



ASEM- LE



ASEM- BT, UBT, HGD, LGD

## ASEM CISCO 1002 MHz RF UPGRADE MODULES

The ACI ASEM CISCO 1G RF upgrade modules are now offered with the Gallium Nitride (GaN) hybrid technology that allows for 3 dB higher output levels while maintaining the same specifications as the previous stations with the old (GaAs) hybrids. With this increase in the output level capabilities the cable operators are now able to ensure that even the long amplifier spacings will work. The 1002 MHz module can be dropped into 750 or 860 MHz spacing and it comes with the ACI DSIM module for increased signal stability.

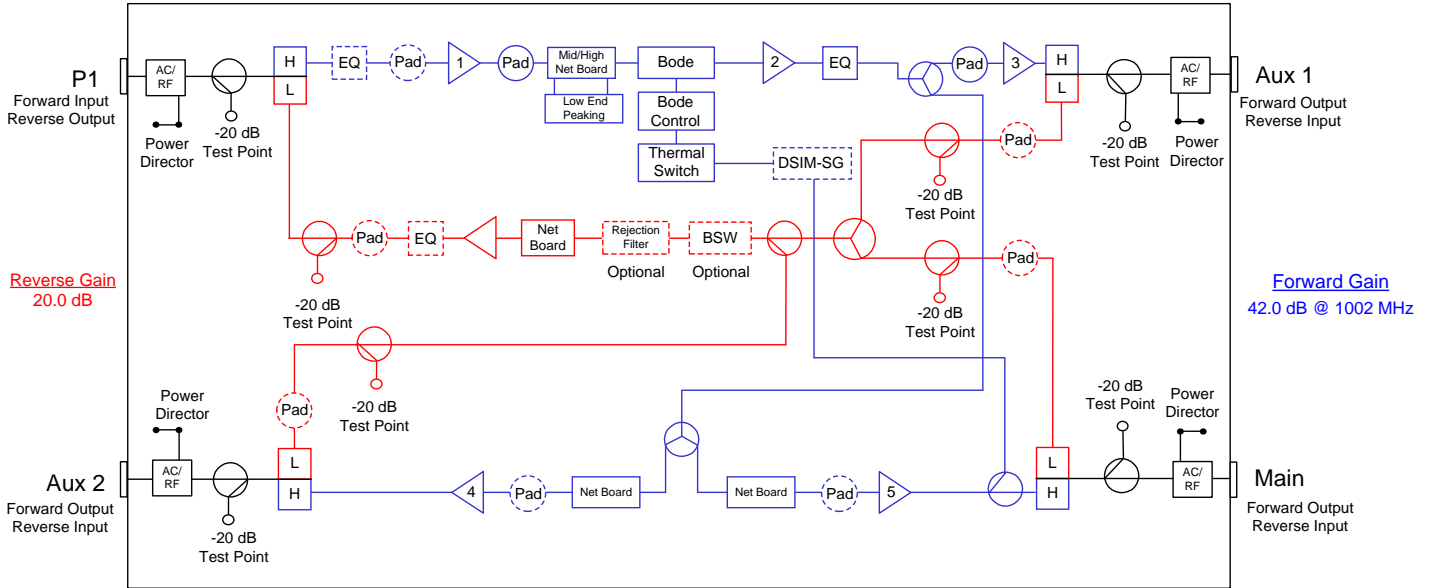
### Features

- ◆ Drop-in 1G replacement RF modules for SA Sys II, III, and GainMaker®
- ◆ 5 to 42, 85 or 204 MHz reverse path
- ◆ Ideal for traditional HFC networks for increased performance & reliability
- ◆ Ideal for fiber deep networks with the extended reach of the amplifiers
- ◆ Lower power consumption than the OEM amplifiers
- ◆ Increased reliability with higher surge protection in the GaN hybrids
- ◆ Pad Adjustable EQs & REQs
- ◆ Automatic Gain Control with the patented DSIM-SG
- ◆ Up to 3 dB higher output levels with same distortion performance with GaN Hybrids

# BLOCK DIAGRAM

## ASEM-Balanced Triple

### Balanced Triple BT 1002 MHz GaN Amplifier Block Diagram

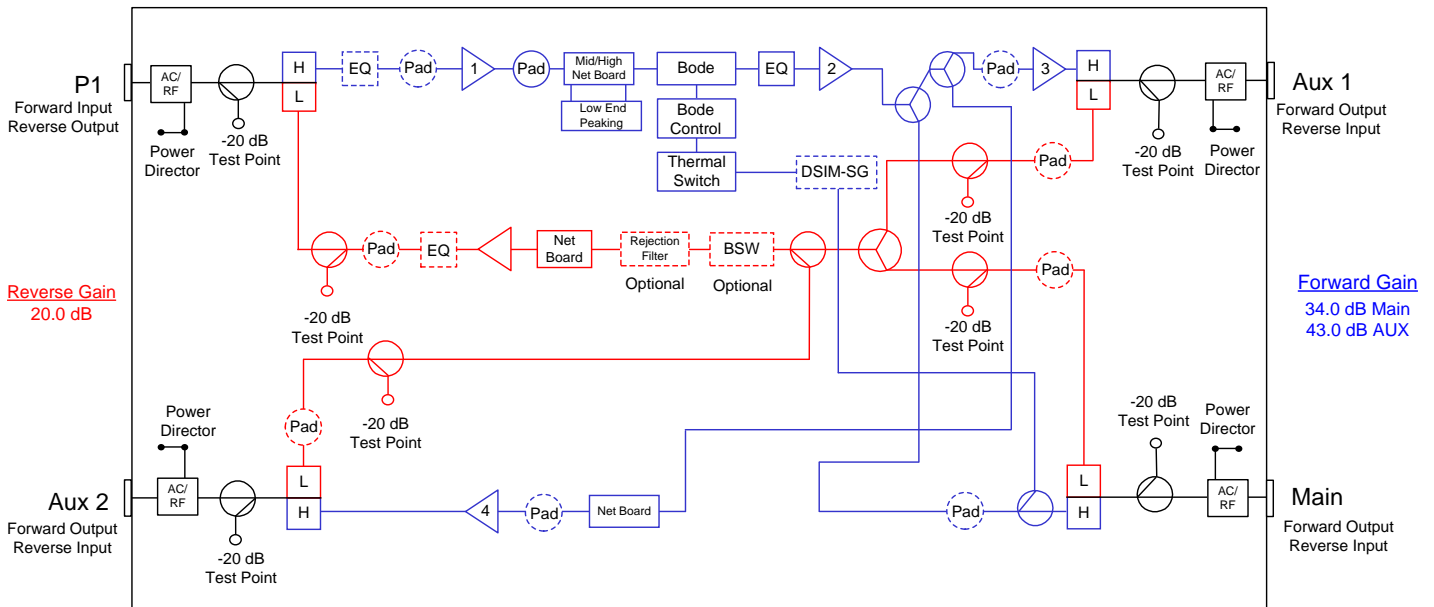


Note:

1. Forward gain stated at 1002 MHz with AGC. Reverse gain stated at 40 MHz.
2. The high gain options is only offered in the GaN hybrid configurations

## ASEM-Unbalanced Triple

### Unbalanced Triple UBT 1002 MHz GaN Amplifier Block Diagram

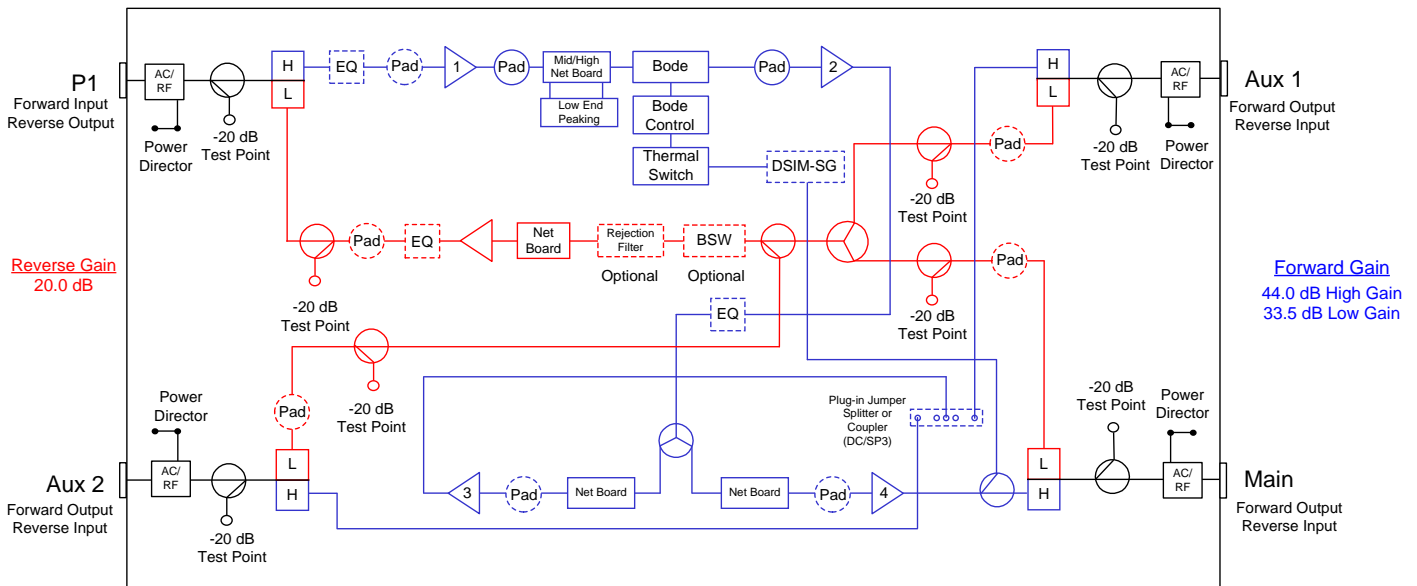


Note:

1. Forward gain stated at 1002 MHz with AGC. Reverse gain stated at 40 MHz.
2. The high gain options is only offered in the GaN hybrid configurations

## ASEM-High and Low Gain Dual

### High & Low Gain Dual (LGD & HGD) 1002 MHz GaN Amplifier Block Diagram

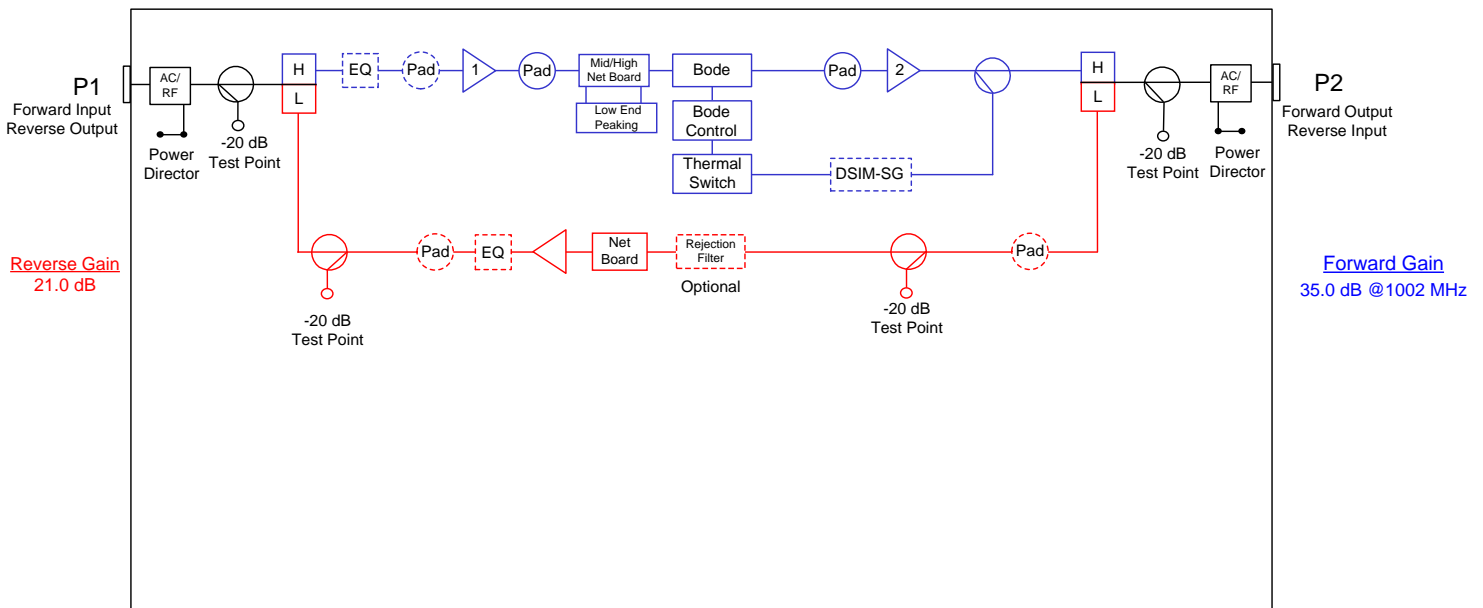


Note:

1. Forward gain stated at 1002 MHz with AGC. Reverse gain stated at 40 MHz.
2. The high gain options is only offered in the GaN hybrid configurations

## ASEM-One Output Line Extender

### Line Extender (LE) 1002 MHz GaN Amplifier Block Diagram



Note:

1. Forward gain stated at 1002 MHz with AGC. Reverse gain stated at 40 MHz.
2. The high gain options is only offered in the GaN hybrid configurations

# STATION SPECIFICATIONS 42/53 MHz Split

STATION PARAMETERS: 1002 MHz 42-53 MHz Split			ASEM CISCO GainMaker RF Modules 1002 MHz With GaN Hybrids						
		CONDITIONS	UNITS	SPECIFICATIONS					
Housing passband			MHz	5 to 1002					
Max AC current		Continuous	Amps	15					
Max AC current		Surge	Amps	25					
Hum modulation		Time domain @ rated current above	-dBc	65 @ 5-42 MHz 70 @ 54-1002 MHz					
Return loss		Any port, worst case	dB	16.0					
<b>Test Points</b>									
Frequency range			MHz	5 to 42 (Reverse) / 54 to 1002 (Forward)					
Test point type		Directional coupler	N / A						
Test point level		Forward & reverse	-dB	20.0					
Test point accuracy		Forward & reverse	±dB	0.75					
<b>Station Slope</b>									
Internal Slope (Tilt)		± 0.5 dB	dB	BT	UBT	HGD	LGD	LE	
Slope control type		Cable equalizers	dB	Plug-in Pad Adjustable EQ's					
Slope control range		Includes cable equivalent	dB	-9.0 to +18					
Slope control steps		Equalizer value steps	dB	1.0					
<b>Station Group Delay</b>									
Group delay		Channel 2 (Std)	nSec / 3.58 MHz	40					
Group delay		Channel 3		16					
Group delay		Channel 4		10					
Group delay		Channel 5 & >		3					
<b>AGC</b>									
Pilot Channel Type			N / A	DSIM-SG Single Pilot Channel AGC NTSC Analog or QAM					
Compensation Range			dB	System compensation input change ± 5.5 @ 1002 MHz					
Accuracy			±dB	0.5					
Nominal loss		@ 77 °F (25 °C)	dB	6.25					
Center frequency bandwidth				6 (MHz)					
<b>Configuration</b>									
				BT	UBT	HGD	LGD	LE	
<b>Operational Specifications</b>									
Station passband			MHz	54 to 1002					
Station flatness		Normalized w / 0 dB slope	±dB	0.5	0.5	0.6	0.5	0.5	
Gain - With AGC		Minimum @ 1002 MHz (Temperature stabilized)	dB	42.0	34.0	43.0	44.0	33.5	35.0
550 MHz analog channel loading, 79 channels +450 MHz digital channel loading, 256 QAM at -6 dBc relative to its associated visual carrier									
<b>Station Output Levels</b>									
				BT	UBT		HGD	LGD	LE
					Main	AUX			
Output Level @...			dBmV	55.0	44.0	53.0	55.0	53.0	53.0
870 MHz				52.9	41.9	50.9	52.9	50.9	50.9
750 MHz				51.0	40.0	49.0	51.0	49.0	49.0
650 MHz				49.4	38.4	47.4	49.4	47.4	47.4
550 MHz				47.9	36.9	45.9	47.9	45.9	45.9
54 MHz				40.0	29.0	38.0	40.0	38.0	38.0
Reference Output Slope (Tilt)		54-1002 MHz	dB	15.0					
<b>Station Noise Figure</b>									
Station noise figure (w / EQ)		Max	dB	9.0	9.5		9.2	10.5	9.0
<b>Station Distortions (Worse Case)</b>									
					Main	AUX			
Composite Triple Beat			-dBc	68	78	72	70	71	71
Cross Modulation			-dBc	63	72	65	66	68	68
Composite Second Order High Side			-dBc	68	76	70	68	70	70

# REVERSE SPECIFICATIONS 42/53 MHz Split

REVERSE SPECTRUM: 42-53 MHz Split								
REVERSE - CHANNEL LOADING - Typically 23 each, 1.5 MHz wide QPSK channels.								
Reverse - General		CONDITIONS	UNITS	SPECIFICATION				
	Station passband		MHZ	5 to 42				
	Station flatness	Normalized w / 0 dB slope	±dB	0.5				
Reverse - Station Gain				BT	UBT	HGD	LGD	LE
	Gain	Minimum	dB	20.0	20.0	20.0	20.0	21.0
	Gain control type			Plug-in pads				
	Gain control range		dB	12.0				
	Gain control steps	Pad value steps	dB	0.5				
Reverse - Station Slope								
	Slope control type	Cable equalizers	N / A	Plug-in EQs				
	Slope control range		dB	0 to 12.0				
	Slope control steps	Equalizer value steps	dB	1.0				
Reverse - Station Output Levels								
	@ Forward input port	Average	dBmV	35.0				
Reverse - Station Distortions								
	Composite Second Order	6 channel loading	-dBc	82.0				
	Composite Tripe Beat			90.0				
	Cross Modulation			80.0				
Reverse - Station Group Delay								
	Group delay	5 MHz	nSec / 1.5 MHz	36				
	Group delay	7 MHz		16				
	Group delay	10 MHz		4				
	Group delay	35 MHz		10				
	Group delay	38.5 MHz		25				
Reverse - Noise Figure				BT	UBT	HGD	LGD	LE
	Station noise figure (w / EQ)	Max	dB	15.0	15.0	15.0	15.0	10.0
Power Requirements:								
Configuration				BT	UBT	HGD	LGD	LE
	With DSIM-SG	Includes reverse (Worst case)	W	53.6	52.8	46.5	40.5	29.2
Environmental								
	Operating temperature		°F (°C)	-40 to +140 (-40 to +60)				

# STATION SPECIFICATIONS 85/105 MHz Split

STATION PARAMETERS: 1002 MHz 85-105 MHz Split			ASEM CISCO GainMaker RF Modules 1002 MHz With GaN Hybrids						
		CONDITIONS	UNITS	SPECIFICATIONS					
Housing passband			MHz	5 to 1002					
Max AC current		Continuous	Amps	15					
Max AC current		Surge	Amps	25					
Hum modulation		Time domain @ rated current above	-dBc	65 @ 5-85 MHz 70 @ 105-1002 MHz					
Return loss		Any port, worst case	dB	16.0					
<b>Test Points</b>									
Frequency range			MHz	5 to 85 (Reverse) / 105 to 1002 (Forward)					
Test point type		Directional coupler	N / A						
Test point level		Forward & reverse	-dB	20.0					
Test point accuracy		Forward & reverse	±dB	0.75					
<b>Station Slope</b>									
Internal Slope (Tilt)		± 0.5 dB	dB	BT	UBT	HGD	LGD	LE	
Slope control type		Cable equalizers	dB	Plug-in Pad Adjustable EQ's					
Slope control range		Includes cable equivalent	dB	-9.0 to +18					
Slope control steps		Equalizer value steps	dB	1.0					
<b>Station Group Delay</b>									
109.25 MHz				25					
115.25 MHz			nSec / 3.58 MHz	16					
121.25 MHz				10					
127.25 MHz				3					
<b>AGC</b>									
Pilot Channel Type			N / A	DSIM-SG Single Pilot Channel AGC NTSC Analog or QAM					
Compensation Range			dB	System compensation input change ± 5.5 @ 1002 MHz					
Accuracy			±dB	0.5					
Nominal loss		@ 77 °F (25 °C)	dB	6.25					
Center frequency bandwidth				6 (MHz)					
<b>Configuration</b>									
				BT	UBT	HGD	LGD	LE	
<b>Operational Specifications</b>									
Station passband			MHz	85 to 1002					
Station flatness		Normalized w / 0 dB slope	±dB	0.5	0.5	0.6	0.5	0.5	
Gain - With AGC		Minimum @ 1002 MHz (Temperature stabilized)	dB	42.0	34.0	43.0	44.0	33.5	35.0
550 MHz analog channel loading, 71 channels +450 MHz digital channel loading, 256 QAM at -6 dBc relative to its associated visual carrier									
<b>Station Output Levels</b>									
				BT	UBT		HGD	LGD	LE
					Main	AUX			
Output Level @...									
1002 MHz			dBmV	55.0	44.0	53.0	55.0	53.0	53.0
870 MHz				52.9	41.9	50.9	52.9	50.9	50.9
750 MHz				51.1	40.1	49.1	51.1	49.1	49.0
650 MHz				49.5	38.5	47.5	49.5	47.5	47.4
550 MHz				47.9	36.9	45.9	47.9	45.9	45.9
105 MHz				41.0	30.0	39.0	41.0	39.0	38.0
Reference Output Slope (Tilt)		105-1002 MHz	dB	14.0					
<b>Station Noise Figure</b>									
Station noise figure (w / EQ)		Max	dB	9.0	9.5		9.2	10.5	9.0
<b>Station Distortions (Worse Case)</b>									
					Main	AUX			
Composite Triple Beat			-dBc	68	78	72	70	71	71
Cross Modulation			-dBc	63	72	65	66	68	68
Composite Second Order High Side			-dBc	68	76	70	68	70	70

# REVERSE SPECIFICATIONS 85/105 MHz Split

REVERSE SPECTRUM: 85-105 MHz Split								
REVERSE - CHANNEL LOADING - Typically 23 each, 1.5 MHz wide QPSK channels.								
Reverse - General		CONDITIONS	UNITS	SPECIFICATION				
	Station passband		MHZ	5 to 85				
	Station flatness	Normalized w / 0 dB slope	±dB	0.5				
Reverse - Station Gain				BT	UBT	HGD	LGD	LE
	Gain	Minimum	dB	20.0	20.0	20.0	20.0	21.0
	Gain control type			Plug-in pads				
	Gain control range		dB	12.0				
	Gain control steps	Pad value steps	dB	0.5				
Reverse - Station Slope								
	Slope control type	Cable equalizers	N / A	Plug-in EQs				
	Slope control range		dB	0 to 12.0				
	Slope control steps	Equalizer value steps	dB	1.0				
Reverse - Station Output Levels								
	@ Forward input port	Average	dBmV	35.0				
Reverse - Station Distortions								
	Composite Second Order	6 channel loading	-dBc	82.0				
	Composite Tripe Beat			90.0				
	Cross Modulation			80.0				
Reverse - Station Group Delay								
	Group delay	5 MHz	nSec / 1.5 MHz	36				
	Group delay	7 MHz		16				
	Group delay	10 MHz		4				
	Group delay	80.5 MHz		10				
	Group delay	83.5 MHz		25				
Reverse - Noise Figure				BT	UBT	HGD	LGD	LE
	Station noise figure (w / EQ)	Max	dB	15.0	15.0	15.0	15.0	10.0
Power Requirements:								
Configuration				BT	UBT	HGD	LGD	LE
	With DSIM-SG	Includes reverse (Worst case)	W	53.6	52.8	46.5	40.5	29.2
Environmental								
	Operating temperature		°F (°C)	-40 to +140 (-40 to +60)				

## Accessory Ordering Information:

The ASEM Cisco ordering matrix provides the part number information to order the configured stations. This page contains the ordering information for the required accessories that will be needed to make the stations functional in the field or the optional accessories that can be ordered separately.

### Required Accessories

Description	Part Numbers (Where XX.X = dB value)
JXP style attenuator pads <ul style="list-style-type: none"> <li>• 1 Required for forward input</li> <li>• 1 Required for reverse output</li> <li>• 1 Required for forward input Equalizer</li> <li>• 1 Required for reverse output Equalizer</li> </ul>	JXP138-XX (0 to 20 dB in 0.5 dB steps)

### Optional Accessories

Description	Part Numbers
Digital Station Intelligence Manager - Single Pilot AGC Module (Analog or Digital)	DSIM-SG-MDL-02
Digital Station Intelligence Manager -Controller	DSCT-xxx-yyy xxx = Pilot Channel Number yyy = Channel Type IRC = Analog IRC Spacing /DIG = Digital / QAM
DSIM Bluetooth Dongle Apple iOS or android	DSIM-DONGLE-02
Cable assembly DSIM adaptor to connect controller	240330-01
Pad Adjustable Equalizer JXP Platform 0-18 dB	AEQDA1G
Pad Adjustable Cable Equivalent Equalizers JXP Platform 0-9 dB	ACEQ1G
Pad Adjustable Reverse Equalizers 5-42, 85 and 204 MHz JXP Platform 0-12 dB (5 Pin)	AREQ42 AREQ85 AREQ204
Reverse Rejection Filter 14 MHz	RPRFLTR-14
Reverse Rejection Filter 8 MHz	RPRFLTR-8
Reverse Rejection Filter by-pass	RPRFLTR-JMP
Cisco HGD & LGD DC/SP3 For AUX 1 & 2	SDA1G-SPLTR3.5 SDA1G-DC7 SDA1G-DC10 SDA1G-DC12
Test Probe (5.5" Long)	100685-01
Test Probe (1.57" / 4 cm Long)	TP-7504
Seizure 15 Amp Black Cisco LE (QTY 2)	120594-02
Seizure 15 Amp White Cisco HGD, LGD, BT, UBT (QTY 4)	120595-04
Conversion Kit, 85/105 ASEM CISCO HGD	120582-01
Conversion Kit, 85/105 ASEM CISCO LGD	120583-01
Conversion Kit, 85/105 ASEM CISCO BT	120584-01
Conversion Kit, 85/105 ASEM CISCO UBT	120585-01
Conversion Kit, 85/105 ASEM CISCO LE	120581-01



# Ordering Matrix

## ASEM Cisco Product Configuration Worksheet

Customer: \_\_\_\_\_

Created By: \_\_\_\_\_ Order Date: \_\_\_\_\_

### ORDERING MATRIX

July 26, 2018

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14
PART NUMBER	A	G	M	-										

5,6   **STATION TYPE**

LE = 1 Output LE

LD = 3 Output Bridger Low Gain (LGD)

HD = 3 Output Bridger High Gain (HGD)

BT = High Gain Balanced Triple (BT)

UT = High Gain Unbalanced Triple (UBT)

7  **BANDWIDTH FREQUENCY**

1 = 1002 MHz

8,9   **STATION GAIN (Forward)**

For 0.5 dB gain values, use the first two digits listed in the part number

Frequency Amplifier Model	54-1002 MHz				
	LE	LD	HD	BT	UT
Max gain with DSIM-SG	35.0	33.5	44.0	42.0	34.0
Max gain w/o AGC	41.5	39.5	44.0	42.0	40.0

10  **FORWARD GAIN CONTROL TYPE**

M = Manual (No AGC)

D = Digital Station Intelligence Manger (DSIM-SG)

11  H **STATION SLOPE**

	42/54	85/105	204/258
H =	15.0	14.0	13.0

12  **BANDPASS SPLIT**

4 = 42/53

8 = 85/105

2 = 204/258

13  **STATION GAIN (Reverse)**

R = 21.0 dB min (LE)

T = 20.0 dB min (LD, HD, BT & UT)

14  **CUSTOM OPTIONS**

0 = NONE

X = Determined by Product Management

Generic Order Form: Not all configurations are available



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