

NRT-8000 OSA - SCPI Commands

User's Manual

Revisions

Version 1	13 July, 2016	Initial revision (2.0.0.125)
Version 2	4 November, 2016	Added new commands (2.0.0.129) :SENSe:BANDwidth:TARget :SENSe:BANDwidth:TARget:LIST :SENSe:BANDwidth:VALue :SENSe:BANDwidth:VALue:LIST
Version 3	29 December, 2016	Added section about possible error codes

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Available Commands

Command	Implementation	Version
*IDN? (Identification)	Implemented	2.0.0.125
:ABORt	Partial	2.0.0.125
:CALCulate:CATegory	Partial	2.0.0.125
:CALCulate:DATA?	Partial	2.0.0.125
:CALCulate:PARAmeter:COMMon:MDIFF	Implemented	2.0.0.125
:CALCulate:PARAmeter[:CATegory]:WDM:DMASk	Implemented	2.0.0.125
:CALCulate:PARAmeter[:CATegory]:WDM:IRANge	Implemented	2.0.0.125
:CALCulate:PARAmeter[:CATegory]:WDM:NARea	Implemented	2.0.0.125
:CALCulate:PARAmeter[:CATegory]:WDM:NBW	Implemented	2.0.0.125
:CALCulate:PARAmeter[:CATegory]:WDM:TH	Implemented	2.0.0.125
:CALCulate[:IMMediate]	Implemented	2.0.0.125
:CALCulate[:IMMediate]:AUTO	Implemented	2.0.0.125
:INITiate:SMODE	Implemented	2.0.0.125
:INITiate[:IMMediate]	Partial	2.0.0.125
:SENSe:AVERage:COUNT	Implemented	2.0.0.125
:SENSe:BANDwidth :BWIDth[:RESolution]	Partial	2.0.0.125
:SENSe:BANDwidth:TARget	Implemented	2.0.0.129
:SENSe:BANDwidth:TARget:LIST	Implemented	2.0.0.129
:SENSe:BANDwidth:VALue	Implemented	2.0.0.129
:SENSe:BANDwidth:VALue:LIST	Implemented	2.0.0.129
:SENSe:CORRection:LEVel:SHIFt	Implemented	2.0.0.125
:SENSe:CORRection:WAVElength:SHIFt	Implemented	2.0.0.125
:SENSe:SWEep:STEP	Partial	2.0.0.125
:SENSe:WAVElength:CENTer	Implemented	2.0.0.125
:SENSe:WAVElength:SPAN	Implemented	2.0.0.125

:SENSe:WAVeLength:START	Implemented	2.0.0.125
:SENSe:WAVeLength:STOP	Implemented	2.0.0.125
:SYSTem:DATE	Partial	2.0.0.125
:SYSTem:ERRor[:NEXT]?	Partial	2.0.0.125
:SYSTem:ERRor:COUNT?	Implemented	2.0.0.125
:SYSTem:ERRor:ALL?	Implemented	2.0.0.125
:SYSTem:ERRor:CODE:NEXT?	Implemented	2.0.0.125
:SYSTem:ERRor:CODE:ALL?	Implemented	2.0.0.125
:SYSTem:ERRor:CODE:COUNT?	Implemented	2.0.0.125
:TRACe:ACTive	Implemented	2.0.0.125
:TRACe:DELete	Implemented	2.0.0.125
:TRACe:DELete:ALL	Implemented	2.0.0.125
:TRACe[:DATA]:X?	Partial	2.0.0.125
:TRACe[:DATA]:Y?	Partial	2.0.0.125
:UNIT:X	Implemented	2.0.0.125
:DEVice:REFRESH	Implemented	2.0.0.125
:DEVice:LIST	Implemented	2.0.0.125
:DEVice:OPEN	Implemented	2.0.0.125
:DEVice:CLOSE	Implemented	2.0.0.125

SCPI Commands

Standard Commands

***IDN? (Identification)**

Function	Queries the instrument type and firmware version
Syntax	*IDN?
Example	*IDN? -> NewRidgeTech,NRT-8000,12345678,2.0.0.125
Explanation	Outputs 4 field data delimited by a comma: <ul style="list-style-type: none">- Field 1: Manufacturer: "NewRidgeTech"- Field 2: Model "NRT-8000"- Field 3: Serial number (8 hexadecimal characters)- Field 4: Software revision
Support	Version 2.0.0.125 This is a sequential command

Instrument-Specific Commands

ABORT Sub System Command

:ABORt

Function	Stops operations such as measurements and calibration
Syntax	ABORt
Example	ABORt
Explanation	Currently, this command has no impact on anything.
Support	Version 2.0.0.125 This is a sequential command

CALCulate Sub System Command

:CALCuLate:CATEgory

Function	Set/queries the type of analysis
Syntax	:CALCuLate:CATEgory<wsp>[OSNR WDM 11]
Example	:CALCULATE:CATEGORY OSNR :CALCULATE:CATEGORY? -> 11
Explanation	This command doesn't do the analysis, it just set the category. They may be further analysis possible, therefore this command will make sense.

Support Version 2.0.0.125, partial
This is a sequential command

:CALCulate:DATA?

Function Queries the analysis results

Syntax :CALCulate:DATA?

Example :CALCULATE:DATA? ->
1.000000e+00,1.925091e+02,-2.802505e+01,0.000000e+00,0.000000e+00,-6.137238e+01,3.100294e+01,...

Explanation Queries the analysis results from the last time analysis was executed. If the analysis function has not been executed, a query error occurs. See section "Output Format of Analysis Results" for more informations.

Support Version 2.0.0.125
This is a sequential command

:CALCulate:PARAMeter:COMMON:MDIFF

Function Sets/queries the peak bottom difference of channel detection for the WDM analysis function.

Syntax :CALCulate:PARAMeter:COMMON:MDIFF<wsp><NRf>[DB]
:CALCulate:PARAMeter:COMMON:MDIFF?

Example :CALCULATE:PARAMETER:COMMON:MDIFF 5DB
:CALCulate:PARAMeter:COMMON:MDIFF? -> 5e+0

Support Version 2.0.0.125
This is a sequential command

:CALCulate:PARAMeter[:CATegory]:WDM:DMASK

Function Sets/queries the channel mask threshold level for the WDM analysis function.

Syntax :CALCulate:PARAMeter[:CATegory]:WDM:DMASK<wsp><NRf>[DB]
:CALCulate:PARAMeter[:CATegory]:WDM:DMASK?

Example :CALCULATE:PARAMETER:WDM:DMASK -30DB
:CALCULATE:PARAMETER:WDM:DMASK? -> -3.0e+1

Explanation Channels below the display mask level will be skipped
To turn off the channel mask function, set the parameter to -999

Support Version 2.0.0.125
This is a sequential command

:CALCulate:PARAmeter[:CATegory]:WDM:IRANge

Function	Sets/queries the Signal Power Integral Range for the WDM analysis function.
Syntax	:CALCulate:PARAmeter[:CATegory]:WDM:IRANge<wsp><NRf>[DB] :CALCulate:PARAmeter[:CATegory]:WDM:IRANge?
Example	:CALCULATE:PARAMETER:WDM:IRANge 1DB :CALCULATE:PARAMETER:WDM:IRANge? -> 1e+0
Support	Version 2.0.0.125 This is a sequential command

:CALCulate:PARAmeter[:CATegory]:WDM:NARea

Function	Sets/queries the Noise Area for the WDM analysis function.
Syntax	:CALCulate:PARAmeter[:CATegory]:WDM:NARea<wsp><NRf>[M] :CALCulate:PARAmeter[:CATegory]:WDM:NARea?
Example	:CALCULATE:PARAMETER:WDM:NAREA 0.80NM
Support	Version 2.0.0.125 This is a sequential command

:CALCulate:PARAmeter[:CATegory]:WDM:NBW

Function	Sets/queries the Noise Bandwidth for the WDM analysis function.
Syntax	:CALCulate:PARAmeter[:CATegory]:WDM:NBW<wsp><NRf>[M] :CALCulate:PARAmeter[:CATegory]:WDM:NBW?
Example	:CALCULATE:PARAMETER:WDM:NBW 0.10NM :CALCULATE:PARAMETER:WDM:NBW? -> 1e-10
Support	Version 2.0.0.125 This is a sequential command

:CALCulate:PARAmeter[:CATegory]:WDM:TH

Function	Sets/queries the Threshold for the WDM analysis function.
Syntax	:CALCulate:PARAmeter[:CATegory]:WDM:TH<wsp><NRf>[DB] :CALCulate:PARAmeter[:CATegory]:WDM:TH?
Example	:CALCULATE:PARAMETER:WDM:TH 20DB :CALCULATE:PARAMETER:WDM:TH? -> 2.0e+1
Support	Version 2.0.0.125 This is a sequential command

:CALCulate[:IMMediate]

Function	Execute analysis. Queries the result of whether analysis has been performed.
Syntax	:CALCulate
Example	:CALCULATE:IMMEDIATE
Explanation	Analysis is performed according to the latest analysis settings As version 2.0.0.125, both with and without IMMEDIATE suffix command are executed sequentially. The user is advised to use :IMMEDIATE as if later a background operation is implemented, it will be trigger just by :CALCulate
Support	Version 2.0.0.125 This is a sequential command

:CALCulate[:IMMediate]:AUTO

Function	Sets/queries the automatic analysis function.
Syntax	:CALCulate[:IMMediate]:AUTO<wsp>OFF ON 0 1
Example	:CALCULATE:IMMEDIATE:AUTO ON :CALCULATE:IMMEDIATE:AUTO? -> 1
Explanation	If the parameter is activated, it will automatically do a analysis after a sweep.
Support	Version 2.0.0.125 This is a sequential command

INITiate Sub System Command

:INITiate:SMODE

Function	Sets/queries the sweep mode.
Syntax	:INITiate:SMODE<wsp><sweep mode> :INITiate:SMODE? <sweep mode> = SINGLE = SINGLE sweep mode (1) REPEAT = REPEAT sweep mode (2) AUTO = AUTO sweep mode (3)
Example	:INITiate:SMODE SINGLE :INITiate:SMODE? -> 1
Explanation	This command is not yet used.
Support	Version 2.0.0.125

This is a sequential command

:INITiate[:IMMediate]

Function	Make a sweep/scan
Syntax	:INITiate[:IMMediate]
Example	:INITIATE:IMMEDIATE
Explanation	As version 2.0.0.125, both with and without IMMEDIATE suffix command are executed sequentially. The user is advised to use :IMMEDIATE as if later a background operation is implemented, it will be trigger just by :INITiate
Support	Version 2.0.0.125 This is a sequential command

SENSe Sub System Command

:SENSe:AVERage:COUNT

Function	Sets/queries the number of times averaging for each measured point.
Syntax	:SENSe:AVERage:COUNT<wsp><integer> :SENSe:AVERage:COUNT?
Example	:SENSE:AVERAGE:COUNT 3 :SENSE:AVERAGE:COUNT? -> 3
Support	Version 2.0.0.125 This is a sequential command

:SENSe:BANDwidth[:RESolution]

Function	Sets/queries the measurement resolution
Syntax	:SENSe:BANDwidth:RESolution<wsp><NRf>[Hz] :SENSe:BANDwidth:RESolution?
Example	:SENSE:BANDwidth:RESolution 20GHz :SENSE:BANDwidth? -> 20E+9
Support	Version 2.0.0.125 This is a sequential command.

:SENSe:BANDwidth:TARget

Function	Sets/queries the current bandwidth target to use with the current device.
Syntax	:SENSe:BANDwidth:TARget<wsp><target name>

`:SENSe:BANDwidth:TARget?`

Example `:SENSe:BANDwidth:TARget Standard OSA`
`:SENSe:BANDwidth:TARget? -> Standard OSA`

Support Version 2.0.0.129
This is a sequential command.

:SENSe:BANDwidth:TARget:LIST

Function List the available bandwidth targets on the current device, separated by a comma.
WARNING: it require you to be connected first to the device.

Syntax `:SENSe:BANDwidth:TARget:LIST?`

Example `:SENSe:BANDwidth:TARget:LIST?`
`Standard OSA,Gaussian / Wavelength [nm],Gaussian / Frequency [GHz]`

Support Version 2.0.0.129
This is a sequential command.

:SENSe:BANDwidth:VALue

Function Sets/queries the current bandwidth value to use with the current device.
WARNING: the value can be either a string or a number, depending the target.
WARNING: the value can be set only after setting the target.

Syntax `:SENSe:BANDwidth:VALue<wsp><value name>`
`:SENSe:BANDwidth:VALue?`

Example `:SENSe:BANDwidth:TARget "Standard OSA"`
`:SENSe:BANDwidth:VALue "4 GHz"`
`:SENSe:BANDwidth:VALue? -> "4 GHz"`

`:SENSe:BANDwidth:TARget "Gaussian / Wavelength [nm]"`
`:SENSe:BANDwidth:VALue 0.2`
`:SENSe:BANDwidth:VALue? -> 0.2`

Support Version 2.0.0.129
This is a sequential command.

:SENSe:BANDwidth:VALue:LIST

Function List all the availables values for the current target, separated by a comma.

Syntax `:SENSe:BANDwidth:VALue:LIST?`

Example `:SENSe:BANDwidth:TARget "Standard OSA"`

:SENSE:BANDwidth:VALue:LIST?
4 GHz,20 GHz,40 GHz,100 GHz,200 GHz

Support Version 2.0.0.129
This is a sequential command.

:SENSe:CORRection:LEVel:SHIFt

Function Sets/queries the offset value for the level
Syntax **:SENSe:CORRection:LEVel:SHIFt**<wsp><NRf>[DB]
:SENSe:CORRection:LEVel:SHIFt?
Example **:SENSE:CORRection:LEVel:SHIFt 0.2DB**
:SENSE:CORRection:LEVel:SHIFt? 0.2
Support Version 2.0.0.125
This is a sequential command.

:SENSe:CORRection:WAVeLength:SHIFt

Function List all the available values for the current target, separated by a comma.
Syntax **:SENSe:CORRection:WAVeLength:SHIFt**<wsp><NRf>[M]
:SENSe:CORRection:WAVeLength:SHIFt?
Example **:SENSE:CORRection:WAVeLength:SHIFt 1NM**
:SENSE:CORRection:WAVeLength:SHIFt? -> 1E-9
Support Version 2.0.0.125
This is a sequential command.

:SENSe:WAVeLength:CENTer

Function Sets/queries the measurement condition center wavelength
Syntax **:SENSe:WAVeLength:CENTer**<wsp><NRf>[M|HZ]
:SENSe:WAVeLength:CENTer?
Example **:SENSe:WAVeLength:CENTer 1550NM**
:SENSe:WAVeLength:CENTer? 0.0000015
Support Version 2.0.0.125
This is a sequential command.

:SENSe:WAVeLength:SPAN

Function Sets/queries the measurement condition span wavelength
Syntax **:SENSe:WAVeLength:SPAN**<wsp><NRf>[M|HZ]
:SENSe:WAVeLength:SPAN?
Example **:SENSe:WAVeLength:SPAN 20NM**

:SENSe:WAVeLength:CENTer? -> 2E-8

Support Version 2.0.0.125
This is a sequential command.

:SENSe:WAVeLength:START

Function Sets/queries the measurement condition start wavelength

Syntax **:SENSe:WAVeLength:START**<wsp><NRf>[M|HZ]
:SENSe:WAVeLength:START?

Example **:SENSe:WAVeLength:START** 1540NM
:SENSe:WAVeLength:START? 0.000001540

Support Version 2.0.0.125
This is a sequential command.

:SENSe:WAVeLength:STOP

Function Sets/queries the measurement condition stop wavelength

Syntax **:SENSe:WAVeLength:STOP**<wsp><NRf>[M|HZ]
:SENSe:WAVeLength:STOP?

Example **:SENSe:WAVeLength:STOP** 1560NM
:SENSe:WAVeLength:STOP? -> 0.000001560

Support Version 2.0.0.125
This is a sequential command.

SYStem Sub System Command

:SYStem:DATE

Function Get the current date with format YEAR,DAY,MONTH

Syntax **:SYStem:DATE?**

Example **:SYStem:DATE?** -> 2016,4,11

Support Version 2.0.0.125
This is a sequential command.

:SYStem:ERRor[:NEXT]?

Function Queries a error in the error queue and deletes it from the queue.
If you use **:NEXT**, the error will stay in the queue.

Syntax **:SYStem:ERRor[:NEXT]?**

Example **:SYStem:ERRor?** -> -109,"Missing parameter"

Support Version 2.0.0.125
 This is a sequential command.

:SYSTem:ERRor:COUNT?

Function Return the number of error in the queue
Syntax :SYSTem:ERRor:COUNT?
Example :SYSTem:ERRor:COUNT? -> 3
Support Version 2.0.0.125
 This is a sequential command.

:SYSTem:ERRor:ALL?

Function Return all the errors code + message in the queue separated by a comma
Syntax :SYSTem:ERRor:ALL?
Example :SYSTem:ERRor:ALL? -> -101,"Invalid character",-109,"Missing
 parameter"
Support Version 2.0.0.125
 This is a sequential command.

:SYSTem:ERRor:CODE[:NEXT]?

Function Queries a error code in the error queue and deletes it from the queue.
 If you use :NEXT, the error will stay in the queue.
Syntax :SYSTem:ERRor[:NEXT]?
Example :SYSTem:ERRor? -> -109
Support Version 2.0.0.125
 This is a sequential command.

:SYSTem:ERRor:CODE:ALL?

Function Return all the errors code then message in the queue separated by a
 comma
Syntax :SYSTem:ERRor[:NEXT]?
Example :SYSTem:ERRor? -> -109,-101
Support Version 2.0.0.125
 This is a sequential command.

TRACe Sub System Commands

:TRACe:ACTive

Function Sets/queries the active trace

Syntax :TRACe:ACTive<wsp><trace name>
 :TRACe:ACTive?

Example :TRACe:ACTive TRA
 :TRACe:ACTive? -> TRA

Support Version 2.0.0.125
 This is a sequential command.

:TRACe:DELeTe

Function Delete a specific trace

Syntax :TRACe:DELeTe<wsp><trace name>

Example :TRACe:DELeTe TRA

Support Version 2.0.0.125
 This is a sequential command.

:TRACe:DELeTe:ALL

Function Delete all traces

Syntax :TRACe:DELeTe:ALL

Example :TRACe:DELeTe:ALL

Support Version 2.0.0.125
 This is a sequential command.

:TRACe[:DATA]:X

Function Queries the X values of a trace, separated by a comma

Syntax :TRACe:X?<wsp><trace name>

Example :TRACe:X? TRA -> 1540,1540.5,1541...

Support Version 2.0.0.125
 This is a sequential command.

:TRACe[:DATA]:Y

Function Queries the Y values of a trace, separated by a comma

Syntax :TRACe:Y?<wsp><trace name>

Example :TRACe:Y? TRA -> -6.3215, -8.1654, -16.35651...

Support Version 2.0.0.125
 This is a sequential command.

UNIT Sub System Command

:UNIT:X

Function Sets/queries the units for the X axis
Syntax :UNIT:X<wsp>WAVElength|FREQuency|0|1
 :UNIT:X?
Example :UNIT:X FREQUENCY
 :UNIT:X? -> 1
Support Version 2.0.0.125
 This is a sequential command.

Multi-Instrument Commands

:DEVIce:REFRESH

Function Activate NRT-8000 scanning on local computer and local network
Syntax :DEVIce:REFRESH
Support Version 2.0.0.125
 This is a sequential command.

:DEVIce:LIST

Function Queries the devices find by refresh, separated by a comma
Syntax :DEVIce:LIST?
Example :DEVIce:LIST? ->
 network:demo;linuxusbserial:/sys/bus/usb-serial/devices/ttyU
 SB0
Support Version 2.0.0.125
 This is a sequential command.

:DEVIce:OPEN

Function Open a specific device
Syntax :DEVIce:OPEN<wsp><device name>
Example :DEVIce:OPEN network:demo
Support Version 2.0.0.125

This is a sequential command.

:DEVIce:CLOSE

Function Close the current connected device

Syntax :DEVIce:CLOSE

Support Version 2.0.0.125

This is a sequential command.

List of possible error code

Standard SCPI

-100 BLOCK: COMMAND ERRORS

command_error = -100
invalid_character = -101
syntax_error = -102
invalid_separator = -103
data_type_error = -104
get_not_allowed = -105
parameter_not_allowed = -108
missing_parameter = -109
command_header_error = -110
header_separator_error = -111
program_mnemonic_too_long = -112
undefined_header = -113
header_suffix_out_of_range = -114
unexpected_number_of_parameters = -115
numeric_data_error = -120
invalid_character_in_number = -121
exponent_too_large = -123
too_many_digits = -124
numeric_data_not_allowed = -128
suffix_error = -130
invalid_suffix = -131
suffix_too_long = -134
suffix_not_allowed = -138
character_data_error = -140
invalid_character_data = -141
character_data_too_long = -144
character_data_not_allowed = -148
string_data_error = -150
invalid_string_data = -151
string_data_not_allowed = -158
block_data_error = -160
invalid_block_data = -161
block_data_not_allowed = -168
expression_error = -170
invalid_expression = -171
expression_not_allowed = -178
macro_error_180 = -180
invalid_outside_macro_definition = -181
invalid_inside_macro_definition = -183
macro_parameter_error = -184

-200 BLOCK: EXECUTION ERRORS

execution_error = -200
data_out_of_range = -222
too_much_data = -223
illegal_parameter_value = -224
out_of_memory = -225
macro_error_270 = -270
macro_execution_error = -272
illegal_macro_label = -273
macro_recursion_error = -276
macro_redefinition_not_allowed = -277

-300 BLOCK: DEVICE-SPECIFIC ERRORS

system_error = -310
too_many_errors = -350

-400 BLOCK: QUERY ERRORS

query_error = -400
query_interrupted = -410
query_terminated = -420
query_deadlocked = -430
query_terminated_after_indefinite_response = -440

OTHERS

user_request_event = -600
request_control_event = -700
operation_complete = -800

Specific NRT-8000 OSA

device_not_connected = -900
device_missing_filter = -901
device_no_matching_resolution_bandwidth = -902
device_no_matching_bandwidth_target = -903
device_no_matching_bandwidth_value = -904
device_no_value_list_for_this_target = -905

Examples

Overview of a scan and OSNR

```
:SENSE:BANDWIDTH:RESOLUTION 4
:CALCULATE:AUTO ON
:CALCULATE:CATEGORY WDM
:CALCULATE:PARAMETER:COMMON:MDIFF 5DB
:CALCULATE:PARAMETER:WDM:MDIFF 5DB
:CALCULATE:PARAMETER:WDM:DMASK -30DB
:CALCULATE:PARAMETER:WDM:TH 20DB
:CALCULATE:PARAMETER:WDM:IRANGE 10
:CALCULATE:PARAMETER:WDM:NAREA 3MM
:CALCULATE:PARAMETER:WDM:NBW 0.1NM
:INITIATE
:TRACE:X? TRA
:TRACE:Y? TRA
:CALCULATE:DATA?
```

Please note that there is 2 MDIFF command, the COMMON:MDIFF is for version 125, the WDM:MDIFF is for version > 125.

Scanning without *STB, *ESR or *OPC

```
# setup the bandwidth / parameters are before
# then clear any previous error before a scan
:SYSTEM:ERROR:ALL?
# do a scan
:INITIATE
# see if there is an error on the previous scan
:SYSTEM:ERROR:COUNT?
# if no error (0) then continue, otherwise go into error
# then ask for trace data
:TRACE:X? TRA
:TRACE:Y? TRA
:CALCULATE:DATA?
```

Overview of a scan and OSNR (documented)

```
# (M) = meter (DB) = decibel (HZ) = hertz
# First line = set a setting / do an action
# Second command line (if exist): query the current value

# Identification
```

```
# NewRidgeTech,<model>,<serial hash>,<software version>
*IDN?
```

```
# Resolution bandwidth (GHZ)
:SENSE:BANDWIDTH:RESOLUTION 4
:SENSE:BANDWIDTH?
```

```
# Do a trace
:INITIATE
```

```
# Get X Data (M)
:TRACE:X? TRA
```

```
# Get Y Data (DB)
:TRACE:Y? TRA
```

```
# -----
# CALCULATION
# All the settings can be set one at the start of the commands.
```

```
# Set the calculate category to WDM (same as OSNR/11)
:CALCULATE:CATEGORY WDM
:CALCULATE:CATEGORY?
```

```
# Do the calculation automatically when a scan is done
:CALCULATE:AUTO 1
:CALCULATE:AUTO?
```

```
# Peak search: Mode diff (DB) (version == 125)
:CALCULATE:PARAMETER:COMMON:MDIFF 5DB
:CALCULATE:PARAMETER:COMMON:MDIFF?
```

```
# Peak search: Mode diff (DB) (version > 125)
:CALCULATE:PARAMETER:WDM:MDIFF 5DB
:CALCULATE:PARAMETER:WDM:MDIFF?
```

```
# Peak search: Display Mask (DB)
:CALCULATE:PARAMETER:WDM:DMASK -30DB
:CALCULATE:PARAMETER:WDM:DMASK?
```

```
# Peak search: Threshold (DB)
:CALCULATE:PARAMETER:WDM:TH 20DB
:CALCULATE:PARAMETER:WDM:TH?
```

```
# OSNR: Signal Power Integral Range (GHZ)
:CALCULATE:PARAMETER:WDM:IRANGE 10
```

```

:CALCULATE:PARAMETER:WDM:IRANGE?

# OSNR: Noise Area (M) (! not HZ)
:CALCULATE:PARAMETER:WDM:NAREA 3MM
:CALCULATE:PARAMETER:WDM:NAREA?

# OSNR: Noise Bandwidth (M)
:CALCULATE:PARAMETER:WDM:NBW 0.1NM
:CALCULATE:PARAMETER:WDM:NBW?

# Do the calculation
:CALCULATE

# Get the data in the WDM format
# <channel number>,<peak wavelength>,<peak power>,<theta>,<theta>,<noise>,<osnr>
# data is repeated on the line joined with comma
:CALCULATE:DATA?

# -----
# BROKEN COMMANDS FOR NOW
# Shift X (M) (BROKEN)
:SENSE:CORRECTION:WAVELENGTH:SHIFT 5NM
:SENSE:CORRECTION:WAVELENGTH:SHIFT?

# Shift Y (DB) (BROKEN)
:SENSE:CORRECTION:LEVEL:SHIFT 1DB
:SENSE:CORRECTION:LEVEL:SHIFT?

```

List and connect to a specific device

```

:DEVICE:REFRESH
# (then, do a loop until you see the device you wanted too)
:DEVICE:LIST?
network:demo;linuxusbserial:/sys/bus/usb-serial/devices/ttyUSB0
:DEVICE:OPEN network:demo
# ...
:DEVICE:CLOSE
:DEVICE:OPEN linuxusbserial:/sys/bus/usb-serial/devices/ttyUSB0
# ...
:DEVICE:CLOSE

```