Pendulum Success Story 4

Mean	**23ºC**	**23ºC**
Max.	**25ºC**	**40ºC**
Min.	**20ºC**	**-15ºC**

Can you trust the specification of a frequency standard?

A manufacturer of mobile telephones told us they had big problems with their final test. The customer needed to run the final test up to four times before a unit could pass the test. They told us that sometimes if they just waited or tested another unit in the mean time, then the unit might pass. We asked them if they had controlled the power line and the frequency reference standard to the test system. They had controlled that and found nothing, and they had even installed a new GPS reference to sync the system. Still it didn't work.

We brought our counter CNT-81R, and asked if we should measure the frequency reference to the test system. Of course you could try was their answer, but we have a new GPS so it must be stable. The CNT-81R warmed up (10 min), and then took a measurement every second. TimeView showed us that the frequency stability was 1E-8. The customer was surprised; "But we need 1E-10! According to the datasheet the stability of our GPS is 1E-12!".

We checked the datasheet together. The stability was 1E-12 for one year. But there was no information on the short time stability. According to the manual however, this was 1E-7 for 1s. The customer needed the 1E-10 stability every second because the test time was just 1s.

All GPS-frequency standards have excellent stability figures, when averaged over days, months or years. But very few are also very stable over seconds.

This case could be compared to living in a house with no insulation. During the winter the temperature of the house is –15ºC and during the summer +40ºC. The average is +23ºC. What the customer wanted was a constant +23ºC climate all around the year.

To solve the problems, the customer bought our GPS-89, which has the right stability every second. 3E-11 for 1s, 1E-11 for 10S, 1E-12 for 1000s and longer times. After that, the final test was always going smooth.

Pendulum Instruments AB
Karlsbodavägen 39, Box 20020, SE-161 02 Bromma, Sweden
Phone +46 8-598 510 00 Fax +46 8-598 10 80 VAT registration no: SE556137506301
E-mail: info@pendulum.se Internet: www.pendulum.se