



ASEM- LE



ASEM- BT, UBT, HGD, LGD

ASEM™ Replacement Upgrade RF Modules 1002 MHz For SA®/Cisco® GainMaker®

The ACI ASEM 1G replacement upgrade RF modules for the SA®/Cisco® GainMaker® 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 patented ACI DSIM module for increased signal stability.

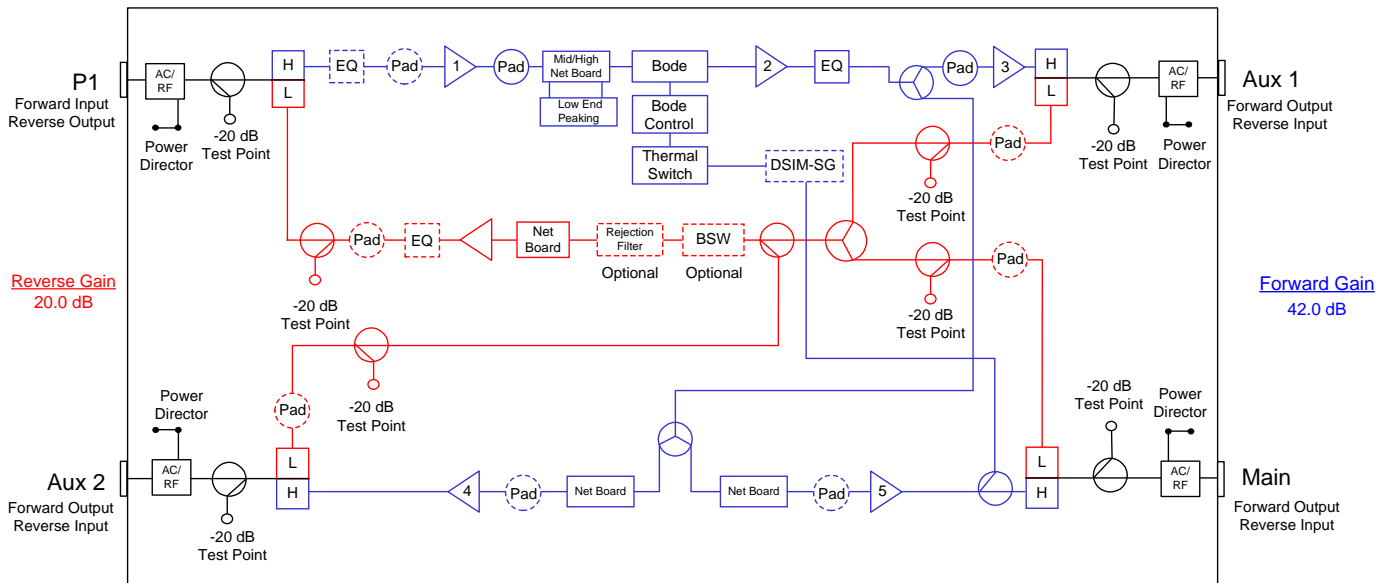
Features

- ◆ 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 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 DIAGRAMS

ASEM-Balanced Triple

AGM-BT Balanced Triple 1002 MHz GaN Amplifier Block Diagram

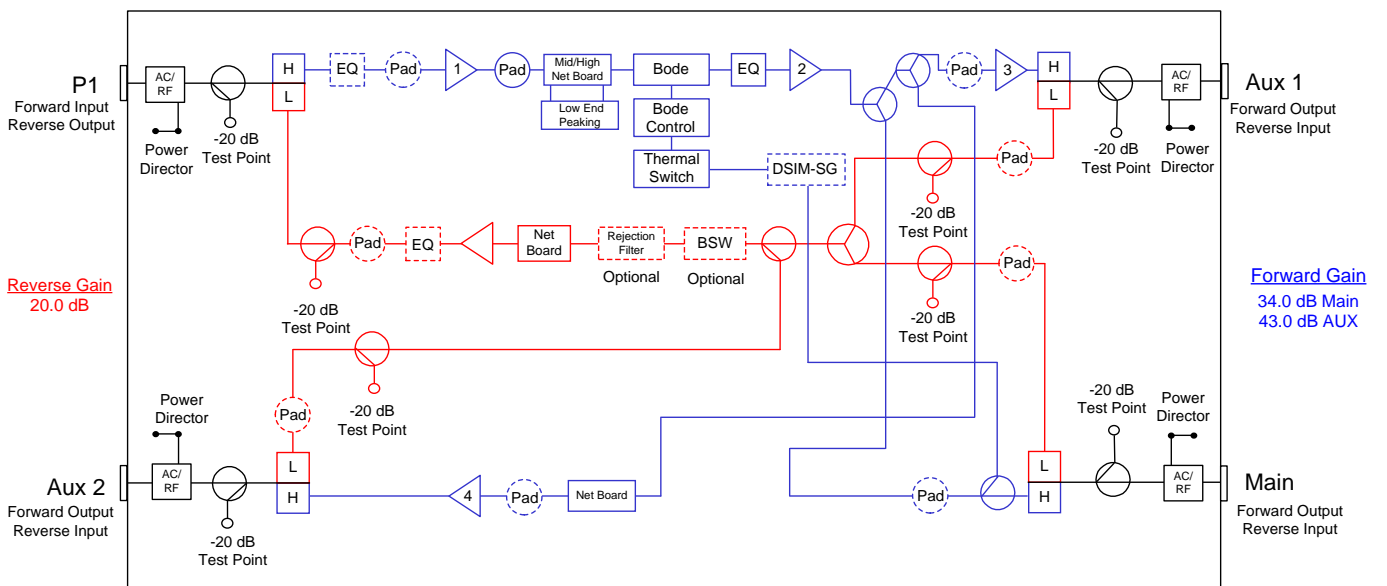


Notes:

1. Forward gain stated at 1002 MHz with AGC.
2. Reverse gain stated at 42, 85 or 204 MHz depending on the selected frequency split.

ASEM-Unbalanced Triple

AGM-UT Unbalanced Triple 1002 MHz GaN Amplifier Block Diagram

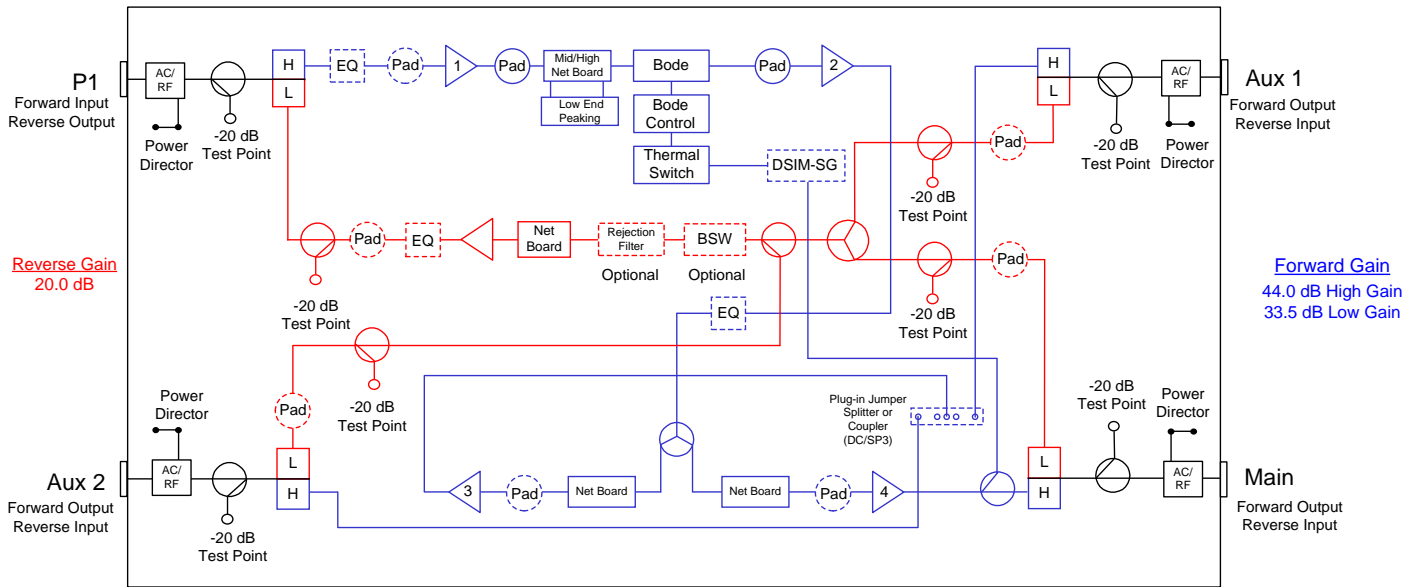


Notes:

1. Forward gain stated at 1002 MHz with AGC.
2. Reverse gain stated at 42, 85 or 204 MHz depending on the selected frequency split.

ASEM-High and Low Gain Dual

AGM-LD & AGM-HD High & Low Gain Dual 1002 MHz GaN Amplifier Block Diagram

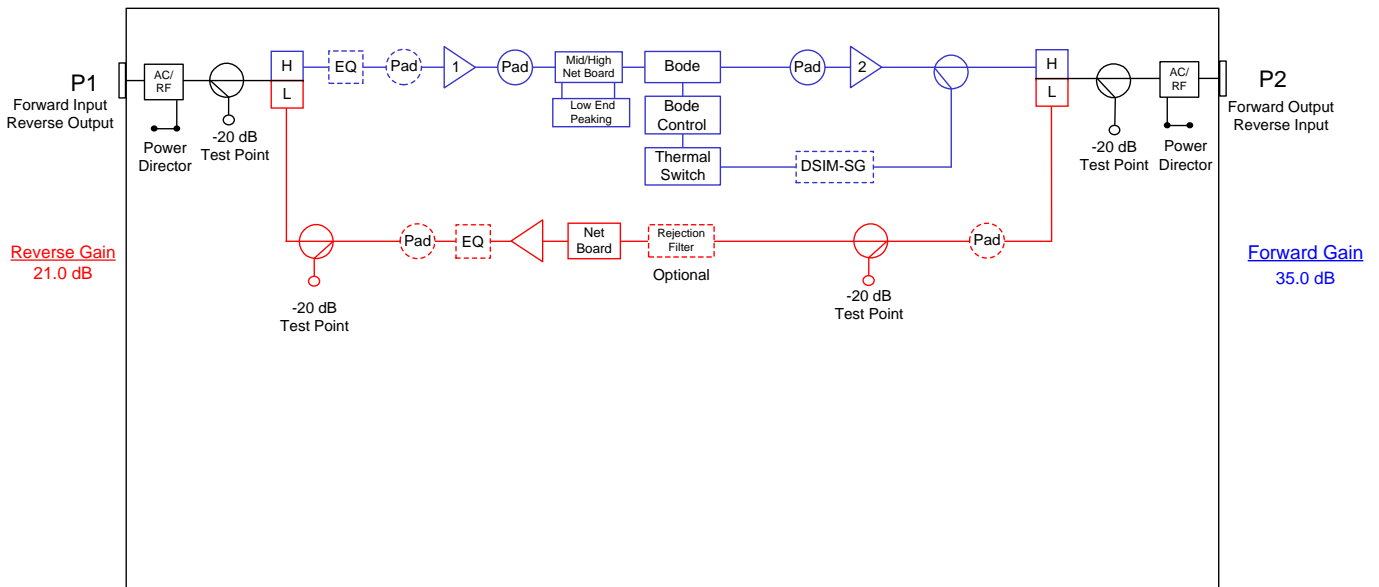


Notes:

1. Forward gain stated at 1002 MHz with AGC.
2. Reverse gain stated at 42, 85 or 204 MHz depending on the selected frequency split.

ASEM-One Output Line Extender

AGM-LE Line Extender 1002 MHz GaN Amplifier Block Diagram



Notes:

1. Forward gain stated at 1002 MHz with AGC.
2. Reverse gain stated at 42, 85 or 204 MHz depending on the selected frequency split.

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					
Test Points									
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					
Station Slope				BT	UBT	HGD	LGD	LE	
Internal Slope (Tilt)		± 0.5 dB	dB	15.0	15.0	15.0	9.5	15.0	
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					
Station Group Delay									
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					
AGC									
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)					
Configuration				BT	UBT	HGD	LGD	LE	
Operational Specifications					Main	AIX			
Station passband			MHz	54 to 1002					
Station flatness		Normalized w / 0 dB slope	±dB	0.5	0.5	0.6	0.5	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									
Station Output Levels				BT	UBT		HGD	LGD	LE
					Main	AUX			
Output Level @...	1002 MHz	dBmV	55.0	44.0	53.0	55.0	53.0	52.0	
	870 MHz		52.9	41.9	50.9	52.9	50.9	49.9	
	750 MHz		51.0	40.0	49.0	51.0	49.0	48.0	
	650 MHz		49.4	38.4	47.4	49.4	47.4	46.4	
	550 MHz		47.9	36.9	45.9	47.9	45.9	44.9	
	54 MHz		40.0	29.0	38.0	40.0	38.0	37.0	
Reference Output Slope (Tilt)	54-1002 MHz	dB	15.0						
Station Noise Figure									
Station noise figure (w / EQ)		Max	dB	9.0	9.5		9.2	10.5	9.0
Station Distortions (Worse Case)									
Composite Triple Beat		-dBc	68	78	72	70	71	73	
Cross Modulation		-dBc	63	72	65	66	68	70	
Composite Second Order High Side		-dBc	68	76	70	68	70	71	

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

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					
Test Points								
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					
Station Slope								
			BT	UBT	HGD	LGD	LE	
Internal Slope (Tilt)	± 0.5 dB	dB	14.0	14.0	14.0	8.5	14.0	
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					
Station Group Delay								
Group delay	109.25 MHz	nSec / 3.58 MHz	25					
Group delay	115.25 MHz		16					
Group delay	121.25 MHz		10					
Group delay	127.25 MHz		3					
AGC								
DSIM-SG Single Pilot Channel AGC								
Pilot Channel Type		N / A	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)					
Configuration								
			BT	UBT	HGD	LGD	LE	
Operational Specifications								
			Main	AUX				
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, 74 channels +450 MHz digital channel loading, 256 QAM at -6 dBc relative to its associated visual carrier								
Station Output Levels								
			BT	UBT		HGD	LGD	LE
				Main	AUX			
Output Level @...	1002 MHz	dBmV	55.0	44.0	53.0	55.0	53.0	52.0
	870 MHz		52.9	41.9	50.9	52.9	50.9	49.9
	750 MHz		51.1	40.1	49.1	51.1	49.1	48.1
	650 MHz		49.5	38.5	47.5	49.5	47.5	46.5
	550 MHz		47.9	36.9	45.9	47.9	45.9	44.9
	105 MHz		41.0	30.0	39.0	41.0	39.0	38.0
Reference Output Slope (Tilt)	105-1002 MHz	dB	14.0					
Station Noise Figure								
Station noise figure (w / EQ)	Max	dB	9.0	9.5		9.2	10.5	9.0
Station Distortions (Worse Case)								
			Main	AUX				
Composite Triple Beat		-dBc	68	78	72	70	71	73
Cross Modulation		-dBc	63	72	65	66	68	70
Composite Second Order High Side		-dBc	68	76	70	68	70	71

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		12 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

STATION SPECIFICATIONS 204/258 MHz Split

STATION PARAMETERS: 1002 MHz 204-258 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 @ 5-204 MHz 70 @ 258-1002 MHz					
Return loss	Any port, worst case	dB	16.0					
Test Points								
Frequency range		MHz	5 to 204 (Reverse) / 258 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					
Station Slope			BT	UBT	HGD	LGD	LE	
Internal Slope (Tilt)	± 0.5 dB	dB	11.5	11.5	11.5	6.0	11.5	
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					
Station Group Delay								
Group delay	Channel 30	nSec / 3.58 MHz	30					
Group delay	Channel 31		16					
Group delay	Channel 32		10					
Group delay	Channel 33 & up		3					
AGC								
Pilot Channel Type		N / A	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)					
Configuration			BT	UBT	HGD	LGD	LE	
Operational Specifications				Main	AUX			
Station passband		MHz	258 to 1002					
Station flatness	Normalized w / 0 dB slope	±dB	0.5	0.5	0.6	0.5	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
292 MHz analog channel loading, 58 channels + 660 MHz digital channel loading, 256 QAM at -6 dBc relative to its associated visual carrier								
Station Output Levels			BT	UBT		HGD	LGD	LE
				Main	AUX			
Output Level @...	1002 MHz	dBmV	55.0	44.0	53.0	55.0	53.0	52.0
	870 MHz		53.0	42.0	51.0	53.0	51.0	50.0
	750 MHz		51.1	40.1	49.1	51.1	49.1	48.1
	650 MHz		49.6	38.6	47.6	49.6	47.6	46.6
	550 MHz		48.0	37.0	46.0	48.0	46.0	45.0
	258 MHz		43.5	32.5	41.5	43.5	41.5	40.5
Reference Output Slope (Tilt)	258-1002 MHz	dB	11.5					
Station Noise Figure								
Station noise figure (w / EQ)	Max	dB	9.0	9.5		9.2	10.5	9.0
Station Distortions (Worse Case)				Main	AUX			
Composite Triple Beat		-dBc	70	79	75	72	73	75
Cross Modulation		-dBc	65	76	67	68	70	72
Composite Second Order High Side		-dBc	70	78	72	70	72	73

REVERSE SPECIFICATIONS 204/258 MHz Split

REVERSE SPECTRUM: 204-258 MHz Split								
REVERSE - CHANNEL LOADING - Typically 23 each, 1.5 MHz wide QPSK channels.								
Reverse - General		CONDITIONS	UNITS	SPECIFICATION				
Station passband			MHZ	5 to 204				
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		31 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		199 MHz		10				
Group delay		202.5 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 & ENVIRONMENTAL

POWER & ENVIRONMENTAL								
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
AC Voltage								
Input ranges		VAC		40-90				
Current Draw (with AGC)				BT	UBT	HGD	LGD	LE
@ 40 VAC	Maximum	A		1.38	1.26	1.25	1.31	0.84
@ 50 VAC		A		1.15	1.05	1.06	1.06	0.69
@ 60 VAC		A		1.02	0.95	0.91	0.87	0.61
@ 70 VAC		A		0.94	0.85	0.87	0.76	0.57
@ 80 VAC		A		0.87	0.80	0.82	0.67	0.53
@ 90 VAC		A		0.82	0.77	0.78	0.61	0.48
Weight				BT	UBT	HGD	LGD	LE
Weight		lbs. (kg)		6.6 (3.0)	6.6 (3.0)	6.6 (3.0)	6.6 (3.0)	4.6 (2.1)
Environmental								
Operating temperature		°F (°C)		-40 to +140 (-40 to +60)				

Accessory Ordering Information:

The 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"> • 1 Required for forward input • 1 Required for reverse output • 1 Required for forward input Equalizer • 1 Required for reverse output Equalizer 	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 LE	120581-01
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
589643	Cisco GainMaker Trunk Housing
593090	Cisco GainMaker Line Extender Housing

Ordering Matrix

ASEM For SA®/Cisco® GainMaker® Product Configuration Worksheet

Customer: _____

Created By: _____ Order Date: _____

ORDERING MATRIX April 6, 2021

	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

	54-1002 MHz				
Frequency					
Amplifier Model	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	Type
H =	15.0	14.0	11.5	LE, HD, BT UT
H =	9.5	8.5	6.0	LD

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
C = Complete Station With Housing
X = Determined by Product Management

Generic Order Form: Not all configurations are available

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

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