

# Remote Emulation with the R&S®SMB100A RF and Microwave Signal Generator Application Note

## Products:

| R&S®SMB100A

The R&S®SMB100A RF and microwave signal generator offers a remote emulation feature that makes it possible to control the instrument by commands other than the built-in native SCPI commands. This feature allows the user to replace signal generators, e.g. from other manufacturers, with the R&S®SMB100A without having to change the remote control code.

This application note describes how to use the remote emulation feature in general. Furthermore, it describes in detail the remote emulation for each supported instrument, limitations of the individual emulations and the remaining differences between the emulated and the original commands.

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# 1 Abbreviations

The following abbreviations are used in this application note:

- AF2023 2023 signal generator from Aeroflex / IFR / Marconi
- AF2024 2024 signal generator from Aeroflex / IFR / Marconi
- AF2030 2030 signal generator from Aeroflex / IFR / Marconi
- AF2031 2031 signal generator from Aeroflex / IFR / Marconi
- AF2032 2032 signal generator from Aeroflex / IFR / Marconi
- AF2040 2040 signal generator from Aeroflex / IFR / Marconi
- AF2041 2041 signal generator from Aeroflex / IFR / Marconi
- AF2042 2042 signal generator from Aeroflex / IFR / Marconi
- AN68017 68017 signal generator from Anritsu
- AN68037 68037 signal generator from Anritsu
- E4428 E4428 signal generator from Agilent Technologies
- E8257 E8257 signal generator from Agilent Technologies
- E8663 E8663 signal generator from Agilent Technologies
- N5161 N5161 signal generator from Agilent Technologies
- N5181 N5181 signal generator from Agilent Technologies
- N5183 N5183 signal generator from Agilent Technologies
- HP8340 8340 signal generator from Hewlett-Packard / Agilent Technologies
- HP8341 8341 signal generator from Hewlett-Packard / Agilent Technologies
- HP83711 83711 signal generator from Hewlett-Packard / Agilent Technologies
- HP83711 83711 signal generator from Hewlett-Packard / Agilent Technologies
- HP83712 83712 signal generator from Hewlett-Packard / Agilent Technologies
- HP83731 83731 signal generator from Hewlett-Packard / Agilent Technologies
- HP83732 83732 signal generator from Hewlett-Packard / Agilent Technologies
- HP8642 8642 signal generator from Hewlett-Packard / Agilent Technologies
- HP8643 8643 signal generator from Hewlett-Packard / Agilent Technologies
- HP8644 8644 signal generator from Hewlett-Packard / Agilent Technologies
- HP8645 8645 signal generator from Hewlett-Packard / Agilent Technologies
- HP8647 8647 signal generator from Hewlett-Packard / Agilent Technologies
- HP8648 8648 signal generator from Hewlett-Packard / Agilent Technologies
- HP8656 8656 signal generator from Hewlett-Packard / Agilent Technologies
- HP8657 8657 signal generator from Hewlett-Packard / Agilent Technologies
- HP8664 8664 signal generator from Hewlett-Packard / Agilent Technologies
- HP8665 8665 signal generator from Hewlett-Packard / Agilent Technologies
- HP8673 8673 signal generator from Hewlett-Packard / Agilent Technologies
- SMB R&S®SMB100A signal generator from Rohde & Schwarz
- SML R&S®SML signal generator from Rohde & Schwarz
- SMT R&S®SMT signal generator from Rohde & Schwarz
- SMY R&S®SMY signal generator from Rohde & Schwarz

## 2 Overview

Measuring instruments used in commercial test systems for applications such as testing of mobile radio base stations typically have a much longer lifespan than the test system itself. Some five to seven years of usage is normal prior to replacement. On the other hand, test systems for use in aerospace & defense applications can have a typical lifespan of 25 years or even more. If standard measuring instruments with a lifespan that is significantly less than this time frame are used in such test systems, an obvious question is how to handle maintenance, repair, calibration and even replacement of the instruments that are no longer supported by their manufacturer. Moreover, the test program sets used in such test systems are generally certified, which makes it very time-consuming and costly to modify and reaccept them.

A feasible strategy to solve this problem is the migration with new measuring instruments that emulate the discontinued instruments.

This migration approach is saves time and is cost-effective. It involves replacing obsolete measuring instruments with new ones that emulate their functionality and programming.

The requirements for the new instruments revolve around the electrical and functional features of the instruments to be emulated as well as the test programs, which ideally should not require any modifications.

To fulfill the last requirement, the SMB offers the remote emulation feature.

Remote emulation means that the SMB will understand the programming commands of the emulated instrument and also emulate the behavior as fully as possible.

Most instruments from other manufacturers in the category of the SMB are emulated by the SMB. An overview of actually implemented remote emulations is given in the following table:

Remote emulations in the SMB			
Manufacturer	Instrument	Language	Section
Aeroflex IFR Marconi	AF2023	SCPI	5
	AF2024		
	AF2030	SCPI	6
	AF2031		
	AF2032		
	AF2040		
	AF2041		
	AF2042		
Anritsu	AN68017	SCPI	7
	AN68037		

Remote emulations in the SMB			
Manufacturer	Instrument	Language	Section
Agilent Technologies Hewlett-Packard	E4428	SCPI	8
	E8257		
	E8663		
	N5161		
	N5181		
	N5183		
	HP8340	Non-SCPI	9
	HP8341		
	HP83711	SCPI	10
	HP83712		
	HP83731		
	HP83732		
	HP8642	Non-SCPI	11
	HP8643	SCPI	12
	HP8644		
	HP8645		
	HP8647	SCPI	13
	HP8648		
	HP8656	Non-SCPI	14
	HP8657		
HP8664	SCPI	12	
HP8665			
HP8673	Non-SCPI	15	
Rohde & Schwarz	SML01	SCPI	16
	SML02		
	SML03		
	SMT03	SCPI	17
	SMY01 SMY02	SCPI	18

**Note:**

The remote emulations AN68017, AN68037, E8257, E8663, N5183, HP8340, HP8341, HP83711, HP83712, HP83731, HP83732 and HP8673 are available only if one of the following options is installed:

- SMB-B112 RF Path 100 kHz to 12.75 GHz with electronic step attenuator
- SMB-B112L RF Path 100 kHz to 12.75 GHz without step attenuator
- SMB-B120 RF Path 100 kHz to 20 GHz with mechanical step attenuator
- SMB-B120L RF Path 100 kHz to 20 GHz without step attenuator
- SMB-B140 RF Path 100 kHz to 40 GHz with mechanical step attenuator
- SMB-B140L RF Path 100 kHz to 40 GHz without step attenuator

## 3 Basics

### 3.1 Remote Control Languages

Instruments implement different kind of remote control languages. These languages are grouped into two basic categories:

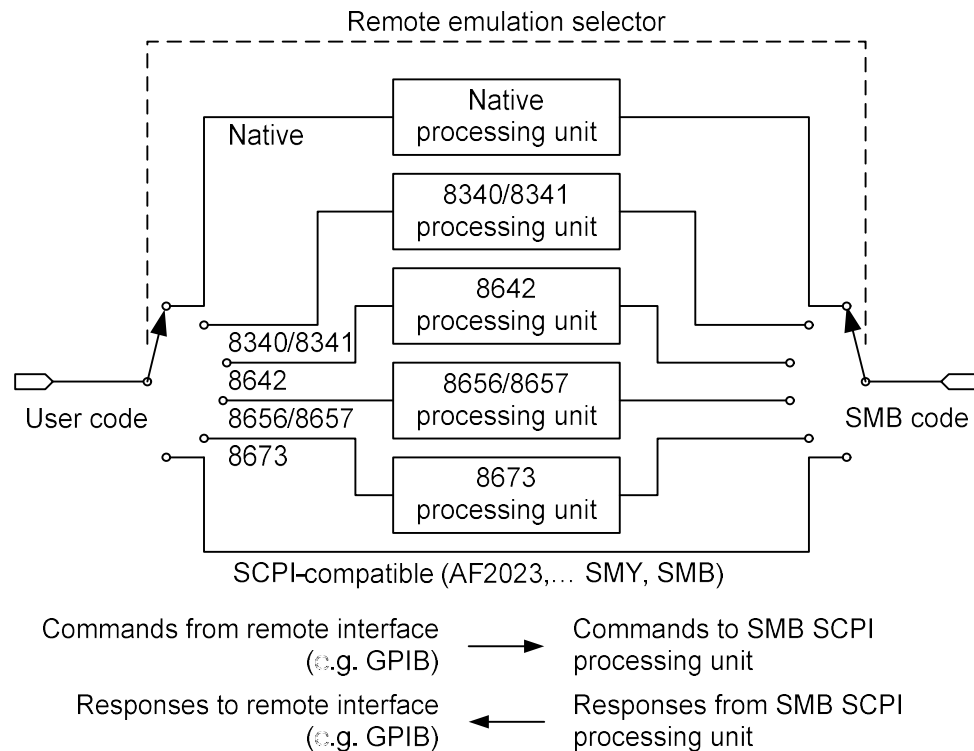
- SCPI-compatible
- Non-SCPI-compatible

Command examples				
Function	HP8642 Non-SCPI	HP8657 Non-SCPI	AF2023 SCPI	SMB SCPI
Resetting the instrument	PR	PR	*RST	*RST
Clearing the system status		CS	*CLS	*CLS
Setting the RF frequency	CW10MZ	FR10MZ	:CFRQ:VALUE 10MHZ	:FREQ 10MHZ
Setting the RF power	AP-10DB	PL-10DM	:RFLV:VALUE -10DBM	:POW -10DBM
Activating the RF output	ON	R3	:RFLV:ON	:OUTP 1

Older instruments often implement a simple, unstructured and non-SCPI-compatible language, whereas modern instruments implement usually a complex, well structured and SCPI-compatible language.

The SMB offers a solution for both kinds of languages using specialized processing units in non-SCPI-compatible languages:





### 3.1.1 SCPI-Compatible Languages

Commands are routed directly from the remote interface to the SMB SCPI command processing unit; responses are routed in the reverse direction.

### 3.1.2 Non-SCPI-Compatible Languages

Commands are routed from the remote interface to the SMB SCPI command processing unit through a remote emulation specific processing unit; responses are routed in the reverse direction.

This specific processing unit parses the non-SCPI-compatible commands with reference to the corresponding syntax and translates them into SCPI-compatible ones. The unit also reformats the responses with respect to the requirements of the emulated instrument.

## 3.2 Remote Emulation Compatibility

An emulated instrument having fewer features than, or the same features as, the SMB can be replaced without special care.

However, replacing an emulated instrument having more features than the SMB or features that differ from those of the SMB requires additional care. The user must


- ensure that the SMB complies with the functional requirements
- verify that application code does not use features in the emulated instrument which are not available in the SMB

### 3.2.1 Command Compatibility

Most of the remote emulations in the SMB implement all commands of the original instrument. However, e.g. due to functional differences in hardware, in certain remote emulations the SMB

- does not support all commands
- does not support all parameters of a command
- implements a different behavior for a command

In the command tables of the different remote emulations, the status column gives compatibility information to a command:

Command compatibility status	
Status	Comment
✓	Command implementation is fully compatible.
 See item n	Command implementation is not fully compatible. The implementation in the SMB <ul style="list-style-type: none"> <li>• does not support the same parameter(s) as the emulated instrument does</li> <li>• has different functionality than the emulated instrument</li> <li>• reports an invalid parameter or execution error if possible</li> </ul>
○	Command is implemented without any functionality. The implementation in the SMB <ul style="list-style-type: none"> <li>• ignores setting commands</li> <li>• returns default value in query commands</li> <li>• does not report errors</li> <li>• does not change any operating mode of the instrument</li> <li>• does not change any system state of the instrument</li> </ul>
✘	Command is not implemented. The implementation in the SMB reports an unknown command error if possible.
+	Command has been added to enhance the functionality of the emulated instrument.

If the application software uses commands that are fully compatible, no special care has to be taken. The applications software can be used as is.

If the application software uses commands that are not fully compatible, the application software must be verified and normally also modified. If the required modifications to the application software are infeasible, the SMB cannot be used as replacement for another instrument.

### 3.2.2 IDN / OPT Strings

The remote emulation provides user-defined responses to \*IDN? and \*OPT? queries. This feature is of informational character only and has no impact on the functionality of the SMB.

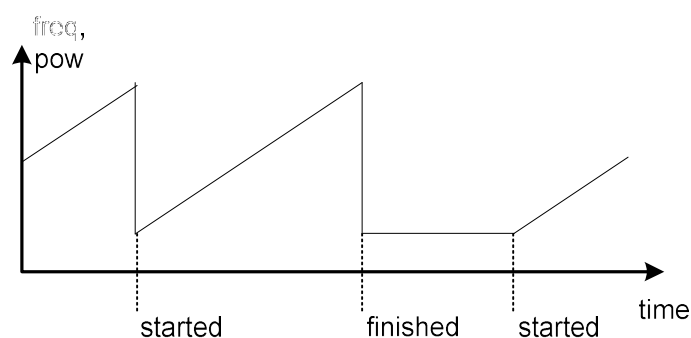
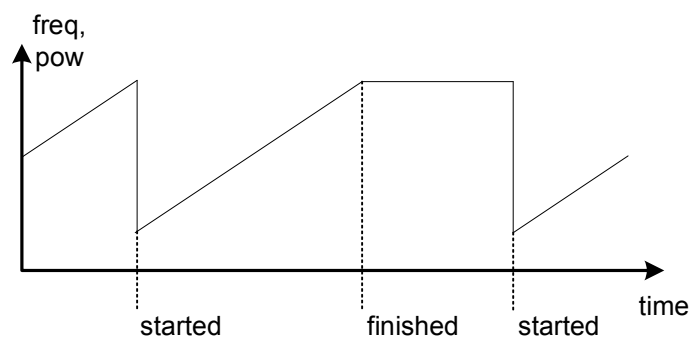
### 3.2.3 Timing

The remote emulation cannot provide exact timing compatibility with the emulated instrument, since timing is a hardware-related property.

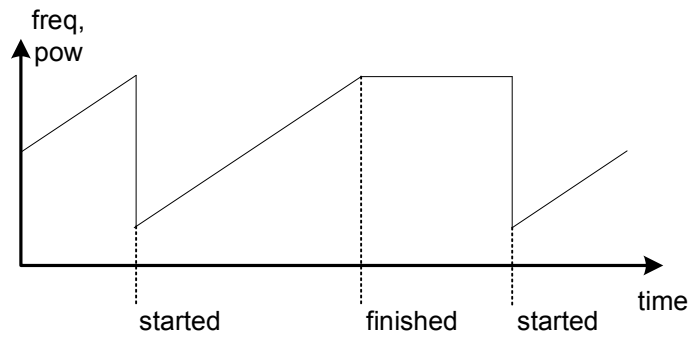
### 3.2.4 Sweep Operation

In the different sweep operating modes, often the behavior when a sweep has finished can be configured.

In some of the emulated instruments, the corresponding signal can be configured to remain at the stop value (upper figure) or to retrace to the start value (lower figure):

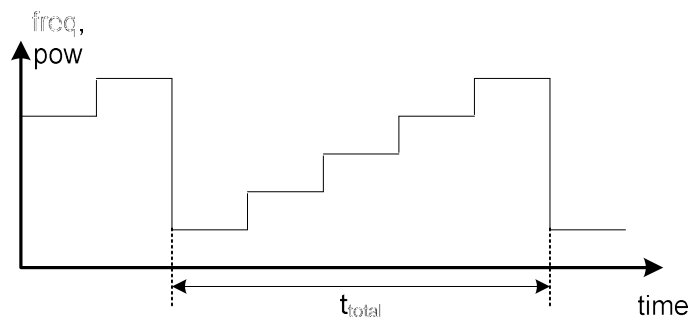


In the SMB, however, the corresponding signal always remains at the stop value:



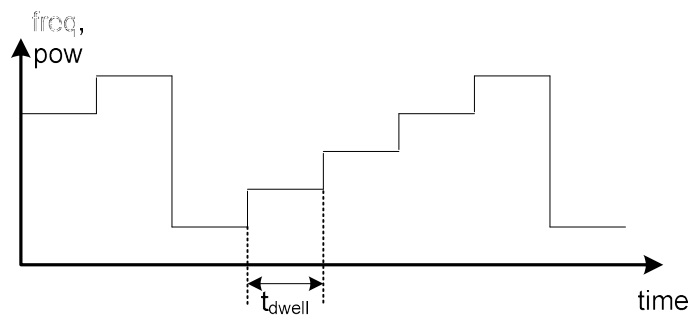
If this feature is undesirable, the user application code has to be changed.

Some of the emulated instruments implement sweep operations with a constant total sweep time:



Changing the start, stop or steps parameter of the sweep operation does not have an impact on the total sweep time.

In the SMB, all sweep operations are based on the dwell time:



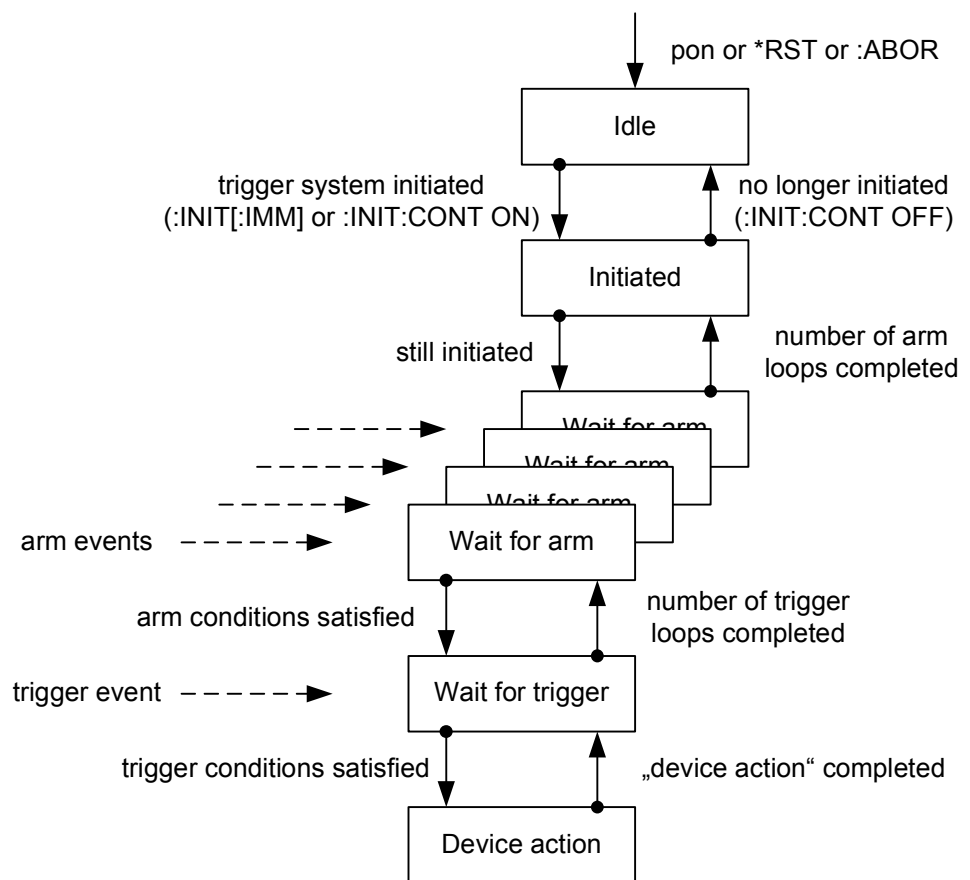
Changing the start, stop or steps parameter directly affects the total sweep time.

$$n_{steps} = \left\lceil \frac{f_{stop} - f_{start}}{f_{step}} \right\rceil + 1$$

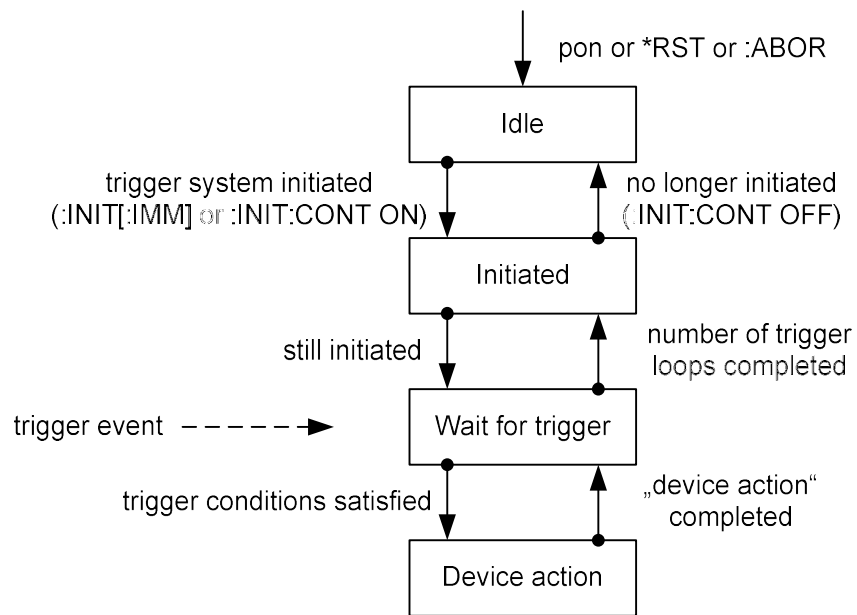
$$t_{total} = n_{steps} \cdot t_{dwell}$$

### 3.2.5 Trigger Control

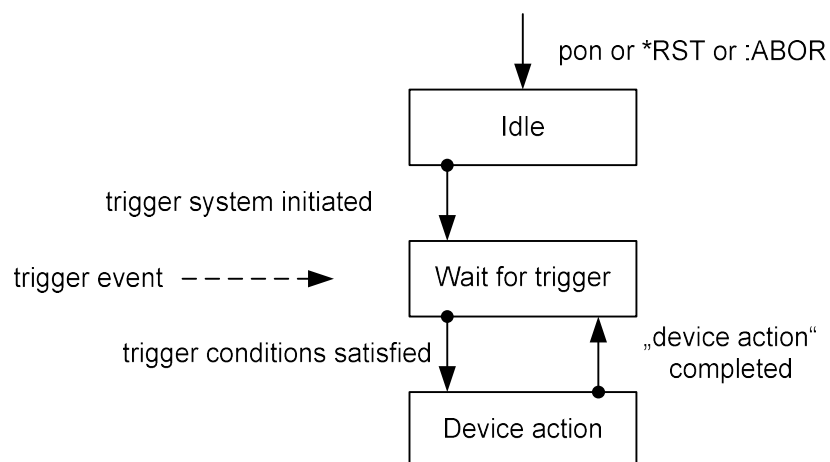
In signal generators with sweeping features, all sweep operating modes use the trigger control system. The figure below shows the SCPI trigger control system proposal:



Some of the emulated instruments implement a simplified trigger control system:



Other emulated instruments and also the SMB implement the trigger control system shown in the following figure:

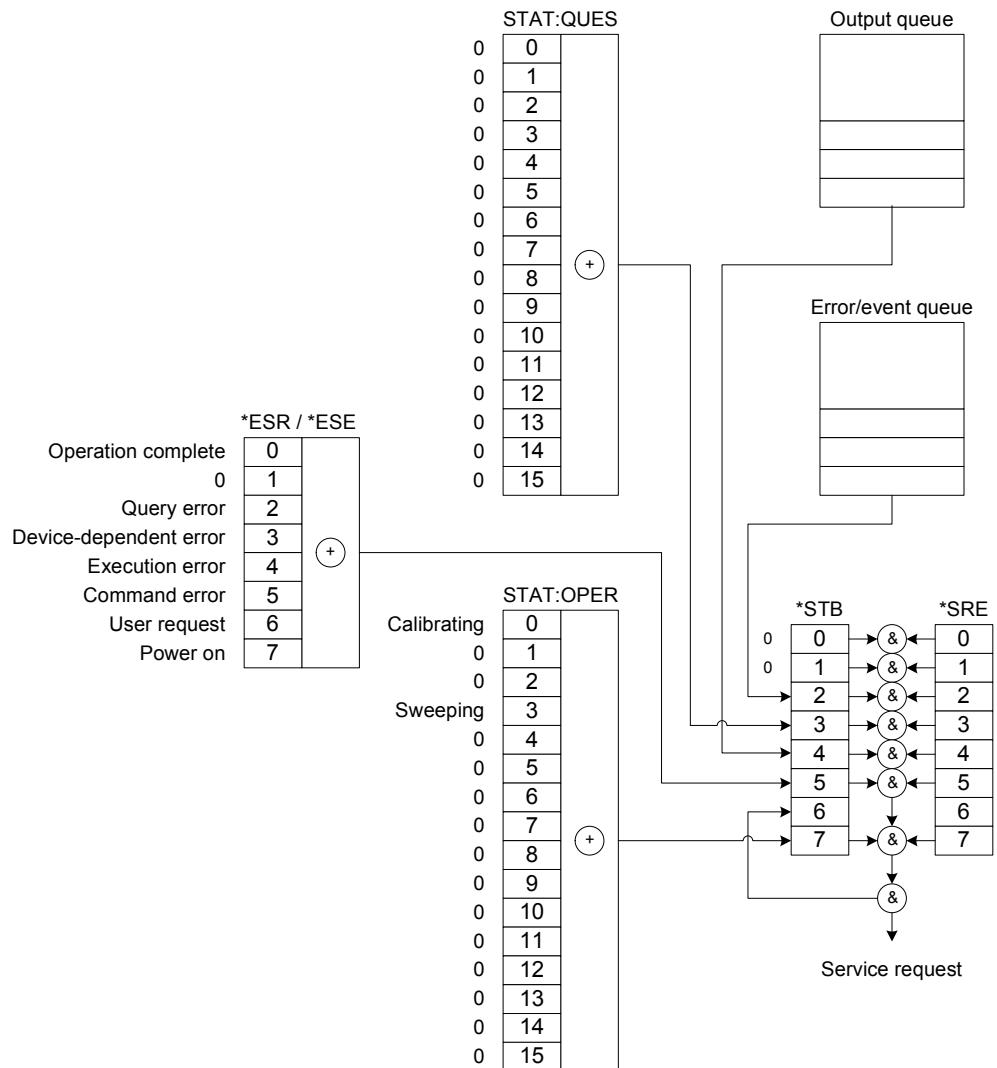


The main difference between the emulated instrument's and the SMB's trigger control system is that there is no "Initiated" state in the SMB. The SMB implementation assumes that the trigger system is initiated automatically in the "Idle" state. As a result, any sweep operation in the SMB, once activated, can only be controlled by internal or external trigger events.

This has an important impact on the user application. Application code that requires an "Initiated" state in the trigger control system must be adapted.

### 3.2.6 Status and Error Reporting

The SMB implements the minimal status and error reporting system required by the SCPI proposal. The following figure shows the status and error reporting model:



Some of the emulated instruments implement a more detailed status and error reporting system. Since the additional information stored in that system is not available in the SMB, application code that uses the additional information must be changed.

### 3.3 Preset / Reset

Changing the remote emulation does not automatically trigger a reset operation to the instrument. Therefore it is strongly recommended to manually execute a reset to the SMB after changing the remote emulation.

To apply the default of a particular remote emulation, the user must send the corresponding command via the remote control interface, e.g. the \*RST command in SCPI-compatible languages.

### 3.4 Power Down / Power Up

The selected remote emulation and the user-defined responses to \*IDN? and \*OPT? queries are saved when the instrument is switched off.

When the instrument is switched on again, it starts up with the same settings that were active before it was switched off.



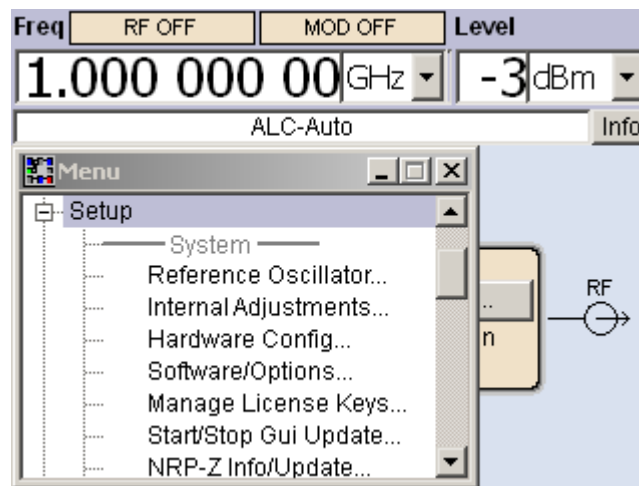
## 4 Activating a Remote Emulation

In order to use a specific remote emulation, it must first be activated by the user. Activation is done either

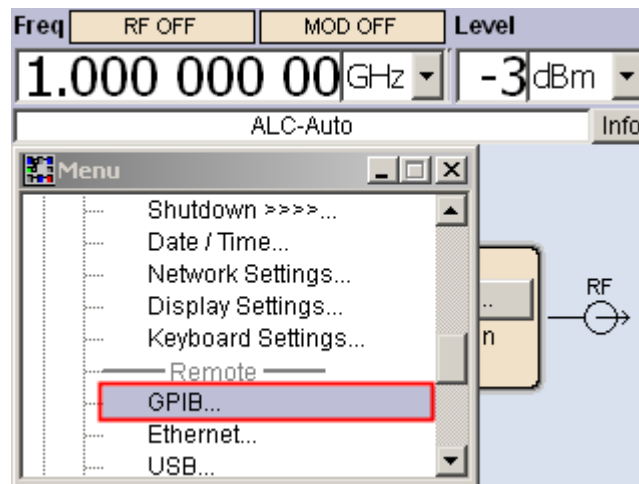
- manually using the SMB front panel
- remotely using SCPI commands

### 4.1 Manual Operation

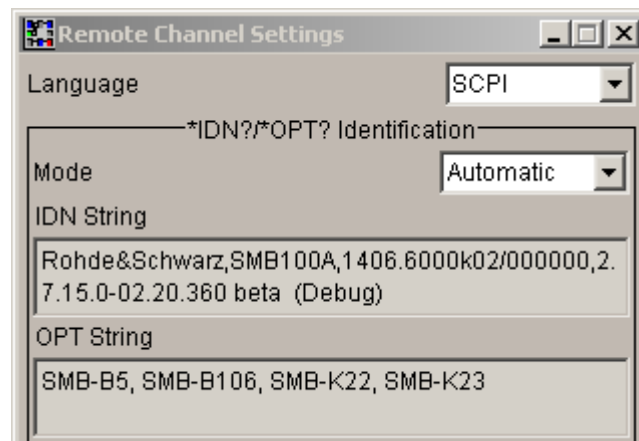
On the SMB front panel, press the SETUP key to open the Menu tree:



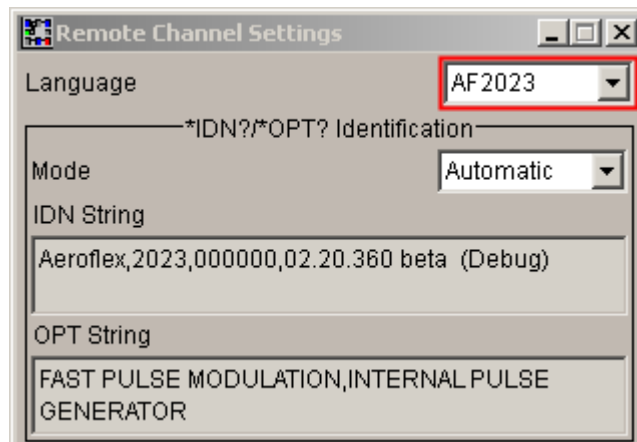
In the Menu tree, select GPIB... and open the Remote Channel Settings dialog:



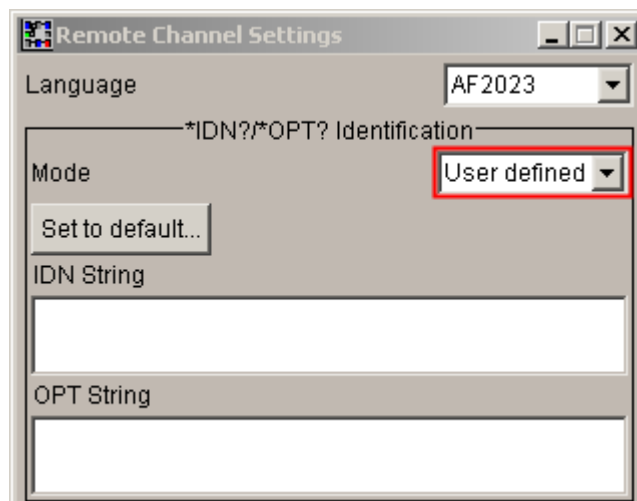
In the Remote Channel Settings dialog, set up the remote emulation specific parameters:



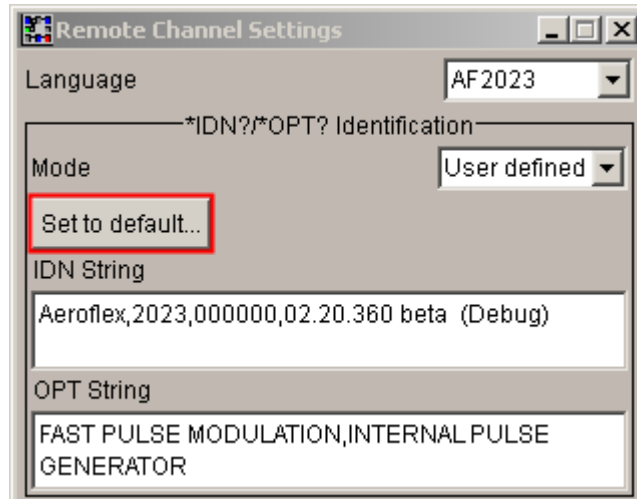
Select the Language and open the drop-down list. Pick an item from the list and confirm the selection:



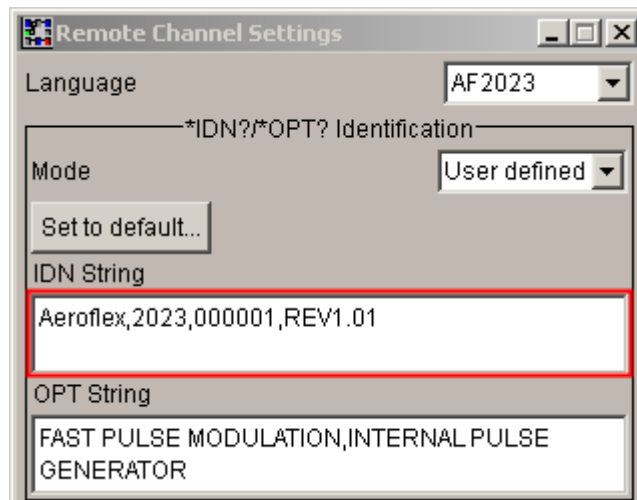
Select the Mode and open the drop-down list. Pick either “Automatic” or “User defined” from the list and confirm the selection. In “Automatic” mode, the response text to \*IDN? and \*OPT? queries is generated by the signal generator itself. In “User defined” mode, the response text to \*IDN? and \*OPT? queries must be entered in the corresponding IDN string and/or OPT string text boxes:



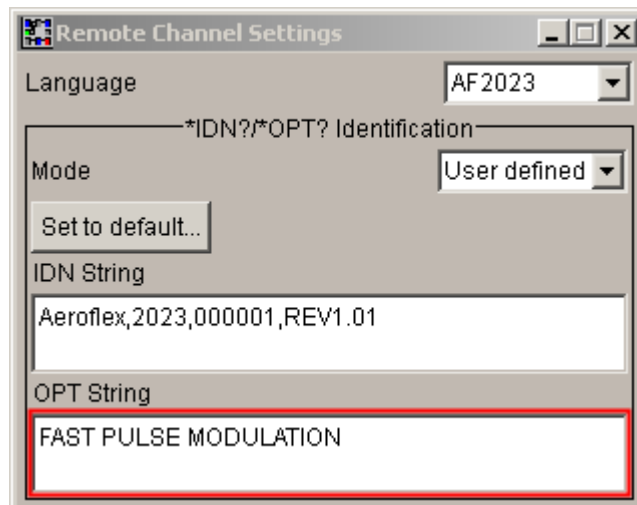
In “User defined” mode, press the “Set to default...” button to preset the corresponding IDN string and/or OPT string text boxes with the default settings from the selected remote emulation:



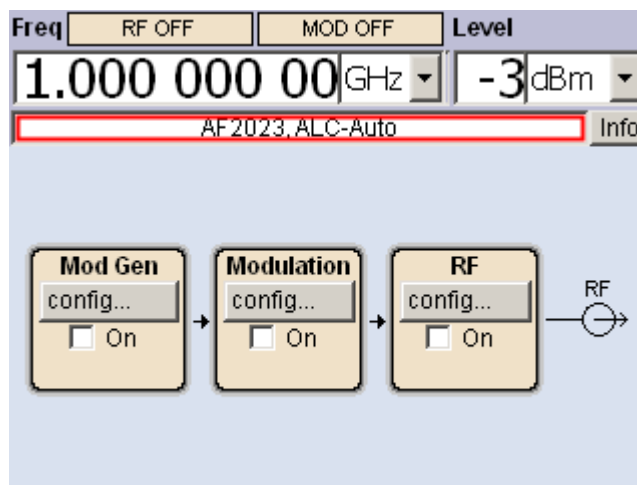
Then select the IDN String text box and edit the response text to \*IDN? queries. When finished, confirm the text:



Finally select the OPT String text box and edit the response text to \*OPT? queries. When finished, confirm the text:



Exit the Remote Channel Settings dialog by pressing the ESC key and verify the selected remote emulation on the SMB front panel:



## 4.2 Remote Operation

When the SMB uses a non-SCPI-compatible language, the remote emulation cannot be changed remotely. The emulation needs to be changed manually.

When the SMB uses an SCPI-compatible language, use the following commands to modify the remote emulation parameters:

Commands to modify remote emulation relevant settings	
Command	Comment
:SYSTem:IDENt <value>	<p>Sets the state of the identification mode.</p> <p>If the identification mode is set to USER, the value provided with the command :SYSTem:IDN &lt;value&gt; is returned on an *IDN? query and the value provided with the command :SYSTem:OPT &lt;value&gt; is returned on *OPT? query.</p> <p>If the identification mode is set to AUTO, the factory default setting is returned on a *IDN? query or an *OPT? query.</p> <p>The value range of character-type parameter &lt;value&gt; is</p> <ul style="list-style-type: none"> <li>• AUTO</li> <li>• USER</li> </ul>
:SYSTem:IDENt?	Gets the state of the identification mode.
:SYSTem:IDN <value>	<p>Sets the user-defined response to an *IDN? query.</p> <p>The string-type parameter &lt;value&gt; allows up to 128 characters. The parameter has to be enclosed in single or double quotes.</p>
:SYSTem:IDN?	Gets the user-defined response to an *IDN? query.
:SYSTem:OPT <value>	<p>Sets the user-defined response to a *OPT? query.</p> <p>The string-type parameter &lt;value&gt; allows up to 128 characters. The parameter has to be enclosed in single or double quotes.</p>
:SYSTem:OPT?	Gets the user-defined response to a *OPT? query.

Commands to modify remote emulation relevant settings	
Command	Comment
:SYSTem:LANGUage <value>	<p>Activates the remote emulation to be used for further communications. The value range of the string-type parameter &lt;value&gt; is:</p> <ul style="list-style-type: none"> <li>• "AF2023", "AF2024"</li> <li>• "AF2030", "AF2031", "AF2032", "AF2040", "AF2041", "AF2042"</li> <li>• "AN68017", "AN68037"</li> <li>• "E4428", "E8257", "E8663", "N5161", "N5181", "N5183"</li> <li>• "HP8340", "HP8341"</li> <li>• "HP83711", "HP83712", "HP83731", "HP83732"</li> <li>• "HP8642"</li> <li>• "HP8643", "HP8643", "HP8644", "HP8664", "HP8665"</li> <li>• "HP8647", "HP8648"</li> <li>• "HP8656", "HP8657"</li> <li>• "HP8673"</li> <li>• "SML01", "SML02", "SML03"</li> <li>• "SMT03"</li> <li>• "SMY01", "SMY02"</li> <li>• "EXIT"</li> </ul> <p><b>Attention:</b></p> <p>The remote emulation is changed immediately after parsing this command. Succeeding commands such as *WAI, *OPC or *OPC? are not allowed, since these commands may not be a part of the newly selected command set.</p> <p><b>Therefore, this command must be the one and only command in a program message unit.</b></p> <p>After sending this command, a delay of two seconds must be applied to the application software before the next command is sent.</p> <p>The parameter value "EXIT" must be used to return to the native SCPI command set of the instrument.</p>
:SYSTem:LANGUage?	Gets the current active remote emulation.

**Note:**

The upper-case and lower-case notation serves to distinguish between the long and the short form of a command. The instrument itself does not distinguish between upper-case and lower-case notation.

## 5 Emulating the Aeroflex 2023/2024

The following tables show the current implementation status of each command. Commands not shown in these tables are not supported.


IEEE488.2 functions	
Command syntax	Status
*CLS	✓
*ESE value *ESE? <b>Remark:</b> Layout of ESE register corresponds to Rohde & Schwarz signal generator.	✋
*ESR? <b>Remark:</b> Layout of ESE register corresponds to Rohde & Schwarz signal generator.	✋
*IDN? <b>Remark:</b> If the response does not match the requirements, a user-specific response to *IDN? and *OPT? can be applied on the instrument's front panel.	✋
*OPC *OPC?	✓
*OPT? <b>Remark:</b> If the response does not match the requirements, a user-specific response to *IDN? and *OPT? can be applied on the instrument's front panel.	✋
*RST	✓
*SRE value *SRE? <b>Remark:</b> Layout of ESE register corresponds to Rohde & Schwarz signal generator.	✋
*STB? <b>Remark:</b> Layout of ESE register corresponds to Rohde & Schwarz signal generator.	✋
*TRG	✓
*TST?	✓
*WAI	✓

Device-specific functions	
Command syntax	Status
AM[1][:DEPTH] value	✓



Device-specific functions	
Command syntax	Status
AM[1]:DN	✓
AM[1]:EXTAC	✓
AM[1]:EXTALC	○
AM[1]:EXTDC	✓
AM[1]:INC value	✓
AM[1]:INT	✓
AM[1]:MODF[:VALUE] value	✓
AM[1]:MODF:DN	✓
AM[1]:MODF:INC value	✓
AM[1]:MODF:PHASE value	○
AM[1]:MODF:RETN	✓
AM[1]:MODF:SIN	✓
AM[1]:MODF:SQR	✓
AM[1]:MODF:TRI	○
AM[1]:MODF:UP	✓
AM[1]:MODF:XFER	✓
AM[1]:OFF	✓
AM[1]:ON	✓
AM[1]:RETN	✓
AM[1]:UP	✓
AM[1]:XFER	✓
AM[1]?	✓
BLANK OFF	✓
BLANK ON	✓
BLANK?	✓
CCR?	○
CFRQ[:VALUE] value	✓
CFRQ:DN	✓
CFRQ:INC value	✓
CFRQ:MODE	✓
CFRQ:PHASE value	✓
CFRQ:RETN	✓
CFRQ:START	✓

Device-specific functions	
Command syntax	Status
CFRQ:STOP	✓
CFRQ:TIME	✓
CFRQ:UP	✓
CFRQ:XFER	✓
CFRQ?	✓
CSE value CSE?	○
CSR?	○
DCFMNL	✓
ERROR? <b>Remark:</b> Returns the original error message of the Rohde & Schwarz signal generator.	
FM[1][:DEVN] value	✓
FM[1]:DN	✓
FM[1]:EXTAC	✓
FM[1]:EXTALC	○
FM[1]:EXTDC	✓
FM[1]:INC value	✓
FM[1]:INT	✓
FM[1]:MODF[:VALUE] value	✓
FM[1]:MODF:DN	✓
FM[1]:MODF:INC value	✓
FM[1]:MODF:PHASE value	○
FM[1]:MODF:RETN	✓
FM[1]:MODF:SIN	✓
FM[1]:MODF:SQR	✓
FM[1]:MODF:TRI	○
FM[1]:MODF:UP	✓
FM[1]:MODF:XFER	✓
FM[1]:OFF	✓
FM[1]:ON	✓
FM[1]:RETN	✓
FM[1]:UP	✓

Device-specific functions	
Command syntax	Status
FM[1]:XFER	✓
FM[1]?	✓
FSTD value <b>Remark:</b> INT, EXT10DIR are supported.	✋
FSTD?	✓
GPIB value	✓
HCR?	○
HSE value HSE?	○
HSR?	○
KLOCK	✓
KUNLOCK	✓
MODE value <b>Remark:</b> Only the following mode combinations are supported: AM1 FM1 PM1 PULSE AM1, FM1 AM1, PM1 PULSE,FM1 PULSE,PM1 PULSE, FM1 PULSE, PM1	✋
MODE?	✓
MOD:OFF	✓
MOD:ON	✓
MOD?	✓
OPER?	✓
OUTPUT:DISABLE	○
OUTPUT:ENABLE	○
PM[1]:[DEVN] value	✓
PM[1]:DN	✓
PM[1]:EXTAC	✓

Device-specific functions	
Command syntax	Status
PM[1]:EXTALC	○
PM[1]:EXTDC	✓
PM[1]:INC value	✓
PM[1]:INT	✓
PM[1]:MODF[:VALUE] value	✓
PM[1]:MODF:DN	✓
PM[1]:MODF:INC value	✓
PM[1]:MODF:PHASE value	○
PM[1]:MODF:RETN	✓
PM[1]:MODF:SIN	✓
PM[1]:MODF:SQR	✓
PM[1]:MODF:TRI	○
PM[1]:MODF:UP	✓
PM[1]:MODF:XFER	✓
PM[1]:OFF	✓
PM[1]:ON	✓
PM[1]:RETN	✓
PM[1]:UP	✓
PM[1]:XFER	✓
PM[1]?	✓
PULSE:EXT	✓
PULSE:INT	✓
PULSE::MODF[:VALUE] value	✓
PULSE:OFF	✓
PULSE:ON	✓
PULSE?	✓
RFLV[:VALUE] value	✓
RFLV:DN	✓
RFLV:INC value	✓
RFLV:LIMIT:DISABLE	✓
RFLV:LIMIT:ENABLE	✓
RFLV:LIMIT[:VALUE] value	✓
RFLV:LIMIT:SAVE	○

Device-specific functions	
Command syntax	Status
RFLV:OFF	✓
RFLV:OFFS:DISABLE	✓
RFLV:OFFS:ENABLE	✓
RFLV:OFFS:SAVE	○
RFLV:OFFS:VALUE value	✓
RFLV:ON	✓
RFLV:RETN	✓
RFLV:TYPE value	✓
RFLV:UNITS value	✓
RFLV:UP	✓
RFLV:XFER	✓
RFLV?	✓
RFLV:LIMIT?	✓
RFLV:OFFS?	✓
SCR?	○
SSE value SSE?	○
SSR?	○
SWEEP:CFRQ:INC value	✓
SWEEP:CFRQ:LOGINC value	✓
SWEEP:CFRQ:START value	✓
SWEEP:CFRQ:STOP value	✓
SWEEP:CFRQ:TIME value	✓
SWEEP:CONT <b>Remark:</b> Identical to SWEEP:GO.	✋
SWEEP:DN	✓
SWEEP:GO	✓
SWEEP:HALT	✓
SWEEP:MODE value	✓
SWEEP:RESET	✓
SWEEP:TRIG value <b>Remark:</b> OFF, START, STEP are supported.	✋

Device-specific functions	
Command syntax	Status
SWEEP:TYPE value	✓
SWEEP:UP	✓
SWEEP:XFER	○
SWEEP?	✓
SWEEP:CFRQ?	✓


## 6 Emulating the Aeroflex 2030-2032, 2040-2042


The following tables show the current implementation status of each command. Commands not shown in these tables are not supported.

IEEE488.2 functions	
Command syntax	Status
*CLS	✓
*ESE value *ESE? <b>Remark:</b> Layout of ESE register corresponds to Rohde & Schwarz signal generator.	✋
*ESR? <b>Remark:</b> Layout of ESE register corresponds to Rohde & Schwarz signal generator.	✋
*IDN? <b>Remark:</b> If the response does not match the requirements, a user-specific response to *IDN? and *OPT? can be applied on the instrument's front panel.	✋
*OPC *OPC?	✓
*OPT? <b>Remark:</b> If the response does not match the requirements, a user-specific response to *IDN? and *OPT? can be applied on the instrument's front panel.	✋
*RST	✓
*SRE value *SRE? <b>Remark:</b> Layout of ESE register corresponds to Rohde & Schwarz signal generator.	✋
*STB? <b>Remark:</b> Layout of ESE register corresponds to Rohde & Schwarz signal generator.	✋
*TRG	✓
*TST?	✓
*WAI	✓

Device-specific functions	
Command syntax	Status
AM[1] [:DEPTH] value	✓
AM[1]:DN	✓
AM[1]:EXT1AC	✓
AM[1]:EXT1DC	✓
AM[1]:INC value	✓
AM[1]:INTF1	✓
AM[1]:INTF2	✓
AM[1]:INTF3	✓
AM[1]:INTF4	✓
AM[1]:INTF5	✓
AM[1]:INTF6	✓
AM[1]:OFF	✓
AM[1]:ON	✓
AM[1]:RETN	✓
AM[1]:UP	✓
AM[1]:XFER	✓
AM[1]?	✓
BLANK value <b>Remark:</b> 0, 1, 4 are supported.	✋
BACKL:ON	✓
BACKL:OFF	✓
CFRQ[:VALUE] value	✓
CFRQ:DN	✓
CFRQ:INC value	✓
CFRQ:PHASE value	✓
CFRQ:RETN	✓
CFRQ:UP	✓
CFRQ:XFER	✓
CFRQ?	✓
CCR?	○
CSE value CSE?	○




Device-specific functions	
Command syntax	Status
CSR?	○
DATE?	✓
DCFMNL	✓
ELAPSED?	✓
ERROR? <b>Remark:</b> Returns the original error message of the Rohde & Schwarz signal generator.	
FM[1][:DEVN] value	✓
FM[1]:DN	✓
FM[1]:EXT1AC	✓
FM[1]:EXT1DC	✓
FM[1]:INC value	✓
FM[1]:INTF1	✓
FM[1]:INTF2	✓
FM[1]:INTF3	✓
FM[1]:INTF4	✓
FM[1]:INTF5	✓
FM[1]:INTF6	✓
FM[1]:OFF	✓
FM[1]:ON	✓
FM[1]:RETN	✓
FM[1]:UP	✓
FM[1]:XFER	✓
FM[1]?	✓
FSTD value <b>Remark:</b> INT10 , EXT5, EXT10 are supported.	
FSTD?	✓
HCR?	○
HSE value HSE?	○
HSR?	○

Device-specific functions	
Command syntax	Status
IMODE value <b>Remark:</b> NORMAL, SWEEPER are supported.	
INTF1 2 3 4 5 6[:FREQ] value	✓
INTF1 2 3 4 5 6:CTC1	○
INTF1 2 3 4 5 6:CTC2	○
INTF1 2 3 4 5 6:DN	✓
INTF1 2 3 4 5 6:INC value	✓
INTF1 2 3 4 5 6:PHASE value	○
INTF1 2 3 4 5 6:SIN	✓
INTF1 2 3 4 5 6:SQU	✓
INTF1 2 3 4 5 6:RETN	○
INTF1 2 3 4 5 6:TEMP	○
INTF1 2 3 4 5 6:TRI	○
INTF1 2 3 4 5 6:UP	✓
INTF1 2 3 4 5 6:USER	○
INTF1 2 3 4 5 6:XFER	✓
INTF1 2 3 4 5 6?	✓
KLOCK	✓
KUNLOCK	✓
LF:ON	✓
LF:OFF	✓
LF?	✓
LFGF[:VALUE] value	✓
LFGF:DN	✓
LFGF:INC value	✓
LFGF:RETN	✓
LFGF:SIN	✓
LFGF:SQU	✓
LFGF:TRI	○
LFGF:UP	✓
LFGF:XFER	✓
LFGF?	✓

Device-specific functions	
Command syntax	Status
LFGL[:VALUE] value	✓
LFGL:DN	✓
LFGL:INC value	✓
LFGL:RETN	✓
LFGL:UNITS value <b>Remark:</b> V, MV, UV are not supported.	✋
LFGL:UP	✓
LFGL:XFER	✓
LFGL?	✓
MODE value <b>Remark:</b> Only the following mode combinations are supported: AM1 FM1 PM1 PULSE AM1, FM1 AM1, PM1 PULSE,FM1 PULSE,PM1	✋
MODE?	✓
MOD:OFF	✓
MOD:ON <b>Remark:</b> Re-enables previously enabled analogous modulations.	✋
MOD?	✓
OPER?	✓
PGEN:DELAY value	○
PGEN:D_DELAY value	✓
PGEN:RATE value	✓
PGEN:SOURCE value	✓
PGEN:STATE value	✓
PGEN:TRIGGER value	✓
PGEN:WIDTH value	✓
PM[1][:DEVN] value	✓

Device-specific functions	
Command syntax	Status
PM[1]:DN	✓
PM[1]:EXT1AC	✓
PM[1]:EXT1DC	✓
PM[1]:INC value	✓
PM[1]:INTF1	✓
PM[1]:INTF2	✓
PM[1]:INTF3	✓
PM[1]:INTF4	✓
PM[1]:INTF5	✓
PM[1]:INTF6	✓
PM[1]:OFF	✓
PM[1]:ON	✓
PM[1]:RETN	✓
PM[1]:UP	✓
PM[1]:XFER	✓
PM[1]?	✓
PULSE:CAL:ENABLE	○
PULSE:CAL:DISABLE	○
PULSE:OFF	✓
PULSE:ON	✓
PULSE?	✓
PULSE:CAL?	○
RFLV[:VALUE] value	✓
RFLV:DN	✓
RFLV:HYST:DISABLE	○
RFLV:HYST:ENABLE	○
RFLV:INC value	✓
RFLV:LIMIT[:VALUE] value	✓
RFLV:LIMIT:DISABLE	✓
RFLV:LIMIT:ENABLE	✓
RFLV:LIMIT:SAVE	○
RFLV:OFF	✓
RFLV:OFFS:DISABLE	✓

Device-specific functions	
Command syntax	Status
RFLV:OFFS:ENABLE	✓
RFLV:OFFS:OFF	✓
RFLV:OFFS:ON	✓
RFLV:OFFS:SAVE	○
RFLV:OFFS:VALUE value	✓
RFLV:ON	✓
RFLV:RETN	✓
RFLV:TYPE value	✓
RFLV:UNITS value	✓
RFLV:UP	✓
RFLV:XFER	✓
RFLV?	✓
RFLV:HYST?	○
RFLV:LIMIT?	✓
RFLV:OFFS?	✓
SCR?	○
SSE value SSE?	○
SSR?	○
SWEEP:CALC	○
SWEEP:CFRQ:STARTvalue	✓
SWEEP:CFRQ:STEP value	✓
SWEEP:CFRQ:STOP value	✓
SWEEP:CFRQ:TIME value	✓
SWEEP:CONT <b>Remark:</b> Identical to SWEEP:GO.	✋
SWEEP:GO	✓
SWEEP:HALT	✓
SWEEP:INTF:STARTvalue	✓
SWEEP:INTF:STEP value	✓
SWEEP:INTF:STOP value	✓
SWEEP:INTF:TIME value	✓






Device-specific functions	
Command syntax	Status
SWEEP:LFGF:STARTvalue	✓
SWEEP:LFGF:STEP value	✓
SWEEP:LFGF:STOP value	✓
SWEEP:LFGF:TIME value	✓
SWEEP:MODE value	✓
SWEEP:RESET	✓
SWEEP:RFLV:STARTvalue	✓
SWEEP:RFLV:STEP value	✓
SWEEP:RFLV:STOP value	✓
SWEEP:RFLV:TIME value	✓
SWEEP:TYPE value <b>Remark:</b> CFRQ, RFLV, LFGF, INTF1, INTF2, INTF3, INTF4, INTF5, INTF6 are supported.	
SWEEP?	✓
SWEEP:CFRQ?	✓
SWEEP:INTF?	✓
SWEEP:LFGF?	✓
SWEEP:RFLV?	✓
SWEEP?	✓
TIME?	✓


## 7 Emulating the Anritsu 68017, 68037


The remote emulations AN68017 and AN68037 are available only if one of the following options is installed:

- SMB-B112 RF Path 100 kHz to 12.75 GHz with electronic step attenuator
- SMB-B112L RF Path 100 kHz to 12.75 GHz without step attenuator
- SMB-B120 RF Path 100 kHz to 20 GHz with mechanical step attenuator
- SMB-B120L RF Path 100 kHz to 20 GHz without step attenuator
- SMB-B140 RF Path 100 kHz to 40 GHz with mechanical step attenuator
- SMB-B140L RF Path 100 kHz to 40 GHz without step attenuator

The following tables show the current implementation status of each command. Commands not shown in these tables are not supported.






IEEE488.2 functions	
Command syntax	Status
*CLS	✓
*ESE value *ESE? <b>Remark:</b> Layout of ESE register corresponds to Rohde & Schwarz signal generator.	
*ESR? <b>Remark:</b> Layout of ESE register corresponds to Rohde & Schwarz signal generator.	
*IDN? <b>Remark:</b> If the response does not match the requirements, a user-specific response to *IDN? and *OPT? can be applied on the instrument's front panel.	
*OPC *OPC?	✓
*OPT? <b>Remark:</b> If the response does not match the requirements, a user-specific response to *IDN? and *OPT? can be applied on the instrument's front panel.	
*RCL value	✓
*RST	✓
*SAV value	✓
*SRE value *SRE? <b>Remark:</b> Layout of ESE register corresponds to Rohde & Schwarz signal generator.	



IEEE488.2 functions	
Command syntax	Status
*STB? <b>Remark:</b> Layout of ESE register corresponds to Rohde & Schwarz signal generator.	
*TRG	✓
*TST?	✓
*WAI	✓

Device-specific functions	
Command syntax	Status
ABORt	✓
CALibration:DCFM	✓
CALibration:IQ:FULL	✓
DISPlay:ANNotation:AMPLitude[:STATe] value DISPlay:ANNotation:AMPLitude[:STATe]?	✓
DISPlay:ANNotation:FREQuency[:STATe] value DISPlay:ANNotation:FREQuency[:STATe]?	✓
DISPlay:REMote value DISPlay:REMote?	✓
INITiate:CONTinuous[:ALL] value INITiate:CONTinuous[:ALL]?	○
INITiate:IMMediate[:ALL]	○
MEMory:CATalog[:ALL]?	✓
MEMory:CATalog:LIST?	✓
MEMory:CATalog:ULFT?	✓
MEMory:CoPY[:NAME] value, value	✓
MEMory:DATA value,value MEMory:DATA? value	✓
MEMory:DATA:UNPRotected value, value MEMory:DATA:UNPRotected? Value <b>Remark:</b> Implementation identical to MEMory:DATA[?].	
MEMory:DELeTe:ALL	✓
MEMory:DELeTe:LIST	✓
MEMory:DELeTe[:NAME] value	✓
MEMory:DELeTe:ULFT	✓




Device-specific functions	
Command syntax	Status
MEMory:FREE[:ALL]	✓
MEMory:LOAD:LIST value	✓
MEMory:MOVE	✓
MEMory:STORE:LIST value	✓
MMEMory:CATalog[:ALL]? value	✓
MMEMory:COpy value, value	✓
MMEMory:DATA value, value MMEMory:DATA? value	✓
MMEMory:DELete[:NAME] value	✓
MMEMory:LOAD:LIST value	✓
MMEMory:LOAD:MOVE value, value	✓
MMEMory:STORe:LIST value	✓
OUTPut:MODulation[:STATe] value OUTPut:MODulation[:STATe]?	✓
OUTPut[:STATe] value OUTPut[:STATe]?	✓
[SOURce:]AM[1] [:DEPth][:LINear] value [SOURce:]AM[1] [:DEPth][:LINear]?	✓
[SOURce:]AM[1] [:DEPth]:STEP[:INCRement] value [SOURce:]AM[1] [:DEPth]:STEP[:INCRement]?	✓
[SOURce:]AM[1]:EXTernal[1]:COUPling value [SOURce:]AM[1]:EXTernal[1]:COUPling?	✓
[SOURce:]AM[1]:INTernal[1]:FREQUency value [SOURce:]AM[1]:INTernal[1]:FREQUency?	✓
[SOURce:]AM[1]:INTernal[1]:FREQUency:STEP[:INCRement] value [SOURce:]AM[1]:INTernal[1]:FREQUency:STEP[:INCRement]?	✓
[SOURce:]AM[1]:INTernal[1]:FUNCTion:SHAPE value [SOURce:]AM[1]:INTernal[1]:FUNCTion:SHAPE? <b>Remark:</b> SINE is supported.	✋
[SOURce:]AM[1]:INTernal[1]:SWEep:TIME value [SOURce:]AM[1]:INTernal[1]:SWEep:TIME? <b>Remark:</b> Dwell time is assumed.	✋

Device-specific functions	
Command syntax	Status
[SOURce:]AM[1]:INTErnal[1]:SWEep:TRIGger value [SOURce:]AM[1]:INTErnal[1]:SWEep:TRIGger? <b>Remark:</b> BUS, EXTErnal, IMMEDIATE are supported.	
[SOURce:]AM[1]:SOURce value [SOURce:]AM[1]:SOURce? <b>Remark:</b> EXTErnal[1], INTErnal[1] are supported.	
[SOURce:]AM[1]:STATe value [SOURce:]AM[1]:STATe?	✓
[SOURce:]CORRection:FLATness:LOAD value	✓
[SOURce:]CORRection:FLATness:PAIR value, value {value, value} [SOURce:]CORRection:FLATness:PAIR?	✓
[SOURce:]CORRection:FLATness:POINts?	✓
[SOURce:]CORRection:FLATness:PRESet	✓
[SOURce:]CORRection:FLATness:STORe value	✓
[SOURce:]CORRection[:STATe] value [SOURce:]CORRection[:STATe]?	✓
[SOURce:]FM[1][:DEViation] value [SOURce:]FM[1][:DEViation]? <b>Remark:</b> DOWN, MINImum, Numeric, UP are supported.	
[SOURce:]FM[1][:DEViation]:STEP[:INCRement] value [SOURce:]FM[1][:DEViation]:STEP[:INCRement]?	✓
[SOURce:]FM[1]2:EXTErnal[12]:COUPling value [SOURce:]FM[1]2:EXTErnal[1]:COUPling?	✓
[SOURce:]FM[1]:INTErnal[1]:FREQUency value [SOURce:]FM[1]:INTErnal[1]:FREQUency?	✓
[SOURce:]FM[1]:INTErnal[1]:FREQUency:STEP[:INCRement] value [SOURce:]FM[1]:INTErnal[1]:FREQUency:STEP[:INCRement]?	✓
[SOURce:]FM[1]:INTErnal[1]:FUNCTion:SHAPE value [SOURce:]FM[1]:INTErnal[1]:FUNCTion:SHAPE? <b>Remark:</b> SINE is supported.	
[SOURce:]FM[1]:INTErnal[1]:SWEep:TIME value [SOURce:]FM[1]:INTErnal[1]:SWEep:TIME? <b>Remark:</b> Dwell time is assumed.	



Device-specific functions	
Command syntax	Status
[SOURce:]FM[1]:INTErnal[1]:SWEep:TRIGger value [SOURce:]FM[1]:INTErnal[1]:SWEep:TRIGger? <b>Remark:</b> BUS, EXTErnal, IMMEDIATE are supported.	
[SOURce:]FM[1]:SOURce value [SOURce:]FM[1]:SOURce? <b>Remark:</b> EXTErnal[1], INTErnal[1] are supported.	
[SOURce:]FM[1]:STATe value [SOURce:]FM[1]:STATe?	✓
[SOURce:]FREQuency[:CW] value [SOURce:]FREQuency[:CW]?	✓
[SOURce:]FREQuency[:CW]:STEP[:INCRement] value [SOURce:]FREQuency[:CW]:STEP[:INCRement]?	✓
[SOURce:]FREQuency:FIXed value [SOURce:]FREQuency:FIXed?	✓
[SOURce:]FREQuency:MODE [SOURce:]FREQuency:MODE?	✓
[SOURce:]FREQuency:OFFSet value [SOURce:]FREQuency:OFFSet?	✓
[SOURce:]FREQuency:OFFSet:STATe value [SOURce:]FREQuency:OFFSet:STATe?	✓
[SOURce:]FREQuency:REFerence value [SOURce:]FREQuency:REFerence?	✓
[SOURce:]FREQuency:REFerence:STATe value [SOURce:]FREQuency:REFerence:STATe?	✓
[SOURce:]FREQuency:STARt value [SOURce:]FREQuency:STARt?	✓
[SOURce:]FREQuency:STOP value [SOURce:]FREQuency:STOP?	✓
[SOURce:]LFOutput:AMPLitude value [SOURce:]LFOutput:AMPLitude?	✓
[SOURce:]LFOutput:FUNCTion[1]:FREQuency value [SOURce:]LFOutput:FUNCTion[1]:FREQuency?	✓
[SOURce:]LFOutput:FUNCTion[1]:FREQuency:STEP[:INCRement] value [SOURce:]LFOutput:FUNCTion[1]:FREQuency:STEP[:INCRement]?	✓

Device-specific functions	
Command syntax	Status
[SOURce:]LFOutput:FUNCTion[1]:PERiod value [SOURce:]LFOutput:FUNCTion[1]:PERiod?	✓
[SOURce:]LFOutput:FUNCTion[1]:PERiod:STEP[:INCRement] value [SOURce:]LFOutput:FUNCTion[1]:PERiod:STEP[:INCRement]?	✓
[SOURce:]LFOutput:FUNCTion[1]:PWIDth value [SOURce:]LFOutput:FUNCTion[1]:PWIDth?	✓
[SOURce:]LFOutput:FUNCTion[1]:PWIDth:STEP[:INCRement] value [SOURce:]LFOutput:FUNCTion[1]:PWIDth:STEP[:INCRement]?	✓
[SOURce:]LFOutput:FUNCTion[1]:SHAPE value [SOURce:]LFOutput:FUNCTion[1]:SHAPE? <b>Remark:</b> SINE is supported.	✋
[SOURce:]LFOutput:FUNCTion[1]:SWEep:TRIGger value [SOURce:]LFOutput:FUNCTion[1]:SWEep:TRIGger? <b>Remark:</b> BUS, EXTernal, IMMEDIATE are supported.	✋
[SOURce:]LFOutput:FUNCTion[1]:SOURce value [SOURce:]LFOutput:FUNCTion[1]:SOURce? <b>Remark:</b> INTernal[1] is supported.	✋
[SOURce:]LFOutput:FUNCTion[1]:STATE value [SOURce:]LFOutput:FUNCTion[1]:STATE?	✓
[SOURce:]LIST:DIRection?	○
[SOURce:]LIST:DWELI value {,value} [SOURce:]LIST:DWELI? <b>Remark:</b> First parameter value is evaluated, rest is ignored.	✋
[SOURce:]LIST:DWELI:POINts?	✓
[SOURce:]LIST:DWELI:TYPE value [SOURce:]LIST:DWELI:TYPE?	✓
[SOURce:]LIST:FREQuency value {,value} [SOURce:]LIST:FREQuency?	✓
[SOURce:]LIST:FREQuency:POINts?	✓
[SOURce:]LIST:MODE value [SOURce:]LIST:MODE?	✓
[SOURce:]LIST:POWEr value {,value} [SOURce:]LIST:POWEr?	✓



Device-specific functions	
Command syntax	Status
[SOURce:]LIST:POWer:POINts?	✓
[SOURce:]LIST:TYPE value [SOURce:]LIST:TYPE?	✓
[SOURce:]LIST:TYPE:LIST:INITialize:FSTep	✓
[SOURce:]LIST:TYPE:LIST:INITialize:PREset	✓
[SOURce:]PHASe[:ADJust] value [SOURce:]PHASe[:ADJust]?	✓
[SOURce:]PHASe:REFerence	✓
[SOURce:]PM[1][:DEViation] value [SOURce:]PM[1][:DEViation]? <b>Remark:</b> DOWN, MINImum, Numeric, UP are supported.	✋
[SOURce:]PM[1][:DEViation]:STEP[:INCRement] value [SOURce:]PM[1][:DEViation]:STEP[:INCRement]?	✓
[SOURce:]PM[1]:EXTernal[1]:COUPling value [SOURce:]PM[1]:EXTernal[1]:COUPling?	✓
[SOURce:]PM[1]:INTernal[1]:FREQUency value [SOURce:]PM[1]:INTernal[1]:FREQUency?	✓
[SOURce:]PM[1]:INTernal[1]:FREQUency:STEP[:INCRement] value [SOURce:]PM[1]:INTernal[1]:FREQUency:STEP[:INCRement]?	✓
[SOURce:]PM[1]:INTernal[1]:FUNCTion:SHAPE value [SOURce:]PM[1]:INTernal[1]:FUNCTion:SHAPE? <b>Remark:</b> SINE is supported.	✋
[SOURce:]PM[1]:INTernal[1]:SWEep:TIME value [SOURce:]PM[1]:INTernal[1]:SWEep:TIME? <b>Remark:</b> Dwell time is assumed.	✋
[SOURce:]PM[1]:INTernal[1]:SWEep:TRIGger value [SOURce:]PM[1]:INTernal[1]:SWEep:TRIGger? <b>Remark:</b> BUS, EXTernal, IMMEDIATE are supported.	✋
[SOURce:]PM[1]:SOURce value [SOURce:]PM[1]:SOURce? <b>Remark:</b> EXTernal[1], INTernal[1] are supported.	✋
[SOURce:]FM[1]:STATe value [SOURce:]FM[1]:STATe?	✓

Device-specific functions	
Command syntax	Status
[SOURce:]POWer:ALC[:STATe] value [SOURce:]POWer:ALC[:STATe]?	✓
[SOURce:]POWer:ATTenuation value [SOURce:]POWer:ATTenuation?	✓
[SOURce:]POWer:ATTenuation:AUTO value [SOURce:]POWer:ATTenuation:AUTO?	✓
[SOURce:]POWer[:LEVel][:IMMediate][:AMPLitude] value [SOURce:]POWer[:LEVel][:IMMediate][:AMPLitude]?	✓
[SOURce:]POWer[:LEVel][:IMMediate][:AMPLitude]:STEP[:INCRement] value [SOURce:]POWer[:LEVel][:IMMediate][:AMPLitude]:STEP[:INCRement]?	✓
[SOURce:]POWer[:LEVel][:IMMediate]:OFFSet value [SOURce:]POWer[:LEVel][:IMMediate]:OFFSet?	✓
[SOURce:]POWer:MODE value [SOURce:]POWer:MODE?	✓
[SOURce:]POWer:REFerence value [SOURce:]POWer:REFerence?	✓
[SOURce:]POWer:REFerence:STATe value [SOURce:]POWer:REFerence:STATe?	✓
[SOURce:]POWer:STARt value [SOURce:]POWer:STARt?	✓
[SOURce:]POWer:STOP value [SOURce:]POWer:STOP?	✓
[SOURce:]PULM:EXTernal:POLarity value [SOURce:]PULM:EXTernal:POLarity?	✓
[SOURce:]PULM:INTernal[1]:FREQuency value [SOURce:]PULM:INTernal[1]:FREQuency?	✓
[SOURce:]PULM:INTernal[1]:FREQuency:STEP[:INCRement] value [SOURce:]PULM:INTernal[1]:FREQuency:STEP[:INCRement]?	✓
[SOURce:]PULM:INTernal[1]:FUNctioN:SHAPE value [SOURce:]PULM:INTernal[1]:FUNctioN:SHAPE? <b>Remark:</b> SQUare is supported.	
[SOURce:]PULM:INTernal[1]:PERiod value [SOURce:]PULM:INTernal[1]:PERiod?	✓
[SOURce:]PULM:INTernal[1]:PERiod:STEP[:INCRement] value [SOURce:]PULM:INTernal[1]:PERiod:STEP[:INCRement]?	✓

Device-specific functions	
Command syntax	Status
[SOURce:]PULM:INTernal[1]:PWIDth value [SOURce:]PULM:INTernal[1]:PWIDth?	✓
[SOURce:]PULM:INTernal[1]:PWIDth:STEP[:INCRement] value [SOURce:]PULM:INTernal[1]:PWIDth:STEP[:INCRement]?	✓
[SOURce:]PULM:INTernal[1]:SOURce value [SOURce:]PULM:INTernal[1]:SOURce? <b>Remark:</b> EXTernal[1], INTernal are supported.	✋
[SOURce:]PULM:INTernal[1]:STATe value [SOURce:]PULM:INTernal[1]:STATe?	✓
[SOURce:]ROSCillator:SOURce value [SOURce:]ROSCillator:SOURce?	✓
[SOURce:]SWEep:DWELI value [SOURce:]SWEep:DWELI?	✓
[SOURce:]SWEep:POINts value [SOURce:]SWEep:POINts?	✓
STATus:OPERation:CONDition?	✓
STATus:OPERation:ENABle value STATus:OPERation:ENABle?	✓
STATus:OPERation[:EVENT]?	✓
STATus:OPERation:NTRansition value STATus:OPERation: NTRansition?	✓
STATus:OPERation:PTRansition value STATus:OPERation: PTRansition?	✓
STATus:PRESet	✓
STATus:QUESTionable:CONDition?	✓
STATus:QUESTionable:ENABle value STATus:QUESTionable:ENABle?	✓
STATus:QUESTionable[:EVENT]?	✓
STATus:QUESTionable:NTRansition value STATus:QUESTionable: NTRansition?	✓
STATus:QUESTionable:PTRansition value STATus:QUESTionable: PTRansition?	✓
SYSTem:CAPability?	○
SYSTem:COMMunicate:GPIB:ADDRess value SYSTem:COMMunicate:GPIB:ADDRess?	✓

Device-specific functions	
Command syntax	Status
SYSTem:COMMunicate:GTLocal	✓
SYSTem:COMMunicate:LAN:CONFig value SYSTem:COMMunicate:LAN:CONFig?	✓
SYSTem:COMMunicate:LAN:GATeway value SYSTem:COMMunicate:LAN:GATeway?	✓
SYSTem:COMMunicate:LAN:HOSTname value SYSTem:COMMunicate:LAN:HOSTname?	✓
SYSTem:COMMunicate:LAN:IP value SYSTem:COMMunicate:LAN:IP?	✓
SYSTem:COMMunicate:LAN:SUBNet value SYSTem:COMMunicate:LAN:SUBNet?	✓
SYSTem:COMMunicate:SERial:BAUD value SYSTem:COMMunicate:SERial:BAUD?	✓
SYSTem:DATE value SYSTem:DATE?	✓
SYSTem:ERRor:CODE[:NEXT]? <b>Remark:</b> Returns the original error code of the Rohde & Schwarz signal generator.	
SYSTem:ERRor[:NEXT]? <b>Remark:</b> Returns the original error message of the Rohde & Schwarz signal generator.	
SYSTem:IDN value SYSTem:IDN?	✓
SYSTem:OPT value SYSTem:OPT?	✓
SYSTem:PDOWn	✓
SYSTem:PRESet	✓
SYSTem:PRESet:ALL	✓
SYSTem:SECurity:DISPlay value SYSTem:SECurity:DISPlay?	✓
SYSTem:TIME value SYSTem:TIME?	✓
SYSTem:VERSion?	✓
TRIGger[:SEQuence][:IMMediate]	✓
TRIGger[:SEQuence]:SLOPe value TRIGger[:SEQuence]:SLOPe?	✓



Device-specific functions	
Command syntax	Status
TRIGger[:SEQuence]:SOURce value TRIGger[:SEQuence]:SOURce? <b>Remark:</b> BUS, EXTernal, IMMEDIATE are supported.	
UNIT:POWer value UNIT:POWer? <b>Remark:</b> DB, DBM, DBV, DBMV, DBUV, V, MV, UV are supported.	

## 8 Emulating the Agilent E4428, E8257, E8663, N5161, N5181, N5183

The remote emulations E8257, E8663 and N5183 are available only if one of the following options is installed:

- SMB-B112 RF Path 100 kHz to 12.75 GHz with electronic step attenuator
- SMB-B112L RF Path 100 kHz to 12.75 GHz without step attenuator
- SMB-B120 RF Path 100 kHz to 20 GHz with mechanical step attenuator
- SMB-B120L RF Path 100 kHz to 20 GHz without step attenuator
- SMB-B140 RF Path 100 kHz to 40 GHz with mechanical step attenuator
- SMB-B140L RF Path 100 kHz to 40 GHz without step attenuator

The file system implemented in the E4428 / E8257 / E8663 / N5161 / N5181 / N5183 is not compatible with the file system implemented in the SMB. The SMB does not support RAM-based file storage; all file contents are stored persistently.

Furthermore, the E4428 / E8257 / E8663 / N5161 / N5181 / N5183 directory tree is not compatible with the SMB directory tree. The following tables show the mapping of the E4428 / E8257 / E8663 / N5161 / N5181 / N5183 directory tree to the SMB directory tree:

Directory tree mapping	
E4428	SMB
/user/list/	/var/user/Agilent/Esg/user/list/
/user/userflat/	/var/user/Agilent/Esg/user/userflat/

Directory tree mapping	
N5161 / N5181 / N5183	SMB
/user/list/	/var/user/Agilent/Mxg/user/list/
/user/userflat/	/var/user/Agilent/Mxg/user/userflat/







Directory tree mapping	
E8257 / E8663	SMB
/user/list/	/var/user/Agilent/Psg/user/list/
/user/userflat/	/var/user/Agilent/Psg/user/userflat/


When E4428 / E8257 / E8663 / N5161 / N5181 / N5183 remote application is applied, the corresponding SMB directory tree is created automatically.

The file format of the E4428 / E8257 / E8663 / N5161 / N5181 / N5183 is different than the file format used in the SMB. Therefore,

- E4428 / E8257 / E8663 / N5161 / N5181 / N5183 formatted files must not be transferred via FTP or USB memory to the SMB.
- E4428 / E8257 / E8663 / N5161 / N5181 / N5183 formatted files must be transferred via remote interface, since the remote emulation performs the required conversion to the SMB file format.

The following tables show the current implementation status of each command. Commands not shown in these tables are not supported.





IEEE488.2 functions	
Command syntax	Status
*CLS	✓
*ESE value *ESE? <b>Remark:</b> Layout of ESE register corresponds to Rohde & Schwarz signal generator.	
*ESR? <b>Remark:</b> Layout of ESE register corresponds to Rohde & Schwarz signal generator.	
*IDN? <b>Remark:</b> If the response does not match the requirements, a user-specific response to *IDN? and *OPT? can be applied on the instrument's front panel.	
*OPC *OPC?	✓
*OPT? <b>Remark:</b> If the response does not match the requirements, a user-specific response to *IDN? and *OPT? can be applied on the instrument's front panel.	
*RST	✓
*SRE value *SRE? <b>Remark:</b> Layout of ESE register corresponds to Rohde & Schwarz signal generator.	
*STB? <b>Remark:</b> Layout of ESE register corresponds to Rohde & Schwarz signal generator.	
*TRG	✓
*TST?	✓
*WAI	✓

Device-specific functions	
Command syntax	Status
ABORt	✓
CALibration:DCFM	✓
CALibration:IQ:FULL	✓
DISPlay:ANNotation:AMPLitude[:STATe] value DISPlay:ANNotation:AMPLitude[:STATe]?	✓
DISPlay:ANNotation:FREQuency[:STATe] value DISPlay:ANNotation:FREQuency[:STATe]?	✓
DISPlay:REMote value DISPlay:REMote?	✓
INITiate:CONTInuous[:ALL] value INITiate:CONTInuous[:ALL]?	○
INITiate:IMMEDIATE[:ALL]	○
MEMory:CATalog[:ALL]?	✓
MEMory:CATalog:LIST?	✓
MEMory:CATalog:ULFT?	✓
MEMory:COpy[:NAME] value, value	✓
MEMory:DATA value, value MEMory:DATA? value	✓
MEMory:DATA:UNPRotected value, value MEMory:DATA:UNPRotected? Value <b>Remark:</b> Implementation identical to MEMory:DATA[?].	
MEMory:DELeTe:ALL	✓
MEMory:DELeTe:LIST	✓
MEMory:DELeTe[:NAME] value	✓
MEMory:DELeTe:ULFT	✓
MEMory:FREE[:ALL]	✓
MEMory:LOAD:LIST value	✓
MEMory:MOVE	✓
MEMory:STORE:LIST value	✓
MMEMory:CATalog[:ALL]? value	✓
MMEMory:COpy value, value	✓
MMEMory:DATA value, value MMEMory:DATA? value	✓
MMEMory:DELeTe[:NAME] value	✓






Device-specific functions	
Command syntax	Status
MMEMory:LOAD:LIST value	✓
MMEMory:LOAD:MOVE value, value	✓
MMEMory:STORe:LIST value	✓
OUTPut:MODulation[:STATe] value OUTPut:MODulation[:STATe]?	✓
OUTPut[:STATe] value OUTPut[:STATe]?	✓
[SOURce:]AM[1] [:DEPth][:LINear] value [SOURce:]AM[1] [:DEPth][:LINear]?	✓
[SOURce:]AM[1] [:DEPth]:STEP[:INCRement] value [SOURce:]AM[1] [:DEPth]:STEP[:INCRement]?	✓
[SOURce:]AM[1]:EXTernal[1]:COUPling value [SOURce:]AM[1]:EXTernal[1]:COUPling?	✓
[SOURce:]AM[1]:INTernal[1]:FREQUency value [SOURce:]AM[1]:INTernal[1]:FREQUency?	✓
[SOURce:]AM[1]:INTernal[1]:FREQUency:STEP[:INCRement] value [SOURce:]AM[1]:INTernal[1]:FREQUency:STEP[:INCRement]?	✓
[SOURce:]AM[1]:INTernal[1]:FUNCTion:SHAPE value [SOURce:]AM[1]:INTernal[1]:FUNCTion:SHAPE? <b>Remark:</b> SINE is supported.	✋
[SOURce:]AM[1]:INTernal[1]:SWEep:TIME value [SOURce:]AM[1]:INTernal[1]:SWEep:TIME? <b>Remark:</b> Dwell time is assumed.	✋
[SOURce:]AM[1]:INTernal[1]:SWEep:TRIGger value [SOURce:]AM[1]:INTernal[1]:SWEep:TRIGger? <b>Remark:</b> BUS, EXTernal, IMMEDIATE are supported.	✋
[SOURce:]AM[1]:SOURce value [SOURce:]AM[1]:SOURce? <b>Remark:</b> EXTernal[1], INTernal[1] are supported.	✋
[SOURce:]AM[1]:STATe value [SOURce:]AM[1]:STATe?	✓
[SOURce:]CORRection:FLATness:LOAD value	✓



Device-specific functions	
Command syntax	Status
[SOURce:]CORRection:FLATness:PAIR value, value {value, value} [SOURce:]CORRection:FLATness:PAIR?	✓
[SOURce:]CORRection:FLATness:POINts?	✓
[SOURce:]CORRection:FLATness:PRESet	✓
[SOURce:]CORRection:FLATness:STORe value	✓
[SOURce:]CORRection[:STATe] value [SOURce:]CORRection[:STATe]?	✓
[SOURce:]FM[1][:DEViation] value [SOURce:]FM[1][:DEViation]? <b>Remark:</b> DOWN, MINImum, Numeric, UP are supported.	✋
[SOURce:]FM[1][:DEViation]:STEP[:INCRement] value [SOURce:]FM[1][:DEViation]:STEP[:INCRement]?	✓
[SOURce:]FM[1]2:EXTernal[12:COUPling value [SOURce:]FM[1]2:EXTernal[1]:COUPling?	✓
[SOURce:]FM[1]:INTernal[1]:FREQUency value [SOURce:]FM[1]:INTernal[1]:FREQUency?	✓
[SOURce:]FM[1]:INTernal[1]:FREQUency:STEP[:INCRement] value [SOURce:]FM[1]:INTernal[1]:FREQUency:STEP[:INCRement]?	✓
[SOURce:]FM[1]:INTernal[1]:FUNCTion:SHAPE value [SOURce:]FM[1]:INTernal[1]:FUNCTion:SHAPE? <b>Remark:</b> SINE is supported.	✋
[SOURce:]FM[1]:INTernal[1]:SWEep:TIME value [SOURce:]FM[1]:INTernal[1]:SWEep:TIME? <b>Remark:</b> Dwell time is assumed.	✋
[SOURce:]FM[1]:INTernal[1]:SWEep:TRIGger value [SOURce:]FM[1]:INTernal[1]:SWEep:TRIGger? <b>Remark:</b> BUS, EXTernal, IMMEDIATE are supported.	✋
[SOURce:]FM[1]:SOURce value [SOURce:]FM[1]:SOURce? <b>Remark:</b> EXTernal[1], INTernal[1] are supported.	✋
[SOURce:]FM[1]:STATe value [SOURce:]FM[1]:STATe?	✓

Device-specific functions	
Command syntax	Status
[SOURce:]FREQuency[:CW] value [SOURce:]FREQuency[:CW]?	✓
[SOURce:]FREQuency[:CW]:STEP[:INCRement] value [SOURce:]FREQuency[:CW]:STEP[:INCRement]?	✓
[SOURce:]FREQuency:FIXed value [SOURce:]FREQuency:FIXed?	✓
[SOURce:]FREQuency:MODE [SOURce:]FREQuency:MODE?	✓
[SOURce:]FREQuency:OFFSet value [SOURce:]FREQuency:OFFSet?	✓
[SOURce:]FREQuency:OFFSet:STATe value [SOURce:]FREQuency:OFFSet:STATe?	✓
[SOURce:]FREQuency:REFerence value [SOURce:]FREQuency:REFerence?	✓
[SOURce:]FREQuency:REFerence:STATe value [SOURce:]FREQuency:REFerence:STATe?	✓
[SOURce:]FREQuency:STARt value [SOURce:]FREQuency:STARt?	✓
[SOURce:]FREQuency:STOP value [SOURce:]FREQuency:STOP?	✓
[SOURce:]LFOutput:AMPLitude value [SOURce:]LFOutput:AMPLitude?	✓
[SOURce:]LFOutput:FUNCTion[1]:FREQuency value [SOURce:]LFOutput:FUNCTion[1]:FREQuency?	✓
[SOURce:]LFOutput:FUNCTion[1]:FREQuency:STEP[:INCRement] value [SOURce:]LFOutput:FUNCTion[1]:FREQuency:STEP[:INCRement]?	✓
[SOURce:]LFOutput:FUNCTion[1]:PERiod value [SOURce:]LFOutput:FUNCTion[1]:PERiod?	✓
[SOURce:]LFOutput:FUNCTion[1]:PERiod:STEP[:INCRement] value [SOURce:]LFOutput:FUNCTion[1]:PERiod:STEP[:INCRement]?	✓
[SOURce:]LFOutput:FUNCTion[1]:PWIDth value [SOURce:]LFOutput:FUNCTion[1]:PWIDth?	✓
[SOURce:]LFOutput:FUNCTion[1]:PWIDth:STEP[:INCRement] value [SOURce:]LFOutput:FUNCTion[1]:PWIDth:STEP[:INCRement]?	✓





Device-specific functions	
Command syntax	Status
[SOURce:]LFOUtput:FUNcTion[1]:SHAPE value [SOURce:]LFOUtput:FUNcTion[1]:SHAPE? <b>Remark:</b> SINE is supported.	
[SOURce:]LFOUtput:FUNcTion[1]:SWEep:TRIGger value [SOURce:]LFOUtput:FUNcTion[1]:SWEep:TRIGger? <b>Remark:</b> BUS, EXtErnal, IMMEDIATE are supported.	
[SOURce:]LFOUtput:FUNcTion[1]:SOURce value [SOURce:]LFOUtput:FUNcTion[1]:SOURce? <b>Remark:</b> INTErnal[1] is supported.	
[SOURce:]LFOUtput:FUNcTion[1]:STATe value [SOURce:]LFOUtput:FUNcTion[1]:STATe?	✓
[SOURce:]LIST:DIRection?	○
[SOURce:]LIST:DWELI value {,value} [SOURce:]LIST:DWELI? <b>Remark:</b> First parameter value is evaluated, rest is ignored.	
[SOURce:]LIST:DWELI:POINts?	✓
[SOURce:]LIST:DWELI:TYPE value [SOURce:]LIST:DWELI:TYPE?	✓
[SOURce:]LIST:FREQuency value {,value} [SOURce:]LIST:FREQuency?	✓
[SOURce:]LIST:FREQuency:POINts?	✓
[SOURce:]LIST:MODE value [SOURce:]LIST:MODE?	✓
[SOURce:]LIST:POWEr value {,value} [SOURce:]LIST:POWEr?	✓
[SOURce:]LIST:POWEr:POINts?	✓
[SOURce:]LIST:TYPE value [SOURce:]LIST:TYPE?	✓
[SOURce:]LIST:TYPE:LIST:INITialize:FSTep	✓
[SOURce:]LIST:TYPE:LIST:INITialize:PREset	✓
[SOURce:]PHASe[:ADJust] value [SOURce:]PHASe[:ADJust]?	✓
[SOURce:]PHASe:REFerence	✓



Device-specific functions	
Command syntax	Status
[SOURce:]PM[1][:DEViation] value [SOURce:]PM[1][:DEViation]? <b>Remark:</b> DOWN, MINImum, Numeric, UP are supported.	
[SOURce:]PM[1][:DEViation]:STEP[:INCRement] value [SOURce:]PM[1][:DEViation]:STEP[:INCRement]?	✓
[SOURce:]PM[1]:EXTernal[1]:COUPLing value [SOURce:]PM[1]:EXTernal[1]:COUPLing?	✓
[SOURce:]PM[1]:INTernal[1]:FREQUency value [SOURce:]PM[1]:INTernal[1]:FREQUency?	✓
[SOURce:]PM[1]:INTernal[1]:FREQUency:STEP[:INCRement] value [SOURce:]PM[1]:INTernal[1]:FREQUency:STEP[:INCRement]?	✓
[SOURce:]PM[1]:INTernal[1]:FUNCTion:SHAPE value [SOURce:]PM[1]:INTernal[1]:FUNCTion:SHAPE? <b>Remark:</b> SINE is supported.	
[SOURce:]PM[1]:INTernal[1]:SWEep:TIME value [SOURce:]PM[1]:INTernal[1]:SWEep:TIME? <b>Remark:</b> Dwell time is assumed.	
[SOURce:]PM[1]:INTernal[1]:SWEep:TRIGger value [SOURce:]PM[1]:INTernal[1]:SWEep:TRIGger? <b>Remark:</b> BUS, EXTernal, IMMEDIATE are supported.	
[SOURce:]PM[1]:SOURce value [SOURce:]PM[1]:SOURce? <b>Remark:</b> EXTernal[1], INTernal[1] are supported.	
[SOURce:]FM[1]:STATe value [SOURce:]FM[1]:STATe?	✓
[SOURce:]POWer:ALC[:STATe] value [SOURce:]POWer:ALC[:STATe]?	✓
[SOURce:]POWer:ATTenuation value [SOURce:]POWer:ATTenuation?	✓
[SOURce:]POWer:ATTenuation:AUTO value [SOURce:]POWer:ATTenuation:AUTO?	✓
[SOURce:]POWer[:LEVel][:IMMEDIATE][:AMPLitude] value [SOURce:]POWer[:LEVel][:IMMEDIATE][:AMPLitude]?	✓

Device-specific functions	
Command syntax	Status
[SOURce:]POWer[:LEVel][:IMMediate][:AMPLitude]:STEP[:INCRement] value [SOURce:]POWer[:LEVel][:IMMediate][:AMPLitude]:STEP[:INCRement]?	✓
[SOURce:]POWer[:LEVel][:IMMediate]:OFFSet value [SOURce:]POWer[:LEVel][:IMMediate]:OFFSet?	✓
[SOURce:]POWer:MODE value [SOURce:]POWer:MODE?	✓
[SOURce:]POWer:REFerence value [SOURce:]POWer:REFerence?	✓
[SOURce:]POWer:REFerence:STATe value [SOURce:]POWer:REFerence:STATe?	✓
[SOURce:]POWer:STARt value [SOURce:]POWer:STARt?	✓
[SOURce:]POWer:STOP value [SOURce:]POWer:STOP?	✓
[SOURce:]PULM:EXTernal:POLarity value [SOURce:]PULM:EXTernal:POLarity?	✓
[SOURce:]PULM:INTernal[1]:FREQuency value [SOURce:]PULM:INTernal[1]:FREQuency?	✓
[SOURce:]PULM:INTernal[1]:FREQuency:STEP[:INCRement] value [SOURce:]PULM:INTernal[1]:FREQuency:STEP[:INCRement]?	✓
[SOURce:]PULM:INTernal[1]:FUNction:SHAPE value [SOURce:]PULM:INTernal[1]:FUNction:SHAPE? <b>Remark:</b> SQUare is supported.	
[SOURce:]PULM:INTernal[1]:PERiod value [SOURce:]PULM:INTernal[1]:PERiod?	✓
[SOURce:]PULM:INTernal[1]:PERiod:STEP[:INCRement] value [SOURce:]PULM:INTernal[1]:PERiod:STEP[:INCRement]?	✓
[SOURce:]PULM:INTernal[1]:PWIDth value [SOURce:]PULM:INTernal[1]:PWIDth?	✓
[SOURce:]PULM:INTernal[1]:PWIDth:STEP[:INCRement] value [SOURce:]PULM:INTernal[1]:PWIDth:STEP[:INCRement]?	✓
[SOURce:]PULM:INTernal[1]:SOURce value [SOURce:]PULM:INTernal[1]:SOURce? <b>Remark:</b> EXTernal[1], INTernal are supported.	

Device-specific functions	
Command syntax	Status
[SOURce:]PULM:INTernal[1]:STATe value [SOURce:]PULM:INTernal[1]:STATe?	✓
[SOURce:]ROSCillator:SOURce value [SOURce:]ROSCillator:SOURce?	✓
[SOURce:]SWEep:DWELl value [SOURce:]SWEep:DWELl?	✓
[SOURce:]SWEep:POINts value [SOURce:]SWEep:POINts?	✓
STATus:OPERation:CONDition?	✓
STATus:OPERation:ENABle value STATus:OPERation:ENABle?	✓
STATus:OPERation[:EVENT]?	✓
STATus:OPERation:NTRansition value STATus:OPERation: NTRansition?	✓
STATus:OPERation:PTRansition value STATus:OPERation: PTRansition?	✓
STATus:PRESet	✓
STATus:QUESTionable:CONDition?	✓
STATus:QUESTionable:ENABle value STATus:QUESTionable:ENABle?	✓
STATus:QUESTionable[:EVENT]?	✓
STATus:QUESTionable:NTRansition value STATus:QUESTionable: NTRansition?	✓
STATus:QUESTionable:PTRansition value STATus:QUESTionable: PTRansition?	✓
SYSTem:CAPability?	○
SYSTem:COMMunicate:GPIB:ADDRes value SYSTem:COMMunicate:GPIB:ADDRes?	✓
SYSTem:COMMunicate:GTLocal	✓
SYSTem:COMMunicate:LAN:CONFig value SYSTem:COMMunicate:LAN:CONFig?	✓
SYSTem:COMMunicate:LAN:GATeway value SYSTem:COMMunicate:LAN:GATeway?	✓
SYSTem:COMMunicate:LAN:HOSTname value SYSTem:COMMunicate:LAN:HOSTname?	✓

Device-specific functions	
Command syntax	Status
SYSTem:COMMunicate:LAN:IP value SYSTem:COMMunicate:LAN:IP?	✓
SYSTem:COMMunicate:LAN:SUBNet value SYSTem:COMMunicate:LAN:SUBNet?	✓
SYSTem:COMMunicate:SERial:BAUD value SYSTem:COMMunicate:SERial:BAUD?	✓
SYSTem:DATE value SYSTem:DATE?	✓
SYSTem:ERRor:CODE[:NEXT]? <b>Remark:</b> Returns the original error code of the Rohde & Schwarz signal generator.	
SYSTem:ERRor[:NEXT]? <b>Remark:</b> Returns the original error message of the Rohde & Schwarz signal generator.	
SYSTem:IDN value SYSTem:IDN?	✓
SYSTem:OPT value SYSTem:OPT?	✓
SYSTem:PDOWN	✓
SYSTem:PRESet	✓
SYSTem:PRESet:ALL	✓
SYSTem:SECurity:DISPlay value SYSTem:SECurity:DISPlay?	✓
SYSTem:TIME value SYSTem:TIME?	✓
SYSTem:VERSion?	✓
TRIGger[:SEQuence][:IMMediate]	✓
TRIGger[:SEQuence]:SLOPe value TRIGger[:SEQuence]:SLOPe?	✓
TRIGger[:SEQuence]:SOURce value TRIGger[:SEQuence]:SOURce? <b>Remark:</b> BUS, EXTernal, IMMediate are supported.	
UNIT:POWer value UNIT:POWer? <b>Remark:</b> DB, DBM, DBV, DBMV, DBUV, V, MV, UV are supported.	



## 9 Emulating the Hewlett-Packard 8340/8341

The remote emulations HP8340 and HP8341 are available only if one of the following options is installed:

- SMB-B112 RF Path 100 kHz to 12.75 GHz with electronic step attenuator
- SMB-B112L RF Path 100 kHz to 12.75 GHz without step attenuator
- SMB-B120 RF Path 100 kHz to 20 GHz with mechanical step attenuator
- SMB-B120L RF Path 100 kHz to 20 GHz without step attenuator
- SMB-B140 RF Path 100 kHz to 40 GHz with mechanical step attenuator
- SMB-B140L RF Path 100 kHz to 40 GHz without step attenuator

The following tables show the current implementation status of each command. Commands not shown in these tables are not supported.

Device-specific functions	
Command syntax	Status
AM0	✓
AM1	✓
CF value	✓
CS	✓
CW value	✓
DF value	✓
DN	✓
DU0	○
DU1	✓
FA value	✓
FB value	✓
FM0	✓
FM1	✓
IF value	✓
IP	✓
KR	✓
OA	✓
OC	✓
OF	✓
OI	✓
OK	✓
OM	✓

Device-specific functions	
Command syntax	Status
OP	✓
OR	✓
OS	✓
PL value	✓
PM0	✓
PM1	✓
PS0	✓
PS1 value	✓
RF0	✓
RF1	✓
RS	✓
S1	✓
S2	✓
S3 value	✓
SF value	✓
SG	✓
SH	✓
SHCF value	✓
SHCW value	✓
SHFA value	✓
SHFB value	✓
SHPL value	✓
SHPM	✓
SHSL value	✓
SHST value	✓
SM value	✓
SN value	✓
SP value	✓
ST value	○
T1	✓
T2	✓
T3	✓
TS	✓

Device-specific functions	
Command syntax	Status
UP	✓









# 10 Emulating the Hewlett-Packard 83711/83712, 83731/83732





The remote emulations HP83711, HP83712, HP83731 and HP83732 are available only if one of the following options is installed:

- SMB-B112 RF Path 100 kHz to 12.75 GHz with electronic step attenuator
- SMB-B112L RF Path 100 kHz to 12.75 GHz without step attenuator
- SMB-B120 RF Path 100 kHz to 20 GHz with mechanical step attenuator
- SMB-B120L RF Path 100 kHz to 20 GHz without step attenuator
- SMB-B140 RF Path 100 kHz to 40 GHz with mechanical step attenuator
- SMB-B140L RF Path 100 kHz to 40 GHz without step attenuator


The following tables show the current implementation status of each command. Commands not shown in these tables are not supported.


IEEE488.2 functions	
Command syntax	Status
*CLS	✓
*ESE value *ESE? <b>Remark:</b> Layout of ESE register corresponds to Rohde & Schwarz signal generator.	
*ESR? <b>Remark:</b> Layout of ESE register corresponds to Rohde & Schwarz signal generator.	
*IDN? <b>Remark:</b> If the response does not match the requirements, a user-specific response to *IDN? and *OPT? can be applied on the instrument's front panel.	
*OPC *OPC?	✓
*OPT? <b>Remark:</b> If the response does not match the requirements, a user-specific response to *IDN? and *OPT? can be applied on the instrument's front panel.	
*RCL value	✓
*RST	✓
*SAV value	✓
*SRE value *SRE? <b>Remark:</b> Layout of ESE register corresponds to Rohde & Schwarz signal generator.	



IEEE488.2 functions	
Command syntax	Status
*STB? <b>Remark:</b> Layout of ESE register corresponds to Rohde & Schwarz signal generator.	
*TRG	✓
*TST?	✓
*WAI	✓




Device-specific functions	
Command syntax	Status
DISPlay[:WINDow][:STATe] value DISPlay[:WINDow][:STATe]?	✓
MEMory:CATalog[:ALL]?	✓
MEMory:CATalog:TABLE?	✓
MEMory:TABLE:SElect value MEMory:TABLE:SElect?	✓
MEMory:TABLE:FREquency value{,value} MEMory:TABLE:FREquency? <b>Remark:</b> MAXimum, MINimum are not supported.	
MEMory:TABLE:FREquency:POINTs? <b>Remark:</b> MAXimum, MINimum are not supported.	
MEMory:TABLE:LOSS[:MAGNitude] value{,value} MEMory:TABLE:LOSS[:MAGNitude]? <b>Remark:</b> MAXimum, MINimum are not supported.	
MEMory:TABLE:LOSS[:MAGNitude]:POINTs? <b>Remark:</b> MAXimum, MINimum are not supported.	
OUTPut:IMPedance?	○
OUTPut:PROTection[:STATe] value OUTPut:PROTection[:STATe]?	○
OUTPut[:STATe] value OUTPut[:STATe]?	✓
[SOURce:]AM[:DEPth] value [SOURce:]AM[:DEPth]?	✓

Device-specific functions	
Command syntax	Status
[SOURce:]AM[:DEPth]:STEP[:INCRement] value [SOURce:]AM[:DEPth]:STEP[:INCRement]?	○
[SOURce:]AM:INTernal:FREQuency value [SOURce:]AM:INTernal:FREQuency?	✓
[SOURce:]AM:INTernal:FREQuency:STEP[:INCRement] value [SOURce:]AM:INTernal:FREQuency:STEP[:INCRement]?	○
[SOURce:]AM:INTernal:FUNCTion value [SOURce:]AM:INTernal:FUNCTion? <b>Remark:</b> SINUSiod, SQUare are supported.	✋
[SOURce:]AM:SOURce value [SOURce:]AM:SOURce?	✓
[SOURce:]AM:STATe value [SOURce:]AM:STATe?	✓
[SOURce:]AM:TYPE value [SOURce:]AM:TYPE?	✓
[SOURce:]CORRection:CSET[:SElect] value [SOURce:]CORRection:CSET[:SElect]?	✓
[SOURce:]CORRection:CSET:STATe value [SOURce:]CORRection:CSET:STATe?	✓
[SOURce:]CORRection:FLATness[:DATA] value, value {,value, value} [SOURce:]CORRection:FLATness[:DATA]? <b>Remark:</b> MAXimum, MINimum are not supported.	✋
[SOURce:]CORRection:FLATness:POINts value [SOURce:]CORRection:FLATness:POINts? <b>Remark:</b> MAXimum, MINimum are not supported.	○ ✋
[SOURce:]CORRection[:STATe] value [SOURce:]CORRection[:STATe]?	✓
[SOURce:]FM:COUPling value [SOURce:]FM:COUPling?	✓
[SOURce:]FM[:DEViation] value [SOURce:]FM[:DEViation]?	✓
[SOURce:]FM[:DEViation]:STEP[:INCRement] value [SOURce:]FM[:DEViation]:STEP[:INCRement]?	○
[SOURce:]FM:INTernal:FREQuency value [SOURce:]FM:INTernal:FREQuency?	✓

Device-specific functions	
Command syntax	Status
[SOURce:]FM:INTernal:FREQuency:STEP[:INCRement] value [SOURce:]FM:INTernal:FREQuency:STEP[:INCRement]?	○
[SOURce:]FM:INTernal:FUNCTion value [SOURce:]FM:INTernal:FUNCTion? <b>Remark:</b> SINUSiod, SQUARE are supported.	
[SOURce:]FM:SOURce value [SOURce:]FM:SOURce?	✓
[SOURce:]FM:STATe value [SOURce:]FM:STATe?	✓
[SOURce:]FREQuency[:CW] value [SOURce:]FREQuency[:CW]?	✓
[SOURce:]FREQuency[:CW]:STEP[:INCRement] value [SOURce:]FREQuency[:CW]:STEP[:INCRement]?	✓
[SOURce:]FREQuency:FIXed value [SOURce:]FREQuency:FIXed?	✓
[SOURce:]FREQuency:FIXed:STEP[:INCRement] value [SOURce:]FREQuency:FIXed:STEP[:INCRement]?	✓
[SOURce:]FREQuency:MULTiplier value [SOURce:]FREQuency:MULTiplier?	✓
[SOURce:]MODulation:AOFF	✓
[SOURce:]MODulation:STATe value [SOURce:]MODulation:STATe?	✓
[SOURce:]PM:COUPling value [SOURce:]PM:COUPling?	✓
[SOURce:]PM[:DEViation] value [SOURce:]PM[:DEViation]?	✓
[SOURce:]PM[:DEViation]:STEP[:INCRement] value [SOURce:]PM[:DEViation]:STEP[:INCRement]?	○
[SOURce:]PM:INTernal:FREQuency value [SOURce:]PM:INTernal:FREQuency?	✓
[SOURce:]PM:INTernal:FREQuency:STEP[:INCRement] value [SOURce:]PM:INTernal:FREQuency:STEP[:INCRement]?	○
[SOURce:]PM:INTernal:FUNCTion value [SOURce:]PM:INTernal:FUNCTion? <b>Remark:</b> SINUSiod, SQUARE are supported.	





Device-specific functions	
Command syntax	Status
[SOURce:]PM:RANGe value [SOURce:]PM:RANGe?	○
[SOURce:]PM:SOURce value [SOURce:]PM:SOURce?	✓
[SOURce:]PM:STATe value [SOURce:]PM:STATe?	✓
[SOURce:]POWER:ATTenuation value [SOURce:]POWER:ATTenuation?	✓
[SOURce:]POWER:ATTenuation:AUTO value [SOURce:]POWER:ATTenuation:AUTO? <b>Remark:</b> ONCE is not are supported.	
[SOURce:]POWER[:LEVel][:IMMediate][:AMPLitude] value [SOURce:]POWER[:LEVel][:IMMediate][:AMPLitude]?	✓
[SOURce:]POWER[:LEVel][:IMMediate][:AMPLitude]:STEP[:INCRement] value [SOURce:]POWER[:LEVel][:IMMediate][:AMPLitude]:STEP[:INCRement]?	✓
[SOURce:]PULM:EXTernal:POLarity value [SOURce:]PULM:EXTernal:POLarity?	✓
[SOURce:]PULM:SOURce value [SOURce:]PULM:SOURce?	✓
[SOURce:]PULM:STATe value [SOURce:]PULM:STATe?	✓
[SOURce:]PULSe:DELay value [SOURce:]PULSe:DELay?	✓
[SOURce:]PULSe:DELay:STEP[:INCRement] value [SOURce:]PULSe:DELay:STEP[:INCRement]?	○
[SOURce:]PULSe:DOUBle:STATe value [SOURce:]PULSe:DOUBle:STATe?	✓
[SOURce:]PULSe:FREQuency value [SOURce:]PULSe:FREQuency?	✓
[SOURce:]PULSe:FREQuency:STEP[:INCRement] value [SOURce:]PULSe:FREQuency:STEP[:INCRement]?	○
[SOURce:]PULSe:PERiod value [SOURce:]PULSe:PERiod?	✓
[SOURce:]PULSe:PERiod:STEP[:INCRement] value [SOURce:]PULSe:PERiod:STEP[:INCRement]?	○

Device-specific functions	
Command syntax	Status
[SOURce:]PULSe:WIDTh value [SOURce:]PULSe:WIDTh?	✓
[SOURce:]PULSe:WIDTh:STEP[:INCRement] value [SOURce:]PULSe:WIDTh:STEP[:INCRement]?	○
[SOURce:]ROSCillator:SOURce?	✓
STATus:OPERation:CONDition?	✓
STATus:OPERation:ENABle value STATus:OPERation:ENABle?	✓
STATus:OPERation[:EVENT]?	✓
STATus:OPERation:NTRansition value STATus:OPERation: NTRansition?	✓
STATus:OPERation:PTRansition value STATus:OPERation: PTRansition?	✓
STATus:PRESet	✓
STATus:QUESTionable:CONDition?	✓
STATus:QUESTionable:ENABle value STATus:QUESTionable:ENABle?	✓
STATus:QUESTionable[:EVENT]?	✓
STATus:QUESTionable:NTRansition value STATus:QUESTionable: NTRansition?	✓
STATus:QUESTionable:PTRansition value STATus:QUESTionable: PTRansition?	✓
SYSTem:COMMunicate:GPIB:ADDRess value SYSTem:COMMunicate:GPIB:ADDRess?	✓
SYSTem:ERRor? <b>Remark:</b> Returns the original error code of the Rohde & Schwarz signal generator.	
SYSTem:LANGuage value SYSTem: LANGuage? <b>Remark:</b> "SCPI" is supported.	
SYSTem:PRESet	✓
SYSTem:VERSion?	✓
UNIT:FREQuency value UNIT:FREQuency? <b>Remark:</b> GHZ, MHZ, KHZ, HZ are supported.	

Device-specific functions	
Command syntax	Status
UNIT:POWer value UNIT:POWer? <b>Remark:</b> DBM, DBW, DBMW, DBUW, DBNW, DBPW, DBV, DBMV, DBUV, DBNV, DBPV, W, MW, UW, NW, PW, V, MV, UV, NV, PV are supported.	
UNIT:TIME value UNIT:TIME? <b>Remark:</b> S, MS, US, NS, PS are supported.	
UNIT:VOLTage value UNIT:VOLTage? <b>Remark:</b> DBV, DBMV, DBUV, DBNV, DBPV, V, MV, UV, NV, PV are supported.	

# 11 Emulating the Hewlett-Packard 8642

The following tables show the current implementation status of each command. Commands not shown in these tables are not supported.



Device-specific functions	
Command syntax	Status
AA value <b>Remark:</b> Units DB, DM, DU, MV, VL are supported.	
AB value <b>Remark:</b> Units DB, DM, DU, MV, VL are supported.	
AM value	✓
AP value <b>Remark:</b> Units DB, DM, DU, MV, VL are supported.	
BA	✓
BD	✓
DN	✓
EMOF	✓
EMON	✓
FA value	✓
FB value	✓
FM value	✓
FR value	✓
IP	✓
IS value <b>Remark:</b> HZ, GZ, KZ, MZ, DB are supported.	
MF value	✓
ML value	✓
NT	✓
OF	✓
ON	✓
PM value	✓
PL	✓
RA value	✓




Device-specific functions	
Command syntax	Status
RF value	✓
XA	✓
XD	✓
UP	✓


## 12 Emulating the Hewlett-Packard 8643-8645, 8664/8665






The following tables show the current implementation status of each command. Commands not shown in these tables are not supported.



IEEE488.2 functions	
Command syntax	Status
*CLS	✓
*ESE value *ESE?	✓
*ESR?	✓
*IDN? <b>Remark:</b> If the response does not match the requirements, a user-specific response to *IDN? and *OPT? can be applied on the instrument's front panel.	
*OPC *OPC?	✓
*OPT? <b>Remark:</b> If the response does not match the requirements, a user-specific response to *IDN? and *OPT? can be applied on the instrument's front panel.	
*RCL value	✓
*RST	✓
*SAV value	✓
*SRE value *SRE?	✓
*STB?	✓
*TST?	✓
*WAI	✓

Device-specific functions	
Command syntax	Status
AM:COUPling value AM:COUPling? <b>Remark:</b> AC, DC are supported.	
AM[:DEPTh] value AM[:DEPTh]?	✓

Device-specific functions	
Command syntax	Status
AM[:DEPT]h]:STEP[:INCRement] value AM[:DEPT]h]:STEP[:INCRement]?	○
AM:FREQUency value AM:FREQUency?	✓
AM:FREQUency:STEP[:INCRement] value AM:FREQUency:STEP[:INCRement]?	○
AM:SOURce value AM:SOURce?	✓
AM:STATe value AM:STATe?	✓
AMPLitude[:OUT]:ATTenuation:AUTO value AMPLitude[:OUT]:ATTenuation:AUTO?	✓
AMPLitude[:OUT]:GAIN value AMPLitude[:OUT]:GAIN?	✓
AMPLitude[:OUT][:LEVe]l value AMPLitude[:OUT][:LEVe]l?	✓
AMPLitude[:OUT][:LEVe]l:STEP[:INCRement] value AMPLitude[:OUT][:LEVe]l:STEP[:INCRement]?	✓
AMPLitude[:OUT][:LEVe]l:STEP:UNIT value AMPLitude[:OUT][:LEVe]l:STEP:UNIT?	✓
AMPLitude[:OUT]:STATe value AMPLitude[:OUT]:STATe?	✓
AMPLitude[:OUT]:ULIMit value AMPLitude[:OUT]:ULIMit?	✓
AMPLitude[:OUT]:UNIT value AMPLitude[:OUT]:UNIT?	✓
AMPLitude:SOURce:ATTenuation:AUTO value AMPLitude:SOURce:ATTenuation:AUTO?	✓
AMPLitude:SOURce:GAIN value AMPLitude:SOURce:GAIN?	✓
AMPLitude:SOURce[:LEVe]l value AMPLitude:SOURce[:LEVe]l?	✓
AMPLitude:SOURce[:LEVe]l:STEP[:INCRement] value AMPLitude:SOURce[:LEVe]l:STEP[:INCRement]?	✓
AMPLitude:SOURce[:LEVe]l:STEP:UNIT value AMPLitude:SOURce[:LEVe]l:STEP:UNIT?	✓

Device-specific functions	
Command syntax	Status
AMPLitude:SOURce:STATe value AMPLitude:SOURce:STATe?	✓
AMPLitude:SOURce:UNIT value AMPLitude:SOURce:UNIT?	✓
CALibration:ALL?	✓
DISPlay:ANNotation[:ALL] value DISPlay:ANNotation[:ALL]?	✓
DISPlay:ANNotation:AMPLitude value DISPlay:ANNotation:AMPLitude?	✓
DISPlay:ANNotation:FREQuency value DISPlay:ANNotation:FREQuency?	✓
DISPlay:STATe value DISPlay:STATe?	✓
FM:COUPling value FM:COUPling? <b>Remark:</b> AC, DC are supported.	
FM[:DEViation] value FM[:DEViation]?	✓
FM[:DEViation]:STEP[:INCRement] value FM[:DEViation]:STEP[:INCRement]?	○
FM:FREQuency value FM:FREQuency?	✓
FM:FREQuency:STEP[:INCRement] value FM:FREQuency:STEP[:INCRement]?	○
FM:SOURce value FM:SOURce?	✓
FM:STATe value FM:STATe?	✓
FREQuency:CENTer value FREQuency:CENTer?	✓
FREQuency:CENTer:STEP[:INCRement] value FREQuency:CENTer:STEP[:INCRement]?	✓
FREQuency[:CW] value FREQuency[:CW]?	✓
FREQuency[:CW]:STEP[:INCRement] value FREQuency[:CW]:STEP[:INCRement]?	✓

Device-specific functions	
Command syntax	Status
FREQuency:INSTantaneous?	✓
FREQuency:MANual value FREQuency:MANual?	✓
FREQuency:MODE value FREQuency:MODE? <b>Remark:</b> Handling of INITialize and TRIGger is different.	
FREQuency:MULTplier value FREQuency:MULTplier?	✓
FREQuency:OFFSet value FREQuency:OFFSet?	✓
FREQuency:SPAN value FREQuency:SPAN?	✓
FREQuency:SPAN:STEP[:INCRement] value FREQuency:SPAN:STEP[:INCRement]?	✓
FREQuency:STARt value FREQuency:STARt?	✓
FREQuency:STARt:STEP[:INCRement] value FREQuency:STARt:STEP[:INCRement]?	✓
FREQuency:STOP value FREQuency:STOP?	✓
FREQuency:STOP:STEP[:INCRement] value FREQuency:STOP:STEP[:INCRement]?	✓
INITialize:ABORt <b>Remark:</b> Handling of INITialize and TRIGger is different.	
INITialize[:IMMediate] <b>Remark:</b> Handling of INITialize and TRIGger is different.	
INITialize:MODE value INITialize:MODE? <b>Remark:</b> Handling of INITialize and TRIGger is different.	
INITialize:STATe value INITialize:STATe? <b>Remark:</b> Handling of INITialize and TRIGger is different.	

Device-specific functions	
Command syntax	Status
LFSOURCE:FREQUENCY[1] value LFSOURCE:FREQUENCY[1]?	✓
LFSOURCE:FREQUENCY[1]:STEP[:INCRement] value LFSOURCE:FREQUENCY[1]:STEP[:INCRement]?	○
LFSOURCE:LEVEL[1]value LFSOURCE:LEVEL[1]?	✓
LFSOURCE:LEVEL[1]:STEP[:INCRement] value LFSOURCE:LEVEL[1]:STEP[:INCRement]?	○
LFSOURCE:STATE[1] value LFSOURCE:STATE[1]?	✓
LFSOURCE:WAVEform[1] value LFSOURCE:WAVEform[1]?	
<b>Remark:</b> SINE, SQUARE are supported.	
MODulation[:STATE] value MODulation[:STATE]?	✓
PHASe[:ADJust] value PHASe[:ADJust]?	✓
PHASe[:ADJust]:STEP[:INCRement] value PHASe[:ADJust]:STEP[:INCRement]?	○
PHASe:REFerence	✓
PM:COUPling value PM:COUPling?	
<b>Remark:</b> AC, DC are supported.	
PM[:DEViation] value PM[:DEViation]?	✓
PM[:DEViation]:STEP[:INCRement] value PM[:DEViation]:STEP[:INCRement]?	○
PM:FREQUency value PM:FREQUency?	✓
PM:FREQUency:STEP[:INCRement] value PM:FREQUency:STEP[:INCRement]?	○
PM:SOURce value PM:SOURce?	✓
PM:STATe value PM:STATe?	✓

Device-specific functions	
Command syntax	Status
POWer[:OUT]:ATTenuation:AUTO value POWer[:OUT]:ATTenuation:AUTO?	✓
POWer[:OUT]:GAIN value POWer[:OUT]:GAIN?	✓
POWer[:OUT][:LEVel] value POWer[:OUT][:LEVel]?	✓
POWer[:OUT][:LEVel]:STEP[:INCRement] value POWer[:OUT][:LEVel]:STEP[:INCRement]?	✓
POWer[:OUT][:LEVel]:STEP:UNIT value POWer[:OUT][:LEVel]:STEP:UNIT?	✓
POWer[:OUT]:STATe value POWer[:OUT]:STATe?	✓
POWer[:OUT]:ULIMit value POWer[:OUT]:ULIMit?	✓
POWer[:OUT]:UNIT value POWer[:OUT]:UNIT?	✓
POWer:SOURce:ATTenuation:AUTO value POWer:SOURce:ATTenuation:AUTO?	✓
POWer:SOURce:GAIN value POWer:SOURce:GAIN?	✓
POWer:SOURce[:LEVel] value POWer:SOURce[:LEVel]?	✓
POWer:SOURce[:LEVel]:STEP[:INCRement] value POWer:SOURce[:LEVel]:STEP[:INCRement]?	✓
POWer:SOURce[:LEVel]:STEP:UNIT value POWer:SOURce[:LEVel]:STEP:UNIT?	✓
POWer:SOURce:STATe value POWer:SOURce:STATe?	✓
POWer:SOURce:UNIT value POWer:SOURce:UNIT?	✓
PULSe:DELay value PULSe:DELay?	✓
PULSe:DELay:STEP[:INCRement] value PULSe:DELay:STEP[:INCRement]?	○
PULSe:FREQuency value PULSe:FREQuency?	✓

Device-specific functions	
Command syntax	Status
PULSe:FREQuency:STEP[:INCRement] value PULSe:FREQuency:STEP[:INCRement]?	○
PULSe:SLOPe value PULSe:SLOPe ? <b>Remark:</b> POSitive, NEGative are supported.	✋
PULSe:SOURce value PULSe:SOURce? <b>Remark:</b> INTernal, EXTernal are supported.	✋
PULSe[:STATe] value PULSe[:STATe]?	✓
PULSe:WIDTh value PULSe:WIDTh?	✓
PULSe:WIDTh:STEP[:INCRement] value PULSe:WIDTh:STEP[:INCRement]?	○
ROSCillator:CALibration value ROSCillator:CALibration?	✓
ROSCillator:CALibration:STEP[:INCRement] value ROSCillator:CALibration:STEP[:INCRement]?	○
ROSCillator:SOURce value ROSCillator:SOURce?	✓
STATus[:DEVIce]:CONDition? <b>Remark:</b> Bit 2 is supported.	✋
STATus[:DEVIce]:ENABle value STATus[:DEVIce]:CONDition? <b>Remark:</b> Bit 2 is supported.	✋
STATus[:DEVIce][:EVENT]? <b>Remark:</b> Bit 2 is supported.	✋
STATus[:DEVIce]:NTRansition? <b>Remark:</b> Bit 2 is supported.	✋
STATus[:DEVIce]:PTRansition? <b>Remark:</b> Bit 2 is supported.	✋



Device-specific functions	
Command syntax	Status
SWEep[:FREQuency]:MODE value SWEep[:FREQuency]:MODE?	✓
SWEep[:FREQuency]:SPACing value SWEep[:FREQuency]:SPACing?	✓
SWEep[:FREQuency]:TIME value SWEep[:FREQuency]:TIME? <b>Remark:</b> Numeric items 1-2-5-10 are supported. Sweep time is divided into dwell time and count.	✋
SWEep[:FREQuency]:TIME:STEP[:INCRement]?	○
SWEep[:FREQuency]:TIME:STEP:MODE?	✓
SYSTem:ERRor? <b>Remark:</b> Returns the original error message of the Rohde & Schwarz signal generator.	✋
TSWeep	✓





## 13 Emulating the Hewlett-Packard 8647/8648



The following tables show the current implementation status of each command. Commands not shown in these tables are not supported.

IEEE488.2 functions	
Status	Command syntax
*CLS	✓
*ESE value *ESE?	✓
*ESR?	✓
*IDN? <b>Remark:</b> If the response does not match the requirements, a user-specific response to *IDN? and *OPT? can be applied on the instrument's front panel.	✋
*OPC *OPC? Wait for/query completion of command.	✓
*OPT? <b>Remark:</b> If the response does not match the requirements, a user-specific response to *IDN? and *OPT? can be applied on the instrument's front panel.	✋
*RCL value[,value] <b>Remark:</b> Optional part is not supported.	✋
*RST	✓
*SAV value[,value] <b>Remark:</b> Optional part is not supported.	✋
*SRE value *SRE?	✓
*STB?	✓
*TST?	✓
*WAI	✓

Device-specific functions	
Command syntax	Status
OUTPut[:STATe] value OUTPut[:STATe]?	✓




Device-specific functions	
Command syntax	Status
[SOURce:]AM[:DEPT] value [SOURce:]AM[:DEPT]?	✓
[SOURce:]AM:EXTernal:COUPling value [SOURce:]AM:EXTernal:COUPling?	✓
[SOURce:]AM:INTernal[1]:FREQuency value [SOURce:]AM:INTernal[1]:FREQuency?	✓
[SOURce:]AM:INTernal2:FREQuency value [SOURce:]AM:INTernal2:FREQuency? <b>Remark:</b> Internal2 is identical to Internal[1].	✋
[SOURce:]AM:INTernal2:FUNction:SHAPE value [SOURce:]AM:INTernal2:FUNction:SHAPE? <b>Remark:</b> SINe and SQUare are supported.	✋
[SOURce:]AM:SOURce value [SOURce:]AM:SOURce? <b>Remark:</b> Internal2 is identical to Internal[1].	✋
[SOURce:]AM:STATe value [SOURce:]AM:STATe?	✓
[SOURce:]CAL:DCFM <b>Remark:</b> The elimination process takes about 10 s.	✋
[SOURce:]FM[:DEVIation] value [SOURce:]FM[:DEVIation]?	✓
[SOURce:]FM:EXTernal:COUPling value [SOURce:]FM:EXTernal:COUPling?	✓
[SOURce:]FM:INTernal[1]:FREQuency value [SOURce:]FM:INTernal[1]:FREQuency?	✓
[SOURce:]FM:INTernal2:FREQuency value [SOURce:]FM:INTernal2:FREQuency? <b>Remark:</b> Internal2 is identical to Internal[1].	✋
[SOURce:]FM:INTernal2:FUNction:SHAPE value. [SOURce:]FM:INTernal2:FUNction:SHAPE? <b>Remark:</b> SINe and SQUare are supported.	✋



Device-specific functions	
Command syntax	Status
[SOURce:]FM:SOURce value [SOURce:]FM:SOURce? <b>Remark:</b> Internal2 is identical to Internal[1].	
[SOURce:]FM:STATe value [SOURce:]FM:STATe?	✓
[SOURce:]FREQuency[:CW] value [SOURce:]FREQuency[:CW]?	✓
[SOURce:]FREQuency:FIXed value [SOURce:]FREQuency:FIXed?	✓
[SOURce:]FREQuency:REFerence value [SOURce:]FREQuency:REFerence?	✓
[SOURce:]FREQuency:REFerence:STATe value [SOURce:]FREQuency:REFerence:STATe?	✓
[SOURce:]PM[:DEViation] value [SOURce:]PM[:DEViation]?	✓
[SOURce:]PM:EXTernal:COUPling value [SOURce:]PM:EXTernal:COUPling?	✓
[SOURce:]PM:INTernal[1]:FREQuency value [SOURce:]PM:INTernal[1]:FREQuency?	✓
[SOURce:]PM:INTernal2:FREQuency value [SOURce:]PM:INTernal2:FREQuency? <b>Remark:</b> Internal2 is identical to Internal[1].	
[SOURce:]PM:INTernal2:FUNction:SHAPE value [SOURce:]PM:INTernal2:FUNction:SHAPE? <b>Remark:</b> SINe and SQUare are supported.	
[SOURce:]PM:SOURce value [SOURce:]PM:SOURce? <b>Remark:</b> Internal2 is identical to Internal[1].	
[SOURce:]PM:STATe value [SOURce:]PM:STATe?	✓
[SOURce:]POWER:ATTenuation:AUTO value [SOURce:]POWER:ATTenuation:AUTO?	✓
[SOURce:]POWER[:LEVel][:IMMediate][:AMPLitude] value [SOURce:]POWER[:LEVel][:IMMediate][:AMPLitude]?	✓

Device-specific functions	
Command syntax	Status
[SOURce:]POWer:REFerence value [SOURce:]POWer:REFerence?	✓
[SOURce:]POWer:REFerence:STATe value [SOURce:]POWer:REFerence:STATe?	✓
[SOURce:]PULM:STATe value [SOURce:]PULM:STATe?	✓
STATus:OPERation[:EVENT]?	✓
STATus: OPERation:CONDition?	✓
STATus: OPERation:ENABle value STATus: OPERation:ENABle?	✓
STATus:QUEStionalbe[:EVENT]?	✓
STATus: QUEStionalbe:CONDition?	✓
STATus: QUEStionalbe:ENABle value STATus: QUEStionalbe:ENABle?	✓
SYSTem:ERRor? <b>Remark:</b> Returns the original error message of the Rohde & Schwarz signal generator.	
SYSTem:LANGuage value SYSTem:LANGuage? <b>Remark:</b> On select, only "EXIT" is supported (to return to the instrument's native SCPI language). On query, always "SCPI" is returned.	
SYSTem:VERSion?	✓

## 14 Emulating the Hewlett-Packard 8656/8657

The following tables show the current implementation status of each command. Commands not shown in these tables are not supported.

Device-specific functions	
Command syntax	Status
AM value	✓
AO value	✓
AP value <b>Remark:</b> Units DM, DF, DBVL, DBMV, DBUV, DBEMVL, DBEMMV, DBEMUV, VL, MV, UV, EMVL, EMMV, EMUV are supported.	
DN	✓
FM value	✓
FR value	✓
IP	✓
IS numeric	✓
PD	✓
PI	✓
PF	✓
PM	✓
R0	✓
R1	✓
R2	✓
R3	✓
R5	✓
RC value <b>Remark:</b> The contents of the registers 0 to 9 are NOT persistent and are lost when power is switched off or when leaving the emulation mode.	
RL value <b>Remark:</b> The contents of the registers 0 to 9 are NOT persistent and are lost when power is switched off or when leaving the emulation mode.	
RP	✓
S1	✓
S2	✓

Device-specific functions	
Command syntax	Status
S3	✓
S4	✓
S5 value	✓
UP	✓
SV value <b>Remark:</b> The contents of the registers 0 to 9 are NOT persistent and are lost when power is switched off or when leaving the emulation mode.	
ST value <b>Remark:</b> The contents of the registers 0 to 9 are NOT persistent and are lost when power is switched off or when leaving the emulation mode.	

## 15 Emulating the Hewlett-Packard 8673

The remote emulation HP8673 is available only if one of the following options is installed:

- SMB-B112 RF Path 100 kHz to 12.75 GHz with electronic step attenuator
- SMB-B112L RF Path 100 kHz to 12.75 GHz without step attenuator
- SMB-B120 RF Path 100 kHz to 20 GHz with mechanical step attenuator
- SMB-B120L RF Path 100 kHz to 20 GHz without step attenuator
- SMB-B140 RF Path 100 kHz to 40 GHz with mechanical step attenuator
- SMB-B140L RF Path 100 kHz to 40 GHz without step attenuator

The following tables show the current implementation status of each command. Commands not shown in these tables are not supported.

Device-specific functions	
Command syntax	Status
AO	✓
A0	✓
A1	✓
A2	✓
A3	✓
AP value	✓
CF value	✓
CS	✓
CW value	✓
DF value	✓
DN	✓
DW value	✓
DO	✓
D0	✓
D1	✓
D2	✓
D3	✓
D4	✓
D5	✓
D6	✓
D7	✓
FA value	✓





Device-specific functions	
Command syntax	Status
FB value	✓
FI value	✓
FN value	✓
FO value	✓
FR value	✓
FS value	✓
FT value	✓
F1 value	✓
IF	✓
IP	✓
LE value	✓
L1c	○
L2	○
MG	✓
MU value	✓
MY value	✓
OA	✓
OC	✓
OK	✓
OR	✓
OS	✓
PL value	✓
PO	✓
P0	✓
P1	✓
P2	✓
P3	✓
RA value	✓
RD	✓
RF0	✓
RF1	✓
RM value	✓
RS	✓

Device-specific functions	
Command syntax	Status
RU	✓
R0	✓
R1	✓
SE	✓
SF value	✓
SH	✓
SM	✓
TI	✓
TR	✓
UP	✓
WO	✓
W0	✓
W1	✓
W2	✓
W3	✓
W4	✓
W5	✓
W6	✓
@1 value	


## 16 Emulating the R&S®SML


The following tables show the current implementation status of each command. Commands not shown in these tables are not supported.


IEEE488.2 functions	
Command syntax	Status
*CLS	✓
*ESE value *ESE?	✓
*ESR?	✓
*IDN? <b>Remark:</b> If the response does not match the requirements, a user-specific response to *IDN? and *OPT? can be applied on the instrument's front panel.	
*OPC *OPC? Wait for/query completion of command.	✓
*OPT? <b>Remark:</b> If the response does not match the requirements, a user-specific response to *IDN? and *OPT? can be applied on the instrument's front panel.	
*RCL value	✓
*RST	✓
*SAV value	✓
*SRE value *SRE?	✓
*STB?	✓
*TST?	✓
*WAI	✓


Device-specific functions	
Command syntax	Status
ABORT[:SWEp]	✓
CALibration[:ALL]?	✓
CALibration:FMOffset[:MEASure]?	✓
CALibration:ROSCillator[:DATA]? value	✓
DIAGnostic:INFO:CCOunt:POWer?	✓
DIAGnostic:INFO:OTIME?	✓

Device-specific functions	
Command syntax	Status
DIAGnostic:INFO:SDATe?	✓
DISPlay:ANNotation[:ALL] value DISPlay:ANNotation[:ALL]?	✓
DISPlay:ANNotation:AMPLitude value DISPlay:ANNotation:AMPLitude?	✓
DISPlay:ANNotation:FREQuency value DISPlay:ANNotation:FREQuency?	✓
MEMory:NSTATes?	✓
OUTPut[1]:AMODe value OUTPut[1]:AMODe?	✓
OUTPut[1][:STATe] value OUTPut1[:STATe]?	✓
OUTPut2[:STATe] value OUTPut2[:STATe]?	✓
OUTPut[1][:STATe]:PON value OUTPut[1][:STATe]:PON?	✓
OUTPut2:VOLTagE value OUTPut2:VOLTagE?	✓
[SOURce:]AM[:DEPTH] value [SOURce:]AM[:DEPTH]?	✓
[SOURce:]AM:EXTernal:COUPling value [SOURce:]AM:EXTernal:COUPling?	✓
[SOURce:]AM:INTernal:FREQuency value [SOURce:]AM:INTernal:FREQuency? value	✓
[SOURce:]AM:SOURce value [SOURce:]AM:SOURce?	✓
[SOURce:]AM:STATe value [SOURce:]AM:STATe?	✓
[SOURce:]CORRection:CSET:CATalog?	✓
[SOURce:]CORRection:CSET:DATA:FREQuency value{,value} [SOURce:]CORRection:CSET:DATA:FREQuency?	✓
[SOURce:]CORRection:CSET:DATA:FREQuency:POINts?	✓
[SOURce:]CORRection:CSET:DATA:POWer value{,value} [SOURce:]CORRection:CSET:DATA:POWer?	✓
[SOURce:]CORRection:CSET:DATA:POWer:POINts?	✓
[SOURce:]CORRection:CSET:DELeTe value	✓




Device-specific functions	
Command syntax	Status
[SOURce:]CORRection:CSET:DELeTe:ALL	✓
[SOURce:]CORRection:CSET:FREE?	✓
[SOURce:]CORRection:CSET[:SELeCt] value [SOURce:]CORRection:CSET[:SELeCt]?	✓
[SOURce:]CORRection[:STATe] value [SOURce:]CORRection[:STATe]?	✓
[SOURce:]FM[:DEVIation] value [SOURce:]FM[:DEVIation]?	✓
[SOURce:]FM:EXTErnal:COUPling value [SOURce:]FM:EXTErnal:COUPling?	✓
[SOURce:]FM:INTernAl:FREQUency value [SOURce:]FM:INTernAl:FREQUency?	✓
[SOURce:]FM:SOURce value [SOURce:]FM:SOURce?	✓
[SOURce:]FM:STATe value [SOURce:]FM:STATe?	✓
[SOURce:]FREQUency:CENTer value [SOURce:]FREQUency:CENTer?	✓
[SOURce:]FREQUency[:CW] value [SOURce:]FREQUency[:CW]?	✓
[SOURce:]FREQUency:FIXed value [SOURce:]FREQUency:FIXed?	✓
[SOURce:]FREQUency:MANual value <b>Remark:</b> Sets and limits actual RF frequency to sweep range.	
[SOURce:]FREQUency:MODE value [SOURce:]FREQUency:MODE?	✓
[SOURce:]FREQUency:OFFSet value [SOURce:]FREQUency:OFFSet?	✓
[SOURce:]FREQUency:RCL value [SOURce:]FREQUency:RCL?	✓
[SOURce:]FREQUency:SPAN value [SOURce:]FREQUency:SPAN?	✓
[SOURce:]FREQUency:STARt value [SOURce:]FREQUency:STARt?	✓
[SOURce:]FREQUency:STEP[:INCRement] value [SOURce:]FREQUency:STEP[:INCRement]?	✓





Device-specific functions	
Command syntax	Status
[SOURce:]FREQuency:STOP value [SOURce:]FREQuency:STOP?	✓
[SOURce:]MODulation[:ALL]:STATe value [SOURce:]MODulation[:ALL]:STATe?	✓
[SOURce:]PHASe value [SOURce:]PHASe?	✓
[SOURce:]PHASe:REFerence	✓
[SOURce:]PHASe:STEP value [SOURce:]PHASe:STEP?	✓
[SOURce:]PM[:DEViation] value [SOURce:]PM[:DEViation]?	✓
[SOURce:]PM:EXTernal:COUPling value [SOURce:]PM:EXTernal:COUPling?	✓
[SOURce:]PM:INTernal:FREQuency value [SOURce:]PM:INTernal:FREQuency?	✓
[SOURce:]PM:SOURce value [SOURce:]PM:SOURce?	✓
[SOURce:]PM:STATe value [SOURce:]PM:STATe?	✓
[SOURce:]POWER:ALC:STATe value [SOURce:]POWER:ALC:STATe?	✓
[SOURce:]POWER[:LEVel][:IMMEDIATE][:AMPLitude] value [SOURce:]POWER[:LEVel][:IMMEDIATE][:AMPLitude]?	✓
[SOURce:]POWER[:LEVel][:IMMEDIATE]:OFFSet value [SOURce:]POWER[:LEVel][:IMMEDIATE]:OFFSet?	✓
[SOURce:]POWER:LIMit[:AMPLitude] value [SOURce:]POWER:LIMit[:AMPLitude]?	✓
[SOURce:]POWER:MANual value <b>Remark:</b> Sets and limits actual RF level to sweep range.	
[SOURce:]POWER:MODE value [SOURce:]POWER:MODE?	✓
[SOURce:]POWER:RCL value [SOURce:]POWER:RCL?	✓
[SOURce:]POWER:STARt value [SOURce:]POWER:STARt?	✓

Device-specific functions	
Command syntax	Status
[SOURce:]POWer:STEP[:INCRement] value [SOURce:]POWer:STEP[:INCRement]?	✓
[SOURce:]POWer:STOP value [SOURce:]POWer:STOP?	✓
[SOURce:]PULM:POLarity? <b>Remark:</b> In external mode only.	
[SOURce:]PULM:SOURce value [SOURce:]PULM:SOURce?	✓
[SOURce:]PULM:STATe value [SOURce:]PULM:STATe?	✓
[SOURce:]PULSe:DELay value [SOURce:]PULSe:DELay?	✓
[SOURce:]PULSe:DOUBle:DELay value [SOURce:]PULSe:DOUBle:DELay?	✓
[SOURce:]PULSe:DOUBle:STATe value [SOURce:]PULSe:DOUBle:STATe?	✓
[SOURce:]PULSe:PERiod value [SOURce:]PULSe:PERiod?	✓
[SOURce:]PULSe:WIDTh value [SOURce:]PULSe:WIDTh	✓
[SOURce:]ROSCillator[::INTernal]:ADJust[::STATe] value [SOURce:]ROSCillator[::INTernal]:ADJust[::STATe]?	✓
[SOURce:]ROSCillator[::INTernal]:ADJust:VALue value [SOURce:]ROSCillator[::INTernal]:ADJust:VALue?	✓
[SOURce:]ROSCillator:SOURce value [SOURce:]ROSCillator:SOURce?	✓
[SOURce:]STEReo:ARI:BK[::CODE] value [SOURce:]STEReo:ARI:BK[::CODE]?	✓
[SOURce:]STEReo:ARI[::DEViation] value [SOURce:]STEReo:ARI[::DEViation]?	✓
[SOURce:]STEReo:ARI:STATe value [SOURce:]STEReo:ARI:STATe?	✓
[SOURce:]STEReo:ARI:TYPE value [SOURce:]STEReo:ARI:TYPE?	✓
[SOURce:]STEReo:ARI:TYPE:STATe value [SOURce:]STEReo:ARI:TYPE:STATe?	✓

Device-specific functions	
Command syntax	Status
[SOURce:]STEReo:AUDio[:FREQuency] value [SOURce:]STEReo:AUDio[:FREQuency]?	✓
[SOURce:]STEReo:AUDio:MODE value [SOURce:]STEReo:AUDio:MODE?	✓
[SOURce:]STEReo:AUDio:PREEmphasis value [SOURce:]STEReo:AUDio:PREEmphasis? <b>Remark:</b> 50us, 75us are supported.	
[SOURce:]STEReo:AUDio:PREEmphasis:STATe value [SOURce:]STEReo:AUDio:PREEmphasis:STATe?	✓
[SOURce:]STEReo[:DEViation] value [SOURce:]STEReo[:DEViation]?	✓
[SOURce:]STEReo:PILot[:DEViation] value [SOURce:]STEReo:PILot[:DEViation]?	✓
[SOURce:]STEReo:PILot:PHASe value [SOURce:]STEReo:PILot:PHASe?	✓
[SOURce:]STEReo:PILot:STATe value [SOURce:]STEReo:PILot:STATe?	✓
[SOURce:]STEReo:RDS:DATaset value [SOURce:]STEReo:RDS:DATaset?	✓
[SOURce:]STEReo:RDS[:DEViation] value [SOURce:]STEReo:RDS[:DEViation]?	✓
[SOURce:]STEReo:RDS:STATe value [SOURce:]STEReo:RDS:STATe?	✓
[SOURce:]STEReo:RDS:TRAFfic:PROGram:STATe value [SOURce:]STEReo:RDS:TRAFfic:PROGram:STATe?	✓
[SOURce:]STEReo:RDS:TRAFfic:ANNouncement:STATe value [SOURce:]STEReo:RDS:TRAFfic:ANNouncement:STATe?	✓
[SOURce:]STEReo:SOURce value [SOURce:]STEReo:SOURce?	✓
[SOURce:]STEReo[:STATe] value [SOURce:]STEReo[:STATe]?	✓
[SOURce:]SWEep[:FREQuency]:DWELI value [SOURce:]SWEep[:FREQuency]:DWELI?	✓





Device-specific functions	
Command syntax	Status
[SOURce:]SWEep[:FREQuency]:MODE value [SOURce:]SWEep[:FREQuency]:MODE? <b>Remark:</b> AUTO, MANual are supported.	
[SOURce:]SWEep[:FREQuency]:RUNNing?	✓
[SOURce:]SWEep[:FREQuency]:SPACing value [SOURce:]SWEep[:FREQuency]:SPACing?	✓
[SOURce:]SWEep[:FREQuency]:STEP[:LINear] value [SOURce:]SWEep[:FREQuency]:STEP[:LINear]?	✓
[SOURce:]SWEep[:FREQuency]:STEP:LOGarithmic value [SOURce:]SWEep[:FREQuency]:STEP:LOGarithmic?	✓
[SOURce:]SWEep:POWer:DWELI value [SOURce:]SWEep:POWer:DWELI?	✓
[SOURce:]SWEep:POWer:MODE value [SOURce:]SWEep:POWer:MODE? <b>Remark:</b> AUTO, MANual are supported.	
[SOURce:]SWEep:POWer:RUNNing?	✓
[SOURce:]SWEep:POWer:SPACing value [SOURce:]SWEep:POWer:SPACing?	✓
[SOURce:]SWEep:POWer:STEP:LOGarithmic value [SOURce:]SWEep:POWer:STEP:LOGarithmic?	✓
SOURce2:FREQuency[:CW] value SOURce2:FREQuency[:CW]?	✓
SOURce2:FREQuency:FIXed value SOURce2:FREQuency:FIXed?	✓
SOURce2:FREQuency:MANual value <b>Remark:</b> Sets and limits actual LF frequency to sweep range.	
SOURce2:FREQuency:MODE value SOURce2:FREQuency:MODE?	✓
SOURce2:FREQuency:STARt value SOURce2:FREQuency:STARt?	✓
SOURce2:FREQuency:STOP value SOURce2:FREQuency:STOP?	✓
SOURce2:SWEep[:FREQuency]:DWELI value SOURce2:SWEep[:FREQuency]:DWELI?	✓

Device-specific functions	
Command syntax	Status
SOURce2:SWEEp[:FREQuency]:MODE value SOURce2:SWEEp[:FREQuency]:MODE? <b>Remark:</b> AUTO, MANual are supported.	
SOURce2:SWEEp[:FREQuency]:RUNNing?	✓
SOURce2:SWEEp[:FREQuency]:SPACing value SOURce2:SWEEp[:FREQuency]:SPACing?	✓
SOURce2:SWEEp[:FREQuency]:STEP[:LINear] value SOURce2:SWEEp[:FREQuency]:STEP[:LINear]?	✓
SOURce2:SWEEp[:FREQuency]:STEP:LOGarithmic value SOURce2:SWEEp[:FREQuency]:STEP:LOGarithmic?	✓
STATus:PRESet	✓
STATus:QUEue[:NEXT]?	✓
SYSTem:COMMunicate:GPIB[:SELF]:ADDRes value SYSTem:COMMunicate:GPIB[:SELF]:ADDRes?	✓
SYSTem:DISPlay:UPDate[:STATe] value SYSTem:DISPlay:UPDate[:STATe]?	✓
SYSTem:ERRor? <b>Remark:</b> Returns the original error message of the Rohde & Schwarz signal generator.	
SYSTem:PRESet <b>Remark:</b> Implementation is identical to common command *RST.	
SYSTem:SECurity[:STATe] value SYSTem:SECurity[:STATe]?	✓
SYSTem:SERRor?	✓
SYSTem:VERSion?	✓
TRIGger:PULSe:EGATed:POLarity value TRIGger:PULSe:EGATed:POLarity?	✓
TRIGger:PULSe:SLOPe value TRIGger:PULSe:SLOPe?	✓
TRIGger:PULSe:SOURce value TRIGger:PULSe:SOURce? <b>Remark:</b> AUTO, EGATe, EXTernal are supported.	
TRIGger[1] [:SWEEp][:IMMEDIATE]	✓
TRIGger2[:SWEEp][:IMMEDIATE]	✓

Device-specific functions	
Command syntax	Status
TRIGger[1] [:SWEep]:SOURce value TRIGger[1][:SWEep]:SOURce?	✓
TRIGger2[:SWEep]:SOURce value TRIGger2[:SWEep]:SOURce?	✓
UNIT:POWer value UNIT:POWer?	✓



## 17 Emulating the R&S®SMT






The following tables show the current implementation status of each command. Commands not shown in these tables are not supported.

IEEE488.2 functions	
Command syntax	Status
*CLS	✓
*ESE value *ESE?	✓
*ESR?	✓
*IDN? <b>Remark:</b> If the response does not match the requirements, a user-specific response to *IDN? and *OPT? can be applied on the instrument's front panel.	
*OPC *OPC?.	✓
*OPT? <b>Remark:</b> If the response does not match the requirements, a user-specific response to *IDN? and *OPT? can be applied on the instrument's front panel.	
*RCL value	✓
*RST	✓
*SAV value	✓
*SRE value *SRE?	✓
*STB?	✓
*TST?	✓
*WAI	✓

Device-specific functions	
Command syntax	Status
ABORT[:SWEp]	✓
CALibration:FM:Offset?	✓
CALibration:LEVel:STATe value CALibration:LEVel:STATe?	✓
CALibration:ROSCillator[:DATA] value CALibration:ROSCillator[:DATA]?	✓
DIAGnostic:INFO:CCOunt:POWer?	✓





Device-specific functions	
Command syntax	Status
DIAGnostic:INFO:OTIME?	✓
DIAGnostic:INFO:SDATE?	✓
DISPlay:ANNotation[:ALL] value DISPlay:ANNotation[:ALL]?	✓
DISPlay:ANNotation:AMPLitude value DISPlay:ANNotation:AMPLitude?	✓
DISPlay:ANNotation:FREQuency value DISPlay:ANNotation:FREQuency?	✓
FORMat[:DATA] value FORMat[:DATA]?	✓
MEMory:NStates?	✓
OUTPut[1]:AMODE value OUTPut[1]:AMODE?	✓
OUTPut[1]:IMPedance?	✓
OUTPut[1][:STATE] value OUTPut[1][:STATE]?	✓
OUTPut2[:STATE] value OUTPut2[:STATE]?	✓
OUTPut[1][:STATE]:PON value OUTPut[1][:STATE]:PON?	✓
OUTPut2:VOLTage value OUTPut2:VOLTage?	✓
[SOURce[1]:]AM[:DEPT]h value [SOURce[1]:]AM[:DEPT]h?	✓
[SOURce[1]:]AM:EXTernal:COUPling value [SOURce[1]:]AM:EXTernal:COUPling?	✓
[SOURce[1]:]AM:INTernal[1]:FREQuency value [SOURce[1]:]AM:INTernal[1]:FREQuency? value	✓
[SOURce[1]:]AM:INTernal2:FREQuency value [SOURce[1]:]AM:INTernal2:FREQuency? value <b>Remark:</b> INTernal2 is mapped to INTernal[1].	✋
[SOURce[1]:]AM:SOURce value [SOURce[1]:]AM:SOURce? <b>Remark:</b> INTernal2 is mapped to INTernal[1].	✋

Device-specific functions	
Command syntax	Status
[SOURce[1]:]AM:STATe value [SOURce[1]:]AM:STATe?	✓
[SOURce[1]:]CORRection:CSET:CATalog?	✓
[SOURce[1]:]CORRection:CSET:DATA:FREQUency value [SOURce[1]:]CORRection:CSET:DATA:FREQUency?	✓
[SOURce[1]:]CORRection:CSET:DATA:POWer value [SOURce[1]:]CORRection:CSET:DATA:POWer?	✓
[SOURce[1]:]CORRection:CSET:DELeTe value	✓
[SOURce[1]:]CORRection:CSET[:SELeCt] value [SOURce[1]:]CORRection:CSET[:SELeCt]?	✓
[SOURce[1]:]CORRection[:STATe] value [SOURce[1]:]CORRection[:STATe]?	✓
[SOURce[1]:]FM[1][:DEVIation] value [SOURce[1]:]FM[1] [:DEVIation]?	✓
[SOURce[1]:]FM2[:DEVIation] value [SOURce[1]:]FM2[:DEVIation]?	
<b>Remark:</b> FM2 is mapped to FM[1].	
[SOURce[1]:]FM[1]:EXTErnal[1]:COUPling value [SOURce[1]:]FM[1]:EXTErnal[1]:COUPling?	✓
[SOURce[1]:]FM[1]:EXTErnal2:COUPling value [SOURce[1]:]FM[1]:EXTErnal2:COUPling?	
<b>Remark:</b> EXTErnal2 is mapped to EXTErnal[1].	
[SOURce[1]:]FM2:EXTErnal[1]:COUPling value [SOURce[1]:]FM2:EXTErnal[1]:COUPling?	
<b>Remark:</b> FM2 is mapped to FM[1].	
[SOURce[1]:]FM2:EXTErnal2:COUPling value [SOURce[1]:]FM2:EXTErnal2:COUPling?	
<b>Remark:</b> FM2 is mapped to FM[1]. EXTErnal2 is mapped to EXTErnal[1].	
[SOURce[1]:]FM[1]:INTernal:FREQUency value [SOURce[1]:]FM[1]:INTernal:FREQUency?	✓


Device-specific functions	
Command syntax	Status
[SOURce[1]:]FM2:INTernal:FREQuency value [SOURce[1]:]FM2:INTernal:FREQuency? <b>Remark:</b> FM2 is mapped to FM[1].	
[SOURce[1]:]FM[1]:SOURce value [SOURce[1]:]FM[1]:SOURce? <b>Remark:</b> EXTernal2 is mapped to EXTernal[1].	
[SOURce[1]:]FM2:SOURce value [SOURce[1]:]FM2:SOURce? <b>Remark:</b> FM2 is mapped to FM[1]. EXTernal2 is mapped to EXTernal[1].	
[SOURce:]FM[1]:STATe value [SOURce:]FM[1]:STATe?	✓
[SOURce:]FM2:STATe value [SOURce:]FM2:STATe? <b>Remark:</b> FM2 is mapped to FM[1].	
[SOURce[1]:]FREQuency:CENTer value [SOURce[1]:]FREQuency:CENTer?	✓
[SOURce[1]:]FREQuency[:CW] value [SOURce[1]:]FREQuency[:CW]?	✓
[SOURce[1]:]FREQuency[:CW]:RCL value [SOURce[1]:]FREQuency[:CW]:RCL?	✓
[SOURce[1]:]FREQuency:FIXed value [SOURce[1]:]FREQuency:FIXed?	✓
[SOURce[1]:]FREQuency:FIXed:RCL value [SOURce[1]:]FREQuency:FIXed:RCL?	✓
[SOURce[1]:]FREQuency:MANual value <b>Remark:</b> Sets and limits actual RF frequency to sweep range.	
[SOURce[1]:]FREQuency:MODE value [SOURce[1]:]FREQuency:MODE?	✓
[SOURce[1]:]FREQuency:OFFSet value [SOURce[1]:]FREQuency:OFFSet?	✓
[SOURce[1]:]FREQuency:SPAN value [SOURce[1]:]FREQuency:SPAN?	✓

Device-specific functions	
Command syntax	Status
[SOURce[1]:]FREQuency:STARt value [SOURce[1]:]FREQuency:STARt?	✓
[SOURce[1]:]FREQuency:STEP[:INCRement] value [SOURce[1]:]FREQuency:STEP[:INCRement]?	✓
[SOURce[1]:]FREQuency:STOP value [SOURce[1]:]FREQuency:STOP?	✓
[SOURce[1]:]MODulation[:ALL]:STATe value [SOURce[1]:] MODulation[:ALL]:STATe?	+
[SOURce[1]:]PHASe[:ADJust] value [SOURce[1]:]PHASe[:ADJust]?	✓
[SOURce[1]:]PHASe:REFerence	✓
[SOURce[1]:]PM[1][:DEViation] value [SOURce[1]:]PM[1] [:DEViation]?	✓
[SOURce[1]:]PM2[:DEViation] value [SOURce[1]:]PM2[:DEViation]?	
<b>Remark:</b> PM2 is mapped to PM[1].	
[SOURce[1]:]PM[1]:EXTernal[1]:COUPling value [SOURce[1]:]PM[1]:EXTernal[1]:COUPling?	✓
[SOURce[1]:]PM[1]:EXTernal2:COUPling value [SOURce[1]:]PM[1]:EXTernal2:COUPling?	
<b>Remark:</b> EXTernal2 is mapped to EXTernal[1].	
[SOURce[1]:]PM2:EXTernal[1]:COUPling value [SOURce[1]:]PM2:EXTernal[1]:COUPling?	
<b>Remark:</b> PM2 is mapped to PM[1].	
[SOURce[1]:]PM2:EXTernal2:COUPling value [SOURce[1]:]PM2:EXTernal2:COUPling?	
<b>Remark:</b> PM2 is mapped to PM[1]. EXTernal2 is mapped to EXTernal[1].	
[SOURce[1]:]PM[1]:INTernal:FREQuency value [SOURce[1]:]PM[1]:INTernal:FREQuency?	✓
[SOURce[1]:]PM2:INTernal:FREQuency value [SOURce[1]:]PM2:INTernal:FREQuency?	
<b>Remark:</b> PM2 is mapped to PM[1].	




Device-specific functions	
Command syntax	Status
[SOURce[1]:]PM[1]:SOURce value [SOURce[1]:]PM[1]:SOURce? <b>Remark:</b> EXTernal2 is mapped to EXTernal[1].	
[SOURce[1]:]PM2:SOURce value [SOURce[1]:]PM2:SOURce? <b>Remark:</b> PM2 is mapped to PM[1]. EXTernal2 is mapped to EXTernal[1].	
[SOURce[1]:]PM[1]:STATe value [SOURce[1]:]PM[1]:STATe?	✓
[SOURce[1]:]PM2:STATe value [SOURce[1]:]PM2:STATe? <b>Remark:</b> PM2 is mapped to PM[1].	
[SOURce[1]:]POWer:ALC:STATe value [SOURce[1]:]POWer:ALC:STATe?	✓
[SOURce[1]:]POWer[:LEVel][:IMMediate][:AMPLitude] value [SOURce[1]:]POWer[:LEVel][:IMMediate][:AMPLitude]?	✓
[SOURce[1]:]POWer[:LEVel][:IMMediate]:OFFSet value [SOURce[1]:]POWer[:LEVel][:IMMediate]:OFFSet?	✓
[SOURce[1]:]POWer[:LEVel][:IMMediate]:RCL value [SOURce[1]:]POWer[:LEVel][:IMMediate]:RCL?	✓
[SOURce[1]:]POWer:LIMit[:AMPLitude] value [SOURce[1]:]POWer:LIMit[:AMPLitude]?	✓
[SOURce[1]:]POWer:MANual value <b>Remark:</b> Sets and limits actual RF level to sweep range.	
[SOURce[1]:]POWer:MODE value [SOURce[1]:]POWer:MODE?	✓
[SOURce[1]:]POWer:STARt value [SOURce[1]:]POWer:STARt?	✓
[SOURce[1]:]POWer:STEP[:INCRement] value [SOURce[1]:]POWer:STEP[:INCRement]?	✓
[SOURce[1]:]POWer:STOP value [SOURce[1]:]POWer:STOP?	✓


Device-specific functions	
Command syntax	Status
[SOURCE[1]:]PULM:EXTernal: IMPedance value [SOURCE[1]:]PULM:EXTernal:IMPedance? <b>Remark:</b> 50Ohms, 10KOhms are supported.	
[SOURCE[1]:]PULM:INTernal:FREQuency value [SOURCE[1]:]PULM:INTernal:FREQuency?	✓
[SOURCE[1]:]PULM:POLarity?	✓
[SOURCE[1]:]PULM:SOURce value [SOURCE[1]:]PULM:SOURce?	✓
[SOURCE[1]:]PULM:STATe value [SOURCE[1]:]PULM:STATe?	✓
[SOURCE[1]:]PULSe:DELay value [SOURCE[1]:]PULSe:DELay?	✓
[SOURCE[1]:]PULSe:DOUBle:DELay value [SOURCE[1]:]PULSe:DOUBle:DELay?	✓
[SOURCE[1]:]PULSe:DOUBle:STATe value [SOURCE[1]:]PULSe:DOUBle:STATe?	✓
[SOURCE[1]:]PULSe:PERiod value [SOURCE[1]:]PULSe:PERiod?	✓
[SOURCE[1]:]PULSe:WIDTh value [SOURCE[1]:]PULSe:WIDTh	✓
[SOURCE[1]:]ROSCillator[:INTernal]:ADJust[:STATe] value [SOURCE[1]:]ROSCillator[:INTernal]:ADJust[:STATe]?	✓
[SOURCE[1]:]ROSCillator[:INTernal]:ADJust:VALue value [SOURCE[1]:]ROSCillator[:INTernal]:ADJust:VALue?	✓
[SOURCE[1]:]ROSCillator:SOURce value [SOURCE[1]:]ROSCillator:SOURce?	✓
[SOURCE[1]:]STEReo:ARI:BK[:CODE] value [SOURCE[1]:]STEReo:ARI:BK[:CODE]?	✓
[SOURCE[1]:]STEReo:ARI[:DEViation] value [SOURCE[1]:]STEReo:ARI[:DEViation]?	✓
[SOURCE[1]:]STEReo:ARI:STATe value [SOURCE[1]:]STEReo:ARI:STATe?	✓
[SOURCE[1]:]STEReo:ARI:TYPE value [SOURCE[1]:]STEReo:ARI:TYPE?	✓
[SOURCE[1]:]STEReo:AUDio[:FREQuency] value [SOURCE[1]:]STEReo:AUDio[:FREQuency]?	✓

Device-specific functions	
Command syntax	Status
[SOURce[1]:]STEReo:AUDio:MODE value [SOURce[1]:]STEReo:AUDio:MODE?	✓
[SOURce[1]:]STEReo:AUDio:PREEmphasis value [SOURce[1]:]STEReo:AUDio:PREEmphasis? <b>Remark:</b> 50us, 75us are supported.	
[SOURce[1]:]STEReo[:DEVIation] value [SOURce[:]STEReo[:DEVIation]?	✓
[SOURce[1]:]STEReo:PILot[:DEVIation] value [SOURce[1]:]STEReo:PILot[:DEVIation]?	✓
[SOURce[1]:]STEReo:PILot:PHASe value [SOURce[1]:]STEReo:PILot:PHASe?	✓
[SOURce[1]:]STEReo:PILot:STATe value [SOURce[1]:]STEReo:PILot:STATe?	✓
[SOURce[1]:]STEReo[:STATe] value [SOURce[1]:]STEReo[:STATe]?	✓
[SOURce[1]:]SWEep[:FREQUency]:DWELI value [SOURce[1]:]SWEep[:FREQUency]:DWELI?	✓
[SOURce[1]:]SWEep[:FREQUency]:MODE value [SOURce[1]:]SWEep[:FREQUency]:MODE?	✓
[SOURce[1]:]SWEep[:FREQUency]:POINTs value [SOURce[1]:]SWEep[:FREQUency]: POINTs?	✓
[SOURce[1]:]SWEep[:FREQUency]:SPACing value [SOURce[1]:]SWEep[:FREQUency]:SPACing?	✓
[SOURce[1]:]SWEep[:FREQUency]:STEP[:LINEar] value [SOURce[1]:]SWEep[:FREQUency]:STEP[:LINEar]?	✓
[SOURce[1]:]SWEep[:FREQUency]:STEP:LOGarithmic value [SOURce[1]:]SWEep[:FREQUency]:STEP:LOGarithmic?	✓
[SOURce[1]:]SWEep:POWer:DWELI value [SOURce[1]:]SWEep:POWer:DWELI?	✓
[SOURce[1]:]SWEep:POWer:MODE value [SOURce[1]:]SWEep:POWer:MODE?	✓
[SOURce[1]:]SWEep:POWer:POINTs value [SOURce[1]:]SWEep:POWer:POINTs?	✓
[SOURce[1]:]SWEep:POWer:SPACing value [SOURce[1]:]SWEep:POWer:SPACing?	✓

Device-specific functions	
Command syntax	Status
[SOURce[1]:]SWEep:POWer:STEP[:LOGarithmic] value [SOURce[1]:]SWEep:POWer:STEP[:LOGarithmic]?	✓
SOURce0:FREQuency[:CW] value SOURce0:FREQuency[:CW]? <b>Remark:</b> SOURce0 is mapped to SOURce2.	✋
SOURce2:FREQuency[:CW] value SOURce2:FREQuency[:CW]?	✓
SOURce0:FREQuency:FIXed value SOURce0:FREQuency:FIXed? <b>Remark:</b> SOURce0 is mapped to SOURce2.	✋
SOURce2:FREQuency:FIXed value SOURce2:FREQuency:FIXed?	✓
SOURce0:FREQuency:MANual value <b>Remark:</b> SOURce0 is mapped to SOURce2. Sets and limits actual LF frequency to sweep range.	✋
SOURce2:FREQuency:MANual value <b>Remark:</b> Sets and limits actual LF frequency to sweep range.	✋
SOURce0:FREQuency:MODE value SOURce0:FREQuency:MODE? <b>Remark:</b> SOURce0 is mapped to SOURce2.	✋
SOURce2:FREQuency:MODE value SOURce2:FREQuency:MODE?	✓
SOURce0:FREQuency:STARt value SOURce0:FREQuency:STARt? <b>Remark:</b> SOURce0 is mapped to SOURce2.	✋
SOURce2:FREQuency:STARt value SOURce2:FREQuency:STARt?	✓
SOURce0:FREQuency:STOP value SOURce0:FREQuency:STOP? <b>Remark:</b> SOURce0 is mapped to SOURce2.	✋
SOURce2:FREQuency:STOP value SOURce2:FREQuency:STOP?	✓





Device-specific functions	
Command syntax	Status
SOURce0:FUNction value SOURce0: FUNction? <b>Remark:</b> SOURce0 is mapped to SOURce2. SINusoid, SQUare are supported.	
SOURce2:FUNction value SOURce2: FUNction? <b>Remark:</b> SINusoid, SQUare are supported.	
SOURce0:SWEEp[:FREQuency]:DWEll value SOURce0:SWEEp[:FREQuency]:DWEll? <b>Remark:</b> SOURce0 is mapped to SOURce2.	
SOURce2:SWEEp[:FREQuency]:DWEll value SOURce2:SWEEp[:FREQuency]:DWEll?	✓
SOURce0:SWEEp[:FREQuency]:MODE value SOURce0:SWEEp[:FREQuency]:MODE? <b>Remark:</b> SOURce0 is mapped to SOURce2.	
SOURce2:SWEEp[:FREQuency]:MODE value SOURce2:SWEEp[:FREQuency]:MODE?	✓
SOURce0:SWEEp[:FREQuency]:POINts value SOURce0:SWEEp[:FREQuency]: POINts? <b>Remark:</b> SOURce0 is mapped to SOURce2.	
SOURce2:SWEEp[:FREQuency]:POINts value SOURce2:SWEEp[:FREQuency]: POINts?	✓
SOURce0:SWEEp[:FREQuency]:SPACing value SOURce0:SWEEp[:FREQuency]:SPACing? <b>Remark:</b> SOURce0 is mapped to SOURce2.	
SOURce2:SWEEp[:FREQuency]:SPACing value SOURce2:SWEEp[:FREQuency]:SPACing?	✓
SOURce0:SWEEp[:FREQuency]:STEP[:LINear] value SOURce0:SWEEp[:FREQuency]:STEP[:LINear]? <b>Remark:</b> SOURce0 is mapped to SOURce2.	
SOURce2:SWEEp[:FREQuency]:STEP[:LINear] value SOURce2:SWEEp[:FREQuency]:STEP[:LINear]?	✓

Device-specific functions	
Command syntax	Status
SOURce0:SWEEp[:FREQuency]:STEP:LOGarithmic value SOURce0:SWEEp[:FREQuency]:STEP:LOGarithmic? <b>Remark:</b> SOURce0 is mapped to SOURce2.	
SOURce2:SWEEp[:FREQuency]:STEP:LOGarithmic value SOURce2:SWEEp[:FREQuency]:STEP:LOGarithmic?	✓
STATus:OPERation:CONDition?	✓
STATus:OPERation:ENABle value STATus:OPERation:ENABle?	✓
STATus:OPERation[:EVENT]?	✓
STATus:OPERation:NTRansition value STATus:OPERation: NTRansition?	✓
STATus:OPERation:PTRansition value STATus:OPERation: PTRansition?	✓
STATus:PRESet	✓
STATus:QUEStionable:CONDition?	✓
STATus:QUEStionable:ENABle value STATus:QUEStionable:ENABle?	✓
STATus:QUEStionable[:EVENT]?	✓
STATus:QUEStionable:NTRansition value STATus:QUEStionable: NTRansition?	✓
STATus:QUEStionable:PTRansition value STATus:QUEStionable: PTRansition?	✓
STATus:QUEue[:NEXT]?	✓
SYSTem:BEEPer:STATe value SYSTem:BEEPer:STATe?	✓
SYSTem:COMMunicate:GPIB[:SELF]:ADDRess value SYSTem:COMMunicate:GPIB[:SELF]:ADDRess?	✓
SYSTem:ERRor? <b>Remark:</b> Returns the original error message of the Rohde & Schwarz signal generator.	
SYSTem:KLOCK value SYSTem:KLOCK?	✓
SYSTem:LANGUage value	+
SYSTem:PRESet <b>Remark:</b> Implementation is identical to common command *RST.	

Device-specific functions	
Command syntax	Status
SYSTem:SECurity[:STATe] value SYSTem:SECurity[:STATe]?	✓
SYSTem:SERRor?	✓
SYSTem:VERSion?	✓
TRIGger[1]:PULSe:SOURce value TRIGger[1]:PULSe:SOURce?	✓
TRIGger[1]:PULSe:SLOPe value TRIGger[1]:PULSe:SLOPe?	✓
TRIGger[1]:SLOPe value TRIGger[1]:SLOPe? <b>Remark:</b> NEGative, POSitive are supported.	
TRIGger[1] [:SWEep][:IMMediate]	✓
TRIGger2[:SWEep][:IMMediate]	✓
TRIGger[1] [:SWEep]:SOURce value TRIGger[1] [:SWEep]:SOURce?	✓
TRIGger2[:SWEep]:SOURce value TRIGger2[:SWEep]:SOURce?	✓
UNIT:ANGLE value UNIT:ANGLE?	✓
UNIT:POWer value UNIT:POWer?	✓

## 18 Emulating the R&S®SMY

The following tables show the current implementation status of each command. Commands not shown in these tables are not supported.




IEEE488.2 functions	
Command syntax	Status
*CLS	✓
*ESE value *ESE?	✓
*ESR?	✓
*IDN? <b>Remark:</b> If the response does not match the requirements, a user-specific response to *IDN? and *OPT? can be applied on the instrument's front panel.	
*OPC *OPC?	✓
*OPT? <b>Remark:</b> If the response does not match the requirements, a user-specific response to *IDN? and *OPT? can be applied on the instrument's front panel.	
*RCL value <b>Remark:</b> Only values in the range from 0 to 9 are supported.	
*RST	✓
*SAV value <b>Remark:</b> Only values in the range from 0 to 9 are supported.	
*SRE value *SRE?	✓
*STB?	✓
*TST?	✓
*WAI	✓

Device-specific functions	
Command syntax	Status
AF value AF?	✓
AF:OFF	✓
AF:ON	✓



Device-specific functions	
Command syntax	Status
AF:Var_step value AF:Var_step?	✓
ALc?	✓
ALc:Auto	○
ALc:Fixed	✓
ALc:NARrow	○
ALc:Normal	✓
ALc:WIDe	○
AM value AM?	✓
AM:Dual:Ac	✓
AM:Dual:Ac value	✓
AM:Dual:Dc	✓
AM:Dual:Dc value	✓
AM:External:Ac	✓
AM:External:Ac value	✓
AM:External:Dc	✓
AM:External:Dc value	✓
AM:Internal	✓
AM:Internal value	✓
AM:OFF	✓
AM:Var_step value AM:Var_step?	✓
Attenuator?	✓
ATtenuator:Fixed	✓
ATtenuator:Normal	✓
DECrement:AF	✓
DECrement:AM	✓
DECrement:FM	✓
DECrement:Level	✓
DECrement:PHM	✓
DECrement:RF	✓
FM value FM?	✓

Device-specific functions	
Command syntax	Status
FM:Dual:Ac	✓
FM:Dual:Ac value	✓
FM:Dual:Dc	✓
FM:Dual:Dc value	✓
FM:External:Ac	✓
FM:External:Ac value	✓
FM:External:Dc	✓
FM:External:Dc value	✓
FM:Internal	✓
FM:Internal value	✓
FM:OFF	✓
FM:Var_step value FM:Var_step?	✓
HEAder:OFF	✓
HEAder:ON	✓
INCrement:AF	✓
INCrement:AM	✓
INCrement:FM	✓
INCrement:Level	✓
INCrement:PHM	✓
INCrement:RF	✓
Level value Level?	✓
Level:Emf value Level:Emf?	✓
Level:OFF	✓
Level:ON	✓
Level:Var_step value Level:Var_step?	✓
PHM value PHM?	✓
PHM:Dual	✓
PHM:Dual value	✓
PHM:External	✓

Device-specific functions	
Command syntax	Status
PHM:External value	✓
PHM:Internal	✓
PHM:Internal value	✓
PHM:OFF	✓
PHM:Var_step value PHM:Var_step?	✓
PRReset	✓
REFerence_oscillator? <b>Remark:</b> Only the first 12 characters are valid.	
REFerence_oscillator:External <b>Remark:</b> Only the first 12 characters are valid.	
REFerence_oscillator:Internal <b>Remark:</b> Only the first 12 characters are valid.	
RF value RF?	✓
RF:STArt value RF:STArt?	✓
RF:STEp value RF:STEp?	✓
RF:STOp value RF:STOp?	✓
RF:Var_step value RF:Var_step?	✓
SWP?	✓
SWP:Auto	✓
SWP:OFF	✓
SWP:ON	✓
SWP:Reset	✓
Time[:RF_swp] value Time[:RF_swp]?	✓

## 19 References

- [1] Rohde & Schwarz, R&S®SMB100A RF and Microwave Signal Generator Operating Manual

## 20 Additional Information

This application note is updated from time to time. Please visit the following website in order to download the latest version:

[Application Notes about the R&S®SMB100A RF and Microwave Signal Generator](#)

## 21 Ordering Information

Please visit the following website for comprehensive ordering information for the SMB:

[Ordering Information for the R&S®SMB100A RF and Microwave Signal Generator](#)

<b>R&amp;S®SMB100A</b>	<b>RF and Microwave Signal Generator</b>	1406.6000.02
R&S®SMB-B101	9 kHz to 1.1 GHz	1407.2509.02
R&S®SMB-B102	9 kHz to 2.2 GHz	1407.2609.02
R&S®SMB-B103	9 kHz to 3.2 GHz	1407.2709.02
R&S®SMB-B106	9 kHz to 6 GHz	1407.2909.02
R&S®SMB-B112	100 kHz to 12.75 GHz with electronic step attenuator	1407.2109.02
R&S®SMB-B112L	100 kHz to 12.75 GHz without step attenuator	1407.2150.02
R&S®SMB-B120	100 kHz to 20 GHz, with mechanical step attenuator	1407.2209.02
R&S®SMB-B120L	100 kHz to 20 GHz, without step attenuator	1407.2250.02
R&S®SMB-B140	100 kHz to 40 GHz, with mechanical step attenuator	1407.2309.02
R&S®SMB-B140L	100 kHz to 40 GHz, without step attenuator	1407.2350.02
R&S®SMB-B1	Reference Oscillator OCXO	1407.3005.02
R&S®SMB-B1H	Reference Oscillator OCXO High Performance	1407.3070.02
R&S®SMB-B5	FM Stereo / RDS	1407.3205.02
R&S®SMB-B30	Reverse Power Protection, 100 kHz to 12.75 GHz	1407.1160.02
R&S®SMB-B31	High Power Option, 10 MHz to 20 GHz	1407.1260.02
R&S®SMB-B32	High Power Option, 10 MHz to 40 GHz	1407.1360.02
R&S®SMB-K21	Pulse Modulator	1407.3811.02
R&S®SMB-K22	Pulse Modulator	1407.3770.02
R&S®SMB-K23	Pulse Generator	1407.3786.02
R&S®SMB-K27	Pulse Train	1407.3828.02

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- Continuous improvement in environmental sustainability
- ISO 14001-certified environmental management system



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