

Reflectivity meas. of INT Primary mirror, taken after soap+water wash + air dry on 18 Dec 2013

Measurements from SMS microScan are usually in pairs, to check 0.5% repeatability.

Lambda	0.67 micron			<--SMS Summary characteristics	
Incident Angle	25 deg				
BW Limits	1	0.01			

datum #	Scattering at angles Θ, Φ				user comment	Roughness RMS(Å)	TIME	DATE
	$\Theta_s \rightarrow$	0	50	Reflectivity				
	$\Phi_s \rightarrow$	0	180					
1	Ref mirror	3.26E-03	1.68E-03	0.931		39.6	13:04:31	12-18-1913
2		3.27E-03	1.69E-03	0.931		39.7	13:04:38	12-18-1913
3	R2	2.72E-03	1.29E-03	0.928		36.4	13:04:47	12-18-1913
4		2.73E-03	1.30E-03	0.928		36.5	13:04:52	12-18-1913
5	R3	2.92E-03	1.35E-03	0.922		37.9	13:05:05	12-18-1913
6		2.92E-03	1.35E-03	0.921		38	13:05:10	12-18-1913
7	R4	6.54E-03	2.34E-03	0.918		58.1	13:05:18	12-18-1913
8		6.55E-03	2.35E-03	0.919		58.1	13:05:23	12-18-1913
9	R5	2.29E-03	1.24E-03	0.933		33.1	13:05:33	12-18-1913
10		2.29E-03	1.24E-03	0.933		33.1	13:05:38	12-18-1913
11	R6	2.95E-03	1.66E-03	0.921		37.8	13:05:46	12-18-1913
12		2.96E-03	1.66E-03	0.920		37.8	13:05:52	12-18-1913
13	R7	6.01E-03	2.12E-03	0.926	AOK	55.6	13:05:58	12-18-1913

This confirms the instrument is able to detect high %R (historical max. is 94%) and thus is clean.

Measurements on the Primary Mirror:

datum #	Scattering at angles Θ, Φ				user comment	Roughness RMS(Å)	TIME	DATE
	$\Theta_s \rightarrow$	0	50	Reflectivity				
	$\Phi_s \rightarrow$	0	180					
14	Location 1	1.34E-03	2.66E-04	0.857	skip	30.5	13:07:31	12-18-1913
15		1.35E-03	2.66E-04	0.865		30.5	13:07:36	12-18-1913
16		1.35E-03	2.66E-04	0.863		30.5	13:07:43	12-18-1913
17	2	7.30E-04	1.25E-04	0.863		23.5	13:08:42	12-18-1913
18		7.35E-04	1.26E-04	0.864		23.6	13:08:47	12-18-1913
19	3	2.22E-03	3.87E-04	0.860		40.9	13:09:03	12-18-1913
20		2.22E-03	3.89E-04	0.860		40.8	13:09:08	12-18-1913
21	4	1.85E-03	2.44E-04	0.848		42.4	13:09:26	12-18-1913
22		1.85E-03	2.43E-04	0.850		42.4	13:09:33	12-18-1913
23	5	2.19E-03	3.72E-04	0.853		41.1	13:09:46	12-18-1913
24		2.18E-03	3.69E-04	0.852		41.2	13:09:51	12-18-1913
25	6	3.76E-03	7.57E-04	0.849		51.1	13:10:14	12-18-1913
26		3.75E-03	7.57E-04	0.850		51	13:10:20	12-18-1913
27	7	7.82E-04	1.29E-04	0.860		24.7	13:10:32	12-18-1913
28		7.80E-04	1.26E-04	0.861		24.9	13:10:37	12-18-1913
29	8	2.74E-03	3.85E-04	0.853		49.9	13:10:50	12-18-1913
30		2.74E-03	3.85E-04	0.852		49.9	13:10:56	12-18-1913
31	9	1.93E-03	2.90E-04	0.856		40.4	13:11:04	12-18-1913
32		1.93E-03	2.89E-04	0.854		40.5	13:11:09	12-18-1913
33	10	9.83E-04	1.53E-04	0.863		28.4	13:11:26	12-18-1913

34		9.80E-04	1.52E-04	0.865		28.3	13:11:31	12-18-1913
35	11	2.33E-03	3.81E-04	0.854		43	13:11:45	12-18-1913
36		2.34E-03	3.81E-04	0.856		43.1	13:11:51	12-18-1913
37		1.78E-03	3.11E-04	0.859		36.6	13:12:04	12-18-1913
38	Ref mirror	4.23E-03	2.44E-03	0.930		45	13:14:50	12-18-1913
39		4.24E-03	2.45E-03	0.928		45.1	13:14:55	12-18-1913
40		2.22E-03	1.30E-03	0.930	OK	32.6	13:15:03	12-18-1913

averages **1.87E-03** **3.15E-04** **0.857** **37.5** M1 data only
 std dev/err **0.035** **0.01**

Reference values have not changed during measurement, hence the averages are trustworthy

CT7 multi-band measurements (note the calibration used was incorrect).

Index	wavelength (nm)							avg visible %R
	365	404	464	522	624	760	970	
145	92.8	91.6	92.4	83.3	86.2	93.9	97.1	91.0
146	94	92.8	93.3	84.3	87.1	94.7	97.8	92.0
147	93.9	92.7	93.3	84.3	87.2	94.8	98	92.0
148	87.1	87.3	88.6	81.3	84.9	92.7	96.7	88.4
149	84.9	85.4	87	79.8	83.7	91.7	96.1	86.9
150	90.6	89.7	90.4	82.1	85.3	92.4	95.5	89.4
1st 3	93.6	92.4	93.0	84.0	86.8	94.5	97.6	
2nd 3	87.5	87.5	88.7	81.1	84.6	92.3	96.1	stained area?
Literature	92	91.9	91.8	91.6	90.8	88.6	92.4	(fresh Al)

Conclusion: all average values are typical of a telescope mirror after washing procedure and are within the acceptable range.

Scattering values and roughness are at ~2/3 of the level obtained after WHT M1 wash in August.

The agreement in two CT7 bands suggest areas of %R close to fresh Al, at least in blue light.

Note that CT7 measurements are difficult to make on non-horizontal measuring surface.

Oil stain remains on upper part of mirror, requiring solvents to clean it, at some future date.