



Microsemi, Inc
4775 walnut Street, Suite 1B
Boulder, CO 80301

6 December 2017

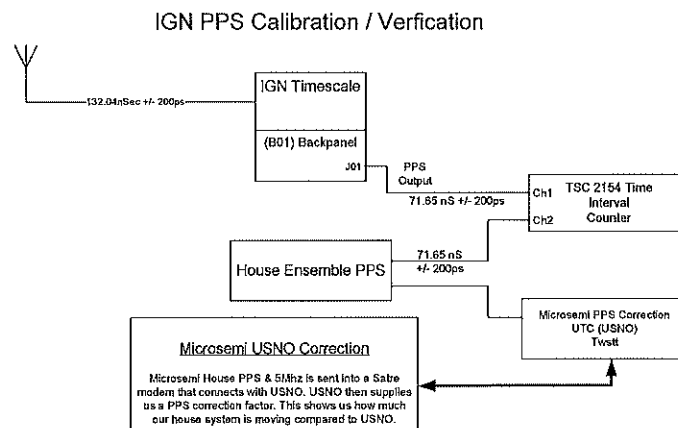
Instituto Geografico Nacional
Attention: Demian Gomes
Av. Cabildo 381, C1426AAD CABA
Buenos Aires, Argentina

SUBJ: Certificate of Calibration

Dear Mr Gomes,

Microsemi, Inc. certifies that the Precise Time Scale System (PTSS) meets or exceeds its published specification at its time of manufacture. The system synchronization to Coordinated Universal Time (UTC) are traceable to the United States Naval Observatory (USNO) via a Two-Way Satellite Time Transfer (TWSTT) link that was calibrated by USNO on 20 August 2014.

The system was purchased with the 702GG antennas, the system was calibrated on the factory floor using the same cables and receiver that were used for the system installation. The results for the system calibration for each antenna is outlined below. The simple block diagram shows the test configuration.



System Calibration Test Configuration

Microsemi, Inc

One Enterprise, Aliso Viejo, CA 92656 USA • Telephone: (949) 380-6100

Fax: +1 (949) 215-4996 • www.microsemi.com



Power Matters.™

Certification Date: 20 Aug 2014
System: Precise Time Scale System
GPS Receiver Serial #: P46620

Cable/Receiver Delays:

Antenna Cable 132.04nSec Uncertainty: 200ps

This cable was measured in the event it requires replacement and the difference in delay between the old cable and the new cable can be calculated and the proper adjustments can be made to the system delay values below.

Receiver/Antenna System Delays:

System w/702GG Antenna: 203.69 nSec System Delay = 201 nSec Uncertainty: 3nSec RMS

On-site Adjustments:

Added 40 nSec of additional cable due to Equipment location change:
System w/702GG Antenna: 243.69 nSec System Delay = 241 nSec

Regards,

A handwritten signature in black ink, appearing to read "Tim E", written over a white background.

Timothy L. Erickson
Systems Integration Manager
Microsemi FTD

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