# LNE-SYRTE progress report

*by*

Joseph ACHKAR & Daniele ROVERA

**16th meeting of the CCTF WG on TWSTFT**

***SP Boras 2-3 October 2008***

LNE
Le progrès, une passion à partager

l'Observatoire de Paris SYRTE
Systèmes de Référence Temps-Espace

# TWSTFT at LNE-SYRTE


- (Two) 2.4 m Ku band VSAT installed (OP01 & OP02)
- OP01 fixed and equipped with a satellite simulator
- OP02 motorized (Az, El, Po) and can be easily moved from Asia network to Europe/USA networks (and vice versa);
*this is particularly useful during the change of the satellite. It has been fully used in January 2008*

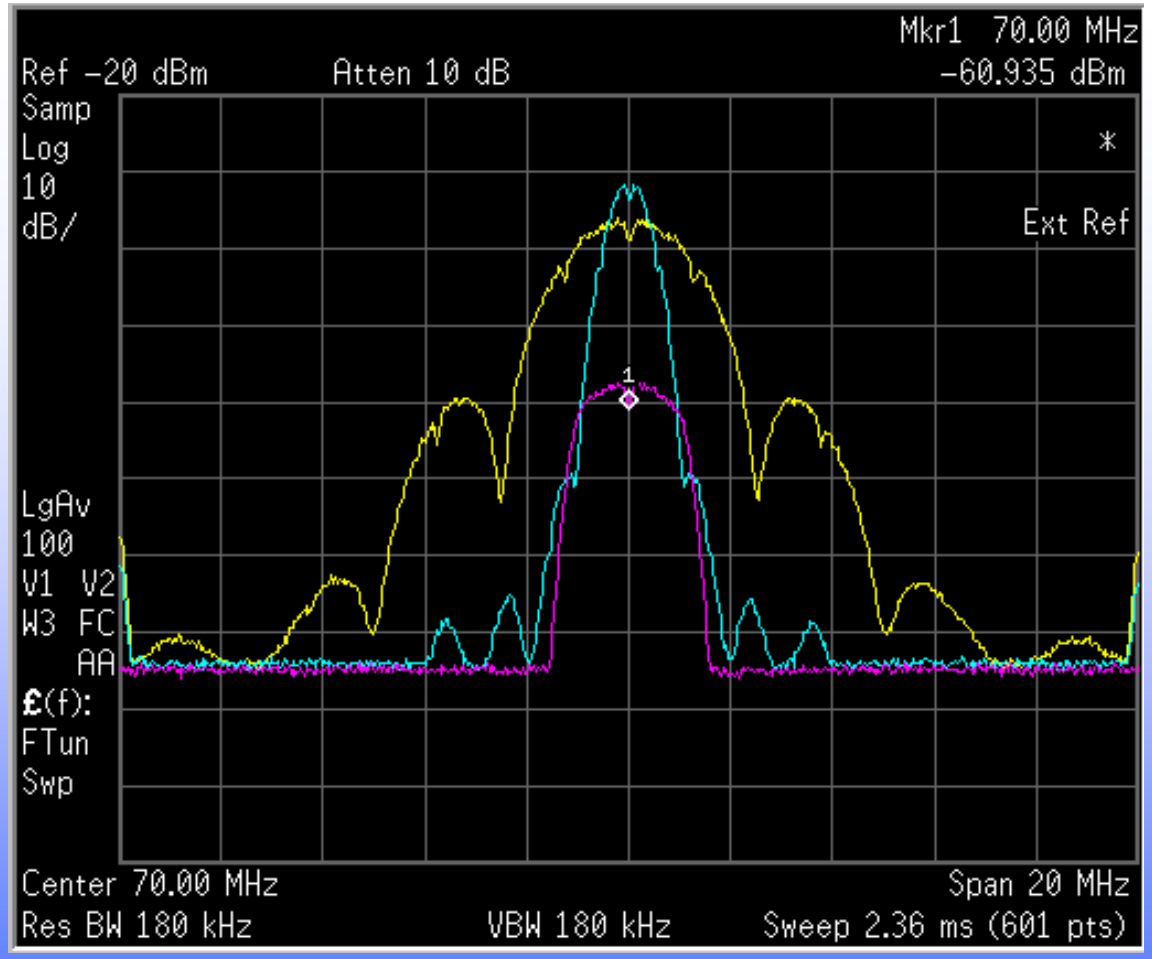
# OP01 station

➔Satellite simulator horn position optimized for the dual offset antenna;
➔2-port feed and related connections removed by Intelsat;
➔4-port feed, 2 waveguide switches and related connections provided and installed by Intelsat (free of charge, in collaboration with TimeTech);
➔Calculation of an Esdvar value due to the change on the equipment (using in part a VNA);
➔Operation of OP01 & OP02 during the change of the satellite (save of the calibration links by TW bridging);
➔OP01 station calibrated for the 3rd time using the TUG portable station (and the 1st time "free of charge" as part of the Galileo TSP prototype); last calibration done in 11-12 September 2008 (TUG report in progress).

# OP02 station

➔Motorized 2.4 m VSAT installed (Andrew, Miteq);
➔New software implemented;
➔OP02 equipped with a SAW filter (see data);
➔OP will contribute to the satellite fees on a cost basis of a month per year, starting on 2009;
➔OP02 is switched off right now until we receive a permission to transmit through IS-4; the permission is to be provided by the local authority for the regulation of communications after approval by ITU; *next step will be the technical approval by Intelsat…*
➔Problem with IS-4 data specifications: the data to be used for TWSTFT are different from the data file of IS-4 recorded at ITU: the frequencies, beam names, polarizations, … do not exist in the official data file for IS-4 provided by Intelsat to ITU !!!

# SAW filter specifications for OP02




➔ **Y: 2,5 MChip; B: 1,0 MChip; P: 2,5 MChip (with SAW filter)**

# T2L2 & TWSTFT comparison project

# T2L2 project (comparison with TWSTFT)

Following the presentation of OCA during the last PS meeting, five topics have been identified, one of them concerns Time scales and comparisons. For this topic, there is a need to establish a network of stations equipped with T2L2 and TWSTFT systems, and to expand it to stations equipped with TWSTFT and wishes to join the experiment through mobile T2L2 stations.

Who will be interested to join the experiment ? *A meeting will probably be organized at the begining of 2009 with the interested participants (T2L2 and TWSTFT experts) (fixed and mobile systems), in order to define the different issues around the comparison of the two techniques.*

A first experiment is scheduled ~ May 2009, between OCA and OP (mobile fountain OCA, mobile T2L2 station at OP)

# TWSTFT operations:

## Recording additional raw data to better understand some sources of errors

# Additional recorded 1s data parameters for TWSTFT operations

2 files are already in use:

➔ a raw data file (1s data), used « occasionaly » by PS to check the data in case of problems, to compare software made by different PS, etc …
➔ a processed data file, used every day by PS and BIPM

- Other parameters, which are not already recorded, are needed (following different discussions): one proposal is to have these additional parameters as « raw type data » (see example)

```
* A5448811.07A
* UTC(OP) - CLOCK  = -0.000038065625 54488 110800
* CLOCK - 1PPSREF  =  0.000000043400 45501 143000
* 1PPSREF - 1PPSTX =  0.000000715314 54488 110800
* DATA UNITS =  s         |   dBm  |   dBHz   |  Hz
* DATA = 1PPSTX - 1PPSRX | Rx Pwr | Rx C/NO | Rx IF
54488 110700  0.264218650242  -45.2   55.8 70003223
54488 110701  0.264218643419  -45.2   55.8 70003223
54488 110702  0.264218637174  -45.2   55.8 70003223
54488 110703  0.264218630689  -45.2   55.9 70003223

 ...

54488 110719  0.264218527194  -46.5   57.8 70003224
54488 110720  0.264218520307  -46.5   57.8 70003224
54488 110721  0.264218513887  -46.5   57.8 70003224
54488 110722  0.264218506992  -49.1   56.2 70003224
54488 110723  0.264218500397  -49.1   56.2 70003224
54488 110724  0.264218494592  -49.1   56.2 70003224
54488 110725  0.264218487632  -49.1   56.2 70003224
54488 110726  0.264218481232  -48.7   56.2 70003224
54488 110727  0.264218474712  -48.7   55.6 70003224

 ...
```