Contents - Chapter 6
"Remote Control - Description of Commands"

6 Remote Control - Description of Commands

Notation

In the following sections, all commands implemented in the instrument are first listed in tables and then described in detail, arranged according to the command subsystems. The notation is adapted to the SCPI standard. The SCPI conformity information is included in the individual description of the commands.

Table of Commands

Command: In the command column, the table provides an overview of the commands and their hierarchical arrangement (see indentations).

Parameter: The parameter column indicates the requested parameters together with their specified range.

Unit: The unit column indicates the basic unit of the physical parameters.

Comment: In the comment column an indication is made on:
- whether the command does not have a query form,
- whether the command has only one query form
- whether the command is implemented only with a certain option of the instrument

Indentations

The different levels of the SCPI command hierarchy are represented in the table by means of indentations to the right. The lower the level, the further the indentation to the right. Please note that the complete notation of the command always includes the higher levels as well.

Example: `SENSe:FREQuency:CENTer` is represented in the table as follows:

`SENSe`	first level
`:FREQuency`	second level
`:CENTer`	third level

Individual description

The individual description contains the complete notation of the command. An example for each command, the *RST value and the SCPI information are included as well.
The operating modes for which a command can be used are indicated by the following abbreviations:

A	Spectrum analysis
A-F	Spectrum analysis - frequency domain only
A-T	Spectrum analysis - time domain only (zero span)

Upper/lower case notation Upper/lower case letters are used to mark the long or short form of the key words of a command in the description (see Section 3.5.2). The instrument itself does not distinguish between upper and lower case letters.

Special characters | A selection of key words with an identical effect exists for several commands. These keywords are indicated in the same line; they are separated by a vertical stroke. Only one of these keywords needs to be included in the header of the command. The effect of the command is independent of which of the keywords is used.

Example: `SENSe:FREQuency:CW|:FIXed`

The two following commands with identical meaning can be created. They set the frequency of the fixed frequency signal to 1 kHz:

`SENSe:FREQuency:CW 1E3` = `SENSe:FREQuency:FIXed 1E3`

A vertical stroke in parameter indications marks alternative possibilities in the sense of "or". The effect of the command is different, depending on which parameter is used.

Example: Selection of the parameters for the command

`DISPlay:FORMat FULL | SPLit`

If parameter FULL is selected, full screen is displayed, in the case of SPLit, split screen is displayed.

[ ] Key words in square brackets can be omitted when composing the header (cf. Section 3.5.2, Optional Keywords). The full command length must be accepted by the instrument for reasons of compatibility with the SCPI standards.
Parameters in square brackets can be incorporated optionally in the command or omitted as well.

{ } Parameters in braces can be incorporated optionally in the command, either not at all, once or several times.

Description of parameters Due to the standardization, the parameter section of SCPI commands consists always of the same syntactical elements. SCPI has therefore specified a series of definitions, which are used in the tables of commands. In the tables, these established definitions are indicated in angled brackets (<...>) and will be briefly explained in the following (see also Section 3.5.5, "Parameters").

<Boolean> This keyword refers to parameters which can adopt two states, "on" and "off". The "off" state may either be indicated by the keyword **OFF** or by the numeric value 0, the "on" state is indicated by **ON** or any numeric value other than zero. Parameter queries are always returned the numeric value 0 or 1.

<numeric_value>
<num>

These keywords mark parameters which may be entered as numeric values or be set using specific keywords (character data).

The following keywords given below are permitted:

MINimum — This keyword sets the parameter to the smallest possible value.

MAXimum — This keyword sets the parameter to the largest possible value.

DEFault — This keyword is used to reset the parameter to its default value.

UP — This keyword increments the parameter value.

DOWN — This keyword decrements the parameter value.

The numeric values associated to MAXimum/MINimum/DEFault can be queried by adding the corresponding keywords to the command. They must be entered following the quotation mark.

Example: `SENSe:FREQuency:CENTer? MAXimum`

returns the maximum possible numeric value of the center frequency as result.

<arbitrary block program data>

This keyword is provided for commands the parameters of which consist of a binary data block.

Common Commands

The common commands are taken from the IEEE 488.2 (IEC 625-2) standard. A particular command has the same effect on different devices. The headers of these commands consist of an asterisk "*" followed by three letters. Many common commands refer to the status reporting system which is described in detail in Section 3.8.

Command	Parameter	Function	Comment
***CAL?**		Calibration Query	query only
***CLS**		Clear Status	no query
***ESE**	0 to 255	Event Status Enable	
***ESR?**		Standard Event Status Query	query only
***IDN?**		Identification Query	query only
***IST?**		Individual Status Query	query only
***OPC**		Operation Complete	
***OPT?**		Option Identification Query	query only
***PCB**	0 to 30	Pass Control Back	no query
***PRE**	0 to 255	Parallel Poll Register Enable	
***PSC**	0 | 1	Power On Status Clear	
***RST**		Reset	no query
***SRE**	0 to 255	Service Request Enable	
***STB?**		Status Byte Query	query only
***TRG**		Trigger	no query
***TST?**		Self Test Query	query only
***WAI**		Wait to continue	no query

***CAL?**

CALIBRATION QUERY initiates a calibration of the instrument and subsequently queries the calibration status. Any responses > 0 indicate errors.

***CLS**

CLEAR STATUS sets the status byte (STB), the standard event register (ESR) and the EVENt-part of the QUEStionable and the OPERation register to zero. The command does not alter the mask and transition parts of the registers. It clears the output buffer.

***ESE 0 to 255**

EVENT STATUS ENABLE sets the event status enable register to the value indicated. The query form *ESE? returns the contents of the event status enable register in decimal form.

***ESR?**

STANDARD EVENT STATUS QUERY returns the contents of the event status register in decimal form (0 to 255) and subsequently sets the register to zero.

***IDN?**

IDENTIFICATION QUERY queries the instrument identification.
Example: " Rohde&Schwarz, FSP-3, 123456/789, 1.03"
FSP-3 = Device name
123456/789 = Serial number of the instrument
1.03 = Firmware version number

***IST?**

INDIVIDUAL STATUS QUERY returns the contents of the IST flag in decimal form (0 | 1). The IST flag is the status bit which is sent during a parallel poll (cf. Section 3.8.3.2).

***OPC**

OPERATION COMPLETE sets bit 0 in the event status register when all preceding commands have been executed. This bit can be used to initiate a service request (cf. Section 3.7).

***OPC?**

OPERATION COMPLETE QUERY writes message "1" into the output buffer as soon as all preceding commands have been executed (cf. Section 3.7).

***OPT?**

OPTION IDENTIFICATION QUERY queries the options included in the instrument and returns a list of the options installed. The options are separated from each other by means of commas.

Position	Option	
1	FSP-B3	Audio Demodulator
2	FSP-B4	OCXO
3		reserved
4		reserved
5		reserved
6		reserved
7	FSP-B9	Tracking Generator 3 GHz / can be I/Q-modulated
8	FSP-B10	Ext. Generator Control
9...13		reserved
14	FSP-B16	LAN Interface
15...18		reserved
19		reserved
20...22		reserved
23	FSP-B25	Electronic Attenuator + 5dB Attenuator Steps
24...40		reserved

Example:
B3, B4, 0, 0, 0, 0, B9, B10, 0, 0, 0, 0, 0, B16, 0, 0, 0, 0, 0, 0, 0, 0, B25, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0

***PCB 0 to 30**

PASS CONTROL BACK indicates the controller address which the IEC-bus control is to be returned to after termination of the triggered action.

***PRE 0 to 255**

PARALLEL POLL REGISTER ENABLE sets the parallel poll enable register to the indicated value. The query form *PRE? returns the contents of the parallel poll enable register in decimal form.

***PSC 0 | 1**

POWER ON STATUS CLEAR determines whether the contents of the ENABle registers are preserved or reset during power-up.

*PSC = 0 causes the contents of the status registers to be preserved. Thus a service request can be generated when switching on the instrument, if the status registers ESE and SRE are suitably configured.

*PSC ≠ 0 resets the registers.

The query form *PSC? reads out the contents of the power-on-status-clear flag. The response can be 0 or 1.

***RST**

RESET sets the instrument to a defined default status. The command essentially corresponds to pressing the *PRESET* key. The default setting is indicated in the description of the commands.

***SRE 0 to 255**

SERVICE REQUEST ENABLE sets the service request enable register to the indicated value. Bit 6 (MSS mask bit) remains 0. This command determines under which conditions a service request is generated. The query form *SRE? reads the contents of the service request enable register in decimal form. Bit 6 is always 0.

***STB?**

READ STATUS BYTE QUERY reads out the contents of the status byte in decimal form.

***TRG**

TRIGGER initiates all actions in the currently active test screen expecting a trigger event. This command corresponds to `INITiate:IMMediate` (cf. Section "TRIGger subsystem").

***TST?**

SELF TEST QUERY initiates the selftest of the instrument and outputs an error code in decimal form (0 = no error).

***WAI**

WAIT-to-CONTINUE permits servicing of subsequent commands only after all preceding commands have been executed and all signals have settled (cf. Section 3.7 and "*OPC" as well).

ABORt Subsystem

The ABORt subsystem contains the commands for aborting triggered actions. An action can be triggered again immediately after being aborted. All commands trigger events, and therefore they have no *RST value.

COMMAND	PARAMETERS	UNIT	COMMENT
ABORt		--	no query

ABORt

This command aborts a current measurement and resets the trigger system.

Example: "ABOR;INIT:IMM"

Characteristics: ***RST value: 0
SCPI: conforming

Mode: A

CALCulate Subsystem

The CALCulate subsystem contains commands for converting instrument data, transforming and carrying out corrections. These functions are carried out subsequent to data acquistion, ie following the SENSe subsystem.

The numeric suffix is used in CALCulate to make the distinction between the two measurement windows SCREEN A and SCREEN B:

CALCulate1 = Screen A
CALCulate2 = Screen B.

For commands without suffix, screen A is selected automatically.

Full Screen — The settings are valid for the measurement window selected with the numeric suffix. They become effective as soon as the corresponding measurement window has been selected as active measurement window using the command DISPLay[:WINDow<1|2>]:SELect. Triggering measurements and querying measured values is possible only in the active measurement window.

Split Screen — The settings are valid for the measurement window selected by means of the numeric suffix and become effective immediately.

CALCulate:DELTamarker Subsystem

The CALCulate:DELTamarker subsystem controls the delta-marker functions in the instrument. The measurement windows are selected via CALCulate1 (screen A) or 2 (screen B).

COMMAND	PARAMETERS	UNIT	COMMENT
CALCulate<1|2>			
:DELTamarker<1 to 4>			
[:STATe]	<Boolean>	--	
:MODE	ABSolute|RELative		
:AOFF			no query
:TRACe	<numeric_value>	--	
:X	<numeric_value>	HZ | S | DBM | DB	
:RELative?	--	--	query only
:Y?	--	--	query only
:MAXimum			
[:PEAK]	--	--	no query
:NEXT	--	--	no query
:RIGHt	--	--	no query
:LEFT	--	--	no query
:MINimum			
[:PEAK]	--	--	no query
:NEXT	--	--	no query
:RIGHt	--	--	no query
:LEFT	--	--	no query
:FUNCtion			
:FIXed			
[:STATe]	<Boolean>		
:RPOint			
:Y	<numeric_value>	DBM	
:OFFSet	<numeric_value>	DB	
:X	<numeric_value>	HZ | S	
:PNOise			
[:STATe]	<Boolean>		
:RESult?	--	--	query only

CALCulate<1|2>:DELTamarker<1 to 4>[:STATe] ON | OFF

This command switches on and off the delta marker when delta marker 1 is selected. The corresponding marker becomes the delta marker when delta marker 2 to 4 is selected. If the corresponding marker is not activated, it will be activated and positioned on the maximum of the measurement curve.
If no numeric suffix is indicated, delta marker 1 is selected automatically.

Example: "CALC:DELT3 ON" Switches marker 3 in screen A to delta marker mode.

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: A

CALCulate<1|2>:DELTamarker<1 to 4>:MODE ABSolute | RELative

This command switches between relative and absolute frequency input of the delta marker (or time with span = 0). It affects all delta markers independent of the measurement window.

Example: "CALC:DELT:MODE ABS" Switches the frequency/time indication for all delta markers to absolute values.

"CALC:DELT:MODE REL" Switches the frequency/time indication for all delta markers to relative to marker 1.

Characteristics: *RST value: REL
SCPI: device-specific

Mode: A

CALCulate<1|2>:DELTamarker<1 to 4>:AOFF

This command switches off all active delta markers in the selected measurement window (screen A or screen B).

Example: "CALC2:DELT:AOFF" Switches off all delta markers in screen B.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

This command is an event and therefore it has no *RST-value and no query form.

CALCulate<1|2>:DELTamarker<1 to 4>:TRACe 1 to 3

This command assigns the selected delta marker to the indicated measurement curve in the indicated measurement window. The selected measurement curve must be active, ie its state must be different from "BLANK".

Example: "CALC:DELT3:TRAC 2" Assigns deltamarker 3 to trace 2 in screen A.
"CALC:DELT:TRAC 3" Assigns deltamarker 1 to trace 3 in screen B.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

CALCulate<1|2>:DELTamarker<1 to 4>:X 0 to MAX (frequency | sweep time)

This command positions the selected delta marker in the indicated measurement window to the indicated frequency (span > 0), time (span = 0) or level (APD measurement = ON or CCDFmeasurement = ON). The input is in absolute values or relative to marker 1 depending on the command `CALCulate:DELTamarker:MODE`. If Reference Fixed measurement (`CALCulate:DELTamarker:FUNCtion:FIXed:STATe ON`) is active, relative values refer to the reference position are entered. The query always returns absolute values.

Example:	`"CALC:DELT:MOD REL"`	Switches the input for all delta markers to relative to marker 1.
	`"CALC:DELT2:X 10.7MHz"`	Positions delta marker 2 in screen A 10.7 MHz to the right of marker 1.
	`"CALC2:DELT:X?"`	Outputs the absolute frequency/time of delta marker 1 in screen B
	`"CALC2:DELT:X:REL?"`	Outputs the relative frequency/time/level of delta marker 1 in screen B

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

CALCulate<1|2>:DELTamarker<1 to 4>:X:RELative?

This command queries the frequency (span > 0) or time (span = 0) of the selected delta marker relative to marker 1 or to the reference position (for `CALCulate:DELTamarker:FUNCtion :FIXed:STATe ON`). The command activates the corresponding delta marker, if necessary.

Example:	`"CALC:DELT:X:REL?"`	Outputs the frequency of delta marker 3 in screen B relative to marker 1 or relative to the reference position.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

CALCulate<1|2>:DELTamarker<1 to 4>:Y?

This command queries the measured value of the selected delta marker in the indicated measurement window. The corresponding delta marker will be activated, if necessary. The output is always a relative value referred to marker 1 or to the reference position (reference fixed active).

To obtain a valid query result, a complete sweep with synchronization to the sweep end must be performed between the activation of the delta marker and the query of the y-value. This is only possible in single sweep mode.

Depending on the unit defined with `CALC:UNIT` or on the activated statistics functions, the query result is output in the units below:

- DBM | DBPW | DBUV | DBMV | DBUA: Output unit DB
- WATT | VOLT | AMPere: Output unit W | V | A
- Statistics function (APD or CCDF) on: Dimensionless output

Example:
```
"INIT:CONT OFF"
"CALC:DELT2 ON"
"INIT;*WAI"
"CALC:DELT2:Y?"
```
Switches to single-sweep mode.
Switches on delta marker 2 in screen A.
Starts a sweep and waits for its end.
Outputs measurement value of delta marker 2 in screen A.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

CALCulate<1|2>:DELTamarker<1 to 4>:MAXimum[:PEAK]

This command positions the delta marker to the current maximum value on the measured curve. If necessary, the corresponding delta marker will be activated first.

Example: `"CALC2:DELT3:MAX"` Sets delta marker 3 in screen B to the maximum value of the associated trace.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

CALCulate<1|2>:DELTamarker<1 to 4>:MAXimum:NEXT

This command positions the delta marker to the next smaller maximum value on the measured curve. The corresponding delta marker will be activated first, if necessary.

Example: `"CALC1:DELT2:MAX:NEXT"` Sets delta marker 2 in screen A to the next smaller maximum value.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

CALCulate<1|2>:DELTamarker<1 to 4>:MAXimum:RIGHt

This command positions the delta marker to the next smaller maximum value to the right of the current value (ie ascending X values). The corresponding delta marker is activated first, if necessary.

Example: "CALC2:DELT:MAX:RIGH" Sets delta marker 1 in screen B to the next smaller maximum value to the right of the current value.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

CALCulate<1|2>:DELTamarker<1 to 4>:MAXimum:LEFT

This command positions the delta marker to the next smaller maximum value to the left of the current value (ie descending X values). The corresponding delta marker will be activated first, if necessary.

Example: "CALC:DELT:MAX:LEFT" Sets delta marker 1 in screen A to the next smaller maximum value to the left of the current value.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

CALCulate<1|2>:DELTamarker<1 to 4>:MINimum[:PEAK]

This command positions the delta marker to the current minimum value on the measured crve. The corresponding delta marker will be activated first, if necessary.

Example: "CALC2:DELT3:MIN" Sets delta marker 3 in screen B to the minimum value of the associated trace.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

CALCulate<1|2>:DELTamarker<1 to 4>:MINimum:NEXT

This command positions the delta marker to the next higher minimum value of the measured curve. The corresponding delta marker will be activated first, if necessary.

Example: "CALC1:DELT2:MIN:NEXT" Sets delta marker 2 in screen A to the next higher minimum value.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

CALCulate<1|2>:DELTamarker<1 to 4>:MINimum:RIGHt

This command positions the delta marker to the next higher minimum value to the right of the current value (ie ascending X values). The corresponding delta marker will be activated first, if necessary.

Example: "CALC2:DELT:MIN:RIGH" Sets delta marker 1 in screen B to the next higher minimum value to the right of the current value.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

CALCulate<1|2>:DELTamarker<1 to 4>:MINimum:LEFT

This command positions the delta marker to the next higher minimum value to the left of the current value (ie descending X values). The corresponding delta marker will be activated first, if necessary.

Example: "CALC:DELT:MIN:LEFT" Sets delta marker 1 in screen A to the next higher minimum to the left of the current value.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

CALCulate<1|2>:DELTamarker<1 to 4>:FUNCtion:FIXed[:STATe] ON | OFF

This command switches the relative measurement to a fixed reference value on or off. Marker 1 will be activated previously and a peak search will be performed, if necessary. If marker 1 is activated, its position becomes the reference point for the measurement. The reference point can then be modified with commands CALCulate:DELTamarker:FUNCtion:FIXed:RPOint:X and ...:RPOint:Y independently of the position of marker 1 and of a trace. It is valid for all delta markers in the selected measurement window as long as the function is active.

Example: "CALC2:DELT:FUNC:FIX ON" Switches on the measurement with fixed reference value for all delta markers in screen B.

"CALC2:DELT:FUNC:FIX:RPO:X 128 MHZ" Sets the reference frequency in screen B to 128 MHz.

"CALC2:DELT:FUNC:FIX:RPO:Y 30 DBM" Sets the reference level in screen B to +30 dBm

Characteristics: *RST value: OFF
SCPI: device-specific.

Mode: A

CALCulate<1|2>:DELTamarker<1 to 4>:FUNCtion:FIXed:RPOint:Y <numeric_value>

This command defines a new reference point level for all delta markers in the selected measurement window for a measurement with fixed reference point.
(`CALCulate:DELTamarker:FUNCtion:FIXed:STATe ON`).

For phase-noise measurements (`CALCulate:DELTamarker:FUNCtion:PNOise:STATe ON`), the command defines a new reference point level for delta marker 2 in the selected measurement window.

Example: `"CALC:DELT:FUNC:FIX:RPO:Y -10dBm"` Sets the reference point level for delta markers in screen A to -10 dBm.

Characteristics: *RST value: - (`FUNction:FIXed[:STATe]` is set to OFF)
SCPI: device-specific

Mode: A

CALCulate<1|2>:DELTamarker<1 to 4>:FUNCtion:FIXed:RPOint:Y:OFFSet <numeric_value>

This command defines an additional level offset for the measurement with fixed reference value (`CALCulate:DELTamarker:FUNCtion:FIXed:STATe ON`). For this measurement, the offset is included in the display of all delta markers of the selected measurement window.

For phase-noise measurements (`CALCulate:DELTamarker:FUNCtion:PNOise:STATe ON`), the command defines an additional level offset which is included in the display of delta marker 2 in the selected measurement window.

Example: `"CALC:DELT:FUNC:FIX:RPO:Y:OFFS 10dB"`
sets the level offset for the measurement with fixed reference value or the phase-noise measurement in screen A to 10 dB.

Characteristics: *RST value: 0 dB
SCPI: device-specific

Mode: A

CALCulate<1|2>:DELTamarker<1 to 4>:FUNCtion:FIXed:RPOint:X <numeric_value>

This command defines a new reference frequency (span > 0) or time (span = 0) for all delta markers in the selected measurement window for a measurement with fixed reference value (`CALCulate:DELTamarker:FUNCtion:FIXed:STATe ON`).

For phase-noise measurements (`CALCulate:DELTamarker:FUNCtion:PNOise:STATe ON`), the command defines a new reference frequency or time for delta marker 2 in the selected measurement window.

Example: `"CALC2:DELT:FUNC:FIX:RPO:X 128MHz"` Sets the reference frequency in screen B to 128 MHz.

Characteristics: *RST value: - (`FUNction:FIXed[:STATe]` is set to OFF)
SCPI: device-specific

Mode: A

CALCulate<1|2>:DELTamarker<1 to 4>:FUNCtion:PNOise[:STATe] ON | OFF

This command switches on or off the phase-noise measurement with all actíve delta markers in the selected measurement window. The correction values for the bandwidth and the log amplifier are taken into account in the measurement.

Marker 1 will be activated, if necessary, and a peak search will be performed. If marker 1 is activated, its position becomes the reference point for the measurement.

The reference point can then be modified with commands `CALCulate:DELTamarker :FUNCtion:FIXed:RPOint:X` and `...:RPOint:Y` independently of the position of marker 1 and of a trace (the same commands used for the measurment with fixed reference point).

The numeric suffix <1 to 4> with `DELTamarker` is not relevant for this command.

Example: `"CALC:DELT:FUNC:PNO ON"` Switches on the phase-noise measurement with all delta markers in screen A.

`"CALC:DELT:FUNC:FIX:RPO:X 128 MHZ"` Sets the reference frequency to 128 MHz.

`"CALC:DELT:FUNC:FIX:RPO:Y 30 DBM"` Sets the reference level to +30 dBm

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: A

CALCulate<1|2>:DELTamarker<1 to 4>:FUNCtion:PNOise:RESult?

This command queries the result of the phase-noise measurement in the selected measurement window.The measurement will be switched on, if necessary.

Example: `"CALC:DELT:FUNC:PNO:RES?"` Outputs the result of phase-noise measurement of the selected delta marker in screen A.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

This command is only a query and is therefore not assigned an *RST value.

CALCulate:LIMit Subsystem

The CALCulate:LIMit subsystem consists of the limit lines and the corresponding limit checks. Limit lines can be defined as upper or lower limit lines. The individual Y values of the limit lines correspond to the values of the X-axis (CONTrol). The number of X- and Y-values must be identical.

8 limit lines can be active at the same time (marked by LIMIT1 to LIMIT8) in screen A and/or screen B. The measurement windows is selected via CALCulate 1 (screen A) or 2 (screen B).

The limit check can be switched on separately for each measurement screen and limit line. WINDow1 corresponds to screen A, WINDow2 to screen B.

Each limit line can be assigned a name (max. 8 letters) under which the line is stored in the instrument. An explanatory comment can also be given for each line (max. 40 characters).

Example:
Definition and use of a new limit line 5 for trace 2 in screen A and trace 1 in screen B with the following features:

- upper limit line
- absolute X-axis in the frequency domain
- 5 ref. values: 126 MHz/-40 dB, 127 MHz/-40 dB, 128 MHz/-20 dB, 129 MHz/-40 dB, 130 MHz/-40 dB
- relative Y-axis with unit dB
- absolute threshold value at -35 dBm
- no safety margin

Definition of the line:

1. Defining the name:	`CALC:LIM5:NAME 'TEST1'`
2. Entering the comment:	`CALC:LIM5:COMM 'Upper limit line'`
3. Associated trace in screen A:	`CALC1:LIM5:TRAC 2`
4. Associated trace in screen B:	`CALC2:LIM5:TRAC 1`
5. Defining the X-axis range:	`CALC:LIM5:CONT:DOM FREQ`
6. Defining the X-axis scaling:	`CALC:LIM5:CONT:MODE ABS`
7. Defining the Y-axis unit:	`CALC:LIM5:UNIT DB`
8. Defining the Y-axis scaling:	`CALC:LIM5:UPP:MODE REL`
9. Defining the X-axis values:	`CALC:LIM5:CONT 126MHZ, 127MHZ, 128MHZ, 129 MHZ, 130MHZ`
10. Defining the y values:	`CALC:LIM5:UPP -40, -40, -30, -40, -40`
11. Defining the y threshold value:	`CALC:LIM5:UPP:THR -35DBM`

The definition of the safety margin and shifting in X- and/or Y-direction can take place as from here (see commands below).

Switching on and evaluating the line in screen A:

1. Switching on the line in screen A:	`CALC1:LIM5:UPP:STAT ON`
2. Switching on the limit check in screen A:	`CALC1:LIM5:STAT ON`
3. Starting a new measurement with synchronization:	`INIT;*WAI`
4. Querying the limit check result:	`CALC1:LIM5:FAIL?`

Switching on and evaluating the line in screen B is performed in the same way by using `CALC2` instead of `CALC1`.

COMMAND	PARAMETERS	UNIT	COMMENT
CALCulate<1|2>			
:LIMit<1 to 8>			
:TRACe	<numeric_value>		
:STATe	<Boolean>	--	
:UNIT	DBM | DBPW | WATT | DBUV | DBMV | VOLT | DBUA | AMPere | DB | DBUV_M | DBUA_M | DEG | RAD | S | HZ | PCT | UNITLESS		
:FAIL?		--	query only
:CLEar			
[:IMMediate]	--	--	no query
:COMMent	<string>	--	
:COPY	1 to 8 | < name>	--	
:NAME	<string>		
:DELete	--		

CALCulate<1|2>:LIMit<1 to 8>:TRACe 1 to 3

This command assigns a limit line to a trace in the indicated measurement window.

Examples: "CALC:LIM2:TRAC 3" Assigns limit line 2 to trace 3 in screen A.

"CALC2:LIM2:TRAC 1" Assigns limit line 2 to trace 1 in screen B at the same time.

Characteristics: *RST value: 1
SCPI: device-specific

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:STATe ON | OFF

This command switches on or off the limit check for the selected limit line in the selected measurement window.

The result of the limit check can be queried with CALCulate:LIMit<1 to 8>:FAIL?.

Example: "CALC:LIM:STAT ON" Switches on the limit check for limit line 1 in screen A.

"CALC2:LIM:STAT OFF" Switches off the limit check for limit line 1 in screen B.

Characteristics: *RST value: OFF
SCPI: conforming

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:UNIT DBM | DBPW | WATT | DBUV | DBMV | VOLT |DBUA | AMPere | DB | DBUV_M | DBUA_M | DEG | RAD | S | HZ | PCT | UNITLESS

This command defines the unit of the selected limit line.

The definition is valid independently of the measurement window.

Upon selection of the unit DB the limit line is automatically switched to the relative mode. For units different from DB the limit line is automatically switched to absolute mode.

The units DEG, RAD, S, HZ, PCT are not available in spectrum analysis mode.

Example: "CALC:LIM4:UNIT DBUV" Sets the unit of limit line 4 to dBµV.

Characteristics: *RST value: DBM
SCPI: device-specific

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:FAIL?

This command queries the result of the limit check of the limit line indicated in the selected measurement window. It should be noted that a complete sweep must have been performed for obtaining a valid result. A synchronization with *OPC, *OPC? or *WAI should therefore be provided.

The result of the limit check responds with 0 for PASS, 1 for FAIL, and 2 for MARGIN.

Example: "INIT;*WAI" Starts a new sweep and waits for its end.

"CALC2:LIM3:FAIL?" Queries the result of the check for limit line 3 in screen B.

Characteristics: *RST value: -
SCPI: conforming

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:CLEar[:IMMediate]

This command deletes the result of the current limit check for all limit lines in the selected measurement window.

Example: "CALC:LIM:CLE" Deletes the result of the limit check in screen A

Characteristics: *RST value: -
SCPI: conforming

Mode: A

This command is an event and is therefore not assigned an *RST value.

CALCulate<1|2>:LIMit<1 to 8>:COMMent <string>

This command defines a comment for the limit line selected (max. 40 characters). The comment is independent from the measurement window.

Example: "CALC:LIM5:COMM 'Upper limit for spectrum'"
Defines the comment for limit line 5.

Characteristics: *RST value: blank comment
SCPI: device-specific

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:COPY 1 to 8 | <name>

This command copies one limit line onto another one. It is independent of the measurement window.

The name of the limit line may consist of max 8 characters.

Parameter: 1 to 8 ::= number of the new limit line or:
<name> ::= name of the new limit line given as a string

Example: "CALC:LIM1:COPY 2" Copies limit line 1 to line 2.

"CALC:LIM1:COPY 'GSM2'" Copies limit line 1 to a new line named 'GSM2'.

Characteristics: *RST value: --
SCPI: device-specific

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

CALCulate<1|2>:LIMit<1 to 8>:NAME <name of limit line>

This command assigns a name to a limit line numbered 1 to 8. If it does not exist already, a limit line with this name is created. The command is independent of the measurement window.

The name of the limit line may contain a maximum of 8 characters.

Example: "CALC:LIM1:NAME 'GSM1'" Assigns the name 'GSM1' to limit line 1.

Characteristics: *RST value: 'REM1' to 'REM8' for lines 1 to 8
SCPI: device-specific

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:DELete

This command deletes the selected limit line. The command is independent of the measurement window.

Example: "CALC:LIM1:DEL" Deletes limit line 1.

Characteristics: *RST value: --
SCPI: device-specific

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

CALCulate:LIMit:ACPower Subsystem

The CALCulate:LIMit:ACPower subsystem defines the limit check for adjacent channel power measurement.

COMMAND	PARAMETERS	UNIT	COMMENT
CALCulate<1|2>			
LIMit<1 to 8>			
:ACPower			
[:STATe]	<Boolean>		
:ACHannel			
[:RELative]	<numeric_value>, <numeric_value>	DB, DB	
:STATe	<Boolean>		
:ABSolute	<numeric_value>, <numeric_value>	DBM, DBM	
:STATe	<Boolean>		
:RESult?	--		query only
:ALTernate<1|2>			
[:RELative]	<numeric_value>, <numeric_value>	DB, DB	
:STATe	<Boolean>		
:ABSolute	<numeric_value>, <numeric_value>	DBM, DBM	
:STATe	<Boolean>		
:RESult?	--		query only

CALCulate<1|2>:LIMit<1 to 8>:ACPower[:STATe] ON | OFF

This command switches on and off the limit check for adjacent channel power measurements in the selected measurement window. The commands `CALCulate:LIMit:ACPower:ACHannel:STATe` or `CALCulate:LIMit:ACPower:ALTernate:STATe` must be used in addition to specify whether the limit check is to be performed for the upper/lower adjacent channel or for the alternate adjacent channels.

The numeric suffixes <1 to 8> are irrelevant for this command.

Example: `"CALC:LIM:ACP ON"` Switches on the ACP limit check in screen A.

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:ACPower:ACHannel[:RELative] 0 to 100dB, 0 to 100dB

This command defines the relative limit of the upper/lower adjacent channel for adjacent channel power measurements in the selected measurement window. The reference value for the relative limit value is the measured channel power.

It should be noted that the relative limit value has no effect on the limit check as soon as it is below the absolute limit value defined with `CALCulate:LIMit:ACPower:ACHannel:ABSolute`. This mechanism allows automatic checking of the absolute basic values of adjacent channel power as defined in mobile radio standards.

The numeric suffixes <1 to 8> are irrelevant for this command.

Parameter: The first numeric value is the limit for the upper (lower) adjacent channel. The second value is ignored but must be indicated for reasons of compatibility with the FSE family.

Example: `"CALC:LIM:ACP:ACH 30DB, 30DB"` Sets the relative limit value in screen A for the power in the lower and upper adjacent channel to 30 dB below the channel power.

Characteristics: *RST value: 0 dB
SCPI: device-specific

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:ACPower:ACHannel[:RELative]:STATe ON | OFF

This command activates the limit check for the relative limit value of the adjacent channel when adjacent channel power measurement is performed. Before the command, the limit check must be activated using `CALCulate:LIMit:ACPower:STATe ON`.

The result can be queried with `CALCulate:LIMit:ACPower:ACHannel:RESult?`. It should be noted that a complete measurement must be performed between switching on the limit check and the result query, since otherwise no valid results are available.

The numeric suffixes <1 to 8> are irrelevant for this command.

Example:

`"CALC:LIM:ACP:ACH 30DB, 30DB"`
Sets the relative limit value in screen A for the power in the lower and upper adjacent channel to 30 dB below the channel power.

`"CALC:LIM:ACP:ACH:ABS -35DBM, -35DBM"`
Sets the absolute limit value in screen A for the power in the lower and upper adjacent channel to -35 dB.

`"CALC:LIM:ACP ON"`
Switches on globally the limit check for the channel/adjacent channel measurement in screen A.

`"CALC:LIM:ACP:ACH:REL:STAT ON"`
Switches on the check of the relative limit values for adjacent channels in screen A.

`"CALC:LIM:ACP:ACH:ABS:STAT ON"`
Switches on the check of absolute limit values for the adjacent channels in screen A.

`"INIT;*WAI"`
Starts a new measurement and waits for the sweep end.

`"CALC:LIM:ACP:ACH:RES?"`
Queries the limit check result in the adjacent channels in screen A.

Characteristics:

*RST value: OFF
SCPI: device-specific

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:ACPower:ACHannel:ABSolute -200DBM to 200DBM, -200 to 200DBM

This command defines the absolute limit value for the lower/upper adjacent channel during adjacent-channel power measurement (Adjacent Channel Power) in the selected measurement window.

It should be noted that the absolute limit value has no effect on the limit check as soon as it is below the relative limit value defined with `CALCulate:LIMit:ACPower:ACHannel:RELative`. This mechanism allows automatic checking of the absolute basic values of adjacent channel power as defined in mobile radio standards.

The numeric suffixes <1 to 8> in LIMIt are irrelevant for this command.

Parameter: The first value is the limit for the lower and the upper adjacent channel. The second limit value is ignored but must be indicated for reasons of compatibiltiy with the FSE family.

Example: `"CALC:LIM:ACP:ACH:ABS -35DBM, -35DBM"`
Sets the absolute limit value in screen A for the power in the lower and upper adjacent channel to -35 dBm.

Characteristics: *RST value: -200DBM
SCPI: device-specific

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:ACPower:ACHannel:ABSolute:STATe ON | OFF

This command activates the limit check for the adjacent channel when adjacent-channel power measurement (Adjacent Channel Power) is performed. Before the command, the limit check for the channel/adjacent-channel measurement must be globally switched on using `CALC:LIM:ACP ON`.

The result can be queried with `CALCulate:LIMit:ACPower:ACHannel:RESult?`. It should be noted that a complete measurement must be performed between switching on the limit check and the result query, since otherwise no valid results are available.

The numeric suffixes <1 to 8> in LIMIt are irrelevant for this command.

Example:

`"CALC:LIM:ACP:ACH 30DB, 30DB"`
Sets the relative limit value in screen A for the power in the lower and upper adjacent channel to 30 dB below the channel power.

`"CALC:LIM:ACP:ACH:ABS -35DBM, -35DBM"`
Sets the absolute limit value in screen A for the power in the lower and upper adjacent channel to -35 dB.

`"CALC:LIM:ACP ON"`
Switches on globally the limit check for the channel/adjacent channel measurement in screen A.

`"CALC:LIM:ACP:ACH:REL:STAT ON"`
Switches on the check of the relative limit values for adjacent channels in screen A.

`"CALC:LIM:ACP:ACH:ABS:STAT ON"`
Switches on the check of absolute limit values for the adjacent channels in screen A.

`"INIT;*WAI"`
Starts a new measurement and waits for the sweep end.

`"CALC:LIM:ACP:ACH:RES?"`
Queries the limit check result in the adjacent channels in screen A.

Characteristics:

*RST value: OFF
SCPI: device-specific

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:ACPower:ACHannel:RESult?

This command queries the result of the limit check for the upper/lower adjacent channel in the selected measurement window when adjacent channel power measurement is performed.

If the power measurement of the adjacent channel is switched off, the command produces a query error.
The numeric suffixes <1 to 8> are irrelevant for this command.

Parameter: The result is returned in the form <result>, <result> where <result> = PASSED | FAILED, and where the first returned value denotes the lower, the second denotes the upper adjacent channel.

Example:

`"CALC:LIM:ACP:ACH 30DB, 30DB"`
Sets the relative limit value in screen A for the power in the lower and upper adjacent channel to 30 dB below the channel power.

`"CALC:LIM:ACP:ACH:ABS -35DBM, -35DBM"`
Sets the absolute limit value in screen A for the power in the lower and upper adjacent channel to -35 dB.

`"CALC:LIM:ACP ON"` Switches on globally the limit check for the channel/adjacent channel measurement in screen A.

`"CALC:LIM:ACP:ACH:STAT ON"` Switches on the limit check for the adjacent channels in screen A.

`"INIT;*WAI"` Starts a new measurement and waits for the sweep end.

`"CALC:LIM:ACP:ACH:RES?"` Queries the limit check result in the adjacent channels in screen A.

Characteristics:

*RST value:	--
SCPI:	device-specific

Mode: A

This command is a query and therefore not assigned an *RST value.

CALCulate<1|2>:LIMit<1 to 8>:ACPower:ALTernate<1|2>[:RELative] 0 to 100dB, 0 to 100dB.

This command defines the limit for the first/second alternate adjacent channel in the selected measurement window for adjacent channel power measurements. The reference value for the relative limit value is the measured channel power.

The numeric suffix after `ALTernate<1|2>` denotes the first or the second alternate channel. The numeric suffixes <1 to 8> are irrelevant for this command.

It should be noted that the relative limit value has no effect on the limit check as soon as it is below th absolute limit defined with `CALCulate:LIMit:ACPower:ALTernate<1|2>:ABSolute`. This mechanism allows automatic checking of the absolute basic values of adjacent channel power as defined in mobile radio standards.

Parameter: The first value is the limit for the lower and the upper alternate adjacent channel. The second limit value is ignored but must be indicated for reasons of compatibility with the FSE family.

Example: `"CALC:LIM:ACP:ALT2 30DB, 30DB"` Sets the relative limit value in screen A for the power in the lower and upper alternate adjacent channel to 30 dB below the channel power.

Characteristics: *RST value: 0DB
SCPI: device-specific

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:ACPower:ALTernate<1|2>[:RELative]:STATe ON | OFF

This command activates the limit check for the first/second alternate adjacent channel in the selected measurement window for adjacent channel power measurements. Before the command, the limit check must be activated using `CALCulate:LIMit:ACPower:STATe ON`.

The numeric suffix after `ALTernate<1|2>` denotes the first or the second alternate channel. The numeric suffixes <1 to 8> are irrelevant for this command.

The result can be queried with `CALCulate:LIMit:ACPower:ALTernate<1|2>:RESult?`. It should be noted that a complete measurement must be performed between switching on the limit check and the result query, since otherwise no valid results are obtained.

Example:

`"CALC:LIM:ACP:ALT2 30DB, 30DB"`
Sets the relative limit value in screen A for the power in the lower and upper second alternate adjacent channel to 30 dB below the channel power.

`"CALC:LIM:ACP:ALT2:ABS -35DBM, -35DBM"`
Sets the absolute limit value in screen A for the power in the lower and upper second alternate adjacent channel to -35 dBm.

`"CALC:LIM:ACP ON"`
Switches on globally the limit check for the channel/adjacent channel measurement in screen A.

`"CALC:LIM:ACP:ACH:REL:STAT ON"`
Switches on the check of the relative limit values for the alternate adjacent channels in screen A.

`"CALC:LIM:ACP:ACH:ABS:STAT ON"`
Switches on the check of absolute limit values for the alternate adjacent channels in screen A.

`"INIT;*WAI"`
Starts a new measurement and waits for the sweep end.

`"CALC:LIM:ACP:ACH:RES?"`
Queries the limit check result in the second alternate adjacent channels in screen A.

Characteristics:

*RST value:	OFF
SCPI:	device-specific

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:ACPower:ALTernate<1|2>:ABSolute -200DBM to 200DBM, -200DBM to .200DBM

This command defines the absolute limit value for the lower/upper alternate adjacent channel power measurement (Adjacent Channel Power) in the selected measurement window.

The numeric suffix after `ALTernate<1|2>` denotes the first or the second alternate channel. The numeric suffixes <1 to 8> are irrelevant for this command.

It should be noted that the absolute limit value for the limit check has no effect as soon as it is below the relative limit value defined with `CALCulate:LIMit:ACPower:ALTernate<1|2>:RELative`. This mechanism allows automatic checking of the absolute basic values defined in mobile radio standards for the power in adjacent channels.

Parameter: The first value is the limit for the lower and the upper alternate adjacent channel. The second limit value is ignored but must be indicated for reasons of compatibility with the FSE family.

Example: `"CALC:LIM:ACP:ALT2:ABS -35DBM, -35DBM"`
Sets the absolute limit value in screen A for the power in the lower and upper second alternate adjacent channel to -35 dBm.

Characteristics: *RST value: -200DBM
SCPI: device-specific

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:ACPower:ALTernate<1|2>:ABSolute:STATe ON | OFF

This command activates the limit check for the first/second alternate adjacent channel in the selected measurement window for adjacent channel power measurement (Adjacent Channel Power).

Before the command, the limit check must be globally switched on for the channel/adjacent channel power with the command `CALCulate:LIMit:ACPower:STATe ON`.

The numeric suffix after `ALTernate<1|2>` denotes the first or the second alternate channel. The numeric suffixes <1 to 8> are irrelevant for this command.

The result can be queried with `CALCulate:LIMit:ACPower:ALTernate<1|2>:RESult?`. It should be noted that a complete measurement must be performed between switching on the limit check and the result query, since otherwise no valid results are available.

Example:

`"CALC:LIM:ACP:ALT2 30DB, 30DB"`
Sets the relative limit value in screen A for the power in the lower and upper second alternate adjacent channel to 30 dB below the channel power.

`"CALC:LIM:ACP:ALT2:ABS -35DBM, -35DBM"`
Sets the absolute limit value in screen A for the power in the lower and upper second alternate adjacent channel to -35 dBm.

`"CALC:LIM:ACP ON"`
Switches on globally the limit check for the channel/adjacent channel measurement in screen A.

`"CALC:LIM:ACP:ACH:REL:STAT ON"`
Switches on the check of the relative limit values for the alternative adjacent channels in screen A.

`"CALC:LIM:ACP:ACH:ABS:STAT ON"`
Switches on the check of absolute limit values for the alternative adjacent channels in screen A.

`"INIT;*WAI"`
Starts a new measurement and waits for the sweep end.

`"CALC:LIM:ACP:ACH:RES?"`
Queries the limit check result in the second alternate adjacent channels in screen A.

Characteristics:

*RST value:	OFF
SCPI:	device-specific

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:ACPower:ALTernate<1|2>:RESult?

This command queries the result of the limit check for the first/second alternate adjacent channel in the selected measurement window for adjacent channel power measurements.

The numeric suffix after `ALTernate<1|2>` denotes the first or the second alternate channel. The numeric suffixes <1 to 8> are irrelevant for this command.

If the power measurement of the adjacent channel is switched off, the command produces a query error.

Parameter: The result is returned in the form <result>, <result> where <result> = PASSED | FAILED and where the first (second) returned value denotes the lower (upper) alternate adjacent channel.

Example:

`"CALC:LIM:ACP:ALT2 30DB, 30DB"`
Sets the relative limit value in screen A for the power in the lower and upper second alternate adjacent channel to 30 dB below the channel power.

`"CALC:LIM:ACP:ALT2:ABS -35DBM, -35DBM"`
Sets the absolute limit value in screen A for the power in the lower and upper second alternate adjacent channel to -35 dBm.

`"CALC:LIM:ACP ON"` Switches on globally the limit check for the channel/adjacent channel measurement in screen A.

`"CALC:LIM:ACP:ALT:STAT ON"`
Switches on the limit check for the adjacent channels in screen A.

`"INIT;*WAI"` Starts a new measurement and waits for the sweep end.

`"CALC:LIM:ACP:ALT:RES?"` Queries the limit check result in the second alternate adjacent channels in screen A.

Characteristics:

*RST value:	--
SCPI:	device-specific

Mode: A

This command is a query and therefore not assigned an *RST value.

CALCulate:LIMit:CONTrol Subsystem

The CALCulate:LIMit:CONTrol subsystem defines the x-axis (CONTrol-axis).

COMMAND	PARAMETERS	UNIT	COMMENT
CALCulate<1|2>			
:LIMit<1 to 8>			
:CONTrol			
[:DATA]	<numeric_value>,<numeric_value>..	HZ | S	
:DOMain	FREQuency|TIME		
:OFFSet	<numeric_value>	HZ | S	
:MODE	RELative|ABSolute		
:SHIFt	<numeric_value>	HZ | S	

CALCulate<1|2>:LIMit<1 to 8>:CONTrol[:DATA] <numeric_value>,<numeric_value>..

This command defines the X-axis values (frequencies or times) of the upper or lower limit lines.The values are defined independently of the measurement window.

The number of values for the CONTrol axis and for the corresponding UPPer and/or LOWer limit lines have to be identical. Otherwise default values are entered for missing values or not required values are deleted.

The unit of values depends on the frequency or time domain of the X-axis, ie it is HZ with `CALC:LIM:CONT:DOM FREQ` und S bei `CALC:LIM:CONT:DOM TIME.`

Example: `"CALC:LIM2:CONT 1MHz,30MHz,100MHz, 300MHz,1GHz"`
Defines 5 reference values for the X-axis of limit line 2

`"CALC:LIM2:CONT?"` Outputs the reference values for the X-axis of limit line 2 separated by a comma.

Characteristics: *RST value: - (LIMit:STATe is set to OFF)
SCPI: conforming

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:CONTrol:DOMain FREQuency | TIME

This command defines the frequency or time domain for the x-axis values.

Example: `"CALC:LIM2:CONT:DOM TIME"` Defines the time domain for the X-axis of limit line 2.

Characteristics: *RST value: FREQuency
SCPI: device-specific

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:CONTrol:OFFSet <numeric_value>

This command defines an offset for the X-axis value of the selected relative limit line in the frequency or time domain.

The unit of values depends on the frequency or time domain of the X-axis, ie it is HZ with CALC:LIM:CONT:DOM FREQ und S bei CALC:LIM:CONT:DOM TIME.

Example: "CALC:LIM2:CONT:OFFS 100us" Sets the X offset for limit line 2 (defined in the time domain) to 100us.

Characteristics: *RST value: 0
SCPI: device-specific

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:CONTrol:MODE RELative | ABSolute

This command selects the relative or absolute scaling for the X-axis of the selected limit line. The definition is independent of the measurement window.

Example: "CALC:LIM2:CONT:MODE REL" Defines the X-axis of limit line 2 as relatively scaled.

Characteristics: *RST value: ABSolute
SCPI: device-specific

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:CONTrol:SHIFt <numeric_value>

This command moves a limit line by the indicated value in x direction. In contrast to CALC:LIM:CONT:OFFS, the line is shifted by modifying the individual x values and not by means of an additive offset. The shift is independent of the measurement window.

The unit of values depends on the frequency or time domain of the X-axis, ie it is HZ with CALC:LIM:CONT:DOM FREQ und S bei CALC:LIM:CONT:DOM TIME.

Example: "CALC:LIM2:CONT:SHIF 50KHZ" Shifts all reference values of limit line 2 by 50 kHz.

Characteristics: *RST value: --
SCPI: device-specific

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

CALCulate:LIMit:LOWer Subsystem

The CALCulate:LIMit:LOWer subsystem defines the lower limit line.

COMMAND	PARAMETERS	UNIT	COMMENT
CALCulate<1|2>			
:LIMit<1 to 8>			
:LOWer			
[:DATA]	<numeric_value>,<numeric_value>..	DBM | DB | DEG | RAD | S | HZ | PCT	
:STATe	<Boolean>	--	
:OFFSet	<numeric_value>	DB| DEG| RAD| S | HZ | PCT	
:MARGin	<numeric_value>	DB| DEG| RAD| S | HZ | PCT	
:MODE	RELative|ABSolute	--	
:SHIFt	<numeric_value>	DB| DEG| RAD| S | HZ | PCT	
:THReshold	<numeric_value>	DBM | DB | DEG | RAD | S | HZ | PCT	

CALCulate<1|2>:LIMit<1 to 8>:LOWer[:DATA] <numeric_value>,<numeric_value>..

This command defines the values for the selected lower limit line independently of the measurement window.

The number of values for the CONTrol axis and for the corresponding LOWer limit line has to be identical. Otherwise default values are entered for missing values or not necessary values are deleted.

The unit must be identical with the unit selected by `CALC:LIM:UNIT`. If no unit is indicated, the unit defined with `CALC:LIM:UNIT` is automatically used.

If the measured values are smaller than the LOWer limit line, the limit check signals errors.

The units DEG, RAD, S, HZ, PCT are not available in the spectrum analysis mode.

Example: `"CALC:LIM2:LOW -30,-40,-10,-40,-30"`
Defines 5 lower limit values for limit line 2 in the preset unit.

`"CALC:LIM2:LOW?"` Outputs the lower limit values of limit line 2 separated by a comma.

Characteristics: *RST value: - (LIMit:STATe is set to OFF)
SCPI: conforming

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:LOWer:STATe ON | OFF

This command switches on or off the indicated limit line in the selected measurement window. The limit check is activated separately with `CALC:LIM:STAT ON`.

The result of the limit check can be queried with `CALCulate:LIMit<1 to 8>:FAIL?`.

Example: `"CALC:LIM4:LOW:STAT ON"` Switches on limit line 4 (lower limit) in screen A.

`"CALC2:LIM4:LOW:STAT ON"` Switches on limit line 4 (lower limit) also in screen B.

Characteristics: *RST value: OFF
SCPI: conforming

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:LOWer:OFFSet <numeric_value>

This command defines an offset for the Y-axis of the selected relative lower limit line. In contrast to `CALC:LIM:LOW:SHIFt`, the line is not shifted by modifying the individual Y values but by means of an additive offset. The offset is independent of the measurement window.

Example: `"CALC:LIM2:LOW:OFFS 3dB"` Shifts limit line 2 in the corresponding measurement windows by 3 dB upwards.

Characteristics: *RST value: 0
SCPI: device-specific

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:LOWer:MARGin <numeric_value>

This command defines a margin to a lower limit line, at which out-of-limit values are signalled (if the limit check is active), but not handled as a violation of the limit value. The margin is independent of the measurement window.

Only the unit dB is available in spectrum analysis mode.

Example: `"CALC:LIM:LOW:MARG 10dB"`

Characteristics: *RST value: 0
SCPI: device-specific

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:LOWer:MODE RELative | ABSolute

This command selects the relative or absolute scaling for the Y-axis of the selected lower limit line. The setting is independent of the measurement window.

Selecting RELative causes the unit to be switched to DB.

Example: `"CALC:LIM:LOW:MODE REL"` Defines the Y-axis of limit line 2 as relative scaled.

Characteristics: *RST value: ABSolute
SCPI: device-specific

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:LOWer:SHIFt <numeric_value>

This command shifts a limit line by the indicated value in Y-direction. In contrast to CALC:LIM:LOW:OFFS, the line is shifted by modifying the individual Y values but not by means of an additive offset. The shift is independent of the measurement window.

Example: "CALC:LIM3:LOW:SHIF 20DB" Shifts all Y values of limit line 3 by 20 dB.

Characteristics: *RST value: --
SCPI: device-specific

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

CALCulate<1|2>:LIMit<1 to 8>:LOWer:THReshold <numeric_value>

This command defines an absolute threshold value for limit lines with relative Y-axis scaling independently of the measurement window. The absolute threshold value is used in the limit check as soon as it exceeds the relative limit value.

The unit must correspond to the unit selected with CALC:LIM:UNIT (except dB which is not allowed). If no unit is indicated, the unit defined with CALC:LIM:UNIT is automatically used (exception: dBm instead of dB).

The units DEG, RAD, S, HZ, PCT are not available in the spectrum analysis mode.

Example: "CALC:LIM2:LOW:THR -35DBM" Defines an absolute threshold value for limit line 2.

Characteristics: *RST value: -200 dBm
SCPI: device-specific

Mode: A

CALCulate:LIMit:UPPer Subsystem

The CALCulate:LIMit:UPPer subsystem defines the upper limit line.

COMMAND	PARAMETERS	UNIT	COMMENT
CALCulate<1|2> :LIMit<1 to 8> :UPPer			
[:DATA]	<numeric_value>,<numeric_value>..	DBM | DB | DEG | RAD | S | HZ | PCT	
:STATe	<Boolean>	--	
:OFFSet	<numeric_value>	DB| DEG| RAD| S | HZ | PCT	
:MARGin	<numeric_value>	DB| DEG| RAD| S | HZ | PCT	
:MODE	RELative|ABSolute	--	
:SHIFt	<numeric_value>	DB |DEG| RAD| S | HZ | PCT	
:THReshold	<numeric_value>	DBM | DB | DEG | RAD | S | HZ | PCT	

CALCulate<1|2>:LIMit<1 to 8>:UPPer[:DATA] <numeric_value>,<numeric_value>..

This command defines the values for the upper limit lines independently of the measurement window.

The number of values for the CONTrol axis and for the corresponding UPPer and/or LOWer limit line have to be identical. Otherwise default values are entered for missing values or not necessary values are deleted.

The unit must be identical with the unit selected by `CALC:LIM:UNIT`. If no unit is indicated, the unit defined with `CALC:LIM:UNIT` is automatically used.

The units DEG, RAD, S, HZ, PCT are not available in spectrum analysis mode.

If the measured values exceed the UPPer limit line, the limit check signals errors.

Example: `"CALC:LIM2:UPP -10,0,0,-10,-5"` Defines 5 upper limit values for limit line 2 in the preset unit.

`"CALC:LIM2:UPP?"` Outputs the upper limit values for limit line 2 separated by a comma.

Characteristics: *RST value: - (LIMit:STATe is set to OFF)
SCPI: conforming

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:UPPer:STATe ON | OFF

This command switches on or off the indicated limit line in the selected measurement window. The limit check is activated separately with `CALC:LIM:STAT ON`.

The result of the limit check can be queried with `CALCulate:LIMit<1 to 8>:FAIL?`.

Example: `"CALC1:LIM4:UPP:STAT ON"` Switches on limit line 4 (upper limit) in screen A.

`"CALC2:LIM4:UPP:STAT ON"` Switches on limit line 4 (upper limit) in screen B.

Characteristics: *RST value: OFF
SCPI: conforming

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:UPPer:OFFSet <numeric_value>

This command defines an offset for the Y-axis of the selected relative upper limit line. In contrast to `CALC:LIM:UPP:SHIFt`, the line is not shifted by modifying the individual Y values but by means of an additive offset. The offset is independent of the measurement window.

Only the unit dB is available in the spectrum analysis mode.

Example: `"CALC:LIM2:UPP:OFFS 3dB"` Shifts limit line 2 by 3 dB upwards in the corresponding measurement windows.

Characteristics: *RST value: 0
SCPI: device-specific

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:UPPer:MARGin <numeric_value>

This command defines a margin to an upper limit line, at which out-of-limit values are signalled (if the limit check is active), but not handled as a violation of the limit value. The margin is independent of the measurement window.

Only the unit dB is available in spectrum analysis mode.

Example: `"CALC:LIM2:UPP:MARG 10dB"` Defines the margin of limit line 2 to 10 dB below the limit value.

Characteristics: *RST value: 0
SCPI: device-specific

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:UPPer:MODE RELative | ABSolute

This command selects the relative or absolute scaling for the Y-axis of the selected upper limit line. The setting is independent of the measurement window.

Selecting RELative causes the unit to be switched to DB.

Example: "CALC:LIM2:UPP:MODE REL" Defines the Y-axis of limit line 2 as relative scaled.

Characteristics: *RST value: ABSolute
SCPI: device-specific

Mode: A

CALCulate<1|2>:LIMit<1 to 8>:UPPer:SHIFt <numeric_value>

This command moves a limit line by the indicated value in Y-direction. In contrast to CALC:LIM:UPP:OFFS, the line is shifted by modifying the individual Y values and not by means of an additive offset. The shift is independent of the measurement window.

Only the unit dB is available in the spectrum analysis mode.

Example: "CALC:LIM3:UPP:SHIF 20DB" Shifts all Y values of limit line 3 by 20 dB.

Characteristics: *RST value: --
SCPI: device-specific

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

CALCulate<1|2>:LIMit<1 to 8>:UPPer:THReshold <numeric_value>

This command defines an absolute threshold value for limit lines with relative Y-axis scaling independently of the measurement window. The absolute threshold value is used in the limit check as soon as it exceeds the relative limit value.

The unit must correspond to the unit selected with CALC:LIM:UNIT (except dB which is not possible). If no unit is indicated, the unit defined with CALC:LIM:UNIT is automatically used (exception: dBm instead of dB).

The units DEG, RAD, S, HZ, PCT are not available in the spectrum analysis mode.

Example: "CALC:LIM2:UPP:THR -35DBM" Defines an absolute threshold value for limit line 2.

Characteristics: *RST value: -200 dBm
SCPI: device-specific

Mode: A

CALCulate:MARKer Subsystem

The CALCulate:MARKer subsystem checks the marker functions in the instrument. The measurement windows are assigned to CALCulate 1 (screen A) or 2 (screen B).

COMMAND	PARAMETERS	UNIT	COMMENT
CALCulate<1|2>			
:MARKer<1 to 4>			
[:STATe]	<Boolean>	--	
:AOFF			no query
:TRACe	<numeric_value>	--	
:X	<numeric_value>	HZ | S | DBM | DB	
:SLIMits			
[:STATe]	<Boolean>		
:LEFT	<numeric_value>	HZ | S	
:RIGHt	<numeric_value>	HZ | S	
:COUNt	<Boolean>	--	
:RESolution	<numeric_value>	HZ	
:FREQuency?	--	--	query only
:LOEXclude	<Boolean>		
:Y?	--	--	query only
:PERCent	<numeric_value>	PCT	
:MAXimum		--	
[:PEAK]	--	--	no query
:NEXT	--	--	no query
:RIGHt	--	--	no query
:LEFT	--	--	no query
:MINimum			
[:PEAK]	--	--	no query
:NEXT	--	--	no query
:RIGHt	--	--	no query
:LEFT	--	--	no query
:PEXCursion	<numeric_value>	DB	

CALCulate<1|2>:MARKer<1 to 4>[:STATe] ON | OFF

This command switches on or off the currently selected marker in the selected measurement window. If no indication is made, marker 1 is selected automatically. If marker 2, 3 or 4 is selected and used as a delta marker, it is switched to marker mode.

Example: "CALC:MARK3 ON" Switches marker 3 in screen A on or to marker mode.

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: A

CALCulate<1|2>:MARKer<1 to 4>:AOFF

This command switches off all active markers in the selected measurement window. All delta markers and active marker/delta marker measurement functions are switched off.

Example: "CALC:MARK:AOFF" Switches off all markers in screen A.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

CALCulate<1|2>:MARKer<1 to 4>:TRACe 1 to 3

This command assigns the selected marker (1 to 4) to the indicated measurement curve in the selected measurement window. The corresponding trace must be active, ie its status must be different from "BLANK".

If necessary the corresponding marker is switched on prior to the assignment.

Example: "CALC:MARK3:TRAC 2" Assigns marker 3 in screen A to trace 2.

"CALC2:MARK:TRAC 3" Assigns marker 1 in screen B to trace 3.

Characteristics: *RST value -
SCPI: device-specific

Mode: A

CALCulate<1|2>:MARKer<1 to 4>:X 0 to MAX (frequency | sweep time)

This command positions the selected marker to the indicated frequency (span > 0), time (span = 0) or level (APD measurement or CCDF measurement ON) in the selected measurement window. If marker 2, 3 or 4 is selected and used as delta marker, it is switched to marker mode.

Example: "CALC1:MARK2:X 10.7MHz" Positions marker 2 in screen A to frequency 10.7 MHz.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

CALCulate<1|2>:MARKer<1 to 4>:X:SLIMits[:STATe] ON | OFF

This command switches between a limited (ON) and unlimited (OFF) search range in the selected measurement window. The function is independent of the selection of a marker, ie the numeric suffix MARKer<1 to 4> is irrelevant.

If the time domain power measurement is active, this command limits the evaluation range on the trace.

Example: "CALC:MARK:X:SLIM ON" Switches on search limitation in screen A.

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: A

CALCulate<1|2>:MARKer<1 to 4>:X:SLIMits:LEFT 0 to MAX (frequency | sweep time)

This command sets the left limit of the search range for markers and delta markers in the selected measurement window. Depending on the x-axis domain the indicated value defines a frequency (span > 0) or time (span = 0). The function is independent of the selection of a marker, ie the numeric suffix in MARKer<1 to 4> is irrelevant.

If the time domain power measurement is active, this command limits the evaluation range to the trace.

Note: *The function is only available if the search limit for marker and delta marker is switched on (`CALC:MARK:X:SLIM ON`).*

Example:

`"CALC:MARK:X:SLIM ON"`	Switches the search limit function on for screen A.
`"CALC:MARK:X:SLIM:LEFT 10MHz"`	Sets the left limit of the search range in screen A to 10 MHz.

Characteristics: *RST value: - (is set to the left diagram border on switching on search limits)
SCPI: device-specific

Mode: A

CALCulate<1|2>:MARKer<1 to 4>:X:SLIMits:RIGHT 0 to MAX (frequency | sweep time)

This command sets the right limit of the search range for markers and delta markers in the selected measurement window. Depending on the x-axis domain the indicated value defines a frequency (span > 0) or time (span = 0). The function is independent of the selection of a marker, ie the numeric suffix in MARKer<1 to 4> is irrelevant.

If the time domain power measurement is active, this command limits the evaluation range to the trace.

Note:
The function is only available if the search limit for marker and delta marker is switched on (`CALC:MARK:X:SLIM ON`).

Example:

`"CALC:MARK:X:SLIM ON"`	Switches the search limit function on for screen A.
`"CALC:MARK:X:SLIM:RIGH 20MHz"`	Sets the right limit of the search range in screen A to 20 MHz.

Characteristics: *RST value: - is set to the right diagram border on switching on search limits)
SCPI: device-specific

Mode: A

CALCulate<1|2>:MARKer<1 to 4>:COUNt ON | OFF

This command switches on or off the frequency counter at the marker position in the selected measurement window. The count result is queríed with `CALCulate:MARKer:COUNt:FREQuency?`.

Frequency counting is possible only for one marker at a time for each measurement window. If it is activated for another marker, it is automatically de-activated for the previous marker.

It should be noted that a complete sweep must be performed after switching on the frequency counter to ensure that the frequency to be measured is actually reached. The synchronization to the sweep end required for this is possible only in single-sweep mode.

Example:

`"INIT:CONT OFF"`	Switches to single-sweep mode.
`"CALC:MARK ON"`	Switches on marker 1 in screen A.
`"CALC:MARK:COUN ON"`	Switches on the frequency counter for marker 1.
`"INIT;*WAI"`	Starts a sweep and waits for the end.
`"CALC:MARK:COUN:FREQ?"`	Outputs the measured value in screen A.

Characteristics:

*RST value:	OFF
SCPI:	device-specific

Mode: A

CALCulate<1|2>:MARKer<1 to 4>:COUNt:RESolution 0.1 | 1 | 10 | 100 | 1000 | 10000 Hz

This command specifies the resolution of the frequency counter in the selected measurement window.The setting is independent of the selected marker, ie the numeric suffix in MARKer<1 to 4> is irrelevant.

Example:

`"CALC:MARK:COUN:RES 1kHz"`	Sets the resolution of the frequency counter to 1 kHz.

Characteristics:

*RST value:	1kHz
SCPI:	device-specific

Mode: A

CALCulate<1|2>:MARKer<1 to 4>:COUNt:FREQuency?

This command queries the result of the frequency counter for´the indicated marker in the selected measurement window. Before the command, the frequency counter should be switched on and a complete measurement performed to obtain a valid count result. Therefore, a single sweep with synchronization must be performed between switching on the frequency counter and querying the count result.

Example:

`"INIT:CONT OFF"`	Switches to single-sweep mode.
`"CALC:MARK2 ON"`	Switches marker 2 in screen A.
`"CALC:MARK2:COUN ON"`	Switches the frequency counter for marker 2.
`"INIT;*WAI"`	Starts a sweep and waits for the end.
`"CALC:MARK2:COUN:FREQ?"`	Outputs the measured value of delta marker 2 in screen A.

Characteristics:

*RST value:	-
SCPI:	device-specific

Mode: A

This command is only a query and thus has no *RST value.

CALCulate<1|2>:MARKer<1 to 4>:LOEXclude ON | OFF

This command switches the local oscillator suppression for peak search on or off. This setting is valid for all markers and delta markers in all measurement windows.

Example: "CALC:MARK:LOEX ON"

Characteristics: *RST value: ON
SCPI: device-specific

Mode: A-F

The numeric suffixes 1|2 and 1 to 4 are irrelevant.

CALCulate<1|2>:MARKer<1 to 4>:Y?

This command queries the selected marker value in the selected measurement window. The corresponding marker is activated first or switched to the marker mode, if necessary.

A complete sweep with synchronization to sweep end must be performed between switching on the marker and querying the y value to obtain a valid query result. This is only possible in single sweep mode.

The query result is output in the unit defined with CALCulate:UNIT.

Example:
"INIT:CONT OFF" Switches to single-sweep mode.
"CALC:MARK2 ON" Switches marker 2 in screen A.
"INIT;*WAI" Starts a sweep and waits for the end.
"CALC:MARK2:Y?" Outputs the measured value of marker 2 in screen A.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

CALCulate<1|2>:MARKer<1...4>:Y:PERCent 0 to100%

This command positions the selected marker in the selected window to the given probability. If marker 2, 3 or 4 is selected and used as a delta marker, it is switched to marker mode.

Note: *The command is only available with the CCDF measurement switched on. The associated level value can be determined with the CALC:MARK:X? command.*

Example: "CALC1:MARK:Y:PERC 95PCT" positions marker 1 in screen A to a probability of 95%.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

CALCulate<1|2>:MARKer<1 to 4>:MAXimum[:PEAK]

This command positions the marker to the current maximum value of the corresponding trace in the selected measurement window. The corresponding marker is activated first or switched to the marker mode.

Note: *If no maximum value is found on the trace (level spacing to adjacent values < peak excursion), an execution error (error eode: -200) is produced.*

Example: "CALC:MARK2:MAX" Positions marker 2 in screen A to the maximum value of the trace.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

CALCulate<1|2>:MARKer<1 to 4>:MAXimum:NEXT

This command positions the marker to the next smaller maximum value of the corresponding trace in the selected measurement window.

Note: *If no next smaller maximum value is found on the trace (level spacing to adjacent values < peak excursion), an execution error (error code: -200) is produced.*

Example: "CALC:MARK2:MAX:NEXT" Positions marker 2 in screen A to the next lower maximum value.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

CALCulate<1|2>:MARKer<1 to 4>:MAXimum:RIGHt

This command positions the marker to the next smaller maximum value to the right of the current value (ie in ascending X values) on the corresponding trace in the selected measurement window.

Note: *If no next smaller maximum value is found on the trace (level spacing to adjacent values < peak excursion), an execution error (error code: -200) is produced.*

Example: "CALC:MARK2:MAX:RIGH" Positions marker 2 in screen A to the next lower maximum value to the right of the current value.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

CALCulate<1|2>:MARKer<1 to 4>:MAXimum:LEFT

This command positions the marker to the next smaller maximum value to the left of the current value (ie in descending X values) on the trace in the selected measurement window.

Note: *If no next smaller maximum value is found on the trace (level spacing to adjacent values < peak excursion), an execution error (error code: -200) is produced.*

Example: "CALC:MARK2:MAX:LEFT" Positions marker 2 in screen A to the next lowe maximum value to the left of the current value.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

CALCulate<1|2>:MARKer<1 to 4>:MINimum[:PEAK]

This command positions the marker to the current minimum value of the corresponding trace in the selected measurement window. The corresponding marker is activated first or switched to marker mode, if necessary.

Note: *If no minimum value is found on the trace (level spacing to adjacent values < peak excursion), an execution error (error code: -200) is produced.*

Example: "CALC:MARK2:MIN" Positions marker 2 in screen A to the minimum value of the trace.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

CALCulate<1|2>:MARKer<1 to 4>:MINimum:NEXT

This command positions the marker to the next higher minimum value of the corresponding trace in the selected measurement window.

Note: *If no next higher minimum value is found on the trace (level spacing to adjacent values < peak excursion), an execution error (error code: -200) is produced.*

Example: "CALC:MARK2:MIN:NEXT" Positions marker 2 in screen A to the next higher maximum value.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

CALCulate<1|2>:MARKer<1 to 4>:MINimum:RIGHt

This command positions the marker to the next higher minimum value to the right of the current value (ie in ascending X direction) on the corresponding trace in the selected measurement window.

Note: *If no next higher minimum value is found on the trace (level spacing to* adjacent values *< peak excursion), an execution error (error code: -200) is produced.*

Example: "CALC:MARK2:MIN:RIGH" Positions marker 2 in screen A to the next higher minimum value to the right of the current value.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

CALCulate<1|2>:MARKer<1 to 4>:MINimum:LEFT

This command positions the marker to the next higher minimum value to the left of the current value (ie in descending X direction) on the corresponding trace in the selected measurement window.

Note: *If no next higher minimum value is found on the trace (level spacing to* adjacent values *< peak excursion), an execution error (error code: -200) is produced.*

Example: "CALC:MARK2:MIN:LEFT" Positions marker 2 in screen A to the next higher minimum value to the left of the current value.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

CALCulate<1|2>:MARKer<1 to 4>:PEXCursion <numeric_value>

This command defines the peak excursion., ie the spacing below a trace maximum which must be attained before a new maximum is recognized, or the spacing above a trace minimum which must be attained before a new minimum is recognized. The set value is valid for all markers and delta markers.

Example: "CALC:MARK:PEXC 10dB"

Characteristics: *RST value: 6dB
SCPI: device-specific

Mode: A

The numeric suffix in MARKer<1 to 4> is irrelevant.

CALCulate:MARKer:FUNCtion Subsystem

The measurement window is selected by CALCulate 1 (screen A) or 2 (screen B).

COMMAND	PARAMETERS	UNIT	COMMENT
CALCulate<1|2>			
:MARKer<1 to 4>			
:FUNCtion			
:NDBDown	<numeric_value>	DB	
:STATe	<Boolean>		
:RESult?	--	--	query only
:FREQuency?	--	--	query only
:ZOOM	<numeric_value>	HZ	no query
:NOISe			
[:STATe]	<Boolean>		
:RESult?	--	--	query only
:DEModulation			option audio demodulator
:SELect	AM|FM		
[:STATe]	<Boolean>		
:HOLDoff	<numeric_value>	S	
:CONTinuous	<Boolean>		
:MDEPth			
[:STATe]	<Boolean>	--	
:RESult?	--		query only
:TOI			
[:STATe]	<Boolean>	--	
:RESult?	--		query only
:CENTer			no query
:CSTep			no query
:REFerence			no query

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:NDBDown <numeric_value>

This command defines the level spacing of the two delta markers to the right and left of marker 1 in the selected measurement window. Marker 1 is always used as the reference marker. The numeric suffix <1 to 4> is irrelevant for this command.

The temporary markers T1 and T2 are positioned by n dB below the active reference marker. The frequency spacing of these markers can be queried with `CALCulate:MARKer:FUNCtion:NDBDown:RESult?`.

Example: `"CALC:MARK:FUNC:NDBD 3dB"` Sets the level spacing in screen A to 3 dB.

Characteristics: *RST value: 6dB
SCPI: device-specific

Mode: A

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:NDBDown:STATe ON | OFF

This command switches the "N dB Down" function on or off in the selected measurement window. Marker 1 is activated first, if necessary. The numeric suffix <1 to 4> is irrelevant for this command.

Example: `"CALC:MARK:FUNC:NDBD:STAT ON"` Switches on the N-dB-down function in screen A.

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: A

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:NDBDown:RESult?

This command queries the frequency spacing (bandwidth) of the N-dB-down markers in the selected measurement window. The numeric suffix <1 to 4> is irrelevant for this command.

A complete sweep with synchronization to sweep end must be performed between switching on the function and querying the measured value in order to obtain a valid query result. This is only possible in single sweep mode.

Example:

`"INIT:CONT OFF"`	Switches to single-sweep mode.
`"CALC:MARK:FUNC:NDBD ON"`	Switches on the n-dB-down function in screen A.
`"INIT;*WAI"`	Starts a sweep and waits for the end.
`"CALC:MARK:FUNC:NDBD:RES?"`	Outputs the measured value of screen A.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

This command is only a query and is therefore not assigned an *RST value.

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:NDBDown:FREQuency?

This command queries the two frequencies of the N-dB-down marker in the selected measurement window. The numeric suffix <1 to 4> is irrelevant for this command. The two frequency values are separated by comma and output in ascending order.

A complete sweep with synchronization to sweep end must be performed between switching on the function and querying the measured value to obtain a valid query result. This is only possible in single sweep mode.

Example:

`"INIT:CONT OFF"`	Switches to single-sweep mode.
`"CALC:MARK:FUNC:NDBD ON"`	Switches on the n-dB-down function in screen A.
`"INIT;*WAI"`	Starts a sweep and waits for the end.
`"CALC:MARK:FUNC:NDBD:FREQ?"`	Outputs the frequencies of the temporary markers in screen A.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

This command is only a query and is therefore not assigned an *RST value.

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:ZOOM <numeric_value>

This command defines the range to be zoomed around marker 1 in the selected measurement window. Marker 1 is activated first, if necessary.

The subsequent frequency sweep is stopped at the marker position and the frequency of the signal is counted. This frequency becomes the new center frequency, and the zoomed span is set. In order to recognize the end of the operation the synchronization to the sweep end should be activated. This is only possible in single sweep mode.

Example:
```
"INIT:CONT OFF"                    Switches to single-sweep mode
"CALC:MARK:FUNC:ZOOM 1kHz;*WAI"    Activates zooming in screen A and
                                   waits for its end.
```

Characteristics: *RST value: -
SCPI: device-specific

Mode: A-F

This command is an event and is therefore not assigned an *RST value and has no query.

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:NOISe[:STATe] ON | OFF

This command switches the noise measurement on or off for all markers of the indicated measurement window. The noise power density is measured at the position of the markers. The result can be queried with `CALCulate:MARKer:FUNCtion:NOISe:RESult?`.

Example:
```
"CALC2:MARK:FUNC:NOIS ON"    Switches on the noise measurement for
                             screen B.
```

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: A

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:NOISe:RESult?

This command queries the result of the noise measurement.

A complete sweep with synchronization to the sweep end must be performed between switching on the function and querying the measured value in order to obtain a valid query result. This is only possible in single sweep mode.

Example:
```
"INIT:CONT OFF"              Switches to single-sweep mode.
"CALC:MARK2 ON"              Switches on marker 2 in screen A.
"CALC:MARK:FUNC:NOIS ON"     Switches on noise measurement in screen A.
"INIT;*WAI"                  Starts a sweep and waits for the end.
"CALC:MARK2:NOIS:RES?"       Outputs the noise result of marker 2 in
                             screen A.
```

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:DEModulation:SELect AM | FM

This command selects the demodulation type for the audio demodulator. The command is independent of the measurement window and of the selected marker, ie suffixes 1|2 and 1 to 4 are irrelevant.

This command is only available with the audio demodulator option FSP-B3.

Example: "CALC:MARK:FUNC:DEM:SEL FM"

Characteristics: *RST value: AM
SCPI: device-specific

Mode: A

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:DEModulation[:STATe] ON | OFF

This command switches on or off the audio demodulator when the indicated marker is reached in the selected measurement window. In the frequency domain (span > 0) the hold time can be defined at the corresponding marker position with CALCulate:MARKer:FUNCtion: DEModulation:HOLD. In the time domain (span = 0) the demodulation is permanently active.

The command is only available with option audio demodulator FSP-B3.

Example: "CALC2:MARK3:FUNC:DEM ON" Switches on the demodulation for marker 3 in screen B.

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: A

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:DEModulation:HOLDoff 10ms to 1000s

This command defines the hold time at the marker position for the demodulation in the frequency domain (span > 0). The setting is independent of the measurement window and the selected marker, ie the suffixes <1|2> and <1 to 4> are irrelevant

The command is only available with option audio demodulator FSP-B3.

Example: "CALC:MARK:FUNC:DEM:HOLD 3s"

Characteristics: *RST value: - (DEModulation is set to OFF)
SCPI: device-specific

Mode: A

CALCulate<1|2>:MARKer<1...4>:FUNCtion:DEModulation:CONTinuous ON | OFF

This command switches on or off the continuous demodulation in the frequency domain (span >0) in the selected measurement window. Thus acoustic monitoring of the signals can be performed in the frequency domain. The function does not depend on the selected marker, ie the suffix <1 to 4> is irrelevant.

The command is only available with option audio demodulator FSP-B3.

Example: "CALC2:MARK3:FUNC:DEM:CONT ON" switches on the continuous demodulation in screen B.

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: **A**

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:MDEPth:[:STATe]

This command switches on the measurement of the AM modulation depth. An AM-modulated carrier is required on the screen for correct operation. If necessary, marker 1 is previously activated and set to the largest signal available.

The level value of marker 1 is regarded as the carrier level. On activating the function, marker 2 and marker 3 are automatically set as delta markers symetrically to the carrier to the adjacent maxima of the trace.

If the position of delta marker 2 is changed, delta marker 3 is moved symetrically with respect to the reference marker (marker 1). If the position of delta marker 3 is changed, fine adjustment can be performed independently of delta marker 2.

The FSP calculates the power at the marker positions from the measured levels. The AM modulation depth is calculated from the ratio of power values at the reference marker and the delta markers. If the two AM sidebands differ in power, the average value of the two power values is used for calculating the AM modulation depth.

The suffix <1 to 4> of :MARKer is irrelevant with this command.

Example:

`"CALC:MARK:X 10MHZ"`	Sets the reference marker (marker 1) to the carrier signal at 10 MHz
`"CALC:MARK:FUNC:MDEP ON"`	Switches on the modulation depth measurement in screen A.
`"CALC:DELT2:X 10KHZ"`	Sets delta markers 2 and 3 to the signals at 10 kHz from the carrier signal
`"CALC:DELT3:X 9.999KHZ"`	Corrects the position of delta marker 3 relative to delta marker 2.

Characteristics:

*RST value:	OFF
SCPI:	device-specific

Mode: A

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:MDEPth:RESult?

This command queries the AM modulation depth in the indicated measurement window.

A complete sweep with synchronization to sweep end must be performed between switching on the function and querying the measured value to obtain a valid query result. This is only possible in single sweep mode.

The suffix <1 to 4> of :MARKer is irrelevant for this command.

Example:

`"INIT:CONT OFF"`	Switches to single-sweep mode.
`"CALC:MARK:X 10MHZ"`	Sets the reference marker (marker 1) to the carrier signal at 10 MHz.
`"CALC:MARK:FUNC:MDEP ON"`	Switches on the modulation depth measurement in screen A.
`"INIT;*WAI"`	Starts a sweep and waits for the end.
`"CALC:MARK:FUNC:MDEP:RES?"`	Outputs the measured value of screen A.

Characteristics:

*RST value:	-
SCPI:	device-specific

Mode: A

This command is only a query and thus has no *RST value assigned.

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:TOI[:STATe] ON | OFF

This command initiates the measurement of the third-order intercept point.

A two-tone signal with equal carrier levels is expected at the input of FSP. Marker 1 and marker 2 (both normal markers) are set to the maximum of the two signals. Delta marker 3 and delta marker 4 are positioned to the intermodulation products. The delta markers can be modified sperately afterwards with the commands `CALCulate:DELTamarker3:X` and `CALCulate:DELTamarker4:X`.

The FSP calculates the third-order intercept from the level spacing between the normal markers and the delata markers.

The suffix <1 to 4> of :MARKer is irrelevant for this command.

Example: `"CALC:MARK:FUNC:TOI ON"` Switches on the measurement of the third-order intercept in screen A.

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: A

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:TOI:RESult?

This command queries the third-order intercept point measurement in the indicated measurement window.

A complete sweep with synchronization to sweep end must be performed between switching on the function and querying the measured value to obtain a valid query result. This is only possible in single sweep mode.

The suffix <1 to 4> of :MARKer is irrelevant of this command.

Example:
`"INIT:CONT OFF"` Switches to single-sweep mode.
`"CALC:MARK:FUNC:TOI ON"` Switches the intercept measurement in screen A.
`"INIT;*WAI"` Starts a sweep and waits for the end.
`"CALC:MARK:FUNC:TOI:RES?"` Outputs the measured value of screen A.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

This command is only a query and thus has no *RST value assigned.

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:CENTer

This command sets the center frequency of the selected measurement window equal to the frequency of the indicated marker.

If marker 2, 3 or 4 is selected and used as delta marker, it is switched to the marker mode.

Example: `"CALC:MARK2:FUNC:CENT"` Sets the center frequency of screen A to the frequency of marker 2.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A-F

This command is an "event" and therefore has no *RST value assigned and has no query.

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:CSTep

This command sets the step width of the center frequency in the selected measurement window to the X value of the current marker. If marker 2, 3 or 4 is selected and used as delta marker, it is switched to the marker mode.

Example: "CALC2:MARK3:FUNC:CST" Sets the center frequency of screen B to the same value as the frequency of marker 3.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A-F

This command is an event and therefore has no *RST value assigned and has no query.

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:REFerence

This command sets the reference level in the selected measurement window to the power measured by the indicated marker. If marker 2, 3 or 4 is selected and used as delta marker, it is switched to marker mode.

Example: "CALC:MARK2:FUNC:REF" Sets the reference level of screen A to the the level of marker 2.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

This command is an event and therefore has no *RST value assigned and has no query.

CALCulate:MARKer:FUNCtion:POWer Subsystem

The CALCulate:MARKer:FUNCtion:POWER subsystem contains the commands for control of power measurement.

COMMAND	PARAMETERS	UNIT	COMMENT
CALCulate<1|2>			
:MARKer			
:FUNCtion			
:POWer			
:SELect	ACPower | CPOWer | OBANdwidth | OBWidth		
:RESult?	ACPower | CPOWer | OBANdwidth | OBWidth<Boolean>		query only
:PHZ	<Boolean>		
:PRESet	NADC | TETRA | PDC | PHS | CDPD | FWCDma | RWCDma | F8CDma | R8CDma | F19Cdma | R19Cdma | FW3Gppcdma | RW3Gppcdma | D2CDma | S2CDma | M2CDma | FIS95A | RIS95A | FIS95C0 | RIS95C0 | FIS95C1 | RIS95C1 | FJ008 | RJ008 | NONE		
[:STATe]	OFF		no query

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:POWer:SELect ACPower | CPOWer | OBANdwidth | OBWidth

This command selects the indicated power measurement and switches it on in the selected measurement window. The function is independent of the selected marker, ie the suffix <1 to 4> of MARKer is irrelevant.
The configuration of channel spacings and channel bandwidths is performed by means of subsystem `SENSe:POWer:ACHannel`.
It should be noted that selecting CPOWer causes the number of adjacent channels (command: `[SENSe<1|2>:]POWer:ACHannel:ACPairs`) to be set to 0. Selecting ACPower causes the number of adjacent channels to be set to 1, if the adjacent channel power measurement is not yet switched on. In both cases the behaviour of FSP differs from that of the FSE family.

Note: *The measurement of the channel/adjacent channel power is performed on the trace which has been selected with `SENSe:POWer:TRACe 1|2|3`.*

The measurement of the occupied bandwidth is performed on the trace on which marker 1 is positioned. In order to evaluate another trace, marker 1 should be positioned on another trace with `CALC:MARK:TRAC 1|2|3`.

Parameter:

ACPower	adjacent channel power measurement
CPOWer	channel power measurement (same as adjacent channel power measurement with No. of Adj Channels = 0)
OBANdwidth | OBWidth	occupied bandwidth power measurement

Example: `"CALC:MARK:FUNC:POW:SEL ACP"` Switches on the adjacent channel power measurement in screen A.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A-F

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:POWer:RESult? ACPower | CPOWer | OBANdwidth | OBWidth

This command queries the results of the power measurement in the selected measurement window.The measurement is switched on first, if necessary.

The configuration of channel spacings and channel bandwidths is performed with subsytem `SENSe:POWer:ACHannel`.

To obtain a valid result, a complete sweep with synchronization to the sweep end must be performed before the query is executed. This is possible in single sweep mode only.

Parameter:

ACPower: adjacent channel power measurement

Results are output separated by commas in the following order:

1. Power of main channel
2. Power of lower adjacent channel
3. Power of upper adjacent channel
4. Power of lower alternate adjacent channel 1
5. Power of upper alternate adjacent channel 1
6. Power of lower alternate adjacent channel 2
7. Power of upper alternate adjacent channel 2

The number of results depends on the number of adjacent channels selected with command `SENSe:POWer:ACHannel:ACPairs`.

With logarithmic scaling (RANGE LOG), the power is output in dBm, with linear scaling (RANGE LIN dB or LIN %) in W. If SENSe:POWer:ACHannel:MODE REL is selected, adjacent channel power is output in dB.

CPOWer channel power measurement

With logarithmic scaling (RANGE LOG), the channel power is output in dBm, with linear scaling (RANGE LIN dB or LIN %) in W.

OBANdwidth | OBWidth occupied bandwidth power measurement

The return value is the occupied bandwidth in Hz.

Example of channel/adjacent power measurement:

`"SENS2:POW:ACH:ACP 3"`	Sets the number of adjacent channels in screen B to 3.
`"SENS2:POW:ACH:BAND 30KHZ"`	Sets the bandwidth of the main channel to 30 kHz.
`"SENS2:POW:ACH:BAND:ACH 40KHZ"`	Sets the bandwidth of all adjacent channels to 40 kHz.
`"SENS2:POW:ACH:BAND:ALT1 50KHZ"`	Sets the bandwidth of all alternate adjacent channels to 50 kHz.
`"SENS2:POW:ACH:BAND:ALT2 60KHZ"`	Sets the bandwidth of alternate adjacent channel 2 to 60 kHz.
`"SENS2:POW:ACH:SPAC 30KHZ"`	Sets the spacing between channel to adjacent channel to 30 kHz as well as between channel and alternate adjacent channel to 60 kHz and 2nd alternate adjacent channel to 90 kHz.
`"SENS2:POW:ACH:SPAC:ALT1 100KHZ"`	Sets the spacing between channel and alternate adjacent channel to 100 kHz as well as 2nd alternate adjacent channel to 150 kHz.
`"SENS2:POW:ACH:SPAC:ALT2 140KHZ"`	Sets the spacing between channel and alternate adjacent channel 2 to 140 kHz.

"SENS2:POW:ACH:MODE ABS"	Switches on the measurement of absolute power values.
"CALC2:MARK:FUNC:POW:SEL ACP"	Switches the adjacent channel power measurement in screen B.
"INIT:CONT OFF"	Switches to single-sweep mode.
"INIT;*WAI"	Starts a sweep and waits for the end
"CALC2:MARK:FUNC:POW:RES? ACP"	Queries the result of the adjacent channel power measurement in screen B.
	In case of relative measurement, the measured channel power can be defined as the reference power with command.
"SENS2:POW:ACH:REF:AUTO ONCE".	

If only the **channel power** is to be measured, all commands for defining the bandwidths of adjacent channels as well as the channel spacings are not necessary. The number of adjacent channels is set to 0 with SENS2:POW:ACH:ACP 0.

Example of occupied bandwidth measurement:

"SENS2:POW:BAND 90PCT"	Sets the percentage of the power contained in the bandwidth under request to 90%.
"INIT:CONT OFF"	Switches to single-sweep mode.
"INIT;*WAI"	Starts a sweep and waits for the end.
"CALC2:MARK:FUNC:POW:RES? OBW"	Queries the result of the occupied bandwidth in screen B.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A-F

This command is only a query and is therefore not assigned an *RST value.

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:POWer:RESult:PHZ ON | OFF

This command switches the query response of the power measurement results in the indicated measurement window between output of absolute values (OFF) and output referred to the measurement bandwith (ON).

The measurement results are output with `CALCulate:MARKer:FUNCtion:POWer:RESult?`

Parameter:

ON: Results output referred to measurement bandwidth.

OFF: Results output in absolute values.

Example of channel/adjacent channel measurement:

`"SENS2:POW:ACH:ACP 3"`	Sets the number of adjacent channels in screen B to 3.
`"SENS2:POW:ACH:BAND 30KHZ"`	Sets the bandwidth of the main channel to 30 kHz.
`"SENS2:POW:ACH:BAND:ACH 40KHZ"`	Sets the bandwidth of all adjacent channels to 40 kHz.
`"SENS2:POW:ACH:BAND:ALT1 50KHZ"`	Sets the bandwidth of all alternate adjacent channels to 50 kHz.
`"SENS2:POW:ACH:BAND:ALT2 60KHZ"`	Sets the bandwidth of alternate adjacent channel 2 to 60 kHz.
`"SENS2:POW:ACH:SPAC 30KHZ"`	Sets the spacing between channel and adjacent channel as well as between all adjacent channels to 30 kHz.
`"SENS2:POW:ACH:SPAC:ALT1 40KHZ"`	Sets the spacing between adjacent channel and alternate adjacent channel as well as between all alternate adjacent channels to 40 kHz.
`"SENS2:POW:ACH:SPAC:ALT2 50KHZ"`	Sets the spacing between alternate adjacent channel 1 and alternate adjacent channel 2 to 50 kHz.
`"SENS2:POW:ACH:MODE ABS"`	Switches on absolute power measurement.
`"CALC2:MARK:FUNC:POW:SEL ACP"`	Switches the adjacent channel power measurement in screen B.
`"INIT:CONT OFF"`	Switches to single-sweep mode.
`"INIT;*WAI"`	Starts a sweep and waits for the end.
`"CALC2:MARK:FUNC:POW:RES:PHZ ON"`	Output of results referred to the channel bandwidth.
`"CALC2:MARK:FUNC:POW:RES? ACP"`	Queries the result of the adjacent channel power measurement in screen B referred to the channel bandwidth.

If only the **channel power** is to be measured, all commands for defining the bandwidths of adjacent channels as well as the channel spacings are not necessary. The number of adjacent channels is set to 0 with `SENS2:POW:ACH:ACP 0`.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A-F

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:POWer[:STATe] OFF

This command switches off the power measurement in the selected measurement window.

Example: "CALC:MARK:FUNC:POW OFF" Switches off the power measurement in screen B.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A-F

This command is an event and is therefore not assigned an *RST value.

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:POWer:PRESet NADC | TETRA | PDC | PHS | CDPD | FWCDma | RWCDma | F8CDma | R8CDma | F19Cdma | R19Cdma | FW3Gppcdma | RW3Gppcdma | D2CDma | S2CDma | M2CDma | FIS95A | RIS95A | FIS95C0 | RIS95C0 | FJ008 | RJ008 | FIS95C1 | RIS95C1 | NONE

This command selects the power measurement setting for a standard in the indicated measurement window and previously switches on the corresponding measurement, if required. The function is independent of the marker selection, ie the suffix <1 to 4> of MARKer is irrelevant.

The configuration for a standard comprises of the parameters weighting filter, channel bandwidth and spacing, resolution and video bandwidth, as well as detector and sweep time.

Meaning of the CDMA standard abbreviations:

FIS95A, F8CDma	CDMA IS95A forward
RIS95A, R8CDma	CDMA IS95A reverse
FJ008, F19CDma	CDMA J-STD008 forward
RJ008, R19CDma	CDMA J-STD008 reverse
FIS95C0	CDMA IS95C Class 0 forward
RIS95C0	CDMA IS95C Class 0 reverse
FIS95C1	CDMA IS95C Class 1 forward
RIS95C1	CDMA IS95C Class 1 reverse
FWCDma	W-CDMA 4.096 MHz forward
RWCDma	W-CDMA 4.096 MHz reverse
FW3Gppcdma	W-CDMA 3.84 MHz forward
RW3Gppcdma	W-CDMA 3.84 MHz reverse
D2CDma	CDMA 2000 direct sequence
S2CDma	CDMA 2000 MC1 multi carrier with 1 carrier
M2CDma	CDMA 2000 MC3 multi carrier with 3 carriers

Note:
The settings for standards IS95A and C differ as far as the calculation method of channel spacings is concerned. For IS95A the spacing is calculated from the center of the main channel to the center of the corresponding adjacent channel, for IS95C from the center of the main channel to the nearest border of the adjacent channel.

Example: "CALC2:MARK:FUNC:POW:PRES NADC" selects the standard setting for NADC in screen B

Characteristics: *RST value: -
SCPI: device-specific

Mode: A-F

CALCulate:MARKer:FUNCtion:STRack Subsystem

COMMAND	PARAMETERS	UNIT	COMMENT
CALCulate<1|2>			
:MARKer			
:FUNCtion			
:STRack			
[:STATe]	<Boolean>		
:BANDwidth	<numeric_value>	HZ	
:BWIDth	<numeric_value>	HZ	
:THReshold	<numeric_value>	DBM	
:TRACe	<numeric_value>		

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:STRack[:STATe] ON | OFF

This command switches the signal-track function on or off for the the selected measurement window. The function is independent of the selected marker, ie the suffix <1 to 4> of MARKer is irrelevant.

With signal track activated, the maximum signal is determined after each frequency sweep and the center frequency is set to the frequency of this signal. Thus with drifting signals the center frequency follows the signal.

Example: `"CALC:MARK:FUNC:STR ON"` Switches on the signal track function for screen A.

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: A-F

CALCulate<1|2>:MARKer<1...4>:FUNCtion:STRack:BANDwidth 10Hz to MAX(SPAN)
CALCulate<1|2>:MARKer<1...4>:FUNCtion:STRack:BWIDth 10Hz to MAX(SPAN)

These commands have the same function. For the selected measurement window they define the bandwidth around the center frequency within which the largest signal is searched. The function is independent of the selected marker, ie the suffix <1 to 4> of MARKer is irrelevant. It is only available in the frequency domain (span > 0).

Note:
The entry of the search bandwidth is only possible if the Signal Track function is switched on (`CALC:MARK:FUNC:STR ON`).

Example: `"CALC:MARK:FUNC:STR:BAND 1MHZ"` Sets the search bandwidth for screen A to 1 MHz.

`"CALC:MARK:FUNC:STR:BWID 1MHZ"` Alternative command for the same function.

Characteristics: *RST value: -- (= span/10 on activating the function)
SCPI: device-specific

Mode: A-F

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:STRack:THReshold -330dBm to +30dBm

This command defines the threshold above which the largest signal is searched for in the selected measurement window. The function is independent of the selected marker, ie the suffix <1 to 4> of MARKer is irrelevant. It is only available in the frequency domain (span > 0).

The response unit depends on the settings defined with `CALC:UNIT`.

Note:
The entry of the search bandwidth is only possible if the Signal Track function is switched on (`CALC:MARK:FUNC:STR ON`).

Example: `"CALC:MARK:FUNC:STR:THR -50DBM"` Sets the threshold for signal tracking in screen A to -50 dBm.

Characteristics: *RST value: -120 dBm
SCPI: device-specific

Mode: A-F

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:STRack:TRACe 1 to 3

This command defines the trace on which the largest signal is searched for in the selected measurement window. The function is independent of the selected marker, ie the suffix <1 to 4> of MARKer is irrelevant. It is only available in the frequency domain (span > 0).

Example: `"CALC2:MARK:FUNC:STR:TRAC 3"` Defines trace 3 in screen B as the trace for signal tracking.

Characteristics: *RST value: 1
SCPI: device-specific

Mode: A-F

CALCulate:MARKer:FUNCtion:SUMMary Subsystem

This subsystem contains the commands for controlling the time domain power functions. These are provided in the marker subsytem for reasons of compatibility with the FSE family.

COMMAND	PARAMETERS	UNIT	COMMENT
CALCulate<1|2>			
:MARKer			
:FUNCtion			
:SUMMary			
[:STATe]	<Boolean>		
:PPEak			
[:STATe]	<Boolean>		
:RESult?			query only
:AVERage			
:RESult?			query only
:PHOLd			
:RESult?			query only
:RMS			
[:STATe]	<Boolean>		
:RESult?			query only
:AVERage			
:RESult?			query only
:PHOLd			
:RESult?			query only
:MEAN			
[:STATe]	<Boolean>		
:RESult?			query only
:AVERage			
:RESult?			query only
:PHOLd			
:RESult?			query only
:SDEViation			
[:STATe]	<Boolean>		
:RESult?			query only
:AVERage			
:RESult?			query only
:PHOLd			
:RESult?			query only
:PHOLd	<Boolean>		
:AVERage	<Boolean>		
:MODE	ABSolute|RELative		
:REFerence			
:AUTO	ONCE		
:AOFF			no query

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:SUMMary[:STATe] ON | OFF

This command switches on or off the previously selected time domain power measurements. Thus one or several measurements can be first selected and then switched on and off together with `CALC:MARK:FUNC:SUMMary:STATe`.

The function is independent of the marker selection, ie the suffix of MARKer is irrelevant. It is only available in the time domain (span = 0).

Example: `"CALC:MARK:FUNC:SUMM:STAT ON"`

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: A-T

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:SUMMary:PPEak[:STATe] ON | OFF

This command switches on or off the measurement of the positive peak value in the selected measurement window.

The function is independent of the marker selection, ie the suffix <1 to 4> of MARKer is irrelevant. It is only available in the time domain (span = 0).

Example: `"CALC:MARK:FUNC:SUMM:PPE ON"` Switches on the function in screen A.

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: A-T

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:SUMMary:PPEak:RESult?

This command is used to query the result of the measurement of the positive peak value in the selected measurement window. The measurement may have to be switched on previously.

The function is independent of the marker selection, ie the suffix <1 to 4> of MARKer is irrelevant. It is only available in the time domain (span = 0).

A complete sweep with synchronization to sweep end must be performed between switching on the function and querying the measured value to obtain a valid query result. This is only possible in single sweep mode.

Example:

`"INIT:CONT OFF"`	Switches to single-sweep mode.
`"CALC:MARK:FUNC:SUMM:PPE ON"`	Switches on the function in screen A.
`"INIT;*WAI"`	Starts a sweep and waits for the end.
`"CALC:MARK:FUNC:SUMM:PPE:RES?"`	Outputs the result of screen A.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A-T

This command is only a query and thus has no *RST value assigned.

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:SUMMary:PPEak:AVERage:RESult?

This command is used to query the result of the measurement of the averaged positive peak value in the selected measurement window. The query is only possible if averaging has been activated previously using `CALCulate<1|2>:MARKer<1 to 4>:FUNCtion: SUMMary:AVERage.`

The function is independent of the marker selection, ie the suffix <1 to 4> in MARKer is irrelevant. It is only available in the time domain (span = 0).

A complete sweep with synchronization to sweep end must be performed between switching on the function and querying the measured value to obtain a valid query result. This is only possible in single sweep mode.

Example:

`"INIT:CONT OFF"`	Switches to single-sweep mode.
`"CALC:MARK:FUNC:SUMM:PPE ON"`	Switches on the function in screen A.
`"CALC:MARK:FUNC:SUMM:AVER ON"`	Switches on the calculation of average in screen A.
`"INIT;*WAI"`	Starts a sweep and waits for the end.
`"CALC:MARK:FUNC:SUMM:PPE:AVER:RES?"`	Outputs the result of screen A.

Characteristics:

*RST value:	-
SCPI:	device-specific

Mode: A-T

This command is only a query and thus has no *RST value assigned.

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:SUMMary:PPEak:PHOLd:RESult?

This command is used to query the result of the measurement of the positive peak value with active peak hold function. The query is only possible if the peak hold function has been activated previously using `CALCulate<1|2>:MARKer<1 to 4>: FUNCtion:SUMMary:PHOLd`.

The function is independent of the marker selection, ie the suffix `<1 to 4>` of `:MARKer` is irrelevant. It is only available in the time domain (span = 0).

A complete sweep with synchronization to sweep end must be performed between switching on the function and querying the measured value to obtain a valid query result. This is only possible in single sweep mode.

Example:

`"INIT:CONT OFF"`	Switches to single-sweep mode.
`"CALC:MARK:FUNC:SUMM:PPE ON"`	Switches on the function in screen A.
`"CALC:MARK:FUNC:SUMM:PHOL ON"`	Switches on the measurement of the peak value in screen A.
`"INIT;*WAI"`	Starts a sweep and waits for the end.
`"CALC:MARK:FUNC:SUMM:PPE:PHOL:RES?"`	Outputs the result of screen A.

Characteristics:

*RST value:	-
SCPI:	device-specific

Mode: A-T

This command is only a query and thus has no *RST value assigned.

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:SUMMary:RMS[:STATe] ON | OFF

This command switches on or off the measurement of the effective (RMS) power in the selected measurement window. If necessary the function is switched on previously.

The function is independent of the marker selection, ie the suffix <1 to 4> of :MARKer is irrelevant. It is only available in the time domain (span = 0).

Example: "CALC2:MARK:FUNC:SUM:RMS ON" Switches on the function in screen B.

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: A-T

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:SUMMary:RMS:RESult?

This command queries the result of the measurement of the RMS power value in the selected measurement window.

The function is independent of the marker selection, ie the suffix <1 to 4> of :MARKer is irrelevant. It is only available in the time domain (span = 0).

A complete sweep with synchronization to sweep end must be performed between switching on the function and querying the measured value to obtain a valid query result. This is only possible in single sweep mode.

Example:

"INIT:CONT OFF"	Switches to single-sweep mode.
"CALC:MARK:FUNC:SUMM:RMS ON"	Switches on the function in screen A.
"INIT;*WAI"	Starts a sweep and waits for the end.
"CALC:MARK:FUNC:SUMM:RMS:RES?"	Outputs the result of screen A.

Characteristics: *RST- value: -
SCPI: device-specific

Mode: A-T

This command is only a query and thus has no *RST value assigned.

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:SUMMary:RMS:AVERage:RESult?

This command queries the result of the measurement of the averaged RMS value in the selected measurement window. The query is only possible if averaging has been activated previously using CALCulate<1|2>:MARKer<1 to 4>:FUNCtion: SUMMary:AVERage.

The function is independent of the marker selection, ie the suffix <1 to 4> of :MARKer is irrelevant. It is only available in the time domain (span = 0).

A complete sweep with synchronization to sweep end must be performed between switching on the function and querying the measured value to obtain a valid query result. This is only possible in single sweep mode.

Example:

"INIT:CONT OFF"	Switches to single-sweep mode.
"CALC:MARK:FUNC:SUMM:RMS ON"	Switches on the function in screen A.
"CALC:MARK:FUNC:SUMM:AVER ON"	Swtiches on the average value calculation in screen A.
"INIT;*WAI"	Starts a sweep and waits for the end.
"CALC:MARK:FUNC:SUMM:RMS:AVER:RES?"	Outputs the result of screen A.

Characteristics: *RST- value: -
SCPI: device-specific

Mode: A-T

This command is only a query and thus has no *RST value assigned.

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:SUMMary:RMS:PHOLd:RESult?

This command queries the result of the measurement of the RMS value with active peak hold in the selected measurement window. The query is only possible only if the peak hold function has been activated previously using `CALCulate<1|2>:MARKer<1 to 4>: FUNCtion:SUMMary:PHOLd`.

The function is independent of the marker selection, ie the suffix `<1 to 4>` of `:MARKer` is irrelevant. It is only available in the time domain (span = 0).

A complete sweep with synchronization to sweep end must be performed between switching on the function and querying the measured value to obtain a valid query result. This is only possible in single sweep mode.

Example:	`"INIT:CONT OFF"`	Switches to single-sweep mode.
	`"CALC:MARK:FUNC:SUMM:RMS ON"`	Switches on the function in screen A.
	`"CALC:MARK:FUNC:SUMM:PHOL ON"`	Switches on the peak value measurement in screen A.
	`"INIT;*WAI"`	Starts a sweep and waits for the end.
	`"CALC:MARK:FUNC:SUMM:RMS:PHOL:RES?"`	Outputs the result of screen A.

Characteristics: *RST- value: -
SCPI: device-specific

Mode: A-T

This command is only a query and thus has no *RST value assigned.

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:SUMMary:MEAN[:STATe] ON | OFF

This command switches on or off the measurement of the mean value in the selected measurement window.

The function is independent of the marker selection, ie the suffix `<1 to 4>` of `:MARKer` is irrelevant. It is only available in the time domain (span = 0).

Note: *The measurement is performed on the trace on which marker 1 is positioned. In order to evaluate another trace, marker 1 must be positioned on another trace with `CALC:MARK:TRAC 1|2|3`.*

Example:	`"CALC:MARK:FUNC:SUMM:MEAN ON"`	Switches on the function in screen A.

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: A-T

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:SUMMary:MEAN:RESult?

This command queries the result of the measurement of the mean value in the selected measurement window. The function is independent of the marker selection, ie the suffix <1 to 4> of :MARKer is irrelevant. It is only available in the time domain (span = 0).

A complete sweep with synchronization to sweep end must be performed between switching on the function and querying the measured value to obtain a valid query result. This is only possible in single sweep mode.

Example:

```
"INIT:CONT OFF"                    Switches to single-sweep mode.
"CALC:MARK:FUNC:SUMM:MEAN ON"      Switches on the function in screen A.
"INIT;*WAI"                        Starts a sweep and waits for the end.
"CALC:MARK:FUNC:SUMM:MEAN:RES?"    Outputs the result of screen A.
```

Characteristics: *RST- value: -
SCPI: device-specific

Mode: A-T

This command is only a query and thus has no *RST value assigned.

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:SUMMary:MEAN:AVERage:RESult?

This command queries the result of the measurement of the averaged mean value in the selected measurement window. The query is only possible if averaging has been activated previously using CALCulate<1|2>:MARKer<1 to 4>:FUNCtion: SUMMary:AVERage.

The function is independent of the marker selection, ie the suffix <1 to 4> of :MARKer is irrelevant. It is only available in the time domain (span = 0).

A complete sweep with synchronization to sweep end must be performed between switching on the function and querying the measured value to obtain a valid query result. This is only possible in single sweep mode.

Example:

```
"INIT:CONT OFF"                    Switches to single-sweep mode.
"CALC:MARK:FUNC:SUMM:MEAN ON"      Switches on the function in screen A.
"CALC:MARK:FUNC:SUMM:AVER ON"      Switches on the average value
                                   calculation in screen A.
"INIT;*WAI"                        Starts a sweep and waits for the end.
"CALC:MARK:FUNC:SUMM:MEAN:AVER:RES?"  Outputs the result of screen A.
```

Characteristics: *RST- value: -
SCPI: device-specific

Mode: A-T

This command is only a query and thus has no *RST value assigned.

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:SUMMary:MEAN:PHOLd:RESult?

This command queries the result of the measurement of the mean value with active peak hold in the selected measurement window. The query is only possible if the peak hold function has been switched on previously using `CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:SUMMary:PHOLd`.

The query is possible only if the peak hold function is active. The function is independent of the marker selection, ie the suffix `<1 to 4>` of `:MARKer` is irrelevant. It is only available in the time domain (span = 0).

A complete sweep with synchronization to sweep end must be performed between switching on the function and querying the measured value to obtain a valid query result. This is only possible in single sweep mode.

Example:

`"INIT:CONT OFF"`	Switches to single-sweep mode
`"CALC:MARK:FUNC:SUMM:MEAN ON"`	Switches on the function in screen A
`"CALC:MARK:FUNC:SUMM:PHOL ON"`	Switches on the peak value measurement in screen A
`"INIT;*WAI"`	Starts a sweep and waits for the end
`"CALC:MARK:FUNC:SUMM:MEAN:PHOL:RES?"`	Outputs the result of screen A.

Characteristics:

*RST- value:	-
SCPI:	device-specific

Mode: A-T

This command is only a query and thus has no *RST value assigned.

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:SUMMary:SDEViation[:STATe] ON | OFF

This command switches on or off the measurement of the standard deviation in the selected measurement window.The function is independent of the marker selection, ie the suffix `<1 to 4>` of `:MARKer` is irrelevant. It is only available in the time domain (span = 0).

On switching on the measurement, the mean power measurement is switched on as well.

Example:

`"CALC2:MARK:FUNC:SUMM:SDEV ON"`	Switches on the measurement of the standard deviation in screen B.

Characteristics:

*RST value:	OFF
SCPI:	device-specific

Mode: A

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:SUMMary:SDEViation:RESult?

This command queries the results of the standard deviation measurement. The function is independent of the marker selection, ie the suffix <1 to 4> of :MARKer is irrelevant. It is only available in the time domain (span = 0).

A complete sweep with synchronization to sweep end must be performed between switching on the function and querying the measured value to obtain a valid query result. This is only possible in single sweep mode.

Example:

"INIT:CONT OFF"	Switches to single-sweep mode.
"CALC:MARK:FUNC:SUMM:SDEV ON"	Switches on the function in screen A.
"INIT;*WAI"	Starts a sweep and waits for the end.
"CALC:MARK:FUNC:SUMM:SDEV:RES?"	Outputs the result of screen A.

Characteristics:

*RST value:	-
SCPI:	device-specific

Mode: A-T

This command is only a query and thus has no *RST value assigned.

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:SUMMary:SDEViation:AVERage:RESult?

This command queries the result of the averaged standard deviation determined in several sweeps in the selected measurement window. The query is possible only if averaging is active. The function is independent of the marker selection, ie the suffix <1 to 4> of :MARKer is irrelevant. It is only available in the time domain (span = 0).

A complete sweep with synchronization to sweep end must be performed between switching on the function and querying the measured value to obtain a valid query result. This is only possible in single sweep mode.

Example:

"INIT:CONT OFF"	Switches to single-sweep mode.
"CALC:MARK:FUNC:SUMM:SDEV ON"	Switches on the function in screen A.
"CALC:MARK:FUNC:SUMM:AVER ON"	Switches on the calculation of average in screen A.
"INIT;*WAI"	Starts a sweep and waits for the end.
"CALC:MARK:FUNC:SUMM:MEAN:SDEV:RES?"	Outputs the result of screen A.

Characteristics:

*RST value:	-
SCPI:	device-specific

Mode: A-T

This command is only a query and thus has no *RST value assigned.

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:SUMMary:SDEViation:PHOLd:RESult?

This command queries the maximum standard deviation value determined in several sweeps in the selected measurement window. The query is possible only if the peak hold function is active.

The function is independent of the marker selection, ie the suffix `<1 to 4>` of `:MARKer` is irrelevant. It is only available in the time domain (span = 0).

A complete sweep with synchronization to sweep end must be performed between switching on the function and querying the measured value to obtain a valid query result. This is only possible in single sweep mode.

Example:

```
"INIT:CONT OFF"                    Switches to single-sweep mode.
"CALC:MARK:FUNC:SUMM:SDEV ON"      Switches on the function in screen A.
"CALC:MARK:FUNC:SUMM:PHOL ON"      Switches on the peak value
                                   measurement in screen A.
"INIT;*WAI"                        Starts a sweep and waits for the end.
"CALC:MARK:FUNC:SUMM:SDEV:PHOL:RES?" Outputs the result of screen A.
```

Characteristics: *RST value: -
SCPI: device-specific

Mode: A-T

This command is only a query and thus has no *RST value assigned.

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:SUMMary:PHOLd ON | OFF

This command switches on or off the peak-hold function for the active time domain power measurement in the indicated measurement window. The function is independent of the marker selection, ie the suffix `<1 to 4>` of `:MARKer` is irrelevant. It is only available in the time domain (span = 0).

The peak-hold function is reset by switching it off and on again.

Example: `"CALC:MARK:FUNC:SUMM:PHOL ON"` Switches on the function in screen A.

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: A-T

The peak-hold function is reset by switching off and on, again.

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:SUMMary:AVERage ON | OFF

This command switches on or off averaging for the active time domain power measurement in the indicated window. The function is independent of the marker selection, ie the suffix <1 to 4> of :MARKer is irrelevant. It is only available in the time domain (span = 0).

Averaging is reset by switching it off and on again.

The number of results required for the calculation of average is defined with [SENSe<1|2>:]AVERage:COUNt.

It should be noted that synchronization to the end of averaging is only possible in single sweep mode.

Example:
```
"INIT:CONT OFF"                    Switches to single-sweep mode.
"CALC2:MARK:FUNC:SUMM:AVER ON"     Switches on the calculation of average
                                   in screen B.
"AVER:COUN 200"                    Sets the measurement counter to 200.
"INIT;*WAI"                        Starts a sweep and waits for the end.
```

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: A-T

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:SUMMary:MODE ABSolute | RELative

This command selects absolute or relative time domain power measurement in the indicated measurement window. The function is independent of the marker selection, ie the suffix <1 to 4> of :MARKer is irrelevant. It is only available in the time domain (span = 0).

The reference power for relative measurement is defined with CALCulate:MARKer:FUNCtion :SUMMary:REFerence:AUTO ONCE. If the reference power is not defined, the value 0 dBm is used.

Example:
```
"CALC:MARK:FUNC:SUMM:REF:MODE REL"
                                   Switches the time domain power
                                   measurement to relative.
```

Characteristics: *RST value: ABSolute
SCPI: device-specific

Mode: A-T

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:SUMMary:REFerence:AUTO ONCE

With this command the currently measured average value (`..:SUMMary:MEAN`) and RMS value (`..:SUMMary:RMS`) are declared as reference values for relative measurements in the indicated measurement window. The function is independent of the marker selection, ie the suffix `<1 to 4>` of `:MARKer` is irrelevant. It is only available in the time domain (span = 0).

If the measurement of RMS value and average is not activated, the reference value 0 dBm is used.

If the function `...:SUMMary:AVERage` or `...:SUMMary:PHOLd` is switched on, the current value is the accumulated measurement value at the time considered.

Example: `"CALC:MARK:FUNC:SUMM:REF:AUTO ONCE"`
Takes the currently measured power in screen A as reference value for the relative time domain power measurement.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A-T

This command is an event and therefore has no *RST value assigned and has no query.

CALCulate<1|2>:MARKer<1 to 4>:FUNCtion:SUMMary:AOFF

This command switches off all time domain measurements in the selected measurement window.The function is independent of the marker selection, ie the suffix `<1 to 4>` of `:MARKer` is irrelevant. It is only available in the time domain (span = 0).

Example: `"CALC2:MARK:FUNC:SUMM:AOFF"` Switches off the time domain power measurement functions in screen B.

Characteristics: *RST value: _
SCPI: device-specific

Mode: A-T

This command is an event and therefore has no *RST value assigned and has no query.

CALCulate:MATH Subsystem

The CALCulate:MATH subsystem allows to process data from the SENSe-subsystem in numeric expressions. The measurement windows are selected by CALCulate1 (screen A) or CALCulate2 (screen B).

COMMAND	PARAMETERS	UNIT	COMMENT
CALCulate<1|2>			
:MATH			
[:EXPRession]			
[:DEFine]	<expr>	--	
:POSition	<numeric_value>	PCT	
:STATe	<Boolean>	--	
:MODE	LINear | LOGarithmic	--	

CALCulate<1|2>:MATH[:EXPression][:DEFine] <expr>

This command defines the mathematical expression for relating traces to trace1.

The zero point of the result display can be defined with `CALC:MATH:POS`. Command `CALCulate:MATH:STATe` switches the mathematical relation of traces on or off .

Parameter: <expr>::= 'OP1 - OP2'
OP1 ::= TRACE1
OP2 ::= TRACE2 | TRACE3

Example: `"CALC1:MATH (TRACE1 - TRACE2)"` Selects the subtraction of trace 1 from trace 2 in screen A.

`"CALC2:MATH (TRACE1 - TRACE3)"` Selects the subtraction of trace 1 from trace 3 in screen B.

Characteristics: *RST value: -
SCPI: conforming

Mode: A

CALCulate<1|2>:MATH:POSition -100PCT to 200PCT

This command defines the position of the result of the trace mathematics in the selected measurement window. The indication is in % of the screen height, with 100% corresponding to the upper diagram border.

Example: `"CALC:MATH:POS 50PCT"` Sets the position in screen A to the horizontal diagram center.

Characteristics: *RST value: 50 %
SCPI: device-specific

Mode: A

CALCulate<1|2>:MATH:STATe ON | OFF

This command switches the mathematical relation of traces on or off.

Example: "CALC:MATH:STAT ON" Switches on the trace mathematics in screen A.

Characteristics: *RST value: OFF
SCPI: conforming

Mode: A

CALCulate<1|2>:MATH:MODE LINear | LOGarithmic

This command selects linear or logarithmic (= video) calculation of the mathematical functions related to the traces. The calculation of the average is one of the affected functions. The setting is valid for all measurement windows, ie the suffix <1|2> of CALCulate is irrelevant.

Example: "CALC:MATH:MODE LIN" Switches on the linear calculation.

Characteristics: *RST value: LOG
SCPI: device-specific

Mode: A

CALCulate:STATistics Subsystem

The CALCulate:STATistics subsystem controls the statistical measurement functions in the instrument. The measurement window cannot be selected with these functions. The numeric suffix in CALCulate is therefore ignored.

COMMAND	PARAMETERS	UNIT	COMMENT
CALCulate			
:STATistics			
:APD			
[:STATe]	<Boolean>	--	
:CCDF			
[:STATe]	<Boolean>	--	
:NSAMples	<numeric_value>		
:SCALe			
:AUTO	ONCE		
:X			
:RLEVel	<numeric_value>	DBM	
:RANGe	<numeric_value>	DB	
:Y			
:UPPer	<numeric_value>		
:LOWer	<numeric_value>		
:PRESet			
:RESult<1 to 3>?	MEAN | PEAK | CFACtor | ALL		query only

CALCulate:STATistics:APD[:STATe] ON | OFF

This command switches on or off the measurement of amplitude distribution (APD). On activating this function, the CCDF measurement is switched off.

Example: "CALC:STAT:APD ON" Switches on the APD measurement.

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: A

CALCulate:STATistics:CCDF[:STATe] ON | OFF

This command switches on or off the measurement of the complementary cumulative distribution function (CCDF). On activating this function, the APD measurement is switched off.

Example: "CALC:STAT:CCDF ON" Switches on the CCDF measurement.

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: A

CALCulate:STATistics:NSAMples 100 to 1E9

This command sets the number of measurement points to be acquired for the statistical measurement functions.

Example: "CALC:STAT:NSAM 500" Sets the number of measurement points to be acquired to 500.

Characteristics: *RST value: 100000
SCPI: device-specific

Mode: A

CALCulate:STATistics:SCALe:AUTO ONCE

This command optimizes the level setting of the FSP depending on the measured peak power, in order to obtain maximum instrument sensitivity.

To obtain maximum resolution, the level range is set as a function of the measured spacing between peak power and the minimum power for the APD measurement and of the spacing between peak power and mean power for the CCDF measurement. In addition, the probability scale for the number of test points is adapted.

Note:
*Subsequent commands have to be synchronized with *WAI, *OPC or *OPC? to the end of the autorange process which would otherwise be aborted.*

Example: "CALC:STAT:SCAL:AUTO ONCE;*WAI" Adapts the level setting for statistical measurements.

Characteristics: *RST value: --
SCPI: device-specific

Mode: A

This command is an event and therefore has no *RST value assigned and has no query.

CALCulate:STATistics:SCALe:X:RLEVel -130dBm to 30dBm

This command defines the reference level for the X-axis of the measurement diagram. The setting is identical to the reference level setting using the command DISPlay:WINDow:TRACe:Y: RLEVel.

With the reference level offset <> 0 the indicated value range of the reference level is modified by the offset.

The unit depends on the setting performed with CALC:UNIT.

Example: "CALC:STAT:SCAL:X:RLEV -60dBm"

Characteristics: *RST value: -20dBm
SCPI: device-specific

Mode: A

CALCulate:STATistics:SCALe:X:RANGe 10dB to 200dB

This command defines the level range for the X-axis of the measurement diagram. The setting is identical to the level range setting defined with the command `DISPlay:WINDow:TRACe:Y:SCALe`.

Example: "`CALC:STAT:SCAL:X:RANG 20dB`"

Characteristics: *RST value: 100dB
SCPI: device-specific

Mode: A

CALCulate:STATistics:SCALe:Y:UPPer 1E-8 to 1.0

This command defines the upper limit for the Y-axis of the diagram in statitistical measurements. Since probabilities are specified on the Y-axis, the entered numerical values are dimensionless.

Example: "`CALC:STAT:Y:UPP 0.01`"

Characteristics: *RST value: 1.0
SCPI: device-specific

Mode: A

CALCulate:STATistics:SCALe:Y:LOWer 1E-9 to 0.1

This command defines the lower limit for th Y-axis of the diagram in statistical measurements. Since probabilities are specified on the Y-axis, the entered numerical values are dimensionless.

Example: "`CALC:STAT:SCAL:Y:LOW 0.001`"

Characteristics: *RST value: 1E-6
SCPI: device-specific

Mode: A

CALCulate:STATistics:PRESet

This command resets the scaling of the X- and Y-axes in a statistical measurement. The following values are set:

X-axis ref level: -20 dBm
X-axis range APD: 100 dB
X-axis range CCDF: 20 dB

Y-axis upper limit: 1.0
Y-axis lower limit: 1E-6

Example: "`CALC:STAT:PRES`" Resets the scaling for statistical functions

Characteristics: *RST value: --
SCPI: device-specific

Mode: A

This command is an event and therefore has no *RST value assigned and has no query.

CALCulate:STATistics:RESult<1 to 3>? MEAN | PEAK | CFACtor | ALL

This command reads out the results of statistical measurements of a recorded trace. The trace is selected with the numeric suffix <1 to 3> attached to RESult.

Parameter: The required result is selected via the following parameters:

MEAN Average (=RMS) power in dBm measured during the measurement time.

PEAK Peak power in dBm measured during the measurement time.

CFACtor Determined CREST factor (= ratio of peak power to average power) in dB.

ALL Results of all three measurements mentioned before, separated by commas:
<mean power>,<peak power>,<crest factor>

Example: "CALC:STAT:RES2? ALL" Reads out the three measurement results of trace 2. Example of answer string:
5.56,19.25,13.69
ie mean power: 5.56 dBm, peak power 19.25 dBm, CREST factor 13.69 dB

Characteristics: *RST value: --
SCPI: device-specific

Mode: A

CALCulate:THReshold Subsystem

The CALCulate:THReshold subsystem controls the threshold value for the maximum/minimum search of markers. The measurement windows are selected by CALCulate 1 (screen A) or 2 (screen B).

COMMAND	PARAMETERS	UNIT	COMMENT
CALCulate<1|2> :THReshold :STATe	 <numeric_value> <Boolean>	 DBM | DB	

CALCulate<1|2>:THReshold MINimum to MAXimum (depending on current unit)

This command defines the threshold value for the maximum/minimum search of markers with marker search functions MAX PEAK, NEXT PEAK, etc. in the selected measurement window. The associated display line is automatically switched on.

Example: "CALC:THR -82DBM" Sets the threshold value for screen A to -82 dBm.

Example: "CALC:THR -82dBm"

Characteristics: *RST value: - (STATe to OFF)
SCPI: device-specific

Mode: A

CALCulate<1|2>:THReshold:STATe ON | OFF

This command switches on or off the threshold line in the selected measurement window.The unit depends on the setting performed with CALC:UNIT.

Example: "CALC2:THR:STAT ON" Switches on the threshold line in screen B.

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: A

CALCulate:UNIT Subsystem

The CALCulate:Unit subsystem defines the units for power measurement settings.

COMMAND	PARAMETERS	UNIT	COMMENT
CALCulate<1|2> :UNIT :POWer	DBM | V | A | W | DBPW | WATT | DBUV | DBMV | VOLT | DBUA | AMPere		

CALCulate<1|2>:UNIT:POWer DBM | V | A | W | DBPW | WATT | DBUV | DBMV | VOLT | DBUA | AMPere

This command selects the unit for power in the selected measurement window.

Example: "CALC:UNIT:POW DBM" Sets the power unit for screen A to dBm.

Characteristics: *RST value: dBm
SCPI: device-specific

Mode: A

CALibration Subsystem

The commands of the CALibration subsystem determine the data for system error correction in the instrument.

COMMAND	PARAMETERS	UNIT	COMMENT
CALibration			
[:ALL]?	--	--	query only
:ABORt	--	--	no query
:RESult?	--	--	query only
:STATe	<Boolean>	--	

CALibration[:ALL]?

This command initiates the acquisition of system error correction data. A "0" is returned if the acquisition was successful.

Note: *During the acquisition of correction data the instrument does not accept any remote control commands, except*
**RST*
CALibration:ABORt

In order to recognize when the acquisition of correction data is completed, the MAV bit in the status byte can be used. If the associated bit is set in the Service Request Enable Register, the instrument generates a service request after the acquisition of correction data has been completed.

Example:
```
"*CLS"          Resetting the status management.
"*SRE 16"       Enable MAV bit in the Service Request Enable Register.
"*CAL?"         Starts the correction data recording and then a service
                request is generated.
```

Characteristics: *RST value: -
SCPI: conforming

Mode: all

CALibration:ABORt

This command aborts the acquisition of correction data and restores the last complete correction data set.

Example: "CAL:ABOR"

Characteristics: *RST value: -
SCPI: device-specific

Mode: all

This command is an event and therefore has no *RST value assigned and has no query.

CALibration:RESult?

This command outputs the results of the correction data acquisition. The lines of the result table (see section "Recording the correction data of FSP – *CAL* key") are output as string data separated by commas:

```
"Total Calibration Status: PASSED","Date (dd/mm/yyyy): 12/07/1999",
"Time: 16:24:54","Runtime:00.06"
```

Example: "CAL:RES?"

Characteristics: *RST value: --
SCPI: device-specific

Mode: all

CALibration:STATe ON | OFF

This command determines whether the current calibration data are taken into account by the instrument (ON) or not (OFF).

Example: "CAL:STAT OFF" Sets up the instrument to ignore the calibration data.

Characteristics: *RST value: -
SCPI: conforming

Mode: all

DIAGnostic Subsystem

The DIAGnostic subsystem contains the commands which support instrument diagnostics for maintenance, service and repair. In accordance with the SCPI standard, all of these commands are device-specific.

COMMAND	PARAMETERS	UNIT	COMMENT
DIAGnostic			
:SERVice			
:INPut			
[:SELect]	CALibration | RF	--	no query
:SFUNCtion	<string>		
:NSOurce	<Boolean>		
:CSOurce			
[:POWer]	<numeric_value>	DBM	
:STESt			
:RESult?			query only

DIAGnostic:SERVice:INPut[:SELect] CALibration | RF

This command toggles between the RF input on the front panel and the internal 128-MHz reference signal. The level of the 128-MHz signals can be selected by command `DIAG:SERV:CSOurce`.

Example: `"DIAG:SERV:INP CAL"`

Characteristics: *RST value: RF
SCPI: device-specific

Mode: all

DIAGnostic:SERVice:SFUNction <string>...

This command activates a service function which can be selected by indicating the five parameters: function group number, board number, function number, parameter 1 and parameter 2 (see service manual). The contents of the parameter string is identical to the code to be entered in the data entry field of manual operation.

The entry of a service function is accepted only if the system password Level 1 or Level 2 has been entered previously (command: `SYSTem:SECurity`).

Note: *The service functions of the FSP family are not identical to those of the FSE family. That is why the IEC/IEEE-bus command differs in syntax and data format.*

Example: `"DIAG:SERV:SFUN '2.0.2.12.1'"`

Characteristics: *RST value: -
SCPI: device-specific

Mode: all

DIAGnostic:SERVice:NSOurce ON | OFF

This command switches the 28-V supply of the noise source at the rear panel on or off.

Example: `"DIAG:SERV:NSO ON"`

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: all

DIAGnostic:SERVice:CSOource[:POWer] <numeric_value>

This command switches the level of the 128 MHz reference signal source between 0 dBm and -30 dBm.

Example: `"DIAG:SERV:CSO 0DBM"`

Characteristics: *RST value: -30 dBm
SCPI: device-specific

Mode: all

DIAGnostic:SERVice:STESt:RESult?

This command reads the results of the selftest out of the instrument. The lines of the result table are output as string data separated by commas:

```
"Total Selftest Status: PASSED","Date (dd/mm/yyyy): 09/07/1999
TIME: 16:24:54","Runtime: 00:06","...
```

Example: `"DIAG:SERV:STES:RES?"`

Characteristics: *RST value: --
SCPI: device-specific

Mode: all

DISPlay Subsystem

The DISPLay subsystem controls the selection and presentation of textual and graphic information as well as of measurement data on the display.
The measurement windows are selected by WINDow1 (screen A) or WINDow2 (screen B) .

COMMAND	PARAMETERS	UNIT	COMMENT
DISPlay			
:FORMat	SINGle|SPLit		
:ANNotation			
:FREQuency	<Boolean>		
:LOGO	<Boolean>		
:PSAVe			
[:STATe]	<Boolean>		
:HOLDoff	1...60	--	
:CMAP<1...26>			
:DEFault<1|2>			
:HSL	0..1,0..1,0..1		
:PDEFined	BLACk | BLUE | BROWn | GREen | CYAN | RED | MAGenta | YELLow | WHITe | DGRAy | LGRAy | LBLUe | LGREen | LCYan | LRED | LMAGenta		
[:WINDow<1|2>]			no query
:SELect			
:TEXT			
[:DATA]	<string>		
:STATe	<Boolean>		
:TIME	<Boolean>		
:TRACe<1...3>			
:X			
[:SCALe]			
:Y			
[:SCALe]	<numeric_value>	DB	
:MODE	ABSolute | RELative		
:RLEVel	<numeric_value>	DBM	
:OFFSet	<numeric_value>	DB	
:RVALue	<numeric_value>	DB	
:RPOSition	<numeric_value>	PCT	
:SPACing	LINear|LOGarithmic	--	
:MODE	WRITe|VIEW|AVERage| MAXHold|MINHold	--	
[:STATe]	<Boolean>	--	

DISPlay:FORMat SINGle | SPLit

This command switches the measurement result display between FULL SCREEN and SPLIT SCREEN. The coupling of settings between screen A and screen B can be selected with the command `INSTrument:COUPle`.
In full-screen display the active measurement window can be selected with `DISPlay:WINDow<1|2>:SELect`.

Example: "`DISP:FORM SPL`" Switches the display to 2 measurement windows.

Characteristics: *RST value: SINGle
SCPI: device-specific

Mode: A

DISPlay:ANNotation:FREQuency ON | OFF

This command switches the X-axis annotation on or off.

Example: "`DISP:ANN:FREQ OFF`"

Characteristics: *RST value: ON
SCPI: conforming

Mode: all

DISPlay:LOGO ON | OFF

This command switches the company logo on the screen on or off.

Example: "`DISP:LOGO OFF`"

Characteristics: *RST value: ON
SCPI: device-specific

Mode: all

DISPlay:PSAVe[:STATe] ON | OFF

This command switches on or off the power-save mode of the display. With the power-save mode activated the display including backlight is completely switched off after the elapse of the response time (see command `DISPlay:PSAVe:HOLDoff`).

Note: *This mode is recommended for preserving the display especially if the instrument is exclusively operated via remote control.*

Example: "`DISP:PSAVe ON`" Switches on the power-save mode.

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: all

DISPlay:PSAVe:HOLDoff 1 to 60

This command sets the holdoff time for the power-save mode of the display. The available value range is 1 to 60 minutes, the resolution 1 minute. The entry is dimensionless.

Example: "`DISP:PSAV:HOLD 30`"

Characteristics: *RST value: 15
SCPI: device-specific

Mode: all

DISPlay:CMAP<1 to 26>:DEFault<1|2>

This command resets the screen colors of all display items to their default settings. Two default settings DEFault1 and DEFault2 are available. The numeric suffix of CMAP is irrelevant.

Example: "DISP:CMAP:DEF2" Selects default setting 2 for setting the colors.

Characteristics: *RST value: --
SCPI: conforming

Mode: all

This command is an event and is therefore not assigned a query and has no *RST value.

DISPlay:CMAP<1 to 26>:HSL <hue>,<sat>,<lum>

This command defines the color table of the instrument.

Each numeric suffix of CMAP is assigned one or several graphical elements which can be modified by varying the corresponding color setting. The following assignment applies:

CMAP1 Background
CMAP2 Grid
CMAP3 Function field + status field + data entry text
CMAP4 Function field LED on
CMAP5 Function field LED warn
CMAP6 Enhancement label text
CMAP7 Status field background
CMAP8 Trace 1
CMAP9 Trace 2
CMAP10 Trace 3
CMAP11 Marker
CMAP12 Lines
CMAP13 Measurement status + limit check pass
CMAP14 Limit check fail
CMAP15 Table + softkey background
CMAP16 Table + softkey text
CMAP17 Table selected field text
CMAP18 Table selected field background
CMAP19 Table + data entry field opaq titlebar
CMAP20 Data entry field opaq text
CMAP21 Data entry field opaq background
CMAP22 3D shade bright part
CMAP23 3D shade dark part
CMAP24 Softkey state on
CMAP25 Softkey state data entry
CMAP26 Logo

Parameter: hue = TINT

sat = SATURATION

lum = BRIGHTNESS

The value range is 0 to 1 for all parameters.

Example: "DISP:CMAP2:HSL 0.3,0.8,1.0" Changes the grid color.

Characteristics: *RST value: --
SCPI: conforming

Mode: all

The values set are not changed by *RST.

DISPlay:CMAP<1 to 26>:PDEFined BLACk | BLUE | BROWn | GREen | CYAN | RED | MAGenta | YELLow | WHITe | DGRAy | LGRAy | LBLUe | LGREen | LCYan | LRED | LMAGenta

This command defines the color table of the instrument using predefined color values. Each numeric suffix of CMAP is assigned one or several graphical elements which can be modified by varying the corresponding color setting.
The same assignment as for `DISPlay:CMAP<1 to 26>:HSL` applies.

Example: "`DISP:CMAP2:PDEF GRE`"

Characteristics: *RST value: --
SCPI: conforming

Mode: all

The values set are not changed by *RST.

DISPlay[:WINDow<1|2>]:SELect

This command selects the active measurement window. WINDow1 corresponds to SCREEN A, WINDow2 to SCREEN B.
In FULL SCREEN mode, the measurements are only performed in the active measurement window. Measurements are therefore initiated in the active window and result queries (marker, trace data and other results) answered also in the active window.
Initiating measurements and queryíng results in the inactive window yields an error message (execution error).

In split screen mode, the selection of the active window for result queries is irrelevant.

Note: *In FULL SCREEN mode, settings can also be performed in the inactive measurement window. They become effective as soon as the corresponding window becomes active.*

Example: "`DISP:WIND2:SEL` Selects SCREEN B as active measurement window.

Characteristics: *RST value: SCREEN A active
SCPI: device-specific

Mode: A

This command is an event and is therefore not assigned a query.

DISPlay[:WINDow<1|2>]:TEXT[:DATA] <string>

This command defines a comment (max. 20 characters) which can be displayed on the screen in the selected measurement window.

Example: "`DISP:WIND2:TEXT 'Noise Measurement'`"
Defines the title for screen B

Characteristics: *RST value: "" (empty)
SCPI: conforming

Mode: all

DISPlay[:WINDow<1|2>]:TEXT:STATe ON | OFF

This command switches on or off the display of the comment (screen title) in the selected measurement window.

Example: "DISP:TEXT:STAT ON" Switches on the title of screen B.

Characteristics: *RST value: OFF
SCPI: conforming

Mode: all

DISPlay[:WINDow<1|2>]:TIME ON | OFF

This command switches on or off the screen display of date and time. The numeric suffix in WINDow<1| 2> is irrelevant.

Example: "DISP:TIME ON"

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: all

DISPlay[:WINDow<1|2>]:TRACe<1 to 3>:Y[:SCALe] 10dB to 200dB

This command defines the display range of the Y-axis (level axis) in the selected measurement window with logarithmic scaling (DISP:TRAC:Y:SPAC LOG).

For linear scaling, (DISP:TRAC:Y:SPAC LIN | PERC) the display range is fixed and cannot be modified. The numeric suffix in TRACe<1 to 3> is irrelevant.

Example: "DISP:TRAC:Y 110dB"

Characteristics: *RST value: 100dB
SCPI: device-specific

Mode: A

DISPlay[:WINDow<1|2>]:TRACe<1 to 3>:Y[:SCALe]:MODE ABSolute | RELative

This command defines the scale type of the Y-axis (absolute or relative) in the selected measurement window.

When SYSTem:DISPlay is set to OFF, this command has no immediate effect on the screen. The numeric suffix in TRACe<1 to 3> is irrelevant.

Example: "DISP:TRAC:Y:MODE REL"

Characteristics: *RST value: ABS
SCPI: device-specific

Mode: A

DISPlay[:WINDow<1|2>]:TRACe<1 to 3>:Y[:SCALe]:RLEVel -130dBm to 30dBm

This command defines the reference level in the selected measurement window. Depending on the coupling of the measurement windows, it is valid for both screens (`INSTrument:COUPle ALL`) or only for the selected measurement window (`INSTrument:COUPle NONE`).

With the reference level offset <> 0 the indicated value range of the reference level is modified by the offset.

The unit depends on the setting defined with `CALCulate:UNIT`. The numeric suffix in TRACe<1 to 3> is irrelevant.

Example: "`DISP:TRAC:Y:RLEV -60dBm`"

Characteristics: *RST value: -20dBm
SCPI: conforming

Mode: A

DISPlay[:WINDow<1|2>]:TRACe<1 to 3>:Y[:SCALe]:RLEVel:OFFSet -200dB to 200dB

This command defines the offset of the reference level in the selected measurement window. Depending on the coupling of the measurement windows, it is valid for both screens (`INSTrument:COUPle ALL`) or only for the selected measurement window (`INSTrument:COUPle NONE`).

The numeric suffix at TRACe<1 to 3> is irrelevant.

Example: "`DISP:TRAC:Y:RLEV:OFFS -10dB`"

Characteristics: *RST value: 0dB
SCPI: conforming

Mode: A

DISPlay[:WINDow<1|2>]:TRACE<1 to 3>:Y[:SCALe]:RVALue <numeric_value>

If the tracking generator option or the external generator control option (FSP-B9/B10) is mounted and the normalization in the NETWORK mode is activated, this value defines the power value assigned to the reference position in the selected measurement window. This value corresponds to the parameter REFERENCE VALUE in manual operation.

The numeric suffix at TRACe<1 to 3> is irrelevant.

Example:

"`DISP:TRAC:Y:RVAL 0`" sets the power value assigned to the reference position to 0 dB.

Characteristics: *RST value:
0 dB
SCPI: device specific

Modes: A

DISPlay[:WINDow<1|2>]:TRACe<1 to 3>:Y[:SCALe]:RPOSition 0 to 100PCT

This command defines the position of the reference value in the selected measurement window. The numeric suffix in TRACe<1 to 3> is irrelevant.

In operating mode NETWORK (Tracking Generator /Ext. Generator Option FSP-B9/B10) with active normalization, RPOSition defines the reference point for the output of the normalized measurement results.

Example: `"DISP:TRAC:Y:RPOS 50PCT"`

Characteristics: *RST value: 100PCT
SCPI: conforming

Mode: A

DISPlay[:WINDow<1|2>]:TRACe<1 to 3>:Y:SPACing LINear | LOGarithmic

This command toggles between linear and logarithmic display in the selected measurement window.

The numeric suffix in TRACe<1 to 3> is irrelevant.

Example: `"DISP:TRAC:Y:SPAC LIN"`

Characteristics: *RST value: LOGarithmic
SCPI: conforming

Mode: A

DISPlay[:WINDow<1|2>]:TRACe<1 to 3>:MODE WRITe | VIEW | AVERage | MAXHold | MINHold

This command defines the type of display and the evaluation of the traces in the selected measurement window. WRITE corresponds to the Clr/Write mode of manual operation. The trace is switched off (= BLANK in manual operation) with `DISP:WIND:TRAC:STAT OFF`.

The number of measurements for AVERage, MAXHold and MINHold is defined with the command `SENSe:AVERage:COUNt` or `SENSe:SWEep:COUNt`. It should be noted that synchronization to the end of the indicated number of measurements is only possible in single sweep mode.

If calculation of average values is active, selection between logarithmic and linear averaging is possible. For more detail see command `SENSe:AVERage:TYPE`.

Example:
`"SWE:CONT OFF"` Switching to single-sweep mode.
`"SWE:COUN 16"` Sets the number of measurements to 16.
`"DISP:WIND1:TRAC3:MODE MAXH"` Switches on the calculation of the for trace 3 in screen A.
`"INIT;*WAI"` Starts the measurement and waits for the end of the 16 sweeps.

Characteristics: *RST value: WRITe for TRACe1, STATe OFF for TRACe2/3
SCPI: device-specific

Mode: all

DISPlay[:WINDow<1|2>]:TRACE<1 to 3>[:STATe] ON | OFF

This command switches on or off the display of the corresponding trace in the selected measurement window.

Example: "DISP:WIND1:TRAC3 ON"

Characteristics: *RST value: ON for TRACe1, OFF for TRACe2 to 4
SCPI: conforming

Mode: all

FORMat Subsystem

The FORMat subsystem specifies the data format of the data transmitted from and to the instrument.

COMMAND	PARAMETERS	UNIT	COMMENT
FORMat			
[:DATA]	ASCii|REAL[,<numeric_value>]	-	
:DEXPort			
:DSEParator	POINt|COMMa		

FORMat[:DATA] ASCii | REAL [, 32]

This command specifies the data format for the data transmitted from the instrument to the control PC.

Example: `"FORM REAL,32"`
`"FORM ASC"`

Characteristics: *RST value: ASCII
SCPI: conforming

Mode: all

The data format is either ASCii or one of the formats REAL . ASCii data are transmitted in plain text, separated by commas. REAL data are transmitted as 32-bit IEEE 754 floating-point numbers in the "definite length block format".

The FORMat command is valid for the transmission of trace data. The data format of trace data received by the instrument is automatically recognized, regardless of the format which is programmed.

Format setting for the binary transmission of trace data (see also `TRACE:DATA?`):

Analyzer mode: REAL, 32

FORMat:DEXPort:DSEParator POINt|COMMA

This command defines which decimal separator (decimal point or comma) is to be used for outputting measurement data to the file in ASCII format. Different languages of evaluation programs (eg MS-Excel) can thus be supported.

Example: `"FORM:DEXP:DSEP POIN` Sets the decimal point as separator.

Characteristics: *RST value: -- (factory setting is POINt; *RST does not affect setting)
SCPI: device-specific

Mode: all

HCOPy Subsystem

The HCOPy subsystem controls the output of display information for documentation purposes on output devices or files. The instrument allows two independent printer configurations which can be set separately with the numeric suffix <1|2>.

COMMAND	PARAMETERS	UNIT	COMMENT
HCOPy			
:ABORt	--	--	no query
:DESTination<1|2>	<string>		no query
:DEVice			
:COLor	<Boolean>		
:LANGuage<1|2>	WMF|GDI|EWMF|BMP		
[:IMMediate<1|2>]	--	--	no query
:ITEM			
:ALL			no query
:WINDow<1|2>			
:TABle			
:STATe	<Boolean>		
:TEXT	<string>		
:TRACe			
:STATe	<Boolean>		
:PAGE			
:ORIentation<1|2>	LANDscape|PORTrait		

HCOPy:ABORt

This command aborts a running hardcopy output.

Example: "HCOP:ABOR"

Characteristics: *RST value: -
SCPI: conforming

Mode: all

This command is an event and is therefore not assigned an *RST value and has no query.

HCOPy:DESTination<1|2> <string>

This command selects the printer output medium (Disk, Printer or Clipboard) associated with configuration 1 or 2.

Note: *The type of instrument is selected with `SYSTem:COMMunicate:PRINter:SELect`, which will automatically select a default output medium. Therefore the command `HCOPy:DESTination` should always be sent after setting the device type.*

Parameter:	<string>::=	'MMEM' | 'SYST:COMM:PRIN' | 'SYST:COMM:CLIP'
	'MMEM'	directs the hardcopy to a file. Command MMEM:NAME <file_name> defines the file name. All formats can be selected for HCOPy:DEVice:LANGuage.
	'SYST:COMM:PRIN'	directs the hardcopy to the printer. The printer is selected with command SYSTEM:COMMunicate:PRINter:SELect. GDI should be selected for HCOPy:DEVice:LANGuage.
	'SYST:COMM:CLIP'	directs the hardcopy to the clipboard. EWMF should be selected for HCOPy:DEVice:LANGuage.
Example:	"SYST:COMM:PRIN:SEL2 'LASER on LPT1'"	Selects the printer and output medium for device 2
	"HCOP:DEST2 'SYST:COMM:PRIN'"	Selects the printer interface as device 2.
Characteristics:	*RST value:	-
	SCPI:	conforming
Mode:	all	

This command is an event and is therefore not assigned an *RST value and has no query.

HCOPy:DEVice:COLor ON|OFF

This command selects between color and monochrome hardcopy of the screen.

Example:	"HCOP:DEV:COL ON"	
Characteristics:	*RST value:	OFF
	SCPI:	conforming
Mode:	all	

HCOPy:DEVice:LANGuage<1|2> GDI | WMF | EWMF | BMP

This command determines the data format of the printout.

Parameter:

GDI	Graphics Device Interface: Default format for the output to a printer configured under Windows. Must be selected for the output to the printer interface (`HCOPy:DEVice 'SYST:COMM:PRIN'`). Can be used for the output to a file (`HCOPy:DEVice 'SYST:COMM:MMEM'`). The printer driver configured under Windows is used in this case and a printer-specific file format is thus generated.
WMF and EWMF	WINDOWS Metafile and Enhanced Metafile Format: Data formats for output files which can be integrated in corresponding programs for documentation purposes at a later time. WMF can only be used for output to a file (`HCOPy:DEVice 'SYST:COMM:MMEM'`) and EWMF also for the output to the clipboard (`HCOPy:DEVice 'SYST:COMM:CLIP'`).
BMP	Bitmap. Data format for output to files only (`HCOPy:DEVice 'SYST:COMM:MMEM'`).

Example: `"HCOP:DEV:LANG WMF"`

Characteristics: *RST value: -
SCPI: conforming

Mode: all

HCOPy[:IMMediate<1|2>]

This command starts a hardcopy output. The numeric suffix selects which printer configuration (1 or 2) is to be used for the hardcopy output. If there is no suffix, configuration 1 is automatically selected.

`HCOPy:IMM[1]`	Starts the hardcopy output to device 1 (default).
`HCOPy:IMM2`	Starts the output to device 2.

Example: `"HCOP"`

Characteristics: *RST value: -
SCPI: conforming

Mode: all

This command is an event and is therefore not assigned an *RST value and has no query.

HCOPy:ITEM:ALL

This command selects the complete screen to be output.

Example: "HCOP:ITEM:ALL"

Characteristics: *RST value: OFF
SCPI: conforming

Mode: all

The hardcopy output is always provided with comments, title, time and date. As an alternative to the whole screen, only traces (commands 'HCOPy:DEVice:WINDow:TRACe: STATe ON') or tables (command 'HCOPy:DEVice:WINDow:TABLe:STATe ON') can be output.

HCOPy:ITEM:WINDow<1|2>:TABle:STATe ON | OFF

This command selects the output of the currently displayed tables.

Example: "HCOP:ITEM:WIND:TABL:STAT ON"

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: all

The command HCOPy:DEVice:ITEM:WINDow<1|2>:TABle:STATe OFF as well as command HCOPy:DEVice:ITEM:ALL enables the output of the whole screen.

HCOPy:ITEM:WINDow<1|2>:TEXT <string>

This command defines the comment text for measurement window 1 or 2 for printout, with a maximum of 100 characters; line feed by means of character @).

Example: "HCOP:ITEM:WIND2:TEXT 'comment'"

Characteristics: *RST value: -
SCPI: device-specific

Mode: all

HCOPy:ITEM:WINDow<1|2>:TRACe:STATe ON | OFF

This command selects the output of the currently displayed trace.

Example: "HCOP:ITEM:WIND:TRACe:STAT ON"

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: all

The command HCOPy:ITEM:WINDow<1|2>:TRACe:STATe OFF as well as command HCOPy:ITEM:ALL enables the output of the whole screen.

HCOPy:PAGE:ORIentation<1|2> LANDscape | PORTrait

The command selects the format of the output (portrait and landscape) (hardcopy unit 1 or 2).

Note:
The command is only available provided that the output device "printer" (`HCOP:DEST 'SYST:COMM:PRIN'`) has been selected.

Example: `"HCOP:PAGE:ORI LAND"`

Characteristics: *RST value: -
SCPI: conforming

Mode: all

INITiate Subsystem

The INITiate subsystem is used to control the init-measurement function in the selected measurement window. The measurement windows are assigned to INITiate1 (screen A) and INITiate2 (screen B).

COMMAND	PARAMETERS	UNIT	COMMENT
INITiate<1|2>			
:CONTinuous	<boolean>	--	
:CONMeas	--	--	no query
[:IMMediate]	--	--	no query
:DISPlay	<boolean>	--	

INITiate<1|2>:CONTinuous ON | OFF

This command determines whether the trigger system is continuously initiated (continuous) or performs single measurements (single). In the spectrum analysis mode, this setting refers to the sweep sequence (switching between continuous/single sweep).

Example: `"INIT2:CONT OFF"` Switches the sequence in screen B to single sweep.

`"INIT2:CONT ON"` Switches the sequence to continuous sweep.

Characteristics: *RST value: ON
SCPI: conforming

Mode: all

INITiate<1|2>:CONMeas

This command continues a stopped measurement at the current position in single sweep mode. The function is useful especially for trace functions MAXHold, MINHold and AVERage if the previous results are not to be cleared with Sweep Count > 0 or Average Count > 0 on restarting the measurement (INIT:IMMediate resets the previous results on restarting the measurement).

The single-sweep mode is automatically switched on. Synchronization to the end of the indicated number of measurements can then be performed with the command *OPC, *OPC? or *WAI. In the continuous-sweep mode, synchronization to the sweep end is not possible since the overall measurement "never" ends.

Example:
`"INIT:CONT OFF"` Switches to single-sweep mode.
`"DISP:WIND:TRAC:MODE AVER` Switches on trace averaging.
`"SWE:COUN 20"` Setting the sweep counter to 20 sweeps.
`"INIT;*WAI"` Starts the measurement and waits for the end of the 20 sweeps.
`"INIT:CONM;*WAI"` Continues the measurement (next 20 sequences) and waits for the end.

Characteristics: *RST value: -
SCPI: device-specific

Mode: all

This command is an event and therefore has no *RST value and has no query.

INITiate<1|2>[:IMMediate]

The command initiates a new sweep in the indicated measurement window. With Sweep Count > 0 or Average Count > 0, this means a restart of the indicated number of measurements. With trace functions MAXHold, MINHold and AVERage, the previous results are reset on restarting the measurement.

In single sweep mode, synchronization to the end of the indicated number of measurements can be achieved with the command *OPC, *OPC? or *WAI. In continuous-sweep mode, synchronization to the sweep end is not possible since the overall measurement never ends.

Example:

`"INIT:CONT OFF"`	Switches to single-sweep mode.
`"DISP:WIND:TRAC:MODE AVER`	Switches on trace averaging.
`"SWE:COUN 20"`	Setting the sweep counter to 20 sweeps.
`"INIT;*WAI"`	Starts the measurement and waits for the end of the 20 sweeps.

Characteristics: *RST value: -
SCPI: conforming

Mode: all

This command is an event and is therefore not assigned an *RST value and has no query.

INITiate<1|2>:DISPlay ON | OFF

This command configures the behavior of the display during a single sweep.
`INITiate:DISPlay OFF` means that the display is switched off during the measurement,
`INITiate:DISPlay ON` means that the display is switched on during the measurement.
The numeric suffix of INITiate is irrelevant with this command.

Example:

`"INIT:CONT OFF"`	Switches to single-sweep mode
`"INIT:DISP OFF`	Sets the display behavior to OFF
`"INIT;*WAI"`	Starts the measurement with display switched off.

Characteristics: *RST value: ON
SCPI: device-specific

Mode: A

INPut Subsystem

The INPut subsystem controls the input characteristics of the RF inputs of the instrument. The measurement windows are assigned to INPut1 (screen A) and INPut2 (screen B).

COMMAND	PARAMETERS	UNIT	COMMENT
INPut<1|2>			
:ATTenuation	<numeric_value>	DB	
:AUTO	<Boolean>	--	
:EATT	<numeric_value>	DB	Only with option FSP-B25
:AUTO	<Boolean>	--	Only with option FSP-B25
:STATe	<Boolean>	--	Only with option FSP-B25
:IMPedance	50 | 75	OHM	
:GAIN			
:STATe	<Boolean>		Only with option FSP-B25

INPut<1|2>:ATTenuation 0 to 70/75 dB

This command programs the input attenuator. To protect the input mixer against damage from overloads, the setting 0 dB can be obtained by entering numerals, not by using the command DEC.

The step width is 10 dB without the option electronic attenuator, the range 0 dB to 70 dB.
The input attenuation can be set in 5 dB steps between 0 dB and 75 dB with the option electronic attenuator.

In the default state, the attenuation set on the step attenuator is coupled to the reference level of the instrument. If the attenuation is programmed directly, the coupling to the reference level is switched off.

Example: `"INP:ATT 40dB"` Sets the attenuation on the attenuator to 40 dB and switches off the coupling to the reference level.

Characteristics: *RST value: 10 dB (AUTO is set to ON)
SCPI: conforming

Mode: all

INPut<1|2>:ATTenuation:AUTO ON | OFF

This command automatically couples the input attenuation to the reference level (state ON) or switches the input attenuation to manual entry (state OFF). The minimum input attenuation set with the coupling switched on is 10 dB (with electronic attenuator option: 5 dB).

Example: `"INP:ATT:AUTO ON"` Couples the attenuation set on the attenuator to the reference level.

Characteristics: *RST value: ON
SCPI: conforming

Mode: all

INPut<1|2>:EATT 0 to 30dB

This command programs the attenuation of the electronic input attenuator. The attenuation can be varied in 5 dB steps from 0 to 30 dB. Other entries are rounded to the next lower integer value. If the attenuation is programmed directly, the coupling to the reference level is switched off.

If the defined reference level cannot be set with the given RF attenuation, this level is adapted to the maximum possible value.

The electronic attenuator is swiched off in the default state.

Example: `"INP:EATT:STAT ON"` Switches the electronic attenuator into the signal path.

`"INP:EATT 15dB"` Sets the attenuation of the electronic attenuator to 15 dB and switches off the coupling to the reference level.

Characteristics: *RST value: 0 dB (state is set to OFF)
SCPI: device-specific

Mode: all

The command is only available with the electronic attenuator option FSP-B25.

INPut<1|2>:EATT:AUTO ON | OFF

This command automatically couples the electronic input attenuation to the reference level and the attenuation of the mechanical attenuator (state ON) or switches the input attenuation to manual entry (state OFF).

Example: `"INP:EATT:STAT ON"` Switches the electronic attenuator into the signal path.

Example: `"INP:EATT:AUTO ON"` Couples the attenuation of the electronic attenuator to the reference level.

Characteristics: *RST value: ON
SCPI: device-specific

Mode: all

The command is only available with the electronic attenuator option FSP-B25.

INPut<1|2>:EATT:STATe ON | OFF

This command switches the electronic input attenuation into the signal path (state ON) or removes it from the signal path (state OFF).

Example: "INP:EATT:STAT ON" Switches the electronic attenuator into the signal path.

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: all

The command is only available with the option electronic attenuator FSP-B25.

INPut<1|2>:IMPedance 50 | 75

This command sets the nominal input impedance of the instrument. The set impedance is taken into account in all level indications of results.

The setting 75 Ω should be selected, if the 50 Ω input impedance is transformed to a higher impedance using a 75 Ω adapter of the RAZ type (= 25 Ω in series to the input impedance of the analyzer). The correction value in this case is 1.76 dB = 10 log (75Ω / 50Ω).

Example: `"INP:IMP 75"`

Characteristics: *RST value: 50
SCPI: conforming

Mode: all

INPut<1|2>:GAIN:STATe ON | OFF

This command switches on the preamplifier for the instrument. The switchable gain is fixed to 20 dB.

Example: `"INP:GAIN ON"`

Characteristics: *RST value: OFF
SCPI: conforming

Modes: A

The command is only available with the option electronic attenuator FSP-B25.

INSTrument Subsystem

COMMAND	PARAMETERS	UNIT	COMMENT
INSTrument			
[:SELect]	SANalyzer		
:NSELect	<numeric_value>		no query
:COUPle	NONE | RLEVel | CF_B | CF_A		

INSTrument[:SELect] SANalyzer

This command switches between the operating modes by means of text parameters.

Parameter: SANalyzer: Spectrum analysis

Example: `"INST SAN"` Switches the instrument to spectrum analyzer mode.

Characteristics: *RST value: SANalyzer
SCPI: conforming

Mode: all

INSTrument:NSELect 1

This command switches between the operating modes by means of numbers.

Example: `"INST:NSEL 1"` Switches the instrument to spectrum analyzer mode.

Characteristics: *RST value: 1
SCPI: conforming

Mode: all

INSTrument:COUPle NONE | RLEVel | CF_B | CF_A

In operating mode *SPECTRUM* this command selects the parameter coupling between the two measurement windows screen A and B.

Parameter:	NONE	No coupling. The two measurement windows are operated like two independent "virtual" devices.
	RLEVel	The reference levels of the two measurement windows are coupled.
	CF_B	The center frequency of screen B is coupled to the frequency of marker 1 in screen A.
	CF_A	The center frequency of screen A is coupled to the frequency of marker 1 in screen B.
Example:	`"INST:COUP NONE"`	Switches off the coupling of measurement windows. This leads to two independent "virtual" devices.
Characteristics:	*RST value:	NONE
	SCPI:	device specific
Mode:	A	

MMEMory Subsystem

The MMEMory (mass memory) subsystem provides commands which allow for access to the storage media of the instrument and for storing and loading various instrument settings.

The various drives can be addressed via the "mass storage unit specifier" <msus> using the conventional DOS syntax. The internal hard disk is addressed by "D:", the floppy-disk drive by "A:".

***Note**: For reasons of compatibility with the FSE instruments, addressing the hard disk by "C:" is also accepted. Since hard disk "C:" is reserved for instrument software in the FSP, all read and write operations are rerouted to hard disk "D:" in normal operation (service level0).*

The file names <file_name> are indicated as string parameters with the commands being enclosed in quotation marks. They also comply with DOS conventions.

DOS file names consist of max. 8 ASCII characters and an extension of up to three characters separated from the file name by a dot "." Both, the dot and the extension are optional. The dot is not part of the file name. DOS file names do not distinguish between uppercase and lowercase notation. All letters and digits are permitted as well as the special characters "_", "^", "$", "~", "!", "#", "%", "&", "-", "{", "}", "(", ")", "@" and "`". Reserved file names are CLOCK$, CON, AUX, COM1 to COM4, LPT1 to LPT3, NUL and PRN.

The two characters "*" and "?" have the function of so-called "wildcards", i.e., they are variables for selection of several files. The question mark "?" replaces exactly one character, the asterisk means any of the remaining characters in the file name. "*.*" thus means all files in a directory.

COMMAND	PARAMETERS	UNIT	COMMENT
MMEMory			
:CATalog?	<string>		
:CDIRectory	<directory_name>	--	
:COPY	<file_name>,<file_name>	--	no query
:DATA	<file_name>[,<block>]	--	
:DELete	<file_name>	--	no query
:INITialize	<msus>	--	no query
:LOAD			
:STATe	1,<file_name>	--	no query
:AUTO	1,<file_name>	--	no query
:MDIRectory	<directory_name>	--	no query
:MOVE	<file_name>,<file_name>	--	no query e
:MSIS	<msus>	--	
:NAME	<file_name>	--	
:RDIRectory	<directory_name>	--	no query
:STORe<1|2>			
:STATe	1,<file_name>	--	no query
:TRACe	<numeric_value>, <file_name>		
:CLEar			
:STATe	1,<file_name>	--	no query
:ALL			k no query
:SELect			
[:ITEM]			
:HWSettings	<Boolean>		
:TRACe			
[:ACTive]	<Boolean>		
:LINes			
:ALL	<Boolean>		
:SCData	<Boolean>		Tracking generator option
:ALL	--		no query
:NONE	--		no query
:DEFault	--		no query
:COMMent	<string>		

MMEMory:CATalog? <path>

This command reads the indicated directory. According to DOS convention, wild card characters can be entered in order to query eg a list of all files of a certain type.

The path name should be in conformance with DOS conventions and may also include the drive name.

Parameter: <path>::= DOS Path name

Example: `"MMEM:CAT? 'D:\USER\DATA'` Returns the contents of the D:\USER\DATA directory

`"MMEM:CAT? 'D:\USER\DATA\*.LOG'` Returns all files in D:\USER\DATA with extension ".LOG"

`"MMEM:CAT? 'D:\USER\DATA\SPOOL?.WMF'`
Returns all files in D:\USER\DATA whose names start with SPOOL, have 6 letters and the extension ".WMF".

Response value: List of file names in the form of strings separated by commas, ie `'SPOOL1.WMF','SPOOL2.WMF','SPOOL3.WMF'`

Characteristics: *RST value: -
SCPI: conformal

Operating mode: all

MMEMory:CDIRectory <directory_name>

This command changes the current directory.

In addition to the path name, the indication of the directory may contain the drive name. The path name complies with the DOS conventions.

Parameter: <directory_name>::= DOS path name

Example: "`MMEM:CDIR 'D:\USER\DATA'`" Returns the list of files in directory D:\USER\DATA.

Characteristics: *RST value: -
SCPI: conforming

Mode: all

MMEMory:COPY <file_source>,<file_destination>

This command copies the files indicated in <file_source> to the destination directory indicated with <file_destination> or to the destination file indicated by <file_destination> when <file_source> is just a file.

The indication of the file name may include the path and the drive name. The file names and path information must be in accordance with the DOS conventions.

Parameter: <file_source>,<file_destination> ::= <file_name>
<file_name> ::= DOS file name

Example: "`MMEM:COPY 'D:\USER\DATA\SETUP.CFG','A:'`"

Characteristics: *RST value: -
SCPI conforming

Mode: all

This command is an event and is therefore not assigned an *RST value and has no query.

MMEMory:DATA <file_name>[,<block data>]

This command writes the block data contained in <block> into the file characterized by <file_name>. The IEC/IEEE-bus delimiter must be set to EOI to obtain error-free data transfer.

The associated query command reads the indicated file from the mass memory and transfers it to the control computer via the IEC/IEEE bus. It should be noted that the buffer memory of the control computer should be large enough to store the file. The setting of the IEC/IEEE-bus delimiter is irrelevant in this case.

The command is useful for reading stored device settings or trace data from the instrument or for transferring them to the instrument.

Syntax:

MMEMory:DATA <file_name>,<block data> — Data transfer from control computer to instrument.

MMEMory:DATA? <file_name> — Data transfer from instrument to control computer.

<file_name> selects the file to be transferred.

The binary data block <block> has the following structure:

- it always begins with the character '#',
- followed by a digit for the length of the length information,
- followed by the indicated number of digits as length information (number of bytes) for the binary data themselves,
- finally the binary data with the indicated number of bytes

Example:

"`MMEM:DATA 'TEST01.HCP', #217This is the file`"
means:
#2: the next 2 characters are the length indication
17: number of subsequent binary data bytes
This is the file:
17 bytes stored as binary data in the file TEST01.HCP.

"`MMEM:DATA? 'TEST01.HCP'`" Transfers the file TEST01.HCP from the instrument to the control computer.

Characteristics:

*RST value: -
SCPI: conforming

Mode: all

MMEMory:DELete <file_name>

This command deletes the indicated files.

The indication of the file name contains the path and, optionally, the drive name. Indication of the path complies with DOS conventions.

Parameter: <file_name> ::= DOS file name

Example: "MMEM:DEL 'TEST01.HCP'" The file TEST01.HCP is deleted.

Characteristics: *RST value: -
SCPI: conforming

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

MMEMory:INITialize 'A:'

This command formats the disk in drive A. Formatting deletes all data stored on the floppy disk.

Parameter: <msus> ::= 'A:'
Only drive name A: is accepted.

Example: "MMEM:INIT 'A:'"

Characteristics: *RST value: -
SCPI: conforming

Mode: all

This command is an event and is therefore not assigned an *RST value and has no query.

MMEMory:LOAD:STATe 1,<file_name>

This command loads device settings from files.The contents of the file are loaded and set as the new device state. The device automatically recognizes the files that are required for the whole setup from the list of file extensions:

Contents	Extension
Current setting of measurement hardware and associated title, if indicated	.SET
Activated limit lines	.LIN
Current configuration of general device parameters	.CFG
Configuration for the hardcopy output	.HCS
User-defined color setting	.COL
All defined limit lines	.LIA
Measured data trace 1 to trace 3 screen A	.TR1 to 3
Measured data trace 1 to trace 3 screen B	.TR4 to 6
Tracking generator settings (only with Tracking Generator Option FSP-B9 or Ext. Generator Control FSP-B10)	.TCi
Setting for source calibration (only with Tracking Generator Option FSP-B9 or Ext. Generator Control FSP-B10)	.TS1 .TS2
Correction data for source calibration (only with Tracking Generator Option FSP-B9 or Ext. Generator Control FSP-B10)	.TC1 .TC2

The file name includes indication of the path and may also include the drive name. The path name complies with DOS conventions.

Parameter: <file_name> ::= DOS file name without extension, extensions see table

Example: "`MMEM:LOAD:STAT 1,'A:TEST'`"

Characteristics: *RST value: -
SCPI: conforming

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query.

MMEMory:LOAD:AUTO 1,<file_name>

This command defines which device setting is automatically loaded after the device is switched on. The contents of the file are read after switching on the device and used to define the new device state. The file name includes indication of the path and may also include the drive. The path name complies with DOS conventions.

Note:
*The data set defined as auto recall set will also be restored by a *RST-command.*

Parameter: <file_name> ::= DOS file name without extension;
FACTORY denotes the data set previously in the instrument

Example: "MMEM:LOAD:AUTO 1,'D:\USER\DATA\TEST'"

Characteristics: *RST value: FACTORY
SCPI: device-specific

Mode: all

This command is an event and is therefore not assigned an *RST value and has no query.

MMEMory:MDIRectory <directory_name>

This command creates a new directory. The file name includes indication of the path and may also include the drive name. The path name complies with DOS conventions.

Parameter: <directory_name>::= DOS path name

Example: "MMEM:MDIR 'D:\USER\DATA'"

Characteristics: *RST value: -
SCPI: device-specific

Mode: all

This command is an event and is therefore not assigned an *RST value and has no query.

MMEMory:MOVE <file_source>,<file_destination>

This command renames existing files, if <file_destination> contains no path indication. Otherwise the file is moved to the indicated path and stored under the file name specified there, if any.

The file name includes indication of the path and may also include the drive. The path name complies with DOS conventions.

Parameter: <file_source>,<file_destination> ::= <file_name>
<file_name> ::= DOS file name

Example: "MMEM:MOVE 'D:\TEST01.CFG','SETUP.CFG'"
Renames TEST01.CFG in SETUP.CFG in directory D:\.

"MMEM:MOVE 'D:\TEST01.CFG','D:\USER\DATA'"
Moves TEST01.CFG from D:\ to D:\USER\DATA.

"MMEM:MOVE 'D:\TEST01.CFG','D:\USER\DATA\SETUP.CFG'"
Moves TEST01.CFG from D:\ to D:\USER\DATA and renames the file in SETUP.CFG.

Characteristics: *RST value: -
SCPI: conforming

Mode: all

This command is an event and is therefore not assigned an *RST value and has no query.

MMEMory:MSIS <device>

This command changes to the drive indicated.The drive may be the internal hard disk D: or the floppy-disk drive A:.

Example: "MMEM:MSIS 'A:'"

Characteristics: *RST value: "D:'
SCPI: conforming

Mode: all

MMEMory:NAME <file_name>

This command defines a destination file for the printout started with the command HCOPy:IMMediate. In this case the printer output must be routed to destination *FILE* using the command "HCOP:DEST 'MMEM' ".

The file name includes indication of the path and may also include the drive name. The file name and path information comply with DOS conventions.

Parameter: <file_name> ::= DOS filename

Example:

"HCOP:DEV:LANG BMP"	Selection of data format.
"HCOP:DEST 'MMEM' "	Selection of the output device
"MMEM:NAME 'PRINT1.BMP'"	Selection of file name.
"HCOP:IMM"	Start of the printout.

Characteristics: *RST value: -
SCPI: conforming

Mode: all

This command is an event and is therefore not assigned an *RST value and has no query.

MMEMory:RDIRectory <directory_name>

This command deletes the indicated directory. The directory name includes indication of the path and may also include the drive name. The path name complies with DOS conventions.

Parameter: <directory_name>::= DOS path name

Example: "`MMEM:RDIR 'D:\TEST'`"

Characteristics: *RST value: -
SCPI: device-specific

Mode: all

This command is an event and is therefore not assigned an *RST value and has no query.

MMEMory:STORe<1|2>:STATe 1,<file_name>

This command stores the current device settings in a series of files which have the indicated file name, but different extensions. The file name includes indication of the path and may also include the drive name. The path name complies with DOS conventions. The numeric suffix in STORe<1|2> is irrelevant with this command.

A list of the extensions used is contained under `MMEMory:LOAD:STATe`.

Parameter: <file_name> := DOS file name without extension

Example: "`MMEM:STOR:STAT 1,'TEST'`"

Characteristics: *RST value: -
SCPI: conforming

Mode: all

This command is an event and is therefore not assigned an *RST value and has no query.

MMEMory:STORe<1|2>:TRACe 1 to 3,<file_name>

This command stores the selected trace (1 to 3) in the measurement window indicated by STORe<1|2> (screen A or B) in a file with ASCII format. The file format is described in chapter 4 in the TRACE menu under the *ASCII-FILE EXPORT* softkey.

The decimal separator (decimal point or comma) for floating-point numerals contained in the file is defined with the command `FORMat:DEXPort:DSEParator`.

The file name includes indication of the path and the drive name. Indication of the path complies with DOS conventions.

Parameter: 1 to 3 := selected measurement curve Trace 1 to 3
<file_name> := DOS file name

Example: "`MMEM:STOR2:TRAC 3,'A:\TEST.ASC'`"
`Stores trace 3 from screen B in the file TEST.ASC on a disk.`

Characteristics: *RST value: -
SCPI: device-specific

Mode: all

This command is an event and is therefore not assigned an *RST value and has no query.

MMEMory:CLEar:STATe 1,<file_name>

This command deletes the instrument setting selected by <file_name>. All associated files on the mass memory storage are cleared. A list of the extensions used is included under `MMEMory:LOAD:STATe`.

The file name includes indication of the path and may also include the drive. The path name complies with DOS conventions.

Parameter: <file_name> ::= DOS file name without extension

Example: "`MMEM:CLE:STAT 1,'TEST'`"

Characteristics: *RST value: -
SCPI: device-specific

Mode: all

This command is an event and is therefore not assigned an *RST value and has no query.

MMEMory:CLEar:ALL

This command deletes all device settings in the current directory.The current directory can be selected with `MMEM:CDIR`. The default directory is D:.

Example: "`MMEM:CLE:ALL`"

Characteristics: *RST value: -
SCPI: device-specific

Mode: all

This command is an event and is therefore not assigned an *RST value and has no query.

MMEMory:SELect[:ITEM]:HWSettings ON | OFF

This command includes the hardware settings in the list of data subsets of a device setting to be stored/loaded. The hardware settings of the FSP include:

- current configuration of general device parameters (general setup)
- current setting of the measurement hardware including markers
- activated limit lines:
  A data set may include 8 limit lines at maximum in each measurement window. This number includes the activated limit lines and, if available, the de-activated limit lines last used. Therefore the combination of the non-activated restored limit lines depends on the sequence of use with the command `MMEM:LOAD`.
- user-defined color setting
- configuration for the hardcopy output
- Tracking generator settings
  (only in conjunction with option Tracking Generator FSP-B9 or External Generator Control FSP-B10)
- Correction data for source calibration
  (only in conjunction with option Tracking Generator FSP-B9 or External Generator Control FSP-B10)

Example: "`MMEM:SEL:HWS ON`"

Characteristics: *RST value: ON
SCPI: device-specific

Mode: all

MMEMory:SELect[:ITEM]:TRACE ON | OFF

This command adds the active traces to the list of data subsets of a save/recall device setting. Active traces are all traces whose state is not blank.

Example: "MMEM:SEL:TRAC ON"

Characteristics: *RST value: OFF, ie no traces will be stored
SCPI: device-specific

Mode: all

MMEMory:SELect[:ITEM]:LINes:ALL ON | OFF

This command adds all limit lines (activated and de-activated) to the list of device settings to be stored/loaded.

Example: "MMEM:SEL:LIN:ALL ON"

Characteristics: *RST value: ON
SCPI: device-specific

Mode: all

MMEMory:SELect[:ITEM]:SCData ON | OFF

This command adds the tracking generator calibration data to the list of device settings to be stored/loaded.

Example: "MMEM:SEL:SCD ON" Inserts the tracking generator correction data in the list of data subsets

Characteristics: *RST value: OFF
SCPI: device-specific

Modes: all

This command is only available in conjunction with the tracking generator option FSP-9 or external generator control option FSP-10.

MMEMory:SELect[:ITEM]:ALL

This command includes all data subsets in the list device settings to be stored/loaded.

Example: "MMEM:SEL:ALL"

Characteristics: *RST value: --
SCPI: device-specific

Mode: all

This command is an event and therefore has no *RST value assigned.

MMEMory:SELect[:ITEM]:NONE

This command deletes all data subsets from the list of device settings to be stored/loaded.

Example: "MMEM:SEL:NONE"

Characteristics: *RST value: --
SCPI: device-specific

Mode: all

This command is an event and therefore has no *RST value assigned.

MMEMory:SELect[:ITEM]:DEFault

This command sets the default list of device settings to be stored/loaded.The latter includes:

- current configuration of general device parameters (general setup)
- current setting of the measurement hardware including markers
- activated limit lines
- user-defined color setting
- configuration for the hardcopy output

Trace data and non-used limit lines are not included.

Example: "MMEM:SEL:DEFault"

Characteristics: *RST value: --
SCPI: device-specific

Mode: all

This command is an event and therefore has no *RST value assigned.

MMEMory:COMMent <string>

This command defines a comment (max. 60 characters) for a device setting to be stored.

Example: "MMEM:COMM 'Setup for GSM measurement'"

Characteristics: *RST value: blank comment
SCPI: device-specific

Mode: all

OUTPut Subsystem

The OUTPut subsystem controls the output features of the instrument.
In conjunction with the tracking generator option, a distinction is made between OUTPut1 (screen A) and OUTPut2 (screen B).

COMMAND	PARAMETERS	UNIT	COMMENT
OUTPut<1|2> [:STATe]	<boolean>	--	Tracking generator option

OUTPut<1|2>[:STATe] ON | OFF

This command switches the tracking generator on or off.

Notes:
With the tracking generator switched on, the maximum stop frequency is limited to 3 GHz. This upper limit is automatically modified by the set frequency offset of the generator.

If measurements in compliance with specs are to be performed with the tracking generator, the start frequency has to be ≥3 x resolution bandwidth.

The minimum sweep time for measurements in compliance with the data sheet is 100 ms in the frequency domain (span >0). If a shorter sweep time is selected, the sweep time indicator SWT on the screen is marked with a red asterisk and the message UNCAL is also displayed.

With the tracking generator switched on, the FFT filters (`BAND:MODE:FFT`) are not available.

Example: `"OUTP ON"` Switches on the tracking generator in screen A.

Characteristics: *RST value: -
SCPI: conforming

Modes: E, A, VA

This command is only valid in conjunction with one of the option tracking generator FSP-B9.

SENSe Subsystem

The SENSe subsystem is organized in several subsystems. The commands of these subsystems directly control device-specific settings, they do not refer to the signal characteristics of the measurement signal.
The SENSe subsystem controls the essential parameters of the analyzer. In accordance with the SCPI standard, the keyword "SENSe" is optional for this reason, which means that it is not necessary to include the SENSe node in command sequences.
The measurement windows are selected by SENSe1 and SENSe2:

SENSe1 = Modification of screen A settings
SENSe2 = Modification of screen B settings.

Screen A is automatically selected if 1 or 2 is missing.

SENSe:AVERage Subsystem

The SENSe:AVERage subsystem calculates the average of the acquired data. A new test result is obtained from several successive measurements.
There are two types of average calculation: logarithmic and linear. In case of logarithmic average calculation (denoted with VIDeo), the average value of the measured logarithmic power is calculated and in case of linear average calculation, the linear power is averaged before the logarithm is applied.
The measurement windows are selected by SENSe1 (screen A) and SENSe2 (screen B).

COMMAND	PARAMETERS	UNIT	COMMENT
[SENSe<1|2>]			
:AVERage			
:COUNt	<numeric_value>	--	
[:STATe<1 to 3>]	<Boolean>	--	
:TYPE	VIDeo | LINear	--	

[SENSe<1|2>:]AVERage:COUNt 0 to 32767

This command defines the number of measurements which contribute to the average value.

It should be noted that continuous averaging will be performed after the indicated number has been reached in continuous sweep mode.

In single sweep mode, the sweep is stopped as soon as the indicated number of measurements (sweeps) is reached. Synchronization to the end of the indicated number of measurements is only possible in single sweep mode.

The command `[SENSe<1|2>:]AVERage:COUNt` is the same as command `[SENSe<1|2>:]SWEep:COUNt`. In both cases, the number of measurements is defined whether the average calculation is active or not.

The number of measurements is valid for all traces in the indicated measurement window.

Example:
`"SWE:CONT OFF"` Switching to single-sweep mode.
`"AVER:COUN 16"` Sets the number of measurements to 16.
`"AVER:STAT ON"` Switches on the calculation of average.
`"INIT;*WAI"` Starts the measurement and waits for the end of the 16 sweeps.

Characteristics:
***RST value:** 0
SCPI: conforming

Mode: all

[SENSe<1|2>:]AVERage[:STATe<1 to 3>] ON | OFF

This command switches on or off the average calculation for the selected trace (STATe<1 to 3>) in the selected measurement window.

Example:
`"AVER OFF"` Switches off the average calculation for trace 1 in screen A.
`"SENS2:AVER:STAT3 ON"` Switches on the average calculation for trace 3 in screen B.

Characteristics:
***RST value:** OFF
SCPI: conforming

Mode: all

[SENSe<1|2>:]AVERage:TYPE VIDeo | LINear

This command selects the type of average function.If VIDeo is selected, the logaritmic power is averaged and, if LINear is selected, the power values are averaged before they are converted to logarithmic values.

The type of average calculation is equally set for all traces in one measurement window.

Example:
`"AVER:TYPE LIN"` Switches screen A to linear average calculation.

Characteristics:
***RST value:** VIDeo
SCPI: device-specific

Mode: A

SENSe:BANDwidth Subsystem

This subsystem controls the setting of the instrument's filter bandwidths. Both groups of commands (BANDwidth and BWIDth) perform the same functions. The measurement windows are selected by SENSe1 (screen A) and SENSe2 (screen B).

COMMAND	PARAMETERS	UNIT	COMMENT
[SENSe<1|2>]			
:BANDwidth			
[:RESolution]	<numeric_value>	HZ	
:AUTO	<Boolean>	--	
:RATio	<numeric_value>	--	
:TYPE	NORMal | FFT | CFILter | RRC	--	
:VIDeo	<numeric_value>	HZ	
:AUTO	<Boolean>	--	
:RATio	<numeric_value>	--	
:BWIDth			
[:RESolution]	<numeric_value>	HZ	
:AUTO	<Boolean>	--	
:RATio	<numeric_value>	--	
:TYPE	NORMal | FFT | CFILter | RRC	--	
:VIDeo	<numeric_value>	HZ	
:AUTO	<Boolean>	--	
:RATio	<numeric_value>	--	

[SENSe<1|2>:]BANDwidth|BWIDth[:RESolution] <numeric_value>

This command defines the analyzer's resolution bandwidth. Analog resolution filters of 10 Hz to 10 MHz in 1, 3, 10 steps are available. These filters are implemented as 4-circuit LC filters in the range of 300 kHz to 10 MHz and as digital filters with analog characteristic in the range of 10 Hz to 100 kHz.

In addition, the EMI bandwidths 200 Hz, 9 kHz and 120 kHz are available (6 dB bandwidths each). These bandwidths can only be obtained by entering numeric values and not with the commands `INCrement` and `DECrement`.

FFT filters of 1 Hz to 30 kHz in 1, 3, 10 steps (3 dB bandwidth each) are also available in the frequency domain (span > 0) for fast measurements on periodic signals. The instrument automatically switches to analog filters above 30 kHz.

A number of especially steep-edged channel filters can be selected from firmware version 1.10 or higher provided that parameters `CFILter` or `RRC` are selected using the `BAND:TYPE` command. The possible combinations of filter type and filter bandwidth are listed in the table "List of available channel filters" of chapter 4, section "Setting Bandwidths and Sweep Time– Key *BW*".

If the resolution bandwidth is modified, the coupling to the span is automatically switched off.

Example: `"BAND 1MHz"` sets the resolution bandwidth to 1 MHz

Characteristics: *RST value: - (AUTO is set to ON)
SCPI: conforming

Mode: all

[SENSe<1|2>:]BANDwidth|BWIDth[:RESolution]:AUTO ON | OFF

This command either automatically couples the resolution bandwidth of the instrument to the span or cancels the coupling.

The automatic coupling adapts the resolution bandwidth to the currently set frequency span according to the relationship between frequency span and resolution bandwidth. The 6 dB bandwidths 200 Hz, 9 kHz and 120 kHz and the channel filters available from Version 1.10 are not set by the automatic coupling.

The ratio resolution bandwidth/span can be modified with the command `[SENSe<1|2>:]BANDwidth[:RESolution]:RATio`.

Example: `"BAND:AUTO OFF"` Switches off the coupling of the resolution bandwidth to the span.

Characteristics: *RST value: ON
SCPI: conforming

Mode: A

[SENSe<1|2>:]BANDwidth|BWIDth[:RESolution]:RATio 0.0001 to 1

This command defines the ratio resolution bandwidth (Hz) / span (Hz). The ratio to be entered is reciprocal to the ratio span/RBW used in manual control.

Example: `"BAND:RAT 0.1"`

Characteristics: *RST value: 0.02 with BAND:TYPE NORMal or RBW > 30 kHz
0.01 with BAND:TYPE FFT for RBW ≤ 30 kHz
SCPI: conforming

Mode: A

[SENSe<1|2>:]BANDwidth|BWIDth[:RESolution]:TYPE NORMal | FFT | CFILter | RRC

This command switches the filter type for the resolution bandwidth between "normal" analog or FIR filters in 1, 3, 10 steps and the FFT filtering for bandwidths <100 kHz.

The advantage of FFT filtering is the higher measurement speed compared to digital filters with analog filter characteristic. However, FFT filters are only suitable for periodic signals, and they are only available for span > 0 Hz.

Since firmware version 1.10 steep-edged channel filters and filters with RRC (Root Raised Cosine) characteristic are available. The possible combinations of filter type and filter bandwidth are listed in the table "List of available channel filters" in chapter 4, section "Setting Bandwidths and Sweep Time– Key *BW".*

Note:
When changing the filter type, the next larger filter bandwidth is selected if the same filter bandwidth is not available for the new filter type.

Example: `"BAND:TYPE NORM"`

Characteristics: *RST value: NORMal
SCPI: device-specific

Operating mode: A

[SENSe<1|2>:]BANDwidth|BWIDth:VIDeo 1Hz to 10MHz

This command defines the instrument's video bandwidth. Bandwidths from 10 Hz to 10 MHz in 1, 3, 10 steps are available. The command is not available if FFT filtering is switched on and the set bandwidth is ≤ 30 kHz or if the quasi-peak detector is switched on.

Example: `"BAND:VID 10kHz"`

Characteristics: *RST value: - (AUTO is set to ON)
SCPI: conforming

Mode: A

[SENSe<1|2>:]BANDwidth|BWIDth:VIDeo:AUTO ON | OFF

This command either automatically couples the instrument's video bandwidth to the resolution bandwidth or cancels the coupling.

The ratio video bandwidth/resolution bandwidth can be modified with the command `[SENSe<1|2>:]BANDwidth:VIDeo:RATio`.

Example: `"BAND:VID:AUTO OFF"`

Characteristics: *RST value: ON
SCPI: conforming

Mode: A

[SENSe<1|2>:]BANDwidth|BWIDth:VIDeo:RATio 0.01 to 1000

This command defines the ratio video bandwidth (Hz) / resolution bandwidth (Hz).The ratio to be entered is reciprocal to the ratio RBW/VBW used in manual control.

Example: `"BAND:VID:RAT 3"` Sets the coupling of video bandwidth to video bandwidth = 3*resolution bandwidth

Characteristics: *RST value: 3
SCPI: conforming

Mode: A

SENSe:CORRection Subsystem

This subystem controls calibration and normalization during operation with the tracking generator options (FSP-B9/10). The measurement windows are selected by SENSe1 (screen A) and SENSe2 (screen B).

COMMAND	PARAMETERS	UNIT	COMMENT
[SENSe<1|2>]			
:CORRection			Tracking Generator option
:METHod	TRANsmission | REFLexion		
:COLLect			
[:ACQuire]	THRough | OPEN		no query
[:STATe]	<Boolean>		
:RECall			no query

[SENSe<1|2>:]CORRection[:STATe] ON | OFF

This command activates/deactivates the normalization of the measurement results in the selected window provided that the tracking generator is active. The command is available only after aquisition of a reference trace for the selected type of measurement (transmission/reflection, see command `[SENSe<1|2>:]CORRection:COLLect[:ACQire]`).

Example: `"CORR ON "` activates normalization in screen A.

Characteristics: *RST value: OFF
SCPI: conforming

Mode: A

This command is only valid in conjunction with the tracking generator / ext. generator control option (FSP-B9/B10).

[SENSe<1|2>:]CORRection:METHod TRANsmission | REFLexion

This command selects the type of measurement with active tracking generator (transmission/reflexion).

Example: `"CORR:METH TRAN "` sets the type of measurement in screen A to "transmission".

Characteristics: *RST value: TRANsmission
SCPI: device specific

Mode: A

This command is only valid in conjunction with the tracking generator / ext. generator control option (FSP-B9/B10).

[SENSe<1|2>:]CORRection:COLLect[:ACQuire] THRough | OPEN

This command selects the kind of measurement for the reference values of the normalization (response calibration).

THRough	"TRANsmission" mode:	calibration with direct connection between tracking generator and device input.
	"REFLexion" mode:	calibration with short circuit at the input
OPEN	only valid in "REFLexion" mode:	calibration with open input

This command is an event and is therefore not assigned an *RST value and has no query. It is only valid in conjunction with the tracking generator / ext. generator control option (FSP-B9/B10).

Example:	`"CORR:COLL THR"`	selects single sweep operation
	`"CORR:COLL THR;*WAI"`	starts the measurement of reference data using direct connection between generator and device input and waits for the sweep end.

Characteristics: *RST value: --
SCPI: conforming

Mode: A

[SENSe<1|2>:]CORRection:RECall

This command restores the instrument setting that was valid for the measurement of the reference data, provided that the tracking generator is active.

Example: `"CORR:REC"`

Characteristics: *RST value: -
SCPI: conforming

Mode: A

This command is an event and is therefore not assigned an *RST value and has no query. It is only valid in conjunction with the tracking generator / ext. generator control option (FSP-B9/B10).

SENSe:DETector Subsystem

The SENSe:DETector subsystem controls the acquisition of measurement data via the selection of the detector for the corresponding trace. The measurement windows are selected by SENSe1 (screen A) and SENSe2 (screen B).

COMMAND	PARAMETERS	UNIT	COMMENT
[SENSe<1|2>] :DETector<1 to 3> [:FUNCtion] :AUTO	 APEak | NEGative| POSitive | SAMPle| RMS | AVERage | QPEak <Boolean>		

[SENSe<1|2>:]DETector<1..3>[:FUNCtion] APEak | NEGative | POSitive | SAMPle | RMS | AVERage | QPEak

This command switches on the detector for the data acquisition in the selected trace and the indicated measurement window.

- The APEak detector (AutoPeak) displays the positive and also the negative peak value of the noise floor. If a signal is detected, only the positive peak value is displayed.
- The POSitive or NEGative detector only displays the positive or the negative peak value.
- With the Sample detector the value measured at the sampling time is displayed, whereas the RMS value of the power measured at each test point is displayed with the RMS detector.
- The AVERage detector displays the power average value at each test point.
- The QPEak detector performs a signal evaluation for EMC measurements.

If QPEak is selected, the video filter is automatically switched off. The couplings between span and RBW as well as between RBW and sweep time are also switched off and restored on selecting another detector. A long sweep time should be selected so that the quasi-peak detector can fully settle at each test point.

The trace is indicated as numeric suffix in `DETector`.

Example: `"DET POS"` Sets the detector in screen A to "positive peak".

Characteristics: *RST value: APEak
SCPI: conforming

Mode: A

[SENSe<1|2>:]DETector<1 to 3>[:FUNCtion]:AUTO ON | OFF

This command either couples the detector in the selected measurement window to the current trace setting or turns coupling off. The trace is selected by the numeric suffix at DETector.

Example: `"DET:AUTO OFF"`

Characteristics: *RST value: ON
SCPI: conforming

Mode: A

SENSe:FREQuency Subsystem

The SENSe:FREQuency subsystem defines the frequency-axis of the active display. The frequency-axis can either be defined via the start/stop frequency or via the center frequency and span. The measurement windows are selected by SENSe1 (screen A) and SENSe2 (screen B).

COMMAND	PARAMETERS	UNIT	COMMENT
[SENSe<1|2>]			
:FREQuency			
:CENTer	<numeric_value>	HZ	
:STEP	<numeric_value>	HZ	
:LINK	SPAN|RBW|OFF	--	
:FACTor	<numeric_value>	PCT	
:SPAN	<numeric_value>	HZ	
:FULL	--	--	
:STARt	<numeric_value>	HZ	
:STOP	<numeric_value>	HZ	
:MODE	CW|FIXed|SWEep		
:OFFSet	<numeric_value>	HZ	

[SENSe<1|2>:]FREQuency:CENTer 0 to f_{max}

This command defines the center frequency of the analyzer or the measuring frequency for span = 0.

Example: `"FREQ:CENT 100MHz"`

Characteristics: *RST value: f_{max} /2 with f_{max} = maximum frequency of the analyzer
SCPI: conforming

Mode: all

[SENSe<1|2>:]FREQuency:CENTer:STEP 0 to f_{max}

This command defines the step width of the center frequency.

Example: `"FREQ:CENT:STEP 120MHz"`

Characteristics: *RST value: - (AUTO 0.1 × SPAN is switched on)
SCPI: conforming

Mode: all

[SENSe<1|2>:]FREQuency:CENTer:STEP:LINK SPAN | RBW | OFF

This command couples the step width of the center frequency to span (span >0) or to the resolution bandwidth (span = 0) or cancels the couplings.

Parameters:

SPAN = Coupling to frequency display range (for span > 0)
RBW = Coupling to resolution bandwidth (for span = 0)
OFF = manual input, no coupling.

Example: `"FREQ:CENT:STEP:LINK SPAN"`

Characteristics: *RST value: SPAN
SCPI: device-specific

Mode: A

[SENSe<1|2>:]FREQuency:CENTer:STEP:LINK:FACTor 1 to 100 PCT

This command couples the step width of the center frequency with a factor to the span (span >0) or to the resolution bandwidth (span = 0).

Example: `"FREQ:CENT:STEP:LINK:FACT 20PCT"`

Characteristics: *RST value: - (AUTO 0.1 × SPAN is switched on)
SCPI: device-specific

Mode: A

[SENSe<1|2>:]FREQuency:SPAN 0 to f_{max}

This command defines the frequency span of the analyzer.

Example: `"FREQ:SPAN 10MHz"`

Characteristics: *RST value: f_{max} with f_{max} = maximum frequency of the analyzer
SCPI: conforming

Mode: A

[SENSe<1|2>:]FREQuency:SPAN:FULL

This command sets the frequency span of the analyzer to its maximum.

Example: `"FREQ:SPAN:FULL"`

Characteristics: *RST value: -
SCPI: conforming

Mode: A

[SENSe<1|2>:]FREQuency:STARt 0 to f_{max}

This command defines the start frequency of the analyzer. This command is only available in the frequency domain (span >0).

Example: `"FREQ:STAR 20MHz"`

Characteristics: *RST value: 0
SCPI: conforming

Mode: E, A

[SENSe<1|2>:]FREQuency:STOP 0 to f_{max}

This command defines the stop frequency of the analyzer.This command is only available in the frequency domain (span >0).

Example: `"FREQ:STOP 2000MHz"`

Characteristics: *RST value: f_{max}
SCPI: conforming

Mode A

[SENSe<1|2>:]FREQuency:MODE CW | FIXed | SWEep

This command switches between frequency domain (SWEep) and time domain (CW | FIXed) in the analyzer mode.

For CW and FIXed, the frequency setting is via command `FREQuency:CENTer`. In the SWEep mode, the setting is via commands `FREQuency:STARt`, `STOP`, `CENTer` and `SPAN`.

Example: `"FREQ:MODE SWE"`

Characteristics: *RST value: SWEep
SCPI: conforming

Mode: A

[SENSe<1|2>:]FREQuency:OFFSet <numeric_value>

This command defines the frequency offset of the instrument.

Example: `"FREQ:OFFS 1GHZ"`

Characteristics: *RST value: 0 Hz
SCPI: conforming

Mode: A

SENSe:LIST Subsystem

The commands of this subsystem are used for measuring the power at a list of frequency points with different device settings. The measurement is always performed in the time domain (span = 0 Hz).

A new trigger event is required for each test point (exception: Trigger FREE RUN).

The results are output as a list in the order of the entered frequency points. The number of results per test point depends on the number of concurrently active measurements (peak/RMS/average).

Selection of concurrently active measurements and setting of parameters that are constant for the whole measurement is via a configuration command (SENSe:LIST:POWer:SET). This also includes the setting for trigger and gate parameters.

The following setting parameters can be selected independently for each frequency point:

- Analyzer frequency
- Reference level
- RF attenuation
- RF attenuation of attenuator (only with option FSP-B25)
- Resolution filter
- Resolution bandwidth
- Video bandwidth
- Measurement time
- Detector

The number of frequencies is limited to 100 entries.

The commands of this subsystem can be used in two different ways:

1. Instrument setup, measurement and querying of the results in a single command: With this method, there is the least delay between the measurement and the result output. However, it requires the control computer to wait for the response from the instrument.
2. Instrument setup and querying of the result list at the end of the measurement: With this method, the control computer may be used for other activities while the measurement is being performed. However, more time is needed for synchronization via service request.

Note:
Settings that are not included in the commands of this subsystem can be configured executing the corresponding commands before the commands of the SENSe:LIST subsystem.
Please note that settings of the trigger level have to be executed in time domain (span = 0 Hz) in order to take effect for the SENSe:LIST commands.

COMMAND	PARAMETER	UNIT	COMMENT
[SENSe<1|2>]			
:LIST			
:POWer			
:RESult?			Query only
[:SEQuence]	<numeric_value>, <numeric_value>, <numeric_value>, <numeric_value> | OFF, NORMal | CFILter | RRC, <numeric_value>, <numeric_value>, <numeric_value>, <numeric_value> ...	HZ, DBM, DB, DB, --, HZ, HZ, S, PCT	
:SET	<Boolean>, <Boolean>, <Boolean>, IMMediate | EXTernal | VIDeo | IFPower, POSitive|NEGative, <numeric_value>, <numeric_value>	--, --, --, --, --, S, S	
:STATe	OFF		

[SENSe<1|2>:]LIST:POWer[:SEQuence] <analyzer freq>,<ref level>,<rf att>,<el att>,
<filter type>,<rbw>,<vbw>,<meas time>,<trigger level>,...

This command configures the list of settings (max. 100 entries) for the multiple power measurement and starts a measurement sequence. When synchronizing the command with *OPC, a service request is generated as soon as all frequency points are processed and the defined number of individual measurements (# of meas) is reached.

To reduce the setting time, all indicated parameters are set up simultaneously at each test point.

The query form of the command processes the list and immediately returns the list of results. The number of results per test point depends on the setting of the "SENSe:LIST:POWer:SET" command.

Parameter:

Note:
The following parameters are the settings for an individual frequency point. They are repeated for every other frequency point.

<analyzer freq>: Receive frequency for the signal to be measured
(= center frequency in manual operation)

Range of values: 0 Hz to max. analyzer frequency, depending on the instrument model.

<ref level>: Reference level

Range of values: +30 dBm to -70 dBm in 10 dB steps
+30 dBm to -75 dBm in 5 dB steps with El. Attenuator option FSP-B25

<rf att>: RF input attenuation

Range of values: 0 dB to 70 dB in 10 dB steps
0 dB to 75 dB in 5 dB steps with El. Attenuator Option FSP-B25

<el att>:	RF input attenuation of electronic attenuator		
	Range of values:	0 dB to 30 dB	in 10 dB steps
		OFF	electronic attenuator not in signal path
	If option FSP-B25 is missing, OFF is to be given.		
<filter type>:	NORMal:	normal resolution filter	
	CFILter:	channel filter. These are especially steep-edged filters, which are used for example in Fast ACP measurement to ensure the band-limiting of a transmission channel in the time domain.	
	RRC:	Root Raised Cosine filter. This special filter form is used to determine the channel power for some mobile radio standards.	
<rbw>:	Resolution bandwidth		
	Range of values:	10 Hz to 10 MHz	in 1, 3, 10 steps for <filter type> = NORMal.
		See filter table	for <filter type> = CFILter and <filter type> = RRC. Possible combinations of filter type and filter bandwidth see table "List of available channel filters" in section "Setting Bandwidths and Sweep Time – Key *BW*".
<vbw>:	Video bandwidth		
	Range of values:	1 Hz to 10 MHz	in 1, 3, 10 steps. The value is ignored for <filter type> = CFILter or RRC
<meas time>:	Measurement time		
	Range of values:	1us to 30s	
<trigger level>:	Reserved. Must be set to 0.		

Returned values:

The query command returns a list of comma-separated values (CSV) which contains the power measurement results in floating-point format. The unit depends on the setting with `CALC:UNIT`.

Command

```
"SENSe:LIST:POWer?  935.2MHz,-20dBm,10dB,OFF,NORM,1MHz,3MHz,434us,0,
                    935.4MHz,-20dBm,10dB,10dB,NORM,30kHz,100kHz,434us,0,
                    935.6MHz,-20dBm,10dB,20dB,NORM,30kHz,100kHz,434us,0"
```

thus returns the following list, for example:

-28.3,-30.6,-38.1

If the command sequence is extended to

```
"SENSe:LIST:POWer:SET ON,ON,ON,IMM,POS,0,0"
"SENSe:LIST:POWer?  935.2MHz,-20dBm,10dB,OFF,NORM,1MHz,3MHz,434us,0,
                    935.4MHz,-20dBm,10dB,10dB,NORM,30kHz,100kHz,434us,0,
                    935.6MHz,-20dBm,10dB,20dB,NORM,30kHz,100kHz,434us,0"
```

the result list is extended to 3 results per frequency point (peak, RMS and average):

-28.3, -29.6, 1.5, -30.6, -31.9, 0.9, -38.1, -40.0, 2.3

Examples:

```
"SENSe:LIST:POWer   935.2MHz,-20dBm,10dB,OFF,NORM,1MHz,3MHz,434us,0,
                    935.4MHz,-20dBm,10dB,10dB,CFIL,30kHz,100kHz,434us,0,
                    935.6MHz,-20dBm,10dB,20dB,CFIL,30kHz,100kHz,434us,0"
```

performs a measurement sequence with the following settings:

Step	Freq. [MHz]	Ref Level	RF Att	el Att	Filtertyp	RBW	VBW	Meas Time	TRG Level (reserved)
1	935.2	-20 dBm	10 dB	OFF	Normal	1 MHz	3 MHz	434 us	0
2	935.4	-20 dBm	10 dB	10dB	Channel	30 kHz	100 kHz	434 us	0
3	935.6	-20 dBm	10 dB	20dB	Channel	30 kHz	100 kHz	434 us	0

```
"SENSe:LIST:POWer?  935.2MHz,-20dBm,10dB,OFF,NORM,1MHz,3MHz,434us,0,
                    935.4MHz,-20dBm,10dB,10dB,CFIL,30kHz,100kHz,434us,0,
                    935.6MHz,-20dBm,10dB,20dB,CFIL,30kHz,100kHz,434us,0"
```

performs the same measurement and returns the result list immediately after the last frequency point.

Notes: *The measurement is performed in the time domain and therefore the span is set to 0 Hz. If the time domain is quit, the function is automatically switched off.*

The measurement is not compatible with other measurements, especially as far as marker, adjacent channel power measurement or statistics are concerned. The corresponding commands thus automatically deactivate the function.

The function is only available in REMOTE operation. It is deactivated when switching the instrument back to LOCAL.

Characteristics: *RST value: --
SCPI: device-specific

Mode: A-F, A-T

[SENSe<1|2>:]LIST:POWer:SET <PEAK meas>,<RMS meas>,<AVG meas>,
<trigger mode>,<trigger slope>,<trigger offset>,<gate length>

This command defines the constant settings for the list during multiple power measurement.

Parameters <PEAK meas>, <RMS meas> and <AVG meas> define, which measurements are to be performed at the same time at the frequency point. Correspondingly, one, two or three results per frequency point are returned for the SENS:LIST:POW? command. If all three parameters are set to OFF, the command generates an execution error.

Parameter:

<PEAK meas>:	ON	activates the measurement of the peak power (peak detector).
	OFF	deactivates the measurement of the peak power.
<RMS meas>:	ON	activates the measurement of the RMS power (RMS detector).
	OFF	deactivates the measurement of the RMS power.
<AVG meas>:	ON	activates the measurement of the average power (average detector).
	OFF	deactivates the measurement of the average power.

<trigger mode>: Selection of the trigger source used for the list measurement.

Possible values:

IMMediate | VIDeo | EXTernal | IFPower

<trigger slope>: Used trigger slope.

Possible values:

POSitive | NEGative

<trigger offset>: Offset between the detection of the trigger signal and the start of the measurement at the next frequency point.

Range of values: 0 s, 125 ns to 100s

<gate length>: Gate length with Gated Sweep.

Range of values: 0 s, 125 ns to 100s

Note:

- *The value 0 s deactivates the use of GATED TRIGGER; other values activate the GATED TRIGGER function.*
- *Values <> 0 s are only possible if <trigger mode> is different from IMMediate. Otherwise, an execution error is triggered.*

Returned values:

The query command returns a list of comma-separated values (CSV) of the settings, ie

`ON,ON,ON,IMM,POS,0,0`

if the configuration has been set with the command

`"SENSe:LIST:POWer:SET ON,ON,ON,IMM,POS,0,0"`

Examples:

```
"SENSe:LIST:POWer:SET ON,OFF,OFF,EXT,POS,10US,434US"
"SENSe:LIST:POWer:SET ON,ON,ON,VID,NEG,10US,0"
```

Characteristics: *RST values: `ON,OFF,OFF,IMM,POS,0S,0S`
SCPI: device-specific

Mode: A-F, A-T

[SENSe<1|2>:]LIST:POWer:RESult?

This command queries the result of a previous list measurement as configured and initiated with SENSe:LIST:POWer[:SEQuence]. The measured results are output in a list of floating point values separated by commas. The unit of the results depends on the setting made with the CALC:UNIT command.

This command may be used to obtain measurement results in an asynchronous way, using the service request mechanism for synchronization with the end of the measurement.

If no measurement results are available, the command will return a query error.

Example:

```
'Configuration of the FSP status reporting system for the generation of an
SRQ on operation complete
*ESE 1
*SRE 32
'Configuring and starting the measurement
"SENSe:LIST:POWer 935.2MHz,-20dBm,10dB,OFF,NORM,1MHz,3MHz,434us,0,
                  935.4MHz,-20dBm,10dB,10dB,NORM,30kHz,100kHz,434us,0,
                  935.6MHz,-20dBm,10dB,20dB,NORM,30kHz,100kHz,434us,0;
                  *OPC"
'Further actions of the control computer during measurement
...
'Response to service request
On SRQ:
SENSe:LIST:POWer:RESult?
```

Characteristics: *RST value: --
SCPI: device-specific

Mode: A-F, A-T

[SENSe<1|2>:]LIST:POWer:STATe OFF

This command deactivates the list measurement.

Example:

```
SENSe:LIST:POWer:STATe OFF
```

Characteristics: *RST value: --
SCPI: device-specific

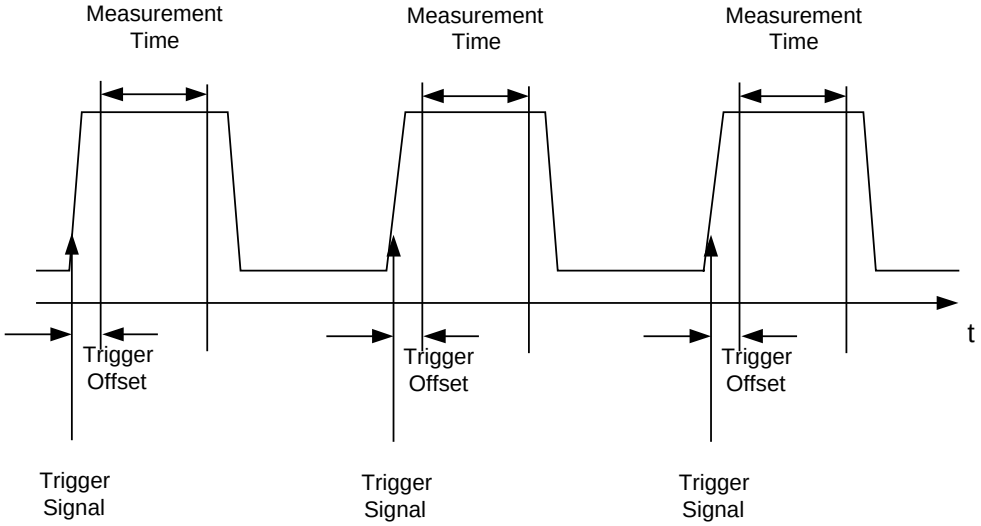
Mode: A-F, A-T

SENSe:MPOWer – Subsystem

The commands of this subsystem are used to determine the mean burst power or peak burst power for a given number of signal bursts, and for outputting the results in a list. Since all the settings required for a measurement are combined in a single command, the measurement speed is considerably higher than when using individual commands.

For measuring the signal bursts, the GATED SWEEP function is used in the time domain. The gate is controlled either by an external trigger signal or by the video signal. An individual trigger event is required for each burst to be measured. If an external trigger signal is used, the threshold is fixed to TTL level, while with a video signal the threshold can be set as desired.

The following graphics shows the relation between trigger time, trigger offset (for delayed gate opening) and measurement time.



Depending on the settings made, the measurements are performed with the RMS detector for RMS power or the PEAK detector for peak power. For all these measurements, TRACE 1 of the selected system is used.

The setting parameters for this measurement are:

- analyzer frequency
- resolution bandwidth
- measurement time used for a single burst
- trigger source
- trigger level
- trigger offset
- type of power measurement (PEAK, MEAN)
- number of bursts to be measured

The commands of this subsystem can be used in two different ways:

1. Setting up the instrument and at the same time querying the result list:
   This method ensures the smallest delay between measurement and the output of the measured values, but requires the control computer to wait actively for the response of the instrument.
2. Setting up the instrument and querying the result list after synchronisation to the end of measurement:
   With this method the control computer can be used for other activities while the FSP is performing the measurement at the cost of additional time needed for synchronisation via service request.

COMMAND	PARAMETER	UNIT	COMMENT
[SENSe<1|2>]			
:MPOWer			
[:SEQuence]	<numeric_value>, <numeric_value>, <numeric_value>, EXTernal | VIDeo, <numeric_value>, <numeric_value>, MEAN | PEAK, <numeric_value>	HZ, HZ, S, --, PCT, S, --, --	
:RESult			
[:LIST]?			Query only
:MIN?			Query only

[SENSe<1|2>:]MPOWer[:SEQuence] <analyzer freq>,<rbw>,<meas time>,<trigger source>, <trigger level>,<trigger offset>,<type of meas>,<# of meas>

This command configures the instrument setup for multiple burst power measurement and starts a measurement sequence. When synchronizing the command with *OPC, a service request is generated as soon as the defined number of individual measurements (# of meas) is reached.

To reduce the setting time, the setup is performed simultaneously for all selected parameters.

The command in the form of a query makes the instrument settings, performs the defined number of measurements and outputs the measurement results list.

Parameters:

<analyzer freq>: Receive frequency for the burst signals to be measured (= center frequency in manual operation)

Range: 0 Hz to max. analyzer frequency, depending on instrument model

<rbw>: resolution bandwidth for the measurement

Range: 10 Hz to 10 MHz in steps of 1, 3, 10

<meas time>: Time span during which measurement samples are sampled for RMS / peak measurement The type of measurement is selected by <type of meas>.

Range: 1us to 30s

<trigger source>: trigger signal source. Possible settings:

EXTernal The trigger signal is fed from the "Ext. Trigger/Gate" input on the rear of the unit.

VIDeo The internal video signal is used as trigger signal.

<trigger level>: Signal level of the video signal as a percentage of the diagram height at which the trigger becomes active. If <trigger source> = EXTernal is selected, the value entered here is ignored, as in this case the trigger input uses TTL levels.

Range: 0 – 100PCT

<trigger offset>: Offset between the detection of the trigger signal and the start of the measurement.

Range: 125 ns to 100s

<type of meas>: Determines whether mean power (RMS) or peak power (PEAK) is to be measured. The FSP detector is selected accordingly.

Possible values:MEAN, PEAK

<# of meas>: Number of individual bursts to be measured.

Range: 1 to 501

Return values:

The query command returns a list separated by commas (comma separated values = CSV), which contains the power measurement results in floating-point format. The unit used for the return values is always dBm.

The command `"SENSe:MPOWer? 935.2MHz,1MHz,434us,VIDEO,50PCT,5us,MEAN,20"`

may, for instance, cause the following list to be returned:

18.3,18.6,18.1,18.0,17.9,18.3,18.6,18.1,18.0,17.9,18.3,18.6,18.1,18.0,17.9,18.3,18.6,18.1,18.0,17.9

Examples: `"SENSe:MPOWer 935.2MHz,1MHz,434us,VIDEO,50PCT,5us,MEAN,20"`
performs a measurement sequence with the following settings:

Frequency	= 935.2 MHz,
Resolution bandwidth	= 1 MHz
Measurement time	= 434 µs
Trigger source	= VIDEO
Trigger threshold	= 50%
Trigger offset	= 5 µs
Type of measurement	= MEAN power
No. of measurements	= 20

`"SENSe:MPOWer? 935.2MHz,1MHz,434us,VIDEO,50PCT,5us,MEAN,20"`

performs the same measurement and in addition returns the results list immediately after completion of the last measurement.

Notes: *The measurement function always uses trace 1 in the selected screen, and activates the selected screen.*
Repeated use of the command without changes to its parameters (ie using the same settings again) will speed up the measurement since the FSP will cache the previous hardware settings and therefore avoid additional hardware settling times. This also holds true if only part of the parameters (e.g. only the trigger delay) are changed, as in this case the rest of the parameters will be cached.

This measurement is not compatible with other measurements, especially as far as marker functions, adjacent-channel measurement or statistics are concerned. The corresponding functions are therefore automatically switched off. In return incompatible commands will automatically deactivate the multi burst power function.

The function is only available in the REMOTE operation. It is deactivated on switching back to LOCAL.

Characteristics: *RST value: --
SCPI: instrument-specific

Mode: A-F, A-T

SENSe:MPOWer:RESult[:LIST]?

This command queries the results of a multiple burst power measurement as configured and initiated with SENSe:MPOWer[:SEQuence]. The results are output in a comma-separated list of floating point values. The unit used for the return values is always dBm.

This command may be used to obtain measurement results in an asynchronous way using the service request mechanism for synchronization with the end of the measurement.

If no measurement results are available, the command will return a query error.

Example:

```
'Configuration of FSP status reporting systems for the
'generation of an SRQ on operation complete
*ESE 1
*SRE 32
'Configuring and starting the measurement
SENSe:MPOWer
935.2MHz,1MHz,434us,VIDEO,50PCT,5us,MEAN,20;*OPC
'Further actions of the control computer during measurement
...
'Response to service request
On SRQ:
SENSe:MPOWer:RESult?
```

Characteristics: *RST value: --
SCPI: instrument-specific

Mode: A-F, A-T

SENSe:MPOWer:RESult:MIN?

This command queries the minimum power value in a multiple burst power measurement as configured and initiated with SENSe:MPOWer[:SEQuence]. The unit used for the return values is always dBm.

If no measurement result is available, the command will return a query error.

Example:

```
'Configuration of the FSP status reporting
system for the 'generation of an SRQ on operation complete
*ESE 1
*SRE 32
'Configuring and starting the measurement
SENSe:MPOWer
935.2MHz,1MHz,434us,VIDEO,50PCT,5us,MEAN,20;*OPC
'Further actions of the control computer during measurement
...
'Response to service request
On SRQ:
SENSe:MPOWer:RESult:MIN?
```

Characteristics: *RST value: --
SCPI: instrument-specific

Mode: A-F, A-T

SENSe:POWer Subsystem

This subsystem controls the setting of the instrument's channel and adjacent channel power measurements. The measurement windows are selected by SENSe1 (screen A) and SENSe2 (screen B).

COMMAND	PARAMETERS	UNIT	COMMENT
[SENSe<1|2>]			
:POWer			
:ACHannel			
:SPACing			
[:ACHannel]	<numeric_value>	HZ	
:ALTernate<1|2>	<numeric_value>	HZ	
:ACPairs	0 | 1 | 2 | 3		
:BANDwidth			
[:CHANnel]	<numeric_value>	HZ	
:ACHannel	<numeric_value>	HZ	
:ALTernate<1|2>	<numeric_value>	HZ	
:BWIDth			
[:CHANnel]	<numeric_value>	HZ	
:ACHannel	<numeric_value>	HZ	
:ALTernate<1|2>	<numeric_value>	HZ	
:MODE	ABSolute | RELative		
:REFerence			
:AUTO	ONCE		no query
:PRESet	ACPower | CPOWer | OBANdwidth | OBWidth		
:RLEVel			
:BANDwidth	<numeric_value>	PCT	
:BWIDth	<numeric_value>	PCT	
:HSPeed	<Boolean>		
:NCORrection	<Boolean>		
:TRACe	<numeric_value>	--	

[SENSe<1|2>:]POWer:ACHannel:SPACing:ACHannel 100 Hz to 2000 MHz

This command defines the channel spacing of the adjacent channel to the TX channel. At the same time, the spacing of alternate adjacent channels 1 and 2 is set to the double or triple of the entered value.

The command is only available in the frequency domain (span > 0).

Example: `"POW:ACH:SPAC:ACH 33kHz"` Sets the spacing between the carrier signal and
- the adjacent channel to 33 kHz
- the alternate adjacent channel 1 to 66 kHz
- the alternate adjacent channel 2 to 99 kHz

Characteristics: *RST value: 14 kHz
SCPI: device-specific

Mode: A-F

[SENSe<1|2>:]POWer:ACHannel:SPACing:ALTernate<1|2> 100 Hz to 2000 MHz

This command defines the spacing between the first (ALTernate1) or the second alternate adjacent channel (ALTernate2) and the TX channel.If the spacing to the alternate adjacent channel ALTernate1 is modified, the spacing to alternate adjacent channel 2 is set to 1.5 times the entered value.

This command is only available in the frequency domain (span > 0).

Example: `"POW:ACH:SPAC:ALT1 100kHz"` Sets the spacing between TX channel and alternate adjacent channel 1 to 100 kHz and between TX channel and alternate adjacent channel 2 to 150 kHz.

Characteristics: *RST value: 40 kHz (ALT1)
60 kHz (ALT2)
SCPI: device-specific

Mode: A-F

[SENSe<1|2>:]POWer:ACHannel:ACPairs 0 | 1.| 2 | 3

This command sets the number of adjacent channels (upper and lower channel in pairs).The figure 0 stands for pure channel power measurement.

The command is only available in the frequency domain (span > 0).

Example: `"POW:ACH:ACP 3"` Sets the number of adjacent channels to 3, ie the adjacent channel and alternate adjacent channels 1 and 2 are switched on.

Characteristics: *RST value: 1
SCPI: device-specific

Mode: A-F

[SENSe<1|2>:]POWer:ACHannel:BANDwidth|BWIDth[:CHANnel] 100 Hz to 1000 MHz

This command sets the channel bandwidth of the radio communication system.The bandwidths of adjacent channels are not influenced by this modification (in contrast to the FSE family).

With `SENS:POW:HSP ON` the steep-edged channel filters from the table "List of available channel filters" in Section "Setting Bandwidths and Sweep Time – Key *BW*" are available.

Example: `"POW:ACH:BWID 30kHz"` Sets the banwidth of the TX channel to 30 kHz.

Characteristics: *RST value: 14 kHz
SCPI: device-specific

Mode: A-F

[SENSe<1|2>:]POWer:ACHannel:BANDwidth|BWIDth:ACHannel 100 Hz to 1000 MHz

This command defines the channel bandwidth of the adjacent channel of the radio transmission system. If the bandwidth of the adjacent channel is changed, the bandwidths of all alternate adjacent channels are automatically set to the same value.

With `SENS:POW:HSP ON` the steep-edged channel filters from the table "List of available channel filters" in Section "Setting Bandwidths and Sweep Time – Key *BW*" are available.

Example: `"POW:ACH:BWID:ACH 30kHz"` Sets the bandwidth of all adjacent channels to 30 kHz.

Characteristics: *RST value: 14 kHz
SCPI: device-specific

Mode: A-F

[SENSe<1|2>:]POWer:ACHannel:BANDwidth|BWIDth:ALTernate<1|2> 100 Hz to 1000 MHz

This command defines the channel bandwidth of the first/second alternate adjacent channel of the radio transmission system. If the channel bandwidth of alternate adjacent channel 1 is changed, the bandwith of alternate adjacent channel 2 is automatically set to the same value.

With `SENS:POW:HSP ON` the steep-edged channel filters from the table "List of available channel filters" in Section "Setting Bandwidths and Sweep Time – Key *BW*" are available.

Example: `"POW:ACH:BWID:ALT2 30kHz"`

Characteristics: *RST value: 14 kHz
SCPI: device-specific

Mode: A-F

[SENSe<1|2>:]POWer:ACHannel:MODE ABSolute | RELative

This command toggles between absolute and relative adjacent channel measurement.

For the relative measurement the reference value is set to the currently measured channel power by command `SENSe:POWer:ACHannel:REFerence:AUTO ONCE`.

The command is only available in the frequency domain (span > 0).

Example: `"POW:ACH:MODE REL"`

Characteristics: *RST value: ABSolute
SCPI: device-specific

Mode: A-F

[SENSe<1|2>:]POWer:ACHannel:REFerence:AUTO ONCE

This command sets the reference value for the relative measurement to the currently measured channel power.

The command is only available in the frequency domain (span > 0).

Example: `"POW:ACH:REF:AUTO ONCE"`

Characteristics: *RST value: -
SCPI: device-specific

Mode: A-F

This command is an event and is therefore not assigned an *RST value and has no query.

[SENSe<1|2>:]POWer:ACHannel:PRESet ACPower | CPOWer | OBANdwidth|OBWidth

This command adapts the frequency span, the bandwidths and the detector to the number of channels, channel bandwidths and channel spacings of the active power measurement and switches on the adjacent channel power measurement, if required.

To ensure that the results are valid, a complete sweep including synchronization to the sweep end must be performed after the configuration. Synchronization is only possible in single sweep mode.

The results are queried with `CALCulate:MARKer:FUNCtion:POWer:RESult?`.

The command is only available in the frequency domain (span > 0).

Example:

`"POW:ACH:REF:PRES ACP"`	Sets the frequency range, bandwidths and detector suitable for ACP measurement in screen A.
`"INIT:CONT OFF"`	Switches to single-sweep mode.
`"INIT;*WAI"`	Starts a sweep and waits for the end.
`"CALC:MARK:FUNC:POW:RES? ACP"`	Queries the result of the adjacent channel power measurement.

Characteristics:

*RST value:	-
SCPI:	device-specific

Mode: A-F

[SENSe<1|2>:]POWer:ACHannel:PRESet:RLEVel

This command adapts the reference level of the FSP to the measured channel power and – if required - switches on previously the adjacent channel power measurement. This ensures that the signal path of the FSP is not overloaded. Since the measurement bandwidth is significantly smaller than the signal bandwidth in channel power measurements, the signal path can be overloaded although the trace is still significantly below the reference level. If the measured channel power equals the reference level, the signal path is not overloaded.

The command is only available in the frequency domain (span > 0).

Note:
*The following commands have to be synchronized with *WAI, *OPC or *OPC? to the end of the autorange process which would otherwise be aborted.*

Example:

`"POW:ACH:REF:PRES:RLEV;*WAI"`	Adapts the reference level to the measured channel power.

Characteristics:

*RST value:	-
SCPI:	device-specific

Mode: A-F

[SENSe<1|2>:]POWer:BANDwidth|BWIDth 10 to 99.9PCT

This command defines the percentage of the power with respect to the total power. This value is the basis for the occupied bandwidth measurement (command: `POWer:ACHannel:PRESet OBW`).

The command is only available in the frequency domain (span > 0).

Example: `"POW:BWID 95PCT"`

Characteristics: *RST value: 99PCT
SCPI: device-specific

Mode: A-F

[SENSe<1|2>:]POWer:HSPeed ON | OFF

This command switches on or off the high-speed channel/adjacent channel power measurement. The measurement itself is performed in the time domain on the center frequencies of the individual channels. The command automatically switches to the time domain and back.

Depending on the selected mobile radio standard, weighting filters with √cos characteristic or very steep-sided channel filters are used for band limitation.

The command is only available in the frequency domain (span > 0).

Example: `"POW:HSP ON"`

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: A-F

[SENSe<1|2>:]POWer:TRACe 1 to 3

This command assigns the channel/adjacent channel power measurement to the indicated trace in the selected measurement window. The corresponding trace must be active, ie its state must be different from blank.

Note: *The measurement of the occupied bandwidth (OBW) is performed on the trace on which marker 1 is positioned. To evaluate another trace, marker 1 must be positioned to another trace with `CALCulate:MARKer:TRACe`.*

Example: `"POW:TRAC 2"` Assigns the measurement in screen A to trace 2.
`"SENS2:POW:TRAC 3"` Assigns the measurement in screen B to trace 3.

Characteristics: *RST value: -
SCPI: device-specific

Mode: A

SENSe:ROSCillator Subsystem

This subsystem controls the reference oscillator. The numeric suffix in SENSe is irrelevant for the commands of this subsystem.

COMMAND	PARAMETERS	UNIT	COMMENT
[SENSe<1|2>]			
:ROSCillator			
:SOURce	INTernal | EXTernal	--	
[:INTernal]			
:TUNe	<numeric_value>		
:SAVe			no query

[SENSe<1|2>:]ROSCillator:SOURce INTernal | EXTernal

This command controls selection of the reference oscillator.

If the external reference oscillator is selected, the reference signal must be connected to the rear panel of the instrument.

Example: "ROSC:SOUR EXT"

Characteristics: *RST value: –
SCPI: conforming

Mode: all

[SENSe<1|2>:]ROSCillator[:INTernal]:TUNe 0 to 4095

This command defines the value for the tuning of the internal reference oscillator.

The reference oscillator should be tuned only if an error has been detected in the frequency accuracy check. After rebooting the instrument, the factory-set reference frequency or the previously saved reference frequency is restored.

Note: *This command is only available at service level 1.*

Example: "ROSC:TUN 128"

Characteristics: *RST value: –
SCPI: device-specific

Mode: all

[SENSe<1|2>:]ROSCillator[:INTernal]:TUNe:SAVe

This command saves the new value for the tuning of the internal reference oscillator. The factory-set value in the EEPROM is overwritten.

Note: *This command is only available at service level 1.*

Example: "ROSC:TUN:SAV"

Characteristics: *RST value: –
SCPI: device-specific

Mode: all

SENSe:SWEep Subsystem

This subsystem controls the sweep parameters. The measurement windows are selected by SENSe1 (screen A) and SENSe2 (screen B).

COMMAND	PARAMETERS	UNIT	COMMENT
[SENSe<1|2>]			
:SWEep			
:TIME	<numeric_value>	S	
:AUTO	<Boolean>	--	
:COUNt	<numeric_value>	--	
:EGATe	<Boolean>	--	
:TYPE	LEVel|EDGE	--	
:POLarity	POSitive|NEGative	--	
:HOLDoff	<numeric_value>	S	
:LENGth	<numeric_value>	S	
:SOURce	EXTernal | IFPower		

[SENSe<1|2>:]SWEep:TIME 2,5ms ... 16000s (frequency domain) | 1µs... 16000s (time domain)

This command defines the sweep time. The available time values are different in the frequency domain (2.5 ms to 16000s with span > 0) and in the time domain (1µs to 16000s with span = 0).

If `SWEep:TIME` is directly programmed, automatic coupling to resolution bandwidth and video bandwidth is switched off.

Example: `"SWE:TIME 10s"`

Characteristics: *RST value - (AUTO is set to ON)
SCPI: conforming

Mode: A

[SENSe<1|2>:]SWEep:TIME:AUTO ON | OFF

This command controls the automatic coupling of the sweep time to the frequency span and bandwidth settings.

If `SWEep:TIME` is directly programmed, automatic coupling is switched off.

Example: `"SWE:TIME:AUTO ON"` Switches on the coupling to frequency span and bandwidths.

Characteristics: *RST value: ON
SCPI: conforming

Mode: A

[SENSe<1|2>:]SWEep:COUNt 0 to 32767

This command defines the number of sweeps started with single sweep, which are used for calculating the average or maximum value. In average mode, the value 0 defines a continuous averaging of measurement data over 10 sweeps.

Example:
```
"SWE:COUN 64"          Sets the number of sweeps to 64.
"INIT:CONT OFF"        Switches to single-sweep mode.
"INIT;*WAI"            Starts a sweep and waits for its end.
```

Characteristics: *RST value: 0
SCPI: conforming

Mode: A

[SENSe<1|2>:]SWEep:EGATe ON | OFF

This command switches on/off the sweep control by an external gate signal. If the external gate is selected the trigger source is automatically switched to EXTernal as well.

In case of measurement with external gate, the measured values are recorded as long as the gate is opened. There are two possibilities:

1. The gate is edge-triggered (`"SWEep:EGATe:TYPE EDGE"`):
   After detection of the set gate signal edge, the gate remains open until the gate delay (`SWEep:EGATe:HOLDoff`) has expired.
2. The gate is level-triggered (`"SWEep:EGATe:TYPE LEVel"`):
   After detection of the gate signal, the gate remains open until the gate signal disappears.

A delay between applying the gate signal and the start of recording measured values can be defined with `SWEep:EGATe:HOLDoff`.

During a sweep the gate can be opened and closed several times. The synchronization mechanisms with *OPC, *OPC? and *WAI remain completely unaffected.

The sweep end is detected when the required number of measurement points (501 in analyzer mode) has been recorded.

Example:
```
"SWE:EGAT ON"          Switches on the external gate mode.
"SWE:EGAT:TYPE EDGE"   Switches on the edge-triggered mode.
"SWE:EGAT:HOLD 100US"  Sets the gate delay to 100 µs.
"SWE:EGAT:LEN 500US"   Sets the gate opening time to 500 µs.
"INIT;*WAI"            Starts a sweep and waits for its end.
```

Characteristics: *RST value: OFF
SCPI: device-specific

Mode: A

[SENSe<1|2>:]SWEep:EGATe:TYPE LEVel | EDGE

This command sets the type of triggering (level or edge) by the external gate signal.

The gate opening time cannot be defined with the parameter `EGATe:LENGth` in case of level triggering. The gate is closed when the gate signal disappears.

Example:
```
"SWE:EGAT:TYPE EDGE"
```

Characteristics: *RST value: EDGE
SCPI: device-specific

Mode: A

[SENSe<1|2>:]SWEep:EGATe:POLarity POSitive | NEGative

This command determines the polarity of the external gate signal. The setting is valid both for the edge of an edge-triggered signal and the level of a level-triggered signal.

Example: "SWE:EGAT:POL POS"

Characteristics: *RST value: POSitive
SCPI: device-specific

Mode: A

[SENSe<1|2>:]SWEep:EGATe:HOLDoff 125 ns to 100 s

This command defines the delay time between the external gate signal and the continuation of the sweep.

Example: "SWE:EGAT:HOLD 100us"

Characteristics: *RST value: 0s
SCPI: device-specific

Mode: A

[SENSe<1|2>:]SWEep:EGATe:LENGth 0 to 100 s

In case of edge triggering, this command determines the time interval during which the instrument sweeps.

Example: "SWE:EGAT:LENG 10ms"

Characteristics: *RST value: 0s
SCPI: device-specific

Mode: A

[SENSe<1|2>:]SWEep:EGATe:SOURce EXTernal | IFPower

This command toggles between external gate signal and IF power signal as a signal source for the gate mode. If an IF power signal is used, the gate is opened as soon as a signal at > -20 dBm is detected within the IF path bandwidth (10 MHz).

Example: "SWE:EGAT:SOUR IFP" Switches the gate source to IF power.

Characteristics: *RST value: IFPower
SCPI: device-specific

Mode: A

SOURce Subsystem

The SOURce subsystem controls the output signals of the analyzer if the options tracking generator (FSP-B9) or External Generator Control (FSP-B10) are installed. The measurement window is selected by SOURce1 (screen A) and SOURce2 (screen B).

Internal Tracking Generator

COMMAND	PARAMETERS	UNIT	COMMENT
SOURce<1|2>			Tracking generator option
:AM			
:STATe	<Boolean>		
:DM			
:STATe	<Boolean>		
:FM			
:STATe	<Boolean>		
:DEViation	<numeric_value>	HZ	
:FREQuency			
:OFFSet	<numeric_value>	HZ	
:POWer			
[:LEVel]			
[:IMMediate]			
[:AMPLitude]	<numeric_value>	DBM	
:OFFSet	<numeric_value>	DB	

SOURce<1|2>:AM:STATe ON | OFF

This command switches on or off the external amplitude modulation of the tracking generator in the selected measurement window.

External I/Q modulation is switched off, if active. This command is only valid in conjunction with the tracking generator option FSP-B9.

Example: `"SOUR:AM:STAT ON "` Switches on the external amplitude modulation of the tracking generator for screen A.

Characteristics: *RST value: OFF
SCPI: conforming

Modes: all

SOURce<1|2>:DM:STATe ON | OFF

This command switches on or off the external I/Q modulation of the tracking generator in the selected measurement window.

External AM and external FM are switched off, if active. This command is only valid in conjunction with the tracking generator option FSP-B9.

Example: `"SOUR2:DM:STAT ON "` Switches on the external I/Q modulation of the tracking generator for screen B.

Characteristics: *RST- value: OFF
SCPI: conforming

Modes: all

SOURce<1|2>:FM:STATe ON | OFF

This command switches on or off the external frequency modulation of the tracking generator in the selected measurement window.

External I/Q modulation is switched off, if active. This command is only valid in conjunction with the tracking generator option FSP-B9.

Example: `"SOUR:FM:STAT ON "` Switches on the external frequency modulation of the tracking generator for screen A.

Characteristics: *RST value: OFF
SCPI: conforming

Modes: all

SOURce<1|2>:FM:DEViation 100Hz...10MHz

This command defines the maximum frequency deviation at 1 V input voltage at the FM input of the tracking generator.

The possible value range is 100 Hz to 10 MHz in steps of one decade.

This command is only available in connection with the Tracking Generator Option FSP-B9.

Example: `"SOUR:FM:DEV 1MHz "` sets the maximum frequency deviation of the tracking generator for screen A to 1 MHz.

Characteristics: *RST value: 10 MHz
SCPI: conforming

Operating mode: all

SOURce<1|2>:FREQuency:OFFSet -150MHz to 150MHz

This command defines a frequency offset of the tracking generator for the indicated measurement window. Frequency-converting DUTs can be measured with this setting.

The possible value range is -150 MHz to 150 MHz. It should be noted that the terms (start frequency - tracking frequency offset) and (stop frequency - tracking frequency offset) are both > 1 kHz or both < -1 kHz.

External I/Q modulation is switched off, if active. This command is only valid in conjunction with the tracking generator option FSP-B9.

Example: `"SOUR:FREQ:OFFS 10MHz"` Switches on the frequency offset of the tracking generator for screen A to 10 MHz.

Characteristics: *RST value: 0 Hz
SCPI: conforming

Modes: all

SOURce<1|2>:POWer[:LEVel][:IMMediate][:AMPLitude] <numeric_value>

This command defines the output level of the tracking generator in the current measurement window.

This command is only valid in conjunction with the tracking generator option FSP-B9.

Parameter: <numeric value>::= -30dBm ... 0dBm. In the external tracking generator mode the limits depend on the type of the generator used.

Example: `"SOUR:POW -20dBm"` Sets the tracking generator level in screen A to -20 dBm.

Characteristics: *RST- value: -20 dBm
SCPI: conforming

Modes: all

SOURce<1|2>:POWer[:LEVel][:IMMediate]:OFFSet -200dB to +200dB

This command defines a level offset for the tracking generator level in screen A. Thus, for example, attenuators or amplifiers at the output of the tracking generator can be taken into account for the setting.

This command is only valid in conjunction with the tracking generator option FSP-B9.

Example: `"SOUR:POW:OFFS -10dB"` Sets the level offset of the tracking generator in screen A to - 20 dBm.

Characteristics: *RST- value: 0dB
SCPI: conforming

Modes: all

SOURce:EXTernal Subsystem

The SOURce:EXTernal subsystem controls the operation of the unit with option Ext. Generator Control (FSP-B10). The commands are only valid for the selected window, with SOURce1 changing the setting in screen A and Source2 the setting in screen B.

The selection of the external generator 1 or 2 is via EXTernal<1|2>.

Note:
The commands of the SOURce:EXTernal subsystem assume that the addressed generator was correctly configured with the commands of subsystem `SYSTem:COMMunicate:GPIB:RDEVice:GENerator`.

If no external generator is selected, if the IECBUS address is not correct or the generator is not ready for operation, an execution error will be generated.

COMMAND	PARAMETER	UNIT	COMMENT
SOURce<1|2>			
:EXTernal<1|2>			Ext. generator option
[:STATe]	<Boolean>		
:FREQuency			
:OFFSet	<numeric_value>	HZ	
[:FACTor]			
:NUMerator	<numeric_value>		
:DENominator	<numeric_value>		
:SWEep			
[:STATe]	<Boolean>		
:POWer			
[:LEVel]	<numeric_value>	DBM	

SOURce<1|2>:EXTernal<1|2>[:STATe] ON | OFF

This command activates or deactivates the external generator selected with `SOUR:EXT<1|2>:FREQ:SWE ON` in the selected window.

The suffix behind EXTernal is irrelevant for this command.

This command is only available in connection with option Ext. Generator Control FSP-B10.

Example: `"SYST:COMM:RDEV:GEN1:TYPE 'SMP02'"`
selects SMP02 as generator 1.

`"SYST:COMM:RDEV:GEN1:LINK TTL"`
selects IECBUS + TTL link as interface.

`"SYST:COMM:RDEV:GEN1:ADDR 28"`
sets the generator address to 28.

`"SOUR:EXT1:FREQ:SWE ON"`
activates the frequency sweep for generator 1.

`"SOUR:EXT ON"` activates the external generator

Characteristics: *RST value: OFF
SCPI: device-specific

Operating mode: all

SOURce<1|2>:EXTernal<1|2>:FREQuency[:FACTor]:DENominator <numeric_value>

This command defines the denominator of the factor with which the analyzer frequency is multiplied in order to obtain the transmit frequency of the selected generator 1 or 2 in the selected window.

Note:
Select the multiplication factor in a way that the frequency range of the generator is not exceeded by the following formula

$$F_{Generator} = F_{Analyzer} * \frac{Numerator}{Denominator} + F_{Offset}$$

if applied to the start and stop frequency of the analyzer.

This command is only valid in combination with option Ext. Generator Control FSP-B10.

Example: `"SOUR:EXT:FREQ:NUM 4"`

`"SOUR:EXT:FREQ:DEN 3"` sets a multiplication factor of 4/3, ie the transmit frequency of the generator is 4/3 times the analyzer frequency.

Characteristics: *RST value: 1
SCPI: device-specific

Operating mode: all

SOURce<1|2>:EXTernal<1|2>:FREQuency[:FACTor]:NUMerator <numeric_value>

This command defines the numerator of the factor with which the analyzer frequency is multiplied to obtain the transmit frequency of the selected generator 1 or 2 in the selected window.

Note:
Select the multiplication factor so that the frequency range of the generator is not exceeded if the following formula

$$F_{Generator} = F_{Analyzer} * \frac{Numerator}{Denominator} + F_{Offset}$$

is applied to the start and stop frequency of the analyzer.

This command is only valid in combination with option Ext. Generator Control FSP-B10.

Example: `"SOUR:EXT:FREQ:NUM 4"`

`"SOUR:EXT:FREQ:DEN 3"` sets a multiplication factor of 4/3, ie the transmit frequency of the generator is 4/3 times the analyzer frequency.

Characteristics: *RST value: 1
SCPI: device-specific

Operating mode: all

SOURce<1|2>:EXTernal<1|2>:FREQuency:OFFSet <numeric_value>

This command defines the frequency offset of the selected generator 1 or 2 with reference to the receive frequency in the selected window.

Note:
Select the frequency offset of the generator so that the frequency range of the generator is not exceeded with the following formula

$$F_{Generator} = F_{Analyzer} * \frac{Numerator}{Denominator} + F_{Offset}$$

applied to the start and stop frequency of the analyzer.

This command is only valid in combination with option Ext. Generator Control FSP-B10.

Example: `"SOUR:EXT:FREQ:OFFS 1GHZ"` sets a frequency offset of the generator transmit frequency compared to the analyzer receive frequency of 1 GHz.

Characteristics: *RST value: 0 Hz
SCPI: device-specific

Operating mode: all

SOURce<1|2>:EXTernal<1|2>:FREQuency:SWEep[:STATe] ON | OFF

This command activates or deactivates the frequency sweep for generator 1 or 2 in the selected window.

This command is only valid in combination with option Ext. Generator Control FSP-B10.

Example: `"SOUR:EXT1:FREQ:SWE ON"` activates the frequency sweep for ext. generator 1.

Characteristics: *RST value: OFF
SCPI: device-specific

Operating mode: all

SOURce<1|2>:EXTernal<1|2>:POWer[:LEVel] <numeric_value>

This command sets the output power of the selected generator 1 or 2 in the selected window.

This command is only valid in combination with option Ext. Generator Control FSP-B10.

Example: `"SOUR:EXT:POW –30dBm"` sets the generator level to –30 dBm

Characteristics: *RST value: -20 dBm
SCPI: device-specific

Operating mode: all

STATus Subsystem

The STATus subsystem contains the commands for the status reporting system (see Section 3.8, Status Reporting System"). *RST does not influence the status registers.

COMMAND	PARAMETERS	UNIT	COMMENT
STATus			
:OPERation			
[:EVENt]?	--	--	
:CONDition?	--	--	
:ENABle	0 to 65535	--	
:PTRansition	0 to 65535	--	
:NTRansition	0 to 65535	--	
:PRESet	--	--	
:QUEStionable			
[:EVENt]?	--	--	
:CONDition?	--	--	
:ENABle	0 to 65535	--	
:PTRansition	0 to 65535	--	
:NTRansition	0 to 65535	--	
:POWer			
[:EVENt]?	--	--	
:CONDition?	--	--	
:ENABle	0 to 65535	--	
:PTRansition	0 to 65535	--	
:NTRansition	0 to 65535	--	
:LIMit<1|2>			
[:EVENt]?	--	--	
:CONDition?	--	--	
:ENABle	0 to 65535	--	
:PTRansition	0 to 65535	--	
:NTRansition	0 to 65535	--	
:LMARgin<1|2>			
[:EVENt]?	--	--	
:CONDition?	--	--	
:ENABle	0 to 65535	--	
:PTRansition	0 to 65535	--	
:NTRansition	0 to 65535	--	
:ACPLimit			
[:EVENt]?	--	--	
:CONDition?	--	--	
:ENABle	0 to 65535	--	
:PTRansition	0 to 65535	--	
:NTRansition	0 to 65535	--	
:FREQuency	--	--	
[:EVENt]?	0 to 65535	--	
:CONDition?	0 to 65535	--	
:ENABle	0 to 65535	--	
:PTRansition	--	--	
:NTRansition	--	--	
:QUEue?	--	--	
[:NEXT]?	--	--	

STATus:OPERation[:EVENt]?

This command queries the contents of the EVENt section of the STATus:OPERation register. The contents of the EVENt section are deleted after readout.

Example: `"STAT:OPER?"`

Characteristics: *RST value: –
SCPI: conforming

Mode: all

STATus:OPERation:CONDition?

This command queries the CONDition section of the STATus:OPERation register. Readout does not delete the contents of the CONDition section. The value returned reflects the current hardware status.

Example: `"STAT:OPER:COND?"`

Characteristics: *RST value: –
SCPI: conforming

Mode: all

STATus:OPERation:ENABle 0 to 65535

This command sets the bits of the ENABle section of the STATus:OPERation register. The ENABle register selectively enables the individual events of the associated EVENt section for the summary bit in the status byte.

Example: `"STAT:OPER:ENAB 65535"`

Characteristics: *RST value: –
SCPI: conforming

Mode: all

STATus:OPERation:PTRansition 0 to 65535

This command sets the edge detectors of all bits of the STATus:OPERation register from 0 to 1 for the transitions of the CONDition bit.

Example: `"STAT:OPER:PTR 65535"`

Characteristics: *RST value: –
SCPI: conforming

Mode: all

STATus:OPERation:NTRansition 0 to 65535

This command sets the edge detectors of all bits of the STATus:OPERation register from 1 to 0 for the transitions of the CONDition bit.

Example: `"STAT:OPER:NTR 65535"`

Characteristics: *RST value: –
SCPI: conforming

Mode: all

STATus:PRESet

This command resets the edge detectors and ENABle parts of all registers to a defined value. All PTRansition parts are set to FFFFh, ie all transitions from 0 to 1 are detected. All NTRansition parts are set to 0, ie a transition from 1 to 0 in a CONDition bit is not detected. The ENABle part of the STATus:OPERation and STATus:QUEStionable registers are set to 0, ie all events in these registers are not passed on.

Example: `"STAT:PRES"`

Characteristics: *RST value: –
SCPI: conforming

Mode: all

STATus:QUEStionable[:EVENt]?

This command queries the contents of the EVENt section of the STATus:QUEStionable register. The contents of the EVENt section are deleted after the readout.

Example: `"STAT:QUES?"`

Characteristics: *RST value: –
SCPI: conforming

Mode: all

STATus:QUEStionable:CONDition?

This command queries the CONDition section of the STATus:QUEStionable register. Readout does not delete the contents of the CONDition section.

Example: `"STAT:QUES:COND?"`

Characteristics: *RST value: –
SCPI: conforming

Mode: all

STATus:QUEStionable:ENABle 0 to 65535

This command sets the bits of the ENABle section of the STATus-QUEStionable register.The ENABle register selectively enables the individual events of the associated EVENt section for the summary bit in the status byte.

Example: `"STAT:QUES:ENAB 65535"`

Characteristics: *RST value: –
SCPI: conforming

Mode: all

STATus:QUEStionable:PTRansition 0 to 65535

This command sets the edge detectors of all bits of the STATus:QUEStionable register from 0 to 1 for the transitions of the CONDition bit.

Example: `"STAT:QUES:PTR 65535"`

Characteristics: *RST value: –
SCPI: conforming

Mode: all

STATus:QUEStionable:NTRansition 0 to 65535

This command sets the edge detectors of all bits of the STATus:OPERation register from 1 to 0 for the transitions of the CONDition bit.

Example: `"STAT:QUES:NTR 65535"`

Characteristics: *RST value: –
SCPI: conforming

Mode: all

STATus:QUEStionable:POWer[:EVENt]?

This command queries the contents of the EVENt section of the STATus:QUEStionable:POWer register. Readout deletes the contents of the EVENt section.

Example: `"STAT:QUES?"`

Characteristics: *RST value: –
SCPI: conforming

Mode: all

STATus:QUEStionable:POWer:CONDition?

This command queries the contents of the CONDition section of the STATus:QUEStionable:POWer register. Readout does not delete the contents of the CONDition section.

Example: `"STAT:QUES:COND?"`

Characteristics: *RST value: –
SCPI: conforming

Mode: all

STATus:QUEStionable:POWer:ENABle 0 to 65535

This command sets the bits of the ENABle section of the STATus:QUEStionable:POWer register. The ENABle register selectively enables the individual events of the associated EVENt section for the summary bit.

Example: `"STAT:QUES:ENAB 65535"`

Characteristics: *RST value: –
SCPI: conforming

Mode: all

STATus:QUEStionable:POWer:PTRansition 0 to 65535

This command sets the edge detectors of all bits of the STATus:QUEStionable:POWer register from 0 to 1 for the transitions of the CONDition bit.

Example: `"STAT:QUES:PTR 65535"`

Characteristics: *RST value: –
SCPI: conforming

Mode: all

STATus:QUEStionable:POWer:NTRansition 0 to 65535

This command sets the edge detectors of all bits of the STATus:QUEStionable:POWer register from 1 to 0 for the transitions of the CONDition bit.

Example: `"STAT:QUES:NTR 65535"`

Characteristics: *RST value: –
SCPI: conforming

Mode: all

STATus:QUEStionable:LIMit<1|2> [:EVENt]?

This command queries the contents of the EVENt section of the STATus:QUEStionable:LIMit register. Readout deletes the contents of the EVENt section.

Example: `"STAT:QUES?"`

Characteristics: *RST value: –
SCPI: device-specific

Mode: all

STATus:QUEStionable:LIMit<1|2>:CONDition?

This command queries the contents of the CONDition section of the STATus:QUEStionable:LIMit register.

Readout does not delete the contents of the CONDition section.

Example: `"STAT:QUES:LIM:COND?"`

Characteristics: *RST value: –
SCPI: device-specific

Mode: all

STATus:QUEStionable:LIMit<1|2>:ENABle 0 to 65535

This command sets the bits of the ENABle section of the STATus:QUEStionable register.The ENABle register selectively enables the individual events of the associated EVENt section for the summary bit.

Example: `"STAT:QUES:ENAB 65535"`

Characteristics: *RST value: –
SCPI: device-specific

Mode: all

STATus:QUEStionable:LIMit<1|2>:PTRansition 0 to 65535

This command sets the edge detectors of all bits of the STATus:QUEStionable:LIMit register from 0 to 1 for the transitions of the CONDition bit.

Example: "STAT:QUES:PTR 65535"

Characteristics: *RST value: –
SCPI: device-specific

Mode: all

STATus:QUEStionable:LIMit<1|2>:NTRansition 0 to 65535

This command sets the edge detectors of all bits of the STATus:QUEStionable:LIMit register from 1 to 0 for the transitions of the CONDition bit.

Example: "STAT:QUES:NTR 65535"

Characteristics: *RST value: –
SCPI: device-specific

Mode: all

STATus:QUEStionable:LMARgin<1|2> [:EVENt]?

This command queries the contents of the EVENt section of the STATus:QUEStionable:LMARgin register. Readout deletes the contents of the EVENt section.

Example: "STAT:QUES:LMAR?"

Characteristics: *RST value: –
SCPI: device-specific

Mode: all

STATus:QUEStionable:LMARgin<1|2>:CONDition?

This command queries the contents of the CONDition section of the STATus:QUEStionable:LMARgin register. Readout does not delete the contents of the CONDition section.

Example: "STAT:QUES:LMAR:COND?"

Characteristics: *RST value: –
SCPI: device-specific

Mode: all

STATus:QUEStionable:LMARgin<1|2>:ENABle 0 to 65535

This command sets the bits of the ENABle section of the STATus:QUEStionable:LMARgin register. The ENABle register selectively enables the individual events of the associated EVENt section for the summary bit.

Example: "STAT:QUES:LMAR:ENAB 65535"

Characteristics: *RST value: –
SCPI: device-specific

Mode: all

STATus:QUEStionable:LMARgin<1|2>:PTRansition 0 to 65535

This command sets the edge detectors of all bits of the STATus:QUEStionable:LMARgin register from 0 to 1 for the transitions of the CONDition bit.

Example: "STAT:QUES:LMAR:PTR 65535"

Characteristics: *RST value: –
SCPI: device-specific

Mode: all

STATus:QUEStionable:LMARgin<1|2>:NTRansition 0 to 65535

This command sets the edge detectors of all bits of the STATus:QUEStionable:LMARgin register from 1 to 0 for the transitions of the CONDition bit.

Example: "STAT:QUES:LMAR:NTR 65535"

Characteristics: *RST value: –
SCPI: device-specific

Mode: all

STATus:QUEStionable:ACPLimit[:EVENt]?

This command queries the contents of the EVENt section of the STATus:QUEStionable:ACPLimit register. Readout deletes the contents of the EVENt section.

Example: "STAT:QUES:ACPL?"

Characteristics: *RST value: –
SCPI: device-specific

Mode: all

STATus:QUEStionable:ACPLimit:CONDition?

This command queries the contents of the CONDition section of the STATus:QUEStionable:ACPLimit register. Readout does not delete the contents of the CONDition section.

Example: "STAT:QUES:ACPL:COND?"

Characteristics: *RST value: –
SCPI: device-specific

Mode: all

STATus:QUEStionable:ACPLimit:ENABle 0 to 65535

This command sets the bits of the ENABle section of the STATus:QUEStionable:ACPLimit register. The ENABle register selectively enables the individual events of the associated EVENt section for the summary bit.

Example: "STAT:QUES:ACPL:ENAB 65535"

Characteristics: *RST value: –
SCPI: device-specific

Mode: all

STATus:QUEStionable:ACPLimit:PTRansition 0 to 65535

This command sets the edge detectors of all bits of the STATus:QUEStionable: ACPLimit register from 0 to 1 for the transitions of the CONDition bit.

Example: `"STAT:QUES:ACPL:PTR 65535"`

Characteristics: *RST value: –
SCPI: device-specific

Mode: all

STATus:QUEStionable:ACPLimit:NTRansition 0 to 65535

This command sets the edge detectors of all bits of the STATus:QUEStionable: ACPLimit register from 1 to 0 for the transitions of the CONDition bit.

Example: `"STAT:QUES:ACPL:NTR 65535"`

Characteristics: *RST value: –
SCPI: device-specific

Mode: all

STATus:QUEStionable:FREQuency[:EVENt]?

This command queries the contents of the EVENt section of the STATus:QUEStionable: FREQuency register.

Example: `"STAT:QUES:FREQ?"`

Characteristics: *RST value: –
SCPI: device-specific

Mode: all

Readout deletes the contents of the EVENt section.

STATus:QUEStionable:FREQuency:CONDition?

This command queries the contents of the CONDition section of the STATus:QUEStionable:FREQuency register. Readout does not delete the contents of the CONDition section.

Example: `"STAT:QUES:FREQ:COND?"`

Characteristics: *RST value: –
SCPI: device-specific

Mode: all

STATus:QUEStionable:FREQuency:ENABle 0 to 65535

This command sets the bits of the ENABle section of the STATus:QUEStionable:FREQuency register. The ENABle register selectively enables the individual events of the associated EVENt section for the summary bit.

Example: `"STAT:QUES:FREQ:ENAB 65535"`

Characteristics: *RST value: –
SCPI: device-specific

Mode: all

STATus:QUEStionable:FREQuency:PTRansition 0 to 65535

This command sets the edge detectors of all bits of the STATus:QUEStionable:FREQuency register from 0 to 1 for the transitions of the CONDition bit.

Example: `"STAT:QUES:FREQ:PTR 65535"`

Characteristics: *RST value: –
SCPI: device-specific

Mode: all

STATus:QUEStionable:FREQuency:NTRansition 0 to 65535

This command sets the edge detectors of all bits of the STATus:QUEStionable:FREQuency register from 1 to 0 for the transitions of the CONDition bit.

Example: `"STAT:QUES:FREQ:NTR 65535"`

Characteristics: *RST value: –
SCPI: device-specific

Mode: all

STATus:QUEue[:NEXT]?

This command returns the earliest entry to the error queue and deletes it.

Positive error numbers indicate device-specific errors, negative error numbers are error messages defined by SCPI (cf. Chapter 9). If the error queue is empty, the error number 0, "no error", is returned. This command is identical with the command `SYSTem:ERRor`.

Example: `"STAT:QUE?"`

Characteristics: *RST value: –
SCPI: conforming

Mode: all

SYSTem Subsystem

This subsystem contains a series of commands for general functions.

COMMAND	PARAMETERS	UNIT	COMMENT
SYSTem			
:COMMunicate			
:GPIB			
[:SELF]			
:ADDRess	0...30	--	
:RTERminator	LFEoi | EOI		
:RDEVice			
:GENerator<1|2>			Option ext. Generator
:ADDRess	0...30		Option ext. Generator
:RDEVice			
:GENerator<1|2>			
:LINK	GPIB | TTL		tracking generator option
:TYPE	<name>		tracking generator option
:SERial			
:CONTrol			
:DTR	IBFull | OFF		
:RTS	IBFull | OFF		
[:RECeive]			
:BAUD	<numeric_value>	--	
:BITS	7 | 8	--	
:PARity			
[:TYPE]	EVEN | ODD | NONE		
:SBITs	1 | 2	--	
:PACE	XON | NONE		
:PRINter			
:ENUMerate			
[:NEXT?]			query only
:FIRSt?			query only
:SELect<1|2>	<printer_name>		
:DATE	<num>, <num>, <num>	--	
:DISPlay			
:FPANel	<Boolean>		
:UPDate	<Boolean>		
:ERRor?	--	--	query only
:PASSword			
[:CENable]	<string>		no querye
:PRESet	--	--	no query
:SET	<block>		
:SPEaker			audio demodulator option
:VOLume	<numeric_value>	--	
:TIME	0...23, 0...59, 0...59	--	
:VERSion?	--	--	query only

SYSTem:COMMunicate:GPIB[:SELF]:ADDRess 0 to 30

This command changes the IEC/IEEE-bus address of the unit.

Example: `"SYST:COMM:GPIB:ADDR 18"`

Characteristics: *RST value: - (no influence on this parameter)
SCPI: conforming

Mode: all

SYSTem:COMMunicate:GPIB[:SELF]:RTERminator LFEOI | EOI

This command changes the GPIB receive terminator.

According to the standard the terminator in ASCII is <LF> and/or <EOI>. For binary data transfers (eg trace data) from the control computer to the instrument, the binary code (0AH) used for <LF> might be included in the binary data block, and therefore should not be interpreted as a terminator in this particular case. This can be avoided by changing the receive terminator to EOI.

Output of binary data from the instrument to the control computer does not require such a terminator change.

Example: `"SYST:COMM:GPIB:RTER EOI"`

Characteristics: *RST value: LFEOI
SCPI: device-specific

Mode: all

SYSTem:COMMunicate:GPIB:RDEVice:GENerator<1|2>:ADDRess 0 to 30

This command changes the IEC/IEEE-bus address of the device selected as external generator 1 or 2.

Note:
If two generators are connected at the same time to IECBUS 2 their addresses must be different.

The command is only available with option Ext. Generator Control FSP-B10.

Example: `"SYST:COMM:GPIB:RDEV:GEN1:ADDR 19"` Changes the IECBUS address of generator 1 to 19

Characteristics: *RST value: 28
SCPI: device-specific

Operating mode: all

SYSTem:COMMunicate:RDEVice:GENerator<1|2>:LINK GPIB | TTL

This command selects the interface type of the external generator 1 or 2.
The following types are available

- IECBUS alone (= GPIB, for all the generators of other manufacturers and some Rohde & Schwarz units)

or

- IECBUS and TTL interface for synchronization (= TTL, for most of the Rohde & Schwarz generators, see table in command SYSTem:COMMunicate:RDEVice:GENerator:TYPE).

The difference between the two operating modes is the execution speed. While, during IECBUS operation, each settable frequency is transmitted separately to the generator, a whole frequency list can be programmed in one go if the TTL interface is also used. Frequency switching can then be performed per TTL handshake which results in considerable speed advantages.

Note:
Only one of the two generators can be operated via the TTL interface at a time. The other generator must be configured for IECBUS (GPIB).

The command is only available with option Ext. Generator Control FSP-B10.

Example: `"SYST:COMM:RDEV:GEN:LINK TTL"` selects IECBUS + TTL interface for generator operation

Characteristics: *RST value: GPIB
SCPI: device-specific

Operating mode: all

SYSTem:COMMunicate:RDEVice:GENerator<1|2>:TYPE <name>

This command selects the type of external generator 1 or 2. The following table shows the available generator types including the associated interface:

Generator	Interface Type	Generator Min Freq	Generator Max Freq	Generator Min Power dBm	Generator Max Power dBm
SME02	TTL	5 kHz	1.5 GHz	-144	+16
SME03	TTL	5 kHz	3.0 GHz	-144	+16
SME06	TTL	5 kHz	6.0 GHz	-144	+16
SMG	GPIB	100 kHz	1.0 GHz	-137	+13
SMGL	GPIB	9 kHz	1.0 GHz	-118	+30
SMGU	GPIB	100 kHz	2.16 GHz	-140	+13
SMH	GPIB	100 kHz	2.0 GHz	-140	+13
SMHU	GPIB	100 kHz	4.32 GHz	-140	+13
SMIQ02B	TTL	300 kHz	2.2 GHz	-144	+13
SMIQ02E	GPIB	300 kHz	2.2 GHz	-144	+13
SMIQ03B	TTL	300 kHz	3.3 GHz	-144	+13
SMIQ03E	GPIB	300 kHz	3.3 GHz	-144	+13
SMIQ04B	TTL	300 kHz	4.4 GHz	-144	+10
SMIQ06B	TTL	300 kHz	6.4 GHz	-144	+10
SML01	GPIB	9 kHz	1.1 GHz	-140	+13
SMR20	GPIB	1 GHz	20 GHz	-130 [2]	+11 [2]
SMR20B11 [1]	GPIB	10 MHz	20 GHz	-130 [2]	+13 [2]
SMR27	GPIB	1 GHz	27 GHz	-130 [2]	+11 [2]
SMR27B11 [1]	GPIB	10 MHz	27 GHz	-130 [2]	+12 [2]
SMR30	GPIB	1 GHz	30 GHz	-130 [2]	+11 [2]
SMR30B11 [1]	GPIB	10 MHz	30 GHz	-130 [2]	+12 [2]
SMR40	GPIB	1 GHz	40 GHz	-130 [2]	+9 [2]
SMR40B11 [1]	GPIB	10 MHz	40 GHz	-130 [2]	+12 [2]
SMP02	TTL	10 MHz	20 GHz	-130 [3]	+17 [3]
SMP03	TTL	10 MHz	27 GHz	-130 [3]	+13 [3]
SMP04	TTL	10 MHz	40 GHz	-130 [3]	+12 [3]
SMP22	TTL	10 MHz	20 GHz	-130 [3]	+20 [3]
SMT02	GPIB	5.0 kHz	1.5 GHz	-144	+13
SMT03	GPIB	5.0 kHz	3.0 GHz	-144	+13
SMT06	GPIB	5.0 kHz	6.0 GHz	-144	+13

[1] Requires mounting of option SMR-B11.

[2] Maximum/Minimum Power depends on the presence of option SMR-B15/-B17 and of the selected frequency range. For details please consult the SMR datasheet.

[3] Maximum/Minimum Power depends on the presence of option SMP-B15/-B17 and of the selected frequency range. For details please consult the SMP datasheet.

Generator	Interface Type	Generator Min Freq	Generator Max Freq	Generator Min Power dBm	Generator Max Power dBm
SMX	GPIB	100 kHz	1.0 GHz	-137	+13
SMY01	GPIB	9 kHz	1.04 GHz	-140	+13
SMY02	GPIB	9 kHz	2.08 GHz	-140	+13
HP8340A	GPIB	10 MHz	26.5 GHz	-110	10
HP ESG-A Series 1000A, 2000A, 3000A, 4000A	GPIB	250 kHz	4 GHz	-136	20
HP ESG-D SERIES E4432B	GPIB	250 kHz	3 GHz	-136	+10

Notes:
Generators with TTL interface can also be operated via IECBUS (= GPIB) alone.

With NONE selected, the corresponding generator 1 or 2 is deactivated.

The command is only available with option Ext. Generator Control FSP-B10.

Example: `"SYST:COMM:RDEV:GEN2:TYPE 'SME02'"` selects SME02 as generator 2.

Characteristics: *RST value: NONE
SCPI: device-specific

SYSTem:COMMunicate:SERial:CONTrol:DTR IBFull | OFF
SYSTem:COMMunicate:SERial:CONTrol:RTS IBFull | OFF

These commands switch the hardware handshake procedure for the serial interface off (OFF) or on (IBFull).

The two commands are equivalent.

Examples:
```
"SYST:COMM:SER:CONT:DTR OFF"
"SYST:COMM:SER:CONT:RTS IBF"
```

Characteristics: *RST value: OFF
SCPI: conforming

Mode: all

SYSTem:COMMunicate:SERial[:RECeive]:BAUD 110 | 300 | 600 | 1200 | 2400 | 9600 | 19200

This command sets the transmission speed for the serial interface (COM).

Example: `"SYST:COMM:SER:BAUD 2400"`

Characteristics: *RST value: 9600
SCPI: conforming

Mode: all

SYSTem:COMMunicate:SERial[:RECeive]:BITS 7 | 8

This command defines the number of data bits per data word for the serial interface (COM).

Example: `"SYST:COMM:SER:BITS 7"`

Characteristics: *RST value: 8
SCPI: conforming

Mode: all

SYSTem:COMMunicate:SERial[:RECeive]:PARity[:TYPE] EVEN | ODD | NONE

This command defines the parity check for the serial interface (COM).

Possible values are:
EVEN even parity
ODD odd parity
NONE no parity check.

Example: `"SYST:COMM:SER:PAR EVEN"`

Characteristics: *RST value: NONE
SCPI: conforming

Mode: all

SYSTem:COMMunicate:SERial[:RECeive]:SBITs 1|2

This command defines the number of stop bits per data word for the serial interface (COM).

Example: `"SYST:COMM:SER:SBITs 2"`

Characteristics: *RST value: 1
SCPI: conforming

Mode: all

SYSTem:COMMunicate:SERial[:RECeive]:PACE XON | NONE

This command switches on or off the software handshake for the serial interface.

Example: `"SYST:COMM:SER:PACE XON"`

Characteristics: *RST value: NONE
SCPI: conforming

Mode: all

SYSTem:COMMunicate:PRINter:ENUMerate:FIRSt?

This command queries the name of the first printer (in the list of printers) available under Windows NT.

The names of other installed printers can be queried with command `SYSTem:COMMunicate:PRINter:ENUMerate:NEXT?`.

If no printer is configured an empty string is output.

Example: `"SYST:COMM:PRIN:ENUM:FIRS?"`

Characteristics: *RST value: NONE
SCPI: device-specific

Mode: all

SYSTem:COMMunicate:PRINter:ENUMerate:NEXT?

This command queries the name of the next printer installed under Windows NT.

The command
`SYSTem:COMMunicate:PRINter:ENUMerate:FIRSt?`
should be sent previously to return to the beginning of the printer list and query the name of the first printer.

The names of other printers can then be queried with NEXT?. After all available printer names have been output, an empty string enclosed by quotation marks (") is output for the next query. Further queries are answered by a Query Error.

Example: `"SYST:COMM:PRIN:ENUM:NEXT?"`

Characteristics: *RST value: NONE
SCPI: device-specific

Mode: all

SYSTem:COMMunicate:PRINter:SELect <1|2> <printer_name>

This command selects one of the printers configured under Windows NT including the associated output destination.

The specified printer name must be a string as returned by the commands
`SYSTem:COMMunicate :PRINter:ENUMerate:FIRSt?` or
`SYSTem:COMMunicate :PRINter:ENUMerate:NEXT?`

Note: *Command `HCOPy:DESTination` is used to select an output medium other than the default one.*

Example: `"SYST:COMM:PRIN:SEL 'LASER on LPT1'"`

Characteristics: *RST value: NONE
SCPI: device-specific

Mode: all

SYSTem:DATE 1980 to 2099, 1 to 12, 1 to 31

This command is used to enter the date for the internal calendar.

The sequence of entry is year, month, day.

Example: `" SYST:DATE 2000,6,1"`

Characteristics: *RST value: –
SCPI: conforming

Mode: all

SYSTem:DISPlay:FPANel ON | OFF

This command activates or deactivates the display of the front panel keys on the screen.

With the display activated, the FSP can be operated on the screen using the mouse by pressing the corresponding buttons. This may be useful if the instrument is operated in a detached station by means of a remote program such as PCANYWHERE.

Notes: *With the display of the front panel keys activated, the screen resolution of the unit is set to 1024x768. Thus, only a section of the whole screen is visible on the internal LCD display, which will be moved by mouse moves.*

For a full display of the user interface, an external monitor has to be connected to the rear panel.

When the front panel display is deactivated, the original screen resolution is restored.

Example: `"SYST:DISP:FPAN ON"`

Characteristics: *RST value: OFF
SCPI: device-specific

Operating mode: all

SYSTem:DISPlay:UPDate ON | OFF

This command switches on or off the update of all display elements during remote control.

Note: *The best performance is obtained when the display output is switched off during remote control.*

Example: `" SYST:DISP:UPD ON`

Characteristics: *RST value: OFF
SCPI: device specific

Mode: all

SYSTem:ERRor?

This command queries the earliest entry in the error queue, and deletes it after the readout.

Positive error numbers indicate device-specific errors, negative error numbers are error messages defined by SCPI (cf. Chapter 9). If the error queue is empty, the error number 0, "no error", is returned. This command is identical with the command `STATus:QUEue:NEXT?`. This command is a query and is therefore not assigned an *RST value.

Example: `"SYST:ERR?"`

Characteristics: *RST value: –
SCPI: conforming

Mode: all

SYSTem:ERRor:LIST?

This command reads all system messages and returns a list of comma separated strings. Each string corresponds to an entry in the table SYSTEM MESSAGES.

If the error list is empty, an empty string "" will be returned.

This command is a query and is therefore not assigned an *RST value.

Example: `"SYST:ERR:LIST?"`

Characteristics: *RST value: –
SCPI: device specific

Mode: all

SYSTem:ERRor:CLEar:ALL

This command deletes all entries in the table SYSTEM MESSAGES.

This command is an event and is therefore not assigned a query or an *RST value.

Example: `"SYST:ERR:CLE:ALL?"`

Characteristics: *RST value: –
SCPI: device specific

Mode: all

SYSTem:PASSword[:CENable] <string>

This command enables access to the service functions by means of the password.

Example: `"SYST:PASS 'XXXX'"`

Characteristics: *RST value: –
SCPI: conforming

Mode: all

This command is an event and is therefore not assigned an *RST value and has no query.

SYSTem:PRESet

This command initiates an instrument reset.

The effect of this command corresponds to that of the *PRESET* key with manual control or to the *RST command.

Example: `"SYST:PRES"`

Characteristics: *RST value: –
SCPI: conforming

Mode: all

SYSTem:SET <block>

The query SYSTem:SET? causes the data of the current instrument setting to be transmitted to the control computer in binary format (SAVE function). The data can be read back into the instrument (RECALL function) by means of command SYSTem:SET <block>. Whilst the data records are stored on the instrument harddisk with SAVE/RECALL (MMEMory:STORe bzw. MMEMory:LOAD), it is possible to store the data in an external computer by means of SYSTem:SET.

The receive terminator has to be set to EOI to ensure reliable transfer of data (setting SYST:COMM:GPIB:RTER EOI).

Example: "SYST:SET "

Characteristics: *RST value: –
SCPI: conforming

Mode: all

SYSTem:SPEaker:VOLume 0 to 1

This command sets the volume of the built-in loudspeaker for demodulated signals. Minimum volume is set by 0 and maximum volume by 1.

The value 0 is the lowest volume, the value 1 the highest volume.

Example: "SYST:SPE:VOL 0.5"

Characteristics: *RST value: 0
SCPI: device-specific

Mode: all

The command is only available with the audio demodulator option (FSP-B3).

SYSTem:TIME 0 to 23, 0 to 59, 0 to 59

This command sets the internal clock. The sequence of entry is hour, minute, second.

Example: "SYST:TIME 12,30,30"

Characteristics: *RST value: –
SCPI: conforming

Mode: all

SYSTem:VERSion?

This command queries the number of the SCPI version, which is relevant for the instrument.

Example: "SYST:VERS?"

Characteristics: *RST value: –
SCPI: conforming

Mode: all

This command is a query and is therefore not assigned an *RST value.

TRACe Subsystem

The TRACe subsystem controls access to the instrument's internal trace memory.

COMMAND	PARAMETERS	UNIT	COMMENT
TRACe<1|2>			
[:DATA]	TRACE1|TRACE2|TRACE3,<block>|<numeric_value>...	-	
:COPY	TRACE1|TRACE2|TRACE3, TRACE1|TRACE2|TRACE3	-	
:IQ			
:DATA?			nur Abfrage
:MEMory?	<numeric_value>, <numeric_value>	-- , --	nur Abfrage
:SET	NORMal, <numeric_value>, <numeric_value>, IMMediate | EXTernal, POSitive, <numeric_value>, <numeric_value>	--, HZ, HZ, --, --, --, --	
:SRATe	<numeric_value>	HZ	
[:STATe]	<Boolean>		

General Trace Commands

TRACe[:DATA] TRACE1| TRACE2| TRACE3, <block> | <numeric_value>

This command transfers trace data from the control computer to the instrument, the query reads trace data out of the instrument. The associated measurement window is selected with the numeric suffix of TRACe<1|2>.

Example: `"TRAC TRACE1,"+A$  (A$: data list in the current format)`
`"TRAC? TRACE1"`

Characteristics: *RST value: -
SCPI: conforming

Mode: all

The trace data are transferred in the current format (corresponding to the command FORMat ASCii|REAL). The device-internal trace memory is addressed using the trace names 'TRACE1' to 'TRACE3'.
The transfer of trace data from the control computer to the instrument takes place by indicating the trace name and then the data to be transferred. In ASCII format, these data are values separated by commas. If the transfer takes place using the format real (REAL,32), the data are transferred in block format.

The parameter of the query is the trace name TRACE1 to TRACE3, it indicates which trace memory will be read out.

Saving and recalling trace data together with the device settings to/from the device-internal hard disk or to/from a floppy is controlled via the commands "`MMEMory:STORe:STATe`" and "`MMEMory:LOAD:STATe`" respectively. Trace data are selected with "`MMEMory:SELect[:ITEM]:ALL`" or ""`MMEMory:SELect[:ITEM]:TRACe`". Trace data in ASCII format (ASCCII FILE EXPORT) are exported with the command "`MMEM:STORe:TRACe`".

The transfer format for the trace data depends on the instrument setting:

Analyzer mode (span > 0 and zero span):

501 results are output in the unit selected for display.

Note: *With AUTO PEAK detector, only positive peak values can be read out. Trace data can be written into the instrument with logarithmic display only in dBm, with linear display only in volts.*

FORMAT REAL,32 is to be used as format for binary transmission.

TRACe:COPY TRACe:COPY TRACE1| TRACE2| TRACE3| TRACE4 , TRACE1| TRACE2| TRACE3| TRACE4

This command copies data from one trace to another. The second operand describes the source, the first operand the destination of the data to be copied.The associated measurement window is selected with the numeric suffix of TRACe<1|2>.

Example: `"TRAC:COPY TRACE1,TRACE2"`

Characteristics: *RST value:
SCPI: conforming

Mode: all

This command is an event and therefore has no query and no *RST value assigned.

TRACe:IQ-Subsystem

The commands of this subsystem are used for collection and output of measured IQ data. A special memory is therefore available in the FSP with 128k words for the I and Q data. The measurement is always performed in the time domain (span = 0 Hz) at the selected center frequency. The number of samples to be collected can be set. The sample rate can be set in the range from 15.625 kHz to 32 MHz. Prior to being stored in memory or output via GPIB, the measurement data are corrected in terms of frequency response.

Depending on the sample rate, the following maximum bandwidths can be obtained during the measurement.

Sample rate	Max. bandwidth	Notes
32 MHz	9.6 MHz	
16 MHz	7.72 MHz	
8 MHz	4.8 MHz	Signals outside the given bandwidth are folded back into the useful band due to the anti-aliasing filter.
4 MHz	2.8 MHz	
2 MHz	1.6 MHz	max. Bandwidth = 0.8 * Sample Rate for Sample Rate ≤ 2 MHz
1 MHz	800 kHz	
500 kHz	400 kHz	
250 kHz	200 kHz	
125 kHz	100 kHz	
62.5 kHz	50 kHz	
31.25 kHz	25 kHz	
15.625 kHz	12.5 kHz	

Due to the sampling concept (21.4 MHz IF, 32 MHz Sampling rate), the image frequency is suppressed only by the 10 MHz analog IF filter. When applying an input signal at the edge of the 10 MHz band (+5 MHz from center), the image frequency appears 800 kHz above the input signal.
The image frequency in MHz is calculated as follows:

$$f_{image} = 2 \cdot (f_{center} + 5.4\,MHz) - f_{signal}$$

where
f_{image} = image frequency in MHz
f_{center} = center frequency of the FSP in MHz
f_{signal} = frequency of the signal to be measured in MHz

For correct operation the RF input signal shall be limited in bandwidth. Signals more than 5.4 MHz above the FSP center frequency will be mirrored into the ± 5 MHz pass band.

For additional bandwidth limitation of the measurement data the analog filters (RBW ≥ 300 kHz) are available.

The trigger mode can be selected between FREE RUN and EXTERNAL. With external trigger the number of samples to be measured before the trigger point can be selected (this value has to be set to 0 for free run trigger mode).

The measurement results will be output as a list of values, with the Q-values following immediately after the list of I-values in the output buffer. The FORMAT command can be used to select between binary output (32 Bit IEEE 754 floating point values) and output in ASCII format.

The commands of this subsystem can be used in two ways:

1. Measurement and result query with one command:
   This method causes the least delay between measurement and output of the result data, but iit requires the control computer to wait actively for the response data.
2. Setting up the instrument, start of the measurement via "INIT" and query of the result list at the end of the measurement:
   With this method the control computer can be used for other activities during the measurement. In this case the additional time needed for synchronisation via service request must be taken into account.

TRACe<1|2>:IQ:DATA?

This command starts a measurement with the settings defined via TRACe:IQ:SET and returns the list of measurement results immediately after they are corrected in terms of frequency response. The number of measurement results depends on the settings defined with TRACe:IQ:SET, the output format depends on the settings of the FORMat – subsystem.

Note:

The command requires that all response data are read out completely before the instrument accepts further commands.

Parameter: none

Example:

```
'Enable acquisition of I/Q data
"TRAC:IQ:STAT ON"
'Measurement configuration:
'Filtertype:  Normal
'RBW:         10 MHz
'Sample Rate: 32 MHz
'Trigger Source:     External
'Trigger Slope:      Positive
'Pretrigger Samples: 0
'# of Samples:4096

"TRAC:IQ:SET  NORM,10MHz,32MHz,EXT,POS,0,4096"
'Select format of response data
"FORMat       REAL,32"
'Start measurement and read results:
"TRAC:IQ:DATA?"
```

Return values:

The result values are scaled linear in unit *Volt* and correspond to the voltage at the RF input of the instrument.

ASCII-Format (FORMat ASCII):

In this case the command returns a comma separated list of the measured voltage values in floating point format (Comma Separated Values = CSV). The number of values returned is 2 * number of samples, the first half being the I-values, the second half the Q-values.

Binary-Format (FORMat REAL,32):

In this case the command returns binary data (Definite Length Block Data according to IEEE 488.2), with the lists of I- and Q-data being arranged one after the other in 32 Bit IEEE 754 floating point data. The scheme of the response string is as follows:

#41024<I-value1><I-value2>...<I-value128><Q-value1><Q-value2>...<Q-value128>

with

#4	digits of the subsequent number of data bytes (4 in the example)
1024	number of subsequent data bytes (*# of DataBytes*, 1024 in the example)
<I-value x>	4-Byte-Floating Point I-value
<Q-value y>	4-Byte-Floating Point Q-value

The number of I- and Q-data can be calculated as follows:

$$\#\ of\ \ I-Data \quad = \quad \#\ of\ \ Q-Data \quad = \quad \frac{\#\ of\ \ DataBytes}{8}$$

The offset of Q-data in the output buffer can be calculated as follows:

$$Q-Data-Offset \quad = \quad \frac{(\#\ of\ \ DataBytes)}{2} + LengthIndicatorDigits$$

with LengthIndicatorDigits being the number of digits of the length indicator including the '#'. In the example above (#41024...) this results in a value of 6 for LengthIndicatorDigits and the offset for the Q-data will result in 512 + 6 = 518.

Characteristics: *RST-Value: --

Note:
*Using the command with the *RST-values for command TRAC:IQ:SET the following minimum buffer sizes for the response data are recommended:*
ASCII format:10 kBytes
Binary format:2 kBytes

SCPI: device specific

Mode: A-T

TRACe<1|2>:IQ:DATA:MEMory? <offset samples>,<# of samples>

This command permits the readout of previously acquired (and frequency response corrected) I/Q data from the memory, with indication of the offset related to the start of measurement and with indication of the number of measurement values. Therefore a previously acquired data set can be read out in smaller portions. The maximum amount of available data depends on the settings of command `TRACe:IQ:SET`, the output format on the settings in the `FORMat` – subsystem.

Note:
The command requires that all response data are read out completely before the instrument accepts further commands.

If there are not I/Q data available in memory because the corresponding measurement had not been started, the command will cause a Query Error.

Parameter:

<offset samples> Offset of the values to be read related to the start of the acquired data.

Value range: 0 to <# of samples> - 1,

with <# of samples> being the value indicated with command TRACe:IQ:SET.

<# of samples> Number of measurement values to be read.

Value range: 1 to <# of samples> - <offset samples>

with <# of samples> being the value indicated with command TRACe:IQ:SET.

Examples:

```
'Enable acquisition of I/Q data
"TRAC:IQ:STAT ON"
'Configure measurement:
'Filtertyp:   Normal
'RBW:         10 MHz
'Sample Rate: 32 MHz
'Trigger Source:     External
'Trigger Slope:      Positive
'Pretrigger Samples: 100
'# of Samples:4096

"TRAC:IQ:SET NORM,10MHz,32MHz,EXT,POS,100,4096"
'Start measurement and wait for sync
"INIT;*WAI"
'Determine output format
"FORMat                          REAL,32"
'Read results:
"TRAC:IQ:DATA:MEM? 0,2048"       'Reads 2048 I/Q data starting at the
                                 'beginning of data acquisition
"TRAC:IQ:DATA:MEM? 2048,1024"  'Reads 1024 I/Q data from half of the
                                 'recorded data
"TRAC:IQ:DATA:MEM? 100,512"      'Reads 512 I/Q data starting at the
                                 'trigger point(<Pretrigger Samples> was
                                 100)
```

Return values:

The result values are scaled linear in unit *Volt* and correspond to the voltage at the RF input of the instrument.

The format of the output buffer corresponds to the command `TRACe:IQ:DATA?`

Characteristics: *RST-value: --
SCPI: device specific

Mode: A-T

TRACe<1|2>:IQ:SET <filter type>,<rbw>,<sample rate>,<trigger source>,<trigger slope>,
<pretrigger samples>,<# of samples>

This command defines the settings of the analyzer hardware for the measurement of I/Q data. This allows setting the bandwidth of the analog filters in front of the A/D converter as well as setting the sample rate, trigger conditions and the record length.

Note:
If this command is omitted, the FSP will use the current analyzer settings for the corresponding parameters.

Parameter:

<filter type>: NORMAL selects the analog analyzer resolution filters as filter type. This is currently the only available filter type.

<rbw>: Bandwidth of the analog filters in front of the A/D converter.

Value range: 300 kHz – 10 MHz in steps of 1, 3, 10 for <filter type> = NORMal<sample rate>: Sampling rate for the data acquisition.

Value range: 15.625 kHz, 31.25 kHz, 62.5 kHz,
125 kHz, 250 kHz, 500 kHz,
1 MHz, 2 MHz, 4 MHz, 8 MHz, 16 MHz,
32 MHz for <filter type> = NORMal

<trigger mode>: Selection of the trigger source used for the measurement.

Values: IMMediate | EXTernal

<trigger slope>: Used trigger slope.

Values: POSitive (currently the only value supported)

<pretrigger samples>: Number of measurement values to be recorded before the trigger point.

Value range: 0 to 65023 (= 64*1024 – 512 - 1)

Note:
For <trigger mode> = IMMediate the value must be 0.

<# of samples>: Number of measurement values to record.

Value range: 1 to 130560 (= 128*1024 – 512)

Examples:

`"TRAC:IQ:SET NORM,10MHz,32MHz,EXT,POS,0,2048"`	Reads 2048 I/Q-values starting at the trigger point. Filtertype: NORMAL (analog) RBW: 10 MHz Sample Rate: 32 MHz Trigger: External Slope: Positive
`"TRAC:IQ:SET NORM,1MHz,4MHz,EXT,POS,1024,512"`	Reads 512 I/Q-values from 1024 measurement points before the trigger point. Filtertype: NORMAL (analog) RBW: 1 MHz Sample Rate: 4 MHz Trigger: External Slope: Positive

Characteristics: *RST-values: `NORM,3MHz,32MHz,IMM,POS,0,128`

Note:
For using these default settings with command TRAC:IQ:DATA? the following minimum buffer sizes for the response data are recommended:
ASCII format:10 kBytes
Binary format:2 kBytes

SCPI: device specific

Mode: A-T

TRACe<1|2>:IQ:SRATe 15.625kHz...32MHz

This command sets the sampling rate for the I/Q data acquisition. Thus the sample rate can be modified without affecting the other settings.

Value range: 15.625 kHz, 31.25 kHz, 62.5 kHz,
125 kHz, 250 kHz, 500 kHz,
1 MHz, 2 MHz, 4 MHz, 8 MHz, 16 MHz, 32 MHz

Example: `"TRAC:IQ:SRAT 4MHZ"`

Characteristics: *RST-value: 32 MHz
SCPI: device specific

Betriebsart: A-T

TRACe<1|2>:IQ[:STATe] ON|OFF

This command switches the I/Q data acquisition on or off.

Note:
The I/Q data acquisition is not compatible with other measurement functions. Therefore all other measurement functions will be switched off as soon as the I/Q measurement function is switched on. Additionally a trace display is not possible in this operating mode. Therefore all traces are set to "BLANK". Finally split screen operation will automatically be stopped.

Example:

`TRAC:IQ ON` Switches on I/Q data acquisition

Characteristics: *RST-value: OFF
SCPI: device specific

Mode: A-T

TRIGger Subsystem

The TRIGger subsystem is used to synchronize instrument actions with events. It is thus possible to control and synchronize the start of a sweep. An external trigger signal can be applied to the connector at the rear panel of the instrument. A distinction is made between TRIGger1 (screen A) and TRIGger2 (screen B).

COMMAND	PARAMETERS	UNIT	COMMENT
TRIGger<1|2>			
[:SEQuence]			
:SOURce	IMMediate | VIDeo | IFPower | EXTernal		
:LEVel			
:VIDeo	<numeric_value>	PCT	
:HOLDoff	<numeric_value>	S	
:SLOPe	POSitive|NEGative	--	

TRIGger<1|2>[:SEQuence]:SOURce IMMediate | EXTernal | VIDeo | IFPower

This command selects the trigger source for the start of a sweep.

Parameter:
- IMMediate = automatic triggering the next measurement at the end of the previous one.The value IMMediate corresponds to the FREE RUN setting.
- EXTernal = the next measurement is triggered by the signal at the external trigger input.
- VIDeo = the next measurement is triggered by the detection of a signal at the video filter output.
- IFPower = the next measurement is triggered by the detectíon of a signal at the instrument IF (10 MHz bandwidth)

Example: `"TRIG:SOUR EXT"` selects the external trigger input as source of the trigger signal

Characteristics:
*RST value: IMMediate
SCPI: conforming

Mode: all

TRIGger<1|2>[:SEQuence]:LEVel:VIDeo 0 to 100PCT

This command sets the level of the video trigger source.

Example: `"TRIG:LEV:VID 50PCT"`

Characteristics:
*RST value: 50 PCT
SCPI: device-specific

Mode: all

TRIGger<1|2>[:SEQuence]:HOLDoff -100 to 100s

This command defines the length of the trigger delay.

A negative delay time (pretrigger) can be set in the time domain (span < 0 Hz) only. The maximum possible range and the maximum effective resolution of the pretrigger are limited by the set sweep time (max range= - 499/500 x sweep time; max. resolution = sweep time/500). Pretriggering is not possible when the RMS or the average detector is activated.

Example: `"TRIG:HOLD 500us"`

Characteristics: *RST value: 0s
SCPI: conforming

Mode: all

TRIGger<1|2>[:SEQuence]:SLOPe POSitive | NEGative

This command selects the slope of the trigger signal. The selected trigger slope applies to all trigger signal sources .

Exapmple: `"TRIG:SLOP NEG"`

Characteristics: *RST value: POSitive
SCPI: conforming

Mode: all

UNIT Subsystem

The UNIT subsystem is used to switch the basic unit of setting parameters. A distinction is made between UNIT1 (screen A) and UNIT2 (screen B).

COMMAND	PARAMETERS	UNIT	COMMENT
UNIT<1|2> :POWer	DBM | V | A | W | DBPW | WATT | DBUV | DBMV | VOLT | DBUA | AMPere		

UNIT<1|2>:POWer DBM | DBPW | WATT | DBUV | DBMV | VOLT | DBUA | AMPere | V | A | W

This command selects the default unit for the selected measurement window.

Example: `"UNIT:POW DBUV"` Sets the power unit for screen A to dBm.

Characteristics: *RST value: DBM
SCPI: conforming

Mode: A

Supported GPIB Commands of the HP 8590 Series

The FSP analyzer family has the capability to support a subset of the HP 8590 GPIB command set. Due to the differences in system architecture and features this can only be a limited support that comes to its limits where the corresponding parameters differ in their value ranges or default values or where hardware dependencies have to be taken into account. Nevertheless in many cases the subset supported by the FSP will make the adaption of existing GPIB programs for use with the FSP easier.

Supported Command Subset

Function Category	Function	HP 8590 Command	Supported Subset	Known differences
Amplitude				
	Attenuation	AT	AT <numeric_value> DB AT DN AT UP AT AUTO AT?	AT DN/UP: Stepsizes if option FSP-B25 is present. AT AUTO: Dependency calculation
	Amplitude Units	AUNITS	AUNITS DBM | DBMV | DBUV AUNITS?	
	Input Impedance	INZ	INZ 75 INZ 50 INZ?	
	Amplitude Scale Log	LG	LG <numeric_value> DB LG?	
	Amplitude Scale Lin	LN	LN	
	Reference Level	RL	RL <numeric_value> DB|DM RL DN RL UP RL?	Stepsize and default value
	Reference Level Position	RLPOS	RLPOS <numeric_value> RLPOS DN RLPOS UP RLPOS?	On the FSP this function affects the Reference Level Position also if tracking generator normalization is inactive.
	Reference Level Offset	ROFFSET	ROFFSET <numeric_value> DB ROFFSET?	
Auxiliary Control				
	AF Demodulator	DEMOD	DEMOD ON|OFF|AM|FM	requires Option FSP-B3 only
	Normalized Reference Level	NRL	NRL <numeric_value> DB NRL?	requires Option FSP-B9 or FSP-B10
	Source Normalization	SRCNORM	SRCNORM ON|OFF SRCNORM 1|0	requires Option FSP-B9 or FSP-B10
	Source Power Offset	SRCPOFS	SRCPOFS <numeric_value> DB SRCPOFS DN SRCPOFS UP SRCPOFS?	requires Option FSP-B9 or FSP-B10
	Source Power	SRCPWR	SRCPWR <numeric_value> DB SRCPWR DN SRCPWR UP SRCPWR ON SRCPWR OFF SRCPWR?	requires Option FSP-B9 or FSP-B10

Function Category	Function	HP 8590 Command	Supported Subset	Known differences
Bandwidth				
	Resolution Bandwidth	RB	RB <numeric_value> HZ|KHZ|MHZ|GHZ RB DN RB UP RB AUTO RB?	Value range. Formula for dependent parameters (video bandwidth, sweeptime).
	Video Bandwidth	VB	VB <numeric_value> HZ|KHZ|MHZ|GHZ VB DN VB UP VB AUTO VB?	Value range. Formula for dependent parameters (sweeptime).
	Video Bandwidth Ratio	VBR	VBR <numeric_value> VBR DN VBR UP VBR?	Default value.
Calibration				
	Start analyzer self alignment	CAL	CAL ALL CAL ON CAL OFF	The CAL commands do not automatically set the command complete bit (Bit 4) in the status byte. An additional DONE is required for that purpose.
Configuration				
	Time Display	TIMEDSP	TIMEDSP ON|OFF TIMEDSP 1|0 TIMEDSP?	
Display				
	Annotation	ANNOT	ANNOT ON|OFF ANNOT 1|0 ANNOT?	Only frequency axis annotation is affected.
	Threshold	TH	TH <numeric_value> DB|DM TH DN TH UP TH ON TH OFF TH AUTO TH?	Default value is different. Threshold line has no effect on trace data (TH AUTO is always active).
Frequency				
	Center Frequency	CF	CF <numeric_value> HZ|KHZ|MHZ|GHZ CF UP CF DN CF?	Default value. Range. Stepsize.
	Start Frequency	FA	FA <numeric_value> HZ|KHZ|MHZ|GHZ FA UP FA DN FA?	Range. Stepsize.
	Stop Frequency	FB	FB <numeric_value> HZ|KHZ|MHZ|GHZ FB UP FB DN FB?	Default value. Range. Stepsize.
	Frequency Offset	FOFFSET	FOFFSET <numeric_value> HZ|KHZ|MHZ|GHZ FOFFSET?	

Function Category	Function	HP 8590 Command	Supported Subset	Known differences
	CF Step Size	SS	SS <numeric_value> HZ|KHZ|MHZ|GHZ SS DN SS UP SS AUTO SS?	Stepsize.
Information				
	Clear all status bits	CLS	CLS	
	Service Request Bit mask	RQS	RQS	Bits supported: 1 (Units key pressed) 2 (End of Sweep) 3 (Device error) 4 (Command complete) 5 (Illegal command)
	Status byte query	STB	STB	Status bits will be mapped as stated under RQS *Note:* *Bit 2 and 4 will always be set together if "Command complete" or "End of Sweep" is detected. The FSP cannot distinguish between these two conditions. Additionally these bits cannot be used for synchronisation on the sweep end in continuous sweep mode.* The status byte obtained by a serial poll will always be conforming to IEEE 488.2 / SCPI.
Marker				
	Marker Frequency Query	MF	MF MF?	
	Set Marker Frequency	MKF	MKF <numeric_value> HZ|KHZ|MHZ|GHZ MKF?	
	Marker Amplitude	MKA	MKA?	
	Select the active marker	MKACT	MKACT 1 MKACT?	Only marker 1 is supported as the active marker.
	N dB Down	MKBW	MKBW <numeric_value> MKBW ON MKBW OFF	Different default value.
	Center Freq = Marker Freq	MKCF	MKCF	
	Delta Marker	MKD	MKD <numeric_value> HZ|KHZ|MHZ|GHZ MKD DN MKD UP MKD ON MKD OFF	Only Deltamarker 1 is supported. Different default value. Different stepsize.
	Frequency Counter	MKFC	MKFC ON|OFF MKFC 1|0	
	Frequency Counter Resolution	MKFCR	MKFCR <numeric_value> HZ|KHZ|MHZ|GHZ MKFCR DN MKFCR UP MKFCR?	

Function Category	Function	HP 8590 Command	Supported Subset	Known differences
	Marker -> Min	MKMIN	MKMIN	
	Normal Marker	MKN	MKN <numeric_value> HZ|KHZ|MHZ|GHZ MKN DN MKN UP MKN ON MKN OFF MKN?	
	Noise Measurement	MKNOISE	MKNOISE ON|OFF MKNOISE 1|0 MKNOISE?	
	Marker off	MKOFF	MKOFF MKOFF ALL	
	Marker Search	MKPK	MKPK MKPK HI MKPK NH MKPK NR MKPK NL	
	Peak Excursion	MKPX	MKPX <numeric_value> DB MKPX DN MKPX UP MKPX?	Different stepsize.
	Ref Level = Marker Level	MKRL	MKRL	
	CF Stepsize = Marker Freq	MKSS	MKSS	
	Marker to Trace	MKTRACE	MKTRACE TRA|TRB|TRC	
	Signal Track	MKTRACK	MKTRACK ON|OFF MKTRACK 1|0 MKTRACK?	
Preset				
	Instrument preset	IP	IP	Does not reset the status reporting information.*RST
Printer				
	Hardcopy	PRINT	PRINT	
Program Flow				
	Stop previous function	ABORT	ABORT	Does not automatically set the command complete bit (Bit 4) in the status byte. An additional DONE is required for that purpose.
Recall or Save				
	Recall analyzer state	RCLS	RCLS <numeric_value>	
	Save analyzer state	SAVES	SAVES <numeric_value>	

Function Category	Function	HP 8590 Command	Supported Subset	Known differences
Span				
	Full Span	FS	FS	Full span value.
	Frequency Span value	SP	SP <numeric_value> SP DN SP UP SP?	Default value. Stepsize. Formula for dependent values (Resolution Bandwidth, Video Bandwidth, Sweeptime)
Sweep				
	Continuous Sweep Mode	CONTS	CONTS	
	Single Sweep	SNGLS	SNGLS	
	Gated Sweep On/Off	GATE	GATE ON|OFF GATE 1|0	
	Gate Mode Edge/Level	GATECTL	GATECTL EDGE|LEVEL GATECTL?	
	Gate delay	GD	GD <numeric_value> US|MS|SC GD DN GD UP GD?	
	Gate length	GL	GL <numeric_value> US|MS|SC GL DN GL UP GL?	
	Gate polarity	GP	GP POS|NEG GP?	
	Sweep time value	ST	ST <numeric_value> US|MS|SC ST DN ST UP ST AUTO ST?	SWE:TIME Valid values. Range. Stepsize
Synchroni-zation				
	Synchronization on end of all previous commands	DONE	DONE DONE?	
	Start and complete a Full Sweep	TS	TS	Only available in single sweep mode

Function Category	Function	HP 8590 Command	Supported Subset	Known differences
Trace				
	Trace difference w. display line	AMBPL	AMBPL ON|OFF AMBPL 1|0 AMBPL?	
	Trace Position (Display Line)	DL	DL <numeric_value> DB|DM DL DN DL UP DL ON DL OFF DL?	The display line function is only supported in terms of trace position on the screen and video trigger level. The general display line function does not exist on the FSP. ON/OFF are accepted, but ignored; the line is automatically switched on/off with AMBPL ON/OFF. Its default position is different.
	Trace Blank	BLANK	BLANK TRA|TRB|TRC	
	Trace Copy	MOV	MOV TRA|TRB|TRC,TRA|TRB|TRC	
	Trace Clear/Write	CLRW	CLRW TRA|TRB|TRC	
	Detector selection	DET	DET POS|SMP|NEG DET?	DET? returns SAMP instead of SMP on the FSP. DET not automatically set the command complete bit (Bit 4) in the status byte. An additional DONE is required for that purpose.
	Trace Max Hold	MXMH	MXMH TRA|TRB	
	Trace Min Hold	MINH	MINH TRC	
	Video Averaging	VAVG	VAVG TRA|TRB|TRC	
	Trace View	VIEW	VIEW TRA|TRB|TRC	
Trigger				
	Trigger Mode	TM	TM FREE|VID|EXT TM?	
	Start new sweep	TS	TS	

Differences in Status Reporting

The major difference in status reporting between the FSP and the HP 8590 analyzers is that the FSP has a hierarchical status reporting system conforming to IEEE 488.2/SCPI, whereas the HP 8590 series has a very simple status reporting system that consists simply of the bit patterns in the status byte.
As described above, for the RQS and STB command the bit mapping of the HP 8590 analyzers is supported as described in the table below. For the status byte returned by a serial poll the bit mapping is different on the FSP. In detail this means that all of the bits enabled by the RQS command will be mapped onto **bit 5** of the Service Request Status Byte of the FSP.
This mechanism makes sure that a Service Request is generated as soon as one of the conditions enabled becomes true.
What the Service Request Routine should do rather than evaluating the return value of a serial poll is to use the STB command in order to identify the reason for the service request. The bits returned by the STB command are mapped in the same way as for the RQS command.

Bit enabled by RQS	**Bit set in the status byte on serial poll**
1 (Units key pressed)	5 (Event Status Register Summary Bit)
2 (End of Sweep)	5 (Event Status Register Summary Bit)
3 (Device Error)	5 (Event Status Register Summary Bit)
4 (Command Complete)	5 (Event Status Register Summary Bit)
5 (Illegal Command)	5 (Event Status Register Summary Bit)

What needs to be noted is that the FSP will notify any key pressed on the frontpanel rather than only the unit keys if bit 1 is set by the RQS command.
Additionally there is a difference in the handling of bit 6. This bit reflects the status of the SRQ line of the GPIB bus on the HP 8590 analyzers. With the FSP this is not possible. Therefore this bit will be set as soon as any of the bits 1 to 5 is set, but it will not be cleared on a serial poll.

Differences in GPIB behavior between the FSP and the FSE families of instruments

The following list of commands contains the differences in syntax and behavior between the GPIB command set of the FSP and the FSE families of instruments. FSE alone in column "Devices" denotes the instrument families FSE, FSIQ, FSET and ESI, unless otherwise noted in column "Notes".

Devices	Command	Parameter	Notes
FSP + FSE	*CAL?		FSP: executes total calibration FSE: executes short calibration
FSP + FSE	*CLS		
FSP + FSE	*ESE		
FSP + FSE	*ESR?		
FSP + FSE	*IDN?		model indicator and version index is different for FSP and FSE
FSP + FSE	*IST?		
FSP + FSE	*OPC?		
FSP + FSE	*OPT?		list of available options is slightly different for FSP and FSE, but equally available options have equal names
FSP + FSE	*PCB		
FSP + FSE	*PRE		
FSP + FSE	*PSC		
FSP + FSE	*RST		instrument settings are slightly different for FSP and FSE due to different instrument specs
FSP + FSE	*SRE		
FSP + FSE	*STB?		
FSP + FSE	*TRG		FSP: starts measurement in active screen FSE: starts measurement in both screens (split screen mode)
FSP + FSE	*TST?		
FSP + FSE	*WAI		
FSP + FSE	ABORt		
FSE	CALCulate:LIMit:CATalog?		not available in FSP
FSP	CALCulate:STATistics:APD[:STATe]	ON | OFF	new function for FSP
FSP	CALCulate:STATistics:CCDF[:STATe]	ON | OFF	new function for FSP
FSP	CALCulate:STATistics:NSAMples	100 to 1E9	new function for FSP
FSP	CALCulate:STATistics:PRESet		new function for FSP
FSP	CALCulate:STATistics:Result<1...3>?	MEAN|PEAK|CFACtor| ALL	new function for FSP
FSP	CALCulate:STATistics:SCALe:AUTO	ONCE	new function for FSP
FSP	CALCulate:STATistics:X:RANGe	-10dB to 200dB	new function for FSP
FSP	CALCulate:STATistics:X:RLEVel	-130dBm to 30dBm	new function for FSP
FSP	CALCulate:STATistics:Y:LOWer	-1E-9 to 0.1	new function for FSP
FSP	CALCulate:STATistics:Y:UPPer	-1E-8 to 1.0	new function for FSP
FSE	CALCulate<1|2>:CTHReshold	MIN to MAX	not available in FSP
FSE	CALCulate<1|2>:CTHReshold:STATe	ON | OFF	not available in FSP
FSP	CALCulate<1|2>:DELTamarker<1...4>:AOFF		markers 2...4 are either normal or delta markers; marker 1 always serves as the reference marker for all deltamarkers
FSE	CALCulate<1|2>:DELTamarker<1...4>:AOFF		there are 4markers and 4 deltamarkers; the most recently used marker serves as the reference marker for all deltamarkers

Devices	Command	Parameter	Notes
FSP + FSE	CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:FIXed:RPOint:X	<numeric_value>	FSP: marker 1 can be moved independently from the reference point FSE: the marker and the reference point are linked to each other
FSP + FSE	CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:FIXed:RPOint:Y	<numeric_value>	FSP: marker 1 can be moved independently from the reference point; FSE: the marker and the reference point are linked to each other
FSP + FSE	CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:FIXed:RPOint:Y:OFFSet	<numeric_value>	
FSP + FSE	CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:FIXed[:STATe]	ON | OFF	
FSP + FSE	CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:PNOise:RESult?		
FSP + FSE	CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:PNOise[:STATe]	ON | OFF	
FSE	CALCulate<1|2>:DELTamarker<1...4>:MAXimum:APEak		not available for FSP
FSP + FSE	CALCulate<1|2>:DELTamarker<1...4>:MAXimum:LEFT		
FSP + FSE	CALCulate<1|2>:DELTamarker<1...4>:MAXimum:NEXT		
FSP + FSE	CALCulate<1|2>:DELTamarker<1...4>:MAXimum:RIGHt		
FSP + FSE	CALCulate<1|2>:DELTamarker<1...4>:MAXimum[:PEAK]		
FSP + FSE	CALCulate<1|2>:DELTamarker<1...4>:MINimum:LEFT		
FSP + FSE	CALCulate<1|2>:DELTamarker<1...4>:MINimum:NEXT		
FSP + FSE	CALCulate<1|2>:DELTamarker<1...4>:MINimum:RIGHt		
FSP + FSE	CALCulate<1|2>:DELTamarker<1...4>:MINimum[:PEAK]		
FSP + FSE	CALCulate<1|2>:DELTamarker<1...4>:MODE	ABSolute | RELative	
FSE	CALCulate<1|2>:DELTamarker<1...4>:STEP:AUTO	ON | OFF	not available for FSP
FSE	CALCulate<1|2>:DELTamarker<1...4>:STEP[:INCRement]	<numeric_value>	not available for FSP
FSP + FSE	CALCulate<1|2>:DELTamarker<1...4>:TRACe	1 to 3	FSP: 3 traces are available per screen; FSE: 4 traces are available in full screen mode and 2 traces per screen in split screen mode
FSP + FSE	CALCulate<1|2>:DELTamarker<1...4>:X	0 to MAX (frequency | sweep time)	unit 'SYM' is not available for FSP
FSP + FSE	CALCulate<1|2>:DELTamarker<1...4>:X:RELative		
FSP + FSE	CALCulate<1|2>:DELTamarker<1...4>:Y?		
FSP + FSE	CALCulate<1|2>:DELTamarker<1...4>[:STATe]	ON | OFF	
FSE	CALCulate<1|2>:DLINe<1|2>	MIN to MAX	not available for FSP
FSE	CALCulate<1|2>:DLINe<1|2>:STATe	ON | OFF	not available for FSP
FSE	CALCulate<1|2>:FEED	'XTIM:DDEM:MEAS'| 'XTIM:DDEM:REF' | 'XTIM:DDEM:ERR:MPH' | 'XTIM:DDEM:ERR:VECT' | 'XTIM:DDEM:SYMB' | 'XTIM:AM' | 'XTIM:FM' | 'XTIM:PM' | 'XTIM:AMSummary' | 'XTIM:FMSummary' |'XTIM:PMSummary' | 'TCAP'	not available for FSP
FSET	CALCulate<1|2>:FEED	'XTIM:DDEM:MEAS' | 'XTIM:DDEM:REF' | 'XTIM:DDEM:ERR:MPH' | 'XTIM:DDEM:ERR:VECT' | 'XTIM:DDEM:SYMB' | 'TCAP'	not available for FSP
FSE	CALCulate<1|2>:FLINe<1|2>	0 to fmax	not available for FSP
FSE	CALCulate<1|2>:FLINe<1|2>:STATe	ON | OFF	not available for FSP
FSE	CALCulate<1|2>:FORMat	MAGNitude | PHASe | UPHase | RIMag | FREQuency | IEYE | QEYE | TEYE | FEYE | COMP | CONS	not available for FSP
FSE	CALCulate<1|2>:FSK:DEViation:REFerence	<numeric value>	not available for FSP
FSE	CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel	0 to 100 DB, 0 to 100 DB	compatible to CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel [:RELative] of FSP not available for FSET

Devices	Command	Parameter	Notes
FSP	CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel:ABSolute	-200 to 200 DBM, -200 to 200 DBM	new function for FSP
FSP	CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel:ABSolute:STATe	ON | OFF	new function for FSP
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel:RESult?		
FSE	CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel:STATe	ON | OFF	compatible to CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel[:RELative]:STATe of FSP not available for FSET
FSP	CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel[:RELative]	0 to 100 DB, 0 to 100 DB	compatible to CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel of FSE
FSP	CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel[:RELative]:STATe	ON | OFF	compatible to CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel:STATe of FSE
FSE	CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate<1|2>	0 to 100 DB, 0 to 100 DB	compatible to CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate<1|2>[:RELative] of FSP not available for FSET
FSP	CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate<1|2>:ABSolute	-200 to 200 DBM, -200 to 200 DBM	new function for FSP
FSP	CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate<1|2>:ABSolute:STATe	ON | OFF	new function for FSP
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate<1|2>:RESult?		
FSE	CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate<1|2>:STATe	ON | OFF	compatible to CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate<1|2>[:RELative]:STATe of FSP not available for FSET
FSP	CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate<1|2>[:RELative]	0 to 100 DB, 0 to 100 DB	compatible to CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate<1|2> of FSE
FSP	CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate<1|2>	ON | OFF	compatible to CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate<1|2>:STATe of FSE
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:ACPower[:STATe]	ON | OFF	
FSE	CALCulate<1|2>:LIMit<1...8>:BURSt:POWer?		not available for FSP, FSET and ESI
FSE	CALCulate<1|2>:LIMit<1...8>:BURSt:PTEMplate?		not available for FSP, FSET and ESI
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:CLEar[:IMMediate]		
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:COMMent	<string>	
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:CONTrol:DOMain	FREQuency | TIME	
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:CONTrol:MODE	RELative | ABSolute	
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:CONTrol:OFFset	<numeric value>	
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:CONTrol:SHIFt	<numeric_value>	
FSE	CALCulate<1|2>:LIMit<1...8>:CONTrol:SPACing	LINear | LOGarithmic	not available for FSP
FSE	CALCulate<1|2>:LIMit<1...8>:CONTrol:UNIT[:TIME]	S | SYM	not available for FSP
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:CONTrol[:DATA]	<numeric value>, <numeric value>	
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:COPY	1 to 8|<name>	
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:DELete		
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:FAIL?		
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:LOWer:MARGin	<numeric value>	
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:LOWer:MODE	RELative | ABSolute	
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:LOWer:OFFset	<numeric value>	
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:LOWer:SHIFt	<numeric_value>	
FSE	CALCulate<1|2>:LIMit<1...8>:LOWer:SPACing	LINear | LOGarithmic	not available for FSP
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:LOWer:STATe	ON | OFF	
FSP	CALCulate<1|2>:LIMit<1...8>:LOWer:THReshold	<numeric value>	new function for FSP
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:LOWer[:DATA]	<numeric value>	
FSE	CALCulate<1|2>:LIMit<1...8>:MARGin	0 to 100DB	not available for FSP, FSET and ESI
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:NAME	1 to 8|<string>	

Devices	Command	Parameter	Notes
FSE	CALCulate<1|2>:LIMit<1...8>:SPECtrum:MODulation:EXCeptions?	ARFCn | TXBand | RXBand| COMBined | DCSRx1800	not available for FSP, FSET and ESI
FSE	CALCulate<1|2>:LIMit<1...8>:SPECtrum:MODulation:FAILs?	ARFCn | TXBand | RXBand| COMBined | DCSRx1800	not available for FSP, FSET and ESI
FSE	CALCulate<1|2>:LIMit<1...8>:SPECtrum:MODulation?	ARFCn | TXBand | RXBand| COMBined | DCSRx1800	not available for FSP, FSET and ESI
FSE	CALCulate<1|2>:LIMit<1...8>:SPECtrum:SWITching:FAILs?		not available for FSP, FSET and ESI
FSE	CALCulate<1|2>:LIMit<1...8>:SPECtrum:SWITching?		not available for FSP, FSET and ESI
FSE	CALCulate<1|2>:LIMit<1...8>:SPURious:FAILs?	TXBand | OTXBand| RXBand | IDLeband	not available for FSP, FSET and ESI
FSE	CALCulate<1|2>:LIMit<1...8>:SPURious?	TXBand | OTXBand| RXBand | IDLeband	not available for FSP, FSET and ESI
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:STATe	ON | OFF	
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:TRACe	1 to 3	FSP: 3 traces are available per screen FSE: 4 traces are available in full screen mode and 2 traces per screen in split screen mode
FSP	CALCulate<1|2>:LIMit<1...8>:UNIT	DBM | DBPW | WATT | DBUV | DBMV | VOLT | DBUA | AMPere | DB | DBUV_M | DBUA_M | DEG | RAD | S | HZ | PCT | UNITLESS	Available units are compatible to the FSE
FSE/ FSIQ	CALCulate<1|2>:LIMit<1...8>:UNIT	DBM | DBPW | WATT | DBUV | DBMV | VOLT | DBUA | AMPere | DB | DBUV_MHZ | DBMV_MHZ | DBUA_MHZ | |DBUV_M | DBUA_M | DBUV_MHZ | DBUA_MHZ | DEG | RAD | S | HZ | PCT | UNITLESS	only the following units are available for the FSP:DBM | DBPW | WATT | DBUV | DBMV | VOLT | DBUA | AMPere | DB | DBUV_M | DBUA_M | DEG | RAD | S | HZ | PCT | UNITLESS
FSET/ ESI	CALCulate<1|2>:LIMit<1...8>:UNIT	DBM | DBPW | WATT | DBUV | DBMV | VOLT | DBUA | AMPere | DB | DBUV_MHZ | DBMV_MHZ | DBUA_MHZ | |DBUV_M | DBUA_M | DBUV_MHZ | DBUA_MHZ | DEG | RAD | S | HZ | PCT | UNITLESS	only the following units are available for the FSP:DBM | DBPW | WATT | DBUV | DBMV | VOLT | DBUA | AMPere | DB | DBUV_M | DBUA_M | DEG | RAD | S | HZ | PCT | UNITLESS
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:UPPer:MARGin	<numeric value>	
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:UPPer:MODE	RELative | ABSolute	
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:UPPer:OFFset	<numeric value>	
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:UPPer:SHIFt	<numeric_value>	
FSE	CALCulate<1|2>:LIMit<1...8>:UPPer:SPACing	LINear | LOGarithmic	not available for FSP
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:UPPer:STATe	ON | OFF	
FSP	CALCulate<1|2>:LIMit<1...8>:UPPer:THReshold	<numeric value>	new function for FSP
FSP + FSE	CALCulate<1|2>:LIMit<1...8>:UPPer[:DATA]	<numeric value>	
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:ZOOM	<numeric value>	FSP: function uses always marker 1 as its reference marker; FSE: all available markers can be used as a reference marker
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:AOFF		
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:COUNt	ON | OFF	
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:COUNt:FREQuency?		
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:COUNt:RESolution	0.1 | 1 | 10 | 100 | 1000 | 10000 Hz	
FSE	CALCulate<1|2>:MARKer<1...4>:COUPled[STATe]	ON | OFF	not available for FSP
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:ADEMod		not available for FSP and FSET
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:ADEMod:AM[:RESult]?	PPEak | MPEak | MIDDle | RMS	not available for FSP and FSET
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:ADEMod:CARRier		not available for FSP and FSET

Devices	Command	Parameter	Notes
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:ADEMod:FERRor		not available for FSP and FSET
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:ADEMod:FM	PPEak | MPEak | MIDDle | RMS | RDEV	not available for FSP and FSET
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:ADEMod:PM	PPEak | MPEak | MIDDle | RMS	not available for FSP and FSET
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:ADEMod:SINad:RESult?		not available for FSP and FSET
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:ADEMod:SINad	ON | OFF	not available for FSP and FSET
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:CENTer		
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:CSTep		
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:DDEMod:RESult?	MERM | MEPK | MEPS | PERM PEPK | PEPS | EVRM | EVPK | EVPS IQOF | IQIM |ADR | FERR | FEPK | RHO | DEV | FSRM | FSPK | FSPS | DTTS	not available for FSP
FSP	CALCulate<1|2>:MARKer<1...4>:FUNCtion:DEModulation: CONTinuous		new function for FSP
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:DEModulation:HOLDoff	10ms to 1000s	
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:DEModulation:SELect	AM | FM	
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:DEModulation[:STATe]	ON | OFF	
FSP	CALCulate<1|2>:MARKer<1...4>:FUNCtion:MDEPth:RESult?		new function for FSP
FSP	CALCulate<1|2>:MARKer<1...4>:FUNCtion:MDEPth[:STATe]		new function for FSP
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:MSTep		not available for FSP
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:NDBDown	<numeric value>	
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:NDBDown:FREQuency?		
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:NDBDown:RESult?		
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:NDBDown:STATe	ON | OFF	
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:NOISe:RESult?		
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:NOISe:STATe	ON | OFF	
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer:CFILter	ON | OFF	not available for FSP
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer:PRESet	NADC | TETRA | PDC | PHS | CDPD | FWCDma | RWCDma | F8CDma | R8CDma | F19Cdma | R19Cdma | FW3Gppcdma| RW3Gppcdma | D2CDma | S2CDma | M2CDma | NONE	available standards are compatible to the FSE
FSP	CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer:RESult:PHZ	ON | OFF	new function for FSP
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer:RESult?	ACPower | CPOWer | OBANdwidth | OBWidth	CN and CN0 are not available on the FSP ACPower and CPOWer are not available on the FSET
FSP	CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer:SELect?	ACPower | CPOWer | OBANdwidth | OBWidth	CN and CN0 are not available on the FSP
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer:SELect?	ACPower | CPOWer | OBANdwidth | OBWidth | CN | CN0	CN and CN0 are not available on the FSP and FSET
FSET	CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer:SELect?	OBANdwidth | OBWidth	
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer[:STATe]	OFF	
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:REFerence		
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SFACtor	(60dB/3dB) | (60dB/6dB)	not available for FSP
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SFACtor:FREQuency?		not available for FSP
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SFACtor:RESult?		not available for FSP
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SFACtor:STATe	ON | OFF	not available for FSP
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:STARt		not available for FSP
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:STOP		not available for FSP
FSP	CALCulate<1|2>:MARKer<1...4>:FUNCtion:STRack: BANDwidth|BWIDth	10 Hz to MAX(span)	new function for FSP. Replaces DISP:FLINE of the FSE.
FSP	CALCulate<1|2>:MARKer<1...4>:FUNCtion:STRack:THReshold	-330 to +30 dBm	new function for FSP
FSP	CALCulate<1|2>:MARKer<1...4>:FUNCtion:STRack:TRACe	1 to 3	new function for FSP
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:STRack[:STATe]	ON | OFF	
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:AOFF		
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:AVERage	ON | OFF	

Devices	Command	Parameter	Notes
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MAXimum:AVERage:RESult?		not available for FSP
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MAXimum:PHOLd:RESult?		not available for FSP
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MAXimum:RESult?		not available for FSP
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MAXimum[:STATe]	ON | OFF	not available for FSP
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MEAN:AVERage:RESult?		
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MEAN:PHOLd:RESult?		
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MEAN:RESult?		
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MEAN[:STATe]	ON | OFF	
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MIDDle:AVERage:RESult?		not available for FSP
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MIDDle:PHOLd:RESult?		not available for FSP
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MIDDle: RESult?		not available for FSP
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MIDDle [:STATe]	ON | OFF	not available for FSP
FSP	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MODE	ABSolute | RELative	new function for FSP
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MPEak:AVERage:RESult?		not available for FSP
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MPEak:PHOLd:RESult?		not available for FSP
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MPEak: RESult?		not available for FSP
FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MPEak [:STATe]	ON | OFF	not available for FSP
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:PHOLd	ON | OFF	
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:PPEak:AVERage:RESult?		
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:PPEak:PHOLd:RESult?		
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:PPEak:RESult?		
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:PPEak[:STATe]	ON | OFF	
FSP	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:REFerence:AUTO	ONCE	new function for FSP
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:RMS:AVERage:RESult?		
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:RMS:PHOLd:RESult?		
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:RMS:RESult?		
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:RMS[:STATe]	ON | OFF	
FSP	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:SDEViation:RESult?		new function for FSP
FSP	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMarySDEViation:AVERage:RESult?		new function for FSP
FSP	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:SDEViation:PHOLd:RESult?		new function for FSP
FSP	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:SDEViation[:STATe]	ON | OFF	new function for FSP
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary[:STATe]	ON | OFF	
FSP	CALCulate<1|2>:MARKer<1...4>:FUNCtion:TOI:RESult?		new function for FSP
FSP	CALCulate<1|2>:MARKer<1...4>:FUNCtion:TOI[:STATe]	ON | OFF	new function for FSP
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:LOEXclude	ON | OFF	
FSE	CALCulate<1|2>:MARKer<1...4>:MAXimum:APEak		not available for FSP
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:MAXimum:LEFT		
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:MAXimum:NEXT		
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:MAXimum:RIGHt		
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:MAXimum[:PEAK]		
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:MINimum:LEFT		
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:MINimum:NEXT		
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:MINimum:RIGHt		
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:MINimum[:PEAK]		
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:PEXCursion	<numeric value>	
FSE	CALCulate<1|2>:MARKer<1...4>:READout	MPHase | RIMaginary	not available for FSP
FSE	CALCulate<1|2>:MARKer<1...4>:SCOupled[STATe]	ON | OFF	not available for FSP
FSE	CALCulate<1|2>:MARKer<1...4>:STEP:AUTO	ON | OFF	not available for FSP

Devices	Command	Parameter	Notes
FSE	CALCulate<1|2>:MARKer<1...4>:STEP[:INCRement]	<numeric_value>	not available for FSP
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:TRACe	1 to 3	FSP: 3 traces are available per screen FSE: 4 traces are available in full screen mode and 2 traces per screen in split screen mode
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:X	0 to MAX (frequency| sweep time)	additional unit SYM is available for FSE
FSP	CALCulate<1|2>:MARKer<1...4>:X:SLIMits:LEFT	0 to MAX (frequency|sweep time)	new function for FSP. Replaces DISP:FLIN and DISP:TLIN commands of the FSE
FSP	CALCulate<1|2>:MARKer<1...4>:X:SLIMits:RIGHt	0 to MAX (frequency|sweep time)	new function for FSP. Replaces DISP:FLIN and DISP:TLIN commands of the FSE
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:X:SLIMits[:STATe]	ON | OFF	
FSP + FSE	CALCulate<1|2>:MARKer<1...4>:Y?		
FSP	CALCulate<1|2>:MARKer<1...4>:Y:PERCent	<numeric_value>	new function for FSP
FSP + FSE	CALCulate<1|2>:MARKer<1...4>[:STATe]	ON | OFF	
FSP	CALCulate<1|2>:MATH:MODE	LINear | LOGarithmic	affects all traces on the FSP; therefore the numeric suffix :MATH<1...4> is not allowed for the FSP
FSE	CALCulate<1|2>:MATH<1...4>:MODE	LINear | LOGarithmic	for FSE, only the trace indicated by a numeric suffix is affected
FSP	CALCulate<1|2>:MATH:POS	-100PCT to 200PCT	new function for FSP; replacement for CALC:RLINe of the FSE
FSP + FSE	CALCulate<1|2>:MATH:STATe	ON | OFF	for FSP, traces can only be subtracted from trace 1; therefore there is no numeric suffix behind :MATH
FSP + FSE	CALCulate<1|2>:MATH[:EXPRession][:DEFine]	<expr>	for FSP, traces can only be subtracted from trace 1; therefore there is no numeric suffix behind :MATH and <expr> may only consist of (TRACE1-TRACE2) or (TRACE1-TRACE3)
FSE	CALCulate<1|2>:RLINe	MIN to MAX	not available for FSP (replaced by CALC:MATH:POS)
FSE	CALCulate<1|2>:RLINe:STATe	ON | OFF	not available for FSP (replaced by CALC:MATH:POS)
FSP + FSE	CALCulate<1|2>:THReshold	MIN to MAX	
FSP + FSE	CALCulate<1|2>:THReshold:STATe	ON | OFF	
FSE	CALCulate<1|2>:TLINe<1|2>	0 to 1000s	not available on the FSP; replaced by CALC:SLIMits:LEFT and CALC:SLIMits:RIGHt
FSE	CALCulate<1|2>:TLINe<1|2>:STATe	ON | OFF	not available on the FSP; replaced by CALC:SLIMits:LEFT and CALC:SLIMits:RIGHt
FSE	CALCulate<1|2>:UNIT:ANGLe	DEG | RAD	not available for FSP
FSP	CALCulate<1|2>:UNIT:POWer	DBM | V| A| W | DBPW | WATT | DBUV | DBMV | VOLT | DBUA | AMPere	available units are compatible to the FSE
FSET/ ESI	CALCulate<1|2>:UNIT:POWer	DBM | V | W | DB | PCT | UNITLESS | DBPW | WATT | DBUV | DBMV | VOLT | DBUA | AMPere | DBPT | DBUV_MHZ | DBMV_MHZ | DBUA_MHZ | DBUV_M | DBUA_M | DBUV_MMHZ | DBUA_MMHZ	the FSP supports the following units:DBM | V| A| W | DBPW | WATT | DBUV | DBMV | VOLT | DBUA | AMPere

Devices	Command	Parameter	Notes
FSE/ FSIQ	CALCulate<1|2>:UNIT:POWer	DBM | V | W | DB | PCT | UNITLESS | DBPW | WATT | DBUV | DBMV | VOLT | DBUA | AMPere | DBUV_MHZ | DBMV_MHZ | DBUA_MHZ | DBUV_M | DBUA_M | DBUV_MMHZ | DBUA_MMHZ	the FSP supports the following units:DBM | V| A| W | DBPW | WATT | DBUV | DBMV | VOLT | DBUA | AMPere
FSE	CALCulate<1|2>:X:UNIT:TIME	S | SYM	not available for FSP
FSP	CALibration:ABORt		new function for FSP
FSE	CALibration:BANDwidth | BWIDth[:RESolution]?		not available for FSP
FSE	CALibration:IQ?		not available for FSP
FSE	CALibration:LDETector?		not available for FSP
FSE	CALibration:LOSuppression?		not available for FSP
FSE	CALibration:PPEak?		not available for FSP
ESI	CALibration:PRESelector?		not available for FSP
FSP	CALibration:RESult?		new function for FSP
FSE	CALibration:SHORt?		not available for FSP
FSP + FSE	CALibration:STATe	ON | OFF	
FSP + FSE	CALibration[:ALL]?		
FSE	CONFigure:BURSt:PFERror:COUNt	1 to 1000	not available for FSP and FSET
FSE	CONFigure:BURSt:PFERror[IMMediate]		not available for FSP and FSET
FSE	CONFigure:BURSt:POWer:CONDition	NORMal | EXTReme	not available for FSP and FSET
FSE	CONFigure:BURSt:POWer:COUNt	1 to 1000	not available for FSP and FSET
FSE	CONFigure:BURSt:POWer[IMMediate]		not available for FSP and FSET
FSE	CONFigure:BURSt:PTEMplate:[IMMediate]		not available for FSP and FSET
FSE	CONFigure:BURSt:PTEMplate:COUNt	1 to 1000	not available for FSP and FSET
FSE	CONFigure:BURSt:PTEMplate:SELect	FULL | TOP | RISing | FALLing	not available for FSP and FSET
FSE	CONFigure:BURst:REFerence:AUTO	ON | OFF	not available for FSP and FSET
FSE	CONFigure:SPECtrum:MODulation:COUNt	1 to 1000	not available for FSP and FSET
FSE	CONFigure:SPECtrum:MODulation:RANGe	ARFCn | TXBand | RXBand | COMBined | DCSRx1800	not available for FSP and FSET
FSE	CONFigure:SPECtrum:MODulation:TGATe	ON | OFF	not available for FSP and FSET
FSE	CONFigure:SPECtrum:MODulation[:IMMediate]		not available for FSP and FSET
FSE	CONFigure:SPECtrum:SWITching:COUNt	1 to 1000	not available for FSP and FSET
FSE	CONFigure:SPECtrum:SWITching[:IMMediate]		not available for FSP and FSET
FSE	CONFigure:SPURious:ANTenna	CONDucted | RADiated	not available for FSP and FSET
FSE	CONFigure:SPURious:COUN:RXBandt	1 to 1000	not available for FSP and FSET
FSE	CONFigure:SPURious:COUNt	1 to 1000	not available for FSP and FSET
FSE	CONFigure:SPURious:RANGe	TXBand | OTXBand | RXBand | IDLeband | COMBined	not available for FSP and FSET
FSE	CONFigure:SPURious:STEP:COUNt?		not available for FSP and FSET
FSE	CONFigure:SPURious:STEP<1..26>	ON | OFF	not available for FSP and FSET
FSE	CONFigure:SPURious[:IMMediate]		not available for FSP and FSET
FSE	CONFigure[:BTS]:ARFCn	<numeric_value>	not available for FSP and FSET
FSE	CONFigure[:BTS]:ARFCn:AUTO	ONCE	not available for FSP and FSET

Devices	Command	Parameter	Notes
FSE	CONFigure[:BTS]:CHANnel:SFH	ON | OFF	not available for FSP and FSET
FSE	CONFigure[:BTS]:CHANnel:SLOT	0 to 7	not available for FSP and FSET
FSE	CONFigure[:BTS]:CHANnel:SLOT:AUTO	ONCE	not available for FSP and FSET
FSE	CONFigure[:BTS]:CHANnel:TSC	0 to 7	not available for FSP and FSET
FSE	CONFigure[:BTS]:CHANnel:TSC:AUTO	ON | OFF	not available for FSP and FSET
FSE	CONFigure[:BTS]:COSiting	ON | OFF	not available for FSP and FSET
FSE	CONFigure[:BTS]:LIMIt:FREQency	<numeric_value>	not available for FSP and FSET
FSE	CONFigure[:BTS]:LIMIt:PPEak	<numeric_value>	not available for FSP and FSET
FSE	CONFigure[:BTS]:LIMIt:PRMS	<numeric_value>	not available for FSP and FSET
FSE	CONFigure[:BTS]:LIMit:STANdard	ON | OFF	not available for FSP and FSET
FSE	CONFigure[:BTS]:NETWork:PHASe	1|2[,PLUS]	not available for FSP and FSET
FSE	CONFigure[:BTS]:NETWork[:TYPE]	PGSM |PGSM900 | EGSM |EGSM900 | DCS |GSM1800 | PCS | GSM1900 | RGSM | RGSM900	not available for FSP and FSET
FSE	CONFigure[:BTS]:POWer:CLASs	1 to 8 | 1 to 4 | M1 | M2 | M3	not available for FSP and FSET
FSE	CONFigure[:BTS]:POWer:COUPled	ON | OFF	not available for FSP and FSET
FSE	CONFigure[:BTS]:POWer:DYNamic	0 to 15	not available for FSP and FSET
FSE	CONFigure[:BTS]:POWer:EXPected	<numeric_value>	not available for FSP and FSET
FSE	CONFigure[:BTS]:POWer:LIMit	<numeric_value>	not available for FSP and FSET
FSE	CONFigure[:BTS]:POWer:SINGle:CLEar		not available for FSP and FSET
FSE	CONFigure[:BTS]:POWer:SINGle[:STATe]	ON | OFF	not available for FSP and FSET
FSE	CONFigure[:BTS]:POWer:STATic	0 to 6	not available for FSP and FSET
FSE	CONFigure[:BTS]:PRESet		not available for FSP and FSET
FSE	CONFigure[:BTS]:SWEeptime	STANdard | AUTO	not available for FSP and FSET
FSE	CONFigure[:BTS]:TXSupp	ON | OFF	not available for FSP and FSET
FSE	CONFigure[:BTS]MEASurement?		not available for FSP and FSET
FSE	CONFigure[:MS]:ARFCn	<numeric_value>	not available for FSP and FSET
FSE	CONFigure[:MS]:ARFCn:AUTO	ONCE	not available for FSP and FSET
FSE	CONFigure[:MS]:CHANnel:SFH	ON | OFF	not available for FSP and FSET
FSE	CONFigure[:MS]:CHANnel:TSC	0 to 7	not available for FSP and FSET
FSE	CONFigure[:MS]:LIMIt:FREQuency	<numeric_value>	not available for FSP and FSET
FSE	CONFigure[:MS]:LIMIt:PPEak	<numeric_value>	not available for FSP and FSET
FSE	CONFigure[:MS]:LIMIt:PRMS	<numeric_value>	not available for FSP and FSET
FSE	CONFigure[:MS]:LIMit:STANdard	ON | OFF	not available for FSP and FSET
FSE	CONFigure[:MS]:NETWork:PHASe	1|2[,PLUS]	not available for FSP and FSET

Devices	Command	Parameter	Notes
FSE	CONFigure[:MS]:NETWork[:TYPE]	PGSM |PGSM900 | EGSM |EGSM900 | DCS |GSM1800 | PCS | GSM1900 | RGSM | RGSM900	not available for FSP and FSET
FSE	CONFigure[:MS]:POWer:CLASs	<numeric_value>	not available for FSP and FSET
FSE	CONFigure[:MS]:POWer:COUPled	ON | OFF	not available for FSP and FSET
FSE	CONFigure[:MS]:POWer:EXPected	<numeric_value>	not available for FSP and FSET
FSE	CONFigure[:MS]:POWer:LEVel	0 to 31	not available for FSP and FSET
FSE	CONFigure[:MS]:POWer:LIMit	<numeric_value>	not available for FSP and FSET
FSE	CONFigure[:MS]:POWer:SINGle:CLEar		not available for FSP and FSET
FSE	CONFigure[:MS]:POWer:SINGle[:STATe]	ON | OFF	not available for FSP and FSET
FSE	CONFigure[:MS]:POWer:SMALl	ON | OFF	not available for FSP and FSET
FSE	CONFigure[:MS]:PRESet		not available for FSP and FSET
FSE	CONFigure[:MS]:SWEeptime	STANdard | AUTO	not available for FSP and FSET
FSE	CONFigure[:MS]:TXSupp	ON | OFF	not available for FSP and FSET
FSE	CONFigure[:MS]MEASurement?		not available for FSP and FSET
FSET	DIAGnostic:INFO:CCOunt:ATTenuation?		not available for FSP
FSE	DIAGnostic:INFO:CCOunt:ATTenuation<1 | 10>?		not available for FSP
FSIQ	DIAGnostic:INFO:CCOunt:ATTenuation<1 | 2 | 3>?		not available for FSP
ESI	DIAGnostic:INFO:CCOunt:ATTenuation<1|2|4>?		not available for FSP
FSE	DIAGnostic:INFO:CCOunt:PRESelector<1..6>?		not available for FSP
FSP	DIAGnostic:SERVice:CSOurce[:POWer]	<numeric_value>	new function for FSP
FSE	DIAGnostic:SERVice:FUNCtion	<numeric_value>, <numeric_value> to	not available for FSP. Replaced by DIAG:SERV:SFUNction
FSET	DIAGnostic:SERVice:HGENerator	OFF | 10 kHz | 100 kHz | BALanced	not available for FSP
FSP + FSE	DIAGnostic:SERVice:INPut[:SELect]	CALibration | RF	
FSP + FSE	DIAGnostic:SERVice:NSOurce	ON | OFF	
FSP	DIAGnostic:SERVice:SFUNction	<string> to	replacement for DIAG:SERV:FUNC of FSP; necessary due to different parameter formats needed on the FSP
FSP	DIAGnostic:SERVice:STESt:RESult?		new function for FSP
FSP + FSE	DISPlay:ANNotation:FREQuency	ON | OFF	
	DISPlay:BARGraph:LEVel:LOWer		not available for FSP
	DISPlay:BARGraph:LEVel:UPPer		not available for FSP
FSP + FSE	DISPlay:CMAP<1...26>:DEFault<1|2>		larger selection of independently configurable items (1 to 26)
FSP + FSE	DISPlay:CMAP<1...26>:HSL	0 to 1,0 to 1,0 to 1	larger selection of independently configurable items (1 to 26)
FSP + FSE	DISPlay:CMAP<1...26>:PDEFined	<color>	larger selection of independently configurable items (1 to 26)
FSP + FSE	DISPlay:FORmat	SINGle | SPLit	
FSP + FSE	DISPlay:LOGO	ON | OFF	
FSE	DISPlay:PROGram[:MODE]	ON | OFF	not available for FSP
FSP + FSE	DISPlay:PSAVe:HOLDoff	0 to 60	
FSP + FSE	DISPlay:PSAVe[:STATe]	ON | OFF	
FSE	DISPlay[:WINDow<1|2>]:FEED	'AF' | 'VIDeo'	not available for FSP
FSE	DISPlay[:WINDow<1|2>]:MINFo	ON | OFF	not available for FSP
FSP	DISPlay[:WINDow<1|2>]:SELect		new function for FSP
FSP + FSE	DISPlay[:WINDow<1|2>]:TEXT:STATe	ON | OFF	

Devices	Command	Parameter	Notes
FSP + FSE	DISPlay[:WINDow<1|2>]:TEXT[:DATA]	<string>	
FSP + FSE	DISPlay[:WINDow<1|2>]:TIME	ON | OFF	
FSP + FSE	DISPlay[:WINDow<1|2>]:TRACe<1...3>:MODE	WRITe | VIEW | AVERage | MAXHold | MINHold	FSP: 3 traces are available per screen FSE: 4 traces are available in full screen mode and 2 traces per screen in split screen mode
FSE	DISPlay[:WINDow<1|2>]:TRACe<1...4>:EYE:COUNt	1 to Result Length	not available for FSP
FSE	DISPlay[:WINDow<1|2>]:TRACe<1...4>:MODE:ANALog	ON | OFF	not available for FSP
FSE	DISPlay[:WINDow<1|2>]:TRACe<1...4>:MODE:CWRite	ON | OFF	not available for FSP
FSE	DISPlay[:WINDow<1|2>]:TRACe<1...4>:MODE:HCONtinuous	ON | OFF	not available for FSP
FSE	DISPlay[:WINDow<1|2>]:TRACe<1...4>:SYMBol	DOTS | BARS | OFF	not available for FSP
FSE	DISPlay[:WINDow<1|2>]:TRACe<1...4>:X:SPACing	LINear | LOGarithmic	not available for FSP
FSE	DISPlay[:WINDow<1|2>]:TRACe<1...4>:X[:SCALe]:RVALue	<numeric value>	not available for FSP
FSE	DISPlay[:WINDow<1|2>]:TRACe<1...4>:X[:SCALe]:ZOOM	ON | OFF	not available for FSP
FSE	DISPlay[:WINDow<1|2>]:TRACe<1...4>:X[:SCALe]:ZOOM [:FREQuency]:CENTer	<numeric_value>	not available for FSP
FSE	DISPlay[:WINDow<1|2>]:TRACe<1...4>:X[:SCALe]:ZOOM [:FREQuency]:	<numeric_value>	not available for FSP
FSE	DISPlay[:WINDow<1|2>]:TRACe<1...4>:X[:SCALe]:ZOOM [:FREQuency]:	<numeric_value>	not available for FSP
FSP	DISPlay[:WINDow<1|2>]:TRACe<1...3>:Y:SPACing	LINear | LOGarithmic	FSP: TRACe<1...3>
FSE	DISPlay[:WINDow<1|2>]:TRACe<1...4>:Y:SPACing	LINear | LOGarithmic | PERCent	PERCent is not available for FSP + FSE: TRACE<1...4>
FSP + FSE	DISPlay[:WINDow<1|2>]:TRACe<1...3>:Y[:SCALe]	10dB to 200dB	FSP: TRACe<1...3> FSE: TRACE<1...4>
FSET/ ESI	DISPlay[:WINDow<1|2>]:TRACe<1...4>:Y[:SCALe]:BOTTom	<numeric value>	not available for FSP
FSP + FSE	DISPlay[:WINDow<1|2>]:TRACe<1...3>:Y[:SCALe]:MODE	ABSolute | RELative	FSP: TRACe<1...3> FSE: TRACE<1...4>
FSE	DISPlay[:WINDow<1|2>]:TRACe<1...4>:Y[:SCALe]:PDIVision		not available for FSP
FSP + FSE	DISPlay[:WINDow<1|2>]:TRACe<1...3>:Y[:SCALe]:RLEVel	-130dBm to 30dBm	FSP: TRACe<1...3> FSE: TRACE<1...4>
FSP + FSE	DISPlay[:WINDow<1|2>]:TRACe<1...3>:Y[:SCALe]:RLEVel:OFFSet	-200dB to 200dB	FSP: TRACe<1...3> FSE: TRACE<1...4>
FSP + FSE	DISPlay[:WINDow<1|2>]:TRACe<1...3>:Y[:SCALe]:RPOSition	0 to 100 PCT	FSP: TRACe<1...3> FSE: TRACE<1...4>
FSP + FSE	DISPlay[:WINDow<1|2>]:TRACe<1...3>:Y[:SCALe]:RVALue	<numeric value>	FSP: TRACe<1...3> FSE: TRACE<1...4>
FSE	DISPlay[:WINDow<1|2>]:TRACe<1...4>:Y[:SCALe]:RVALue:AUTO	ON | OFF	not available for FSP
FSET/ ESI	DISPlay[:WINDow<1|2>]:TRACe<1...4>:Y[:SCALe]:TOP	<numeric value>	not available for FSP
FSP	DISPlay[:WINDow<1|2>]:TRACe<1...3>[:STATe]	ON | OFF	FSP: TRACe<1...3> FSE: TRACE<1...4>
FSE	FETCh:BURSt:FERRor:AVERage?		not available for FSP and FSET
FSE	FETCh:BURSt:FERRor:MAXimum?		not available for FSP and FSET
FSE	FETCh:BURSt:FERRor:STATus?		not available for FSP and FSET
FSE	FETCh:BURSt:PERRor:PEAK:AVERage?		not available for FSP and FSET
FSE	FETCh:BURSt:PERRor:PEAK:MAXimum?		not available for FSP and FSET
FSE	FETCh:BURSt:PERRor:PEAK:STATus?		not available for FSP and FSET
FSE	FETCh:BURSt:PERRor:RMS:AVERage?		not available for FSP and FSET
FSE	FETCh:BURSt:PERRor:RMS:MAXimum?		not available for FSP and FSET
FSE	FETCh:BURSt:PERRor:RMS:STATus?		not available for FSP and FSET
FSE	FETCh:BURSt:POWer[:IMMediate]?		not available for FSP and FSET
FSE	FETCh:MODulation[:ALL]?	ARFCn | TXBand | RXBand |COMBined | DCSRx1800	not available for FSP and FSET

Devices	Command	Parameter	Notes
FSE	FETCh:PTEMplate:REFerence?	TXBand	not available for FSP and FSET
FSE	FETCh:SPECtrum:MODulation:REFerence?	TXBand	not available for FSP and FSET
FSE	FETCh:SPECtrum:SWITching:REFerence?	TXBand	not available for FSP and FSET
FSE	FETCh:SPECtrum:SWITching[:ALL]?		not available for FSP and FSET
FSE	FETCh:SPURious:STEP?		not available for FSP and FSET
FSE	FETCh:SPURious[:ALL]?	TXBand OTXBand | RXBand | IDLeband	not available for FSP and FSET
FSE	FORMat:DEXPort:APPend[:STATe] ON|OFF[,32]		not available for FSP
FSP + FSE	FORMat:DEXPort:DSEParator	POINt|COMMa	
FSE	FORMat:DEXPort:HEADer[:STATe] ON|OFF[,32]		not available for FSP
FSP	FORMat[:DATA]	ASCii | REAL[,32]	
FSE	FORMat[:DATA]	ASCii | REAL | UINT [,32]	UINT is not available for FSP
FSP + FSE	HCOPy:ABORt		
FSP	HCOPy:DESTination<1|2>	'MMEM' | 'SYST:COMM:PRIN' | 'SYST:COMM:CLIP'	
FSE/	HCOPy:DESTination<1|2>	'SYST:COMM:GPIB' |'SYST:COMM:SER1' | 'SYST:COMM:SER2' | 'SYST:COMM:CENT' | 'MMEM' | 'SYST:COMM:PRIN'|'SYST :COMM:CLIP'	SYST:COMM:GPIB/SER1/SE R2 is not available for FSP
FSIQ/ ESI	HCOPy:DESTination<1|2>	''MMEM' | 'SYST:COMM:PRIN'| 'SYST:COMM:CLIP'	
FSP + FSE	HCOPy:DEVice:COLor	ON | OFF	
FSP	HCOPy:DEVice:LANGuage<1|2>	GDI | WMF | EWMF | BMP	
FSE/	HCOPy:DEVice:LANGuage<1|2>	HPGL | PCL4 | PCL5 | POSTscript | ESCP | WMF | PCX | HP7470 to	
FSIQ/ ESI	HCOPy:DEVice:LANGuage<1|2>	WMF | GDI | EWMF | BMP to	
FSE/	HCOPy:DEVice:PRESet<1|2>	ON | OFF	not available for FSP
FSE/	HCOPy:DEVice:RESolution<1|2>	150 | 300	not available for FSP
FSP + FSE	HCOPy:ITEM:ALL		
FSE	HCOPy:ITEM:FFEed<1|2>:STATe	ON | OFF	not available for FSP
FSE	HCOPy:ITEM:LABel:TEXT	<string>	not available for FSP
FSE	HCOPy:ITEM:PFEed<1|2>:STATe	ON | OFF	not available for FSP
FSP + FSE	HCOPy:ITEM:WINDow<1|2>:TABle:STATe	ON | OFF	
FSP + FSE	HCOPy:ITEM:WINDow<1|2>:TEXT	<string>	
FSE	HCOPy:ITEM:WINDow<1|2>:TRACe:CAINcrement	ON | OFF	not available for FSP
FSP + FSE	HCOPy:ITEM:WINDow<1|2>:TRACe:STATe	ON | OFF	
FSE	HCOPy:PAGE:DIMensions:FULL		not available for FSP
FSE	HCOPy:PAGE:DIMensions:QUADrant<1...4>		not available for FSP
FSP + FSE	HCOPy:PAGE:ORIentation<1|2>	LANDscape | PORTrait	
FSP + FSE	HCOPy[:IMMediate]		
FSET/ ESI	HOLD		not available for FSP
FSP + FSE	INITiate<1|2>:CONMeas	ON | OFF	
FSP + FSE	INITiate<1|2>:CONTinuous	ON | OFF	
FSP + FSE	INITiate<1|2>:DISPlay	ON | OFF	
FSP + FSE	INITiate<1|2>[:IMMediate]		
FSET	INPut:PRESelection:CATalog?		not available for FSP
FSET	INPut:PRESelection:USET:NAME	'name of user defined preselector set (to edit existing set or to create new set)'	not available for FSP
FSET	INPut:PRESelection:USET:CLEar		not available for FSP
FSET	INPut:PRESelection:USET:COMMent	'comment for preselector-set'	not available for FSP

Devices	Command	Parameter	Notes
FSET	INPut:PRESelection:USET:LRANge[:DATA]	<numeric value>, <numeric value>, <numeric_value>	not available for FSP
FSET	INPut:PRESelection:USET:MRANge[:DATA]	<numeric value>, <numeric value>, <numeric_value>	not available for FSP
FSP + FSE	INPut<1|2>:ATTenuation	0 to 70dB	
FSET	INPut<1|2>:ATTenuation	0 to 70 | 80dB	80 dB not available for FSP
FSP + FSE	INPut<1|2>:ATTenuation:AUTO	ON | OFF	
FSE	INPut<1|2>:ATTenuation:AUTO:MODE	NORMal | LNOise | LDIStorsion	not available for FSP
FSET/ ESI	INPut<1|2>:ATTenuation:PROTection	ON | OFF	not available for FSP
FSET	INPut<1|2>:ATTenuation:STEPsize	1dB | 10dB	not available for FSP
FSET	INPut<1|2>:BIMPedance	150OHM | 600OHM | 10kOHM	not available for FSP
FSET	INPut<1|2>:COUPling	AC | DC	not available for FSP
FSP	INPut<1|2>:EATT	0 to 30dB	new function for FSP
FSP	INPut<1|2>:EATT:AUTO	ON | OFF	new function for FSP
FSP	INPut<1|2>:EATT:STATe	ON | OFF	new function for FSP
FSET	INPut<1|2>:GAIN	0 to 30dB	not available for FSP
FSET/ ESI	INPut<1|2>:GAIN:AUTO	ON | OFF	not available for FSP
FSP + FSE	INPut<1|2>:GAIN:STATe	ON | OFF	
FSP + FSE	INPut<1|2>:IMPedance	50 | 75	
FSE	INPut<1|2>:IMPedance:CORRection	RAM | RAZ	not available for FSP
FSET	INPut<1|2>:LISN:PEARth	GROunded | FLOating	not available for FSP
FSET	INPut<1|2>:LISN:PHASe	L1 | L2 | L3 | N	not available for FSP
FSET	INPut<1|2>:LISN[:TYPE]	TWOphase | FOURphase | OFF	not available for FSP
FSE	INPut<1|2>:MIXer	<numeric value>	not available for FSP
FSET	INPut<1|2>:PRESelection:COUPling	ON | OFF	not available for FSP
FSET	INPut<1|2>:PRESelection:COUPling:HIGH:FREQuency	5MHz to 500MHz	not available for FSP
FSET	INPut<1|2>:PRESelection:COUPling:HIGH:SET	'name of preselector set for high RBW'	not available for FSP
FSET	INPut<1|2>:PRESelection:COUPling:LOW:FREQuency	10Hz to 5MHz	not available for FSP
FSET	INPut<1|2>:PRESelection:COUPling:LOW:SET	''name of preselector set for low RBW'	not available for FSP
FSET	INPut<1|2>:PRESelection:COUPling:MID:SET	''name of preselector set for medium RBW'	not available for FSP
FSET	INPut<1|2>:PRESelection:FILTer:HPASS[:FREQuency]	100Hz to 5MHz	not available for FSP
FSET	INPut<1|2>:PRESelection:FILTer:LPASS[:FREQuency]	20KHz to 40MHz	not available for FSP
FSET	INPut<1|2>:PRESelection:FILTer[:STATe]	ON | OFF	not available for FSP
FSET	INPut<1|2>:PRESelection:SET	NARRow | NORMal | WIDE	not available for FSP
FSET	INPut<1|2>:PRESelection:USET[:SELect]	''name of user defined preselector set'	not available for FSP
FSET	INPut<1|2>:PRESelection[:STATe]	ON | OFF	not available for FSP
FSET	INPut<1|2>:TYPE	RF | BALanced	not available for FSP
ESI	INPut<1|2>:TYPE	INPUT1 | INPUT2	not available for FSP
FSE	INPut<1|2>:UPORt<1|2>:STATe	ON | OFF	not available for FSP
FSE	INPut<1|2>:UPORt<1|2>[:VALue]?		not available for FSP
ESI	INPut2:COUPling	AC | DC	not available for FSP
FSP	INSTrument:COUPle	NONE | RLEVel | CF_B | CF_A	available coupling modes between Screen A and Screen B have been changed between FSE and FSP
FSE	INSTrument:COUPle	NONE | MODE | X | Y | CONTrol | XY | XCONtrol | YCONtrol | ALL	Available coupling modes between screen A and screen B have been changed between FSE and FSP
FSP	INSTrument<1|2>:NSELect	1	currently only parameter value 1 available
ESI	INSTrument<1|2>:NSELect	1 to 3 | 6	4 parameter values are available
FSE/ FSIQ	INSTrument<1|2>:NSELect	1 to 5	5 parameter values are available
FSET	INSTrument<1|2>:NSELect	1 | 2 | 6	3 parameter values are available

Devices	Command	Parameter	Notes
FSP	INSTrument<1|2>[:SELect]	SANalyzer	Currently only SANalyzer available
FSE/ FSIQ	INSTrument<1|2>[:SELect]	SANalyzer | DDEMod | ADEMod | BGSM | MGSM	5 parameters are available.
ESI	INSTrument<1|2>[:SELect]	RECeiver | SANalyzer | DDEMod | ADEMod	4 parameters are available.
FSET	INSTrument<1|2>[:SELect]	ANalyzer | DDEMod | RECeiver	3 parameters are available.
FSP + FSE	MMEMory:CATalog?	string	
FSP + FSE	MMEMory:CDIRectory	directory name	
FSP + FSE	MMEMory:CLear:ALL		
FSP + FSE	MMEMory:CLear:STATe	1,path	
FSP + FSE	MMEMory:COMMent	<string>	
FSP + FSE	MMEMory:COPY	path\file, path\file	
FSP + FSE	MMEMory:DATA	filename [, <block data>]	
FSP + FSE	MMEMory:DELete	path\filename	
FSP + FSE	MMEMory:LOAD:AUTO	1,path	
FSP + FSE	MMEMory:LOAD:STATe	1,path	
FSP + FSE	MMEMory:MDIRectory	path	
FSP + FSE	MMEMory:MOVE	path	
FSP + FSE	MMEMory:MSIS	'A:' | 'D:'	FSP: valid drives are A: and D: FSE: valid drives are A: and C:
FSP + FSE	MMEMory:NAME	path\filename	
FSP + FSE	MMEMory:RDIRectory	directory	
FSP + FSE	MMEMory:SELect[:ITEM]:ALL		
FSE	MMEMory:SELect[:ITEM]:CSETup	ON | OFF	not available for FSP (default setting on the FSP)
FSE	MMEMory:SELect[:ITEM]:CVL:ALL	ON | OFF	not available for FSP and FSET
FSE	MMEMory:SELect[:ITEM]:CVL[:ACTive]	ON | OFF	not available for FSP and FSET
FSP + FSE	MMEMory:SELect[:ITEM]:DEFault		
FSE	MMEMory:SELect[:ITEM]:GSETup	ON | OFF	not available for FSP (default setting on the FSP)
FSE	MMEMory:SELect[:ITEM]:HCOPy	ON | OFF	not available for FSP (default setting on the FSP)
FSP + FSE	MMEMory:SELect[:ITEM]:HWSettings	ON | OFF	
FSP + FSE	MMEMory:SELect[:ITEM]:LINes:ALL	ON | OFF	
FSE	MMEMory:SELect[:ITEM]:LINes:ALL	ON | OFF	
FSE	MMEMory:SELect[:ITEM]:LINes[:ACTive]	ON | OFF	not available for FSP (default setting on the FSP)
FSE	MMEMory:SELect[:ITEM]:MACRos	ON | OFF	not available for FSP
FSP + FSE	MMEMory:SELect[:ITEM]:NONE		
FSP + FSE	MMEMory:SELect[:ITEM]:SCData	ON | OFF	
FSP	MMEMory:SELect[:ITEM]:TRACe[:ACTive]	ON | OFF	no numeric suffixes behind TRACe
FSE	MMEMory:SELect[:ITEM]:TRACe<1...4>	ON | OFF	numeric suffixes behind TRACe
FSE	MMEMory:SELect[:ITEM]:TRANsducer:ALL	ON | OFF	not available for FSP
FSE	MMEMory:SELect[:ITEM]:TRANsducer[:ACTive]	ON | OFF	not available for FSP
FSP + FSE	MMEMory:STORe:STATe	1,path	
FSP + FSE	MMEMory:STORe:TRACe	1 to 3,path	
FSE	OUTPut:AF:SENSitivity	<numeric_value>	not available for FSP and FSET
FSE	OUTPut:UPORt<1|2>:STATe	ON | OFF	not available for FSP
FSE	OUTPut:UPORt<1|2>[:VALue]	#B00000000 to #B11111111	not available for FSP
FSP + FSE	OUTPut<1|2>[:STATe]	ON | OFF	
FSE	READ:BURSt:FERRor:AVERage?		not available for FSP and FSET
FSE	READ:BURSt:FERRor:MAXimum?		not available for FSP and FSET
FSE	READ:BURSt:FERRor:STATus?		not available for FSP and FSET

Devices	Command	Parameter	Notes
FSE	READ:BURSt:PERRor:PEAK:AVERage?		not available for FSP and FSET
FSE	READ:BURSt:PERRor:PEAK:MAXimum?		not available for FSP and FSET
FSE	READ:BURSt:PERRor:PEAK:STATus?		not available for FSP and FSET
FSE	READ:BURSt:PERRor:RMS:AVERage?		not available for FSP and FSET
FSE	READ:BURSt:PERRor:RMS:MAXimum?		not available for FSP and FSET
FSE	READ:BURSt:PERRor:RMS:STATus?		not available for FSP and FSET
FSE	READ:BURSt:POWer:DYNamic?		not available for FSP and FSET
FSE	READ:BURSt:POWer:LEVel?		not available for FSP and FSET
FSE	READ:BURSt:POWer:STATic?		not available for FSP and FSET
FSE	READ:BURSt:POWer?		not available for FSP and FSET
FSE	READ:BURSt:REFerence[:IMMediate?]		not available for FSP and FSET
FSE	READ:SPECtrum:MODulation[:ALL]?		not available for FSP and FSET
FSE	READ:SPECtrum:SWITching[:ALL]?		not available for FSP and FSET
FSE	READ:SPURious:STEP?		not available for FSP and FSET
FSE	READ:SPURious[:ALL]?		not available for FSP and FSET
FSE	[SENSe<1|2>:]ADEMod:AF:COUPling	AC | DC	not available for FSP and FSET
FSE	[SENSe<1|2>:]ADEMod:RTIMe	ON | OFF	not available for FSP and FSET
FSE	[SENSe<1|2>:]ADEMod:SBANd	NORMal | INVerse	not available for FSP and FSET
FSE	[SENSe<1|2>:]ADEMod:SQUelch:LEVel	30 to 150 dBm	not available for FSP and FSET
FSE	[SENSe<1|2>:]ADEMod:SQUelch[:STATe]	ON | OFF	not available for FSP and FSET
FSET	[SENSe<1|2>:]AM:RANGe[:UPPer]	3PCT | 10 PCT | 100PCT	not available for FSP
FSE	[SENSe<1|2>:]AVERage:AUTO	ON | OFF	not available for FSP
FSP + FSE	[SENSe<1|2>:]AVERage:COUNt	0 to 32767	
FSE	[SENSe<1|2>:]AVERage:COUNt	0 to 32767	
FSP	[SENSe<1|2>:]AVERage:TYPE	VIDeo | LINear	command is used to select logarithmic or linear averaging on the FSP; therefore parameters are incompatible to the FSE
FSE	[SENSe<1|2>:]AVERage:TYPE	MAXimum | MINimum | SCALar	command is used to select logarithmic or linear averaging on the FSP; therefore parameters are incompatible to the FSE
FSP + FSE	[SENSe<1|2>:]AVERage[:STATe<1...3>]	ON | OFF	
FSE	[SENSe<1|2>:]BANDwidth|BWIDth:DEMod	<numeric_value>	not available for FSP and FSET
FSE	[SENSe<1|2>:]BANDwidth|BWIDth:PLL	AUTO | HIGH | MEDium | LOW	not available for FSP
FSP + FSE	[SENSe<1|2>:]BANDwidth|BWIDth:VIDeo	1Hz to 10MHz	
FSET	[SENSe<1|2>:]BANDwidth|BWIDth:VIDeo	1Hz to 500MHz	
FSP + FSE	[SENSe<1|2>:]BANDwidth|BWIDth:VIDeo:AUTO	ON | OFF	
FSET	[SENSe<1|2>:]BANDwidth|BWIDth:VIDeo:EXTernal[:STATe]	ON | OFF	not available for FSP
FSP	[SENSe<1|2>:]BANDwidth|BWIDth:VIDeo:RATio	0.0001 to 1	only numeric values available. Parameter ranges differ between FSP and FSE
FSE	[SENSe<1|2>:]BANDwidth|BWIDth:VIDeo:RATio	0.001 to 1000 | SINe | PULSe | NOISe	also text parameters are available. Parameter ranges differ between FSP and FSE not available for FSET

Devices	Command	Parameter	Notes
FSP + FSE	[SENSe<1|2>:]BANDwidth|BWIDth[:RESolution]	10Hz to 10MHz (anal. filter) 1Hz to 10MHz (FFT filter)	FSE: 10Hz to 10MHz (models 20) 1Hz to 10MHz (models 30)
FSET	[SENSe<1|2>:]BANDwidth|BWIDth[:RESolution]	10 Hz to 500MHz	
FSP + FSE	[SENSe<1|2>:]BANDwidth|BWIDth[:RESolution]:AUTO	ON | OFF	
FSE	[SENSe<1|2>:]BANDwidth|BWIDth[:RESolution]:MODE	ANALog | DIGital	not available for FSP and FSET
FSP + FSE	[SENSe<1|2>:]BANDwidth|BWIDth[:RESolution]:MODE:FFT	ON | OFF	old command that is still supported, but has been replaced on the FSP by [SENSe<1|2>:]BANDwidth|BWIDth[:RESolution]:TYPE
FSP + FSE	[SENSe<1|2>:]BANDwidth|BWIDth[:RESolution]:RATio	0.0001 to 1	
FSP	[SENSe<1|2>:]BANDwidth|BWIDth[:RESolution]:TYPE	NORMal | FFT | CFILter | RRC	new function for FSP
FSP + FSE	[SENSe<1|2>:]CORRection:COLLect[:ACQuire]	THRough | OPEN	
FSE	[SENSe<1|2>:]CORRection:CVL:BAND	A|Q|U|V|E|W|F|D|G|Y|J	not available for FSP and FSET
FSE	[SENSe<1|2>:]CORRection:CVL:BIAS	<numeric_value>	not available for FSP and FSET
FSE	[SENSe<1|2>:]CORRection:CVL:CATalog?		not available for FSP and FSET
FSE	[SENSe<1|2>:]CORRection:CVL:CLEar		not available for FSP and FSET
FSE	[SENSe<1|2>:]CORRection:CVL:COMMent	<string>	not available for FSP and FSET
FSE	[SENSe<1|2>:]CORRection:CVL:DATA	<freq>,<level> to	not available for FSP and FSET
FSE	[SENSe<1|2>:]CORRection:CVL:MIXer	<string>	not available for FSP and FSET
FSE	[SENSe<1|2>:]CORRection:CVL:PORTs	2 | 3	not available for FSP and FSET
FSE	[SENSe<1|2>:]CORRection:CVL:SELect	<file_name>	not available for FSP and FSET
FSE	[SENSe<1|2>:]CORRection:CVL:SNUMber	<string>	not available for FSP and FSET
FSE	[SENSe<1|2>:]CORRection:CVL:TYPE	ODD | EVEN | EODD	not available for FSP and FSET
FSE/ FSIQ	[SENSe<1|2>:]CORRection:LOSS:INPut[:MAGNitude]	<numeric_value>	not available for FSP
FSP + FSE	[SENSe<1|2>:]CORRection:METHod	TRANsmission | REFLexion	
FSP + FSE	[SENSe<1|2>:]CORRection:RECall		
FSE	[SENSe<1|2>:]CORRection:RXGain:INPut[:MAGNitude]	<numeric_value>	not available for FSP, FSET and ESI
FSP + FSE	[SENSe<1|2>:]CORRection[:STATe]	ON | OFF	
FSE	[SENSe<1|2>:]CORRection:TRANsducer:ACTive?		not available for FSP
FSE	[SENSe<1|2>:]CORRection:TRANsducer:CATalog?		not available for FSP
FSE	[SENSe<1|2>:]CORRection:TRANsducer:COMMent	<string>	not available for FSP
FSE	[SENSe<1|2>:]CORRection:TRANsducer:DATA	<freq>,<level> to	not available for FSP
FSE	[SENSe<1|2>:]CORRection:TRANsducer:DELete		not available for FSP
FSE	[SENSe<1|2>:]CORRection:TRANsducer:SCALing	LINear|LOGarithmic	not available for FSP
FSE	[SENSe<1|2>:]CORRection:TRANsducer:SELect	<name>	not available for FSP
FSE	[SENSe<1|2>:]CORRection:TRANsducer:UNIT	<string>	not available for FSP
FSE	[SENSe<1|2>:]CORRection:TRANsducer[:STATe]	ON | OFF	not available for FSP
FSE	[SENSe<1|2>:]CORRection:TSET:ACTive?		not available for FSP
FSE	[SENSe<1|2>:]CORRection:TSET:BREak	ON | OFF	not available for FSP
FSE	[SENSe<1|2>:]CORRection:TSET:CATalog?		not available for FSP
FSE	[SENSe<1|2>:]CORRection:TSET:COMMent	<string>	not available for FSP
FSE	[SENSe<1|2>:]CORRection:TSET:DELete		not available for FSP
FSE	[SENSe<1|2>:]CORRection:TSET:RANGe<1...10>	<freq>,<freq>,<name> to	not available for FSP
FSE	[SENSe<1|2>:]CORRection:TSET:SELect	<name>	not available for FSP
FSE	[SENSe<1|2>:]CORRection:TSET:UNIT	<string>	not available for FSP
FSE	[SENSe<1|2>:]CORRection:TSET[:STATe]	ON | OFF	not available for FSP
FSE	[SENSe<1|2>:]DDEMod:FILTer:ALPHa	0.2 to 1	not available for FSP

Devices	Command	Parameter	Notes
FSE	[SENSe<1|2>:]DDEMod:FILTer:MEASurement	OFF | RCOSine | RRCosine | GAUSsian | B22 | B25 | B44 | QFM | QFR | QRM | QRR | A25Fm | EMES | EREF	not available for FSP
FSE	[SENSe<1|2>:]DDEMod:FILTer:REFerence	RCOSine | RRCosine | GAUSsian | B22 | B25 | B44 | QFM | QFR | QRM | QRR | A25Fm | EMES | EREF	not available for FSP
FSE	[SENSe<1|2>:]DDEMod:FORMat	QPSK | PSK | MSK |QAM | FSK	not available for FSP
FSE	[SENSe<1|2>:]DDEMod:FSK:NSTate	2 | 4	not available for FSP
FSE	[SENSe<1|2>:]DDEMod:MSK:FORMat	TYPE1 | TYPE2 | NORMal | DIFFerential	not available for FSP
FSE	[SENSe<1|2>:]DDEMod:NORMalize	ON | OFF	not available for FSP
FSE	[SENSe<1|2>:]DDEMod:PRATe	1 | 2 | 4 | 8 | 16	not available for FSP
FSE/ ESI	[SENSe<1|2>:]DDEMod:PRESet	GSM | EDGe | NADC | TETRa | DCS1800 | PCS1900 | PHS | PDCup | PDCDown | APCO25CQPSK | APCO25C4FM | CDPD | DECT | CT2 | ERMes | MODacom | PWT | TFTS | F16 | F322 | F324 | F64 | FQCDma | RQCDma | FNADc | RNADc | BPSK18 | GMSK18 | QPSK18 | GMSK36	not available for FSP
FSIQ	[SENSe<1|2>:]DDEMod:PRESet	GSM | EDGe | NADC | TETRa | PHS | PDCup | PDCDown | APCO25CQPSK | APCO25C4FM | CDPD | DECT | CT2 | ERMes | MODacom | PWT | TFTS | F16 | F322 | F324 | F64 | FWCDma | RWCDma | FW3Gppcdma | RW3Gppcdma | BPSK18 | GMSK18 | QPSK18 | GMSK36	not available for FSP
FSET	[SENSe<1|2>:]DDEMod:PRESet	GSM | EDGe | NADC | TETRa | DCS1800 | PCS1900 | PHS | PDCup | PDCDown | APCO25CQPSK | APCO25C4FM | CDPD | DECT | CT2 | ERMes | MODacom | PWT | TFTS | F16 | F322 | F324 | F64 | FQCDma | RQCDma | FNADc | RNADc | BPSK18 | GMSK18 | QPSK18 | GMSK36	not available for FSP
FSE	[SENSe<1|2>:]DDEMod:PSK:FORMat	NORMal | DIFFerential | N3Pi8	not available for FSP
FSE	[SENSe<1|2>:]DDEMod:PSK:NSTate	2 | 8	not available for FSP
FSE	[SENSe<1|2>:]DDEMod:QAM:NSTate	16	not available for FSP
FSE	[SENSe<1|2>:]DDEMod:QPSK:FORMat	NORMal | DIFFerential | OFFSet | DPI4	not available for FSP
FSE	[SENSe<1|2>:]DDEMod:SBANd	NORMal | INVerse	not available for FSP
FSE	[SENSe<1|2>:]DDEMod:SEARch:PULSe:STATe	ON | OFF	not available for FSP
FSE	[SENSe<1|2>:]DDEMod:SEARch:SYNC:CATalog?		not available for FSP
FSE	[SENSe<1|2>:]DDEMod:SEARch:SYNC:COMMent	<string>	not available for FSP
FSE	[SENSe<1|2>:]DDEMod:SEARch:SYNC:DATA	<string>	not available for FSP
FSE	[SENSe<1|2>:]DDEMod:SEARch:SYNC:NAME	<string>	not available for FSP
FSE	[SENSe<1|2>:]DDEMod:SEARch:SYNC:OFFSet	<numeric_value>	not available for FSP
FSE	[SENSe<1|2>:]DDEMod:SEARch:SYNC:PATTern	<string>	not available for FSP
FSE	[SENSe<1|2>:]DDEMod:SEARch:SYNC:SELect	<string>	not available for FSP
FSE	[SENSe<1|2>:]DDEMod:SEARch:SYNC:STATe	ON | OFF	not available for FSP
FSE	[SENSe<1|2>:]DDEMod:SEARch:TIME	100 to 1600	not available for FSP

Devices	Command	Parameter	Notes
FSE	[SENSe<1|2>:]DDEMod:SRATe	160 Hz to 1,6 MHz	not available for FSP
FSIQ	[SENSe<1|2>:]DDEMod:SRATe	160 Hz to 7 MHz	not available for FSP
	[SENSe<1|2>:]DDEMod:TIME	1 to Frame Length	not available for FSP
FSET	[SENSe<1|2>:]DEMod	OFF | AM | AMVideo | FM | PM	not available for FSP
ESI	[SENSe<1|2>:]DEMod	OFF | AM | FM	not available for FSP
FSET	[SENSe<1|2>:]DEMod:FILTer:HPASs:FREQuency	0 Hz | 10 Hz | 100 Hz | 1 kHZ	not available for FSP
FSET	[SENSe<1|2>:]DEMod:FILTer[:LPASs]:AUTO	ON | OFF	not available for FSP
FSET	[SENSe<1|2>:]DEMod:FILTer[:LPASs]:FREQuency	<numeric_value>	not available for FSP
FSE	[SENSe<1|2>:]DETector<1...4>:CMEM[:STATe]	ON | OFF	not available for FSP
FSP	[SENSe<1|2>:]DETector<1...3>[:FUNCtion]	APEak |NEGative | POSitive | SAMPle | RMS | AVERage | QPEak	FSP: number of traces restricted to 3; detector settings correspond to selected screen FSE: Qpeak not available
ESI	[SENSe<1|2>:]DETector<1..4>[:FUNCtion]	APEak |NEGative | POSitive | SAMPle | RMS | AVERage | QPEak	
FSP + FSE	[SENSe<1|2>:]DETector<1...3>[:FUNCtion]:AUTO	ON | OFF	number of traces restricted to 3
FSET	[SENSe<1|2>:]DETector<1...4>:PSTRetch:AUTO	ON | OFF	not available for FSP
FSET	[SENSe<1|2>:]DETecto<1...4>r:PSTRetch[:STATe]	ON | OFF	not available for FSP
ESI	[SENSe<1|2>:]DETector<1...4>:RECeiver[:FUNCtion]	POSitive |NEGative| RMS | AVERage | QPEak	not available for FSP
FSET	[SENSe<1|2>:]DETector<1...4>:RECeiver[:FUNCtion]	POSitive | NEGative | RMS | AVERage	not available for FSP
FSE	[SENSe<1|2>:]FILTer:CCITt[:STATe]	ON | OFF	not available for FSP and FSET
FSE	[SENSe<1|2>:]FILTer:CMESsage[:STATe]	ON | OFF	not available for FSP and FSET
FSE	[SENSe<1|2>:]FILTer:DEMPhasis:LINK	DISPlay | AUDio	not available for FSP and FSET
FSE	[SENSe<1|2>:]FILTer:DEMPhasis:TCONstant	<numeric_value>	not available for FSP and FSET
FSE	[SENSe<1|2>:]FILTer:DEMPhasis[:STATe]	ON | OFF	not available for FSP and FSET
FSE	[SENSe<1|2>:]FILTer:HPASs:FREQuency	30 Hz | 300 HZ	not available for FSP and FSET
FSET	[SENSe<1|2>:]FILTer:HPASs:FREQuency	10 kHz | 1 kHz | 100 Hz	not available for FSP
FSE	[SENSe<1|2>:]FILTer:HPASs[:STATe]	ON | OFF	not available for FSP
FSE	[SENSe<1|2>:]FILTer:LPASs:FREQuency	3 kHz| 15 kHz	not available for FSP and FSET
FSE	[SENSe<1|2>:]FILTer:LPASs[:STATe]	ON | OFF	not available for FSP and FSET
FSET	[SENSe<1|2>:]FILTer:NOTCh[:STATe]	ON | OFF	not available for FSP
FSET	[SENSe<1|2>:]FM[:DEViation]:RANGe:UPPer	ON | OFF	not available for FSP
FSET	[SENSe<1|2>:]FM[:DEViation]:RANGe[:UPPer]	<numeric_value>	not available for FSP
FSP + FSE	[SENSe<1|2>:]FREQuency:CENTer	0 to f_{max}	frequency ranges are different for FSP and FSE
FSE	[SENSe<1|2>:]FREQuency:CENTer:LINK	STARt | STOP | SPAN	not available for FSP
FSP + FSE	[SENSe<1|2>:]FREQuency:CENTer:STEP	0 to f_{max}	frequency ranges are different for FSP and FSE
FSP + FSE	[SENSe<1|2>:]FREQuency:CENTer:STEP:LINK	SPAN | RBW | OFF	
FSP + FSE	[SENSe<1|2>:]FREQuency:CENTer:STEP:LINK:FACTor	1 to 100 PCT	
FSP + FSE	[SENSe<1|2>:]FREQuency:MODE	CW|FIXed | SWEep	
FSP + FSE	[SENSe<1|2>:]FREQuency:OFFSet	<numeric_value>	
FSET	[SENSe<1|2>:]FREQuency:RANGe	2 GHz | 22 GHz	not available for FSP
FSP + FSE	[SENSe<1|2>:]FREQuency:SPAN	0 to f_{max}	frequency ranges are different for FSP and FSE
FSP + FSE	[SENSe<1|2>:]FREQuency:SPAN:FULL		
FSE	[SENSe<1|2>:]FREQuency:SPAN:LINK	CENTer | STOP | SPAN	not available for FSP
FSP + FSE	[SENSe<1|2>:]FREQuency:STARt	0 to f_{max}	frequency ranges are different for FSP and FSE
FSET	[SENSe<1|2>:]FREQuency:STARt:FLINe[:STATe]	ON | OFF	not available for FSP. Replaced by CALC:MARK:FUNC:SLIMits
FSE	[SENSe<1|2>:]FREQuency:STARt:LINK	CENTer | STOP | SPAN	not available for FSP

Devices	Command	Parameter	Notes
FSP + FSE	[SENSe<1|2>:]FREQuency:STOP	0 to f_{max}	frequency ranges are different for FSP and FSE
FSET	[SENSe<1|2>:]FREQuency:STOP:FLINe[:STATe]	ON | OFF	not available for FSP; replaced by CALC:MARK:FUNC:SLIMits.
FSE	[SENSe<1|2>:]FREQuency:STOP:LINK	CENTer | STARt | SPAN	not available for FSP
FSET/ ESI	[SENSe<1|2>:]FREQuency[:CW|:FIXed]	f_{min} to f_{max}	not available for FSP
FSET/ ESI	[SENSe<1|2>:]FREQuency[:CW|:FIXed]:STEP	f_{min} to f_{max}	not available for FSP
FSP	[SENSe<1|2>:]LIST:POWer:RESult?		new function for FSP
FSP	[SENSe<1|2>:]LIST:POWer[:SEQuence]	<analyzer freq>, <ref level>,<rf att>,<el att>, <filter type>,<rbw>,<vbw>, <meas time>, <trigger level>,...	new function for FSP
FSP	[SENSe<1|2>:]LIST:POWer:SET	<PEAK meas>, <RMS meas>, <AVG meas>, <trigger mode>, <trigger slope>, <trigger offset>, <gate length>	new function for FSP
FSP	[SENSe<1|2>:]LIST:POWer:STATe	ON | OFF	new function for FSP
FSE	[SENSe<1|2>:]MIXer:BIAS	<numeric_value>	not available for FSP
FSE	[SENSe<1|2>:]MIXer:BIAS:LIMit:MIN	<numeric_value>	not available for FSP
FSE	[SENSe<1|2>:]MIXer:BIAS:LIMit[:MAX]	<numeric_value>	not available for FSP
FSE	[SENSe<1|2>:]MIXer:BLOCk	ON | OFF	not available for FSP
FSE	[SENSe<1|2>:]MIXer:HARMonic	<numeric_value>	not available for FSP
FSE	[SENSe<1|2>:]MIXer:HARMonic:BAND	A | Q | U | V | E | W | F | D | G | Y | J	not available for FSP
FSE	[SENSe<1|2>:]MIXer:HARMonic:TYPE	ODD | EVEN | EODD	not available for FSP
FSE	[SENSe<1|2>:]MIXer:LOSS:HIGH	<numeric_value>	not available for FSP
FSE	[SENSe<1|2>:]MIXer:LOSS:TABLE	<file_name>	not available for FSP
FSE	[SENSe<1|2>:]MIXer:LOSS[:LOW]	<numeric_value>	not available for FSP
FSE	[SENSe<1|2>:]MIXer:PORTs	2 | 3	not available for FSP
FSE	[SENSe<1|2>:]MIXer:SIGNal	2 | 3	not available for FSP
FSE	[SENSe<1|2>:]MIXer:THReshold	0.1 to 100 dB	not available for FSP
FSE	[SENSe<1|2>:]MIXer[:STATe]	ON | OFF	not available for FSP
FSP	[SENSe<1|2>:]MPOWer[:SEQuence]	<analyzer freq>, <rbw>,<meas time>, <trigger source>, <trigger level>, <trigger offset>, <type of meas>, <# of meas>	new function for FSP
FSP	[SENSe<1|2>:]MPOWer:RESult[:LIST]?		new function for FSP
FSP	[SENSe<1|2>:]MPOWer:RESult:MIN?		new function for FSP
FSE	[SENSe<1|2>:]MSUMmary:AHOLd[:STATe]	ON | OFF	not available for FSP and FSET
FSE	[SENSe<1|2>:]MSUMmary:MODE	ABSolute | RELative	not available for FSP and FSET
FSE	[SENSe<1|2>:]MSUMmary:MTIMe	0.1S | 1S	not available for FSP and FSET
FSE	[SENSe<1|2>:]MSUMmary:REFerence	<numeric_value>	not available for FSP and FSET
FSE	[SENSe<1|2>:]MSUMmary:REFerence:AUTO	ONCE	not available for FSP and FSET
FSE	[SENSe<1|2>:]MSUMmary:RUNit	PCT | DB	not available for FSP and FSET
FSET	[SENSe<1|2>:]PM[:DEViation]:RANGe[:UPPer]	<numeric_value>	not available for FSP
FSP + FSE	[SENSe<1|2>:]POWer:ACHannel:ACPairs	0 to 3	FSP: new parameter value 0 for channel power measure-ment
FSP + FSE	[SENSe<1|2>:]POWer:ACHannel:BANDwidth|BWIDth:ACHannel	100 to 1000MHz	FSP: parameter range starts at 100Hz FSE: parameter range starts at 0 Hz

Devices	Command	Parameter	Notes
FSP + FSE	[SENSe<1|2>:]POWer:ACHannel:BANDwidth|BWIDth:ALTernate<1|2>	100 to 1000MHz	FSP: parameter range starts at 100Hz FSE: parameter range starts at 0 Hz
FSP + FSE	[SENSe<1|2>:]POWer:ACHannel:BANDwidth|BWIDth[:CHANnel]	100 to 1000MHz	FSP: parameter range starts at 100Hz FSE: parameter range starts at 0 Hz
FSP + FSE	[SENSe<1|2>:]POWer:ACHannel:MODE	ABSolute | RELative	
FSP + FSE	[SENSe<1|2>:]POWer:ACHannel:PRESet	ACPower | CPOWer | OBANdwidth | OBWidth	CN and CN0 are not available for FSP
FSP	[SENSe<1|2>:]POWer:ACHannel:PRESet:RLEVel		new function for FSP
FSP + FSE	[SENSe<1|2>:]POWer:ACHannel:REFerence:AUTO	ONCE	
FSP + FSE	[SENSe<1|2>:]POWer:ACHannel:SPACing[:ACHannel]	100Hz to 2000MHz	different parameter range
FSE	[SENSe<1|2>:]POWer:ACHannel:SPACing[:UPPer]	0 to 1000MHz	not available for FSP and FSET
FSP + FSE	[SENSe<1|2>:]POWer:ACHannel:SPACing:ALTernate<1|2>	100Hz to 2000MHz	different parameter range
FSP + FSE	[SENSe<1|2>:]POWer:BANDwidth|BWIDth	10 to 99.9PCT	different parameter range
FSP	[SENSe<1|2>:]POWer:HSPeed	ON | OFF	new function for FSP
FSP	[SENSe<1|2>:]POWer:NCORrection	ON | OFF	new function for FSP
FSP	[SENSe<1|2>:]POWer:TRACe	1 to 3	new function for FSP
FSP + FSE	[SENSe<1|2>:]ROSCillator:[INTernal:]TUNe	0 to 4095	
FSP + FSE	[SENSe<1|2>:]ROSCillator:[INTernal:]TUNe:SAVe		
FSE	[SENSe<1|2>:]ROSCillator:EXTernal:FREQuency	1MHz to 16MHz	not available for FSP
FSP + FSE	[SENSe<1|2>:]ROSCillator:SOURce	INTernal | EXTernal	
FSET/ ESI	[SENSe<1|2>:]SCAN<:RANGes[COUNt]	1 to 10	not available for FSP
FSE/ ESI	[SENSe<1|2>:]SCAN<1...10>:BANDwidth:RESolution	f_{min} to f_{max}	not available for FSP
FSET/ ESI	[SENSe<1|2>:]SCAN<1...10>:INPut:ATTenuation	dB_{min} to dB_{max}	not available for FSP
FSET/ ESI	[SENSe<1|2>:]SCAN<1...10>:INPut:ATTenuation:AUTO	ON | OFF	not available for FSP
FSET	[SENSe<1|2>:]SCAN<1...10>:INPut:BIMPedance	150OHM | 600OHM | 10kOHM	not available for FSP
FSET	[SENSe<1|2>:]SCAN<1...10>:INPut:GAIN	0dB to 30dB	not available for FSP
FSET/ ESI	[SENSe<1|2>:]SCAN<1...10>:INPut:GAIN:AUTO	ON | OFF	not available for FSP
ESI	[SENSe<1|2>:]SCAN<1...10>:INPut:GAIN:STATe	ON | OFF	not available for FSP
ESI	[SENSe<1|2>:]SCAN<1...10>:INPut:TYPE	INPUT1 | INPUT2	not available for FSP
FSET	[SENSe<1|2>:]SCAN<1...10>:INPut:TYPE	RF | BALanced	not available for FSP
FSET/ ESI	[SENSe<1|2>:]SCAN<1...10>:STARt	f_{min} to f_{max}	not available for FSP
FSET/ ESI	[SENSe<1|2>:]SCAN<1...10>:STEP	f_{min} to f_{max}	not available for FSP
FSET/ ESI	[SENSe<1|2>:]SCAN<1...10>:STOP	f_{min} to f_{max}	not available for FSP
FSET/ ESI	[SENSe<1|2>:]SCAN<1...10>:TIME	100 µs to 100 s	not available for FSP
FSP + FSE	[SENSe<1|2>:]SWEep:COUNt	0 to 32767	
FSP + FSE	[SENSe<1|2>:]SWEep:EGATe	ON | OFF	
FSP + FSE	[SENSe<1|2>:]SWEep:EGATe:HOLDoff	0 to 100s	
FSP + FSE	[SENSe<1|2>:]SWEep:EGATe:LENGth	0 to 100s	
FSE	[SENSe<1|2>:]SWEep:EGATe:LENGth	0 to 100s	
FSE	[SENSe<1|2>:]SWEep:EGATe:LEVel	-5V to +5V	not availabe for FSP
FSP + FSE	[SENSe<1|2>:]SWEep:EGATe:POLarity	POSitive | NEGative	
FSP + FSE	[SENSe<1|2>:]SWEep:EGATe:SOURce	EXTernal | IFPower	
FSP + FSE	[SENSe<1|2>:]SWEep:EGATe:TYPE	LEVel | EDGE	
FSE	[SENSe<1|2>:]SWEep:GAP	ON | OFF	not available for FSP
FSE	[SENSe<1|2>:]SWEep:GAP:LENGth	0 to 100s	not available for FSP
FSE	[SENSe<1|2>:]SWEep:GAP:PRETrigger	0 to 100s	not available for FSP
FSE	[SENSe<1|2>:]SWEep:GAP:TRGTogap	0 to 100s	not available for FSP
FSET/ ESI	[SENSe<1|2>:]SWEep:SPACing	LINear | LOGarithmic | AUTO	not available for FSP
FSE/ FSIQ	[SENSe<1|2>:]SWEep:SPACing	LINear | LOGarithmic	not available for FSP

Devices	Command	Parameter	Notes
FSP + FSE	[SENSe<1|2>:]SWEep:TIME	2.5ms to 1000s | 1µs to 16000s	different parameter ranges for FSP and FSE
FSP + FSE	[SENSe<1|2>:]SWEep:TIME:AUTO	ON | OFF	
FSE	[SENSe<1|2>:]TCAPture:LENGth	1024 | 2048 | 4096 | 8192 | 16384	not available for FSP
FSE	[SENSe<1|2>:]TV:PSOFfset	0 to 6.5 MHz	not available for FSP and FSET
FSE	[SENSe<1|2>:]TV[:STATe]	ON | OFF	not available for FSP and FSET
FSP + FSE	SOURce:AM:STATe	ON | OFF	
FSP + FSE	SOURce:DM:STATe	ON | OFF	
FSP	SOURce:EXTernal[:STATe]	ON | OFF	new command for FSP
FSP	SOURce:EXTernal:FREQuency:OFFset	<numeric_value>	new command for FSP
FSP	SOURce:EXTernal:FREQuency[:FACTor]:NUMerator	<numeric_value>	new command for FSP
FSP	SOURce:EXTernal:FREQuency[:FACTor]:DENominator	<numeric_value>	new command for FSP
FSP	SOURce:EXTernal:FREQuency:SWEep[:STATe]	ON | OFF	new command for FSP
FSP	SOURce:EXTernal:POWer[:LEVel]	<numeric_value>	new command for FSP
FSP + FSE	SOURce:FM:STATe	ON | OFF	
FSP + FSE	SOURce:FREQuency:OFFSet	-150Hz to 150MHz	different value ranges for FSP and FSE
FSE	SOURce:POWer:ALC:SOURce	INTernal | EXTernal	not available for FSP and FSET
FSP + FSE	SOURce:POWer[:LEVel][:IMMediate]:OFFSet	-200dB to +200dB	
FSP + FSE	SOURce:POWer[:LEVel][:IMMediate][:AMPLitude]	-30dBm to 0dBm	different value ranges for FSP and FSE
FSP + FSE	STATus:OPERation:CONDition?		
FSE	STATus:OPERation:CONDition?		
FSP + FSE	STATus:OPERation:ENABle	0 to 65535	
FSP + FSE	STATus:OPERation:NTRansition	0 to 65535	
FSP + FSE	STATus:OPERation:PTRansition	0 to 65535	
FSP + FSE	STATus:OPERation[:EVENt?]		
FSP + FSE	STATus:PRESet		
FSP + FSE	STATus:QUEStionable:ACPLimit:CONDition?		
FSP + FSE	STATus:QUEStionable:ACPLimit:ENABle	0 to 65535	
FSP + FSE	STATus:QUEStionable:ACPLimit:NTRansition	0 to 65535	
FSP + FSE	STATus:QUEStionable:ACPLimit:PTRansition	0 to 65535	
FSP + FSE	STATus:QUEStionable:ACPLimit[:EVENt]?		
FSP + FSE	STATus:QUEStionable:CONDition?		
FSP + FSE	STATus:QUEStionable:ENABle	0 to 65535	
FSP + FSE	STATus:QUEStionable:FREQuency:CONDition?		
FSP + FSE	STATus:QUEStionable:FREQuency:ENABle	0 to 65535	
FSP + FSE	STATus:QUEStionable:FREQuency:NTRansition	0 to 65535	
FSP + FSE	STATus:QUEStionable:FREQuency:PTRansition	0 to 65535	
FSP + FSE	STATus:QUEStionable:FREQuency[:EVENt]?		
FSP + FSE	STATus:QUEStionable:LIMit<1|2>:CONDition?		FSP: individual registers for screen A and B
FSP + FSE	STATus:QUEStionable:LIMit<1|2>:ENABle	0 to 65535	FSP: individual registers for screen A and B
FSP + FSE	STATus:QUEStionable:LIMit<1|2>:NTRansition	0 to 65535	FSP: individual registers for screen A and B
FSP + FSE	STATus:QUEStionable:LIMit<1|2>:PTRansition	0 to 65535	FSP: individual registers for screen A and B
FSP + FSE	STATus:QUEStionable:LIMit<1|2>[:EVENt]?		FSP: individual registers for screen A and B
FSP + FSE	STATus:QUEStionable:LMARgin<1|2>:CONDition?		FSP: individual registers for screen A and B
FSP + FSE	STATus:QUEStionable:LMARgin<1|2>:ENABle	0 to 65535	FSP: individual registers for screen A and B
FSP + FSE	STATus:QUEStionable:LMARgin<1|2>:NTRansition	0 to 65535	FSP: individual registers for screen A and B
FSP + FSE	STATus:QUEStionable:LMARgin<1|2>:PTRansition	0 to 65535	FSP: individual registers for screen A and B
FSP + FSE	STATus:QUEStionable:LMARgin<1|2>[:EVENt]?		FSP: individual registers for screen A and B
FSP + FSE	STATus:QUEStionable:NTRansition	0 to 65535	
FSP + FSE	STATus:QUEStionable:POWer:CONDition?		

Devices	Command	Parameter	Notes
FSP + FSE	STATus:QUEStionable:POWer:ENABle	0 to 65535	
FSP + FSE	STATus:QUEStionable:POWer:NTRansition	0 to 65535	
FSP + FSE	STATus:QUEStionable:POWer:PTRansition	0 to 65535	
FSP + FSE	STATus:QUEStionable:POWer[:EVENt]?		
FSP + FSE	STATus:QUEStionable:PTRansition	0 to 65535	
FSE	STATus:QUEStionable:SYNC:CONDition?		not available for FSP
FSE	STATus:QUEStionable:SYNC:ENABle	0 to 65535	not available for FSP
FSE	STATus:QUEStionable:SYNC:NTRansition	0 to 65535	not available for FSP
FSE	STATus:QUEStionable:SYNC:PTRansition	0 to 65535	not available for FSP
FSE	STATus:QUEStionable:SYNC[:EVENt]?		not available for FSP
FSE	STATus:QUEStionable:TRANsducer:CONDition?		not available for FSP
FSE	STATus:QUEStionable:TRANsducer:ENABle	0 to 65535	not available for FSP
FSE	STATus:QUEStionable:TRANsducer:NTRansition	0 to 65535	not available for FSP
FSE	STATus:QUEStionable:TRANsducer:PTRansition	0 to 65535	not available for FSP
FSE	STATus:QUEStionable:TRANsducer[:EVENt]?		not available for FSP
FSP + FSE	STATus:QUEStionable[:EVENt]?		
FSP + FSE	STATus:QUEue[:NEXT?]		
FSE	SYSTem:BINFo?		not available for FSP
FSP	SYSTem:COMMunicate:GPIB:RDEVice:GENerator<1|2>:ADDRess	0 to 30	new command for FSP
FSE	SYSTem:COMMunicate:GPIB:RDEVice<1|2>:ADDRess	0 to 30	not available for FSP
FSP + FSE	SYSTem:COMMunicate:GPIB[:SELF]:ADDRess	0 to 30	
FSP + FSE	SYSTem:COMMunicate:GPIB[:SELF]:RTERminator	LFEOI | EOI	
FSP + FSE	SYSTem:COMMunicate:PRINter:ENUMerate:FIRSt?		
FSP + FSE	SYSTem:COMMunicate:PRINter:ENUMerate:NEXT?		
FSP	SYSTem:COMMunicate:PRINter:SELect<1|2>	<printer_name>	numeric suffix behind SELect
FSIQ/ ESI	SYSTem:COMMunicate:PRINter<1|2>:SELect	<printer_name>	numeric suffix behind PRINters
FSP	SYSTem:COMMunicate:RDEVice:GENerator<1|2>:LINK	GPIB | TTL	new function for FSP
FSP	SYSTem:COMMunicate:RDEVice:GENerator<1|2>:TYPE	<name>	new function for FSP
FSP + FSE	SYSTem:COMMunicate:SERial:CONTrol:DTR	IBFull | OFF	only SERial1 available for FSP
FSP + FSE	SYSTem:COMMunicate:SERial:CONTrol:RTS	IBFull | OFF	only SERial1 available for FSP
FSP + FSE	SYSTem:COMMunicate:SERial[:RECeive]:BAUD	110 | 300 | 600 | 1200 | 2400 | 9600 | 19200	only SERial1 available for FSP
FSP + FSE	SYSTem:COMMunicate:SERial[:RECeive]:BITS	7 | 8	only SERial1 available for FSP
FSP + FSE	SYSTem:COMMunicate:SERial[:RECeive]:PACE	XON | NONE	only SERial1 available for FSP
FSP + FSE	SYSTem:COMMunicate:SERial[:RECeive]:PARity[:TYPE]	EVEN | ODD | NONE	only SERial1 available for FSP
FSP + FSE	SYSTem:COMMunicate:SERial[:RECeive]:SBITs	1 | 2	only SERial1 available for FSP
FSP + FSE	SYSTem:DATE	1980 to 2099, 1 to 12, 1 to 31	
FSP	SYSTem:DISPlay:FPANel	ON | OFF	new function for FSP
FSP + FSE	SYSTem:DISPlay:UPDate	ON | OFF	
FSP + FSE	SYSTem:ERRor[:NEXT]?		new function for FSP, but compatible to SYSTem:ERRor? on the FSE
FSP	SYSTem:ERRor:LIST?		new function for FSP
FSP	SYSTem:ERRor:CLEar:ALL		new command for FSP
FSP + FSE	SYSTem:PASSword[:CENable]	'pass word	
FSP + FSE	SYSTem:PRESet		
ESI/ FSIQ	SYSTem:PRESet:COMPatible	FSE | OFF	not available for FSP
FSP + FSE	SYSTem:SET		
FSP + FSE	SYSTem:SPEaker:VOLume	0 to 1	
FSP + FSE	SYSTem:TIME	0 to 23, 0 to 59, 0 to 59	
FSP + FSE	SYSTem:VERSion?		
FSP + FSE	TRACe:COPY	TRACE1 | TRACE2 | TRACE3 , TRACE1 | TRACE2 | TRACE3	only TRACE1...TRACE3 available for FSP
FSET/ ESI	TRACe:FEED:CONTrol<1...4>	ALWays | NEVer	not available for FSP

Devices	Command	Parameter	Notes
FSP + FSE	TRACe[:DATA]	TRACE1 | TRACE2 | TRACE3 , <block> | <numeric_value>	only TRACE1...TRACE3 available for FSP
FSET/ ESI	TRACe[:DATA]	TRACE1| TRACE2| TRACE3| TRACE4| SINGle| SCAN| STATus, <block> | <numeric_value>	
FSP	TRACe:IQ:DATA?		new function for FSP
FSP	TRACe:IQ:DATA:MEMory?	<offset samples>, <# of samples>	new function for FSP
FSP	TRACe:IQ:SET	<filter type>, <rbw>, <sample rate>, <trigger source>, <trigger slope>, <pretrigger samples>, <# of samples>	new function for FSP
FSP	TRACe:IQ:SRATe	16kHz to 32MHz	new function for FSP
FSP	TRACe:IQ[:STATe]	ON | OFF	new function for FSP
FSP + FSE	TRIGger<1|2>[:SEQuence]:HOLDoff	0 to 100s	
FSE	TRIGger<1|2>[:SEQuence]:LEVel:AF	-120 to +120PCT	not available for FSP
FSE	TRIGger<1|2>[:SEQuence]:LEVel:VIDeo	0 to 100PCT	not available for FSP; replaced by TRIGger:SEQuence:SOURce :VIDeo
FSE	TRIGger<1|2>[:SEQuence]:LEVel[:EXTernal]	-5.0 to +5.0V	not available for FSP
FSP + FSE	TRIGger<1|2>[:SEQuence]:SLOPe	POSitive | NEGative	
FSP	TRIGger<1|2>[:SEQuence]:SOURce	IMMediate | LINE | EXTernal | VIDeo | IFPower	
FSE/ ESI	TRIGger<1|2>[:SEQuence]:SOURce	IMMediate | LINE | EXTernal | VIDeo | RFPower | TV | AF	
FSIQ	TRIGger<1|2>[:SEQuence]:SOURce	IMMediate | LINE | EXTernal | VIDeo | RFPower | AF	
FSET	TRIGger<1|2>[:SEQuence]:SOURce	IMMediate | LINE | EXTernal | VIDeo	
FSP + FSE	TRIGger<1|2>[:SEQuence]:SOURce:VIDeo	0 to 100PCT	
FSE/ ESI	TRIGger<1|2>[:SEQuence]:SYNChronize:ADJust:FRAMe	0 to 100s	not available for FSP
FSE	TRIGger<1|2>[:SEQuence]:SYNChronize:ADJust:FRAMe:AUTO	ONCE	not available for FSP and FSET
FSE	TRIGger<1|2>[:SEQuence]:SYNChronize:ADJust:SLOT	0 to 100s	not available for FSP and FSET
FSE	TRIGger<1|2>[:SEQuence]:SYNChronize:ADJust:SLOT:AUTO	ONCE	not available for FSP and FSET
FSE	TRIGger<1|2>[:SEQuence]:SYNChronize:SOURce	FRAMe | TSC	not available for FSP and FSET
FSE/ ESI	TRIGger<1|2>[:SEQuence]:VIDeo:FIELd:SELect	ALL | ODD | EVEN	not available for FSP
FSE/ ESI	TRIGger<1|2>[:SEQuence]:VIDeo:FORMat:LPFRame	525 | 625	not available for FSP
FSE/ ESI	TRIGger<1|2>[:SEQuence]:VIDeo:LINE:NUMBer	<numeric_value>	not available for FSP
FSE/ ESI	TRIGger<1|2>[:SEQuence]:VIDeo:SSIGnal:POLarity	NEGative | POSitive	not available for FSP
FSP	UNIT<1|2>:POWer	DBM | DBPW | WATT | DBUV | DBMV | VOLT | DBUA | AMP | V | A | W	available units are compatible to the FSE.
FSE/ FSIQ	UNIT<1|2>:POWer	DBM | DBPW | WATT | DBUV | DBMV | VOLT | DBUA | AMP | DB | PCT | UNITLESS | DBUV_MHZ | DBMV_MHZ | DBUA_MHZ | DBUV_M | DBIA_M | DBUV_MMHZ | DBUA_MMHZ	for FSP, the following units apply:DBM | DBPW | WATT | DBUV | DBMV | VOLT | DBUA | AMP | V | A | W

Devices	Command	Parameter	Notes
FSET/ ESI	UNIT<1|2>:POWer	DBM | DBPW | DBPT | WATT | DBUV | DBMV | VOLT | DBUA | AMPere | V | W | DB | PCT | UNITLESS | DBUV_MHZ | DBMV_MHZ | DBUA_MHZ | DBUV_M | DBIA_M | DBUV_MMHZ | DBUA_MMHZ	for FSP, the following units apply:DBM | DBPW | WATT | DBUV | DBMV | VOLT | DBUA | AMP | V | A | W
FSE	UNIT<1|2>:PROBe	ON | OFF	not available for FSP

Alphabetical List of Commands

In the following, all remote-control commands are listed with their parameters and page numbers. Generally, they are arranged alphabetically according to the keywords of the command. The list of common commands starts the table.

Command	Parameter	Page
*CAL?		6.5
*CLS		6.5
*ESE	0 ... 255	6.5
*ESR?		6.5
*IDN?		6.5
*IST?		6.5
*OPC		6.5
*OPC?		6.5
*OPT?		6.6
*PCB	0 ... 30	6.6
*PRE	0 ... 255	6.6
*PSC	0 | 1	6.6
*RST		6.7
*SRE	0 ... 255	6.7
*STB?		6.7
*TRG		6.7
*TST?		6.7
*WAI		6.7
ABORt		6.8
CALCulate<1|2>:DELTamarker<1...4>:AOFF		6.10
CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:FIXed:RPOint:X	<numeric_value>	6.15
CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:FIXed:RPOint:Y	<numeric_value>	6.15
CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:FIXed:RPOint:Y:OFFSet	<numeric_value>	6.15
CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:FIXed[:STATe]	ON | OFF	6.14
CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:PNOise:RESult?		6.16
CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:PNOise[:STATe]	ON | OFF	6.16
CALCulate<1|2>:DELTamarker<1...4>:MAXimum:LEFT		6.13
CALCulate<1|2>:DELTamarker<1...4>:MAXimum:NEXT		6.12
CALCulate<1|2>:DELTamarker<1...4>:MAXimum[:PEAK]		6.12
CALCulate<1|2>:DELTamarker<1...4>:MAXimum:RIGHt		6.13
CALCulate<1|2>:DELTamarker<1...4>:MINimum:LEFT		6.14
CALCulate<1|2>:DELTamarker<1...4>:MINimum:NEXT		6.13
CALCulate<1|2>:DELTamarker<1...4>:MINimum[:PEAK]		6.13
CALCulate<1|2>:DELTamarker<1...4>:MINimum:RIGHt		6.14
CALCulate<1|2>:DELTamarker<1...4>:MODE	ABSolute | RELative	6.10
CALCulate<1|2>:DELTamarker<1...4>[:STATe]	ON | OFF	6.9
CALCulate<1|2>:DELTamarker<1...4>:TRACe	1...3	6.10
CALCulate<1|2>:DELTamarker<1...4>:X	0 ... MAX (Frequenz | Sweepzeit)	6.11
CALCulate<1|2>:DELTamarker<1...4>:X:RELative		6.11

Command	Parameter	Page
CALCulate<1|2>:DELTamarker<1...4>:Y?		6.12
CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel:ABSolute	-200...200 DBM, -200...200 DBM	6.24
CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel:ABSolute:STATe	ON | OFF	6.25
CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel[:RELative]	0...100 DB, 0...100 DB	6.22
CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel[:RELative]:STATe	ON | OFF	6.23
CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel:RESult?		6.26
CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate<1|2>:ABSolute	-200...200 DBM, -200...200 DBM	6.29
CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate<1|2>:ABSolute:STATe	ON | OFF	6.30
CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate<1|2>[:RELative]	0...100 DB, 0...100 DB	6.27
CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate<1|2>[:RELative]:STATe	ON | OFF	6.28
CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate<1|2>:RESult?		6.31
CALCulate<1|2>:LIMit<1...8>:ACPower[:STATe]	ON | OFF	6.21
CALCulate<1|2>:LIMit<1...8>:CLEar[:IMMediate]		6.19
CALCulate<1|2>:LIMit<1...8>:COMMent	<string>	6.20
CALCulate<1|2>:LIMit<1...8>:CONTrol[:DATA]	<numeric value>,<numeric value>	6.32
CALCulate<1|2>:LIMit<1...8>:CONTrol:DOMain	FREQuency | TIME	6.32
CALCulate<1|2>:LIMit<1...8>:CONTrol:MODE	RELative | ABSolute	6.33
CALCulate<1|2>:LIMit<1...8>:CONTrol:OFFset	<numeric value>	6.33
CALCulate<1|2>:LIMit<1...8>:CONTrol:SHIFt	<numeric_value>	6.33
CALCulate<1|2>:LIMit<1...8>:COPY	1...8|<name>	6.20
CALCulate<1|2>:LIMit<1...8>:DELete		6.20
CALCulate<1|2>:LIMit<1...8>:FAIL?		6.19
CALCulate<1|2>:LIMit<1...8>:LOWer[:DATA]	<numeric value>	6.34
CALCulate<1|2>:LIMit<1...8>:LOWer:MARGin	<numeric value>	6.35
CALCulate<1|2>:LIMit<1...8>:LOWer:MODE	RELative | ABSolute	6.35
CALCulate<1|2>:LIMit<1...8>:LOWer:OFFset	<numeric value>	6.35
CALCulate<1|2>:LIMit<1...8>:LOWer:SHIFt	<numeric_value>	6.36
CALCulate<1|2>:LIMit<1...8>:LOWer:STATe	ON | OFF	6.35
CALCulate<1|2>:LIMit<1...8>:LOWer:THReshold	<numeric value>	6.36
CALCulate<1|2>:LIMit<1...8>:NAME	1...8|<string>	6.20
CALCulate<1|2>:LIMit<1...8>:STATe	ON | OFF	6.18
CALCulate<1|2>:LIMit<1...8>:TRACe	<numeric_value>	6.18
CALCulate<1|2>:LIMit<1..8>:UNIT	DBM | DBPW | WATT | DBUV | DBMV | VOLT | DBUA | AMPere | DB | DBUV_M | DBUA_M | DEG | RAD | S | HZ | PCT | UNITLESS	6.19
CALCulate<1|2>:LIMit<1...8>:UPPer[:DATA]	<numeric value>	6.37
CALCulate<1|2>:LIMit<1...8>:UPPer:MARGin	<numeric value>	6.38
CALCulate<1|2>:LIMit<1...8>:UPPer:MODE	RELative | ABSolute	6.39
CALCulate<1|2>:LIMit<1...8>:UPPer:OFFset	<numeric value>	6.38
CALCulate<1|2>:LIMit<1...8>:UPPer:SHIFt	<numeric_value>	6.39
CALCulate<1|2>:LIMit<1...8>:UPPer:STATe	ON | OFF	6.38
CALCulate<1|2>:LIMit<1...8>:UPPer:THReshold	<numeric value>	6.39
CALCulate<1|2>:MARKer:FUNCtion:ZOOM	<numeric value>	6.51

Command	Parameter	Page
CALCulate<1|2>:MARKer<1...4>:AOFF		6.41
CALCulate<1|2>:MARKer<1...4>:COUNt	ON | OFF	6.43
CALCulate<1|2>:MARKer<1...4>:COUNt:FREQuency?		6.43
CALCulate<1|2>:MARKer<1...4>:COUNt:RESolution	0.1 | 1 | 10 | 100 | 1000 | 10000 Hz	6.43
CALCulate<1|2>:MARKer<1...4>:FUNCtion:CENTer		6.54
CALCulate<1|2>:MARKer<1...4>:FUNCtion:CSTep		6.55
CALCulate<1|2>:MARKer<1...4>:FUNCtion:DEModulation:CONTinuous	ON | OFF	6.52
CALCulate<1|2>:MARKer<1...4>:FUNCtion:DEModulation:HOLDoff	10ms ... 1000s	6.52
CALCulate<1|2>:MARKer<1...4>:FUNCtion:DEModulation:SELect	AM | FM	6.52
CALCulate<1|2>:MARKer<1...4>:FUNCtion:DEModulation[:STATe]	ON | OFF	6.52
CALCulate<1|2>:MARKer<1...4>:FUNCtion:MDEPth:RESult?		6.53
CALCulate<1|2>:MARKer<1...4>:FUNCtion:MDEPth[:STATe]		6.53
CALCulate<1|2>:MARKer<1...4>:FUNCtion:NDBDown	<numeric value>	6.49
CALCulate<1|2>:MARKer<1...4>:FUNCtion:NDBDown:FREQuency?		6.50
CALCulate<1|2>:MARKer<1...4>:FUNCtion:NDBDown:RESult?		6.50
CALCulate<1|2>:MARKer<1...4>:FUNCtion:NDBDown:STATe	ON | OFF	6.50
CALCulate<1|2>:MARKer<1...4>:FUNCtion:NOISe:RESult?		6.51
CALCulate<1|2>:MARKer<1...4>:FUNCtion:NOISe[:STATe]	ON | OFF	6.51
CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer:PRESet	<standard>	6.60
CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer:RESult:PHZ	ON | OFF	6.59
CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer:RESult?	ACPower | CPOWer | OBANdwidth | OBWidth	6.57
CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer:SELect?	ACPower | CPOWer | OBANdwidth | OBWidth	6.56
CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer[:STATe]	OFF	6.60
CALCulate<1|2>:MARKer<1...4>:FUNCtion:REFerence		6.55
CALCulate<1|2>:MARKer<1...4>:FUNCtion:STRack:BANDwidth|BWIDth	10 Hz...MAX(SPAN)	6.61
CALCulate<1|2>:MARKer<1...4>:FUNCtion:STRack[:STATe]	ON | OFF	6.61
CALCulate<1|2>:MARKer<1...4>:FUNCtion:STRack:THReshold	-330 dBm...+30 dBm	6.62
CALCulate<1|2>:MARKer<1...4>:FUNCtion:STRack:TRACe	1...3	6.62
CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:AOFF		6.73
CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:AVERage	ON | OFF	6.72
CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MEAN:AVERage:RESult?		6.68
CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MEAN:PHOLd:RESult?		6.69
CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MEAN:RESult?		6.68
CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MEAN[:STATe]	ON | OFF	6.67
CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MODE	ABSolute | RELative	6.72
CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:PHOLd	ON | OFF	6.71
CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:PPEak:AVERage:RESult?		6.65
CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:PPEak:PHOLd:RESult?		6.65
CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:PPEak:RESult?		6.64
CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:PPEak[:STATe]	ON | OFF	6.64
CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:REFerence:AUTO	ONCE	6.73
CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:RMS:AVERage:RESult?		6.66
CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:RMS:PHOLd:RESult?		6.67
CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:RMS:RESult?		6.66

Command	Parameter	Page
CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:RMS[:STATe]	ON | OFF	6.66
CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:SDEViation:AVERage:RESult?		6.70
CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:SDEViation:PHOLd:RESult?		6.71
CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:SDEViation:RESult?		6.70
CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:SDEViation[:STATe]	ON | OFF	6.69
CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary[:STATe]	ON | OFF	6.64
CALCulate<1|2>:MARKer<1...4>:FUNCtion:TOI:RESult?		6.54
CALCulate<1|2>:MARKer<1...4>:FUNCtion:TOI[:STATe]	ON | OFF	6.54
CALCulate<1|2>:MARKer<1...4>:LOEXclude	ON | OFF	6.44
CALCulate<1|2>:MARKer<1...4>:MAXimum:LEFT		6.46
CALCulate<1|2>:MARKer<1...4>:MAXimum:NEXT		6.45
CALCulate<1|2>:MARKer<1...4>:MAXimum[:PEAK]		6.45
CALCulate<1|2>:MARKer<1...4>:MAXimum:RIGHt		6.46
CALCulate<1|2>:MARKer<1...4>:MINimum:LEFT		6.47
CALCulate<1|2>:MARKer<1...4>:MINimum:NEXT		6.47
CALCulate<1|2>:MARKer<1...4>:MINimum[:PEAK]		6.46
CALCulate<1|2>:MARKer<1...4>:MINimum:RIGHt		6.47
CALCulate<1|2>:MARKer<1...4>:PEXCursion	<numeric value>	6.48
CALCulate<1|2>:MARKer<1...4>[:STATe]	ON | OFF	6.40
CALCulate<1|2>:MARKer<1...4>:TRACe	1...3	6.41
CALCulate<1|2>:MARKer<1...4>:X	0 ... MAX (Frequenz|Sweepzeit)	6.41
CALCulate<1|2>:MARKer<1...4>:X:SLIMits:LEFT	0 ... MAX (Frequenz|Sweepzeit)	6.42
CALCulate<1|2>:MARKer<1...4>:X:SLIMits:RIGHt	0 ... MAX (Frequenz|Sweepzeit)	6.42
CALCulate<1|2>:MARKer<1...4>:X:SLIMits[:STATe]	ON | OFF	6.41
CALCulate<1|2>:MARKer<1...4>:Y:PERCent	0 ... 100%	6.44
CALCulate<1|2>:MARKer<1...4>:Y?		6.44
CALCulate<1|2>:MATH[:EXPRession][:DEFine]	<expr>	6.74
CALCulate<1|2>:MATH:MODE LINear | LOGarithmic		6.75
CALCulate<1|2>:MATH:POS	-100PCT ... 200PCT	6.74
CALCulate<1|2>:MATH:STATe	ON | OFF	6.75
CALCulate:STATistics:APD[:STATe]	ON | OFF	6.76
CALCulate:STATistics:CCDF[:STATe]	ON | OFF	6.76
CALCulate:STATistics:NSAMples	100 ... 1E9	6.77
CALCulate:STATistics:PRESet		6.78
CALCulate:STATistics:Result<1...3>?	MEAN|PEAK|CFACtor|ALL	6.79
CALCulate:STATistics:SCALe:AUTO	ONCE	6.77
CALCulate:STATistics:SCALe:X:RANGe	-10dB...200dB	6.78
CALCulate:STATistics:SCALe:X:RLEVel	-130dBm...30dBm	6.77
CALCulate:STATistics:SCALe:Y:LOWer	-1E-9...0.1	6.78
CALCulate:STATistics:SCALe:Y:UPPer	-1E-8...1.0	6.78
CALCulate<1|2>:THReshold	MIN ... MAX (abhängig von akt. Einheit)	6.80
CALCulate<1|2>:THReshold:STATe	ON | OFF	6.80
CALCulate<1|2>:UNIT:POWer	DBM | V| A| W | DBPW | WATT | DBUV | DBMV | VOLT | DBUA | AMPere |	6.81
CALibration:ABORt		6.82

Command	Parameter	Page
CALibration[:ALL]?		6.82
CALibration:RESult?		6.83
CALibration:STATe	ON | OFF	6.83
DIAGnostic:SERVice:CSOurce[:POWer]	<numeric_value>	6.85
DIAGnostic:SERVice:INPut[:SELect]	CALibration | RF	6.84
DIAGnostic:SERVice:NSOurce	ON | OFF	6.85
DIAGnostic:SERVice:SFUNction	<string>...	6.84
DIAGnostic:SERVice:STESt:RESult?		6.85
DISPlay:ANNotation:FREQuency	ON | OFF	6.87
DISPlay:CMAP<1...26>:DEFault<1|2>		6.88
DISPlay:CMAP<1...26>:HSL	0..1,0..1,0..1	6.88
DISPlay:CMAP<1...26>:PDEFined	<color>	6.89
DISPlay:FORmat	SINGle | SPLit	6.87
DISPlay:LOGO	ON | OFF	6.87
DISPlay:PSAVe:HOLDoff	0...60	6.87
DISPlay:PSAVe[:STATe]	ON | OFF	6.87
DISPlay[:WINDow<1|2>]:SELect		6.89
DISPlay[:WINDow<1|2>]:TEXT[:DATA]	<string>	6.89
DISPlay[:WINDow<1|2>]:TEXT:STATe	ON | OFF	6.90
DISPlay[:WINDow<1|2>]:TIME	ON | OFF	6.90
DISPlay[:WINDow<1|2>]:TRACe<1...3>:MODE	WRITe | VIEW | AVERage | MAXHold | MINHold	6.92
DISPlay[:WINDow<1|2>]:TRACe<1...3>:Y[:SCALe]	10dB ... 200dB	6.90
DISPlay[:WINDow<1|2>]:TRACe<1...3>:Y[:SCALe]:MODE	ABSolute | RELative	6.90
DISPlay[:WINDow<1|2>]:TRACe<1...3>:Y[:SCALe]:RLEVel	-130dBm ... 30dBm	6.91
DISPlay[:WINDow<1|2>]:TRACe<1...3>:Y[:SCALe]:RLEVel:OFFSet	-200dB ... 200dB	6.91
DISPlay[:WINDow<1|2>]:TRACe<1...3>:Y[:SCALe]:RPOSition	0...100 PCT	6.92
DISPlay[:WINDow<1|2>]:TRACe<1...3>:Y[:SCALe]:RVALue	<numeric value>	6.91
DISPlay[:WINDow<1|2>]:TRACe<1...3>[:STATe]	ON | OFF	6.93
DISPlay[:WINDow<1|2>]:TRACe<1...3>:Y:SPACing	LINear | LOGarithmic	6.92
FORMat[:DATA]	ASCii | REAL[,32]	6.94
FORMat:DEXPort:DSEParator POINt|COMMa		6.94
HCOPy:ABORt		6.95
HCOPy:DESTination<1|2>	'' 'MMEM' | 'SYST:COMM:PRIN' | 'SYST:COMM:CLIP'	6.96
HCOPy:DEVice:COLor	ON | OFF	6.96
HCOPy:DEVice:LANGuage<1|2>	GDI | WMF | EWMF | BMP	6.97
HCOPy[:IMMediate]		6.97
HCOPy:ITEM:ALL		6.98
HCOPy:ITEM:WINDow<1|2>:TABle:STATe	ON | OFF	6.98
HCOPy:ITEM:WINDow<1|2>:TEXT	<string>	6.98
HCOPy:ITEM:WINDow<1|2>:TRACe:STATe	ON | OFF	6.98
HCOPy:PAGE:ORIentation<1|2>	LANDscape | PORTrait	6.99
INITiate<1|2>:CONMeas	ON | OFF	6.100
INITiate<1|2>:CONTinuous	ON | OFF	6.100
INITiate<1|2>:DISPlay	ON | OFF	6.101

Command	Parameter	Page
INITiate<1|2>[:IMMediate]		6.101
INPut<1|2>:ATTenuation	0 ... 70/75dB	6.102
INPut<1|2>:ATTenuation:AUTO	ON | OFF	6.102
INPut<1|2>:EATT (nur mit Option FSP-B25)	0 ... 30dB	6.103
INPut<1|2>:EATT:AUTO (nur mit Option FSP-B25)	ON | OFF	6.103
INPut<1|2>:EATT:STATe (nur mit Option FSP-B25)	ON | OFF	6.103
INPut<1|2>:GAIN:STATe (nur mit Option FSP-B25)	ON | OFF	6.104
INPut<1|2>:IMPedance (nur mit Option FSP-B25)	50 | 75	6.104
INSTrument:COUPle	NONE | RLEVel | CF_B | CF_A	6.106
INSTrument<1|2>:NSELect	1	6.105
INSTrument<1|2>[:SELect]	SANalyzer	6.105
MMEMory:CATalog?	Pfad	6.108
MMEMory:CDIRectory	Verzeichnisname	6.109
MMEMory:CLear:ALL		6.116
MMEMory:CLear:STATe	1,Pfad	6.116
MMEMory:COMMent	<string>	6.118
MMEMory:COPY	Pfad\Datei, Pfad\Datei	6.109
MMEMory:DATA	Dateiname[, <Blockdaten>]	6.110
MMEMory:DELete	Pfad\Dateiname	6.111
MMEMory:LOAD:AUTO	1,Pfad	6.113
MMEMory:LOAD:STATe	1,Pfad	6.112
MMEMory:MDIRectory	Pfad	6.113
MMEMory:MOVE	Pfad	6.114
MMEMory:MSIS	'A:' | 'D:'	6.114
MMEMory:NAME	Pfad\Dateiname	6.114
MMEMory:RDIRectory	Verzeichnisname	6.115
MMEMory:SELect[:ITEM]:ALL		6.117
MMEMory:SELect[:ITEM]:DEFault		6.118
MMEMory:SELect[:ITEM]:HWSettings	ON | OFF	6.116
MMEMory:SELect[:ITEM]:LINes:ALL	ON | OFF	6.117
MMEMory:SELect[:ITEM]:NONE		6.118
MMEMory:SELect[:ITEM]:SCData	ON | OFF	6.117
MMEMory:SELect[:ITEM]:TRACe[:ACTive]	ON | OFF	6.117
MMEMory:STORe<1|2>:STATe	1,Pfad	6.115
MMEMory:STORe<1|2>:TRACe	1...3,Pfad	6.115
OUTPut<1| 2>[:STATe]	ON | OFF	6.119
[SENSe<1|2>:]AVERage:COUNt	0...32767	6.121
[SENSe<1|2>:]AVERage[:STATe<1...3>]	ON | OFF	6.121
[SENSe<1|2>:]AVERage:TYPE	VIDeo | LINear	6.121
[SENSe<1|2>:]BANDwidth|BWIDth[:RESolution]	$10Hz...10MHz (Analoge Filter) 1Hz...10MHz (FFT-Filter)	6.122

Command	Parameter	Page
[SENSe<1|2>:]BANDwidth|BWIDth[:RESolution]:AUTO	ON | OFF	6.123
[SENSe<1|2>:]BANDwidth|BWIDth[:RESolution]:RATio	0.0001...1	6.123
[SENSe<1|2>:]BANDwidth|BWIDth[:RESolution]:TYPE	NORMal | FFT | CFILter | RRC	6.123
[SENSe<1|2>:]BANDwidth|BWIDth:VIDeo	1Hz...10MHz	6.124
[SENSe<1|2>:]BANDwidth|BWIDth:VIDeo:AUTO	ON | OFF	6.124
[SENSe<1|2>:]BANDwidth|BWIDth:VIDeo:RATio	0.01...1000	6.124
[SENSe<1|2>:]CORRection:COLLect[:ACQuire]	THRough | OPEN	6.126
[SENSe<1|2>:]CORRection:METHod	TRANsmission | REFLexion	6.125
[SENSe<1|2>:]CORRection:RECall		6.126
[SENSe<1|2>:]CORRection[:STATe]	ON | OFF	6.125
[SENSe<1|2>:]DETector[:FUNCtion]:AUTO	ON | OFF	6.127
[SENSe<1|2>:]DETector<1..4>[:FUNCtion]	APEak |NEGative | POSitive | SAMPle | RMS | AVERage | QPEak	6.127
[SENSe<1|2>:]FREQuency:CENTer	0 ... f_{max}	6.128
[SENSe<1|2>:]FREQuency:CENTer:STEP	0 ... f_{max}	6.128
[SENSe<1|2>:]FREQuency:CENTer:STEP:LINK	SPAN | RBW | OFF	6.128
[SENSe<1|2>:]FREQuency:CENTer:STEP:LINK:FACTor	1 ... 100 PCT	6.129
[SENSe<1|2>:]FREQuency:MODE	CW|FIXed | SWEep	6.130
[SENSe<1|2>:]FREQuency:OFFSet	<numeric_value>	6.130
[SENSe<1|2>:]FREQuency:SPAN	0 ... f_{max}	6.129
[SENSe<1|2>:]FREQuency:SPAN:FULL		6.129
[SENSe<1|2>:]FREQuency:STARt	0 ... f_{max}	6.129
[SENSe<1|2>:]FREQuency:STOP	0 ... f_{max}	6.129
[SENSe<1|2>:]LIST:POWer:RESult?		6.136
[SENSe<1|2>:]LIST:POWer[SEQuence]	<analyzer freq>,<ref level>, <rf att>, <el att>, <filter type>, <rbw>,<vbw>,<meas time>,<trigger level>,...	6.132
[SENSe<1|2>:]LIST:POWer:SET	<PEAK meas>, <RMS meas>, <AVG meas>, <trigger mode>, <trigger slope>,<trigger offset>,<gate length>	6.135
[SENSe<1|2>:]LIST:POWer:STATe OFF		6.136
[SENSe<1|2>:]MPOWer:RESult[:LIST]?		6.140
[SENSe<1|2>:]MPOWer:RESult:MIN?		6.140
[SENSe<1|2>:]MPOWer[:SEQuence]	<analyzer freq>,<rbw>,<meas time>,<trigger source>,<trigger level>,<trigger offset>,<type of meas>,<# of meas>	6.138
[SENSe<1|2>:]POWer:ACHannel:ACPairs	0 ... 3	6.142
[SENSe<1|2>:]POWer:ACHannel:BANDwidth|BWIDth:ACHannel	100 ... 1000MHz	6.143
[SENSe<1|2>:]POWer:ACHannel:BANDwidth|BWIDth:ALTernate<1|2>	100...1000MHz	6.143
[SENSe<1|2>:]POWer:ACHannel:BANDwidth|BWIDth[:CHANnel]	100 ... 1000MHz	6.142
[SENSe<1|2>:]POWer:ACHannel:MODE	ABSolute | RELative	6.143
[SENSe<1|2>:]POWer:ACHannel:PRESet	ACPower | CPOWer | OBANdwidth | OBWidth	6.144

Command	Parameter	Page
[SENSe<1|2>:]POWer:ACHannel:PRESet:RLEVel		6.144
[SENSe<1|2>:]POWer:ACHannel:REFerence:AUTO	ONCE	6.143
[SENSe<1|2>:]POWer:ACHannel:SPACing[:ACHannel]	100 ... 2000MHz	6.141
[SENSe<1|2>:]POWer:ACHannel:SPACing:ALTernate<1|2>	100 ... 2000MHz	6.142
[SENSe<1|2>:]POWer:BANDwidth|BWIDth	10 ... 99.9PCT	6.145
[SENSe<1|2>:]POWer:HSPeed	ON | OFF	6.145
[SENSe<1|2>:]POWer:TRACe	1 ... 3	6.145
[SENSe<1|2>:]ROSCillator:[INTernal:]TUNe	0 ... 4095	6.146
[SENSe<1|2>:]ROSCillator:[INTernal:]TUNe:SAVe		6.146
[SENSe<1|2>:]ROSCillator:SOURce	INTernal | EXTernal	6.146
[SENSe<1|2>:]SWEep:COUNt	0 ... 32767	6.148
[SENSe<1|2>:]SWEep:EGATe	ON | OFF	6.148
[SENSe<1|2>:]SWEep:EGATe:HOLDoff	125ns ... 100s	6.149
[SENSe<1|2>:]SWEep:EGATe:LENGth	0 ... 100s	6.149
[SENSe<1|2>:]SWEep:EGATe:POLarity	POSitive | NEGative	6.149
[SENSe<1|2>:]SWEep:EGATe:SOURce	EXTernal | IFPower	6.149
[SENSe<1|2>:]SWEep:EGATe:TYPE	LEVel | EDGE	6.148
[SENSe<1|2>:]SWEep:TIME	5ms ... 1000s | 1µs ... 16000s	6.147
[SENSe<1|2>:]SWEep:TIME:AUTO	ON | OFF	6.147
SOURce<1|2>:AM:STATe	ON | OFF	6.150
SOURce<1|2>:DM:STATe	ON | OFF	6.150
SOURce<1|2>:FM:DEViation	100Hz...10MHz	6.151
SOURce<1|2>:FM:STATe	ON | OFF	6.151
SOURce<1|2>:FREQuency:OFFSet	-150MHz .. 150MHz	6.151
SOURce<1|2>:EXTernal<1|2>:FREQuency[:FACTor]:DENominator	<numeric_value>	6.153
SOURce<1|2>:EXTernal<1|2>:FREQuency[:FACTor]:NUMerator	<numeric_value>	6.154
SOURce<1|2>:EXTernal<1|2>:FREQuency:OFFSet	<numeric_value>	6.155
SOURce<1|2>:EXTernal<1|2>:FREQuency:SWEep[:STATe]	ON | OFF	6.155
SOURce<1|2>:EXTernal<1|2>:POWer[:LEVel]	<numeric_value>	6.155
SOURce<1|2>:EXTernal<1|2>[:STATe]	ON | OFF	6.153
SOURce<1|2>:POWer[:LEVel][:IMMediate][:AMPLitude]	-30dBm ... 0dBm	6.152
SOURce<1|2>:POWer[:LEVel][:IMMediate]:OFFSet	-200dB ... +200dB	6.152
STATus:OPERation:CONDition?		6.157
STATus:OPERation:ENABle	0...65535	6.157
STATus:OPERation[:EVENt?]		6.157
STATus:OPERation:NTRansition	0...65535	6.157
STATus:OPERation:PTRansition	0...65535	6.157
STATus:PRESet		6.158
STATus:QUEStionable:ACPLimit:CONDition?		6.162
STATus:QUEStionable:ACPLimit:ENABle	0...65535	6.162
STATus:QUEStionable:ACPLimit[:EVENt]?		6.162
STATus:QUEStionable:ACPLimit:NTRansition	0...65535	6.163
STATus:QUEStionable:ACPLimit:PTRansition	0...65535	6.163
STATus:QUEStionable:CONDition?		6.158
STATus:QUEStionable:ENABle	0...65535	6.158
STATus:QUEStionable[:EVENt]?		6.158

Command	Parameter	Page
STATus:QUEStionable:FREQuency:CONDition?		6.163
STATus:QUEStionable:FREQuency[:EVENt]?		6.163
STATus:QUEStionable:FREQuency:ENABle	0...65535	6.163
STATus:QUEStionable:FREQuency:NTRansition	0...65535	6.164
STATus:QUEStionable:FREQuency:PTRansition	0...65535	6.164
STATus:QUEStionable:LIMit<1|2>:CONDition?		6.160
STATus:QUEStionable:LIMit<1|2>:ENABle	0...65535	6.160
STATus:QUEStionable:LIMit<1|2>:NTRansition	0...65535	6.161
STATus:QUEStionable:LIMit<1|2>:PTRansition	0...65535	6.161
STATus:QUEStionable:LMARgin<1|2>:CONDition?		6.161
STATus:QUEStionable:LMARgin<1|2>:ENABle	0...65535	6.161
STATus:QUEStionable:LMARgin<1|2>[:EVENt]?		6.161
STATus:QUEStionable:LMARgin<1|2>:NTRansition	0...65535	6.162
STATus:QUEStionable:LMARgin<1|2>:PTRansition	0...65535	6.162
STATus:QUEStionable:NTRansition	0...65535	6.159
STATus:QUEStionable:POWer:CONDition?		6.159
STATus:QUEStionable:POWer:ENABle	0...65535	6.159
STATus:QUEStionable:POWer[:EVENt]?		6.159
STATus:QUEStionable:POWer:NTRansition	0...65535	6.160
STATus:QUEStionable:POWer:PTRansition	0...65535	6.160
STATus:QUEStionable:PTRansition	0...65535	6.159
SYSTem:COMMunicate:GPIB:RDEVice:GENerator<1|2>:ADDRess	0...30	6.166
SYSTem:COMMunicate:GPIB:RDEVice:GENerator<1|2>:LINK	GPIB | TTL	6.166
SYSTem:COMMunicate:GPIB:RDEVice:GENerator<1|2>:TYPE	<name>	6.167
SYSTem:COMMunicate:GPIB[:SELF]:ADDRess	0...30	6.166
SYSTem:COMMunicate:GPIB[:SELF]:RTERminator	LFEOI | EOI	6.166
SYSTem:COMMunicate:PRINter:ENUMerate:FIRSt?		6.170
SYSTem:COMMunicate:PRINter:ENUMerate:NEXT?		6.170
SYSTem:COMMunicate:PRINter:SELect<1|2> <printer_name>		6.170
SYSTem:COMMunicate:SERial:CONTrol:DTR	IBFull | OFF	6.168
SYSTem:COMMunicate:SERial:CONTrol:RTS	IBFull | OFF	6.168
SYSTem:COMMunicate:SERial[:RECeive]:BAUD	110 | 300 | 600 | 1200 | 2400 | 9600 | 19200	6.168
SYSTem:COMMunicate:SERial[:RECeive]:BITS	7 | 8	6.169
SYSTem:COMMunicate:SERial[:RECeive]:PACE	XON | NONE	6.169
SYSTem:COMMunicate:SERial[:RECeive]:PARity[:TYPE]	EVEN | ODD | NONE	6.169
SYSTem:COMMunicate:SERial[:RECeive]:SBITs	1 | 2	6.169
SYSTem:DATE	1980...2099, 1...12, 1...31	6.171
SYSTem:DISPlay:FPANel	ON | OFF	6.171
SYSTem:DISPlay:UPDate	ON | OFF	6.171
SYSTem:ERRor:CLEar:ALL		6.172
SYSTem:ERRor:LIST?		6.172
SYSTem:ERRor?		6.171
SYSTem:PASSword[:CENable]	'Passwort'	6.172
SYSTem:PRESet		6.172
SYSTem:SET		6.173

Command	Parameter	Page
SYSTem:SPEaker:VOLume	0...1	6.173
SYSTem:TIME	0...23, 0...59, 0...59	6.173
SYSTem:VERSion?		6.173
TRACe<1|2>:COPY	TRACE1 | TRACE2 | TRACE3 , TRACE1 | TRACE2 | TRACE3	6.175
TRACe<1|2>[:DATA]	TRACE1 | TRACE2 | TRACE3 , <block> | <numeric_value>	6.174
TRACe<1|2>:IQ:DATA:MEMory?	<offset sample>, <# of samples>	6.179
TRACe<1|2>:IQ:DATA?		6.177
TRACe<1|2>:IQ:SET	<filter type>, <rbw>,<sample rate>,<trigger source>,<trigger slope>,<pretrigger samples>,<# of samples>	6.180
TRACe<1|2>:IQ:SRATe	15.625kHz...32MHz	6.181
TRACe<1|2>:IQ[:STATe]	ON | OFF	6.181
TRIGger<1|2>[:SEQuence]:HOLDoff	0...100s	6.183
TRIGger<1|2>[:SEQuence]:LEVel:VIDeo	0...100PCT	6.182
TRIGger<1|2>[:SEQuence]:SLOPe	POSitive | NEGative	6.183
TRIGger<1|2>[:SEQuence]:SOURce	IMMediate | EXTernal | VIDeo | RFPower	6.182
UNIT<1|2>:POWer	DBM | DBPW | WATT | DBUV | DBMV | VOLT | DBUA | AMP | V | A | W	6.184

Table of Softkeys with IEC/IEEE-Bus Command Assignment

FREQUENCY Key

FREQ	
CENTER	[SENSe:]FREQuency:CENTer <num_value>
CF- SREPSIZE	
0.1 * SPAN	[SENSe:]FREQuency:CENTer:STEP:LINK SPAN; [SENSe:]FREQuency:CENTer:STEP:LINK:FACTor 10PCT
0.5 * SPAN	[SENSe:]FREQuency:CENTer:STEP:LINK SPAN; [SENSe:]FREQuency:CENTer:STEP:LINK:FACTor 50PCT
X * SPAN	[SENSe:]FREQuency:CENTer:STEP:LINK SPAN; [SENSe:]FREQuency:CENTer:STEP:LINK:FACTor <num_value>
0.1 * RBW	[SENSe:]FREQuency:CENTer:STEP:LINK RBW; [SENSe:]FREQuency:CENTer:STEP:LINK:FACTor 10PCT
0.5 * RBW	[SENSe:]FREQuency:CENTer:STEP:LINK RBW; [SENSe:]FREQuency:CENTer:STEP:LINK:FACTor 50PCT
X * RBW	[SENSe:]FREQuency:CENTer:STEP:LINK RBW; [SENSe:]FREQuency:CENTer:STEP:LINK:FACTor <num_value>
= CENTER	no corresponding IEC/IEEE-bus command
= MARKER	no corresponding IEC/IEEE-bus command
MANUAL	[SENSe:]FREQuency:CENTer:STEP <num_value>
START	[SENSe:]FREQuency:STARt <num_value>
STOP	[SENSe:]FREQuency:STOP <num_value>
FREQUENCY OFFSET	[SENSe:]FREQuency:OFFSet <num_value>
SIGNAL TRACK	
TRACK ON OFF	CALCulate<1|2>:MARKer<1...4>:FUNCtion:STRack[:STATe] ON | OFF
TRACK BW	CALCulate<1|2>:MARKer<1...4>:FUNCtion:STRack:BANDwidth <num_value>
TRACK THRESHOLD	CALCulate<1|2>:MARKer<1...4>:FUNCtion:STRack:THReshold <num_value>
SELECT TRACE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:STRack:TRACe 1 | 2 | 3

SPAN Key

SPAN

SPAN MANUAL	`[SENSe:]FREQuency:SPAN <num_value>`
SWEEPTIME MANUAL	`[SENSe:]SWEeptime <num_value>`
FULL SPAN	`[SENSe:]FREQuency:SPAN:FULL`

ZERO SPAN	`[SENSe:]FREQuency:SPAN 0HZ`
	or
	`[SENSe:]FREQuency:MODE CW | FIXed`

LAST SPAN	no corresponding IEC/IEEE-bus command

AMPT Key

AMPT	
REF LEVEL	DISPlay[:WINDow<1|2>]:TRACe<1...3>:Y[:SCALe]:RLEVel <num_value>
RANGE LOG 100 dB	DISPlay[:WINDow<1|2>]:TRACe<1...3>:Y:SPACing LOGarithmic; DISPlay[:WINDow<1|2>]:TRACe<1...3>:Y[:SCALe] 100 dB
RANGE LOG MANUAL	DISPlay[:WINDow<1|2>]:TRACe<1...3>:Y:SPACing LOGarithmic; DISPlay[:WINDow<1|2>]:TRACe<1...3>:Y[:SCALe] <num_value>
RANGE LINEAR	DISPlay[:WINDow<1|2>]:TRACe<1...3>:Y:SPACing LINear
UNIT	
dBm	CALCulate<1|2>:UNIT:POWer DBM
dBmV	CALCulate<1|2>:UNIT:POWer DBMV
dBµV	CALCulate<1|2>:UNIT:POWer DBUV
dBµA	CALCulate<1|2>:UNIT:POWer DBUA
dBpW	CALCulate<1|2>:UNIT:POWer DBPW
VOLT	CALCulate<1|2>:UNIT:POWer VOLT
AMPERE	CALCulate<1|2>:UNIT:POWer AMPere
WATT	CALCulate<1|2>:UNIT:POWer WATT
RF ATTEN MANUAL	INPut:ATTenuation <num_value>
RF ATTEN AUTO	INPut:ATTenuation:AUTO ON
REF LEVEL POSITION	DISPlay[:WINDow<1|2>]:TRACe<1...3>:Y[:SCALe]:RPOSition <num_value>
REF LEVEL OFFSET	DISPlay[:WINDow<1|2>]:TRACe<1...3>:Y[:SCALe]:RLEVel:OFFSet <num_value>
GRID ABS/REL	DISPlay[:WINDow<1|2>]:TRACe<1...3>:Y[:SCALe]:MODE ABSolute|RELative
EL ATTEN AUTO	INPut:EATT:AUTO ON (nur mit Option FSP-B25)
EL ATTEN MANUAL	INPut:EATT <num_value> (nur mit Option FSP-B25)
EL ATTEN OFF	INPut:EATT:STATe OFF (nur mit Option FSP-B25)
RF INPUT 50Ω 75Ω	INPut:IMPedance 50 | 75

MKR Key

MKR

MARKER 1..4

```
CALCulate<1|2>:MARKer<1...4>[:STATe]   ON | OFF;
CALCulate<1|2>:MARKer<1...4>:X <numeric value>;
CALCulate<1|2>:MARKer<1...4>:Y?
CALCulate<1|2>:DELTamarker1[:STATe]   ON | OFF;
CALCulate<1|2>:DELTamarker<1...4>:X <numeric value>;
CALCulate<1|2>:DELTamarker<1...4>:Y?
```

MARKER NORM DELTA

```
CALCulate<1|2>:DELTamarker<1...4>[:STATe]   ON | OFF;
```

SIGNAL COUNT

```
CALCulate<1|2>:MARKer<1...4>:COUNt   ON | OFF;
CALCulate<1|2>:MARKer<1...4>:COUNt:FREQuency?
```

REFERENCE FIXED

REF FXD FREQUENCY

```
CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:FIXed[:STATe]  ON | OFF
```

REF POINT LEVEL

```
CALCulate<1|2>:DELTamarker<1..4>:FUNCtion:FIXed:RPOint:Y <num_value>
```

REF POINT LVL OFFSET

```
CALCulate<1|2>:DELTamarker<1..4>:FUNCtion:FIXed:RPOint:Y:OFFSet
                                                          <num_value>
```

REF POINT FREQUENCY

```
CALCulate<1|2>:DELTamarker<1..4>:FUNCtion:FIXed:RPOint:X  <num_value>
```

or:

REF POINT TIME

```
CALCulate<1|2>:DELTamarker<1..4>:FUNCtion:FIXed:RPOint:X  <num_value>
```

MARKER ZOOM

```
CALCulate<1|2>:MARKer<1...4>:FUNCtion:ZOOM <num_value>
```

ALL MARKER OFF

```
CALCulate<1|2>:MARKer<1...4>:AOFF
CALCulate<1|2>:DELTamarker<1...4>:AOFF
```

MKR-> TRACE

```
CALCulate<1|2>:MARKer<1...4>:TRACe <num_value>
CALCulate<1|2>:DELTamarker<1...4>:TRACe <num_value>
```

CNT RESOL ...

```
CALCulate<1|2>:MARKer<1...4>:COUNt:RESolution <numeric value>
```

MKR-> Key

MKR->	
SELECT MARKER	no corresponding IEC/IEEE-bus command
PEAK	CALCulate<1|2>:MARKer<1...4>:MAXimum[:PEAK] CALCulate<1|2>:DELTamarker<1...4>:MAXimum[:PEAK]
CENTER = MKR FREQ	CALCulate<1|2>:MARKer<1...4>:FUNCtion:CENTer
REF LEVEL = MKR LVL	CALCulate<1|2>:MARKer<1...4>:FUNCtion:REFerence
NEXT PEAK	CALCulate<1|2>:MARKer<1...4>:MAXimum:NEXT CALCulate<1|2>:DELTamarker<1...4>:MAXimum:NEXT
NEXT MODE	
ABSOLUTE PEAK / MIN	CALCulate<1|2>:MARKer<1...4>:MAXimum:NEXT CALCulate<1|2>:DELTamarker<1...4>:MAXimum:NEXT CALCulate<1|2>:MARKer<1...4>:MINimum:NEXT CALCulate<1|2>:DELTamarker<1...4>:MINimum:NEXT
SEARCH NEXT LEFT	CALCulate<1|2>:MARKer<1...4>:MAXimum:LEFT CALCulate<1|2>:DELTamarker<1...4>:MAXimum:LEFT CALCulate<1|2>:MARKer<1...4>:MINimum:LEFT CALCulate<1|2>:DELTamarker<1...4>:MINimum:LEFT
SEARCH NEXT RIGHT	CALCulate<1|2>:MARKer<1...4>:MAXimum:RIGHt CALCulate<1|2>:DELTamarker<1...4>:MAXimum:RIGHt CALCulate<1|2>:MARKer<1...4>:MINimum:RIGHt CALCulate<1|2>:DELTamarker<1...4>:MINimum:RIGHt
SEARCH LIMITS	
LEFT LIMIT	CALCulate<1|2>:MARKer<1...4>:X:SLIMits[STATe] ON | OFF CALCulate<1|2>:MARKer<1...4>:X:SLIMits:LEFT <num_value>
RIGHT LIMIT	CALCulate<1|2>:MARKer<1...4>:X:SLIMits[STATe] ON | OFF CALCulate<1|2>:MARKer<1...4>:X:SLIMits:RIGHt <num_value>
THRESHOLD	CALCulate<1|2>:THReshold[STATe] ON | OFF CALCulate<1|2>:THReshold <num_value>
SEARCH LIM OFF	CALCulate<1|2>:MARKer<1...4>:X:SLIMits[STATe] OFF CALCulate<1|2>:THReshold[STATe] ON | OFF
PEAK EXCURSION	CALCulate<1|2>:MARKer<1...4>:PEXCursion <num_value>
MKR-> TRACE	CALCulate<1|2>:MARKer<1...4>:TRACe <numeric value> CALCulate<1|2>:DELTamarker<1...4>:TRACe <numeric value>
MKR-> CF STEPSIZE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:CSTep
MIN	CALCulate<1|2>:MARKer<1...4>:MINimum[:PEAK] CALCulate<1|2>:DELTamarker<1...4>:MINimum[:PEAK]
MIN NEXT	CALCulate<1|2>:MARKer<1...4>:MINimum:NEXT CALCulate<1|2>:DELTamarker<1...4>:MINimum:NEXT
NEXT MODE	see above
EXCLUDE LO	CALCulate<1|2>:MARKer<1...4>:LOEXclude ON | OFF

MKR FCTN Key

MKR FUNC

SELECT MARKER	no corresponding IEC/IEEE-bus command
PEAK	CALCulate<1|2>:MARKer<1...4>:MAXimum[:PEAK] CALCulate<1|2>:DELTamarker<1...4>:MAXimum[:PEAK]
NOISE MEAS	CALCulate<1|2>:MARKer<1...4>:FUNCtion:NOISe[:STATe] ON | OFF; CALCulate<1|2>:MARKer<1...4>:FUNCtion:NOISe:RESult?
PHASE NOISE	
PH NOISE ON OFF	CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:PNOise[:STATe] ON | OFF CALCulate<1|2>:DELTamarker<1...4>:FUNCtion:PNOise:RESult?
REF POINT LEVEL	CALCulate<1|2>:DELTamarker<1..4>:FUNCtion:FIXed:RPOint:Y <num_value>
REF POINT LVL OFFSET	CALCulate<1|2>:DELTamarker<1..4>:FUNCtion:FIXed:RPOint:Y:OFFSet <num_value>
REF POINT FREQUENCY	CALCulate<1|2>:DELTamarker<1..4>:FUNCtion:FIXed:RPOint:X <num_value>
N dB DOWN	CALCulate<1|2>:MARKer<1...4>:FUNCtion:NDBDown[:STATe] ON | OFF CALCulate<1|2>:MARKer<1...4>:FUNCtion:NDBDown <num_value> CALCulate<1|2>:MARKer<1...4>:FUNCtion:NDBDown:RESult? CALCulate<1|2>:MARKer<1...4>:FUNCtion:NDBDown:FREQuency
MARKER DEMOD	with option audio demodulator FSP-B3 only
MKR DEMOD ON/OFF	CALCulate<1|2>:MARKer<1...4>:FUNCtion:DEModulation[:STATe] ON | OFF
AM	CALCulate<1|2>:MARKer<1...4>:FUNCtion:DEModulation:SELect AM
FM	CALCulate<1|2>:MARKer<1...4>:FUNCtion:DEModulation:SELect FM
MKR STOP TIME	CALCulate<1|2>:MARKer<1..4>:FUNCtion:DEModulation:HOLDoff <num_value>
MKR-> TRACE	CALCulate<1|2>:MARKer<1...4>:TRACe <numeric value> CALCulate<1|2>:DELTamarker<1...4>:TRACe <numeric value>

BW Key

BW

RES BW MANUAL	[SENSe:]BANDwidth|BWIDth:AUTO OFF [SENSe:]BANDwidth|BWIDth[:RESolution] <num_value>
VIDEO BW MANUAL	[SENSe:]BANDwidth|BWIDth:VIDeo:AUTO OFF [SENSe:]BANDwidth|BWIDth:VIDeo <num_value>
SWEEP TIME MANUAL	[SENSe:]SWEep:TIME:AUTO OFF [SENSe:]SWEep:TIME <num_value>
RES BW AUTO	[SENSe:]BANDwidth|BWIDth[:RESolution]:AUTO ON
VIDEO BW AUTO	[SENSe:]BANDwidth|BWIDth:VIDeo:AUTO ON
SWEEP TIME AUTO	[SENSe:]SWEep:TIME:AUTO ON
COUPLING RATIO	--
RBW / VBW SINE [1/3]	[SENSe:]BANDwidth|BWIDth:VIDeo:RATio 3
RBW / VBW PULSE [.1]	[SENSe:]BANDwidth|BWIDth:VIDeo:RATio 10
RBW / VBW NOISE [10]	[SENSe:]BANDwidth|BWIDth:VIDeo:RATio 0.1
RBW / VBW MANUAL	[SENSe:]BANDwidth|BWIDth:VIDeo:RATio <num_value>
SPAN / RBW AUTO [50]	[SENSe:]BANDwidth|BWIDth[:RESolution]:RATio 0.02
SPAN / RBW MANUAL	[SENSe:]BANDwidth|BWIDth[:RESolution]:RATio <num_value>
COUPLING DEFAULT	[SENSe:]BANDwidth|BWIDth[:RESolution]:AUTO ON; [SENSe:]BANDwidth|BWIDth:VIDeo:AUTO ON; [SENSe:]SWEep:TIME:AUTO ON
FILTER TYPE	[SENSe:]BANDwidth|BWIDth[:RESolution]:TYPE NORMal | FFT | CFILter | RRC

SWEEP Key

SWEEP

CONTINUOUS SWEEP	INITiate:CONTinuous ON
SINGLE SWEEP	INITiate:CONTinuous OFF; INITiate:IMMediate
CONTINUE SGL SWEEP	INITiate:CONMeasure
SWEEP TIME MANUAL	[SENSe:]SWEep:TIME <num_value>
SWEEP TIME AUTO	[SENSe:]SWEep:TIME:AUTO ON | OFF
SWEEP COUNT	[SENSe:]SWEep:COUNt <num_value>
SGL SWEEP DISP OFF	INITiate:DISPlay OFF INITiate:IMMediate

MEAS Key

MEAS

TIME DOM POWER	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:RMS[:STATe] ON CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:PPEak[:STATe] ON CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MEAN[:STATe] ON CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:SDEViation[:STATe] ON
POWER ON OFF	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:RMS[:STATe] ON|OFF CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:PPEak[:STATe] ON|OFF CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MEAN[:STATe] ON|OFF CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:SDEViation[:STATe] ON|OFF
RMS	CALCulate<1|2>:MARKer<1..4>:FUNCtion:SUMMary:RMS[:STATe] ON | OFF CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:RMS:RESult?
PEAK	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:PPEak[:STATe] ON | OFF CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:PPEak:RESult?
MEAN	CALCulate<1|2>:MARKer<1..4>:FUNCtion:SUMMary:MEAN[:STATe] ON | OFF CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MEAN:RESult?
STANDARD DEVIATION	CALCulate<1|2>:MARKer<1..4>:FUNCtion:SUMMary:SDEViation[:STATe] ON|OFF CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:SDEViation:RESult?
LIMITS ON OFF	CALCulate<1|2>:MARKer<1...4>:SLIMits ON | OFF
START LIMIT	CALCulate<1|2>:MARKer<1...4>:SLIMits:LEFT <num_value>
STOP LIMIT	CALCulate<1|2>:MARKer<1...4>:SLIMits:RIGHt <num_value>
SET REFERENCE	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:REFerence:AUTO ONCE
POWER ABS REL	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:MODE ABS | REL
MAX HOLD ON OFF	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:PHOLd ON | OFF CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:PPEak:PHOLd:RESult? CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:RMS:PHOLd:RESult? CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMar:MEAN:PHOLd:RESult? CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:SDEViation:PHOLd:RESult?
AVERAGE ON OFF	CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:AVERage ON | OFF CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:PPEak:AVERage:RESult? CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:RMS:AVERage:RESult? CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMar:MEAN:AVERage:RESult? CALCulate<1|2>:MARKer<1...4>:FUNCtion:SUMMary:SDEViation:AVERage:RES?
NUMBER OF SWEEPS	[SENSe:]SWEep:COUNt <num_value>
CHAN PWR ACP	--
CP / ACP ON OFF	CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer:SELect CPOWer | ACPower; CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer:RESult? CPOWer | ACPower; CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer[:STATe] OFF
CP / ACP STANDARD	CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer:PRESet <standard>
CP / ACP CONFIG	--
NO. OF ADJ CHAN	[SENSe:]POWer:ACHannel:ACPairs <num_value>
CHANNEL BANDWIDTH	[SENSe:]POWer:ACHannel:BANDwidth|BWIDth[:CHANnel] <num_value>

ADJ CHAN BANDWIDTH
```
[SENSe:]POWer:ACHannel:BANDwidth|BWIDth:ACHannel <num_value>
[SENSe:]POWer:ACHannel:BANDwidth|BWIDth:ALTernate<1|2> <num_value>
```

ADJ CHAN SPACING
```
[SENSe:]POWer:ACHannel:SPACing:ACHannel <num_value>
[SENSe:]POWer:ACHannel:SPACing:ALTernate<1|2> <num_value>
```

CP/ACP ABS/REL
```
[SENSe:]POWer:ACHannel:MODE ABSolute|RELative
```

FAST ACP ON OFF
```
[SENSe:]POWer:HSPeed ON | OFF
```

SELECT TRACE
```
[SENSe:]POWer:TRACe 1|2|3
```

ADJUST REF LVL
```
[SENSe:]POWer:ACHannel:PRESet:RLEVel
```

ADJUST SETTINGS
```
[SENSe:]POWer:ACHannel:PRESet ACPower|CPOWer|OBANdwidth|OBWidth
```

ACP LIMIT CHECK
```
CALCulate<1|2>:LIMit<1...8>:ACPower[:STATe] ON | OFF
CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel:RESult?
CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate<1|2>:RESult?
```

EDIT ACP LIMITS
```
CALCulate<1|2>:LIMit<1...8>:ACPower[:STATe] ON | OFF
CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel[:RELative]:STATe ON | OFF
CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel[:RELative]
                                        <num_val>,<num_val>
CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel:ABSolute:STATe ON | OFF
CALCulate<1|2>:LIMit<1...8>:ACPower:ACHannel:ABSolute
                                        <num_value>,<num_value>
CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate[:RELative]:STATe ON | OFF
CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate[:RELative]
                                        <num_value>,<num_value>
CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate:ABSolute:STATe ON | OFF
CALCulate<1|2>:LIMit<1...8>:ACPower:ALTernate:ABSolute
                                        <num_value>,<num_value>
```

SET CP REFERENCE
```
[SENSe:]POWer:ACHannel:REFerence:AUTO ONCE
```

CHAN PWR /HZ
```
CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer:RESult:PHZ ON | OFF
```

SWEEP TIME
```
[SENSe:]SWEep:TIME <num_value>
```

ADJUST REF LVL
```
[SENSe:]POWer:ACHannel:PRESet:RLEVel
```

ADJUST SETTINGS
```
[SENSe:]POWer:ACHannel:PRESet ACPower|CPOWer|OBANdwidth|OBWidth
```

OCCUPIED PWR BANDW

OCCUP BW ON OFF
```
CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer:SELect OBANdwidth | OBWidth
CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer:RESult? OBANdwidth| OBWidth
CALCulate<1|2>:MARKer<1...4>:FUNCtion:POWer[:STATe] OFF
```

% POWER BANDWIDTH
```
[SENSe:]POWer:BANDwidth|BWIDth <num_value>
```

CHANNEL BANDWIDTH
```
[SENSe:]POWer:ACHannel:BANDwidth|BWIDth <num_value>
```

NOISE CORR ON OFF
```
[SENSe:]POWer:NCORrection ON | OFF
```

ADJUST REF LVL
```
[SENSe:]POWer:ACHannel:PRESet:RLEVel
```

ADJUST SETTINGS
```
[SENSe:]POWer:PRESet ACPower|CPOWer|OBANdwidth|OBWidth
```

SIGNAL STATISTIC	
APD ON OFF	CALCulate:STATistics:APD[:STATe] ON | OFF CALCulate:STATistics:RESult<1...3>? MEAN | PEAK | CFACtor | ALL
CCDF ON OFF	CALCulate:STATistics:CCDF[:STATe] ON | OFF CALCulate:STATistics:RESult<1...3>? MEAN | PEAK | CFACtor | ALL
PERCENT MARKER	CALC:MARK:Y:PERC 0...100%
RES BW	[SENSe:]BANDwidth[:RESolution]:AUTO OFF [SENSe:]BANDwidth[:RESolution] <num_value>
NO OF SAMPLES	CALCulate:STATistics:NSAMples <num_value>
SCALING	--
X-AXIS REF LEVEL	CALCulate:STATistics:X:RLEVel <num_value>
X-AXIS RANGE	CALCulate:STATistics:X:RANGe <num_value>
Y-AXIS MAX VALUE	CALCulate:STATistics:Y:UPPER <num_value>
Y-AXIS MIN VALUE	CALCulate:STATistics:Y:LOWer <num_value>
ADJUST SETTINGS	CALCulate:STATistics:SCALe:AUTO ONCE
DEFAULT SETTINGS	CALCulate:STATistics:PRESet
ADJUST SETTINGS	CALCulate:STATistics:SCALe:AUTO ONCE
SINGLE MEAS	INITiate:CONTinuous OFF; INITiate:IMMediate
COUNT MEAS	INITiate:CONTinuous ON; INITiate:IMMediate
MODULATION DEPTH	CALCulate<1|2>:MARKer<1...4>:FUNCtion:MDEPth[:STATe] ON | OFF CALCulate<1|2>:MARKer<1...4>:FUNCtion:MDEPth:RESult?
TOI	CALCulate<1|2>:MARKer<1...4>:FUNCtion:TOI[:STATe] ON | OFF CALCulate<1|2>:MARKer<1...4>:FUNCtion:TOI:RESult?
SELECT MARKER	no corresponding IEC/IEEE-bus command

TRIG Key

TRIG	
FREE RUN	TRIGger[:SEQuence]:SOURce IMMediate
VIDEO	TRIGger[:SEQuence]:SOURce VIDeo TRIGger[:SEQuence]:LEVel:VIDeo <numeric value>
EXTERN	TRIGger[:SEQuence]:SOURce EXTernal [SENSe:]SWEep:EGATe:SOURce EXTernal
IF POWER	TRIGger[:SEQuence]:SOURce IFPower [SENSe:]SWEep:EGATe:SOURce IFPower
TRIGGER OFFSET	TRIGger[:SEQuence]:HOLDoff <num_value>
POLARITY POS/NEG	TRIGger[:SEQuence]:SLOPe POSitive | NEGative oder [SENSe:]SWEep:EGATe:POLarity POSitive | NEGative
GATED TRIGGER	[SENSe:]SWEep:EGATe ON | OFF [SENSe:]SWEep:EGATe:SOURce IFPower | EXTernal
GATE SETTINGS	--
GATE MODE LEVEL/EDGE	[SENSe:]SWEep:EGATe:TYPE LEVel | EDGE
POLARITY POS/NEG	[SENSe:]SWEep:EGATe:POLarity POSitive | NEGative
GATE DELAY	[SENSe:]SWEep:EGATe:HOLDoff <num_value>
GATE LENGTH	[SENSe:]SWEep:EGATe:LENGth <num_value>
SWEEP TIME	--

TRACE Key

TRACE	
SELECT TRACE	--
CLEAR/ WRITE	DISPlay[:WINDow<1|2>]:TRACe<1...3>:MODE WRITe
MAX HOLD	DISPlay[:WINDow<1|2>]:TRACe<1...3>:MODE MAXHold
AVERAGE	DISPlay[:WINDow<1|2>]:TRACe<1...3>:MODE AVERage oder: [SENSe:]AVERage[:STATe<1...3>] ON
VIEW	DISPlay[:WINDow<1|2>]:TRACe<1...3>:MODE VIEW
BLANK	DISPlay[:WINDow<1|2>]:TRACe<1...3>[:STATe] OFF
SWEEP COUNT	[SENSe:]SWEep:COUNt <num_value> oder: [SENSe:]AVERage:COUNt <num_value>
DETECTOR	--
AUTO SELECT	[SENSe:]DETector[:FUNCtion]:AUTO ON | OFF
DETECTOR AUTOPEAK	[SENSe:]DETector[:FUNCtion] APEak
DETECTOR MAX PEAK	[SENSe:]DETector[:FUNCtion] POSitive
DETECTOR MIN PEAK	[SENSe:]DETector[:FUNCtion] NEGative
DETECTOR SAMPLE	[SENSe:]DETector[:FUNCtion] SAMPle
DETECTOR RMS	[SENSe:]DETector[:FUNCtion] RMS
DETECTOR AVERAGE	[SENSe:]DETector[:FUNCtion] AVERage
DETECTOR QPK	[SENSe:]DETector[:FUNCtion] QPEak
TRACE MATH	--
T1-T2->T1	CALCulate<1|2>:MATH:STATe ON CALCulate<1|2>:MATH[:EXPRession][:DEFine] (TRACE1 - TRACE2)
T1-T3->T1	CALCulate<1|2>:MATH:STATe ON CALCulate<1|2>:MATH[:EXPRession][:DEFine] (TRACE1 - TRACE3)
TRACE POSITION	CALCulate<1|2>:MATH:POSition <num_value>
TRACE MATH OFF	CALCulate<1|2>:MATH:STATe OFF

MIN HOLD	DISPlay[:WINDow<1|2>]:TRACe<1...3>:MODE MINHold
AVG MODE LOG LIN	CALCulate<1|2>:MATH:MODE LINear | LOGarithmic or: [SENSe:]AVERage:TYPE VIDeo | LINear
ASCII FILE EXPORT	FORMat[:DATA] ASCii MMEMory:STORe<1|2>:TRACe 1,'TRACE.DAT'
DECIM SEP . ,	FORMat:DEXPort:DSEParator POINt | COMMa
COPY TRACE	TRACe:COPY TRACE1|TRACE2|TRACE3,TRACE1|TRACE2|TRACE3

LINES Key

LINES

SELECT LIMIT LINE

selection:
CALCulate<1|2>:LIMit<1...8>:NAME <string>;
CALCulate<1|2>:LIMit<1...8>:UPPer:STATe ON | OFF
CALCulate<1|2>:LIMit<1...8>:LOWer:STATe ON | OFF
limit check:
CALCulate<1|2>:LIMit<1...8>:STATe ON | OFF
INITiate[:IMMediate]; WAI*
CALCulate<1|2>:LIMit<1...8>:FAIL?
trace assignment:
CALCulate<1|2>:LIMit<1...8>:TRACe 1|2|3

NEW LIMIT LINE

NAME

name:
CALCulate<1|2>:LIMit<1...8>:NAME <string>;
domain:
CALCulate<1|2>:LIMit<1...8>:CONTrol:DOMain FREQuency|TIME
scaling:
CALCulate<1|2>:LIMit<1...8>:CONTrol:MODE RELative | ABSolute
CALCulate<1|2>:LIMit<1...8>:UPPer:MODE RELative | ABSolute
CALCulate<1|2>:LIMit<1...8>:LOWer:MODE RELative | ABSolute
unit:
CALCulate<1|2>:LIMit<1...8>:UNIT DBM| DBPW| WATT| DBUV|
VOLT|DBUA|AMPere| DB| DBUV_MHZ| DBUA_MHZ| DEG| RAD| S| HZ| PCT
margin:
CALCulate<1|2>:LIMit<1...8>:UPPer:MARGin <num_value>
CALCulate<1|2>:LIMit<1...8>:LOWer:MARGin <num_value>
threshold for relative y-scaling::
CALCulate<1|2>:LIMit<1...8>:UPPer:THReshold <num_value>
CALCulate<1|2>:LIMit<1...8>:LOWer:THReshold <num_value>
comment:
CALCulate<1|2>:LIMit<1...8>:COMMent <string>

VALUES

CALCulate<1|2>:LIMit<1...8>:CONTrol[:DATA] <num_value>, <num_value>..
CALCulate<1|2>:LIMit<1...8>:UPPer[:DATA] <num_value>, <num_value>..
CALCulate<1|2>:LIMit<1...8>:LOWer[:DATA] <num_value>,<num_value>..

INSERT VALUE

no corresponding IEC/IEEE-bus command

DELETE VALUE

no corresponding IEC/IEEE-bus command

SHIFT X LIMIT LINE

CALCulate<1|2>:LIMit<1...8>:CONTrol:SHIFt <num_value>

SHIFT Y LIMIT LINE

CALCulate<1|2>:LIMit<1...8>:UPPer:SHIFt <num_value>
CALCulate<1|2>:LIMit<1...8>:LOWer:SHIFt <num_value>

SAVE LIMIT LINE

automatically executed during IEC/IEEE-bus operation

EDIT LIMIT LINE

s. EDIT LIMIT LINE

COPY LIMIT LINE

CALCulate<1|2>:LIMit<1...8>:COPY 1...8 | <name>

DELETE LIMIT LINE

CALCulate<1|2>:LIMit<1...8>:DELete

X OFFSET

CALCulate<1|2>:LIMit<1...8>:CONTrol:OFFset <num_value>

Y OFFSET

CALCulate<1|2>:LIMit<1...8>:UPPer:OFFset <num_value>
CALCulate<1|2>:LIMit<1...8>:LOWer:OFFset <num_value>

DISP Key

DISP	
FULL SCREEN	DISPlay:FORmat SINGle DISPlay[:WINDow<1|2>]:SELect
SPLIT SCREEN	DISPlay:FORmat SPLit
REF LEVEL COUPLED	INSTrument:COUPle RLEVel | NONE
CENTER B = MARKER A	INSTrument:COUPle CF_B | NONE
CENTER A = MARKER B	INSTrument:COUPle CF_A | NONE
CONFIG DISPLAY	--
SCREEN TITLE	DISPlay[:WINDow<1|2>]:TEXT[:DATA] <string> DISPlay[:WINDow<1|2>]:TEXT:STATe ON | OFF
TIME/DATE ON OFF	DISPlay[:WINDow<1|2>]:TIME ON | OFF
LOGO ON/OFF	DISPlay:LOGO ON|OFF
ANNOTATION ON/OFF	DISPlay:ANNotation:FREQuency ON|OFF
DATAENTRY OPAQUE	ohne Funktion im IEC-Bus-Betrieb
DEFAULT COLORS 1	DISPlay:CMAP<1...13>:DEFault1
DEFAULT COLORS 2	DISPlay:CMAP<1...13>:DEFault2
DISPLAY PWR SAVE	DISPlay:PSAVe[:STATe] ON | OFF DISPlay:PSAVe:HOLDoff <num_value>
SELECT OBJECT	--
BRIGHTNESS	DISPlay:CMAP:HSL <hue>,<sat>,<lum>
TINT	DISPlay:CMAP<1...13>:HSL <hue>,<sat>,<lum>
SATURATION	DISPlay:CMAP<1...13>:HSL <hue>,<sat>,<lum>
PREDEFINED COLORS	DISPlay:CMAP<1...13>:PDEFined BLACk| BLUE| BROWn| GREen| CYAN| RED| MAGenta| YELLow| WHITe| DGRAy| LGRAy| LBLUe| LGREen| LCYan| LRED| MAGenta

FILE Key

FILE	
SAVE	MMEMory:STORe:STATe 1,<file_name>
RECALL	MMEMory:LOAD:STATe 1,<file_name>
EDIT COMMENT	MMEMory:COMMent <string>
ITEMS TO SAVE/RCL	
SELECT ITEMS	MMEMory:SELect[:ITEM]:HWSettings ON|OFF MMEMory:SELect[:ITEM]:TRACe[:ACTive] ON|OFF MMEMory:SELect[:ITEM]:LINes:ALL ON|OFF MMEMory:SELect[:ITEM]:NONE
DEFAULT CONFIG	MMEMory:SELect[:ITEM]:DEFault
DISABLE ALL ITEMS	MMEMory:SELect[:ITEM]:NONE
ENABLE ALL ITEMS	MMEMory:SELect[:ITEM]:ALL
DATA SET LIST	--
DATA SET CLEAR	MMEMory:CLEar:STATe 1,<file_name>
DATA SET CLEAR ALL	MMEMory:CLEar:ALL
STARTUP RECALL	MMEMory:LOAD:AUTO 1,<file_name>
FILE MANAGER	
EDIT PATH	MMEMory:MSIS <device> MMEMory:CDIRectory <directory_name>
MAKE DIRECTORY	MMEMory:MDIRectory <directory_name>
FORMAT DISK	MMEMory:INITialize <msus>
RENAME	MMEMory:MOVE <file_source>,<file_destination>
SORT MODE	no corresponding IEC/IEEE-bus command
COPY	MMEMory:COPY <file_source>,<file_destination>
DELETE	MMEMory:DELete <file_name> MMEMory:RDIRectory <directory_name>

CAL Key

CAL

CAL TOTAL	CALibration[:ALL]?
CAL ABORT	CALibration:ABORt
CAL CORR ON OFF	CALibration:STATe ON | OFF
CAL RESULTS	CALibration:RESults?

SETUP Key

REFERENCE INT/EXT	[SENSe:]ROSCillator:SOURce INTernal|EXTernal
NOISE SCR ON OFF	DIAGnostic:SERVice:NSOurce ON | OFF <num_value>
PREAMP	INPut:GAIN <num_value> (nur mit Option Electronic Attenuator - FSP-B25)
GENERAL SETUP	--
GPIB ADDRESS	SYSTem:COMMunicate:GPIB[:SELF]:ADDRess 0...30
COM INTERFACE	SYSTem:COMMunicate:SERial[:RECeive:]BAUD <num_value> SYSTem:COMMunicate:SERial[:RECeive]:BITS 7 | 8 SYSTem:COMMunicate:SERial:RECeive:PARity[:TYPE] EVEN | ODD | NONE SYSTem:COMMunicate:SERial[:RECeive]:SBITs 1|2 SYSTem:COMMunicate:SERial:CONTrol:DTR IBFull | OFF SYSTem:COMMunicate:SERial:CONTrol:RTS IBFull | OFF SYSTem:COMMunicate:SERial[:RECeive]:PACE XON | NONE
TIME+DATE	SYSTem:TIME 0...23, 0...59, 0...59 SYSTem:DATE <num>,<num>,<num>
CONFIGURE NETWORK	with option LAN-Interface FSP-B16 only --
NETWORK LOGIN	with option LAN-Interface FSP-B16 only --
SOFT FRONTPANEL	--
SYSTEM INFO	--
HARDWARE INFO	--
STATISTICS	--
SYSTEM MESSAGES	SYSTem:ERRor?
CLEAR ALL MESSAGES	SYSTem:ERRor?
SAVE CHANGES	--
SERVICE	--
INPUT RF	DIAGnostic:SERVice:INPut[:SELect] RF
INPUT CAL	DIAGnostic:SERVice:INPut[:SELect] CALibration DIAGnostic:SERVice:CSOurce[:POWer] <num_value>
SELFTEST	*TST?
SELFTEST RESULTS	DIAGnostic:SERVice:STEst:RESult?
REFERENCE FREQUENCY	[SENSE<1|2>:]ROSCillator[:INTernal]:TUNe 0...4095
CAL SIGNAL POWER	--

SAVE CHANGES	[SENSE<1|2>:]ROSCillator[:INTernal]:TUNe:SAVe
ENTER PASSWORD	SYSTem:PASSword[:CENable] <string>
SERVICE FUNCTION	DIAGnostic:SERVice:SFUNction <string>
FIRMWARE UPDATE	--
RESTORE FIRMWARE	--

HCOPY Key

HCOPY

PRINT SCREEN	HCOPy:ITEM:ALL HCOPy:IMMediate for printout into file add MMEMory:NAME <file_name>
PRINT TRACE	HCOPy:ITEM:WINDow<1|2>:TRACe:STATe ON | OFF HCOPy:IMMediate for printout into file add MMEMory:NAME <file_name>
PRINT TABLE	HCOPy:ITEM:WINDow<1|2>:TABle:STATe ON | OFF HCOPy:IMMediate for printout into file add MMEMory:NAME <file_name>
HARDCOPY ABORT	HCOPy:ABORt
DEVICE1	SYSTem:COMMunicate:PRINter:ENUMerate:FIRSt? SYSTem:COMMunicate:PRINter:ENUMerate:NEXT? SYSTem:COMMunicate:PRINter:SELect <string> HCOPy:DESTination <string> HCOPy:DEVice:LANGuage GDI | WMF | EWMF | BMP HCOPy:PAGE:ORIentation<1|2> LANDscape | PORTrait
DEVICE2	SYSTem:COMMunicate:PRINter:ENUMerate:FIRSt? SYSTem:COMMunicate:PRINter:ENUMerate:NEXT? SYSTem:COMMunicate:PRINter:SELect "string> HCOPy:DESTination2 <string> HCOPy:DEVice:LANGuage GDI | WMF | EWMF | BMP HCOPy:PAGE:ORIentation<1|2> LANDscape | PORTrait
COLOR ON/OFF	HCOPy:DEVice:COLor ON | OFF
COMMENT SCREEN A/B	HCOPy:ITEM:WINDow<1|2>:TEXT <string>
INSTALL PRINTER	

Hotkeys

SPECTRUM

```
INSTrument[:SELect] SANalyzer
INSTrument:NSELect 1
```

NETWORK

with option tracking generator FSP-B9 or option external generator control FSP-B10 only.

```
--
```

SCREEN A/B

FULL SCREEN: Selection of the active window: `DISPlay[:WINDow<1|2>]:SELect`
The window valid for the setting is selected by the numeric suffix in the command, eg `SENSe<1|2>`

SPLIT SCREEN: The two measurement windows are active.
The window valid for the setting is selected by the numeric suffix in the command, eg `SENSe<1|2>`

Hotkey NETWORK

NETWORK	with option tracking generator FSP-B9 or option external generator control FSP-B10 only `--`
SOURCE ON / OFF	with option tracking generator FSP-B9 only `OUTPut:STATe ON | OFF`
SOURCE POWER	`SOURce:POWer <num_value>`
POWER OFFSET	`SOURce:POWer:OFFSet <num_value>`
SOURCE CAL	with option tracking generator FSP-B9 or option external generator control FSP-B10 only
CAL TRANS	`[SENSe:]CORRection:METHod TRANsmission` `[SENSe:]CORRection:COLLect[:ACQuire] THRough`
CAL REFL SHORT	`[SENSe:]CORRection:METHod REFLexion` `[SENSe:]CORRection:COLLect[:ACQuire] THRough`
CAL REFL OPEN	`[SENSe:]CORRection:METHod REFLexion` `[SENSe:]CORRection:COLLect[:ACQuire] OPEN`
NORMALIZE	`[SENSe:]CORRection[:STATe] ON | OFF`
REF VALUE POSITION	`DISP:WIND:TRAC:Y:RPOS <num_value>`
REF VALUE	`DISP:WIND:TRAC:Y:RVAL <num_value>`
RECALL	`[SENSe:]CORRection:RECall`
FREQUENCY OFFSET	with option tracking generator FSP-B9 only `SOURce:FREQuency:OFFSet <num_value>`
MODULATION	with option tracking generator FSP-B9 only
EXT AM	`SOURce:AM:STATe ON|OFF`
EXT FM	`SOURce:FM:STATe ON|OFF` `SOURce:FM:DEViation <num_value>`
EXT I/Q	`SOURce:DM:STATe ON|OFF`
MODULATION OFF	`--`
EXT SOURCE	with option external generator control FSP-B10 only
EXT SRC ON / OFF	`SOURce:EXTernal[:STATe] ON | OFF`

SELECT GENERATOR	`SYSTem:COMMunicate:RDEVice:GENerator:TYPE 'SME02'`
	`SYSTem:COMMunicate:RDEVice:GENerator:LINK TTL`
	`SYSTem:COMMunicate:GPIB:RDEVice:GENerator:ADDRess 28`

FREQUENCY SWEEP	`SOURce:EXTernal:POWer –30dBm`
	`SOURce:EXTernal:FREQuency:NUMerator 4`
	`SOURce:EXTernal:FREQuency:DENominator 3`
	`SOURce:EXTernal:FREQuency:OFFSet 100MHZ`