

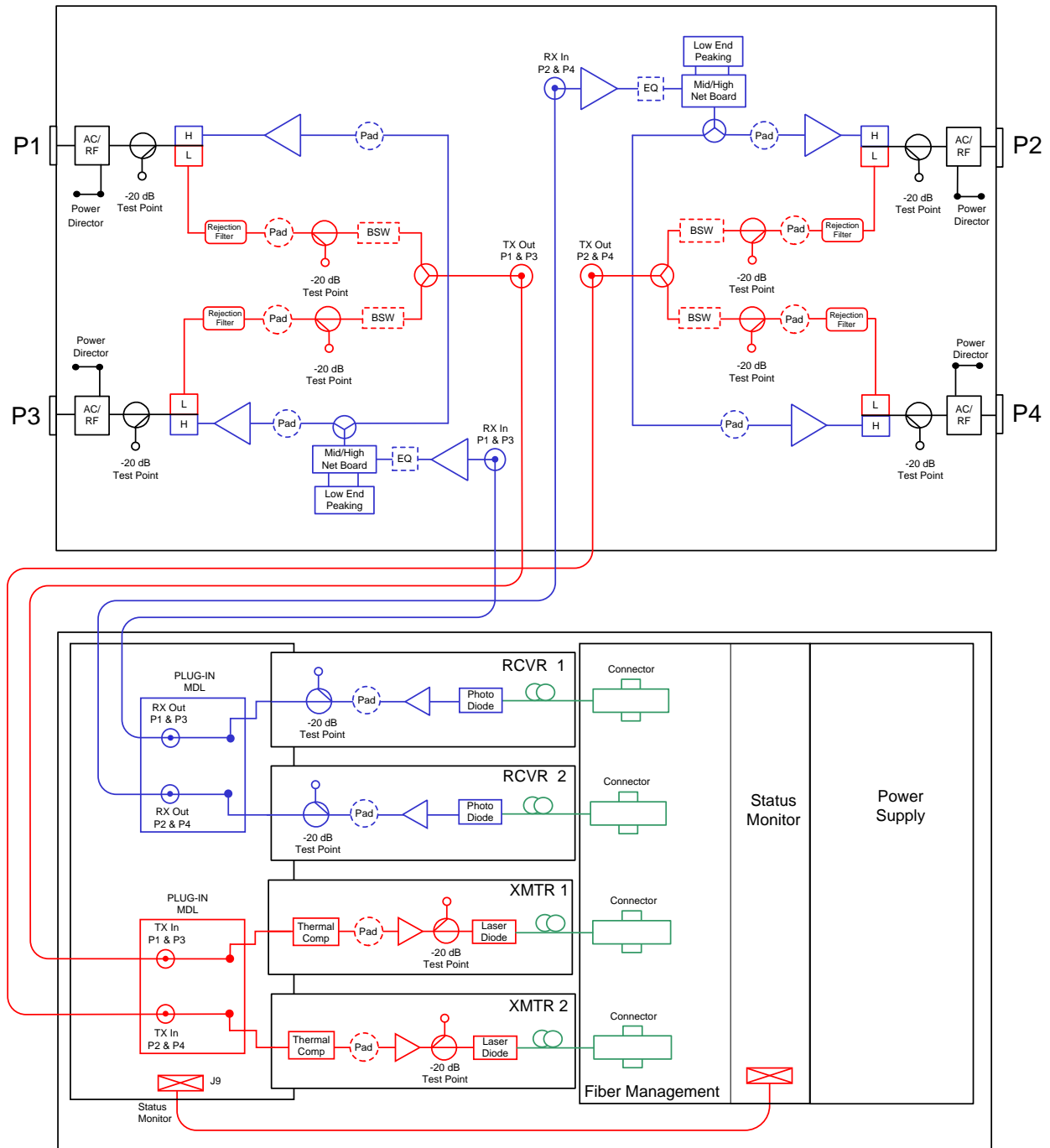
ACION 3422 Optical Node

2x2 Fully Segmentable

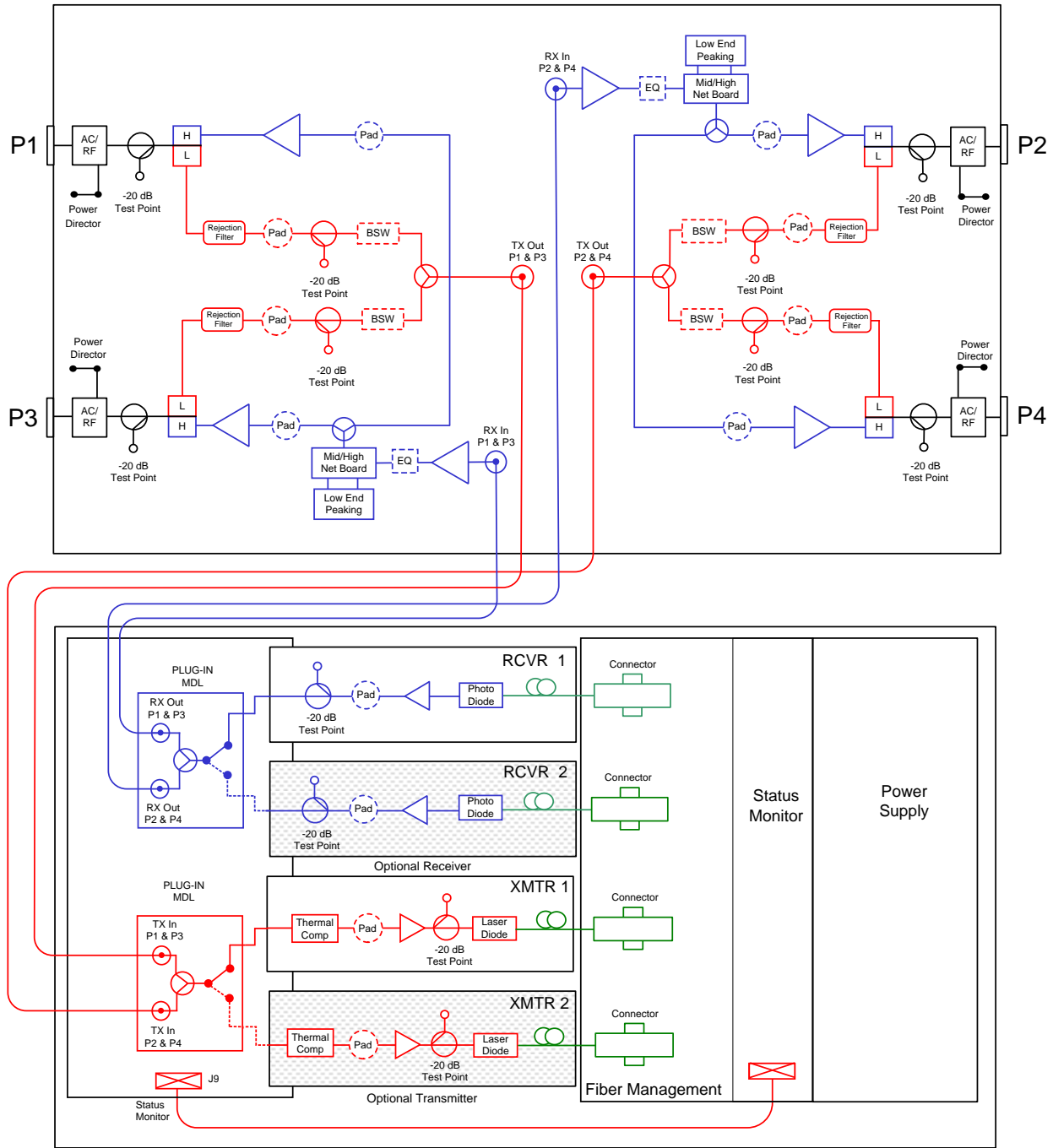
The ACI Communications' ACION 3422 1GHz is a 4-output 2x2 fully segmentable optical node that is capable of providing up to 52.2 dBmV output at 1002 MHz, and has an optical input level range from -3 dBm to +2 dBm. The node can have up to two optical receivers and two optical transmitters.

Features

- ◆ Four driven output ports
- ◆ Compact size for a 2x2 segmentable node
- ◆ -20.0 dB directional coupler test points
- ◆ 15 amp power passing
- ◆ Plug-in bridger switching for managing the reverse path @ 0, -3.0, -6.0, -12.0 dB and open with active status monitoring (optional)
- ◆ Standard push on "F" connectors can be used on all test points
- ◆ FP, DFB and CWDM transmitters available
- ◆ Redundant receiver & Transmitter (optional 1:4 only)
- ◆ Future availability of an 85/105 MHz option that will double the reverse band width
- ◆ Plug-in forward and reverse configuration modules allows for easy field reconfiguration to add or remove segmentation as needed
- ◆ 85% efficient 40/90 VAC switch-mode power supply with built-in Triac surge protection
- ◆ Standard push on "F" connectors can be used on all test points



ACION 3422 Block Diagram (Forward and Reverse Segmented Optical Node 1002 MHz)



ACION 3422 Block Diagram (Non-Segmented Optical Node 1002 MHz)

ACION 3422 4-Output (Forward and Reverse Segmentable Optical Node 1002 MHz)						
STATION PARAMETERS						
	CONDITIONS	UNITS	SPECIFICATION			NOTES
Housing passband		MHz	5 to 1002			
Input current capacity	Any port, worst case	Amperes	15			
Frequency range		MHz	5 - 10	11-750	751 - 1002	
Hum modulation	Time domain @ rated current above	-dBc	55	70	65	
Station passband		MHz	54 to 1002			
Return loss- Ports 1 to 4	Worst case	-dB	16.5			Typical 18.0
Frequency range		MHz	54-870	871-1002		
Port to Port Isolation	Typical	-dB	70	60		
Test Points						
Test point type	Directional coupler	N / A	DC			
Test point level(s)		-dB	20.0			
Test point accuracy	Forward TP	±dB	0.5			
Frequency range	Reverse TP	MHz	5 to 40			
Test point accuracy	Reverse TP	±dB	0.5			
Frequency Range						
Station passband		MHz	54 to 1002			
Station flatness - feeder out		±dB	0.75			
Station Gain						
			Minimum	Minimum		
Configuration			1:4	1:2 (X2)		
Gain - feeder	@ 1002 MHz	dB	33	37		
Gain control type		N / A	Plug-in pads			
Gain control range		dB	15.0			
Gain control steps	Pad value steps	dB	0.5			
Station Slope						
Slope control type	Linear equalizers	dB	Plug-in Equalizers			
Slope control range		dB	-12.0 to +13.0			
Slope control steps	Equalizer value steps	dB	1.0 linear steps			
Operational Specifications						
Operational level - feeders	@ 1002 MHz	dBmV	52.2			
Operational slope	@ 54 / 550 / 750 / 870 / 1002 MHz	dB	0 / 9.0 / 12.6 / 14.8 / 17.2			
Operational optical input range		dBm	-3 to +2			Recommended optical input level 0 dBm
Station Output Levels with a -3 dBm optical input						
Distribution out	@ 54 / 550 / 750 / 870 / 1002 MHz	dBmV	35.0 / 44.0 / 47.6 / 49.8 / 52.2			
Station Noise Figure - values for RF portion of node only. Complete values dependent on optical link.						
			* No slope	17.2 dB slope	* LEQ1= 0 dB	
Noise figure (NF)	@ 54 MHz	dB	9.5	16.0		
Noise figure (NF)	@ 550 MHz	dB	9.5	11.0		
Noise figure (NF)	@ 1002 MHz	dB	9.5	11.0		
Station Distortions - values for RF Portion of node only. Complete values dependent on optical link.						
550 MHz analog channel loading, 79 channels + 450 MHz digital channel loading, 256 QAM at -6 dBc relative to its associated visual carrier						
Reference levels	@ 54 / 550 / 650 / 870 / 1002 MHz	dBmV	35.0 / 44.0 / 47.6 / 49.8 / 52.2			
		N / A	Worst Case	Typical		
Composite Triple Beat (CTB)		-dBc	70	72		
Cross Modulation (XMOD)		-dBc	64	66		
Composite Second Order (CSO -)	(Vc +0.75 & -1.25 MHz only)	-dBc	69	71		
Composite Second Order (CSO +)	(Vc +1.25 MHz only)	-dBc	69	71		
CIN		-dBc	65	67		
Station Group Delay						
Group delay	Channel 2 (std)	nSec / 3.58 MHz	30			Typical 25
Group delay	Channel 3	nSec / 3.58 MHz	16			
Group delay	Channel 4	nSec / 3.58 MHz	10			
Group delay	Channel 5 & >	nSec / 3.58 MHz	3			

Confidential
information contained in this document is subject to change without notice.
Revision date: 09/25/2015

ACION 3422 4-Output (Forward and Reverse Segmentable Optical Node 1002 MHz)					
REVERSE SPECTRUM:					
	CONDITIONS	UNITS	SPECIFICATIONS		NOTES
Reverse - General					
Station passband		MHz	5 to 42		
Station flatness		±dB	1.0		
Bridger switch control (optional)		-dB	0, 3.0, 6.0, 12.0 & open		
Port to Port Isolation	Typical	-dB	65		
Reverse - Station Gain (RF section only)					
Configuration			4:1	2:1 (X2)	
Gain	Minimum	dB	*10.0	6.0	*for one TX Configuration
Gain control type		N / A	Plug-in pads		
Gain control steps	Pad value steps	dB	0.5		
Reverse - Station Input Levels					
RF station input to node for 40 dBmV @ Laser TP	Minimum	dBmV	17		
Reverse - Noise Figure					
Configuration			4:1	2:1 (X2)	
Station Noise Figure (w/EQ)		dB	16.5	12.0	
Reverse - Station Distortions @ 23 dBmV					
Composite Second Order (CSO)	6 NTSC channel loading	-dBc	75		
Composite Triple Beat (CTB)	6 NTSC channel loading	-dBc	80		
Cross Modulation (XMOD)	6 NTSC channel loading	-dBc	80		
Noise-to-Power Ratio (NPR)	Noise loading	dB	Typical >40.0 / 13.0		@ 10.0 dB optical loss (6.0 dB fiber +4.0 dB flat loss) @ -51 dBmV/Hz
Reverse - Station Group Delay					
Group delay	5 MHz	nSec / 1.5 MHz	36		
Group delay	7 MHz	nSec / 1.5 MHz	16		
Group delay	10 MHz	nSec / 1.5 MHz	4		
Group delay	35 MHz	nSec / 1.5 MHz	8		
Group delay	38.5 MHz	nSec / 1.5 MHz	25		
Power Requirements:					
Station configuration (Over temperature range of -40°F to +140°F (-40°C to +60°C) @ 90 VAC)			1X4 (1RX & 1TX)	2X2 (2RX & 2TX)	
Power requirements	Worst case	W	67.5	79.8	
AC Voltage					
Input ranges		VAC	40 - 90		
Current Draw					
@ 40 VAC	Maximum	A	1.97	2.28	
@ 50 VAC	Maximum	A	1.66	1.90	
@ 60 VAC	Maximum	A	1.43	1.64	
@ 70 VAC	Maximum	A	1.30	1.48	
@ 80 VAC	Maximum	A	1.18	1.33	
@ 90 VAC	Maximum	A	1.05	1.22	
Environmental					
Operating temperature		°F (°C)	-40 to +140 (-40 to +60)		
RF output stability over temperature		±dB	0.5		
Physical					
Dimensions (H X W X D)		In. (cm)	6.75 X 14.25 X 9 (17.15 X 36.20 X 22.86)		
Weight		lbs. (kg)	18.25 (8.28)		

Confidential
Information contained in this document is subject to change without notice.
Revision date: 09/25/2015

ACION 3422 Configuration Sheet

Customer: _____

Created By: _____ Order Date: _____

ORDERING MATRIX

January 11, 2018

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
PART NUMBER																			

- 3 **BASIC CONFIGURATION**
 A = FWD 1:4 REV 4:1 nonsegmented
 1 Transmitter installed
 1 Receiver installed
 TX and RX redundancy capable
 B = FWD 1:4 REV 2:1 (X2) Reverse segmented
 2 Analog or 1 Digital Dual Transmitter installed
 1 Receiver installed
 RX redundancy capable
 C = FWD 1:2 (X2) REV 4:1 Forward segmented
 1 Transmitter installed
 2 Receivers installed
 TX redundancy capable
 D = FWD 1:2 (2X) REV 2:1 (X2) Forward & Return segmented
 2 Analog or 1 Digital Dual Transmitter installed
 2 Receivers installed
 Not TX or RX redundancy capable
- 4 **DIPLEX FREQUENCY SPLIT**
 4 = 42/53
 5 = 55/70
 6 = 65/85
 8 = 85/105
- 5 **OPTICAL CONNECTOR TYPE**
 1 = SC/APC (Standard)
 2 = SC/UPC
 3 = FC/APC
 4 = FC/UPC
- 6 **TRANSMITTER 1 - Primary 4:1 or Ports 1 & 3 for 2:1 (X2)**
 7 **TRANSMITTER 2 - Secondary 4:1 or Ports 2 & 4 for 2:1 (X2)**
- TYPE FP & DFB**
 0 = None
 D = Uncooled 1310 nm 1.0 mW FP
 H = Uncooled 1310 nm 2.0 mW FP W/SOLATOR
 J = Uncooled 1310 nm 1.0 mW DFB
 R = Uncooled 1310 nm 2.0 mW DFB
 B = Uncooled 1310 nm 3.0 mW DFB
 C = Uncooled 1550 nm 2.0 mW DFB
 Z = Uncooled 1550 nm 4.0 mW DFB
- TYPE DFB CWDM 2.0 mW**
 A = Uncooled 1471 nm DFB CWDM (2.0 mW)
 G = Uncooled 1491 nm DFB CWDM (2.0 mW)
 V = Uncooled 1511 nm DFB CWDM (2.0 mW)
 L = Uncooled 1531 nm DFB CWDM (2.0 mW)
 W = Uncooled 1551 nm DFB CWDM (2.0 mW)
 M = Uncooled 1571 nm DFB CWDM (2.0 mW)
 N = Uncooled 1591 nm DFB CWDM (2.0 mW)
 T = Uncooled 1611 nm DFB CWDM (2.0 mW)
 U = Uncooled 1431 nm DFB CWDM (2.0 mW) E-Band
 Y = Uncooled 1451 nm DFB CWDM (2.0 mW) E-Band
- TYPE DFB CWDM 3.0 mW**
 F = Uncooled 1471 nm DFB CWDM (3.0 mW)
 I = Uncooled 1491 nm DFB CWDM (3.0 mW)
 Q = Uncooled 1551 nm DFB CWDM (3.0 mW)
 K = Uncooled 1591 nm DFB CWDM (3.0 mW)
 P = Uncooled 1611 nm DFB CWDM (3.0 mW)
- TYPE DFB CWDM 4.0, 5.0 & 6.0 mW**
 9 = Uncooled 1551 nm DFB CWDM (4.0 mW)
 8 = Uncooled 1551 nm DFB CWDM (5.0 mW)
 5 = Uncooled 1591 nm DFB CWDM (5.0 mW)
 6 = Uncooled 1611 nm DFB CWDM (5.0 mW)
 3 = Uncooled 1471 nm DFB CWDM (6.0 mW)
 4 = Uncooled 1491 nm DFB CWDM (6.0 mW)
- TYPE DIGITAL RETURN TRANSMITTER MODULE**
 7 = Enter "7" in position 6 and "0" in position 7
 See position #18 on following page for options
- TYPE ANALOG DWDM: ITU Grid: C-Band, 100 GHz Spacing**
 2 = Enter "2" in position 6 and "0" in position 7
 See positions 16 & 17 on following page for wavelength options
- 8 **RECEIVER REDUNDANCY (Basic configuration A or B only)**
 1 Not redundant
 2 RX Redundant
- 9 **CWDM/DWDM Mux/DeMux or WDM**
 (For a 1X2 Mux or WDM use positions 9 & 11)
 10 **CWDM or DWDM DeMux Downstream Wavelength # 1**
 11 **CWDM or DWDM DeMux Downstream Wavelength # 2**
 12 **CWDM Mux Upstream Wavelength #1**
 CWDM Mux Upstream Wavelength #2
- 0 = None**
 A = 1271 nm K = 1451 nm W = 1310 nm
 B = 1291 nm L = 1471 nm Y = 1550 nm
 C = 1311 nm M = 1491 nm
 D = 1331 nm N = 1511 nm
 E = 1351 nm P = 1531 nm
 F = 1371 nm R = 1551 nm
 G = 1391 nm T = 1571 nm
 H = 1411 nm U = 1591 nm
 J = 1431 nm V = 1611 nm
- DWDM O-Band: 1270nm to 1370nm (Downstream Only)**
 3 = 1290 nm
 4 = 1291 nm
 5 = 1293 nm
 6 = 1295 nm
- DWDM C-Band: 1531nm to 1570nm (Downstream Only)**
 1 = Channel 21 - 1560.61 nm
 H = Channel 22 - 1559.79 nm
 7 = Channel 24 - 1558.17 nm
 8 = Channel 26 - 1556.56 nm
 9 = Channel 28 - 1554.94 nm
 I = Channel 33 - 1550.92 nm
 Q = Channel 36 - 1548.52 nm
 S = Channel 39 - 1546.12 nm
- 13 **HOUSING TYPE (See Note 1)**
 P = Powder Coated (Complete Station)
 K = Powder Coated (Upgrade kit without housing base)
- 14 **STATUS MONITORING**
 0 = None
 M = Status Monitoring upgradeable (With Bridger switching)
 D = Docsis HMS Transponder
- 15 **CUSTOM**
 0 = None
 2 = Port 1 bypassed, Port 2 forward gain lowered by 10 dB
 5 = 15 dB Slope at 1002 MHz (Fixed Value LEQs)
 A = 15.0 dB Slope at 1002 MHz (Pad Adjustable LEQ's)
 B = 17.2 dB Slope at 1002 MHz (Pad Adjustable LEQ's)
 X = Determined by Product Management

16 **DWDM TRANSMITTER 1 Primary 4:1 or Ports 1 & 3 for 2:1 (X2)**

17 **DWDM TRANSMITTER 2: Secondary 4:1 or Ports 2 & 4 for 2:1 (X2)**

DWDM: ITU Grid: C-Band, 100 GHz Spacing

Blank = No DWDM or Digital Return Transmitters

0 = For a Digital Return Transmitter use "0" for #16 & #17

H = Channel 21 - 1560.61 nm (10.0 mW)

R = Channel 22 - 1559.79 nm (10.0 mW)

J = Channel 23 - 1558.98 nm (10.0 mW)

P = Channel 24 - 1558.17 nm (10.0 mW)

K = Channel 25 - 1557.36 nm (10.0 mW)

C = Channel 26 - 1556.56 nm (10.0 mW)

D = Channel 28 - 1554.94 nm (10.0 mW)

L = Channel 29 - 1554.13 nm (10.0 mW)

E = Channel 30 - 1553.33 nm (10.0 mW)

M = Channel 31 - 1552.52 nm (10.0 mW)

F = Channel 32 - 1551.72 nm (10.0 mW)

N = Channel 33 - 1550.92 nm (10.0 mW)

G = Channel 34 - 1550.12 nm (10.0 mW)

18 **DIGITAL RETURN TRANSMITTER MODULE**

Blank = None

C = 45 MHz, Single RF, Single 1310 nm DFB, 40 km

D = 45 MHz, Single RF, Single 1471 nm CWDM, 80 km

E = 45 MHz, Single RF, Single 1491 nm CWDM, 80 km

F = 45 MHz, Single RF, Single 1511 nm CWDM, 80 km

G = 45 MHz, Single RF, Single 1531 nm CWDM, 80 km

H = 45 MHz, Single RF, Single 1551 nm CWDM, 80 km

J = 45 MHz, Single RF, Single 1571 nm CWDM, 80 km

K = 45 MHz, Single RF, Single 1591 nm CWDM, 80 km

L = 45 MHz, Single RF, Single 1611 nm CWDM, 80 km

B = 45 MHz, Dual RF, Single 1310 nm DFB, 40 km

M = 45 MHz, Dual RF, Single 1591 nm CWDM, 80 km

1 = 85 MHz, Single RF, Single 1310 nm DFB, 40 km

2 = 85 MHz, Single RF, Single 1471 nm CWDM, 80 km

3 = 85 MHz, Single RF, Single 1491 nm CWDM, 80 km

4 = 85 MHz, Single RF, Single 1511 nm CWDM, 80 km

5 = 85 MHz, Single RF, Single 1531 nm CWDM, 80 km

6 = 85 MHz, Single RF, Single 1551 nm CWDM, 80 km

7 = 85 MHz, Single RF, Single 1571 nm CWDM, 80 km

8 = 85 MHz, Single RF, Single 1591 nm CWDM, 80 km

9 = 85 MHz, Single RF, Single 1611 nm CWDM, 80 km

NOTES:

- 1 The ACION 3422 upgrade kit (option # 13 selection K) will include a fully configured optical top housing assembly and the RF module tray. The upgrade Kit will allow field upgrades of legacy ACION 3000 & ACION 3410 nodes or it can be used as a conversion kit to convert an existing SDA RF amplifier into a fully 2X2 segmentable optical node.



ACI Communications, Inc.
23307 66th Avenue South
Kent, WA 98032

Rev T 01-23-2018 Printed in U.S.A.
ACI Communications, Inc. reserves the right to discontinue the manufacture or change specifications without prior notice on any parts illustrated in this data sheet. Registered trademarks are the property of their respective owners