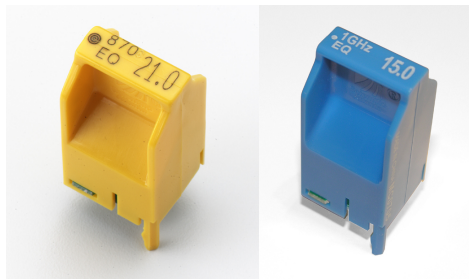


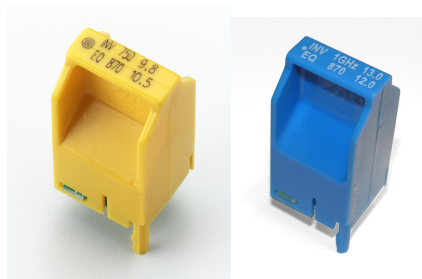
GainMaker® Amplifier Accessories

Description

The GainMaker® amplifier accessories are plug-in devices common to all GainMaker System Amplifiers and Line Extenders. They are typically field installed in accordance with system design. The accessories specified in this document include:



**Forward
Equalizers**



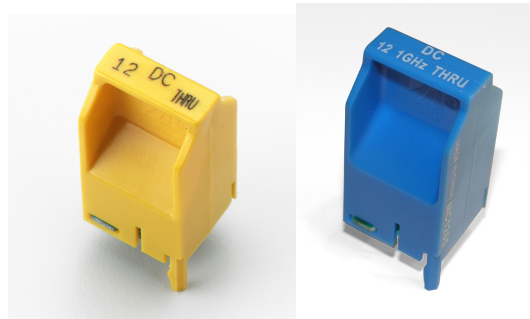
**Inverse
Equalizers**



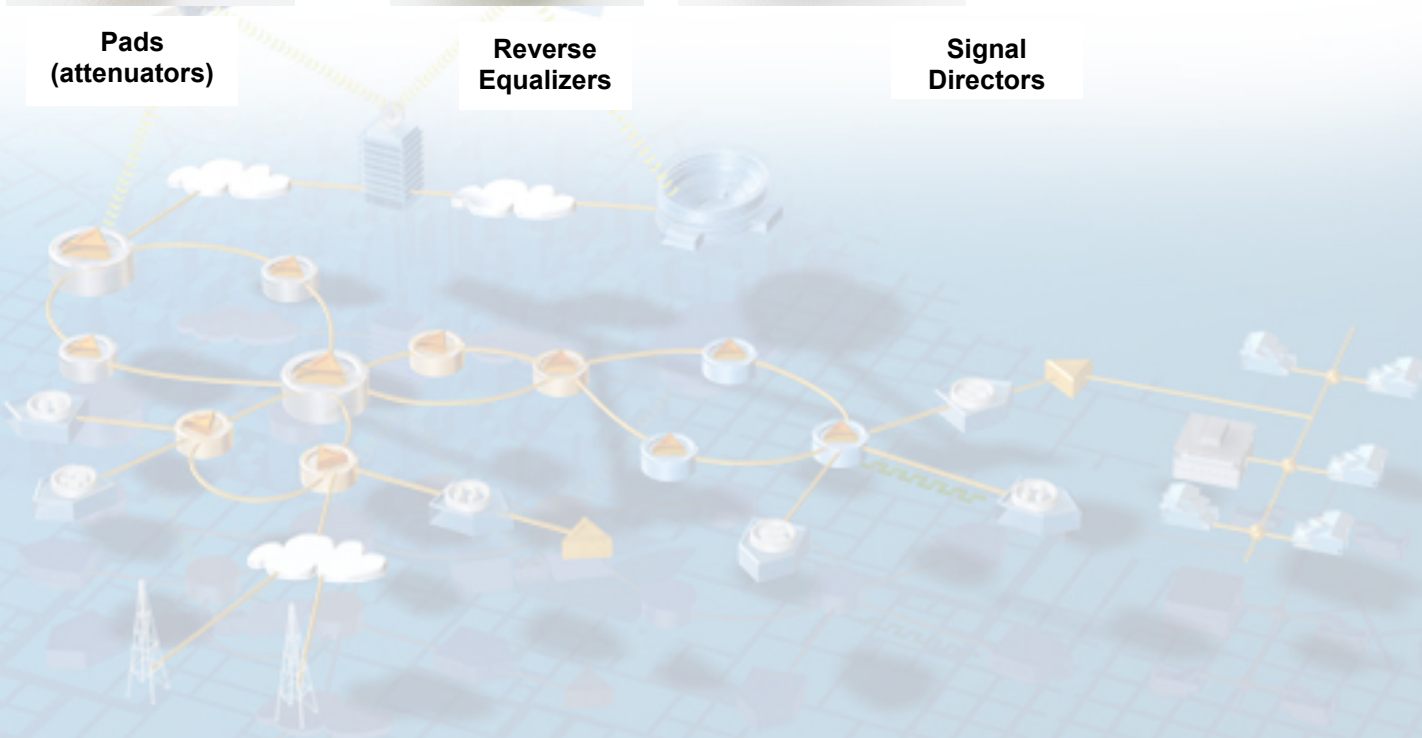
**Pads
(attenuators)**



**Reverse
Equalizers**



**Signal
Directors**



Forward Cable Equalizers

Forward cable equalizers produce a tilted frequency response opposite of that produced by coaxial cable. They are normally used during station balancing to counteract the tilt produced by coaxial cable, in order to achieve the desired output tilt. An equalizer's "dB value" indicates the equivalent length of cable (in dB, at rated high frequency) that the equalizer is designed to offset. The dB value and rated high frequency (750, 870, or 1002 MHz) are printed on the top of each equalizer. The amount of tilt (in dB) that the equalizer produces from low to high frequency is printed on the side of each equalizer.

Forward Cable Equalizers - 1002 MHz (blue cover)

EQ Value (dB)	Part Number	Typical Insertion Loss (dB) at Various Frequencies (MHz)								
		52	70	86	550	600	650	750	870	1002
0	4007228	-	-	-	-	-	-	-	-	-
1.5	4007229	2.2	2.2	2.1	1.4	1.4	1.3	1.2	1.1	1.0
3.0	4007230	3.4	3.3	3.2	1.9	1.8	1.7	1.5	1.2	1.0
4.5	4007231	4.6	4.4	4.3	2.3	2.1	2	1.7	1.4	1.0
6.0	4007232	5.8	5.6	5.4	2.7	2.5	2.3	1.9	1.5	1.0
7.5	4007233	7.0	6.7	6.5	3.2	2.9	2.6	2.1	1.6	1.0
9.0	4007234	8.2	7.9	7.7	3.6	3.3	3.0	2.4	1.7	1.0
10.5	4007235	9.4	9.0	8.8	4.0	3.7	3.3	2.6	1.8	1.0
12.0	4007236	10.6	10.2	9.9	4.5	4.0	3.6	2.8	1.9	1.0
13.5	4007237	11.8	11.3	11.0	4.9	4.4	3.9	3.1	2.0	1.0
15.0	4007238	13.0	12.5	12.1	5.3	4.8	4.3	3.3	2.2	1.0
16.5	4007239	14.2	13.6	13.2	5.8	5.2	4.6	3.5	2.3	1.0
18.0	4007240	15.4	14.8	14.3	6.2	5.5	4.9	3.7	2.4	1.0
19.5	4007241	16.6	15.9	15.4	6.6	5.9	5.3	4.0	2.5	1.0
21.0	4007242	17.8	17.1	16.5	7.1	6.3	5.6	4.2	2.6	1.0
22.5	4007243	19.5	18.7	18.1	8.0	7.2	6.4	4.9	3.2	1.5
24.0	4007244	20.7	19.9	19.2	8.4	7.6	6.7	5.2	3.4	1.5
25.5	4007245	21.9	21.0	20.3	8.8	7.9	7.1	5.4	3.5	1.5
27.0	4007246	23.1	22.2	21.5	9.3	8.4	7.4	5.6	3.6	1.5
28.5	4007247	24.3	23.3	22.6	9.7	8.7	7.7	5.8	3.7	1.5
30.0	4007248	25.5	24.5	23.7	10.1	9.1	8.0	6.1	3.8	1.5

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.

Forward Cable Equalizers, continued

Forward Cable Equalizers - 870 MHz (yellow cover)

EQ Value (dB)	Part Number	Typical Insertion Loss (dB) at Various Frequencies (MHz)							
		52	70	86	550	600	650	750	870
0	589260	-	-	-	-	-	-	-	-
1.5	589261	2.2	2.1	2.1	1.3	1.3	1.2	1.1	1.0
3.0	589262	3.3	3.2	3.2	1.7	1.6	1.5	1.2	1.0
4.5	589263	4.5	4.4	4.2	2.0	1.9	1.7	1.4	1.0
6.0	589264	5.7	5.5	5.3	2.4	2.1	1.9	1.5	1.0
7.5	589265	6.9	6.6	6.4	2.7	2.4	2.1	1.6	1.0
9.0	589266	8.0	7.7	7.5	3.1	2.7	2.4	1.7	1.0
10.5	589267	9.2	8.8	8.5	3.4	3.0	2.6	1.9	1.0
12.0	589268	10.4	10.0	9.6	3.7	3.3	2.8	2.0	1.0
13.5	589269	11.6	11.1	10.7	4.1	3.6	3.1	2.1	1.0
15.0	589270	12.8	12.2	11.8	4.4	3.9	3.3	2.2	1.0
16.5	589271	13.9	13.3	12.8	4.8	4.1	3.5	2.3	1.0
18.0	589272	15.1	14.4	13.9	5.1	4.4	3.7	2.5	1.0
19.5	589273	16.3	15.5	15.0	5.5	4.7	4.0	2.6	1.0
21.0	589274	17.4	16.7	16.1	5.8	5.0	4.2	2.7	1.0
22.5	589275	18.6	17.8	17.2	6.1	5.3	4.4	2.8	1.0
24.0	589276	19.8	18.9	18.2	6.5	5.6	4.7	2.9	1.0
25.5	589277	21.0	20.0	19.3	6.8	5.8	4.9	3.1	1.0
27.0	589278	22.1	21.1	20.4	7.2	6.1	5.1	3.2	1.0

Forward Cable Equalizers - 750 MHz (yellow cover)

EQ Value (dB)	Part Number	Typical Insertion Loss (dB) at Various Frequencies (MHz)							
		52	70	86	550	600	650	750	
0	589260	-	-	-	-	-	-	-	-
1.5	589306	2.1	2.1	2.0	1.2	1.2	1.1	1.0	
3.0	589307	3.3	3.2	3.1	1.5	1.4	1.2	1.0	
4.5	589308	4.4	4.3	4.2	1.7	1.5	1.4	1.0	
6.0	589309	5.6	5.3	5.2	2.0	1.7	1.5	1.0	
7.5	589310	6.7	6.4	6.2	2.2	1.9	1.6	1.0	
9.0	589311	7.9	7.5	7.2	2.4	2.1	1.7	1.0	
10.5	589312	9.0	8.6	8.3	2.7	2.2	1.8	1.0	
12.0	589313	10.2	9.7	9.3	2.9	2.4	1.9	1.0	
13.5	589314	11.3	10.8	10.3	3.2	2.6	2.1	1.0	
15.0	589315	12.4	11.9	11.4	3.4	2.8	2.2	1.0	
16.5	589316	13.6	12.9	12.4	3.6	3.0	2.3	1.0	
18.0	589317	14.7	14.0	13.5	3.9	3.1	2.4	1.0	
19.5	589318	15.9	15.1	14.5	4.1	3.3	2.5	1.0	
21.0	589319	17.0	16.2	15.5	4.4	3.5	2.6	1.0	
22.5	589320	18.2	17.3	16.6	4.6	3.7	2.8	1.0	
24.0	589321	19.3	18.4	17.6	4.9	3.8	2.9	1.0	
25.5	589322	20.5	19.4	18.6	5.1	4.0	3.0	1.0	
27.0	589323	21.6	20.5	19.7	5.3	4.2	3.1	1.0	

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.

Forward Linear Equalizers

Forward Linear Equalizers produce linear tilt. A Linear Equalizer will need to be used in the plug-in input or interstage equalizer location if a node output tilt does not have the desired station output tilt. The EQ "value" is the amount of tilt from lowest to highest frequency (52-1002MHz).

Forward Linear Equalizers – 1002 MHz (blue cover) *(used in Node only)*

EQ Value (dB)	Part Number	Typical Insertion Loss (dB) at Various Frequencies (MHz)								
		52	70	86	550	600	650	750	870	1002
0	4007228	-	-	-	-	-	-	-	-	-
1.5	4008778	2.5	2.5	2.4	1.7	1.6	1.6	1.4	1.2	1.0
3.0	4008779	4.0	3.9	3.9	2.4	2.3	2.1	1.8	1.4	1.0
4.5	4008780	5.5	5.4	5.3	3.1	2.9	2.7	2.2	1.6	1.0
6.0	4008781	7.0	6.9	6.8	3.8	3.5	3.2	2.6	1.8	1.0
7.5	4008782	8.5	8.4	8.2	4.6	4.2	3.8	3.0	2.0	1.0
9.0	4008783	10.0	9.8	9.7	5.3	4.8	4.3	3.4	2.2	1.0
10.5	4008784	11.5	11.3	11.1	6.0	5.4	4.9	3.8	2.4	1.0
12.0	4008785	13.0	12.8	12.6	6.7	6.1	5.4	4.2	2.6	1.0
13.5	4008786	14.5	14.2	14.0	7.4	6.7	6.0	4.6	2.9	1.0
15.0	4008787	16.0	15.7	15.5	8.1	7.3	6.5	5.0	3.1	1.0

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.

Inverse Equalizers

Inverse equalizers produce cable equivalent tilt. An inverse equalizer is normally used in place of a forward input equalizer during station balancing when an amplifier is short spaced, in order to achieve the desired output tilt. An inverse equalizer's "dB value" indicates the length of cable (in dB) that would produce similar tilt (loss differential from low to high frequency). As with the other equalizers, the 750, 870, and 1002 MHz inverse equalizer values are printed on the top of each inverse equalizer.

Inverse Equalizers – 1002 MHz (blue cover)

Inverse EQ 1002 MHz Value (dB)	Part Number	Typical Insertion Loss (dB) at Various Frequencies (MHz)								
		52	70	86	550	600	650	750	870	1002
1.6	4007486	1.0	1.1	1.1	1.8	1.9	1.9	2.1	2.2	2.3
3.3	4007487	1.0	1.1	1.2	2.7	2.8	2.9	3.1	3.3	3.6
4.9	4007488	1.0	1.2	1.3	3.5	3.7	3.8	4.2	4.5	4.9
6.5	4007489	1.0	1.2	1.4	4.3	4.6	4.8	5.2	5.7	6.2
8.1	4007490	1.0	1.3	1.5	5.2	5.4	5.7	6.3	6.9	7.5
9.8	4007491	1.0	1.3	1.6	6.0	6.3	6.7	7.3	8.0	8.8
11.4	4007492	1.0	1.4	1.7	6.8	7.2	7.6	8.4	9.2	10.1
13.0	4007493	1.0	1.4	1.8	7.6	8.1	8.6	9.4	10.4	11.4
14.6	4007494	1.0	1.5	1.9	8.5	9.0	9.5	10.5	11.6	12.7
16.2	4007495	1.0	1.5	2.0	9.3	9.9	10.4	11.5	12.7	14.0

Inverse Equalizers – 750 & 870 MHz (yellow cover)

Inverse EQ 870 MHz Value (dB)	Inverse EQ 750 MHz Value (dB)	Part Number	Typical Insertion Loss (dB) at Various Frequencies (MHz)							
			52	70	86	550	600	650	750	870
1.5	1.4	589325	1.0	1.1	1.1	1.8	1.9	1.9	2.1	2.2
3.0	2.9	589326	1.0	1.1	1.2	2.7	2.8	2.9	3.1	3.3
4.5	4.2	589327	1.0	1.2	1.3	3.5	3.7	3.8	4.2	4.5
6.0	5.5	589328	1.0	1.2	1.4	4.3	4.6	4.8	5.2	5.7
7.5	6.9	589329	1.0	1.3	1.5	5.2	5.4	5.7	6.3	6.9
9.0	8.4	589330	1.0	1.3	1.6	6.0	6.3	6.7	7.3	8.0
10.5	9.8	589331	1.0	1.4	1.7	6.8	7.2	7.6	8.4	9.2
12.0	11.1	589332	1.0	1.4	1.8	7.6	8.1	8.6	9.4	10.4
13.5	12.6	589333	1.0	1.5	1.9	8.5	9.0	9.5	10.5	11.6
15.0	13.8	589334	1.0	1.5	2.0	9.3	9.9	10.4	11.5	12.7

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 Equalizers

Reverse equalizers produce a tilted frequency response opposite of that produced by coaxial cable. They are normally used during station balancing to counteract the tilt produced by coaxial cable, in order to achieve desired tilt. An equalizer's "dB value" indicates the equivalent length of cable (in dB, at rated high frequency) that the equalizer is designed to offset. The dB value and rated high frequency (40, 42, 55, or 65 MHz) are printed on the top of each equalizer. The amount of tilt (in dB) that the equalizer produces from low to high frequency is printed on the side of each equalizer.

Reverse Equalizers - 42 MHz

42 MHz reverse equalizers (EQ's) are used in GainMaker amplifiers with either a 40/52 or 42/54 MHz reverse/forward bandsplit. Both the 42 MHz and the 40 MHz EQ values are printed on the top of each 42 MHz reverse equalizer.

EQ Value at 40 MHz (dB)	EQ Value at 42 MHz (dB)	Part Number	Typical Insertion Loss (dB)		
			5 MHz	40 MHz	42 MHz
0	0	712719	-	-	-
1	1	589628	1.7	1.0	1.0
2	2	589629	2.3	1.0	1.0
3	3.1	589630	3.0	1.0	0.9
4	4.1	589631	3.6	1.0	0.9
5	5.1	589632	4.3	1.0	0.9
6	6.1	589633	4.9	1.0	0.9
7	7.2	589634	5.6	1.0	0.8
8	8.2	589635	6.2	1.0	0.8
9	9.2	589636	6.9	1.0	0.8
10	10.2	589637	7.5	1.0	0.8
11	11.3	589638	8.2	1.0	0.7
12	12.3	589639	8.9	1.0	0.7

Reverse Equalizers - 55 MHz

55 MHz reverse equalizers are used in GainMaker amplifiers with a 55/70 MHz reverse/forward bandsplit.

EQ Value at 55 MHz (dB)	Part Number	Typical Insertion Loss (dB)	
		5 MHz	55 MHz
0	712719	-	-
1	712679	1.7	1.0
2	712680	2.4	1.0
3	712681	3.1	1.0
4	712682	3.8	1.0
5	712683	4.5	1.0
6	712684	5.2	1.0
7	712685	5.9	1.0
8	712686	6.7	1.0
9	712687	7.4	1.0
10	712688	8.1	1.0
11	712689	8.8	1.0
12	712690	9.5	1.0

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 Equalizers, continued

Reverse Equalizers - 65 MHz

65 MHz reverse equalizers are used in GainMaker amplifiers with a 65/86 MHz reverse/forward bandsplit.

EQ Value at 65 MHz (dB)	Part Number	Typical Insertion Loss (dB)	
		5 MHz	65 MHz
0	712719	-	-
1	589736	1.7	1.0
2	589737	2.5	1.0
3	589738	3.2	1.0
4	589739	3.9	1.0
5	589740	4.7	1.0
6	589741	5.4	1.0
7	589742	6.1	1.0
8	589743	6.9	1.0
9	589744	7.6	1.0
10	589745	8.3	1.0
11	589746	9.0	1.0
12	589747	9.8	1.0

Reverse Thermal Equalizers

Reverse thermal equalizers can be used in GainMaker amplifiers with either a 40/52 or 42/54 MHz reverse/forward bandsplit. Reverse thermal equalizers compensate for variations in cable loss due to changes in temperature.

EQ Value at 40 MHz (dB)	EQ Value at 42 MHz (dB)	Part Number	Typical Insertion Loss (dB) *		
			5 MHz	40 MHz	42 MHz
1	1	748376	2.3	1.8	1.6
2	2	748377	3.0	1.8	1.7
3	3.1	748378	3.9	1.8	1.8
4	4.1	748379	4.6	1.8	1.9
5	5.1	748380	5.2	1.8	1.8
6	6.1	748381	5.8	1.8	1.8
7	7.2	748382	6.5	1.8	1.7
8	8.2	748383	7.2	1.8	1.8

* Reverse Thermal Equalizer specifications reflect typical performance and are referenced to 77°F (25°C).

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.

GainMaker - Amplifier Accessories



Signal Directors

Signal directors are used in the High Gain Dual and Low Gain Dual system amplifiers only. One signal director is required per amplifier to route and/or split forward RF signal to the Auxiliary output port(s). The signal director is available in splitter, DC-8, or DC-12 configurations for splitting the Auxiliary path signal to feed both Auxiliary ports, or as a jumper, for routing all signal to a selected port.

Signal Directors – 1002 MHz (blue covers)

Type	Part Number	Tap/ Thru Leg	Typical Insertion Loss (dB) at Various Frequencies (MHz)								
			52	70	86	550	600	650	750	870	1002
Jumper	4008208	Aux 2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3
		Aux 1	0.1	0.1	0.1	0.4	0.4	0.4	0.5	0.6	0.7
2-way Splitter	4008364	-	3.4	3.4	3.4	3.8	3.9	3.9	4.0	4.1	4.2
DC-8	4008365	Thru	1.7	1.8	1.8	2.1	2.1	2.1	2.1	2.2	2.3
		Tap	8.3	8.3	8.3	8.2	8.3	8.2	8.1	8.0	8.0
DC-12	4008366	Thru	1.1	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.5
		Tap	12.4	12.4	12.4	11.8	11.8	11.7	11.7	11.7	11.8

Signal Directors – 870 MHz

Type	Part Number	Tap/ Thru Leg	Typical Insertion Loss (dB) at Various Frequencies (MHz)							
			52	70	86	550	600	650	750	870
Jumper	589281	-	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3
2-way Splitter	589357	-	3.7	3.7	3.7	3.7	3.7	3.7	3.8	4.0
DC-8	589363	Thru	1.7	1.7	1.7	1.8	1.9	1.9	1.9	2.0
		Tap	8.3	8.3	8.3	8.3	8.2	8.2	8.1	8.1
DC-12	589367	Thru	1.0	1.0	1.0	1.2	1.2	1.3	1.4	1.6
		Tap	12.1	12.1	12.1	11.7	11.6	11.6	11.6	11.6

Note: The GainMaker plug-in signal director produces loss in the forward signal path only. The signal director is physically located inboard of the forward/reverse duplex filters in the forward path of the amplifier. Therefore, there are no reverse path losses associated. Auxiliary port reverse input pad values must be selected accordingly during system design when using the splitter, DC-8, or DC-12 signal director in a station.

System Trim

A plug-in system trim may be desired to counter the frequency response effects of some passive devices in the coaxial plant. A mid frequency, single dip trim (Model MSD-1NGF) is available for all 870 MHz GainMaker amplifiers. Order part number 714446.

Fuse Kits / Surge Protectors

System Amplifier	Part Number
Slow Blow Fuse Kit, 4 amp (contains 4 fuses)	735628
Slow Blow Fuse Kit, 8 amp (contains 4 fuses)	735630
Slow Blow Fuse Kit, 15 amp (contains 4 fuses)	735632
Crowbar Surge Protector	715973

Line Extender	Part Number
Slow Blow Fuse Kit, 4 amp contains 2 fuses)	735629
Slow Blow Fuse Kit, 8 amp (contains 2 fuses)	735631
Slow Blow Fuse Kit, 15 amp (contains 2 fuses)	735633
Crowbar Surge Protector	715973

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.

Pads (attenuators)

Plug-in pads produce flat (even) loss across the forward and reverse frequency spectrums. Pads are used during station balancing to adjust amplifier signal levels as needed. The (dB) loss produced is equal to the pad value printed on the top of the pad. The pads listed below are rated for operation to 1 GHz.

Pad Value (dB)	Part Number
0	589693
1	589695
2	589697
3	589699
4	589701
5	589703
6	589705
7	589707
8	589709
9	589711
10	589713
11	589715
12	589717
13	589719
14	589721
15	589723
16	589725
17	589727
18	589729
19	589731
20	589733

Pad Value (dB)	Part Number
0.5	589694
1.5	589696
2.5	589698
3.5	589700
4.5	589702
5.5	589704
6.5	589706
7.5	589708
8.5	589710
9.5	589712
10.5	589714
11.5	589716
12.5	589718
13.5	589720
14.5	589722
15.5	589724
16.5	589726
17.5	589728
18.5	589730
19.5	589732
20.5	589734
75 ohm terminator	589735

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.