




# MTS/TBerd-8000 PLATFORM QUICK CARD

## Optical Spectrum Analysis with the OSA: I-OSNR testing



The following procedure outlines how to use the MTS/TBERD-8000 platform with an OSA module to qualify WDM systems including optical filters and ROADMs for conformance or verification testing. This measurement is done to ensure that the system is in conformance with the equipment requirements. Please read the entire procedure **BEFORE** starting.




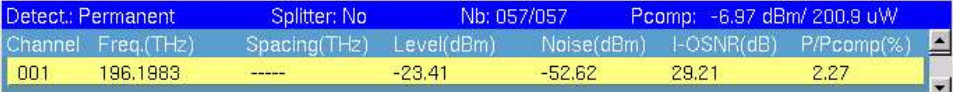
### Part 1 - Configuring the 8000 platform, OSA application

Step	Press first	Explanation and/or action(s) to be made afterwards
1		If power supply can be provided, plug AC/DC adapter to mains and 8000 platform and wait for a double beep and flashing 'ON' LED.
2		To switch-on the unit. Then wait the completion of auto-test
3	 	Press 'System' and use the arrow keys to select the OSA function  Press the select key to activate the OSA function (becomes yellow)

### Part 2 - Connecting to the fiber

Step	Press first	Explanation and/or action(s) to be made afterwards
1		Before connecting a fiber, use appropriate cleaning material (e.g. dust air sprays, Isopropyl Alcohol etc.) to clean the end surfaces of the OSA connector, and test lead connector
2		Connect the OSA module to the test access port of the system.

### Part 3- Performing an In-band OSNR measurement in Auto Mode

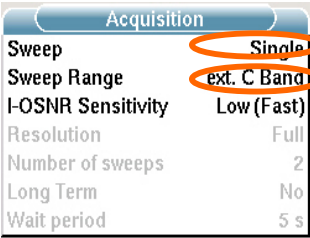

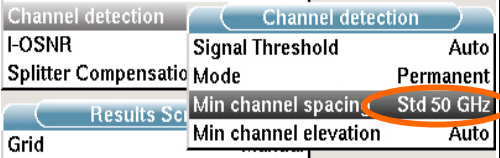

Step	Press first	Explanation and/or action(s) to be made afterwards
1		Press 'Setup' until OSA test setup appears
2		Press 'Test Auto I-OSNR' button. => All Parameter settings will be done automatically: <i>The following parameter auto-setting will be done:</i> Sweep range: <i>ext. C-band</i> = <i>standard transmission band for DWDM networks</i> Sweep mode: <i>single</i> Type: <i>I-OSNR</i> = <i>in-band OSNR mode</i> Resolution: <i>full</i> = <i>highest resolution</i> min. ch-spacing: <i>std 50GHz</i> = <i>50GHz minimum channel spacing</i> I-OSNR: <i>Noise Shape = filtered</i> = <i>optimized for ROADM networks</i>
4		Start the measurement. It will take approximately two minutes and will end automatically. While the test is active, a green bar will show the progress of the measurement. All measurement parameters are displayed in a graphical format (trace) and a tabular format.  The table will show the following results: Channel: channel number Freq / Wavelength: will be displayed in nm or in THz Spacing: channel spacing in THz Level: total channel power in dBm, integrated over ±1/2 min ch-spacing Noise: noise power in dBm normalized to 0.1nm noise bandwidth <b>I-OSNR</b> : in-band OSNR of the channel, normalized to 0.1nm noise BW Pcomp: Total power of the entire signal applied to the instrument

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### Part 4- Manual adjustment of an In-band OSNR measurement

Step	Press first	Explanation and/or action(s) to be made afterwards
<p><b>1. Set I-OSNR mode</b></p> <p><b>2. Set min channel spacing</b></p> <p><b>3. set I-OSNR sensitivity</b></p> <p><b>4. Show I-OSNR trace</b></p>		<p><b>Adjustment of parameteres for I-OSNR testing:</b>                      Selecte Measurement Type to WDM/I-OSNR</p> <p>Min channel spacing needs top be set according to the DWDM network under test. This is a relevant parameter for I-OSNR testing as it defines the ROADM network filters, (e.g. 50GHz or 100GHz network) Standard is 50GHz but should be changed to 100GHz for 100GHz ROADM networks</p> <p>I-OSNR sensitivity defines the number of samples taken for polarization nulling Standard is Low sensitivity (= Fast mode) Medium und High sens will do more samples and is recommended for data rates of 40G and higher or expected OSNR ranges &gt;25dB</p> <p>Select Show I-OSNR trace =Yes to show the polarization nulling trace (shown in blue)</p>    
<p><b>I-OSNR analysis adjustment</b></p>		<p><b>I-OSNR analysis can be adapted to the system type</b></p> <ul style="list-style-type: none"> <li>- <b>ROADM networks</b>                      set Noise Shape to filtered  <i>in-band OSNR measurements will approximate the rounded or Gaussian noise distribution inside the filter passband</i></li> <li>- <b>Normal networks / networks with overlapping spectra:</b>                      set Nouse Shape to unfiltered :  <i>in-band OSNR measurements will approximate a flat noise distribution which is valid for networks without optical filters</i></li> </ul> 