The Appendix is an integral part of
Certificate of Accreditation No. 439/2019 of 29. 8. 2019

Accredited entity according to ČSN EN ISO/IEC 17025:2018:

FORTE a.s.
Metrological Laboratory
798 02 Mostkovice 529

CMC for the field of measured quantity: Electrical quantities

Ord. number[1]	Calibrated quantity / Subject of calibration	Nominal range min.	unit		max.	unit	Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified[2]	Calibration principle	Calibration procedure identification[3]	Work place
1	Electrical resistance /								Direct measurement using a multimeter	KP 01/2019	
		0	Ω	up to	0.5	Ω		1.0 mΩ			
	Resistance boxes,	0.5	Ω	up to	1	Ω		0.25 %			
	multimeters,	1	Ω	up to	4	Ω		0.07 %			
	ohmmeters	4	Ω	up to	1	MΩ		0.035 %			
		1	MΩ	up to	3	MΩ		0.06 %			
		3	MΩ	up to	10	MΩ		0.035 %			
		10	MΩ	up to	40	MΩ		0.30 %			
		40	MΩ	up to	100	MΩ		0.15 %			
									Generation using a calibrator	KP 02/2019	
					10	Ω		0.010 %			
					100	Ω		0.0050 %			
					1	kΩ		0.0050 %			
					10	kΩ		0.0050 %			
					100	kΩ		0.0050 %			
					1	MΩ		0.010 %			
					10	MΩ		0.030 %			
					100	MΩ		0.050 %			
2	DC voltage /								Generation using a calibrator	KP 02/2019	
		0	mV	up to	20	mV		10 µV			
	Multimeters, voltmeters	20	mV	up to	40	mV		0.045 %			
		40	mV	up to	100	mV		0.020 %			
		100	mV	up to	600	mV		0.0060 %			
		600	mV	up to	1,100	V		0.0040 %			

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Ord. number[1]	Calibrated quantity / Subject of calibration	Nominal range					Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified[2]		Calibration principle	Calibration procedure identification[3]	Work place
		min.	unit		max.	unit						
3	DC current /									Generation using a calibrator	KP 02/2019	
		10	mA	up to	2	mA		1.0	µA			
	Multimeters,	2	mA	up to	2	A		0.05	%			
	ammeters	2	A	up to	20	A		0.026	% + 1.1			
4	AC voltage /									Generation using a calibrator	KP 02/2019 KP 14/2019	
		10	mV	up to	60	mV	32 Hz to 300 Hz	0.15	mV			
	Multimeters,						0.3 kHz to 30 kHz	0.15	mV			
	voltmeters						30 kHz to 100 kHz	0.18	mV			
		60	mV	up to	200	mV	32 Hz to 300 Hz	0.20	%			
							0.3 kHz to 30 kHz	0.20	%			
							30 kHz to 100 kHz	0.25	%			
		200	mV	up to	20	V	32 Hz to 300 Hz	0.080	%			
							0.3 kHz to 30 kHz	0.070	%			
							30 kHz to 100 kHz	0.060	%			
		20	V	up to	200	V	32 Hz to 300 Hz	0.080	%			
							0.3 kHz to 30 kHz	0.070	%			
							30 kHz to 100 kHz	0.12	%			
		200	V	up to	1,000	V	32 Hz to 300 Hz	0.080	%			
							0.3 kHz to 30 kHz	0.070	%			
5	AC current /									Generation using a calibrator	KP 02/2019	
		1	mA	up to	2	mA	0.01 kHz to 1 kHz	3	µA			
	Multimeters,	2	mA	up to	200	mA		0.1	%			
	ammeters	200	mA	up to	2	A		0.15	%			
		2	A	up to	20	A		0.095	%+ 1.14mA			

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Ord. number[1]	Calibrated quantity / Subject of calibration	Nominal range					Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified[2]		Calibration principle	Calibration procedure identification[3]	Work place
		min.	unit		max.	unit						
6	Electric capacity / Capacity meters, RLC bridges	1	pF	up to	3	pF	1 kHz	1.0	%	Generation using capacity standards	KP 04/2019	
		4	pF	up to	7	pF	1 kHz	0.30	%			
		8	pF	up to	20	pF	1 kHz	0.20	%			
		20	pF	up to	1	µF	1 kHz	0.080	%			
7	Electrical inductance / Inductance meters, RLC bridges				10	µH	1 kHz	0.70	%	Generation using inductance standards	KP 07/2019	
					100	µH	1 kHz	0.070	%			
					1	mH	1 kHz	0.070	%			
					10	mH	1 kHz	0.070	%			
					100	mH	1 kHz	0.070	%			
					1	H	1 kHz	0.070	%			
8	High-frequency power / Hf generators, signal generators, oscillators, frequency converters	1	µW	up to	2	µW	0.01 GHz to 2 GHz	8.1	%	Measurement using a thermoelectric sensor	KP 03/2019	
		2	µW	up to	4	µW	0.01 GHz to 2 GHz	5.0	%			
		4	µW	up to	8	µW	0.01 GHz to 2 GHz	3.4	%			
		8	µW	up to	30	µW	0.01 GHz to 2 GHz	3.0	%			
		30	µW	up to	100	mW	0.01 GHz to 2 GHz	2.8	%			
		1	µW	up to	2	µW	2 GHz to 12.4 GHz	9.2	%			
		2	µW	up to	4	µW	2 GHz to 12.4 GHz	6.5	%			
		4	µW	up to	7	µW	2 GHz to 12.4 GHz	5.5	%			

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Ord. number[1]	Calibrated quantity / Subject of calibration	Nominal range					Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified[2]		Calibration principle	Calibration procedure identification[3]	Work place
		min.	unit		max.	unit						
		7	µW	up to	20	µW	2 GHz to 12.4 GHz	5.2	%			
		20	µW	up to	100	mW	2 GHz to 12.4 GHz	5.1	%			
		1	µW	up to	2	µW	12.4 GHz to 18 GHz	9.9	%			
		2	µW	up to	5	µW	12.4 GHz to 18 GHz	7.5	%			
		5	µW	up to	20	µW	12.4 GHz to 18 GHz	6.5	%			
		20	µW	up to	100	mW	12.4 GHz to 18 GHz	6.4	%			
9	Inspection equipment / Loop impedance modulus meters	0.5	Ω	up to	1.5	Ω	50 Hz	0.073	Ω	Generation using a calibrator	KP 18/2019	
		1.5	Ω	up to	10	Ω	50 Hz	0.26	Ω			
		10	Ω	up to	100	Ω	50 Hz	2.6	%			
		100	Ω	up to	1,800	Ω	50 Hz	2.2	%			
	Meters of circuit breaker tripping current	3	mA	up to	10	mA	50 Hz	0.15	mA			
		10	mA	up to	3,000	mA	50 Hz	2.0	%			
	Meters of tripping contact voltage	1	V	up to	10	V	50 Hz	4.9	V			
		10	V	up to	100	V	50 Hz	11	V			
	Meters of transition resistance	0.1	Ω	up to	1	Ω		0.019	Ω			
		1	Ω	up to	10	Ω		0.042	Ω			
		10	Ω	up to	10,000	Ω		0.42	%			

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Ord. number[1]	Calibrated quantity / Subject of calibration	Nominal range					Parameter(s) of the meas. quantity	Lowest expanded measurement uncertainty specified[2]		Calibration principle	Calibration procedure identification[3]	Work place
		min.	unit		max.	unit						
	Meters of insulation resistance	0.01	MΩ	up to	1	MΩ		0.28	%			
		1	MΩ	up to	10	MΩ		0.44	%			
		10	MΩ	up to	1,000	MΩ		0.72	%			
		1,000	MΩ	up to	10,000	MΩ		1.4	%			
	Meters of leakage current	0.1	mA	up to	1	mA	50 Hz	8.6	µA			
		1	mA	up to	10	mA	50 Hz	0.86	%			
		10	mA	up to	28	mA	50 Hz	0.62	%			

[1)] Asterisk at the ordinal number identifies the calibrations, which the Laboratory is qualified to carry out outside the permanent laboratory premises.

[2] The expanded measurement uncertainty is in accordance with ILAC-P14 and EA-4/02, part of CMC, and it is the lowest value of the respective uncertainty. If not stated otherwise, its coverage probability is approx. 95%. If not stated otherwise, the uncertainty values stated without a unit are relative to the value measured. If the calibration is carried out outside the laboratory premises, the measurement uncertainty may be affected.

[3] If the document identifying the calibration procedure is dated, only these specific procedures are used. If the document identifying the calibration procedure is not dated, the latest edition of the specified procedure is used (including any changes).

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CMC for the field of measured quantity: Time and frequency quantities

Ord. number[1]	Calibrated quantity / Subject of calibration	Nominal range min.	unit		max.	unit	Parameter(s) of the meas. quantity		Lowest expanded measurement uncertainty specified[2]	Calibration principle	Calibration procedure identification[3]	Work-place
1	Relative frequency deviation from f_0 (1; 5; 10) MHz / Counters, generators, reference oscillators frequency converters	0		up to	1×10^{-7}				2.5×10^{-10}	Measurement of frequency deviation by a frequency comparator	KP 05/2019	
		1×10^{-7}		up to	1×10^{-6}				1.2×10^{-9}			
2	Frequency f / Lf generators, Hf generators, calibrators, reference oscillators	0.1	Hz	up to	100	Hz			3×10^{-4}/f	Measurement using a counter	KP 09/2019 KP 14/2019	
		100	Hz	up to	1	kHz			6×10^{-4}/f			
		1	kHz	up to	1.5	GHz			6×10^{-7}			
		1.5	GHz	up to	12	GHz			2×10^{-6}	Measurement using a counter	KP 15/2019	
		1.5	GHz	up to	12	GHz			2×10^{-6}	Generation	KP 16/2019	
3	Pulse rise time / Oscilloscopes			≤	3.5	ns			0.80 ns	Generation using a calibrator	KP 14/2019	
4	Time interval / Inspection equipment, meters of circuit breaker tripping times	10	ms	up to	100	ms			0.69 ms	Generation using a calibrator	KP 18 /2019	
		100	ms	up to	1,000	ms			0.85 ms			

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[2] The expanded measurement uncertainty is in accordance with ILAC-P14 and EA-4/02, part of CMC, and it is the lowest value of the respective uncertainty. If not stated otherwise, its coverage probability is approx. 95%. If not stated otherwise, the uncertainty values stated without a unit are relative to the value measured. If the calibration is carried out outside the laboratory premises, the measurement uncertainty may be affected.

[3] If the document identifying the calibration procedure is dated, only these specific procedures are used. If the document identifying the calibration procedure is not dated, the latest edition of the specified procedure is used (including any changes).