



FCC Part 15E Test Report

FCC ID: 2A5TQ-G153

Applicant: SHENZHEN SAGE IOT TECHNOLOGY CO.,LTD
Address: 4th Floor, Building B, Qiao Hongsheng cultural and creative garden, Xixiang Jiedao, Bao'an District, Shenzhen City, China
Manufacturer: SHENZHEN SAGE IOT TECHNOLOGY CO.,LTD
Address: 4th Floor, Building B, Qiao Hongsheng cultural and creative garden, Xixiang Jiedao, Bao'an District, Shenzhen City, China
Product Name: Wireless HD Transmitter Receiver Kit
Trade Mark: N/A
Model Number: G153, G150, G151, G154, G155, G156, G157, G158, G159, G160, G161, G162, G163, G164, G165, G166, G167, G168, G169, G170, G171, G172, G173, G174, G175, G176, G177, G178, G179, G180, G181, G182, G183, G184, G185, G186, G187, G188, G189, G190
Date of Receipt: Jan. 16, 2026
Test Date: Jan. 16, 2026 ~ Feb. 06, 2026
Date of Report: Feb. 06, 2026
Prepared By: Shenzhen DL Testing Technology Co., Ltd.
Address: 101-201, Comprehensive Building, Tongzhou Electronics Longgang Factory Area, No.1 Baolong Fifth Road, Baolong Community, Baolong Street, Longgang District, Shenzhen, China
Applicable Standards: FCC Rules and Regulations Part 15 Subpart E Section 15.407
ANSI C63.10: 2020
Test Result: Pass
Report Number: DLE-260203025R

Prepared by(Engineer): Ken Tan
Reviewer(Supervisor): Jack Bu
Approved(Manager): Jade Yang



This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Shenzhen DL Testing Technology Co., Ltd.



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**** Issued History ****

Revision	Description	Issued Date	Remark
Revision 1.0	Initial Test Report Release	Feb. 06, 2026	



1. Summary

1.1. Test Procedures and Results

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

Note:

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

1.2. Information of the Test Laboratory

Shenzhen DL Testing Technology Co., Ltd.

Add: 101-201, Comprehensive Building, Tongzhou Electronics Longgang Factory Area, No.1
Baolong Fifth Road, Baolong Community, Baolong Street, Longgang District, Shenzhen, China



1.3. Measurement Uncertainty

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

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 2.56\text{dB}$
2	RF power, conducted	$\pm 0.42\text{dB}$
3	Spurious emissions, conducted	$\pm 2.76\text{dB}$
4	All emissions, radiated(<1G)	$\pm 3.65\text{dB}$
5	All emissions, radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$
8	6dB Bandwidth	$\pm 0.2\text{MHz}$
9	Power Spectral Density	$\pm 0.3\text{dBm}$



2. EUT Description

2.1. General Description of EUT

Equipment	Wireless HD Transmitter Receiver Kit
Model Name	G153
Series Model(s)	G150, G151, G154, G155, G156, G157, G158, G159, G160, G161, G162, G163, G164, G165, G166, G167, G168, G169, G170, G171, G172, G173, G174, G175, G176, G177, G178, G179, G180, G181, G182, G183, G184, G185, G186, G187, G188, G189, G190
Model Difference	All model's the function, software and electric circuit are the same, only with product model named different. Test sample mode: G153.
Operation Frequency:	IEEE 802.11a/n(HT20) 5.180GHz-5.240GHz IEEE 802.11n(HT40) 5.190GHz-5.230GHz
Modulation Technology:	IEEE 802.11a/n
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM
Antenna Type	External Antenna
Antenna Gain	3.61dBi
Power Source	DC5V from Type-C
Power Supply:	DC5V from Type-C
Hardware Version	G144-S13xx-RX-USB-V1
Software Version	3.2855.2251
Note: 1. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual. 2. Antenna gain Refer to the antenna specifications. 3. The cable loss data is obtained from the supplier. 4. The test results in the report only apply to the tested sample.	



2.2. Operation Frequency Each of Channel

802.11a/802.11n(HT20)		802.11n(HT40)	
Channel	Frequency	Channel	Frequency
36	5180	38	5190
40	5200	46	5230
44	5220		
48	5240		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

2.3. Operation of EUT during Testing

For 802.11a/n (HT20)

Band I (5150 - 5250 MHz)		
Channel Number	Channel	Frequency (MHz)
36	Low	5180
40	Mid	5200
48	High	5240

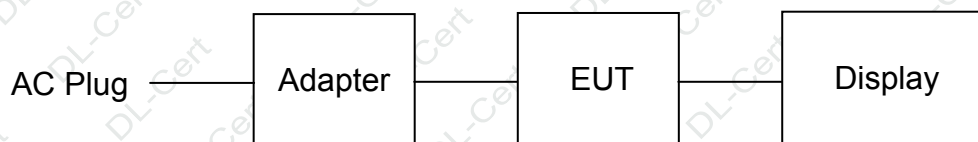
For 802.11n (HT40)

Band I (5150 - 5250 MHz)		
Channel Number	Channel	Frequency (MHz)
38	Low	5190
46	High	5230

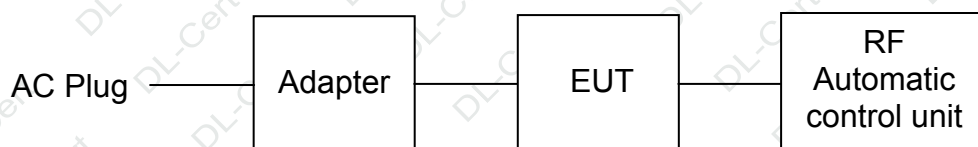


2.4. Description of Test Setup

Operation of EUT during AC Conducted and Radiation testing:



Operation of EUT during RF Conducted testing:



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



2.5. Description of Support Units

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

Item	Equipment	Trade Mark	Model/Type No.	Specification	Remark
1	Wireless HD Transmitter Receiver Kit	N/A	G153	N/A	EUT
2	Adapter	N/A	ICP12-050-2000B	Input: AC100-240V, 50/60Hz, 0.3A Output: DC5V, 2.0A, 10W	
3	Display	PHILIPS	N/A	N/A	

Note:

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



2.6. Equipments List for All Test Items

Radiation test, Band-edge test and 6db bandwidth test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	Agilent	E4408B	MY50140780	Oct. 25, 2025	Oct. 24, 2026
2	Test Receiver (9kHz-7GHz)	R&S	ESRP7	101393	Oct. 25, 2025	Oct. 24, 2026
3	Bilog Antenna (30MHz-1GHz)	R&S	VULB9162	00306	Oct. 25, 2025	Oct. 24, 2026
4	Horn Antenna (1GHz-18GHz)	Schwarzbeck	BBHA9120D	02139	Oct. 25, 2025	Oct. 24, 2026
5	Horn Antenna (18GHz-40GHz)	A.H. Systems	SAS-574	588	Oct. 25, 2025	Oct. 24, 2026
6	Amplifier (9KHz-6GHz)	Schwarzbeck	BBV9743B	00153	Oct. 25, 2025	Oct. 24, 2026
7	Amplifier (1GHz-18GHz)	EMEC	EM01G8GA	00270	Oct. 25, 2025	Oct. 24, 2026
8	Amplifier (18GHz-40GHz)	Quanjuda	DLE-161	97	Oct. 25, 2025	Oct. 24, 2026
9	Loop Antenna (9KHz-30MHz)	Schwarzbeck	FMZB1519B	00014	Oct. 25, 2025	Oct. 24, 2026
10	RF cables1 (9kHz-1GHz)	ChengYu	966	004	Oct. 25, 2025	Oct. 24, 2026
11	RF cables2 (1GHz-40GHz)	ChengYu	966	003	Oct. 25, 2025	Oct. 24, 2026
12	Antenna connector	Florida RF Labs	N/A	RF 01#	Oct. 25, 2025	Oct. 24, 2026
13	Power probe	KEYSIGHT	U2021XA	MY55210018	Oct. 25, 2025	Oct. 24, 2026
14	Signal Analyzer 9kHz-26.5GHz	Agilent	N9020A	MY55370280	Oct. 25, 2025	Oct. 24, 2026
15	Test Receiver 20kHz-40GHz	R&S	ESU 40	100376	Oct. 25, 2025	Oct. 24, 2026
16	D.C. Power Supply	LongWei	PS-305D	010964729	Oct. 25, 2025	Oct. 24, 2026

Conduction Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	843 Shielded Room	ChengYu	843 Room	843	Nov. 05, 2023	Nov. 04, 2026
2	EMI Receiver	R&S	ESR	101421	Oct. 25, 2025	Oct. 24, 2026
3	LISN	R&S	ENV216	102417	Oct. 25, 2025	Oct. 24, 2026
4	843 Cable 1#	ChengYu	CE Cable	001	Oct. 25, 2025	Oct. 24, 2026

Other

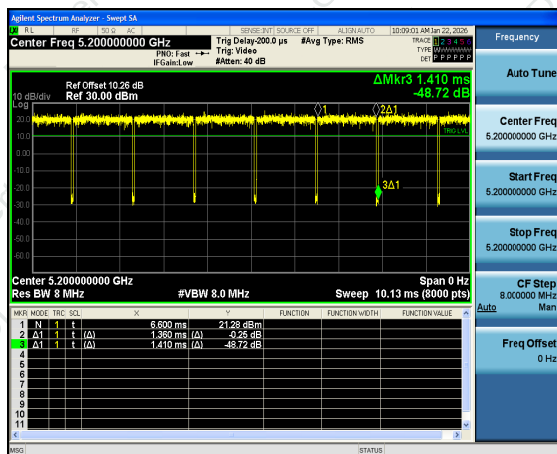
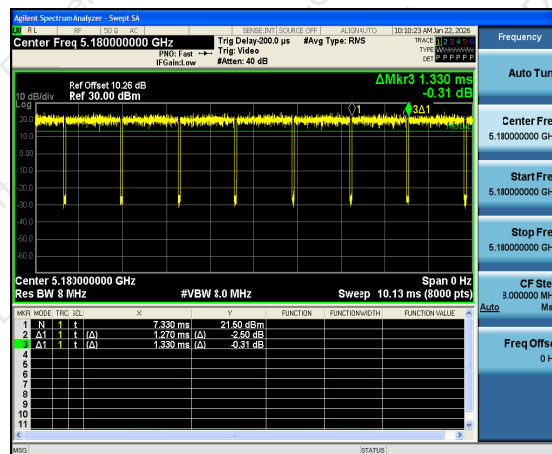
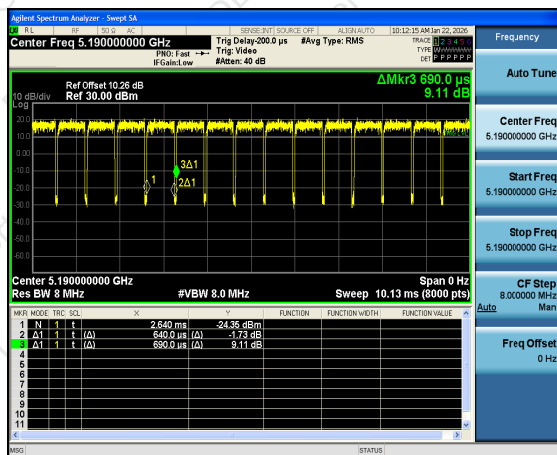
Item	Name	Manufacturer	Model	Software version
1	EMC Conduction Test System	FALA	EZ_EMCC	EMC-CON 3A1.1
2	EMC radiation test system	FALA	EZ_EMCC	FA-03A2
3	RF test system	MAIWEI	MTS8310	2.0.0.0
4	RF communication test system	MAIWEI	MTS8200	2.0.0.0



3. General Information

3.1. Test environment and mode

Operating Environment:									
Temperature:	25.0 °C								
Humidity:	56 % RH								
Atmospheric Pressure:	1010 mbar								
Test Mode:									
Engineering mode:	Keep the EUT in continuous transmitting by select channel and modulations								
We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:									
Per-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.									
Mode	Data rate								
802.11a	6 Mbps								
802.11n(HT20)	MCS0								
802.11n(HT40)	MCS0								
Final Test Mode:									
Operation mode:	Keep the EUT in continuous transmitting with modulation								
Mode Test Duty Cycle:									
<table><tr><th>Mode</th><th>Duty Cycle</th></tr><tr><td>802.11a</td><td>0.9645</td></tr><tr><td>802.11n(HT20)</td><td>0.9549</td></tr><tr><td>802.11n(HT40)</td><td>0.9275</td></tr></table>		Mode	Duty Cycle	802.11a	0.9645	802.11n(HT20)	0.9549	802.11n(HT40)	0.9275
Mode	Duty Cycle								
802.11a	0.9645								
802.11n(HT20)	0.9549								
802.11n(HT40)	0.9275								
Test plots as follows:									

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



4. Test Results and Measurement Data

4.1. AC Conducted Emission

4.1.1. Test Specification

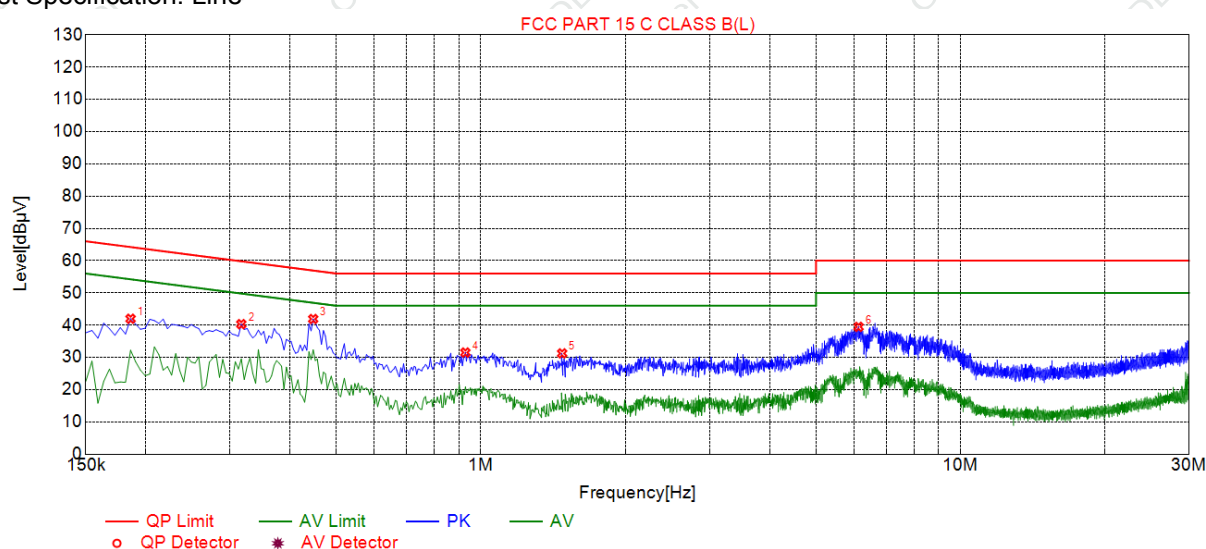
Test Requirement:	FCC Part15 C Section 15.207														
Test Method:	ANSI C63.10: 2020														
Frequency Range:	150 kHz to 30 MHz														
Receiver Setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto														
Limits:	<table><tr><th rowspan="2">Frequency range (MHz)</th><th colspan="2">Limit (dBuV)</th></tr><tr><th>Quasi-peak</th><th>Average</th></tr><tr><td>0.15-0.5</td><td>66 to 56*</td><td>56 to 46*</td></tr><tr><td>0.5-5</td><td>56</td><td>46</td></tr><tr><td>5-30</td><td>60</td><td>50</td></tr></table>	Frequency range (MHz)	Limit (dBuV)		Quasi-peak	Average	0.15-0.5	66 to 56*	56 to 46*	0.5-5	56	46	5-30	60	50
Frequency range (MHz)	Limit (dBuV)														
	Quasi-peak	Average													
0.15-0.5	66 to 56*	56 to 46*													
0.5-5	56	46													
5-30	60	50													
Test Setup:	Reference Plane 40cm E.U.T AC power 80cm LISN Filter AC power EMI Receiver Test table/Insulation plane Remark: E.U.T: Equipment Under Test LISN: Line Impedance Stabilization Network Test table height=0.8m														
Test Mode:	Tx Mode														
Test Procedure:	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10: 2020 on conducted measurement.														
Test Result:	PASS														



4.1.2. Test Data

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

Test Specification: Line



Suspected List

NO.	Freq. [MHz]	Level [dBμV]	Factor [dB]	Limit [dBμV]	Margin [dB]	Reading [dBμV]	Detector	Type
1	0.1860	41.98	19.76	64.21	22.23	22.22	PK	L
2	0.3165	40.31	19.85	59.80	19.49	20.46	PK	L
3	0.4470	41.91	19.84	56.93	15.02	22.07	PK	L
4	0.9285	31.51	19.74	56.00	24.49	11.77	PK	L
5	1.4775	31.24	19.95	56.00	24.76	11.29	PK	L
6	6.1350	39.47	20.40	60.00	20.53	19.07	PK	L

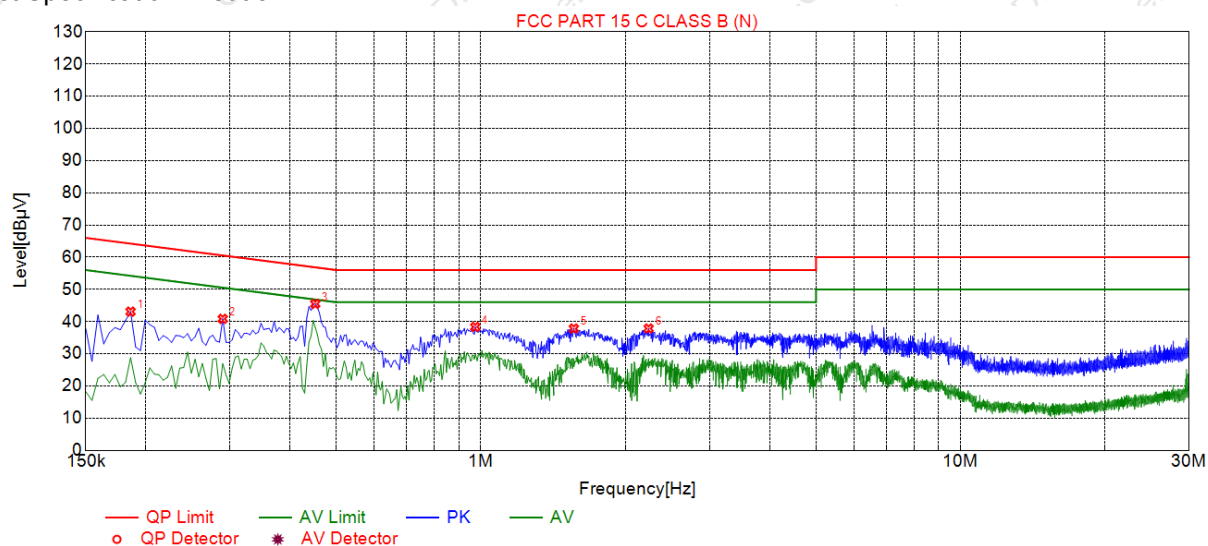
Remark: Margin = Limit – Level

Correction factor = Cable lose + LISN insertion loss

Level=Test receiver reading + correction factor



Test Specification: Neutral



Suspected List

NO.	Freq. [MHz]	Level [dBμV]	Factor [dB]	Limit [dBμV]	Margin [dB]	Reading [dBμV]	Detector	Type
1	0.1860	43.09	19.65	64.21	21.12	23.44	PK	N
2	0.2895	40.85	19.66	60.54	19.69	21.19	PK	N
3	0.4515	45.50	19.72	56.85	11.35	25.78	PK	N
4	0.9735	38.34	19.76	56.00	17.66	18.58	PK	N
5	1.5630	37.84	19.87	56.00	18.16	17.97	PK	N
6	2.2380	37.86	19.99	56.00	18.14	17.87	PK	N

Remark: Margin = Limit – Level

Correction factor = Cable lose + LISN insertion loss

Level=Test receiver reading + correction factor



4.2. Maximum Conducted Output Power

4.2.1. Test Specification

Test Requirement:	FCC Part15 E Section 15.407(a)	
Test Method:	KDB789033 D02 General UNII Test Procedures New Rules v02.r01 Section E	
Limit:	Frequency Band (MHz)	Limit
	5150-5250	250mW for client devices
Test Setup:	 RF automatic control unit EUT	
Test Mode:	Transmitting mode with modulation	
Test Procedure:	1. The testing follows the Measurement Procedure of KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section E, 3, a. 2. The RF output of EUT was connected to the power meter by RF cable. The path loss was compensated to the results for each measurement. 3. Set to the maximum power setting and enable the EUT transmit continuously. 4. Measure the conducted output power and record the results in the test report.	
Test Result:	PASS	
Remark:	Conducted output power= measurement power +10log(1/x) X is duty cycle. During the test, the "duty cycle factor" has already been added to the testing software.	



4.2.2. Test Data

Configuration Band I (5150 - 5250MHz)				
Mode	Test Channel	Maximum Conducted Output Power (dBm)	FCC Limit (dBm)	Result
802.11a	CH36	6.90	24	PASS
802.11a	CH40	6.79	24	PASS
802.11a	CH48	6.60	24	PASS
802.11n(HT20)	CH36	6.69	24	PASS
802.11n(HT20)	CH40	7.05	24	PASS
802.11n(HT20)	CH48	6.37	24	PASS
802.11n(HT40)	CH38	7.75	24	PASS
802.11n(HT40)	CH46	6.05	24	PASS
Note: 1.The test results including the cable lose.				



4.3. 26dB Bandwidth and 99% Occupied Bandwidth

4.3.1. Test Specification

Test Requirement:	47 CFR Part 15C Section 15.407
Test Method:	KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section C
Limit:	No restriction limits
Test Setup:	 The diagram illustrates the test setup. On the left is a green rectangular box labeled 'Spectrum Analyzer'. A black cable connects it to a yellow rectangular box on the right labeled 'EUT'.
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section C. 2. Set to the maximum power setting and enable the EUT transmit continuously. 3. Make the measurement with the spectrum analyzer's resolution bandwidth $RBW = 1\% \text{ EBW}$, $VBW \geq 3RBW$, In order to make an accurate measurement. 4. Measure and record the results in the test report.
Test Result:	PASS



4.3.2. Test Data

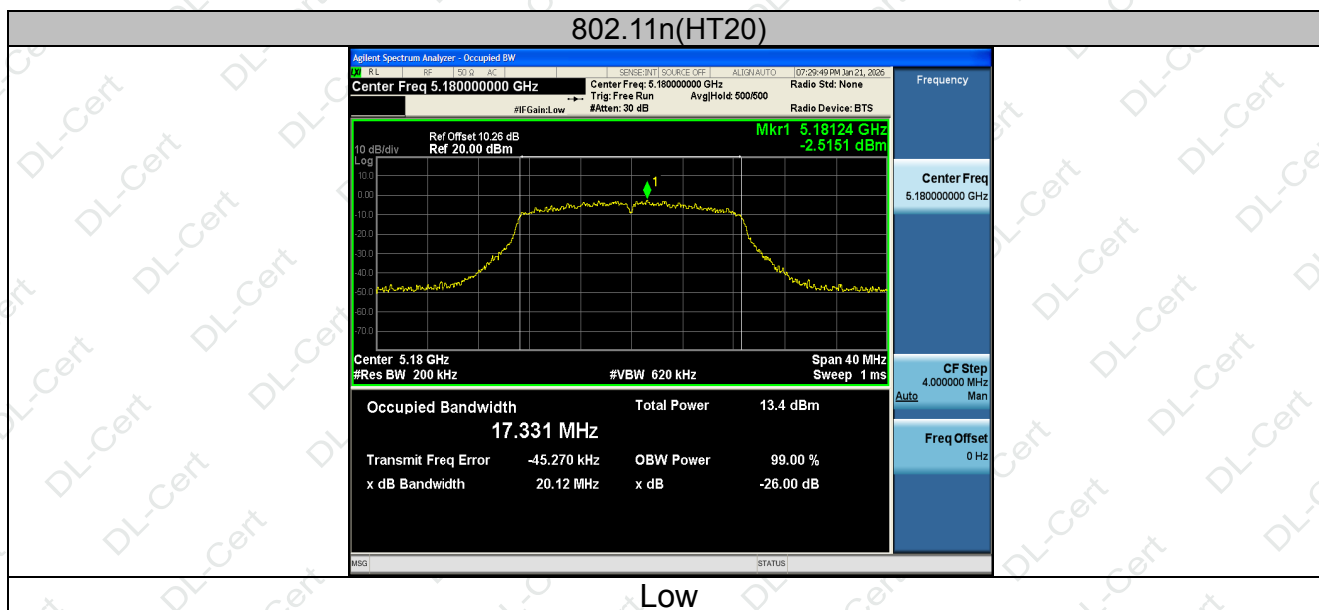
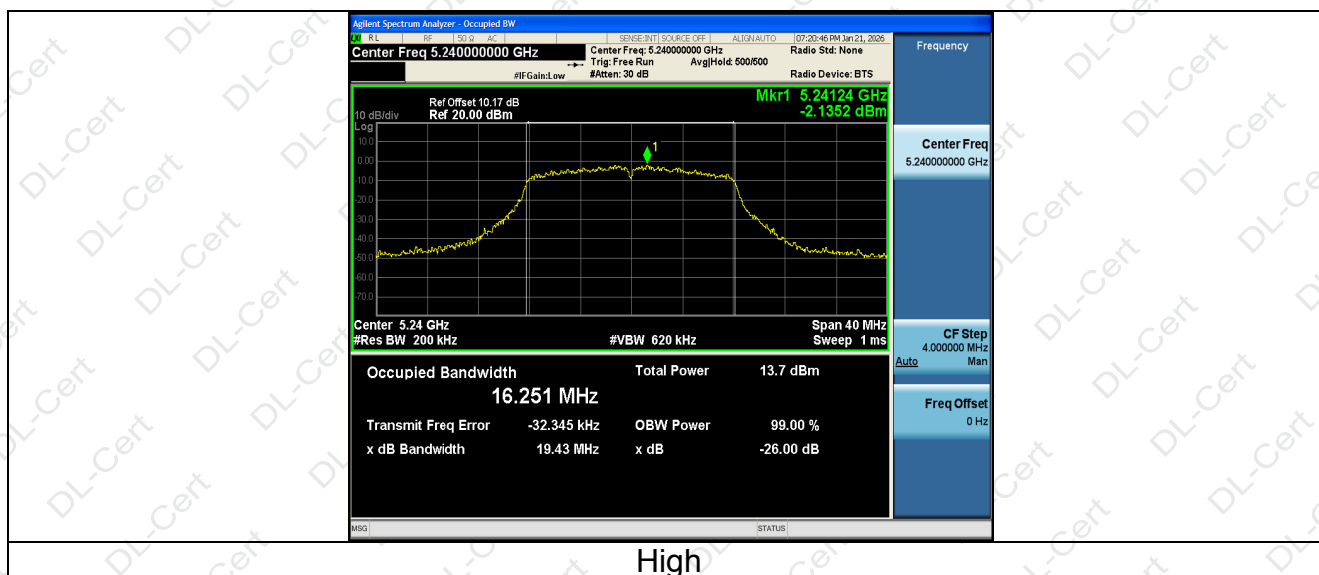
Mode	Test Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	Verdict
802.11a	CH36	5180	19.35	PASS
802.11a	CH40	5200	19.30	PASS
802.11a	CH48	5240	19.43	PASS
802.11n(HT20)	CH36	5180	20.12	PASS
802.11n(HT20)	CH40	5200	20.11	PASS
802.11n(HT20)	CH48	5240	20.14	PASS
802.11n(HT40)	CH38	5190	38.05	PASS
802.11n(HT40)	CH46	5230	38.00	PASS

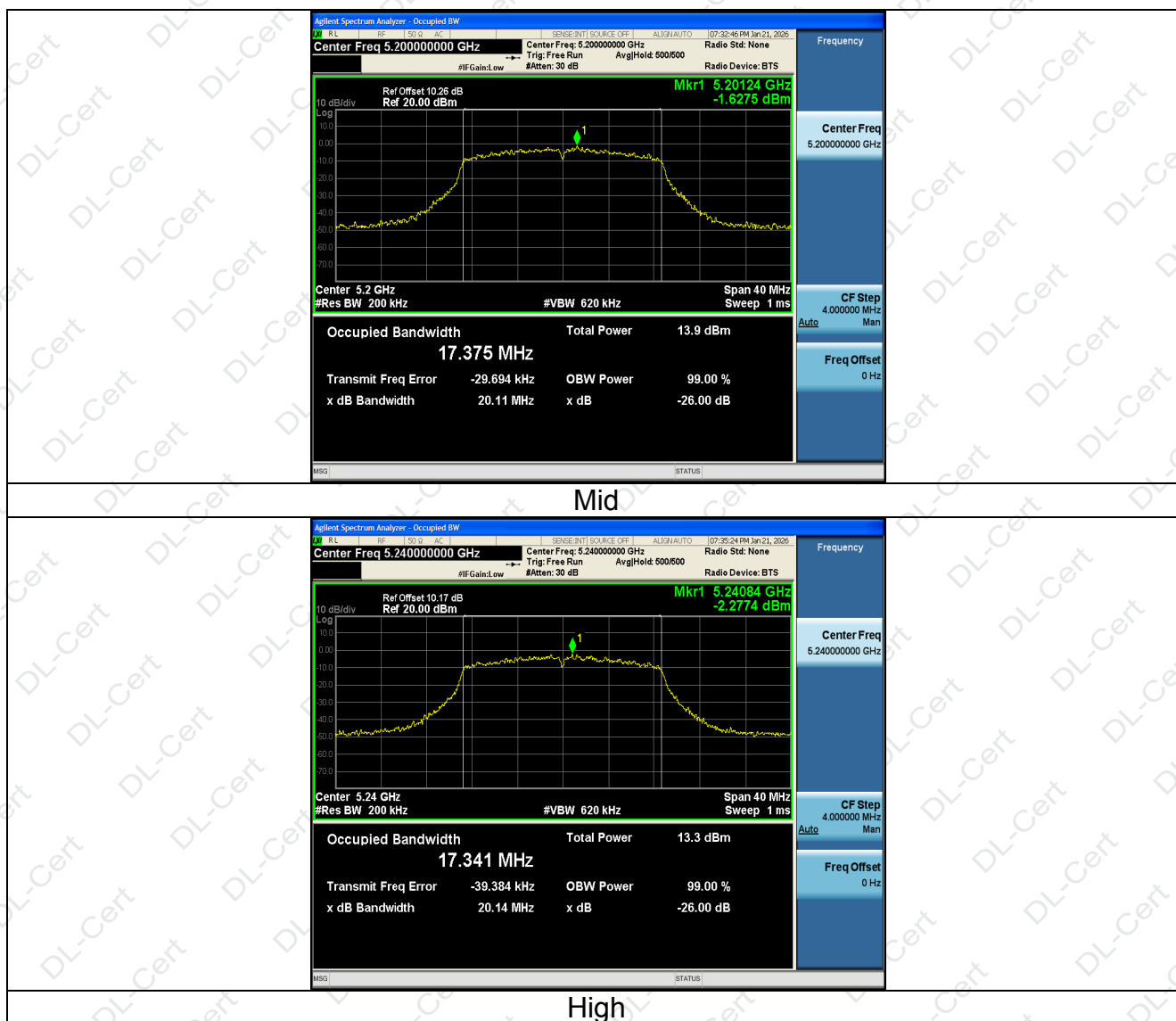
Test plots as follows:



Band I (5150 – 5250MHz)

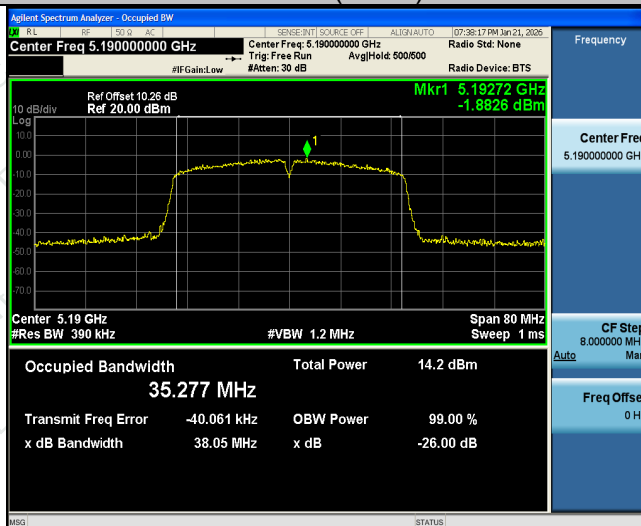




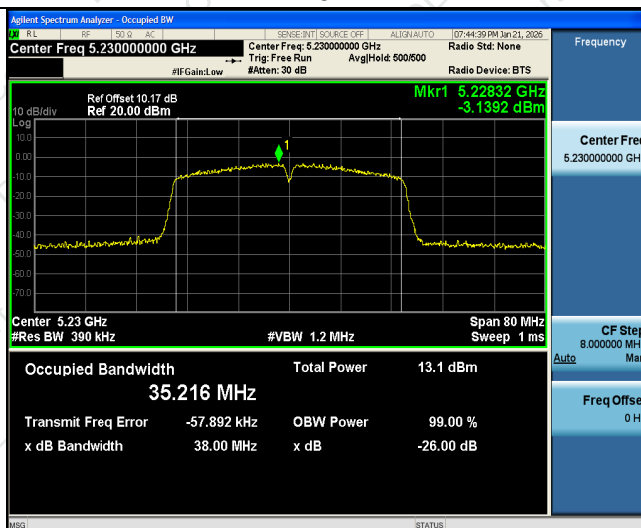




802.11n(HT40)



Low



High



4.4. Power Spectral Density

4.4.1. Test Specification

Test Requirement:	FCC Part15 E Section 15.407 (a)
Test Method:	KDB789033 D02 General UNII Test Procedures New Rules v02r01 Section F
Limit:	$\leq 11.00\text{dBm/MHz}$ for Band I 5150MHz-5250MHz
Test Setup:	 The diagram illustrates the test setup. On the left is a green rectangular box labeled 'Spectrum Analyzer'. A horizontal line connects it to a yellow rectangular box on the right labeled 'EUT'.
Test Mode:	Transmitting mode with modulation
Test Procedure:	1. Set the spectrum analyzer or EMI receiver span to view the entire emission bandwidth. 2. Set RBW = 1 MHz, VBW $\geq 3 \times$ RBW, Sweep time = Auto, Detector = RMS. 3. Allow the sweeps to continue until the trace stabilizes. 4. Use the peak marker function to determine the maximum amplitude level. 5. The E.I.R.P spectral density used radiated test method. At a test site that has been validated using the procedures of ANSI C63.4 or the latest CISPR 16-1-4 for measurements above 1 GHz, so as to simulate a near free-space environment.
Test Result:	PASS
Remark:	During the test, the "duty cycle factor" has already been added to the testing software.



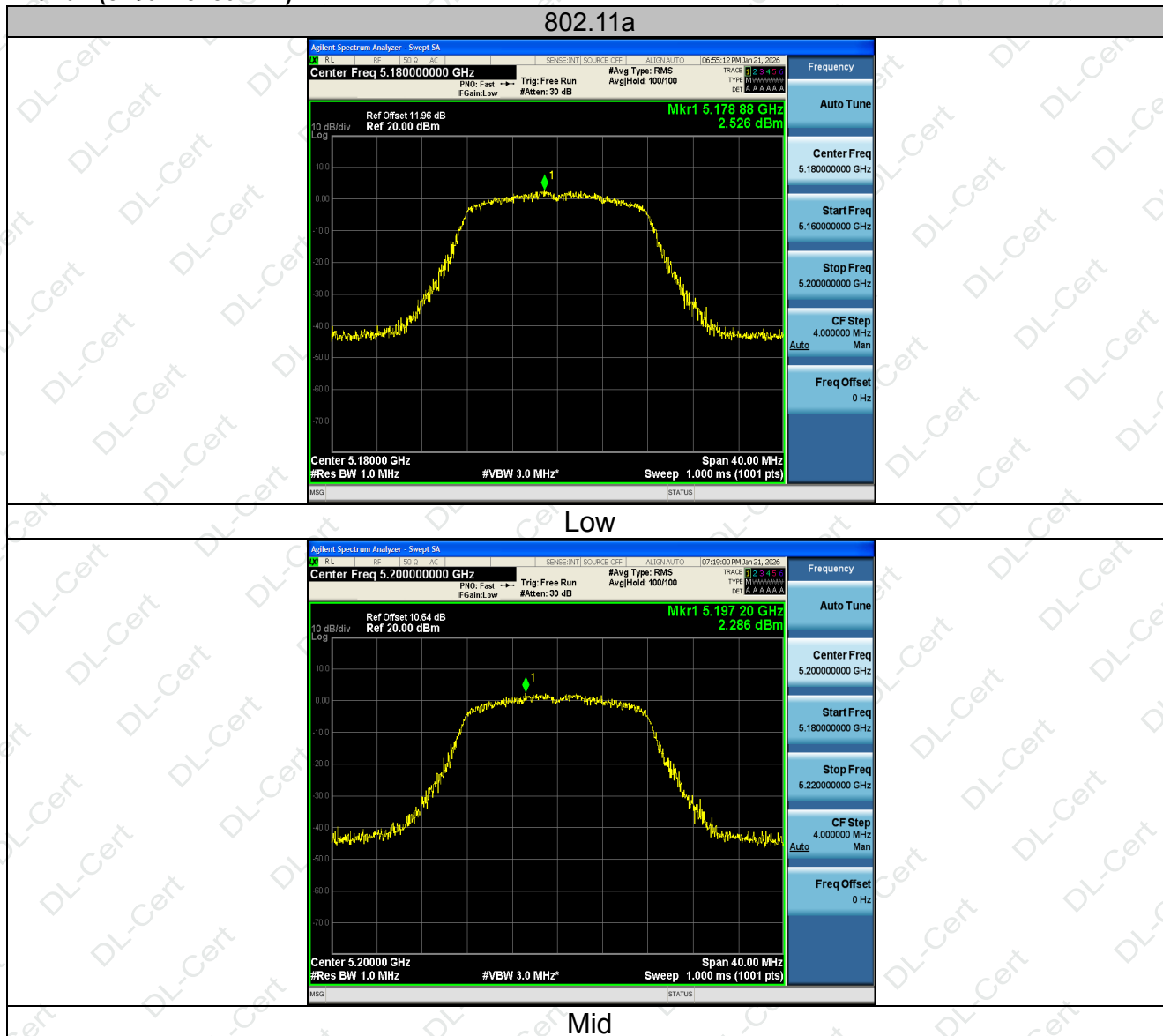
4.4.2. Test Data

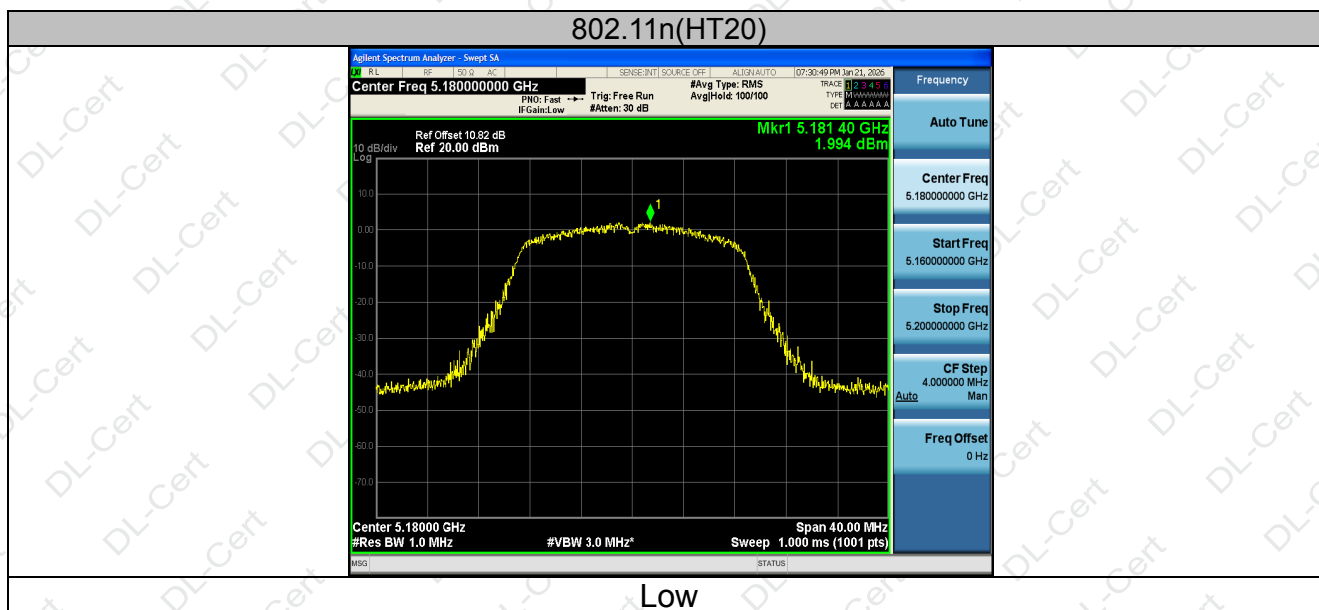
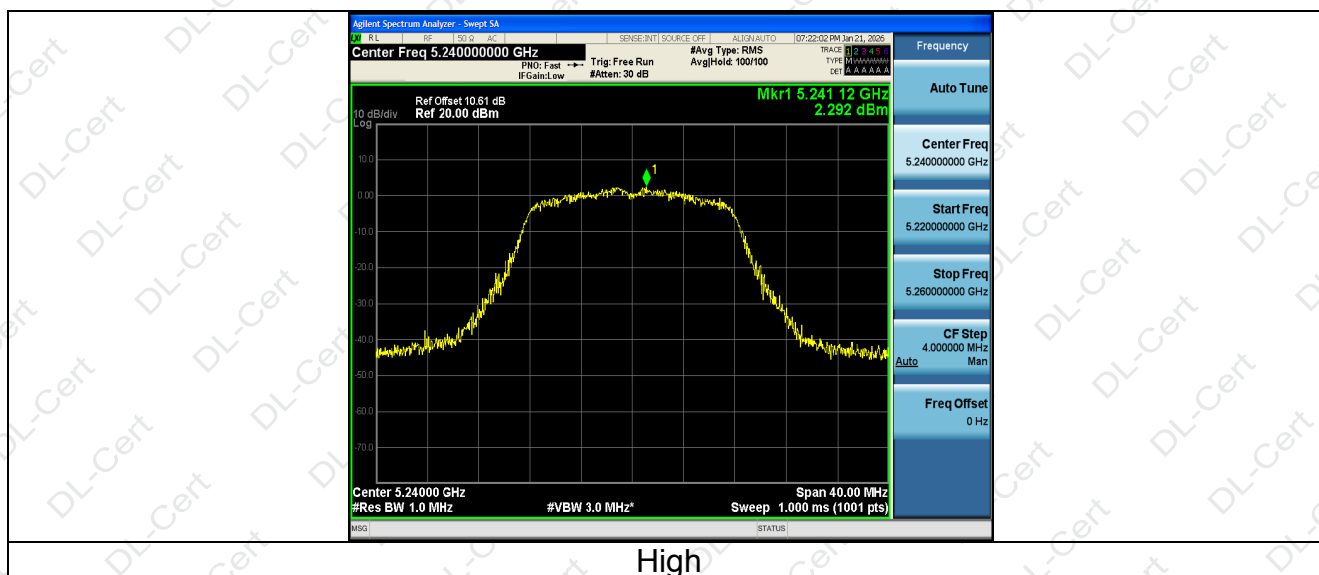
Mode	Test Channel	Level [dBm/MHz]	Limit (dBm/MHz)	Result
802.11a	CH36	2.53	11	PASS
802.11a	CH40	2.29	11	PASS
802.11a	CH48	2.29	11	PASS
802.11n(HT20)	CH36	1.99	11	PASS
802.11n(HT20)	CH40	2.54	11	PASS
802.11n(HT20)	CH48	2.06	11	PASS
802.11n(HT40)	CH38	1.22	11	PASS
802.11n(HT40)	CH46	-0.32	11	PASS

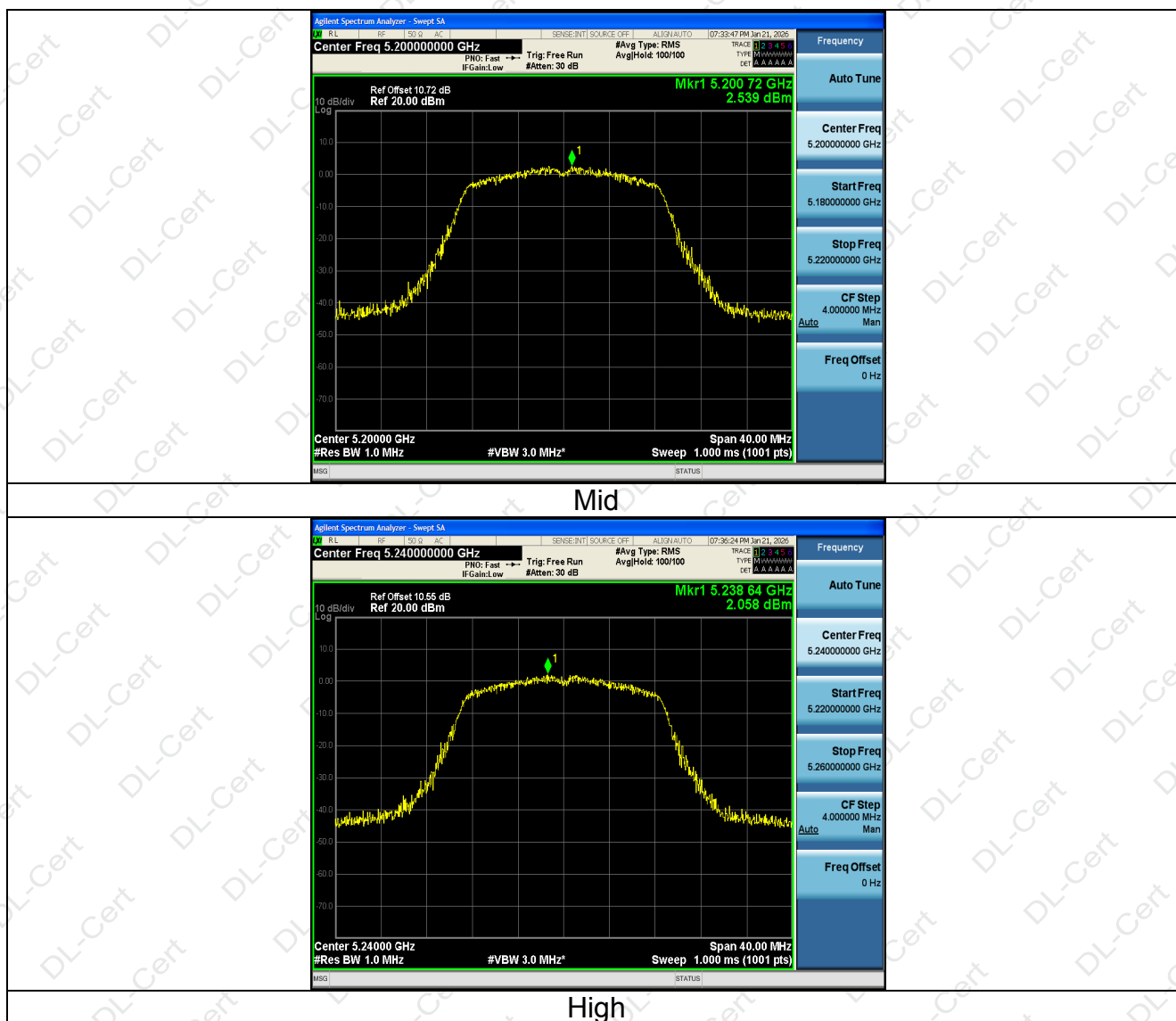
Note: Instrument attenuation and cable loss See test diagram



Test plots as follows:
Band I (5150 – 5250MHz)

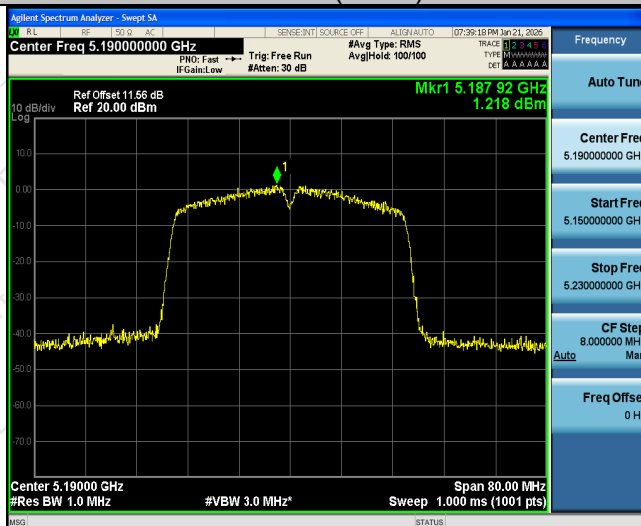




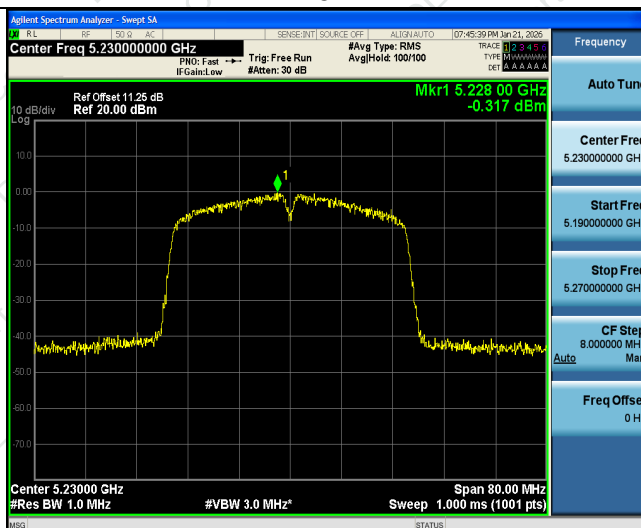




802.11n(HT40)



Low



High



4.5. Spurious Emission

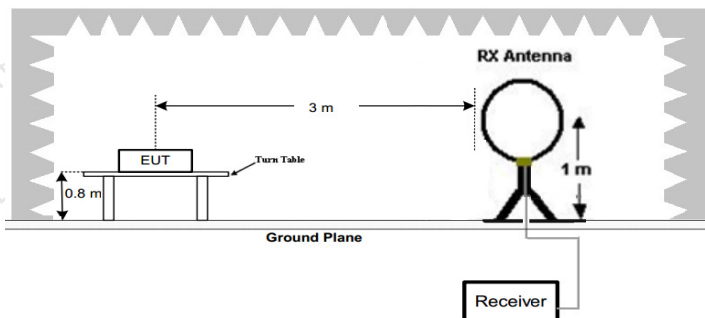
4.5.1. Test Specification

Test Requirement:	FCC CFR47 Part 15 Section 15.407				
Test Method:	KDB 789033 D02 v02r01				
Frequency Range:	9kHz to 40GHz				
Measurement Distance:	3 m				
Antenna Polarization:	Horizontal & Vertical				
Operation mode:	Transmitting mode with modulation				
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark
	9kHz- 150kHz	Quasi-peak	200Hz	1kHz	Quasi-peak Value
	150kHz- 30MHz	Quasi-peak	9kHz	30kHz	Quasi-peak Value
	30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak Value
	Above 1GHz	Peak	1MHz	3MHz	Peak Value
		Peak	1MHz	10Hz	Average Value
Limit:	(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz. (i) 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 25 MHz 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 27 dBm/MHz at the band edge. The limit of frequency below 1GHz and which fall in restricted bands should comply 15.209.				

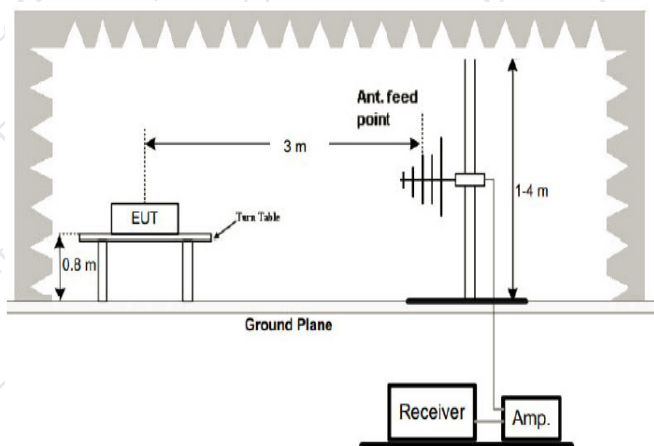


Test setup:

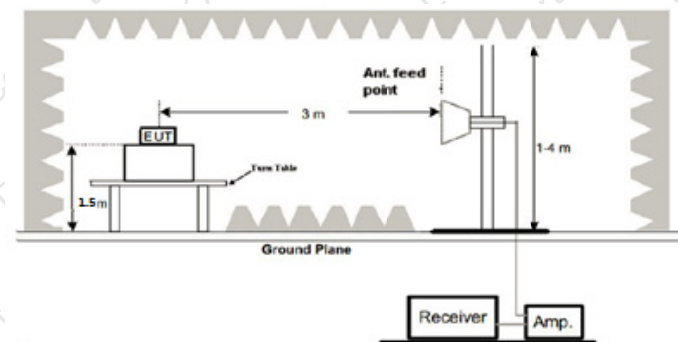
For Radiated Emissions below 30MHz



30MHz to 1GHz



Above 1GHz



**Test Procedure:**

1. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Test Results:

PASS

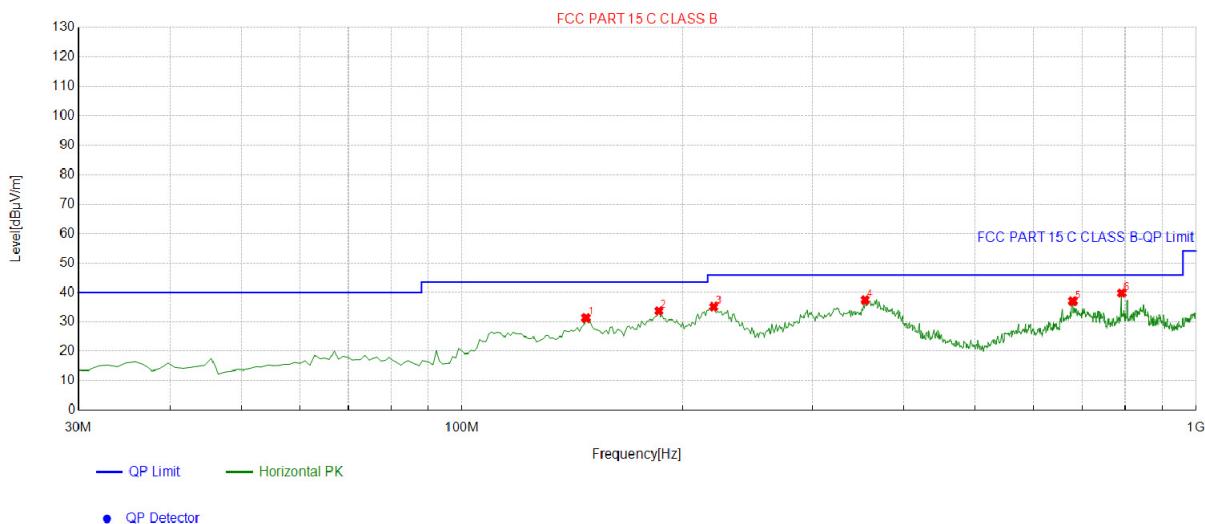


4.5.2. Test Data

Below 1GHz Test Results

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

Antenna polarity: Horizontal

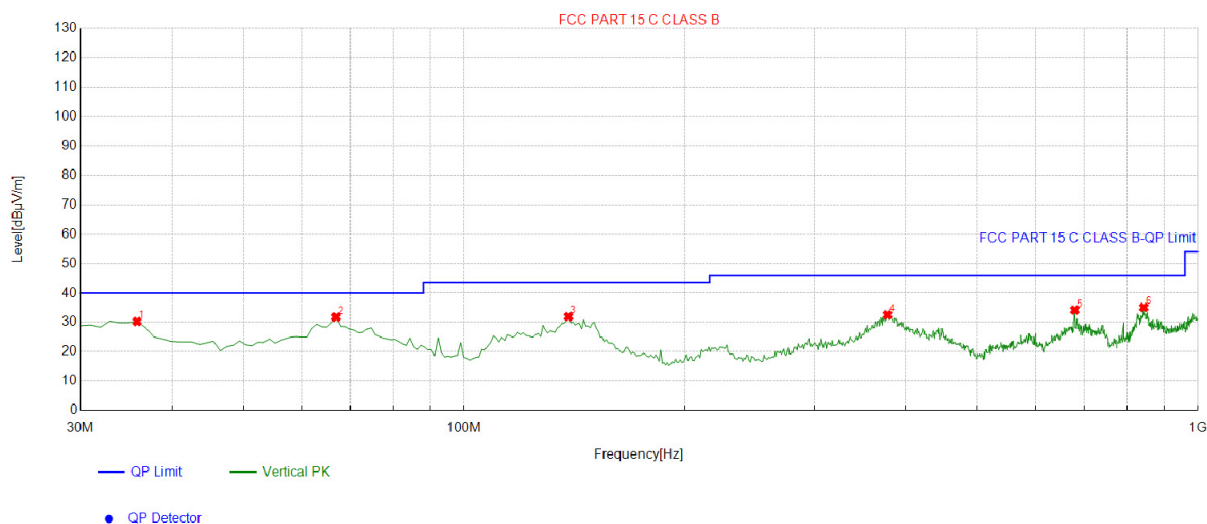


Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	147.4875	-18.23	49.59	31.36	43.50	12.14	100	262	Horizontal
2	185.3554	-15.96	49.72	33.76	43.50	9.74	100	258	Horizontal
3	220.3103	-14.54	49.71	35.17	46.00	10.83	100	108	Horizontal
4	354.3043	-10.22	47.66	37.44	46.00	8.56	100	326	Horizontal
5	679.5796	-4.67	41.74	37.07	46.00	8.93	100	318	Horizontal
6	792.2122	-3.25	43.08	39.83	46.00	6.17	100	340	Horizontal

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



Antenna polarity: Vertical



Suspected List

NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	35.8258	-14.54	44.83	30.29	40.00	9.71	100	155	Vertical
2	66.8969	-16.17	47.98	31.81	40.00	8.19	100	223	Vertical
3	138.7487	-17.98	49.94	31.96	43.50	11.54	100	20	Vertical
4	377.6076	-9.58	42.14	32.56	46.00	13.44	100	273	Vertical
5	679.5796	-4.67	38.86	34.19	46.00	11.81	100	277	Vertical
6	843.6737	-1.66	36.74	35.08	46.00	10.92	100	251	Vertical

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

Harmonics and Spurious Emissions

Frequency Range (9kHz-30MHz)

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

Note: 1. Emission Level = Reading + Cable loss - Antenna factor - Amp factor.

2. The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement.

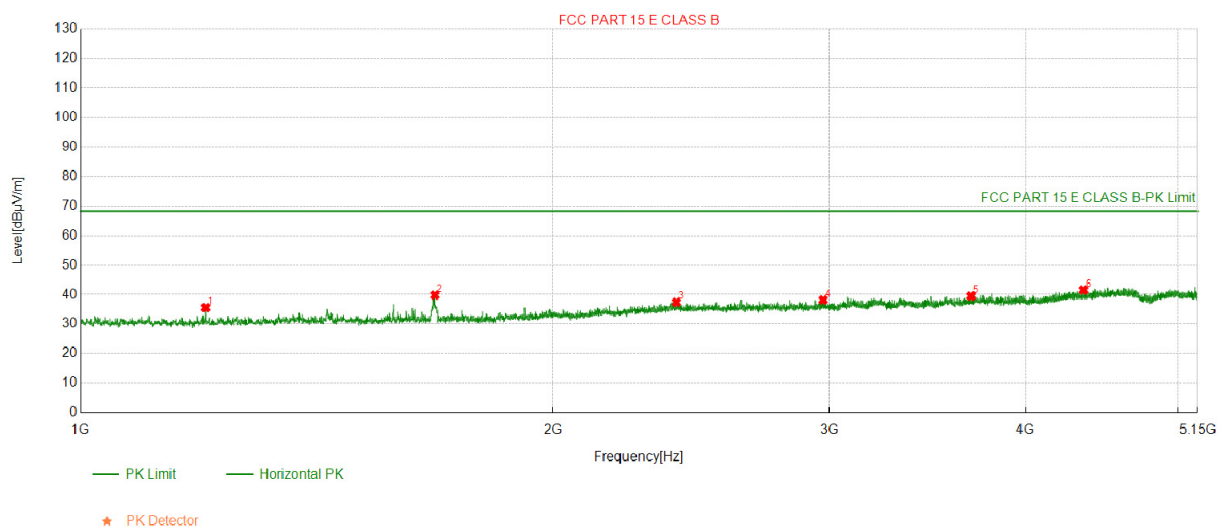


Above 1GHz Test Results

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

For 1GHz to 5.15GHz

Antenna polarity: Horizontal

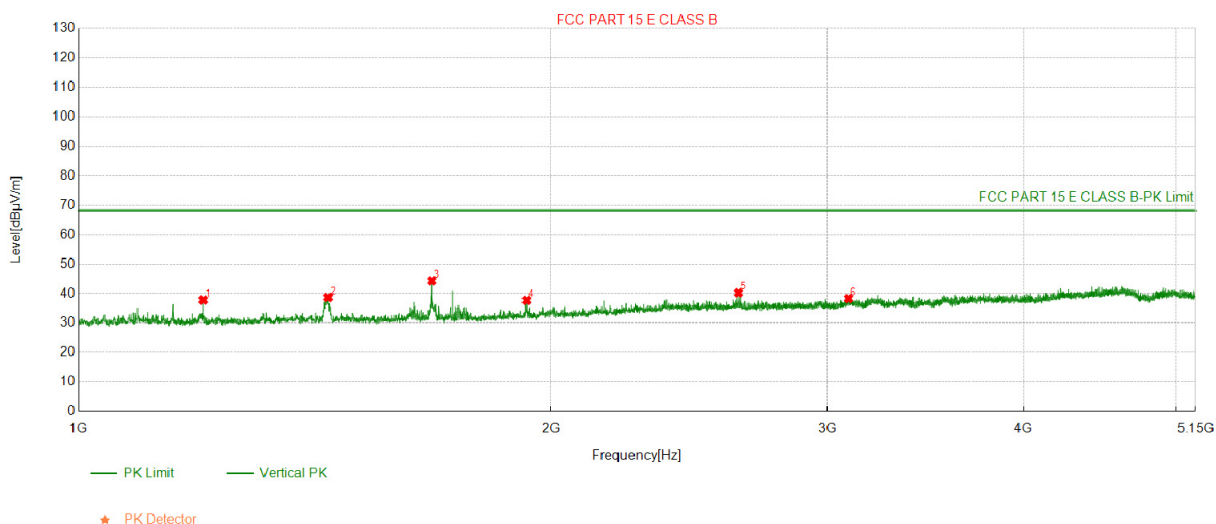


Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1201.710	56.81	35.57	-21.24	68.20	32.63	150	151	Horizontal
2	1681.913	59.87	39.81	-20.06	68.20	28.39	150	225	Horizontal
3	2396.614	53.57	37.39	-16.18	68.20	30.81	150	4	Horizontal
4	2972.277	53.33	38.17	-15.16	68.20	30.03	150	125	Horizontal
5	3692.374	52.10	39.50	-12.60	68.20	28.70	150	71	Horizontal
6	4353.950	52.08	41.55	-10.53	68.20	26.65	150	333	Horizontal

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



Antenna polarity: Vertical



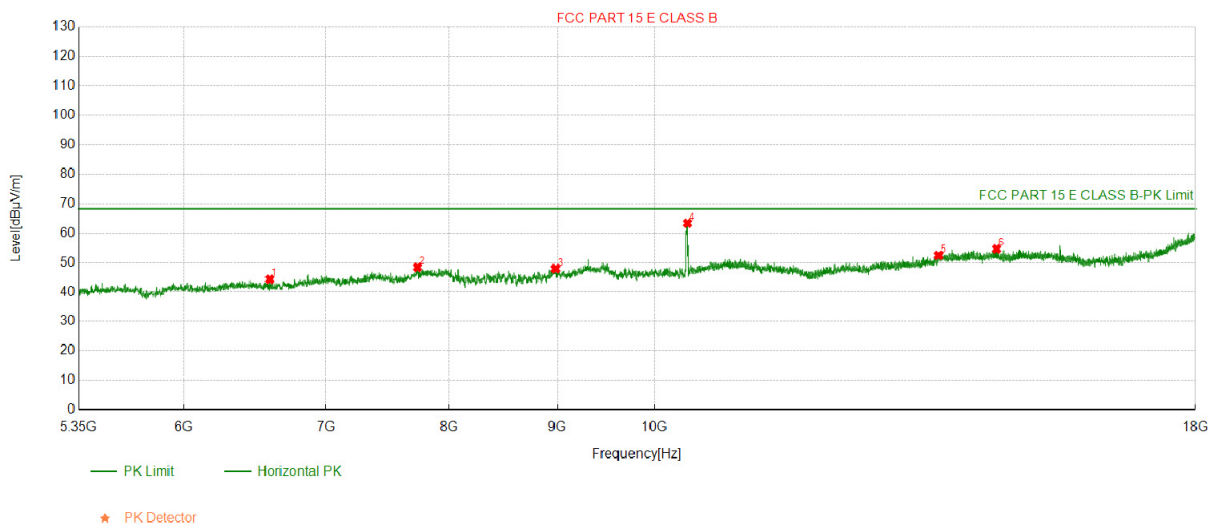
Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1200.880	59.05	37.80	-21.25	68.20	30.40	150	46	Vertical
2	1442.019	59.00	38.69	-20.31	68.20	29.51	150	95	Vertical
3	1679.007	64.42	44.35	-20.07	68.20	23.85	150	95	Vertical
4	1929.693	56.35	37.68	-18.67	68.20	30.52	150	77	Vertical
5	2632.773	56.31	40.25	-16.06	68.20	27.95	150	114	Vertical
6	3093.469	53.18	38.31	-14.87	68.20	29.89	150	241	Vertical

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



For 5.35GHz to 18GHz

Antenna polarity: Horizontal

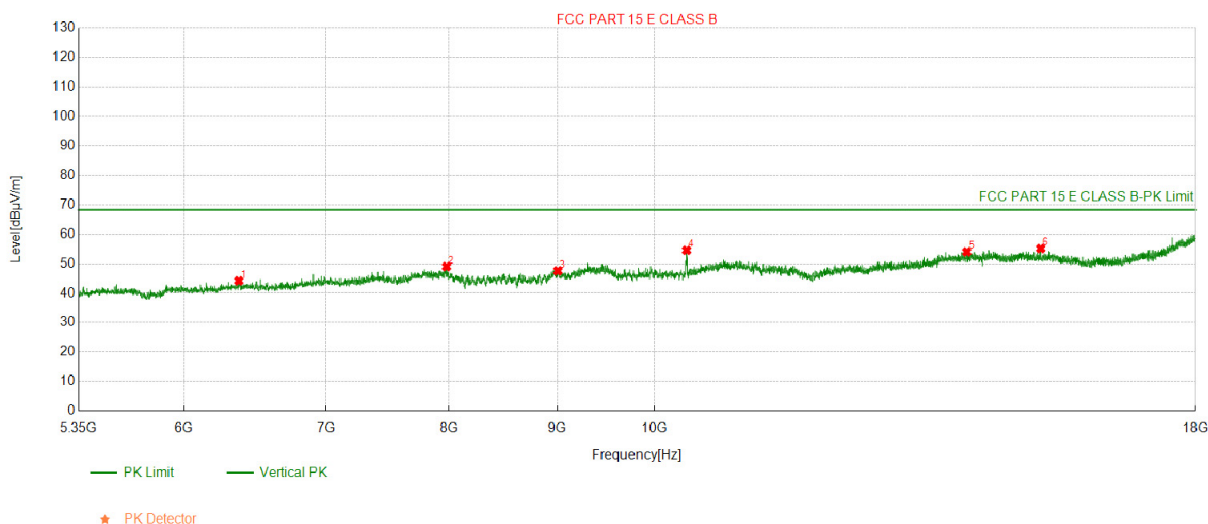


Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	6584.763	50.96	44.32	-6.64	68.20	23.88	150	151	Horizontal
2	7730.968	51.30	48.37	-2.93	68.20	19.83	150	298	Horizontal
3	8980.913	49.61	47.92	-1.69	68.20	20.28	150	270	Horizontal
4	10362.43	63.26	63.36	0.10	68.20	4.84	150	211	Horizontal
5	13612.54	48.00	52.45	4.45	68.20	15.75	150	211	Horizontal
6	14498.12	47.90	54.63	6.73	68.20	13.57	150	359	Horizontal

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



Antenna polarity: Vertical



Suspected Data List

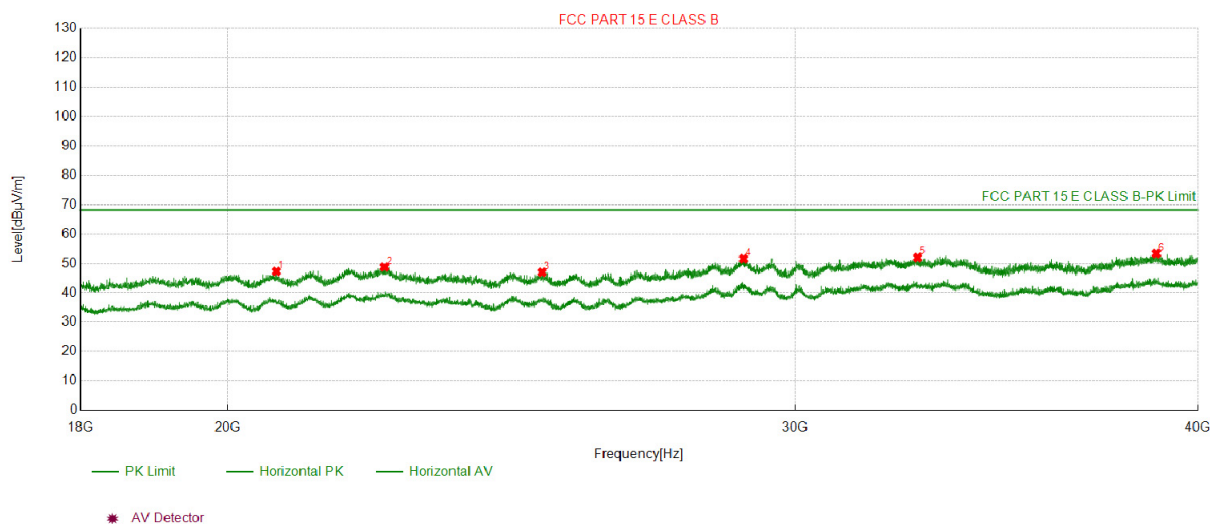
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	6367.161	51.46	44.19	-7.27	68.20	24.01	150	151	Vertical
2	7978.932	51.17	49.01	-2.16	68.20	19.19	150	105	Vertical
3	9003.685	49.23	47.57	-1.66	68.20	20.63	150	312	Vertical
4	10354.84	54.44	54.53	0.09	68.20	13.67	150	269	Vertical
5	14036.35	48.03	54.00	5.97	68.20	14.20	150	136	Vertical
6	15206.60	48.98	55.14	6.16	68.20	13.06	150	87	Vertical

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



For 18GHz to 40GHz

Antenna polarity: Horizontal

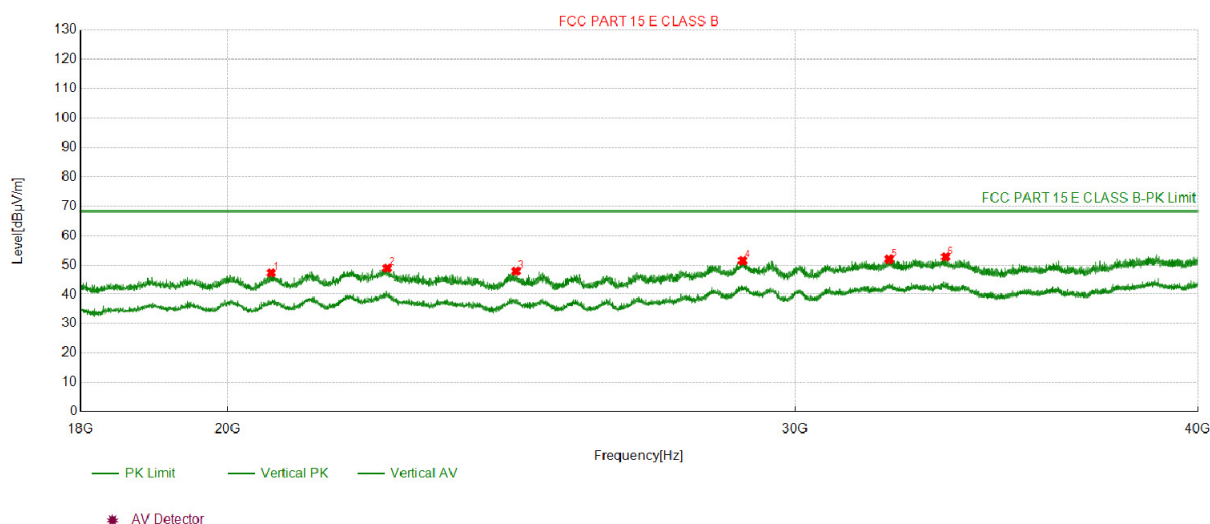


Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	20706.27	41.51	47.27	5.76	68.20	20.93	150	160	Horizontal
2	22367.43	43.08	48.77	5.69	68.20	19.43	150	230	Horizontal
3	25031.90	40.58	46.98	6.40	68.20	21.22	150	320	Horizontal
4	28908.69	42.61	51.59	8.98	68.20	16.61	150	270	Horizontal
5	32741.47	41.38	51.98	10.60	68.20	16.22	150	250	Horizontal
6	38829.48	42.23	53.34	11.11	68.20	14.86	150	140	Horizontal

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



Antenna polarity: Vertical



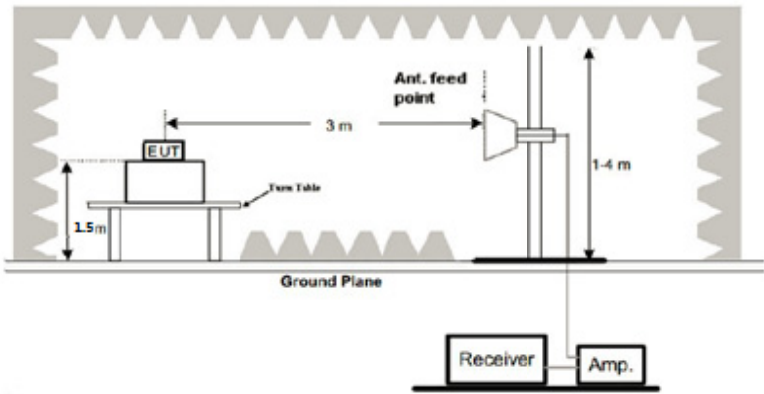
Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	20627.06	41.43	47.28	5.85	68.20	20.92	150	160	Vertical
2	22411.44	43.28	48.96	5.68	68.20	19.24	150	50	Vertical
3	24572.05	42.03	47.86	5.83	68.20	20.34	150	150	Vertical
4	28891.08	42.48	51.45	8.97	68.20	16.75	150	180	Vertical
5	32079.20	42.11	51.95	9.84	68.20	16.25	150	230	Vertical
6	33401.54	41.79	52.72	10.93	68.20	15.48	150	50	Vertical

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



4.6. Band Edge

4.6.1. Test Specification

Test Requirement:	FCC CFR47 Part 15E Section 15.407
Test Method:	ANSI C63.10: 2020
Limit:	For band I&II&III: $E[\text{dB}\mu\text{V}/\text{m}] = \text{EIRP}[\text{dBm}] + 95.2 = 68.2 \text{ dB}\mu\text{V}/\text{m}$, for $\text{EIRP}(\text{dBm}) = -27\text{dBm}$ For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of $-27 \text{ dBm}/\text{MHz}$ at 75 MHz or more above or below the band edge increasing linearly to $10 \text{ dBm}/\text{MHz}$ at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of $15.6 \text{ dBm}/\text{MHz}$ 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 $27 \text{ dBm}/\text{MHz}$ at the band edge. For band IV(5715-5725MHz&5850-5860MHz): $E[\text{dB}\mu\text{V}/\text{m}] = \text{EIRP}[\text{dBm}] + 95.2 = 78.2 \text{ dB}\mu\text{V}/\text{m}$, for $\text{EIRP}(\text{dBm}) = -27\text{dBm}$; For band IV(other un-restricted band): $E[\text{dB}\mu\text{V}/\text{m}] = \text{EIRP}[\text{dBm}] + 95.2 = 68.2 \text{ dB}\mu\text{V}/\text{m}$, for $\text{EIRP}(\text{dBm}) = -27\text{dBm}$
Test Setup:	
Test Mode:	Transmitting mode with modulation

**Test Procedure:**

1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi peak or average method as specified and then reported in a data sheet.

Test Result:

PASS

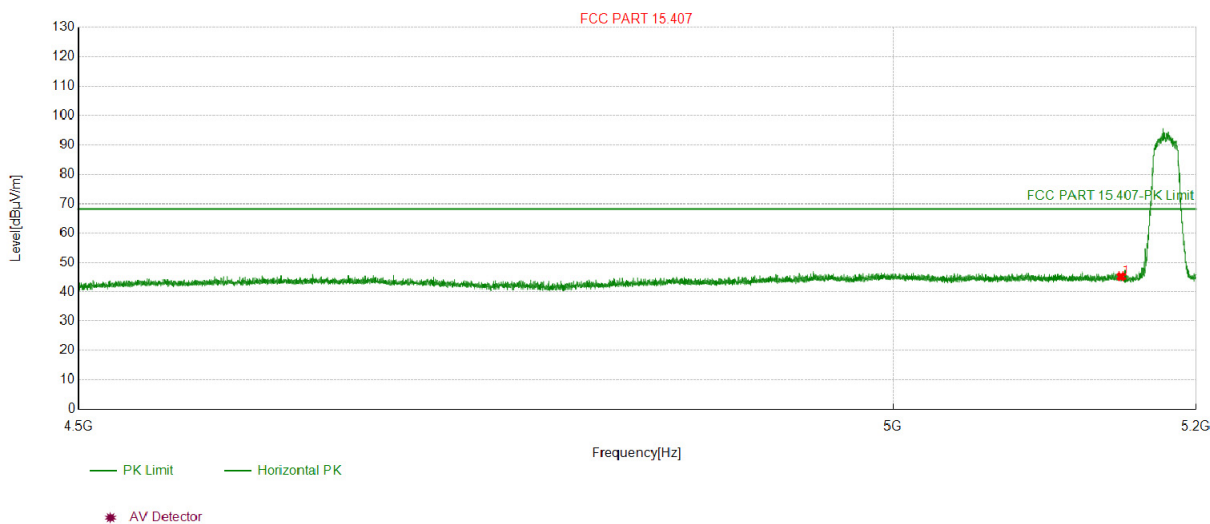


4.6.2. Test Data

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

802.11n(HT20)-5180

Antenna polarity: Horizontal

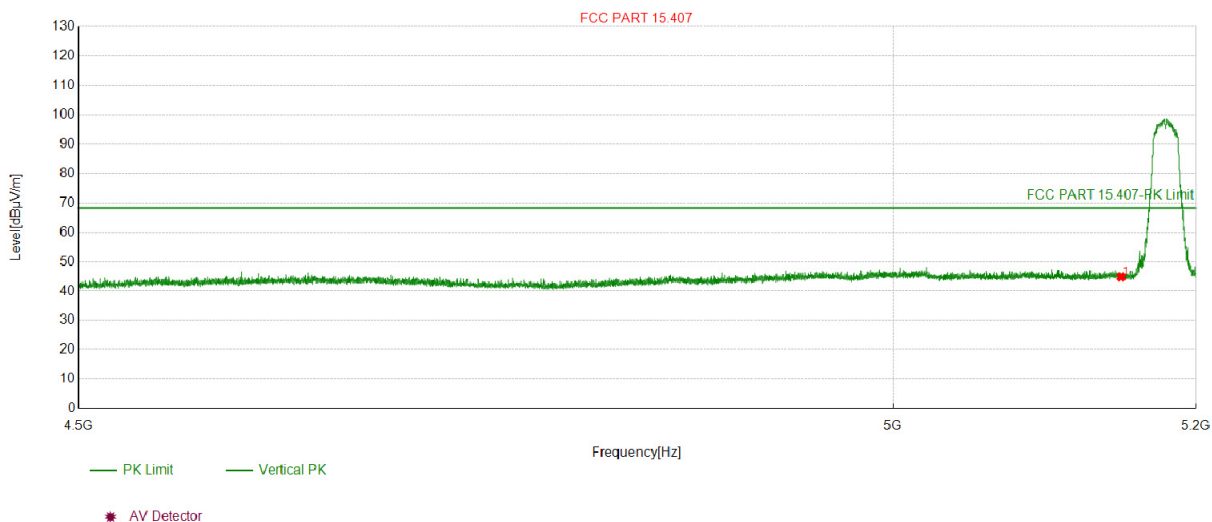


Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	5150.000	50.02	45.24	-4.78	68.20	22.96	150	179	Horizontal

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



Antenna polarity: Vertical



Suspected Data List

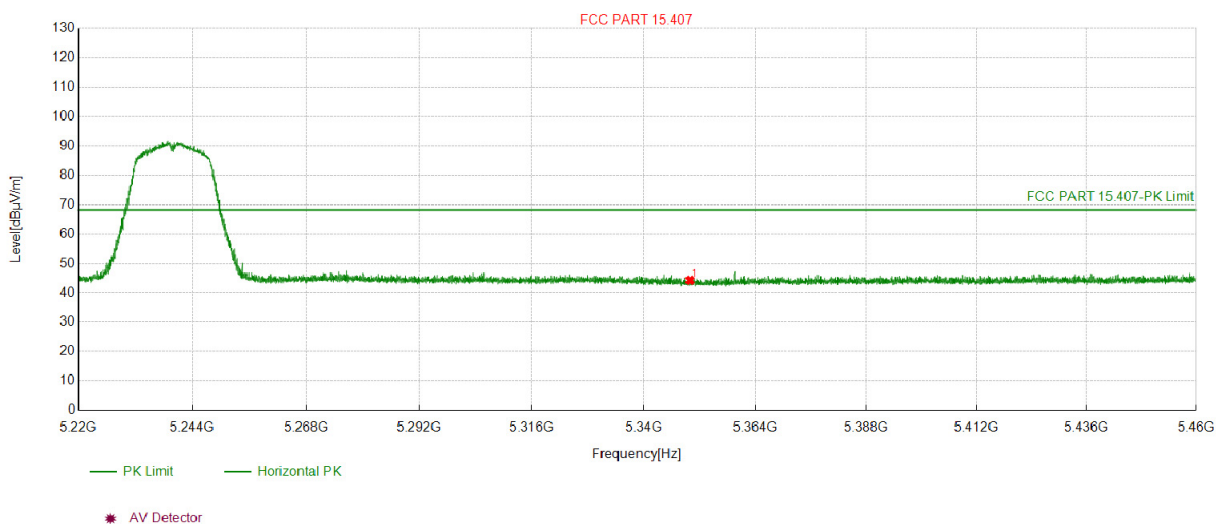
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	5150.000	49.57	44.79	-4.78	68.20	23.41	150	315	Vertical

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



802.11n(HT20)-5240

Antenna polarity: Horizontal

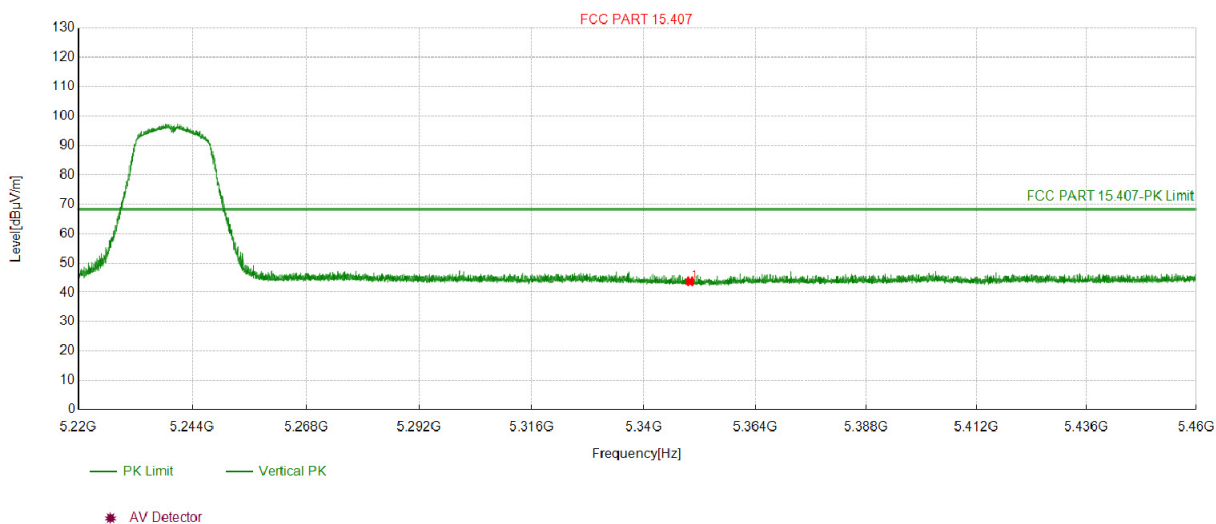


Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	5350.000	49.68	44.24	-5.44	68.20	23.96	150	288	Horizontal

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



Antenna polarity: Vertical



Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	5350.000	49.14	43.70	-5.44	68.20	24.50	150	118	Vertical

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



4.7. Frequency Stability Measurement

4.7.1. Test Specification

Test Requirement:	FCC Part15 Section 15.407(g)
Test Method:	ANSI C63.10: 2020
Limit:	The frequency tolerance shall be maintained within the band of operation frequency over a temperature variation of 0 degrees to 35 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.
Test Setup:	<pre>graph LR; SA[Spectrum Analyzer] --- EUT[EUT]; EUT --- TCh[Temperature Chamber]; TCh --- P[AC/DC Power supply];</pre>
Test Procedure:	- The EUT was placed inside the environmental test chamber and powered by nominal AC/DC voltage. - Turn the EUT on and couple its output to a spectrum analyzer. - Turn the EUT off and set the chamber to the highest temperature specified. - Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize. - Repeat step 2 and 3 with the temperature chamber set to the lowest temperature. - The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.
Test Result:	PASS
Remark:	N/A



4.7.2. Test Result

Mode	Voltage (V)	FHL (5180MHz)	Deviation (KHz)	FHH (5240MHz)	Deviation (KHz)
5.2G Band	4.25V	5179.987	-13	5240.016	16
	5.0V	5179.991	-9	5239.982	-18
	5.75V	5180.002	2	5239.988	-12

Mode	Temperature (°C)	FHL (5180MHz)	Deviation (KHz)	FHH (5240MHz)	Deviation (KHz)
5.2G Band	-30	5179.985	-15	5240.013	13
	-20	5179.992	-8	5240.007	7
	-10	5179.987	-13	5240.011	11
	0	5180.005	5	5239.984	-16
	10	5180.012	12	5239.991	-9
	20	5179.983	-17	5240.013	13
	30	5180.014	14	5240.005	5
	40	5180.007	7	5239.988	-12
	50	5179.988	-12	5240.017	17



4.8. Antenna Requirement

Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

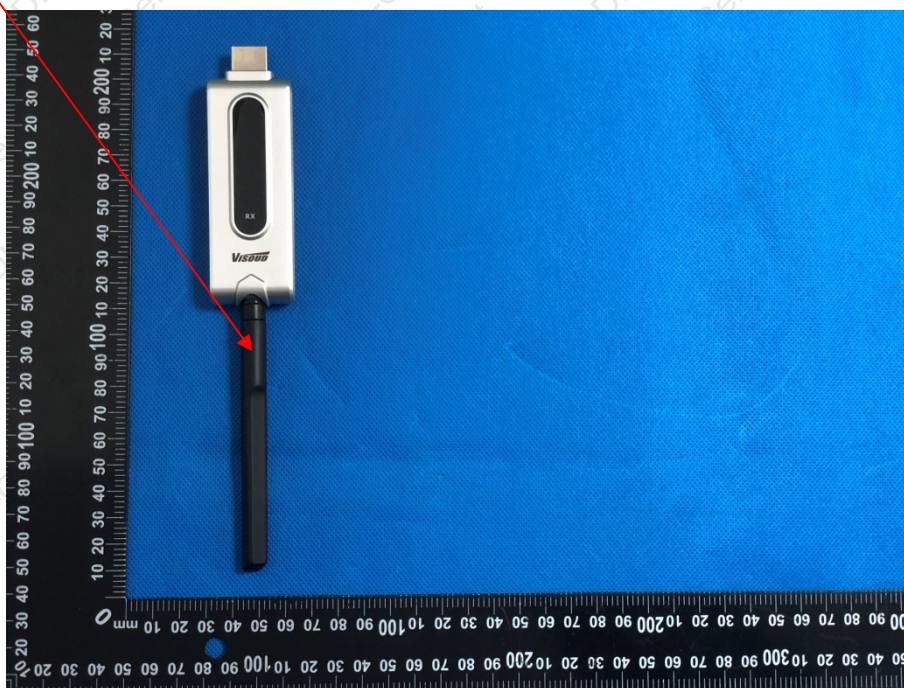
Refer to statement below for compliance.

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

Antenna Connected Construction

The antenna used in this product is an External Antenna, with non-standard SMA connector, need professional installation. It conforms to the standard requirements. The directional gains of antenna used for transmitting is 3.61dBi.

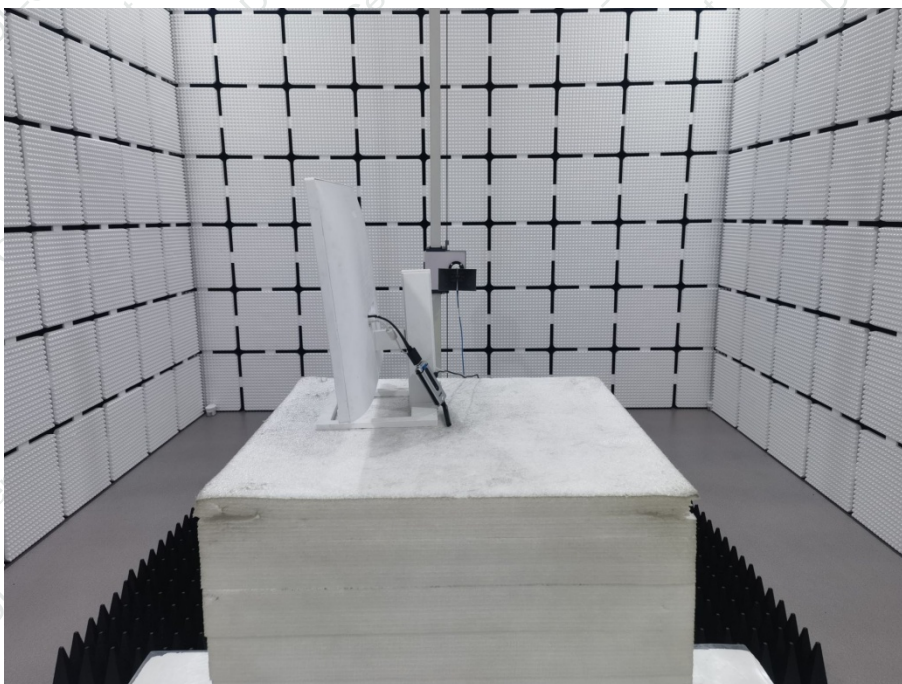
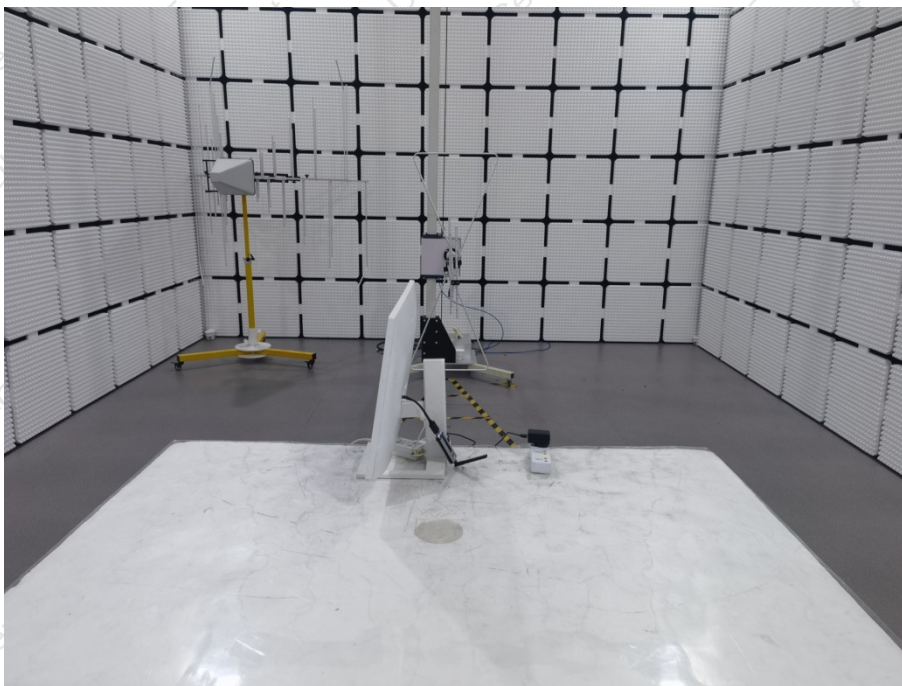
WIFI Antenna





5. Test Setup Photos of the EUT

Radiated Emission

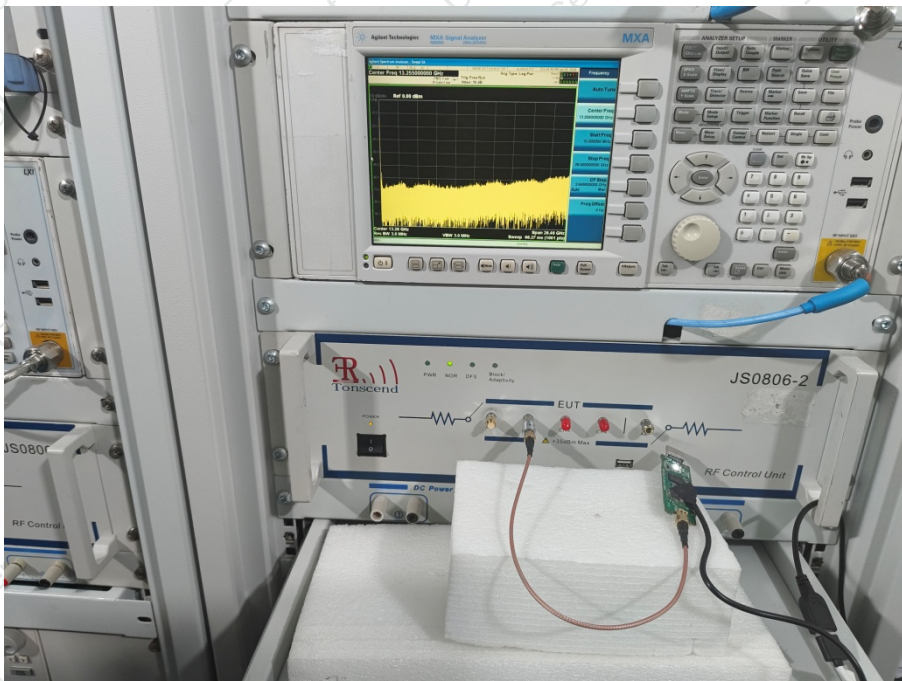




AC Conducted Emission



RF Conducted Emission





6. Photos of the EUT

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

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