

JDSU Characterization test Solution

T-BERD 8000/6000 Product Selection Guide

Unidirectional Link Characterization



Bidirectional Link Characterization



Network Characterization



Link and Network characterization

Characterization is a comprehensive suite of point-to-point physical layer (including components) optical tests that measures and determines the quality and potential transmission capability of a given optical fiber.

Link Characterization

It measures the fiber performance and the quality of any interconnections (splice, connectors...). The suite of tests mostly depends on the user's methods & procedure. It could be unidirectional or bidirectional, and comprises some or all of the following measurements, covering the required parameters to test.

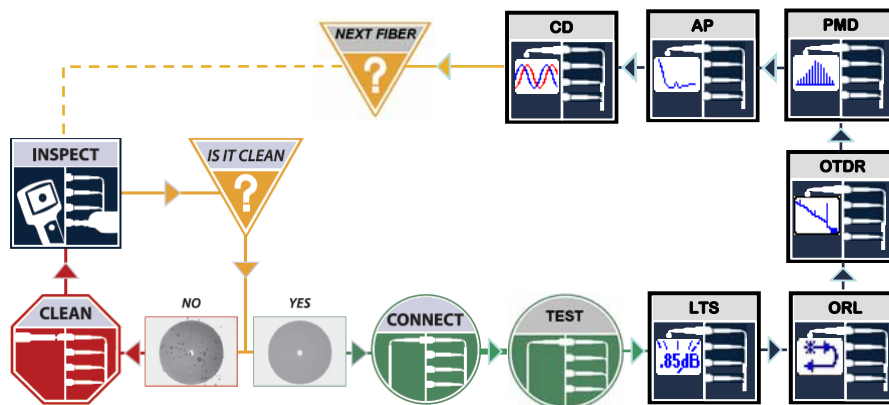
Test Parameters	Measurement Tools
Connector Inspection	Video Inspection Scope
Insertion Loss measurement	OFI module
Distance measurement (fiber length)	OTDR module
Connectors/splice measurements	OTDR module
Reflectance measurements	OTDR module
Optical Return Loss (ORL) measurements	OFI module
Polarization Mode Dispersion (PMD) measurements	PMD analyzer
Chromatic Dispersion (CD) measurement	CD analyzer
Attenuation Profile (AP) measurements	Spectral analyzer

Network Characterization

It provides the network baseline measurements before turning the transmission system up. Network characterization includes measurements through the Optical amplifiers, dispersion compensators, and any elements in line. It is a limited suite of tests compare to the link characterization with the following ones:

Test Parameters	Measurement Tool
Connector Inspection	Video Inspection Scope
Polarization Mode Dispersion (PMD) measurements	PMD analyzer
Chromatic Dispersion (CD) measurement	CD analyzer
Attenuation Profile (AP) measurements	Spectral analyzer



Test Sequence scenario





All above measurements will be compared with defined limits, all determined by the network equipment manufacturer and related to the transmission rate, distances and coding format being implemented.


Main dispersion thresholds according to the transmission rate (NRZ coding format).

Bit rate per channel	SONET /SDH	PMD delay limit	Maximum chromatic dispersion @ 1550 nm
2.5 Gbps	OC-48/STM-16	40 ps	18000 ps
10 Gbps	OC-192/STM-64	10 ps	1176 ps
40 Gbps	OC-768/STM-256	2.5 ps	74 ps
10GEth	--	5ps	735ps

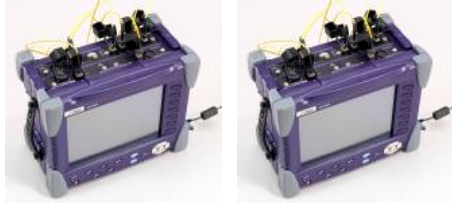

JDSU LINK CHARACTERIZATION SOLUTION UNIDIRECTIONAL TESTING		
JDSU PART NO.	DESCRIPTION/CONTENTS	PRODUCT IMAGE
TB8000-FC1-MR2	<p>T-BERD 8000 mainframe with Medium Range ODM, MR OTDR 1310/1550 nm and MTAU4 modules with hand held light source at the far end. It enables to perform unidirectional OTDR at 1310/1550nm, CD, PMD and AP tests with automated test sequence using the Multi-Test Access Unit and the Link characterization script. The OBS500 is used at far end for CD, PMD and AP testing</p> <ul style="list-style-type: none"> ▪ T-BERD 8000 mainframe with: <ul style="list-style-type: none"> ➢ Touch screen ➢ 20GB hard disk drive ➢ 2x Dual slot receptacles ➢ USB Mouse and Keyboard ➢ Hard carrying case with lid organizer ▪ Link Characterization Automated Script ▪ Fiber Patch cords <ul style="list-style-type: none"> ➢ 2x 3m SM SC/SC UPC ➢ 2x 30cm bend insensitive SM SC/SC UPC ▪ Dual magnification (200X/400X) FBP video probe microscope with QuickCapture™ image capture button with: <ul style="list-style-type: none"> ➢ USB 1.1 digital converter for connection to T-BERD/MTS platforms and PC/Laptop. ➢ 7 Interchangeable FBPT precision tips in hard case (SC/UPC, SC/APC, FC and ST Bulkhead. Universal 2.5 UPC, 2.5 APC and 1.25 UPC Patchcord) ▪ Medium Range Optical Dispersion Measurement (ODM) module with SC-UPC universal connector ▪ 4-Port Multi-Test Access Unit (MTAU4) module with SC-UPC universal connector ▪ 2-wavelength (1310/1550nm) Medium Range OTDR module with SC-UPC universal connector ▪ OBS500 handheld Light source with SC-UPC universal connector 	
TB8000-FC1-MR3	<p>T-BERD 8000 mainframe and Medium Range ODM, Medium Range OTDR 1310/1550/1625 nm and MTAU4 with hand held light source at the far end. It enables to perform unidirectional OTDR at 1310/1550/1625nm, CD, PMD and AP tests with automated test sequence using the Multi-Test Access Unit and the Link characterization script. The OBS500 is used at far end for CD, PMD and AP testing</p> <ul style="list-style-type: none"> ▪ T-BERD 8000 mainframe with: <ul style="list-style-type: none"> ➢ Touch screen ➢ 20GB hard disk drive ➢ 2x Dual slot receptacles ➢ USB Mouse and Keyboard ➢ Hard carrying case with lid organizer ▪ Link Characterization Automated Script ▪ Fiber Patch cords <ul style="list-style-type: none"> ➢ 2x 3m SM SC/SC UPC ➢ 2x 30cm bend insensitive SM SC/SC UPC ▪ Dual magnification (200X/400X) FBP video probe microscope with QuickCapture™ image capture button with: <ul style="list-style-type: none"> ➢ USB 1.1 digital converter for connection to T-BERD/MTS platforms and PC/Laptop. ➢ 7 Interchangeable FBPT precision tips in hard case (SC/UPC, SC/APC, FC and ST Bulkhead. Universal 2.5 UPC, 2.5 APC and 1.25 UPC Patchcord) ▪ Medium Range Optical Dispersion Measurement (ODM) module with SC-UPC universal connector ▪ 4-Port Multi-Test Access Unit (MTAU4) module with SC-UPC universal connector ▪ 3-wavelength (1310/1550/1625nm) Medium Range OTDR module with SC-UPC universal connector ▪ OBS500 handheld Light source with SC-UPC universal connector 	


JDSU Fiber Optics Test & Measurements


JDSU PART NO.	DESCRIPTION/CONTENTS	PRODUCT IMAGE
TB8000-FC1-VLR3	<p>T-BERD 8000 mainframe and ODM, Very Long Range OTDR 1310/1550/1625 nm and MTAU4 with hand held light source at the far end.</p> <p>It enables to perform very long range unidirectional OTDR at 1310/1550/1625nm, CD, PMD and AP tests with automated test sequence using the Multi-Test Access Unit and the Link characterization script. The OBS550 is used at far end for CD, PMD and AP testing</p> <ul style="list-style-type: none"> ▪ T-BERD 8000 mainframe with: <ul style="list-style-type: none"> ➢ Touch screen ➢ 20GB hard disk drive ➢ 2x Dual slot receptacles ➢ USB Mouse and Keyboard ➢ Hard carrying case with lid organizer ▪ Link Characterization Automated Script ▪ Fiber Patch cords <ul style="list-style-type: none"> ➢ 2x 3m SM SC/SC UPC ➢ 2x 30cm bend insensitive SM SC/SC UPC ▪ Dual magnification (200X/400X) FBP video probe microscope with QuickCapture™ image capture button with: <ul style="list-style-type: none"> ➢ USB 1.1 digital converter for connection to T-BERD/MTS platforms and PC/Laptop. ➢ 7 Interchangeable FBPT precision tips in hard case (SC/UPC, SC/APC, FC and ST Bulkhead. Universal 2.5 UPC, 2.5 APC and 1.25 UPC Patchcord) ▪ Optical Dispersion Measurement (ODM) module with SC-UPC universal connector ▪ 4-Port Multi-Test Access Unit (MTAU4) module with SC-UPC universal connector ▪ 3-wavelength (1310/1550/1625nm) Very Long Range OTDR module with SC-UPC universal connector ▪ OBS550 handheld Light source with SC-UPC universal connector 	
TB8KUPG-FCHH-MR3	<p>Upgrade package for T-BERD 8000 with Medium Range ODM, Medium Range OTDR 1310/1550/1625 nm and MTAU4, with 2 dual slot receptacles and a hand held light source.</p> <p>It enables to perform medium range unidirectional OTDR measurements at 1310/1550/1625nm, CD, PMD and AP tests with automated test sequence using the Multi-Test Access Unit and the Link characterization script. The OBS500 is used at far end for CD, PMD and AP testing</p> <ul style="list-style-type: none"> ▪ 2x Dual slot receptacles ▪ USB Mouse and Keyboard ▪ Hard carrying case with lid organizer ▪ Link Characterization Automated Script ▪ Fiber Patch cords <ul style="list-style-type: none"> ➢ 2x 3m SM SC/SC UPC ➢ 2x 30cm bend insensitive SM SC/SC UPC ▪ Dual magnification (200X/400X) FBP video probe microscope with QuickCapture™ image capture button with: <ul style="list-style-type: none"> ➢ USB 1.1 digital converter for connection to T-BERD/MTS platforms and PC/Laptop. ➢ 7 Interchangeable FBPT precision tips in hard case (SC/UPC, SC/APC, FC and ST Bulkhead. Universal 2.5 UPC, 2.5 APC and 1.25 UPC Patchcord) ▪ 1x Medium Range Optical Dispersion Measurement (ODM) module with SC-UPC universal connector ▪ 1x 4-Port Multi-Test Access Unit (MTAU4) module with SC-UPC universal connector ▪ 1x 3-wavelength (1310/1550/1625nm) Medium Range OTDR module with SC-UPC universal connector ▪ 1x OBS500 handheld Light source with SC-UPC universal connector 	

JDSU LINK CHARACTERIZATION SOLUTION BI-DIRECTIONAL TESTING		
JDSU PART NO.	DESCRIPTION/CONTENTS	PRODUCT IMAGE
TB8000-FC2-MR3	<p>2 x T-BERD 8000 mainframes with two Medium Range OTDR 1310/1550/1625nm (at both sides), one Medium Range ODM (at one side), one BBS module (at the other side) and 2x MTAU4 (at both sides). It enables bidirectional OTDR measurement and unidirectional CD, PMD and AP tests with automated test sequence using the Multi-Test Access Unit and the Link characterization script.</p> <ul style="list-style-type: none"> ▪ 2x T-BERD 8000 mainframes with: <ul style="list-style-type: none"> ➢ Touch screen ➢ 20GB hard disk drive ➢ 2x Dual slot receptacles ➢ USB Mouse and Keyboard ➢ Hard carrying case with lid organizer ➢ Loss Test set with talk set and ORL at 1310/1550nm ▪ 2x Link Characterization Automated Script ▪ 2x Bi-directional OTDR test function ▪ 2x Fiber Patch cords <ul style="list-style-type: none"> ➢ 1x 3m SM SC/SC UPC ➢ 2x 30cm bend insensitive SM SC/SC UPC ▪ 2x Dual magnification (200X/400X) FBP video probe microscope with QuickCapture™ image capture button with: <ul style="list-style-type: none"> ➢ USB 1.1 digital converter for connection to T-BERD/MTS platforms and PC/Laptop. ➢ 7 Interchangeable FBPT precision tips in hard case (SC/UPC, SC/APC, FC and ST Bulkhead. Universal 2.5 UPC, 2.5 APC and 1.25 UPC Patchcord) ▪ 1x Medium Range Optical Dispersion Measurement (ODM) module with SC-UPC universal connector ▪ 2x 4-Port Multi-Test Access Unit (MTAU4) module with SC-UPC universal connector ▪ 2x 3-wavelength (1310/1550/1625nm) Medium Range OTDR module with SC-UPC universal connector ▪ 1x Broadband light source module with SC-UPC universal connector 	
JDSU PART NO.	DESCRIPTION/CONTENTS	PRODUCT IMAGE
TB8000-FC3-MR3	<p>2x T-BERD 8000 mainframes with Medium range OTDR 1310/1550/1625nm and OFI 1310/1550/1625nm (at both sides), one ODM (at one side), one BBS module (at the other side) and 2x MTAU4 (at both sides). It enables bidirectional OTDR, Insertion Loss and ORL measurements and unidirectional CD, PMD and AP tests using the BBS2A module from the second unit.</p> <ul style="list-style-type: none"> ▪ 2x T-BERD 8000 mainframes with: <ul style="list-style-type: none"> ➢ Touch screen ➢ 20GB hard disk drive ➢ 2x Dual slot receptacles ➢ USB Mouse and Keyboard ➢ Hard carrying case with lid organizer ➢ Loss Test set with talk set and ORL at 1310/1550nm ▪ 2x Link Characterization Automated Script ▪ 2x Bi-directional OTDR test function ▪ 2x Fiber Patch cords <ul style="list-style-type: none"> ➢ 1x 3m SM SC/SC UPC ➢ 2x 30cm bend insensitive SM SC/SC UPC ➢ 1x30cm bend insensitive SM SC/SC APC ▪ 2x Dual magnification (200X/400X) FBP video probe microscope with QuickCapture™ image capture button with: <ul style="list-style-type: none"> ➢ USB 1.1 digital converter for connection to T-BERD/MTS platforms and PC/Laptop. ➢ 7 Interchangeable FBPT precision tips in hard case (SC/UPC, SC/APC, FC and ST Bulkhead. Universal 2.5 UPC, 2.5 APC and 1.25 UPC Patchcord) ▪ 1x Medium Range Optical Dispersion Measurement (ODM) module with SC-UPC universal connector ▪ 2x 4-Port Multi-Test Access Unit (MTAU4) module with SC-UPC universal connector ▪ 2x 3-wavelength (1310/1550/1625nm) Medium Range OTDR module with SC-UPC universal connector. ▪ 2x 3-wavelength (1310/1550/1625nm) OFI module with SC universal connector. ▪ 1x Broadband light source module with SC-UPC universal connector 	

JDSU Fiber Optics Test & Measurements

TB8000-FC3-VLR3	2x T-BERD 8000 mainframes with Very Long Range OTDR 1310/1550/1625nm and OFI 1310/1550/1625nm (at both sides), one ODM (at one side), one BBS module (at the other side) and 2x MTAU4 (at both sides). It enables bidirectional OTDR, Insertion Loss and ORL measurements and unidirectional CD, PMD and AP tests using the BBS2A module from the second unit.	
	<ul style="list-style-type: none"> ▪ 2x T-BERD 8000 mainframes with: <ul style="list-style-type: none"> ➢ Touch screen ➢ 20GB hard disk drive ➢ 2x Dual slot receptacles ➢ USB Mouse and Keyboard ➢ Hard carrying case with lid organizer ➢ Loss Test set with talk set and ORL at 1310/1550nm ▪ 2x Link Characterization Automated Script ▪ 2x Bi-directional OTDR test function ▪ 2x Fiber Patch cords: <ul style="list-style-type: none"> ➢ 1x 3m SM SC/SC UPC ➢ 2x 30cm bend insensitive SM SC/SC UPC ➢ 1x30cm bend insensitive SM SC/SC APC ▪ 2x Dual magnification (200X/400X) FBP video probe microscope with QuickCapture™ image capture button with: <ul style="list-style-type: none"> ➢ USB 1.1 digital converter for connection to T-BERD/MTS platforms and PC/Laptop. ➢ 7 Interchangeable FBPT precision tips in hard case (SC/UPC, SC/APC, FC and ST Bulkhead. Universal 2.5 UPC, 2.5 APC and 1.25 UPC Patchcord) ▪ 1x Optical Dispersion Measurement (ODM) module with SC-UPC universal connector ▪ 2x 4-Port Multi-Test Access Unit (MTAU4) module with SC-UPC universal connector ▪ 2x 3-wavelength (1310/1550/1625nm) Very Long Range OTDR module with SC-UPC universal connector. ▪ 2x 3-wavelength (1310/1550/1625nm) OFI module with SC universal connector. ▪ 1x Broadband light source module with SC-UPC universal connector 	

JDSU NETWORK CHARACTERIZATION SOLUTION		
JDSU PART NO.	DESCRIPTION/CONTENTS	PRODUCT IMAGE
TB6000A-NC1	TB6000A with ODM module and OBS550 hand held light source at the other end. It enables to perform CD, PMD and AP testing of the end to end network after installation of the in-line elements. <ul style="list-style-type: none"> ▪ T-BERD 6000A mainframe with touch screen: <ul style="list-style-type: none"> ➢ 1GB extended memory ➢ 1 Lilon high power battery ➢ USB Mouse and Keyboard ➢ Soft carrying case ▪ Network Characterization Automated Script ▪ Fiber Patch cords: <ul style="list-style-type: none"> ➢ 2x 3m SM SC/SC UPC ▪ Dual magnification (200X/400X) FBP video probe microscope with QuickCapture™ image capture button. <ul style="list-style-type: none"> ➢ USB 1.1 digital converter for connection to T-BERD/MTS platforms and PC/Laptop. ➢ 7 Interchangeable FBPT precision tips in hard case (SC/UPC, SC/APC, FC and ST Bulkhead. Universal 2.5 UPC, 2.5 APC and 1.25 UPC Patchcord) ▪ Optical Dispersion Measurement (ODM) module with SC-UPC universal connector ▪ OBS500 handheld Light source with SC-UPC universal connector 	

JDSU PART NO.	DESCRIPTION/CONTENTS	PRODUCT IMAGE
<p>TB6000-NC1-MR</p>	<p>TB6000A with Medium Range ODM module and OBS500 hand held light source at the other end. It enables to perform CD, PMD and AP testing of the end to end network after installation of the in-line elements.</p> <ul style="list-style-type: none"> ▪ T-BERD 6000A mainframe with touch screen: <ul style="list-style-type: none"> ➢ 1GB extended memory ➢ 1 Lilon high power battery ➢ USB Mouse and Keyboard ➢ Soft carrying case ▪ Network Characterization Automated Script ▪ Fiber Patch cords: <ul style="list-style-type: none"> ➢ 2x 3m SM SC/SC UPC ▪ Dual magnification (200X/400X) FBP video probe microscope with QuickCapture™ image capture button. <ul style="list-style-type: none"> ➢ USB 1.1 digital converter for connection to T-BERD/MTS platforms and PC/Laptop. ➢ 7 Interchangeable FBPT precision tips in hard case (SC/UPC, SC/APC, FC and ST Bulkhead. Universal 2.5 UPC, 2.5 APC and 1.25 UPC Patchcord) ▪ Medium Range Optical Dispersion Measurement (ODM) module with SC-UPC universal connector ▪ OBS500 handheld Light source with SC-UPC universal connector 	
<p>TB6KUP-NC1-MR</p>	<p>Upgrade package for TB6000A with Medium Range ODM module and OBS500 hand held light source at the other end. It enables to perform medium range CD, PMD and AP testing of the end to end network after installation of the in-line elements.</p> <ul style="list-style-type: none"> ▪ T-BERD 6000A mainframe with touch screen: <ul style="list-style-type: none"> ➢ 1GB extended memory ➢ 1 Lilon high power battery ➢ USB Mouse and Keyboard ➢ Soft carrying case ▪ Network Characterization Automated Script ▪ Fiber Patch cords: <ul style="list-style-type: none"> ➢ 2x 3m SM SC/SC UPC ▪ Dual magnification (200X/400X) FBP video probe microscope with QuickCapture™ image capture button. <ul style="list-style-type: none"> ➢ USB 1.1 digital converter for connection to T-BERD/MTS platforms and PC/Laptop. ➢ 7 Interchangeable FBPT precision tips in hard case (SC/UPC, SC/APC, FC and ST Bulkhead. Universal 2.5 UPC, 2.5 APC and 1.25 UPC Patchcord) ▪ Medium Range Optical Dispersion Measurement (ODM) module with SC-UPC universal connector ▪ OBS500 handheld Light source with SC-UPC universal connector 	