



Quametek Corporation Proficiency Testing Services

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Certificate Number 2060.01

Proficiency Test Final Report

Proficiency test name: Frequency #1

Organization name: Century Labs II Corporation
2802-G Congressional Parkway
Fort Wayne, IN 46808

Laboratory code: CR

Contact name: Robin Bork

Phone Number: (260) 471-1673

Report number: 218

Date of Participation: 09/08/2005

Date of Report: 10/06/2005

This proficiency test was designed and conducted by Quametek Proficiency Testing Services (QPTS) as a modified petal¹ type scheme, where a reference value and measurement uncertainty for the artifact was established by use of an HP Z3801A GPS disciplined oscillator and Agilent 53132A Frequency Counter². The artifact was sent from QPTS to the participant, and the artifact was immediately returned to QPTS upon completion of measurements by the participant. The frequency offset and its estimated uncertainty were determined for both the opening and closing measurement. The deviation measured by QPTS in before/after measurements is considered to be a measurement of stability of the artifact, and the uncertainty due to stability is included in the expanded uncertainty of the proficiency test².

The artifact used in the proficiency test was an ERC Model 130 reference oscillator, serial number 346.

The results of the participant's measurements are summarized below. The acceptable range of results are values that result in an E_n ¹ number value of -1 to $+1$. Graphs are included to communicate the magnitude of uncertainty reported by the participant, all participating laboratories, and the expanded uncertainty of the proficiency test.

¹Definitions of Proficiency Testing Terminology is available at www.quametek-pt.com

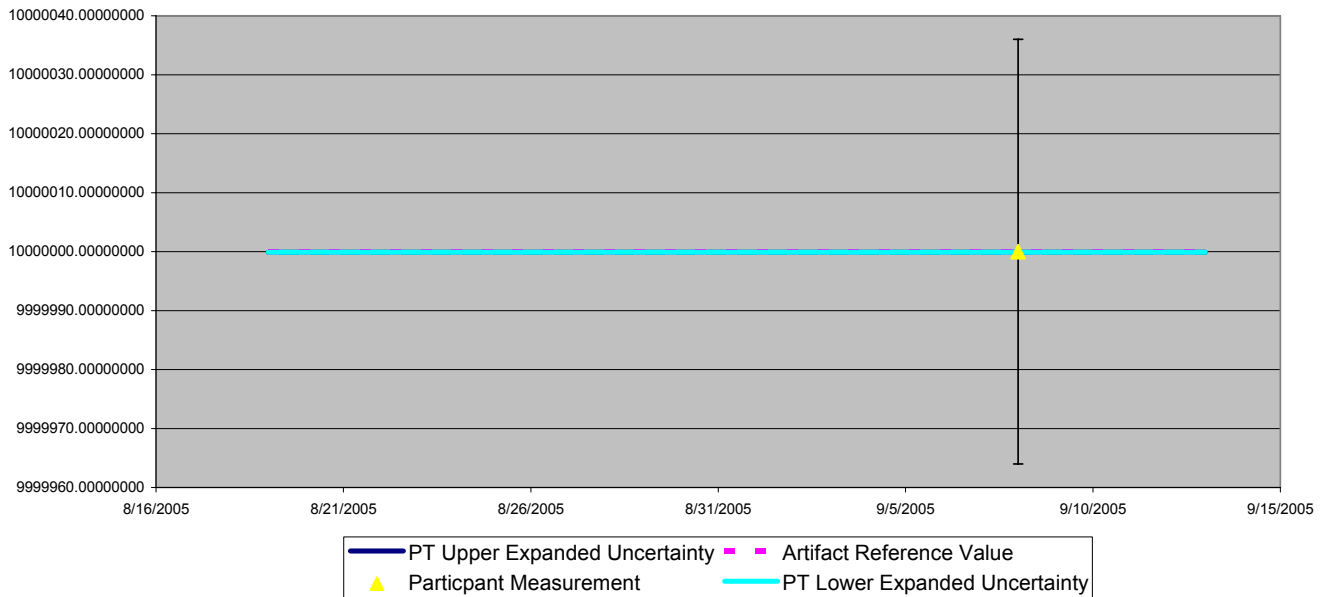
²Details of development of proficiency test and technical protocol are controlled as quality records. Contact QPTS for release of additional design information.

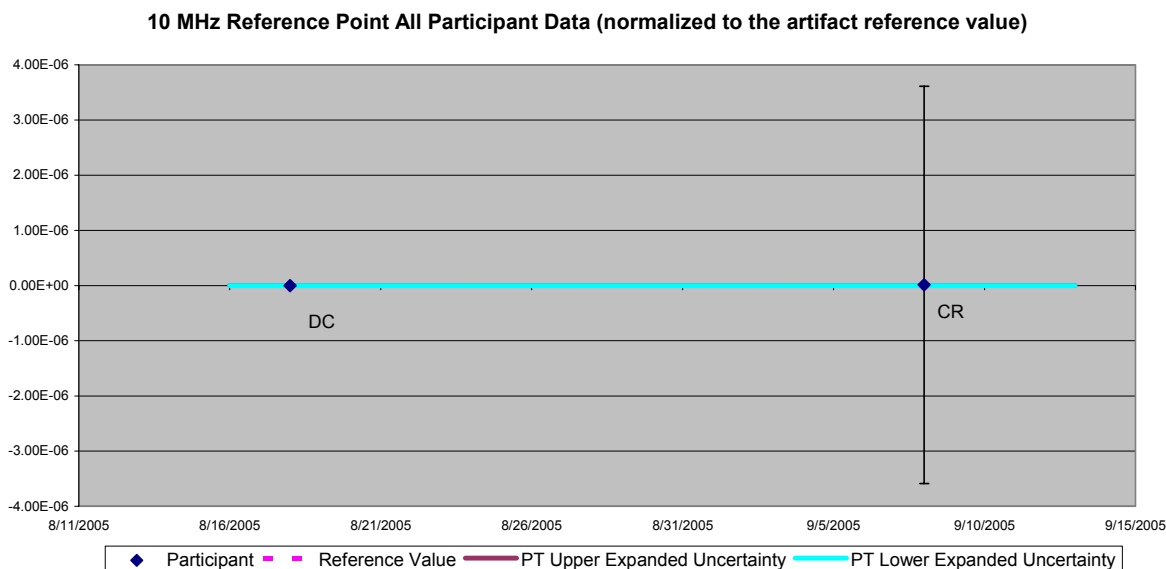
Proficiency Test Data

10 MHz Nominal Value Reference Frequency

Reference Value of Artifact	9 999 999.886 712 Hz (-1.13E-08)
Participant Measured Value	10 000 000. Hz (0)
Deviation between Reference and Participant	0.113288 Hz (1.13E-08)
Proficiency Test Expanded Uncertainty	.001 101 Hz (1.10E-10)
Uncertainty Reported by Participant	36. Hz (3.60E-06)
E_n	0.00 <input checked="" type="checkbox"/> Satisfactory <input type="checkbox"/> Unsatisfactory

Participant Data at 10 MHz Reference Point





Comments: Please note that none of these comments require a response to the proficiency test provider, but are intended to aid the participant in improving their measurement processes. It is understood that some of these suggestions may have already been considered by the laboratory.

The participant performed very well in the proficiency test. The difference between the reference value and the participant value was very small as compared to the estimated uncertainty. This indicates that the laboratory measurement method and traceability are sound. The estimate of uncertainty appears to be appropriate for the equipment (and its associated resolution) and measurement method employed.

My congratulations on a job well done!

Jeff C. Gust
 Technical Manager