TEST REPORT

Client Information:

Applicant:	HONG KONG LELEGAO TECHNOLOGY CO.,LIMITED
Applicant add.:	19H Maxgrand Plaza, No.3 Tai Yau Street, San Po Kong,Kowloon,HongKong, China
Manufacturer:	Shenzhen DOKE Electronic Co., Ltd
Manufacturer add.:	801, Building3, 7th Industrial Zone, Yulv Community, Yutang Road, Guangming District, Shenzhen, China.

Product Information:

Product Name:	Laptop
Model No:	AceBook 10
Brand Name:	Blackview
FCC ID :	2BSW8-ACEBOOK10

Applicable standards: FCC CFR Title 47 Part 15 Subpart E Section 15.407

Prepared By:

Dongguan Yaxu (AiT) Technology Limited

No.22, Jinqianling 3rd Street, Jitigang, Huangjiang,Dongguan, Guangdong, China

Tel.: +86-769-8202 0499 Fax.: +86-769-8202 0495

Date of Receipt: Oct. 16, 2025 Date of Test: Oct. 16, 2025~Nov. 12, 2025

Date of Issue: Nov. 13, 2025 Test Result: Pass

This device described above has been tested by Dongguan Yaxu (AiT) Technology Limited and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

Note: This report shall not be reproduced except in full, without the written approval of Dongguan Yaxu (AiT) Technology Limited, this document may be altered or revised by Dongguan Yaxu (AiT) Technology Limited, personal only, and shall be noted in the revision of the document. This test report must not be used by the client to claim product endorsement.

Reviewed by: Emiya Lin
Emiya Lin

Approved by: Simba Huang
Simba Huang

1 Contents

Page

COVER PAGE

1 CONTENTS 2

2 TEST SUMMARY 6

2.1 Statement of the Measurement Uncertainty 6
2.2 Measurement Uncertainty 6

3 TEST FACILITY 7

3.1 Deviation from standard 7
3.2 Abnormalities from standard conditions 7
3.3 Test Location 7

4 GENERAL INFORMATION 8

4.1 Test Frequencies 10
4.2 EUT Peripheral List 11
4.3 Test Peripheral List 11
4.4 TEST METHODOLOGY 12
4.5 Description of Test Modes 13

5 EQUIPMENT USED DURING TEST 15

6 TEST RESULTS AND MEASUREMENT DATA 17

6.1 Antenna requirement 17
6.1.1 Standard requirement 17
6.1.2 EUT Antenna 17
6.2 On Time and Duty Cycle 18
6.2.1 Standard requirement 18
6.2.2 Measuring Instruments and Setting: 18
6.2.3 Test Procedures 18
6.2.4 Test Setup Layout 18
6.2.5 EUT Operation During Test 18
6.2.6 Test Result 18
6.3 Maximum Conducted Output Power Measurement 19
6.3.1 Standard requirement 19
6.3.2 Measuring Instruments 20
6.3.3 Test Procedures 20
6.3.4 Test Setup Layout 20
6.3.5 EUT Operation During Test 20
6.3.6 Test Result 20
6.4 26dB Bandwidth Measurement 22
6.4.1 Standard requirement 22
6.4.2 Measuring Instruments 22
6.4.3 Test Procedures 22

6.4.4 Test Setup Layout 22
6.4.5 EUT Operation During Test 22
6.4.6 Test Result 22
6.5 6dB Bandwidth Measurement 23
6.5.1 Standard requirement 23
6.5.2 Measuring Instruments 23
6.5.3 Test Procedures 23
6.5.4 Test Setup Layout 23
6.5.5 EUT Operation During Test 23
6.5.6 Test Result 23
6.6 99% Occupied Bandwidth Measurement 24
6.6.1 Standard requirement 24
6.6.2 Measuring Instruments 24
6.6.3 Test Procedures 24
6.6.4 Test Setup Layout 24
6.6.5 EUT Operation During Test 24
6.6.6 Test Result 24
6.7 Power Spectral Density 26
6.7.1 Standard requirement 26
6.7.2 Measuring Instruments and Setting 26
6.7.3 Test Procedures 26
6.7.4 Test Setup Layout 27
6.7.5 EUT Operation during Test 27
6.7.6 Test result 27
6.8 Conducted RF Spurious Emission 28
6.8.1 Standard requirement 28
6.8.2 Measuring Instruments 28
6.8.3 Test Procedures 28
6.8.4 Test Setup Layout 29
6.8.5 EUT Operation During Test 29
6.8.6 Test Result 29
6.9 Radiated Emissions and Radiation Restricted band Measurement 30
6.9.1 Standard requirement 30
6.9.2 Measuring Instruments and Setting: 31
6.9.3 Test Procedures 31
6.9.4 Test Setup Layout 34
6.9.5 EUT Operation During Test 35
6.9.6 Test Result 35
6.10 Power Line Conducted Emissions 44
6.10.1 Standard requirement 44
6.10.2 Test Setup Layout 44
6.10.3 Test Procedures 44
6.10.4 EUT Operation during Test 44
6.10.5 Test result 44
6.11 Frequency Stability 47
6.11.1 Standard requirement 47
6.11.2 Measuring Instruments and Setting: 47

6.11.3 Test Procedures 47
6.11.4 Test Setup Layout 47
6.11.5 EUT Operation during Test 47
6.11.6 Test result 47

7 TEST SETUP PHOTOGRAPHS OF EUT 48

8 EXTERNAL PHOTOGRAPHS OF EUT 48

9 INTERNAL PHOTOGRAPHS OF EUT 48

REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Nov. 13, 2025	Valid	Initial release

2 Test Summary

Test Item	Section in CFR 47	Result
/	On Time and Duty Cycle	/
§15.407(a)	Maximum Conducted Output Power	Pass
§15.407(a)	Power Spectral Density	Pass
§15.407(a)	26dB Bandwidth	Pass
§15.407(a)	6dB Bandwidth	Pass
§15.209 §15.407(b)	Radiated Emissions	Pass
§15.205	Emissions at Restricted Band	Pass
§15.407(g)	Frequency Stability	Pass
§15.207(a)	Power Line Conducted Emissions	Pass
§15.203	Antenna Requirements	Pass
§2.1093	RF Exposure	Pass*

Note

1. Test according to ANSI C63.10:2020.
2. The measurement uncertainty is not included in the test result.
3. "*" Test results in other test report (RF Exposure Evaluation Report)

2.1 Statement of the Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the AiT quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

2.2 Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	0.009MHz-30MHz	3.10dB	(1)
Radiated Emission	30MHz-1GHz	3.75dB	(1)
Radiated Emission	1GHz-18GHz	3.88dB	(1)
Radiated Emission	18GHz-40GHz	3.88dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	1.20dB	(1)
Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.			

3 Test Facility

The test facility is recognized, certified or accredited by the following organizations:

CNAS-Registration No: L6177

Dongguan Yaxu (AiT) technology Limited is accredited to ISO/IEC 17025:2017 general Requirements for the competence of testing and calibration laboratories (CNAS-CL01 Accreditation Criteria for the competence of testing and calibration laboratories) on April 18, 2022

FCC-Registration No.: 703111 Designation Number: CN1313

Dongguan Yaxu (AiT) technology Limited has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files.

IC-Registration No.: 6819A CAB identifier: CN0122

The 3m Semi-anechoic chamber of Dongguan Yaxu (AiT) technology Limited has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 6819A

A2LA-Lab Cert. No.: 6317.01

Dongguan Yaxu (AiT) technology Limited has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

3.1 Deviation from standard

None

3.2 Abnormalities from standard conditions

None

3.3 Test Location

Dongguan Yaxu (AiT) Technology Limited

Address: No.22, Jinqianling 3rd Street, Jitigang, Huangjiang,Dongguan, Guangdong, China

Tel.: +86-769-8202 0499

Fax.: +86-769-8202 0495

4 General Information

<table>
<tr><td>EUT Name:</td><td>Laptop</td></tr>
<tr><td>Model No:</td><td>AceBook 10</td></tr>
<tr><td>Serial Model:</td><td>N/A</td></tr>
<tr><td>Brand Name:</td><td>Blackview</td></tr>
<tr><td>Test sample(s) ID:</td><td>AiTDG-251016001-1</td></tr>
<tr><td>Sample(s) Status:</td><td>Engineer sample</td></tr>
<tr><td>Operation frequency:</td><td>
<table>
<tr><td>Band</td><td>Mode</td><td>Frequency Range(MHz)</td><td>Number of channels</td></tr>
<tr><td rowspan="4">U-NII Band I</td><td>IEEE 802.11a</td><td>5180-5240</td><td>4</td></tr>
<tr><td>IEEE 802.11n/ac/ax 20MHz</td><td>5180-5240</td><td>4</td></tr>
<tr><td>IEEE 802.11n/ac/ax 40MHz</td><td>5190-5230</td><td>2</td></tr>
<tr><td>IEEE 802.11ac/ax 80MHz</td><td>5210</td><td>1</td></tr>
<tr><td rowspan="4">U-NII Band III</td><td>IEEE 802.11a</td><td>5745-5825</td><td>5</td></tr>
<tr><td>IEEE 802.11n/ac/ax 20MHz</td><td>5745-5825</td><td>5</td></tr>
<tr><td>IEEE 802.11n/ac/ax 40MHz</td><td>5755-5795</td><td>2</td></tr>
<tr><td>IEEE 802.11ac/ax 80MHz</td><td>5775</td><td>1</td></tr>
</table>
</td></tr>
<tr><td>Modulation Technology:</td><td>IEEE 802.11a/n/ac: OFDM
IEEE 802.11ax: OFDMA</td></tr>
<tr><td>Modulation Type</td><td>IEEE 802.11a/n/ac: OFDM(256QAM, 64QAM, 16QAM, QPSK, BPSK)
IEEE 802.11ax: OFDMA(1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK)</td></tr>
<tr><td>Antenna Type:</td><td>FPC Antenna</td></tr>
<tr><td>Antenna gain:</td><td>ANT1(AUX):
2.18dBi for 5150-5250MHz
2.72dBi for 5725-5875MHz
ANT2(MAIN):
2.43dBi for 5150-5250MHz
2.64dBi for 5725-5875MHz
Directional Gain:
5.32dBi for 5150-5250MHz
5.69dBi for 5725-5875MHz
Note: Directional Gain=10*LOG((10^(ANT1/20)+10^(ANT2/20))^2/2)</td></tr>
<tr><td>Hardware version.:</td><td>EM-IDN8139-S4-V1.0</td></tr>
<tr><td>Software version.:</td><td>Windows 11 pro 10.0.26100</td></tr>
<tr><td>Power Supply:</td><td>DC 7.6V by 8000mAh rechargeable Li-ion battery or DC power from adapter</td></tr>
<tr><td>Battery:</td><td>DC 7.6V by 8000mAh rechargeable Li-ion battery</td></tr>
<tr><td>Adapter:</td><td>MODEL: P4524U
INPUT:100-240V~ 50/60Hz 1.5A</td></tr>
</table>

	OUTPUT: 5.0V/9.0V/12.0V/15.0V⎓3.0A 20.0V⎓2.25A 45.0W Max
Model different:	N/A

Note:
For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

4.1 Test Frequencies

EUT channels and frequencies list:

Channel list for 802.11a/n(HT20)/ac(VHT20)/ax(HE20)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180MHz	40	5200MHz	44	5220MHz	48	5240MHz
149	5745MHz	157	5785MHz	165	5825MHz		

Channel list for 802.11n(HT40)/ac(VHT40)/ax(HE40)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
38	5190MHz	46	5230MHz				
151	5755MHz	159	5795MHz				

Channel list for 802.11ac(VHT80)/ax(HE80)							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
42	5210MHz					--	--
155	5775MHz						

4.2 EUT Peripheral List

No.	Equipment	Manufacturer	Model No.	Serial No.	Power cord	Remark
1	Adapter	SHENZHEN XINSPOWER TECHNOLOGY CO.,LTD	P4524U	N/A	N/A	N/A

4.3 Test Peripheral List

No.	Equipment	Manufacturer	Model No.	Serial No.	Power cord	Remark
1	N/A	N/A	N/A	N/A	N/A	N/A

4.4 TEST METHODOLOGY

All measurements contained in this report were conducted with ANSI C63.10:2020, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

The radiated testing was performed at an antenna-to-EUT distance of 3 meters. All radiated and conducted emissions measurement was performed at Dongguan Yaxu (AiT) Technology Limited

4.4.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

4.4.2 EUT Exercise

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to FCC's request, Test Procedure 789033 D02 General UNII Test Procedures New Rules v01r03 and KDB 662911 D01 Multiple Transmitter Output v02r01 is required to be used for this kind of FCC 15.407 UII device.

According to its specifications, the EUT must comply with the requirements of the Section 15.203, 15.205, 15.207, 15.209 and 15.407 under the FCC Rules Part 15 Subpart E

4.4.3 General Test Procedures

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2.1 of ANSI C63.10:2020 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 6.3 of ANSI C63.10:2020.

4.5 Description of Test Modes

The EUT has been tested under operating condition.

This test was performed with EUT in X, Y, Z position and the worst case was found when EUT in X position.

AC main conducted emission pre-test voltage at both AC 120V/60Hz and AC 240V/50Hz, recorded worst case;

AC main conducted emission pre-test at charge from power adapter modes, recorded worst case;

Worst-case mode and channel used for 9 KHz-1000 MHz radiated emissions was the mode and channel with the highest output power, that was determined to be ANT1 IEEE 802.11a mode (MCH).

Worst-Case data rates were utilized from preliminary testing of the Chipset, worst-case data rates used during the testing are as follows:

IEEE 802.11a Mode: 6 Mbps, OFDM.
IEEE 802.11ac VHT20 Mode: MCS0
IEEE 802.11n HT20 Mode: MCS0, OFDM.
IEEE 802.11ac VHT40 Mode: MCS0, OFDM.
IEEE 802.11n HT40 Mode: MCS0, OFDM.
IEEE 802.11ac VHT80 Mode: MCS0, OFDM.
IEEE 802.11ax HE20 Mode: MCS0, OFDM.
IEEE 802.11ax HE40 Mode: MCS0, OFDM.
IEEE 802.11ax HE80 Mode: MCS0, OFDM.

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Transmitting mode	Keep the EUT in continuously transmitting mode.					
Test software:	AX Series MP Toolkit					
Frequency	5180 MHz	5200 MHz	5240 MHz	5745 MHz	5785 MHz	5825 MHz
Parameters(802.11a)	12.5	12.5	12.5	11.5	11.5	11.5
Parameters(802.11n20)	9	9	9	7.5	7.5	7.5
Parameters(802.11ac20)	9	9	9	7.5	7.5	7.5
Parameters(802.11ax20)	8	8	8	7	7	7
Frequency	5190 MHz	5230 MHz	5755 MHz	5795 MHz	--	--
Parameters(802.11n40)	8.5	8.5	7.5	7.5	--	--
Parameters(802.11ac40)	8.5	8.5	7.5	7.5	--	--
Parameters(802.11ax40)	7.5	7.5	7	7	--	--
Frequency	5210 MHz	5775 MHz	--	--	--	--
Parameters(802.11ac80)	8	7.5	--	--	--	--
Parameters(802.11ax80)	7	7	--	--	--	--

Antenna & Bandwidth

Antenna	Chain 1 (ANT1)			Chain 2 (ANT2)			Simultaneously
Bandwidth Mode	20MHz	40MHz	80MHz	20MHz	40MHz	80MHz	/
IEEE 802.11a	☑	☐	☐	☑	☐	☐	☐
IEEE 802.11n	☑	☑	☐	☑	☑	☐	☑
IEEE 802.11ac	☑	☑	☑	☑	☑	☑	☑
IEEE 802.11ax	☑	☑	☑	☑	☑	☑	☑

5 Equipment Used during Test

No	Test Equipment	Manufacturer	Model No	Serial No	Cal. Date	Cal. Due Date
1	Spectrum Analyzer	R&S	FSV40	101470	2025.09.25	2026.09.24
2	EMI Measuring Receiver	R&S	ESPI	100773	2025.09.25	2026.09.24
3	Low Noise Pre Amplifier	HP	HP8447E	1937A01855	2025.09.25	2026.09.24
4	Low Noise Pre Amplifier	Tsj	MLA-0120-A02-34	2648A04738	2025.09.25	2026.09.24
5	Passive Loop	ETS	6512	00165355	2024.09.04	2026.09.03
6	TRILOG Super Broadband test Antenna	SCHWARZBECK	VULB9160	9160-3206	2024.08.29	2026.08.28
7	Broadband Horn Antenna	SCHWARZBECK	BBHA9120D	452	2024.08.29	2026.08.28
8	SHF-EHF Horn Antenna 15-40GHz	SCHWARZBECK	BBHA9170	BBHA9170367d	2023.09.12	2026.09.11
9	EMI Test Receiver	R&S	ESCI	100124	2025.09.25	2026.09.24
10	LISN	Kyoritsu	KNW-242	8-837-4	2025.09.25	2026.09.24
11	LISN	R&S	ESH3-Z5	892785/016	2025.09.25	2026.09.24
12	Pro.Temp&Humi.chamber	MENTEK	MHP-150-1C	MAA08112501	2025.09.25	2026.09.24
13	RF Automatic Test system	MW	MW100-RFCB	21033016	2025.09.25	2026.09.24
14	Signal Generator	Agilent	N5182A	MY50143009	2025.09.25	2026.09.24
15	Wideband Radio communication tester	R&S	CMW500	1201.0002K50	2025.09.25	2026.09.24
16	RF Automatic Test system	MW	MW100-RFCB	21033016	2025.09.25	2026.09.24
17	Pulse Limiter	R&S	ESH3-Z2	03578810.54	2025.09.25	2026.09.24
18	Switch	MFJ Rhinos	MFJ-2702	CZ3457	2025.09.25	2026.09.24
19	DC power supply	ZHAOXIN	RXN-305D-2	28070002559	N/A	N/A
20	RE Software	EZ	EZ-EMC_RE	Ver.AIT-03A	N/A	N/A
21	CE Software	EZ	EZ-EMC_CE	Ver.AIT-03A	N/A	N/A
22	RF Software	MW	MTS 8310	2.0.0.0	N/A	N/A

23	temporary antenna connector(Note)	NTS	R001	N/A	N/A	N/A
Note: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.						

6 Test results and Measurement Data

6.1 Antenna requirement

6.1.1 Standard requirement

For intentional device, according to FCC 47 CFR Section 15.203:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited

And according to FCC 47 CFR Section 15.407 (a), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

6.1.2 EUT Antenna

Note: The antenna information refer the manufacturer provide report, applicable only to the tested sa-mple identified in the report., reference to the Internal photos for details.

6.2 On Time and Duty Cycle

6.2.1 Standard requirement

None; for reporting purpose only

6.2.2 Measuring Instruments and Setting:

Please refer to equipments list in this report. The following table is the setting of the spectrum analyser.

6.2.3 Test Procedures

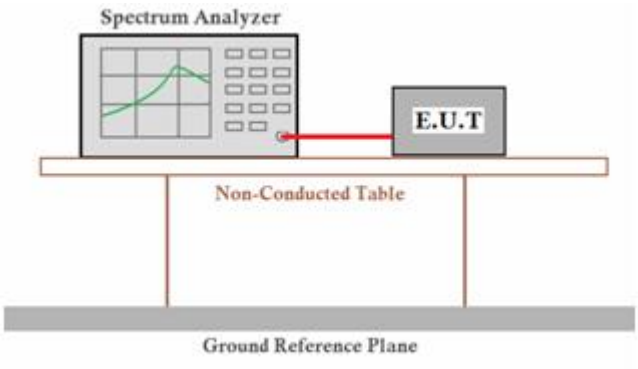
1). Set the Centre frequency of the spectrum analyzer to the transmitting frequency;

2). Set the span=0MHz, RBW=28MHz, VBW=28MHz, Sweep time=100ms;

3). Detector = peak;

4). Trace mode = Single hold.

6.2.4 Test Setup Layout



6.2.5 EUT Operation During Test

The EUT was programmed to be in continuously transmitting mode.

6.2.6 Test Result

For reporting purpose only.

Please refer to Appendix D.1 (5150-5250MHz) and Appendix E.1(5725-5850MHz)

6.3 Maximum Conducted Output Power Measurement

6.3.1 Standard requirement

(1) For the band 5.15~5.25GHz

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1dB reduction in maximum conducted output power is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the band 5.25-5.35 GHz and 5.47-5.725 GHz

The maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For 5725~5850MHz

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

6.3.2 Measuring Instruments

Please refer to equipment's list in this report.

6.3.3 Test Procedures

The transmitter output (antenna port) was connected to the power meter.

According to KDB 789033 D02 v02r01 Section 3 (a) Method PM (Measurement using an RF average power meter):

(i) Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied.

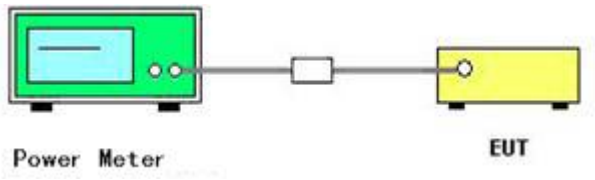
- The EUT is configured to transmit continuously or to transmit with a constant duty cycle.
- At all times when the EUT is transmitting, it must be transmitting at its maximum power control level.
- The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.

(ii) If the transmitter does not transmit continuously, measure the duty cycle, x, of the transmitter output signal as described in section II.B.

(iii) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.

(iv) Adjust the measurement in dBm by adding 10 log (1/x) where x is the duty cycle (e.g., 10 log (1/0.25) if the duty cycle is 25%).

6.3.4 Test Setup Layout



6.3.5 EUT Operation During Test

The EUT was programmed to be in continuously transmitting mode.

6.3.6 Test Result

PASS

Please refer to Appendix D.2 (5150-5250MHz) and Appendix E.2(5725-5850MHz)
Remark:

1. Measured output power at difference data rate for each mode and recorded worst case for each mode.
2. Test results including cable loss;
3. Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11ac VHT20, IEEE 802.11ac VHT40, IEEE 802.11ac VHT80, IEEE 802.11ax HE20, IEEE 802.11ax HE40, IEEE 802.11ax HE80;
4. Report conducted power = Measured conducted average power + Duty Cycle factor;
5. For power measurements on IEEE 802.11 devices;

Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;

Array Gain = 5 log (NANT/NSS) dB or 3 dB, whichever is less, for 20-MHz channel widths with NANT ≥ 5

6.4 26dB Bandwidth Measurement

6.4.1 Standard requirement

No restriction limits. But resolution bandwidth within band edge measurement is 1% of the 99% occupied bandwidth.

6.4.2 Measuring Instruments

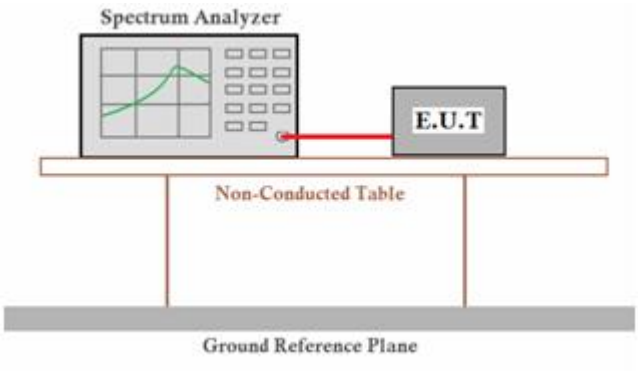
Please refer to equipment list in this report. The following table is the setting of the Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span	> 26dB Bandwidth
Detector	Peak
Trace	Max Hold
Sweep Time	100ms

6.4.3 Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
2. The RBW = 1% - 3% of occupied bandwidth, VBW = 3*RBW;
3. Measured the spectrum width with power higher than 26dB below carrier.

6.4.4 Test Setup Layout



6.4.5 EUT Operation During Test

The EUT was programmed to be in continuously transmitting mode.

6.4.6 Test Result

PASS

Please refer to Appendix D.3 (5150-5250MHz)

Remark:

1. Measured 26dB bandwidth at difference data rate for each mode and recorded worst case for each mode.
2. Test results including cable loss;
3. Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11ac VHT20, IEEE 802.11ac VHT40, IEEE 802.11ac VHT80, IEEE 802.11ax HE20, IEEE 802.11ax HE40, IEEE 802.11ax HE80;

6.5 6dB Bandwidth Measurement

6.5.1 Standard requirement

No restriction limits. But resolution bandwidth within band edge measurement is 1% of the 99% occupied bandwidth.

6.5.2 Measuring Instruments

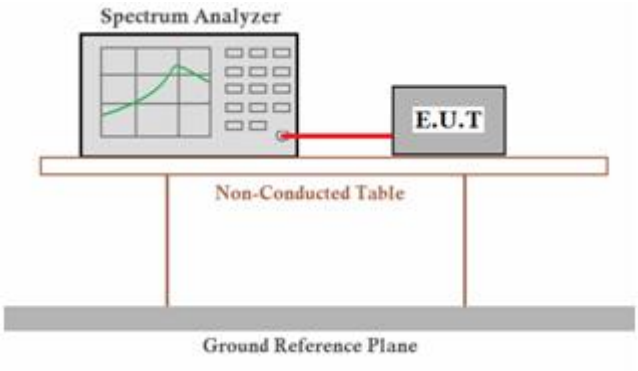
Please refer to equipment list in this report. The following table is the setting of the Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
Span	> 6dB Bandwidth
Detector	Peak
Trace	Max Hold
Sweep Time	100ms

6.5.3 Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
2. The RBW = 1% - 3% of occupied bandwidth, VBW = 3*RBW;
3. Measured the spectrum width with power higher than 6dB below carrier.

6.5.4 Test Setup Layout



6.5.5 EUT Operation During Test

The EUT was programmed to be in continuously transmitting mode.

6.5.6 Test Result

PASS

Please refer to Appendix E.3(5725-5850MHz)

Remark:

1.Measured 6dB bandwidth at difference data rate for each mode and recorded worst case for each mode.

2.Test results including cable loss;

3.Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11ac VHT20, IEEE 802.11ac VHT40, IEEE 802.11ac VHT80, IEEE 802.11ax HE20, IEEE 802.11ax HE40, IEEE 802.11ax HE80;

6.6 99% Occupied Bandwidth Measurement

6.6.1 Standard requirement

According to §2.1049: The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured under the following conditions as applicable.

6.6.2 Measuring Instruments

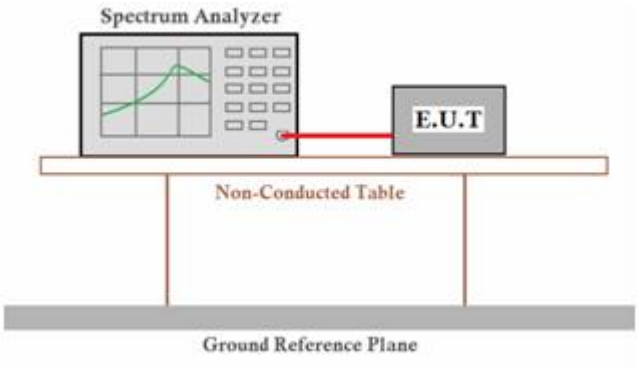
Please refer to equipment list in this report. The following table is the setting of the Spectrum Analyzer.

Spectrum Parameter	Setting
Attenuation	Auto
RBW	> RBW
VBW	Peak
Span Frequency	Max Hold
Detector	100ms

6.6.3 Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
2. Set RBW = 1%~5% OBW; VBW≥3*RBW;
3. Measured the 99% occupied bandwidth by related function of the spectrum analyzer.

6.6.4 Test Setup Layout



6.6.5 EUT Operation During Test

The EUT was programmed to be in continuously transmitting mode.

6.6.6 Test Result

PASS

Please refer to Appendix D.4 (5150-5250MHz) and Appendix E.4(5725-5850MHz)

Remark:

1. Measured 99% bandwidth at difference data rate for each mode and recorded worst case for each mode.
2. Test results including cable loss;
3. Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11ac VHT20, IEEE 802.11ac VHT40, IEEE 802.11ac VHT80, IEEE 802.11ax HE20, IEEE 802.11ax HE40, IEEE 802.11ax HE80;

6.7 Power Spectral Density

6.7.1 Standard requirement

For 5.15~5.25GHz

(i) For an outdoor access point operating in the band 5.15 - 5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 MHz band.note1
(ii) For an indoor access point operating in the band 5.15 - 5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 MHz band.note1
(iii) For fixed point-to-point access points operating in the band 5.15 - 5.25 GHz, transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi.
(iv) For mobile and portable client devices in the 5.15 - 5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 MHz band. note1
Note1: If transmitting antennas of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.25-5.35 GHz and 5.47-5.725 GHz

The maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For 5725~5850MHz

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

6.7.2 Measuring Instruments and Setting

Please refer to equipment list in this report. The following table is the setting of Spectrum Analyzer.

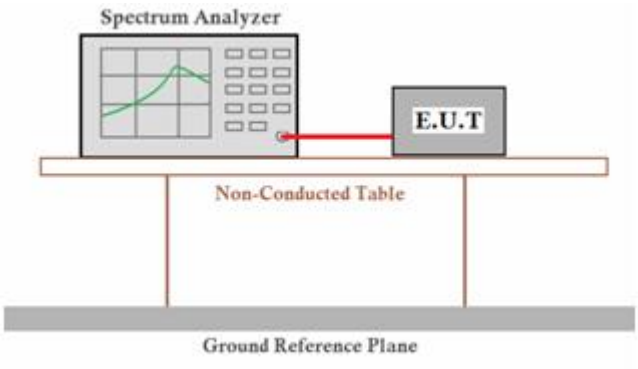
6.7.3 Test Procedures

1). Use this procedure when the maximum peak conducted output power in the fundamental 1). The transmitter was connected directly to a Spectrum Analyzer through a directional couple.
2). The power was monitored at the coupler port with a Spectrum Analyzer. The power level was set to the maximum level.
3). Set the RBW = 1MHz.
4). Set the VBW ≥ 3MHz
5). Span=Encompass the entire emissions bandwidth (EBW) of the signal (or, alternatively, the entire 99% occupied bandwidth) of the signal.
6). Number of points in sweep ≥ 2 × span / RBW. (This ensures that bin-to-bin spacing is ≤ RBW/2, so that narrowband signals are not lost between frequency bins.)
7). Manually set sweep time ≥ 10 × (number of points in sweep) × (total on/off period of the transmitted signal).

8). Set detector = power averaging (rms).
9). Sweep time = auto couple.
10). Trace mode = max hold.
11). Allow trace to fully stabilize.
12). Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively.
13). Add 10 log (1/x), where x is the duty cycle, to the measured power in order to compute the average power during the actual transmission times (because the measurement represents an average over both the on and off times of the transmission). For example, add 10 log (1/0.25) = 6 dB if the duty cycle is 25%.

14). Use the peak marker function to determine the maximum power level in any 1MHz band segment within the fundamental EBW.

6.7.4 Test Setup Layout



6.7.5 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

6.7.6 Test result

PASS

Please refer to Appendix D.5 (5150-5250MHz) and Appendix E.5(5725-5850MHz)

Remark:

1. Measured power spectrum density at difference data rate for each mode and recorded worst case for each mode.
2. Test results including cable loss;
3. Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11ac VHT20, IEEE 802.11ac VHT40, IEEE 802.11ac VHT80, IEEE 802.11ax HE20, IEEE 802.11ax HE40, IEEE 802.11ax HE80;

Report conducted PSD = Measured conducted average power + Duty Cycle factor;

6.8 Conducted RF Spurious Emission

6.8.1 Standard requirement

According to §15.407(b):Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(4) For transmitters operating solely in the 5.725-5.850 GHz band:

(i) All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.

6.8.2 Measuring Instruments

Please refer to equipment list in this report. The following table is the setting of the Spectrum Analyzer.

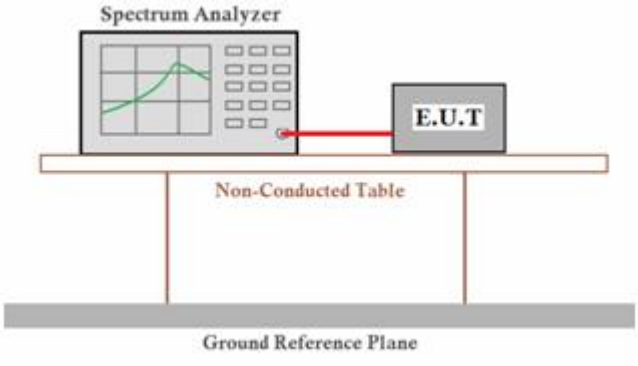
Spectrum Parameter	Setting
Attenuation	Auto
RBW	> RBW
VBW	Peak
Span Frequency	Max Hold
Detector	100ms

6.8.3 Test Procedures

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz

The spectrum from 9 kHz to 26.5GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

6.8.4 Test Setup Layout



6.8.5 EUT Operation During Test

The EUT was programmed to be in continuously transmitting mode.

6.8.6 Test Result

PASS

Please refer to Appendix D.7 (5150-5250MHz) and Appendix E.7(5725-5850MHz)

Remark:

1). Measured at difference data rate for each mode and recorded worst case for each mode.
2). Test results including cable loss;
3). Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11ac VHT20, IEEE 802.11ac VHT40, IEEE 802.11ac VHT80, IEEE 802.11ax HE20, IEEE 802.11ax HE40, IEEE 802.11ax HE80;
4). Not recorded test plots from 9 KHz to 30 MHz as emission levels 20dB lower than emission limit.

6.9 Radiated Emissions and Radiation Restricted band Measurement

6.9.1 Standard requirement

15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
\1\ 0.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	108-121.94	1718.8-1722.2	13.25-13.4
6.31175-6.31225	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293.	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(\2\)
13.36-13.41			

\1\ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

\2\ Above 38.6

According to §15.247 (d): 20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

6.9.2 Measuring Instruments and Setting:

Please refer to equipment list in this report. The following table is the setting of spectrum analyzer and receiver.

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (Emission in restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average
RB / VB (Emission in non-restricted band)	1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB/VB 200Hz/1KHz for QP/AVG
Start ~ Stop Frequency	150kHz~30MHz / RB/VB 9kHz/30KHz for QP/AVG
Start ~ Stop Frequency	30MHz~1000MHz / RB/VB 120kHz/1MHz for QP

6.9.3 Test Procedures

1) Sequence of testing 9 kHz to 30 MHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions.

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

Premeasurement:

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna height is 1.5 meter.

--- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

Final measurement:

--- Identified emissions during the premeasurement the software maximizes by rotating the turntable position (0° to 360°) and by rotating the elevation axes (0° to 360°).

--- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QPK detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

2) Sequence of testing 30 MHz to 1 GHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

Premeasurement:

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna is polarized vertical and horizontal.

--- The antenna height changes from 1 to 3 meter.

--- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

Final measurement:

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position (± 45°) and antenna movement between 1 and 4 meter.

--- The final measurement will be done with QP detector with an EMI receiver.

--- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

3) Sequence of testing 1 GHz to 18 GHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

Premeasurement:

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna is polarized vertical and horizontal.

--- The antenna height scan range is 1 meter to 2.5 meter.

--- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.

Final measurement:

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position (± 45°) and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.

--- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

4) Sequence of testing above 18 GHz

Setup:

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 1 meter.

--- The EUT was set into operation.

Premeasurement:

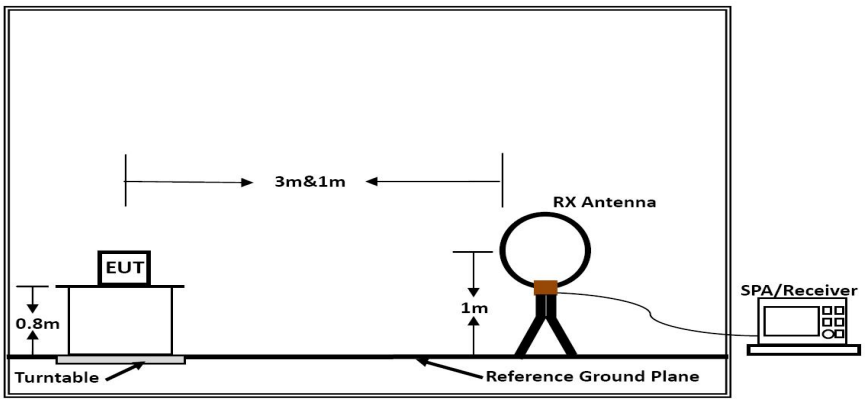
--- The antenna is moved spherical over the EUT in different polarisations of the antenna.

Final measurement:

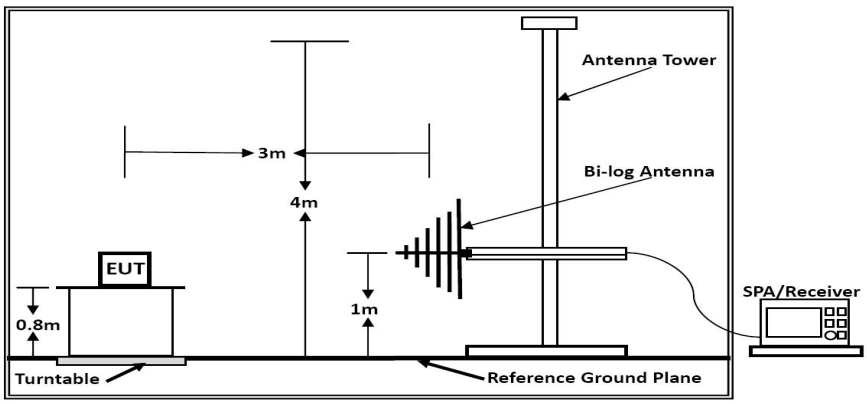
--- The final measurement will be performed at the position and antenna orientation for all detected emissions that were found during the premeasurements with Peak and Average detector.

--- The final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

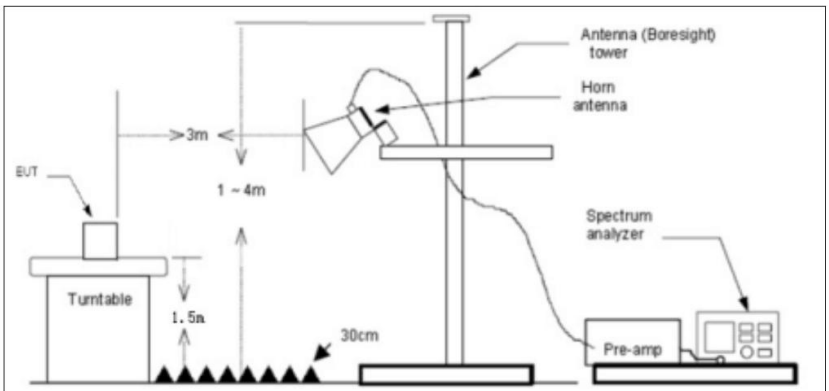
6.9.4 Test Setup Layout



Below 30MHz



Below 1GHz



Above 1GHz

Above 18 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade form 3m to 1m.

Distance extrapolation factor = 20 log (specific distance [3m] / test distance [1m]) (dB);

Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

6.9.5 EUT Operation During Test

The EUT was programmed to be in continuously transmitting mode.

6.9.6 Test Result

.

Temperature	25.5℃	Humidity	52.2%
Test Engineer	Emiya Lin	Configurations	IEEE 802.11a/n/ac/ax

Remarks:

1. Only the worst case Main Antenna test data.
2. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.

■ **Results of Radiated Emissions (9 KHz~30MHz)**

Freq. (MHz)	Level (dBuV)	Over Limit (dB)	Over Limit (dBuV)	Remark
-	-	-	-	See Note

Note:

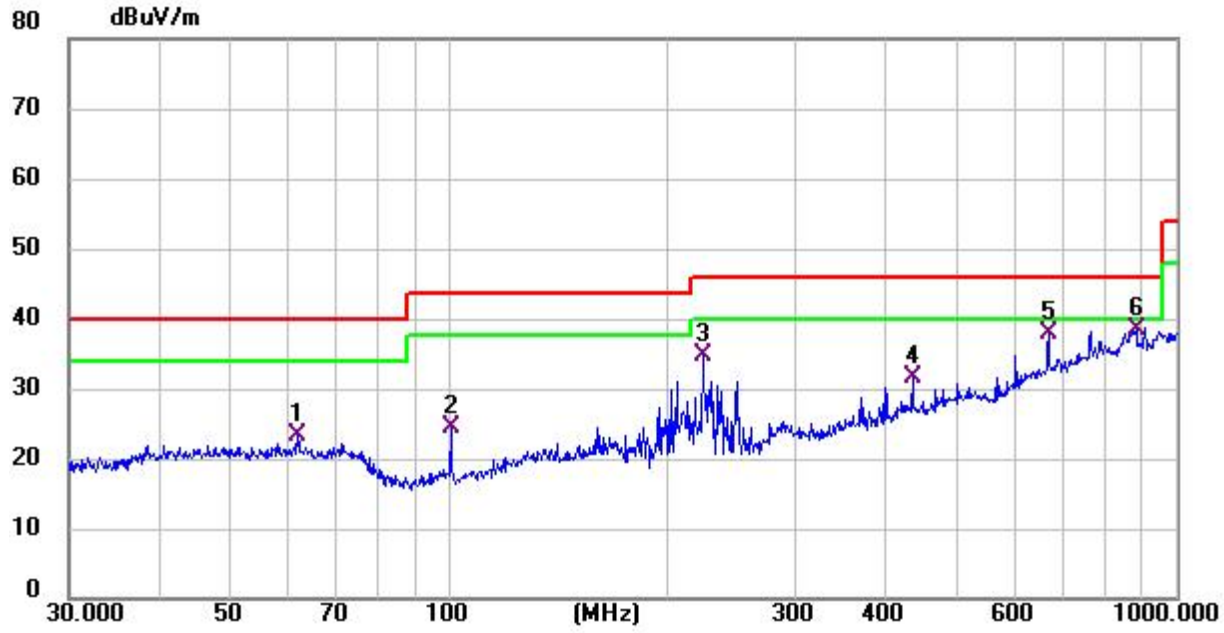
The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and the permissible value has no need to be reported.

Distance extrapolation factor = 40 log (specific distance / test distance) (dB);
Limit line = specific limits (dBuV) + distance extrapolation factor.

■ **Results of Radiated Emissions (30MHz~1GHz)**

Pre-scan all modes and recorded the worst case results in this report (ANT1 IEEE 802.11a Middle Channel).

Model name:	AceBook 10	Test Date :	2025-10-30
Polarization :	Vertical	Test Result:	☒ Pass ☐ Fail



Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Measurement Result=Reading Level +Correct Factor;
Over Limit= Measurement Result- Limit;

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		61.9951	25.44	-2.04	23.40	40.00	-16.60	QP
2		100.5806	28.54	-4.04	24.50	43.50	-19.00	QP
3		223.7334	36.62	-1.98	34.64	46.00	-11.36	QP
4		434.0651	26.53	5.14	31.67	46.00	-14.33	QP
5		668.1423	27.48	10.50	37.98	46.00	-8.02	QP
6	*	881.4067	24.34	14.02	38.36	46.00	-7.64	QP

Model name:	AceBook 10	Test Date :	2025-10-30
Polarization :	Horizontal	Test Result:	☒ Pass ☐ Fail

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Measurement Result=Reading Level +Correct Factor;
Over Limit= Measurement Result- Limit;

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		59.0251	22.62	-1.82	20.80	40.00	-19.20	QP
2		100.5806	29.63	-4.04	25.59	43.50	-17.91	QP
3		242.5253	36.96	-0.63	36.33	46.00	-9.67	QP
4		434.0651	26.39	5.14	31.53	46.00	-14.47	QP
5		601.4265	26.54	8.58	35.12	46.00	-10.88	QP
6	*	763.3757	24.53	12.09	36.62	46.00	-9.38	QP

Results for Radiated Emissions (1- 40 GHz)

IEEE 802.11a

Channel 36 / 5180 MHz

Freq GHz	Read Level dBuV	Correct Factor	Measured Level dBuV	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
10360	34.33	12.56	46.89	68.20	-21.31	Peak	Horizontal
15540	21.00	16.45	37.45	54.00	-16.55	Average	Horizontal
10360	32.98	12.56	45.54	68.20	-22.66	Peak	Vertical
15540	20.52	16.45	36.97	54.00	-17.03	Average	Vertical

Channel 48 / 5240 MHz

Freq GHz	Read Level dBuV	Correct Factor	Measured Level dBuV	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
10480	35.18	12.68	47.86	68.20	-20.34	Peak	Horizontal
15720	21.07	16.54	37.61	54.00	-16.39	Average	Horizontal
10480	31.35	12.68	44.03	68.20	-24.17	Peak	Vertical
15720	20.42	16.54	36.96	54.00	-17.04	Average	Vertical

Channel 149 / 5745 MHz

Freq GHz	Read Level dBuV	Correct Factor dB/m	Measured Level dBuV/m	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
11490	31.41	16.82	48.23	68.20	-19.97	Peak	Horizontal
17235	20.22	22.93	43.15	54.00	-10.85	Average	Horizontal
11490	29.75	16.71	46.46	68.20	-21.74	Peak	Vertical
17235	18.97	22.93	41.90	54.00	-12.10	Average	Vertical

Channel 157 / 5785 MHz

Freq GHz	Read Level dBuV	Correct Factor dB/m	Measured Level dBuV/m	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
11570	32.19	16.71	48.90	68.20	-19.30	Peak	Horizontal
17355	19.37	24.37	43.74	54.00	-10.26	Average	Horizontal
11570	31.69	16.71	48.40	68.20	-19.80	Peak	Vertical
17355	20.20	24.37	44.57	54.00	-9.43	Average	Vertical

Channel 163 / 5825 MHz

Freq GHz	Read Level dBuV	Correct Factor dB/m	Measured Level dBuV/m	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
11650	31.81	16.61	48.42	68.20	-19.78	Peak	Horizontal
17475	19.99	25.01	45.00	54.00	-9.00	Average	Horizontal
11650	29.61	16.61	46.22	68.20	-21.98	Peak	Vertical
17475	18.78	25.01	43.79	54.00	-10.21	Average	Vertical

Note: All modes have been tested. ANT1 IEEE 802.11a is the worst mode, and the report only records the worst data.

IEEE 802.11n HT40

Channel 38 / 5190 MHz

Freq GHz	Read Level dBuV	Correct Factor	Measured Level dBuV	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
10380	29.68	12.58	42.26	68.20	-25.94	Peak	Horizontal
15570	20.37	16.48	36.85	54.00	-17.15	Average	Horizontal
10380	28.56	12.58	41.14	68.20	-27.06	Peak	Vertical
15570	20.29	16.48	36.77	54.00	-17.23	Average	Vertical

Channel 151 / 5755 MHz

Freq GHz	Read Level dBuV	Correct Factor dB/m	Measured Level dBuV/m	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
11510	30.30	16.78	47.08	68.20	-21.12	Peak	Horizontal
17265	19.50	23.29	42.79	54.00	-11.21	Average	Horizontal
11510	29.51	16.78	46.29	68.20	-21.91	Peak	Vertical
17265	18.53	23.29	41.82	54.00	-12.18	Average	Vertical

Channel 159 / 5795 MHz

Freq GHz	Read Level dBuV	Correct Factor dB/m	Measured Level dBuV/m	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
11590	30.63	16.69	47.32	68.20	-20.88	Peak	Horizontal
17385	19.39	24.73	44.12	54.00	-9.88	Average	Horizontal
11590	28.95	16.69	45.64	68.20	-22.56	Peak	Vertical
17385	18.38	24.73	43.11	54.00	-10.89	Average	Vertical

Note: All modes have been tested. MIMO IEEE 802.11n HT40 is the worst mode, and the report only records the worst data.

IEEE 802.11ac VHT80

Channel 42 / 5210 MHz

Freq GHz	Read Level dBuV	Correct Factor	Measured Level dBuV	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
10420	28.46	12.62	41.08	68.20	-27.12	Peak	Horizontal
15630	17.99	16.52	34.51	54.00	-19.49	Average	Horizontal
10420	26.94	12.62	39.56	68.20	-28.64	Peak	Vertical
15630	17.84	16.52	34.36	54.00	-19.64	Average	Vertical

Channel 155 / 5775 MHz

Freq GHz	Read Level dBuV	Correct Factor dB/m	Measured Level dBuV/m	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
11550	29.38	16.73	46.11	68.20	-22.09	Peak	Horizontal
17325	18.88	24.01	42.89	54.00	-11.11	Average	Horizontal
11550	27.94	16.73	44.67	68.20	-23.53	Peak	Vertical
17325	17.85	24.01	41.86	54.00	-12.14	Average	Vertical

Note: All modes have been tested. MIMO IEEE 802.11ac VHT80 is the worst mode, and the report only records the worst data.

Notes:
1). Measuring frequencies from 9 KHz ~ 40GHz, No emission found between lowest internal used/generated frequency to 30MHz.
2). Radiated emissions measured in frequency range from 9 KHz ~ 40GHz were made with an instrument using Peak detector mode.
3). 18~40GHz at least have 20dB margin. No recording in the test report.
4). Worst case data at 6Mbps at IEEE 802.11a; MCS0 at IEEE 802.11n HT20, IEEE 802.11n HT40, IEEE 802.11ac VHT20, IEEE 802.11ac VHT40, IEEE 802.11ac VHT80, IEEE 802.11ax HE20, IEEE 802.11ax HE40, IEEE 802.11ax HE80;
5). Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
6). Margin=Reading level + Factor – Limit

Results for Radiation Restricted band

Note: All modes have been tested. 16GB+512GB is the worst mode, and the report only records the worst data.

5180MHz-5240MHz:

IEEE 802.11a Lowest

Freq GHz	Read Level dBuV	Correct Factor dB/m	Measured Level dBuV	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
5150.000	45.75	7.18	52.93	68.20	-15.27	Peak	Horizontal
5150.000	44.79	7.18	51.97	68.20	-16.23	Peak	Vertical
5350.000	43.17	7.20	50.37	68.20	-17.83	Peak	Horizontal
5350.000	42.48	7.20	49.68	68.20	-18.52	Peak	Vertical

Note: All modes have been tested. ANT1 IEEE 802.11a is the worst mode, and the report only records the worst data.

IEEE 802.11n HT40 Lowest

Freq GHz	Read Level dBuV	Correct Factor dB/m	Measured Level dBuV	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
5150.000	43.48	7.18	50.66	68.20	-17.54	Peak	Horizontal
5150.000	42.30	7.18	49.48	68.20	-18.72	Peak	Vertical
5350.000	45.59	7.20	52.79	68.20	-15.41	Peak	Horizontal
5350.000	44.71	7.20	51.91	68.20	-16.29	Peak	Vertical

Note: All modes have been tested. MIMO IEEE 802.11n HT40 is the worst mode, and the report only records the worst data.

IEEE 802.11ac VHT80 Lowest

Freq GHz	Read Level dBuV	Correct Factor dB/m	Measured Level dBuV	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
5150.000	47.99	7.18	55.17	68.20	-13.03	Peak	Horizontal
5150.000	45.81	7.18	52.99	68.20	-15.21	Peak	Vertical
5350.000	47.16	7.20	54.36	68.20	-13.84	Peak	Horizontal
5350.000	45.77	7.20	52.97	68.20	-15.23	Peak	Vertical

Note: All modes have been tested. MIMO IEEE 802.11ac VHT80 is the worst mode, and the report only records the worst data.

5745MHz-5825MHz:

IEEE 802.11a Lowest

Freq GHz	Read Level dBuV	Correct Factor dB/m	Measured Level dBuV	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
5650	36.20	3.94	40.14	68.23	-28.09	Peak	Horizontal
5700	74.07	3.95	78.02	105.23	-27.21	Peak	Horizontal
5720	76.57	3.95	80.52	110.83	-30.31	Peak	Horizontal
5725	88.61	3.95	92.56	122.23	-29.67	Peak	Horizontal
5650	36.44	3.94	40.38	68.23	-27.85	Peak	Vertical
5700	72.44	3.95	76.39	105.23	-28.84	Peak	Vertical
5720	77.79	3.95	81.74	110.83	-29.09	Peak	Vertical
5725	88.06	3.95	92.01	122.23	-30.22	Peak	Vertical

IEEE 802.11a Highest

Freq GHz	Read Level dBuV	Correct Factor dB/m	Measured Level dBuV	Limit Line dBuV/m	Over limit dB	Remark	Pol/Phase
5850	88.61	3.96	92.57	122.23	-29.66	Peak	Horizontal
5855	79.23	3.96	83.19	110.83	-27.64	Peak	Horizontal
5875	71.80	3.97	75.77	105.23	-29.46	Peak	Horizontal
5925	35.35	3.97	39.32	68.23	-28.91	Peak	Horizontal
5850	86.03	3.96	89.99	122.23	-32.24	Peak	Vertical
5855	75.75	3.96	79.71	110.83	-31.12	Peak	Vertical
5875	70.56	3.97	74.53	105.23	-30.70	Peak	Vertical
5925	37.09	3.97	41.06	68.23	-27.17	Peak	Vertical

Note: All modes have been tested. ANT1 IEEE 802.11a is the worst mode, and the report only records the worst data.

Remarks:
1). Margin= Emission Level – Limit
2). Emission Level = Reading + Factor
3). Factor = Antenna Factor + Cable Loss – Pre-amplifie
4).The PEAK value is less than the AVG limit, the AVG result no need be show in this report.

6.10 Power Line Conducted Emissions

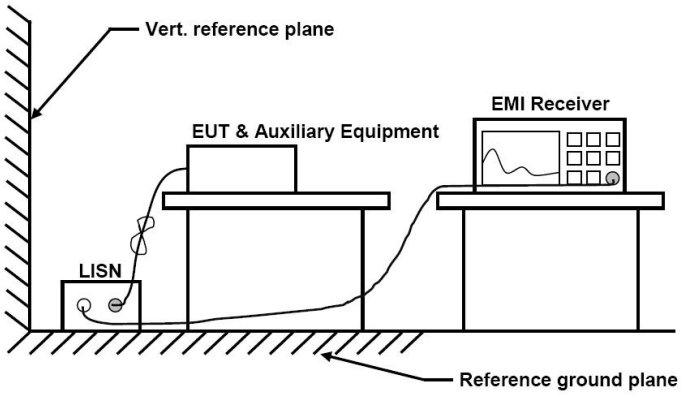
6.10.1 Standard requirement

According to §15.207 (a): For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

Frequency Range (MHz)	Limits (dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

* Decreasing linearly with the logarithm of the frequency

6.10.2 Test Setup Layout



6.10.3 Test Procedures

The transmitter output is connected to EMI receiver. The resolution bandwidth is set to 9 kHz. The video bandwidth is set to 30 kHz, Sweep time=Auto

The spectrum from 150 kHz to 30MHz is investigated with the transmitter set to the lowest, middle, and highest channels.

6.10.4 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

6.10.5 Test result

PASS

The test data please refer to following page.

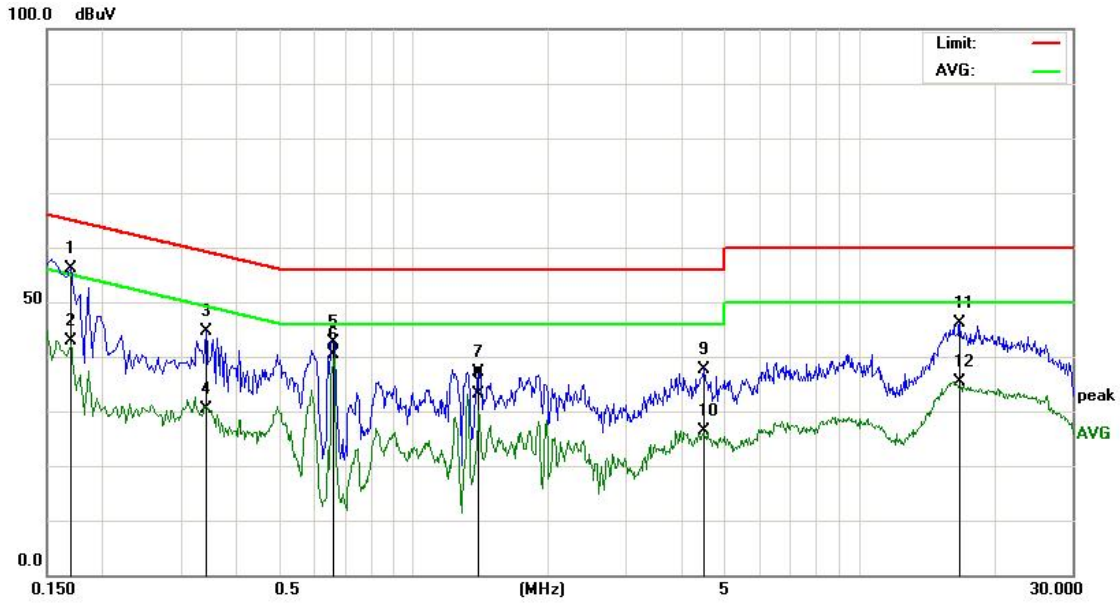
Temperature	25.5℃	Humidity	52.2%
Test Engineer	Emiya Lin	Configurations	IEEE 802.11a/n/ac/ax

Measurement data:

AC Conducted Emission of charge from ANT1 IEEE 802.11a (MCH) mode @ AC 120V/60Hz (worst case)

:

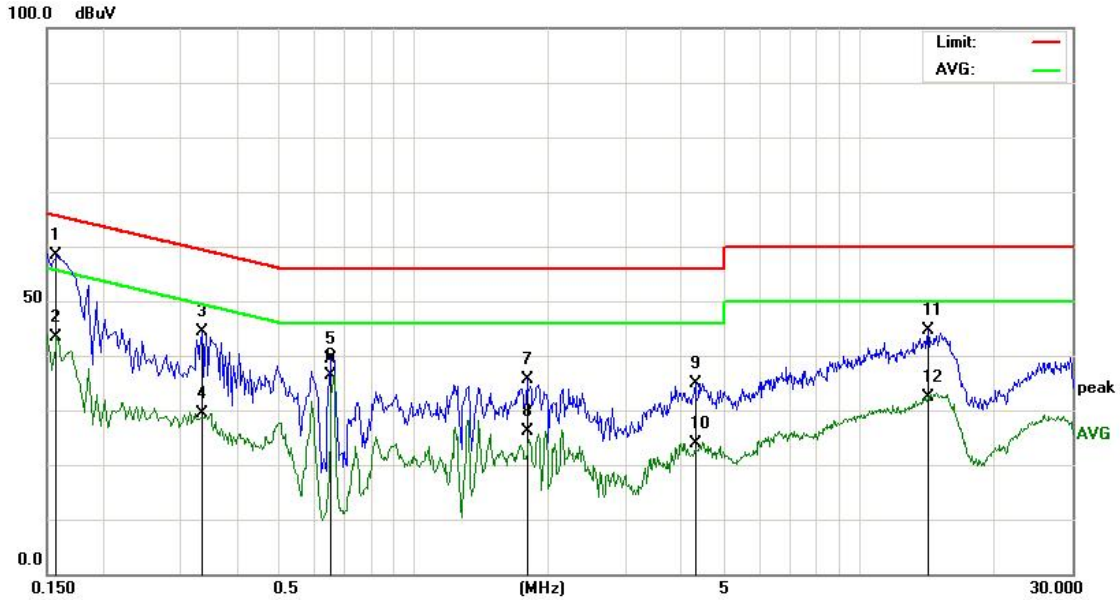
Model name:	AceBook 10	Test Date :	2025-10-30
ATM Pressure:	101 kPa	Test by:	Emiya Lin
Phase :	Line	Test Result:	☒ Pass ☐ Fail



Remark: Factor =insertion loss of LISN + Cable loss +insertion loss of Pulse Limiter +insertion loss of Switch.
Measurement Result=Reading Level +Correct Factor;
Over Limit= Measurement Result- Limit;

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.1700	46.16	10.07	56.23	64.96	-8.73	QP
2		0.1700	32.92	10.07	42.99	54.96	-11.97	AVG
3		0.3420	34.63	10.06	44.69	59.15	-14.46	QP
4		0.3420	20.40	10.06	30.46	49.15	-18.69	AVG
5		0.6580	32.54	10.10	42.64	56.00	-13.36	QP
6	*	0.6580	30.27	10.10	40.37	46.00	-5.63	AVG
7		1.3980	27.01	10.22	37.23	56.00	-18.77	QP
8		1.3980	23.00	10.22	33.22	46.00	-12.78	AVG
9		4.4820	27.37	10.38	37.75	56.00	-18.25	QP
10		4.4820	15.94	10.38	26.32	46.00	-19.68	AVG
11		16.7700	44.15	1.93	46.08	60.00	-13.92	QP
12		16.7700	33.53	1.93	35.46	50.00	-14.54	AVG

Model name:	AceBook 10	Test Date :	2025-10-30
ATM Pressure:	101 kPa	Test by:	Emiya Lin
Phase :	Neutral	Test Result:	☒ Pass ☐ Fail



Remark: Factor =insertion loss of LISN + Cable loss +insertion loss of Pulse Limiter +insertion loss of Switch.
Measurement Result=Reading Level +Correct Factor;
Over Limit= Measurement Result- Limit;

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1	*	0.1580	48.36	10.04	58.40	65.56	-7.16	QP
2		0.1580	33.41	10.04	43.45	55.56	-12.11	AVG
3		0.3339	34.35	10.07	44.42	59.35	-14.93	QP
4		0.3339	19.30	10.07	29.37	49.35	-19.98	AVG
5		0.6540	29.17	10.10	39.27	56.00	-16.73	QP
6		0.6540	26.26	10.10	36.36	46.00	-9.64	AVG
7		1.7940	25.25	10.28	35.53	56.00	-20.47	QP
8		1.7940	15.73	10.28	26.01	46.00	-19.99	AVG
9		4.2900	24.55	10.36	34.91	56.00	-21.09	QP
10		4.2900	13.47	10.36	23.83	46.00	-22.17	AVG
11		14.2180	42.90	1.84	44.74	60.00	-15.26	QP
12		14.2180	30.54	1.84	32.38	50.00	-17.62	AVG

Notes:

1. Pre-scan all modes and recorded the worst case results in this report (IEEE 802.11a mode (MCH).
2. An initial pre-scan was performed on the line and neutral lines with peak detector.
3. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
4. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.

6.11 Frequency Stability

6.11.1 Standard requirement

According to FCC §15.407(g) “Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.”

According to FCC §2.1055(a) “The frequency stability shall be measured with variation of ambient temperature as follows:”

(1) From −30° to + 50° centigrade for all equipment except that specified in paragraphs (a) (2) and (3) of this section.

(2) From −20° to + 50° centigrade for equipment to be licensed for use in the Maritime Services under part 80 of this chapter, except for Class A, B, and S Emergency Position Indicating Radiobeacons (EPIRBS), and equipment to be licensed for use above 952 MHz at operational fixed stations in all services, stations in the Local Television Transmission Service and Point-to-Point Microwave Radio Service under part 21 of this chapter, equipment licensed for use aboard aircraft in the Aviation Services under part 87 of this chapter, and equipment authorized for use in the Family Radio Service under part 95 of this chapter.

From 0° to + 50° centigrade for equipment to be licensed for use in the Radio Broadcast Services under part 73 of this chapter.

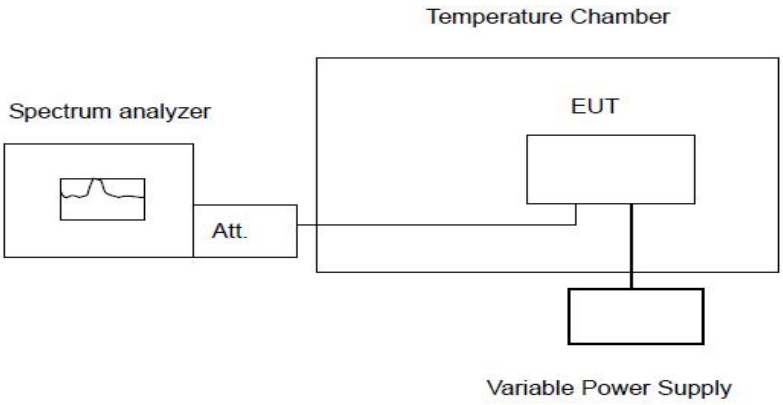
6.11.2 Measuring Instruments and Setting:

Please refer to equipment list in this report.

6.11.3 Test Procedures

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum anzlyer via feed through attenators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low engouh to obtain the desired frequency resoluation and measure EUT 20 degree operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30 degree. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure wuth 10 degree increased per stage until the highest temperature of +50 degree reached.

6.11.4 Test Setup Layout



6.11.5 EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

6.11.6 Test result

PASS

Please refer to Appendix D.6 (5150-5250MHz) and Appendix E.6 (5725-5850MHz)

7 Test Setup Photographs of EUT

Please refer to separated files for Test Setup Photos of the EUT.

8 External Photographs of EUT

Please refer to separated files for External Photos of the EUT.

9 Internal Photographs of EUT

Please refer to separated files for Internal Photos of the EUT.

----End Of The Report----