

Quasar VLBI network

Stations report for the TOG meeting

2016 February 8-9, Madrid, Spain

Period 2015/10 – 2016/01

1. General Information

Quasar VLBI network is a part of the Institute of Applied Astronomy (IAA) and includes three stations: Badary, Svetloe and Zelenchukskaya. These stations are equipped with a 32-m fully steerable radiotelescopes RT-32 marked as Bd, Sv and Zc respectively. Stations Zelenchukskaya and Badary are also equipped with a 13-m VGOS radiotelescopes marked as Zv and Bv. At present both new RT-13 are under setting and testing works.

During the reporting period in all Quasar stations the standard maintenance work with antennas, servo, receivers and cryogenic systems were carried out. Technical improvements and problems are presented below by topics.

2. EVN session 3/2015

Quasar participated in 19 experiments (Bd – 14, Sv – 19, Zc – 18) at L, X and C-bands. Most of the observations were successful. The some losses were due to problems with antenna (EY023 at Bd), experiment setup (EA055B at BdSvZc – sources below horizon), receivers (ER038 at Sv – only RCP) etc.

3. Out of Session experiments

Additionally the Quasar (only Bd & Zc) supported one out-of session experiment – EG089B.

Furthermore the Quasar participated in 10 experiments (Bd – 7, Sv – 7, Zc – 10) of Doppler tracking of the MEX spacecraft.

4. Antenna

On Bd the antenna alignment was conducted – correction models of azimuth and elevation axes were updated in January 2016.

At Zelenchukskaya the geodetic measurements on RT-32 and local network were conducted in November 2015.

5. Receivers

All RT-32 Quasar radio telescopes are equipped with receivers in the next bands: L, C, S/X and K.

At Bd three cryogenic systems was repaired: 1) one for L-band in October 2015; 2, 3) two for X and S-bands in December 2015. Replacement of K-band one-channel frontend on the new two-channel unit is planned on June-August 2016.

At Zc S-band cryogenic systems was repaired.

6. Backends

From 2012 February the IAA data acquisition systems R1002M is fully functional at all Quasar stations and using in all VLBI observations, including IVS, EVN, RadioAstron and domestic programs.

7. Recording system

The Mark5B+ is the data recording system at all Quasar stations. At May 2014 Mark5B+ software was upgraded to SDK 9.3.

8. H-masers

Since July 2011 the new Active Hydrogen Masers VCH-1003M were put into operation in all stations of the Quasar network. The H-maser VCH-1003M is a modern, high-performance maser with low phase noise option. It uses the latest technologies, including Stand-alone Auto Cavity Tuning (no external reference required), remote IP control, monitoring and self-diagnostics.

Another two Active Hydrogen Masers VCH-1005 (old models) are in reserve in Sv and Zc.

9. Disks

IAA provides 160 TB (20 packs of 8TB) for the EVN disk pool. No new disk packs for reporting period.

10. Field System

Release 9.10.4 is used at all Quasar stations.

11. Personnel

No changes.

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