

**Metsähovi station report Q1/2017**  
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### **1) Receiver status**

All Metsähovi's VLBI-receivers (2/8, 22, 43 and 86 GHz) are working fine. We had some temperature stability problems with the 3 mm-receiver, but they are mostly solved now.

### **2) DBBC status**

The traditional DDC mode is working quite reliable in every session. However the PFB-mode (Poly-phase Filter Bank) has been proved to be very unstable. The power readings were occasionally underflow/overflow states in the middle of recording. We have not found solution and/reason for this problem. In addition we have a preliminary plan to update our dBBC to standard setup (four IF inputs). Currently, we only have two IF inputs. This modification hopefully enables also full band (512 MHz) recordings.

### **3) Mark5B+ and other recording systems**

No special notices about recording systems. Both recorders Mark5B+ and Flexbuff have been used successfully both in EVN and GMVA sessions, and both can be used in following EVN-session. Local Flexbuff is available with the space capacity of 93.67 TB.

### **4) Software versions**

We have installed FS 9.11.19, SDK 9.4 and jive5ab 2.7.1 (Mark5B+) and 2.8.0 (Flexbuff). We are using DBBC firmware versions DDC v 105\_1 and DDC v 105E\_1 and PFB version v 16. In addition FILA10G version v3.3.2\_1 is in use.

### **5) EVN sessions in 2016 (Q2)-2017 (Q1)**

Metsähovi Radio Observatory (Aalto University) participated in following EVN-sessions with this period of time (Q2/2016 – Q1/2017):

- 2016: Session 3 – part 4 – K-band
- 2017: Session 1 – part 4 and part 5 – K- and Q-bands

In addition Metsähovi Radio Observatory (MRO) participated in following EVN-Target-of-Opportunity-sessions (ToO):

- 2016: Between Sessions 2-3 – K-band
- 2016: Session 3 – K-band
- 2017: In/around Session 1 – K-band

MRO also participated in two GMVA sessions.

### **6) Other issues**

- Phase coherence tests will be done before every session. Also signal chain will be tested using software tools from mark5access libraries.
- Metsähovi has not produced any antenna beam shapes to JIVE at K- and Q-bands.
- Continuous calibration (80 Hz) is implemented into 22 GHz-VLBI receiver but not yet tested during

the real observations.

- Some antenna mechanics were replaced in spring 2017 (e.g. one elevation motor).