



## TEST Report

**Applicant:** Huizhou Iclink tech Co. Ltd

**Address of Applicant:** 1803 Building 7, Zone 3, Shuibei New Village, Huicheng District, Huizhou City

**Manufacturer :** Huizhou Iclink tech Co. Ltd

**Address of Manufacturer :** 1803 Building 7, Zone 3, Shuibei New Village, Huicheng District, Huizhou City

### Equipment Under Test (EUT)

**Product Name:** USB Car Interconnect Module

**Model No.:** H-1

**Series model:** H-2, H-3, H-5, H-6, H-8, H-MAX, H-AIR, H-Plus, H-Pro, H-ultra

**Trade Mark:** N/A

**FCC ID:** 2BAT2-H-1

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

**Date of sample receipt:** Mar.08,2023

**Date of Test:** Mar.08,2023~Apr.07,2023

**Date of report issued:** Apr.07,2023

**Test Result :** PASS \*

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



Report No.: HTT202304037F03

## 1. Version

Version No.	Date	Description
00	Apr.07,2023	Original

Tested/ Prepared By

Heber He

Date:

Apr.07,2023

Project Engineer

Check By:

Bruce Zhu

Date:

Apr.07,2023

Reviewer

Approved By :

Kevin Yang

Date:

Apr.07,2023

Authorized Signature



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### 3. Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	PASS
AC Power Line Conducted Emission	15.207	PASS
26dB Bandwidth	FCC §15.407(a)	PASS
Maximum Conducted Output Power	15.407(a)	PASS
Power Spectral Density	15.407(a)	PASS
Undesirable Emission	FCC Part 15.407(b)	PASS
Radiated Emission	FCC Part 15.407(b)/15.205/15.209	PASS
Frequency Stability	15.407(g)	PASS

*Remark: Pass: The EUT complies with the essential requirements in the standard.*

#### Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	30~1000MHz	3.45 dB	(1)
Radiated Emission	1~6GHz	3.54 dB	(1)
Radiated Emission	6~40GHz	5.38 dB	(1)
Conducted Disturbance	0.15~30MHz	2.66 dB	(1)

Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.



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## 4. General Information

### 4.1. General Description of EUT

Product Name:	USB Car Interconnect Module			
Model No.:	H-1			
Series model:	H-2, H-3, H-5, H-6, H-8, H-MAX, H-AIR, H-Plus, H-Pro, H-ultra			
Test sample(s) ID:	HTT202304037-1(Engineer sample) HTT202304037-2(Normal sample)			
Operation Frequency:	Band	Mode	Frequency Range(MHz)	Number of channels
	U-NII Band I	IEEE 802.11a	5180-5240	4
		IEEE 802.11n 20MHz	5180-5240	4
		IEEE 802.11n 40MHz	5190-5230	2
Modulation technology:	OFDM			
Antenna Type:	FPC Antenna			
Antenna gain:	6.39dBi			
Power supply:	DC 5.0V			



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**Channel list for 802.11a/n(HT20)**

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180MHz	40	5200MHz	44	5220MHz	48	5240MHz

**Channel list for 802.11n(HT40)(HT40)**

Channel	Frequency	Channel	Frequency
38	5190MHz	46	5230MHz



#### 4.2. Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode
<i>Remark: During the test, the dutycycle &gt;98%, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.</i>	

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:						
Pre-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.						
<table border="1"><thead><tr><th>Mode</th><th>Data rate</th></tr></thead><tbody><tr><td>802.11a/n(HT20)</td><td>6/6.5 Mbps</td></tr><tr><td>802.11n(HT40)</td><td>13.5 Mbps</td></tr></tbody></table>	Mode	Data rate	802.11a/n(HT20)	6/6.5 Mbps	802.11n(HT40)	13.5 Mbps
Mode	Data rate					
802.11a/n(HT20)	6/6.5 Mbps					
802.11n(HT40)	13.5 Mbps					

#### 4.3. Description of Support Units

None.

#### 4.4. Deviation from Standards

None.

#### 4.5. Abnormalities from Standard Conditions

None.

#### 4.6. Test Facility

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

##### FCC-Registration No.: 779513 Designation Number: CN1319

Shenzhen HTT Technology Co.,Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

##### A2LA-Lab Cert. No.: 6435.01

Shenzhen HTT Technology Co.,Ltd. has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2010.

#### 4.7. Test Location

All tests were performed at:

Shenzhen HTT Technology Co.,Ltd.

1F, Building B, Huafeng International Robotics Industrial Park, Hangcheng Road, Nanchang Community, Xixiang Street, Bao'an District, Shenzhen, Guangdong, China

Tel: 0755-23595200

Fax: 0755-23595201



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#### 4.8. Additional Instructions

Test Software	Special AT test command provided by manufacturer to Keep the EUT in continuously transmitting mode and hopping mode
Power level setup	Default

### 5. Test Instruments list

Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (mm-dd-yy)	Cal.Due date (mm-dd-yy)
1	3m Semi- Anechoic Chamber	Shenzhen C.R.T technology co., LTD	9*6*6	HTT-E028	Aug. 10 2020	Aug. 09 2024
2	Control Room	Shenzhen C.R.T technology co., LTD	4.8*3.5*3.0	HTT-E030	Aug. 10 2020	Aug. 09 2024
3	EMI Test Receiver	Rohde&Schwarz	ESCI7	HTT-E022	May 23 2022	May 22 2023
4	Spectrum Analyzer	Rohde&Schwarz	FSP	HTT-E037	May 23 2022	May 22 2023
5	Coaxial Cable	ZDecl	ZT26-NJ-NJ-0.6M	HTT-E018	May 23 2022	May 22 2023
6	Coaxial Cable	ZDecl	ZT26-NJ-SMAJ-2M	HTT-E019	May 23 2022	May 22 2023
7	Coaxial Cable	ZDecl	ZT26-NJ-SMAJ-0.6M	HTT-E020	May 23 2022	May 22 2023
8	Coaxial Cable	ZDecl	ZT26-NJ-SMAJ-8.5M	HTT-E021	May 23 2022	May 22 2023
9	Composite logarithmic antenna	Schwarzbeck	VULB 9168	HTT-E017	May 23 2022	May 22 2023
10	Horn Antenna	Schwarzbeck	BBHA9120D	HTT-E016	May 23 2022	May 22 2023
11	Loop Antenna	Zhinan	ZN30900C	HTT-E039	May 23 2022	May 22 2023
12	Horn Antenna	Beijing Hangwei Dayang	OBH100400	HTT-E040	May 23 2022	May 22 2023
13	low frequency Amplifier	Sonoma Instrument	310	HTT-E015	May 23 2022	May 22 2023
14	high-frequency Amplifier	HP	8449B	HTT-E014	May 23 2022	May 22 2023
15	Variable frequency power supply	Shenzhen Anbiao Instrument Co., Ltd	ANB-10VA	HTT-082	May 23 2022	May 22 2023
16	EMI Test Receiver	Rohde & Schwarz	ESCS30	HTT-E004	May 23 2022	May 22 2023
17	Artificial Mains	Rohde & Schwarz	ESH3-Z5	HTT-E006	May 23 2022	May 22 2023
18	Artificial Mains	Rohde & Schwarz	ENV-216	HTT-E038	May 23 2022	May 22 2023
19	Cable Line	Robinson	Z302S-NJ-BNCJ-1.5M	HTT-E001	May 23 2022	May 22 2023
20	Attenuator	Robinson	6810.17A	HTT-E007	May 23 2022	May 22 2023
21	Variable frequency power supply	Shenzhen Yanghong Electric Co., Ltd	YF-650 (5KVA)	HTT-E032	May 23 2022	May 22 2023
22	Control Room	Shenzhen C.R.T technology co., LTD	8*4*3.5	HTT-E029	May 23 2022	May 22 2023
23	DC power supply	Agilent	E3632A	HTT-E023	May 23 2022	May 22 2023
24	EMI Test Receiver	Agilent	N9020A	HTT-E024	May 23 2022	May 22 2023
25	Analog signal generator	Agilent	N5181A	HTT-E025	May 23 2022	May 22 2023
26	Vector signal generator	Agilent	N5182A	HTT-E026	May 23 2022	May 22 2023
27	Power sensor	Keysight	U2021XA	HTT-E027	May 23 2022	May 22 2023
28	Temperature and humidity meter	Shenzhen Anbiao Instrument Co., Ltd	TH10R	HTT-074	May 23 2022	May 22 2023

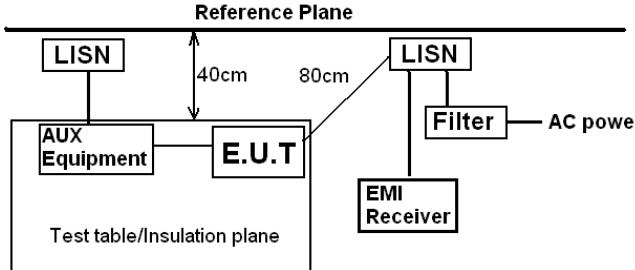


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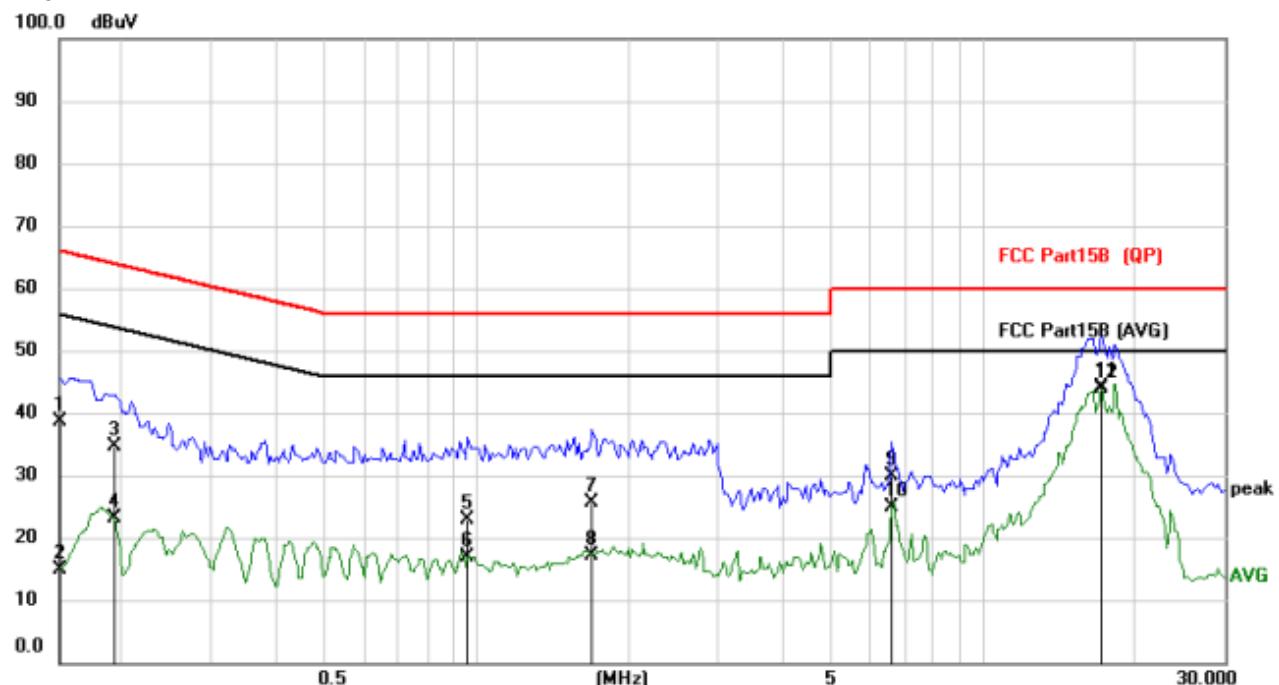
29	Radiated Emission Test Software	Farad	EZ-EMC	N/A	N/A	N/A
30	Conducted Emission Test Software	Farad	EZ-EMC	N/A	N/A	N/A
31	RF Test Software	panshanrf	TST	N/A	N/A	N/A
32	Pre-Amplifier	Schwarzbeck	BBV-9721	HTT-E105	May 23 2022	May 22 2023

## 6. Test results and Measurement Data

### 6.1. Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207																
Test Method:	ANSI C63.10:2013																
Test Frequency Range:	150KHz to 30MHz																
Class / Severity:	Class B																
Receiver setup:	RBW=9KHz, VBW=30KHz																
Limit:	<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															
	* Decreases with the logarithm of the frequency.																
Test setup:	 <p>Remark  E.U.T: Equipment Under Test  LISN: Line Impedance Stabilization Network  Test table height=0.8m</p>																
Test procedure:	<ol style="list-style-type: none"> <li>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.</li> <li>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).</li> <li>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 C63.10:2013 on conducted measurement.</li> </ol>																
Test Instruments:	Refer to section 6.0 for details																
Test mode:	Refer to section 5.2 for details																
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar											
Test voltage:	AC 120V, 60Hz																
Test results:	Pass																

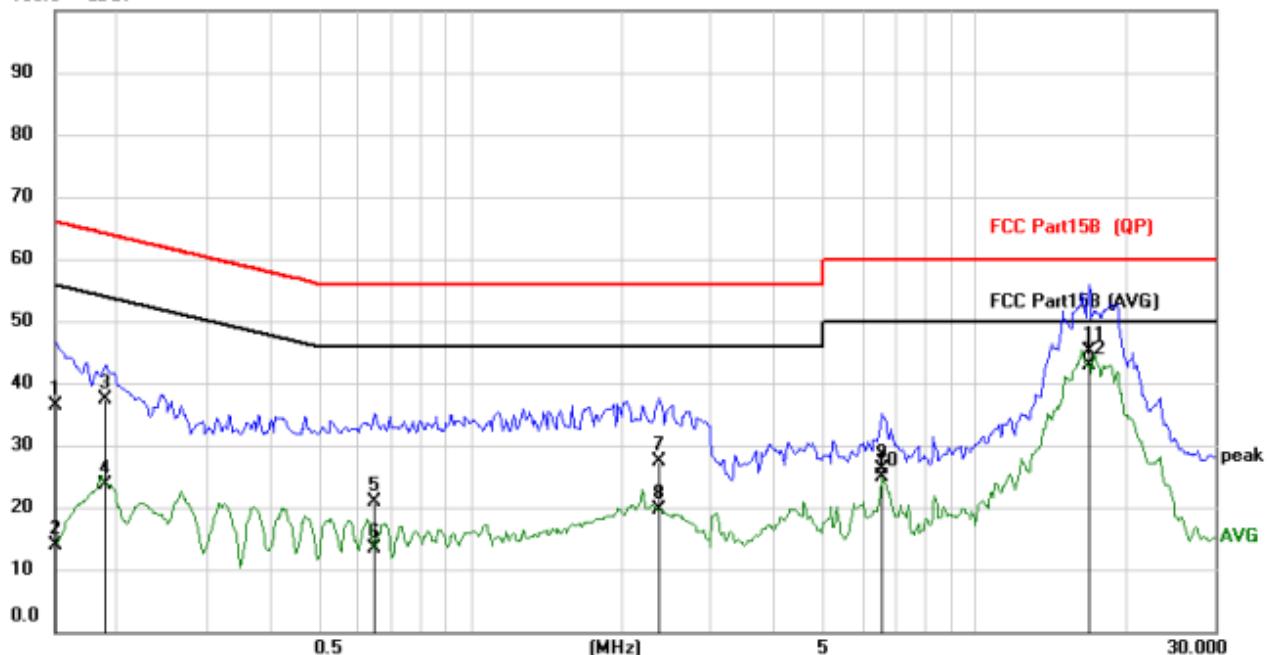
Remark: Both high and low voltages have been tested to show only the worst low voltage test data.

**Measurement data:**
**Line:**


No. Mk.	Freq. MHz	Reading Level	Correct Factor	Measure- ment	Limit	Over	Detector
		dBuV	dB	dBuV	dB	Detector	
1	0.1500	28.14	10.37	38.51	66.00	-27.49	QP
2	0.1500	4.63	10.37	15.00	56.00	-41.00	AVG
3	0.1929	24.17	10.39	34.56	63.91	-29.35	QP
4	0.1929	12.72	10.39	23.11	53.91	-30.80	AVG
5	0.9612	11.89	10.88	22.77	56.00	-33.23	QP
6	0.9612	5.99	10.88	16.87	46.00	-29.13	AVG
7	1.6944	14.81	10.85	25.66	56.00	-30.34	QP
8	1.6944	6.20	10.85	17.05	46.00	-28.95	AVG
9	6.6153	18.47	11.36	29.83	60.00	-30.17	QP
10	6.6153	13.42	11.36	24.78	50.00	-25.22	AVG
11	17.1414	31.88	12.23	44.11	60.00	-15.89	QP
12 *	17.1414	31.66	12.23	43.89	50.00	-6.11	AVG

**Neutral:**

100.0 dBuV

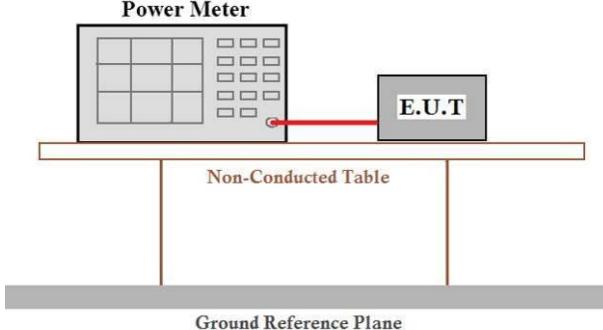


No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over
			Level	Factor	ment		
		MHz	dBuV	dB	dBuV	dB	Detector
1		0.1500	26.11	10.27	36.38	66.00	-29.62 QP
2		0.1500	3.67	10.27	13.94	56.00	-42.06 AVG
3		0.1890	27.24	10.21	37.45	64.08	-26.63 QP
4		0.1890	13.34	10.21	23.55	54.08	-30.53 AVG
5		0.6453	10.35	10.57	20.92	56.00	-35.08 QP
6		0.6453	2.93	10.57	13.50	46.00	-32.50 AVG
7		2.3691	16.44	10.83	27.27	56.00	-28.73 QP
8		2.3691	8.85	10.83	19.68	46.00	-26.32 AVG
9		6.5529	15.25	10.92	26.17	60.00	-33.83 QP
10		6.5529	13.86	10.92	24.78	50.00	-25.22 AVG
11		16.9113	32.85	12.32	45.17	60.00	-14.83 QP
12	*	16.9113	30.67	12.32	42.99	50.00	-7.01 AVG

*Notes:*

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level =Receiver Read level + LISN Factor + Cable Los

## 6.2. Maximum Conducted Output Power

Test Requirement:	FCC Part15 E Section 15.407								
Test Method:	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01								
Limit:	<table border="1"> <thead> <tr> <th>Frequency band (MHz)</th> <th>Limit</th> </tr> </thead> <tbody> <tr> <td>5150-5250</td> <td>≤1W(30dBm) for master device ≤250mW(23.98dBm) for client device</td> </tr> <tr> <td>5250-5350</td> <td>≤250mW(23.98dBm) for client device or 11dBm+10logB*</td> </tr> <tr> <td>5470-5725</td> <td>≤250mW(23.98dBm) for client device or 11dBm+10logB*</td> </tr> </tbody> </table> <p>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.</p>	Frequency band (MHz)	Limit	5150-5250	≤1W(30dBm) for master device ≤250mW(23.98dBm) for client device	5250-5350	≤250mW(23.98dBm) for client device or 11dBm+10logB*	5470-5725	≤250mW(23.98dBm) for client device or 11dBm+10logB*
Frequency band (MHz)	Limit								
5150-5250	≤1W(30dBm) for master device ≤250mW(23.98dBm) for client device								
5250-5350	≤250mW(23.98dBm) for client device or 11dBm+10logB*								
5470-5725	≤250mW(23.98dBm) for client device or 11dBm+10logB*								
Test setup:									
Test procedure:	<p><b>Measurement using an RF average power meter</b></p> <p>(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</p> <ol style="list-style-type: none"> <li>The EUT is configured to transmit continuously or to transmit with a constant duty cycle.</li> <li>At all times when the EUT is transmitting, it must be transmitting at its maximum power control level.</li> <li>The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.</li> </ol> <p>(ii) If the transmitter does not transmit continuously, measure the duty cycle, x, of the transmitter output signal as described in section B).</p> <p>(iii) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.</p> <p>(iv) Adjust the measurement in dBm by adding <math>10 \log(1/x)</math> where x is the duty cycle (e.g., <math>10\log(1/0.25)</math> if the duty cycle is 25 percent).</p>								
Test Instruments:	Refer to section 6 for details								
Test mode:	Refer to section 5.2 for details								
Test results:	Pass								



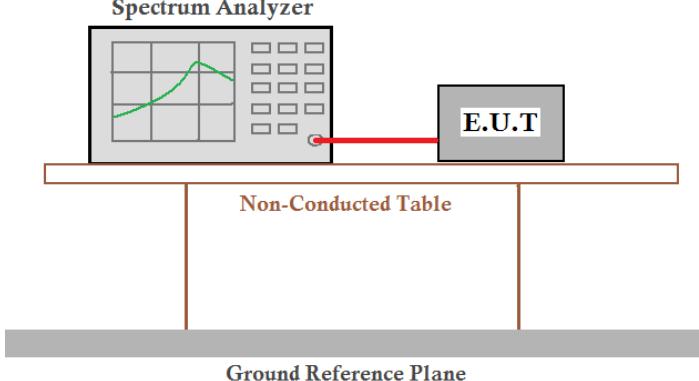
Report No.: HTT202304037F03

Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar
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### Measurement Data

Test Mode	Frequency (MHz)	Output Power (dBm)	Limit (dBm)	Result
802.11a	5180	11.36	23.59	PASS
	5200	11.76	23.59	PASS
	5240	11.92	23.59	PASS
802.11n(HT20)	5180	10.55	23.59	PASS
	5200	10.88	23.59	PASS
	5240	10.99	23.59	PASS
802.11n(HT40)	5190	11.26	23.59	PASS
	5230	11.61	23.59	PASS

### 6.3. Emission Bandwidth

Test Requirement:	FCC Part15 E Section 15.407	
Test Method:	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01	
Limit:	N/A	
Test setup:		
Test procedure:	According to KDB 789033 D02 General U-NII Test Procedures New Rules v02r01.	
Test Instruments:	Refer to section 6 for details	
Test mode:	Refer to section 5.2 for details	
Test results:	Pass	

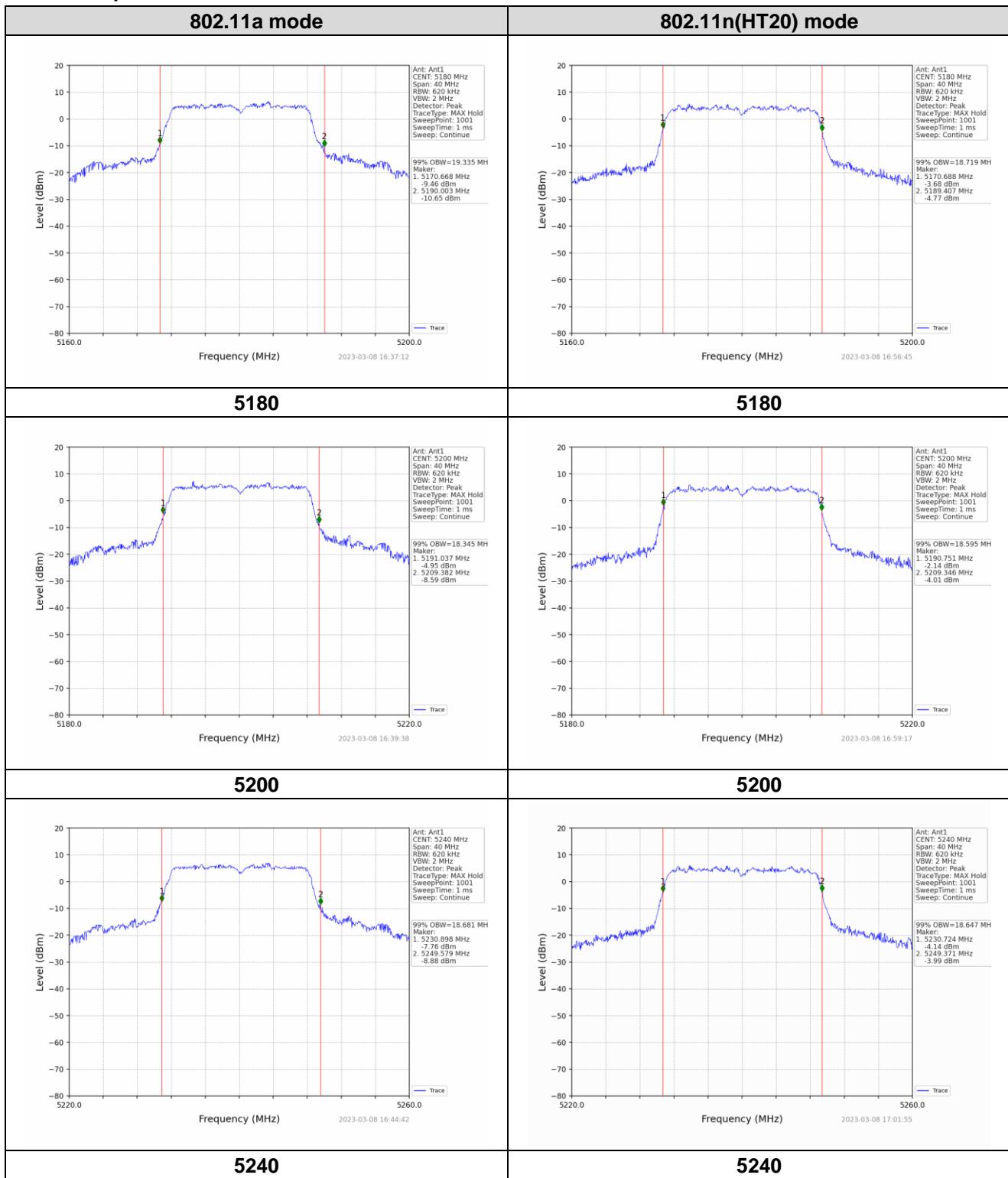
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar
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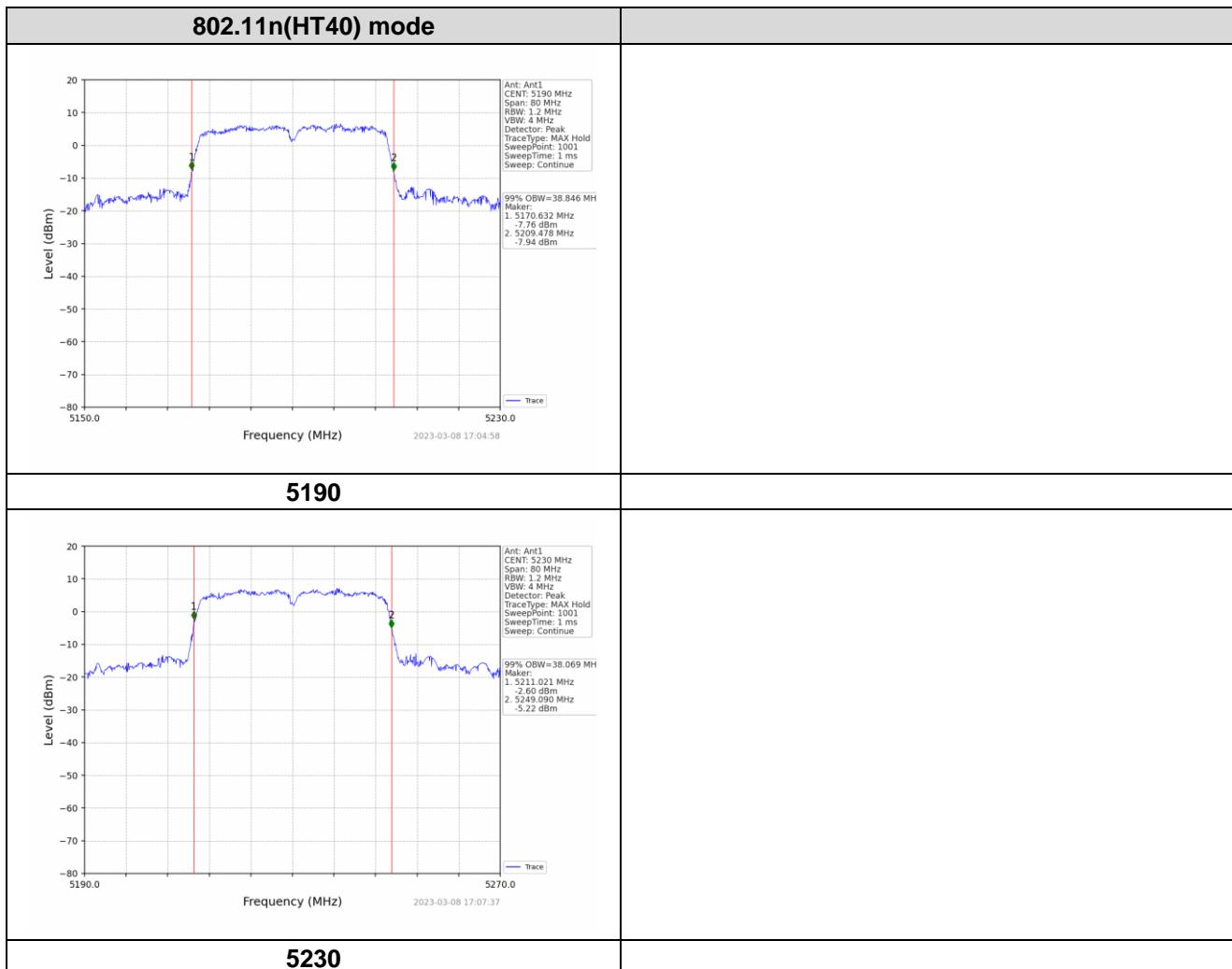
#### Measurement Data

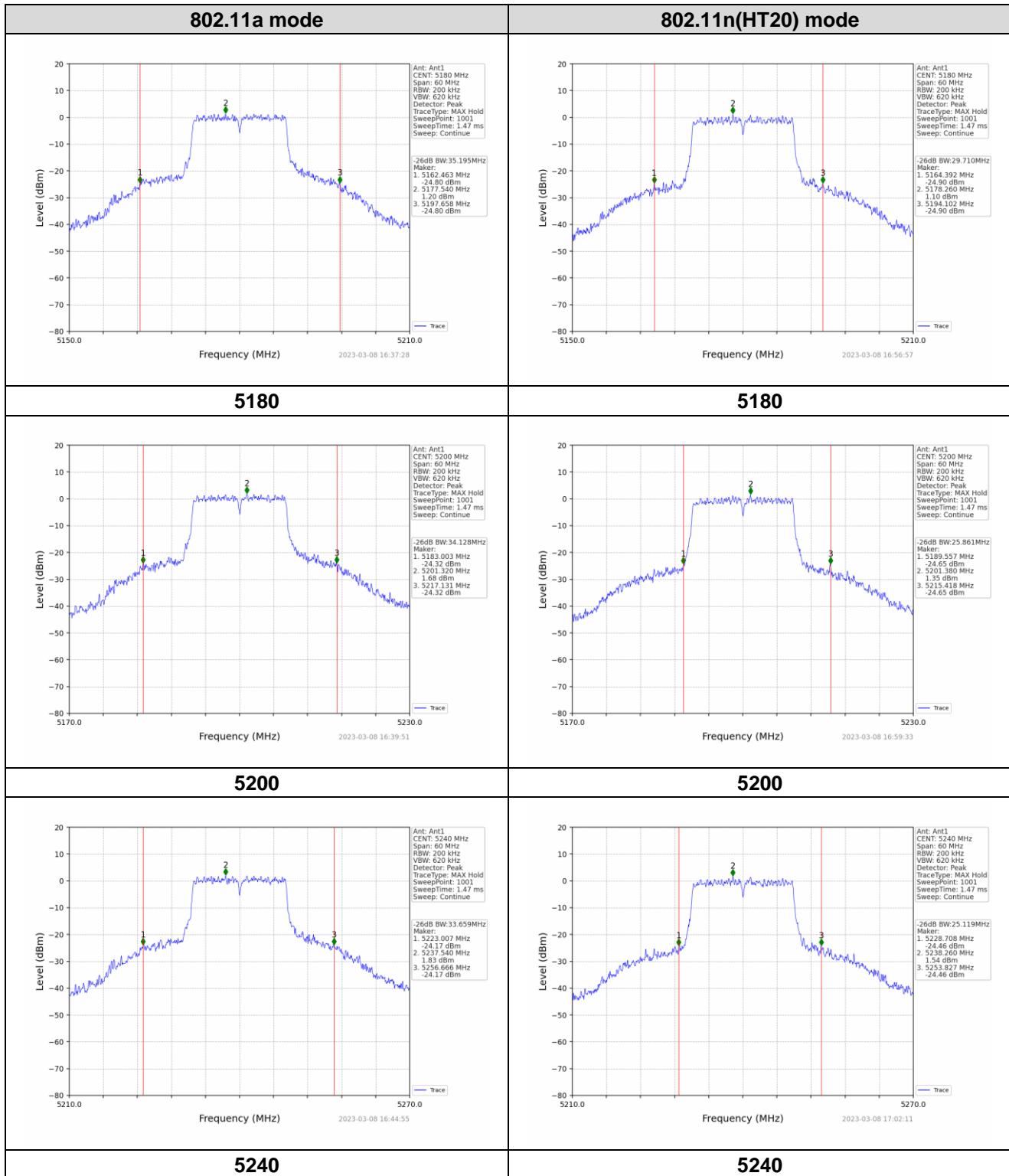
CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)			26dB Occupied Bandwidth (MHz)		
		802.11a	802.11n(HT20)	802.11ac(HT20)	802.11a	802.11n(HT20)	802.11ac(HT20)
36	5180	19.335	18.719	/	35.195	29.710	/
40	5200	18.345	18.595	/	34.128	25.861	/
48	5240	18.681	18.647	/	33.659	25.119	/

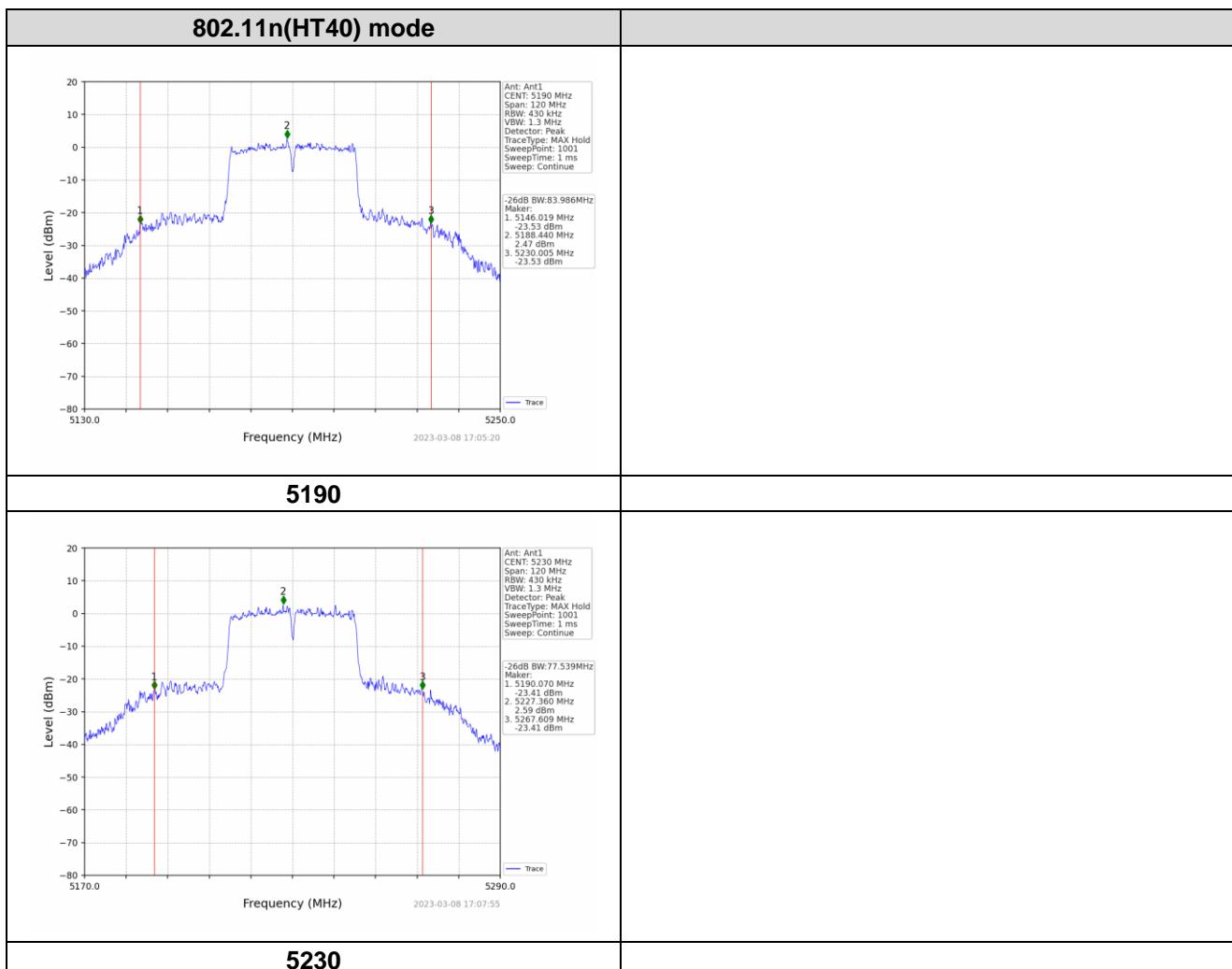
CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Occupied Bandwidth (MHz)	
		802.11n(HT40)	802.11ac(HT40)	802.11n(HT40)	802.11ac(HT40)
38	5190	38.846	/	83.986	/
46	5230	38.069	/	77.539	/

CH. No.	Frequency (MHz)	99% Occupied Bandwidth (MHz)		26dB Occupied Bandwidth (MHz)	
		802.11ac(HT80)		802.11ac(HT80)	
42	5210	/		/	

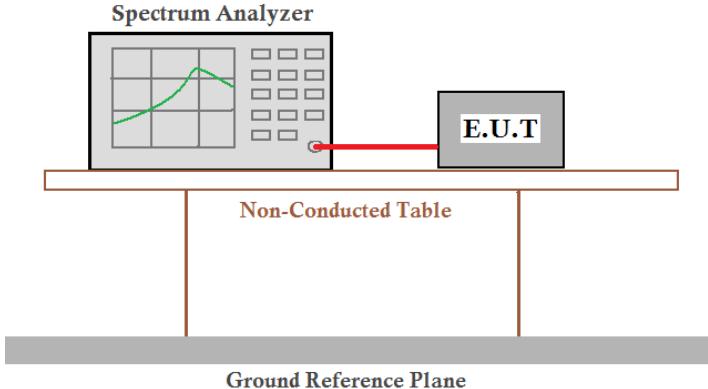
**99% Occupied Bandwidth:**




**26dB Occupied Bandwidth:**




## 6.4. Power Spectral Density

Test Requirement:	FCC Part15 E Section 15.407									
Test Method:	KDB 789033 D02 General U-NII Test Procedures New Rules v02r01									
Limit:	<table border="1"> <thead> <tr> <th>Frequency band (MHz)</th> <th>Limit</th> </tr> </thead> <tbody> <tr> <td>5150-5250</td> <td> <math>\leq 17\text{dBm}</math> in 1MHz for master device  <math>\leq 11\text{dBm}</math> in 1MHz for client device                 </td> </tr> <tr> <td>5250-5350</td> <td><math>\leq 11\text{dBm}</math> in 1MHz for client device</td> </tr> <tr> <td>5470-5725</td> <td><math>\leq 11\text{dBm}</math> in 1MHz for client device</td> </tr> </tbody> </table> <p>Remark: The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test.</p>	Frequency band (MHz)	Limit	5150-5250	$\leq 17\text{dBm}$ in 1MHz for master device $\leq 11\text{dBm}$ in 1MHz for client device	5250-5350	$\leq 11\text{dBm}$ in 1MHz for client device	5470-5725	$\leq 11\text{dBm}$ in 1MHz for client device	
Frequency band (MHz)	Limit									
5150-5250	$\leq 17\text{dBm}$ in 1MHz for master device $\leq 11\text{dBm}$ in 1MHz for client device									
5250-5350	$\leq 11\text{dBm}$ in 1MHz for client device									
5470-5725	$\leq 11\text{dBm}$ in 1MHz for client device									
Test setup:										
Test procedure:	<ol style="list-style-type: none"> <li>1) Create an average power spectrum for the EUT operating mode being tested by following the instructions in section E)2) for measuring maximum conducted output power using a spectrum analyzer or EMI receiver: select the appropriate test method (SA-1, SA-2, SA-3, or alternatives to each) and apply it up to, but not including, the step labeled, "Compute power...".</li> <li>2) Use the peak search function on the instrument to find the peak of the spectrum.</li> <li>3) Make the following adjustments to the peak value of the spectrum, if applicable: <ul style="list-style-type: none"> <li>a) If Method SA-2 or SA-2 Alternative was used, add <math>10 \log(1/x)</math>, where x is the duty cycle, to the peak of the spectrum.</li> <li>b) If Method SA-3 Alternative was used and the linear mode was used in step E)2)g)(viii), add 1 dB to the final result to compensate for the difference between linear averaging and power averaging.</li> </ul> </li> <li>4) The result is the PSD.</li> </ol>									
Test Instruments:	Refer to section 6 for details									
Test mode:	Refer to section 5.2 for details									
Test results:	Pass									

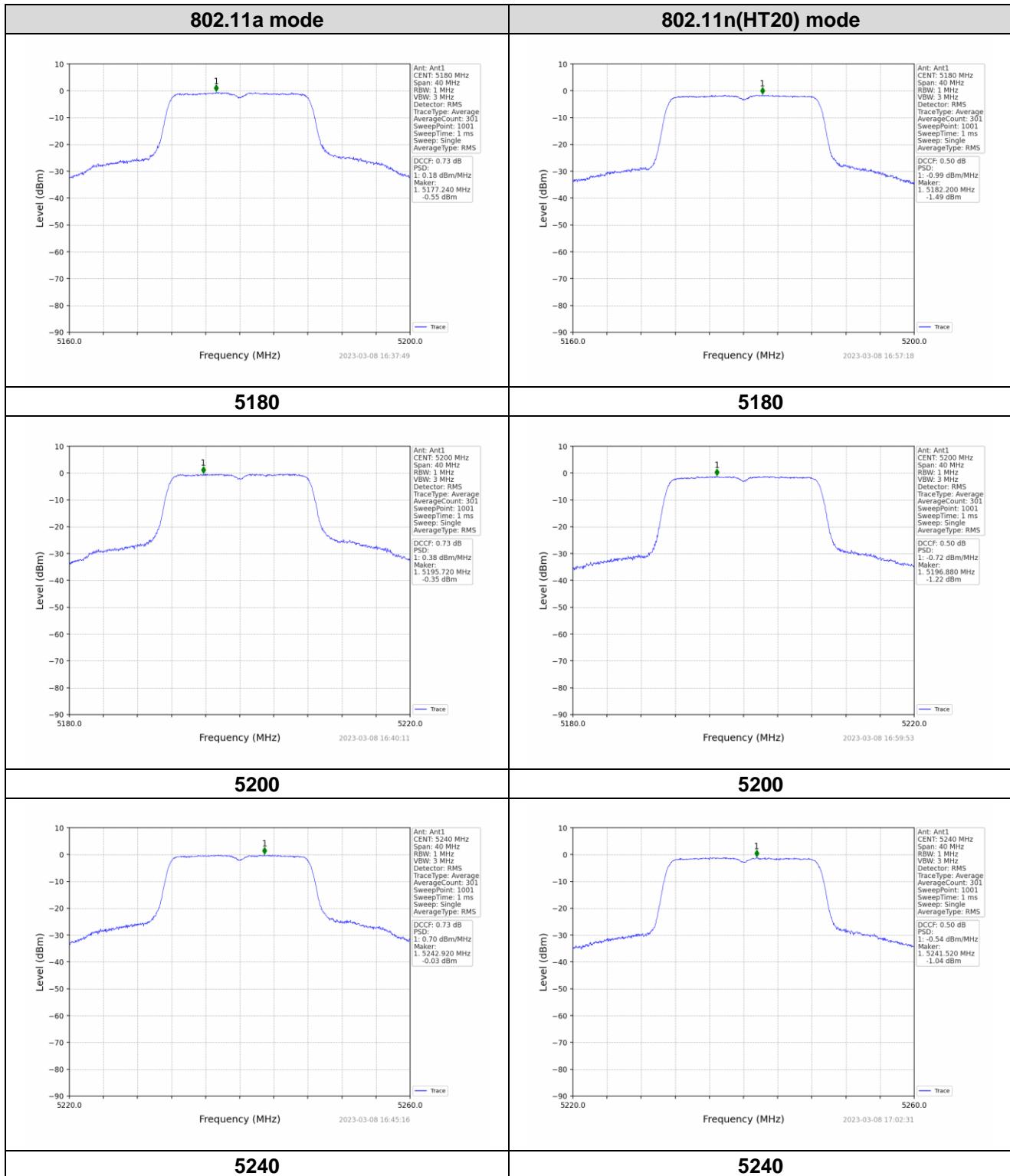


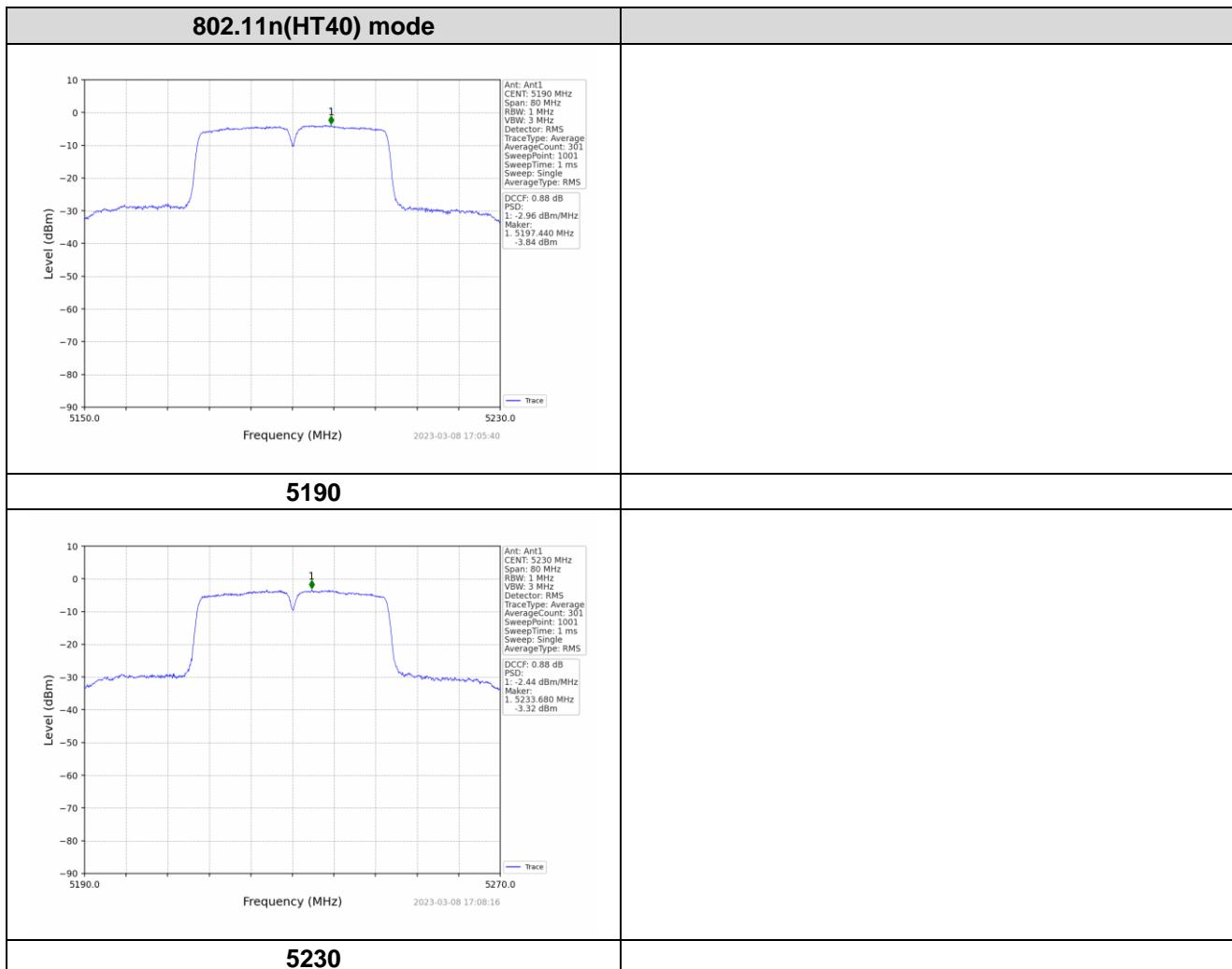
Report No.: HTT202304037F03

Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar
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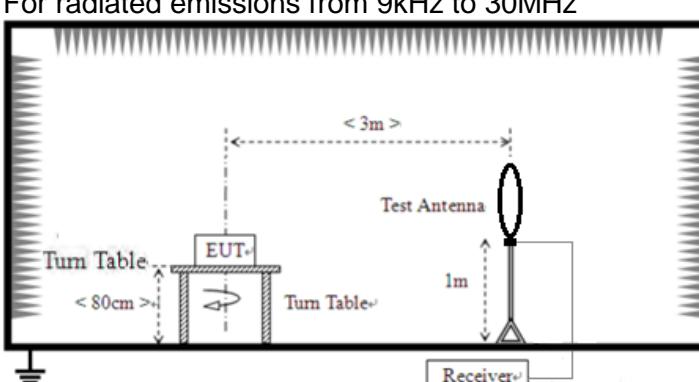
#### Measurement Data

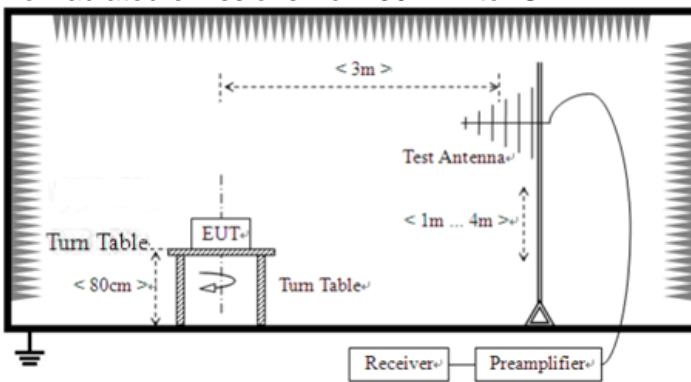
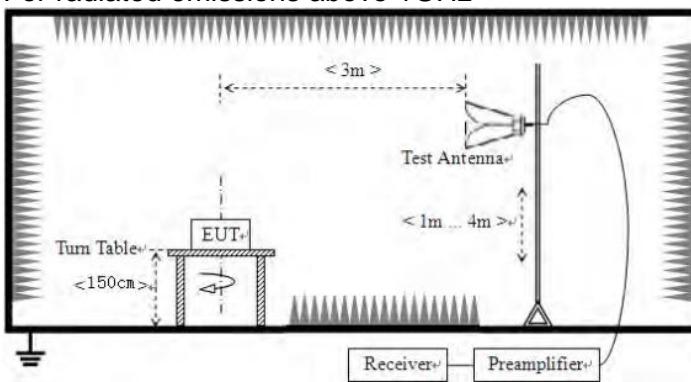
Test Mode	Frequency (MHz)	Total PSD Power(dBm/MHz)	Limits (dBm/MHz)	Result
802.11a	5180	0.18	10.61	PASS
	5200	0.38	10.61	PASS
	5240	0.70	10.61	PASS
802.11n(HT20)	5180	-0.99	10.61	PASS
	5200	-0.72	10.61	PASS
	5240	-0.54	10.61	PASS
802.11n(HT40)	5190	-2.96	10.61	PASS
	5230	-2.44	10.61	PASS

**Test plots as followed:**




## 6.5. Radiated Emission

Test Requirement:	FCC Part15 C Section 15.209						
Test Method:	ANSI C63.10:2013						
Test Frequency Range:	9kHz to 25GHz						
Test site:	Measurement Distance: 3m						
Receiver setup:	Frequency	Detector	RBW	VBW	Value		
	9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak		
	150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak		
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak		
	Above 1GHz	Peak	1MHz	3MHz	Peak		
		Peak	1MHz	10Hz	Average		
Limit:	Frequency	Limit (uV/m)	Value	Measurement Distance			
	0.009MHz-0.490MHz	2400/F(KHz)	QP	300m			
	0.490MHz-1.705MHz	24000/F(KHz)	QP	30m			
	1.705MHz-30MHz	30	QP	30m			
	30MHz-88MHz	100	QP	3m			
	88MHz-216MHz	150	QP				
	216MHz-960MHz	200	QP				
	960MHz-1GHz	500	QP				
	Above 1GHz	500	Average				
		5000	Peak				
Test setup:	For radiated emissions from 9kHz to 30MHz						
							

	<p>For radiated emissions from 30MHz to1GHz</p> 
	<p>For radiated emissions above 1GHz</p> 
Test Procedure:	<ol style="list-style-type: none"> <li>1. The EUT was placed on the top of a rotating table (0.8m for below 1G and 1.5m for above 1G) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.</li> <li>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.</li> <li>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.</li> <li>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.</li> <li>5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.</li> <li>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.</li> </ol>
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details



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Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar
Test voltage:	AC 120V, 60Hz					
Test results:	Pass					

**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.

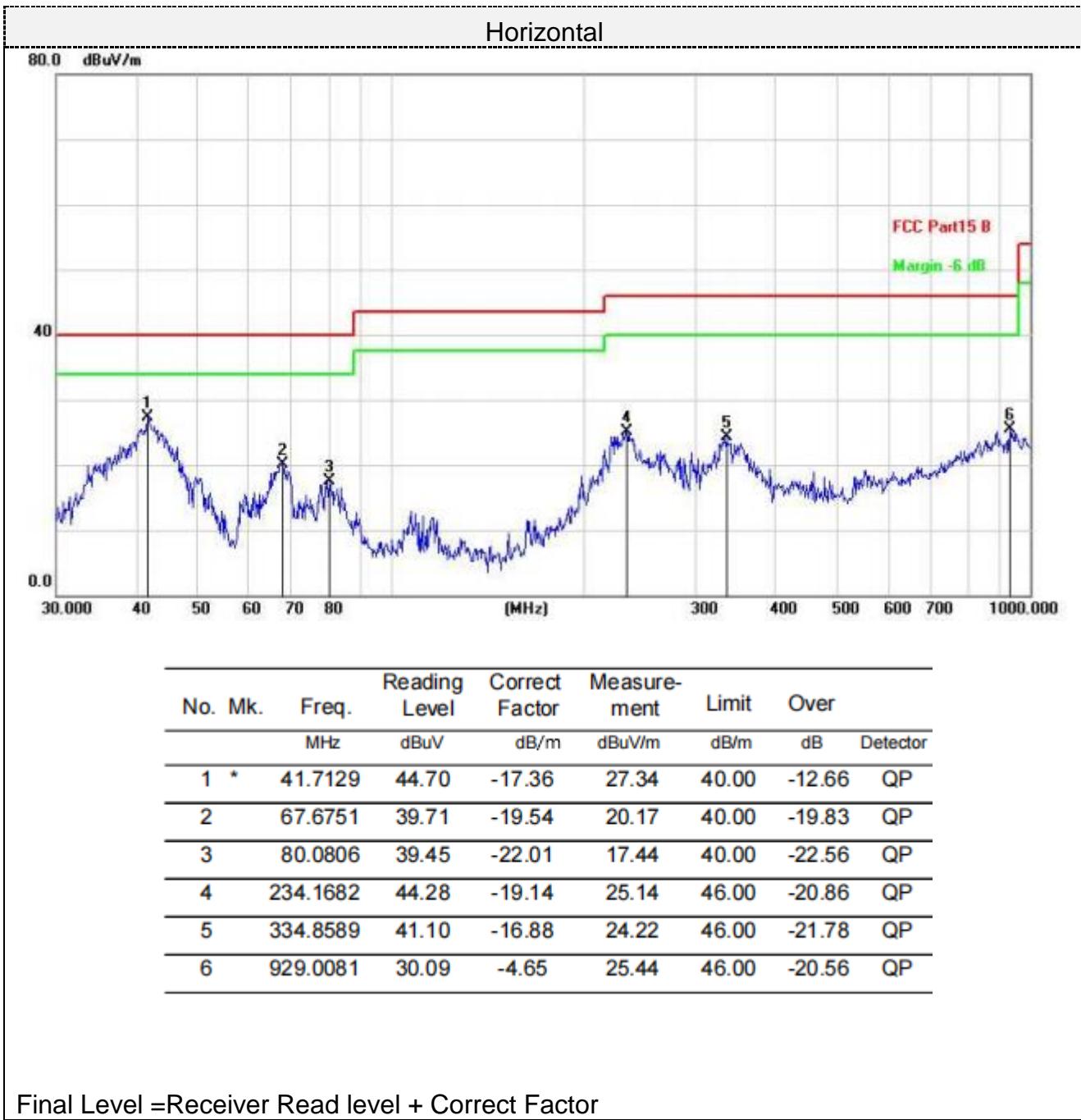
**Measurement data:**

■ **9kHz~30MHz**

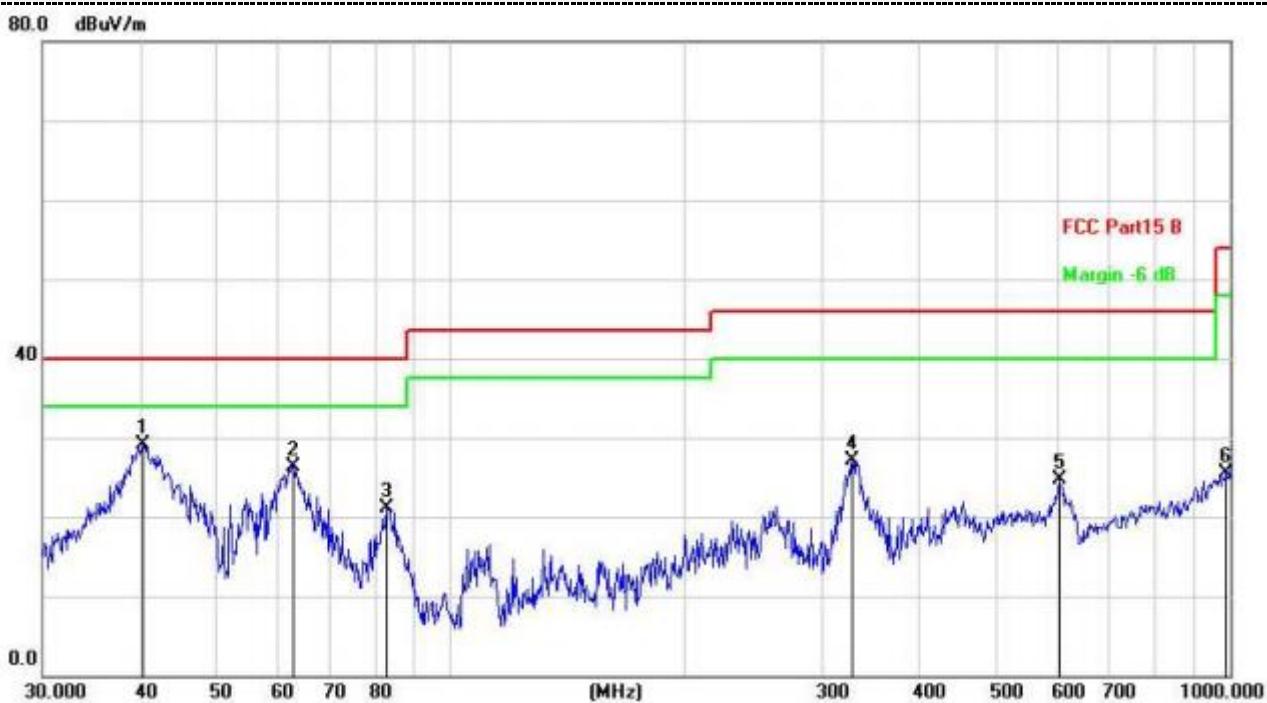
The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

## ■ Below 1GHz

Pre-scan all test modes, found worst case at 802.11b 2437MHz, and so only show the test result of 802.11b 2437MHz



### Vertical



No.	Mk.	Freq. MHz	Reading	Correct	Measure-	Limit dB/m	Over dB	Over Detector
			Level dBuV	Factor dB/m	ment dBuV/m			
1	*	40.2757	46.64	-17.44	29.20	40.00	-10.80	QP
2		62.8708	45.04	-18.66	26.38	40.00	-13.62	QP
3		82.9385	43.04	-21.98	21.06	40.00	-18.94	QP
4		327.8872	44.25	-17.22	27.03	46.00	-18.97	QP
5		603.5392	34.80	-10.14	24.66	46.00	-21.34	QP
6		989.5353	29.46	-3.86	25.60	54.00	-28.40	QP

Final Level = Receiver Read level + Correct Factor

**■ Above 1-40GHz**

Pre-scan all test modes of antenna , found worst case at 802.11n(HT20), and so only show the test result of 802.11n(HT20).

U-NII 1 &amp; 802.11n(HT20) (above 1GHz)

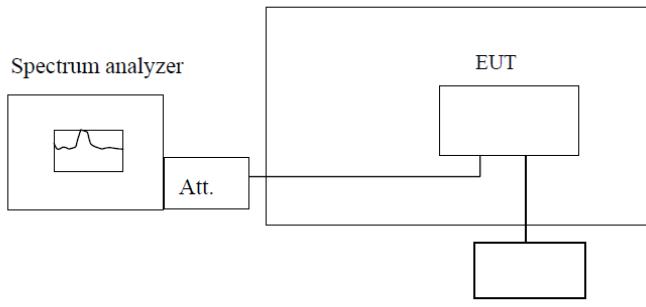
Tested Channel	Frequency (MHz)	Emission Level (dBuV/m)	Detector Mode	ANT Pol	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre amplifier (dB)	Correction Factor (dB/m)
36.00 (5180MHz)	5150.00	54.86	PK	H	68.20	13.34	46.52	31.4	8.44	31.5	8.34
	5150.00	41.99	AV	H	54.00	12.01	33.65	31.4	8.44	31.5	8.34
	10360.00	52.67	PK	H	68.20	15.53	38.83	38.21	11.59	38.26	11.54
	--	--	--	--	--	--	--	--	--	--	--
40.00 (5200MHz)	10400.00	54.09	PK	H	68.20	14.11	42.55	38.21	11.59	38.26	11.54
	--	--	--	--	--	--	--	--	--	--	--
48.00 (5240MHz)	5350.50	41.99	PK	H	68.20	26.21	33.65	31.4	8.44	31.5	8.34
	10480.00	53.67	PK	H	68.20	14.53	42.53	38.21	11.19	38.26	11.14
--	--	--	--	--	--	--	--	--	--	--	--

Tested Channel	Frequency (MHz)	Emission Level (dBuV/m)	Detector Mode	ANT Pol	Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre amplifier (dB)	Correction Factor (dB/m)
36.00 (5180MHz)	5150.00	54.17	PK	V	68.20	14.03	45.83	31.4	8.44	31.5	8.34
	5150.00	43.69	AV	V	54.00	10.31	35.35	31.4	8.44	31.5	8.34
	10360.00	51.74	PK	V	68.20	16.46	40.20	38.21	11.59	38.26	11.54
	--	--	--	--	--	--	--	--	--	--	--
40.00 (5200MHz)	10400.00	51.80	PK	V	68.20	16.40	40.26	38.21	11.59	38.26	11.54
	--	--	--	--	--	--	--	--	--	--	--
48.00 (5240MHz)	5350.50	53.47	PK	V	68.20	14.73	45.13	31.4	8.44	31.5	8.34
	10480.00	51.64	PK	V	68.20	16.56	40.50	38.21	11.19	38.26	11.14
--	--	--	--	--	--	--	--	--	--	--	--

**Remark:**

- (1) 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.
- (2) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed.

## 6.6. Frequency stability

Test Requirement:	FCC Part15 C Section 15.407(g)				
Test Method:	ANSI C63.10:2013, FCC Part 2.1055				
Limit:	Manufactures 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				
Test Procedure:	The EUT was setup to ANSI C63.4, 2003; tested to 2.1055 for compliance to FCC Part 15.407(g) requirements.				
Test setup:	<p style="text-align: right;">Temperature Chamber</p>  <p><b>Note :</b> Measurement setup for testing on Antenna connector</p>				
Test Instruments:	Refer to section 6 for details				
Test mode:	Refer to section 5.2 for details				
Test results:	Pass				

Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar
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Remark: Set the EUT transmits at un-modulation mode to test frequency stability.



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Reference Frequency: 802.11n(HT20) channel=36 frequency=5180MHz					
Voltage ( V )	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
AC120	-30	85.47	0.01650	Within the band of operation	Pass
	-20	96.12	0.01856		
	-10	86.17	0.01664		
	0	98.15	0.01895		
	10	82.97	0.01602		
	20	94.88	0.01832		
	30	99.50	0.01921		
	40	92.77	0.01791		
	50	102.55	0.01980		
AC138	25	105.96	0.02046		
AC102	25	106.82	0.02062		

Reference Frequency: 802.11n(HT20) channel=149 frequency=5745MHz					
Voltage ( V )	Temperature (°C)	Frequency error		Limit (ppm)	Result
		Hz	ppm		
AC120	-30	118.74	0.02067	Within the band of operation	Pass
	-20	119.09	0.02073		
	-10	105.81	0.01842		
	0	116.95	0.02036		
	10	104.59	0.01821		
	20	102.99	0.01793		
	30	99.80	0.01737		
	40	98.75	0.01719		
	50	92.33	0.01607		
AC138	25	115.80	0.02016		
AC102	25	112.37	0.01956		



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## 7. Test Setup Photo

Reference to the **appendix I** for details.

## 8. EUT Constructional Details

Reference to the **appendix II** for details.

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