FCC Test Report

Client Name	:	**SPRINTRAY INC**
Client Address	:	**2705 Media Center Drive, Suite 100A, Los Angeles, CA 90065, United States**
Product Name	:	**Pro S**
Report Date	:	**Feb. 17, 2023**

Shenzhen Anbotek Compliance Laboratory Limited

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TEST REPORT

Applicant	:	SPRINTRAY INC
Manufacturer	:	SOONSOLID
Product Name	:	Pro S
Model No.	:	SRP2301A, SRP2301B
Trade Mark	:	SprintRay
Rating(s)	:	Input: 100-240VAC 50/60Hz, 3A
Test Standard(s)	:	**FCC Part15 Subpart E, Paragraph 15.407**
Test Method(s)	:	**ANSI C63.10: 2020** **KDB 789033 D02 General UNII Test Procedures New Rules v02r01**

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart E requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Receipt	Nov. 09, 2022
Date of Test	Nov. 09~Dec. 22, 2022
Prepared By	(Ella Liang)
Approved & Authorized Signer	(Kingkong Jin)

Revision History

Report Version	Description	Issued Date
R00	Original Issue.	Feb. 17, 2023

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Hotline 400-003-0500
www.anbotek.com.cn

1. General Information

1.1. Client Information

Applicant	:	SPRINTRAY INC
Address	:	2705 Media Center Drive, Suite 100A, Los Angeles, CA 90065, United States
Manufacturer	:	SOONSOLID
Address	:	4TH FLOOR, BUILDING 2, QIHANG BUILDING, TECHNOLOGY PARK, NO 586 XIHUAN ROAD, KEQIAO DISTRICT, SHAOXING, ZHEJIANG, CHINA
Factory	:	SOONSOLID
Address	:	NO.79 SHUGUANG ROAD, KEBEI INDUSTRIAL ZONE, QIXIAN SUB-DISTRICT, KEQIAO DISTRICT, SHAOXING, ZHEJIANG, 312000, CHINA

1.2. Description of Device (EUT)

Product Name	:	Pro S
Model No.	:	SRP2301A, SRP2301B (Note: All samples are the same except the internal optical and mechanical accuracy、the size and color of resin tank and printing platform are different, so we prepare "SRP2301A" for testing only.)
Trade Mark	:	SprintRay
Test Power Supply	:	AC 120V, 60Hz
Test Sample No.	:	1-2-1(Normal Sample), 1-2-2(Engineering Sample)
Adapter	:	N/A
RF Specification		
Operation Mode	:	☒ a ☒ n(HT20) ☒ n(HT40) ☒ ac(VHT20) ☒ ac(VHT40) ☒ ac(VHT80) ☐ ac(VHT160) ☐ ax(HEW20) ☐ ax(HEW40) ☐ ax(HEW80) ☐ ax(HEW160)
Device Type	:	☐ Outdoor AP ☐ Indoor AP ☐ Point-to-point AP ☒ Client
Operation Frequency	:	☒ Wi-Fi 5.2G: 5150~5250MHz ☐ Wi-Fi 5.3G: 5250~5350MHz ☐ Wi-Fi 5.6G: 5470~5725MHz ☒ Wi-Fi 5.8G: 5725~5850MHz

Number of Channel	:	Wi-Fi 5.2G: ☒4 Channels for 20MHz bandwidth (5180-5240MHz) ☒2 Channels for 40MHz bandwidth (5190-5230MHz) ☒1 Channels for 80MHz bandwidth (5210MHz) Wi-Fi 5.8G: ☒5 Channels for 20MHz bandwidth (5745MHz ~ 5825MHz) ☒2 Channels for 40MHz bandwidth (5755MHz ~ 5795MHz) ☒1 Channels for 80MHz bandwidth (5775MHz)
Modulation Type	:	☒802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK) ☒802.11n: OFDM (BPSK, QPSK, 16QAM, 64QAM) ☒802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM) ☐802.11ax: OFDMA(BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
Antenna Type	:	PCB antenna
Antenna Gain(Peak)	:	Wi-Fi 5.2G: 2.97 dBi (Provided by customer) Wi-Fi 5.8G: 2.97 dBi (Provided by customer)
Remark: 1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.		

1.3. Auxiliary Equipment Used During Test

Description	Rating(s)
--	--

1.4. Description of Test Modes

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Frequency Band	Mode	Test channel	Frequency (MHz)
5.2GHz	OFDM 802.11a/n(HT20) /ac(HT20)	CH 36	5180MHz
		CH 40	5200MHz
		CH 48	5240MHz
	OFDM 802.11n(HT40)/ac(HT40)	CH 38	5190MHz
		CH 46	5230MHz
	OFDM 802.11ac(HT80)	CH 42	5210MHz
5.8GHz	OFDM 802.11a/n(HT20) /ac(HT20)	CH 149	5745MHz
		CH 157	5785MHz
		CH 165	5825MHz
	OFDM 802.11n(HT40)/ac(HT40)	CH 151	5755MHz
		CH 159	5795MHz

	OFDM 802.11ac(HT80)	CH 155	5775MHz

Note:

1. The measurements are performed at the highest, middle, lowest available channels.
2. The EUT has been tested as an independent unit. And Continual Transmitting in maximum power.
3. For the relevant Conducted Measurement, the temporary antenna connector is used during the measurement. Antenna Connector Impedance: 50Ω, Cable Loss: 1.0 dB
4. The EUT was programmed to be in continuously transmitting mode.

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Hotline 400-003-0500
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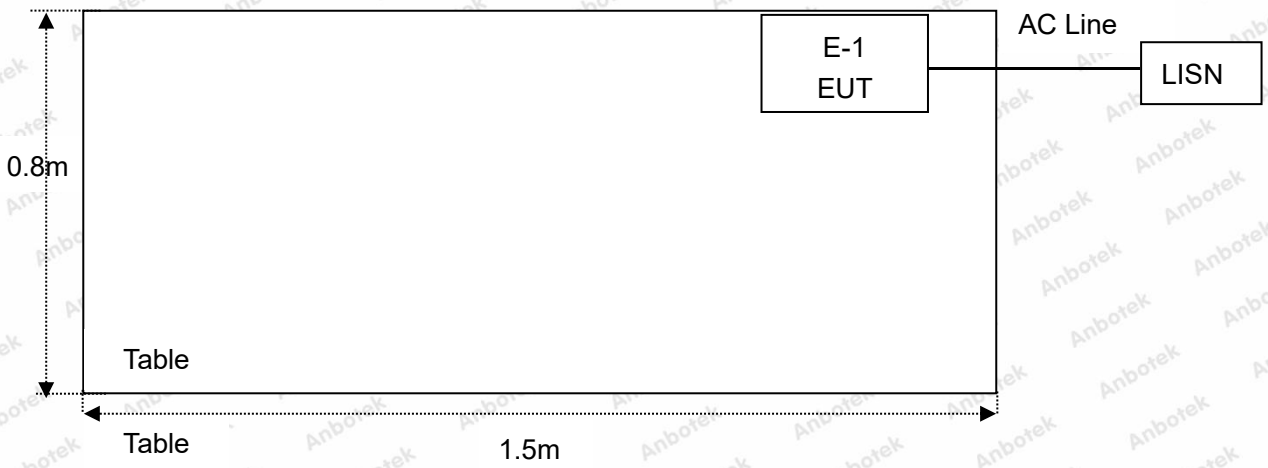
1.5. Description Of Test Setup

CE



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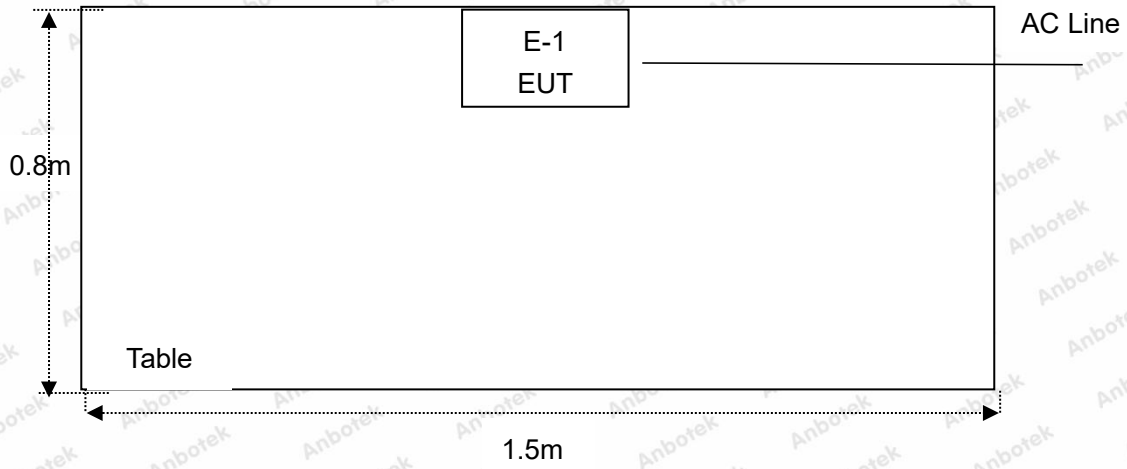


1.6. Test Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	L.I.S.N. Artificial Mains Network	Schwarzbeck	NSLK 8127	8127386	Sept. 7, 2022	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Sept. 7, 2022	1 Year
3.	Spectrum Analysis	Keysight	N9020A	MY53100616	Jun. 10, 2022	1 Year
4.	Preamplifier	SKET Electronic	BK1G18G30 D	KD17503	Oct. 23, 2022	1 Year
5.	Pre-amplifier	EMtrace	RP01A	50017	Sept. 7, 2022	1 Year
6.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Oct. 24, 2021	2 Year
7.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	01417	Sept. 25, 2022	2 Year
8.	Loop Antenna	Schwarzbeck	FMZB1519B	00053	Oct. 23, 2022	1 Year
9.	Test Software	Ferrari Technology	EZ-EMC	N/A	N/A	N/A
10.	Switch box	Meike	/	/	Nov. 10, 2022	1 Year
11.	Power Sensor box	Meike	/	/	Oct. 23, 2022	1 Year
12.	MXG RF Vector Signal Generator	Agilent	N5182A	MY47420822	Feb. 28, 2022	1 Year
13.	Signal Generator	Agilent	E4425B	GB39340038	Oct. 23, 2022	1 Year
14.	DC Power Supply	Longwei	TPR-6420D	020215240	N/A	N/A

1.7. Measurement Uncertainty

Item	Uncertainty
AC Conducted Emissions	3.4 dB
Radiation Emission (Below 1GHz)	5.10 dB(Polarize: V)
	4.52 dB(Polarize: H)
Radiation Emission (Above 1GHz)	4.46 dB(Polarize: H)
	4.92 dB(Polarize: V)
RF output power, conducted	0.74 dB
Conduction unwanted spurious emission	1.69dB
Occupied Bandwidth	193Hz

1.8. Description of Test Facility

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

FCC-Registration No.: 184111

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 184111.

ISED-Registration No.: 8058A

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A.

Test Location

Shenzhen Anbotek Compliance Laboratory Limited.
1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.518102

2. Summary of Test Results

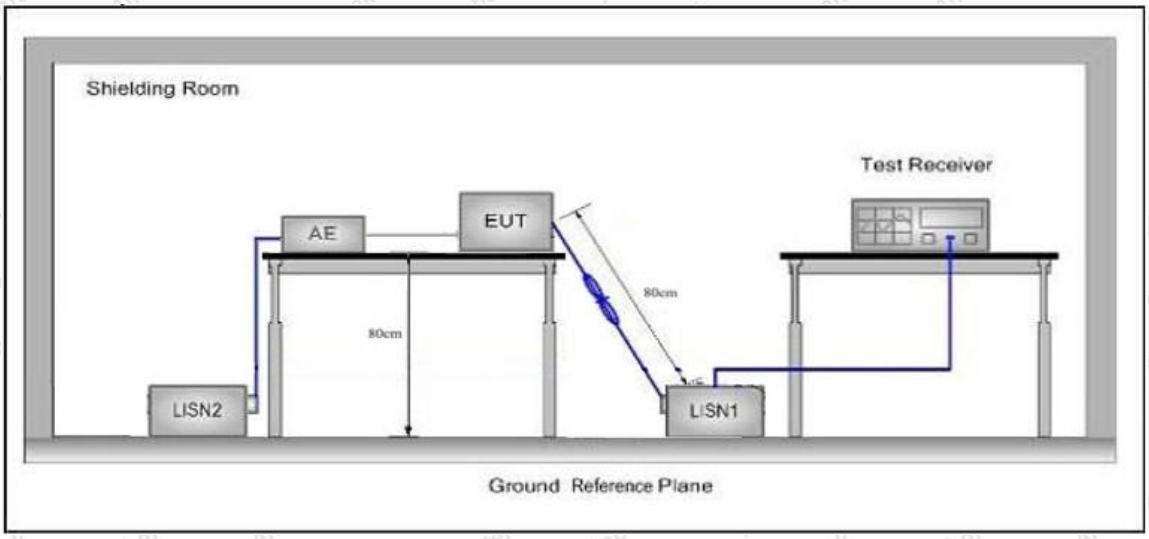
Standard	Test Type	Result
15.207 & 15.407(b)	Conducted Emission	PASS
15.205 & 15.209	Spurious Emission	PASS
15.407(b)	Band Edge	PASS
15.407(a) & 2.1049	26dB Bandwidth & 99% Occupied Bandwidth	PASS
15.407(e)	Minimum 6dB bandwidth (5.725-5.85GHz band)	PASS
15.407(a)	Maximum Conducted Output Power	PASS
15.407(a)	Peak Power Spectral Density	PASS
15.407(g)	Frequency Stability	PASS
15.203	Antenna Requirement	PASS

3. Conducted Emission Test

3.1. Test Standard and Limit

Test Standard	FCC Part15 Section 15.207 & 15.407(b)		
Test Limit	Frequency	Maximum RF Line Voltage (dBuV)	
		Quasi-peak Level	Average Level
	150kHz~500kHz	66 ~ 56 *	56 ~ 46 *
	500kHz~5MHz	56	46
	5MHz~30MHz	60	50
Remark: (1) *Decreasing linearly with logarithm of the frequency. (2) The lower limit shall apply at the transition frequency.			

3.2. Test Setup



3.3. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.10: 2020 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9kHz.

The frequency range from 150kHz to 30MHz is checked.

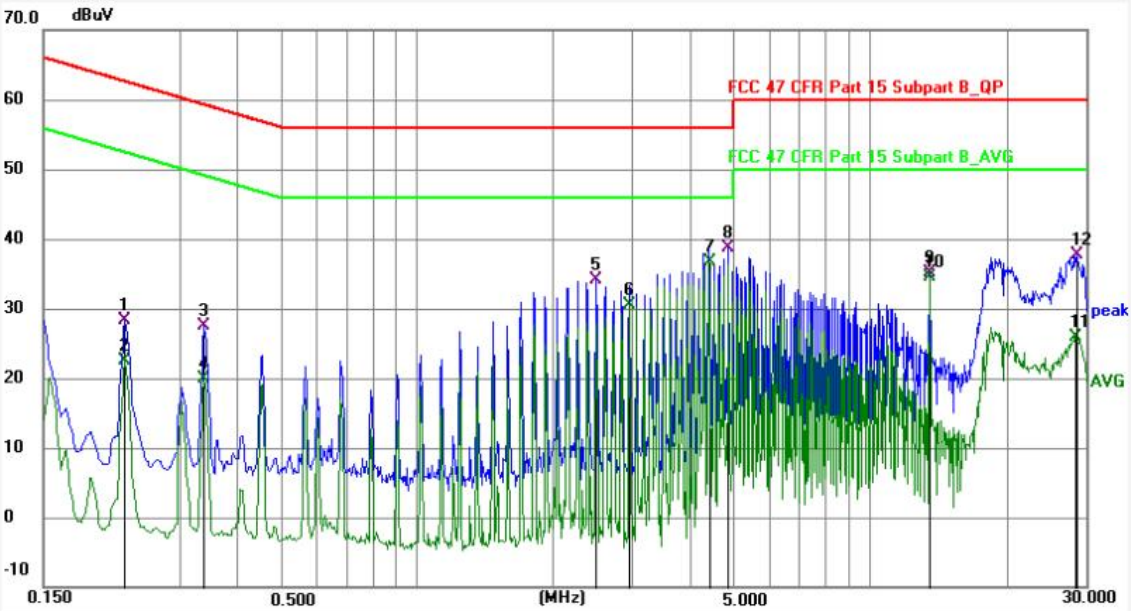
3.4. Test Data

During the test, pre-scan all modes, only the worst case is recorded in the report.

AC conducted emission pre-test at both at AC 120V/60Hz and AC 240V/60Hz modes, recorded worst case AC 120V/60Hz.

Conducted Emission Test Data

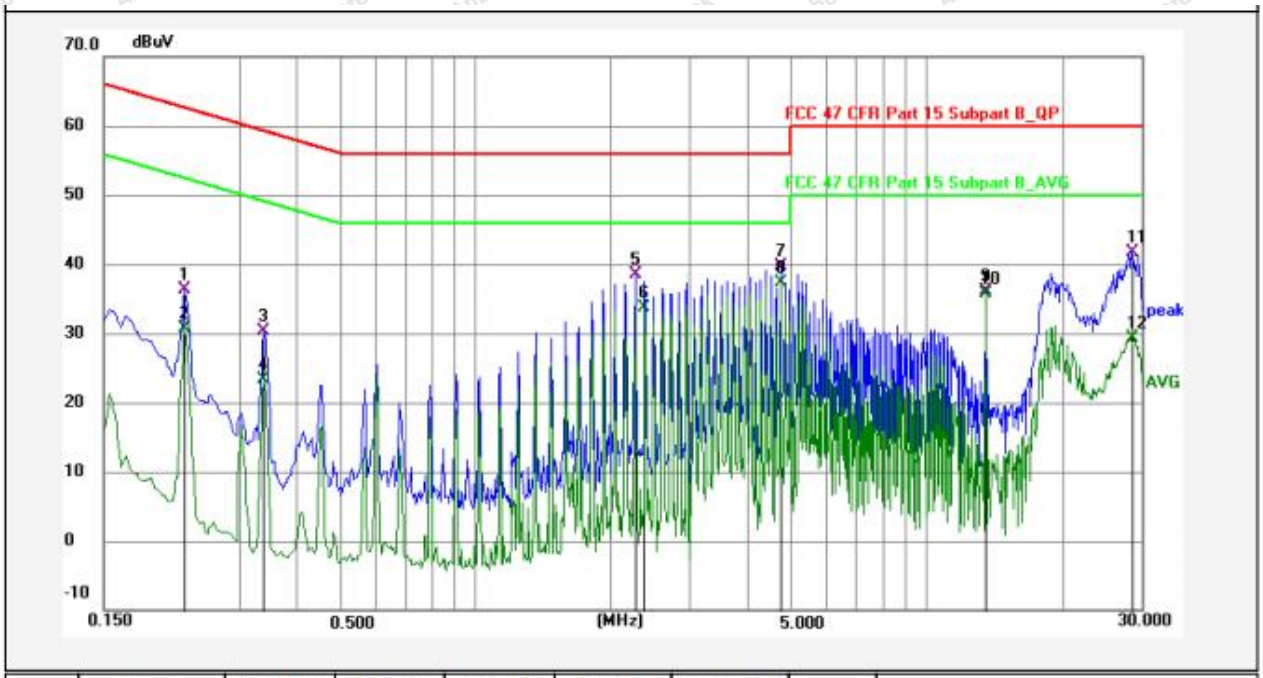
Test Site:	1# Shielded Room
Operating Condition:	802.11a 5825MHz
Test Specification:	AC 120V, 60Hz
Comment:	Live Line
Temp.(℃)/Hum.(%RH):	25.6℃/54%RH



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.2265	27.48	0.88	28.36	62.58	-34.22	QP	
2	0.2265	21.65	0.88	22.53	52.58	-30.05	AVG	
3	0.3390	26.53	0.90	27.43	59.23	-31.80	QP	
4	0.3390	18.91	0.90	19.81	49.23	-29.42	AVG	
5	2.4990	33.16	0.93	34.09	56.00	-21.91	QP	
6	2.9534	29.49	0.94	30.43	46.00	-15.57	AVG	
7	4.4250	35.70	0.96	36.66	46.00	-9.34	AVG	
8	4.8795	37.79	0.98	38.77	56.00	-17.23	QP	
9	13.5645	34.01	1.00	35.01	60.00	-24.99	QP	
10	13.5645	33.51	1.00	34.51	50.00	-15.49	AVG	

Conducted Emission Test Data

Test Site:	1# Shielded Room
Operating Condition:	802.11a 5825MHz
Test Specification:	AC 120V, 60Hz
Comment:	Neutral Line
Temp.(℃)/Hum.(%RH):	25.6℃/54%RH



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Over Limit (dB)	Detector	Remark
1	0.2265	35.44	0.81	36.25	62.58	-26.33	QP	
2	0.2265	29.80	0.81	30.61	52.58	-21.97	AVG	
3	0.3390	29.39	0.83	30.22	59.23	-29.01	QP	
4	0.3390	22.47	0.83	23.30	49.23	-25.93	AVG	
5	2.2695	37.52	0.92	38.44	56.00	-17.56	QP	
6	2.3820	32.77	0.92	33.69	46.00	-12.31	AVG	
7	4.7625	38.81	0.98	39.79	56.00	-16.21	QP	
8	4.7625	36.33	0.98	37.31	46.00	-8.69	AVG	
9	13.5645	35.19	0.98	36.17	60.00	-23.83	QP	
10	13.5645	34.70	0.98	35.68	50.00	-14.32	AVG	
11	28.5810	39.59	2.07	41.66	60.00	-18.34	QP	
12	28.5810	27.30	2.07	29.37	50.00	-20.63	AVG	

4. Radiation Spurious Emission and Band Edge

4.1. Test Standard and Limit

Radiated Spurious Emission					
Test Standard	FCC Part15 C Section 15.205 & 15.209				
Test Limit	Frequency (MHz)	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz~0.490MHz	2400/F(kHz)	-	-	300
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
	1.705MHz-30MHz	30	-	-	30
	30MHz~88MHz	100	40.0	Quasi-peak	3
	88MHz~216MHz	150	43.5	Quasi-peak	3
	216MHz~960MHz	200	46.0	Quasi-peak	3
	960MHz~1000MHz	500	54.0	Quasi-peak	3
	Above 1000MHz	500	54.0	Average	3
		-	68.2	Peak	3

Band Edge				
Test Standard	15.407(b)			
Test Limit	Operating Band	Frequency	EIRP Limit	Remark
	5150-5250MHz	Above 1GHz	-27dBm/MHz(68.2dBuV/m)@3m	Peak
	5250-5350MHz	Above 1GHz	-27dBm/MHz(68.2dBuV/m)@3m	Peak
	5470-5725MHz	Above 1GHz	-27dBm/MHz(68.2dBuV/m)@3m	Peak
	5725-5850 MHz	Above 1GHz	-27dBm/MHz(68.2dBuV/m)@3m	Peak
		1GHz-5.65GHz	-27*dBm/MHz to 10dBm/MHz (68.2* dBuV/m to 105.6dBuV/m)	Peak
		5.65GHz-5.7GHz	10*dBm/MHz to 15.6dBm/MHz (105.6*dBuV/m to 110.8dBuV/m)	Peak
		5.7GHz-5.72GHz	15.6*dBm/MHz to 27dBm/MHz (110.8dBuV/m to* 122.2dBuV/m)	Peak
		5.72GHz-5.725GHz	27dBm/MHz to 15.6*dBm/MHz (122.2dBuV/m to110.8* dBuV/m)	Peak

		5.85GHz-5.855GHz	15.6dBm/MHz to 10*dBm/MHz (110.8dBuV/m to 105.6* dBuV/m	Peak
		5.855GHz-5.875GHz	10dBm/MHz to -27*dBm/MHz (105.6dBuV/m to 68.2* dBuV/m)	Peak
		5.875GHz-5.925GHz	-27 dBm/MHz(68.2dBuV/m)@3m	Peak

Remark:

(1)The lower limit shall apply at the transition frequency.

(2) 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

(3)Above 1GHz limit:E[dBμV/m] = EIRP[dBm] + 95.2=68.2 dBuV/m, for EIPR[dBm]=-27dBm.

4.2. Test Setup

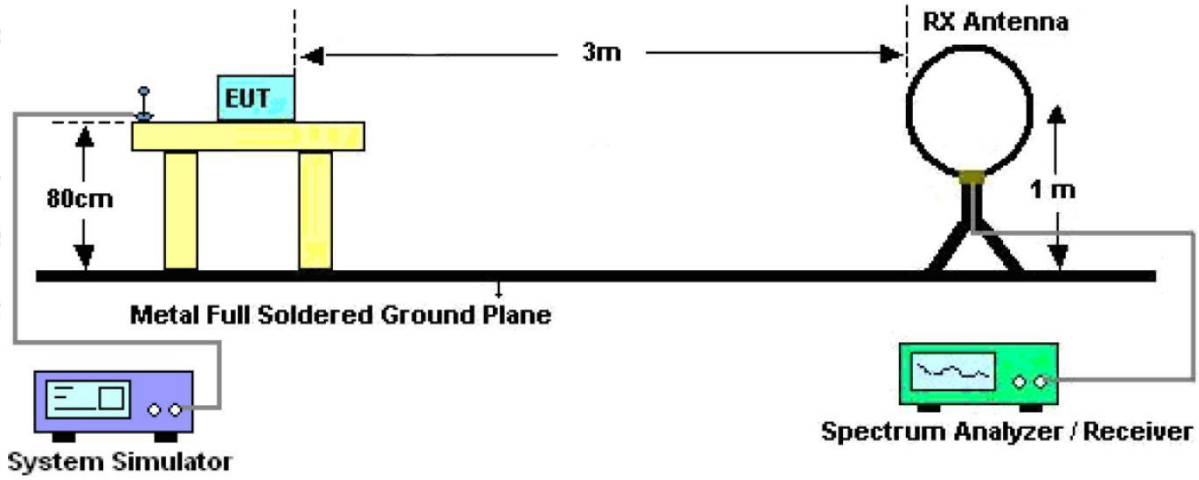


Figure 1. Below 30MHz

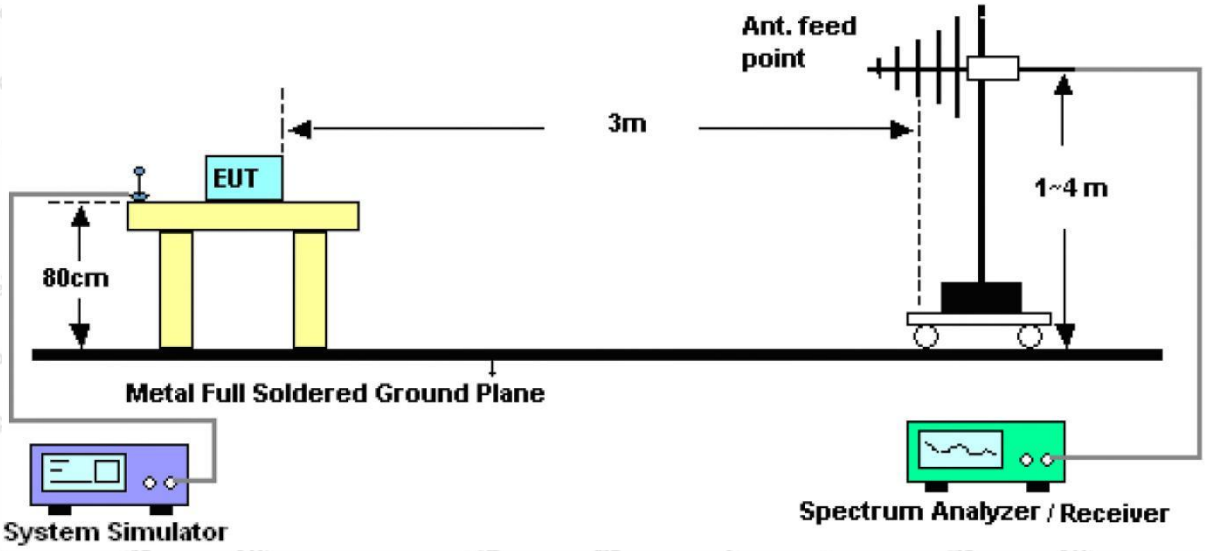


Figure 2. 30MHz to 1GHz

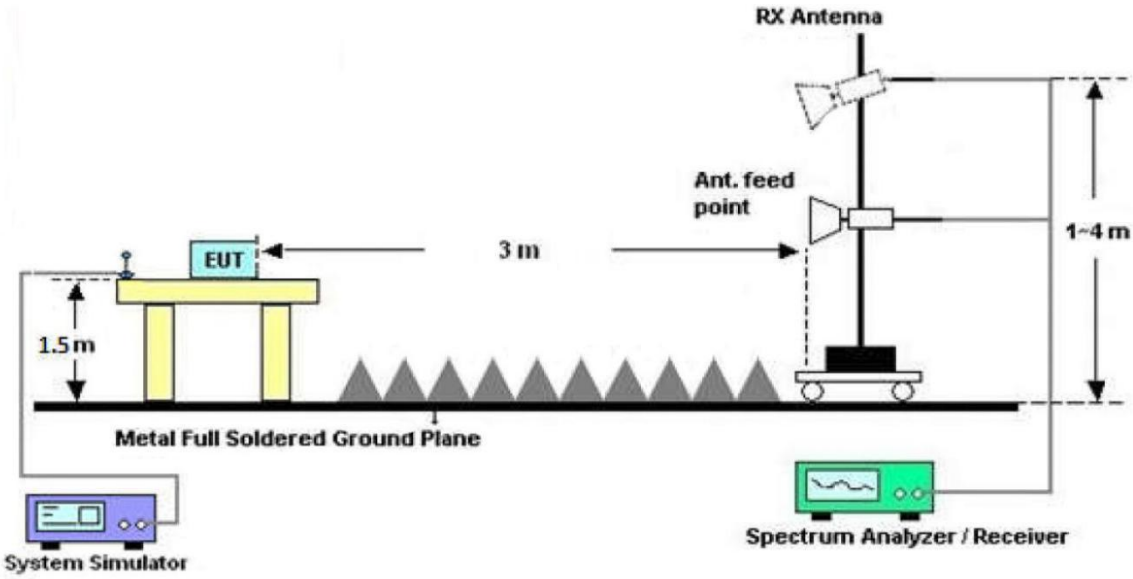


Figure 3. Above 1 GHz

4.3. Test Procedure

For below 1GHz: The EUT is placed on a turntable, which is 0.8m above the ground plane.

For above 1GHz: The EUT is placed on a turntable, which is 1.5m above the ground plane.

The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Rotated the EUT through three orthogonal axes to determine the maximum emissions, both horizontal and vertical polarization of the antenna are set on test. The EUT is tested in 9*6*6 Chamber. The device is evaluated in xyz orientation.

For the radiated emission test above 1GHz:

Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.

For 9kHz to 150kHz, Set the spectrum analyzer as:
RBW = 200Hz, VBW =1kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 150kHz to 30MHz, Set the spectrum analyzer as:
RBW = 9KHz, VBW =30kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For 30MHz to 1000MHz, Set the spectrum analyzer as:
RBW = 100kHz, VBW =300kHz, Detector= Quasi-Peak, Trace mode= Max hold, Sweep- auto couple.

For above 1GHz, Set the spectrum analyzer as:
RBW =1MHz, VBW =1MHz, Detector= Peak, Trace mode= Max hold, Sweep- auto couple.
RBW =1MHz, VBW =10Hz, Detector= Average, Trace mode= Max hold, Sweep- auto couple.

4.4. Test Data

PASS

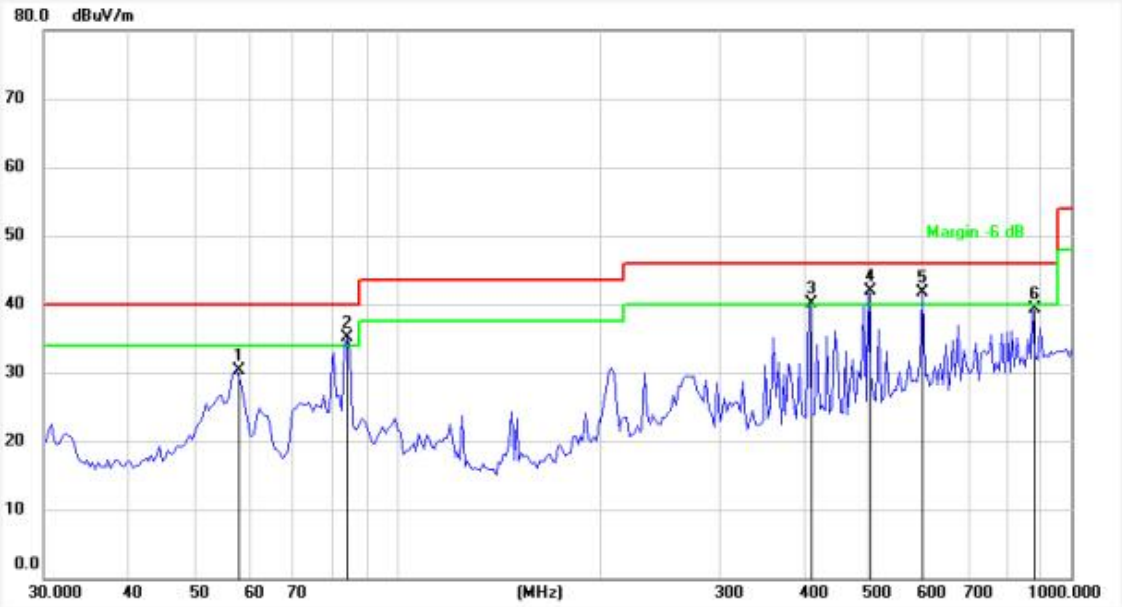
During the test, Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the X-axis is the worst case.

The test results of 9kHz-30MHz was attenuated more than 20dB below the permissible limits, so the results don't record in the report.

During the test, pre-scan all modes, only the worst case is recorded in the report.

Test Results (30~1000MHz)

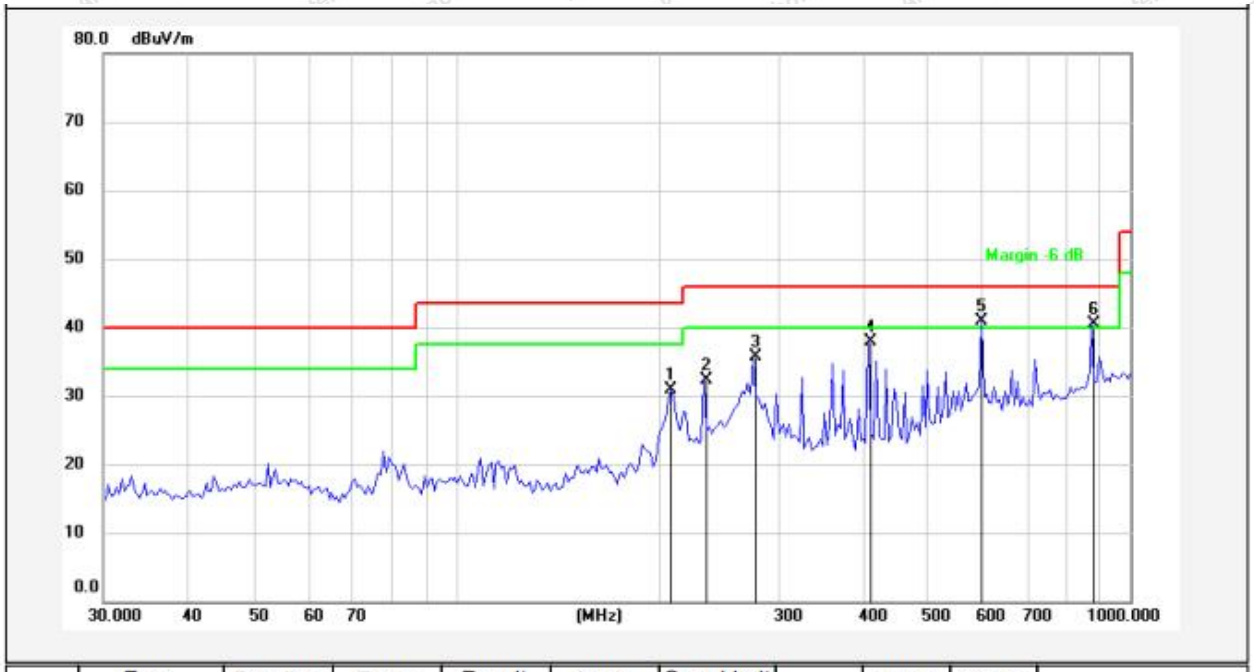
Test Mode:	802.11a 5825MHz
Power Source:	AC 120V, 60Hz
Polarization:	Vertical
Temp.(℃)/Hum.(%RH):	24.8℃/41%RH



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	57.8977	46.16	-15.79	30.37	40.00	-9.63	QP			
2	84.4054	51.11	-16.07	35.04	40.00	-4.96	QP			
3	408.9460	48.15	-8.02	40.13	46.00	-5.87	QP			
4	500.3011	46.70	-4.83	41.87	46.00	-4.13	QP			
5	601.4265	43.01	-1.34	41.67	46.00	-4.33	QP			
6	876.7829	35.72	3.60	39.32	46.00	-6.68	QP			

Test Results (30~1000MHz)

Test Mode:	802.11a 5825MHz
Power Source:	AC 120V, 60Hz
Polarization:	Horizontal
Temp.(℃)/Hum.(%RH):	24.8℃/41%RH



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	208.2148	43.62	-12.77	30.85	43.50	-12.65	QP			
2	233.3487	44.20	-11.87	32.33	46.00	-13.67	QP			
3	275.6399	46.45	-10.84	35.61	46.00	-10.39	QP			
4	408.9460	46.02	-8.02	38.00	46.00	-8.00	QP			
5	601.4265	42.18	-1.34	40.84	46.00	-5.16	QP			
6	876.7829	36.88	3.60	40.48	46.00	-5.52	QP			

Test Results (Above 1000MHz)

Test Mode: IEEE 802.11a							
Test channel: Low CH							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
11490.000	28.49	23.36	51.85	68.20	-16.35	V	Peak
17235.000	29.80	31.97	61.77	68.20	-6.43	V	Peak
11490.000	28.89	23.36	52.25	68.20	-15.95	H	Peak
17235.000	30.04	31.97	62.01	68.20	-6.19	H	Peak
11490.000	17.75	23.36	41.11	54.00	-12.89	V	AVG
17235.000	18.49	31.97	50.46	54.00	-3.54	V	AVG
11490.000	17.92	23.36	41.28	54.00	-12.72	H	AVG
17235.000	18.02	31.97	49.99	54.00	-4.01	H	AVG
Test channel: Middle CH							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
11570.000	29.07	23.42	52.49	68.20	-15.71	V	Peak
17355.000	29.68	32.18	61.86	68.20	-6.34	V	Peak
11570.000	29.09	23.42	52.51	68.20	-15.69	H	Peak
17355.000	30.13	32.18	62.31	68.20	-5.89	H	Peak
11570.000	19.022	23.42	42.44	54.00	-11.56	V	AVG
17355.000	18.807	32.18	50.99	54.00	-3.01	V	AVG
11570.000	18.914	23.42	42.33	54.00	-11.67	H	AVG
17355.000	18.397	32.18	50.58	54.00	-3.42	H	AVG
Test channel: High CH							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
11650.000	28.58	23.49	52.07	68.20	-16.13	V	Peak
17475.000	29.92	32.39	62.31	68.20	-5.89	V	Peak
11650.000	28.83	23.49	52.32	68.20	-15.88	H	Peak
17475.000	29.74	32.39	62.13	68.20	-6.07	H	Peak
11650.000	18.09	23.49	41.58	54.00	-12.42	V	AVG
17475.000	18.61	32.39	51.00	54.00	-3.00	V	AVG
11650.000	18.09	23.49	41.58	54.00	-12.42	H	AVG
17475.000	18.37	32.39	50.76	54.00	-3.24	H	AVG

Remark:

1. During the test, pre-scan 802.11a, 802.11n(HT20), ac(HT20), n(HT40), ac(HT40), ac(HT80) modes, and found that the 802.11a mode of the 5.8G frequency band is worse , the report only records that pattern.
2. Result =Reading + Factor

Radiated Band Edge: 5.2G

Test Mode: IEEE 802.11a							
Test channel: Lowest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5150.00	36.78	15.99	52.77	68.20	-15.43	H	Peak
5150.00	38.81	15.99	54.80	68.20	-13.40	V	Peak
5150.00	26.77	15.99	42.76	54.00	-11.24	H	AVG
5150.00	28.77	15.99	44.76	54.00	-9.24	V	AVG
Test channel: Highest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5250.00	37.28	16.43	53.71	68.20	-14.49	H	Peak
5250.00	40.10	16.43	56.53	68.20	-11.67	V	Peak
5250.00	28.53	16.43	44.96	54.00	-9.04	H	AVG
5250.00	29.50	16.43	45.93	54.00	-8.07	V	AVG

Remark: 1. Result =Reading + Factor

Test Mode: IEEE 802.11n(HT20)							
Test channel: Lowest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5150.00	35.80	15.99	51.79	68.20	-16.41	H	Peak
5150.00	37.14	15.99	53.13	68.20	-15.07	V	Peak
5150.00	26.52	15.99	42.51	54.00	-11.49	H	AVG
5150.00	27.53	15.99	43.52	54.00	-10.48	V	AVG
Test channel: Highest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5250.00	37.58	16.43	54.01	68.20	-14.19	H	Peak
5250.00	38.66	16.43	55.09	68.20	-13.11	V	Peak
5250.00	27.60	16.43	44.03	54.00	-9.97	H	AVG
5250.00	28.99	16.43	45.42	54.00	-8.58	V	AVG

Remark: 1. Result =Reading + Factor

Test Mode: IEEE 802.11n(HT40)							
Test channel: Lowest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5150.00	36.25	15.99	52.24	68.20	-15.96	H	Peak
5150.00	38.12	15.99	54.11	68.20	-14.09	V	Peak
5150.00	26.80	15.99	42.79	54.00	-11.21	H	AVG
5150.00	28.65	15.99	44.64	54.00	-9.36	V	AVG
Test channel: Highest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5250.00	37.93	16.43	54.36	68.20	-13.84	H	Peak
5250.00	36.85	16.43	53.28	68.20	-14.92	V	Peak
5250.00	28.05	16.43	44.48	54.00	-9.52	H	AVG
5250.00	29.22	16.43	45.65	54.00	-8.35	V	AVG

Remark: 1. Result =Reading + Factor

Test Mode: IEEE 802.11ac(HT20)							
Test channel: Lowest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5150.00	36.69	15.99	52.68	68.20	-15.52	H	Peak
5150.00	38.41	15.99	54.40	68.20	-13.80	V	Peak
5150.00	26.43	15.99	42.42	54.00	-11.58	H	AVG
5150.00	28.55	15.99	44.54	54.00	-9.46	V	AVG
Test channel: Highest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5250.00	37.75	16.43	54.18	68.20	-14.02	H	Peak
5250.00	38.02	16.43	54.45	68.20	-13.75	V	Peak
5250.00	27.62	16.43	44.05	54.00	-9.95	H	AVG
5250.00	28.11	16.43	44.54	54.00	-9.46	V	AVG

Remark: 1. Result =Reading + Factor

Test Mode: IEEE 802.11ac(HT40)							
Test channel: Lowest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5150.00	35.66	15.99	51.65	68.20	-16.55	H	Peak
5150.00	36.18	15.99	52.17	68.20	-16.03	V	Peak
5150.00	25.75	15.99	41.74	54.00	-12.26	H	AVG
5150.00	26.58	15.99	42.57	54.00	-11.43	V	AVG
Test channel: Highest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5250.00	37.85	16.43	54.28	68.20	-13.92	H	Peak
5250.00	37.05	16.43	53.48	68.20	-14.72	V	Peak
5250.00	27.36	16.43	43.79	54.00	-10.21	H	AVG
5250.00	27.17	16.43	43.60	54.00	-10.40	V	AVG

Remark: 1. Result =Reading + Factor

Test Mode: IEEE 802.11ac(HT80)							
Test channel: Lowest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5150.00	35.89	15.99	51.88	68.20	-16.32	H	Peak
5150.00	36.15	15.99	52.14	68.20	-16.06	V	Peak
5150.00	26.27	15.99	42.26	54.00	-11.74	H	AVG
5150.00	26.63	15.99	42.62	54.00	-11.38	V	AVG
Test channel: Highest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5250.00	38.01	16.43	54.44	68.20	-13.76	H	Peak
5250.00	37.21	16.43	53.64	68.20	-14.56	V	Peak
5250.00	28.45	16.43	44.88	54.00	-9.12	H	AVG
5250.00	27.90	16.43	44.33	54.00	-9.67	V	AVG

Remark: 1. Result =Reading + Factor

Radiated Band Edge: 5.8G

Test Mode: IEEE 802.11a							
Test channel: Lowest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5725.00	38.02	16.37	54.39	74.00	-19.61	H	Peak
5725.00	39.34	16.37	55.71	74.00	-18.29	V	Peak
5725.00	28.61	16.70	45.31	54.00	-8.69	H	AVG
5725.00	29.67	16.70	46.37	54.00	-7.63	V	AVG
Test channel: Highest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	38.93	17.21	56.14	68.20	-12.06	H	Peak
5850.00	39.27	17.21	56.48	68.20	-11.72	V	Peak
5850.00	28.95	17.21	46.16	54.00	-7.84	H	AVG
5850.00	28.99	17.21	46.20	54.00	-7.80	V	AVG

Remark: 1. Result =Reading + Factor

Test Mode: IEEE 802.11n(HT20)							
Test channel: Lowest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5725.00	37.97	16.37	54.34	74.00	-19.66	H	Peak
5725.00	38.51	16.37	54.88	74.00	-19.12	V	Peak
5725.00	27.28	16.70	43.98	54.00	-10.02	H	AVG
5725.00	27.65	16.70	44.35	54.00	-9.65	V	AVG
Test channel: Highest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	37.17	17.21	54.38	68.20	-13.82	H	Peak
5850.00	37.83	17.21	55.04	68.20	-13.16	V	Peak
5850.00	27.40	17.21	44.61	54.00	-9.39	H	AVG
5850.00	28.28	17.21	45.49	54.00	-8.51	V	AVG

Remark: 1. Result =Reading + Factor

Test Mode: IEEE 802.11n(HT40)							
Test channel: Lowest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5725.00	37.55	16.37	53.92	74.00	-20.08	H	Peak
5725.00	38.39	16.37	54.76	74.00	-19.24	V	Peak
5725.00	26.57	16.70	43.27	54.00	-10.73	H	AVG
5725.00	28.08	16.70	44.78	54.00	-9.22	V	AVG
Test channel: Highest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	37.91	17.05	54.96	68.20	-13.24	H	Peak
5850.00	38.34	17.05	55.39	68.20	-12.81	V	Peak
5850.00	28.07	17.05	45.12	54.00	-8.88	H	AVG
5850.00	29.21	17.05	46.26	54.00	-7.74	V	AVG

Remark: 1. Result =Reading + Factor

Test Mode: IEEE 802.11ac(HT20)							
Test channel: Lowest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5725.00	37.23	16.37	53.60	74.00	-20.40	H	Peak
5725.00	37.45	16.37	53.82	74.00	-20.18	V	Peak
5725.00	27.92	16.70	44.62	54.00	-9.38	H	AVG
5725.00	28.46	16.70	45.16	54.00	-8.84	V	AVG
Test channel: Highest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	37.97	17.21	55.18	68.20	-13.02	H	Peak
5850.00	38.88	17.21	56.09	68.20	-12.11	V	Peak
5850.00	27.87	17.21	45.08	54.00	-8.92	H	AVG
5850.00	28.88	17.21	46.09	54.00	-7.91	V	AVG

Remark: 1. Result =Reading + Factor

Test Mode: IEEE 802.11ac(HT40)							
Test channel: Lowest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5725.00	36.19	16.37	52.56	74.00	-21.44	H	Peak
5725.00	37.75	16.37	54.12	74.00	-19.88	V	Peak
5725.00	27.20	16.70	43.90	54.00	-10.10	H	AVG
5725.00	27.94	16.70	44.64	54.00	-9.36	V	AVG
Test channel: Highest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	37.55	17.21	54.76	68.20	-13.44	H	Peak
5850.00	38.32	17.21	55.53	68.20	-12.67	V	Peak
5850.00	27.54	17.21	44.75	54.00	-9.25	H	AVG
5850.00	27.11	17.21	44.32	54.00	-9.68	V	AVG

Remark: 1. Result =Reading + Factor

Test Mode: IEEE 802.11ac(HT80)							
Test channel: Lowest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5725.00	35.37	16.37	51.74	74.00	-22.26	H	Peak
5725.00	36.82	16.37	53.19	74.00	-20.81	V	Peak
5725.00	25.92	16.70	42.62	54.00	-11.38	H	AVG
5725.00	26.76	16.70	43.46	54.00	-10.54	V	AVG
Test channel: Highest							
Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Over limit (dB)	Antenna Pol.	Detector
5850.00	37.39	17.21	54.60	68.20	-13.60	H	Peak
5850.00	37.74	17.21	54.95	68.20	-13.25	V	Peak
5850.00	27.71	17.21	44.92	54.00	-9.08	H	AVG
5850.00	28.14	17.21	45.35	54.00	-8.65	V	AVG

Remark: 1. Result =Reading + Factor

Conducted Measurement:

5.2G: Please refer to clause 5&clause 6 of the Appendix Test Data.

5.8G: Please refer to clause 6&clause 7 of the Appendix Test Data.

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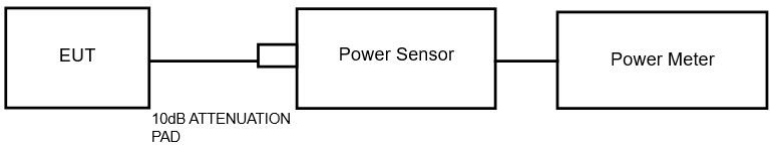
5. Maximum conducted output power Test

5.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.407(a)	
Test Limit	5.15 - 5.25GHz	1) Outdoor AP The maximum conducted output power (Pout) shall not exceed the lesser of 1W (30dBm). if GTx>6dBi, then Pout =30-(GTx-6). e.i.r.p. at any elevation angle above 30 degrees≤125mW (21dBm) 2) Indoor AP The maximum conducted output power (Pout) shall not exceed the lesser of 1W (30dBm). if GTx>6dBi, then Pout =30-(GTx-6). 3) Point-to-point AP The maximum conducted output power (Pout) shall not exceed the lesser of 1W (30dBm). if GTx>23dBi, then Pout =30-(GTx-23). 4) Client devices The maximum conducted output power (Pout) shall not exceed the lesser of 250W (23.98dBm). if GTx>6dBi, then Pout =24-(GTx-6).
	5.25 - 5.35GHz	The maximum conducted output power (Pout) shall not exceed the lesser of 250mW (24dBm) or 11dBm+10 log B, where B is the 26dB emission bandwith in MHz. if GTx>6dBi, then Pout =24-(GTx-6).
	5.47- 5.725GHz	The maximum conducted output power (Pout) shall not exceed the lesser of 250mW (23.98dBm) or 11dBm+10 log B, where B is the 26dB emission bandwith in MHz. if GTx>6dBi, then Pout =24-(GTx-6).
	5.725 - 5.85GHz	1) Point-to-multipoint systems (P2M) The maximum conducted output power (Pout) shall not exceed the lesser of 1W (30dBm). if GTx>6dBi, then Pout =30-(GTx-6). 2) Point-to-point systems (P2P) The maximum conducted output power (Pout) shall not exceed the lesser of 1W (30dBm).

5.2. Test Setup



5.3. Test Procedure

1. The Transmitter output (antenna port) was connected to the power meter.

2. Turn on the EUT and power meter and then record the power value.
3. Repeat above procedures on all channels needed to be tested.
Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

5.4. Test Data

Pass
5.2G: Please refer to clause 3 of the Appendix Test Data.
5.8G: Please refer to clause 4 of the Appendix Test Data.

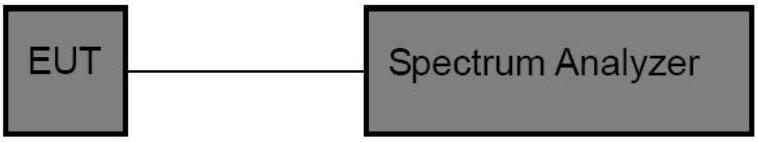
Additional test for duty cycle.
5.2G: Please refer to clause 2 of the Appendix Test Data.
5.8G: Please refer to clause 3 of the Appendix Test Data.

6. 26dB Bandwidth & 99% Occupied Bandwidth Test

6.1. Test Standard

Test Standard	FCC Part15 C Section 15.407(a) & 2.1049
Test Limit	N/A

6.2. Test Setup



6.3. Test Procedure

1. Place the EUT on the table and set it in the transmitting mode.

2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

3. Set the spectrum analyzer as:

   26 dB &99%bandwidth
   RBW = approximately 1% of the emission bandwidth;
   Set the VBW＞RBW;
   Detector= Peak
   Trace mode= Max hold.
   Sweep- auto couple.

4. Measure the maximum width of the emission that is 26dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer.

5. Repeat until all the rest channels are investigated.

6.4. Test Data

Pass

5.2G: Please refer to clause 1 of the Appendix Test Data.

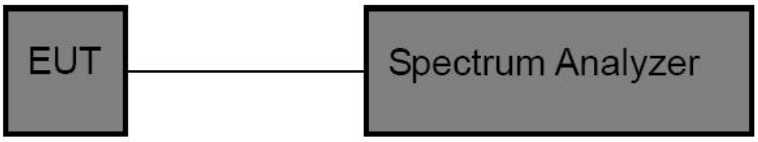
5.8G: Please refer to clause 2 of the Appendix Test Data.

7. Minimum 6dB bandwidth Test

7.1. Test Standard

Test Standard	FCC Part15 C Section 15.407(e)
Test Limit	≥500 kHz

7.2. Test Setup



7.3. Test Procedure

1. Place the EUT on the table and set it in the transmitting mode.

2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

4. Set the spectrum analyzer as:

6 dB bandwidth
RBW = approximately 1% of the emission bandwidth;
Set the VBW＞RBW;
Detector= Peak
Trace mode= Max hold.
Sweep- auto couple.

4. Measure the maximum width of the emission that is 6dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer.

5. Repeat until all the rest channels are investigated.

7.4. Test Data

Pass

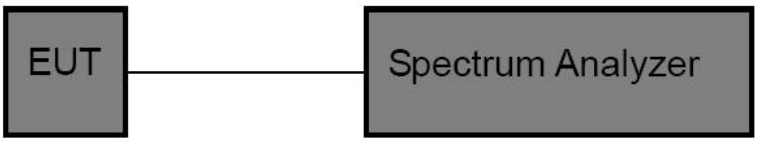
Please refer to Clause 1 of Appendix 5.8GTest Data.

8. Power Spectral Density Test

8.1. Test Standard and Limit

Test Standard	FCC Part15 C Section 15.407(a)	
Test Limit	5.15 - 5.25GHz	1) Outdoor AP The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz. if GTx>6dBi, then PSD =17-(GTx-6). 2) Indoor AP The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz. if GTx>6dBi, then PSD =17-(GTx-6). 3) Point-to-point AP The peak power spectral density (PSD) shall not exceed the lesser of 17dBm/MHz. if GTx>23dBi, then PSD =17-(GTx-23). 4) Client devices The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz. if GTx>6dBi, then PSD =11-(GTx-6).
	5.25 - 5.35GHz	The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz. if GTx>6dBi, then PSD =11-(GTx-6).
	5.47- 5.725GHz	The peak power spectral density (PSD) shall not exceed the lesser of 11dBm/MHz. if GTx>6dBi, then PSD =11-(GTx-6).
	5.725 - 5.85GHz	1) Point-to-multipoint systems (P2M) The peak power spectral density (PSD) shall not exceed the lesser of 30dBm/500kHz. if GTx>6dBi, then PSD =30-(GTx-6). 2) Point-to-point systems (P2P) The peak power spectral density (PSD) shall not exceed the lesser of 30dBm/500kHz.

8.2. Test Setup



8.3. Test Procedure

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz).

1. The EUT is directly connected to the spectrum analyzer;
2. Set RBW =1MHz;

3. Set VBW ≥ 3 RBW=3MHz;
3. Set the span to encompass the entire emissions bandwidth (EBW) of the signal;
5. Detector=RMS;
6. Sweep time= auto couple;
7. Trace mode=max. hold;

8.4. Test Data

Pass

5.2G: Please refer to clause 4 of the Appendix Test Data.

5.8G: Please refer to clause 5 of the Appendix Test Data.

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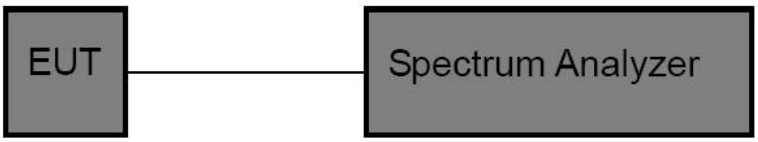
9. Frequency Stability

9.1. Test Standard and Limit

Test Standard	FCC Part15 Section 15.407(g)
Test Limit	The frequency tolerance shall be maintained within the band of operation frequency over a temperature variation of 0 degrees to 35 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

9.2. Test Setup



9.3. Test Procedure

The EUT was placed inside the environmental test chamber and powered by nominal AC/DC voltage. b. Turn the EUT on and couple its output to a spectrum analyzer. c. Turn the EUT off and set the chamber to the highest temperature specified. d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature. f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

9.4. Test Data

Pass

Please to see the following pages.

Test Mode: 5.2G							
Mode	TX Type	Frequency (MHz)	Temperature (°C)	Voltage (VDC)	Measured Frequency (MHz)	Limit	Verdict
802.11a	SISO	5180	20	102.00	5180.12	5172 to 5188	Pass
				120.00	5180.10	5172 to 5188	Pass
				138.00	5180.04	5172 to 5188	Pass
			-30	120.00	5180.10	5172 to 5188	Pass
			-20	120.00	5180.06	5150 to 5250	Pass
			-10	120.00	5180.07	5150 to 5250	Pass
			0	120.00	5180.13	5150 to 5250	Pass
			10	120.00	5180.10	5150 to 5250	Pass
			30	120.00	5180.06	5150 to 5250	Pass
			40	120.00	5180.04	5150 to 5250	Pass
			50	120.00	5180.08	5172 to 5188	Pass
		5200	20	102.00	5200.05	5192 to 5208	Pass
				120.00	5200.03	5192 to 5208	Pass
				138.00	5200.08	5192 to 5208	Pass
			-30	120.00	5200.02	5192 to 5208	Pass
			-20	120.00	5200.11	5150 to 5250	Pass
			-10	120.00	5200.01	5150 to 5250	Pass
			0	120.00	5200.06	5150 to 5250	Pass
			10	120.00	5200.05	5150 to 5250	Pass
			30	120.00	5200.05	5150 to 5250	Pass
			40	120.00	5200.09	5150 to 5250	Pass
			50	120.00	5200.04	5192 to 5208	Pass
		5240	20	102.00	5240.12	5232 to 5248	Pass
				120.00	5240.03	5232 to 5248	Pass
				138.00	5240.04	5232 to 5248	Pass
			-30	120.00	5240.04	5232 to 5248	Pass
			-20	120.00	5240.02	5150 to 5250	Pass
			-10	120.00	5240.05	5150 to 5250	Pass
			0	120.00	5240.09	5150 to 5250	Pass
			10	120.00	5240.03	5150 to 5250	Pass
			30	120.00	5240.04	5150 to 5250	Pass
			40	120.00	5240.09	5150 to 5250	Pass
			50	120.00	5240.05	5232 to 5248	Pass
802.11n (HT20)	SISO	5180	20	102.00	5180.06	5172 to 5188	Pass
				120.00	5180.12	5172 to 5188	Pass
				138.00	5180.00	5172 to 5188	Pass
			-30	120.00	5180.08	5172 to 5188	Pass

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			-20	120.00	5180.06	5150 to 5250	Pass
			-10	120.00	5180.08	5150 to 5250	Pass
			0	120.00	5180.02	5150 to 5250	Pass
			10	120.00	5180.09	5150 to 5250	Pass
			30	120.00	5180.04	5150 to 5250	Pass
			40	120.00	5180.09	5150 to 5250	Pass
			50	120.00	5180.02	5172 to 5188	Pass
		5200	20	102.00	5200.09	5192 to 5208	Pass
				120.00	5200.02	5192 to 5208	Pass
				138.00	5200.12	5192 to 5208	Pass
			-30	120.00	5200.02	5192 to 5208	Pass
			-20	120.00	5200.01	5150 to 5250	Pass
			-10	120.00	5200.08	5150 to 5250	Pass
			0	120.00	5200.02	5150 to 5250	Pass
			10	120.00	5200.02	5150 to 5250	Pass
			30	120.00	5200.08	5150 to 5250	Pass
			40	120.00	5200.01	5150 to 5250	Pass
			50	120.00	5200.09	5192 to 5208	Pass
		5240	20	102.00	5240.03	5232 to 5248	Pass
				120.00	5240.08	5232 to 5248	Pass
				138.00	5240.00	5232 to 5248	Pass
			-30	120.00	5240.07	5232 to 5248	Pass
			-20	120.00	5240.01	5150 to 5250	Pass
			-10	120.00	5240.00	5150 to 5250	Pass
			0	120.00	5240.02	5150 to 5250	Pass
			10	120.00	5240.03	5150 to 5250	Pass
			30	120.00	5240.03	5150 to 5250	Pass
			40	120.00	5240.05	5150 to 5250	Pass
			50	120.00	5240.10	5232 to 5248	Pass
802.11n (HT40)	SISO	5190	20	102.00	5190.07	5174 to 5206	Pass
				120.00	5190.07	5174 to 5206	Pass
				138.00	5190.10	5174 to 5206	Pass
			-30	120.00	5190.03	5174 to 5206	Pass
			-20	120.00	5190.08	5150 to 5250	Pass
			-10	120.00	5190.03	5150 to 5250	Pass
			0	120.00	5190.04	5150 to 5250	Pass
			10	120.00	5190.03	5150 to 5250	Pass
			30	120.00	5190.04	5150 to 5250	Pass
			40	120.00	5190.08	5150 to 5250	Pass
			50	120.00	5190.05	5174 to 5206	Pass

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		5230	20	138.00	5230.04	5214 to 5246	Pass
				120.00	5230.02	5214 to 5246	Pass
				120.00	5230.10	5214 to 5246	Pass
			-30	120.00	5230.08	5214 to 5246	Pass
			-20	120.00	5230.08	5150 to 5250	Pass
			-10	120.00	5230.05	5150 to 5250	Pass
			0	120.00	5230.08	5150 to 5250	Pass
			10	120.00	5230.05	5150 to 5250	Pass
			30	120.00	5230.07	5150 to 5250	Pass
			40	138.00	5230.04	5150 to 5250	Pass
			50	120.00	5230.02	5214 to 5246	Pass
802.11ac (VHT20)	SISO	5180	20	102.00	5180.08	5172 to 5188	Pass
				120.00	5180.12	5172 to 5188	Pass
				138.00	5180.05	5172 to 5188	Pass
			-30	120.00	5180.09	5172 to 5188	Pass
			-20	120.00	5180.10	5150 to 5250	Pass
			-10	120.00	5180.06	5150 to 5250	Pass
			0	120.00	5180.12	5150 to 5250	Pass
			10	120.00	5180.03	5150 to 5250	Pass
			30	120.00	5180.06	5150 to 5250	Pass
			40	120.00	5180.10	5150 to 5250	Pass
			50	120.00	5180.00	5172 to 5188	Pass
		5200	20	102.00	5200.05	5192 to 5208	Pass
				120.00	5200.02	5192 to 5208	Pass
				138.00	5200.01	5192 to 5208	Pass
			-30	120.00	5200.10	5192 to 5208	Pass
			-20	120.00	5200.03	5150 to 5250	Pass
			-10	120.00	5200.02	5150 to 5250	Pass
			0	120.00	5200.02	5150 to 5250	Pass
			10	120.00	5200.08	5150 to 5250	Pass
			30	120.00	5200.09	5150 to 5250	Pass
			40	120.00	5200.12	5150 to 5250	Pass
			50	120.00	5200.04	5192 to 5208	Pass
		5240	20	102.00	5240.00	5232 to 5248	Pass
				120.00	5240.10	5232 to 5248	Pass
				138.00	5240.01	5232 to 5248	Pass
			-30	120.00	5240.09	5232 to 5248	Pass
			-20	120.00	5240.02	5150 to 5250	Pass
			-10	120.00	5240.01	5150 to 5250	Pass
			0	120.00	5240.12	5150 to 5250	Pass

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			10	120.00	5240.00	5150 to 5250	Pass
			30	120.00	5240.05	5150 to 5250	Pass
			40	120.00	5240.12	5150 to 5250	Pass
			50	120.00	5240.13	5232 to 5248	Pass
802.11ac (VHT40)	SISO	5190	20	102.00	5190.12	5174 to 5206	Pass
				120.00	5190.11	5174 to 5206	Pass
				138.00	5190.09	5174 to 5206	Pass
			-30	120.00	5190.12	5174 to 5206	Pass
			-20	120.00	5190.05	5150 to 5250	Pass
			-10	120.00	5190.02	5150 to 5250	Pass
			0	120.00	5190.03	5150 to 5250	Pass
			10	120.00	5190.10	5150 to 5250	Pass
			30	120.00	5190.05	5150 to 5250	Pass
			40	120.00	5190.10	5150 to 5250	Pass
			50	120.00	5190.08	5174 to 5206	Pass
		5230	20	102.00	5230.08	5214 to 5246	Pass
				120.00	5230.01	5214 to 5246	Pass
				138.00	5230.02	5214 to 5246	Pass
			-30	120.00	5230.03	5214 to 5246	Pass
			-20	120.00	5230.06	5150 to 5250	Pass
			-10	120.00	5230.02	5150 to 5250	Pass
			0	120.00	5230.08	5150 to 5250	Pass
			10	120.00	5230.07	5150 to 5250	Pass
			30	120.00	5230.12	5150 to 5250	Pass
			40	120.00	5230.03	5150 to 5250	Pass
			50	120.00	5230.01	5214 to 5246	Pass
802.11ac (VHT80)	SISO	5210	20	102.00	5210.11	5178 to 5242	Pass
				120.00	5210.03	5178 to 5242	Pass
				138.00	5210.12	5178 to 5242	Pass
			-30	120.00	5210.01	5178 to 5242	Pass
			-20	120.00	5210.06	5150 to 5250	Pass
			-10	120.00	5210.06	5150 to 5250	Pass
			0	120.00	5210.08	5150 to 5250	Pass
			10	120.00	5210.03	5150 to 5250	Pass
			30	120.00	5210.04	5150 to 5250	Pass
			40	120.00	5210.06	5150 to 5250	Pass
			50	120.00	5210.05	5178 to 5242	Pass

Test Mode: 5.8G							
Mode	TX Type	Frequency (MHz)	Temperature (°C)	Voltage (VDC)	Measured Frequency (MHz)	Limit	Verdict
802.11a	SISO	5745	20	102.00	5745.04	5737 to 5753	Pass
				120.00	5745.06	5737 to 5753	Pass
				138.00	5745.01	5737 to 5753	Pass
			-30	120.00	5745.02	5737 to 5753	Pass
			-20	120.00	5745.02	5725 to 5850	Pass
			-10	120.00	5745.09	5725 to 5850	Pass
			0	120.00	5745.09	5725 to 5850	Pass
			10	120.00	5745.12	5725 to 5850	Pass
			30	120.00	5745.05	5725 to 5850	Pass
			40	120.00	5745.02	5725 to 5850	Pass
			50	120.00	5745.09	5737 to 5753	Pass
		5785	20	102.00	5785.07	5777 to 5793	Pass
				120.00	5785.09	5777 to 5793	Pass
				138.00	5785.08	5777 to 5793	Pass
			-30	120.00	5785.02	5777 to 5793	Pass
			-20	120.00	5785.05	5725 to 5850	Pass
			-10	120.00	5785.04	5725 to 5850	Pass
			0	120.00	5785.07	5725 to 5850	Pass
			10	120.00	5785.00	5725 to 5850	Pass
			30	120.00	5785.04	5725 to 5850	Pass
			40	120.00	5785.10	5725 to 5850	Pass
			50	120.00	5785.00	5777 to 5793	Pass
		5825	20	102.00	5825.03	5817 to 5833	Pass
				120.00	5825.11	5817 to 5833	Pass
				138.00	5825.07	5817 to 5833	Pass
			-30	120.00	5825.10	5817 to 5833	Pass
			-20	120.00	5825.11	5725 to 5850	Pass
			-10	120.00	5825.07	5725 to 5850	Pass
			0	120.00	5825.10	5725 to 5850	Pass
			10	120.00	5825.04	5725 to 5850	Pass
			30	120.00	5825.11	5725 to 5850	Pass
			40	120.00	5825.12	5725 to 5850	Pass
			50	120.00	5825.09	5817 to 5833	Pass
802.11n (HT20)	SISO	5745	20	102.00	5745.00	5737 to 5753	Pass
				120.00	5745.12	5737 to 5753	Pass
				138.00	5745.07	5737 to 5753	Pass
			-30	120.00	5745.12	5737 to 5753	Pass

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			-20	120.00	5745.10	5725 to 5850	Pass
			-10	120.00	5745.08	5725 to 5850	Pass
			0	120.00	5745.02	5725 to 5850	Pass
			10	120.00	5745.01	5725 to 5850	Pass
			30	120.00	5745.05	5725 to 5850	Pass
			40	120.00	5745.12	5725 to 5850	Pass
			50	120.00	5745.04	5737 to 5753	Pass
		5785	20	102.00	5785.00	5777 to 5793	Pass
				120.00	5785.02	5777 to 5793	Pass
				138.00	5785.01	5777 to 5793	Pass
			-30	120.00	5785.12	5777 to 5793	Pass
			-20	120.00	5785.04	5725 to 5850	Pass
			-10	120.00	5785.03	5725 to 5850	Pass
			0	120.00	5785.06	5725 to 5850	Pass
			10	120.00	5785.01	5725 to 5850	Pass
			30	120.00	5785.01	5725 to 5850	Pass
			40	120.00	5785.00	5725 to 5850	Pass
			50	120.00	5785.08	5777 to 5793	Pass
		5825	20	102.00	5825.08	5817 to 5833	Pass
				120.00	5825.06	5817 to 5833	Pass
				138.00	5825.07	5817 to 5833	Pass
			-30	120.00	5825.13	5817 to 5833	Pass
			-20	120.00	5825.01	5725 to 5850	Pass
			-10	120.00	5825.02	5725 to 5850	Pass
			0	120.00	5825.05	5725 to 5850	Pass
			10	120.00	5825.08	5725 to 5850	Pass
			30	120.00	5825.13	5725 to 5850	Pass
			40	120.00	5825.11	5725 to 5850	Pass
			50	120.00	5825.04	5817 to 5833	Pass
802.11n (HT40)	SISO	5755	20	102.00	5755.03	5739 to 5771	Pass
				120.00	5755.08	5739 to 5771	Pass
				138.00	5755.11	5739 to 5771	Pass
			-30	120.00	5755.10	5739 to 5771	Pass
			-20	120.00	5755.13	5725 to 5850	Pass
			-10	120.00	5755.08	5725 to 5850	Pass
			0	120.00	5755.05	5725 to 5850	Pass
			10	120.00	5755.07	5725 to 5850	Pass
			30	120.00	5755.07	5725 to 5850	Pass
			40	120.00	5755.02	5725 to 5850	Pass
			50	120.00	5755.02	5739 to 5771	Pass

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		5795	20	102.00	5795.09	5779 to 5811	Pass
				120.00	5795.12	5779 to 5811	Pass
				138.00	5795.06	5779 to 5811	Pass
			-30	120.00	5795.00	5779 to 5811	Pass
			-20	120.00	5795.08	5725 to 5850	Pass
			-10	120.00	5795.07	5725 to 5850	Pass
			0	120.00	5795.11	5725 to 5850	Pass
			10	120.00	5795.07	5725 to 5850	Pass
			30	120.00	5795.12	5725 to 5850	Pass
			40	120.00	5795.06	5725 to 5850	Pass
			50	120.00	5795.11	5779 to 5811	Pass
802.11ac (VHT20)	SISO	5745	20	102.00	5745.12	5737 to 5753	Pass
				120.00	5745.08	5737 to 5753	Pass
				138.00	5745.09	5737 to 5753	Pass
			-30	120.00	5745.04	5737 to 5753	Pass
			-20	120.00	5745.07	5725 to 5850	Pass
			-10	120.00	5745.10	5725 to 5850	Pass
			0	120.00	5745.12	5725 to 5850	Pass
			10	120.00	5745.02	5725 to 5850	Pass
			30	120.00	5745.06	5725 to 5850	Pass
			40	120.00	5745.08	5725 to 5850	Pass
			50	120.00	5745.05	5737 to 5753	Pass
		5785	20	102.00	5785.06	5777 to 5793	Pass
				120.00	5785.05	5777 to 5793	Pass
				138.00	5785.05	5777 to 5793	Pass
			-30	120.00	5785.03	5777 to 5793	Pass
			-20	120.00	5785.01	5725 to 5850	Pass
			-10	120.00	5785.08	5725 to 5850	Pass
			0	120.00	5785.12	5725 to 5850	Pass
			10	120.00	5785.10	5725 to 5850	Pass
			30	120.00	5785.09	5725 to 5850	Pass
			40	120.00	5785.06	5725 to 5850	Pass
			50	120.00	5785.02	5777 to 5793	Pass
		5825	20	102.00	5825.04	5817 to 5833	Pass
				120.00	5825.06	5817 to 5833	Pass
				138.00	5825.00	5817 to 5833	Pass
			-30	120.00	5825.07	5817 to 5833	Pass
			-20	120.00	5825.02	5725 to 5850	Pass
			-10	120.00	5825.03	5725 to 5850	Pass
			0	120.00	5825.04	5725 to 5850	Pass

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			10	120.00	5825.07	5725 to 5850	Pass
			30	120.00	5825.10	5725 to 5850	Pass
			40	120.00	5825.04	5725 to 5850	Pass
			50	120.00	5825.11	5817 to 5833	Pass
802.11ac (VHT40)	SISO	5755	20	102.00	5755.11	5739 to 5771	Pass
				120.00	5755.02	5739 to 5771	Pass
				138.00	5755.06	5739 to 5771	Pass
			-30	120.00	5755.13	5739 to 5771	Pass
			-20	120.00	5755.07	5725 to 5850	Pass
			-10	120.00	5755.02	5725 to 5850	Pass
			0	120.00	5755.01	5725 to 5850	Pass
			10	120.00	5755.01	5725 to 5850	Pass
			30	120.00	5755.09	5725 to 5850	Pass
			40	120.00	5755.01	5725 to 5850	Pass
			50	120.00	5755.07	5739 to 5771	Pass
		5795	20	102.00	5795.01	5779 to 5811	Pass
				120.00	5795.03	5779 to 5811	Pass
				138.00	5795.01	5779 to 5811	Pass
			-30	120.00	5795.05	5779 to 5811	Pass
			-20	120.00	5795.09	5725 to 5850	Pass
			-10	120.00	5795.11	5725 to 5850	Pass
			0	120.00	5795.00	5725 to 5850	Pass
			10	120.00	5795.06	5725 to 5850	Pass
			30	120.00	5795.03	5725 to 5850	Pass
			40	120.00	5795.07	5725 to 5850	Pass
			50	120.00	5795.00	5779 to 5811	Pass
802.11ac (VHT80)	SISO	5775	20	102.00	5775.06	5743 to 5807	Pass
				120.00	5775.12	5743 to 5807	Pass
				138.00	5775.09	5743 to 5807	Pass
			-30	120.00	5775.05	5743 to 5807	Pass
			-20	120.00	5775.08	5725 to 5850	Pass
			-10	120.00	5775.13	5725 to 5850	Pass
			0	120.00	5775.02	5725 to 5850	Pass
			10	120.00	5775.09	5725 to 5850	Pass
			30	120.00	5775.08	5725 to 5850	Pass
			40	120.00	5775.02	5725 to 5850	Pass
			50	120.00	5775.09	5743 to 5807	Pass

10. Antenna Requirement

10.1. Test Standard and Requirement

Test Standard	FCC Part15 Section 15.203 /15.407
Requirement	1) 15.203 requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 2) 15.407 requirement: if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

10.2. Antenna Connected Construction

The antenna is a PCB Antenna which permanently attached, and the best case gain of the 2.97 dBi. It complies with the standard requirement.

APPENDIX I -- TEST SETUP PHOTOGRAPH

Please refer to separated files Appendix I -- Test Setup Photograph

APPENDIX II -- EXTERNAL PHOTOGRAPH

Please refer to separated files Appendix II -- External Photograph

APPENDIX III -- INTERNAL PHOTOGRAPH

Please refer to separated files Appendix III -- Internal Photograph

---------- End of Report ----------

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