

# **Noto Station: Report on the Geodetic Activity**

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## **Abstract**

The most important improvements at the Noto station are presented and a status is shown about developments and future plans.

## **1. Update Program at the Noto VLBI Station**

### **1.1. Efficiency Optimisation and Reliability**

The active surface of the Noto antenna has been completed in the end of January 2002. Measurements at 32 GHz and 43 GHz show an efficiency of about 50% is achievable in the entire elevation range.

A new driving system has been installed in the second half of 2002. Such system includes the entire chain of Antenna Control Unit, driving electronics, brushless motors, and encoders. It is entirely based on digital technology, and a great improvement in reliability is expected. The system suffered by some firmware problems that still need to be fixed by the producer.

A new version of the antenna drive software is under development. This will run in the Field System PC and will benefit by the possibility to command the new ACU with time flagged positions.

Considering the numerous improvements the station is going to introduce, a great deal will be given to achieve unattended observations, giving particular importance to preventive maintenance and pre-observation checks.

### **1.2. SXL Receiver and Microwave Technology**

The L and S/X band feeds have been delivered and tested, and the dewar construction has been completed. Both feeds are cooled, together with the front-end LNAs. This new receiver for geodesy observations should have been operational in the summer 2002, but due to the unusual complexity of the vacuum system, it is suffering by a further delay.

The construction of L band amplifiers has been completed and it was the first example of bonded amplifiers built in Noto. LNAs in S band are under construction. Other LNAs are in development at the frequency of 5, 6, 8, 43 GHz.

### **1.3. Acquisition Terminal and Digital Technology**

The Mark 5P recorder has been installed and used for testing purposes; at present the system is going to be upgraded with 'A' version.

A digital base-band converter prototype with narrow band channels has been realized and used for radar VLBI observations. A more extensive project is under development.

## 2. Geodetic Experiments in Noto during 2002

During 2002 the Noto radiotelescope participated only in few geodetic experiments, due to the upgrade activity: VLBA32 (06 MAR), IVS-T2003 (12 MAR), EUROPE-63 (16 MAR), IVS-T2004 (09 APR), EUROPE-64 (18 JUN), IVS-T2008 (06 AUG).

In 2003 the station is expected to be fully operational; the unattended observation mode will be tested, that could allow to extend observations time during week-end, providing personnel presence only for tapes or disks change.