A.6. AC Powerline Conducted Emission (150kHz- 30MHz)

A.6.1 Summary

All AC line conducted spurious emissions are measured with a receiver connected to a grounded LISN while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates and modes were investigated for conducted spurious emissions. Only the conducted emissions of the configuration that produced the worst case emissions are reported in this section

A.6.2 Method of Measurement

See Clause 6.2 of ANSI C63.10 specifically.

See Clause 4 and Clause 5 of ANSI C63.10 generally.

The conducted emissions from the AC port of the EUT are measured in a shielding room. The EUT is connected to a Line Impedance Stabilization Network (LISN). An overview sweep with peak detection was performed. The measurements were performed with a quasi-peak detector and if required, an average detector.

The conducted emission measurements were made with the following detector of the test receiver: Quasi-Peak / Average Detector.
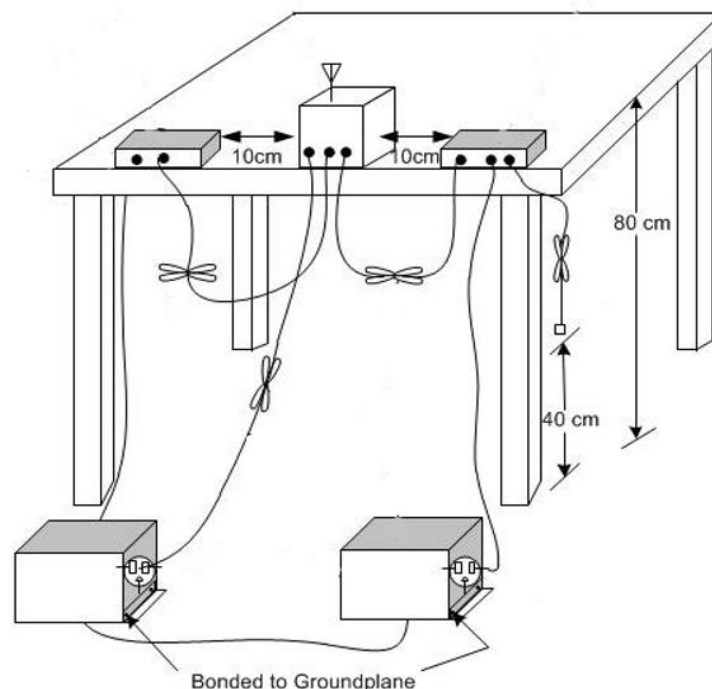
The measurement bandwidth is:

Frequency of Emission (MHz)	RBW/IF bandwidth
0.15-30	9kHz

A.6.3 Test Condition

Voltage（V）	Frequency（Hz）
120	60

A.6.4 Test setup

Measurement Result and limit:

WLAN (Quasi-peak Limit)

Frequency range (MHz)	Quasi-peak Limit (dBμV)	Result (dBμV)		Conclusion
		With charger		
		11a mode	**Idle**	
0.15 to 0.5	66 to 56	Fig.25	Fig.26	P
0.5 to 5	56			
5 to 30	60			
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

WLAN (Average Limit)

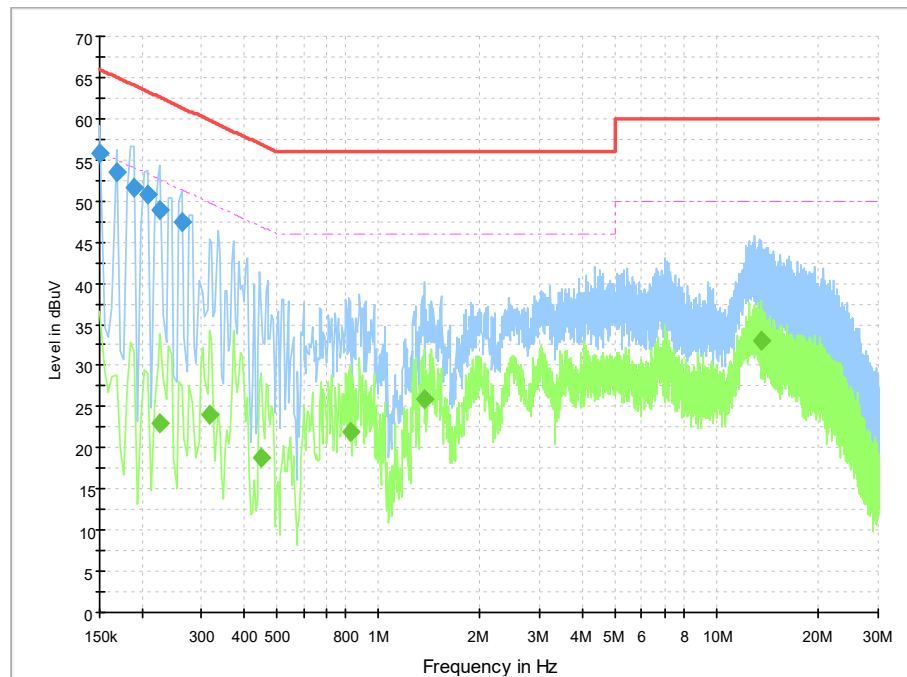| Frequency range (MHz)	Average Limit (dBμV)	Result (dBμV)		Conclusion
		With charger		
		11a mode	**Idle**	
0.15 to 0.5	56 to 46	Fig.25	Fig.26	P
0.5 to 5	46			
5 to 30	50			
NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.				

Conclusion: PASS

Test graphs as below:

Fig.25   Conducted Emission(802.11a, Ch40, TX)

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.150000	55.9	2000.0	9.000	On	L1	20.2	10.1	66.0	
0.168000	53.4	2000.0	9.000	On	L1	20.0	11.6	65.1	
0.190500	51.6	2000.0	9.000	On	L1	20.0	12.4	64.0	
0.208500	50.7	2000.0	9.000	On	L1	20.0	12.5	63.3	
0.226500	48.8	2000.0	9.000	On	N	20.0	13.8	62.6	
0.262500	47.3	2000.0	9.000	On	L1	20.0	14.0	61.4	

Final Result 2

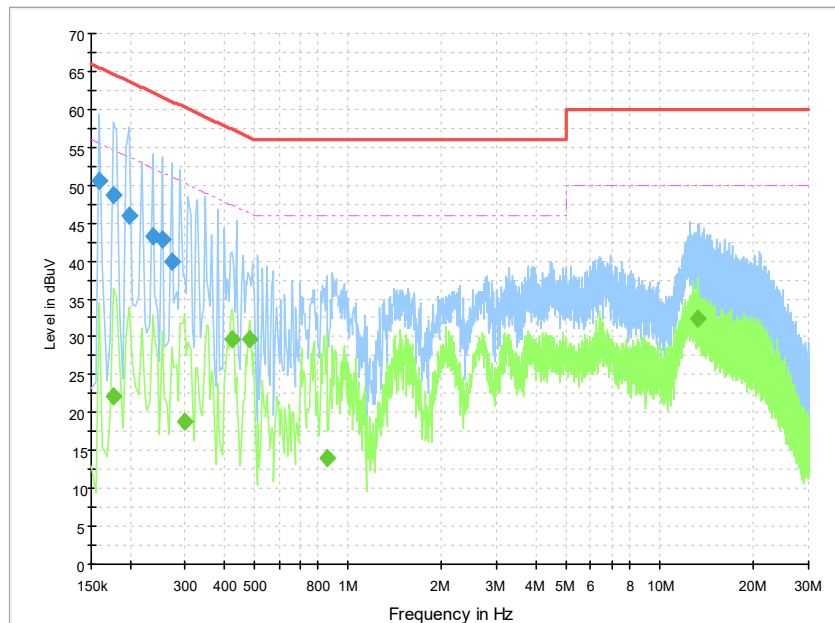| Frequency (MHz)	CAverage (dBμV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.226500	23.1	2000.0	9.000	On	N	20.0	29.5	52.6	
0.316500	24.1	2000.0	9.000	On	L1	20.0	25.7	49.8	
0.451500	18.9	2000.0	9.000	On	L1	20.1	28.0	46.8	
0.825000	22.0	2000.0	9.000	On	N	20.1	24.0	46.0	
1.360500	25.9	2000.0	9.000	On	L1	19.9	20.1	46.0	
13.510500	32.9	2000.0	9.000	On	L1	20.0	17.1	50.0	

Fig.26   Conducted Emission(802.11a, IDLE)

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.159000	50.5	2000.0	9.000	On	L1	20.1	15.0	65.5	
0.177000	48.7	2000.0	9.000	On	L1	20.0	16.0	64.6	
0.199500	45.9	2000.0	9.000	On	L1	20.0	17.7	63.6	
0.235500	43.3	2000.0	9.000	On	L1	20.0	18.9	62.3	
0.253500	42.7	2000.0	9.000	On	N	20.0	18.9	61.6	
0.271500	40.0	2000.0	9.000	On	L1	20.0	21.1	61.1	

Final Result 2

Frequency (MHz)	CAverage (dBµV)	Meas. Time	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.177000	22.1	2000.0	9.000	On	N	20.0	32.6	54.6	
0.298500	18.7	2000.0	9.000	On	N	20.1	31.5	50.3	
0.424500	29.7	2000.0	9.000	On	L1	20.1	17.7	47.4	
0.483000	29.7	2000.0	9.000	On	L1	20.1	16.6	46.3	
0.852000	14.0	2000.0	9.000	On	N	20.1	32.0	46.0	
13.191000	32.5	2000.0	9.000	On	L1	20.0	17.5	50.0	

A.7. 99% Occupied bandwidth

Method of Measurement: See ANSI C63.10-2013-clause 12.4.2.

a)   The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.

b)   The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.

c)   Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.

d)   Step a) through step c) might require iteration to adjust within the specified range.

e)   Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.

f)   Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.

g)   If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% ofthe total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.

h)   The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

Measurement Uncertainty:

Measurement Uncertainty	60.80Hz

EUT ID: UT01a

Measurement Result:

TestMode	Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11A	5180	17.512	5171.2944	5188.8069	---	---
	5200	17.488	5191.2070	5208.6955	---	---
	5240	17.649	5231.2192	5248.8682	---	---
11N40SISO	5190	36.597	5171.7317	5208.3282	---	---
	5230	36.71	5211.6550	5248.3650	---	---
11AC20SISO	5180	18.294	5170.8959	5189.1895	---	---
	5200	18.209	5190.8941	5209.1031	---	---
	5240	18.212	5230.8953	5249.1071	---	---
11AC80SISO	5210	75.568	5172.2801	5247.8484	---	---

Test graphs as below:

11A_5180

18:02:28 05.01.2025

11A_5200

18:04:05 05.01.2025

11A_5240
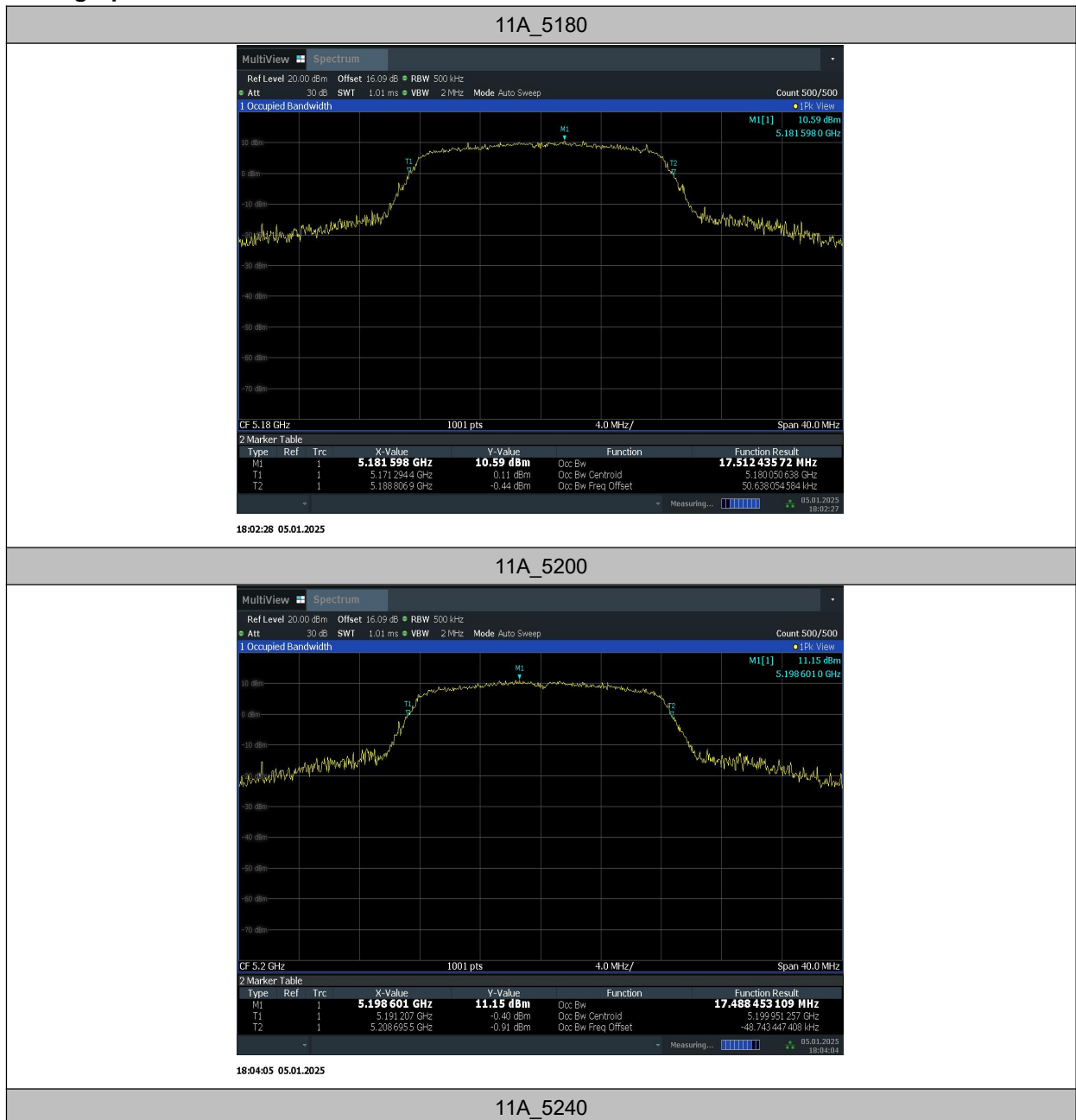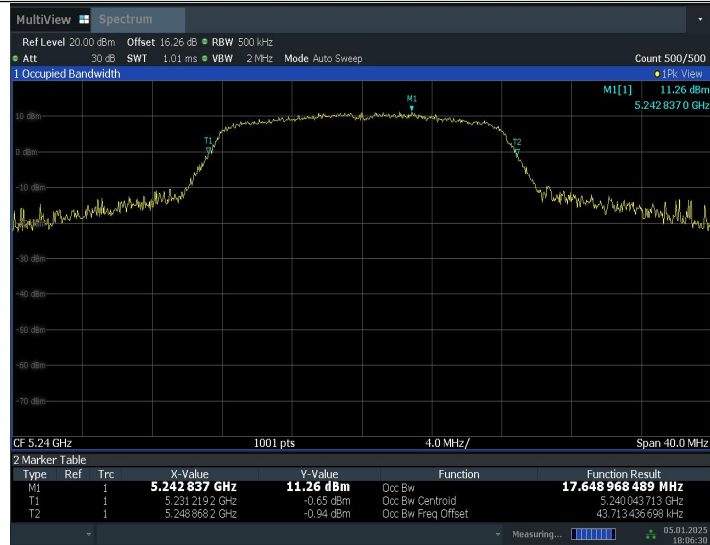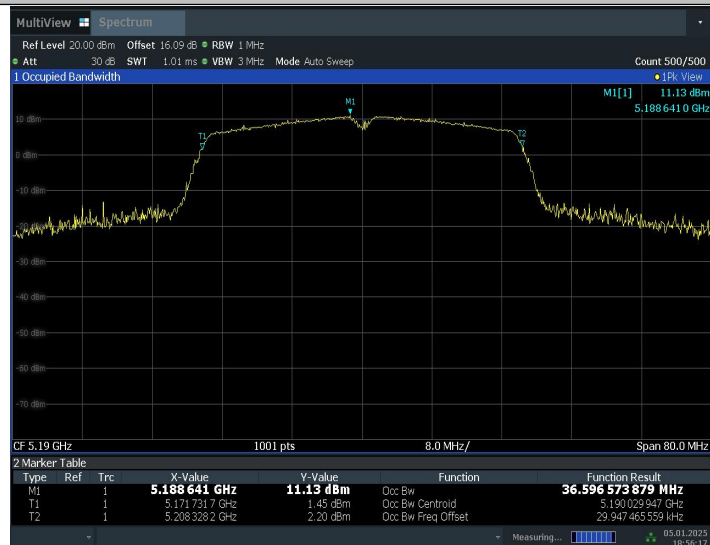
11N40SISO_5190

11N40SISO_5230
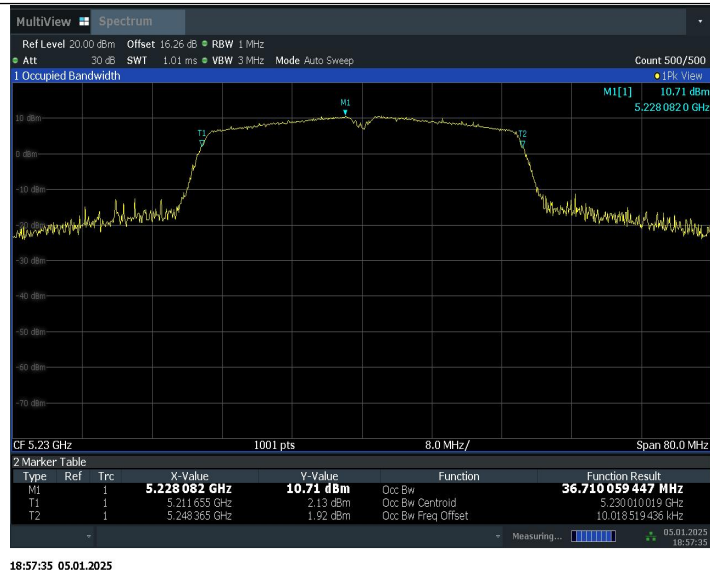
11AC20SISO_5180
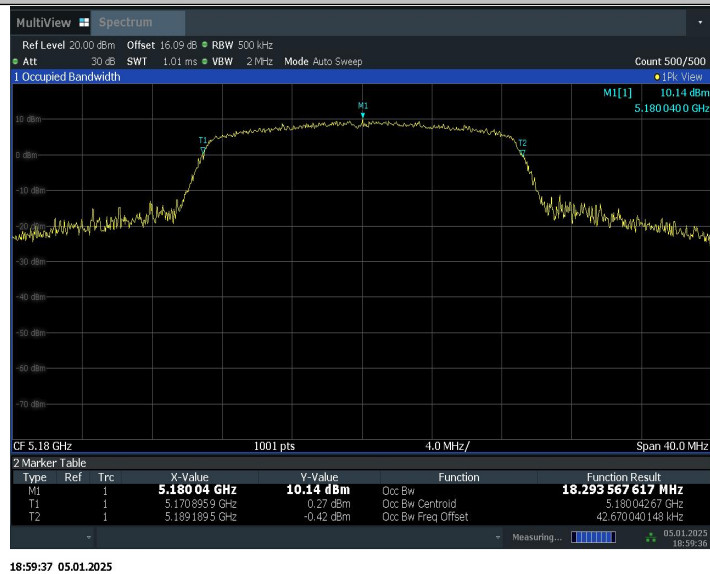
11AC20SISO_5200

11AC20SISO_5240

11AC80SISO_5210

19:43:07 05.01.2025
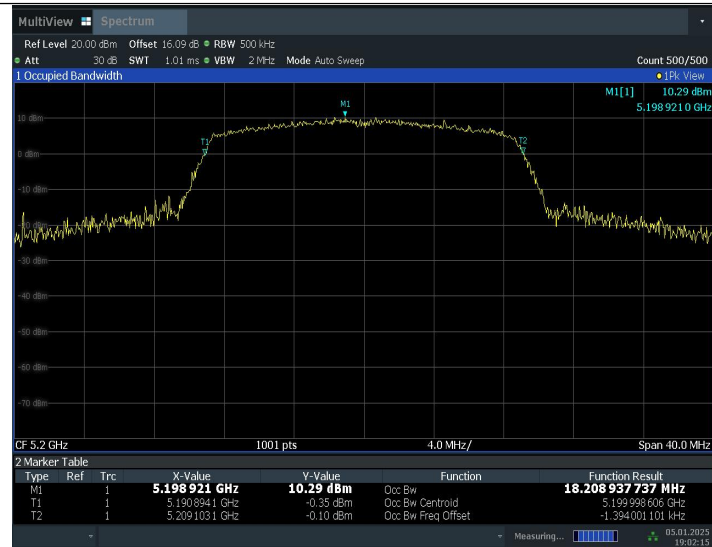
Conclusion: PASS

A.8. Antenna Requirement

The antenna of the device is permanently attached. There are no provisions for connection to an external antenna.

The unit complies with the requirement of FCC Part 15.203.

A.9. Power control

A Transmission Power Control mechanism is not required for systems with an e.i.r.p. of less than 27dBm (500 mW).

ANNEX B: EUT parameters

Disclaimer: The antenna gain and worse case provided by the client may affect the validity of the measurement results in this report, and the client shall bear the impact and consequences arising therefrom.

ANNEX C: Accreditation Certificate

Accredited Laboratory

A2LA has accredited

TELECOMMUNICATION TECHNOLOGY LABS, CAICT

Beijing, People's Republic of China

for technical competence in the field of

Electrical Testing

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 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 23ʳᵈ day of July 2024.

Mr. Trace McInturff, Vice President, Accreditation Services
For the Accreditation Council
Certificate Number 7049.01
Valid to July 31, 2026

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

*** END OF REPORT BODY ***