

INT Secondary Mirror Reflectivity Measurements with SMS uScan

Pairs of measurements in same place to check %R repeatability.

Can be identified by their almost identical scattering measurements

Poor repeatability: abandoned after 20 measurements

Returned to charger and later took 17 more measurements

Average Reflectivity is 79.6 %

Average Reflectivity at similar wavelength from CT7 is 80.3 %

High estimate of Std Error indicates real non-uniformity in %R. Range 76 to 81%

Confirmed by large Std Deviation (> measurement error) from CT7. Range 75 to 82%

Lambda	0.67					
Incident An	25					
BW Limits	1	0.01				
Θs->	0	50				
Φs->	0	180	REFL	RMS(Å)	TIME	DATE
	Scatt 0,0	Scatt 50,180		surf. Rough		
1	1.20E-02	1.05E-03	0.785	147	10:10:27	05-16-1912
2	1.20E-02	1.05E-03	0.786	147.1	10:10:32	05-16-1912
3	9.88E-03	8.40E-04	0.803 omit	135.7	10:10:40	05-16-1912
4	9.96E-03	8.44E-04	0.791 omit	137.7	10:10:46	05-16-1912
5	9.93E-03	1.07E-03	0.785 omit	115.3	10:11:04	05-16-1912
6	9.93E-03	1.06E-03	0.803	114.5	10:11:11	05-16-1912
7	9.89E-03	1.06E-03	0.799	114.3	10:11:18	05-16-1912
8	1.15E-02	1.18E-03	0.784	127.4	10:11:35	05-16-1912
9	1.15E-02	1.18E-03	0.787	127.5	10:11:41	05-16-1912
10	9.94E-03	9.94E-04	0.789	120.9	10:12:07	05-16-1912
11	9.94E-03	9.87E-04	0.791	121.3	10:12:12	05-16-1912
12	2.03E-02	1.74E-03	0.8	193.3	10:12:27	05-16-1912
13	2.00E-02	1.73E-03	0.786	192.3	10:12:39	05-16-1912
14	1.12E-02	1.04E-03	0.802	133.8	10:13:25	05-16-1912
15	1.11E-02	1.04E-03	0.807	132.5	10:13:31	05-16-1912
16	1.11E-02	1.03E-03	0.815 omit	133.9	10:13:36	05-16-1912
17	1.02E-02	9.40E-04	0.802	129.9	10:13:49	05-16-1912
18	1.02E-02	9.44E-04	0.801	128.6	10:13:54	05-16-1912
19	8.32E-03	6.11E-04	0.805 omit	142.3	10:14:02	05-16-1912
20	8.43E-03	6.16E-04	0.814 omit	143.1	10:14:07	05-16-1912
21	8.80E-03	6.49E-04	0.825 omit	144.1	10:14:14	05-16-1912
average except omitted			0.794			
stderr			0.003			
break in measurements						
22	2.23E-02	1.80E-03	0.782 omit	216.6	11:46:54	05-16-1912
23	2.33E-02	3.05E-03	0.757	159.6	11:47:01	05-16-1912
24	2.31E-02	3.08E-03	0.758	157.7	11:47:07	05-16-1912
25	8.90E-03	9.11E-04	0.792 omit	112.3	11:47:31	05-16-1912
26	8.61E-03	8.75E-04	0.678 omit	120	11:47:37	05-16-1912
27	6.32E-03	6.96E-04	0.809	89.1	11:47:50	05-16-1912
28	6.27E-03	6.96E-04	0.808	88.3	11:47:55	05-16-1912
29	1.84E-02	1.20E-03	0.81	239.3	11:48:02	05-16-1912
30	9.28E-03	1.07E-03	0.808	105.2	11:48:08	05-16-1912
31	8.59E-03	8.42E-04	0.805	113	11:48:17	05-16-1912

32	8.56E-03	8.37E-04	0.806	112.8	11:48:22	05-16-1912
33	7.78E-03	8.24E-04	0.811	101.3	11:48:29	05-16-1912
34	7.75E-03	8.17E-04	0.834 omit	100	11:48:34	05-16-1912
35	7.74E-03	8.13E-04	0.814	101.5	11:48:39	05-16-1912
36	9.59E-03	5.13E-04	0.796	217.7	11:49:01	05-16-1912
37	9.57E-03	5.11E-04	0.797	217.5	11:49:06	05-16-1912
average except omitted			0.79825			
stderr			0.008061			
average of all except omitted			0.796192			
stderr			0.004023			

#### Reference Mirror Measurements

38	3.37E-03	1.71E-03	0.912	40.8	12:06:23	05-16-1912
39	3.37E-03	1.70E-03	0.913	40.7	12:06:27	05-16-1912
40	3.11E-03	1.56E-03	0.914	39.1	12:06:34	05-16-1912
41	3.11E-03	1.56E-03	0.914	39.1	12:06:38	05-16-1912
42	4.08E-03	2.11E-03	0.913	44.8	12:06:45	05-16-1912
43	4.08E-03	2.11E-03	0.913	44.8	12:06:50	05-16-1912

All within correct range.

CT7 Measurements of the INT secondary, curvature 3.6m convex hyperboloidal, 16/05/2012 15:45

Each measurement at a different location; successive ones may be close (Dust Index correlates)

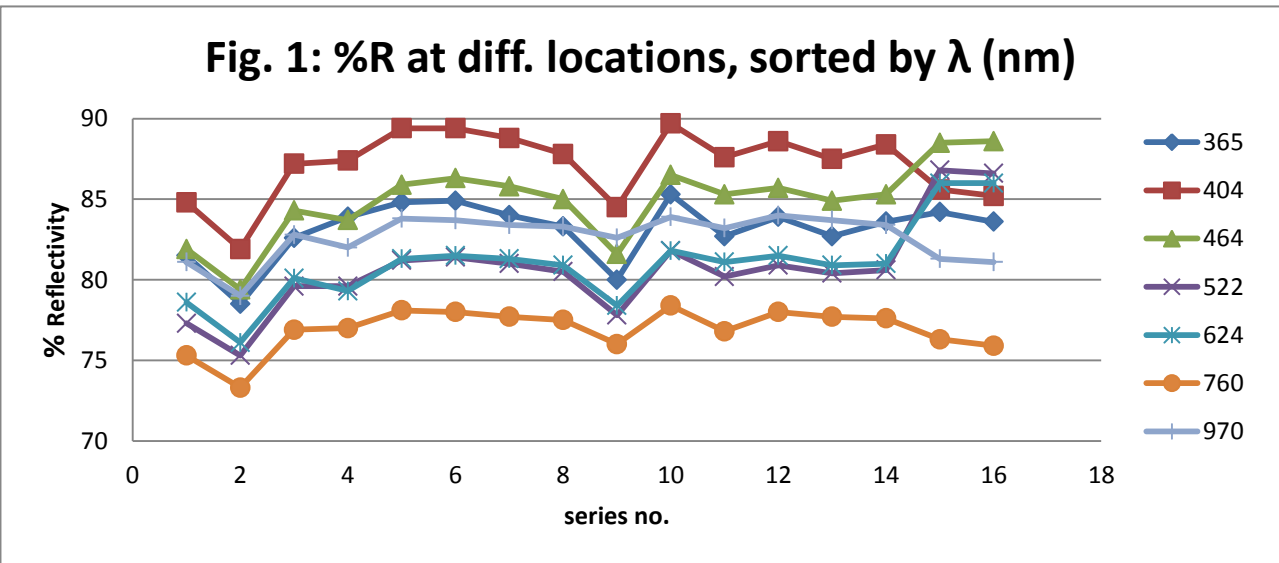
Lower values at individual wavelengths, due to movement, have not occurred (see Fig 1.)

Longer wavelengths show less variability. Dip at 760nm (Fig.2 ) not observed in other mirrors

Sensor Temperature 24.3 increasing throughout, to 26.6 degC

Measurements highlighted in red are higher in mid-range wavelengths - omitted

order measd.	1	2	5	6	7	3	4	corresponding Dust Index measurements							
wavelength	365	404	464	522	624	760	970								
1	81.5	84.8	81.9	77.3	78.6	75.3	81.1	lo	23.5	15.1	11.2	10.9	12.5	10.4	11
2	78.5	81.9	79.4	75.3	76.1	73.3	79	lo	26.1	15.7	13.8	15	16.1	14.9	14.5
3	82.6	87.2	84.3	79.6	80.1	76.9	82.8		19.7	13	8.6	8.6	10.9	9.7	9.3
4	83.9	87.4	83.7	79.6	79.3	77	82		17.3	12.5	8.7	11.1	11.4	9.6	11
5	84.8	89.4	85.9	81.2	81.3	78.1	83.8		15.4	9.9	7.1	7.2	8.4	7.7	7.1
6	84.9	89.4	86.3	81.4	81.5	78	83.7		15.1	9.2	6.5	6.6	7.7	6.9	6.5
7	84	88.8	85.8	81	81.3	77.7	83.4		16.6	10.1	6.9	7.1	8.3	7.7	7
8	83.3	87.8	85	80.5	80.9	77.5	83.3		16.5	10.7	7.2	7.4	8.8	8	7.5
9	80	84.5	81.6	77.8	78.4	76	82.6	lo	21.6	14.7	9.9	9.8	13	11.7	11.4
10	85.3	89.7	86.5	81.8	81.8	78.4	83.9	hi	13.6	8.5	5.8	5.9	6.9	6.2	5.8
11	82.7	87.6	85.3	80.2	81.1	76.8	83.2		17.2	10.7	7.5	7.4	8.5	8	7.1
12	83.9	88.6	85.7	80.9	81.5	78	84		15.9	10	6.4	6.2	8	7.2	6.4
13	82.7	87.5	84.9	80.4	80.9	77.7	83.7		17.8	11.6	6.7	6.9	9.3	8.1	7.2
14	83.6	88.4	85.3	80.6	81	77.6	83.4		15.7	10	7	7.2	8.2	7.6	6.9
15	84.2	85.6	88.5	86.8	86	76.3	81.3	X	7.8	5	3.2	3.3	3.6	3.1	2.3
16	83.6	85.2	88.6	86.6	86	75.9	81.1	X	7.6	4.3	3.2	3.2	3.1	2.9	2.1
mean	83.0	87.4	84.4	79.8	80.3	77.0	82.9	omitting red							
stdev	1.9	2.2	2.1	1.8	1.6	1.4	1.4								
best mean	83.8	88.3	85.3	80.7	81.0	77.6	83.4	omitting yellow and red							
best stdev	0.9	0.9	0.8	0.7	0.7	0.5	0.6								



**Fig. 2: Spectral variation of Reflectivity**

