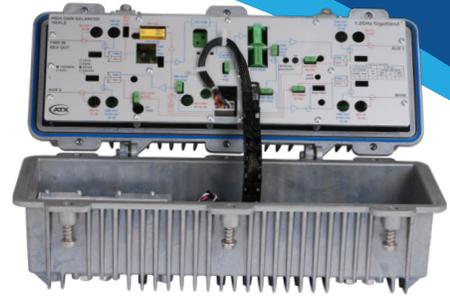




# GigaXtend

## GMC 1.2GHz (GainMaker® Compatible) High Gain Balanced Triple (HGBT) System Amplifier



GMC 1.2GHz High Gain Balanced Triple (HGBT) System Amplifiers  
*(front view)*

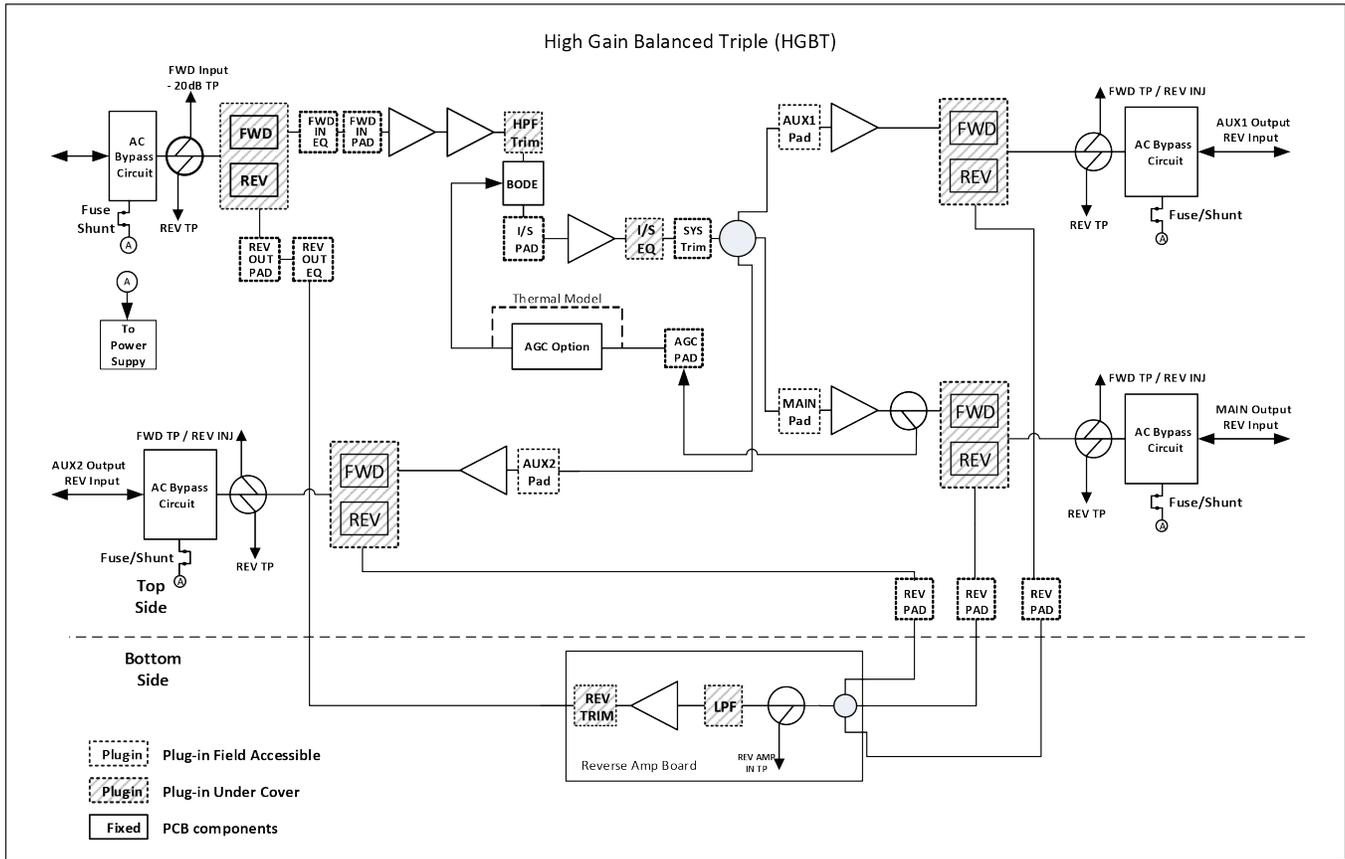
1.2 GHz

The ATX GigaXtend™ GMC 1.2GHz High Gain Balanced Triple (HGBT) System Amplifier is designed to assist cable operators in evolving their HFC networks to meet subscriber demand, while fully leveraging previous investments. The ATX GigaXtend GMC 1.2GHz HGBT System Amplifier provides three high-level forward RF outputs (main and two auxiliary).

ATX GigaXtend GMC 1.2GHz HGBT System Amplifier modules have increased gain to allow drop in for 750MHz, 870MHz, and 1002MHz spacing and are mechanically compatible with GainMaker® housings, often allowing upgrades to higher bandwidth with no respacing or respicing. The DC power supply is modular and located in an updated housing lid for easy access. All ATX GigaXtend GMC 1.2GHz system amplifier modules are factory configured with reverse amplifier, diplex filters, thermal compensation circuit, forward interstage pads, and equalizer to promote optimal performance. Optional single-pilot Automatic Gain Control (AGC) configurations are also available.

### Features

- High-performance GaN gain stage technology
- Plug-in accessories are compatible with earlier version of the Cisco GainMaker® platform Amplifiers (equalizers, attenuators, crowbar, etc)
- Amplifier housing that provides access to RF test points without opening the housing
- Spring-loaded seizure assemblies allow coaxial connectors to be installed or removed without removing amplifier RF module
- Power supply mounted in housing lid for efficient thermal dissipation (60- and 90-VAC powering capability)
- 15A current capacity (steady state) and 25 A surge survivability
- Quadrature Amplitude Modulation (QAM) pilot AGC available
- AGC with thermal backup, which eliminates disruptive RF output variation in the event of pilot loss
- Reverse input pad and RF test point for each reverse input port to allow optimum reverse path design and alignment
- Surge-resistant circuitry that helps ensure gain stage protection without fuses or other failure-causing devices



Functional Schematic

## Specifications

### General Station Performance

MEASUREMENT	UNITS	FORWARD	REVERSE
PASS BAND	MHz	54-1218	5-42 / 85 or 204
AMPLIFIER TYPE	-	GaN	GaAs HBT
FREQUENCY RESPONSE <sup>(2)</sup>	dB	±0.5	±0.5
AUTO SLOPE AND GAIN RANGE	dB	+/-5.8	-
RETURN LOSS	dB	16	16
MAXIMUM AC THROUGH CURRENT (Continuous)	Amps	15	-
MAXIMUM AC THROUGH CURRENT (Surge)	Amps	25	-
HUM MODULATION @ 15A (Over specified frequency range)	dB	60 (Fmin-1002MHz) 55 (1002-1218MHz)	55 (5-10MHz) 60 (10-FmaxMHz)
TEST POINTS (± 0.75 dB)	dB	-20	-20

MEASUREMENT	FREQUENCY (MHz)	UNITS	FORWARD
REFERENCE OUTPUT LEVEL @	1218	dBmV	49
	258		34
	105		32
	54		31
REFERENCE OUTPUT TILT <sup>(1)</sup>	1218-54	dB	18

NOTE:

- Reference output tilt is specified with a 12 dB EQ in the interstage. The remaining EQ is installed at the input.
- Mid-split 85/102, 102 MHz to 105 MHz roll-off of <1.0 dB. Intended to support lower modulation signals such as OOB.

Unless otherwise noted, specifications reflect typical performance and are referenced to 68°F (20°C). Specifications are based upon measurements made in accordance with SCTE/ANSI standards (where applicable), using standard frequency assignments.

## Specifications

### Forward Station Performance

MEASUREMENT	UNITS	AUTO/THERMAL WITH 12.0 dB I/S EQ
OPERATIONAL GAIN (Minimum) <sup>(1)</sup>	dB	46
INTERNAL TILT (± 0.5 dB) @ 54-1218 MHz <sup>(2)</sup>	dB	19
NOISE FIGURE <sup>(1)</sup>	dB	8.5
BER	dB	<1E-6
CCN <sup>(3)</sup>	dB	49
MER <sup>(3)</sup>	dB	49

NOTE:

1. Forward gain and noise figure measured with 0 dB input EQ and 1 dB input pad. Thermal and AGC module.
2. All digital loading. 49dBmV QAM at 1218MHz, 18dB tilt (54 – 1218 MHz)
3. Distortion performance at reference output levels and tilt. Corrected with source performance backed out

Unless otherwise noted, specifications reflect typical performance and are referenced to 68°F (20°C). Specifications are based upon measurements made in accordance with SCTE/ANSI standards (where applicable), using standard frequency assignments.

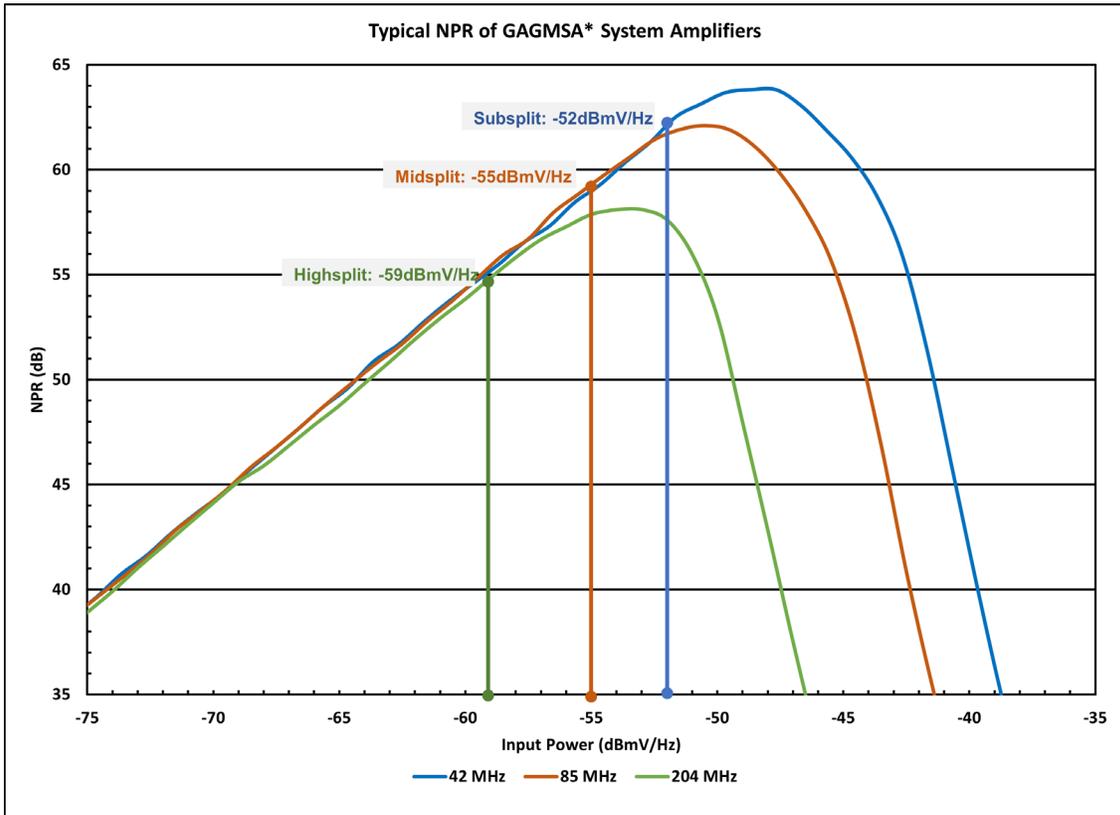
### Reverse Station Performance

MEASUREMENT	UNITS		
OPERATIONAL GAIN (Minimum) @ 42MHz <sup>(1)</sup>	dB	21.6	
OPERATIONAL GAIN (Minimum) @ 85MHz <sup>(1)</sup>	dB	23.8	
OPERATIONAL GAIN (Minimum) @ 204MHz <sup>(1)</sup>	dB	27.2	
NOISE FIGURE <sup>(1)</sup>	dB	12	
RECOMMENDED INPUT LEVEL 42MHz / 85MHz / 204MHz	dBmV/6.4MHz	16 / 13 / 9	
	dBmV/Hz	-52 / -55 / -59	
RECOMMENDED OUTPUT LEVEL 42MHz / 85MHz / 204MHz	dBmV/6.4MHz	43 / 40 / 36	
	dBmV/Hz	-25 / -28 / -32	
MEASUREMENT	FREQUENCY (MHz)	UNITS	
NPR/ Dynamic Range <sup>(2)</sup>	42	dB	50/22
	85	dB	50/19
	204	dB	50/14.5

NOTE:

1. Reverse gain and noise figure for station with 0 dB reverse input pad, 0 dB reverse output EQ, and 1 dB output pad.
2. See NPR Chart

Unless otherwise noted, specifications reflect typical performance and are referenced to 68°F (20°C). Specifications are based upon measurements made in accordance with SCTE/ANSI standards (where applicable), using standard frequency assignments.



### Station Delay Characteristics (42/54)

FORWARD (Chrominance to Luminance Delay)		REVERSE (Group Delay in 1.5MHz bandwidth)	
FREQUENCY (MHz)	DELAY (ns)	FREQUENCY (MHz)	DELAY (ns)
55.25 to 58.83	39	5.0 to 6.5	60
61.25 to 64.83	15	6.5 to 8.0	22
67.25 to 70.83	10	8.0 to 9.5	12
77.25 to 80.83	5	37.5 to 39.0	20
		39.0 to 40.5	32
		40.5 to 42.0	50

### Station Delay Characteristics (85/102)

FORWARD (Chrominance to Luminance Delay)		REVERSE (Group Delay in 1.5MHz bandwidth)	
FREQUENCY (MHz)	DELAY (ns)	FREQUENCY (MHz)	DELAY (ns)
109.275 to 112.855	15	5.0 to 6.5	60
115.275 to 118.855	10	6.5 to 8.0	22
121.2625 to 124.8425	8	8.0 to 9.5	12
127.2625 to 130.8425	5	80.5 to 82.0	10
		82.0 to 83.5	17
		83.5 to 85.0	21

## Station Delay Characteristics (204/258)

FORWARD (Chrominance to Luminance Delay)		REVERSE (Group Delay in 1.5MHz bandwidth)	
FREQUENCY (MHz)	DELAY (ns)	FREQUENCY (MHz)	DELAY (ns)
259.2625 to 262.8425	10	5.0 to 6.5	60
265.2625 to 268.8425	8	6.5 to 8.0	22
271.2625 to 274.8425	7	8.0 to 9.5	12
277.2625 to 280.8425	5	199.5 to 201.0	6
		201.0 to 202.5	5
		202.5 to 204.0	8

## Specifications

### Station Powering Data

		GainMaker® Compatible High Gain Balanced Triple System Amplifier												
	I DC (Amps)		AC VOLTAGE											
			90	85	80	75	70	65	60	55	50	45	40	35
THERMAL/MANUAL	1.97	AC Current (A)	0.83	0.85	0.87	0.90	0.92	0.95	1.08	1.17	1.25	1.36	1.53	1.76
		Power (W)	53.5	53.3	53.1	53.0	52.8	52.7	52.7	52.6	52.6	52.7	52.8	53.2
AGC	2.03	AC Current (A)	0.84	0.88	0.90	0.93	0.95	1.12	0.98	1.22	1.30	1.42	1.59	1.82
		Power (W)	55.0	54.8	54.7	54.5	54.4	54.3	54.3	54.2	54.3	54.3	54.5	54.8

**NOTE:**

Data is based on stations configured for two-way operation. AC currents specified are based on measurements made with typical CATV-type ferroresonant AC power supply (quasi-square wave) and GigaXtend System Amplifier power supply (2.5A, 24 VDC).

DC supply has a user-configurable 30V, 40V, or 50 VAC under voltage lockout circuit. Default setting is 40 VAC. Under-voltage lockout may be selected by changing the position of the lockout jumper.

PHYSICAL & ENVIRONMENTAL	
OPERATING TEMPERATURE	-40-140°F (-40-60°C)
MECHANICAL	
HOUSING (LxHxD)	17.3 in. x 7.2 in. x 7.8 in. (439.4 mm x 182.9 mm x 198.1 mm)
WEIGHT	
HOUSING WITH POWER SUPPLY	13 lb, 7 oz (6.1 kg)
MODULE	5 lb, 5 oz (2.4 kg)

## Ordering Information

Part Number	Description
<b>1.2GHz High Gain Balanced Triple Station w/ Coated Housing,PS, CB, TPA, Launch Amp</b>	
<b>GAGMSATS45H</b>	GMC 1.2 GHz, HGBT, 42/54, D-AGC711, Full Station w/ PS
<b>GAGMSATS4TH</b>	GMC 1.2 GHz, HGBT, 42/54, Thermal, Full Station w/ PS
<b>GAGMSATS85H</b>	GMC 1.2 GHz, HGBT, 85/102, D-AGC711, Full Station w/ PS
<b>GAGMSATS8TH</b>	GMC 1.2 GHz, HGBT, 85/102, Thermal, Full Station w/ PS
<b>GAGMSATS25H</b>	GMC 1.2 GHz, HGBT, 204/258,D-AGC 711, Full Station w/ PS
<b>GAGMSATS2TH</b>	GMC 1.2 GHz, HGBT, 204/258, Thermal, Full Station w/ PS
<b>1.2GHz High Gain Balanced Triple Launch Amp Only</b>	
<b>GAGMSATS45</b>	GMC 1.2 GHz, HGBT, 42/54, CB, LA, D-AGC711
<b>GAGMSATS4T</b>	GMC 1.2 GHz, HGBT, 42/54, CB,LA, Thermal
<b>GAGMSATS85</b>	GMC 1.2 GHz, HGBT, 85/102, CB, LA, D-AGC711
<b>GAGMSATS8T</b>	GMC 1.2 GHz, HGBT, 85/102, CB, LA, Thermal
<b>GAGMSATS25</b>	GMC 1.2 GHz, HGBT, 204/258, CB, LA, D-AGC-711
<b>GAGMSATS2T</b>	GMC 1.2 GHz, HGBT, 204/258, CB, LA, Thermal
<b>Required Accessories (GM Compatible)</b>	
<b>GAGM-PAD-1.2G-a=</b>	1.2GHz PAD (Multi=10)(a=dB: 00,1,0,2,0,..20.0) - 2 required for forward (1 input, 1 output) - 1 required for AGC, if applicable* - 2 required for reverse (1 input, 1 output) *To determine AGC pad value, subtract 30dB from the design value main port RF output level at the AGC pilot frequency
<b>Forward Path Plug In Conditioners (GM Compatible)</b>	
<b>GAGM-EQC-1.2G-a=</b>	1.2GHz FWD EQ (Multi=10)(a=dB: 0,1.5,3,..30)
<b>GAGM-EQL-1.2G-a=</b>	1.2GHz FWD LIN EQ (Multi=10)(a=dB: 1.5,3,..24)
<b>GAGM-EQIN-1.2G-a=</b>	1.2GHz INV EQ (Multi=10)(a=dB: 1.5,3,..21)
<b>GAGM-EQC-1G-a=</b>	1GHz Fwd EQ (Mult=10)(a=dB: 0,1.5,3,..30)
<b>GAGM-EQIN-1G-a=</b>	1GHz Inverse EQ (Mult=10)(a=dB: 1.6,3.3,4.9,6.5,8.1,9.8,11.4,13,14.6,16.2)
<b>Other Plug In Conditioners (GM Compatible)</b>	
<b>GAGM-EQREV-42M-a=</b>	Rev EQ,42MHz (Multi=10)(a=dB: 1,2,3,..12)
<b>GAGM-EQREV-85M-a=</b>	Rev EQ,85MHz (Multi=10)(a=dB: 1,2,3,..12)
<b>GAGM-EQREV-204M-a=</b>	Rev EQ,204MHz (Multi=10)(a=dB: 1,2,3,..12)
<b>GAGM-EQREVT-42M-a</b>	Rev Therm EQ,42MHz(a=dB: 1,2,3,..8)
<b>GAGM-PAD-1.2G-75=</b>	1.2GHz 75ohm Terminator (Multi=10)

**NOTE:**

GAGMSA Amplifiers do not ship with plug-ins installed in the following positions, because the user must choose values based on installation levels (see user manual): Forward Input PAD, Forward Input EQ, AGC PAD. Reverse Output Pad and Reverse Output EQ. Other positions come factory installed, based on model of SA ordered.

\*\* unless otherwise mentioned, all new housings and housing parts are coated aluminum, and all plugins are compatible with legacy 1GHz or 1.2GHz GainMaker® and GigaXtend system amplifiers

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Part Number	Description
<b>MISC Accessories (GM Compatible)</b>	
<b>GAGM-AGC-QAM-711</b>	GMC QAM AGC 711MHz (Multi=10)
<b>GAGMSA-FUSE-SK</b>	GMC SA Fuse Shunt Kit (Multi=10)
<b>GAGMSA-LIDPS=</b>	GMC 1.2 GHz SA Housing Lid w/ Cable, ladder, PS
<b>GAGMSA-LID=</b>	GMC 1.2 GHz SA Housing Lid w/ Cable and ladder
<b>GAGMSA-HSG-1.2G=</b>	GMC 1.2 GHz SA Housing (with cable,ladder, seizure ports. No PS or amp module)
<b>GAGMSA-PS-1.2G=</b>	GMC 1.2 GHz SA Power Supply, 24V-2.5A (Multi=10)
<b>GAGM-CRWBR-S</b>	GMC CROWBAR SIDACTOR (Multi=10)
<b>GAGMLE-PWRKIT-1.2G</b>	GMC AC Power Pack Kit, 120VAC, Universal LE and SA w/ wall bracket (Multi=10)
<b>GAGM-1.2G-LONGF81</b>	GMC 1.2 GHz Long Test Point Adapter (Multi=10)

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