SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017
& ANSI/NCSL Z540-1-1994 & ANSI/NCSL Z540.3-2006

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CALIBRATION

Valid To: November 30, 2023 Certificate Number: 2354.01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following calibrations[1, 8]:

I. Electrical – DC/Low Frequency

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
DC Voltage – Measure[3]	(0 to 100) mV 100 mV to 1 V (1 to 10) V (10 to 100) V (100 to 500) V (500 to 1000) V	9.6 µV 4.9 µV/V + 8.9 µV 6.7 µV/V + 28 µV 10 µV/V + 42 µV 6.8 mV 23 mV	HP 3458A
DC Voltage – Generate[3]	(0 to 100) mV 100 mV to 1 V (1 to 10) V (10 to 100) V (100 to 1000) V	0.3 µV/V + 9.2 µV 4 µV/V + 10 µV 5.2 µV/V + 59 µV 7 µV/V + 460 µV 1.4 µV/V + 57 mV	Fluke 5700A (5-digit DUT)
DC Current – Measure[3]	(0 to 100) µA 100 µA to 1 mA (1 to 10) mA (10 to 100) mA 100 mA to 1 A	19 µA/A + 1.2 nA 19 µA/A + 6.8 nA 20 µA/A + 64 nA 36 µA/A + 590 nA 0.013 % + 9.7 µA	HP 3458A

Parameter/Equipment	Range	CMC[2, 4] (±)	Comments
Resistance – Measure[3]	(0 to 10) Ω (10 to 100) Ω 100 Ω to 1 kΩ (1 to 10) kΩ (10 to 100) kΩ 100 kΩ to 1 MΩ (1 to 10) MΩ (10 to 100) MΩ	15 µΩ/Ω + 60 µΩ 15 µΩ/Ω + 600 µΩ 10 µΩ/Ω + 670 µΩ 10 µΩ/Ω + 6.7 mΩ 14 µΩ/Ω + 8.8 mΩ 16 µΩ/Ω + 2.4 Ω 52 µΩ/Ω + 110 Ω 0.047 % + 6.0 kΩ	HP 3458A

Parameter/Range	Frequency	CMC[2, 4] (±)	Comments
AC Voltage – Measure[3]			
(1 to 10) mV	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	0.058 % + 2.5 µV 0.02 % + 1.2 µV 0.055 % + 0.93 µV 0.11 % + 2.2 µV 0.46 % + 6.7 µV 3.9 % + 28 µV	HP 3458A
(10 to 100) mV	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz	52 µV/V + 7.3 µV 55 µV/V + 4.3 µV 97 µV/V + 7.6 µV 0.021 % + 17 µV 0.07 % + 15 µV 0.32 % + 7.2 µV 0.99 % + 27 µV	
100 mV to 1 V	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz	69 µV/V + 47 µV 65 µV/V + 31 µV 0.015 % + 34 µV 0.03 % + 31 µV 0.08 % + 30 µV 0.3 % + 120 µV 0.98 % + 530 µV	
(1 to 10) V	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz 300 kHz to 1 MHz	63 µV/V + 550 µV 64 µV/V + 310 µV 0.015 % + 260 µV 0.031 % + 270 µV 0.08 % + 280 µV 0.3 % + 1.2 mV 0.97 % + 5.7 mV	

Parameter/Range	Frequency	CMC[2, 4] (±)	Comments
AC Voltage – Measure[3] (cont)			
(10 to 100) V	(1 to 40) Hz 40 Hz to 1 kHz (1 to 20) kHz (20 to 50) kHz (50 to 100) kHz (100 to 300) kHz	0.019 % + 5.8 mV 0.02 % + 2.7 mV 0.021 % + 2.5 mV 0.036 % + 2.6 mV 0.12 % + 2.6 mV 0.4 % + 12 mV	HP 3458A
(100 to 700) V	40 Hz to 1 kHz	0.04 % + 25 mV	
AC Voltage – Generate[3]			
(0 to 10) mV	40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz	0.029 % + 5.2 µV 0.058 % + 5.4 µV 0.032 % + 17 µV	Fluke 5700A (4.5-digit DUT)
(10 to 100) mV	(10 to 20) Hz (20 to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz	0.062 % + 15 µV 0.024 % + 11 µV 0.012 % + 11 µV 0.031 % + 15 µV 0.087 % + 34 µV	
100 mV to 1 V	(10 to 20) Hz (20 to 40) Hz 40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz	0.063 % + 83 µV 0.017 % + 48 µV 0.009 % + 50 µV 0.01 % + 81 µV 0.019 % + 18 µV	
(1 to 10) V	40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz	0.008 % + 450 µV 0.015 % + 380 µV 0.031 % + 320 µV	
(10 to 100) V	40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz	0.009 % + 5 mV 0.026 % + 4.5 mV 0.059 % + 11 mV	
200 V	40 Hz to 20 kHz (20 to 50) kHz (50 to 100) kHz	61 mV 81 mV 140 mV	

Parameter/Range	Frequency	CMC[2, 4] (±)	Comments
AC Current – Measure[3]			
(5 to 100) µA	(45 to 100) Hz 100 Hz to 1 kHz	0.058 % + 0.035 µA 0.058 % + 0.035 µA	HP 3458A
100 µA to 1 mA	(45 to 100) Hz 100 Hz to 5 kHz	0.056 % + 0.27 µA 0.029 % + 0.23 µA	
(1 to 10) mA	(45 to 100) Hz 100 Hz to 5 kHz	0.057 % + 2.7 µA 0.03 % + 2.2 µA	
(10 to 100) mA	(45 to 100) Hz 100 Hz to 5 kHz	0.06 % + 26 µA 0.034 % + 22 µA	
100 mA to 1 A	(45 to 100) Hz 100 Hz to 5 kHz	0.21 % + 250 µA 0.12 % + 280 µA	

II. Electrical – RF/Microwave

Parameter/Range	Frequency	CMC[2, 4] (±)	Comments
RF Power – Generate & Measure[3] e.g. Generator, Power Meter			
(-100 to <-80) dBm	(8 to <100) kHz	0.079 dB	R&S®UCS2010 measuring system: power sensor w/ receiver
(-130 to <-80) dBm	100 kHz to 100 MHz >100 MHz to 2.4 GHz (>2.4 to 8) GHz (>8 to 20) GHz	0.079 dB 0.081 dB 0.083 dB 0.11 dB	
(-120 to <-80) dBm	(>20 to 40) GHz	0.12 dB	
(-100 to <-80) dBm	(>40 to 50) GHz (>50 to 67) GHz	0.14 dB 0.19 dB	
(-80 to <-20) dBm	>8 kHz to 100 MHz >100 MHz to 2.4 GHz (>2.4 to 8) GHz (>8 to 20) GHz (>20 to 40) GHz (>40 to 50) GHz (>50 to 67) GHz	0.057 dB 0.060 dB 0.062 dB 0.094 dB 0.10 dB 0.13 dB 0.18 dB	

Parameter/Range	Frequency	CMC[2, 4] (±)	Comments
RF Power – Generate & Measure[3] (cont)			
Generate[3] e.g. Generator			
(-20 to 20) dBm	1 kHz to 100 MHz >100 MHz to 2 GHz (>2 to 8) GHz (>8 to 12.4) GHz (>12.4 to 18) GHz (>18 to 26.5) GHz (26.5 to 33) GHz (33 to 40) GHz (>40 to 50) GHz (>50 to 67) GHz (>67 to 70) GHz (>70 to 90) GHz	0.016 dB 0.024 dB 0.030 dB 0.037 dB 0.049 dB 0.064 dB 0.080 dB 0.085 dB 0.12 dB 0.17 dB 0.21 dB 0.34 dB	R&S®NRP18T R&S®NRP67T
(>20 to 40) dBm	>1 kHz to 100 MHz 100 MHz to 6 GHz	0.048 dB 0.059 dB	R&S®NRP110T R&S®NRP18T w/ 20 dB attenuator
(>20 to 35) dBm	(>6 to 8) GHz (>8 to 12.5) GHz (12.5 to 18) GHz	0.064 dB 0.081 dB 0.095 dB	
(>20 to 30) dBm	(>18 to 26.5) GHz (>26.5 to 40) GHz (>40 to 50) GHz (>50 to 67) GHz	0.11 dB 0.12 dB 0.15 dB 0.19 dB	R&S®NRP67T w/ 20 dB attenuator
(0 to 70) dB (>70 to 120) dB	8 kHz to 67 GHz	0.05 dB 0.10 dB	R&S®FSW67 w/ preamplifier
RF Power – Generate[3] Absolute, DUT: Power Meter			Material measure Direct RF power comparison
(-40 to -20) dBm	>DC to 100 MHz >100 MHz to 2.4 GHz (>2.4 to 4) GHz (>4 to 8) GHz (>8 to 12.4) GHz (>12.4 to 18) GHz (>18 to 26.5) GHz (>26.5 to 33) GHz (>33 to 40) GHz	0.025 dB 0.029 dB 0.034 dB 0.041 dB 0.055 dB 0.063 dB 0.064 dB 0.076 dB 0.082 dB	R&S®NRPC18 R&S®NRPC33 R&S®NRPC40 R&S®NRPC67

Parameter/Range	Frequency	CMC[2, 4] (±)	Comments
RF Power – Generate[3] Absolute, DUT: Power Meter (cont)			
(-20 to 20) dBm	>DC to 1 MHz >(1 to 100) MHz >100 MHz to 2.4 GHz (2.4 to 8) GHz (>8 to 12.4) GHz (>12.4 to 18) GHz (>18 to 26.5) GHz (>26.5 to 33) GHz (>33 to 40) GHz (>40 to 50) GHz (>50 to 67) GHz (>67 to 90) GHz	0.012 dB 0.015 dB 0.021 dB 0.029 dB 0.036 dB 0.047 dB 0.050 dB 0.060 dB 0.063 dB 0.095 dB 0.15 dB 0.44 dB	R&S®NRPC18 R&S®NRPC33 R&S®NRPC40 R&S®NRPC50 R&S®NRPC67 R&S®NRP110T w/ R&S® SMZ90
Tuned RF Power – Measure[3] Relative DUT: Generator, Step Attenuator			Indicating measuring instrument direct RF power comparison (e.g.: R&S® FSWP8)
(0 to -0.1) dB (-0.1 to -20) dB (-20 to -40) dB (-40 to -60) dB (-60 to -80) dB (-80 to -90) dB	(10 to 200) MHz	0.007 dB 0.010 dB 0.014 dB 0.016 dB 0.019 dB 0.023 dB	UCS display linearity - MS: spectrum analyzer - DUT: step attenuator
Tuned RF Power – Generate[3] Relative DUT: Power Meter			
(0 to -0.1) dB (-0.1 to -20) dB (-20 to -40) dB (-40 to -60) dB (-60 to -80) dB (-80 to -90) dB	(10 to 200) MHz	0.010 dB 0.020 dB 0.023 dB 0.024 dB 0.027 dB 0.036 dB	Material measure direct RF power comparison R&S® RSC step attenuator; R&S® UCS2120

Parameter/Range	Frequency	CMC[2, 4] (±)	Comments
Tuned RF Power – Generate[3] Relative DUT: Power Meter (cont)			
(0 to 0.1) dB	50 MHz to 1 GHz	0.001 dB	R&S®NRPC-LS, w/ R&S®RSC
(>0.1 to 21) dB		0.005 dB	
(>21 to 30) dB		0.010 dB	
(>30 to 40) dB		0.012 dB	
(>40 to 50) dB		0.013 dB	
(>50 to 60) dB		0.014 dB	
(>60 to 70) dB		0.015 dB	
(>70 to 80) dB		0.016 dB	
(>80 to 90) dB		0.017 dB	
(>90 to 100) dB		0.018 dB	
(>100 to 110) dB		0.019 dB	
(>110 to 120) dB		0.020 dB	
Reflection Γ S_{11}/S_{22} – Measure[3]			Γ: reflection magnitude
Magnitude			Type-N (50 Ω), 3.5 mm, 2.92 mm 2.4 mm, 1.85 m
Unit Linear:			
(>0.2 to 1) lin (0 to 0.2) lin	9 kHz to 10 GHz	$(0.0035 + 0.0039 \cdot \Gamma^2)$ lin 0.0035 lin	R&S®ZNB8
(>0.2 to 1) lin (0 to 0.2) lin	(>10 to 18) GHz	$(0.0041 + 0.0040 \cdot \Gamma^2)$ lin 0.0041 lin	R&S®ZVA67
(>0.2 to 1) lin (0 to 0.2) lin	(>18 to 30) GHz	$(0.0059 + 0.0055 \cdot \Gamma^2)$ lin 0.0059 lin	R&S®ZV-Z270
(>0.2 to 1) lin (0 to 0.2) lin	(>30 to 40) GHz	$(0.0070 + 0.0050 \cdot \Gamma^2)$ lin 0.0070 lin	R&S®ZV-Z235
(>0.2 to 1) lin (0 to 0.2) lin	(>40 to 50) GHz	$(0.0092 + 0.0088 \cdot \Gamma^2)$ lin 0.0092 lin	R&S®ZN-Z229
(>0.2 to 1) lin (0 to 0.2) lin	(>50 to 60) GHz	$(0.012 + 0.011 \cdot \Gamma^2)$ lin 0.012 lin	R&S®ZV-Z224
(>0.2 to 1) lin (0 to 0.2) lin	(>60 to 67) GHz	$(0.012 + 0.014 \cdot \Gamma^2)$ lin 0.012 lin	R&S®ZV-Z218

Parameter/Range	Frequency	CMC[2, 4] (±)	Comments
Reflection Γ S_{11}/S_{22} – Measure[3] Phase:			R&S®ZNB8 w/CalKit Phase uncertainty: If $U_{Mag} > \lvert\Gamma\rvert$, If $U_{Mag} < \lvert\Gamma\rvert$
(0 to 1)	9 kHz to 67 GHz	180°	Γ: reflection magnitude U_{Mag}: magnitude uncertainty in unit 1 U_{Deg}: phase uncertainty in unit degree
(0 to 1)	9 kHz to 67 GHz	$U_{Deg} = \arcsin(U_{Mag}/\lvert\Gamma\rvert) \times 180°/\pi$	
Transmission S_{21}/S_{12} – Measure[3]			*A*: Attenuation in dB
(0 to 30) dB (>30 to 40) dB (>40 to 50) dB (>50 to 60) dB (>60 to 80) dB	(9 to 100) kHz	0.05 dB, 0.4° 0.07 dB, 0.5° 0.12 dB, 0.8° 0.32 dB, 2.1° 0.32 dB + 0.13 x (*A* - 60 dB)	R&S®ZNB8 R&S®ZV-Z270
(0 to 30) dB (>30 to 40) dB (>40 to 50) dB (>50 to 60) dB (>60 to 80) dB	>100 kHz to 50 MHz	0.05 dB, 0.4° 0.06 dB, 0.4° 0.09 dB, 0.6° 0.19 dB, 1.3° 0.19 dB + 0.076 x (*A* - 60 dB)	
(0 to 30) dB (>30 to 40) dB (>40 to 60) dB (>60 to 80) dB (>80 to 90) dB	(>50 to 200) MHz	0.05 dB, 0.4° 0.06 dB, 0.4° 0.08 dB, 0.6° 0.32 dB, 2.1° 1.0 dB	
(0 to 30) dB (>30 to 40) dB (>40 to 60) dB (>60 to 80) dB (>80 to 90) dB	200 MHz to 20 GHz	0.04 dB, 0.9° 0.06 dB, 0.9° 0.07 dB, 0.9° 0.15 dB, 1.3° 0.32 dB	R&S®ZVA67 R&S®ZV-Z218

Parameter/Range	Frequency	CMC[2, 4] (±)	Comments
Transmission S_{21}/S_{12} – Measure[3] (cont)			*A*: Attenuation in dB
(0 to 30) dB (>30 to 40) dB (>40 to 60) dB (>60 to 80) dB (>80 to 90) dB	(20 to 40) GHz	0.06 dB, 1.3° 0.08 dB, 1.3° 0.09 dB, 1.3° 0.33 dB, 2.5° 0.96 dB	R&S®ZVA67 R&S®ZV-Z218
(0 to 30) dB (>30 to 40) dB (>40 to 60) dB (>60 to 80) dB (>80 to 90) dB	(40 to 50) GHz	0.11 dB, 1.7° 0.12 dB, 1.7° 0.13 dB, 1.7° 0.34 dB, 2.7° 0.96 dB	
(0 to 30) dB (>30 to 40) dB (>40 to 60) dB (>60 to 90) dB	(50 to 67) GHz	0.15 dB, 2.2° 0.16 dB, 2.3° 0.20 dB, 2.4° 0.20 dB + 0.09 x (*A* - 60 dB)	

III. Electrical – RF/Microwave Device Specific Parameters

Parameter/Range	Frequency	CMC[2, 4, 6] (±)	Comments
CISPR Pulse Characteristic – Absolute Measure DUT: Pulse Generator			Indicating measuring instrument, direct pulse comparison R&S®FSWP8 CISPR 16-1-1
Band A 13.5 µVs; 25 Hz	(9 to 150) kHz	0.25 dB	
Band B 0.316 µVs; 100 Hz	150 kHz to 30 MHz	0.25 dB	UCS CISPR: pulse level, MS: spectrum analyzer, DUT: EMI pulse generator
Band C/D 0.044 µVs; 100 Hz	(30 to 1000) MHz	0.26 dB	

Parameter/Range	Frequency	CMC[2, 4, 5, 6] (±)	Comments
CISPR Detector Absolute – Generate DUT: Test Receiver			Material measure, direct pulse comparison (e.g.: Schwarzbeck® IGUU 2918)
Band A 13.5 µVs; 25 Hz	(9 to 150) kHz	0.30 dB	CISPR 16-1-1
Band B 0.316 µVs; 100 Hz	150 kHz to 30 MHz	0.30 dB	
Band C/D 0.044 µVs; 100 Hz	(30 to 1000) MHz	0.31 dB	
Band E (Pulse Modulated Carrier)	(1 to 4) GHz (4 to 8) GHz (8 to 18) GHz	0.10 dB 0.11 dB 0.13 dB	Absolute pulse response (Band E) MS: pulsed RF generator, DUT: receiver R&S® SMA100B
CISPR Pulse Repetition Rate – Measure DUT: Pulse Generator			Indicating measuring, instrument direct measurement (e.g.: R&S® HM8123)
Band A	(9 to 150) kHz	0.01 %	CISPR 16-1-1
Band B	150 kHz to 30 MHz	0.01 %	UCS: pulse repetition rate, MS: frequency counter, DUT: EMI pulse generator
Band C/D	(30 to 1000) MHz	0.01 %	
CISPR Detector – Relative: Response Variation with Repetition Frequency Generate[3] DUT: Test Receiver			Material measure, direct pulse comparison (e.g.: Schwarzbeck® IGUU 2918) CISPR 16-1-1
Band A (0.1 to 100) Hz	(9 to 150) kHz	0.05 dB	UCS: pulse repetition rate, MS: pulse generator, DUT: receiver
Band B 0.1 Hz to 4 kHz	150 kHz to 30 MHz	0.05 dB	
Band C/D 0.1 Hz to 50 kHz	(30 to 1000) MHz	0.05 dB	

Parameter/Range	Frequency	CMC[2, 4, 6] (±)	Comments
CISPR Detector – Absolute Generate[3] DUT: Test Receiver Band E (Pulse Modulated Carrier) 100 Hz to 400 kHz	(1 to 18) GHz	0.05 dB	Material measure direct comparison pulse to modulated carrier (e.g.: R&S® SMA100B) CISPR 16-1-1 Absolute pulse response (Band E) MS: pulsed RF generator, DUT: receiver
Phase Noise – Measure	100 MHz to 16 GHz Carrier	0.67 dB	R&S LPN
Resolution Bandwidth Bandwidth Switching – Measure[3]	100 Hz to 80 MHz (RBW)	0.010 dB	R&S NRP18A
Amplitude Modulation – Generate & Measure[3] 0.01 to 1.0	>DC $f_{mod} \leq$ 100 kHz 100 kHz $< f_{mod} \leq$ 1 MHz 1 MHz $< f_{mod} \leq$ 10 MHz	0.001 x $m + k_{AM}$ 0.002 x $m + k_{AM}$ 0.007 x $m + k_{AM}$	m: Mmodulation index f_{mod}: modulation frequency R&S®FSW k_{AM}: residual influence depends on demodulation bandwidth
Frequency Modulation – Generate & Measure[3] 10 Hz to 16 MHz	10 Hz $< f_{mod} \leq$ 100 kHz 100 kHz $< f_{mod} \leq$ 200 kHz 200 kHz $< f_{mod} \leq$ 10 MHz	0.001 x $\Delta f + k_{FM}$ 0.002 x $\Delta f + k_{FM}$ 0.005 x $\Delta f + k_{FM}$	Δf: frequency deviation R&S®FSW k_{FM}: residual influence depends on demodulation bandwidth

Parameter/Range	Frequency	CMC[2, 4] (±)	Comments
Phase Modulation – Generate & Measure[3] 10 Hz/ f_{mod} in rad to 16 MHz/ f_{mod} in rad	10 Hz $f_{mod} \leq$ 100 kHz 100 kHz $< f_{mod} \leq$ 200 kHz 200 kHz $< f_{mod} \leq$ 10 MHz	0.001 x $\Delta\phi$+ k_{FM} 0.002 x $\Delta\phi$ + k_{FM} 0.005 x $\Delta\phi$+ k_{FM}	$\Delta\phi$: phase deviation R&S®FSW k_{PM}: residual influence depends on demodulation
Digital Modulation – Generate & Measure[3] Carrier: 2 MHz to 6 GHz Error Vector Magnitude (RMS) for Modulation Types: MSK, GMSK, BPSK, DQPSK, π/4 DQPSK, 8 PSK, 16 QAM & 32QAM, QPSK Phase Error (RMS) for Modulation Types: MSK, GMSK, BPSK, DQPSK, π/4 DQPSK, 8 PSK, 16 QAM & 32 QAM, QPSK	(20 to 1500) MHz (>1500 to 2600) MHz (>2600 to 6000) MHz (20 to 1500) MHz (>1500 to 2600) MHz (>2600 to 6000) MHz	0.018 % RMS 0.019 % RMS 0.046 % RMS 0.0099º RMS 0.011º RMS 0.026º RMS	R&S FSQ

IV. Time & Frequency

Parameter/Equipment	Range	CMC[2, 7] (±)	Comments
Frequency – Measure and Measuring Equipment[3]	20 Hz to 100 MHz 100 MHz to 67 GHz 10 MHz	0.01 Hz 0.10 nHz/Hz 3.9 pHz/Hz (3.9 parts in 10^{12})	Fluke 910R w/ FSQ spectrum analyzer, generator (e.g.: R&S® SMA100B)

Parameter/Equipment	Range	CMC[2, 7] (±)	Comments
Time – Measure	100 ns	3.9 ps/s (3.9 parts in 10^{12})	Fluke 910R w/ Fluke 6690 counter
Rise-Time (RF pulse) – Measure[3]	(0.5 to 10) ns	1 ns	Krytar®704A w/ R&S®RTO2000

[1] This laboratory offers commercial calibration service and field calibration service.

[2] Calibration and Measurement Capability Uncertainty (CMC) is the smallest uncertainty of measurement that a laboratory can achieve within its scope of accreditation when performing more or less routine calibrations of nearly ideal measurement standards or nearly ideal measuring equipment. CMCs represent expanded uncertainties expressed at approximately the 95 % level of confidence, usually using a coverage factor of $k = 2$. The actual measurement uncertainty of a specific calibration performed by the laboratory may be greater than the CMC due to the behavior of the customer's device and to influences from the circumstances of the specific calibration.

[3] Field calibration service is available for this calibration. Please note the actual measurement uncertainties achievable on a customer's site can normally be expected to be larger than the CMC found on the A2LA Scope. Allowance must be made for aspects such as the environment at the place of calibration and for other possible adverse effects such as those caused by transportation of the calibration equipment. The usual allowance for the actual uncertainty introduced by the item being calibrated, (e.g. resolution) must also be considered and this, on its own, could result in the actual measurement uncertainty achievable on a customer's site being larger than the CMC.

[4] The stated measured values are determined using the indicated instrument (see Comments). This capability is suitable for the calibration of the devices intended to measure or generate the measured value in the ranges indicated. CMCs are expressed as either a specific value that covers the full range or as a percent or fraction of the reading plus a fixed floor specification.

[5] In the statement of CMC, % refers to a percent of reading unless otherwise noted.

[6] Calibration of EMI Test Receivers according to CISPR 16-1-1.

[7] The type of instrument or material being calibrated is defined by the parameter. This indicates the laboratory is capable of calibrating instruments that measure or generate the values in the ranges indicated for the listed measurement parameter.

[8] This scope meets A2LA's *P112 Flexible Scope Policy.*

Accredited Laboratory

A2LA has accredited

ROHDE & SCHWARZ USA, INC.

Columbia, MD

for technical competence in the field of

Calibration

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 *General requirements for the competence of testing and calibration laboratories*. This laboratory also meets the requirements of ANSI/NCSL Z540-1-1994 and the requirements of ANSI/NCSL Z540.3-2006 and R205 – Specific Requirements: Calibration Laboratory Accreditation Program. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (*refer to joint ISO-ILAC-IAF Communiqué dated April 2017*).

Presented this 4th day of November 2021.

Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 2354.01
Valid to November 30, 2023
Revised on October 18, 2023

For the calibrations to which this accreditation applies, please refer to the laboratory's Calibration Scope of Accreditation.