

5.4.2 :SENSe:VCO branch

Command (VCO Tesing)	Parameters	Default	Remark
:SENSe:VCO:TEST:FREQuency	{ON OFF 1 0}	ON	
:SENSe:VCO:TEST:ISUPply	{ON OFF 1 0}	ON	
:SENSe:VCO:TEST:KPUSHing	{ON OFF 1 0}	ON	
:SENSe:VCO:TEST:KVCO	{ON OFF 1 0}	ON	
:SENSe:VCO:TEST:PNoise	{ON OFF 1 0}	OFF	
:SENSe:VCO:TEST:PNoise:OFFSet :SENSe:VCO:TEST:PNoise:OFFSet#?	{10 ~ 40M}, {10 ~ 40M}, {10 ~ 40M}, {10 ~ 40M} {1 2 3 4}	10 kHz, 100 kHz, 1 MHz, 10 MHz	
:SENSe:VCO:TEST:PNoise:COUNt?		0	
:SENSe:VCO:TEST:POWer	{ON OFF 1 0}	ON	
:SENSe:VCO:TYPE	{VCO VCXO}	VCO	
:SENSe:VCO: VOLTage:POINts	{1 ~ 1000}	10	
:SENSe:VCO:VOLTage:STARt	{-5.0 ~ 21.0 V}	0.0 V	
:SENSe:VCO: VOLTage:STOP	{-5.0 ~ 21.0 V}	5.0 V	

:SENSe:VCO:TEST:FREQuency

```
:SENSe:VCO:TEST:FREQuency ON|OFF|1|0
:SENSe:VCO:TEST:FREQuency?
```

Enables/disables the frequency parameter for the measurement.

```
*RST          1
```

:SENSe:VCO:TEST:ISUPply

```
:SENSe:VCO:TEST:ISUPply ON|OFF|1|0
:SENSe:VCO:TEST:ISUPply?
```

Enables/disables the acquisition of current at the supply port for the measurement.

```
*RST          1
```

:SENSe:VCO:TEST:KPUShing

```
:SENSe:VCO:TEST:KPUShing ON|OFF|1|0
:SENSe:VCO:TEST:KPUShin?
```

Enables/disables the pushing parameter for the measurement.

```
*RST          0
```

:SENSe:VCO:TEST:KVCO

```
:SENSe:VCO:TEST:KVCO ON|OFF|1|0
:SENSe:VCO:TEST:KVCO?
```

Enables/disables the tune sensitivity parameter for the measurement.

```
*RST          1
```

:SENSe:VCO:TEST:PNoise

```
:SENSe:VCO:TEST:PNoise ON|OFF|1|0
:SENSe:VCO:TEST:PNoise?
```

Enables/disables the phase noise parameter for the measurement.

```
*RST          1
```

:SENSe:VCO:TEST:PNoise:OFFSet

```
:SENSe:VCO:TEST:PNoise:OFFSet <val1>[,<val2>][[,<val3>][[,<val4>]]
:SENSe:VCO:TEST:PNoise:OFFSet#?
```

This command sets up to 4 offset frequencies at which the phase noise is measured. At least 1 parameter is required. Blank parameters are set to 0 (disabled).

The query returns the set frequency for the specified offset #.

```
*RST          1: 10000.000000000
              2: 100000.000000000
              3: 1000000.000000000
              4: 10000000.000000000
```

:SENSe:VCO:TEST:PNoise:COUNt

```
:SENSe:VCO:TEST:COUNt?
```

Returns the number of offset frequencies that are set.

```
*RST          4
```

:SENSe:VCO:TEST:POWer

```
:SENSe:VCO:TEST:POWer ON|OFF|1|0  
:SENSe:VCO:TEST:POWer?
```

Enables/disables the power parameter during the measurement.

```
*RST          1
```

:SENSe:VCO:TYPE

```
:SENSe:VCO:TYPE VCO|VCXO  
:SENSe:VCO:TYPE?
```

Select the DUT type for the measurement. Distinguish between slow (VCXO) and fast (VCO) tuning sensitivities.

```
*RST          VCO
```

:SENSe:VCO:VOLTage:POINTs

```
:SENSe:VCO:VOLTage:POINTs <value>  
:SENSe:VCO:VOLTage:POINTs?
```

Sets/gets the number of voltage points to use in the measurement.

```
*RST          10
```

:SENSe:VCO:VOLTage:STARt

```
:SENSe:VCO:VOLTage:STARt <value>  
:SENSe:VCO:VOLTage:STARt?
```

Sets/gets the start tuning voltage for the measurement.

```
*RST          0
```

:SENSe:VCO:VOLTage:STOP

```
:SENSe:VCO:VOLTage:STOP <value>  
:SENSe:VCO:VOLTage:STOP?
```

Sets/gets the stop tuning voltage for the measurement.

```
*RST          5
```

5.4.3 :SENSe:AN branch

Command (AN)	Parameters	Default	Remark
:SENSe:AN:AVERAge	{1 ~ 10k}	1	
:SENSe:AN:CORRelation	{1 ~ 10k}	1	
:SENSe:AN:FREQUency	<value>	100e6 Hz	
:SENSe:AN:FREQUency:AUTO	{ON OFF 1 0}	ON	
:SENSe:AN:FREQUency:DETECT	{ALWAYS NEVER}	ALWAYS	
:SENSe:AN:FREQUency:START	{0.1 0.5 1 10 100 1k 10k 100k}	100 Hz	
:SENSe:AN:FREQUency:STOP	{1k 10k 100k 1M 10M 40M}	40e6 Hz	
:SENSe:AN:PPD	{1 ~ 500}	250	
:SENSe:AN:RESet			
:SENSe:AN:SPURious:OMISsion	{ON OFF 1 0}	ON	
:SENSe:AN:SPURious:THReshold	{1 ~ 70}	10 dB	
:SENSe:AN:SMOothing:APERture	{0.05 ~ 20}	0.05 %	
:SENSe:AN:SMOothing:STATe	{ON OFF 1 0}	OFF	

:SENSe:AN:AVERAge

```
:SENSe:AN:AVERAge <value>
:SENSe:AN:AVERAge?
```

Sets/gets the average count of the measurement.

```
*RST          1
```

:SENSe:AN:CORRelation

```
:SENSe:AN:CORRelation <value>
:SENSe:AN:CORRelation?
```

Sets/gets the correlation count of the measurement.

```
*RST          1
```

:SENSe:AN:FREQuency

```
:SENSe:AN:FREQuency <value>
:SENSe:AN:FREQuency?
```

Sets/gets the DUT frequency in [Hz].

```
*RST          100000000.000000000
```

:SENSe:AN:FREQuency:AUTO

```
:SENSe:AN:FREQuency:AUTO ON|OFF|1|0
:SENSe:AN:FREQuency:AUTO?
```

Enables/disables the automatic frequency search at the start of the measurement.

```
*RST          1
```

:SENSe:AN:FREQuency:DETECT

```
:SENSe:AN:FREQuency:DETECT ALWays|ONCe|NEVer
:SENSe:AN:FREQuency:DETECT?
```

Sets how often the automatic frequency search should be performed (if activated via `SENS:AN:FREQ:AUTO`). `ALWays`: Perform it for every measurement; `ONCe`: Perform it only if it hasn't been performed yet since startup of the instrument; `NEVer`: Always skip it.

```
*RST          ALW
```

:SENSe:AN:FREQuency:STARt

```
:SENSe:AN:FREQuency:STARt <value>
:SENSe:AN:FREQuency:STARt?
```

Sets/gets the start offset frequency for the measurement.

```
*RST          10.000000000
```

:SENSe:AN:FREQuency:STOP

```
:SENSe:AN:FREQuency:STOP <value>
:SENSe:AN:FREQuency:STOP?
```

Sets/gets the stop offset frequency for the measurement.

```
*RST          40000000.000000000
```

:SENSe:AN:PPD

```
:SENSe:AN:PPD <value>
:SENSe:AN:PPD?
```

Sets/gets the number of points per decade for the trace.

```
*RST          250
```

:SENSe:AN:RESet

```
:SENSe:AN:FREQuency:RESet
```

Resets the measurement. The measurement configuration will remain, but the detect states will be reset (ONCe will be active again).

:SENSe:AN:SPURious:OMISsion

```
:SENSe:AN:SPURious:OMISsion ON|OFF|1|0  
:SENSe:AN:SPURious:OMISsion?
```

Enables/disables spur omission for the trace and statistical analysis.

```
*RST          1
```

:SENSe:AN:SPURious:THREshold

```
:SENSe:AN:SPURious:THREshold <value>  
:SENSe:AN:SPURious:THREshold?
```

Sets the threshold for the spur omission in [dB]. If spur omission is OFF, spurs that fall under this threshold are still not included.

:SENSe:AN:SMOothing:APERture

```
:SENSe:AN:SMOothing:APERture <value>  
:SENSe:AN:SMOothing:APERture?
```

Sets/gets the smoothing aperture of the trace in [%].

```
*RST          0.050000000
```

:SENSe:AN:SMOothing:STATe

```
:SENSe:AN:SMOothing:STATe ON|OFF|1|0  
:SENSe:AN:SMOothing:STATe?
```

Enables/disables trace smoothing.

```
*RST          0
```


5.4.4 :SENSe:FN branch

Command (FN)	Parameters	Default	Remark
:SENSe:FN:AVERAge	{1 ~ 10k}	1	
:SENSe:FN:CORRelation	{1 ~ 10k}	1	
:SENSe:FN:FREQUency	<value>	100e6 Hz	
:SENSe:FN:FREQUency:AUTO	{ON OFF 1 0}	ON	
:SENSe:FN:FREQUency:DETECT	{ALWAYS NEVER}	ALWAYS	
:SENSe:FN:FREQUency:START	{0.1 0.5 1 10 100 1k 10k 100k}	100 Hz	
:SENSe:FN:FREQUency:STOP	{1k 10k 100k 1M 10M 40M}	40e6 Hz	
:SENSe:FN:PPD	{1 ~ 500}	250	
:SENSe:FN:RESet			
:SENSe:FN:SPURious:OMISsion	{ON OFF 1 0}	ON	
:SENSe:FN:SPURious:THReshold	{1 ~ 70}	10 dB	
:SENSe:FN:SMOothing:APERture	{0.05 ~ 20}	0.05 %	
:SENSe:FN:SMOothing:STATe	{ON OFF 1 0}	OFF	

:SENSe:FN:AVERAge

:SENSe:FN:AVERAge <value>

:SENSe:FN:AVERAge?

Sets/gets the average count of the measurement.

*RST 1

:SENSe:FN:CORRelation

:SENSe:FN:CORRelation <value>

:SENSe:FN:CORRelation?

Sets/gets the correlation count of the measurement.

*RST 1

:SENSe:FN:FREQuency

:SENSe:FN:FREQuency <value>
:SENSe:FN:FREQuency?

Sets/gets the DUT frequency in [Hz].

*RST 100000000.000000000

:SENSe:FN:FREQuency:AUTO

:SENSe:FN:FREQuency:AUTO ON|OFF|1|0
:SENSe:FN:FREQuency:AUTO?

Enables/disables the automatic frequency search at the start of the measurement.

*RST 1

:SENSe:FN:FREQuency:DETECT

:SENSe:FN:FREQuency:DETECT ALWays|ONCe|NEVer
:SENSe:FN:FREQuency:DETECT?

Sets how often the automatic frequency search should be performed (if activated via SENS:FN:FREQ:AUTO). ALWays: Perform it for every measurement; ONCe: Perform it only if it hasn't been performed yet since startup of the instrument; NEVer: Always skip it.

*RST ALW

:SENSe:FN:FREQuency:STARt

:SENSe:FN:FREQuency:STARt <value>
:SENSe:FN:FREQuency:STARt?

Sets/gets the start offset frequency for the measurement.

*RST 10.000000000

:SENSe:FN:FREQuency:STOP

:SENSe:FN:FREQuency:STOP <value>
:SENSe:FN:FREQuency:STOP?

Sets/gets the stop offset frequency for the measurement.

*RST 40000000.000000000

:SENSe:FN:PPD

:SENSe:FN:PPD <value>
:SENSe:FN:PPD?

Sets/gets the number of points per decade for the trace.

*RST 250

:SENSe:FN:RESet

```
:SENSe:FN:FREQuency:RESet
```

Resets the measurement. The measurement configuration will remain, but the detect states will be reset (ONCe will be active again).

:SENSe:FN:SPURious:OMISsion

```
:SENSe:FN:SPURious:OMISsion ON|OFF|1|0  
:SENSe:FN:SPURious:OMISsion?
```

Enables/disables spur omission for the trace and statistical analysis.

```
*RST          1
```

:SENSe:FN:SPURious:THREshold

```
:SENSe:FN:SPURious:THREshold <value>  
:SENSe:FN:SPURious:THREshold?
```

Sets the threshold for the spur omission in [dB]. If spur omission is OFF, spurs that fall under this threshold are still not included.

:SENSe:FN:SMOothing:APERture

```
:SENSe:FN:SMOothing:APERture <value>  
:SENSe:FN:SMOothing:APERture?
```

Sets/gets the smoothing aperture of the trace in [%].

```
*RST          0.050000000
```

:SENSe:FN:SMOothing:STATe

```
:SENSe:FN:SMOothing:STATe ON|OFF|1|0  
:SENSe:FN:SMOothing:STATe?
```

Enables/disables trace smoothing.

```
*RST          0
```

5.5 :SOURce Subsystem

Command	Parameters	Default	Remark
:SOURce:TUNE:DUT:VOLT	<value>	0	
:SOURce:TUNE:DUT:STAT	{ON OFF 1 0}	OFF	

:SOURce:TUNE:DUT:VOLT

```
:SOURce:TUNE:DUT:VOLT <value>
:SOURce:TUNE:DUT:VOLT?
```

Sets/gets the voltage at the DUT TUNE port. Returns the configured value. If the output is turned off, it doesn't necessarily return 0, as an internal voltage may be configured.

```
*RST          0.000000000
```

:SOURce:TUNE:DUT:STAT

```
:SOURce:TUNE:DUT:STAT ON|OFF|1|0
:SOURce:TUNE:DUT:STAT?
```

Enables/disables the DUT TUNE port

```
*RST          0
```

5.6 :STATus Subsystem

This subsystem controls the status-reporting structures.

Command	Parameters	Unit (default)	Remark
:STATus:OPERation[:EVENT]?			
:STATus:OPERation:CONDition?			
:STATus:OPERation:ENABle	<value>		
:STATus:OPERation:PTR	<value>		
:STATus:OPERation:NTR	<value>		
:STATus:PREset			
:STATus:QUEStionable[:EVENT]?			
:STATus:QUEStionable:CONDition?			
:STATus:QUEStionable:ENABle	<value>		
:STATus:QUEStionable:PTR	<value>		
:STATus:QUEStionable:NTR	<value>		

:STATus:OPERation[:EVENT]

```
:STATus:OPERation[:EVENT]?
```

Returns the contents of the operation status event register and clears it.

```
*RST      0
```

:STATus:OPERation:CONDition

```
:STATus:OPERation:CONDition?
```

Returns the contents of the operation status condition register.

```
*RST      0
```

:STATus:OPERation:ENABle

```
:STATus:OPERation:ENABle <value>
```

Sets the enable mask of the operation status event register.

:STATus:OPERation:PTR

```
:STATus:OPERation:PTR <value>
```

Sets the positive transition filter of the operation status event register.

:STATus:OPERation:NTR

:STATus:OPERation:NTR <value>

Sets the negative transition filter of the operation status event register.

:STATus:PRESet

:STATus:PRESet

Disables all status events, clears all negative transition filters and sets all positive transition filters.

:STATus:QUEStionable[:EVENT]

:STATus:QUEStionable[:EVENT]?

Returns the contents of the questionable status event register and clears it.

*RST 0

:STATus:QUEStionable:CONDition

:STATus:QUEStionable:CONDition?

Returns the contents of the questionable status condition register.

*RST 0

:STATus:QUEStionable:ENABLE

:STATus:QUEStionable:ENABLE <value>

Sets the enable mask of the questionable status event register.

:STATus:QUEStionable:PTR

:STATus:QUEStionable:PTR <value>

Sets the positive transition filter of the questionable status event register.

:STATus:QUEStionable:NTR

:STATus:QUEStionable:NTR <value>

Sets the negative transition filter of the questionable status event register.

5.7 :SYSTem Subsystem

Command	Parameters	Unit	Remark
:SYSTem:ERRor[:NEXT]?			
:SYSTem:ERRor:ALL?			
:SYSTem:PRESet			
:SYSTem:VERSion?			

:SYSTem:ERRor[:NEXT]

:SYSTem:ERRor[:NEXT]?

Return parameters: Integer error number. This query is a request for the next entry in the instrument's error queue. Error messages in the queue contain an integer in the range [-32768, 32768] denoting an error code and associated descriptive text.

*RST 0,"No error"

:SYSTem:ERRor:ALL

:SYSTem:ERRor:ALL?

Return parameters: List of integer error numbers. This query is a request for all entries in the instrument's error queue. Error messages in the queue contain an integer in the range [-32768, 32768] denoting an error code and associated descriptive text. This query clears the instrument's error queue.

*RST 0,"No error"

:SYSTem:PRESet

:SYSTem:PRESet

Resets most instruments functions to factory-defined conditions. This command is similar to the *RST command.

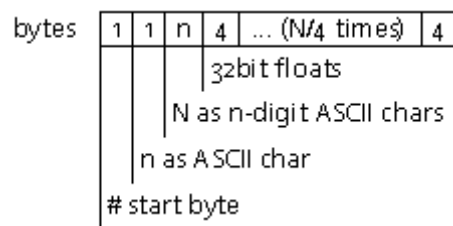
:SYSTem:VERSion

:SYSTem:VERSion?

Returns the SCPI version number that the instrument software complies with.

7 Block Data Format

The block data format is used to transfer an array of floating point values via the SCPI protocol. It follows the definition of block data according to IEEE 488.2. It contains a header and a block of 32bit floats. The header contains a start byte, a byte containing the number n defining the number of 1-byte digits following in the header. The n following 1-byte digits define the number of 4-byte floats following in the body of the package. See the color coded example below.



Example: 0x233231320050C34779689A4800247449

0x23: ASCII code for # -> start

0x32: ASCII code for 2 -> n=2

0x3132: ASCII code for 1 (0x31) and 2 (0x32) -> N=12 (3x 32bit float values)

0x0050C347: 32bit float -> 100000.0

0x79689A48: 32bit float -> 316227.78125

0x00247449: 32bit float -> 1000000.0