

MTS/T-BERD Platforms

Medium Range (MR) OTDR Module



Key Features

- CWDM/DWDM ready with 1310, 1490, 1550, and 1625 nm wavelengths
- FTTx ready with 1310/1490/1550 nm wavelengths
- 0.8 m event dead zone for highest network precision
- Point-to-multipoint (P2MP) testing with a combined high dynamic range and high resolution solution
- Continuous wave (CW) functionality



The optical time domain reflectometer (OTDR) is at the core of fiber optic characterization. Allowing measurements of fiber link attenuation, attenuation coefficient, reflection, splice/connector loss, and point of error, all as part of the fiber distance function.

Multi-application optical test module

In today's telecommunications market, test solutions must be cost effective, increase productivity, and reduce the complexity of field testing. JDSU's Medium Range (MR) OTDR Module offers a high-performance OTDR test module, which has been specifically developed in response to these industry demands.

Configurable at the time of order, the MR OTDR Module offers multiple wavelength test capabilities (1310, 1490, 1550, and 1625 nm), providing field technicians with an all-in-one test instrument.

The MR OTDR Module's performance enables effective testing on short haul (access, FTTx, P2MP) and long haul networks.

Test the fiber...with the right solution...at the right wavelength

As fiber installers and technicians continue to look for ways to reduce time and costs during field operation, it is essential for them to use the right tool for the job at hand. The combination of an unprecedented 0.1 s refreshing time, the shortest event resolution (0.8 m event dead zone and 4 m attenuation dead zone), and a 40 dB dynamic range, makes the MR OTDR Module an ideal tool for the qualification of any type of fiber network.

A large range of wavelengths is available to best match any application:

- For metro networks, a three-wavelength (1310/1550/1625 nm) MR OTDR Module is used for fiber qualification (according to ITU standards G.652, G.655, and G.656).
- For access networks, a three-wavelength (1310/1490/1550 nm) MR OTDR Module is used for fiber qualification at FTTx transmission wavelengths.

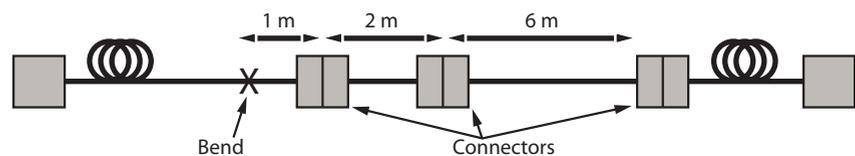
A new standard in OTDR performance

The MR OTDR Module is a high performance OTDR and is capable of characterizing sections of singlemode fiber links that have been illusive in the past. With a 0.8 m event dead zone, it is now possible to qualify and troubleshoot problems in never before investigated sections of the fiber link.

- Pinpoint any fault in the network.
- Discriminate a failure or break within the patch panel or distribution frame.
- Reduce testing time for medium and long haul fiber network commissioning.
- Obtain a superior and cleaner trace form for high link loss for best fault detection.



High resolution for detection of bends and close events



3



3 wavelength OTDR trace display

Improve productivity and efficiency in the field with JDSU's innovative software

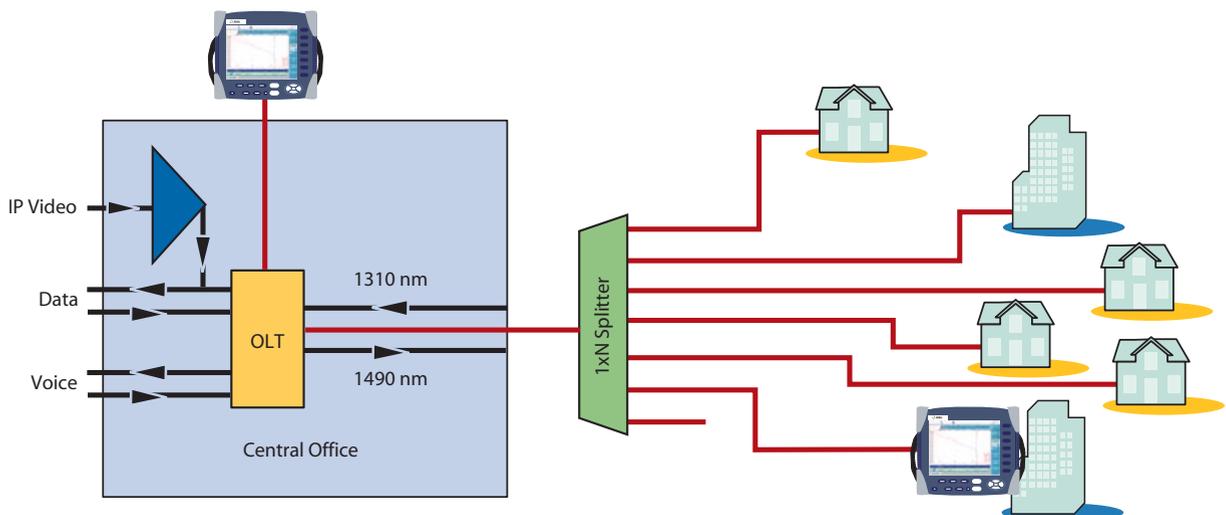
With the MR OTDR Module's impressive performance, testing, and troubleshooting capabilities, the amount of time required to characterize a fiber network is drastically reduced. Test any fiber link or network configuration in record time.

- The MR OTDR Module configures itself with its automated functionality and sets the best-suited acquisition parameters, including optimized acquisition times, as defined by the instrument.
- Obtain the trace form with the correct auto zoom, evaluate the fiber link, and save the results in record time!
- Minimize handling errors with the pass/fail indicator. By viewing a quick snapshot, technicians can easily identify incorrect results.

Test through a PON splitter with the best available performance

With the combination of an impressive acquisition time, event dead zone, and dynamic range, FTTx technicians are able to test through a splitter with unprecedented accuracy using the MR OTDR Module.

- In compliance with ITU-T G.983.3, the MR OTDR Module provides a three-wavelength version at 1310/1490/1550 nm, expanding its test capabilities to FTTx/PON.
- Provides splice and connector information at the three PON wavelengths.
- Combines a high dynamic range and short event resolution in order to characterize short fiber lengths and measure through the splitters.
- Integrates splitter management data in the table results.

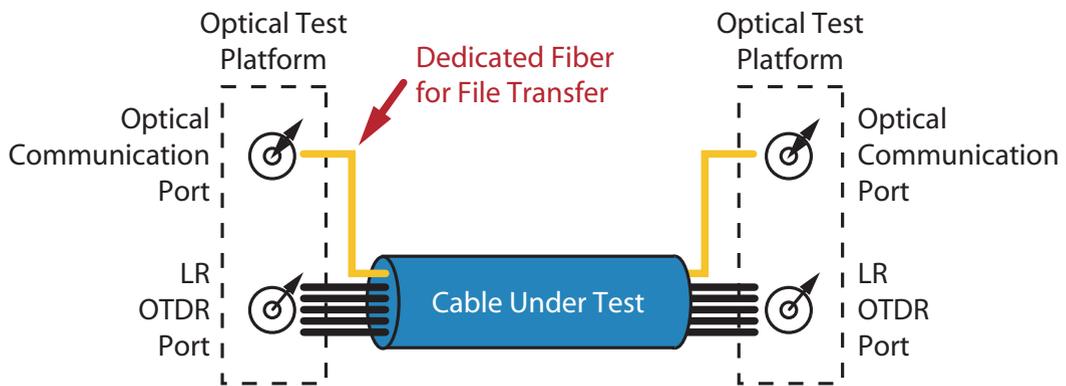


FTTx/PON Network Tests

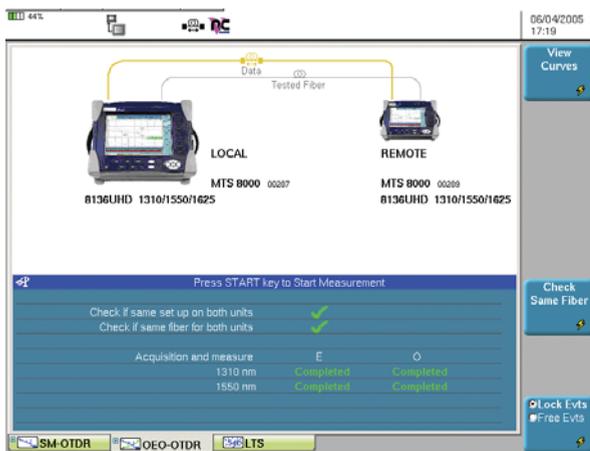
One button bi-directional OTDR acquisition and analysis

Added to the MTS/T-BERD platforms' automated bi-directional OTDR acquisition process, the MR OTDR Module offers an essential tool for the acceptance testing of new cable deployments.

- Configuration synchronization at both ends for error-free test setup.
- Fiber continuity check capability.
- Automatic measurement procedure with the master-master operation.
- Exchange results from both ends through the fiber.
- Pass/fail indication minimizes handling errors.



Automatic Bi-directional OTDR Analysis



Insertion loss table

From		To		Loss	
Single location	End location	dB	dB	dB	dB
1	2	0.25	0.25	0.25	0.25
1	3	0.50	0.50	0.50	0.50
1	4	0.75	0.75	0.75	0.75
1	5	1.00	1.00	1.00	1.00
1	6	1.25	1.25	1.25	1.25
1	7	1.50	1.50	1.50	1.50
1	8	1.75	1.75	1.75	1.75
1	9	2.00	2.00	2.00	2.00
1	10	2.25	2.25	2.25	2.25
1	11	2.50	2.50	2.50	2.50
1	12	2.75	2.75	2.75	2.75
1	13	3.00	3.00	3.00	3.00
1	14	3.25	3.25	3.25	3.25
1	15	3.50	3.50	3.50	3.50
1	16	3.75	3.75	3.75	3.75
1	17	4.00	4.00	4.00	4.00
1	18	4.25	4.25	4.25	4.25
1	19	4.50	4.50	4.50	4.50
1	20	4.75	4.75	4.75	4.75
1	21	5.00	5.00	5.00	5.00
1	22	5.25	5.25	5.25	5.25
1	23	5.50	5.50	5.50	5.50
1	24	5.75	5.75	5.75	5.75
1	25	6.00	6.00	6.00	6.00
1	26	6.25	6.25	6.25	6.25
1	27	6.50	6.50	6.50	6.50
1	28	6.75	6.75	6.75	6.75
1	29	7.00	7.00	7.00	7.00
1	30	7.25	7.25	7.25	7.25
1	31	7.50	7.50	7.50	7.50
1	32	7.75	7.75	7.75	7.75
1	33	8.00	8.00	8.00	8.00
1	34	8.25	8.25	8.25	8.25
1	35	8.50	8.50	8.50	8.50
1	36	8.75	8.75	8.75	8.75
1	37	9.00	9.00	9.00	9.00
1	38	9.25	9.25	9.25	9.25
1	39	9.50	9.50	9.50	9.50
1	40	9.75	9.75	9.75	9.75
1	41	10.00	10.00	10.00	10.00
1	42	10.25	10.25	10.25	10.25
1	43	10.50	10.50	10.50	10.50
1	44	10.75	10.75	10.75	10.75
1	45	11.00	11.00	11.00	11.00
1	46	11.25	11.25	11.25	11.25
1	47	11.50	11.50	11.50	11.50
1	48	11.75	11.75	11.75	11.75
1	49	12.00	12.00	12.00	12.00
1	50	12.25	12.25	12.25	12.25
1	51	12.50	12.50	12.50	12.50
1	52	12.75	12.75	12.75	12.75
1	53	13.00	13.00	13.00	13.00
1	54	13.25	13.25	13.25	13.25
1	55	13.50	13.50	13.50	13.50
1	56	13.75	13.75	13.75	13.75
1	57	14.00	14.00	14.00	14.00
1	58	14.25	14.25	14.25	14.25
1	59	14.50	14.50	14.50	14.50
1	60	14.75	14.75	14.75	14.75
1	61	15.00	15.00	15.00	15.00
1	62	15.25	15.25	15.25	15.25
1	63	15.50	15.50	15.50	15.50
1	64	15.75	15.75	15.75	15.75
1	65	16.00	16.00	16.00	16.00
1	66	16.25	16.25	16.25	16.25
1	67	16.50	16.50	16.50	16.50
1	68	16.75	16.75	16.75	16.75
1	69	17.00	17.00	17.00	17.00
1	70	17.25	17.25	17.25	17.25
1	71	17.50	17.50	17.50	17.50
1	72	17.75	17.75	17.75	17.75
1	73	18.00	18.00	18.00	18.00
1	74	18.25	18.25	18.25	18.25
1	75	18.50	18.50	18.50	18.50
1	76	18.75	18.75	18.75	18.75
1	77	19.00	19.00	19.00	19.00
1	78	19.25	19.25	19.25	19.25
1	79	19.50	19.50	19.50	19.50
1	80	19.75	19.75	19.75	19.75
1	81	20.00	20.00	20.00	20.00
1	82	20.25	20.25	20.25	20.25
1	83	20.50	20.50	20.50	20.50
1	84	20.75	20.75	20.75	20.75
1	85	21.00	21.00	21.00	21.00
1	86	21.25	21.25	21.25	21.25
1	87	21.50	21.50	21.50	21.50
1	88	21.75	21.75	21.75	21.75
1	89	22.00	22.00	22.00	22.00
1	90	22.25	22.25	22.25	22.25
1	91	22.50	22.50	22.50	22.50
1	92	22.75	22.75	22.75	22.75
1	93	23.00	23.00	23.00	23.00
1	94	23.25	23.25	23.25	23.25
1	95	23.50	23.50	23.50	23.50
1	96	23.75	23.75	23.75	23.75
1	97	24.00	24.00	24.00	24.00
1	98	24.25	24.25	24.25	24.25
1	99	24.50	24.50	24.50	24.50
1	100	24.75	24.75	24.75	24.75
1	101	25.00	25.00	25.00	25.00
1	102	25.25	25.25	25.25	25.25
1	103	25.50	25.50	25.50	25.50
1	104	25.75	25.75	25.75	25.75
1	105	26.00	26.00	26.00	26.00
1	106	26.25	26.25	26.25	26.25
1	107	26.50	26.50	26.50	26.50
1	108	26.75	26.75	26.75	26.75
1	109	27.00	27.00	27.00	27.00
1	110	27.25	27.25	27.25	27.25
1	111	27.50	27.50	27.50	27.50
1	112	27.75	27.75	27.75	27.75
1	113	28.00	28.00	28.00	28.00
1	114	28.25	28.25	28.25	28.25
1	115	28.50	28.50	28.50	28.50
1	116	28.75	28.75	28.75	28.75
1	117	29.00	29.00	29.00	29.00
1	118	29.25	29.25	29.25	29.25
1	119	29.50	29.50	29.50	29.50
1	120	29.75	29.75	29.75	29.75
1	121	30.00	30.00	30.00	30.00
1	122	30.25	30.25	30.25	30.25
1	123	30.50	30.50	30.50	30.50
1	124	30.75	30.75	30.75	30.75
1	125	31.00	31.00	31.00	31.00
1	126	31.25	31.25	31.25	31.25
1	127	31.50	31.50	31.50	31.50
1	128	31.75	31.75	31.75	31.75
1	129	32.00	32.00	32.00	32.00
1	130	32.25	32.25	32.25	32.25
1	131	32.50	32.50	32.50	32.50
1	132	32.75	32.75	32.75	32.75
1	133	33.00	33.00	33.00	33.00
1	134	33.25	33.25	33.25	33.25
1	135	33.50	33.50	33.50	33.50
1	136	33.75	33.75	33.75	33.75
1	137	34.00	34.00	34.00	34.00
1	138	34.25	34.25	34.25	34.25
1	139	34.50	34.50	34.50	34.50
1	140	34.75	34.75	34.75	34.75
1	141	35.00	35.00	35.00	35.00
1	142	35.25	35.25	35.25	35.25
1	143	35.50	35.50	35.50	35.50
1	144	35.75	35.75	35.75	35.75
1	145	36.00	36.00	36.00	36.00
1	146	36.25	36.25	36.25	36.25
1	147	36.50	36.50	36.50	36.50
1	148	36.75	36.75	36.75	36.75
1	149	37.00	37.00	37.00	37.00
1	150	37.25	37.25	37.25	37.25
1	151	37.50	37.50	37.50	37.50
1	152	37.75	37.75	37.75	37.75
1	153	38.00	38.00	38.00	38.00
1	154	38.25	38.25	38.25	38.25
1	155	38.50	38.50	38.50	38.50
1	156	38.75	38.75	38.75	38.75
1	157	39.00	39.00	39.00	39.00
1	158	39.25	39.25	39.25	39.25
1	159	39.50	39.50	39.50	39.50
1	160	39.75	39.75	39.75	39.75
1	161	40.00	40.00	40.00	40.00
1	162	40.25	40.25	40.25	40.25
1	163	40.50	40.50	40.50	40.50
1	164	40.75	40.75	40.75	40.75
1	165	41.00	41.00	41.00	41.00
1	166	41.25	41.25	41.25	41.25
1	167	41.50	41.50	41.50	41.50
1	168	41.75	41.75	41.75	41.75
1	169	42.00	42.00	42.00	42.00
1	170	42.25	42.25	42.25	42.25
1	171	42.50	42.50	42.50	42.50
1	172	42.75	42.75	42.75	42.75
1	173	43.00	43.00	43.00	43.00
1	174	43.25	43.25	43.25	43.25
1	175	43.50	43.50	43.50	43.50
1	176	43.75	43.75	43.75	43.75
1	177	44.00	44.00	44.00	44.00
1	178	44.25	44.25	44.25	44.25
1	179	44.50	44.50	44.50	44.50
1	180	44.75	44.75	44.75	44.75
1	181	45.00	45.00	45.00	45.00
1	182	45.25	45.25	45.25	45.25
1	183	45.50	45.50	45.50	45.50
1	184	45.75	45.75	45.75	45.75
1	185	46.00	46.00	46.00	46.00
1	186	46.25	46.25	46.25	46.25
1	187	46.50			

Specifications
General (typical at 25°C)

Weight	0.6 kg (1.1 lb)
Dimensions (w x h x d)	213 x 124 x 32 mm (8.38 x 4.88 x 1.26 in)

Optical Interfaces

Applicable fiber	SMF 9/125 μ m
Interchangeable optical connectors	FC, SC, DIN, ST, LC

Technical Characteristics

Laser safety class (21 CFR)	Class 1
Distance units	Kilometers, feet, and miles
Group index range	1.30000 to 1.70000 in 0.00001 steps
Number of data points	Up to 128,000 data points
Distance measurement	Automatic or dual cursor
Display range	From 2.6 m up to 380 km
Cursor resolution	1 cm
Sampling resolution	4 cm
Accuracy	± 1 m \pm sampling resolution $\pm 1.10 \cdot 5$ x distance (Excluding group index uncertainties)

Attenuation Measurement

Automatic, manual, 2-point, 5-point, and LSA	
Display range	1.25 dB to 55 dB
Display resolution	0.001 dB
Cursor resolution	0.001 dB
Linearity	± 0.03 dB/dB
Threshold	0.01 to 5.99 dB in 0.01 dB step

Reflectance/ORL Measurements

Display resolution	0.01 dB
Threshold	-11 dB to -99 dB in 1 dB step
Reflectance accuracy	± 2 dB

Ordering Information

Medium Range	
1625 nm OTDR Module	E8117MR
Medium Range	
1310/1550 nm OTDR Module	E8126MR
Medium Range	
1550/1625 nm OTDR Module	E8129MR
Medium Range	
1310/1550/1625 nm OTDR Module	E8136MR
Medium Range	
1310/1490/1550 nm OTDR Module	E8138MR49
Continuous Source option	E810TDRLS
Universal Optical Connectors	
Straight connectors	EUNIPCF, EUNIPCSC, EUNIPCST, EUNIPCDIN, EUNIPCLC
8" angled connectors	EUNIAPCF, EUNIAPCSC, EUNIAPCST, EUNIAPCDIN, EUNIAPCLC

For more information on the MTS/T-BERD platforms, test modules, adapters, cables, and fiber optic couplers, refer to the separate datasheets and brochures.

OTDR Module Technical Specifications (typical at 25°C)

These are standard specifications, representing only a selection of JDSU's offerings. For specific requirements, please contact your local JDSU representative.

Central Wavelength ¹	Pulse Width	RMS Dynamic Range ²	Event Dead Zone ³	Attenuation Dead Zone ⁴	Continuous Wave Output Power	Application
1310 ± 20 nm	3 ns to 20 μ s	40 dB	0.8 m	4 m	-3.5 dBm	FTTx through splitters/Access/Metro
1490 ± 15 nm		40 dB				
1550 ± 20 nm		38 dB				
1625 ± 10 nm		37 dB				

¹Laser at 25°C and measured at 10 μ s for singlemode and 50 ns for multimode

²The one way difference between the extrapolated backscattering level at the start of the fiber and the RMS noise level, after 3 minutes averaging and using the largest pulsewidth

³Measured at ± 1.5 dB down from the peak of an unsaturated reflective event using the shortest pulsewidth

⁴Measured at ± 0.5 dB from the linear regression using a FC/UPC reflectance and using the shortest pulsewidth

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