

# Noto Station Status Report

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## Abstract

The observing activity in Noto is again fully operational after a serious failure in the antenna drive system. Fringes have been found in all the testing experiments, proving the normal status. This brief report summarizes the main activities in 2006.

## 1. Activity Plan

An organization chart was established with a new structure of the Noto Section personnel. It includes a revised organization in all the activities including operations, logistics and ordinary maintenance, in particular operations like the introduction of new receivers, the renewing of the antenna driving software, the implementation of new software dedicated to single dish measurements. As soon as funds will be available the remaking of the grout and azimuth rail will be realized. Better performance is expected in terms of tracking and pointing precision.

## 2. Receivers and Microwave Technology

The new SX receiver has not been installed yet and a revision is considered in order to decrease the weight and to simplify the operations of receiver changes in the primary focus of the antenna. A further variation could come from the digitization of the received bands with the sampling stage realized in the receiver area. This digital receiver would produce a digital stream to be transferred through optical fibres to the backend. The date of installation is not yet decided.

## 3. Acquisition Terminal and Digital Technology

A large number of disk packs was acquired in 2006 with a total amount of 100 TB for both astronomy and geodesy. The Mark 5B interface to upgrade the recorder from the Mark 5A is available and it will be installed as soon as this will be supported on the correlation side.

The DBBC (digital baseband converter) development group was fully operative and complete units have been produced. Three units are under construction for the geodetic stations of Wettzell, Tigo and O'Higgins. Using this digital backend, tuning configurations are possible, allowing for multi-channel solutions the geodetic community is poised to use. At present, the main functionality of a 64 channel system is ready to be used for testing in the radiotelescopes, and observations have been regularly performed between Noto and Medicina. A small hardware version has been used in the so-called 'EVN Aspiring Stations' (Evpatoria in Ukraine and Irbene in Latvia) for testing the antenna and VLBI equipment performance. The Field System support to the DBBC is simplified by commands already defined in FS style. A complete EVN-PC has been kindly sent to Noto by the Metsahovi group for testing functionalities with the VSI interfaces. The maximum DBBC data rate with 2 VSI connectors is 4.096 Gbps for up to 64 tunable channels of 32-16-8-4-2-1-0.5 MHz bandwidth. For bandwidths of 64, 128, 256, 512 MHz, the maximum data rate is 8.192 Gbps. Four input analog bands are in the range 1-512, 512-1024, 1024-1536, 1536-2048 MHz. An upgraded

version of DBBC is under development that will feature additional input bands up to 3.5 GHz and a bidirectional 10 Gbps connection.

#### **4. Geodetic Experiments in Noto during 2006**

In 2006 the Noto radiotelescope participated in the following scheduled geodetic experiments: EUROPE-85, T2049, EUROPE-86, CRF44, EUROPE-87, EUROPE-88, CRF46, EUROPE-89, and EUROPE-90.