Timeline for Cassini Rev 54 RSS Rings and Atmospheric Occultations on December 19, 2007 (DOY 353)

Essam Marouf 12/12/2007 (v3)

	ERT UTC OWLT = 1:14:05	SCET	PDT ERT-8hrs 8:00:00	Comments
DSS-55: Start Precal	0:45:00	23:30:55	16:45:00	
DSS-63: Start Precal	1:30:00	0:15:55	17:30:00	
DSS-55 & 63 Begin of Track	2:30:00	1:15:55	18:30:00	
TWNC ON/ RNG OFF/ TLM OFF	3:14:58	2:00:53	19:14:58	
Start Live Moveable Block (LMB)	3:15:05	2:01:00	19:15:05	Cassini HGA is ~Earth pointed; strong S/X/Ka signals
DSS-55: Enable Monopulse	3:15:30	2:01:25	19:15:30	Enable monopulse once receiver is locked
DSS-55: Disable Monopulse	3:21:00	2:06:55	19:21:00	Real-Time decision to leave or remove the offset
Start Free-Space Baseline	3:28:32	2:14:27	19:28:32	PC/N0 (X70, X&Ka34, S70) = ~54, 48, 48, and 41 dB
Ring F	3:43:35	2:29:30	19:43:35	Rings F is only detectable in postprocessing
Ring A in	3:44:43	2:30:38	11:44:43	Detectable signals over most of Ring A
Enke Gap	3:45:42	2:31:37	19:45:42	Signals are back very briefly to full strength
Ring A out	3:49:26	2:35:21	19:49:26	Relatively strong signals in the Cassini Division
Ring B in	3:50:59	2:36:54	19:50:59	Signals will be small or absent over most of Ring B
Ring C in	4:03:07	2:49:02	20:03:07	Signals detectable but briefly blocked by dense ringlets
Ring C out	4:14:39	3:00:34	20:14:39	Signals will be small or absent over most of Ring B
Ring B out	4:26:46	3:12:41	20:26:46	Relatively strong signals in the Cassini Division
Ring A in	4:28:20	3:14:15	20:28:20	Detectable signals over most of Ring A
Ionosphere in (~68,000 km)	4:28:25	3:14:20	20:28:25	Ionosphere is mixed with outer ring region
Encke gap	4:32:04	3:17:59	20:32:04	Signals are back very briefly to full strength
Ring A out	4:33:03	3:18:58	20:33:03	PC/N0 (X70, X&Ka34, S70) = ~54, 48, 48, and 41 dB
Ring F	4:34:11	3:20:06	20:34:11	Rings F is only detectable in postprocessing

Troposphere in (~0.1° BA)		4:38:05		3:24:00	20:38:05	S/X/Ka signal intensities start to drop and scintillate
Loss of the Ka-band signal (~1.15° BA)		4:42:44		3:28:39	20:42:44	Approximate time
Loss of the X-band signal (~1.35° BA)		4:43:39		3:29:34	20:43:39	Approximate time
Loss of the S-band signal (~1.55° BA)		4:44:35		3:30:30	20:44:35	Approximate time
End of Ingress Limb-Track		5:18:43		4:04:38	21:18:43	All three signals extinguished; S/C is well behind Saturn
End of Turn to the Earth waypoint		5:22:10		4:08:05	21:22:10	
Cassini is Behind Saturn						No Downlink from Cassini is detectable during this period
Start of turn from waypoint to Saturn's limb		5:24:11		4:10:06	21:24:11	
Start Egress Limb-Track		5:26:59		4:12:54	21:26:59	Signals still not detectable; S/C is still well behind Saturn
Weak S-band signal (~1.55° BA)		5:46:28		4:32:23	21:46:28	Weak but increasing and scintillating S-band signal
Weak X-band signal (~1.35° BA)		5:47:25		4:33:20	21:47:25	Weak but increasing and scintillating X-band signal
Weak Ka-band signal (~1.15° BA)		5:48:21		4:34:16	21:48:21	Weak but increasing and scintillating Ka-band signal
Troposphere Out (~0.1° BA)		5:53:03		4:38:58	21:53:03	PC/N0 (X70, X&Ka34, S70) = ~54, 48, 48, and 41 dB
Ionosphere Out (~68,000 km)		6:08:25		4:54:20	22:08:25	Ionosphere primarily affects signal frequency
End of Free-Space Baseline		6:22:06		5:08:01	22:22:06	"Official" end of the rev 54 RSS experiments
DSS-55: Enable Monopulse		6:36:00		5:21:55	22:36:00	Monopulse enabled to check blind pointing performance
End of Live Moveable Block (LMB)		6:39:05		5:25:00	22:39:05	HGA Continues to be Earth pointed till this time
Start turn away from Earth point (to CIRS)		6:39:05		5:25:00	22:39:05	End of the rev 54 RSS observations period
TLM ON/ TWNC OFF/ RNG ON		6:39:06		5:25:01	22:39:06	
DSS-55 & 63: End of Track		7:10:00		5:55:55	23:10:00	
DSS-55 & 63 End of Postcal		7:25:00		6:10:55	23:25:00	

Indicates DSN Related Activities

All times are based on OTM-138 OD and the corresponding Live Update of the rev 54 mini-sequence

Some Ring Edges are known to be noncircular, which will affect ring event times above