

Timeline for Cassini Rev 270: 2-Way RSS Ingress Saturn's Ring & Atmospheric Occultations

April 20, 2017 UTC (DOY-110); Last Cassini RSS Atmospheric Occultaion

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	ERT UTC OWLT = 01:18:49	SCET	PDT ERT-7hrs 07:00:00	Comments
DOY 2017-110				
RSSG: Load 1-W, 2-W, and 3-W Frequency Predicts				
DSS-63: Begin Pre-Cal	05:20:00	04:01:11	22:20:00	
DSS-63: Beginning Of Track	06:20:00	05:01:11	23:20:00	No downlink signals detectable
DSS-14: Begin Pre-Cal	06:25:00	05:06:11	23:25:00	
DSS-63 Transmitter ON, 18 kW, LCP, RAMP, SWEEP	06:41:12	05:22:23	23:41:12	Start of Experiment - RTLT
DSS-14: Beginning of Track	07:25:00	06:06:11	00:25:00	
S-Band ON	07:25:37	06:06:48	00:25:37	Per PEF
DSS-26: Begin Pre-Cal	07:30:00	06:11:11	00:30:00	
Ka-Band ON	07:30:33	06:11:44	00:30:33	Per PEF
DSS-63: Transmitter OFF	07:46:00	06:27:11	00:46:00	Start of Coherent Gap -RTLT
DSS-14: Transmitter ON, 18 kW, LCP, RAMP	07:49:00	06:30:11	00:49:00	NO SWEEP ; End of Coherent Gap - RTLT
DSS-63: End of Track	08:05:00	06:46:11	01:05:00	
DSS-84: Begin Pre-Cal	08:15:00	06:56:11	01:15:00	
DSS-63: Post-Cal	08:20:00	07:01:11	01:20:00	
RSSG: Begin DSS-14 and DSS-26 Open-Loop Recordings	08:45:00	07:26:11	01:45:00	
DSS-26: Beginning of Track	09:00:00	07:41:11	02:00:00	No downlink signals detectable
DSS-84: Beginning of Track	09:00:00	07:41:11	02:00:00	
S/C is Earth Pointed; Start Inbound 20 m Deadtime	09:18:49	08:00:00	02:18:49	Downlink signals detectable shortly before 09:18:49
RNG OFF	09:18:49	08:00:00	02:18:49	
TLM OFF	09:18:50	08:00:01	02:18:50	
DSS-63 Uplink Sweep is Observed	09:18:50	08:00:01	02:18:50	2 minutes sweep
DSS-14: Begin X- & S-Band 3-Way Acquisition (w/DSS-63)	09:18:50	08:00:01	02:18:50	
DSS-26: Begin X- & Ka-Band 3-Way Acquisition (w/DSS-63)	09:18:50	08:00:01	02:18:50	
DSS-84: Begin X- & Ka-band 3-Way Acquisition (w/DSS-63)	09:18:50	08:00:01	02:18:50	
Start 2-Way/3-Way Baseline	09:20:50	08:02:01	02:20:50	Pc/N0 (X-70, S-70, X-34, Ka-34) = 54, 42, 48, 48 dB-Hz
DSS-26: Enable Monopulse	09:22:00	08:03:11	02:22:00	Enable monopulse only when requested by RS Operations
Official Start of Rev 270 Experiments	09:38:49	08:20:00	02:38:49	Waypoint X-Band to Earth , NEG_X to NSP
DSS-35: Start Pre-Cal	10:10:00	08:51:11	03:10:00	
DSS-26: Disable Monopulse Without Clearing the Offsets	10:22:00	09:03:11	03:22:00	Prior to mode switch to 1-way
Start of Coherent Gap Observed	10:23:38	09:04:49	03:23:38	Loss of 2-Way signals

DSS-14: Begin X- & S-Band 1-Way Acquisition	10:23:38	09:04:49	03:23:38	
DSS-26: Begin X- & Ka-Band 1-Way Acquisition	10:23:38	09:04:49	03:23:38	
RSSG: Enter 1-Way Open-Loop Frequency Offsets as Needed				
DSS-84: Do Not Configure For 1-Way	10:23:38	09:04:49	03:23:38	Keep 3-way configuration
DSS-43: Start Pre-Cal	10:25:00	09:06:11	03:25:00	
End of Coherent Gap Observed	10:26:38	09:07:49	03:26:38	
DSS-14: Begin X- & S-Band 2-Way Acquisition	10:26:38	09:07:49	03:26:38	
DSS-26: Begin X- & Ka-Band 3-Way Acquisition (w/DSS-14)	10:26:38	09:07:49	03:26:38	
DSS-84: Begin X- & Ka-band 3-Way Acquisition (w/DSS-14)	10:26:38	09:07:49	03:26:38	
DSS-26: Enable Monopulse	10:28:00	09:09:11	03:28:00	Enable monopulse only when requested by RS Operations
RSSG: Begin DSS-43 and DSS-35 Open-Loop Recordings	10:55:00	09:36:11	03:55:00	
Ring F	11:00:00	09:41:11	04:00:00	Approximate time; Ring F is usually not detectable in real-time
Ring A In	11:06:30	09:47:41	04:06:30	Approximate time
DSS-43: Beginning of Track	11:25:00	10:06:11	04:25:00	In mid Ring A
DSS-43: Begin X- & S-Band 3-Way Acquisition (w/DSS-14)	11:25:00	10:06:11	04:25:00	
DSS-26: Disable Monopulse Without Clearing the Offsets	11:26:00	10:07:11	04:26:00	Disable monopulse only when requested by RS Operations
Ring A Out	11:34:40	10:15:51	04:34:40	Approximate time
DSS-35: Beginning of Track	11:40:00	10:21:11	04:40:00	In mid Cassini Division
DSS-35: Begin X- & Ka-Band 3-Way Acquisition (w/DSS-14)	11:40:00	10:21:11	04:40:00	
Ring B In	11:43:25	10:24:36	04:43:25	Approximate time
Ring B Out	12:34:02	11:15:13	05:34:02	Approximate time
Top of the ionosphere (~68,000 km)	12:34:53	11:16:04	05:34:53	
DSS-26: Enable Monopulse	12:35:30	11:16:41	05:35:30	Enable monopulse only when requested by RS Operations
DSS-35: Enable Monopulse	12:35:30	11:16:41	05:35:30	Enable monopulse only when requested by RS Operations
Ring C Out	13:11:46	11:52:57	06:11:46	Approximate time
DSS-26: Disable Monopulse Without Clearing the Offsets	13:14:49	11:56:00	06:14:49	Disable monopulse only when requested by RS Operations
DSS-35: Disable Monopulse Without Clearing the Offsets	13:14:49	11:56:00	06:14:49	Disable monopulse only when requested by RS Operations
Top of the Troposphere (~0.001° BA)	13:16:39	11:57:50	06:16:39	No Rings Interference
Official Start of Rev 270 Ingress Atmospheric Occultation	13:16:49	11:58:00	06:16:49	
Start Tracking Ingress Occultation IVD	13:18:25	11:59:36	06:18:25	
DSS-84: End of Track	13:30:00	12:11:11	06:30:00	
DSS-84: Post-Cal	13:45:00	12:26:11	06:45:00	
Loss of 3-Way Ka-band signal (~1.0° BA)	14:32:49	13:14:00	07:32:49	Approximate time
DSS-14: Transmitter OFF	14:42:00	13:23:11	07:42:00	End of Experiment - RTLT
Loss of Coherent X-band signal (~1.2° BA)	15:01:44	13:42:55	08:01:44	Approximate time; 2-Way until DST loses lock, then 1-Way
End Tracking Ingress Occultation IVD	15:21:49	14:03:00	08:21:49	Max BA = ~1.263°; Loss of S-band signal after this time
S/C is Behind Saturn				S/C is occulted. No signal until 17:59:34
DSS-43 Transmitter ON, 18 kW, LCP, RAMP, SWEEP	15:26:03	14:07:14	08:26:03	Per DKF

DSS-14 & DSS-26: End of Track	15:30:00	14:11:11	08:30:00	
DSS-14 & DSS-26: Post-Cal	15:45:00	14:26:11	08:45:00	
RSSG: End DSS-14 and DSS-26 Open-Loop Recordings	16:00:00	14:41:11	09:00:00	
RSSG: End DSS-43 Open-Loop Recordings Except X-band 1 KHz	16:00:00	14:41:11	09:00:00	DSS-43 tracking continues for telemetry purposes
RSSG: End DSS-35 Open-Loop Recordings	16:00:00	14:41:11	09:00:00	
End of Rev 270 Observations: Start of 20 m Deadtime	16:59:49	15:41:00	09:59:49	S/C is deep behind Saturn
S-Band OFF	17:19:10	16:00:21	10:19:10	Per PEF
Ka-Band OFF	17:19:12	16:00:23	10:19:12	Per PEF
DSS-14 Transmitter OFF Observed	17:19:38	16:00:49	10:19:38	
TLM ON	17:19:43	16:00:54	10:19:43	
RNG ON	17:19:47	16:00:58	10:19:47	
End of Deadtime	17:19:49	16:01:00	10:19:49	S/C Remains Earth Pointed; No Detectable Downlink until 17:59:34
Official End of Rev 270 RSS Experiments	17:19:49	16:01:00	10:19:49	
S/C is Still Behind Saturn	17:20:03	16:01:14	10:20:03	
DSS-43 Tracking Continues for Telemetry Purposes. Follow DKF				
DSS-35: End of Track	17:50:00	16:31:11	10:50:00	
Top of the Troposphere	17:59:34	16:40:45	10:59:34	S/C exits Saturn occultation over outer Ring B
DSS-43: Begin X-Band 2-Way Acquisition	18:03:39	16:44:50	11:03:39	Per DKF
DSS-35: Post-Cal	18:05:00	16:46:11	11:05:00	
DSS-43 Transmitter OFF	21:37:13	20:18:24	14:37:13	Per DKF
DOY 2017-111				
DSS-43: End of Track	00:15:00	22:56:11	17:15:00	
RSSG: End DSS-43 1 KHz Open-Loop Recordings	00:20:00	23:01:11	17:20:00	
DSS-43: Post-Cal	00:30:00	23:11:11	17:30:00	

Madrid DSS-63 related activities

Goldstone DSS-14 & DSS-26

Canberra DSS-43 & DSS-35

Malargue DSS-84

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