De: panek@ufe.cz
Envoyé: mardi 17 février 2009 17:51
À: gpetit@bipm.org
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Objet: RE: Calibration of GPS receivers

Pièces jointes: tp-b5.jpeg; 1PPS_IN-20MHZ_IN_20mV.jpeg;
1PPS_IN-20MHZ_IN_1V.jpeg

Dear Gerard,

First, I would like to explain the history of our GTR50 calibration.
Before we started to use our GTR50, it was calibrated in PTB. When it was back
in Prague, we found out that there is a difference of 11.7 ns between the GTR50
and our old TTR6 which was calibrated some time ago to a BIPM travelling
receiver. We did not get results from this calibration, but we supposed that
they are applicated on our data in BIPM. From that reason we decided to keep
continuity with the TTR6 measurement and we started to add
11.7 ns to all GTR50 measurement data. The calibration data from PTB were used
only if we calibrated GTR50s for Dicom. In this case the 11.7 ns correction was
removed.

It results from this introduction that the shift around 15 ns could be real. We
would like to remove the 11.7 ns correction, but it must be coordinated with
BIPM.

Today we repeated all the specified delay measurements. For the 3.1-1 and
3.1-2 measurements we used HP54615B because it has high-impedance inputs.
For the 3.1-3 measurement we used Agilent DSO80604B which is better, but its
input impedance is 50 ohms. Here are the results:

3.1-1
19.2 ns for 1 V/div
19.9 ns for 20 mV/div

3.1-2
39.8 ns for 20 mV/div
The difference between 3.1-2 and 3.1-1 measurements is not 18.2 ns!

3.1-3
18.8 ns for 1 V/div
18.9 ns for 20 mV/div

Delay of 1PPS at the receiver input with respect to UTC(TP):
18.9 ns

Please, find attached figures from the 3.1-3 and (TP - input 1pps) measurements.
After we interchanged the channels, all the results were the same.

Regards

Petr

Top oscilloscope screen (2:55 PM):
File Control Setup Measure Analyze Utilities Help

20.0 GSa/s   1.00 kpts   6GHz Standard BW

1 On 1.00 V/   2 On 20.0 mV/   3 On   4 On

H 2.00 ns/   0.0 s   0   T 1.00 V

Markers Scales

	X	Y
A——(1) =	0.0 s	1.000 V
B---(f1) =	18.86665 ns	-2.6 mV
Δ =	18.86665 ns	-1.0023 V
1/ΔX =	53.00359 MHz	

Bottom oscilloscope screen (3:12 PM):
File Control Setup Measure Analyze Utilities Help

20.0 GSa/s   1.00 kpts   6GHz Standard BW

1 On 1.00 V/   2 On 1.00 V/   3 On   4 On

H 2.00 ns/   0.0 s   0   T 1.00 V

Measurements Markers Scales

	X	Y
A——(1) =	-50 fs	1.000 V
B---(2) =	18.93331 ns	1.000 V
Δ =	18.93336 ns	0.0 V
1/ΔX =	52.81683 MHz	