



ASEM- LE



ASEM- BT & HGD

## ASEM™ Complete Stations & RF Modules 1218 MHz For SA®/Cisco® GainMaker®

The ACI ASEM 1.2G RF upgrade modules that are compatible to the GainMaker® amplifiers are designed to work up to a high forward output of 57 dBmV. The return bandwidth split can be easily changed from 42 to 85 or 204 MHz with the use of field conversion kits. ACI's patented DSIM advanced technology keeps both the forward and return signals stable and reliable over extreme temperature swings. Having return band stabilization over temperature has become much more important as return band is increased to 204 MHz. Having the increased return gain of 28 dB enables these amplifiers to drop into existing designs from 750 MHz to 1 GHz.

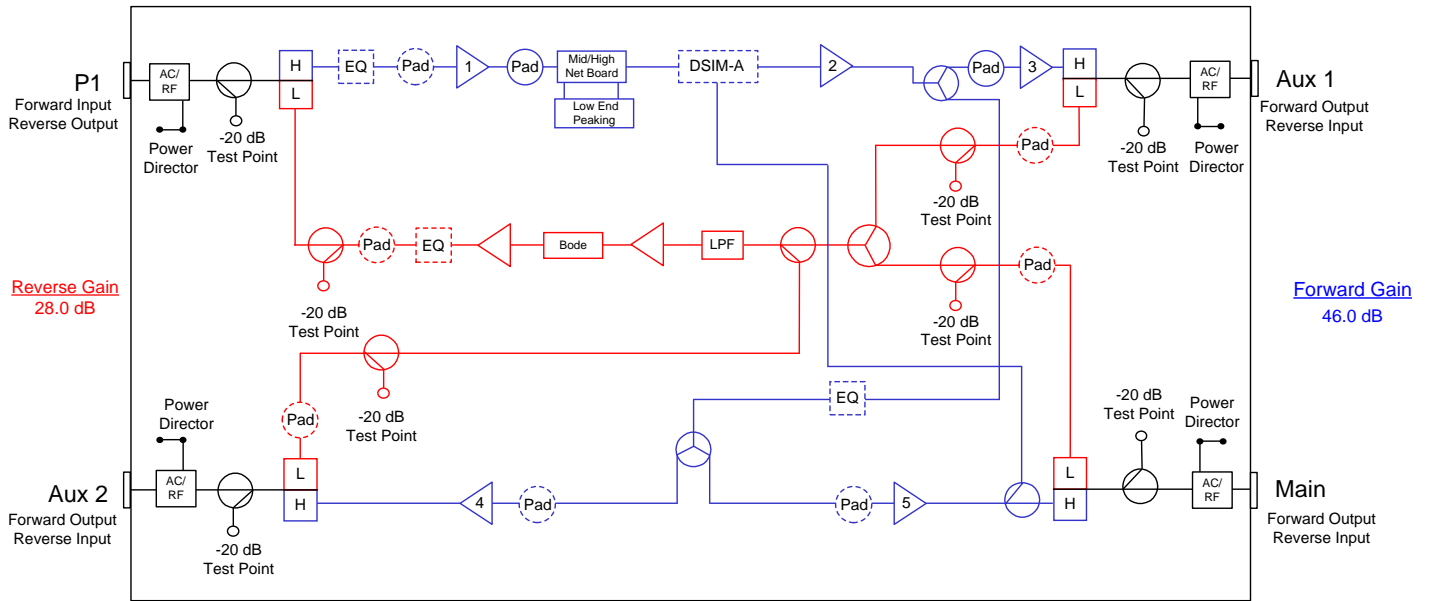
### Features

- ◆ Drop-in 1.2G replacement RF modules for SA Sys II, III, and GainMaker®
- ◆ Easy upgrade to 85/105 or 204/258 MHz return bandwidth.
- ◆ 20.0 dB directional coupler test points
- ◆ 28 dB return gain
- ◆ Complete stations available
- ◆ RoHS compliant
- ◆ Patented DSIM® Technology (Programmable AGC)
- ◆ Increased reliability with higher surge protection
- ◆ DSIM controlled return band AGC
- ◆ Pad adjustable forward and return EQ's
- ◆ DSIM Android & Apple iOS setup applications

## BLOCK DIAGRAMS

### ASEM-Balanced Triple

Balanced Triple (BT) 1218 MHz GaN Amplifier Block Diagram

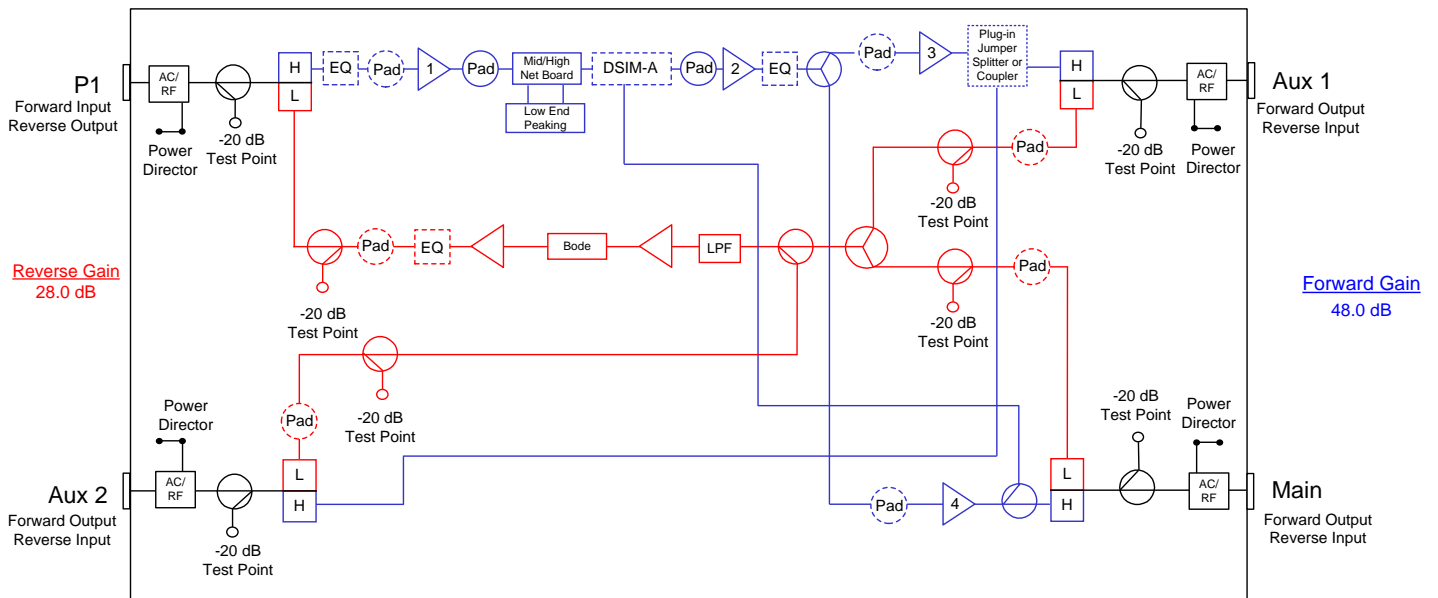


Note:

1. Forward gain stated at 1218 MHz with AGC. Reverse gain stated at 42, 85 or 204 MHz.

### ASEM-High Gain Dual

High Dual (HGD) 1218 MHz GaN Amplifier Block Diagram

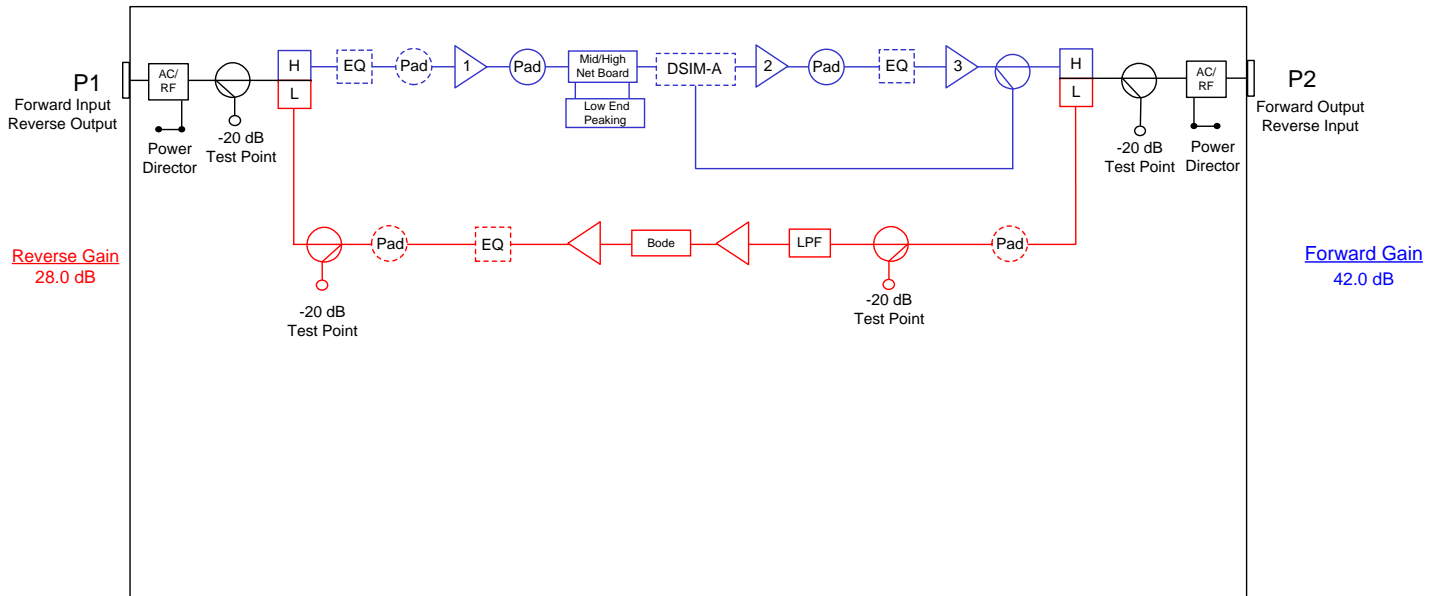


Note:

1. Forward gain stated at 1218 MHz with AGC. Reverse gain stated at 42, 85 or 204 MHz.

# ASEM-One Output Line Extender

## Line Extender (LE) 1218 MHz GaN Amplifier Block Diagram



**Note:**

1. Forward gain stated at 1218 MHz with AGC. Reverse gain stated at 42, 85 or 204 MHz.

# STATION SPECIFICATIONS 42/53 MHz Split

STATION PARAMETERS:		1218 MHz 42-53 MHz Split		ASEM FOR CISCO GainMaker RF Modules 1218 MHz		
		CONDITIONS	UNITS	SPECIFICATIONS		
Housing passband			MHz	5 to 1218		
Max AC current		Continuous	Amps	15		
Max AC current		Surge	Amps	25		
Hum modulation		Time domain @ rated current above	-dBc	65 @ 5-42 MHz 65 @ 54-1218 MHz		
Return loss		Any port, worst case	dB	16.0		
<b>Test Points</b>						
Frequency range			MHz	5 to 42 (Reverse) / 54 to 1218 (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>						
Operational Slope (Tilt)		@ 54 / 550 / 1218 MHz	dB	BT	HGD	LE
				0 / 8.1 / 19.0	0 / 8.1 / 19.0	0 / 8.1 / 19.0
Slope control type		Cable equalizers	dB	Plug-in Pad Adjustable EQ's		
Slope control range		Includes cable equivalent	dB	-12 to +22		
Slope control steps		Equalizer value steps	dB	1.0		
<b>Station Group Delay</b>						
Group delay		Channel 2 (Std)		37		
Group delay		Channel 3	nSec /	16		
Group delay		Channel 4	3.58 MHz	10		
Group delay		Channel 5 & >		4		
<b>AGC</b>						
Pilot Channel Type		Up to 1002 MHz	N / A	DSIM-A Single Pilot Channel AGC NTSC Analog or QAM		
Compensation Range			dB	System compensation input change +4.0/-8.0 @ 1218 MHz		
Accuracy			±dB	0.5		
Nominal loss		@ 77 °F (25 °C)	dB	6.25		
<b>Configuration</b>						
				BT	HGD	LE
<b>Operational Specifications</b>						
Station passband			MHz	54 to 1218		
Station flatness		Normalized w / 0 dB slope	±dB	0.50	0.50	0.30
Gain - With DSIM AGC		+1.0 / -0 @ 1218 MHz	dB	46.0	48.0	42.0
496 MHz analog channel loading, 79 channels + 660 MHz digital channel loading, 256 QAM at -6 dBc relative to its associated visual carrier						
<b>Station Output Levels</b>						
				BT	HGD	LE
Output Level @...	1218 MHz			57.0	57.0	57.0
	1002 MHz		dBmV	53.5	53.5	53.5
	550 MHz			46.1	46.1	46.1
	54 MHz			38.0	38.0	38.0
Reference Output Slope (Tilt)		54-1218MHz	dB	19.0		
<b>Station Noise Figure</b>						
Station noise figure (w / EQ)		Typ. @ 54 to 1002 MHz		9.0	9.0	9.0
		Typ. @ 1218 MHz	dB	9.5	9.5	10.5
<b>Station Distortions (Worse Case)</b>						
Composite Triple Beat (CTB)			-dBc	67	67	67
Cross Modulation (XMOD)			-dBc	65	65	64
Composite Second Order (CSO -)			-dBc	67	67	67
Composite Second Order (CSO +)			-dBc	67	67	67
MER			-dBc	≥40	≥40	≥40
BER			-dBc	≤ 1 x 10 <sup>-9</sup>	≤ 1 x 10 <sup>-9</sup>	≤ 1 x 10 <sup>-9</sup>

# STATION SPECIFICATIONS 85/105 MHz Split

STATION PARAMETERS:		1218 MHz 85-105 MHz Split		ASEM FOR CISCO GainMaker RF Modules 1218 MHz		
	CONDITIONS	UNITS	SPECIFICATIONS			
Housing passband		MHz	5 to 1218			
Max AC current	Continuous	Amps	15			
Max AC current	Surge	Amps	25			
Hum modulation	Time domain @ rated current above	-dBc	65 @ 5-85 MHz 65 @ 105-1218 MHz			
Return loss	Any port, worst case	dB	16.0			
<b>Test Points</b>						
Frequency range		MHz	5 to 85 (Reverse) / 105 to 1218 (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>						
			BT	HGD	LE	
Operational Slope (Tilt)	@ 105 / 550 / 1218 MHz	dB	0 / 7.2 / 18.0	0 / 7.2 / 18.0	0 / 7.2 / 18.0	
Slope control type	Cable equalizers	dB	Plug-in Pad Adjustable EQ's			
Slope control range	Includes cable equivalent	dB	-12 to +22			
Slope control steps	Equalizer value steps	dB	1.0			
<b>Station Group Delay</b>						
Group delay	Channel A-2	nSec / 3.58 MHz	30			
Group delay	Channel A-1		16			
Group delay	Channel 14		10			
Group delay	Channel 15 & up		3			
<b>AGC</b>						
			DSIM-A Single Pilot Channel AGC			
Pilot Channel Type	Up to 1002 MHz	N / A	NTSC Analog or QAM			
Compensation Range		dB	System compensation input change +4.0/-8.0 @ 1218 MHz			
Accuracy		±dB	0.5			
Nominal loss	@ 77 °F (25 °C)	dB	6.25			
<b>Configuration</b>						
			BT	HGD	LE	
<b>Operational Specifications</b>						
Station passband		MHz	105 to 1218			
Station flatness	Normalized w / 0 dB slope	±dB	0.50	0.50	0.35	
Gain - With DSIM AGC	+1.0 / -0 @ 1218 MHz	dB	46.0	48.0	42.0	
442 MHz analog channel loading 74 channels + 660 MHz digital channel loading, 256 QAM at -6 dBc relative to its associated visual carrier						
<b>Station Output Levels</b>						
			BT	HGD	LE	
Output Level @...	1218 MHz	dBmV	57.0	57.0	57.0	
	1002 MHz		53.5	53.5	53.5	
	550 MHz		46.2	46.2	46.2	
	105 MHz		39.0	39.0	39.0	
Reference Output Slope (Tilt)	105-1218MHz	dB	18.0			
<b>Station Noise Figure</b>						
Station noise figure (w / EQ)	Typ. @ 105 to 1002 MHz		9.0	9.0	9.0	
	Typ. @ 1218 MHz	dB	9.5	9.5	10.5	
<b>Station Distortions (Worse Case)</b>						
Composite Triple Beat (CTB)		-dBc	67	67	67	
Cross Modulation (XMOD)		-dBc	65	65	64	
Composite Second Order (CSO -)		-dBc	67	67	67	
Composite Second Order (CSO +)		-dBc	67	67	67	
MER		-dBc	≥40	≥40	≥40	
BER		-dBc	≤ 1 x 10 <sup>-9</sup>	≤ 1 x 10 <sup>-9</sup>	≤ 1 x 10 <sup>-9</sup>	

# STATION SPECIFICATIONS 204/258 MHz Split

STATION PARAMETERS:		1218 MHz 204-258 MHz Split		ASEM FOR CISCO GainMaker RF Modules 1218 MHz		
		CONDITIONS	UNITS	SPECIFICATIONS		
Housing passband			MHz	5 to 1218		
Max AC current		Continuous	Amps	15		
Max AC current		Surge	Amps	25		
Hum modulation		Time domain @ rated current above	-dBc	65 @ 5-204 MHz 65 @ 258-1218 MHz		
Return loss		Any port, worst case	dB	16.0		
<b>Test Points</b>						
Frequency range			MHz	5 to 204 (Reverse) / 258 to 1218 (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>						
				BT	HGD	LE
Operational Slope (Tilt)	@ 258 / 550 / 1218 MHz	dB		0 / 4.7 / 15.5	0 / 4.7 / 15.5	0 / 4.7 / 15.5
Slope control type	Cable equalizers	dB		Plug-in Pad Adjustable EQ's		
Slope control range	Includes cable equivalent	dB		-12 to +22		
Slope control steps	Equalizer value steps	dB		1.0		
<b>Station Group Delay</b>						
Group delay	Channel 30			30		
Group delay	Channel 31	nSec /		16		
Group delay	Channel 32	3.58 MHz		10		
Group delay	Channel 33 & up			3		
<b>AGC</b>						
DSIM-A Single Pilot Channel AGC						
Pilot Channel Type	Up to 1002 MHz	N / A		NTSC Analog or QAM		
Compensation Range		dB		System compensation input change +4.0/-8.0 @ 1218 MHz		
Accuracy		±dB		0.5		
Nominal loss	@ 77 °F (25 °C)	dB		6.25		
<b>Configuration</b>						
				BT	HGD	LE
<b>Operational Specifications</b>						
Station passband			MHz	258 to 1218		
Station flatness	Normalized w / 0 dB slope	±dB		0.50	0.50	0.35
Gain - With DSIM AGC	+1.0 / -0 @ 1218 MHz	dB		46.0	48.0	42.0
<b>Station Output Levels</b>						
				BT	HGD	LE
Output Level @...	1218 MHz			57.0	57.0	57.0
	1002 MHz		dBmV	53.5	53.5	53.5
	550 MHz			46.2	46.2	46.2
	105 MHz			41.5	41.5	41.5
Reference Output Slope (Tilit)	258-1218MHz	dB		15.5		
<b>Station Noise Figure</b>						
Station noise figure (w / EQ)	Typ. @ 258 to 1002 MHz			9.0	9.0	9.0
	Typ. @ 1218 MHz	dB		9.5	9.5	10.5
<b>Station MER/BER Performance</b>						
MER		-dBc		≥40	≥40	≥40
BER		-dBc		≤ 1 x 10 <sup>-9</sup>	≤ 1 x 10 <sup>-9</sup>	≤ 1 x 10 <sup>-9</sup>

# Reverse Spectrum

REVERSE SPECTRUM:			ASEM FOR CISCO GainMaker RF Modules 1218 MHz			
REVERSE						
Reverse - General		CONDITIONS	UNITS	SPECIFICATIONS		
Station passband			MHZ	5 to 42, 5 to 85, 5 to 204		
Station flatness - 5 to 42 MHz		Normalized w / 0 dB slope	±dB	0.50		
Station flatness - 5 to 85 MHz		Normalized w / 0 dB slope	±dB	0.50		
Station flatness - 5 to 204 MHz		Normalized w / 0 dB slope	±dB	0.65		
Reverse - Station Gain						
Gain		+1.0 / -0 @ HF	dB	28.0		
Gain control type				JXP Plug-in pads		
Reverse - Station Slope						
Slope control type		Cable equalizers	N / A	Pad Adjustable Eqs		
Slope control range			dB	0 to 15.0		
Slope control steps		Equalizer pad value steps	dB	1.0		
Reverse - Station Group Delay						
Group delay		5 MHz	nSec / 1.5 MHz	45		
Group delay		7 MHz		16		
Group delay		10 MHz		5		
Group delay		35 / 80 / 199 MHz		10		
Group delay		38.5 / 83.5 / 202.5 MHz		25		
Configuration			BT	HGD	LE	
Reverse - Station Distortions						
Reference Output Level			dBmV	42.0	42.0	42.0
NPR at 50 dB CNR at 42 MHz		42/53 Split	dB	21.0	21.0	24.0
NPR at 50 dB CNR at 85 MHz		85/105 Split	dB	18.0	18.0	21.0
NPR at 50 dB CNR at 204 MHz		204/258 Split	dB	12.0	12.0	17.0
Reverse - Noise Figure						
Noise figure (W/1 dB for input EQ loss)		Maximum	dB	11.5	11.5	6.0
Power Requirements:						
Max Watts		Includes reverse & DSIM (Worst case)	W	53.6	46.5	29.2
AC Voltage						
Input ranges			VAC	45-90		
Current Draw (with DSIM AGC)						
@ 45 VAC		Maximum	A	TBD	TBD	TBD
@ 50 VAC			A	TBD	TBD	TBD
@ 60 VAC			A	TBD	TBD	TBD
@ 70 VAC			A	TBD	TBD	TBD
@ 80 VAC			A	TBD	TBD	TBD
@ 90 VAC			A	TBD	TBD	TBD
Weight			BT	HGD	LE	
Weight			lbs. (kg)	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 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	DSIM-A-MDL-1201
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 0-22 dB	AEQ1.2G
Pad Adjustable Cable Equivalent Equalizers 0-12 dB	ACEQ1.2G
Pad Adjustable Reverse Equalizers 5-42, 85 and 204 MHz 0-12 dB (5 Pin)	AREQPE42 AREQPE85 AREQPE204
Cisco HGD DC/SP3 For AUX 1 & 2	SDA1.2-SPLT SDA1.2-DC8 SDA1.2-DC10 SDA1.2-DC12
Test Probe (5.5" Long)	100685-01
Test Probe (1.57" / 4 cm Long)	TP-7504
HSG-SA-TB	Cisco GainMaker Compatible Trunk Housing
HSG-SA-LE	Cisco GainMaker Compatible Line Extender Housing

### Frequency Split Field Conversion Kits

Description	Part Numbers
Split Conversion Kit, 85/105 ASEM CISCO LE 1.2G	120623-01
Split Conversion Kit, 85/105 ASEM CISCO HGD 1.2G	120624-01
Split Conversion Kit, 85/105 ASEM CISCO BT 1.2G	120625-01
Split Conversion Kit, 85/105 ASEM CISCO UBT 1.2G	120626-01
Split Conversion Kit, 204/258 ASEM CISCO LE 1.2G	120627-01
Split Conversion Kit, 204/258 ASEM CISCO HGD 1.2G	120628-01
Split Conversion Kit, 204/258 ASEM CISCO BT 1.2G	120629-01
Split Conversion Kit, 204/258 ASEM CISCO UBT 1.2G	120630-01



# Ordering Matrix

## ASEM 1.2G for SA/Cisco GainMaker Product Configuration Worksheet

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

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

### ORDERING MATRIX

June 8, 2022

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

BT = High Gain Balanced Triple (BT)

HD = 3 Output Bridger High Gain (HGD)

7  **BANDWIDTH FREQUENCY**

2 = 1218 MHz

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

Amplifier Model	LE	HD	BT
Max gain with DSIM-A	42.0	48.0	46.0

10  **FORWARD GAIN CONTROL TYPE**

D = Digital Station Intelligence Manger (DSIM-A)

11  H **STATION FORWARD SLOPE**

	54-1218	105-1218	258-1218
V =	19.0	18.0	15.0

12  **BANDPASS SPLIT**

4 = 42/53

8 = 85/105

2 = 204/258

13  **STATION GAIN (Reverse)**

L = 28.0 dB

14  **CUSTOM OPTIONS**

0 = NONE

C = Complete Station With Housing

X = Determined by Product Management

Generic Order Form: Not all configurations are available



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