4.0 Relative Spectral Response (RSR) Summary

Outline

- RSR Key Issues
- Definitions
- Band level RSR summary charts
- Summary table of results
- Composite traph of MWIR RSRs (Bands 20-25)
- Composite graph of LWIR PV Bands RSRs (Bands 27-30)
- Composite graph of LWIR PC Bands RSRs (Bands 31-36)
- Notional graphs of LWIR PC Bands RSRs with Band 31 crosstalk OOB light leak

RSR Key Issues

- Corrected measured RSRs for non-orbit transmission effects
  - for atmospheric transmission (Bands 30-36)
  - T/V CaF_2 window transmission
  - LWIR PbTe Intermediate Cooler Window temperature shift
- Wavelength scale uncertainties
  - following “smile” correction procedure, no wavelength scale adjustment required for CO_2 13.8 micrometer absorption feature alignment
- SpMA Out-of-Plane Aberrations
  - light is “red shifted” towards end channels
- In-valid RSR measurements for end channels
  - SpMA source slightly underfills exit slit

RSR Key Issues -continued

- CWL vs Ch# “Smile” correction procedure
  - shifted Channel CWLs to average of parabola fitted to CWL vs Ch# distributions (after discarding significant out-of-family data points)
  - recomputed and normalized RSRs
- Band 29 corrected ambient measurement vs corrected T/V measurement
  - large (and imprecise) CaF2 window corrections required for T/V measurements
  - moderate PbTe temperature dependent transmission corrections needed for ambient environment measurements

RSR Key Issues -continued

- Integration of OOB-Dispersive measurements with In-Band RSRs pending clarification of SBRS normalization procedures
- Crosstalk amplitudes
  - SWIR to MWIR ≤ 1%
  - LWIR Band 31 to remaining PC Bands (TBD)

Definitions

- RSR Weighted Center Wavelength (CWL)
  - $$CW = \frac{\int_{-1\%}^{1\%} RSR(\lambda) \bullet \lambda}{\int_{-1\%}^{1\%} RSR(\lambda)} d\lambda$$
- RSR Weighted Bandwidth (BW)
  - $$BW_{wtd} = \int_{-1\%}^{1\%} RSR(\lambda) d\lambda$$
- Full Width at Half Maximum (FWHM)
  - Wavelength interval between the 50% response wavelengths
- 50% Response Wavelengths
- 1% Response Wavelengths

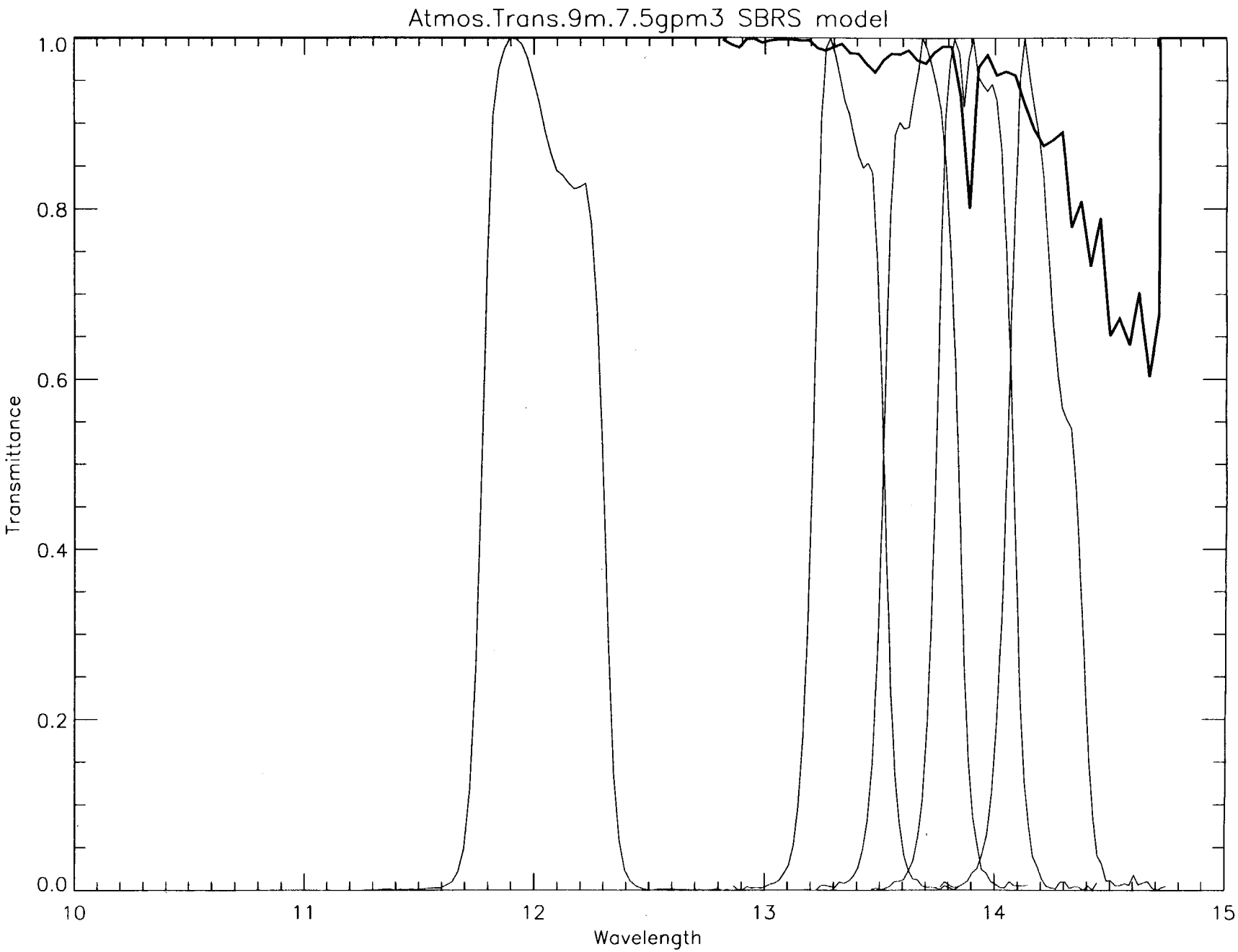
Summary of PFM RSR Data Collects

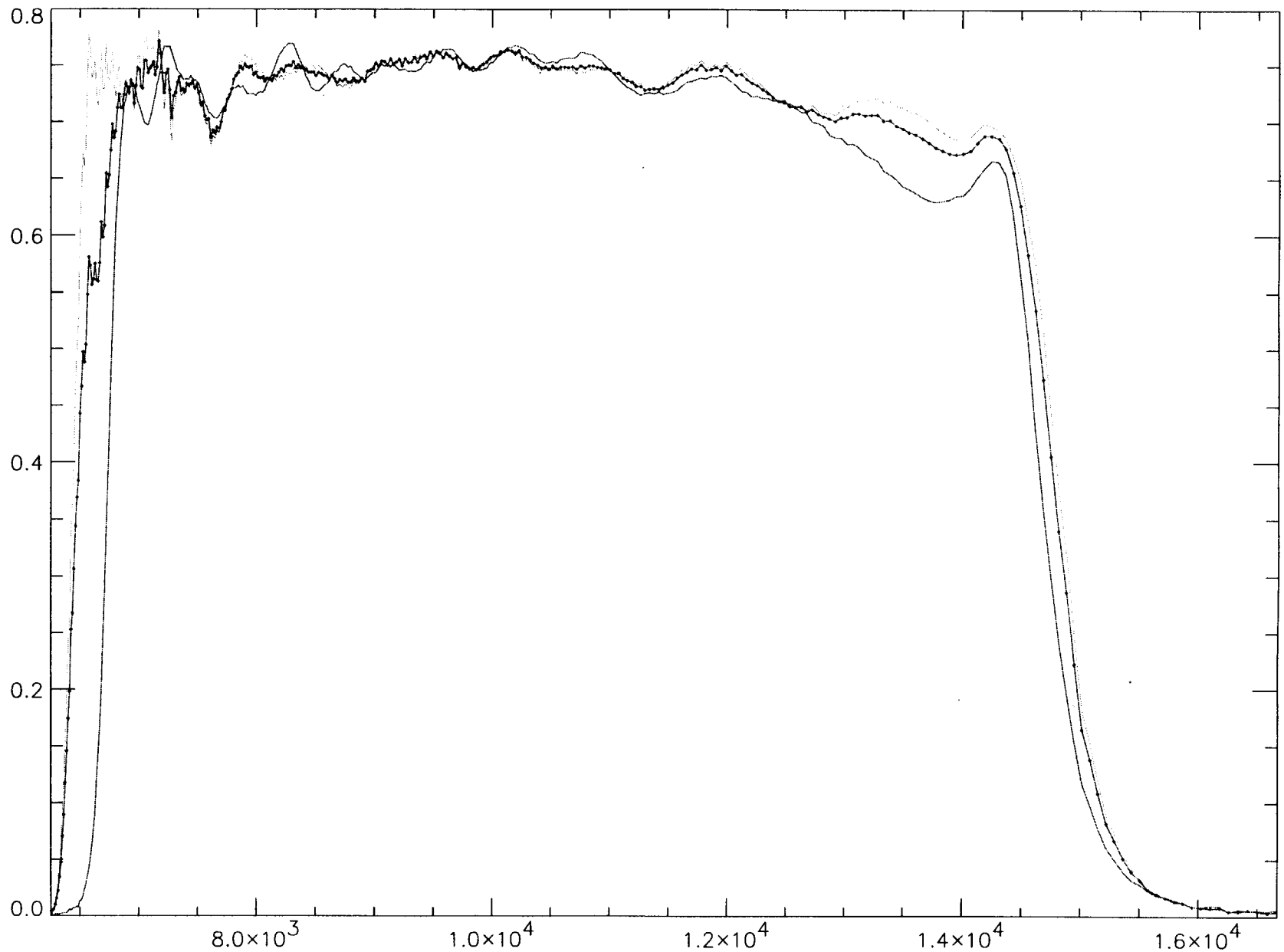
- High-bay ambient environment data collects
  - In-band RSR UAIDs:
    [856,858,859,860,861,862,863,864,865,866,874,868,875,876,877] EM Electronics
    [1089 ,1090 ,1092 ,1093 ,1094 ,1095] PFM Electronics
  - OOB-D RSR UAIDs:
    [878,879,881,882,883,884,885,887,888,889] EM Electronics
  - Data useable for Bands unaffected by path length water vapor absorption (all but Bands 27 and 28)
- Thermal Vacuum (T/V) purged environment data collects
  - In-band RSR UAIDs: [1585,1586,1587,1588,1589,1590,1582,1591,1592,1593,1594]
  - OOB-D RSR UAIDs:[1311,1312,1313,1314]
  - SpMA, collimator and pathlength to the MCC CaF_2 window environment maintained very dry with GN_2 purge
  - CaF2 window transmission flat from visibile to 10.0 micrometer region

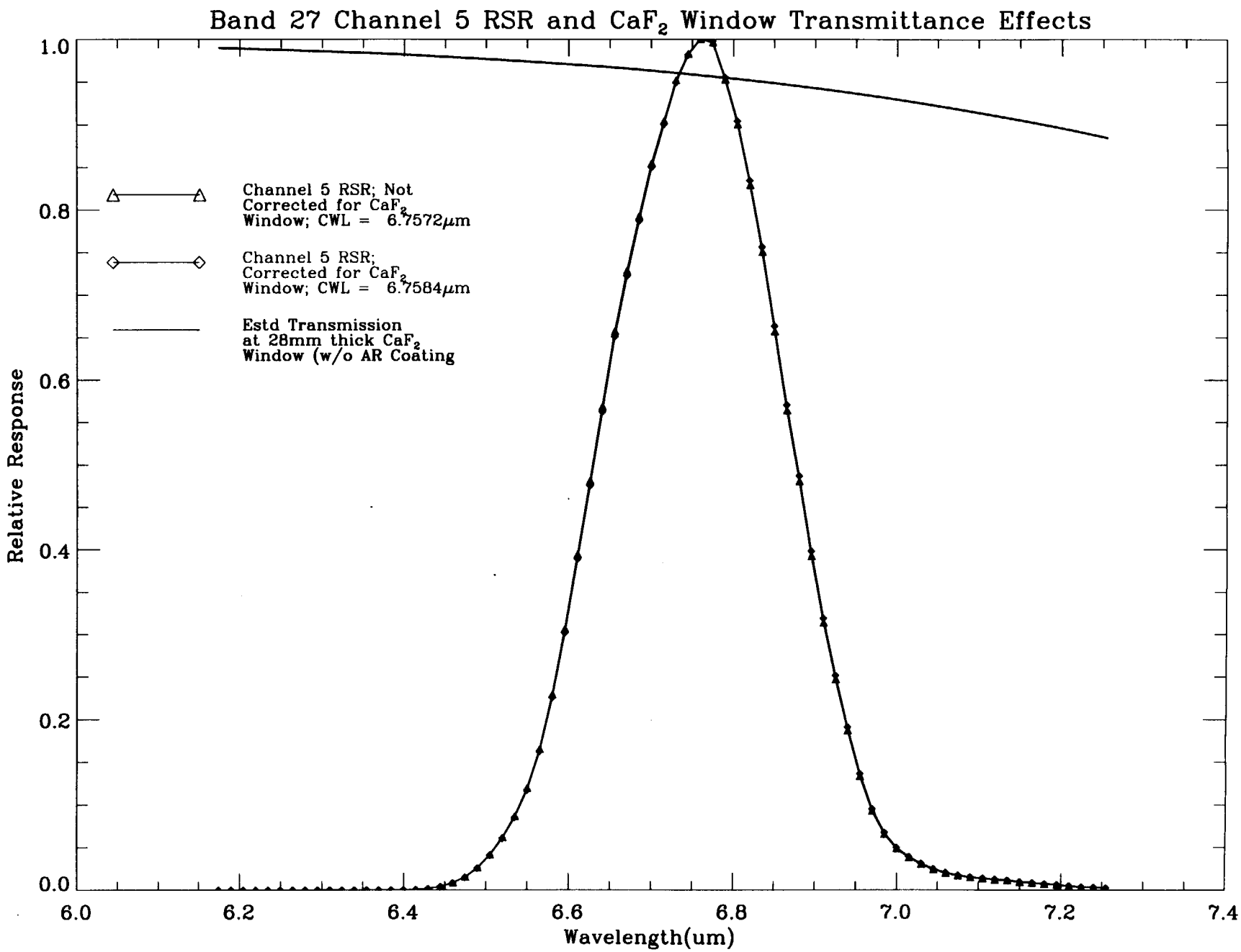
Summary of MWIR and LWIR In-band RSR Data (PC07-I) Processing

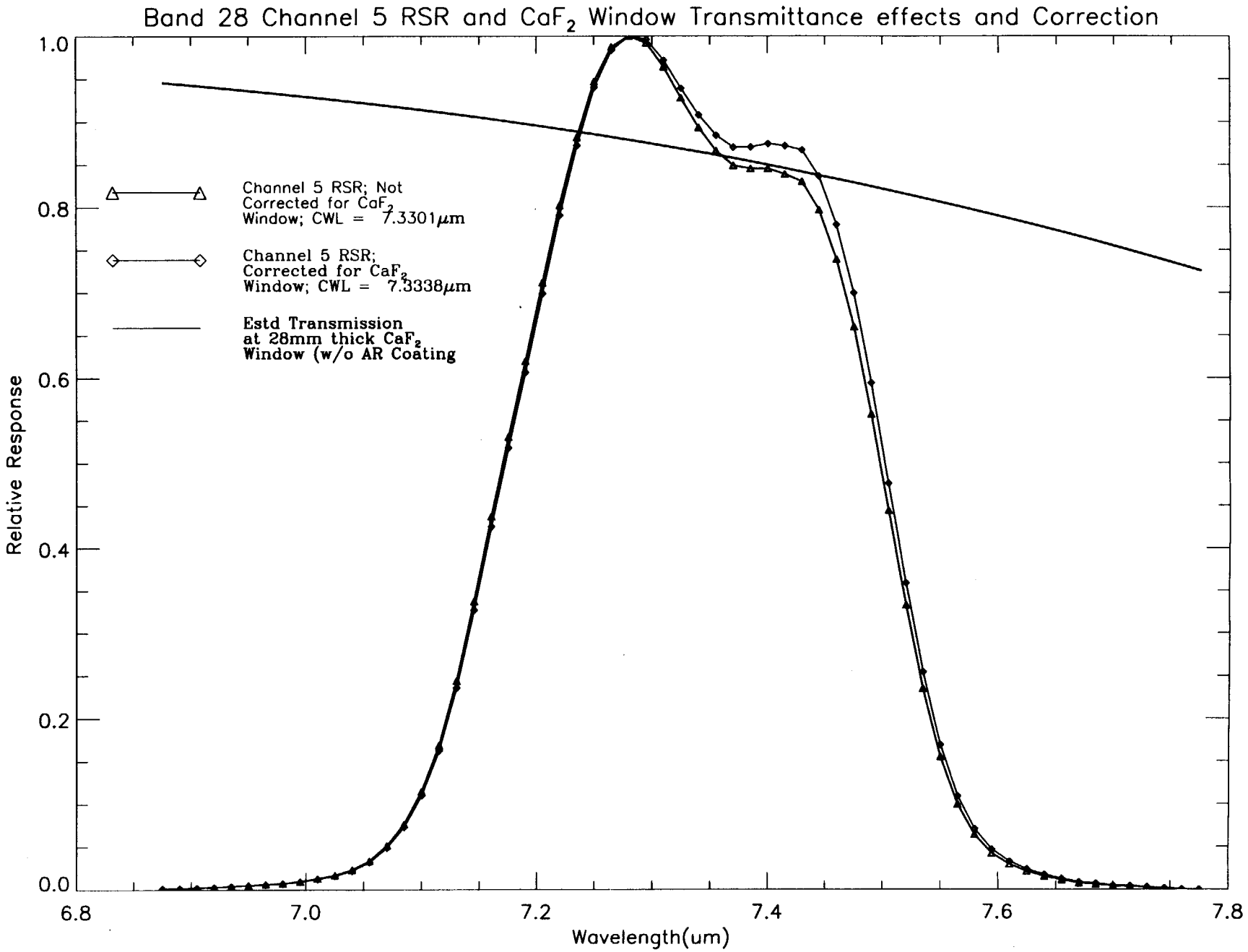
	Band Number	Ambient Environment Atmosphere MODTRAN 2.0 Correction (9m; 43%RH; 25C; 1013mb)	T/V CaF2 Window Transmission Correction	300K to 137K LWIR PbTe Intermediate Window Correction via linear interpolation	SpMA Out-of Plane Aberrations Correction to Channel level RSRs (using B35 CO2 feature as scale reference)
T/V RSRs	20	NA	None	NA	Parabola Fit to: 1-9 Drop 10 CWL= Ave. of 1-10 para. pts.
	21	NA	None	NA	Parabola Fit to: 1-9 Drop 10 CWL= Ave. of 1-10 para. pts.
	22	NA	None	NA	Parabola Fit to: 1-9 Drop 10 CWL= Ave. of 1-10 para. pts.
	23	NA	None	NA	Parabola Fit to: 1-9 Drop 10 CWL= Ave. of 1-10 para. pts.
	24	NA	None	NA	Parabola Fit to:1-6, and 9 Drop 7,8 and 10 CWL= Ave. of 1-10 para. pts.
	25	NA	None	NA	Parabola Fit to: 1-3, 6-9 Drop 4, 5 and 10 CWL= Ave. of 1-10 para. pts.
	27	NA	Yes	NA	Parabola Fit to: 2-10 Drop 1 CWL= Ave. of 1-10 para. pts.
	28	NA	Yes	NA	Parabola Fit to: 2-10 Drop 1 CWL= Ave. of 1-10 para. pts.
	29T/V	**No**	**Yes**	**NA**	**Parabola Fit to: 1-5, 7-9 Drop 6 and 10 CWL= Ave. of 1-10 para. pts.**

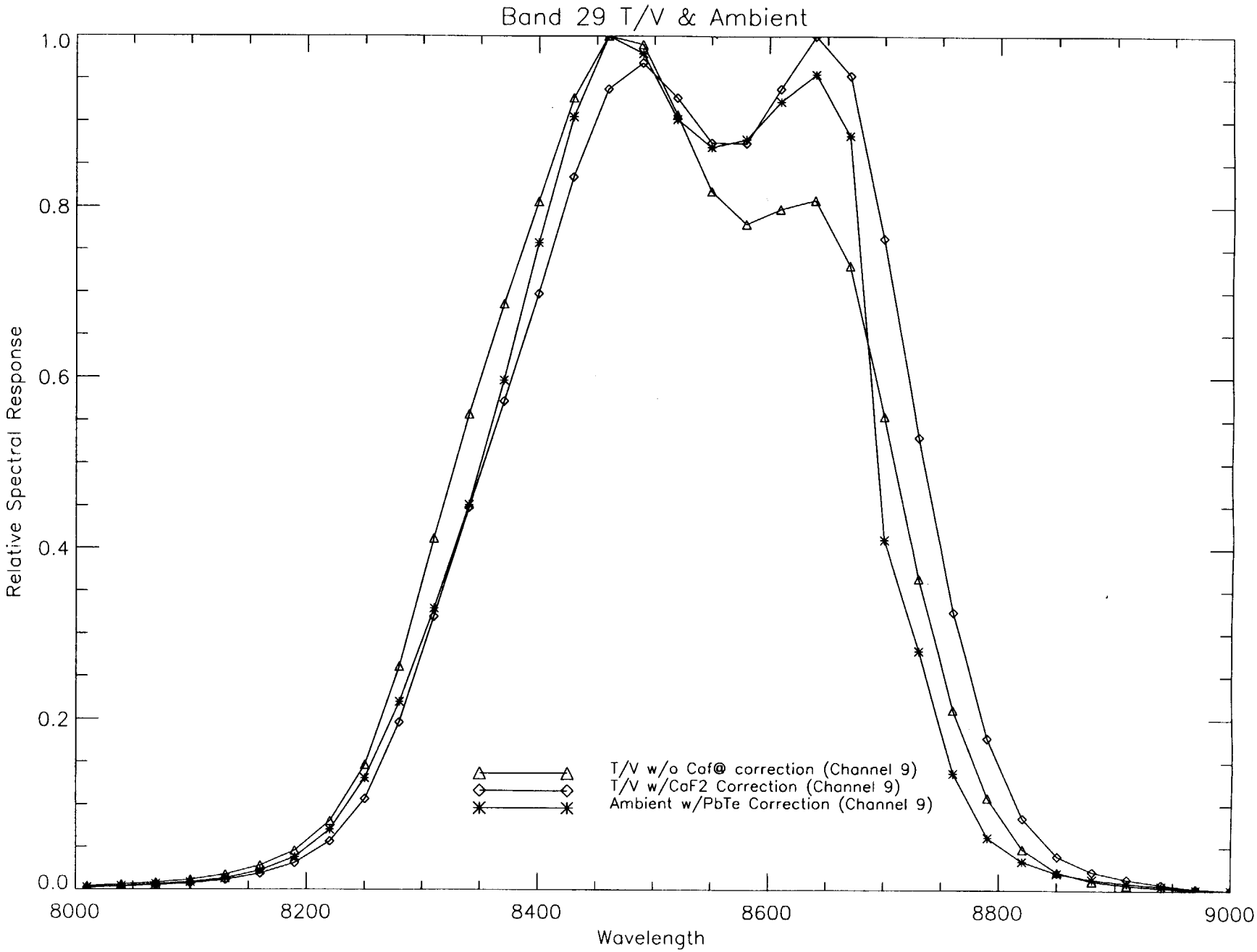
Amb. Env. RSRs	29amb	Yes	NA	Yes	Parabola Fit to: 3-10 Drop 1 and 2 CWL= Ave. of 1-10 para. pts.
	30	No	NA	Yes	Parabola Fit to: 2-10 Drop 1 CWL= Ave. of 1-10 para. pts.
	31	No	NA	Yes	Parabola Fit to: 1,2,3,6,9 Drop 4,5,7,8,10 CWL= Ave. of 1-10 para. pts.
	32	No	NA	Yes	Parabola Fit to: 2-9 Drop 1,10 CWL= Ave. of 1-10 para. pts.
	33	Yes	NA	Yes	Parabola Fit to: 1-10 CWL= Ave. of 1-10 para. pts.
	34	Yes	NA	Yes	Parabola Fit to: 1-9 Drop 10 CWL= Ave. of 1-10 para. pts.
	35	Yes	NA	Yes	Parabola Fit to: 1-9 Drop 10 CWL= Ave. of 1-10 para. pts.
	36	Yes	NA	Yes	Parabola Fit to: 1-10; CWL= Ave. of 1-10 para. pts.

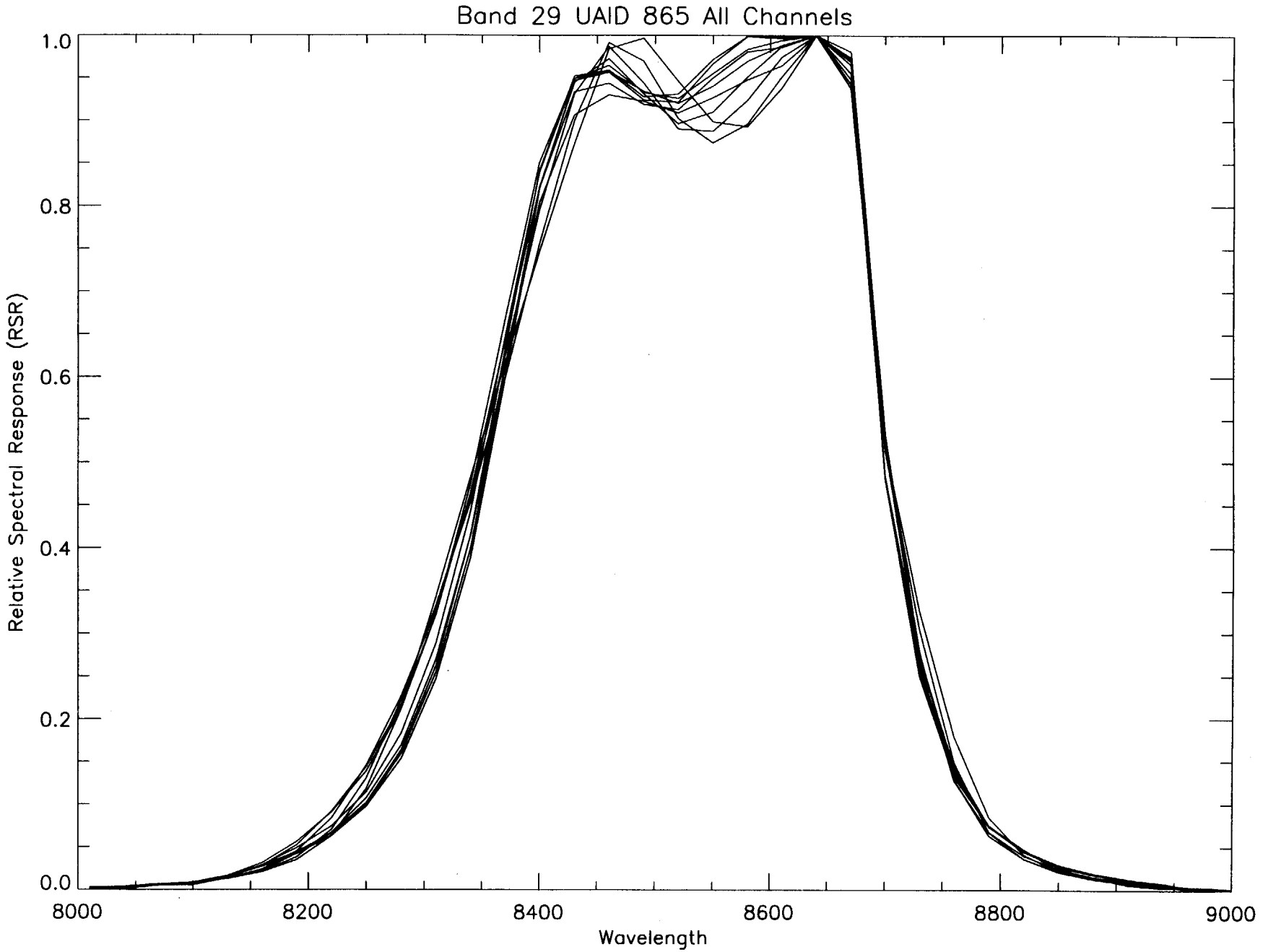

Atmos.Trans.9m.7.5gpm3 SBRS model
Transmittance
1.0
0.8
0.6
0.4
0.2
0.0
10
11
12
13
14
15
Wavelength


LWIR Intermediate Window
Interpolated to 137k Using Available
300k and 77k Measurements
0.8
0.6
0.4
0.2
0.0
8.0×10^3
1.0×10^4
1.2×10^4
1.4×10^4
1.6×10^4


Band 27 Channel 5 RSR and CaF2 Window Transmittance Effects
Channel 5 RSR; Not Corrected for CaF2 Window; CWL = 6.7572μm
Channel 5 RSR; Corrected for CaF2 Window; CWL = 6.7584μm
Estd Transmission at 28mm thick CaF2 Window (w/o AR Coating
Relative Response
Wavelength(um)
1.0
0.8
0.6
0.4
0.2
0.0
6.0
6.2
6.4
6.6
6.8
7.0
7.2
7.4


Band 28 Channel 5 RSR and CaF2 Window Transmittance effects and Correction
Channel 5 RSR; Not Corrected for CaF2 Window; CWL = 7.3301μm
Channel 5 RSR; Corrected for CaF2 Window; CWL = 7.3338μm
Estd Transmission at 28mm thick CaF2 Window (w/o AR Coating
Relative Response
Wavelength(um)
1.0
0.8
0.6
0.4
0.2
0.0
6.8
7.0
7.2
7.4
7.6
7.8


Band 29 T/V & Ambient
Relative Spectral Response
1.0
0.8
0.6
0.4
0.2
0.0
8000
8200
8400
8600
8800
9000
Wavelength
T/V w/o Caf@ correction (Channel 9)
T/V w/CaF2 Correction (Channel 9)
Ambient w/PbTe Correction (Channel 9)


Band 29 UAID 865 All Channels
Relative Spectral Response (RSR)
1.0
0.8
0.6
0.4
0.2
0.0
8000
8200
8400
8600
8800
9000
Wavelength

Band 29

Currently Band 29 is processed from T/V data. Band 29 will be reprocessed using ambient data (UAID 865) when this data is acquired.

Thermal Bands Spectral Response Parameters

Wavelength Units (um)

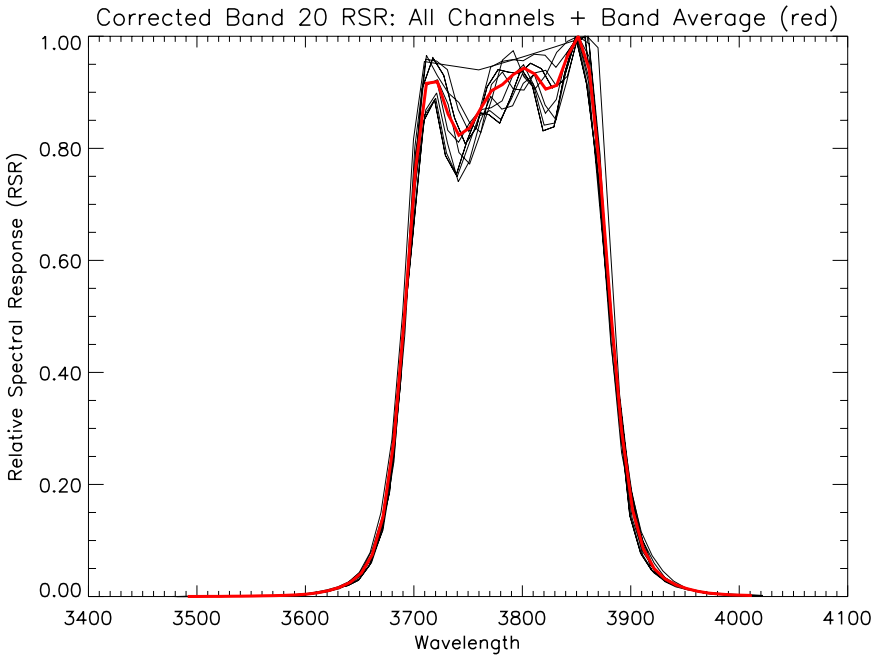
Band No.	GSFC Specification: Center Wavelength (CWL) [nm] (specified)	GSFC Specification: Bandwidth (nm) (specified)	PFM Measured (nm): Average Center Wavelength (CWL) (measured&corrected	PFM Measured (nm): CWL Delta (=meas. - spec.)	PFM Measured (nm): Ave. Bandwidth (measured)	PFM Measured (nm): BW Delta (=meas. - spec.)	BW Delta (%)
20 PV	3750	180	**3788.2**	38.2	**190.8**	10.8	6%
21 PV	3959	59.4	**3992.1**	33.1	**84.0**	24.6	41%
22 PV	3959	59.4	**3971.9**	12.9	**87.4**	28.0	47%
23 PV	4050	60.8	**4056.7**	6.7	**87.2**	26.4	43%
24 PV	4465	65	**4473.2**	8.2	**91.4**	26.4	41%
25 PV	4515	67	**4545.4**	30.4	**92.5**	25.5	38%
27 PV	6715	360	**6765.4**	50.4	**241.2**	-118.8	-33%
28 PV	7325	300	**7336.7**	11.7	**325.4**	25.4	8%
29 PV	8550	300	**8540.7**	-9.3	**370.7**	70.7	24%
30 PV	9730	300	**9730.0**	0.0	**301.4**	1.4	0%
31 PC	11030	500	**11014.4**	-15.6	**522.0**	22.0	4%
32 PC	12020	500	**12028.2**	8.1	**524.4**	24.4	5%
33 PC	13335	300	**13361.2**	26.2	**311.5**	11.5	4%
34 PC	13635	300	**13679.5**	44.5	**327.7**	27.7	9%
35 PC	13935	300	**13910.8**	-24.3	**333.0**	33.0	11%
36 PC	14235	300	**14194.8**	-40.2	**288.0**	-12.0	-4%
31 Hi PC	11030	500	**11014.4**	-15.6	**522.0**	22.0	4%
32 Hi PC	12020	500	**12028.2**	8.1	**524.4**	24.4	5%

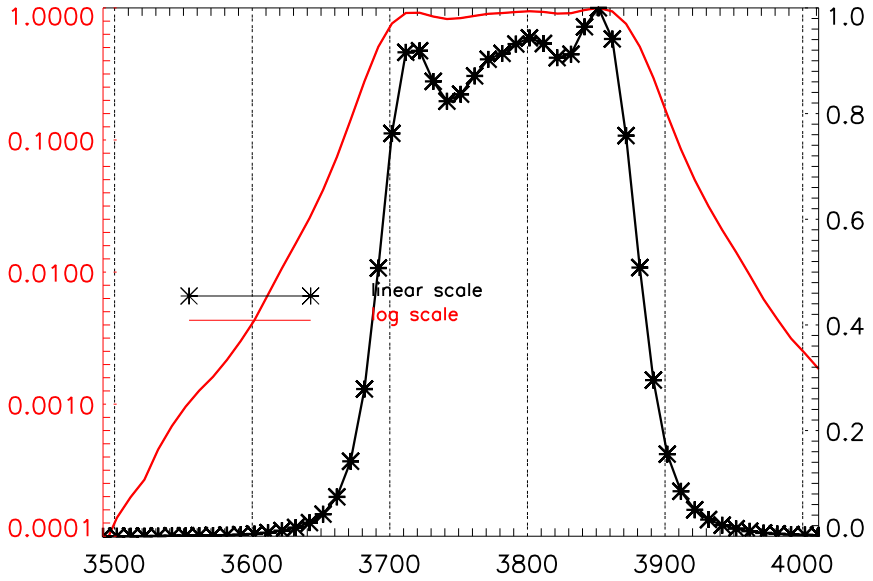
Wavenumber Units (cm-1)

Band No.	Note 4: Band Center (cm-1) (specified)	Note 5: Bandwidth (cm-1) (specified)	PFM Measured (cm-1): Ave.Band Center (cm-1) (measured & corrected)	PFM Measured (cm-1): CWL Delta (=meas. - spec.)	PFM Measured (cm-1): Ave.Bandwidth (cm-1) (measured)	PFM Measured (cm-1): BW Delta (=meas. - spec.)
20 PV	2666.67	128.07	**2639.76**	-26.91	**133.00**	4.93
21 PV	2525.89	37.90	**2504.93**	-20.96	**52.73**	14.83
22 PV	2525.89	37.90	**2517.66**	-8.23	**55.43**	17.53
23 PV	2469.14	37.07	**2465.08**	-4.05	**52.98**	15.91
24 PV	2239.64	32.61	**2235.54**	-4.10	**45.69**	13.09
25 PV	2214.84	32.87	**2200.05**	-14.79	**44.78**	11.91
27 PV	1489.20	79.90	**1478.12**	-11.09	**52.72**	-27.17
28 PV	1365.19	55.94	**1363.01**	-2.18	**60.49**	4.55
29 PV	1169.59	41.05	**1170.86**	1.27	**50.85**	9.80
30 PV	1027.75	31.70	**1027.75**	0.00	**31.84**	0.14
31 PC	906.62	41.12	**907.91**	1.29	**43.05**	1.93
32 PC	831.95	34.62	**831.38**	-0.56	**36.27**	1.64
33 PC	749.91	16.87	**748.44**	-1.47	**17.45**	0.58
34 PC	733.41	16.14	**731.02**	-2.39	**17.51**	1.37
35 PC	717.62	15.45	**718.87**	1.25	**17.21**	1.76
36 PC	702.49	14.81	**704.49**	1.99	**14.30**	-0.51
31 Hi PC	906.62	41.12	**907.91**	1.29	**43.05**	1.93
32 Hi PC	831.95	34.62	**831.38**	-0.56	**36.27**	1.64

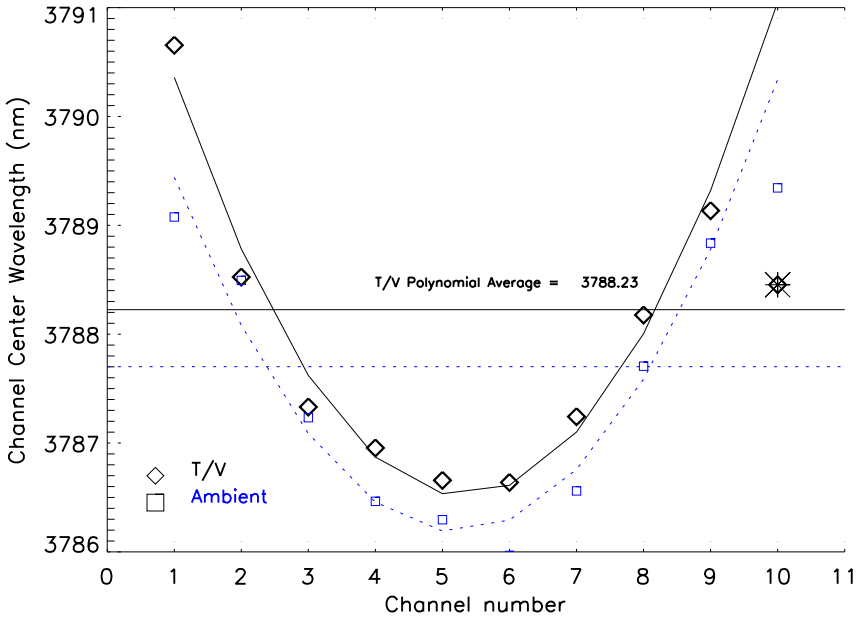
MWIR,LWIR In-Band RSRs Available

- All Channels / Band + Band Average
- Graphs of MWIR and LWIR band groupings logarithmic scales
- Data available on anonymous ftp at:
  ringmaster.gsfc.nasa.gov
  in **/pub/MCST/PFM_L1B_LUT/Thermal**
  - Channel dependent RSRs Bands 20-25,27-36
  - Band Averaged RSRs Bands 20-25,27-36
  - Band metrics : CWL BW 50%pts 1%pts
  - Caution B29

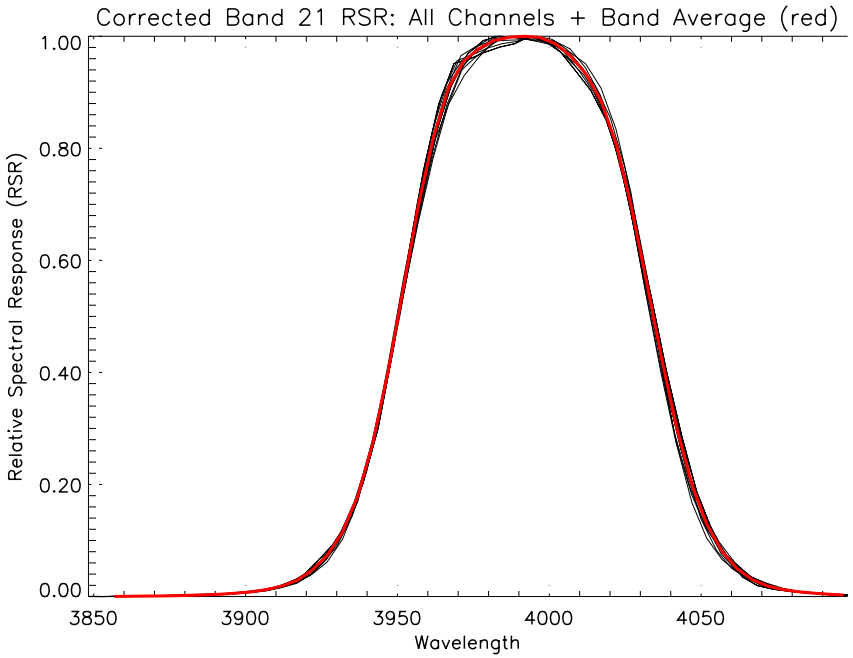


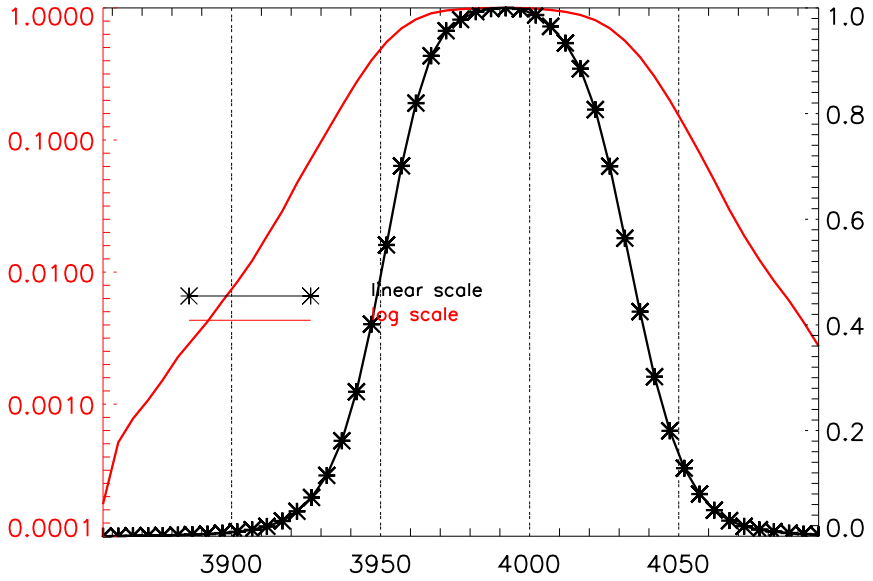


	nm	cm^{-1}	Stdev(nm)
Center Wavelength (CWL)	3788.21	2639.77	
Band Width (BW)	190.75	133.01	7.34
FWHM	188.96	133.12	2.21
Lower 50% Response	3691.28	2709.08	1.35
Upper 50% Response	3882.04	2575.97	2.35
Lower 1% Response	3619.85	2762.55	2.80
Upper 1% Response	3960.41	2524.99	5.27
SpMA Correction Ch5 =	1.56763		

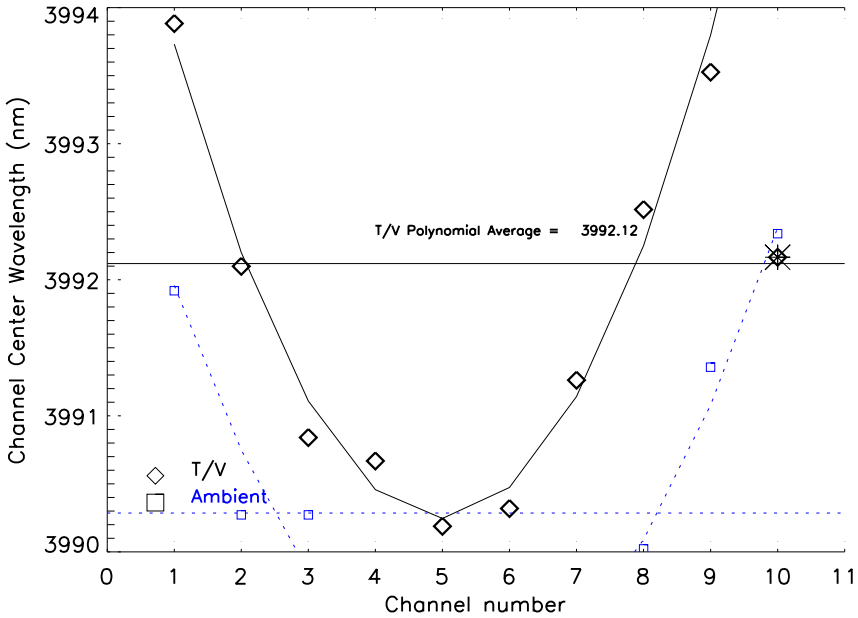


* represent CWL measurements not used to generate the fitted polynomial
-- Average of Fitted Polynomial Points for each Channel

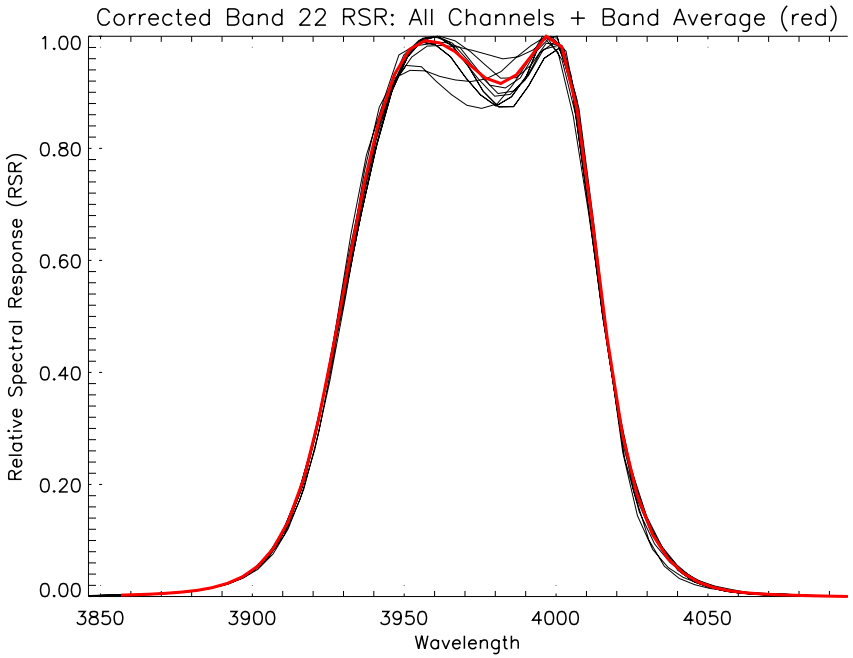


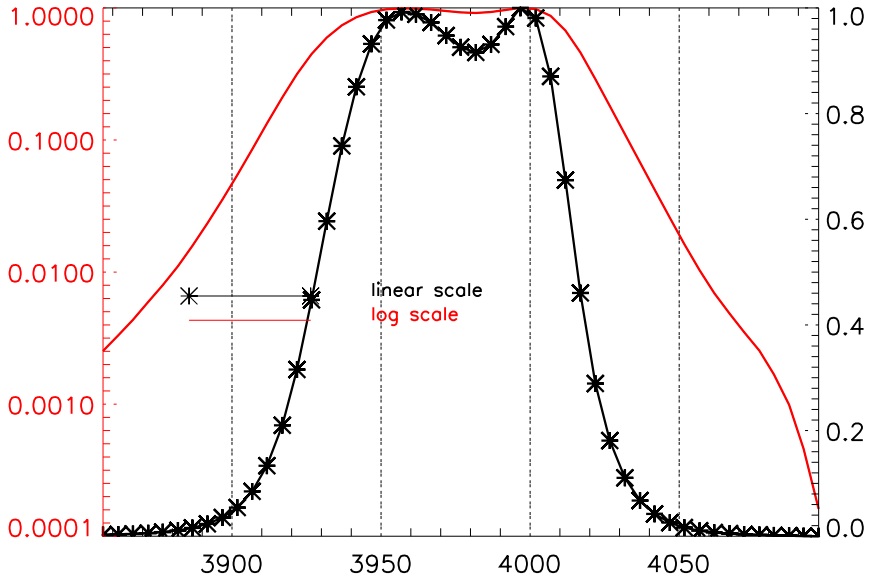


	nm	cm^{-1}	Stdev(nm)
Center Wavelength (CWL)	3992.11	2504.94	
Band Width (BW)	84.03	52.73	0.69
FWHM	82.68	52.73	0.85
Lower 50% Response	3950.24	2531.49	1.44
Upper 50% Response	4034.27	2478.76	1.64
Lower 1% Response	3904.00	2561.48	2.62
Upper 1% Response	4080.10	2450.92	1.71
SpMA Correction Ch5 =	1.93115		

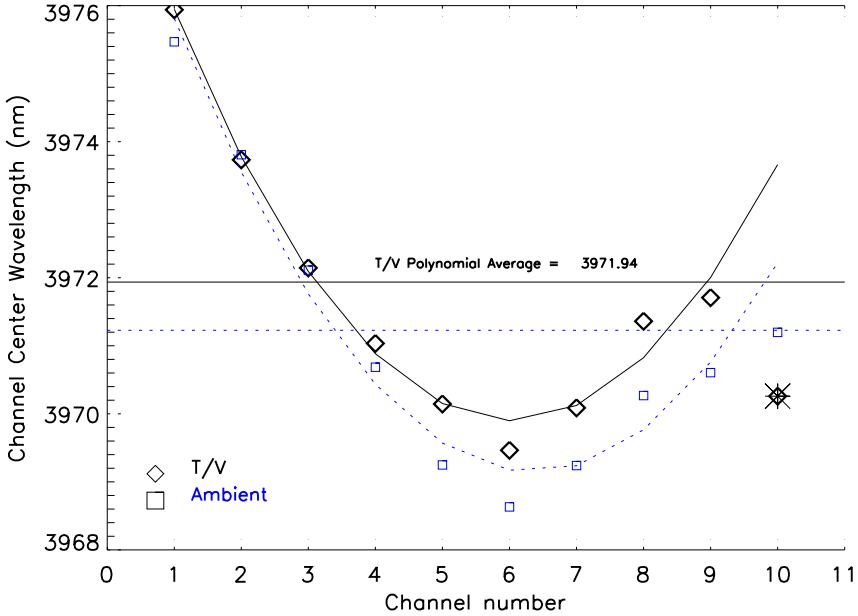


* represent CWL measurements not used to generate the fitted polynomial
-- Average of Fitted Polynomial Points for each Channel

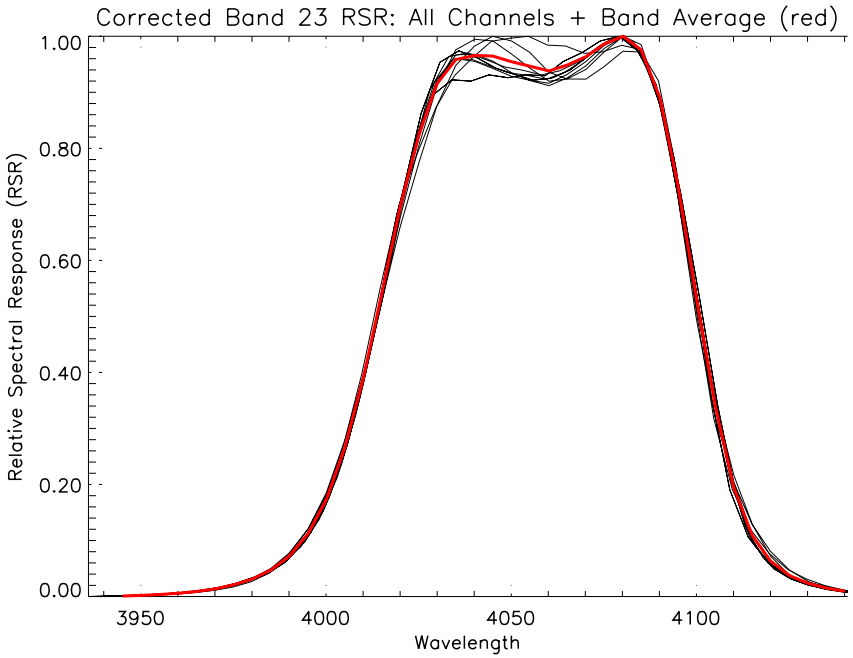


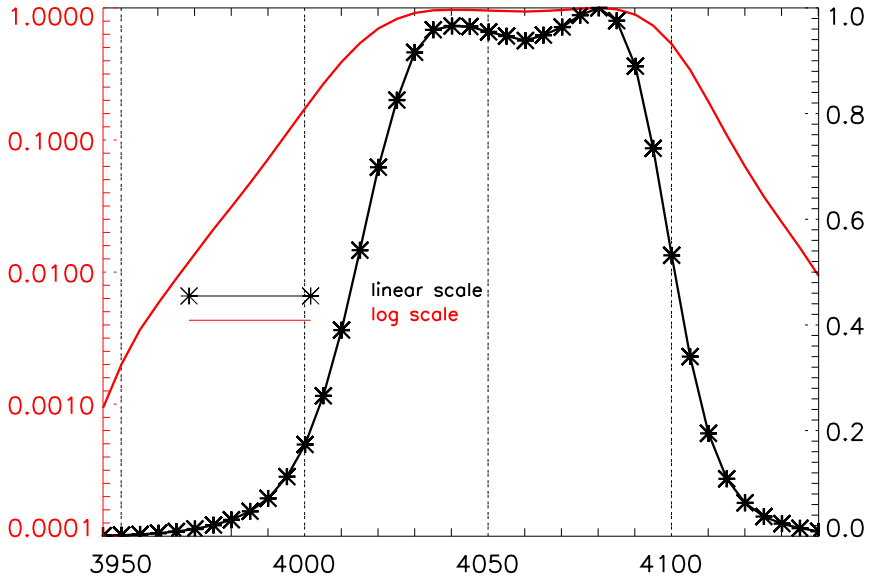


	nm	cm^{-1}	Stdev(nm)
Center Wavelength (CWL)	3971.95	2517.65	
Band Width (BW)	87.44	55.43	1.56
FWHM	85.65	55.42	0.71
Lower 50% Response	3928.49	2545.50	2.09
Upper 50% Response	4015.93	2490.08	2.04
Lower 1% Response	3880.10	2577.25	2.56
Upper 1% Response	4057.34	2464.67	1.55
SpMA Correction Ch5 =	1.79175		

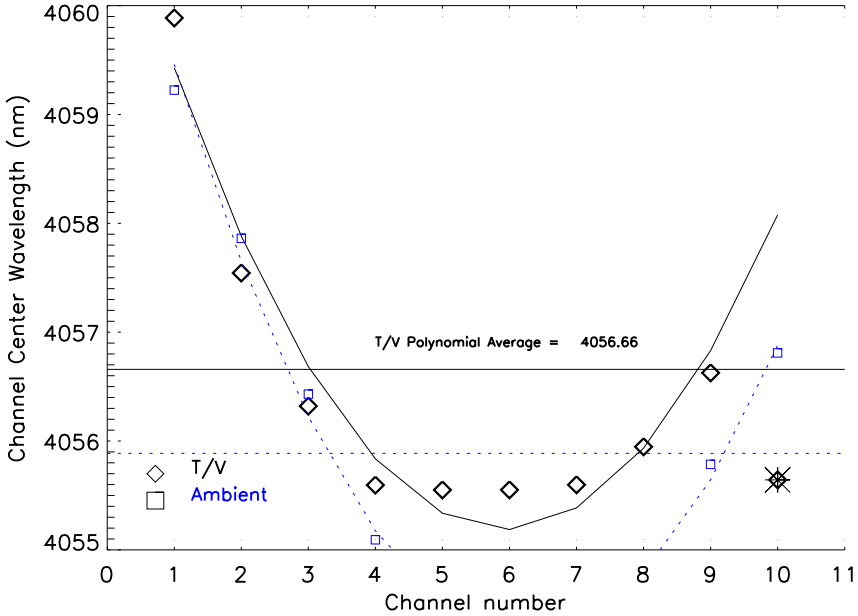


* represent CWL measurements not used to generate the fitted polynomial
-- Average of Fitted Polynomial Points for each Channel

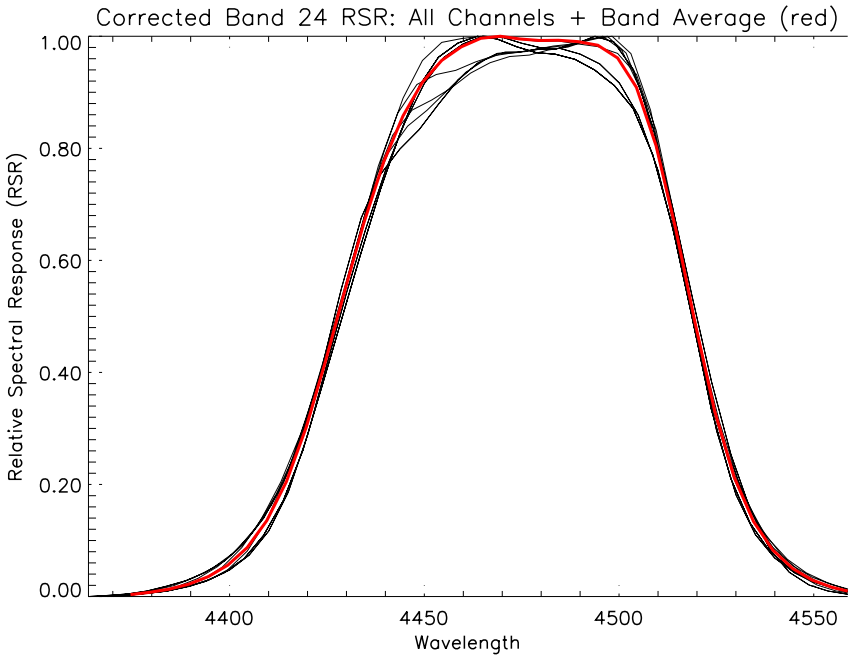


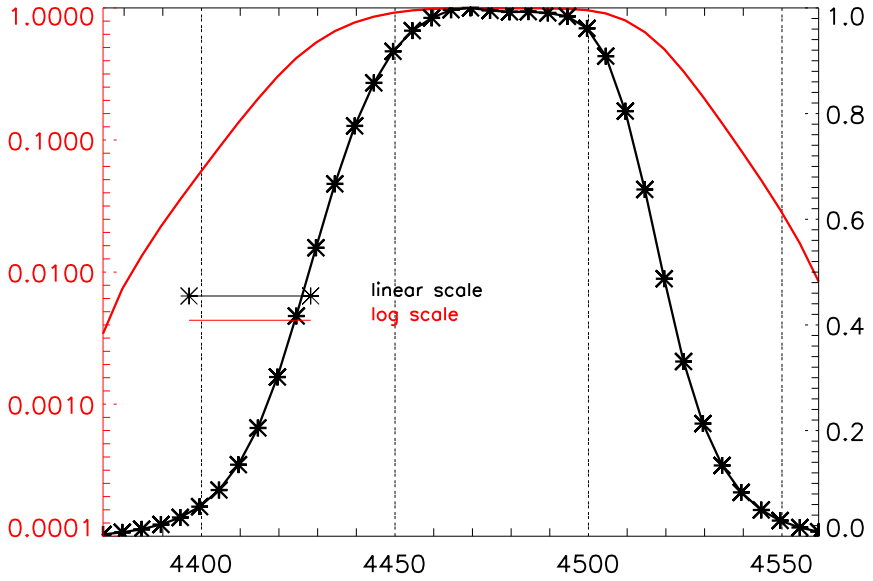


	nm	cm^{-1}	Stdev(nm)
Center Wavelength (CWL)	4056.63	2465.10	
Band Width (BW)	87.17	52.98	0.77
FWHM	85.33	52.96	0.72
Lower 50% Response	4013.71	2491.46	1.38
Upper 50% Response	4100.89	2438.50	1.83
Lower 1% Response	3966.15	2521.34	1.53
Upper 1% Response	4139.56	2415.72	2.47
SpMA Correction Ch5 =	1.10791		

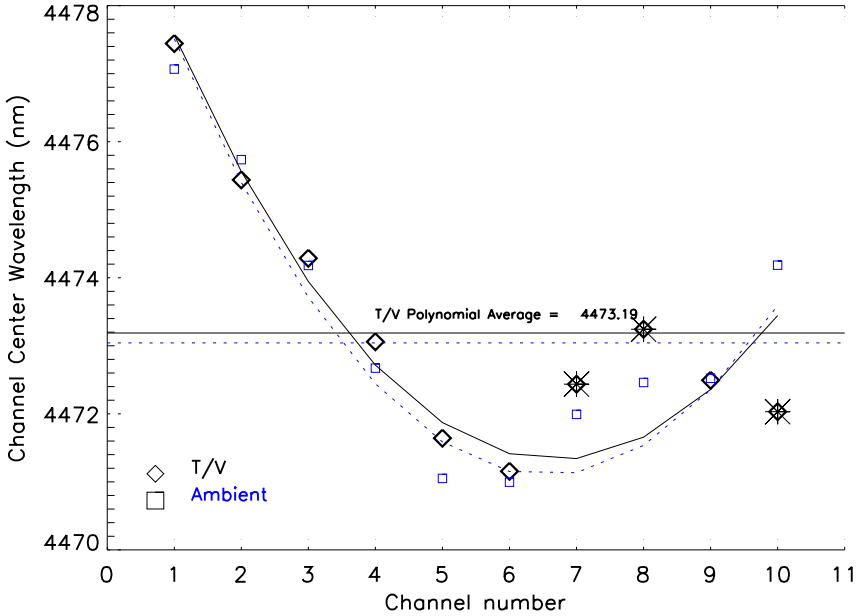


* represent CWL measurements not used to generate the fitted polynomial
-- Average of Fitted Polynomial Points for each Channel

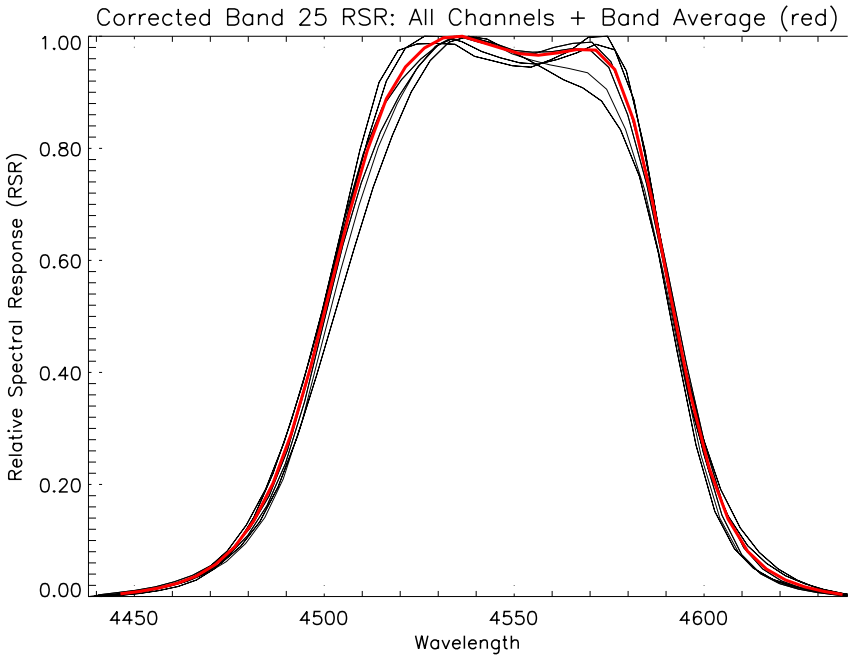


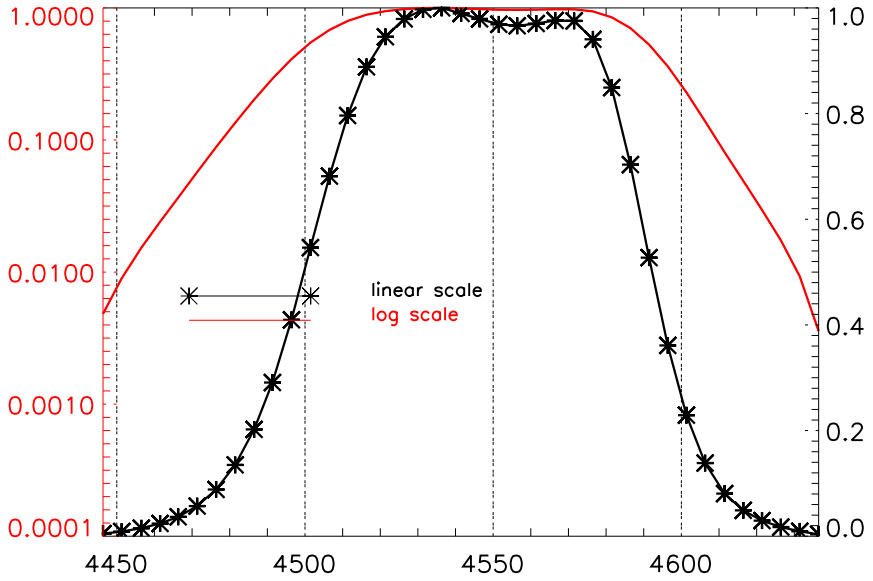


	nm	cm^{-1}	Stdev(nm)
Center Wavelength (CWL)	4473.17	2235.55	
Band Width (BW)	91.42	45.69	1.88
FWHM	87.73	45.69	1.44
Lower 50% Response	4427.76	2258.48	1.68
Upper 50% Response	4519.18	2212.79	2.27
Lower 1% Response	4381.75	2282.19	1.30
Upper 1% Response	4558.55	2193.68	1.92
SpMA Correction Ch5 =	1.54492		

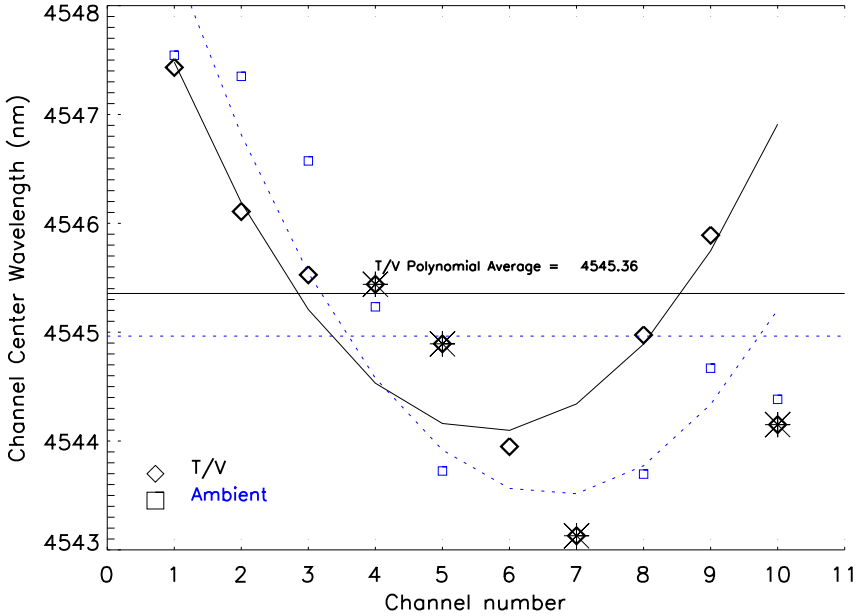


* represent CWL measurements not used to generate the fitted polynomial
-- Average of Fitted Polynomial Points for each Channel

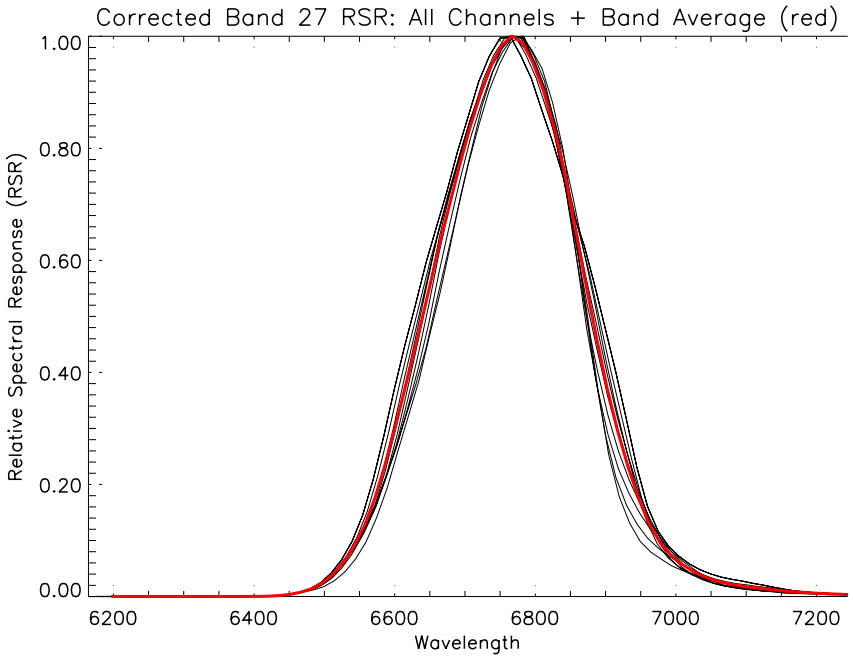


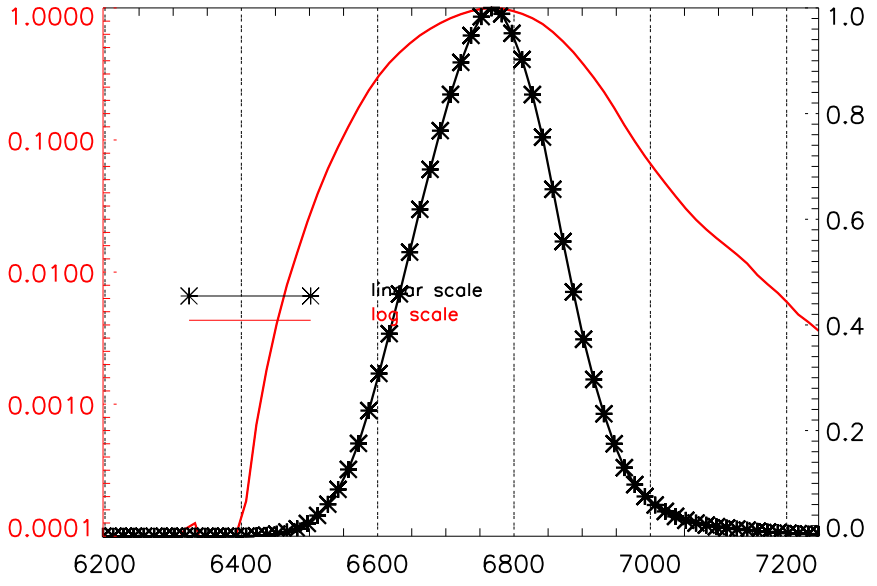


	nm	cm^{-1}	Stdev(nm)
Center Wavelength (CWL)	4545.37	2200.04	
Band Width (BW)	92.50	44.78	2.66
FWHM	94.58	44.76	1.72
Lower 50% Response	4499.75	2222.35	2.22
Upper 50% Response	4592.24	2177.58	1.17
Lower 1% Response	4452.16	2246.10	1.88
Upper 1% Response	4631.00	2159.36	1.90
SpMA Correction Ch5 =	0.46289		

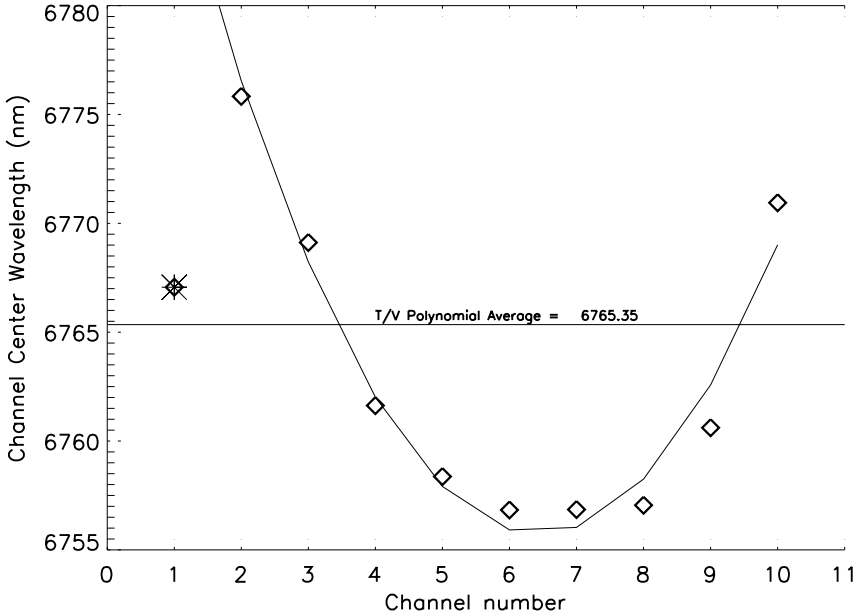


* represent CWL measurements not used to generate the fitted polynomial
-- Average of Fitted Polynomial Points for each Channel

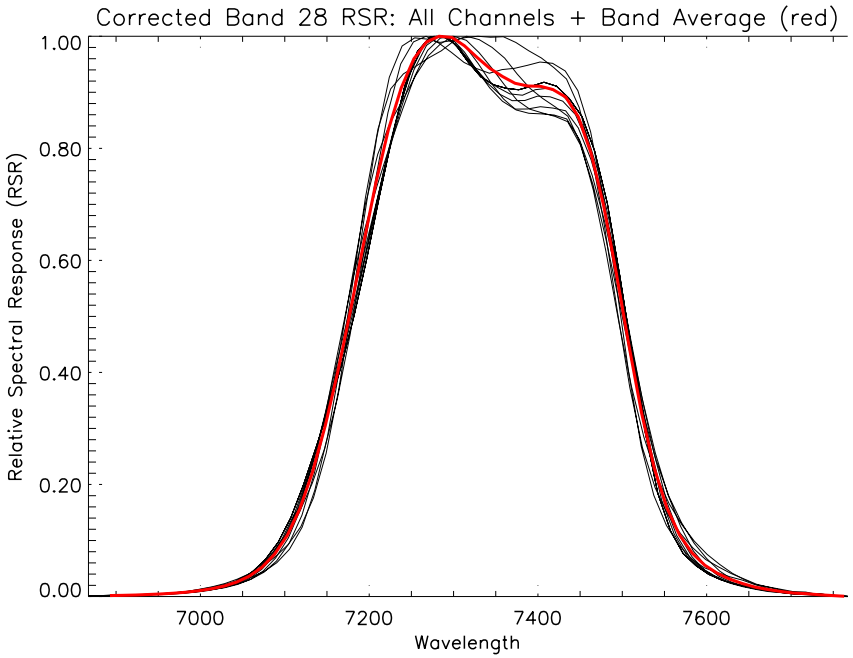


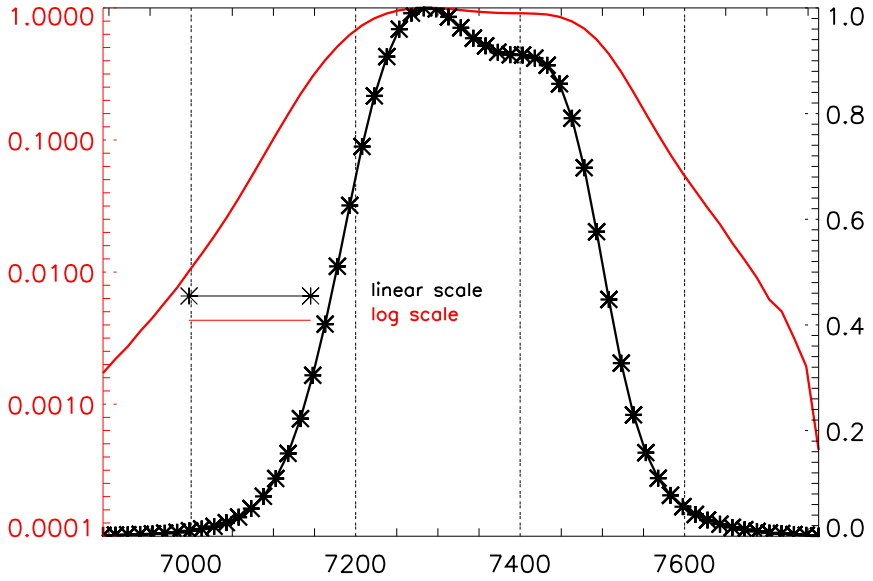


	nm	cm^{-1}	Stdev(nm)
Center Wavelength (CWL)	6765.29	1478.13	
Band Width (BW)	241.23	52.72	13.29
FWHM	218.01	52.80	20.76
Lower 50% Response	6639.84	1506.06	10.71
Upper 50% Response	6881.08	1453.26	14.88
Lower 1% Response	6471.96	1545.13	7.24
Upper 1% Response	7153.52	1397.91	21.72
SpMA Correction Ch5 =	6.97705		

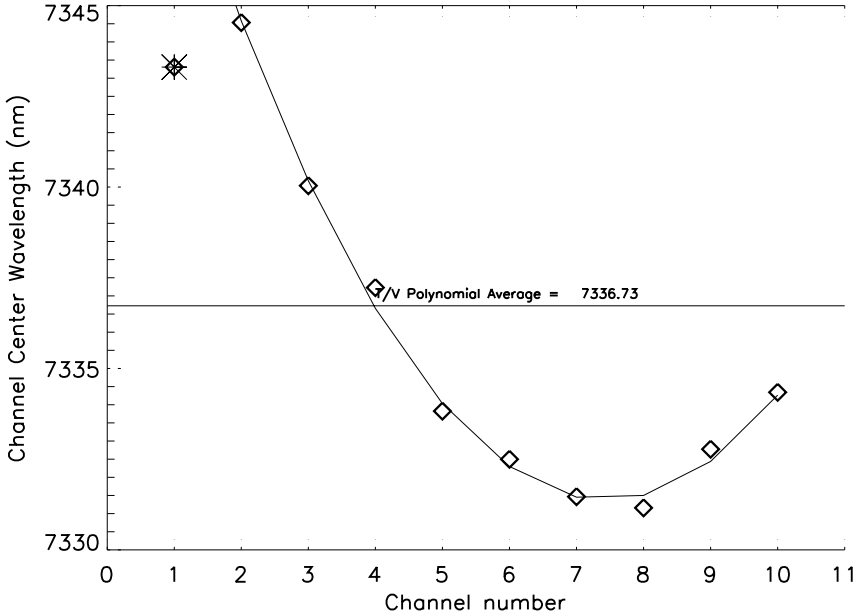


* represent CWL measurements not used to generate the fitted polynomial
-- Average of Fitted Polynomial Points for each Channel

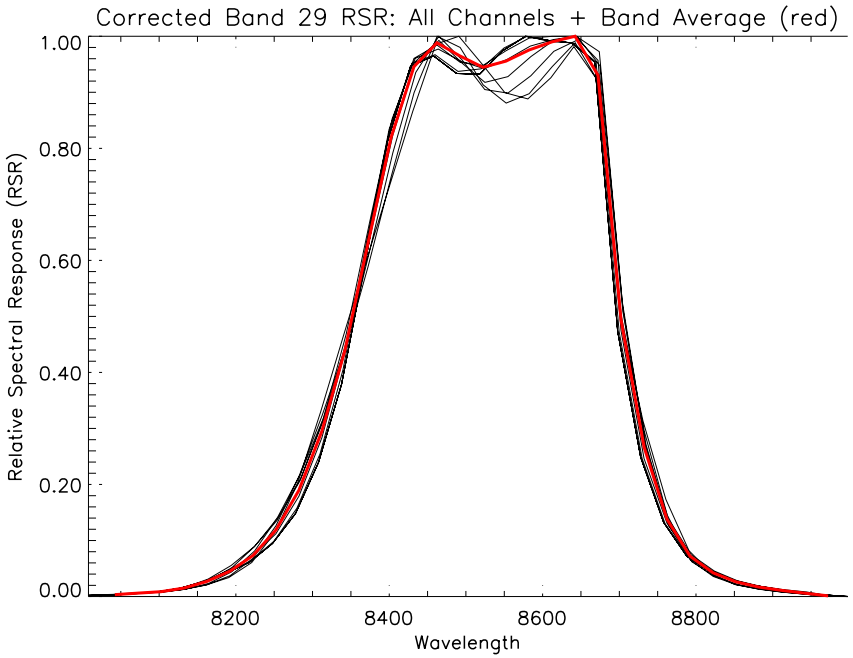


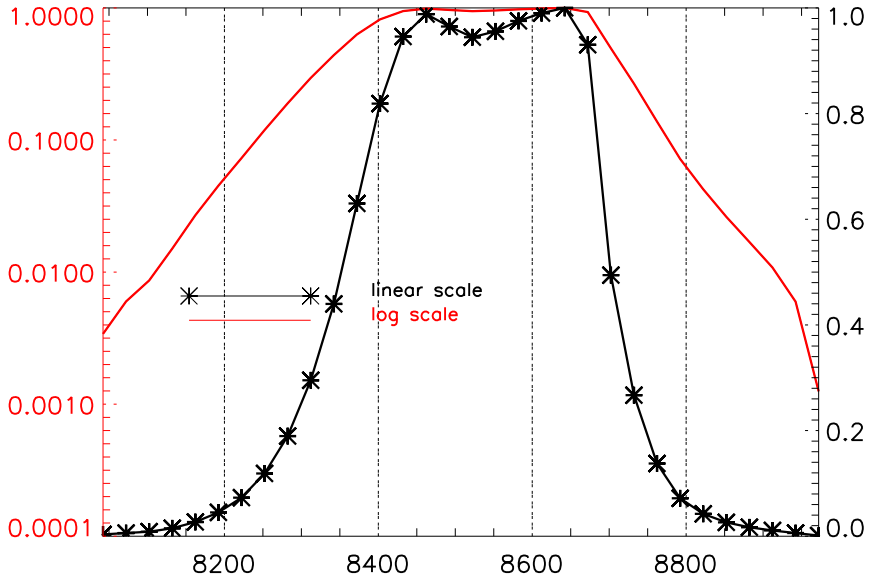


	nm	cm^{-1}	Stdev(nm)
Center Wavelength (CWL)	7336.76	1363.00	
Band Width (BW)	325.42	60.49	3.36
FWHM	317.18	60.45	4.96
Lower 50% Response	7176.41	1393.46	8.24
Upper 50% Response	7501.83	1333.01	8.29
Lower 1% Response	6996.30	1429.33	9.17
Upper 1% Response	7683.57	1301.48	10.50
SpMA Correction Ch5 =	2.90283		

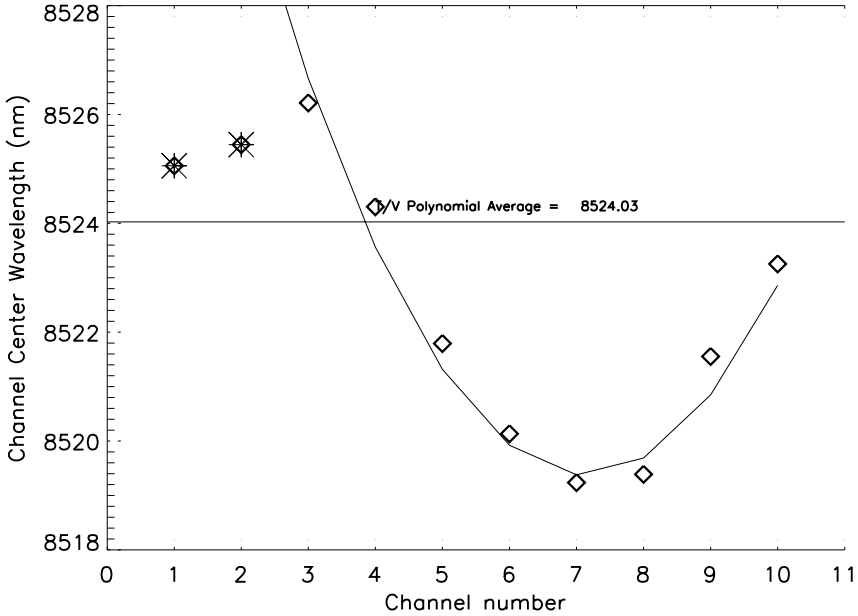


* represent CWL measurements not used to generate the fitted polynomial
-- Average of Fitted Polynomial Points for each Channel

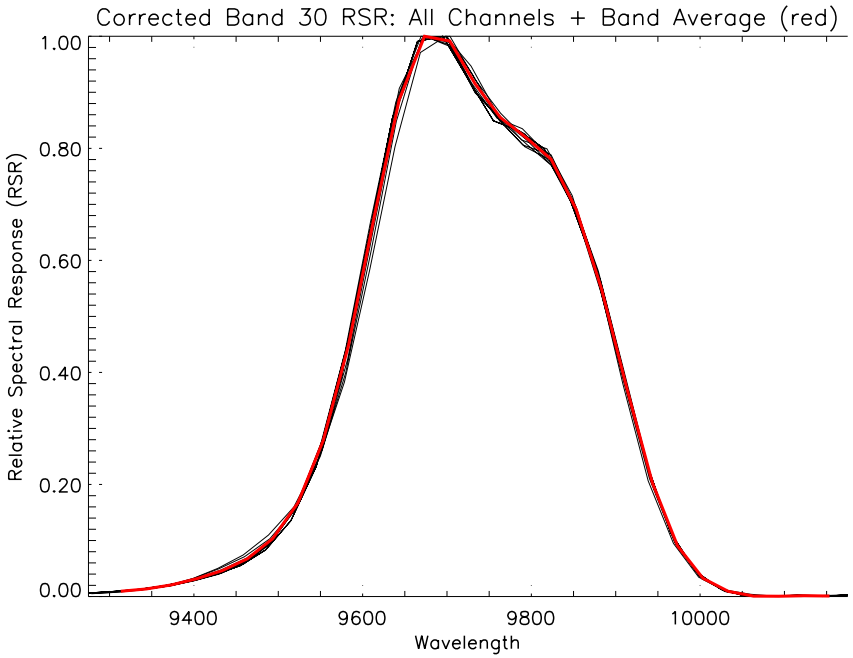


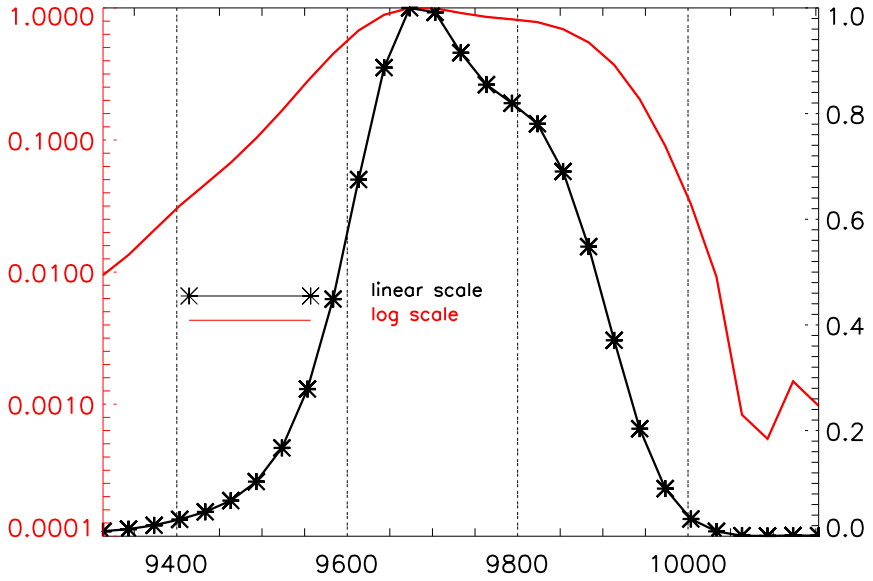


	nm	cm^{-1}	Stdev(nm)
Center Wavelength (CWL)	8524.12	1173.14	
Band Width (BW)	350.08	48.20	5.94
FWHM	353.02	48.17	5.43
Lower 50% Response	8351.75	1197.35	3.98
Upper 50% Response	8701.84	1149.18	1.66
Lower 1% Response	8108.62	1233.26	3.66
Upper 1% Response	8917.39	1121.40	11.15
SpMA Correction Ch5 =	2.23438		

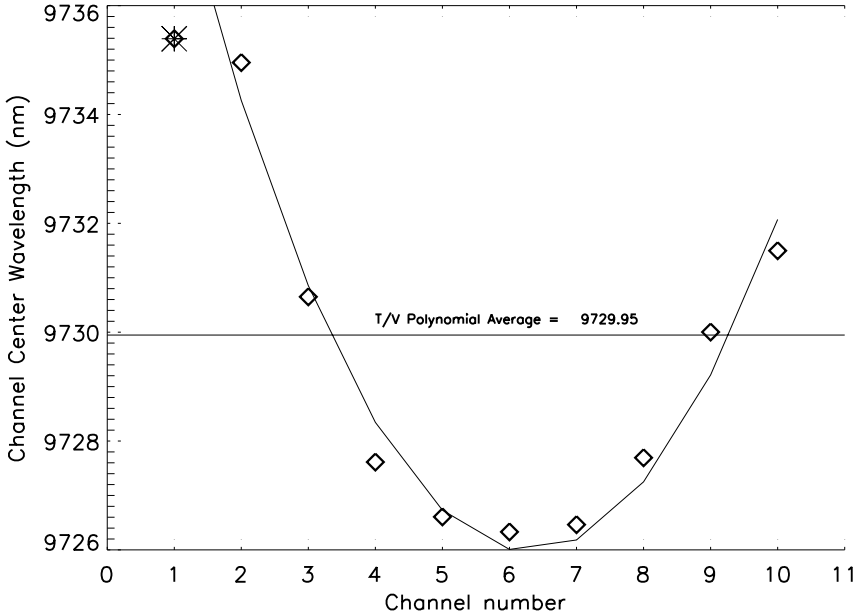


* represent CWL measurements not used to generate the fitted polynomial
-- Average of Fitted Polynomial Points for each Channel

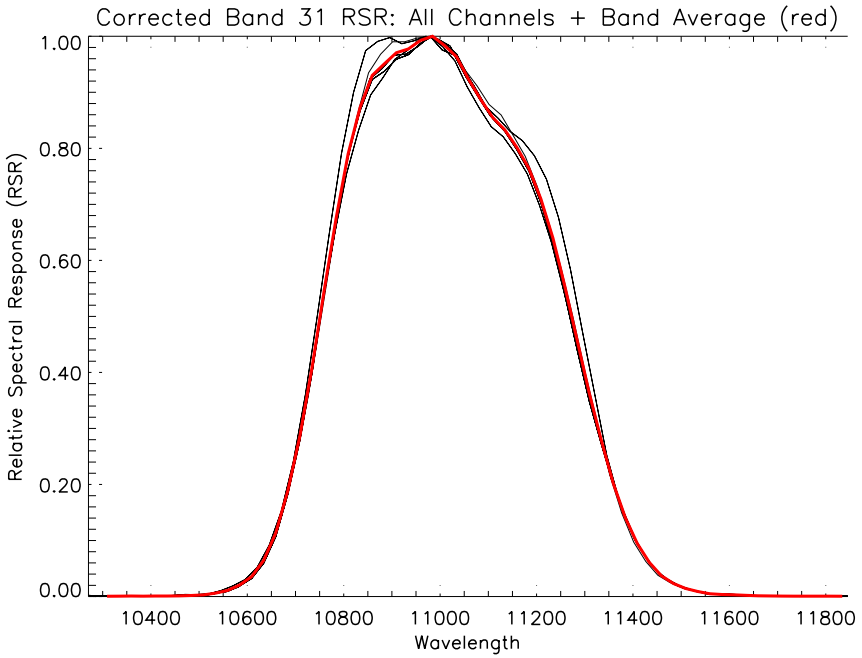


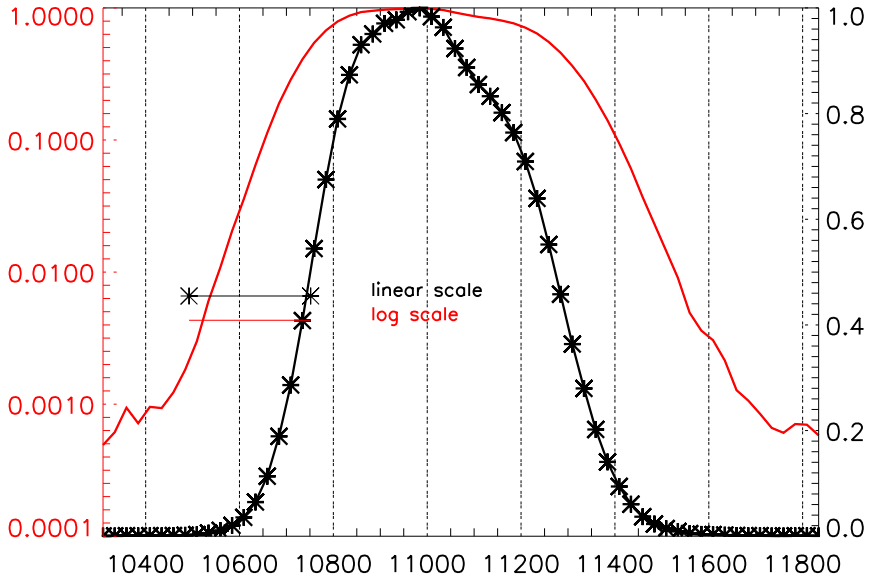


	nm	cm^{-1}	Stdev(nm)
Center Wavelength (CWL)	9730.25	1027.72	
Band Width (BW)	301.36	31.84	2.80
FWHM	293.58	31.77	4.08
Lower 50% Response	9590.12	1042.74	4.22
Upper 50% Response	9891.48	1010.97	3.89
Lower 1% Response	9317.21	1073.28	4.51
Upper 1% Response	10032.34	996.78	4.33
SpMA Correction Ch5 =	3.33984		

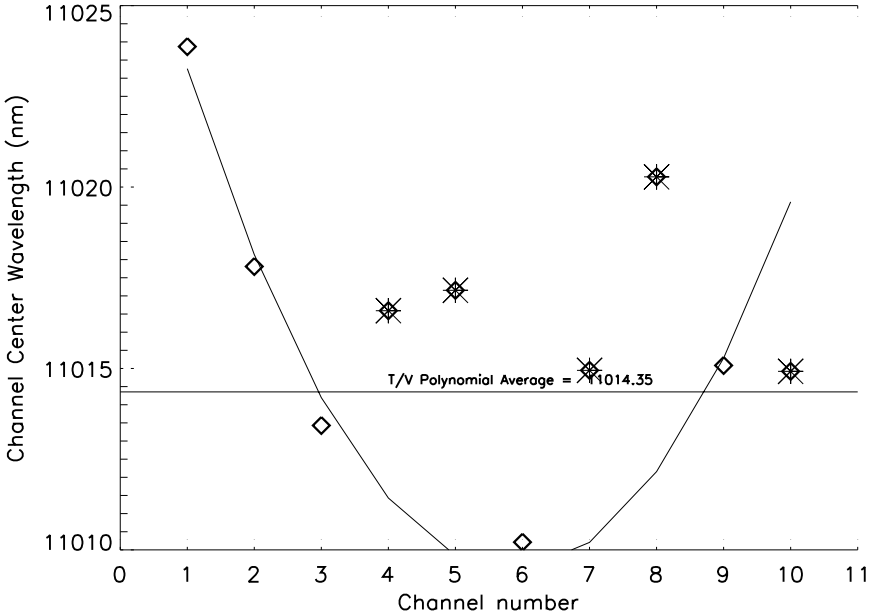


* represent CWL measurements not used to generate the fitted polynomial
-- Average of Fitted Polynomial Points for each Channel

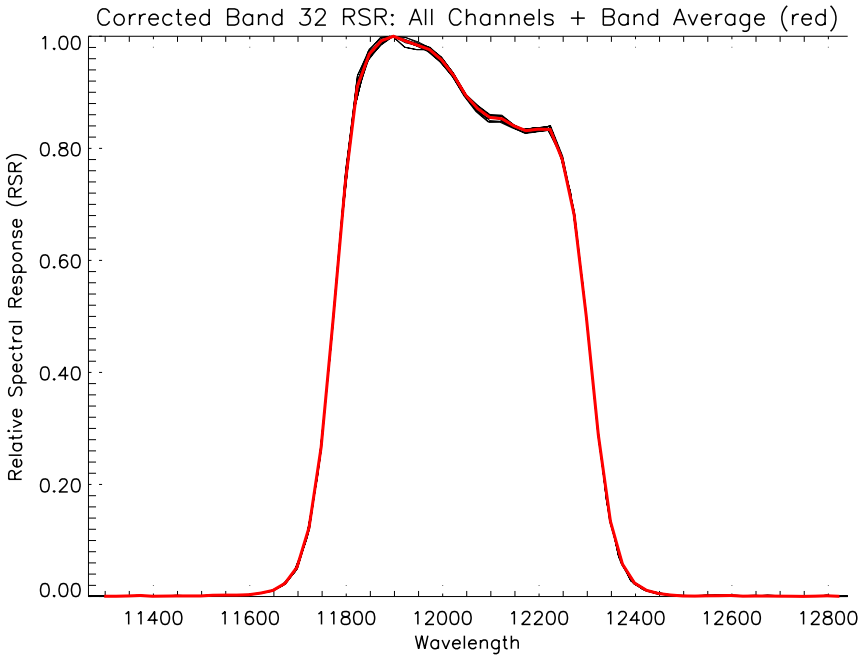


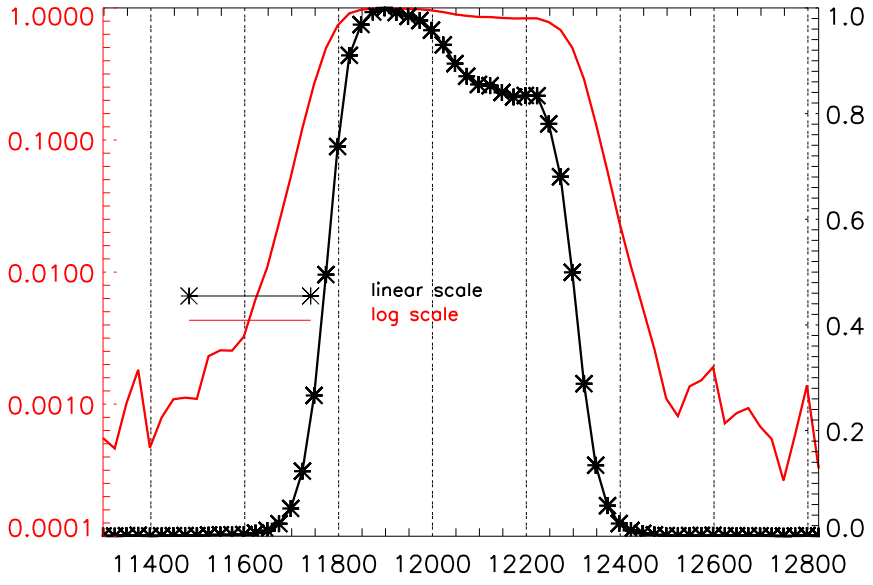


	nm	cm^{-1}	Stdev(nm)
Center Wavelength (CWL)	11014.35	907.91	
Band Width (BW)	522.00	43.05	10.39
FWHM	522.76	43.07	9.91
Lower 50% Response	10750.99	930.15	2.66
Upper 50% Response	11272.99	887.08	10.39
Lower 1% Response	10554.74	947.44	3.51
Upper 1% Response	11529.73	867.32	6.13
SpMA Correction Ch5 =	−2.79883		

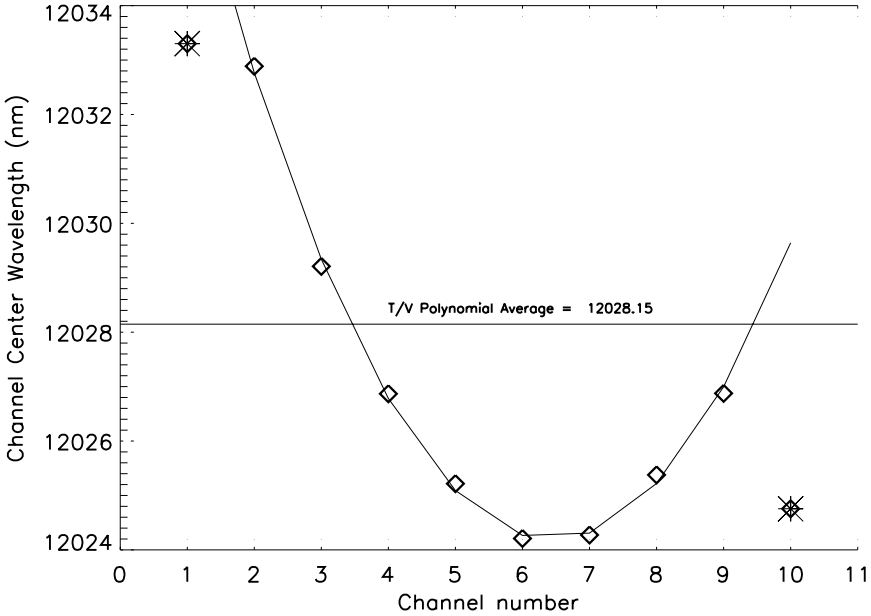


* represent CWL measurements not used to generate the fitted polynomial
-- Average of Fitted Polynomial Points for each Channel

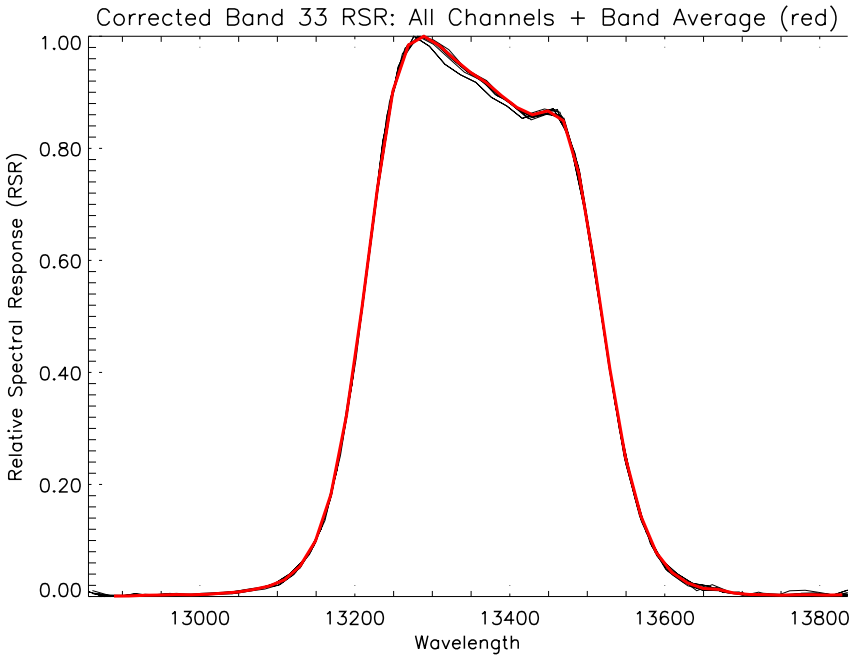


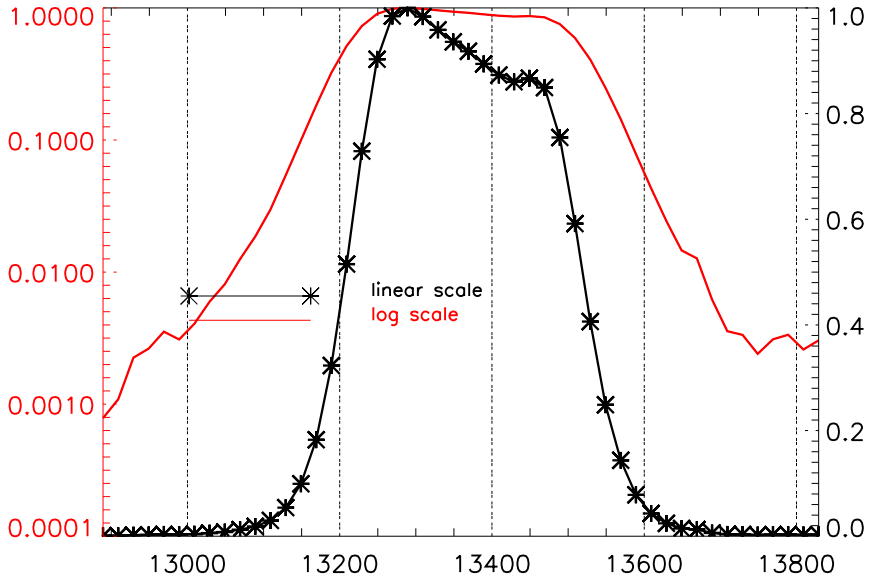


	nm	cm^{-1}	Stdev(nm)
Center Wavelength (CWL)	12028.16	831.38	
Band Width (BW)	524.44	36.27	1.80
FWHM	523.86	36.22	0.61
Lower 50% Response	11773.43	849.37	3.77
Upper 50% Response	12297.87	813.15	3.60
Lower 1% Response	11643.13	858.88	5.29
Upper 1% Response	12427.47	804.67	4.25
SpMA Correction Ch5 =	2.93066		

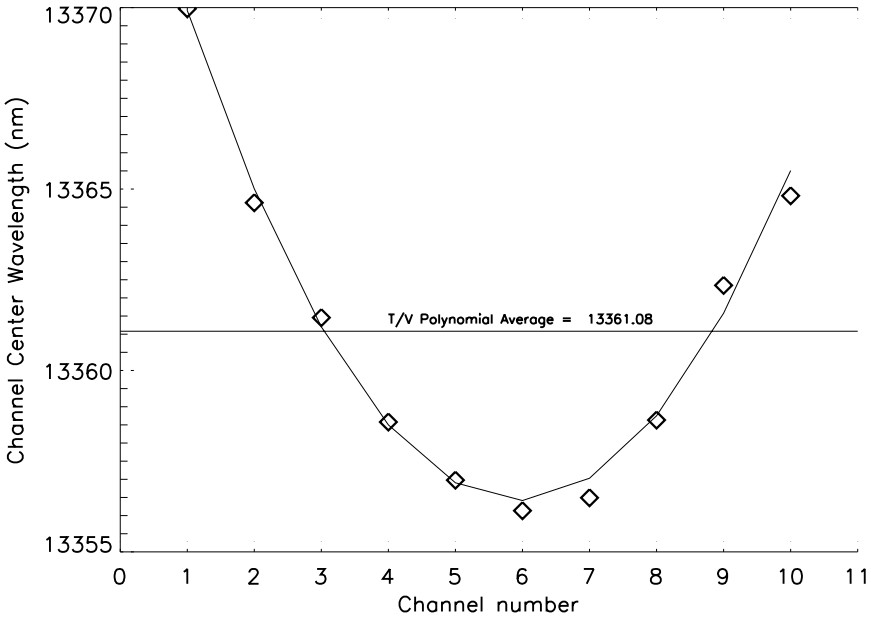


* represent CWL measurements not used to generate the fitted polynomial
-- Average of Fitted Polynomial Points for each Channel

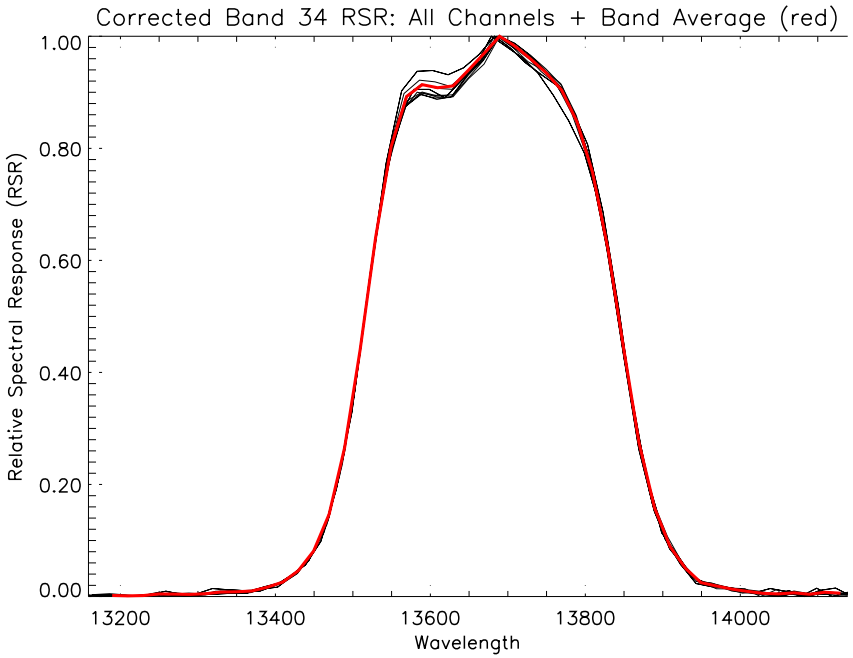


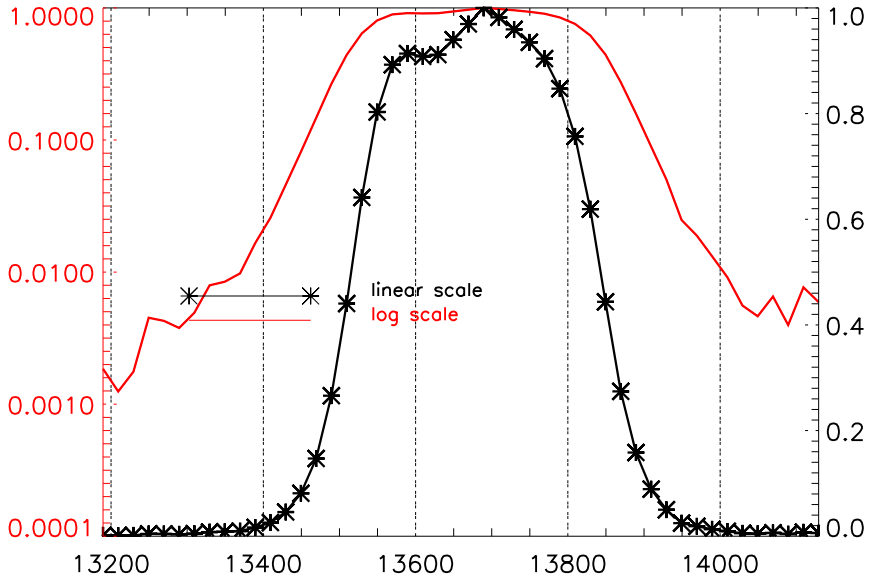


	nm	cm^{-1}	Stdev(nm)
Center Wavelength (CWL)	13361.11	748.44	
Band Width (BW)	311.47	17.45	0.77
FWHM	311.60	17.44	0.50
Lower 50% Response	13207.52	757.14	4.24
Upper 50% Response	13519.00	739.70	4.22
Lower 1% Response	13057.69	765.83	6.35
Upper 1% Response	13677.42	731.13	4.85
SpMA Correction Ch5 =	4.10352		

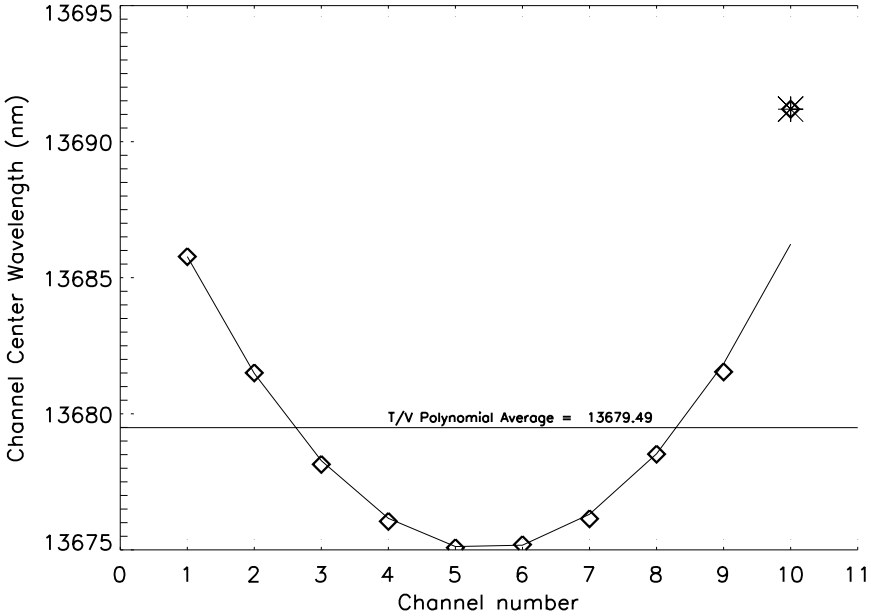


* represent CWL measurements not used to generate the fitted polynomial
-- Average of Fitted Polynomial Points for each Channel

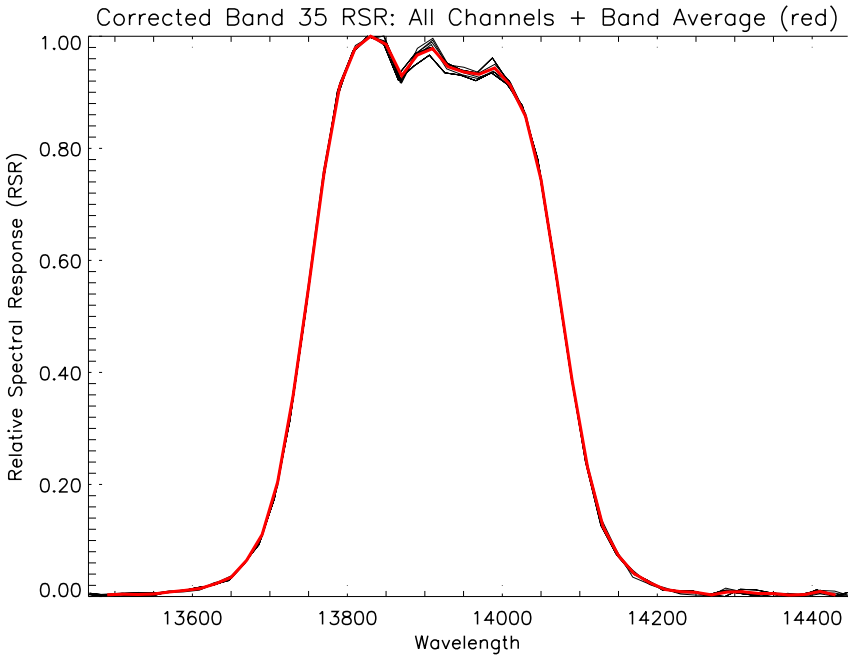


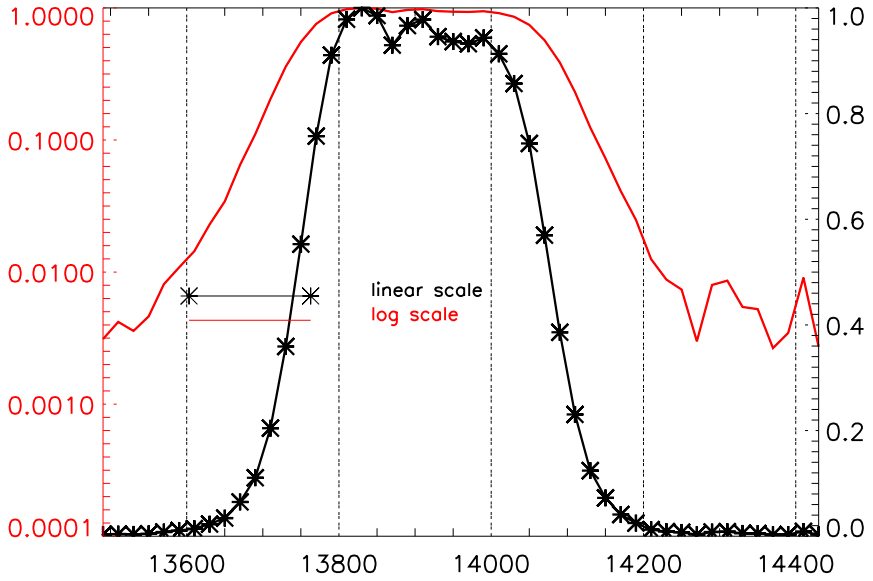


	nm	cm^{-1}	Stdev(nm)
Center Wavelength (CWL)	13679.45	731.02	
Band Width (BW)	327.65	17.51	4.90
FWHM	315.28	17.51	4.04
Lower 50% Response	13515.34	739.90	5.98
Upper 50% Response	13842.99	722.39	4.47
Lower 1% Response	13370.07	747.94	22.46
Upper 1% Response	14005.20	714.02	45.65
SpMA Correction Ch5 =	4.41113		

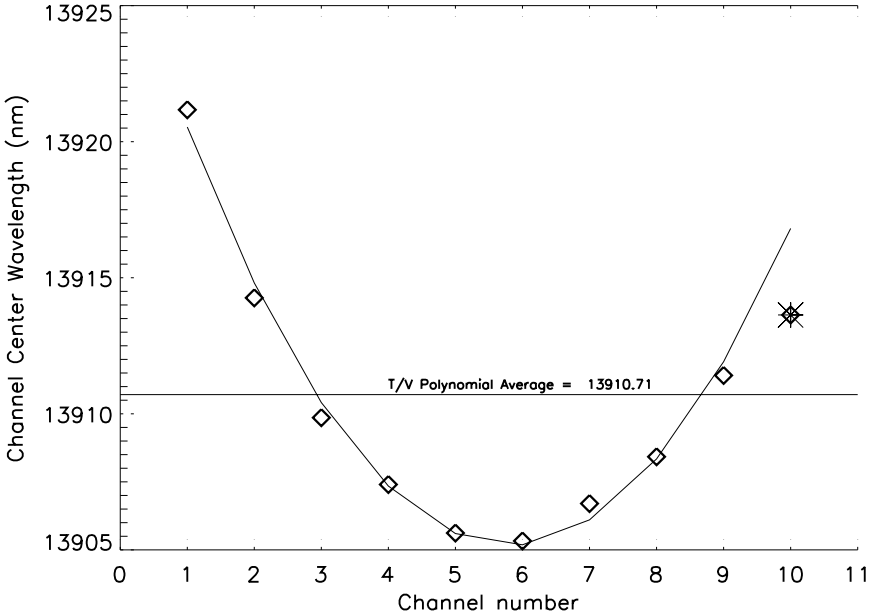


* represent CWL measurements not used to generate the fitted polynomial
-- Average of Fitted Polynomial Points for each Channel

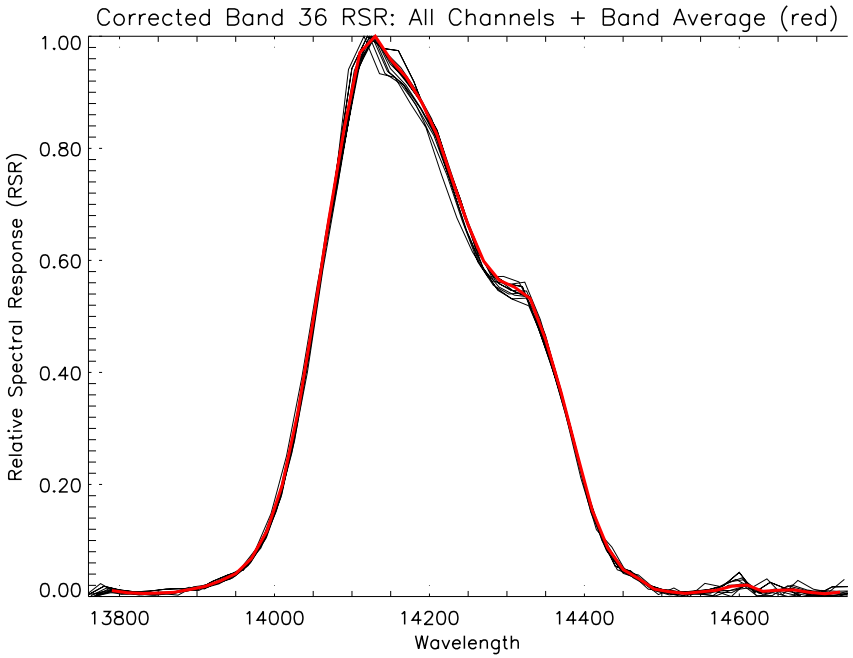


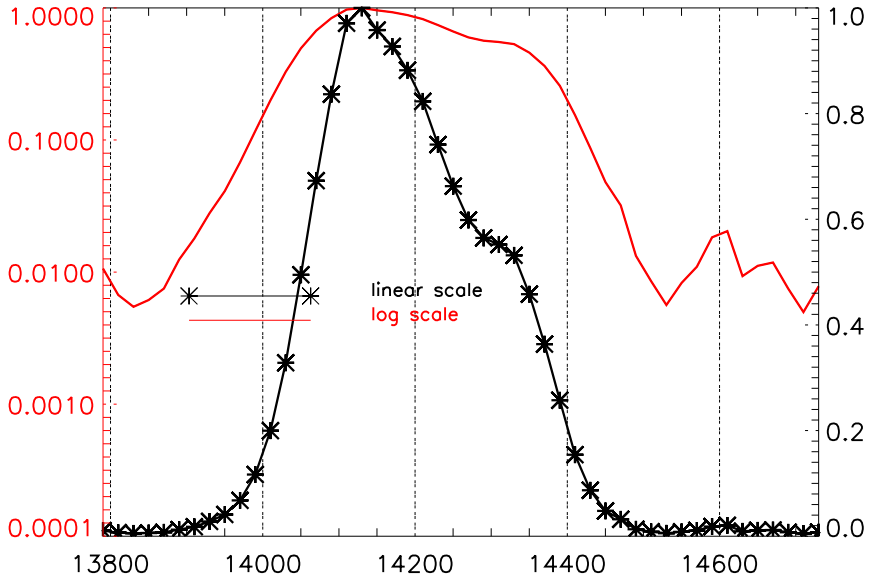


	nm	cm^{-1}	Stdev(nm)
Center Wavelength (CWL)	13910.71	718.87	
Band Width (BW)	333.06	17.21	3.32
FWHM	327.82	17.21	1.65
Lower 50% Response	13744.62	727.56	4.99
Upper 50% Response	14077.68	710.34	4.27
Lower 1% Response	13583.87	736.17	9.91
Upper 1% Response	14223.55	703.06	31.80
SpMA Correction Ch5 =	5.08594		

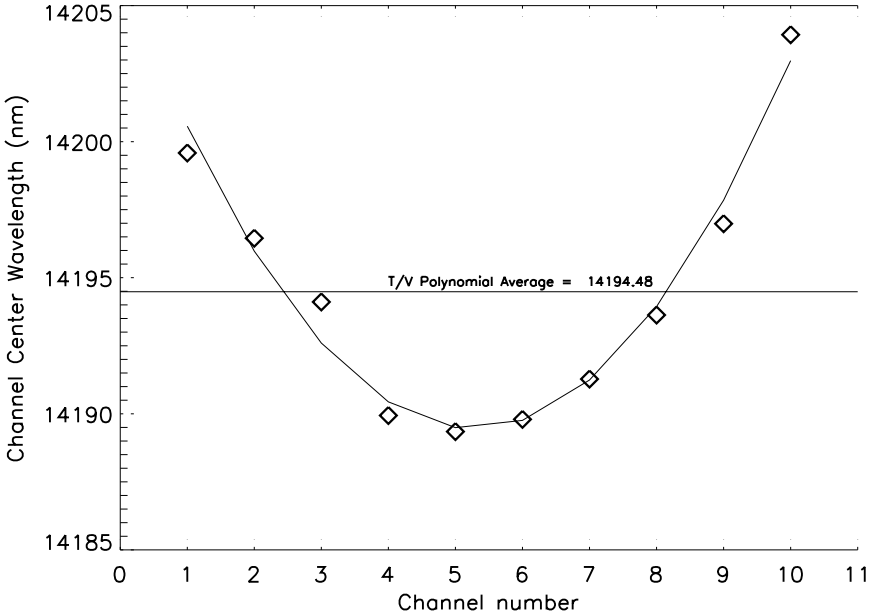


* represent CWL measurements not used to generate the fitted polynomial
-- Average of Fitted Polynomial Points for each Channel





	nm	cm^{-1}	Stdev(nm)
Center Wavelength (CWL)	14194.58	704.49	
Band Width (BW)	288.03	14.30	3.59
FWHM	288.68	14.30	3.31
Lower 50% Response	14050.72	711.71	4.17
Upper 50% Response	14338.75	697.41	4.70
Lower 1% Response	13880.27	720.45	13.23
Upper 1% Response	14503.94	689.47	8.97
SpMA Correction Ch5 =	5.13867		

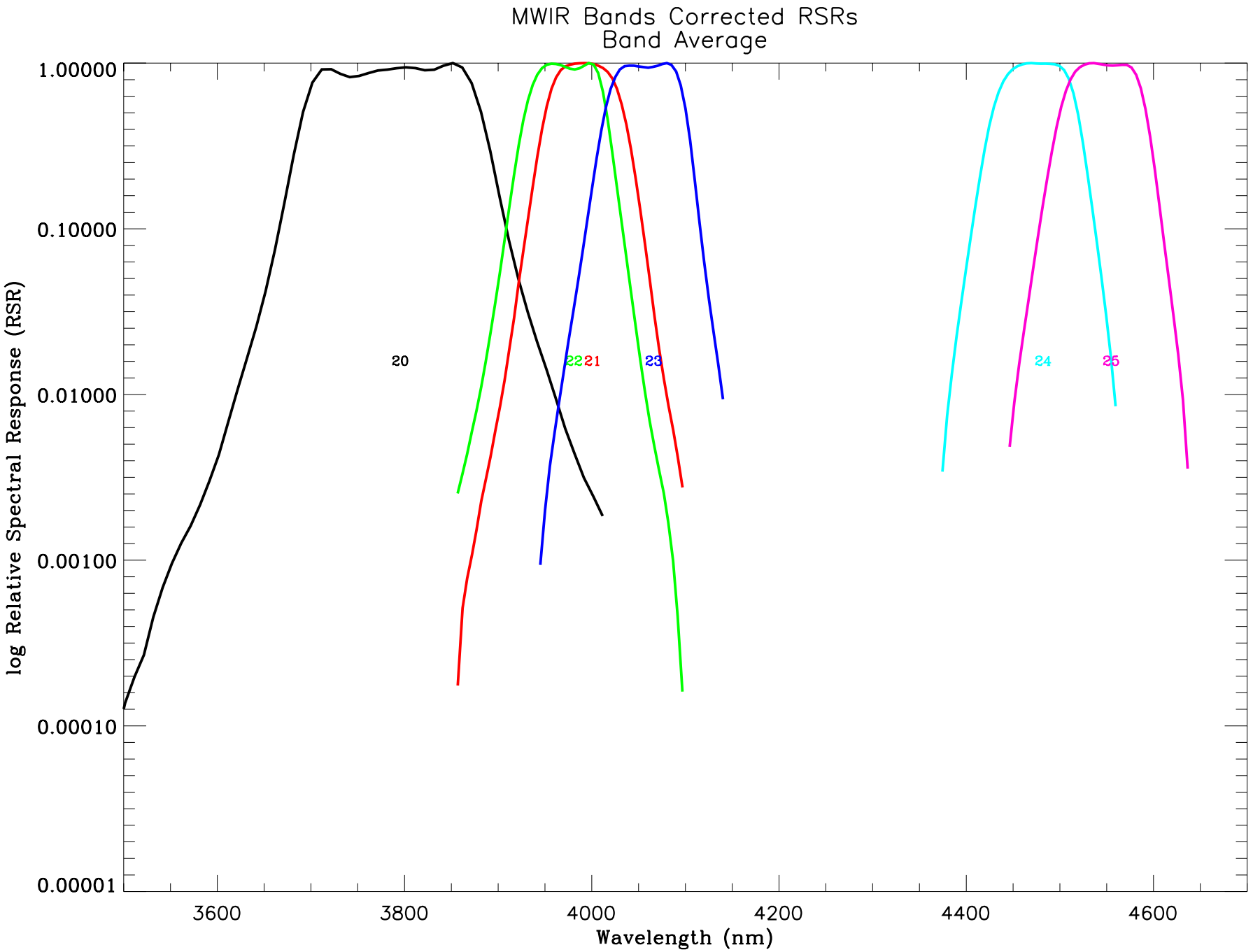


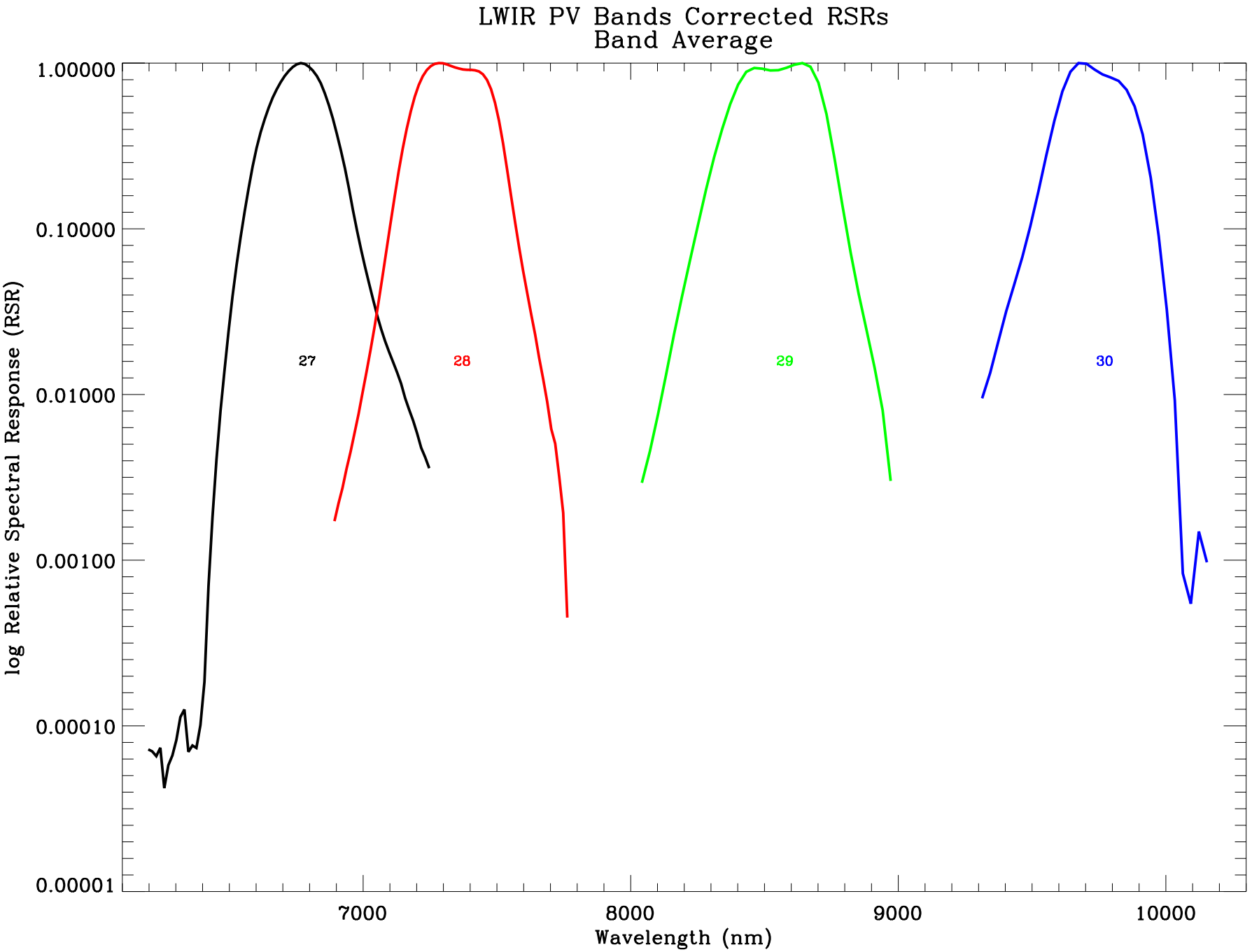
* represent CWL measurements not used to generate the fitted polynomial
-- Average of Fitted Polynomial Points for each Channel

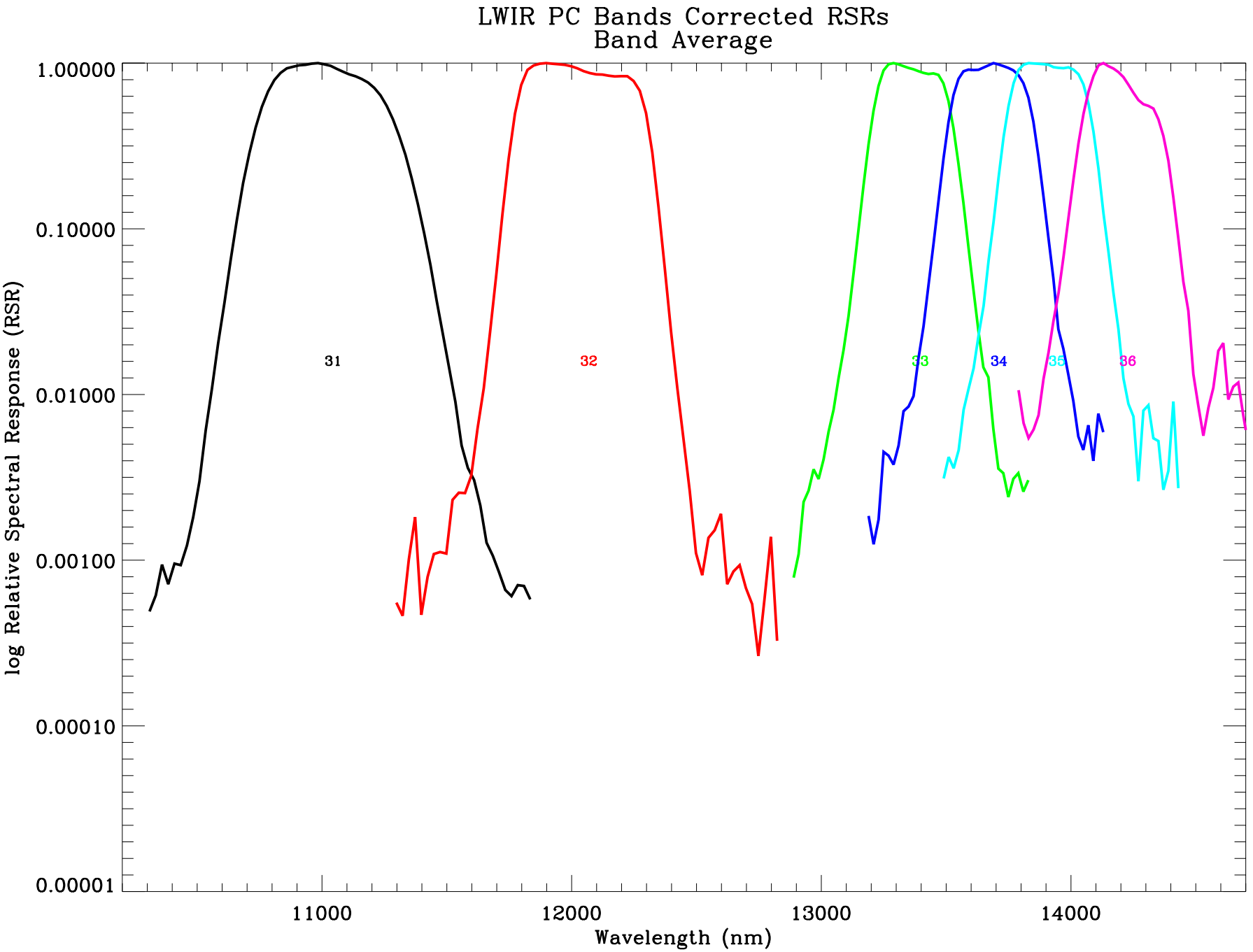
RSR Center Wavelength Air-to-Vacuum Shift

Band	CWL_amb nm	CWL_T/V nm	Shift nm	Delta/CWL_tv %	
20	3787.70	3788.23	-0.52	0.01	
21	3990.29	3992.12	-1.83	0.05	
22	3971.23	3971.94	-0.71	0.02	
23	4055.89	4056.66	-0.77	0.02	
24	4473.04	4473.19	-0.15	0.00	
25	4544.96	4545.36	-0.39	0.01	
27	6731.41	6765.35	-33.94	0.50	Note 1
28	7336.00	7336.73	-0.73	0.01	
29	8517.39	8540.69	-23.30	0.27	Notes 2 & 3
30	9729.77	NA	NA	NA	
31	11012.88	NA	NA	NA	
32	12027.83	NA	NA	NA	
33	13360.19	NA	NA	NA	
34	13679.71	NA	NA	NA	
35	13911.70	NA	NA	NA	
36	14194.40	NA	NA	NA	

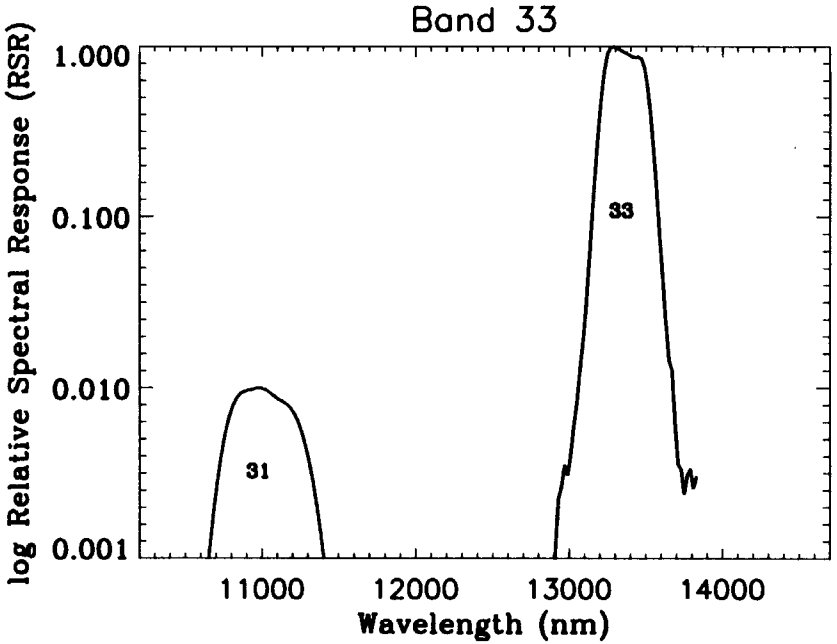
- Note 1: Ambient RSR strongly shifted by 300 K PbTe window
- Note 2: T/V RSR strongly shifted by CaF_2 window
- Note 3: Ambient RSR correction for SpMA chopper phase shift pending

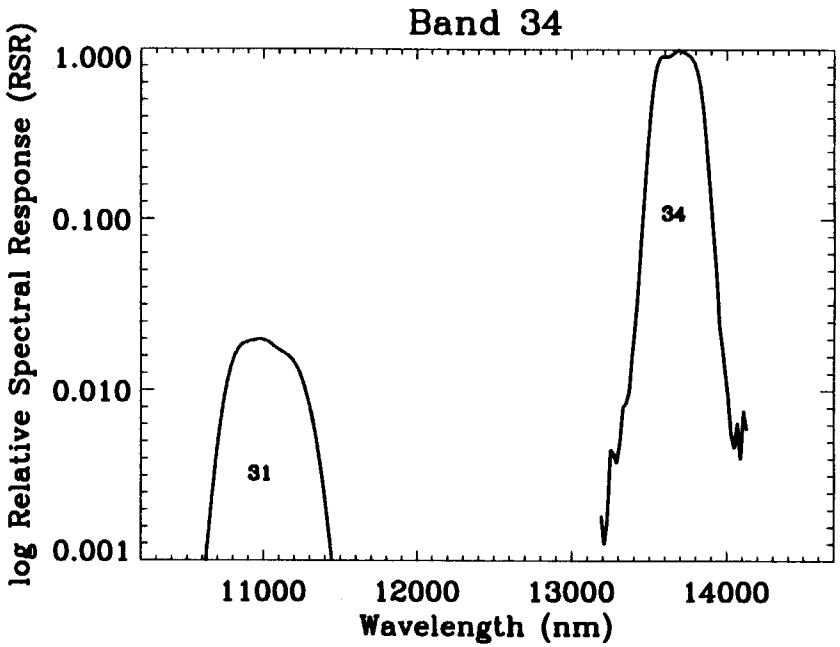

MWIR Bands Corrected RSRs
Band Average
1.00000
0.10000
0.01000
0.00100
0.00010
0.00001
log Relative Spectral Response (RSR)
20
22
21
23
24
25
3600
3800
4000
4200
4400
4600
Wavelength (nm)

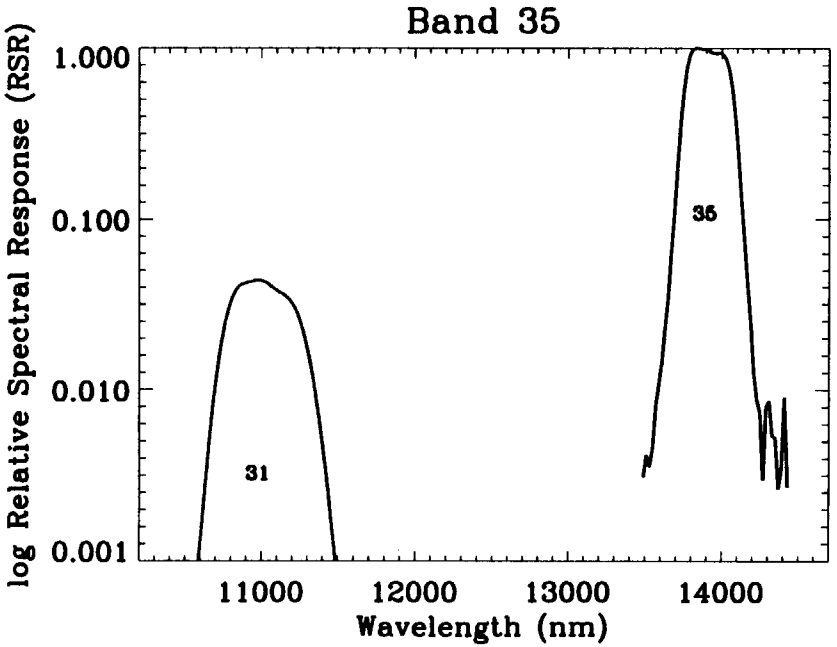

LWIR PV Bands Corrected RSRs
Band Average
1.00000
0.10000
0.01000
0.00100
0.00010
0.00001
log Relative Spectral Response (RSR)
27
28
29
30
7000
8000
9000
10000
Wavelength (nm)

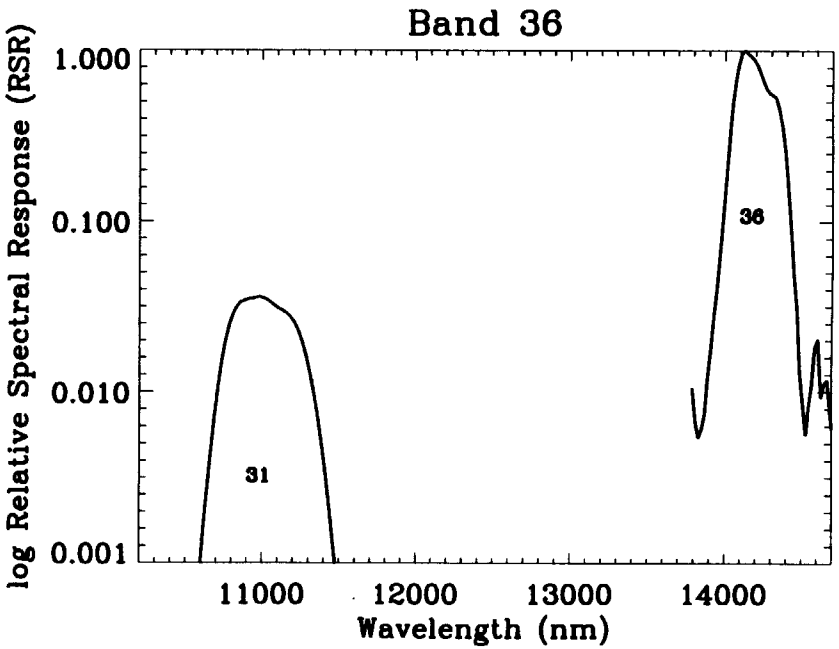

LWIR PC Bands Corrected RSRs
Band Average
1.00000
0.10000
0.01000
0.00100
0.00010
0.00001
log Relative Spectral Response (RSR)
31
32
33
34
35
36
11000
12000
13000
14000
Wavelength (nm)

Notional LWIR PC Bands RSRs (B33@1.0%; B34@3.0%; B35@4.4%; B36@3.6%)
(These Preliminary crosstalk amplitudes may be factor of 2 high)



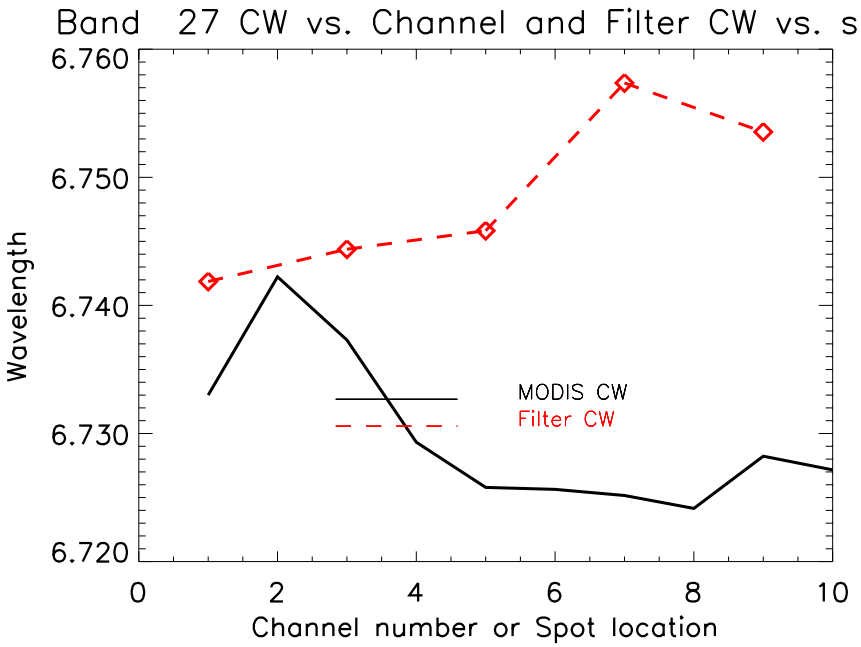


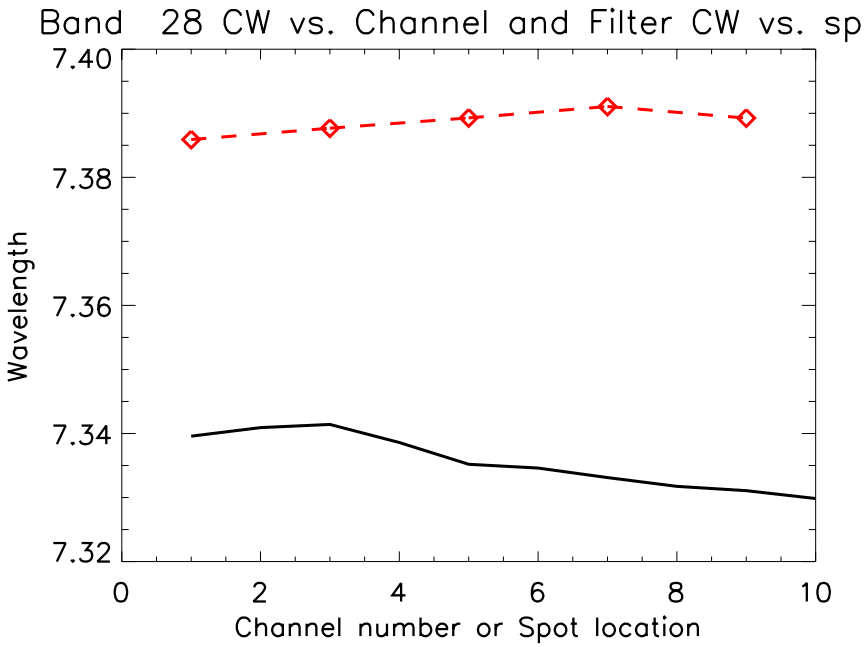


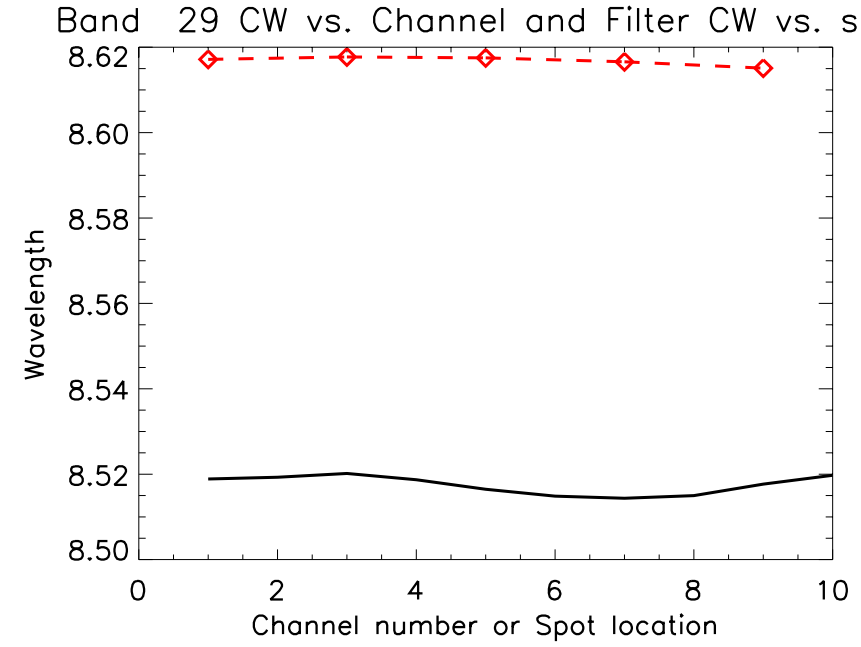


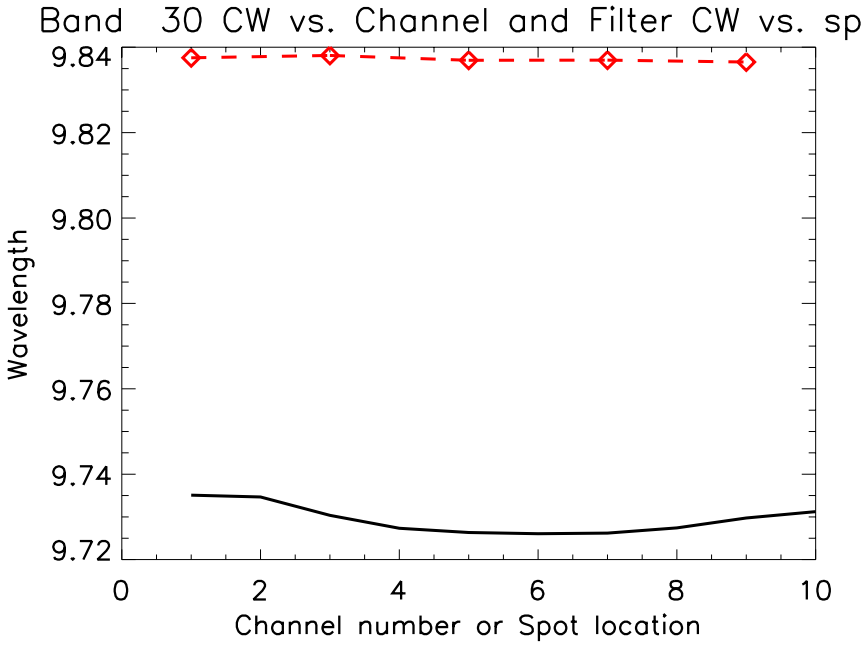
Comparison of LWIR As Measured System Level Center Wavelengths (CWLs) with 5 Spot Filter Level CWL

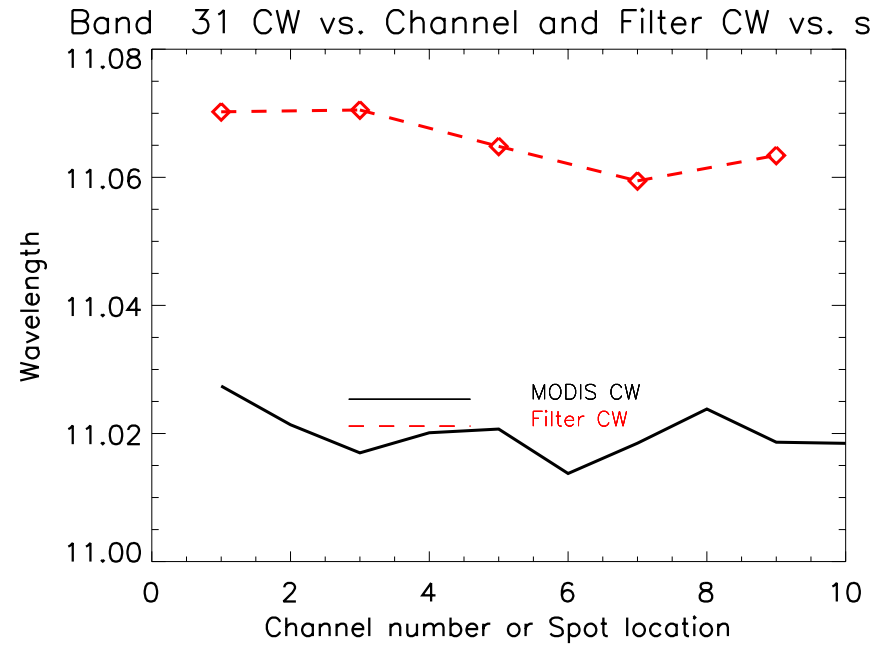
Note: No MWIR 5 spot filter level data available

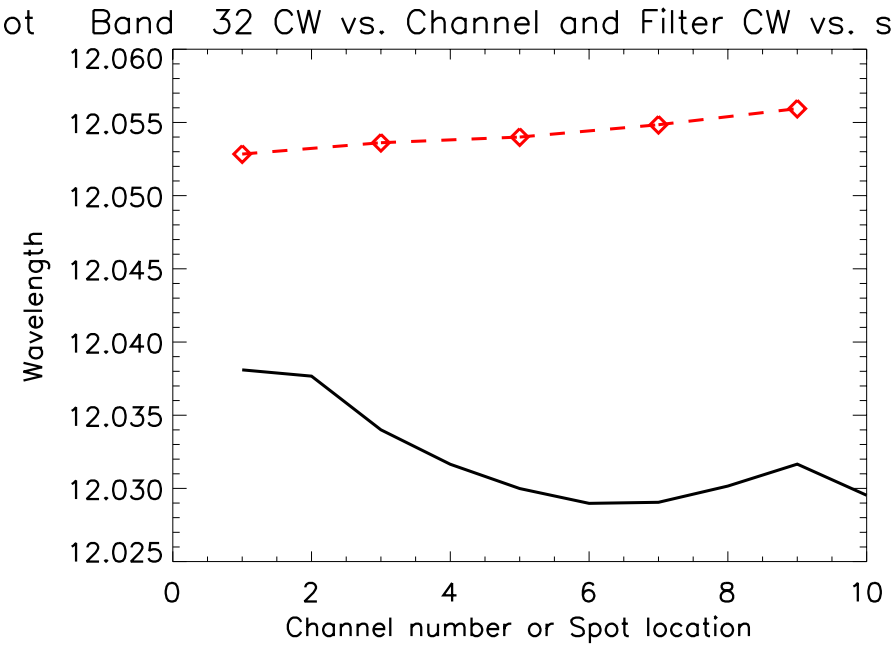

Band 27 CW vs. Channel and Filter CW vs. spot
Wavelength
6.760
6.750
6.740
6.730
6.720
0
2
4
6
8
10
Channel number or Spot location
MODIS CW
Filter CW

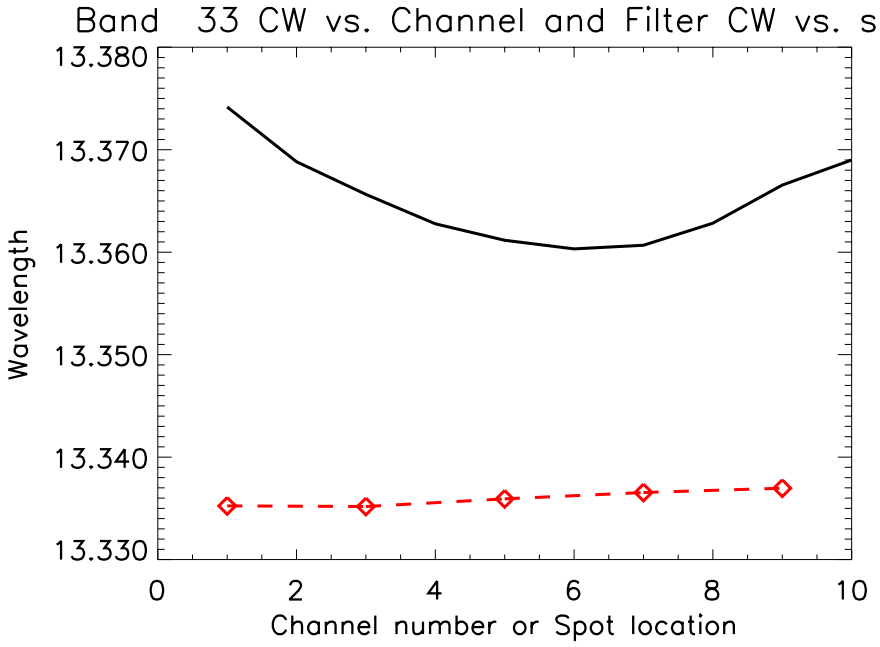

Band 28 CW vs. Channel and Filter CW vs. spot
Wavelength
7.40
7.38
7.36
7.34
7.32
0
2
4
6
8
10
Channel number or Spot location

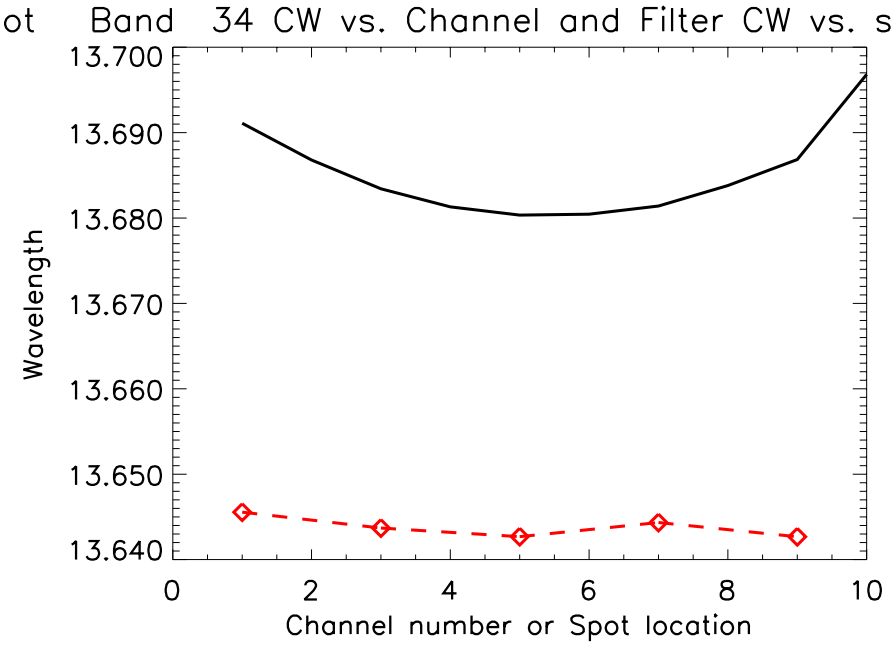

Band 29 CW vs. Channel and Filter CW vs. spot
Wavelength
8.62
8.60
8.58
8.56
8.54
8.52
8.50
0
2
4
6
8
10
Channel number or Spot location

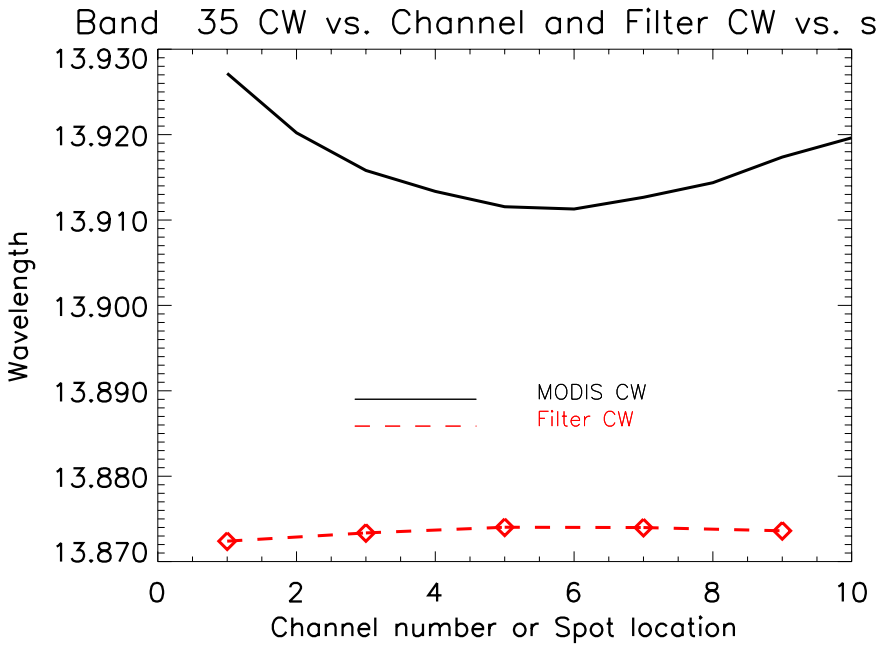

Band 30 CW vs. Channel and Filter CW vs. spot
Wavelength
9.84
9.82
9.80
9.78
9.76
9.74
9.72
0
2
4
6
8
10
Channel number or Spot location

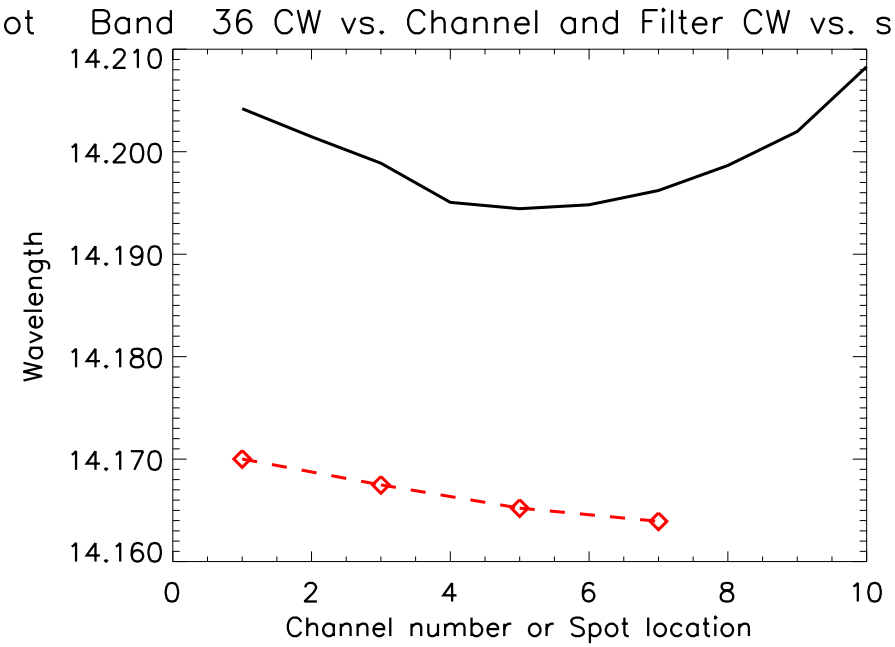

Band 31 CW vs. Channel and Filter CW vs. spot
Wavelength
11.08
11.06
11.04
11.02
11.00
MODIS CW
Filter CW
0
2
4
6
8
10
Channel number or Spot location


Band 32 CW vs. Channel and Filter CW vs. spot
Wavelength
12.060
12.055
12.050
12.045
12.040
12.035
12.030
12.025
0
2
4
6
8
10
Channel number or Spot location


Band 33 CW vs. Channel and Filter CW vs. spot
Wavelength
13.380
13.370
13.360
13.350
13.340
13.330
0
2
4
6
8
10
Channel number or Spot location


Band 34 CW vs. Channel and Filter CW vs. spot
Wavelength
13.700
13.690
13.680
13.670
13.660
13.650
13.640
0
2
4
6
8
10
Channel number or Spot location


Band 35 CW vs. Channel and Filter CW vs. spot
Wavelength
13.930
13.920
13.910
13.900
13.890
13.880
13.870
MODIS CW
Filter CW
0
2
4
6
8
10
Channel number or Spot location


Band 36 CW vs. Channel and Filter CW vs. spot
Wavelength
14.210
14.200
14.190
14.180
14.170
14.160
0
2
4
6
8
10
Channel number or Spot location