

Timeline for Cassini Rev 253: 2-Way RSS Saturn's Ring Chord Occultation

December 19, 2016 UTC (DOY-354)

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| | ERT UTC OWLT = 01:31:41 | SCET | PST ERT-8hrs 08:00:00 | Comments |
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| DOY 2016-354 | | | | |
| RSSG: Load 1-W Predicts, 2-W, and 3-W Frequency Predicts | | | | |
| DSS-63: Begin Pre-Cal | 08:25:00 | 06:53:19 | 00:25:00 | |
| DSS-63: Beginning Of Track | 09:25:00 | 07:53:19 | 01:25:00 | Spacecraft is not Earth pointed; no detectable downlink |
| DSS-63: Transmitter ON, 18 kW, LCP, RAMP, SWEEP | 09:47:00 | 08:15:19 | 01:47:00 | Trasnmitter on time = Start of 2-Way acquisition - RTLTL |
| Start of YGAP Activity | 10:44:41 | 09:13:00 | 02:44:41 | Spacecraft is Earth pointed; downlink loss during YGAP |
| S-Band ON | 10:45:25 | 09:13:44 | 02:45:25 | Per PEF |
| DSS-55: Begin Pre-Cal | 10:50:00 | 09:18:19 | 02:50:00 | |
| Ka-Band ON | 10:50:21 | 09:18:40 | 02:50:21 | Per PEF |
| Start of Thermal Stabilization Period | 10:50:22 | 09:18:41 | 02:50:22 | |
| RSSG: Begin All DSS-63 and DSS-55 Open-Loop Recordings | 11:45:00 | 10:13:19 | 03:45:00 | |
| DSS-84: Begin Pre-Cal | 11:55:00 | 10:23:19 | 03:55:00 | |
| End of YGAP Activity; Spacecraft is Earth Pointed | 12:14:41 | 10:43:00 | 04:14:41 | X/S/Ka downlink detectable; free 1-Way baseline |
| DSS-63: Begin X- and S-band 1-Way Acquisition | 12:14:41 | 10:43:00 | 04:14:41 | PC/N0 (X-70m TLM OFF, S-70m) = 54, 42 dB-Hz |
| RSSG: Enter 1-Way Open-Loop Frequency Offsets as Needed | | | | |
| DSS-55: Beginning Of Track | 12:20:00 | 10:48:19 | 04:20:00 | |
| DSS-55: Begin X- and Ka-band 1-Way Acquisition | 12:20:00 | 10:48:19 | 04:20:00 | PC/N0 (X-34m TLM OFF, Ka-34m) = 48, 48 dB-Hz |
| RSSG: Enter 1-Way Open-Loop Frequency Offsets as Needed | | | | |
| DSS-55: Enable Monopulse | 12:22:00 | 10:50:19 | 04:22:00 | Enable Monopulse only when requested by RS Operations |
| DSS-84: Beginning Of Track | 12:40:00 | 11:08:19 | 04:40:00 | |
| DSS-84: Begin X- and Ka-band 1-Way Acquisition | 12:40:00 | 11:08:19 | 04:40:00 | |
| DSS-55: Disable Monopulse Without Clearing the Offsets | 12:48:00 | 11:16:19 | 04:48:00 | Prior to mode switch to 3-Way |
| End of Thermal Stabilization Period | 12:49:41 | 11:18:00 | 04:49:41 | |
| Official Start of Rev253 Ring Occultation Experiment | 12:49:41 | 11:18:00 | 04:49:41 | |
| RNG OFF/TLM OFF | 12:49:41 | 11:18:00 | 04:49:41 | X-band signal level increase. PC/N0 (X-70m, X-34m) = 54, 48 dB-Hz |
| RSSG: Clear 1-Way Open-Loop Frequency Offsets | | | | |
| DSS-63: Begin X- & S-band 2-Way Acquisition | 12:50:22 | 11:18:41 | 04:50:22 | PC/N0 (X-70m TLM OFF, S-70m) = 54, 42 dB-Hz |
| DSS-55: Begin X- & Ka-band 3-Way Acquisition (w/DSS-63) | 12:50:22 | 11:18:41 | 04:50:22 | PC/N0 (X-34m TLM OFF, Ka-34m) = 48, 48 dB-Hz |
| DSS-84: Begin X- and Ka-band 3-Way Acquisition (w/DSS-63) | 12:50:22 | 11:18:41 | 04:50:22 | |
| Start 2-Way/3-Way Baseline | 12:52:22 | 11:20:41 | 04:52:22 | |
| DSS-25: Begin Pre-Cal | 13:20:00 | 11:48:19 | 05:20:00 | |
| DSS-14: Begin Pre-Cal | 13:50:00 | 12:18:19 | 05:50:00 | |

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| Ring F | 14:19:45 | 12:48:04 | 06:19:45 | Approx. time; Ring F is usually not detectable in real-time |
| RSSG: Begin DSS-14 & DSS-25 Open-Loop Recordings | 14:20:00 | 12:48:19 | 06:20:00 | |
| Ring A In | 14:27:05 | 12:55:24 | 06:27:05 | Approximate time |
| DSS-55: Disable Monopulse | 14:49:12 | 13:17:31 | 06:49:12 | Disable Monopulse only when requested by RS Operations |
| Ring A Out | 14:49:12 | 13:17:31 | 6:49:12 | |
| DSS-14 & DSS-25: Beginning Of Track | 14:50:00 | 13:18:19 | 06:50:00 | |
| DSS-14: Begin X- & S-band 3-Way Acquisition (w/DSS-63) | 14:50:00 | 13:18:19 | 06:50:00 | In the Cassini Division |
| DSS-25: Begin X- & Ka-band 3-Way Acquisition (w/DSS-63) | 14:50:00 | 13:18:19 | 06:50:00 | In the Cassini Division |
| Ring B In | 15:09:47 | 13:38:06 | 07:09:47 | Potential loss of 2-Way signals over parts of Ring B |
| DSS-14 Transmitter ON, 18 kW, LCP, RAMP | 15:14:20 | 13:42:39 | 07:14:20 | NO SWEEP; Uplink transfer from DSS-63 to DSS-14 |
| DSS-63: Transmitter OFF | 15:14:25 | 13:42:44 | 07:14:25 | |
| DSS-63 & DSS-55: End Of Track | 15:30:00 | 13:58:19 | 07:30:00 | |
| DSS-63 & DSS-55: End of Post-Cal | 15:45:00 | 14:13:19 | 07:45:00 | |
| RSSG: End DSS-63 & DSS-55 Open-Loop Recordings | 15:50:00 | 14:18:19 | 07:50:00 | |
| Ring C In | 16:14:42 | 14:43:01 | 08:14:42 | |
| DSS-25: Enable Monopulse | 16:16:48 | 14:45:07 | 08:16:48 | Enable monopulse only when requested by RS Operations |
| Ring C Out | 17:28:57 | 15:57:16 | 09:28:57 | |
| Ring Turn Around Time | 17:55:00 | 16:23:19 | 09:55:00 | Center of the chord occultation track |
| Uplink Transfer from DSS-63 to DSS-14 Observed | 18:17:42 | 16:46:01 | 10:17:42 | |
| DSS-14: Begin X- & S-band 2-Way Acquisition | 18:17:42 | 16:46:01 | 10:17:42 | In Ring C |
| DSS-25: Begin X- & Ka-band 3-Way Acquisition (w/DSS-14) | 18:17:42 | 16:46:01 | 10:17:42 | In Ring C |
| DSS-84: Begin X- and Ka-band 3-Way Acquisition (w/DSS-14) | 18:17:42 | 16:46:01 | 10:17:42 | |
| Ring C In | 18:21:05 | 16:49:24 | 10:21:05 | |
| DSS-14 Transmitter OFF | 19:05:00 | 17:33:19 | 11:05:00 | Transmitter off time = End of coherent baseline - RTLTL |
| DSS-14 Transmitter ON, 18 kW, LCP, RAMP | 19:15:00 | 17:43:19 | 11:15:00 | Transmitter on time = End of 1-way baseline - RTLTL |
| DSS-25: Disable Monopulse | 19:33:00 | 18:01:19 | 11:33:00 | Disable monopulse only when requested by RS Operations |
| Ring B In | 19:35:15 | 18:03:34 | 11:35:15 | |
| DSS-43: Begin Pre-Cal | 19:50:00 | 18:18:19 | 11:50:00 | |
| DSS-84: End Of Track | 20:00:00 | 18:28:19 | 12:00:00 | In Ring B |
| DSS-84: End of Post-Cal | 20:15:00 | 18:43:19 | 12:15:00 | |
| Ring B Out | 20:39:59 | 19:08:18 | 12:39:59 | |
| RSSG: Start DSS-43 X- and S-band Open-Loop Recordings | | | | |
| DSS-43: Beginning of Track | 20:50:00 | 19:18:19 | 12:50:00 | In the Cassini Division |
| DSS-43: Begin X- & S-band 3-Way Acquisition (w/DSS-14) | 20:50:00 | 19:18:19 | 12:50:00 | PC/N0 (X-70m TLM OFF, S-70m) = 54, 42 dB-Hz |
| Ring A in | 20:50:15 | 19:18:34 | 12:50:15 | |
| DSS-25: Enable Monopulse | 21:00:00 | 19:28:19 | 13:00:00 | Enable monopulse only when requested by RS Operations |
| DSS-43 Transmitter ON | 21:00:00 | 19:28:19 | 13:00:00 | Per DKF. Uplink Transfer from DSS-14 to DSS-43 |
| DSS-14 Transmitter OFF | 21:00:05 | 19:28:24 | 13:00:05 | |
| Ring A out | 21:22:25 | 19:50:44 | 13:22:25 | All signals back to full strength (free-space) levels |

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| Ring F | 21:29:42 | 19:58:01 | 13:29:42 | Approx. time; Ring F is usually not detectable in real-time |
| Begin 2-Way/3-Way Baseline | | | | |
| DSS-25: Disable Monopulse | 22:08:00 | 20:36:19 | 14:08:00 | Prior to mode switch to 1-Way |
| End 2-Way/3-Way Baseline, Start ~10 min 1-Way Baseline | 22:08:22 | 20:36:41 | 14:08:22 | |
| DSS-14: Begin X- & S-band 1-Way Acquisition | 22:08:22 | 20:36:41 | 14:08:22 | PC/N0 (X-70m, S-70m) = 54, 42 dB-Hz |
| DSS-25: Begin X- & Ka-band 1-Way Acquisition | 22:08:22 | 20:36:41 | 14:08:22 | PC/N0 (X-34m, Ka-34m) = 48, 48 dB-Hz |
| DSS-43: Begin X- & S-band 1-Way Acquisition | 22:08:22 | 20:36:41 | 14:08:22 | PC/N0 (X-70m, S-70m) = 54, 42 dB-Hz |
| DSS-25: Enable Monopulse | 22:10:00 | 20:38:19 | 14:10:00 | Enable monopulse only when requested by RS Operations |
| RSSG: Enter 1-Way Open-Loop Frequency Offsets as Needed | | | | |
| DSS-25: Disable Monopulse | 22:17:00 | 20:45:19 | 14:17:00 | Prior to mode switch to 3-Way |
| End 1-Way Baseline | 22:18:22 | 20:46:41 | 14:18:22 | |
| DSS-14: Begin X-band 2-Way Acquisition | 22:18:22 | 20:46:41 | 14:18:22 | |
| DSS-25: Begin X-band 3-Way Acquisition (w/DSS-14) | 22:18:22 | 20:46:41 | 14:18:22 | |
| DSS-43: Begin X-band 3-Way Acquisition (w/DSS-14) | 22:18:22 | 20:46:41 | 14:18:22 | |
| S-Band OFF | 22:20:06 | 20:48:25 | 14:20:06 | Per PEF |
| Ka-Band OFF | 22:20:08 | 20:48:27 | 14:20:08 | Per PEF |
| TLM ON/RNG ON | 22:20:35 | 20:48:54 | 14:20:35 | X-band signal level decrease |
| End of Rev 253 RSS Ring Occultation Experiment , Tracking Continues | 22:20:41 | 20:49:00 | 14:20:41 | Spacecraft remains Earth pointed |
| S-Band ON | 22:21:39 | 20:49:58 | 14:21:39 | Per PEF |
| DSS-14: Begin S-band 2-Way Acquisition | 22:21:39 | 20:49:58 | 14:21:39 | |
| DSS-43: Begin S-band 3-Way Acquisition (w/DSS-14) | 22:21:39 | 20:49:58 | 14:21:39 | |
| DSS-14 & DSS-25: End Of Track | 22:55:00 | 21:23:19 | 14:55:00 | |
| DSS-14 & DSS-25: End Of Post-Cal | 23:10:00 | 21:38:19 | 15:10:00 | |
| RSSG: End DSS-14 & DSS-25 Open-Loop Recordings | 23:15:00 | 21:43:19 | 15:15:00 | |
| DOY 2016-355 | | | | |
| Uplink Transfer from DSS-14 to DSS-43 Observed | 00:03:22 | 22:31:41 | 16:03:22 | |
| DSS-43: Begin X- & S-band 2-Way Acquisition | 00:03:22 | 22:31:41 | 16:03:22 | |
| DSS-43 Transmitter OFF | 04:37:19 | 03:05:38 | 20:37:19 | Per DKF |
| S-Band OFF | 07:38:41 | 06:07:00 | 23:38:41 | |
| DSS-43: End of Track | 07:45:00 | 06:13:19 | 23:45:00 | |
| DSS-43: End of Post-Cal | 08:00:00 | 06:28:19 | 00:00:00 | |

- Canberra DSS-63 & DSS-55 related activities
- Goldstone DSS-25 & DSS-14 related activities
- Canberra DSS-43 related activities
- Malargue DSS-84 related activities

Predicted rings event times are approximate and are based on [Ref Traj 150901](#)