

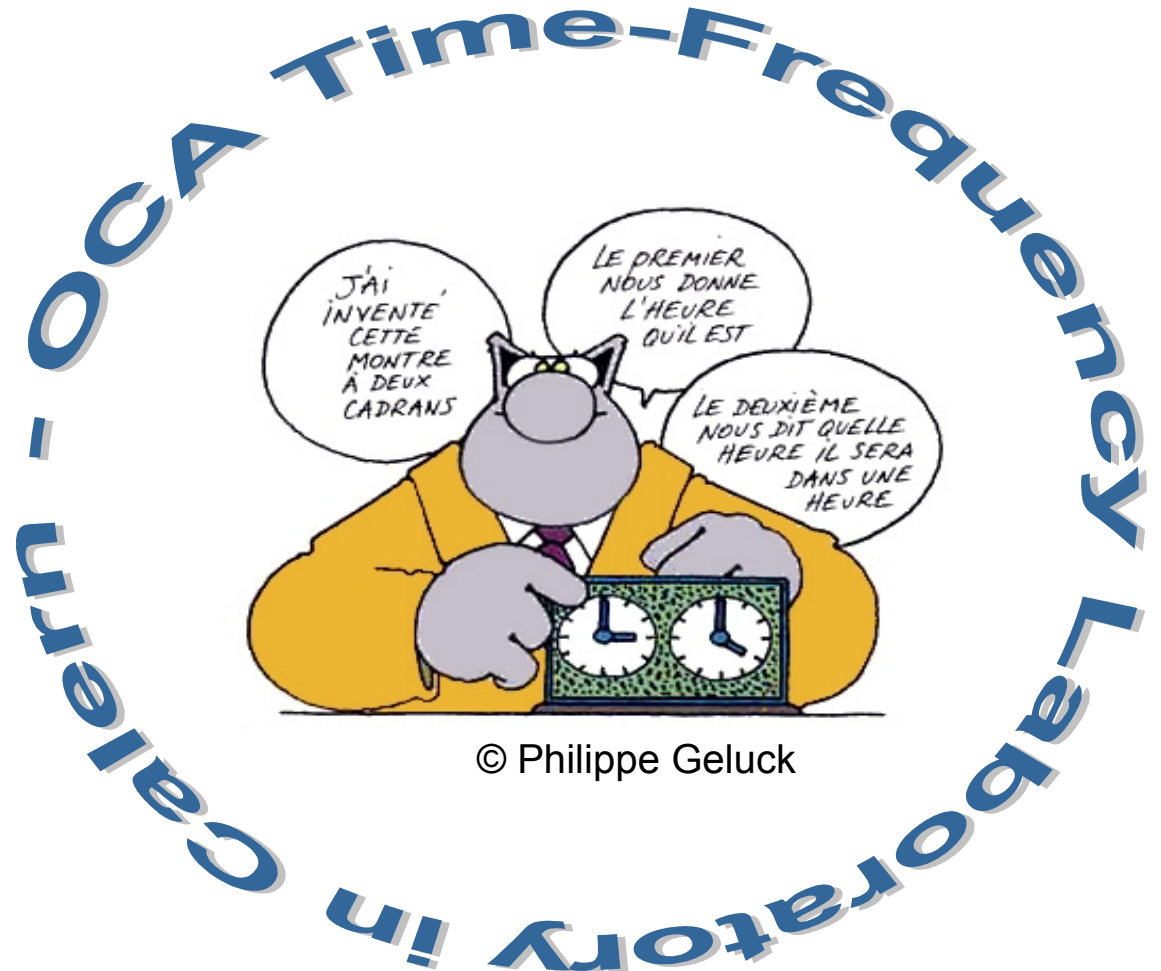


TERRE - OCÉAN - ESPACE  
Observatoire de la Côte d'Azur - OCA  
<http://geoazur.oca.eu>



Observatoire  
de la CÔTE d'AZUR

# OCA TF laboratory report



## TF materials

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- 2 primary cesium atomic clocks HP 5071A
- 2 hydrogen masers
- 2 ultra stable event timer STX
- 4 GPS receiver: 1NBS-TTR5 (single canal), 1 Motorola-TTS2 (multicanal), 2 Dicom GTR 50 : data send to SYRTE in the context of participation in TA(F)
- 1 fixed laser clock link : MeO 1.54m (Telemetry, T2L2, coherent link)
- 1 mobile laser clock link : FTLRS (Telemetry, T2L2)
- 1 system of 2 way time transfer TWSTFT
- 4 intervalometres SR620, amplis, multiplexeurs , batteries, generator ...



# TWSTFT OCA station

Antenna : VSAT Andrew 1.8M KU TX/RX G/T ESA serial

Transmitter receiver:

Anacom OCA: 4SEKu 31277, RxChan=1-1801 (10950-12750 MHz), TxChan=-250-501 (13750-14500 MHz), Serial=065614, option : 10MHz Ref Out + 10 MHz Ref In

Anacom LNC 80K: P/N 30784, S/N: 73456 / 065614, option: RF Output (L-Band)



## **TWSTFT OCA station**

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**Major technical mission by OP in April 2010.**

- **Replacement of the Anacom transceiver,**
- **Daily operational comparison OCA-OP/IT/ROA/NPL/PTB by TWSTFT** in the ITU format and with daily monitoring of Transceiver behavior in received power and in signal to noise ratio.

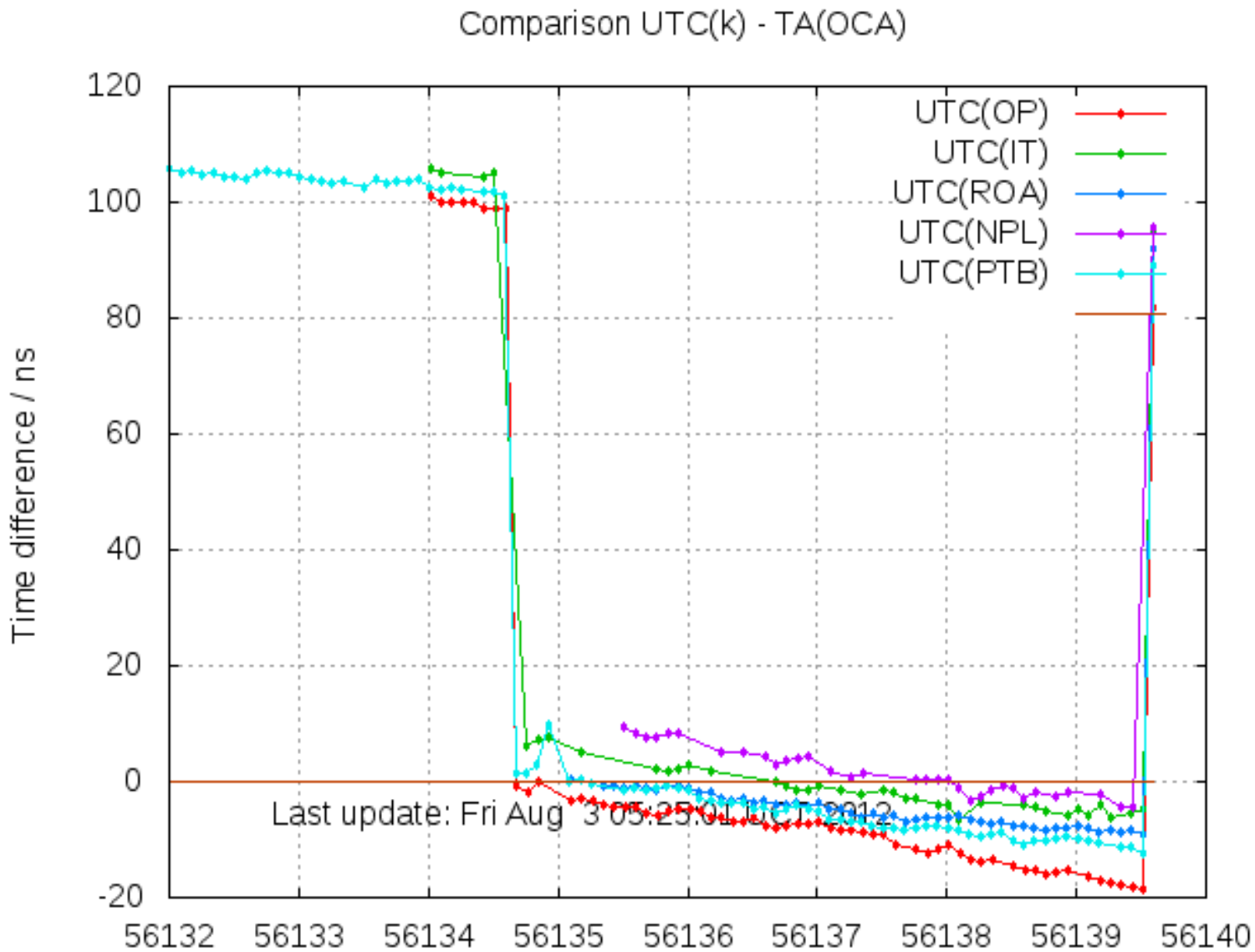
**Important works** have been done, between **OCA and OP**, to accurately **compare T2L2 with microwave time transfer GPS and TWSTFT :**

- **Dedicated campaign with atomic fountain, GPS, TWSTFT and T2L2 in 2010.** The OCA laser station FTLRS was installed at OP. The OP mobile atomic fountain (FOM) was installed at OCA. At OP, FTLRS, the atomic fountain and the Microwave time transfer systems (GPS and TWSTFT) were connected to the same H-Maser. At OCA, MeO, the mobile atomic fountain and the time transfer systems were also connected to a common H-Maser. Both OP and OCA have been calibrated with the same T2L2 calibration station.

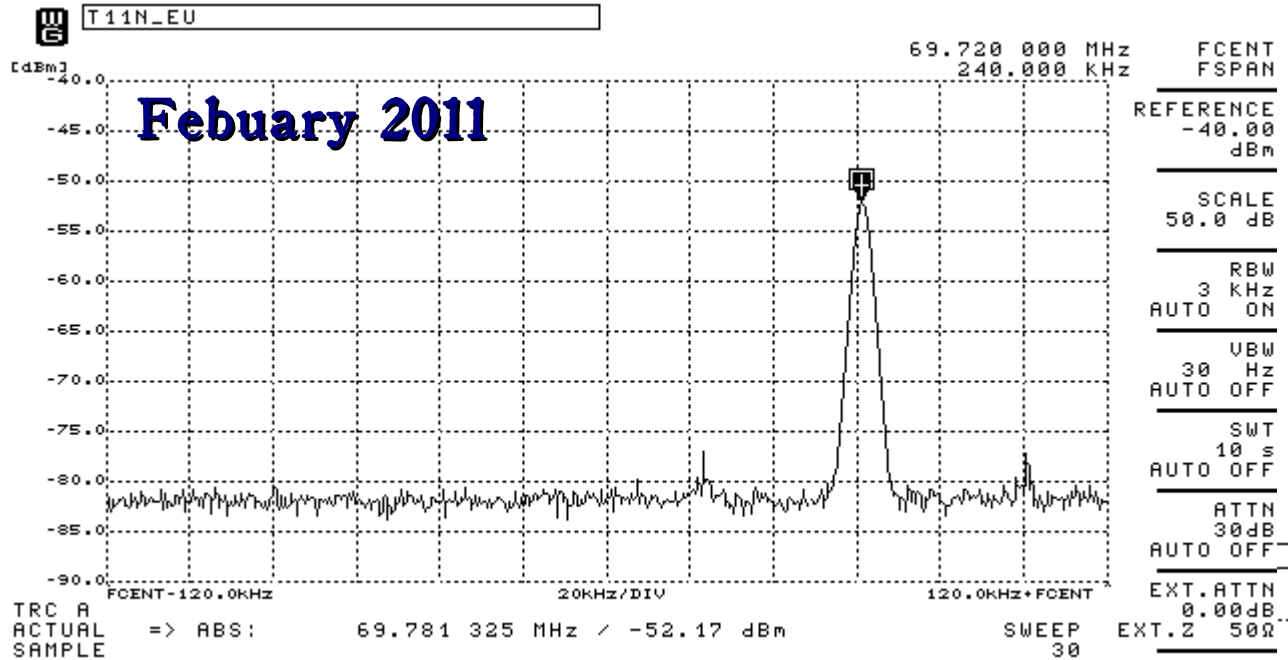
We saw strong daily oscillations of TW but a good long term stability.

- **New objectives and work in the next two years** have been settled.

# TWSTFT OCA station – automated daily comparison

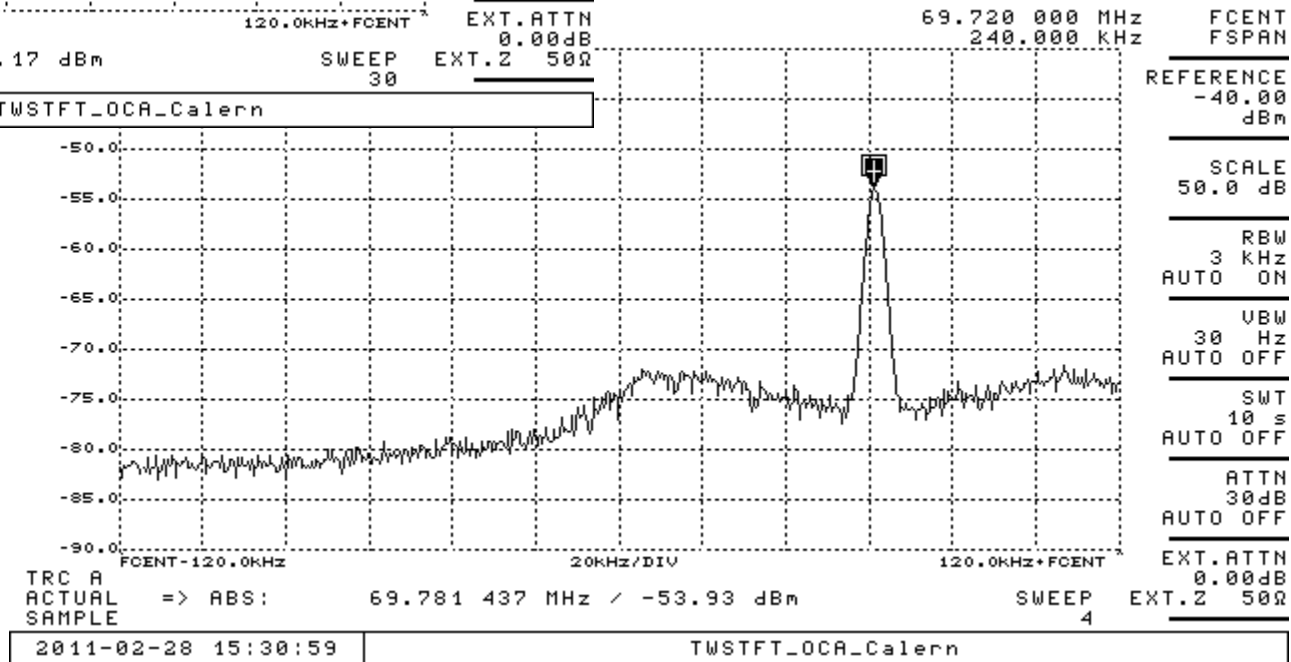


# TWSTFT OCA station – Hmaser 50HZ trouble ?

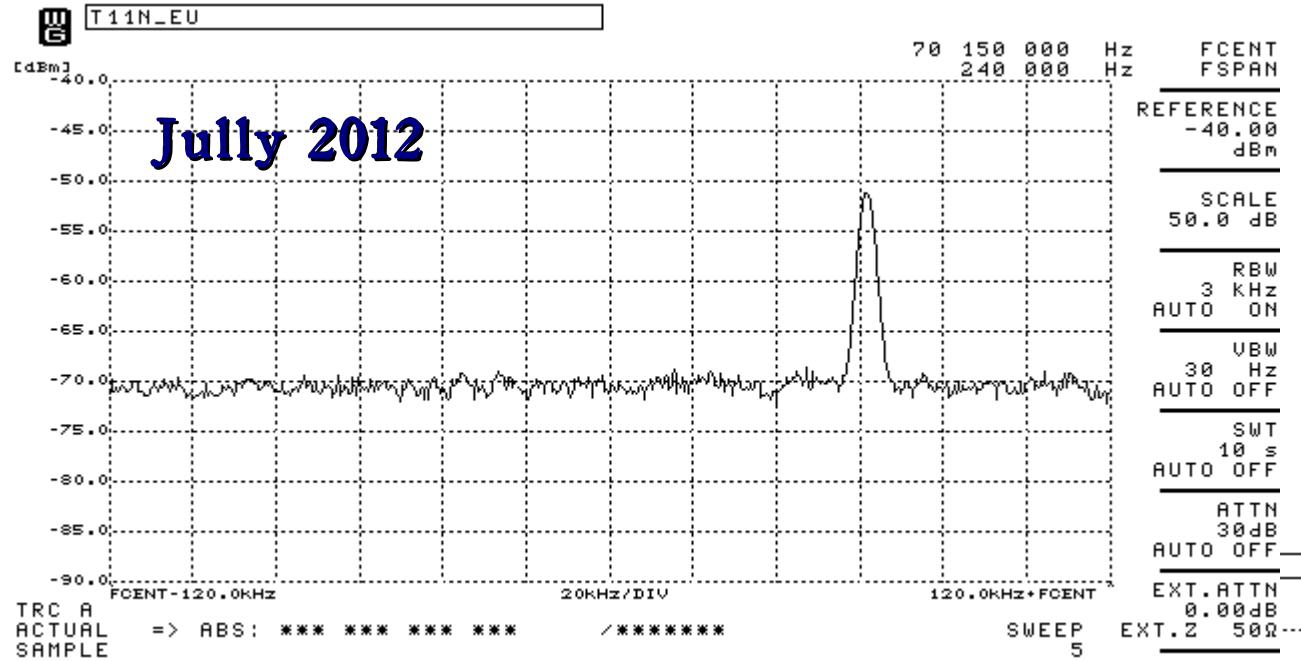


Spectrum of the clean carrier with **caesium Primary** as Anacom reference

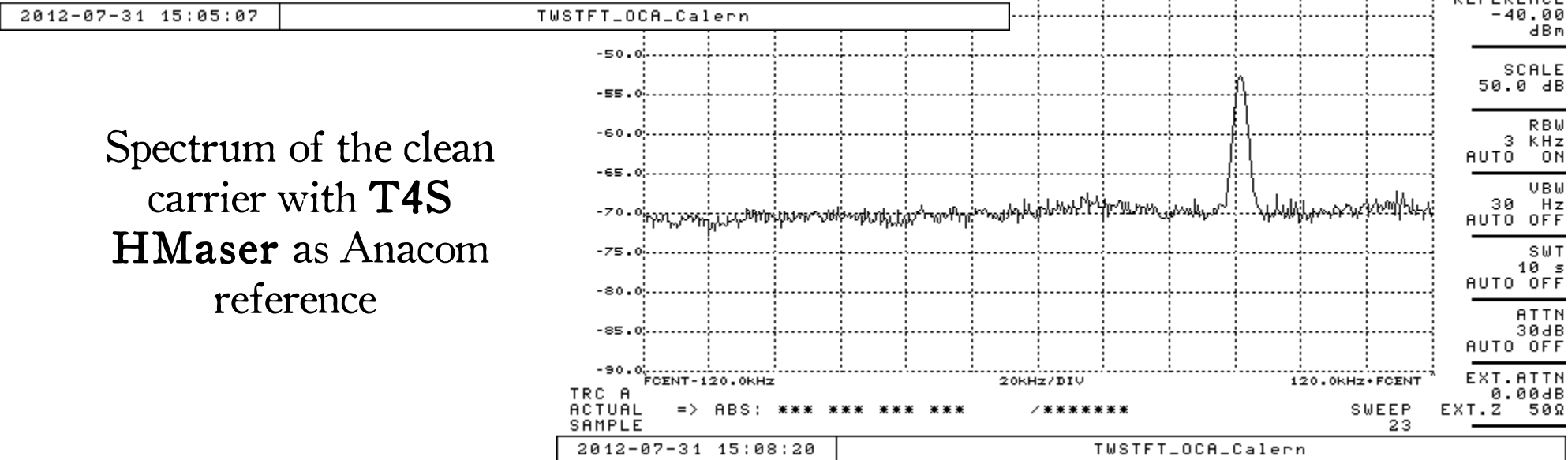
Spectrum of the clean carrier with **T4S HMaser** as Anacom reference



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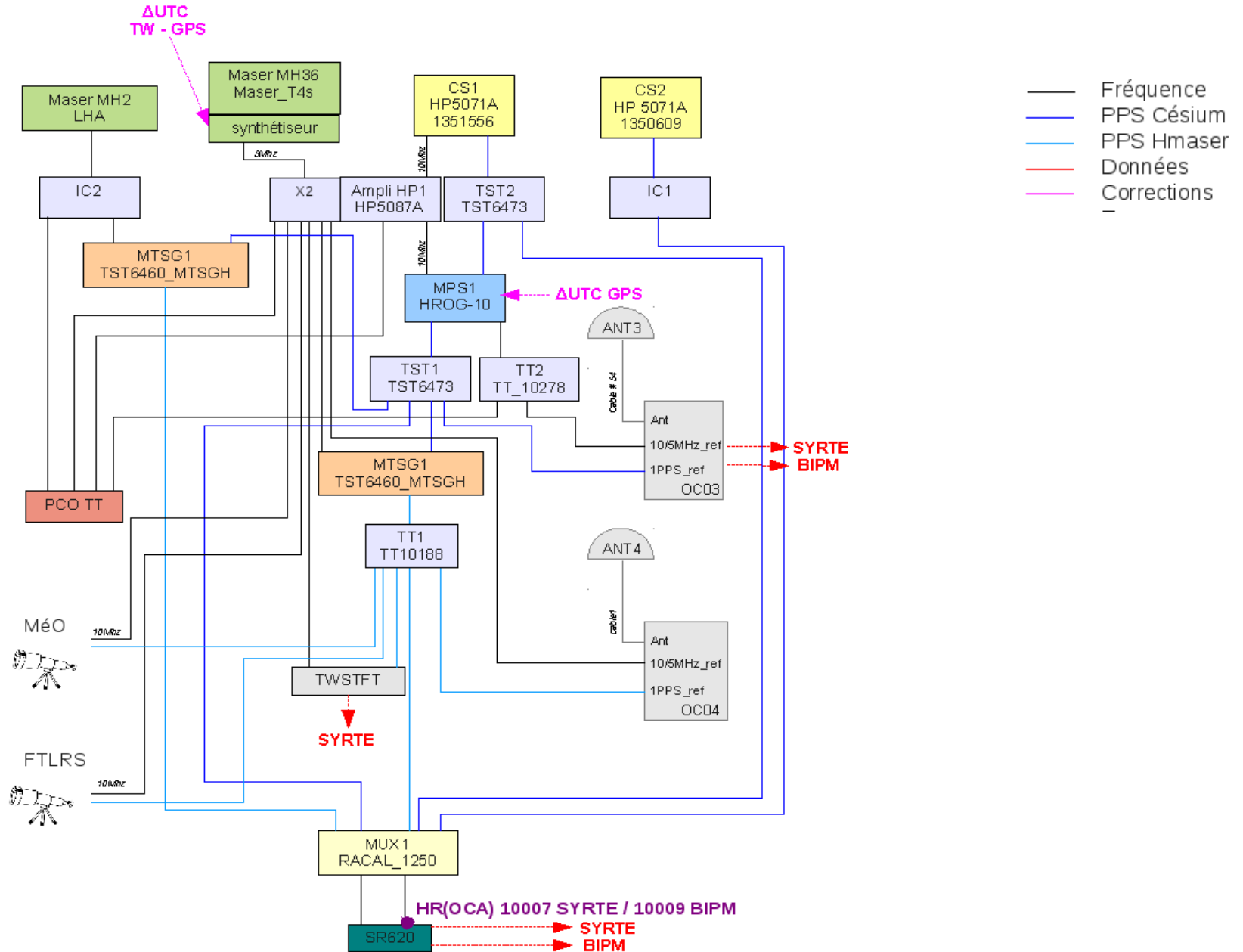


Spectrum of the clean carrier with **caesium Primary** as Anacom reference



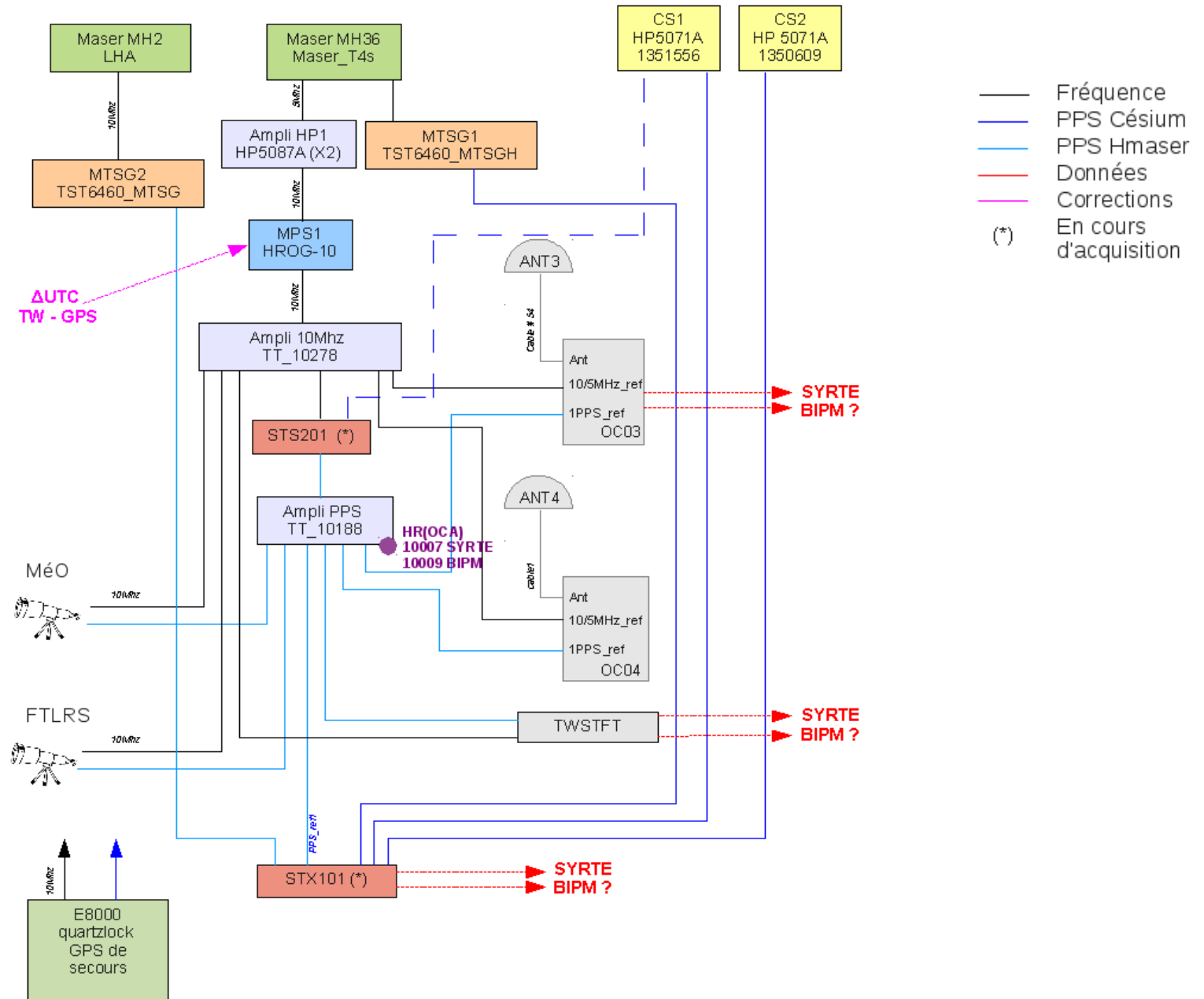
Spectrum of the clean carrier with **T4S HMaser** as Anacom reference

# TWSTFT OCA station in the current lab configuration





# TWSTFT OCA station in the new lab configuration



## **TWSTFT OCA station - conclusion**

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- ✗ TWSTFT new lab configuration → use of daily measurements for local atomic scale.
- ✗ New tests for the 50Hz troubles → by the end of 2012.
- ✗ New technical mission to finalise configuration/use.
- ✗ Station calibration in view of T2L2 OP-OCA comparisons.