

AFM2-L  
Compatible With  
Arris 331e  
Line Extender

AFM2-E  
Compatible With  
Arris 900  
Line Extender

AFM2-T / B  
Compatible With  
Arris 901e  
FMB/FMT

## ASEM<sup>™</sup> Replacement Upgrade RF Modules 1218 MHz For C-Cor<sup>™</sup>/Arris<sup>®</sup>

The ACI ASEM 1.2G replacement upgrade RF modules for C-Cor<sup>™</sup>/Arris<sup>®</sup> 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.

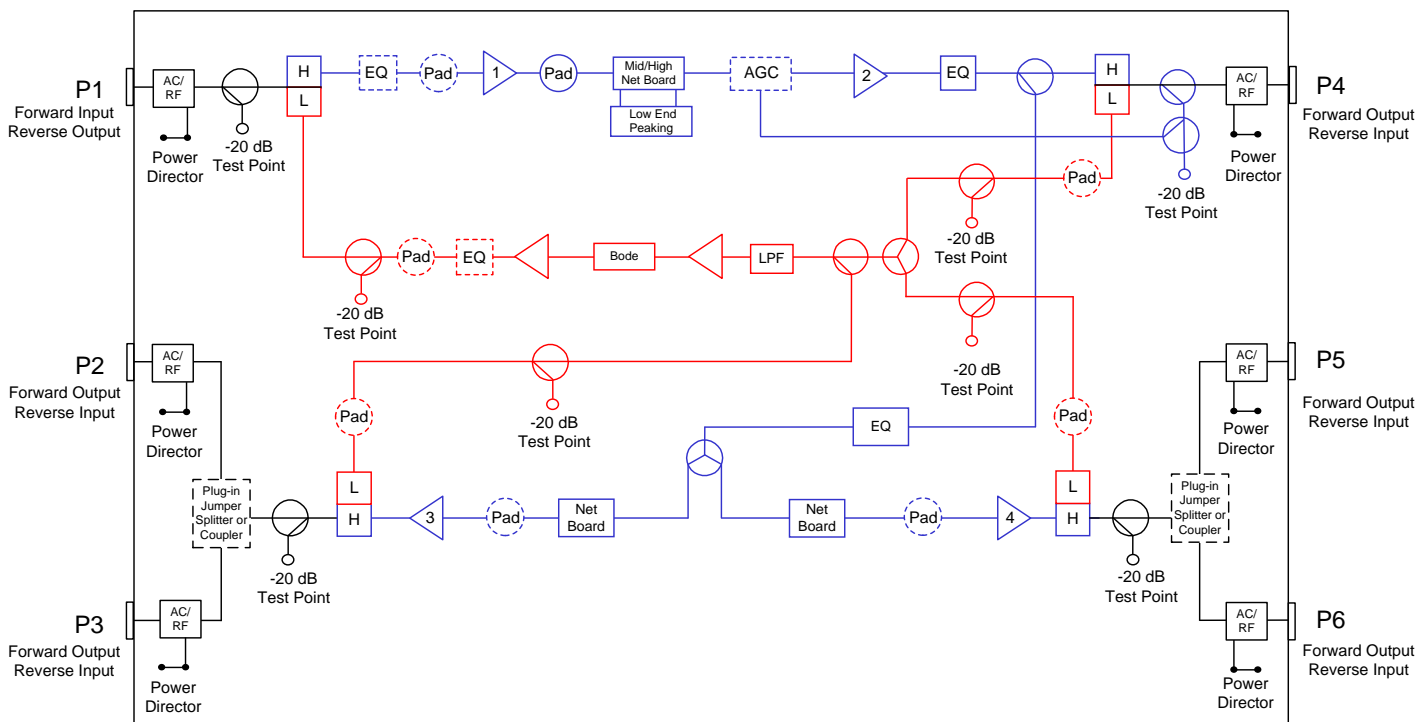
### Features

- ◆ AFM2-T Trunk is compatible with Arris 901e FMT and is a 1G drop-in replacement for the C-Cor FNT700, FNT800, FNT900
- ◆ AFM2-B Bridger is compatible with Arris 901e FMB and is a 1G drop-in replacement for the C-Cor FNB700, FNB800, FNB900
- ◆ AFM2-L Line Extender is compatible with Arris/C-Cor FM331e and is a 1G drop-in replacement for the C-Cor E6 and E7 Line Extender
- ◆ AFM2-E Line Extender is compatible with Arris/C-Cor 900 LE
- ◆ Patented DSIM<sup>®</sup> Technology (programmable AGC)
- ◆ DSIM controlled return band AGC
- ◆ Easy upgrade to 85/105 or 204/258 MHz return bandwidth.
- ◆ Pad adjustable forward and return EQ's
- ◆ Increased reliability with higher surge protection
- ◆ DSIM Android & Apple iOS setup applications
- ◆ RoHS Compliant

# Block Diagrams

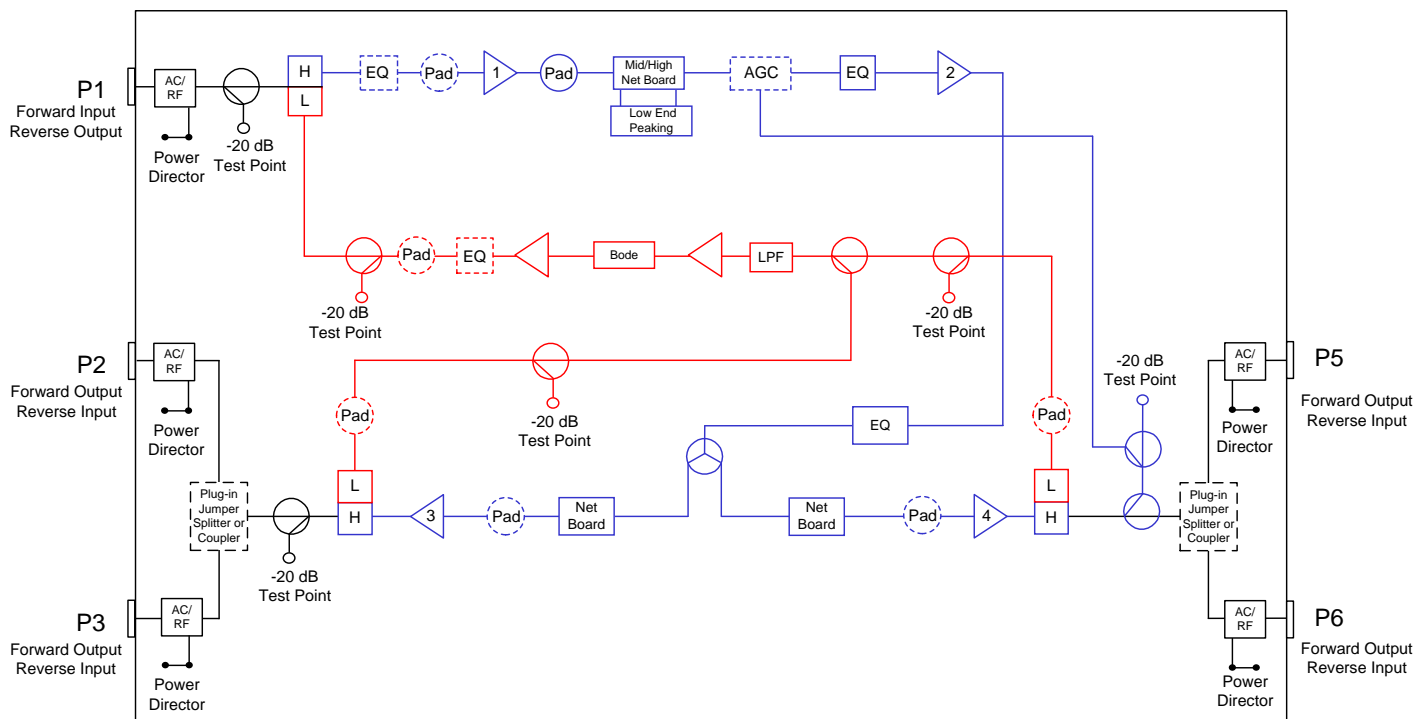
## AFM2-T

### AFM2-T Trunk 1218 MHz Amplifier Block Diagram



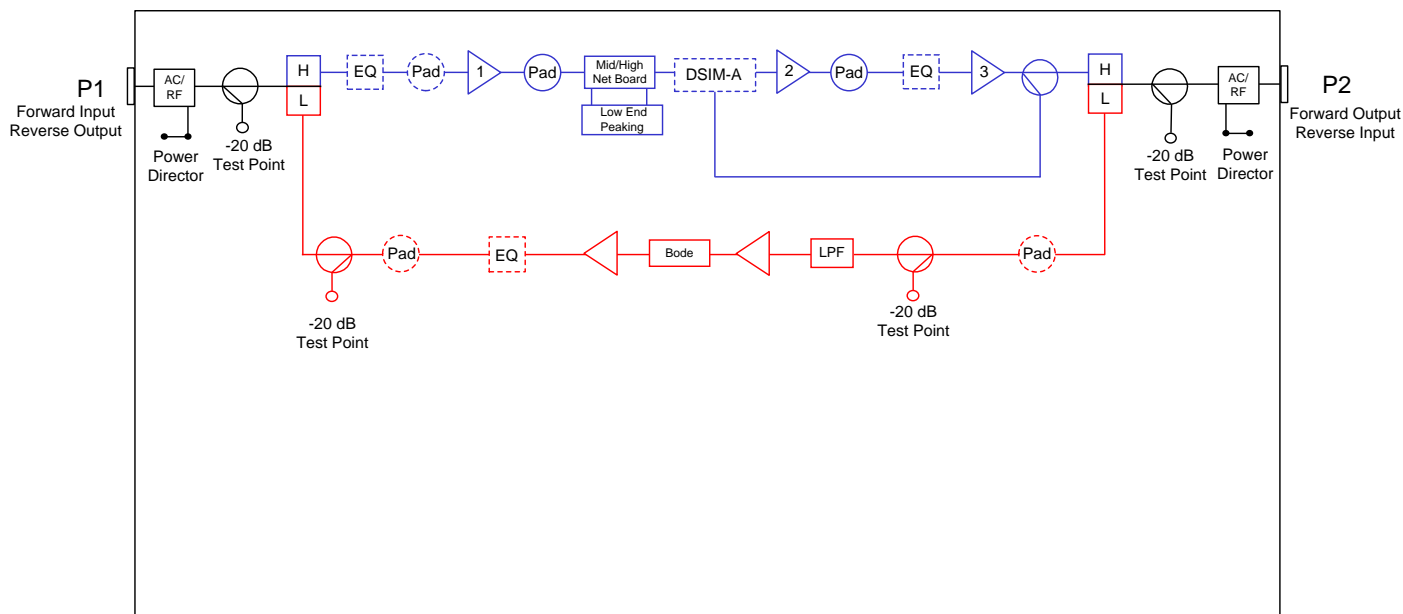
## AFM2-B

### AFM2-B Bridger 1218 MHz Amplifier Block Diagram



# AFM2-L & AFM2-E

## AFM2-L & AFM2-E Line Extender 1218 MHz Amplifier Block Diagram



## Station Parameters 42/53 MHz

STATION PARAMETERS: 1218 MHz 42-53 MHz Split				ASEM For C-Cor™ / Arris® RF Modules 1218 MHz				
		CONDITIONS	UNITS	SPECIFICATIONS				Notes
Housing passband			MHz	5 to 1218				
Input current capacity	Any port, worst case		Amps	15				
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>								
				AFM-T Trunk	AFM-B Bridger	AFM-L LE	AFM-E LE	
Operational slope (Tilt)	@ 54 / 550 / 1218 MHz		dB	0 / 8.1 / 19.0	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)		nSec / 3.58 MHz	37				
Group delay	Channel 3			16				
Group delay	Channel 4			10				
Group delay	Channel 5 & >			4				
<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				
<b>Configuration</b>								
				AFM-T	AFM-B	AFM-L	AFM-E	
<b>Operational Specifications</b>				Trunk	Bridger	Bridger	LE	LE
Station passband			MHz	54 to 1218				
Station flatness	Normalized w / 0 dB slope		±dB	0.35	0.50	0.50	0.30	0.30
Standard operational gain With DSIM AGC	+1.0 / -0 @ 1218 MHz		dB	37.0	47.0	47.0	42.0	42.0
Note1								
<b>Station Referenced Output Levels</b>								
				AFM-T	AFM-B	AFM-L	AFM-E	
				Main	AUX	Bridger	LE	LE
Output Level @...	1218 MHz 1002 MHz 550 MHz 54 MHz		dBmV	47.0 43.5 36.1 28.0	57.0 53.5 46.1 38.0	57.0 53.5 46.1 38.0	57.0 53.5 46.1 38.0	57.0 53.5 46.1 38.0
Note 2								
Reference output slope (Tilt)	54-1218 MHz		dB	19.0	19.0	19.0	19.0	19.0
<b>Station Noise Figure</b>								
				AFM-T	AFM-B	AFM-L	AFM-E	
Noise figure (w / 1 dB for input EQ loss)	Typ. @ 54 to 1002 MHz		dB	9.0	9.0	9.0	9.0	
	Typ. @ 1218 MHz		dB	9.5	9.5	11.0	10.5	
<b>CTB, XMOD &amp; CSO Test Parameters</b>								
496 MHz analog channel loading, 79 channels + 660 MHz digital channel loading, 256 QAM at -6 dBc relative to its associated visual carrier								
<b>CCN Test Parameters</b>								
Trunk Port: 55.25MHz to 547.25MHz, +28dBmV to +36dBmV (8dB tilted) analog + 555MHz to 1215MHz, +30dBmV to +41dBmV (11dB tilted) digital Bridger Ports: 55.25MHz to 547.25MHz, +38dBmV to +46dBmV (8dB tilted) analog + 555MHz to 1215MHz, +40dBmV to +51dBmV (11dB tilted) digital								
<b>Station Distortions (Worse Case)</b>								
				Main	AUX			
Composite Triple Beat (CTB)			-dBc	77	67	67	67	67
Cross Modulation (XMOD)			-dBc	74	65	65	64	64
Composite Second Order (CSO-)			-dBc	76	67	67	67	67
Composite Second Order (CSO+)			-dBc	76	67	67	67	67
Carrier to Composite Noise (CCN)			dB	57	56	56	53	53
MER			-dBc	≥40		≥40	≥40	≥40
BER			-dBc	≤ 1 x 10 <sup>-9</sup>	≤ 1 x 10 <sup>-9</sup>	≤ 1 x 10 <sup>-9</sup>	≤ 1 x 10 <sup>-9</sup>	≤ 1 x 10 <sup>-9</sup>

## Station Parameters 85/105 MHz

STATION PARAMETERS: 1218 MHz 85-105 MHz Split			ASEM For C-Cor™ / Arris® RF Modules 1218 MHz						
		CONDITIONS	UNITS	SPECIFICATIONS					Notes
Housing passband			MHz	5 to 1218					
Input current capacity		Any port, worst case	Amps	15					
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>				AFM-T Trunk	AFM-B Bridger	AFM-L LE	AFM-E LE		
Operational slope (Tilt)		@ 105 / 550 / 1218 MHz	dB	0 / 7.2 / 18.0	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>									
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					
<b>Configuration</b>									
<b>Operational Specifications</b>				AFM-T Trunk	AFM-T Bridger	AFM-B Bridger	AFM-L LE	AFM-E LE	
Station passband			MHz	105 to 1218					
Station flatness		Normalized w / 0 dB slope	±dB	0.35	0.50	0.50	0.35	0.35	
Standard operational gain With DSIM AGC		+1.0 / -0 @ 1218 MHz	dB	37.0	47.0	47.0	42.0	42.0	Note1
<b>Station Referenced Output Levels</b>									
				AFM-T Main	AFM-T AUX	AFM-B Bridger	AFM-L LE	AFM-E LE	
Output Level @...	1218 MHz	dBmV		47.0	57.0	57.0	57.0	57.0	Note 2
	1002 MHz			43.5	53.5	53.5	53.5	53.5	
	550 MHz			36.2	46.2	46.2	46.2	46.2	
	105 MHz			29.0	39.0	39.0	39.0	39.0	
Reference output slope (Tilt)		105-1218 MHz	dB	18.0	18.0	18.0	18.0	18.0	
<b>Station Noise Figure</b>									
Noise figure (w / 1 dB for input EQ loss)		Typ. @ 105 to 1002 MHz	dB	9.0	9.0	9.0	9.0	9.0	
		Typ. @ 1218 MHz	dB	9.5	9.5	10.0	11.0		
<b>CTB, XMOD &amp; CSO Test Parameters</b>									
442 MHz analog channel loading, 74 channels + 660 MHz digital channel loading, 256 QAM at -6 dBc relative to its associated visual carrier									
<b>CCN Test Parameters</b>									
Trunk Port: 109.25MHz to 547.25MHz, +28dBmV to +36dBmV (7dB tilted) analog+ 555MHz to 1215MHz, +30dBmV to +41dBmV (10dB tilted) digital Bridger Ports: 109.25MH to 547.25MHz, +38dBmV to +46dBmV (8dB tilted) analog + 555MHz to 1215MHz, +40dBmV to +51dBmV (11dB tilted) digital									
<b>Station Distortions (Worse Case)</b>									
Composite Triple Beat (CTB)			-dBc	77	67	67	67	67	
Cross Modulation (XMOD)			-dBc	74	65	65	64	64	
Composite Second Order (CSO-)			-dBc	76	67	67	67	67	
Composite Second Order (CSO+)			-dBc	76	67	67	67	67	
Carrier to Composite Noise (CCN)			dB	57	56	56	53	53	
MER			-dBc	≥40		≥40	≥40	≥40	
BER			-dBc	≤ 1 x 10 <sup>-9</sup>	≤ 1 x 10 <sup>-9</sup>	≤ 1 x 10 <sup>-9</sup>	≤ 1 x 10 <sup>-9</sup>	≤ 1 x 10 <sup>-9</sup>	

## Station Parameters 204/258 MHz

STATION PARAMETERS: 1218 MHz 204-258 MHz Split			ASEM For C-Cor™ / Arris® RF Modules 1218 MHz						
		CONDITIONS	UNITS	SPECIFICATIONS					Notes
Housing passband			MHz	5 to 1218					
Input current capacity		Any port, worst case	Amps	15					
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>				AFM-T Trunk	AFM-B Bridger	AFM-L LE	AFM-E LE		
Operational slope (Tilt)		@ 258 / 550 / 1218 MHz	dB	0 / 4.7 / 15.5	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	nSec / 3.58 MHz	30					
Group delay		Channel 31		16					
Group delay		Channel 32		10					
Group delay		Channel 33 & up		3					
<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					
<b>Configuration</b>				AFM-T	AFM-B	AFM-L	AFM-E		
<b>Operational Specifications</b>				Trunk	Bridger	Bridger	LE	LE	
Station passband			MHz	258 to 1218					
Station flatness		Normalized w / 0 dB slope	±dB	0.35	0.50	0.50	0.35	0.35	
Standard operational gain With DSIM AGC		+1.0 / -0 @ 1218 MHz	dB	37.0	47.0	47.0	42.0	42.0	Note 1
<b>Station Referenced Output Levels</b>				AFM-T	AFM-B	AFM-L	AFM-E		
				Main	AUX	Bridger	LE	LE	
Output Level @...		1218 MHz	dBmV	47.0	57.0	57.0	57.0	57.0	Note 2
		1002 MHz		43.5	53.5	53.5	53.5	53.5	
		550 MHz		36.2	46.2	46.2	46.2	46.2	
		258 MHz		31.5	41.5	41.5	41.5	41.5	
Reference output slope (Tilt)		258-1218 MHz	dB	15.5	15.5	15.5	15.5	15.5	
<b>Station Noise Figure</b>									
Noise figure (w / 1 dB for input EQ loss)		Typ. @ 258 to 1002 MHz	dB	9.0		9.0	9.0	9.0	
		Typ. @ 1218 MHz	dB	9.5		9.5	10.0	11.0	
<b>CCN Test Parameters</b>									
Trunk Port: 109.25MHz to 547.25MHz, +28dBmV to +36dBmV (7dB tilted) analog+ 555MHz to 1215MHz, +30dBmV to +41dBmV (10dB tilted) digital Bridger Ports: 109.25MH to 547.25MHz, +38dBmV to +46dBmV (8dB tilted) analog + 555MHz to 1215MHz, +40dBmV to +51dBmV (11dB tilted) digital									
<b>Station CCN/MER/BER Performance</b>									
Carrier to Composite Noise (CCN)			dB	57	56	56	53	53	
MER			-dBc	≥40		≥40	≥40	≥40	
BER			-dBc	≤ 1 x 10 <sup>-9</sup>		≤ 1 x 10 <sup>-9</sup>	≤ 1 x 10 <sup>-9</sup>	≤ 1 x 10 <sup>-9</sup>	

## Reverse Spectrum

REVERSE SPECTRUM:			ASEM For C-Cor™ / Arris® 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				AFM-T	AFM-B	AFM-L	AFM-E
Reverse - Station Dynamic Range							
Reference Output Level			dBmV	42.0	42.0	42.0	42.0
NPR at 50 dB CNR at 42 MHz		42/53 Split	dB	21.0	21.0	24.0	24.0
NPR at 50 dB CNR at 85 MHz		85/105 Split	dB	18.0	18.0	21.0	21.0
NPR at 50 dB CNR at 204 MHz		204/258 Split	dB	12.0	12.0	17.0	17.0
Reverse - Noise Figure							
Noise figure (W/1 dB for input EQ loss)		Maximum	dB	11.0	11.0	6.0	6.0
Power Requirements:							
Max Watts		AFM-T & B W/AFM901E-90VPS (Worst case)	W	52.9	48.6	26.9	TBD
AC Voltage							
Input ranges			VAC	45-90			
Current Draw (with DSIM AGC)							
@ 45 VAC		Maximum	A	1.46	1.38	0.75	TBD
@ 50 VAC			A	1.36	1.28	0.72	TBD
@ 60 VAC			A	1.17	1.09	0.66	TBD
@ 70 VAC			A	1.05	0.97	0.62	TBD
@ 80 VAC			A	0.95	0.89	0.58	TBD
@ 90 VAC			A	0.87	0.80	0.54	TBD
Weight				AFM-T	AFM-B	AFM-L	AFM-E
Weight			lbs. (kg)	5.3 (2.4)	5.3 (2.4)	4.0 (1.8)	5.0 (2.3)
Environmental							
Operating temperature			°F (°C)	-40 to +140 (-40 to +60)			

### Notes:

1. The AFM2-T & B operational gain – with AGC are based on the amplifier configured with jumper at DC/SP 3 (port 3) and DC/SP 2 (port 6) as a 2 output Bridger.
2. When using the DC/SP plug-ins SDA1.2-SPLT, SDA1.2-DC8, SDA1.2-DC10 and SDA1.2-DC12, levels will derated accordingly based on the accessory specification.

## 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"> <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 1.0 dB steps)

### Optional Accessories

Description	Part Numbers
Digital Station Intelligence Manager - Single Pilot AGC Module (Analog or Digital)	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 JXP Platform 0-22 dB	AEQ1.2G
Pad Adjustable Cable Equivalent Equalizers JXP Platform 0-12 dB	ACEQ1.2G
Pad Adjustable Reverse Equalizers 5-42, 85 and 204 MHz JXP Platform 0-12 dB (5 Pin)	AREQPE42 AREQPE85 AREQPE204
Splitter, 1.2GHz	SDA1.2-SPLT
Directional Coupler, 8 dB, 1.2GHz	SDA1.2-DC8
Directional Coupler, 10 dB, 1.2GHz	SDA1.2-DC10
Directional Coupler, 12 dB, 1.2GHz	SDA1.2-DC12
Test Probe (5.5" Long)	100685-01
Test Probe (1.57" / 4 cm Long)	TP-7504
Power Supply Adaptor Cable 9 to 12 Pin Connectors	240336-01
Power Supply 45-90 VAC for AFM901e	AFM901E-90VPS



## Frequency Split Field Conversion Kits

Description	Part Numbers
<b>85/105 Conversion Kits</b>	
CONVERSION KIT, AFM-L 1.2G 85/105 18dB	120611-01
CONVERSION KIT, AFM-L 1.2G 85/105 12dB	120659-01
CONVERSION KIT, AFM-B 1.2G 85/105 18dB	120613-01
CONVERSION KIT, AFM-T 1.2G 85/105 18dB	120614-01
<b>204/258 Conversion Kits</b>	
CONVERSION KIT, AFM-L 1.2G 204/258 15.5dB	120615-01
CONVERSION KIT, AFM-L 1.2G 204/258 8.5dB	120658-01
CONVERSION KIT, AFM-B 1.2G 204/258 15.5dB	120617-01
CONVERSION KIT, AFM-T 1.2G 204/258 15.5dB	120618-01

**Ordering Matrix**

ASEM For C-Cor™/Arris® Product Configuration Worksheet 1218 MHz

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

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

**ORDERING MATRIX**

October 21, 2022

Position	1	2	3	3	4	5	6	7	8	9	10	11	12	13
PART NUMBER	A	F	M	2	-									

5  STATION TYPE

T = AFM2-T 1 Trunk / 2 Briger Outputs (User configurable to 4 outputs)

B = AFM2-B 2 Output Bridger (User configurable to up to 4 outputs)

L = AFM2-L 1 Output Line Extender (Compatible with Arris FM331e LE)

E = AFM2-E 1 Output Line Extender (Compatible with Arris 900-LE)

6  BANDPASS SPLIT

4 = 5-42 MHz / 54-1218 MHz

2 = 5-204 MHz / 258-1218 MHz

8 = 5-85 MHz / 105-1218 MHz

7,8  STATION GAIN (Forward)

Amplifier Model	AFM2-L	AFM2-E	AFM2-B	AFM2-T
Max gain with DSIM	42.0	42.0	47.0	37.0

9  FORWARD GAIN CONTROL TYPE

D = Digital Station Intelligence Manger

10  STATION SLOPE

Call Out	Station	42/54	85/105	240/258
A =	AFM2-B,L or E	19	18	15.5
B =	AFM2-L or E	12	11	8.5
E =	AFM2-T Only	19/19	18/18	15.5/15.5

Note: T/B for Trunk/Bridger Ports

11  STATION GAIN (Reverse)

L = 28 dB min

12  CUSTOM OPTIONS

0 = NONE

X = Determined by Product Management

Generic Order Form: Not all configurations are available



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