

Timeline for Cassini Rev 122 RSS Saturn Atmospheric Occultation on December 9, 2009 (DOY 343)

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	ERT UTC OWLT = 1:20:35	SCET	PST ERT-8hrs 8:00:00	Comments
Load ingress occultation frequency predicts	TBD			
RSS3a OpMode ON	16:33:57	15:13:22	8:33:57	
DSS-34: Start pre-cal	16:35:00	15:14:25	8:35:00	
DSS-43: Start pre-cal	17:05:00	15:44:25	9:05:00	
DSS-34 & 14 Begin-of-Track	18:05:00	16:44:25	10:05:00	No signals from Cassini till shortly before 18:44:35
ISS Enceladus observation				
Start LMB deadtime; S/C is Earth pointed	18:44:35	17:24:00	10:44:35	Cassini HGA is Earth pointed; strong S/X/Ka signals
TWNC ON	18:44:35	17:24:00	10:44:35	
RNG OFF	18:44:39	17:24:04	10:44:39	
TLM OFF	18:44:40	17:24:05	10:44:40	
DSS-34: Enable monopulse	18:47:00	17:26:25	10:47:00	Enable monopulse only when requested by RSS ops
Start of actual free-space baseline	18:47:01	17:26:26	10:47:01	
Start formal RSS Ingress observation period	19:05:20	17:44:45	11:05:20	PC/N0 (X70, X & Ka34, S70) = ~54, 48, 48, and 42 dB
Start tracking Earth (IVD file)	19:05:27	17:44:52	11:05:27	
Ionosphere in (~68,000 km)	19:26:19	18:05:44	11:26:19	Ionospher primarily affects signal frequency
Troposphere in (~0.1° BA)	19:54:54	18:34:19	11:54:54	S/X/Ka signal intensities start to drop and scintillate
Loss of the Ka-band signal (~1.15° BA)	20:22:59	19:02:24	12:22:59	approximate time
Loss of the X-band signal (~1.35° BA)	20:28:59	19:08:24	12:28:59	approximate time
Loss of the S-band signal (~1.55° BA)	20:35:22	19:14:47	12:35:22	approximate time
Cassini is behind Saturn				No detectable signals from Cassini are expected during
End of ingress limb-track	21:51:35	20:31:00	13:51:35	
Load egress occultation frequency predicts	21:52:00	20:31:25	13:52:00	
DSS-34: Initialize blind pointing offset?	21:53:00	20:32:25	13:53:00	Real-Time decision based on monopulse offsets behavior
start of egress limb-track	21:53:45	20:33:10	13:53:45	The egress occultation is completed using blind pointing

Cassini is behind Saturn				
Weak S-band signal (~1.55° BA)	22:27:21	21:06:46	14:27:21	Weak but increasing and scintillating S-band signal
Weak X-band signal (~1.35° BA)	22:32:56	21:12:21	14:32:56	Weak but increasing and scintillating X-band signal
Weak Ka-band signal (~1.15° BA)	22:38:06	21:17:31	14:38:06	Weak but increasing and scintillating Ka-band signal
Troposphere out (~0.1° BA)	23:01:19	21:40:44	15:01:19	PC/N0 (X70, X&Ka34, S70) = ~54, 48, 48, and 42 dB
End of tracking IVD file	23:07:35	21:47:00	15:07:35	
Continue tracking Xband to Earth	23:07:36	21:47:01	15:07:36	
Ionosphere out (~68,000 km)	23:26:35	22:06:00	15:26:35	Ionosphere primarily affects signal frequency
End of formal RSS egress observation period	23:41:35	22:21:00	15:41:35	
Actual end of free-space baseline	23:58:34	22:37:59	15:58:34	
DSS-34: Enable monopulse	23:58:00	22:37:25	15:58:00	Monopulse enabled to check blind pointing performance
End of RSS3a Op-Mode	0:00:56	22:40:21	16:00:56	Loss of S- and Ka-band downlink
TLM ON	0:01:29	22:40:54	16:01:29	Drop of X-band signal level
TWNC OFF	0:01:33	22:40:58	16:01:33	
RNG ON	0:01:34	22:40:59	16:01:34	
End of LMB deadtime; S/C still Earth pointed	0:01:35	22:41:00	16:01:35	HGA Continues to be Earth pointed until this time
Start turn away from Earth; RADAR observ'n	0:01:35	22:41:00	16:01:35	Quick loss of X-band downlink
DSS-34 & DSS-43: End-of-Track	0:30:00	23:09:25	16:30:00	
DSS-34 & DSS-43: End of post-cal	0:45:00	23:24:25	16:45:00	

Goldstone DSS-34 & DSS-43 related activities

Occultation event times are based on reference trajectory 080806 (used for the on-the-shelf PDT design) & may be updated