

Timeline for Cassini Rev 186: 2-Way RSS Saturn Atmospheric Occultation

April 12, 2013 UTC (DOY-102)

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	ERT UTC OWLT = 1:13:40	SCET	PDT ERT-7hrs 7:00:00	Comments
Spacecraft is NOT Earth Pointed				
RSSG: Load 1-W, 2-W, and 3-W Frequency Predicts	TBD			
DSS-63: Begin Pre-Cal (DOY-101)	23:50:00	22:36:20	16:50:00	
DSS-63: Begin of Track	00:50:00	23:36:20	17:50:00	Spacecraft is not Earth pointed
Ka-Band ON	01:16:50	00:03:10	18:16:50	No Ka-band stations are up yet
DSS-63: Transmitter ON, 18 kW, LCP, RAMP, SWEEP	01:23:00	00:09:20	18:23:00	
DSS-55: Begin Pre-Cal	01:30:00	00:16:20	18:30:00	
DSS-25: Begin Pre-Cal	02:35:00	01:21:20	19:35:00	
DSS-55: Begin of Track	03:00:00	01:46:20	20:00:00	Spacecraft is not Earth pointed
S-Band ON	03:04:22	01:50:42	20:04:22	Spacecraft is not Earth pointed
DSS-14: Begin Pre-Cal	03:05:00	01:51:20	20:05:00	
DSS-63: Transmitter OFF	03:23:00	02:09:20	20:23:00	End of DSS-63 uplink period
Start LMB Deadtime	03:33:40	02:20:00	20:33:40	X-, S-, and Ka-band signals detectable shortly before 03:33
DSS-63: Begin X- & S-band 1-Way Acquisition	03:33:40	02:20:00	20:33:40	
DSS-55: Begin X- & Ka-band 1-Way Acquisition	03:33:40	02:20:00	20:33:40	
RNG OFF/TLM OFF	03:33:49	02:20:09	20:33:49	X-band signal level increase
Begin 1-Way Free-Space Baseline	03:33:50	02:20:10	20:33:50	PC/N0 (X70, S70, X34, Ka34) = 54, 42, 48, and 48 dB-Hz
DSS-55: Enable Monopulse	TBD			Enable monopulse only when requested by RS Operations
DSS-63: Begin X- & S-band 2-Way Acquisition	03:50:20	02:36:40	20:50:20	PC/N0 (X-70m, S-70m) = 54, 42 dB-Hz
DSS-55: Begin X- & Ka-band 3-Way Acquisition	03:50:20	02:36:40	20:50:20	PC/N0 (X-34m, Ka-34m) = 48, 48 dB-Hz
Start of atmospheric occultation observation	03:53:56	02:40:16	20:53:56	X-, S-, and Ka-band downlink signals detectable
DSS-25 & DSS-14: Begin of Track	04:05:00	02:51:20	21:05:00	X-, S-, and Ka-band downlink signals detectable
DSS-14: Begin X- & S-band 3-Way Acquisition	04:05:01	02:51:21	21:05:01	PC/N0 (X70, S70) = 54 and 42 dB-Hz
DSS-25: Begin X- & Ka-band 3-Way Acquisition	04:05:01	02:51:21	21:05:01	PC/N0 (X34, Ka34) = 48 and 48 dB-Hz
DSS-25: Enable Monopulse	TBD			Enable monopulse only when requested by RS Operations

Start 2-Way & 3-Way Free-Space Baseline	04:08:17	02:54:37	21:08:17	
Top of the ionosphere (68,000 km)	04:39:15	03:25:35	21:39:15	Ionosphere primarily affects signals frequency/phase
Upper Troposphere (~0.02° BA)	04:59:20	03:45:40	21:59:20	S/X/Ka signal intensities quickly drop and scintillate
Loss of 3-Way Ka-band signal (~1.15° BA)	05:13:42	04:00:02	22:13:42	Approximate time; Ka-band downlink signal absorbed
Loss of 2-Way & 3-Way X-band signal (~1.35° BA)	05:16:15	04:02:35	22:16:15	Approximate time; X-band downlink signal absorbed
Loss of 2-Way S-band signal	05:17:27	04:03:47	22:17:27	Approximate time
DSS-63: S-band 1-Way Signal Acquisition	05:17:27	04:03:47	22:17:27	Approximate time; S/C Aux-Osc kicks in
DSS-14: S-band 1-Way Signal Acquisition	05:17:27	04:03:47	22:17:27	
Loss of 1-Way S-band signal (~1.55° BA)	05:18:47	04:05:07	22:18:47	Approximate time; likely loss of all downlink signals
End of Noise Baseline	05:50:20	04:36:40	22:50:20	No downlink signals detectable
Cassini is behind Saturn as seen from Earth				
DSS-55: End of Track	06:00:00	04:46:20	23:00:00	
DSS-63: End of Track	06:10:00	04:56:20	23:10:00	
DSS-55: End of Post Cal	06:15:00	05:01:20	23:15:00	
Ka-Band and S-Band OFF	06:20:01	05:06:21	23:20:01	End of RSS3 Op-Mode
TLM ON/RNG ON	06:20:34	05:06:54	23:20:34	End of Rev 186 RSS Experiment
End of Rev 186 RSS S/C Activities	06:20:35	05:06:55	23:20:35	
DSS-63: End of Post Cal	06:25:00	05:11:20	23:25:00	
DSS-25 & DSS-14: End of Track	06:45:00	05:31:20	23:45:00	
DSS-25 & DSS-14: End of Post Cal	07:00:00	05:46:20	00:00:00	

Madrid DSS-55 & DSS-63 related activities

Goldstone DSS-25 & DSS-14 related activities

Predicted atmospheric event times are approximate and are based on [Live-Update \(LUD\) OD on 07 April 2013](#)

Monopulse strategy is preliminary at this time and is finalized during real-time operations