

# S15 Rev 16 Cassini RSS Dione Mass Determination

2005/284-285, Tuesday-Wednesday, October 11-12, 2005

Dione Closest Approach C/A: 2005/284-19:10 ERT, Altitude: 500 km

GMB: GMB\_E016\_Dione 2005-284T17:52:02 SCET

OWLT = 01:18, RTLTL = 02:36

Times below are rounded and may differ by a minute from other timelines

RSR = Radio Science Receiver (open-loop receiver).

Prime data for gravity are closed-loop Doppler data. Open-loop data are backup

RSSG = Radio Science Systems Group

RSSG: Note Telemetry Bit Rate changes during observation for possible change in SNR. Set RSR fgain accordingly. Do no change during observation.

Event	ERT UTC (hh:mm)	Local PDT	Comments
<b>DOY 284</b>			
<b>First Segment - Dione Inbound</b>		<b>11-Oct</b>	
DSS-25 Pre-cal	08:00	1:00 AM	Cassini specific 4th-order pointing model, TLC Enabled
DSS-25 BOT (Beginning Of Track)	09:30	2:30 AM	No downlink until ~1220 ERT
DSS-25 Transmitter ON	09:45	2:45 AM	
Ka-band ON (KEX and Ka-TWTA)	10:01	3:01 AM	On-board s/c. ON prior to beginning of observation for thermal stabilization
DSS-25 Transmitter OFF	11:49	4:49 AM	REAL-TIME CHANGE: Time is 3 mins later than time in SOE/SFOS time at 11:46
Begin S/C Turn to Earth (turn by SP)	12:01	5:01 AM	
RSSG: Begin RSR recording (X & Ka)	12:15	5:15 AM	Or as soon as signal appears in RSR FFT display
End S/C Turn to Earth/Begin Downlink	12:20	5:20 AM	Signal may be present shortly before 12:20 ERT as s/c is turning to Earth
<b>Begin RSS Dione Mass Determination - Inbound</b>	<b>12:20</b>	<b>5:20 AM</b>	Telemetry Bit Rate: 27650 throughout observation
1-way signal	12:20	5:20 AM	SOE time: 12:20:21 ERT
2-way signal	12:21	5:21 AM	SOE time: 12:21:31 ERT, X-up/X-down and X-up/Ka-down
DSS-25 Enable Monopulse after 2-way lock			
<b>End RSS Dione Mass Determination - Inbound</b>	<b>14:22</b>	<b>7:22 AM</b>	
Ka-band OFF (KEX and Ka-TWTA)	14:22	7:22 AM	
DSS-25 Disable Monopulse at loss of Ka-band signal			
Begin S/C Turn from Earth (turn by SP)/End Downlink			Coherent X-band signal may be present for a few minutes after beginning of turn
End Possible Coherent Downlink	14:25	7:25 AM	If signal is still present, this will be end of coherent downlink
DSS-25 EOT (End of Track)	14:25	7:25 AM	
RSSG: End RSR open-loop recording (X & Ka)	14:25	7:25 AM	
<b>Dione Closest Approach</b>	<b>19:10</b>	<b>12:10 PM</b>	<b>Altitude: 500 km</b>
<b>Second Segment - Dione Outbound</b>			
DSS-34 Pre-cal	20:55	1:55 PM	Cassini specific 4th-order pointing model
DSS-34 BOT	22:25	3:25 PM	No downlink until ~01:19 ERT
DSS-34 Transmitter ON	22:45	3:45 PM	
Ka-band ON (KEX and Ka-TWTA)	23:19	4:19 PM	On-board s/c. ON prior to beginning of observation for thermal stabilization
DSS-55 Pre-cal	23:45	4:45 PM	Cassini specific 4th-order pointing model, TLC Enabled
<b>DOY 285</b>			
Begin S/C Turn to Earth (turn by SP)	01:09	6:09 PM	

RSSG: Begin RSR recording at DSS-34 (X & Ka)	01:14	6:14 PM	Or as soon as signal appears in RSR FFT display
RSSG: Begin RSR recording at DSS-55 (X & Ka)	01:14	6:14 PM	Or as soon as signal appears in RSR FFT display
RSSG: Begin RSR recording at DSS-63 (X)	01:14	6:14 PM	
DSS-55 BOT	01:15	6:15 PM	No downlink until ~01:19 ERT
DSS-63 BOT	01:15	6:15 PM	No downlink until ~01:19 ERT
End S/C Turn to Earth/Begin Downlink	01:19	6:19 PM	Signal may be present shortly before 01:19 ERT as s/c is turning to Earth
Begin RSS Dione Mass Determination - Outbound	01:19	6:19 PM	Telemetry Bit Rate: 14220
1-way signal	01:19	6:19 PM	SOE time: 01:19:08 ERT
Coherent (2-way at DSS-34, 3-way at DSS-55) signal	01:21	6:21 PM	SOE time: 01:21:25 ERT. X-up/X-down and X-up/Ka-down
DSS-34 Enable Monopulse after 2-way lock			
DSS-55 Enable Monopulse after 3-way lock			
Uplink transfer from DSS-34 to DSS-55	01:38	6:38 PM	
DSS-34 EOT	02:00	7:00 PM	
Note to RSSG	02:00	7:00 PM	Telemetry Bit Rate change to 22120 until 03:00 ERT
DSS-34 Disable Monopulse at loss of Ka-band signal			At loss of coherent Ka-band signal
RSSG: End RSR recording at DSS-34 (X & Ka)	02:05	7:05 PM	
Note to RSSG	03:00	8:00 PM	Telemetry Bit Rate change to 27650 until end of downlink
DSS-55 switch from 3-way to 2-way	04:14	9:14 PM	SOE time: 04:14:21 ERT
DSS-63 EOT	05:15	10:15 PM	
RSSG: End RSR recording at DSS-63 (X)	05:20	10:20 PM	
End RSS Dione Mass Determination - Outbound	05:46	10:46 PM	
Ka-band OFF (KEX and Ka-TWTA)	05:46	10:46 PM	SOE time: 05:45:11 ERT
DSS-55 Disable Monopulse at loss of Ka-band signal			At loss of coherent Ka-band signal
OTM-38, Downlink Continues			Continue acquisition of coherent X-band data
RSSG: End RSR Ka-band recording at DSS-55 (Ka)	05:50	10:50 PM	Continue with RSR X-band recording
		12-Oct	
DSS-55 Transmitter OFF	07:07	12:07 AM	
Begin S/C Turn from Earth/End Downlink	09:43	2:43 AM	Signal may be present for a few minutes after beginning of turn
DSS-55 EOT	09:45	2:45 AM	
RSSG: End RSR X-band recording at DSS-55 (X)	09:45	2:45 AM	