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ИНСТИТУТ ЗА АКРЕДИТАЦИЈА НА РЕПУБЛИКА СЕВЕРНА МАКЕДОНИЈА

Institute for Accreditation of the Republic of North Macedonia

СЕРТИФИКАТ ЗА АКРЕДИТАЦИЈА

Бр. ЛК- 011

Accreditation Certificate No. LC-011

НТТ – High Tech Tests

е акредитиран од
Институтот за акредитација на Република Северна Македонија

Со овој Сертификат се потврдува дека се исполнети барањата на стандардот:

МКС EN ISO/IEC 17025:2018

за дејностите кои се опишани во прилогот на овој Сертификат кој е означен со ист број.

This above-named entity is accredited by the Institute for Accreditation of the Republic of North Macedonia.

*By this Certificate the fulfilment of the requirements of the standard
МКС ISO/IEC 17025:2018*

is acknowledged for the field of accreditation in its full scope as described in the Annex to this Certificate marked with the same number.

в.д. Директор

Acting Director

Наташа Несторовска Спасовска
Natasha Nestorovska Spasovska

Дата на додела на акредитацијата/ 26.10.2015

Date of the initial accreditation: 26.10.2015

Дата на реиздавање/Reissuing Date: 06.09.2019

Важи до/ Valid until: 25.10.2023

**Прилог кон сертификатот за акредитација на
лабораторија за калибрација**
*Annex to the Accreditation Certificate of
Calibration Laboratory*
Бр. ЛК-011 / No. LC-011

Датум: 23.09.2020
Date: 23.09.2020

Го заменува прилогот од: 06.09.2019
Replace the annex from: 06.09.2019

1. АКРЕДИТИРАНО ТЕЛО

Accredited body

НТТ – High Tech Tests

2. ЛОКАЦИЈА

Location

***Municipal Unit No. 5, Street “Perlat Rexhepi”,
Building No.6, 11th Floor, Postal Code 1019,
Tirana, Albania***

3. СТАНДАРД

Standard

МКС EN ISO/IEC 17025 : 2018

MKS EN ISO/IEC 17025 : 2018

**4. КРАТОК ОПИС НА ОПСЕГОТ
НА АКРЕДИТАЦИЈАТА**

*A short description of the
accreditation scope*

**Калибрација на електрични броила;
Калибрација на стандардни референтни
броила и калибрација на мерни
инструменти за електрични големнини.**

***Calibration of Electric Meters; Calibration of
Standard Reference Meters and Calibration of
Measuring Instruments for Electrical Quantities.***



5.

ДЕТАЛЕН ОПИС НА ОПСЕГОТ НА АКРЕДИТАЦИЈА
Detailed description of the accreditation scope

Подрачје (од ИАРСМ документот Р 15) / Field (from the IARNM document R 15): 5 - ELECTRICITY 5.6 - ENERGY					
Локација каде се изведува калибрацијата / Location where calibration is performed Municipal Unit No. 5, Street "Perlat Rexhepi", Building No.6, 11th Floor, Postal Code 1019, Tirana, Albania					
Реден број No.	Предмет на калибрација Subject of calibration	Мерен опсег Measuring range	Калибрациска мерна можност Calibration measurement capability (cmc)*	Метода на калибрација Method of calibration	Забелешка Remark
1	Electrical Energy Meters Class 0.2S; 0.5S; 0.5; C	Voltage: 0 V ÷ 300 V Current: 0 A ÷ 120 A Frequency: 45 Hz ÷ 65 Hz Phase Angle: 0° ÷ 360°	0.03 % ÷ 0.04%	Self-Developed Procedure by HTT-High Tech Tests: PR-305-Calibration of Measuring Instruments for Energy and Electrical Quantities (MIE&MIEQ) IPR-305-1-Instruction for Calibration of Measuring Instrument of Energy (MIE) (Indicators) User Manual PRS.600.3 + PPS.400.3 User Manual KP-P3001-C EA-4/02 M:2013, Evaluation of the Uncertainty of Measurements in Calibration JCGM 100:2008, Evaluation of measurement data – Guide to the expression of uncertainty in measurement	Direct Calibration method with MTE PRS600.3 + PPS400.3 or Kaipu KP-P3001-C
2	Electric Energy Reference Standards Class 0.05 to 0.5	Voltage: 0 V ÷ 300 V Current: 0 A ÷ 120 A Frequency: 45 Hz ÷ 65 Hz Phase Angle: 0° ÷ 360°	0.03%	Self-Developed Procedure by HTT-High Tech Tests: PR-305-Calibration of Measuring Instruments for Energy and Electrical Quantities (MIE&MIEQ) IPR-305-1-Instruction for Calibration of Measuring Instrument of Energy (MIE) (Indicators) IPR-305-2-Instruction for Calibration of Measuring Instrument of Energy with Power Source (MIE) (Generators) User Manual PRS.600.3 + PPS.400.3 EA-4/02 M:2013, Evaluation of the Uncertainty of Measurements in Calibration JCGM 100:2008, Evaluation of measurement data – Guide to	Direct Calibration method with MTE PRS600.3 and/or PPS400.3

				the expression of uncertainty in measurement	
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Реден број <i>No.</i>	Предмет на калибрација <i>Subject of calibration</i>	Мерен опсег <i>Measuring range</i>	Калибрациска мерна можност <i>Calibration measurement capability (cmc)*</i>	Метода на калибрација <i>Method of calibration</i>	Забелешка <i>Remark</i>
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Локација каде се изведува калибрацијата / *Location where calibration is performed:*
Municipal Unit No. 5, Street "Perlat Rexhepi", Building No.6, 11th Floor, Postal Code 1019, Tirana, Albania

Подрачје (од ИАРМ документот Р 15) / *Field (from the IARM document R 15):*
5 - ELECTRICITY
5.1 - DC/LF Voltage

3	Digital and analog multimeters, voltmeters and measuring instruments of DC V which are primarily intended for measuring quantities of a different type	0 mV ÷ 33 mV	24 µV	Self-Developed Procedure by HTT-High Tech Tests: PR-305-Calibration of Measuring Instruments for Energy and Electrical Quantities (MIE & MIEQ) IPR-305-3-Instruction for Calibration of Instruments used for Measuring Electrical Quantities (Indicators) User Manual: Fluke 5522A User Manual: Fluke 5320A EURAMET CG-15:2015 Guidelines on the Calibration of Digital Multimeters EA-4/02 M:2013 Evaluation of the Uncertainty of Measurements in Calibration JCGM 100:2008 Evaluation of measurement data – Guide to the expression of uncertainty in measurement	Direct Calibration method with Fluke 5522A and/or Fluke 5320A
		33 mV ÷ 330 V	24 µV ÷ 23 mV		
		330 V ÷ 1020 V	26 mV ÷ 29 mV		

4	Digital and analog multimeters, voltmeters and measuring instruments of AC V which are primarily intended for measuring quantities of a different type	1.0 mV ÷ 33 mV (10 Hz ÷ 500 kHz)	40 µV	Self-Developed Procedure by HTT-High Tech Tests: PR-305-Calibration of Measuring Instruments for Energy and Electrical Quantities (MIE & MIEQ) IPR-305-3-Instruction for Calibration of Instruments used for Measuring Electrical Quantities (Indicators)	Direct Calibration method with Fluke 5522A and/or Fluke 5320A
		33 mV ÷ 330 V (10 Hz ÷ 500 kHz)	24 mV ÷ 0.63 V	User Manual: Fluke 5522A User Manual: Fluke 5320A EURAMET CG-15:2015 Guidelines on the Calibration of Digital Multimeters	
		330 V ÷ 1020 V (45 Hz ÷ 10kHz)	0.31 V ÷ 0.35 V	EA-4/02 M:2013 Evaluation of the Uncertainty of Measurements in Calibration JCGM 100:2008 Evaluation of measurement data – Guide to the expression of uncertainty in measurement	

5.2 - DC/LF Current

5	Digital and analog multimeters, ammeters and measuring instruments of DC A which are primarily intended for measuring quantities of a different type	0 µA ÷ 330 µA	30 pA ÷ 50 µA	Self-Developed Procedure by HTT-High Tech Tests: PR-305-Calibration of Measuring Instruments for Energy and Electrical Quantities (MIE & MIEQ)	Direct Calibration method with Fluke 5522A and/or Fluke 5320A and/or Fluke 52120A + Coil 3kA
		330 µA ÷ 330 mA	50 µA ÷ 80 mA	IPR-305-3-Instruction for Calibration of Instruments used for Measuring Electrical Quantities (Indicators)	
		330 mA ÷ 3 A	24 mA ÷ 25 mA	User Manual: Fluke 5522A User Manual: Fluke 5320A User Manual: Fluke 52120A User Manual: Fluke Coil 3kA	
		3 A ÷ 20.5 A	24 mA ÷ 25 mA	EURAMET CG-15:2015 Guidelines on the Calibration of Digital Multimeters	
		20.5 A ÷ 3000 A	1.6 A	EA-4/02 M:2013 Evaluation of the Uncertainty of Measurements in Calibration JCGM 100:2008 Evaluation of measurement data – Guide to the expression of uncertainty in measurement	

6	Digital and analog multimeters, ammeters and measuring instruments of AC A which are primarily intended for measuring quantities of a different type	29 μ A \div 330 μ A (10 Hz \div 30 kHz)	0.16 μ A \div 0.48 μ A	Self-Developed Procedure by HTT-High Tech Tests: PR-305- Calibration of Measuring Instruments for Energy and Electrical Quantities (MIE & MIEQ)	Direct Calibration method with Fluke 5522A and/or Fluke 5320A and/or Fluke 52120A + Coil 3kA
		330 μ A \div 330 mA (10 Hz \div 30 kHz)	24 μ A \div 0.16 mA	IPR-305-3- Instruction for Calibration of Instruments used for Measuring Electrical Quantities (Indicators)	
		330 mA \div 3 A (10 Hz \div 30 kHz)	24 mA \div 25 mA	User Manual: Fluke 5522A User Manual: Fluke 5320A User Manual: Fluke 52120A User Manual: Fluke Coil 3kA	
		3 A \div 20.5 A (45 Hz \div 10 kHz)	0.45 mA \div 0.65 mA	EURAMET CG-15:2015 Guidelines on the Calibration of Digital Multimeters EA-4/02 M:2013 Evaluation of the Uncertainty of Measurements in Calibration	
		20.5 A \div 3000 A (10 Hz \div 30 kHz)	1 A	JCGM 100:2008 Evaluation of measurement data – Guide to the expression of uncertainty in measurement	

5.8 – Resistance

7	Digital and analog multimeters, ohm meters and measuring instruments of Ω which are primarily intended for measuring quantities of a different type	0 Ω \div 330 Ω	24 m Ω \div 25 m Ω	Self-Developed Procedure by HTT-High Tech Tests: PR-305- Calibration of Measuring Instruments for Energy and Electrical Quantities (MIE & MIEQ)	Direct Calibration method with Fluke 5522A and/or Fluke 5320A
		330 Ω \div 330 k Ω	23 Ω \div 25 Ω	IPR-305-3- Instruction for Calibration of Instruments used for Measuring Electrical Quantities (Indicators)	
		330 k Ω \div 330 M Ω	24 Ω \div 66 k Ω	User Manual: Fluke 5522A User Manual: Fluke 5320A EURAMET CG-15:2015 Guidelines on the Calibration of Digital Multimeters	
		330 M Ω \div 10G Ω	0.5M Ω \div 0.74 M Ω	EA-4/02 M:2013 Evaluation of the Uncertainty of Measurements in Calibration JCGM 100:2008 Evaluation of measurement data – Guide to the expression of uncertainty in measurement	

5.9 – Capacitance					
8	Digital and analog multimeters, and measuring instruments of capacitance which are primarily intended for measuring quantities of a different type	220 pF ÷ 330 nF	0.31 nF ÷ 97 pF	Self-Developed Procedure by HTT-High Tech Tests: PR-305- Calibration of Measuring Instruments for Energy and Electrical Quantities (MIE & MIEQ) •	Direct Calibration method with Fluke 5522A and/or Fluke 5320A
		330 nF ÷ 33 mF	33 nF ÷ 0.67 mF	IPR-305-3- Instruction for Calibration of Instruments used for Measuring Electrical Quantities (Indicators) User Manual: Fluke 5522A User Manual: Fluke 5320A EURAMET CG-15:2015 Guidelines on the Calibration of Digital Multimeters	
		33 mF ÷ 110 mF	0.61 mF ÷ 1 mF	EA-4/02 M:2013 Evaluation of the Uncertainty of Measurements in Calibration JCGM 100:2008 Evaluation of measurement data – Guide to the expression of uncertainty in measurement	
Подрачје (од ИАРМ документот Р 15) / Field (from the IARM document R 15): 4 – TIME AND FREQUENCY 4.2 – Phase Angle					
9	Digital and analog multimeters, and measuring instruments of Phase Angle which are primarily intended for measuring quantities of a different type	Phase (Φ) Watts (0° ÷ 90°)	0.25° ÷ 2.0°	Self-Developed Procedure by HTT-High Tech Tests: PR-305- Calibration of Measuring Instruments for Energy and Electrical Quantities (MIE & MIEQ) IPR-305-3- Instruction for Calibration of Instruments used for Measuring Electrical Quantities (Indicators) User Manual: Fluke 5522A	Direct Calibration method with Fluke 5522A and/or Fluke 5320A and/or

		Phase (Φ) VARs ($90^\circ \div 0^\circ$)	$0.25^\circ \div 2.0^\circ$	<p>User Manual: Fluke 5320A User Manual: Fluke 52120A User Manual: Fluke Coil 3kA</p> <p>EURAMET CG-15:2015 Guidelines on the Calibration of Digital Multimeters</p> <p>EA-4/02 M:2013 Evaluation of the Uncertainty of Measurements in Calibration</p> <p>JCGM 100:2008 Evaluation of measurement data – Guide to the expression of uncertainty in measurement</p>	Fluke 52120A + Coil 3kA
4.3 – Frequency					
10	Digital and analog multimeters, and measuring instruments of Frequency which are primarily intended for measuring quantities of a different type	$0.01 \text{ Hz} \div 1.2 \text{ kHz}$	$20 \text{ mHz} \div 0.10 \text{ kHz}$	<p>Self-Developed Procedure by HTT-High Tech Tests:</p> <p>PR-305- Calibration of Measuring Instruments for Energy and Electrical Quantities (MIE & MIEQ)</p> <p>IPR-305-3- Instruction for Calibration of Instruments used for Measuring Electrical Quantities (Indicators)</p> <p>User Manual: Fluke 5522A User Manual: Fluke 5320A</p> <p>EURAMET CG-15:2015 Guidelines on the Calibration of Digital Multimeters</p> <p>EA-4/02 M:2013 Evaluation of the Uncertainty of Measurements in Calibration</p> <p>JCGM 100:2008 Evaluation of measurement data – Guide to the expression of uncertainty in measurement</p>	<p>Direct Calibration method with</p> <p>Fluke 5522A</p> <p>and/or</p> <p>Fluke 5320A</p>

м-р Слободен Чокревски
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Директор
Director