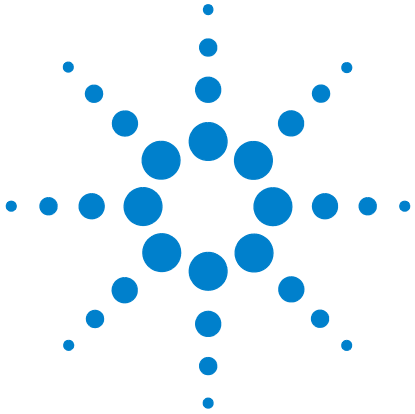

Agilent X-Series Signal Analyzer

This manual provides documentation for the following X-Series Analyzers:
MXA Signal Analyzer N9020A
EXA Signal Analyzer N9010A

N9071A XFP Combined GSM Measurement Application User's and Programmer's Reference

Agilent Technologies

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Documentation is updated periodically. For the latest information about this analyzer, including firmware upgrades, application information, and product information, see the following URLs:

http://www.agilent.com/find/mxa
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Information on preventing analyzer damage can be found at:

http://www.agilent.com/find/tips

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1 Introduction

This chapter provides overall information on the Agilent N9071A XFP Combined GSM Measurement Application and describes the measurements made by the analyzer. Installation instructions for adding this option to your analyzer are provided in this section, in case you purchased this option separately.

What Does the Agilent N9071A Combined GSM Measurement Application Do?

The N9071A Combined GSM is a full-featured GSM signal analyzer that can help determine if a GSM modulated source or transmitter is working correctly.

The N9071A Combined GSM measurement provides a measurement that combines multiple measurements in a single package. The goal of this application is to provide all necessary measurement results at once in the fastest manner. The supporting measurements in the Combined GSM measurement application are:

- List Power Step
- Phase and Frequency Error (PFER)
- Edge EVM (EEVM)
- Power vs Time (PVT)
- Output RF Spectrum (ORFS)
- Marker Meas
- Harmonics

This manual is intended to supplement the standard N9071A EDGE/GSM User's and Programmer's Reference and Help. Only features specific to the N9073A XFP Combined GSM Measurement Application are documented here.

Installing Application Software

When you want to install a measurement application after your initial hardware purchase, you actually only need to license it. All of the available applications are loaded in your analyzer at the time of purchase.

So when you purchase an application, you will receive an entitlement certificate that is used to obtain a license key for that particular measurement application. Enter the license key that you obtain into the N9020A Signal Analyzer to activate the new measurement application. See below for more information.

For the latest information on Agilent Signal Analyzer measurement applications and upgrade kits, visit the following internet URL.

http://www.agilent.com/find/sa_upgrades

Viewing a License Key

Measurement personalities purchased with your instrument have been installed and activated at the factory before shipment. The instrument requires a unique **License Key** for every measurement application purchased. The license key is a hexadecimal string that is specific to your measurement application, instrument model number and serial number. It enables you to install, or reactivate that particular application.

Press **System**, **Show**, **System** to display which measurement applications are currently licensed in your analyzer.

Go to the following location to view the license keys for the installed measurement applications:

C:\Programing Files\Agilent\Licensing

NOTE You may want to keep a copy of your license key in a secure location. You can print out a copy of the display showing the license numbers to do this. If you should lose your license key, call your nearest Agilent Technologies service or sales office for assistance.

Obtaining and Installing a License Key

If you purchase an additional application that requires installation, you will receive an "Entitlement Certificate" which may be redeemed for a license key for one instrument. Follow the instructions that accompany the certificate to obtain your license key.

Installing a license key for the selected application can be done automatically using a USB memory device. To do this, you would put the license file on the USB memory device at the root level. Follow the instructions that come with your software installation kit.

Installing a license key can also be done manually using the license management application in the instrument. It is found through the instrument front panel keys at **System**, **Licensing. . .** , or internally at C:\Programming Files\Agilent\Licensing.

NOTE	You can also use these procedures to reinstall a license key that has been accidentally deleted, or lost due to a memory failure.

Missing and Old Measurement Application Software

All the software applications were loaded at the time of original instrument manufacture. It is a good idea to regularly update your software with the latest available version. This assures that you get any improvements and expanded functionality that is available.

Because the software was loaded at the initial purchase, there may be additional measurement applications that are now available. If the application you are interested in licensing is not available, you will need to do a software update. (Press **System**, **Show**, **System**.)

Check the Agilent internet website for the latest software versions available for downloading:

http://www.agilent.com/find/mxa_software
http://www.agilent.com/find/exa_software

You must load the updated software package into the analyzer from a USB drive, or directly from the internet. An automatic loading program is included with the files.

2 Single-Acquisition Combined GSM Measurement

Combined GSM is a measurement that combines multiple measurements in a single package. The goal of this measurement is to provide all necessary measurement results at once in the fastest manner.

Combined GSM Measurement

Description: Single Acquisition Combined GSM/EDGE measurement is a measurement that combines multiple measurements in a single package. The goal of this measurement is to provide all necessary measurement results at once in the fastest manner. The supporting measurements in this Combined GSM/EDGE measurement are:

Phase and Frequency Error (PFER)
Edge EVM (EEVM)
Power vs Time (PVT)
Output RF Spectrum (ORFS)
Marker Meas
Harmonics

Remote Commands and Results:

NOTE: Measurements may be configured remotely as well as via Front-Panel keys. This section details Remote commands and results. For information on Front-Panel configuration and results see:

Section View/Display, View/Display

Remote Commands:

```
:CONFigure:CGSM

:CONFigure:CGSM:NDEFault

:FETCh:CGSM[n]?

:INITiate:CGSM

:MEASure:CGSM[n]?

:READ:CGSM[n]?
```

Remote Command Results:

N	Results Returned
0	Returns unprocessed I/Q trace data, as a series of comma-separated trace points, in volts. The I values are listed first in each pair, using the 0 through even-indexed values. The Q values are the odd-indexed values.

not specified or n = 1

Measurement Result Values

Total result length is variable.

The returned contents could change depending on the measurement setting. For ex, depending on how many Frequency List States are enabled, the result length varies. If there are multiple frequency lists, then the result below starts at the lowest active freq list.

So the result sequence goes as follows:

Freq List1, GSM or EDGE Demod Results

Freq List1, ORFS Results

Freq List1, PVT Results

Freq List2, GSM or EDGE Demod Results

Freq List2, ORFS Results

Freq List2, PVT Results

…

ZSPan Results

HARMonics Results

GSM Results (Radio Format = GSM):

Note that PFER results and EDGE results are exclusive each other. The result depends on which Radio Format is used in the frequency and is written in the result of n=2 (that is, “read:cgsm2?”). Regarding the LD, also refer the description of n=2. The result contents are customizable. See GSM Result Selection for details. The list below represents the default result.

(LD). Averaged RMS Phase Error

(LD+1). Maximum of the Peak Phase Error

(LD+2). Maximum of the Peak Phase Error Symbol Position

(LD+3). Averaged Frequency Error

(LD+4). Maximum Frequency Error

(LD+5). Averaged I/Q Origin Offset

(LD+6). Maximum I/Q Origin Offset

(LD+7). Averaged T0 Offset

EDGE Results (Radio Format = EDGE):

Note that PFER results and EDGE results are exclusive each other. The result depends on which Radio Format is used in the frequency and it is written in the result of n=2 (that is, “read:cgsm2?”). Regarding the LD, also refer the description of n=2. The result contents are customizable. See “EDGE Result Selection” on page 109 for detail. The list below represents the default result.

not specified or n = 1 Continued

(LD). RMS 95th %tile EVM

(LD+1). Average RMS EVM

(LD+2). Maximum of the Peak EVM

(LD+3). Symbol position of the peak EVM

(LD+4). Average Magnitude Error

(LD+5). Maximum of the Peak Magnitude Error

(LD+6). Average Phase Error

(LD+7). Maximum of the Peak Phase Error

(LD+8). Average Frequency Error

(LD+9). Maximum Frequency Error

(LD+10). I/Q Origin Offset

(LD+11). Amplitude Droop Error

(LD+12). Trigger to T0

ORFS Results:

The result contents are customizable and the list shown below is a sample.. See ORFS Result Selection for details. Regarding the LM and LS, refer description of n=2.

ORFS Modulation Result Table (if there are one or more ORFS modulation results):

(LM). Offset0 (Ref Carrier) Absolute

(LM+1). Offset1 Lower Relative

(LM+2). Offset1 Lower Absolute

(LM+2). Offset1 Lower Delta

(LM+4). Offset1 Upper Relative

(LM+5). Offset1 Upper Absolute

(LM+6). Offset1 Upper Delta

(LM+7). Offset2 Lower Relative

(LM+8). Offset2 Lower Absolute

(LM+9). Offset2 Lower Delta

(LM+10). Offset2 Upper Relative

(LM+11). Offset2 Upper Absolute

(LM+12). Offset2 Upper Delta

…

not specified or n = 1 Continued

ORFS Switching Result Table (if there are one or more ORFS switching results):

(LS). Offset0 (Ref Carrier) Absolute

(LS+1). Offset1 Lower Relative

(LS+2). Offset1 Lower Absolute

(LS+3). Offset1 Lower Delta

(LS+4) . Offset1 Upper Relative

(LS+5) . Offset1 Upper Absolute

(LS+6). Offset1 Upper Delta

(LS+7). Offset2 Lower Relative

(LS+8). Offset2 Lower Absolute

(LS+9). Offset2 Lower Delta

(LS+10). Offset2 Upper Relative

(LS+11). Offset2 Upper Absolute

(LS+12). Offset2 Upper Delta

…

PVT Results:

The result contents are customizable and the list shown below is a sample. See Power vs Time Result Selection for details. Regarding the LP, refer description of n=2.

Note that the “1st Bust” doesn’t always mean the leftmost burst in a frequency list. It means the leftmost burst that PVT mask test is done and it depends on the PVT Test Bitmap, PVT Secondary Test Group, and their backup burst test settings. If there aren’t any valid backup bursts configured, it always returns the test results of bursts configured by PVT Test Bitmap. If backup bursts are enabled, the list includes both primary and backup bursts’ results even though secondary bursts are not tested.

. PVT (Primary) Group Pass/Fail

0: Pass, 1: Fail

(LP+1). 1st Burst, PVT Mask Test Pass/Fail

0: Pass, 1: Fail, -1:Not Tested

(LP+2). 1st Burst, Averaged Power

(LP+3). 1st Burst, Max Power

(LP+4). 1st Burst, 1st Error Point

(LP+5). 1st Burst, 1st Error Time

(LP+6). 2nd Burst, PVT Mask Test Pass/Fail

not specified or n = 1 Continued

(LP+7). 2nd Burst, Averaged Power

(LP+8). 2nd Burst, Max Power

(LP+9). 2nd Burst, 1st Error Point

(LP+10). 2nd Burst, 1st Error Time

…

ZSPan Results:

(LZ). Marker1 Y Value

Same result as is returned by “CALC:CGSM:ZSP:MARK:Y”.

HARMonics Results:

Number of results varies depending on number of harmonics to be measured

(LH). Marker1 Y Value at 1st Harmonics

Marker1 Y Value for 1st Harmonics

(LH+1). Marker1 Y Value at 2nd Harmonics

Marker1 Y Value for 2nd Harmonics

(LH+2). Marker1 Y Value at 3rd Harmonics

Marker1 Y Value for 3rd Harmonics

…

n = 2

Contents Location Pointer and Result Attributes

Total result length is variable.

The returned contents could change depending on the measurement setting. For ex, depending on how many Frequency List States are enabled, the result length varies.

Returns the following scalar results:

0. Number of Total Result Length-returns the number of the total result length of this query.

1. Index where general measurement attributes starts. It shows the location where the general measurement results starts. The value is zero-based. The location is denoted as Lg. For ex, the value will be 14 in many cases.

1. 2. Index where PVT Attributes starts. The location is denoted as in this list. The value is zero-based.
2. 3. Index where ZSPan result starts. The location is denoted as (LZ) in n = 1 list. The value is zero-based.
3. 4. Index where HARMonics result starts. The location is denoted as (LH) in n = 1 list. The value is zero-based.
4. 5. Number of Frequency Lists pointers below. The number is denoted as NF. It will be 8 at present. Might be expanded in future.
5. 6. Index where Frequency List 1 result starts.
6. 7. Index where Frequency List 2 result starts
   …
7. (5+NF). Index where Frequency List NF result starts
8. The values [3] to [2+NF] show the pointer where the result lists of the frequency list start. The values are zero-based. For ex, the value of [3] will be 19 in many cases. If there are no results in the frequency list, the value will be -999.0. The location is denoted as LF (1..NG)

General Measurement Attributes:

Note that the contents here may be expanded or made selectable in the future. That is, the individual contents may be selected for output or not. Also other parameters might be added in future.

(Lg). Sampling Rate

returns sampling rate in Hz.

(Lg+1). Total Acquisition Points

(Lg+2). IF Bandwidth

returns IF bandwidth in Hz.

N = 2 Continued

PVT Attributes:

. Number of PVT Bursts

number of PVT bursts reported in n=1 list.

(Lp+1). Burst Index of 1st Bursts

(Lp+2). Burst Index of 2nd Bursts

…

Result Tables of each Frequency Pointer List :

(LF). Index where general attribute of the list starts- the location is denoted as (LR) in this list. The value is zero-based.

(LF+1). Index where Demod result starts -the location is denoted as (LD) in n=1 list. The value is zero-based. If there are no results about Demod measurement, the value will be -999.0.

(LF+2). Index where ORFS modulation result starts -the location is denoted as (LM) in n=1 list. The value is zero-based. If there are no results about ORFS modulation measurement, the value will be -999.0.

(LF+3). Index where ORFS switching result starts -the location is denoted as (LS) in n=1 list. The value is zero-based. If there are no results about ORFS switching measurement, the value will be -999.0.

(LF+4). Index where PVT result starts -the location is denoted as in n=1 list. The value is zero-based.

General Attribute of the List:

Note that the contents here might be expanded or made selectable in the future.

(LR). Radio Format

1:GSM, 2:EDGE

(LR+1). Center Frequency

returns the center frequency of the list in Hz.

4 GSM and EDGE individual bursts results:

Returns demod result of each burst. The total result length is variable and the returned contents could change depending on the measurement setting. For example, depending on how many Frequency List States are enabled, the result length varies. If there are multiple frequency lists, then the result below starts at the lowest active freq list. Iif there are multiple bursts active on a frequency list, then the result starts at the leftmost burst.

The result sequence is returned as follows:

1st Freq List, 1st Burst, GSM or EDGE Demod Results

1st Freq List, 2nd Burst, GSM or EDGE Demod Results

1st Freq List, 3rd Burst, GSM or EDGE Demod Results

…

2nd Freq List, 1st Burst, GSM or EDGE Demod Results

2nd Freq List, 2nd Burst, GSM or EDGE Demod Results

2nd Freq List, 3rd Burst, GSM or EDGE Demod Results

…

GSM Results (Radio Format = GSM):

Note that PFER results and EDGE results are exclusive of each other. The results depend on which Radio Format is used in the frequency and is written in the result of n=2 (that is, “read:cgsm2?”). Whether the following results are output or not is decided by the GSM Result Selection setting. This is the single burst’s result, so the average and the maximum value is the same. For such parameters, if either one of them is active, the result is output.

1. RMS Phase Error
2. Peak Phase Error
3. Peak Phase Error Symbol Position
4. Frequency Error
5. I/Q Origin Offset
6. T0 Offset
7. TSC

EDGE Results (Radio Format = EDGE):

n = 4 Continued

Note that PFER results and EDGE results are exclusive of each other. Te results depend on which Radio Format is used in the frequency and are written in the result of n=2 (that is, “read:cgsm2?”). Whether the following results are output or not is decided by the GSM Result Selection setting. This is the single burst’s result, so the average and the maximum value is the same. For such parameters, if either one of them is active, the result is output.

1. RMS 95th %tile EVM
2. RMS EVM
3. Peak EVM
4. Symbol position of the peak EVM
5. Magnitude Error
6. Peak Magnitude Error
7. Phase Error
8. Peak Phase Error
9. Frequency Error
10. I/Q Origin Offset
11. Amplitude Droop Error
12. Trigger to T0
13. Timing Offset of AM/PM path
14. TSC

5

GSM and EDGE individual burst attributes

Returns attributes of n=4 results

1. Number of individual bursts

It returns the number of burst results that exist in the n=4 result. If it is ‘n’ for ex., the total length of this list must be 1 + 3 * n.

1. 1st Burst, Location in the n=4 result
2. 1st Burst, Frequency Index
3. 1st Burst, Burst Index
4. 2nd Burst, Location in the n=4 result
5. 2nd Burst, Frequency Index
6. 2nd Burst, Burst Index

…

Measurement Example - Configuration and Results

The following are examples of Measurement configuration SCPI commands and results queries for the CGSM measurement.

Note: In all examples, the following SCPI commands should be sent first:

:INST:SEL EDGEGSM

*RST

:CONF:CGSM:NDEF

Example 1, Two Frequencies, 4 Bursts

Test Configuration

Frequency	850MHz and 950MHz
Radio Format	GSMK for 850MHz, EDGE for 950MHz
# of Bursts	4 Bursts for each frequency
Time Duration	10ms for each frequency
Burst Interval	1.154846ms (2 slots)
Start Offset	200us
Start Trigger	RF Burst
Demod (PFER and EEVM) Burst Location	The 3rd and 4th burst
PVT Burst	The 4th burst
ORFS Burst	All bursts
ORFS Meas Type	Both Modulationand Switching Modulation: 400k and 600kHz Switching: 400kHz
Result Values (Result Values)	As default

Measurement Configuration SCPI :CGSM:LIST:FORM PFER,EEVM
:CGSM:LIST:FREQ 850MHZ,950MHZ
:CGSM:LIST:STAT 1,1,0,0,0,0,0,0
:CGSM:SWE:BURS:NUMB 4
:CGSM:SWE:OFFS 200US
:CGSM:SWE:BURS:INT 1.154846MS
:CGSM:CAPT 9MS
:CGSM:GATE:RTIM 1MS
:CGSM:GATE:SOUR IMM
:TRIG:CGSM:SOUR RFB
:TRIG:RFB:DEL -200US
:CGSM:DEM 1
:CGSM:DEM:TEST 12
:CGSM:PVT 1
:CGSM:PVT:TEST 8
:CGSM:PVT:SEC 0
:CGSM:PVT:BACK 0
:CGSM:ORFS 1
:CGSM:ORFS:TEST 15
:CGSM:ORFS:TYPE MSW
:CGSM:ZSP 0
:CGSM:HARM 0
:CALC:CGSM:PVT:MASK:SEL 1
:CALC:CGSM:PVT:MASK:PRES
:CALC:CGSM:PVT:MASK:SEL 2
:CALC:CGSM:PVT:MASK:PRES
:CGSM:FLIS:ORFS:MOD:STAT 1,0,0,0,1,1,0
:CGSM:FLIS2:ORFS:MOD:STAT 1,0,0,0,1,1,0
:CGSM:FLIS:ORFS:SWIT:STAT 1,1,0
:CGSM:FLIS2:ORFS:SWIT:STAT 1,1,0

READ:CGSM1 Result Here is an example of a ":READ:CGSM1" query and its explanation.

Value	Description
1.742735654E-01	Freq1, PFER, Averaged RMS Phase Error
4.606593847E-01	Freq1, PFER, Maximum of the Peak Phase Error
3.430000000E+01	Freq1, PFER, Maximum of the Peak Phase Error Symbol Position
2.492690086E-02	Freq1, PFER, Averaged Frequency Error
3.420000374E-01	Freq1, PFER, Maximum Frequency Error
-6.773266799E+01	Freq1, PFER, Averaged I/Q Origin Offset
-6.640914154E+01	Freq1, PFER, Maximum I/Q Origin Offset
2.763937000E-04	Freq1, PFER, Averaged T0 Offset
-1.357914291E+01	Freq1, ORFS, Modulation, Off0 (Ref Carrier) Absolute

Value	Description
-7.215130728E+01	Freq1, ORFS, Modulation, Off1 (400kHz). Lower Relative
-8.573045018E+01	Freq1, ORFS, Modulation, Off1 (400kHz). Lower Absolute
-4.973045018E+01	Freq1, ORFS, Modulation, Off1 (400kHz). Lower Delta
-7.226565353E+01	Freq1, ORFS, Modulation, Off1 (400kHz). Upper Relative
-8.584479643E+01	Freq1, ORFS, Modulation, Off1 (400kHz). Upper Absolute
-4.984479643E+01	Freq1, ORFS, Modulation, Off1 (400kHz). Upper Delta
-8.034658796E+01	Freq1, ORFS, Modulation, Off2 (600kHz). Lower Relative
-9.392573087E+01	Freq1, ORFS, Modulation, Off2 (600kHz). Lower Absolute
-4.292573087E+01	Freq1, ORFS, Modulation, Off2 (600kHz). Lower Delta
-8.069719557E+01	Freq1, ORFS, Modulation, Off2 (600kHz). Upper Relative
-9.427633847E+01	Freq1, ORFS, Modulation, Off2 (600kHz). Upper Absolute
-4.327633847E+01	Freq1, ORFS, Modulation,Off2 (600kHz). Upper Delta
-6.692791840E+00	Freq1, ORFS, Switching, Off0 (Ref Carrier) Absolute
-6.855127423E+01	Freq1, ORFS, Switching, Off1 (400kHz). Lower Relative
-7.524406607E+01	Freq1, ORFS, Switching, Off1 (400kHz). Lower Absolute
-5.224406607E+01	Freq1, ORFS, Switching, Off1 (400kHz). Lower Delta
-6.942512799E+01	Freq1, ORFS, Switching, Off1 (400kHz). Upper Relative
-7.611791983E+01	Freq1, ORFS, Switching, Off1 (400kHz). Upper Absolute
-5.311791983E+01	Freq1, ORFS, Switching, Off1 (400kHz). Upper Delta
0.000000000E+00	Freq1, PVT, Primary Test Group Pass/Fail
0.000000000E+00	Freq1, PVT, 4th Burst, PVT Mask Test Pass/Fail
-6.397717264E+00	Freq1, PVT, 4th Burst, Averaged Power
-6.389250433E+00	Freq1, PVT, 4th Burst, Max Power
-9.990000000E+02	Freq1, PVT, 4th Burst, 1st Error Point
-9.990000000E+02	Freq1, PVT, 4th Burst, 1st Error Time
7.124999841E-01	Freq2, EDGE, RMS 95th %tile EVM
3.715007454E-01	Freq2, EDGE, Average RMS EVM
1.030398846E+00	Freq2, EDGE, Maximum of the Peak EVM
4.400000000E+01	Freq2, EDGE, Symbol position of the peak EVM
6.977381185E-02	Freq2, EDGE, Average Magnitude Error

Value	Description
1.973391026E-01	Freq2, EDGE, Maximum of the Peak Magnitude Error
2.472979203E-01	Freq2, EDGE, Average Phase Error
1.847238302E+00	Freq2, EDGE, Maximum of the Peak Phase Error
3.048159122E-01	Freq2, EDGE, Average Frequency Error
1.567105276E+00	Freq2, EDGE, Maximum Frequency Error
-6.483923579E+01	Freq2, EDGE, I/Q Origin Offset
-4.778547013E-04	Freq2, EDGE, Amplitude Droop Error
2.773540643E-04	Freq2, EDGE, Trigger to T0
-1.419562637E+01	Freq2, ORFS, Modulation, Off0 (Ref Carrier) Absolute
…	…

READ:CGSM2 Result Here is an example of a ":READ:CGSM2" query and its explanation.

Value	Description
33	Number of Total Result Length in this list
14	Index where general measurement attributes starts in this list
17	Index where PVT Attributes starts in this list
-999	Index where ZSPan result starts in n=1 list
-999	Index where HARMonics result starts in n=1 list
8	Number of Frequency Lists pointers below.
19	Index where Frequency List 1 result starts in n=1 list
26	Index where Frequency List 2 result starts in n=1 list
-999	Index where Frequency List 3 result starts in n=1 list
-999	Index where Frequency List 4 result starts in n=1 list
-999	Index where Frequency List 5 result starts in n=1 list
-999	Index where Frequency List 6 result starts in n=1 list
-999	Index where Frequency List 7 result starts in n=1 list
-999	Index where Frequency List 8 result starts in n=1 list
3.75E+06	General Measurement Attributes , Sampling Rate
67500	General Measurement Attributes , Total Acquisition Points
1.5E+06	General Measurement Attributes , IF Bandwidth
1	PVT Attributes, Number of PVT Bursts
4	PVT Attributes, Burst Index of 1st Bursts
24	Result Tables of Freq List 1, Index where general attribute of the list starts
0	Result Tables of Freq List 1, Index where Demod result starts
8	Result Tables of Freq List 1, Index where ORFS modulation result starts
21	Result Tables of Freq List 1, Index where ORFS switching result starts
28	Result Tables of Freq List 1, Index where PVT result starts
1	General Attribute of Freq List 1, Radio Format = GSM
8.50E+08	General Attribute of Freq List 1, Center Frequency = 850MHz
31	Result Tables of Freq List 2, Index where general attribute of the list starts

Value	Description
34	Result Tables of Freq List 2, Index where Demod result starts
47	Result Tables of Freq List 2, Index where ORFS modulation result starts
60	Result Tables of Freq List 2, Index where ORFS switching result starts
67	Result Tables of Freq List 2, Index where PVT result starts
2	General Attribute of Freq List 2, Radio Format = EDGE
9.50E+08	General Attribute of Freq List 2, Center Frequency = 950MHz

READ:CGSM4 Result Here is an example of a ":READ:CGSM4" query and its explanation.

Value	Description
1.624448299E-01	Freq1, 3rd Burst, PFER, RMS Phase Error
4.606593847E-01	Freq1, 3rd Burst, PFER, Peak Phase Error
3.430000000E+01	Freq1, 3rd Burst, PFER, Peak Phase Error Symbol Position
3.420000374E-01	Freq1, 3rd Burst, PFER, Frequency Error
-6.640914154E+01	Freq1, 3rd Burst, PFER, I/Q Origin Offset
2.768930510E-04	Freq1, 3rd Burst, PFER, T0 Offset
1.861023009E-01	Freq1, 4th Burst, PFER, RMS Phase Error
4.573341906E-01	Freq1, 4th Burst, PFER, Peak Phase Error
5.000000000E+00	Freq1, 4th Burst, PFER, Peak Phase Error Symbol Position
-2.921462357E-01	Freq1, 4th Burst, PFER, Frequency Error
-6.964576721E+01	Freq1, 4th Burst, PFER, I/Q Origin Offset
2.758943491E-04	Freq1, 4th Burst, PFER, T0 Offset
7.249999838E-01	Freq2, 3rd Burst, EDGE, RMS 95th %tile EVM
3.871338069E-01	Freq2, 3rd Burst, EDGE, RMS EVM
1.030398846E+00	Freq2, 3rd Burst, EDGE, Peak EVM
4.400000000E+01	Freq2, 3rd Burst, EDGE, Symbol position of the peak EVM
7.250271738E-02	Freq2, 3rd Burst, EDGE, Magnitude Error
1.790225953E-01	Freq2, 3rd Burst, EDGE, Peak Magnitude Error

Value	Description
2.689246535E-01	Freq2, 3rd Burst, EDGE, Phase Error
1.847238302E+00	Freq2, 3rd Burst, EDGE, Peak Phase Error
-9.574734515E-01	Freq2, 3rd Burst, EDGE, Frequency Error
-6.609591484E+01	Freq2, 3rd Burst, EDGE, I/Q Origin Offset
-1.176257863E-03	Freq2, 3rd Burst, EDGE, Amplitude Droop Error
2.778531547E-04	Freq2, 3rd Burst, EDGE, Trigger to T0
6.999999844E-01	Freq2, 4th Burst, EDGE, RMS 95th %tile EVM
3.558676839E-01	Freq2, 4th Burst, EDGE, RMS EVM
9.535019994E-01	Freq2, 4th Burst, EDGE, Peak EVM
9.300000000E+01	Freq2, 4th Burst, EDGE, Symbol position of the peak EVM
6.704490632E-02	Freq2, 4th Burst, EDGE, Magnitude Error
1.973391026E-01	Freq2, 4th Burst, EDGE, Peak Magnitude Error
2.256711870E-01	Freq2, 4th Burst, EDGE, Phase Error
-2.987661362E-01	Freq2, 4th Burst, EDGE, Peak Phase Error
1.567105276E+00	Freq2, 4th Burst, EDGE, Frequency Error
-6.386576653E+01	Freq2, 4th Burst, EDGE, I/Q Origin Offset
2.205484603E-04	Freq2, 4th Burst, EDGE, Amplitude Droop Error
2.768549738E-04	Freq2, 4th Burst, EDGE, Trigger to T0

READ:CGSM5 Result Here is an example of a ":READ:CGSM5" query and its explanation.

Value	Description
4	Total number of bursts in n=4 result
0	The location index of the 1st burst in the n=4 list
1	The frequency index of the 1st burst
3	The burst index of the 1st burst
6	The location index of the 2nd burst in the n=4 list
1	The frequency index of the 2nd burst
4	The burst index of the 2nd burst

Value	Description
12	The location index of the 3rd burst in the n=4 list
2	The frequency index of the 3rd burst
3	The burst index of the 3rd burst
24	The location index of the 4th burst in the n=4 list
2	The frequency index of the 4th burst
4	The burst index of the 4th burst

Amplitude (AMPTD) Y Scale

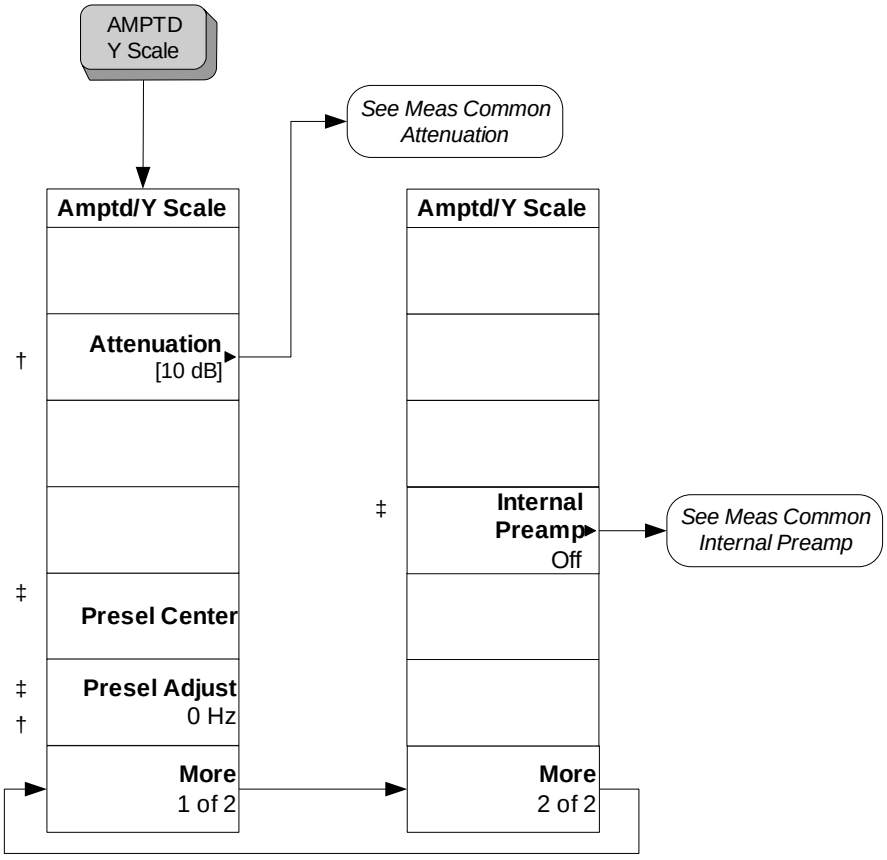


Figure 2-1 AMPTD Y Scale menu

Attenuation

This menu controls both the electrical and mechanical attenuators and their interactions. The value read back on the key in square brackets is the current Total (Elec + Mech) attenuation. When in Pre-Adjust for Min Clip mode, this value can change at the start of every measurement.

For more information see Attenuation under AMPTD Y Scale in the User's and Programmer's reference or Help for your mode.

Presel Center

When this key is pressed, the centering of the preselector filter is adjusted to optimize the amplitude accuracy at the frequency of the selected marker.

For more information see Presel Center under AMPTD Y Scale in the User's and Programmer's reference or Help for your mode.

Presel Adjust

Allows you to manually adjust the preselector filter frequency to optimize its response to the signal of interest. This function is only available when Presel Center is available.

For more information see Presel Adjust under AMPTD Y Scale in the User's and Programmer's reference or Help for your mode.

Internal Preamp

This menu controls the internal preamplifier. Turning Internal Preamp on gives a better noise figure, but a poorer inter-modulation distortion (TOI) to noise floor dynamic range. You can optimize this setting for your particular measurement.

For more information see Internal Preamp under AMPTD Y Scale in the User's and Programmer's reference or Help for your mode.

BW

There is no BW functionality implemented for this measurement.

Marker

There is no Marker functionality implemented for this measurement.

Marker Fctn

There are no Marker Functions implemented for this measurement.

Marker > (Marker To)

There is no Marker To functionality implemented for this measurement.

Meas Setup

There are no menu keys available in the Meas Setup menu. Meas Setup functions are performed using Remote Commands documented in the following sections, or via setup tables, using the front-panel keys or a mouse and keyboard.

For more information on the measurement setup table screens see:

Section Measurement List view, Measurement List view and

Section Parameter List view, Parameter List view

General Setting Commands

IF Gain

In order to take full advantage of the RF dynamic range of the analyzer, we will offer a switched IF amplifier with approximately 10 dB of gain. When it can be turned on without an overload, the dynamic range is always better with it on than off. The **IF Gain** key can be used to set the IF Gain function to Auto, or to On (the extra 10 dB) or Off. These settings affect sensitivity and IF overloads.

IF Gain Auto Activates the auto rules for IF Gain

Mode	GSM
Remote Command	`[:SENSe]:CGSM:IF:GAIN:AUTO[:STATe] ON|OFF|1|0`
	`[:SENSe]:CGSM:IF:GAIN:AUTO[:STATe]?`
Example	CGSM:IF:GAIN:AUTO ON
	CGSM:IF:GAIN:AUTO?
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Dependencies/Couplings	When either the auto attenuation works (for example, with electrical attenuator), or the optimized mechanical attenuator range is requested, the IF Gain setting is changed as following rule.
	'Auto' sets IF Gain High under any of the following conditions: the input attenuator is set to 0 dB, the preamp is turned on, or the Max Mixer Level is 20 dBm or lower. For other settings, auto sets IF Gain to Low.
Preset	OFF
State Saved	Saved in instrument state.
Range	Auto|Man

Instrument S/W Revision	A.01.60 or later

IF Gain State Selects the range of IF gain.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:IF:GAIN[:STATe] ON|OFF|1|0`
	`[:SENSe]:CGSM:IF:GAIN[:STATe]?`
Example	CGSM:IF:GAIN ON
	CGSM:IF:GAIN?
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
	where ON = high gain
	OFF = low gain
Dependencies/Couplings	Coupled to IF Gain. Auto forces it to Man.
Preset	OFF
State Saved	Saved in instrument state.
Range	Low Gain (Best for Large Signals)|High Gain (Best Noise Level)
Instrument S/W Revision	A.01.60 or later

Demodulation Setting Commands

Measurement Enable/Disable

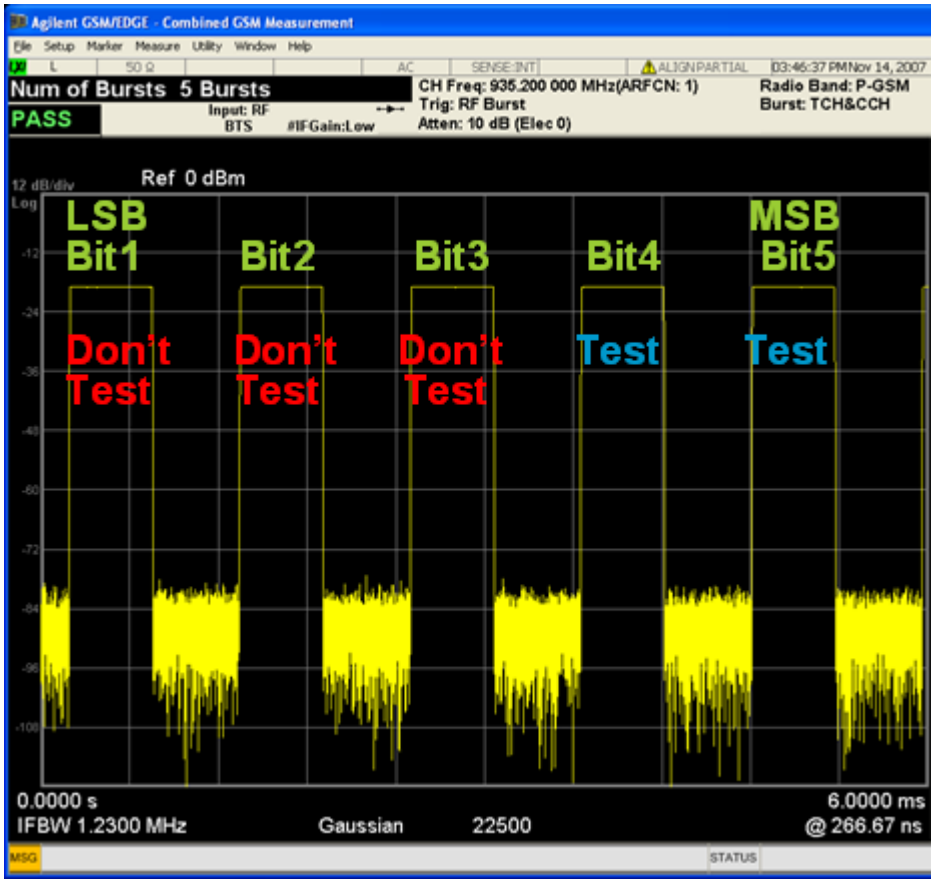
Allows you to enable or disable Demodulation measurements.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:DEMod[:ENABle] ON|OFF|1|0`
	`[:SENSe]:CGSM:DEMod[:ENABle]?`

Example	CGSM:DEM 0 CGSM:DEM?
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	ON
State Saved	Saved in instrument state.
Range	ON | OFF
Instrument S/W Revision	A.01.60 or later

Demod Test Bitmap

Select which Bits are to be tested using an 16-Bit code.



Note: this figure is not an actual screen shot, but is used to illustrate how the Test Bitmap is used.

The screenshot above shows an example of "Number of Bursts" = 5. The "Test Bitmap"

specifies which bursts are to be tested. Set the bit to 1 if you want to test the burst, to 0 if you want the instrument to ignore the burst. If you want to demodulate the 4th and 5th Bursts, set the test bitmap value to the decimal integer of the binary number. In the above example, the binary number is 11000, so the integer is 24. The test bitmap has a 16 bit field (0 to 65535 in decimal) allowing up to 16 bursts to be tested. In this case of the illustration above, only Bits 1 - 5 are used, and Bits 6 to 16 are unused. The screenshot above shows an example of “Number of Bursts” = 5. The “Test Bitmap” specifies which bursts are to be tested. Set the bit to 1 if you want to test the burst, to 0 if you want the instrument to ignore the burst. If you want to demodulate the 4th and 5th Bursts, set the test bitmap value to 11000B=24.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:DEMod:TEST <integer>`
	`[:SENSe]:CGSM:DEMod:TEST?`
Example	CGSM:DEM:TEST 24
	CGSM:DEM:TEST?
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	65535
State Saved	Saved in instrument state.
Min	1
Max	65535
Test MIN/MAX/DEF	Yes
Instrument S/W Revision	A.01.60 or later

EDGE Specific Setting Commands

SCPI commands in this section affect all frequency lists’ EDGE measurements.

Droop Compensation Turn droop compensation on or off. Droop compensation corrects amplitude variations across a burst. You may want to turn off this compensation so you can see the changes in the measured magnitude error. Droop can result from signal impairments like a power amplifier problem.

Mode	GSM

Remote Command	`[:SENSe]:CGSM:DEMod:EEVM:DROop OFF|ON|0|1`
	`[:SENSe]:CGSM:DEMod:EEVM:DROop?`
Example	CGSM:DEM:EEVM:DRO ON
	CGSM:DEM:EEVM:DRO?
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	ON
State Saved	Saved in instrument state.
Range	On | Off
Test MIN/MAX/DEF	No
Instrument S/W Revision	A.01.60 or later

Polar Mod Align Turn On/Off polar modulation alignment.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:DEMod:EEVM:PMODulation:ALIGnment OFF|ON|0|1`
	`[:SENSe]:CGSM:DEMod:EEVM:PMODulation:ALIGnment?`
Example	CGSM:DEM:EEVM:PMOD:ALIG OFF
	CGSM:DEM:EEVM:PMOD:ALIG?
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	OFF
State Saved	Saved in instrument state.
Range	On | Off
Test MIN/MAX/DEF	No
Instrument S/W Revision	A.01.60 or later

ORFS Related Setting Commands

SCPI commands in this section affect all frequency lists' ORFS measurements.

Measurement Enable/Disable

Allows you to enable or disable ORFS measurement.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:ORFSpectrum[:ENABle] ON|OFF|1|0`
	`[:SENSe]:CGSM:ORFSpectrum[:ENABle]?`
Example	CGSM:ORFS 0
	CGSM:ORFS?
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	ON
State Saved	Saved in instrument state.
Range	ON|OFF
Instrument S/W Revision	A.01.60 or later

ORFS Test Bitmap

See Demod Test Bitmap for the concept of the test bitmap.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:ORFSpectrum:TEST <integer>`
	`[:SENSe]:CGSM:ORFSpectrum:TEST?`
Example	CGSM:ORFS:TEST 2
	CGSM:ORFS:TEST?
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	65535
State Saved	Saved in instrument state.
Min	1

Max	65535
Test MIN/MAX/DEF	Yes
Instrument S/W Revision	A.01.60 or later

Fast Average

Used to change On/Off state of Fast Average.

Fast Average is for ORFS modulation measurement. When it is on, it averages both before-midamble-part and after-midamble-part at each specified offset frequency with regard to the standard specifying only after-midamble-part.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:ORFSpectrum:AVERage:FAST[:STATe] OFF|ON|0|1`
	`[:SENSe]:CGSM:ORFSpectrum:AVERage:FAST[:STATe]?`
Example	CGSM:ORFS:AVER:FAST ON
	CGSM:ORFS:AVER:FAST?
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	ON
State Saved	Saved in instrument state.
Range	ON|OFF
Instrument S/W Revision	A.01.60 or later

Meas Type

Selects the measurement type.

Mod & Switch SCPIMSWitching	performs both Modulation and Switching measurements.
Modulation SCPIMODulation	measures the spectrum due to the 0.3 GMSK modulation and noise.

Switching SCPISWITching	measures the spectrum due to switching transients (burst ramping up and down).

Mode	GSM
Remote Command	`[:SENSe]:CGSM:ORFSpectrum:TYPE MODulation|MSWitching|SWITching` `[:SENSe]:CGSM:ORFSpectrum:TYPE?`
Example	CGSM:ORFS:TYPE MOD CGSM:ORFS:TYPE?
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	MODulation
State Saved	Saved in instrument state.
Range	MODulation | MSWitching | SWITching
Instrument S/W Revision	A.01.60 or later

Mod Average

Select the type of averaging for ORFS modulation measurement.

Log-Pwr Avg (Video) SCPILOG	The log of the power is averaged. (This is also known as video averaging.)
Pwr Avg (RMS) SCPIRMS	The power is averaged, providing the rms of the voltage.

Mode	GSM

Remote Command	`[:SENSe]:CGSM:ORFSpectrum:AVERage:MODulation:TYPE LOG|RMS`
	`[:SENSe]:CGSM:ORFSpectrum:AVERage:MODulation:TYPE?`
Example	CGSM:ORFS:AVER:MOD:TYPE LOG
	CGSM:ORFS:AVER:MOD:TYPE?
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	LOG
State Saved	Saved in instrument state.
Range	LOG|RMS
Instrument S/W Revision	A.01.60 or later

ORFS Filter

Select the type of ORFS filter.

5-Pole Sync Tuned SCPIFPST	5-Pole Sync Tuned filter specified by standard
Gaussian SCPIGAUSsian	Ideal Gaussian filter

Mode	GSM
Remote Command	`[:SENSe]:CGSM:ORFSpectrum:FILTer FPST|GAUSsian`
	`[:SENSe]:CGSM:ORFSpectrum:FILTer`
Example	CGSM:ORFS:FILT GAUS
	CGSM:ORFS:FILT?
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	FPST
State Saved	Saved in instrument state.

Range	FPST|GAUS
Instrument S/W Revision	A.01.60 or later

PVT Related Setting Commands

Measurement Enable/Disable

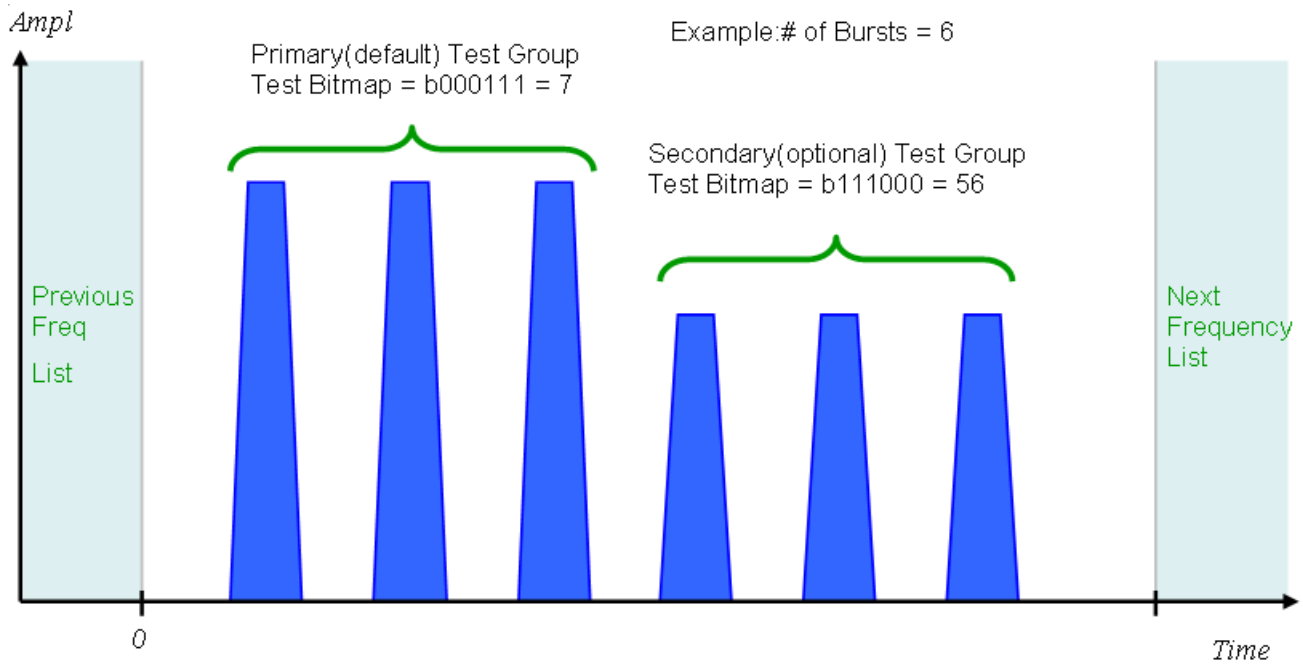
Allows you to enable or disable PVT measurement.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:PVTime[:ENABle] ON|OFF|1|0`
	`[:SENSe]:CGSM:PVTime[:ENABle]?`
Example	CGSM:PVT 0
	CGSM:PVT?
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	ON
State Saved	Saved in instrument state.
Range	ON|OFF
Instrument S/W Revision	A.01.60 or later

PVT Secondary Test Group

A PVT measurement can have a Secondary (optional) test group. When the secondary test group isenabled, the secondary test bitmap is available and the group's pass/fail result is written after the primary (default) PVT group result. In the usual test case, Test bitmaps for both the Primary group and the Secondary group do not overlap,. but the instrument will allow overlap if it is used. . The instrument will measure theburst points and the results will be used for both groups. Secondary test group is a feature only for PVT measurement.

Note that all other setups except test bitmap are shared with both test groups.



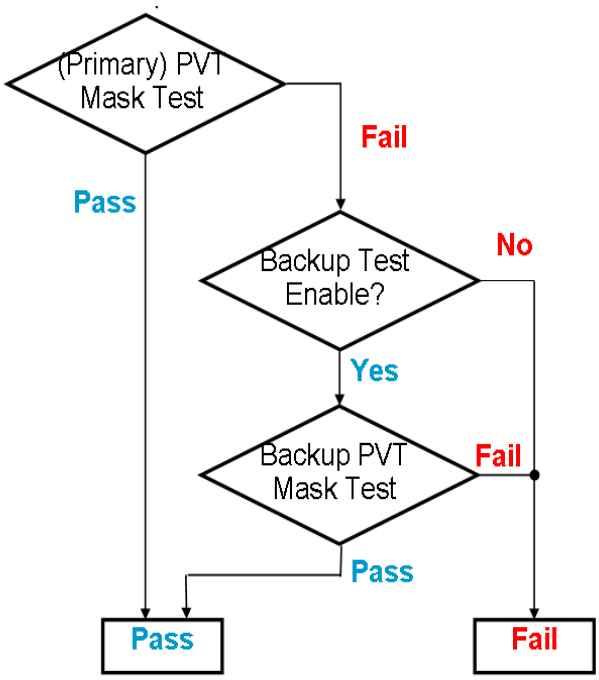
Mode	GSM
Remote Command	`[:SENSe]:CGSM:PVTime:SECondary[:ENABle] ON|OFF|1|0`
	`[:SENSe]:CGSM:PVTime:SECondary[:ENABle]?`
Example	CGSM:PVT:SEC ON
	CGSM:PVT:SEC?
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	OFF
State Saved	Saved in instrument state.
Range	ON|OFF
Instrument S/W Revision	A.01.60 or later

PVT Test Bitmap

See Demod Test Bitmap for the concept of the test bitmap.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:PVTime:TEST[1]|2 <integer>`
	`[:SENSe]:CGSM:PVTime:TEST[1]|2?`
Example	CGSM:PVT:TEST 6
	CGSM:PVT:TEST?
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
	The index 1 or 2 is for the selection of test group.
Preset	65535
State Saved	Saved in instrument state.
Min	1
Max	65535
Test MIN/MAX/DEF	Yes
Instrument S/W Revision	A.01.60 or later

PVT Backup Burst Test Enable/Disable



The PVT mask test is one of the most severe tests for GSM/EDGE. To reduce the total test time, in CGSM you can specify a set of backup bursts that are tested only when the primary bursts' mask test has failed. See above figure.

In a frequency list, the (primary) bursts that specified by PVT Test Bitmap are mask tested first. If any bursts fail, the PVT BackupBurst Test is enabled, and the backup bursts are mask tested. If all primary bursts pass the test, the backup bursts aren't tested. Note that the backup bursts can be configured for each test group (see PVT Secondary Test GroupTest Group).

Mode	GSM
Remote Command	`[:SENSe]:CGSM:PVTime:BACKup[1]|2[:ENABle] ON|OFF|1|0`
	`[:SENSe]:CGSM:PVTime:BACKup[1]|2[:ENABle]?`
Example	CGSM:PVT:BACK 1
	CGSM:PVT:BACK?
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
	The index 1 or 2 is for the selection of test group.
Preset	OFF
State Saved	Saved in instrument state.

Range	ON | OFF
Instrument S/W Revision	A.01.60 or later

PVT Backup Burst Test Bitmap

It's a bitmap for PVT Backup burst test. See PVT Backup Burst Test Enable/Disable for details.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:PVTime:BACKup[1]|2:TEST <integer>`
	`[:SENSe]:CGSM:PVTime:BACKup[1]|2:TEST?`
Example	CGSM:PVT:BACK2:TEST 6
	CGSM:PVT:BACK2:TEST?
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
	The index 1 or 2 is for the selection of test group.
Preset	1
State Saved	Saved in instrument state.
Min	1
Max	65535
Test MIN/MAX/DEF	Yes
Instrument S/W Revision	A.01.60 or later

Zero Span Related Setting Commands

Measurement Enable/Disable

Allows you to enable or disable Zero Span measurement.

Mode	GSM

Remote Command	`[:SENSe]:CGSM:ZSPan[:ENABle] ON|OFF|1|0`
	`[:SENSe]:CGSM:ZSPan[:ENABle]?`
Example	CGSM:ZSP 0
	CGSM:ZSP?
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	ON
State Saved	Saved in instrument state.
Range	ON|OFF
Instrument S/W Revision	A.01.60 or later

Marker

All Markers Off Turns off all markers.

Mode	GSM
Remote Command	`:CALCulate:CGSM:ZSPan:MARKer:AOFF`
Example	CALC:CGSM:ZSP:MARK:AOFF
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Instrument S/W Revision	A.01.60 or later

Couple Marker When this function is ON or true, moving any marker causes an equal X Axis movement of all other markers. “Equal X Axis movement”means thatthe instrument preserves the difference between each marker’s X Axis value (in the fundamental x-axis units of the trace that marker is on) and the X Axis value of the marker being moved (in the same fundamental x-axis units).

Mode	GSM

Remote Command	`:CALCulate:CGSM:ZSPan:MARKer:COUPle[:STATe] OFF|ON|0|1`
	`:CALCulate:CGSM:ZSPan:MARKer:COUPle[:STATe]?`
Example	CALC:CGSM:ZSP:MARK:COUP ON
	CALC:CGSM:ZSP:MARK:COUP?
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	OFF
State Saved	Saved in instrument state.
Range	ON | OFF
Instrument S/W Revision	A.01.60 or later

Marker Type Sets the marker control mode as described under **Normal**, **Delta** and **Off**, below. All interactions and dependencies detailed under the key description are enforced when the remote command is sent.

Mode	GSM
Remote Command	`:CALCulate:CGSM:ZSPan:MARKer[1]|2|3|4|5|6|7|8|9|10|11|12:MODE POSition|DELTa|OFF`
	`:CALCulate:CGSM:ZSPan:MARKer[1]|2|3|4|5|6|7|8|9|10|11|12:MODE?`
Example	CALC:CGSM:ZSP:MARK:MODE POS
	CALC:CGSM:ZSP:MARK:MODE?
Notes	If the selected marker is Off, pressing Marker sets it to Normal and places it at the center of the screen on a trace. You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF
State Saved	Saved in instrument state.
Range	Normal | Delta | Off
Instrument S/W Revision	A.01.60 or later

Marker X Axis Value Sets the marker X Axis value in the current marker X Axis Scale unit. It has no effect if the control mode is **Off,** but is the SCPI equivalent of entering an X value if the control mode is **Normal** or **Delta**.

Mode	GSM
Remote Command	`:CALCulate:CGSM:ZSPan:MARKer[1]|2|3|4|5|6|7|8|9|10|11|12:X <time>`
	`:CALCulate:CGSM:ZSPan:MARKer[1]|2|3|4|5|6|7|8|9|10|11|12:X?`
Example	CALC:CGSM:ZSP:MARK3:X 1ks
	CALC:CGSM:ZSP:MARK3:X?
Notes	If no suffix is sent it will use the fundamental units for the current marker X Axis Scale. If a suffix is sent that does not match the current marker X Axis Scale unit, an error “Invalid suffix” will be generated. If the specified marker is Fixed and a Marker Function is on, error -221 “Settings conflict; cannot adjust Fixed marker while Marker Function is on” is generated.
	The query returns the marker’s absolute X Axis value if the control mode is **Normal**, or the offset from the marker’s reference marker if the control mode is **Delta**.
	You must be in the GSM mode to use this command. Use INSTrument:SELect to set the mode.
Preset	3.31333E-02
State Saved	No
Min	1us
Max	6ks
Test MIN/MAX/DEF	No
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Marker X Axis Position Sets the marker X position in trace points. It has no effect if the control mode is **Off,** but is the SCPI equivalent of entering a value if the control mode is **Normal** or **Delta** - except in trace points rather than X Axis Scale units. The entered value is immediately translated into the current X Axis Scale units for setting the value of the marker.

Mode	GSM
Remote Command	`:CALCulate:CGSM:ZSPan:MARKer[1]|2|3|4|5|6|7|8|9|10|11|12:X:POSition <integer>`
	`:CALCulate:CGSM:ZSPan:MARKer[1]|2|3|4|5|6|7|8|9|10|11|12:X:POSition?`
Example	CALC:CGSM:ZSP:MARK3:X 10
	CALC:CGSM:ZSP:MARK3:X?
Notes	If no suffix is sent it will use the fundamental units for the current marker X Axis Scale. If a suffix is sent that does not match the current marker X Axis Scale unit, an error “Invalid suffix” will be generated. If the specified marker is Fixed and a Marker Function is on, error -221 “Settings conflict; cannot adjust Fixed marker while Marker Function is on” is generated.
	The query returns the marker’s absolute X Axis value if the control mode is **Normal**, or the offset from the marker’s reference marker if the control mode is **Delta**.
	You must be in the GSM mode to use this command. Use INSTrument:SELect to set the mode.
Preset	500
State Saved	No
Min	1
Max	6ks
Test MIN/MAX/DEF	No
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Marker Y Axis Value Queries Y Axis value in the current marker Y Axis unit. Marker Y Axis unit will be depend on the selected marker mode and marker function.

Mode	GSM
Remote Command	`:CALCulate:CGSM:ZSPan:MARKer[1]|2|3|4|5|6|7|8|9|10|11|12:Y?`
Example	CALC:CGSM:ZSP:MARK:Y?

Notes	The query returns the marker Y-axis result, if the control mode is **Normal** or **Delta**. If the marker is **Off**, the response is not a number. You must be in the GSM mode to use this command. Use INSTrument:SELect to set the mode.
Preset	500
State Saved	No
Min	-9.9E37
Max	9.9E37
Test MIN/MAX/DEF	No
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Relative To Selects the marker the selected marker will be relative to (its reference marker).

Mode	GSM
Remote Command	`:CALCulate:CGSM:ZSPan:MARKer[1]|2|3|4|5|6|7|8|9|10|11|12:REFerence <integer>` `:CALCulate:CGSM:ZSPan:MARKer[1]|2|3|4|5|6|7|8|9|10|11|12:REFerence?`
Example	CALC:CGSM:ZSP:MARK:REF 3 CALC:CGSM:ZSP:MARK:REF?
Notes	A marker cannot be relative to itself so that choice is grayed out, and if sent from SCPI generates error -221: “Settings conflict; marker cannot be relative to itself.” You must be in the GSM mode to use this command. Use INSTrument:SELect to set the mode.
Preset	2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1
State Saved	No
Min	1
Max	12
Test MIN/MAX/DEF	Yes
Test UP/DOWN	1

Instrument S/W Revision	A.01.60 or later

Peak Search Places the selected marker on the trace point with the maximum y-axis value for that marker's trace.

Mode	GSM
Remote Command	`:CALCulate:CGSM:ZSPan:MARKer[1]|2|3|4|5|6|7|8|9|10|11|12:MAXimum`
Example	CALC:CGSM:ZSP:MARK:MAX
Instrument S/W Revision	A.01.60 or later

Marker Function Type Sets the marker function type. All interactions and dependencies detailed under the key description are enforced when the remote command is sent.

Mode	GSM
Remote Command	`:CALCulate:CGSM:ZSPan:MARKer[1]|2|3|4|5|6|7|8|9|10|11|12:FUNCtion NOISe|BPOWer|BDENsity|OFF` `:CALCulate:CGSM:ZSPan:MARKer[1]|2|3|4|5|6|7|8|9|10|11|12:FUNCtion?`
Example	CALC:CGSM:ZSP:MARK:FUNC NOIS CALC:CGSM:ZSP:MARK:FUNC?
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF
State Saved	No
Range	Noise | BPower | BDensity | Off
Instrument S/W Revision	A.01.60 or later

Band Span Sets the width of the span for the selected marker.

Mode	GSM
Remote Command	`:CALCulate:CGSM:ZSPan:MARKer[1]|2|3|4|5|6|7|8|9|10|11|12:FUNCtion:BAND:SPAN <freq>`
	`:CALCulate:CGSM:ZSPan:MARKer[1]|2|3|4|5|6|7|8|9|10|11|12:FUNCtion:BAND:SPAN?`
Example	CALC:CGSM:ZSP:MARK:FUNC:BAND:SPAN 10ms
	CALC:CGSM:ZSP:MARK:FUNC:BAND:SPAN?
Notes	You must be in the GSM mode to use this command. Use INSTrument:SELect to set the mode.
Dependencies/Couplings	Changing the Band Span necessarily changes the Band Left and Band Right values
	Band Span is set to 0 when the marker is turned off
	Band Span is set to 5% of span when any marker function is turned on if and only if it is zero at that time
Preset	5% of Sweep Time
State Saved	No
Min	Graph Start Time
Max	Graph Stop Time
Test MIN/MAX/DEF	Yes
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Band Left Sets the left edge frequency or time for the band of the selected marker. The right edge is unaffected.

Mode	GSM
Remote Command	`:CALCulate:CGSM:ZSPan:MARKer[1]|2|3|4|5|6|7|8|9|10|11|12:FUNCtion:BAND:LEFT <freq>`
	`:CALCulate:CGSM:ZSPan:MARKer[1]|2|3|4|5|6|7|8|9|10|11|12:FUNCtion:BAND:LEFT?`

Example	CALC:CGSM:ZSP:MARK:FUNC:BAND:LEFT 10ms
	CALC:CGSM:ZSP:MARK:FUNC:BAND:LEFT?
Notes	You must be in the GSM mode to use this command. Use INSTrument:SELect to set the mode.
Dependencies/Couplings	Changing the Band Span necessarily changes the Band Left and Band Right values
	Band Span is set to 0 when the marker is turned off
	Band Span is set to 5% of span when any marker function is turned on if and only if it is zero at that time
Preset	47.5% (50% – 5% / 2) of Sweep Time
State Saved	No
Min	Graph Start Time
Max	Graph Stop Time
Test MIN/MAX/DEF	Yes
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Band Right Sets the right edge frequency or time for the band of the selected marker. The left edge is unaffected.

Mode	GSM
Remote Command	`:CALCulate:CGSM:ZSPan:MARKer[1]|2|3|4|5|6|7|8|9|10|11|12:FUNCtion:BAND:RIGHt <freq>`
	`:CALCulate:CGSM:ZSPan:MARKer[1]|2|3|4|5|6|7|8|9|10|11|12:FUNCtion:BAND:RIGHt?`
Example	CALC:CGSM:ZSP:MARK:FUNC:BAND:RIGH 10ms
	CALC:CGSM:ZSP:MARK:FUNC:BAND:RIGH?
Notes	You must be in the GSM mode to use this command. Use INSTrument:SELect to set the mode.
Dependencies/Couplings	Changing the Band Span necessarily changes the Band Left and Band Right values
	Band Span is set to 0 when the marker is turned off
	Band Span is set to 5% of span when any marker function is turned on if and only if it is zero at that time

Preset	52.5% (50% + 5% / 2) of Sweep Time
State Saved	No
Min	Graph Start Time
Max	Graph Stop Time
Test MIN/MAX/DEF	Yes
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Acquisition Setup

Res BW Sets the resolution bandwidth for the current measurement. If an unavailable bandwidth is entered, the closest available bandwidth is selected.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:ZSPan:BANDwidth[:RESolution] <freq>`
	`[:SENSe]:CGSM:ZSPan:BANDwidth[:RESolution]?`
Example	CGSM:ZSP:BAND 3MHz
	CGSM:ZSP:BAND?
Notes	You must be in the GSM mode to use this command. Use INSTrument:SELect to set the mode
Preset	3.0 MHz
State Saved	Saved in instrument state.
Min	1.0 Hz
Max	8.0 MHz
Test MIN/MAX/DEF	Yes
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Res BW Filter Type Sets the type/shape of resolution bandwidth filter for the current

measurement.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:ZSPan:BANDwidth:SHAPe GAUSsian|FLATtop`
	`[:SENSe]:CGSM:ZSPan:BANDwidth:SHAPe?`
Example	CGSM:ZSP:BAND:SHAP FLAT
	CGSM:ZSP:BAND:SHAP?
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	GAUSsian
State Saved	Saved in instrument state.
Range	Gaussian | flattop
Instrument S/W Revision	A.01.60 or later

Video BW Sets the video bandwidth for the current measurement. If an unavailable bandwidth is entered, the closest available bandwidth is selected.

When this function is set to ON, Video BW is automatically calculated with using values of VBW:3dB RBW and Res BW.

Video BW = VBW:3dB RBW Res BW

Mode	GSM
Remote Command	`[:SENSe]:CGSM:ZSPan:BANDwidth:VIDeo <freq>`
	`[:SENSe]:CGSM:ZSPan:BANDwidth:VIDeo?`
	`[:SENSe]:CGSM:ZSPan:BANDwidth:VIDeo:AUTO OFF|ON|0|1`
	`[:SENSe]:CGSM:ZSPan:BANDwidth:VIDeo:AUTO?`
Example	CGSM:ZSP:BAND:VID 3MHz
	CGSM:ZSP:BAND:VID?
	CGSM:ZSP:BAND:VID:AUTO ON
	CGSM:ZSP:BAND:VID:AUTO?
Notes	You must be in the GSM mode to use this command. Use INSTrument:SELect to set the mode.

Preset	3.0 MHz
	ON
State Saved	Saved in instrument state.
Min	1.0 Hz
Max	50.0 MHz
Test MIN/MAX/DEF	Yes
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

VBW:3dB RBW Selects the ratio between the video bandwidth and the equivalent 3 dB resolution bandwidth to be used for setting the VBW when VBW is in Auto.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:ZSPan:BANDwidth:VIDeo:RATio <real>`
	`[:SENSe]:CGSM:ZSPan:BANDwidth:VIDeo:RATio?`
	`[:SENSe]:CGSM:ZSPan:BANDwidth:VIDeo:RATio:AUTO OFF|ON|0|1`
	`[:SENSe]:CGSM:ZSPan:BANDwidth:VIDeo:RATio:AUTO?`
Example	CGSM:ZSP:BAND:VID:RAT 1
	CGSM:ZSP:BAND:VID:RAT?
	CGSM:ZSP:BAND:VID:RAT:AUTO ON
	CGSM:ZSP:BAND:VID:RAT:AUTO?
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	1.0
	ON
State Saved	Saved in instrument state.
Min	0.00001
Max	3000000
Test MIN/MAX/DEF	Yes
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Detector Allows you to select a specific detector for the current measurement. When the detector choice is Auto, the analyzer selects the detector. The selected detector depends on marker functions, trace functions, and trace averaging functions for the current measurement.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:ZSPan:DETector[:FUNCtion] AVERage|NEGative|NORMal|POSitive|SAMPle`
	`[:SENSe]:CGSM:ZSPan:DETector[:FUNCtion]?`
Example	CGSM:ZSP:DET AVER
	CGSM:ZSP:DET?
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	AVERage
State Saved	Saved in instrument state.
Range	Average | Negative | Normal | Positive | Sample
Instrument S/W Revision	A.01.60 or later

Sweep Points Sets the number of points per sweep. The resolution of setting the sweep time depends on the number of points selected. If Preset is selected, the number of points per sweep defaults to 1001. The current value of points is displayed parenthetically, next to the sweep time in the lower right corner of the display.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:ZSPan:SWEep:POINts <integer>`
	`[:SENSe]:CGSM:ZSPan:SWEep:POINts?`
Example	CGSM:ZSP:SWE:POIN 2000
	CGSM:ZSP:SWE:POIN?
Notes	You must be in the GSM mode to use this command. Use INSTrument:SELect to set the mode.
Preset	1001

State Saved	Saved in instrument state.
Min	2
Max	20001
Test MIN/MAX/DEF	Yes
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Sweep Time Selects the length of time in which the spectrum analyzer sweeps the displayed frequency span. Additional overhead time is required by the analyzer. It impacts the sweep rate, but is not calculated as part of the sweep time. Reducing the sweep time increases the rate of sweeps.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:ZSPan:SWEep:TIME <time>`
	`[:SENSe]:CGSM:ZSPan:SWEep:TIME?`
Example	CGSM:ZSP:SWE:TIME 2
	CGSM:ZSP:SWE:TIME?
Notes	You must be in the GSM mode to use this command. Use INSTrument:SELect to set the mode.
Preset	3.0 ms
State Saved	Saved in instrument state.
Min	1.0 us
Max	4000 s
Test MIN/MAX/DEF	Yes
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Display

Y – Axis Scale/Div Sets the logarithmic units per vertical graticule division on the display.

Mode	GSM
Remote Command	`:DISPlay:CGSM:ZSPan:TRACe:Y[:SCALe]:PDIVision <rel_ampl>`
	`:DISPlay:CGSM:ZSPan:TRACe:Y[:SCALe]:PDIVision?`
Example	DISP:CGSM:ZSP:TRAC:Y:PDIV 2
	DISP:CGSM:ZSP:TRAC:Y:PDIV?
Notes	You must be in the GSM mode to use this command. Use INSTrument:SELect to set the mode.
Preset	10.0 dB
State Saved	Saved in instrument state.
Min	0.1 dB
Max	20 dB
Test MIN/MAX/DEF	Yes
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Y – Axis Ref Value Sets the absolute power reference value.

Mode	GSM
Remote Command	`:DISPlay:CGSM:ZSPan:TRACe:Y[:SCALe]:RLEVel <ampl>`
	`:DISPlay:CGSM:ZSPan:TRACe:Y[:SCALe]:RLEVel?`
Example	DISP:CGSM:ZSP:TRAC:Y:RLEV 2
	DISP:CGSM:ZSP:TRAC:Y:RLEV?
Notes	You must be in the GSM mode to use this command. Use INSTrument:SELect to set the mode.
Preset	10.0 dBm
State Saved	Saved in instrument state.
Min	-250 dBm
Max	250 dBm
Test MIN/MAX/DEF	Yes

Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Harmonics Related Setting Commands

Measurement Enable/Disable

Allows you to enable or disable Harmonics measurement.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:HARMonics[:ENABle] ON|OFF|1|0`
	`[:SENSe]:CGSM:HARMonics[:ENABle]?`
Example	CGSM:HARM 0
	CGSM:HARM?
Notes	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	ON
State Saved	Saved in instrument state.
Range	ON|OFF
Instrument S/W Revision	A.01.60 or later

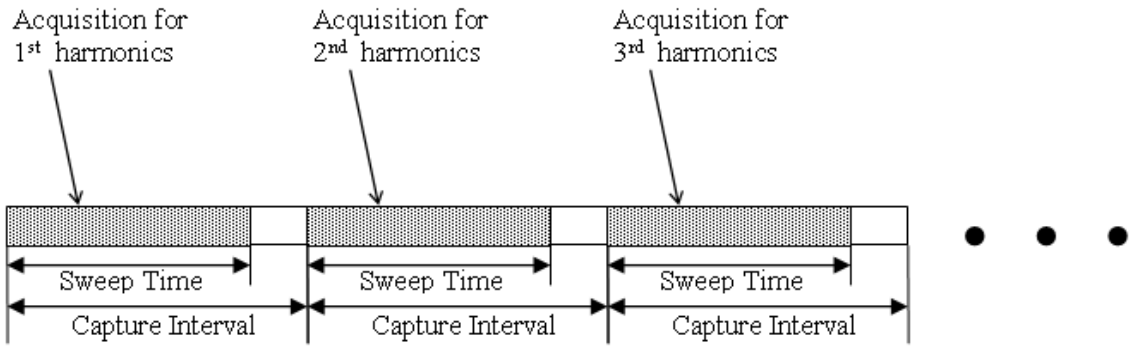
Number of Harmonics

Sets the number of harmonics to measure.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:HARMonics:NUMBer <integer>`
	`[:SENSe]:CGSM:HARMonics:NUMBer?`
Example	CGSM:HARM:NUMB 2
	CGSM:HARM:NUMB?

Notes	You must be in the GSM mode to use this command. Use INSTrument:SELect to set the mode.
Preset	3
State Saved	Saved in instrument state.
Min	1
Max	10
Test MIN/MAX/DEF	Yes
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Capture Interval



Sets the interval of capturing each harmonics. If the value is set to smaller than sweep time, it will be changed to the same value with sweep time.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:HARMonics:INTerval <time>`
	`[:SENSe]:CGSM:HARMonics:INTerval?`
Example	CGSM:HARM:INT 1ms
	CGSM:HARM:INT?
Notes	You must be in the GSM mode to use this command. Use INSTrument:SELect to set the mode.
Preset	4.615385ms

State Saved	Saved in instrument state.
Min	1 us
Max	10 s
Test MIN/MAX/DEF	Yes
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Frequency List

List of frequencies for harmonics measurement. Parameter settings for Zero span measurement apply to acquisition and marker calculation.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:HARMonics:LIST:FREQuency <freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>` `[:SENSe]:CGSM:HARMonics:LIST:FREQuency?`
Example	CGSM:HARM:LIST:FREQ 850e6,900e6,1.8e9 CGSM:HARM:LIST:FREQ?
Notes	Parameter settings for Zero span measurement apply to acquisition and marker calculation. Caution: When Harmonics are measured at a frequency beyond the electronic attenuator's specified operating range (3.6GHz), the value of E-Atten is changed to zero regardless of the value specified via the front panel or by SCPI command. When this occurs, the setting of the mechanical attenuator remains unchanged, as it has a wider effective range. In addition, the input preamplifier is disabled above frequencies for which a license is installed. You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	935.2MHz, 935.2MHz, 935.2MHz, 935.2MHz, 935.2MHz, 935.2MHz, 935.2MHz, 935.2MHz, 935.2MHz, 935.2MHz
State Saved	Saved in instrument state.
Min	-79.999995 MHz

Max	Hardware Dependent: Same as Center Frequency
Test MIN/MAX/DEF	No
Instrument S/W Revision	A.01.60 or later

Capture Step Setup

Number of Bursts

Number of Bursts specifies how many bursts are to be measured for each frequency in the list.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:SWEep:BURSt:NUMBer <integer>` `[:SENSe]:CGSM:SWEep:BURSt:NUMBer?`
Example	CGSM:SWE:BURS:NUMB 5 CGSM:SWE:BURS:NUMB?
Notes	You must be in the GSM mode to use this command. Use INSTrument:SELect to set the mode.
Dependencies/Couplings	Single Capture Interval, Start Offset and Burst Interval
Preset	1
State Saved	Saved in instrument state.
Min	1
Max	16
Test MIN/MAX/DEF	Yes
Test UP/DOWN	1
Instrument S/W Revision	A.01.60 or later

Single Capture Interval

Single Capture Interval specifies capture time length in each frequency list.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:CAPTure[:TIME] <real>`
	`[:SENSe]:CGSM:CAPTure[:TIME]?`
Example	CGSM:CAPT 7MS
	CGSM:CAPT?
Notes	The total sampling points can't exceed more than 4e6(4M) samples. The sampling points is calculated from the number of active freq list, BW and this parameter, Single Capture Interval.
	You must be in the GSM mode to use this command. Use INSTrument:SELect to set the mode.
Dependencies/Couplings	Number of Bursts, Start Offset and Burst Interval
Preset	9.76923E-4
State Saved	Saved in instrument state.
Min	9.76923E-4
Max	100ms
Test MIN/MAX/DEF	Yes
Test UP/DOWN	0.01
Instrument S/W Revision	A.01.60 or later

Start Offset

Start Offset specifies where the first burst slot boundary begins in each frequency list. The minimum value of the Start Offset is 200us.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:SWEep:OFFSet <real>`
	`[:SENSe]:CGSM:SWEep:OFFSet?`
Example	CGSM:SWE:OFFS 1.153846MS
	CGSM:SWE:OFFS?

Notes	You must be in the GSM mode to use this command. Use INSTrument:SELect to set the mode.
Preset	200us
State Saved	Saved in instrument state.
Min	200us
Max	50ms
Test MIN/MAX/DEF	Yes
Test UP/DOWN	0.00001
Instrument S/W Revision	A.01.60 or later

Burst Interval

Burst Interval specifies time between a burst and the next burst.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:SWEep:BURSt:INTerval <real>`
	`[:SENSe]:CGSM:SWEep:BURSt:INTerval?`
Example	CGSM:SWE:BURS:INT 2MS
	CGSM:SWE:BURS:INT?
Notes	You must be in the GSM mode to use this command. Use INSTrument:SELect to set the mode.
Preset	1.153846ms
State Saved	Saved in instrument state.
Min	1.153846ms
Max	100ms
Test MIN/MAX/DEF	Yes
Test UP/DOWN	1.153846ms
Instrument S/W Revision	A.01.60 or later

Gate Setup

Gate Source

Defines the gate source setting at which the frequency list acquisition is made.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:GATE:SOURce IMMediate|EXTernal1|EXTernal2|RFBurst|FRAMe`
	`[:SENSe]:CGSM:GATE:SOURce?`
Example	CGSM:GATE:SOUR IMM
	CGSM:GATE:SOUR?
Preset	IMMediate
State Saved	Saved in instrument state.
Instrument S/W Revision	A.01.60 or later

Gate Level

Gate Level is set by Trigger Level SCPIs specified in Trigger, Measurement Functions section in the EDGE/GSM mode User's and Programmer's Reference or Help. For example, the trigger level when Gate Source is External1 is specified by following SCPI:

:TRIGger:EXTernal1:LEVel <level>.

Gate Recovery

Defines the recovery time until next list's acquisition starts when the current acquisition is going to the next. The value should be set a settling time that the LO frequency becomes stable.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:GATE:RTIMe <time>`
	`[:SENSe]:CGSM:GATE:RTIMe?`
Example	CGSM:GATE:RTIM 500e-6
	CGSM:GATE:RTIM?
Preset	1 ms

State Saved	Saved in instrument state.
Min	1 us
Max	10 ms
Test MIN/MAX/DEF	Yes
Test UP/DOWN	10 us
Instrument S/W Revision	A.01.60 or later

Frequency List Setup

Frequency List

Combined CGSM allows to set up multiple frequencies and it captures the specified time length in 'Single Capture Interval' at each frequency in order. Frequency List specifies these frequencies and their on/off states.

This specifies the frequencies for all measurements except Zero Span and Harmonics measurements.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:LIST:FREQuency <freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>`
	`[:SENSe]:CGSM:LIST:FREQuency?`
	`[:SENSe]:CGSM:LIST:STATe OFF|ON|0|1, OFF|ON|0|1, OFF|ON|0|1, OFF|ON|0|1, OFF|ON|0|1, OFF|ON|0|1, OFF|ON|0|1, OFF|ON|0|1`
	`[:SENSe]:CGSM:LIST:STATe?`
Example	CGSM:LIST:FREQ 850e6,900e6,1.8e9
	CGSM:LIST:FREQ?
	CGSM:LIST:STAT 1,1,1,0
	CGSM:LIST:STAT?

Notes	Combined CGSM allows to set up multiple frequencies and it captures the specified time length in 'Single Capture Interval' at each frequency in order. The 'Freq Hopping' under 'Mode Setup' isn't related to this feature. In this measurement, frequency settings must be set here. The 'Center Frequency' setting under "Freq / Channel' front panel key or [:SENSe]:FREQuency:CENTer overwrites the first frequency in this list. CAUTION: When list acquisition is performed, the maximum frequency is 3.6 GHz even they are all the same frequency. When only the first list is used (see [:SENSe]:CGSM:LIST:STATe), there is no limitation. You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	935.2e6,935.2e6,935.2e6,935.2e6,935.2e6,935.2e6,935.2e6,935.2e6 1, 0, 0, 0, 0, 0, 0, 0
State Saved	Saved in instrument state.
Min	-79.999995 MHz
Max	Hardware Dependent: Same as Center Frequency
Test MIN/MAX/DEF	No
Instrument S/W Revision	A.01.60 or later

Radio Format List

Allows you to select measurement format.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:LIST:FORMat PFERror|EEVM,PFERror|EEVM, PFERror|EEVM,PFERror|EEVM, PFERror|EEVM,PFERror|EEVM, PFERror|EEVM,PFERror|EEVM` `[:SENSe]:CGSM:LIST:FORMat?`
Example	CGSM:LIST:FORM PFER,EEVM,PFER,EEVM CGSM:LIST:FORM?
Preset	PFERror,PFERror,PFERror,PFERror,PFERror,PFERror,PFERror, PFERror

State Saved	Saved in instrument state.
Range	PFERror | EEVM
Test MIN/MAX/DEF	No
Instrument S/W Revision	A.01.60 or later

PVT Related Setting Commands

Selected Freq Index Set a frequency index. This value is referred when PVT Mask Preset is operated. See PVT Preset Standard MaskVT Preset Standard Mask.

Mode	GSM
Remote Command	`:CALCulate:CGSM:PVTime:MASK:SELect <integer>`
	`:CALCulate:CGSM:PVTime:MASK:SELect?`
Example	CALC:CGSM:PVT:MASK:SEL 2
	CALC:CGSM:PVT:MASK:SEL?
Notes	This value is referred when PVT Mask Preset is operated. See PVT Preset Standard MaskVT Preset Standard Mask
	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	1
State Saved	Saved in instrument state.
Min	1
Max	8
Test MIN/MAX/DEF	Yes
Instrument S/W Revision	A.01.60 or later

PVT Preset Standard Mask This is an immediate action function that resets PVT mask to default settings depending on Radio Band, Radio Device, Power Control Level(Mode Setup parameters), Radio Format Type and Band Index(Band Setup parameters).

Mode	GSM
Remote Command	`:CALCulate:CGSM:PVTime:MASK:PRESet`
Example	CALC:CGSM:PVT:MASK:PRES
Notes	PVT Mask on the specified frequency index (see Selected Freq IndexFreq Index) is automatically set by referring "Radio Band", "Radio Device", "Power Control Level", and "Radio Format List". You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Instrument S/W Revision	A.01.60 or later

PVT Mask Setting Commands

Start Time Specifies the start time for each region.

Mode	GSM
Remote Command	`:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:TIME:STARt <time>, …` `:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:TIME:STARt?` `:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:STATe ON|OFF|1|0, ON|OFF|1|0, ON|OFF|1|0, ON|OFF|1|0, ON|OFF|1|0, ON|OFF|1|0, ON|OFF|1|0, ON|OFF|1|0, ON|OFF|1|0, ON|OFF|1|0, ON|OFF|1|0, ON|OFF|1|0, ON|OFF|1|0, ON|OFF|1|0, ON|OFF|1|0, ON|OFF|1|0, ON|OFF|1|0, ON|OFF|1|0, ON|OFF|1|0, ON|OFF|1|0, ON|OFF|1|0, ON|OFF|1|0, ON|OFF|1|0, ON|OFF|1|0, ON|OFF|1|0`  `:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:STATe?`
Example	CALC:CGSM:FLIS:PVT:MASK:TIME:STAR 1 CALC:CGSM:FLIS:PVT:MASK:TIME:STAR? CALC:CGSM:FLIST:PVT:MASK:STAT 1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 CALC:CGSM:FLIST:PVT:MASK:STAT?

Notes	The time is relative to the T0 point. This supports variable array length. Undefined parameters will be unchanged.
Dependencies/Couplings	Coupled to Stop Time. When Start Time is set to a larger value than the Stop Time, the Stop Time is forced to increase to the same value as the new Start Time. When Stop Time is set to a smaller value than the Start Time, the Start Time is forced to decrease to the same value as the new Stop Time.
Preset	-1.0, -5.7688E-04, -2.8938E-04, -2.8138E-04, -2.7138E-04,2.7138E-04,2.8138E-04, 2.8938E-04, 5.7688E-04, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
State Saved	Saved in instrument state.
Min	-1.0
Max	1.0
Test MIN/MAX/DEF	No
Instrument S/W Revision	`A.01.60 or later`

Stop Time Specifies the stop time of each region.

Mode	GSM
Remote Command	`:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:TIME:STOP <time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>,<time>` `:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:TIME:STOP?`
Example	CALC:CGSM:FLIS:PVT:MASK:TIME:STOP -5.7688E-04, -2.8938E-04, -2.8138E-04, -2.7138E-04,2.7138E-04, 2.8138E-04, 2.8938E-04, 5.7688E-04, 1.0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0 CALC:CGSM:FLIS:PVT:MASK:TIME:STOP?
Notes	The time is relative to the T0 point. This supports variable array length. Undefined parameters will be unchanged.

Dependencies/Couplings	Coupled to Start Time. When Start Time is set to a larger value than the Stop Time, the Stop Time is forced to increase to the same value as the new Start Time. When Stop Time is set to a smaller value than the Start Time, the Start Time is forced to decrease to the same value as the new Stop Time.
Preset	-5.7688E-04, -2.8938E-04, -2.8138E-04, -2.7138E-04,2.7138E-04, 2.8138E-04, 2.8938E-04, 5.7688E-04, 1.0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0
State Saved	Saved in instrument state.
Min	-1.0
Max	1.0
Test MIN/MAX/DEF	No
Instrument S/W Revision	A.01.60 or later

Lower Fail Mask Specifies the fail condition of the lower limit for the selected region.

Absolute SCPI:ABSolute	The measurement reports “FAIL” if the result exceeds the lower absolute limit.
Relative SCPI:Relative	The measurement reports “FAIL” if the result exceeds the lower relative limit.
Abs AND Rel SCPI:AND	The measurement reports “FAIL” if the result exceeds both the lower absolute limit and the lower relative limit.
Abs OR Rel SCPI:OR	The measurement reports “FAIL” if the result exceeds either the lower absolute limit or the lower relative limit.

Mode	GSM

Remote Command	`:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:LOWer:TEST ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR`   `:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:LOWer:TEST?`
Example	CALC:CGSM:FLIST:PVT:MASK:LOW:TEST REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL CALC:CGSM:FLIST:PVT:MASK:LOW:TEST?
Notes	This supports variable array length. Undefined parameters will be unchanged.
Preset	REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL
State Saved	Saved in instrument state.
Range	ABSolute | RELative | AND | OR
Instrument S/W Revision	A.01.60 or later

Lower Abs Start Specifies the absolute power level limit at the start time of the selected region.

Mode	GSM
Remote Command	`:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:LOWer:STARt:ABSolute <ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>` `:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:LOWer:STARt:ABSolute?`

Example	CALC:CGSM:FLIS:PVT:MASK:LOW:STAR:ABS 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 CALC:CGSM:FLIS:PVT:MASK:LOW:STAR:ABS?
Notes	This supports variable array length. Undefined parameters will be unchanged.
Preset	0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
State Saved	Saved in instrument state.
Min	-200 dBm
Max	200 dBm
Test MIN/MAX/DEF	No
Instrument S/W Revision	A.01.60 or later

Lower Abs Stop Specifies the absolute power level limit at the stop time of the selected region. The parameter can be toggled between Auto and Man. If set to Auto, this parameter is coupled to Lower Abs Start to make a flat limit line. If set to Man, Lower Abs Start and Lower Abs Stop can be assigned different values to make a sloped limit line.

Mode: GSM

Remote Command

```
:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:LOWer:STOP:ABSolute <ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>
```

```
:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:LOWer:STOP:ABSolute?
```

```
:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:LOWer:STOP:ABSolute:AUTO
ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,
ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,
ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,
ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,
ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0
```

```
:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:LOWer:STOP:ABSolute:AUTO?
```

Example	CALC:CGSM:FLIS:PVT:MASK:LOW:STOP:ABS 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 CALC:CGSM:FLIS:PVT:MASK:LOW:STOP:ABS? CALC:CGSM:FLIS:PVT:MASK:LOW:STOP:ABS:AUTO 1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1 CALC:CGSM:FLIS:PVT:MASK:LOW:STOP:ABS:AUTO?
Notes	This supports variable array length. Undefined parameters will be unchanged.
Dependencies/Couplings	Coupled to Lower Abs Start, if coupling is set to "Auto". In this case, Lower Abs Stop keeps the same value as Lower Abs Start.
Preset	0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1
State Saved	Saved in instrument state.
Min	-200 dBm
Max	200 dBm
Test MIN/MAX/DEF	No
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Lower Rel Start Specifies the relative power level limit at the start time of the selected region. The reference power level is specified by the useful part of the burst.

Mode	GSM
Remote Command	`:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:LOWer:STARt:RELative <rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>` `:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:LOWer:STARt:RELative?`
Example	CALC:CGSM:FLIS:PVT:MASK:LOW:STAR:REL -200,-200,-200,-200,-1,-200,-200,-200,-200,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 CALC:CGSM:FLIS:PVT:MASK:LOW:STAR:REL?

Notes	This supports variable array length. Undefined parameters will be unchanged.
Preset	-200.0, -200.0, -200.0, -200.0,-1.0, -200.0, -200.0, -200.0, -200.0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0
State Saved	Saved in instrument state.
Min	-200 dB
Max	200 dB
Test MIN/MAX/DEF	No
Instrument S/W Revision	A.01.60 or later

Lower Rel Stop Specifies the relative power level limit at the stop time of the selected region. The parameter can be toggled between Auto and Man. If set to Auto, this parameter is coupled to Lower Rel Start to make a flat limit line. If set to Man, Lower Rel Start and Lower Rel Stop can be assigned different values to make a sloped limit line.

Mode	GSM
Remote Command	`:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:LOWer:STOP:RELative <rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>, <rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>, <rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>, <rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>, <rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>`  `:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:LOWer:STOP:RELative?`  `:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:LOWer:STOP:RELative:AUTO ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0, ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0, ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0, ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0, ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0`  `:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:LOWer:STOP:RELative:AUTO?`

Example	CALC:CGSM:FLIS:PVT:MASK:LOW:STOP:REL 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 CALC:CGSM:FLIS:PVT:MASK:LOW:STOP:REL? CALC:CGSM:FLIS:PVT:MASK:LOW:STOP:REL:AUTO 1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1 CALC:CGSM:FLIS:PVT:MASK:LOW:STOP:REL:AUTO?
Notes	This supports variable array length. Undefined parameters will be unchanged.
Dependencies/Couplings	Coupled to Lower Abs Start, if coupling is set to “Auto”. In this case, Lower Rel Stop keeps the same value as Lower Rel Start.
Preset	0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1
State Saved	Saved in instrument state.
Min	-200 dB
Max	200 dB
Test MIN/MAX/DEF	No
Instrument S/W Revision	A.01.60 or later

Upper Fail Mask Specifies the fail condition of the upper limit for the selected region.

Absolute SCPI:ABSolute	The measurement reports “FAIL” if the result exceeds the upper absolute limit.
Relative SCPI:Relative	The measurement reports “FAIL” if the result exceeds the upper relative limit.
Abs AND Rel SCPI:AND	The measurement reports “FAIL” if the result exceeds both the upper absolute limit and the upper relative limit.
Abs OR Rel SCPI:OR	The measurement reports “FAIL” if the result exceeds either the upper absolute limit or the upper relative limit.

Mode	GSM

Remote Command	`:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:UPPer:TEST ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR,ABSolute|RELative|AND|OR` `:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:UPPer:TEST?`
Example	CALC:CGSM:FLIS:PVT:MASK:UPP:TEST REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL CALC:CGSM:FLIS:PVT:MASK:UPP:TEST?
Notes	This supports variable array length. Undefined parameters will be unchanged.
Preset	REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL,REL
State Saved	Saved in instrument state.
Range	ABSolute | RELative | AND | OR
Instrument S/W Revision	A.01.60 or later

Upper Abs Start Specifies the absolute power level limit at the start time of the selected region.

Mode	GSM
Remote Command	`:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:UPPer:STARt:ABSolute <ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>` `:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:UPPer:STARt:ABSolute?`

Example	CALC:CGSM:FLIS:PVT:MASK:UPP:STAR:ABS 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 CALC:CGSM:FLIS:PVT:MASK:UPP:STAR:ABS?
Notes	This supports variable array length. Undefined parameters will be unchanged.
Preset	0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
State Saved	Saved in instrument state.
Min	-200 dBm
Max	200 dBm
Test MIN/MAX/DEF	No
Help Map ID	0
Instrument S/W Revision	A.01.60 or later

Upper Abs Stop Specifies the absolute power level limit at the stop time of the selected region. The parameter can be toggled between Auto and Man. If set to Auto, this parameter is coupled to Upper Abs Start to make a flat limit line. If set to Man, Upper Abs Start and Upper Abs Stop can be assigned different values to make a sloped limit line.

Mode	GSM
Remote Command	`:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:UPPer:STOP:ABSolute <ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>` `:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:UPPer:STOP:ABSolute?` `:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:UPPer:STOP:ABSolute:AUTO ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0` `:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:UPPer:STOP:ABSolute:AUTO?`

Example	CALC:CGSM:FLIS:PVT:MASK:UPP:STOP:ABS 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 CALC:CGSM:FLIS:PVT:MASK:UPP:STOP:ABS? CALC:CGSM:FLIS:PVT:MASK:UPP:STOP:ABS:AUTO 1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1 CALC:CGSM:FLIS:PVT:MASK:UPP:STOP:ABS:AUTO?
Notes	This supports variable array length. Undefined parameters will be unchanged.
Dependencies/Couplings	Coupled to Upper Abs Start, if coupling is set to “Auto”. In this case, Upper Abs Stop keeps the same value as Upper Abs Start.
Preset	0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1
State Saved	Saved in instrument state.
Min	-200 dBm
Max	200 dBm
Test MIN/MAX/DEF	No
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Upper Rel Start Specifies the relative power level limit at the start time of the selected region. The reference power level is specified by the useful part of the burst.

Mode	GSM
Remote Command	`:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:UPPer:STARt:RELative <rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>, <rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>, <rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>, <rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>, <rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>` `:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:UPPer:STARt:RELative?`
Example	CALC:CGSM:FLIS:PVT:MASK:UPP:STAR:REL -30,-30,-6,4,1,1,-6,-30,-30, 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0 CALC:CGSM:FLIS:PVT:MASK:UPP:STAR:REL?

Notes	This supports variable array length. Undefined parameters will be unchanged.
Preset	-30.0, -30.0, -6.0, 4.0, 1.0, 1.0, -6.0, -30.0, -30.0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0
State Saved	Saved in instrument state.
Min	-200 dB
Max	200 dB
Test MIN/MAX/DEF	No
Instrument S/W Revision	A.01.60 or later

Upper Rel Stop Specifies the relative power level limit at the stop time of the selected region. The parameter can be toggled between Auto and Man. If set to Auto, this parameter is coupled to Upper Rel Start to make a flat limit line. If set to Man, Upper Rel Start and Upper Rel Stop can be assigned different values to make a sloped limit line.

Mode	GSM
Remote Command	`:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:UPPer:STOP:RELative <rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>` `:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:UPPer:STOP:RELative?` `:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:UPPer:STOP:RELative:AUTO ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0,ON|OFF|1|0` `:CALCulate:CGSM:FLISt[1]|2|3|4|5|6|7|8:PVTime:MASK:UPPer:STOP:RELative:AUTO?`

Example	CALC:CGSM:FLIS:PVT:MASK:UPP:STOP:REL 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
	CALC:CGSM:FLIS:PVT:MASK:UPP:STOP:REL?
	CALC:CGSM:FLIS:PVT:MASK:UPP:STOP:REL:AUTO 1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1
	CALC:CGSM:FLIS:PVT:MASK:UPP:STOP:REL:AUTO?
Notes	This supports variable array length. Undefined parameters will be unchanged.
Dependencies/Couplings	Coupled to Upper Abs Start, if coupling is set to “Auto”. In this case, Upper Rel Stop keeps the same value as Upper Rel Start.
Preset	0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
	1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1
State Saved	Saved in instrument state.
Min	-200 dB
Max	200 dB
Test MIN/MAX/DEF	No
Instrument S/W Revision	A.01.60 or later

ORFS Related Setting Commands

Modulation Configuration Commands

Offset Frequency Defines a list of offset frequencies for ORFS Modulation test. The list value must be positive.Measurements are performed at both lower and upper frequencies from the reference(0Hz).

Mode	GSM

Remote Command	`[:SENSe]:CGSM:FLISt[1]|2|3|4|5|6|7|8:ORFSpectrum:MODulation:FREQuency <freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>` `[:SENSe]:CGSM:FLISt[1]|2|3|4|5|6|7|8:ORFSpectrum:MODulation:FREQuency?` `[:SENSe]:CGSM:FLISt[1]|2|3|4|5|6|7|8:ORFSpectrum:MODulation:STATe OFF|ON|0|1,OFF|ON|0|1,OFF|ON|0|1,OFF|ON|0|1,OFF|ON|0|1,OFF|ON|0|1, OFF|ON|0|1,OFF|ON|0|1,OFF|ON|0|1,OFF|ON|0|1,OFF|ON|0|1,OFF|ON|0|1, OFF|ON|0|1,OFF|ON|0|1,OFF|ON|0|1,OFF|ON|0|1,OFF|ON|0|1,OFF|ON|0|1` `[:SENSe]:CGSM:FLISt[1]|2|3|4|5|6|7|8:ORFSpectrum:MODulation:STATe?`
Example	CGSM:FLIS:ORFS:MOD:FREQ 0.0,2.0e5,4.0e5,6.0e5 CGSM:FLIS:ORFS:MOD:FREQ? CGSM:FLIS:ORFS:MOD:STAT 1,1,1,1 CGSM:FLIS:ORFS:MOD:STAT?
Notes	Freq0 (1st parameter) is always '0'. It's for the reference carrier. It supports variable array length. Undefined parameters will be unchanged. You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	0, 1e5, 2e5, 2.5e5, 4e5, 6e5, 8e5, 0, 0, 0, 0, 0, 0, 0, 0 1, 0, 1, 1, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0
State Saved	Saved in instrument state.
Min	0.0 Hz
Max	800 kHz
Test MIN/MAX/DEF	No
Instrument S/W Revision	A.01.60 or later

Res BW Defines the resolution bandwidths list for the modulation spectrum part of the ORFS measurement. The first bandwidth specified is for the reference carrier. Each resolution bandwidth in this list corresponds to an offset frequency in the modulation offset frequency list.

Mode	GSM

Remote Command	`[:SENSe]:CGSM:FLISt[1]|2|3|4|5|6|7|8:ORFSpectrum:MODulation:BANDwidth <freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>` `[:SENSe]:CGSM:FLISt[1]|2|3|4|5|6|7|8:ORFSpectrum:MODulation:BANDwidth?`
Example	CGSM:FLIS:ORFS:MOD:BAND 3.0e4,3.0e4,3.0e4,3.0e4 CGSM:FLIS:ORFS:MOD:BAND?
Notes	This supports variable array length. Undefined parameters will be unchanged. This command is valid only when SENS:CGSM:ORFS:TYPE is set to 'MOD' or 'MSW'. You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	3e4,3e4,3e4,3e4,3e4,3e4,3e4,3e4,3e4,3e4,3e4,3e4,3e4,3e4,3e4,3e4
State Saved	Saved in instrument state.
Min	1 kHz
Max	500 kHz
Test MIN/MAX/DEF	No
Instrument S/W Revision	A.01.60 or later

Relative Limit Level Defines relative limit level list in dB for the modulation spectrum part of the ORFS measurement. The first limit level is for the reference carrier and it is not used. Each relative limit level in this list corresponds to an offset frequency in the modulation offset frequency list.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:FLISt[1]|2|3|4|5|6|7|8:ORFSpectrum:MODulation:LIMit:RELative <rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>` `[:SENSe]:CGSM:FLISt[1]|2|3|4|5|6|7|8:ORFSpectrum:MODulation:LIMit:RELative?`
Example	CGSM:FLIS:ORFS:MOD:LIM:REL 0.0,-35.0,-60.0,-60.0 CGSM:FLIS:ORFS:MOD:LIM:REL?

Notes	This implementation is different from the regular ORFS measurement. This supports variable array length. Undefined parameters will be unchanged. You must be in the GSM mode to use this command. Use INSTrument:SELect to set the mode.
Preset	0, 0.5, -30, -33, -60, -60, -60, 0, 0, 0, 0, 0, 0, 0, 0
State Saved	Saved in instrument state.
Min	-200.0
Max	200.0
Test MIN/MAX/DEF	No
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Absolute Limit Level Defines absolute limit level list in dBm for the modulation spectrum part of the ORFS measurement. The first limit level is for the reference carrier and it is not used. Each absolute limit level in this list corresponds to an offset frequency in the modulation offset frequency list.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:FLISt[1]|2|3|4|5|6|7|8:ORFSpectrum:MODulation:LIMit:ABSolute <ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>` `[:SENSe]:CGSM:FLISt[1]|2|3|4|5|6|7|8:ORFSpectrum:MODulation:LIMit:ABSolute?`
Example	CGSM:FLIS:ORFS:MOD:LIM:ABS 0.0,-65.0,-65.0,-65.0 CGSM:FLIS:ORFS:MOD:LIM:ABS?
Notes	This implementation is different from the regular ORFS measurement. This supports variable array length. Undefined parameters will be unchanged. You must be in the GSM mode to use this command. Use INSTrument:SELect to set the mode.
Preset	0, -36, -36, -36, -36, -51, -51, 0, 0, 0, 0, 0, 0, 0, 0
State Saved	Saved in instrument state.

Min	-200.0
Max	200.0
Test MIN/MAX/DEF	No
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Switching Configuration Commands

Offset Frequency Defines a list of offset frequencies for ORFS Switching test. The list value must be positive and it's measured at both lower and upper frequencies from the reference(0Hz).

Mode	GSM
Remote Command	`[:SENSe]:CGSM:FLISt[1]|2|3|4|5|6|7|8:ORFSpectrum:SWITching:FREQuency <freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>`
	`[:SENSe]:CGSM:FLISt[1]|2|3|4|5|6|7|8:ORFSpectrum:SWITching:FREQuency?`
	`[:SENSe]:CGSM:FLISt[1]|2|3|4|5|6|7|8:ORFSpectrum:SWITching:STATe OFF|ON|0|1, OFF|ON|0|1,OFF|ON|0|1,OFF|ON|0|1,OFF|ON|0|1,OFF|ON|0|1, OFF|ON|0|1,OFF|ON|0|1,OFF|ON|0|1,OFF|ON|0|1,OFF|ON|0|1,OFF|ON|0|1, OFF|ON|0|1,OFF|ON|0|1,OFF|ON|0|1,OFF|ON|0|1,OFF|ON|0|1`
	`[:SENSe]:CGSM:FLISt[1]|2|3|4|5|6|7|8:ORFSpectrum:SWITching:STATe?`
Example	CGSM:FLIS:ORFS:SWIT:FREQ 0.0,4.0e5,6.0e5
	CGSM:FLIS:ORFS:SWIT:FREQ?
	CGSM:FLIS:ORFS:SWIT:STAT 1,1,1
	CGSM:FLIS:ORFS:SWIT:STAT?
Notes	Freq0 (1st parameter) is always '0'. It's for the reference carrier.
	This supports variable array length. Undefined parameters will be unchanged.
	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	0,4e5,6e5,0,0,0,0,0,0,0,0,0,0,0,0
	1, 1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0

State Saved	Saved in instrument state.
Min	0.0 Hz
Max	800 kHz
Test MIN/MAX/DEF	No
Instrument S/W Revision	A.01.60 or later

Res BW Defines the resolution bandwidths list for the switching spectrum part of the ORFS measurement. The first bandwidth specified is for the reference carrier. Each resolution bandwidth in this list corresponds to an offset frequency in the switching offset frequency list.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:FLISt[1]|2|3|4|5|6|7|8:ORFSpectrum:SWITching:BANDwidth <freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>,<freq>`
	`[:SENSe]:CGSM:FLISt[1]|2|3|4|5|6|7|8:ORFSpectrum:SWITching:BANDwidth?`
Example	CGSM:FLIS:ORFS:SWIT:BAND 3.0e5,3.0e4,3.0e4
	CGSM:FLIS:ORFS:SWIT:BAND?
Notes	This supports variable array length. Undefined parameters will be unchanged.
	This command is valid only when CGSM:ORFS:TYPE is set to 'SWIT' or 'MSW'.
	You must be in the GSM/EDGE mode to use this command. Use INSTrument:SELect to set the mode.
Preset	3e5,3e4,3e4,3e4,3e4,3e4,3e4,3e4,3e4,3e4,3e4,3e4,3e4,3e4,3e4
State Saved	Saved in instrument state.
Min	1 kHz
Max	500 kHz
Test MIN/MAX/DEF	No
Instrument S/W Revision	A.01.60 or later

Relative Limit Level Defines relative limit level list in dB for the switching spectrum part of the

ORFS measurement. The first limit level is for the reference carrier and it is not used. Each relative limit level in this list corresponds to an offset frequency in the switching offset frequency list.

Mode	GSM
Remote Command	`[:SENSe]:CGSM:FLISt[1]|2|3|4|5|6|7|8:ORFSpectrum:SWITching:LIMit:RELative <rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>, <rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>, <rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>,<rel_ampl>` `[:SENSe]:CGSM:FLISt[1]|2|3|4|5|6|7|8:ORFSpectrum:SWITching:LIMit:RELative?`
Example	CGSM:FLIS:ORFS:SWIT:LIM:REL 0.0,-57.0,-67.0 CGSM:FLIS:ORFS:SWIT:LIM:REL?
Notes	This implementation is different from the regular ORFS measurement. You must be in the GSM mode to use this command. Use INSTrument:SELect to set the mode.
Preset	-200,-200,-200,-200,-200,-200,-200,-200,-200,-200,-200,-200,-200,-200
State Saved	Saved in instrument state.
Min	-200.0
Max	200.0
Test MIN/MAX/DEF	No
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Absolute Limit Level Defines absolute limit level list in dBm for the switching spectrum part of the ORFS measurement. The first limit level is for the reference carrier and it is not used. Each absolute limit level in this list corresponds to an offset frequency in the switching offset frequency list.

Mode	GSM

Remote Command	`[:SENSe]:CGSM:FLISt[1]|2|3|4|5|6|7|8:ORFSpectrum:SWITching:LIMit:ABSolute <ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>,<ampl>` `[:SENSe]:CGSM:FLISt[1]|2|3|4|5|6|7|8:ORFSpectrum:SWITching:LIMit:ABSolute?`
Example	CGSM:FLIS:ORFS:SWIT:LIM:ABS 0.0,-36.0,-36.0 CGSM:FLIS:ORFS:SWIT:LIM:ABS?
Notes	This implementation is different from the regular ORFS measurement. You must be in the GSM mode to use this command. Use INSTrument:SELect to set the mode.
Preset	0, -23, -26, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0
State Saved	Saved in instrument state.
Min	-200.0
Max	200.0
Test MIN/MAX/DEF	No
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Result Values

GSM Result Selection

Here is the mapping of the Array index and Result parameter

Index	Result Parameter
1	Average RMS Phase Error a floating point number (in degrees) of the rms phase error between the measured phase and the ideal phase over the entire burst. The calculation is based on symbol decision points and points halfway between symbol decision points (i.e. 2 points/symbol). If there are more than one burst selected for Demod Bitmap, then the rms values are averaged.

2 Maximum RMS Phase Error

a floating point number (in degrees) of the rms phase error between the measured phase and the ideal phase over the entire burst. The calculation is based on symbol decision points and points halfway between symbol decision points (i.e. 2 points/symbol). If there are more than one burst selected for Demod Bitmap, then it takes the highest rms value.

3 Average of the Peak Phase Error

a floating point number (in degrees) of the peak phase error of all the individual symbol decision points (prior to the rms averaging process). If there are more than one burst selected for Demod Bitmap, then the rms values are averaged.

4 Maximum of the Peak Phase Error

a floating point number (in degrees) of the peak phase error of all the individual symbol decision points (prior to the rms averaging process). If there are more than one burst selected for Demod Bitmap, then it takes the highest.

5 Peak Phase Error Symbol Position

a floating point number (in symbols) representing the symbol number at which the peak phase error occurred.

If multiple bursts are configured, it just takes the last burst's result.

6 Maximum of the Peak Phase Error Symbol Position

a floating point number (in symbols) representing the symbol number at which the peak phase error occurred.

7 Average Frequency Error

a floating point number (in Hz) of the frequency error over the entire measurement area. This is the difference between the measured phase trajectory and the reference phase trajectory.

8 Maximum Frequency Error

a floating point number (in Hz) of the peak frequency error through over the measurement area. Take the peak frequency error from each burst and identify the highest.

9 Average I/Q Origin Offset

a floating point number (in dB) of the I and Q error (magnitude squared) offset from the origin over the entire measurement area.

10 Maximum I/Q Origin Offset

a floating point number (in dB) of the maximum I and Q error (magnitude squared) offset over the measurement area.

11	Average T0 Offset a floating-point number of the time interval between the slot boundary to T0. T0 means the transition time from symbol 13 to symbol 14 of the midamble training sequence for each time slot. Unit is sec. The 'RF Sync Delay' under 'Mode Setup' is not considered in this measurement.
12	Maximum T0 Offset a floating-point number of the time interval between the trigger point to T0. T0 means the transition time from symbol 13 to symbol 14 of the midamble training sequence for each time slot. Unit is sec. Take the T0 offset from each burst and identify the highest. The 'RF Sync Delay' under 'Mode Setup' is not considered in this measurement.
13	Detected TSC a floating-point number of detected TSC of the last measured burst. The returned value is 0~7 (Burst Type: Normal), 8 (Burst Type: Access), 9 (Burst Type: Sync) if TSC detected. If TSC not detected, the returned value is -999.0.

Mode	CGSM
Remote Command	`[:SENSe]:CGSM:DEMod:PFERror:RESult ON|OFF|0|1,…` `[:SENSe]:CGSM:DEMod:PFERror:RESult?`
Example	CGSM:DEM:PFER:RES 0,1,0 CGSM:DEM:PFER:RES?
Notes	Refer to the above table to see the mapping of the index and result parameter. This setting applies to all frequencies' results. The array length might be expanded for future enhancement.
Preset	1,0,0,1,0,1,1,1,1,1,1,0,0
State Saved	Saved in instrument state.
Test MIN/MAX/DEF	No
Instrument S/W Revision	A.01.60 or later

EDGE Result Selection

Here is the mapping of the Array index and Result parameter

Index	Result Parameter
1	RMS 95th %tile EVM a floating point number (in percent) of EVM over 95% of the entire burst. The result is averaged over the all demodulated bursts at the frequency.
2	Average RMS EVM a floating point number (in percent) of EVM over the burst. The result is averaged over the all demodulated bursts at the frequency.
3	Maximum RMS EVM a floating point number (in percent) of the highest EVM over the all demodulated bursts at the frequency
4	Average of the Peak EVM a floating point number (in percent) of the average of the peak EVMs. Take the peak EVMs from each burst and average them together.
5	Maximum of the Peak EVM a floating point number (in percent) of the maximum peak EVM. Take the peak EVMs from each burst and identify the highest peak.
6	Symbol position of the peak EVM an integer number of the symbol position where the peak EVM error is detected.
7	Average Magnitude Error a floating point number (in percent) of the average magnitude error over the all demodulated bursts at the frequency.
8	Maximum Magnitude Error a floating point number (in percent) of maximum magnitude error over the all demodulated bursts at the frequency.
9	Average of the Peak Magnitude Error a floating point number (in percent) of the average of peak magnitude error over the all demodulated bursts at the frequency.
10	Maximum of the Peak Magnitude Error a floating point number (in percent) of the highest peak magnitude error over the all demodulated bursts at the frequency.

11	Average Phase Error a floating point number (in degrees) of average phase error over the entire measurement area.
12	Maximum Phase Error a floating point number (in degrees) of the highest of the average phase error over the entire measurement area.
13	Average of the Peak Phase Error a floating point number (in percent) of the average of peak phase error over the all demodulated bursts at the frequency.
14	Maximum of the Peak Phase Error a floating point number (in degrees) of the highest peak phase error over the entire measurement area.
15	Average Frequency Error a floating point number (in Hz) of the frequency error in the measured signal.
16	Maximum Frequency Error a floating point number (in Hz) of the highest frequency error in the measured signal.
17	I/Q Origin Offset a floating point number (in dB) of the I and Q error (magnitude squared) offset from the origin.
18	Amplitude Droop Error a floating point number (in dB) of the amplitude droop measured across the 142 symbol burst.
19	Trigger to T0 a floating-point number (in sec) of the time interval between the slot boundary T0. T0 means the transition time from symbol 13 to symbol 14 of the midamble training sequence for each time slot. The 'RF Sync Dealy' under 'Mode Setup' is not considered in this measurement.
20	Timing Offset of AM/PM path a floating number (in sec) of the time interval between Amplitude Modulation path and Phase Modulation path.
21	Detected TSC a floating-point number of detected TSC of the last measured burst. . The returned value is 0~7 (Burst Type: Normal) if TSC detected. If TSC not detected, the returned value is -999.0.

Mode	CGSM
Remote Command	`[:SENSe]:CGSM:DEMod:EEVM:RESult ON|OFF|0|1,…`
	`[:SENSe]:CGSM:DEMod:EEVM:RESult?`
Example	CGSM:DEM:EEVM:RES 1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
	CGSM:DEM:EEVM:RES?
Notes	Refer above table to see the mapping of the index and result parameter. This setting applies to all frequencies' results.
	The array length might be expanded for future enhancement.
Preset	1,1,0,0,1,1,1,0,0,1,1,0,0,1,1,1,1,1,1,0,0
State Saved	Saved in instrument state.
Test MIN/MAX/DEF	No
Instrument S/W Revision	A.01.60 or later

ORFS Result Selection

Here is the mapping of the Array index and Result parameter

Index	Result Parameter
1	Lower Relative
	Amplitude relative to Offset 0 at Lower Offset in dB
	For the offset0, it isn't output regardless this state.
2	Lower Absolute
	Absolute amplitude at Lower Offset in dBm
3	Lower Delta
	Pick the lower value up between the "Lower Relative Delta" and the "Lower Absolute Delta".
	For the offset0, it isn't output regardless this state.
4	Upper Relative
	Amplitude relative to Offset 0 at Upper Offset in dB
	For the offset0, it isn't output regardless this state.

5	Upper Absolute Absolute amplitude at Upper Offset in dBm For the offset0, it isn't output regardless this state because it is same as the index 1.
6	Upper Delta Pick the lower value up between the "Upper Relative Delta" and the "Upper Absolute Delta". For the offset0, it isn't output regardless this state.

Mode	CGSM
Remote Command	`[:SENSe]:CGSM:ORFSpectrum:RESult ON|OFF|0|1,…` `[:SENSe]:CGSM:ORFSpectrum:RESult?`
Example	CGSM:ORFS:RES 1,1,1,1,1,1 CGSM:ORFS:RES?
Notes	Refer above table to see the mapping of the index and result parameter. This setting applies to all frequencies' results. The array length might be expanded for future enhancement.
Preset	1,1,1,1,1,1
State Saved	Saved in instrument state.
Test MIN/MAX/DEF	No
Instrument S/W Revision	A.01.60 or later

Power vs Time Result Selection

Here is the mapping of the Array index and Result parameter

Index	Result Parameter
1	Pass/Fail Result shows the mask test result 0:Pass, 1:Fail, -1:Not tested

2	Burst Amplitude The mean power (in dBm) across the useful part of the selected burst
3	Maximum Amplitude The peak amplitude of the specified region around the burst in dBm
4	Minimum Amplitude The lowest amplitude of the specified region around the burst in dBm
5	1st Error Point of the Burst it shows the first error point where the RF envelope exceeds the PVT mask from the point where the acquisition starts at the frequency, in sample. If the measured waveform is in the mask, it will be -999.0.
6	1st Error Time of the Burst it shows the first error point where the RF envelope exceeds the PVT mask from the slot boundary, in time unit. If the measured waveform is in the mask, it will be -999.0.

Mode	CGSM
Remote Command	`[:SENSe]:CGSM:PVTime:RESult ON|OFF|0|1,…` `[:SENSe]:CGSM:PVTime:RESult?`
Example	CGSM:PVT:RES 1,0,0,0,0,0 CGSM:PVT:RES?
Preset	1,1,1,0,1,1
State Saved	Saved in instrument state.
Test MIN/MAX/DEF	No
Instrument S/W Revision	A.01.60 or later

Meas Preset

Restores all the measurement parameters to their default values.

For more information, see the section under the Preset key in the Utility section.

Mode	GSM
Remote Command	`:CONFigure:CGSM`
Example	:CONF:CGSM
Notes	You must be in the or GSM mode to use this command. Use INSTrument:SELect to set the mode.
Instrument S/W Revision	A.01.60 or later

Peak Search

There is no Peak Search functionality implemented for this measurement.

Sweep/Control

There is no Sweep/Control functionality implemented for this measurement.

SPAN X Scale

There is no Span X Scale functionality implemented for this measurement.

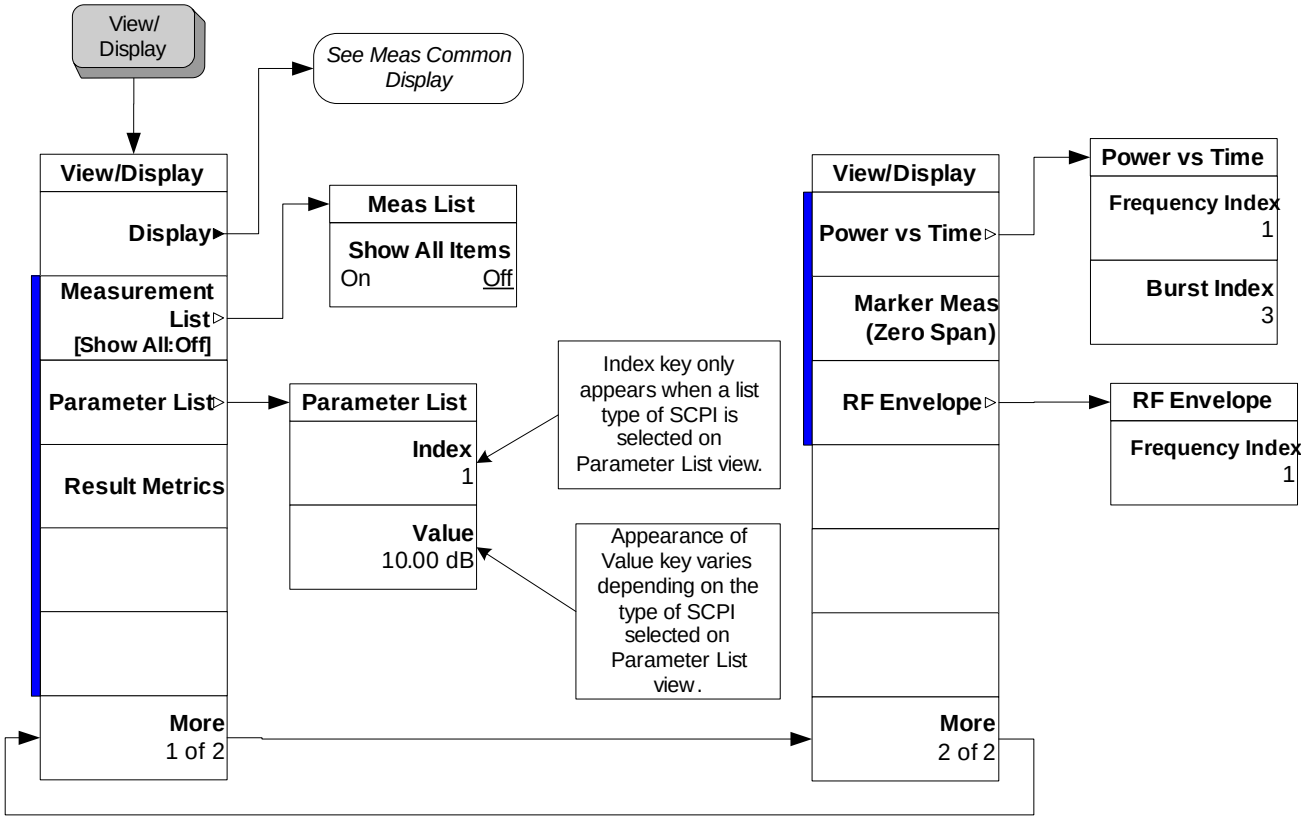
Trace/Detector

There is no Trace/Detector functionality implemented for this measurement.

Trigger

Selects the trigger source and trigger setup functionality. See the “Trigger” section in the EDGE/GSM User's and Programmer's Reference or Help for trigger setup information.

View/Display



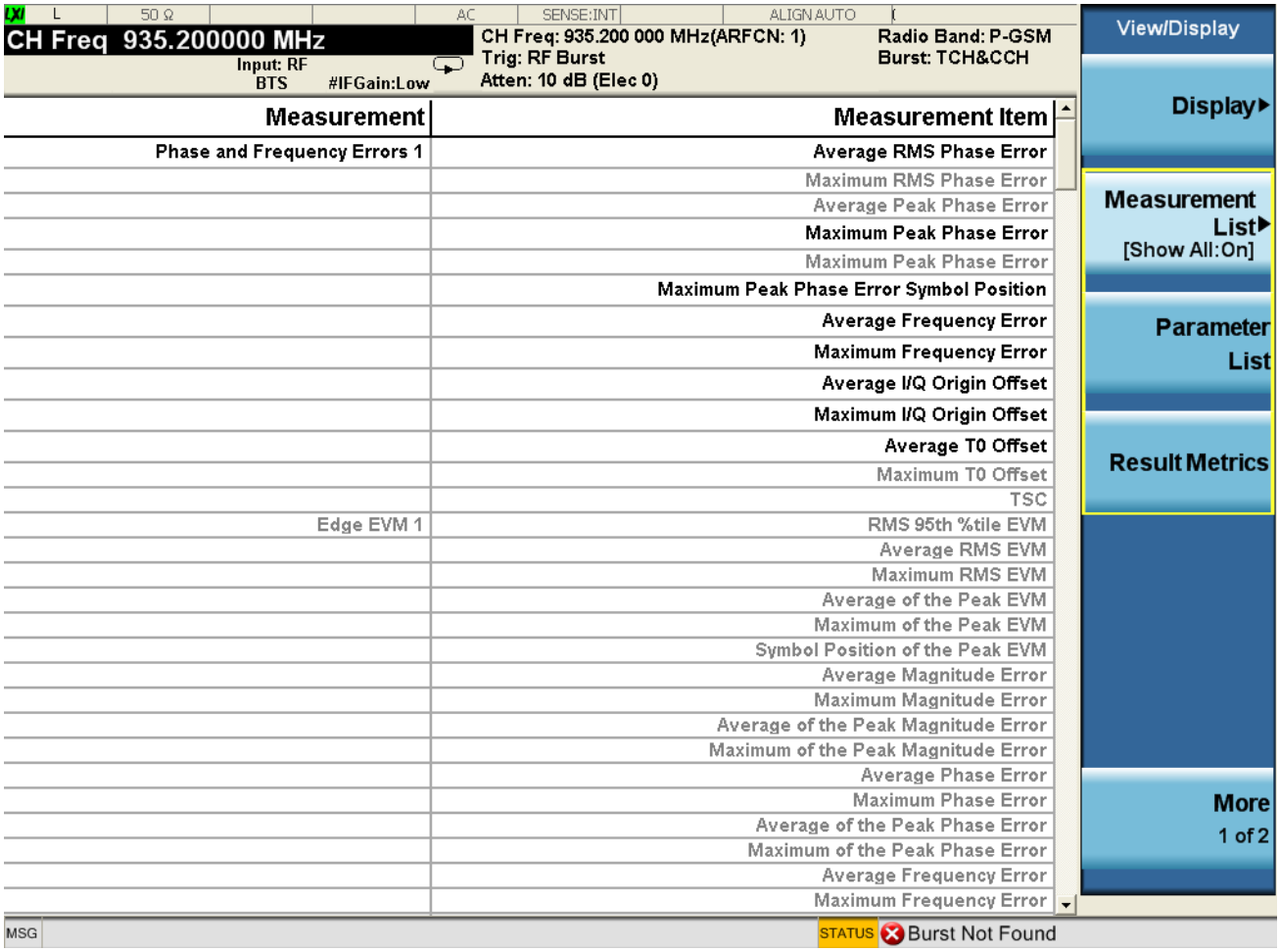
The CGSM measurement provides six views:

- Measurement List view
- Parameter List view
- Result Metrics view
- Power vs Time View
- Marker Meas (Zero Span) View
- RF Envelope view

Measurement List view

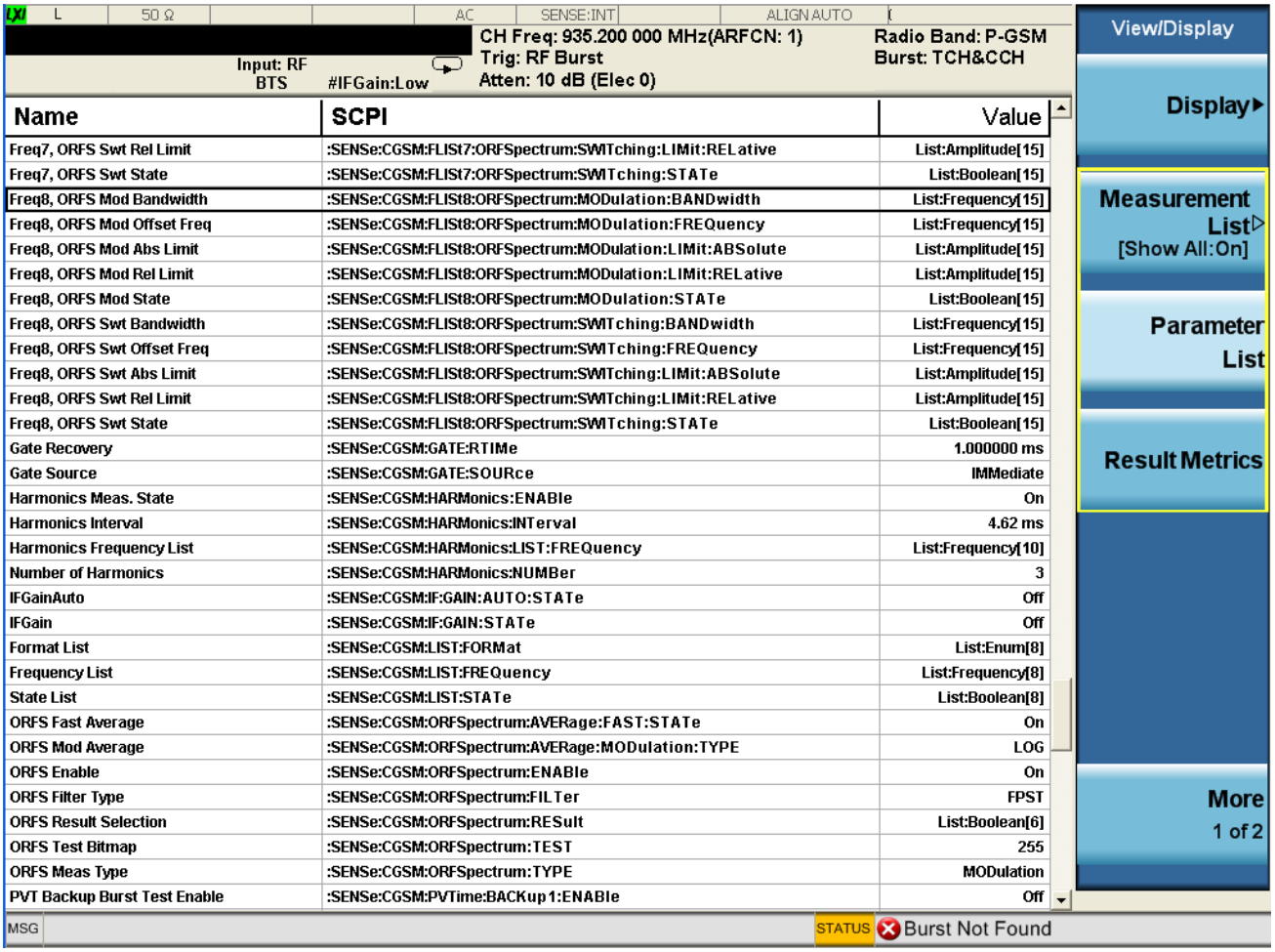
By default, this view shows the current status of enabled measurements and results.

If “Show All Items” parameter is enabled from the soft key, all available measurements and items are displayed. When the measurement is disabled, the measurement name and items which belong to the measurement are grayed out.



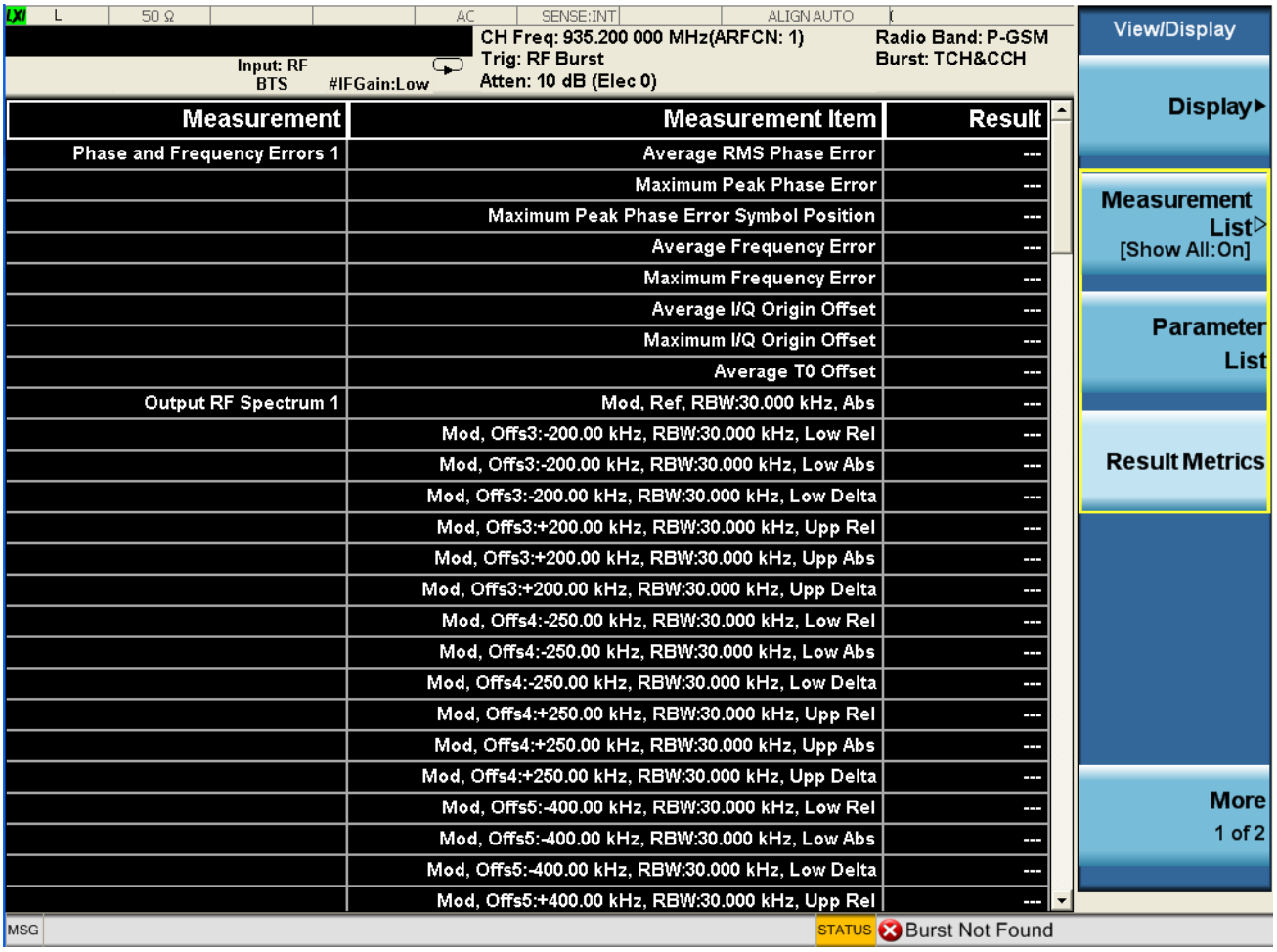
Parameter List view

This view shows name, remote command and value of available commands for this measurement. The user can verify and change values with using menu and front panel keys or by using a mouse and keyboard.



Result Metrics view

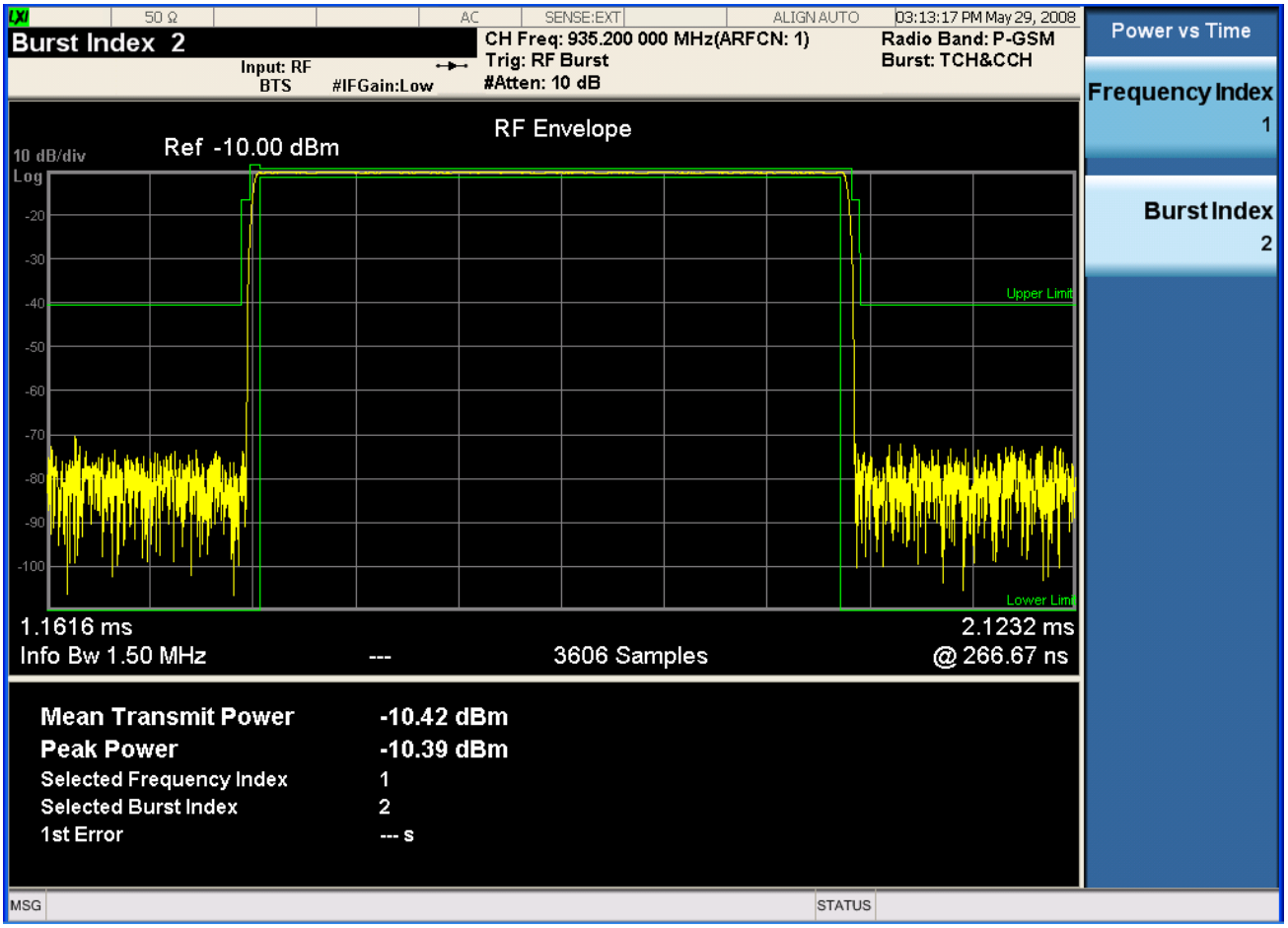
This view shows measurement results in the same order in which remote command measurement results by index (n=1) returns are provided.



Measurement	Measurement Item	Result
Phase and Frequency Errors 1	Average RMS Phase Error	---
	Maximum Peak Phase Error	---
	Maximum Peak Phase Error Symbol Position	---
	Average Frequency Error	---
	Maximum Frequency Error	---
	Average I/Q Origin Offset	---
	Maximum I/Q Origin Offset	---
	Average T0 Offset	---
Output RF Spectrum 1	Mod, Ref, RBW:30.000 kHz, Abs	---
	Mod, Offs3:-200.00 kHz, RBW:30.000 kHz, Low Rel	---
	Mod, Offs3:-200.00 kHz, RBW:30.000 kHz, Low Abs	---
	Mod, Offs3:-200.00 kHz, RBW:30.000 kHz, Low Delta	---
	Mod, Offs3:+200.00 kHz, RBW:30.000 kHz, Upp Rel	---
	Mod, Offs3:+200.00 kHz, RBW:30.000 kHz, Upp Abs	---
	Mod, Offs3:+200.00 kHz, RBW:30.000 kHz, Upp Delta	---
	Mod, Offs4:-250.00 kHz, RBW:30.000 kHz, Low Rel	---
	Mod, Offs4:-250.00 kHz, RBW:30.000 kHz, Low Abs	---
	Mod, Offs4:-250.00 kHz, RBW:30.000 kHz, Low Delta	---
	Mod, Offs4:+250.00 kHz, RBW:30.000 kHz, Upp Rel	---
	Mod, Offs4:+250.00 kHz, RBW:30.000 kHz, Upp Abs	---
	Mod, Offs4:+250.00 kHz, RBW:30.000 kHz, Upp Delta	---
	Mod, Offs5:-400.00 kHz, RBW:30.000 kHz, Low Rel	---
	Mod, Offs5:-400.00 kHz, RBW:30.000 kHz, Low Abs	---
	Mod, Offs5:-400.00 kHz, RBW:30.000 kHz, Low Delta	---
	Mod, Offs5:+400.00 kHz, RBW:30.000 kHz, Upp Rel	---

Power vs Time View

PVT view shows a time-domain magnitude plot with its PVT masks of the selected burst for the selected frequency. The burst and frequency are specified by 'Burst Index' and 'Frequency Index' respectively. When the indexed burst is not PVT tested, no plot will be shown.



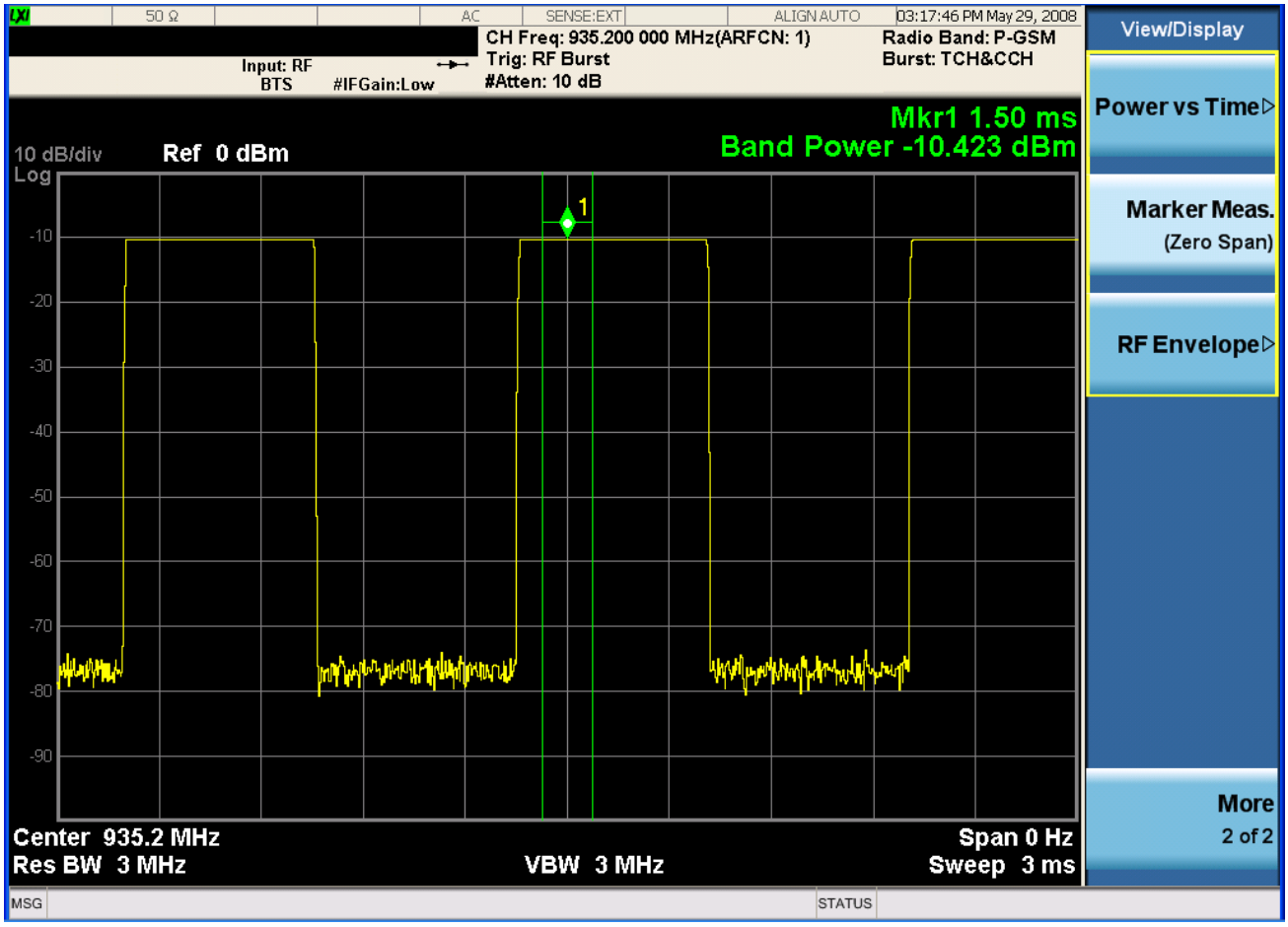
Metrics Window

Name	Corresponding Results	Display Format
Mean Transmit Power	n=1, the location is variable. See "5.1.1 Remote Results"	xx.xx dBm
Peak Power	n=1, the location is variable. See "5.1.1 Remote Results".	xx.xx dBm
Selected Frequency Index	It describes the index of the frequency list.	x

Selected Burst Index	It describes which burst to be shown in the frequency list.	x
1st Error	It describes the first point where the mask test failed. The location is aligned by the slot boundary defined by "5.2.7.3 Start Offset" and "5.2.7.4 Burst Interval".	xx s

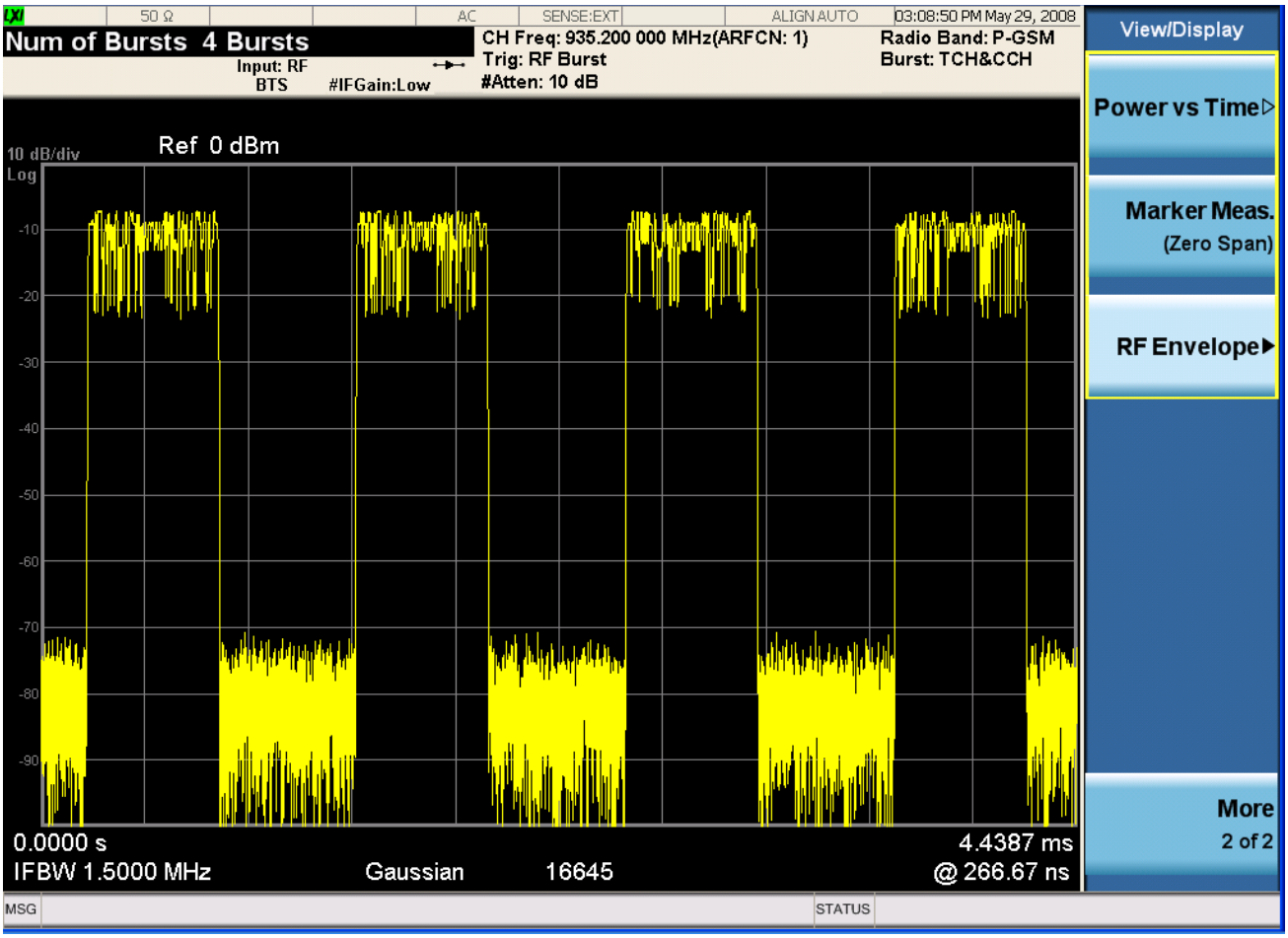
Marker Meas (Zero Span) View

This view shows the trace and markers of Marker Meas (ZSPan).



RF Envelope view

For diagnostic purposes, RF Envelope View shows a time-domain magnitude plot of each frequency. By changing Frequency Index, you can see the plot of the selected frequency. When the frequency list is off (see Frequency List), no plot of the list is shown.



View Selection

Allows you to select the desired measurement view from the following selections:

- MLISt – Measurement List view
- PARameter – Parameter List view
- RESult - Result Metrics view
- PVTime - Power vs Time view
- ZSPan – Marker Meas (Zero Span) view
- RFENvelope - RF Envelope view
-

Key Path	**View/Display**
Mode	GSM

Remote Command	`:DISPlay:CGSM:VIEW[:SELect] MLISt|PARameter|RESult|PVTime|ZSPan|RFENvelope` `:DISPlay:CGSM:VIEW[:SELect]?`
Example	DISP:CGSM:VIEW RES DISP:CGSM:VIEW?
Preset	RESult
State Saved	Saved in instrument state.
Range	Measurement List | Parameter List | Result Metrics | | Power vs Time | Marker Meas | RF Envelope
Instrument S/W Revision	A.01.60 or later

Show All Items

Allows you to specify display settings of the Measurement List view. In default (OFF), the current status of enabled measurements, items are displayed.

Key Path	**View/Display, Measurement List**
Mode	GSM
Preset	OFF
State Saved	Saved in instrument state.
Range	On | Off
Instrument S/W Revision	A.01.60 or later

Index

Allows you to specify an index of array for editing the value of specified index. This key only appears when a list type of SCPI is selected on Parameter List view. Maximum number of this index corresponds to the length of selected SCPI.

Key Path	**View/Display, Parameter List**
Mode	GSM

Instrument S/W Revision	A.01.60 or later

Value

Allows you to edit the value of selected SCPI on Parameter List view.

Key Path	**View/Display, Parameter List**
Mode	GSM
Instrument S/W Revision	A.01.60 or later

Frequency Index (for RF Envelope and PVT)

Frequency Index specifies which frequency index's result is plotted on the display. If the state of the index is off, it shows nothing.

Key Path	**View/Display, RF Envelope or Power vs Time**
Mode	CGSM
Remote Command	`:DISPlay:CGSM:VIEW:FREQuency <integer>`
	`:DISPlay:CGSM:VIEW:FREQuency?`
Example	DISP:CGSM:VIEW:FREQ 2
	DISP:CGSM:VIEW:FREQ?
Notes	If the selected frequency index isn't active, no meaningful result will be shown.
Preset	1
State Saved	Saved in instrument state.
Min	1
Max	8
Test MIN/MAX/DEF	Yes
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Burst Index (for Power vs Time)

Burst Index specifies which bursts index's result is plotted on the display. If the state of the burst of the frequency is off, it shows nothing.

Key Path	**View/Display, Power vs Time**
Mode	CGSM
Remote Command	`:DISPlay:CGSM:VIEW:BURSt <integer>`
	`:DISPlay:CGSM:VIEW:BURSt?`
Example	DISP:CGSM:VIEW:BURS 2
	DISP:CGSM:VIEW:BURS?
Notes	If the selected burst index isn't active, no meaningful result will be shown.
Preset	1
State Saved	Saved in instrument state.
Min	1
Max	16
Test MIN/MAX/DEF	No
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Change Title

Accesses an Alpha Editor menu that enables you to write a title across the top of the display.

See the "View/Display" section of the EDGE/GSM User's and Programmer's Reference or Help for details.

Key Path	**View/Display, Display, Title**
Mode	GSM

Remote Command	`:DISPlay:CGSM:ANNotation:TITLe:DATA <string>`
	`:DISPlay:CGSM:ANNotation:TITLe:DATA?`
Example	DISP:CGSM:ANN:TITL:DATA “Agilent”
	DISP:CGSM:ANN:TITL:DATA?
Preset	Combined GSM/EDGE
State Saved	Saved in instrument state.
Range	Uppercase, Lowercase, Numeric, Symbol
Instrument S/W Revision	A.01.60 or later

3 List Power Step Measurement

The List Power Step measurement performs multiple sweeps using the zero span method across the listed frequencies, employing selected electronic attenuator and sweep point settings. The settings are accessed sequentially and the power measurements taken create a trace from the multiple sweeps. This provides a faster measurement than by using previous methods.

List Power Step

The List Power Step measurement performs multiple sweeps using the zero span method across the listed frequencies, employing selected electronic attenuator and sweep point settings. The settings are accessed sequentially and the power measurements taken create a trace from the multiple sweeps. This provides a faster measurement than by using previous methods.

Key Path	**Meas**
Instrument S/W Revision	A.01.60 or later

Remote Commands

```
:CONFigure:LPSTep

:CONFigure:LPSTep:NDEFault

:INITiate:LPSTeps

:FETCh:LPSTep[n]?

:MEASure:LPSTep[n]?

:READ:LPSTep[n]?
```

Table 3-1 List Power Step Measurement Remote Results

n	Results Returned
not specified or n = 1	Returns the following scalar results: Sample Interval is a floating point number representing the time between samples when using the trace queries (n=2). Mean Power is the mean power (in dBm). This is the power across the entire trace. If averaging is on, the power is for the latest acquisition. Mean Power Averaged is the power (in dBm) for N averages, if averaging is on. This is the power across the entire trace. If averaging is on, the power is for the latest acquisition. If averaging is off, the value of the mean power averaged is the same as the value of the mean power. Sweep Points is the number of data points in the swept signal. This number is useful when performing a query on the signal (i.e. when n=2). Peak-to-Mean ratio has units of dB. This is the ratio of the maximum signal level to the mean power. Valid values are only obtained with averaging turned off. If averaging is on, the peaktomean ratio is calculated using the highest peak value, rather than the displayed average peak value. Maximum value is the maximum of the most recently acquired data (in dBm). 1. Minimum value is the minimum of the most recently acquired data (in dBm).
n = 2	Returns trace point values of the entire captured signal envelope trace data. These data points are floating point numbers representing the power of the signal (in dBm). There are N data points, where N is the sweep points. The period between the samples is defined by the sample interval.

Calculate Results (Query Only)

Return power results of the selected sweep. The calculated period is specified with Calculation Time Setup.

Mode	WCDMA, GSM
Remote Command	`:CALCulate:LPSTep:LIST[1]|2|3|4|5|6|7|8|9|10|11|12|13|14|15|16|17|18|19|20|21|22|23|24|25|26|27|28|29|30|31|32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|48|49|50? [RMS]|MAXimum|MINimum`
Example	CALC:LPST:LIST2? MAX
Notes	Query only command For obtaining results efficiently, it is recommended to query this result when analyzer is not sweeping during query. It is generally advisable to be in Single Sweep. ex) Here is a sequence: INIT:CONT 0 Set Parameter INIT *OPC? CALC:LPST:LIST?
Instrument S/W Revision	A.01.60 or later

Amplitude (AMPTD) Y Scale

Accesses the AMPTD Y Scale menu that allows you to set desired vertical scale settings.

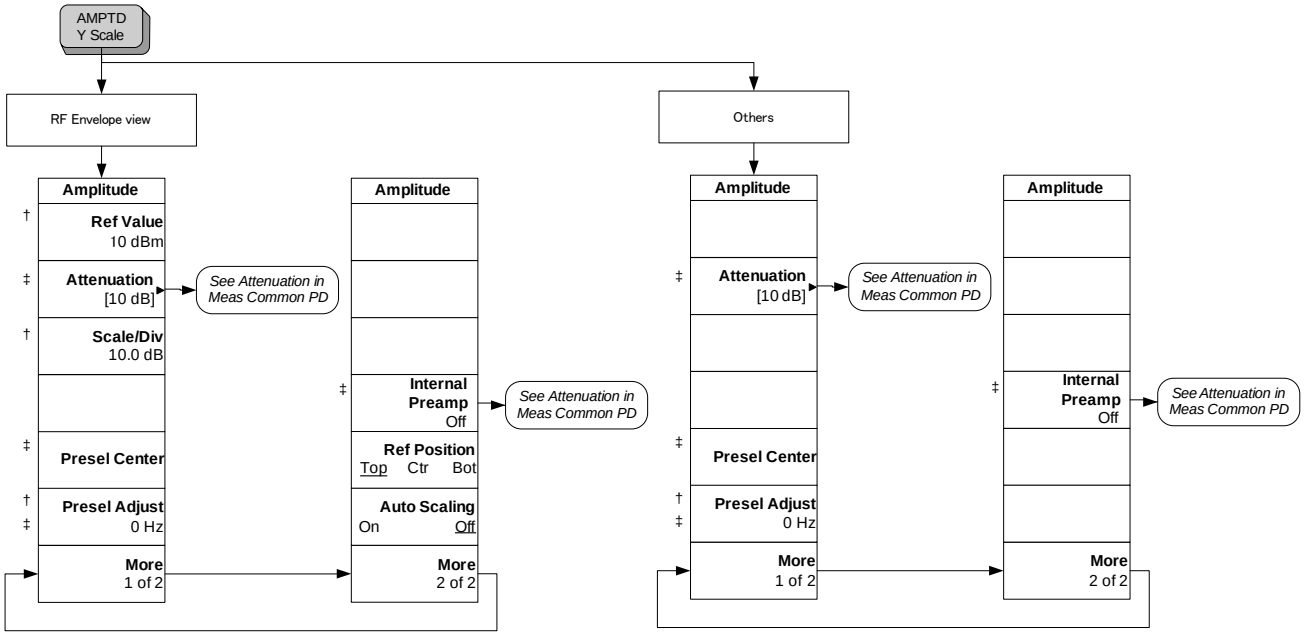


Figure 3-1 AMPTD Y Scale

Ref Value

Sets the absolute power reference.

Key Path	**AMPTD Y Scale**
Mode	WCDMA, GSM
Remote Command	`:DISPlay:LPSTep:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel <ampl>`
	`:DISPlay:LPSTep:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RLEVel?`
Example	DISP:LPST:VIEW:WIND:TRAC:Y:SCAL:RLEV 5dbm
	DISP:LPST:VIEW:WIND:TRAC:Y:SCAL:RLEV?
Dependencies/Couplings	When Y Auto Scaling is set to On, this value is automatically determined by the measurement result. When you set this value manually, Y Auto Scaling is automatically set to Off.
Preset	10.00
State Saved	Saved in instrument state.

Min	–250.0
Max	250.0
Test MIN/MAX/DEF	Yes
Test UP/DOWN	Y Scale/Div value
Instrument S/W Revision	A.01.60 or later

Attenuation

This menu controls both the electrical and mechanical attenuators and their interactions. The value read back on the key in square brackets is the current Total (Elec + Mech) attenuation. When in Pre-Adjust for Min Clip mode, this value can change at the start of every measurement.

See Attenuation under the AMPTD Y Scale section of the User's and Programmer's reference or Help for your application for more information.

Scale/Div

Allows you to enter a numeric value to change vertical display sensitivity.

Key Path	**AMPTD Y Scale**
Mode	WCDMA, GSM
Remote Command	`:DISPlay:LPSTep:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision <rel_ampl>`
	`:DISPlay:LPSTep:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:PDIVision?`
Example	DISP:LPST:VIEW:WIND:TRAC:Y:SCAL:PDIV 10dB
	DISP:LPST:VIEW:WIND:TRAC:Y:SCAL:PDIV?
Dependencies/Couplings	When the Y Auto Scaling is set to On, this value is automatically determined by the measurement result. When you set a value manually, Y Auto Scaling is automatically set to Off.
Preset	10.00 dB
State Saved	Saved in instrument state.
Min	0.1 dB
Max	20.00 dB
Test MIN/MAX/DEF	Yes

Test UP/DOWN	Step follows the “1,2,5,10 … Rule”
Instrument S/W Revision	A.01.60 or later

Presel Center

When this key is pressed, the centering of the preselector filter is adjusted to optimize the amplitude accuracy at the frequency of the selected marker.

See Presel Center under the AMPTD Y Scale section of the User's and Programmer's reference or Help for your application for more information.

Presel Adjust

Allows you to manually adjust the preselector filter frequency to optimize its response to

the signal of interest. This function is only available when Presel Center is available

See Presel Adjust under the AMPTD Y Scale section of the User's and Programmer's reference or Help for your application for more information.

Internal Preamp

This menu controls the internal preamplifier. Turning Internal Preamp on gives a better noise figure, but a poorer inter-modulation distortion (TOI) to noise floor dynamic range. You can optimize this setting for your particular measurement. See Internal Preamp under the AMPTD Y Scale section of the User's and Programmer's reference or Help for your application for more information.

Ref Position

Allows you to set the display reference position to the top, center, or bottom of the display.

Key Path	**AMPTD Y Scale, More**
Mode	WCDMA, GSM
Remote Command	`:DISPlay:LPSTep:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RPOSition TOP|CENTer|BOTTom`
	`:DISPlay:LPSTep:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:RPOSition?`
Example	DISP:LPST:VIEW:WIND:TRAC:Y:SCAL:RPOS CENT
	DISP:LPST:VIEW:WIND:TRAC:Y:SCAL:RPOS?
Preset	TOP

State Saved	Saved in instrument state.
Range	Top | Ctr | Bot
Instrument S/W Revision	A.01.60 or later

Auto Scaling

Allows you to toggle the Y axis Auto Scaling function between On and Off.

Key Path	**AMPTD Y Scale, More**
Mode	WCDMA, GSM
Remote Command	`:DISPlay:LPSTep:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:COUPle 0|1|OFF|ON` `:DISPlay:LPSTep:VIEW[1]:WINDow[1]:TRACe:Y[:SCALe]:COUPle?`
Example	DISP:LPST:VIEW:WIND:TRAC:Y:COUP 0 DISP:LPST:VIEW:WIND:TRAC:Y:COUP?
Dependencies/Couplings	When Auto Scaling is On, and you press the Restart front-panel key, this function automatically determines the scale per division and reference values based on the measurement results. When you manually set a value for the Y Rel Value or Y Scale/Div, this parameter is automatically set to Off.
Preset	OFF
State Saved	Saved in instrument state.
Range	On | Off
Instrument S/W Revision	A.01.60 or later

Auto Couple

For Auto Couple information see the User's and Programmer's reference or Help for your application.

BW

Allows you to control the Information Bandwidth and Video Bandwidth functions of the instrument.

Info BW

Enables you to manually set the information bandwidth of the analyzer.

Mode	WCDMA, GSM
Remote Command	`[:SENSe]:LPSTep:BANDwidth[:RESolution] <freq>`
	`[:SENSe]:LPSTep:BANDwidth[:RESolution]?`
Example	LPST:BAND 10
	LPST:BAND?
Notes	You must be in the GSM or WCDMA mode to use this command. Use INSTrument:SELect to set the mode.
Preset	1MHz
State Saved	Saved in instrument state.
Min	10 Hz
Max	8 MHz
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Filter Type

Selects the type of bandwidth filter that is used. The choices are Gaussian or Flat top.

Mode	WCDMA, GSM
Remote Command	`[:SENSe]:LPSTep:BANDwidth:SHAPe GAUSsian|FLATtop`
	`[:SENSe]:LPSTep:BANDwidth:SHAPe?`
Example	LPST:BAND:SHAP FLAT
	LPST:BAND:SHAP?

Preset	GAUS
State Saved	Saved in instrument state.
Range	Gaussian | Flattop
Instrument S/W Revision	A.01.60 or later

Video BW

Allows you to change the analyzer post-detection filter (VBW).

Mode	WCDMA, GSM
Remote Command	`[:SENSe]:LPSTep:BANDwidth:VIDeo <freq>` `[:SENSe]:LPSTep:BANDwidth:VIDeo?`
Example	LPST:BAND:VID 1MHz LPST:BAND:VID?
Preset	1MHz
State Saved	Saved in instrument state.
Min	1Hz
Max	50MHz
Test MIN/MAX/DEF	Yes
Test UP/DOWN	1e0, 3e0, 1e2, 3e2, 1e3, 3e3, 1e4, 3e4, 1e5, 3e5, 1e6, 3e6, 8e6, 50e6
Instrument S/W Revision	A.01.60 or later

FREQ Channel

For FREQuency Channel information see the User's and Programmer's reference or Help for your application.

Input/Output

For Input/Output information see the User's and Programmer's reference or Help for your application.

Marker

There are no Markers implemented for this measurement.

Marker Fctn (Function)

There are no Marker Functions implemented for this measurement.

Marker > (Marker To)

There is no Marker To functionality implemented for this measurement.

Meas Setup

Avg/Hold Num

Sets the number of data acquisitions that will be averaged. After the specified number of average counts, the average mode (termination control) setting determines the average action.

Mode	WCDMA, GSM
Remote Command	`[:SENSe]:LPSTep:AVERage:COUNt <integer>`
	`[:SENSe]:LPSTep:AVERage:COUNt?`
	`[:SENSe]:LPSTep:AVERage[:STATe] OFF|ON|0|1`
	`[:SENSe]:LPSTep:AVERage[:STATe]?`
Example	LPST:AVER:COUN 3
	LPST:AVER:COUN?
	LPST:AVER ON
	LPST:AVER?
Notes	You must be in the WCDMA or GSM mode to use this command. Use INSTrument:SELect to set the mode.
Dependencies/Couplings	When this value is changed, Avg State is set to On.
Preset	10
	OFF
State Saved	Saved in instrument state.
Min	1
Max	20001
Test MIN/MAX/DEF	Yes
Test UP/DOWN	Yes
Instrument S/W Revision	A.01.60 or later

Average Mode

Select the type of termination control used to averaging. This determines the averaging action after the specified number of data acquisitions (average count) is reached.

Mode	WCDMA, GSM
Remote Command	`[:SENSe]:LPSTep:AVERage:TCONtrol EXPonential|REPeat`
	`[:SENSe]:LPSTep:AVERage:TCONtrol?`
Example	LPST:AVER:TCON REP
	LPST:AVER:TCON?
Notes	EXPonential - When Measure is set at Cont, data acquisitions will continue indefinitely. After N averages, exponential averaging is used with a weighting factor of N (the displayed average count stops at N). Exponential averaging weights new data more than old data, which allows tracking of slow-changing signals. The weighting factor N is set using the Averages, Avg Bursts key.
	REPeat - When Measure is set at Cont, data acquisitions will continue indefinitely. After N averages is reached, all previous result data is cleared and the average count is set back to 1. This is equivalent to being in Measure Single and pressing the Restart key when the Single measurement finishes.
Preset	EXPonential
State Saved	Saved in instrument state.
Instrument S/W Revision	A.01.60 or later

Average Type

Specifies the type of trace and result averaging to use.

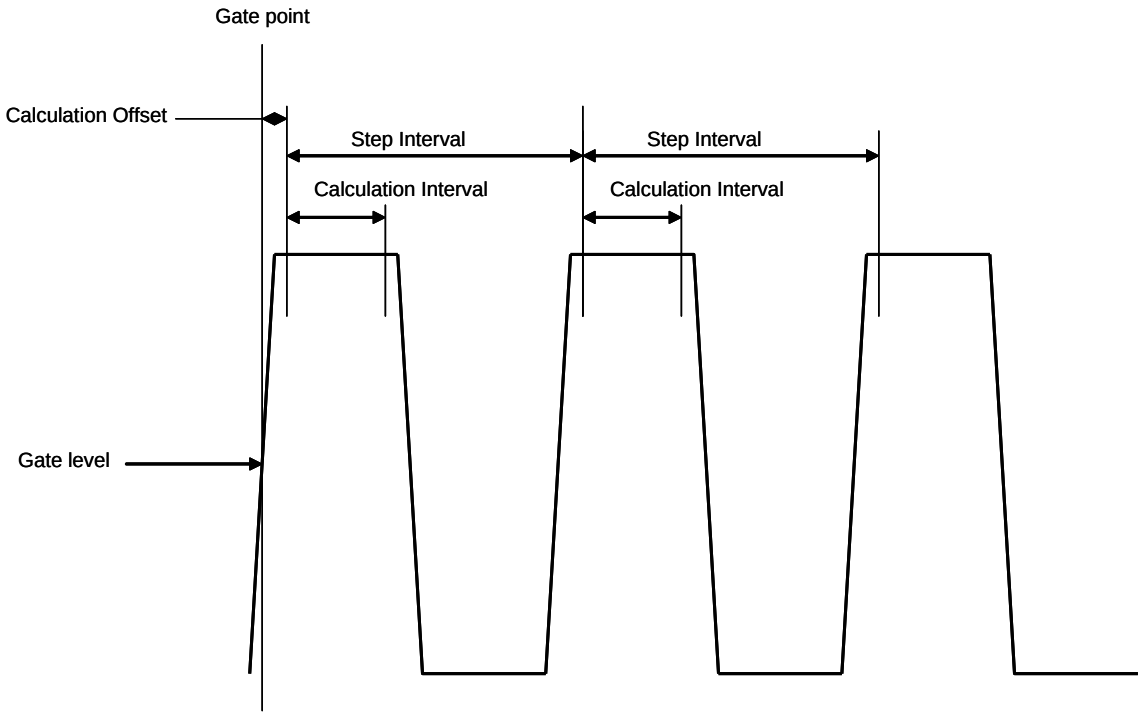
This parameter is valid only for Measure Trace.

Mode	WCDMA, GSM
Remote Command	`[:SENSe]:LPSTep:AVERage:TYPE LOG|RMS`
	`[:SENSe]:LPSTep:AVERage:TYPE?`
Example	LPST:AVER:TYPE LOG
	LPST:AVER:TYPE?

Notes	LOG - simulates the traditional spectrum analyzer type of averaging by averaging the log of the power. RMS - true power averaging that is equivalent to taking the RMS value of the voltage. It is the most accurate type of averaging.
Preset	RMS
State Saved	Saved in instrument state.
Instrument S/W Revision	A.01.60 or later

Calculation Time Setup

Specify the period to be calculated for the swept trace.



Step Interval

Step Interval is a real number in seconds. It defines the beginning of the next field of trace elements to be calculated. This is relative to the beginning of the previous field.

Mode	WCDMA, GSM

Remote Command	`[:SENSe]:LPSTep:SWEep:STEP:TIME <time>`
	`[:SENSe]:LPSTep:SWEep:STEP:TIME`
Example	LPST:SWE:STEP:TIME 0.001
	LPST:SWE:STEP:TIME?
Preset	500 us
State Saved	Saved in instrument state.
Min	1 ns
Max	1s
Test MIN/MAX/DEF	Yes
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Calculation Offset

Calculation Offset is a real number in seconds. It specifies the amount of data points at the beginning of the gated sweep that will be ignored before the calculation process starts.

Mode	WCDMA, GSM
Remote Command	`[:SENSe]:LPSTep:LIST:SWEep:STEP:OFFSet <time>, …`
	`[:SENSe]:LPSTep:LIST:SWEep:STEP:OFFSet?`
Example	LPST:LIST:SWE:STEP:OFFS 0.00005,0.00005
	LPST:LIST:SWE:STEP:OFFS?
Preset	0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
State Saved	Saved in instrument state.
Min	0 s
Max	1 s
Test MIN/MAX/DEF	No
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Calculation Interval

Calculation Interval is a real number in seconds. It defines how much data points will be calculated into one value.

Mode	WCDMA, GSM
Remote Command	`[:SENSe]:LPSTep:SWEep:STEP:LENGth <time>`
	`[:SENSe]:LPSTep:SWEep:STEP:LENGth?`
Example	LPST:SWE:STEP:LENG 0.00004
	LPST:SWE:STEP:LENG?
Preset	250 us
State Saved	Saved in instrument state.
Min	1 ns
Max	1 s
Test MIN/MAX/DEF	Yes
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

List Setup

Number of Steps

Allows you to set the number of periods to be calculated in a sweep.

Mode	WCDMA, GSM
Remote Command	`[:SENSe]:LPSTep:LIST:STEP <integer>, …`
	`[:SENSe]:LPSTep:LIST:STEP?`
Example	LPST:LIST:STEP 10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10,10
	LPST:LIST:STEP?

Preset	1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1, 1,1,1,1,1,1,1,1,1,1,1,1,1
State Saved	Saved in instrument state.
Min	1
Max	100
Test MIN/MAX/DEF	No
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Sweep State

The command defines a list of state at which the sweep is made.

Mode	WCDMA, GSM
Remote Command	`[:SENSe]:LPSTep:LIST:STATe ON|OFF|1|0, …` `[:SENSe]:LPSTep:LIST:STATe?`
Example	LPST:LIST:STAT 1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0, 0,0,0,0,0,0,0,0,0,0,0,0,0 LPST:LIST:STAT?
Notes	The state of the first list doesn’t change to OFF|0.
Preset	1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0, 0,0,0,0,0,0,0,0,0,0,0,0,0
State Saved	Saved in instrument state.
Instrument S/W Revision	A.01.60 or later

Sweep Frequency

The command defines a list of center frequencies at which the sweep is made.

Mode	WCDMA, GSM

Remote Command

`[:SENSe]:LPSTep:LIST:FREQuency <freq>, …`

`[:SENSe]:LPSTep:LIST:FREQuency?`

Example

LPST:LIST:FREQ 1e9, 2e9, 3e9

LPST:LIST:FREQ?

Notes

The 'Center Frequency' setting under "Freq / Channel' front panel key or [:SENSe]:FREQuency:CENTer overwrites the first frequency in this list.

Any values less than 3.6GHz can be set. Note that when Sweep E-ATT has a cycle consisting of n values, then the same Sweep Frequency should be repeated n times.

[Example of the combination of Sweep Frequency and E-ATT]

N=1 (No cycle)

Sweep Frequency 1GHz, 1.5GHz, 2GHz, 2.5GHz, 3GHz, 3.5GHz

Sweep E-ATT 20, 20, 20, 20, 20, 20

N=3 cycle

Sweep Frequency 1GHz, 1GHz, 1GHz, 2GHz, 2GHz, 2GHz, 3GHz, 3GHz, 3GHz

Sweep E-ATT 20, 0, 20, 20, 0, 20, 20, 0, 20

N=5 cycle

Sweep Frequency 1GHz, 1GHz, 1GHz, 1GHz, 1GHz, 2GHz, 2GHz, 2GHz, 2GHz, 2GHz

Sweep E-ATT 20, 0, 20, 20, 0, 20, 0, 20, 20, 0

N=10 cycle

Sweep Frequency 1GHz, 1GHz, 1GHz, 1GHz, 1GHz, 1GHz, 1GHz, 1GHz, 1GHz, 2GHz, 2GHz, 2GHz, 2GHz, 2GHz, 2GHz, 2GHz, 2GHz, 2GHz, 2GHz, 2GHz

Sweep E-ATT 20, 0, 20, 0, 0, 20, 20, 20, 20, 0, 20, 0, 20, 0, 0, 20, 20, 20, 20, 0

Preset	WCDMA: 1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9,1e9 GSM: 935.2MHz,,935.2MHz,,935.2MHz,935.2MHz,935.2MHz,935.2MHz,935.2MHz
State Saved	Saved in instrument state.
Min	–79.999995 MHz
Max	3.6GHz
Test MIN/MAX/DEF	No
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Sweep Time

This command defines a list of sweep time settings at which the sweep is made.

Mode	WCDMA, GSM
Remote Command	`[:SENSe]:LPSTep:LIST:TIME <time>, …` `[:SENSe]:LPSTep:LIST:TIME?`
Example	LPST:LIST:TIME 10e–4,10e–4 LPST:LIST:TIME?

Preset	10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms,10ms
Min	1us
Max	0.5
Test MIN/MAX/DEF	No
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Sweep E-ATT

This command defines a list of electric attenuator settings at which the sweep is made. The value must be 0 or 20.

Mode	WCDMA, GSM
Remote Command	`[:SENSe]:LPSTep:LIST:EATTen <rel_ampl>, …` `[:SENSe]:LPSTep:LIST:EATTen`
Example	LPST:LIST:EATT 20,0,20,0,20,0,20,0 LPST:LIST:EATT?
Notes	Either 20dB or 0 dB can be set for each value. When Sweep E-ATT has a cycle consisting of n values, then the same Sweep Frequency should be repeated n times. See examples in Notes of Sweep Frequency.
Preset	20dB,0dB,20dB,0dB
State Saved	Saved in instrument state.
Min	0
Max	20
Test MIN/MAX/DEF	No
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

Gate Source

This command defines a list of gate source settings at which the sweep is made.

Mode	WCDMA, GSM
Remote Command	`[:SENSe]:LPSTep:LIST:GATE:SOURce IMMediate|EXTernal1|EXTernal2|RFBurst|FRAMe, …` `[:SENSe]:LPSTep:LIST:GATE:SOURce?`
Example	LPST:LIST:GATE:SOUR RFB,IMM,RFB,IMM LPST:LIST:GATE:SOUR?
Notes	One or any two types of Gate Sources can be set. When two sources are set, in accordance with the Ns cycle, each combination must include one source and the other repeated Ns–1 times. [Example] No cycle RFB, RFB, RFB,RFB,,, Ns=2 cycle EXT, IMM, EXT, IMM, EXT, IMM, EXT, IMM EXT1, EXT2, EXT1, EXT2, EXT1, EXT2, EXT1, EXT2 Ns=5 cycle RFB, IMM, IMM, IMM, IMM, RFB, IMM, IMM, IMM, IMM
Preset	IMM,IMM,IMM,IMM,IMM,IMM,IMM,IMM,IMM,IMM,IMM,IMM, IMM,IMM,IMM,IMM,IMM,IMM,IMM,IMM,IMM,IMM,IMM,IMM, IMM,IMM,IMM,IMM,IMM,IMM,IMM,IMM,IMM,IMM,IMM,IMM, IMM,IMM,IMM,IMM,IMM,IMM,IMM,IMM,IMM,IMM,IMM,IMM, IMM,IMM
State Saved	Saved in instrument state.
Instrument S/W Revision	A.01.60 or later

Gate Recovery Time

It defines the recovery time until next sweep starts.

Mode	WCDMA, GSM
Remote Command	`[:SENSe]:LPSTep:LIST:GATE:RTIMe <time>, …` `[:SENSe]:LPSTep:LIST:GATE:RTIMe?`
Example	LPST:LIST:GATE:RTIM 2e–6, 1e–3 LPST:LIST:GATE:RTIM?
Notes	One or any two values can be set. When two values are set, in accordance with the Nr cycle, each combination must include one value repeated Nr–1 times and one another value. [Example] No cycle 2u, 2u, 2u, 2u, 2u, 2u,,, Nr=3 cycle 2u, 2u, 500u, 2u, 2u, 500u, 2u, 2u, 500u Nr=6 cycle 10u, 10u, 10u, 10u, 10u, 100u, 10u, 10u, 10u, 10u, 10u, 100u
Preset	0.5ms,0.5ms
State Saved	Saved in instrument state.
Min	2us
Max	500 ms
Test MIN/MAX/DEF	No
Test UP/DOWN	No
Instrument S/W Revision	A.01.60 or later

IF Gain

IF Gain Auto

Activates the auto rules for IF Gain. When Auto is active, the IF Gain is set to High Gain under the following conditions:

1. The input attenuator is set to 0 dB
2. The preamp is turned On and the frequency range is under 3.6 GHz

For other settings, Auto sets the IF Gain to Low Gain.

Mode	WCDMA, GSM
Remote Command	`[:SENSe]:LPSTep:IF:GAIN:AUTO[:STATe] ON|OFF|1|0`
	`[:SENSe]:LPSTep:IF:GAIN:AUTO[:STATe]?`
Example	LPST:IF:GAIN:AUTO ON
	LPST:IF:GAIN:AUTO?
Preset	ON
State Saved	Saved in instrument state.
Range	On | Off
Instrument S/W Revision	A.01.60 or later

IF Gain State

Selects the range of IF gain.

Mode	WCDMA, GSM
Remote Command	`[:SENSe]:LPSTep:IF:GAIN[:STATe] AUTOrange|LOW|HIGH`
	`[:SENSe]:LPSTep:IF:GAIN[:STATe]?`
Example	LPST:IF:GAIN HIGH
	LPST:IF:GAIN?
Notes	AUTO – slower follows signals
	LOW – best for large signals
	HIGH – best noise level
Preset	AUTOrange
State Saved	Saved in instrument state.
Range	Autorange | Low | High
Instrument S/W Revision	A.01.60 or later

Meas Preset

Restores all the measurement parameters to their default values.

For more information, see the section under the Preset key in the Utility section.

Mode	WCDMA, GSM
Remote Command	`:CONFigure:LPSTep`
Example	CONF:LPST
Notes	You must be in the WCDMA or GSM mode to use this command. Use INSTrument:SELect to set the mode.
Instrument S/W Revision	A.01.60 or later

Trigger

For Trigger information see the User's and Programmer's reference or Help for your application.

Sweep/Control

For more Sweep/Control information see the User's and Programmer's reference or Help for your application.

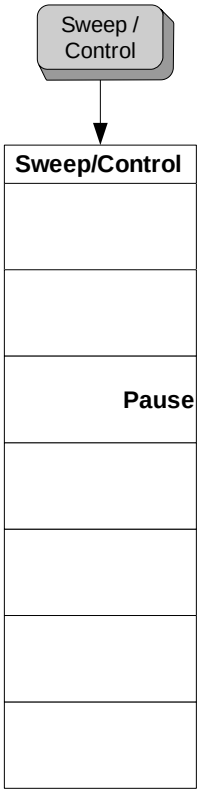


Figure 14-1Sweep/Control

Points

Sets the number of points per sweep, from 1 to 30001. The sweep time and calculation time resolution setting will depend on the number of points selected.

Mode	WCDMA, GSM
Remote Command	`[:SENSe]:LPSTep:SWEep:POINts <integer>`
	`[:SENSe]:LPSTep:SWEep:POINts`
Example	LPST:SWE:POIN 1005
	LPST:SWE:POIN?

Notes	Whenever the number of sweep points change: • All trace data is erased • Any traces with Update Off will also go to Display Off (like going from View to Blank in the older analyzers) • Sweep time is re-quantized • Any limit lines that are on will be updated If averaging/hold is on, averaging/hold starts over.
Dependencies/Couplings	Whenever the number of sweep points change the sweep time is re-quantized.
Preset	1001
State Saved	Saved in instrument state.
Min	100
Max	20001
Test MIN/MAX/DEF	Yes
Instrument S/W Revision	A.01.60 or later

Peak Search

There is no Peak Search functionality implemented for this measurement

Source

There is no Source functionality for this application.

SPAN X Scale

Accesses the SPAN/X Scale menu that allows you to set the desired horizontal scale settings.

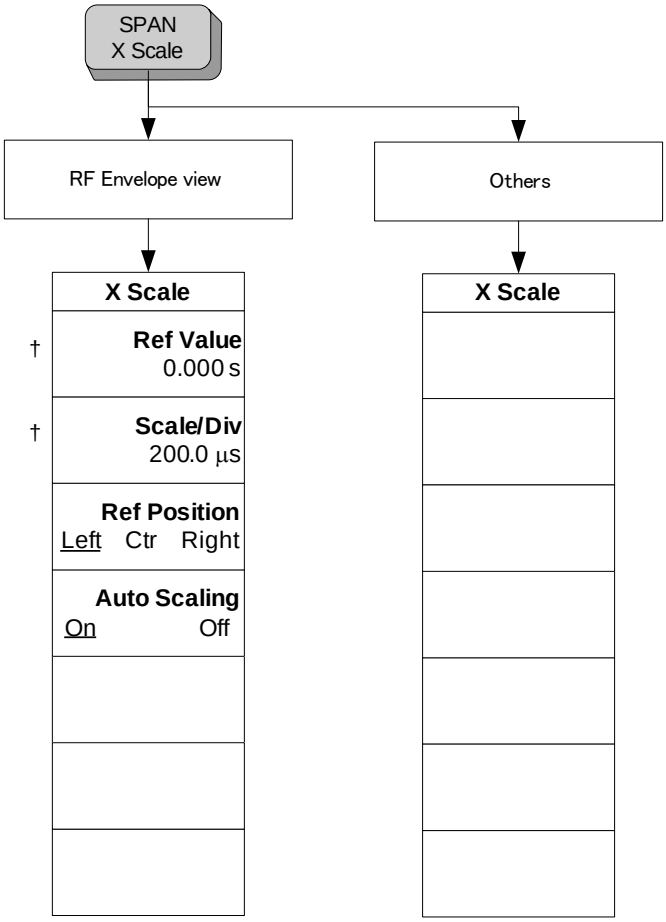


Figure 17-1 SPAN X Scale

Ref Value

Allows you to set the display X reference value.

Key Path	**SPAN X Scale**
Mode	WCDMA, GSM
Remote Command	`:DISPlay:LPSTep:VIEW[1]:WINDow[1]:TRACe:X[:SCALe]:RLEVel <time>`
	`:DISPlay:LPSTep:VIEW[1]:WINDow[1]:TRACe:X[:SCALe]:RLEVel?`

Example	DISP:LPST:VIEW:WIND:TRAC:X:RLEV 1 DISP:LPST:VIEW:WIND:TRAC:X:RLEV?
Notes	If X Auto Scaling is On, this value is automatically determined by the measurement result. When a value is set manually, X Auto Scaling is automatically set to Off.
Dependencies/Couplings	See Notes
Preset	Automatically calculated
State Saved	Saved in instrument state.
Min	–1s
Max	10s
Test MIN/MAX/DEF	MIN MAX
Test UP/DOWN	200.0 us
Instrument S/W Revision	A.01.60 or later

Scale/Div

Allows you to set the display X scale/division value.

Key Path	**SPAN X Scale**
Mode	WCDMA, GSM
Remote Command	`:DISPlay:LPSTep:VIEW[1]:WINDow[1]:TRACe:X[:SCALe]:PDIVision <time>` `:DISPlay:LPSTep:VIEW[1]:WINDow[1]:TRACe:X[:SCALe]:PDIVision?`
Example	DISP:LPST:VIEW:WIND:TRAC:X:PDIV 1ms DISP:LPST:VIEW:WIND:TRAC:X:PDIV?
Notes	If X Auto Scaling is set to On, this value is automatically determined by the measurement result. When a value is set manually, X Auto Scaling is automatically set to Off.
Dependencies/Couplings	See Notes
Preset	Automatically calculated
State Saved	Saved in instrument state.
Min	1.00 ns

Max	1.00 s
Test MIN/MAX/DEF	MIN MAX
Test UP/DOWN	Step follows the “1,2,5,10 … Rule”
Instrument S/W Revision	A.01.60 or later

Ref Position

Allows you to set the X reference position to the left, center, or right of the display.

Key Path	**SPAN X Scale**
Mode	WCDMA, GSM
Remote Command	`:DISPlay:LPSTep:VIEW[1]:WINDow[1]:TRACe:X[:SCALe]:RPOSition LEFT|CENTer|RIGHt`
	`:DISPlay:LPSTep:VIEW[1]:WINDow[1]:TRACe:X[:SCALe]:RPOSition?`
Example	DISP:LPST:VIEW:WIND:TRAC:X:RPOS LEFT
	DISP:LPST:VIEW:WIND:TRAC:X:RPOS?
Preset	LEFT
State Saved	Saved in instrument state.
Range	Left | Ctr | Right
Instrument S/W Revision	A.01.60 or later

Auto Scaling

Allows you to toggle the X Auto Scaling function between On and Off.

Key Path	**SPAN X Scale**
Mode	WCDMA, GSM

Remote Command	`:DISPlay:LPSTep:VIEW[1]:WINDow[1]:TRACe:X[:SCALe]:COUPle 0|1|OFF|ON` `:DISPlay:LPSTep:VIEW[1]:WINDow[1]:TRACe:X[:SCALe]:COUPle?`
Example	DISP:LPST:VIEW:WIND:TRAC:X:COUP OFF DISP:LPST:VIEW:WIND:TRAC:X:COUP?
Notes	Upon pressing the Restart front-panel key, or Restart softkey under the Meas Control menu, the scale coupling function automatically determines the scale per division and reference values, based on the measurement results, if this parameter is set to On. When you manually set a value to either X Rel Value or X Scale/Div, X Auto Scaling is automatically set to Off.
Dependencies/Couplings	See Notes
Preset	ON
State Saved	Saved in instrument state.
Range	On | Off
Instrument S/W Revision	A.01.60 or later

Trace/Detector

For more Trace/Detector information see the User's and Programmer's reference or Help for your application.

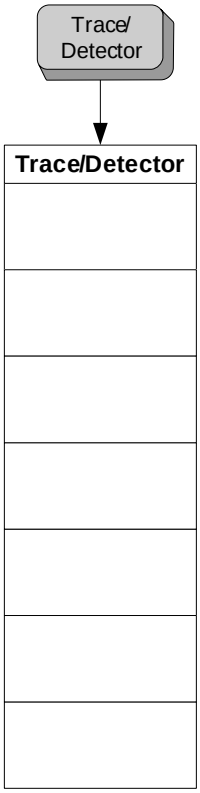


Figure 18-1 Trace/Detector

Detector

Selects a detector.

Mode	WCDMA, GSM
Remote Command	`[:SENSe]:LPSTep:DETector[:FUNCtion] AVERage|NEGative|SAMPle|NORMal|POSitive` `[:SENSe]:LPSTep:DETector[:FUNCtion]?`
Example	LPST:DET NEG LPST:DET?
Preset	AVERage
State Saved	Saved in instrument state.

Test MIN/MAX/DEF	No
Instrument S/W Revision	A.01.60 or later

View Display

The View/Display menu provides access to many settings and results for the List Power Step measurement.

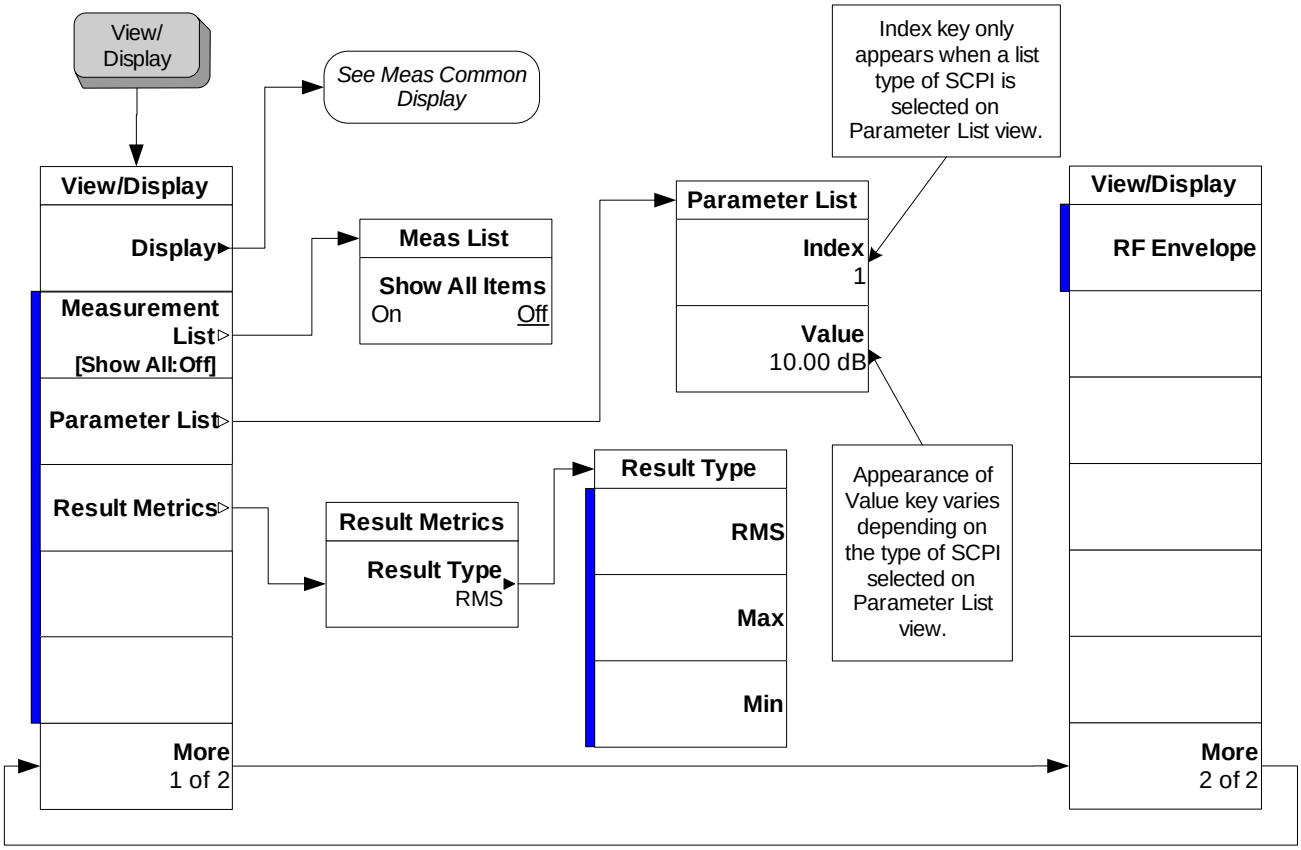


Figure 19-1 View/Display

Display

Change Title

Accesses an Alpha Editor menu that enables you to write a title across the top of the display.

See the “View Display ” section in your mode User's and Programmer's Reference for details.

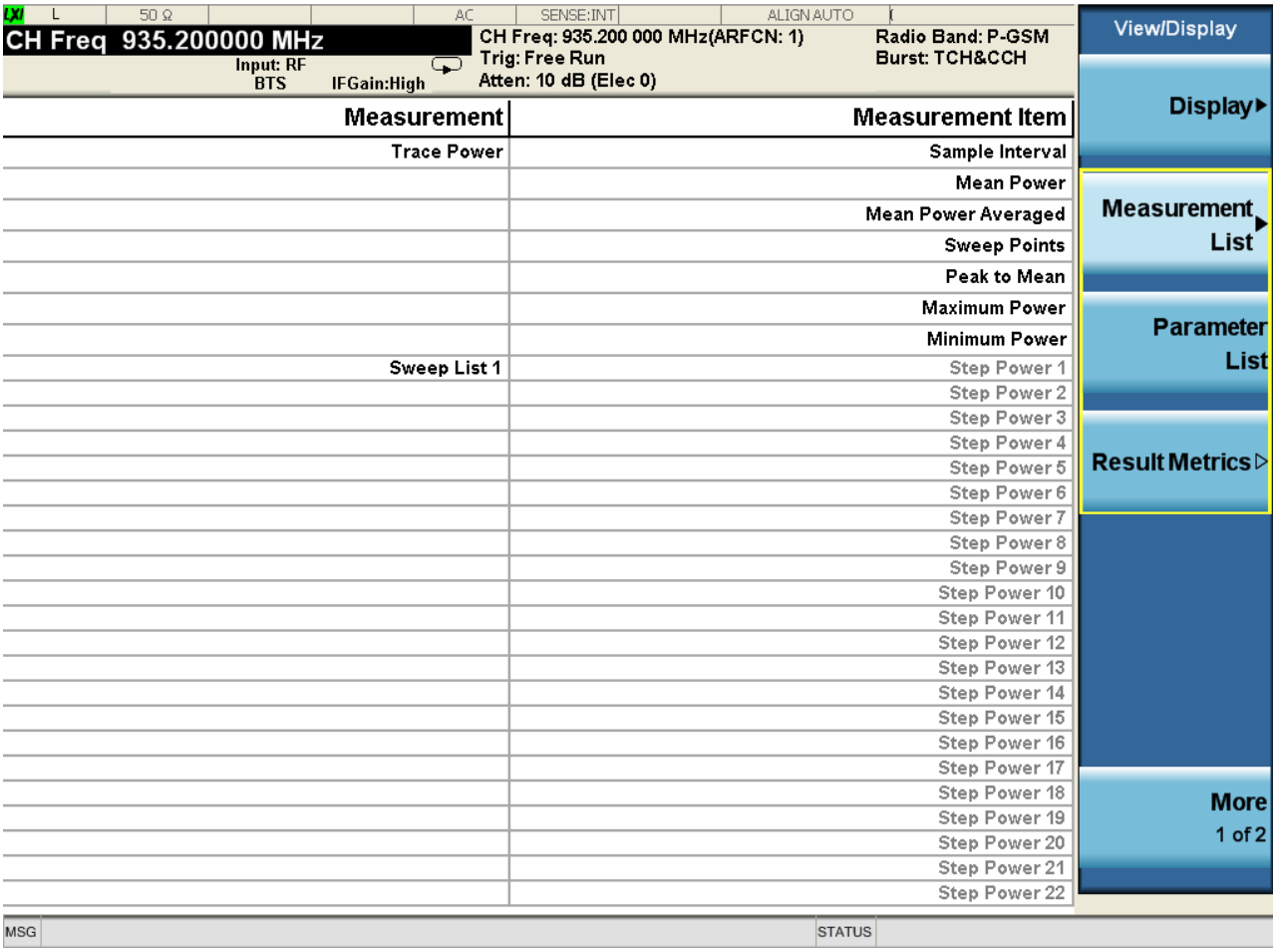
Key Path **View/Display, Display, Title**

Mode	WCDMA, GSM
Remote Command	`:DISPlay:LPSTep:ANNotation:TITLe:DATA <string>`
	`:DISPlay:LPSTep:ANNotation:TITLe:DATA?`
Example	DISP:LPST:ANN:TITL:DATA “List Power Step”
	DISP:LPST:ANN:TITL:DATA?
Preset	List Power Step
State Saved	Saved in instrument state.
Range	Uppercase, Lowercase, Numeric, Symbol
Instrument S/W Revision	A.01.60 or later

Measurement List

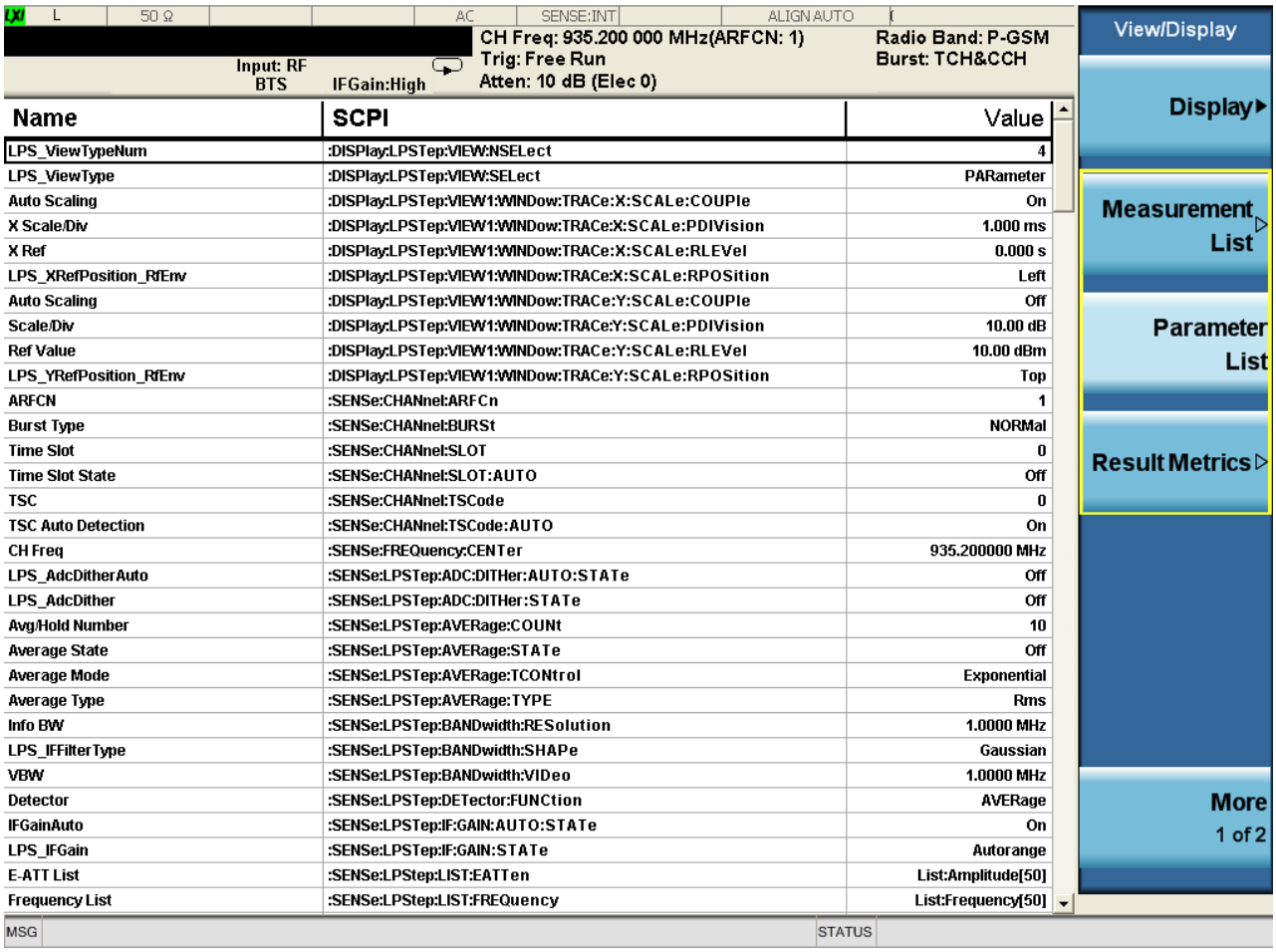
This view shows the results of currently enabled measurements.

If “Show All Items” parameter is enabled from the soft key, all available measurements and results are displayed. When a measurement is disabled, the measurement name and results for the disabled measurement are grayed out.



Parameter List

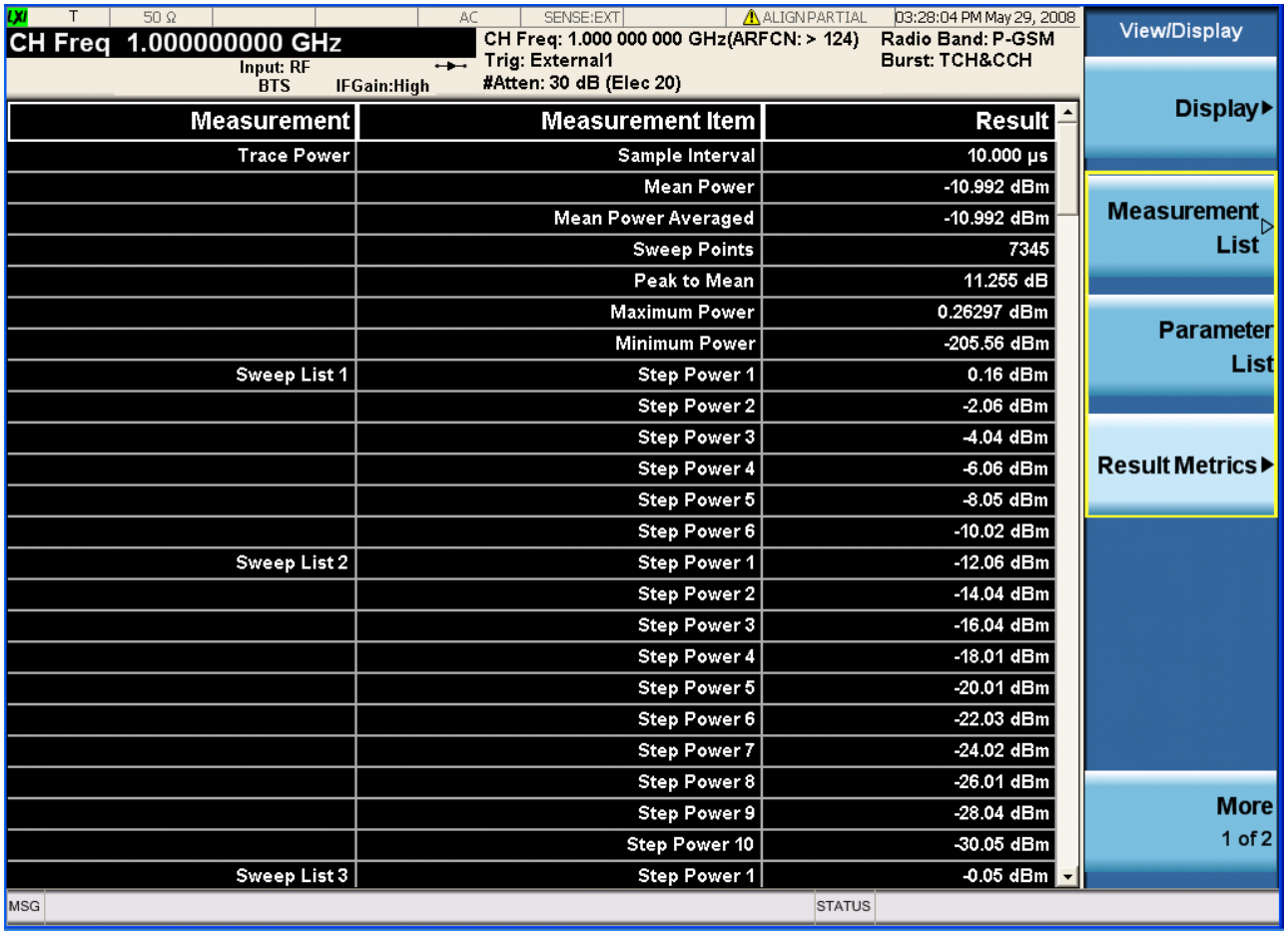
This screen shows the name, remote commands and values of all available commands for the current measurement. You can verify and change values in the table by using front panel keys or a mouse and keyboard.



Name	SCPI	Value
LPS_ViewTypeNum	:DISPlay:LPSTep:VIEW:NSELect	4
LPS_ViewType	:DISPlay:LPSTep:VIEW:SELect	PARameter
Auto Scaling	:DISPlay:LPSTep:VIEW1:WINDow:TRACe:X:SCALe:COUPle	On
X Scale/Div	:DISPlay:LPSTep:VIEW1:WINDow:TRACe:X:SCALe:PDIVision	1.000 ms
X Ref	:DISPlay:LPSTep:VIEW1:WINDow:TRACe:X:SCALe:RLEVel	0.000 s
LPS_XRefPosition_RfEnv	:DISPlay:LPSTep:VIEW1:WINDow:TRACe:X:SCALe:RPOSition	Left
Auto Scaling	:DISPlay:LPSTep:VIEW1:WINDow:TRACe:Y:SCALe:COUPle	Off
Scale/Div	:DISPlay:LPSTep:VIEW1:WINDow:TRACe:Y:SCALe:PDIVision	10.00 dB
Ref Value	:DISPlay:LPSTep:VIEW1:WINDow:TRACe:Y:SCALe:RLEVel	10.00 dBm
LPS_YRefPosition_RfEnv	:DISPlay:LPSTep:VIEW1:WINDow:TRACe:Y:SCALe:RPOSition	Top
ARFCN	:SENSe:CHANnel:ARFCn	1
Burst Type	:SENSe:CHANnel:BURSt	NORMal
Time Slot	:SENSe:CHANnel:SLOT	0
Time Slot State	:SENSe:CHANnel:SLOT:AUTO	Off
TSC	:SENSe:CHANnel:TSCode	0
TSC Auto Detection	:SENSe:CHANnel:TSCode:AUTO	On
CH Freq	:SENSe:FREQuency:CENTer	935.200000 MHz
LPS_AdcDitherAuto	:SENSe:LPSTep:ADC:DITHer:AUTO:STATe	Off
LPS_AdcDither	:SENSe:LPSTep:ADC:DITHer:STATe	Off
Avg/Hold Number	:SENSe:LPSTep:AVERage:COUNt	10
Average State	:SENSe:LPSTep:AVERage:STATe	Off
Average Mode	:SENSe:LPSTep:AVERage:TCONtrol	Exponential
Average Type	:SENSe:LPSTep:AVERage:TYPE	Rms
Info BW	:SENSe:LPSTep:BANDwidth:RESolution	1.0000 MHz
LPS_IFFilterType	:SENSe:LPSTep:BANDwidth:SHAPe	Gaussian
VBW	:SENSe:LPSTep:BANDwidth:VIDeo	1.0000 MHz
Detector	:SENSe:LPSTep:DETector:FUNCtion	AVERage
IFGainAuto	:SENSe:LPSTep:IF:GAIN:AUTO:STATe	On
LPS_IFGain	:SENSe:LPSTep:IF:GAIN:STATe	Autorange
E-ATT List	:SENSe:LPStep:LIST:EATTen	List:Amplitude[50]
Frequency List	:SENSe:LPStep:LIST:FREQuency	List:Frequency[50]

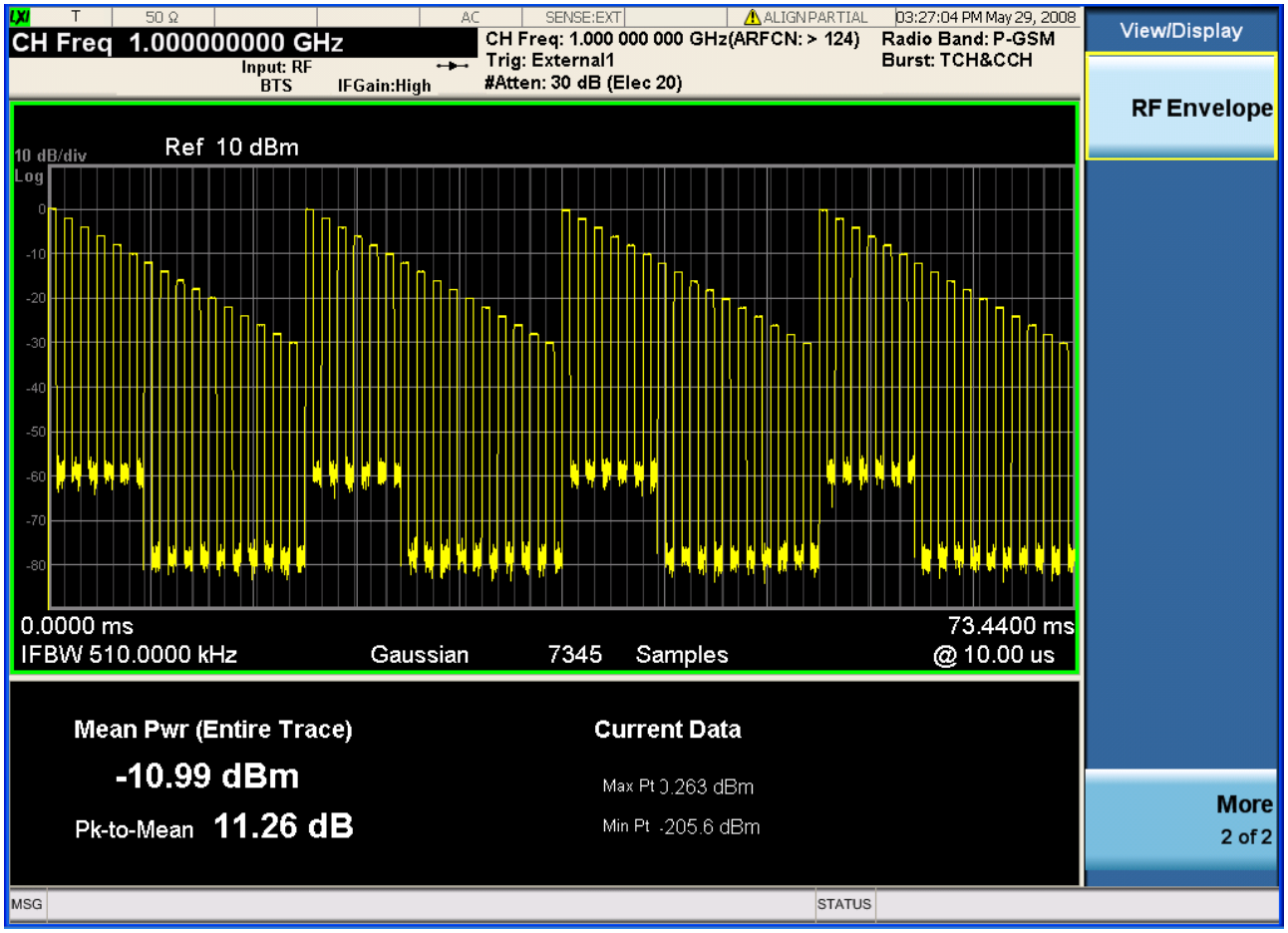
Result Metrics

This screen displays measurement results in the same order as they are returned by the remote results(n=1) query.



RF Envelope

This view shows a time-domain magnitude trace that is connected multiple gated sweeps by setting of List Setup parameters. The gray vertical bars show the calculation period of related power results.



Trace Window

Corresponding Trace	yellow – n=2

Results Window

Name	Corresponding Results	Display Format
Meas Pwr (Entire Trace)	n=1 2nd Meas power across the entire trace in dBm	XX.XX dBm
Pk-to-Mean	n=1 5th The ratio of the maximum signal level to the mean power in dB.	XX.XX dB
Current Data Max	n=1 6th Maximum value of the most recently acquired data in dBm	XX.XX dBm
Current Data Min	n=1 7th Minimum value of the most recently acquired data in dBm	XX.XX dBm

View Selection Remote Commands

Allows you to select the desired measurement view from the following selections:

- MLISt – Measurement List view
- PARameter – Parameter List view
- RESult - Result Metrics view
- RFENvelope - RF Envelope view
-

Key Path	**View/Display**
Mode	WCDMA, GSM
Remote Command	`:DISPlay:LPSTep:VIEW[:SELect] MLISt|PARameter|RESult|RFENvelope` `:DISPlay:LPSTep:VIEW[:SELect]?`
Example	DISP:LPST:VIEW RES DISP:LPST:VIEW?
Preset	RESult
State Saved	Saved in instrument state.
Range	Measurement List | Parameter List | Result Metrics | RF Envelope

Instrument S/W Revision	A.01.60 or later

Show All Items

Allows you to specify display settings of the Measurement List view. In default (OFF), the current status of enabled measurements, items, limit settings and pass fail states are displayed.

Key Path	**View/Display, Measurement List**
Mode	GSM
Preset	OFF
State Saved	Saved in instrument state.
Range	On | Off
Instrument S/W Revision	A.01.60 or later

Index

Allows you to specify an index of array for editing the value of specified index. This key only appears when a list type of SCPI is selected on Parameter List view. Maximum number of this index corresponds to the length of selected SCPI.

Key Path	**View/Display, Parameter List**
Mode	GSM
Instrument S/W Revision	A.01.60 or later

Value

Allows you to edit the value of selected SCPI on Parameter List view.

Key Path	**View/Display, Parameter List**

Mode	GSM
Instrument S/W Revision	A.01.60 or later

Result Type

Allows you to choose type of power displayed in the Result Metrics view.

Key Path	**Diplay/View, Result Metrics**
Mode	WCDMA, GSM
Remote Command	`:DISPlay:LPSTep:VIEW:RESType RMS|MAXimum|MINimum` `:DISPlay:LPSTep:VIEW:RESType?`
Example	DISP:LPST:VIEW:REST MAX DISP:LPST:VIEW:REST?
Preset	RMS
State Saved	Saved in instrument state.
Range	RMS | Max | Min
Instrument S/W Revision	A.01.60 or later