

Multimedia Stretch Tap Directional Coupler/Equalizer

The Multimedia Stretch™ Tap Directional Coupler/Equalizer (DC/EQ) enables a more flexible deployment of reverse services in a hybrid fiber/coax transmission system.

The DC/EQ is a by-product on the extensive reverse path. The 5–1000 MHz broadband equalizers add attenuation to the reverse path of the tap port allowing for a more flexible deployment of reverse services. The cost-effective DC/EQ eliminates the need for high-pass filters by adding a selectable 5–1000 MHz broadband equalizer to all tap ports while providing the appropriate directional coupler (dB value of the tap).

Benefits

The DC/EQ has several key benefits.

- Eliminate the need for high-pass filters.
- Enable systems to better support signal transmission in this challenging portion of the spectrum by strategically attenuating reverse path signals.
- Improve overall signal-to-noise performance by raising output levels to the upper ends of their dynamic range on telephony network interface units and customer premise devices.
- Simplify deployment of new services by lowering the dynamic range variance.
- Minimize concerns regarding overdriving optical return transmitter lasers.

Scope of Application

The DC/EQ plugs into any of Cisco Stretch Tap products including 2-Way, 4-Way and 8-Way. It is available in six different equalizer values from 3 to 18 dB.

Figure 1. Multimedia Stretch Tap Directional Coupler/Equalizer



Features

- Available in six equalizer values
- Available at 1 GHz frequency band
- Plugs into all Cisco Stretch Tap products
- Unique labeling to distinguish equalized DC from standard DC
- Additional labels provided in packaging to mark the tap containing a DC/EQ module

Product Specifications

See the table below for product specifications.

Table 1. Insertion Loss with DC/EQ

2-Way Insertion Loss with DC/EQ																
Freq. (MHz)	4 dB		8 dB		11 dB		14 dB		17 dB		20 dB		23 dB		26 dB	
	Max	Mean	Max	Mean	Max	Mean	Max	Mean	Max	Mean	Max	Mean	Max	Mean	Max	Mean
5	NA	NA	3.6	3.3	2.2	1.9	1.5	1.2	1.2	0.9	1.1	0.8	1.1	0.8	1.1	0.8
40	NA	NA	3.5	3.2	2.0	1.7	1.3	1.0	1.1	0.8	1.0	0.7	1.0	0.7	1.0	0.7
50	NA	NA	3.6	3.3	1.8	1.5	1.2	0.9	1.0	0.7	0.8	0.5	0.8	0.5	0.8	0.5
300	NA	NA	4.4	4.1	2.7	2.4	1.8	1.5	1.5	1.2	1.4	1.1	1.4	1.1	1.4	1.1
450	NA	NA	4.4	4.1	2.9	2.6	2.2	1.9	1.8	1.5	1.6	1.3	1.6	1.3	1.6	1.3
550	NA	NA	4.3	4.0	2.9	2.6	2.3	2.0	1.9	1.6	1.7	1.4	1.7	1.4	1.7	1.4
750	NA	NA	3.9	3.5	2.9	2.5	2.4	2.0	2.1	1.7	1.8	1.4	1.8	1.4	1.8	1.4
870	NA	NA	4.5	4.1	3.2	2.8	2.5	2.1	2.3	1.9	2.0	1.6	2.0	1.6	2.0	1.6
1000	NA	NA	5.2	4.7	3.8	3.3	3.2	2.7	2.9	2.4	2.6	2.1	2.6	2.1	2.6	2.1
4-Way Insertion Loss with DC/EQ																
Freq. (MHz)	8 dB		11 dB		14 dB		17 dB		20 dB		23 dB		26 dB		29 dB	
	Max	Mean	Max	Mean	Max	Mean	Max	Mean	Max	Mean	Max	Mean	Max	Mean	Max	Mean
5	NA	NA	3.6	3.3	2.2	1.9	1.5	1.2	1.2	0.9	1.1	0.8	1.1	0.8	1.1	0.8
40	NA	NA	3.5	3.2	2.0	1.7	1.3	1.0	1.1	0.8	1.0	0.7	1.0	0.7	1.0	0.7
50	NA	NA	3.6	3.3	1.8	1.5	1.2	0.9	1.0	0.7	0.8	0.5	0.8	0.5	0.8	0.5
300	NA	NA	4.4	4.1	2.7	2.4	1.8	1.5	1.5	1.2	1.4	1.1	1.4	1.1	1.4	1.1
450	NA	NA	4.4	4.1	2.9	2.6	2.2	1.9	1.8	1.5	1.6	1.3	1.6	1.3	1.6	1.3
550	NA	NA	4.3	4.0	2.9	2.6	2.3	2.0	1.9	1.6	1.7	1.4	1.7	1.4	1.7	1.4
750	NA	NA	3.9	3.5	2.9	2.5	2.4	2.0	2.1	1.7	1.8	1.4	1.8	1.4	1.8	1.4
870	NA	NA	4.5	4.1	3.2	2.8	2.5	2.1	2.3	1.9	2.0	1.6	2.0	1.6	2.0	1.6
1000	NA	NA	5.2	4.7	3.8	3.3	3.2	2.7	2.9	2.4	2.6	2.1	2.6	2.1	2.6	2.1
8-Way Insertion Loss with DC/EQ																
Freq. (MHz)	11 dB		14 dB		17 dB		20 dB		23 dB		26 dB		29 dB		-	
	Max	Mean	Max	Mean	Max	Mean	Max	Mean	Max	Mean	Max	Mean	Max	Mean	Max	Mean
5	NA	NA	3.6	3.3	2.2	1.9	1.5	1.2	1.2	0.9	1.1	0.8	1.1	0.8	-	-
40	NA	NA	3.5	3.2	2.0	1.7	1.3	1.0	1.1	0.8	1.0	0.7	1.0	0.7	-	-
50	NA	NA	3.6	3.3	1.8	1.5	1.2	0.9	1.0	0.7	0.8	0.5	0.8	0.5	-	-
300	NA	NA	4.4	4.1	2.7	2.4	1.8	1.5	1.5	1.2	1.4	1.1	1.4	1.1	-	-
450	NA	NA	4.4	4.1	2.9	2.6	2.2	1.9	1.8	1.5	1.6	1.3	1.6	1.3	-	-
550	NA	NA	4.3	4.0	2.9	2.6	2.3	2.0	1.9	1.6	1.7	1.4	1.7	1.4	-	-
750	NA	NA	3.9	3.5	2.9	2.5	2.4	2.0	2.1	1.7	1.8	1.4	1.8	1.4	-	-
870	NA	NA	4.5	4.1	3.2	2.8	2.5	2.1	2.3	1.9	2.0	1.6	2.0	1.6	-	-
1000	NA	NA	5.2	4.7	3.8	3.3	3.2	2.7	2.9	2.4	2.6	2.1	2.6	2.1	-	-

Table 2. 2-Way 9-Inch Stretch Tap Loss with DC/EQ

2-Way 9 Inch Stretch Tap Loss with DC/EQ									
	Freq. (MHz)	Tap Value							
		4 dB	8 dB	11 dB	14 dB	17 dB	20 dB	23 dB	26 dB
Equalizer 3 dB	5	7.6	12.1	13.8	16.8	19.8	22.8	25.8	28.8
	40	6.8	10.9	13.5	16.5	19.5	22.5	25.5	28.5
	50	6.6	10.7	13.4	16.4	19.4	22.4	25.4	28.4
	300	5.7	9.8	12.5	15.5	18.5	21.5	24.5	27.5
	450	5.3	9.8	12.1	15.1	18.1	21.1	24.1	27.1
	550	5.1	9.7	11.9	14.9	17.9	20.9	23.9	26.9
	750	4.4	9.0	11.4	14.4	17.4	20.4	23.4	26.4
	870	4.2	8.5	11.2	14.2	17.2	20.2	23.2	26.2
	1000	4.4	8.8	11.0	14.0	17.0	20.0	23.0	26.0
Equalizer 6 dB	5	10.5	15.0	16.6	19.6	22.6	25.6	28.6	
	40	9.3	13.5	15.9	18.9	21.9	24.9	27.9	
	50	9.0	13.2	15.8	18.8	21.8	24.8	27.8	
	300	7.2	11.4	13.9	16.9	19.9	22.9	25.9	
	450	6.5	11.0	13.2	16.2	19.2	22.2	25.2	
	550	6.0	10.5	12.7	15.7	18.7	21.7	24.7	
	750	4.9	9.1	11.9	14.9	17.9	20.9	23.9	
	870	4.5	8.5	11.4	14.4	17.4	20.4	23.4	
	1000	4.4	8.7	11.0	14.0	17.0	20.0	23.0	
Equalizer 9 dB	5	14.0	18.2	19.8	22.4	25.4	28.4		
	40	12.1	16.6	18.7	21.4	24.4	27.4		
	50	11.6	16.3	18.4	21.2	24.2	27.2		
	300	8.6	13.1	15.3	18.4	21.4	24.4		
	450	7.6	12.3	14.6	17.2	20.2	23.2		
	550	6.8	11.7	14.1	16.5	19.5	22.5		
	750	5.4	10.1	12.6	15.3	18.3	21.3		
	870	4.7	9.0	11.6	14.7	17.7	20.7		
	1000	4.1	8.7	11.0	14.0	17.0	20.0		
Equalizer 12 dB	5	16.8	21.6	22.9	25.2	28.2			
	40	14.9	19.3	21.1	23.8	26.8			
	50	14.4	18.9	20.7	23.6	26.6			
	300	9.9	14.6	16.8	19.8	22.8			
	450	8.3	13.3	15.7	18.3	21.3			
	550	7.4	12.4	14.8	17.4	20.4			
	750	5.8	10.1	12.9	15.8	18.8			
	870	5.0	8.8	11.9	14.9	17.9			
	1000	4.2	8.6	11.0	14.0	17.0			
Equalizer 15 dB	5	19.9	25.1	25.7	28.0				
	40	17.1	22.8	23.8	26.3				
	50	16.4	22.3	23.2	26.0				
	300	11.9	17.1	18.6	21.3				
	450	10.1	15.6	17.1	19.4				
	550	8.7	14.5	16.0	18.3				
	750	6.2	11.7	13.5	16.2				
	870	5.1	10.0	12.1	15.1				
	1000	4.3	9.0	11.0	14.0				
Equalizer 18 dB	5	22.5	27.6	28.7					
	40	20.1	24.3	27.1					
	50	19.7	24.1	26.6					
	300	14.1	18.3	20.0					
	450	11.3	15.7	17.6					
	550	9.5	14.3	16.2					
	750	6.7	11.3	13.7					
	870	5.3	9.6	12.3					
	1000	4.5	9.1	11.1					

Note: Unless otherwise noted, specifications are based on measurements made in accordance with NCTA Practices for Measurements on Cable Television Systems using standard frequency assignments and are referenced to 68 °F(20 °C). All ports are terminated.

Table 3. 4-Way 9-Inch Stretch Tap Loss with DC/EQ

4-Way 9 Inch Stretch Tap Loss with DC/EQ									
	Freq. (MHz)	Tap Value							
		8 dB	11 dB	14 dB	17 dB	20 dB	23 dB	26 dB	29 dB
Equalizer 3 dB	5	10.8	15.2	16.8	19.8	22.8	25.8	28.8	31.8
	40	10.5	14.0	16.5	19.5	22.5	25.5	28.5	31.5
	50	10.4	13.8	16.4	19.4	22.4	25.4	28.4	31.4
	300	9.5	12.9	15.5	18.5	21.5	24.5	27.5	30.5
	Tap Loss								
	(dB)	450	9.1	13.0	15.3	18.1	21.1	24.1	27.1
		550	8.9	13.1	15.3	17.9	20.9	23.9	26.9
	(max tolerance	750	8.4	12.7	14.9	17.4	20.4	23.4	26.4
	±1 dB)	870	8.2	12.5	14.5	17.2	20.2	23.2	26.2
		1000	8.0	12.4	14.3	17.0	20.0	23.0	26.0
Equalizer 6 dB	5	13.6	18.1	19.6	22.6	25.6	28.6	31.6	
	40	12.9	16.6	18.9	21.9	24.9	27.9	30.9	
	50	12.8	16.4	18.8	21.8	24.8	27.8	30.8	
	300	10.9	14.7	16.9	19.9	22.9	25.9	28.9	
	Tap Loss								
	(dB)	450	10.2	14.4	16.2	19.2	22.2	25.2	28.2
		550	9.7	14.0	15.7	18.7	21.7	24.7	27.7
	(max tolerance	750	8.9	13.0	14.9	17.9	20.9	23.9	26.9
	±1 dB)	870	8.4	13.0	14.4	17.4	20.4	23.4	26.4
		1000	8.0	12.4	14.0	17.0	20.0	23.0	26.0
Equalizer 9 dB	5	16.4	21.3	23.2	25.4	28.4	31.4		
	40	15.4	19.7	21.9	24.4	27.4	30.4		
	50	15.2	19.4	21.5	24.2	27.2	30.2		
	300	12.4	16.5	18.5	21.4	24.4	27.4		
	Tap Loss								
	(dB)	450	11.2	15.6	18.1	20.2	23.2	26.8	
		550	10.5	15.1	17.5	19.5	22.5	26.1	
	(max tolerance	750	9.3	14.0	16.3	18.3	21.3	24.4	
	±1 dB)	870	8.7	13.2	14.8	17.7	20.7	23.7	
		1000	8.0	12.4	14.5	17.0	20.0	23.0	
Equalizer 12 dB	5	19.9	24.6	26.3	28.2	31.2			
	40	18.0	22.5	24.3	26.8	29.8			
	50	17.6	22.0	23.9	26.6	29.6			
	300	13.8	17.9	20.2	22.8	25.8			
	Tap Loss								
	(dB)	450	12.3	16.7	19.3	21.3	24.3		
		550	11.4	15.9	18.6	20.4	23.4		
	(max tolerance	750	9.8	14.0	16.8	18.8	21.8		
	±1 dB)	870	8.9	12.9	15.0	17.9	20.9		
		1000	8.1	11.8	14.5	17.0	20.0		
Equalizer 15 dB	5	22.9	28.0	30.2	31.0				
	40	20.3	25.9	28.0	29.3				
	50	20.0	25.4	27.4	29.0				
	300	15.3	20.4	22.7	24.3				
	Tap Loss								
	(dB)	450	13.4	18.8	21.5	22.4			
		550	12.3	17.8	20.6	21.3			
	(max tolerance	750	10.2	15.5	18.3	19.2			
	±1 dB)	870	9.1	14.1	16.4	18.1			
		1000	8.3	13.0	15.7	17.0			
Equalizer 18 dB	5	25.4	30.4	32.3					
	40	23.2	27.5	30.4					
	50	22.8	27.3	29.9					
	300	17.4	21.6	23.4					
	Tap Loss								
	(dB)	450	14.6	19.2	20.9				
		550	13.1	18.2	19.6				
	(max tolerance	750	10.7	15.8	17.3				
	±1 dB)	870	9.3	14.6	15.7				
		1000	8.2	13.1	15.1				

Note: Unless otherwise noted, specifications are based on measurements made in accordance with NCTA Practices for Measurements on Cable Television Systems using standard frequency assignments and are referenced to 68 °F (20 °C). All ports are terminated.

Table 4. 8-Way 9-Inch Stretch Tap Loss with DC/EQ

8-Way - Revision A								
	Freq. MHz	Tap Value						
		11 dB	14 dB	17 dB	20 dB	23 dB	26 dB	29 dB
Equalizer 3 dB	5	13.8	18.9	19.8	22.8	25.8	28.8	31.8
	40	13.5	17.6	19.6	22.5	25.5	28.5	31.5
	50	13.4	17.5	19.5	22.4	25.4	28.4	31.4
	300	12.5	16.6	18.5	21.5	24.5	27.5	30.5
	450	12.1	16.9	18.5	21.1	24.1	27.1	30.1
	550	11.9	16.8	18.5	20.9	23.9	26.9	29.9
	750	11.4	16.5	18.1	20.4	23.4	26.4	29.4
	870	11.3	16.3	17.6	20.2	23.2	26.2	29.9
Tap Loss (dB) (max tolerance ±1 dB)	1000	12.1	16.5	17.2	20.0	23.0	27.0	30.3
Equalizer 6 dB	5	16.6	21.1	22.6	25.6	28.6	31.6	34.6
	40	15.9	19.8	21.9	24.9	27.9	30.9	33.9
	50	15.8	19.5	21.8	24.8	27.8	30.8	33.8
	300	13.9	17.8	19.9	22.9	25.9	28.9	31.9
	450	13.2	17.3	19.2	22.2	25.2	28.2	31.2
	550	12.7	17.4	19.1	21.7	24.7	27.7	30.7
	750	11.9	16.4	18.3	20.9	23.9	26.9	29.9
	870	11.5	15.8	17.5	20.4	23.4	26.5	30.8
Tap Loss (dB) (max tolerance ±1 dB)	1000	12.1	16.0	17.7	20.0	23.0	26.6	30.1
Equalizer 9 dB	5	20.1	24.2	26.2	28.4	31.4	34.4	
	40	18.4	22.9	25.1	27.4	30.4	33.4	
	50	18.2	22.6	24.7	27.2	30.2	33.2	
	300	15.4	19.5	21.8	24.4	27.4	30.4	
	450	14.2	18.7	21.0	23.2	26.2	29.2	
	550	13.5	18.5	20.7	22.5	25.5	28.5	
	750	12.3	17.4	19.3	21.3	24.3	27.3	
	870	11.7	16.3	18.4	20.7	23.7	26.7	
Tap Loss (dB) (max tolerance ±1 dB)	1000	12.1	16.0	18.4	20.0	23.0	26.6	
Equalizer 12 dB	5	23.0	27.6	29.5	31.2	34.2		
	40	21.3	25.6	27.5	29.8	32.8		
	50	20.8	25.2	27.1	29.6	32.6		
	300	16.8	21.0	23.5	25.8	28.8		
	450	15.3	19.7	22.3	24.3	27.3		
	550	14.4	19.1	21.6	23.4	26.4		
	750	12.8	17.4	19.8	21.8	24.8		
	870	12.1	16.2	18.4	20.9	23.9		
Tap Loss (dB) (max tolerance ±1 dB)	1000	12.1	15.9	18.0	20.2	23.1		
Equalizer 15 dB	5	25.9	30.0	32.4	34.0			
	40	23.5	28.1	30.2	32.3			
	50	23.0	27.6	29.7	32.0			
	300	18.5	22.5	25.1	27.3			
	450	16.6	20.8	23.6	25.4			
	550	15.5	20.1	22.6	24.3			
	750	13.2	18.0	20.3	22.2			
	870	12.1	16.3	18.8	21.1			
Tap Loss (dB) (max tolerance ±1 dB)	1000	12.4	15.8	18.3	20.0			
Equalizer 18 dB	5	28.6	33.5	35.4				
	40	26.6	30.7	33.6				
	50	26.2	30.5	33.1				
	300	20.7	24.6	26.6				
	450	18.0	22.0	24.2				
	550	16.3	20.7	22.8				
	750	13.6	18.7	20.4				
	870	12.4	16.1	18.3				
Tap Loss (dB) (max tolerance ±1 dB)	1000	12.4	16.3	19.3				

Note: Unless otherwise noted, specifications are based on measurements made in accordance with NCTA Practices for Measurements on Cable Television Systems using standard frequency assignments and are referenced to 68 °F(20 °C). All ports are terminated.

Ordering Information

The following table lists the part numbers (P/N) for the DC/EQ.

Table 5. Ordering Information

Tap Loss Value			EQ Value					
			3 dB	6 dB	9 dB	12 dB	15 dB	18 dB
2-Way	4-Way	8-Way	DC/EQ P/N					
4 dB	8 dB	11 dB	4038221	4038229	4038236	4038242	4038247	4038251
8 dB	11 dB	14 dB	4038222	4038230	4038237	4038243	4038248	4038252
11 dB	14 dB	17 dB	4038223	4038231	4038238	4038244	4038249	4038253
14 dB	17 dB	20 dB	4038224	4038232	4038239	4038245	4038250	-
17 dB	20 dB	23 dB	4038225	4038233	4038240	4038246	-	-
20 dB	23 dB	26 dB	4038226	4038234	4038241	-	-	-
23 dB	26 dB	-	4038227	4038235	-	-	-	-
26 dB	-	-	4038228	-	-	-	-	-



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