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检测
TESTING
CNAS L5785

Test Report

Report No.: CQASZ20260500916E-05
Applicant: Ultimea Technology (Shenzhen) Limited
Address of Applicant: 20th Floor, Building 4, Tianan Cloud Park, Bantian St., Longgang District, Shenzhen, China
Equipment Under Test (EUT):
Product: Soundbar
Model No.: UC001
Test Model No.: UC001
Brand Name: ULTIMEA
FCC ID: 2A900-UC001S
Standards: 47 CFR Part 15, Subpart E
KDB 789033 D02 General UNII Test Procedures New Rules v02r01
Date of Receipt: 2026-05-07
Date of Test: 2026-05-07 to 2026-06-04
Date of Issue: 2026-06-18
Test Result: **PASS***

*In the configuration tested, the EUT complied with the standards specified above.

Tested By:

Lewis Zhou

(Lewis Zhou)

Reviewed By:

Timo Lei

(Timo Lei)

Approved By:

Jack Ai

(Jack Ai)



1 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ20260500916E-05	Rev.01	Initial report	2026-06-18

Note:

Except for Conducted Peak Output Power, AC Power Line Conducted Emission, Radiated Spurious Emissions, and Restricted Bands around Fundamental Frequency, all other test data are leveraged from the original module (FCC ID: YYX-FS2345).

Comparison Summary Table

Parameter / Feature	Original Module	EUT	Remarks / Impact
Model Name	[YYX-FS2345]	[2A9OO-UC001S]	FCC ID
Antenna Specification	2.4G: ANT1:PIFA antenna/2.21dBi ANT2:PIFA antenna/1.86dBi 5G: ANT1:PIFA antenna/ 2.11 dBi for 5150-5250MHZ 3.42 dBi for 5250-5350MHZ 4.54 dBi for 5470-5725MHZ 3.05 dBi for 5725-5850MHZ ANT2:PIFA antenna/ 2.75 dBi for 5150-5250MHZ 3.02 dBi for 5250-5350MHZ 2.04 dBi for 5470-5725MHZ 0.22 dBi for 5725-5850MHZ	2.4G: ANT1:FPC antenna/2.87dBi ANT2:PIFA antenna/1.86dBi 5G: ANT1:FPC antenna/ 3.23dBi for 5725-5850MHZ ANT2:PIFA antenna/ 0.22dBi for 5725-5850MHZ	Antenna changed
Frequency Range/ Operation Mode	BLE: 1Mbps, 2Mbps: 2402MHz~2480MHz BT: 1Mbps/2Mbps/3Mbps 2402MHz~2480MHz 2.4GHz: Wi-Fi: 802.11b/g/n(HT20)/ax(HE20): 2412MHz~2462MHz 5G WIFI: 802.11a/n/ac/ax(20M): 5180MHz~5240MHz; 5260MHz~5320MHz; 5500MHz~5720MHz; 5745MHz~5825MHz	BLE: 1Mbps, 2Mbps: 2402MHz~2480MHz BT: 1Mbps/2Mbps/3Mbps 2402MHz~2480MHz 2.4GHz: Wi-Fi: 802.11b/g/n(HT20)/ax(HE20): 2412MHz~2462MHz 5G WIFI: IEEE 802.11a/n/ac/ax(20M): 5745MHz~5825MHz	Frequency band

2 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15 Subpart C Section 15.203	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024; KDB789033	PASS
AC Power Line Conducted Emission	47 CFR Part 15 Subpart E Section 15.207	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024; KDB789033	PASS
Maximum Conducted Output Power	47 CFR Part 15 Subpart C Section 15.407 (a)	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024; KDB789033	PASS
Emission Bandwidth	47 CFR Part 15 Subpart C Section 15.407 (a)(e)	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024; KDB789033	N/A
Maximum Power Spectral Density	47 CFR Part 15 Subpart E Section 15.407 (a)	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024; KDB789033	N/A
Band Edge Measurements	47 CFR Part 15 Subpart C Section 15.209 & 15.407(b)	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024; KDB789033	N/A
Frequency stability	47 CFR Part 15 Subpart E Section 15.407 (g)	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024; KDB789033	N/A
Operation in the absence of information to the transmit	47 CFR Part 15 Subpart E Section 15.407 (c)	47 CFR Part 15 Subpart E	N/A
Radiated Spurious Emissions	47 CFR Part 15 Subpart E Section 15.407 (b)	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024; KDB789033	PASS

Remark:

The tested sample(s) and the sample information are provided by the client.

Tx: In this whole report Tx (or tx) means Transmitter.

Rx: In this whole report Rx (or rx) means Receiver.

RF: In this whole report RF means Radiated Frequency.

CH: In this whole report CH means channel.

Volt: In this whole report Volt means Voltage.

Temp: In this whole report Temp means Temperature.

Humid: In this whole report Humid means humidity.

Press: In this whole report Press means Pressure.

N/A: In this whole report not application

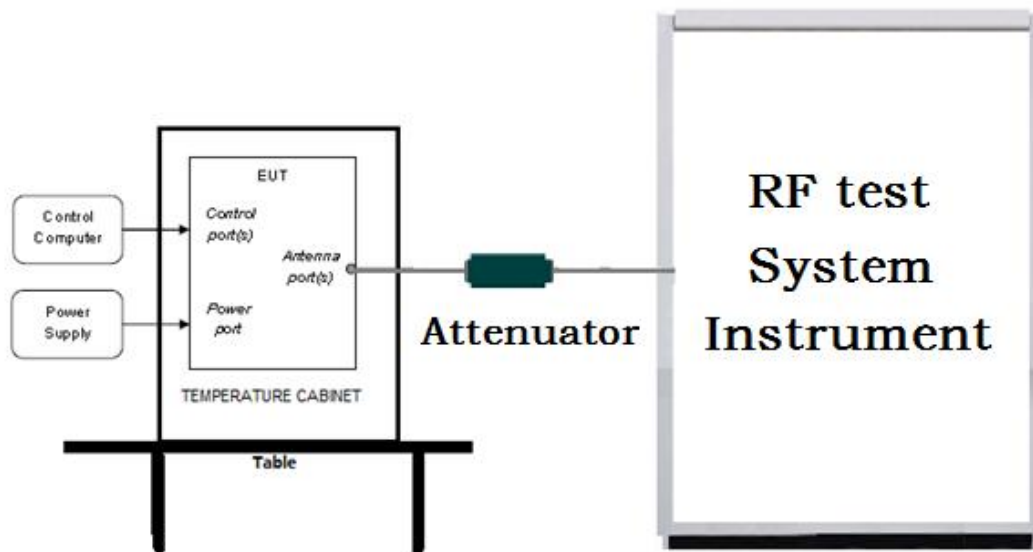
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4 Test Requirement

4.1 Test setup

4.1.1 For Conducted test setup



4.1.2 For Radiated Emissions test setup

Radiated Emissions setup:

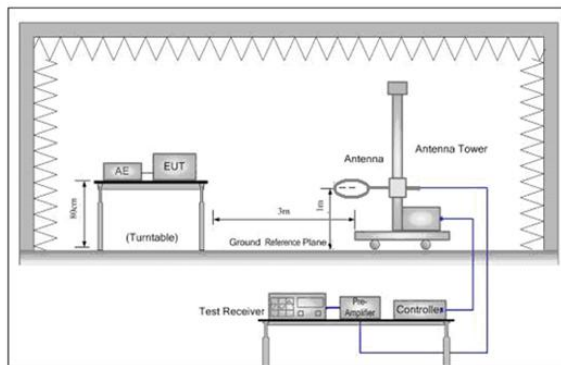


Figure 1. Below 30MHz

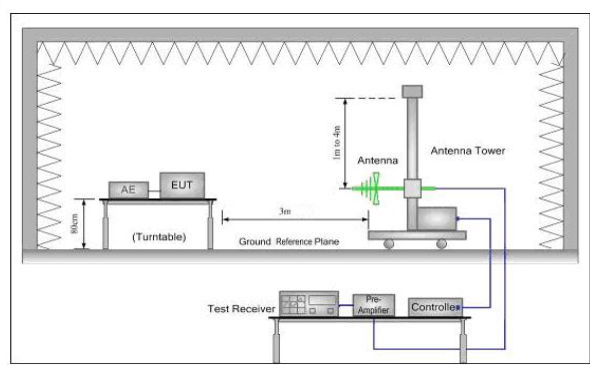


Figure 2. 30MHz to 1GHz

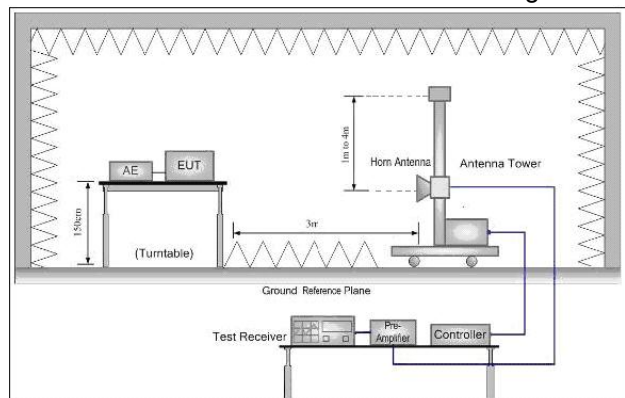
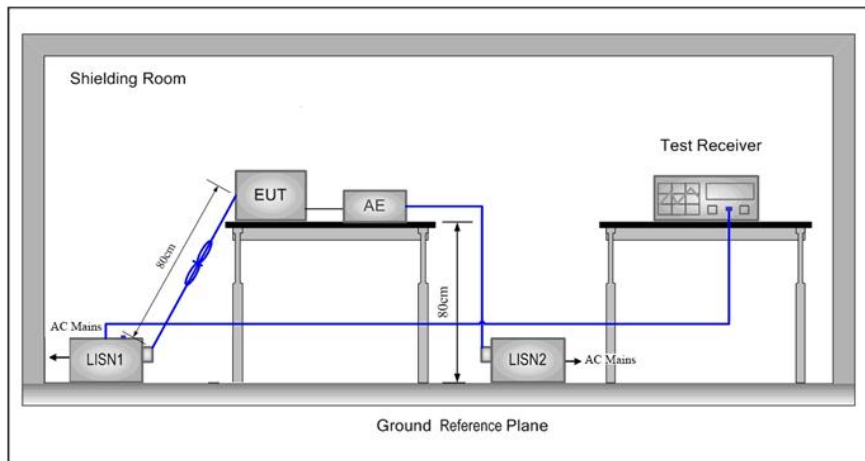


Figure 3. Above 1GHz

4.1.3 For Conducted Emissions test setup

Conducted Emissions setup



4.2 Test Environment

Operating Environment:		
Conducted Emissions:		
Temperature:	25.6 °C	
Humidity:	60 % RH	
Atmospheric Pressure:	1009 mbar	
Radiated Emissions:		
Temperature:	25.5 °C	
Humidity:	54 % RH	
Atmospheric Pressure:	1009mbar	
Radio conducted item test (RF Conducted test room):		
Temperature:	25.3 °C	
Humidity:	50 % RH	
Atmospheric Pressure:	1009 mbar	
Test Condition	Temperature (°C)	Voltage (V)
TN/VN	+15 to +35	18
TL/VL	-30	16.2
TH/VL	50	16.2
TL/VH	-30	19.8
TH/VH	50	19.8
Remark:		
1)The EUT just work in such extreme temperature of -30 °C to 50 °C and the extreme voltage of 16.2V to 19.8V, so here the EUT is tested in the temperature of -30 °C to 50 °C and the voltage of 16.2V to 19.8V.		
2)VN: Normal Voltage; TN: Normal Temperature;		
TL: Low Extreme Test Temperature; TH: High Extreme Test Temperature;		
VL: Low Extreme Test Voltage; VH: High Extreme Test Voltage.		

4.3 Test Condition

Test channel:

Test Mode	Tx/Rx	RF Channel		
		Low(L)	Middle(M)	High(H)
802.11a/n/ac/ax(20 M)	5725MHz ~5850 MHz	Channel 149	Channel 157	Channel 165
		5745MHz	5785MHz	5825MHz

Run Software:

AmebaZ2_mptool_1v3
— □ ×

Main
PSD
Efuse
Reg

Select COM COM2 ▼

Control

Initialize

☐ Pwridx by Rate and Limit

☐ TX Power Tracking Start

MAC Address

Wlan Mode

Testing Item

Start Stop

TX Setting

RX Setting

Ant TX

Ant RX

▼

▼

Data Channel ▼

Data Rate ▼

A ▼

B ▼

C ▼

D ▼

TX Power Index

Preamble ▼

Bandwidth ▼

☐ Limit CH by BW

Xtalcap ▼

TX Packet Setup

Pattern ▼

Count

Length

Interval

View Window

Packet Counter

TX OK

RX OK

RX ERR

Reset

Advanced

TX Dest Set

Test mode:

Pre-scan under all rate at lowest channel for Ant1

Through Pre-scan, 6Mbps is the worst case of 802.11a (20M); MCS0 is the worst case of 802.11n (20M); MCS0 is the worst case of 802.11ac (20M), MCS0 is the worst case of 802.11ax (20M)

5 General Information

5.1 Client Information

Applicant:	Ultimea Technology (Shenzhen) Limited
Address of Applicant:	20th Floor, Building 4, Tianan Cloud Park, Bantian St., Longgang District, Shenzhen, China
Manufacturer:	Ultimea Technology (Shenzhen) Limited
Address of Manufacturer:	20th Floor, Building 4, Tianan Cloud Park, Bantian St., Longgang District, Shenzhen, China
Factory:	SHENZHEN SOUNDJOYFUL TECHNOLOGY CO., LTD
Address of Factory:	Room 905A, Lingyun Building, Xin'an Street, Bao'an, Shenzhen

5.2 General Description of EUT

Product Name:	Soundbar
Model No.:	UC001
Test Model No.:	UC001
Trade Mark:	ULTIMEA
Software Version:	V023
Hardware Version:	V03
Module model:	RTL8730ELH
EUT Power Supply:	Power by adapter:GQ36-180200-AU Input:100-240V~50/60Hz 1.0A Max Output:18.0V $\overline{\text{---}}$ 2.0A 36.0W
EUT Supports Radios application:	U-NII-3: 5.725-5.850GHz
EUT Type:	Client devices

5.3 Product Specification subjective to this standard

Operation Frequency:	IEEE 802.11a/n/ac/ax(20M): 5725MHz ~5850 MHz
Channel Numbers:	IEEE 802.11a/n/ac/ax(20M): 5725MHz ~5850MHz/ 5 channel
Type of Modulation:	IEEE for 802.11a/n/ac: OFDM(256QAM, 64QAM, 16QAM, QPSK, BPSK) IEEE for 802.11ax: OFDMA(1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK)
Sample Type:	☒ Mobile ☐ Portable
Test Software of EUT:	AmebaZ2_mptool_1v3
Antenna Type:	ANT1:FPC antenna ANT2:PIFA antenna
Antenna gain:	ANT1:3.23dBi ANT2:0.22dBi
Cable loss:	1.0 dB

Operation Frequency each of channel

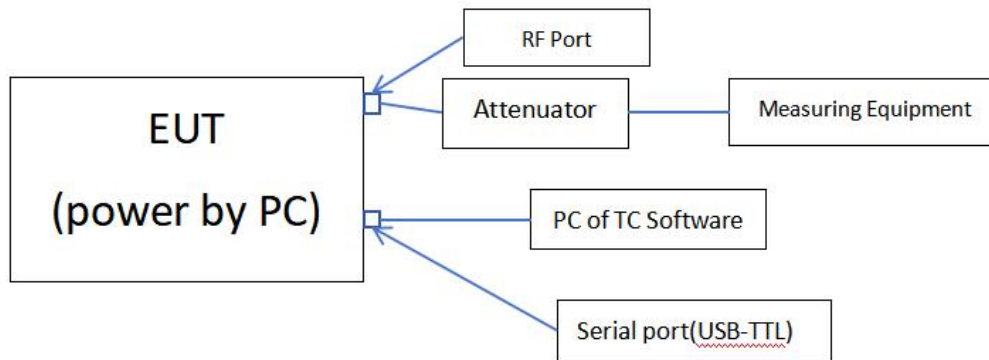
(U-NII-3) 5745MHz-5825MHz				
Bandwidth	Channel	Frequency (MHz)	Channel	Frequency (MHz)
20MHz	149	5745	153	5765
	157	5785	161	5805
	165	5825	/	/

5.4 Description of Support Units

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.	Certification	Supplied by
/	/	/	/	/

5.5 Test configuration



5.6 Test Location

All tests were performed at:

SHENZHEN HUAXIA TESTING TECHNOLOGY CO., LTD

102A, 102B, Building 2, Shanghenglang New Industrial Zone, Shanghenglang Community,
Dalang Street, Longhua District, Shenzhen, Guangdong, People's Republic of China, 518000

5.7 Test Facility

• **A2LA (Certificate No. 4742.01)**

SHENZHEN HUAXIA TESTING TECHNOLOGY CO., LTD, Shenzhen EMC Laboratory is accredited by the

American Association for Laboratory Accreditation(A2LA). Certificate No. 4742.01.

• **FCC Registration No.: 522263**

SHENZHEN HUAXIA TESTING TECHNOLOGY CO., LTD, Shenzhen EMC Laboratory 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. Registration No.:522263

5.8 Deviation from Standards

None.

5.9 Abnormalities from Standard Conditions

None.

5.10 Other Information Requested by the Customer

None.

5.11 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty
1	Radio Frequency	3×10^{-8}
2	RF power, conducted	0.86dB
3	Radiated Spurious emission test	5.12dB (Below 1GHz)
		4.6dB (Above 1GHz)
4	Conduction emission	3.5dB (9kHz to 150kHz)
		3.1dB (150kHz to 30MHz)
5	Temperature test	0.8°C
6	Humidity test	2.0%
7	DC power voltages	0.5%

6 Equipment List

Test Equipment	Manufacturer	Model No.	Instrument No.	Calibration Date	Calibration Due Date
EMI Test Receiver	R&S	ESR7	CQA-005	2025/9/1	2026/8/31
Spectrum analyzer	R&S	FSU26	CQA-038	2025/9/1	2026/8/31
Spectrum analyzer	R&S	FSU40	CQA-075	2025/9/1	2026/8/31
Preamplifier	MITEQ	AFS4-00010300-18-10P-4	CQA-035	2025/9/1	2026/8/31
Preamplifier	MITEQ	AMF-6D-02001800-29-20P	CQA-036	2025/9/1	2026/8/31
Preamplifier	EMCI	EMC184055SE	CQA-089	2025/9/1	2026/8/31
Loop antenna	Schwarzbeck	FMZB1516	CQA-060	2023/9/8	2026/9/7
Bilog Antenna	R&S	HL562	CQA-011	2023/11/01	2026/10/31
Horn Antenna	R&S	HF906	CQA-012	2023/11/01	2026/10/31
Horn Antenna	Schwarzbeck	BBHA 9170	CQA-088	2023/9/7	2026/9/6
Coaxial Cable (Above 1GHz)	CQA	N/A	C007	2025/9/1	2026/8/31
Coaxial Cable (Below 1GHz)	CQA	N/A	C013	2025/9/1	2026/8/31
RF cable(9KHz~40GHz)	CQA	RF-01	CQA-079	2025/9/1	2026/8/31
Antenna Connector	CQA	RFC-01	CQA-080	2025/9/1	2026/8/31
Power Sensor	KEYSIGHT	U2021XA	CQA-30	2025/9/1	2026/8/31
N1918A Power Analysis Manager Power Panel	Agilent	N1918A	CQA-074	2025/9/1	2026/8/31
Power meter	R&S	NRVD	CQA-029	2025/9/1	2026/8/31
Power divider	MIDWEST	PWD-2533-02-SMA-79	CQA-067	2025/9/1	2026/8/31
EMI Test Receiver	R&S	ESR7	CQA-005	2025/9/1	2026/8/31
LISN	R&S	ENV216	CQA-003	2025/9/1	2026/8/31
Coaxial cable	CQA	N/A	CQA-C009	2025/9/1	2026/8/31
DC power	KEYSIGHT	E3631A	CQA-028	2025/9/1	2026/8/31

Test software:

	Manufacturer	Software brand	Software version
Radiated Emissions test software	Tonscend	JS1120-3	Version:8
Conducted Emissions test software	Audix	e3	Version:9
RF Conducted test software	Audix	e3	V3.5.39

7 Radio Technical Requirements Specification

Reference documents for testing:

No.	Identity	Document Title
1	FCC Part15E	Subpart C-Intentional Radiators
2	ANSI C63.10-2020+Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024	American National Standard for Testing Unlicensed Wireless Devices
3	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01	Guidelines for compliance testing of unlicensed national information infrastructure (U-NII) device part 15, subpart E

Appendix A): Maximum Conduct Output Power

1.Duty Cycle (x)

Test Requirement KDB 789033 D02 II B 1

Test Method: KDB 789033 II B 1

Test Procedure:

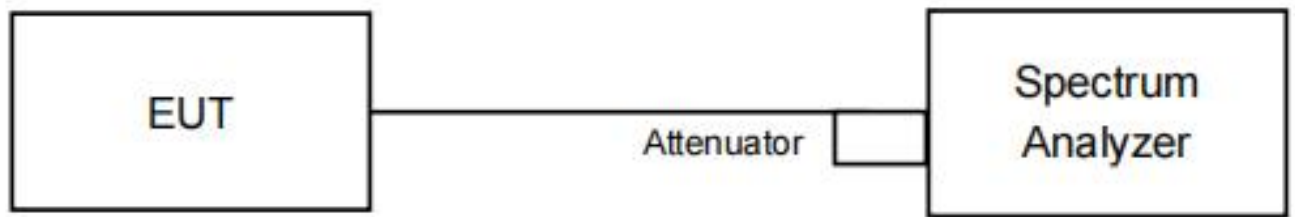
Set RBW = 20MHz

Set VBW = 40MHz

Set detector = peak.

Set span =0Hz

Test Setup Diagram



Measurement Data

Please Refer to Appendix for Details

Transmitting in full-bandwidth single-user mode (Full RU) with all kinds of modulations, and at the lowest, middle, and highest data rates across the channel.

2. Maximum Conducted Output Power

Test Requirement 47 CFR Part 15, Subpart C 15.407 (a)

Test Method: KDB 789033 D02 II E

Limit:

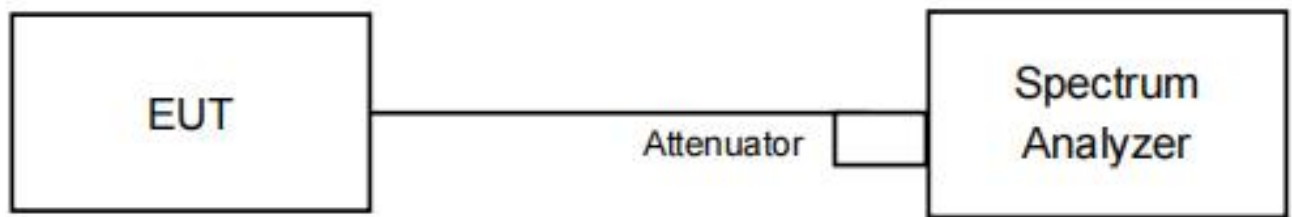
Frequency band(MHz)	Limit
5150-5250	$\leq 1\text{W}(30\text{dBm})$ for master device
	$\leq 250\text{mW}(24\text{dBm})$ for client device
5250-5350	$\leq 250\text{mW}(24\text{dBm})$ for client device or $11\text{dBm}+10\log B^*$
5470-5725	$\leq 250\text{mW}(24\text{dBm})$ for client device or $11\text{dBm}+10\log B^*$
5725-5850	$\leq 1\text{W}(30\text{dBm})$
Remark:	* Where B is the 26dB emission bandwidth in MHz. The maximum conducted output power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.

Test Procedure:

Method SA-2 (trace averaging across on and off times of the EUT transmissions, followed by duty cycle correction).

- (1) Set RBW = 1 MHz.
- (2) Set VBW ≥ 3 MHz.
- (3) Detector = power average
- (4) Sweep time = auto.
- (5) Add duty cycle to the measured average power.

Test Setup Diagram



Measurement Data

Please Refer to Appendix for Details

Transmitting in full-bandwidth single-user mode (Full RU) with all kinds of modulations, and at the lowest, middle, and highest data rates across the channel.

Appendix F): Antenna Requirement

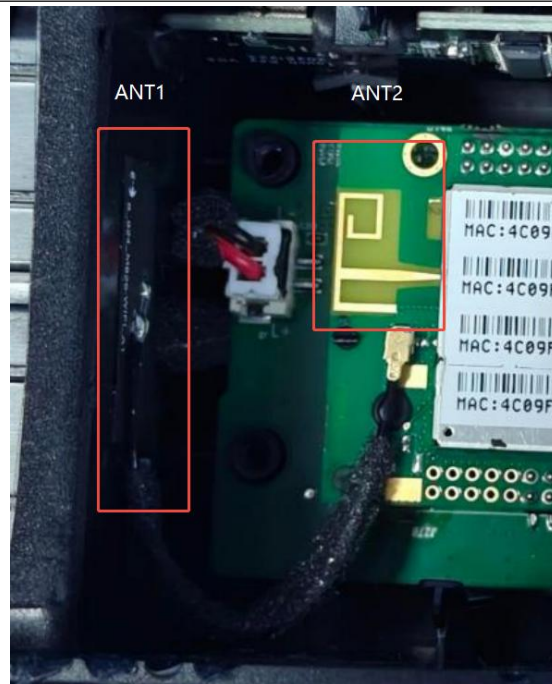
15.203 requirement:

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.

15.407(a)(1) (2) requirement:

The conducted output power limit specified in paragraph (a) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (a) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power and the peak power spectral density shall be reduced by the by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:



Ant 1 is FPC antenna.

The connection/connection type between the antenna to the EUT's antenna port is: unique coupling.
This is either permanently attachment or a unique coupling that satisfies the requirement.

Ant 2 is PIFA antenna

The connection/connection type between the antenna to the EUT's antenna port is: permanently attachment.

This is either permanently attachment or a unique coupling that satisfies the requirement.

Appendix G): Operation in the absence of information to the transmit

15.407(c) requirement:

The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signal ling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

Operation in the absence of information to the transmit

While the EUT is not transmitting any information, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ASK message transmitting from remote device and verify whether it shall resend or discontinue transmission. (manufacturer declare)

Appendix H): AC Power Line Conducted Emission

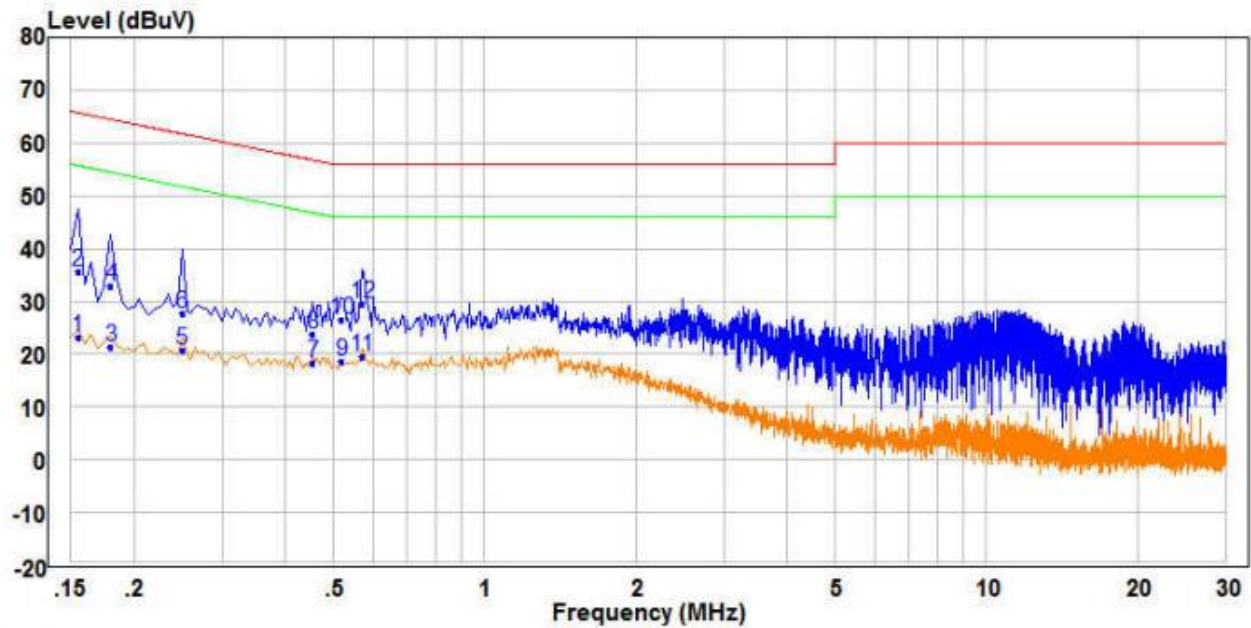
Test Procedure:	Test frequency range :150KHz-30MHz 1)The mains terminal disturbance voltage test was conducted in a shielded room. 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded. 3)The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2. 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.														
Limit:	<table><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBμV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>5-30</td><td>60</td><td>50</td></tr></table> * The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz. NOTE : The lower limit is applicable at the transition frequency	Frequency range (MHz)	Limit (dBμV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dBμV)														
	Quasi-peak	Average													
0.15-0.5	66 to 56*	56 to 46*													
0.5-5	56	46													
5-30	60	50													

Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

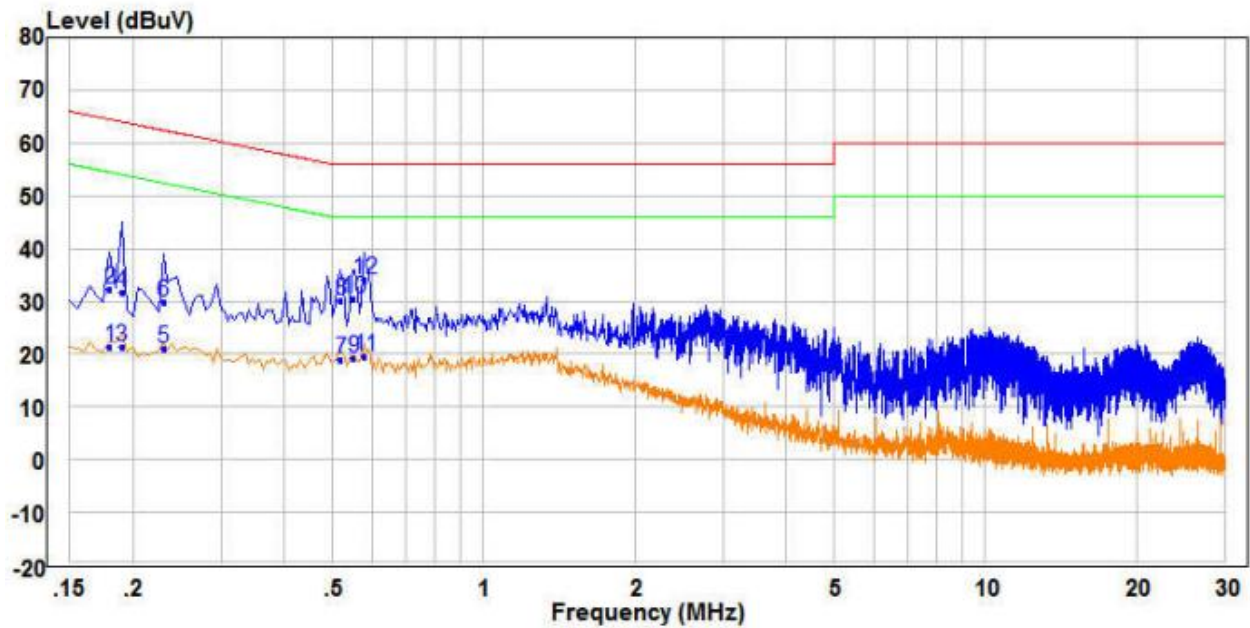
Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Live line:



	Freq	Read	Factor	Level	Limit	Over	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.155	13.38	9.69	23.07	55.73	-32.66	Average	Line
2	0.155	25.92	9.69	35.61	65.73	-30.12	QP	Line
3	0.180	11.58	9.64	21.22	54.49	-33.27	Average	Line
4	0.180	23.16	9.64	32.80	64.49	-31.69	QP	Line
5	0.250	11.10	9.55	20.65	51.76	-31.11	Average	Line
6	0.250	18.14	9.55	27.69	61.76	-34.07	QP	Line
7	0.455	8.51	9.66	18.17	46.78	-28.61	Average	Line
8	0.455	14.02	9.66	23.68	56.78	-33.10	QP	Line
9	0.520	8.95	9.72	18.67	46.00	-27.33	Average	Line
10	0.520	16.91	9.72	26.63	56.00	-29.37	QP	Line
11 PP	0.570	9.86	9.77	19.63	46.00	-26.37	Average	Line
12 QP	0.570	19.68	9.77	29.45	56.00	-26.55	QP	Line

Neutral line:



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB	dBuV	dBuV	dB		
1	0.180	11.79	9.64	21.43	54.49	-33.06	Average	Neutral
2	0.180	22.62	9.64	32.26	64.49	-32.23	QP	Neutral
3	0.190	11.62	9.62	21.24	54.04	-32.80	Average	Neutral
4	0.190	22.17	9.62	31.79	64.04	-32.25	QP	Neutral
5	0.230	11.47	9.56	21.03	52.45	-31.42	Average	Neutral
6	0.230	20.26	9.56	29.82	62.45	-32.63	QP	Neutral
7	0.520	9.12	9.72	18.84	46.00	-27.16	Average	Neutral
8	0.520	20.48	9.72	30.20	56.00	-25.80	QP	Neutral
9	0.550	9.35	9.75	19.10	46.00	-26.90	Average	Neutral
10	0.550	20.58	9.75	30.33	56.00	-25.67	QP	Neutral
11 AV	0.580	9.86	9.78	19.64	46.00	-26.36	Average	Neutral
12 PP	0.580	24.27	9.78	34.05	56.00	-21.95	QP	Neutral

Notes:

1. The following Quasi-Peak and Average measurements were performed on the EUT:
2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.
3. The 6Mbps of rate of 802.11A_5240 is the worst case, only the worst data recorded in the report.

Appendix I): Restricted bands around fundamental frequency (Radiated Emission)

Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average
Test Procedure:	Below 1GHz test procedure as below:				
	a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.				
	b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.				
	c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.				
	d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading.				
	e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.				
	f. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel				
	Above 1GHz test procedure as below:				
	g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre).				
	h. Test the EUT in the lowest channel , the Highest channel				
Limit:	Frequency	Limit (dBµV/m @3cm)		Remark	
	30MHz-88MHz	40.0		Quasi-peak Value	
	88MHz-216MHz	43.5		Quasi-peak Value	
	216MHz-960MHz	46.0		Quasi-peak Value	
	960MHz-1GHz	54.0		Quasi-peak Value	
	Above 1GHz	54.0		Average Value	
		74.0		Peak Value	
	Exploratory Test Mode:	Transmitting in full-bandwidth single-user mode (Full RU) with all kinds of modulations, and at the lowest, middle, and highest data rates across the channel. Only Ant 1 was tested. For Ant 2 data, refer to the original report as no modifications were made.			

Test plot as follows:

Worse case mode:		802.11a		Test channel:		149			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
5470.00	57.79	-3.44	54.35	74	-19.65	peak	H	1.5	52
5470.00	43.96	-3.44	40.52	54	-13.48	AVG	H	1.5	59
5470.00	57.48	-3.44	54.04	74	-19.96	peak	V	1.5	18
5470.00	45.53	-3.44	42.09	54	-11.91	AVG	V	1.5	167

Worse case mode:		802.11a		Test channel:		165			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
5850.00	58.99	-3.42	55.57	74	-18.43	peak	H	1.5	215
5850.00	44.58	-3.42	41.16	54	-12.84	AVG	H	1.5	248
5850.00	60.23	-3.42	56.81	74	-17.19	peak	V	1.5	209
5850.00	46.68	-3.42	43.26	54	-10.74	AVG	V	1.5	209

Worse case mode:		802.11n(HT20)		Test channel:		149			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
5470.00	58.08	-3.44	54.64	74	-19.36	peak	H	1.5	186
5470.00	44.12	-3.44	40.68	54	-13.32	AVG	H	1.5	53
5470.00	57.74	-3.44	54.30	74	-19.70	peak	V	1.5	176
5470.00	45.70	-3.44	42.26	54	-11.74	AVG	V	1.5	226

Worse case mode:		802.11n(HT20)		Test channel:		165			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
5850.00	59.09	-3.42	55.67	74	-18.33	peak	H	1.5	231
5850.00	44.25	-3.42	40.83	54	-13.17	AVG	H	1.5	327
5850.00	59.25	-3.42	55.83	74	-18.17	peak	V	1.5	191
5850.00	46.86	-3.42	43.44	54	-10.56	AVG	V	1.5	137

Worse case mode:		802.11ac(VHT20)		Test channel:		149			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
5470.00	58.15	-3.44	54.71	74	-19.29	peak	H	1.5	240
5470.00	43.86	-3.44	40.42	54	-13.58	AVG	H	1.5	173
5470.00	57.89	-3.44	54.45	74	-19.55	peak	V	1.5	342
5470.00	46.25	-3.44	42.81	54	-11.19	AVG	V	1.5	251

Worse case mode:		802.11ac(VHT20)		Test channel:		165			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
5850.00	58.79	-3.42	55.37	74	-18.63	peak	H	1.5	250
5850.00	44.22	-3.42	40.80	54	-13.20	AVG	H	1.5	189
5850.00	59.43	-3.42	56.01	74	-17.99	peak	V	1.5	266
5850.00	46.03	-3.42	42.61	54	-11.39	AVG	V	1.5	268

Worse case mode:		802.11ax(HE20)		Test channel:		149			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
5470.00	57.90	-3.44	54.46	74	-19.54	peak	H	1.5	141
5470.00	43.65	-3.44	40.21	54	-13.79	AVG	H	1.5	143
5470.00	57.95	-3.44	54.51	74	-19.49	peak	V	1.5	286
5470.00	45.80	-3.44	42.36	54	-11.64	AVG	V	1.5	24

Worse case mode:		802.11ax(HE20)		Test channel:		165			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
5850.00	59.18	-3.42	55.76	74	-18.24	peak	H	1.5	327
5850.00	44.62	-3.42	41.20	54	-12.80	AVG	H	1.5	356
5850.00	60.14	-3.42	56.72	74	-17.28	peak	V	1.5	207
5850.00	46.92	-3.42	43.50	54	-10.50	AVG	V	1.5	203

Note:

1) Through Pre-scan transmitting mode with all kind of modulation and data rate, Only the worst case is recorded in the report.

2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading - Correct Factor

Correct Factor = Preamplifier Factor - Antenna Factor - Cable Factor

Appendix J): Radiated Spurious Emissions

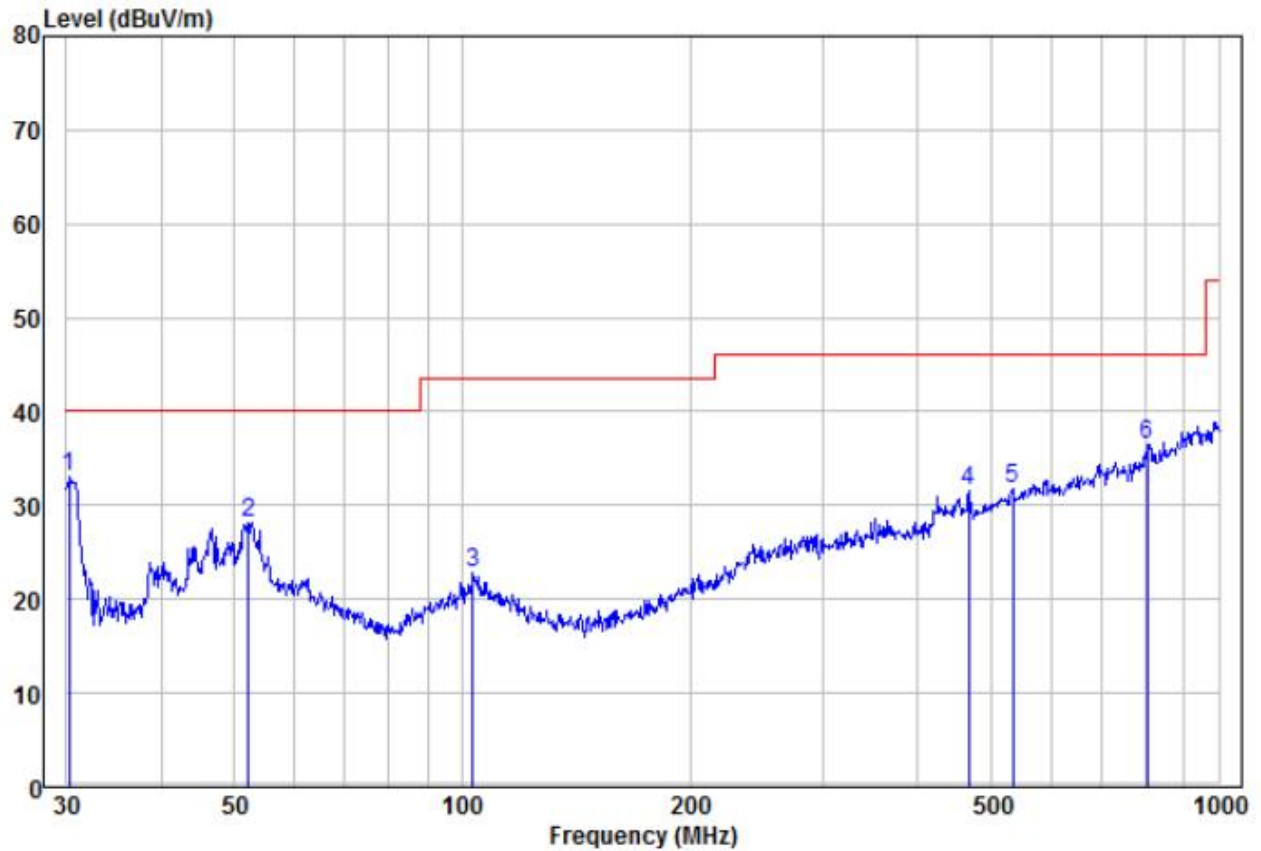
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak
	0.009MHz-0.090MHz	Average	10kHz	30kHz	Average
	0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
	0.110MHz-0.490MHz	Average	10kHz	30kHz	Average
	0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	120kHz	300kHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
Peak		1MHz	10Hz	Average	
Test Procedure:					
Below 1GHz test procedure as below: a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.					
Above 1GHz test procedure as below: g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre) h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is worse case. j. Repeat above procedures until all frequencies measured was complete.					
Limit:	Frequency	Field strength (microvolt/meter)	Limit (dBµV/cm)	Remark	Measurement distance (cm)
	0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz-88MHz	100	40.0	Quasi-peak	3
	88MHz-216MHz	150	43.5	Quasi-peak	3
	216MHz-960MHz	200	46.0	Quasi-peak	3
	960MHz-1GHz	500	54.0	Quasi-peak	3
	Above 1GHz	500	54.0	Average	3
	Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.				
Exploratory Test Mode:	Transmitting in full-bandwidth single-user mode (Full RU) with all kinds of modulations, and at the lowest, middle, and highest data rates across the channel. Only Ant 1 was tested. For Ant 2 data, refer to the original report as no modifications were				

	made.
Test result:	PASS

Test Data:

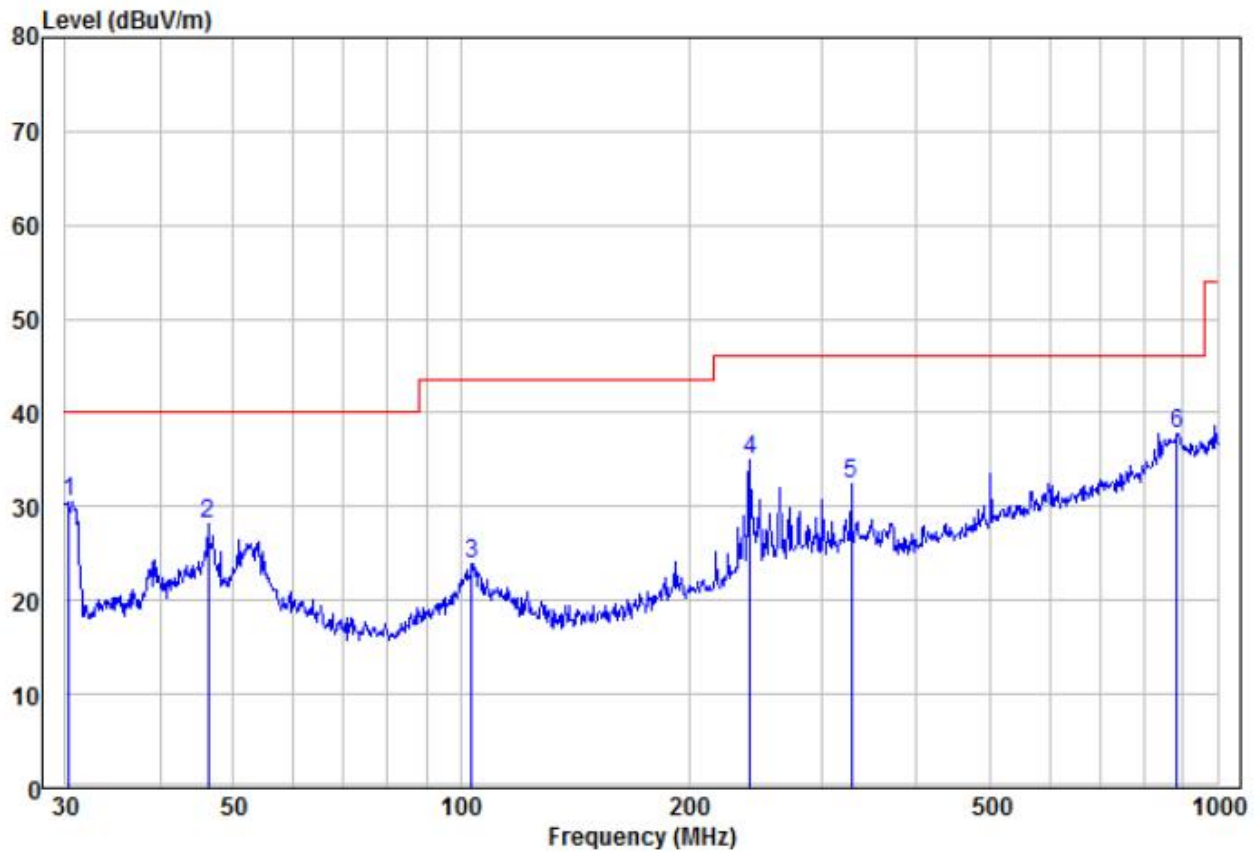
Radiated Emission below 1GHz

30MHz~1GHz		
Test mode:	Transmitting (802.11a 149CH)	Vertical



		Read		Limit	Over		
	Freq	Level	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Pol/Phase
1	pp	30.21	24.92	8.15	33.07	40.00	-6.93 Peak
2		52.21	15.43	12.68	28.11	40.00	-11.89 Peak
3		103.44	10.91	11.87	22.78	43.50	-20.72 Peak
4		467.24	11.55	19.94	31.49	46.00	-14.51 Peak
5		533.83	10.29	21.39	31.68	46.00	-14.32 Peak
6		804.60	9.89	26.59	36.48	46.00	-9.52 Peak

Test mode:	Transmitting (802.11a 149CH)	Horizontal
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	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
	MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB		
1	30.32	22.28	8.16	30.44	40.00	-9.56	Peak	HORIZONTAL
2	46.34	15.93	12.19	28.12	40.00	-11.88	Peak	HORIZONTAL
3	103.44	12.04	11.87	23.91	43.50	-19.59	Peak	HORIZONTAL
4	240.83	19.59	15.29	34.88	46.00	-11.12	Peak	HORIZONTAL
5	327.89	14.88	17.57	32.45	46.00	-13.55	Peak	HORIZONTAL
6 pp	884.50	8.79	29.04	37.83	46.00	-8.17	Peak	HORIZONTAL

Transmitter Emission above 1GHz

Test mode:	802.11a(6Mbps)			Test channel:		149			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
11490	51.65	2.54	54.19	68.2	-14.01	peak	H	1.5	291
11490	38.08	2.54	40.62	54	-13.38	AVG	H	1.5	134
17235	50.78	3.94	54.72	68.2	-13.48	peak	H	1.5	86
17235	37.54	3.94	41.48	54	-12.52	AVG	H	1.5	123
11490	54.47	2.54	57.01	68.2	-11.19	peak	V	1.5	39
11490	38.47	2.54	41.01	54	-12.99	AVG	V	1.5	4
17235	51.11	3.94	55.05	68.2	-13.15	peak	V	1.5	338
17235	36.13	3.94	40.07	54	-13.93	AVG	V	1.5	56

Test mode:	802.11a(6Mbps)			Test channel:		157			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
11570	51.28	2.55	53.83	68.2	-14.37	peak	H	1.5	137
11570	37.86	2.55	40.41	54	-13.59	AVG	H	1.5	351
17355	49.97	3.96	53.93	68.2	-14.27	peak	H	1.5	330
17355	37.25	3.96	41.21	54	-12.79	AVG	H	1.5	18
11570	55.17	2.55	57.72	68.2	-10.48	peak	V	1.5	234
11570	38.83	2.55	41.38	54	-12.62	AVG	V	1.5	135
17355	50.96	3.96	54.92	68.2	-13.28	peak	V	1.5	327
17355	37.87	3.96	41.83	54	-12.17	AVG	V	1.5	190

Test mode:	802.11a(6Mbps)			Test channel:		165			
Frequency	Meter Reading	Factor	Emission Level	Limits	Over	Detect or Type	Ant. Pol.	Antenna Height	Table Angle
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)		H/V	(m)	(Degree)
11650	51.40	2.58	53.98	68.2	-14.22	peak	H	1.5	197
11650	37.93	2.58	40.51	54	-13.49	AVG	H	1.5	179
17475	49.26	4.02	53.28	68.2	-14.92	peak	H	1.5	307
17475	36.31	4.02	40.33	54	-13.67	AVG	H	1.5	282
11650	54.53	2.58	57.11	68.2	-11.09	peak	V	1.5	172
11650	37.23	2.58	39.81	54	-14.19	AVG	V	1.5	266
17475	49.99	4.02	54.01	68.2	-14.19	peak	V	1.5	179
17475	36.67	4.02	40.69	54	-13.31	AVG	V	1.5	58

Remark:

- 1) The 802.11a 6Mbps of rate is the worst case, only the worst data recorded in the report.
- 2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level = Receiver Reading + Antenna Factor + Cable Factor – Preamplifier Factor
- 3) Scan from 9kHz to 40GHz, The disturbance above 18GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

8 Photographs - EUT Test Setup

Detailed information is given in Appendix A

9 Photographs - EUT Constructional Details

Detailed information is given in Appendix B and Appendix C

*** END OF REPORT ***