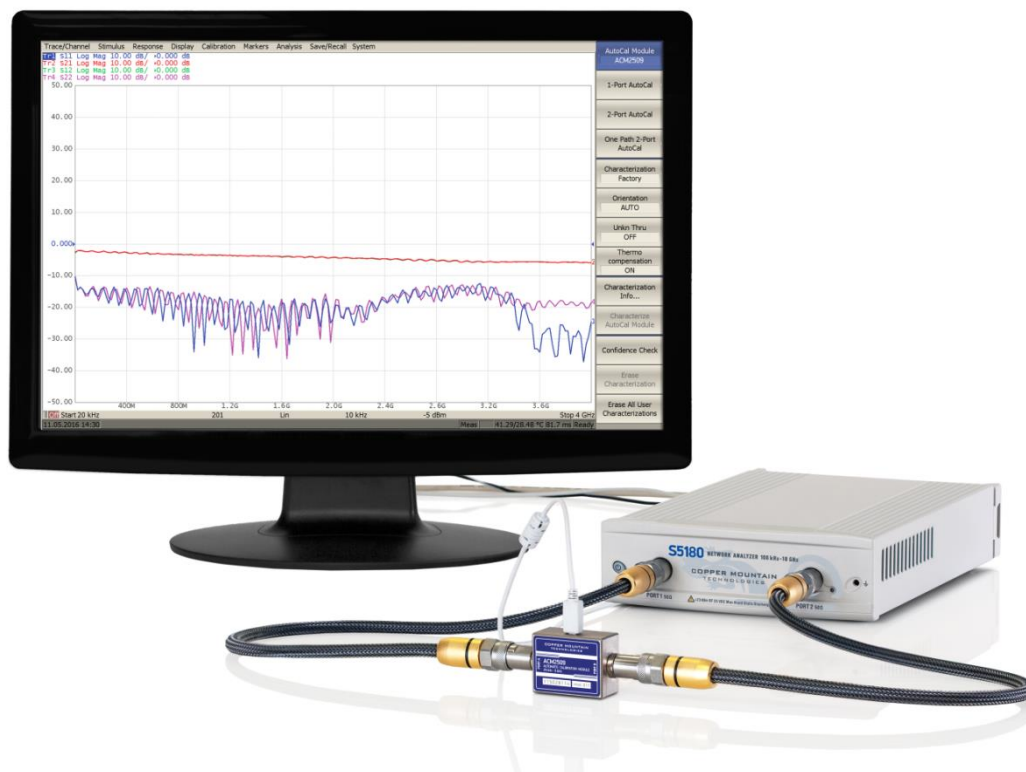




COPPER MOUNTAIN
TECHNOLOGIES

S2 and S4 series

Network Analyzer Programming Manual SCPI Commands



Revision 20.3
September 2020

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1 Introduction

This Programming Manual corresponds to S2VNA and S4VNA software version 20.3.4

This Manual contains information about the CMT Network Analyzer remote control and its data communication, carried out by means of user program through a computer network.

This manual describes the analyzer command system and the network protocols used to deliver the commands. The commands sent to and the responses read from the analyzer are text messages conforming to the **SCPI** (Standard Commands for Programmable Instruments) specification. The text messages are delivered over computer networks using HiSLIP or TCP/IP Socket network protocols.

HiSLIP (High-Speed LAN Instrument Protocol) is a specialized TCP/IP network protocol developed for the remote control of measuring and testing equipment. HiSLIP is developed by the consortium IVI Foundation as the successor to GPIB¹ and VXI-11² protocols. The user program, as a rule, relies on the implementation of the HiSLIP protocol in the VISA library.

TCP/IP Socket is a general-purpose network protocol. The user program can connect to the analyzer using the TCP/IP Socket protocol both directly and through the VISA library.

VISA (Virtual Instrument Software Architecture) is a widely used software input-output interface in the field of testing and measurement for controlling devices from a personal computer. It is a library of functions for C / C ++, C #, Visual Basic, MATLAB, LabVIEW and others. The VISA library unifies access to all measuring instruments, regardless of the protocol and equipment used. The VISA library is installed on the client side, that is, on the computer where the user program is executed. The VISA library is available on the websites of many companies for free download. There are versions for Linux, Mac OS, Windows.

Section 2 of the manual describes how to establish a network connection between the user program and the analyzer using the HiSLIP or TCP/IP Socket protocol. It shows the differences between the HiSLIP and TCP/IP Socket protocols in terms of writing user programs.

Sections 3 and 4 of the manual describe general information about SCPI and the analyzer command system, respectively.

Section 5 of the manual focuses on recommendations about programming in some specific situations.

¹ GPIB is a bus interface that connects measurement and test equipment to a computer.

² VXI-11 is a network protocol for remote control of measurement and test equipment.

Appendixes 1 through 3 contain information about the IEE488.2 Status Reporting System, Error Codes, and Sample Programs.

Note. Analyzers support an alternative remote control technology based on COM. Its description is contained in a separate manual.

1.1 Programming Manual Scope

This programmer's manual covers the 2-port and 4-port models of the CMT network analyzers listed below.

This programmer's manual covers the 2-port and 4-port models of the CMT network analyzers listed below.

The 2-port network analyzers controlled by the S2VNA software:

- Planar 304/1
- Planar 804/1
- Planar 814/1
- S5045
- S5048
- S5065
- S5085
- S5180
- S5243
- S7530
- SC5065
- SC5090
- C1209
- C1220
- C2220
- C2209
- C4209
- C4220
- M5045
- M5065
- M5090
- M5180

The 4-port network analyzers controlled by the S4VNA software:

- Planar 808/1
- C1409
- C1420
- C2409
- C2420
- C4409
- C4420

1.2 Related Documents

Before reading this Manual, read the Analyzer Operating Manual first.

1.3 References

IEEE Standard 488.2–1992, *IEEE Standard Codes, Formats, Protocols and Common Commands for Use with ANSI/IEEE Std 488.1–1987*. IEEE, New York, NY, 1992.

Standard Commands for Programmable Instruments (SCPI),

<http://www.ivifoundation.org/specifications>

High-Speed LAN Instrument Protocol (HiSLIP),

<http://www.ivifoundation.org/specifications>

VISA specifications, <http://www.ivifoundation.org/specifications>

2 Connection Setup

2.1 Overview

To enable remote control of the analyzer, the user must enable the HiSLIP server or Socket server in the settings of the analyzer's program. After that the analyzer's program waits for connection from the user program (client).

HiSLIP server and Socket server use various network protocols based on TCP/IP protocol. HiSLIP is a specialized protocol developed for measuring and test equipment. TCP/IP Socket is a general-purpose protocol.

It is possible to simultaneously enable both HiSLIP and Socket servers in the analyzer program. In this case, the client determines the connection protocol. When using the VISA library, the client selects the protocol by specifying it in the address string of the analyzer.

After a connection has been established on the initiative of the client, the latter can send text commands and read the results of the measurements. The command set is the same for both protocols and is described in sections 3 and 4.

The VISA library hides the details of protocol implementation from the user and provides an uniform I/O interface. Nevertheless, there are some minor differences in programming methods using the HiSLIP and TCP/IP Socket protocols, which are described later in Section 2.7.

Usually the user program and the analyzer program run on different computers connected by the local network. However, it is possible that the user and analyzer program runs on the same computer. In the latter case, the client specifies the IP address of the analyzer's computer – 127.0.0.1 or the network name of the analyzer's computer – *localhost*.

Multiple analyzer programs can be executed on the same computer (when several USB analyzer blocks are connected). In this case, remote control of each analyzer is possible. For this purpose, the user must specify a unique TCP/IP port number in the settings of each analyzer program.

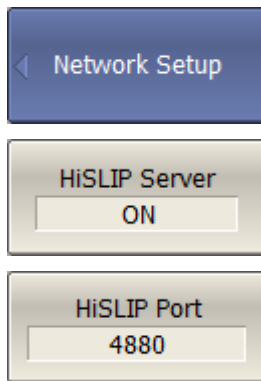
One analyzer program does not limit the number of simultaneously connected clients. Clients themselves are responsible for the absence of conflicts in the remote control of the analyzer. The HiSLIP protocol supports the exclusive or shared lock of the analyzer by the client. For more details about locks, see the VISA manual.

2.2 Analyzer Setting

For remote access to the analyzer it is necessary to make the following settings in its program:

- Enable HiSLIP server and/or Socket server;
- Configure the TCP/IP port number (optional).

Configuring the TCP/IP port number is necessary in the only case where several analyzer programs are simultaneously executed on the same computer, and these programs require remote remote control. In other cases, leave the default TCP/IP port number: for the HiSLIP server - 4880, and for the Socket server – 5025.

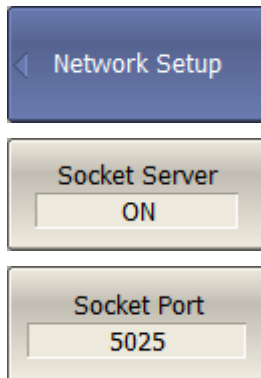


To enable remote control of the analyzer using the HiSLIP protocol, press the following softkeys:

System > Misc Setup > Network Setup > HiSLIP Server [ON/OFF].

To change the TCP/IP port number of the HiSLIP server, use the following softkeys:

System > Misc Setup > Network Setup > HiSLIP Port.



To enable remote control of the analyzer using the Socket protocol, press the following softkeys:

System > Misc Setup > Network Setup > Socket Server [ON/OFF].

To change the TCP/IP port number of the Socket server, use the following softkeys:

System > Misc Setup > Network Setup > Socket Port.

2.3 Client Setting

If the client is a user program that works through the VISA library, the easiest way to configure the network connection with the Analyzer is using a special graphical utility from VISA package (for example, NI-MAX, Keysight Connection Expert).

According to the manual for the above utilities, add a new network device, specifying the network name or IP address of the Analyzer's computer, and the protocol. As a result of successful connection to the Analyzer, the VISA address of the analyzer will be automatically generated and displayed. The VISA address of the Analyzer is used later in the user program in order to open the connection.

The format of the VISA address for the HiSLIP and Socket protocols:

HiSLIP	TCPIP[board]:: <i>host address</i> [: <i>HiSLIP device name</i> [, <i>HiSLIP port</i>]][:INSTR]
Socket	TCPIP[<i>board</i>]:: <i>host address</i> :: <i>port</i> ::SOCKET

Examples of VISA address for HiSLIP and Socket protocols:

HiSLIP	TCPIP0::192.168.0.1::hislip0::INSTR TCPIP0::localhost::hislip0::INSTR
Socket	TCPIP0::192.168.0.1::5025::SOCKET TCPIP0::localhost::5025::SOCKET

If the client is a user program that does not use the VISA library, then only the TCP/IP Socket protocol is available to it. In this case, the user program establishes a connection using the IP address of the analyzer's Socket server.

The format of the IP address of the analyzer's Socket server:

Socket	<i>host address:port</i>
--------	--------------------------

Examples of the IP address of the analyzer's Socket server:

Socket	192.168.0.1:5025 localhost:5025
--------	------------------------------------

2.4 VISA Library

Using the VISA (Virtual Instrument Software Architecture) library is most common approach. The VISA library is a widely used software input-output interface in the field of testing and measurement for controlling devices from a personal computer. It is a library of functions for C/C ++, C #, Visual Basic, MATLAB, LabVIEW and others.

The VISA Library unifies access to all measuring instruments, regardless of the protocol and equipment used.

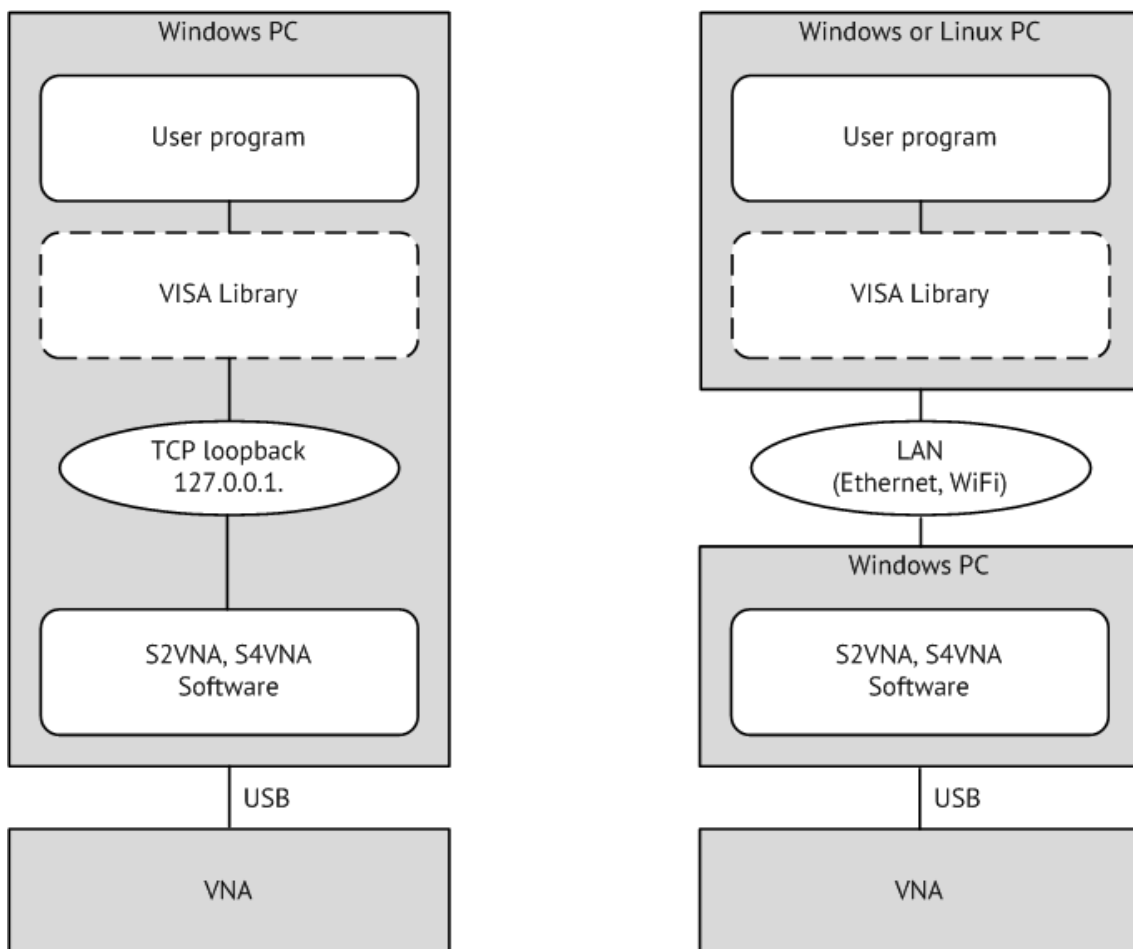
The VISA library is installed on the client side, that is, on the computer where the user program is executed. The VISA library is available on the websites of many companies for free download. There are versions for Linux, Mac OS, Windows

2.5 Network and Local Configuration

A network configuration involves executing a user program and analyzer program on different computers connected by a local area network.

The local configuration involves executing the user program and the analyzer program on the single computer.

The figure shows the local configuration on the left and the network configuration on the right.



The local configuration is possible due to the standard TCP/IP stack function – TCP loopback. The TCP loopback function allows network applications to communicate in a standard way within a single computer. The most widely used IP address in the TCP loopback mechanism is 127.0.0.1. Instead of the numeric address 127.0.0.1, it is possible to use the symbolic name *localhost*.

Note: The network configuration does not restrict the client in choosing the OS. The local configuration limits the client in choosing the OS – only Windows.

2.6 Connecting Multiple Analyzers to Single Computer

This section describes in detail how to configure the remote control of the multiple analyzer programs executed simultaneously on a single computer (provided several USB analyzer hardware units connected to the single computer).

- It is recommended to create a separate folder for each analyzer with the software. This allows to save individual settings for each analyzer.
- It is recommended that each copy of the software be linked to a specific hardware unit by its serial number or model (see at the end of this section).
- Assign a unique TCP/IP port number for each copy of the software for the HiSLIP or Socket protocol used. For example, if HiSLIP is used, assign port 4880 to the first analyzer, 4881 to the second, and so on. When assigning a port number, the user must ensure that the port number is not used by other programs.
- Use the analyzer's address in the user program with the mandatory indication of the TCP/IP port number assigned to the analyzer, as in the examples given.

Examples of the VISA address for the HiSLIP and Socket protocols with the indication of the TCP/IP port:

HiSLIP	TCPIP0::192.168.0.1::hislip0,4880::INSTR TCPIP0::192.168.0.1::hislip0,4881::INSTR
Socket	TCPIP0::192.168.0.1::5025::SOCKET TCPIP0::192.168.0.1::5026::SOCKET

Examples of the TCP/IP address of the analyzer's Socket server with the indication of the port:

Socket	192.168.0.1:5025 192.168.0.1:5026
--------	--------------------------------------



To link the analyzer program to the analyzer model, press the softkeys:

System > Misc Setup > Analyzer Model

To link the analyzer program to the analyzer serial number, press the softkeys:

System > Misc Setup > Analyzer Serial N

2.7 Differences in Use of HiSLIP and Socket Protocols

This section describes the differences in the methods of writing user programs due to the use of different HiSLIP and TCP/IP Socket protocols. It is assumed that the user program works through the VISA library.

The list of differences in a brief form is given below. Then a detailed description of each item is given.

1. The terminal character *<newline>* in the commands sent to the analyzer.
2. The terminal character *<newline>* in the analyzer's responses.
3. Determine the *interrupted* violation of the messages exchange protocol of IEEE488.2.
4. Support for the IEEE488.2 *Status Reporting System*.
5. Support the transfer of binary data.

2.7.1 Terminal Character in Messages to Analyzer

The user program sends variable-length text messages to the analyzer. The end of the message, according to IEEE488.2, is transmitted either by protocol means (not by a symbol), or by the symbol *<newline>* ('\n', 0x0A, 10), or both methods together.

The HiSLIP has a mechanism for transmitting the end of the message by protocol means, while the Socket protocol does not. This makes the following requirements for programs sending commands to analyzer:

- Programs using the Socket protocol **shall** send a *<newline>* character at the end of the message;
- Programs using the HiSLIP protocol **may** send the *<newline>* symbol at the end of the message.

Note for the graphical language LabVIEW when using the Socket protocol: to be able to enter the symbol *<newline>* at the end of the message, right-click on the string constant and enable **'\ Codes Display**. The *<newline>* character is entered as **'\n'**.

Note for the textual languages: it is recommended to use to the symbol *<newline>* at the end of the message regardless of the protocol used.

2.7.2 Terminal Character in Analyzer Responses

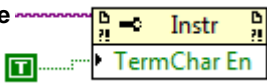
When using the HiSLIP protocol, the analyzer terminates messages with the symbol *<newline>* + the protocol defined end of message (not symbolic).

When using the Socket protocol, the analyzer terminates messages only with the *<newline>* symbol, since the Socket protocol does not have the protocol defined end of message.

Depending on the protocol used, the following settings for the VISA library should be made so that it correctly determines the end of the message from the analyzer:

- When using the HiSLIP protocol – no settings are required, the VISA library functions normally with default settings;
- When using the Socket protocol, the user program must set the attribute VI_ATTR_TERMCHAR_EN to TRUE (completion of the read operation when the *<newline>* character is received).

Examples of setting up the VISA library using the Socket protocol:

C/C++	<code>viSetAttribute(instr, VI_ATTR_TERMCHAR_EN, VI_TRUE);</code>
LabVIEW	

2.7.3 Interrupted Error

The HiSLIP protocol meets the requirements of the IEEE Std 488.2 message exchange protocol to detect an interrupted error³. The interrupted error indicates that the Analyzer received an incoming message (command or query) before the client accepted a response from the previous request. In other words, the client is required to read the result of each query before sending the next query or command. If the client fails to do so, the protocol generates an error message and the response from the previous query is cleared by the protocol.

The Socket protocol does not detect the interrupted error. Multiple queries can be sent to the analyzer without a read operation between them. Answers from queries will be returned in the order in which they were sent. The client himself determines from which request a specific answer has been received.

2.7.4 IEEE488.2 Status Reporting System

The HiSLIP protocol fully supports the analyzer's IEEE488.2 Status Reporting System described in the appendix, while the Socket protocol supports it only partially. The Socket protocol does not support the following functions:

- The MAV (message available) bit in the Status Byte;
- SRQ (service request) generation - request from the analyzer, implemented by callback functions in the VISA library;
- Read the Status Byte using the dedicated function – viReadSTB.

2.7.5 Transfer of Binary Data

By default, data from the analyzer is sent in text form. To increase the speed of the exchange, the user has the option to enable binary data transfer. The transfer of binary data is enabled by the FORMat:DATA command and is effective for commands that transfer large data amounts. A list of such commands is given in the description of the FORMat:DATA command.

The HiSLIP protocol supports the transfer of binary data, since it provides the protocol defined end of message (not symbolic).

The Socket protocol does not support the transfer of binary data, since it uses the `<newline>` byte as the end of the message, which can occur in binary data.

³ The analyzer implements the synchronized mode of the HiSLIP protocol.

3 SCPI Overview

The analyzer implements a set of commands based on the standard SCPI-1999 (Standard Commands for Programmable Instruments). This is a set of instructions oriented to the exchange of symbolic messages.

SCPI was developed by the SCPI Consortium (currently supported by the IVI Foundation). The main details of the SCPI standard are described below. More information about the SCPI standard can be downloaded from the IVI Foundation website.

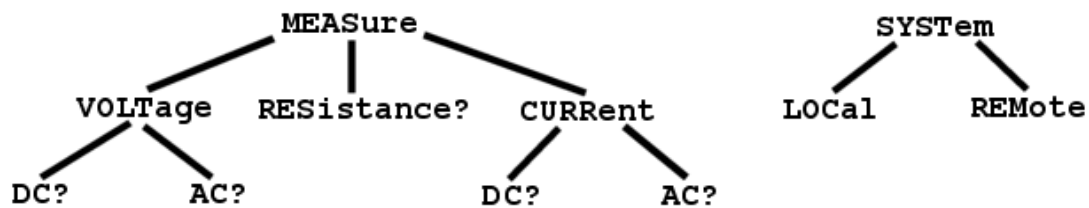
3.1 Messages

The SCPI is text message oriented protocol. The commands are sent as character messages. One message can contain one or several commands. The answer from instrument is read out as a text message by default. Optionally an instrument can be programmed to output a binary data.

Note	The Analyzer supports the binary data output when using HiSLIP protocol.
	The Analyzer does not support the binary data output when using TCP/IP Socket protocol.

3.2 Command Tree

The SCPI commands are organized in a tree structure. For example:



Each tree structure forms a functional system. The base of the tree is called root, e.g. MEASure and SYSTem. Each functional system can have subsystems of lower level. The final nodes are called leaves. The entire sequence from root to the leaf makes up the command. For example, part of SOURCe functional system looks as follows:

```

:SOURCE
  :POWER
    :CENTer
    :START
    :SPAN
    :STOP
    [:LEVe1]
      :SLOPe
        [:DATA]
        :STATE
  
```

This SOURce branch has several levels, where CENTer, START, SPAN, STOP, DATA, STATE are the leaves, which represent the following six commands:

```

:SOURCE:POWER:CENTer
:SOURCE:POWER:START
:SOURCE:POWER:SPAN
:SOURCE:POWER:STOP
:SOURCE:POWER[:LEVe1]:SLOPe[:DATA]
:SOURCE:POWER[:LEVe1]:SLOPe:STATE
  
```

The tree can contain subsystems and leaves with the same names if they belong to different branches, e.g. CENTer leaf is on the tips of different branches:

```

:SOURCE                                :SENSe
  :POWER                                :FREQuency
    :CENTer                             :CENTer
  
```

3.3 Subsystems

A colon (':') separates the subsystems. The subsystems, which follow the colon are of a lower level. For example, in command:

```
:SOURce:POWer:STARt
```

the start power STARt is a part of POWer subsystem, which is a part of SOURce subsystem. The stop power is also a part of :SOURce:POWer subsystem. It is specified by:

```
:SOURce:POWer:STOP
```

The first colon in the line can be omitted, for example:

```
SOURce:POWer:STOP
```

3.4 Optional Subsystems

Some subsystems can be specified as optional, if omission of such a subsystem will not lead to ambiguity. This means that the subsystem can be omitted in command line. The optional subsystems are bracketed ("[]"). For example, if full command specification is written as:

```
SOURce:POWer[:LEVe1]:SLOPe[:DATA]
```

subsystems LEVe1 and DATA are optional. Therefore the both commands are valid:

```
SOURce:POWer:LEVe1:SLOPe:DATA
```

```
SOURce:POWer:SLOPe
```

3.5 Long and Short Formats

Each keyword in a command specification has a long format and a short format. The short format of a command is indicated by capital letters. For example, a command specification:

```
SENSe:FREQuency:CENTer
```

can be written as:

```
SENS:FREQ:CENT
```

```
SENS:FREQ:CENTer
```

Only long or short form of each keyword is acceptable. For example, the following specification is incorrect:

```
:SENS:FREQuen:CEN
```

3.6 Case Sensitivity

The commands are not case sensitive. Upper case and lower case letters are only used to indicate the long and short formats of a command specification. For example, the following commands are equivalent:

```
SENS:FREQ:STAR
```

```
sens:freq:star
```

3.7 Parameters

The commands can have parameters. The parameters are separated from the command by a space. If a command has several parameters, they are separated by commas (',').

3.7.1 Numeric Values

The numeric values are integer or real numbers. These parameters can have measurement units. For example:

```
SENS:FREQ 1000000000
```

```
SENS:FREQ 1000 MHz
```

```
SENS:FREQ 1 GHz
```

```
SENS:FREQ 1E9
```

3.7.1.1 Multiplier Prefixes

The SCPI standard allows specification of the numeric values with multiplier prefix to the measurement units.

Prefix	Multiplier
A	1e-18
F	1e-15
P	1e-12
N	1e-9
U	1e-6
M	1e-3
K	1e3
MA	1e6
G	1e9
T	1e12
PE	1e15
EX	1e18

There are two exceptions to the above designation: prefix M in combination with HZ or OHM means 1e6 (Mega), and not 1e-3 (milli), i.e. MHZ means Megahertz, same as MAHZ.

3.7.1.2 Notations

The SCPI standard allows numeric value specification in different notations. Decimal notation is used by default. To use other notations, specify the numeric values in the following way:

Notation	Prefix	Example
Binary	#B	#B11001010 = 202 ₁₀
Octal	#Q	#Q107 = 71 ₁₀
Hexadecimal	#H	#H10FF = 4351 ₁₀

3.7.2 Booleans

The booleans can assume two values: logical *yes* and logical *no* (ON and OFF), and specified in command as:

ON or 1 – logical yes
OFF or 0 – logical no

For example:

DISPlay:ENABle OFF
DISPlay:ENABle 0

3.7.3 Character Data

The SCPI standard allows specification of parameters as character data, as in the following command:

TRIGger:SOURce {BUS|IMMediate|EXTernal}

the possible values of the character data – "BUS", "IMMediate", "EXTernal".

The character data have long and short format, and the formats are specified in accordance with the same rules as described in Section 3.5.

Apart from that, the character data can be combined with numerical parameters. For example:

SENSe:FREQuency:START {MINimum|MAXimum|<value>}

The following specifications are acceptable:

SENSe:FREQuency:START MIN
SENSe:FREQuency:START maximum
SENSe:FREQuency:START 1000000

3.7.4 String Parameters

In some cases, the Analyzer can accept parameters made of character strings. Such strings are enclosed with single quotes (') or double quotes ("). For example, the file name in the state saving command:

MMEMemory:STORe "state01.sta"

3.7.5 Numeric Lists

The numeric lists (*<numeric list>*) are used to specify a variable number of numerical parameters, for example:

```
CALC:LIMit:DATA 2,1,1E9,3E9,0,0,2,1E9,3E9,-3,-3
```

3.8 Query Commands

The query commands read out the parameter values from the Analyzer. After a query command has been sent, the response should return via remote control interface.

The query commands has a question mark ('?') in the end of the command. Many of the commands have two forms. The form with a question mark writes the parameter, the form without a question mark reads out the parameter. For example:

```
SENSe:FREQuency:STARt 1MHz
SENSe:FREQuency:STARt?
```

3.9 Numeric Suffixes

The Analyzer contains several items of the same type, such as 16 channels, each of which in turn contains 16 traces, etc. A numeric suffix is used to denote the item number in a command. The suffix is added to the keyword of the item (channel, trace, etc). For example, in the following specification the channel number *<Ch>* and trace number *<Tr>* indicate the channel and trace, to which this command is addressed:

```
CALCulate<Ch>:PARameter<Tr>:DEFine
```

According to this specification, the command referred to the trace 2 of the channel 1 will be written as follows:

```
CALC1:PAR2:DEF
```

The numeric suffix can be omitted. In this case, it is 1 by default. For example, the following commands are equivalent:

```
CALC:PAR:DEF
CALC1:PAR1:DEF
```

3.10 Compound Commands

It is possible to enter more than one command in the same command line. The commands in the line are separated by a semicolon (;). The specification of the first command is valid for the following command, except for the last leaf before the semicolon. For example:

```
SENS:FREQ:STAR 1 MHZ;STOP 2MHZ
```

To start the next command from the highest level of the structure, this command should begin from a colon (':'):

```
SENS:FREQ:STAR 1 MHZ;:CALC:PAR:DEF S21
```

3.11 IEEE488.2 Common Commands Overview

A SCPI compatible Analyzer must support a set of common commands of IEEE488.2 standard. These commands start with an asterisk (*). The list of such commands see below:

*CLS
*ESE
*ESE?
*ESR?
*IDN?
*OPC
*OPC?
*RST
*SRE
*SRE?
*STB?
*TRG
*WAI

These commands are used for resetting, state queries, etc.

4 Remote Commands

4.1 Conventions

The following conventions are used throughout the Manual.

4.1.1 Syntax

The following symbols are used in command syntax:

<>	identifiers enclosed in angular brackets indicated that a particular type of data must be specified
[]	part enclosed in square brackets can be omitted
{}	part enclosed in curly brackets indicates that one of the items must be selected in this part. Individual items are separated by a vertical bar " "
<i>Space</i>	space separates commands from parameters
,	comma separates adjacent parameters
...	ellipses indicates that parameters in that part are omitted

4.1.2 Identifiers

Identifier	Parameter	Description
<code><numeric></code>	Number	<code>{<integer> <real>}</code>
<code><frequency></code>	Frequency	<code><numeric>{[HZ] KHZ MHZ GHZ}</code>
<code><power></code>	Power	<code><numeric>{[DBM] DBMW DBW KW W MW UW NW}</code>
<code><time></code>	Time	<code><numeric>{[S] MS US NS PS FS}</code>
<code><phase></code>	Phase	<code><numeric>{[DEG] MADEG KDEG MDEG UDEG}</code>
<code><stimulus></code>	Stimulus	<code>{<frequency> <power> <time>}</code>
<code><numeric list></code>	Numeric List	<code><numeric 1>,<numeric 2>,...<numeric N></code>
<code><bool></code>	Boolean parameter	<code>{0 1 ON OFF}</code>
<code><char></code>	Character parameter	Predefined set of character strings without quotes
<code><port></code>	Port Number	<code><integer></code>
<code><string></code>	String parameter	Quoted string

4.2 IEEE488.2 Common Commands

*CLS

*CLS

<i>Description</i>	<p>Clears the following:</p> <ul style="list-style-type: none"> • Error Queue • Status Byte Register • Standard Event Status Register • Operation Status Event Register • Questionable Status Event Register • Questionable Limit Status Event Register • Questionable Limit Channel Status Event Register <p>(no query)</p>
<i>Target</i>	Status Reporting System
<i>Equivalent Softkeys</i>	None

*ESE

*ESE <numeric>

*ESE?

<i>Description</i>	<p>Sets or reads out the value of the Standard Event Status Enable Register.</p> <p>(command/query)</p>
<i>Target</i>	Status Reporting System
<i>Parameter</i>	<numeric> 0 to 255
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	None

ESR?**ESR?**

<i>Description</i>	Reads out the value of the Standard Event Status Register. Executing this command clears the register value. (query only)
<i>Target</i>	Status Reporting System
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	None

IDN?**IDN?**

<i>Description</i>	Reads out the Analyzer identification string. (query only)
<i>Target</i>	Analyzer
<i>Query Response</i>	The identification string in format: <manufacturer>, <model>, <serial number>, <software version>/<hardware version>. For example: CMT, C1209, 08080188, 16.2/01
<i>Equivalent Softkeys</i>	None

OPC**OPC**

<i>Description</i>	Sets the OPC bit (bit 0) of the Standard Event Status Register at the completion of all pending operations. The pending operation caused by the command TRIG:SING only. (no query)
<i>Target</i>	Status Reporting System
<i>Equivalent Softkeys</i>	None

OPC?**OPC?**

<i>Description</i>	Reads out the "1" at the completion of all pending operations. The query blocks the execution of the user program until execution of all previous instructions. The query *OPC? can be used for waiting for the end of a sweep initiated by the command TRIG:SING. (query only)
<i>Target</i>	Analyzer
<i>Query Response</i>	1
<i>Related Commands</i>	TRIG:SING
<i>Equivalent Softkeys</i>	None

RST**RST**

<i>Description</i>	Restores the default settings of the Analyzer. There is difference from presetting the Analyzer with SYST:PRESet command – in this case all channels are set to <i>Hold</i> . (no query)
<i>Target</i>	Analyzer
<i>Related Commands</i>	SYSTem:PRESet
<i>Equivalent Softkeys</i>	None

SRE**SRE <numeric>*****SRE?**

<i>Description</i>	Sets or reads out the value of the Service Request Enable Register (command/query)
<i>Target</i>	Status Reporting System
<i>Parameter</i>	<numeric> 0 to 255
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	None

STB?**STB?**

<i>Description</i>	Reads out the value of the Status Byte Register (query only)
<i>Target</i>	Status Reporting System
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	None

TRG**TRG**

<i>Description</i>	<p>Generates a trigger signal and initiates a sweep under the following conditions.</p> <ol style="list-style-type: none"> 6. Trigger source is set to the <i>BUS</i> (set by the command TRIG:SOUR BUS), otherwise an error occurs and the command is ignored. 7. Analyzer must be in the <i>trigger waiting</i> state, otherwise (the analyzer is in the <i>measurement</i> state or <i>hold</i> state) an error occurs and the command is ignored. <p>The command is completed immediately after the generation of the trigger signal.</p> <p>(no query)</p>
<i>Target</i>	Analyzer
<i>Related Commands</i>	TRIG:SOUR INIT INIT:CONT
<i>Equivalent Softkeys</i>	None

TST?**TST?**

<i>Description</i>	<p>Reads out the analyzer self-test result. 0 indicates no failures found. A non-zero value indicates one or more of failure conditions exist. The SYST:TEST? query returns a textual description of the failures.</p> <p>Note: the query returns a non-zero value when it is issued until the instrument is ready.</p> <p>(query only)</p>
<i>Target</i>	Instrument
<i>Query Response</i>	<numeric>
<i>Related commands</i>	SYST:TEST? SYST:READY?
<i>Equivalent Softkeys</i>	None

WAI**WAI**

<i>Description</i>	<p>Delays the execution by the analyzer of the next command till the completion of the command TRIG:SING.</p> <p>In absence of a pending command TRIG:SING the command *WAI is equivalent to an empty operation.</p> <p>A query that follows the command *WAI blocks the execution of the user program till the completion of the command TRIG:SING, similarly to the query *OPC?.</p> <p>(no query)</p>
<i>Target</i>	Analyzer
<i>Related Commands</i>	TRIG:SING
<i>Equivalent Softkeys</i>	None

4.3 Network Analyzer Commands

ABOR

ABORt

<i>Description</i>	Aborts the sweep. The channels in the <i>Single</i> trigger initiation mode transit to the <i>Hold</i> state. The channels in the <i>Continuous</i> trigger initiation mode transit to the <i>trigger waiting</i> state, if the trigger source is set to <i>Internal</i> , the channel immediately starts a new sweep. (no query)
<i>Related Commands</i>	INIT:CONT
<i>Equivalent Softkeys</i>	Stimulus > Trigger > Restart

CALC:CONV

CALCulate <Ch>[:SElected]:CONVersion[:STATe] {OFF|ON|0|1}

CALCulate <Ch>[:SElected]:CONVersion[:STATe]?

Or

CALCulate <Ch>:TRACe <Tr>:CONVersion[:STATe] {OFF|ON|0|1}

CALCulate <Ch>:TRACe <Tr>:CONVersion[:STATe]?

<i>Description</i>	Turns ON/OFF the S-parameter conversion function. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<div style="margin-left: 20px;"> {ON 1} : ON {OFF 0} : OFF </div>
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Analysis > Conversion > Conversion

CALC:CONV:FUNC

CALCulate <Ch>[:SElected]:CONVersion:FUNction <char>

CALCulate <Ch>[:SElected]:CONVersion:FUNction?

Or

CALCulate <Ch>:TRACe<Tr>:CONVersion:FUNction <char>

CALCulate <Ch>:TRACe<Tr>:CONVersion:FUNction?

Description	Sets or reads out the S-parameter conversion function type. (command/query)
Target	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
Parameter	<char> Specifies parameter: ZREFlection : Reflection equivalent impedance ZTRansmit : Transmission equivalent impedance YREFlection : Reflection equivalent admittance YTRansmit : Transmission equivalent admittance INVersion : Inverse S-parameter ZTSHunt : Shunt equivalent impedance YTSHunt : Shunt equivalent admittance CONJugation : S-parameter conjugate
Query Response	{ZREF ZTR YREF YTR INV ZTSH YTSH CONJ}
Preset Value	ZREF
Equivalent Softkeys	Analysis > Conversion > {Zr Zt Yr Yt 1/S Z Trans–Shunt Y Trans–Shunt Conjugation}

CALC:CORR:EDEL:DIST

CALCulate <Ch>[:SElected]:CORRection:EDELay:DISTance <numeric>

CALCulate <Ch>[:SElected]:CORRection:EDELay:DISTance?

Or

CALCulate <Ch>:TRACe <Tr>:CORRection:EDELay:DISTance <numeric>

CALCulate <Ch>:TRACe <Tr>:CORRection:EDELay:DISTance?

<i>Description</i>	Sets or reads out the value of the equivalent distance in the electrical delay function. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<numeric> the distance value
<i>Unit</i>	meter, feet or inches depending on the CALC:CORR:EDEL:DIST:UNIT command
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Scale > Electrical Delay > Distance

CALC:CORR:EDEL:DIST:UNIT

CALCulate <Ch>[:SElected]:CORRection:EDELay:DISTanCe:UNITs <char>

CALCulate <Ch>[:SElected]:CORRection:EDELay:DISTanCe:UNITs?

Or

CALCulate <Ch>:TRACe <Tr>:CORRection:EDELay:DISTanCe:UNITs <char>

CALCulate <Ch>:TRACe <Tr>:CORRection:EDELay:DISTanCe:UNITs?

<i>Description</i>	Sets or reads out the distance units in the electrical delay function. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<char> Specifies parameter: METer : meters FEET : Feet INCHes : Inches
<i>Query Response</i>	{MET FEET INCH}
<i>Preset Value</i>	METer
<i>Equivalent Softkeys</i>	Scale > Electrical Delay > Distance Units > {Meter Feet Inches}

CALC:CORR:EDEL:MED

CALCulate <Ch>[:SElected]:CORRection:EDELay:MEDia <char>

CALCulate <Ch>[:SElected]:CORRection:EDELay:MEDia?

Or

CALCulate <Ch>:TRACe <Tr>:CORRection:EDELay:MEDia <char>

CALCulate <Ch>:TRACe <Tr>:CORRection:EDELay:MEDia?

<i>Description</i>	Sets or reads out the type of media in the electrical delay function. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<char> Specifies parameter: COAXial : Coaxial type of media WAVeguide : Waveguide type of media
<i>Query Response</i>	{COAX WAV}
<i>Preset Value</i>	COAX
<i>Equivalent Softkeys</i>	Scale > Electrical Delay > Media > {Coax Waveguide}

CALC:CORR:EDEL:RVEL

CALCulate <Ch>[:SElected]:CORRection:EDELay:RVELocity <numeric>

CALCulate <Ch>[:SElected]:CORRection:EDELay:RVELocity?

Or

CALCulate <Ch>:TRACe <Tr>:CORRection:EDELay:RVELocity <numeric>

CALCulate <Ch>:TRACe <Tr>:CORRection:EDELay:RVELocity?

<i>Description</i>	Sets or reads out the value of the velocity factor used to calculate between delay and distance in the electrical delay function. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<numeric> the velocity factor value from 0 to 1.
<i>Unit</i>	No units
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Scale > Electrical Delay > Velocity Factor

CALC:CORR:EDEL:TIME

CALCulate <Ch>[:SElected]:CORRection:EDELay:TIME <time>

CALCulate <Ch>[:SElected]:CORRection:EDELay:TIME?

Or

CALCulate <Ch>:TRACe <Tr>:CORRection:EDELay:TIME <time>

CALCulate <Ch>:TRACe <Tr>:CORRection:EDELay:TIME?

Description	Sets or reads out the value of the electrical delay. (command/query)
Target	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
Parameter	<time> the electrical delay value from –10 to 10
Unit	sec (second)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	0
Equivalent Softkeys	Scale > Electrical Delay > Electrical Delay

CALC:CORR:EDEL:WAV:CUT

CALCulate <Ch>[:SElected]:CORRection:EDELay:WAVeguide:CUToff <numeric>

CALCulate <Ch>[:SElected]:CORRection:EDELay:WAVeguide:CUToff?

Or

CALCulate <Ch>:TRACe <Tr>:CORRection:EDELay:WAVeguide:CUToff <numeric>

CALCulate <Ch>:TRACe <Tr>:CORRection:EDELay:WAVeguide:CUToff?

Description	Sets or reads out the value of the waveguide cutoff frequency in the electrical delay function if the type of media set to the "WAVeguide" by the command CALC:CORR:EDEL:MED. (command/query)
Target	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
Parameter	<numeric> the cutoff frequency 0 to 999e9
Unit	hz (hertz)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	0
Equivalent Softkeys	Scale > Electrical Delay > Waveguide Cutoff

CALC:CORR:OFFS:PHAS

CALCulate <Ch>[:SElected]:CORRection:OFFSet:PHASe <phase>

CALCulate <Ch>[:SElected]:CORRection:OFFSet:PHASe?

Or

CALCulate <Ch>:TRACe <Tr>:CORRection:OFFSet:PHASe <phase>

CALCulate <Ch>:TRACe <Tr>:CORRection:OFFSet:PHASe?

Description	Sets or reads out the value of the phase offset. (command/query)
Target	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
Parameter	<phase> the phase offset value from –360 to 360
Unit	° (degree)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	0
Equivalent Softkeys	Scale > Phase Offset

CALC:CORR:STAT?

CALCulate <Ch>[:SElected]:CORRection:STATus?

Or

CALCulate <Ch>:TRACe <Tr>:CORRection:STATus?

<i>Description</i>	Reads out the interpolation/extrapolation status of the error correction. (query only)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Query Response</i>	Trace represents S-parameter: NONE : Correction not applied COR : Correction applied exactly C? : Correction interpolated C! : Correction extrapolated Trace represents absolute parameter: NONE : Correction not applied RC : Correction applied exactly RC? : Correction interpolated RC! : Correction extrapolated
<i>Equivalent Softkeys</i>	None

CALC:DATA:FDAT

CALCulate <Ch>[:SElected]:DATA:FDATa <numeric list>

CALCulate <Ch>[:SElected]:DATA:FDATa?

Or

CALCulate <Ch>:TRACe<Tr>:DATA:FDATa <numeric list>

CALCulate <Ch>:TRACe<Tr>:DATA:FDATa?

Description	<p>Reads out or writes the formatted data array.</p> <p>The formatted data array is the data, whose processing is completed including the formatting as the last step. Such data represent the data trace values as they are shown on the screen.</p> <p>The array size is 2N, where N is the number of measurement points.</p> <p>For the n-th point, where n from 1 to N:</p> <p><numeric 2n-1> real number in rectangular format, real part in polar and Smith chart formats;</p> <p><numeric 2n> 0 in rectangular format, imaginary part in polar and Smith chart formats.</p> <p>(Command/Query)</p>
Target	<p>CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16}</p>
Query Response	<numeric 1>,<numeric 2>,...<numeric 2N>
Note	When data is being written it is recommended to hold the sweep before and update the screen after write.
Related Commands	CALC:FORM
Equivalent Softkeys	None

CALC:DATA:FMEM

CALCulate <Ch>[:SElected]:DATA:FMEMory <numeric list>

CALCulate <Ch>[:SElected]:DATA:FMEMory?

Or

CALCulate <Ch>:TRACe <Tr>:DATA:FMEMory <numeric list>

CALCulate <Ch>:TRACe <Tr>:DATA:FMEMory?

Description	<p>Reads out or writes the formatted memory array.</p> <p>The formatted memory array is the data, whose processing is completed including the formatting as the last step. Such data represent the memory trace values as they are shown on the screen.</p> <p>The array size is 2N, where N is the number of measurement points.</p> <p>For the n–th point, where n from 1 to N:</p> <p><numeric 2n–1> real number in rectangular format, real part in polar and Smith chart formats;</p> <p><numeric 2n> 0 in rectangular format, imaginary part in polar and Smith chart formats.</p> <p>(Command/Query)</p>
Target	<p>CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16}</p>
Query Response	<numeric 1>,<numeric 2>,...<numeric 2N>
Related Commands	<p>CALC:MATH:MEM</p> <p>CALC:FORM</p>
Equivalent Softkeys	None

CALC:DATA:SDAT

CALCulate <Ch>[:SElected]:DATA:SDATa <numeric list>

CALCulate <Ch>[:SElected]:DATA:SDATa?

Or

CALCulate <Ch>:TRACe<Tr>:DATA:SDATa <numeric list>

CALCulate <Ch>:TRACe<Tr>:DATA:SDATa?

Description	<p>Reads out or writes the corrected data array.</p> <p>The corrected data array is the data, whose processing is completed excluding the formatting as the last step. Such data represent S-parameter complex values.</p> <p>The array size is 2N, where N is the number of measurement points.</p> <p>For the n-th point, where n from 1 to N:</p> <p><numeric 2n-1> the real part of corrected measurement; <numeric 2n> the imaginary part of corrected measurement.</p> <p>(Command/Query)</p>
Target	<p>CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16}</p>
Query Response	<numeric 1>,<numeric 2>,...<numeric 2N>
Notes	When data is being written it is recommended to hold the sweep before and update the screen after write.
Equivalent Softkeys	None

CALC:DATA:SMEM

CALCulate <Ch>[:SElected]:DATA:SMEMory <numeric list>

CALCulate <Ch>[:SElected]:DATA:SMEMory?

Or

CALCulate <Ch>:TRACe<Tr>:DATA:SMEMory <numeric list>

CALCulate <Ch>:TRACe<Tr>:DATA:SMEMory?

Description	<p>Reads out or writes the corrected memory array.</p> <p>The corrected memory array is the data, whose processing is completed excluding the formatting as the last step. Such data represent S-parameter complex values.</p> <p>The array size is 2N, where N is the number of measurement points.</p> <p>For the n-th point, where n from 1 to N:</p> <p><numeric 2n-1> the real part of corrected measurement memory; <numeric 2n> the imaginary part of corrected measurement memory.</p> <p>(Command/Query)</p>
Target	<p>CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16}</p>
Query Response	<numeric 1>, <numeric 2>, ...<numeric 2N>
Related Commands	CALC:MATH:MEM
Equivalent Softkeys	None

CALC:DATA:XAX?

CALCulate <Ch>[:SElected]:DATA:XAXis?

Or

CALCulate <Ch>:TRACe <Tr>:DATA:XAXis?

<i>Description</i>	<p>Reads out the X-axis values array.</p> <p>The X-axis values array is the frequency, power or time values array depending on the trace setup. The array contains real values.</p> <p>The array size is N, where N is the number of measurement points.</p> <p>For the n–th point, where n from 1 to N:</p> <p><numeric n> the X-axis value;</p> <p>(Query only)</p>
<i>Target</i>	<p>CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16}</p>
<i>Query Response</i>	<numeric 1>,<numeric 2>,...<numeric N>
<i>Related Commands</i>	<p>SENS:SWE:TYPE</p> <p>CALC:TRAN:TIME:STAT</p>
<i>Equivalent Softkeys</i>	None

CALC:FILT:TIME

CALCulate <Ch>[:SElected]:FILTer[:GATE]:TIME[:TYPE] <char>

CALCulate <Ch>[:SElected]:FILTer[:GATE]:TIME[:TYPE] ?

Or

CALCulate <Ch>:TRACe<Tr>:FILTer[:GATE]:TIME[:TYPE] <char>

CALCulate <Ch>:TRACe<Tr>:FILTer[:GATE]:TIME[:TYPE] ?

<i>Description</i>	Sets or reads out the gate type of the gating function. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ... 16} <Tr> = {[1] 2 ... 16} </div>
<i>Parameter</i>	<char> Specifies the gate type: BPASs : Bandpass type NOTCh : Notch type
<i>Query Response</i>	{BPAS NOTC}
<i>Preset Value</i>	BPAS
<i>Equivalent Softkeys</i>	Analysis > Gating > Type

CALC:FILT:TIME:CEN

CALCulate <Ch>[:SElected]:FILTer[:GATE]:TIME:CENTer <time>

CALCulate <Ch>[:SElected]:FILTer[:GATE]:TIME:CENTer?

Or

CALCulate <Ch>:TRACe<Tr>:FILTer[:GATE]:TIME:CENTer <time>

CALCulate <Ch>:TRACe<Tr>:FILTer[:GATE]:TIME:CENTer?

Description	Sets or reads out the gate center value of the gating function. (command/query)
Target	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
Parameter	<time> the center value of the gate, the range varies depending on the frequency span and the number of points
Unit	sec (second)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	0
Equivalent Softkeys	Analysis > Gating > Center

CALC:FILT:TIME:SHAP

CALCulate <Ch>[:SElected]:FILTer[:GATE]:TIME:SHApe <char>

CALCulate <Ch>[:SElected]:FILTer[:GATE]:TIME:SHApe?

Or

CALCulate <Ch>:TRACe<Tr>:FILTer[:GATE]:TIME:SHApe <char>

CALCulate <Ch>:TRACe<Tr>:FILTer[:GATE]:TIME:SHApe?

Description	Sets or reads out the gate shape of the gating function. (command/query)
Target	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
Parameter	<char> Specifies the gate shape: MAXimum : Maximum shape WIDE : Wide shape NORMal : Normal shape MINimum : Minimum shape
Query Response	{MAX WIDE NORM MIN}
Preset Value	NORM
Equivalent Softkeys	Analysis > Gating > Shape > {Maximum Wide Normal Minimum}

CALC:FILT:TIME:SPAN

CALCulate <Ch>[:SElected]:FILTer[:GATE]:TIME:SPAN <time>

CALCulate <Ch>[:SElected]:FILTer[:GATE]:TIME:SPAN?

Or

CALCulate <Ch>:TRACe<Tr>:FILTer[:GATE]:TIME:SPAN <time>

CALCulate <Ch>:TRACe<Tr>:FILTer[:GATE]:TIME:SPAN?

Description	Sets or reads out the gate span value of the gating function. (command/query)
Target	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
Parameter	<time> the span value of the gate, the range varies depending on the frequency span and the number of points
Unit	sec (second)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	2e-8
Equivalent Softkeys	Analysis > Gating > Span

CALC:FILT:TIME:STAR

CALCulate <Ch>[:SElected]:FILTer[:GATE]:TIME:STARt <time>

CALCulate <Ch>[:SElected]:FILTer[:GATE]:TIME:STARt?

Or

CALCulate <Ch>:TRACe<Tr>:FILTer[:GATE]:TIME:STARt <time>

CALCulate <Ch>:TRACe<Tr>:FILTer[:GATE]:TIME:STARt?

Description	Sets or reads out the gate start value of the gating function. (command/query)
Target	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
Parameter	<time> the start value of the gate, the range varies depending on the frequency span and the number of points
Unit	sec (second)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	-1e-8
Equivalent Softkeys	Analysis > Gating > Start

CALC:FILT:TIME:STAT

CALCulate <Ch>[:SElected]:FILTer[:GATE]:TIME:STATe {OFF|ON|0|1}

CALCulate <Ch>[:SElected]:FILTer[:GATE]:TIME:STATe?

Or

CALCulate <Ch>:TRACe<Tr>:FILTer[:GATE]:TIME:STATe {OFF|ON|0|1}

CALCulate <Ch>:TRACe<Tr>:FILTer[:GATE]:TIME:STATe?

<i>Description</i>	Turns ON/OFF the gating function. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<div style="margin-left: 20px;"> {ON 1} : ON {OFF 0} : OFF </div>
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Analysis > Gating > Gating

CALC:FILT:TIME:STOP

CALCulate <Ch>[:SElected]:FILTer[:GATE]:TIME:STOP <time>

CALCulate <Ch>[:SElected]:FILTer[:GATE]:TIME:STOP?

Or

CALCulate <Ch>:TRACe<Tr>:FILTer[:GATE]:TIME:STOP <time>

CALCulate <Ch>:TRACe<Tr>:FILTer[:GATE]:TIME:STOP?

Description	Sets or reads out the gate stop value of the gating function. (command/query)
Target	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
Parameter	<time> the stop value of the gate, the range varies depending on the frequency span and the number of points
Unit	sec (second)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	+1e-8
Equivalent Softkeys	Analysis > Gating > Stop

CALC:FORM

CALCulate <Ch>[:SElected]:FORMat <char>

CALCulate <Ch>[:SElected]:FORMat?

Or

CALCulate <Ch>:TRACe<Tr>:FORMat <char>

CALCulate <Ch>:TRACe<Tr>:FORMat?

<i>Description</i>	Sets or reads out the trace format. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<char> Specifies the trace format: <div style="margin-left: 20px;"> MLOGarithmic : Logarithmic magnitude PHASe : Phase GDELay : Group delay time SLINear : Smith chart format (Lin) SLOGarithmic : Smith chart format (Log) SCOMplex : Smith chart format (Real/Imag) SMITH : Smith chart format (R + jX) SADMittance : Smith chart format (G + jB) PLINear : Polar format (Lin) PLOGarithmic : Polar format (Log) POLar : Polar format (Real/Imag) MLINear : Linear magnitude SWR : Voltage standing wave ratio REAL : Real part IMAGinary : Imaginary part UPHase : Expanded phase </div>
<i>Query Response</i>	{MLOG PHAS GDEL SLIN SLOG SCOM SMIT SADM PLIN PLOG POL MLIN SWR REAL IMAG UPH}
<i>Preset Value</i>	MLOG
<i>Equivalent Softkeys</i>	Format > {Log Mag Phase Group Delay Lin Mag SWR Real Imag Phase > 180} Format > Smith > {Log/Phase Lin/Phase Real/Imag R+jX G+jB} Format > Polar > {Log/Phase Ling/Phase Real/Imag}

CALC:FSIM:BAL:CZC:BPOR:Z0

CALCulate<Ch>:FSIMulator:BALun:CZConversion:BPORt<Bpt>:Z0[:R] <numeric>

CALCulate<Ch>:FSIMulator:BALun:CZConversion:BPORt<Bpt>:Z0[:R]?

Description	Sets or reads out the impedance value for the common impedance conversion function of the balanced port. The impedance is real. The default impedance value equals to 25 Ω . (command/query)
Target	Balanced Port <Bpt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Bpt>={ [1] 2 }, 1 or 2 for the Bal-Bal topology, always 1 for the SE-Bal, SE-SE-Bal and Bal topology.
Parameter	<numeric> the new value of the common impedance of the balanced port from 1 m Ω to 10 M Ω .
Unit	Ω (Ohm)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	25 Ω
Equivalent Softkeys	Analysis > Fixture Simulator > Cmn ZConversion > Bal Port n

CALC:FSIM:BAL:CZC:STAT

CALCulate <Ch>:FSIMulator:BALun:CZConversion:STATe {OFF|ON|0|1}

CALCulate <Ch>:FSIMulator:BALun:CZConversion:STATe?

<i>Description</i>	Turns ON/OFF the common impedance conversion function of the balanced port. (command/query)
<i>Target</i>	The channel <Ch>={ [1] 2 ...16 }
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Analysis > Fixture Simulator > Cmn ZConversion > Cmn ZConversion [On/Off]

CALC:FSIM:BAL:DEV

CALCulate <Ch>:FSIMulator:BALun:DEVice <char>

CALCulate <Ch>:FSIMulator:BALun:DEVice?

<i>Description</i>	Selects the type of balanced device of the balance-unbalance fixture simulation function (command/query, S4 only).
<i>Target</i>	The channel <Ch>={ [1] 2 ...16 }
<i>Parameter</i>	<char> Specifies type of the balanced device: SBALanced : Unbalance-Balance (3 ports) BBALanced : Balance-Balance (4 ports) SSBALanced : Unbalance-Unbalance-Balance (4 ports) BALanced : Balance (2 ports)
<i>Query Response</i>	{SBAL BBAL SSB BAL }
<i>Preset Value</i>	BBAL
<i>Equivalent Softkeys</i>	Analysis > Fixture Simulator > Topology > Device > {SE-Bal Bal-Bal SE-SE-Bal Bal}

CALC:FSIM:BAL:DMC:BPOR:PAR:C

CALCulate<Ch>:FSIMulator:BALun:DMCircuit:BPORt<Bpt>:PARameters:C <numeric>

CALCulate<Ch>:FSIMulator:BALun:DMCircuit:BPORt<Bpt>:PARameters:C?

Description	Sets or reads out the capacitance value of the C element of the differential matching circuit. (command/query, S4 only)
Target	Balanced Port <Bpt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Bpt>={ [1] 2 }, 1 or 2 for the Bal-Bal topology, always 1 for the SE-Bal, SE-SE-Bal and Bal topology.
Parameter	<numeric> the capacitance value of the C element of the differential matching circuit from 1e-18 to 1e18.
Unit	F (Farad)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	0
Equivalent Softkeys	Analysis > Fixture Simulator > Diff Matching > Bal Port n > C

CALC:FSIM:BAL:DMC:BPOR:PAR:G

CALCulate<Ch>:FSIMulator:BALun:DMCircuit:BPORt<Bpt>:PARameters:G <numeric>

CALCulate<Ch>:FSIMulator:BALun:DMCircuit:BPORt<Bpt>:PARameters:G?

Description	Sets or reads out the conductance value of the G element of the differential matching circuit. (command/query, S4 only)
Target	Balanced Port <Bpt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Bpt>={ [1] 2 }, 1 or 2 for the Bal-Bal topology, always 1 for the SE-Bal, SE-SE-Bal and Bal topology.
Parameter	<numeric> the conductance value of the G element of the differential matching circuit from 1e-18 to 1e18.
Unit	S (Siemens)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	0
Equivalent Softkeys	Analysis > Fixture Simulator > Diff Matching > Bal Port n > G

CALC:FSIM:BAL:DMC:BPOR:PAR:L

CALCulate<Ch>:FSIMulator:BALun:DMCircuit:BPORt<Bpt>:PARameters:L <numeric>

CALCulate<Ch>:FSIMulator:BALun:DMCircuit:BPORt<Bpt>:PARameters:L?

Description	Sets or reads out the inductance value of the L element of the differential matching circuit. (command/query, S4 only)
Target	Balanced Port <Bpt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Bpt>={ [1] 2 }, 1 or 2 for the Bal-Bal topology, always 1 for the SE-Bal, SE-SE-Bal and Bal topology.
Parameter	<numeric> the inductance value of the L element of the differential matching circuit from 1e-18 to 1e18.
Unit	H (Henry)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	0
Note	If both elements L and R are equal to zero, then L and R elements are omitted in the scheme. If any element L or R is not zero, then zero value of the rest element means short circuit.
Equivalent Softkeys	Analysis > Fixture Simulator > Diff Matching > Bal Port n > L

CALC:FSIM:BAL:DMC:BPOR:PAR:R

CALCulate<Ch>:FSIMulator:BALun:DMCircuit:BPORt<Bpt>:PARameters:R <numeric>

CALCulate<Ch>:FSIMulator:BALun:DMCircuit:BPORt<Bpt>:PARameters:R?

Description	Sets or reads out the resistance value of the R element of the differential matching circuit. (command/query, S4 only)
Target	Balanced Port <Bpt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Bpt>={ [1] 2 }, 1 or 2 for the Bal-Bal topology, always 1 for the SE-Bal, SE-SE-Bal and Bal topology.
Parameter	<numeric> the resistance value of the R element of the differential matching circuit from 1e-18 to 1e18.
Unit	Ω (Ohm)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	0
Note	If both elements L and R are equal to zero, then L and R elements are omitted in the scheme. If any element L or R is not zero, then zero value of the rest element means short circuit.
Equivalent Softkeys	Analysis > Fixture Simulator > Diff Matching > Bal Port n > R

CALC:FSIM:BAL:DMC:BPOR:TYPE

CALCulate<Ch>:FSIMulator:BALun:DMCircuit:BPORt<Bpt>:TYPE <char>

CALCulate<Ch>:FSIMulator:BALun:DMCircuit:BPORt<Bpt>:TYPE?

Description	Selects the type of the differential matching circuit for the specified balanced port number <i>Bpt</i> of the channel <i>Ch</i> . (command/query, S4 only)
Target	Balanced Port <Bpt> of channel <Ch>, <Ch>={ [1] 2 ...16 } <Bpt>={ [1] 2 }, 1 or 2 for the Bal-Bal topology, always 1 for the SE-Bal, SE-SE-Bal and Bal topology
Parameter	<char> Specifies the differential matching circuit: NONE : No-circuit PLPC : Shunt L – Shunt C USER : User defined circuit by touchstone file
Query Response	{NONE PLPC USER}
Preset Value	NONE
Related Commands	CALC:FSIM:BAL:DEV
Equivalent Softkeys	Analysis > Fixture Simulator > Diff Matching > Bal Port n > {None Shunt L - Shunt C User}

CALC:FSIM:BAL:DMC:BPOR:USER:FIL

CALCulate<Ch>:FSIMulator:BALun:DMCircuit:BPORt<Bpt>:USER:FILEname <string>

CALCulate<Ch>:FSIMulator:BALun:DMCircuit:BPORt<Bpt>:USER:FILEname?

Description	Specifies a file defining the 2-port network which is used in the differential matching circuit, for the specified balanced port number <i>Bpt</i> of the channel <i>Ch</i> . The *.s2p file contains the circuit S-parameters in Touchstone format. (command/query, S4 only)
Target	Balanced Port < <i>Bpt</i> > of channel < <i>Ch</i> >, < <i>Ch</i> >={ [1] 2 ... 16 } < <i>Bpt</i> >={ [1] 2 }, 1 or 2 for the Bal-Bal topology, always 1 for the SE-Bal, SE-SE-Bal and Bal topology
Parameter	< <i>string</i> >, up to 256 characters
Notes	If the full path of the file is not specified, the \FixtureSim subdirectory of the application directory will be searched for the file.
Related Commands	CALC:FSIM:BAL:DMC:BPOR:TYPE
Equivalent Softkeys	Analysis > Fixture Simulator > Diff Matching > Bal Port n > User File

CALC:FSIM:BAL:DMC:STAT

CALCulate<Ch>:FSIMulator:BALun:DMCircuit:STATe {OFF|ON|0|1}

CALCulate<Ch>:FSIMulator:BALun:DMCircuit:STATe?

Description	Turns ON/OFF the differential matching circuit function. (command/query, S4 only)
Target	The channel < <i>Ch</i> >={ [1] 2 ... 16 }
Parameter	{ON 1} : ON {OFF 0} : OFF
Query Response	{0 1}
Preset Value	0
Equivalent Softkeys	Analysis > Fixture Simulator > Diff Matching > Diff Matching

CALC:FSIM:BAL:DZC:BPOR:Z0

CALCulate<Ch>:FSIMulator:BALun:DZConversion:BPORt<Bpt>:Z0[:R] <numeric>

CALCulate<Ch>:FSIMulator:BALun:DZConversion:BPORt<Bpt>:Z0[:R]?

Description	Sets or reads out the impedance value for the differential impedance conversion function of the balanced port. The impedance is real. The default impedance value equals to 100 Ω . (command/query, S4 only)
Target	Balanced Port <Bpt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Bpt>={ [1] 2 }, 1 or 2 for the Bal-Bal topology, always 1 for the SE-Bal, SE-SE-Bal and Bal topology.
Parameter	<numeric> the new value of the differential impedance of the balanced port from 1 m Ω to 10 M Ω .
Unit	Ω (Ohm)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	100 Ω
Equivalent Softkeys	Analysis > Fixture Simulator > Diff ZConversion > Bal Port n

CALC:FSIM:BAL:DZC:STAT

CALCulate <Ch>:FSIMulator:BALun:DZConversion:STATe {OFF|ON|0|1}

CALCulate <Ch>:FSIMulator:BALun:DZConversion:STATe?

<i>Description</i>	Turns ON/OFF the differential impedance conversion function of the balanced port. (command/query, S4 only)
<i>Target</i>	The channel <Ch>={ [1] 2 ...16 }
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Analysis > Fixture Simulator > Diff ZConversion > Diff ZConversion [On/Off]

CALC:FSIM:BAL:PAR:BAL

CALCulate <Ch>:FSIMulator:BALun:PARAmeter <Tr>:BALanced[:DEFine] <char>

CALCulate <Ch>:FSIMulator:BALun:PARAmeter <Tr>:BALanced[:DEFine]?

Description	Selects the measurement parameter of the fixture simulation function when the device type is BALanced. (command/query, S4 only)
Target	Trace <Tr> of channel <Ch>, <Tr>={ [1] 2 ...16} <Ch>={ [1] 2 ...16}
Parameter	<char> Specifies the measurement parameter: SDD11 SCD11 SDC11 SCC11
Query Response	{SDD11 SCD11 SDC11 SCC11}
Preset Value	SDD11
Related Commands	CALC:FSIM:BAL:DEV
Equivalent Softkeys	Analysis > Fixture Simulator > Measurement > {Sdd11 Scd11 Sdc11 Scc11}

CALC:FSIM:BAL:PAR:BBAL

CALCulate <Ch>:FSIMulator:BALun:PARameter <Tr>:BBALanced[:DEFine] <char>

CALCulate <Ch>:FSIMulator:BALun:PARameter <Tr>:BBALanced[:DEFine]?

Description	Selects the measurement parameter of the fixture simulation function when the device type is BBALanced. (command/query, S4 only)
Target	Trace <Tr> of channel <Ch>, <Tr>={ [1] 2 ... 16 } <Ch>={ [1] 2 ... 16 }
Parameter	<p><char> Specifies the measurement parameter:</p> <p>SDD11</p> <p>SDD21</p> <p>SDD12</p> <p>SDD22</p> <p>SCD11</p> <p>SCD21</p> <p>SCD12</p> <p>SCD22</p> <p>SDC11</p> <p>SDC21</p> <p>SDC12</p> <p>SDC22</p> <p>SCC11</p> <p>SCC21</p> <p>SCC12</p> <p>SCC22</p> <p>IMB1 : Imbalance1</p> <p>IMB2 : Imbalance1</p> <p>CMRR : Sdd21/Sc21</p>
Query Response	{SDD11 SDD21 SDD12 SDD22 SCD11 SCD21 SCD12 SCD22 SDC11 SDC21 SDC12 SDC22 SCC11 SCC21 SCC12 SCC22 IMB1 IMB2 CMRR}
Preset Value	SDD11
Related Commands	CALC:FSIM:BAL:DEV
Equivalent Softkeys	Analysis > Fixture Simulator > Measurement > {Sdd11 ... CMRR}

CALC:FSIM:BAL:PAR:SBAL

CALCulate <Ch>:FSIMulator:BALun:PARameter <Tr>:SBALanced[:DEFine] <char>

CALCulate <Ch>:FSIMulator:BALun:PARameter <Tr>:SBALanced[:DEFine]?

Description	Selects the measurement parameter of the fixture simulation function when the device type is SBALanced. (command/query, S4 only)
Target	Trace <Tr> of channel <Ch>, <Tr>={ [1] 2 ... 16 } <Ch>={ [1] 2 ... 16 }
Parameter	<char> Specifies the measurement parameter: SSS11 SDS21 SSD12 SCS21 SSC12 SDD22 SCD22 SDC22 SCC22 IMB : Imbalance CMRR1 : Sds21/Scs21 CMRR2 : Ssd12/Ssc12
Query Response	{SSS11 SDS21 SSD12 SCS21 SSC12 SDD22 SCD22 SDC22 SCC22 IMB CMRR1 CMRR2}
Preset Value	SSS11
Related Commands	CALC:FSIM:BAL:DEV
Equivalent Softkeys	Analysis > Fixture Simulator > Measurement > {Sss11 ... CMRR2}

CALC:FSIM:BAL:PAR:SSB

CALCulate <Ch>:FSIMulator:BALun:PARameter <Tr>:SSBalanced[:DEFine] <char>

CALCulate <Ch>:FSIMulator:BALun:PARameter <Tr>:SSBalanced[:DEFine]?

Description	Selects the measurement parameter of the fixture simulation function when the device type is SSBalanced. (command/query, S4 only)
Target	Trace <Tr> of channel <Ch>, <Tr>={ [1] 2 ... 16 } <Ch>={ [1] 2 ... 16 }
Parameter	<p><char> Specifies the measurement parameter:</p> <p>SSS11 SSS21 SSS12 SSS22 SDS31 SDS32 SSD13 SSD23 SCS31 SCS32 SSC13 SSC23 SDD33 SCD33 SDC33 SCC33 IMB1 : Imbalance1 IMB2 : Imbalance2 IMB3 : Imbalance3 IMB4 : Imbalance4 CMRR1 : Sds31/Scs31 CMRR2 : Sds32/Scs32</p>
Query Response	{SSS11 SSS21 SSS12 SSS22 SDS31 SDS32 SSD13 SSD23 SCS31 SCS32 SSC13 SSC23 SDD33 SCD33 SDC33 SCC33 IMB1 IMB2 IMB3 IMB4 CMRR1 CMRR2}
Preset Value	SSS11
Related Commands	CALC:FSIM:BAL:DEV

<i>Equivalent Softkeys</i>	Analysis > Fixture Simulator > Measurement > {Sss11 ... CMRR2}
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CALC:FSIM:BAL:PAR:STAT

CALCulate <Ch>:FSIMulator:BALun:PARAmeter <Tr>:STATe {OFF|ON|0|1}

CALCulate <Ch>:FSIMulator:BALun:PARAmeter <Tr>:STATe?

<i>Description</i>	Turns ON/OFF the BalUn function for the specified trace. (command/query, S4 only)
<i>Target</i>	Trace <Tr> of channel <Ch>, <Tr>={ [1] 2 ... 16 } <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Analysis > Fixture Simulator > BalUn

CALC:FSIM:BAL:TOP:BAL

CALCulate <Ch>:FSIMulator:BALun:TOPology:BALanced[:PPORts] <port1>, <port2>

CALCulate <Ch>:FSIMulator:BALun:TOPology:BALanced[:PPORts] ?

Description	Sets or reads out the ports assigned to the balanced device when its type is "BALance". (command/query, S4 only)
Target	The channel <Ch>={ [1] 2 ...16 }
Parameters	<p><port1> First port number</p> <p><port2> Second port number</p>
Query Response	<port1>, <port2>
Preset Value	1,2
Related Commands	CALC:FSIM:BAL:DEV
Equivalent Softkeys	Analysis > Fixture Simulator > Topology > Port 1 (bal)

CALC:FSIM:BAL:TOP:BBAL

CALCulate <Ch>:FSIMulator:BALun:TOPology:BBALanced[:PPORTs] <port1>, <port2>, <port3>, <port4>

CALCulate <Ch>:FSIMulator:BALun:TOPology:BBALanced[:PPORTs]?

Description	Sets or reads out the ports assigned to the balanced device when its type is "BBALance". (command/query, S4 only)
Target	The channel <Ch>={ [1] 2 ...16 }
Parameters	<p><port1> First port number</p> <p><port2> Second port number</p> <p><port3> Third port number</p> <p><port4> Fourth port number</p>
Query Response	<port1>, <port2>, <port3>, <port4>
Preset Value	1,2,3,4
Related Commands	CALC:FSIM:BAL:DEV
Equivalent Softkeys	Analysis > Fixture Simulator > Topology > Port 1 (bal), Port 2 (bal)

CALC:FSIM:BAL:TOP:SBAL

CALCulate <Ch>:FSIMulator:BALun:TOPology:SBALanced[:PPORts]
<port1>, <port2>, <port3>

CALCulate <Ch>:FSIMulator:BALun:TOPology:SBALanced[:PPORts]?

<i>Description</i>	Sets or reads out the ports assigned to the balanced device when its type is "SBALance". (command/query, S4 only)
<i>Target</i>	The channel <Ch>={ [1] 2 ...16 }
<i>Parameters</i>	<p><port1> First port number</p> <p><port2> Second port number</p> <p><port3> Third port number</p>
<i>Query Response</i>	<port1>, <port2>, <port3>
<i>Preset Value</i>	1, 2, 3
<i>Related Commands</i>	CALC:FSIM:BAL:DEV
<i>Equivalent Softkeys</i>	Analysis > Fixture Simulator > Topology > Port 1 (se), Port 2 (bal)

CALC:FSIM:BAL:TOP:SSB

CALCulate <Ch>:FSIMulator:BALun:TOPology:SSBalanced[:PPORTs]
<port1>, <port2>, <port3>, <port4>

CALCulate <Ch>:FSIMulator:BALun:TOPology:SSBalanced[:PPORTs]?

Description	Sets or reads out the ports assigned to the balanced device when its type is "SSBalance". (command/query, S4 only)
Target	The channel <Ch>={ [1] 2 ...16 }
Parameters	<p><port1> First port number</p> <p><port2> Second port number</p> <p><port3> Third port number</p> <p><port4> Fourth port number</p>
Query Response	<port1>, <port2>, <port3>, <port4>
Preset Value	1,2,3,4
Related Commands	CALC:FSIM:BAL:DEV
Equivalent Softkeys	Analysis > Fixture Simulator > Topology > Port 1 (se), Port 2 (se), Port 3 (bal)

CALC:FSIM:BAL:TOP:PROP:STAT

CALCulate <Ch>:FSIMulator:BALun:TOPology:PROPerty:STATe {OFF|ON|0|1}

CALCulate <Ch>:FSIMulator:BALun:TOPology:PROPerty:STATe?

<i>Description</i>	Turns ON/OFF the BalUn property indication on the screen. (command/query, S4 only)
<i>Target</i>	The channel <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Analysis > Fixture Simulator > Topology > Property

CALC:FSIM:EMB:NETW:FIL

CALCulate <Ch>:FSIMulator:EMBEd:NETWork <Nk>:FILename <string>

CALCulate <Ch>:FSIMulator:EMBEd:NETWork <Nk>:FILename?

<i>Description</i>	Sets or reads out the name of 4-port touchstone file (*.s4p) of the 4-port network embedding/de-embedding feature. The file contains the circuit S-parameters in Touchstone format. (command/query, S4 only)
<i>Target</i>	The channel <Ch>={ [1] 2 ... 16 }, The Network <Nk>={ [1] 2 }
<i>Parameter</i>	< string >, up to 256 characters
<i>Notes</i>	If the full path of the file is not specified, the \FixtureSim subdirectory of the application directory will be searched for the file.
<i>Equivalent Softkeys</i>	Analysis > Fixture Simulator > De-Embedding S4P > File (ntwk1), File (ntwk2)

CALC:FSIM:EMB:NETW:TYPE

CALCulate <Ch>:FSIMulator:EMBed:NETWork <Nk>:TYPE <char>

CALCulate <Ch>:FSIMulator:EMBed:NETWork <Nk>:TYPE?

<i>Description</i>	Selects the processing type of the 4-port network embedding/de-embedding feature. (command/query, S4 only, S4 only)
<i>Target</i>	The channel <Ch>={ [1] 2 ...16 }, The Network <Nk>={ [1] 2 }
<i>Parameter</i>	<char> Specifies processing type: NONE : No processing EMBed : Embedding DEEMbed : De-Embedding
<i>Query Response</i>	{ NONE EMB DEEM }
<i>Preset Value</i>	NONE
<i>Equivalent Softkeys</i>	Analysis > Fixture Simulator > De-Embedding S4P > Type (ntwk1), Type (ntwk2) > {None Embed De-Embed}

CALC:FSIM:EMB:STAT

CALCulate <Ch>:FSIMulator:EMBed:STATe {OFF|ON|0|1}

CALCulate <Ch>:FSIMulator:EMBed:STATe?

<i>Description</i>	Turns ON/OFF the 4-port network embedding/de-embedding feature (command/query, S4 only).
<i>Target</i>	The channel <Ch>={ [1] 2 ...16 }
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{ 0 1 }
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Analysis > Fixture Simulator > De-Embedding S4P > De-Embedding S4P

CALC:FSIM:EMB:TOP:A:PORT

CALCulate <Ch>:FSIMulator:EMBed:TOPology:A:PORTs <port1>, <port2>

CALCulate <Ch>:FSIMulator:EMBed:TOPology:A:PORTs?

<i>Description</i>	Sets or reads out the test port assignment when the Topology is set to A, for the 4-port network embedding/de-embedding feature. (command/query, S4 only)
<i>Target</i>	The channel <Ch>={ [1] 2 ...16 }
<i>Parameters</i>	<p><port1> First port number</p> <p><port2> Second port number</p>
<i>Query Response</i>	<port1>, <port2>
<i>Preset Value</i>	1, 2
<i>Related Commands</i>	CALC:FSIM:EMB:TYPE
<i>Equivalent Softkeys</i>	Analysis > Fixture Simulator > De-Embedding S4P > Ports

CALC:FSIM:EMB:TOP:B:PORT

CALCulate <Ch>:FSIMulator:EMBed:TOPology:B:PORTs <port1>, <port2>, <port3>

CALCulate <Ch>:FSIMulator:EMBed:TOPology:B:PORTs?

<i>Description</i>	Sets or reads out the test port assignment when the Topology is set to B, for the 4-port network embedding/de-embedding feature. (command/query, S4 only)
<i>Target</i>	The channel <Ch>={ [1] 2 ...16 }
<i>Parameters</i>	<p><port1> First port number</p> <p><port2> Second port number</p> <p><port3> Third port number</p>
<i>Query Response</i>	<port1>, <port2>, <port3>
<i>Preset Value</i>	1,2,3
<i>Related Commands</i>	CALC:FSIM:EMB:TYPE
<i>Equivalent Softkeys</i>	Analysis > Fixture Simulator > De-Embedding S4P > Ports

CALC:FSIM:EMB:TOP:C:PORT

CALCulate <Ch>:FSIMulator:EMBed:TOPology:C:PORTs <port1>, <port2>, <port3>, <port4>

CALCulate <Ch>:FSIMulator:EMBed:TOPology:C:PORTs?

Description	Sets or reads out the test port assignment when the Topology is set to B, for the 4-port network embedding/de-embedding feature. (command/query, S4 only)
Target	The channel <Ch>={ [1] 2 ... 16 }
Parameters	<p><port1> First port number</p> <p><port2> Second port number</p> <p><port3> Third port number</p> <p><port4> Fourth port number</p>
Query Response	<port1>, <port2>, <port3>, <port4>
Preset Value	1,2,3,4
Related Commands	CALC:FSIM:EMB:TYPE
Equivalent Softkeys	Analysis > Fixture Simulator > De-Embedding S4P > Ports

CALC:FSIM:EMB:TYPE

CALCulate <Ch>:FSIMulator:EMBed:TYPE <char>

CALCulate <Ch>:FSIMulator:EMBed:TYPE?

<i>Description</i>	Selects the Topology for the 4-port network embedding/de-embedding feature. (command/query, S4 only)
<i>Target</i>	The channel <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<char> Specifies Topology: A : Topology A B : Topology B C : Topology C
<i>Query Response</i>	{A B C}
<i>Preset Value</i>	A
<i>Equivalent Softkeys</i>	Analysis > Fixture Simulator > De-Embedding S4P > Topology > {A B C}

CALC:FSIM:SEND:DEEM:STAT

CALCulate <Ch>:FSIMulator:SENDEd:DEEMbed:STATe {OFF|ON|0|1}

CALCulate <Ch>:FSIMulator:SENDEd:DEEMbed:STATe?

<i>Description</i>	Turns ON/OFF the 2-port network de-embedding function. (command/query)
<i>Target</i>	The channel <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Analysis > Fixture Simulator > De-Embedding > De-Embedding

CALC:FSIM:SEND:DEEM:PORT:STAT

CALCulate<Ch>:FSIMulator:SENDEd:DEEMbed:PORT<Pt>:STATe {OFF|ON|0|1}

CALCulate <Ch>:FSIMulator:SENDEd:DEEMbed:PORT <Pt>:STATe?

<i>Description</i>	Turns ON/OFF the 2-port network de-embedding function for specified port. (command/query)
<i>Target</i>	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Analysis > Fixture Simulator > De-Embedding > Port n [ON/OFF]

CALC:FSIM:SEND:DEEM:PORT:USER:FIL

CALCulate <Ch>:FSIMulator:SENDEd:DEEMbed:PORT <Pt>:USER:FILEname <string>

CALCulate <Ch>:FSIMulator:SENDEd:DEEMbed:PORT <Pt>:USER:FILEname?

Description	Sets or reads out the name of *.s2p file of the de-embedded circuit of the 2-port network de-embedding function. The file contains the circuit S-parameters in Touchstone format. (command/query)
Target	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
Parameter	<string>, up to 256 characters
Notes	If the full path of the file is not specified, the \FixtureSim subdirectory of the application directory will be searched for the file.
Equivalent Softkeys	(S2VNA): Analysis > Fixture Simulator > De-Embedding > S-parameters File (S4VNA): Analysis > Fixture Simulator > De-Embedding > User File

CALC:FSIM:SEND:PMC:STAT

CALCulate <Ch>:FSIMulator:SENDEd:PMCircuit:STATe {OFF|ON|0|1}

CALCulate <Ch>:FSIMulator:SENDEd:PMCircuit:STATe?

Description	Turns ON/OFF the 2-port network embedding function. (command/query)
Target	The channel <Ch>={ [1] 2 ... 16 }
Parameter	{ON 1} : ON {OFF 0} : OFF
Query Response	{0 1}
Preset Value	0
Equivalent Softkeys	Analysis > Fixture Simulator > Embedding > Embedding [ON/OFF]

CALC:FSIM:SEND:PMC:PORT:STAT

CALCulate <Ch>:FSIMulator:SENDEd:PMCircuit:PORT <Pt>:STATe {OFF|ON|0|1}

CALCulate <Ch>:FSIMulator:SENDEd:PMCircuit:PORT <Pt>:STATe?

<i>Description</i>	Turns ON/OFF the 2-port network embedding function for each port. (command/query)
<i>Target</i>	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Analysis > Fixture Simulator > Embedding > Port n [ON/OFF]

CALC:FSIM:SEND:PMC:PORT:USER:FIL

CALCulate <Ch>:FSIMulator:SENDeD:PMCircuit:PORT <Pt>:USER:FiLeName <string>

CALCulate <Ch>:FSIMulator:SENDeD:PMCircuit:PORT <Pt>:USER:FiLeName?

<i>Description</i>	<p>Sets or reads out the name of *.s2p file of the embedded circuit of the 2-port network embedding function. The file contains the circuit S-parameters in Touchstone format.</p> <p>(command/query)</p>
<i>Target</i>	<p>Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA</p>
<i>Parameter</i>	<p><string>, up to 256 characters</p>
<i>Notes</i>	<p>If the full path of the file is not specified, the \FixtureSim subdirectory of the application directory will be searched for the file.</p>
<i>Equivalent Softkeys</i>	<p>(S2VNA): Analysis > Fixture Simulator > Embedding > S-parameters File (S4VNA): Analysis > Fixture Simulator > Embedding > User File</p>

CALC:FSIM:SEND:ZCON:PORT:Z0

CALCulate <Ch>:FSIMulator:SENDEd:ZCONversion:PORT <Pt>:Z0[:R] <numeric>

CALCulate <Ch>:FSIMulator:SENDEd:ZCONversion:PORT <Pt>:Z0[:R]?

Description	Sets or reads out the value of the impedance of the port impedance conversion function. The function sets real part and zeros the imaginary part of the port impedance. (command/query)
Target	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
Parameter	<numeric> the impedance value from 1e-6 to 1e10
Unit	Ω (Ohm)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	50
Equivalent Softkeys	Analysis > Fixture Simulator > Port Z Conversion > Port n Z0 Real Analysis > Fixture Simulator > Port Z Conversion > Port n Z0 Imag

CALC:FSIM:SEND:ZCON:PORT:Z0:REAL

CALCulate <Ch>:FSIMulator:SENDEd:ZCONversion:PORT <Pt>:Z0:REAL <numeric>

CALCulate <Ch>:FSIMulator:SENDEd:ZCONversion:PORT <Pt>:Z0:REAL?

Description	Sets or reads out the real part of the impedance of the port impedance conversion function. (command/query)
Target	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
Parameter	<numeric> the impedance value from 1e-6 to 1e10
Unit	Ω (Ohm)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	50
Equivalent Softkeys	Analysis > Fixture Simulator > Port Z Conversion > Port n Z0 Real

CALC:FSIM:SEND:ZCON:PORT:Z0:IMAGinary

CALCulate <Ch>:FSIMulator:SENDEd:ZCONversion:PORT <Pt>:Z0:IMAGinary <numeric>

CALCulate <Ch>:FSIMulator:SENDEd:ZCONversion:PORT <Pt>:Z0:IMAGinary?

Description	Sets or reads out the imaginary part of the impedance of the port impedance conversion function. (command/query)
Target	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
Parameter	<numeric> the impedance value from -1e10 to +1e10
Unit	Ω (Ohm)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	0
Equivalent Softkeys	Analysis > Fixture Simulator > Port Z Conversion > Port n Z0 Imag

CALC:FSIM:SEND:ZCON:STAT

CALCulate <Ch>:FSIMulator:SENDEd:ZCONversion:STATe {OFF|ON|0|1}

CALCulate <Ch>:FSIMulator:SENDEd:ZCONversion:STATe?

<i>Description</i>	Turns ON/OFF the port impedance conversion function. (command/query)
<i>Target</i>	The channel <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Analysis > Fixture Simulator > Port Z Conversion > Port Z Conversion [ON/OFF]

CALC:FSIM:STAT

CALCulate <Ch>:FSIMulator:STATe {OFF|ON|0|1}

CALCulate <Ch>:FSIMulator:STATe?

<i>Description</i>	Turns ON/OFF the fixture simulation function. (command/query)
<i>Target</i>	The channel <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Analysis > Fixture Simulator > Fixture Simulator [ON/OFF]

CALC:FUNC:DATA?

CALCulate <Ch>[:SElected]:FUNCtion:DATA?

Or

CALCulate <Ch>:TRACe <Tr>:FUNCtion:DATA?

<i>Description</i>	<p>Reads out the data array, which is the CALC:FUNC:EXEC command analysis result.</p> <p>The array size is 2N, where N is the number of points.</p> <p>For the n–th point, where n from 1 to N:</p> <p><numeric 2n–1> the response value in n–th measurement point;</p> <p><numeric 2n> the stimulus value in n–th measurement point. Always set to 0 for the analysis of mean value, standard deviation, and peak–to–peak value.</p> <p>(query only)</p>
<i>Target</i>	<p>CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16}</p>
<i>Query Response</i>	<numeric 1>,<numeric 2>,...<numeric 2N>
<i>Related Commands</i>	<p>CALC:FUNC:EXEC</p> <p>CALC:FUNC:POIN?</p>
<i>Equivalent Softkeys</i>	None

CALC:FUNC:DOM

CALCulate <Ch>[:SElected]:FUNCtion:DOMain[:STATe] {OFF|ON|0|1}

CALCulate <Ch>[:SElected]:FUNCtion:DOMain[:STATe]?

Or

CALCulate <Ch>:TRACe<Tr>:FUNCtion:DOMain[:STATe] {OFF|ON|0|1}

CALCulate <Ch>:TRACe<Tr>:FUNCtion:DOMain[:STATe]?

<i>Description</i>	Specify whether an arbitrary range or the entire sweep range is used when the CALC:FUNC:EXEC command is executed. (command/query)
<i>Target</i>	All traces of channel <Ch> (if the coupling is set to ON by the CALC:FUNC:DOM:COUP command), Or CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	Select the following : <div style="margin-left: 20px;"> {ON 1} : Arbitrary range {OFF 0} : Entire sweep range </div>
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Related Commands</i>	CALC:FUNC:EXEC CALC:FUNC:DOM:COUP
<i>Equivalent Softkeys</i>	None

CALC:FUNC:DOM:COUP

CALCulate <Ch>[:SElected]:FUNCtion:DOMain:COUPle {OFF|ON|0|1}

CALCulate <Ch>[:SElected]:FUNCtion:DOMain:COUPle?

Or

CALCulate <Ch>:TRACe <Tr>:FUNCtion:DOMain:COUPle {OFF|ON|0|1}

CALCulate <Ch>:TRACe <Tr>:FUNCtion:DOMain:COUPle?

<i>Description</i>	If the arbitrary range turned ON by the CALC:FUNC:DOM:STAT command, specifies whether all traces of channel use the same range (coupling) or each trace uses individual range when the CALC:FUNC:EXEC command is executed. (command/query)
<i>Target</i>	All traces of channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	1
<i>Related Commands</i>	CALC:FUNC:EXEC
<i>Equivalent Softkeys</i>	None

CALC:FUNC:DOM:STAR

CALCulate <Ch>[:SElected]:FUNCtion:DOMain:STARt <stimulus>

CALCulate <Ch>[:SElected]:FUNCtion:DOMain:STARt?

Or

CALCulate <Ch>:TRACe<Tr>:FUNCtion:DOMain:STARt <stimulus>

CALCulate <Ch>:TRACe<Tr>:FUNCtion:DOMain:STARt?

Description	Sets the start value of the analysis range of the CALC:FUNC:EXEC command. (command/query)
Target	All traces of channel <Ch> (if the coupling is set to ON by the CALC:FUNC:DOM:COUP command), Or CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
Parameter	<stimulus> the start value of analysis range
Unit	{ Hz s dBm }
Query Response	<numeric>
Preset Value	0
Related Commands	CALC:FUNC:DOM
Equivalent Softkeys	None

CALC:FUNC:DOM:STOP

CALCulate <Ch>[:SElected]:FUNCTION:DOMain:STOP <stimulus>

CALCulate <Ch>[:SElected]:FUNCTION:DOMain:STOP?

Or

CALCulate <Ch>:TRACe <Tr>:FUNCTION:DOMain:STOP <stimulus>

CALCulate <Ch>:TRACe <Tr>:FUNCTION:DOMain:STOP?

Description	Sets the stop value of the analysis range of the CALC:FUNC:EXEC command. (command/query)
Target	All traces of channel <Ch> (if the coupling is set to ON by the CALC:FUNC:DOM:COUP command), Or CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
Parameter	< stimulus > the stop value of analysis range
Unit	{ Hz s dBm }
Query Response	< numeric >
Preset Value	0
Related Commands	CALC:FUNC:DOM
Equivalent Softkeys	None

CALC:FUNC:EXEC

CALCulate <Ch>[:SElected]:FUNCtion:EXECute

Or

CALCulate <Ch>:TRACe <Tr>:FUNCtion:EXECute

<i>Description</i>	<p>Executes the analysis specified by the CALC:FUNC:TYPE command.</p> <p>The analysis result can be read out by the CALC:FUNC:DATA? command.</p> <p>(no query)</p>
<i>Target</i>	<p>CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div> </p>
<i>Related Commands</i>	<p>CALC:FUNC:TYPE CALC:FUNC:DATA?</p>
<i>Equivalent Softkeys</i>	None

CALC:FUNC:PEXC

CALCulate <Ch>[:SElected]:FUNCtion:PEXCursion <numeric>

CALCulate <Ch>[:SElected]:FUNCtion:PEXCursion?

Or

CALCulate <Ch>:TRACe<Tr>:FUNCtion:PEXCursion <numeric>

CALCulate <Ch>:TRACe<Tr>:FUNCtion:PEXCursion?

<i>Description</i>	Sets the lower limit for the peak excursion value when executing the peak search with the CALC:FUNC:EXEC command. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<numeric> the lower limit of the peak excursion value, varies depending on the data format
<i>Unit</i>	{ dB ° s }
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	3.0
<i>Related Commands</i>	CALC:FUNC:EXEC
<i>Equivalent Softkeys</i>	None

CALC:FUNC:POIN?

CALCulate <Ch>[:SElected]:FUNCtion:POINts?

Or

CALCulate <Ch>:TRACe <Tr>:FUNCtion:POINts?

<i>Description</i>	<p>Reads out the number of points (data pairs) of the analysis result by the CALC:FUNC:EXEC command.</p> <p>Always reads out 1, when the search is executed for the maximum, minimum, mean, standard deviation, peak, and peak-to-peak values. The actual number of points is read out, when the search is executed for all peak or all targets.</p> <p>(query only)</p>
<i>Target</i>	<p>CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div> </p>
<i>Query Response</i>	<numeric>
<i>Related Commands</i>	CALC:FUNC:EXEC
<i>Equivalent Softkeys</i>	None

CALC:FUNC:PPOL

CALCulate <Ch>[:SElected]:FUNCtion:PPOLarity <char>

CALCulate <Ch>[:SElected]:FUNCtion:PPOLarity?

Or

CALCulate <Ch>:TRACe<Tr>:FUNCtion:PPOLarity <char>

CALCulate <Ch>:TRACe<Tr>:FUNCtion:PPOLarity?

<i>Description</i>	Selects the polarity when performing the peak search with the CALC:FUNC:EXEC command. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<char> Specifies the polarity: POSitive : Positive peaks NEGative : Negative peaks BOTH : Both positive peaks and negative peaks
<i>Query Response</i>	{POS NEG BOTH}
<i>Preset Value</i>	POS
<i>Related Commands</i>	CALC:FUNC:EXEC
<i>Equivalent Softkeys</i>	None

CALC:FUNC:TARG

CALCulate <Ch>[:SElected]:FUNCtion:TARGet <numeric>

CALCulate <Ch>[:SElected]:FUNCtion:TARGet?

Or

CALCulate <Ch>:TRACe <Tr>:FUNCtion:TARGet <numeric>

CALCulate <Ch>:TRACe <Tr>:FUNCtion:TARGet?

<i>Description</i>	Selects the target level when performing the search for the trace and the target level crosspoints with the CALC:FUNC:EXEC command. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<numeric> the target value, varies depending on the data format
<i>Unit</i>	{ dB ° s }
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	0
<i>Related Commands</i>	CALC:FUNC:EXEC
<i>Equivalent Softkeys</i>	None

CALC:FUNC:TTR

CALCulate <Ch>[:SElected]:FUNCtion:TTRansition <char>

CALCulate <Ch>[:SElected]:FUNCtion:TTRansition?

Or

CALCulate <Ch>:TRACe<Tr>:FUNCtion:TTRansition <char>

CALCulate <Ch>:TRACe<Tr>:FUNCtion:TTRansition?

Description	Selects the transition type when performing the search for the trace and the target level crosspoints with the CALC:FUNC:EXEC command. (command/query)
Target	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
Parameter	<char> Specifies the transition: POSitive : Positive peaks NEGative : Negative peaks BOTH : Both positive peaks and negative peaks
Query Response	{POS NEG BOTH}
Preset Value	POS
Related Commands	CALC:FUNC:EXEC
Equivalent Softkeys	None

CALC:FUNC:TYPE

CALCulate <Ch>[:SElected]:FUNCtion:TYPE <char>

CALCulate <Ch>[:SElected]:FUNCtion:TYPE?

Or

CALCulate <Ch>:TRACe<Tr>:FUNCtion:TYPE <char>

CALCulate <Ch>:TRACe<Tr>:FUNCtion:TYPE?

<i>Description</i>	Selects the type of analysis executed with the CALC:FUNC:EXEC command. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<char> Specifies the transition: PTPeak : Peak-to-peak (difference between the maximum value and the minimum value) STDEV : Standard deviation MEAN : Mean value MAXimum : Maximum value MINimum : Minimum value PEAK : Search for peak APEak : Search for all the peaks ATARget : Search for all targets
<i>Query Response</i>	{PTP STDEV MEAN MAX MIN PEAK APE ATAR}
<i>Preset Value</i>	PTP
<i>Related Commands</i>	CALC:FUNC:EXEC
<i>Equivalent Softkeys</i>	None

CALC:HOLD:TYPE

CALCulate <Ch>[:SElected]:HOLD:TYPE <char>

CALCulate <Ch>[:SElected]:HOLD:TYPE?

Or

CALCulate <Ch>:TRACe<Tr>:HOLD:TYPE <char>

CALCulate <Ch>:TRACe<Tr>:HOLD:TYPE?

<i>Description</i>	Sets the type of the trace hold function. The function holds the trace at the maximum or minimum point. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<char> Specifies the type of the trace hold function: OFF : Turns off the trace hold function. MAXimum : Maximum hold MINimum : Minimum hold
<i>Query Response</i>	{OFF MAX MIN}
<i>Preset Value</i>	OFF
<i>Related Commands</i>	CALC:TRAC:HOLD:CLE
<i>Equivalent Softkeys</i>	Display > Trace Hold > {OFF Maximum Minimum}

CALC:HOLD:CLEAr

CALCulate <Ch>[:SElected]:HOLD:CLEAr

Or

CALCulate <Ch>[:SElected]:HOLD:CLEAr

<i>Description</i>	This command resets the trace hold function. (command)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Related Commands</i>	CALC:TRAC:HOLD:TYPE
<i>Equivalent Softkeys</i>	Display > Trace Hold > Reset

CALC:LIM

CALCulate <Ch>[:SElected]:LIMit[:STATe] {OFF|ON|0|1}

CALCulate <Ch>[:SElected]:LIMit[:STATe]?

Or

CALCulate <Ch>:TRACe<Tr>:LIMit[:STATe] {OFF|ON|0|1}

CALCulate <Ch>:TRACe<Tr>:LIMit[:STATe]?

<i>Description</i>	Turns ON/OFF the limit test. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<div style="margin-left: 20px;"> {ON 1} : ON {OFF 0} : OFF </div>
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Analysis > Limit Test > Limit Test

CALC:LIM:DATA

CALCulate <Ch>[:SElected]:LIMit:DATA <numeric list>

CALCulate <Ch>[:SElected]:LIMit:DATA?

Or

CALCulate <Ch>:TRACe<Tr>:LIMit:DATA <numeric list>

CALCulate <Ch>:TRACe<Tr>:LIMit:DATA?

Description	<p>Sets the data array, which is the limit line in the limit test function. The array size is $1 + 5N$, where N is the number of limit line segments.</p> <p>For the n-th point, where n from 1 to N:</p> <p><numeric 1> the number of limit line segments N is from 0 to 100. Setting 0 clears the limit line.</p> <p><numeric 5n-3> type of the n-th limit line segment 0: Off. 1: Upper limit 2: Lower limit 3: Single Point limit</p> <p><numeric 5n-2> the stimulus value in the start point of the n-th segment</p> <p><numeric 5n-1> the stimulus value in the end point of the n-th segment</p> <p><numeric 5n-0> the response value in the start point of the n-th segment</p> <p><numeric 5n+1> the response value in the end point of the n-th segment</p> <p>(command/query)</p>
Target	<p>CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16}</p>
Query Response	<numeric 1>, <numeric 2>, ...<numeric 5N+1>
Notes	<p>If the array size is not $1 + 5N$, where N is <numeric 1>, an error occurs. If <numeric 5n-3> is less than 0 or more than 2, an error occurs. When <numeric 5n-2>, <numeric 5n-1>, <numeric 5n-0>, and <numeric 5n+1> elements are out of allowable range, the value is set to the limit, which is closer to the specified value.</p>
Equivalent Softkeys	Analysis > Limit Test > Edit Limit Line

CALC:LIM:DISP

CALCulate <Ch>[:SElected]:LIMit:DISPlay[:STATe] {OFF|ON|0|1}

CALCulate <Ch>[:SElected]:LIMit:DISPlay[:STATe]?

Or

CALCulate <Ch>:TRACe <Tr>:LIMit:DISPlay[:STATe] {OFF|ON|0|1}

CALCulate <Ch>:TRACe <Tr>:LIMit:DISPlay[:STATe]?

<i>Description</i>	Turns ON/OFF the limit line display of the limit test function. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<div style="margin-left: 20px;"> {ON 1} : ON {OFF 0} : OFF </div>
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Analysis > Limit Test > Limit Line

CALC:LIM:FAIL?

CALCulate <Ch>[:SElected]:LIMit:FAIL?

Or

CALCulate <Ch>:TRACe <Tr>:LIMit:FAIL?

<i>Description</i>	Reads out the limit test result. (query only)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Query Response</i>	<div style="display: flex; align-items: center;"> <div style="margin-right: 20px;">1</div> : Fail </div> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;">0</div> : Pass </div>
<i>Equivalent Softkeys</i>	None

CALC:LIM:OFFS:AMPL

CALCulate <Ch>[:SElected]:LIMit:OFFSet:AMPLitude <numeric>

CALCulate <Ch>[:SElected]:LIMit:OFFSet:AMPLitude?

Or

CALCulate <Ch>:TRACe<Tr>:LIMit:OFFSet:AMPLitude <numeric>

CALCulate <Ch>:TRACe<Tr>:LIMit:OFFSet:AMPLitude?

Description	Sets and reads out the value of the limit line offset along Y-axis. (command/query)
Target	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
Parameter	<numeric> the value of the limit line offset along Y-axis, varies depending on the data format
Unit	{ dB ° s}
Query Response	<numeric>
Preset Value	0
Equivalent Softkeys	Analysis > Limit Test > Limit Line Offsets > Response Offset

CALC:LIM:OFFS:MARK

CALCulate <Ch>[:SElected]:LIMit:OFFSet:MARKer

Or

CALCulate <Ch>:TRACe <Tr>:LIMit:OFFSet:MARKer

<i>Description</i>	Sets the value of the limit line offset along Y-axis to the active marker value. (no query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Equivalent Softkeys</i>	Analysis > Limit Test > Limit Line Offsets > Marker > Response Of

CALC:LIM:OFFS:STIM

CALCulate <Ch>[:SElected]:LIMit:OFFSet:STIMulus <stimulus>

CALCulate <Ch>[:SElected]:LIMit:OFFSet:STIMulus?

Or

CALCulate <Ch>:TRACe <Tr>:LIMit:OFFSet:STIMulus <stimulus>

CALCulate <Ch>:TRACe <Tr>:LIMit:OFFSet:STIMulus?

Description	Sets the value of the limit line offset along X-axis. (command/query)
Target	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
Parameter	< stimulus > the value of the limit line offset along X-axis
Unit	{ Hz s dBm }
Query Response	<numeric>
Preset Value	0
Equivalent Softkeys	Analysis > Limit Test > Limit Lines Offsets > Stimulus Offset

CALC:LIM:REP:ALL?

CALCulate <Ch>[:SElected]:LIMit:REPort:ALL?

Or

CALCulate <Ch>:TRACe <Tr>:LIMit:REPort:ALL?

<i>Description</i>	<p>Reads out the data array, which is the limit test result.</p> <p>The array size is 4N, where N is the number of measurement points.</p> <p>For the n-th point, where n from 1 to N:</p> <p><numeric 4n-3> the stimulus value in the n-th point;</p> <p><numeric 4n-2> the limit test result in the n-th point; -1: No limit 0: Fail 1: Pass</p> <p><numeric 4n-1> the upper limit value in the n-th point (0 – if there is no limit)</p> <p><numeric 4n-0> the lower limit value in the n-th point (0 – if there is no limit)</p> <p>(query only)</p>
<i>Target</i>	<p>CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16}</p>
<i>Query Response</i>	<numeric 1>,<numeric 2>,...<numeric 4N>
<i>Related Commands</i>	FORM:DATA
<i>Equivalent Softkeys</i>	None

CALC:LIM:REP:POIN?

CALCulate <Ch>[:SElected]:LIMit:REPort:POINts?

Or

CALCulate <Ch>:TRACe <Tr>:LIMit:REPort:POINts?

<i>Description</i>	<p>Reads out the number of the measurement points that failed the limit test.</p> <p>The stimulus data array of these points can be read out by the CALC:LIM:REP? command.</p> <p>(query only)</p>
<i>Target</i>	<p>CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div> </p>
<i>Query Response</i>	<numeric>
<i>Related Commands</i>	CALC:LIM:REP?
<i>Equivalent Softkeys</i>	None

CALC:LIM:REP?

CALCulate <Ch>[:SElected]:LIMit:REPort[:DATA]?

Or

CALCulate <Ch>:TRACe<Tr>:LIMit:REPort[:DATA]?

<i>Description</i>	<p>Reads out the data array, which is the stimulus values of the measurement points that failed the limit test.</p> <p>The array size is set by the CALC:LIM:REP:POIN? command.</p> <p>(query only)</p>
<i>Target</i>	<p>CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div> </p>
<i>Query Response</i>	<numeric 1>,<numeric 2>,...<numeric N>
<i>Related Commands</i>	CALC:LIM:REP:POIN?
<i>Equivalent Softkeys</i>	None

CALC:MARK

CALCulate <Ch>[:SElected]:MARKer <Mk>[:STATe] {OFF|ON|0|1}

CALCulate <Ch>[:SElected]:MARKer <Mk>[:STATe]?

Or

CALCulate <Ch>:TRACe <Tr>:MARKer <Mk>[:STATe] {OFF|ON|0|1}

CALCulate <Ch>:TRACe <Tr>:MARKer <Mk>[:STATe]?

Description	<p>Turns ON/OFF the marker.</p> <p>Turning ON a marker with the number from 1 to 15 will turn ON all the markers of smaller numbers. Turning OFF a marker with the number from 1 to 15 will turn OFF all the markers of greater numbers (except of the reference marker with number 16). Turning ON/OFF the reference marker with number 16 does not turn ON/OFF the markers with the numbers from 1 to 15, but switches these markers between relative and absolute measurement mode.</p> <p>(command/query)</p>
Target	<p>Marker <Mk> of the active trace of channel <Ch>, Or Marker <Mk> of the trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} <Mk> = {[1] 2 ...16}</p>
Parameter	<p>{ON 1} : ON {OFF 0} : OFF</p>
Query Response	{0 1}
Preset Value	0
Equivalent Softkeys	<p>Markers > {Add Marker Remove Marker}</p> <p>Markers > Reference Marker</p>

CALC:MARK:ACT

CALCulate <Ch>[:SELEcted]:MARKer <Mk>:ACTivate

Or

CALCulate <Ch>:TRACe<Tr>MARKer<Mk>:ACTivate

<i>Description</i>	<p>Sets the active marker.</p> <p>If the marker is not ON, this function will turn the marker ON. Turning ON a marker with the number from 1 to 15 will turn ON all the markers of smaller numbers. Turning ON the reference marker with number 16 does not turn ON the markers with the numbers from 1 to 15, but switches these markers to the relative measurement mode.</p> <p>(no query)</p>
<i>Target</i>	<p>Marker <Mk> of the active trace of channel <Ch>, Or Marker <Mk> of the trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} <Mk> = {[1] 2 ...16}</p>
<i>Equivalent Softkeys</i>	<p>Markers > Select > Marker n</p> <p>Markers > Reference Marker</p>

CALC:MARK:BWID

CALCulate <Ch>[:SElected]:MARKer:BWIDth[:STATe] {OFF|ON|0|1}

CALCulate <Ch>[:SElected]:MARKer:BWIDth[:STATe]?

Or

CALCulate <Ch>:TRACe <Tr>:MARKer:BWIDth[:STATe] {OFF|ON|0|1}

CALCulate <Ch>:TRACe <Tr>:MARKer:BWIDth[:STATe]?

<i>Description</i>	Turns ON/OFF the bandwidth search function. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<div style="margin-left: 20px;"> {ON 1} : ON {OFF 0} : OFF </div>
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Markers > Marker Math > Bandwidth Search > Bandwidth Search

CALC:MARK:BWID:DATA?

CALCulate <Ch>[:SElected]:MARKer <Mk>:BWIDth:DATA?

Or

CALCulate <Ch>:TRACe <Tr>:MARKer <Mk>:BWIDth:DATA?

<i>Description</i>	<p>Reads out the bandwidth search result.</p> <p>The bandwidth search can performed relatively to the marker <Mk>, or relatively to the absolute maximum value of the trace (in this case the number of the marker is ignored), what is set by the CALC:MARK:BWID:REF command.</p> <p>The data include 4 elements:</p> <p><numeric 1> Bandwidth;</p> <p><numeric 2> Center frequency;</p> <p><numeric 3> Q value;</p> <p><numeric 4> Loss;</p> <p>(query only)</p>
<i>Target</i>	<p>Marker <Mk> of the active trace of channel <Ch>, Or Marker <Mk> of the trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} <Mk> = {[1] 2 ...16}</p>
<i>Query Response</i>	<numeric 1>,<numeric 2>,...<numeric 4>
<i>Related Commands</i>	CALC:MARK:BWID:REF
<i>Notes</i>	If the bandwidth search is impossible, all the read out values are 0. If the search is performed relatively to a maker, which is OFF, an error occurs.
<i>Equivalent Softkeys</i>	None

CALC:MARK:BWID:REF

CALCulate <Ch>[:SElected]:MARKer:BWIDth:REFerence <char>

CALCulate <Ch>[:SElected]:MARKer:BWIDth:REFerence?

Or

CALCulate <Ch>:TRACe<Tr>:MARKer:BWIDth:REFerence <char>

CALCulate <Ch>:TRACe<Tr>:MARKer:BWIDth:REFerence?

<i>Description</i>	Selects the reference point for the bandwidth search function: reference marker or absolute maximum value of the trace. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<char> Choose from: MARKer : Bandwidth search relative to the reference marker MAXimum : Bandwidth search relative to the absolute maximum of the trace MINimum : Bandwidth search relative to the absolute minimum of the trace
<i>Query Response</i>	{MAX MARK MIN}
<i>Preset Value</i>	MAX
<i>Equivalent Softkeys</i>	Markers > Marker Math > Bandwidth Search > Search Ref To

CALC:MARK:BWID:THR

CALCulate <Ch>[:SElected]:MARKer <Mk>:BWIDth:THReshold <numeric>

CALCulate <Ch>[:SElected]:MARKer <Mk>:BWIDth:THReshold?

Or

CALCulate <Ch>:TRACe <Tr>:MARKer <Mk>:BWIDth:THReshold <numeric>

CALCulate <Ch>:TRACe <Tr>:MARKer <Mk>:BWIDth:THReshold?

Description	Sets the bandwidth definition value. (command/query)
Target	Marker <Mk> of the active trace of channel <Ch>, Or Marker <Mk> of the trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} <Mk> = {[1] 2 ...16}
Parameter	<numeric> the bandwidth definition value, the range varies depending on the data format
Unit	{ dB ° s }
Query Response	<numeric>
Preset Value	−3.0
Equivalent Softkeys	Markers > Marker Math > Bandwidth Search > Bandwidth Value

CALC:MARK:BWID:TYPE

CALCulate <Ch>[:SElected]:MARKer:BWIDth:TYPE <char>

CALCulate <Ch>[:SElected]:MARKer:BWIDth:TYPE?

Or

CALCulate <Ch>:TRACe <Tr>:MARKer:BWIDth:TYPE <char>

CALCulate <Ch>:TRACe <Tr>:MARKer:BWIDth:TYPE?

<i>Description</i>	Sets the type of the bandwidth search function. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<char> Specifies the type of the bandwidth: BPASs : Bandpass NOTCh : Notch
<i>Query Response</i>	{BPAS NOTC}
<i>Preset Value</i>	BPAS
<i>Equivalent Softkeys</i>	Markers > Marker Math > Bandwidth Search > Type

CALC:MARK:COUN

CALCulate <Ch>[:SElected]:MARKer:COUNT <numeric>

CALCulate <Ch>[:SElected]:MARKer:COUNT?

Or

CALCulate <Ch>:TRACe <Tr>:MARKer:COUNT <numeric>

CALCulate <Ch>:TRACe <Tr>:MARKer:COUNT?

<i>Description</i>	Sets the number of the turned ON markers. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<numeric>, range from 0 to 16
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	0
<i>Notes</i>	Choosing 16 turns on the reference marker and sets the markers 1 to 15 to the relative values.
<i>Equivalent Softkeys</i>	None

CALC:MARK:COUP

CALCulate <Ch>[:SELeCted]:MARKer:COUPle {OFF|ON|0|1}

CALCulate <Ch>[:SELeCted]:MARKer:COUPle?

Or

CALCulate <Ch>:TRACe <Tr>:MARKer:COUPle {OFF|ON|0|1}

CALCulate <Ch>:TRACe <Tr>:MARKer:COUPle?

<i>Description</i>	Turns ON/OFF the marker coupling between traces. When coupled the markers of different traces with same number track the X-axis position. (command/query)
<i>Target</i>	All the traces of channel <Ch>, <Ch>={1 2 ...16}
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	1
<i>Equivalent Softkeys</i>	Marker > Properties > Marker Couple

CALC:MARK:DATA?

CALCulate <Ch>[:SElected]:MARKer:DATA?

Or

CALCulate <Ch>:TRACe <Tr>:MARKer:DATA?

<i>Description</i>	<p>Reads out the data array of all turned ON markers.</p> <p>The array size is $3N + 1$, where N is the number of turned ON markers including the reference marker. If the reference marker is turned ON the last three elements of array contain the reference marker data and the rest elements of array contain the relative values.</p> <p>For the n-th marker, where n from 1 to N:</p> <p><numeric 1> the number of turned ON markers including the reference marker (N);</p> <p><numeric $3n-1$> the stimulus value of the n-th marker;</p> <p><numeric $3n$> the real data in rectangular format, real part in polar and Smith chart formats of the n-th marker;</p> <p><numeric $3n+1$> 0 in rectangular format, imaginary part in polar and Smith chart formats of the n-th marker;</p> <p>(query only)</p>
<i>Target</i>	<p>CALCulate<Ch>[:SElected] – All markers of the active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – All markers of the trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16}</p>
<i>Target</i>	<p>All markers of the active trace of channel <Ch>, <Ch>={ [1] 2 ...16}</p>
<i>Query Response</i>	<p><numeric 1>, <numeric 2>, ...<numeric $3N+1$></p>
<i>Related Commands</i>	<p>CALC:MARK:COUN FORM:DATA</p>
<i>Equivalent Softkeys</i>	<p>None</p>

CALC:MARK:DISC

CALCulate <Ch>[:SElected]:MARKer:DISCcrete {OFF|ON|0|1}

CALCulate <Ch>[:SElected]:MARKer:DISCcrete?

Or

CALCulate <Ch>:TRACe<Tr>:MARKer:DISCcrete {OFF|ON|0|1}

CALCulate <Ch>:TRACe<Tr>:MARKer:DISCcrete?

<i>Description</i>	Turns ON/OFF the marker discrete mode. (command/query)
<i>Target</i>	All traces of channel <Ch> (if the marker coupling is set to ON by the CALC:MARK:COUP command), Or CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<div style="margin-left: 20px;"> {ON 1} : ON {OFF 0} : OFF </div>
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	1
<i>Equivalent Softkeys</i>	Marker > Properties > Discrete [ON/OFF]

CALC:MARK:FUNC:DOM

CALCulate <Ch>[:SELEcted]:MARKer:FUNCtion:DOMain[:STATe] {OFF|ON|0|1}

CALCulate <Ch>[:SELEcted]:MARKer:FUNCtion:DOMain[:STATe]?

Or

CALCulate <Ch>:TRACe<Tr>:MARKer:FUNCtion:DOMain[:STATe] {OFF|ON|0|1}

CALCulate <Ch>:TRACe<Tr>:MARKer:FUNCtion:DOMain[:STATe]?

<i>Description</i>	<p>Turns ON/OFF the state of the arbitrary range when executing the marker search. If the state of an arbitrary range is ON, marker search is performed in the range specified by the CALC:MARK:FUNC:DOM:STAR, CALC:MARK:FUNC:DOM:STOP commands. Otherwise, the search is performed over the entire sweep range.</p> <p>(command/query)</p>
<i>Target</i>	<p>All traces of channel <Ch> (if the marker coupling is set to ON by the CALC:MARK:FUNC:DOM:COUP command), Or CALCulate<Ch>[:SELEcted] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16}</p>
<i>Parameter</i>	<p>{ON 1} : Arbitrary range {OFF 0} : Entire sweep range</p>
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Markers > Marker Search > Search Range

CALC:MARK:FUNC:DOM:COUP

CALCulate <Ch>[:SElected]:MARKer:FUNCtion:DOMain:COUPle {OFF|ON|0|1}

CALCulate <Ch>[:SElected]:MARKer:FUNCtion:DOMain:COUPle?

Or

CALCulate <Ch>:TRACe <Tr>:MARKer:FUNCtion:DOMain:COUPle {OFF|ON|0|1}

CALCulate <Ch>:TRACe <Tr>:MARKer:FUNCtion:DOMain:COUPle?

<i>Description</i>	Turns ON/OFF the state of the marker search range coupling for different traces. If the arbitrary search range turned ON by the CALC:MARK:FUNC:DOM command, specifies whether (coupling) or each trace uses individual range when the marker search is performed. (command/query)
<i>Target</i>	All the traces of channel <Ch>, <Ch>={1 2 ...16}
<i>Parameter</i>	Specifies the search range coupling: {ON 1} : ON - all traces of channel use the same range {OFF 0} : OFF - each trace uses individual range
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	1
<i>Equivalent Softkeys</i>	Markers > Marker Search > Couple

CALC:MARK:FUNC:DOM:STAR

CALCulate <Ch>[:SElected]:MARKer:FUNCtion:DOMain:STARt <stimulus>

CALCulate <Ch>[:SElected]:MARKer:FUNCtion:DOMain:STARt?

Or

CALCulate <Ch>:TRACe <Tr>:MARKer:FUNCtion:DOMain:STARt <stimulus>

CALCulate <Ch>:TRACe <Tr>:MARKer:FUNCtion:DOMain:STARt?

Description	Sets or reads out the start value of the marker search range. (command/query)
Target	All traces of channel <Ch> (if the marker search range coupling is set to ON by the CALC:MARK:FUNC:DOM:COUP command), Or CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
Parameter	<stimulus> the start value of the marker search
Unit	{ Hz s dBm }
Query Response	<numeric>
Preset Value	Lower limit of the analyzer frequency range
Equivalent Softkeys	Markers > Marker Search > Search Start

CALC:MARK:FUNC:DOM:STOP

CALCulate <Ch>[:SElected]:MARKer:FUNCtion:DOMain:STOP <stimulus>

CALCulate <Ch>[:SElected]:MARKer:FUNCtion:DOMain:STOP?

Or

CALCulate <Ch>:TRACe<Tr>:MARKer:FUNCtion:DOMain:STOP <stimulus>

CALCulate <Ch>:TRACe<Tr>:MARKer:FUNCtion:DOMain:STOP?

Description	Sets or reads out the stop value of the marker search range. (command/query)
Target	All traces of channel <Ch> (if the marker search range coupling is set to ON by the CALC:MARK:FUNC:DOM:COUP command), Or CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
Parameter	<stimulus> the stop value of the marker search
Unit	{ Hz s dBm }
Query Response	<numeric>
Preset Value	Upper limit of the analyzer frequency range
Equivalent Softkeys	Markers > Marker Search > Search Stop

CALC:MARK:FUNC:EXEC

CALCulate <Ch>[:SElected]:MARKer <Mk>:FUNCtion:EXECute

Or

CALCulate <Ch>:TRACe <Tr>:MARKer <Mk>:FUNCtion:EXECute

<i>Description</i>	<p>Executes the marker search according to the specified criterion. The type of the marker search is set by the CALC:MARK:FUNC:TYPE command.</p> <p>(no query)</p>
<i>Target</i>	<p>Marker <Mk> of the active trace of channel <Ch>, Or Marker <Mk> of the trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} <Mk> = {[1] 2 ...16}</p>
<i>Related Commands</i>	<p>CALC:MARK:FUNC:TYPE CALC:MARK:FUNC:DOM</p>
<i>Equivalent Softkeys</i>	<p>Markers > Marker Search > { Maximum Minimum }</p> <p>Markers > Marker Search > Peak > { Search Peak Search Max Peak Search Peak Left Search Peak Right }</p> <p>Markers > Marker Search > Target > { Search Target Search Target Left Search Target Right }</p>

CALC:MARK:FUNC:PEXC

CALCulate <Ch>[:SElected]:MARKer <Mk>:FUNCtion:PEXCursion <numeric>

CALCulate <Ch>[:SElected]:MARKer <Mk>:FUNCtion:PEXCursion?

Or

CALCulate <Ch>:TRACe <Tr>:MARKer <Mk>:FUNCtion:PEXCursion <numeric>

CALCulate <Ch>:TRACe <Tr>:MARKer <Mk>:FUNCtion:PEXCursion?

Description	Sets or reads out the peak excursion value, when the marker search for peak is performed by the CALC:MARK:FUNC:EXEC command. (command/query)
Target	Marker <Mk> of the active trace of channel <Ch>, Or Marker <Mk> of the trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} <Mk> = {[1] 2 ...16}
Parameter	<numeric> the peak excursion value, the range varies depending on the data format
Unit	{ dB ° s }
Query Response	<numeric>
Preset Value	1
Equivalent Softkeys	Markers > Marker Search > Peak > Peak Excursion

CALC:MARK:FUNC:PPOL

CALCulate <Ch>[:SElected]:MARKer <Mk>:FUNCtion:PPOLarity <char>

CALCulate <Ch>[:SElected]:MARKer <Mk>:FUNCtion:PPOLarity?

Or

CALCulate <Ch>:TRACe <Tr>:MARKer <Mk>:FUNCtion:PPOLarity <char>

CALCulate <Ch>:TRACe <Tr>:MARKer <Mk>:FUNCtion:PPOLarity?

Description	Selects the peak polarity, when the marker search for peak is performed by the CALC:MARK:FUNC:EXEC command. (command/query)
Target	Marker <Mk> of the active trace of channel <Ch>, Or Marker <Mk> of the trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} <Mk> = {[1] 2 ...16}
Parameter	<char> Specifies the peak polarity: POSitive : Positive polarity NEGative : Negative polarity BOTH : Both positive polarity and negative polarity
Query Response	{POS NEG BOTH}
Preset Value	POS
Related Commands	CALC:MARK:FUNC:EXEC
Equivalent Softkeys	Markers > Marker Search > Peak > Peak Polarity > {Positive Negative Both}

CALC:MARK:FUNC:TARG

CALCulate <Ch>[:SElected]:MARKer <Mk>:FUNCtion:TARGet <numeric>

CALCulate <Ch>[:SElected]:MARKer <Mk>:FUNCtion:TARGet?

Or

CALCulate <Ch>:TRACe <Tr>:MARKer <Mk>:FUNCtion:TARGet <numeric>

CALCulate <Ch>:TRACe <Tr>:MARKer <Mk>:FUNCtion:TARGet?

Description	Sets or reads out the target value, when the marker search for target is performed by the CALC:MARK:FUNC:EXEC command. (command/query)
Target	Marker <Mk> of the active trace of channel <Ch>, Or Marker <Mk> of the trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} <Mk> = {[1] 2 ...16}
Parameter	<numeric> the target value, the range varies depending on the data format
Unit	{ dB ° s }
Query Response	<numeric>
Preset Value	0
Equivalent Softkeys	Markers > Marker Search > Target > Target Value

CALC:MARK:FUNC:TRAC

CALCulate <Ch>[:SElected]:MARKer <Mk>:FUNCtion:TRACking {OFF|ON|0|1}

CALCulate <Ch>[:SElected]:MARKer <Mk>:FUNCtion:TRACking?

Or

CALCulate <Ch>:TRACe <Tr>:MARKer <Mk>:FUNCtion:TRACking {OFF|ON|0|1}

CALCulate <Ch>:TRACe <Tr>:MARKer <Mk>:FUNCtion:TRACking?

<i>Description</i>	Turns ON/OFF the marker search tracking. (command/query)
<i>Target</i>	Marker <Mk> of the active trace of channel <Ch>, Or Marker <Mk> of the trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} <Mk> = {[1] 2 ...16}
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Markers > Marker Search > Tracking

CALC:MARK:FUNC:TTR

CALCulate <Ch>[:SElected]:MARKer <Mk>:FUNCtion:TTRansition <char>

CALCulate <Ch>[:SElected]:MARKer <Mk>:FUNCtion:TTRansition?

Or

CALCulate <Ch>:TRACe <Tr>:MARKer <Mk>:FUNCtion:TTRansition <char>

CALCulate <Ch>:TRACe <Tr>:MARKer <Mk>:FUNCtion:TTRansition?

Description	Selects the type of the target transition, when the marker search for transition is performed by the CALC:MARK:FUNC:EXEC command. (command/query)
Target	Marker <Mk> of the active trace of channel <Ch>, Or Marker <Mk> of the trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} <Mk> = {[1] 2 ...16}
Parameter	<char> Specifies the type of the target transition: POSitive : Positive target transition NEGative : Negative target transition BOTH : Both positive target transition and negative target transition
Query Response	{POS NEG BOTH}
Preset Value	POS
Related Commands	CALC:MARK:FUNC:EXEC
Equivalent Softkeys	Marker > Marker Search > Target > Target Transition > {Positive Negative Both}

CALC:MARK:FUNC:TYPE

CALCulate <Ch>[:SElected]:MARKer <Mk>:FUNCtion:TYPE <char>

CALCulate <Ch>[:SElected]:MARKer <Mk>:FUNCtion:TYPE ?

Or

CALCulate <Ch>:TRACe <Tr>:MARKer <Mk>:FUNCtion:TYPE <char>

CALCulate <Ch>:TRACe <Tr>:MARKer <Mk>:FUNCtion:TYPE ?

Description	Selects the type of the marker search, which is performed by the CALC:MARK:FUNC:EXEC command. (command/query)
Target	Marker <Mk> of the active trace of channel <Ch>, Or Marker <Mk> of the trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} <Mk> = {[1] 2 ...16}
Parameter	<char> Specifies the type of the marker search: MAXimum : Maximum value search MINimum : Minimum value search PEAK : Peak search LPEak : Peak search to the left from the marker RPEak : Peak search to the right from the marker TARGet : Target search LTARget : Target search to the left from the marker RTARget : Target search to the right from the marker
Query Response	{MAX MIN PEAK LPE RPE TARG LTAR RTAR}
Preset Value	MAX
Related Commands	CALC:MARK:FUNC:EXEC
Equivalent Softkeys	Markers > Marker Search > {Maximum Minimum} Markers > Marker Search > Peak > {Search Peak Search Max Peak Search Peak Left Search Peak Right} Markers > Marker Search > Target > {Search Target Search Target Left Search Target Right}

CALC:MARK:MATH:FLAT:DATA?

CALCulate <Ch>[:SElected]:MARKer:MATH:FLATness:DATA?

Or

CALCulate <Ch>:TRACe<Tr>:MARKer:MATH:FLATness:DATA?

<i>Description</i>	<p>Reads out FLATNESS function data array. The FLATNESS function is applied within the range determined by two markers.</p> <p>The array includes 4 elements:</p> <p><numeric 1> Span;</p> <p><numeric 2> Gain;</p> <p><numeric 3> Slope;</p> <p><numeric 4> Flatness.</p> <p>(query only)</p>
<i>Target</i>	<p>CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16}</p>
<i>Query Response</i>	<numeric 1>,<numeric 2>,...<numeric 4>
<i>Related Commands</i>	<p>CALC:MARK:MATH:FLAT:DOM:STAR CALC:MARK:MATH:FLAT:DOM:STOP</p>
<i>Equivalent Softkeys</i>	None

CALC:MARK:MATH:FLAT:STAT

CALCulate <Ch>[:SElected]:MARKer:MATH:FLATness:STATe {OFF|ON|0|1}

CALCulate <Ch>[:SElected]:MARKer:MATH:FLATness:STATe?

Or

CALCulate <Ch>:TRACe <Tr>:MARKer:MATH:FLATness:STATe {OFF|ON|0|1}

CALCulate <Ch>:TRACe <Tr>:MARKer:MATH:FLATness:STATe?

<i>Description</i>	Turns ON/OFF the marker FLATNESS function. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<div style="display: flex; justify-content: space-between;"> {ON 1} : ON </div> <div style="display: flex; justify-content: space-between;"> {OFF 0} : OFF </div>
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Markers > Marker Math > Flatness > Flatness

CALC:MARK:MATH:FLAT:DOM:STAR

CALCulate <Ch>[:SElected]:MARKer:MATH:FLATness:STARt <numeric>

CALCulate <Ch>[:SElected]:MARKer:MATH:FLATness:STARt?

Or

CALCulate <Ch>:TRACe <Tr>:MARKer:MATH:FLATness:STARt <numeric>

CALCulate <Ch>:TRACe <Tr>:MARKer:MATH:FLATness:STARt?

Description	Sets or reads out the number of the marker, which specifies the start frequency of the FLATNESS function domain. (command/query)
Target	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
Parameter	<numeric> marker number from 1 to 16
Query Response	<numeric>
Preset Value	1
Equivalent Softkeys	Markers > Marker Math > Flatness > Flatness Start

CALC:MARK:MATH:FLAT:DOM:STOP

CALCulate <Ch>[:SElected]:MARKer:MATH:FLATness:STOP <numeric>

CALCulate <Ch>[:SElected]:MARKer:MATH:FLATness:STOP?

Or

CALCulate <Ch>:TRACe <Tr>:MARKer:MATH:FLATness:STOP <numeric>

CALCulate <Ch>:TRACe <Tr>:MARKer:MATH:FLATness:STOP?

Description	Sets or reads out the number of the marker, which specifies the stop frequency of the FLATNESS function domain. (command/query)
Target	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
Parameter	<numeric> marker number from 1 to 16
Query Response	<numeric>
Preset Value	2
Equivalent Softkeys	Markers > Marker Math > Flatness > Flatness Stop

CALC:MARK:REF

CALCulate <Ch>[:SElected]:MARKer:REFerence[:STATe] {OFF|ON|0|1}

CALCulate <Ch>[:SElected]:MARKer:REFerence[:STATe]?

Or

CALCulate <Ch>:TRACe <Tr>:MARKer:REFerence[:STATe] {OFF|ON|0|1}

CALCulate <Ch>:TRACe <Tr>:MARKer:REFerence[:STATe]?

<i>Description</i>	<p>Turns ON/OFF the reference marker.</p> <p>When the reference marker is turned ON, all the values of the other markers turn to relative values.</p> <p>(command/query)</p>
<i>Target</i>	<p>CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16}</p>
<i>Parameter</i>	<p>{ON 1} : Reference marker ON {OFF 0} : Reference marker OFF</p>
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Markers > Reference Marker

CALC:MARK:SET

CALCulate <Ch>[:SELEcted]:MARKer <Mk>:SET <char>

Or

CALCulate <Ch>:TRACe <Tr>:MARKer <Mk>:SET <char>

Description	Sets the value of the specified item to the value of the position of the marker. (no query)
Target	Marker <Mk> of the active trace of channel <Ch>, Or Marker <Mk> of the trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} <Mk> = {[1] 2 ...16}
Parameter	<char> Specifies the type of the marker search: START : Sweep start value set to the stimulus value of the marker position. STOP : Sweep stop value set to the stimulus value of the marker position. CENTER : Sweep center value set to the stimulus value of the marker position. RLEVEL : Reference value set to the response value of the marker position. DELAY : Delay value set to the response value of the marker position.
Equivalent Softkeys	Markers > Marker Functions > {Marker->Start Marker->Stop Marker->Center Marker->Ref Value Marker->Delay}

CALC:MARK:X

CALCulate <Ch>[:SElected]:MARKer <Mk>:X <stimulus>

CALCulate <Ch>[:SElected]:MARKer <Mk>:X?

Or

CALCulate <Ch>:TRACe <Tr>:MARKer <Mk>:X <stimulus>

CALCulate <Ch>:TRACe <Tr>:MARKer <Mk>:X?

Description	Sets or reads out the stimulus value of the marker. (command/query)
Target	Marker <Mk> of the active trace of channel <Ch>, Or Marker <Mk> of the trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} <Mk> = {[1] 2 ...16}
Parameter	<stimulus> the stimulus value of the marker, the range is from the stimulus start value to the stimulus stop value currently set
Unit	{ Hz s dBm }
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	Stimulus center value
Equivalent Softkeys	Markers > Edit Stimulus

CALC:MARK:Y?

CALCulate <Ch>[:SELEcted]:MARKer <Mk>:Y?

Or

CALCulate <Ch>:TRACe <Tr>:MARKer <Mk>:Y?

<i>Description</i>	<p>Reads out the response value of the marker.</p> <p>If the reference marker is turned ON, the values of the markers from 1 to 15 are read out as relative values to the reference marker.</p> <p>The data include 2 elements:</p> <p><numeric 1> real number in rectangular format, real part in polar and Smith chart formats;</p> <p><numeric 2> 0 in rectangular format, imaginary part in polar and Smith chart formats.</p> <p>(query only)</p>
<i>Target</i>	<p>Marker <Mk> of the active trace of channel <Ch>, Or Marker <Mk> of the trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} <Mk> = {[1] 2 ...16}</p>
<i>Query Response</i>	<numeric 1>,<numeric 2>
<i>Related Commands</i>	CALC:MARK:REF
<i>Equivalent Softkeys</i>	None

CALC:MATH:FUNC

CALCulate <Ch>[:SElected]:MATH:FUNCtion <char>

CALCulate <Ch>[:SElected]:MATH:FUNCtion?

Or

CALCulate <Ch>:TRACe<Tr>:MATH:FUNCtion <char>

CALCulate <Ch>:TRACe<Tr>:MATH:FUNCtion?

Description	<p>Selects the math operation between the data trace and the memory trace. The math result replaces the data trace. If the memory trace does not exist, the command is ignored.</p> <p>(command/query)</p>
Target	<p>CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, $\langle Ch \rangle = \{[1] 2 \dots 16\}$ $\langle Tr \rangle = \{[1] 2 \dots 16\}$</p>
Parameter	<p><char> Specifies the math operation:</p> <p>DIVide : Division <i>Data / Mem.</i></p> <p>MULTiPLY : Multiplication <i>Data x Mem.</i></p> <p>ADD : Addition <i>Data + Mem.</i></p> <p>SUBTract : Subtraction <i>Data – Mem.</i></p> <p>OFF : No math</p>
Query Response	{OFF DIV MULT SUBT ADD}
Preset Value	OFF
Related Commands	CALC:MATH:MEM
Equivalent Softkeys	<p>Display > Data Math > {Data/Mem Data*Mem Data+Mem Data–Mem OFF}</p>

CALC:MATH:MEM

CALCulate <Ch>[:SElected]:MATH:MEMorize

Or

CALCulate <Ch>:TRACe <Tr>:MATH:MEMorize

<i>Description</i>	Copies the measurement data to the memory trace. Automatically turns on the display the memory trace. (no query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Equivalent Softkeys</i>	Display > Data –> Memory

CALC:MST

CALCulate <Ch>[:SElected]:MSTatistics[:STATe] {OFF|ON|0|1}

CALCulate <Ch>[:SElected]:MSTatistics[:STATe]?

Or

CALCulate <Ch>:TRACe <Tr>:MSTatistics[:STATe] {OFF|ON|0|1}

CALCulate <Ch>:TRACe <Tr>:MSTatistics[:STATe]?

<i>Description</i>	Turns ON/OFF the math statistics display. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<div style="margin-left: 20px;"> {ON 1} : ON {OFF 0} : OFF </div>
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Markers > Marker Math > Statistics > Statistics

CALC:MST:DATA?

CALCulate <Ch>[:SElected]:MSTatistics:DATA?

Or

CALCulate <Ch>:TRACe<Tr>:MSTatistics:DATA?

<i>Description</i>	<p>Reads out the math statistics values.</p> <p>The statistics function is applied either over the whole range, or within the range specified by CALC:MST:DOM command (the range limits are determined by two markers).</p> <p>The data include 3 elements:</p> <p><numeric 1> Mean value;</p> <p><numeric 2> Standard deviation;</p> <p><numeric 3> Peak-to-peak (difference between the maximum value and the minimum value).</p> <p>(query only)</p>
<i>Target</i>	<p>CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16}</p>
<i>Query Response</i>	<numeric 1>, <numeric 2>, <numeric 3>
<i>Related Commands</i>	CALC:MST
<i>Equivalent Softkeys</i>	None

CALC:MST:DOM

CALCulate <Ch>[:SElected]:MSTatistics:DOMain[:STATe] {OFF|ON|0|1}

CALCulate <Ch>[:SElected]:MSTatistics:DOMain[:STATe]?

Or

CALCulate <Ch>:TRACe <Tr>:MSTatistics:DOMain[:STATe] {OFF|ON|0|1}

CALCulate <Ch>:TRACe <Tr>:MSTatistics:DOMain[:STATe]?

<i>Description</i>	Selects either partial frequency range or entire frequency range is used for math statistic calculation. The partial frequency range is limited by two markers. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	Choose from: <div style="margin-left: 20px;"> {ON 1} : partial frequency range {OFF 0} : entire frequency range </div>
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Related Commands</i>	CALC:MST:DOM:STAR CALC:MST:DOM:STOP
<i>Equivalent Softkeys</i>	Markers > Marker Math > Statistics > Statistics Range

CALC:MST:DOM:STAR

CALCulate <Ch>[:SElected]:MSTatistics:DOMain[:MARKer]:START <numeric>

CALCulate <Ch>[:SElected]:MSTatistics:DOMain[:MARKer]:START?

Or

CALCulate <Ch>:TRACe<Tr>:MSTatistics:DOMain[:MARKer]:START <numeric>

CALCulate <Ch>:TRACe<Tr>:MSTatistics:DOMain[:MARKer]:START?

<i>Description</i>	Sets or reads out the number of the marker, which specifies the start frequency of the math statistics range. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<numeric> marker number from 1 to 16
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	1
<i>Equivalent Softkeys</i>	Markers > Marker Math > Statistics > Statistics Start

CALC:MST:DOM:STOP

CALCulate <Ch>[:SElected]:MSTatistics:DOMain[:MARKer]:STOP <numeric>

CALCulate <Ch>[:SElected]:MSTatistics:DOMain[:MARKer]:STOP?

Or

CALCulate <Ch>:TRACe<Tr>:MSTatistics:DOMain[:MARKer]:STOP <numeric>

CALCulate <Ch>:TRACe<Tr>:MSTatistics:DOMain[:MARKer]:STOP?

<i>Description</i>	Sets or reads out the number of the marker, which specifies the stop frequency of the math statistics range. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<numeric> marker number from 1 to 16
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	2
<i>Equivalent Softkeys</i>	Markers > Marker Math > Statistics > Statistics Stop

CALC:PAR:COUN

CALCulate <Ch>:PARAmeter:COUNT <numeric>

CALCulate <Ch>:PARAmeter:COUNT?

<i>Description</i>	Sets or reads out the number of traces in the channel. (command/query)
<i>Target</i>	The channel <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<numeric> The number of the traces in the channel from 1 to 16
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	1
<i>Equivalent Softkeys</i>	Display > Num of Traces

CALC:PAR:DEF

CALCulate <Ch>:PARAmeter <Tr>:DEFine <char>

CALCulate <Ch>:PARAmeter <Tr>:DEFine?

Description	Selects the measurement parameter of the trace. (command/query)
Target	Trace <Tr> of channel <Ch>, <Tr>={ [1] 2 ... 16 } <Ch>={ [1] 2 ... 16 }
Parameter	<char> Specifies parameter:
	S11, S12, S13, S14, : S – parameter S21, S22, S23, S24, S31, S32, S33, S34, S41, S42, S43, S44
	A, B, C, D or : Test receiver T1, T2, T3, T4
	R1, R2, R3, R4 : Reference receiver
	AUX1, AUX2 or : DC Voltage V1, V2
Query Response	{S11 S12 S13 S14 S21 S22 S23 S24 S31 S32 S33 S34 S41 S42 S43 S44 R1(n) R2(n) R3(n) R4(n) A(n) B(n) C(n) D(n) V1(n) V2(n)}, Where n is the stimulus port number;
Preset Value	Depends on the trace number.
Equivalent Softkeys	(S2VNA): Measurement > {S11 S21 S12 S22 ...} Measurement > Absolute (S4VNA): Measurement > S-Parameter > {S11 S12 ... S44} Measurement > Test Receiver > {T1(1) T1(2) ... T4(4)} Measurement > Reference Receiver > {R1(1) R1(2) ... R4(4)}

CALC:PAR:SEL

CALCulate <Ch>:PARameter <Tr>:SElect

<i>Description</i>	Selects the active trace in channel. (no query)
<i>Target</i>	Trace <Tr> of channel <Ch>, <Tr>={ [1] 2 ... 16 } <Ch>={ [1] 2 ... 16 }
<i>Notes</i>	If the trace number is greater than the number of the traces displayed in the channel, an error occurs and the command is ignored.
<i>Related Commands</i>	CALC:PAR:COUN
<i>Equivalent Softkeys</i>	Display > Active Trace/Channel > Active Channel Display > Active Trace/Channel > Active Trace

CALC:PAR:SPOR

CALCulate <Ch>:PARAmeter <Tr>:SPORt <port>

CALCulate <Ch>:PARAmeter <Tr>:SPORt?

Description	Sets or reads out the number of the stimulus port, when performing absolute measurements. (command/query)
Target	Trace <Tr> of channel <Ch>, <Tr>={ [1] 2 ... 16} <Ch>={ [1] 2 ... 16}
Parameter	<port> the number of the stimulus port
Out of Range	Error occurs. The command is ignored.
Query Response	<port>
Preset Value	1
Equivalent Softkeys	(S2VNA): Measurement > Absolute > {A(1) B(1) R1(1) A(2) B(2) R2(2)} (S4VNA): Measurement > Test Receiver > {T1(1) T1(2) ... T4(4)} Measurement > Reference Receiver > {R1(1) R1(2) ... R4(4)}

CALC:RLIM

CALCulate <Ch>[:SElected]:RLIMit[:STATe] {OFF|ON|0|1}

CALCulate <Ch>[:SElected]:RLIMit[:STATe]?

Or

CALCulate <Ch>:TRACe <Tr>:RLIMit[:STATe] {OFF|ON|0|1}

CALCulate <Ch>:TRACe <Tr>:RLIMit[:STATe]?

<i>Description</i>	Turns ON/OFF the ripple limit test. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<div style="margin-left: 20px;"> {ON 1} : ON {OFF 0} : OFF </div>
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Analysis > Ripple Limit > Ripple Test

CALC:RLIM:DATA

CALCulate <Ch>[:SElected]:RLIMit:DATA <numeric list>

CALCulate <Ch>[:SElected]:RLIMit:DATA?

Or

CALCulate <Ch>:TRACe<Tr>:RLIMit:DATA <numeric list>

CALCulate <Ch>:TRACe<Tr>:RLIMit:DATA?

Description	<p>Sets the data array, which is the limit line for the ripple limit function.</p> <p>The array size is $1 + 4N$, where N is the number of limit line segments.</p> <p>For the n-th point, where n from 1 to N:</p> <p><numeric 1> the number of limit line segments N is the integer from 0 to 12. Setting 0 clears the limit line.</p> <p><numeric $4n-2$> type of the n-th limit line segment 0: Off. 1: On</p> <p><numeric $4n-1$> the stimulus value in the beginning point of the n-th segment</p> <p><numeric $4n-0$> the stimulus value in the end point of the n-th segment</p> <p><numeric $4n+1$> the ripple limit value of the n-th segment (command/query)</p>
Target	<p>CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16}</p>
Query Response	<numeric 1>,<numeric 2>,...<numeric $4N+1$ >
Notes	<p>If the array size is not $1 + 4N$, where N is <numeric 1>, an error occurs.</p> <p>If <numeric $4n-2$> is less than 0 or more than 1, an error occurs. When <numeric $4n-1$>, <numeric $4n-0$>, and <numeric $4n+1$> elements are out of allowable range, the value is set to the limit, which is closer to the specified value.</p>
Equivalent Softkeys	Analysis > Ripple Limit > Edit Ripple Limit

CALC:RLIM:DISP:LINE

CALCulate <Ch>[:SElected]:RLIMit:DISPlay:LINE {OFF|ON|0|1}

CALCulate <Ch>[:SElected]:RLIMit:DISPlay:LINE?

Or

CALCulate <Ch>:TRACe <Tr>:RLIMit:DISPlay:LINE {OFF|ON|0|1}

CALCulate <Ch>:TRACe <Tr>:RLIMit:DISPlay:LINE?

<i>Description</i>	Turns ON/OFF the ripple limit line display. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<div style="margin-left: 20px;"> {ON 1} : ON {OFF 0} : OFF </div>
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Analysis > Ripple Limit > Ripple Limit

CALC:RLIM:DISP:SEL

CALCulate <Ch>[:SElected]:RLIMit:DISPlay:SElect <numeric>

CALCulate <Ch>[:SElected]:RLIMit:DISPlay:SElect?

Or

CALCulate <Ch>:TRACe<Tr>:RLIMit:DISPlay:SElect <numeric>

CALCulate <Ch>:TRACe<Tr>:RLIMit:DISPlay:SElect?

<i>Description</i>	Sets or reads out the number of the ripple limit test band selected for the ripple value display. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<numeric>, range from 1 to 12
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	1
<i>Equivalent Softkeys</i>	Analysis > Ripple Limit > Ripple Value Band

CALC:RLIM:DISP:VAL

CALCulate <Ch>[:SElected]:RLIMit:DISPlay:VALue <char>

CALCulate <Ch>[:SElected]:RLIMit:DISPlay:VALue?

Or

CALCulate <Ch>:TRACe <Tr>:RLIMit:DISPlay:VALue <char>

CALCulate <Ch>:TRACe <Tr>:RLIMit:DISPlay:VALue?

<i>Description</i>	Selects the display type of the ripple value in the specified band. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<char> Specifies the math operation: OFF : Ripple value display OFF ABSolute : Absolute value MARgin : Margin (difference between the ripple limit and the absolute value)
<i>Query Response</i>	{OFF ABS MAR}
<i>Preset Value</i>	OFF
<i>Equivalent Softkeys</i>	Analysis > Ripple Limit > Ripple Value

CALC:RLIM:FAIL?

CALCulate <Ch>[:SElected]:RLIMit:FAIL?

Or

CALCulate <Ch>:TRACe <Tr>:RLIMit:FAIL?

<i>Description</i>	Reads out the ripple limit test result. (query only)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Query Response</i>	<div style="display: flex; align-items: center;"> <div style="margin-right: 20px;">1</div> : Fail </div> <div style="display: flex; align-items: center;"> <div style="margin-right: 20px;">0</div> : Pass </div>
<i>Equivalent Softkeys</i>	None

CALC:RLIM:REP?

CALCulate <Ch>[:SElected]:RLIMit:REPort[:DATA]?

Or

CALCulate <Ch>:TRACe<Tr>:RLIMit:REPort[:DATA]?

<i>Description</i>	<p>Reads out the data array, which is the ripple limit test result.</p> <p>The array size is 1+3N, where N is the number of ripple limit bands.</p> <p>For the n-th point, where n from 1 to N:</p> <p><numeric 1> N total number of the bands</p> <p><numeric 3n-1> n number of the band</p> <p><numeric 3n-0> Ripple value in the n-th band</p> <p><numeric 3n+1> Ripple limit test result in the n-th band: 0- Pass 1- Fail</p> <p>(query only)</p>
<i>Target</i>	<p>CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16}</p>
<i>Query Response</i>	<numeric 1>, <numeric 2>, ...<numeric 3N+1>
<i>Equivalent Softkeys</i>	None

CALC:SMO

CALCulate <Ch>[:SElected]:SMOothing[:STATe] {OFF|ON|0|1}

CALCulate <Ch>[:SElected]:SMOothing[:STATe]?

Or

CALCulate <Ch>:TRACe <Tr>:SMOothing[:STATe] {OFF|ON|0|1}

CALCulate <Ch>:TRACe <Tr>:SMOothing[:STATe]?

<i>Description</i>	Turns ON/OFF the trace smoothing. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<div style="margin-left: 20px;"> {ON 1} : ON {OFF 0} : OFF </div>
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Average > Smoothing

CALC:SMO:APER

CALCulate <Ch>[:SElected]:SMOothing:APERture <numeric>

CALCulate <Ch>[:SElected]:SMOothing:APERture?

Or

CALCulate <Ch>:TRACe <Tr>:SMOothing:APERture <numeric>

CALCulate <Ch>:TRACe <Tr>:SMOothing:APERture?

<i>Description</i>	Sets or reads out the smoothing aperture, when performing smoothing function. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<numeric> the smoothing aperture from 0.01 to 20
<i>Unit</i>	% (percent)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	1
<i>Equivalent Softkeys</i>	Average > Smo Aperture

CALC:TRAN:TIME

CALCulate <Ch>[:SElected]:TRANSform:TIME[:TYPE] <char>

CALCulate <Ch>[:SElected]:TRANSform:TIME[:TYPE] ?

Or

CALCulate <Ch>:TRACe <Tr>:TRANSform:TIME[:TYPE] <char>

CALCulate <Ch>:TRACe <Tr>:TRANSform:TIME[:TYPE] ?

<i>Description</i>	Selects the transformation type for the time domain transformation function: band-pass or low-pass. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<char> Specifies the transformation type: BPASs Ban-dpass LPASs Low-pass
<i>Query Response</i>	{BPAS LPAS}
<i>Preset Value</i>	BPAS
<i>Equivalent Softkeys</i>	Analysis > Time Domain > Type > {Bandpass Lowpass Step Lowpass Impulse}

CALC:TRAN:TIME:CENT

CALCulate <Ch>[:SElected]:TRANSform:TIME:CENTer <time>

CALCulate <Ch>[:SElected]:TRANSform:TIME:CENTer?

Or

CALCulate <Ch>:TRACe<Tr>:TRANSform:TIME:CENTer <time>

CALCulate <Ch>:TRACe<Tr>:TRANSform:TIME:CENTer?

<i>Description</i>	Sets or reads out the time domain center value, when the time domain transformation function is turned ON. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	< time > the time domain center value, the range varies depending on the specified frequency range and the number of points
<i>Unit</i>	sec (second)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	< numeric >
<i>Preset Value</i>	1
<i>Equivalent Softkeys</i>	Analysis > Time Domain > Center

CALC:TRAN:TIME:IMP:WIDT

CALCulate <Ch>[:SElected]:TRANSform:TIME:IMPulse:WIDTh <time>

CALCulate <Ch>[:SElected]:TRANSform:TIME:IMPulse:WIDTh?

Or

CALCulate <Ch>:TRACe <Tr>:TRANSform:TIME:IMPulse:WIDTh <time>

CALCulate <Ch>:TRACe <Tr>:TRANSform:TIME:IMPulse:WIDTh?

Description	Sets or reads out the impulse width (time domain transformation resolution), coupled with the Kaiser-Bessel window shape β parameter. The impulse width setting changes the β parameter, and setting of β parameter changes the impulse width. (command/query)
Target	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
Parameter	<time> the impulse width, the range varies depending on the specified frequency range and the number of points
Unit	sec (second)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Equivalent Softkeys	Analysis > Time Domain > Window > Impulse Width (when the transformation type is set to Bandpass or Lowpass Impulse)

CALC:TRAN:TIME:KBES

CALCulate <Ch>[:SElected]:TRANSform:TIME:KBESsel <numeric>

CALCulate <Ch>[:SElected]:TRANSform:TIME:KBESsel?

Or

CALCulate <Ch>:TRACe <Tr>:TRANSform:TIME:KBESsel <numeric>

CALCulate <Ch>:TRACe <Tr>:TRANSform:TIME:KBESsel?

Description	Sets or reads out the β parameter, which controls the Kaiser-Bessel window shape, when performing time domain transformation. (command/query)
Target	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
Parameter	<numeric> β parameter from 0 to 13
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	6
Equivalent Softkeys	Analysis > Time Domain > Window > Kaiser Beta

CALC:TRAN:TIME:LPFR

CALCulate <Ch>[:SElected]:TRANSform:TIME:LPFRequency

Or

CALCulate <Ch>:TRACe <Tr>:TRANSform:TIME:LPFRequency

<i>Description</i>	Changes the frequency range to match with the low-pass type of the time domain transformation function. (no query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Equivalent Softkeys</i>	Analysis > Time Domain > Set Frequency Low Pass

CALC:TRAN:TIME:REFL:TYPE

CALCulate <Ch>[:SElected]:TRANSform:TIME:REFLection:TYPE <char>

CALCulate <Ch>[:SElected]:TRANSform:TIME:REFLection:TYPE?

Or

CALCulate <Ch>:TRACe <Tr>:TRANSform:TIME:REFLection:TYPE <char>

CALCulate <Ch>:TRACe <Tr>:TRANSform:TIME:REFLection:TYPE?

<i>Description</i>	Selects the reflection distance either one way or round trip for the time domain transformation function. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<char> Choose from: RTRip : Round Trip OWAY : One Way
<i>Query Response</i>	{RTR OWAY}
<i>Preset Value</i>	RTR
<i>Equivalent Softkeys</i>	Analysis > Time Domain > Reflection Type > {Round Trip One Way}

CALC:TRAN:TIME:SPAN

CALCulate <Ch>[:SElected]:TRANSform:TIME:SPAN <time>

CALCulate <Ch>[:SElected]:TRANSform:TIME:SPAN?

Or

CALCulate <Ch>:TRACe <Tr>:TRANSform:TIME:SPAN <time>

CALCulate <Ch>:TRACe <Tr>:TRANSform:TIME:SPAN?

<i>Description</i>	Sets or reads out the time domain span value, when the time domain transformation function is turned ON. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<time> the time domain span value, the range varies depending on the specified frequency range and the number of points
<i>Unit</i>	sec (second)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	2e-8
<i>Equivalent Softkeys</i>	Analysis > Time Domain > Span

CALC:TRAN:TIME:STAR

CALCulate <Ch>[:SElected]:TRANSform:TIME:STARt <time>

CALCulate <Ch>[:SElected]:TRANSform:TIME:STARt?

Or

CALCulate <Ch>:TRACe <Tr>:TRANSform:TIME:STARt <time>

CALCulate <Ch>:TRACe <Tr>:TRANSform:TIME:STARt?

<i>Description</i>	Sets or reads out the time domain start value, when the time domain transformation function is turned ON. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<time> the time domain start value, the range varies depending on the specified frequency range and the number of points
<i>Unit</i>	sec (second)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	-1e-8
<i>Equivalent Softkeys</i>	Analysis > Time Domain > Start

CALC:TRAN:TIME:STOP

CALCulate <Ch>[:SElected]:TRANSform:TIME:STOP <time>

CALCulate <Ch>[:SElected]:TRANSform:TIME:STOP?

Or

CALCulate <Ch>:TRACe <Tr>:TRANSform:TIME:STOP <time>

CALCulate <Ch>:TRACe <Tr>:TRANSform:TIME:STOP?

<i>Description</i>	Sets or reads out the time domain stop value, when the time domain transformation function is turned ON. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<time> the time domain stop value, the range varies depending on the specified frequency range and the number of points
<i>Unit</i>	sec (second)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	+1e-8
<i>Equivalent Softkeys</i>	Analysis > Time Domain > Stop

CALC:TRAN:TIME:STAT

CALCulate <Ch>[:SElected]:TRANSform:TIME:STATe {OFF|ON|0|1}

CALCulate <Ch>[:SElected]:TRANSform:TIME:STATe?

Or

CALCulate <Ch>:TRACe <Tr>:TRANSform:TIME:STATe {OFF|ON|0|1}

CALCulate <Ch>:TRACe <Tr>:TRANSform:TIME:STATe?

<i>Description</i>	Turns ON/OFF the time domain transformation function. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<div style="margin-left: 20px;"> {ON 1} : ON {OFF 0} : OFF </div>
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Analysis > Time Domain > Time Domain

CALC:TRAN:TIME:STEP:RTIM

CALCulate <Ch>[:SElected]:TRANSform:TIME:STEP:RTIME <time>

CALCulate <Ch>[:SElected]:TRANSform:TIME:STEP:RTIME?

Or

CALCulate <Ch>:TRACe <Tr>:TRANSform:TIME:STEP:RTIME <time>

CALCulate <Ch>:TRACe <Tr>:TRANSform:TIME:STEP:RTIME?

Description	Sets or reads out the rise time of the step signal (time domain transformation resolution), coupled with the Kaiser-Bessel window shape β parameter. The impulse width setting changes the β parameter, and setting of β parameter changes the impulse width. (command/query)
Target	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
Parameter	<time> the impulse width, the range varies depending on the specified frequency range and the number of points
Unit	sec (second)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Equivalent Softkeys	Analysis > Time Domain > Window > Impulse Width (when the transformation type is set to Lowpass Step)

CALC:TRAN:TIME:STIM

CALCulate <Ch>[:SElected]:TRANSform:TIME:STIMulus <char>

CALCulate <Ch>[:SElected]:TRANSform:TIME:STIMulus?

Or

CALCulate <Ch>:TRACe <Tr>:TRANSform:TIME:STIMulus <char>

CALCulate <Ch>:TRACe <Tr>:TRANSform:TIME:STIMulus?

<i>Description</i>	Selects the stimulus type for the time domain transformation function: impulse or step. (command/query)
<i>Target</i>	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
<i>Parameter</i>	<char> Specifies the stimulus type: IMPulse : Impulse STEP : Step
<i>Query Response</i>	{IMP STEP}
<i>Preset Value</i>	IMP
<i>Equivalent Softkeys</i>	Analysis > Time Domain > Type > {Bandpass Lowpass Step Lowpass Impulse}

CALC:TRAN:TIME:UNIT

CALCulate <Ch>[:SElected]:TRANSform:TIME:UNIT <char>

CALCulate <Ch>[:SElected]:TRANSform:TIME:UNIT?

Or

CALCulate <Ch>:TRACe <Tr>:TRANSform:TIME:UNIT <char>

CALCulate <Ch>:TRACe <Tr>:TRANSform:TIME:UNIT?

Description	Selects the the transformation unit for the time domain transformation function: seconds, meters, feet. (command/query)
Target	CALCulate<Ch>[:SElected] – active trace of channel <Ch>, Or CALCulate<Ch>:TRACe<Tr> – trace <Tr> of channel <Ch>, <div style="margin-left: 40px;"> <Ch> = {[1] 2 ...16} <Tr> = {[1] 2 ...16} </div>
Parameter	<char> Choose from: SEConds : Seconds METers : Meters FEET : Feet
Query Response	{SEC MET FEET}
Preset Value	SEC
Equivalent Softkeys	Analysis > Time Domain > Unit > {Seconds Meters Feet}

DISP:COL:BACK

DISPlay:COLor:BACK <numeric 1>,<numeric 2>,<numeric 3>

DISPlay:COLor:BACK?

<i>Description</i>	Sets or reads out the background color for trace display. (command/query)
<i>Parameter</i>	<numeric 1> Red value R from 0 to 255; <numeric 2> Green value G from 0 to 255; <numeric 3> Blue value B from 0 to 255.
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric 1>,<numeric 2>,<numeric 3>
<i>Preset Value</i>	0, 0, 0
<i>Equivalent Softkeys</i>	Display > Properties > Color > Background > {Red Green Blue}

DISP:COL:GRAT

DISPlay:COLor:GRATicule <numeric 1>,<numeric 2>,<numeric 3>

DISPlay:COLor:GRATicule?

<i>Description</i>	Sets or reads out the grid and the graticule label color for trace display. (command/query)
<i>Parameter</i>	<numeric 1> Red value R from 0 to 255; <numeric 2> Green value G from 0 to 255; <numeric 3> Blue value B from 0 to 255.
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric 1>,<numeric 2>,<numeric 3>
<i>Preset Value</i>	160, 160, 164
<i>Equivalent Softkeys</i>	Display > Properties > Color > Grid > {Red Green Blue}

DISP:COL:RES

DISPlay:COLor:RESet

<i>Description</i>	Restores the display settings to the default values. (no query)
<i>Equivalent Softkeys</i>	Display > Properties > Set Defaults

DISP:COL:TRAC:DATA

DISPlay:COLor:TRACe <Tr>:DATA <numeric 1>, <numeric 2>, <numeric 3>

DISPlay:COLor:TRACe <Tr>:DATA?

<i>Description</i>	Sets or reads out the data trace color. (command/query)
<i>Target</i>	Trace <Tr>, <Tr>={ [1] 2 ... 16 }
<i>Parameter</i>	<numeric 1> Red value R from 0 to 255; <numeric 2> Green value G from 0 to 255; <numeric 3> Blue value B from 0 to 255.
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric 1>, <numeric 2>, <numeric 3>
<i>Preset Value</i>	Varies depending on the trace number.
<i>Equivalent Softkeys</i>	Display > Properties > Color > Data Trace > {Red Green Blue}

DISP:COL:TRAC:MEM

DISPlay:COLor:TRACe <Tr>:MEMory <numeric 1>, <numeric 2>, <numeric 3>

DISPlay:COLor:TRACe <Tr>:MEMory?

<i>Description</i>	Sets or reads out the memory trace color. (command/query)
<i>Target</i>	Trace <Tr>, <Tr>={ [1] 2 ... 16 }
<i>Parameter</i>	<numeric 1> Red value R from 0 to 255; <numeric 2> Green value G from 0 to 255; <numeric 3> Blue value B from 0 to 255.
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric 1>, <numeric 2>, <numeric 3>
<i>Preset Value</i>	Varies depending on the trace number.
<i>Equivalent Softkeys</i>	Display > Properties > Color > Memory Trace > {Red Green Blue}

DISP:ENAB

DISPlay:ENABle {OFF|ON|0|1}

DISPlay:ENABle?

<i>Description</i>	Turns ON/OFF the display update. (command/query)
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	1
<i>Equivalent Softkeys</i>	Display > Update

DISP:FONT:SIZE

DISPlay:FONT:SIZE <numeric>

DISPlay:FONT:SIZE?

<i>Description</i>	Sets/gets one font size for all displayed elements of application. (command/query)
<i>Parameter</i>	<numeric> Specifies the font size from 10 to 22.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	11
<i>Equivalent Softkeys</i>	Display > Properties > Font > Size

DISP:FSIG

DISPlay:FSIGn {OFF|ON|0|1}

DISPlay:FSIGn?

<i>Description</i>	Turns ON/OFF the "Fail" sign display, when performing limit test or ripple limit test. (command/query)
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Analysis > Limit Test > Fail Sign Analysis > Ripple Limit > Fail Sign

DISP:GLAB

DISPlay:GLABel <char>

DISPlay:GLABel?

<i>Description</i>	Sets/gets the Graticule Label state. (command/query)
<i>Parameter</i>	<char> Specifies the Graticule Label state: OFF : Graticule label is OFF ACTive : Only active trace has graticule label ALL : All traces have graticule label
<i>Query Response</i>	<char>
<i>Preset Value</i>	ACTive
<i>Equivalent Softkeys</i>	Display > Properties > Graticule Label

DISP:IMAG

DISPlay:IMAGe <char>

DISPlay:IMAGe?

<i>Description</i>	Turns ON/OFF the inversion of display colors of the traces area. (command/query)
<i>Parameter</i>	<char> Choose from: NORMal : Normal display INVert : Inverted color display
<i>Query Response</i>	{NORM INV}
<i>Preset Value</i>	NORM
<i>Equivalent Softkeys</i>	Display > Properties > Invert Color

DISP:HIDE

DISPlay:HIDE

<i>Description</i>	Hides the Analyzer GUI. (no query)
<i>Related Commands</i>	DISP:SHOW
<i>Equivalent Softkeys</i>	None

DISP:MARKer:TABL

DISPlay:MARKer:TABLE[:STATe] {OFF|ON|0|1}

DISPlay:MARKer:TABLE[:STATe]?

<i>Description</i>	Turns ON/OFF of the marker table. (command/query)
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Display > Marker > Properties > Marker Table

DISP:MAX

DISPlay:MAXimize {OFF|ON|0|1}

DISPlay:MAXimize?

<i>Description</i>	Turns ON/OFF of the maximization of the active channel window. (command/query)
<i>Target</i>	The active channel set by the command DISP:WIND:ACT
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Display > Active Trace/Channel > Maximize channel

DISP:PART:FONT:SIZE

DISPlay:PARTition:FONT:SIZE <char>, <numeric>

DISPlay:PARTition:FONT:SIZE? <char>

<i>Description</i>	Sets/gets the font size of the item specified by parameter <char>. (command/query)
<i>Parameter</i>	<numeric> Specifies the font size from 10 to 22. <char> Specifies display item: BUTTon : Soft buttons MENU : Menu bar CStatus : Channel status AStatus : Analyzer status CHANnel : Channel window
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	11
<i>Equivalent Softkeys</i>	Markers > Properties > Font > Size

DISP:PART:FONT:SIZE:STAT

DISPlay:PARTition:FONT:SIZE:STATe {OFF|ON|0|1}

DISPlay:PARTition:FONT:SIZE:STATe?

<i>Description</i>	Specifies whether different elements of the application window have individual font sizes or the same font size. (command/query)
<i>Parameter</i>	<bool> Specifies what font size different window elements have: {ON 1} : individual font sizes {OFF 0} : same font size
<i>Query Response</i>	{0 1}
<i>Related Commands</i>	DISP:PART:FONT:SIZE
<i>Equivalent Softkeys</i>	Display > Properties > Font > Item Font Size > Item Font Size

DISP:PART:VIS

DISPlay:PARTition:VISible <char>, {OFF|ON|0|1}

DISPlay:PARTition:VISible? <char>

Description	Shows or hides the display partition specified by parameter <char>. (command/query)
Parameter	<p><bool> Specifies the status of the display partition:</p> <p>{ON 1} : ON</p> <p>{OFF 0} : OFF</p> <p><char> Specifies display partition:</p> <p>BUTTon : Soft buttons</p> <p>MENU : Menu bar</p> <p>CSTatus : Channel status</p> <p>ASTatus : Analyzer status</p> <p>TITLe : Main window title</p> <p>FLABel : Frequency label</p> <p>MTABLe : Marker table</p>
Query Response	{0 1}
Equivalent Softkeys	<p>Display > Properties > Menu Bar</p> <p>Display > Display Properties > Frequency Label</p> <p>Markers > Properties > Marker Table or None</p>

DISP:POS

DISPlay:POSition <numeric 1>, <numeric 2>, <numeric 3>, <numeric 4>

DISPlay:POSition?

<i>Description</i>	Sets/gets the application window position on the screen and its dimension. (command/query)
<i>Parameter</i>	Parameters determine the position of the main window: <numeric 1> : Specifies the coordinate of the left side of the window <numeric 2> : Specifies the coordinate of the top of the window <numeric 3> : Specifies the width of the window <numeric 4> : Specifies the height of the window
<i>Unit</i>	Screen pixel
<i>Range</i>	From 0 to the screen resolution
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	<numeric 1> = (screen width – 800) / 2, <numeric 2> = (screen height – 600) / 2, <numeric 3> = 800, <numeric 4> = 600, Preset: Display > Properties > Set Defaults
<i>Equivalent Softkeys</i>	None

DISP:SHOW

DISPlay:SHOW

<i>Description</i>	Shows the Analyzer GUI hidden by the DISP:HIDE command. (no query)
<i>Related Commands</i>	DISP:HIDE
<i>Equivalent Softkeys</i>	None




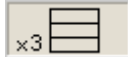
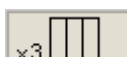

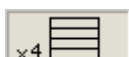

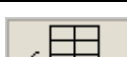
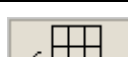
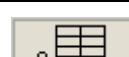

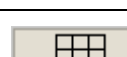
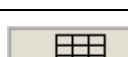
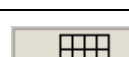
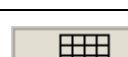
DISP:SPL

DISPlay:SPLit <numeric>

DISPlay:SPLit?

<i>Description</i>	Sets or reads out the layout of the channel windows on the screen. The channel window layout on the screen see below. (command/query)
<i>Parameter</i>	< numeric > the number of the channel window layout from 1 to 16
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	1
<i>Equivalent Softkeys</i>	Display > Allocate channels

Channel window layout on the screen

1: 	2: 	3: 	4: 
5: 	6: 	7: 	8: 
9: 	10: 	11: 	12: 
13: 	14: 	15: 	16: 

DISP:UPD

DISPlay:UPDate[:IMMediate]

<i>Description</i>	Updates the display once, when the display update is set to OFF by the DISP:ENAB command. (no query)
<i>Related Commands</i>	DISP:ENAB
<i>Equivalent Softkeys</i>	None

DISP:WIND:ACT

DISPlay:WINDow<Ch>:ACTivate

<i>Description</i>	Sets the active channel. (no query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ...16 }
<i>Notes</i>	At attempt to set to the active channel the channel, which is not displayed by the DISP:SPL command, an error occurs.
<i>Related Commands</i>	DISP:SPL
<i>Equivalent Softkeys</i>	Display > Active Trace / Channel > Active Channel

DISP:WIND:ANN:MARK:ALIG

DISPlay:WINDow <Ch>:ANNotation:MARKer:ALIGn[:TYPE] <char>

DISPlay:WINDow <Ch>:ANNotation:MARKer:ALIGn[:TYPE]?

<i>Description</i>	Sets or reads out the alignment mode of the marker display position of each trace, when the only active trace display feature is turned OFF by the DISP:WIND:ANN:MARK:SING command. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<char> Choose from: VERTical : Vertical alignment HORizontal : Horizontal alignment NONE : No alignment
<i>Query Response</i>	{ NONE VERT HOR }
<i>Preset Value</i>	NONE
<i>Related Commands</i>	DISP:WIND:ANN:MARK:SING
<i>Equivalent Softkeys</i>	Markers > Properties > Align > {Vertical Horizontal OFF}

DISP:WIND:ANN:MARK:SING

DISPlay:WINDow <Ch>:ANNotation:MARKer:SINGLE[:STATe] {OFF|ON|0|1}

DISPlay:WINDow <Ch>:ANNotation:MARKer:SINGLE[:STATe]?

<i>Description</i>	Selects display either the active trace markers or the all trace markers. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	Choose from: {ON 1} : Active trace markers {OFF 0} : All trace markers
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	1
<i>Equivalent Softkeys</i>	Markers > Properties > Active Only

DISP:WIND:MAX

DISPlay:WINDow <Ch>:MAXimize {OFF|ON|0|1}

DISPlay:WINDow <Ch>:MAXimize?

<i>Description</i>	Turn ON/OFF the active trace maximization inside the specified channel. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Display > Active Trace/Channel > Maximize Trace




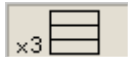




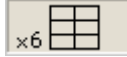
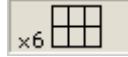

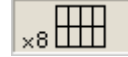
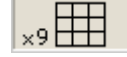
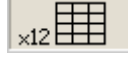

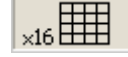
DISP:WIND:SPL

DISPlay:WINDow <Ch>:SPLit <numeric>

DISPlay:WINDow <Ch>:SPLit?

Description	<p>Sets or reads out the layout of the graph in the channel window.</p> <p>The graph layout in the channel window see below. (command/query)</p>
Target	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
Parameter	<numeric> the number of the graph layout from 1 to 16
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	1
Note	This function does not determine the number of traces in the channel window; CALC:PAR:COUN command sets the number of traces.
Equivalent Softkeys	Display > Allocate Traces

Graph layout in the channel window

1: 	2: 	3: 	4: 
5: 	6: 	7: 	8: 
9: 	10: 	11: 	12: 
13: 	14: 	15: 	16: 

DISP:WIND:TITL

DISPlay:WINDow <Ch>:TITLe[:STATe] {OFF|ON|0|1}

DISPlay:WINDow <Ch>:TITLe[:STATe]?

<i>Description</i>	Turns ON/OFF the channel title display. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Display > Title Label

DISP:WIND:TITL:DATA

DISPlay:WINDow <Ch>:TITLe:DATA <string>

DISPlay:WINDow <Ch>:TITLe:DATA?

<i>Description</i>	Sets or reads out the channel title label. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	< string >, up to 256 characters
<i>Query Response</i>	< string >
<i>Preset Value</i>	Empty string
<i>Equivalent Softkeys</i>	Display > Edit Title Label

DISP:WIND:TRAC:ANN:MARK:POS:X

DISPlay:WINDow <Ch>:TRACe <Tr>:ANNotation:MARKer:POSition:X <numeric>

DISPlay:WINDow <Ch>:TRACe <Tr>:ANNotation:MARKer:POSition:X?

Description	Sets or reads out the display position of the marker annotation on the X-axis by a percentage of the display width. (command/query)
Target	Trace <Tr> of channel <Ch>, <Tr>={ [1] 2 ... 16 } <Ch>={ [1] 2 ... 16 }
Parameter	<numeric> the display position of the marker value on the X-axis from 0 to 100
Unit	% (percent)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	0
Equivalent Softkeys	Markers > Properties > Data X Position

DISP:WIND:TRAC:ANN:MARK:POS:Y

DISPlay:WINDow <Ch>:TRACe <Tr>:ANNotation:MARKer:POSition:Y <numeric>

DISPlay:WINDow <Ch>:TRACe <Tr>:ANNotation:MARKer:POSition:Y?

<i>Description</i>	Sets or reads out the display position of the marker annotation on the Y-axis by a percentage of the display height. (command/query)
<i>Target</i>	Trace <Tr> of channel <Ch>, <Tr>={ [1] 2 ... 16 } <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<numeric> the display position of the marker value on the Y-axis from 0 to 100
<i>Unit</i>	% (percent)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Markers > Properties > Data Y Position

DISP:WIND:TRAC:MEM

DISPlay:WINDow <Ch>:TRACe <Tr>:MEMory[:STATe] {OFF|ON|0|1}

DISPlay:WINDow <Ch>:TRACe <Tr>:MEMory[:STATe]?

<i>Description</i>	Turns ON/OFF the memory trace display. (command/query)
<i>Target</i>	Trace <Tr> of channel <Ch>, <Tr>={ [1] 2 ... 16 } <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Notes</i>	If the memory trace does not exist, an error occurs and the command is ignored.
<i>Equivalent Softkeys</i>	Display > Display > {Memory Data & Memory} (ON) Display > Display > {Data OFF} (OFF)

DISP:WIND:TRAC:STAT

DISPlay:WINDow <Ch>:TRACe <Tr>:STATe {OFF|ON|0|1}

DISPlay:WINDow <Ch>:TRACe <Tr>:STATe?

<i>Description</i>	Turns ON/OFF the data trace display. (command/query)
<i>Target</i>	Trace <Tr> of channel <Ch>, <Tr>={ [1] 2 ... 16 } <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	1
<i>Equivalent Softkeys</i>	Display > Display > {Data Data & Memory} (ON) Display > Display > {Memory OFF} (OFF)

DISP:WIND:TRAC:Y:AUTO

DISPlay:WINDow <Ch>:TRACe <Tr>:Y[:SCALE]:AUTO

<i>Description</i>	Executes the auto scale function for the trace. The function automatically sets both the PDIVision and the RLEVel values. (no query)
<i>Target</i>	Trace <Tr> of channel <Ch>, <Tr>={ [1] 2 ... 16 } <Ch>={ [1] 2 ... 16 }
<i>Related Commands</i>	DISP:WIND:TRAC:Y:PDIV DISP:WIND:TRAC:Y:RLEV
<i>Equivalent Softkeys</i>	Scale > Auto Scale

DISP:WIND:TRAC:Y:PDIV

DISPlay:WINDow <Ch>:TRACe <Tr>:Y[:SCALe]:PDIVision <numeric>

DISPlay:WINDow <Ch>:TRACe <Tr>:Y[:SCALe]:PDIVision?

Description	Sets or reads out the trace scale. Sets the scale per division, when the data format is the rectangular format. Sets the full scale value, when the data format is the Smith chart format or the polar format.
Target	Trace <Tr> of channel <Ch>, <Tr>={ [1] 2 ... 16 } <Ch>={ [1] 2 ... 16 }
Parameter	<numeric> the scale value from 10E-18 to 1E18
Out of Range	Sets the value of the limit, which is closer to the specified value.
Unit	{ dB ° s }
Query Response	<numeric>
Preset Value	Varies depending on the format. Logarithmic Magnitude: 10 dB/Div Phase: 40 °/Div Expand Phase: 100 °/Div Group Delay: 10e-9 s/Div Smith Chart, Polar, SWR: 1 /Div Linear Magnitude: 0.1 /Div Real part, Imaginary part: 0.2 /Div
Equivalent Softkeys	Scale > Scale

DISP:WIND:TRAC:Y:RLEV

DISPlay:WINDow <Ch>:TRACe <Tr>:Y[:SCALe]:RLEVel <numeric>

DISPlay:WINDow <Ch>:TRACe <Tr>:Y[:SCALe]:RLEVel?

Description	Sets the value of the reference line (response value on the reference line). For the rectangular format only. (command/query)
Target	Trace <Tr> of channel <Ch>, <Tr>={ [1] 2 ... 16 } <Ch>={ [1] 2 ... 16 }
Parameter	<numeric> the reference value from 10E-18 to 1E18
Unit	{ dB ° s }
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	0 (except for SWR: 1)
Equivalent Softkeys	Scale > Ref Value

DISP:WIND:TRAC:Y:RLEV:AUTO

DISPlay:WINDow <Ch>:TRACe <Tr>:Y[:SCALe]:RLEVel:AUTO

Description	Executes the auto reference function for the trace. The function automatically sets the RLEVel value. (no query)
Target	Trace <Tr> of channel <Ch>, <Tr>={ [1] 2 ... 16 } <Ch>={ [1] 2 ... 16 }
Related Commands	DISP:WIND:TRAC:Y:RLEV
Equivalent Softkeys	Scale > Auto Ref Value

DISP:WIND:TRAC:Y:RPOS

DISPlay:WINDow <Ch>:TRACe <Tr>:Y[:SCALE]:RPOSition <numeric>

DISPlay:WINDow <Ch>:TRACe <Tr>:Y[:SCALE]:RPOSition?

Description	Sets the position of the reference line. For the rectangular format only. (command/query)
Target	Trace <Tr> of channel <Ch>, <Tr>={ [1] 2 ... 16 } <Ch>={ [1] 2 ... 16 }
Parameter	<numeric> the reference line position from 0 to the number of the scale divisions (set by the DISP:WIND:Y:DIV command, 10 by default)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	5 (except for SWR: 0)
Equivalent Softkeys	Scale > Ref Position

DISP:WIND:X:SPAC

DISPlay:WINDow <Ch>:X:SPACing <char>

DISPlay:WINDow <Ch>:X:SPACing?

<i>Description</i>	Sets or reads out the display method of the graph horizontal axis for the segment sweep. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<char> Choose from: LINEar : Frequency base (linear frequency axis) OBASe : Order base (linear axis of the point numbers)
<i>Out of Range</i>	The command is ignored.
<i>Query Response</i>	{ LIN OBAS }
<i>Preset Value</i>	LIN
<i>Related Commands</i>	SENS:SWE:TYPE
<i>Equivalent Softkeys</i>	Stimulus > Segment Table > Segment Display

DISP:WIND:Y:DIV

DISPlay:WINDow <Ch>:Y[:SCALe]:DIVisions <numeric>

DISPlay:WINDow <Ch>:Y[:SCALe]:DIVisions?

Description	Sets the number of the vertical scale divisions. For the rectangular format only. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ...16 }
Parameter	<numeric> the number of the vertical scale divisions from 4 to 30
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	10
Resolution	2
Equivalent Softkeys	Scale > Divisions

FORM:BORD

FORMat:BORDer <char>

FORMat:BORDer?

<i>Description</i>	Sets or reads out the transfer order of each byte in data, when the binary data transfer format is set by the FORM:DATA command. (command/query)
<i>Parameter</i>	<char> Choose from: NORMa1 : Normal (big-endian format) SWAPped : Swapped (little-endian format)
<i>Query Response</i>	{NORM SWAP}
<i>Preset Value</i>	NORM
<i>Note</i>	The Intel x86 and also AMD64 / x86-64 series of processors use the little-endian format.
<i>Related Commands</i>	FORM:DATA
<i>Equivalent Softkeys</i>	None

FORM:DATA

FORMat:DATA <char>

FORMat:DATA?

Description	<p>Sets or reads out the data transfer format, when responding to the following queries:</p> <table> <tr> <td>CALC:DATA:FDAT?</td><td>CALC:TRAC:LIM:REP:ALL?</td></tr> <tr> <td>CALC:DATA:FMEM?</td><td>CALC:TRAC:MARK:DATA?</td></tr> <tr> <td>CALC:DATA:SDAT?</td><td>CALC:TRAC:RLIM:DATA?</td></tr> <tr> <td>CALC:DATA:SMEM?</td><td>CALC:TRAC:RLIM:REP?</td></tr> <tr> <td>CALC:DATA:XAX?</td><td>SENS:CORR:COEF?</td></tr> <tr> <td>CALC:FUNC:DATA?</td><td>SENS:CORR:COLL:DATA:ISOL?</td></tr> <tr> <td>CALC:LIM:DATA?</td><td>SENS:CORR:COLL:DATA:LOAD?</td></tr> <tr> <td>CALC:LIM:REP?</td><td>SENS:CORR:COLL:DATA:OPEN?</td></tr> <tr> <td>CALC:LIM:REP:ALL?</td><td>SENS:CORR:COLL:DATA:SHOR?</td></tr> <tr> <td>CALC:MARK:DATA?</td><td>SENS:CORR:COLL:DATA:THRU:MATCH?</td></tr> <tr> <td>CALC:RLIM:DATA?</td><td>SENS:CORR:COLL:DATA:THRU:TRAN?</td></tr> <tr> <td>CALC:RLIM:REP?</td><td>SENS:DATA:CORR?</td></tr> <tr> <td>CALC:TRAC:DATA:FDAT?</td><td>SENS:DATA:RAWD?</td></tr> <tr> <td>CALC:TRAC:DATA:FMEM?</td><td>SENS:FREQ:DATA?</td></tr> <tr> <td>CALC:TRAC:DATA:SDAT?</td><td>SENS:OFFS:SOUR:DATA?</td></tr> <tr> <td>CALC:TRAC:DATA:SMEM?</td><td>SENS:OFFS:REC:DATA?</td></tr> <tr> <td>CALC:TRAC:DATA:XAX?</td><td>SENS:OFFS:PORT:DATA?</td></tr> <tr> <td>CALC:TRAC:FUNC:DATA?</td><td>SENS:SEGM:DATA?</td></tr> <tr> <td>CALC:TRAC:LIM:DATA?</td><td>SOUR:POW:PORT:CORR:COLL:TABL:LOSS:DATA?</td></tr> <tr> <td>CALC:TRAC:LIM:REP?</td><td>SOUR:POW:PORT:CORR:DATA?</td></tr> </table>	CALC:DATA:FDAT?	CALC:TRAC:LIM:REP:ALL?	CALC:DATA:FMEM?	CALC:TRAC:MARK:DATA?	CALC:DATA:SDAT?	CALC:TRAC:RLIM:DATA?	CALC:DATA:SMEM?	CALC:TRAC:RLIM:REP?	CALC:DATA:XAX?	SENS:CORR:COEF?	CALC:FUNC:DATA?	SENS:CORR:COLL:DATA:ISOL?	CALC:LIM:DATA?	SENS:CORR:COLL:DATA:LOAD?	CALC:LIM:REP?	SENS:CORR:COLL:DATA:OPEN?	CALC:LIM:REP:ALL?	SENS:CORR:COLL:DATA:SHOR?	CALC:MARK:DATA?	SENS:CORR:COLL:DATA:THRU:MATCH?	CALC:RLIM:DATA?	SENS:CORR:COLL:DATA:THRU:TRAN?	CALC:RLIM:REP?	SENS:DATA:CORR?	CALC:TRAC:DATA:FDAT?	SENS:DATA:RAWD?	CALC:TRAC:DATA:FMEM?	SENS:FREQ:DATA?	CALC:TRAC:DATA:SDAT?	SENS:OFFS:SOUR:DATA?	CALC:TRAC:DATA:SMEM?	SENS:OFFS:REC:DATA?	CALC:TRAC:DATA:XAX?	SENS:OFFS:PORT:DATA?	CALC:TRAC:FUNC:DATA?	SENS:SEGM:DATA?	CALC:TRAC:LIM:DATA?	SOUR:POW:PORT:CORR:COLL:TABL:LOSS:DATA?	CALC:TRAC:LIM:REP?	SOUR:POW:PORT:CORR:DATA?
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Parameter	<p><char> Choose from:</p> <p>ASCIi : Character format</p> <p>REAL : Binary format (IEEE–64 floating point)</p> <p>REAL32 : Binary format (IEEE–32 floating point)</p>																																								
Query Response	{ASC REAL REAL32}																																								
Preset Value	ASC																																								
Note	<p>The command is applicable with the TCP/IP HiSLIP protocol.</p> <p>The command is NOT applicable with the TCP/IP Socket protocol.</p>																																								
Related Commands	FORM:BORD																																								
Equivalent Softkeys	None																																								

FORM:PUSH

FORMat:PUSH <format>, <border>

<i>Description</i>	Saves the current settings and sets new values for the data transfer format and byte order. (command only)
<i>Parameter</i>	<p><format> Choose from:</p> <p>ASCIi : Character format</p> <p>REAL : Binary format (IEEE–64 floating point)</p> <p>REAL32 : Binary format (IEEE–32 floating point)</p> <p><border> Choose from:</p> <p>NORMa1 : Normal (big-endian format)</p> <p>SWAPped : Swapped (little-endian format)</p>
<i>Note</i>	The Intel x86 and also AMD64 / x86-64 series of processors use the little-endian format.
<i>Related Commands</i>	FORM:POP
<i>Equivalent Softkeys</i>	None

FORM:POP

FORMat:POP

<i>Description</i>	Restores the settings for the data transfer format and byte order saved by the preceeding FORM:PUSH command. (command/query)
<i>Related Commands</i>	FORM:PUSH
<i>Equivalent Softkeys</i>	None

HCOP

HCOPy[:IMMediate]

<i>Description</i>	Prints out the image displayed on the screen without previewing. (no query)
<i>Equivalent Softkeys</i>	System > Print > Print Embedded

HCOP:ABOR

HCOPy:ABORt

<i>Description</i>	Aborts the printout. (no query)
<i>Equivalent Softkeys</i>	None

HCOP:DATE:STAM

HCOPy:DATE:STAMp {OFF|ON|0|1}

HCOPy:DATE:STAMp?

<i>Description</i>	Turns ON/OFF the date and time printout in the upper right corner of the image. (command/query)
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	1
<i>Equivalent Softkeys</i>	System > Print > Print Date & Time

HCOP:IMAG

HCOPy:IMAGe <char>

HCOPy:IMAGe?

<i>Description</i>	Sets or reads out the inverted color image printout. (command/query)
<i>Parameter</i>	<char> Choose from: NORMal : Normal printout INVert : Inverted color printout
<i>Query Response</i>	{NORM INV}
<i>Preset Value</i>	NORM
<i>Equivalent Softkeys</i>	System > Print > Invert Image

HCOP:PAIN

HCOPy:PAINt <char>

HCOPy:PAINt?

<i>Description</i>	Sets or reads out the color chart for the image printout. (command/query)
<i>Parameter</i>	<char> Choose from: COLor : Color printout GRAY : Grayscale printout BW : Black&white printout
<i>Query Response</i>	{COL GRAY BW}
<i>Preset Value</i>	BW
<i>Equivalent Softkeys</i>	System > Print > Print Color

INIT

INITiate <Ch>[:IMMediate]

Description	<p>Puts the channel to the <i>Trigger Waiting</i> state for the one trigger event. The channel should be in the <i>hold</i> state, otherwise an error occurs and the command is ignored. The channel goes into the <i>Hold</i> as a result of the command INIT:CONT OFF.</p> <p>If the <i>Internal</i> trigger source is selected by the command TRIG:SOUR INT, then the command initiates a sweep in the single channel, otherwise the channel goes to the <i>Waiting for a Single Trigger</i> mode.</p> <p>Upon receipt of a trigger from the selected source, the sweep starts for the channels awaiting trigger. On completion of the sweep the channel goes to the <i>Hold</i> state.</p> <p>(no query)</p>
Target	<p>Channel <Ch>, <Ch>={ [1] 2 . . . 16 }</p>
Related Commands	<p>TRIG:SOUR INIT:CONT</p>
Equivalent Softkeys	<p>Stimulus > Trigger > Single</p>

INIT:CONT

INITiate <Ch>:CONTInuous {OFF|ON|0|1}

INITiate <Ch>:CONTInuous?

Description	<p>Turns ON/OFF the <i>continuous trigger initiation</i> mode.</p> <p>When the <i>continuous initiation</i> mode turned ON:</p> <ul style="list-style-type: none"> • If the <i>Internal</i> trigger source is selected by the command TRIG:SOUR INT, then the channel continuously sweeps; • If the trigger source other than the internal is selected, then the channel goes to the <i>trigger waiting</i> state. Upon receipt of a trigger from the selected source, the sweep starts for the channels awaiting trigger. On completion of the sweep the channel goes to the <i>trigger waiting</i> state. <p>When the <i>continuous trigger initiation</i> mode turned OFF the channel is in the <i>Hold</i> state, to initiate a sweep one should use the INIT command.</p> <p>(command /query)</p>
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<p>Specifies the continuous trigger initiation mode:</p> <p>{ON 1} : ON</p> <p>{OFF 0} : OFF</p>
Query Response	{0 1}
Preset Value	1
Related Commands	TRIG:SOUR INIT
Equivalent Softkeys	<p>Stimulus > Trigger > Continuous</p> <p>Stimulus > Trigger > Hold</p>

INIT:CONT:ALL

INITiate:CONTinuous:ALL {OFF|ON|0|1}

<i>Description</i>	Turns ON/OFF the <i>continuous trigger initiation</i> mode for all channels. (command)
<i>Parameter</i>	Specifies the continuous trigger initiation mode: {ON 1} : ON {OFF 0} : OFF
<i>Preset Value</i>	1
<i>Related Commands</i>	INIT:CONT
<i>Equivalent Softkeys</i>	Stimulus > Trigger > Continuous All Channels Stimulus > Trigger > Hold All Channels

MMEM:CAT?

MMEMory:CATalog? <string>

<i>Description</i>	<p>This command reads out the following information on the hard drive:</p> <ul style="list-style-type: none"> • Space in use • Available space • Name and size of all files (including directories) in the specified directory <p>(query only)</p>
<i>Parameter</i>	<p><string> Directory name</p>
<i>Query Response</i>	<p>Format: ("{A},{B},{Name 1},{Size 1},{Name 2},{Size 2}, ... ,{Name N},{Size N}")</p> <p>Where N is the number of all files in the specified directory and n is an integer between 1 and N.</p> <p>{A}: Space in use of the hard drive (byte). {B}: Available space of the hard drive (byte). {Name n}: Name of the n-th file (directory). {Size n}: Size (byte) of the n-th file (directory). Always 0 for directories.</p>
<i>Equivalent Softkeys</i>	<p>None</p>

MMEM:COPY

MMEMory:COPY <string1>, <string2>

<i>Description</i>	<p>Copies a file.</p> <p>(no query)</p>
<i>Parameter</i>	<p><string1> Source file name <string2> Destination file name</p>
<i>Equivalent Softkeys</i>	<p>None</p>

MMEM:DEL

MMEMory:DELeTe <*string*>

<i>Description</i>	Deletes a file. (no query)
<i>Parameter</i>	< <i>string</i>
<i>Equivalent Softkeys</i>	None

MMEM:LOAD

MMEMory:LOAD[:STATe] <*string*>

<i>Description</i>	Recalls the specified Analyzer state file. The file must be saved by the MMEM:STOR command. (no query)
<i>Parameter</i>	< <i>string</i>
<i>Notes</i>	If the full path of the file is not specified, the \State subdirectory of the application directory will be searched for the file. The Analyzer state file has *.sta extension by default.
<i>Equivalent Softkeys</i>	Save/Recall > Recall State > State...

MMEM:LOAD:CHAN

MMEMory:LOAD:CHANnel[:STATe] <char>

<i>Description</i>	Recalls the Analyzer state for the active channel. The file must be saved in one of the four memory registers by the MMEM:STOR:CHAN command. (no query)
<i>Target</i>	Active channel set by the DISP:WIND:ACT command
<i>Parameter</i>	<char> Choose from: A : Recall from register A B : Recall from register B C : Recall from register C D : Recall from register D
<i>Equivalent Softkeys</i>	Save/Recall > Recall Channel > {State A B C D}

MMEM:LOAD:CHAN:CAL

MMEMory:LOAD:CHANnel<ch>:CALibration <string>

<i>Description</i>	Recalls the calibration for the specified channel from the file. The file must be saved by the MMEM:STOR:CHAN:CAL command. (no query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ...16 }
<i>Parameter</i>	<string> File name
<i>Note</i>	If the full path of the file is not specified, the \State subdirectory of the application directory will be searched for the file. The Analyzer calibration file has *.cal extension by default.
<i>Equivalent Softkeys</i>	Save/Recall > Recall Channel Calibration...

MMEM:LOAD:CKIT

MMEMory:LOAD:CKIT <Ck> <string>

Description	Recalls the definition file for the calibration kit. The file must be saved by the MMEM:STOR:CKIT command. (no query)
Target	Calibration kit <Ck>, <Ck>={ [1] 2 ... 50 }
Parameter	<string> Fine name
Notes	If the full path of the file is not specified, the \CalKit subdirectory of the application directory will be searched for the file. The calibration kit definition file has *.ckd extension by default.
Equivalent Softkeys	None

MMEM:LOAD:LIM

MMEMory:LOAD:LIMit <string>

Description	Recalls the limit table file. The file must be saved by the MMEM:STOR:LIM command. (no query)
Target	Active trace of the active channel, set by the CALC:PAR:SEL command
Parameter	<string> File name
Notes	If the full path of the file is not specified, the \Limit subdirectory of the application directory will be searched for the file. The limit table file has *.lim extension by default.
Equivalent Softkeys	Analysis > Limit Test > Edit Limit Line > Restore Limit Table

MMEM:LOAD:PLOS

MMEMory:LOAD:PLOsS <Pt> <string>

Description	Recalls the loss compensation file. The file must be saved by the MMEM:STOR:PLOS command. (no query)
Target	Port <Pt> of the active channel, set by the DISP:WIND:ACT command <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
Parameter	<string> File name
Notes	If the full path of the file is not specified, the \CalKit subdirectory of the application directory will be searched for the file. The loss compensation file has *.lct extension by default.
Equivalent Softkeys	Calibration > Power Calibration > Loss Compens > Import Loss Table

MMEM:LOAD:RLIM

MMEMory:LOAD:RLIMit <string>

Description	Recalls the ripple limit table file. The file must be saved by the MMEM:STOR:RLIM command. (no query)
Target	Active trace of the active channel, set by the CALC:PAR:SEL command
Parameter	<string> File name
Notes	If the full path of the file is not specified, the \Limit subdirectory of the application directory will be searched for the file. The ripple limit file has *.rlm extension by default.
Equivalent Softkeys	Analysis > Ripple Limit > Edit Ripple Limit > Restore Ripple Limit Table

MMEM:LOAD:SEGM

MMEMory:LOAD:SEGMent *<string>*

<i>Description</i>	Recalls the segment table file. The file must be saved by the MMEM:STOR:SEGM command. (no query)
<i>Target</i>	Active channel, set by the DISP:WIND:ACT command
<i>Parameter</i>	<string> File name
<i>Notes</i>	If the full path of the file is not specified, the \Segment subdirectory of the application directory will be searched for the file. The segment file has *.seg extension by default.
<i>Equivalent Softkeys</i>	Stimulus > Segment Table > Recall...

MMEM:LOAD:SNP

MMEMory:LOAD:SNP[:DATA] *<string>*

<i>Description</i>	Loads the Touchstone file with the specified name to the measured S-parameters of the active channel. The Touchstone file types 1, 2, 3 or 4 port (file extensions s1p, s2p, s3p or s4p) are supported. On completion of the command, the channel goes to the hold state. (no query)
<i>Target</i>	The active channel set by the command SCPI.DISPlay.WINDow(Ch).ACTivate.
<i>Parameter</i>	<string> File name
<i>Equivalent Softkeys</i>	Save/Recall > Load Data From Touchstone File > To S-parameters...

MMEM:LOAD:SNP:TRAC:MEM

MMEMory:LOAD:SNP:TRACe <Tr>:MEMory <string>

Description	<p>Loads the Touchstone file with the specified name to the memory trace. The Touchstone file types 1, 2, 3 or 4 port (file extensions s1p, s2p, s3p or s4p) are supported. The current measured S-parameter of data trace selects the appropriate S-parameter from the Touchstone file. After successful load the display of memory trace is automatically switched on.</p> <p>(no query)</p>
Target	<p>The specified memory trace <Tr> of active channel, <Tr>={1 2 ...16} Active channel set by the command SCPI.DISPlay.WINDow(Ch).ACTivate.</p>
Parameter	<p><string> File name</p>
Equivalent Softkeys	<p>Save/Recall > Load Data From Touchstone File > To Active Trace Memory...</p>

MMEM:MDIR

MMEMory:MDIRectory <string>

Description	<p>Creates a new directory.</p> <p>(no query)</p>
Parameter	<p><string> Directory full name</p>
Equivalent Softkeys	<p>None</p>

MMEM:STOR

MMEMory:STORe[:STATe] <string>

Description	Saves the Analyzer state into a file. (no query)
Parameter	<string> File name
Notes	If the full path of the file is not specified, the \State subdirectory of the application directory will be searched for the file. The state file has *.sta extension by default.
Equivalent Softkeys	Save/Recall > Save State > State...

MMEM:STOR:CHAN

MMEMory:STORe:CHANnel[:STATe] <char>

Description	Saves the Analyzer state of the items set for the active channel into one of the four memory registers. (no query)
Target	Active channel set by the DISP:WIND:ACT command
Parameter	<char> Choose from: A : Save to register A B : Save to register B C : Save to register C D : Save to register D
Equivalent Softkeys	Save/Recall > Save Channel > {State A B C D}

MMEM:STOR:CHAN:CAL

MMEMory:STORe:CHANnel<ch>:CALibration <string>

Description	Stores the calibration of the specified channel to the file. (no query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<string> File name
Note	If the full path of the file is not specified, the \State subdirectory of the application directory will be searched for the file. The Analyzer calibration file has *.cal extension by default.
Equivalent Softkeys	Save/Recall > Save Channel Calibration...

MMEM:STOR:CHAN:CLEAR

MMEMory:STORe:CHANnel:CLEar

Description	Clears the memory of the channel state saved by the MMEM:STOR:CHAN command. (no query)
Equivalent Softkeys	Save/Recall > Save Channel > Clear States

MMEM:STOR:CKIT

MMEMory:STORe:CKIT <Ck> <string>

Description	Saves the definition file for the calibration kit. (no query)
Target	Calibration kit <Ck>, <Ck>={ [1] 2 ... 50 }
Parameter	<string> File name
Notes	If the full path of the file is not specified, the \CalKit subdirectory of the application directory will be searched for the file. The calibration kit definition file has *.ckd extension by default.
Equivalent Softkeys	None

MMEM:STOR:FDAT

MMEMory:STORe:FDATa <string>

Description	Saves the CSV formatted data into a file. (no query)
Target	Active trace of the active channel, set by the CALC:PAR:SEL command
Parameter	<string> File name
Notes	If the full path of the file is not specified, the \CSV subdirectory of the application directory will be searched for the file. The file has *.csv extension by default.
Equivalent Softkeys	Save/Recall > Save Trace Data

MMEM:STOR:IMAG

MMEMory:STORe:IMAGe *<string>*

<i>Description</i>	Saves the display image in BMP or PNG format into a file. (no query)
<i>Parameter</i>	<string> File name
<i>Notes</i>	If the full path of the file is not specified, the \image subdirectory of the application directory will be searched for the file. If the file has *.png extension, the file had PNG format, in all the other cases the file has BMP format.
<i>Equivalent Softkeys</i>	System > Print > Print Windows > Save as...

MMEM:STOR:LIM

MMEMory:STORe:LIMit *<string>*

<i>Description</i>	Saves the limit table into a file. (no query)
<i>Target</i>	Active trace of the active channel, set by the CALC:PAR:SEL command
<i>Parameter</i>	<string> File name
<i>Notes</i>	If the full path of the file is not specified, the \Limit subdirectory of the application directory will be searched for the file. The file has *.lim extension by default.
<i>Equivalent Softkeys</i>	Analysis > Limit Test > Edit Limit Line > Save Limit Table

MMEM:STOR:PLOS

MMEMory:STORe:PLOsS <Pt> <string>

Description	Saves the loss compensation table into a file. (no query)
Target	Port <Pt> of the active channel, set by the DISP:WIND:ACT command <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
Parameter	<string> File name
Notes	If the full path of the file is not specified, the \CalKit subdirectory of the application directory will be searched for the file. The loss compensation file has *.lct extension by default.
Equivalent Softkeys	Calibration > Power Calibration > Loss Compen > Export Loss Table

MMEM:STOR:RLIM

MMEMory:STORe:RLIMit <string>

Description	Saves the ripple limit table into a file. (no query)
Target	Active trace of the active channel, set by the CALC:PAR:SEL command
Parameter	<string> File name
Notes	If the full path of the file is not specified, the \Limit subdirectory of the application directory will be searched for the file. The ripple limit file has *.rlm extension by default.
Equivalent Softkeys	Analysis > Ripple Limit > Edit Ripple Limit > Save Ripple Limit Table

MMEM:STOR:SEGM

MMEMory:STORe:SEGMENT <string>

Description	Save the segment table in a file. (no query)
Target	Active channel, set by the DISP:WIND:ACT command
Parameter	<string> File name
Notes	If the full path of the file is not specified, the \Segment subdirectory of the application directory will be searched for the file. The segment file has *.seg extension by default.
Equivalent Softkeys	Stimulus > Segment Table > Save...

MMEM:STOR:SNP

MMEMory:STORe:SNP[:DATA] <string>

Description	Saves the measured S-parameters of the active channel into a Touchstone file. The file type (1-port to 4-port) is set by the MMEM:STOR:SNP:TYPE:SxP command. (no query)
Target	Active channel, set by the DISP:WIND:ACT command
Parameter	<string> File name
Notes	If the full path of the file is not specified, the \FixtureSim subdirectory of the application directory will be searched for the file. The file has *.sNp extension by default.
Equivalent Softkeys	Save/Recall > Save Data to Touchstone File > Save File...

MMEM:STOR:SNP:FORM

MMEMory:STORe:SNP:FORMat <char>

MMEMory:STORe:SNP:FORMat?

Description	Sets the data format for the S-parameter saving by the MMEM:STOR:SNP command. (command/query)
Parameter	<char> Choose from: MA : Logarithmic Magnitude / Angle format DB : Linear Magnitude / Angle format RI : Real part /Imaginary part format
Query Response	{RI DB MA}
Preset Value	RI
Equivalent Softkeys	Save/Recall > Save Data to Touchstone File > Format

MMEM:STOR:SNP:SEP

MMEMory:STORe:SNP:SEParator <char>

MMEMory:STORe:SNP:SEParator?

<i>Description</i>	Sets the Touchstone file separator symbol when the S-parameters are saved by the MMEM:STOR:SNP command. (command/query)
<i>Parameter</i>	<char> Choose from: TAB : Tab symbol (0x09) SPACe : Space symbol (0x20)
<i>Query Response</i>	{TAB SPAC}
<i>Preset Value</i>	TAB
<i>Equivalent Softkeys</i>	Save/Recall > Save Data to Touchstone File > Separator

MMEM:STOR:SNP:TYPE?

MMEMory:STORe:SNP:TYPE?

<i>Description</i>	Reads out the type of Touchstone file (S1P, S2P, S3P or S4P) to will be used when saving S-parameters with the MMEM:STOR:SNP command. (query only)
<i>Query Response</i>	<string> {S1P S2P S3P S4P}
<i>Equivalent Softkeys</i>	Save/Recall > Save Data to Touchstone File > Type

MMEM:STOR:SNP:TYPE:S1P

MMEMory:STORe:SNP:TYPE:S1P *<port>*

MMEMory:STORe:SNP:TYPE:S1P?

<i>Description</i>	Sets the 1-port Touchstone file type (*.s1p) and the port number, when saving S-parameters by the MMEM:STOR:SNP command. (command/query)
<i>Parameter</i>	<i><port></i> port number from 1 to 2 (or 4 for S4 software)
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	1
<i>Equivalent Softkeys</i>	Save/Recall > Save Data to Touchstone File > Type > 1-Port (s1p) Save/Recall > Save Data to Touchstone File > Select Port

MMEM:STOR:SNP:TYPE:S2P

MMEMory:STORe:SNP:TYPE:S2P *<port1>*, *<port2>*

MMEMory:STORe:SNP:TYPE:S2P?

<i>Description</i>	Sets the 2-port Touchstone file type (*.s2p) and the port numbers, when saving S-parameters by the MMEM:STOR:SNP command. (command/query)
<i>Parameter</i>	<div> <div><port1></div> <div>First port number</div> </div> <div> <div><port2></div> <div>Second port number</div> </div> <div>port number must be from 1 to 2 (or 4 for S4 software)</div>
<i>Query Response</i>	<numeric1>,<numeric2>
<i>Equivalent Softkeys</i>	Save/Recall > Save Data to Touchstone File > Type > 2-Port (s2p) Save/Recall > Save Data to Touchstone File > Select Port (s2p)

MMEM:STOR:SNP:TYPE:S3P

MMEMory:STORe:SNP:TYPE:S3P <port1>, <port2>, <port3>

MMEMory:STORe:SNP:TYPE:S3P?

Description	Sets the 3-port Touchstone file type (*.s3p) and the port numbers, when saving S-parameters by the MMEM:STOR:SNP command. (command/query)
Parameter	<p><port1> First port number</p> <p><port2> Second port number</p> <p><port3> Third port number</p> <p>port number must be from 1 to 4 (S4 software only)</p>
Query Response	<numeric1>,<numeric2>,<numeric3>
Equivalent Softkeys	Save/Recall > Save Data to Touchstone File > Type > 3-Port (s3p) Save/Recall > Save Data to Touchstone File > Select Port (s3p)

MMEM:STOR:SNP:TYPE:S4P

MMEMory:STORe:SNP:TYPE:S4P <port1>, <port2>, <port3>, <port4>

MMEMory:STORe:SNP:TYPE:S4P?

Description	Sets the 4-port Touchstone file type (*.s4p) and the port numbers, when saving S-parameters by the MMEM:STOR:SNP command. (command/query)
Parameter	<p><port1> First port number</p> <p><port2> Second port number</p> <p><port3> Third port number</p> <p><port4> Fourth port number</p> <p>port number must be from 1 to 4 (S4 software only)</p>
Query Response	<numeric1>,<numeric2>,<numeric3>,<numeric4>
Equivalent Softkeys	Save/Recall > Save Data to Touchstone File > Type > 4-Port (s4p)

MMEM:STOR:STYP

MMEMory:STORe:STYPe <char>

MMEMory:STORe:STYPe?

<i>Description</i>	Selects the type of the Analyzer or channel state saving by the MMEM:STOR or MMEM:STOR:CHAN command. (command/query)
<i>Parameter</i>	<char> Choose from: STAt : Measurement conditions CSAt : Measurement conditions and calibration DSAt : Measurement conditions and data CDSt : Measurement conditions, calibration, data and memory CMSt : Measurement conditions, calibration and memory
<i>Query Response</i>	{STAT CST DST CDST CMST}
<i>Preset Value</i>	CST
<i>Equivalent Softkeys</i>	Save/Recall > Save Type

MMEM:TRAN?

MMEMory:TRANsfer? *<string>*

<i>Description</i>	Transfers the contents of a specified file from the Analyzer to the external computer. (command/query)
<i>Parameter</i>	<string> the file name with the full path
<i>Query Response</i>	Block data transfer format. For example: #6001000<binary block 1000 bytes> #6 Symbol # introduces the data block. The next number indicates how many of the following digits describe the length of the data block; 001000 Length of the data block;
<i>Notes</i>	The command is not applicable with the TCP/IP Socket protocol. The file must be 20 Mbytes or less.
<i>Equivalent Softkeys</i>	None

OUTP

OUTPut[:STATe] {OFF|ON|0|1}

OUTPut[:STATe]?

<i>Description</i>	Turns ON/OFF the RF signal output. Measurements cannot be performed when the RF signal output is turned OFF. (command/query)
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	1
<i>Equivalent Softkeys</i>	Stimulus > Power > RF Out

SENS: AVER

SENSe <Ch>:AVERage[:STATe] {OFF|ON|0|1}

SENSe <Ch>:AVERage[:STATe]?

<i>Description</i>	Turns ON/OFF the measurement averaging function. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Related Commands</i>	SENS:AVER:COUN
<i>Equivalent Softkeys</i>	Average > Averaging

SENS: AVER: CLE

SENSe <Ch>:AVERage:CLEar

<i>Description</i>	Restarts the averaging process, when the averaging function turned on. (no query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Related Commands</i>	SENS:AVER
<i>Equivalent Softkeys</i>	None

SENS:AVER:COUN

SENSe <Ch>:AVERage:COUNT <numeric>

SENSe <Ch>:AVERage:COUNT?

<i>Description</i>	Sets or reads out the averaging factor, when the averaging function turned on. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<numeric> the averaging factor from 1 to 999
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	10
<i>Related Commands</i>	SENS:AVER
<i>Equivalent Softkeys</i>	Average > Avg Factor

SENS:BAND

SENSe <Ch>:BANDwidth[:RESolution] <frequency>

SENSe <Ch>:BANDwidth[:RESolution]?

SENS:BWID

SENSe <Ch>:BWIDth[:RESolution] <frequency>

SENSe <Ch>:BWIDth[:RESolution]?

Description	Sets or reads out the IF bandwidth. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<frequency> the IF bandwidth value
Unit	Hz (Hertz)
Out of Range	Sets the value of the analyzer limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	10 kHz
Resolution	In steps of 1, 1.5, 2, 3, 5, 7
Equivalent Softkeys	Average > IF Bandwidth

SENS:CORR:CLEAR

SENSe <Ch>:CORRection:CLEAr

Description	Clears the calibration coefficient table. (no query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Equivalent Softkeys	None

SENS:CORR:COEF

SENSe <Ch>:CORRection:COEFFicient[:DATA] <char>, <rcvport>, <srcport>, <numeric list>

SENSe <Ch>:CORRection:COEFFicient[:DATA]? <char>, <rcvport>, <srcport>

Description	<p>Writes or reads out the calibration coefficient data array.</p> <p>The array size is 2N, where N is the number of measurement points. For the n-th point, where n from 1 to N:</p> <p><numeric 2n-1> real part of the calibration coefficients</p> <p><numeric 2n> imaginary part of the calibration coefficients</p> <p>(command/query)</p>
Target	<p>Channel <Ch>, <Ch>={1 2 ...16}</p>
Parameter	<p><char> Specifies the Error term:</p> <p>ER : Reflection tracking</p> <p>ED : Directivity</p> <p>ES : Source match</p> <p>ET : Transmission tracking</p> <p>EX : Isolation</p> <p>EL : Load match</p> <p><rcvport> the number of the receiver port from 1 to 2 (or 4)</p> <p><srcport> the number of the source port from 1 to 2 (or 4)</p> <p><numeric list> the calibration coefficient array</p> <p>When ES, ER, or ED is used, the numbers of the ports <rcvport> and <srcport> must be the same. When EL, ET, or EX is used, the numbers of the ports <rcvport> and <srcport> must be different.</p>
Query Response	<numeric 1>, <numeric 2>, ...<numeric 2N>
Notes	The written calibration coefficients become effective only after the SENS:CORR:COEF:SAVE command is executed.
Related Commands	SENS:CORR:COEF:SAVE
Equivalent Softkeys	None

SENS:CORR:COEF:METH:ERES

SENSe <Ch>:CORRection:COEFficient:METHod:ERESponse <rcvport>, <srcport>

Description	Selects the ports and sets the <i>1-path 2-port calibration</i> type, when the written calibration coefficients are made effective by the SENS:CORR:COEF:SAVE command. (no query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<rcvport> the number of the receiver port from 1 to 2 (or 4) <srcport> the number of the source port from 1 to 2 (or 4)
Out of Range	If the same port numbers are specified, an error occurs.
Related Commands	SENS:CORR:COEF:SAVE
Equivalent Softkeys	None

SENS:CORR:COEF:METH:OPEN

SENSe <Ch>:CORRection:COEFficient:METHod[:RESPonse]:OPEN <port>

Description	Selects the port and sets the <i>response calibration (Open)</i> type, when the written calibration coefficients are made effective by the SENS:CORR:COEF:SAVE command. (no query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<port> the number of the port from 1 to 2 (or 4)
Related Commands	SENS:CORR:COEF:SAVE
Equivalent Softkeys	None

SENS:CORR:COEF:METH:SHOR

SENSe <Ch>:CORRection:COEFFicient:METHod[:RESPonse]:SHORT <port>

Description	Selects the port and sets the <i>response calibration (Short)</i> type, when the written calibration coefficients are made effective by the SENS:CORR:COEF:SAVE command. (no query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<port> the number of the port from 1 to 2 (or 4)
Related Commands	SENS:CORR:COEF:SAVE
Equivalent Softkeys	None

SENS:CORR:COEF:METH:SOLT1

SENSe <Ch>:CORRection:COEFFicient:METHod:SOLT1 <port>

Description	Selects the port and sets the <i>full 1-port calibration</i> type, when the written calibration coefficients are made effective by the SENS:CORR:COEF:SAVE command. (no query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<port> the number of the port from 1 to 2 (or 4)
Related Commands	SENS:CORR:COEF:SAVE
Equivalent Softkeys	None

SENS:CORR:COEF:METH:SOLT2

SENSe <Ch>:CORRection:COEFFicient:METHod:SOLT2 <port1>, <port2>

Description	Selects the ports and sets the <i>full 2-port calibration</i> type, when the written calibration coefficients are made effective by the SENS:CORR:COEF:SAVE command. (no query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<port1> the first port number from 1 to 2 (or 4) <port2> the second port number from 1 to 2 (or 4)
Out of Range	If the same port numbers are specified, an error occurs.
Related Commands	SENS:CORR:COEF:SAVE
Equivalent Softkeys	None

SENS:CORR:COEF:METH:SOLT3

SENSe <Ch>:CORRection:COEFFicient:METHod:SOLT3 <port1>, <port2>, <port3>

Description	Selects the ports and sets the <i>full 3-port calibration</i> type, when the written calibration coefficients are made effective by the SENS:CORR:COEF:SAVE command. (no query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<port1> the first port number from 1 to 4 <port2> the second port number from 1 to 4 <port3> the third port number from 1 to 4
Out of Range	If the same port numbers are specified, an error occurs.
Related Commands	SENS:CORR:COEF:SAVE
Equivalent Softkeys	None

SENS:CORR:COEF:METH:SOLT4

SENSe <Ch>:CORRection:COEFFicient:METHod:SOLT4 <port1>, <port2>, <port3>, <port4>

Description	Selects the ports and sets the <i>full 4-port calibration</i> type, when the written calibration coefficients are made effective by the SENS:CORR:COEF:SAVE command. (no query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<port1> the first port number from 1 to 4 <port2> the second port number from 1 to 4 <port3> the third port number from 1 to 4 <port4> the fourth port number from 1 to 4
Out of Range	If the same port numbers are specified, an error occurs.
Related Commands	SENS:CORR:COEF:SAVE
Equivalent Softkeys	None

SENS:CORR:COEF:METH:THRU

SENSe <Ch>:CORRection:COEFFicient:METHod[:RESPonse]:THRU <rcvport>, <srcport>

Description	Selects the ports and sets the <i>response calibration (Thru)</i> type, when the written calibration coefficients are made effective by the SENS:CORR:COEF:SAVE command. (no query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<rcvport>, the number of the receiver port from 1 to 2 (or 4) <srcport>, the number of the source port from 1 to 2 (or 4)
Out of Range	If the same port numbers are specified, an error occurs.
Related Commands	SENS:CORR:COEF:SAVE
Equivalent Softkeys	None

SENS:CORR:COEF:SAVE

SENSe <Ch>:CORRection:COEFficient:SAVE

<i>Description</i>	<p>Enables the written calibration coefficients depending on the selected calibration type.</p> <p>On completion of the command the error correction automatically turns ON.</p> <p>At the attempt to execute this command before all the needed calibration coefficients are written, an error occurs and the command is ignored.</p> <p>(no query)</p>
<i>Target</i>	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
<i>Related Commands</i>	<p>Calibration type selection:</p> <p>SENS:CORR:COEF:METH:ERES SENS:CORR:COEF:METH:OPEN SENS:CORR:COEF:METH:SHOR SENS:CORR:COEF:METH:THRU SENS:CORR:COEF:METH:SOLT1 SENS:CORR:COEF:METH:SOLT2</p> <p>Calibration coefficient writing:</p> <p>SENS:CORR:COEF</p>
<i>Equivalent Softkeys</i>	None

SENS:CORR:COLL:ADAP:DEL

SENSe <Ch>:CORRection:COLLect:ADAPter:DELay <numeric>

SENSe <Ch>:CORRection:COLLect:ADAPter:DELay?

Description	<p>Sets or reads out the approximate delay value of an adapter in the adapter removal/insertion function. This value is used to eliminate the uncertainty of $\pm 180^\circ$ when calculating the phase response of the adapter.</p> <p>The sign of the value depends on the type of the removal / insertion function. The value must be negative for the adapter removal function and must be positive for the adapter insertion function.</p> <p>If this value is set to zero, the analyzer uses an algorithm to automatically determine the delay of the adapter. In most cases setting this value to zero is enough. Setting this value to non zero is required when:</p> $\text{Frequency Step} > \frac{1}{2\text{Delay}}$ <p>(command/query)</p>
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<numeric> the approximate delay value of the adapter (with minus sign when adapter is removed).
Unit	sec (Seconds)
Query Response	<numeric>
Preset Value	0
Note	<p>The delay and the length of the adapter can be set mutually.</p> $\text{Delay} = \frac{\text{Length} \sqrt{\text{Permittivity}}}{c}$
Equivalent Softkeys	Calibration > Calibrate > Adapter Removal / Insertion > Adapter Delay

SENS:CORR:COLL:ADAP:LENG

SENSe <Ch>:CORRection:COLLect:ADAPter:LENGth <numeric>

SENSe <Ch>:CORRection:COLLect:ADAPter:LENGth?

Description	<p>Sets or reads out the approximate value of the mechanical length of the adapter in the adapter removal/insertion function. This value is used to eliminate the uncertainty of $\pm 180^\circ$ when calculating the phase response of the adapter.</p> <p>The sign of the value depends on the type of the removal / insertion function. The value must be negative for the adapter removal function and must be positive for the adapter insertion function.</p> <p>If this value is set to zero, the analyzer uses an algorithm to automatically determine the delay of the adapter. In most cases setting this value to zero is enough. Setting this value to non zero is required when:</p> $\text{Frequency Step} > \frac{1}{2\text{Delay}}$ <p>(command/query)</p>
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<numeric> the approximate length of the adapter (with minus sign when adapter is removed).
Unit	M (Meters)
Query Response	<numeric>
Preset Value	0
Note	<p>The delay and the length of the adapter can be set mutually.</p> $\text{Delay} = \frac{\text{Length} \sqrt{\text{Permittivity}}}{c}$
Equivalent Softkeys	Calibration > Calibrate > Adapter Removal / Insertion > Adapter Delay

SENS:CORR:COLL:ADAP:UNIT

SENSe <Ch>:CORRection:COLLect:ADAPter:UNIT {SEConds|METers}

SENSe <Ch>:CORRection:COLLect:ADAPter:UNIT?

<i>Description</i>	Selects the display units of the adapter delay (length) in the adapter removal/insertion function. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ...16 }
<i>Parameter</i>	SEConds : Selects the seconds METers : Selects the meters
<i>Query Response</i>	{SEC MET}
<i>Preset Value</i>	SEConds
<i>Equivalent Softkeys</i>	Calibration > Calibrate > Adapter Removal / Insertion > Delay Unit

SENS:CORR:COLL:ADAP:MED

SENSe <Ch>:CORRection:COLLect:ADAPter:MEDia {COAXial|WAVeguide}

SENSe <Ch>:CORRection:COLLect:ADAPter:MEDia?

<i>Description</i>	Specifies the adapter media in the adapter removal/insertion function. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ...16 }
<i>Parameter</i>	COAXial : Specifies the coaxial adapter WAVeguide : Specifies the waveguide adapter
<i>Query Response</i>	{COAX WAV}
<i>Preset Value</i>	COAXial
<i>Note</i>	When the waveguide adapter is used it is recommended to specify the adapter length instead of delay.
<i>Equivalent Softkeys</i>	Calibration > Calibrate > Adapter Removal / Insertion > Adapter Media

SENS:CORR:COLL:ADAP:PERM

SENSe <Ch>:CORRection:COLLect:ADAPter:PERMittivity <numeric>

SENSe <Ch>:CORRection:COLLect:ADAPter:PERMittivity?

<i>Description</i>	<p>Sets or reads out the value of the permittivity of an adapter media in the adapter removal/insertion function.</p> <p>When setting the adapter length, this parameter is used to calculate the adapter delay; therefore this parameter must be set before setting of the adapter length. When setting the adapter delay, this parameter is not used.</p> <p>(command/query)</p>
<i>Target</i>	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
<i>Parameter</i>	<p><numeric> the value of the permittivity of an adapter</p>
<i>Query Response</i>	<p><numeric></p>
<i>Preset Value</i>	<p>1.000649 (air)</p>
<i>Equivalent Softkeys</i>	<p>Calibration > Calibrate > Adapter Removal / Insertion > Permittivity</p>

SENS:CORR:COLL:ADAP:WAV:CUT

SENSe <Ch>:CORRection:COLLect:ADAPter:WAVEguide:CUToff <numeric>

SENSe <Ch>:CORRection:COLLect:ADAPter:WAVEguide:CUToff?

Description	Sets or reads out the value of the cutoff frequency of the waveguide adapter. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ...16 }
Parameter	<numeric> the value of the cutoff frequency of the waveguide adapter.
Query Response	<numeric>
Preset Value	1.0 GHz
Equivalent Softkeys	Calibration > Calibrate > Adapter Removal / Insertion> Cutoff Frequency

SENS:CORR:COLL:METH:ADAP:REM

SENSe <Ch>:CORRection:COLLect:METHod:ADAPter:REMOval <port>

Description	Selects the port number and sets the <i>adapter removal/insertion function</i> for the calculation of the calibration coefficients when the SENS:CORR:COLL:SAVE command has been executed . (no query)
Target	Channel <Ch>, <Ch>={ [1] 2 ...16 }
Parameter	<port> the number of the port from 1 to 2 (4 for S4VNA)
Related Commands	SENS:CORR:COLL:SAVE
Equivalent Softkeys	Calibration > Calibrate > Adapter Removal / Insertion > Select Port

SENS:CORR:COLL:CKIT

SENSe:CORRection:COLLect:CKIT[:SElect] <numeric>

SENSe:CORRection:COLLect:CKIT[:SElect]?

<i>Description</i>	Sets or reads out the number of the selected calibration kit in the table of calibration kits. The selected calibration kit is used in the subsequent calibration and is used for editing by the commands SENS:CORR:COLL:CKIT:XXXX. (command/query)
<i>Parameter</i>	<numeric> the number of the calibration kit from 1 to 64
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	1
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Cal Kit n > Select

SENS:CORR:COLL:CKIT:DESC

SENSe:CORRection:COLLect:CKIT:DESCription <string>

SENSe:CORRection:COLLect:CKIT:DESCription?

<i>Description</i>	Sets or reads out the calibration kit description string. (command/query)
<i>Target</i>	Selected calibration kit
<i>Parameter</i>	<string>, up to 254 characters
<i>Query Response</i>	<string>
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Cal Kit n > Description

SENS:CORR:COLL:CKIT:LAB

SENSe:CORRection:COLLect:CKIT:LABel <string>

SENSe:CORRection:COLLect:CKIT:LABel?

Description	Sets or reads out the calibration kit label. (command/query)
Target	Selected calibration kit
Parameter	<string>, up to 254 characters
Query Response	<string>
Equivalent Softkeys	Calibration > Cal Kit > Cal Kit n > Label

SENS:CORR:COLL:CKIT:ORD:LOAD

SENSe:CORRection:COLLect:CKIT:ORDer:LOAD <port>, <numeric>

SENSe:CORRection:COLLect:CKIT:ORDer:LOAD? <port>

Description	Sets or reads out the number of the calibration standard of the load type, used for the measurement of the specified port. (command/query)
Target	Selected calibration kit
Parameter	<port> the number of the port from 1 to 2 (or 4) <numeric> the number of the calibration standard
Out of Range	If the specified standard number is greater than the number of standards in the kit, an error occurs. If the specified standard number is not the load standard number, an error occurs.
Query Response	<numeric>
Equivalent Softkeys	Calibration > Cal Kit > Specify CLSs > Load Port x (Row)

SENS:CORR:COLL:CKIT:ORD:OPEN

SENSe:CORRection:COLLect:CKIT:ORDer:OPEN <port>, <numeric>

SENSe:CORRection:COLLect:CKIT:ORDer:OPEN? <port>

<i>Description</i>	Sets or reads out the number of the calibration standard of the open type, used for the measurement of the specified port. (command/query)
<i>Target</i>	Selected calibration kit
<i>Parameter</i>	<port> the number of the port from 1 to 2 (or 4) <numeric> the number of the calibration standard
<i>Out of Range</i>	If the specified standard number is greater than the number of standards in the kit, an error occurs. If the specified standard number is not the open standard number, an error occurs.
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Specify CLSs > Open Port x (Row)

SENS:CORR:COLL:CKIT:ORD:SEL

SENSe:CORRection:COLLect:CKIT:ORDer:SElect <numeric>

SENSe:CORRection:COLLect:CKIT:ORDer:SElect?

<i>Description</i>	The subclass used to specify classes of calibration standards by the commands SENSe<Ch>:CORRection:COLLect:CKIT:ORDer:XXXX.
<i>Target</i>	Selected calibration kit
<i>Parameter</i>	<numeric> the subclass number from 1 to 8
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Specify CLSs > Subclass n (Column)

SENS:CORR:COLL:CKIT:ORD:SHOR

SENSe:CORRection:COLLect:CKIT:ORDer:SHORt <port>, <numeric>

SENSe:CORRection:COLLect:CKIT:ORDer:SHORt? <port>

<i>Description</i>	Sets or reads out the number of the calibration standard of the short type, used for the measurement of the specified port. (command/query)
<i>Target</i>	Selected calibration kit
<i>Parameter</i>	< port > the number of the port from 1 to 2 (or 4) < numeric > the number of the calibration standard
<i>Out of Range</i>	If the specified standard number is greater than the number of standards in the kit, an error occurs. If the specified standard number is not the short standard number, an error occurs.
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Specify CLSs > Short Port x (Row)

SENS:CORR:COLL:CKIT:ORD:THRU

SENSe:CORRection:COLLect:CKIT:ORDer:THRU <port1>, <port2>, <numeric>

SENSe:CORRection:COLLect:CKIT:ORDer:THRU? <port1>, <port2>

<i>Description</i>	Sets or reads out the number of the calibration standard of the thru type, used for the measurement between the <port1> and <port2> ports. (command/query)
<i>Target</i>	Selected calibration kit
<i>Parameter</i>	<p><port1> the number of the receiver port from 1 to 2 (or 4)</p> <p><port2> the number of the source port from 1 to 2 (or 4)</p> <p><numeric> the number of the calibration standard</p>
<i>Out of Range</i>	If the specified standard number is greater than the number of standards in the kit, an error occurs. If the specified standard number is not the thru standard number, an error occurs.
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Specify CLSs > Thru Port x-y (Row)

SENS:CORR:COLL:CKIT:ORD:TRLL

SENSe:CORRection:COLLect:CKIT:ORDer:TRLLine <port1>, <port2>, <numeric>

SENSe:CORRection:COLLect:CKIT:ORDer:TRLLine? <port1>, <port2>

<i>Description</i>	Sets or reads out the number of the calibration standard of the TRL line type, used for the measurement between the <port1> and <port2> ports. (command/query)
<i>Target</i>	Selected calibration kit
<i>Parameter</i>	<port1> the number of the receiver port from 1 to 2 (or 4) <port2> the number of the source port from 1 to 2 (or 4) <numeric> the number of the calibration standard
<i>Out of Range</i>	If the specified standard number is greater than the number of standards in the kit, an error occurs. If the specified standard number is not the thru standard number, an error occurs.
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Specify CLSs > TRL Line Port x-y (Row)

SENS:CORR:COLL:CKIT:ORD:TRLT

SENSe:CORRection:COLLect:CKIT:ORDer:TRLThru <port1>, <port2>, <numeric>

SENSe:CORRection:COLLect:CKIT:ORDer:TRLThru? <port1>, <port2>

<i>Description</i>	Sets or reads out the number of the calibration standard of the TRL thru type, used for the measurement between the <port1> and <port2> ports. (command/query)
<i>Target</i>	Selected calibration kit
<i>Parameter</i>	<port1> the number of the receiver port from 1 to 2 (or 4) <port2> the number of the source port from 1 to 2 (or 4) <numeric> the number of the calibration standard
<i>Out of Range</i>	If the specified standard number is greater than the number of standards in the kit, an error occurs. If the specified standard number is not the thru standard number, an error occurs.
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Specify CLSs > TRL Thru Port x-y (Row)

SENS:CORR:COLL:CKIT:ORD:TRLR

SENSe:CORRection:COLLect:CKIT:ORDer:TRLReflect <port>, <numeric>

SENSe:CORRection:COLLect:CKIT:ORDer:TRLReflect? <port>

<i>Description</i>	Sets or reads out the number of the calibration standard of the TRL Reflect type, used for the measurement of the specified port. (command/query)
<i>Target</i>	Selected calibration kit
<i>Parameter</i>	< port > the number of the port from 1 to 2 (or 4) < numeric > the number of the calibration standard
<i>Out of Range</i>	If the specified standard number is greater than the number of standards in the kit, an error occurs. If the specified standard number is not the open or short standard number, an error occurs.
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Specify CLSs > TRL Reflect Port x (Row)

SENS:CORR:COLL:CKIT:RES

SENSe:CORRection:COLLect:CKIT:RESet

<i>Description</i>	Resets the calibration kit to the factory settings. Restores the predefined calibration kit. Removes the user defined calibration kit. (no query)
<i>Target</i>	Selected calibration kit
<i>Equivalent Softkeys</i>	Calibration > Restore Cal Kit

SENS:CORR:COLL:CKIT:STAN:ARB

SENSe:CORRection:COLLect:CKIT:STAN <Std>:ARBitrary <numeric>

SENSe:CORRection:COLLect:CKIT:STAN <Std>:ARBitrary?

<i>Description</i>	Sets or reads out the value of the arbitrary impedance for the load standard. (command/query)
<i>Target</i>	Standard <Std> of the selected calibration kit, <Std>={ [1] 2 ...N }, where N – the number of the standards in the calibration kit
<i>Parameter</i>	<numeric> the arbitrary impedance value from –1E18 to 1E18
<i>Unit</i>	Ω (Ohm)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	50 or 75, depending on the selected calibration kit
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Define STDs > Terminal Impedance

SENS:CORR:COLL:CKIT:STAN:C0

SENSe:CORRection:COLLect:CKIT:STAN <Std>:C0 <numeric>

SENSe:CORRection:COLLect:CKIT:STAN <Std>:C0?

<i>Description</i>	Sets or reads out the C0 value for the open calibration standard. (command/query)
<i>Target</i>	Standard <Std> of the selected calibration kit, <Std>={ [1] 2 ... N }, where N – the number of the standards in the calibration kit
<i>Parameter</i>	<numeric> the C0 value from –1E18 to 1E18
<i>Unit</i>	1E–15 F (Farad)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Define STDs > C0 10⁻¹⁵ F

SENS:CORR:COLL:CKIT:STAN:C1

SENSe:CORRection:COLLect:CKIT:STAN <Std>:C1 <numeric>

SENSe:CORRection:COLLect:CKIT:STAN <Std>:C1?

<i>Description</i>	Sets or reads out the C1 value for the open calibration standard. (command/query)
<i>Target</i>	Standard <Std> of the selected calibration kit, <Std>={ [1] 2 ... N }, where N – the number of the standards in the calibration kit
<i>Parameter</i>	<numeric> the C1 value from $-1\text{E}18$ to $1\text{E}18$
<i>Unit</i>	$1\text{E}-27$ F/Hz (Farad/Hertz)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Define STDs > C1 10^{-27} F/Hz

SENS:CORR:COLL:CKIT:STAN:C2

SENSe:CORRection:COLLect:CKIT:STAN <Std>:C2 <numeric>

SENSe:CORRection:COLLect:CKIT:STAN <Std>:C2?

<i>Description</i>	Sets or reads out the C2 value for the open calibration standard. (command/query)
<i>Target</i>	Standard <Std> of the selected calibration kit, <Std>={ [1] 2 ... N }, where N – the number of the standards in the calibration kit
<i>Parameter</i>	<numeric> the C2 value from –1E18 to 1E18
<i>Unit</i>	1E–36 F/Hz ² (Farad/Hertz ²)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Define STDs > C2 10^{–36} F/Hz²

SENS:CORR:COLL:CKIT:STAN:C3

SENSe:CORRection:COLLect:CKIT:STAN <Std>:C3 <numeric>

SENSe:CORRection:COLLect:CKIT:STAN <Std>:C3 ?

<i>Description</i>	Sets or reads out the C3 value for the open calibration standard. (command/query)
<i>Target</i>	Standard <Std> of the selected calibration kit, <Std>={ [1] 2 ... N }, where N – the number of the standards in the calibration kit
<i>Parameter</i>	<numeric> the C3 value from –1E18 to 1E18
<i>Unit</i>	1E–45 F/Hz ³ (Farad/Hertz ³)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Define STDs > C3 10^{–45} F/Hz³

SENS:CORR:COLL:CKIT:STAN:DATA

SENSe:CORRection:COLLect:CKIT:STAN <Std>:DATA <numeric list>

SENSe:CORRection:COLLect:CKIT:STAN <Std>:DATA?

Description	<p>Writes or reads out the data array of the data-based calibration standard. The first element of the array is 1 or 2 and determines the number of ports of the calibration standard. The array format is as follows.</p> <p>When the first element of the array is 1 :</p> <p><1>,<freq1>,<S11.re1>,<S11.im1>, <freq2>,<S11.re2>,<S11.im2>, ... <freqN>,<S11.reN>,<S11.imN></p> <p>When the first element of the array is 2:</p> <p><2>,<freq1>,<S11.re1>,<S11.im1>,<S21.re1>,<S21.im1>, <S12.re1>,<S12.im1>,<S22.re1>,<S22.im1>, ... <freqN>,<S11.reN>,<S11.imN>,<S21.reN>,<S21.imN>, <S12.reN>,<S12.imN>,<S22.reN>,<S22.imN></p> <p>(command/query)</p>
Target	Standard <Std> of the selected calibration kit, <Std>={ [1] 2 ...N }, where N – the number of the standards in the calibration kit
Query Response	<numeric 1>,<numeric 2>,...<numeric N>
Equivalent Softkeys	Calibration > Cal Kit > Define STDs > Define STD Data

SENS:CORR:COLL:CKIT:STAN:DEL

SENSe:CORRection:COLLect:CKIT:STAN <Std>:DELay <numeric>

SENSe:CORRection:COLLect:CKIT:STAN <Std>:Delay?

<i>Description</i>	Sets or reads out the offset delay value for the calibration standard. (command/query)
<i>Target</i>	Standard <Std> of the selected calibration kit, <Std>={ [1] 2 ...N }, where N – the number of the standards in the calibration kit
<i>Parameter</i>	<numeric> the offset delay value form –1E18 to 1E18
<i>Unit</i>	sec (second)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Define STDs > Offset Delay

SENS:CORR:COLL:CKIT:STAN:FMAX

SENSe:CORRection:COLLect:CKIT:STAN <Std>:FMAXimum <numeric>

SENSe:CORRection:COLLect:CKIT:STAN <Std>:FMAXimum?

<i>Description</i>	Sets or reads out the maximum frequency limit of the calibration standard. (command/query)
<i>Target</i>	Standard <Std> of the selected calibration kit, <Std>={ [1] 2 ...N }, where N – the number of the standards in the calibration kit
<i>Parameter</i>	<numeric> the maximum frequency limit form 0 to 1E14
<i>Unit</i>	Hz (Hertz)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Define STDs -> F max

SENS:CORR:COLL:CKIT:STAN:FMIN

SENSe:CORRection:COLLect:CKIT:STAN <Std>:FMINimum <numeric>

SENSe:CORRection:COLLect:CKIT:STAN <Std>:FMINimum?

<i>Description</i>	Sets or reads out the minimum frequency limit of the calibration standard. (command/query)
<i>Target</i>	Standard <Std> of the selected calibration kit, <Std>={ [1] 2 ... N }, where N – the number of the standards in the calibration kit
<i>Parameter</i>	<numeric> the minimum frequency limit form 0 to 1E14
<i>Unit</i>	Hz
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Define STDs -> F min

SENS:CORR:COLL:CKIT:STAN:INS

SENSe:CORRection:COLLect:CKIT:STAN <Std>:INSert

<i>Description</i>	Inserts the calibration standard into the selected calibration kit. The existing standards with indices greater than or equal to <std> are shifted by +1. (no query)
<i>Target</i>	Standard <Std> of the selected calibration kit, <Std>={ [1] 2 ... N+1 }, where N – the number of the standards in the calibration kit
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Define STDs > Add STD

SENS:CORR:COLL:CKIT:STAN:L0

SENSe:CORRection:COLLect:CKIT:STAN <Std>:L0 <numeric>

SENSe:CORRection:COLLect:CKIT:STAN <Std>:L0?

<i>Description</i>	Sets or reads out the L0 value for the short calibration standard. (command/query)
<i>Target</i>	Standard <Std> of the selected calibration kit, <Std>={ [1] 2 ... N }, where N – the number of the standards in the calibration kit
<i>Parameter</i>	<numeric> the L0 value from –1E18 to 1E18
<i>Unit</i>	1E–12 H (Henry)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Define STDs > L0 10^{–12} H

SENS:CORR:COLL:CKIT:STAN:L1

SENSe:CORRection:COLLect:CKIT:STAN <Std>:L1 <numeric>

SENSe:CORRection:COLLect:CKIT:STAN <Std>:L1?

<i>Description</i>	Sets or reads out the L1 value for the short calibration standard. (command/query)
<i>Target</i>	Standard <Std> of the selected calibration kit, <Std>={ [1] 2 ... N }, where N – the number of the standards in the calibration kit
<i>Parameter</i>	<numeric> the L1 value from $-1\text{E}18$ to $1\text{E}18$
<i>Unit</i>	$1\text{E}-24$ H/Hz (Henry/Hertz)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Define STDs > L1 10^{-24} H/Hz

SENS:CORR:COLL:CKIT:STAN:L2

SENSe:CORRection:COLLect:CKIT:STAN <Std>:L2 <numeric>

SENSe:CORRection:COLLect:CKIT:STAN <Std>:L2 ?

<i>Description</i>	Sets or reads out the L2 value for the short calibration standard. (command/query)
<i>Target</i>	Standard <Std> of the selected calibration kit, <Std>={ [1] 2 ... N }, where N – the number of the standards in the calibration kit
<i>Parameter</i>	<numeric> the L2 value from –1E18 to 1E18
<i>Unit</i>	1E–33 H/Hz ² (Henry/Hertz ²)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Define STDs > L2 10^{–33} H/Hz²

SENS:CORR:COLL:CKIT:STAN:L3

SENSe:CORRection:COLLect:CKIT:STAN <Std>:L3 <numeric>

SENSe:CORRection:COLLect:CKIT:STAN <Std>:L3 ?

Description	Sets or reads out the L3 value for the short calibration standard. (command/query)
Target	Standard <Std> of the selected calibration kit, <Std>={ [1] 2 ... N }, where N – the number of the standards in the calibration kit
Parameter	<numeric> the L3 value from $-1\text{E}18$ to $1\text{E}18$
Unit	$1\text{E}-42 \text{ H/Hz}^3$ (Henry/Hertz ³)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Equivalent Softkeys	Calibration > Cal Kit > Define STDs > L3 10^{-42} H/Hz^3

SENS:CORR:COLL:CKIT:STAN:LAB

SENSe:CORRection:COLLect:CKIT:STAN <Std>:LABel <string>

SENSe:CORRection:COLLect:CKIT:STAN <Std>:LABel ?

Description	Sets or reads out the label for the calibration standard. (command/query)
Target	Standard <Std> of the selected calibration kit, <Std>={ [1] 2 ... N }, where N – the number of the standards in the calibration kit
Parameter	<string>, up to 254 characters
Query Response	<string>
Equivalent Softkeys	Calibration > Cal Kit > Define STDs -> {Open Short Load Thru/Delay} - > Label

SENS:CORR:COLL:CKIT:STAN:LOSS

SENSe:CORRection:COLLect:CKIT:STAN <Std>:LOSS <numeric>

SENSe:CORRection:COLLect:CKIT:STAN <Std>:LOSS?

<i>Description</i>	Sets or reads out the offset loss value for the calibration standard. (command/query)
<i>Target</i>	Standard <Std> of the selected calibration kit, <Std>={ [1] 2 ... N }, where N – the number of the standards in the calibration kit
<i>Parameter</i>	<numeric> the offset loss value from –1E18 to 1E18
<i>Unit</i>	Ω/s (Ohm/second)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Define STDs -> {Open Short Load Thru/Delay} - > Offset -> Loss

SENS:CORR:COLL:CKIT:STAN:REM

SENSe:CORRection:COLLect:CKIT:STAN <Std>:REMove

<i>Description</i>	Deletes the calibration standard into the selected calibration kit. The existing standards with indices greater than the <std> are shifted by –1. (no query)
<i>Target</i>	Standard <Std> of the selected calibration kit, <Std>={ [1] 2 ... N }, where N – the number of the standards in the calibration kit
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Define STDs > Delete STD

SENS:CORR:COLL:CKIT:STAN:TYPE

SENSe:CORRection:COLLect:CKIT:STAN <Std>:TYPE <char>

SENSe:CORRection:COLLect:CKIT:STAN <Std>:TYPE?

<i>Description</i>	Sets or reads out the type of calibration standard. (command/query)
<i>Target</i>	Standard <Std> of the selected calibration kit, <Std>={ [1] 2 ... N }, where N – the number of the standards in the calibration kit
<i>Parameter</i>	<char> Specifies the type of calibration standard: OPEN : Open SHORT : Short LOAD : Load THRU : Thru UTHR : Unknown Thru SLID : Sliding Load DATA : Data Based NONE : Not defined
<i>Query Response</i>	{ OPEN SHOR LOAD THRU UTHR SLID DATA NONE }
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Define STDs -> { Open Short Load Thru/Delay } - > STD Type

SENS:CORR:COLL:CKIT:STAN:Z0

SENSe:CORRection:COLLect:CKIT:STAN <Std>:Z0 <numeric>

SENSe:CORRection:COLLect:CKIT:STAN <Std>:Z0?

<i>Description</i>	Sets or reads out the offset Z0 value for the calibration standard. (command/query)
<i>Target</i>	Standard <Std> of the selected calibration kit, <Std>={ [1] 2 ... N }, where N – the number of the standards in the calibration kit
<i>Parameter</i>	<numeric> the offset Z0 value from –1E18 to 1E18
<i>Unit</i>	Ω (Ohm)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	50 or 75, depending on the selected calibration kit
<i>Equivalent Softkeys</i>	Calibration > Cal Kit > Define STDs -> {Open Short Load Thru/Delay} - > Offset -> Z0

SENS:CORR:COLL:CLE

SENSe <Ch>:CORRection:COLLect:CLEar

<i>Description</i>	Clears the measurement data of the calibration standards. (no query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Equivalent Softkeys</i>	<p>(S2VNA): Calibration > Calibrate > {Response (Open) Response (Short) Response (Thru) Full 1–Port Cal One Path 2–Port Cal Full 2–Port Cal 2–Port TRL Cal} > Cancel > OK</p> <p>(S4VNA): Calibration > Calibrate > {Response (Open) Response (Short) Response (Thru) 1–Port SOL Cal One Path 2–Port Cal 2–Port SOLT Cal 3–Port SOLT Cal 4–Port SOLT Cal 2–Port TRL Cal 3–Port TRL Cal 4–Port TRL Cal} > Cancel > OK</p>

SENS:CORR:COLL:DATA:ISOL

SENSe <Ch>:CORRection:COLLect:DATA:ISOLation <rcvport>, <srcport>, <numeric list>

SENSe <Ch>:CORRection:COLLect:DATA:ISOLation? <rcvport>, <srcport>

Description	<p>Writes or reads out the array of the isolation calibration measurement performed between the receiver port <rcvport> and the source port <srcport>.</p> <p>The array size is 2N, where N is the number of measurement points.</p> <p>For the n–th point, where n from 1 to N:</p> <p><numeric 2n–1> real part of the measurement</p> <p><numeric 2n> imaginary part of the measurement</p> <p>(command/query)</p>
Target	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
Parameter	<p><rcvport> the number of the receiver port from 1 to 2 (or 4)</p> <p><srcport> the number of the source port from 1 to 2 (or 4)</p> <p><numeric list> the isolation measurement data array</p>
Query Response	<numeric 1>, <numeric 2>, ... <numeric 2N>
Related Commands	SENS:CORR:COLL:ISOL
Equivalent Softkeys	None

SENS:CORR:COLL:DATA:LOAD

SENSe <Ch>:CORRection:COLLect:DATA:LOAD <port>, <numeric list>

SENSe <Ch>:CORRection:COLLect:DATA:LOAD? <port>

Description	<p>Writes or reads out the array of the <i>load</i> calibration standard measurement for the port <port>.</p> <p>The array size is 2N, where N is the number of measurement points.</p> <p>For the n-th point, where n from 1 to N:</p> <p><numeric 2n-1> real part of the measurement</p> <p><numeric 2n> imaginary part of the measurement</p> <p>(command/query)</p>
Target	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
Parameter	<p><port> the number of the port from 1 to 2 (or 4)</p> <p><numeric list> the data array of the <i>load</i> standard measurement</p>
Query Response	<numeric 1>, <numeric 2>, ... <numeric 2N>
Related Commands	SENS:CORR:COLL:LOAD
Equivalent Softkeys	None

SENS:CORR:COLL:DATA:OPEN

SENSe <Ch>:CORRection:COLLect:DATA:OPEN <port>, <numeric list>

SENSe <Ch>:CORRection:COLLect:DATA:OPEN? <port>

Description	<p>Writes or reads out the array of the <i>open</i> calibration standard measurement for the port <port>.</p> <p>The array size is 2N, where N is the number of measurement points.</p> <p>For the n-th point, where n from 1 to N:</p> <p><numeric 2n-1> real part of the measurement</p> <p><numeric 2n> imaginary part of the measurement</p> <p>(command/query)</p>
Target	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
Parameter	<p><port> the number of the port from 1 to 2 (or 4)</p> <p><numeric list> the data array of the <i>open</i> standard measurement</p>
Query Response	<numeric 1>, <numeric 2>, ... <numeric 2N>
Related Commands	SENS:CORR:COLL:OPEN
Equivalent Softkeys	None

SENS:CORR:COLL:DATA: SHOR

SENSe <Ch>:CORRection:COLLect:DATA:SHORT <port>, <numeric list>

SENSe <Ch>:CORRection:COLLect:DATA:SHORT? <port>

Description	<p>Writes or reads out the array of the <i>short</i> calibration standard measurements for the port <port>.</p> <p>The array size is 2N, where N is the number of measurement points.</p> <p>For the n-th point, where n from 1 to N:</p> <p><numeric 2n-1> real part of the measurement</p> <p><numeric 2n> imaginary part of the measurement</p> <p>(command/query)</p>
Target	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
Parameter	<p><port> the number of the port from 1 to 2 (or 4)</p> <p><numeric list> the data array of the <i>short</i> standard measurement</p>
Query Response	<numeric 1>, <numeric 2>, ... <numeric 2N>
Related Commands	SENS:CORR:COLL:SHOR
Equivalent Softkeys	None

SENS:CORR:COLL:DATA:THRU:MATC

SENSe <Ch>:CORRection:COLLect:DATA:THRU:MATCh <rcvport>, <srcport>, <numeric list>

SENSe <Ch>:CORRection:COLLect:DATA:THRU:MATCh? <rcvport>, <srcport>

Description	<p>Writes or reads out the array of the reflection measurement of the <i>thru</i> standard connected between the receiver port <rcvport> and the source port <srcport>.</p> <p>The array size is 2N, where N is the number of measurement points.</p> <p>For the n-th point, where n from 1 to N:</p> <p><numeric 2n-1> real part of the measurement</p> <p><numeric 2n> imaginary part of the measurement</p> <p>(command/query)</p>
Target	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
Parameter	<p><rcvport> the number of the receiver port from 1 to 2 (or 4)</p> <p><srcport> the number of the source port from 1 to 2 (or 4)</p> <p><numeric list> the data array of the reflection measurements using the <i>thru</i> standard</p>
Query Response	<numeric 1>, <numeric 2>, ... <numeric 2N>
Related Commands	SENS:CORR:COLL:THRU
Equivalent Softkeys	None

SENS:CORR:COLL:DATA:THRU:TRAN

SENSe <Ch>:CORRection:COLLect:DATA:THRU:TRANsmission <rcvport>, <srcport>, <numeric list>

SENSe <Ch>:CORRection:COLLect:DATA:THRU:TRANsmission? <rcvport>, <srcport>

Description	<p>Writes or reads out the array of the transmission measurement performed between the receiver port <rcvport> and the source port <srcport> using the <i>thru</i> standard.</p> <p>The array size is 2N, where N is the number of measurement points.</p> <p>For the n-th point, where n from 1 to N:</p> <p><numeric 2n-1> real part of the measurement</p> <p><numeric 2n> imaginary part of the measurement</p> <p>(command/query)</p>
Target	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
Parameter	<p><rcvport> the number of the receiver port from 1 to 2 (or 4)</p> <p><srcport> the number of the source port from 1 to 2 (or 4)</p> <p><numeric list> the data array of the transmission measurements using the <i>thru</i> standard</p>
Query Response	<numeric 1>, <numeric 2>, ... <numeric 2N>
Related Commands	SENS:CORR:COLL:THRU
Equivalent Softkeys	None

SENS:CORR:COLL:ECAL:CCH

SENSe <Ch>:CORRection:COLLect:ECAL:CCHeck[:ACQuire]

<i>Description</i>	<p>Executes the confidence check of the calibration coefficients of specified channel using the AutoCal module. (command only).</p> <p>The command sets the AutoCal Module to the special internal state, reads the S-parameters of this state from the AutoCal Module and sets memory traces so that they can be compared with actual measured data. Comparison is carried out visually by the user.</p>
<i>Target</i>	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
<i>Equivalent Softkeys</i>	Calibration > AutoCal > Confidence Check

SENS:CORR:COLL:ECAL:ERES

SENSe <Ch>:CORRection:COLLect:ECAL:ERESponse <rcvport>,<srcport>

<i>Description</i>	<p>Executes <i>one path 2-port calibration</i> between the specified 2 ports of specified channel using the AutoCal module (command only).</p>
<i>Target</i>	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
<i>Parameter</i>	<p><rcvport> the number of the receiver port from 1 to 2 (or 4)</p> <p><srcport> the number of the source port from 1 to 2 (or 4)</p>
<i>Equivalent Softkeys</i>	Calibration > AutoCal > One Path 2-Port Cal

SENS:CORR:COLL:ECAL:INF?

SENSe:CORRection:COLLect:ECAL:INFormation?

<i>Description</i>	Gets information of the AutoCal Module connected to the Network Analyzer. (query only)
<i>Target</i>	AutoCal Module
<i>Query Response</i>	The query returns information in a string with comma separated fields. Autocal Module Information: Model Name, Serial Number, Current Temperature of AutoCal Module, Selected Characterization Information: Characterization Name, Characterization Date and Time, Min Frequency, Max Frequency, Number of Points, Characterization Temperature, PortA Connector, PortB Connector, PortA Adapter, PortB Adapter, Analyzer, Location, Operator.
<i>Equivalent Softkeys</i>	Calibration > AutoCal > Characterization Info...

SENS:CORR:COLL:ECAL:ORI:EXEC

SENSe:CORRection:COLLect:ECAL:ORientation:EXECute

<i>Description</i>	Executes the Auto-Orientation procedure of the AutoCal Module. The AutoCal Module must be connected to the ports of Analyzer. (command)
<i>Target</i>	AutoCal Module
<i>Equivalent Softkeys</i>	Calibration > AutoCal > Orientation > Execute Auto-Orientation

SENS:CORR:COLL:ECAL:ORI:STAT

SENSe:CORRection:COLLect:ECAL:ORientation:STATe {OFF|ON|0|1}

SENSe:CORRection:COLLect:ECAL:ORientation:STATe?

<i>Description</i>	Turns ON/OFF the Auto-Orientation function when the AutoCal Module calibration is executed. (command/query)
<i>Target</i>	AutoCal Module
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Calibration > AutoCal > Orientation > Auto-Orientation

SENS:CORR:COLL:ECAL:PATH

SENSe:CORRection:COLLect:ECAL:PATH <numeric1>,<numeric2>

SENSe:CORRection:COLLect:ECAL:PATH? <numeric1>

<i>Description</i>	Sets or reads out the AutoCal module port number which is connected to a specified port of Network Analyzer. (command/query)
<i>Target</i>	AutoCal
<i>Parameter</i>	<numeric1> Network Analyzer Port Number, <numeric2> AutoCal Module Port Number: 1- Port A of AutoCal Module 2- Port B of AutoCal Module
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	Calibration > AutoCal > Orientation > Port n

SENS:CORR:COLL:ECAL:SOLT1

SENSe <Ch>:CORRection:COLLect:ECAL:SOLT1 <port>

<i>Description</i>	Executes 1-port calibration of the specified port of specified channel using the AutoCal module. (command only)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<port> : Port Number
<i>Equivalent Softkeys</i>	Calibration > AutoCal > 1-Port AutoCal > Port n

SENS:CORR:COLL:ECAL:SOLT2

SENSe <Ch>:CORRection:COLLect:ECAL:SOLT2 <port1>, <port2>

<i>Description</i>	Executes full 2-port calibration between the specified 2 ports of specified channel using the AutoCal module (command only).
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<port1> : Port Number <port2> : Port Number
<i>Equivalent Softkeys</i>	Calibration > AutoCal > 2-Port AutoCal

SENS:CORR:COLL:ECAL:SOLT3

SENSe <Ch>:CORRection:COLLect:ECAL:SOLT3 <port1>, <port2>, <port3>

<i>Description</i>	Executes full 3-port calibration between the specified 3 ports of specified channel using the AutoCal module (command only).
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<port1> : Port Number <port2> : Port Number <port3> : Port Number
<i>Equivalent Softkeys</i>	Calibration > AutoCal > 3-Port AutoCal > Port x-y-z Calibration > AutoCal > 3-Port Cal > 4-Port AutoCal Module

SENS:CORR:COLL:ECAL:SOLT4

SENSe <Ch>:CORRection:COLLect:ECAL:SOLT4 <port1>, <port2>, <port3>, <port4>

<i>Description</i>	Executes full 4-port calibration between the specified 4 ports of specified channel using the AutoCal module (command only).
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<port1> : Port Number <port2> : Port Number <port3> : Port Number <port4> : Port Number
<i>Equivalent Softkeys</i>	Calibration > AutoCal > 4-Port AutoCal Module

SENS:CORR:COLL:ECAL:UCH

SENSe:CORRection:COLLect:ECAL:UCHar <char>

SENSe:CORRection:COLLect:ECAL:UCHar?

<i>Description</i>	Sets or reads out the characterization number used when executing AutoCal (factory or user characterizations). (command/query)
<i>Target</i>	AutoCal
<i>Parameter</i>	<char> Specifies the stimulus type: CHAR0 : factory characterization CHAR1 : user characterization 1 CHAR2 : user characterization 2 CHAR3 : user characterization 3
<i>Query Response</i>	{CHAR0 CHAR1 CHAR2 CHAR3}
<i>Preset Value</i>	CHAR0
<i>Equivalent Softkeys</i>	Calibration > AutoCal > Characterization

SENS:CORR:COLL:ECAL:UTHR:STAT

SENSe:CORRection:COLLect:ECAL:UTHRu:STATe {OFF|ON|0|1}

SENSe:CORRection:COLLect:ECAL:UTHRu:STATe?

<i>Description</i>	Turns ON/OFF the Unknown Thru feature when the AutoCal Module calibration is executed. (command/query)
<i>Target</i>	AutoCal
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Note</i>	Planar 304/1 does not support this method.
<i>Equivalent Softkeys</i>	Calibration > AutoCal > Unkn Thru

SENS:CORR:COLL:ISOL

SENSe <Ch>:CORRection:COLLect[:ACQuire]:ISOLation <rcvport>, <srcport>

<i>Description</i>	Measures the isolation calibration data between the receiver port <rcvport> and the source port <srcport>. (no query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<rcvport> the number of the receiver port from 1 to 2 (or 4) <srcport> the number of the source port from 1 to 2 (or 4)
<i>Out of Range</i>	If the same port numbers are specified, an error occurs.
<i>Notes</i>	The command starts the measurement immediately if the trigger source for calibration set to the "Internal" by the command SENS:CORR:TRIG:FREE, otherwise waits for the trigger signal. The command blocks the execution of the subsequent commands until the completion of the measurement.
<i>Equivalent Softkeys</i>	Calibration > Calibrate > Response (Thru) > Isolation (Optional) Calibration > Calibrate > One Path 2-Port Cal > Isolation (Optional) Calibration > Calibrate > 2-Port SOLT Cal > Port 1-2 Isol (Optional) (S4VNA only): Calibration > Calibrate > 3-Port SOLT Cal > Isolation (Optional) > Port x-y Calibration > Calibrate > 4-Port SOLT Cal > Isolation (Optional) > Port x-y

SENS:CORR:COLL:LOAD

SENSe <Ch>:CORRection:COLLect[:ACQuire]:LOAD <port>

<i>Description</i>	Measures the calibration data of the <i>load</i> standard for the specified port. (no query)
<i>Target</i>	Channel <Ch>, <Ch>={1 2 ...16}
<i>Parameter</i>	<port> the number of the port from 1 to 2 (or 4)
<i>Notes</i>	The command starts the measurement immediately if the trigger source for calibration set to the "Internal" by the command SENS:CORR:TRIG:FREE, otherwise waits for the trigger signal. The command blocks the execution of the subsequent commands until the completion of the measurement.
<i>Equivalent Softkeys</i>	Calibration > Calibrate > Response (Open) > Load (Optional) Calibration > Calibrate > Response (Short) > Load (Optional) Calibration > Calibrate > 1–Port SOL Cal > Load Calibration > Calibrate > One Path 2–Port Cal > Load Calibration > Calibrate > 2–Port SOLT Cal > Port n Load (S4VNA only): Calibration > Calibrate > 3–Port SOLT Cal > Reflection (Port n) > Load Calibration > Calibrate > 4–Port SOLT Cal > Reflection (Port n) > Load

SENS:CORR:COLL:OPEN

SENSe <Ch>:CORRection:COLLect[:ACQuire]:OPEN <port>

Description	Measures the calibration data of the <i>open</i> standard for the specified port. (no query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<port> the number of the port from 1 to 2 (or 4)
Notes	The command starts the measurement immediately if the trigger source for calibration set to the "Internal" by the command SENS:CORR:TRIG:FREE, otherwise waits for the trigger signal. The command blocks the execution of the subsequent commands until the completion of the measurement.
Equivalent Softkeys	Calibration > Calibrate > Response (Open) > Open Calibration > Calibrate > Full 1–Port Cal > Open Calibration > Calibrate > One Path 2–Port Cal > Open Calibration > Calibrate > 2–Port SOLT Cal > Port n Open (S4VNA only): Calibration > Calibrate > 3–Port SOLT Cal > Reflection (Port n) > Open Calibration > Calibrate > 4–Port SOLT Cal > Reflection (Port n) > Open

SENS:CORR:COLL:SHOR

SENSe <Ch>:CORRection:COLLect[:ACQuire]:SHORT <port>

<i>Description</i>	Measures the calibration data of the <i>short</i> standard for the specified port. (no query)
<i>Target</i>	Channel <Ch>, <Ch>={1 2 ...16}
<i>Parameter</i>	<port> the number of the port from 1 to 2 (or 4)
<i>Notes</i>	The command starts the measurement immediately if the trigger source for calibration set to the "Internal" by the command SENS:CORR:TRIG:FREE, otherwise waits for the trigger signal. The command blocks the execution of the subsequent commands until the completion of the measurement.
<i>Equivalent Softkeys</i>	Calibration > Calibrate > Response (Short) > Short Calibration > Calibrate > Full 1–Port Cal > Short Calibration > Calibrate > One Path 2–Port Cal > Short Calibration > Calibrate > Full 2–Port Cal > Port n Short (S4VNA only): Calibration > Calibrate > 3–Port SOLT Cal > Reflection (Port n) > Short Calibration > Calibrate > 4–Port SOLT Cal > Reflection (Port n) > Short

SENS:CORR:COLL:THRU

SENSe <Ch>:CORRection:COLLect[:ACQuire]:THRU <rcvport>, <srcport>

Description	Measures the calibration data of the <i>thru</i> standard between the receiver port <rcvport> and the source port <srcport>. (no query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<rcvport> the number of the receiver port from 1 to 2 (or 4) <srcport> the number of the source port from 1 to 2 (or 4)
Out of Range	If the same port numbers are specified, an error occurs.
Notes	The command starts the measurement immediately if the trigger source for calibration set to the "Internal" by the command SENS:CORR:TRIG:FREE, otherwise waits for the trigger signal. The command blocks the execution of the subsequent commands until the completion of the measurement.
Equivalent Softkeys	Calibration > Calibrate > Response (Thru) > Thru Calibration > Calibrate > One Path 2-Port Cal > Thru Calibration > Calibrate > 2-Port SOLT Cal > Port 1-2 Thru (S4VNA only): Calibration > Calibrate > 3-Port SOLT Cal > Port x-y Thru Calibration > Calibrate > 4-Port SOLT Cal > Transmission > Port x-y Thru

SENS:CORR:COLL:TRLL

SENSe <Ch>:CORRection:COLLect[:ACQuire]:TRLLine <port1>, <port2>

<i>Description</i>	Measures the calibration data of the TRL line standard between the <port1> and the <port2>. (no query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<port1> the number of the port from 1 to 2 (or 4) <port2> the number of the port from 1 to 2 (or 4)
<i>Out of Range</i>	If the same port numbers are specified, an error occurs.
<i>Notes</i>	The command starts the measurement immediately if the trigger source for calibration set to the "Internal" by the command SENS:CORR:TRIG:FREE, otherwise waits for the trigger signal. The command blocks the execution of the subsequent commands until the completion of the measurement.
<i>Equivalent Softkeys</i>	Calibration > Calibrate > n-Port TRL Cal > Line/Match

SENS:CORR:COLL:TRLT

SENSe <Ch>:CORRection:COLLect[:ACQuire]:TRLThru <port1>, <port2>

Description	Measures the calibration data of the TRL thru standard between the <port1> and the <port2>. (no query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<port1> the number of the port from 1 to 2 (or 4) <port2> the number of the port from 1 to 2 (or 4)
Out of Range	If the same port numbers are specified, an error occurs.
Notes	The command starts the measurement immediately if the trigger source for calibration set to the "Internal" by the command SENS:CORR:TRIG:FREE, otherwise waits for the trigger signal. The command blocks the execution of the subsequent commands until the completion of the measurement.
Equivalent Softkeys	Calibration > Calibrate > n-Port TRL Cal > Thru/Line

SENS:CORR:COLL:TRLR

SENSe <Ch>:CORRection:COLLect[:ACQuire]:TRLReflect <port>

Description	Measures the calibration data of the <i>TRL reflect</i> standard for the specified port. (no query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<port> the number of the port from 1 to 2 (or 4)
Notes	The command starts the measurement immediately if the trigger source for calibration set to the "Internal" by the command SENS:CORR:TRIG:FREE, otherwise waits for the trigger signal. The command blocks the execution of the subsequent commands until the completion of the measurement.
Equivalent Softkeys	Calibration > Calibrate > n-Port TRL Cal > Reflect

SENS:CORR:COLL:SUBC

SENSe <Ch>:CORRection:COLLect[:ACQuire]:SUBClass <numeric>

SENSe <Ch>:CORRection:COLLect[:ACQuire]:SUBClass?

Description	Selects the subclass number of calibration standard used for measurement by the subsequent command SENS:CORR:COLL:XXXX. If the calibration kit contains several calibration standards of the same type, say SHORTs, this allows select the particular SHORT. The subclasses must be set in advance by the commands SENS:CORR:COLL:CKIT:ORD:XXXX or in the user interface “Specify Classes”.
Target	Calibration kit, selected for channel <Ch>, <Ch>={1 2 ...16}
Parameter	<numeric> the subclass number from 1 to 8
Query Response	<numeric>
Preset Value	1
Equivalent Softkeys	None

SENS:CORR:COLL:METH:ERES

SENSe <Ch>:CORRection:COLLect:METHod:ERESponse <rcvport>,<srcport>

Description	Selects the ports and sets the <i>one path 2-port calibration</i> type for the calculation of the calibration coefficients on completion of the calibration executed by the SENS:CORR:COLL:SAVE command. (no query)
Target	Channel <Ch>, <Ch>={1 2 ...16}
Parameter	<rcvport> the number of the receiver port from 1 to 2 (or 4) <srcport> the number of the source port from 1 to 2 (or 4)
Out of Range	If the same port numbers are specified, an error occurs.
Related Commands	SENS:CORR:COLL:SAVE
Equivalent Softkeys	Calibration > Calibrate > One Path 2-Port Cal > Select Port

SENS:CORR:COLL:METH:OPEN

SENSe <Ch>:CORRection:COLLect:METHod[:RESPonse]:OPEN <port>

<i>Description</i>	Selects the port and sets the <i>response calibration (Open)</i> type for the calculation of the calibration coefficients on completion of the calibration executed by the SENS:CORR:COLL:SAVE command. (no query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<port> the number of the port from 1 to 2 (or 4)
<i>Related Commands</i>	SENS:CORR:COLL:SAVE
<i>Equivalent Softkeys</i>	Calibration > Calibrate > Response (Open) > Select Port

SENS:CORR:COLL:METH: SHOR

SENSe <Ch>:CORRection:COLLect:METHod[:RESPonse]:SHORT <port>

<i>Description</i>	Selects the port and sets the <i>response calibration (Short)</i> type for the calculation of the calibration coefficients on completion of the calibration executed by the SENS:CORR:COLL:SAVE command. (no query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<port> the number of the port from 1 to 2 (or 4)
<i>Related Commands</i>	SENS:CORR:COLL:SAVE
<i>Equivalent Softkeys</i>	Calibration > Calibrate > Response (Short) > Select Port

SENS:CORR:COLL:METH:SOLT1

SENSe <Ch>:CORRection:COLLect:METHod:SOLT1 <port>

Description	Selects the port and sets the <i>full 1-port calibration</i> type for the calculation of the calibration coefficients on completion of the calibration executed by the SENS:CORR:COLL:SAVE command. (no query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<port> the number of the port from 1 to 2 (or 4)
Related Commands	SENS:CORR:COLL:SAVE
Equivalent Softkeys	Calibration > Calibrate > Full 1-Port Cal > Select Port

SENS:CORR:COLL:METH:SOLT2

SENSe <Ch>:CORRection:COLLect:METHod:SOLT2 <port1>, <port2>

Description	Selects the ports and sets the <i>full 2-port calibration</i> type for the calculation of the calibration coefficients on completion of the calibration executed by the SENS:CORR:COLL:SAVE command. (no query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<port1> the first port number from 1 to 2 (or 4) <port2> the second port number from 1 to 2 (or 4)
Out of Range	If the same port numbers are specified, an error occurs.
Related Commands	SENS:CORR:COLL:SAVE
Equivalent Softkeys	Calibration > Calibrate > 2-Port SOLT Cal (S4VNA): Calibration > Calibrate > 2-Port SOLT Cal > Select Ports {x-y}

SENS:CORR:COLL:METH:SOLT3

SENSe <Ch>:CORRection:COLLect:METHod:SOLT3 <port1>, <port2>, <port3>

Description	Selects the ports and sets the <i>full 3-port calibration</i> type for the calculation of the calibration coefficients on completion of the calibration executed by the SENS:CORR:COLL:SAVE command. (no query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<port1> the first port number from 1 to 4 <port2> the second port number from 1 to 4 <port3> the third port number from 1 to 4
Out of Range	If the same port numbers are specified, an error occurs.
Related Commands	SENS:CORR:COLL:SAVE
Equivalent Softkeys	Calibration > Calibrate > 3-Port SOLT Cal > Select Ports {x-y-z}

SENS:CORR:COLL:METH:SOLT4

SENSe <Ch>:CORRection:COLLect:METHod:SOLT4 <port1>, <port2>, <port3>, <port4>

Description	Selects the ports and sets the <i>full 4-port calibration</i> type for the calculation of the calibration coefficients on completion of the calibration executed by the SENS:CORR:COLL:SAVE command. (no query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<port1> the first port number from 1 to 4 <port2> the second port number from 1 to 4 <port3> the third port number from 1 to 4 <port4> the fourth port number from 1 to 4
Out of Range	If the same port numbers are specified, an error occurs.
Related Commands	SENS:CORR:COLL:SAVE
Equivalent Softkeys	Calibration > Calibrate > 4-Port SOLT Cal

SENS:CORR:COLL:METH:THRU

SENSe <Ch>:CORRection:COLLect:METHod[:RESPonse]:THRU <rcvport>, <srcport>

Description	Selects the ports and sets the <i>response calibration (Thru)</i> type for the calculation of the calibration coefficients on completion of the calibration executed by the SENS:CORR:COLL:SAVE command. (no query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<rcvport> the number of the receiver port from 1 to 2 (or 4) <srcport> the number of the source port from 1 to 2 (or 4)
Out of Range	If the same port numbers are specified, an error occurs.
Related Commands	SENS:CORR:COLL:SAVE
Equivalent Softkeys	Calibration > Calibrate > Response (Thru) > Select Port {x-y}

SENS:CORR:COLL:METH:TRL2

SENSe <Ch>:CORRection:COLLect:METHod:TRL2 <port1>, <port2>

<i>Description</i>	Selects the ports and sets the <i>2-port TRL calibration</i> type for the calculation of the calibration coefficients on completion of the calibration executed by the SENS:CORR:COLL:SAVE command. (no query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<port1> the first port number from 1 to 2 (or 4) <port2> the second port number from 1 to 2 (or 4)
<i>Out of Range</i>	If the same port numbers are specified, an error occurs.
<i>Related Commands</i>	SENS:CORR:COLL:SAVE
<i>Equivalent Softkeys</i>	Calibration > Calibrate > 2-Port TRL Cal (S4VNA): Calibration > Calibrate > 2-Port TRL Cal > Select Ports {x-y}

SENS:CORR:COLL:METH:TRL3

SENSe <Ch>:CORRection:COLLect:METHod:TRL3 <port1>, <port2>, <port3>

<i>Description</i>	Selects the ports and sets the <i>3-port TRL calibration</i> type for the calculation of the calibration coefficients on completion of the calibration executed by the SENS:CORR:COLL:SAVE command. (no query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<port1> the first port number from 1 to 4 <port2> the second port number from 1 to 4 <port3> the third port number from 1 to 4
<i>Out of Range</i>	If the same port numbers are specified, an error occurs.
<i>Related Commands</i>	SENS:CORR:COLL:SAVE
<i>Equivalent Softkeys</i>	Calibration > Calibrate > 3-Port TRL Cal > Select Ports {x-y-z}

SENS:CORR:COLL:METH:TRL4

SENSe <Ch>:CORRection:COLLect:METHod:TRL4 <port1>, <port2>, <port3>, <port4>

<i>Description</i>	Selects the ports and sets the <i>4-port TRL calibration</i> type for the calculation of the calibration coefficients on completion of the calibration executed by the SENS:CORR:COLL:SAVE command. (no query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<port1> the first port number from 1 to 4 <port2> the second port number from 1 to 4 <port3> the third port number from 1 to 4 <port4> the fourth port number from 1 to 4
<i>Out of Range</i>	If the same port numbers are specified, an error occurs.
<i>Related Commands</i>	SENS:CORR:COLL:SAVE
<i>Equivalent Softkeys</i>	Calibration > Calibrate > 4-Port TRL Cal

SENS:CORR:COLL:METH:TYPE?

SENSe <Ch>:CORRection:COLLect:METHod:TYPE?

<i>Description</i>	Reads out the calibration type selected for the calculation of the calibration coefficients on completion of the calibration executed by the SENS:CORR:COLL:SAVE command. (query only)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Query Response</i>	RESPO : Response (Open) RESPS : Response (Short) RESPT : Response (Thru) SOLT1 : Full 1–port calibration SOLT2 : Full 2–port calibration 1PATH : One path 2–port calibration NONE : Not defined
<i>Equivalent Softkeys</i>	None

SENS:CORR:COLL:SAVE

SENSe <Ch>:CORRection:COLLect:SAVE

<i>Description</i>	<p>Calculates the calibration coefficients from the calibration standards measurements depending on the selected calibration type. The calibration type is selected by one of commands SENS:CORR:COLL:METH:XXXX.</p> <p>On completion of the command, all the calibration standards measurements are cleared and the error correction automatically turns ON.</p> <p>At the attempt to execute this command before all the needed standards are measured, an error occurs and the command is ignored.</p> <p>(no query)</p>
<i>Target</i>	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
<i>Related Commands</i>	<p>Calibration type selection: SENS:CORR:COLL:METH:XXXX</p> <p>Calibration standards measurement: SENS:CORR:COLL:ISOL SENS:CORR:COLL:LOAD SENS:CORR:COLL:OPEN SENS:CORR:COLL:SHOR SENS:CORR:COLL:THRU SENS:CORR:COLL:TRLT SENS:CORR:COLL:TRLL SENS:CORR:COLL:TRLR</p>
<i>Equivalent Softkeys</i>	<p>Calibration > Calibrate > {Response (Open) Response (Short) Response (Thru) 1-Port SOL Cal One Path 2-Port Cal n-Port SOLT Cal n-Port TRL Cal} > Apply</p>

SENS:CORR:COLL:SIMP:SAVE

SENSe <Ch>:CORRection:COLLect:SIMPlied:SAVE

<i>Description</i>	<p>Calculates the calibration coefficients for the simplified 3 or 4 port calibration from the calibration standards measurements when the 3 or 4 port calibration is selected as the calibration type. The calibration type is selected by one of commands SENS:CORR:COLL:METH:SOLT3/SOLT4/TRL3/TRL4.</p> <p>The simplified 3 port calibration allows omit one THRU measurement. The simplified 4 port calibration allows omit up to three THRU measurements.</p> <p>If full set of calibration standard measurement is made this command behaves like the SENS:CORR:COLL:SAVE command.</p> <p>(no query)</p>
<i>Target</i>	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
<i>Related Commands</i>	<p>Calibration type selection:</p> <p>SENS:CORR:COLL:METH:SOLT3 SENS:CORR:COLL:METH:SOLT4 SENS:CORR:COLL:METH:TRL3 SENS:CORR:COLL:METH:TRL4</p> <p>Calibration standards measurement:</p> <p>SENS:CORR:COLL:ISOL SENS:CORR:COLL:LOAD SENS:CORR:COLL:OPEN SENS:CORR:COLL:SHOR SENS:CORR:COLL:THRU SENS:CORR:COLL:TRLT SENS:CORR:COLL:TRLL SENS:CORR:COLL:TRLR</p>
<i>Equivalent Softkeys</i>	<p>Calibration > Calibrate > {n-Port SOLT Cal n-Port TRL Cal} > Apply</p>

SENS:CORR:COLL:THRU:ADD:DEL

SENSe <Ch>:CORRection:COLLect:THRU:ADDition:DELay <numeric>

SENSe <Ch>:CORRection:COLLect:THRU:ADDition:DELay?

Description	<p>Sets or reads out the approximate delay value of an unknown thru in the thru addition function. This value is used to eliminate the uncertainty of $\pm 180^\circ$ when calculating the phase response of the thru.</p> <p>If this value is set to zero, the analyzer uses an algorithm to automatically determine the delay of the thru. In most cases setting this value to zero is enough. Setting this value to non zero is required when:</p> $Frequency\ Step > \frac{1}{2Delay}$ <p>(command/query)</p>
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<numeric> the approximate delay value of the thru.
Unit	sec (Seconds)
Query Response	<numeric>
Preset Value	0
Note	<p>The delay and the length of the thru can be set mutually.</p> $Delay = \frac{Length \sqrt{Permittivity}}{C}$
Equivalent Softkeys	Calibration > Calibrate > Thru Addition > Thru Delay

SENSe:CORR:COLL:THRU:ADD:LENG

SENSe <Ch>:CORRection:COLLect:THRU:ADDition:LENGth <numeric>

SENSe <Ch>:CORRection:COLLect:THRU:ADDition:LENGth?

Description	<p>Sets or reads out the approximate value of the mechanical length of an unknown thru in the thru addition function. This value is used to eliminate the uncertainty of $\pm 180^\circ$ when calculating the phase response of the thru.</p> <p>If this value is set to zero, the analyzer uses an algorithm to automatically determine the delay of the thru. In most cases setting this value to zero is enough. Setting this value to non zero is required when:</p> $\text{Frequency Step} > \frac{1}{2\text{Delay}}$ <p>(command/query)</p>
Target	Channel <Ch>, <Ch>={1 2 ...16}
Parameter	<numeric> the approximate value of the thru length .
Unit	m (Meters)
Query Response	<numeric>
Preset Value	0
Note	<p>The delay and the length of the thru can be set mutually.</p> $\text{Delay} = \frac{\text{Length} \sqrt{\text{Permittivity}}}{C}$
Equivalent Softkeys	Calibration > Calibrate > Thru Addition > Thru Delay

SENS:CORR:COLL:THRU:ADD:UNIT

SENSe <Ch>:CORRection:COLLect:THRU:ADDition:UNIT {SEConds|METers}

SENSe <Ch>:CORRection:COLLect:THRU:ADDition:UNIT?

<i>Description</i>	Selects the display units of the thru delay (length) in the thru addition function. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	SEConds : Selects the seconds METers : Selects the meters
<i>Query Response</i>	{SEC MET}
<i>Preset Value</i>	SEConds
<i>Equivalent Softkeys</i>	Calibration > Calibrate > Thru Addition > Delay Unit

SENS:CORR:COLL:THRU:ADD:MED

SENSe <Ch>:CORRection:COLLect:THRU:ADDition:MEDia {COAXial|WAVeguide}

SENSe <Ch>:CORRection:COLLect:THRU:ADDition:MEDia?

<i>Description</i>	Specifies the media of the thru in the thru addition function. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	COAXial : Specifies the coaxial WAVeguide : Specifies the waveguide
<i>Query Response</i>	{COAX WAV}
<i>Preset Value</i>	COAXial
<i>Note</i>	When the waveguide adapter is used it is recommended to specify the thru length instead of its delay.
<i>Equivalent Softkeys</i>	Calibration > Calibrate > Thru Addition > Thru Media

SENS:CORR:COLL:THRU:ADD:PERM

SENSe <Ch>:CORRection:COLLect:THRU:ADDition:PERMittivity <numeric>

SENSe <Ch>:CORRection:COLLect:THRU:ADDition:PERMittivity?

<i>Description</i>	<p>Sets or reads out the value of the permittivity of the thru media in the thru addition function.</p> <p>This parameter is used to calculate the adapter delay when the thru length is setting; therefore this parameter must be set before setting of the thru length.</p> <p>(command/query)</p>
<i>Target</i>	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
<i>Parameter</i>	<numeric> the value of the permittivity of the thru
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	1.000649 (air)
<i>Equivalent Softkeys</i>	Calibration > Calibrate > Thru Addition > Permittivity

SENS:CORR:COLL:THRU:ADD:WAV:CUT

SENSe <Ch>:CORRection:COLLect:THRU:ADDition:WAVeguide:CUToff <numeric>

SENSe <Ch>:CORRection:COLLect:THRU:ADDition:WAVeguide:CUToff?

Description	Sets or reads out the value of the cutoff frequency of the waveguide thru in the thru addition function. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ...16 }
Parameter	<numeric> the value of the cutoff frequency of the waveguide thru.
Query Response	<numeric>
Preset Value	1.0 GHz
Equivalent Softkeys	Calibration > Calibrate > Thru Addition > Cutoff Frequency

SENS:CORR:COLL:THRU:ADD:FULL2:COMP

SENSe <Ch>:CORRection:COLLect:THRU:ADDition:FULL2:COMPLete <port1>, <port2>

<i>Description</i>	<p>Completes the full 2-port calibration between the specified ports provided that each port was calibrated using full 1-port calibration:</p> <ul style="list-style-type: none"> • Measures an arbitrary thru between the ports; • Calculates the error terms Et and El using the unknown thru algorithm; • Saves the Et and El error terms to the existing calibration getting the full 2-port calibration from the two 1-port calbrations. <p>If the full 2-port calibration already existed between the specified ports, updates the Et and El error terms.</p> <p>(no query)</p>
<i>Target</i>	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
<i>Parameter</i>	<p><port1> the first port number from 1 to 4</p> <p><port2> the second port number from 1 to 4</p>
<i>Equivalent Softkeys</i>	Calibration > Calibrate > Thru Addition > Comlete 2-Port Calibration

SENS:CORR:COLL:THRU:ADD:FULL3:PORT

SENSe <Ch>:CORRection:COLLect:THRU:ADDition:FULL3:PORTs
<port1>, <port2>, <port3>

SENSe <Ch>:CORRection:COLLect:THRU:ADDition:FULL3:PORTs?

<i>Description</i>	Selects the ports to complete the 3-port calibration in the thru addition function. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<port1> the first port number from 1 to 4 <port2> the second port number from 1 to 4 <port3> the third port number from 1 to 4
<i>Related Commands</i>	SENS:CORR:COLL:THRU:ADD:FULL3:COMP
<i>Equivalent Softkeys</i>	Calibration > Calibrate > Thru Addition > Complete 3-Port Calibration > Select Ports {x-y-z}

SENS:CORR:COLL:THRU:ADD:FULL3:ACQ

SENSe <Ch>:CORRection:COLLect:THRU:ADDition:FULL3:ACQuire <port1>, <port2>

<i>Description</i>	Measures an arbitrary thru between the specified ports. The measurements are used to complete the 3-port calibration in the thru addition function by the command SENS:CORR:COLL:THRU:ADD:FULL3:COMP. (no query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<port1> the first port number from 1 to 4 <port2> the second port number from 1 to 4
<i>Equivalent Softkeys</i>	Calibration > Calibrate > Thru Addition > Complete 3-Port Calibration > Thru {m-n}

SENS:CORR:COLL:THRU:ADD:FULL3:COMP

SENSe <Ch>:CORRection:COLLect:THRU:ADDition:FULL3:COMPLete

<i>Description</i>	<p>Completes the full 3-port calibration between the ports specified by the command SENS:CORR:COLL:THRU:ADD:FULL3:PORT. The ports must be calibrated using the full 1-port calibration in advance. The necessary number of the thru measurement must be accomplished by the command SENS:CORR:COLL:THRU:ADD:FULL3:ACQ.</p> <p>This command calculates the error terms Et and El using the unknown thru algorithm. Then it saves the Et and El error terms to the existing calibration getting the full 3-port calibration from the three 1-port calibrations.</p> <p>If the full 3-port calibration already existed, updates the Et and El error terms.</p> <p>(no query)</p>
<i>Target</i>	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
<i>Equivalent Softkeys</i>	<p>Calibration > Calibrate > Thru Addition > Complete 3-Port Calibration > Apply</p>

SENS:CORR:COLL:THRU:ADD:FULL4:ACQ

SENSe <Ch>:CORRection:COLLect:THRU:ADDition:FULL4:ACQuire <port1>,<port2>

<i>Description</i>	<p>Measures an arbitrary thru between the specified ports. The measurements are used to complete the 4-port thru addition function by the command SENS:CORR:COLL:THRU:ADD:FULL4:COMP.</p> <p>(no query)</p>
<i>Target</i>	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
<i>Parameter</i>	<p><port1> the first port number from 1 to 4</p> <p><port2> the second port number from 1 to 4</p>
<i>Equivalent Softkeys</i>	<p>Calibration > Calibrate > Thru Addition > Complete 4-Port Calibration > Thru {m-n}</p>

SENS:CORR:COLL:THRU:ADD:FULL4:COMP

SENSe <Ch>:CORRection:COLLect:THRU:ADDition:FULL4:COMPLete

<i>Description</i>	<p>Completes the full 4-port calibration. The ports must be calibrated using the full 1-port calibration in advance. The necessary number of the thru measurement must be accomplished by the command SENS:CORR:COLL:THRU:ADD:FULL4:ACQ.</p> <p>This command calculates the error terms Et and El using the unknown thru algorithm. Then it saves the Et and El error terms to the existing calibration getting the full 4-port calibration from the four 1-port calibrations.</p> <p>If the full 4-port calibration already existed, updates the Et and El error terms.</p> <p>(no query)</p>
<i>Target</i>	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
<i>Equivalent Softkeys</i>	Calibration > Calibrate > Thru Addition > Complete 4-Port Calibration > Apply

SENS:CORR:EXT

SENSe <Ch>:CORRection:EXTension[:STATe] {OFF|ON|0|1}

SENSe <Ch>:CORRection:EXTension[:STATe] ?

<i>Description</i>	<p>Turns ON/OFF the port extension function.</p> <p>(command/query)</p>
<i>Target</i>	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
<i>Parameter</i>	<p>{ON 1} : ON {OFF 0} : OFF</p>
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Calibration > Port Extensions > Extension

SENS:CORR:EXT:AUTO:CONF

SENSe <Ch>:CORRection:EXTension:AUTO:CONFig {CSPN|AMKR|USPN}

SENSe <Ch>:CORRection:EXTension:AUTO:CONFig?

<i>Description</i>	Specifies the frequency range used for calculation of the results of the Auto Port Extension function. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	CSPN : Uses current frequency span AMKR : Uses the frequency of the active marker. This is applied to Loss 1 and Loss 2 is ignored. USPN : Uses arbitrary frequency range set by user
<i>Query Response</i>	{CSPN AMKR USPN}
<i>Preset Value</i>	CSPN
<i>Equivalent Softkeys</i>	Calibration > Port Extension > Auto Port Extension > Method {Current span Active Marker User Span}

SENS:CORR:EXT:AUTO:DCOF

SENSe <Ch>:CORRection:EXTension:AUTO:DCOFset {OFF|ON|0|1}

SENSe <Ch>:CORRection:EXTension:AUTO:DCOFset?

<i>Description</i>	Turns ON/OFF the usage of "Loss at DC" value for the results of the auto port extension function. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Calibration > Port Extension > Auto Port Extension > Adjust Mismatch [OFF/ON]

SENS:CORR:EXT:AUTO:LOSS

SENSe <Ch>:CORRection:EXTension:AUTO:LOSS {OFF|ON|0|1}

SENSe <Ch>:CORRection:EXTension:AUTO:LOSS?

<i>Description</i>	Turns ON/OFF the usage of "Loss1" and "Loss2" values for the results of the auto port extension function. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Calibration > Port Extension > Auto Port Extension > Include Loss [OFF/ON]

SENS:CORR:EXT:AUTO:MEAS

SENSe <Ch>:CORRection:EXTension:AUTO:MEASure {SHORT|OPEN}

<i>Description</i>	<p>Performs measurement of the standard "SHORT" or "OPEN", automatically calculates and sets the parameters of the Port Extension.</p> <p>The set of ports for which this command is executed is determined by the SENS:CORR:EXT:AUTO:PORTcommand.</p> <p>When two consecutive measurements of "SHORT" and "OPEN" are performed the results of these measurements are averaged.</p> <p>(command)</p>
<i>Target</i>	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
<i>Parameter</i>	<p>SHORT : Measures "SHORT" standard</p> <p>OPEN : Measures "OPEN" standard</p>
<i>Equivalent Softkeys</i>	<p>Calibration > Port Extension > Auto Port Extension > Measure Short or Open</p>

SENS:CORR:EXT:AUTO:PORT

SENSe <Ch>:CORRection:EXTension:AUTO:PORT <Pt> {OFF|ON|0|1}

SENSe <Ch>:CORRection:EXTension:AUTO:PORT <Pt>?

<i>Description</i>	Turns ON/OFF the status of the auto port extension for the Port number <Pt>. (command/query)
<i>Target</i>	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	1
<i>Equivalent Softkeys</i>	Calibration > Port Extension > Auto Port Extension > Select Port(s)

SENS:CORR:EXT:AUTO:RES

SENSe <Ch>:CORRection:EXTension:AUTO:RESet

<i>Description</i>	Deletes the finished measurement data of OPEN and SHORT standards of the auto port extension function. Allows to start averaging again between the SHORT and OPEN standards. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Equivalent Softkeys</i>	Enter to the Auto Port Extension menu

SENS:CORR:EXT:AUTO:STAR

SENSe <Ch>:CORRection:EXTension:AUTO:STARt <frequency>

SENSe <Ch>:CORRection:EXTension:AUTO:STARt?

Description	Sets or reads out the start value of the user span of the auto port extension function. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ...16 }
Parameter	<frequency> the user span start
Unit	Hz (Hertz)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	The analyzer's lowest frequency
Related Commands	SENS:CORR:EXT:AUTO:CONF
Equivalent Softkeys	Calibration > Port Extension > Auto Port Extension > User Span Start

SENS:CORR:EXT:AUTO:STOP

SENSe <Ch>:CORRection:EXTension:AUTO:STOP <frequency>

SENSe <Ch>:CORRection:EXTension:AUTO:STOP?

Description	Sets or reads out the stop value of the user span of the auto port extension function. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ...16 }
Parameter	<frequency> the user span stop
Unit	Hz (Hertz)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	The analyzer's highest frequency
Related Commands	SENS:CORR:EXT:AUTO:CONF
Equivalent Softkeys	Calibration > Port Extension > Auto Port Extension > User Span Stop

SENS:CORR:EXT:PORT:FREQ

SENSe <Ch>:CORRection:EXTension:PORT <Pt>:FREQuency{[1]|2} <frequency>

SENSe <Ch>:CORRection:EXTension:PORT <Pt>:FREQuency{[1]|2}?

Description	Sets or reads out the values of the frequency 1 and frequency 2 to calculate the loss for the port extension function. (command/query)
Target	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ...16} <Pt>={ [1] 2} for S2VNA or {[1] 2 3 4} for S4VNA
Parameter	<frequency> the frequency value within the frequency limits of the analyzer.
Unit	Hz (Hertz)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	1E9
Equivalent Softkeys	Calibration > Port Extensions > Loss > {Freq1 Freq}

SENS:CORR:EXT:PORT:INCL

SENSe <Ch>:CORRection:EXTension:PORT <Pt>:INCLude{[1]|2}[:STATe]
{OFF|ON|0|1}

SENSe <Ch>:CORRection:EXTension:PORT <Pt>:INCLude{[1]|2}[:STATe]?

<i>Description</i>	Turns ON/OFF the loss compensation of the loss 1 and loss 2 for the port extension function. (command/query)
<i>Target</i>	Port <Pt> of channel <Ch>, <Ch>={[1] 2 ...16} <Pt>={[1] 2} for S2VNA or {[1] 2 3 4} for S4VNA
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Calibration > Port Extensions > Loss > {Loss1 Loss2}

SENS:CORR:EXT:PORT:LDC

SENSe <Ch>:CORRection:EXTension:PORT <Pt>:LDC <numeric>

SENSe <Ch>:CORRection:EXTension:PORT <Pt>:LDC?

<i>Description</i>	Sets or reads out the loss value at DC for the port extension function. (command/query)
<i>Target</i>	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
<i>Parameter</i>	<numeric> the loss value from –200 to 200
<i>Unit</i>	dB (decibel)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Calibration > Port Extensions > Loss > Loss at DC

SENS:CORR:EXT:PORT:LOSS

SENSe <Ch>:CORRection:EXTension:PORT <Pt>:LOSS{[1]|2} <numeric>

SENSe <Ch>:CORRection:EXTension:PORT <Pt>:LOSS{[1]|2}?

Description	Sets or reads out the values of the loss 1 and loss 2 for the port extension function. (command/query)
Target	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ...16} <Pt>={ [1] 2} for S2VNA or {[1] 2 3 4} for S4VNA
Parameter	<numeric> the loss value from -200 to 200
Unit	dB (decibel)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	0
Equivalent Softkeys	Calibration > Port Extensions > Loss > {Loss1 Loss2}

SENS:CORR:EXT:PORT:TIME

SENSe <Ch>:CORRection:EXTension:PORT <Pt>:TIME <time>

SENSe <Ch>:CORRection:EXTension:PORT <Pt>:TIME ?

Description	Sets or reads out the electrical delay value for the port extension function. (command/query)
Target	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
Parameter	<time> the electrical delay value from -10 to 10
Unit	sec (second)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	0
Equivalent Softkeys	Calibration > Port Extensions > Extension Port n

SENS:CORR:INF?

SENSe <Ch>:CORRection:INFormation? <rcvport>, <srcport>

Description	Reads out the information string of the calibration acting between the <rcvport> and <srcport>. (query only)
Target	Channel <Ch>, <Ch>={1 2 ...16}
Parameter	<rcvport> the receiver port number from 1 to 2 (or 4) <srcport> the source port number from 1 to 2 (or 4)
Query Response	<YYYY/MM/DD> <HH:MM:SS>, <Type>, <TypeEx>, <IFBW>, <Power>, <Temperature>, <CalKit> <Type>: {RT RO RS F1 OP F2 F3 F4} <TypeEx>: {SOLT SOLR TRL COPY} <CalKit>: Calibration Kit Label and Description
Equivalent Softkeys	None

SENS:CORR:IMP

SENSe:CORRection:IMPedance[:INPut][:MAGNitude] <numeric>

SENSe:CORRection:IMPedance[:INPut][:MAGNitude]?

Description	Sets or reads out the system impedance Z0 (command/query)
Parameter	<numeric> the Z0 value from 0.001 to 1000
Unit	Ω (Ohm)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	50
Equivalent Softkeys	Calibration > System Z0

SENS:CORR:IMP:SEL:AUTO

SENSe:CORRection:IMPedance[:INPut]:SElect:AUTO {OFF|ON|0|1}

SENSe:CORRection:IMPedance[:INPut]:SElect:AUTO?

<i>Description</i>	Turns ON/OFF the auto-select Z0 function. When enabled the function sets the port impedance Z0 to the corresponding value of measuring calibration standard. (command/query)
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Calibration > System Z0> Auto Select Z0

SENS:CORR:OFFS:CLE

SENSe<Ch>:CORRection:OFFSet:CLEar

<i>Description</i>	Clears the scalar mixer calibration coefficient table. (no query)
<i>Target</i>	Channel <Ch>, <Ch>={1 2 ...16}
<i>Equivalent Softkeys</i>	None

SENS:CORR:OFFS:COLL:CLEAR

SENSe <Ch>:CORRection:OFFSet:COLLect:CLEAr

<i>Description</i>	Clears the calibration measurement data of scalar mixer calibration when the frequency offset feature is ON. (no query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Equivalent Softkeys</i>	Calibration > Mixer/Converter Calibration > Scalar Mixer Calibration > Cancel > Yes

SENS:CORR:OFFS:COLL:LOAD

SENSe <Ch>:CORRection:OFFSet:COLLect[:ACQuire]:LOAD <numeric1>, <numeric2>

<i>Description</i>	Measures the calibration data of the <i>load</i> standard of the specified port when the frequency offset feature is on for scalar mixer calibration. (no query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<numeric1> Measurement port number <numeric2> Frequency port number.
<i>Out of Range</i>	If an incorrect port number is specified, an error occurs.
<i>Notes</i>	The command starts the measurement immediately if the trigger source for calibration set to the "Internal" by the command SENS:CORR:TRIG:FREE, otherwise waits for the trigger signal. The command blocks the execution of the subsequent commands until the completion of the measurement.
<i>Equivalent Softkeys</i>	Calibration > Mixer/Converter Calibration > Scalar Mixer Calibration > Reflection Port n > Port n Load

SENS:CORR:OFFS:COLL:METH:SMIX2

SENSe <Ch>:CORRection:OFFSet:COLLect:METHod:SMIX2 <numeric1>, <numeric2>

Description	Selects the ports and sets the <i>scalar mixer calibration</i> type when the frequency offset feature is on for the calculation of the calibration coefficients on completion of the calibration executed by the SENS:CORR:OFFS:COLL:SAVE command. (no query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<numeric1> first port; <numeric2> second port.
Out of Range	If the same port numbers are specified, an error occurs.
Equivalent Softkeys	Calibration > Mixer/Converter Calibration > Scalar Mixer Calibration

SENS:CORR:OFFS:COLL:OPEN

SENSe <Ch>:CORRection:OFFSet:COLLect[:ACQuire]:OPEN <numeric1>, <numeric2>

Description	Measures the calibration data of the <i>open</i> standard of the specified port when the frequency offset feature is on for scalar mixer calibration. (no query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<numeric1> Measurement port number <numeric2> Frequency port number.
Notes	The command starts the measurement immediately if the trigger source for calibration set to the "Internal" by the command SENS:CORR:TRIG:FREE, otherwise waits for the trigger signal. The command blocks the execution of the subsequent commands until the completion of the measurement.
Equivalent Softkeys	Calibration > Mixer/Converter Calibration > Scalar Mixer Calibration > Reflection Port n > Port n Open

SENS:CORR:OFFS:COLL:PMETer

SENSe <Ch>:CORRection:OFFSet:COLLect[:ACQuire]:PMETer <numeric1>, <numeric2>, <numeric3>

Description	Measures the scalar-mixer calibration data using the power meter when the frequency offset feature is ON. (no query)
Target	Channel <Ch>, <Ch>={ [1] 2 ...16 }
Parameter	<numeric1> Measurement port number <numeric2> Frequency port number. <numeric3> Always 0 (reserved).
Notes	The command starts the measurement of the calibration data immediately regardless the trigger settings. The command blocks the execution of the subsequent commands until the completion of the measurement.
Equivalent Softkeys	Calibration > Mixer/Converter Calibration > Scalar Mixer Calibration > Power > Port n

SENS:CORR:OFFS:COLL:SHOR

SENSe <Ch>:CORRection:OFFSet:COLLect[:ACQuire]:SHORT <numeric1>, <numeric2>

<i>Description</i>	Measures the calibration data of the <i>short</i> standard of the specified port when the frequency offset feature is on for scalar mixer calibration. (no query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ...16 }
<i>Parameter</i>	<numeric1> Measurement port number <numeric2> Frequency port number.
<i>Notes</i>	The command starts the measurement immediately if the trigger source for calibration set to the "Internal" by the command SENS:CORR:TRIG:FREE, otherwise waits for the trigger signal. The command blocks the execution of the subsequent commands until the completion of the measurement.
<i>Equivalent Softkeys</i>	Calibration > Mixer/Converter Calibration > Scalar Mixer Calibration > Reflection Port n > Port n Short

SENS:CORR:OFFS:COLL:THRU

SENSe <Ch>:CORRection:OFFSet:COLLect[:ACQuire]:THRU <numeric1>, <numeric2>

<i>Description</i>	Measures the calibration data of the <i>thru</i> standard of the specified port when the frequency offset feature is on for scalar mixer calibration. (no query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ...16 }
<i>Parameter</i>	<numeric1> Response port number; <numeric2> Stimulus port number.
<i>Out of Range</i>	If the same port numbers are specified, an error occurs.
<i>Notes</i>	The command starts the measurement immediately if the trigger source for calibration set to the "Internal" by the command SENS:CORR:TRIG:FREE, otherwise waits for the trigger signal. The command blocks the execution of the subsequent commands until the completion of the measurement.
<i>Equivalent Softkeys</i>	Calibration > Mixer/Converter Calibration > Scalar Mixer Calibration > Reflection Port n > Port n-m Thru

SENS:CORR:OFFS:COLL:SAVE

SENSe <Ch>:CORRection:OFFSet:COLLect:SAVE

<i>Description</i>	<p>Calculates the calibration coefficient for the selected calibration type (scalar mixer calibration only) from the calibration data measured with the frequency offset feature is ON.</p> <p>If this command is executed before all necessary calibration data for calculating the calibration coefficient is measured, an error occurs when executed.</p> <p>(no query)</p>
<i>Target</i>	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
<i>Related Commands</i>	<p>SENS:CORR:OFFS:COLL:METH:SMIX2 SENS:CORR:OFFS:COLL:LOAD SENS:CORR:OFFS:COLL:OPEN SENS:CORR:OFFS:COLL:SHOR SENS:CORR:OFFS:COLL:THRU SENS:CORR:OFFS:COLL:PMETer</p>
<i>Equivalent Softkeys</i>	<p>Calibration > Mixer/Converter Calibration > Scalar Mixer Calibration > Apply</p>

SENS:CORR:PORT:IMP

SENSe:CORRection:PORT <Pt>:IMPedance[:INPut][:MAGNitude] <numeric>

SENSe:CORRection:PORT <Pt>:IMPedance[:INPut][:MAGNitude]?

<i>Description</i>	Sets or reads out the impedance Z0 of port <Pt> (command/query)
<i>Target</i>	Port <Pt>, <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
<i>Parameter</i>	<numeric> the Z0 value from 0.001 to 1000
<i>Unit</i>	Ω (Ohm)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	50
<i>Equivalent Softkeys</i>	Calibration > System Z0 > Port n Z0

SENS:CORR:REC

SENSe <Ch>:CORRection:RECEiver <Pt>[:STATe] {OFF|ON|0|1}

SENSe <Ch>:CORRection:RECEiver <Pt>[:STATe]?

<i>Description</i>	Turns ON/OFF the receiver correction of the specified port. (command/query)
<i>Target</i>	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Calibration > Receiver Calibration > Correction

SENS:CORR:REC:COLL:ACQ

SENSe <Ch>:CORRection:RECEiver <Pt>:COLLect:ACQuire <srcport>

<i>Description</i>	Executes receiver calibration of both the test receiver and the reference receiver of the specified port <Pt>. The test receiver calibration uses port number <srcport> as the source port. The reference receiver calibration uses its own port <Pt> as the source port. (no query)
<i>Target</i>	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
<i>Parameter</i>	<srcport> the number of the source port from 1 to 2 (or 4)
<i>Notes</i>	The command starts the measurement of the calibration data immediately regardless the trigger settings. The command blocks the execution of the subsequent commands until the completion of the measurement.
<i>Equivalent Softkeys</i>	Calibration > Receiver Calibration > Calibrate Both

SENS:CORR:REC:COLL:RCH:ACQ

SENSe <Ch>:CORRection:RECeiver <Pt>:COLLect:RCHannel:ACQuire

<i>Description</i>	Executes receiver calibration of the reference receiver of the specified port <Pt>. The reference receiver calibration uses its own port <Pt> as the source port. (no query)
<i>Target</i>	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
<i>Notes</i>	The command starts the measurement of the calibration data immediately regardless the trigger settings. The command blocks the execution of the subsequent commands until the completion of the measurement.
<i>Equivalent Softkeys</i>	Calibration > Receiver Calibration > Calibrate Reference Receiver

SENS:CORR:REC:COLL:TCH:ACQ

SENSe <Ch>:CORRection:RECeiver <Pt>:COLLect:TCHannel:ACQuire <srcport>

<i>Description</i>	Executes receiver calibration of the test receiver of the specified port <Pt>. The test receiver calibration uses port number <srcport> as the source port. (no query)
<i>Target</i>	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
<i>Parameter</i>	<srcport> the number of the source port from 1 to 2 (or 4)
<i>Notes</i>	The command starts the measurement of the calibration data immediately regardless the trigger settings. The command blocks the execution of the subsequent commands until the completion of the measurement.
<i>Equivalent Softkeys</i>	Calibration > Receiver Calibration > Calibrate Test Receiver

SENS:CORR:REC:OFFS:AMPL

SENSe <Ch>:CORRection:RECeiver <Pt>:OFFSET:AMPLitude <numeric>

SENSe <Ch>:CORRection:RECeiver <Pt>:OFFSET:AMPLitude ?

Description	Sets or reads out the power offset value when the Receiver Calibration is performed. Receiver calibration is done at the condition of <source power> + < power offset>. (command/query)
Target	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
Parameter	<numeric> the power offset value when the Receiver Calibration is performed from -100 to 100.
Unit	dBm (decibels above 1 milliwatt)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	0.0
Equivalent Softkeys	Calibration > Receiver Calibration > Power Offset

SENS:CORR:STAT

SENSe <Ch>:CORRection:STATe {OFF|ON|0|1}

SENSe <Ch>:CORRection:STATe?

<i>Description</i>	Turns ON/OFF the S-parameter error correction. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Calibration > Correction

SENS:CORR:TRAN:TIME:FREQ

SENSe <Ch>:CORRection:TRANsform:TIME:FREQuency <frequency>

SENSe <Ch>:CORRection:TRANsform:TIME:FREQuency?

<i>Description</i>	Sets or reads out the frequency value at which the cable loss specified for the cable correction function, when the time domain transformation function is turned ON. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<frequency> the frequency value.
<i>Unit</i>	Hz (Hertz)
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	1 GHz
<i>Equivalent Softkeys</i>	Analysis > Time Domain > Cable Correction > Frequency

SENS:CORR:TRAN:TIME:LOSS

SENSe <Ch>:CORRection:TRANsform:TIME:LOSS <numeric>

SENSe <Ch>:CORRection:TRANsform:TIME:LOSS?

Description	Sets or reads out the cable loss value for the cable correction function, when the time domain transformation function is turned ON. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<numeric> the cable loss value.
Unit	dB/m (decibell / meter)
Query Response	<numeric>
Preset Value	0 dB/m
Equivalent Softkeys	Analysis > Time Domain > Cable Correction > Cable Loss

SENS:CORR:TRAN:TIME:RVEL

SENSe <Ch>:CORRection:TRANsform:TIME:RVELocity <numeric>

SENSe <Ch>:CORRection:TRANsform:TIME:RVELocity?

Description	Sets or reads out the cable relative wave speed velocity for the cable correction function, when the time domain transformation function is turned ON. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<numeric> the cable velocity factor.
Query Response	<numeric>
Preset Value	1.0
Equivalent Softkeys	Analysis > Time Domain > Cable Correction > Velocity Factor

SENS:CORR:TRAN:TIME:STAT

SENSe <Ch>:CORRection:TRANsform:TIME:STATe {OFF|ON|0|1}

SENSe <Ch>:CORRection:TRANsform:TIME:STATe?

<i>Description</i>	Turns ON/OFF the cable correction when the time domain transformation function is turned ON. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Analysis > Time Domain > Cable Correction > Cable Correction

SENS:CORR:TRIG:FREE

SENSe <Ch>:CORRection:TRIGger:FREE[:STATe] {OFF|ON|0|1}

SENSe <Ch>:CORRection:TRIGger:FREE[:STATe]?

Description	<p>Enables/disables the <i>internal</i> trigger source for calibration. If the <i>internal</i> trigger source for calibration is enabled then a command of the calibration standard measurement starts the measurement immediately. If the internal trigger source for calibration is disabled then the <i>system</i> trigger source is used (which is set for regular measurement with the command TRIG:SOUR) to start the calibration standard measurement.</p> <p>The <i>system</i> trigger source also enables the averaging trigger function (TRIG:AVER) and the point trigger function (TRIG:POIN) for calibration.</p> <p>Note: When the <i>system</i> trigger source is selected, the program trigger source (BUS) should be avoided, otherwise the program deadlock is possible.</p> <p>Note: The command does not apply to the electronic calibration, the power calibration and the receiver calibration. The internal trigger always used in these cases.</p> <p>(command/query)</p>
Target	<p>Channel <Ch>, <Ch>={1 2 ...16}</p>
Parameter	<p>Specifies the trigger source for calibration:</p> <p>{ON 1} : Internal {OFF 0} : System</p>
Query Response	{0 1}
Preset Value	1
Equivalent Softkeys	Calibration > Cal Trig Source {Internal System}

SENS:CORR:TYPE?

SENSe <Ch>:CORRection:TYPE <Tr>?

<i>Description</i>	<p>Reads the information about the calibration type and the number of ports to which the calibration is applied for the specified trace. The response format is as follows.</p> <p>(query only)</p>
<i>Target</i>	<p>Trace <Tr> of channel <Ch>, <Tr>={ [1] 2 ... 16 } <Ch>={ [1] 2 ... 16 }</p>
<i>Query Response</i>	<p><Type>,<Port1>...,<PortN></p> <p>Where <Type> is:</p> <p>RESPO : Response (Open) RESPS : Response (Short) RESPT : Response (Thru) SOLT1 : Full 1–port calibration SOLT2 : Full 2–port calibration SOLT3 : Full 2–port calibration SOLT4 : Full 2–port calibration 1PATH : One path 2–port calibration NONE : Not defined</p>
<i>Equivalent Softkeys</i>	None

SENS:CORR:VMC:COLL:IF:SEL

SENSe <Ch>:CORRection:VMC:COLLect:SElect <char>

SENSe <Ch>:CORRection:VMC:COLLect:SElect?

<i>Description</i>	Selects the IF frequency from RF+LO, RF-LO and LO-RF, depending on the IF frequency of the calibration mixer in the vector mixer calibration. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<char> Select from following: RFPLO : RF + LO RFMLO : RF - LO LOMRF : LO - RF
<i>Query Response</i>	{ RFPLO RFMLO LOMRF }
<i>Preset Value</i>	RFPLO
<i>Equivalent Softkeys</i>	Calibration > Mixer/Converter Calibration > Vector Mixer Calibration > IF Frequency > { RF+LO RF - LO LO - RF }

SENS:CORR:VMC:COLL:LO:FREQ

SENSe <Ch>:CORRection:VMC:COLLect:LO:FREQuency <numeric>

SENSe <Ch>:CORRection:VMC:COLLect:LO:FREQuency?

<i>Description</i>	Sets or reads out the LO frequency value used in the vector mixer calibration. The LO source is an external signal generator. The LO frequency is common for both the calibration and the mixer under test. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<numeric> LO frequency from 0 to 1000THz
<i>Query Response</i>	<numeric>
<i>Unit</i>	Hz (Hertz)
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Calibration > Mixer/Converter Calibration > Vector Mixer Calibration > LO Frequency

SENS:CORR:VMC:COLL:LOAD

SENSe <Ch>:CORRection:VMC:COLLect[:ACQuire]:LOAD

<i>Description</i>	Measures the load standard in order to characterize the calibration mixer + filter in the vector mixer calibration. (no query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Note</i>	The command starts the measurement immediately if the trigger source for calibration set to the "Internal" by the command SENS:CORR:TRIG:FREE, otherwise waits for the trigger signal. The command blocks the execution of the subsequent commands until the completion of the measurement.
<i>Equivalent Softkeys</i>	Calibration > Mixer/Converter Calibration > Vector Mixer Calibration > Load

SENS:CORR:VMC:COLL:OPEN

SENSe <Ch>:CORRection:VMC:COLLect[:ACQuire]:OPEN

<i>Description</i>	Measures the open standard in order to characterize the calibration mixer + filter in the vector mixer calibration. (no query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Note</i>	The command starts the measurement immediately if the trigger source for calibration set to the "Internal" by the command SENS:CORR:TRIG:FREE, otherwise waits for the trigger signal. The command blocks the execution of the subsequent commands until the completion of the measurement.
<i>Equivalent Softkeys</i>	Calibration > Mixer/Converter Calibration > Vector Mixer Calibration > Open

SENS:CORR:VMC:COLL:SHOR

SENSe <Ch>:CORRection:VMC:COLLect[:ACQuire]:SHORT

<i>Description</i>	Measures the short standard in order to characterize the calibration mixer + filter in the vector mixer calibration. (no query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Note</i>	The command starts the measurement immediately if the trigger source for calibration set to the "Internal" by the command SENS:CORR:TRIG:FREE, otherwise waits for the trigger signal. The command blocks the execution of the subsequent commands until the completion of the measurement.
<i>Equivalent Softkeys</i>	Calibration > Mixer/Converter Calibration > Vector Mixer Calibration > Short

SENS:CORR:VMC:COLL:OPT

SENSe <Ch>:CORRection:VMC:COLLect[:SETup]:OPTion {OFF|ON|0|1}

SENSe <Ch>:CORRection:VMC:COLLect[:SETup]:OPTion?

<i>Description</i>	Turns ON/OFF the setup option in the vector mixer calibration. This option forces the de-embedding S-parameters of the calibration mixer + filter when the S-parameters have been calculated and written to the touchstone file. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Calibration > Mixer/Converter Calibration > Vector Mixer Calibration > Setup Option

SENS:CORR:VMC:COLL:PORT

SENSe <Ch>:CORRection:VMC:COLLect:PORT <numeric>

SENSe <Ch>:CORRection:VMC:COLLect:PORT?

<i>Description</i>	Sets or reads out the number of the port used in the vector mixer calibration. To this port the calibration mixer with IF filter is connected. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<numeric> port number from 1 to 2 (S2VNA) or 4 (S4VNA)
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	1
<i>Equivalent Softkeys</i>	Calibration > Mixer/Converter Calibration > Vector Mixer Calibration > Select Port

SENS:CORR:VMC:COLL:SAVE

SENSe <Ch>:CORRection:VMC:COLLect:SAVE <string>

<i>Description</i>	Completes the vector mixer calibration procedure. Calculates S-parameters of the calibration mixer + filter and writes them to a touchstone file. Optionally turns on the de-embedding S-parameters of the calibration mixer + filter. (no query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<string> destination file name
<i>Related Commands</i>	SENS:CORR:VMC:COLL:OPT
<i>Preset Value</i>	1
<i>Equivalent Softkeys</i>	Calibration > Mixer/Converter Calibration > Vector Mixer Calibration > Save to Touchstone File

SENS:DATA:CORR?

SENSe <Ch>:DATA:CORRdata? <char>

<i>Description</i>	<p>Reads out the corrected S-parameter data array or the corrected receiver data array. The type of the array entries is a complex number.</p> <p>The array size is 2N, where N is the number of measurement points. For the n–th point, where n from 1 to N:</p> <p><numeric 2n–1> the real part of corrected measurement; <numeric 2n> the imaginary part of corrected measurement.</p> <p>(query only)</p>
<i>Target</i>	<p>Channel <Ch>, <Ch>={1 2 ...16}</p>
<i>Parameter</i>	<p><char> Specifies the S-parameter: S11, S12, S13, S14, S21, ... S44</p> <p><char> Specifies the Test Receiver: T11, T12, T13, T14, T21, ... T44 Where the first index is the receiver port number, and the second index is the source port number; The following notations are also available: T1(1), T1(2), T1(3), T1(4), T2(1), ... T4(4) or A(1), A(2), A(3), A(4), B(1), ... D(4)</p> <p><char> Specifies the Reference Receiver: R11, R12, R13, R14, R21, ... R44 Where the first index is the receiver port number, and the second index is the source port number; The following notations are also available: R1(1), R1(2), R1(3), R1(3), R2(1), ... R4(4)</p>
<i>Query Response</i>	<numeric 1>, <numeric 2>, ...<numeric 2N>
<i>Note</i>	To ensure the update of the data, the corresponding stimulus port must be active. For example, when reading the S12 parameter at least one trace with the stimulus port 2 must present or SOLT2 calibration must be active.
<i>Equivalent Softkeys</i>	None

SENS:DATA:RAWD?

SENSe <Ch>:DATA:RAWData? <char>

Description	<p>Reads out the raw S-parameter data array or the raw receiver data array. The type of the array entries is a complex number. The array size is 2N, where N is the number of measurement points. For the n-th point, where n from 1 to N:</p> <p><numeric 2n-1> the real part of raw measurement; <numeric 2n> the imaginary part of raw measurement.</p> <p>(query only)</p>
Target	<p>Channel <Ch>, <Ch>={1 2 ...16}</p>
Parameter	<p><char> Specifies the S-parameter: S11, S12, S13, S14, S21, ... S44</p>
	<p><char> Specifies the Test Receiver: T11, T12, T13, T14, T21, ... T44 Where the first index is the receiver port number, and the second index is the source port number; The following notations are also available: T1(1), T1(2), T1(3), T1(4), T2(1), ... T4(4) or A(1), A(2), A(3), A(4), B(1), ... D(4)</p>
	<p><char> Specifies the Reference Receiver: R11, R12, R13, R14, R21, ... R44 Where the first index is the receiver port number, and the second index is the source port number; The following notations are also available: R1(1), R1(2), R1(3), R1(3), R2(1), ... R4(4)</p>
Query Response	<p><numeric 1>,<numeric 2>,...<numeric 2N></p>
Note	<p>To ensure the update of the data, the corresponding stimulus port must be active. For example, when reading the S12 parameter at least one trace with the stimulus port 2 must present or SOLT2 calibration must be active.</p>
Equivalent Softkeys	<p>None</p>

SENS:FREQ

SENSe <Ch>:FREQuency[:CW] <frequency>

SENSe <Ch>:FREQuency[:FIXed] <frequency>

SENSe <Ch>:FREQuency[:CW]?

SENSe <Ch>:FREQuency[:FIXed]?

Description	Sets or reads out the fixed frequency value when the power sweep type selected. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	< frequency > the frequency value within the frequency limits of the analyzer.
Unit	Hz (Hertz)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	The minimum frequency limit of the analyzer.
Equivalent Softkeys	Stimulus > Power > CW Freq

SENS:FREQ:DATA?

SENSe <Ch>:FREQuency:DATA?

<i>Description</i>	<p>Reads out the frequency array of the measurement points.</p> <p>The array size is N, where N is the number of measurement points.</p> <p>For the n–th point, where n from 1 to N:</p> <p style="padding-left: 40px;"><i><numeric n></i> the frequency value at the n–th measurement point</p> <p>(query only)</p>
<i>Target</i>	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
<i>Query Response</i>	<i><numeric 1>, <numeric 2>, ... <numeric N></i>
<i>Equivalent Softkeys</i>	None

SENS:FREQ:CENT

SENSe <Ch>:FREQuency:CENTer <frequency>

SENSe <Ch>:FREQuency:CENTer?

Description	Sets or reads out the stimulus center value of the sweep range for linear or logarithmic sweep type. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ...16 }
Parameter	<frequency> the stimulus center value within the frequency limits of the analyzer.
Unit	Hz (Hertz)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	the center frequency of the analyzer
Equivalent Softkeys	Stimulus > Center

SENS:FREQ:SPAN

SENSe <Ch>:FREQuency:SPAN <frequency>

SENSe <Ch>:FREQuency:SPAN?

Description	Sets or reads out the stimulus span value of the sweep range for linear or logarithmic sweep type. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ...16 }
Parameter	< frequency > the stimulus span value from 0 to the maximum frequency span of the analyzer.
Unit	Hz (Hertz)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	the maximum frequency span of the analyzer
Equivalent Softkeys	Stimulus > Span

SENS:FREQ:STAR

SENSe <Ch>:FREQuency:STARt <frequency>

SENSe <Ch>:FREQuency:STARt?

Description	Sets or reads out the stimulus start value of the sweep range for linear or logarithmic sweep type. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ...16 }
Parameter	<frequency> the stimulus start value within the frequency limits of the analyzer.
Unit	Hz (Hertz)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	The minimum frequency limit of the analyzer.
Equivalent Softkeys	Stimulus > Start

SENS:FREQ: STOP

SENSe <Ch>:FREQuency:STOP <frequency>

SENSe <Ch>:FREQuency:STOP?

Description	Sets or reads out the stimulus stop value of the sweep range for linear or logarithmic sweep type. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ...16 }
Parameter	< frequency > the stimulus stop value within the frequency limits of the analyzer..
Unit	Hz (Hertz)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	The maximum frequency limit of the analyzer.
Equivalent Softkeys	Stimulus > Stop

SENS:OFFS

SENSe <Ch>:OFFSet[:STATe] {OFF|ON|0|1}

SENSe <Ch>:OFFSet[:STATe]?

<i>Description</i>	Turns ON/OFF the frequency offset feature. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Stimulus > Frequency Offset > Frequency Offset

SENS:OFFS:PORT:DATA?

SENSe <Ch>:OFFSet:PORT <Pt>[:FREQuency]:DATA?

<i>Description</i>	Reads out the array of the frequency points of port <Pt> when the frequency offset feature is ON and offset type is "PORT". The array size is N, where N is the number of measurement points. For the n-th point, where n from 1 to N: <numeric n> the frequency value at the n-th point (query only)
<i>Target</i>	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
<i>Query Response</i>	<numeric 1>, <numeric 2>, ... <numeric N>
<i>Related Commands</i>	SENS:OFFS SENS:OFFS:TYPE
<i>Equivalent Softkeys</i>	None

SENS:OFFS:PORT:DIV

SENSe <Ch>:OFFSet:PORT <Pt>[:FREQuency]:DIVisor <numeric>

SENSe <Ch>:OFFSet:PORT <Pt>[:FREQuency]:DIVisor?

Description	Sets or reads out the basic frequency range divisor of port <Pt> when the frequency offset feature is ON and offset type is "PORT". (command/query)
Target	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
Parameter	<numeric> divisor from 1 to 1000;
Unit	n/a
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	1
Related Commands	SENS:OFFS SENS:OFFS:TYPE
Equivalent Softkeys	Stimulus > Frequency Offset > Port n > Divider

SENS:OFFS:PORT:MULT

SENSe <Ch>:OFFSet:PORT <Pt>[:FREQuency]:MULTiplier <numeric>

SENSe <Ch>:OFFSet:PORT <Pt>[:FREQuency]:MULTiplier?

Description	Sets or reads out the basic frequency range multiplier of port <Pt> when the frequency offset feature is ON and offset type is "PORT". (command/query)
Target	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
Parameter	<numeric> multiplier from -1000 to 1000;
Unit	n/a
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	1
Related Commands	SENS:OFFS SENS:OFFS:TYPE
Equivalent Softkeys	Stimulus > Frequency Offset > Port n > Multiplier

SENS:OFFS:PORT:OFFS

SENSe <Ch>:OFFSet:PORT <Pt>[:FREQuency]:OFFSet <frequency>

SENSe <Ch>:OFFSet:PORT <Pt>[:FREQuency]:OFFSet?

Description	Sets or reads out the basic frequency range offset of port <Pt> when the frequency offset feature is ON and offset type is "PORT". (command/query)
Target	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
Parameter	<frequency> offset from -1e12 to 1e12;
Unit	Hz (Hertz)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	0
Related Commands	SENS:OFFS SENS:OFFS:TYPE
Equivalent Softkeys	Stimulus > Frequency Offset > Port n > Offset

SENS:OFFS:PORT:STAR

SENSe <Ch>:OFFSet:PORT <Pt>[:FREQuency]:STARt <frequency>

SENSe <Ch>:OFFSet:PORT <Pt>[:FREQuency]:STARt?

Description	Sets or reads out the frequency sweep start of port <Pt> when the frequency offset feature is ON and offset type is "PORT". (command/query)
Target	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
Parameter	<frequency> frequency sweep start of port <Pt>;
Unit	Hz (Hertz)
Query Response	<numeric>
Related Commands	SENS:OFFS SENS:OFFS:TYPE
Equivalent Softkeys	Stimulus > Frequency Offset > Port n > Start

SENS:OFFS:PORT:STOP

SENSe <Ch>:OFFSet:PORT <Pt>[:FREQuency]:STOP <frequency>

SENSe <Ch>:OFFSet:PORT <Pt>[:FREQuency]:STOP?

Description	Sets or reads out the frequency sweep stop of port <Pt> when the frequency offset feature is ON and offset type is "PORT". (command/query)
Target	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
Parameter	<frequency> frequency sweep stop of port <Pt>;
Unit	Hz (Hertz)
Query Response	<numeric>
Related Commands	SENS:OFFS SENS:OFFS:TYPE
Equivalent Softkeys	Stimulus > Frequency Offset > Port n > Stop

SENS:OFFS:REC:DATA?

SENSe <Ch>:OFFSet:RECeiver[:FREQuency]:DATA?

<i>Description</i>	<p>Reads out the array of the receiver frequency points when the frequency offset feature is ON and offset type is "SRCRCv".</p> <p>The array size is N, where N is the number of measurement points.</p> <p>For the n–th point, where n from 1 to N: <numeric n> the frequency value at the n–th point (query only)</p>
<i>Target</i>	<p>Channel <Ch>, <Ch>={ [1] 2 ...16 }</p>
<i>Query Response</i>	<numeric 1>, <numeric 2>, ...<numeric N>
<i>Related Commands</i>	<p>SENS:OFFS SENS:OFFS:TYPE</p>
<i>Equivalent Softkeys</i>	None

SENS:OFFS:REC:DIV

SENSe <Ch>:OFFSet:RECeiver[:FREQuency]:DIVisor <numeric>

SENSe <Ch>:OFFSet:RECeiver[:FREQuency]:DIVisor?

Description	Sets or reads out the basic frequency range divisor to get the receiver frequency when the frequency offset feature is ON and offset type is "SRCRCv". (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<numeric> divisor from 1 to 1000;
Unit	n/a
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	1
Related Commands	SENS:OFFS SENS:OFFS:TYPE
Equivalent Softkeys	Stimulus > Frequency Offset > Receivers > Divider

SENS:OFFS:REC:MULT

SENSe <Ch>:OFFSet:RECeiver[:FREQuency]:MULTiplier <numeric>

SENSe <Ch>:OFFSet:RECeiver[:FREQuency]:MULTiplier?

<i>Description</i>	Sets or reads out the basic frequency range multiplier to get the receiver frequency when the frequency offset feature is ON and offset type is "SRCRCv". (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<numeric> multiplier from –1000 to 1000;
<i>Unit</i>	n/a
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	1
<i>Related Commands</i>	SENS:OFFS SENS:OFFS:TYPE
<i>Equivalent Softkeys</i>	Stimulus > Frequency Offset > Receivers > Multiplier

SENS:OFFS:REC:OFFS

SENSe <Ch>:OFFSet:RECeiver[:FREQuency]:OFFSet <frequency>

SENSe <Ch>:OFFSet:RECeiver[:FREQuency]:OFFSet?

Description	Sets or reads out the basic frequency range offset to get the receiver frequency when the frequency offset feature is ON and offset type is "SRCRCv". (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 . . . 16 }
Parameter	<frequency> offset from -1e12 to 1e12;
Unit	Hz (Hertz)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	0
Related Commands	SENS:OFFS SENS:OFFS:TYPE
Equivalent Softkeys	Stimulus > Frequency Offset > Receivers > Offset

SENS:OFFS:REC:STAR

SENSe <Ch>:OFFSet:RECeiver[:FREQuency]:STARt <frequency>

SENSe <Ch>:OFFSet:RECeiver[:FREQuency]:STARt?

<i>Description</i>	Sets or reads out the frequency sweep start of the receivers when the frequency offset feature is ON and offset type is "SRCRcv". (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ...16 }
<i>Parameter</i>	<frequency> frequency sweep start of receivers
<i>Unit</i>	Hz (Hertz)
<i>Query Response</i>	<numeric>
<i>Related Commands</i>	SENS:OFFS SENS:OFFS:TYPE
<i>Equivalent Softkeys</i>	Stimulus > Frequency Offset > Receivers > Start

SENS:OFFS:REC:STOP

SENSe <Ch>:OFFSet:RECeiver[:FREQuency]:STOP <frequency>

SENSe <Ch>:OFFSet:RECeiver[:FREQuency]:STOP?

<i>Description</i>	Sets or reads out the frequency sweep stop of the receivers when the frequency offset feature is ON and offset type is "SRCRcv". (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ...16 }
<i>Parameter</i>	< frequency > frequency sweep stop of receivers
<i>Unit</i>	Hz (Hertz)
<i>Query Response</i>	<numeric>
<i>Related Commands</i>	SENS:OFFS SENS:OFFS:TYPE
<i>Equivalent Softkeys</i>	Stimulus > Frequency Offset > Receivers > Stop

SENS:OFFS:SOUR:DATA?

SENSe <Ch>:OFFSet:SOURce[:FREQuency]:DATA?

<i>Description</i>	<p>Reads out the array of the frequency points of the source when the frequency offset feature is ON and offset type is "SRCRCv".</p> <p>The array size is N, where N is the number of measurement points.</p> <p>For the n–th point, where n from 1 to N: <numeric n> the frequency value at the n–th point (query only)</p>
<i>Target</i>	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
<i>Query Response</i>	<numeric 1>, <numeric 2>, ... <numeric N>
<i>Related Commands</i>	<p>SENS:OFFS SENS:OFFS:TYPE</p>
<i>Equivalent Softkeys</i>	None

SENS:OFFS:SOUR:DIV

SENSe <Ch>:OFFSet:SOURce[:FREQuency]:DIVisor <numeric>

SENSe <Ch>:OFFSet:SOURce[:FREQuency]:DIVisor?

Description	Sets or reads out the basic frequency range divisor to get the source frequency when the frequency offset feature is ON and offset type is "SRCRcv". (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<numeric> divisor from 1 to 1000;
Unit	n/a
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	1
Related Commands	SENS:OFFS SENS:OFFS:TYPE
Equivalent Softkeys	Stimulus > Frequency Offset > Source > Divider

SENS:OFFS:SOUR:MULT

SENSe <Ch>:OFFSet:SOURce[:FREQuency]:MULTiplier <numeric>

SENSe <Ch>:OFFSet:SOURce[:FREQuency]:MULTiplier?

Description	Sets or reads out the basic frequency range multiplier to get the source frequency when the frequency offset feature is ON and offset type is "SRCRCv". (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<numeric> multiplier from -1000 to 1000;
Unit	n/a
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	1
Related Commands	SENS:OFFS SENS:OFFS:TYPE
Equivalent Softkeys	Stimulus > Frequency Offset > Source > Multiplier

SENS:OFFS:SOUR:OFFS

SENSe <Ch>:OFFSet:SOURce[:FREQuency]:OFFSet <frequency>

SENSe <Ch>:OFFSet:SOURce[:FREQuency]:OFFSet?

Description	Sets or reads out the basic frequency range offset to get the source frequency when the frequency offset feature is ON and offset type is "SRCRCv". (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<frequency> offset from -1e12 to 1e12;
Unit	Hz (Hertz)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	0
Related Commands	SENS:OFFS SENS:OFFS:TYPE
Equivalent Softkeys	Stimulus > Frequency Offset > Source > Offset

SENS:OFFS:SOUR:STAR

SENSe <Ch>:OFFSet:SOURce[:FREQuency]:STARt <frequency>

SENSe <Ch>:OFFSet:SOURce[:FREQuency]:STARt?

<i>Description</i>	Sets or reads out the frequency sweep start of the source when the frequency offset feature is ON and offset type is "SRCRCv". (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ...16 }
<i>Parameter</i>	< frequency > frequency sweep start of the source
<i>Unit</i>	Hz (Hertz)
<i>Query Response</i>	<numeric>
<i>Related Commands</i>	SENS:OFFS SENS:OFFS:TYPE
<i>Equivalent Softkeys</i>	Stimulus > Frequency Offset > Source > Start

SENS:OFFS:SOUR:STOP

SENSe <Ch>:OFFSet:SOURce[:FREQuency]:STOP <frequency>

SENSe <Ch>:OFFSet:SOURce[:FREQuency]:STOP?

<i>Description</i>	Sets or reads out the frequency sweep stop of the source when the frequency offset feature is ON and offset type is "SRCRCv". (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ...16 }
<i>Parameter</i>	< frequency > frequency sweep stop of the source
<i>Unit</i>	Hz (Hertz)
<i>Query Response</i>	<numeric>
<i>Related Commands</i>	SENS:OFFS SENS:OFFS:TYPE
<i>Equivalent Softkeys</i>	Stimulus > Frequency Offset > Source > Stop

SENS:OFFS:TYPE

SENSe <Ch>:OFFSet:TYPE <char>

SENSe <Ch>:OFFSet:TYPE?

<i>Description</i>	<p>Sets or reads out the frequency offset type when the frequency offset feature is ON. There are two frequency offset types: "Port1/Port2" and "Source/Receivers". First offset type offsets ports against each other. Second offset type offsets source against receivers.</p> <p>(command/query)</p>
<i>Target</i>	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
<i>Parameter</i>	<p><char> Specifies the offset type:</p> <p>PORT : Port1/Port2 offset</p> <p>SRCRcv : Source/Receivers offset</p>
<i>Query Response</i>	{PORT SRCR}
<i>Preset Value</i>	PORT
<i>Equivalent Softkeys</i>	Stimulus > Frequency Offset > Offset Type

SENS:ROSC:SOUR

SENSe <Ch>:ROSCillator:SOURce <char>

SENSe <Ch>:ROSCillator:SOURce?

<i>Description</i>	Sets or reads out the internal or external source of the reference frequency of 10 MHz. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<char> Choose from: INTernal : Internal source of the reference frequency EXTernal : External source of the reference frequency
<i>Query Response</i>	{ INT EXT }
<i>Preset Value</i>	INT
<i>Equivalent Softkeys</i>	System > Misc Setup > Ref Source

SENS:ROSC:EXT:ROUT

SENSe:ROSCillator:EXTeRnal:ROUTe <char>

SENSe:ROSCillator:EXTeRnal:ROUTe?

<i>Description</i>	Sets or reads out the route of the external 10 MHz reference frequency. (command/query, PXIe-S5090 model only)
<i>Target</i>	Instrument
<i>Parameter</i>	<char> Choose from: REAR : Rear panel FRONT : Front panel
<i>Query Response</i>	{REAR FRON}
<i>Preset Value</i>	REAR
<i>Equivalent Softkeys</i>	System > Misc Setup > Ref Source > Ext Ref Route

SENS:SEGM:DATA

SENSe <Ch>:SEGMENT:DATA <numeric list>

SENSe <Ch>:SEGMENT:DATA?

Description	<p>Sets or reads out the array of the segment sweep table.</p> <p>The array has the following format:</p> <pre>{ <Buf>, <Flag1>, <Flag2>, <Flag3>, <Flag4>, <Flag5>, <N>, <Start 1>, <Stop 1>, <NOP 1> [,<IFBW 1>] [,<Pow 1>] [,<Del 1>] [,<Time 1>], <Start 2>, <Stop 2>, <NOP 2> [,<IFBW 2>] [,<Pow 2>] [,<Del 2>] [,<Time 2>], ... <StartN>, <StopN>, <NOP N> [,<IFBW N>] [,<Pow N>] [,<Del N>] [,<TimeN>] }</pre> <p><Buf> : Always 5, <Flag1> : Stimulus start setting (0 – start/stop, 1 – center/span), <Flag2> : Setting of the <IFBW> field (0 – disabled, 1 – enabled), <Flag3> : Setting of the <Pow> field (0 – disabled, 1 – enabled), <Flag4> : Setting of the field (0 – disabled, 1 – enabled), <Flag5> : Setting of the <Time> field (0 – disabled, 1 – enabled), <N> : Number of segments, <Start n> : Start value of the n–th segment, <Stop n> : Stop value of the n–th segment, <NOP n> : Number of points of the n–th segment, <IFBW n> : IF bandwidth of the n–th segment (if enabled), <Pow n> : Power of the n–th segment (if enabled), <Del n> : Measurement delay of the n–th segment (if enabled), <Time n> : Reserved for future use (if enabled)</p> <p>(command/query)</p>
Target	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
Query Response	<p><numeric 1>,<numeric 2>,...<numeric 7+M×N></p> <p>Where, N – the number of the segments, M – depends on the values of the flags: $M = 3 + \text{<Flag2>} + \text{<Flag3>} + \text{<Flag4>} + \text{<Flag5>}$</p>
Equivalent Softkeys	<p>Stimulus > Segment Table</p>

SENS:SWE:POIN

SENSe <Ch>:SWEep:POINts <numeric>

SENSe <Ch>:SWEep:POINts?

<i>Description</i>	Sets or reads out the number of measurement points. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<numeric> the number of measurement points from 2 to maximum limit of the analyzer.
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	201
<i>Equivalent Softkeys</i>	Stimulus > Points

SENS:SWE:POIN:TIME

SENSe <Ch>:SWEep:POINt:TIME <time>

SENSe <Ch>:SWEep:POINt:TIME ?

Description	Sets or reads out the delay before measurement in each measurement point. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ...16 }
Parameter	<time> the measurement delay value from 0 to 0.3 sec.
Unit	sec (Second)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	0
Equivalent Softkeys	Stimulus > Meas Delay

SENS:SWE:REV

SENSe <Ch>:SWEep:REVerse[:STATe] {OFF|ON|0|1}

SENSe <Ch>:SWEep:REVerse[:STATe]?

<i>Description</i>	Sets or reads out the ON/OFF status of the reverse sweep function. In normal sweep mode, the start frequency is less than the stop frequency. If reverse sweep mode is enabled, the stop frequency is less than the start frequency. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={1 2 ...16}
<i>Parameter</i>	{ON 1} : ON - reverse sweep mode {OFF 0} : OFF - normal sweep mode
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Stimulus > Reverse Sweep [ON/OFF]

SENS:SWE:TYPE

SENSe <Ch>:SWEep:TYPE <char>

SENSe <Ch>:SWEep:TYPE?

<i>Description</i>	Sets or reads out the sweep type. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<char> Specifies the sweep type: LI near : Linear frequency sweep LO garithmic : Logarithmic frequency sweep SEG ment : Segment frequency sweep PO wer : Power sweep
<i>Query Response</i>	{ LIN LOG SEGM POW }
<i>Preset Value</i>	LIN
<i>Equivalent Softkeys</i>	Stimulus > Sweep Type

SENS:VOLT:DC:RANG:UPP

SENSe <Ch>:VOLTage{[1]|2}:DC:RANGe:UPPer <numeric>

SENSe <Ch>:VOLTage{[1]|2}:DC:RANGe:UPPer?

Description	Sets or reads out the DC voltage range at the connector AUX1 or AUX2. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<numeric> the DC voltage range 10V or 1V
Unit	V (Volt)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	10
Equivalent Softkeys	Measurement > DC Voltage > Range

SERV:CHAN:ACT?

SERVice:CHANnel:ACTive?

Description	Reads out the active channel number. (query only)
Query Response	<numeric> from 1 to 16
Equivalent Softkeys	None

SERV:CHAN:COUN?

SERVice:CHANnel:COUNT?

<i>Description</i>	Reads out the maximum number of the channels. (query only)
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	None

SERV:CHAN:TRAC:ACT?

SERVice:CHANnel <Ch>:TRACe:ACTive?

<i>Description</i>	Read out the active trace number of the channel. (query only)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Query Response</i>	<numeric> from 1 to 16
<i>Equivalent Softkeys</i>	None

SERV:CHAN:TRAC:COUN?

SERVice:CHANnel:TRACe:COUNT?

<i>Description</i>	Reads out the maximum number of the traces in the channel. (query only)
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	None

SERV:CHAN:TRAC:MARK:ACT?

SERVice:CHANnel <Ch>:TRACe< Tr>:MARKer:ACTive?

<i>Description</i>	Gets the active marker number of the specified trace of the specified channel. (query only)
<i>Target</i>	Trace <Tr> of channel <Ch>, <Ch>={ [1] 2 ...16 } <Tr>={ [1] 2 ...16 }
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	None

SERV:PORT:COUN?

SERVice:PORT:COUNT?

<i>Description</i>	Reads out the number of the ports. (query only)
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	None

SERV:SWE:FREQ:MAX?

SERVice:SWEep:FREQuency:MAXimum?

<i>Description</i>	Reads out the upper limit of the measurement frequency. (query only)
<i>Query Response</i>	<numeric>
<i>Unit</i>	Hz (Hertz)
<i>Equivalent Softkeys</i>	None

SERV:SWE:FREQ:MIN?

SERVice:SWEep:FREQuency:MINimum?

<i>Description</i>	Reads out the lower limit of the analyzer measurement frequency. (query only)
<i>Query Response</i>	<numeric>
<i>Unit</i>	Hz (Hertz)
<i>Equivalent Softkeys</i>	None

SERV:SWE:POIN?

SERVice:SWEep:POINts?

<i>Description</i>	Reads out the maximum number of the measurement points. (query only)
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	None

SERV:SWE:POW:MAX?

SERVice:SWEep:POWer:MAXimum?

<i>Description</i>	Reads out the upper limit of the source power. (query only)
<i>Query Response</i>	<numeric>
<i>Unit</i>	dBm (decibels above 1 milliwatt)
<i>Equivalent Softkeys</i>	None

SERV:SWE:POW:MIN?

SERVice:SWEep:FREQuency:MINimum?

<i>Description</i>	Reads out the lower limit of the source power. (query only)
<i>Query Response</i>	<numeric>
<i>Unit</i>	dBm (decibels above 1 milliwatt)
<i>Equivalent Softkeys</i>	None

SOUR:AUX

SOURce <Ch>:AUXiliary[:STATe] {OFF|ON|0|1}

SOURce <Ch>:AUXiliary[:STATe]?

<i>Description</i>	Turns ON/OFF an auxiliary RF source. The auxiliary RF source takes one port of the 4 port VNA to output the second RF source with programmable frequency and power. The second RF source can be used, for example, as a LO in mixer measurements. The auxiliary port can not be used for measurements. Ports are divided into two groups: 1, 2 and 3, 4. The second port of the group that comprises the auxiliary port can not be used as a stimulus. (command/query, S4VNA only)
<i>Target</i>	Channel <Ch>, <Ch>={1 2 ...16}
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Stimulus > Auxiliary Source > Auxiliary Source [ON/OFF]

SOUR:AUX:FREQ:DIV

SOURce <Ch>:AUXiliary:FREQuency:DIVisor <numeric>

SOURce <Ch>:AUXiliary:FREQuency:DIVisor?

<i>Description</i>	Sets or reads out the basic frequency range divisor to derive the frequency of the auxiliary RF source. (command/query, S4VNA only)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<numeric> the integer divisor from 1 to 1000;
<i>Unit</i>	n/a
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	1
<i>Related Commands</i>	SOUR:AUX:FREQ:MULT SOUR:AUX:FREQ:OFFS
<i>Equivalent Softkeys</i>	Stimulus > Auxiliary Source > Divider

SOUR:AUX:FREQ:MULT

SOURce <Ch>:AUXiliary:FREQuency:MULTiplier <numeric>

SOURce <Ch>:AUXiliary:FREQuency:MULTiplier?

<i>Description</i>	Sets or reads out the basic frequency range multiplier to derive the frequency of the auxiliary RF source. (command/query, S4VNA only)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<numeric> the floating point multiplier from –1000 to 1000;
<i>Unit</i>	n/a
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	0
<i>Related Commands</i>	SOUR:AUX:FREQ:DIV SOUR:AUX:FREQ:OFFS
<i>Equivalent Softkeys</i>	Stimulus > Auxiliary Source > Multiplier

SOUR:AUX:FREQ:OFFS

SOURce <Ch>:AUXiliary:FREQuency:MULTiplier <numeric>

SOURce <Ch>:AUXiliary:FREQuency:MULTiplier?

<i>Description</i>	Sets or reads out the basic frequency range offset to derive the frequency of the auxiliary RF source. (command/query, S4VNA only)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<numeric> the frequency offset from -1e12 to 1e12;
<i>Unit</i>	Hz
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	1 GHz
<i>Related Commands</i>	SOUR:AUX:FREQ:DIV SOUR:AUX:FREQ:MULT
<i>Equivalent Softkeys</i>	Stimulus > Auxiliary Source > Offset

SOUR:AUX:FREQ:STAR

SOURce <Ch>:AUXiliary:FREQuency:STARt <numeric>

SOURce <Ch>:AUXiliary:FREQuency:STARt?

<i>Description</i>	Sets or reads out the start of the frequency range of the auxiliary RF source. When set the multiplier and offset values are automatically corrected. (command/query, S4VNA only)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<numeric> start of the frequency range of the auxiliary RF source within the VNA frequency range;
<i>Unit</i>	Hz (Hertz)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	1 GHz
<i>Related Commands</i>	SOUR:AUX:FREQ:STOP
<i>Equivalent Softkeys</i>	Stimulus > Auxiliary Source > Start

SOUR:AUX:FREQ:STOP

SOURce <Ch>:AUXiliary:FREQuency:STOP <numeric>

SOURce <Ch>:AUXiliary:FREQuency:STOP?

<i>Description</i>	Sets or reads out the stop of the frequency range of the auxiliary RF source (4-port VNA only). When set the multiplier and offset values are automatically corrected. (command/query, S4VNA only)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<numeric> stop of the frequency range of the auxiliary RF source within the VNA frequency range;
<i>Unit</i>	Hz (Hertz)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	1 GHz
<i>Related Commands</i>	SOUR:AUX:FREQ:STAR
<i>Equivalent Softkeys</i>	Stimulus > Auxiliary Source > Stop

SOUR:AUX:PORT

SOURce <Ch>:AUXiliary:PORT <numeric>

SOURce <Ch>:AUXiliary:PORT?

Description	<p>Sets or reads out the port number assigned to the auxiliary RF source when it is turned on.</p> <p>The auxiliary port can not be used for measurements. Ports are divided into two groups: 1, 2 and 3, 4 ports. The second port of the group that comprises the auxiliary port can not be used as a stimulus.</p> <p>(command/query, S4VNA only)</p>
Target	<p>Channel <Ch>, <Ch>={ [1] 2 ... 16 }</p>
Parameter	<p><numeric> port number assigned to the auxiliary RF source from 1 to 4;</p>
Out of Range	<p>Sets the value of the limit, which is closer to the specified value.</p>
Query Response	<p><numeric></p>
Preset Value	<p>4</p>
Equivalent Softkeys	<p>Stimulus > Auxiliary Source > Select Port</p>

SOUR:AUX:POW

SOURce <Ch>:AUXiliary:POWer[:AMPLitude] <numeric>

SOURce <Ch>:AUXiliary:POWer[:AMPLitude]?

<i>Description</i>	Sets or reads out the power of the auxiliary RF source (4-port VNA only). (command/query, S4VNA only)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ...16 }
<i>Parameter</i>	<numeric> the power level of the auxiliary RF source within the power limits of the analyzer;
<i>Unit</i>	dBm (decibels above 1 milliwatt)
<i>Resolution</i>	0.05 dBm
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	0 dBm
<i>Equivalent Softkeys</i>	Stimulus > Auxiliary Source > Power

SOUR:POW

SOURce <Ch>:POWer[:LEVel][:IMMediate][:AMPLitude] <power>

SOURce <Ch>:POWer[:LEVel][:IMMediate][:AMPLitude] ?

Description	Sets or reads out the power level for the frequency sweep type. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<power> the power level within the power limits of the analyzer.
Unit	dBm (decibels above 1 milliwatt)
Resolution	0.05 dBm
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	0 dBm
Equivalent Softkeys	Stimulus > Power > Power

SOUR:POW:CENr

SOURce <Ch>:POWer:CENTer <power>

SOURce <Ch>:POWer:CENTer?

<i>Description</i>	Sets or reads out the center value of the power sweep type. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	<power> the power level within the power limits of the analyzer.
<i>Unit</i>	dBm (decibels above 1 milliwatt)
<i>Resolution</i>	0.05 dBm
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	Depends on the analyzer
<i>Equivalent Softkeys</i>	Stimulus > Center

SOUR:POW:PORT

SOURce <Ch>:POWER:PORT <Pt>[:LEVel][:IMMediate][:AMPLitude] <power>

SOURce <Ch>:POWER:PORT <Pt>[:LEVel][:IMMediate][:AMPLitude]?

Description	Sets or reads out the power level of each port for the frequency sweep type when the port couple feature is set to OFF by the SOUR:POW:PORT:COUP command. (command/query)
Target	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
Parameter	<power> the power level within the power limits of the analyzer.
Unit	dBm (decibels above 1 milliwatt)
Resolution	0.05 dBm
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	0
Related Commands	SOUR:POW:PORT:COUP
Equivalent Softkeys	Stimulus > Power > Port Power > Port n

SOUR:POW:PORT:CORR

SOURce <Ch>:POWER:PORT <Pt>:CORRection[:STATe] {OFF|ON|0|1}

SOURce <Ch>:POWER:PORT <Pt>:CORRection[:STATe]?

<i>Description</i>	Turns ON/OFF the power correction. (command/query)
<i>Target</i>	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Related Commands</i>	SOUR:POW:PORT:CORR:COLL
<i>Equivalent Softkeys</i>	Calibration > Power Calibration > Correction

SOUR:POW:PORT:CORR:COLL

SOURce <Ch>:POWER:PORT <Pt>:CORRection:COLLect[:ACQuire]

<i>Description</i>	Measures the power calibration data for the port <Pt> using the power meter controlled via USB or USB/GPIB. Calculates calibration coefficients on completion of the measurement, and turns ON the power correction for the port. (no query)
<i>Target</i>	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ... 16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
<i>Related Commands</i>	SOUR:POW:PORT:CORR:COLL:TABL:LOSS SOUR:POW:PORT:CORR:COLL:TABL:LOSS:DATA
<i>Equivalent Softkeys</i>	Calibration > Power Calibration > Calibrate

SOUR:POW:PORT:CORR:COLL:TABL:LOSS:DATA

SOURce <Ch>:POWER:PORT <Pt>:CORRection:COLLect:TABLe:LOSS:DATA <numeric list>

SOURce <Ch>:POWER:PORT <Pt>:CORRection:COLLect:TABLe:LOSS:DATA?

Description	Sets/gets the loss compensation table used when the power calibration is executed by the SOUR:POW:PORT:CORR:COLL command. (command/query)
Parameter	<p>The array size is $1+2N$, where N is the number of measurement points.</p> <p>For the n-th point, where n from 1 to N:</p> <p><numeric 1> the number of the table rows N integer from 0 to 10001;</p> <p><numeric 2n> the frequency of the n-th row of the table;</p> <p><numeric 2n+1> the loss compensation value of the n-th row of the table from -100 to +100 dB;</p>
Target	Port <Pt> of channel <Ch>, <Ch>={1 2 ...16} <Pt>={1 2} for S2VNA or {1 2 3 4} for S4VNA
Query Response	<numeric 1>,<numeric 2>,...<numeric 2N+1>
Notes	If the array size is not $1 + 2N$, where N is equal to <numeric 1>, an error occurs. If the <numeric 2n> and <numeric 2n+1> values are out of the allowable range, the value of the limit, which is closer to the specified value will be set.
Related Commands	SOUR:POW:PORT:CORR:COLL SOUR:POW:PORT:CORR:COLL:TABL:LOSS
Equivalent Softkeys	Calibration > Power Calibration > Loss Comp

SOUR:POW:PORT:CORR:COLL:TABL:LOSS

SOURce <Ch>:POWER:PORT <Pt>:CORRection:COLLect:TABLe:LOSS[:STATe]
{OFF|ON|0|1}

SOURce <Ch>:POWER:PORT <Pt>:CORRection:COLLect:TABLe:LOSS[:STATe]?

<i>Description</i>	Turns ON/OFF the state of the loss compensation used when the power calibration is executed by the SOUR:POW:PORT:CORR:COLL command. (command/query)
<i>Target</i>	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ...16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Calibration > Power Calibration > Loss Compens > Compensation [ON/OFF]

SOUR:POW:PORT:CORR:DATA

SOURce <Ch>:POWER:PORT <Pt>:CORRection:DATA <numeric list>

SOURce <Ch>:POWER:PORT <Pt>:CORRection:DATA?

Description	Sets or reads out the power correction array (result of power calibration executed by the SOUR:POW:PORT:CORR:COLL command). (command/query)
Parameter	The array size is NOP, where NOP is the number of measurement points. For the n–th point, where n from 1 to NOP: <numeric n> power correction value of the n–th point;
Target	Port <Pt> of channel <Ch>, <Ch>={ [1] 2 ...16 } <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA
Query Response	<numeric 1>, <numeric 2>, ...<numeric NOP>
Notes	If the array size is not 1 + 2N, where N is equal to <numeric 1>, an error occurs. If the <numeric 2n> and <numeric 2n+1> values are out of the allowable range, the value of the limit, which is closer to the specified value will be set.
Related Commands	SOUR:POW:PORT:CORR:COLL
Equivalent Softkeys	None

SOUR:POW:PORT:COUP

SOURce <Ch>:POWer:PORT:COUPle {OFF|ON|0|1}

SOURce <Ch>:POWer:PORT:COUPle?

<i>Description</i>	Turns ON/OFF the port power couple. Setting the port power couple to OFF allows independent power level setting for each port. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={1 2 ...16}
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	1
<i>Equivalent Softkeys</i>	Stimulus > Power > Port Couple [ON/OFF]

SOUR:POW:SLOP

SOURce <Ch>:POWer[:LEVel]:SLOPe[:DATA] <numeric>

SOURce <Ch>:POWer[:LEVel]:SLOPe[:DATA] ?

<i>Description</i>	Sets or reads out the power slope value for the frequency sweep type. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ...16 }
<i>Parameter</i>	<numeric> the power slope value from – 2 to +2
<i>Unit</i>	dB/GHz (decibel/gigahertz)
<i>Resolution</i>	0.1
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Stimulus > Power > Slope

SOUR:POW:SLOP:STAT

SOURce <Ch>:POWer[:LEVel]:SLOPe:STATe {OFF|ON|0|1}

SOURce <Ch>:POWer[:LEVel]:SLOPe:STATe?

<i>Description</i>	Turns ON/OFF the power slope. The power slope is valid for the frequency sweep type: Linear, Logarithmic, Segment. (command/query)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	Stimulus > Power > Slope [ON/OFF]

SOUR:POW:SPAN

SOURce <Ch>:POWer:SPAN <power>

SOURce <Ch>:POWer:SPAN?

Description	Sets or reads out the power span when the power sweep type is active. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ...16 }
Parameter	<power> the power sweep span value from 0 to maximum limit of the analyzer
Unit	dBm (decibels above 1 milliwatt)
Resolution	0.05 dBm
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	Depends on the analyzer
Equivalent Softkeys	Stimulus > Span

SOUR:POW:STAR

SOURce <Ch>:POWer:STARt <power>

SOURce <Ch>:POWer:STARt?

Description	Sets or reads out the power sweep start value when the power sweep type is active. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ...16 }
Parameter	<power> the power sweep start value within the power limits of the analyzer
Unit	dBm (decibels above 1 milliwatt)
Resolution	0.05 dBm
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	Depends on the analyzer
Equivalent Softkeys	Stimulus > Start

SOUR:POW:STOP

SOURce <Ch>:POWer:STOP <power>

SOURce <Ch>:POWer:STOP?

Description	Sets or reads out the power sweep stop value when the power sweep type is active. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ...16 }
Parameter	<power> the power sweep stop value within the power limits of the analyzer
Unit	dBm (decibels above 1 milliwatt)
Resolution	0.05 dBm
Out of Range	Sets the value of the limit, which is closer to the specified value.
Query Response	<numeric>
Preset Value	Depends on the analyzer
Equivalent Softkeys	Stimulus > Stop

STAT:OPER?

STATus:OPERation[:EVENT]?

Description	Reads out the value of the Operation Status Event Register. (query only)
Target	Status Reporting System
Query Response	<numeric>
Equivalent Softkeys	None

STAT:OPER:COND?

STATus:OPERation:CONDition?

<i>Description</i>	Reads out the value of the Operation Status Condition Register. (query only)
<i>Target</i>	Status Reporting System
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	None

STAT:OPER:ENAB

STATus:OPERation:ENABle <numeric>

STATus:OPERation:ENABle?

<i>Description</i>	Sets or reads out the value of the Operation Status Enable Register. (command/query)
<i>Target</i>	Status Reporting System
<i>Parameter</i>	<numeric> from 0 to 65535
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	None

STAT:OPER:NTR

STATus:OPERation:NTRansition <numeric>

STATus:OPERation:NTRansition?

<i>Description</i>	Sets or reads out the value of the Negative transition filter of the Operation Status Register. (command/query)
<i>Target</i>	Status Reporting System
<i>Parameter</i>	<numeric> from 0 to 65535
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	None

STAT:OPER:PTR

STATus:OPERation:PTRansition <numeric>

STATus:OPERation:PTRansition?

<i>Description</i>	Sets or reads out the value of the Positive transition filter of the Operation Status Register. (command/query)
<i>Target</i>	Status Reporting System
<i>Parameter</i>	<numeric> from 0 to 65535
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	65535
<i>Equivalent Softkeys</i>	None

STAT:PRES

STATus:PRESet

<i>Description</i>	Resets all the status registers to the factory settings. (no query)
<i>Target</i>	Status Reporting System
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	None

STAT:QUES:COND?

STATus:QUEStionable:CONDition?

<i>Description</i>	Reads out the value of the Questionable Status Condition Register. (query only)
<i>Target</i>	Status Reporting System
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	None

STAT:QUES:ENAB

STATus:QUEStionable:ENABle <numeric>

STATus:QUEStionable:ENABle?

<i>Description</i>	Sets or reads out the value of the Questionable Status Enable Register. (command/query)
<i>Target</i>	Status Reporting System
<i>Parameter</i>	<numeric> from 0 to 65535
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	None

STAT:QUES:LIM:CHAN:COND?

STATus:QUEStionable:LIMit:CHANnel <Ch>:CONDition?

<i>Description</i>	Reads out the value of the Questionable Limit Channel Status Condition Register. (query only)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	None

STAT:QUES:LIM:CHAN:ENAB

STATus:QUEStionable:LIMit:CHANnel <Ch>:ENABle <numeric>

STATus:QUEStionable:LIMit:CHANnel <Ch>:ENABle?

Description	Sets or reads out the value of the Questionable Limit Channel Status Enable Register. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<numeric> from 0 to 65535
Query Response	<numeric>
Preset Value	0
Equivalent Softkeys	None

STAT:QUES:LIM:CHAN:NTR

STATus:QUEStionable:LIMit:CHANnel <Ch>:NTRansition <numeric>

STATus:QUEStionable:LIMit:CHANnel <Ch>:NTRansition?

Description	Sets or reads out the value of the Negative transition filter of the Questionable Limit Channel Status Register. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<numeric> from 0 to 65535
Query Response	<numeric>
Preset Value	0
Equivalent Softkeys	None

STAT:QUES:LIM:CHAN:PTR

STATus:QUEStionable:LIMit:CHANnel <Ch>:PTRansition <numeric>

STATus:QUEStionable:LIMit:CHANnel <Ch>:PTRansition?

Description	Sets or reads out the value of the Positive transition filter of the Questionable Limit Channel Status Register. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<numeric> from 0 to 65535
Query Response	<numeric>
Preset Value	65535
Equivalent Softkeys	None

STAT:QUES:LIM:CHAN?

STATus:QUEStionable:LIMit:CHANnel <Ch>[:EVENT]?

Description	Reads out the value of the Questionable Limit Channel Status Event Register. (query only)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Query Response	<numeric>
Equivalent Softkeys	None

STAT:QUES:LIM:COND?

STATus:QUEStionable:LIMit:CONDition?

<i>Description</i>	Reads out the value of the Questionable Limit Status Condition Register. (query only)
<i>Target</i>	Status Reporting System
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	None

STAT:QUES:LIM:ENAB

STATus:QUEStionable:LIMit:ENABle <numeric>

STATus:QUEStionable:LIMit:ENABle?

<i>Description</i>	Sets or reads out the value of the Questionable Limit Status Enable Register. (command/query)
<i>Target</i>	Status Reporting System
<i>Parameter</i>	<numeric> from 0 to 65535
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	None

STAT:QUES:LIM:NTR

STATus:QUEStionable:LIMit:NTRansition <numeric>

STATus:QUEStionable:LIMit:NTRansition?

<i>Description</i>	Sets or reads out the value of the Negative transition filter of the Questionable Limit Status Register. (command/query)
<i>Target</i>	Status Reporting System
<i>Parameter</i>	<numeric> from 0 to 65535
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	None

STAT:QUES:LIM:PTR

STATus:QUEStionable:LIMit:PTRansition <numeric>

STATus:QUEStionable:LIMit:PTRansition?

<i>Description</i>	Sets or reads out the value of the Positive transition filter of the Questionable Limit Status Register. (command/query)
<i>Target</i>	Status Reporting System
<i>Parameter</i>	<numeric> from 0 to 65535
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	65535
<i>Equivalent Softkeys</i>	None

STAT:QUES:LIM?

STATus:QUEStionable:LIMit[:EVENT]?

<i>Description</i>	Reads out the value of the Questionable Limit Status Event Register. (query only)
<i>Target</i>	Status Reporting System
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	None

STAT:QUES:NTR

STATus:QUEStionable:NTRansition <numeric>

STATus:QUEStionable:NTRansition?

<i>Description</i>	Sets or reads out the value of the Negative transition filter of the Questionable Status Register. (command/query)
<i>Target</i>	Status Reporting System
<i>Parameter</i>	<numeric> from 0 to 65535
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	None

STAT:QUES:PTR

STATus:QUEStionable:PTRansition <numeric>

STATus:QUEStionable:PTRansition ?

<i>Description</i>	Sets or reads out the value of the Positive transition filter of the Questionable Status Register. (command/query)
<i>Target</i>	Status Reporting System
<i>Parameter</i>	<numeric> from 0 to 65535
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	65535
<i>Equivalent Softkeys</i>	None

STAT:QUES:RLIM:CHAN:COND?

STATus:QUEStionable:RLIMit:CHANnel <Ch>:CONDition ?

<i>Description</i>	Reads out the value of the Questionable Ripple Limit Channel Status Condition Register. (query only)
<i>Target</i>	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	None

STAT:QUES:RLIM:CHAN:ENAB

STATus:QUEStionable:RLIMit:CHANnel <Ch>:ENABle <numeric>

STATus:QUEStionable:RLIMit:CHANnel <Ch>:ENABle?

Description	Sets or reads out the value of the Questionable Ripple Limit Channel Status Enable Register. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<numeric> from 0 to 65535
Query Response	<numeric>
Preset Value	0
Equivalent Softkeys	None

STAT:QUES:RLIM:CHAN:NTR

STATus:QUEStionable:RLIMit:CHANnel <Ch>:NTRansition <numeric>

STATus:QUEStionable:RLIMit:CHANnel <Ch>:NTRansition?

Description	Sets or reads out the value of the Negative transition filter of the Questionable Ripple Limit Channel Status Register. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<numeric> from 0 to 65535
Query Response	<numeric>
Preset Value	0
Equivalent Softkeys	None

STAT:QUES:RLIM:CHAN:PTR

STATus:QUEStionable:RLIMit:CHANnel <Ch>:PTRansition <numeric>

STATus:QUEStionable:RLIMit:CHANnel <Ch>:PTRansition?

Description	Sets or reads out the value of the Positive transition filter of the Questionable Ripple Limit Channel Status Register. (command/query)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Parameter	<numeric> from 0 to 65535
Query Response	<numeric>
Preset Value	65535
Equivalent Softkeys	None

STAT:QUES:RLIM:CHAN?

STATus:QUEStionable:RLIMit:CHANnel <Ch>[:EVENT]?

Description	Reads out the value of the Questionable Ripple Limit Channel Status Event Register. (query only)
Target	Channel <Ch>, <Ch>={ [1] 2 ... 16 }
Query Response	<numeric>
Equivalent Softkeys	None

STAT:QUES:RLIM:COND?

STATus:QUEStionable:RLIMit:CONDition?

<i>Description</i>	Reads out the value of the Questionable Ripple Limit Status Condition Register. (query only)
<i>Target</i>	Status Reporting System
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	None

STAT:QUES:RLIM:ENAB

STATus:QUEStionable:RLIMit:ENABle <numeric>

STATus:QUEStionable:RLIMit:ENABle?

<i>Description</i>	Sets or reads out the value of the Questionable Ripple Limit Status Enable Register. (command/query)
<i>Target</i>	Status Reporting System
<i>Parameter</i>	<numeric> from 0 to 65535
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	None

STAT:QUES:RLIM:NTR

STATus:QUEStionable:RLIMit:NTRansition <numeric>

STATus:QUEStionable:RLIMit:NTRansition?

<i>Description</i>	Sets or reads out the value of the Negative transition filter of the Questionable Ripple Limit Status Register. (command/query)
<i>Target</i>	Status Reporting System
<i>Parameter</i>	<numeric> from 0 to 65535
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	None

STAT:QUES:RLIM:PTR

STATus:QUEStionable:RLIMit:PTRansition <numeric>

STATus:QUEStionable:RLIMit:PTRansition?

<i>Description</i>	Sets or reads out the value of the Positive transition filter of the Questionable Ripple Limit Status Register. (command/query)
<i>Target</i>	Status Reporting System
<i>Parameter</i>	<numeric> from 0 to 65535
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	65535
<i>Equivalent Softkeys</i>	None

STAT:QUES:RLIM?

STATus:QUEStionable:RLIMit[:EVENT]?

<i>Description</i>	Reads out the value of the Questionable Ripple Limit Status Event Register. (query only)
<i>Target</i>	Status Reporting System
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	None

STAT:QUES?

STATus:QUEStionable[:EVENT]?

<i>Description</i>	Reads out the value of the Questionable Status Event Register. (query only)
<i>Target</i>	Status Reporting System
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	None

SYST:BEEP:COMP:IMM

SYSTem:BEEPer:COMPLete:IMMEDIATE

<i>Description</i>	Generates a beep to notify of the completion of the operation. (no query)
<i>Equivalent Softkeys</i>	System > Misc Setup > Beeper > Test Beep Complete

SYST:BEEP:COMP:STAT

SYSTem:BEEPer:COMPLete:STATe {OFF|ON|0|1}

SYSTem:BEEPer:COMPLete:STATe?

<i>Description</i>	Turns ON/OFF the beeper notifying of the completion of the operation. (command/query)
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	1
<i>Equivalent Softkeys</i>	System > Misc Setup > Beeper > Beep complete

SYST:BEEP:WARN:IMM

SYSTem:BEEPer:WARNing:IMMEDIATE

<i>Description</i>	Generates a beep to notify of warning. (no query)
<i>Equivalent Softkeys</i>	System > Misc Setup > Beeper > Test Beep Warning

SYST:BEEP:WARN:STAT

SYSTem:BEEPer:WARNing:STATe {OFF|ON|0|1}

SYSTem:BEEPer:WARNing:STATe?

<i>Description</i>	Turns ON/OFF the beeper notifying of warning. (command/query)
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	1
<i>Equivalent Softkeys</i>	System > Misc Setup > Beeper > Beep Warning

SYST:CAP:IFBW:MAX?

SYSTem:CAPability:IFBW:MAXimum?

<i>Description</i>	Reads out the upper limit of the IFBW. (query only)
<i>Unit</i>	Hz (Hertz)
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	None

SYST:CAP:IFBW:MIN?

SYSTem:CAPability:IFBW:MINimum?

<i>Description</i>	Reads out the lower limit of the IFBW. (query only)
<i>Unit</i>	Hz (Hertz)
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	None

SYST:COMM:ECAL:TEMP:SENS?

SYSTem:COMMunicate:ECAL:TEMPerature:SENSor?

<i>Description</i>	Reads out the temperature of the AutoCal module connected to the Analyzer. (query only)
<i>Target</i>	AutoCal module
<i>Unit</i>	°C
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	None

SYST:COMM:ECAL:IMP

SYSTem:COMMunicate:ECAL:IMPedance <port>, <char>

SYSTem:COMMunicate:ECAL:IMPedance? <port>

<i>Description</i>	Sets or reads out the impedance state of the specified port of AutoCal module. (command/query)
<i>Parameters</i>	<port> : Port number of the AutoCal module <char> Specifies the math operation: OPEN : OPEN impedance state SHORT : SHORT impedance state LOAD : LOAD impedance state LOAD2 : LOAD2 impedance state OPEN2 : OPEN2 impedance state
<i>Query Response</i>	{OPEN SHOR LOAD THRU LOAD2 OPEN2}
<i>Preset Value</i>	LOAD
<i>Equivalent Softkeys</i>	None

SYST:COMM:ECAL:READY?

SYSTem:COMMunicate:ECAL:READY?

<i>Description</i>	Reads out the readiness status of the AutoCal Module. 1 indicates that the AutoCal Module is ready. (query only)
<i>Query Response</i>	{0 1}, 1 - the module is ready
<i>Equivalent Softkeys</i>	None

SYST:COMM:ECAL:THRU

SYSTem:COMMunicate:ECAL:THRU <port1>, <port2>

<i>Description</i>	Sets the THRU state between the specified 2 ports of AutoCal module (command only).
<i>Parameters</i>	<p><port1> : the first port number of the AutoCal module</p> <p><port2> : the second port number of the AutoCal module</p>
<i>Equivalent Softkeys</i>	None

SYST:COMM:ECAL:CHEC

SYSTem:COMMunicate:ECAL:CHECK

<i>Description</i>	Sets the CHECK state of AutoCal module (command only).
<i>Equivalent Softkeys</i>	None

SYST:COMM:PSEN:READY?

SYSTem:COMMunicate:PSEnSor:READY?

<i>Description</i>	<p>Selects the power sensor type to be used in a source power calibration.</p> <p>(query only)</p>
<i>Query Response</i>	{0 1}, 1 - the Power Sensor is ready
<i>Equivalent Softkeys</i>	None

SYST:COMM:PSEN:TYPE

SYSTem:COMMunicate:PSEnsor:TYPE <char>

SYSTem:COMMunicate:PSEnsor:TYPE?

<i>Description</i>	Selects the power sensor type to be used in a source power calibration. (command/query)
<i>Parameter</i>	<char> Choose from: NRPZ : Rohde&Schwarz NRP-Z series Sensors NRPxT : Rohde&Schwarz NRPxT series Sensors NRVS : Rohde&Schwarz NRVS power meter U848x : Keysight U848x series Sensors U200x : Keysight U200x series Sensors
<i>Query Response</i>	{NRPZ NRPxT NRVS U848x U200x}
<i>Preset Value</i>	NRPZ
<i>Equivalent Softkeys</i>	System > Misc Setup > Power Meter Settings > Power Metewr {NRPZ NRPxT NRVS U848x U200x}

SYST:COMM:PSEN:ZERO

SYSTem:COMMunicate:PSEnsor:ZEROing

<i>Description</i>	Executes zeroing procedure of the power sensor. (command only).
<i>Note</i>	The power meter sensor can be connected to the port, since during this procedure, the output signal of the port is turned off the RF power.
<i>Equivalent Softkeys</i>	Calibration > Power Calibration > Power Sensor Zero Correction

SYST:CORR

SYSTem:CORRection[:STATe] {OFF|ON|0|1}

SYSTem:CORRection[:STATe]?

<i>Description</i>	Turns ON/OFF the system correction. The system correction is the factory full 1-port calibration performed at the port connectors. (command/query)
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	1
<i>Equivalent Softkeys</i>	System > Misc Setup > System Correction

SYST:CYCL:TIME:MEAS?

SYSTem:CYCLe:TIME:MEASurement?

<i>Description</i>	Reads out the measured cycle time. The cycle time is the interval between the start of two adjacent sweeps. The cycle time is averaged by an exponential window with a time constant of about 0.5 sec. If the cycle time is changed more than 100 usec in comparison with the averaged time, the averaging starts anew. (query only)
<i>Target</i>	Analyzer
<i>Unit</i>	sec (second)
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	Display > Properies > Cycle Time

SYST:DATE

SYSTem:DATE <numeric 1>,<numeric 2>,<numeric 3>

SYSTem:DATE?

<i>Description</i>	Sets or reads out the current date. (command/query)
<i>Parameter</i>	<numeric 1> year from 1900 to 2100; <numeric 2> month from 1 to 12; <numeric 3> day from 1 to 31.
<i>Query Response</i>	<numeric 1>,<numeric 2>,<numeric 3>
<i>Equivalent Softkeys</i>	None

SYST:ERR?

SYSTem:ERRor[:NEXT]?

<i>Description</i>	Reads out the error message of the error occurred when executing the SCPI commands, from the FIFO (First In First Out) error queue stored in the Analyzer. The read out error is deleted from the error queue. The *CLS command clears the error queue. The maximum size of the queue is 100 messages. (query only)
<i>Query Response</i>	<numeric>,<string> Where: <numeric> error code <string> error message If there is no error in the queue, "0, No error" is read out.
<i>Equivalent Softkeys</i>	None

SYST:FREQ:EXT:RFP:POW

SYSTem:FREQuency:EXTender:RFPort:POWer <numeric>

SYSTem:FREQuency:EXTender:RFPort:POWer?

<i>Description</i>	Sets or reads out the RF Port Power when analyzer is configured to work with a frequency extender. (command/query)
<i>Parameter</i>	<numeric> the power value.
<i>Unit</i>	dBm (decibel relative to 1 milliwatt)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	System > Misc Setup > Frequency Extender > RF Port Power

SYST:FREQ:EXT:RFP:PSL

SYSTem:FREQuency:EXTender:RFPort:PSLope <numeric>

SYSTem:FREQuency:EXTender:RFPort:PSLope?

<i>Description</i>	Sets or reads out the RF Port Power Slope when analyzer is configured to work with a frequency extender. (command/query)
<i>Parameter</i>	<numeric> the slope value.
<i>Unit</i>	dB/GHz (decibel / gigahertz)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	System > Misc Setup > Frequency Extender > RF Power Slope

SYST:FREQ:EXT:LOP:POW

SYSTem:FREQuency:EXTender:LOPort:POWer <numeric>

SYSTem:FREQuency:EXTender:LOPort:POWer?

<i>Description</i>	Sets or reads out the LO Port Power when analyzer is configured to work with a frequency extender. (command/query)
<i>Parameter</i>	<numeric> the power value.
<i>Unit</i>	dBm (decibel relative to 1 milliwatt)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	System > Misc Setup > Frequency Extender > LO Port Power

SYST:FREQ:EXT:LOP:PSL

SYSTem:FREQuency:EXTender:LOPort:PSLope <numeric>

SYSTem:FREQuency:EXTender:LOPort:PSLope?

<i>Description</i>	Sets or reads out the LO Port Power Slope when analyzer is configured to work with a frequency extender. (command/query)
<i>Parameter</i>	<numeric> the slope value.
<i>Unit</i>	dB/GHz (decibel / gigahertz)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	<numeric>
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	System > Misc Setup > Frequency Extender > LO Power Slope

SYST:FREQ:EXT:TYPE

SYSTem:FREQuency:EXTender:TYPE <char>

SYSTem:FREQuency:EXTender:TYPE?

<i>Description</i>	<p>Selects or reads the frequency extender type. When the new type is selected the connection has been closed because of the program restart.</p> <p>(command/query)</p>
<i>Parameter</i>	<p><char> Choose from:</p> <p>NONE : None</p> <p>FEV15 : FEV-15 50 – 75 GHz</p> <p>FEV12 : FEV-15 60 – 90 GHz</p> <p>FEV10 : FEV-15 75 – 110 GHz</p> <p>FET1854 : FET-1854 18 – 54 GHz</p> <p>CUSTom : Custom</p>
<i>Query Response</i>	{NONE FEV15 FEV12 FEV10 FET1854 CUST}
<i>Preset Value</i>	NONE
<i>Equivalent Softkeys</i>	<p>System > Misc Setup > Frequency Extender > {None FEV15 FEV12 FEV10 FET1854 Custom}</p>

SYST:FREQ:EXT:PORT:CONN?

SYSTem:FREQuency:EXTender:PORT<Pt>:CONNect?

<i>Description</i>	<p>Reads out whether the frequency extender is connected to the port number <Pt>. The actual state is read out when the FET-1854 is configured. Always reads 1 when other type of frequency extender is configured.</p> <p>(query only)</p>
<i>Target</i>	<p>Port <Pt>, <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA</p>
<i>Query Response</i>	<p>1 : Connected 0 : Not connected</p>
<i>Equivalent Softkeys</i>	None

SYST:FREQ:EXT:PORT:SER?

SYSTem:FREQuency:EXTender:PORT<Pt>:SERial?

<i>Description</i>	<p>Reads out whether the serial number of the frequency extender connected to the port number <Pt>. The actual serial number is read out when the FET-1854 is configured. Always reads "00000000" when other type of frequency extender is configured.</p> <p>(query only)</p>
<i>Target</i>	<p>Port <Pt>, <Pt>={ [1] 2 } for S2VNA or { [1] 2 3 4 } for S4VNA</p>
<i>Query Response</i>	<String> of 8 symbols
<i>Equivalent Softkeys</i>	None

SYST:HIDE

SYSTem:HIDE

<i>Description</i>	Minimizes the analyzer main window removing it from desktop. (no query)
<i>Related Commands</i>	SYST:SHOW
<i>Equivalent Softkeys</i>	None

SYST:LOC

SYSTem:LOCal

<i>Description</i>	Sets the Analyzer to the local operation mode, when all the keys on the front panel, mouse and the touch screen are active. (no query)
<i>Related Commands</i>	SYST:REM SYST:RWL
<i>Equivalent Softkeys</i>	None

SYST:PRES

SYSTem:PRESet

<i>Description</i>	Resets the Analyzer to the factory settings. (no query)
<i>Notes</i>	The difference from the *RST: command is that the trigger is set to the <i>Continuous</i> trigger mode.
<i>Related Commands</i>	*RST
<i>Equivalent Softkeys</i>	System > Preset > OK

SYST:REC:DIR:ACC

SYSTem:RECeiver:DIRect:ACCess[:STATe] {OFF|ON|0|1}

SYSTem:RECeiver:DIRect:ACCess[:STATe]?

<i>Description</i>	Turns ON/OFF the direct access to receiver function. C2220 and C2420 models only. (command/query)
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	System > Misc Setup > Direct Access to Receivers

SYST:REC:OVER:POW

SYSTem:RECeiver:OVERload:POWer[:STATe] {OFF|ON|0|1}

SYSTem:RECeiver:OVERload:POWer[:STATe]?

<i>Description</i>	Turns ON/OFF the Power Trip at Overload function. Except for Planar-804/808/304 Models. (command/query)
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Equivalent Softkeys</i>	System > Misc Setup > Power Trip at Overload

SYST:REAdy?

SYSTem:REAdy[:STATe]?

<i>Description</i>	<p>Reads out the analyzer readiness status. 1 indicates that the analyzer is ready. 0 indicates that the analyzer is not ready. The state is ready after the initialization is completed. Initialization occurs after connecting and turning on the analyzer hardware or after starting the software. Initialization takes about 10-15 seconds.</p> <p>(query only)</p>
<i>Query Response</i>	{0 1}
<i>Equivalent Softkeys</i>	None

SYST:REM

SYSTem:REMOte

<i>Description</i>	<p>Sets the Analyzer to the remote operation mode, when all the keys on the front panel, mouse and the touch screen are not active, except for one key labeled Return to Local. Pushing this button will reset the Analyzer to the local operation mode.</p> <p>(no query)</p>
<i>Related Commands</i>	<p>SYST:LOC SYST:RWL</p>
<i>Equivalent Softkeys</i>	None

SYST:RWL

SYSTem:RWLock

<i>Description</i>	Sets the Analyzer to the remote operation mode, when all the keys on the front panel, mouse and the touch screen are not active. Only SYST:LOC or SYST:REM command can release this remote operation mode. (no query)
<i>Related Commands</i>	SYST:LOC SYST:REM
<i>Equivalent Softkeys</i>	None

SYST:SERV:PVER:INT

SYSTem:SERVice:PVERify:INTerval <numeric>

SYSTem:SERVice:PVERify:INTerval?

<i>Description</i>	Sets or reads out the interval between Instrument Performance Verifications. One year (365 days) is recommended. (command/query)
<i>Parameter</i>	<numeric> interval in days;
<i>Query Response</i>	<numeric>
<i>Default</i>	0 (not set)
<i>Equivalent Softkeys</i>	None

SYST:SERV:PVER:LAST

SYSTem:SERVice:PVERify:LAST <numeric 1>, <numeric 2>, <numeric 3>

SYSTem:SERVice:PVERify:LAST?

<i>Description</i>	Sets or reads out the date of the last Instrument Performance Verification. (command/query)
<i>Parameter</i>	<numeric 1> year; <numeric 2> month; <numeric 3> day.
<i>Query Response</i>	<year>, <month>, <day>
<i>Default</i>	0,0,0 (not set)
<i>Equivalent Softkeys</i>	None

SYST:SERV:PVER:NEXT

SYSTem:SERVice:PVERify:NEXT?

<i>Description</i>	Reads out the date of the next Instrument Performance Verification. (command/query)
<i>Query Response</i>	<year>, <month>, <day>
<i>Default</i>	0,0,0 (not set)
<i>Equivalent Softkeys</i>	None

SYST:SHOW

SYSTem:SHOW

<i>Description</i>	Restores the analyzer main window hidden by the SYST:HIDE command. (no query)
<i>Related Commands</i>	SYST:HIDE
<i>Equivalent Softkeys</i>	None

SYST:TEMP:SENS?

SYSTem:TEMPerature:SENSor?

<i>Description</i>	Reads out the specified sensor temperature inside the Analyzer. (query only)
<i>Target</i>	Analyzer
<i>Parameter</i>	<numeric> the DC
<i>Unit</i>	°C (degrees Celsius)
<i>Query Response</i>	<numeric>
<i>Equivalent Softkeys</i>	None

SYST:TEST?

SYSTem:TEST?

<i>Description</i>	<p>Reads out a textual description of the analyzer self-test. If no failure conditions exist, "No failures" is read, otherwise the failures description string is read. The string contains substrings separated with semicolon.</p> <p>Note: the query returns "Not ready" when it is issued until the analyzer is ready.</p> <p>(query only)</p>
<i>Target</i>	Instrument
<i>Query Response</i>	< <i>string</i> >
<i>Related commands</i>	<p>*TST?</p> <p>SYST:READY?</p>
<i>Equivalent Softkeys</i>	None

SYST:TERM

SYSTem:TERMinate

<i>Description</i>	<p>Terminates the analyzer software.</p> <p>(no query)</p>
<i>Equivalent Softkeys</i>	None

SYST:TIME

SYSTem:TIME <numeric 1>, <numeric 2>, <numeric 3>

SYSTem:TIME?

<i>Description</i>	Sets or reads out the current time. (command/query)
<i>Parameter</i>	<p><numeric 1> hours from 0 to 23;</p> <p><numeric 2> minutes from 0 to 59;</p> <p><numeric 3> seconds from 0 to 59.</p>
<i>Query Response</i>	<numeric 1>, <numeric 2>, <numeric 3>
<i>Equivalent Softkeys</i>	None

TRIG

TRIGger[:SEquence][:IMMediate]

<i>Description</i>	<p>Generates a trigger signal and initiates a sweep under the following conditions.</p> <ol style="list-style-type: none"> 1. Trigger source is set to the <i>BUS</i> (set by the command TRIG:SOUR BUS), otherwise an error occurs and the command is ignored. 2. Analyzer must be in the <i>trigger waiting</i> state, otherwise (the analyzer is in the <i>measurement</i> state or in the <i>hold</i> state) an error occurs and the command is ignored. <p>The command is completed immediately after the generation of the trigger signal (does not wait the end of a sweep). (no query)</p>
<i>Related Commands</i>	TRIG:SOUR BUS INIT:CONT INIT
<i>Equivalent Softkeys</i>	None

TRIG:AVER

TRIGger[:SEquence]:AVERage {OFF|ON|0|1}

TRIGger[:SEquence]:AVERage?

<i>Description</i>	<p>Turns ON/OFF the averaging trigger function. The function executes a sweep the number of times specified by the averaging factor with a single trigger for the channels with the averaging enabled.</p> <p>The averaging process begins again with each trigger.</p> <p>Note: The point trigger function has priority against this command. When the point trigger is enabled the number of pulses equal to (number of points) x (averaging factor) is needed to complete the averaging.</p> <p>(command/query)</p>
<i>Parameter</i>	<p>Specifies the averaging trigger function state:</p> <p>{ON 1} : ON</p> <p>{OFF 0} : OFF</p>
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Related Commands</i>	SENS:AVER
<i>Equivalent Softkeys</i>	Average > Avg Trigger [ON/OFF]

TRIG:EXT:DEL

TRIGger[:SEquence]:EXTernal:DELay <time>

TRIGger[:SEquence]:EXTernal:DELay?

<i>Description</i>	Sets or reads out the response delay with respect to the external trigger signal. (command/query)
<i>Parameter</i>	< time > the delay value from 0 to 100 sec.
<i>Unit</i>	sec (second)
<i>Out of Range</i>	Sets the value of the limit, which is closer to the specified value.
<i>Query Response</i>	< numeric >
<i>Preset Value</i>	0
<i>Related Commands</i>	TRIG:SOUR EXT
<i>Equivalent Softkeys</i>	Stimulus > Trigger > Ext Trig > Delay

TRIG:EXT:SLOP

TRIGger[:SEQuence]:EXTernal:SLOPe <char>

TRIGger[:SEQuence]:EXTernal:SLOPe?

<i>Description</i>	Sets or reads out the polarity of the external trigger. (command/query)
<i>Parameter</i>	<char> Choose from: POSitive : Positive edge NEGative : Negative edge
<i>Query Response</i>	{POS NEG}
<i>Preset Value</i>	NEG
<i>Related Commands</i>	TRIG:SOUR
<i>Equivalent Softkeys</i>	Stimulus > Trigger > Ext Trig Polarity > {Negative edge Positive edge}

TRIG:EXT:POS

TRIGger[:SEquence]:EXTernal:POSition <char>

TRIGger[:SEquence]:EXTernal:POSition?

Description	<p>Selects the position of the external trigger. The Analyzer waits for external trigger:</p> <ul style="list-style-type: none"> • Before sampling, when the frequency of the stimulus port have been set. • Before the frequency setup and subsequent measurement. The frequency change of the stimulus port begins when the external trigger arrives. <p>Depending on the command TRIG:POIN the external trigger wait occurs before each point or before the first point of the full sweep cycle.</p> <p>(command/query)</p>
Parameter	<p><char> Choose from:</p> <p>BSAM : Before sampling</p> <p>BSET : Before frequency setup</p>
Query Response	{BSAM BSET}
Preset Value	BSAM
Related Commands	TRIG:SOUR
Equivalent Softkeys	Stimulus > Trigger > Ext Trig > Position > {Before sampling Before setup}

TRIG:EXT:ROUT

TRIGger[:SEquence]:EXTernal:ROUTe <char>

TRIGger[:SEquence]:EXTernal:ROUTe?

<i>Description</i>	<p>Selects the connector to use for the external trigger input in a PXI system (command valid for PXIe-5090 model only). The trigger source must be set to the EXTERNAL. One of the 10 routes can be selected.</p> <p>The same line cannot be selected as input and output trigger route. (command/query, PXIe-5090 model only)</p>
<i>Parameter</i>	<p><char> Choose from:</p> <p>SMB : Front panel connector "Ext Trig In"</p> <p>STAR : Backplane Trigger Line (PXI STAR)</p> <p>TRIG0 : Backplane Trigger Line (PXI TRIG0)</p> <p>TRIG1 : Backplane Trigger Line (PXI TRIG1)</p> <p>TRIG2 : Backplane Trigger Line (PXI TRIG2)</p> <p>TRIG3 : Backplane Trigger Line (PXI TRIG3)</p> <p>TRIG4 : Backplane Trigger Line (PXI TRIG4)</p> <p>TRIG5 : Backplane Trigger Line (PXI TRIG5)</p> <p>TRIG6 : Backplane Trigger Line (PXI TRIG6)</p> <p>TRIG7 : Backplane Trigger Line (PXI TRIG7)</p>
<i>Query Response</i>	{SMB STAR TRIG0 TRIG1 TRIG2 TRIG3 TRIG4 TRIG5 TRIG6 TRIG7}
<i>Preset Value</i>	SMB
<i>Related Commands</i>	TRIG:SOUR
<i>Equivalent Softkeys</i>	Stimulus > Trigger > Ext Trig > Route > {SMB STAR TRIG0 ...TRIG7}

TRIG:OUTP:FUNC

TRIGger:OUTPut:FUNction <char>

TRIGger:OUTPut:FUNction?

<i>Description</i>	Selects the trigger output function. The trigger output outputs various waveforms depending on the setting of the Output Trigger Function (see the operating manual). (command/query)
<i>Parameter</i>	<char> Choose from: BSET : Before frequency setup pulse BSAM : Before sampling pulse ASAM : After sampling pulse RTRG : Ready for trigger signal ESWP : End of sweep pulse MEAS : Measurement sweep signal
<i>Query Response</i>	{BSET BSAM ASAM RTGR ESWP MEAS}
<i>Preset Value</i>	RTRG
<i>Related Commands</i>	TRIG:OUTP:STAT TRIG:OUTP:POL
<i>Equivalent Softkeys</i>	Stimulus > Trigger > Trigger Output > Function > {Before setup Before sampling After sampling Ready for trigger Sweep End Measurement}

TRIG:OUTP:POL

TRIGger:OUTPut:POLarity <char>

TRIGger:OUTPut:POLarity?

<i>Description</i>	Sets or reads out the polarity of the trigger output. (command/query)
<i>Parameter</i>	<char> Choose from: POSitive : Positive edge NEGative : Negative edge
<i>Query Response</i>	{POS NEG}
<i>Preset Value</i>	NEG
<i>Related Commands</i>	TRIG:OUTP:FUNC TRIG:OUTP:STAT
<i>Equivalent Softkeys</i>	Stimulus > Trigger > Trigger Output > Polarity > {Negative edge Positive edge}

TRIG:OUTP:ROUT

TRIGger:OUTPut:ROUTe <char>

TRIGger:OUTPut:ROUTe?

Description	<p>Selects the connector to use for the trigger output in a PXI system (command valid for PXIe-5090 model only). The trigger output must be activated and configured by the TRIG:OUTP:XXX commands. One of the 9 routes can be selected.</p> <p>The same line cannot be selected as input and output trigger route. (command/query, PXIe-5090 model only)</p>
Parameter	<p><char> Choose from:</p> <p>SMB : Front panel connector "Ext Trig Out"</p> <p>TRIG0 : Backplane Trigger Line (PXI TRIG0)</p> <p>TRIG1 : Backplane Trigger Line (PXI TRIG1)</p> <p>TRIG2 : Backplane Trigger Line (PXI TRIG2)</p> <p>TRIG3 : Backplane Trigger Line (PXI TRIG3)</p> <p>TRIG4 : Backplane Trigger Line (PXI TRIG4)</p> <p>TRIG5 : Backplane Trigger Line (PXI TRIG5)</p> <p>TRIG6 : Backplane Trigger Line (PXI TRIG6)</p> <p>TRIG7 : Backplane Trigger Line (PXI TRIG7)</p>
Query Response	{SMB TRIG0 TRIG1 TRIG2 TRIG3 TRIG4 TRIG5 TRIG6 TRIG7}
Preset Value	SMB
Related Commands	TRIG:OUTP:STAT
Equivalent Softkeys	Stimulus > Trigger > Trigger Output > Route > {SMB TRIG0 ...TRIG7}

TRIG:OUTP:STAT

TRIGger:OUTPut:STATe {OFF|ON|0|1}

TRIGger:OUTPut:STATe?

<i>Description</i>	Turns ON/OFF the trigger output. (command/query)
<i>Parameter</i>	{ON 1} : ON {OFF 0} : OFF
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Related Commands</i>	TRIG:OUTP:FUNC TRIG:OUTP:POL
<i>Equivalent Softkeys</i>	Stimulus > Trigger > Trigger Output > Trigger Output [ON/OFF]

TRIG:POIN

TRIGger[:SEquence]:POINT {OFF|ON|0|1}

TRIGger[:SEquence]:POINT?

<i>Description</i>	<p>Turns ON/OFF the point trigger feature.</p> <p>When the point trigger is turned ON, the external trigger response is the single point. When the point trigger feature is turned OFF, the external trigger response is the entire sweep.</p> <p>(command/query)</p>
<i>Parameter</i>	<p>{ON 1} : ON</p> <p>{OFF 0} : OFF</p>
<i>Query Response</i>	{0 1}
<i>Preset Value</i>	0
<i>Related Commands</i>	TRIG:SOUR EXT
<i>Equivalent Softkeys</i>	Stimulus > Trigger > Ext Trig Event > {On Sweep On Point}

TRIG:SING

TRIGger[:SEquence]:SINGle

<p><i>Description</i></p>	<p>Generates a trigger signal and initiates a sweep under the following conditions.</p> <ul style="list-style-type: none"> • Trigger source is set to the <i>BUS</i> (set by the command TRIG:SOUR BUS), otherwise an error occurs and the command is ignored. • Analyzer must be in the <i>trigger waiting</i> state, otherwise (the analyzer is in the <i>measurement</i> state or in the <i>hold</i> state) an error occurs and the command is ignored. <p>As opposed to the TRIG command this command is pending till the end of the sweep. The end of the sweep initiated by the TRIG:SING command can be waited using the *OPC? query.</p> <p>(no query)</p>
<p><i>Related Commands</i></p>	<p>TRIG:SOUR *OPC? INIT:CONT INIT</p>
<p><i>Equivalent Softkeys</i></p>	<p>None</p>

TRIG:SCOP

TRIGger[:SEQuence]:SCOPe <char>

TRIGger[:SEQuence]:SCOPe?

<i>Description</i>	<p>Sets or reads out the trigger scope. The trigger scope determines the response on the trigger signal arrival: either starts a sweep of all waiting channels in turn or starts a sweep in the active channel only.</p> <p>(command/query)</p>
<i>Parameter</i>	<p><char> Choose from:</p> <p>ALL : All channels</p> <p>ACTive : Active channel</p>
<i>Query Response</i>	{ALL ACT}
<i>Preset Value</i>	ALL
<i>Related Commands</i>	<p>TRIG</p> <p>TRIG:SING</p> <p>*TRG</p>
<i>Equivalent Softkeys</i>	Stimulus > Trigger > Trigger Scope > {All Channels Active Channel}

TRIG:SOUR

TRIGger[:SEQuence]:SOURce <char>

TRIGger[:SEQuence]:SOURce?

Description	<p>Selects the trigger source (see options below).</p> <p>If the the <i>continuous trigger initiation</i> mode is enabled with the command INIT:CONT ON, the INTernal choice leads to continuous sweep. The choice of another option switches the analyzer to the <i>trigger waiting state</i> from the corresponding source.</p> <p>If the the <i>continuous trigger initiation</i> mode is disabled with the command INIT:CONT OFF, the reaction to INIT command is different. Selecting INTernal leads to a single sweep in response to the command INIT, selection another option puts the analyzer in a <i>single trigger waiting state</i> in response to the INIT command.</p> <p>(command/query)</p>
Parameter	<p><char> Choose from:</p> <p>INTernal : Internal</p> <p>EXTernal : External (hardware trigger input)</p> <p>MANual : Manual (user interface)</p> <p>BUS : Bus (program)</p>
Query Response	{INT EXT MAN BUS}
Preset Value	INT
Related Commands	INIT INIT:CONT TRIG:SING *TRG
Equivalent Softkeys	Stimulus > Trigger > Trigger Source > {Internal External Manual Bus}

TRIG:STAT?

TRIGger[:SEQuence]:STATus?

<i>Description</i>	Reads out the the current state of the analyzer trigger system. (query only)
<i>Query Response</i>	HOLD : Hold MEAS : Measure (sweep in progress) WTRG : Waiting for trigger
<i>Equivalent Softkeys</i>	None

TRIG:WAIT

TRIGger[:SEquence]:WAIT <char>

Description	<p>Delays the execution of the next command until the specified state of the analyzer trigger system is reached (see options below). The analyzer trigger system can be "Stop", "Waiting for Trigger", or "Measurement Cycle". When the continuous initiation mode is turned OFF (INIT:CONT OFF), the trigger system transits between all three states. When the continuous initiation mode is turned ON (INIT:CONT ON), the trigger system transits between the "Waiting for Trigger" and "Measurement Cycle" states.</p> <p>This command is useful for waiting for a sweep end initiated by the TRIG, *TRG commands or initiated by the external trigger signal, because the *OPC? command cannot be used. (The *OPC? command can wait the sweep end initiated by the TRIG:SING command only).</p> <p><i>Note:</i> Despite the next command execution is guaranteed after the wait is completed, the TRIG:WAIT command does not block the user program execution. To block the user program execution a query must follow the *OPC? command.</p> <p>(no query)</p>
Parameter	<p><char> Choose from:</p> <p>HOLD : Waits for the "Stop" state</p> <p>MEASure : Waits for the "Measurement Cycle" state</p> <p>WTRG : Waits for the "Waiting for Trigger" state</p> <p>ENDM : Waits for the "End of Measurement" event. The event occurs when the trigger system transits from the "Measurement Cycle" state to any other state.</p>
Related Commands	<p>TRIG</p> <p>*TRG</p> <p>TRIG:SOUR EXT</p>
Equivalent Softkeys	<p>None</p>

5 Programming Tips

This section gives recommendations for programming in certain specific situations.

5.1 Program Sweep Initiation and Waiting

The most simple method of the program sweep initiation and waiting for the sweep completion can be implemented by using commands TRIG:SING and *OPC?.

The command TRIG:SING generates a trigger signal and starts sweeping under the following conditions:

- The program trigger source is selected by command TRIG:SOUR BUS;
- The analyzer should be in the *trigger waiting* state, otherwise (analyzer is sweeping or analyzer is in the *Hold* state) an error occurs and the command is ignored.

The transition of the analyzer to the *trigger waiting* state depends on the state of the *continuous initiation mode*, which is set by command INIT:CONT. Provided that the *continuous initiation mode* is ON, the analyzer automatically transits to the *trigger waiting* state when the program trigger source has been selected, and then each time at the end of a sweep. Provided that the *continuous initiation mode* is OFF, the analyzer transits to the *trigger waiting* state for **single** time upon receiving the command INIT.

The command TRIG:SING remains pending until the end of sweep. This allows use the *OPC? query for the waiting the end of sweep.

Example 1. Program starts sweeping in all channels and waits for completion. The channels are swept one by one in turn. The *continuous initiation mode* must be enabled (after PRESET, for example).

TRIG:SOUR BUS <loop>: TRIG:SING *OPC? ...	Selects the program trigger source and transits the analyzer to the <i>trigger waiting</i> state Starts sweep Waits for the end of the sweep
---	--

After the sweep completion the analyzer returns to the *trigger waiting* state, and then the next trig:sing command can be sent.

Example 2. Program starts sweep in one channel and waits for completion, then starts sweep in another channel and waits for completion. The number of channels must be set to 2.

<pre> TRIG:SOUR BUS INIT1:CONT OFF INIT2:CONT OFF <loop>: INIT1 TRIG:SING *OPC? ... INIT2 TRIG:SING *OPC? ... </pre>	<p>Selects the program trigger source</p> <p>Puts channel 1 to the hold state</p> <p>Puts channel 2 to the hold state</p> <p>Puts channel 1 to the <i>trigger waiting</i> state</p> <p>Starts sweep in channel 1</p> <p>Waits for the end of the sweep</p> <p>Puts channel 2 to the <i>trigger waiting</i> state</p> <p>Starts sweep in channel 2</p> <p>Waits for the end of the sweep</p>
--	---

After completion of sweeping on one channel the analyser returns to the *hold* state, then the sweep initiation for another channel is available.

5.2 Using External Trigger

If trigger source is set to the *External* by the command TRIG:SOUR EXT, the sweep starts at signal arrival on the external trigger input.

At the moment of a trigger signal arrival the Analyzer must be in the *trigger waiting* state, otherwise the signal is ignored but no error is detected.

When using the external trigger input, the hardware trigger output can also be used to determine the end of the sweep. In case if there is a need to determine programmatically the end of the sweep, the TRIG:WAIT command can be used.

Example 3. Program puts the analyzer to the external trigger waiting. Then program waits for the sweep completion. The *continuous initiation mode* must be enabled (after PRESET, for example).

<pre> TRIG:SOUR EXT <loop>: TRIG:WAIT ENDM *OPC? ... </pre>	<p>Selects the external trigger source and transits the analyzer to the <i>trigger waiting</i> state</p> <p>Waits for the end of the sweep</p> <p>Any query is required to block program</p>
---	---

After the sweep completion the analyser returns to the *trigger waiting* state, and then the next external trigger signal starts new sweep.

Socket	192.168.0.1:5025 localhost:5025
--------	------------------------------------

5.3 Waiting for Calibration Commands

Depending on the sweep settings the calibration commands may have long execution time, as they start sweep and wait it completion. These commands are:

SENS:CORR:COLL:XXXX

SENS:CORR:OFFS:COLL:XXXX

SENS:CORR:REC:COLL:XXXX

SENS:CORR:COLL:ECAL:XXXX

SENS:CORR:COLL:ECAL:ORI:EXEC

The user program can stop execution until the end of these commands using any query, the *OPC? for example.

5.4 VISA Timeout Considerations

Using the *OPC? or any other query for waiting an operation complete can lead to VISA timeout. The program must set the timeout to the value no less than the expected sweep time. For example:

```
viSetAttribute(instr, VI_ATTR_TMO_VALUE, 5000);
```

If the timeout has occurred, the analyzer remains in the waiting state and does not respond to the next commands. The program must check the timeout condition, and recover the analyzer in case of the timeout. The recover code must include the Device Clear operation (viClear). The viClear function clears the device input and output buffers. Optionally the recover code can include other operations, for example, abort current sweep, clear reporting status system.

```
status = viQueryf(instr, "TRIG:SING;*OPC?\n", "%*t");
if (status == VI_ERROR_TMO)
{
    viClear(instr);
    viPrintf(instr, "ABORT\n");
    viPrintf(instr, "*CLS\n");
}
```

Note. The timeout recover using viClear function is possible with the HiSLIP protocol.

5.5 Receiving Data Arrays in Text Format

By default the data from the analyzer is transmitted in a text form. The VISA library has built-in facilities for receiving an array of data from the analyzer. The example assumes that the size of the array is sufficient to receive a number of elements equal to twice the number of points.

Example of receiving a data array in text format:

```
double data[NOP * 2];
ViUInt32 retCount;
...
retCount = sizeof(data) / sizeof(double);
viQueryf(instr, "CALC:DATA:SDAT?\n", "%, #lf", &retCount, data);
// retCount now contains the actual number of elements
```

5.6 Receiving Data Arrays in Binary Format

The binary transfer format reduces the amount of bytes transmitted and therefore reduces the transmission time. The binary transfer format is supported by HiSLIP protocol only. To enable the binary transfer format use the FORM:DATA command. Also use the FORM:BORD command to determine the byte order in the 32 bit word or in the 64 bit word. The x86 architecture uses the little endian byte order. When using the x86 architecture, setting the little endian byte order with the command FORM:BORD SWAP further improves throughput. The list of commands that support the binary transfer format is given in the description of the FORM:DATA command.

Binary data is transmitted as a block having a header followed by data. Block format:

#	8	<Data Size>	<Binary Data>
---	---	-------------	---------------

Where:

– the character '#';

8 – the character '8';

<Data Size> – 8 bytes, the symbolic representation of the number of bytes in binary data.

For example:

#800003216<Binary Data>

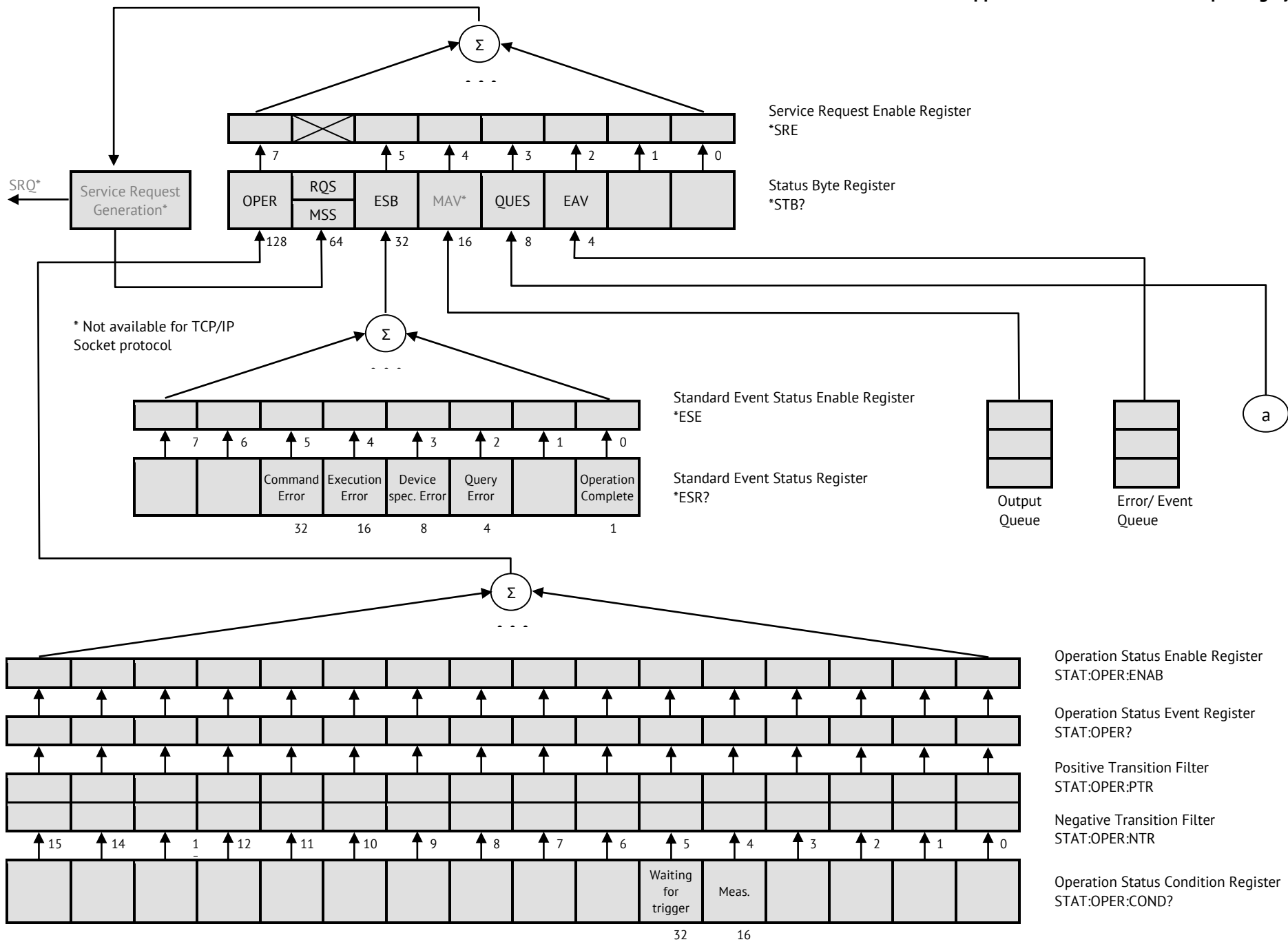
The VISA library has built-in tools for receiving binary data from the analyzer. The example assumes that the size of the array is sufficient to receive a number of elements equal to twice the number of points.

Example 1. Receiving array of doubles (x86 architecture):

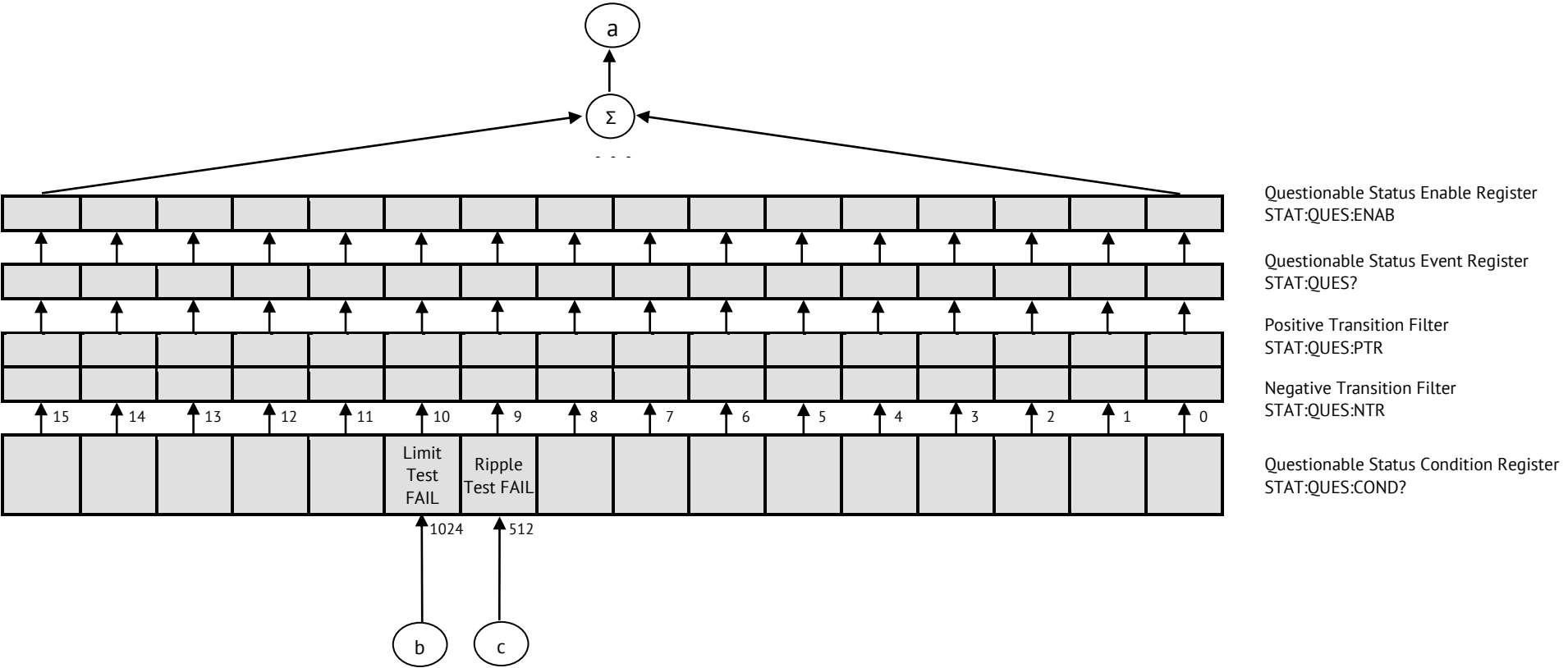
```
double data[NOP * 2];
ViUInt32 retCount;
...
viPrintf(instr, "FORM:DATA REAL\n");
viPrintf(instr, "FORM:BORD SWAP\n");
retCount = sizeof(data);
viQueryf(instr, "SENS:DATA:CORR? S11\n", "%#b", &retCount, data);
// retCount now contains the actual number of bytes
```

Example 2. Receiving array of doubles (architecture independent):

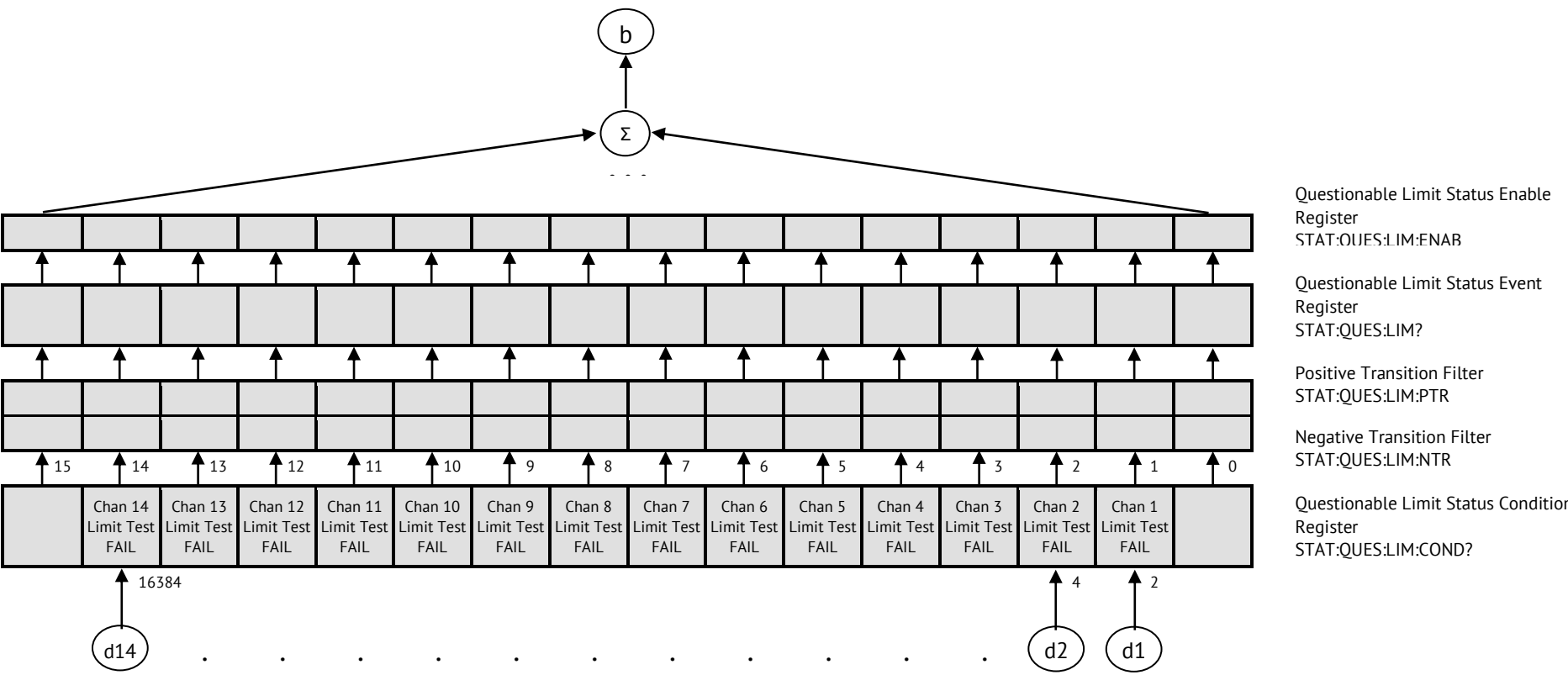
```
double data[NOP * 2];
ViUInt32 retCount;
...
viPrintf(instr, "FORM:DATA REAL\n");
viPrintf(instr, "FORM:BORD NORM\n");
retCount = sizeof(data) / sizeof(double);
viQueryf(instr, "SENS:DATA:CORR? S11\n", "%#Zb", &retCount, data);
// retCount now contains the actual number of elements
```



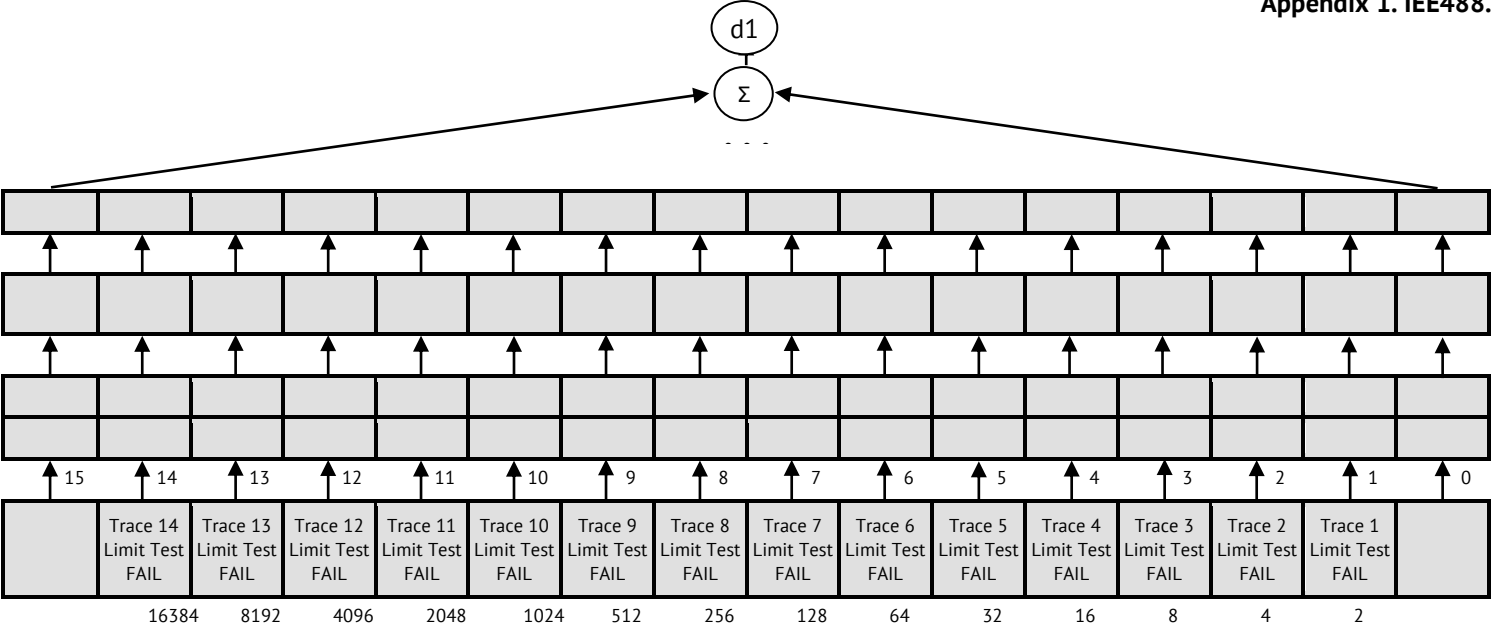
Appendix 1. IEE488.2 Status Reporting System



Appendix 1. IEE488.2 Status Reporting System



Appendix 1. IEE488.2 Status Reporting System



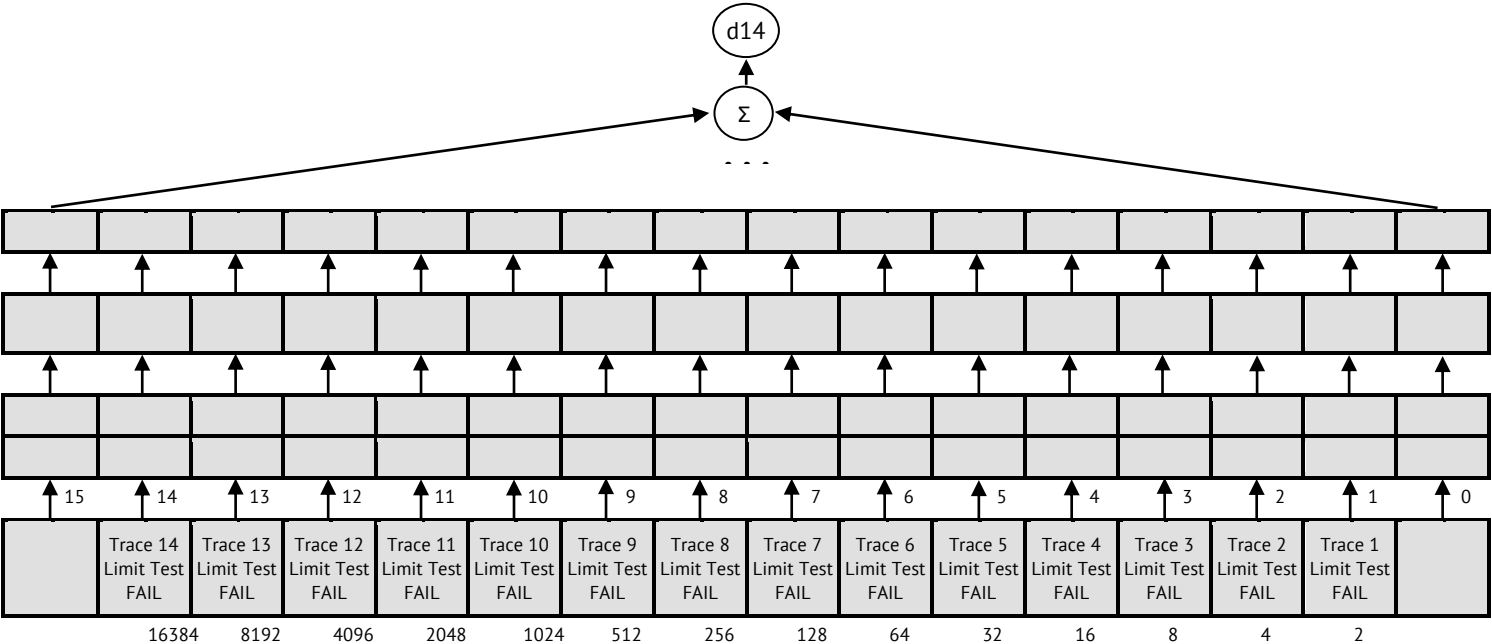
Questionable Limit Channel 1 Status
Enable Register
STAT:QUES:LIM:CHAN1:ENAB

Questionable Limit Channel 1 Status
Event Register
STAT:QUES:CHAN1:LIM?

Positive Transition Filter
STAT:QUES:LIM:CHAN1:PTR

Negative Transition Filter
STAT:QUES:LIM:CHAN1:NTR

Questionable Limit Channel 1 Status
Condition Register
STAT:QUES:LIM:CHAN1:COND?



Questionable Limit Channel 14 Status
Enable Register
STAT:QUES:LIM:CHAN14:ENAB

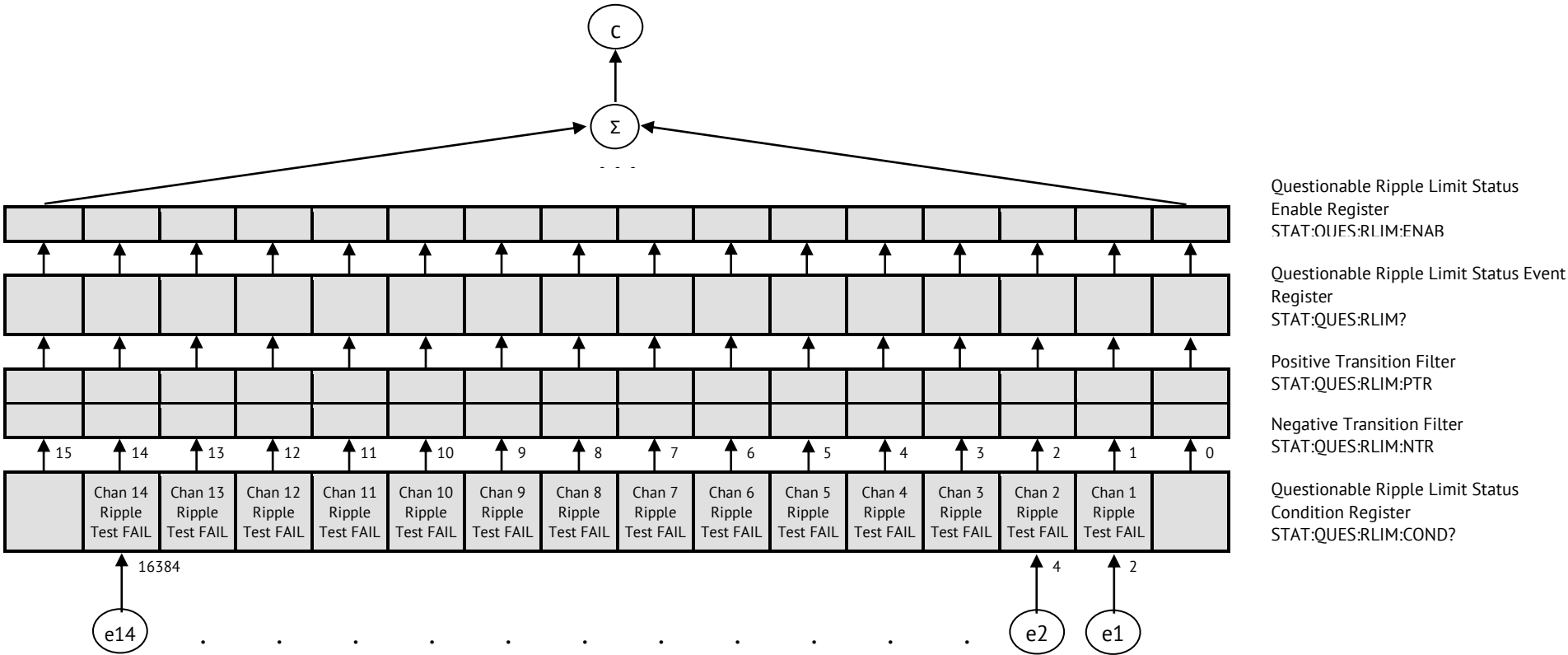
Questionable Limit Channel 14 Status
Event Register
STAT:QUES:CHAN14:LIM?

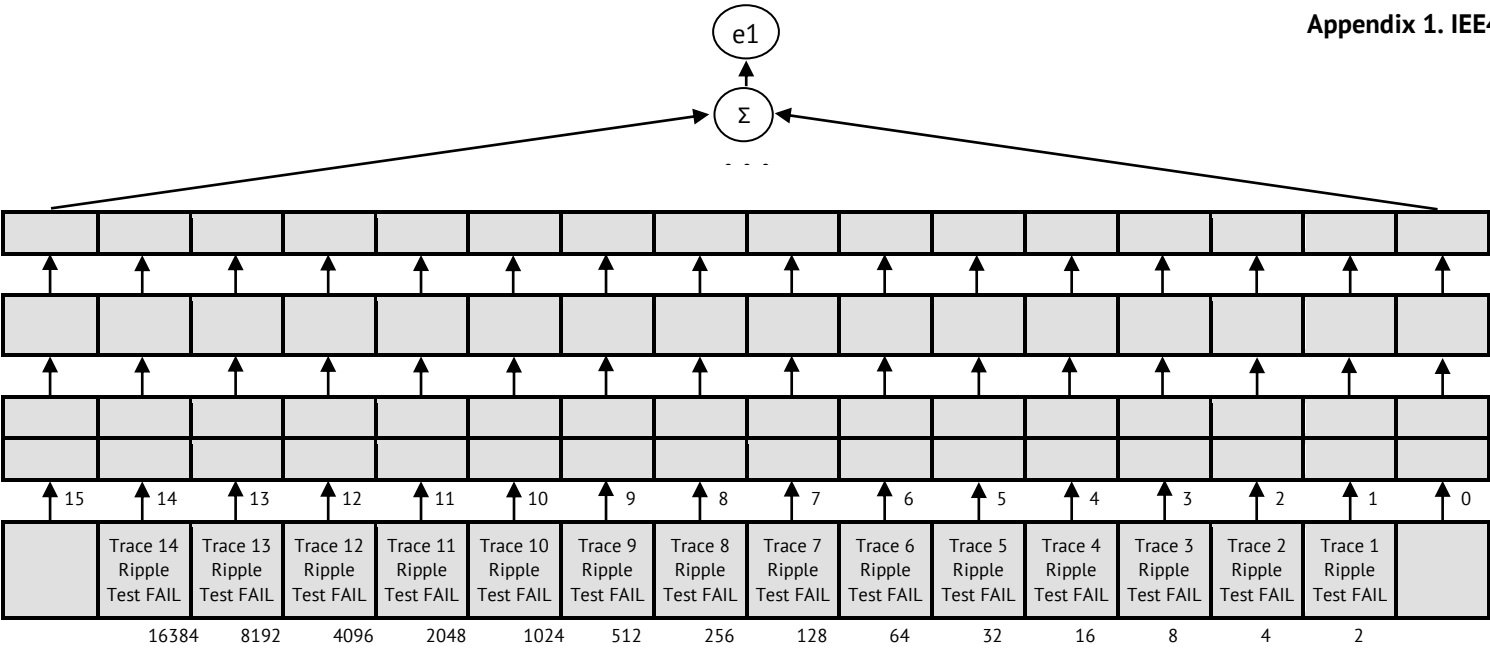
Positive Transition Filter
STAT:QUES:LIM:CHAN14:PTR

Negative Transition Filter
STAT:QUES:LIM:CHAN14:NTR

Questionable Limit Channel 14 Status
Condition Register
STAT:QUES:LIM:CHAN14:COND?

Appendix 1. IEE488.2 Status Reporting System





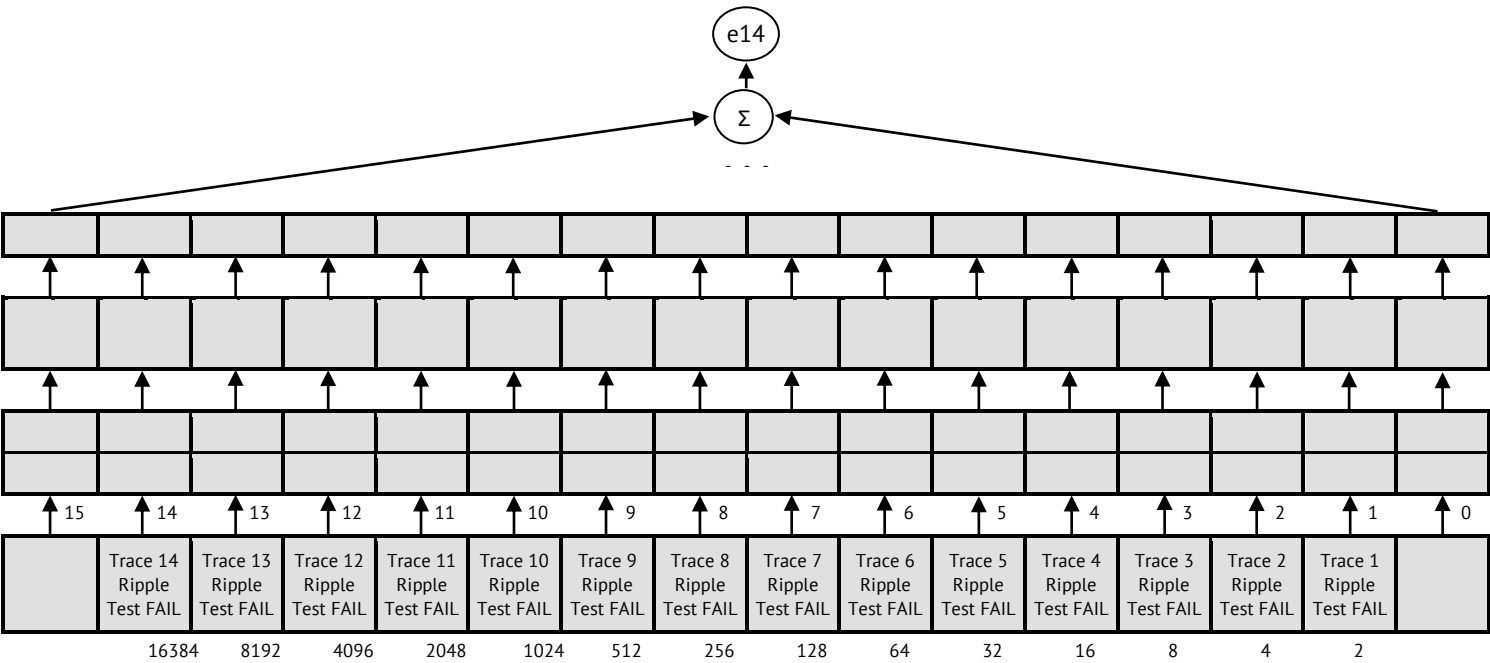
Questionable Ripple Limit Channel 1
Status Enable Register
STAT:QUES:RLIM:CHAN1:ENAB

Questionable Ripple Limit Channel 1
Status Event Register
STAT:QUES:CHAN1:RLIM?

Positive Transition Filter
STAT:QUES:RLIM:CHAN1:PTR

Negative Transition Filter
STAT:QUES:RLIM:CHAN1:NTR

Questionable Ripple Limit Channel 1
Status Condition Register
STAT:QUES:RLIM:CHAN1:COND?



Questionable Ripple Limit Channel 14
Status Enable Register
STAT:QUES:RLIM:CHAN14:ENAB

Questionable Ripple Limit Channel 14
Status Event Register
STAT:QUES:CHAN14:RLIM:?

Positive Transition Filter
STAT:QUES:RLIM:CHAN14:PTR

Negative Transition Filter
STAT:QUES:RLIM:CHAN14:NTR

Questionable Ripple Limit Channel 14
Status Condition Register
STAT:QUES:RLIM:CHAN14:COND?

Appendix 2. Error Codes

100	"Command error"
101	"Unmatched quote"
102	"Unmatched bracket"
103	"Invalid value in numeric list"
104	"Data type error"
106	"Numeric parameter overflow"
107	"Wrong units in numeric data"
108	"Parameter not allowed"
109	"Missing parameter"
110	"Command header error"
114	"Header suffix out of range"
115	"Input buffer is full"
130	"Suffix error"
200	"Execution error"
201	"Invalid channel index"
202	"Invalid trace index"
203	"Invalid marker index"
204	"Marker is not enabled"
205	"Invalid save type specifier"
206	"Invalid sweep type specifier"
207	"Invalid trigger source specifier"
208	"Invalid measurement parameter specifier"
209	"Invalid format specifier"
210	"Invalid data math specifier"
211	"Trigger ignored"
212	"Invalid trigger source"

213	"Init ignored"
214	"Invalid limit data"
215	"Invalid segment data"
216	"Invalid standard type specifier"
217	"Invalid conversion specifier"
218	"Invalid gating shape specifier"
219	"Invalid gating type specifier"
220	"Parameter Error"
221	"Invalid port index"
222	"Data out of range"
223	"No Calibration Measurement Data"
224	"Illegal parameter value"
225	"Cal Kit Definition Error"
226	"Differ Forward and Reverse Thru"
227	"Differ Forward and Reverse TRL Thru"
228	"Differ Forward and Reverse Line"
229	"TRL Match Standard is not Load Type Standard"
230	"ACM Auto-Orientation Error"
231	"ACM Orientation Settings Error"
232	"AutoCal Execution Error"
233	"ACM Frequency Settings Error"
234	"ACM Characterization Error"
235	"Frequency Range Exceeds ACM Characterization Frequency Range"
236	"AutoCal Module Reading Error"
237	"Incorrect set of measured parameters"
238	"Calibration Execution Error"
239	"TRIG:SING interrupted"

240	"Analyzer not ready"
241	"AutoCal Module not ready"
251	"Invalid trigger scope specifier"
252	"Invalid trigger polarity specifier"
253	"Invalid trigger position specifier"
256	"File not found"
300	"Device-specific error"
302	"Status reporting system error"
400	"Query error"
403	"Query error: no data"
404	"Query truncated"
410	"Query Interrupted"

Example. Program Written in C

The following program shows the control over the Analyzer using the C language with the VISA library.

The Analyzer address is passed as parameter in the command line at the start of the program. For more detail on VISA Resource Name see the VISA library documentation.

Program description:

1. Sets up the communication with the Analyzer.
2. Reads out and displays the Analyzer information string.
3. Sets some parameters of the Analyzer.
4. Triggers the measurement and waits for the sweep completion.
5. Reads out the measurement data and the frequency values at the measurement points.
6. Displays the measurement data

```
// Example.cpp
//
// VISA Header: visa.h (must be included)
// VISA Library: visa32.lib (must be linked with)
#include "stdafx.h"
#include "visa.h"

int main(int argc, char* argv[])
{
    ViStatus status;           // Error checking
    ViSession defaultRM, instr; // Communication channels
    ViUInt32 retCount;         // Return count from string I/O
    ViByte buffer[255];        // Buffer for string I/O
    ViUInt32 temp;
    int NOP = 21;              // Number of measurement points
    const int maxCnt = 100;     // Maximum reading count
    double Data[maxCnt*2];      // Measurement data array
    double Freq[maxCnt];        // Frequency array

    if (argc < 2)
    {
        printf("\nUsage: Example <VISA address>\n\n");
        printf("VISA address examples:\n");
        printf("        TCPIP::nnn.nnn.nnn.nnn::5025::SOCKET\n");
        printf("        TCPIP::hostname::5025::SOCKET\n");
        return -1;
    }

    status = viOpenDefaultRM(&defaultRM);
```

```

if (status < VI_SUCCESS)
{
    printf("Can't initialize VISA\n");
    return -1;
}

status = viOpen(defaultRM, argv[1], VI_NULL, VI_NULL, &instr);

if (status < VI_SUCCESS)
{
    printf("Can't open VISA address: %s\n", argv[1]);
    return -1;
}
//
// Set the answer timeout
//
viSetAttribute(instr, VI_ATTR_TMO_VALUE, 5000);
//
// Enable the terminal character
//
viSetAttribute(instr, VI_ATTR_TERMCHAR_EN, VI_TRUE);
viSetAttribute(instr, VI_ATTR_TERMCHAR, '\n');
//
// Read ID string from Analyzer
//
viPrintf(instr, "*IDN?\n");
viRead(instr, buffer, sizeof(buffer), &retCount);
printf("*IDN? Returned %d bytes: %.*s\n\n", retCount, retCount, buffer);
//
// Set up the Analyzer
//
viPrintf(instr, "SYST:PRES\n");
viPrintf(instr, "SENS:SWE:POIN %d\n", NOP);
viPrintf(instr, "CALC:PAR1:DEF S21\n");
viPrintf(instr, "CALC:PAR1:SEL\n");
viPrintf(instr, "CALC:FORM MLOG\n");
viPrintf(instr, "SENS:BAND 10\n");
//
// Trigger measurement and wait for completion
//
viPrintf(instr, ":TRIG:SOUR BUS\n");
viPrintf(instr, ":TRIG:SING\n");
viQueryf(instr, "*OPC?\n", "%d", &temp);
//
// Read out measurement data
//
retCount = maxCnt * 2;
viQueryf(instr, "CALC:DATA:FDAT?\n", "%,#1f", &retCount, Data);
retCount = maxCnt;
viQueryf(instr, "SENS:FREQ:DATA?\n", "%,#1f", &retCount, Freq);
//
// Display measurement data
//
printf("%20s %20s %20s\n", "Frequency", "Data1", "Data2");
for (int i = 0; i < NOP; i++)
{

```



```
    printf("%20f %20f %20f\n", Freq[i], Data[i*2], Data[i*2+1]);  
}  
  
status = viClose(instr);  
status = viClose(defaultRM);  
return 0;  
}
```

Example 5. Program Written in LabView

The following program shows the control over the Analyzer using the LabView language with the VISA library.

Below see the block diagram of the program and front panel of the program with the program execution result.

The front panel contains the entry field for the Analyzer name “VISA Resource Name”. For more detail on VISA Resource Name see the VISA library documentation.

The user must enter the Analyzer address, select the trace format in the “Format” field, and click the “Run” button. As the result of the program, the Analyzer information string will be displayed and the measurement trace will be plotted.

Program description:

1. Sets up the communication with the Analyzer.
2. Reads out and displays the Analyzer information string.
3. Sets some parameters of the Analyzer.
4. Generates the trigger and waits for the sweep completion.
5. Sets the trace format to the format entered by the user in the “Format” field.
6. Reads out the measurement data.
7. Displays the measurement data.

