

# CTC Laboratories, Inc.

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# **TEST REPORT**

Report No.....: CTC20232381E05

FCC ID-----: 2AGKB-KA1235

Applicant .....: Videostrong Technology Co.,Ltd

Address...... 604, Lushi industrial Building, 28 District, Bao'an District,

Shenzhen, China

Manufacturer...... Videostrong Technology Co.,Ltd

Address...... 604, Lushi industrial Building, 28 District, Bao'an District,

Shenzhen, China

Product Name .....: Android TV Box

Trade Mark .....: /

Model/Type reference .....: KA2

Listed Model(s) .....: KA1, KA1 PRO, KA2 PRO, KA3, KA3 PRO, KA5, KA5 PRO,

KA6, OC-STB-01, OC-STB-02, OC-STB-03

Standard .....: FCC Part 15 Subpart E 15. 407

Date of receipt of test sample...: Dec. 20, 2023

Date of testing...... Dec. 21, 2023 ~ Jan. 08, 2024

Result.....: PASS

Compiled by:

(Printed name+signature) Terry Su

Supervised by:

(Printed name+signature) Eric Zhang

Approved by:

(Printed name+signature) Totti Zhao

Testing Laboratory Name.....: CTC Laboratories, Inc.

Address ...... 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park,

Shenzhen, Guangdong, China

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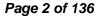
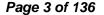




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# 1. TEST SUMMARY

# 1.1. Test Standards

The tests were performed according to following standards:

<u>FCC Part 15, Subpart E(15.407)</u> — for 802.11a/n/ac, the test procedure follows the FCC KDB 789033 D02 General UNII Test Procedures New Rules V02r01.

Report No.: CTC20232381E05

RSS-247 Issue 3 — Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices

RSS-Gen — General Requirements for Compliance of Radio Apparatus

# 1.2. Report version

Revised No.	Date of issue	Description
01	Jan. 09, 2024	Original



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1.3. Test Description

FCC Part 15 Subpart E (15.407) / RSS-247 Issue 3						
Test Item	Test r	equire	Result	Test		
rest item	FCC IC		Resuit	Engineer		
Antenna Requirement	15.203	/	Pass	Alicia Liu		
Conducted Emission	15.207	RSS-Gen 8.8	Pass	Seth Chen		
Band Edge Emissions	15.407(b)	RSS-247 6.2.1.2 RSS-247 6.2.2.2 RSS-247 6.2.4.2	Pass	Alicia Liu		
26dB Bandwidth & 99% Bandwidth	15.407(a) (5)	RSS-247 6.2.1.2	Pass	Alicia Liu		
6dB Bandwidth (only for UNII-3)	15.407(e)	RSS-247 6.2.4.1	Pass	Alicia Liu		
Peak Output Power	15.407(a)	RSS-247 6.2.1.1 RSS-247 6.2.4.1	Pass	Alicia Liu		
Power Spectral Density	15.407(a)	RSS-247 6.2	Pass	Alicia Liu		
Transmitter Radiated Spurious Emission	15.407(b) &15.209	RSS-Gen 8.9 RSS-247 6.2.1.2 RSS-247 6.2.4.2	Pass	Alicia Liu		
Frequency Stability	15.407(g)	/	Pass	Alicia Liu		
Dynamic Frequency Selection (DFS)	15.407(h)	RSS-247 6.3	N/A	N/A		

Note: "N/A" is not applicable.

The measurement uncertainty is not included in the test result.

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# 1.4. Test Facility

### CTC Laboratories, Inc.

Add: 1-2/F., Building 2, Jiaquan Building, Guanlan High-Tech Park, Shenzhen, Guangdong, China

### Laboratory accreditation

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

#### A2LA-Lab Cert. No.: 4340.01

CTC Laboratories, Inc. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

### Industry Canada (Registration No.: 9783A, CAB Identifier: CN0029)

CTC Laboratories, Inc. EMC Laboratory has been registered by Certification and Engineer Bureau of Indus try Canada for the performance of with Registration NO.: 9783A on Jan, 2016.

### FCC (Registration No.: 951311, Designation Number CN1208)

CTC Laboratories, Inc. 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 inour files. Registration 951311, Aug 26, 2017.

# 1.5. Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01" Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2 " and is documented in the CTC Laboratories, Inc. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Below is the best measurement capability for CTC Laboratories, Inc.



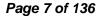
Test Items	Measurement Uncertainty	Notes
Emission Bandwidth	±0.0196%	(1)
Maximum Conduct Output Power	±0.766dB	(1)
Power Spectral Density	±1.22dB	(1)
Band Edge Measurements	±1.328dB	(1)
Unwanted Emissions Measurement	9kHz-1GHz: ±0.746dB 1GHz-40GHz: ±1.328dB	(1)
Frequency Stability	±2.76%	(1)
Conducted Emissions 9kHz~30MHz	±3.08 dB	(1)
Radiated Emissions 30~1000MHz	±4.51 dB	(1)
Radiated Emissions 1~18GHz	±5.84 dB	(1)
Radiated Emissions 18~40GHz	±6.12 dB	(1)

Note (1): This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

# 1.6. Environmental conditions

	Temperature	22 °C ~ 28°C
Normal Condition	Relative humidity	50% ~ 65%
Condition	Voltage	The equipment shall be the nominal voltage for which the equipment was designed.
Extreme	Temperature	Measurements shall be made over the extremes of the operating temperature range as declared by the manufacturer
Condition	Voltage	Measurements shall be made over the extremes of the operating voltage range as declared by the manufacturer

Normal Condition T <sub>N</sub> =Normal Temperature		22 °C ~ 28°C
Extreme Condition	T <sub>L</sub> =Lower Temperature	0 °C
Extreme Condition	T <sub>H</sub> =Higher Temperature	40 °C





2. GENERAL INFORMATION

# 2.1. Client Information

Applicant:	Videostrong Technology Co.,Ltd
Address:	604, Lushi industrial Building, 28 District, Bao'an District, Shenzhen, China
Manufacturer:	Videostrong Technology Co.,Ltd
Address:	604, Lushi industrial Building, 28 District, Bao'an District, Shenzhen, China

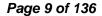
Accreditation Administration of the People's Republic of China : <u>yz.cnca.cn</u>



2.2. General Description of EUT

Product Name:	Android TV Box					
Trade Mark:	/					
Model/Type reference:	KA2					
Listed Model(s):	•	RO, KA2 PRO, OC-STB-02, O	KA3, KA3 PRO, C-STB-03	KA5	, KA5 PR	O, KA6,
Model Different:			al in the same P de mark and app		•	
Power supply:	5Vdc/2A from	n AC/DC Adapto	er			
Adapter Model:	TEAK012-05 Input: 100-24 Output: 5Vdd	40V~ 50/60Hz (	).35A Max			
Hardware version:	/					
Software version:	/					
Antenna 1 and 2 type:	PCB Antenn	a				
Antenna 1 gain:	3.18dBi Max	,				
Antenna 2 gain:	2.25dBi Max					
Antenna 1 and 2 Directional gain:	5.74dBi					
Technical index for 5G WIFI						
Operation Band:	⊠U-NII-1	□U-NII-2A	□U-NII-2C		⊠U-NII	-3
Operation Frequency Range:	U-NII-1:	U-NII-1: 5150MHz~5250MHz				
Operation i requericy realige.	U-NII-3:	5725MHz~58	50MHz			
	802.11a	⊠20MHz				
Support bandwidth:	802.11n	⊠20MHz	⊠40MHz			
	802.11ac	⊠20MHz	⊠40MHz	$\boxtimes$	80MHz	□160MHz
Modulation:	802.11a: OFDM (BIT/SK, QPSK, BPSK, 16QAM) 802.11n: OFDM (BIT/SK, QPSK, BPSK, 16QAM, 64QAM) 802.11ac: OFDM (BIT/SK, QPSK, BPSK, 16QAM, 64QAM, 256QAM)					
Bit Rate of Transmitter:	802.11a: 6/9/12/18/24/36/48/54 Mbps 802.11n: up to 300Mbps 802.11ac: at most 866.7 Mbps					

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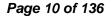




2.3. Accessory Equipment information

Equipment Information						
Name	Model	S/N	Manufacturer			
Notebook	ThinkBook 14G3 ACL	MP246QDR	Lenovo			
/	/	/	/			
Cable Information	Cable Information					
Name	Shielded Type	Ferrite Core	Length			
/	/	/	/			
Test Software Information						
Name	Versions	/	/			
SecureCRT.exe	8.7.1	/	/			

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# 2.4. Operation state

# Operation Frequency List:

	20MHz Bandwidth		40MHz Bandwidth		80MHz Bandwidth	
Band (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
	36	5180	38	5190		5210
U-NII-1	40	5200	30	5190	42	
U-INII-1	44	5220	46	5230		
	48	5240		5230		
	149	5745	151	5755		5775
	153	5765				
U-NII-3	157	5785	159		155	
	161	5805		5795		
	165	5825				

### Test channel is below:

Operating	Test	20MHz		40MHz		80MHz	
Band	Channel	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
	CH∟	36	5180	38	5190	/	/
U-NII-1	CH <sub>M</sub>	40	5200	/	/	42	5210
	СНн	48	5240	46	5230	/	/
	CH∟	149	5745	151	5755	/	/
U-NII-3	CH <sub>M</sub>	157	5785	/	/	155	5775
	CH <sub>H</sub>	165	5825	159	5795	/	/

# Data Rated

Preliminary tests were performed in different data rate, and found which the below bit rate is worst case mode, so only show data which it is a worst case mode.

Mode	Data rate (worst mode)
802.11a	6Mbps
802.11n(HT20)/ 802.11n(HT40)	HT-MCS0
802.11ac(VHT20)/ 802.11ac(VHT40)/ 802.11ac(VHT80)	VHT-MCS0



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#### Test mode

#### For RF test items

The engineering test program was provided and enabled to make EUT continuous transmit.

For AC power line conducted emissions:

The EUT was set to connect with the WLAN AP under large package sizes transmission.

For Radiated spurious emissions test item:

The engineering test program was provided and enabled to make EUT continuous transmit. The EUT in each of three orthogonal axis emissions had been tested, but only the worst case (X axis) data Recorded in the report.

# For DFS test items

The EUT has been tested under test mode condition. The Applicant provides software to control the EUT for staying in DFS mode for testing.

# Beamforming Antenna Specification:

Ant.	Antenna Type	Gain (dBi)
1	PCB Antenna	3.18
2	PCB Antenna	2.25

Note: This Directional gain=5.74dBi, So the U-NII-1 output power limit is 23.98, The power spectral density limit is 11, The U-NII-3 output power limit is 30, The power spectral density limit is 30

$$Directional Gain = 10 \cdot \log \left[ \frac{\sum\limits_{j=1}^{N_{SS}} \left\{ \sum\limits_{k=1}^{N_{ANT}} g_{j,k} \right\}^{2}}{N_{ANT}} \right]$$

Directional gain= $10*log[(10^{(3.18/20)}+10^{(2.25/20)})^2/2]=5.74dBi$ 

### CDD Antenna Specification:

Ant.	Antenna Type	Gain (dBi)
1	PCB Antenna	3.18
2	PCB Antenna	2.25

### Note:

For power spectral density (PSD) measurements on all devices, Directional gain = 5.74dBi,

For power measurements on IEEE 802.11 devices,

Directional gain = GANT + Array Gain

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

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

Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less, for 20MHz channel widths with NANT ≥ 5. So the U-NII-1 output power limit is 30, The power spectral density limit is 11, The U-NII-3 output power limit is 30, The power spectral density limit is 30

$$Directional Gain = 10 \cdot \log \left\lceil \frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^{2}}{N_{ANT}} \right\rceil$$

Directional gain= $10*log[(10^{(3.18/20)}+10^{(2.25/20)})^2/2]=5.74dBi$ 

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**Measurement Instruments List** 

RF Tes	st System				
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated Until
1	Spectrum Analyzer	R&S	FSV40-N	101331	Mar. 14, 2024
2	Spectrum Analyzer	R&S	FSV40-N	101654	Aug. 07, 2024
3	Spectrum Analyzer	R&S	FSU26	100105	Dec. 16, 2023
4	MXA Signal Analyzer	Keysight	N9020A	MY46471737	Dec. 16, 2023
5	MXA Signal Analyzer	Keysight	N9020A	MY52091402	Aug. 22, 2024
6	MXG Vector Signal Generator	Agilent	N5182A	MY47420864	Dec. 16, 2023
7	PSG Analog Signal Generator	Agilent	E8257D	MY46521908	Dec. 16, 2023
8	EXG Analog Signal Generator	Keysight	N5173B	MY59100842	Dec. 16, 2023
9	MXG Vector Signal Generator	Keysight	N5182B	MY59100212	Dec. 16, 2023
10	Wideband Radio Communication Tester	R&S	CMW500	102257	May 25, 2024
11	Wideband Radio Communication Tester	R&S	CMW500	102414	Dec. 16, 2023
12	High and low temperature test chamber	ESPEC	MT3035	/	Mar. 24, 2024
13	RF Control Unit	Tonscend	JS0806-2	/	Aug. 22, 2024
14	Test Software	Tonscend	JS1120-3	V3.3.38	/

Radiate	ed Emission (3m chamber 2	2)			
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated Until
1	Trilog-Broadband Antenna	Schwarzbeck	VULB 9168	9168-1013	Dec. 07, 2024
2	Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-648	Dec. 07, 2024
3	Spectrum Analyzer	R&S	FSU26	100105	Dec. 16, 2023
4	Spectrum Analyzer	R&S	FSV40-N	101331	Mar. 14 2024
5	Pre-Amplifier	SONOMA	310	186194	Dec. 16, 2023
6	Low Noise Pre-Amplifier	EMCI	EMC051835	980075	Dec. 16, 2023
7	Test Receiver	R&S	ESCI7	100967	Dec. 16, 2023
8	3m chamber 2	Frankonia	EE025	/	Oct. 23, 2024
9	Test Software	FARA	EZ-EMC	FA-03A2	/

Radiate	Radiated Emission (3m chamber 3)								
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated Until				
1	Trilog-Broadband Antenna	Schwarzbeck	VULB 9163	01026	Dec. 18, 2024				
2	Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-647	Dec. 01, 2024				
3	Test Receiver	Keysight	N9038A	MY56400071	Dec. 16, 2023				
4	Broadband Amplifier	SCHWARZBECK	BBV9743B	259	Dec. 16, 2023				
5	Mirowave Broadband	SCHWARZBECK	BBV9718C	111	Dec. 16, 2023				



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	Amplifier				
6	3m chamber 3	YIHENG	EE106	/	Aug. 28, 2026
7	Test Software	FARA	EZ-EMC	FA-03A2	/

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Conduc	eted Emission				
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated Until
1	LISN	R&S	ENV216	101112	Dec. 16, 2023
2	LISN	R&S	ENV216	101113	Dec. 16, 2023
3	EMI Test Receiver	R&S	ESCS30	100353	Dec. 16, 2023
4	ISN CAT6	Schwarzbeck	NTFM 8158	CAT6-8158-0046	Dec. 16, 2023
5	ISN CAT5	Schwarzbeck	NTFM 8158	CAT5-8158-0046	Dec. 16, 2023
6	Test Software	R&S	EMC32	6.10.10	/

Note: 1. The Cal. Interval was one year.

- 2. The Cal. Interval was three year of the chamber
- 3. The cable loss has calculated in test result which connection between each test instruments.



# 3. TEST ITEM AND RESULTS

# 3.1. Conducted Emission

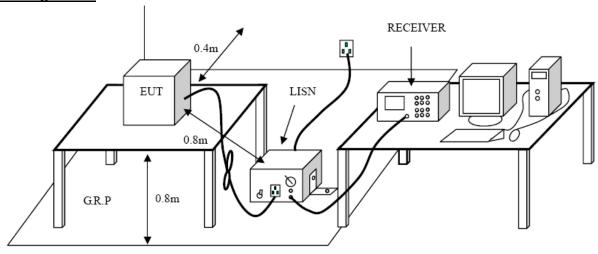
### Limit

# FCC CFR Title 47 Part 15 Subpart C Section 15.207/ RSS – Gen 8.8:

Frequency ronge (MHz)	Limit (dBuV)					
Frequency range (MHz)	Quasi-peak	Average				
0.15-0.5	66 to 56*	56 to 46*				
0.5-5	56	46				
5-30	60	50				

<sup>\*</sup> Decreases with the logarithm of the frequency.

### **Test Configuration**



### **Test Procedure**

- 1. The EUT was setup according to ANSI C63.10:2013 requirements.
- 2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface.
- 3. The EUT and simulators are connected to the main power through a line impedances stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment.
  - The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
- 4. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
- 5. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
- 6. Conducted Emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
- 7. During the above scans, the emissions were maximized by cable manipulation.

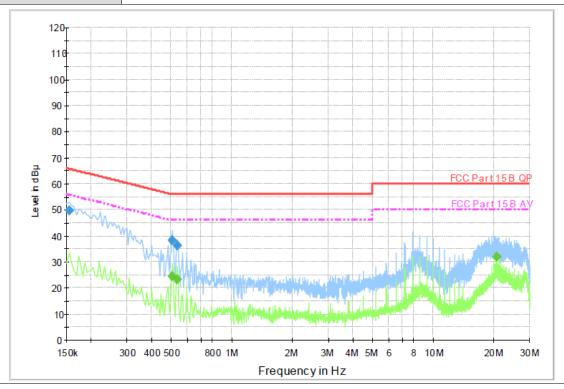
### **Test Mode**

Please refer to the clause 2.4.





# Test Voltage: AC 120V/60 Hz Terminal: Line



# Final Measurement Detector 1

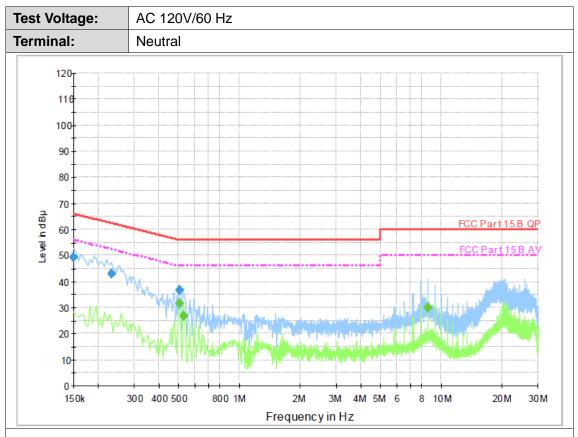
Frequency	QuasiPeak	Meas.	Bandwidth	Filter	Line	Corr.	Margin	Limit	Comment
(MHz)	(dBµ V)	Time	(kHz)			(dB)	(dB)	(dBµ	
		(ms)						V)	
0.154500	49.7	1000.00	9.000	On	L1	9.4	16.1	65.8	
0.505500	38.4	1000.00	9.000	On	L1	9.5	17.6	56.0	
0.532500	36.3	1000.00	9.000	On	L1	9.5	19.7	56.0	

# Final Measurement Detector 2

Frequency (MHz)	Average (dBµ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµ V)	Comment
0.505500	24.6	1000.00	9.000	On	L1	9.5	21.4	46.0	
0.532500	23.3	1000.00	9.000	On	L1	9.5	22.7	46.0	
20.575500	32.1	1000.00	9.000	On	L1	9.6	17.9	50.0	

Emission Level= Read Level+ Correct Factor





# **Final Measurement Detector 1**

Frequency (MHz)	QuasiPeak (dBµ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµ V)	Comment
0.150000	49.3	1000.00	9.000	On	N	9.3	16.7	66.0	
0.231000	42.9	1000.00	9.000	On	N	9.4	19.5	62.4	
0.501000	36.9	1000.00	9.000	On	N	9.4	19.1	56.0	

# Final Measurement Detector 2

Frequency (MHz)	Average (dBµ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµ V)	Comment
0.501000	31.4	1000.00	9.000	On	N	9.4	14.6	46.0	
0.528000	26.6	1000.00	9.000	On	N	9.4	19.4	46.0	
8.569500	30.0	1000.00	9.000	On	N	9.6	20.0	50.0	

Emission Level= Read Level+ Correct Factor



# 3.2. Radiated Emission

### **Limit**

### FCC CFR Title 47 Part 15 Subpart C Section 15.209/ RSS-Gen 8.9

Frequency	Limit (dBuV/m @3m)	Value	
30 MHz ~ 88 MHz	40.00	Quasi-peak	
88 MHz ~ 216 MHz	43.50	Quasi-peak	
216 MHz ~ 960 MHz	46.00	Quasi-peak	
960 MHz ~ 1 GHz	54.00	Quasi-peak	
Abovo 1 CHz	54.00	Average	
Above 1 GHz	74.00	Peak	

#### Note:

- (1) The tighter limit applies at the band edges.
- (2) Emission Level (dBuV/m)= 20log Emission Level (uV/m).

### Limits of unwanted emission out of the restricted bands

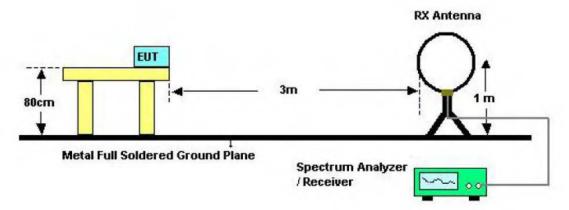
# FCC CFR Title 47 Part 15 Subpart C Section 15.407(b)/ RSS-247 6.2.1.2 & RSS-247 6.2.4.2

Frequency (MHz)	EIRP Limits (dBm)	Equivalent Field Strength at 3m (dBuV/m)		
5150~5250	-27	68.2		
5250~5350	-27	68.2		
5470~5725	-27	68.2		
	-27(Note 2)	68.2		
5725~5825	10(Note 2)	105.2		
3725~5025	15.6(Note 2)	110.8		
	27(Note 2)	122.2		

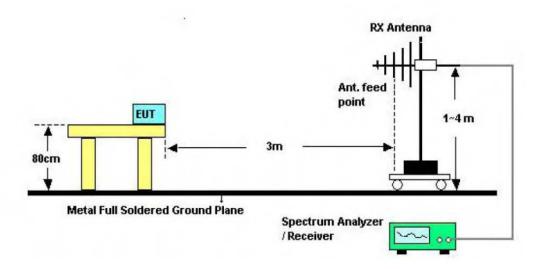
Note: 1. The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:  $E = \frac{1000000\sqrt{30P}}{3}$  uV/m, where P is the eirp (Watts)

2. According to FCC 16-24, All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27dBm/MHz at the band edge.

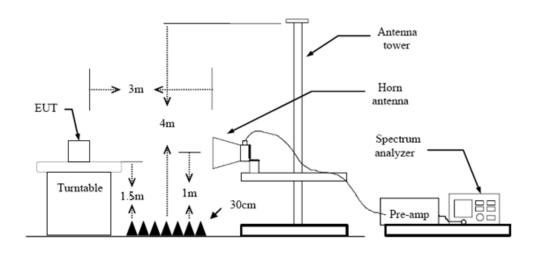
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Below 30MHz Test Setup



Below 1000MHz Test Setup



Above 1GHz Test Setup

# **Test Procedure**

- 1. The EUT was setup and tested according to ANSI C63.10:2013
- 2. The EUT is placed on a turn table which is 0.8 meter above ground for below 1 GHz, and 1.5 m for above 1 GHz. The turn table is rotated 360 degrees to determine the position of the maximum emission level.

CTC Laboratories, Inc.





3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower.

Report No.: CTC20232381E05

- 4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
- 5. Set to the maximum power setting and enable the EUT transmit continuously.
- 6. Use the following spectrum analyzer settings
  - (1) Span shall wide enough to fully capture the emission being measured;
  - (2) Below 1 GHz:

RBW=120 kHz, VBW=300 kHz, Sweep=auto, Detector function=peak, Trace=max hold;

If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

(3) From 1 GHz to 40GHz:

RBW=1MHz, VBW=3MHz Peak detector for Peak value.

RBW=1MHz, VBW≥1/T Peak detector for Average value.

Note 1: For the 1/T& Duty Cycle please refer to clause Duty Cycle.

### **Test Mode**

Please refer to the clause 2.4.

### **Test Result**

### 9 KHz~30 MHz

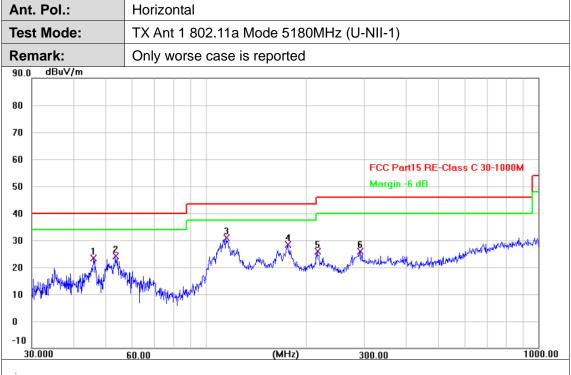
From 9 KHz to 30 MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Pre-scan all antenna, only show the test data for worse case antenna on the test report.



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No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	46.0162	37.11	-13.70	23.41	40.00	-16.59	QP
2	53.6033	38.23	-14.19	24.04	40.00	-15.96	QP
3 *	114.9168	47.43	-16.67	30.76	43.50	-12.74	QP
4	176.2686	46.58	-18.10	28.48	43.50	-15.02	QP
5	216.7828	41.29	-15.48	25.81	46.00	-20.19	QP
6	291.0358	39.59	-13.66	25.93	46.00	-20.07	QP

# Remarks:

- 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
- 2.Margin value = Level -Limit value

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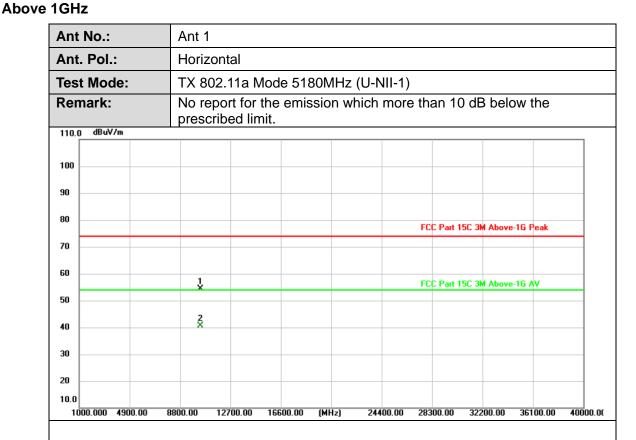




No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	35.1278	48.06	-15.70	32.36	40.00	-7.64	QP
2 *	49.8814	50.16	-13.90	36.26	40.00	-3.74	QP
3 !	53.5052	49.41	-14.18	35.23	40.00	-4.77	QP
4	108.6470	50.94	-15.94	35.00	43.50	-8.50	QP
5	142.8243	53.88	-19.54	34.34	43.50	-9.16	QP
6	179.3863	52.03	-17.90	34.13	43.50	-9.37	QP

# Remarks:

- 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
- 2.Margin value = Level -Limit value



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	10359.960	47.66	6.75	54.41	74.00	-19.59	peak
2 *	10360.480	34.00	6.75	40.75	54.00	-13.25	AVG

# Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant No.: Ant 1 Ant. Pol.: Vertical **Test Mode:** TX 802.11a Mode 5180MHz (U-NII-1) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 ខព FCC Part 15C 3M Above-1G Peak 70 60 2 X FCC Part 15C 3M Above-1G AV 50 X 40 30 20

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	10359.763	34.30	6.75	41.05	54.00	-12.95	AVG
2	10360.346	47.74	6.75	54.49	74.00	-19.51	peak

12700.00 16600.00 (MHz) 24400.00 28300.00 32200.00 36100.00 40000.00

### Remarks:

1000.000 4900.00

8800.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

24400.00 28300.00 32200.00 36100.00 40000.00



Ant No.: Ant 1 Ant. Pol.: Horizontal **Test Mode:** TX 802.11a Mode 5200MHz (U-NII-1) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 90 ខព FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV 50 2 X 40 30

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	10399.510	47.07	6.87	53.94	74.00	-20.06	peak
2 *	10399.986	33.83	6.87	40.70	54.00	-13.30	AVG

12700.00 16600.00 (MHz)

### Remarks:

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1000.000 4900.00

8800.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

32200.00

36100.00

40000.00



Ant No.: Ant 1 Ant. Pol.: Vertical **Test Mode:** TX 802.11a Mode 5200MHz (U-NII-1) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 2 X FCC Part 15C 3M Above-1G AV 50 X

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1 *	10400.191	34.25	6.87	41.12	54.00	-12.88	AVG
2	10400.387	48.22	6.87	55.09	74.00	-18.91	peak

(MHz)

12700.00

16600.00

# Remarks:

40

30 20 10.0

1000.000 4900.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

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Ant No.: Ant 1 Ant. Pol.: Horizontal **Test Mode:** TX 802.11a Mode 5240MHz (U-NII-1) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV 50 2 X 40 30 20 10.0

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	10480.041	47.17	7.08	54.25	74.00	-19.75	peak
2 *	10480.410	33.87	7.08	40.95	54.00	-13.05	AVG

(MHz)

28300.00

### Remarks:

1000.000 4900.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

12700.00

16600.00



Ant No.: Ant 1 Ant. Pol.: Vertical **Test Mode:** TX 802.11a Mode 5240MHz (U-NII-1) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-16 AV 50 2 X 40 30 20

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	No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
	1	10480.280	47.86	7.08	54.94	74.00	-19.06	peak
	2 *	10480.375	34.57	7.08	41.65	54.00	-12.35	AVG

(MHz)

24400.00

28300.00

32200.00

36100.00

40000.00

# Remarks:

10.0

1000.000 4900.00

8800.00

12700.00

16600.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Horizontal **Test Mode:** TX 802.11n(HT20) Mode 5180MHz (U-NII-1) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 į, FCC Part 15C 3M Above-1G AV 50 2 X

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	10359.595	47.27	6.75	54.02	74.00	-19.98	peak
2 *	10360.069	34.23	6.75	40.98	54.00	-13.02	AVG

(MHz)

16600.00

#### Remarks:

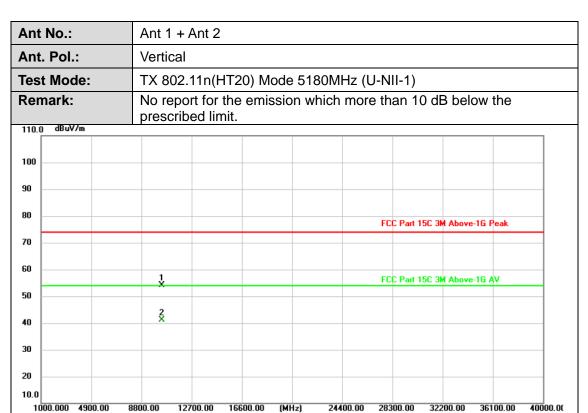
40

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1000.000 4900.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor





No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	10359.758	47.38	6.75	54.13	74.00	-19.87	peak
2 *	10359.963	34.28	6.75	41.03	54.00	-12.97	AVG

### Remarks:

 $1. Factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ Factor \ (dB) - Pre-amplifier \ Factor$ 



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Horizontal **Test Mode:** TX 802.11n(HT20) Mode 5200MHz (U-NII-1) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV 50 X X 40 30 20

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1 *	10399.650	34.12	6.87	40.99	54.00	-13.01	AVG
2	10400.132	47.30	6.87	54.17	74.00	-19.83	peak

# Remarks:

10.0

1000.000 4900.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical **Test Mode:** TX 802.11n(HT20) Mode 5200MHz (U-NII-1) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 Š FCC Part 15C 3M Above-1G AV 50 X 40 30

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1 *	10399.518	34.28	6.87	41.15	54.00	-12.85	AVG
2	10400.461	47.44	6.87	54.31	74.00	-19.69	peak

(MHz)

24400.00 28300.00

32200.00

36100.00

40000.00

#### Remarks:

20 10.0

1000.000 4900.00

8800.00

12700.00

16600.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

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Ant No.:

Ant 1 + Ant 2

Ant. Pol.:

Horizontal

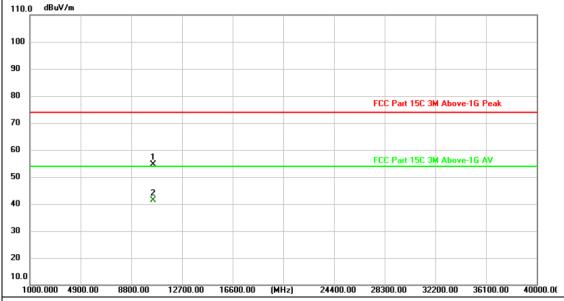
Test Mode:

TX 802.11n(HT20) Mode 5240MHz (U-NII-1)

Remark:

No report for the emission which more than 10 dB below the prescribed limit.

Report No.: CTC20232381E05



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	10479.868	47.60	7.08	54.68	74.00	-19.32	peak
2 *	10480.347	34.34	7.08	41.42	54.00	-12.58	AVG

### Remarks:

- 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
- 2.Margin value = Level -Limit value

24400.00 28300.00 32200.00 36100.00 40000.00



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40 30

20 10.0

1000.000 4900.00

Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical **Test Mode:** TX 802.11n(HT20) Mode 5240MHz (U-NII-1) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 ខ្លា FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1 *	10479.586	34.54	7.08	41.62	54.00	-12.38	AVG
2	10479.770	47.63	7.08	54.71	74.00	-19.29	peak

12700.00 16600.00 (MHz)

### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

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8800.00

24400.00 28300.00 32200.00 36100.00 40000.00



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Horizontal **Test Mode:** TX 802.11ac(VHT20) Mode 5180MHz (U-NII-1) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 į, FCC Part 15C 3M Above-1G AV 50 2 X 40 30

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	10359.538	47.36	6.75	54.11	74.00	-19.89	peak
2 *	10359.821	34.08	6.75	40.83	54.00	-13.17	AVG

12700.00 16600.00 (MHz)

# Remarks:

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1000.000 4900.00

8800.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical **Test Mode:** TX 802.11ac(VHT20) Mode 5180MHz (U-NII-1) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV 50 2 X 40 30 20

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	10359.681	47.33	6.75	54.08	74.00	-19.92	peak
2 *	10360.150	34.14	6.75	40.89	54.00	-13.11	AVG

12700.00 16600.00 (MHz)

### Remarks:

10.0

1000.000 4900.00

8800.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

24400.00 28300.00 32200.00 36100.00 40000.00



Ant No.:		Ant 1 + Ant 2								
Ant. Pol.:		Horiz	ontal							
est Mode	):	TX 80	)2.11ac	(VHT20)	Mode :	5200MHz	z (U-NII-	1)		
Remark:			port for ribed lin		ssion w	nich more	e than 1	0 dB bel	ow the	
110.0 dBuV/n	1									
100										
90										
80							FCC Part 1	ISC 3M Above	e-1G Peak	
70										
60		ş					FCC Part 1	ISC 3M Above	e-1G AV	
50										
40		1 ×								
30										
20										
10.0	900.00	8800.00	12700.00	16600.00	(MHz)	24400.00	28300.00	32200.00	36100.00	40000.

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	No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
	1 *	10399.826	34.23	6.87	41.10	54.00	-12.90	AVG
	2	10400.028	47.04	6.87	53.91	74.00	-20.09	peak

# Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

40000.00

36100.00



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical **Test Mode:** TX 802.11ac(VHT20) Mode 5200MHz (U-NII-1) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV 50 2 X 40 30

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	10399.594	47.98	6.87	54.85	74.00	-19.15	peak
2 *	10400.467	34.46	6.87	41.33	54.00	-12.67	AVG

(MHz)

24400.00

28300.00

32200.00

16600.00

12700.00

### Remarks:

20 10.0

1000.000 4900.00

- 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
- 2.Margin value = Level -Limit value

8800.00



50

1000.000 4900.00

Ant No.: Ant 1 + Ant 2 Ant. Pol.: Horizontal **Test Mode:** TX 802.11ac(VHT20) Mode 5240MHz (U-NII-1) Remark: No report for the emission which more than 10 dB below the prescribed limit. 110.0 dBuV/m 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV

į								
	No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
	1	10480.062	47.74	7.08	54.82	74.00	-19.18	peak
	2 *	10480.318	34.48	7.08	41.56	54.00	-12.44	AVG

12700.00 16600.00 (MHz)

#### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

2 X

8800.00

24400.00 28300.00 32200.00 36100.00 40000.00

FCC Part 15C 3M Above-1G AV

32200.00 36100.00

40000.00



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1000.000 4900.00

Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical **Test Mode:** TX 802.11ac(VHT20) Mode 5240MHz (U-NII-1) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 ž

	No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
Ì	1 *	10480.448	34.57	7.08	41.65	54.00	-12.35	AVG
	2	10480.499	47.88	7.08	54.96	74.00	-19.04	peak

(MHz)

24400.00 28300.00

#### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

½

12700.00

16600.00

8800.00

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Ant No.:

Ant 1 + Ant 2

Ant. Pol.:

Horizontal

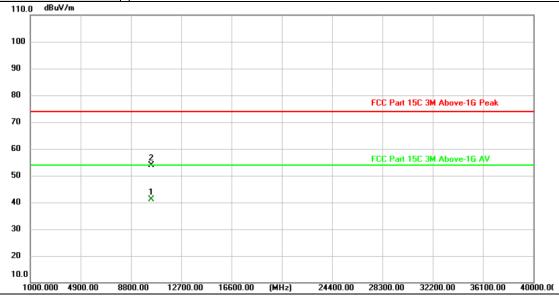
Test Mode:

TX 802.11n(HT40) Mode 5190MHz (U-NII-1)

Remark:

No report for the emission which more than 10 dB below the prescribed limit.

Report No.: CTC20232381E05



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1 *	10379.582	34.26	6.81	41.07	54.00	-12.93	AVG
2	10379.693	46.98	6.81	53.79	74.00	-20.21	peak

#### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

24400.00 28300.00 32200.00 36100.00 40000.00



50

40

30

20 10.0

1000.000 4900.00

Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical **Test Mode:** TX 802.11n(HT40) Mode 5190MHz (U-NII-1) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110 0 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV

	No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
ľ	1	10379.668	47.02	6.81	53.83	74.00	-20.17	peak
ľ	2 *	10380.280	34.18	6.81	40.99	54.00	-13.01	AVG

12700.00 16600.00 (MHz)

# Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

2 X

8800.00

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Ant No.: Ant 1 + Ant 2

Ant. Pol.: Horizontal

Test Mode: TX 802.11n(HT40) Mode 5230MHz (U-NII-1)

Remark: No report for the emission which more than 10 dB below the prescribed limit.

Report No.: CTC20232381E05



ĺ	No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin	Detector
	1 *	10459.585	34.30	7.04	41.34	` '	-12.66	AVG
	2	10459.699	47.70	7.04	54.74	74.00	-19.26	peak

# Remarks:

- 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
- 2.Margin value = Level -Limit value



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical **Test Mode:** TX 802.11n(HT40) Mode 5230MHz (U-NII-1) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 ខព FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV 50

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1 *	10459.650	34.48	7.04	41.52	54.00	-12.48	AVG
2	10459.795	48.21	7.04	55.25	74.00	-18.75	peak

(MHz)

24400.00 28300.00

32200.00 36100.00

40000.00

#### Remarks:

1000.000 4900.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

1 X

8800.00

12700.00

16600.00

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50

40 30

20 10.0

1000.000 4900.00

Ant No.: Ant 1 + Ant 2 Ant. Pol.: Horizontal **Test Mode:** TX 802.11ac(VHT40) Mode 5190MHz (U-NII-1) Remark: No report for the emission which more than 10 dB below the prescribed limit. 110.0 dBuV/m 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector	
1	10379.641	47.96	6.81	54.77	74.00	-19.23	peak	

41.11

24400.00 28300.00 32200.00 36100.00 40000.00

54.00

-12.89

AVG

12700.00 16600.00 (MHz)

34.30

# Remarks:

2 \*

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

6.81

2.Margin value = Level -Limit value

10380.247

2 X

8800.00

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40000.00

36100.00



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical **Test Mode:** TX 802.11ac(VHT40) Mode 5190MHz (U-NII-1) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 2 X FCC Part 15C 3M Above-1G AV 50 1 X 40 30

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1 *	10379.670	34.31	6.81	41.12	54.00	-12.88	AVG
2	10380.201	47.78	6.81	54.59	74.00	-19.41	peak

(MHz)

24400.00

28300.00

32200.00

#### Remarks:

20 10.0

1000.000 4900.00

8800.00

12700.00

16600.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant No.:

Ant 1 + Ant 2

Ant. Pol.:

Horizontal

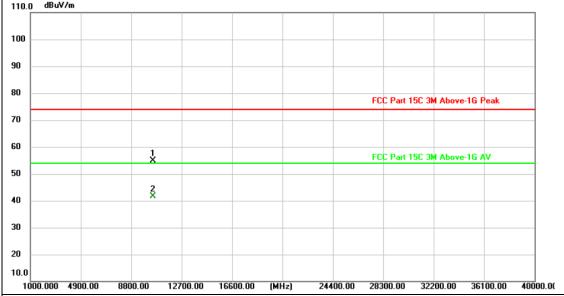
Test Mode:

TX 802.11ac(VHT40) Mode 5230MHz (U-NII-1)

Remark:

No report for the emission which more than 10 dB below the prescribed limit.

Report No.: CTC20232381E05



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	10459.977	47.74	7.04	54.78	74.00	-19.22	peak
2 *	10460.214	34.50	7.04	41.54	54.00	-12.46	AVG

## Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

32200.00

36100.00

40000.00



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical **Test Mode:** TX 802.11ac(VHT40) Mode 5230MHz (U-NII-1) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 ខា FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV 50 1 X 40 30

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1 *	10459.535	34.38	7.04	41.42	54.00	-12.58	AVG
2	10459.694	47.41	7.04	54.45	74.00	-19.55	peak

(MHz)

24400.00

28300.00

#### Remarks:

20 10.0

1000.000 4900.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

8800.00

12700.00

16600.00

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Ant No.: Ant 1 + Ant 2 Ant. Pol.: Horizontal **Test Mode:** TX 802.11ac(VHT80) Mode 5210MHz (U-NII-1) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 ខព FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV 50

ı	ı							
	No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
	1 *	10419.706	34.21	6.92	41.13	54.00	-12.87	AVG
	2	10420.478	47.24	6.92	54.16	74.00	-19.84	peak

(MHz)

24400.00

28300.00

32200.00

40000.00

36100.00

#### Remarks:

40 30

20 10.0

1000.000 4900.00

8800.00

12700.00

16600.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

24400.00 28300.00 32200.00 36100.00 40000.00



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical **Test Mode:** TX 802.11ac(VHT80) Mode 5210MHz (U-NII-1) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV 50 2 X 40 30

								_
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector	
1	10419.834	47.37	6.92	54.29	74.00	-19.71	peak	
2 *	10420.432	34.18	6.92	41.10	54.00	-12.90	AVG	ſ

12700.00 16600.00 (MHz)

#### Remarks:

20 10.0

1000.000 4900.00

- 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
- 2.Margin value = Level -Limit value

8800.00



Ant No.: Ant 1 Ant. Pol.: Horizontal **Test Mode:** TX 802.11a Mode 5745MHz (U-NII-3) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV 50 40 30 20 10.0

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	11489.730	46.21	7.46	53.67	74.00	-20.33	peak
2 *	11490.071	33.37	7.46	40.83	54.00	-13.17	AVG

(MHz)

28300.00

32200.00

40000.00

# Remarks:

1000.000 4900.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

12700.00

16600.00



Ant No.: Ant 1 Ant. Pol.: Vertical **Test Mode:** TX 802.11a Mode 5745MHz (U-NII-3) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV 50 2 X 40 30 20 10.0

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	11490.157	46.71	7.46	54.17	74.00	-19.83	peak
2 *	11490.467	33.39	7.46	40.85	54.00	-13.15	AVG

(MHz)

24400.00

28300.00

32200.00

36100.00

40000.00

### Remarks:

1000.000 4900.00

8800.00

12700.00

16600.00

- 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
- 2.Margin value = Level -Limit value



Ant No.: Ant 1 Ant. Pol.: Horizontal **Test Mode:** TX 802.11a Mode 5785MHz (U-NII-3) Remark: No report for the emission which more than 10 dB below the prescribed limit. 110.0 dBuV/m 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV 50 <u>2</u> 40 30 20

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	11570.201	45.73	7.40	53.13	74.00	-20.87	peak
2 *	11570.327	32.44	7.40	39.84	54.00	-14.16	AVG

12700.00 16600.00 (MHz)

### Remarks:

1000.000 4900.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

8800.00

24400.00 28300.00 32200.00 36100.00 40000.00



Ant No.: Ant 1 Ant. Pol.: Vertical **Test Mode:** TX 802.11a Mode 5785MHz (U-NII-3) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV 50

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	11569.684	45.65	7.40	53.05	74.00	-20.95	peak
2 *	11570.022	32.60	7.40	40.00	54.00	-14.00	AVG

(MHz)

24400.00

28300.00

32200.00

36100.00

40000.00

### Remarks:

1000.000 4900.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

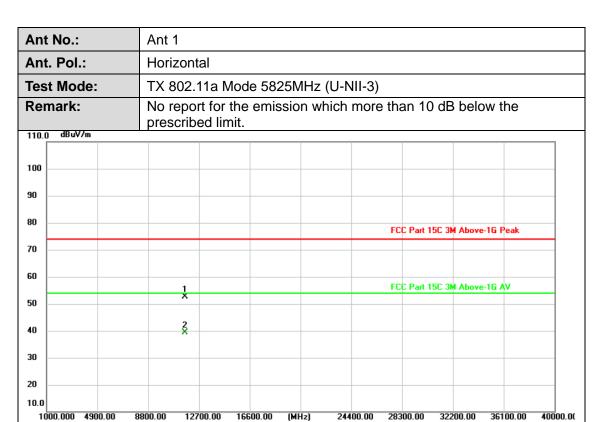
2.Margin value = Level -Limit value

8800.00

12700.00

16600.00





No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	11650.087	45.17	7.35	52.52	74.00	-21.48	peak
2 *	11650.274	31.95	7.35	39.30	54.00	-14.70	AVG

## Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

32200.00 36100.00 40000.00



Ant No.: Ant 1 Ant. Pol.: Vertical **Test Mode:** TX 802.11a Mode 5825MHz (U-NII-3) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 ខា FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV 50

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	11650.142	44.86	7.35	52.21	74.00	-21.79	peak
2 *	11650.177	31.96	7.35	39.31	54.00	-14.69	AVG

24400.00 28300.00

16600.00 (MHz)

## Remarks:

**4**0

20 10.0

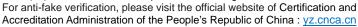
1000.000 4900.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

8800.00

12700.00







Ant No.:

Ant 1 + Ant 2

Ant. Pol.:

Horizontal

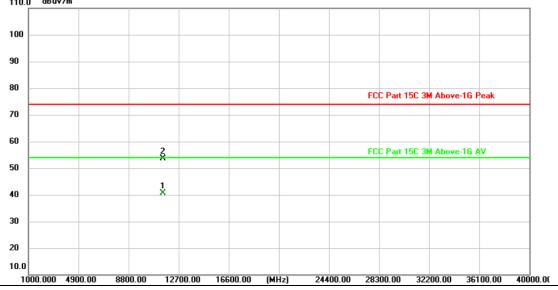
Test Mode:

TX 802.11n(HT20) Mode 5745MHz (U-NII-3)

Remark:

No report for the emission which more than 10 dB below the prescribed limit.

Report No.: CTC20232381E05



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1 *	11489.680	33.23	7.46	40.69	54.00	-13.31	AVG
2	11490.162	46.22	7.46	53.68	74.00	-20.32	peak

#### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

24400.00 28300.00 32200.00 36100.00 40000.00



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical **Test Mode:** TX 802.11n(HT20) Mode 5745MHz (U-NII-3) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-16 AV 50 1 X 40 30

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1 *	11489.648	33.48	7.46	40.94	54.00	-13.06	AVG
2	11490.498	47.10	7.46	54.56	74.00	-19.44	peak

12700.00 16600.00 (MHz)

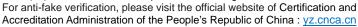
#### Remarks:

20 10.0

1000.000 4900.00

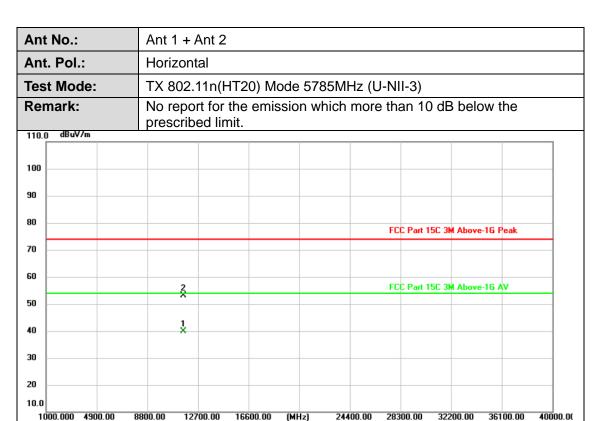
8800.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor









No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1 *	11570.442	32.41	7.40	39.81	54.00	-14.19	AVG
2	11570.456	45.80	7.40	53.20	74.00	-20.80	peak

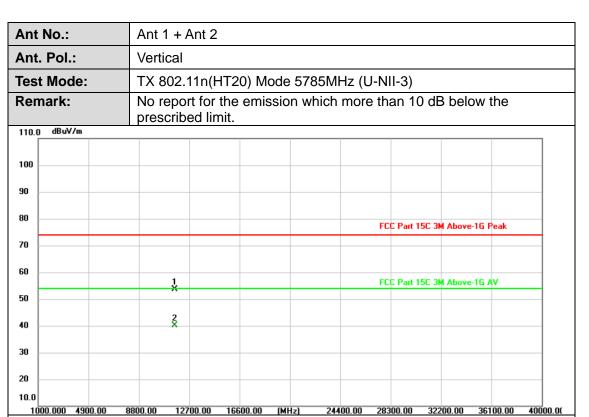
# Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

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No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	11570.240	46.33	7.40	53.73	74.00	-20.27	peak
2 *	11570.447	32.63	7.40	40.03	54.00	-13.97	AVG

### Remarks:

 $1. Factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ Factor \ (dB) - Pre-amplifier \ Factor$ 



Ant No.:

Ant 1 + Ant 2

Ant. Pol.:

Horizontal

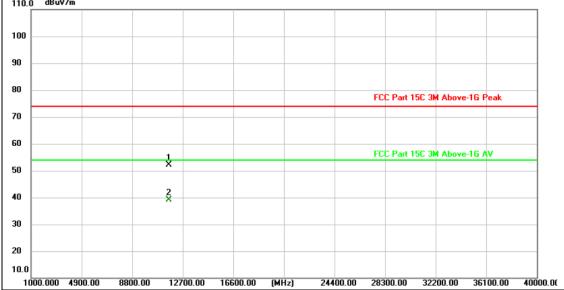
Test Mode:

TX 802.11n(HT20) Mode 5825MHz (U-NII-3)

Remark:

No report for the emission which more than 10 dB below the prescribed limit.

Report No.: CTC20232381E05



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No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector	
1	11649.799	44.78	7.35	52.13	74.00	-21.87	peak	
2 *	11649.826	31.74	7.35	39.09	54.00	-14.91	AVG	Γ

#### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical **Test Mode:** TX 802.11n(HT20) Mode 5825MHz (U-NII-3) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV 50 40 30

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1 *	11649.585	31.85	7.35	39.20	54.00	-14.80	AVG
2	11649.997	45.33	7.35	52.68	74.00	-21.32	peak

(MHz)

24400.00

28300.00

32200.00

36100.00

40000.00

#### Remarks:

20

1000.000 4900.00

8800.00

12700.00

16600.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant No.:

Ant 1 + Ant 2

Ant. Pol.:

Horizontal

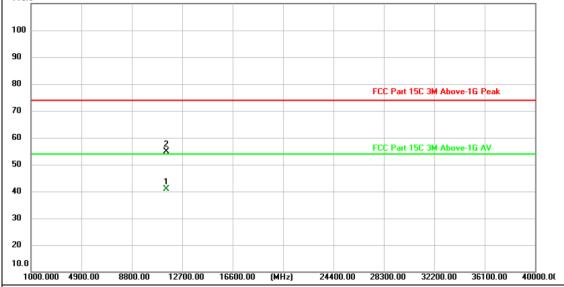
Test Mode:

TX 802.11ac(VHT20) Mode 5745MHz (U-NII-3)

Remark:

No report for the emission which more than 10 dB below the prescribed limit.

Report No.: CTC20232381E05



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1 *	11489.808	33.44	7.46	40.90	54.00	-13.10	AVG
2	11490.223	47.32	7.46	54.78	74.00	-19.22	peak

## Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant No.:

Ant 1 + Ant 2

Ant. Pol.:

Vertical

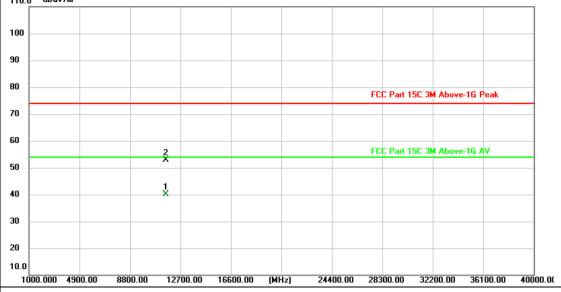
Test Mode:

TX 802.11ac(VHT20) Mode 5745MHz (U-NII-3)

Remark:

No report for the emission which more than 10 dB below the prescribed limit.

Report No.: CTC20232381E05



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1 *	11569.926	32.66	7.40	40.06	54.00	-13.94	AVG
2	11570.106	45.56	7.40	52.96	74.00	-21.04	peak

# Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant No.	:	Ant 1 +	Ant 2							
Ant. Po	l.:	Horizon	tal							
Test Mo	de:	TX 802.	TX 802.11ac(VHT20) Mode 5785MHz (U-NII-3)							
Remark	<b>(:</b>	No repo			on which	more th	an 10 d	dB belo	w the	
110.0 dB	uV/m									
100										_
90										-
80						FC	C Part 15C	3M Above	-1G Peak	-
70										
60		2				FC	C Part 15C	3M Above	-16 AV	
50		×								
40		1 ×								
30										
20										
10.0	3 4900.00	8800.00 12	700.00 16	600.00 (N	(Hz) 244	00.00 28	300.00 3	2200.00	36100.00	40000

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1 *	11570.304	32.54	7.40	39.94	54.00	-14.06	AVG
2	11570.350	45.87	7.40	53.27	74.00	-20.73	peak

# Remarks:

1. Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical **Test Mode:** TX 802.11ac(VHT20) Mode 5785MHz (U-NII-3) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV 50 2 X 40

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	11569.902	45.37	7.40	52.77	74.00	-21.23	peak
2 *	11570.342	32.58	7.40	39.98	54.00	-14.02	AVG

8800.00 12700.00 16600.00 (MHz) 24400.00 28300.00 32200.00 36100.00 40000.00

#### Remarks:

30

20

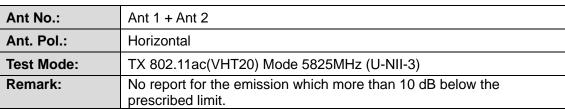
1000.000 4900.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

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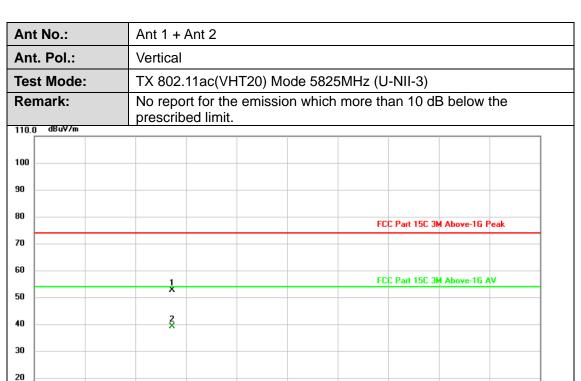
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	I	Margin (dB)	Detector
1 *	11649.646	32.02	7.35	39.37	54.00	-14.63	AVG
2	11650.474	44.69	7.35	52.04	74.00	-21.96	peak

#### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

40000.00





No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	11649.586	45.22	7.35	52.57	74.00	-21.43	peak
2 *	11650.390	31.82	7.35	39.17	54.00	-14.83	AVG

(MHz)

24400.00 28300.00 32200.00 36100.00

## Remarks:

1000.000 4900.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

8800.00

12700.00

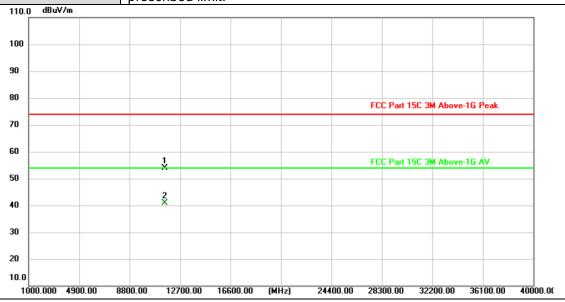
16600.00



Ant No.: Ant 1 + Ant 2

Report No.: CTC20232381E05

Ant. Pol.:	Horizontal
Test Mode:	TX 802.11n(HT40) Mode 5755MHz (U-NII-3)
Remark:	No report for the emission which more than 10 dB below the prescribed limit.



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	11509.647	46.56	7.44	54.00	74.00	-20.00	peak
2 *	11510.084	33.40	7.44	40.84	54.00	-13.16	AVG

## Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

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40000.00



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical **Test Mode:** TX 802.11n(HT40) Mode 5755MHz (U-NII-3) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV 50 1 X 40 30

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1 *	11509.530	33.60	7.43	41.03	54.00	-12.97	AVG
2	11510.458	47.32	7.44	54.76	74.00	-19.24	peak

16600.00 (MHz)

## Remarks:

20 10.0

1000.000 4900.00

8800.00

12700.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

24400.00 28300.00 32200.00 36100.00



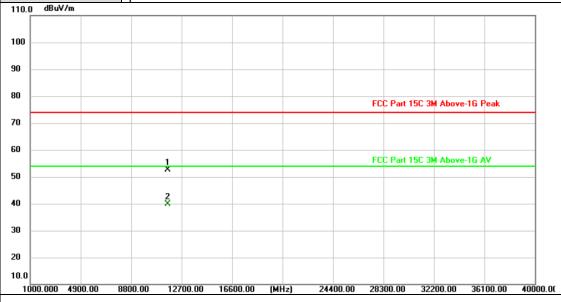
Ant No.: Ant 1 + Ant 2

Ant. Pol.: Horizontal

Test Mode: TX 802.11n(HT40) Mode 5795MHz (U-NII-3)

Remark: No report for the emission which more than 10 dB below the prescribed limit.

Report No.: CTC20232381E05



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	11589.618	45.36	7.39	52.75	74.00	-21.25	peak
2 *	11590.062	32.43	7.39	39.82	54.00	-14.18	AVG

### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

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Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical **Test Mode:** TX 802.11n(HT40) Mode 5795MHz (U-NII-3) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV 50 40

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1 *	11589.665	32.38	7.39	39.77	54.00	-14.23	AVG
2	11590.423	45.71	7.39	53.10	74.00	-20.90	peak

(MHz)

24400.00 28300.00 32200.00 36100.00

## Remarks:

30

20 10.0

1000.000 4900.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

8800.00

12700.00

16600.00

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Ant. Pol.: Ant 1 + Ant 2

Ant. Pol.: Horizontal

Test Mode: TX 802.11ac(VHT40) Mode 5755MHz (U-NII-3)

Remark: No report for the emission which more than 10 dB below the prescribed limit.

110.0 dBuV/m

100
90
80
70
FCC Part 15C 3M Above-16 Peak



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1 *	11509.558	33.50	7.43	40.93	54.00	-13.07	AVG
2	11510.375	46.86	7.44	54.30	74.00	-19.70	peak

#### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



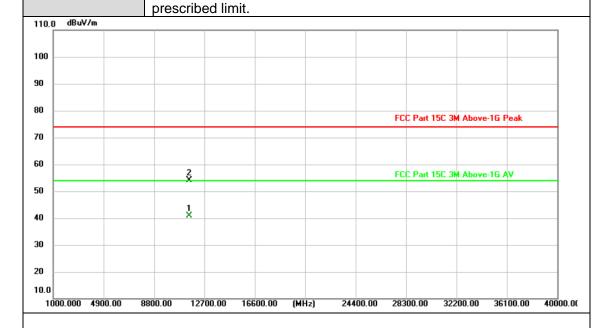
Ant No.:

Ant. Pol.:

Remark:

Ant 1 + Ant 2 Vertical **Test Mode:** TX 802.11ac(VHT40) Mode 5755MHz (U-NII-3) No report for the emission which more than 10 dB below the

Report No.: CTC20232381E05

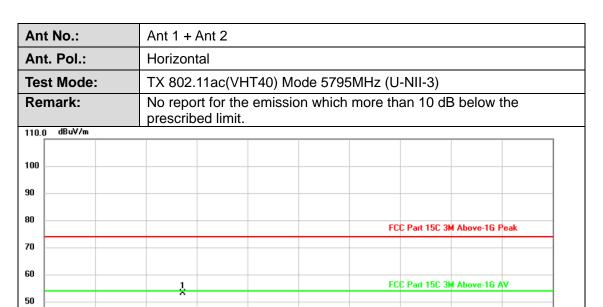


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1 *	11509.708	33.44	7.44	40.88	54.00	-13.12	AVG
2	11510.317	46.67	7.44	54.11	74.00	-19.89	peak

#### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor





No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	11589.972	45.78	7.39	53.17	74.00	-20.83	peak
2 *	11589.976	32.32	7.39	39.71	54.00	-14.29	AVG

12700.00 16600.00 (MHz)

### Remarks:

40

30

20 10.0

1000.000 4900.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

2

8800.00

24400.00 28300.00 32200.00 36100.00 40000.00



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical **Test Mode:** TX 802.11ac(VHT40) Mode 5795MHz (U-NII-3) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 ខព FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV 50 40 30

ĺ	No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
	1 *	11589.593	32.65	7.39	40.04	54.00	-13.96	AVG
	2	11590.088	45.62	7.39	53.01	74.00	-20.99	peak

(MHz)

24400.00

28300.00

32200.00

36100.00

40000.00

### Remarks:

20

1000.000 4900.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

8800.00

12700.00

16600.00

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50

40

30 20 10.0

1000.000 4900.00

Ant No.: Ant 1 + Ant 2 Ant. Pol.: Horizontal **Test Mode:** TX 802.11ac(VHT80) Mode 5775MHz (U-NII-3) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 80 FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	11549.967	45.80	7.42	53.22	74.00	-20.78	peak
2 *	11550.002	32.78	7.42	40.20	54.00	-13.80	AVG

#### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

2 X

12700.00 16600.00 (MHz)

8800.00

24400.00 28300.00 32200.00 36100.00 40000.00



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical **Test Mode:** TX 802.11ac(VHT80) Mode 5775MHz (U-NII-3) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 RΠ FCC Part 15C 3M Above-1G Peak 70 60 FCC Part 15C 3M Above-1G AV 50 40 30 20

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1 *	11549.505	32.94	7.42	40.36	54.00	-13.64	AVG
2	11549.873	45.91	7.42	53.33	74.00	-20.67	peak

(MHz)

24400.00

28300.00

32200.00

36100.00

40000.00

#### Remarks:

10.0

1000.000 4900.00

8800.00

12700.00

16600.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

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# 3.3. Band Edge Emissions

#### Limit

### Limits of unwanted emission out of the restricted bands

### FCC CFR Title 47 Part 15 Subpart C Section 15.407(b)/ RSS-247 6.2.1.2 & RSS-247 6.2.4.2

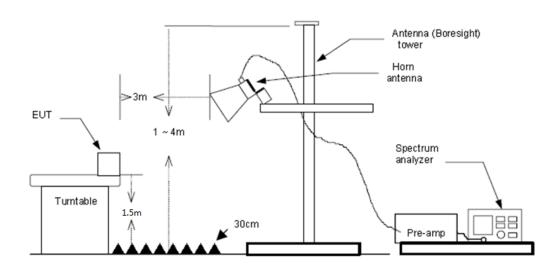
Frequency (MHz)	EIRP Limits (dBm)	Equivalent Field Strength at 3m (dBuV/m)
5150~5250	-27	68.2
5250~5350	-27	68.2
5470~5725	-27	68.2
	-27(Note 2)	68.2
5725~5825	10(Note 2)	105.2
3725~5625	15.6(Note 2)	110.8
	27(Note 2)	122.2

Note: 1. The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:  $E = \frac{1000000\sqrt{30P}}{1000000\sqrt{30P}}$  where P is the eiro (Watts)

strength:  $E = \frac{1000000\sqrt{30P}}{3}$  uV/m, where P is the eirp (Watts)

2. According to FCC 16-24, All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27dBm/MHz at the band edge.

### **Test Configuration**



#### **Test Procedure**

- 1. The EUT was setup and tested according to ANSI C63.10:2013 requirements.
- 2. The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
- 3. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
- 4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.

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The receiver set as follow:

RBW=1MHz. VBW=3MHz PEAK detector for Peak value.

RBW=1MHz, VBW see note 1 with Peak Detector for Average Value.

Note 1: For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 3 MHz for peak measurements and 1 MHz resolution bandwidth with 1/T video bandwidth with peak detector for average measurements. For the Duty Cycle please refer to clause Appendix E: Duty Cycle

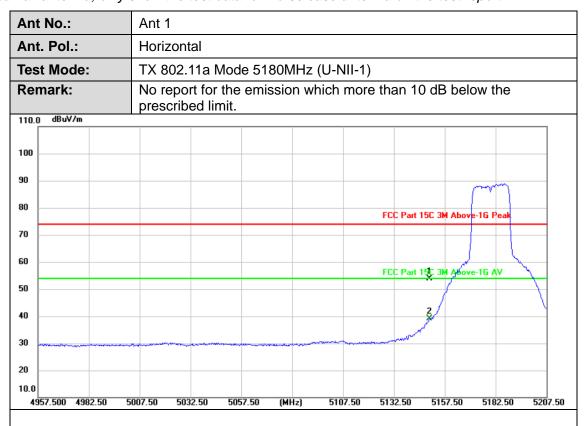
Report No.: CTC20232381E05

### **Test Mode**

Please refer to the clause 2.4.

#### **Test Results**

Pre-scan all antenna, only show the test data for worse case antenna on the test report.



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	5150.000	56.42	-2.48	53.94	74.00	-20.06	peak
2 *	5150.000	41.56	-2.48	39.08	54.00	-14.92	AVG

## Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

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5202.50

FCC Part 15C 3M Above-1G AV

5127.50



60

50

4952.500 4977.50

5002.50

5027.50

Ant No.: Ant 1 Vertical Ant. Pol.: **Test Mode:** TX 802.11a Mode 5180MHz (U-NII-1) Remark: No report for the emission which more than 10 dB below the prescribed limit. dBuV/m 110.0 100 90 80 FCC Part 15C 3M Above-16 Peak 70

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	l .	Margin (dB)	Detector
1	5150.000	51.52	-2.48	49.04	74.00	-24.96	peak
2 *	5150.000	34.64	-2.48	32.16	54.00	-21.84	AVG

(MHz)

## Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

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Ant	No.:		Ant 1								
Ant	. Pol.:		Horizo	ontal							
Tes	t Mode:		TX 80	)2.11a N	1ode 524	10MHz (	U-NII-1)				
Rer	mark:			port for ribed lim		sion wh	ich more	than 10	dB belo	ow the	
110.0	g dBuV/m										_
100											
90	- man	1									
80								FCC Part	15C 3M Abov	e-16 Peak	
70											
60	,	$\rightarrow$						FCC Part	15C 3M Abov	e-1G AV	
50		-				1 X					
40						2					
30			-	***************************************		J					~
20											
10.0	222.500 52 <b>4</b>	7.50	5272.50	5297.50	5322.50	(MHz)	5372.50	5397.50	5422.50	5447.50	54

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	5350.000	47.23	-2.14	45.09	74.00	-28.91	peak
2 *	5350.000	34.90	-2.14	32.76	54.00	-21.24	AVG

## Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



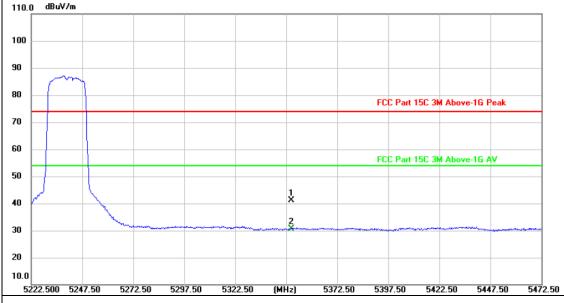
Ant No.: Ant 1

Ant. Pol.: Vertical

Test Mode: TX 802.11a Mode 5240MHz (U-NII-1)

Remark: No report for the emission which more than 10 dB below the prescribed limit.

Report No.: CTC20232381E05



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	5350.000	43.39	-2.14	41.25	74.00	-32.75	peak
2 *	5350.000	32.87	-2.14	30.73	54.00	-23.27	AVG

## Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant	: No.:	Ant 1 +	Ant 2					
Ant	. Pol.:	Horizon	tal					
Tes	t Mode:	TX 802	11n(HT2	0) Mode 518	30MHz (U	I-NII-1)		
Rer	mark:		ort for the ed limit.	emission w	nich more	than 10 c	B below to	ne
110.0	) dBuV/m							
100								
90							المبالم	-m
80						FCC Part 150	3M Above-1G I	eak.
70								
60						FCC Part 150	3M Above-16	v
50						1 X	production of the same of the	- Mary
40						2 2	/	1
30						*		
20 10.0								
	57.500 4982.50	5007.50 50	32.50 50	57.50 (MHz)	5107.50	5132.50	5157.50 518	32.50 520

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	5150.000	44.50	-2.48	42.02	74.00	-31.98	peak
2 *	5150.000	35.42	-2.48	32.94	54.00	-21.06	AVG

## Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant	No.:		Ant 1	+ Ant 2							
Ant	. Pol.:		Vertic	al							
Tes	t Mode:		TX 80	TX 802.11n(HT20) Mode 5180MHz (U-NII-1)							
Rer	nark:			oort for t		ion whi	ch more	e than 10	dB belo	ow the	
110.0	dBuV/m										
100											
90											
80								FCC Part	15C 3M Above	e-1G Peak	
70											
60								FCC Part	15C 3M Above	-1G AV	
50									1		
40									· k		1
30	<del></del>	And the same							2		
20											
10.0	52.500 4977.		002.50	5027.50	5052.50	(MHz)	5102.50	5127.50	5152.50	5177.50	520

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	5150.000	44.80	-2.48	42.32	74.00	-31.68	peak
2 *	5150.000	33.31	-2.48	30.83	54.00	-23.17	AVG

### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

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Ant	90 80 70		Ant 1	+ Ant 2	2						
Ant.	. Pol.:		Horiz	ontal							
Tes	t Mode:		TX 80	02.11n(l	HT20) M	ode 5240	OMHz (L	J-NII-1)			
Ren	nark:			port for		ssion wh	ich more	e than 1	0 dB bel	ow the	
110.0	0 dBuV/m										
100											
90	John	1									
80								FCC Part	15C 3M Abov	e-1G Peak	
70											
60	الر							FCC Part	15C 3M Abov	e-16 AV	
50	<u> </u>	- N				1 X					
40		1	_			2					
30			-	and the same of th	and the same	~~~×~~	- Joseph - Lander				
20											
10.0		47.50	5272.50	5297.50	5322.50	(MHz)	5372.50	5397.50	5422.50	5447.50	5472.

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	5350.000	44.89	-2.14	42.75	74.00	-31.25	peak
2 *	5350.000	34.23	-2.14	32.09	54.00	-21.91	AVG

### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant	No.:		Ant 1	+ Ant 2							
Ant	. Pol.:		Vertic	al							
Tes	t Mode:		TX 80	TX 802.11n(HT20) Mode 5240MHz (U-NII-1)							
Rer	nark:			oort for ribed lin		ssion wh	ich more	e than 10	dB belo	ow the	
110.0	) dBuV/m										
100											
90	~~~										
80		}						FCC Part	15C 3M Abov	re-1G Peak	
70											
60								FCC Part	15C 3M Abov	re-1G AV	
50	J	igg(				1					
40	<u>~</u>	The same of	<b></b>			2 2					
30			- The second			<del>X</del>		The second second	4	***************************************	
20 10.0											
52	222.500 524	7.50	5272.50	5297.50	5322.50	(MHz)	5372.50	5397.50	5422.50	5447.50	547

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	5350.000	43.39	-2.14	41.25	74.00	-32.75	peak
2 *	5350.000	32.87	-2.14	30.73	54.00	-23.27	AVG

## Remarks:

1. Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant	t No.:	Ant 1 + Ant 2							
Ant	t. Pol.:	Horizontal							
Tes	t Mode:	TX 802.11ac(VHT20) N	TX 802.11ac(VHT20) Mode 5180MHz (U-NII-1)						
Rei	mark:	No report for the emiss prescribed limit.	sion which more than 10 dB below the						
110.0	) dBuV/m								
100									
90			June 1						
80			FCC Part 15C 3M Above-16 Peak						
70									
60			FCC Part 15C 3M Above-1G AV						
50			1 1						
40			3						
30	<del></del>		5						
20									
10.0	957.500 4982.50	5007.50 5032.50 5057.50	(MHz) 5107.50 5132.50 5157.50 5182.50 52						

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	5150.000	47.44	-2.48	44.96	74.00	-29.04	peak
2 *	5150.000	34.02	-2.48	31.54	54.00	-22.46	AVG

#### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant	No.:	Ant 1 + Ant 2								
Ant	. Pol.:	Vertical								
Tes	t Mode:	TX 802.11ac(VHT20) Mode 5180MHz (U-NII-1)								
Rer	nark:	No report for the emission which more than 10 dB below the prescribed limit.								
110.0	) dBuV/m									
100										
90										
80		FCC Part 15C 3M Above-1G Peak								
70										
60		FCC Part 15C 3M Above-16 AV								
50										
40		1 k								
30		3								
20										
10.0	52.500 4977.50	5002.50 5027.50 5052.50 (MHz) 5102.50 5127.50 5152.50 5177.50 5								

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	5150.000	44.85	-2.48	42.37	74.00	-31.63	peak
2 *	5150.000	32.89	-2.48	30.41	54.00	-23.59	AVG

## Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant l	No.:		Ant 1	+ Ant 2							
Ant.	Pol.:		Horizo	ntal							
Test	Mode:		TX 80	TX 802.11ac(VHT20) Mode 5240MHz (U-NII-1)							
Rem	ark:			ort for t		sion whic	ch more	than 10	dB belo	w the	
110.0	dBuV/m										
100											
90	many	<u> </u>									
80								FCC Part 1	5C 3M Above	e-1G Peak	
70											
60		4						FCC Part 1	5C 3M Above	e-1G AV	
50		+				_					
40		$\longrightarrow$				×					
30			Marine and			3					
20											
10.0											

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	5350.000	43.63	-2.14	41.49	74.00	-32.51	peak
2 *	5350.000	33.90	-2.14	31.76	54.00	-22.24	AVG

### Remarks:

- 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
- 2.Margin value = Level -Limit value



Ant	No.:		Ant 1	+ Ant 2							
Ant. Pol.: Vertical  Test Mode: TX 802.11ac(VHT20) Mode 5240MHz (U-N											
Test	t Mode:		TX 80	2.11ac(	VHT20) I	Mode 52	40MHz (I	J-NII-1)			
Ren	nark:			ort for tibed lim		sion whic	ch more t	han 10	dB belo	w the	
110.0	dBuV/m										
100											
90											
80								FCC Part 150	3M Above-	16 Peak	
70								CO T GIT TO	J GII ABOVE	Tu Tuuk	
60								FCC Part 150	\ 214 AL	10.44	
50								FLC Part 150	, 3M ADOVE-	IG AV	
40	1	1				1 ×					
30			·			2					
20											
10.0											

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	5350.000	44.26	-2.14	42.12	74.00	-31.88	peak
2 *	5350.000	32.86	-2.14	30.72	54.00	-23.28	AVG

## Remarks:

 $1. Factor \ (dB/m) = Antenna \ Factor \ (dB/m) + Cable \ Factor \ (dB) - Pre-amplifier \ Factor$ 



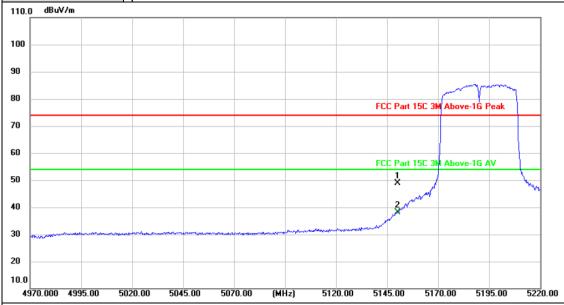
Ant No.: Ant 1 + Ant 2

Ant. Pol.: Horizontal

Test Mode: TX 802.11n(HT40) Mode 5190MHz (U-NII-1)

Remark: No report for the emission which more than 10 dB below the prescribed limit.

Report No.: CTC20232381E05



								_
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector	
1	5150.000	51.24	-2.48	48.76	74.00	-25.24	peak	
2 *	5150.000	40.50	-2.48	38.02	54.00	-15.98	AVG	

### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Δnŧ	. Pol.:	Vertica								
Tes	t Mode:	TX 802	².11n(H <sup>⁻</sup>	T40) Mo	ode 519	0MHz (U	J-NII-1)			
Ren	nark:		ort for t		sion wh	ich more	than 10	dB bel	ow the	
110.0	) dBuV/m									
100										
90										
80							ECC D-4	5C 3M Abov	10.0	anna n
70							FLL Part	OL 3M ADOV	e-16 Peak	$\dashv$
70										
60							FCC Part 1	5C 3M Abov	e-16 AV	$\rightarrow$
50							Toorak	JU SI AUST		
							1 X			1
40							2	-North Control		
30				and the same production.			Marie Company	r		
20										
10.0										

No.	Frequency (MHz)	Reading (dBuV)		Level (dBuV/m)		Margin (dB)	Detector
1	5150.000	45.53	-2.48	43.05	74.00	-30.95	peak
2 *	5150.000	35.61	-2.48	33.13	54.00	-20.87	AVG

### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant	No.:	Ant 1 +	Ant 2							
Ant	nt. Pol.: Horizontal									
Tes	t Mode:	TX 802	TX 802.11n(HT40) Mode 5230MHz (U-NII-1)							
Rer	mark:	No repo			sion wh	nich more	e than 10	dB belo	ow the	
110.0	) dBuV/m									
100										
90										
80		}					FCC Part	15C 3M Abov	e-1G Peak	
70										
60							ECC Part	15C 3M Abov	o-16 AV	
50		1					rccran	TOC SHI ADDY	e-Id AV	
40	<i>/</i> *	and the second				1 X				
			1	-tubber paragraphy		2				
30			,							and the same of th
20										
10.0	202.500 5227.50 !	5252.50 52	77.50	5302.50	(MHz)	5352.50	5377.50	5402.50	5427.50	545

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	5350.000	43.34	-2.14	41.20	74.00	-32.80	peak
2 *	5350.000	33.84	-2.14	31.70	54.00	-22.30	AVG

## Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant No.:	Ant 1 + Ant 2						
Ant. Pol.:	Vertical						
Test Mode:	TX 802.11n(HT40) Mode 5230MHz (U-NII-1)						
Remark:	No report for the emission which more than 10 dB below the prescribed limit.						
110.0 dBuV/m							
100							
90							
80	FCC Part 15C 3M Above-16 Peak						
70							
60	FCC Part 15C 3M Above-16 AV						
50							
40	1						
30	2						
20							
10.0							

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	5350.000	42.77	-2.14	40.63	74.00	-33.37	peak
2 *	5350.000	33.54	-2.14	31.40	54.00	-22.60	AVG

## Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



An	t No.:	Ant 1 + Ant 2						
An	t. Pol.:	Horizontal						
Tes	st Mode:	TX 802.11ac(VHT40) Mode 5190MHz (U-NII-1)						
Re	mark:	No report for the emission which more than 10 dB be prescribed limit.	low the					
110.	0 dBuV/m							
100								
90								
80		FCC Part 15C 3M Abo	ove-1G Peak					
70								
60		FCC Part 15C 3N Abo	ove-1G AV					
50		1 X	- V					
40		2,000						
30	water of the formal of the same	application of the state of the						
20								
10.0	970.000 4995.00	020.00 5045.00 5070.00 (MHz) 5120.00 5145.00 5170.00	5195.00 522					

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	5150.000	51.89	-2.48	49.41	74.00	-24.59	peak
2 *	5150.000	40.77	-2.48	38.29	54.00	-15.71	AVG

### Remarks:

- 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
- 2.Margin value = Level -Limit value



Ant	No.:	Ant 1	+ Ant 2							
Ant	. Pol.:	Vertic	al							
Tes	t Mode:	TX 80	)2.11ac(\	′HT40) N	Mode 51	90MHz	(U-NII-1	)		
Rer	mark:		port for th		sion whi	ch more	than 10	dB belo	ow the	
110.0	) dBuV/m	•								
100										
90										
80							FCC Part 1	5C 3M Abov	e-16 Peak	
70										$\exists$
60							FCC Part 1	5C 3M Abov	e-1G AV	$\dashv$
50							1			$\dashv$
40							2 2	200		
30				مدر و المعاول و	matter the state of the state o	Marine Marine	and the same of th			
20										
10.0	362.500 <b>4</b> 987.50	5012.50	5037.50	5062.50	(MHz)	5112.50	5137.50	5162.50	5187.50	521

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	5150.000	45.43	-2.48	42.95	74.00	-31.05	peak
2 *	5150.000	35.57	-2.48	33.09	54.00	-20.91	AVG

### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



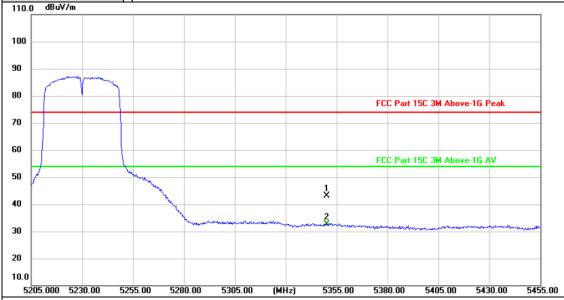
Ant No.:
Ant 1 + Ant 2

Ant. Pol.:
Horizontal

Test Mode:
TX 802.11ac(VHT40) Mode 5230MHz (U-NII-1)

Remark:
No report for the emission which more than 10 dB below the prescribed limit.

Report No.: CTC20232381E05



-								
	No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
	1	5350.000	45.36	-2.14	43.22	74.00	-30.78	peak
	2 *	5350.000	34.84	-2.14	32.70	54.00	-21.30	AVG

#### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



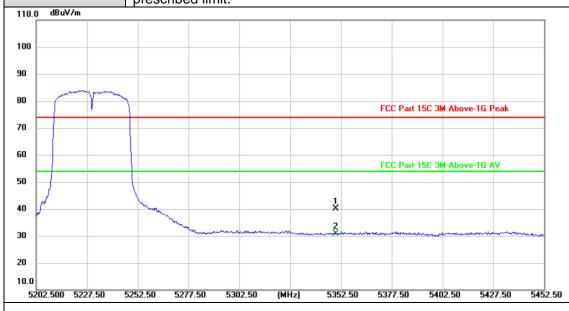
Ant No.: Ant 1 + Ant 2

Ant. Pol.: Vertical

Test Mode: TX 802.11ac(VHT40) Mode 5230MHz (U-NII-1)

Remark: No report for the emission which more than 10 dB below the prescribed limit.

Report No.: CTC20232381E05



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1	5350.000	42.31	-2.14	40.17	74.00	-33.83	peak
2 *	5350.000	32.91	-2.14	30.77	54.00	-23.23	AVG

## Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



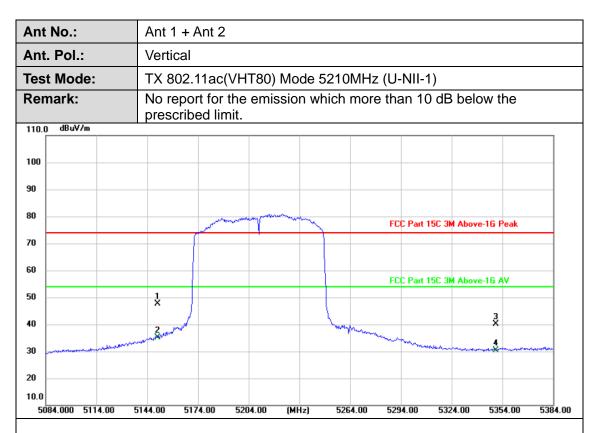
Ant	No.:	Ant 1 + A	1 + Ant 2							
Ant	. Pol.:	Horizont	tal							
Tes	t Mode:	TX 802.	11ac(VH	T80) Mo	de 5210MI	Hz (U-NII-1	)			
Ren	nark:	No repo prescrib		emissio	n which mo	ore than 10	dB below the			
110.0	dBuV/m									
100										
90										
80			- Andrews	myrama	many	FCC Part 1	5C 3M Above-1G Peak			
70										
60		1				FCC Part 1	5C 3M Above-1G AV			
50		×			- The same					
40		Zupon Mark			7 117	Sand Market Color	3			
30	and the state of t						man	***************************************		
20										
10.0 50	81.000 5111.00	5141.00 51	71.00 52	201.00 (MI	Hz) 5261.0	0 5291.00	5321.00 5351.00	538		

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	5150.000	55.10	-2.48	52.62	74.00	-21.38	peak
2 *	5150.000	42.63	-2.48	40.15	54.00	-13.85	AVG
3	5350.000	42.78	-2.14	40.64	74.00	-33.36	peak
4	5350.000	33.70	-2.14	31.56	54.00	-22.44	AVG

### Remarks:

1. Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor





No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	5150.000	50.22	-2.48	47.74	74.00	-26.26	peak
2 *	5150.000	37.68	-2.48	35.20	54.00	-18.80	AVG
3	5350.000	42.29	-2.14	40.15	74.00	-33.85	peak
4	5350.000	32.40	-2.14	30.26	54.00	-23.74	AVG

## Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor





Ant No.: Ant 1 Ant. Pol.: Horizontal **Test Mode:** TX 802.11a Mode 5745MHz (U-NII-3) No report for the emission which more than 10 dB below the Remark: prescribed limit. dBuV/m 130.0 120 110 100 90 80 FCC Part15.407 U-NII-3 70 Margin -6 dB 60 50 40 30.0 5650.000 5677.50 5732.50 5760.00 (MHz) 5815.00 5842.50 5897.50 5925.00 5870.00

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	5725.000	56.29	-1.23	55.06	122.20	-67.14	peak

#### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant No.: Ant 1 Ant. Pol.: Vertical **Test Mode:** TX 802.11a Mode 5745MHz (U-NII-3) No report for the emission which more than 10 dB below the Remark: prescribed limit. dBuV/m 130.0 120 110 100 90 80 FCC Part15.407 U-NII-3 70 Margin -6 dB 60 50 40 5650.000 5677.50 5760.00 5925.00

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	5725.000	48.29	-1.23	47.06	122.20	-75.14	peak

(MHz)

5815.00

5842.50

5870.00

5897.50

5732.50

#### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant 1 Ant No.: Ant. Pol.: Horizontal **Test Mode:** TX 802.11a Mode 5825MHz (U-NII-3) No report for the emission which more than 10 dB below the Remark: prescribed limit. 130.0 dBuV/m 120 110 100 90 80 FCC Part15.407 U-NII-3 70 60 50 40 30.0

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	5850.000	56.62	-0.81	55.81	122.20	-66.39	peak

(MHz)

5815.00

5842.50

5870.00

5897.50

5925.00

#### Remarks:

5650.000 5677.50

5705.00

5732.50

5760.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant No.: Ant 1 Ant. Pol.: Vertical **Test Mode:** TX 802.11a Mode 5825MHz (U-NII-3) No report for the emission which more than 10 dB below the Remark: prescribed limit. dBuV/m 130.0 120 100 90 80 FCC Part15.407 U-NII-3 70 Margin -6 dB 60 50 40 5650.000 5677.50 5705.00 5760.00 (MHz) 5815.00 5842.50 5870.00 5897.50 5925.00 5732.50

No.	Frequency (MHz)			Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	5850.000	50.49	-0.81	49.68	122.20	-72.52	peak

## Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Horizontal **Test Mode:** TX 802.11n(HT20) Mode 5745MHz (U-NII-3) No report for the emission which more than 10 dB below the Remark: prescribed limit. dBuV/m 130.0 120 110 100 90 80 FCC Part15.407 U-NII-3 70 Margin -6 dB 60 50 40 30.0 5650.000 5677.50 5760.00 (MHz) 5925.00

No.	Frequency (MHz)			Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	5725.000	56.78	-1.23	55.55	122.20	-66.65	peak

### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical TX 802.11n(HT20) Mode 5745MHz (U-NII-3) **Test Mode:** No report for the emission which more than 10 dB below the Remark: prescribed limit. dBuV/m 130.0 120 100 90 80 FCC Part15.407 U-NII-3 70 Margin -6 dB 60 50 40 30.0 Med 5650.000 5677.50 5760.00 5705.00 5732.50 (MHz) 5815.00 5842.50 5870.00 5897.50 5925.00

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	5725.000	49.76	-1.23	48.53	122.20	-73.67	peak

#### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

For anti-fake verification, please visit the official website of Certification and Accreditation Administration of the People's Republic of China: <a href="yz.cnca.cn">yz.cnca.cn</a>



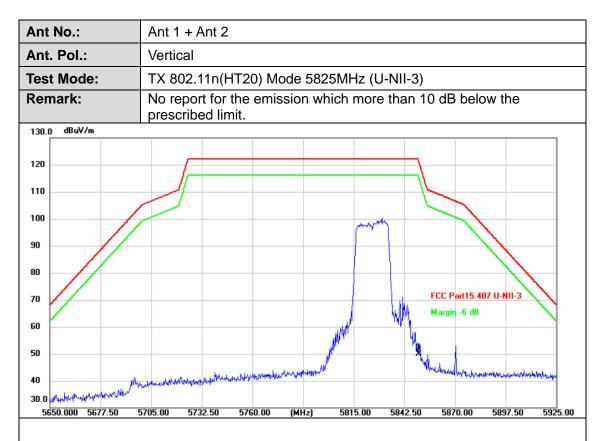
Ant No.: Ant 1 + Ant 2 Ant. Pol.: Horizontal **Test Mode:** TX 802.11n(HT20) Mode 5825MHz (U-NII-3) No report for the emission which more than 10 dB below the Remark: prescribed limit. 130.0 dBuV/m 120 110 100 90 ខព FCC Part15.407 U-NII-3 70 Margin -6 dB 60 50 40 30.0 5650.000 5677.50

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	5850.000	51.18	-0.81	50.37	122.20	-71.83	peak

#### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor





No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	5850.000	50.62	-0.81	49.81	122.20	-72.39	peak

### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

中国国家认证认可监督管理委员会



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Horizontal **Test Mode:** TX 802.11ac(VHT20) Mode 5745MHz (U-NII-3) No report for the emission which more than 10 dB below the Remark: prescribed limit. 130.0 dBuV/m 120 110 100 90 80 FCC Part15.407 U-NII-3 70 Margin -6 dB 60 50 40 30.0 5650.000 5677.50 (MHz) 5815.00 5925.00 5842.50

No.	Frequency (MHz)	Reading (dBuV)		Level (dBuV/m)		Margin (dB)	Detector
1 *	5725.000	53.93	-1.23	52.70	122.20	-69.50	peak

## Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

5925.00



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical TX 802.11ac(VHT20) Mode 5745MHz (U-NII-3) **Test Mode:** No report for the emission which more than 10 dB below the Remark: prescribed limit. dBuV/m 130.0 120 110 100 90 80 FCC Part15.407 U-NII-3 70 Margin -6 dB

No.	Frequency (MHz)	Reading (dBuV)		Level (dBuV/m)		Margin (dB)	Detector
1 *	5725.000	46.42	-1.23	45.19	122.20	-77.01	peak

(MHz)

5815.00

5842.50

5870.00

#### Remarks:

60

50

40

30.0 100 5677.50

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

5705.00

5732.50

5760.00



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Horizontal **Test Mode:** TX 802.11ac(VHT20) Mode 5825MHz (U-NII-3) No report for the emission which more than 10 dB below the Remark: prescribed limit. dBuV/m 130.0 120 110 100 90 80 FCC Part15.407 U-NII-3 70 Margin -6 dB 60 50 40 30.0 5650.000 5677.50 5705.00 5732.50 5760.00 (MHz) 5815.00 5842.50 5870.00 5897.50 5925.00

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	5850.000	54.91	-0.81	54.10	122.20	-68.10	peak

#### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical TX 802.11ac(VHT20) Mode 5825MHz (U-NII-3) **Test Mode:** No report for the emission which more than 10 dB below the Remark: prescribed limit. dBuV/m 130.0 120 110 100 90 80 FCC Part15.407 U-NII-3 70 Margin -6 dB 60 50 40 5650.000 5677.50 5705.00 5760.00 (MHz) 5815.00 5842.50 5870.00 5897.50 5925.00 5732.50

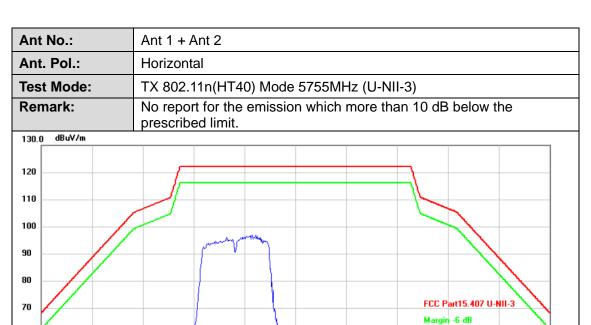
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	5850.000	50.62	-0.81	49.81	122.20	-72.39	peak

#### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

5925.00





No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	5725.000	53.91	-1.23	52.68	122.20	-69.52	peak

(MHz)

5815.00

5842.50

5870.00

5760.00

5732.50

## Remarks:

GΠ

50

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical **Test Mode:** TX 802.11n(HT40) Mode 5755MHz (U-NII-3) No report for the emission which more than 10 dB below the Remark: prescribed limit. 130.0 dBuV/m 120 110 100 90 80 FCC Part15.407 U-NII-3 70 Margin -6 dB 60 50 40 30.0 5650.000 5677.50 5760.00 (MHz) 5815.00 5842.50 5870.00 5897.50 5925.00

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	5725.000	45.77	-1.23	44.54	122.20	-77.66	peak

## Remarks:

- 1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor
- 2.Margin value = Level -Limit value



Ant No.:

Ant 1 + Ant 2

Ant. Pol.:

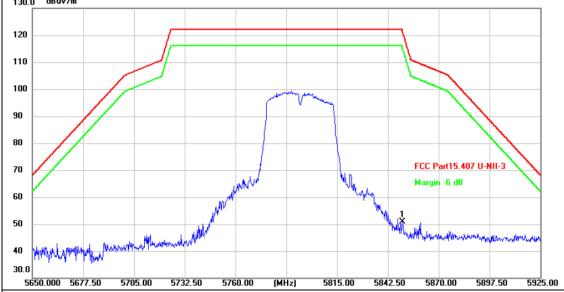
Horizontal

Test Mode:

TX 802.11n(HT40) Mode 5795MHz (U-NII-3)

Remark:

No report for the emission which more than 10 dB below the prescribed limit.



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	5850.000	51.75	-0.81	50.94	122.20	-71.26	peak

## Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

5870.00

5925.00

5897.50



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical **Test Mode:** TX 802.11n(HT40) Mode 5795MHz (U-NII-3) No report for the emission which more than 10 dB below the Remark: prescribed limit. 130.0 dBuV/m 120 110 100 90 80 FCC Part15.407 U-NII-3 70 Margin -6 dB Mary May Mally rest for a strange of the second 60

No.	Frequency (MHz)	Reading (dBuV)		Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	5850.000	46.95	-0.81	46.14	122.20	-76.06	peak

(MHz)

5815.00

5842.50

#### Remarks:

50

40

5650.000 5677.50

5705.00

5732.50

5760.00

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

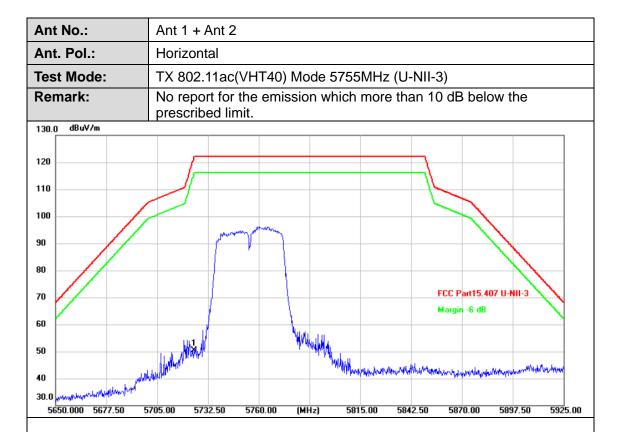
2.Margin value = Level -Limit value

Tel.: (86)755-27521059

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No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	5725.000	51.59	-1.23	50.36	122.20	-71.84	peak

## Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

2.Margin value = Level -Limit value

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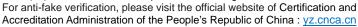


Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical TX 802.11ac(VHT40) Mode 5755MHz (U-NII-3) **Test Mode:** No report for the emission which more than 10 dB below the Remark: prescribed limit. dBuV/m 130.0 120 110 100 90 80 FCC Part15.407 U-NII-3 70 Margin -6 dB 60 50 (MHz) 5815.00 5650.000 5677.50 5732.50 5760.00 5842.50 5870.00 5925.00

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	5725.000	45.24	-1.23	44.01	122.20	-78.19	peak

# Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor







Ant No.: Ant 1 + Ant 2 Ant. Pol.: Horizontal **Test Mode:** TX 802.11ac(VHT40) Mode 5795MHz (U-NII-3) No report for the emission which more than 10 dB below the Remark: prescribed limit. 130.0 dBuV/m 120 110 100 90 80 FCC Part15.407 U-NII-3 70 Margin -6 dB 60 50 40 30.0 5650.000 5677.50 5705.00 5732.50 5760.00 (MHz) 5815.00 5842.50 5870.00 5897.50 5925.00

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	5850.000	43.79	-0.81	42.98	122.20	-79.22	peak

# Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



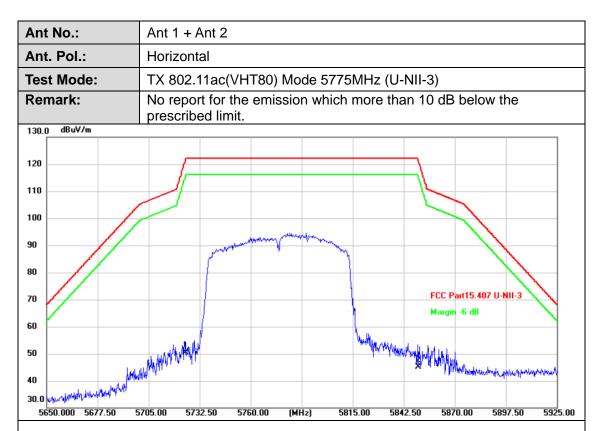
Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical TX 802.11ac(VHT40) Mode 5795MHz (U-NII-3) **Test Mode:** No report for the emission which more than 10 dB below the Remark: prescribed limit. dBuV/m 130.0 120 110 100 90 80 FCC Part15.407 U-NII-3 70 Margin -6 dB 60 50 40 5650.000 5677.50 5897.50 5760.00 (MHz) 5815.00 5842.50 5870.00 5925.00 5732.50

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	5850.000	42.74	-0.81	41.93	122.20	-80.27	peak

#### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor





No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector
1 *	5725.000	51.59	-1.23	50.36	122.20	-71.84	peak
2	5850.000	46.00	-0.81	45.19	122.20	-77.01	peak

#### Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor



Ant No.: Ant 1 + Ant 2 Ant. Pol.: Vertical **Test Mode:** TX 802.11ac(VHT80) Mode 5775MHz (U-NII-3) No report for the emission which more than 10 dB below the Remark: prescribed limit. dBuV/m 130.0 120 110 100 90 80 FCC Part15.407 U-NII-3 70 Margin -6 dB 60 50 40 30.0 5650.000 5677.50 (MHz) 5815.00 5925.00 5705.00 5732.50 5760.00 5842.50 5870.00 5897.50

<u> </u>						_		
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)		Margin (dB)	Detector	
1	5725.000	42.06	-1.23	40.83	122.20	-81.37	peak	
2 *	5850.000	50.83	-0.81	50.02	122.20	-72.18	peak	Γ

## Remarks:

1.Factor (dB/m) = Antenna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor

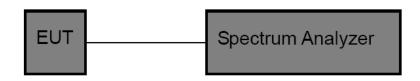


# 3.4. Bandwidth Test

## **Limit**

FCC Part 15 Subpart C(15.407)/ RSS-247				
Test Item	Frequency Range (MHz)			
		5150~5250		
26 Bandwidth	N/A	5250~5350		
		5500~5700		
6 dB Bandwidth	>500kHz	5725~5850		

# **Test Configuration**



# **Test Procedure**

Please refer to According to KDB789033 D02, for the measurement methods.

# The setting of the spectrum analyser as below:

26dB Bandwidth Test			
Spectrum Parameters Setting			
Attenuation	Auto		
Span	>26 dB Bandwidth		
RBW	Approximately 1% of the emission bandwidth		
VBW VBW>RBW			
Detector	Peak		
Trace	Max Hold		
Sweep Time	Auto		



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	6dB Bandwidth Test			
Spectrum Parameters	Setting			
Attenuation	Auto			
Span	>6 dB Bandwidth			
RBW	100 kHz			
VBW	VBW>=3*RBW			
Detector	Peak			
Trace	Max Hold			
Sweep Time	Auto			
	99% Occupied Bandwidth Test			
Spectrum Parameters	Setting			
Attenuation	Auto			
RBW	1% to 5% of the OBW			
VBW	≥ 3RBW			
Detector	Peak			
Trace	Max Hold			

Note: The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

# **Test Mode**

Please refer to the clause 2.4.

## **Test Results**

Please see the Appendix A1, A2, A3.



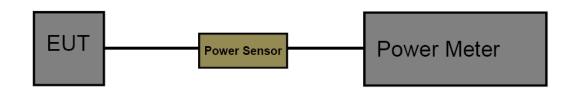
# 3.5. Output Power Test

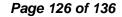
# <u>Limit</u>

FCC Part 15 Subpart E (15.407)					
Test Item	Limit	Frequency Range(MHz)			
	Fixed: 1 Watt (30dBm) Mobile and Portable: 250mW (24dBm)	5150~5250			
Conducted Output Power	250mW (24dBm)	5250~5350			
	250mW (24dBm)	5500~5700			
	1 Watt (30dBm)	5725~5850			

	IC Power&PSD Limit				
Frequency	Type of devices	Maximum Conducted Output Power	EIRP Output Power	Conducted Power Spectral Density	EIRP Power Spectral Density
5150MHz-5250MHz	in vehicles		30mW or 1.76 + 10 × log10B dBm, whichever is less (B=99% OBW in MHz)		
STSSMILL SESSMILL	Other Devices		200mW or 10 + 10 × log10B dBm, whichever is less (B=99% OBW in MHz)		10dBm/MHz
	in vehicles		30mW or 1.76 + 10 × log10B dBm, whichever is less (B=99% OBW in MHz)		
5250MHz-5350MHz	Other Devices	250mW or 11 + 10 × log10B dBm, whichever is less (B=99% OBW in MHz)	1W or 17 + 10 ×log10B dBm, whichever is less (B=99% OBW in MHz)	11 dBm/Mhz	
5470MHz-5600MHz 5650MHz-5725MHz	ALL Devices	250mW or 11 + 10 × log10B dBm, whichever is less (B=99% OBW in MHz)	1W or 17 + 10 ×log10B dBm, whichever is less (B=99% OBW in MHz)	11 dBm/Mhz	
5725MHz-5850MHz	ALL Devices	1₩		30dBm/500KHz	

# **Test Configuration**







## **Test Procedure**

The measurement is according to section 3 of KDB 789033 D02 General UNII Test Procedures New Rules V02r01.

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# **Test Mode**

Please refer to the clause 2.4.

## **Test Result**

Please see the Appendix B.



# 3.6. Power Spectral Density Test

#### **Limit**

## FCC Part 15 Subpart E(15.407)/ RSS-247

#### For the 5.15~5.25GHz band:

Outdoor AP

The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz. If  $G_{Tx}$ >6dBi, then PSD =17-( $G_{Tx}$ -6).

Indoor AP

The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz. If  $G_{Tx}$ >6dBi, then PSD =17-( $G_{Tx}$ -6).

Point-to-point AP

The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz. If  $G_{Tx}>23dBi$ , then PSD =17-( $G_{Tx}$ -23).

Client devices

The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz. If  $G_{Tx}$ >6dBi, then PSD =11-( $G_{Tx}$ -6).

### For the 5.25~5.35GHz band:

The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz. If  $G_{Tx}$ >6dBi, then PSD =11-( $G_{Tx}$ -6).

#### For the 5.47~5.725GHz band:

The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz. If  $G_{Tx}$ >6dBi, then PSD =11-( $G_{Tx}$ -6).

#### For the 5.725~5.85GHz band:

Point-to-multipoint systems (P2M)

The peak power spectral density (PSD) shall not exceed the lesser of 30dBm/500kHz. If  $G_{Tx}>6dBi$ , then PSD = $30-(G_{Tx}-6)$ .

Point-to-point systems (P2P)

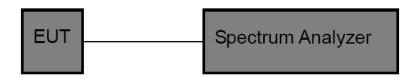
The peak power spectral density (PSD) shall not exceed the lesser of 30dBm/500kHz.

Note: G<sub>Tx</sub>: EUT Antenna gain.

	•	nit			
Frequency	Type of devices	Maximum Conducted	EIRP Output Power	Conducted Power	EIRP Power
rrequency	Type of devices	Output Power	EIM Output lower	Spectral Density	Spectral Density
5150MHz-5250MHz	in vehicles		30mW or 1.76 + 10 × logsOB dBm, whichever is less (B=99% OBW in MHz)		
	Other Devices		200mW or 10 + 10 × logioB dBm, whichever is less (B=99% OBW in MHz)		10dBm/MHz
	in vehicles		30mW or 1.76 + 10 × logioB dBm, whichever is less (B=99% OBW in MHz)		
5250MHz-5350MHz	Other Devices	250mW or 11 + 10 × logiOB dBm, whichever is less (B=99% OBW in MHz)	1W or 17 + 10 ×log10B dBm, whichever is less (B=99% OBW in MHz)	11 dBm/Mhz	
5470MHz-5600MHz 5650MHz-5725MHz	ALL Devices	250mW or 11 + 10 × log10B dBm, whichever is less (B=99% OBW in MHz)	1W or 17 + 10 ×log10B dBm, whichever is less (B=99% OBW in MHz)	11 dBm/Mhz	
5725MHz-5850MHz	ALL Devices	1₩		30 dBm/500KHz	



**Test Configuration** 



### **Test Procedure**

The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above. The measurement is according to KDB 789033 D02 General UNII Test Procedures New Rules V02r01.

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Set analyzer center frequency to transmitting frequency.
- (3) Set the span to encompass the entire emissions bandwidth (EBW)(alternatively, the entire 99% OBW) of the signal.
- (4) RBW=1MHz for devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz RBW=500kHz for devices operating in the band 5.725-5.85 GHz
- (5) Set the VBW to: ☐ 3 RBW
- (6) Detector: AVG
- (7) Trace: Max Hold and View
- (7) Sweep time: auto
- (8) Trace average at least 100 traces in power averaging.
- (9) User the peak marker function to determine the maximum amplitude level within the RBW. Apply correction to the result if different RBW is used.

NOTE: The EUT was set to continuously transmitting in each mode and low, Middle and high channel for the test.

## **Test Mode**

Please refer to the clause 2.4.

#### **Test Result**

Please see the Appendix C.

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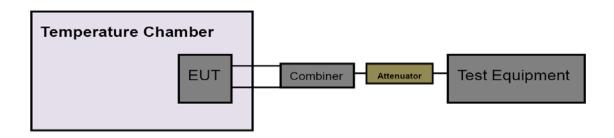


# 3.7. Frequency Stability Measurement

## **Limit**

FCC Part 15 Subpart C(15.407)					
Test Item	Limit	Frequency Range(MHz)			
	Specified in the user's manual, the transmitter center frequency tolerance shall be ±20 ppm maximum for the 5 GHz band (IEEE 802.11n specification)	5150~5250			
Peak Excursion Measurement		5250~5350			
Peak Excursion Measurement		5500~5700			
		5725~5850			

## **Test Configuration**



#### **Test Procedure**

The EUT was directly connected to the Spectrum Analyzer and antenna output port as show in the block diagram above.

- (1) The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram above.
- (2) Set analyzer center frequency to transmitting frequency.
- (3) Set the span to encompass the entire emissions bandwidth (EBW) of the signal.
- (4) Set the RBW to: 10MHz, VBW=10MHz with peak detector and maxhold settings.
- (5) The test extreme voltage is to change the primary supply voltage from 5.5V to 4.5V percent of the nominal value.
- (6) Extreme temperature is 0°C~40°C

NOTE: The EUT was set to continuously transmitting in continuously un-modulation transmitting mode.

#### **Test Mode**

Please refer to the clause 2.4.

#### **Test Result**

Please see the Appendix D.



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# 3.8. Antenna Requirement

## **Standard Requirement**

## FCC CFR Title 47 Part 15 Subpart C Section 15.203:

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

## **Test Result**

The directional gain of the antenna less than 6dBi, please refer to the EUT internal photographs antenna photo.

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# 3.9. Dynamic Frequency Selection(DFS)

## Requirement

Table 1: Applicability of DFS Requirements Prior to Use of a Channel

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	Operational Mode			
Requirement	Master	Client Without Radar Detection	Client With Radar Detection	
Non-Occupancy Period	Yes	Not required	Yes	
DFS Detection Threshold	Yes	Not required	Yes	
Channel Availability Check Time	Yes	Not required	Not required	
U-NII Detection Bandwidth	Yes	Not required	Yes	

Table 2: Applicability of DFS requirements during normal operation

	Operational Mode			
Requirement	Master Device or Client with Radar Detection	Client Without Radar Detection		
DFS Detection Threshold	Yes	Not required		
Channel Closing Transmission Time	Yes	Yes		
Channel Move Time	Yes	Yes		
U-NII Detection Bandwidth	Yes	Not required		

Additional requirements for devices with multiple bandwidth modes	Master Device or Client with Radar Detection	Client Without Radar Detection
U-NII Detection Bandwidth and Statistical Performance Check	All BW modes must be tested	Not required
Channel Move Time and Channel Closing Transmission Time	Test using widest BW mode available	Test using the widest BW mode available for the link
All other tests	Any single BW mode	Not required

Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.



#### LIMIT

#### 1. DFS Detection Thresholds

Table 3: DFS Detection Thresholds for Master Devices and Client Devices With Radar Detection

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Maximum Transmit Power	Value (See Notes 1, 2, and 3)
EIRP ≥ 200 milliwatt	-64 dBm
EIRP < 200 milliwatt and power spectral density < 10 dBm/MHz	-62 dBm
EIRP < 200 milliwatt that do not meet the power spectral density requirement	-64 dBm

Note 1: This is the level at the input of the receiver assuming a 0dBi receive antenna.

Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.

Note3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.

## 2. DFS Response Requirements

Table 4: DFS Response Requirement Values

Parameter	Value	
Non-occupancy period	Minimum 30 minutes	
Channel Availability Check Time	60 seconds	
Channel Move Time	10 seconds See Note 1.	
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.	
U-NII Detection Bandwidth	Minimum 100% of the U-NII 99% transmission power bandwidth. See Note 3.	

Note 1: Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.

Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required facilitating a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

# **RADAR TEST WAVEFORMS**

This section provides the parameters for required test waveforms, minimum percentage of successful detections, and the minimum number of trials that must be used for determining DFS conformance. Step intervals of 0.1 microsecond for Pulse Width, 1 microsecond for PRI, 1 MHz for chirp width and 1 for the number of pulses will be utilized for the random determination of specific test waveforms.



#### Table 5 Short Pulse Radar Test Waveforms

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Radar Type	Pulse Width (µsec)	PRI (µsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
0	1	1428	18	See Note 1	See Note 1
		Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a	$ \operatorname{Roundup} \left\{ \left( \frac{1}{360} \right) \cdot \left( \frac{19 \cdot 10^6}{\operatorname{PRI}_{\mu \text{sec}}} \right) \right\} $		
1	1	Test B: 15 unique PRI values randomly selected within the range of 518-3066 µsec, with a minimum increment of 1 µsec, excluding PRI values selected in Test A		60%	30
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
	Agg	gregate (Radar Types 1	-4)	80%	120
Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time,					

Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.

A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 2 through 4. If more than 30 waveforms are used for Short Pulse Radar Types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms. If more than 30 waveforms are used for Short Pulse Radar Type 1, then each additional waveform is generated with Test B and must also be unique and not repeated from the previous waveforms in Tests A or B.

For example if in Short Pulse Radar Type 1 Test B a PRI of 3066 µsec is selected, the number of pulses

would be Round up 
$$\left\{ \left( \frac{1}{360} \right) \cdot \left( \frac{19 \cdot 10^6}{3066} \right) \right\} = \text{Round up } \{17.2\} = 18.$$

Table 5a - Pulse Repetition Intervals Values for Test A

Pulse Repetition Frequency	Pulse Repetition Frequency	Pulse Repetition Interval
Number	(Pulses Per Second)	(Microseconds)
1	1930.5	518
2	1858.7	538
3	1792.1	558
4	1730.1	578
5	1672.2	598
6	1618.1	618
7	1567.4	638
8	1519.8	658
9	1474.9	678
10	1432.7	698

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11	1392.8	718
12	1355	738
13	1319.3	758
14	1285.3	778
15	1253.1	798
16	1222.5	818
17	1193.3	838
18	1165.6	858
19	1139	878
20	1113.6	898
21	1089.3	918
22	1066.1	938
23	326.2	3066

Table 6 – Long Pulse Radar Test Waveform

Radar Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Number of Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Number of Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

The parameters for this waveforms are randomly chosen. Thirty unique waveforms are required for the Long Pulse Radar Type waveforms. If more than 30 waveforms are used for the Long Pulse Radar Type wave forms, then each additional waveform must also be unique and not repeated from the previous waveforms.

Table 7 – Frequency Hopping Radar Test Waveform

Radar Type	Pulse Width (µsec)	PRI (µsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Number of Trials
6	1	333	9	0.333	300	70%	30

For the Frequency Hopping Radar Type, the same Burst parameters are used for each wave form. The hopping sequence is different for each wave form and a 100-length segment is selected from the hopping sequence defined by the following algorithm:

The first frequency in a hopping sequence is selected randomly from the group of 475 integer frequencies from 5250–5724MHz.Next,the frequency that was just chosen is removed from the group and a frequency is randomly selected from the remaining 474 frequencies in the group. This process continues until all 475 frequencies are chosen for the set. For selection of a random frequency, the frequencies remaining within the group are always treated as equally likely.

#### **Calibration of Radar Waveform**

Radar Waveform Calibration Procedure

- 1) A 50 ohm load is connected in place of the spectrum analyzer, and the spectrum analyzer is connected to place of the master
- 2) The interference Radar Detection Threshold Level is -62dBm + 0dBi +1dB = -61dBm that had been taken into account the output power range and antenna gain.
- 3) The following equipment setup was used to calibrate the conducted radar waveform. A vector signal generator was utilized to establish the test signal level for radar type 0. During this process there were no transmissions by either the master or client device. The spectrum analyzer was switched to the zero spans (time domain) at the frequency of the radar waveform generator. Peak detection was

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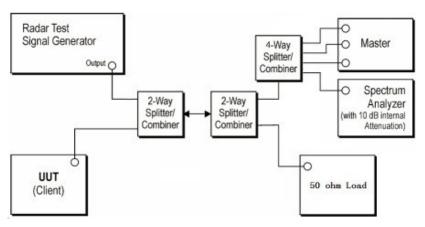


used. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 3 MHz. The spectrum analyzer had offset -1.0dB to compensate RF cable loss 1.0dB.

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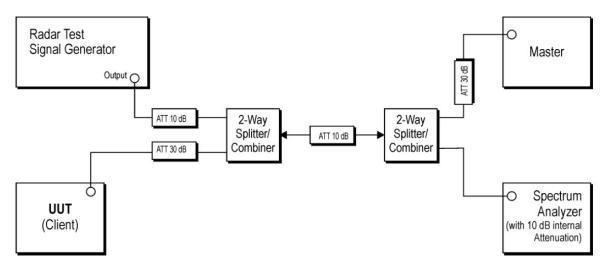
4) The vector signal generator amplitude was set so that the power level measured at the spectrum analyzer was - -62dBm + 0dBi +1dB = -61dBm. Capture the spectrum analyzer plots on short pulse radar waveform.

## **Conducted Calibration Setup**



# **Test Configuration**

Setup for Client with injection at the Master



## **Radar Waveform Calibration Result**

☐ Passed
☒ Not Applicable



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#### **Test Procedure**

- 1. The radar pulse generator is setup to provide a pulse at frequency that the master and client are operating. A type 0 radar pulse with a 1us pulse width and a 1428us PRI is used for the testing.
- 2. The vector signal generator is adjusted to provide the radar burst (18 pulses) at the level of approximately -61dBm at the antenna port of the master device
- 3. A trigger is provided from the pulse generator to the DFS monitoring system in order to capture the traffic and the occurrence of the radar pulse.
- 4. EUT will associate with the master at channel. The file "iperf.exe" specified by the FCC is streamed from the PC 2 through the master and the client device to the PC 1 and played in full motion video using Media Player Classic Ver. 6.4.8.6 in order to properly load the network for the entire period of the test.
- 5. When radar burst with a level equal to the DFS Detection Threshold +1dB is generated on the operating channel of the U-NII device. At time T0 the radar waveform generator sends a burst of pulse of the radar waveform at Detection Threshold +1dB.
- 6. Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel Measure and record the transmissions from the UUT during the observation time (Channel Move Time). One 15 seconds plot is reported for the Short Pulse Radar Type 0. The plot for the Short Pulse Radar Types start at the end of the radar burst. The Channel Move Time will be calculated based on the zoom in 600ms plot of the Short Pulse Radar Type
- 7. Measurement of the aggregate duration of the Channel Closed Transmission Time method. With the spectrum analyzer set to zero span tuned to the center frequency of the EUT operating channel at the radar simulated frequency, peak detection, and max hold, the dwell time per bin is given by: Dwell (0.3ms) =S (12000ms) / B (4000); where Dwell is the dwell time per spectrum analyzer sampling bin, S is sweep time and B is the number of spectrum analyzer sampling bins. An upper bound of the aggregate duration of the intermittent control signals of Channel Closing Transmission Time is calculated by: C (ms)= N X Dwell (0.3ms); where C is the Closing Time, N is the number of spectrum analyzer sampling bins (intermittent control signals) showing a U-NII transmission and Dwell is the dwell time per bin.
- 8. Measurement the EUT for more than 30 minutes following the channel move time to verify that no transmission or beacons occur on this channel.

Please refer to the clause 2.4.	
Total December	

rest Results	
☐ Passed	Not Applicable     ■
_	<b>–</b> 11
	**************************************

