TR Series

Planar TR1300/1,

TR5048, TR7530

Vector Network Analyzer

Programming Manual COM/DCOM

Software version: 18.3.0

December 2018

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Introduction

This Programming Manual contains information on remote control over Planar TR1300/1, TR5048 or TR7530 Vector Network Analyzer (Analyzer) and its data communication by means of user programs written with COM/DCOM technology.

COM technology is used when a user program runs together with an external measurement instrument program on one PC. DCOM technology is used when a user program runs on a PC connected with the measurement instrument by LAN.

Methods and techniques for writing of user programs are the same for both technologies. The only difference between the technologies is that the DCOM technology requires additional LAN setting performed by the LAN administrator.

Before reading this Manual, familiarize yourself with Analyzer Operating Manual.

1 Registering COM Server

To register COM server of the analyzer run the executable module from command prompt with the */regserver* keyword. To unregister COM server of the analyzer run the executable module from command prompt with the */unregserver* keyword. Administrative rights are required to register/unregister COM server. Also user has ability to register COM server during the software installation procedure.

Example of the COM server registration command:

```
    TRVNA.exe /regserver
```

2 COM Technology Overview

COM stands for *Component Object Model*. This programming technology was developed by Microsoft for two purposes:

- the model provides the specification for interaction of binary modules created in different programming languages;
- the model defines the interfacing between a client application and a server application running either on the same PC or on two different PCs. In the latter case, the technology has DCOM abbreviation – Distributed COM.

3 Automation Server

The network analyzer executable module contains a built-in COM server that enables other programs to access its functionality. The COM server was developed in conformity with the COM *automation* specification. COM automation is a technology allowing control over the COM server by the programs written in both traditional compiling programming languages and interpreting programming languages, such as VBScript. This enables the server applications to make their functionality accessible to many more clients.

4 Automation Controllers

Automation controllers are client programs, which use internal functionality of COM servers. Automation controller programs are developed by users for writing their own additions for the system.

User programs can be written in different languages:

- programming languages with built-in COM support, such as Visual Basic®, Delphi, Java;
- universal programming languages, such as C, C++;
- Microsoft Excel and Word office applications as they include built-in programming language Visual Basic for Applications®;
- program generators, such as National Instruments LabView®, or HP–VEE.

Examples represented in this Manual are written in Visual Basic (VB). Appendix 2 contains examples written in VB, and C++ languages.

Examples\COM\VBA folder contains source codes for examples written in Visual Basic for Applications® (Microsoft Excel files).

Examples\COM\CPP folder contains source codes for the C++ language examples.

5 Local and Remote Server

The network analyzer executable module can function either as a *local* server or as a *remote* server of COM automation.

Local server runs on the same PC with the automation controller and each of the programs is executed as an individual application in a separate window. COM technology is used in this case (Figure 1).

Remote server and the automation controller run on different PCs connected by LAN. DCOM (Distributed COM) technology is used in this case (Figure 2). When using DCOM it is necessary to configure the local network by means of DCOM Windows tools.

The same automation controller is used for the both COM and DCOM technology. Some changes to the user program may be required in operators, which establish connection with the server. Moreover, DCOM technology requires additional settings of the LAN performed by the LAN administrator.

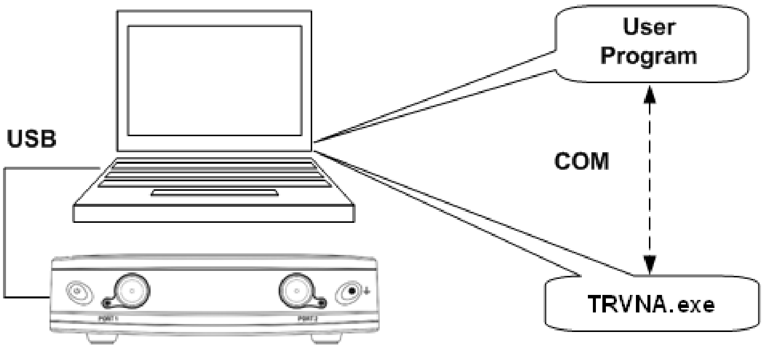


Figure 1. COM technology

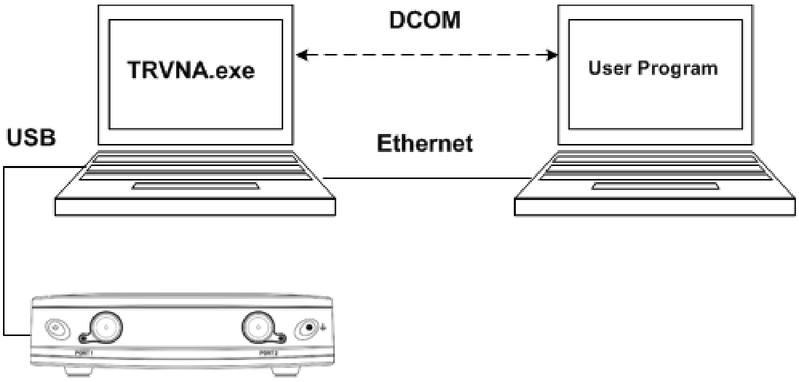


Figure 2. DCOM technology

6 Structure of COM Objects

COM server contains several *objects*, which provide different functionality of the server. The COM objects of the network analyzer executable module are organized in a hierarchical structure. Figure 3 shows the main COM objects, which comprise the first three levels of the hierarchical structure of the COM server. COM objects provide various *methods* and *properties*, which allow access to the server functions; besides, they allow access to the objects of the lower levels, which are not shown in Figure 3.

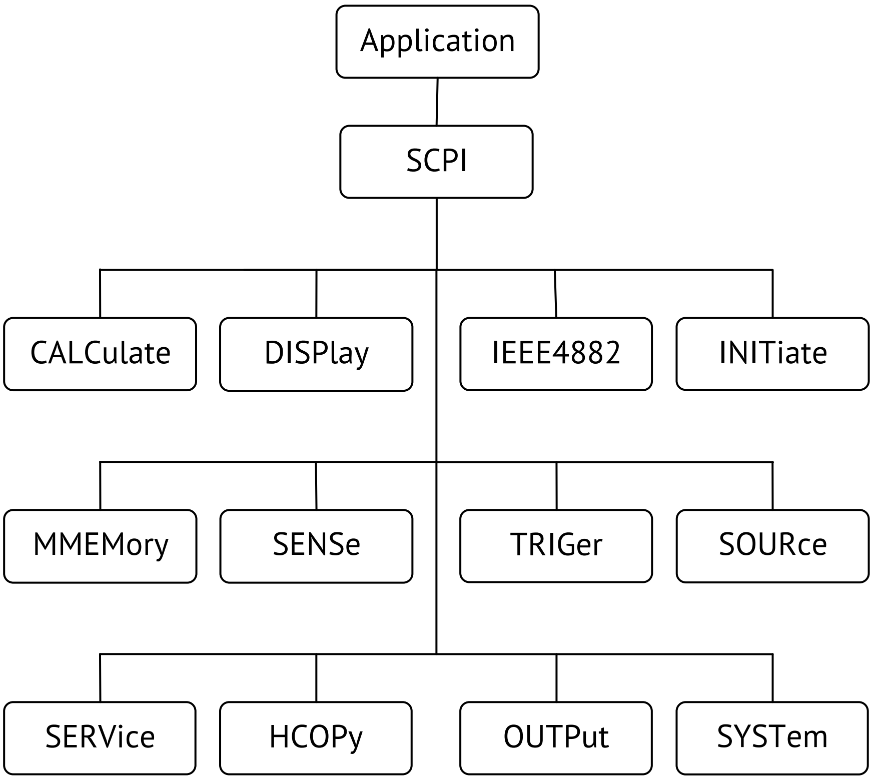


Figure 3. The structure of COM objects

The Object Application is in the top of the hierarchy COM server. Access to the lower level objects is implemented via higher level objects.

Note

The hierarchy of COM objects is organized in accordance with the standard and syntax of the SCPI programming language. Operators in SCPI have hierarchical chain structure, for example:

```
CALCulate:PARameter:DEFine S11
```

The same COM command written in VB programming language is as follows:

```
app.SCPI.CALCulate.PARameter.DEFine = "S11"
```

7 Accessing the Application Object

To establish connection with the COM server application, create an object reference in the client program. In COM programming the object reference needs to be acquired preliminarily, to be used later to access the object functionality. To define an object in Visual Basic perform the following:

1) Declare a variable as an object;
2) Assign the object to this variable.

To declare a variable, use *Dim* operator or other declaration statement (*Public, Private* or *Static*). The variables used for references should be of the types *Variant, Object,* or a type of a specific object. For example, the following three operators declare *app* variable:

```
Dim app
Dim app as Object
Dim app as TR1300.Application
Dim app as TRVNA.Application
```

Use *Set* operator and *CreateObject* (*ObjectName, HostName*) function to assign a specific object to a variable.

ObjectName	Automation object name is always equal to “*TR1300.Application*”, “*TRVNA.Application*”
HostName	Network name of the PC hosting the COM server. This parameter is not specified in case of a local server.

For example, the following operators create *Application* object and assign it to *app* variable:

```
Set app = CreateObject("TRVNA.Application")
Set app = CreateObject("TRVNA.Application", "Network_Name")
Set app = CreateObject("TRVNA.Application", "192.168.10.10")
```

Note	The first form of the operator is used to create the reference to the local COM server, the second one is used to create the reference to the remote DCOM server.

To allow access to the objects of a lower level of the hierarchy, these objects are specified after the reference to the higher level object and separated from it by a dot. For example:

```
    Dim SystObj
    Set SystObj = app.SCPI.SYSTem
```

COM objects can have indices. For example, *CALCulate, INITiate, SENSe, SOURce* objects represent various aspects of the 4 measurement channels of the Analyzer. Therefore, it is necessary to write the channel index from 1 to 4 to acquire the data of these objects. For example:

```
    Set SensObj1 = app.SCPI.SENSe(1)
    Set SensObj2 = app.SCPI.SENSe(2)
```

Visual Basic allows omitting of such indices; in this case the indices are considered as equal to 1. For example, the following VB operators are equivalent:

```
    Set SensObj = app.SCPI.SENSe(1)
    Set SensObj = app.SCPI.SENSe
```

8 Object Methods

Objects have methods. Methods are actions that can be applied to objects. The object methods are specified after the object name and separated from it by a dot.

The following example shows the *PRESet* method of *SYSTem* object. This method performs setting of the Analyzer to the preset condition:

```
app.SCPI.SYSTem.PRESet
```

9 Object Properties

Along with methods, objects have properties. Properties are object characteristics that can be set or read out. The object properties are specified after the object name and separated from it by a dot.

To modify an object characteristic, write the value of the corresponding property. To define an object characteristic, read out the value of its property. The following example show the setting of the *POINts* property of *SWEep* object, i.e. the number of sweep points:

```
app.SCPI.SENSe.SWEp.POINts = 201
```

Note Some object properties cannot be written, and some object properties cannot be read. In such cases, the properties are indicated as “read only” or “write only”.

10 Error Handling

You can use different approaches to error handling in VB program:

- check the value of Err.Number variable after execution of VB operator, which contains the call to COM server object;
- use *On Error GoTo* VB operator.

These approaches are represented in the examples below. The following operator causes an error in VB program as *"S13"* value of the *DEFine* property is incorrect.

```
app.SCPI.PARameter.DEFine = "S13"
```

In the first example, the value of the *Err.Number* variable is checked after execution of the VB operator, which contains the call to COM server object. *On Error Resume Next* directive instructs VB not to interrupt the program execution when the error is detected but to pass control to the next operator in natural order.

```
Dim app
Public Sub HandleError1()
Set app = CreateObject("TRVNA.Application")
On Error Resume Next
app.SCPI.PARameter.DEFine = "S13"
If Err.Number <> 0 Then
  Msg = "Error # " & Str(Err.Number) & " was generated by " &_
  Err.Source & Chr(13) & Err.Description
  MsgBox Msg,,"Error"
End If
...
End Sub
```

In the second example, *On Error GoTo ErrHandler* directive instructs VB to interrupt the program execution when the error is detected and to pass control to *ErrHandler* label.

```
Dim app
Public Sub HandleError2()
Set app = CreateObject("TRVNA.Application")
On Error GoTo ErrHandler
app.SCPI.PARameter.DEFine = "S13"
...
Exit Sub
ErrHandler:
  Msg = "Error # " & Str(Err.Number) & " was generated by " &_
  Err.Source & Chr(13) & Err.Description
  MsgBox Msg,,"Error"
End Sub
```

11 COM Automation Data Types

In COM automation, there are the following data types, which can be used for client-to-server communication:

Long

32-bit signed integer, value range from −2147483648 to 2147483647

Double

64-bit double-precision floating point, value range from −1.79769313486232E308 to −4.94065645841247E−324 for negative values, and from 4.94065645841247E−324 to 1.79769313486232E308 for positive values

Boolean

16-bit integer, two values 0 – *False*, 1 – *True*

String

Variable-length string

Variant

Can be either a value of arbitrary type or an array of values of arbitrary type. In this case, the term “arbitrary type” means any allowed type of COM automation. A variable contains information about its type and array size (if it is an array). It is used for communication of data arrays between a client and a server.

12 Measurement Data Arrays

Measurement data can be either complex values or real values. This depends on the format selected by the user. For example, the data is real in logarithmic magnitude format and the data is complex in polar format.

The measurement data is transferred in a *Variant* type variable, which represents an array of *Double* type. To transfer one complex measurement, two adjacent array cells are used. To transfer one real measurement two adjacent array cells are used as well but the second cell is always equal to 0. Thus, measurement data array size is a double number of the measurement points.

Measurement 1		Measurement 2			Measurement N	
Real	Imag	Real	Imag	...	Real	Imag

Figure 4. Array of complex measurements

Measurement 1		Measurement 2			Measurement N	
Value	0	Value	0	...	Value	0

Figure 5. Array of real measurements

13 COM Server Commands

NAME

Object Type	Property (read only)
Data Type	String
Description	Instrument information string. String format: manufacturer, model, serial number, number of firmware version and number of software version.
Range	up to 40 characters

Syntax	`Dim ID As String`
	`ID = app.NAME`

Equivalent Softkeys	**None**

Ready

Object Type	Property (read only)
Data Type	Boolean
Description	Ready state of the instrument. Reads out the *True* value after successful completion of the boot process (about 10 sec). The vector analyzer must be connected to PC by a USB cable.

Syntax	`Dim State as Boolean`
	`State = app.Ready`

Equivalent Softkeys	**None**

SCPI.ABORt

Object Type	Method
Description	Aborts the sweep. Switches trigger mode from *Single* to *Hold*, or from *Continuous* to waiting for a trigger. If the trigger source is set to *Internal*, starts a new sweep.
Syntax	`app.SCPI.ABORt`
Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).FSIMulator.SENDed.DEEMbed.PORT(*Pt*).USER.FILename

Object Type	Property (read/write)
Data Type	String
Target	Port *Pt* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Pt* port number 1–2 (see Table 2)
Description	De-embedding function file name (*.s2p). The file contains the circuit S–parameters in Touchstone format.
Range	up to 256 characters
Preset Value	""

Syntax	`Dim File As String`
	`File =`
	`app.SCPI.CALCulate(Ch).FSIMulator.SENDed.DEEMbed.`
	`PORT(Pt).USER.FILename`
	
	`app.SCPI.CALCulate(Ch).FSIMulator.SENDed.DEEMbed.`
	`PORT(Pt).USER.FILename = "network.s2p"`

Notes	If the full path to the file is not specified, the \FixtureSim subdirectory of the main directory will be searched for the file.
Equivalent Softkeys	**Analysis > Fixture Simulator > De–Embedding > S–parameters File**

Table 1. *Ch*: Channel Number

Data Type	Long
Description	Channel number.
Range	from 1 to 4
Out of Range	An error occurs. Error code: 201.

Table 2. *Pt*: Port Number

Data Type	Long
Description	Port number.
Range	from 1 to 2
Out of Range	An error occurs. Error code: 114.

SCPI.CALCulate(*Ch*).FSIMulator.SENDed.DEEMbed.PORT(*Pt*).STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	Port *Pt* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Pt* port number 1–2 (see Table 2)
Description	The ON/OFF state of the e-embedding function.
Allowable Values	*True* De-embedding function ON *False* De-embedding function OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status =`
	`app.SCPI.CALCulate(Ch).FSIMulator.SENDed.DEEMbed.PORT(Pt).STATe`
	`app.SCPI.CALCulate(Ch).FSIMulator.SENDed.DEEMbed.PORT(Pt).STATe = True`

Equivalent Softkeys	**Analysis > Fixture Simulator > De–Embedding > Port n**

SCPI.CALCulate(*Ch*).FSIMulator.SENDed.PMCircuit.PORT(*Pt*).USER.FILename

Object Type	Property (read/write)
Data Type	String
Target	Port *Pt* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Pt* port number 1–2 (see Table 2)
Description	Embedding function file name (*.s2p). The file contains the circuit S–parameters in Touchstone format.
Range	up to 256 characters
Preset Value	""

Syntax	`Dim File As String`
	`File =`
	`app.SCPI.CALCulate(Ch).FSIMulator.SENDed.PMCircuit.`
	`PORT(Pt).USER.FILename`
	
	`app.SCPI.CALCulate(Ch).FSIMulator.SENDed.PMCircuit.`
	`PORT(Pt).USER.FILename = "network.s2p"`

Notes	If the full path to the file is not specified, the \FixtureSim subdirectory of the main directory will be searched for the file.
Equivalent Softkeys	**Analysis > Fixture Simulator > Embedding > User File**

SCPI.CALCulate(*Ch*).FSIMulator.SENDed.PMCircuit.PORT(*Pt*).STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	Port *Pt* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Pt* port number 1–2 (see Table 2)
Description	The ON/OFF state of the embedding function.
Allowable Values	*True* Embedding function ON *False* Embedding function OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status =`
	`app.SCPI.CALCulate(Ch).FSIMulator.SENDed.DEEMbed.`
	`PORT(Pt).STATe`
	`app.SCPI.CALCulate(Ch).FSIMulator.SENDed.DEEMbed.`
	`PORT(Pt).STATe = True`

Equivalent Softkeys	**Analysis > Fixture Simulator > Embedding > Port n**

SCPI.CALCulate(*Ch*).FSIMulator.SENDed.ZCONversion.PORT(*Pt*).Z0.R

Object Type	Property (read/write)
Data Type	Double
Target	Port *Pt* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Pt* port number 1–2 (see Table 2)
Description	The value of the impedance for port impedance conversion function.
Range	from 1e–6 to 1e6
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	50
Unit	Ω (Ohm)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.CALCulate(Ch).FSIMulator.SENDed.`
	`ZCONversion.PORT(Pt).Z0.R`
	`app.SCPI.CALCulate(Ch).FSIMulator.SENDed.`
	`ZCONversion.PORT(Pt).Z0.R = 75`

Equivalent Softkeys	**Analysis > Fixture Simulator > Port Z Conversion > Port n Z0**

SCPI.CALCulate(*Ch*).FSIMulator.SENDed.ZCONversion.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the port impedance conversion function.
Allowable Values	*True* Port Z conversion function ON *False* Port Z conversion function OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.CALCulate(Ch).FSIMulator.SENDed.ZCONversion.STATe`
	`app.SCPI.CALCulate(Ch).FSIMulator.SENDed.ZCONversion.STATe = True`

Equivalent Softkeys	**Analysis > Fixture Simulator > Port Z Conversion > Port Z Conversion**

SCPI.CALCulate(*Ch*).PARameter.COUNt

Object Type	Property (read/write)
Data Type	Long
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The number of traces in the channel.
Range	from 1 to 8
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`1`

Syntax	`Dim TraceNum As Long`
	`TraceNum = app.SCPI.CALCulate(Ch).PARameter.COUNt`
	`app.SCPI.CALCulate(Ch).PARameter.COUNt = 2`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).PARameter(*Tr*).DEFine

Object Type	Property (read/write)
Data Type	String
Target	Trace *Tr* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Tr* trace number 1–8 (see Table 3)
Description	The measurement parameter of the trace.
Allowable Values	"S11" S11 parameter "S21" S21 parameter "A" Abs A parameter "B" Abs B parameter "R" Abs R parameter
Out of Range	An error occurs.
Preset Value	Depends on the trace number. Tr 1, Tr 3, Tr 5, Tr 7 "S11" Tr 2, Tr 4, Tr 6, Tr 8 "S21"

Syntax	`Dim Meas As String`
	`Meas = app.SCPI.CALCulate(Ch).PARameter(Tr).DEFine`
	`app.SCPI.CALCulate(Ch).PARameter(Tr).DEFine = "S11"`

Equivalent Softkeys	**Response > Measurement > S11 | S21**

Table 3. *Tr*: Trace Number

Data Type	Long
Description	Trace number
Range	from 1 to 8
Out of Range	An error occurs. Error code: 202.
Notes	If the trace number is not specified, it is taken as equal to 1.

SCPI.CALCulate(*Ch*).PARameter(*Tr*).SELect

Object Type	Method
Target	Trace *Tr* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Tr* trace number 1–8 (see Table 3)
Description	Sets the active channel and trace.
Syntax	`app.SCPI.CALCulate(Ch).PARameter(Tr).SELect`
Notes	If the channel number is greater than the number of the channels displayed, an error occurs and the command is ignored. If the trace number is greater than the number of the traces displayed in the channel, an error occurs and the command is ignored.
Equivalent Softkeys	**Channel > Active Channel** **Trace > Active Trace**

SCPI.CALCulate(Ch).PARameter(Tr).SPORt

Object Type	Property (read/write)
Data Type	Long
Target	Trace *Tr* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Tr* trace number 1–8 (see Table 3)
Description	The number of the source port for absolute measurements.
Range	From 1 to 2
Out of range	An error occurs..
Preset Value	1

Syntax	`Dim StimPort As Long`
	`StimPort = app.SCPI.CALCulate(Ch).PARameter(Tr).SPORt`
	`app.SCPI.CALCulate(Ch).PARameter(Tr).SPORt = 1`

Equivalent Softkeys	**Response > Measurement > Abs A | Abs B | Abs R**

SCPI.CALCulate(*Ch*).SELected.CONVersion.FUNCtion

Object Type	Property (read/write)
Data Type	String
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The S–parameter conversion function type.
Range	"IMPedance" Reflection or Transmission equivalent impedance according to the trace measurement parameter (S11 or S21) "ADMittance" Reflection or Transmission equivalent admittance according to the trace measurement parameter (S11 or S21) "INVersion" Inverse S–parameter "CONJugation" S–parameter conjugate
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	An error occurs.
Preset Value	`"IMP"`

Syntax	`Dim Param As String`
	`Param = app.SCPI.CALCulate(Ch).SELected.CONVersion.FUNCtion`
	`app.SCPI.CALCulate(Ch).SELected.CONVersion.FUNCtion = "INV"`

Equivalent Softkeys	**Analysis > Conversion > Function > Impedance Z | AdmittanceY | Inverse 1/S | Conjugation**

SCPI.CALCulate(*Ch*).SELected.CONVersion.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the S-parameter conversion function.
Allowable Values	*True* S–parameter conversion function ON *False* S–parameter conversion function OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.CALCulate(Ch).SELected.CONVersion.STATe`
	`app.SCPI.CALCulate(Ch).SELected.CONVersion.STATe = True`

Equivalent Softkeys	**Analysis > Conversion > Conversion**

SCPI.CALCulate(*Ch*).SELected.CORRection.EDELay.TIME

Object Type	Property (read/write)
Data Type	Double
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The value of the electrical delay.
Range	from −10 to 10
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`0`
Unit	s (second)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.CALCulate(Ch).SELected.CORRection.EDELay.`
	`TIME`
	`app.SCPI.CALCulate(Ch).SELected.CORRection.EDELay.`
	`TIME = 1e-9`

Equivalent Softkeys	**Scale > Electrical Delay**

SCPI.CALCulate(*Ch*).SELected.CORRection.OFFSet.PHASe

Object Type	Property (read/write)
Data Type	Double
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The value of the phase offset.
Range	from –360 to 360
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	0
Unit	° (degree)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.CALCulate(Ch).SELected.CORRection.OFFSet.`
	`PHASe`
	`app.SCPI.CALCulate(Ch).SELected.CORRection.OFFSet.`
	`PHASe = 360`

Equivalent Softkeys	**Scale > Phase Offset**

SCPI.CALCulate(*Ch*).SELected.DATA.FDATa

Object Type	Property (read only)
Data Type	Variant (Double array)
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The formatted data array. The array elements contain measurements in the current format, for example, in logarithmic magnitude format (Log Mag). Also, see section 12. The array size is 2N, where N is the number of measurement points. For the n–th point, where n from 1 to N: Data(2n–2) real number in rectangular format, real part in polar and Smith chart formats; Data(2n–1) 0 in rectangular format, imaginary part in polar and Smith chart formats.

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.CALCulate(Ch).SELected.DATA.FDATa`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.DATA.FMEMory

Object Type	Property (read only)
Data Type	Variant (Double array)
Target	The active trace of channel *Ch*, *Ch* channel number 1−9 (see Table 1)
Description	The formatted memory array. The array elements contain saved measurements in the current format, for example, in logarithmic magnitude format (Log Mag). Also, see section 12. The array size is 2N, where N is the number of measurement points. For the n−th point, where n from 1 to N: Data(2n−2) real number in rectangular format, real part in polar and Smith chart formats; Data(2n−1) 0 in rectangular format, imaginary part in polar and Smith chart formats.

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.CALCulate(Ch).SELected.DATA.FMEMory`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.DATA.SDATa

Object Type	Property (read only)
Data Type	Variant (Double array)
Target	The active trace of channel *Ch*, *Ch* channel number 1-9 (see Table 1)
Description	The corrected data array. The corrected measurements are complex numbers. Also, see section 12. The array size is 2N, where N is the number of measurement points. For the n-th point, where n from 1 to N: Data(2n-2) the real part of corrected measurement; Data(2n-1) the imaginary part of corrected measurement.

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.CALCulate(Ch).SELected.DATA.SDATa`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.DATA.SMEMory

Object Type	Property (read only)
Data Type	Variant (Double array)
Target	The active trace of channel *Ch*, *Ch* channel number 1-9 (see Table 1)
Description	The corrected memory array. The corrected measurements are complex numbers. Also, see section 12. The array size is 2N, where N is the number of measurement points. For the n-th point, where n from 1 to N: Data(2n-2) the real part of corrected measurement memory; Data(2n-1) the imaginary part of corrected measurement memory.

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.CALCulate(Ch).SELected.DATA.SMEMory`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.FILTer.GATE.TIME.CENTer

Object Type	Property (read/write)
Data Type	Double
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The gate center value of the gating function.
Range	Varies depending on the frequency span and the number of points.
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	0
Unit	s (seconds), m (meters) or ft (feet)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.CALCulate(Ch).SELected.FILTer.GATE.TIME.`
	`CENTer`
	`app.SCPI.CALCulate(Ch).SELected.FILTer.GATE.TIME.`
	`CENTer = 1e-8`

Equivalent Softkeys	**Analysis > Gating > Center**

SCPI.CALCulate(*Ch*).SELected.FILTer.GATE.TIME.SHAPe

Object Type	Property (read/write)
Data Type	String
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The gate shape of the gating function.
Range	"MAXimum" Maximum shape "WIDE" Wide shape "NORMal" Normal shape "MINimum" Minimum shape
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	An error occurs.
Preset Value	`"NORM"`

Syntax	`Dim Param As String`
	`Param =`
	`app.SCPI.CALCulate(Ch).SELected.FILTer.GATE.TIME.SHAPe`
	`app.SCPI.CALCulate(Ch).SELected.FILTer.GATE.TIME.SHAPe = "MAX"`

Equivalent Softkeys	**Analysis > Gating > Shape > Maximum | Wide | Normal | Minimum**

SCPI.CALCulate(*Ch*).SELected.FILTer.GATE.TIME.SPAN

Object Type	Property (read/write)
Data Type	Double
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The gate span value of the gating function.
Range	Varies depending on the frequency span and the number of points.
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`2e-8`
Unit	s (seconds), m (meters) or ft (feet)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.CALCulate(Ch).SELected.FILTer.GATE.TIME.`
	`SPAN`
	`app.SCPI.CALCulate(Ch).SELected.FILTer.GATE.TIME.`
	`SPAN = 1e-8`

Equivalent Softkeys	**Analysis > Gating > Span**

SCPI.CALCulate(*Ch*).SELected.FILTer.GATE.TIME.STARt

Object Type	Property (read/write)
Data Type	Double
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The gate start value of the gating function.
Range	Varies depending on the frequency span and the number of points.
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`–1e–8`
Unit	s (seconds), m (meters) or ft (feet)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.CALCulate(Ch).SELected.FILTer.GATE.TIME.`
	`STARt`
	`app.SCPI.CALCulate(Ch).SELected.FILTer.GATE.TIME.`
	`STARt = 1e–7`

Equivalent Softkeys	**Analysis > Gating > Start**

SCPI.CALCulate(*Ch*).SELected.FILTer.GATE.TIME.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the gating function.
Allowable Values	*True* Gating function ON *False* Gating function OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status =`
	`app.SCPI.CALCulate(Ch).SELected.FILTer.GATE.TIME.`
	`STATe`
	`app.SCPI.CALCulate(Ch).SELected.FILTer.GATE.TIME.`
	`STATe = Status`

Equivalent Softkeys	**Analysis > Gating > Gating**

SCPI.CALCulate(*Ch*).SELected.FILTer.GATE.TIME.STOP

Object Type	Property (read/write)
Data Type	Double
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The gate stop value of the gating function.
Range	Varies depending on the frequency span and the number of points.
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`1e-8`
Unit	s (seconds), m (meters) or ft (feet)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.CALCulate(Ch).SELected.FILTer.GATE.TIME.STOP`
	`app.SCPI.CALCulate(Ch).SELected.FILTer.GATE.TIME.STOP = 1e-7`

Equivalent Softkeys	**Analysis > Gating > Stop**

SCPI.CALCulate(*Ch*).SELected.FILTer.GATE.TIME.TYPE

Object Type	Property (read/write)
Data Type	String
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The gate type of the gating function.
Range	"BPASs" Bandpass type "NOTCh" Notch type
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	An error occurs.
Preset Value	`"BPAS"`

Syntax	`Dim Param As String`
	`Param =`
	`app.SCPI.CALCulate(Ch).SELected.FILTer.GATE.TIME.`
	`TYPE`
	`app.SCPI.CALCulate(Ch).SELected.FILTer.GATE.TIME.`
	`TYPE = "NOTC"`

Equivalent Softkeys	**Analysis > Gating > Type**

SCPI.CALCulate(*Ch*).SELected.FORMat

Object Type	Property (read/write)
Data Type	String
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Data format.
Range	"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
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	An error occurs.
Preset Value	`"MLOG"`

Syntax	`Dim Param As String`
	`Param = app.SCPI.CALCulate(Ch).SELected.FORMat`
	`app.SCPI.CALCulate(Ch).SELected.FORMat = "PHAS"`

Equivalent Softkeys	**Response > Format > Log Mag | SWR | Phase | Expand Phase | Group Delay | Lin Mag | Real | Imag** **Response > Format > Smith > Log / Phase | Lin / Phase | Real / Imag | R+jX | G+jB** **Response > Format > Polar > Log / Phase | Ling / Phase | Real / Imag**

SCPI.CALCulate(*Ch*).SELected.FUNCtion.DATA

Object Type	Property (read only)
Data Type	Variant (Double array)
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The data array of analysis executed by the `SCPI.CALCulate(Ch).SELected.FUNCtion.EXECute` method. The array size is 2N, where N is the number of points defined by the `SCPI.CALCulate(Ch).SELected.FUNCtion.POINts` property. For the n–th point, where n from 1 to N: Data(2n–2) the response value in the n–th measurement point; Data(2n–1) the stimulus value in the n–th measurement point. Always set to 0 for the analysis of mean value, standard deviation, and peak–to–peak value.

Syntax	`Dim Data As Variant`
	`Data =`
	`app.SCPI.CALCulate(Ch).SELected.FUNCtion.DATA`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.FUNCtion.DOMain.COUPle

Object Type	Property (read/write)
Data Type	Boolean
Target	All traces of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF coupling state of the analysis range for the `SCPI.CALCulate(Ch).SELected.FUNCtion.EXECute` method.
Allowable Values	*True* Coupling state ON *False* Coupling state OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.CALCulate(Ch).SELected.FUNCtion.DOMain.COUPle`
	`app.SCPI.CALCulate(Ch).SELected.FUNCtion.DOMain.COUPle = Status`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.FUNCtion.DOMain.STARt

Object Type	Property (read/write)
Data Type	Double
Target	All traces of channel Ch (if the coupling is set to OFF by the `SCPI.CALCulate(Ch).SELected.FUNCtion.DOMain.COUPle` property), the active trace of channel *Ch* (if otherwise), *Ch* channel number 1–9 (see Table 1)
Description	The start value of the analysis range set by the `SCPI.CALCulate(Ch).SELected.FUNCtion.EXECute` method.
Range	From the stimulus current start value to the stimulus current stop value.
Out of Range	No limitation
Preset Value	`0`
Unit	Hz (Hertz) | s (second) | dBm (decibels above 1 milliwatt)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.CALCulate(Ch).SELected.FUNCtion.DOMain.`
	`STARt`
	`app.SCPI.CALCulate(Ch).SELected.FUNCtion.DOMain.`
	`STARt = 1e9`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.FUNCtion.DOMain.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	All traces of channel Ch (if the coupling is set to OFF by the `SCPI.CALCulate(Ch).SELected.FUNCtion.DOMain.COUPle` property), the active trace of channel *Ch* (if otherwise), *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the arbitrary range when executing the analysis by the `SCPI.CALCulate(Ch).SELected.FUNCtion.EXECute` method.
Allowable Values	*True* Arbitrary range ON *False* Arbitrary range OFF (entire sweep range)
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status =`
	`app.SCPI.CALCulate(Ch).SELected.FUNCtion.DOMain.`
	`STATe`
	`app.SCPI.CALCulate(Ch).SELected.FUNCtion.DOMain.`
	`STATe = True`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.FUNCtion.DOMain.STOP

Object Type	Property (read/write)
Data Type	Double
Target	All traces of channel Ch (if the coupling is set to OFF by the `SCPI.CALCulate(Ch).SELected.FUNCtion.DOMain.COUPle` property), the active trace of channel *Ch* (if otherwise), *Ch* channel number 1–9 (see Table 1)
Description	The stop value of the analysis range set by the `SCPI.CALCulate(Ch).SELected.FUNCtion.EXECute` method.
Range	From the stimulus current start value to the stimulus current stop value.
Out of Range	No limitation
Preset Value	`0`
Unit	Hz (Hertz) | s (second) | dBm (decibels above 1 milliwatt)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.CALCulate(Ch).SELected.FUNCtion.DOMain.STOP`
	`app.SCPI.CALCulate(Ch).SELected.FUNCtion.DOMain.STOP = 2e9`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.FUNCtion.EXECute

Object Type	Method
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Executes the analysis specified with the `SCPI.CALCulate(Ch).SELected.FUNCtion.TYPE` property. The analysis result can then be read out with the `SCPI.CALCulate(Ch).SELected.FUNCtion.DATA` property.
Syntax	`app.SCPI.CALCulate(Ch).SELected.FUNCtion.EXECute`
Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.FUNCtion.PEXCursion

Object Type	Property (read/write)
Data Type	Double
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The lower limit for the peak excursion value when executing the peak search by the `SCPI.CALCulate(Ch).SELected.FUNCtion.EXECute` method.
Range	Varies depending on the trace format.
Out of Range	No limitation
Preset Value	`3`
Unit	dB (decibel) | ° (degree) | s (second)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.CALCulate(Ch).SELected.FUNCtion.PEXCursion`
	`app.SCPI.CALCulate(Ch).SELected.FUNCtion.PEXCursion = 1.5`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.FUNCtion.POINts

Object Type	Property (read only)
Data Type	Long
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The number of points (data pairs) of the analysis result by the `SCPI.CALCulate(Ch).SELected.FUNCtion.EXECute` method. Always equal to 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 peaks or all targets.

Syntax	`Dim Value As Long`
	`Value =`
	`app.SCPI.CALCulate(Ch).SELected.FUNCtion.POINts`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.FUNCtion.PPOLarity

Object Type	Property (read/write)
Data Type	String
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The polarity selection when performing the peak search by the `SCPI.CALCulate(Ch).SELected.FUNCtion.EXECute` method.
Range	"POSitive" Positive peaks "NEGative" Negative peaks "BOTH" Both positive peaks and negative peaks
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	The value is ignored.
Preset Value	`"POS"`

Syntax	`Dim Param As String`
	`Param =`
	`app.SCPI.CALCulate(Ch).SELected.FUNCtion.PPOLarity`
	`app.SCPI.CALCulate(Ch).SELected.FUNCtion.PPOLarity`
	`= "NEG"`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.FUNCtion.TARGet

Object Type	Property (read/write)
Data Type	Double
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The target level when performing the search for the trace and the target level crosspoints by the `SCPI.CALCulate(Ch).SELected.FUNCtion.EXECute` method.
Range	Varies depending on the trace format.
Out of Range	No limitation
Preset Value	`0`
Unit	dB (decibel) | ° (degree) | s (second)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.CALCulate(Ch).SELected.FUNCtion.TARGet`
	`app.SCPI.CALCulate(Ch).SELected.FUNCtion.TARGet = -10`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.FUNCtion.TTRansition

Object Type	Property (read/write)
Data Type	String
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The transition type selection when performing the search for the trace and the target level crosspoints by the `SCPI.CALCulate(Ch).SELected.FUNCtion.EXECute` method.
Range	"POSitive" Positive peaks "NEGative" Negative peaks "BOTH" Both positive peaks and negative peaks
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	The value is ignored.
Preset Value	`"POS"`

Syntax	`Dim Param As String`
	`Param = app.SCPI.CALCulate(Ch).SELected.FUNCtion.`
	`TTRansition`
	`app.SCPI.CALCulate(Ch).SELected.FUNCtion.`
	`TTRansition = "BOTH"`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.FUNCtion.TYPE

Object Type	Property (read/write)
Data Type	String
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The selection of the type of analysis executed by the `SCPI.CALCulate(Ch).SELected.FUNCtion.EXECute` method.
Range	"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 the peak "APEak" Search for all the peaks "ATARget" Search for all targets
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	The value is ignored.
Preset Value	`"PTP"`

Syntax	`Dim Param As String`
	`Param =`
	`app.SCPI.CALCulate(Ch).SELected.FUNCtion.TYPE`
	`app.SCPI.CALCulate(Ch).SELected.FUNCtion.TYPE =`
	`"STDEV"`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.LIMit.DATA

Object Type	Property (read/write)
Data Type	Variant (Double array)
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	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 measuring points. For the n–th point, where n from 1 to N: Data(0) The number of limit line segments N is from 0 to 100. Setting 0 clears the limit line; Data(5n–4) type of the n–th limit line segment; • 0: OFF • 1: Upper limit • 2: Lower limit Data(5n–3) the stimulus value in the start point of the n–th segment; Data(5n–2) the stimulus value in the end point of the n–th segment; Data(5n–1) the response value in the start point of the n–th segment; Data(5n–0) the response value in the end point of the n–th segment.
Notes	If the array size is not 1 + 5N, where N is Data(0), an error occurs. If Data(5n – 4) is less than 0 or more than 2, an error occurs. When Data(5n–3), Data(5n–2), Data(5n–1) and Data(5n–0) elements are out of allowable range, the value is set to the limit, which is closer to the specified value.

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.CALCulate(Ch).SELected.LIMit.DATA`
	`app.SCPI.CALCulate(Ch).SELected.LIMit.DATA = Array(1,2,800,900,-10,-10)`

Equivalent Softkeys	**Analysis > Limit Test > Edit Limit Line**

SCPI.CALCulate(*Ch*).SELected.LIMit.DISPlay.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the limit line display of the limit test function.
Allowable Values	*True* Limit line display ON *False* Limit line display OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status =`
	`app.SCPI.CALCulate(Ch).SELected.LIMit.DISPlay.STATe`
	`app.SCPI.CALCulate(Ch).SELected.LIMit.DISPlay.STATe`
	`= True`

Equivalent Softkeys	**Analysis > Limit Test > Limit Line**

SCPI.CALCulate(*Ch*).SELected.LIMit.FAIL

Object Type	Property (read only)
Data Type	Boolean
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The limit test result.
Allowable Values	*True* Fail *False* Pass

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.CALCulate(Ch).SELected.LIMit.FAIL`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.LIMit.OFFSet.AMPLitude

Object Type	Property (read/write)
Data Type	Double
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The value of the limit line offset along Y–axis.
Range	Varies depending on the trace format.
Out of Range	No limitation
Preset Value	0
Unit	dB (decibel) | ° (degree) | s (second)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.CALCulate(Ch).SELected.LIMit.OFFSet.`
	`AMPLitude`
	`app.SCPI.CALCulate(Ch).SELected.LIMit.OFFSet.`
	`AMPLitude = -10`

Equivalent Softkeys	**Analysis > Limit Test > Limit Line Offsets > Response Offset**

SCPI.CALCulate(*Ch*).SELected.LIMit.OFFSet.STIMulus

Object Type	Property (read/write)
Data Type	Double
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The value of the limit line offset along X–axis.
Range	From the stimulus current start value to the stimulus current stop value.
Out of Range	No limitation
Preset Value	0
Unit	Hz (Hertz) | s (second) | dBm (decibels above 1 milliwatt)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.CALCulate(Ch).SELected.LIMit.OFFSet.`
	`STIMulus`
	`app.SCPI.CALCulate(Ch).SELected.LIMit.OFFSet.`
	`STIMulus = 1e6`

Equivalent Softkeys	**Analysis > Limit Test > Limit Lines Offsets > Stimulus Offset**

SCPI.CALCulate(*Ch*).SELected.LIMit.REPort.ALL

Object Type	Property (read only)
Data Type	Variant (Double array)
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The data array, which is the limit test results. The array size is 4N, where N is the number of measurement points. For the n–th point, where n from 1 to N: Data(4n–3) the stimulus value in the n–th point Data(4n–2) the limit test result in the n–th point • –1: No limit • 0: Fail • 1: Pass Data(4n–1) the upper limit value in the n–th point (0 – if there is no limit) Data(4n–0) the lower limit value in the n–th point (0 – if there is no limit)

Syntax	`Dim Data As Variant`
	`Data =`
	`app.SCPI.CALCulate(Ch).SELected.LIMit.REPort.ALL`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.LIMit.REPort.DATA

Object Type	Property (read only)
Data Type	Variant (Double array)
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The data array, which is the stimulus values at all the measurement points that failed the limit test. The array size is defined by the `SCPI.CALCulate(Ch).SELected.LIMit.REPort.POINts` property.

Syntax	`Dim Data As Variant`
	`Data =`
	`app.SCPI.CALCulate(Ch).SELected.LIMit.REPort.DATA`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.LIMit.REPort.POINts

Object Type	Property (read only)
Data Type	Long
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The number of the measurement points that failed the limit test. The array of stimulus values of the points can be read out by the `SCPI.CALCulate(Ch).SELected.LIMit.REPort.DATA` property.

Syntax	`Dim Cnt  As Long`
	`Cnt  =`
	`app.SCPI.CALCulate(Ch).SELected.LIMit.REPort.POINts`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.LIMit.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the limit test function.
Allowable Values	*True* Limit test function ON *False* Limit test function OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status =`
	`app.SCPI.CALCulate(Ch).SELected.LIMit.STATe`
	`app.SCPI.CALCulate(Ch).SELected.LIMit.STATe = True`

Equivalent Softkeys	**Analysis > Limit Test > Limit Test**

SCPI.CALCulate(*Ch*).SELected.MARKer(*Mk*).ACTivate

Object Type	Method
Target	Marker *Mk* of the active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Mk* marker number 1–15, or reference marker number 16 (see Table 4)
Description	Sets the active marker. If a marker is OFF this function will turn it 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.
Syntax	`app.SCPI.CALCulate(Ch).SELected.MARKer(Mk).ACTivate`
Equivalent Softkeys	**Markers > Active Marker > Marker n** **Markers > Reference Marker**

Table 4. Mk: Marker Number

Data Type	Long
Description	Marker number. Numbers from 1 to 15 are for regular markers, number 16 is for the reference marker.
Range	from 1 to 16
Out of Range	An error occurs..
Notes	If the marker number is not specified, it is taken as equal to 1.

SCPI.CALCulate(*Ch*).SELected.MARKer(*Mk*).BWIDth.DATA

Object Type	Property (read only)
Data Type	Variant (Double array)
Target	Marker *Mk* of the active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Mk* marker number 1–15, or reference marker number 16 (see Table 4)

Description	The bandwidth search result. The bandwidth search can be performed relatively to the marker Mk, or relatively to the absolute maximum value of the trace (in this case the marker number is ignored), what is set by the `SCPI.CALCulate(Ch).SELected.MARKer.BWIDth.REFerence` property.
	The array contains 4 elements:
	Data(0) Bandwidth;
	Data(1) Center frequency;
	Data(2) Q value;
	Data(3) Loss.

Notes	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.

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.CALCulate(Ch).SELected.MARKer(Mk).BWIDth.DATA`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.MARKer.BWIDth.REFerence

Object Type	Property (read/write)
Data Type	String
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The selection of the reference point for the bandwidth search function: reference marker or absolute maximum value of the trace.
Range	"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
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	The value is ignored.
Preset Value	`"MAX"`

Syntax	`Dim Param As String`
	`Param = app.SCPI.CALCulate(Ch).SELected.MARKer.BWIDth.REFerence`
	`app.SCPI.CALCulate(Ch).SELected.MARKer.BWIDth.REFerence = "MARK"`

Equivalent Softkeys	**Markers > Marker Math > Bandwidth Search > Search Ref To**

SCPI.CALCulate(*Ch*).SELected.MARKer.BWIDth.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the bandwidth search function.
Allowable Values	*True* Bandwidth search function ON *False* Bandwidth search function OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status =`
	`app.SCPI.CALCulate(Ch).SELected.MARKer.BWIDth.STATe`
	`app.SCPI.CALCulate(Ch).SELected.MARKer.BWIDth.STATe`
	`= True`

Equivalent Softkeys	**Markers > Marker Math > Bandwidth Search > Bandwidth Search**

SCPI.CALCulate(*Ch*).SELected.MARKer.BWIDth.THReshold

Object Type	Property (read/write)
Data Type	Double
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The bandwidth definition value.
Range	Varies depending on the trace format.
Out of Range	No limitation
Preset Value	`–3`
Unit	dB (decibel) | ° (degree) | s (second)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.CALCulate(Ch).SELected.MARKer.BWIDth.`
	`THReshold`
	`app.SCPI.CALCulate(Ch).SELected.MARKer.BWIDth.`
	`THReshold = –6.0`

Equivalent Softkeys	**Markers > Marker Math > Bandwidth Search > Bandwidth Value**

SCPI.CALCulate(*Ch*).SELected.MARKer.BWIDth.TYPE

Object Type	Property (read/write)
Data Type	String
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The type of the bandwidth search function.
Range	"BPASs" Bandpass "NOTCh" Notch
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	The value is ignored.
Preset Value	`"BPAS"`

Syntax	`Dim Param As String`
	`Param =`
	`app.SCPI.CALCulate(Ch).SELected.MARKer.BWIDth.TYPE`
	`app.SCPI.CALCulate(Ch).SELected.MARKer.BWIDth.TYPE`
	`= "NOTC"`

Equivalent Softkeys	**Markers > Marker Math > Bandwidth Search > Type**

SCPI.CALCulate(*Ch*).SELected.MARKer.COUPle

Object Type	Property (read/write)
Data Type	Boolean
Target	All traces of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the marker coupling function.
Allowable Values	*True* Marker coupling ON *False* Marker coupling OFF
Preset Value	`True`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.CALCulate(Ch).SELected.MARKer.COUPle`
	`app.SCPI.CALCulate(Ch).SELected.MARKer.COUPle = false`

Equivalent Softkeys	**Markers > Properties > Marker Couple**

SCPI.CALCulate(*Ch*).SELected.MARKer(*Mk*).FUNCtion.DOMain.STARt

Object Type	Property (read/write)
Data Type	Double
Target	All traces of channel *Ch* (if the marker search range coupling is set to OFF by the `SCPI.CALCulate(Ch).SELected.FUNCtion.DOMain.COUPle` property), the active trace of channel *Ch* (if otherwise), *Ch* channel number 1–9 (see Table 1)
Description	The start value of the marker search range.
Range	From the stimulus current start value to the stimulus current stop value.
Out of Range	No limitation
Preset Value	`3e5`
Unit	Hz (Hertz) | s (second) | dBm (decibels above 1 milliwatt)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.CALCulate(Ch).SELected.MARKer(1).FUNCtion.DOMain.STARt`
	`app.SCPI.CALCulate(Ch).SELected.MARKer(1).FUNCtion.DOMain.STARt = 1e6`

Equivalent Softkeys	**Markers > Marker Search > Search Start**

SCPI.CALCulate(*Ch*).SELected.MARKer(*Mk*).FUNCtion.DOMain.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	All traces of channel *Ch* (if the marker search range coupling is set to OFF by the `SCPI.CALCulate(Ch).SELected.MARKer.FUNCtion.DOMain.COUPle` property), the active trace of channel *Ch* (if otherwise), *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the arbitrary range when executing the marker search.
Allowable Values	*True* Marker search range ON *False* Marker search range OFF (entire sweep range)
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.CALCulate(Ch).SELected.MARKer(1).FUNCtion.DOMain.STATe`
	`app.SCPI.CALCulate(Ch).SELected.MARKer(1).FUNCtion.DOMain.STATe = True`

Equivalent Softkeys	**Markers > Marker Search > Search Range**

SCPI.CALCulate(*Ch*).SELected.MARKer(*Mk*).FUNCtion.DOMain.STOP

Object Type	Property (read/write)
Data Type	Double
Target	All traces of channel *Ch* (if the marker search range coupling is set to OFF by the `SCPI.CALCulate(Ch).SELected.MARKer.FUNCtion.DOMain.COUPle` property), the active trace of channel *Ch* (if otherwise), *Ch* channel number 1–9 (see Table 1)
Description	The stop value of the marker search range.
Range	From the stimulus current start value to the stimulus current stop value.
Out of Range	No limitation
Preset Value	`1.5e9`
Unit	Hz (Hertz) | s (second) | dBm (decibels above 1 milliwatt)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.CALCulate(Ch).SELected.MARKer(1).FUNCtion.DOMain.STOP`
	`app.SCPI.CALCulate(Ch).SELected.MARKer(1).FUNCtion.DOMain.STOP = 1e6`

Equivalent Softkeys	**Markers > Marker Search > Search Stop**

SCPI.CALCulate(*Ch*).SELected.MARKer(*Mk*).FUNCtion.EXECute

Object Type	Method
Target	Marker *Mk* of the active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Mk* marker number 1–15, or reference marker number 16 (see Table 4)
Description	Executes the marker search according to the specified criterion. The type of the marker search is set by the `SCPI.CALCulate(Ch).SELected.MARKer(Mk).FUNCtion.TYPE` property.
Syntax	`app.SCPI.CALCulate(Ch).SELected.MARKer(Mk).FUNCtion.EXECute`
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**

SCPI.CALCulate(*Ch*).SELected.MARKer(*Mk*).FUNCtion.PEXCursion

Object Type	Property (read/write)
Data Type	Double
Target	Marker *Mk* of the active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Mk* marker number 1–15, or reference marker number 16 (see Table 4)
Description	The peak excursion value, when the marker search for peak is performed by the `SCPI.CALCulate(Ch).SELected.MARKer(Mk).FUNCtion.EXECute` method.
Range	Varies depending on the trace format.
Out of Range	No limitation
Preset Value	`1`
Unit	dB (decibel) | ° (degree) | s (second)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.CALCulate(Ch).SELected.MARKer(Mk).FUNCtion.PEXCursion`
	`app.SCPI.CALCulate(Ch).SELected.MARKer(Mk).FUNCtion.PEXCursion = 3.0`

Equivalent Softkeys	**Markers > Marker Search > Peak > Peak Excursion**

SCPI.CALCulate(*Ch*).SELected.MARKer(*Mk*).FUNCtion.PPOLarity

Object Type	Property (read/write)
Data Type	String
Target	Marker *Mk* of the active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Mk* marker number 1–15, or reference marker number 16 (see Table 4)
Description	The peak polarity selection, when the marker search for peak is performed by the `SCPI.CALCulate(Ch).SELected.MARKer(Mk).FUNCtion.EXECute` method.
Range	"POSitive" Positive polarity "NEGative" Negative polarity "BOTH" Both positive polarity and negative polarity
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	The value is ignored.
Preset Value	`"POS"`

Syntax	`Dim Param As String`
	`Param = app.SCPI.CALCulate(Ch).SELected.MARKer(Mk).FUNCtion.PPOLarity`
	`app.SCPI.CALCulate(Ch).SELected.MARKer(Mk).FUNCtion.PPOLarity = "neg"`

Equivalent Softkeys	**Markers > Marker Search > Peak > Peak Polarity > Positive | Negative | Both**

SCPI.CALCulate(*Ch*).SELected.MARKer(*Mk*).FUNCtion.TARGet

Object Type	Property (read/write)
Data Type	Double
Target	Marker *Mk* of the active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Mk* marker number 1–15, or reference marker number 16 (see Table 4)
Description	The target value, when the marker search for target is performed by the `SCPI.CALCulate(Ch).SELected.MARKer(Mk).FUNCtion.EXECute` method.
Range	Varies depending on the trace format.
Out of Range	No limitation
Preset Value	0
Unit	dB (decibel) | ° (degree) | s (second)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.CALCulate(Ch).SELected.MARKer(Mk).FUNCtion.TARGet`
	`app.SCPI.CALCulate(Ch).SELected.MARKer(Mk).FUNCtion.TARGet = -10`

Equivalent Softkeys	**Markers > Marker Search > Target > Target Value**

SCPI.CALCulate(*Ch*).SELected.MARKer(*Mk*).FUNCtion.TRACking

Object Type	Property (read/write)
Data Type	Boolean
Target	Marker *Mk* of the active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Mk* marker number 1–15, or reference marker number 16 (see Table 4)
Description	The ON/OFF state of the marker search tracking function.
Allowable Values	*True* Marker search tracking ON *False* Marker search tracking OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status =`
	`app.SCPI.CALCulate(Ch).SELected.MARKer(Mk).`
	`FUNCtion.TRACking`
	`app.SCPI.CALCulate(Ch).SELected.MARKer(Mk).`
	`FUNCtion.TRACking = True`

Equivalent Softkeys	**Markers > Marker Search > Tracking**

SCPI.CALCulate(*Ch*).SELected.MARKer(*Mk*).FUNCtion.TTRansition

Object Type	Property (read/write)
Data Type	String
Target	Marker *Mk* of the active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Mk* marker number 1–15, or reference marker number 16 (see Table 4)
Description	The selection of the type of the target transition, when the marker search for transition is performed by the `SCPI.CALCulate(Ch).SELected.MARKer(Mk).FUNCtion.EXECute` method.
Range	"POSitive" Positive target transition "NEGative" Negative target transition "BOTH" Both positive target transition and negative target transition
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	The value is ignored.
Preset Value	`"POS"`

Syntax	`Dim Param As String`
	`Param = app.SCPI.CALCulate(Ch).SELected.MARKer(Mk).FUNCtion.TTRansition`
	`app.SCPI.CALCulate(Ch).SELected.MARKer(Mk).FUNCtion.TTRansition = "NEG"`

Equivalent Softkeys	**Marker > Marker Search > Target > Target Transition**

SCPI.CALCulate(*Ch*).SELected.MARKer(*Mk*).FUNCtion.TYPE

Object Type	Property (read/write)
Data Type	String
Target	Marker *Mk* of the active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Mk* marker number 1–15, or reference marker number 16 (see Table 4)
Description	The selection of the type of the marker search, which is performed by the `SCPI.CALCulate(Ch).SELected.MARKer(Mk).FUNCtion.EXECute` method.
Range	"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
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	The value is ignored.
Preset Value	`"MAX"`

Syntax	`Dim Param As String`
	`Param = app.SCPI.CALCulate(Ch).SELected.MARKer(Mk).FUNCtion.TYPE`
	`app.SCPI.CALCulate(Ch).SELected.MARKer(Mk).FUNCtion.TYPE = "MIN"`

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**

SCPI.CALCulate(*Ch*).SELected.MARKer.REFerence.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the reference marker. When the reference marker is turned ON, all the values of the other markers turn to relative values.
Allowable Values	*True* Reference marker ON *False* Reference marker OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status =`
	`app.SCPI.CALCulate(Ch).SELected.MARKer.REFerence.`
	`STATe`
	`app.SCPI.CALCulate(Ch).SELected.MARKer.REFerence.`
	`STATe = True`

Equivalent Softkeys	**Markers > Reference Marker**

SCPI.CALCulate(*Ch*).SELected.MARKer(*Mk*).SET_

Object Type	Property (write only)
Data Type	String
Target	Marker *Mk* of the active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Mk* marker number 1–15, or reference marker number 16 (see Table 4)
Description	The setting of the value of the specified item to the value of the position of the marker.
Range	"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.
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	The value is ignored.
Syntax	`app.SCPI.CALCulate(Ch).SELected.MARKer(Mk).SET_ = "STOP"`
Equivalent Softkeys	**Markers > Marker Functions > Marker–>Start | Marker–>Stop | Marker –>Center | Marker–>Ref Value**

SCPI.CALCulate(*Ch*).SELected.MARKer(*Mk*).STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	Marker *Mk* of the active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Mk* marker number 1–15, or reference marker number 16 (see Table 4)
Description	The ON/OFF state of a marker. 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 for the reference marker). 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 to the relative measurement mode.
Allowable Values	*True* Marker ON *False* Marker OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status =`
	`app.SCPI.CALCulate(Ch).SELected.MARKer(Mk).STATe`
	`app.SCPI.CALCulate(Ch).SELected.MARKer(Mk).STATe =`
	`True`

Equivalent Softkeys	**Markers > Add Marker | Remove Marker** **Markers > Reference Marker**

SCPI.CALCulate(*Ch*).SELected.MARKer(*Mk*).X

Object Type	Property (read/write)
Data Type	Double
Target	Marker *Mk* of the active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Mk* marker number 1–15, or reference marker number 16 (see Table 4)
Description	The stimulus value of the marker.
Range	From the stimulus current start value to the stimulus current stop value.
Out of Value	Sets the value of the limit, which is closer to the specified value.
Preset Value	Stimulus center value
Unit	Hz (Hertz) | s (second) | dBm (decibels above 1 milliwatt)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.CALCulate(Ch).SELected.MARKer(Mk).X`
	`app.SCPI.CALCulate(Ch).SELected.MARKer(Mk).X = 1e9`

Equivalent Softkeys	**Markers > Edit Stimulus**

SCPI.CALCulate(*Ch*).SELected.MARKer(*Mk*).Y

Object Type	Property (read only)
Data Type	Variant (Double array)
Target	Marker *Mk* of the active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Mk* marker number 1–15, or reference marker number 16 (see Table 4)
Description	The response value of the marker. 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. The array includes 2 elements: Data(0) real number in rectangular format, real part in polar and Smith chart formats; Data(1) 0 in rectangular format, imaginary part in polar and Smith chart formats.

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.CALCulate(Ch).SELected.MARKer(Mk).Y`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.MARKer.COUNt

Object Type	Property (read/write)
Data Type	Long
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The number of the turned ON markers excluding the reference marker.
Range	from 0 to 15
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`0`

Syntax	`Dim MarkerCnt As Long`
	`MarkerCnt =`
	`app.SCPI.CALCulate(Ch).SELected.MARKer.COUNt`
	`app.SCPI.CALCulate(Ch).SELected.MARKer.COUNt = 5`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.MATH.DELete

Object Type	Method
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Removes the data (All memory traces) from the memory trace.
Syntax	`app.SCPI.CALCulate(Ch).SELected.MATH.DELete`
Equivalent Softkeys	**Trace > Delete All Memory**

SCPI.CALCulate(*Ch*).SELected.MATH.FUNCtion

Object Type	Property (read/write)
Data Type	String
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The selection of the math operation between the measurement data and the memory trace data. The math result replaces the data trace. If the data trace is not saved, the command is ignored.
Range	"DIVide" Division Data / Mem. "MULTiply" Multiplication Data x Mem. "ADD" Addition Data + Mem. "SUBTract" Subtraction Data – Mem. "NORMal" No math
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	An error occurs.
Preset Value	`"NORM"`

Syntax	`Dim Param As String`
	`Param =`
	`app.SCPI.CALCulate(Ch).SELected.MATH.FUNCtion`
	`app.SCPI.CALCulate(Ch).SELected.MATH.FUNCtion=`
	`"DIV"`

Equivalent Softkeys	**Trace > Data Math > Data/Mem | Data*Mem | Data+Mem | Data–Mem | OFF**

SCPI.CALCulate(*Ch*).SELected.MATH.MEMorize

Object Type	Method
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Saves the measurement data to the memory trace. Automatically turns on the display of the memory trace.
Syntax	`app.SCPI.CALCulate(Ch).SELected.MATH.MEMorize`
Equivalent Softkeys	**Trace > Memorize Data Trace**

SCPI.CALCulate(*Ch*).SELected.MAXhold.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the Maximum Hold function.
Allowable Values	*True* Maximum Hold ON *False* Maximum Hold OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status =`
	`app.SCPI.CALCulate(Ch).SELected.MAXhold.STATe`
	`app.SCPI.CALCulate(Ch).SELected.MAXhold.STATe =`
	`True`

Equivalent Softkeys	**Trace > Max Hold**

SCPI.CALCulate(*Ch*).SELected.MSTatistics.DATA

Object Type	Property (read only)
Data Type	Variant (Double array)
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The math statistics data array. The statistics function is applied either over the whole range (for all the trace), or within the range specified by the `SCPI.CALCulate(Ch).SELected.MSTatistics.DOMain.STATe` property (the range limits are determined by two markers). The array includes 3 elements: Data(0) Mean value; Data(1) Standard deviation; Data(2) Peak–to–peak (difference between the maximum value and the minimum value).

Syntax	`Dim Data As Variant`
	`Data =`
	`app.SCPI.CALCulate(Ch).SELected.MSTatistics.DATA`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.MSTatistics.DOMain.MARKer.STARt

Object Type	Property (read/write)
Data Type	Long
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The number of the marker, which specifies the start frequency of the math statistics range.
Range	from 1 to 16
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`1`

Syntax	`Dim MkrNum As Long`
	`MkrNum =`
	`app.SCPI.CALCulate(Ch).SELected.MSTatistics.DOMain.`
	`MARKer.STARt`
	`app.SCPI.CALCulate(Ch).SELected.`
	`MSTatistics.DOMain.MARKer.STARt = 3`

Equivalent Softkeys	**Markers > Marker Math > Statistics > Statistics Start**

SCPI.CALCulate(*Ch*).SELected.MSTatistics.DOMain.MARKer.STOP

Object Type	Property (read/write)
Data Type	Long
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The number of the marker, which specifies the stop frequency of the math statistics range.
Range	from 1 to 16
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`2`

Syntax	`Dim Mkr As Long`
	`Mkr =`
	`app.SCPI.CALCulate(Ch).SELected.MSTatistics.DOMain.`
	`MARKer.STOP`
	`app.SCPI.CALCulate(Ch).SELected.MSTatistics.DOMain.`
	`MARKer.STOP = 4`

Equivalent Softkeys	**Markers > Marker Math > Statistics > Statistics Stop**

SCPI.CALCulate(*Ch*).SELected.MSTatistics.DOMain.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the math statistics range.
Allowable Values	*True* Statistics range ON *False* Statistics range OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status =`
	`app.SCPI.CALCulate(Ch).SELected.MSTatistics.DOMain.`
	`STATe`
	`app.SCPI.CALCulate(Ch).SELected.MSTatistics.DOMain.`
	`STATe = True`

Equivalent Softkeys	**Markers > Marker Math > Statistics > Statistics Range**

SCPI.CALCulate(*Ch*).SELected.MSTatistics.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the math statistics display.
Allowable Values	*True* Statistics display ON *False* Statistics display OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.CALCulate(Ch).SELected.MSTatistics.STATe`
	`app.SCPI.CALCulate(Ch).SELected.MSTatistics.STATe = True`

Equivalent Softkeys	**Markers > Marker Math > Statistics > Statistics**

SCPI.CALCulate(*Ch*).SELected.RLIMit.DATA

Object Type	Property (read/write)
Data Type	Variant (Double array)
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The data array, which is the limit line for the ripple limit function. The array size is 1 + 4N, where N is the number of limit line segments. For the n–th point, where n from 1 to N: Data(0) the number of limit line segments N is the integer from 0 to 12. Setting 0 clears the limit line; Data(4n–3) type of the n–th limit line segment; • 0: Off • 1: On Data(4n–2) the stimulus value in the beginning point of the n–th segment; Data(4n–2) the stimulus value in the end point of the n–th segment; Data(4n–0) the ripple limit value of the n–th segment.
Notes	If the array size is not 1 + 4N, where N is Data(0), an error occurs. If Data(4n – 3) is less than 0 or more than 1, an error occurs. When Data(4n–2), Data(4n–1), and Data(4n–0) elements are out of allowable range, the value is set to the limit, which is closer to the specified value.

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.CALCulate(Ch).SELected.RLIMit.DATA`
	`app.SCPI.CALCulate(Ch).SELected.RLIMit.DATA = Array(1,1,800,900,10)`

Equivalent Softkeys	**Analysis > Ripple Limit > Edit Ripple Limit**

SCPI.CALCulate(*Ch*).SELected.RLIMit.DISPlay.LINE

Object Type	Property (read/write)
Data Type	Boolean
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the ripple limit line display.
Allowable Values	*True* Ripple limit line ON *False* Ripple limit line OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status =`
	`app.SCPI.CALCulate(Ch).SELected.RLIMit.DISPlay.LINE`
	`app.SCPI.CALCulate(Ch).SELected.RLIMit.DISPlay.LINE`
	`= True`

Equivalent Softkeys	**Analysis > Ripple Limit > Limit Line**

SCPI.CALCulate(*Ch*).SELected.RLIMit.FAIL

Object Type	Property (read only)
Data Type	Boolean
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Ripple limit test result.
Allowable Values	*True* Fail *False* Pass

Syntax	`Dim Status As Boolean`
	`Status =`
	`app.SCPI.CALCulate(Ch).SELected.RLIMit.FAIL`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.RLIMit.REPort.DATA

Object Type	Property (read only)
Data Type	Variant (Double array)
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The data array, which is the ripple limit test results. The array size is 1+3N, where N is the number of ripple limit bands. For the n–th point, where n from 1 to N: Data(0) N total number of the bands; Data(3n–2) n number of the band; Data(3n–1) Ripple value in the n–th band; Data(3n–0) Ripple limit test result in the n–th band: • 0: Pass • 1: Fail

Syntax	`Dim Data As Variant`
	`Data =`
	`app.SCPI.CALCulate(Ch).SELected.RLIMit.REPort.DATA`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).SELected.RLIMit.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the ripple limit test.
Allowable Values	*True* Ripple limit test ON *False* Ripple limit test OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.CALCulate(Ch).SELected.RLIMit.STATe`
	`app.SCPI.CALCulate(Ch).SELected.RLIMit.STATe = True`

Equivalent Softkeys	**Analysis > Ripple Limit > Ripple Test**

SCPI.CALCulate(*Ch*).SELected.SMOothing.APERture

Object Type	Property (read/write)
Data Type	Double
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The smoothing aperture for the smoothing function.
Range	from 0.01 to 20
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`1`
Unit	%

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.CALCulate(Ch).SELected.SMOothing.APERture`
	`app.SCPI.CALCulate(Ch).SELected.SMOothing.APERture`
	`= 1.5`

Equivalent Softkeys	**Response > Smo Aperture**

SCPI.CALCulate(*Ch*).SELected.SMOothing.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the trace smoothing function.
Allowable Values	*True* Trace smoothing ON *False* Trace smoothing OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status =`
	`app.SCPI.CALCulate(Ch).SELected.SMOothing.STATe`
	`app.SCPI.CALCulate(Ch).SELected.SMOothing.STATe =`
	`True`

Equivalent Softkeys	**Response > Smoothing**

SCPI.CALCulate(*Ch*).SELected.TRANsform.TIME.CENTer

Object Type	Property (read/write)
Data Type	Double
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Ehe time domain center value, when the time domain transformation function is turned ON.
Range	Varies depending on the specified frequency range and the number of points.
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	0
Unit	s (seconds), m (meters) or ft (feet)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.`
	`CENTer`
	`app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.`
	`CENTer = 1e-8`

Equivalent Softkeys	**Analysis > Time Domain > Center**

SCPI.CALCulate(*Ch*).SELected.TRANsform.TIME.IMPulse.WIDTh

Object Type	Property (read/write)
Data Type	Double
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	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.
Range	Varies depending on the specified frequency range and the number of points.
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	None
Unit	s (second)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.`
	`IMPulse.WIDTh`
	`app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.`
	`IMPulse.WIDTh = 1e-8`

Equivalent Softkeys	**Analysis > Time Domain > Window > Impulse Width** (when the transformation type is set to Bandpass or Lowpass Impulse)

SCPI.CALCulate(*Ch*).SELected.TRANsform.TIME.KBESsel

Object Type	Property (read/write)
Data Type	Double
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The β parameter, which controls the Kaiser–Bessel window shape, when performing time domain transformation.
Range	from 0 to 13
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`6`
Unit	s (second)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.`
	`KBESsel`
	`app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.`
	`KBESsel = 13`

Equivalent Softkeys	**Analysis > Time Domain > Window > Kaiser Beta**

SCPI.CALCulate(*Ch*).SELected.TRANsform.TIME.LPFRequency

Object Type	Method
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Changes the frequency range to match with the lowpass type of the time domain transformation function.
Syntax	`app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.LPFRequency`
Equivalent Softkeys	**Analysis > Time Domain > Set Frequency Low Pass**

SCPI.CALCulate(*Ch*).SELected.TRANsform.TIME.REFLection.TYPE

Object Type	Property (read/write)
Data Type	String
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The selection of the reflection type for the time domain transformation function.
Range	"RTRip" Round Trip "OWAY" One Way
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	The value is ignored.
Preset Value	`"RTR"`

Syntax	`Dim Param As String`
	`Param =`
	`app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.`
	`REFLection.TYPE`
	`app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.`
	`REFLection.TYPE = "OWAY"`

Equivalent Softkeys	**Analysis > Time Domain > Reflection Type > Round Trip | One Way**

SCPI.CALCulate(*Ch*).SELected.TRANsform.TIME.SPAN

Object Type	Property (read/write)
Data Type	Double
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The time domain span value, when the time domain transformation function is turned ON.
Range	Varies depending on the specified frequency range and the number of points.
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`2e-8`
Unit	s (seconds), m (meters) or ft (feet)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.SPAN`
	`app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.SPAN = 1e-8`

Equivalent Softkeys	**Analysis > Time Domain > Span**

SCPI.CALCulate(*Ch*).SELected.TRANsform.TIME.STARt

Object Type	Property (read/write)
Data Type	Double
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The start value used for the transformation function of the time domain function.
Range	Varies depending on the specified frequency range and the number of points.
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`–1e–8`
Unit	s (seconds), m (meters) or ft (feet)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.`
	`STARt`
	`app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.`
	`STARt = 1e–8`

Equivalent Softkeys	**Analysis > Time Domain > Start**

SCPI.CALCulate(*Ch*).SELected.TRANsform.TIME.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the time domain transformation function.
Allowable Values	*True* Time domain transformation ON *False* Time domain transformation OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status =`
	`app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.`
	`STATe`
	`app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.`
	`STATe = True`

Equivalent Softkeys	**Analysis > Time Domain > Time Domain**

SCPI.CALCulate(*Ch*).SELected.TRANsform.TIME.STEP.RTIMe

Object Type	Property (read/write)
Data Type	Double
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	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.
Range	Varies depending on the specified frequency range and the number of points.
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	None
Unit	s (second)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.`
	`IMPulse.WIDTh`
	`app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.`
	`IMPulse.WIDTh = 1e-8`

Equivalent Softkeys	**Analysis > Time Domain > Window > Impulse Width** (when the transformation type is set to Lowpass Step)

SCPI.CALCulate(*Ch*).SELected.TRANsform.TIME.STIMulus

Object Type	Property (read/write)
Data Type	String
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The selection of the stimulus type for the time domain transformation function: impulse or step.
Range	"IMPulse" Impulse "STEP" Step
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	The value is ignored.
Preset Value	`"IMP"`

Syntax	`Dim Param As String`
	`Param =`
	`app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.`
	`STIMulus`
	`app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.`
	`STIMulus = "STEP"`

Equivalent Softkeys	**Analysis > Time Domain > Response Type > Bandpass | Lowpass Step | Lowpass Impulse**

SCPI.CALCulate(*Ch*).SELected.TRANsform.TIME.STOP

Object Type	Property (read/write)
Data Type	Double
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The time domain stop value, when the time domain transformation function is turned ON.
Range	Varies depending on the specified frequency range and the number of points.
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`1e-8`
Unit	s (seconds), m (meters) or ft (feet)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.STOP`
	`app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.STOP`
	`= 2e-8`

Equivalent Softkeys	**Analysis > Time Domain > Stop**

SCPI.CALCulate(*Ch*).SELected.TRANsform.TIME.TYPE

Object Type	Property (read/write)
Data Type	String
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The selection of the transformation type for the time domain transformation function: bandpass response or direct current circuit.
Range	"BPASs" Bandpass "LPASs" Lowpass
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	The value is ignored.
Preset Value	`"BPASs"`

Syntax	`Dim Param As String`
	`Param = app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.TYPE`
	`app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.TYPE = "STEP"`

Equivalent Softkeys	**Analysis > Time Domain > Response Type > Bandpass | Lowpass Step | Lowpass Impulse**

SCPI.CALCulate(*Ch*).SELected.TRANsform.TIME.UNIT

Object Type	Property (read/write)
Data Type	String
Target	The active trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The selection of the unit for the time domain transformation function.
Range	"SEC" Seconds "MET" Metre "FEET" Feet
Out of Range	The value is ignored.
Preset Value	`"SEC"`

Syntax	`Dim Param As String`
	`Param =`
	`app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.UNIT`
	`app.SCPI.CALCulate(Ch).SELected.TRANsform.TIME.UNIT`
	`= "MET"`

Equivalent Softkeys	**Analysis > Time Domain > Unit > Time, ns | Metric, m | Imperial, ft**

SCPI.CALCulate(*Ch*).TRACe(*Tr*).DATA.FDATa

Object Type	Property (read only)
Data Type	Variant (Double array)
Target	The specified trace *Tr* of channel *Ch*, *Tr* trace number 1–8 (see Table 3) *Ch* channel number 1–9 (see Table 1)
Description	The formatted data array. The array elements contain measurements in the current format, for example, in logarithmic magnitude format (Log Mag). Also, see section 12. The array size is 2N, where N is the number of measurement points. For the n–th point, where n from 1 to N: Data(2n–2) real number in rectangular format, real part in polar and Smith chart formats; Data(2n–1) 0 in rectangular format, imaginary part in polar and Smith chart formats.

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.CALCulate(Ch).Trace(Tr).DATA.FDATa`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*).TRACe(*Tr*).DATA.FMEMory

Object Type	Property (read only)
Data Type	Variant (Double array)
Target	The specified trace *Tr* of channel *Ch*, *Tr* trace number 1–8 (see Table 3) *Ch* channel number 1–9 (see Table 1)
Description	The formatted memory array. The array elements contain saved measurements in the current format, for example, in logarithmic magnitude format (Log Mag). Also, see section 12. The array size is 2N, where N is the number of measurement points. For the n–th point, where n from 1 to N: Data(2n–2) real number in rectangular format, real part in polar and Smith chart formats; Data(2n–1) 0 in rectangular format, imaginary part in polar and Smith chart formats.

Syntax	`Dim Data As Variant`
	`Data =`
	`app.SCPI.CALCulate(Ch).Trace(Tr).DATA.FMEMory`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*). TRACe(*Tr*).DATA.SDATa

Object Type	Property (read only)
Data Type	Variant (Double array)
Target	The specified trace *Tr* of channel *Ch*, *Tr* trace number 1−8 (see Table 3) *Ch* channel number 1−9 (see Table 1)
Description	The corrected data array. The corrected measurements are complex numbers. Also, see section 12. The array size is 2N, where N is the number of measurement points. For the n−th point, where n from 1 to N: Data(2n−2) the real part of corrected measurement; Data(2n−1) the imaginary part of corrected measurement.

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.CALCulate(Ch). Trace(Tr).DATA.SDATa`

Equivalent Softkeys	**None**

SCPI.CALCulate(*Ch*). TRACe(*Tr*).DATA.SMEMory

Object Type	Property (read only)
Data Type	Variant (Double array)
Target	The specified trace *Tr* of channel *Ch*, *Tr* trace number 1–8 (see Table 3) *Ch* channel number 1–9 (see Table 1)
Description	The corrected memory array. The corrected measurements are complex numbers. Also, see section 12. The array size is 2N, where N is the number of measurement points. For the n–th point, where n from 1 to N: Data(2n–2) the real part of corrected measurement memory; Data(2n–1) the imaginary part of corrected measurement memory.

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.CALCulate(Ch).`
	`Trace(Tr).DATA.SMEMory`

Equivalent Softkeys	**None**

SCPI.DISPlay.ANNotation.FREQuency.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	Instrument
Description	The ON/OFF state of the frequency or time label on the channel window.
Allowable Values	*True* Frequency label display ON *False* Frequency label display OFF
Preset Value	`True`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.DISPlay.ANNotation.FREQuency.STATe`
	`app.SCPI.DISPlay. ANNotation.FREQuency.STATe = False`

Equivalent Softkeys	**Display > Frequency Label**

SCPI.DISPlay.COLor.BACK

Object Type	Property (read/write)
Data Type	Variant (Long array)
Target	Instrument
Description	The background color for trace display. The array contains 3 elements: Data(0) Red value R; Data(1) Green value G; Data(2) Blue value B.
Range	For all the array elements from 0 to 255.
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`16, 16, 16`

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.DISPlay.COLor.BACK`
	`app.SCPI.DISPlay.COLor.BACK = Array(0, 0, 0)`

Equivalent Softkeys	**Display > Color > Background**

SCPI.DISPlay.COLor.GRATicule

Object Type	Property (read/write)
Data Type	Variant (Long array)
Target	Instrument
Description	The grid and the graticule label color for trace display. The array contains 3 elements: Data(0) Red value R; Data(1) Green value G; Data(2) Blue value B.
Range	For all array elements from 0 to 255.
Out of Range	Sets the value of the limit, which is closer to the specified value.

Preset Value	Data(0) 63;
	Data(1) 63;
	Data(2) 63.

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.DISPlay.COLor.GRATicule`
	`app.SCPI.DISPlay.COLor. GRATicule = Array(128, 128, 128)`

Equivalent Softkeys	**Display > Color > Grid**

SCPI.DISPlay.COLor.RESet

Object Type	Method
Target	Instrument
Description	Restores the display settings to the default values.
Syntax	`app.SCPI.DISPlay.COLor.RESet`
Equivalent Softkeys	**Display > Set Defaults**

SCPI.DISPlay.COLor.TRACe(*Tr*).DATA

Object Type	Property (read/write)
Data Type	Variant (Long array)
Target	Trace number *Tr* in all channels, *Tr* trace number 1–8 (see Table 3)
Description	The data trace color. The array contains 3 elements: Data(0) Red value R; Data(1) Green value G; Data(2) Blue value B.
Range	For all array elements from 0 to 255.
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	Varies depending on the trace number.

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.DISPlay.COLor.TRACe(Tr).DATA`
	`app.SCPI.DISPlay.COLor.TRACe(Tr).DATA = Array(255, 255, 0)`

Equivalent Softkeys	**Display > Color > Data Trace**

SCPI.DISPlay.COLor.TRACe(*Tr*).MEMory

Object Type	Property (read/write)
Data Type	Variant (Long array)
Target	Trace number *Tr* in all channels *Tr* trace number 1–8 (see Table 3)
Description	The memory trace color. The array contains 3 elements: Data(0) Red value R; Data(1) Green value G; Data(2) Blue value B.
Range	For all array elements from 0 to 255.
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	Varies depending on the trace number.

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.DISPlay.COLor.TRACe(Tr).MEMory`
	`app.SCPI.DISPlay.COLor.TRACe(Tr). MEMory = Array(255, 255, 0)`

Equivalent Softkeys	**Display > Color > Memory Trace**

SCPI.DISPlay.FSIGn

Object Type	Property (read/write)
Data Type	Boolean
Target	Instrument
Description	The ON/OFF state of the Fail sign display, when performing limit test or ripple limit test.
Allowable Values	*True* Fail sign display ON *False* Fail sign display OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.DISPlay.FSIGn`
	`app.SCPI.DISPlay.FSIGn = True`

Equivalent Softkeys	**Analysis > Limit Test > Fail Sign** **Analysis > Ripple Limit > Fail Sign**

SCPI.DISPlay.IMAGe

Object Type	Property (read/write)
Data Type	String
Target	Instrument
Description	The inverted color display of the data traces.
Range	"NORMal" Normal display "INVert" Inverted color display
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	The value is ignored.
Preset Value	`"NORM"`

Syntax	`Dim Param As String`
	`Param = app.SCPI.DISPlay.IMAGe`
	`app.SCPI.DISPlay.IMAGe = "INV"`

Equivalent Softkeys	**Display > Invert Color**

SCPI.DISPlay.MAXimize

Object Type	Property (read/write)
Data Type	Boolean
Target	Active Channel
Description	The ON/OFF maximize state of the active channel window.
Allowable Values	*True* Maximize active chanel state ON *False* Maximize active chanel state OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.DISPlay.MAXimize`
	`app.SCPI.DISPlay.MAXimize = True`

Equivalent Softkeys	**Channel > Maximize Channel**

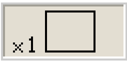
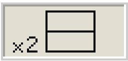
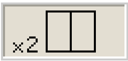
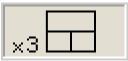
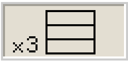
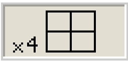
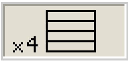
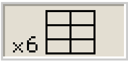
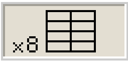
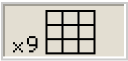
SCPI.DISPlay.SPLit

Object Type	Property (read/write)
Data Type	Long
Target	Instrument
Description	The number and layout of the channel windows on the screen. The channel window layout is in Table 5 below.
Range	from 1 to 10
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`1`

Syntax	`Dim Value As Long`
	`Value = app.SCPI.DISPlay.SPLit`
	`app.SCPI.DISPlay.SPLit = 2`

Equivalent Softkeys	**Channel > Allocate channels**

Table 5. Channel Window Layout on the Screen

1: 	2: 	3: 
4: 	5: 	6: 
7: 	8: 	9: 
10: 		

SCPI.DISPlay.UPDate_.IMMediate

Object Type	Method
Target	Instrument
Description	Updates the display once, when the display update is set to OFF (`SCPI.DISPlay.ENABle` property is set to False).
Syntax	`app.SCPI.DISPlay.UPDate_.IMMediate`
Equivalent Softkeys	**None**

SCPI.DISPlay.WINDow(*Ch*).ACTivate

Object Type	Method
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Sets the active channel.
Notes	The channel window must be displayed. At attempt to set to the active channel the channel, which is not displayed, an error occurs.
Syntax	`app.SCPI.DISPlay.WINDow(Ch).ACTivate`
Equivalent Softkeys	**Channel > Active Channel** **Trace > Active Trace**

SCPI.DISPlay.WINDow(*Ch*).ANNotation.MARKer.ALIGn.TYPE

Object Type	Property (read/write)
Data Type	String
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The alignment mode of the marker display position of each trace, when the only active trace display feature is turned OFF (`SCPI.DISPlay.WINDow(Ch).ANNotation.MARKer.SINGle.STATe` property is set to *False*).
Range	"VERTical" Vertical alignment "HORizontal" Horizontal alignment "NONE" No alignment
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	The value is ignored.
Preset Value	`"NONE"`

Syntax	`Dim Param As String`
	`Param = app.SCPI.DISPlay.WINDow(Ch).ANNotation.MARKer.ALIGn.TYPE`
	`app.SCPI.DISPlay.WINDow(Ch).ANNotation.MARKer.ALIGn.TYPE = "VERT"`

Equivalent Softkeys	**Markers > Properties > Align > Vertical | Horizontal | OFF**

SCPI.DISPlay.WINDow(*Ch*).ANNotation.MARKer.SINGle.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the marker display for the active trace only.
Allowable Values	*True* Only active trace markers display ON *False* Only active trace markers display OFF
Preset Value	`True`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI`
	`SCPI.DISPlay.WINDow(Ch).ANNotation.MARKer.SINGle.`
	`STATe`
	`app.SCPI`
	`SCPI.DISPlay.WINDow(Ch).ANNotation.MARKer.SINGle.`
	`STATe = True`

Equivalent Softkeys	**Markers > Properties > Active Only**

SCPI.DISPlay.WINDow(Ch).MAXimize

Object Type	Property (read/write)
Data Type	Boolean
Target	Active Trace of channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF maximize state of the active trace for channel window.
Allowable Values	*True* Maximize active trace state ON *False* Maximize active trace state OF F
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.DISPlay.WINDow(1).MAXimize`
	`app.SCPI.DISPlay.WINDow(1).MAXimize = True`

Equivalent Softkeys	**Trace > Maximize Trace**

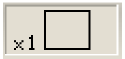
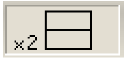
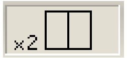
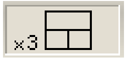
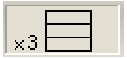
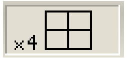
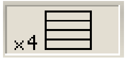
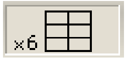
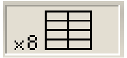
SCPI.DISPlay.WINDow(Ch).SPLit

Object Type	Property (read/write)
Data Type	Long
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The number and layout of the trace on the channel window. The trace layout is in Table 6 below.
Range	From 1 to 9
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`1`

Syntax	`Dim Value As Long`
	`Value = app.SCPI.DISPlay.WINDow(1).SPLit`
	`app. app.SCPI.DISPlay.WINDow(1).SPLit = 2`

Equivalent Softkeys	**Trace > Allocate Traces**

Table 6. Trace Layout on the Channel Window

1: 	2: 	3: 
4: 	5: 	6: 
7: 	8: 	9: 

SCPI.DISPlay.WINDow(*Ch*).TITLe.DATA

Object Type	Property (read/write)
Data Type	String
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The channel title label.
Range	up to 254 characters
Preset Value	""

Syntax	`Dim Text  As String`
	`Text  = app.SCPI.DISPlay.WINDow(Ch).TITLe.DATA`
	`app.SCPI.DISPlay.WINDow(Ch).TITLe.DATA = "Example1"`

Equivalent Softkeys	**None**

SCPI.DISPlay.WINDow(*Ch*).TITLe.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the title label display.
Allowable Values	*True* Title label display ON *False* Title label display OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.DISPlay.WINDow(Ch).TITLe.STATe`
	`app.SCPI.DISPlay.WINDow(Ch).TITLe.STATe = True`

Equivalent Softkeys	**Display > Title Label**

SCPI.DISPlay.WINDow(*Ch*).TRACe(*Tr*).ANNotation.MARKer.MEMory

Object Type	Property (read/write)
Data Type	Boolean
Target	Trace *Tr* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Tr* trace number 1–8 (see Table 3)
Description	Turns ON/OFF the state of the memory value display on the marker.
Parameter	True Memory value display ON False Memory value display OFF

Syntax	`Dim Status As Boolean`
	`Status =`
	`app.SCPI.DISPlay.WINDow(Ch).TRACe(Tr).ANNotation.`
	`MARKer. MEMory`
	`app.SCPI.DISPlay.WINDow(Ch).TRACe(Tr).ANNotation.`
	`MARKer. MEMory = true`

Equivalent Softkeys	**Markers > Properties > Memory Value**

SCPI.DISPlay.WINDow(*Ch*).TRACe(*Tr*).ANNotation.MARKer.POSition.X

Object Type	Property (read/write)
Data Type	Double
Target	Trace *Tr* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Tr* trace number 1–8 (see Table 3)
Description	The display position of the marker value on the X–axis by a percentage of the display width.
Range	from 0 to 100
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	0
Unit	%

Syntax	`Dim Value As Double`
	`Value = app.SCPI.DISPlay.WINDow(Ch).TRACe(Tr).ANNotation.MARKer.POSition.X`
	`app.SCPI.DISPlay.WINDow(Ch).TRACe(Tr).ANNotation.MARKer.POSition.X = 50`

Equivalent Softkeys	**Markers > Properties > Data X Position**

SCPI.DISPlay.WINDow(*Ch*).TRACe(*Tr*).ANNotation.MARKer.POSition.Y

Object Type	Property (read/write)
Data Type	Double
Target	Trace *Tr* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Tr* trace number 1–8 (see Table 3)
Description	The display position of the marker value on the Y–axis by a percentage of the display height.
Range	from 0 to 100
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	0
Unit	%

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.DISPlay.WINDow(Ch).TRACe(Tr).ANNotation.`
	`MARKer.POSition.Y`
	`app.SCPI.DISPlay.WINDow(Ch).TRACe(Tr).ANNotation.`
	`MARKer.POSition.Y = 50`

Equivalent Softkeys	**Markers > Properties > Data Y Position**

SCPI.DISPlay.WINDow(Ch).TRACe(Tr).MEMory. STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	Trace *Tr* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Tr* trace number 1–8 (see Table 3)
Description	The ON/OFF state of the memory trace display.
Allowable Values	*True* Memory trace display ON *False* Memory trace display OFF
Preset Value	`False`
Notes	If the memory is empty, an error occurs and the object is ignored

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.DISPlay.WINDow(Ch).TRACe(Tr).MEMory.STATe`
	`app.SCPI.DISPlay.WINDow(Ch).TRACe(Tr).MEMory.STATe = true`

Equivalent Softkeys	**Trace> Display > Memory | Data&Memory (ON)** **Trace> Display > Data | OFF (OFF)**

SCPI.DISPlay.WINDow(Ch).TRACe(Tr).STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	Trace *Tr* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Tr* trace number 1–8 (see Table 3)
Description	The ON/OFF state of the data trace display.
Allowable Values	*True* Data trace display ON *False* Data trace display OFF
Preset Value	`True`

Syntax	`Dim Status As Boolean`
	`Status =`
	`app.SCPI.DISPlay.WINDow(Ch).TRACe(Tr).STATe`
	`app.SCPI.DISPlay.WINDow(Ch).TRACe(Tr).STATe = false`

Equivalent Softkeys	**Trace> Display > Data | Data&Memory (ON)** **Trace> Display > Memory | OFF (OFF)**

SCPI.DISPlay.WINDow(*Ch*).TRACe(*Tr*).Y.SCALe.AUTO

Object Type	Method
Target	Trace *Tr* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Tr* trace number 1–8 (see Table 3)
Description	Executes the auto scale function for the trace.
Syntax	`app.SCPI.DISPlay.WINDow(Ch).TRACe(Tr).Y.SCALe.AUTO`
Equivalent Softkeys	**Scale > Auto Scale**

SCPI.DISPlay.WINDow(*Ch*).TRACe(*Tr*).Y.SCALe.PDIVision

Object Type	Property (read/write)
Data Type	Double
Target	Trace *Tr* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Tr* trace number 1–8 (see Table 3)
Description	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.
Range	from 10E–18 to 1E18
Out of Range	Sets the value of the limit, which is closer to the specified value.
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
Unit	dB/Div (decibel per division), °/Div (degree per division), s/Div (second per division)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.DISPlay.WINDow(Ch).TRACe(Tr).Y.SCALe.`
	`PDIVision`
	`app.SCPI.DISPlay.WINDow(Ch).TRACe(Tr).Y.SCALe.`
	`PDIVision = 20`

Equivalent Softkeys	**Scale > Scale**

SCPI.DISPlay.WINDow(*Ch*).TRACe(*Tr*).Y.SCALe.RLEVel

Object Type	Property (read/write)
Data Type	Double
Target	Trace *Tr* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Tr* trace number 1–8 (see Table 3)
Description	The value of the reference line (response value on the reference line). For the rectangular format only.
Range	from −1E−18 to 1E18
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	0 (except for SWR: 1)
Unit	dB (decibel) | ° (degree) | s (second)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.DISPlay.WINDow(Ch).TRACe(Tr).Y.SCALe.`
	`RLEVel`
	`app.SCPI.DISPlay.WINDow(Ch).TRACe(Tr).Y.SCALe.`
	`RLEVel = 10`

Equivalent Softkeys	**Scale > Ref Value**

SCPI.DISPlay.WINDow(*Ch*).TRACe(*Tr*).Y.SCALe.RPOSition

Object Type	Property (read/write)
Data Type	Long
Target	Trace *Tr* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Tr* trace number 1–8 (see Table 3)
Description	The position of the reference line. For the rectangular format only.
Range	From 0 to the number of the scale divisions (set by the `SCPI.DISPlay.WINDow(Ch).Y.SCALe.DIVisions` property, 10 by default).
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	5 (except for SWR: 0)

Syntax	`Dim Value As Long`
	`Value = app.SCPI.DISPlay.WINDow(Ch).TRACe(Tr).Y.SCALe.RPOSition`
	`app.SCPI.DISPlay.WINDow(Ch).TRACe(Tr).Y.SCALe.RPOSition = 10`

Equivalent Softkeys	**Scale > Ref Position**

SCPI.DISPlay.WINDow(*Ch*).Y.SCALe.DIVisions

Object Type	Property (read/write)
Data Type	Long
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1).
Description	The number of the vertical scale divisions. For the rectangular format only.
Range	from 4 to 20
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`10`
Resolution	2

Syntax	`Dim Value As Long`
	`Value =`
	`app.SCPI.DISPlay.WINDow(Ch).Y.SCALe.DIVisions`
	`app.SCPI.DISPlay.WINDow(Ch).Y.SCALe.DIVisions = 12`

Equivalent Softkeys	**Scale > Divisions**

SCPI.HCOPy.ABORt

Object Type	Method
Target	Analyzer
Description	Aborts the printout
Syntax	`app.SCPI.HCOPy.ABORt`
Equivalent Softkeys	**None**

SCPI.HCOPy.DATE.STAMp

Object Type	Property (read/write)
Data Type	Boolean
Target	Instrument
Description	The ON/OFF state of the current date and time printout in the upper right corner.
Allowable Values	*True* Date & time printout ON *False* Date & time printout OFF
Preset Value	`True`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.HCOPy.DATE.STAMp`
	`app.SCPI.HCOPy.DATE.STAMp = False`

Equivalent Softkeys	**System > Print > Print Date & Time**

SCPI.HCOPy.IMAGe

Object Type	Property (read/write)
Data Type	String
Target	Instrument
Description	The inverted color image printout.
Range	"NORMal" Normal printout "INVert" Inverted color printout
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	The value is ignored.
Preset Value	`"NORM"`

Syntax	`Dim Param As String`
	`Param = app.SCPI.HCOPy.IMAGe`
	`app.SCPI.HCOPy.IMAGe = "INV"`

Equivalent Softkeys	**System > Print > Invert Image**

SCPI.HCOPy.IMMediate

Object Type	Method
Target	Instrument
Description	Prints out the image displayed on the screen without previewing.
Syntax	`app.SCPI.HCOPy.IMMediate`
Equivalent Softkeys	**System > Print > Print Embedded**

SCPI.HCOPy.PAINt

Object Type	Property (read/write)
Data Type	String
Target	Instrument
Description	The color chart for the image printout.
Range	"COLor" Color printout "GRAY" Grayscale printout "BW" Black&white printout
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	The value is ignored.
Preset Value	`"BW"`

Syntax	`Dim Param As String`
	`Param = app.SCPI.HCOPy.PAINt`
	`app.SCPI.HCOPy.PAINt = "COL"`

Equivalent Softkeys	**System > Print > Print Color**

SCPI.IEEE4882.CLS

Object Type	Method
Target	Status Reporting System
Description	Clears the following: • 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
Syntax	`app.SCPI.IEEE4882.CLS`
Equivalent Softkeys	**None**

SCPI.IEEE4882.IDN

Object Type	Property (read only)
Data Type	String
Target	Instrument
Description	The instrument information string. The string format: "{manufacturer}, {model}, {serial number}, {software version/firmware version}".
Range	up to 40 characters

Syntax	`Dim ID As String`
	`ID = app.NAME`

Equivalent Softkeys	**None**

SCPI.IEEE4882.RST

Object Type	Method
Target	Instrument
Description	Restores the default settings of the instrument. There is difference from presetting the instrument with the `SCPI.SYSTem.PRESet` method – in this case the trigger mode is set to Hold.
Syntax	`app.SCPI.IEEE4882.RST`
Equivalent Softkeys	**None**

SCPI.IEEE4882.TRG

Object Type	Method
Target	Instrument
Description	If the trigger source is set to LAN (`SCPI.TRIGger.SEQuence.SOURce` property is set to "BUS"), triggers a sweep. If the trigger source is not set to the bus (`SCPI.TRIGger.SEQuence.SOURce` property is not set to "BUS") or the instrument is not waiting for a trigger, the method is ignored.
Syntax	`app.SCPI.IEEE4882.TRG`

Related Commands	`SCPI.TRIGger.SEQuence.SOURce`
	`SCPI.INITiate(Ch).CONTinuous`
	`SCPI.INITiate(Ch).IMMediate`

Equivalent Softkeys	**None**

SCPI.IEEE4882.WAI

Object Type	Method
Target	Instrument
Description	Waits for the execution of all commands sent before this command.
Syntax	`app.SCPI.IEEE4882.WAI`
Equivalent Softkeys	**None**

SCPI.INITiate.CONTinuous

Object Type	Property (read/write)
Data Type	Boolean
Target	Instrument
Description	The ON/OFF state of the continuous trigger initiation mode. If the continuous trigger initiation mode is set to OFF, the channel turns to the hold state.
Allowable Values	*True* Continuous trigger initiation mode ON *False* Continuous trigger initiation mode OFF
Preset Value	`True`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.INITiate.CONTinuous`
	`app.SCPI.INITiate.CONTinuous = False`

Notes	The sweep start in continuous trigger initiation mode depends on the trigger source. If the trigger is set to internal, the sweeps will go immediately one after another. If the trigger is set otherwise, the sweep will start when the trigger signal is received.
Equivalent Softkeys	**Stimulus > Trigger > Continuous** **Stimulus > Trigger > Hold**

SCPI.INITiate.IMMediate

Object Type	Method
Target	Instrument
Description	Sets the channel to the single trigger mode. Before this method is called, the channel must be in hold state, otherwise an error occurs (error code 213) and the method is ignored. On completion of the sweep, the channel goes back into the hold state. The method returns control before the end of the sweep.
Syntax	`app.SCPI.INITiate.IMMediate`
Notes	The sweep start in the single trigger mode depends on the trigger source. If the trigger is set to internal, the sweep will start immediately after the method is called. If the trigger is set otherwise, the sweep will start when the trigger signal is received.
Equivalent Softkeys	**Stimulus > Trigger > Single**

SCPI.MMEMory.COPY(*Src*, *Dst*)

Object Type	Method
Target	Instrument
Description	Copies a file.
Syntax	`app.SCPI.MMEMory.COPY(Src, Dst)`
Parameter	Src Source file name. String data type. Dst Destination file name. String data type.
Equivalent Softkeys	**None**

SCPI.MMEMory.DELete(*File*)

Object Type	Method
Target	Instrument
Description	Deletes a file.
Syntax	`app.SCPI.MMEMory.DELete(File)`
Parameter	File – File name. String data type.
Equivalent Softkeys	**None**

SCPI.MMEMory.LOAD.CHANnel.STATe

Object Type	Property (write only)
Data type	String
Target	Active channel
Description	Recalls the analyzer state for the active channel, saved in one of the four memory registers by the `SCPI.MMEMory.STORe.CHANnel.STATe` property
Range	"A" Recall from register A "B" Recall from register B "C" Recall from register C "D" Recall from register D
Out of range	The value is ignored.
Syntax	`app.SCPI.MMEMory.LOAD.CHANnel.STATe = "A"`
Equivalent Softkeys	**System > Recall > Channel > State A | State B | State C | State D**

SCPI.MMEMory.LOAD.CKIT(*Ck*)

Object Type	Property (write only)
Data Type	String
Target	Calibration kit *Ck*, *Ck* calibration kit number 1–11 (see Table 7)
Description	Recalls the definition file for the calibration kit. The file must be saved by the `SCPI.MMEMory.STORe.CKIT(Ck)` property.
Range	up to 254 characters
Syntax	`app.SCPI.MMEMory.LOAD.CKIT(Ck) = File`
Notes	If the full path to the file is not specified, the \CalKit subdirectory of the main directory will be searched for the file. The calibration kit definition file has *.ckd extension by default.
Equivalent Softkeys	**None**

Table 7. *Ck*: Calibration Kit Number

Data Type	Long
Description	Calibration kit number.
Range	from 1 to 16
Out of Range	An error occurs. Error code: 114.
Notes	If the calibration kit number is not specified, it is taken as equal to 1.

SCPI.MMEMory.LOAD.CALibration

Object Type	Property (write only)
Data Type	String
Target	User calibration of the active channel.
Description	Recalls the specified calibration file. The file must be saved by the `SCPI.MMEMory.STORe.CALibration` property.
Range	up to 254 characters
Syntax	`app.SCPI.MMEMory.LOAD.CALibration = File`
Notes	If the full path to the file is not specified, the \State subdirectory of the main directory will be searched for the file. The calibration files have *.cal extension by default.
Equivalent Softkeys	**System > Recall > Calibration**

SCPI.MMEMory.LOAD.LIMit

Object Type	Property (write only)
Data Type	String
Target	Active trace of the active channel.
Description	Recalls the specified limit table file. The file must be saved by the `SCPI.MMEMory.STORe.LIMit` property.
Range	up to 254 characters
Syntax	`app.SCPI.MMEMory.LOAD.LIMit = File`
Notes	If the full path to the file is not specified, the \Limit subdirectory of the main directory will be searched for the file. The limit table files have *.lim extension by default.
Equivalent Softkeys	**Analysis > Limit Test > Edit Limit Line > Restore Limit Table**

SCPI.MMEMory.LOAD.RLIMit

Object Type	Property (write only)
Data Type	String
Target	Active trace of the active channel.
Description	Recalls the ripple limit table file. The file must be saved by the `SCPI.MMEMory.STORe.RLIMit` property.
Range	up to 254 characters
Syntax	`app.SCPI.MMEMory.LOAD.RLIMit = File`
Notes	If the full path to the file is not specified, the \Limit subdirectory of the main directory will be searched for the file. The ripple limit files have *.rlm extension by default.
Equivalent Softkeys	**Analysis > Ripple Limit > Edit Ripple Limit > Restore Ripple Limit Table**

SCPI.MMEMory.LOAD.SEGMent

Object Type	Property (write only)
Data Type	String
Target	Active channel
Description	Recalls the segment table file. The file must be saved by the `SCPI.MMEMory.STORe.SEGMent` property.
Range	up to 254 characters
Syntax	`app.SCPI.MMEMory.LOAD.SEGMent = File`
Notes	If the full path to the file is not specified, the \Segment subdirectory of the main directory will be searched for the file. The segment files have *.seg extension by default.
Equivalent Softkeys	**Stimulus > Segment Table > Recall**

SCPI.MMEMory.LOAD.SNP.DATA

Object Type	Property (write only)
Data Type	String
Target	Active channel
Description	Loads the Touchstone file with the specified name to the measured S–parameters of the active channel. The Touchstone file types *.s1p (1–port) and *.s2p (2–port) are supported. *.s1p file loads the S11 parameter only. *.s2p file loads all S11, S21, S12 and S22 parameters. On completion of the command, the channel goes to the hold state.
Range	up to 254 characters
Syntax	`app.SCPI.MMEMory.LOAD.SNP.DATA = File`
Notes	If the full path to the file is not specified, the \Segment subdirectory of the main directory will be searched for the file. The segment files have *.seg extension by default.
Equivalent Softkeys	**System> Recall > Touchstone File > To S-Parameters**

SCPI.MMEMory.LOAD.SNP.TRACe(Tr).MEMory

Object Type	Property (write only)
Data Type	String
Target	The specified memory trace *Tr* of active channel *Tr* trace number 1–9 (see Table 3) Active channel set by command `SCPI.DISPlay.WINDow(Ch).ACTivate`
Description	Loads the Touchstone file with the specified name to the memory trace. The Touchstone file types *.s1p (1–port) and *.s2p (2–port) are supported. The current measured S-parameter of data trace selects the appropriate S–parameter from Touchstone file. After successful load the display of memory trace is automatically switched on.
Range	up to 254 characters
Syntax	`app.SCPI.MMEMory.LOAD.SNP.TRACe(Tr).MEMory = File`
Equivalent Softkeys	**System> Recall > Touchstone File > To Active Trace Memory**

SCPI.MMEMory.LOAD.STATe

Object Type	Property (write only)
Data Type	String
Target	Instrument
Description	Recalls the specified instrument state file. The file must be saved by the `SCPI.MMEMory.STORe.STATe` property.
Range	up to 254 characters
Syntax	`app.SCPI.MMEMory.LOAD.STATe = File`
Notes	If the full path to the file is not specified, the \State subdirectory of the main directory will be searched for the file. The instrument state files have *.cfg extension by default.
Equivalent Softkeys	**System > Recall > State** **System > Recall > Calibration**

SCPI.MMEMory.MDIRectory

Object Type	Property (write only)
Data Type	String
Target	Instrument
Description	Creates a new directory (folder). Contains the full path to the folder being created.
Range	up to 254 characters
Syntax	`app.SCPI.MMEMory.MDIRectory = Path`
Equivalent Softkeys	**None**

SCPI.MMEMory.STORe.CHANnel.CLEar

Object Type	Method
Target	Analyzer
Description	Clears the memory of the channel state saved by the `SCPI.MMEMory.STORe.CHANnel.STATe` property.
Syntax	`app.SCPI.MMEMory.STORe.CHANnel.CLEar`
Equivalent Softkeys	**System > Save > Channel > Clear States**

SCPI.MMEMory.STORe.CHANnel.STATe

Object Type	Property (write only)
Data Type	String
Target	Active channel
Description	Saves the analyzer state of the items set for the active channel into one of the four memory registers.
Range	"A" Save to register A "B" Save to register B "C" Save to register C "D" Save to register D
Out of range	The value is ignored.
Syntax	`app.SCPI.MMEMory.STORe.CHANnel.STATe = "A"`
Equivalent Softkeys	**System > Save > Channel > State A | State B | State C | State D**

SCPI.MMEMory.STORe.CKIT(*Ck*)

Object Type	Property (write only)
Data Type	String
Target	Calibration kit *Ck*, *Ck* calibration kit number 1–11 (see Table 7)
Description	Saves the definition file for the calibration kit parameters.
Range	up to 254 characters
Syntax	`app.SCPI.MMEMory.STORe.CKIT(Ck) = File`
Notes	If the full path to the file is not specified, the file will be saved to the \CalKit subdirectory of the main directory. The calibration kit definition file has *.dat extension by default.
Equivalent Softkeys	**None**

SCPI.MMEMory.STORe.CALibration

Object Type	Property (write only)
Data Type	String
Target	User calibration of the active channel.
Description	Save the specified calibration file.
Range	up to 254 characters
Syntax	`app.SCPI.MMEMory.STORe.CALibration = File`
Notes	If the full path to the file is not specified, the \State subdirectory of the main directory will be used for the file. The calibration files have *.cal extension by default.
Equivalent Softkeys	**System > Save > Calibration**

SCPI.MMEMory.STORe.FDATa

Object Type	Property (write only)
Data Type	String
Target	Active trace of the active channel
Description	Saves the CSV formatted data into a file.
Range	up to 254 characters
Syntax	`app.SCPI.MMEMory.STORe.FDATa = File`
Notes	If the full path to the file is not specified, the file will be saved to the \CSV subdirectory of the main directory. The files have *.csv extension by default.
Equivalent Softkeys	**System > Save > Save Trace Data**

SCPI.MMEMory.STORe.IMAGe

Object Type	Property (write only)
Data Type	String
Target	Instrument
Description	Saves the display image in BMP or PNG format into a file.
Range	up to 254 characters
Syntax	`app.SCPI.MMEMory.STORe.IMAGe = File`
Notes	If the full path to the file is not specified, the file will be saved to the \Image subdirectory of the main directory. If the file has *.png extension, the file has PNG format, in all the other cases the file has BMP format.
Equivalent Softkeys	**System > Print > Print Windows**

SCPI.MMEMory.STORe.LIMit

Object Type	Property (write only)
Data Type	String
Target	Active trace of the active channel
Description	Saves the limit table into a file with the specified name.
Range	up to 254 characters
Syntax	`app.SCPI.MMEMory.STORe.LIMit = File`
Notes	If the full path to the file is not specified, the file will be saved to the \Limit subdirectory of the main directory. The files have *.lim extension by default.
Equivalent Softkeys	**Analysis > Limit Test > Edit Limit Line > Save Limit Table**

SCPI.MMEMory.STORe.RLIMit

Object Type	Property (write only)
Data Type	String
Target	Active trace of the active channel
Description	Saves the ripple limit table into a file with the specified name.
Range	up to 254 characters
Syntax	`app.SCPI.MMEMory.STORe.RLIMit = File`
Notes	If the full path to the file is not specified, the file will be saved to the \Limit subdirectory of the main directory. The ripple limit files have *.rlm extension by default.
Equivalent Softkeys	**Analysis > Ripple Limit > Edit Ripple Limit > Save Ripple Limit Table**

SCPI.MMEMory.STORe.SEGMent

Object Type	Property (write only)
Data Type	String
Target	Active channel
Description	Saves the segment table in a file with the specified name.
Range	up to 254 characters
Syntax	`app.SCPI.MMEMory.STORe.SEGMent = File`
Notes	If the full path to the file is not specified, the file will be saved to the \Segment subdirectory of the main directory. The segment files have *.seg extension by default.
Equivalent Softkeys	**Stimulus > Segment Table > Save**

SCPI.MMEMory.STORe.SNP.DATA

Object Type	Property (write only)
Data Type	String
Target	Active channel
Description	Saves the measured S–parameters of the active channel into a Touchstone file with the specified name. The file type (1–port or 2–port) is set by the `SCPI.MMEMory.STORe.SNP.TYPE.S1P` and `SCPI.MMEMory.STORe.SNP.TYPE.S2P` properties. 1–port type file saves one reflection parameter: S11. 2–port type file saves the two parameters: S11, S21.
Range	up to 254 characters
Syntax	`app.SCPI.MMEMory.STORe.SNP.DATA = File`
Notes	If the full path to the file is not specified, the file will be saved to the \FixtureSim subdirectory of the main directory. The 1–port measurement files have *.slp extension; the 2–port measurement files have *.s2p extension.
Equivalent Softkeys	**System >Save > Touchstone File > Save**

SCPI.MMEMory.STORe.SNP.FORMat

Object Type	Property (read/write)
Data Type	String
Target	Active channel
Description	The data format for the S–parameters saving by the `SCPI.MMEMory.STORe.SNP.DATA` property.
Range	"MA" Logarithmic Magnitude / Angle format "DB" Linear Magnitude / Angle format "RI" Real part /Imaginary part format
Out of Range	The value is ignored.
Preset Value	`"RI"`

Syntax	`Dim Param As String`
	`Param = app.SCPI.MMEMory.STORe.SNP.FORMat`
	`app.SCPI.MMEMory.STORe.SNP.FORMat = "DB"`

Equivalent Softkeys	**System > Save > Touchstone File > Format**

SCPI.MMEMory.STORe.SNP.TYPE.S1P

Object Type	Property (read/write)
Data Type	Long
Target	Active channel
Description	Selects 1-port measurements and sets port numbers (selects S11 parameter) when saving the measured S-parameters by the `SCPI.MMEMory.STORe.SNP.DATA` property.
Range	from 1 to 2
Out of Range	An error occurs.
Preset Value	`1`

Syntax	`Dim Value As Long`
	`Value = app.SCPI.MMEMory.STORe.SNP.TYPE.S1P`
	`app.SCPI.MMEMory.STORe.SNP.TYPE.S1P = 2`

Equivalent Softkeys	**System > Save > Touchstone File > Type > 1–Port (s1p)**

SCPI.MMEMory.STORe.SNP.TYPE.S2P

Object Type	Property (read/write)
Data Type	Variant (Long array)
Target	Active channel
Description	Selects 2-port measurements and sets port numbers when saving the measured S-parameters by the `SCPI.MMEMory.STORe.SNP.DATA` property. The array contains 2 elements: Data(0) First port number (reads out 1, ignored when written); Data(1) Second port number (reads out 2, ignored when written).

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.MMEMory.STORe.SNP.TYPE.S2P`
	`app.SCPI.MMEMory.STORe.SNP.TYPE.S2P = Array(1, 2)`

Equivalent Softkeys	**System > Save > Touchstone File > Type > 2–Port (s2p)**

SCPI.MMEMory.STORe.STATe

Object Type	Property (write only)
Data Type	String
Target	Instrument
Description	Saves the instrument state into a file with the specified name.
Range	up to 254 characters
Syntax	`app.SCPI.MMEMory.STORe.STATe = File`
Notes	If the full path to the file is not specified, the file will be saved to the \State subdirectory of the main directory. The state files have *.cfg extension by default.
Equivalent Softkeys	**System > Save > State**

SCPI.MMEMory.STORe.STYPe

Object Type	Property (read/write)
Data Type	String
Target	Instrument
Description	Selects the type of the instrument or channel state saving by the `SCPI.MMEMory.STORe.STATe or SCPI.MMEMory.STORe.CHANnel.STATe` property.
Range	"STATe" Measurement conditions "CSTate" Measurement conditions and calibration tables "DSTate" Measurement conditions and data traces "CDSTate" Measurement conditions, calibration tables and data traces
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	An error occurs.
Preset Value	`"CST"`

Syntax	`Dim Param As String`
	`Param = app.SCPI.MMEMory.STORe.STYPe`
	`app.SCPI.MMEMory.STORe.STYPe = "STATe"`

Equivalent Softkeys	**None**

SCPI.OUTPut.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	Instrument
Description	Sets the ON/OFF state of the stimulus signal output. Measurements cannot be performed when the stimulus signal output is set to OFF.
Allowable Values	*True* Stimulus signal output ON *False* Stimulus signal output OFF
Preset Value	`True`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.OUTPut.STATe`
	`app.SCPI.OUTPut.STATe = False`

Equivalent Softkeys	**Stimulus > Power > RF Out**

SCPI.SENSe(*Ch*).AVERage.CLEar

Object Type	Method
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Resets the averaging data count to 0. Restarts the averaging process.
Syntax	`app.SCPI.SENSe(Ch).AVERage.CLEar`
Equivalent Softkeys	**None**

SCPI.SENSe(*Ch*).AVERage.COUNt

Object Type	Property (read/write)
Data Type	Long
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The averaging factor, when the averaging function is set to ON by the `SCPI.SENSe(Ch).AVERage.STATe` property.
Range	from 1 to 999
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`10`

Syntax	`Dim Value As Long`
	`Value = app.SCPI.SENSe(Ch).AVERage.COUNt`
	`app.SCPI.SENSe(Ch).AVERage.COUNt = 2`

Equivalent Softkeys	**Response > Avg Factor**

SCPI.SENSe(*Ch*).AVERage.CURRent

Object Type	Property (read only)
Data Type	Long
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The current step of averaging.
Range	from 1 to Averaging Factor

Syntax	`Dim Value As Long`
	`Value = app.SCPI.SENSe(Ch).AVERage.CURRent`

Equivalent Softkeys	**None**

SCPI.SENSe(*Ch*).AVERage.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the averaging function.
Allowable Values	*True* Averaging ON *False* Averaging OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.SENSe(Ch).AVERage.STATe`
	`app.SCPI.SENSe(Ch).AVERage.STATe = False`

Equivalent Softkeys	**Response > Averaging**

SCPI.SENSe(*Ch*).BANDwidth.RESolution

Object Type	Property (read/write)
Data Type	Double
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The IF bandwidth value.
Range	from 10 to 30000
Resolution	In steps of 3. (10, 30, 100, 300, 1000, 3000, 10000, 30000)
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`10000`
Unit	Hz (Hertz)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SENSe(Ch).BANDwidth.RESolution`
	`app.SCPI.SENSe(Ch).BANDwidth.RESolution = 100`

Equivalent Softkeys	**Response > IF Bandwidth**

SCPI.SENSe(*Ch*).CORRection.CLEar

Object Type	Method
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Clears the calibration coefficient table.
Syntax	`app.SCPI.SENSe(Ch).CORRection.CLEar`
Equivalent Softkeys	**None**

SCPI.SENSe(*Ch*).CORRection.COEFficient.DATA(*Str, Pt_r, Pt_s*)

Object Type	Property (read)
Data Type	Variant (Double array)
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The calibration coefficient data array set by the type of the corrected error *Str*, the number of the receiver port *Pt*_r and the number of the source port *Pt_s,* *Str* error type (see below) *Pt_r* the number of the receiver port 1–2 (see Table 2) *Pt_s* the number of the source port 1–2 (see Table 2) The array size is 2N, where N is the number of measurement points. For the n–th point, where n from 1 to N: Data(2n–2) real part of the calibration coefficients Data(2n–1) imaginary part of the calibration coefficients
Parameter	String Str – corrected error type: "ES" Source match "ER" Reflection tracking "ED" Directivity "EL" Load match "ET" Transmission tracking "EX" Isolation When ES, ER, or ED is used, the numbers of the ports Pt_r and Pt_s must be the same. When EL, ET, or EX is used, the numbers of the ports Pt_r and Pt_s must be different.
Syntax	Dim Data As Variant Data = app.SCPI.SENSe(Ch).CORRection.COEFficient.DATA (Str, Pt_r, Pt_s)
Notes	The written calibration coefficients become effective only after the `SCPI.SENSe(Ch).CORRection.COEFficient.SAVE` method is invoked.
Equivalent Softkeys	**None**

SCPI.SENSe(Ch).CORRection.COEFficient.METHod.ERESponse

Description	Selects the port numbers and sets the *1-path 2-port calibration* type, when the written calibration coefficients are made effective by the `SCPI.SENSe(Ch).CORRection.COEFficient.SAVE` method. The array contains 2 elements: Data(0) the number of the receiver port; Data(1) the number of the source port.
Type	Variant: array of long (write only)
Range	Port number is 1–2. Array elements can not contain the same port numbers.
Out of Range	If an incorrect port number is specified, an error occurs. If the same port numbers are specified, an error occurs.
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)

Syntax	`Ports = Array(2, 1)`
	`app.SCPI.SENSe(Ch).CORRection.COEFficient.METHod.`
	`ERESponse = Ports`

Equivalent Softkeys	**None**

SCPI.SENSe(Ch).CORRection.COEFficient.METHod.RESPonse.OPEN

Description	Selects the port and sets the response calibration (Open) type, when the written calibration coefficients are made effective by the `SCPI.SENSe(Ch).CORRection.COEFficient.SAVE` method.
Type	Long (write only)
Range	Port number is 1 or 2. (see Table 2)
Out of Range	An error occurs.
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)

Syntax	`Port = 1`
	`app.SCPI.SENSe(Ch).CORRection.COEFficient.METHod.`
	`RESPonse.OPEN = Port`

Equivalent Softkeys	**None**

SCPI.SENSe(Ch).CORRection.COEFficient.METHod.RESPonse.SHORt

Description	Selects the port and sets the response calibration (Short) type, when the written calibration coefficients are made effective by the `SCPI.SENSe(Ch).CORRection.COEFficient.SAVE` method.
Type	Long (write only)
Range	Port number is 1 or 2. (see Table 2)
Out of Range	An error occurs.
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)

Syntax	`Port = 1`
	`app.SCPI.SENSe(Ch).CORRection.COEFficient.METHod.`
	`RESPonse.SHORt = Port`

Equivalent Softkeys	**None**

SCPI.SENSe(Ch).CORRection.COEFficient.METHod.RESPonse.THRU

Description	Selects the ports and sets the *response calibration (Thru)* type, when the written calibration coefficients are made effective by the `SCPI.SENSe(Ch).CORRection.COEFficient.SAVE` method. The array contains 2 elements: Data(0) the number of the receiver port; Data(1) the number of the source port.
Type	Variant: array of long (write only)
Range	Port number is 1 to 2. The array elements can not contain the same port numbers.
Out of Range	If an incorrect port number is specified, an error occurs. If the same port numbers are specified, an error occurs.
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)

Syntax	`Ports = Array(2, 1)`
	`app.SCPI.SENSe(Ch).CORRection.COEFficient.METHod.RESPonse.THRU = Ports`

Equivalent Softkeys	**None**

SCPI.SENSe(Ch).CORRection.COEFficient.METHod.SOLT1

Description	Selects the port and sets the full 1-port calibration type, when the written calibration coefficients are made effective by the `SCPI.SENSe(Ch).CORRection.COEFficient.SAVE` method.
Type	Long (write only)
Range	Port number is 1 or 2. (see Table 2)
Out of Range	An error occurs. Error code: 222.
Target	Channel *Ch*, *Ch* channel number 1-9 (see Table 1)

Syntax	`Port = 1`
	`app.SCPI.SENSe(Ch).CORRection.COEFficient.METHod.`
	`SOLT1 = Port`

Equivalent Softkeys	**None**

SCPI.SENSe(Ch).CORRection.COEFficient.SAVE

Description	Enables the written calibration coefficients depending on the selected calibration type. On completion of the method the written calibration coefficients are cleared, the error correction automatically turns ON. At the attempt to execute this method before all the needed calibration coefficients are written, an error occurs and the method is ignored.
Type	Method
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Syntax	`app.SCPI.SENSe(Ch).CORRection.COEFficient.SAVE`

Related Commands	Calibration type selection:
	`SCPI.SENSe(Ch).CORRection.COEFficient.METHod. RESPonse. OPEN`
	`SCPI.SENSe(Ch).CORRection.COEFficient.METHod. RESPonse. SHORt`
	`SCPI.SENSe(Ch).CORRection.COEFficient.METHod.SOLT1`
	Calibration coefficient writing:
	`SCPI.SENSe(Ch).CORRection.COEFficient.DATA (Str, Pt_r, Pt_s)`

Equivalent Softkeys	**None**

SCPI.SENSe(*Ch*).CORRection.COLLect.ACQuire.LOAD

Object Type	Property (write only)
Data Type	Long
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Measures the calibration data of the load standard for the specified port.
Range	Port number is 1 or 2.
Out of Range	An error occurs (error code: 222).
Syntax	`app.SCPI.SENSe(Ch).CORRection.COLLect.ACQuire.LOAD = 1`
Notes	The property writing starts the measurement for the channel independently of the trigger initiation and trigger source settings. The function of the property writing waits for the completion of the measurement.
Equivalent Softkeys	**Calibration > Calibrate > Response (Open) > Load (Optional)** **Calibration > Calibrate > Response (Short) > Load (Optional)** **Calibration > Calibrate > Full 1–Port Cal > Load** **Calibration > Calibrate > One Path 2–Port Cal > Load**

SCPI.SENSe(*Ch*).CORRection.COLLect.ACQuire.OPEN

Object Type	Property (write only)
Data Type	Long
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Measures the calibration data of the open standard for the specified port.
Range	Port number is 1 or 2.
Out of Range	An error occurs.
Syntax	`app.SCPI.SENSe(Ch).CORRection.COLLect.ACQuire.OPEN=1`
Notes	The property writing starts the measurement for the channel independently of the trigger initiation and trigger source settings. The function of the property writing waits for 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**

SCPI.SENSe(*Ch*).CORRection.COLLect.ACQuire.SHORt

Object Type	Property (write only)
Data Type	Long
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Measures the calibration data of the short standard for the specified port.
Range	Port number is 1 or 2.
Out of Range	An error occurs.
Syntax	`app.SCPI.SENSe(Ch).CORRection.COLLect.ACQuire.SHORt = 1`
Notes	The property writing starts the measurement for the channel independently of the trigger initiation and trigger source settings. The function of the property writing waits for the completion of the measurement.
Equivalent Softkeys	**Calibration > Calibrate > Response (Short) > Short** **Calibration > Calibrate > Full 1–Port Cal > Short** **Calibration > Calibrate > One Path 2–Port Cal > Short**

SCPI.SENSe(*Ch*).CORRection.COLLect.ACQuire.THRU

Object Type	Property (write only)
Data Type	Variant (Long array)
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Measures the calibration data of the thru standard between the source port and the receiver port. The array contains 2 elements: Data(0) the number of the receiver port; Data(1) the number of the source port.
Range	Port number is 1 or 2. The array elements can not contain the same port numbers.
Out of Range	If an incorrect port number is specified, an error occurs. If the same port numbers are specified, an error occurs.
Syntax	`app.SCPI.SENSe(Ch).CORRection.COLLect.ACQuire.THRU= Array(2, 1)`
Notes	The property writing starts the measurement for the channel independently of the trigger initiation and trigger source settings. The function of the property writing waits for the completion of the measurement.
Equivalent Softkeys	**Calibration > Calibrate > Response (Thru) > Thru** **Calibration > Calibrate > One Path 2–Port Cal > Thru**

SCPI.SENSe(*Ch*).CORRection.COLLect.CKIT.LABel

Object Type	Property (read/write)
Data Type	String
Target	Calibration kit, selected for channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The calibration kit label.
Range	up to 254 characters
Preset Value	Varies depending on the number of the calibration kit. 1: Not Def 50Ohm 2: Not Def 75Ohm 3: 05CK10A-150 –F– 4: 05CK10A-150 –M– 5: N1.1 Type-N –F– 6: N1.1 Type-N –M– 7: Agil. 85032B –F– 8: Agil. 85032B –M– 9: Agil. 85036B –F– 10: Agil. 85036B –M– 11: N611 –F– 12: N611 –M– 13: Empty 14: Empty 15: Empty 16: Empty

Syntax	`Dim Lab  As String`
	`Lab  =`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.LABel`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.LABel =`
	`"User1"`

Equivalent Softkeys	**Calibration > Edit Cal Kit > Label**

SCPI.SENSe(*Ch*).CORRection.COLLect.CKIT.RESet

Object Type	Method
Target	Calibration kit, selected for channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Resets the calibration kit to the factory settings.
Syntax	`app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.RESet`
Equivalent Softkeys	**Calibration > Restore Cal Kit**

SCPI.SENSe(*Ch*).CORRection.COLLect.CKIT.SELect

Object Type	Property (read/write)
Data Type	Long
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The selected calibration kit for the channel.
Range	from 1 to 16
Out of Range	An error occurs. Error code: 222.
Preset Value	`1`

Syntax	`Dim Value As Long`
	`Value = app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.SELect`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.SELect = 3`

Equivalent Softkeys	**Calibration > Cal Kit > Cal Kit n**

Table 8. *Std*: Calibration Standard Number

Data Type	Long
Description	The number of the standard.
Range	Varies depending on the number of the standards in the calibration kit.
Out of Range	If the specified standard number is greater than the number of standards in the kit, an error occurs.
Notes	If the standard number is not specified, it is taken as equal to 1.

SCPI.SENSe(*Ch*).CORRection.COLLect.CKIT.STAN(*Std*).C0

Object Type	Property (read/write)
Data Type	Double
Target	Standard *Std* of the calibration kit specified for channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Std* standard number (see Table 8)
Description	The C0 value of the open calibration standard.
Range	from −1E18 to 1E18
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	Varies depending on the selected calibration kit and the standard.
Unit	1E−15 F (Farad)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.STAN (Std).C0`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.STAN (Std).C0 = 100`

Equivalent Softkeys	**Calibration > Edit Cal Kit > Capacitance > C0 [10^{-15} F]**

SCPI.SENSe(*Ch*).CORRection.COLLect.CKIT.STAN(*Std*).C1

Object Type	Property (read/write)
Data Type	Double
Target	Standard *Std* of the calibration kit specified for channel *Ch*, *Ch* channel number 1−9 (see Table 1) *Std* standard number (see Table 8)
Description	The C1 value of the open calibration standard.
Range	from −1E18 to 1E18
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	Varies depending on the selected calibration kit and the standard.
Unit	1E−27 F/Hz (Farad/Hertz)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.STAN (Std).C1`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.STAN (Std).C1 = 100`

Equivalent Softkeys	**Calibration > Edit Cal Kit > Capacitance > C1 [10^{-27} F/Hz]**

SCPI.SENSe(*Ch*).CORRection.COLLect.CKIT.STAN(*Std*).C2

Object Type	Property (read/write)
Data Type	Double
Target	Standard *Std* of the calibration kit specified for channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Std* standard number (see Table 8)
Description	The C2 value of the open calibration standard.
Range	from −1E18 to 1E18
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	Varies depending on the selected calibration kit and the standard.
Unit	1E−36 F/Hz2 (Farad/Hertz2)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.STAN(Std).C2`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.STAN(Std).C2 = 100`

Equivalent Softkeys	**Calibration > Edit Cal Kit > Capacitance > C2 [10^{-36} F/Hz^2]**

SCPI.SENSe(*Ch*).CORRection.COLLect.CKIT.STAN(*Std*).C3

Object Type	Property (read/write)
Data Type	Double
Target	Standard *Std* of the calibration kit specified for channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Std* standard number (see Table 8)
Description	The C3 value of the open calibration standard.
Range	from −1E18 to 1E18
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	Varies depending on the selected calibration kit and the standard.
Unit	1E−45 F/Hz3 (Farad/Hertz3)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.STAN`
	`(Std).C3`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.STAN`
	`(Std).C3 = 100`

Equivalent Softkeys	**Calibration > Edit Cal Kit > Capacitance > C3 [10^{-45} F/Hz^{3}]**

SCPI.SENSe(*Ch*).CORRection.COLLect.CKIT.STAN(*Std*).DELay

Object Type	Property (read/write)
Data Type	Double
Target	Standard *Std* of the calibration kit specified for channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Std* standard number (see Table 8)
Description	The offset delay value of the calibration standard.
Range	from –1E18 to 1E18
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	Varies depending on the selected calibration kit and the standard.
Unit	s (second)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.STAN(Std).DELay`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.STAN(Std).DELay = 93E-12`

Equivalent Softkeys	**Calibration > Edit Cal Kit > Offset Delay**

SCPI.SENSe(*Ch*).CORRection.COLLect.CKIT.STAN(*Std*).L0

Object Type	Property (read/write)
Data Type	Double
Target	Standard *Std* of the calibration kit specified for channel *Ch*, *Ch* channel number 1−9 (see Table 1) *Std* standard number (see Table 8)
Description	The L0 value of the short calibration standard.
Range	from −1E18 to 1E18
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	Varies depending on the selected calibration kit and the standard.
Unit	1E−12 H (Henry)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.STAN (Std).L0`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.STAN (Std).L0 = 100`

Equivalent Softkeys	**Calibration > Edit Cal Kit > Inductance > L0 [10^{-12} H]**

SCPI.SENSe(*Ch*).CORRection.COLLect.CKIT.STAN(*Std*).L1

Object Type	Property (read/write)
Data Type	Double
Target	Standard *Std* of the calibration kit specified for channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Std* standard number (see Table 8)
Description	The L1 value of the short calibration standard.
Range	from −1E18 to 1E18
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	Varies depending on the selected calibration kit and the standard.
Unit	1E−24 H/Hz (Henry/Hertz)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.STAN(Std).L1`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.STAN(Std).L1 = 100`

Equivalent Softkeys	**Calibration > Edit Cal Kit > Inductance > L1 [10^{-24} H/Hz]**

SCPI.SENSe(*Ch*).CORRection.COLLect.CKIT.STAN(*Std*).L2

Object Type	Property (read/write)
Data Type	Double
Target	Standard *Std* of the calibration kit specified for channel *Ch*, *Ch* channel number 1−9 (see Table 1) *Std* standard number (see Table 8)
Description	The L2 value of the short calibration standard.
Range	from −1E18 to 1E18
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	Varies depending on the selected calibration kit and the standard.
Unit	1E−33 H/Hz2 (Henry/Hertz2)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.STAN(Std).L2`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.STAN(Std).L2 = 100`

Equivalent Softkeys	**Calibration > Edit Cal Kit > Inductance > L2 [10^{-33} H/Hz^2]**

SCPI.SENSe(*Ch*).CORRection.COLLect.CKIT.STAN(*Std*).L3

Object Type	Property (read/write)
Data Type	Double
Target	Standard *Std* of the calibration kit specified for channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Std* standard number (see Table 8)
Description	The L3 value of the short calibration standard.
Range	from −1E18 to 1E18
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	Varies depending on the selected calibration kit and the standard.
Unit	1E–42 H/Hz3 (Henry/Hertz3)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.STAN`
	`(Std).L3`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.STAN`
	`(Std).L3 = 100`

Equivalent Softkeys	**Calibration > Edit Cal Kit > Inductance > L3 [10^{-42} H/Hz^{3}]**

SCPI.SENSe(*Ch*).CORRection.COLLect.CKIT.STAN(*Std*).LABel

Object Type	Property (read)
Data Type	String
Target	Standard *Std* of the calibration kit specified for channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Std* standard number (see Table 8)
Description	The label of the calibration standard.
Range	up to 254 characters
Preset Value	Varies depending on the selected calibration kit and the standard.

Syntax	`Dim Lab  As String`
	`Lab  =`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.STAN(Std).`
	`LABel`

Equivalent Softkeys	**None**

SCPI.SENSe(*Ch*).CORRection.COLLect.CKIT.STAN(*Std*).LOSS

Object Type	Property (read/write)
Data Type	Double
Target	Standard *Std* of the calibration kit specified for channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Std* standard number (see Table 8)
Description	The offset loss value of the calibration standard.
Range	from −1E18 to 1E18
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	Varies depending on the selected calibration kit and the standard.
Unit	Ω/s (Ohm/second)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.STAN(Std).LOSS`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.STAN(Std).LOSS = 700E6`

Equivalent Softkeys	**Calibration > Edit Cal Kit > Offset Loss**

SCPI.SENSe(*Ch*).CORRection.COLLect.CKIT.STAN(*Std*).TYPE

Object Type	Property (read only)
Data Type	String
Target	Standard *Std* of the calibration kit specified for channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Std* standard number (see Table 8)
Description	The type of the calibration standard.
Range	"OPEN" Open "SHORt" Short "LOAD" Load "THRU" Thru
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.

Syntax	`Dim Param As String`
	`Param =`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.STAN`
	`(Std).TYPE`

Equivalent Softkeys	**Calibration > Edit Cal Kit > STD Type**

SCPI.SENSe(*Ch*).CORRection.COLLect.CKIT.STAN(*Std*).Z0

Object Type	Property (read/write)
Data Type	Double
Target	Standard *Std* of the calibration kit specified for channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Std* standard number (see Table 8)
Description	The offset Z0 value of the calibration standard.
Range	from −1E18 to 1E18
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	50 or 75, depending on the selected calibration kit.
Unit	Ω (Ohm)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.STAN (Std).Z0`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.CKIT.STAN (Std).Z0 = 50`

Equivalent Softkeys	**Calibration > Edit Cal Kit > Offset Z0**

SCPI.SENSe(*Ch*).CORRection.COLLect.CLEar

Object Type	Method
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Clears the measurement values of the calibration standards.
Syntax	`app.SCPI.SENSe(Ch).CORRection.COLLect.CLEar`
Equivalent Softkeys	**Calibration > Calibrate > Response (Open) | Response (Short) | Response (Thru) | One Path 2–Port Cal | Full 1–Port Cal > Cancel**

SCPI.SENSe(*Ch*).CORRection.COLLect.DATA.LOAD(*Pt*)

Object Type	Property (read/write)
Data Type	Variant (array of double)
Target	Channel *Ch*, *Ch:* channel number 1–9 (see Table 1)
Description	The array of the *load* calibration standard measurements for the port *Pt*, *Pt:* port number 1 The array elements are complex numbers. Also see section 12. The array size is 2N, where N is the number of measurement points. For the n–th point, where n from 1 to N: Data(2n–2) real part of the measurement; Data(2n–1) imaginary part of the measurement.

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.SENSe(Ch).CORRection.COLLect.DATA.LOAD(Pt)`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.DATA.LOAD(Pt) = Data`

Related Commands	`SCPI.SENSe(`*Ch*`).CORRection.COLLect.ACQuire.LOAD`
Equivalent Softkeys	**None**

SCPI.SENSe(*Ch*).CORRection.COLLect.DATA.OPEN(*Pt*)

Object Type	Property (read/write)
Data Type	Variant (array of double)
Target	Channel *Ch*, *Ch:* channel number 1−9 (see Table 1)
Description	The array of the *open* calibration standard measurements for the port *Pt*, *Pt:* port number 1 The array elements are complex numbers. Also see section 12. The array size is 2N, where N is the number of measurement points. For the n−th point, where n from 1 to N: Data(2n−2) real part of the measurement; Data(2n−1) imaginary part of the measurement.

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.SENSe(Ch).CORRection.COLLect.DATA.OPEN (Pt)`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.DATA.OPEN (Pt) = Data`

Related Commands	`SCPI.SENSe(`*`Ch`*`).CORRection.COLLect.ACQuire.OPEN`
Equivalent Softkeys	**None**

SCPI.SENSe(*Ch*).CORRection.COLLect.DATA.SHORt(*Pt*)

Object Type	Property (read/write)
Data Type	Variant (array of double)
Target	Channel *Ch*, *Ch:* channel number 1–9 (see Table 1)
Description	The array of the *short* calibration standard measurements for the port *Pt*, *Pt:* port number 1 The array elements are complex numbers. Also see section 12. The array size is 2N, where N is the number of measurement points. For the n–th point, where n from 1 to N: Data(2n–2) real part of the measurement; Data(2n–1) imaginary part of the measurement.

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.SENSe(Ch).CORRection.COLLect.DATA.SHORt (Pt)`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.DATA.SHORt (Pt) = Data`

Related Commands	`SCPI.SENSe(Ch).CORRection.COLLect.ACQuire.SHORt`
Equivalent Softkeys	**None**

SCPI.SENSe(*Ch*).CORRection.COLLect.DATA.THRU.MATCh (*Pt_r*, *Pt_s*)

Object Type	Property (read/write)
Data Type	Variant (array of double)
Target	Channel *Ch*, *Ch:* channel number 1–9 (see Table 1)
Description	The array of the reflection measurements of the *thru* standard connected between the receiver port *Pt_r* and the source port *Pt_s*, *Pt_r:* the number of the receiver port 2 *Pt_s:* the number of the source port 1 The array elements are complex numbers. Also see section 12. The array size is 2N, where N is the number of measurement points. For the n–th point, where n from 1 to N: Data(2n–2) real part of the measurement; Data(2n–1) imaginary part of the measurement.

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.SENSe(Ch).CORRection.COLLect.DATA.THRU.MATCh (Pt_r, Pt_s)`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.DATA.THRU.MATCh (Pt_r, Pt_s) = Data`

Related Commands	`SCPI.SENSe(Ch).CORRection.COLLect.ACQuire.THRU`
Equivalent Softkeys	**None**

SCPI.SENSe(*Ch*).CORRection.COLLect.DATA.THRU. TRANsmission (*Pt_r*, *Pt_s*)

Object Type	Property (read/write)
Data Type	Variant (array of double)
Target	Channel *Ch*, *Ch:* channel number 1–9 (see Table 1)
Description	The array of the transmission measurements performed between the receiver port *Pt_r* and the source port *Pt_s*, using the *thru* standard, *Pt_r:* the number of the receiver port 2 *Pt_s:* the number of the source port 1 The array elements are complex numbers. Also see section 12. The array size is 2N, where N is the number of measurement points. For the n–th point, where n from 1 to N: Data(2n–2) real part of the measurement; Data(2n–1) imaginary part of the measurement.

Syntax	`Dim Data As Variant`
	`Data =`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.DATA.THRU.`
	`TRANsmission(Pt_r, Pt_s)`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.DATA.THRU.`
	`TRANsmission(Pt_r, Pt_s) = Data`

Related Commands	`SCPI.SENSe(Ch).CORRection.COLLect.ACQuire.THRU`
Equivalent Softkeys	**None**

SCPI.SENSe(*Ch*).CORRection.COLLect.ECAL.INFormation

Object Type	Property (read only)
Data Type	String
Target	AutoCal module (*Ch* – arbitrary number 1 to 9)
Description	Gets information about the AutoCal Module connected to the Network Analyzer 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.

Syntax	`Dim ID As String`
	`ID = app.SCPI.SENSe(Ch).CORRection.COLLect.ECAL.`
	`INFormation`

Equivalent Softkeys	**Calibration > AutoCal > Characterization Info**

SCPI.SENSe(*Ch*).CORRection.COLLect.ECAL.CHECK.Execute

Object Type	Method
Target	AutoCal module (*Ch* – arbitrary number 1 to 9)
Description	Executing confidence check
Syntax	`app.SCPI.SENSe(Ch).CORRection.COLLect.ECAL.CHECK.Execute`
Equivalent Softkeys	**Calibration > Autocalibration > Confidence Check**

SCPI.SENSe(*Ch*).CORRection.COLLect.ECAL.ORIenation.Execute

Object Type	Method
Target	AutoCal module (*Ch* – arbitrary number 1 to 9)
Description	Executing AutoCal orientation to the ports Rcv, Src
Syntax	`app.SCPI.SENSe.CORRection.COLLect.ECAL.ORIentation. Execute = Array(Rcv,Src)`
Equivalent Softkeys	**Calibration > Autocalibration > Perform Auto-Orientation**

SCPI.SENSe(*Ch*).CORRection.COLLect.ECAL.ORIenation.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	AutoCal (*Ch* – arbitrary number 1 to 9)
Description	The ON/OFF state of the Auto-Orientation function used when executing AutoCal.
Allowable Values	*True* Auto-Orientation function ON *False* Auto-Orientation function OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status =`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.ECAL.`
	`ORIentation.STATe`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.ECAL.`
	`ORIentation.STATe = False`

Equivalent Softkeys	**Calibration > AutoCal > Orientation > Auto**

SCPI.SENSe(*Ch*).CORRection.COLLect.ECAL.PATH(*Pt*)

Object Type	Property (read/write)
Data Type	Long
Target	AutoCal (*Ch* – arbitrary number 1 to 9)
Description	Sets or reads out the AutoCal module port number which is connected to a selected Network Analyzer port (*Pt*).
Allowable Values	1 Port A of AutoCal Module 2 Port B of AutoCal Module 3 Port C of AutoCal Module (4 port AutoCal module only) 4 Port D of AutoCal Module (4 port AutoCal module only)

Syntax	`Dim Value As Long`
	`Value =`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.ECAL.PATH(Pt)`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.ECAL.PATH(Pt)`
	`= 2`

Equivalent Softkeys	**Calibration > AutoCal > Orientation > Port 1 - Port A | Port 1 - Port B | Port 1 - Port C | Port 1 - Port D**

SCPI.SENSe(*Ch*).CORRection.COLLect.ECAL.SOLT1

Object Type	Property (write only)
Data Type	Long
Target	Channel *Ch*, *Ch*: channel number 1–9 (see Table 1)
Description	Executes Full 1-port calibration of the specified port of specified channel (*Ch*) using the AutoCal module.
Allowable Values	Port number = 1

Syntax	`Dim Port As Long`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.ECAL.SOLT1 = Port`

Equivalent Softkeys	**Calibration > AutoCal > Full 1-Port Calibration**

SCPI.SENSe(*Ch*).CORRection.COLLect.ECAL.SOLT2

Object Type	Property (write only)
Data Type	Variant: array of long
Target	Channel *Ch*, *Ch*: channel number 1–9 (see Table 1)
Description	Executes One Path 2-Port Calibration of the specified 2 ports of specified channel (*Ch*) using the AutoCal module.
Allowable Values	Available Array values only (2, 1)

Syntax	`Dim Port As Long`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.ECAL.SOLT2 = Array(2,1)`

Equivalent Softkeys	**Calibration > AutoCal > One Path 2-Port Calibration**

SCPI.SENSe(*Ch*).CORRection.COLLect.ECAL.UCHar

Object Type	Property (read/write)
Data Type	String
Target	AutoCal (*Ch* – arbitrary number 1 to 9)
Description	Sets or reads out the Characteristic used when executing AutoCal (factory or user characterization).
Range	"CHAR0" Factory characterization "CHAR1" User characterization 1 "CHAR2" User characterization 2 "CHAR3" User characterization 3
Preset Value	`CHAR0`

Syntax	`Dim Param As String`
	`Param = app.SCPI.SENSe(Ch).CORRection.COLLect.ECAL.UCHar`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.ECAL.UCHar = "CHAR0"`

Equivalent Softkeys	**Calibration > AutoCal > Characterization > Factory | User 1 | User 2 | User 3**

SCPI.SENSe(*Ch*).CORRection.COLLect.METHod.ERESponse

Object Type	Property (write only)
Data Type	Variant (Long array)
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Selects the ports and sets the one path 2–port calibration type for the calculation of the calibration coefficients on completion of the calibration executed by the `SCPI.SENSe(Ch).CORRection.COLLect.SAVE` method. The array contains 2 elements: Data(0) the number of the receiver port; Data(1) the number of the source port.
Range	Port number is 1 or 2. The array elements can not contain the same port numbers.
Out of Range	If an incorrect port number is specified, an error occurs (error code: 222). If the same port numbers are specified, an error occurs (error code: 220).
Syntax	`app.SCPI.SENSe(Ch).CORRection.COLLect.METHod.ERESponse = Array(2, 1)`
Equivalent Softkeys	**None**

SCPI.SENSe(*Ch*).CORRection.COLLect.METHod.RESPonse.OPEN

Object Type	Property (write only)
Data Type	Long
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Selects the port and sets the response calibration (Open) type for the calculation of the calibration coefficients on completion of the calibration executed by the `SCPI.SENSe(Ch).CORRection. COLLect.SAVE` method.
Range	from 1 to 2
Out of Range	An error occurs.
Syntax	`app.SCPI.SENSe(Ch).CORRection.COLLect.METHod.RESPonse. OPEN = 1`
Equivalent Softkeys	**None**

SCPI.SENSe(*Ch*).CORRection.COLLect.METHod.RESPonse.SHORt

Object Type	Property (write only)
Data Type	Long
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Selects the port and sets the response calibration (Short) type for the calculation of the calibration coefficients on completion of the calibration executed by the `SCPI.SENSe(Ch).CORRection.COLLect.SAVE` method.
Range	from 1 to 2
Out of Range	An error occurs.
Syntax	`app.SCPI.SENSe(Ch).CORRection.COLLect.METHod.RESPonse.SHORt = 1`
Equivalent Softkeys	**None**

SCPI.SENSe(*Ch*).CORRection.COLLect.METHod.RESPonse.THRU

Object Type	Property (write only)
Data Type	Variant (Long array)
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Selects the ports and sets the response calibration (Thru) type for the calculation of the calibration coefficients on completion of the calibration executed by the `SCPI.SENSe(Ch).CORRection.COLLect.SAVE` method. The array contains 2 elements: Data(0) the number of the receiver port; Data(1) the number of the source port.
Range	Port number is 1 or 2. Array elements can not contain the same port numbers.
Out of Range	If an incorrect port number is specified, an error occurs. If the same port numbers are specified, an error occurs.
Syntax	`app.SCPI.SENSe(Ch).CORRection.COLLect.METHod.RESPonse.THRU = Array(2, 1)`
Equivalent Softkeys	**None**

SCPI.SENSe(*Ch*).CORRection.COLLect.METHod.SOLT1

Object Type	Property (write only)
Data Type	Long
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Selects the port and sets the full 1–port calibration type for the calculation of the calibration coefficients on completion of the calibration executed by the `SCPI.SENSe(Ch).CORRection.COLLect.SAVE` method.
Range	from 1 to 2
Out of Range	An error occurs.
Syntax	`app.SCPI.SENSe(Ch).CORRection.COLLect.METHod.SOLT1 = 1`
Equivalent Softkeys	**None**

SCPI.SENSe(*Ch*).CORRection.COLLect.METHod.TYPE

Object Type	Property (read only)
Data Type	String
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The calibration type selected for calculating of the calibration coefficients on completion of the calibration executed by the `SCPI.SENSe(Ch).CORRection.COLLect.SAVE` method.
Range	"RESPO" Response (Open) "RESPS" Response (Short) "RESPT" Response (Thru) "SOLT1" Full 1–port calibration "1PATH" One path 2–port calibration "NONE" Not defined

Syntax	`Dim Param As String`
	`Param =`
	`app.SCPI.SENSe(Ch).CORRection.COLLect.METHod.TYPE`

Equivalent Softkeys	**None**

SCPI.SENSe(*Ch*).CORRection.COLLect.SAVE

Object Type	Method
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Calculates the calibration coefficients from the calibration standards measurements depending on the selected calibration type. On completion of the method, all the calibration standards measurements are cleared and the error correction automatically turns ON. At the attempt to execute this method before all the needed standards are measured, an error occurs and the method is ignored.
Syntax	`app.SCPI.SENSe(Ch).CORRection.COLLect.SAVE`

Related Commands	Calibration type selection:
	`SCPI.SENSe(Ch).CORRection.COLLect.METHod.RESPonse.OPEN`
	`SCPI.SENSe(Ch).CORRection.COLLect.METHod.RESPonse.SHORt`
	`SCPI.SENSe(Ch).CORRection.COLLect.METHod.RESPonse.THRU`
	`SCPI.SENSe(Ch).CORRection.COLLect.METHod.ERESponse`
	`SCPI.SENSe(Ch).CORRection.COLLect.METHod.SOLT1`
	
	Calibration standards measurement:
	`SCPI.SENSe(Ch).CORRection.COLLect.ACQuire.LOAD`
	`SCPI.SENSe(Ch).CORRection.COLLect.ACQuire.OPEN`
	`SCPI.SENSe(Ch).CORRection.COLLect.ACQuire.SHORt`
	`SCPI.SENSe(Ch).CORRection.COLLect.ACQuire.THRU`

Equivalent Softkeys	**Calibration > Calibrate > Response (Open) | Response (Short) | Response (Thru) | One Path 2–Port Cal | Full 1–Port Cal > Apply**

SCPI.SENSe(*Ch*).CORRection.EXTension.PORT(*Pt*).FREQuency(*Ls*)

Object Type	Property (read/write)
Data Type	Double
Target	Port *Pt* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Pt* port number 1–2 (see Table 2)
Description	The value of the frequency at the point number *Ls* for calculation of the loss for the port extension function, *Ls* point number 1–2 (see Table 9)
Range	from 2E4 to 4.8E9
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`1e9`
Unit	Hz (Hertz)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SENSe(Ch).CORRection.EXTension.PORT(Pt).FREQuency(Ls)`
	`app.SCPI.SENSe(Ch).CORRection.EXTension.PORT(Pt).FREQuency(Ls) = 100E6`

Equivalent Softkeys	**Calibration > Port Extensions > Loss > Freq1 | Freq2**

Table 9. Ls: point number

Data Type	Long
Description	Point number for setting the losses in the functions extension of port
Range	1 or 2
Out of Range	An error occurs. Error code: 222

SCPI.SENSe(*Ch*).CORRection.EXTension.PORT(*Pt*).INCLude(*Ls*).STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	Port *Pt* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Pt* port number 1–2 (see Table 2)
Description	The ON/OFF state of the loss compensation at the point number *Ls* to calculate the loss for the port extension function, *Ls* point number 1–2 (see Table 9).
Allowable Values	*True* Loss compensation ON *False* Loss compensation OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status =`
	`app.SCPI.SENSe(Ch).CORRection.EXTension.PORT(Pt).`
	`INCLude(Ls).STATe`
	`app.SCPI.SENSe(Ch).CORRection.EXTension.PORT(Pt).`
	`INCLude(Ls).STATe = True`

Equivalent Softkeys	**Calibration > Port Extensions > Loss > Loss1 | Loss2**

SCPI.SENSe(*Ch*).CORRection.EXTension.PORT(*Pt*).LDC

Object Type	Property (read/write)
Data Type	Double
Target	Port *Pt* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Pt* port number 1–2 (see Table 2)
Description	The loss value at DC for the loss calculation of the port extension function.
Range	from -200 to 200
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	0
Unit	dB (decibel)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SENSe(Ch).CORRection.EXTension.PORT(Pt).LDC`
	`app.SCPI.SENSe(Ch).CORRection.EXTension.PORT(Pt).LDC = 10`

Equivalent Softkeys	**Calibration > Port Extensions > Loss > Loss at DC**

SCPI.SENSe(*Ch*).CORRection.EXTension.PORT(*Pt*).LOSS(*Ls*)

Object Type	Property (read/write)
Data Type	Double
Target	Port *Pt* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Pt* port number 1–2 (see Table 2)
Description	The loss value at the point number *Ls* to calculate the loss for the port extension function, *Ls* point number 1–2 (see Table 9)
Range	from -200 to 200
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`0`
Unit	dB (decibel)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.SENSe(Ch).CORRection.EXTension.PORT(Pt).`
	`LOSS(Ls)`
	`app.SCPI.SENSe(Ch).CORRection.EXTension.PORT(Pt).`
	`LOSS(Ls) = 10`

Equivalent Softkeys	**Calibration > Port Extensions > Loss > Loss 1 | Loss 2**

SCPI.SENSe(*Ch*).CORRection.EXTension.PORT(*Pt*).TIME

Object Type	Property (read/write)
Data Type	Double
Target	Port *Pt* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Pt* port number 1–2 (see Table 2)
Description	The electrical delay value for the port extension function.
Range	from -10 to 10
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	0
Unit	s (second)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SENSe(Ch).CORRection.EXTension.PORT(Pt).TIME`
	`app.SCPI.SENSe(Ch).CORRection.EXTension.PORT(Pt).TIME = 1e-9`

Equivalent Softkeys	**Calibration > Port Extensions > Extension Port1 | Extension Port2**

SCPI.SENSe(*Ch*).CORRection.EXTension.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the port extension function.
Allowable Values	*True* Port extension function ON *False* Port extension function OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.SENSe(Ch).CORRection.EXTension.STATe`
	`app.SCPI.SENSe(Ch).CORRection.EXTension.STATe = True`

Equivalent Softkeys	**Calibration > Port Extensions > Extension**

SCPI.SENSe(*Ch*).CORRection.IMPedance.INPut.MAGNitude

Object Type	Property (read/write)
Data Type	Double
Target	Instrument
Description	The system impedance Z0.
Range	from 0.001 to 1000
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`50`
Unit	Ω (Ohm)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.SENSe.CORRection.IMPedance.INPut.MAGNitude`
	`app.SCPI.SENSe.CORRection.IMPedance.INPut.MAGNitude`
	`= 75`

Equivalent Softkeys	**Calibration > System Z0**

SCPI.SENSe(*Ch*).CORRection.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the error correction.
Allowable Values	*True* Error correction ON *False* Error correction OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.SENSe(Ch).CORRection.STATe`
	`app.SCPI.SENSe(Ch).CORRection.STATe = True`

Equivalent Softkeys	**Calibration > Correction**

SCPI.SENSe(*Ch*).CORRection.TRANsform.TIME.FREQuency

Object Type	Property (read/write)
Data Type	Double
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The Value of Frequency specified for Cable Loss in Time Domain measurements.
Range	from 1.0 to 10000.0
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`1000.0`
Unit	MHz

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.SENSe(Ch).CORRection.TRANsform.TIME.`
	`FREQuency`
	`app.SCPI.SENSe(Ch).CORRection.TRANsform.TIME.`
	`FREQuency = 2000.0`

Equivalent Softkeys	**Analysis > Time Domain > Cable Correction > Frequency**

SCPI.SENSe(*Ch*).CORRection.TRANsform.TIME.LOSS

Object Type	Property (read/write)
Data Type	Double
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The Value of Cable Loss for Time Domain measurements.
Range	from 0.0 to 1000.0
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`0.0`
Unit	dB/m

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SENSe(Ch).CORRection.TRANsform.TIME.LOSS`
	`app.SCPI.SENSe(Ch).CORRection.TRANsform.TIME.LOSS = 0.25`

Equivalent Softkeys	**Analysis > Time Domain > Cable Correction > Cable Loss**

SCPI.SENSe(*Ch*).CORRection.TRANsform.TIME.RVELocity

Object Type	Property (read/write)
Data Type	Double
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The Value of Velocity Factor for Time Domain measurements.
Range	from 0.01 to 1.0
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`1.0`
Unit	None

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.SENSe(Ch).CORRection.TRANsform.TIME.`
	`RVELocity`
	`app.SCPI.SENSe(Ch).CORRection.TRANsform.TIME.`
	`RVELocity = 0.68`

Equivalent Softkeys	**Analysis > Time Domain > Cable Correction > Velocity Factor**

SCPI.SENSe(*Ch*).CORRection.TRANsform.TIME.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	The channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of Cable Loss correction in Time Domain measurements.
Allowable Values	*True* Cable Loss correction ON *False* Cable Loss correction OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status =`
	`app.SCPI.SENSe(Ch).CORRection.TRANsform.TIME.STATe`
	`app.SCPI.SENSe(Ch).CORRection.TRANsform.TIME.STATe`
	`= True`

Equivalent Softkeys	**Analysis > Time Domain > Cable Correction > Cable Correction**

SCPI.SENSe(*Ch*).CORRection.TYPE(*Tr*)

Object Type	Property (read only)
Data Type	Variant (Variant array)
Target	Trace *Tr* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Tr* trace number 1–8 (see Table 3)
Description	The information about the applied calibration type and the port numbers for the specified trace. The array contains 3 elements: Data(0) calibration type (see below); Data(1) the number of the receiver port to be calibrated; Data(2) the number of the source port to be calibrated.
Range	Calibration type in the element Data(0): "RESPO" Response (Open) "RESPS" Response (Short) "RESPT" Response (Thru) "SOLT1" Full 1–port calibration "1PATH" One path 2–port calibration "NONE" Not defined

Syntax	`Dim CalInfo As Variant`
	`CalInfo = app.SCPI.SENSe(Ch).CORRection.TYPE(Tr)`

Equivalent Softkeys	**None**

SCPI.SENSe(*Ch*).FREQuency.CENTer

Object Type	Property (read/write)
Data Type	Double
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The stimulus center value of the sweep range for linear or logarithmic sweep types.
Range	From the minimum value to the maximum value of the analyzer frequency range.
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	The center value of the analyzer frequency range.
Unit	Hz (Hertz)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SENSe(Ch).FREQuency.CENTer`
	`app.SCPI.SENSe(Ch).FREQuency.CENTer = 1E9`

Equivalent Softkeys	**Stimulus > Center**

SCPI.SENSe(*Ch*).FREQuency.CW

Object Type	Property (read/write)
Data Type	Double
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The value of the fixed frequency for the power sweep. Before this method is called, the sweep type must be set to power sweep, otherwise the method is ignored.
Range	From the minimum value to the maximum value of the analyzer frequency range.
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	The center value of the analyzer frequency range.
Unit	Hz (Hertz)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SENSe(Ch).FREQuency.CW`
	`app.SCPI.SENSe(Ch).FREQuency.CW = 1E9`

Equivalent Softkeys	**Stimulus > Power > CW Freq**

SCPI.SENSe(*Ch*).FREQuency.DATA

Object Type	Property (read only)
Data Type	Variant (Double array)
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The array of the measurement points frequency for linear, logarithmic or segment sweep type. The array size is N, where N is the number of measurement points. For the n–th point, where n from 1 to N: Data(n–1) the frequency value at the n–th measurement point.

Syntax	`Dim Data As Variant`
	`Data = app. SCPI.SENSe(Ch).FREQuency.DATA`

Equivalent Softkeys	**None**

SCPI.SENSe(*Ch*).FREQuency.SPAN

Object Type	Property (read/write)
Data Type	Double
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The stimulus span value of the sweep range for linear or logarithmic sweep types.
Range	From 0 to the maximum span of the analyzer frequency range.
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	The maximum span of the analyzer frequency range.
Unit	Hz (Hertz)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SENSe(Ch).FREQuency.SPAN`
	`app.SCPI.SENSe(Ch).FREQuency.SPAN = 1E9`

Equivalent Softkeys	**Stimulus > Span**

SCPI.SENSe(*Ch*).FREQuency.STARt

Object Type	Property (read/write)
Data Type	Double
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The stimulus start value of the sweep range for linear or logarithmic sweep types.
Range	From the minimum value to the maximum value of the analyzer frequency range.
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	The minimum value of the analyzer frequency range.
Unit	Hz (Hertz)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SENSe(Ch).FREQuency.STARt`
	`app.SCPI.SENSe(Ch).FREQuency.STARt = 1E6`

Equivalent Softkeys	**Stimulus > Start**

SCPI.SENSe(*Ch*).FREQuency.STOP

Object Type	Property (read/write)
Data Type	Double
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The stimulus stop value of the sweep range for linear or logarithmic sweep types.
Range	From the minimum value to the maximum value of the analyzer frequency range.
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	The maximum value of the analyzer frequency range.
Unit	Hz (Hertz)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SENSe(Ch).FREQuency.STOP`
	`app.SCPI.SENSe(Ch).FREQuency.STOP = 1E8`

Equivalent Softkeys	**Stimulus > Stop**

SCPI.SENSe(Ch).OFFSet.ADJust.CONTinuous.PERiod

Object Type	Property (read/write)
Data Type	Long
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Selects the period for continuous offset adjust feature: 1 – 3 sec; 2 – 10 sec; 3 – 30 sec. 4 – 100 sec. 5 – 300 sec.
Range	from 1 to 5
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	2
Unit	n/a

Syntax	`Dim Value As Long`
	`Value = app.SCPI.SENSe(Ch).OFFSet.ADJust.PERiod`
	`app.SCPI.SENSe(Ch).OFFSet.ADJust.PERiod = 1`

Equivalent Softkeys	**Stimulus > Freq.Offset > Offset Adjust > Adjust Period > 3 sec | 10 sec | 30 sec | 100 sec | 300 sec**

SCPI.SENSe(Ch).OFFSet.ADJust.CONTinuous.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the continuous frequency offset adjust feature.
Allowable values	*True* continuous offset adjust feature is ON *False* continuous offset adjust feature is OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.SENSe(Ch).OFFSet.ADJust.CONTinuous.STATe`
	`app.SCPI.SENSe(Ch).OFFSet.ADJust.CONTinuous.STATe = True`

Equivalent Softkeys	**Stimulus > Freq.Offset > Offset Adjust > Contin.Adjust**

SCPI.SENSe(Ch).OFFSet.ADJust.EXECute

Object Type	Method
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Executes the offset adjust when the frequency offset feature is ON
Syntax	`app.SCPI.SENSe(Ch).OFFset.ADJust.EXECute`
Equivalent Softkeys	**Stimulus > Freq.Offset > Offset Adjust > Adjust Immediate**

SCPI.SENSe(Ch).OFFSet.ADJust.PORT

Object Type	Property (read/write)
Data Type	Long
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Selects the port number for frequency offset adjust feature
Range	from 1 to 2
Out of range	Sets the value of the limit, which is closer to the specified value.
Unit	n/a

Syntax	`Dim Value As Long`
	`Value = app.SCPI.SENSe(Ch).OFFset.ADJust.PORT`
	`app.SCPI.SENSe(Ch).OFFset.ADJust.PORT = 2`

Equivalent Softkeys	**Stimulus > Freq.Offset > Offset Adjust > Select Port**

SCPI.SENSe(Ch).OFFSet.ADJust.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the frequency offset adjust feature.
Allowable Values	*True* offset adjust feature is ON *False* offset adjust feature is OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.SENSe(Ch).OFFSet.ADJust.STATe`
	`app.SCPI.SENSe(Ch).OFFSet.ADJust.STATe = True`

Equivalent Softkeys	**Stimulus > Freq.Offset > Offset Adjust > Offset Adjust**

SCPI.SENSe(Ch).OFFSet.ADJust.Value

Object Type	Property (read/write)
Data Type	Double
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The frequency offset adjust value of the offset adjust feature
Range	from −5E5 to 5E5
Out of range	Sets the value of the limit, which is closer to the specified value.
Preset Value	0
Unit	Hz

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SENSe(Ch).OFFSet.ADJust.VALue`
	`app.SCPI.SENSe(Ch).OFFSet.ADJust.VALue = 1000`

Equivalent Softkeys	**Stimulus > Freq.Offset > Offset Adjust > Adjust Value**

SCPI.SENSe(Ch).OFFSet.PORT(Pt).FREQuency.DATA

Object Type	Property (read only)
Data Type	Variant (array of double)
Target	Port *Pt* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Pt* port number 1–2 (see Table 2)
Description	Reads the frequency data for the selected port *Pt* when the frequency offset feature is ON and offset type is "PORT", for the selected channel *Ch*. The array size is N, where N is the number of measurement points. For the n–th point, where n from 1 to N: Data(n–1) the frequency value at the n–th measurement point.

Syntax	`Dim Data As Variant`
	`Data =`
	`app.SCPI.SENSe(Ch).OFFSet.PORT(Pt).FREQuency.DATA`

Related Commands	`SCPI.SENSe(Ch).OFFset.STATe`
	`SCPI.SENSe(Ch).OFFset.TYPE`

Equivalent Softkeys	**None**

SCPI.SENSe(Ch).OFFSet.PORT(Pt).FREQuency.DIVisor

Object Type	Property (read/write)
Data Type	Double
Target	Port *Pt* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Pt* port number 1–2 (see Table 2)
Description	The basic frequency range divisor when the frequency offset feature is ON and offset type is "PORT"..
Range	from 1 to 1000
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	1
Unit	n/a

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SENSe(Ch).OFFset.PORT(Pt).FREQuency.DIVisor`
	`app.SCPI.SENSe(Ch).OFFset.PORT(Pt).FREQuency.DIVisor = 2`

Related Commands	`SCPI.SENSe(Ch).OFFset.STATe`
	`SCPI.SENSe(Ch).OFFset.TYPE`

Equivalent Softkeys	**Stimulus > Freq.Offset > Port 1 | Port 2 > Divider**

SCPI.SENSe(Ch).OFFSet.PORT(Pt).FREQuency.MULTiplier

Object Type	Property (read/write)
Data Type	Double
Target	Port *Pt* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Pt* port number 1–2 (see Table 2)
Description	The basic range frequency multiplier when the frequency offset feature is ON and offset type is "PORT".
Range	from −1000 to 1000
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	1
Unit	n/a

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SENSe(Ch).OFFset.PORT(Pt).FREQuency.MULTiplier`
	`app.SCPI.SENSe(Ch).OFFset.PORT(Pt).FREQuency.MULTiplier = 2`

Related Commands	`SCPI.SENSe(Ch).OFFset.STATe`
	`SCPI.SENSe(Ch).OFFset.TYPE`

Equivalent Softkeys	**Stimulus > Freq.Offset > Port 1 | Port 2 > Multiplier**

SCPI.SENSe(Ch).OFFSet.PORT(Pt).FREQuency.OFFSet

Object Type	Property (read/write)
Data Type	Double
Target	Port *Pt* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Pt* port number 1–2 (see Table 2)
Description	The basic frequency range offset when the frequency offset feature is ON and offset type is "PORT".
Range	from –1e–12 to 1e12
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	0
Unit	Hz

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SENSe(Ch).OFFset.PORT(Pt).FREQuency.OFFSet`
	`app.SCPI.SENSe(Ch).OFFset.PORT(Pt).FREQuency.OFFSet = 1e9`

Related Commands	`SCPI.SENSe(Ch).OFFset.STATe`
	`SCPI.SENSe(Ch).OFFset.TYPE`

Equivalent Softkeys	**Stimulus > Freq.Offset > Port 1 | Port 2 > Offset**

SCPI.SENSe(Ch).OFFSet.PORT(Pt).FREQuency.STARt

Object Type	Property (read/write)
Data Type	Double
Target	Port *Pt* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Pt* port number 1–2 (see Table 2)
Description	The frequency sweep start when the frequency offset feature is ON and offset type is "PORT".
Unit	Hz

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.SENSe(Ch).OFFset.PORT(Pt).FREQuency.STARt`

Related Commands	`SCPI.SENSe(Ch).OFFset.STATe`
	`SCPI.SENSe(Ch).OFFset.TYPE`

Equivalent Softkeys	**Stimulus > Freq.Offset > Port 1 | Port 2 > Start**

SCPI.SENSe(Ch).OFFSet.PORT(Pt).FREQuency.STOP

Object Type	Property (read/write)
Data Type	Double
Target	Port *Pt* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Pt* port number 1–2 (see Table 2)
Description	The frequency sweep stop when the frequency offset feature is ON and offset type is "PORT".
Unit	Hz

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.SENSe(Ch).OFFset.PORT(Pt).FREQuency.STOP`

Related Commands	`SCPI.SENSe(Ch).OFFset.STATe`
	`SCPI.SENSe(Ch).OFFset.TYPE`

Equivalent Softkeys	**Stimulus > Freq.Offset > Port 1 | Port 2 > Stop**

SCPI.SENSe(Ch).OFFSet.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the frequency offset feature.
Allowable Values	*True* frequency offset feature is ON *False* frequency offset feature is OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.SENSe(Ch).OFFSet.STATe`
	`app.SCPI.SENSe(Ch).OFFSet.STATe = True`

Equivalent Softkeys	**Stimulus > Freq.Offset > Freq.Offset**

SCPI.SENSe(*Ch*).ROSCillator.SOURce

Object Type	Property (read/write)
Data Type	String
Target	Instrument
Description	Selects the internal or external source of the reference frequency of 10 MHz.
Range	"INTernal" Internal source of the reference frequency "EXTernal" External source of the reference frequency
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	An error occurs.
Preset Value	`"INT"`

Syntax	`Dim Param As String`
	`Param = app.SCPI.SENSe(1).ROSCillator.SOURce`
	`app.SCPI.SENSe(1).ROSCillator.SOURce = "EXT"`

Equivalent Softkeys	**None**

SCPI.SENSe(*Ch*).SEGMent.DATA

Object Type	Property (read/write)
Data Type	Variant (Double array)
Target	Channel Ch, Ch: channel number 1–9 (see Table 1 on page 21)

Description	The array of the segment sweep table.
	The array has the following format:
	`{<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)>],`
	…
	`<Start(N)>, <Stop(N)>, <NOP(N)> [,<IFBW(N)>] [,<Pow(N)>] [,<Del(N)>] [,<Time(N)>]}`
	`<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 <Del> 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).

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.SENSe(Ch).SEGMent.DATA`
	`app.SCPI.SENSe(Ch).SEGMent.DATA = Data`

Equivalent Softkeys	**Stimulus > Segment Table**

SCPI.SENSe(*Ch*).SWEep.POINt.TIME

Object Type	Property (read/write)
Data Type	Double
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The value of the delay before measurement in each measurement point.
Range	from 0 to 0.3
Resolution	5E-6
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	0
Unit	s (second)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SENSe(Ch).SWEep.POINt.TIME`
	`app.SCPI.SENSe(Ch).SWEep.POINt.TIME = 5E-6`

Equivalent Softkeys	**Stimulus > Meas Delay**

SCPI.SENSe(*Ch*).SWEep.POINts

Object Type	Property (read/write)
Data Type	Long
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The number of measurement points.

Range	from 2 to 16001 (Planar TR1300)
	from 2 to 200001 (TR5048, TR7530)

Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	`201`

Syntax	`Dim Value As Long`
	`Value = app.SCPI.SENSe(Ch).SWEep.POINts`
	`app.SCPI.SENSe(Ch).SWEep.POINts = 1001`

Equivalent Softkeys	**Stimulus > Points**

SCPI.SENSe(*Ch*).SWEep.REVerse.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The ON/OFF state of the reverse scan.
Allowable Values	*True* Reserse Scan ON *False* Reverse Scan OFF
Preset Value	`"False"`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.SENSe(Ch).SWEep.REVerse.STATe`
	`app.SCPI.SENSe(Ch).SWEep.REVerse.STATe = True`

Equivalent Softkeys	**Stimulus > Sweep Type > Reverse Scan**

SCPI.SENSe(*Ch*).SWEep.TYPE

Object Type	Property (read/write)
Data Type	String
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Sets the sweep type.
Range	"LINear" Linear frequency sweep "LOGarithmic" Logarithmic frequency sweep "SEGMent" Segment frequency sweep "POWer " Power sweep "VVM" Vector Voltmeter mode
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	An error occurs.
Preset Value	`"LIN"`

Syntax	`Dim Param As String`
	`Param = app.SCPI.SENSe(Ch).SWEep.TYPE`
	`app.SCPI.SENSe(Ch).SWEep.TYPE = "LOG"`

Equivalent Softkeys	**Stimulus > Sweep Type**

SCPI.SENSe(*Ch*).VVM.DATA

Object Type	Property (read only)
Data Type	Variant (Double array)
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Reads out the value of the vector voltmeter measurement (query only). If a reference value is specified, the return value is read relatively to it. The data include 2 elements: `<numeric 1>` Magnitude value, depending on the data format or SWR value; `<numeric 2>` Phase value or zero in SWR format.

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.SENSe(Ch).VVM.DATA`

Equivalent Softkeys	**None**

SCPI.SENSe(*Ch*).VVM.FORMat

Object Type	Property (read/write)
Data Type	String
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Sets or reads out the data format in Vector Voltmeter mode.
Range	"LOGP" Log magnitude and phase "LINP" Linear magnitude and phase "SWR" Voltage standing wave ratio "IMP" Impedance value
Preset Value	`"LOGP"`

Syntax	`Dim Param As String`
	`Param = app.SCPI.SENSe(Ch).VVM.FORMat`
	`app.SCPI.SENSe(Ch).VVM.FORMat = "LOGP"`

Equivalent Softkeys	**Stimulus > Vector Voltmeter > Format > {LOGP | LINP | SWR | IMP}**

SCPI.SENSe(*Ch*).VVM.FREQuency.CW

Object Type	Property (read/write)
Data Type	Double
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Sets or reads out the operating frequency in the Vector Voltmeter mode.
Out of Range	Sets the value of the limit, which is closer to the specified value.
Unit	Hz (Hertz)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SENSe(Ch).VVM.FREQuency.CW`
	`app.SCPI.SENSe(Ch).VVM.FREQuency.CW = 200000000`

Equivalent Softkeys	**Stimulus > Vector Voltmeter > Frequency**

SCPI.SENSe(*Ch*).VVM.REFerence.CLEar

Object Type	Method
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Clears the reference value of the vector voltmeter .
Syntax	`app.SCPI.SENSe(Ch).VVM.REFerence.CLEar`
Equivalent Softkeys	**Stimulus > Vector Voltmeter > Clear Reference**

SCPI.SENSe(*Ch*).VVM.REFerence.MEMorize

Object Type	Method
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Memorizes the reference value of the vector voltmeter .
Syntax	`app.SCPI.SENSe(Ch).VVM.REFerence.CLEar`
Equivalent Softkeys	**Stimulus > Vector Voltmeter > Save Reference**

SCPI.SENSe(*Ch*).VVM.REFerence.DATA?

Object Type	Property (read only)
Data Type	Variant (Double array)
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Reads out the reference value of the vector voltmeter measurement (query only). The data include 2 elements: `<numeric 1>` Magnitude value, depending on the data format or SWR value; `<numeric 2>` Phase value or zero in SWR format.

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.SENSe(Ch).VVM.REFerence.DATA`

Equivalent Softkeys	**None**

SCPI.SENSe(*Ch*).VVM.TABLe.CLEar

Object Type	Method
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Clears all data from the vector voltmeter measurement table.
Syntax	`app.SCPI.SENSe(Ch).VVM.TABLe.CLEar`
Equivalent Softkeys	**Stimulus > Vector Voltmeter > Data Table > Clear Table**

SCPI.SENSe(*Ch*).VVM.TABLe.DATA

Object Type	Property (read only)
Data Type	Variant (Double array)
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Returns data table of the vector voltmeter (query only). The array has the following format: {<Flag1>, <N>, <Abs.Mag 1>, <Abs.Phase 1> [,<Rel.Mag 1>] [,<Rel.Phase 1>], … <Abs.Mag N>, <Abs.Phase N> [,<Rel.Mag N>] [,<Rel.Phase N>]}, Where: <Flag1> reference value, 0 – is not specified, 1 – is specified, N – rows number in the data table; <Abs.Mag i>, <Abs.Phase i> - measurement data of a vector voltmeter; [,<Rel.Mag i>] [,<Rel.Phase i>] - measurement data relative to the reference value (if specified).

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.SENSe(Ch).VVM.TABLe.DATA`

Equivalent Softkeys	**None**

SCPI.SENSe(*Ch*).VVM.TABLe.INSert(Index)

Object Type	Method (Index as long)
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Inserts a row of data into the table with the current measurement of a vector voltmeter `<numeric>` The row number in the table where new data will be inserted.
Syntax	`app.SCPI.SENSe(Ch).VVM.TABLe.INSert(Index)`
Equivalent Softkeys	**Stimulus > Vector Voltmeter > Data Table > Insert Data**

SCPI.SENSe(*Ch*).VVM.TABLe.MEMorize

Object Type	Method
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Saves measurements of the vector voltmeter to the table.
Syntax	`app.SCPI.SENSe(Ch).VVM.TABLe.MEMorize`
Equivalent Softkeys	**Stimulus > Vector Voltmeter > Data Table > Add Data**

SCPI.SENSe(*Ch*).VVM.TABLe.REMove(Index)

Object Type	Method (Index as long)
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Removes a table row with a vector voltmeter measurement index `<numeric>` The row number in the table which will be removed.
Syntax	`app.SCPI.SENSe(Ch).VVM.TABLe.REMove(Index)`
Equivalent Softkeys	**Stimulus > Vector Voltmeter > Data Table > Remove Data**

SCPI.SENSe(*Ch*).VVM.TABLe.SAVE(Name)

Object Type	Method (Name as string)
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Saves the table into CSV file.
Syntax	`app.SCPI.SENSe(Ch).VVM.TABLe.SAVE("Test.csv")`
Notes	If the full path of the file is not specified, the \CSV subdirectory of the main directory will be searched for the file. The file has *.csv extension by default.
Equivalent Softkeys	**Stimulus > Vector Voltmeter > Data Table > Save Table to CSV**

SCPI.SENSe(*Ch*).VVM.DISPlay.RESolution

Object Type	Property (Read and write)
Data Type	Long)
Description	Sets or reads out number of indication symbols in the vector voltmeter mode

Syntax	`Dim Data As Long`
	`Data = app.SCPI.SENSe(Ch).VVM.DISPlay.RESolution`
	`app.SCPI.SENSe(Ch).VVM.DISPlay.RESolution = 8`

Equivalent Softkeys	**Stimulus > Vector Voltmeter > Properties > Response Digits**

SCPI.SENSe(*Ch*).VVM.DISPlay.FONT.SIZE

Object Type	Property (read/write)
Data Type	Long)
Description	Sets or reads out the font size for indication in the vector voltmeter mode

Syntax	`Dim Data As Long`
	`Data = app.SCPI.SENSe(Ch).VVM.DISPlay.FONT.SIZE`
	`app.SCPI.SENSe(Ch).VVM.DISPlay.FONT.SIZE = 72`

Equivalent Softkeys	**Stimulus > Vector Voltmeter > Properties > Font Size**

SCPI.SENSe(*Ch*).VVM.TYPE

Object Type	Property (read/write)
Data Type	String
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	Sets or reads out the smeasured parameter in Vector Voltmeter mode.
Range	"S11" Eflection parameter "S21" Transmission parameter "A/B The ratio of the receivers signals A to B, an external frequency generator is used. "B/A" The ratio of the receivers signals B to A, an external frequency generator is used.
Preset Value	`S11`

Syntax	`Dim Param As String`
	`Param = app.SCPI.SENSe(Ch).VVM.TYPE`
	`app.SCPI.SENSe(Ch).VVM.TYPE = "A/B"`

Equivalent Softkeys	**Stimulus > Vector Voltmeter > Measurement > {S11|S21|A/B|B/A}**

SCPI.SERVice.CHANnel.ACTive

Object Type	Property (read only)
Data Type	Long
Target	Instrument
Description	The number of the active channel.

Syntax	`Dim Value As Long`
	`Value = app.SCPI.SERVice.CHANnel.ACTive`

Equivalent Softkeys	**None**

SCPI.SERVice.CHANnel.COUNt

Object Type	Property (read only)
Data Type	Long
Target	Instrument
Description	The maximum number of the channels.

Syntax	`Dim Value As Long`
	`Value = app.SCPI.SERVice.CHANnel.COUNt`

Equivalent Softkeys	**None**

SCPI.SERVice.CHANNel(*Ch*).TRACe.ACTive

Object Type	Property (read only)
Data Type	Long
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The active trace number of the channel.

Syntax	`Dim Value As Long`
	`Value = app.SCPI.SERVice.CHANNel(Ch).TRACe.ACTive`

Equivalent Softkeys	**None**

SCPI.SERVice.CHANNel.TRACe.COUNt

Object Type	Property (read only)
Data Type	Long
Target	Instrument
Description	The maximum number of the traces in the channel.

Syntax	`Dim Value As Long`
	`Value = app.SCPI.SERVice.CHANNel.TRACe.COUNt`

Equivalent Softkeys	**None**

SCPI.SERVice.PORT.COUNt

Object Type	Property (read only)
Data Type	Long
Target	Instrument
Description	The number of the ports.

Syntax	`Dim Value As Long`
	`Value = app.SCPI.SERVice.PORT.COUNt`

Equivalent Softkeys	**None**

SCPI.SERVice.SWEep.FREQency.MAXimum

Object Type	Property (read only)
Data Type	Double
Target	Instrument
Description	The upper limit of the measurement frequency.

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SERVice.SWEep.FREQency.MAXimum`

Equivalent Softkeys	**None**

SCPI.SERVice.SWEep.FREQency.MINimum

Object Type	Property (read only)
Data Type	Double
Target	Instrument
Description	The lower limit of the measurement frequency.

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SERVice.SWEep.FREQency.MINimum`

Equivalent Softkeys	**None**

SCPI.SERVice.SWEep.POINts

Object Type	Property (read only)
Data Type	Double
Target	Instrument
Description	The maximum number of the measurement points.

Syntax	`Dim Value As Long`
	`Value = app.SCPI.SERVice.SWEep.POINts`

Equivalent Softkeys	**None**

SCPI.SOURce(*Ch*).POWer.CENTer

Object Type	Property (read/write)
Data Type	Double
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The center value of the power sweep range.
Range	From the minimum value to the maximum value of the analyzer power range
Resolution	0.05
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	Center value of the analyzer power range.
Unit	dBm (decibels above 1 milliwatt)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SOURce(Ch).POWer.CENTer`
	`app.SCPI.SOURce(Ch).POWer.CENTer = -5`

Equivalent Softkeys	**Stimulus > Center**

SCPI.SOURce(*Ch*).POWer.LEVel.IMMediate.AMPLitude

Object Type	Property (read/write)
Data Type	Double
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The power level for the frequency sweep.
Range	From the minimum value to the maximum value of the analyzer power range
Resolution	0.05
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	0
Unit	dBm (decibels above 1 milliwatt)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SOURce(Ch).POWer.LEVel.IMMediate.AMPLitude`
	`app.SCPI.SOURce(Ch).POWer.LEVel.IMMediate.AMPLitude = -10`

Equivalent Softkeys	**Stimulus > Power > Output Power**

SCPI.SOURce(*Ch*).POWer.LEVel.SLOPe.DATA

Object Type	Property (read/write)
Data Type	Double
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The power slope value for the frequency sweep.
Range	from 0 to 2
Resolution	0.05
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	0
Unit	dB/GHz (decibel/gigahertz)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SOURce(Ch).POWer.LEVel.SLOPe.DATA`
	`app.SCPI.SOURce(Ch).POWer.LEVel.SLOPe.DATA = 0.2`

Equivalent Softkeys	**Stimulus > Power > Power Slope**

SCPI.SOURce(*Ch*).POWer.PORT(*Pt*).CORRection.DATA

Object Type	Property (read only)
Data Type	Variant (Double array)
Target	Port *Pt* of channel *Ch*, *Ch* channel number 1–9 (Table 1) *Pt* port number 1–2 (see Table 2)
Description	The power correction table. The array size is 1+2N, where N is the number of the table rows. For the n–th point, where n from 1 to N: Data(0) the number of the table rows N integer from 0 to 10001; Data(2n–1) the frequency of the n–th row of the table; Data(2n) power correction value of the n–th row of the table.

Syntax	`Dim Data As Variant`
	`Data = app.SCPI.SOURce(Ch).POWer.PORT(Pt).CORRection.DATA`

Equivalent Softkeys	**None**

SCPI.SOURce(*Ch*).POWer.PORT(*Pt*).CORRection.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	Port *Pt* of channel *Ch*, *Ch* channel number 1–9 (see Table 1) *Pt* port number 1–2 (see Table 2)
Description	The ON/OFF state of the power correction function.
Allowable Values	*True* Power correction ON *False* Power correction OFF
Preset Value	`True`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.SOURce(Ch).POWer.PORT(Pt).CORRection.STATe`
	`app.SCPI.SOURce(Ch).POWer.PORT(Pt).CORRection.STATe = True`

Equivalent Softkeys	**None**

SCPI.SOURce(*Ch*).POWer.SPAN

Object Type	Property (read/write)
Data Type	Double
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The power span for the power sweep.
Range	From 0 to the maximum span of the analyzer power range.
Resolution	0.05
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	The maximum span of the analyzer power range.
Unit	dBm (decibels above 1 milliwatt)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SOURce(Ch).POWer.SPAN`
	`app.SCPI.SOURce(Ch).POWer.SPAN = 50`

Equivalent Softkeys	**Stimulus > Span**

SCPI.SOURce(*Ch*).POWer.STARt

Object Type	Property (read/write)
Data Type	Double
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The power sweep start for the power sweep.
Range	From the minimum value to the maximum value of the analyzer power range.
Resolution	0.05
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	The minimum value of the analyzer power range.
Unit	dBm (decibels above 1 milliwatt)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SOURce(Ch).POWer.STARt`
	`app.SCPI.SOURce(Ch).POWer.STARt = -5`

Equivalent Softkeys	**Stimulus > Start**

SCPI.SOURce(*Ch*).POWer.STOP

Object Type	Property (read/write)
Data Type	Double
Target	Channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Description	The power sweep stop for the power sweep.
Range	From the minimum value to the maximum value of the analyzer power range.
Resolution	0.05
Out of Range	Sets the value of the limit, which is closer to the specified value.
Preset Value	The maximum value of the analyzer power range.
Unit	dBm (decibels above 1 milliwatt)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SOURce(Ch).POWer.STOP`
	`app.SCPI.SOURce(Ch).POWer.STOP = 0`

Equivalent Softkeys	**Stimulus > Stop**

SCPI.STATus.OPERation.CONDition

Object Type	Property (read only)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Operation Status Condition Register.

Syntax	`Dim Value As Long`
	`Value = app.SCPI.STATus.OPERation.CONDition`

Equivalent Softkeys	**None**

SCPI.STATus.OPERation.ENABle

Object Type	Property (read/write)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Operation Status Enable Register.
Range	from 0 to 65535
Preset Value	0

Syntax	`Dim Value As Long`
	`Value = app.SCPI.STATus.OPERation.ENABle`
	`app.SCPI.STATus.OPERation.ENABle = Value`

Equivalent Softkeys	**None**

SCPI.STATus.OPERation.EVENt

Object Type	Property (read only)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Operation Status Event Register

Syntax	`Dim Value As Long`
	`Value = app.SCPI.STATus.OPERation.EVENt`

Equivalent Softkeys	**None**

SCPI.STATus.OPERation.NTRansition

Object Type	Property (read/write)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Negative Transition Filter of the Operation Status Register
Range	from 0 to 65535
Preset Value	0

Syntax	`Dim Value As Long`
	`Value = app.SCPI.STATus.OPERation.NTRansition`
	`app.SCPI.STATus.OPERation.NTRansition = Value`

Equivalent Softkeys	**None**

SCPI.STATus.OPERation.PTRansition

Object Type	Property (read/write)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Positive Transition Filter of the Operation Status Register.
Range	from 0 to 65535
Preset Value	65535

Syntax	`Dim Value As Long`
	`Value = app.SCPI.STATus.OPERation.PTRansition`
	`app.SCPI.STATus.OPERation.PTRansition = Value`

Equivalent Softkeys	**None**

SCPI.STATus.PRESet

Object Type	Method
Target	IEE488.2 Status Reporting System
Description	Initialization of all registers.
Syntax	`app.SCPI.STATus.PRESet`
Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.CONDition

Object Type	Property (read only)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Questionable Status Condition Register

Syntax	`Dim Value As Long`
	`Value = app.SCPI.STATus.QUEStionable.CONDition`

Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.ENABle

Object Type	Property (read/write)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Questionable Status Enable Register
Range	from 0 to 65535
Preset Value	0

Syntax	`Dim Value As Long`
	`Value = app.SCPI.STATus.QUEStionable.ENABle`
	`app.SCPI.STATus.QUEStionable.ENABle = Value`

Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.EVENt

Object Type	Property (read only)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Questionable Status Event Register

Syntax	`Dim Value As Long`
	`Value = app.SCPI.STATus.QUEStionable.EVENt`

Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.LIMit.CHANnel(Ch).CONDition

Object Type	Property (read only)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Questionable Limit Channel Status Condition Register for channel *Ch*, *Ch* channel number 1–9 (see Table 1)

Syntax	`Dim Value As Long`
	`Value =`
	`app.SCPI.STATus.QUEStionable.LIMit.CHANnel(Ch).`
	`CONDition`

Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.LIMit.CHANnel(Ch).ENABle

Object Type	Property (read/write)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Questionable Limit Channel Status Enable Register for channel *Ch*, *Ch* channel number 1–9 (see Table 1)

Syntax	`Dim Value As Long`
	`Value =`
	`app.SCPI.STATus.QUEStionable.LIMit.CHANnel(Ch).`
	`ENABle`
	`app.SCPI.STATus.QUEStionable.LIMit.CHANnel(Ch).`
	`ENABle = Value`

Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.LIMit.CHANnel(Ch).EVENt

Object Type	Property (read only)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Questionable Limit Channel Status Event Register for channel *Ch*, *Ch* channel number 1–9 (see Table 1)

Syntax	`Dim Value As Long`
	`Value = app.`
	`SCPI.STATus.QUEStionable.LIMit.CHANnel(Ch).EVENt`

Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.LIMit.CHANnel(Ch).NTRansition

Object Type	Property (read/write)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Negative Transition Filter of the Questionable Limit Channel Status Register for channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Range	from 0 to 65535
Preset Value	0

Syntax	`Dim Value As Long`
	`Value =`
	`app.SCPI.STATus.QUEStionable.LIMit.CHANnel(Ch).`
	`NTRansition`
	`app.SCPI.STATus.QUEStionable.LIMit.CHANnel(Ch).`
	`NTRansition = Value`

Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.LIMit.CHANnel(Ch).PTRansition

Object Type	Property (read/write)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Positive Transition Filter of the Questionable Limit Channel Status Register for channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Range	from 0 to 65535
Preset Value	65535

Syntax	`Dim Value As Long`
	`Value =`
	`app.SCPI.STATus.QUEStionable.LIMit.CHANnel(Ch).`
	`PTRansition`
	`app.SCPI.STATus.QUEStionable.LIMit.CHANnel(Ch).`
	`PTRansition = Value`

Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.LIMit.CONDition

Object Type	Property (read only)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Questionable Limit Status Condition Register.

Syntax	`Dim Value As Long`
	`Value =`
	`app.SCPI.STATus.QUEStionable.LIMit.CONDition`

Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.LIMit.ENABle

Object Type	Property (read/write)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Questionable Limit Status Enable Register.
Range	from 0 to 65535
Preset Value	0

Syntax	`Dim Value As Long`
	`Value = app.SCPI.STATus.QUEStionable.LIMit.ENABle`
	`app.SCPI.STATus.QUEStionable.LIMit.ENABle = Value`

Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.LIMit.EVENt

Object Type	Property (read only)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Questionable Limit Status Event Register.

Syntax	`Dim Value As Long`
	`Value = app.SCPI.STATus.QUEStionable.LIMit.EVENt`

Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.LIMit.NTRansition

Object Type	Property (read/write)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Negative Transition Filter of the Questionable Limit Status Register
Range	from 0 to 65535
Preset Value	0

Syntax	`Dim Value As Long`
	`Value =`
	`app.SCPI.STATus.QUEStionable.LIMit.NTRansition`
	`app.SCPI.STATus.QUEStionable.LIMit.NTRansition =`
	`Value`

Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.LIMit.PTRansition

Object Type	Property (read/write)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Positive Transition Filter of the Questionable Limit Status Register.
Range	from 0 to 65535
Preset Value	65535

Syntax	`Dim Value As Long`
	`Value = app.SCPI.STATus.QUEStionable.LIMit.PTRansition`
	`app.SCPI.STATus.QUEStionable.LIMit.PTRansition = Value`

Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.NTRansition

Object Type	Property (read/write)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Negative Transition Filter of the Questionable Status Register.
Range	from 0 to 65535
Preset Value	0

Syntax	`Dim Value As Long`
	`Value = app.SCPI.STATus.QUEStionable.NTRansition`
	`app.SCPI.STATus.QUEStionable.NTRansition = Value`

Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.PTRansition

Object Type	Property (read/write)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Positive Transition Filter of the Questionable Status Register.
Range	from 0 to 65535
Preset Value	65535

Syntax	`Dim Value As Long`
	`Value = app.SCPI.STATus.QUEStionable.PTRansition`
	`app.SCPI.STATus.QUEStionable.PTRansition = Value`

Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.RLIMit.CHANnel(Ch).CONDition

Object Type	Property (read only)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Questionable Ripple Limit Channel Status Condition Register for channel *Ch*, *Ch* channel number 1–9 (see Table 1)

Syntax	`Dim Value As Long`
	`Value = app.SCPI.STATus.QUEStionable.RLIMit.CHANnel(Ch).CONDition`

Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.RLIMit.CHANnel(Ch).ENABle

Object Type	Property (read/write)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Questionable Ripple Limit Channel Status Enable Register for channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Range	from 0 to 65535
Preset Value	0

Syntax	`Dim Value As Long`
	`Value =`
	`app.SCPI.STATus.QUEStionable.RLIMit.CHANnel(Ch).`
	`ENABle`
	`app.SCPI.STATus.QUEStionable.RLIMit.CHANnel(Ch).`
	`ENABle = Value`

Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.RLIMit.CHANnel(Ch).EVENt

Object Type	Property (read only)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Questionable Ripple Limit Channel Status Event Register for channel *Ch*, *Ch* channel number 1–9 (see Table 1)

Syntax	`Dim Value As Long`
	`Value = app.SCPI.STATus.QUEStionable.RLIMit.CHANnel(Ch).EVENt`

Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.RLIMit.CHANnel(Ch).NTRansition

Object Type	Property (read/write)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Negative Transition Filter of the Questionable Ripple Limit Channel Status Register for channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Range	from 0 to 65535
Preset Value	0

Syntax	`Dim Value As Long`
	`Value =`
	`app.SCPI.STATus.QUEStionable.RLIMit.CHANnel(Ch).`
	`NTRansition`
	`app.SCPI.STATus.QUEStionable.RLIMit.CHANnel(Ch).`
	`NTRansition = Value`

Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.RLIMit.CHANnel(Ch).PTRansition

Object Type	Property (read/write)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Positive Transition Filter of the Questionable Ripple Limit Channel Status Register for channel *Ch*, *Ch* channel number 1–9 (see Table 1)
Range	from 0 to 65535
Preset Value	65535

Syntax	`Dim Value As Long`
	`Value =`
	`app.SCPI.STATus.QUEStionable.RLIMit.CHANnel(Ch).`
	`PTRansition`
	`app.SCPI.STATus.QUEStionable.RLIMit.CHANnel(Ch).`
	`PTRansition = Value`

Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.RLIMit.CONDition

Object Type	Property (read only)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Questionable Ripple Limit Status Condition Register.

Syntax	`Dim Value As Long`
	`Value =`
	`app.SCPI.STATus.QUEStionable.RLIMit.CONDition`

Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.RLIMit.ENABle

Object Type	Property (read/write)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Questionable Ripple Limit Status Enable Register
Range	from 0 to 65535
Preset Value	0

Syntax	`Dim Value As Long`
	`Value = app.SCPI.STATus.QUEStionable.RLIMit.ENABle`
	`app.SCPI.STATus.QUEStionable.RLIMit.ENABle = Value`

Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.RLIMit.EVENt

Object Type	Property (read only)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Questionable Ripple Limit Status Event Register.

Syntax	`Dim Value As Long`
	`Value = app.SCPI.STATus.QUEStionable.RLIMit.EVENt`

Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.RLIMit.NTRansition

Object Type	Property (read/write)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Negative Transition Filter of the Questionable Ripple Limit Status Register
Range	from 0 to 65535
Preset Value	0

Syntax	`Dim Value As Long`
	`Value = app.SCPI.STATus.QUEStionable.RLIMit.NTRansition`
	`app.SCPI.STATus.QUEStionable.RLIMit.NTRansition = Value`

Equivalent Softkeys	**None**

SCPI.STATus.QUEStionable.RLIMit.PTRansition

Object Type	Property (read/write)
Data Type	Long
Target	IEE488.2 Status Reporting System
Description	Positive Transition Filter of the Questionable Ripple Limit Status Register.
Range	from 0 to 65535
Preset Value	65535

Syntax	`Dim Value As Long`
	`Value = app.SCPI.STATus.QUEStionable.RLIMit.PTRansition`
	`app.SCPI.STATus.QUEStionable.RLIMit.PTRansition = Value`

Equivalent Softkeys	**None**

SCPI.SYSTem.COMMunicate.ECAL.TEMPerature.SENSor

Object Type	Property (read only)
Data Type	Double
Target	AutoCal module
Description	Reads out the temperature of the AutoCal module connected to the instrument.
Unit	°C (Celsius)

Syntax	`Dim Value As Double`
	`Value =`
	`app.SCPI.SYSTem.COMMunicate.ECAL.TEMPerature.SENSor`

Equivalent Softkeys	**None**

SCPI.SYSTem.CORRection.STATe

Object Type	Property (read/write)
Data Type	Boolean
Target	Instrument
Description	The ON/OFF state of the system error correction.
Allowable Values	*True* System error correction ON *False* System error correction OFF
Preset Value	`True`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.SYSTem.CORRection.STATe`
	`app.SCPI.SYSTem.CORRection.STATe = False`

Equivalent Softkeys	**None**

SCPI.SYSTem.DATE

Object Type	Property (read/write)
Data Type	Variant (Long array)
Target	Instrument
Description	The current date. The array consists of three elements: Data(0) year from 1900 to 2100; Data(1) month from 1 to 12; Data(2) day from 1 to 31.

Syntax	`Dim Data As Variant`
	`Data  = app.SCPI.SYSTem.DATE`
	`app. app.SCPI.SYSTem.DATE = Array(2009, 9, 9)`

Equivalent Softkeys	**None**

SCPI.SYSTem.HIDe

Object Type	Method
Target	Instrument
Description	Make the main form of a application invisible.
Syntax	`app.SCPI.SYSTem.HIDe`
Related Commands	`SCPI.SYSTem.SHOw`
Equivalent Softkeys	**None**

SCPI.SYSTem.LOCal

Object Type	Method
Target	Instrument
Description	Sets the instrument to the local operation mode, when all the keys on the front panel, mouse and the touch screen are active.
Syntax	`app.SCPI.SYSTem.LOCal`
Related Commands	`SCPI.SYSTem.RWLock`
Equivalent Softkeys	**None**

SCPI.SYSTem.PRESet

Object Type	Method
Target	Instrument
Description	Resets the instrument to the factory settings. The difference from the `SCPI.IEEE4882.RST`: method is that the trigger is set to the Continuous trigger mode.
Syntax	`app.SCPI.SYSTem.PRESet`
Equivalent Softkeys	**System > Preset > Apply**

SCPI.SYSTem.REMote

Object Type	Method
Target	Instrument
Description	Sets the instrument 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 instrument to the local operation mode.
Syntax	`app. SCPI.SYSTem.REMote`
Related Commands	`SCPI.SYSTem.LOCal`
Equivalent Softkeys	**None**

SCPI.SYSTem.RWLock

Object Type	Method
Target	Instrument
Description	Sets the instrument to the remote operation mode, when all the keys on the front panel, mouse and the touch screen are not active. Only `SCPI.SYSTem.LOCal` or `SCPI.SYSTem.REMote` command can release this remote operation mode.
Syntax	`app. SCPI.SYSTem.RWLock`
Related Commands	`SCPI.SYSTem.LOCal` `SCPI.SYSTem.REMote`
Equivalent Softkeys	**None**

SCPI.SYSTem.SHOw

Object Type	Method
Target	Instrument
Description	Return the main form of a application to visible state.
Syntax	`app. SCPI.SYSTem.SHOw`
Related Commands	`SCPI.SYSTem.HIDe`
Equivalent Softkeys	**None**

SCPI.SYSTem.TEMPerature.SENSor(Idx)

Object Type	Property (read only)
Data Type	Double
Target	Instrument
Description	Reads out the specified sensor (Idx) temperature inside the analyzer.
Unit	°C (Celsius)

Syntax	`Dim Value As Double`
	`Value = app.SCPI.SYSTem.TEMPerature.SENSor(1)`

Equivalent Softkeys	**None**

SCPI.SYSTem.TERMinate

Object Type	Method
Target	Instrument
Description	Close the COM server application.
Syntax	`app. SCPI.SYSTem.TERMinate`
Equivalent Softkeys	**System > Exit > Ok**

SCPI.SYSTem.TIME

Object Type	Property (read/write)
Data Type	Variant (Long array)
Target	Instrument
Description	The current time. The array consists of three elements: Data(0) hours from 0 to 23; Data(1) minutes from 0 to 59; Data(2) seconds from 0 to 59.

Syntax	`Dim Data As Variant`
	`Data  = app.SCPI.SYSTem.TIME`
	`app. app.SCPI.SYSTem.TIME = Array(15, 20, 30)`

Equivalent Softkeys	**None**

SCPI.TRIGger.SEQuence.EXTernal.Delay

Object Type	Property (read/write)
Data Type	Double
Target	External Trigger
Description	Sets the response delay with respect to the external trigger signal.
Range	From 0 to 100 sec
Resolution	0.1 usec
Out of Range	Sets to the nearest bound.
Preset Value	`0`

Syntax	`Dim Param As Double`
	`Param = app.SCPI.TRIGger.SEQuence.EXTernal.Delay`
	`app.SCPI.TRIGger.SEQuence.EXTernal.Delay = 0`

Related Commands	`SCPI.TRIGger.SEQuence.SOURce`
Equivalent Softkeys	**Stimulus > Trigger > External Trigger > Delay**

SCPI.TRIGger.SEQuence.EXTernal.POSition

Object Type	Property (read/write)
Data Type	String
Target	External trigger
Description	Selects the position of the external trigger. The Analyzer waits for external trigger: Before sampling, when the frequency of the stimulus port have been set. The frequency change of the stimulus port begins after sampling. Before the frequency setup and subsequent measurement. The frequency change of the stimulus port begins when the external trigger arrives. Depending on the command `SCPI.TRIGger.SEQuence.POINt` the external trigger wait occurs before each point or before the first point of the full sweep cycle.
Range	"BSAM" Before sampling "BSET" Before frequency setup
Out of Range	An error occurs.
Preset Value	`"BSAM"`

Syntax	`Dim Param As String`
	`Param = app.SCPI.TRIGger.SEQuence.EXTernal.POSition`
	`app.SCPI.TRIGger.SEQuence.EXTernal.POSition = "BSAM"`

Related Commands	`SCPI.TRIGger.SEQuence.SOURce`
Equivalent Softkeys	**Stimulus > Trigger > External Trigger > Position > Before Sampling | Before Setup**

SCPI.TRIGger.SEQuence.EXTernal.SLOPe

Object Type	Property (read/write)
Data Type	String
Target	External trigger
Description	Selects the edge of the external trigger.
Range	"POSitive" Positive edge "NEGative" Negative edge
Out of Range	An error occurs.
Preset Value	`"NEG"`

Syntax	`Dim Param As String`
	`Param = app.SCPI.TRIGger.SEQuence.EXTernal.SLOPe`
	`app.SCPI.TRIGger.SEQuence.EXTernal.SLOPe = "POS"`

Related Commands	`SCPI.TRIGger.SEQuence.SOURce`
Equivalent Softkeys	**Stimulus > Trigger > External Trigger > Polarity > Negative Edge | Positive Edge**

SCPI.TRIGger.SEQuence.IMMediate

Object Type	Method
Target	Instrument
Description	Generates a trigger, independently of the trigger source setting (except for the *External*). If the trigger source is set to *External*, an error occurs and the command is ignored. If the instrument is not in the waiting for a trigger state (sweep is in progress or all the channels are set to *Hold*), an error occurs and the command is ignored. The method returns control before the end of the sweep.
Syntax	`app.SCPI.TRIGger.SEQuence.IMMediate`

Related Commands	`SCPI.TRIGger.SEQuence.SOURce`
	`SCPI.INITiate(Ch).CONTinuous`
	`SCPI.INITiate(Ch).IMMediate`

Equivalent Softkeys	**None**

SCPI.TRIGger.SEQuence.POINt

Object Type	Property (read/write)
Data Type	Boolean
Target	Instrument
Description	The ON/OFF state of the point trigger feature. When the point trigger feature is turned ON, the external trigger response is single point. When the point trigger feature is turned OFF, the external trigger response is single sweep.
Allowable Values	*True* point trigger feature ON *False* point trigger feature OFF
Preset Value	`False`

Syntax	`Dim Status As Boolean`
	`Status = app.SCPI.TRIGger.SEQuence.POINt`
	`app.SCPI.TRIGger.SEQuence.POINt = True`

Related Commands	`SCPI.TRIGger.SEQuence.SOURce`
Equivalent Softkeys	**Stimulus > Trigger > External Trigger > Event > On Sweep | On Point**

SCPI.TRIGger.SEQuence.SINGle

Object Type	Method
Target	Instrument
Description	Generates a trigger, independently of the trigger source setting (except for the *External*). If the trigger source is set to *External*, an error occurs and the command is ignored. If the instrument is not in the waiting for a trigger state (sweep is in progress or all the channels are set to *Hold*), an error occurs and the command is ignored. The method does not return control before the end of the sweep (waiting for the completion of the sweep of all the channels).
Syntax	`app.SCPI.TRIGger.SEQuence.SINGle`

Related Commands	`SCPI.TRIGger.SEQuence.SOURce`
	`SCPI.INITiate(Ch).CONTinuous`
	`SCPI.INITiate(Ch).IMMediate`

Equivalent Softkeys	**None**

SCPI.TRIGger.SEQuence.SOURce

Object Type	Property (read/write)
Data Type	String
Target	Instrument
Description	Selects the sweep trigger source.
Range	"INTernal" Internal "EXTernal" External "BUS" Bus
Notes	The short format of the parameter is indicated by upper case letters. There is no distinction between upper and lower case letters when the property is written. When the property is read out, the short format is indicated by upper case letters.
Out of Range	An error occurs.
Preset Value	`"INT"`

Syntax	`Dim Param As String`
	`Param = app.SCPI.TRIGger.SEQuence.SOURce`
	`app.SCPI.TRIGger.SEQuence.SOURce = "BUS"`

Related Commands	`SCPI.TRIGger.SEQuence.IMMediate`
	`SCPI.TRIGger.SEQuence.SINGle`
	`SCPI.IEEE4882.TRG`

Equivalent Softkeys	**Stimulus > Trigger > Trigger Source > Internal | External | Bus**

SCPI.TRIGger.SEQuence.STATe

Object Type	Property (read only)
Data Type	String
Target	Instrument
Description	Returns the status of the scanner.
Range	"HOLD" scanning is stopped "WAIT" waiting for the start "MEAS" is scanning
Notes	The short format of the parameter is indicated by upper case letters.
Out of Range	An error occurs.

Syntax	`Dim Param As String`
	`Param = app.SCPI.TRIGger.SEQuence.STATe`

Related Commands	`SCPI.TRIGger.SEQuence.IMMediate`
	`SCPI.TRIGger.SEQuence.SINGle`
	`SCPI.IEEE4882.TRG`
	`SCPI.IEEE4882.RST`

Equivalent Softkeys	**None**

114	"Header suffix out of range"
200	"Execution error"
211	"Trigger ignored"
213	"Init ignored"
220	"Parameter Error"
222	"Data out of range"
224	"Illegal parameter value"
201	"Invalid channel index"
202	"Invalid trace index"
203	"Invalid marker index"
204	"Marker is not active"
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"
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"
300	"Device-specific error"
302	"Status reporting system error"

Example 1. Instrument Information String Readout

The following program reads out and displays on the screen the instrument information string – the Name property of the COM object. The string contains the following fields:

Manufacturer, Model, Serial Number, Software Version/Firmware Version

For example:

Copper Mountain Technologies, TR5048, 00000001, 15.4.0/2.0

```
Dim app As Object
Sub Example1()
Set app = CreateObject("TRVNA.Application")
ID = app.Name
MsgBox ("Information string read out: " + ID)
End Sub
```

Example 2. Checking the Instrument Ready State

Normally, the user control program starts when the analyzer executable module is running, the instrument booting is completed, and the instrument is ready for use. In some cases, it is recommended to check if the instrument is ready for use. The instrument may be not ready for use if it is not connected to PC via USB cable. Moreover, if the analyzer executable module has not been started in advance, the *CreateObject* function will automatically start the application and then within about 10 seconds the instrument booting will be in progress. The instrument will not be ready for use until the booting is completed. The *Ready* property is used to check if the instrument is ready for use.

The following program checks the *Ready* property right after a COM object has been created. If the analyzer executable module has been started in advance and the booting is completed, *"Analyzer is ready"* will be displayed. If the *Ready* property value is *False,* 10 second delay is activated for the case the analyzer executable module has been started by the COM object creation. In 10 seconds the program rechecks the *Ready* property. If the value is *True, "Analyzer is ready"* will be displayed, if otherwise, *"Analyzer is not ready"* will be displayed, what means the instrument is not turned on or it is not connected to PC via USB cable.

```
Dim app As Object
Sub Example2()
Set app = CreateObject("TRVNA.Application")
If app.Ready = False Then
   Application.Wait (Now + TimeValue("0:00:10"))
   If app.Ready = False Then
      MsgBox ("Analyzer is not ready")
      Exit Sub
   End If
End If
MsgBox ("Analyzer is ready")
End Sub
```

Example 3. Setting the Measurement Parameters

The following program shows the setting of some measurement parameters. First, the instrument is reset to the factory settings. Then the following parameters are set:

- Two channel windows are opened and allocated one above the other.
- The number of traces is set to 2 in the first channel window.
- For the first channel the stimulus parameters are set as follows: the frequency range from 100 MHz to 1.2 GHz, the number of measurement points 401.
- For the second channel the stimulus parameters are set as follows: the frequency range from 800 MHz to 900 MHz, the number of points 51, IF bandwidth 100 Hz, stimulus power −10 dBm.
- In the first channel window: S11 measurement is set for the trace 1, S21 measurement is set for the trace 2. The Smith chart format is set for the both traces.
- In the second channel window: S21 measurement and logarithmic magnitude format are set for the single trace. Then the auto scale function is called for this trace.

```
Dim app As Object

Public Sub Example3()
Set app = CreateObject("TRVNA.Application")

app.SCPI.SYSTem.PRESet

app.SCPI.DISPlay.Split = 2
app.SCPI.Calculate(1).Parameter.Count = 2

app.SCPI.SENSe(1).Frequency.Start = 100000000
app.SCPI.SENSe(1).Frequency.STOP = 1200000000
app.SCPI.SENSe(1).SWEep.Points = 401

app.SCPI.SENSe(2).Frequency.Start = 800000000
app.SCPI.SENSe(2).Frequency.STOP = 900000000
app.SCPI.SENSe(2).SWEep.Points = 51
app.SCPI.SENSe(2).BANDwidth.RESolution = 100
app.SCPI.Source(2).Power.LEVel.IMMediate.AMPlitude = -10

app.SCPI.Calculate(1).Parameter(1).DEFine = "S11"
app.SCPI.Calculate(1).Parameter(2).DEFine = "S21"
app.SCPI.Calculate(1).Parameter(1).Select
app.SCPI.Calculate(1).Selected.Format = "SMIT"
app.SCPI.Calculate(1).Parameter(2).Select
app.SCPI.Calculate(1).Selected.Format = "SMIT"

app.SCPI.Calculate(2).Parameter(1).DEFine = "S21"
app.SCPI.Calculate(2).Parameter(1).Select
app.SCPI.Calculate(2).Selected.Format = "MLOG"
app.SCPI.DISPlay.Window(2).TRACe(1).Y.SCALe.AUTO

End Sub
```

Example 4. Measurement Data Acquisition

The following program shows data array acquisition with further writing into a file. The program also shows the method of a sweep triggering and waiting for the sweep completion.

Three variables *F, M, P* are declared in the second string of the code. They are used for arrays of frequency values (Hz), magnitude values (dB), and phase values (degree) respectively.

After the instrument has been reset to the factory settings, two operators are used for the sweep triggering and waiting for the sweep completion:

```
app.SCPI.TRIGger.SEQuence.Source = "BUS"
app.SCPI.TRIGger.SEQuence.Single
```

The first operator sets the LAN bus command or the COM/DCOM interface command as a trigger source. It aborts the sweep and switches the instrument to waiting for a trigger. The second operator is used for a new sweep triggering and waiting for the sweep completion.

Note	Unlike the `SCPI.TRIGger.SEQuence.IMMediate` and `SCPI.IEEE4882.TRG` commands, which are completed immediately after a trigger generation, the `SCPI.TRIGger.SEQuence.Single` command is not completed until the end of the sweep. Using the `SCPI.TRIGger.SEQuence.Single` command is the simplest way to set the waiting for the sweep completion.

On completion of the sweep, three arrays are read out: frequency values, magnitude values and phase values. Before the magnitude and phase arrays are read out, the corresponding trace format is set.

The array size of frequency *F* is equal to the number of measurement points, and the array size of magnitude *M* and phase *P* is equal to the double number of measurement points (see section 12). In rectangular formats (for magnitude and phase) the measurement data are real numbers located in even cells of the array. Odd cells of the array contain 0.

On completion of the program, the frequency, magnitude and phase values for each measurement point are written string by string into the file named *TESTFILE*.

```
Dim app As Object
```

```
Dim app As Object
Dim F, M, P

Public Sub Example4()
Set app = CreateObject("TRVNA.Application")

app.SCPI.SYSTem.PRESet

app.SCPI.TRIGger.SEQuence.Source = "BUS"
app.SCPI.TRIGger.SEQuence.Single

F = app.SCPI.SENSe(1).Frequency.Data

app.SCPI.Calculate(1).Selected.Format = "MLOG"
M = app.SCPI.Calculate(1).Selected.Data.FDATa

app.SCPI.Calculate(1).Selected.Format = "PHASe"
P = app.SCPI.Calculate(1).Selected.Data.FDATa

Open "TESTFILE" For Output As #1

For i = LBound(F) To UBound(F)
    Print #1, F(i), M(i * 2), P(i * 2)
Next i

Close #1
End Sub
```

Example 5. Program Written in C++

The following C++ program represents an example of the measurement parameter setting, as well as acquisition and display of the measurement data array. The program also shows a method of the sweep triggering and waiting for the sweep completion.

```
//---------------------------------------------------------------------------
// Simple example of using COM object of TRVNA.exe application.
// This example is console application. GUI is not used in this example to
// simplify the program. Error proccessing is very restricted too.
#include "stdafx.h"
//---------------------------------------------------------------------------
// Generate description of COM object of TRVNA.exe application.
#import "TRVNA.exe" no_namespace
//---------------------------------------------------------------------------
int _tmain(int argc, _TCHAR* argv[])
{
    ITRVNAPtr    pNWA;                    // Pointer to COM object of
TRVNA.exe
    CComVariant Data;                 // Variable for measurement data
    // Init COM subsystem
    HRESULT hr = CoInitialize(NULL);
    if(hr != S_OK) return -1;
    // Create COM object
    hr = pNWA.CreateInstance(__uuidof(TRVNA));
    if(hr != S_OK) return -1;
    // Preset network analyzer
    pNWA->SCPI->SYSTem->PRESet();
    // Set frequency start to 1 GHz
    pNWA->SCPI->SENSe[1]->FREQuency->STARt = 1e8;
    // Set frequency stop to 1.2 GHz
    pNWA->SCPI->SENSe[1]->FREQuency->STOP = 1.2e8;
    // Set number of measurement points to 51
    pNWA->SCPI->SENSe[1]->SWEep->POINts = 51;
    // Set measured parameter to S21
    pNWA->SCPI->CALCulate[1]->PARameter[1]->DEFine = "S21";
    // Set trigger source to GPIB/LAN bus or COM interface
    pNWA->SCPI->TRIGger->SEQuence->SOURce = "bus";
    // Trigger measurement and wait
    pNWA->SCPI->TRIGger->SEQuence->SINGle();
    // Get measurement data (array of complex numbers)
    Data = pNWA->SCPI->CALCulate[1]->SELected->DATA->FDATa;
    // Display measurement data.
    // Data is array of NOP * 2 (number of measurement points).
    // Where n is an integer between 0 and NOP - 1.
    // Data(n*2)      : Primary value at the n-th measurement point.
    // Data(n*2+1) : Secondary value at the n-th measurement point. Always 0
    //                        when the data format is not the Smith chart or
the polar.
    CComSafeArray<double> mSafeArray;
    if (mSafeArray.Attach(Data.parray) == S_OK)
    {
        for (unsigned int n = 0; n < mSafeArray.GetCount() / 2; ++n)
        {
            printf("%+.9E\t%+.9E\n",
            mSafeArray.GetAt(n*2),
            mSafeArray.GetAt(n*2+1));
        }
        mSafeArray.Detach();
    }
    printf("Press ENTER to exit.\n");
    getc(stdin);
    // Release COM object
    pNWA.Release();
    CoUninitialize();
    return 0;
}
```