

ASEM- High Gain Dual Shown

## 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.

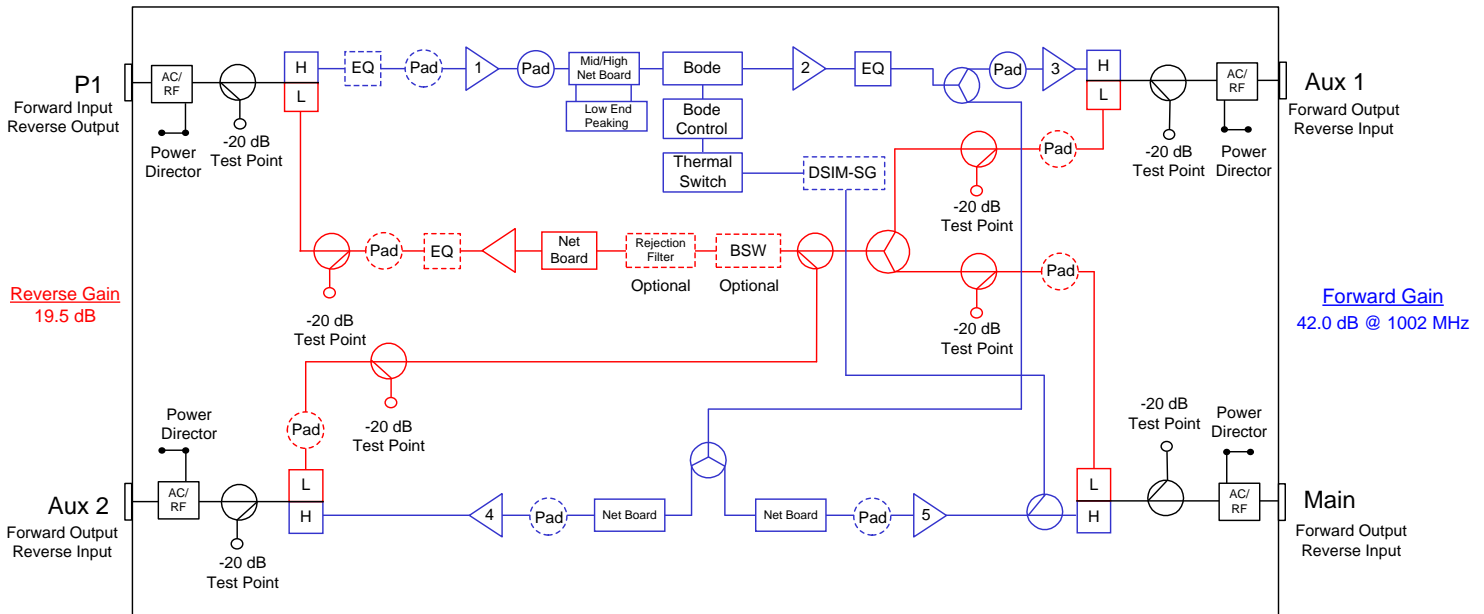
### Features

- ◆ Drop-in 1G replacement RF modules for SA Sys II, III, and GainMaker®
- ◆ 5 to 42, 55, 65 or 85 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 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



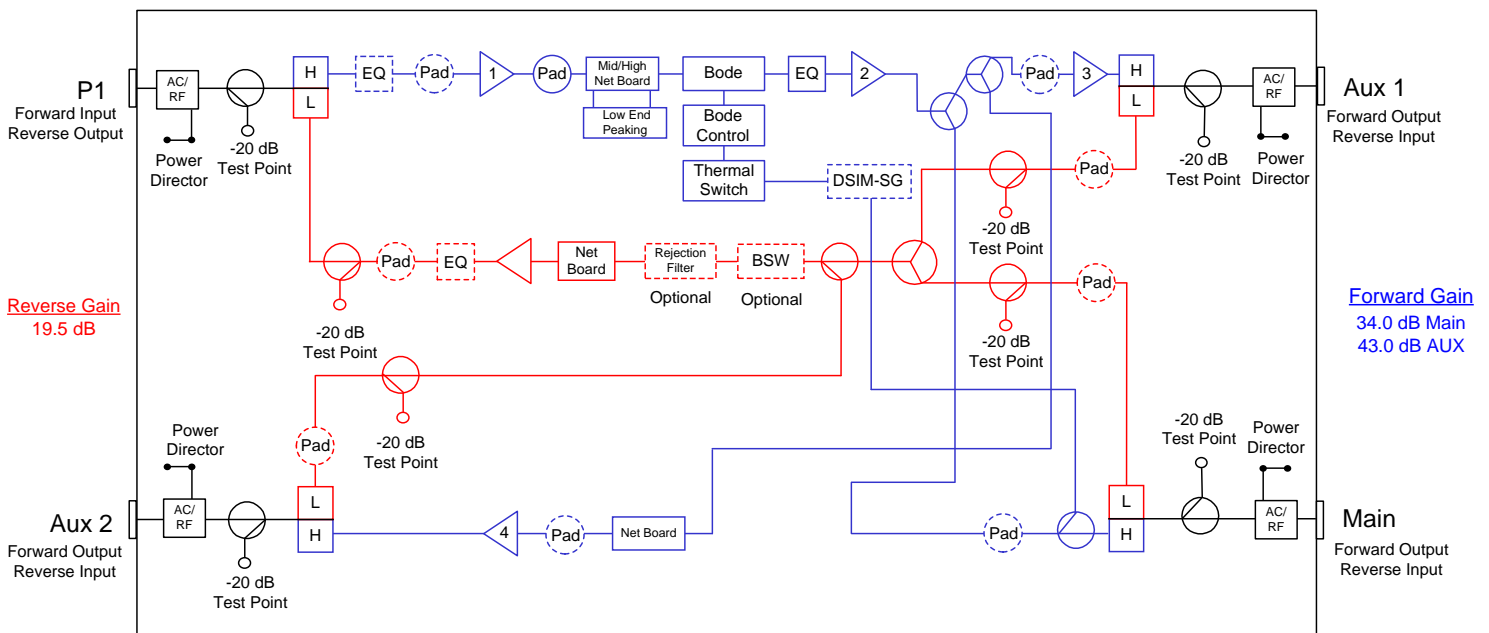
Reverse Gain  
19.5 dB

Forward Gain  
42.0 dB @ 1002 MHz

- 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



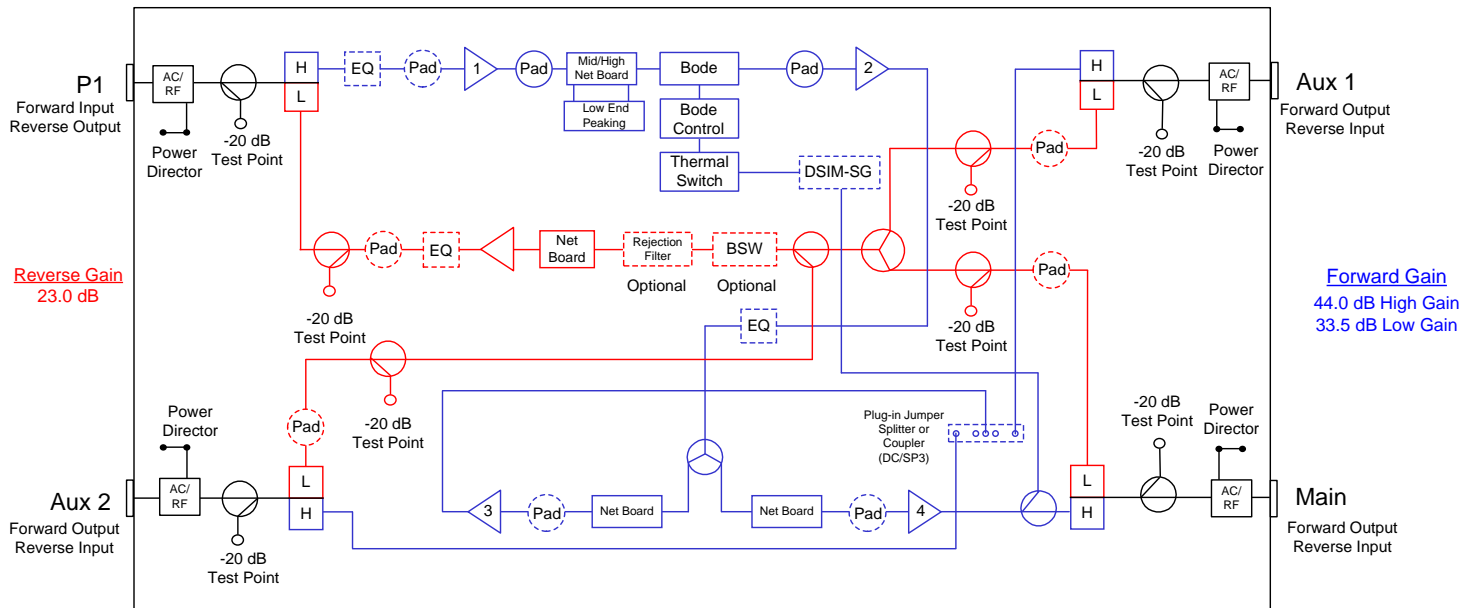
Reverse Gain  
19.5 dB

Forward Gain  
34.0 dB Main  
43.0 dB AUX

- 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

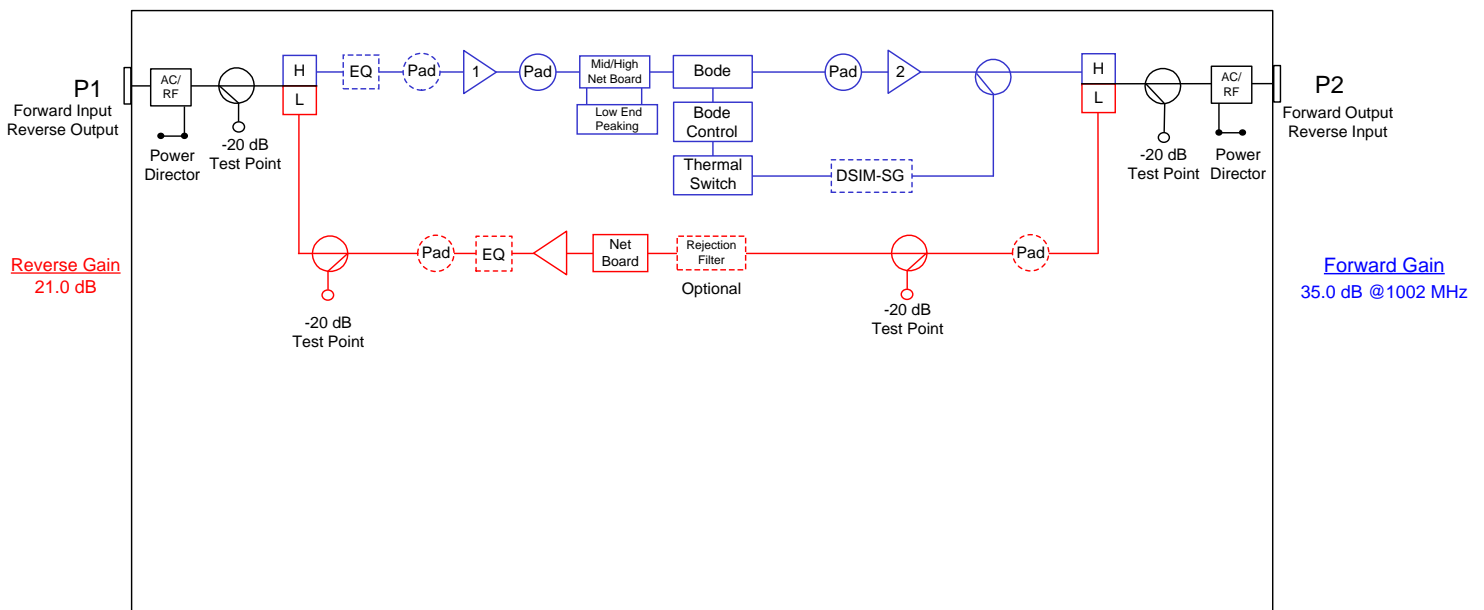


Note:

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

# SPECIFICATIONS

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	0.5					
<b>Station Slope</b>									
				BT	UBT	HGD	LGD	LE	
Internal Slope (Tilt)		± 0.5 dB	dB	15.0	15.0	15.0	15.0	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					
<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>									
				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)					
<b>Configuration</b>									
				BT	UBT	HGD	LGD	LE	
<b>Operational Specifications</b>									
				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	
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 @...	1002 MHz	dBmV	56.0	44.0	53.0	56.0	53.0	53.0	
	870 MHz		54.0	41.9	50.9	54.0	50.9	50.9	
	750 MHz		52.2	40.0	49.0	52.2	49.0	49.0	
	650 MHz		50.5	38.4	47.4	50.5	47.4	47.4	
	550 MHz		49.0	36.9	45.9	49.0	45.9	45.9	
	54 MHz		42.0	29.0	38.0	42.0	38.0	38.0	
Reference Output Slope (Tilt)	54-1002 MHz	dB	15.0						
<b>Station Distortions (Worse Case)</b>									
				Main	AUX				
Composite Triple Beat		-dBc	68	82	72	70	77	71	
Cross Modulation		-dBc	63	72	65	66	68	68	
Composite Second Order High Side		-dBc	68	73	70	68	70	70	

# SPECIFICATIONS

REVERSE SPECTRUM:								
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	19.5	19.5	23.0	23.0	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				
Configuration				BT	UBT	HGD	LGD	LE
Power Requirements:								
	With DSIM-SG	Includes reverse (Worst case)	W	53.6	52.8	46.5	39.9	29.2
Environmental								
	Operating temperature		°F (°C)	-40 to +140 (-40 to +60)				

