

# IENG: A New IGS Station in Italy

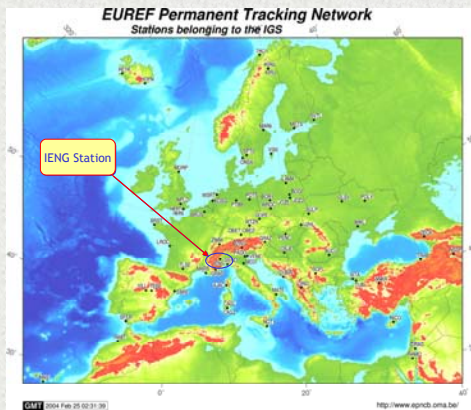
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The Istituto Elettrotecnico Nazionale (IEN) "Galileo Ferraris" (Torino, Italy) is glad to announce a new IGS station designated IENG (please refer to Message Number 4853 of IGS Mail, on February 24<sup>th</sup>, 2004).

This station, located in Torino (Italy) and operated by the Time, Frequency and Electromagnetic Metrology Department of IEN, has been also included in the EUREF Permanent Network (EPN) since February 1st, 2004 (please refer to Message Number 1907 of EUREF Mail, on January 27<sup>th</sup>, 2004).

The IENG station is providing both daily and hourly data which are available at the BKG IGS regional data centre (BKGI) and at the ASI EPN local data centre, as well as at all IGS Global Data Centers.



## IENG Site Technical Information

IENG is based on an ASHTECH Z-XIIT "Metronome" receiver (IGS code: ASHTECH Z-XI13T) with a Dorne Margolin chokering antenna (IGS code: ASH701945C\_M) without radome.

The pillar on which is mounted the antenna is located on a solid concrete building. The antenna support is fixed on an external wall of the highest part of the building, close to the top. The antenna and its chokering are located at about 25m from the ground level.



The external reference signals (20 MHz and 1pps) for the receiver are both supplied by the UTC(IEN) realization of UTC, being UTC(IEN) the Italian time scale generated by a frequency steered commercial Cesium standard.

The complete site log for IENG can be retrieved from the Central Bureau of IGS and EPN

<ftp://igscb.jpl.nasa.gov/igscb/station/log>  
<ftp://ftp.epncb.oma.be/pub/station/log>

as well as through the web pages dedicated to the site

<http://igscb.jpl.nasa.gov/network/site/ieng.html>  
[http://www.epncb.oma.be/\\_trackingnetwork/info/IENG.html](http://www.epncb.oma.be/_trackingnetwork/info/IENG.html)

## Analysis Centres for IENG Data

- In the frame of EUREF Permanent Network:
  - ROB (Royal Observatory of Belgium)
  - IGE (Instituto Geográfico Nacional de España)
  - BEK (Bayerische Kommission fuer die Internationale Erdmessung, Germany)
  - SGO (FOMI Satellite Geodetic Observatory, Hungary)
  - UPA (University of Padova, Italy)
- In the frame of IGS:
  - CODE (Center for Orbit Determination in Europe, AIUB Berne, Switzerland)
  - NRCan (Natural Resources Canada, Canada)
  - MIT (Massachusetts Institute of Technology, USA)

## First IGS Products Available for IENG

Since GPS Week n. 1258 (February 15<sup>th</sup>, 2004), the IENG data are included in the IGS Rapid Combined Clock products (<https://goby.nrl.navy.mil/IGS/rct/>), where combined clock estimates are referenced to the new Rapid IGS Timescale (IGRT).



## The Istituto Elettrotecnico Nazionale "Galileo Ferraris"

The Istituto Elettrotecnico Nazionale (IEN) "Galileo Ferraris" of Torino (Italy) is a public research institution operating under the responsibility of the Italian Ministry for Education, University and Research.

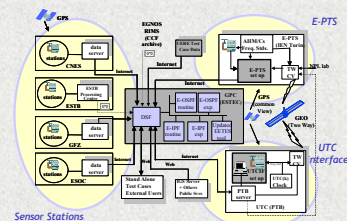
The Time, Frequency and Electromagnetic Metrology Department of IEN is in charge of the generation and the dissemination of the national atomic scale, namely UTC(IEN). The UTC(IEN) time scale is generated by a frequency steered commercial Cesium standards and is compared on regular basis versus both UTC and the other international time scales using both GPS CV (Common View) and TWSTFT (Two Way Satellite Time and Frequency Transfer) techniques.

A Cesium fountain atomic frequency standard is also operative at IEN and some comparisons with other similar devices are in progress. In addition, two H-maser (hydrogen maser) are now available for both future UTC(IEN) time scale and final operation of the Cesium fountain.

## The Contribution of IEN in Galileo System Test Bed (GSTB)

The IEN Time and Frequency laboratory is currently deeply involved in the Galileo System Test Bed V1 (GSTB V1), the first experimental phase of the Galileo project supported by the European Space Agency.

The main objective of GSTB V1 is to conduct experiments to provide feedback to the definition of critical algorithms in the Galileo Design and Development Phase, building up a collaboration between IGS, UTC time community, EGNOS and other communities.



In this frame, a second geodetic receiver (not currently an IGS site), a Javad (JNS) Legacy with timing option, is also operated by IEN as part of the Experimental Precise Timing Station (E-PTS) of the GSTB V1, implemented at IEN in collaboration with Alenia Spazio (Roma, Italy).

The Javad receiver is fed by the Experimental Galileo System Time (E-GST) - that is, a prototype of the future Galileo time scale - with the aim to support the GSTB V1 experimental activity planned for 2004/2005.

## Acknowledgments

The Istituto Elettrotecnico Nazionale "Galileo Ferraris" is grateful to all the people in Central Bureau of both IGS and EPN for the help to join their tracking networks.

Special thanks to Ken Senior and Jim Ray for the kind support and for friendly advices provided us to meet the IGS community.