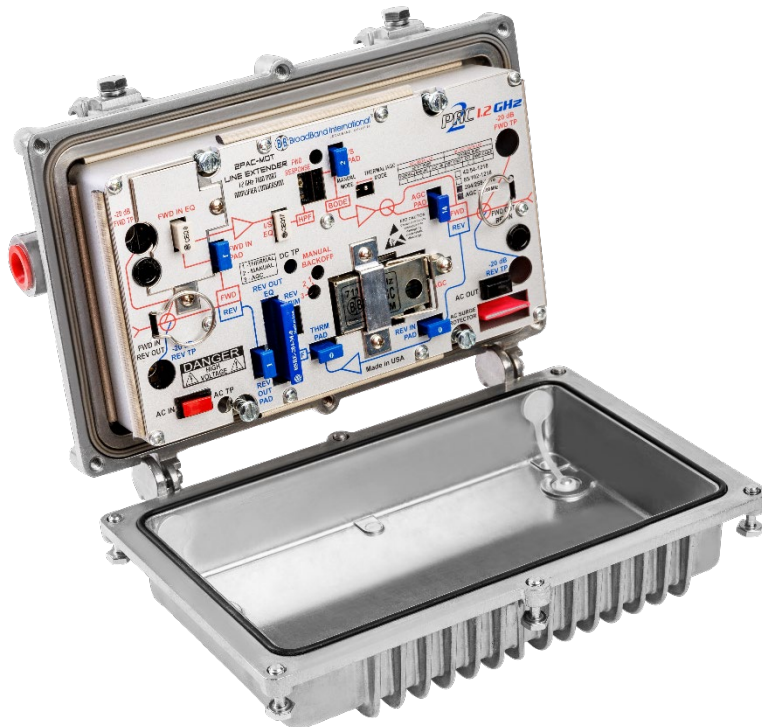


1.2 GHz Line Extenders – 2PAC-MOT High Gain GaN

Replaces/Upgrades Commscope®/ARRIS®
Motorola® 750/870/1002/1218 MHz Systems



Product Overview

The 2PAC-MOT High Gain GaN 1.2 GHz enhanced line extender module from Broadband International® is designed to drop into any existing Broadband International® or JLX/BLE® Line Extender housing. The forward bandwidth is up to 1.2 GHz and will cover most spacing from 750 to 1218 MHz. A high efficiency power supply is built into the back of the module with an easy-to-access crowbar network in the front lid cover.

The amplifier accepts any standard SFE® style equalizer or 1.2" JXP equalizer and long 1.4" JXP style pads. The interstage pad and equalizer set the output gain and slope for maximum performance. The new 1.2 GHz amplifier is equipped with Gallium Nitride (GaN) technology with a single output.



Features:

- Specified bandwidth performance to 1.2 GHz
- Built-in high efficiency power supply
- Multiple options for return path bandwidth with removable diplex filter
- Low/high pass filters can be changed in the field
- Field upgradable from 42/54 to 85/104 or 204/258 MHz
- All modules contain a built in thermal network for thermal mode operations when an AGC is not installed
- Advanced AGC circuitry with loss of pilot protection
- Housing available with Chromate Conversion



Performance Specifications - 5-42/54-1218		Unit	Forward	Reverse
Pass Band		MHz	54-1218	5-42
Frequency Response (Flatness)		dB	+/--.75	+/--.5
Return Loss (Min)		dB	16	16
Noise Figure		dB	9.5*	6
Operating Gain with AGC		dB	39	27
Operating Gain in Manual		dB	44	27
Bode Control Range		dB	+/-5	N/A
AC Hum Mod @ 12 Amperes (worst case)		dBc	>60	>60
AC Hum Mod @ 15 Amperes (worst case)		dBc	>60	>60
Maximum AC through current (continuous)		Amps	15	15
Reference Digital Output Level (1218/54 MHz)		dBmV	49/31	Varies
Output Slope (typical)		dB	18	Varies
Output Gain Block Technology		dB	GaN/Hybrid	Hybrid
Test Points		dB	-20 (+/-1 dB)	-20 (+/-1 dB)
Noise and Distortion Performance		Units	Forward	Reverse
Composite Triple Beat-(Analog 54-550/256 QAM 558-1218 MHz)		dB	70	N/A
Cross-Modulation		dB	63	N/A
Composite Second Order		dB	69	N/A
Carrier to Intermodulation Noise (CIN)		dB	54	N/A
NPR at 40 dB CNR at 42 MHz		dB	N/A	35
Amplifier Delay Characteristics				
Forward Chrominance to Luminance Delay ns/3.58 MHz		Reverse Group Delay 1.5 MHz		
Frequency (MHz)	Delay (ns)	Frequency (MHz)	Delay (ns)	
55.25 to 58.83	43	5.0 to 6.5	55	
61.25 to 64.83	15	6.5 to 8.0	25	
67.25 to 70.83	8	39.0 to 40.5	19	
77.25 to 80.83	4	40.5 to 42.0	38	
Powering Data		Units	Voltage/Current	
DC Voltage		VDC	24	
DC Power Consumption- Thermal – 24		Amps	.96	
DC Power Consumption- with AGC – 24		Amps	1.02	
AC Input voltage range		VAC	38-90	

Notes

1. Forward operating gain and noise figure measured with 1 dB input pad and 0 dB equalizer. *Forward noise figure measures < 8 dB with 10.4 dB of internal tilt.
2. Analog loading varies by band split for distortions and CIN.
3. X-Mod measured with 100% synchronous modulation.
4. Reverse gain and reverse noise figure measured with 1 dB output pad and 0 dB equalizer.
5. Manual backoff set to 4 dB at 1218 MHz at 75° F.
6. Output level is rated 49 dBmV at 1218 MHz with 18 dB tilt for 54-1218, 17.3 dB tilt for 102-1218, and 15 dB tilt for 258-1218 modules.
7. QAM loading is 256 QAM Annex B 6 MHz channels.
8. Hum modulation is measured with 15 and 12 amperes of AC passing through the port under test.
9. Specifications are listed as typical performance at 75° F and are subject to change without notice.



Performance Specifications - 5-85/102-1218		Unit	Forward	Reverse
Pass Band		MHz	102-1218	5-85
Frequency Response (Flatness)		dB	+/--.75	+/--.5
Return Loss (Min)		dB	16	16
Noise Figure		dB	8.5	6
Operating Gain with AGC		dB	39	27
Operating Gain in Manual		dB	44	27
Bode Control Range		dB	+/-5	N/A
AC Hum Mod @ 12 Amperes (worst case)		dBc	>60	>60
AC Hum Mod @ 15 Amperes (worst case)		dBc	>60	>60
Maximum AC through current (continuous)		Amps	15	15
Reference Digital Output Level (1218/1 MHz)		dBmV	49/32	Varies
Output Slope (typical)		dB	17	Varies
Output Gain Block Technology		dB	GaN/Hybrid	Hybrid
Test Points		dB	-20 (+/-1 dB)	-20 (+/-1 dB)
Noise and Distortion Performance		Units	Forward	Reverse
Composite Triple Beat-(Analog 105-550/256 QAM 558-1218 MHz)		dB	71	N/A
Cross-Modulation		dB	64	N/A
Composite Second Order		dB	70	N/A
Carrier to Intermodulation Noise (CIN)		dB	54	N/A
NPR at 40 dB CNR at 85 MHz		dB	N/A	32
Amplifier Delay Characteristics				
Forward Chrominance to Luminance Delay ns/3.58 MHz		Reverse Group Delay 1.5 MHz		
Frequency (MHz)	Delay (ns)	Frequency (MHz)	Delay (ns)	
109.275 - 112.855	10	5.0 to 6.5	55	
115.275 - 118.855	6	6.5 to 8.0	21	
124.2625 - 124.8425	5	82.0 to 83.5	13	
127.2625 - 130.8425	4	83.5 to 85.0	20	
Powering Data		Units	Voltage/Current	
DC Voltage		VDC	24	
DC Power Consumption- Thermal – 24		Amps	.96	
DC Power Consumption- with AGC – 24		Amps	1.02	
AC Input voltage range		VAC	38-90	

Notes

1. Forward operating gain and noise figure measured with 1 dB input pad and 0 dB equalizer.
2. Analog loading varies by band split for distortions and CIN.
3. X-Mod measured with 100% synchronous modulation.
4. Reverse gain and reverse noise figure measured with 1 dB output pad and 0 dB equalizer.
5. Manual backoff set to 4 dB at 1218 MHz at 75° F.
6. Output level is rated 49 dBmV at 1218 MHz with 18 dB tilt for 54-1218, 17.3 dB tilt for 102-1218, and 15 dB tilt for 258-1218 modules.
7. QAM loading is 256 QAM Annex B 6 MHz channels.
8. Hum modulation is measured with 15 and 12 amperes of AC passing through the port under test.
9. Specifications are listed as typical performance at 75° F and are subject to change without notice.



Performance Specifications - 5-204/258-1218		Unit	Forward	Reverse
Pass Band		MHz	258-1218	5-204
Frequency Response (Flatness)		dB	+/- .75	+/- .5
Return Loss (Min)		dB	16	16
Noise Figure		dB	8	6
Operating Gain with AGC		dB	39	27
Operating Gain in Manual		dB	44	27
Bode Control Range		dB	+/-6	N/A
AC Hum Mod @ 12 Amperes (worst case)		dBc	>60	>60
AC Hum Mod @ 15 Amperes (worst case)		dBc	>60	>60
Maximum AC through current (continuous)		Amps	15	15
Reference Digital Output Level (1218/258 MHz)		dBmV	49/34	Varies
Output Slope (typical)		dB	15	Varies
Output Gain Block Technology		dB	GaN/Hybrid	Hybrid
Test Points		dB	-20 (+/-1 dB)	-20 (+/-1 dB)
Noise and Distortion Performance		Units	Forward	Reverse
Composite Triple Beat-(Analog 258-550/256 QAM 558-1218 MHz)		dB	72	N/A
Cross-Modulation		dB	65	N/A
Composite Second Order		dB	71	N/A
Carrier to Intermodulation Noise (CIN)		dB	54	N/A
NPR at 40 dB CNR at 204 MHz		dB	N/A	26
Amplifier Delay Characteristics				
Forward Chrominance to Luminance Delay ns/3.58 MHz		Reverse Group Delay 1.5 MHz		
Frequency (MHz)	Delay (ns)	Frequency (MHz)	Delay (ns)	
259.2625 – 262.8425	5	5.0 to 6.5	55	
265.2625 – 268.8425	4	6.5 to 8.0	21	
271.2625 to 274.8425	3	201.0 to 202.5	3	
277.2625 to 280.8425	2	202.5 to 204.0	5	
Powering Data		Units	Voltage/Current	
DC Voltage		VDC	24	
DC Power Consumption- Thermal – 24 volts		Amps	.96	
DC Power Consumption- with AGC – 24 volts		Amps	1.02	
AC Input voltage range		VAC	38-90	

Notes

1. Forward operating gain and noise figure measured with 1 dB input pad and 0 dB equalizer.
2. Analog loading varies by band split for distortions and CIN.
3. X-Mod measured with 100% synchronous modulation.
4. Reverse gain and reverse noise figure measured with 1 dB output pad and 0 dB equalizer.
5. Manual backoff set to 4 dB at 1218 MHz at 75° F.
6. Output level is rated 49 dBmV at 1218 MHz with 18 dB tilt for 54-1218, 17.3 dB tilt for 102-1218, and 15 dB tilt for 258-1218 modules.
7. QAM loading is 256 QAM Annex B 6 MHz channels.
8. Hum modulation is measured with 15 and 12 amperes of AC passing through the port under test.
9. Specifications are listed as typical performance at 75° F and are subject to change without notice.

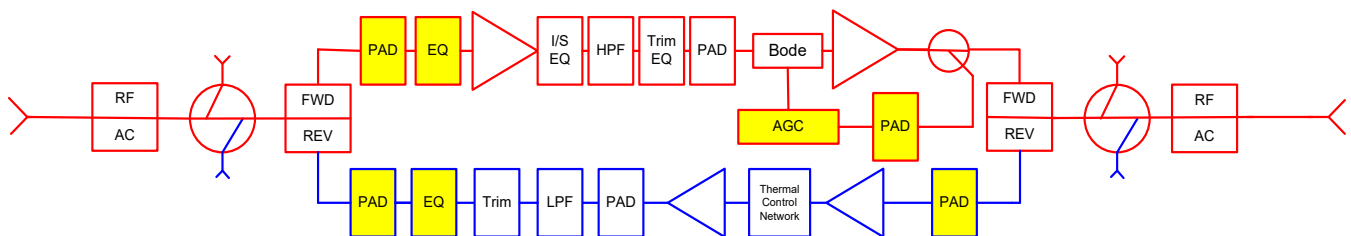


2PAC-MOT	1 DC	2 PAC - GaN	AC Voltage										
	24V		90	85	80	75	70	65	60	55	50	45	40
Thermal	.96	AC current draw	0.46	0.47	0.49	0.51	0.54	0.56	0.59	0.62	0.66	0.71	0.78
AGC	1.02	AC current draw	0.47	0.48	0.5	0.53	0.55	0.58	0.61	0.64	0.69	0.74	0.81

Physical Specifications	
Operating temperature range (degrees)	-40 to +140 F (-40 to +60 C)
Housing dimensions (inches- L x W x D)	10.5 x 8 x 4.3
Housing weight (lbs.)	4 lbs. 14 oz.
Amplifier Weight (lbs.)	3 lbs. 4 oz.
Weight (lbs.) Housing, module and power supply	8 lbs. 2 oz.

2PAC-MOT Line Extender 1.2 GHz Diagram and Ordering Information

The following Required Accessories highlighted in yellow must be ordered separately (all other pads and equalizers are provided)



BROADBAND INTERNATIONAL 2PAC-MOT 1.2

The Broadband International® 2PAC-MOT amplifier can be configured in many different frequencies and options. Please consult your account representative for assistance with specific plug-in options.



Required Accessories

Plug-In 1.2 GHz Pads* (Attenuators) – available in 1 dB steps from 0 to 25 dB	Part Number
1 Pad required for forward input	5640XXSN
1 Pad required for reverse output	
**1 Pad required for AGC, if applicable	
Forward 1.2 GHz Equalizers for Forward Input	
1 Forward Cable Equalizer – available in 1 dB steps from 0 to 20 dB	56712XX
Or - 1 Forward Inverse Equalizer – available in 1 dB steps from 1 to 10 dB	56712XXC
Reverse Cable Equalizers for Reverse Output	Part Number
1 Reverse Equalizer - available in 1 dB steps from 0 to 12 dB (42 MHz)	142401EK
1 Reverse Equalizer - available in 1 dB steps from 0 to 12 dB and 2 dB steps from 14 to 20 dB (85 MHz)	142801EN
1 Reverse Equalizer - available in 2 dB steps from 0 to 20 dB (204 MHz)	142201EM

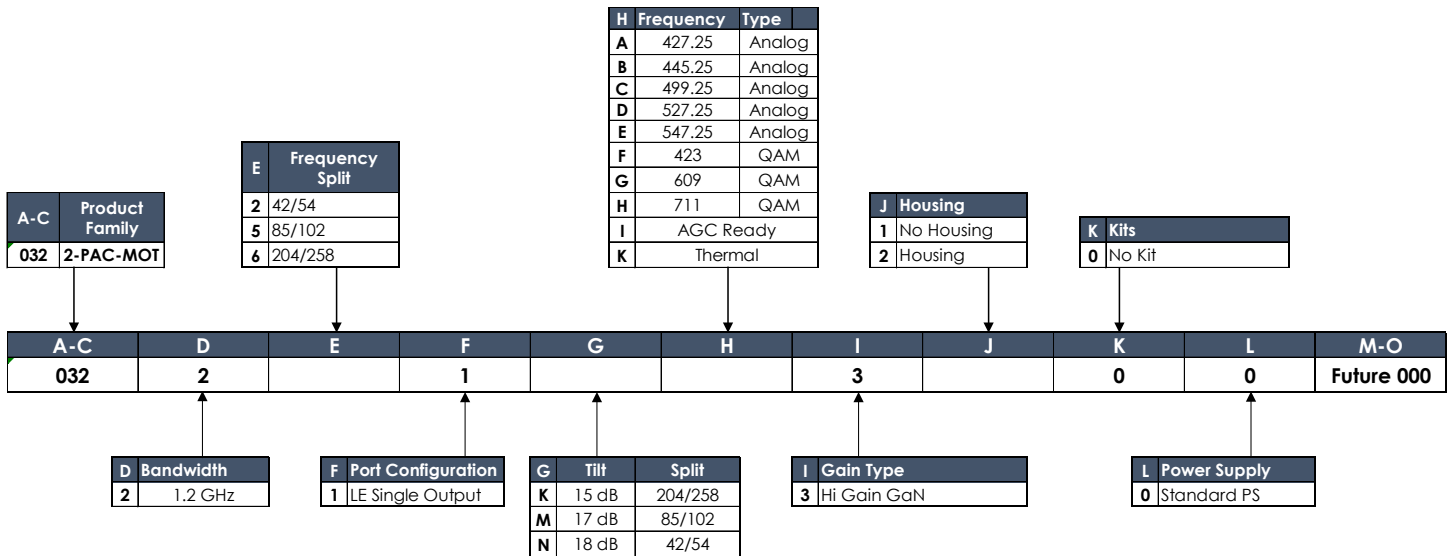
**To determine AGC pad value, subtract 35 dB from the design value main port RF output level at the AGC Pilot Frequency

Optional Accessories

Optional – Automatic Gain Control (AGC)	Part Number
423.00 MHz – QAM	225423
427.25 MHz – Analog	225427
445.25 MHz – Analog	225445
499.25 MHz – Analog	225499
527.25 MHz - Analog	225527
547.25 MHz – Analog	225547
609.00 MHz – QAM	225609
711.00 MHz – QAM	225711
Optional – Accessories	Part Number
Housing for BBI BLE Style Line Extender with 15 Amp/1.2 GHz Blue seizure assemblies	31-3000
BLE upgrade kit includes Lid Cover with 15 Amp/1.2 GHz Blue seizure assemblies	BLE12-LID/15A-K
BLE 1.2 GHz -15 Ampere purple seizure assemblies for OEM housing	35-1200-K
BLE 1.2 GHz -15 Ampere blue seizure assembly for BBI housing	35-1204-K
BBI 2PAC-MOT BLE, High-Split Upgrade Kit 5-204/258-1218 MHz	32312204BLE-K
BBI 2PAC-MOT BLE, Mid-Split Upgrade Kit 5-85/102-1218 MHz	3231285BLE-K



Ordering Information



The Broadband International® 2PAC-MOT amplifier can be configured with many different options. Please consult your account representative for assistance with specific options.

