

Timeline for Cassini Rev 257: 2-Way RSS Saturn's Ring & Atmospheric Occultations

January 17, 2017 UTC (DOY-017)

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	ERT UTC OWLT = 01:30:14	SCET	PST ERT-8hrs 08:00:00	Comments
DOY 2017-017				
RSSG: Load 1-W, 2-W, and 3-W Frequency Predicts				
DSS-63: Begin Pre-Cal	05:00:00	03:29:46	21:00:00	
DSS-63: Beginning Of Track	06:00:00	04:29:46	22:00:00	No downlink signals detectable
S-Band ON	07:03:02	05:32:48	23:03:02	Per PEF
Ka-Band ON	07:07:58	05:37:44	23:07:58	Per PEF
DSS-55: Begin Pre-Cal	07:10:00	05:39:46	23:10:00	
DSS-63 Transmitter ON, 18 kW, LCP, RAMP, NO SWEEP	08:19:00	06:48:46	00:19:00	
DSS-55: Beginning Of Track	08:40:00	07:09:46	00:40:00	No downlink signals detectable
Spacecraft is Behind Saturn				No Detectable X/S/Ka downlink signals
RNG OFF, TLM OFF	09:07:14	07:37:00	01:07:14	
Start of Rev 257 Egress Atmospheric Occultation	09:27:14	07:57:00	01:27:14	No Detectable X/S/Ka downlink signals
DSS-84: Begin Pre-Cal	10:15:00	08:44:46	02:15:00	
RSSG: Begin DSS-63 and DSS-55 Open-Loop Recordings	10:45:00	09:14:46	02:45:00	
Start of Turn to Egress Occultation IVD	10:46:39	09:16:25	02:46:39	
End of Turn to Egress Occultation IVD	10:49:25	09:19:11	02:49:25	
Start Tracking Saturn's Limb	10:49:25	09:19:11	02:49:25	
RSSG: Begin DSS-84 Open-Loop Recordings				
DSS-84: Beginning of Track	11:00:00	09:29:46	03:00:00	
Potential Weak and Scintillating S-band 1-Way Signal (~1.4° BA)	11:13:49	09:43:35	03:13:49	
DSS-63: Begin S-Band 1-Way Acquisition	11:13:49	09:43:35	03:13:49	
RSSG: Enter 1-Way Open-Loop Frequency Offsets as Needed				
Potential Weak S-band 2-Way signal (~1.28° BA)	11:19:28	09:49:14	03:19:28	Approx. time; 1-Way until X-band uplink lock, then 2-Way
DSS-63: Begin S-Band 2-Way Acquisition	11:19:28	09:49:14	03:19:28	Scintillating signal; DST may go in and out of lock
Weak X-band signal (~1.15° BA)	11:25:39	09:55:25	03:25:39	Approx. time; 1-Way until X-band uplink lock, then 2-Way
DSS-63: Begin X-Band 2-Way Acquisition	11:25:39	09:55:25	03:25:39	
DSS-55: Begin X-Band 3-Way Acquisition (w /DSS-63)	11:25:39	09:55:25	03:25:39	
DSS-84: Begin X-Band 3-Way Acquisition (w/DSS-63)	11:25:39	09:55:25	03:25:39	
Weak Ka-band signal (~1.0° BA) at DSS-55	11:32:39	10:02:25	03:32:39	Approx. time; 1-Way until X-band uplink lock, then 3-Way/63
DSS-55: Begin Ka-Band 3-Way Acquisition (w /DSS-63)	11:32:39	10:02:25	03:32:39	
DSS-84: Begin Ka-Band 3-Way Acquisition (w/DSS-63)	11:32:39	10:02:25	03:32:39	

DSS-25: Begin Pre-Cal	11:45:00	10:14:46	03:45:00	
Ring C In	12:01:26	10:31:12	04:01:26	Approximate time; Mixed with the upper troposphere
DSS-14: Begin Pre-Cal	12:15:00	10:44:46	04:15:00	
Top of the Troposphere (~0.001° BA)	12:19:04	10:48:50	04:19:04	Mixed with inner Ring C
Ring B In	12:34:56	11:04:42	04:34:56	Signals will likely be blocked over parts of Ring B
DSS-63: Transmitter OFF	12:35:00	11:04:46	04:35:00	
RSSG: Begin DSS-14 & DSS-25 Open-Loop Recordings	12:45:00	11:14:46	04:45:00	
Top of the ionosphere (~68,000 km)	12:52:49	11:22:35	04:52:49	Mixed with inner Ring B
End Tracking Egress Atmospheric Occultation	12:55:14	11:25:00	04:55:14	Pc/N0 (dB/Hz): ~ 54 (43X), 48 (35/X), 48 (35K), 42 (43S)
DSS-14 & DSS-25: Beginning of Track	13:15:00	11:44:46	05:15:00	
DSS-14: Begin X- and S-Band 3-Way Acquisition (w/DSS-63)	13:15:00	11:44:46	05:15:00	
DSS-25: Begin X- and Ka-Band 3-Way Acquisition (w/DSS-63)	13:15:00	11:44:46	05:15:00	
Ring B Out	13:22:23	11:52:09	05:22:23	Approximate time; Strong signals in the Cassini Division
Ring A In	13:30:44	12:00:30	05:30:44	Detectable signals over most of Ring A
DSS-25: Enable Monopulse	13:39:00	12:08:46	05:39:00	Enable monopulse only when requested by RS Operations
DSS-55: End Of Track	13:50:00	12:19:46	05:50:00	
Ring A Out	13:57:50	12:27:36	05:57:50	All signals back to full strength (free-space) levels
DSS-63: End of Track	14:00:00	12:29:46	06:00:00	
Ring F	14:04:07	12:33:53	06:04:07	Approximate time; Ring F is usually not detectable in real-time
DSS-55: End of Post-Cal	14:05:00	12:34:46	06:05:00	
DSS-63: End of Post-Cal	14:15:00	12:44:46	06:15:00	
RSSG: End DSS-63 and DSS-55 Open-Loop Recordings	14:20:00	12:49:46	06:20:00	
DSS-25: Disable Monopulse	15:34:00	14:03:46	07:34:00	Disable monopulse only when requested by RS Operations
Begin 25 m Deadtime	15:34:17	14:04:03	07:34:17	
DSS-63 Transmitter OFF Observed	15:35:28	14:05:14	07:35:28	
Start ~23 m 1-Way Baseline	15:35:28	14:05:14	07:35:28	
DSS-14: Begin X- & S-Band 1-Way Acquisition	15:35:28	14:05:14	07:35:28	
DSS-84: Begin X- and Ka-band 1-Way Acquisition	15:35:28	14:05:14	07:35:28	
RSSG: Adjust 1-Way Open-Loop Frequency Offsets as Needed				
DSS-25: Enable Monopulse	15:38:00	14:07:46	07:38:00	Enable monopulse only when requested by RS Operations
S-Band OFF	15:58:35	14:28:21	07:58:35	Per PEF
Ka-Band OFF	15:58:37	14:28:23	07:58:37	Per PEF
TLM ON/RNG ON	15:59:08	14:28:54	07:59:08	
End Deadtime. Official End of Rev 257 Observations	15:59:14	14:29:00	07:59:14	End of Rev 257 Ring Occultation + 25 minutes deadtime
Begin Spacecraft YBIAS	16:00:14	14:30:00	08:00:14	
DSS-84: End of Track	16:05:00	14:34:46	08:05:00	
DSS-84: End of Post-Cal	16:20:00	14:49:46	08:20:00	
RSSG: End DSS-84 Open-Loop Recordings	16:20:00	14:49:46	08:20:00	

DSS-14 & DSS-25: End of Track	16:25:00	14:54:46	08:25:00	
RSSG: End DSS-14 & DSS-25 Open-Loop Recordings	16:25:00	14:54:46	08:25:00	
DSS-14 & DSS-25: End of Post-Cal	16:40:00	15:09:46	08:40:00	

- Madrid DSS-63 & DSS-55 related activities
- Goldstone DSS-14 & DSS-25 related activities
- Malargue DSS-84 related activities

Predicted atmospheric & ring event times are approximate and are based on reference trajectory 150901