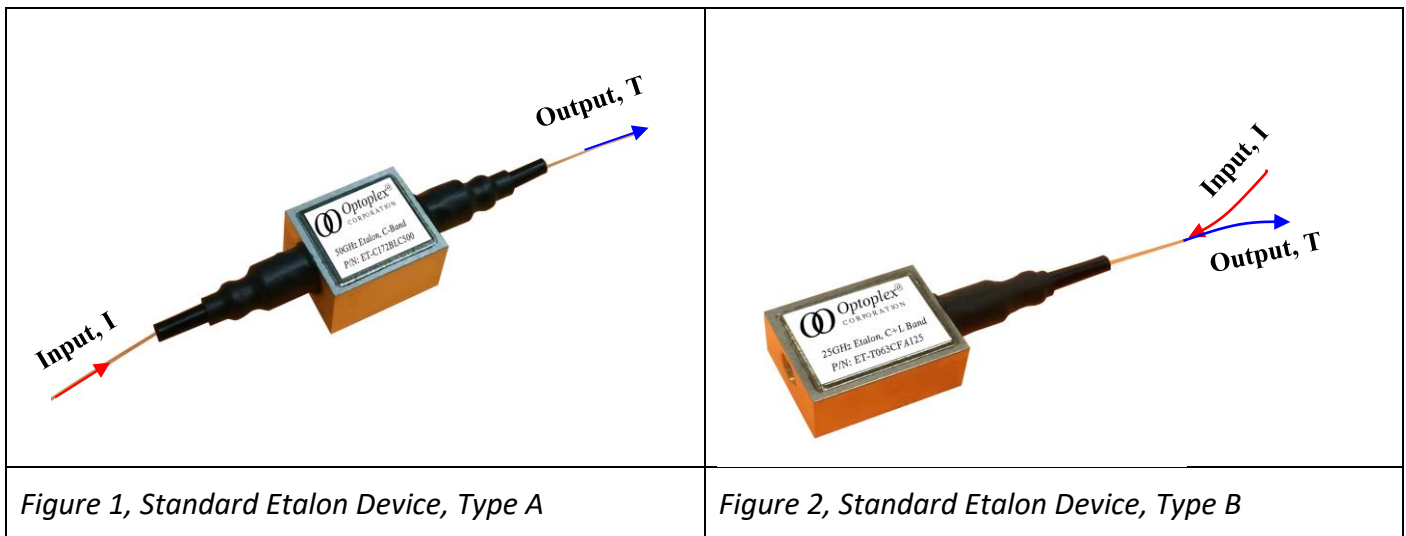


Pigtailed Fabry-Perot Etalon Devices

Optoplex's Inline Fabry-Perot Air-Gap Etalon is based on its proprietary free-space optics technology that offers superior optical performance and excellent environmental stability. With in-situ monitoring and adjustment in manufacturing, the FSR (free-spectrum range) can be made very accurately to the required spec (such as 50, or 100GHz). Also, the peak wavelength can be aligned very precisely to what the customers need.

Optoplex provides a wide selection of F-P Etalons covering different wavelength ranges for C-, L-, C+L, or O-band with different FSR from 200GHz, 100GHz, 50GHz, 25GHz, 12.5GHz to 6.25GHz.

Types of Packages



Notes:

- Type-A is the standard design of the free-space optics-based etalon.
- Type-B is a special design to provide higher peak-to-valley contrast ratio (almost 2X). The bandwidth of Type-B is slightly narrower (~0.7X of Type-A's). The insertion loss of Type-B is higher than Type-A's (~1.5 -2.0X)

<h3>Features</h3> <ul style="list-style-type: none">• Low insertion loss• Precise peak wavelength (frequency) setting• Extremely environmental stability (+/- 1.5GHz lifetime)• Compact size• Wide selections of wavelength coverages• Large selections of FSR: 200, 100, 50, 25, 12.5, 6.25 or customer specific• Option with PM fiber available	<h3>Applications</h3> <ul style="list-style-type: none">• DWDM filtering• Comb light source• Inter-channel noise suppression• Wavelength reference• Signal shaping• Spectroscopic Optical instrumentation
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General Specifications

Parameter	Symbol	Unit	FSR (GHz)						
			400	200	100	50	25	12.5	6.5
Free Spectral Range (FSR)	FSR	GHz	400	200	100	50	25	12.5	6.5
FSR Tolerance	Δ FSR	GHz	± 0.3	± 0.2	± 0.1	± 0.05	± 0.05	± 0.03	± 0.02
Center Frequency Alignment at room temperature	$\Delta\phi$	GHz	± 3.0	± 2.5	± 1.5	± 1.0	± 0.5	± 0.4	± 0.3
Temperature dependent frequency shift	TDFS	MHz/ $^{\circ}$ C	50	40	30	30	30	N/A	N/A

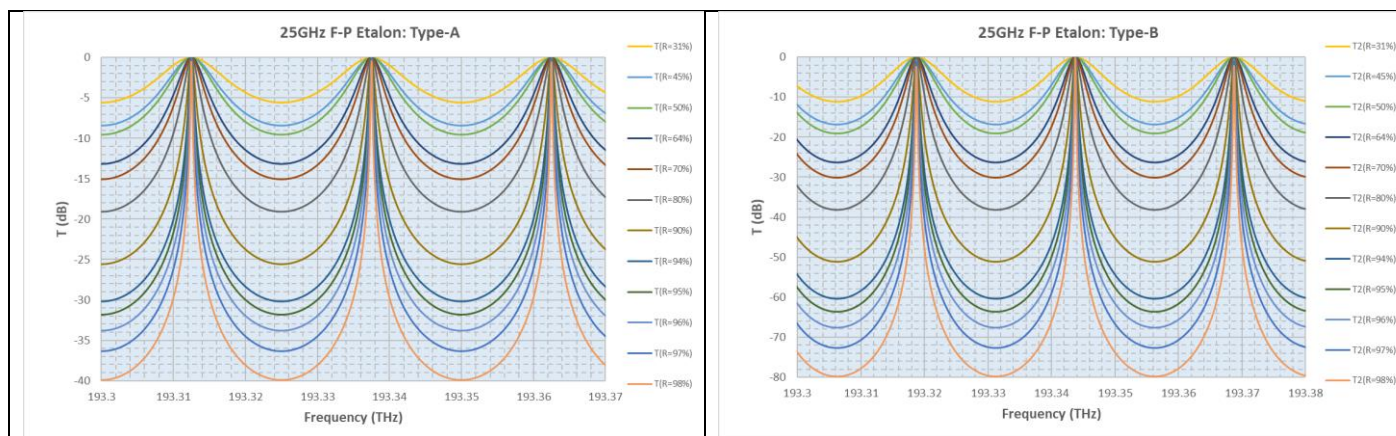
Type-A											Type-B										
0.5dB BW											0.5dB BW										
FSR (GHz)	Mirror Reflectance										FSR (GHz)	Mirror Reflectance									
	0.31	0.45	0.5	0.64	0.7	0.8	0.9	0.94	0.97	0.31		0.45	0.5	0.64	0.7	0.8	0.9	0.94	0.97		
6.25	1.28	0.84	0.72	0.46	0.36	0.23	0.11	0.06	0.03	6.25	0.87	0.57	0.49	0.31	0.25	0.16	0.07	0.04	0.05		
12.5	1.74	1.14	0.99	0.63	0.50	0.31	0.15	0.09	0.04	12.5	1.20	0.80	0.69	0.44	0.35	0.22	0.10	0.06	0.03		
25	3.47	2.29	1.97	1.25	1.00	0.62	0.29	0.17	0.08	25	2.41	1.59	1.37	0.87	0.69	0.43	0.20	0.12	0.06		
50	6.94	4.57	3.94	2.50	1.99	1.24	0.59	0.34	0.17	50	4.82	3.18	2.74	1.74	1.39	0.87	0.41	0.24	0.12		
100	13.89	9.15	7.88	5.01	3.99	2.49	1.17	0.69	0.34	100	9.64	6.36	5.49	3.49	2.78	1.73	0.82	0.48	0.24		
200	27.78	18.30	15.76	10.02	7.98	4.97	2.34	1.38	0.68	200	19.28	12.73	10.97	6.98	5.56	3.47	1.63	0.96	0.47		
400	55.56	36.59	31.53	20.03	15.96	9.95	4.69	2.75	1.35	400	38.56	25.45	21.94	13.95	11.12	6.93	3.27	1.92	0.94		
1.0dB BW											1.0dB BW										
FSR (GHz)	Mirror Reflectance										FSR (GHz)	Mirror Reflectance									
	0.31	0.45	0.5	0.64	0.7	0.8	0.9	0.94	0.97	0.31		0.45	0.5	0.64	0.7	0.8	0.9	0.94	0.97		
6.25	1.28	0.84	0.72	0.46	0.36	0.23	0.11	0.06	0.03	6.25	0.87	0.57	0.49	0.31	0.25	0.16	0.07	0.04	0.05		
12.5	2.55	1.67	1.44	0.91	0.73	0.45	0.21	0.13	0.06	12.5	1.74	1.14	0.99	0.63	0.50	0.31	0.15	0.09	0.09		
25	5.11	3.34	2.88	1.83	1.45	0.91	0.43	0.25	0.12	25	3.47	2.29	1.97	1.25	1.00	0.62	0.29	0.17	0.19		
50	10.21	6.69	5.76	3.65	2.91	1.81	0.85	0.50	0.25	50	6.94	4.57	3.94	2.50	1.99	1.24	0.59	0.34	0.38		
100	20.42	13.38	11.52	7.30	5.82	3.62	1.71	1.00	0.49	100	13.89	9.15	7.88	5.01	3.99	2.49	1.17	0.69	0.75		
200	40.84	26.76	23.03	14.61	11.63	7.25	3.42	2.00	0.99	200	27.78	18.30	15.76	10.02	7.98	4.97	2.34	1.38	1.51		
400	81.68	53.51	46.06	29.22	23.26	14.49	6.83	4.01	1.97	400	55.56	36.59	31.53	20.03	15.96	9.95	4.69	2.75	3.01		
3dB BW											3dB BW										
FSR (GHz)	Mirror Reflectance										FSR (GHz)	Mirror Reflectance									
	0.31	0.45	0.5	0.64	0.7	0.8	0.9	0.94	0.97	0.31		0.45	0.5	0.64	0.7	0.8	0.9	0.94	0.97		
6.25	2.66	1.68	1.44	0.90	0.72	0.45	0.21	0.12	0.06	6.25	1.63	1.06	0.91	0.58	0.46	0.29	0.13	0.08	0.08		
12.5	5.32	3.36	2.88	1.81	1.43	0.89	0.42	0.25	0.12	12.5	3.26	2.12	1.82	1.15	0.92	0.57	0.27	0.16	0.17		
25	10.64	6.72	5.75	3.61	2.87	1.78	0.84	0.49	0.24	25	6.51	4.24	3.65	2.31	1.84	1.14	0.54	0.32	0.34		
50	21.27	13.45	11.50	7.22	5.74	3.57	1.68	0.99	0.48	50	13.03	8.48	7.29	4.62	3.67	2.29	1.08	0.63	0.67		
100	42.54	26.89	23.01	14.45	11.48	7.13	3.36	1.97	0.97	100	26.06	16.96	14.58	9.23	7.35	4.58	2.16	1.27	1.34		
200	85.09	53.78	46.01	28.90	22.95	14.27	6.71	3.94	1.94	200	52.12	33.92	29.17	18.46	14.69	9.15	4.31	2.53	2.69		
400	170.18	107.56	92.02	57.79	45.90	28.53	13.43	7.88	3.88	400	104.23	67.85	58.34	36.93	29.39	18.30	8.62	5.06	5.38		

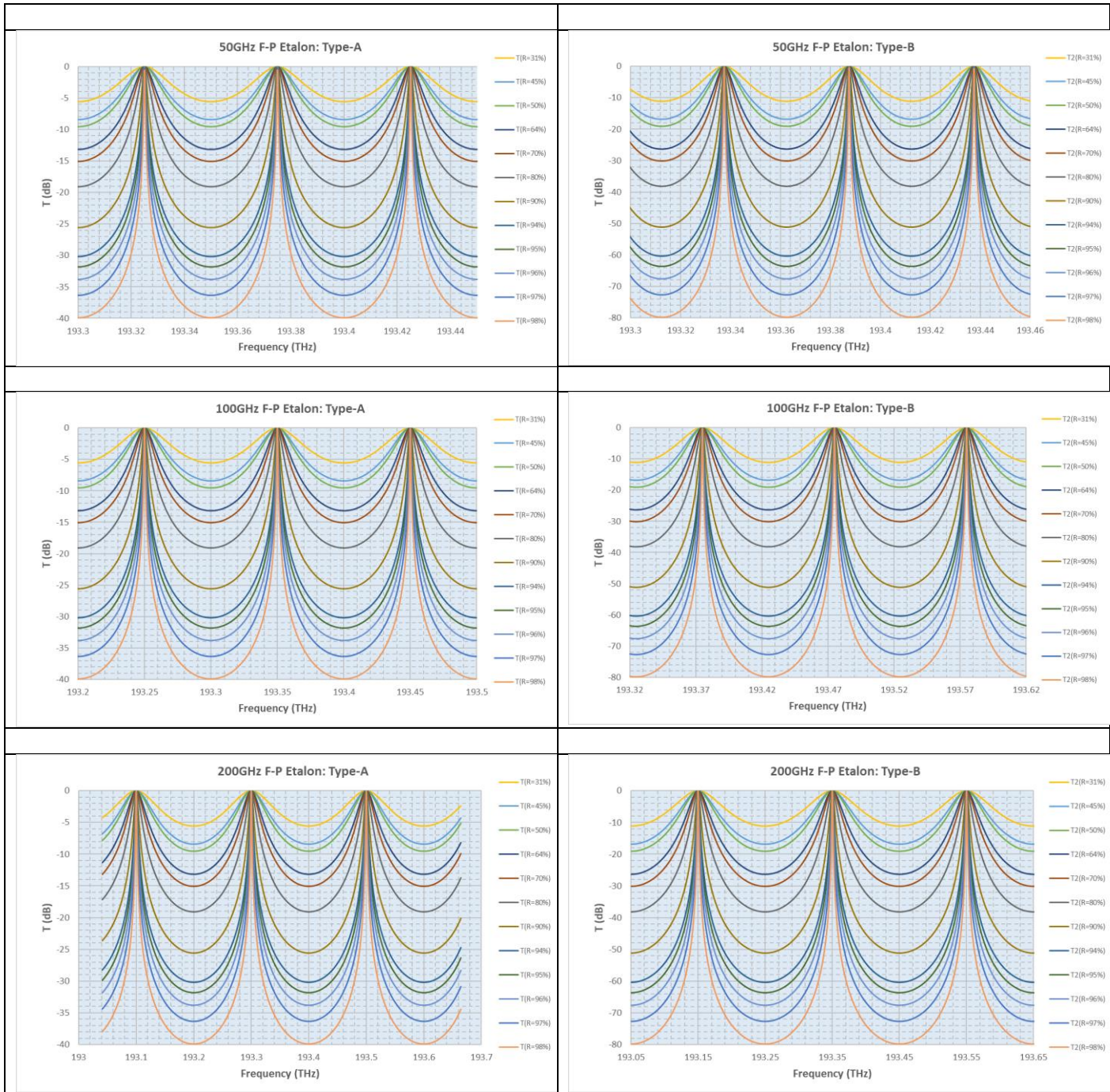
Type-A								Type-B							
Insertion Loss (dB)								Insertion Loss (dB)							
Mirror Reflectance	400GHz	200 GHz	100 GHz	50 GHz	25 GHz	12.5GHz	6.25GHz	Mirror Reflectance	400GHz	200 GHz	100 GHz	50 GHz	25 GHz	12.5GHz	6.25GHz
31%	1.2	1.2	1.2	1.2	1.5	2.0	2.5	31%	2.0	2.0	2.0	2.0	2.5	3.0	3.5
45%	1.2	1.2	1.2	1.2	1.5	2.0	2.5	45%	2.0	2.0	2.0	2.0	2.5	3.0	3.5
50%	1.2	1.2	1.2	1.2	1.5	2.0	2.5	50%	2.0	2.0	2.0	2.0	2.5	3.0	3.5
64%	1.2	1.2	1.2	1.2	1.5	1.5	2.0	64%	2.0	2.0	2.0	2.0	2.5	3.0	3.5
70%	1.1	1.1	1.1	1.1	1.5	1.5	2.0	70%	1.8	1.8	1.8	1.8	2.5	3.0	3.5
80%	1.1	1.1	1.1	1.1	1.5	1.5	2.0	80%	1.8	1.8	1.8	1.8	2.5	3.0	3.5
90%	1.3	1.3	1.3	1.3	1.6	1.8	2.2	90%	2.2	2.2	2.2	2.2	2.5	3.0	3.5
94%	1.5	1.5	1.5	1.5	1.8	2.0	2.5	94%	2.5	2.5	2.5	2.5	3.0	3.5	3.5
97%	1.5	1.5	1.5	1.5	1.8	2.0	2.5	97%	2.5	2.5	2.5	2.5	3.0	3.5	3.5

Mirror Reflectance	Finesse	Peak-to-Valley Contrast Ratio (dB)
31%	2.5	5
45%	3.5	8
50%	4	9
64%	7	12
70%	8.5	14
80%	14	18
90	30	23
94	50	26
97	100	33

Mirror Reflectance	Finesse	Peak-to-Valley Contrast Ratio (dB)
31%	3.5	10
45%	6	16
50%	7	18
64%	10	24
70%	14	27
80%	22	35
90	46	40
94	79	45
97	74	55

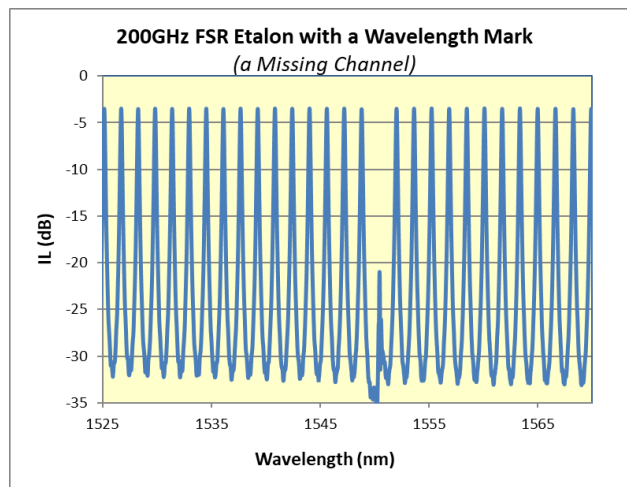
Typical Spectra of Etalons (Type-A and Type-B)





Etalon with a Built-in Wavelength Reference

Optoplex has a special design for etalon with a built-in wavelength reference (a missing channel). The missing channel can be used as an ABSOLUTE wavelength reference.



This is particularly useful in fiber sensing system with swept light source. With this wavelength ruler, one can measure the signal's wavelength very precisely.

Contact Optoplex for details.

Model and Part Number Definition

