

CTC Laboratories, Inc.

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TE	EST REPORT				
Report No	CTC20210600E04				
FCC ID:	2AR24-AIBOX30S				
Applicant:	Shenzhen Absen Optoelectronic	Co.,Ltd			
Address	18-20F Building 3A, Cloud Park, Bantian, Longgang District, Shenzhen, China				
Manufacturer	Shenzhen Absen Optoelectronic Co.,Ltd				
Address	18-20F Building 3A, Cloud Park, Bantian, Longgang District, Shenzhen, China				
Product Name:	: LED Multimedia Processor				
Trade Mark:	: /				
Model/Type reference:	Ai Box3.0 S				
Listed Model(s):	/				
Standard:	: FCC Part 15, Subpart E 15. 407				
Date of receipt of test sample:	Apr. 08, 2021				
Date of testing	Apr. 08, 2021 to Apr. 26, 2021				
Date of issue	Apr. 26, 2021				
Result:	PASS				
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Testing Laboratory Name::	CTC Laboratories, Inc.				
Address:	1-2/F., Building 2, Jiaquan Building, Shenzhen, Guangdong, China	Guanlan High-Tech Park,			
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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.

<u>RSS-247 Issue 2 February 2017</u> — 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	Apr. 26, 2021	Original



1.3. Test Description

FCC Part 15 Subpart E (15.407) / RSS-247 Issue 2 February 2017						
Test Item	Test r	equire	Result	Test		
Test item	FCC	IC	Result	Engineer		
Antenna Requirement	15.203	/	Pass	Rod Luo		
Conducted Emission	15.207	RSS-Gen 8.8	Pass	Rod Luo		
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	Rod Luo		
26dB Bandwidth & 99% Bandwidth	15.407(a) (5)	RSS-247 6.2.1.2	Pass	Rod Luo		
6dB Bandwidth (only for UNII-3)	15.407(e)	RSS-247 6.2.4.1	Pass	Rod Luo		
Peak Output Power	15.407(a)	RSS-247 6.2.1.1 RSS-247 6.2.4.1	Pass	Rod Luo		
Power Spectral Density	15.407(a)	RSS-247 6.2	Pass	Rod Luo		
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	Rod Luo		
Frequency Stability	15.407(g)	/	Pass	Rod Luo		
Dynamic Frequency Selection (DFS)	15.407(h)	RSS-247 6.3	N/A	N/A		
Automatically DiscontinueTransmission	15.407(c)	/	Pass	Note(3)		

Note:

(1)"N/A" is not applicable.

(2)The measurement uncertainty is not included in the test result.

(3)During no any information transmission, the EUT can automatically discontinue transmission and become standby mode for power saving. the EUT can detect the controlling sianal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission.

(4)The test data except AC conducted emission and Radiated emission below 1GHz refer to CTC20210599E06(FCC ID: 2AR24-AIBOX30XS; Equipment code: NII). The EUT wireless module, antenna, PCB layout and electrical circuit are the same, the difference is EUT size.



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:

CNAS-Lab Code: L5365

CTC Laboratories, Inc. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation. Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements) for the Competence of Testing and Calibration Laboratories.

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 Industry 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 in our 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 radio equipment characteristics; Part 2" 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
Transmitter power conducted	0.42 dB	(1)
Transmitter power Radiated	2.14 dB	(1)
Conducted spurious emissions 9kHz~40GHz	1.60 dB	(1)
Radiated spurious emissions 9kHz~40GHz	2.20 dB	(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)
Occupied Bandwidth		(1)

Note (1): This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

1.6. Environmental Conditions

		Temperature	21°C~27°C
	Normal Condition	Relative humidity	40%~60%
		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 temperature range as declared by the manufacturer.

Normal Condition	T _N =Normal Temperature	21°C~27°C
Extreme Condition	T _L =Lower Temperature	-10 °C
	T _H =Higher Temperature	40 °C



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2. GENERAL INFORMATION

2.1. Client Information

Applicant:	Shenzhen Absen Optoelectronic Co.,Ltd
Address:	18-20F Building 3A, Cloud Park, Bantian, Longgang District, Shenzhen, China
Manufacturer:	Shenzhen Absen Optoelectronic Co.,Ltd
Address:	18-20F Building 3A, Cloud Park, Bantian, Longgang District, Shenzhen, China

2.2. General Description of EUT

Product Name:	LED Multimedia Processor							
Trade Mark:	/	/						
Model/Type reference:	Ai E	Ai Box3.0 S						
Listed Model(s):	/	/						
Model Difference:	/	1						
Power supply:	100	-240V~ 50/60	Hz 23W					
RF Module Model:	ZK-	7612U						
Hardware version:	V1.0	0						
Software version:	V1.0	0						
Remark:	EUT is a fixed point-to-point access points operating device. According to the power limit for 5150~5250MHz band, ZK-7612U can operating in client mode.							
Technical index for 5G WIF	-1							
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					
	·	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)Modulation: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								
Antenna 1 or 2 type: PCB Antenna								
Antenna 1 or 2 gain:		5dBi						



2.3. Accessory Equipment Information

Equipment Information							
Name	Model	S/N	Manufacturer				
Notebook	X220	/	Lenovo				
Cable Information							
Name	Shielded Type Ferrite Core		Length				
USB Cable	Unshielded	NO	150cm				
AC Cable	Unshielded NO		120cm				
Test Software Information	Test Software Information						
Name	Software version / /						
QA Tool	0.0.1.88	/	/				

2.4. Operation State

Operation Frequency List:

	20MHz Bandwidth		40MHz B	andwidth	80MHz Bandwidth	
Band (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
	36	36 5180 20 5100		5190		
U-NII-1	40	5200	38	5190	42	5210
U-INII-T	44	5220	46	5230		
	48	5240	40 5250			
	149	5745	151	5755		5775
	153	5765	151	5755	155 5795	
U-NII-3	157	5785				
	161	5805	159	5795		
	165	5825				

Test channel is below:

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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 _M	40	5200	/	/	42	5210
	СН _н	48	5240	46	5230	/	/
	CH_{L}	149	5745	151	5755	/	/
U-NII-3	CH_M	157	5785	/	/	155	5775
	СН _н	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

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.



2.5. Measurement Instruments List

Tonsce	Tonscend JS0806-2 Test system					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until	
1	Spectrum Analyzer	Rohde & Schwarz	FSU26	100105	Dec. 25, 2021	
2	Spectrum Analyzer	Rohde & Schwarz	FUV40-N	101331	Mar. 15, 2022	
3	MXG Vector Signal Generator	Agilent	N5182A	MY47420864	Dec. 25, 2021	
4	Signal Generator	Agilent	E8257D	MY46521908	Dec. 25, 2021	
5	Power Sensor	Agilent	U2021XA	MY5365004	Dec. 25, 2021	
6	Power Sensor	Agilent	U2021XA	MY5365006	Dec. 25, 2021	
7	Simultaneous Sampling DAQ	Agilent	U2531A	TW54493510	Dec. 25, 2021	
8	Climate Chamber	TABAI	PR-4G	A8708055	Dec. 25, 2021	
9	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	116410	Dec. 25, 2021	
10	Climate Chamber	ESPEC	MT3065	/	Dec. 25, 2021	
11	300328 v2.2.2 test system	TONSCEND	v2.6	/	/	

Radiate	Radiated Emission and Transmitter spurious emissions					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until	
1	EMI Test Receiver	Rohde & Schwarz	ESCI	100658	Dec. 25, 2021	
2	High pass filter	micro-tranics	HPM50111	142	Dec. 25, 2021	
3	Log-Bicon Antenna	Schwarzbeck	CBL6141A	4180	Dec. 25, 2021	
4	Ultra-Broadband Antenna	ShwarzBeck	BBHA9170	25841	Dec. 25, 2021	
5	Loop Antenna	LAPLAC	RF300	9138	Dec. 25, 2021	
6	Spectrum Analyzer	Rohde & Schwarz	FSU26	100105	Dec. 25, 2021	
7	Horn Antenna	Schwarzbeck	BBHA 9120D	647	Dec. 25, 2021	
8	Pre-Amplifier	HP	8447D	1937A03050	Dec. 25, 2021	
9	Pre-Amplifier	EMCI	EMC051835	980075	Dec. 25, 2021	
10	Antenna Mast	UC	UC3000	N/A	N/A	
11	Turn Table	UC	UC3000	N/A	N/A	
12	Cable Below 1GHz	Schwarzbeck	AK9515E	33155	Dec. 25, 2021	
13	Cable Above 1GHz	Hubersuhner	SUCOFLEX 102	DA1580	Dec. 25, 2021	
14	Splitter	Mini-Circuit	ZAPD-4	400059	Dec. 25, 2021	
15	RF Connection Cable	HUBER+SUHNER	RE-7-FL	N/A	Dec. 25, 2021	
16	RF Connection Cable	Chengdu E-Microwave			Dec. 25, 2021	
17	High pass filter	Compliance	BSU-6	34202	Dec. 25, 2021	

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		Direction systems			
18	Attenuator	Chengdu E-Microwave	EMCAXX-10 RNZ-3		Dec. 25, 2021
19	High and low temperature box	ESPEC	MT3065	12114019	Dec. 25, 2021

Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
1	LISN	R&S	ENV216	101112	Dec. 25, 2021
2	LISN	R&S	ENV216	101113	Dec. 25, 2021
3	EMI Test Receiver	R&S	ESCI	100658	Dec. 25, 2021

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

2. The cable loss has calculated in test result which connection between each test instruments.



3. TEST ITEM AND RESULTS

3.1. Conducted Emission

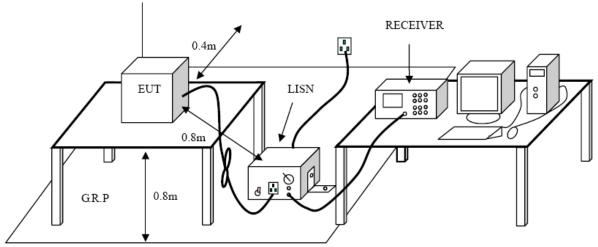
<u>Limit</u>

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

	Limit (d	lBuV)
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

* 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.

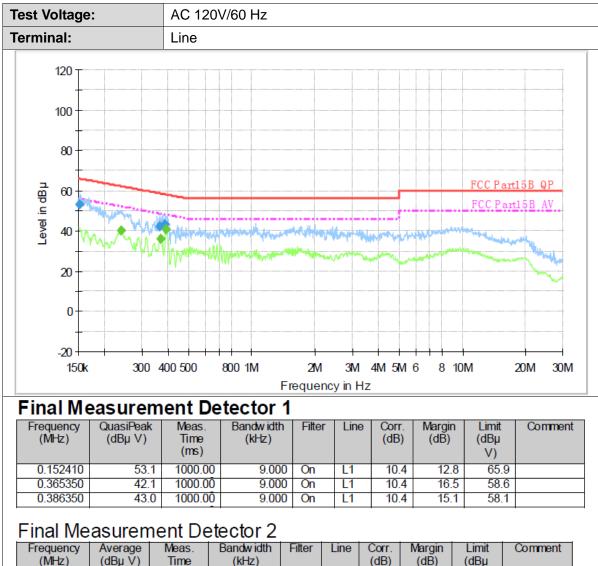
The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)

- 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.

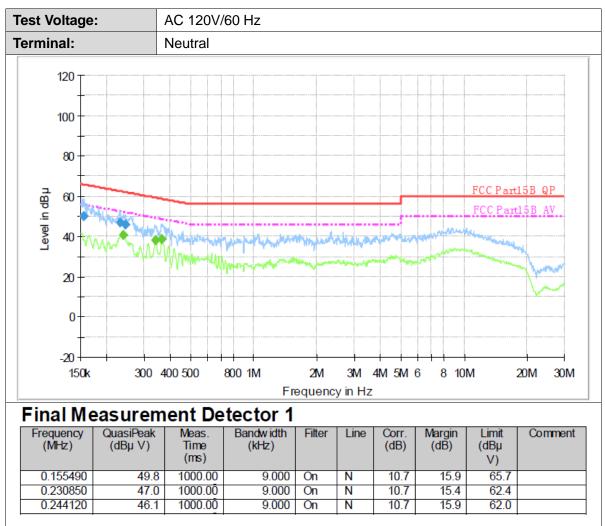




(MHz)	(dBµ V)	Time (ms)	(kHz)	Filler	Line	(dB)	(dB)	(dBµ V)	Comment
0.238340	40.0	1000.00	9.000	On	L1	10.4	12.2	52.2	
0.368280	35.8	1000.00	9.000	On	L1	10.4	12.7	48.5	
0.392570	40.4	1000.00	9.000	On	L1	10.4	7.6	48.0	

Emission Level= Read Level+ Correct Factor





Final Measurement Detector 2

	Frequency (MHz)	Average (dBµ V)	Meas. Time (ms)	Bandwidth (kHz)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµ V)	Comment
	0.240250	40.7	1000.00	9.000	On	Ν	10.7	11.4	52.1	
Ì	0.340020	38.0	1000.00	9.000	On	Ν	10.7	11.2	49.2	
	0.365350	38.5	1000.00	9.000	On	Ν	10.7	10.1	48.6	

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 (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
960~1000	500	3

	dB(uV/m) (at 3 meters)			
Frequency (MHz)	Peak	Average		
Above 1000	74	54		

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

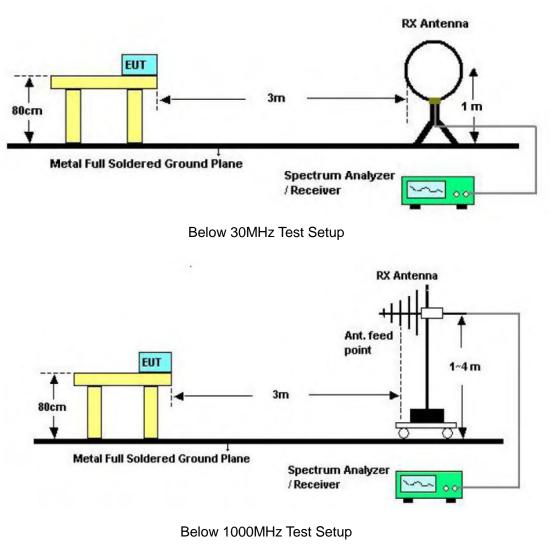
Frequency (MHz)	EIRP Limits (dBm)	Equivalent Field Strength at 3m (dBuV/m)
5150~5250	-27	68.2
5250~5350	-27	68.2
5470~5725	-27	68.2
	-27(Note 2)	68.2
E70E E00E	10(Note 2)	105.2
5725~5825	15.6(Note 2)	110.8
	27(Note 2)	122.2

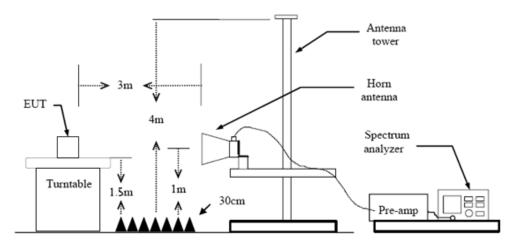
Note: 1. The following formula is used to convert the equipment isotropic radiated power (eirp) to field

 $\frac{1000000\sqrt{30P}}{2}$ uV/m, where P is the eirp (Watts) strength: E=

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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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.



- 3. The EUT was set 3 meters from the receiving antenna, which was mounted on the top of a variable height antenna tower.
- 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 10th harmonic:

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

RBW=1MHz, VBW \ge 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

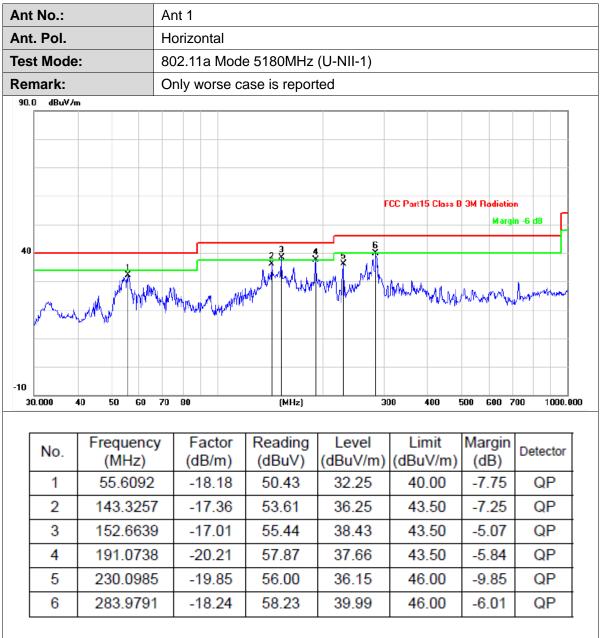
9 KHz~30 MHz

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.



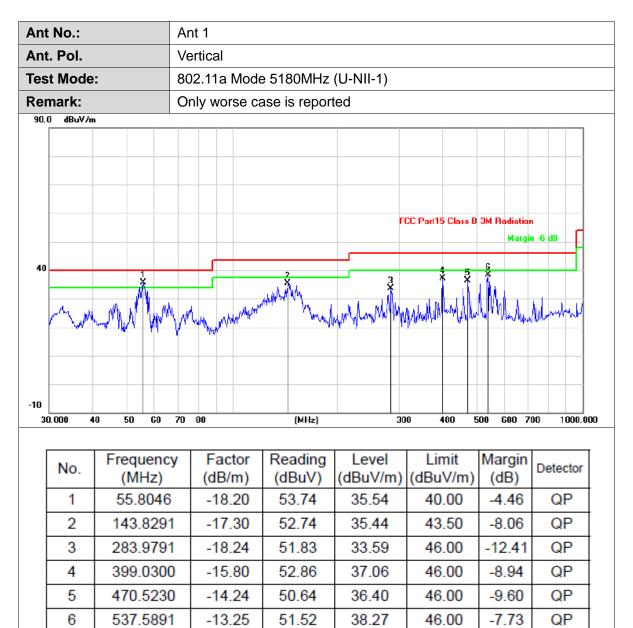


Remarks:

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

2.Margin value = Level -Limit value





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. Pol.:	Horizontal
Test Mode:	TX 802.11a Mode 5180MHz (U-NII-1)
Remark:	No report for the emission which more than 20 dB below the prescribed limit.

1	No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
	1	10360.115	6.64	49.79	56.43	74.00	-17.57	peak
	2	10360.300	6.64	35.59	42.23	54.00	-11.77	AVG

Remarks:



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 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	10360.200	6.64	49.68	56.32	74.00	-17.68	peak
2	10360.410	6.64	35.56	42.20	54.00	-11.80	AVG

Remarks:



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 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	10400.140	6.76	49.84	56.60	74.00	-17.40	peak
2	10400.202	6.76	35.69	42.45	54.00	-11.55	AVG

Remarks:



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 20 dB below the prescribed limit.		

N	0.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
	1	10399.895	6.76	35.47	42.23	54.00	-11.77	AVG
2	2	10400.122	6.76	49.09	55.85	74.00	-18.15	peak

Remarks:



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 20 dB below the prescribed limit.		

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	10479.787	6.99	35.26	42.25	54.00	-11.75	AVG
2	10480.401	6.99	49.52	56.51	74.00	-17.49	peak

Remarks:



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 20 dB below the prescribed limit.		

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	10479.874	6.99	35.03	42.02	54.00	-11.98	AVG
2	10479.945	6.99	48.53	55.52	74.00	-18.48	peak

Remarks:



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 20 dB below the prescribed limit.		

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	10359.954	6.64	49.46	56.10	74.00	-17.90	peak
2	10360.412	6.64	35.92	42.56	54.00	-11.44	AVG

Remarks:



Ant No.:	Ant 1 + Ant 2		
Ant. Pol.:	Vertical		
Test Mode:	TX 802.11n(HT20) Mode 5180MHz (U-NII-1)		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	10359.857	6.64	35.75	42.39	54.00	-11.61	AVG
2	10360.521	6.64	48.39	55.03	74.00	-18.97	peak

Remarks:



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 20 dB below the prescribed limit.		

	No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
Γ	1	10400.068	6.76	35.49	42.25	54.00	-11.75	AVG
	2	10400.252	6.76	49.23	55.99	74.00	-18.01	peak

Remarks:



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 20 dB below the prescribed limit.		

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	10400.121	6.76	35.48	42.24	54.00	-11.76	AVG
2	10400.251	6.76	48.50	55.26	74.00	-18.74	peak

Remarks:



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 20 dB below the prescribed limit.		

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	10479.897	6.99	35.32	42.31	54.00	-11.69	AVG
2	10480.303	6.99	49.27	56.26	74.00	-17.74	peak

Remarks:



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 20 dB below the prescribed limit.		

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	10479.970	6.99	48.66	55.65	74.00	-18.35	peak
2	10480.084	6.99	35.22	42.21	54.00	-11.79	AVG

Remarks:



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 20 dB below the prescribed limit.		

	No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
	1	10359.854	6.64	49.49	56.13	74.00	-17.87	peak
ſ	2	10360.251	6.64	36.03	42.67	54.00	-11.33	AVG

Remarks:



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 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	10359.854	6.64	49.41	56.05	74.00	-17.95	peak
2	10360.365	6.64	35.81	42.45	54.00	-11.55	AVG

Remarks:



Ant No.:	Ant 1 + Ant 2
Ant. Pol.:	Horizontal
Test Mode:	TX 802.11ac(VHT20) Mode 5200MHz (U-NII-1)
Remark:	No report for the emission which more than 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	10400.036	6.76	35.45	42.21	54.00	-11.79	AVG
2	10400.125	6.76	49.36	56.12	74.00	-17.88	peak

Remarks:



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 20 dB below the prescribed limit.

Ν	<mark>ا</mark> ٥.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
	1	10400.211	6.76	35.98	42.74	54.00	-11.26	AVG
	2	10400.521	6.76	49.13	55.89	74.00	-18.11	peak

Remarks:



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 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	10480.112	6.99	49.07	56.06	74.00	-17.94	peak
2	10480.308	6.99	36.14	43.13	54.00	-10.87	AVG

Remarks:



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 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	10479.980	6.99	48.33	55.32	74.00	-18.68	peak
2	10480.414	6.99	35.22	42.21	54.00	-11.79	AVG

Remarks:



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 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	10379.850	6.70	49.18	55.88	74.00	-18.12	peak
2	10380.225	6.70	35.91	42.61	54.00	-11.39	AVG

Remarks:



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 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	10379.992	6.70	36.32	43.02	54.00	-10.98	AVG
2	10380.245	6.70	48.81	55.51	74.00	-18.49	peak

Remarks:



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 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	10459.792	6.94	48.52	55.46	74.00	-18.54	peak
2	10460.128	6.94	35.38	42.32	54.00	-11.68	AVG

Remarks:



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 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	10459.956	6.94	48.51	55.45	74.00	-18.55	peak
2	10460.266	6.94	35.52	42.46	54.00	-11.54	AVG

Remarks:



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 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	10380.125	6.70	35.83	42.53	54.00	-11.47	AVG
2	10380.424	6.70	49.51	56.21	74.00	-17.79	peak

Remarks:



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 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	10379.990	6.70	35.75	42.45	54.00	-11.55	AVG
2	10380.328	6.70	49.26	55.96	74.00	-18.04	peak

Remarks:



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 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	10459.599	6.94	49.27	56.21	74.00	-17.79	peak
2	10460.254	6.94	35.52	42.46	54.00	-11.54	AVG

Remarks:



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 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	10459.782	6.94	48.53	55.47	74.00	-18.53	peak
2	10460.301	6.94	35.38	42.32	54.00	-11.68	AVG

Remarks:



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 20 dB below the prescribed limit.

	No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
	1	10419.560	6.82	49.33	56.15	74.00	-17.85	peak
Γ	2	10420.314	6.82	35.96	42.78	54.00	-11.22	AVG

Remarks:



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 20 dB below the prescribed limit.

No	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	10420.036	6.82	50.12	56.94	74.00	-17.06	peak
2	10420.215	6.82	36.44	43.26	54.00	-10.74	AVG

Remarks:



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 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11489.982	7.44	35.86	43.30	54.00	-10.70	AVG
2	11490.120	7.44	48.70	56.14	74.00	-17.86	peak

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)		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11489.421	7.44	35.45	42.89	54.00	-11.11	AVG
2	11490.345	7.44	48.23	55.67	74.00	-18.33	peak

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 5785MHz (U-NII-3)			
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		

	No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
Γ	1	11569.698	7.39	49.23	56.62	74.00	-17.38	peak
	2	11570.240	7.39	35.31	42.70	54.00	-11.30	AVG



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 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11570.054	7.39	47.73	55.12	74.00	-18.88	peak
2	11570.256	7.39	35.35	42.74	54.00	-11.26	AVG

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 5825MHz (U-NII-3)			
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11650.051	7.33	34.91	42.24	54.00	-11.76	AVG
2	11650.062	7.33	49.00	56.33	74.00	-17.67	peak



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 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11650.036	7.33	48.32	55.65	74.00	-18.35	peak
2	11650.145	7.33	35.11	42.44	54.00	-11.56	AVG

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)
Remark:	No report for the emission which more than 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11489.763	7.44	48.90	56.34	74.00	-17.66	peak
2	11490.105	7.44	35.56	43.00	54.00	-11.00	AVG



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 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11489.689	7.44	35.90	43.34	54.00	-10.66	AVG
2	11490.323	7.44	49.20	56.64	74.00	-17.36	peak

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 5785MHz (U-NII-3)	
Remark:	No report for the emission which more than 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11570.068	7.39	48.63	56.02	74.00	-17.98	peak
2	11570.213	7.39	35.08	42.47	54.00	-11.53	AVG



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No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11569.875	7.39	48.61	56.00	74.00	-18.00	peak
2	11570.354	7.39	35.15	42.54	54.00	-11.46	AVG

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 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11650.230	7.33	35.54	42.87	54.00	-11.13	AVG
2	11650.462	7.33	48.46	55.79	74.00	-18.21	peak



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 20 dB below the prescribed limit.
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No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11649.785	7.34	35.00	42.34	54.00	-11.66	AVG
2	11650.324	7.33	48.33	55.66	74.00	-18.34	peak

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 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11489.912	7.44	35.45	42.89	54.00	-11.11	AVG
2	11490.254	7.44	48.96	56.40	74.00	-17.60	peak



Ant 1 + Ant 2
Vertical
TX 802.11ac(VHT20) Mode 5745MHz (U-NII-3)
No report for the emission which more than 20 dB below the prescribed limit.
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No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11489.784	7.44	49.42	56.86	74.00	-17.14	peak
2	11490.305	7.44	35.41	42.85	54.00	-11.15	AVG

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 5785MHz (U-NII-3)
Remark:	No report for the emission which more than 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11570.108	7.39	48.55	55.94	74.00	-18.06	peak
2	11570.254	7.39	35.75	43.14	54.00	-10.86	AVG



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 20 dB below the prescribed limit.
Remark:	

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11569.201	7.39	35.64	43.03	54.00	-10.97	AVG
2	11570.451	7.39	48.19	55.58	74.00	-18.42	peak

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 5825MHz (U-NII-3)
Remark:	No report for the emission which more than 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11649.320	7.34	35.96	43.30	54.00	-10.70	AVG
2	11650.215	7.33	48.87	56.20	74.00	-17.80	peak



	Ant No.:			
zal	Ant. Pol.: Vertical			
02.11ac(VHT20) Mode 5825MHz (U-NII-3)	Test Mode:			
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eport for the emission which more than 20 dB below the				

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11649.768	7.34	48.54	55.88	74.00	-18.12	peak
2	11650.255	7.33	35.23	42.56	54.00	-11.44	AVG

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 5755MHz (U-NII-3)	
Remark:	No report for the emission which more than 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11510.142	7.43	35.93	43.36	54.00	-10.64	AVG
2	11510.335	7.43	48.63	56.06	74.00	-17.94	peak



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 20 dB below the prescribed limit.			

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11509.767	7.43	48.25	55.68	74.00	-18.32	peak
2	11510.029	7.43	35.78	43.21	54.00	-10.79	AVG

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 5795MHz (U-NII-3)		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.		

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11589.825	7.37	48.79	56.16	74.00	-17.84	peak
2	11590.314	7.37	35.76	43.13	54.00	-10.87	AVG



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 20 dB below the prescribed limit.		

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11590.327	7.37	48.61	55.98	74.00	-18.02	peak
2	11590.542	7.37	35.95	43.32	54.00	-10.68	AVG

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 5755MHz (U-NII-3)
Remark:	No report for the emission which more than 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11509.680	7.43	48.72	56.15	74.00	-17.85	peak
2	11510.205	7.43	35.46	42.89	54.00	-11.11	AVG



Ant No.:	Ant 1 + Ant 2
Ant. Pol.:	Vertical
Test Mode:	TX 802.11ac(VHT40) Mode 5755MHz (U-NII-3)
Remark:	No report for the emission which more than 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11509.899	7.43	35.88	43.31	54.00	-10.69	AVG
2	11510.121	7.43	49.03	56.46	74.00	-17.54	peak

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)
Remark:	No report for the emission which more than 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11590.155	7.37	48.89	56.26	74.00	-17.74	peak
2	11590.220	7.37	35.57	42.94	54.00	-11.06	AVG



Ant 1 + Ant 2
Vertical
TX 802.11ac(VHT40) Mode 5795MHz (U-NII-3)
No report for the emission which more than 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11590.045	7.37	35.11	42.48	54.00	-11.52	AVG
2	11590.104	7.37	48.15	55.52	74.00	-18.48	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(VHT80) Mode 5775MHz (U-NII-3)
Remark:	No report for the emission which more than 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11649.687	7.34	49.87	57.21	74.00	-16.79	peak
2	11650.105	7.33	36.26	43.59	54.00	-10.41	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(VHT80) Mode 5775MHz (U-NII-3)
Remark:	No report for the emission which more than 20 dB below the prescribed limit.

No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)		Margin (dB)	Detector
1	11649.735	7.34	49.86	57.20	74.00	-16.80	peak
2	11650.524	7.33	36.01	43.34	54.00	-10.66	AVG

Remarks:

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

3.3. Band Edge Emissions

<u>Limit</u>

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

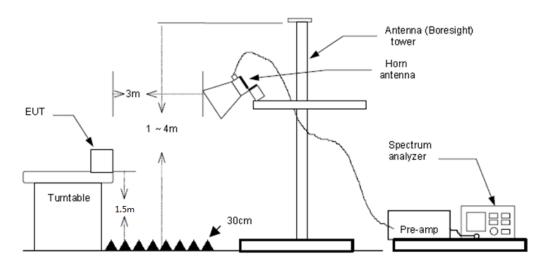
Frequency (MHz)	EIRP Limits (dBm)	Equivalent Field Strength at 3m (dBuV/m)
5150~5250	-27	68.2
5250~5350	-27	68.2
5470~5725	-27	68.2
	-27(Note 2)	68.2
5725~5825	10(Note 2)	105.2
5725~5625	15.6(Note 2)	110.8
	27(Note 2)	122.2

Note: 1. The following formula is used to convert the equipment isotropic radiated power (eirp) to field $1000000 \sqrt{20R}$

strength: $E = \frac{1000000\sqrt{30P}}{2}$ 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.



5. 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

Test Mode

Please refer to the clause 2.4.

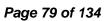
Test Results

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

Ant	No.:		Aı	nt 1					
۹nt.	. Pol.:		Н	orizontal					
Tes t	t Mode	:	T)	X 802.11a N	lode 5180M	Hz (U-NII-1)		
Remark: No report for the emission which more than 20 dB below the prescribed limit.									
110.0	0 dBuV/n	n							
								_	~
								-	
						FCC Pa	rt15 Class C 3M A	bove-16 Pea	k
60									
						FCC	Part15 Class C 3	Above-1G A	v V
							3	/	
10.0									
50	043.500 50	058.50 5	073.50	5088.50 510	3.50 5118.50	51 33.50	5148.50 5163	.50	5193.50 MHz
Γ		Frequ	ency	Factor	Reading	Level	Limit	Margin	
	No.	(M⊦		(dB/m)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	Detector
	1	5150	.000	-1.92	58.90	56.98	74.00	-17.02	peak
	2	5150	.000	-1.92	44.21	42.29	54.00	-11.71	AVG
₹en	narks:								
					/m)+Cable I	Factor (dB)-	Pre-amplifie	r Factor	
M	argin v	alue = Le	evel -Li	mit value					



Ant No.:		Ant	1								
Ant. Pol.:		Vert	Vertical								
Test Mode	:	TX 8	302.11a N	/lode 5180M	Hz (U-NII-1)					
Remark:			eport for cribed lin	the emission nit.	n which mor	e than 20 d	B below	the			
110.0 dBuV/	m	1 1 2 2	1								
								$\overline{}$			
					ECC P.	art15 Class C 3M A	bour 10 Per				
					FLL PC						
60						Part15 Class C 3	Above-1G /	w			
					~~~~*						
······											
10.0 5073.200 5	00E 20 E00	7.20 51	09.20 512	21.20 5133.20	5145.20	5157,20 5169	1 20	5193.20			
No.	Frequer (MHz	-	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector			
1	5150.0	00	-1.92	59.56	57.64	74.00	-16.36	peak	Ι		
2	5150.0	00	-1.92	46.09	44.17	54.00	-9.83	AVG	1		





Ant	No.:			Ant	1											
Ant	. Pol.:			Hor	izonta	al										
Tes	t Mode	:		ТΧ	802.1	1a N	lode 5	5240N	Hz (U	-NII-1	)					
Rer	nark:				report scribe			nissio	n whic	h mor	e th	an 20 c	B	below	the	
110.	0 dBu∀h	n		pre	scribe		π.									
																1
	$\left  \right $															
		-								FCC D		Class C 3M				
										TCC F			-	VC-TU FCC		
60																
00			$\searrow$	_						FCC	Part1	5 Class C 3	SM A	.bove-1G /	w	1
	<u> </u>												2	K		
														•		
														\$		
10.0																1
	226.500 5	241.50	5256.5	50 5	271.50	528	6.50	5301.50	5310	G. 50	5331.	50 534	6.50	)	5376.50	_ MHz
ſ	No.	Freq		y	Fact			ding	Lev		1	_imit		1argin	Detector	r
┝	4		Hz)	_	(dB/r			SuV)				BuV/m)	+-	(dB)	naak	+
╞	1		0.00		-1.4			.55	47.			74.00	+-	26.90	peak	-
L	2	535	0.00	U	-1.4	5	36	.61	35.	16	1	54.00	-	18.84	AVG	
1.Fa	narks: actor (d largin v						/m)+C	Cable	-actor	(dB)-	Pre-	amplifie	ər I	Factor		



Ant	No.:		Ar	nt 1										
Ant	. Pol.:		Ve	ertical										
Tes	t Mode	:				lode 524		•						
Rer	nark:			o report escribe			sio	ר whicl	h mor	e tha	an 20 d	B below	the	
110.	0 dBuV/r	n	1									1		
		~												
	1						-							
	$\parallel$	+							FCC P	art15 C	ass C 3M /	Above-1G Pea	ak.	
60														
00			<u> </u>						FCC	Part15	i Class C 3	M Above-1G /	w	
												1 X		
					~~~									
												¥		
10.0														
10.0 5:	227.700 52	242.70 525	7.70	5272.70	528	7.70 530	2.70	5317	7.70	5332.7	0 534	7.70	5377.70	MHz
Γ	No.	Freque	псу	Fact	or	Readir	ng	Lev	/el	L	imit	Margin	Detector	T
	NO.	(MHz	-	(dB/n		(dBuV		•			uV/m)		Delector	ļ
	1	5350.0	00	-1.4	5	45.09		43.		7	4.00	-30.36	peak	ļ
	2	5350.0	00	-1.4	5	34.60)	33.	15	5	4.00	-20.85	AVG	
Ren	narks:													
.Fa	actor (d	B/m) = An alue = Lev				/m)+Cab	le l	actor	(dB)-	Pre-a	amplifie	er Factor		



elow the
elow the
elow the
IG Peak
/e-1G AV
5192.00 MH
rgin B) Detector
3.15 peak
3.47 AVG



Ant	No.:		A	nt 1 + Ant 2					
Ant	. Pol.:		V	ertical					
ſes	t Mode	:		•	HT20) Mode	•	•		
Rer	nark:			o report for escribed lir	the emissio	n which moi	e than 20 d	B below	the
110.	0 dBu∀/r	n	[P.						
									~
								\square	
						FCC Pa	nt15 Class C 3M A	bove-1G Pea	k
60							1		
						FCC	Part1SClass C 3	Abgve-16 A	×
							2	-	
10.0									
50	042.000 50	057.00	5072.00	5097.00 51	02.00 5117.00	5132.00	5147.00 5162	2.00	5192.00 MH
ſ	No.		uency Hz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
ŀ	1		0.000	-1.92	59.28	57.36	74.00	-16.64	peak
ŀ	2	515	0.000	-1.92	45.63	43.71	54.00	-10.29	AVG
L								1	I I



	o .:			Ant 1 +	Ant 2									
Ant. P	ol.:			Horizon	ıtal									
Fest N	Node	:		TX 802	.11n(ŀ	HT20) M	lode	5240N	/Hz (U-NII-	1)			
Rema	rk:			No repo prescrib			ssior	ר whicl	h mor	e thar	n 20 d	B below	the	
110.0	dBuV/m	1				1								7
60												Above-16 Pea		
10.0	.000 52	40.00 5	255.00	5270.00	0 52	85.00 5	300.00	5315	.00	5330.00	5345	5.00	5375.00	MH:
5225	.000 52	40.00 5	255.00	5270.00) 52)	85.00 5	300.00	5315	.00	5330.00	5345	5.00	5375.00	мн
	1	Frequ	ency	Fa	ctor	Read	ing	Lev	/el	Lir	nit	Margin	Datasta	Т
N	lo.	Frequ (MF	-		ctor 3/m)	Read (dBu	-			Lir (dBu		Margin (dB)	Detector	r
N	lo. 1		lz)	(dB		1	V)		V/m)	(dBu		_		4



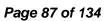
Ant No.:		Ant 1 + Ant 2						
Ant. Pol.:		Vertical						
Fest Mod	e:	TX 802.11n(F		•	,			
Remark:		No report for prescribed lin	the emissior hit.	n which mor	e than 20 d	B below	the	
110.0 dBuV/	/m							1
								ĺ
				ECC P	art15 Class C 3M A	bove-16 Pea	4	
60								
60	<u> </u>	<u></u>		FCC	Part15 Class C 3	Above-1G /	w	
		\mathbf{X}				1 ×		
						-*		
10.0 5226.500 §	5241.50 5256.5	50 5271.50 528	6.50 5301.50	5316.50	5331.50 5340	.50	5376.50	 MHz
								_
No.	Frequen (MHz)	cy Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	
1	5350.00	0 -1.45	48.26	46.81	74.00	-27.19	peak	T
2	5350.00	0 -1.45	37.37	35.92	54.00	-18.08	AVG	1



nt No	.:		An	t 1 + Ant	2							
nt. Po	ol.:		Ho	orizontal								
est Mo	ode:		ТХ	802.11a	c(VHT20) Mo	de 5180)MH:	z (U-N	ll-1)		
emarl	K :			report fo	or the emi limit.	ssio	n which	mor	e than	20 d	B below	the
10.0 de	3uV/m	1					ĺ		1			
											-	
								FCC Pr	art15 Class	C 3M A	bove 1G Pea	sk l
60								FCC	Part 1 5 Cl	ass C 3	M Above-1G /	w \
											/	
									3	- All		
0.0												
5043.50	0 5058.5	0 5073	1.50	5098.50	5103.50 5	6118.50	5133.5	JU	5148.50	5163	3.50	5193.50
[F	requen) CV	Factor	Read	ling	Leve		Lin	nit	Margin	
). '	(MHz)	-	(dB/m)			(dBuV		1			Detector
No				4 00	57.0)5	55.1	3	74.	00	-18.87	peak
No 1	(5150.00	00	-1.92	57.0							
		5150.00 5150.00		-1.92	42.0)1	40.0	9	54.	00	-13.91	AVG



Ant	No.:		Ant	t 1 + Ant 2						
Ant	. Pol.:		Ver	tical						
	t Mode):			,	de 5180MH	. ,			
Rer	nark:			report for scribed lin		n which mor	e than 20 d	B below	the	
110.	0 dBuV/	m	_ pre	Scribed III	iit.					
									~~~	
						ECC P	art15 Class C 3M A	bove 16 Per		
60							_			
00						FCC	Part) 5 Class C 3	Above-16 /	w (	
							2	~~~~		
10.0										
	043.500 5	058.50 507	3.50 S	5088.50 510	3.50 5118.50	5133.50	5148.50 5163	3.50	5193.50	 MHz
Γ	No.	Freque	тсу	Factor	Reading	Level	Limit	Margin	Detector	Т
	INO.	(MHz	)	(dB/m)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	Delector	
	1	5150.0	00	-1.92	58.24	56.32	74.00	-17.68	peak	
	2	5150.0	00	-1.92	43.66	41.74	54.00	-12.26	AVG	
1.Fa		IB/m) = An alue = Lev			/m)+Cable I	Factor (dB)-	Pre-amplifie	er Factor		





Ant	No.:		An	ıt 1 + An	nt 2							
۹nt.	Pol.:		Ho	orizontal								
est	t Mode	:	ТХ	( 802.11	ac(V	HT20) M	lode	5240MI	Hz (	U-NII-1)		
Rem	nark:			o report f			ion v	which mo	ore	than 20 d	B below	the
110.0 I	) dBuV/π	1	1					ĺ		1	1	
	5											
								FCC	Part1	5 Class C 3M /	Above-1G Pa	ak
60												
	]		~					F	CC Pa	rt15 Class C 3		AV
											X	
				Marine Marine							ž	
10.0												
L	25.000 52	40.00 525	5.00	5270.00	5285.	00 5300	.00	5315.00	533	0.00 534	5.00	5375.00 MH
Γ	No.	Frequer (MHz	-	Facto (dB/m		Readin( (dBuV)	-	Level IBuV/m	) (0	Limit IBuV/m)	Margin (dB)	Detector
	1	5350.0	00	-1.45	5	50.68		49.23		74.00	-24.77	/ peak
	2	5350.0	00	-1.45	5	37.44		35.99		54.00	-18.01	AVG
							•		·			·
I.Fa	narks: actor (d argin va	B/m) = An alue = Lev	tenna el -Lir	Factor ( nit value	(dB/n	n)+Cable	e Fa	ctor (dB	)-Pr	e-amplifie	er Factor	



Ant	No.:		Ar	nt 1 + Ant 2						
Ant	. Pol.:		Ve	ertical						
	t Mode	:		-		de 5240MH				
Rer	nark:			o report for escribed lim		n which mor	e than 20 d	B below t	the	
110.	0 dBuV/i	n	[ pi							_
										ĺ
	$\vdash$					ECC Pa	rt15 Class C 3M A	hove-16 Pea		
										1
60										
00						FCC	Part15 Class C 3N	Above-1G A	v	
			$\mathbf{X}$					1 X		
					·····			ţ.		
								•		
10.0										
	226.500 5	241.50 525	6.50	5271.50 528	6.50 5301.50	5316.50	5331.50 5346	.50	5376.50	j MHz
ſ	No.	Freque	-	Factor	Reading	Level	Limit	Margin	Detector	r
ļ		(MHz	<i>'</i>	(dB/m)	(dBuV)		(dBuV/m)	(dB)		
	1	5350.0		-1.45	48.55	47.10	74.00	-26.90	peak	
	2	5350.0	000	-1.45	37.86	36.41	54.00	-17.59	AVG	
Ren	narks									
	narks: actor (d	B/m) = An	tenna	Factor (dB	/m)+Cable I	-actor (dB)-	Pre-amplifie	r Factor		



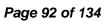
Ant No.:		A	nt 1 + Ant 2	2					
Ant. Pol.	:	F	lorizontal						
Fest Mod	le:	Т	X 802.11n(	HT40) Mode	5190MHz (	U-NII-1)			
Remark:			lo report for rescribed li	the emissio	n which moi	e than 20 d	B below	the	
110.0 dBu	//m	ΙP		1111.					
									ĺ
					ECC D	art15 Class C 3M /	hour 10 Per		
					FUL P		ADOVC-TU PC	3K	
60					1 Y FCC	Part15 Class C 3	M Above-1G /	av l	
					2	- And			
									ĺ
10.0 5062.500	5077.50	5092.50	5107.50 51	22.50 5137.50	5152.50	5167.50 5182	2.50	5212.50	 MHz
			5-1	Destruction		1		I	Т
No.		quency MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	
1	51	50.000	-1.92	59.93	58.01	74.00	-15.99	peak	
2	51	50.000	-1.92	45.86	43.94	54.00	-10.06	AVG	T
<u></u>									
Remarks		– Antenn	a Factor (di	3/m)+Cable	Factor (dB)-	Pre-amplifie	r Factor		



Ant	No.:			Ant 1	+ An	t 2									
Ant	. Pol.:			Vertic	al										
	t Mode	:				•	T40) Mo								
Rer	mark:			No re presc				sior	n which	mor	e than	20 d	B below t	the	
110.	0 dBuV/r	n		prese	nbeu										_
															1
													~~~~		
										FCC Pa	et15 Class	C 3M A	vove-16 Pea	.k	-
														IN I	
60									1						
00									Ý	FCC	Part15CI	ass C 3	N Above-1G A	W	1
									-						
10.0															1
10.0 5	061.000 50	076.00	5091.00	5100	G. OO	5121	1.00 513	6.00	5151.0	00	5166.00	518	1.0D	5211.00	_ MHz
г															
	No.		quency //Hz)	· .	Facto dB/m		Readir (dBuV	-	Leve (dBuV)		Lin (dBu)		Margin (dB)	Detecto	r
	1	51	50.000)	-1.92	2	60.63	}	58.7	'1	74.	00	-15.29	peak	
	2	51	50.000) .	-1.92	2	48.64	ł	46.7	2	54.	00	-7.28	AVG	
Rer	narks:														
.Fa	narks: actor (d largin v						/m)+Cab	le F	actor (dB)-l	Pre-an	nplifie	er Factor		



Ant No.:		Ant 1 + Ant	2				
Ant. Pol	:	Horizontal					
Test Mo	de:	TX 802.11n	(HT40) Mode	5230MHz (I	J-NII-1)		
Remark:		No report for prescribed I	or the emissio imit.	n which mor	e than 20 d	B below t	he
110.0 dBu	V/m						
60					rt15 Closs C 3M A Part15 Class C 3N		
10.0	5224.00 5239.1	00 5254.00 5	5269.00 5204.00) 5299.00 !	5314.00 5329	1.00	2 2 5359.00 MH
	F ee even	E sta	Decilia		Lizza it	Manair	
No.	Frequent (MHz)	cy Factor (dB/m)		Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
No.		(dB/m)	-				
	(MHz)	(dB/m)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	





Ant	No.:		Ar	nt 1 + Ant	2						
4nt	. Pol.:		Ve	ertical							
Гes	t Mode):	T)	K 802.11n	(HT40) Mo	de 523	oMHz (U-NII-1)			
Rer	nark:			o report fo escribed		sion wł	nich mo	re than 20) dB below	the	
110.	0 dBuV/r	n	_ p	escribeu							
	<u> </u>		1				ECC P	wt15 Class C 3	M Above-16 Pea	.le	
60				{							
00				hanna	_		FCC	Part15 Class	3M Above-1G A		
										X	
										-	
10.0											
52	209.000 52	224.00 523	9.00	5254.00	5269.00 529	4.00 5	299.00	5314.00 5	329.00	5359.00 M	IHz
ſ	No.	Freque (MHz	-	Factor (dB/m)		-	.evel BuV/m)	Limit (dBuV/n	Margin n) (dB)	Detector	Ţ
ſ	1	5350.0	000	-1.45	49.76	6 4	8.31	74.00	-25.69	peak	t
ľ	2	5350.0	000	-1.45	38.80) 3	7.35	54.00	-16.65	AVG	t
Rer	narks:										
		IB/m) – Ar	otenna	Eactor (dB/m)+Cat	le Fact	or (dB)	Pre-ampl	ifier Factor		



nt No.:	Pol.: Mode:		nt 1 + Ar	nt 2								
nt. Pol.:		Н	orizonta	I								
est Mod	e:	T)	< 802.1 1	lac(V	'HT40) N	Noc	le 519	90MH:	z (U	-NII-1)		
emark:			o report escribe			sion	whic	h mor	e th	an 20 d	B below t	the
10.0 dBuV/	/m											
								FCC D		21 C 214 4		L.
								FLC P2	an i a i		Abexe-16 Pee	
60							1	FCC	Part1	5 Class C 3	M Above-1G A	w (
										1		1
								mener	~~~~	~		
			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~									
0.0												
5061.000	5076.00 5	091.00	5106.00	5121.	.00 513	6.00	515	1.00	5166.	00 518	1.00	5211.00 M
	Frequ	0001	Fact	or	Readin			vel		Limit	Margin	
No.	(MF		(dB/n		(dBuV	_				BuV/m)		Detector
	5150	.000	-1.9	2	57.31		55	.39		74.00	-18.61	peak
1		.000	-1.9	2	42.52		40	.60	1	54.00	-13.40	AVG
1			1 1 0	2	42 52		40	60	1 (	54.00	-13.40	AVG



Ant No.:		A	Ant 1 + Ant 2								
Ant. Pol.:		Ve	ertical								
Fest Mode	<b>e</b> :		X 802.11a				-				
Remark:			No report for the emission which more than 20 dB below the prescribed limit.								
110.0 dBu∀/	m										-
											1
											1
						F	CC Part15	Class C 3M /	Abovo-1G/Pea	ky	
									Υ Y		
60											
						×.	FCC Part	15 Class C 3	M Above-1G A	v	4
						3.~~	~~~	٦.			1
10.0											
5061.000 5	076.00 50	91.00	5106.00 5	121.00 51	36.00	5151.00	) 5168	.00 518	1.00	5211.00	MH
No.	Freque (MH	-	Factor (dB/m)		-	Leve (dBuV/		Limit BuV/m)	Margin (dB)	Detecto	r
1	5150	-	-1.92	59.3		57.4		74.00	-16.54	peak	1
2	5150	.000	-1.92	44.4	7	42.5	5	54.00	-11.45	AVG	+



nt No.:		Ant 1 +	Ant 2						
nt. Pol.	:	Horizon	tal						
st Mod	le:			√HT40) Mo					
emark:		No repo			n whic	h mor	e than 20 d	B below t	the
0.0 dBu\	//m								
						500 B			
	man mun	mm				FUC Pa	ut15 Class C 3M A	Above-16 Pea	ik
50		-+				FCC	Part15 Class C 3	M Above-1G A	v
1		Vanar	With Westerney	Munantu management					×
ľ				Mary Mary Mary Mary					
					and the second	177991-9799-9999-9999-9999-9999-9999-99	anita (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997)		
.0									
5207.500	5222.50 5237.5	i0 5252.50	) 526	7.50 5282.5	) 5297	7.50	5312.50 5323	7.50	5357.50
No.	Frequence (MHz)	-	ctor 8/m)	Reading (dBuV)	Lev (dBu)		Limit (dBuV/m)	Margin (dB)	Detector
1	5350.00	0 -1	.45	51.50	50.	05	74.00	-23.95	peak
2	5350.00	0 -1	.45	39.10	37.	65	54.00	-16.35	AVG
									-



Ant	No.:		Ant 1	+ Ant 2									
4nt	. Pol.:		Vertic	al									
	t Mode	):		-					z (U-NII-1)				
Rer	nark:			port for t ribed lim		sior	n which	h more than 20 dB below the					
110.	0 dBuV/ı	m		1	1	_				1	i	-	
												1	
								FCC D	ut15 Class C 3M /	10 D	1.		
	1 mar							FUL Pa	artio Liass Li JM /	ADOVE-TU Pea	эк		
60								FCC	Part15 Class C 3	M Above-1G /	4V	1	
			har								1 X	]	
					- man						3		
											<b>X</b>	1	
												1	
0.0 52	210.500 5	225.50 5240.	50 5259	5.50 527	0.50 528	5.50	5300	.50	5315.50 533	0.50	5360.50	_ MH2	
Г		Frequen	cv F	actor	Readin	a	Lev	vel	Limit	Margin		Т	
	No.	(MHz)	-	dB/m)	(dBuV	-			(dBuV/m)	_	Detector	r	
	1	5350.00	. 0	-1.45	50.74		49.	29	74.00	-24.71	peak		
	2	5350.00	)0	-1.45	38.73		37.	28	54.00	-16.72	AVG		
Ren	narks:												
.Fa	actor (d	IB/m) = Ante			/m)+Cab	le F	actor	(dB)-	Pre-amplifie	er Factor			
		alue = Leve			/iii)+Cab		actor	(UD)-		a racior			

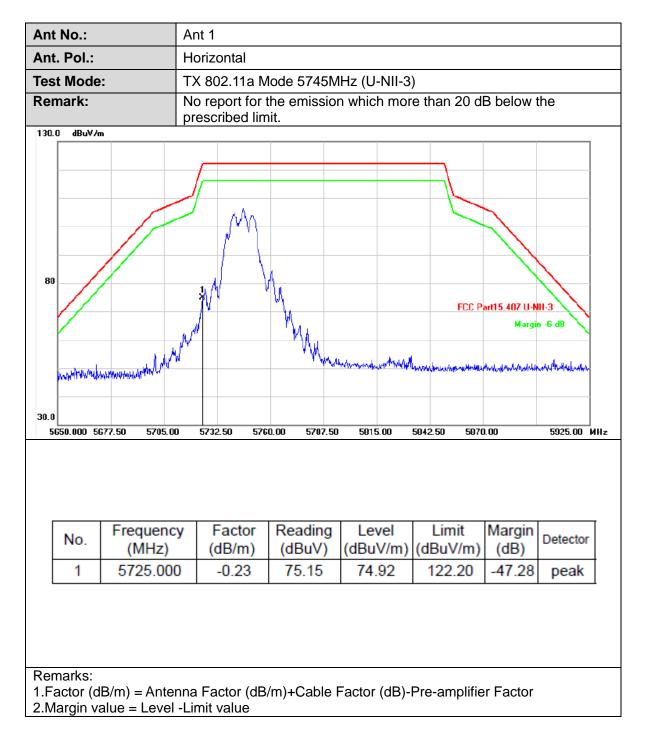


nt No.	:			A	nt 1 -	⊦ An	t 2											
nt. Po	l.:			H	orizo	ntal												
est Mo	ode:			T)	X 802	2.11	ac(\	VHT8	0) Mo	de 52	10N	1Hz	(U-N	II-1)				
emark	<b>c</b> :				o rep escri				nissio	n which more than 20 dB below the								
10.0 dB	uV/m							1										
											FC	C Par	t15 Clas	s C 3M /	Above-1G Pea	ik		
							<u></u>	~~~~		n lun	m		_					
60					Ţ			7	Y	V	$\square$	FCC I	Part15 C	lass C 3	M Above-1G A	v ·	2	
							$\vdash$					un.						
			man	mur	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	مرجد را ^{ور ر} ور	)					~~~~	mon	mound	m Manne - + + +			
			~															
0.0 5060.00	0 5090.	.00	5120.	00	5150.0	00	5180	D. OO	5210.00	524	0.00	5	270.00	5300	D. OD	5360	Ц. .00 м	Hz
No	. I	Freq (M	uen IHz)	су	1	acto B/m	I	Rea (dB			vel IV/n	n)	Lin (dBu)		Margin (dB)	Deter	ctor	
1		515	0.00	00	-'	1.92		57.	.95	56	.03		74	.00	-17.97	pea	ak	
2		515	0.00	00	-'	1.92		42.	.77	40	.85		54	.00	-13.15	AV	G	
3		535	0.00	00	-'	1.45		54.	.77	53	.32		74	.00	-20.68	pea	ak	
4		535	0.00	00	-'	1.45		40.	.45	39	.00		54	.00	-15.00	AV	G	
																		-
emark Facto		(m) =	Ante	enna	a Fac	tor (	dB/	/m)+C	able	Facto	r (dF	3)-F	Pre-ar	nolifie	er Factor			

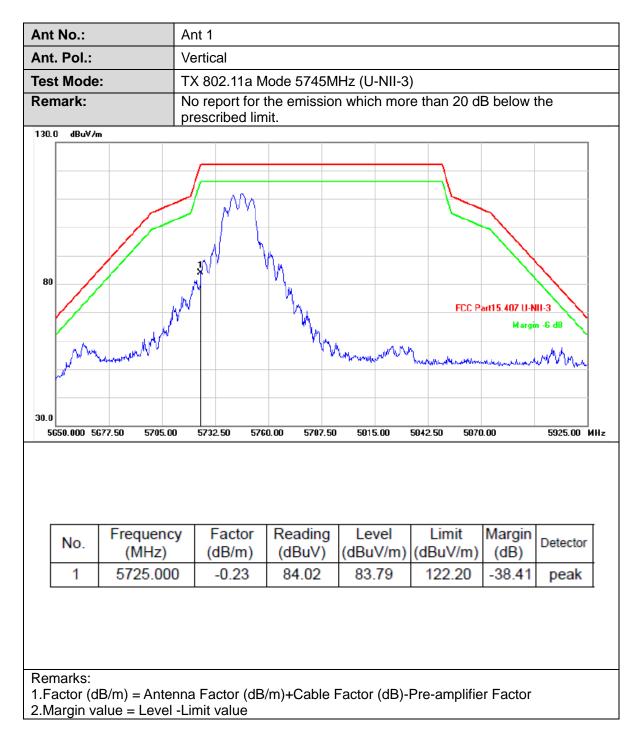


nt No	<b>)</b> .:			A	nt 1 + /	Ant 2								
nt. Po	ol.:			V	ertical									
est M		:						,			z (U-N	,		
emar	k:				o repo rescrib		the emission which more than 20 dB below the							
10.0 d	lBuV/n	1		Ιp	IESCIID									
										FCC P	art15 Class	C 3M /	Above-16 Pea	k
						~	and pro	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	سالس	3				
60					1_		V	Y	V					
					×					FCC	Part15 Cl	ass C 3	M Above-1G A	₩ <u>3</u> *
				when	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m				-	how	~~	~	
-														
0.0 5060.0	00 50	90.00	5120	.00	5150.00	518	0.00	5210.00	5240	1.00	5270.00	530	0.00	5360.00 M
N	0.		quen MHz)		Fac (dB)		1	ding uV)	Lev (dBu)		Lim (dBu\		Margin (dB)	Detector
	1		50.00		-1.			.94	57.		. 74.		-16.98	peak
	2	51	50.00	00	-1.	92	44	.32	42.	40	54.	00	-11.60	AVG
;	3	53	50.00	00	-1.	45	54	.11	52.	66	74.	00	-21.34	peak
4	4	53	50.00	00	-1.	45	40	.27	38.	82	54.	00	-15.18	AVG
					•									
	or (dl				a Facto mit val		/m)+C	able I	actor	(dB)-	Pre-an	nplifie	er Factor	





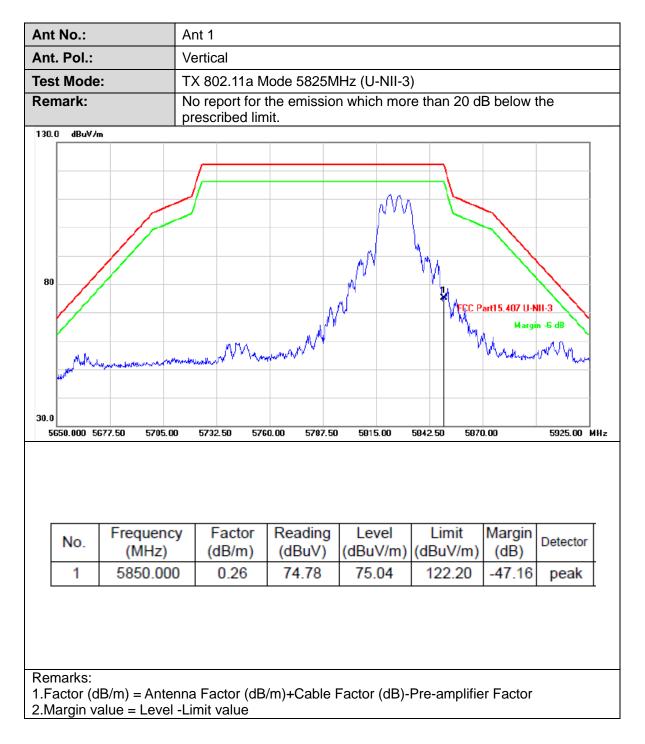






Ant No.:		Ant 1					
Ant. Pol.:		Horizontal					
Test Mode	ə:	TX 802.11a M	lode 5825M	Hz (U-NII-3	)		
Remark:		No report for prescribed lim		n which mor	e than 20 d	B below t	the
130.0 dBuV/	'n						
80 Market Minhou		winderson with the second		M	M	art15.407 U.N Margi	n -6 dB
30.0			0.00 5787.50	5815.00	5842.50 5870	00	5925.00 MHz
No.	Frequenc (MHz)	y Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	5850.000	0.26	70.97	71.23	122.20	-50.97	peak
	dB/m) = Anter value = Level	nna Factor (dB	/m)+Cable F	Factor (dB)-	Pre-amplifie	er Factor	

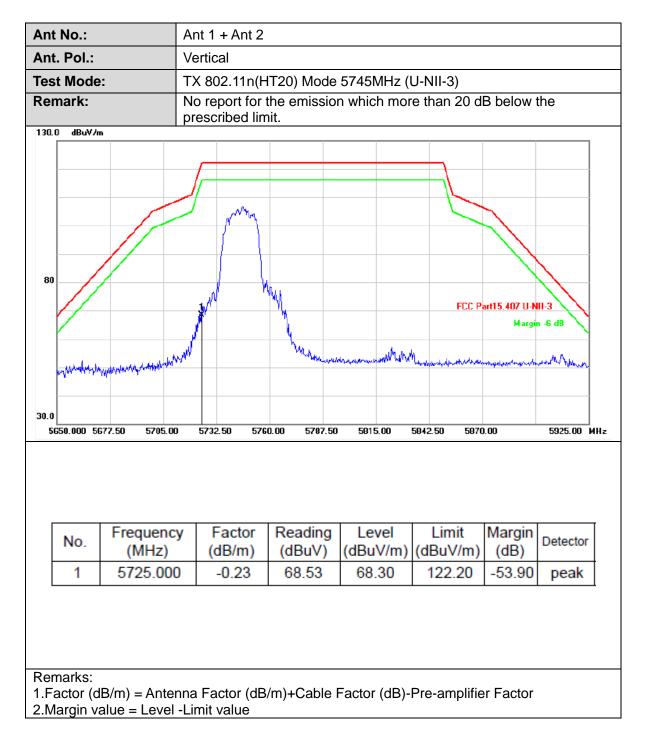






Ant No.:		Ant 1 + Ant 2									
Ant. Pol.:		Horizontal									
Test Mode:		TX 802.11n(H	IT20) Mode	5745MHz (	U-NII-3)						
Remark:		No report for t prescribed lim		n which mor	e than 20 d	B below	the				
130.0 dBuV/m											
30.0 5650.000 5677.50	5705.00 equency (MHz) 725.000	5732.50 576	Reading (dBuV) 60.26		5842.50 5870 Limit	redulenteeneed	n -6 dB				
Remarks: 1.Factor (dB/m 2.Margin value			/m)+Cable I	Factor (dB)-	Pre-amplifie	er Factor					







Ant No.:	Ant 1 + A	Int 2								
Ant. Pol.:	Horizonta	Horizontal								
Test Mode:	TX 802.1	1n(HT20) Mode	5825MHz (	U-NII-3)						
Remark:		No report for the emission which more than 20 dB below the prescribed limit.								
130.0 dBuV/m			1							
80 30.0 5650.000 5677.50 5	705.00 5732.50	5760.00 5787.50		FCC P	art15.407 U-NI Margin Margin	-6 dB				
No. Freque	-		Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector				
1 5850	.000 0.2	6 54.88	55.14	122.20	-67.06	peak				
INO. (MH	z) (dB/ı	m) (dBuV)	(dBuV/m)	(dBuV/m)	(dB)					





		Ant 1 + Ant 2							
Ant. Pol.:		Vertical							
Test Mode	e:	TX 802	.11n(HT	20) Mode	5825M	Hz (U	-NII-3)		
Remark:		No repo prescrit			n which	more	than 20 dl	B below 1	the
130.0 dBuV/	'n								
80		J.	Anthronyment	and the second sec	, den al a construction of the second s	www.	1	art 15. 407 LL-N Margin WAcadathaliry Japa	n -6 dB
30.0	677.50 5705.0	00 5732.50	0 5760.	00 5787.50	5815.0	10 50	342.50 5870	00	5925.00 MHa
No.	Frequence (MHz)	,	ctor 3/m)	Reading (dBuV)	Leve (dBuV		Limit dBuV/m)	Margin (dB)	Detector
	5850.00	· ·	.26	59.36	59.6		122.20	-62.58	peak



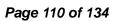
Ant No.:	Ant 1 + Ant 2			
Ant. Pol.:	Horizontal			
Test Mode:	TX 802.11ac(VHT20)	Mode 5745MH	z (U-NII-3)	
Remark:	No report for the emis prescribed limit.	sion which mor	e than 20 dl	B below the
130.0 dBuV/m				
				art15.407 U.NII.3 Margin -6 dB Keetyo, ukantyo de de mana de
No. Frequence (MHz)	-	-		Margin (dB) Detector
1 5725.00			122.20	-65.83 peak
MO. (MHz)	(dB/m) (dBu	/) (dBuV/m)	(dBuV/m)	(dB)



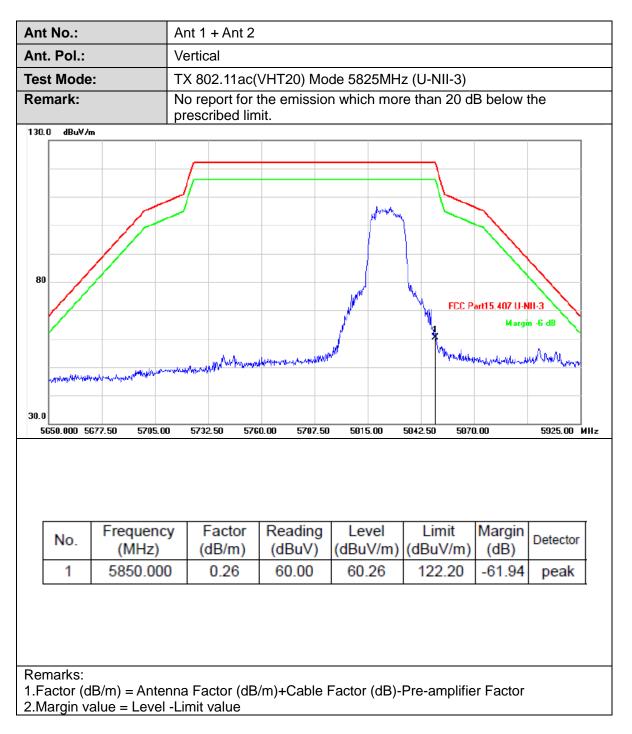
			,	B below	the
Remark: No report for prescribed	for the emission		,	B below	the
prescribed	l limit.	h which mor	e than 20 d	B below	the
No.         Frequency (MHz)         Factor (dB/m)           1         5725.00         -0.23	5760.00 5787.50 or Reading (dBuV)	Level		molilledown	n -6 dB



Ant No.:		Ant 1 + Ant 2							
Ant. Pol.:		Horizont	al						
Test Mode	):	TX 802.	11ac(VH	T20) Mod	de 5825	5MHz	(U-NII-3)		
Remark:		No report for the emission which more than 20 dB below the prescribed limit.							
130.0 dBuV/	m			1					
80 80 80 80 80 80		\$.11400000000000000000000000000000000000	sectoritienen Mite	Ad anisofie and a strange of the A	A Marine	( )	N.	Part 5.407 U-N Margi	n -6 dB
5650.000 5	677.50 5705.0	0 5732.50	5760.00	) 5787.50	5815.0	0 5	842.50 587	70.00	5925.00 MH
No.	Frequenc	;y Fac	tor R	Reading	Leve	I	Limit	Margin	Detector
	(MHz)	(dB/		dBuV)			(dBuV/m)		
1	5850.00	0 0.2	26	53.97	54.2	3	122.20	-67.97	peak
	0000.00	0 0		00.01	01.2		122.20	-01.01	peak
	IB/m) = Ante alue = Level			)+Cable F	actor (	dB)-F	Pre-amplifi	er Factor	









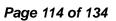
nt. Pol.: est Mode: emark: 30.0 dBuV/m	Horizontal TX 802.11n(H No report for prescribed lim	the emission hit.	•	,	B below	the
emark:	No report for prescribed lim	the emission hit.	•	,	B below	the
	prescribed lim	nit.	h which mor	e than 20 d	B below t	
30.0 dBuV/m	J. Married	Murry				
	/ mmm/	www				
	J. J	www			~	
	///www.	www				
	Moning	Murry				
	Manunal	www				
	l l					
80						
		- AI		FCC P	art15.407 U-N	111-3
	un Mt	MYM.			Margi	n -6 dB
	1 Min W	Ý	WWW.JL			
at an an transmitted and a standard by	Ar.,		Marthan Martine Construction	mallingendet	hadrightedan	wheelmandelikerander
An additional and an all of an						
0.0						
5650.000 5677.50 5705	5.00 5732.50 576	0.00 5787.50	5815.00	5842.50 5870	D. OO	5925.00 MH
No Frequer	ncy Factor	Reading	Level	Limit	Margin	Detector
No. (MHz)	-	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)	Detector
1 5725.0	00 -0.23	62.39	62.16	122.20	-60.04	peak
emarks:						
.Factor (dB/m) = Ant .Margin value = Leve		/m)+Cable F	actor (dB)-	Pre-amplifie	er Factor	



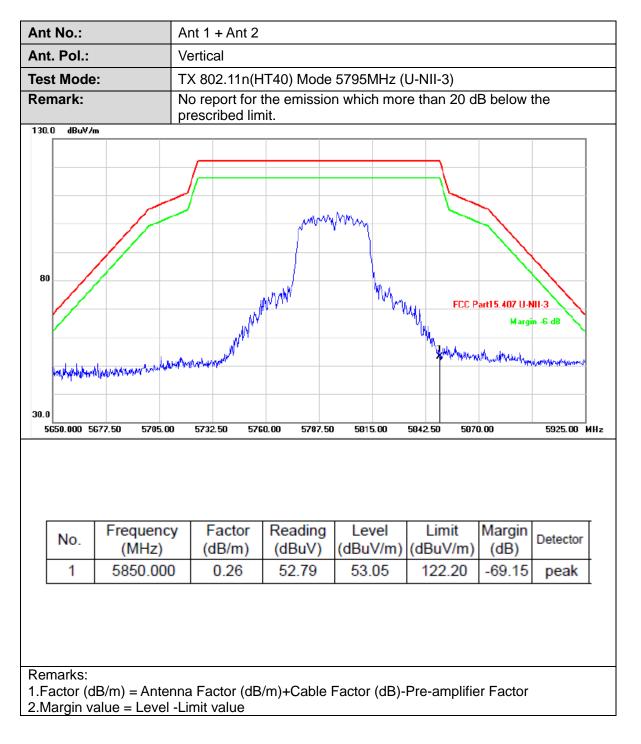
Ant No.:	Ant 1 + Ant 2					
Ant. Pol.:	Vertical					
Test Mode:	TX 802.11n(H	IT40) Mode	5755MHz (	U-NII-3)		
Remark:	No report for the emission which more than 20 dB below the prescribed limit.					
130.0 dBuV/m		III.				
	- mark	m				
	marine 4					
	<b>[</b>					
80						
	Bull	"My		FCC P	art15.407 U-N	11-3
	MANN T	100	Mr.		Margi	n -6 dB
l l	r Marine and		MAN			
And			Minghow many and	and the descences	mumumumu	www.weburnell
and which and a series of a second shall be						
30.0						
5650.000 5677.50 5705.0	0 5732.50 576	0.00 5787.50		5842.50 5870		5925.00 MHz
No. Frequence (MHz)	cy Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 5725.00	0 -0.23	69.53	69.30	122.20	-52.90	peak
Remarks: 1.Factor (dB/m) = Ante						



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 20 dB below the prescribed limit.						
130.0 dBu∀/m							
	and Albania						
	monorman						
80							
	FEC Part15.407 U-NII-3						
	FCC Part 5.407 U-NII-3 Margin -6 dB						
	un and the second and						
and was also and an and a start and a start and							
30.0 5650.000 5677.50 5705.0							
No. Frequence							
(MHz)	(dB/m) (dBuV) (dBuV/m) (dBuV/m) (dB)						
1 5850.00	0 0.26 51.88 52.14 122.20 -70.06 peak						
Remarks:							
1.Factor (dB/m) = Ante	nna Factor (dB/m)+Cable Factor (dB)-Pre-amplifier Factor						
2.Margin value = Level	I -Limit value						









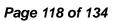
Ant No.:	Ant 1 + Ant 2						
Ant. Pol.:	Horizontal						
Test Mode:	TX 802.11ac(VHT40) Mode	e 5755MHz (U-NII-3)					
Remark:	No report for the emission which more than 20 dB below the prescribed limit.						
130.0 dBuV/m							
		<u> </u>					
	mayna						
	Marry my						
80							
		FCC Part15.407 U-N	n -6 dB				
	WWW MAN						
	Mark. 19	my the selection part is a subcome descended	1. Abre hel				
hand have a second and the second and the second		Margi	er forde og annen ser				
30.0 5650.000 5677.50 5705.	D 5732.50 5760.00 5787.50	5815.00 5842.50 5870.00	5925.00 MHz				
No. Frequen		Level Limit Margin	Detector				
(MHZ)		dBuV/m) (dBuV/m) (dB)					
1 5725.00	0 -0.23 60.68	60.45 122.20 -61.75	peak				
Remarks:							
	nna Factor (dB/m)+Cable Fa	actor (dB)-Pre-amplifier Factor					
2.Margin value = Leve							



Test Mode: Remark:	Vertical TX 802.11ac( No report for t prescribed lim	he emissior			B below t	the
Remark:	No report for t prescribed lim	he emissior			B below t	the
	prescribed lim		ו which mor	e than 20 d	B below t	the
80 30.0 5650.000 5677.50 5705.00 No. Frequency (MHz) 1 5725.000	5732.50 5760 / Factor (dB/m)		Level	FCC P		Detector peak

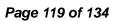


Ant No.:		Ant 1 + Ant 2					
Ant. Pol	:	Horizontal					
Test Mo	de:	TX 802.11ac	(VHT40) Mo	de 5795MH	z (U-NII-3)		
Remark	:	No report for the emission which more than 20 dB below the prescribed limit.					
130.0 dB	uV/m						
80		coloneutrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometrosometros	MMM MMM MMM	Normen and a second sec	FCC P		n -6 dB
	) 5677.50 5705.00		60.00 5787.50	5815.00	5842.50 5870	1.00	5925.00 MHz
No	Frequenc	-	Reading	Level	Limit	Margin	Detector
1	(MHz)	(dB/m)	(dBuV)		(dBuV/m)	(dB)	pook
1	5850.000	0 0.26	49.97	50.23	122.20	-71.97	peak
	s: (dB/m) = Antei n value = Level		3/m)+Cable I	Factor (dB)-	Pre-amplifie	er Factor	

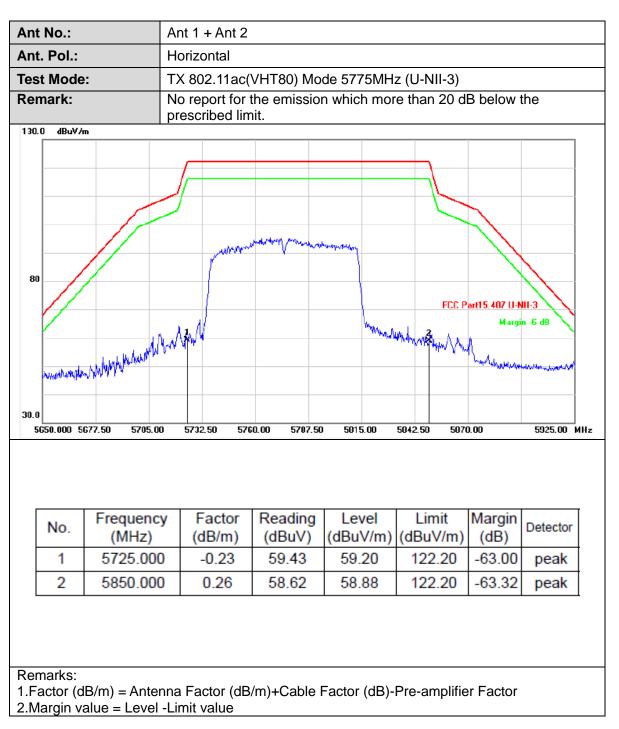




Ant No.:	Ant 1 + Ant 2					
Ant. Pol.:	Vertical					
Test Mode:	TX 802.11ac(VHT40) Mode 5795MHz (U-NII-3)					
Remark:	No report for the emission which more than 20 dB below the prescribed limit.					
130.0 dBuV/m						
80 80 30.0 5650.000 5677.50 5705						
No. Frequer						
1 5850.0						
MHz	(dB/m) (dBuV) (dBuV/m) (dBuV/m) (dB) Detector					

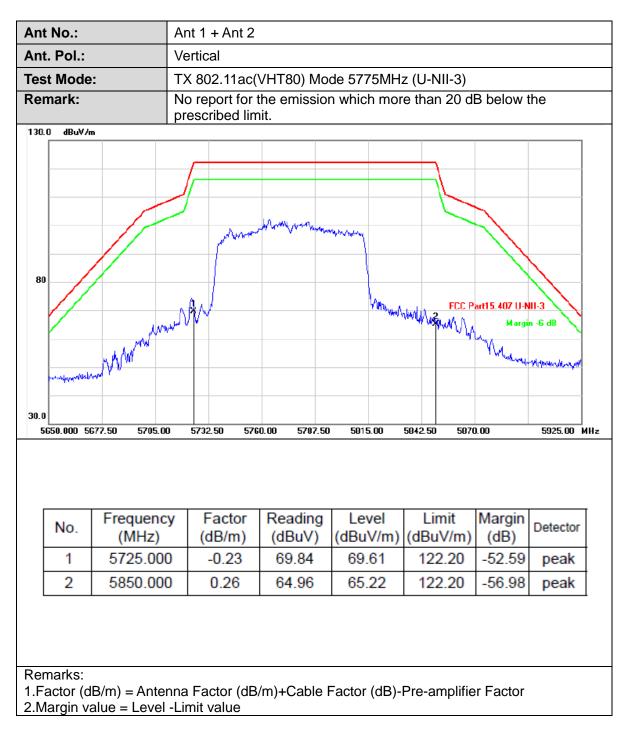












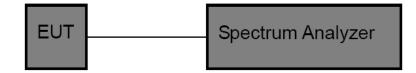


# 3.4. Bandwidth Test

# <u>Limit</u>

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

# **Test Configuration**



#### Test Procedure

EN

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			



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

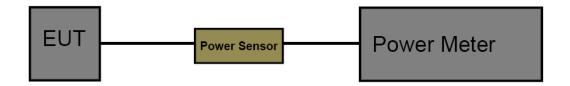
# <u>Limit</u>

FCC Part 15 Subpart E (15.407)					
Test Item	Limit	Frequency Range(MHz)			
Conducted Output Power	Fixed: 1 Watt (30dBm) Mobile and Portable: 250mW (24dBm)	5150~5250			
	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)		
	Other Devices		200mW or 10 + 10 × log10B dBm, whichever is less (B=99% OBW in MHz)	$\ge$	10dBm/MHz
	in vehicles		30mW or 1.76 + 10 × log10B dBm, whichever is less (B=99% OBW in MHz)	$\geq$	
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 MHr)	11dBm/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	$\searrow$
5725MHz-5850MHz	ALL Devices	1₩		30 dBm/500 KHz	

# **Test Configuration**

EN



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# **Test Procedure**

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

# Test Mode

Please refer to the clause 2.4.

# **Test Result**

Please see the Appendix B.



# 3.6. Power Spectral Density Test

# <u>Limit</u>

# 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.

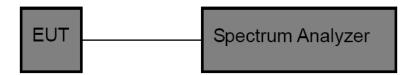
Note: G _{Tx} : EUT	Antenna gain.
-----------------------------	---------------

	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	$\geq$	30mW or 1.76 + 10 × log10B dBm, whichever is less (B=99% OBW in MHz)	$\geq$	
	Other Devices	$\geq$	200mW or 10 + 10 × log10B dBm, whichever is less (B=99% OBW in MHz)		10dBm/MHz
	in vehicles	$\geq$	30mW or 1.76 + 10 × log:0B dBm, whichever is less (B=99% 0BW in MHz)		
5250MHz-5350MHz	Other Devices	250mW or 11 + 10 × logiOB dBm, whichever is less (B=99% OBW in MHz)	1W or 17 + 10 ×logioB dBm, whichever is less (B=99% OBW in MHz)	11dBm/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)	11dBm/Mhz	
5725MHz-5850MHz	ALL Devices	1₩		30 dBm/500KHz	

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# 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:  $\geq$  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.

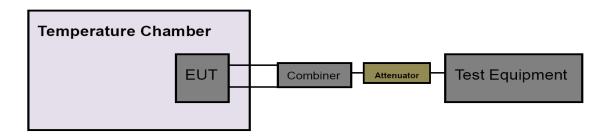


# 3.7. Frequency Stability Measurement

# Limit

FCC Part 15 Subpart C(15.407)				
Test Item	Limit	Frequency Range(MHz)		
Peak Excursion Measurement	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		
		5250~5350		
		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 6.66V to 8.14V percent of the nominal value.
- (6) Extreme temperature is -10°C~40°C
- NOTE: The EUT was set to continuously transmitting in continuously un-modulation transmitting mode. The limit for frequency stability is maintained within the band of operation.

# **Test Mode**

Please refer to the clause 2.4.

#### Test Result

Please see the Appendix D.



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

Complies

Directional gain =  $G_{ANT}$  = 5dBi

Note: All transmit signals are completely uncorrelated with each other in MIMO transmitting modes (Manufacturer's Declaration).



# 3.9. Dynamic Frequency Selection(DFS)

# **Requirement**

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

	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	her tests Any single BW mode		

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.



## 1. DFS Detection Thresholds

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

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	<b>Requirement Values</b>
-----------------------	---------------------------

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.		
<ul> <li>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.</li> <li>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.</li> <li>Note 3: During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each</li> </ul>			
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.





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
1	1	Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a 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	$\operatorname{Roundup}\left\{ \begin{pmatrix} \frac{1}{360} \end{pmatrix}, \\ \begin{pmatrix} \frac{19 \cdot 10^6}{\text{PRI}_{\mu \text{sec}}} \end{pmatrix} \right\}$	60%	30
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30

#### Table 5 Short Pulse Radar Test Waveforms

Aggregate (Radar Types 1-4) 120 80% Note 1: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.

12-16

60%

30

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

$$\left\{ \left(\frac{1}{360}\right) \cdot \left(\frac{19 \cdot 10^6}{3066}\right) \right\}$$

200-500

would be Round up

4

11-20

= Round up {17.2} = 18.

Table 5a - Pulse Repetition I	Intervals Values for Test A
-------------------------------	-----------------------------

Pulse Repetition Frequency Number	Pulse Repetition Frequency (Pulses Per Second)	Pulse Repetition Interval (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	778 798		
15	1253.1			
16	1222.5	818 838 858 878 898		
17	1193.3			
18	1165.6			
19	1139			
20	1113.6			
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.

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

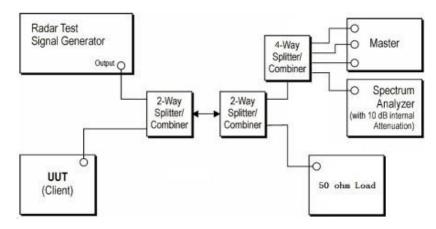


used. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) were set to 3

MHz. The spectrum analyzer had offset -1.0dB to compensate RF cable loss 1.0dB.

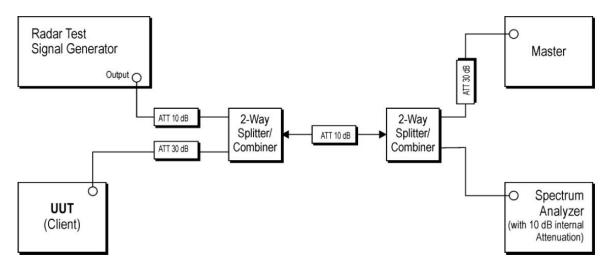
4) The vector signal generator amplitude was set so that the power level measured at the spectrum analyzer was - -62dBm + 0dBi +1dB = -61dBm. Capture the spectrum analyzer plots on short pulse radar waveform.

#### Conducted Calibration Setup



## **Test Configuration**

Setup for Client with injection at the Master





#### Radar Waveform Calibration Result

Not Applicable

## **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.

#### **Test Mode**

Please refer to the clause 2.4.

#### **Test Results**

Passed

Not Applicable