

EVN Performance and Reliability

Jay Blanchard

EVN TOG Meeting, St. Petersburg 2016



JIVE

Joint Institute for VLBI
ERIC

EUROPEAN



NETWORK

2016 Session 2 June NME Results

- **N16L2:**

- JB subband 5 LCP (BBC11:Lower) systematically low amplitude.
- EF stopped observations at 13:02 due to a calibration script which overwrote the schedule.
- T6 lost scans 1 and 2, required DBBC reset.
- TR low amplitude in both pols for baseband 8 (BBC 04:Upper and 08:Upper). Poor subband 1 LCP.
- SR missed first two hours due to electrical room upgrade.

- **N16C2:**

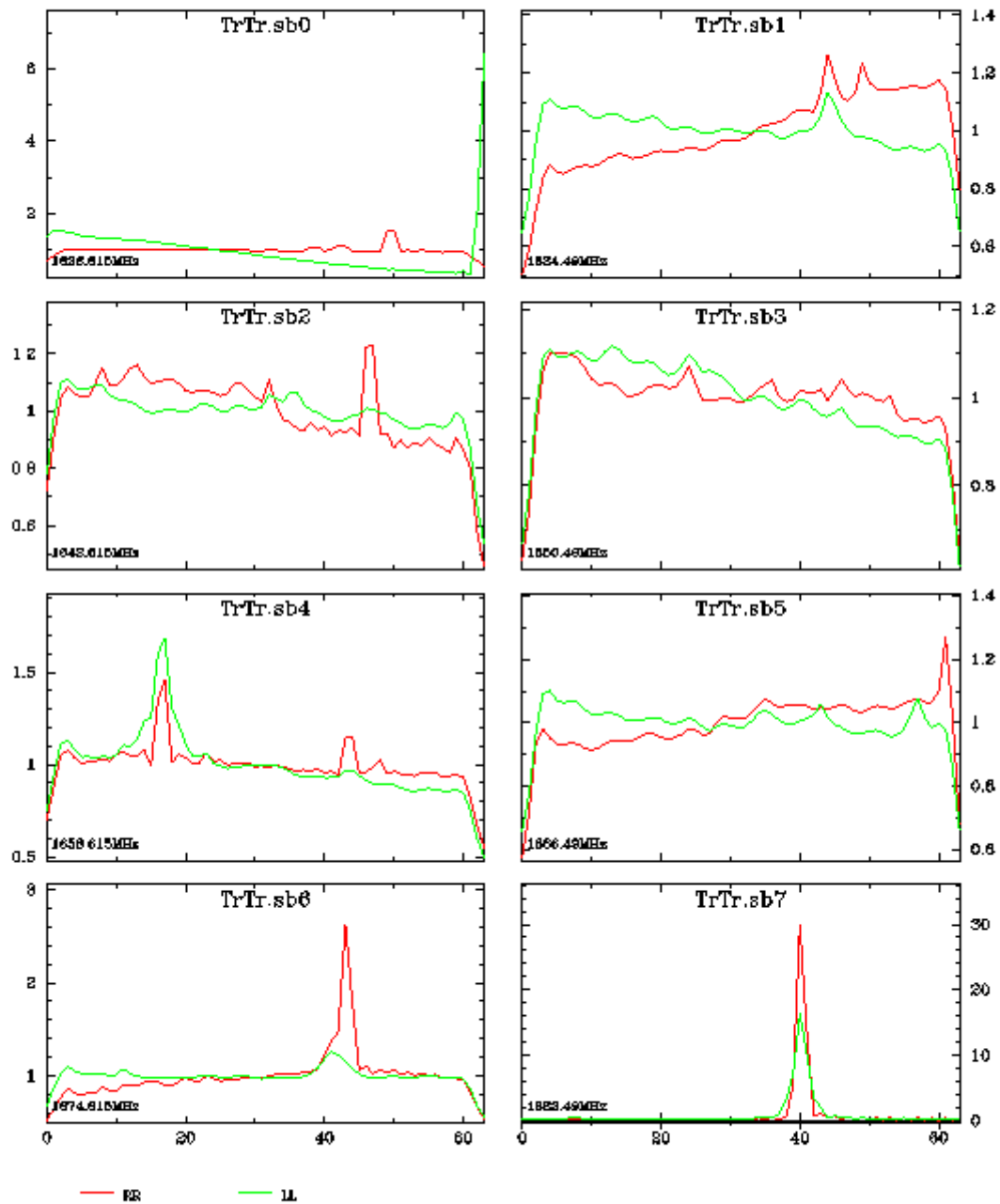
- WB recorder linear polarisations due to broken hybrid.
- NT saw tooth shaped bandpass in LCP.
- TR LCP subband 2 systematically low power
- T6 disks delayed due to customs issue.
- IR crossed pols.
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- **N16M2:**

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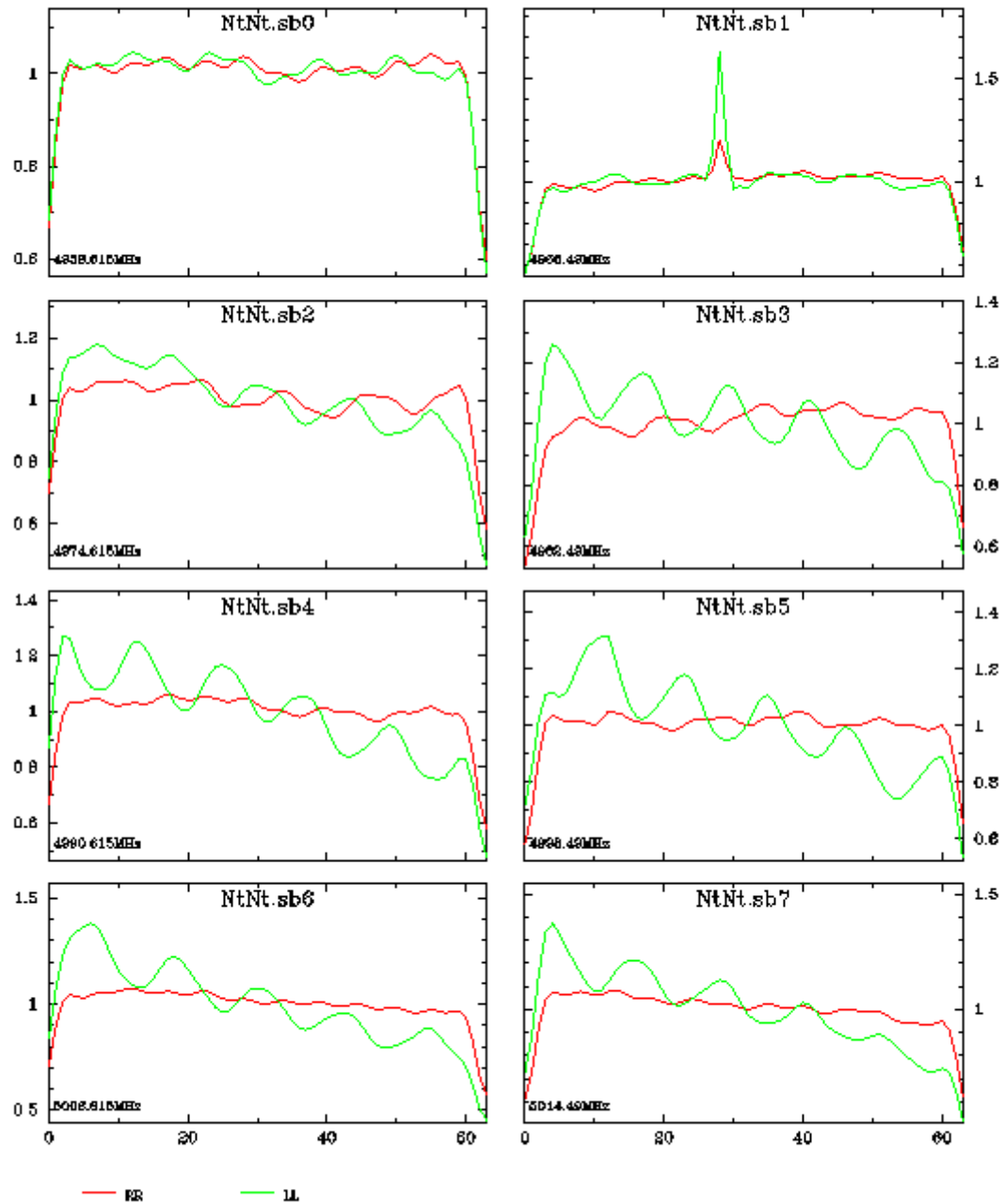
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Amplitude versus channel
Src=J0927+3902
Pol=RR LL RL LR; Nsub=8
Scalar-averaged 30-May-2016/14:57:00->14:58:00; Weight=0.7

N16C2

jops@eee Mon-05-Sep-2016/10:46:
data: n16c2.ms
page:5/11



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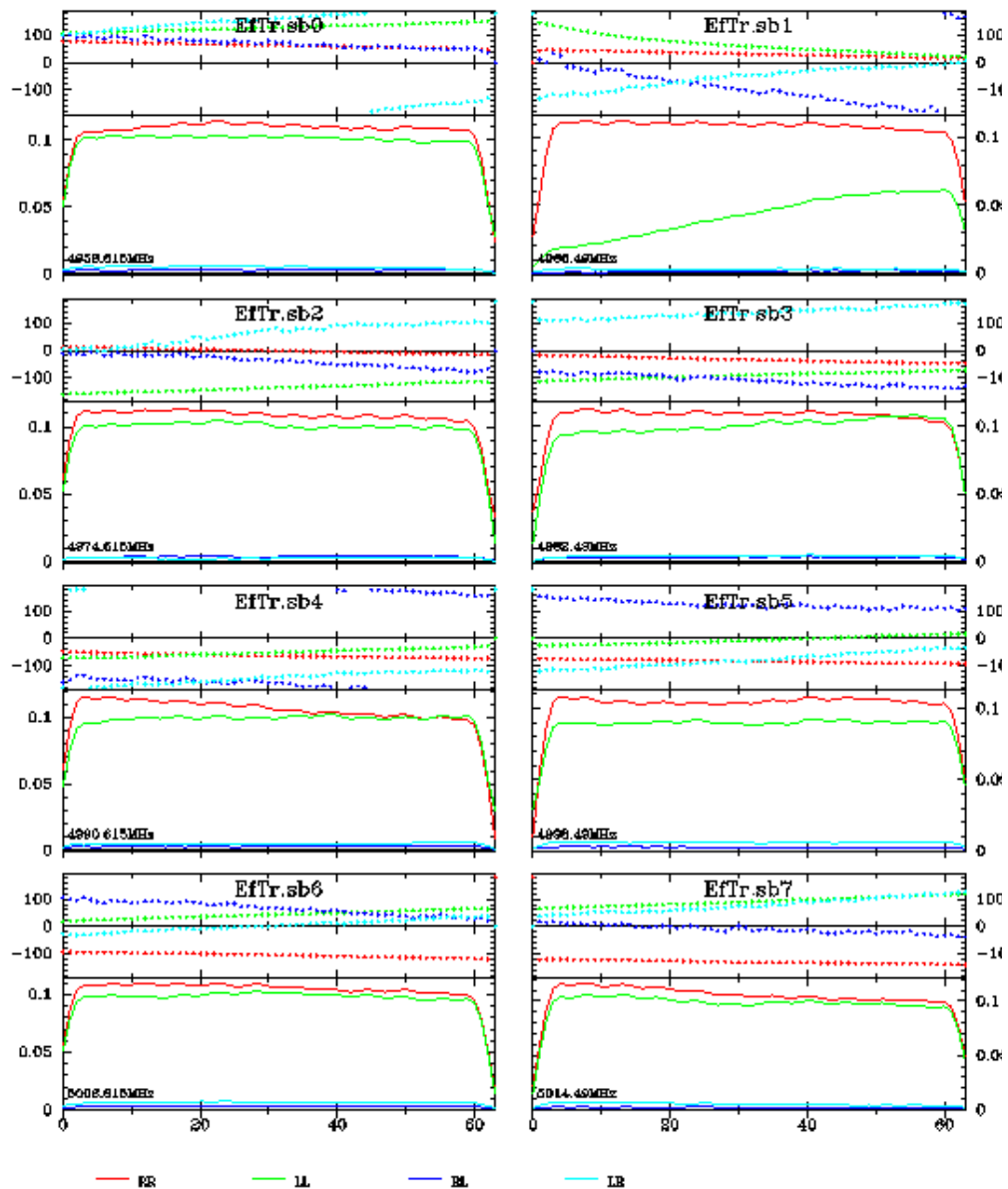
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Amplitude/Phase versus channel
 Src=J0927+3902
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 Vector-averaged 30-May-2016/12:02:00->12:03:00; Weight=0.7

N16C2

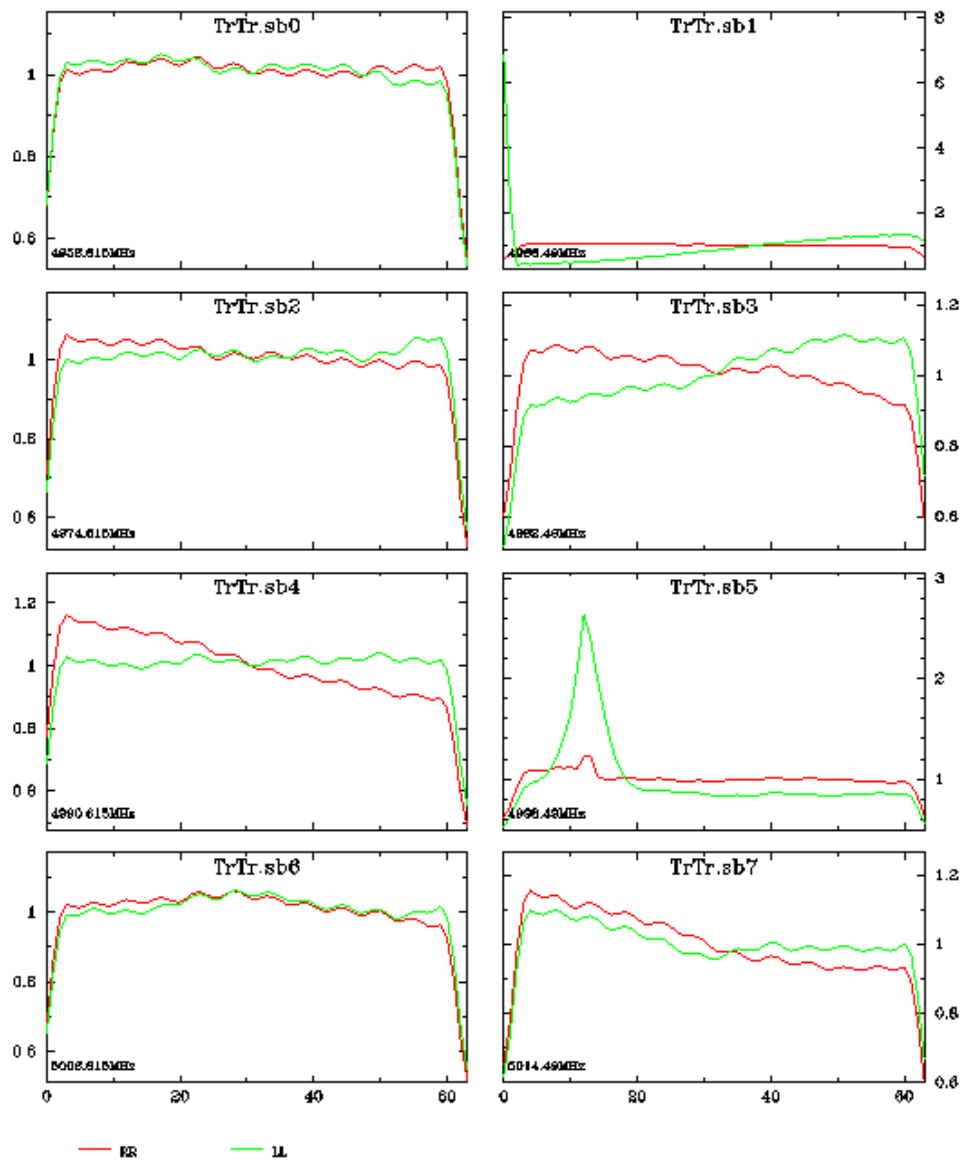
jops@eee Mon-05-Sep-2016/10:44
 data: n16c2.m
 page:7/



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 Src=J0927+3902
 Pol=RR LL RL LR; Nsub=8
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N16C2

jops@eee Mon-05-Sep-2016/10:46:
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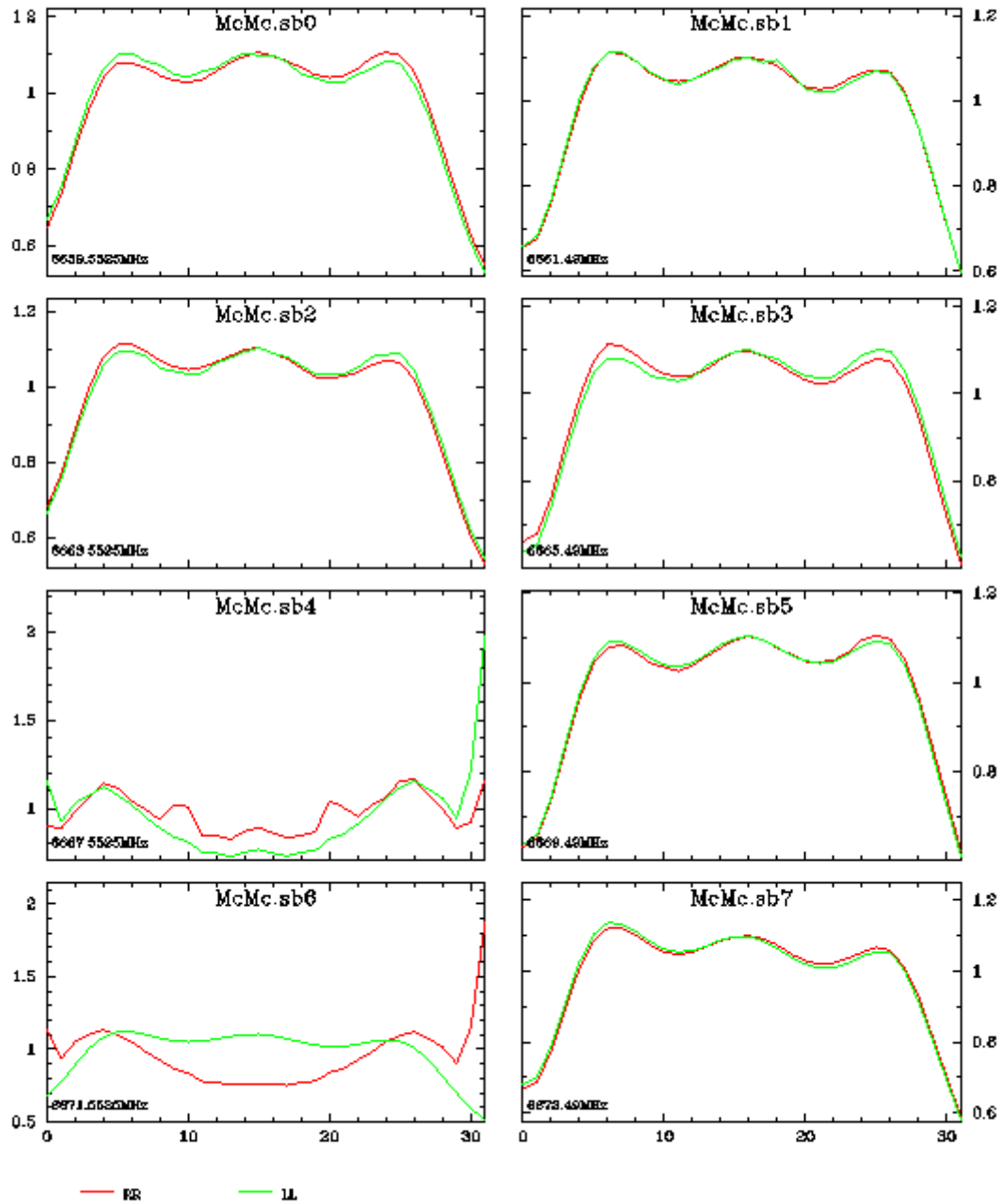
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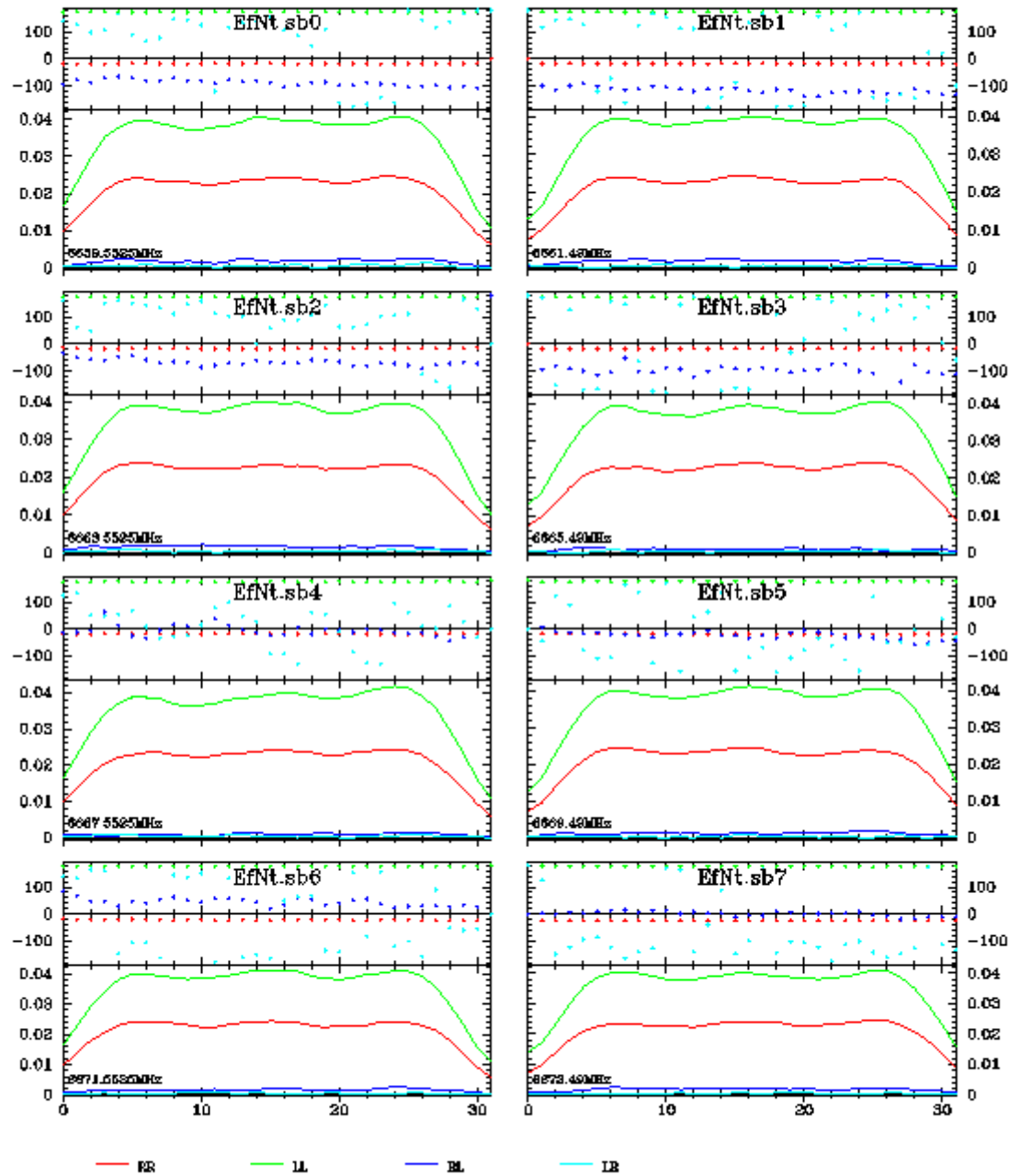
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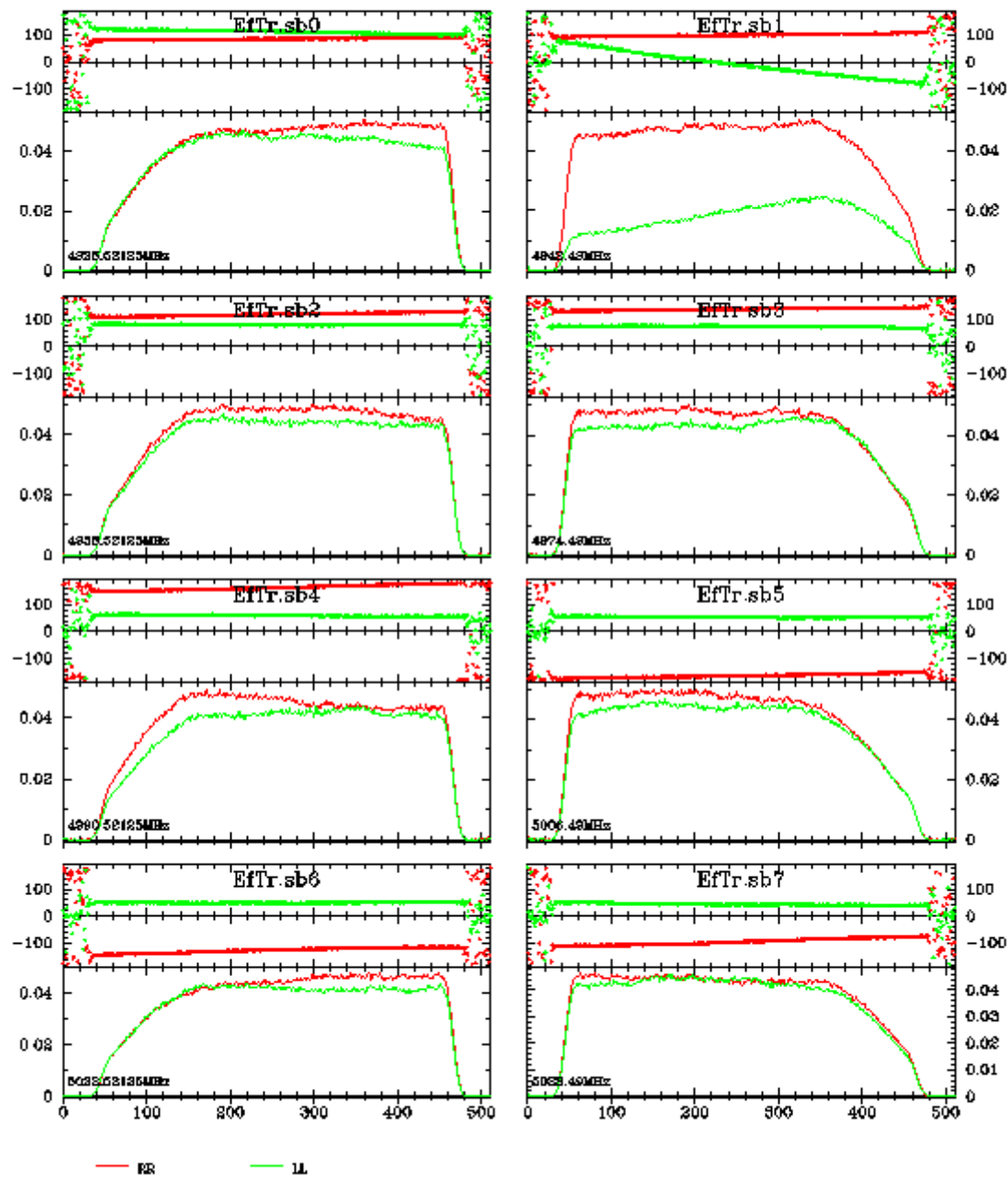
2016 Session 2 June Feedback

- **General:**
 - Noto several times had RCP at half power of LCP.
 - Torun BBC5:Upper had a different delay (phase vs freq) for all experiments this session.
- **6 cm:**
 - Westerbork broken hybrid – no good circular pols.
 - Several telescopes reported FS crashes.
- **1.3 cm:**
 - Urumqi receiver failure.
 - Effelsberg swapped pols.
 - Several telescopes (Hh, Ef, Sr, O8) reported issues with v105E firmware giving bad tsys and bit statistics.



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2016 Session 3 Oct NME Results

- **N16L3:**

- EF stayed on first target source (did not slew to second or third) thus missed the later parts.
- O8 could not participate due to strong winds.
- UR undergoing repairs - did not participate.
- MERLIN: Data recorded for Cm, Kn, De often had reasonable sample stats but no fringes achieved.

- **N16C3:**

- JB appears to have been in the wrong MK5 mode all experiment. Initially in mk5b mode=ext,0x,,16.00 then VDIF 800-512-16-2 then mk5b mode=ext,0x,,32.0.
- UR broken receiver.
- MERLIN no fringes.
- IR time offset when transferring data, forcing manual selection of data 11 seconds from expected. Packet loss?

2016 Session 3 Oct NME Results

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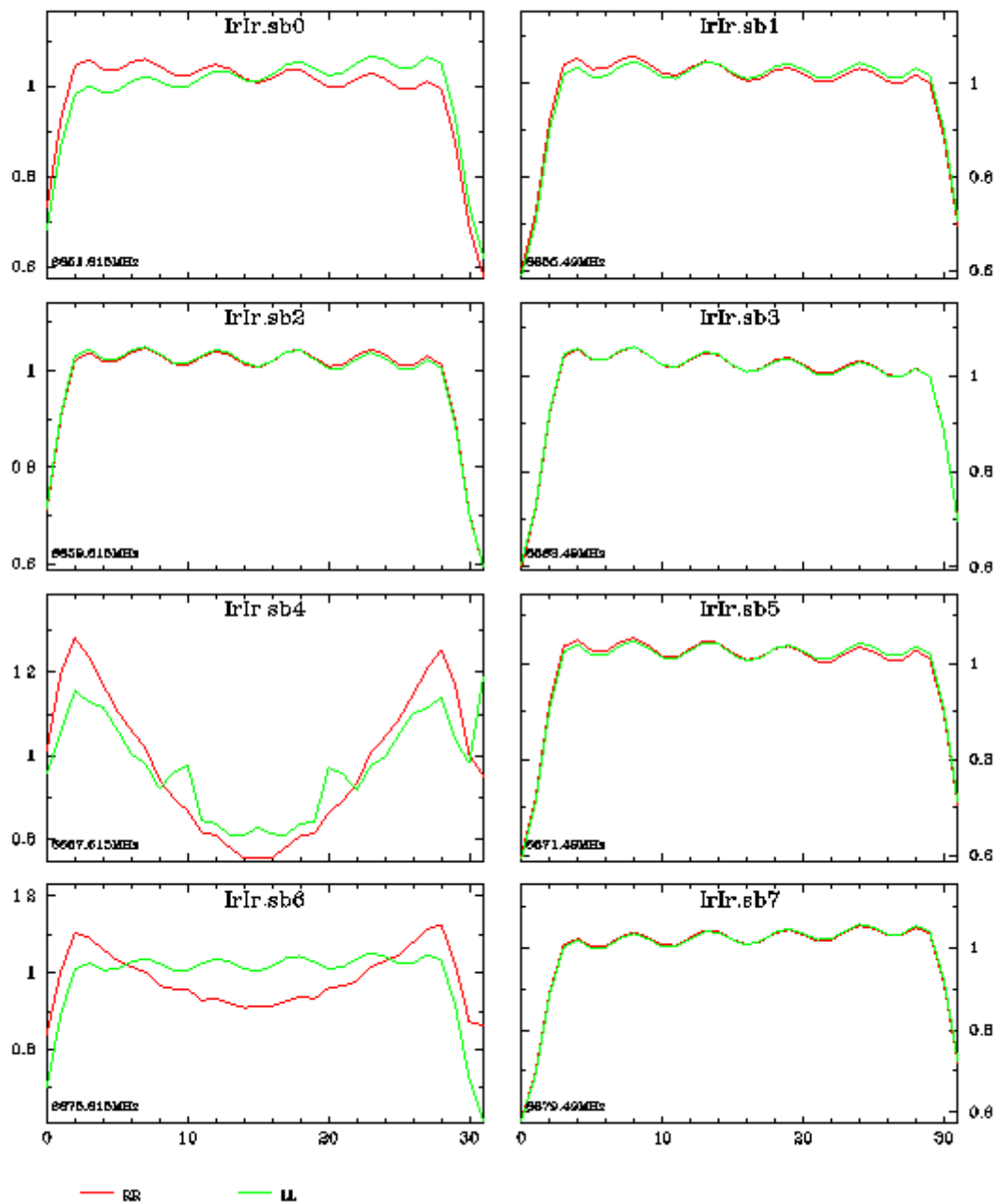
- KM Fringes but only for one scan with high rate → maser problem.
- IR subband 5 shows a dip in the center of the band.
- MERLIN stations no fringes, VDIF looks mangled.

- **N16X1:**

- UR could not observe to to antenna drive motor failure.

- **N16K2:**

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2016 Session 3 Oct Feedback

- General:
 - Whole session after initial two 5 cm observations ran with DBBC firmware v105E.
 - Irbene:
 - Appears to have large packet loss to recorder.
 - The first disk-pack proved unusable.
 - Sub-band 5 (BBC 5,13 LSB) had a dip in the center of the band.
 - Urumqi antenna gear-box maintenance → K – band only.
 - No fringes to MERLIN stations.
 - Kunming (not yet “EVN”) fringes in 6 cm, 5 cm, 3.6 cm NMEs. Maser problem in 5cm NME.

2016 Session 3 Oct Feedback

- 5 cm:
 - Effelsberg had broken amplifier in LCP for NME, fixed by the immediately following C-band session.
- 6 cm:
 - Hartebeesthoek had a warm receiver in ER045A (cryo failure); also HA encoder jumping intermittently (but not a large problem).
 - O8 EP099A left pointing offset in pointing model → weak fringes.
 - Jodrell Bank no fringes in EM121B and EP099A:
 - 1 Gbps observations immediately following 2 Gbps observations.
 - Subsequent 2 and 1 Gbps observations were fine.

2016 Session 3 Oct Feedback

- 6 cm:
 - Noto showed its typical falling-off in amplitude in the upper LCP channels (BBCs 13,15 in DBBC firmware v105E, but this has also occurred the "normal" firmware in which it was BBCs 7,8).
 - Torun had an issue with a pack. Record-pointer went back to zero → 4.5 experiments lost in C and L band.
 - Yebes receiver fault in ER045A (fixed during experiment).
 - Zelenchukskaya had consistently low power in RCP channels throughout, and a warm receiver in EM126A.
 - Robledo used new version of DVP back-end → no fringes in any observation.
 - Correlating single channel against all others showed some in the wrong place, but with 90 degree phase jump and null amplitude in the middle of the band.

2016 Session 3 Oct Feedback

- 18/21 cm:
 - Irbene had an NTP error in EM123B that prevented recording.
 - Jodrell bank fringe ‘walked away’ in jumps of 512 lags every 10-14 seconds.
- 1.3 cm:
 - Noto cryo failure during NME.
 - KVN Yonsei did not participate due to realignment of antenna panels.
 - KVN Tamna had a hexapod failure in EP099B.
- 3.5 cm:
 - Noto had mark5 problems in EP099C.