

## Model 755MM-M Optical Transmitter

### DWDM, 20 km, Low Distortion, Wideband



#### Applications

- Video signal distribution to HFC CATV and FTTP nodes
- Supports CATV, QAM, and DBS signal carriage
- Replacement for externally modulated transmitters

#### Features

- Dual redundant power supplies
- SNMP network interface
- Dual RF inputs for CATV and DBS
- Available on 100 GHz spaced ITU DWDM C-band channels
- Optimized RF integration of predistorter, amplifiers, and laser
- Complete, efficient laser bias and TEC control circuitry
- OEM/ODM opportunities available through Emcore

Emcore Model 755MM-M is a directly modulated (DM) DWDM optical transmitter specifically designed for wideband applications that require both CATV and DBS signals to be carried over up to 20 km of fiber. This facilitates network designs that may use a single transmitter to carry multiple signals. The 755MM-M supports CATV + DBS transmission up to 20 km.

The 755MM family of transmitter products is designed to support various CATV transmitter applications with a common platform. A 75Ω CATV RF video input supports frequencies up to 1002 MHz. Integrated within the transmitter design are Emcore's low chirp control, noise suppression circuitry, and patented predistortion technology to provide outstanding performance with any of Emcore's wide range of cooled broadband lasers. A second 50Ω RF input supports frequencies up to 2600 MHz for FTTP, L-Band satellite, and wireless applications.

#### Performance Highlights

	Min	Typ	Max	Units
Operating Temperature Range	0	25	50	°C
Wavelength (100 GHz ITU Options)	1530	-	1560	nm
Optical Power	7	-	-	dBm
Frequency Response (75Ω CATV Input)	47	-	1002	MHz
(50Ω L-Band Input)	950	-	2600	
CNR	51	-	-	dB
CSO	-	-	-60	dBc
CTB	-	-	-65	dBc
C/I (3 <sup>rd</sup> order, 950 – 2200 MHz)	-	-	-60	dBc
SBS Suppression Capability	-	-	17	dBm

Noise and distortion performance above assumes 79 channel NTSC loading with no QAM, 0 dBm received optical power, 0 and 20 km SMF-28 fiber or equivalent. See following pages for complete specifications and operating/test conditions.



*For more information on this and other products:*

Contact Sales at Emcore 626-293-3400, or visit [www.emcore.com](http://www.emcore.com).

## Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the transmitter. These are absolute stress ratings only. Functional operation of the device is not implied or guaranteed at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter	Symbol	Min	Max	Unit
Storage Temperature (power off)	$T_{stg}$	-40	85	°C
75Ω CATV RF Input Level (without L-Band input)	-	-	+3	dBm
50Ω L-Band RF Input Level (without CATV input)	-	-	+15	dBm
75Ω CATV RF Input Level (with +10 dBm L-Band input)	-	-	+1	dBm
50Ω L-Band RF Input Level (with +1 dBm CATV input)	-	-	+10	dBm
AC Input Range	$V_{AC}$	94	245	$V_{AC}$
AC Input Frequency Range	$f_{AC}$	50	60	Hz
DC Input Range	$V_{DC}$	36	60	$V_{DC}$
Power Consumption	$P$	-	50	W

## Optical Characteristics

Parameter	Condition	Min	Typ	Max	Unit
Optical Output Power	-	7	-	-	dBm
SBS Threshold	SMF-28, 20 km	-	-	17	dBm
Wavelength	-	See ITU Channel Table			nm
Wavelength Stability	-	-30	-	+30	pm
Wavelength Tolerance	100 GHz spacing	-0.4	-	+0.4	nm
Output Level Stability	-	-0.5	-	+0.5	dB
Spectral Width (-20 dB)	$I_F = I_{OP}$	-	0.1	1.0	nm
Side Mode Suppression Ratio	-	30	40	-	dB
Optical Isolation	-	30	-	-	dB
Optical Return Loss <sup>1</sup>	APC style connector	35	-	-	dB

1. In order to prevent reflection-induced distortion, the laser must be connected to an optical cable having a return loss of at least 55 dB for discrete reflections and 30 dB for distributed reflections.

RF Characteristics<sup>1</sup>

Parameter	Condition	Min	Typ	Max	Unit
Frequency Response Flatness	75Ω input, 47 - 1002 MHz 50Ω input, 950 - 2600 MHz	-	-	1.5 3.5	dB <sub>p-p</sub>
Input Impedance	CATV, 47 – 1002 MHz RF Input L-Band, 950 – 2600 MHz RF Input	-	75 50	-	Ohms
C/I (3 <sup>rd</sup> order) <sup>5,2</sup>	50Ω RF Input	-	-	-60	dBc
75Ω Test Port Response Flatness	Relative to 75Ω input	-1	-	+1	dB
RF Test Point Level	With -2.0 dBm total RF power into 75Ω input	-20.5	-	-19.5	dBm
75Ω Input RF Level	79-channel loading, composite	-2.2	-2.0	-1.8	dBm
50Ω Input RF Level	Composite	-0.5	0.0	+0.5	dBm
75Ω CATV Video Input Return Loss	47 to 1002 MHz	16	-	-	dB
75Ω CATV Test Port Input Return Loss	47 to 870 MHz 870 to 1002 MHz	16 14	-	-	dB
50Ω L-band Input Return Loss	950 to 2600 MHz	10	-	-	dB

1. 25°C ambient operation. Test receiver responsivity ≥ 0.95 A/W at 1550 nm and equivalent noise current of 7 pA/√Hz. SMF-28 fiber, 0.25 dB/km maximum loss, 1312 nm ± 3 nm zero dispersion wavelength.

5.2. Two -3 dBm/tone carriers, f<sub>1</sub> = 2000 MHz, f<sub>2</sub> = 2000.5 MHz, 50Ω input.

Channel Loading	RF Input Level per Channel (dBmV)	Composite RF Input Level (dBmV)	Composite RF Input Level (dBm)	CNR <sup>1,2,3</sup> (dB)	CSO <sup>1,3,4</sup> (dBc)	CTB <sup>1,3,4</sup> (dBc)	BER <sup>5</sup>
79 Channel NTSC	27.83	46.75	-2.0	51.0	-60	-65	-
79 Channel NTSC + 75 Channel QAM-256 @ -6 dB	27.83 (analog) 21.83 (QAM)	47.68	-1.066	49.0	-60	-65	10 <sup>-7</sup>
110 Channel NTSC	26.34	46.75	-2.0	48.5	-60	-65	-
42 Channel CENELEC	30.52	46.75	-2.0	52.0	-60	-65	-
60 Channel PAL	28.97	46.75	-2.0	52.0	-60	-65	-

1. 10 km transmitter option is tested through 0 km and 10 km SMF-28 fiber. 20 km transmitter option is tested through 0 km and 20 km SMF-28 fiber.

2. CNR may degrade up to 0.5 dB over the operating temperature range.

3. 0 dBm optical power received.

4. CSO and CTB may degrade up to 1.5 dB over the operating temperature range.

5. Pre-FEC.

Package Characteristics

Parameter	Dimension	Unit
Height	1.75 (44), 1RU	Inch (mm)
Width	19 (483)	Inch (mm)
Depth	17.77 (452) with fans	Inch (mm)
Weight	9.0 (4)	Pounds (kg)

ITU Channel Numbering

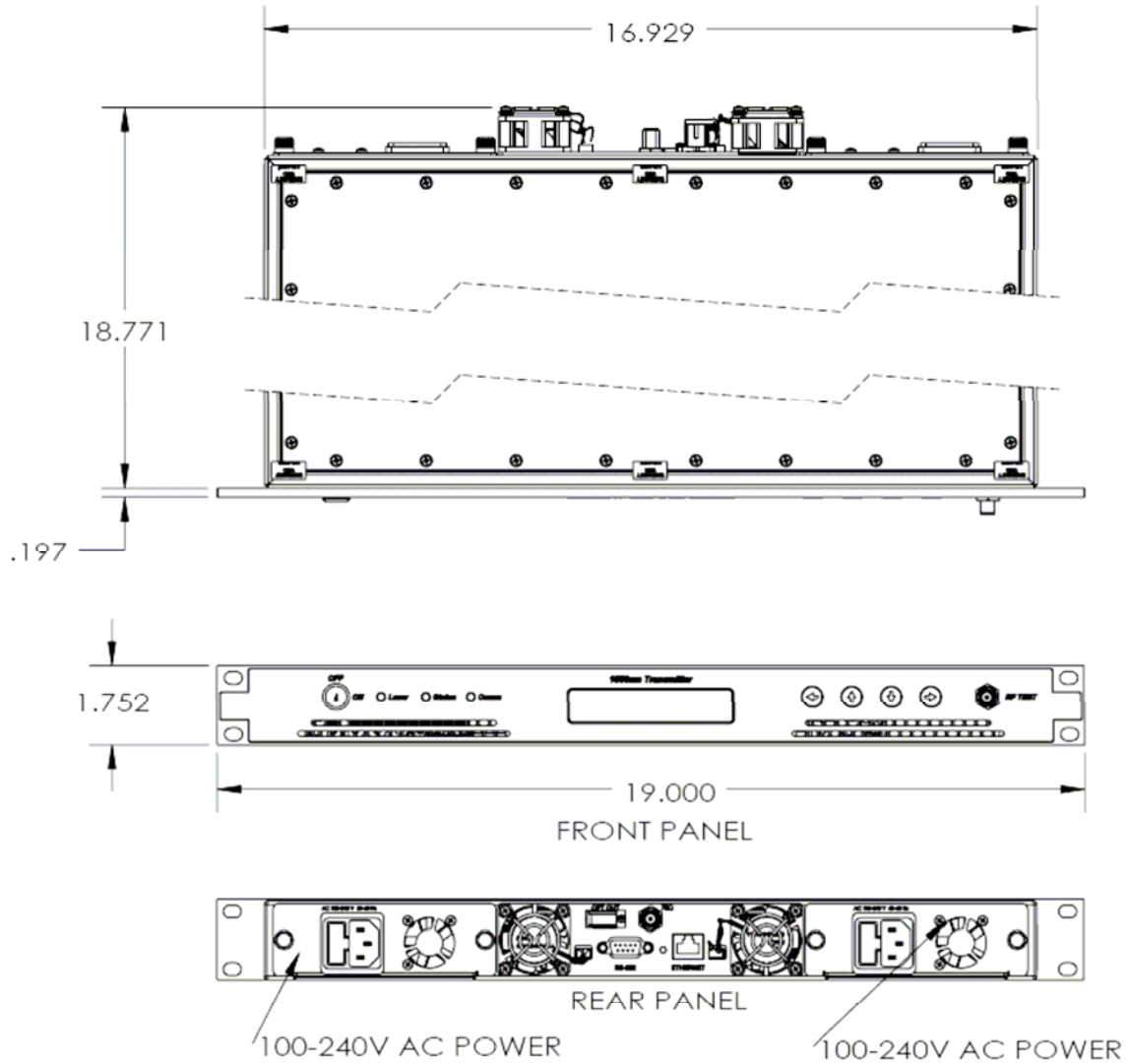
Channel	Wavelength (nm)
62	1527.99
61	1528.77
60	1529.55
59	1530.33
58	1531.12
57	1531.90
56	1532.68
55	1533.47
54	1534.25
53	1535.04
52	1535.82
51	1536.61
50	1537.40
49	1538.19
48	1538.98

Channel	Wavelength (nm)
47	1539.77
46	1540.56
45	1541.35
44	1542.14
43	1542.94
42	1543.73
41	1544.53
40	1545.32
39	1546.12
38	1546.92
37	1547.72
36	1548.51
35	1549.32
34	1550.12
33	1550.92

Channel	Wavelength (nm)
32	1551.72
31	1552.52
30	1553.33
29	1554.13
28	1554.94
27	1555.75
26	1556.56
25	1557.36
24	1558.17
23	1558.98
22	1559.79
21	1560.61
20	1561.42
19	1562.23
18	1563.05

Outline Drawing

Dimensions are in inches.



**Laser Safety Information**

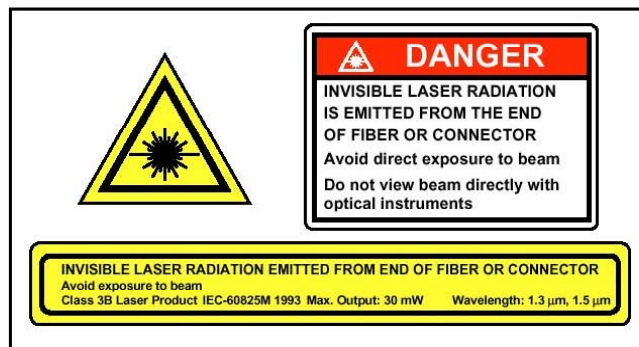
This product meets the appropriate standard in Title 21 of the Code of Federal Regulations (CFR). FDA/CDRH Class IIIb laser product. A supplemental FDA application has been filed and it is anticipated that the accession number for this product will be 0220309 since this accession number is from a similar product family. Final determination will be no later than 1/1/08.

Single-mode fiber SC/APC bulkhead connectors (standard).

Wavelength = 1.5  $\mu\text{m}$ .

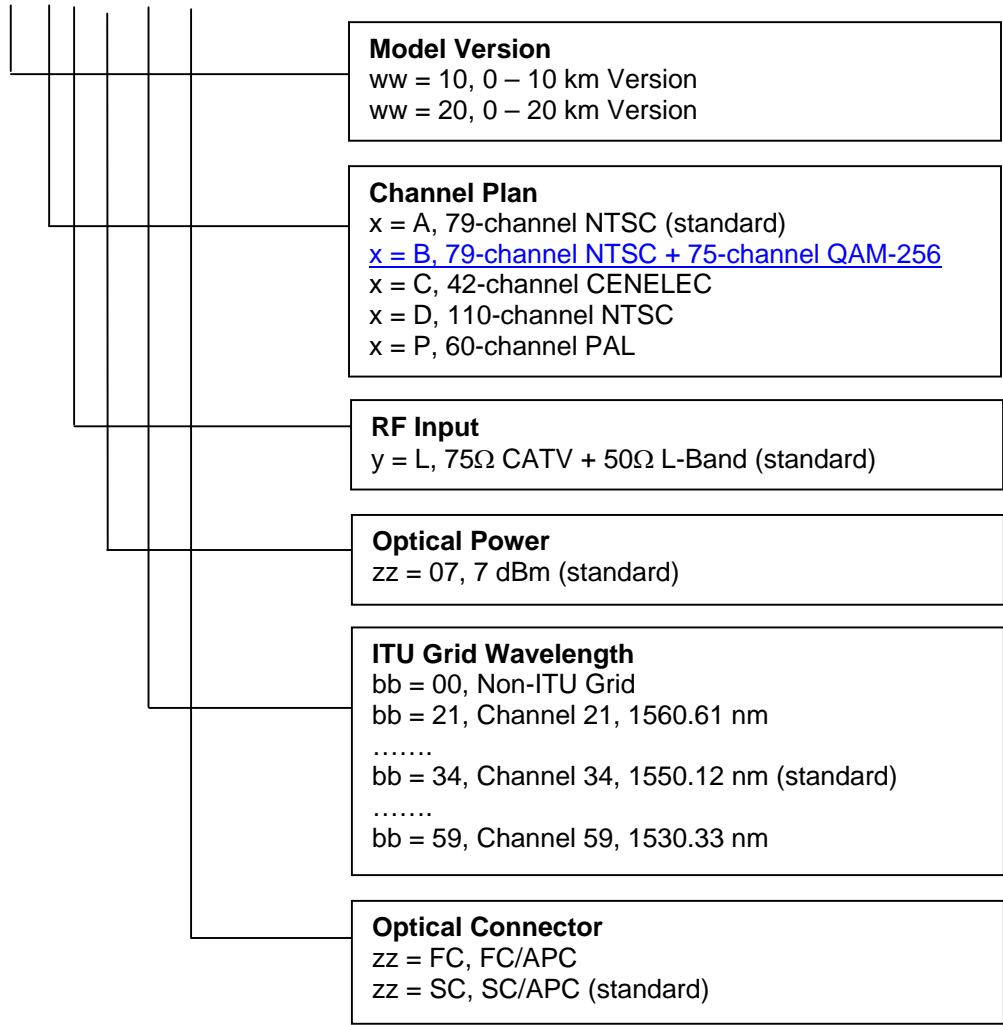
Maximum power = 30 mW.

**Caution: Use of controls, adjustments and procedures other than those specified herein may result in hazardous laser radiation exposure.**



Ordering Information – Model Number Options

755MM-M-ww-x-y-zz-bb-cc



Information contained herein is deemed to be reliable and accurate as of issue date. EMCORE reserves the right to change the design or specifications of the product at any time without notice. EMCORE and the EMCORE logo are trademarks of EMCORE Corporation.

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