

Timeline for Cassini Rev 167: First 2-Way RSS Ring Occultation

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	ERT UTC OWLT = 1:15:30	SCET	PDT ERT-7hrs 7:00:00	Comments
DSS-63: Begin Pre-Cal	18:30:00	17:14:30	11:30:00	
DSS-63: Begin of Track	19:30:00	18:14:30	12:30:00	
DSS-55: Begin Pre-Cal	20:15:00	18:59:30	13:15:00	
DSS-63: Transmitter ON, 18 kW, LCP	20:30:00	19:14:30	13:30:00	Ramped uplink predicts
Ka-Band ON	20:57:40	19:42:10	13:57:40	Completed transition to RSSK op-mode
RSSG: Load 1-W, 2-W, and 3-W Frequency Predicts	TBD			Predicts for both Madrid & Goldstone complexes
DSS-25: Begin Pre-Cal	21:40:00	20:24:30	14:40:00	
DSS-55 Begin of Track	21:45:00	20:29:30	14:45:00	
DSS-14: Begin Pre-Cal	22:10:00	20:54:30	15:10:00	No downlink till shortly before 22:40:51
Start of RSS Experiment	22:17:30	21:02:00	15:17:30	Cassini starts a turn to Earth point
RNG OFF/TLM OFF	22:17:39	21:02:09	15:17:39	
S-Band ON	22:18:12	21:02:42	15:18:12	Completed transition to RSS3 op-mode
Spacecraft is Earth Pointed	22:40:51	21:25:21	15:40:51	Spacecraft turn to Earth point is completed
Begin 1-Way Free-Space Baseline	22:40:52	21:25:22	15:40:52	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	23:00:00	21:44:30	16:00:00	PC/N0 (X-70m, S-70m) = 54, 42 dB-Hz
DSS-55: Begin X- & Ka0band 3-Way Acquisition	23:00:00	21:44:30	16:00:00	PC/N0 (X-34m, Ka-34m) = 48, 48 dB-Hz
DSS-63: Transmitter OFF	23:10:00	21:54:30	16:10:00	End of uplink period
DSS-25 & DSS-14: Begin of Track	23:10:00	21:54:30	16:10:00	
DSS-25: Begin X- and Ka-band 3-Way Acquisition	23:10:00	21:54:30	16:10:00	PC/N0 (X-34m, Ka-34m) = 48, 48 dB-Hz
DSS-14: Begin X- & S-band 3-Way Acquisition	23:10:00	21:54:30	16:10:00	PC/N0 (X-70m, S-70m) = 54, 42 dB-Hz
DSS-25: Enable Monopulse	TBD			Enable monopulse only when requested by RS Operations
Start 2-Way and 3-Way Free-Space Baseline	23:18:00	22:02:30	16:18:00	PC/N0 (X70, S70, X34, Ka34) = 54, 42, 48, and 48 dB-Hz
Start of ingress ring occultation (Ring F)	23:47:34	22:32:04	16:47:34	Ring F is usually not detectable in real-time
Ring A In	23:51:12	22:35:42	16:51:12	Detectable signals over most of Ring A
In Mid Encke Gap	23:54:24	22:38:54	16:54:24	Signals are briefly back to full strength
Ring A Out	0:06:02	22:50:32	17:06:02	Relatively strong signals in the Cassini Division
Ring B In	0:10:41	22:55:11	17:10:41	Signals will be small or absent over most of Ring B
Ring B Out / Ring C In	0:38:15	23:22:45	17:38:15	Signals detectable; may be briefly blocked by dense ringlets
Ring C Out	1:00:41	23:45:11	18:00:41	Signals are back to full strength

Ionosphere In (~68,000 km)	1:07:32	23:52:02	18:07:32	Ionospher primarily affects signal frequency
Upper Troposphere (~0.1° BA)	1:17:34	0:02:04	18:17:34	S/X/Ka signal intensities quickly drop and scintillate
Loss of the 3-Way Ka-band signal (~0.17° BA)	1:18:01	0:02:31	18:18:01	Approximate time; signal walks out of HGA Ka-band beam
Loss of 2-Way&3-Way X-band signals (~0.57° BA)	1:20:30	0:05:00	18:20:30	Approximate time; loss of lock (signal walks out of X beam)
Loss of 2-Way&3-Way S-band signal (~0.57° BA)	1:20:30	0:05:00	18:20:30	Approximate time
DSS-63: S-band 1-Way Signal Acquisition	1:20:30	0:05:00	18:20:30	Approximate time; S/C AUX-OSC kicks in
DSS-14: S-band 1-Way Signal Acquisition	1:20:30	0:05:00	18:20:30	Approximate time; dropping and scintillating signal
Loss of the 1-Way S-band signal (~1.55° BA)	1:26:28	0:10:58	18:26:28	Approximate time; S-band lost to ammonia absorption
Cassini is behind Saturn as seen from Earth				Loss of all downlink signals
DSS-55 & DSS-63: End of Track	1:45:00	0:29:30	18:45:00	
DSS-55 & DSS-63: End Post-Cal	2:00:00	0:44:30	19:00:00	
Ka-Band and S-Band OFF	2:31:51	1:16:21	19:31:51	End of RSS3 Op-Mode
TLM ON/RNG ON	2:32:19	1:16:49	19:32:19	
End of Rev 167 RSS Experiment	2:32:30	1:17:00	19:32:30	
DSS-25 & DSS-14 End of Track	3:00:00	1:44:30	20:00:00	
DSS-25 & DSS-14: End Post-Cal	3:15:00	1:59:30	20:15:00	

Madrid DSS-55 & DSS-63 related activities

Goldstone DSS-25 and DSS-14 related activities

Predicted ring occultation & atmospheric event times are approximate and are based on reference trajectory 110818

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