



A3422 XMTDR

Digital Return Optical Transmitter Module

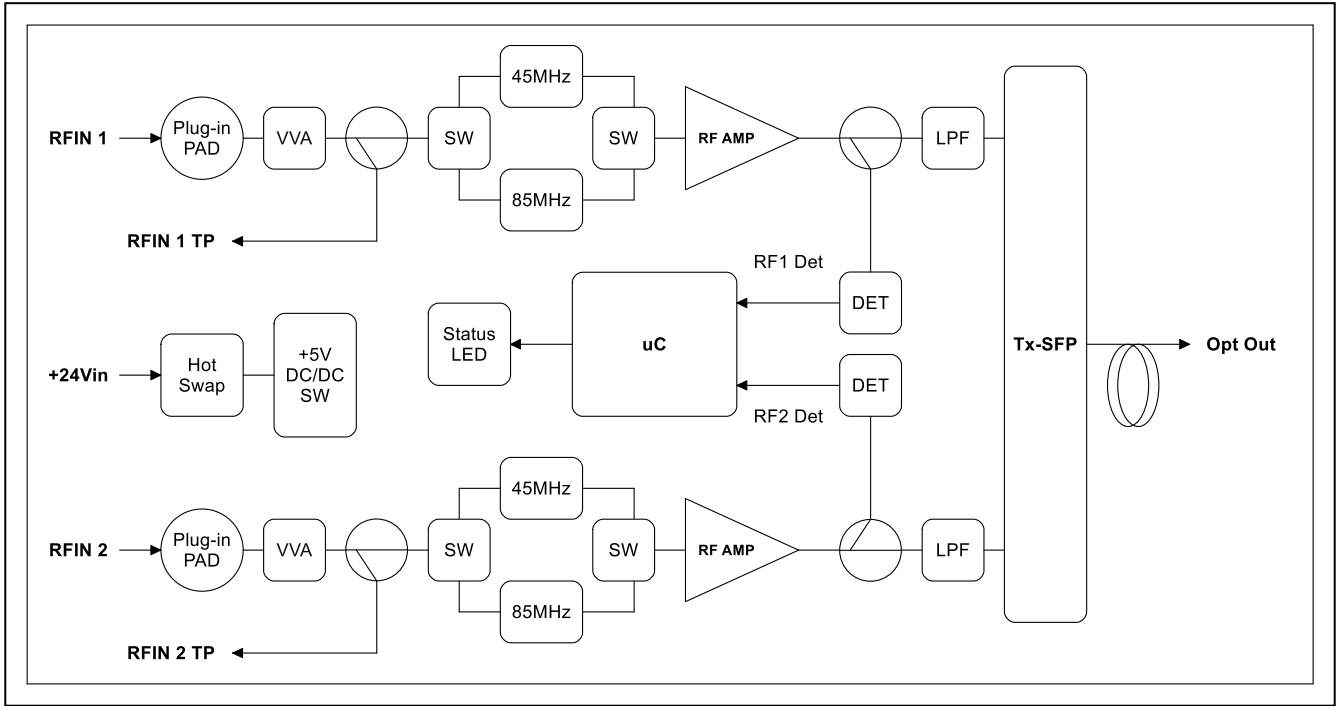
The A34XMTDR is the digital return optical node transmitter (Tx) that sends the RF reverse path signals to the headend via a single fiber. The digital return optical Tx has two separate CATV RF inputs that drive an optical SFP module with ADC/multiplexing circuitry. The RF drive level to the Tx-SFP inputs of the A34XMTDR can be adjusted to optimize the performance with the input pad.

The A34XMTDR can be configured for single RF band or dual RF band with variety of optical wavelength options of 1310nm, 1550nm DFB, CWDM or DWDM lasers. This maximizes the fiber efficiency on a single fiber conserving the cable operator's investment in the fiber network.

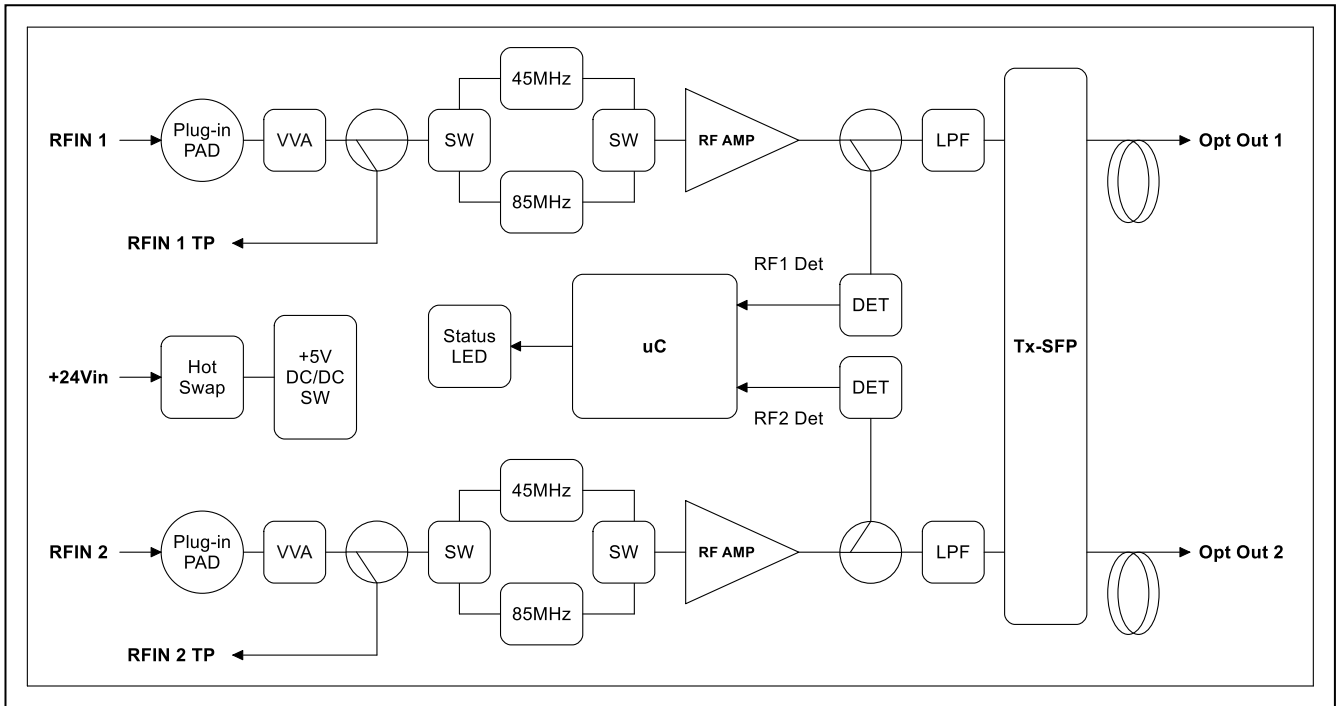
Features

- DFB laser technology
- ITU-T CWDM grid wavelengths
- Wide Dynamic Range
- Module Hot-swappable
- -20 dB test point for RFIN 1 and RFIN 2
- Control and monitor functions via GUI
- 45MHz/85MHz bandwidth selectable with field exchangeable Tx-SFP sub module

Block Diagrams

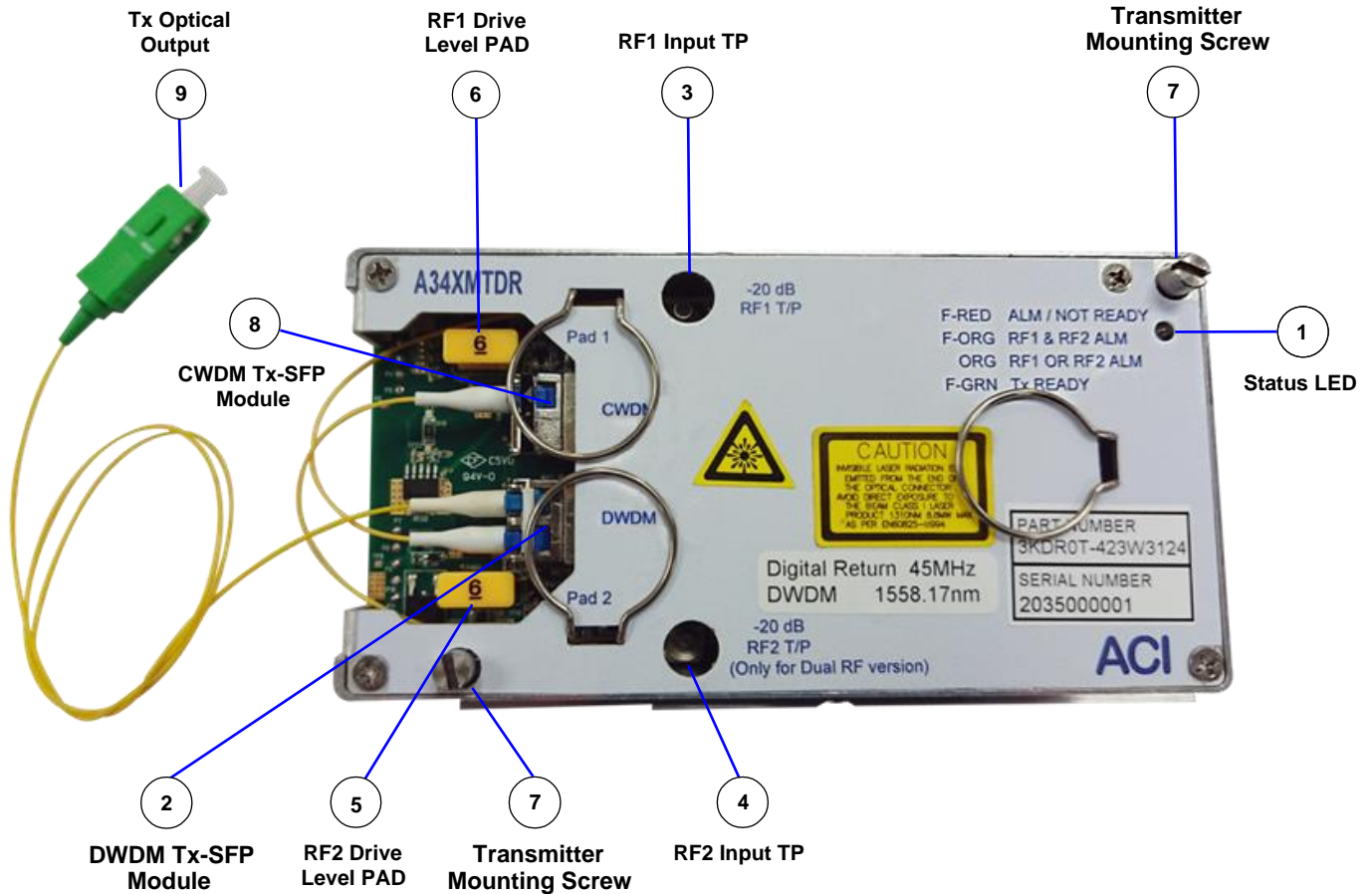


Digital Return 2-Fer Path (Single Fiber)



Digital Return Dual Channel Path (Two Fibers)

Transmitter Module



A34XMTDR Optical Transmitter Module Top View		
No.	COMPONENT NAME	FUNCTION
1	Status LED	Indicating RF status, DC power status of the A34XMTDR module
2	DWDM Digital Return Tx-SFP Module	Receive optical signal with Digitized RF loading and convert to DWDM optical signal and transmits optical signal over fiber to headend receiver (A8KQDR)
3,4	RF Input Test Point	-20dB test point, the TP is measuring the RF drive level into the A34XMTDR module
5,6	RF Drive Level PAD	Attenuates the RF drive level into the Tx- SFP
7	Transmitter Mounting Screws	Mount the A34XMTDR to the Node housing
8	CWDM / 1310nm DFB digital Return Tx-SFP Module	Digitize RF input signals, convert to 1310nm or CWDM optical signal and transmits optical signal over fiber to the headend receiver (A8KQDR)
9	Tx Optical Output	A34XMTDR transmitter fiber optical output

Specifications

ACI Communications, Inc.			A34XMTDR Digital Return Optical Transmitter Module	
PARAMETERS	CONDITIONS	UNITS	SPECIFICATION	NOTES
Optical Specifications				
Laser type			DFB, CWDM or DWDM	
Optical connector	Output fiber		SC/APC (standard)	
Optical return loss	Min.	dB	50	
Optical output power	Range	dBm	-5 to 0 for DFB laser 0 to 3 for CWDM laser 3 to 7 for DWDM laser	
Wavelength	DFB laser CWDM laser DWDM laser		1310 ± 20 nm ITU-T CWDM: 1271 nm – 1611 nm ITU-T DWDM : Ch21 - Ch60	DWDM : C-band, 100GHz spacing
Spectral line width (RMS)	DFB/ CWDM/ DWDM	nm	0.4 / 0.4 / 0.1 (typical)	
RF Specifications				
Impedance		Ω	75	
Return loss	Max.	dB	-16	
RF Input level		dBmV	22	
RF input level adjustment	0.5 dB/step	dB	0 to 20	
Operating bandwidth	45 85	MHz	5 - 45 5 - 85	
Flatness	Tested in optical node	dB	± 1.0	Note 1
	Tested on interface board		± 0.75	Note 2
Slope	Min.	dB	-3	Link
Test point	Directional coupler	dB	-20 ± 0.5	
Link Performance				
Full scale single CW amplitude		dBmV	57	
Link gain		dB	14 (typical)	
Peak NPR	45MHz / 85MHz	dB	53 / 52	
Dynamic range	@40dB CNR	dB	18	
MER	Minimum	dB	38 (40 typical)	
BER	Maximum		1 x 10 ⁻⁹	
Environmental				
Power consumption	Maximum	Watt	7.5	
Operating temperature	Module ambient.	°F (°C)	-32 to +185 (-25 to +85)	
	Opt. Node ambient	°F (°C)	-40 to +140 (-40 to +60)	
Relative humidity	Non-condensing	%	0 to 95	
Dimensions	D x H x W	Inch. (mm)	5.81 x 1.16 x 2.95 (147.6 x 29.5 x 74.9)	

Notes: 1. Tested in a complete optical node with optical link to A8KQDR receiver. Reverse RF signal is inserted at the node output port.

2. Tested on the optical interface board (without return configuration board) of the optical node with optical link to A8KQDR receiver. Reverse RF signal is inserted at the RF input connector on the interface board.

Ordering Matrix for TDR Modules

A34XMTDR Digital Return Optical Transmitter Module Configuration Sheet

Customer: _____

Created By: _____

Order Date: _____

ORDERING MATRIX

September 28, 2020

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
PART NUMBER	3	K	D	R	O	T	-								

8~12

DIGITAL RETURN TRANSMITTER MODULE

For FP, DFB or CWDM Laser type:

SS0-0 = TDR base unit only, 45 or 85 MHz, Single or Dual RF

411-1 = 45MHz, Single RF, Single FP-Type Laser, 10km

421-1 = 45MHz, Dual RF, Single FP-Type Laser, 10km (2-fer)

413-2 = 45MHz, Single RF, Single 1310nm DFB-Type Laser, 40km

423-2 = 45MHz, Dual RF, Single 1310nm DFB-Type Laser, 40km (2-fer)

811-1 = 85MHz, Single RF, Single FP-Type Laser, 10km

813-2 = 85MHz, Single RF, Single 1310nm DFB-Type Laser, 40km

824-2 = 85MHz, Dual RF, Dual 1310nm DFB-Type Laser, 40km

823-2 = 85MHz, Dual RF, Single 1310nm DFB-Type Laser, 40km (2-fer)

41 -3 = 45MHz, Single RF, Single CWDM-Type Laser, 80km

42 -3 = 45MHz, Dual RF, Single CWDM-Type Laser, 80km(2-fer)

81 -3 = 85MHz, Single RF, Single CWDM-Type Laser, 80km

82 -3 = 85MHz, Dual RF, Single CWDM-Type Laser, 80km (2-fer)

: Single CWDM-Type Laser

0 = Without SFP module installed (for TDR base unit only)

A = 1471nm CWDM-Type Laser F = 1551nm CWDM-Type Laser

C = 1491nm CWDM-Type Laser G = 1571nm CWDM-Type Laser

D = 1511nm CWDM-Type Laser H = 1591nm CWDM-Type Laser

E = 1531nm CWDM-Type Laser J = 1611nm CWDM-Type Laser

For DWDM Laser type:

413S2= DWDM TDR base unit only, 45 MHz, Single RF

423S2= DWDM TDR base unit only, 45 MHz, Dual RF

813S2= DWDM TDR base unit only, 85 MHz, Single RF

823S2= DWDM TDR base unit only, 85 MHz, Dual RF

413W2 = 45MHz, Single RF, Single DWDM-Type Laser, 40km

413W3 = 45MHz, Single RF, Single DWDM-Type Laser, 80km

423W2 = 45MHz, Dual RF, Single DWDM-Type Laser, 40km (2-fer)

423W3 = 45MHz, Dual RF, Single DWDM-Type Laser, 80km (2-fer)

813W2 = 85MHz, Single RF, Single DWDM-Type Laser, 40km

813W3 = 85MHz, Single RF, Single DWDM-Type Laser, 80km

823W2 = 85MHz, Dual RF, Single DWDM-Type Laser, 40km (2-fer)

823W3 = 85MHz, Dual RF, Single DWDM-Type Laser, 80km (2-fer)

Note: Select DWDM wavelength at position #14 & #15

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OPTICAL CONNECTOR TYPE

1 = SC/APC (Standard)

2 = SC/UPC

3 = FC/APC

4 = FC/UPC

Ordering Matrix for TDR Modules (Continued)

14,15	<input type="checkbox"/>	<input type="checkbox"/>	DWDM LASER WAVELENGTH CHANNEL			
Blank= Non DWDM Laser Wavelength						
00= without DWDM SFP module (for TDR base unit only)						
DWDM: ITU-T Wavelength Grid, C-band, 100GHz Spacing						
21= Ch 21 - 1560.61 nm	31= Ch 31 - 1552.52 nm	41= Ch 41 - 1544.53 nm	51= Ch 51 - 1536.61 nm			
22= Ch 22 - 1559.79 nm	32= Ch 32 - 1551.72 nm	42= Ch 42 - 1543.73 nm	52= Ch 52 - 1535.82 nm			
23= Ch 23 - 1558.98 nm	33= Ch 33 - 1550.92 nm	43= Ch 43 - 1542.94 nm	53= Ch 53 - 1535.04 nm			
24= Ch 24 - 1558.17 nm	34= Ch 34 - 1550.12 nm	44= Ch 44 - 1542.14 nm	54= Ch 54 - 1534.25 nm			
25= Ch 25 - 1557.36 nm	35= Ch 35 - 1549.32 nm	45= Ch 45 - 1541.35 nm	55= Ch 55 - 1533.47 nm			
26= Ch 26 - 1556.56 nm	36= Ch 36 - 1548.51 nm	46= Ch 46 - 1540.56 nm	56= Ch 56 - 1532.68 nm			
27= Ch 27 - 1555.75 nm	37= Ch 37 - 1547.72 nm	47= Ch 47 - 1539.77 nm	57= Ch 57 - 1531.90 nm			
28= Ch 28 - 1554.94 nm	38= Ch 38 - 1546.92 nm	48= Ch 48 - 1538.98 nm	58= Ch 58 - 1531.12 nm			
29= Ch 29 - 1554.13 nm	39= Ch 39 - 1546.12 nm	49= Ch 49 - 1538.19 nm	59= Ch 59 - 1530.33 nm			
30= Ch 30 - 1553.33 nm	40= Ch 40 - 1545.32 nm	50= Ch 50 - 1537.40 nm	60= Ch 60 - 1529.55 nm			

Part Numbers for 1310 nm FP, DFB and CWDM SFP Modules:

FP & DFB With SFP Modules Sold Separately	
SUMA-TX-11X-00	A3422 Digital Transmitter, 45MHz, Single RF, Single 1310 nm FP, 10km
SUMA-TX-21X-00	A3422 Digital Transmitter, 45MHz, Dual RF, Single 1310 nm FP, 10km (2-fer)
SUMA-TX-12X-00	A3422 Digital Transmitter, 45MHz, Single RF, Single 1310 nm DFB, 40km
SUMA-TX-22X-00	A3422 Digital Transmitter, 45MHz, Dual RF, Single 1310 nm DFB, 40km (2-fer)
SUMA-TX-82X-00	A3422 Digital Transmitter, 85MHz, Single RF, Single 1310nm DFB, 40km
SUMA-TX-92X-00	A3422 Digital Transmitter, 85MHz, Dual RF, Single 1310nm DFB, 40km (2-fer)
CWDM With SFP Modules Sold Separately 45 MHz	
SUMA-TX-15C-1470	SFP Module, 45MHz, Single RF, Single 1471 nm CWDM, 80km
SUMA-TX-15C-1490	SFP Module, 45MHz, Single RF, Single 1491 nm CWDM, 80km
SUMA-TX-15C-1510	SFP Module, 45MHz, Single RF, Single 1511 nm CWDM, 80km
SUMA-TX-15C-1530	SFP Module, 45MHz, Single RF, Single 1531 nm CWDM, 80km
SUMA-TX-15C-1550	SFP Module, 45MHz, Single RF, Single 1551 nm CWDM, 80km
SUMA-TX-15C-1570	SFP Module, 45MHz, Single RF, Single 1571 nm CWDM, 80km
SUMA-TX-15C-1590	SFP Module, 45MHz, Single RF, Single 1591 nm CWDM, 80km
SUMA-TX-15C-1610	SFP Module, 45MHz, Single RF, Single 1611 nm CWDM, 80km
SUMA-TX-25C-1470	SFP Module, 45MHz, Dual RF, Single 1471 nm CWDM, 80km (2-fer)
SUMA-TX-25C-1490	SFP Module, 45MHz, Dual RF, Single 1491 nm CWDM, 80km (2-fer)
SUMA-TX-25C-1510	SFP Module, 45MHz, Dual RF, Single 1511 nm CWDM, 80km (2-fer)
SUMA-TX-25C-1530	SFP Module, 45MHz, Dual RF, Single 1531 nm CWDM, 80km (2-fer)
SUMA-TX-25C-1550	SFP Module, 45MHz, Dual RF, Single 1551 nm CWDM, 80km (2-fer)
SUMA-TX-25C-1570	SFP Module, 45MHz, Dual RF, Single 1571 nm CWDM, 80km (2-fer)
SUMA-TX-25C-1590	SFP Module, 45MHz, Dual RF, Single 1591 nm CWDM, 80km (2-fer)
SUMA-TX-25C-1610	SFP Module, 45MHz, Dual RF, Single 1611 nm CWDM, 80km (2-fer)
CWDM With SFP Modules Sold Separately 85 MHz	
SUMA-TX-85C-1470	SFP Module, 85MHz, Single RF, Single 1471 nm CWDM, 80km
SUMA-TX-85C-1490	SFP Module, 85MHz, Single RF, Single 1491 nm CWDM, 80km
SUMA-TX-85C-1510	SFP Module, 85MHz, Single RF, Single 1511 nm CWDM, 80km
SUMA-TX-85C-1530	SFP Module, 85MHz, Single RF, Single 1531 nm CWDM, 80km
SUMA-TX-85C-1550	SFP Module, 85MHz, Single RF, Single 1551 nm CWDM, 80km
SUMA-TX-85C-1570	SFP Module, 85MHz, Single RF, Single 1571 nm CWDM, 80km

CWDM With SFP Modules Sold Separately 85 MHz	
SUMA-TX-85C-1590	SFP Module, 85MHz, Single RF, Single 1591 nm CWDM, 80km
SUMA-TX-85C-1610	SFP Module, 85MHz, Single RF, Single 1611 nm CWDM, 80km
SUMA-TX-95C-1470	SFP Module, 85MHz, Dual RF, Single 1471 nm CWDM, 80km (2-fer)
SUMA-TX-95C-1490	SFP Module, 85MHz, Dual RF, Single 1491 nm CWDM, 80km (2-fer)
SUMA-TX-95C-1510	SFP Module, 85MHz, Dual RF, Single 1511 nm CWDM, 80km (2-fer)
SUMA-TX-95C-1530	SFP Module, 85MHz, Dual RF, Single 1531 nm CWDM, 80km (2-fer)
SUMA-TX-95C-1550	SFP Module, 85MHz, Dual RF, Single 1551 nm CWDM, 80km (2-fer)
SUMA-TX-95C-1570	SFP Module, 85MHz, Dual RF, Single 1571 nm CWDM, 80km (2-fer)
SUMA-TX-95C-1590	SFP Module, 85MHz, Dual RF, Single 1591 nm CWDM, 80km (2-fer)
SUMA-TX-25C-1610	SFP Module, 85MHz, Dual RF, Single 1611 nm CWDM, 80km (2-fer)

Ordering Matrix for DWDM SFP Modules

DWDM SFP Optical Transceiver Module for A34XMTDR transmitter Configuration Sheet																
Customer: _____																
Created By: _____ Order Date: _____																
ORDERING MATRIX																September 17, 2020
Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
PART NUMBER	A	C	-			-						-				
4,5	TRANCEIVER PACKAGE															
	SF = SFP (Small Form factor Plugable) type with LC connector socket (standard)															
7,8,9	DWDM WAVELENGTH SELECTION															
	D□□ = DWDM wavelength according to ITU-T 100GHz spacing															
	21= Ch 21 - 1560.61 nm	31= Ch 31 - 1552.52 nm	41= Ch 41 - 1544.53 nm	51= Ch 51 - 1536.61 nm												
	22= Ch 22 - 1559.79 nm	32= Ch 32 - 1551.72 nm	42= Ch 42 - 1543.73 nm	52= Ch 52 - 1535.82 nm												
	23= Ch 23 - 1558.98 nm	33= Ch 33 - 1550.92 nm	43= Ch 43 - 1542.94 nm	53= Ch 53 - 1535.04 nm												
	24= Ch 24 - 1558.17 nm	34= Ch 34 - 1550.12 nm	44= Ch 44 - 1542.14 nm	54= Ch 54 - 1534.25 nm												
	25= Ch 25 - 1557.36 nm	35= Ch 35 - 1549.32 nm	45= Ch 45 - 1541.35 nm	55= Ch 55 - 1533.47 nm												
	26= Ch 26 - 1556.56 nm	36= Ch 36 - 1548.51 nm	46= Ch 46 - 1540.56 nm	56= Ch 56 - 1532.68 nm												
	27= Ch 27 - 1555.75 nm	37= Ch 37 - 1547.72 nm	47= Ch 47 - 1539.77 nm	57= Ch 57 - 1531.90 nm												
	28= Ch 28 - 1554.94 nm	38= Ch 38 - 1546.92 nm	48= Ch 48 - 1538.98 nm	58= Ch 58 - 1531.12 nm												
	29= Ch 29 - 1554.13 nm	39= Ch 39 - 1546.12 nm	49= Ch 49 - 1538.19 nm	59= Ch 59 - 1530.33 nm												
	30= Ch 30 - 1553.33 nm	40= Ch 40 - 1545.32 nm	50= Ch 50 - 1537.40 nm	60= Ch 60 - 1529.55 nm												
10,11	DATA RATE															
	G1 = 1.25 GBPS															
13,14,15	FIBER LINK DISTANCE															
	040 = 40 KM															
	080 = 80 KM															
16	OPERATION TEMPERATURE RANGE															
	F = -40° to 85°C															



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