

Cassini S10 RSS/DSN Preparatory Meeting #1

April 7th, 2005

1 - 3 pm

230-260W (818)354-5955

Preliminary Agenda

1. Introduction
2. Overview of Cassini S10 RSS Upcoming Activities Aseel
 - a. RSS Activities
HGA Boresight, ORTs, First Occultation Experiment, Gravity Science Enhancement Observations
 - b. Ka-band downlink for DSN Testing
 - c. S-band downlink (in addition to X and Ka)
 - d. Rolling vs. non-rolling downlink
3. BWG Ka-band Upgrade Task Watt
 - a. Status
 - b. Plan for testing
4. DSN Antennas Dual-Polarization Capabilities Aseel/Gene/Al/Karen
 - a. Using VSRs to record RS data
 - b. Creation of new Configuration Codes
5. Details of Rings/Saturn Occultation Experiment on May 2nd Essam/All
 - a. Geometry
 - b. Monopulse/Blind Pointing strategy
 - c. Subreflector strategy (fixed/moving)
 - d. Stability of reference frequency standard (clean-up loop)
 - e. Recording of RCP and LCP signal components
6. Plan for testing during RSS ORTs All
 - a. Monopulse and Blind Pointing testing
 - b. Ground antenna pattern cal
DOY 113 at DSS-34? (non-rolling downlink)
7. Misc. All
 - a. NOPE Briefing Message
 - b. Outreach – RSS presentation to DSN personnel on 4/19

Cassini S10 Radio Science Activities

	USO-PIM
	Engineering Passes
	Stand-alone PIM
	HGA Pattern Calibration
	Operational Readiness Test (ORT)
	Boresight Calibration
	Saturn Atmosphere and/or Rings Occultation
	Titan Atmosphere Occultation and/or Bistatic
	Gravity Science Experiments
	Ka-band Downlink for Gravity
	Special Activity

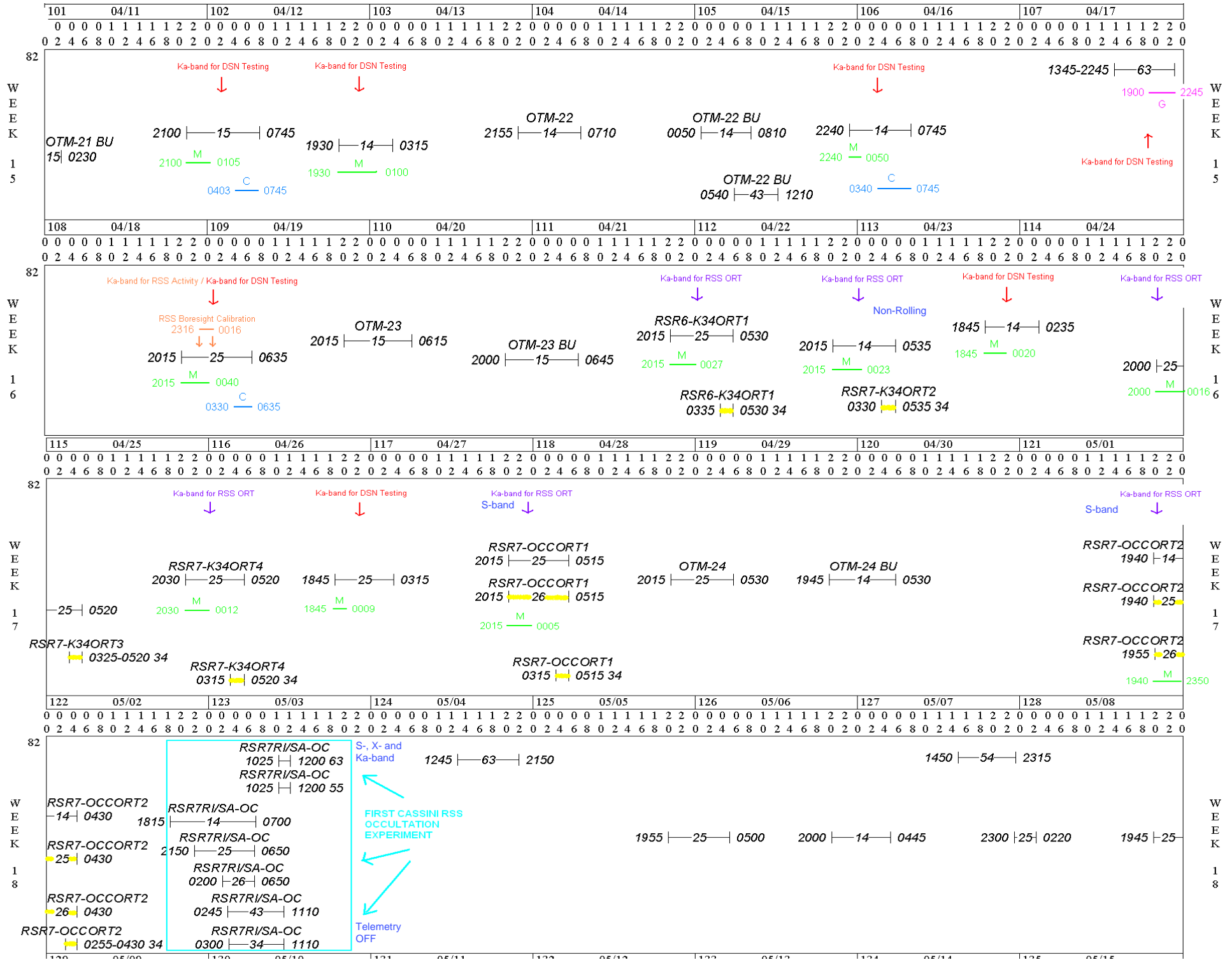
Note1: Opmode rss3a = S-, X- and Ka-band downlink

Note2: Opmode rssk = X- and Ka-band downlink

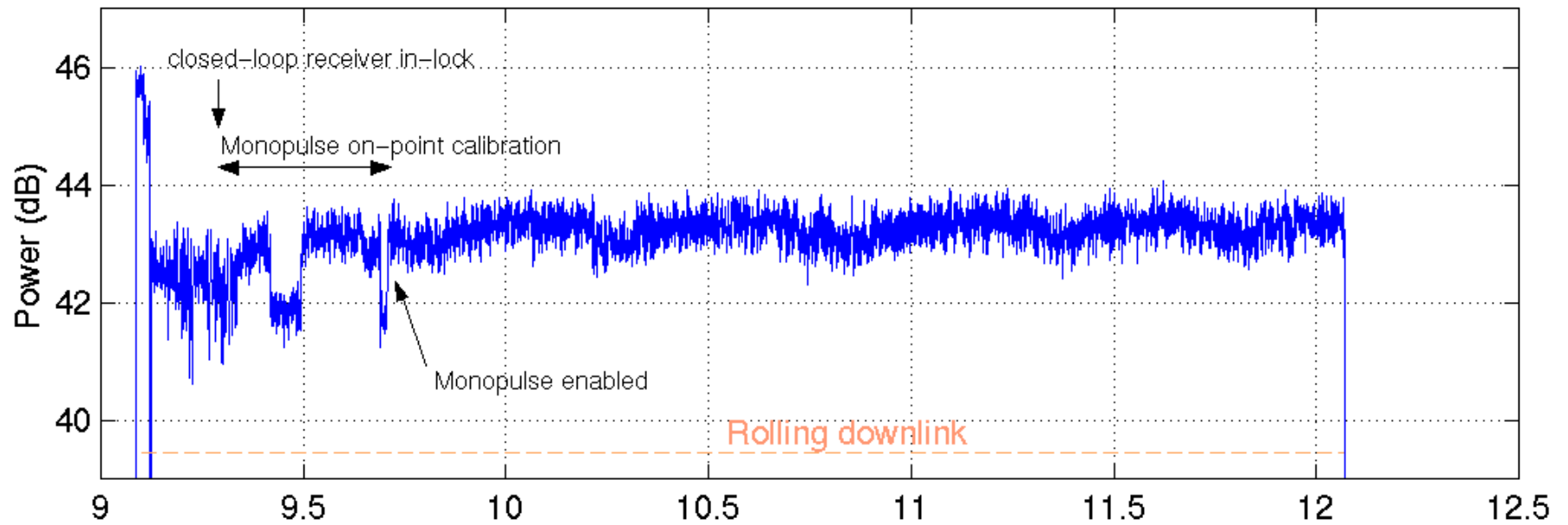
Note3: Gravity DSN coverage must start at least RTLT (2xOWLT) and 10 minutes before times to the left in ERT for uplink.

REQUEST/CIMS_Request	SEQ #	Year	Times in SCET		OWLT h:mm	Times in ERT			K-TWTA Maint	Therm Stab	Op-mode	DSN Coverage in ERT				Date ERT	Notes
			DOY	Start End		DOY	Start End	Dur				Cmplx	DSS	DOY	Start End		
Ka-band downlink for DSN Testing	10	2005				101	21:00 07:45		5 min	2 hr	rssk			101	21:00 07:45	04/11/05	shadow DSS-15 101/21:00-07:45
Ka-band downlink for DSN Testing	10	2005				102	19:30 03:15		5 min	2 hr	rssk			102	19:30 03:15	04/12/05	shadow DSS-14 102/19:30-03:15
Ka-band downlink for DSN Testing	10	2005				105	22:40 07:45		5 min	2 hr	rssk			105	22:40 07:45	04/15/05	shadow DSS-14 105/22:40-07:45
Ka-band downlink for DSN Testing	10	2005				107	13:45 22:45		5 min	2 hr	rssk			107	13:45 22:45	04/17/05	shadow DSS-63 107/13:45-22:45
RSS_006EA_BORESIGHT002_PRIME	10	2005	108	22:00 23:00	1:16	108	23:16 00:16	1:00	2 hr	2 hr	rssk	G	25	108	20:15 06:35	04/18/05	Also Tracking Pass
Ka-band downlink for DSN Testing	10	2005				108	20:15 06:35			Incl above	rssk			108	20:15 06:35	04/18/05	shadow DSS-25 108/20:15-06:35
RSS_006EA_KA34ORT001_RSS	10	2005	112	02:24 04:24	1:16	112	03:40 05:40	2:00	5 min	2 hr	rssk	C	34	112	03:35 05:30	04/22/05	shadow DSS-25 111/20:15-05:30
RSS_006EA_KA34ORT002_RSS	10	2005	113	02:19 04:19	1:17	113	03:36 05:36	2:00	5 min	2 hr	rssk	C	34	113	03:30 05:35	04/23/05	shadow DSS-14 112/20:15-05:30
Ka-band downlink for DSN Testing	10	2005				113	18:45 02:35		5 min	2 hr	rssk			113	18:45 02:35	04/23/05	shadow DSS-14 113/18:45-02:35
Ka-band downlink for DSN Testing	10	2005				114	20:00 05:20		5 min	2 hr	rssk			114	20:00 05:20	04/24/05	shadow DSS-25 114/20:00-05:20
RSS_007EA_KA34ORT003_RSS	10	2005	115	02:14 04:14	1:17	115	03:31 05:31	2:00	5 min	2 hr	rssk	C	34	115	03:25 05:20	04/25/05	shadow DSS-25 114/20:00-05:20
RSS_007EA_KA34ORT004_RSS	10	2005	116	02:06 04:06	1:17	116	03:23 05:23	2:00	5 min	2 hr	rssk	C	34	116	03:15 05:20	04/26/05	shadow DSS-25 115/20:30-05:20
Ka-band downlink for DSN Testing	10	2005				116	18:45 03:15		5 min	2 hr	rssk			116	18:45 03:15	04/26/05	shadow DSS-25 116/18:45-03:15
RSS_007SA_OCCORT001_RSS	10	2005	117	18:58 03:58	1:17	117	20:15 05:15	9:00	5 min	2 hr	rss3a	G	26	117	20:15 05:15	04/27/05	shadow DSS-25 117/20:15-05:15
												C	34	118	03:15 05:15	04/28/05	
RSS_007SA_OCCORT002_RSS	10	2005	121	18:22 03:22	1:18	121	19:40 04:40	9:00	5 min	2 hr	rss3a	G	14	121	19:40 04:30	05/01/05	Tkg pass. S-band support
												G	25	121	19:40 04:30		Shadow DSS-14
												G	26	121	19:55 04:30		
												C	34	122	02:55 04:30	05/02/05	
RSS_007TE_KADOWN001_RSS	10	2005	122	19:00 01:10	1:18	122	20:18 02:28	6:10	5 min	2 hr	rss3a	G	25	122	21:50 06:50	05/02/05	Pass continues for Occ
<i>Begin MB or deadtime</i>			123	01:10 02:19	1:18	123	02:28 03:37	1:09				G	14	122	18:15 07:00	05/02/05	
RSS_007RI_OCC003_PRIME	10	2005	123	02:32 04:39	1:18	123	03:50 05:57	2:07				G	25	122	21:50 06:50	05/03/05	Pass starts early for gravity
RSS_007SA_OCC003_PRIME	10	2005	123	04:39 05:20	1:18	123	05:57 06:38	0:41		Included in above gravity observation	rss3a	G	26	123	02:00 06:50		
												C	43	123	02:45 11:10		
RSS_007SA_OCC004_PRIME	10	2005	123	06:39 07:12	1:18	123	07:57 08:30	0:33				C	34	123	03:00 11:10		
RSS_007RI_OCC004_PRIME	10	2005	123	07:12 09:16	1:18	123	08:30 10:34	2:04				M	63	123	10:25 12:00		BOT at 6 degrees
<i>End of MB od deadtime</i>			123	09:20 10:29	1:18	123	10:38 11:47	1:09				M	55	123	10:25 12:00		
RSS_007SA_KADOWN001_RSS	10	2005	124	11:30 20:30	1:18	123	12:48 21:48	9:00	5 min	2 hr	rssk	Italy	Noto	124	15:20 21:50	05/04/05	shadow DSS-63 124/12:45-21:50

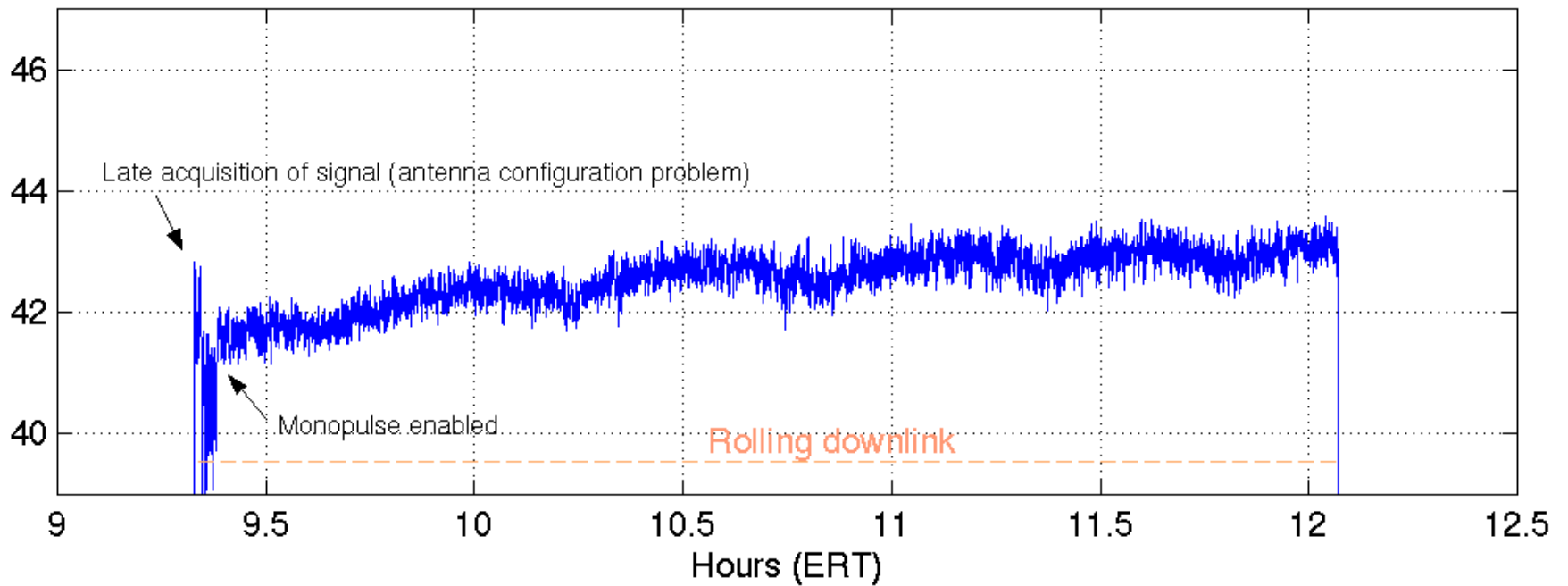
S10 RSS DSN Schedule/Activities

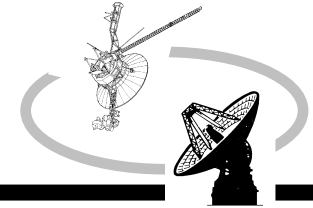


2004/268 Ka-band Pc/No
DOY:268 DSS-55 Ka-Band



DOY:268 DSS-25 Ka-Band





Plan for BWG Operational at Ka-band

DSS-25	Dates	DSS-26	Dates
1. Install & Test Ka-band Signal at F1 and F3 at DSS-13	Completed	1. Install & Test Ka-band Signal at F1 and F3 at DSS-13	N/A
2. Install APC Software and Test	Completed	2. Install APC Software and Test	Completed
3. LQG Servo Coefficient		3. LQG Servo Coefficient	
3.1 Data collection	Completed	3.1 Data collection	Completed
3.2 Data analysis	Completed	3.2 Data analysis	Completed
3.3 Install LQG coefficient and test	Completed	3.3 Install LQG coefficient and test*	2/1/05 –3/10/05
4. Azimuth Track Level Correction		4. Azimuth Track Level Correction	
4.1 PO of inclinometers	Completed	4.1 PO of inclinometers	Completed
4.2 Check look-up table with dummy data	Completed	4.2 Check look-up table with dummy data	N/A
4.3 Work on inclinometer software	Completed	4.3 Work on inclinometer software	N/A
4.4 RF measurement*	Completed	4.4 RF measurement*	Completed
4.5 Receive inclinometers	Completed	4.5 Receive inclinometers	3/24/05
4.6 Lab test inclinometers	Completed	4.6 Lab test inclinometers after DSS-25 is done	N/A
4.7 Install inclinometers cables and collect data*	Completed	4.7 Install inclinometers cables and collect data*	3/25/05–3/29/05
4.8 Data analysis & create look-up table	2/25/05–3/18/05	4.8 Data analysis & create look-up table	3/30/05–4/12/05
4.9 Install look-up table and test at DSS-25*	3/19/05–3/24/05	4.9 Install look-up table and test at DSS-26	4/13/05–4/20/05
4.10 Document and report	4/1/05–6/30/05	4.10 Document and report	5/17/05–7/15/05
5. 4 th Order Model, Day and Night Models		5. 4 th Order Model, Day and Night Models	
5.1 Data collection and analysis*	3/24/05–3/28/05	5.1 Data collection and analysis*	4/26/05–4/30/05
5.2 Installation and test*	3/28/05–3/30/05	5.2 Installation and test*	4/31/05–5/1/05
6. Monopulse Calibration and Test*	3/31/05–4/4/05	6. Monopulse Calibration and Test*	5/1/05–5/2/05
7. Acceptance Test for Operational Ka-band*	TBD	7. Acceptance Test for Operational Ka-band*	TBD

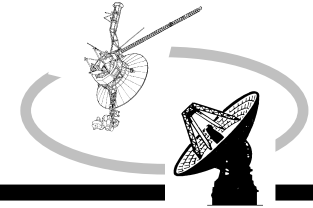
*Request for antenna time and station support personnel.

Item 4.7 needs two 8-hour periods (daytime) for installation and four 4-hour periods (nighttime) for data collection.

Item 4.9 needs three 6-hour periods (nighttime) for the test.

Item 5.1 needs three 8-hour periods (daytime) and three 8-hour periods (nighttime) for data collection.

Item 5.2 needs two 8-hour periods (daytime) and two 8-hour periods (nighttime) for installation and test.



Plan for BWG Operational at Ka-band (Cont'd)

DSS-34	Dates	DSS-55	Dates
1. Install & Test Ka-band Signal at F1 and F3 at DSS-13	N/A	1. Install & Test Ka-band Signal at F1 and F3 at DSS-13	N/A
2. Install APC Software and Test (modkit on site)	3/15/05–4/15/05	2. Install APC Software and Test	Completed
3. LQG Servo Coefficient		3. LQG Servo Coefficient	
3.1 Data collection	Completed	3.1 Data collection	Completed
3.2 Data analysis	Completed	3.2 Data analysis	Completed
3.3 Install LQG coefficient and test*	2/15/05–3/11/05	3.3 Install LQG coefficient and test*	2/16/05-3/18/05
4. Azimuth Track Level Correction		4. Azimuth Track Level Correction	
4.1 PO of inclinometers	Completed	4.1 PO of inclinometers	Completed
4.2 Check look-up table with dummy data	N/A	4.2 Check look-up table with dummy data	N/A
4.3 Work on inclinometer software	N/A	4.3 Work on inclinometer software	N/A
4.4 RF measurement*	Completed	4.4 RF measurement*	TBD
4.5 Receive inclinometers	Completed	4.5 Receive inclinometers from vendor	Completed
4.6 Lab test inclinometers and ship to DSS-34	Completed	4.6 Lab test inclinometers and ship to DSS-55	Completed
4.7 Install inclinometers and collect data*	Completed	4.7 Install inclinometers and collect data*	Completed
4.8 Data analysis & create look-up table	3/14/05–3/23/05	4.8 Data analysis & create look-up table	3/21/05–4/3/05
4.9 Install look-up table and test at DSS-34*	3/24/05–3/31/05	4.9 Install look-up table and test at DSS-55*	4/4/05–4/10/05
4.10 Document and report	4/1/05–7/15/05	4.10 Document and report	4/11/05–7/15/05
5. 4 th Order Model, Day and Night Models		5. 4 th Order Model, Day and Night Models	
5.1 Data collection and analysis*	4/1/05–4/7/05	5.1 Data collection and analysis*	4/15/05–4/20/05
5.2 Installation and test*	4/8/05–4/12/05	5.2 Installation and test*	4/21/05–4/24/05
6. Monopulse Calibration and Test*	4/13/05–4/16/05	6. Monopulse Calibration and Test*	4/26/05–4/29/05
7. Acceptance Test for Operational Ka-band*	TBD	7. Acceptance Test for Operational Ka-band*	TBD

*Request for antenna time and station support personnel.

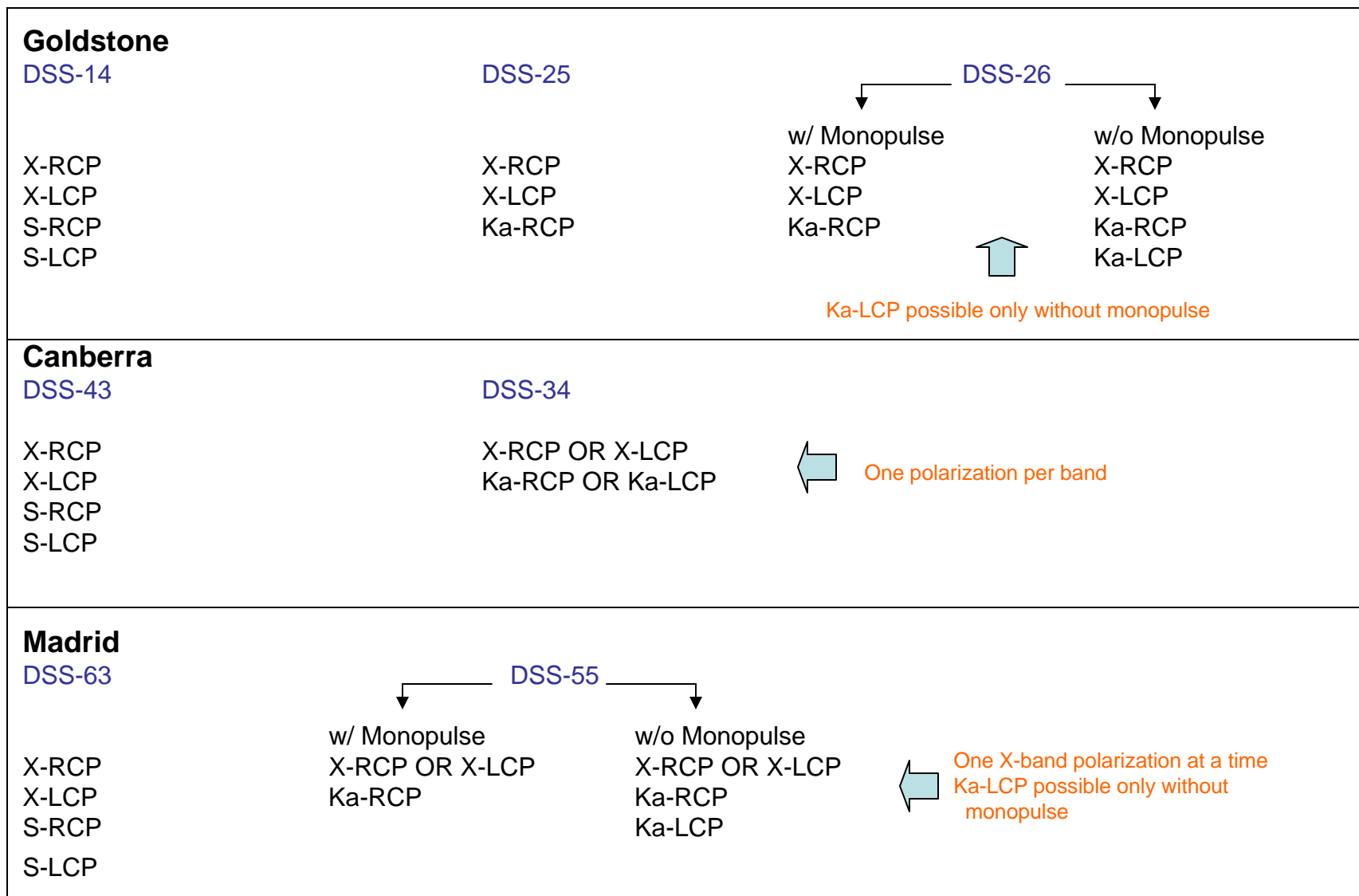
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Item 4.9 needs three 6-hour periods (nighttime) for the test.

Item 5.1 needs three 8-hour periods (daytime) and three 8-hour periods (nighttime) for data collection.

Item 5.2 needs two 8-hour periods (daytime) and two 8-hour periods (nighttime) for installation and test.

DSN Antennas Dual-Polarization Capabilities



DSS-14, -43 and -63 are 70-m antennas. DSS-25, -26, -34, and -55 are 34-m BWGs

Radio Occultation of Saturn's Rings and Atmosphere: Rev 7, May 2-3, 2005

