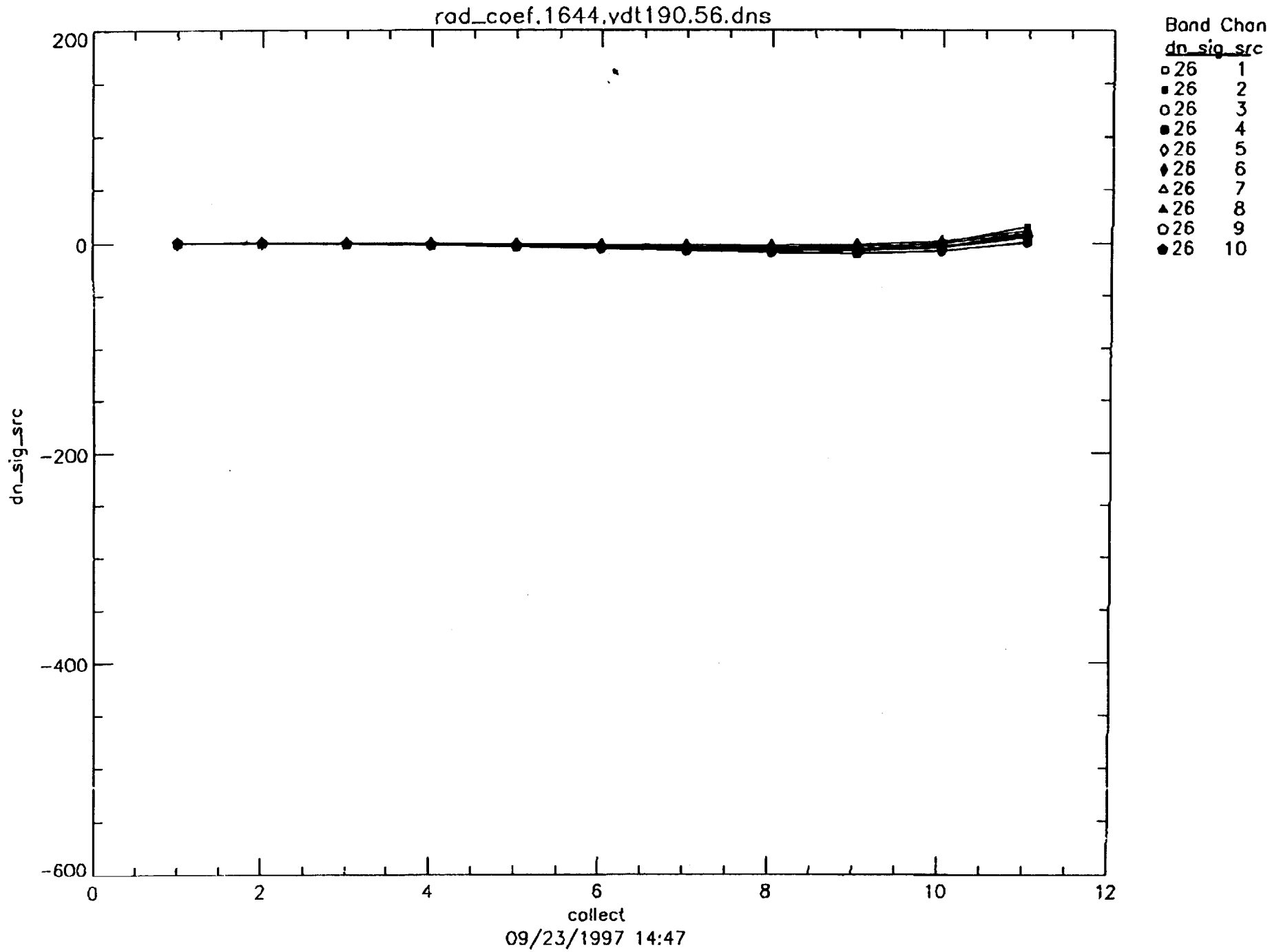
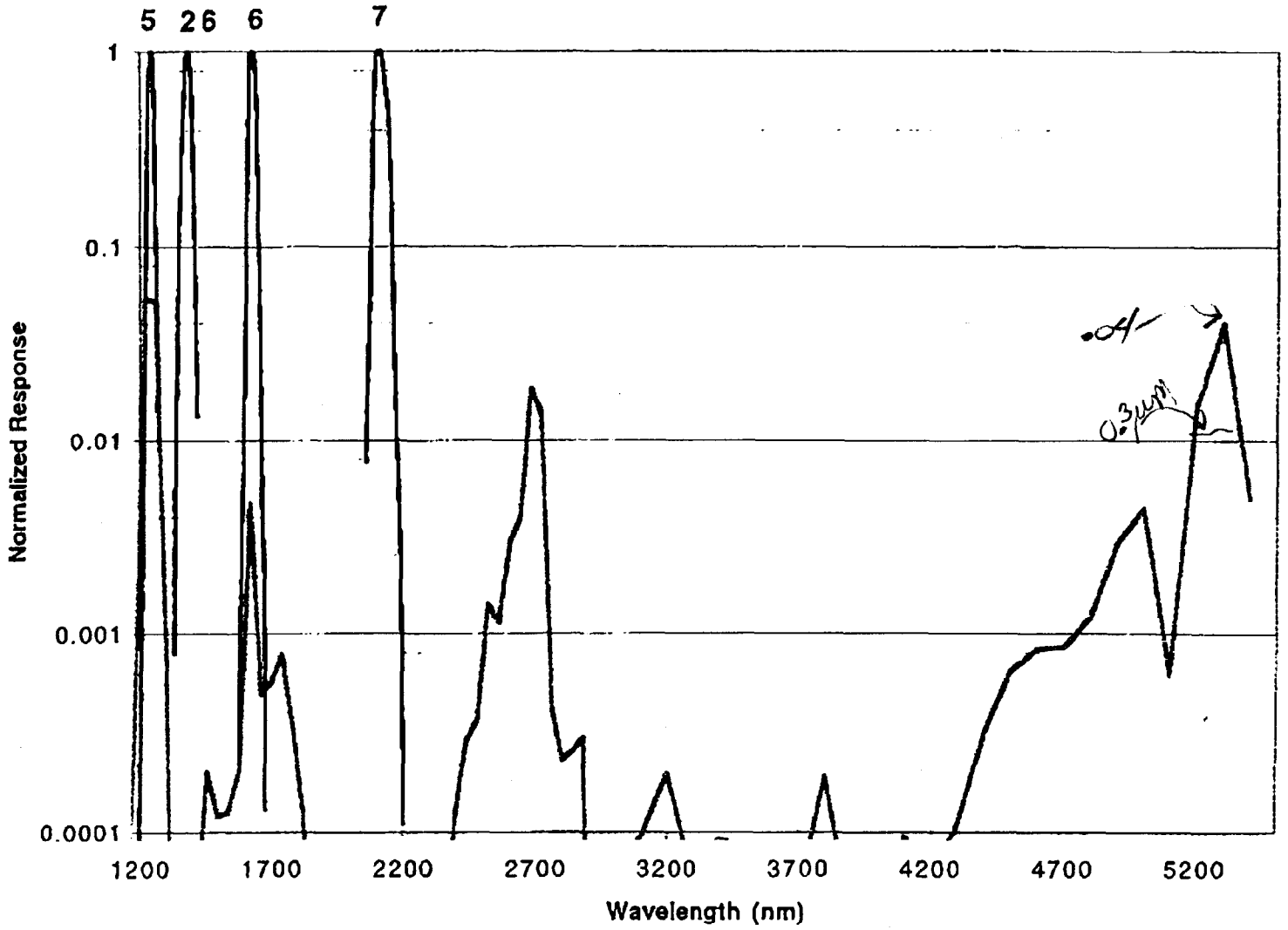

rad_coef.1644.vdt190.56.dns
Band Chan
dn_sig_src
26 1
26 2
26 3
26 4
26 5
26 6
26 7
26 8
26 9
26 10
200
0
-200
-400
-600
dn_sig_src
0
2
4
6
8
10
12
collect
09/23/1997 14:47

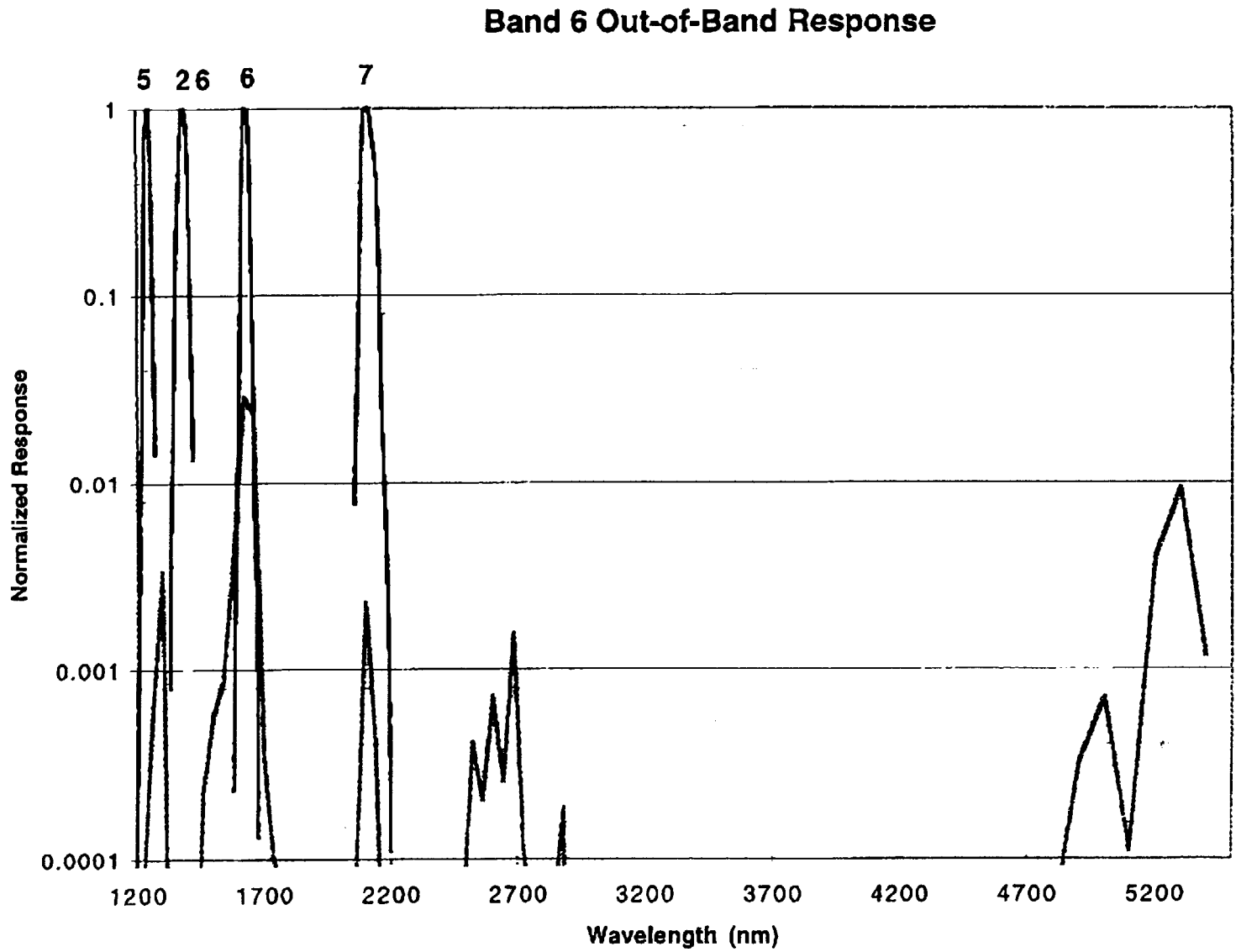
SWIR-B5 OOBD

Band 5 Out-of-Band Response

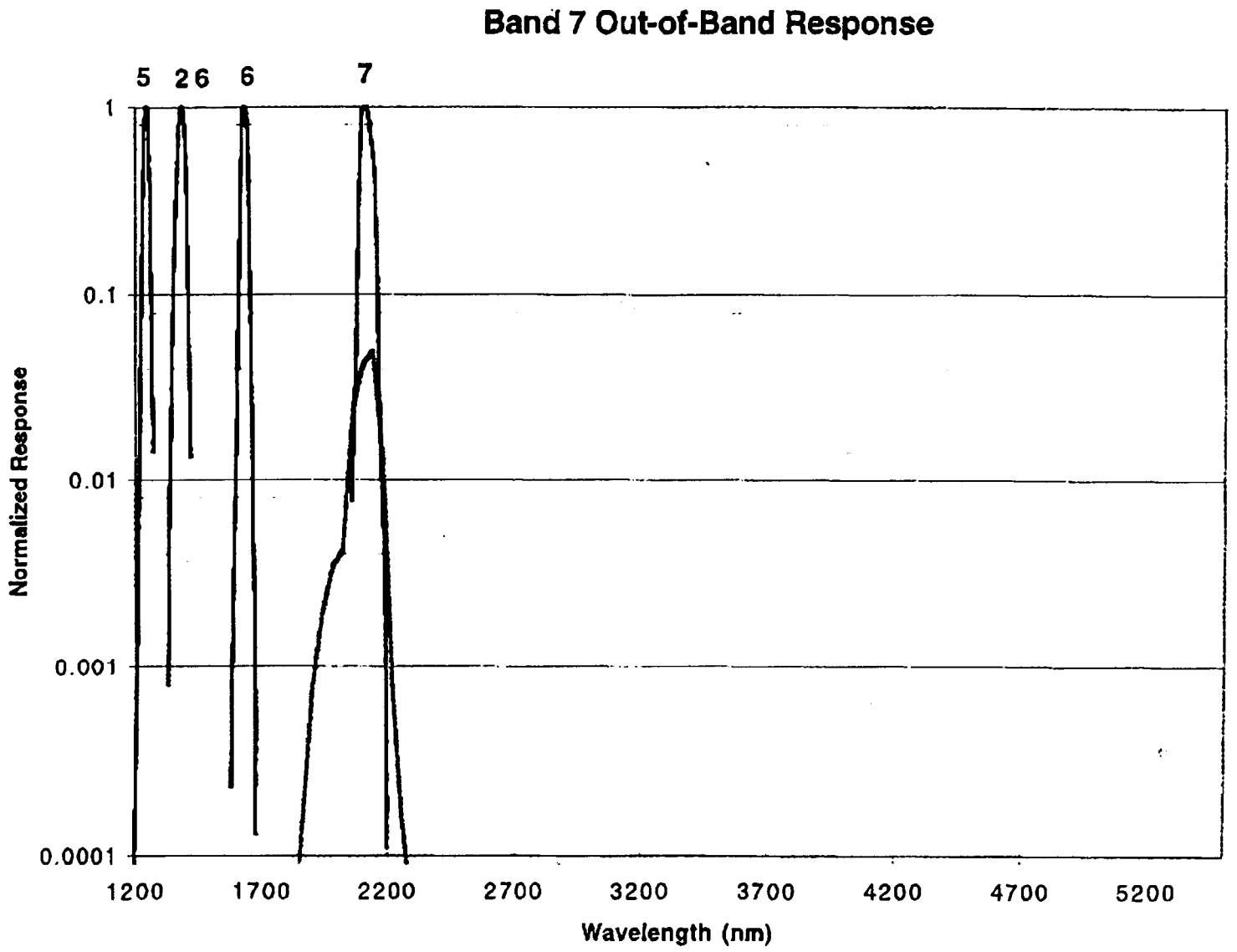


2

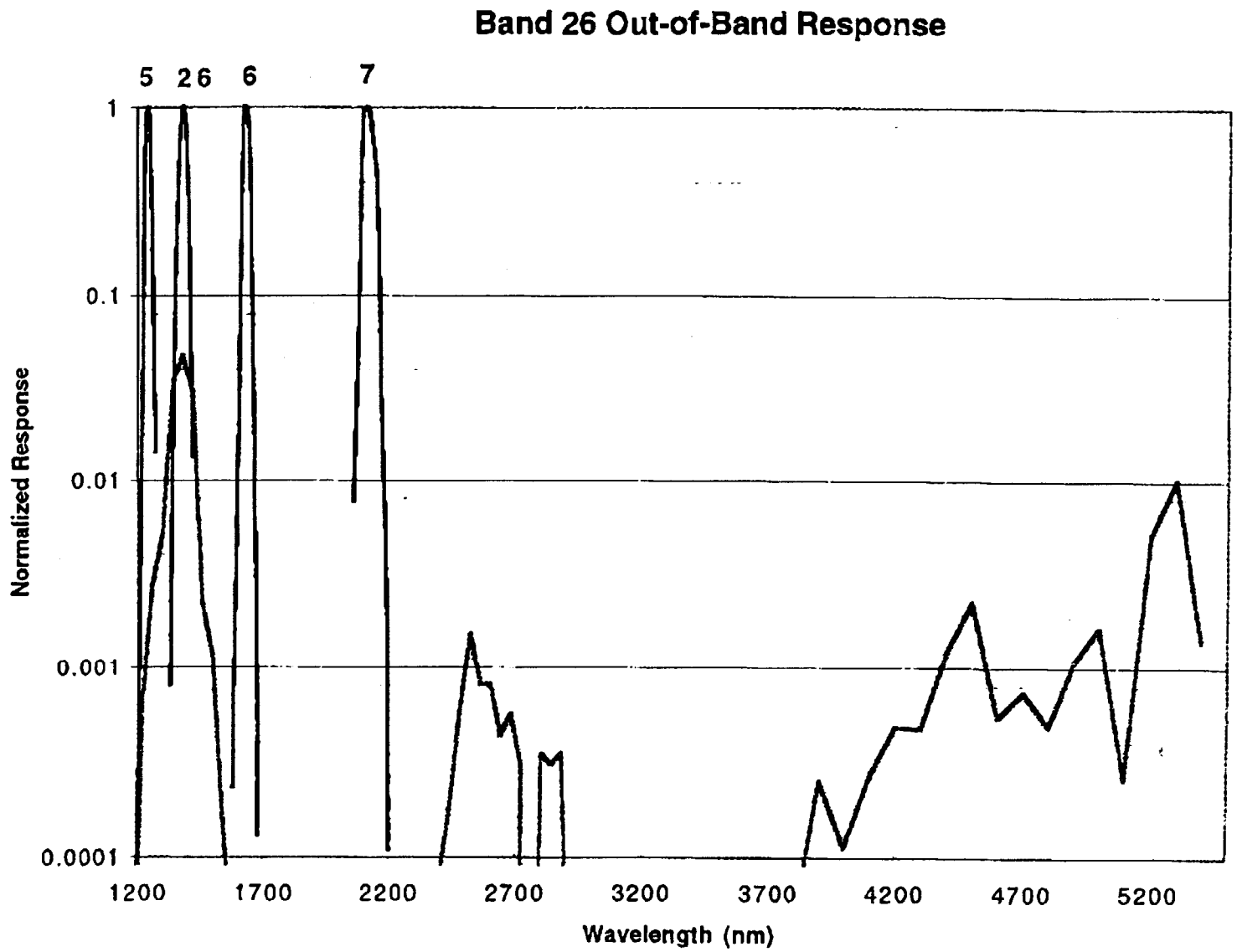
SWIR-B6 OOBD



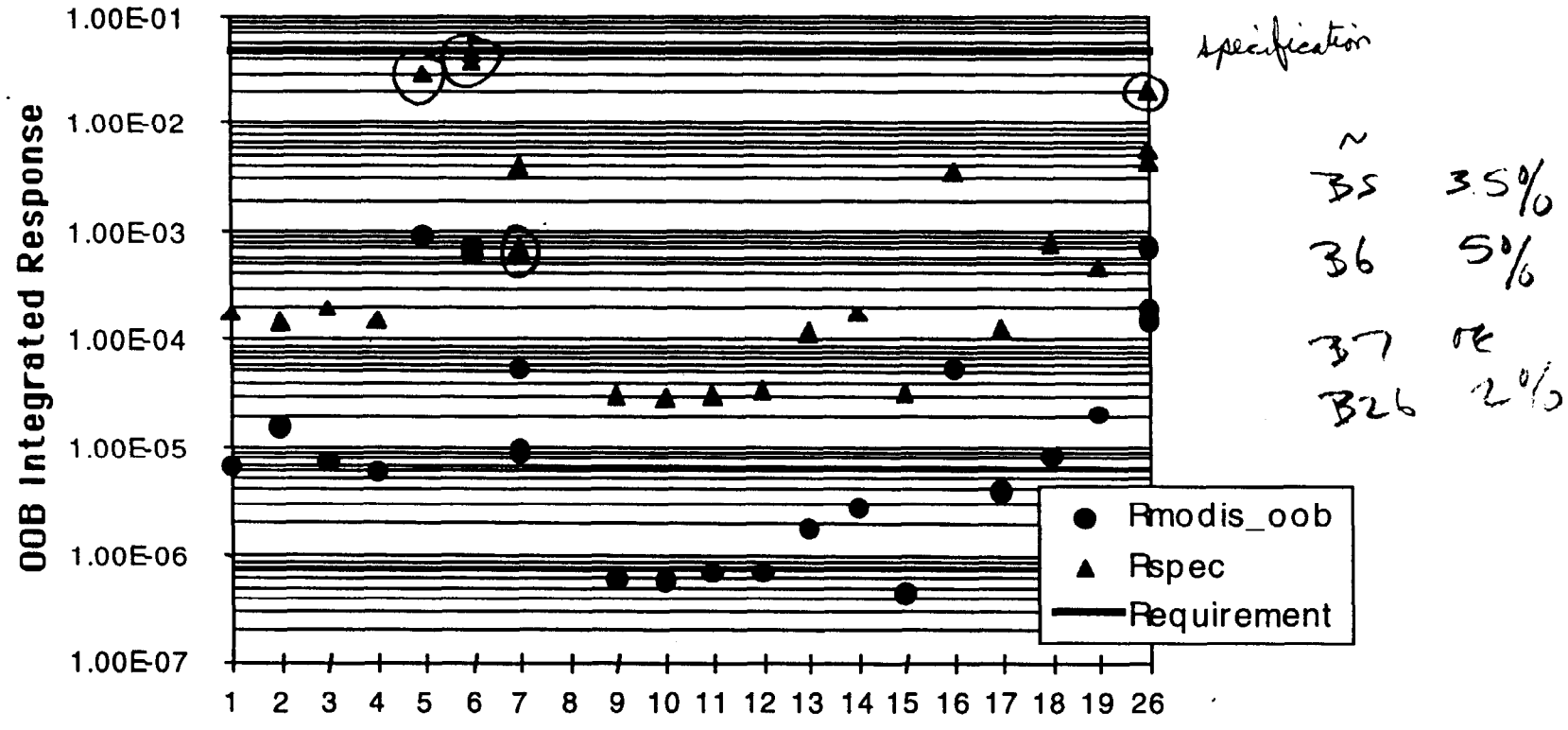
3


Band 7 Out-of-Band Response
5
2 6
6
7
1
0.1
0.01
0.001
0.0001
Normalized Response
1200
1700
2200
2700
3200
3700
4200
4700
5200
Wavelength (nm)

SWIR-B26 OOBD

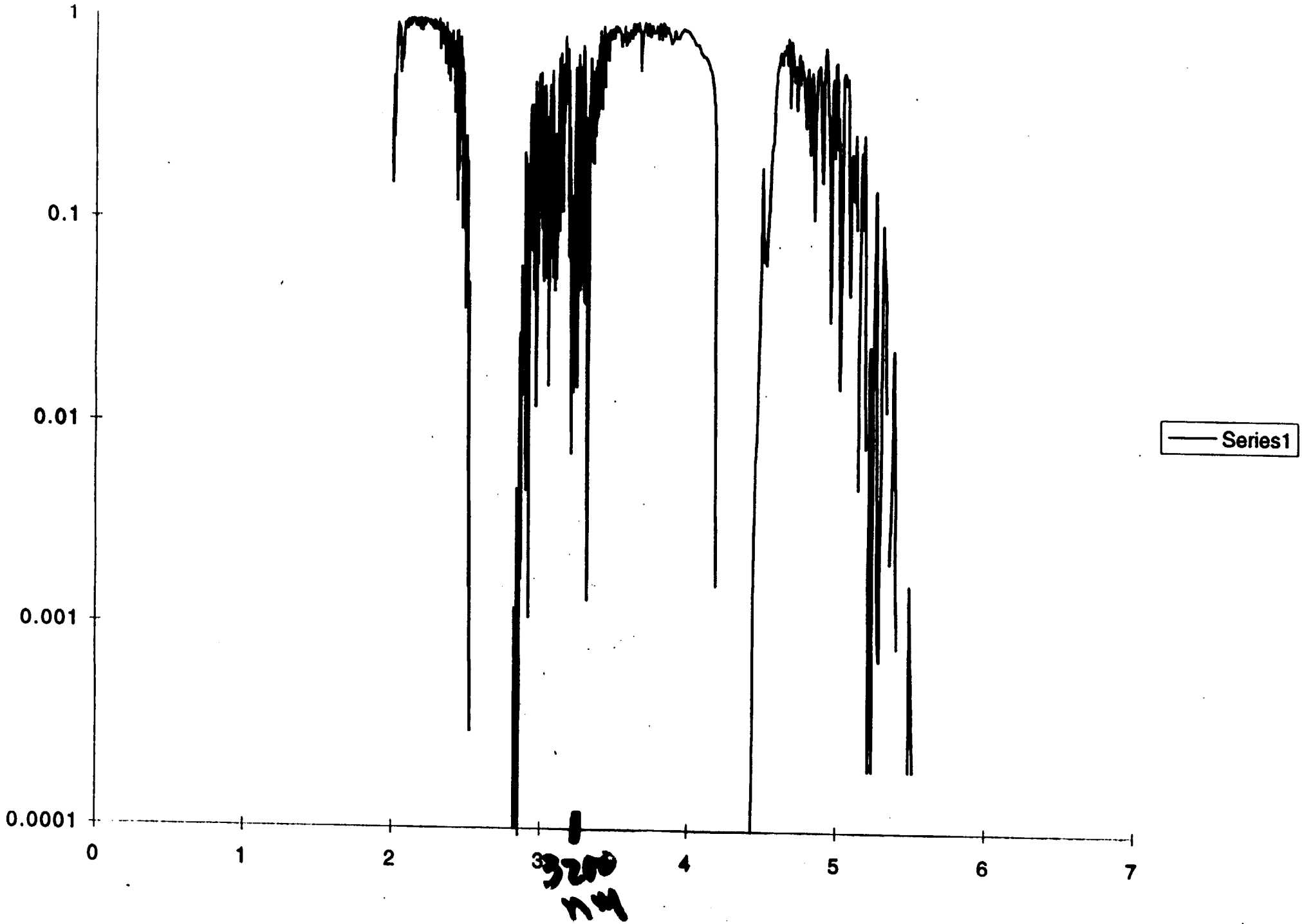


VIS/ NIR/ SWIR OOB Integrated Response, Ceramic Source



Rmodis_oob = the MODIS response in the out-of-band (OOB) region, normalized by the in-band response

Rspec: relates the Rmodis_oob values to the specified requirement by assuming Rmodis-oob to be valid over the entire out-of-band region and scaling it by the ratio of the integrated specified source spectrum over the OOB region, to the integrated specified source spectrum over the in-band region.


1
0.1
0.01
0.001
0.0001
0
1
2
3
4
5
6
7
Series1
3200
nm

Why does the MODIS SWIR bands respond to BCS?
The dispersive OOB measurements indicates there are leaks at 2.7 and 5.3 µm.
Do these leaks explain the SWIR sensitivity to BCS?
What is the significance of these leaks for orbital performance?

[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	[13]
							L @ 2.7 µm				L @ 5.2 µm	
band	ctr wln (µm)	fwhm (µm)	Ltyp	Lmax	Toob @2.7µm	fwhm oob	260 K	330 K	Toob @ 5.2µm	fwhm oob	260 K	330 K
5	1.24	0.02	5.4	110	0.02	0.1	0.001	0.08	0.04	0.2	0.75	7.16
6	1.64	0.025	7.3	70	0.001	0.1	0.001	0.08	0.01	0.2	0.75	7.16
7	2.13	0.05	1	22	0.0001	0.1	0.001	0.08	0.0001	0.2	0.75	7.16
26	1.375	0.03	6	90	0.001	0.1	0.001	0.08	0.01	0.2	0.75	7.16

For the 5.3 µm OOB leak.
resp_bcs= [10]*[11]*[13]*3700 / {[3]*[5]} in counts

band	resp_bcs	resp_bcs actual
5	96.	± 100
6	30.	±40
7	0.	+50 to -100
26	20.	≈ 15

For the 2.7 µm OOB leak
resp_bcs=[6]*[7]*[9]*3700/{[3]*[5]} in counts

band	resp_bcs
5	0.2691
6	0.0169
7	0.0027
26	0.011

For the 5.3 µm OOB leak.
This calculation assumes that the earth scene at 5.3 µm is 260 K.
resp_orbit= [10]*[11]*[13]*3700 / {[3]*[5]} in counts
resp_Ltyp=3700*[4]/[5]

band	resp_orbit	resp_Ltyp	%	NEDL
5	10	182	5.56	4
6	3	386	0.82	2
7	0	168	0.03	
26	2	247	0.83	1

Conclusion: 1.)The above calculations indicate MODIS response to BCS is consistent with OOB leak at 5.3 µm for bands 5, 6, and 26. However, band 7 performance is not consistent with this hypothesis.
2.) On orbit effects for bands 5, 6, 7, and 26 relative to Ltyp are: 5.6, 0.8, 0, 0.8 %, respectively.