Network Monitoring Report: **X-band 3.6cm** N23X1

Source: J0237+2848, J0319+4130, J0530+1331
Reference antenna: Effelsberg
Experiment code: N23X1

Length: 180 min.
Date of observations: 28/02/23
Date of report: 28/09/25

Observing mode: 2 Gbps (8x32 MHz), 4 Gbps (16x32 MHz)
Reference date: 59d 12h 00m
by: Gabor Orosz

⊗ According to expectation, no special remarks
■ Problem occured - see enclosed footnote(s)
⬚ Station did not observe (not scheduled)
○ Entry not applicable/investigated

	Wb	Ef	Mc	Nt	O6	T6	Ur	Tr	Ys	Hh	Ib
Station has observed	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Station produced fringes (ftp)	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Station produced fringes (disk)	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Logs are available (within 72 h)	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Antabs on vlbeer (within 7 days)	⊗	⊗	⊗	⊗	⊗	⊗	■	⊗	⊗	⊗	■
Feedback on www (within 7 days)	⊗	⊗	⊗	■	⊗	⊗	■	⊗	⊗	⊗	■
GPS clock estimate gives fringes	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Clock rate in psec/sec	0.09	0.05	−0.02	−0.15	−0.63	0.79	−0.41	0	1.39	0.05	1.00
Recording okay	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗	⊗
Polarization setup okay	⊗	⊗	⊗	⊗	⊗	⊗	■	⊗	⊗	⊗	⊗
Strong signal amplitude	⊗	⊗	⊗	⊗	⊗	⊗	■	⊗	⊗	⊗	⊗
Sampler statistics okay	⊗	■	■	■	⊗	■	⊗	■	⊗	⊗	⊗
Please check BBC number(s):		02/10	01/09	01		all		all			
Previous problem(s) corrected	■							■			
Problem(s) first reported							■	■			
See enclosed footnote(s):	2/a	4/b	c	d	4	e	2/f	g	4		h

Enclosure: Footnotes X-band 3.6cm N23X1

Footnotes to the Network Monitoring Report: **X-band 3.6cm** N23X1

General:
1) The NME included two data rate modes: 2 Gbps (8287–8544 MHz, 8x32 MHz dual pol, scans 1–12) for standard EVN operations, and 4 Gbps (8080–8592 MHz, 16x32 MHz dual pol, scans 13–14) for DBBC3 compatibility testing.
2) Westerbork and Urumqi recorded at 1 Gbps and 2 Gbps, respectively, for the entire NME due to system limitations. (Since then, Urumqi also did a successful 4 Gbps test in 2025 – see fringe test FR067). **3)** Recording at 4 Gbps pushes stations beyond optimal LO frequency ranges, affecting edge channels (attenuation, steep bandpass roll-off).
4) Effelsberg (Ed), Onsala (Od) and Yebes (Yd) conducted DBBC3 tests in parallel with normal recording. Correlated results not included here.

a) Wb, Westerbork: Corrected issue reported in N22X1 (data showing drops in amplitude along time).
b) Ef, Effelsberg: Asymmetric sampler distribution in 2 Gbps mode at 8383.49MHz LSB (BBC 02/10).
c) Mc, Medicina: No fringes (and bad sampler distribution) in 4 Gbps mode at the bottom band edge (BBC 01/09), caused by frequency limitations due to the receiver hardware.
d) Nt, Noto: Missed scans 1–5 completely and 7–8 & 12–13 partially (seen in amplitude dropping to zero mid-scan), due to antenna drive issues. Asymmetric sampler distribution in 2 Gbps mode at 8319.49MHz LSB RCP (BBC 01). No station feedback provided.
e) T6, Tianma: No data recorded for scans 1–2 due to a Flexbuff problem. Elevated invalid rates for recorded bits (2.65% instead of expected <1%), possibly due to flexbuff problems.
f) Ur, Urumqi: Polarizations levels are corrupted with data almost appearing as linearly polarized (receiver is circular). Fringes are also weaker than expected. No fringes at all after scan 6 (first source change). No station feedback provided.
g) Tr, Torun: No fringes in 4 Gbps mode (scans 13-14), reason unknown. Elevated invalid rates for recorded bits in 2 Gbps mode (1.34% instead of expected <1%). Phase instability in time (+/−180° scatter): the interference bands appear every ∼4 minutes (this issue had been a problem from early 2022 in multiple bands, see, e.g N22X1/N22C3/N22L2, and was eventually solved after this session in the spring of 2023).
h) Ib, Irbene 16m: Participated instead of the 32m telescope, which had hardware issues (H-maser problems). No station feedback provided.