



HUAK TESTING

FCC Test Report

**Test Report
On Behalf of
Xiamen Yiquan Technology Co., Ltd.
For
Lyrics Music Frame
Model No.: JD190H-B06**

FCC ID: 2BR9E-JD190H-B06

Prepared For: Xiamen Yiquan Technology Co., Ltd.
Room 1001, Century Fortune Center, Lianqian Street, Siming District, Xiamen, China

Prepared By: Shenzhen HUAK Testing Technology Co., Ltd.
1-2/F, Building B2, Junfeng Zhongcheng Zhizao Innovation Park, Heping, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

Date of Test: Jul. 31, 2025 ~ Aug. 13, 2025
Date of Report: Aug. 13, 2025
Report Number: HK2507314231-4E

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Test Result Certification

Applicant's Name Xiamen Yiquan Technology Co., Ltd.
Address Room 1001, Century Fortune Center, Lianqian Street, Siming District, Xiamen, China
Manufacturer's Name SHENZHEN JOYHONG TECH CO.,LTD
Address Building B6, Western Industry Factory Zone, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China

Product Description

Trade Mark BOCT
Product Name Lyrics Music Frame
Model and/or Type Reference JD190H-B06
Standards FCC Rules and Regulations Part 15 Subpart E Section 15.407
ANSI C63.10: 2020

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Date of Test

Date (s) of performance of tests Jul. 31, 2025 ~ Aug. 13, 2025
Date of Issue Aug. 13, 2025
Test Result Pass

Testing Engineer


Len Liao

Technical Manager


Sliver Wan

Authorized Signatory


Jason Zhou

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** Modified History **

Revision	Description	Issued Date	Remark
Revision 1.0	Initial Test Report Release	Aug. 13, 2025	Jason Zhou



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1. Test Result Summary

1.1. Test Procedures and Results

Requirement	CFR 47 Section	Result
Antenna Requirement	§15.203	PASS
AC Power Line Conducted Emission	§15.207	PASS
Maximum Conducted Output Power	§15.407(a)	PASS
6dB Emission Bandwidth	§15.407(e)	N/A
26dB Emission Bandwidth & 99% Occupied Bandwidth	§15.407(a)	PASS
Power Spectral Density	§15.407(a)	PASS
Band Edge	§15.407(b)/15.209/15.205	PASS
Radiated Emission	§15.407(b)/15.209/15.205	PASS
Frequency Stability	§15.407(g)	PASS

Note:-

1. **PASS:** Test item meets the requirement.
2. **FAIL:** Test item does not meet the requirement.
3. **N/A:** Test case does not apply to the test object.
4. The test result judgment is decided by the limit of test standard.

1.2. Information of the Test Laboratory

Shenzhen HUAK Testing Technology Co., Ltd

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1.3. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

No.	Item	MU
1	Conducted Emission	$\pm 0.37\text{dB}$
2	RF power, conducted	$\pm 3.35\text{dB}$
3	Spurious emissions, conducted	$\pm 2.20\text{dB}$
4	All emissions, radiated(<1G)	$\pm 3.90\text{dB}$
5	All emissions, radiated(>1G)	$\pm 4.28\text{dB}$
6	Temperature	$\pm 0.1^\circ\text{C}$
7	Humidity	$\pm 1.0\%$

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2. EUT Description

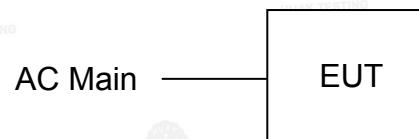
2.1. General Description of EUT

Equipment	Lyrics Music Frame
Model Name	JD190H-B06
Series Model(s)	N/A
Model Difference	N/A
Trade Mark	BOCT
FCC ID	2BR9E-JD190H-B06
Operation Frequency:	IEEE 802.11a/n/ac (HT20) 5.180GHz-5.240GHz IEEE 802.11n/ac (HT40) 5.190GHz-5.230GHz
Modulation Technology:	IEEE 802.11a/n/ac
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM
Antenna Type	Internal antenna
Antenna Gain	3.28dBi
Power Source	AC100-240V, 50/60Hz
Power Supply:	AC100-240V, 50/60Hz
Hardware Version	V1.0
Software Version	V1.0

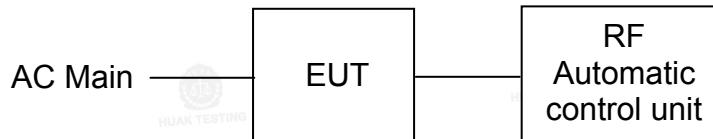
Note: 1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
 2. Antenna gain Refer to the antenna specifications.
 3. The cable loss data is obtained from the supplier.
 4. The test results in the report only apply to the tested sample.

2.4. Description of Test Setup

Operation of EUT during AC Conducted and Radiation testing



Operation of EUT during RF Conducted testing:



The sample was placed (0.8m below 1GHz, 1.5m above 1GHz) above the ground plane of 3m chamber. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating the turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages. The worst case is X position.



2.5. Description of Support Units

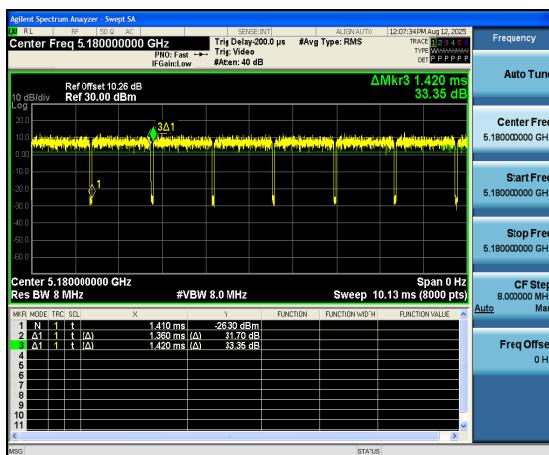
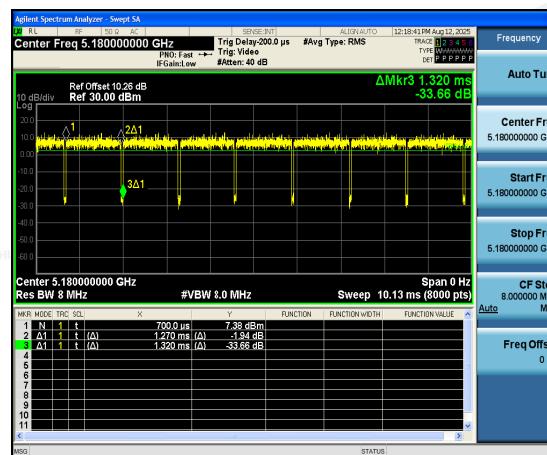
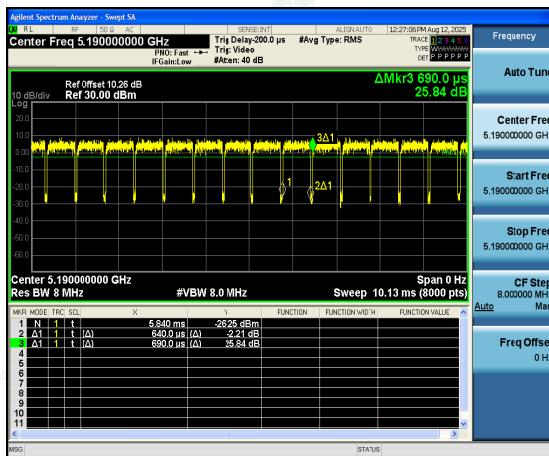
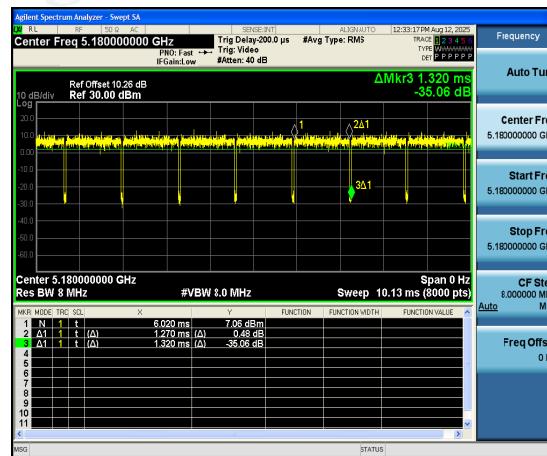
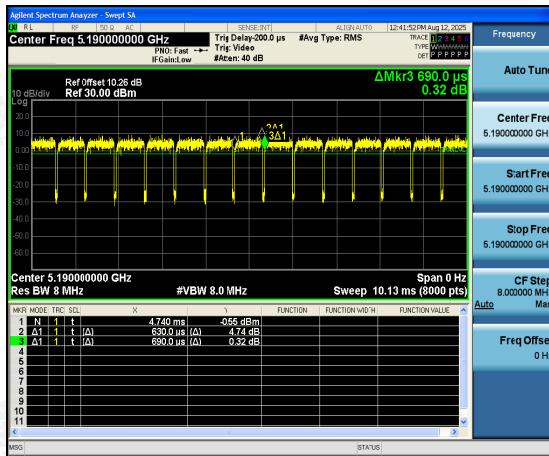
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Trade Mark	Model/Type No.	Specification	Remark
1	Lyrics Music Frame	BOCT	JD190H-B06	N/A	EUT
2	AC Cable	N/A	N/A	Length: 3m	Accessory

Note:

Note:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
3. For conducted measurements (Output Power, 26db Bandwidth and 99% Occupied Bandwidth, Power Spectral Density, Spurious Emissions), the antenna of EUT is connected to the test equipment via temporary antenna connector, the antenna connector is soldered on the antenna port of EUT, and the temporary antenna connector is listed in the Test Instruments.

**802.11a****802.11n(HT20)****802.11n(HT40)****802.11ac(HT20)****802.11ac(HT40)**

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4. Test Results and Measurement Data

4.1. AC Conducted Emission

4.1.1. Test Specification

Test Requirement:	FCC Part15 C Section 15.207														
Test Method:	ANSI C63.10: 2020														
Frequency Range:	150 kHz to 30 MHz														
Receiver Setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto														
Limits:	<table border="1"> <thead> <tr> <th rowspan="2">Frequency range (MHz)</th> <th colspan="2">Limit (dBuV)</th> </tr> <tr> <th>Quasi-peak</th> <th>Average</th> </tr> </thead> <tbody> <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> </tbody> </table>	Frequency range (MHz)	Limit (dBuV)		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 (dBuV)														
	Quasi-peak	Average													
0.15-0.5	66 to 56*	56 to 46*													
0.5-5	56	46													
5-30	60	50													
Test Setup:	<p>Reference Plane</p> <p>40cm</p> <p>E.U.T</p> <p>AC power</p> <p>LISN</p> <p>Filter</p> <p>EMI Receiver</p> <p>Test table/Insulation plane</p> <p>Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m</p>														
Test Mode:	Tx Mode														
Test Procedure:	<ol style="list-style-type: none"> 1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. 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: 2020 on conducted measurement. 														
Test Result:	N/A														

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**4.1.2. Test Instruments****Conducted Emission Shielding Room Test Site (843)**

Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Receiver	R&S	ESR	HKE-005	Feb. 19, 2025	Feb. 18, 2026
LISN	R&S	ENV216	HKE-002	Feb. 19, 2025	Feb. 18, 2026
LISN	R&S	ENV216	HKE-059	Feb. 19, 2025	Feb. 18, 2026
Coax cable (9KHz-30MHz)	Times	381806-002	N/A	Feb. 19, 2025	Feb. 18, 2026
EMI Test Software	Tonscend	JS32-CE 2.5.0.6	HKE-081	N/A	N/A
10dB Attenuator	Schwarzbeck	VTSD9561F	HKE-153	Feb. 19, 2025	Feb. 18, 2026

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).



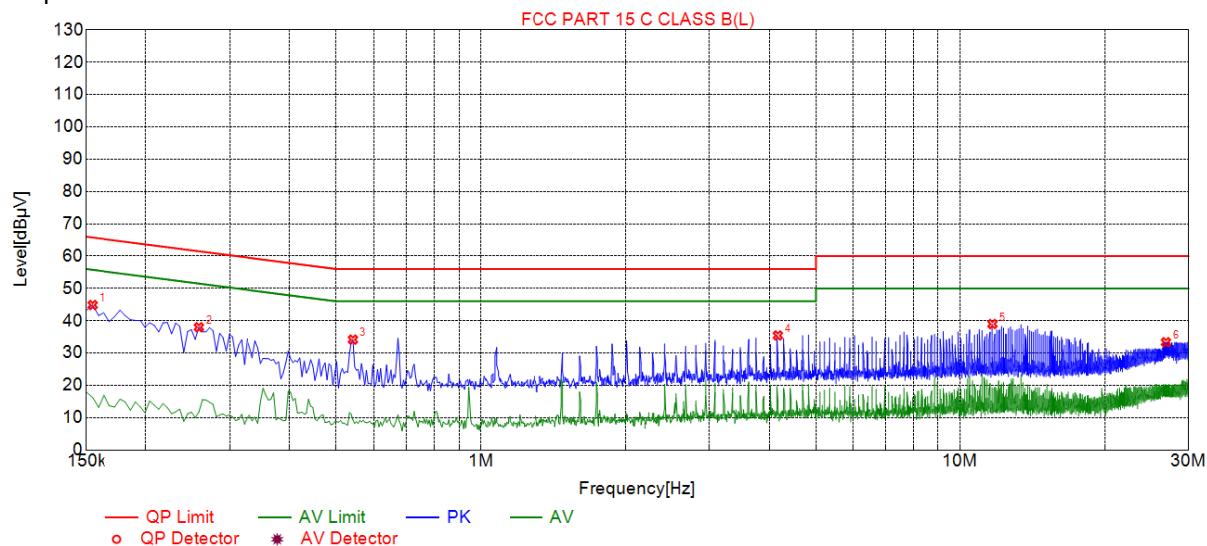
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4.1.3. Test data

Remark: All the test modes completed for test. Only the worst result of was reported as below:

Test Specification: Line



Suspected List

NO.	Freq. [MHz]	Level [dB μ V]	Factor [dB]	Limit [dB μ V]	Margin [dB]	Reading [dB μ V]	Detector	Type
1	0.1545	44.85	19.56	65.75	20.90	25.29	PK	L
2	0.2580	37.99	19.84	61.50	23.51	18.15	PK	L
3	0.5415	34.15	19.81	56.00	21.85	14.34	PK	L
4	4.1685	35.43	20.36	56.00	20.57	15.07	PK	L
5	11.6925	38.98	21.36	60.00	21.02	17.62	PK	L
6	26.9205	33.34	24.82	60.00	26.66	8.52	PK	L

Remark: Margin = Limit – Level

Correction factor = Cable loss + LISN insertion loss

Level=Test receiver reading + correction factor



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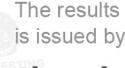
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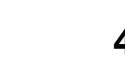
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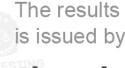
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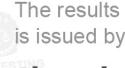
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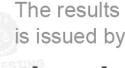
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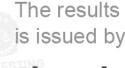
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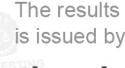
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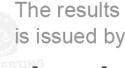
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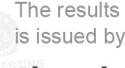
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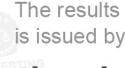
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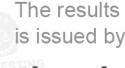
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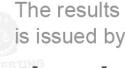
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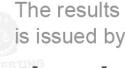
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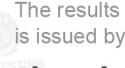
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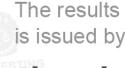
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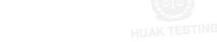
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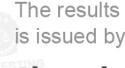
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**HUAK TESTING****4.2.2. Test Instruments**

RF Test Room					
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum analyzer	Agilent	N9020A	HKE-025	Feb. 19, 2025	Feb. 18, 2026
Spectrum analyzer	Agilent	N9020A	HKE-117	Feb. 19, 2025	Feb. 18, 2026
Power meter	Agilent	E4419B	HKE-085	Feb. 19, 2025	Feb. 18, 2026
Power Sensor	Agilent	E9300A	HKE-086	Feb. 19, 2025	Feb. 18, 2026
RF cable	Times	1-40G	HKE-034	Feb. 19, 2025	Feb. 18, 2026
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Feb. 19, 2025	Feb. 18, 2026
RF Test Software	Tonscend	JS1120-3 Version 3.5.39	HKE-083	N/A	N/A

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

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4.2.3. Test Data

Configuration Band I (5150 - 5250 MHz)

Mode	Test Channel	Maximum Conducted Output Power (dBm)	FCC Limit (dBm)	Result
802.11a	CH36	5.81	24	PASS
802.11a	CH40	6.33	24	PASS
802.11a	CH48	5.62	24	PASS
802.11n(HT20)	CH36	5.90	24	PASS
802.11n(HT20)	CH40	5.75	24	PASS
802.11n(HT20)	CH48	5.64	24	PASS
802.11n(HT40)	CH38	5.89	24	PASS
802.11n(HT40)	CH46	5.96	24	PASS
802.11ac(HT20)	CH36	5.49	24	PASS
802.11ac(HT20)	CH40	5.81	24	PASS
802.11ac(HT20)	CH48	5.67	24	PASS
802.11ac(HT40)	CH38	5.92	24	PASS
802.11ac(HT40)	CH46	6.05	24	PASS

Note: 1.The test results including the cable lose.

4.3. 6dB Emission Bandwidth

4.3.1. Test Specification

4.3.2. Test Instruments

RF Test Room					
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum analyzer	Agilent	N9020A	HKE-025	Feb. 19, 2025	Feb. 18, 2026
Spectrum analyzer	Agilent	N9020A	HKE-117	Feb. 19, 2025	Feb. 18, 2026
RF cable	Times	1-40G	HKE-034	Feb. 19, 2025	Feb. 18, 2026
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Feb. 19, 2025	Feb. 18, 2026
RF Test Software	Tonscend	JS1120-3 Version 3.5.39	HKE-083	N/A	N/A

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

4.3.3 Test Data

N/A

4.4. 26dB Bandwidth and 99% Occupied Bandwidth

4.4.1. Test Specification

4.4.2. Test Instruments

RF Test Room					
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum analyzer	Agilent	N9020A	HKE-025	Feb. 19, 2025	Feb. 18, 2026
Spectrum analyzer	Agilent	N9020A	HKE-117	Feb. 19, 2025	Feb. 18, 2026
RF cable	Times	1-40G	HKE-034	Feb. 19, 2025	Feb. 18, 2026
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Feb. 19, 2025	Feb. 18, 2026
RF Test Software	Tonscend	JS1120-3 Version 3.5.39	HKE-083	N/A	N/A

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

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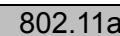
4.4.3. Test Data

Mode	Test Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	Verdict
802.11a	CH36	5180	20.60	PASS
802.11a	CH40	5200	20.61	PASS
802.11a	CH48	5240	20.64	PASS
802.11n(HT20)	CH36	5180	21.19	PASS
802.11n(HT20)	CH40	5200	20.90	PASS
802.11n(HT20)	CH48	5240	20.97	PASS
802.11n(HT40)	CH38	5190	43.44	PASS
802.11n(HT40)	CH46	5230	42.94	PASS
802.11ac(HT20)	CH36	5180	21.08	PASS
802.11ac(HT20)	CH40	5200	21.03	PASS
802.11ac(HT20)	CH48	5240	21.00	PASS
802.11ac(HT40)	CH38	5190	42.80	PASS
802.11ac(HT40)	CH46	5230	42.53	PASS

Test plots as follows:



Band I (5150 – 5250 MHz)



Low

10



Mid



1

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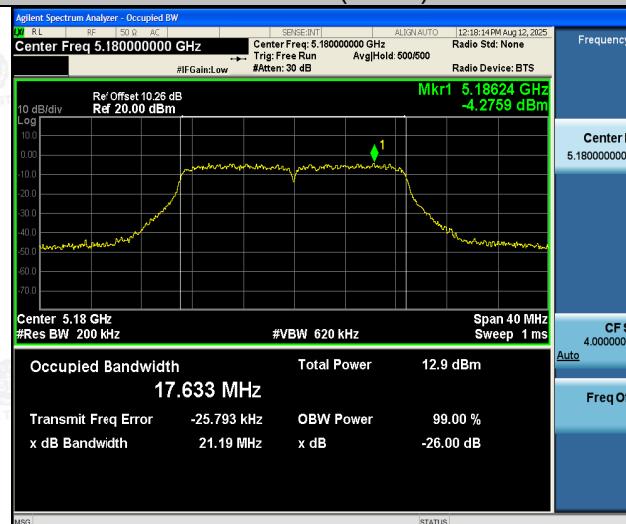
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HUAN TENGZI



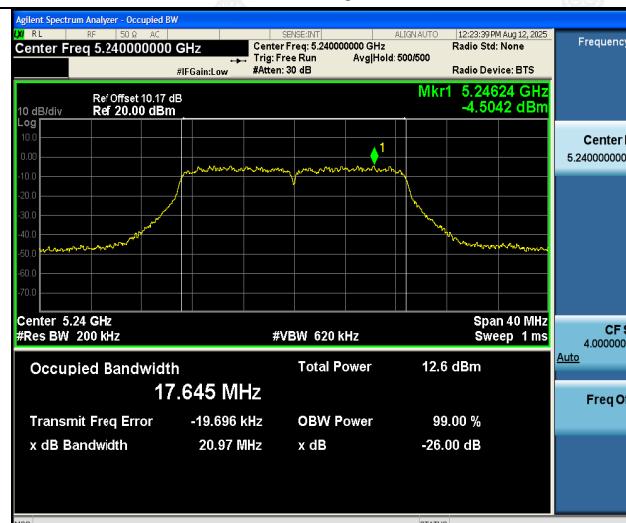
802.11n(HT20)



LOW



Mid



High

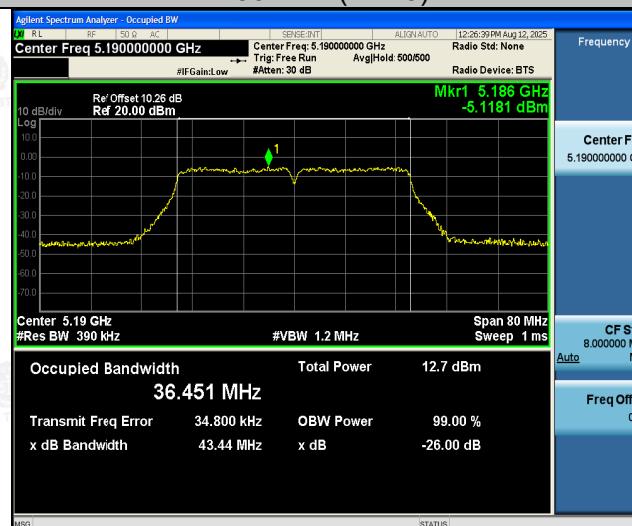
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802.11n(HT40)



LOW



High

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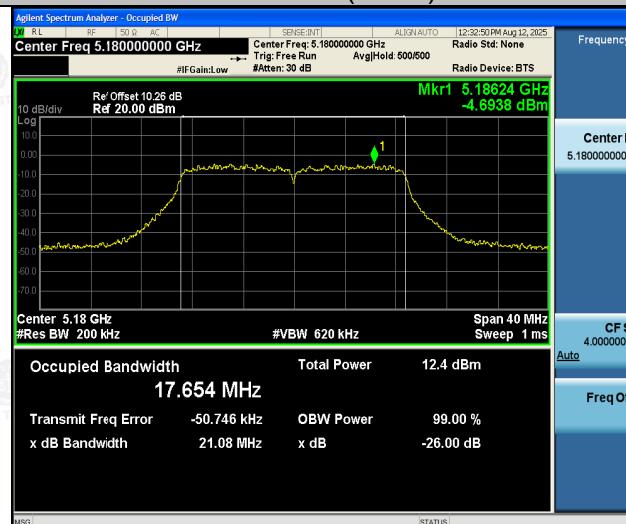
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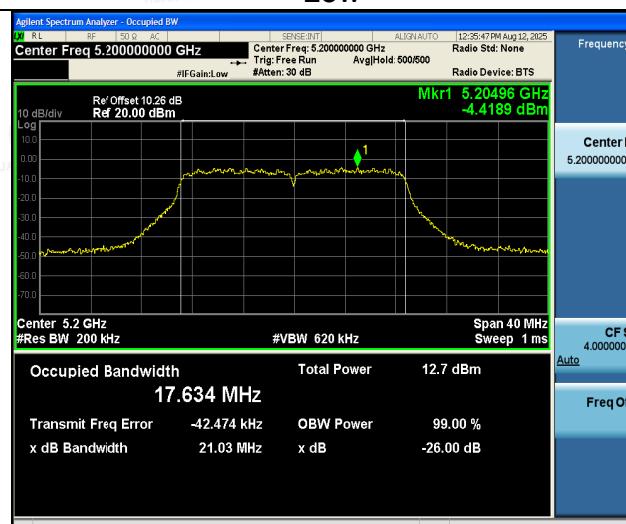
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802.11ac(HT20)



LOW



Mid



High

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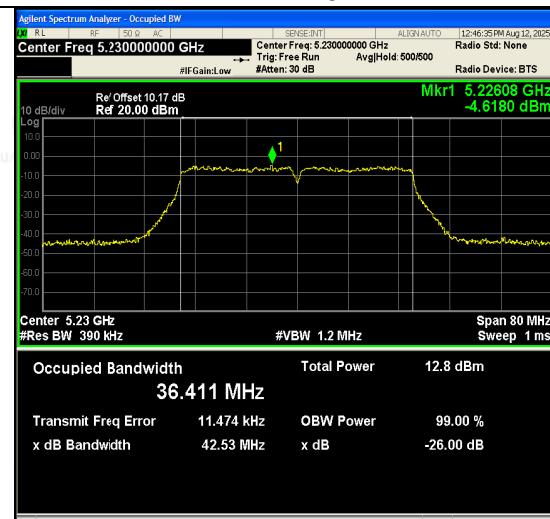
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802.11ac(HT40)



LOW



High

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4.5. Power Spectral Density

4.5.1. Test Specification

Test Requirement:	FCC Part15 E Section 15.407 (a)
Test Method:	KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section F
Limit:	$\leq 11.00 \text{dBm/MHz}$ for Band I 5150MHz-5250MHz
Test Setup:	 <p>Spectrum Analyzer EUT</p>
Test Mode:	Transmitting mode with modulation
Test Procedure:	<ol style="list-style-type: none"> 1. Set the spectrum analyzer or EMI receiver span to view the entire emission bandwidth. 2. Set RBW = 1 MHz, VBW $\geq 3 \times \text{RBW}$, Sweep time = Auto, Detector = RMS. 3. Allow the sweeps to continue until the trace stabilizes. 4. Use the peak marker function to determine the maximum amplitude level. 5. The E.I.R.P spectral density used radiated test method. At a test site that has been validated using the procedures of ANSI C63.4 or the latest CISPR 16-1-4 for measurements above 1 GHz, so as to simulate a near free-space environment.
Test Result:	PASS

4.5.2. Test Instruments

RF Test Room					
Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum analyzer	Agilent	N9020A	HKE-025	Feb. 19, 2025	Feb. 18, 2026
Spectrum analyzer	Agilent	N9020A	HKE-117	Feb. 19, 2025	Feb. 18, 2026
RF cable	Times	1-40G	HKE-034	Feb. 19, 2025	Feb. 18, 2026
RF automatic control unit	Tonscend	JS0806-2	HKE-060	Feb. 19, 2025	Feb. 18, 2026
RF Test Software	Tonscend	JS1120-3 Version 3.5.39	HKE-083	N/A	N/A

Note: The calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

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4.5.3. Test Data

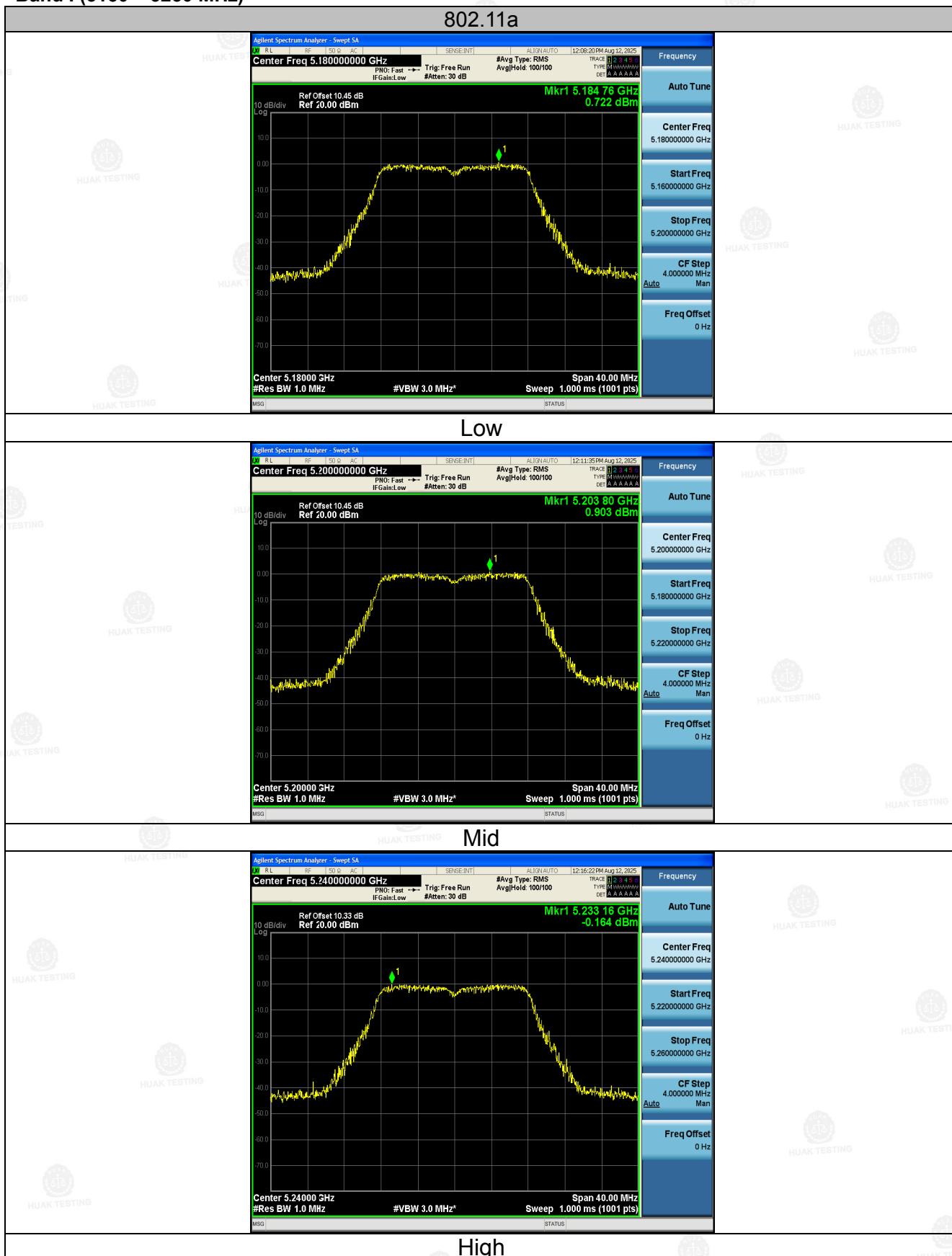
Mode	Test Channel	Level [dBm/MHz]	Limit (dBm/MHz)	Result
802.11a	CH36	0.72	11	PASS
802.11a	CH40	0.90	11	PASS
802.11a	CH48	-0.16	11	PASS
802.11n(HT20)	CH36	0.58	11	PASS
802.11n(HT20)	CH40	0.01	11	PASS
802.11n(HT20)	CH48	-0.26	11	PASS
802.11n(HT40)	CH38	-2.52	11	PASS
802.11n(HT40)	CH46	-2.50	11	PASS
802.11ac(HT20)	CH36	-0.14	11	PASS
802.11ac(HT20)	CH40	-0.04	11	PASS
802.11ac(HT20)	CH48	0.17	11	PASS
802.11ac(HT40)	CH38	-2.60	11	PASS
802.11ac(HT40)	CH46	-2.62	11	PASS

Note: Instrument attenuation and cable loss See test diagram



Test plots as follows:

Band I (5150 – 5250 MHz)



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802.11n(HT20)



Frequency

Auto Tune

Center Freq

Start Freq

Stop Freq

CF Step

Auto

Man

Freq Offset

0 Hz

LOW



Frequency

Auto Tune

Center Freq

Start Freq

Stop Freq

CF Step

Auto

Man

Freq Offset

0 Hz

Mid



Frequency

Auto Tune

Center Freq

Start Freq

Stop Freq

CF Step

Auto

Man

Freq Offset

0 Hz

High

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802.11n(HT40)



LOW



High

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802.11ac(HT20)



LOW



Mid



High

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802.11ac(HT40)



LOW

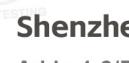
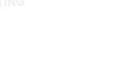
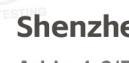
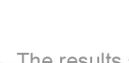
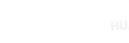


HIGH

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Test Procedure:	<p>1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.</p> <p>2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.</p> <p>3. 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.</p> <p>4. 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 rota table was turned from 0 degrees to 360 degrees to find the maximum reading.</p> <p>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</p> <p>6. 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.</p>
Test Result:	PASS



4.6.2. Test Instruments

Radiated Emission Test Site (966)					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Spectrum analyzer	Agilent	N9020A	HKE-025	Feb. 19, 2025	Feb. 18, 2026
Spectrum analyzer	Agilent	N9020A	HKE-117	Feb. 19, 2025	Feb. 18, 2026
Spectrum analyzer	R&S	FSV3044	HKE-126	Feb. 19, 2025	Feb. 18, 2026
Preamplifier	EMCI	EMC051845S	HKE-006	Feb. 19, 2025	Feb. 18, 2026
Preamplifier	Schwarzbeck	BBV 9743	HKE-016	Feb. 19, 2025	Feb. 18, 2026
Preamplifier	A.H. Systems	SAS-574	HKE-182	Feb. 19, 2025	Feb. 18, 2026
6dB Attenuator	Pasternack	6db	HKE-184	Feb. 19, 2025	Feb. 18, 2026
EMI Test Receiver	Rohde & Schwarz	ESR-7	HKE-010	Feb. 19, 2025	Feb. 18, 2026
Broadband Antenna	Schwarzbeck	VULB9168	HKE-167	Feb. 21, 2024	Feb. 20, 2026
Loop Antenna	COM-POWER	AL-130R	HKE-014	Feb. 21, 2024	Feb. 20, 2026
Horn Antenna	Schwarzbeck	9120D	HKE-013	Feb. 21, 2024	Feb. 20, 2026
EMI Test Software	Tonscend	JS32-RE 5.0.0	HKE-082	N/A	N/A
RSE Test Software	Tonscend	JS36-RSE 5.0.0	HKE-184	N/A	N/A



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4.6.3. Test Data

Operation Mode: 802.11a Mode with 5.2G TX CH Low

Horizontal:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	HUMAN Limits (dB μ V/m)	Margin (dB)	Detector Type
5150	56.18	-2.49	53.69	74	20.31	peak
5150	/	-2.49	/	54	/	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-L level

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
5150	53.36	-2.49	50.87	74	23.13	peak
5150	/	-2.49	/	54	/	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-L level

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Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
5350	53.45	-2.11	51.34	74	22.66	peak
5350	/	-2.11	/	54	/	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
5350	53.49	-2.11	51.38	74	22.62	peak
5350	/	-2.11	/	54	/	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

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Horizontal:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
5150	52.14	-2.49	49.65	74	24.35	peak
5150	/	-2.49	/	54	/	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Vertical:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
5150	53.28	-2.49	50.79	74	23.21	peak
5150	/	-2.49	/	54	/	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

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Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
5350	55.36	-2.11	53.25	74	20.75	peak
5350	/	-2.11	/	54	/	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
5350	52.19	-2.11	50.08	74	23.92	peak
5350	/	-2.11	/	54	/	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

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Horizontal:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
5150	53.41	-2.49	50.92	74	23.08	peak
5150	/	-2.49	/	54	/	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Vertical:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
5150	51.24	-2.49	48.75	74	25.25	peak
5150	/	-2.49	/	54	/	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

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Operation Mode: TX CH High with 5.2G

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
5350	55.36	-2.11	53.25	74	20.75	peak
5350	/	-2.11	/	54	/	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
5350	53.17	-2.11	51.06	74	22.94	peak
5350	/	-2.11	/	54	/	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.



Operation Mode: 802.11 ac/HT20 Mode with 5.2G TX CH Low

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
5150	52.68	-2.49	50.19	74	23.81	peak
5150	/	-2.49	/	54	/	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
5150	52.34	-2.49	49.85	74	24.15	peak
5150	/	-2.49	/	54	/	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.



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Operation Mode: TX CH High with 5.2G

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
5350	54.15	-2.11	52.04	74	21.96	peak
5350	/	-2.11	/	54	/	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
5350	54.22	-2.11	52.11	74	21.89	peak
5350	/	-2.11	/	54	/	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.



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Operation Mode: 802.11 ac/HT40 Mode with 5.2G TX CH Low

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
5150	53.18	-2.49	50.69	74	23.31	peak
5150	/	-2.49	/	54	/	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
5150	52.24	-2.49	49.75	74	24.25	peak
5150	/	-2.49	/	54	/	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

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Horizontal:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
5350	54.78	-2.11	52.67	74	21.33	
5350 NO	/	-2.11	/	54	/	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Vertical:

Frequency (MHz)	Meter Reading (dB μ V)	Factor (dB)	Emission Level (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)	Detector Type
5350	52.25	-2.11	50.14	74	23.86	
5350	/	-2.11	/	54	/	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Remark:

1. If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.
2. In restricted bands of operation, the spurious emissions below the permissible value more than 20dB.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

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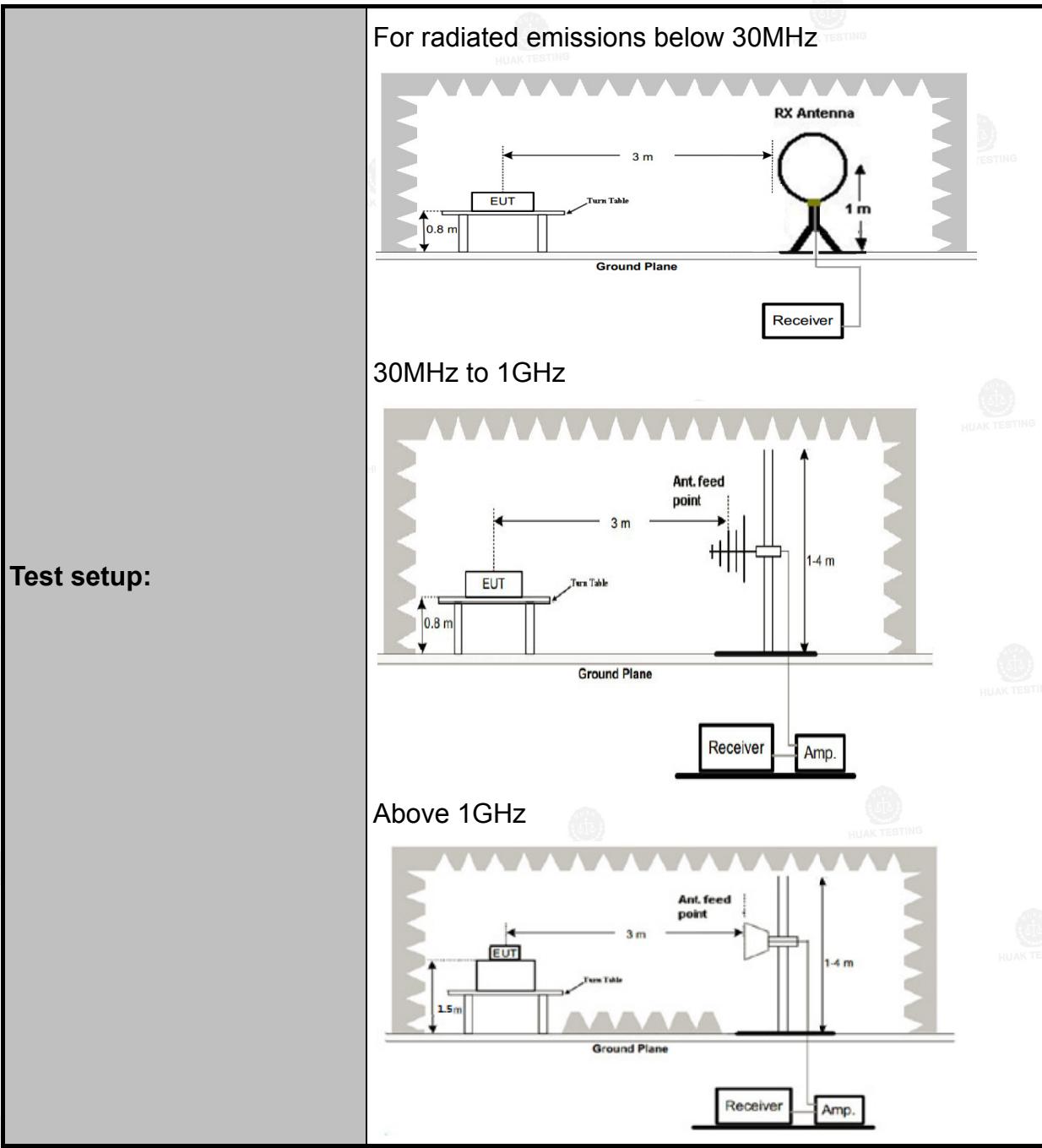


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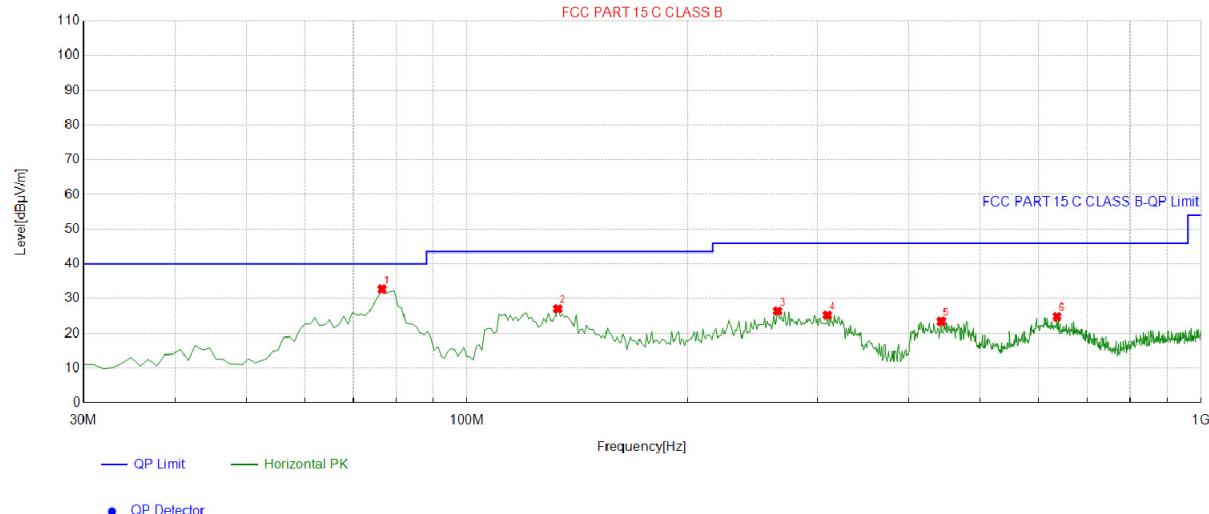
Test Procedure:	<ol style="list-style-type: none">1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.3. 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.4. 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.5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.6. 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.
Test Results:	PASS

4.7.2. Test Data

All the test modes completed for test. Only the worst result of (802.11a at 5180MHz) was reported

Below 1GHz

Horizontal:



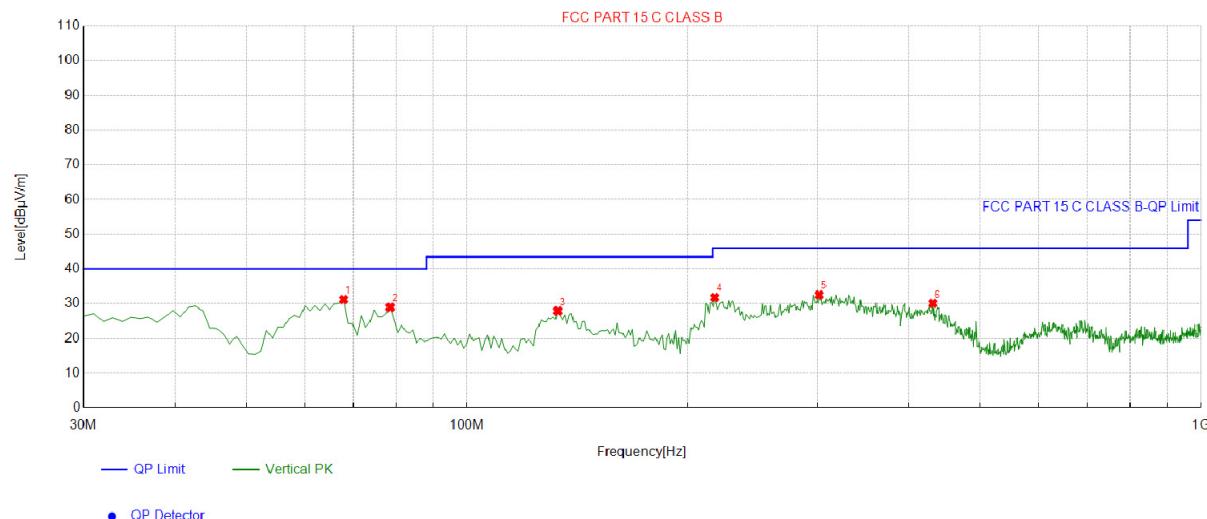
Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	76.6066	-17.96	50.71	32.75	40.00	7.25	100	244	Horizontal
2	132.9229	-17.24	44.38	27.14	43.50	16.36	100	360	Horizontal
3	264.9750	-13.11	39.58	26.47	46.00	19.53	100	153	Horizontal
4	309.6396	-11.84	37.07	25.23	46.00	20.77	100	175	Horizontal
5	442.6627	-8.66	32.14	23.48	46.00	22.52	100	20	Horizontal
6	636.8569	-5.13	29.96	24.83	46.00	21.17	100	2	Horizontal

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level;



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Vertical:



Suspected List

NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	67.8679	-16.02	47.24	31.22	40.00	8.78	100	134	Vertical
2	78.5485	-17.92	46.90	28.98	40.00	11.02	100	87	Vertical
3	132.9229	-17.24	45.17	27.93	43.50	15.57	100	138	Vertical
4	217.3974	-14.66	46.47	31.81	46.00	14.19	100	163	Vertical
5	301.8719	-11.78	44.32	32.54	46.00	13.46	100	84	Vertical
6	431.0110	-8.79	38.89	30.10	46.00	15.90	100	51	Vertical

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level;

Harmonics and Spurious Emissions Frequency Range (9kHz-30MHz)

Frequency (MHz)	Level@3m (dBμV/m)	Limit@3m (dBμV/m)
--	--	--
--	--	--
--	--	--
--	--	--

Note: 1. Emission Level=Reading+ Cable loss-Antenna factor-Amp factor.
2. The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement.

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Above 1GHz

LOW CH 36 (802.11 a Mode with 5.2G)/5180

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
3647	56.12	-4.59	51.53	74	22.47	peak
3647	43.88	-4.59	39.29	54	14.71	AVG
10360	52.37	3.74	56.11	74	17.89	peak
10360	39.25	3.74	42.99	54	11.01	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
3647	52.98	-4.59	48.39	74	25.61	peak
3647	41.52	-4.59	36.93	54	17.07	AVG
10360	52.77	3.74	56.51	74	17.49	peak
10360	38.25	3.74	41.99	54	12.01	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-L level

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Horizontal:

MID CH40 (802.11 a Mode with 5.2G)/5200

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Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
3647	52.17	-4.59	47.58	74	26.42	peak
3647	40.98	-4.59	36.39	54	17.61	AVG
10400	52.14	3.74	55.88	74	18.12	peak
10400	38.57	3.74	42.31	54	11.69	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
3647	53.28	-4.59	48.69	74	25.31	peak
3647	41.26	-4.59	36.67	54	17.33	AVG
10400	52.88	3.74	56.62	74	17.38	peak
10400	38.29	3.74	42.03	54	11.97	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-Level.

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HIGH CH 48 (802.11a Mode with 5.2G)/5240

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dB μ V)	(dB)	(dB μ V/m)	(dB μ V/m)	(dB)	
3647	54.23	-4.59	49.64	74	24.36	peak
3647	42.98	-4.59	38.39	54	15.61	AVG
10480	52.31	3.75	56.06	74	17.94	peak
10480	38.09	3.75	41.84	54	12.16	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit-L level

Vertical:

Frequency (MHz)	Meter Reading (dBµV)	Factor (dB)	Emission Level (dBµV/m)	Limits (dBµV/m)	Margin (dB)	Detector Type
3647	56.18	-4.59	51.59	74	22.41	peak
3647	41.25	-4.59	36.66	54	17.34	AVG
10480	52.44	3.75	56.19	74	17.81	peak
10480	37.69	3.75	41.44	54	12.56	AVG

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit Level

Remark:

Remark:

- (1) Measuring frequencies from 1 GHz to the 40 GHz.
- (2) "F" denotes fundamental frequency; "H" denotes spurious frequency; "E" denotes band edge frequency.
- (3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (4) The emissions are attenuated more than 20dB below the permissible limits are not recorded in the report.
- (5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.
- (6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dB_{V/m}(PK Value) <93.98(AV Limit), at harmonic 53.20 dB_{V/m}(PK Value) <54 dB_{V/m}(AV Limit), the Average Detected not need to completed.
- (7) All the test modes completed for test, only the worst result of Mode 1(802.11a Mode)

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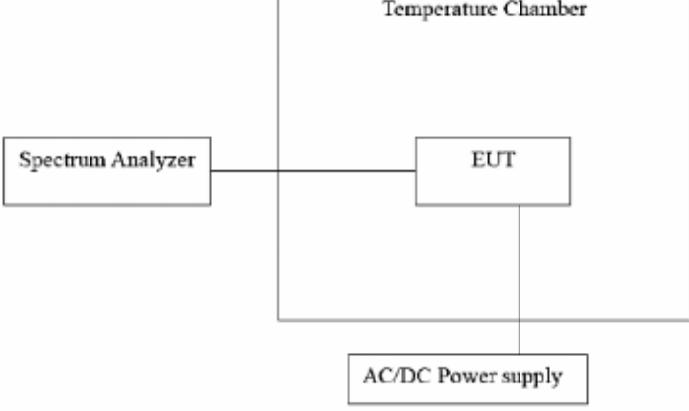
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4.8. Frequency Stability Measurement

4.8.1. Test Specification

Test Requirement:	FCC Part15 Section 15.407(g)
Test Method:	ANSI C63.10: 2020
Limit:	The frequency tolerance shall be maintained within the band of operation frequency over a temperature variation of 0 degrees to 35 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.
Test Setup:	 <pre> graph LR SA[Spectrum Analyzer] --- EUT[EUT] EUT --- ACDC[AC/DC Power supply] EUT --- TC[Temperature Chamber] </pre>
Test Procedure:	<ol style="list-style-type: none"> The EUT was placed inside the environmental test chamber and powered by nominal AC/DC voltage. Turn the EUT on and couple its output to a spectrum analyzer. Turn the EUT off and set the chamber to the highest temperature specified. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.
Test Result:	PASS
Remark:	N/A



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Test Result as follows:

Mode	Voltage (V)	FHL (5180MHz)	Deviation (KHz)	FHH (5240MHz)	Deviation (KHz)
5.2G Band	102V	5179.985	-15	5240.013	13
	120V	5179.996	-4	5239.984	-16
	138V	5179.975	-25	5239.969	-31

Mode	Temperature (°C)	FHL (5180MHz)	Deviation (KHz)	FHH (5240MHz)	Deviation (KHz)
HUAK TESTING 5.2G Band	-30	5180.015	15	5240.018	18
	-20	5179.986	-14	5240.025	25
	-10	5179.993	-7	5239.993	-7
	0	5179.972	-28	5240.024	24
	10	5180.011	11	5239.971	-29
	20	5180.028	28	5239.985	-15
	30	5180.014	14	5240.014	14
	40	5179.973	-27	5239.969	-31
	50	5180.008	8	5240.021	21

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4.9. Antenna Requirement

Standard Applicable

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.

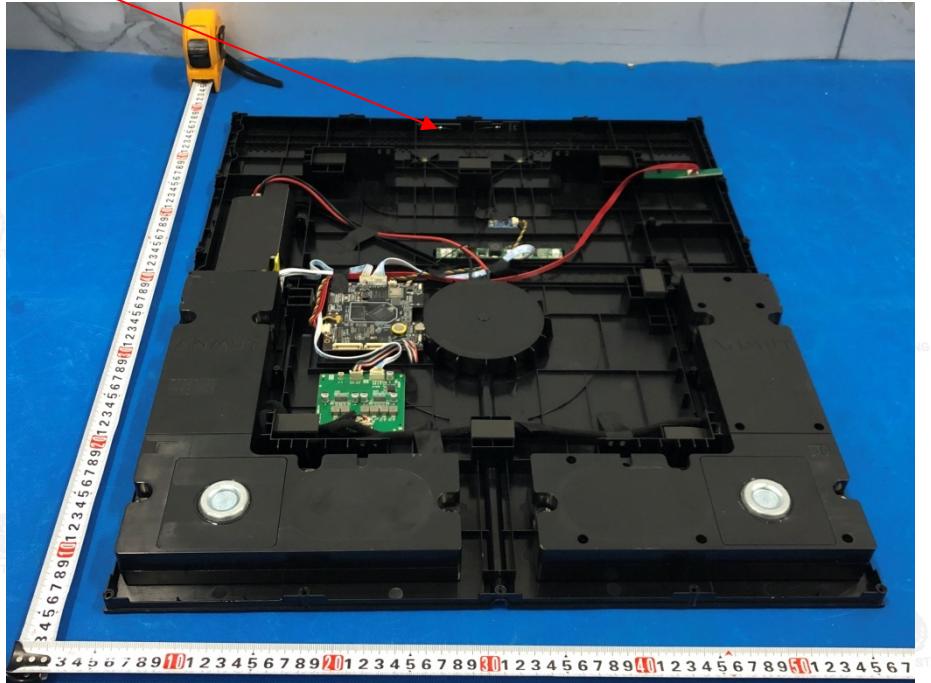
Refer to statement below for compliance.

The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

Antenna Connected Construction

The antenna used in this product is an Internal antenna, need professional installation, not easy to remove. It conforms to the standard requirements. The directional gains of antenna used for transmitting is 3.28dBi.

WIFI Antenna





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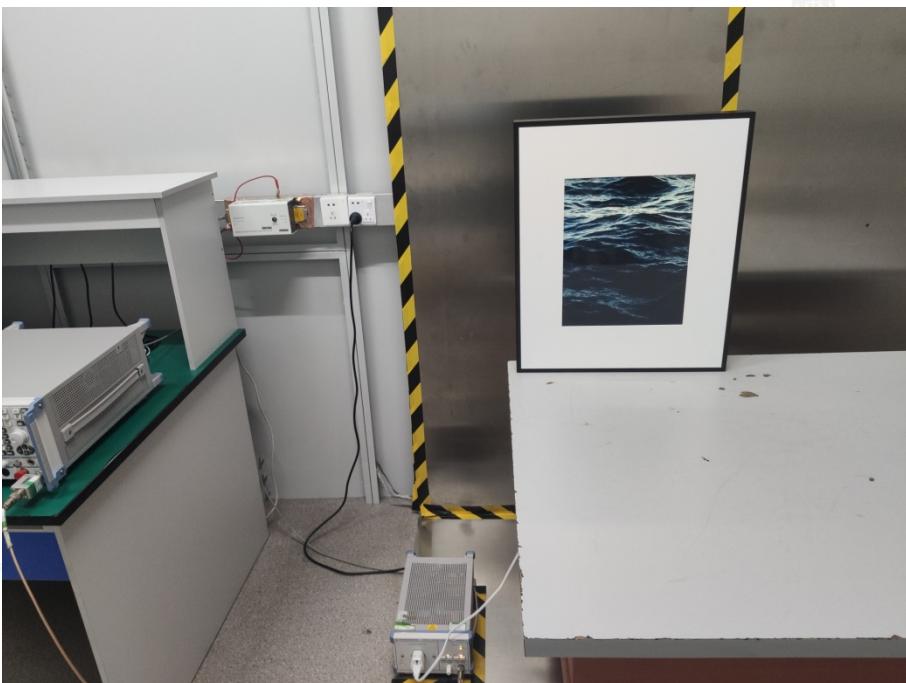
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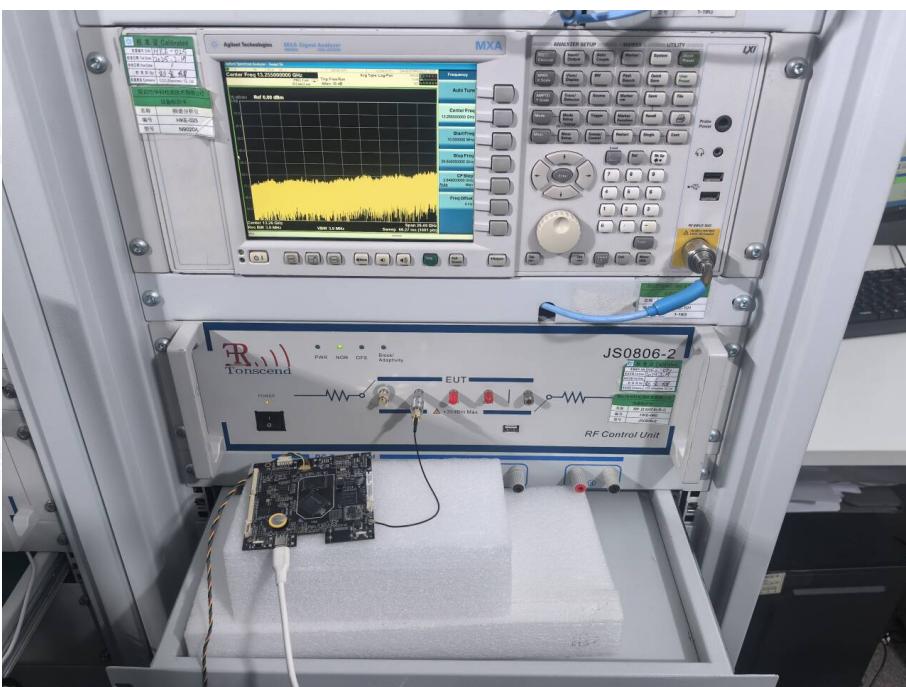
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AC Conducted Emission



RF Conducted Emission



6. Photos of the EUT

Reference to the report: ANNEX A of external photos and ANNEX B of internal photos

-----End of test report-----