

SMS Reflectivity measurements of WHT M1 after water washing on 2 August 2012

"User comment" column gives partial averages from portholes & shows data omitted from statistics

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

Measurements at AP3 straight after water washing, at AP3, lower half of mirror

	Θs-> Φs->	0 0	50 180	Reflec- tivity	user comment	Rough- ness RMS(Å)	TIME	DATE
141	location 1	9.16E-04	6.32E-05	0.875		48.1	10:26:37	08/02/1912
142		9.42E-04	6.23E-05	0.871		51.1	10:26:42	08/02/1912
143	2	7.19E-03	1.09E-03	0.858		78	10:26:51	08/02/1912
144		7.15E-03	1.08E-03	0.855		77.8	10:26:57	08/02/1912
145	3	1.02E-03	8.42E-05	0.86		43.1	10:27:47	08/02/1912
146		1.60E-03	1.95E-04	0.875	skip	40.7	10:28:24	08/02/1912
147		1.61E-03	1.99E-04	0.857		40.7	10:28:29	08/02/1912
148	4	9.75E-04	7.01E-05	0.871		47.8	10:28:42	08/02/1912
149		9.85E-04	7.16E-05	0.866	skip	47.6	10:28:46	08/02/1912
150		9.81E-04	6.92E-05	0.872		48.8	10:28:51	08/02/1912
151	5	2.01E-03	1.79E-04	0.865		56.5	10:28:59	08/02/1912
152		2.00E-03	1.78E-04	0.866		56.7	10:29:04	08/02/1912
153		1.11E-03	7.78E-05	0.871	skip	52.5	10:29:17	08/02/1912
		2.19E-03	2.63E-04	0.865		54.9		

stdev

Measurements taken 1.5h later, also at AP3, lower half

154	location 6	1.70E-03	1.64E-04	0.865		49.1	11:47:29	08/02/1912
155		1.71E-03	1.65E-04	0.86		49.2	11:47:36	08/02/1912
156		1.71E-03	1.66E-04	0.868		48.8	11:47:43	08/02/1912
157	7	1.45E-03	1.25E-04	0.845	skip	49.8	11:47:59	08/02/1912
158		1.47E-03	1.27E-04	0.869	skip	49.5	11:48:03	08/02/1912
159		1.47E-03	1.25E-04	0.858	skip	50.5	11:48:08	08/02/1912
160	8	9.96E-04	7.23E-05	0.866		48	11:48:17	08/02/1912
161		9.98E-04	7.34E-05	0.868		47.4	11:48:21	08/02/1912
162	9	3.13E-03	3.32E-04	0.857		62.5	11:48:34	08/02/1912
163		3.13E-03	3.31E-04	0.855		62.6	11:48:39	08/02/1912
164	10	1.89E-03	5.41E-04	0.864	skip	33.3	11:48:59	08/02/1912
165		1.89E-03	5.44E-04	0.844	skip	33.5	11:49:04	08/02/1912
MEAN		1.79E-03	2.30E-04	0.863		52.5		
STDEV				0.006				
stderr				0.002				

Measurements taken 3.5 hours later at zenith through port holes

166	11	3.22E-03	4.57E-04	0.855	port 1	53.7	15:22:17	08/02/1912
167		3.22E-03	4.57E-04	0.853		53.8	15:22:22	08/02/1912
168	12	2.51E-03	3.83E-04	0.857		45.8	15:22:34	08/02/1912
169		2.51E-03	3.84E-04	0.856		45.8	15:22:38	08/02/1912

170	13	2.62E-03	3.30E-04	0.847		51.7	15:22:51	08/02/1912
171		2.62E-03	3.28E-04	0.848		51.8	15:22:56	08/02/1912
172	14	1.09E-03	1.13E-04	0.863	port 2	37.4	15:23:45	08/02/1912
173		1.09E-03	1.13E-04	0.863		37.4	15:23:50	08/02/1912
174	15	1.77E-03	1.76E-04	0.852		49.4	15:24:00	08/02/1912
175		1.77E-03	1.76E-04	0.854		49.3	15:24:05	08/02/1912
176	16	1.08E-03	1.30E-04	0.862		33.8	15:24:15	08/02/1912
177		1.08E-03	1.30E-04	0.862		33.8	15:24:19	08/02/1912
178	17	1.24E-03	2.03E-04	0.85		31.4	15:24:35	08/02/1912
179		1.24E-03	2.04E-04	0.851	0.857	31.4	15:24:40	08/02/1912
180	18	1.08E-03	1.00E-04	0.859	port 3	40.6	15:25:24	08/02/1912
181		1.08E-03	1.00E-04	0.859		40.5	15:25:28	08/02/1912
182	19	1.78E-03	2.12E-04	0.851		43.8	15:25:38	08/02/1912
183		1.78E-03	2.12E-04	0.851		43.8	15:25:42	08/02/1912
184	20	1.56E-03	1.34E-04	0.855	del old	52	15:25:53	08/02/1912
185		1.57E-03	1.35E-04	0.855		51.9	15:29:53	08/02/1912
186		1.57E-03	1.35E-04	0.855		51.9	15:30:18	08/02/1912
187	21	1.40E-03	1.49E-04	0.853		41.8	15:30:29	08/02/1912
188		1.40E-03	1.50E-04	0.853		41.7	15:30:33	08/02/1912
189	22	9.04E-04	7.66E-05	0.862		39.7	15:30:44	08/02/1912
190		9.04E-04	7.75E-05	0.863		39.3	15:30:48	08/02/1912
191	23	1.98E-03	2.79E-04	0.854		42.4	15:31:00	08/02/1912
192		1.98E-03	2.79E-04	0.857		42.2	15:31:04	08/02/1912
193		1.98E-03	2.79E-04	0.857	0.856	42.3	15:31:10	08/02/1912
194	24	1.08E-03	1.15E-04	0.868	port 4	36.3	15:31:58	08/02/1912
195		1.08E-03	1.15E-04	0.868		36.4	15:32:03	08/02/1912
196	25	1.13E-03	1.06E-04	0.858		41.1	15:32:13	08/02/1912
197		1.13E-03	1.06E-04	0.857		41.1	15:32:17	08/02/1912
198	26	8.94E-04	5.57E-05	0.855		53.6	15:32:29	08/02/1912
199		8.94E-04	5.57E-05	0.856		53.6	15:32:33	08/02/1912
200	27	3.28E-03	4.31E-04	0.847		56.5	15:32:49	08/02/1912
201		3.28E-03	4.30E-04	0.847		56.6	15:32:53	08/02/1912
202	28	2.90E-03	4.72E-04	0.851		48.2	15:33:05	08/02/1912
203		2.90E-03	4.70E-04	0.85		48.3	15:33:10	08/02/1912
204	29	2.20E-03	1.74E-04	0.859		65.9	15:33:26	08/02/1912
205		2.19E-03	1.73E-04	0.86	0.856	65.8	15:33:30	08/02/1912
206	30	9.01E-03	1.72E-03	0.826	port 1 rpt	81.5	15:34:34	08/02/1912
207		9.01E-03	1.72E-03	0.826		81.5	15:34:39	08/02/1912
208	31	2.46E-03	4.31E-04	0.845	close	43.3	15:34:50	08/02/1912
209		2.46E-03	4.31E-04	0.846		43.3	15:34:55	08/02/1912
210	32	2.15E-03	2.75E-04	0.847	close	46.5	15:35:03	08/02/1912
211		2.15E-03	2.76E-04	0.848	0.840	46.4	15:35:07	08/02/1912
212	33	1.45E-03	2.00E-04	0.861	0.852	36.3	15:35:18	08/02/1912
MEAN ZEN		2.12E-03	2.91E-04	0.855		46.9		
MEAN ALL		2.05E-03	2.76E-04					
STDEV				0.006				
stderr				0.001				

The difference between means of measurements at AP3 and at zenith fails the t-test of significance

P(t<T) 0.027941 t-test probability

CT7 measurements of WHT primary at portholes after CO2 cleaning

waveband	Reflectivity							Dust Index						
	365	404	464	522	624	760	970							
Normal	93.1	94.5	90.3	83.1	82.9	78.7	85.4	10.5	5.6	5.8	5.9	5	5.1	4.8
Normal	93	95.1	90.7	83.5	83.2	79	85.5	9.8	5	5.5	5.6	4.5	4.7	4.5
Normal	92.6	94.5	90.3	83.3	82.9	78.8	85.1	10.1	5.4	5.7	6.2	4.8	4.9	4.9
GAUGE	85.7	85.3	88.7	84.9	85.4	74.4	80.5	8.1	4.4	3.2	3	2.9	2.8	2.1
Normal	93.2	95.4	90.9	84.1	83.5	79.6	86.1	9.8	5.1	5.1	5	4.6	4.7	4.2
Normal	93.1	95.5	90.9	84.1	83.5	79.6	86.1	9.5	4.8	5.1	4.8	4.4	4.5	4.1
Normal	92.5	94.8	90.4	83.7	83	79	85.5	9.8	5.2	5.7	5.8	4.7	4.9	4.8
Normal	91.5	94.1	90.2	83.4	82.6	78.5	84.9	11.4	6.4	6.5	6.6	5.2	5.4	5.7
Normal	92.7	95.3	90.8	84.1	83.3	79.5	85.7	9.5	4.9	5.1	5.2	4.4	4.6	4.3
Normal	92.6	95.1	90.6	84	83.2	79.3	85.6	9.3	4.8	5.1	5.3	4.4	4.5	4.4
Normal	91.5	94.2	90.1	83.7	82.7	79	85.4	10.7	6.3	5.5	5.6	5.3	5.1	5.1
Normal	92.7	95.6	90.9	84.3	83.4	79.4	86	9.3	4.8	5.2	5	4.3	4.4	4.2
Normal	92.8	95.4	91	84.3	83.6	79.6	86	9	4.6	4.8	4.6	4	4.2	3.9
	92.6	95.0	90.6	83.8	83.2	79.2	85.6	9.9	5.2	5.4	5.5	4.6	4.8	4.6

data at zenith from 20th April after CO2														
	92.4	95.0	90.6	83.9	83.2	79.2	85.6	9.8	5.2	5.4	5.4	4.6	4.7	4.6
gauge measurements from 20th April														
	85.1	84.9	88.5	86.1	86.6	76.4	81.4	8.3	4.7	3.6	4	3.6	3.3	2.5

CT7 on WHT primary mirror several hours after water washing 02/08/2012 15:00

waveband	Reflectivity							Dust Index						
	365	404	464	522	624	760	970							
Normal	93	95.6	91	84	83.5	79.6	86.2	11	5.8	4.9	4.5	4.8	4.7	4.3
Normal	93	95.9	91.4	84.5	83.8	79.8	86.4	9.8	4.9	4.5	4.1	4	4.1	3.6
Normal	93.3	96.3	91.6	84.8	84.1	80	86.5	8.9	4.1	4	3.6	3.6	3.5	3.1
Normal	91.7	95.2	91	84	83.6	79.2	86.1	11.6	6	5.5	4.5	4.8	5.1	4.2
Normal	92.6	95.9	91.2	84.5	83.8	79.9	86.3	10.1	5	4.4	4.1	4.2	4.1	3.7
Normal	93.4	96.6	91.7	85.1	84.1	80.1	86.6	8.7	3.8	3.9	3.5	3.3	3.3	2.9
Normal	92.7	96.3	91.5	84.9	84.1	80	86.5	9	4.3	4	3.8	3.6	3.7	3.2
Normal	92.5	96	91.3	84.7	84	79.8	86.4	9.6	4.7	4.3	3.9	4	4	3.4
Normal	92.8	96.5	91.7	85.1	84.1	80.1	86.5	8.7	4	3.9	3.8	3.4	3.5	3
Normal	92.7	96.3	91.6	85	84.1	80	86.5	9.2	4.4	4.2	3.8	3.7	3.8	3.3
Normal	93.1	96.5	91.6	85.2	84.1	80	86.4	8.6	4.1	3.9	3.7	3.5	3.5	3
Normal	92.7	96.3	91.5	85	83.7	80.1	86	8.7	4	3.9	3.8	3.4	3.4	3.1
Normal	92.4	96.2	91.4	84.9	84	79.9	86.2	9.3	4.5	4.2	4.1	3.9	4	3.3
Normal	92.6	96.3	91.4	85	84	80	86.3	9	4.3	4	3.8	3.8	3.7	3.2
Normal	92.7	96.5	91.7	85.2	84.1	80.1	86.4	9.1	4.4	4	3.8	3.8	3.7	3.3
Normal	92	95.8	91.2	84.8	84	79.9	86.4	9.2	4.4	4	3.6	3.6	3.7	2.9
Normal	92.9	96.7	91.9	85.4	84.2	80.2	86.5	8.3	4	3.9	3.6	3.4	3.5	3
Normal	92.9	96.9	92.1	85.6	84.3	80.3	86.5	8.3	4	3.8	3.5	3.4	3.5	2.9
Normal	92.8	96.8	92	85.5	84.3	80.3	86.5	8.9	4.2	4	3.8	3.5	3.6	3.1
Normal	91.4	95.6	90.9	84.6	83.6	79.6	86.1	10.8	5.8	4.8	4.5	4.8	4.8	4.2
Normal	92.7	96.7	91.8	85.5	84.2	80.2	86.4	9	4.3	4.1	3.8	3.7	3.8	3.2
Normal	92.4	96.4	91.6	85.2	84	80	86.4	9.3	4.7	4.4	4	4.1	4.2	3.6
MEANS	92.7	96.2	91.5	84.9	84.0	80.0	86.4	9.3	4.5	4.2	3.9	3.8	3.9	3.3
GAUGE	85.5	86.7	89.5	86.4	85.7	75.5	81	8	4.9	3.2	2.9	3.6	3	2.3

For comparison, Data straight after Aluminising, 7 Feb, from the IRIS instrument from GTC

	470	530	650	880
typical	91.1	90.7	89.6	88.24
lowest value	90.7	89.8	89.4	87.92