

Dear Editor of the Acta IMEKO,

I have prepared an improved and extended version of the paper “Acoustic thermometer with a single waveguide” presented in the 22nd IMEKO TC4 International symposium in Iasi, 2017. The original paper was selected by the IMEKO TC-4 Board for eventual publication in Acta IMEKO in an extended and updated version.

Manuscript has a new title “Evaluation of pressure effects on acoustic thermometer with a single waveguide” and it is submitted for possible publication in Journal Acta IMEKO. This paper presents implementation and testing of the acoustical thermometer with a single waveguide. Proposed design has a few specific advantages against other types of acoustic designs with waveguides, such as smaller size, better sensitivity and the same common sound path. The paper describes each advantage and tests used to determine their usefulness. Finally it shows how to deal with disadvantages of this design, such as weak return signals and possible coincidences of the return signals. The instrument was calibrated at ice point and then tested in oil bath from -30 °C to 120 °C. In steady states it has standard deviation of 0.050 °C with 66 independent readings per second. Stability of the bath is 10 mK and uncertainty of the reference thermometer is 0.003 °C.

There are following changes and additions made during manuscript preparation for Acta IMEKO journal:

1. The title of paper has been changed from “Acoustic thermometer with single waveguide” to “Evaluation of pressure effects on acoustic thermometer with a single waveguide” to emphasis problems of pressure changes and gas mixing on the acoustic thermometer.
2. The new parts are: section 7 and 8, explaining effect of gas mixing and pressure on temperature reading. In section 5 were described new additional experimental setups. In section 6 were added subsection 6.1 and 6.2, describing effects of high temperature on optimal tube length selection. Section 9, conclusions, was extended to incorporate results from new tests.
3. In total 5 new figures (Figs. 5 and 8-11) were added with suitable text to improve intelligibility of the paper and to present results of new tests.
4. 9 new references were added ([4],[6],[8],[10],[11],[13],[14],[19] and [20]) and the 22nd IMEKO TC4 International symposium 2017 paper has been cited ([18])

Author certify that the submission is original work and is not under review at any other publication. Thank you in advance for considering the work.

Sincerely,

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