



FCC Part 15E Test Report

FCC ID: 2BWHG-EC3201

Applicant: SHENZHEN FICAN TECHNOLOGY CO., LTD
Address: Unit 102, 105, 106, Evolution Space, Baoan District, Shenzhen, China
Manufacturer: SHENZHEN FICAN TECHNOLOGY CO., LTD
Address: Unit 102, 105, 106, Evolution Space, Baoan District, Shenzhen, China
Product Name: DIGITAL CALENDAR
Trade Mark: ZXDKIT
Model Number: EC3201
Date of Receipt: May 12, 2026
Test Date: May 12, 2026 ~ Jun. 16, 2026
Date of Report: Jun. 16, 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-260616023R

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	Jun. 16, 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	DIGITAL CALENDAR
Model Name	EC3201
Series Model(s)	N/A
Model Difference	N/A
Operation Frequency	IEEE 802.11a/n/ac(HT20) 5.180GHz-5.240GHz IEEE 802.11n/ac(HT40) 5.190GHz-5.230GHz IEEE 802.11ac(HT80) 5.210GHz
Modulation Technology	IEEE 802.11a/n/ac
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM
Antenna Type	External Antenna
Antenna Gain	6.81dBi
Power Source	DC12V from adapter with AC100-240V, 50/60Hz
Power Supply	DC12V from adapter with AC100-240V, 50/60Hz
Hardware Version	V1.1
Firmware Version:	20260116
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/ 802.11ac (HT20)		802.11n/802.11ac (HT40)		802.11ac(HT80)	
Channel	Frequency	Channel	Frequency	Channel	Frequency
36	5180	38	5190	42	5210
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)/ac(HT20)

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

For 802.11n (HT40)/ac(HT40)

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

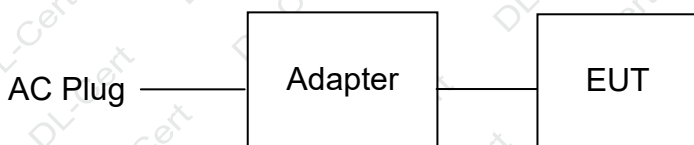
For 802.11ac(HT80)

Band I (5150 - 5250 MHz)	
Channel Number	Frequency (MHz)
42	5210

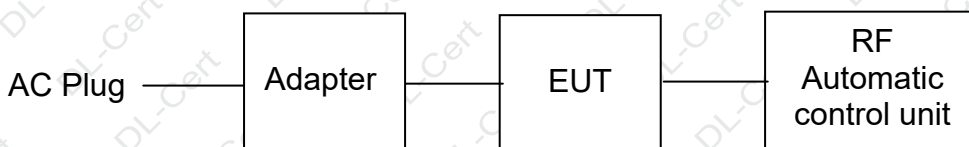


2.4 Description of Test Setup

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 Name	Specification	Remark
1	DIGITAL CALENDAR	ZXDKIT	EC3201	N/A	EUT
2	Adapter	N/A	YMK-48W120400	INPUT: AC100-240V 50/60Hz 1.2A Max OUTPUT: DC12V 4000mA	

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.



3. 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



4. General Information

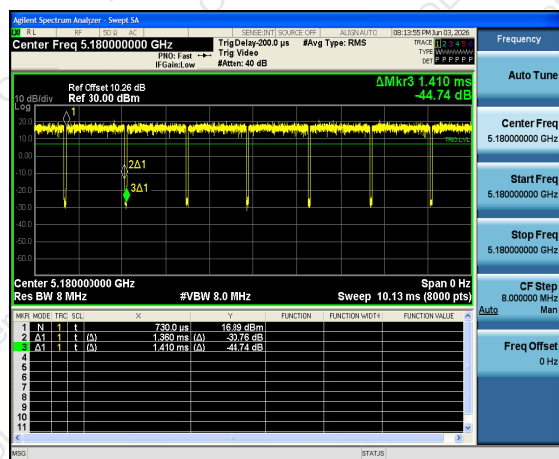
4.1 Test Environment and Mode

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
802.11ac(HT20)/ac(HT40)/ac(HT80)	MCS0
Final Test Mode:	
Operation mode:	Keep the EUT in continuous transmitting with modulation



Mode	Duty Cycle
802.11a	0.9645
802.11n(HT20)	0.9621
802.11n(HT40)	0.9275
802.11ac(HT20)	0.9624
802.11ac(HT40)	0.9275
802.11ac(HT80)	0.9549

802.11a



Agilent Spectrum Analyzer - Sweep 5A

SENSE: RVT 93.5CSE CH1 ALN: ALN1 TO DB: 17.55 dBm 3 in (0) 2006

Center Freq 5.200000000 GHz Trig Delay: 200.0 μ s #Avg Type: RMS TRACE 1 3 5 7 9 TYPE Waveform 100 P P P P P P

PRG: Fast $\rightarrow$ IF Control: Low Filter: 40 dB

10 dB/div Ref Offset: 10.26 dB Δ Mkr3 1.320 ms
Ref 30.00 dBm -22.17 dB

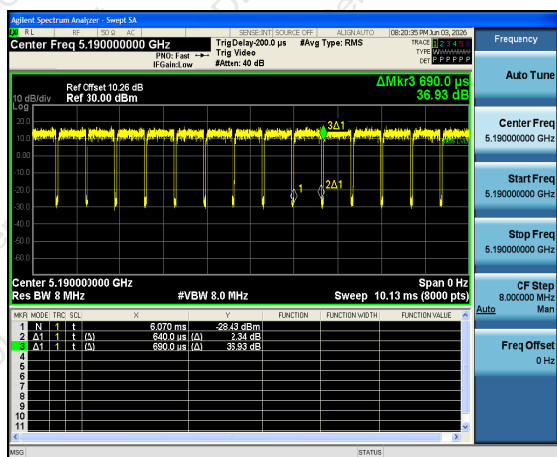
Center 5.200000000 GHz Span 0 Hz
Res BW 8 MHz #VBW 8.0 MHz Sweep 10.13 ms (8000 pts)

MR	NAME	TRIG	SOL	W	W	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1	A1	t	t	7.370 ms	17.40 dBm			
2	A1	t	t	1.270 ms	-44.78 dB			
3	A1	t	t	1.320 ms	-22.17 dB			

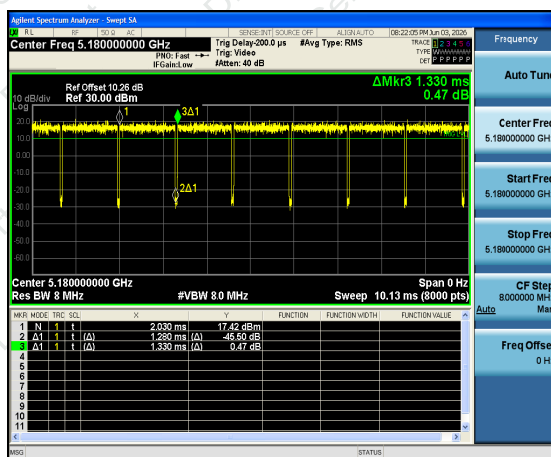
MSG (STATUS)



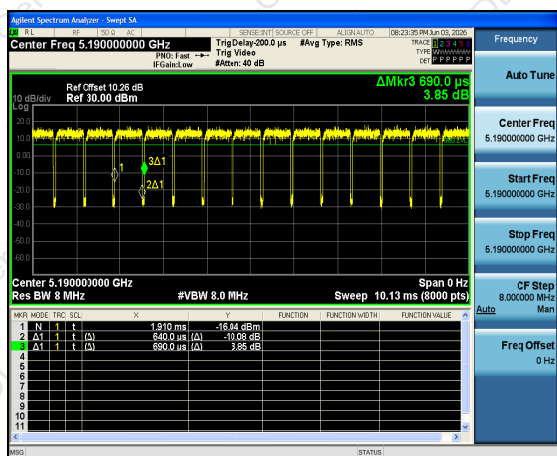
802.11n(HT40)



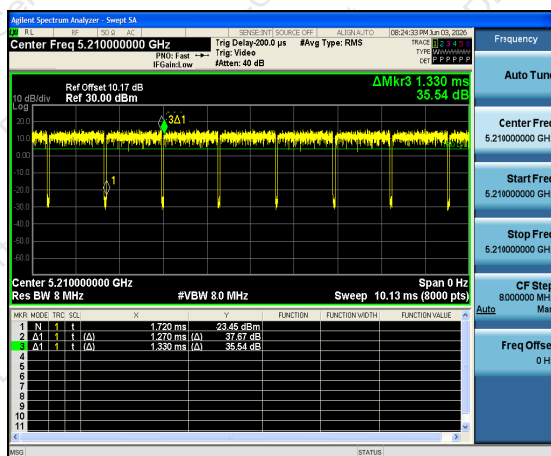
802.11ac(HT20)



802.11ac(HT40)



802.11ac(HT80)





5. Test Results and Measurement Data

5.1 AC Power Line Conducted Emission

5.1.1 Test Specification

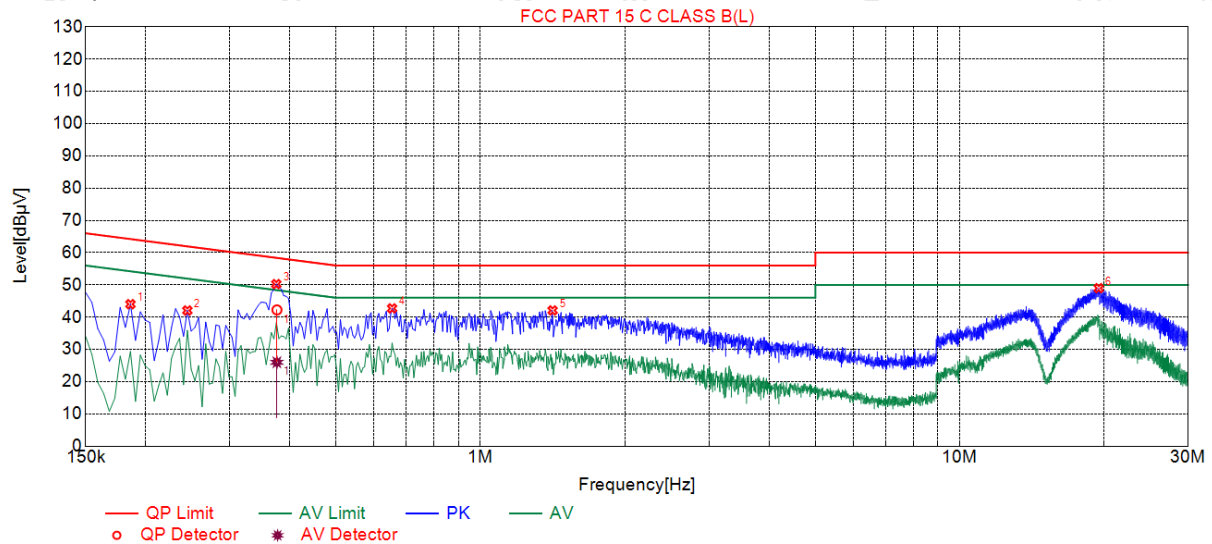
Test Requirement:	FCC Part15 C Section 15.207		
Test Method:	ANSI C63.10: 2020		
Frequency Range:	150 kHz to 30 MHz		
Receiver Setup:	RBW=9 kHz, VBW=30 kHz, Sweep time=auto		
Limits:	Frequency range (MHz)	Limit (dBuV)	
		Quasi-peak	Average
	0.15-0.5	66 to 56*	56 to 46*
	0.5-5	56	46
	5-30	60	50
Test Setup:	Reference Plane 40cm 80cm E.U.T. AC power 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		



5.1.2 Test Data

All modes have been tested, 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	44.02	19.78	64.21	20.19	24.24	PK	L
2	0.2445	42.07	19.76	61.94	19.87	22.31	PK	L
3	0.3750	50.25	19.81	58.39	8.14	30.44	PK	L
4	0.6540	42.72	19.93	56.00	13.28	22.79	PK	L
5	1.4145	42.08	19.95	56.00	13.92	22.13	PK	L
6	19.5180	48.99	22.96	60.00	11.01	26.03	PK	L

Final Data List

NO.	Freq. [MHz]	Correction factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	QP Reading [dBμV]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	AV Reading [dBμV]	Type
1	0.3750	19.81	42.25	58.37	16.12	22.44	26.00	48.37	22.37	6.19	L

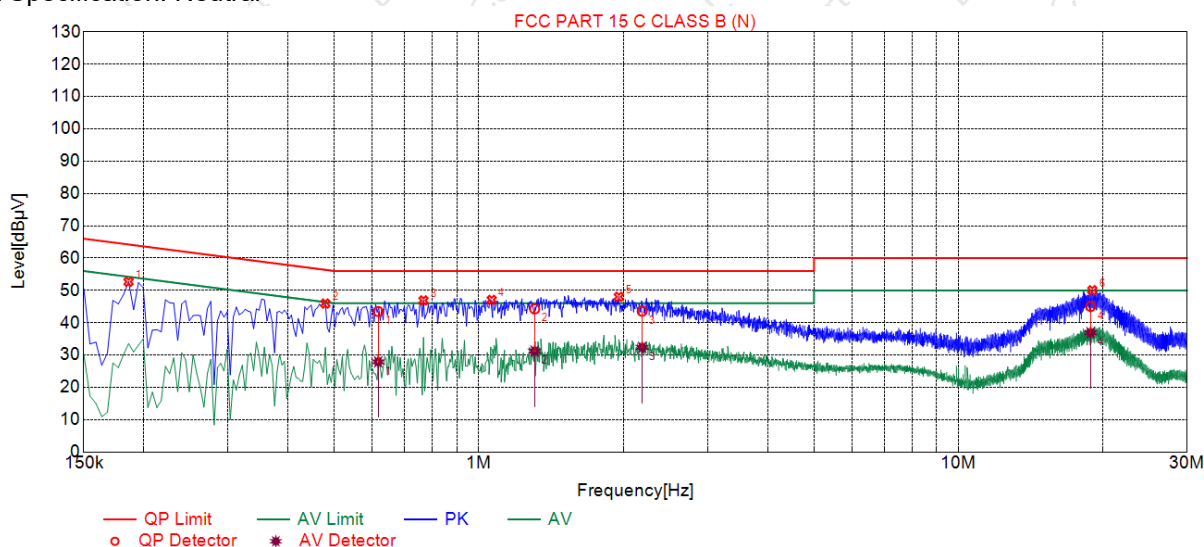
Remark: Margin = Limit – Level

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	52.66	19.81	64.21	11.55	32.85	PK	N
2	0.4785	45.94	19.94	56.37	10.43	26.00	PK	N
3	0.7665	46.89	19.95	56.00	9.11	26.94	PK	N
4	1.0635	47.07	19.98	56.00	8.93	27.09	PK	N
5	1.9590	48.02	20.16	56.00	7.98	27.86	PK	N
6	19.0320	50.04	22.85	60.00	9.96	27.19	PK	N

Final Data List

NO.	Freq. [MHz]	Correction factor [dB]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	QP Reading [dBμV]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	AV Reading [dBμV]	Type
1	0.6167	19.95	43.47	56.00	12.53	23.52	27.88	46.00	18.12	7.93	N
2	1.3074	20.03	44.27	56.00	11.73	24.24	31.21	46.00	14.79	11.18	N
3	2.1906	20.17	43.56	56.00	12.44	23.39	32.36	46.00	13.64	12.19	N
4	18.8743	22.81	45.05	60.00	14.95	22.24	36.90	50.00	13.10	14.09	N

Remark: Margin = Limit – Level

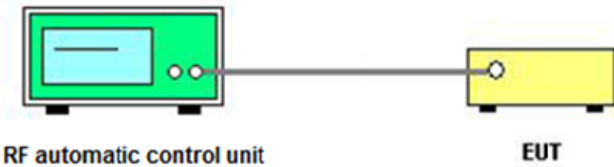
Correction factor = Cable loss + LISN insertion loss

Level=Test receiver reading + correction factor



5.2 Maximum Conducted Output Power

5.2.1 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 RF automatic control unit 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.	



5.2.2 Test Data

Configuration Band I (5150 - 5250 MHz)				
Mode	Test Channel	Maximum Conducted Output Power (dBm)	FCC Limit (dBm)	Result
802.11a	CH36	6.04	23.19	PASS
802.11a	CH40	6.04	23.19	PASS
802.11a	CH48	6.05	23.19	PASS
802.11n(HT20)	CH36	6.92	23.19	PASS
802.11n(HT20)	CH40	6.83	23.19	PASS
802.11n(HT20)	CH48	5.85	23.19	PASS
802.11n(HT40)	CH38	5.53	23.19	PASS
802.11n(HT40)	CH46	5.86	23.19	PASS
802.11ac(HT20)	CH36	5.48	23.19	PASS
802.11ac(HT20)	CH40	5.98	23.19	PASS
802.11ac(HT20)	CH48	5.66	23.19	PASS
802.11ac(HT40)	CH38	5.58	23.19	PASS
802.11ac(HT40)	CH46	5.02	23.19	PASS
802.11ac(HT80)	CH42	5.33	23.19	PASS
Note: 1. The test results including the cable lose. 2. Limit=24dBm-(direction gain-6dBi)= 23.19dBm				



5.3 26dB Bandwidth and 99% Occupied Bandwidth

5.3.1 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:	 Spectrum Analyzer 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



5.3.2 Test Data

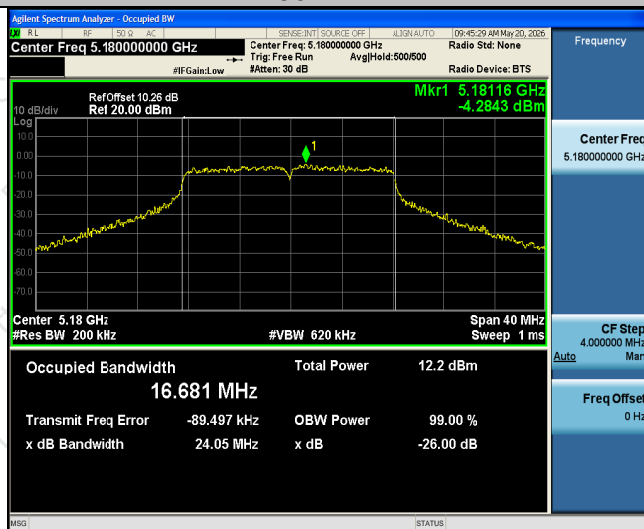
Mode	Test Channel	Frequency (MHz)	26 dB Bandwidth (MHz)	Verdict
802.11a	CH36	5180	24.05	PASS
802.11a	CH40	5200	24.07	PASS
802.11a	CH48	5240	24.28	PASS
802.11n(HT20)	CH36	5180	25.74	PASS
802.11n(HT20)	CH40	5200	23.89	PASS
802.11n(HT20)	CH48	5240	24.45	PASS
802.11n(HT40)	CH38	5190	45.46	PASS
802.11n(HT40)	CH46	5230	44.29	PASS
802.11ac(HT20)	CH36	5180	24.66	PASS
802.11ac(HT20)	CH40	5200	25.05	PASS
802.11ac(HT20)	CH48	5240	24.96	PASS
802.11ac(HT40)	CH38	5190	43.82	PASS
802.11ac(HT40)	CH46	5230	44.40	PASS
802.11ac(HT80)	CH42	5210	84.71	PASS

Test plots as follows:

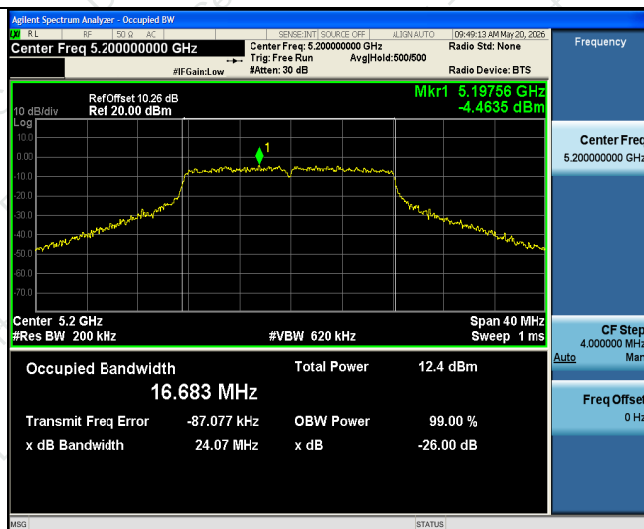


Band I (5150 – 5250MHz)

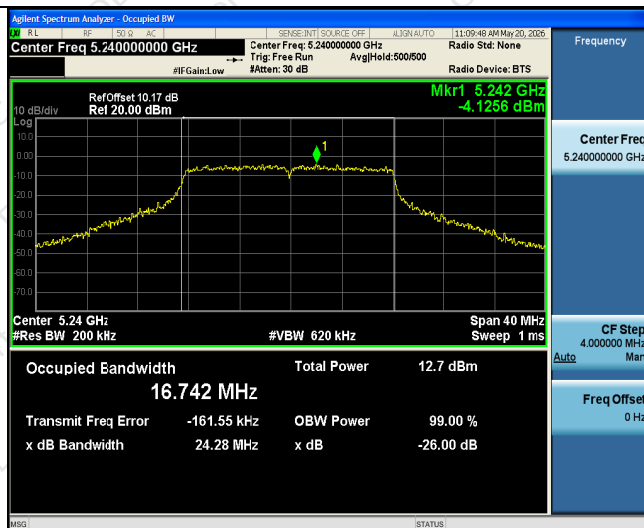
802.11a



Low



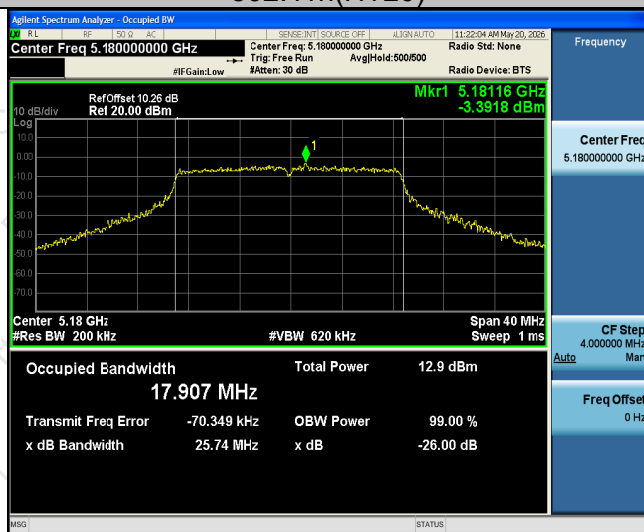
Mid



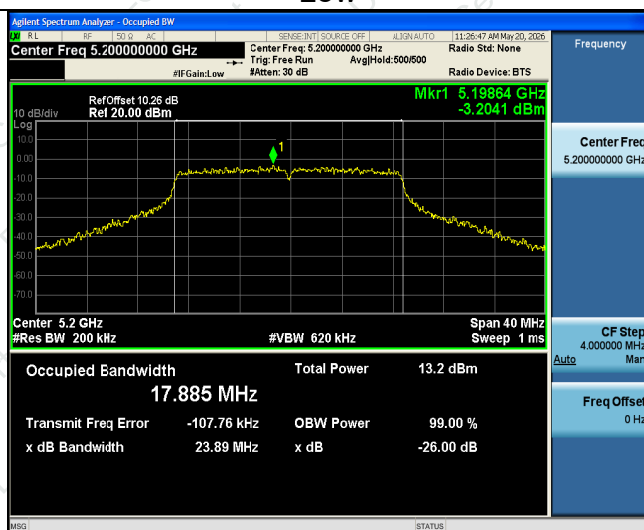
High



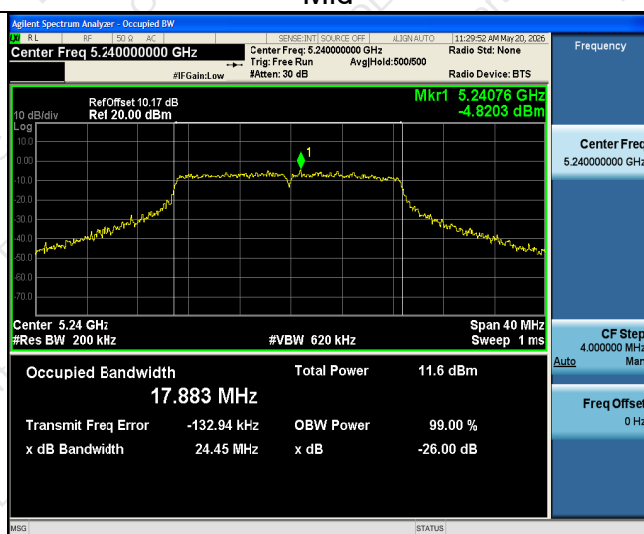
802.11n(HT20)



Low



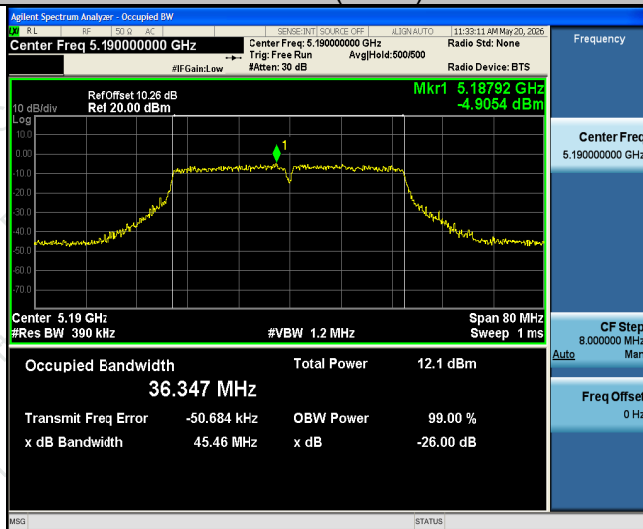
Mid



High



802.11n(HT40)



Low



High



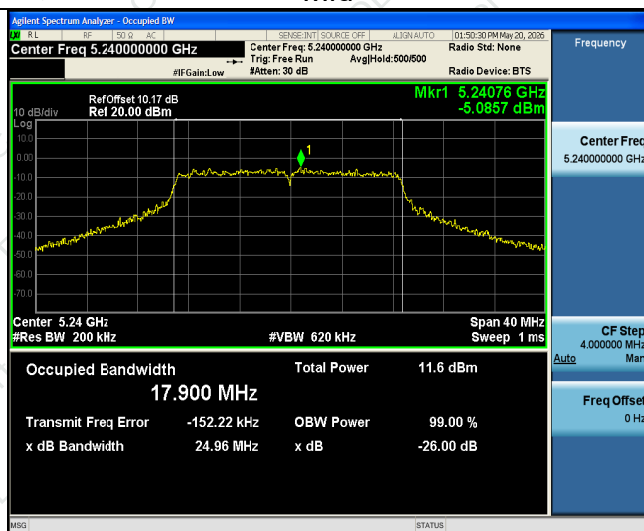
802.11ac(HT20)



Low



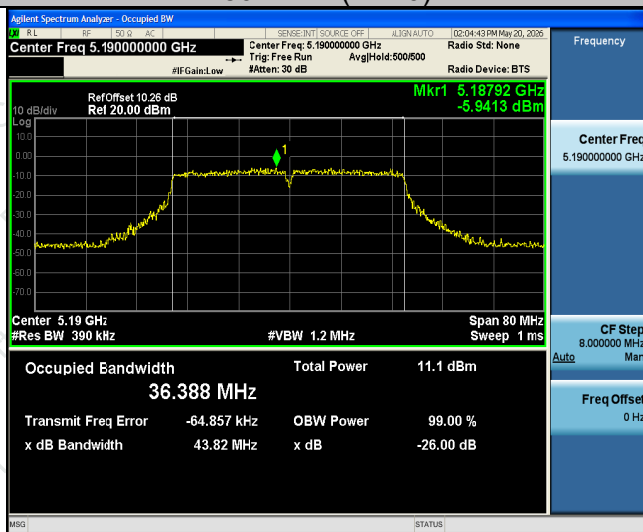
Mid



High



802.11ac(HT40)

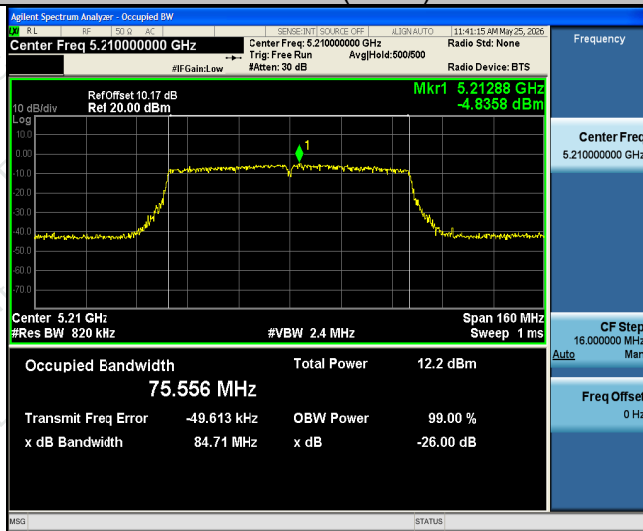


Low



High

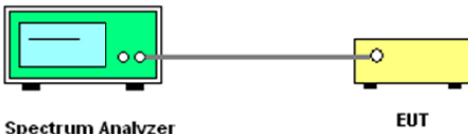
802.11ac(HT80)





5.4 Power Spectral Density

5.4.1 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'. Below the green box is the text 'Spectrum Analyzer' and below the yellow box is the text '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.



5.4.2 Test Data

Mode	Test Channel	Level [dBm/MHz]	Limit (dBm/MHz)	Result
802.11a	CH36	4.64	10.19	PASS
802.11a	CH40	5.21	10.19	PASS
802.11a	CH48	5.49	10.19	PASS
802.11n(HT20)	CH36	6.89	10.19	PASS
802.11n(HT20)	CH40	7.71	10.19	PASS
802.11n(HT20)	CH48	5.84	10.19	PASS
802.11n(HT40)	CH38	4.11	10.19	PASS
802.11n(HT40)	CH46	3.51	10.19	PASS
802.11ac(HT20)	CH36	6.19	10.19	PASS
802.11ac(HT20)	CH40	6.66	10.19	PASS
802.11ac(HT20)	CH48	5.33	10.19	PASS
802.11ac(HT40)	CH38	5.42	10.19	PASS
802.11ac(HT40)	CH46	4.68	10.19	PASS
802.11ac(HT80)	CH42	3.58	10.19	PASS

Note:

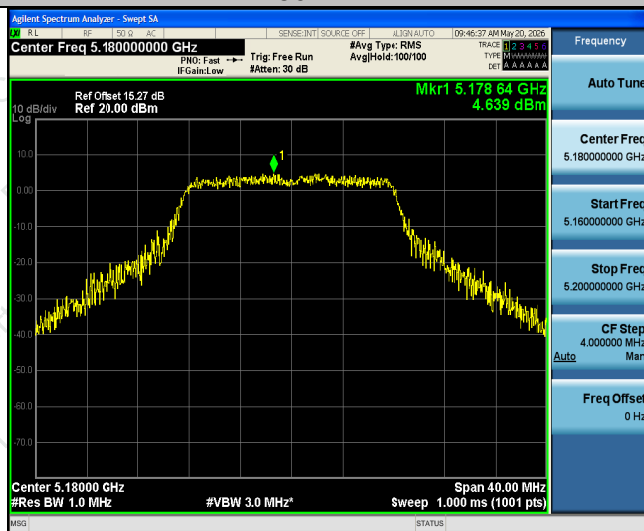
1. Instrument attenuation and cable loss See test diagram
2. Limit=11dBm-(direction gain-6dBi)= 10.19dBm



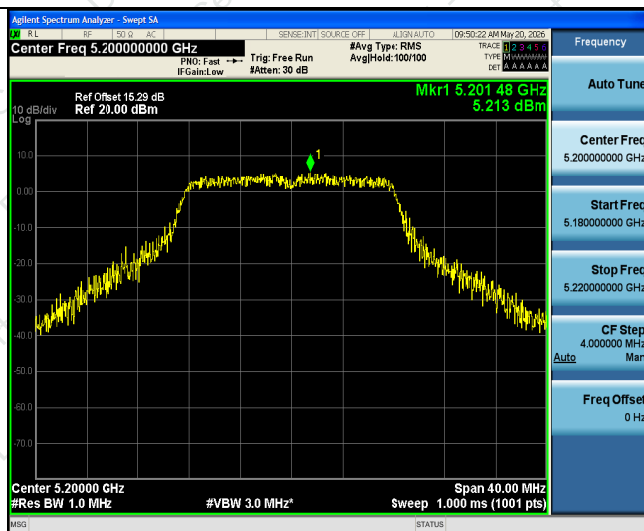
Test plots as follows:

Band I (5150 – 5250MHz)

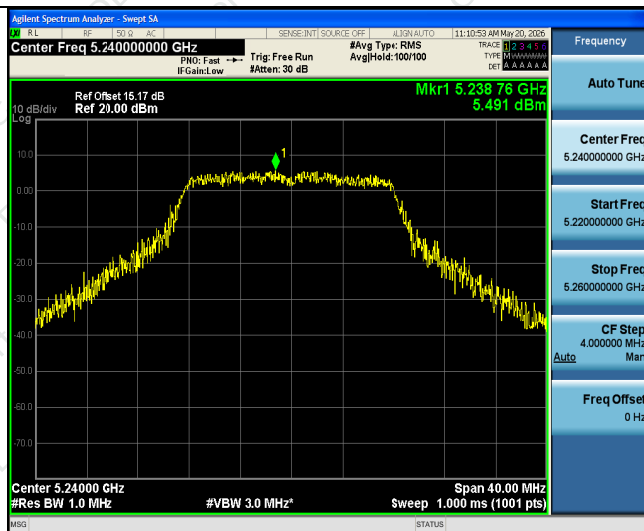
802.11a



Low



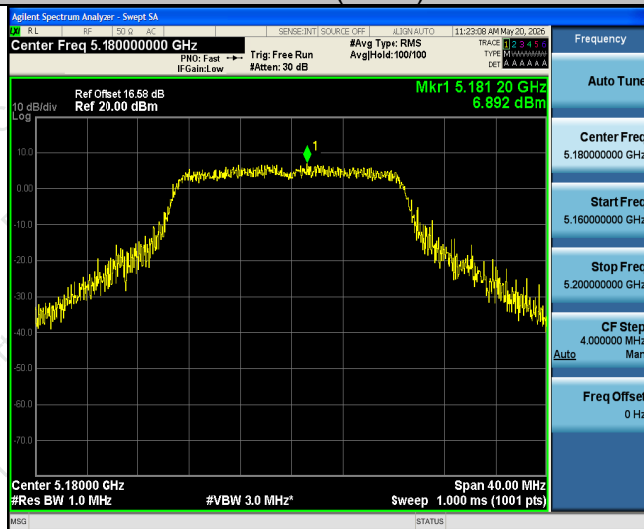
Mid



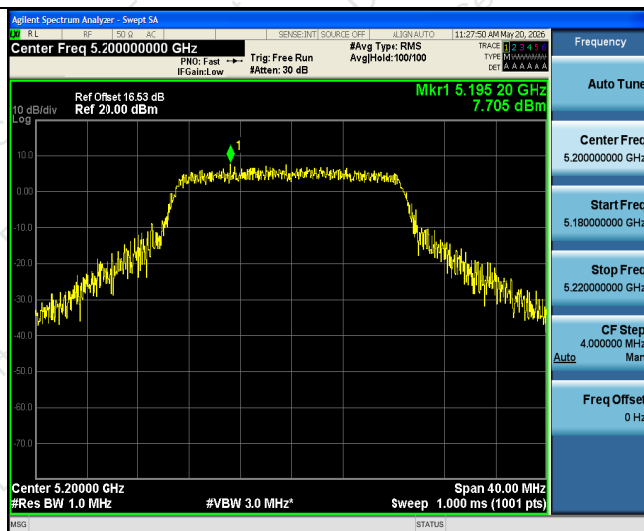
High



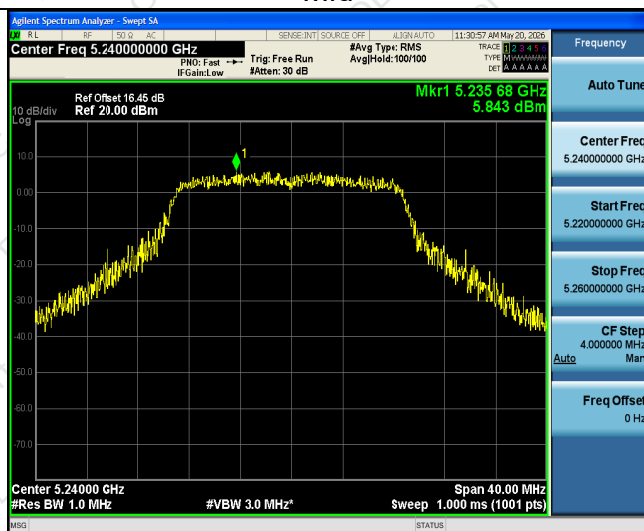
802.11n(HT20)



Low



Mid



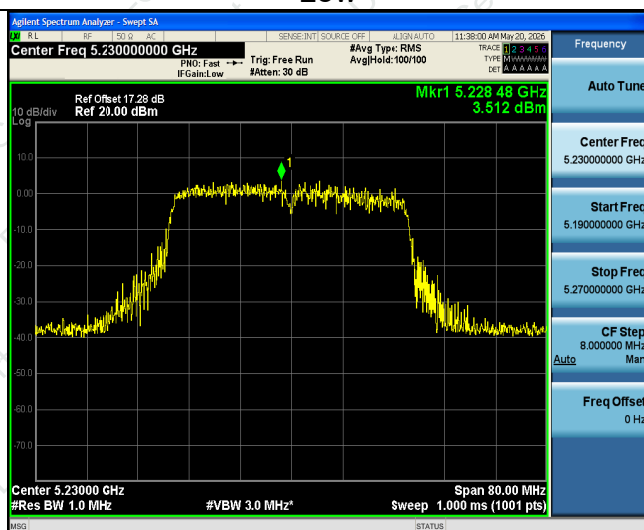
High



802.11n(HT40)



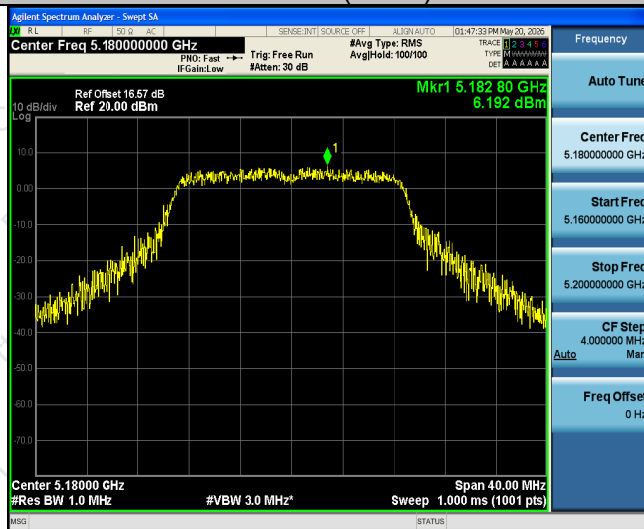
Low



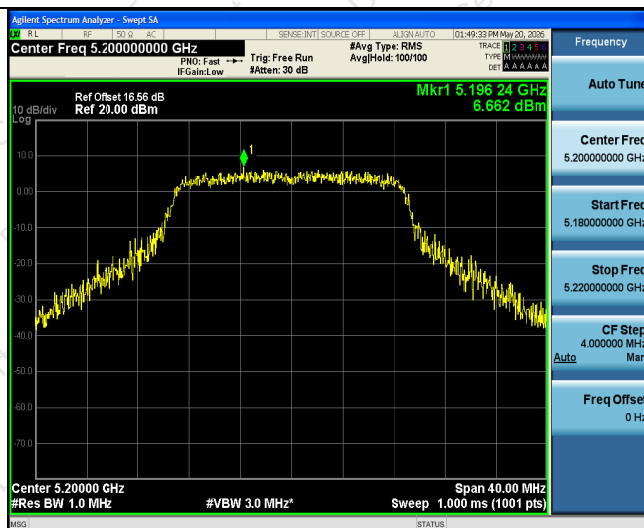
High



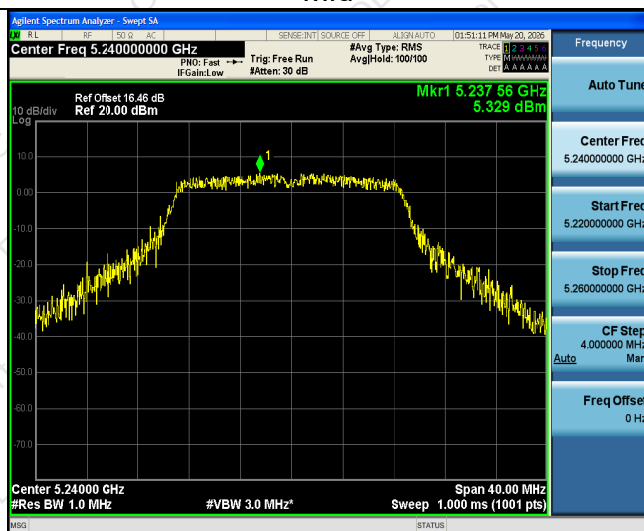
802.11ac(HT20)



Low



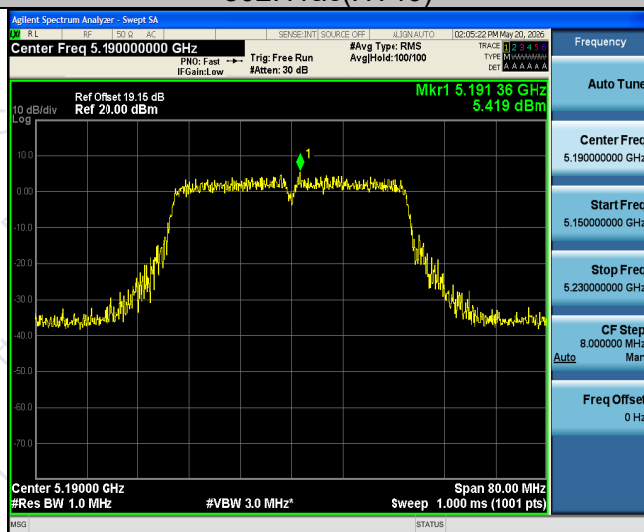
Mid



High



802.11ac(HT40)

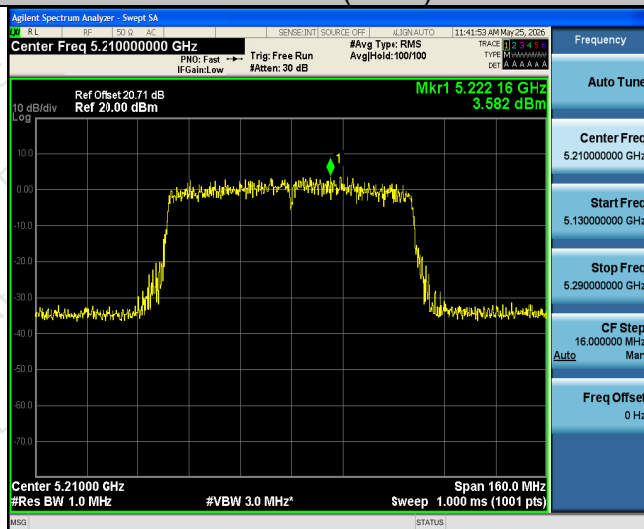


Low



High

802.11ac(HT80)





5.5 Spurious Emission

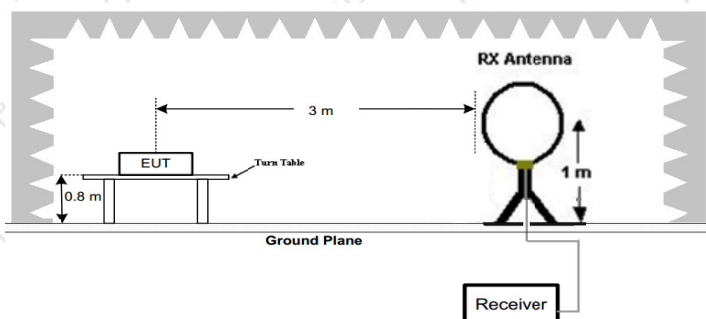
5.5.1 Test Specification

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.				

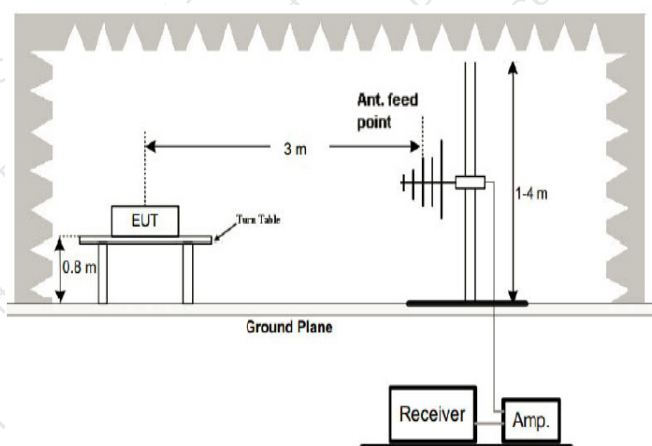


Test Setup:

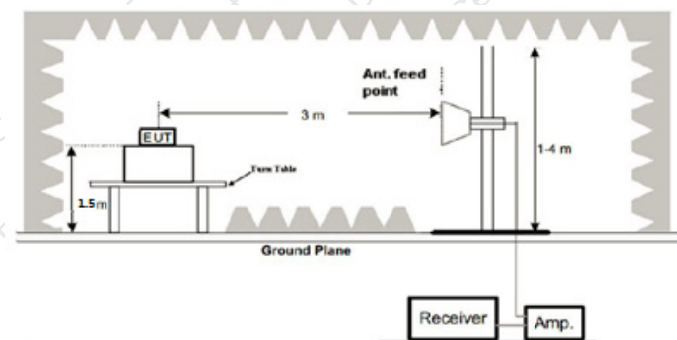
For radiated emissions below 30MHz



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

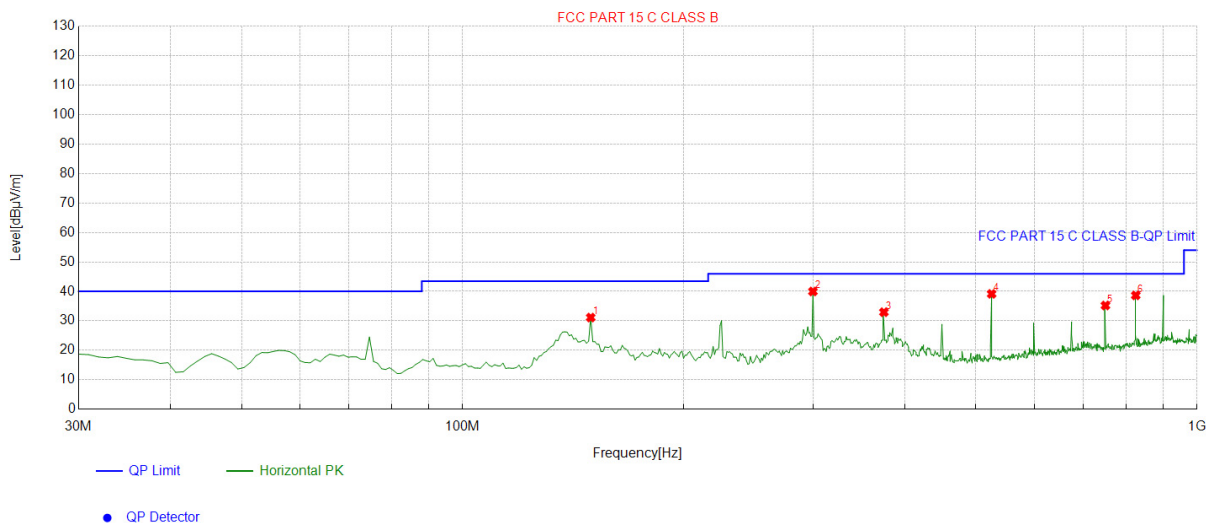


5.5.2 Test Data

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

Below 1GHz Test Results

Antenna polarity: Horizontal

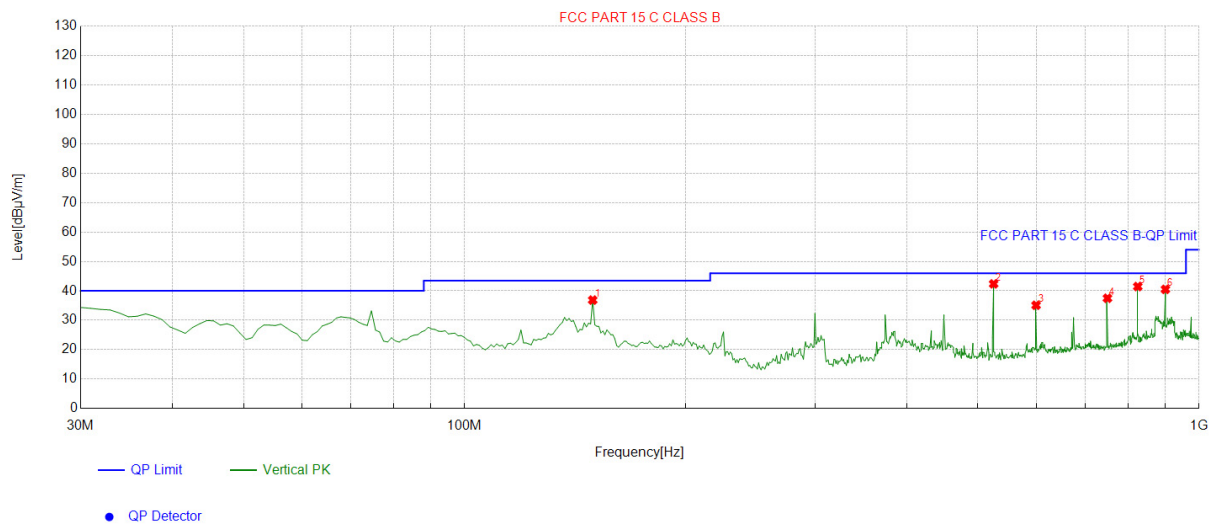


Suspected List									
NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	149.429	-18.24	49.38	31.14	43.50	12.36	100	210	Horizontal
2	299.930	-12.01	51.99	39.98	46.00	6.02	100	132	Horizontal
3	374.695	-10.49	43.44	32.95	46.00	13.05	100	213	Horizontal
4	525.195	-7.32	46.48	39.16	46.00	6.84	100	40	Horizontal
5	750.460	-3.34	38.56	35.22	46.00	10.78	100	263	Horizontal
6	825.225	-2.21	40.86	38.65	46.00	7.35	100	75	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	149.429	-18.24	55.11	36.87	43.50	6.63	100	119	Vertical
2	525.195	-7.32	49.69	42.37	46.00	3.63	100	216	Vertical
3	599.960	-5.63	40.73	35.10	46.00	10.90	100	145	Vertical
4	750.460	-3.34	40.83	37.49	46.00	8.51	100	199	Vertical
5	825.225	-2.21	43.68	41.47	46.00	4.53	100	327	Vertical
6	899.990	-1.41	41.93	40.52	46.00	5.48	100	249	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.

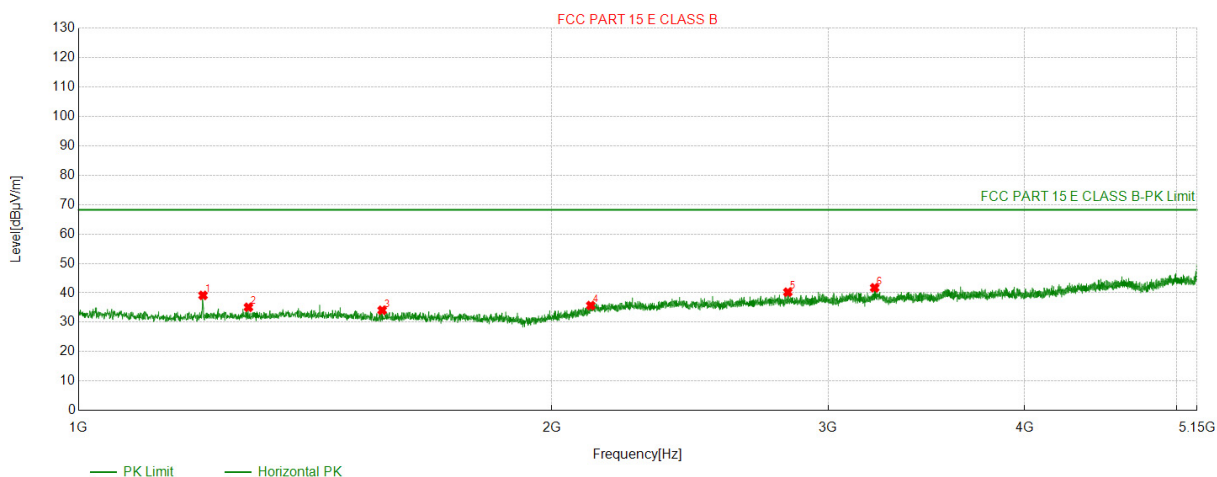


Above 1GHz Test Results

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

For 1GHz to 5.15GHz

Antenna polarity: Horizontal

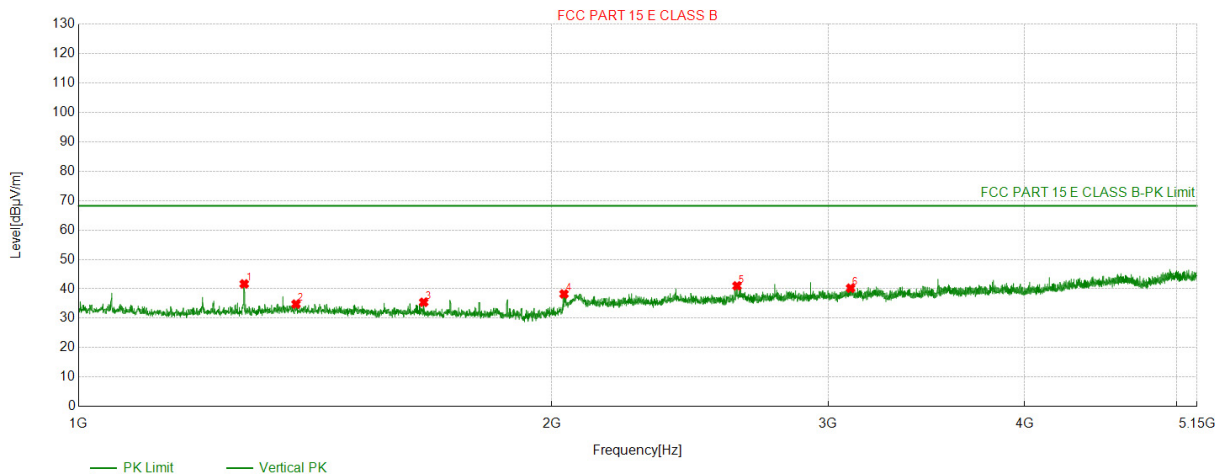


Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1200.050	58.01	39.14	-18.87	68.20	29.06	150	300	Horizontal
2	1282.643	53.59	35.10	-18.49	68.20	33.10	150	230	Horizontal
3	1560.306	52.63	34.08	-18.55	68.20	34.12	150	70	Horizontal
4	2118.122	51.42	35.69	-15.73	68.20	32.51	150	300	Horizontal
5	2827.428	53.74	40.24	-13.50	68.20	27.96	150	150	Horizontal
6	3210.926	54.41	41.73	-12.68	68.20	26.47	150	140	Horizontal

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



Antenna polarity: Vertical



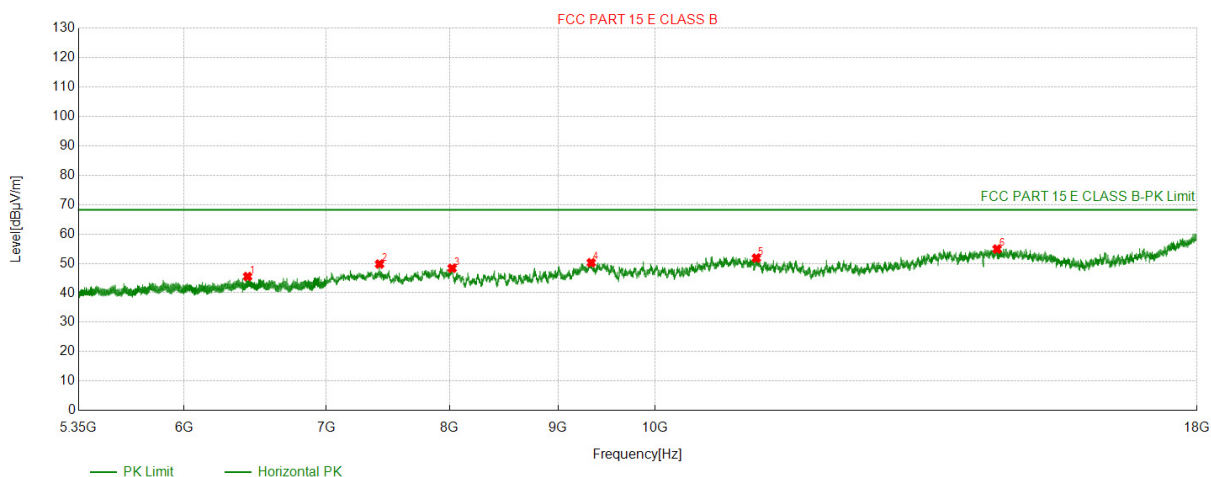
Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1274.757	60.19	41.68	-18.51	68.20	26.52	150	120	Vertical
2	1375.198	52.94	34.82	-18.12	68.20	33.38	150	60	Vertical
3	1658.256	53.87	35.44	-18.43	68.20	32.76	150	260	Vertical
4	2036.774	54.90	38.27	-16.63	68.20	29.93	150	90	Vertical
5	2624.472	55.34	41.01	-14.33	68.20	27.19	150	120	Vertical
6	3099.695	52.84	40.24	-12.60	68.20	27.96	150	250	Vertical

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



For 5.35GHz to 18GHz

Antenna polarity: Horizontal

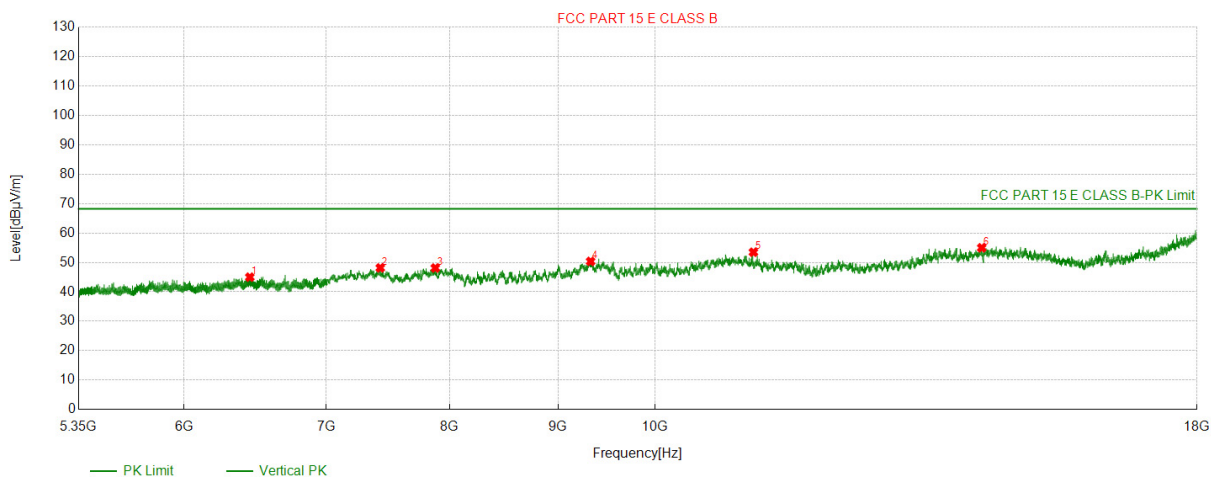


Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	6426.568	52.31	45.55	-6.76	68.20	22.65	150	142	Horizontal
2	7415.842	52.85	49.79	-3.06	68.20	18.41	150	26	Horizontal
3	8023.102	50.18	48.36	-1.82	68.20	19.84	150	16	Horizontal
4	9330.033	50.54	50.25	-0.29	68.20	17.95	150	48	Horizontal
5	11159.516	48.97	51.81	2.84	68.20	16.39	150	354	Horizontal
6	14489.549	47.53	54.89	7.36	68.20	13.31	150	304	Horizontal

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



Antenna polarity: Vertical



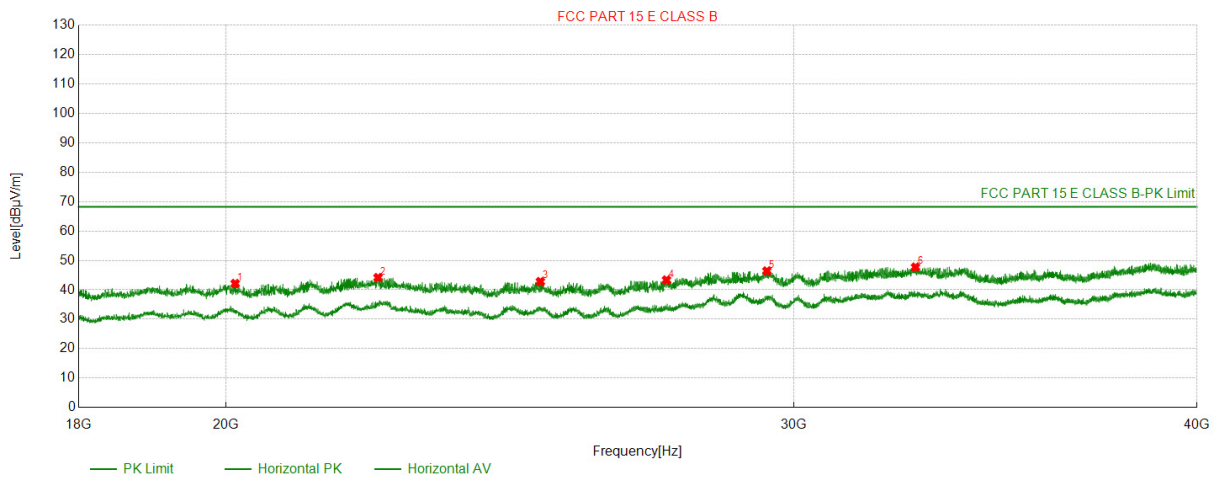
Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	6442.244	51.68	45.00	-6.68	68.20	23.20	150	3	Vertical
2	7421.342	51.20	48.15	-3.05	68.20	20.05	150	39	Vertical
3	7877.888	51.00	48.10	-2.90	68.20	20.10	150	117	Vertical
4	9323.432	50.66	50.36	-0.30	68.20	17.84	150	94	Vertical
5	11124.312	50.77	53.48	2.71	68.20	14.72	150	58	Vertical
6	14250.825	47.85	54.97	7.12	68.20	13.23	150	44	Vertical

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



For 18GHz to 40GHz

Antenna polarity: Horizontal

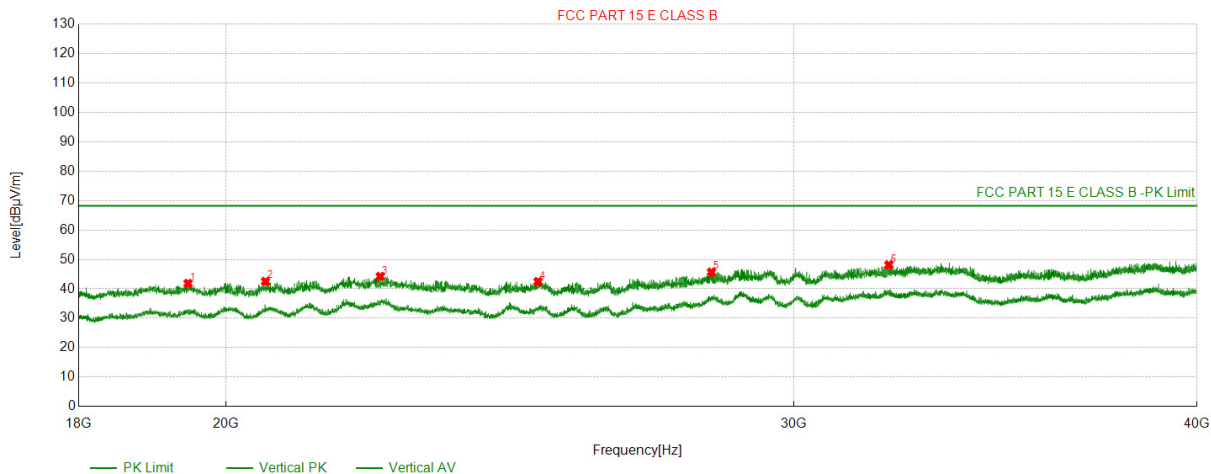


Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	20129.813	36.02	42.14	6.12	68.20	26.06	150	230	Horizontal
2	22290.429	38.43	44.15	5.72	68.20	24.05	150	60	Horizontal
3	25029.703	36.39	42.80	6.41	68.20	25.40	150	180	Horizontal
4	27388.339	35.37	43.34	7.97	68.20	24.86	150	20	Horizontal
5	29423.542	37.46	46.39	8.93	68.20	21.81	150	140	Horizontal
6	32717.272	37.11	47.70	10.59	68.20	20.50	150	270	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	19463.146	35.77	41.85	6.08	68.20	26.35	150	330	Vertical
2	20569.857	36.61	42.51	5.90	68.20	25.69	150	50	Vertical
3	22325.633	38.48	44.19	5.71	68.20	24.01	150	260	Vertical
4	24987.899	36.05	42.46	6.41	68.20	25.74	150	240	Vertical
5	28281.628	37.05	45.69	8.64	68.20	22.51	150	350	Vertical
6	32099.010	38.25	48.12	9.87	68.20	20.08	150	330	Vertical

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