Confirmation of Compliance with the Requirements for Measurement Accuracy Indicators in the Field of EUM

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key words

measurement accuracy, error limits, direct measurements, indirect measurements

I have considered the options for calculating the limits of measurement error and confidence limits of measurement error for direct and indirect measurements. A variant of calculating the measurement error limit based on a truncated normal probability distribution law is proposed. In the article I have shown that the boundaries of the interval in which the error of the measurement result is located with probability P=1 can significantly exceed the confidence limits of the error of the measurement result for P=0.95. Proposals are given to clarify the measurement accuracy indicator established in the list of measurements related to the sphere of state regulation of ensuring the uniformity of measurements.

References

- 1.List of measurements related to the scope of state regulation to ensure the uniformity of measurements. Approved by the Government of the Russian Federation of 16.11.2020 N 1847.
- 2. PMG 96-2009 SSM. Results and quality characteristics of measurements. Forms of presentation.
- 3. RD 50-453-84 Methodical instructions. Characteristics of the error of measuring instruments under real operating conditions. Calculation methods.
- 4. GOST 8.009-84 SSM. Standardized metrological characteristics of measuring instruments.
- 5. GOST R 8.736–2011 SSM. Multiple direct measurements. Methods for processing measurement results. Basic provisions.
- 6. R 50.2.038–2004 SSM. Single direct measurements. Estimation of errors and uncertainty of measurement results.
- 7. GOST 34100.3.1–2017/ISO/IEC Guide 98-3/Suppl 1:2008 Measurement uncertainty. Part 3. Guidance on expressing measurement uncertainty. Appendix 1. Transformation of distributions using the Monte Carlo method.
- 8. MI 2083–90 Recommendation. SSM. Indirect measurements. Determination of measurement results and estimation of their errors.
- 9. GOST 8.381-2009 SSM. Standards. Ways of expressing accuracy.

НОВАЯ КНИГА

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