

# Radio Science Activity – Operations Log

Operator(s): Jay & Carlyn

Spacecraft: 082	Year: 2016	Date (local): 2016/10/20
Station: 25	Pass: 0294	DOY (BOA): 294

Activity / Experiment: Occultation ORT BOA: 294/1700 BOT: 294/1830 EOT: 295/0230 EOA: 295/0245

BRIEFING	PASS	
Voice Check: <input checked="" type="checkbox"/> Weather: <u>Clear calm</u> Wind: <u>No wind</u> Equipment Status: <u>green</u>  <b>Light-Times:</b> OWLT (hh:mm:ss): <u>01:29</u> RTLT (hh:mm:ss): <u>02:58</u>	<b>Closed-Loop Receivers:</b> Band(s): <u>Ka</u> <u>X</u> DCC(s): <u>9</u> <u>8</u> SNT: <u>enabled</u> <u>enabled</u>  <b>Transmitter:</b> Band(s): <u>X</u> Time: <u>294/1840</u> Uplink Power: <u>17.774 KW LCP</u> Uplink Transfers: <u>n/a</u>	<b>Antenna Configuration:</b> Subreflector: _____ Ka-band Aberration Correction: _____  <b>Pointing:</b> CONSCAN: _____ Monopulse: <u>Enabled, off between 2100 and 2031 due to X-band issue</u> 4 <sup>th</sup> -Order Blind Pointing Model: _____ DR Number(s): <u>DR#: G117565</u>

FSP ( RSR / VSR / WVSR / PRSR ):	RSR – 2 , B	RSR – 2 , A	RSR – 3 , B	(FSP) – (#) , (Side)
Band (and Polarization)	Ka RCP	X RCP		
Ground Mode (Way) at BOT	1 way	1 way		
Downlink Predicts Set ID	082250294_xk.dlf	082250294_xx.dlf		
Bandwidth (kHz)	1, 4, 16, 50	1, 16, 50, 100		
Sampling Rate (bits)	16	16		
FGAIN (dB-Hz)	55	38		
FRO (Hz) / Time				
SFRO (Hz) / Time	See notes	See notes		
Start Record Time / Play	294/1815	294/1815		
Stop Record Time / Play	295/0235	295/0235		
Mode Change Time / Mode	294/213813	294/213813		
Mode Change Time / Mode				
Other: _____				
Other: _____				



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Thursday, October 20, 2016

10:00 AM PDT

294 1700 1830 0230 0245 DSS-25 CAS TP RSS MONCAL MC 0294 N748 1A1

S/C not rolling.

ACE: M. Staab

Before AOS:

X: sfro 1 -500

Ka: sfro 1 – 1300, sfro 2 -1800

1822 SNT Ka: 102.3 X: 43.8 El: 7.75  
1822 AOS X, signal level nominal  
182638 X: sfro 1 -600  
1828 AOS Ka, signal level nominal  
1830 X-band TLM on, signal dropped approx. -7dB  
183315 Ka: sfro 1 -1800  
184524 Ka: att auto (Ka-band ADC Amp out of desired range -7.1dB, att auto)  
1844 1-way on-point phase cal began  
185015 SNT Ka: 79.6 X: 50.1 El: 12.3  
185550 X: att auto (X-band ADC Amp out of desired range -6.2 dB, att auto)  
1902 1-way on-point phase cal ended; monopulse enabled  
192424 SNT Ka: 68.8 X: 47.1 El: 17.6

Operator error: accidental disabling recording on XRCP from 193257 to 193519

205525 ACE inquired station to check high SNT on X band signal (SNT Ka: 59 X: 43.8 EL: 28). ACE wanted to try use CONSCAN on X. Ka monopulse goes to open loop (kept offset)

205955 Monopulse disabled (offset AZ 2.33 mdeg, EL -10.12 mdeg)

210019 CONSCAN ON for X; Ka-band signal fluctuating between 47 dB/Hz (nominal level for the track so far) down to 42.5dB/Hz

211336 CONSCAN OFF; ACE instruct station to reconfigure receiver, loss of X-band signal, Ka-band signal still present.

2122 Station report X-band signal back, but not observed on RSR. We asked station to verify XRCP output.

213000 Station report X-band data now routed to output 02; RSR again records X-band data.

2135 Consulted ACE, if X-band signal remains strong to re-enable monopulse after 2-way. It was agreed.

213850 LOS 1-way Ka

213905 LOS 1-2ay X

214020 2-way AOS X, Ka

214235 SNT Ka: 56.56 X: 25.76 EL: 32.26

2153 monopulse 2-way phase cal began

2214 monopulse 2-way phase cal ended

2231 monopulse enabled, observe about 0.5 dB improvement in SNR. X-band looks good, much lower SNT.

224338 SNT Ka: 56.0 X: 26.5 EL: 33.7

001158 Station indicate performing work on microwave path. Observed 2dB loss on Ka-band, no noticable loss on X.

002431 Station completed work, Ka-band SNR recovered.

**SUMMARY on data gap:**

X-band data gap #1: 193257 to 193519 (operator error, accidentally disabled X-band recording, Ka-band unaffected)

X-band data gap #2: approx. 2113 to 2130, station reconfigure X-band LNA, routing XRCP signal to wrong output and caused loss of X-band data.

**Log file:**

Ka: RSR2B\_log.294-161442

X: RSR2A\_log.294-161549

Subchannel 1 played back for X and Ka; signal carrier stayed within 1KHz.

DR#: G117565 – high X-band noise in HEMT LNA, switching LNA caused 20 minute of X-band data loss.