



FCC Part 15E Test Report

FCC ID: 2A54Y-X1PRO-2

Applicant: Shenzhen TFIRETEK Technology Co., Ltd.

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Manufacturer: Shenzhen TFIRETEK Technology Co., Ltd.

Address: 204, Building 2, Stech Park, Taoyuan Community, Dalang Street, LongHua District, ShenZhen

EUT: Projector

Trade Mark: N/A

Model Number: X1 PRO
X1 PRO-A, X1 PRO-S, X1 PRO-Q

Date of Receipt: Apr. 01, 2025

Test Date: Apr. 01, 2025 - Apr. 14, 2025

Date of Report: Apr. 14, 2025

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 PART 15 E 15.407
ANSI C63.10:2013

Test Result: Pass

Report Number: DLE-250401016R

Prepared (Test 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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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.407) , Subpart E			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.407(b), 15.205, 15.209	Radiated Spurious Emission	PASS	
15.407 (b), 15.205, 15.209	Band Edge Emission	PASS	
15.407 (a)	Average Output Power	PASS	
15.407 (a)	Power Spectral Density	PASS	
15.407(a) (e)	26dB bandwidth and 99%dB Bandwidth 6dB bandwidth and 99%dB Bandwidth	PASS	
15.407(g)	Frequency Stability	PASS	
15.407(c)	Transmission in case of Absence of Information	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

Test lab: Shenzhen DL Testing Technology Co., Ltd.

Address: 101-201, Comprehensive Building, Tongzhou Electronics Longgang Factory Area, No.1
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The test results presented in this report relate only to the object tested.

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FCC Test Firm Registration Number: 854456

Designation Number: CN1307

IC Registered No.: 27485

CAB ID.: CN0118



1.1 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(<30MHz)	$\pm 3.54\text{dB}$
5	All emissions,radiated(<1G)	$\pm 3.65\text{dB}$
6	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$
7	Occupied bandwidth	$\pm 0.2\text{MHz}$
8	PSD	$\pm 0.69\text{dB}$
9	Temperature	$\pm 0.5^{\circ}\text{C}$
10	Humidity	$\pm 2\%$
11	Time	$\pm 2\%$



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product Name:	Projector
Trademark	N/A
Model No.:	X1 PRO X1 PRO-A, X1 PRO-S, X1 PRO-Q
Model Difference	All models are same as the samples except model name, they have the same structure and circuit.
Operation Frequency:	5180-5240, 5745-5825MHz(802.11a/n/ac(HT20)) 5190-5230, 5755-5795MHz(802.11n/ac(HT40))
Channel numbers:	See channel list
Channel separation:	5MHz
Modulation technology:	64QAM, 16QAM, QPSK, BPSK for OFDM
Rate of Transmitter	802.11a: 6Mbps, 9Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps, 54Mbps 802.11n: Up to 300Mbps 802.11ac: up to 867Mbps
Antenna Type:	Internal Antenna
Antenna gain:	4.67dBi
Power Supply:	AC100-240V~ 50/60Hz, 2.0A max

Note:

- 1.For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- 2.The EUT's all information provided by client.



2. Channel List

Channel List for 802.11a/n(HT20)/ac(HT20)			
Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220
40	5200	48	5240

Channel List for 802.11n(HT40)/ac(HT40)			
Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	46	5230

Channel List for 802.11a/n(HT20)/ac(HT20)			
Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	161	5805
153	5765	165	5825
157	5785		

Channel List for 802.11n(HT40)/ac(HT40)			
Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	159	5795



2.2 DESCRIPTION OF TEST MODES

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

Description			
Pretest Mode	Channel	Band 1	Band 4
Mode 1	802.11a/n/acHT20	CH36, CH44, CH48	CH149, CH157, CH165
Mode 2	802.11n/acHT40	CH38, CH46	CH151, CH159
Mode 3	Link Mode		

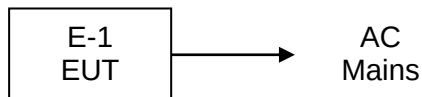
For Radiated Emission			
Pretest Mode	Channel	Band 1	Band 4
Mode 1	802.11a/n/acHT20	CH36, CH44, CH48	CH149, CH157, CH165
Mode 2	802.11n/acHT40	CH38, CH46	CH151, CH159
Mode 3	Link Mode		

Note: 1. The measurements are performed at the highest, middle, lowest available channels.
2. During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.

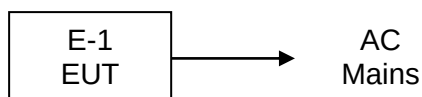


2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Spurious Emission Test



Power Line Conducted Emission Test



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

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	Model/Type No.	Series No.	Note
E-1	Projector	X1 PRO	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note

Note:

- (1) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

2.5 TABLE OF PARAMETERS OF TEST SOFTWARE SETTING

During testing, channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the end product.

Max output power Setting				
Test software Version	Test program: RF Test_V1.4			
Mode	802.11a	802.11n HT20	802.11n HT40	802.11ac HT20/HT40
Data Rate	6Mbps	MSC0	MSC0	MSC0
Power Setting of Software	60	60	66	66



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	Nov. 01, 2024	Oct. 31, 2025
2	Test Receiver (9kHz-7GHz)	R&S	ESRP7	101393	Nov. 01, 2024	Oct. 31, 2025
3	Bilog Antenna (30MHz-1GHz)	R&S	VULB9162	00306	Nov. 01, 2024	Oct. 31, 2025
4	Horn Antenna (1GHz-18GHz)	Schwarzbeck	BBHA9120D	02139	Nov. 01, 2024	Oct. 31, 2025
5	Horn Antenna (18GHz-40GHz)	A.H. Systems	SAS-574	588	Nov. 01, 2024	Oct. 31, 2025
6	Amplifier (9KHz-6GHz)	Schwarzbeck	BBV9743B	00153	Nov. 01, 2024	Oct. 31, 2025
7	Amplifier (1GHz-18GHz)	EMEC	EM01G8GA	00270	Nov. 01, 2024	Oct. 31, 2025
8	Amplifier (18GHz-40GHz)	Quanjuda	DLE-161	97	Nov. 01, 2024	Oct. 31, 2025
9	Loop Antenna (9KHz-30MHz)	Schwarzbeck	FMZB1519B	00014	Nov. 01, 2024	Oct. 31, 2025
10	RF cables1 (9kHz-1GHz)	ChengYu	966	004	Nov. 01, 2024	Oct. 31, 2025
11	RF cables2 (1GHz-40GHz)	ChengYu	966	003	Nov. 01, 2024	Oct. 31, 2025
12	Antenna connector	Florida RF Labs	N/A	RF 01#	Nov. 01, 2024	Oct. 31, 2025
13	Power probe	KEYSIGHT	U2021XA	MY55210018	Nov. 01, 2024	Oct. 31, 2025
14	Signal Analyzer 9kHz-26.5GHz	Agilent	N9020A	MY55370280	Nov. 01, 2024	Oct. 31, 2025
15	Test Receiver 20kHz-40GHz	R&S	ESU 40	100376	Nov. 01, 2024	Oct. 31, 2025
16	D.C. Power Supply	LongWei	PS-305D	010964729	Nov. 01, 2024	Oct. 31, 2025
17	Temperature & humidity chamber	Changfeng	CF-150-40-P	CF170802-01	Nov. 01, 2024	Oct. 31, 2025

Conduction Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	843 Shielded Room	YIHENG	843 Room	843	Nov. 05, 2023	Nov. 04, 2026
2	EMI Receiver	R&S	ESR	101421	Nov. 01, 2024	Oct. 31, 2025
3	LISN	R&S	ENV216	102417	Nov. 01, 2024	Oct. 31, 2025
4	843 Cable 1#	ChengYu	CE Cable	001	Nov. 01, 2024	Oct. 31, 2025

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. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Limit (dBuV)		Standard
	Quasi-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.5 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

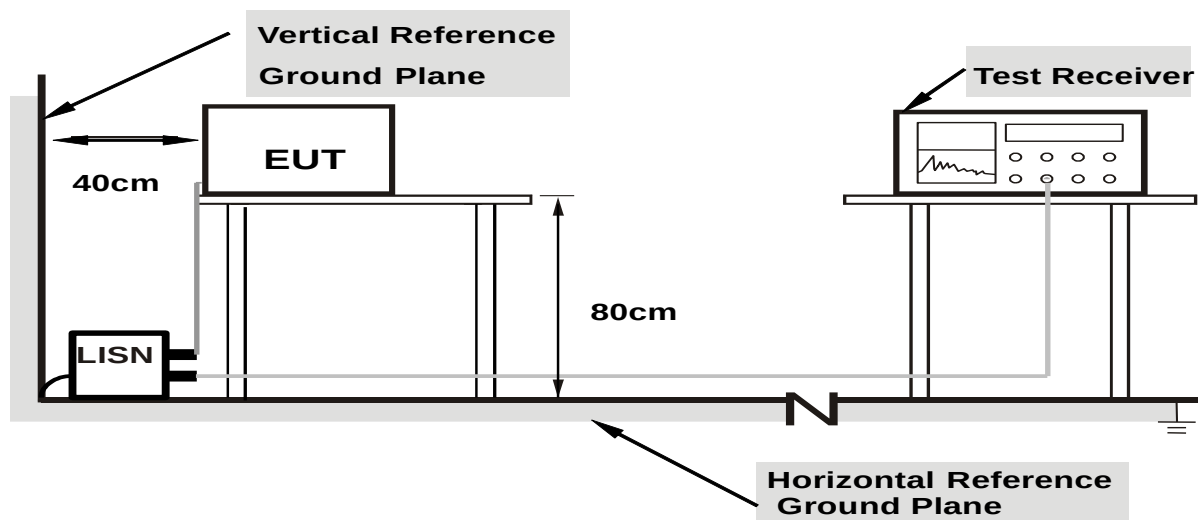
3.1.2 TEST PROCEDURE

- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

3.1.5 EUT OPERATING CONDITIONS

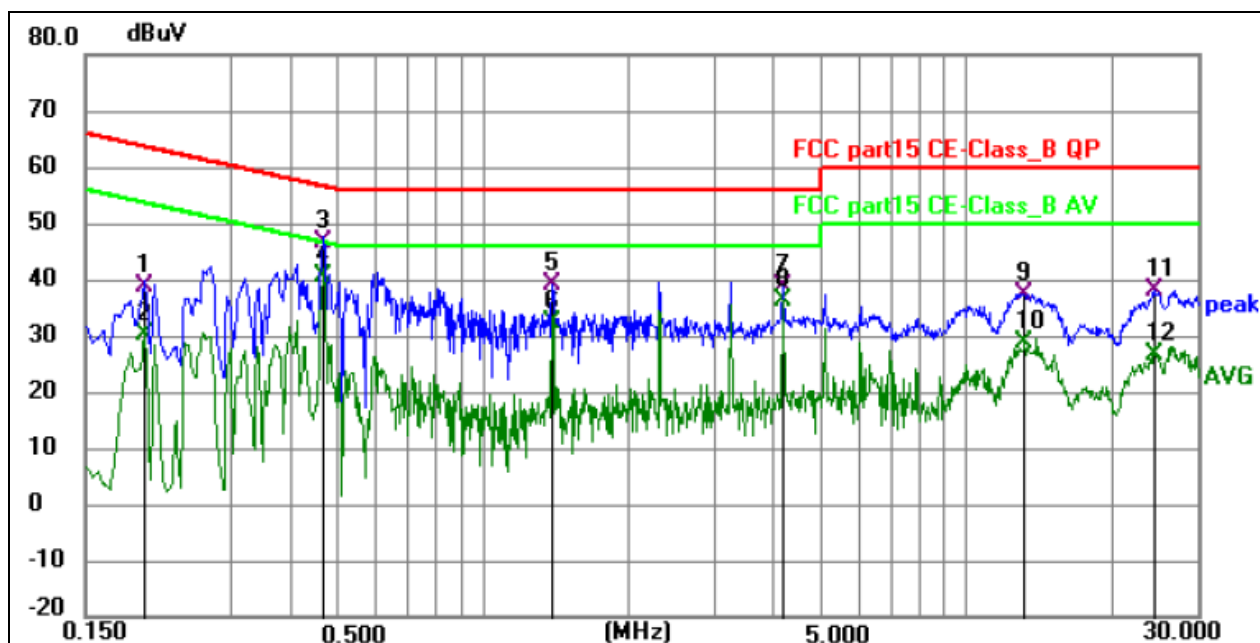
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

We pretest AC 120V and AC 230V, the worst voltage was AC 120V and the data recording in the report.

3.1.6 TEST RESULTS



Temperature:	25 °C	Relative Humidity:	54%
Pressure:	1010hPa	Phase :	L
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 3



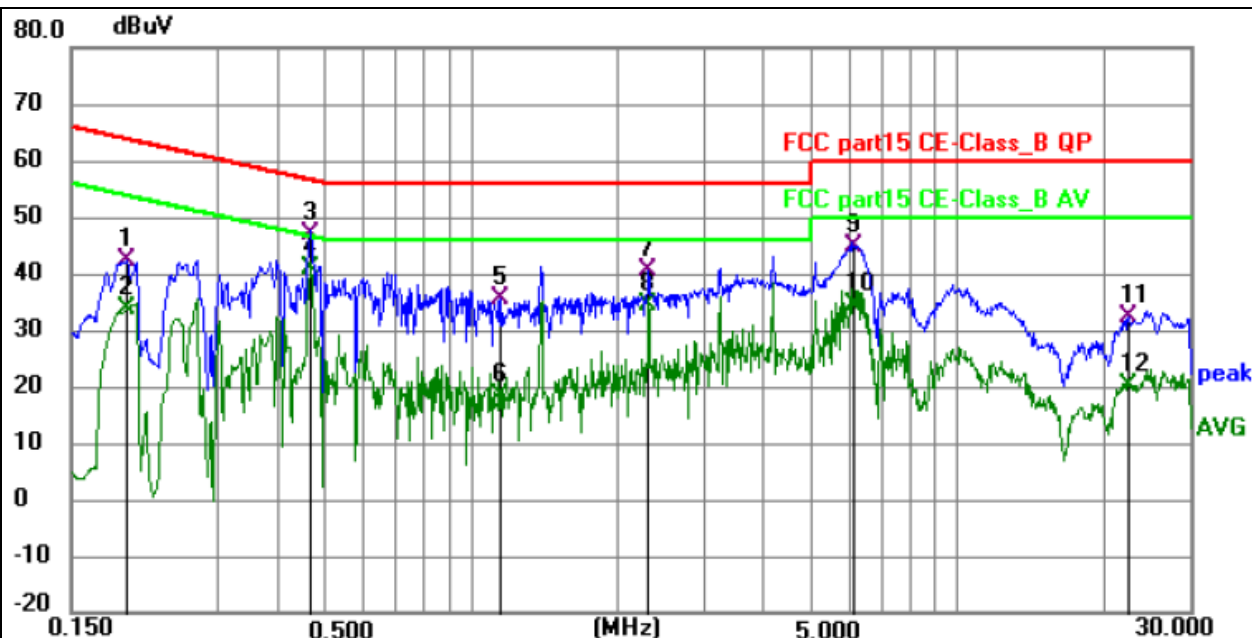
Remark:

Margin = Limit – Level, Correct Factor = Cable lose + LISN insertion loss, Level= Reading + Correct factor

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1995	28.99	9.91	38.90	63.63	-24.73	QP	P	
2	0.1995	20.20	9.91	30.11	53.63	-23.52	AVG	P	
3	0.4650	36.61	9.88	46.49	56.60	-10.11	QP	P	
4 *	0.4650	30.65	9.88	40.53	46.60	-6.07	AVG	P	
5	1.3920	28.97	9.98	38.95	56.00	-17.05	QP	P	
6	1.3920	22.52	9.98	32.50	46.00	-13.50	AVG	P	
7	4.1684	28.81	9.91	38.72	56.00	-17.28	QP	P	
8	4.1684	26.42	9.91	36.33	46.00	-9.67	AVG	P	
9	13.1820	27.55	9.92	37.47	60.00	-22.53	QP	P	
10	13.1820	18.93	9.92	28.85	50.00	-21.15	AVG	P	
11	24.4634	27.81	10.18	37.99	60.00	-22.01	QP	P	
12	24.4634	16.47	10.18	26.65	50.00	-23.35	AVG	P	



Temperature:	25 °C	Relative Humidity:	54%
Pressure:	1010hPa	Phase :	N
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 3



Remark:

Margin = Limit – Level, Correct Factor = Cable lose + LISN insertion loss, Level= Reading + Correct factor

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1949	32.30	9.85	42.15	63.83	-21.68	QP	P	
2	0.1949	23.76	9.85	33.61	53.83	-20.22	AVG	P	
3	0.4650	36.92	9.88	46.80	56.60	-9.80	QP	P	
4 *	0.4650	30.91	9.88	40.79	46.60	-5.81	AVG	P	
5	1.1490	25.48	9.97	35.45	56.00	-20.55	QP	P	
6	1.1490	8.60	9.97	18.57	46.00	-27.43	AVG	P	
7	2.3144	30.41	9.98	40.39	56.00	-15.61	QP	P	
8	2.3144	24.43	9.98	34.41	46.00	-11.59	AVG	P	
9	6.1440	34.92	9.98	44.90	60.00	-15.10	QP	P	
10	6.1440	24.49	9.98	34.47	50.00	-15.53	AVG	P	
11	22.4564	22.22	10.10	32.32	60.00	-27.68	QP	P	
12	22.4564	10.24	10.10	20.34	50.00	-29.66	AVG	P	



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS

15.407(b) Undesirable emission limits. Except as shown in paragraph (b) (10) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

- (1) For transmitters operating in the 5.15-5.25GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (2) For transmitters operating in the 5.25-5.35 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.
- (3) For transmitters operating in the 5.47-5.725GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.
- (4) For transmitters operating solely in the 5.725-5.850GHz band:
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 10dBm/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.

In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

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

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Limit (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	40GHz
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average



Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

Below 1GHz test procedure as below:

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.
- 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 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.

Above 1GHz test procedure as below:

- Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre.
- Test the EUT in the lowest channel, the middle channel, the Highest channel

Note:

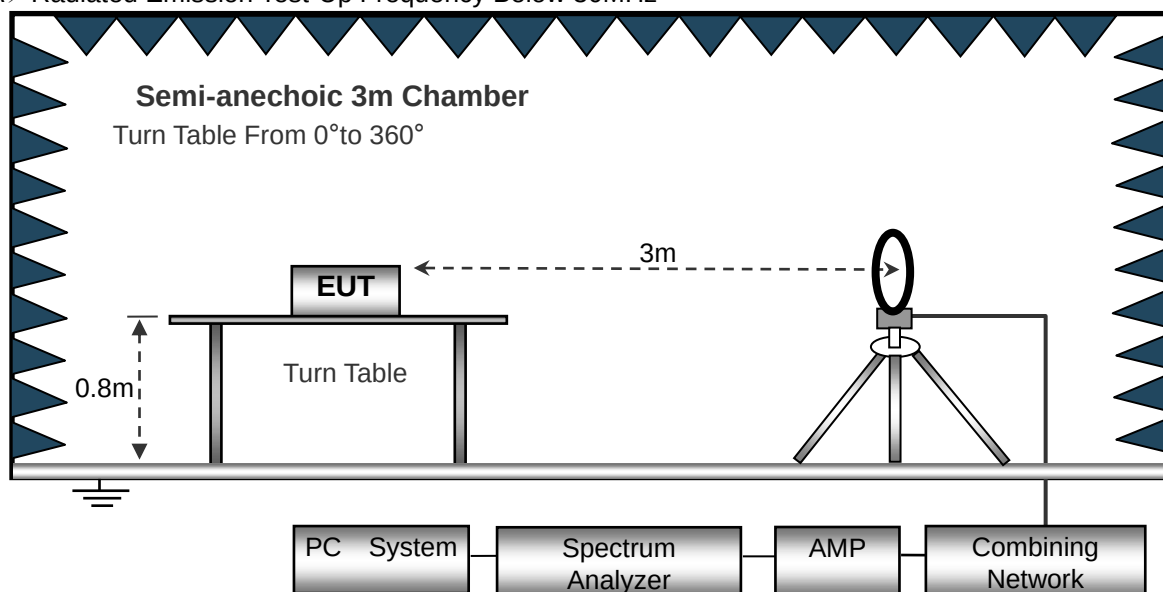
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

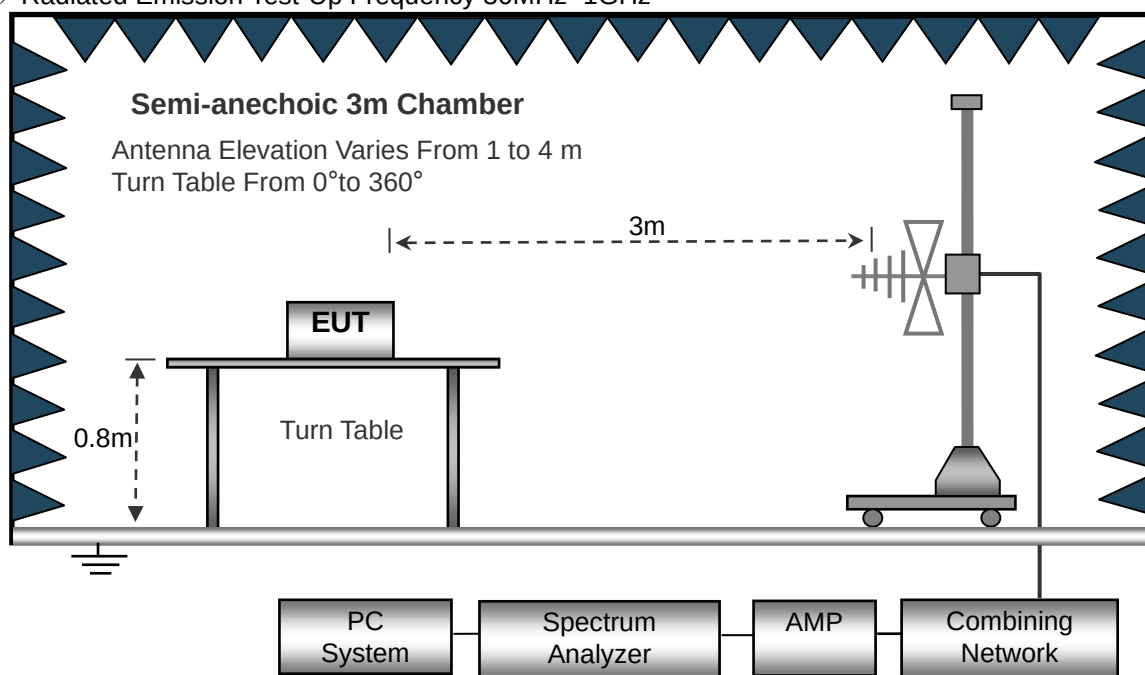
No deviation

3.2.4 TEST SETUP

(A) Radiated Emission Test-Up Frequency Below 30MHz

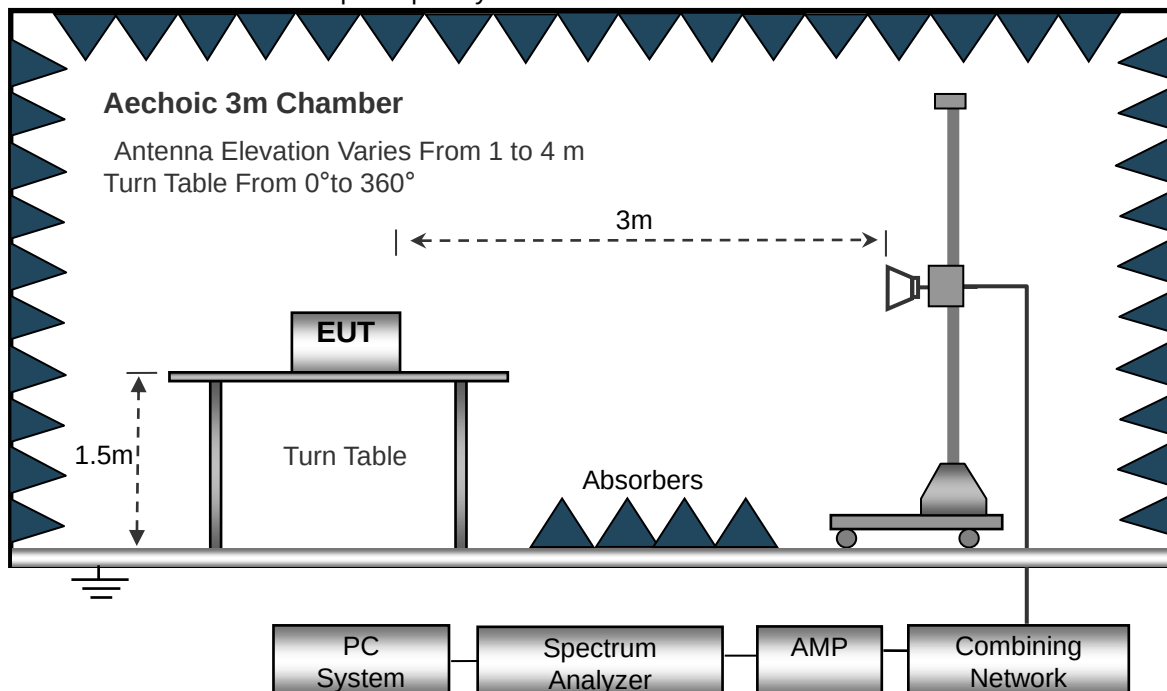


(B) Radiated Emission Test-Up Frequency 30MHz~1GHz





(C) Radiated Emission Test-Up Frequency Above 1GHz

**3.2.5 EUT OPERATING CONDITIONS**

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

**3.2.6 TEST RESULTS (Between 9KHz – 30 MHz)**

Temperature:	20℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	Mode 3	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

NOTE:

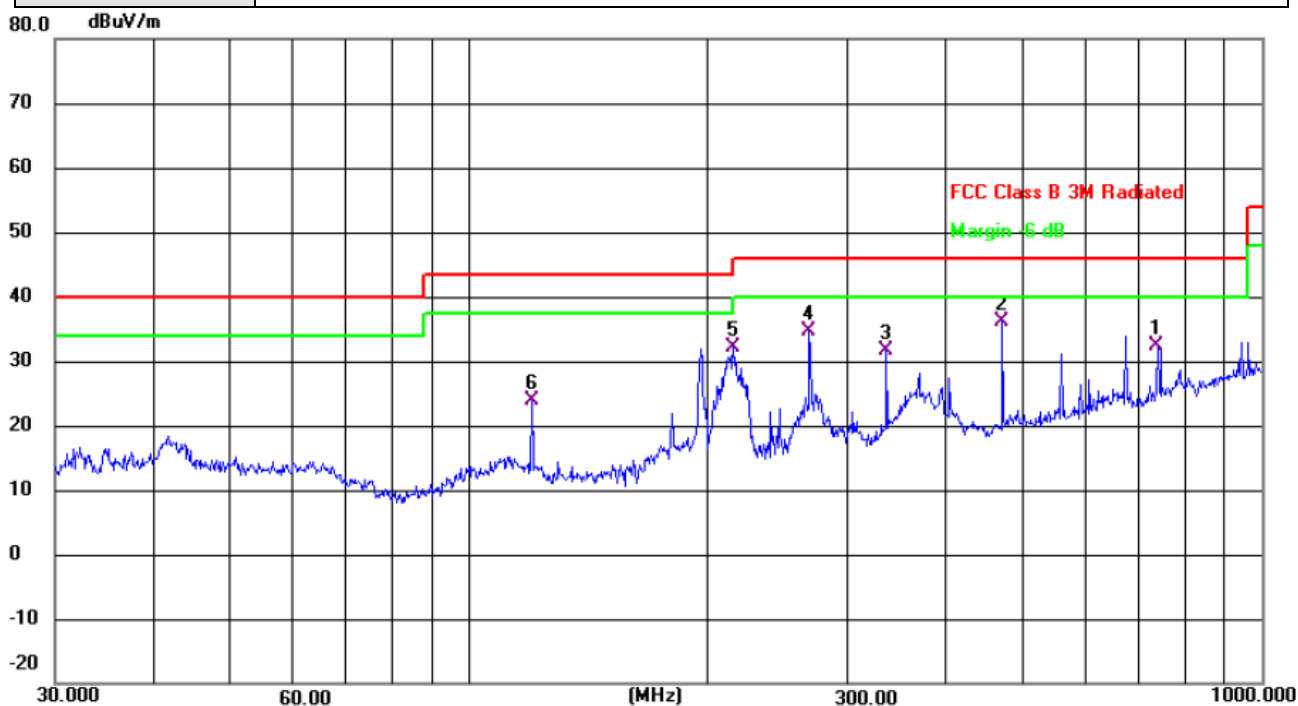
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance}/\text{test distance})$ (dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.

**3.2.7 TEST RESULTS (Between 30MHz – 1GHz)**

Temperature:	26℃	Relative Humidity:	54%
Pressure:	1010 hPa	Polarization :	Horizontal
Test Voltage :	AC 120V/60Hz		
Test Mode :	Mode 3		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		739.6604	35.59	-3.10	32.49	46.00	-13.51	QP
2	*	470.5232	44.29	-8.16	36.13	46.00	-9.87	QP
3		336.0352	42.66	-11.14	31.52	46.00	-14.48	QP
4		268.4853	47.20	-12.59	34.61	46.00	-11.39	QP
5		215.2678	46.44	-14.28	32.16	43.50	-11.34	QP
6		119.8556	40.24	-16.37	23.87	43.50	-19.63	QP

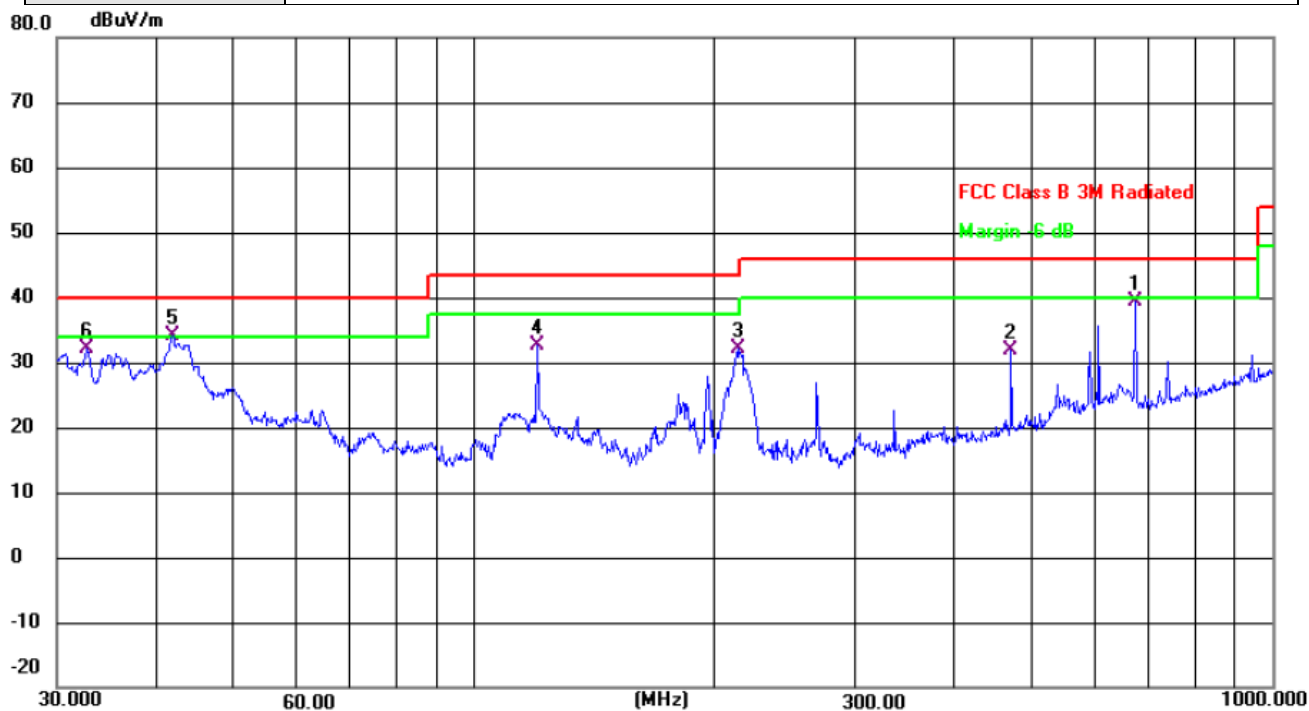
Remark:

Correct Factor = Cable loss + Antenna factor – Preamplifier;

Level = Reading Level + Correct Factor; Margin = Level - Limit;



Temperature:	26°C	Relative Humidity:	54%
Pressure:	1010 hPa	Polarization :	Vertical
test voltage :	AC 120V/60Hz		
Test Mode :	Mode 3		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		672.8444	43.85	-4.44	39.41	46.00	-6.59	QP
2		470.5232	40.06	-8.16	31.90	46.00	-14.10	QP
3		213.7634	46.34	-14.32	32.02	43.50	-11.48	QP
4		119.8556	48.95	-16.37	32.58	43.50	-10.92	QP
5	*	41.8596	47.75	-13.56	34.19	40.00	-5.81	QP
6		32.7486	47.99	-15.96	32.03	40.00	-7.97	QP

Remark:

Correct Factor = Cable loss + Antenna factor – Preamplifier;

Level = Reading Level + Correct Factor; Margin = Level - Limit;



3.2.8 TEST RESULTS (1ghz~40ghZ)

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Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
operation frequency:5180									
V	10360	57.63	49.05	15.3	37.39	61.27	68.2	-6.93	PK
V	10360	42.05	49.05	15.3	37.39	45.69	54	-8.31	AV
V	15540	53.79	49.16	15.27	40.45	60.35	74	-13.65	PK
V	15540	39.83	49.16	15.27	40.45	46.39	54	-7.61	AV
H	10360	57.34	49.05	15.3	37.39	60.98	68.2	-7.22	PK
H	10360	40.83	49.05	15.3	37.39	44.47	54	-9.53	AV
H	15540	52.32	49.16	15.27	40.45	58.88	74	-15.12	PK
H	15540	39.58	49.16	15.27	40.45	46.14	54	-7.86	AV
operation frequency:5200									
V	10400	58.67	49.09	15.34	37.42	62.34	68.2	-5.86	PK
V	10400	40.14	49.09	15.34	37.42	43.81	54	-10.19	AV
V	15600	53.56	49.18	15.29	40.47	60.14	74	-13.86	PK
V	15600	38.94	49.18	15.29	40.47	45.52	54	-8.48	AV
H	10400	57.16	49.09	15.34	37.42	60.83	68.2	-7.37	PK
H	10400	39.95	49.09	15.34	37.42	43.62	54	-10.38	AV
H	15600	54.15	49.18	15.29	40.47	60.73	74	-13.27	PK
H	15600	39.34	49.18	15.29	40.47	45.92	54	-8.08	AV
operation frequency:5240									
V	10480	59.20	49.11	15.37	37.46	62.92	68.2	-5.28	PK
V	10480	40.55	49.11	15.37	37.46	44.27	54	-9.73	AV
V	15720	54.59	49.21	15.34	40.51	61.23	74	-12.77	PK
V	15720	38.81	49.21	15.34	40.51	45.45	54	-8.55	AV
H	10480	58.51	49.11	15.37	31.31	56.08	68.2	-12.12	PK
H	10480	46.33	49.11	15.37	31.31	43.9	54	-10.10	AV
H	15720	55.32	49.21	15.34	40.51	61.96	74	-12.04	PK
H	15720	37.80	49.21	15.34	40.51	44.44	54	-9.56	AV

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



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Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
operation frequency:5180									
V	10360	57.23	49.05	15.3	37.39	60.87	68.2	-7.33	PK
V	10360	39.17	49.05	15.3	37.39	42.81	54	-11.19	AV
V	15540	53.27	49.16	15.27	40.45	59.83	74	-14.17	PK
V	15540	39.32	49.16	15.27	40.45	45.88	54	-8.12	AV
H	10360	57.94	49.05	15.3	37.39	61.58	68.2	-6.62	PK
H	10360	40.33	49.05	15.3	37.39	43.97	54	-10.03	AV
H	15540	52.06	49.16	15.27	40.45	58.62	74	-15.38	PK
H	15540	39.08	49.16	15.27	40.45	45.64	54	-8.36	AV
operation frequency:5200									
V	10400	57.25	49.09	15.34	37.42	60.92	68.2	-7.28	PK
V	10400	40.06	49.09	15.34	37.42	43.73	54	-10.27	AV
V	15600	53.07	49.18	15.29	40.47	59.65	74	-14.35	PK
V	15600	38.89	49.18	15.29	40.47	45.47	54	-8.53	AV
H	10400	56.53	49.09	15.34	37.42	60.2	68.2	-8.00	PK
H	10400	40.89	49.09	15.34	37.42	44.56	54	-9.44	AV
H	15600	54.90	49.18	15.29	40.47	61.48	74	-12.52	PK
H	15600	40.33	49.18	15.29	40.47	46.91	54	-7.09	AV
operation frequency:5240									
V	10480	58.27	49.11	15.37	37.46	61.99	68.2	-6.21	PK
V	10480	41.34	49.11	15.37	37.46	45.06	54	-8.94	AV
V	15720	53.07	49.21	15.34	40.51	59.71	74	-14.29	PK
V	15720	38.97	49.21	15.34	40.51	45.61	54	-8.39	AV
H	10480	58.89	49.11	15.37	31.31	56.46	68.2	-11.74	PK
H	10480	45.32	49.11	15.37	31.31	42.89	54	-11.11	AV
H	15720	52.58	49.21	15.34	40.51	59.22	74	-14.78	PK
H	15720	39.88	49.21	15.34	40.51	46.52	54	-7.48	AV

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



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Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
operation frequency:5190									
V	10380	57.26	49.07	15.33	37.41	60.93	68.2	-7.27	PK
V	10380	40.05	49.07	15.33	37.41	43.72	54	-10.28	AV
V	15570	53.37	49.17	15.28	40.46	59.94	74	-14.06	PK
V	15570	39.07	49.17	15.28	40.46	45.64	54	-8.36	AV
H	10380	57.23	49.07	15.33	37.41	60.9	68.2	-7.30	PK
H	10380	40.85	49.07	15.33	37.41	44.52	54	-9.48	AV
H	15570	53.19	49.17	15.28	40.46	59.76	74	-14.24	PK
H	15570	39.36	49.17	15.28	40.46	45.93	54	-8.07	AV
operation frequency:5230									
V	10460	58.28	49.11	15.37	37.46	62	68.2	-6.20	PK
V	10460	40.32	49.11	15.37	37.46	44.04	54	-9.96	AV
V	15690	53.29	49.21	15.34	40.51	59.93	74	-14.07	PK
V	15690	39.04	49.21	15.34	40.51	45.68	54	-8.32	AV
H	10460	58.66	49.11	15.37	31.31	56.23	68.2	-11.97	PK
H	10460	45.55	49.11	15.37	31.31	43.12	54	-10.88	AV
H	15690	53.79	49.21	15.34	40.51	60.43	74	-13.57	PK
H	15690	40.53	49.21	15.34	40.51	47.17	54	-6.83	AV

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



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Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
operation frequency:5180									
V	10360	57.64	49.05	15.3	37.39	61.28	68.2	-6.92	PK
V	10360	39.88	49.05	15.3	37.39	43.52	54	-10.48	AV
V	15540	52.56	49.16	15.27	40.45	59.12	74	-14.88	PK
V	15540	39.03	49.16	15.27	40.45	45.59	54	-8.41	AV
H	10360	57.62	49.05	15.3	37.39	61.26	68.2	-6.94	PK
H	10360	39.08	49.05	15.3	37.39	42.72	54	-11.28	AV
H	15540	53.61	49.16	15.27	40.45	60.17	74	-13.83	PK
H	15540	40.04	49.16	15.27	40.45	46.6	54	-7.40	AV
operation frequency:5200									
V	10400	57.63	49.09	15.34	37.42	61.3	68.2	-6.90	PK
V	10400	42.02	49.09	15.34	37.42	45.69	54	-8.31	AV
V	15600	53.19	49.18	15.29	40.47	59.77	74	-14.23	PK
V	15600	41.12	49.18	15.29	40.47	47.7	54	-6.30	AV
H	10400	56.93	49.09	15.34	37.42	60.6	68.2	-7.60	PK
H	10400	41.28	49.09	15.34	37.42	44.95	54	-9.05	AV
H	15600	54.79	49.18	15.29	40.47	61.37	74	-12.63	PK
H	15600	42.26	49.18	15.29	40.47	48.84	54	-5.16	AV
operation frequency:5240									
V	10480	58.35	49.11	15.37	37.46	62.07	68.2	-6.13	PK
V	10480	41.57	49.11	15.37	37.46	45.29	54	-8.71	AV
V	15720	52.84	49.21	15.34	40.51	59.48	74	-14.52	PK
V	15720	40.59	49.21	15.34	40.51	47.23	54	-6.77	AV
H	10480	58.38	49.11	15.37	31.31	55.95	68.2	-12.25	PK
H	10480	45.20	49.11	15.37	31.31	42.77	54	-11.23	AV
H	15720	53.56	49.21	15.34	40.51	60.2	74	-13.80	PK
H	15720	41.39	49.21	15.34	40.51	48.03	54	-5.97	AV
Remark:									
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit									
2. If peak below the average limit, the average emission was no test.									
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.									



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Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
operation frequency:5190									
V	10380	57.25	49.07	15.33	37.41	60.92	68.2	-7.28	PK
V	10380	41.05	49.07	15.33	37.41	44.72	54	-9.28	AV
V	15570	53.57	49.17	15.28	40.46	60.14	74	-13.86	PK
V	15570	40.32	49.17	15.28	40.46	46.89	54	-7.11	AV
H	10380	57.16	49.07	15.33	37.41	60.83	68.2	-7.37	PK
H	10380	41.57	49.07	15.33	37.41	45.24	54	-8.76	AV
H	15570	52.41	49.17	15.28	40.46	58.98	74	-15.02	PK
H	15570	40.33	49.17	15.28	40.46	46.9	54	-7.10	AV
operation frequency:5230									
V	10460	58.16	49.11	15.37	37.46	61.88	68.2	-6.32	PK
V	10460	42.37	49.11	15.37	37.46	46.09	54	-7.91	AV
V	15690	53.89	49.21	15.34	40.51	60.53	74	-13.47	PK
V	15690	40.14	49.21	15.34	40.51	46.78	54	-7.22	AV
H	10460	59.00	49.11	15.37	31.31	56.57	68.2	-11.63	PK
H	10460	45.04	49.11	15.37	31.31	42.61	54	-11.39	AV
H	15690	53.25	49.21	15.34	40.51	59.89	74	-14.11	PK
H	15690	41.66	49.21	15.34	40.51	48.3	54	-5.70	AV
Remark: 1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit 2. If peak below the average limit, the average emission was no test. 3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.									



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Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
operation frequency:5745									
V	11490	55.17	49.05	15.3	37.39	58.81	74	-15.19	PK
V	11490	42.57	49.05	15.3	37.39	46.21	54	-7.79	AV
V	17235	56.52	49.16	15.27	40.45	63.08	68.2	-5.12	PK
V	17235	41.66	49.16	15.27	40.45	48.22	54	-5.78	AV
H	11490	53.11	49.05	15.3	37.39	56.75	74	-17.25	PK
H	11490	43.61	49.05	15.3	37.39	47.25	54	-6.75	AV
H	17235	52.05	49.16	15.27	40.45	58.61	68.2	-9.59	PK
H	17235	41.58	49.16	15.27	40.45	48.14	54	-5.86	AV
operation frequency:5785									
V	11570	52.29	49.09	15.34	37.42	55.96	74	-18.04	PK
V	11570	42.58	49.09	15.34	37.42	46.25	54	-7.75	AV
V	17355	51.07	49.18	15.29	40.47	57.65	68.2	-10.55	PK
V	17355	41.69	49.18	15.29	40.47	48.27	54	-5.73	AV
H	11570	51.65	49.09	15.34	37.42	55.32	74	-18.68	PK
H	11570	42.78	49.09	15.34	37.42	46.45	54	-7.55	AV
H	17355	49.23	49.18	15.29	40.47	55.81	68.2	-12.39	PK
H	17355	41.58	49.18	15.29	40.47	48.16	54	-5.84	AV
operation frequency:5825									
V	11650	53.16	49.11	15.37	37.46	56.88	74	-17.12	PK
V	11650	42.59	49.11	15.37	37.46	46.31	54	-7.69	AV
V	17475	50.45	49.21	15.34	40.51	57.09	68.2	-11.11	PK
V	17475	41.08	49.21	15.34	40.51	47.72	54	-6.28	AV
H	11650	58.66	49.11	15.37	31.31	56.23	74	-17.77	PK
H	11650	49.84	49.11	15.37	31.31	47.41	54	-6.59	AV
H	17475	50.15	49.21	15.34	40.51	56.79	68.2	-11.41	PK
H	17475	41.04	49.21	15.34	40.51	47.68	54	-6.32	AV

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



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Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
operation frequency:5745									
V	11490	50.33	49.05	15.3	37.39	53.97	74	-20.03	PK
V	11490	42.92	49.05	15.3	37.39	46.56	54	-7.44	AV
V	17235	49.54	49.16	15.27	40.45	56.1	68.2	-12.10	PK
V	17235	41.34	49.16	15.27	40.45	47.9	54	-6.10	AV
H	11490	50.09	49.05	15.3	37.39	53.73	74	-20.27	PK
H	11490	42.26	49.05	15.3	37.39	45.9	54	-8.10	AV
H	17235	49.00	49.16	15.27	40.45	55.56	68.2	-12.64	PK
H	17235	41.46	49.16	15.27	40.45	48.02	54	-5.98	AV
operation frequency:5785									
V	11570	53.39	49.09	15.34	37.42	57.06	74	-16.94	PK
V	11570	43.17	49.09	15.34	37.42	46.84	54	-7.16	AV
V	17355	50.32	49.18	15.29	40.47	56.9	68.2	-11.30	PK
V	17355	41.58	49.18	15.29	40.47	48.16	54	-5.84	AV
H	11570	50.85	49.09	15.34	37.42	54.52	74	-19.48	PK
H	11570	44.73	49.09	15.34	37.42	48.4	54	-5.60	AV
H	17355	50.02	49.18	15.29	40.47	56.6	68.2	-11.60	PK
H	17355	41.69	49.18	15.29	40.47	48.27	54	-5.73	AV
operation frequency:5825									
V	11650	52.25	49.11	15.37	37.46	55.97	74	-18.03	PK
V	11650	42.37	49.11	15.37	37.46	46.09	54	-7.91	AV
V	17475	49.21	49.21	15.34	40.51	55.85	68.2	-12.35	PK
V	17475	41.58	49.21	15.34	40.51	48.22	54	-5.78	AV
H	11650	58.86	49.11	15.37	31.31	56.43	74	-17.57	PK
H	11650	45.43	49.11	15.37	31.31	43	54	-11.00	AV
H	17475	50.25	49.21	15.34	40.51	56.89	68.2	-11.31	PK
H	17475	41.34	49.21	15.34	40.51	47.98	54	-6.02	AV

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



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Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
operation frequency:5755									
V	11510	50.23	49.07	15.33	37.41	53.9	74	-20.10	PK
V	11510	41.98	49.07	15.33	37.41	45.65	54	-8.35	AV
V	17265	50.52	49.17	15.28	40.46	57.09	68.2	-11.11	PK
V	17265	41.52	49.17	15.28	40.46	48.09	54	-5.91	AV
H	11510	49.51	49.07	15.33	37.41	53.18	74	-20.82	PK
H	11510	42.37	49.07	15.33	37.41	46.04	54	-7.96	AV
H	17265	50.51	49.17	15.28	40.46	57.08	68.2	-11.12	PK
H	17265	41.15	49.17	15.28	40.46	47.72	54	-6.28	AV
operation frequency:5795									
V	11590	50.14	49.11	15.37	37.46	53.86	74	-20.14	PK
V	11590	42.02	49.11	15.37	37.46	45.74	54	-8.26	AV
V	17385	49.28	49.21	15.34	40.51	55.92	68.2	-12.28	PK
V	17385	41.17	49.21	15.34	40.51	47.81	54	-6.19	AV
H	11590	58.59	49.11	15.37	31.31	56.16	74	-17.84	PK
H	11590	45.33	49.11	15.37	31.31	42.9	54	-11.10	AV
H	17385	49.83	49.21	15.34	40.51	56.47	68.2	-11.73	PK
H	17385	41.56	49.21	15.34	40.51	48.2	54	-5.80	AV

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



802.11ac HT20

Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
operation frequency:5745									
V	11490	50.26	49.05	15.3	37.39	53.9	74	-20.10	PK
V	11490	42.97	49.05	15.3	37.39	46.61	54	-7.39	AV
V	17235	49.56	49.16	15.27	40.45	56.12	68.2	-12.08	PK
V	17235	41.06	49.16	15.27	40.45	47.62	54	-6.38	AV
H	11490	49.13	49.05	15.3	37.39	52.77	74	-21.23	PK
H	11490	42.48	49.05	15.3	37.39	46.12	54	-7.88	AV
H	17235	49.50	49.16	15.27	40.45	56.06	68.2	-12.14	PK
H	17235	40.85	49.16	15.27	40.45	47.41	54	-6.59	AV
operation frequency:5785									
V	11570	49.49	49.09	15.34	37.42	53.16	74	-20.84	PK
V	11570	42.33	49.09	15.34	37.42	46	54	-8.00	AV
V	17355	50.02	49.18	15.29	40.47	56.6	68.2	-11.60	PK
V	17355	41.27	49.18	15.29	40.47	47.85	54	-6.15	AV
H	11570	50.86	49.09	15.34	37.42	54.53	74	-19.47	PK
H	11570	43.90	49.09	15.34	37.42	47.57	54	-6.43	AV
H	17355	50.02	49.18	15.29	40.47	56.6	68.2	-11.60	PK
H	17355	41.00	49.18	15.29	40.47	47.58	54	-6.42	AV
operation frequency:5825									
V	11650	50.02	49.11	15.37	37.46	53.74	74	-20.26	PK
V	11650	42.10	49.11	15.37	37.46	45.82	54	-8.18	AV
V	17475	49.39	49.21	15.34	40.51	56.03	68.2	-12.17	PK
V	17475	41.04	49.21	15.34	40.51	47.68	54	-6.32	AV
H	11650	58.29	49.11	15.37	31.31	55.86	74	-18.14	PK
H	11650	45.04	49.11	15.37	31.31	42.61	54	-11.39	AV
H	17475	49.01	49.21	15.34	40.51	55.65	68.2	-12.55	PK
H	17475	41.69	49.21	15.34	40.51	48.33	54	-5.67	AV

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



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Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
operation frequency:5755									
V	11510	50.02	49.07	15.33	37.41	53.69	74	-20.31	PK
V	11510	43.29	49.07	15.33	37.41	46.96	54	-7.04	AV
V	17265	49.24	49.17	15.28	40.46	55.81	68.2	-12.39	PK
V	17265	42.37	49.17	15.28	40.46	48.94	54	-5.06	AV
H	11510	49.63	49.07	15.33	37.41	53.3	74	-20.70	PK
H	11510	43.17	49.07	15.33	37.41	46.84	54	-7.16	AV
H	17265	49.50	49.17	15.28	40.46	56.07	68.2	-12.13	PK
H	17265	41.60	49.17	15.28	40.46	48.17	54	-5.83	AV
operation frequency:5795									
V	11590	50.35	49.11	15.37	37.46	54.07	74	-19.93	PK
V	11590	42.09	49.11	15.37	37.46	45.81	54	-8.19	AV
V	17385	49.20	49.21	15.34	40.51	55.84	68.2	-12.36	PK
V	17385	41.57	49.21	15.34	40.51	48.21	54	-5.79	AV
H	11590	58.38	49.11	15.37	31.31	55.95	74	-18.05	PK
H	11590	45.56	49.11	15.37	31.31	43.13	54	-10.87	AV
H	17385	49.32	49.21	15.34	40.51	55.96	68.2	-12.24	PK
H	17385	40.94	49.21	15.34	40.51	47.58	54	-6.42	AV

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

**3.3 RADIATED BAND EMISSION MEASUREMENT****3.3.1 TEST REQUIREMENT:**

15.407 (b)

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

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.

For transmitters operating solely in the 5.725-5.850 GHz band:

(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.

(ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in § 15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in § 15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.

The provisions of §15.205 apply to intentional radiators operating under this section, 15.205 Restricted bands of operation

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(2)
13.36-13.41			

FREQUENCY (MHz)	Limit (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	Band 1:5000MHz-5150MHz, Band 4:5600MHz-5785MHz
Stop Frequency	Band 1:5350MHz-5460MHz, Band 4:5780MHz-6000MHz
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average



3.3.2 TEST PROCEDURE

Above 1GHz test procedure as below:

- 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.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.
- 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.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 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 the EUT in the lowest channel,the Highest channel

Note:

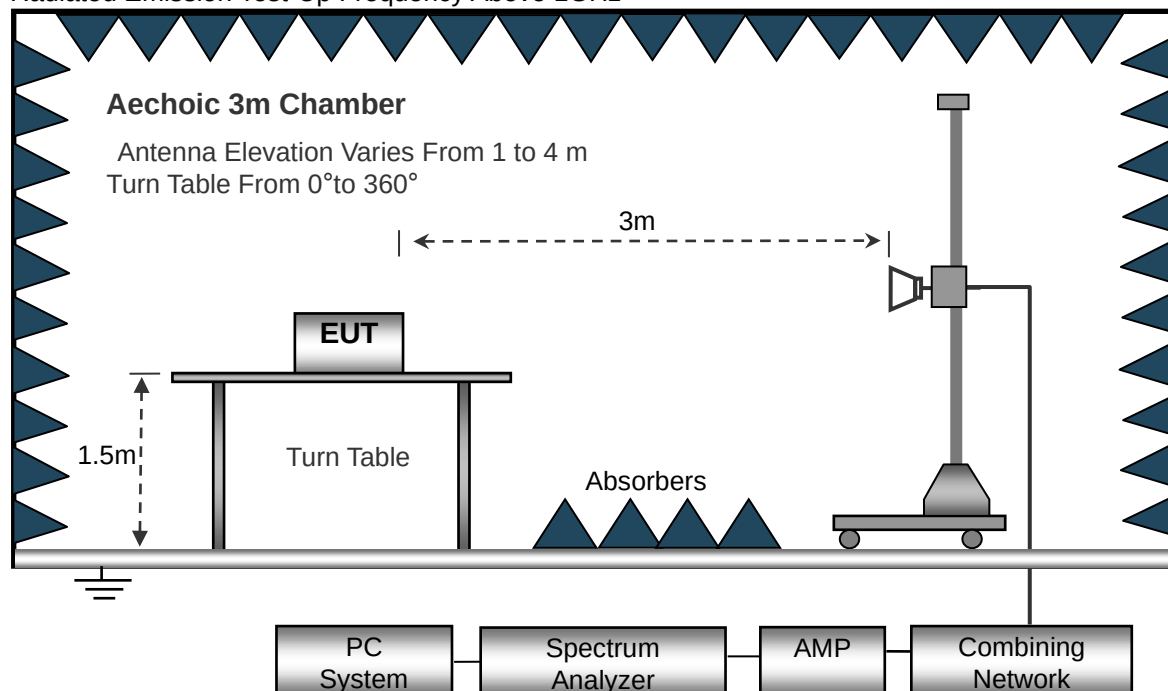
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

3.3.3 DEVIATION FROM TEST STANDARD

No deviation

3.3.4 TEST SETUP

Radiated Emission Test-Up Frequency Above 1GHz





3.3.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

3.3.6 TEST RESULT

802.11a(Band 1)

Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
operation frequency:5190									
V	5110	53.24	49.12	15.6	37.34	57.06	74	-16.94	PK
V	5110	39.92	49.12	15.6	37.34	43.74	54	-10.26	AV
H	5135	54.33	49.19	15.24	40.43	60.81	74	-13.19	PK
H	5135	36.8	49.19	15.24	40.43	43.28	54	-10.72	AV
V	5110	52.55	49.12	15.6	37.34	56.37	74	-17.63	PK
V	5110	37.5	49.12	15.6	37.34	41.32	54	-12.68	AV
H	5135	54.17	49.19	15.24	40.43	60.65	74	-13.35	PK
H	5135	33.58	49.19	15.24	40.43	40.06	54	-13.94	AV
operation frequency:5230									
V	5360	53.12	49.13	15.32	37.46	56.77	74	-17.23	PK
V	5360	35.8	49.13	15.32	37.46	39.45	54	-14.55	AV
H	5385	53.15	49.24	15.36	40.51	59.78	74	-14.22	PK
H	5385	32.11	49.24	15.36	40.51	38.74	54	-15.26	AV
V	5360	52.62	49.13	15.32	31.31	50.12	74	-23.88	PK
V	5360	40.7	49.13	15.32	31.31	38.2	54	-15.8	AV
H	5385	52.43	49.24	15.36	40.51	59.06	74	-14.94	PK
H	5385	32.8	49.24	15.36	40.51	39.43	54	-14.57	AV
Remark: 1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit 2. If peak below the average limit, the average emission was no test. 3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.									



802.11n HT20

Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
operation frequency:5190									
V	5110	51.61	49.12	15.6	37.34	55.43	74	-18.57	PK
V	5110	33.09	49.12	15.6	37.34	36.91	54	-17.09	AV
H	5135	51.86	49.19	15.24	40.43	58.34	74	-15.66	PK
H	5135	33.58	49.19	15.24	40.43	40.06	54	-13.94	AV
V	5110	51.23	49.12	15.6	37.34	55.05	74	-18.95	PK
V	5110	33.31	49.12	15.6	37.34	37.13	54	-16.87	AV
H	5135	50.83	49.19	15.24	40.43	57.31	74	-16.69	PK
H	5135	32.3	49.19	15.24	40.43	38.78	54	-15.22	AV
operation frequency:5230									
V	5360	53.24	49.13	15.32	37.46	56.89	74	-17.11	PK
V	5360	34.81	49.13	15.32	37.46	38.46	54	-15.54	AV
H	5385	50.83	49.24	15.36	40.51	57.46	74	-16.54	PK
H	5385	33.31	49.24	15.36	40.51	39.94	54	-14.06	AV
V	5360	54.24	49.13	15.32	31.31	51.74	74	-22.26	PK
V	5360	36.64	49.13	15.32	31.31	34.14	54	-19.86	AV
H	5385	51.39	49.24	15.36	40.51	58.02	74	-15.98	PK
H	5385	33.84	49.24	15.36	40.51	40.47	54	-13.53	AV

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



802.11ac HT20

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre- amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:5190									
V	5110	52.34	49.12	15.33	37.41	55.96	74	-18.04	PK
V	5110	34.5	49.12	15.33	37.41	38.12	54	-15.88	AV
H	5135	51.24	49.19	15.28	40.46	57.79	74	-16.21	PK
H	5135	33.8	49.19	15.28	40.46	40.35	54	-13.65	AV
V	5110	52.14	49.12	15.33	37.41	55.76	74	-18.24	PK
V	5110	34.8	49.12	15.33	37.41	38.42	54	-15.58	AV
H	5135	50.54	49.19	15.28	40.46	57.09	74	-16.91	PK
H	5135	33.62	49.19	15.28	40.46	40.17	54	-13.83	AV
operation frequency:5230									
V	5360	53.62	49.13	15.32	37.46	57.27	74	-16.73	PK
V	5360	36.09	49.13	15.32	37.46	39.74	54	-14.26	AV
H	5385	50.16	49.24	15.36	40.51	56.79	74	-17.21	PK
H	5385	33.58	49.24	15.36	40.51	40.21	54	-13.79	AV
V	5360	53.54	49.13	15.32	31.31	51.04	74	-22.96	PK
V	5360	40.62	49.13	15.32	31.31	38.12	54	-15.88	AV
H	5385	51.16	49.24	15.36	40.51	57.79	74	-16.21	PK
H	5385	35.36	49.24	15.36	40.51	41.99	54	-12.01	AV

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



802.11n HT40

Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
operation frequency:5190									
V	5110	52.78	49.12	15.6	37.39	56.65	74	-17.35	PK
V	5110	35.63	49.12	15.6	37.39	39.5	54	-14.5	AV
H	5135	51.79	49.19	15.24	40.45	58.29	74	-15.71	PK
H	5135	34.49	49.19	15.24	40.45	40.99	54	-13.01	AV
V	5110	52.73	49.12	15.6	37.39	56.6	74	-17.4	PK
V	5110	35.01	49.12	15.6	37.39	38.88	54	-15.12	AV
H	5135	50.68	49.19	15.24	40.45	57.18	74	-16.82	PK
H	5135	35.31	49.19	15.24	40.45	41.81	54	-12.19	AV
operation frequency:5230									
V	5360	53.44	49.13	15.34	37.46	57.11	74	-16.89	PK
V	5360	37.48	49.13	15.34	37.46	41.15	54	-12.85	AV
H	5385	50.32	49.24	15.35	40.51	56.94	74	-17.06	PK
H	5385	36.58	49.24	15.35	40.51	43.2	54	-10.8	AV
V	5360	54.51	49.13	15.34	31.31	52.03	74	-21.97	PK
V	5360	41.94	49.13	15.34	31.31	39.46	54	-14.54	AV
H	5385	52.71	49.24	15.35	40.51	59.33	74	-14.67	PK
H	5385	36.53	49.24	15.35	40.51	43.15	54	-10.85	AV
Remark:									
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit									
2. If peak below the average limit, the average emission was no test.									
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.									



802.11ac HT40

Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
operation frequency:5190									
V	5110	52.62	49.12	15.32	37.41	56.23	74	-17.77	PK
V	5110	35.52	49.12	15.32	37.41	39.13	54	-14.87	AV
H	5135	51.64	49.19	15.36	40.46	58.27	74	-15.73	PK
H	5135	34.39	49.19	15.36	40.46	41.02	54	-12.98	AV
V	5110	52.57	49.12	15.32	37.41	56.18	74	-17.82	PK
V	5110	34.91	49.12	15.32	37.41	38.52	54	-15.48	AV
H	5135	50.53	49.19	15.36	40.46	57.16	74	-16.84	PK
H	5135	35.2	49.19	15.36	40.46	41.83	54	-12.17	AV
operation frequency:5230									
V	5360	53.28	49.13	15.34	37.34	56.83	74	-17.17	PK
V	5360	37.36	49.13	15.34	37.34	40.91	54	-13.09	AV
H	5385	50.17	49.24	15.35	40.43	56.71	74	-17.29	PK
H	5385	36.47	49.24	15.35	40.43	43.01	54	-10.99	AV
V	5360	54.35	49.13	15.34	37.34	57.9	74	-16.1	PK
V	5360	41.81	49.13	15.34	37.34	45.36	54	-8.64	AV
H	5385	52.55	49.24	15.35	40.43	59.09	74	-14.91	PK
H	5385	36.42	49.24	15.35	40.43	42.96	54	-11.04	AV
Remark: 1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit 2. If peak below the average limit, the average emission was no test. 3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.									



802.11a(Band 4)

Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
operation frequency:5745									
V	5650	51.3	46.38	12.43	35.65	53	68.2	-15.2	PK
V	5650	40.85	46.38	12.43	35.65	42.55	54	-11.45	AV
H	5720	51.68	46.56	12.47	35.76	53.35	68.2	-14.85	PK
H	5720	41.04	46.56	12.47	35.76	42.71	54	-11.29	AV
V	5650	51.99	46.38	12.43	35.65	53.69	68.2	-14.51	PK
V	5650	41.04	46.38	12.43	35.65	42.74	54	-11.26	AV
H	5720	51.28	46.56	12.47	35.76	52.95	68.2	-15.25	PK
H	5720	40.97	46.56	12.47	35.76	42.64	54	-11.36	AV
operation frequency:5825									
V	5855	51.87	46.55	12.65	35.87	53.84	68.2	-14.36	PK
V	5855	40.14	46.55	12.65	35.87	42.11	54	-11.89	AV
H	5875	52.39	46.58	12.67	35.93	54.41	68.2	-13.79	PK
H	5875	39.87	46.58	12.67	35.93	41.89	54	-12.11	AV
V	5855	51.04	46.55	12.65	35.87	53.01	68.2	-15.19	PK
V	5855	39.08	46.55	12.65	35.87	41.05	54	-12.95	AV
H	5875	50.96	46.58	12.67	35.93	52.98	68.2	-15.22	PK
H	5875	39.31	46.58	12.67	35.93	41.33	54	-12.67	AV
Remark: 1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit 2. If peak below the average limit, the average emission was no test. 3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.									



802.11n HT20

Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
operation frequency:5745									
V	5650	51.77	47.36	13.18	36.26	53.85	68.2	-14.35	PK
V	5650	41.9	47.36	13.18	36.26	43.98	54	-10.02	AV
H	5720	51.73	47.38	13.2	36.29	53.84	68.2	-14.36	PK
H	5720	41.61	47.38	13.2	36.29	43.72	54	-10.28	AV
V	5650	52.1	47.36	13.18	36.26	54.18	68.2	-14.02	PK
V	5650	41.23	47.36	13.18	36.26	43.31	54	-10.69	AV
H	5720	51.43	47.38	13.2	36.29	53.54	68.2	-14.66	PK
H	5720	40.22	47.38	13.2	36.29	42.33	54	-11.67	AV
operation frequency:5825									
V	5855	51.5	46.38	12.43	35.65	53.2	68.2	-15	PK
V	5855	41.46	46.38	12.43	35.65	43.16	54	-10.84	AV
H	5875	51.5	46.56	12.47	35.76	53.17	68.2	-15.03	PK
H	5875	41.73	46.56	12.47	35.76	43.4	54	-10.6	AV
V	5855	51.71	46.38	12.43	35.65	53.41	68.2	-14.79	PK
V	5855	40.24	46.38	12.43	35.65	41.94	54	-12.06	AV
H	5875	51.28	46.56	12.47	35.76	52.95	68.2	-15.25	PK
H	5875	40.27	46.56	12.47	35.76	41.94	54	-12.06	AV

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



802.11ac HT20

Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
operation frequency:5745									
V	5650	51.56	46.55	12.65	35.87	53.53	68.2	-14.67	PK
V	5650	40.31	46.55	12.65	35.87	42.28	54	-11.72	AV
H	5720	51.92	46.58	12.67	35.93	53.94	68.2	-14.26	PK
H	5720	41.01	46.58	12.67	35.93	43.03	54	-10.97	AV
V	5650	51.69	46.55	12.65	35.87	53.66	68.2	-14.54	PK
V	5650	41.02	46.55	12.65	35.87	42.99	54	-11.01	AV
H	5720	51.37	46.58	12.67	35.93	53.39	68.2	-14.81	PK
H	5720	40.53	46.58	12.67	35.93	42.55	54	-11.45	AV
operation frequency:5825									
V	5855	51.3	47.36	13.18	36.26	53.38	68.2	-14.82	PK
V	5855	39.5	47.36	13.18	36.26	41.58	54	-12.42	AV
H	5875	50.67	47.38	13.2	36.29	52.78	68.2	-15.42	PK
H	5875	39.23	47.38	13.2	36.29	41.34	54	-12.66	AV
V	5855	50.94	47.36	13.18	36.26	53.02	68.2	-15.18	PK
V	5855	40.05	47.36	13.18	36.26	42.13	54	-11.87	AV
H	5875	50.98	47.38	13.2	36.29	53.09	68.2	-15.11	PK
H	5875	39.01	47.38	13.2	36.29	41.12	54	-12.88	AV
Remark:									
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit									
2. If peak below the average limit, the average emission was no test.									
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.									



802.11n HT40

Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
operation frequency:5745									
V	5650	51.75	46.38	12.43	35.65	53.45	68.2	-14.75	PK
V	5650	42.19	46.38	12.43	35.65	43.89	54	-10.11	AV
H	5720	52.08	46.56	12.47	35.76	53.75	68.2	-14.45	PK
H	5720	40.47	46.56	12.47	35.76	42.14	54	-11.86	AV
V	5650	52.12	46.38	12.43	35.65	53.82	68.2	-14.38	PK
V	5650	41.11	46.38	12.43	35.65	42.81	54	-11.19	AV
H	5720	51.75	46.56	12.47	35.76	53.42	68.2	-14.78	PK
H	5720	41.53	46.56	12.47	35.76	43.2	54	-10.8	AV
operation frequency:5825									
V	5855	51.4	46.55	12.65	35.87	53.37	68.2	-14.83	PK
V	5855	41.41	46.55	12.65	35.87	43.38	54	-10.62	AV
H	5875	51.4	46.58	12.67	35.93	53.42	68.2	-14.78	PK
H	5875	41.68	46.58	12.67	35.93	43.7	54	-10.3	AV
V	5855	51.61	46.55	12.65	35.87	53.58	68.2	-14.62	PK
V	5855	40.2	46.55	12.65	35.87	42.17	54	-11.83	AV
H	5875	51.18	46.58	12.67	35.93	53.2	68.2	-15	PK
H	5875	40.23	46.58	12.67	35.93	42.25	54	-11.75	AV

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



802.11ac HT40

Polar (H/V)	Frequency	Meter Reading	Pre- amplifier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
operation frequency:5745									
V	5650	51.59	47.36	13.18	36.26	53.67	68.2	-14.53	PK
V	5650	42.03	47.36	13.18	36.26	44.11	54	-9.89	AV
H	5720	51.92	47.38	13.2	36.29	54.03	68.2	-14.17	PK
H	5720	40.31	47.38	13.2	36.29	42.42	54	-11.58	AV
V	5650	51.96	47.36	13.18	36.26	54.04	68.2	-14.16	PK
V	5650	40.94	47.36	13.18	36.26	43.02	54	-10.98	AV
H	5720	51.59	47.38	13.2	36.29	53.7	68.2	-14.5	PK
H	5720	41.37	47.38	13.2	36.29	43.48	54	-10.52	AV
operation frequency:5825									
V	5855	51.32	46.38	12.43	35.65	53.02	68.2	-15.18	PK
V	5855	40.62	46.38	12.43	35.65	42.32	54	-11.68	AV
H	5875	51.2	46.56	12.47	35.76	52.87	68.2	-15.33	PK
H	5875	40.49	46.56	12.47	35.76	42.16	54	-11.84	AV
V	5855	51.47	46.38	12.43	35.65	53.17	68.2	-15.03	PK
V	5855	40.93	46.38	12.43	35.65	42.63	54	-11.37	AV
H	5875	51.38	46.56	12.47	35.76	53.05	68.2	-15.15	PK
H	5875	40.44	46.56	12.47	35.76	42.11	54	-11.89	AV

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.



4. AVERAGING OUTPUT POWER

4.1 APPLIED PROCEDURES / LIMIT

For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

4.1.1 TEST PROCEDURE

Method SA-2 uses trace averaging across ON and OFF times of the EUT transmissions, followed by duty cycle correction. The procedure for this method is as follows:

- a) Measure the duty cycle D of the transmitter output signal as described in 12.2.
- b) Set span to encompass the entire 26 dB EBW or 99% OBW of the signal.
- c) Set RBW=1 MHz.
- d) Set VBW ≥ 3 MHz.
- e) Number of points in sweep $\geq [2 \times \text{span} / \text{RBW}]$. (This gives bin-to-bin spacing $\leq \text{RBW} / 2$, so that narrowband signals are not lost between frequency bins.)
- f) Sweep time = auto.
- g) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
- h) Do not use sweep triggering. Allow the sweep to "free run."
- i) Trace average at least 100 traces in power averaging (rms) mode; however, the number of traces to be averaged shall be increased above 100 as needed such that the average accurately represents the true average over the ON and OFF periods of the transmitter.
- j) Compute power by integrating the spectrum across the 26 dB EBW or 99% OBW of the signal using the instrument's band power measurement function with band limits set equal to the EBW or OBW band edges. If the instrument does not have a band power function, then sum the spectrum levels (in power units) at 1MHz intervals extending across the 26 dB EBW or 99% OBW of the spectrum.
- k) Add $[10 \log (1 / D)]$, where D is the duty cycle, to the measured power to compute the average power during the actual transmission times (because the measurement represents an average over both the ON and off times of the transmission). For example, add $[10 \log (1 / 0.25)] = 6$ dB if the duty cycle is 25%.

4.1.2 DEVIATION FROM STANDARD

No deviation.

4.1.3 TEST SETUP



4.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

**4.1.5 TEST RESULTS**

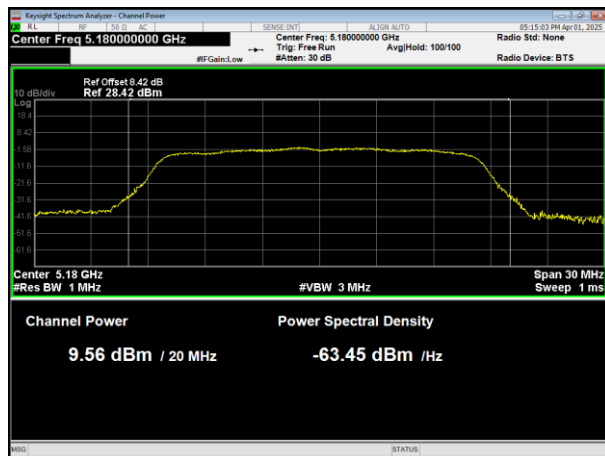
Temperature:	25 °C	Relative Humidity:	60%
Pressure:	1012 hPa	Test Voltage :	AC 120V/60Hz

Band	Mode	Test Channel	Average Output Power (dBm)	Duty factor (dB)	Total Output Power(dBm)	LIMIT (dBm)
Band 1	802.11a	Low	9.563	0.87	10.433	23.98
		Middle	9.233	0.87	10.103	23.98
		High	11.063	0.87	11.933	23.98
	802.11ac HT20	Low	10.012	0.16	10.172	23.98
		Middle	9.739	0.13	9.869	23.98
		High	11.426	0.13	11.556	23.98
	802.11ac HT40	Low	10.315	0.26	10.575	23.98
		High	10.297	0.32	10.617	23.98
	802.11n HT20	Low	9.763	0.16	9.923	23.98
		Middle	9.48	0.13	9.61	23.98
		High	11.465	0.13	11.595	23.98
	802.11n HT40	Low	10.37	0.26	10.63	23.98
		High	10.32	0.26	10.58	23.98

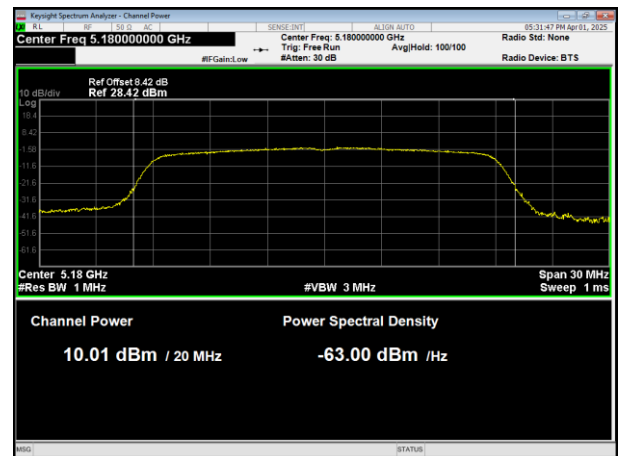
Band	Mode	Test Channel	Average Output Power (dBm)	Duty factor (dB)	Total Output Power(dBm)	LIMIT (dBm)
Band 4	802.11a	Low	8.527	0.87	9.397	30
		Middle	8.221	1.12	9.341	30
		High	9.078	0.87	9.948	30
	802.11ac HT20	Low	8.616	0.13	8.746	30
		Middle	8.514	0.16	8.674	30
		High	9.29	0.13	9.42	30
	802.11ac HT40	Low	9.052	0.26	9.312	30
		High	9.393	0.26	9.653	30
	802.11n HT20	Low	9.261	0.16	9.421	30
		Middle	9.055	0.13	9.185	30
		High	9.784	0.13	9.914	30
	802.11n HT40	Low	8.922	0.26	9.182	30
		High	9.402	0.26	9.662	30



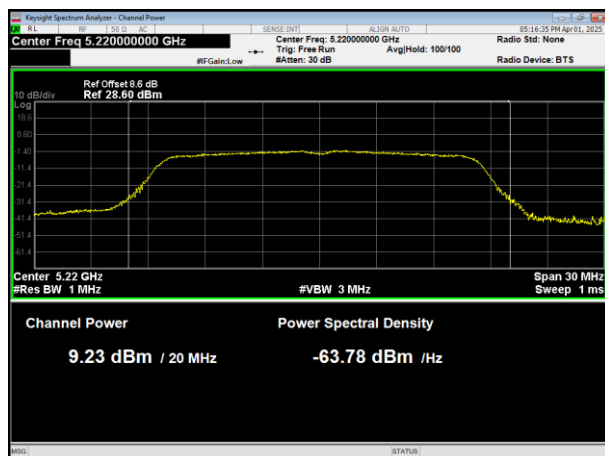
802.11a



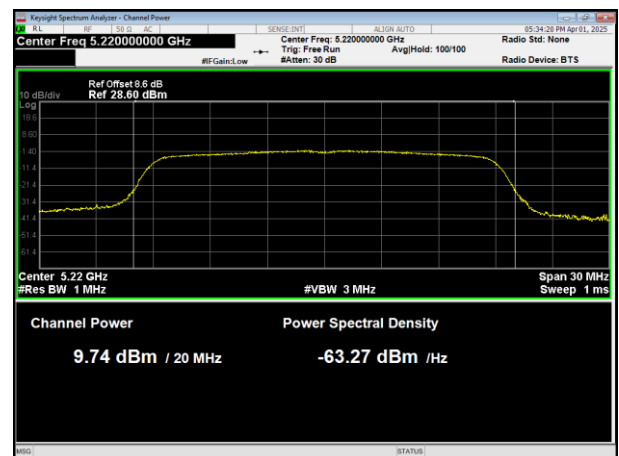
802.11ac HT20



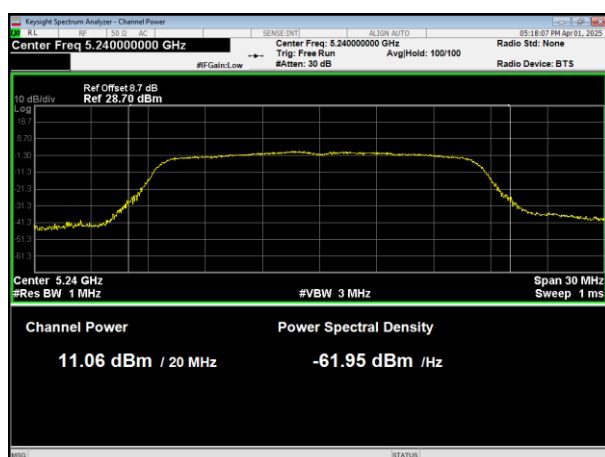
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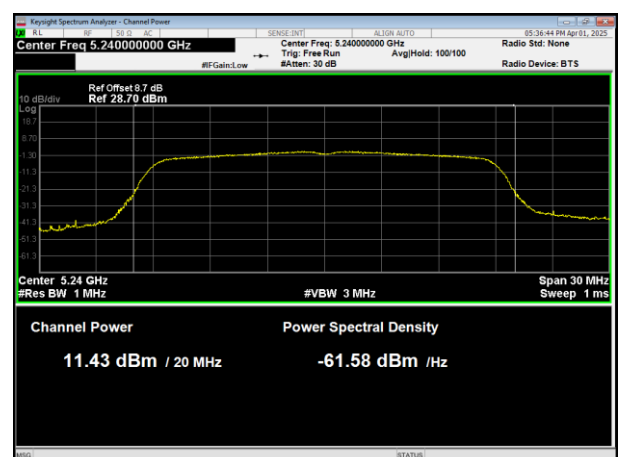
5180MHz



5200MHz



5200MHz

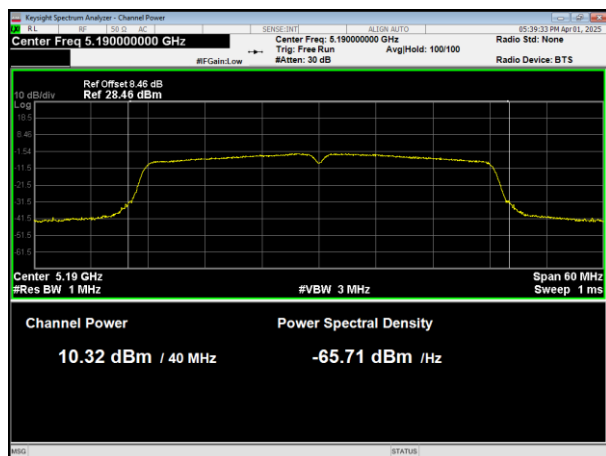


5240MHz

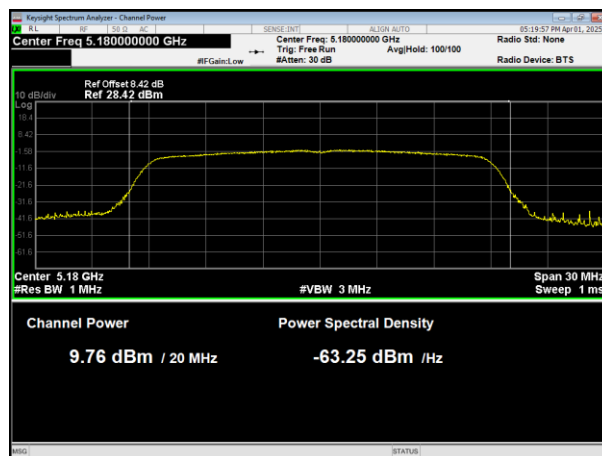
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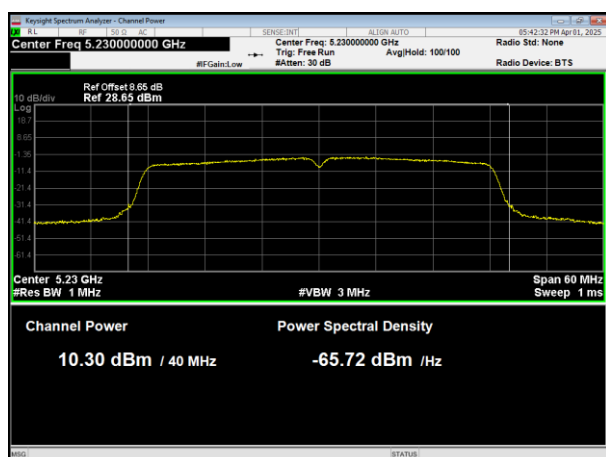
802.11ac HT40



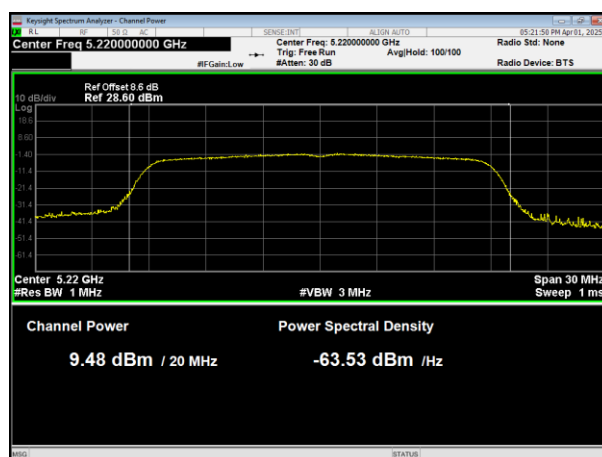
802.11n HT20



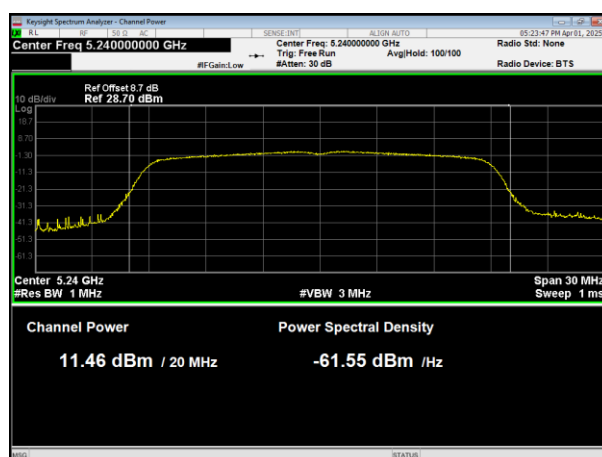
5190MHz



5180MHz



5230MHz

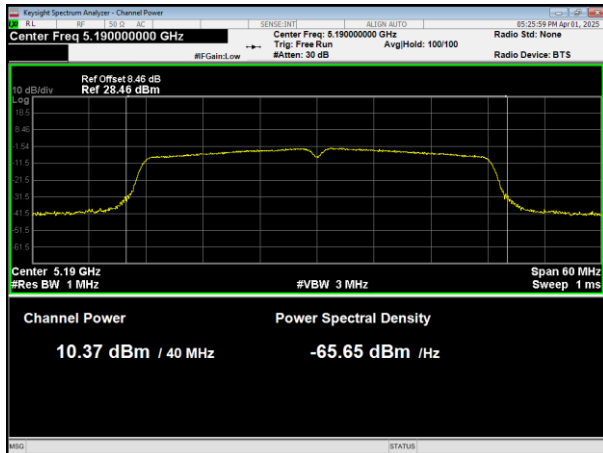


5200MHz

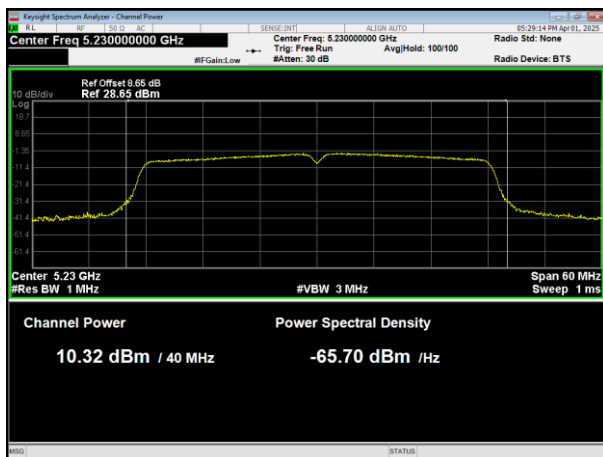
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802.11n HT40



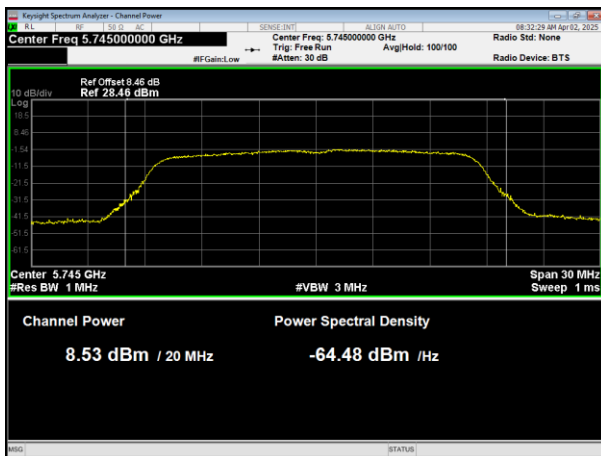
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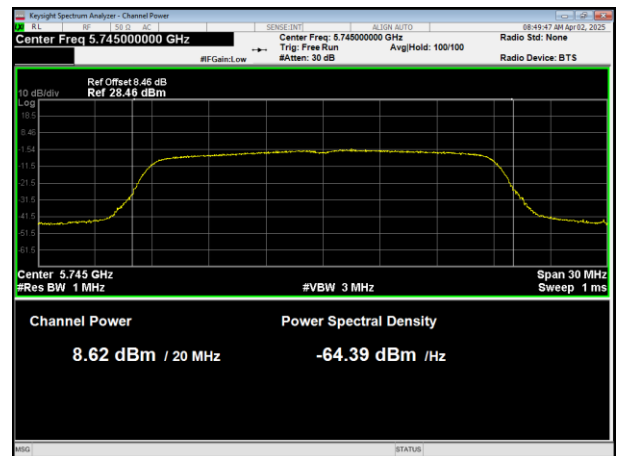
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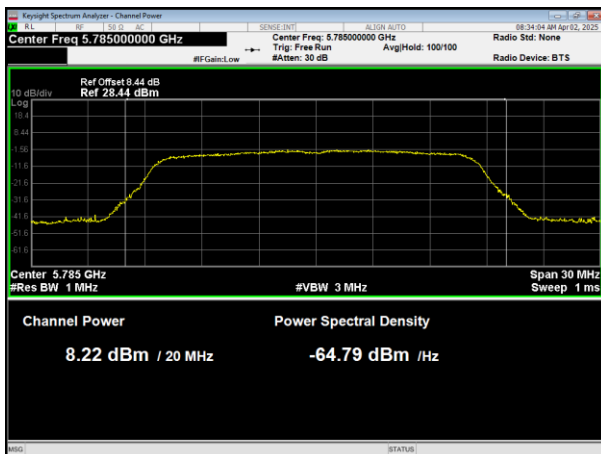
802.11a



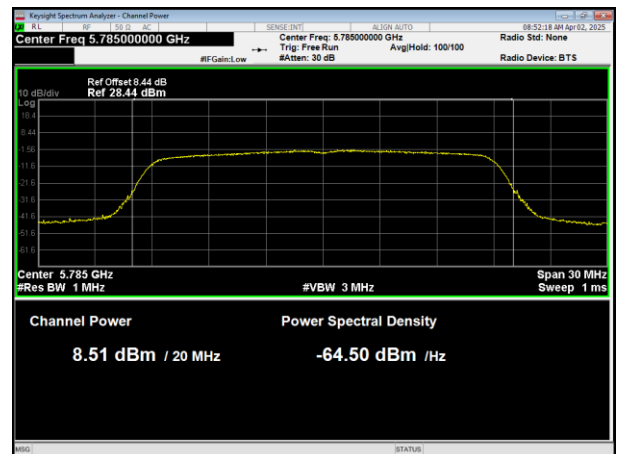
802.11ac HT20



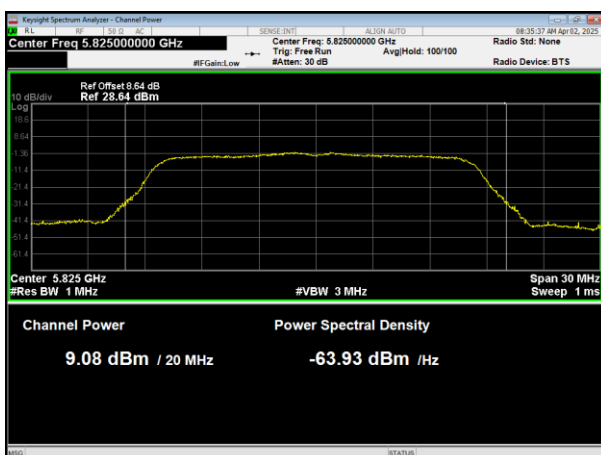
5745MHz



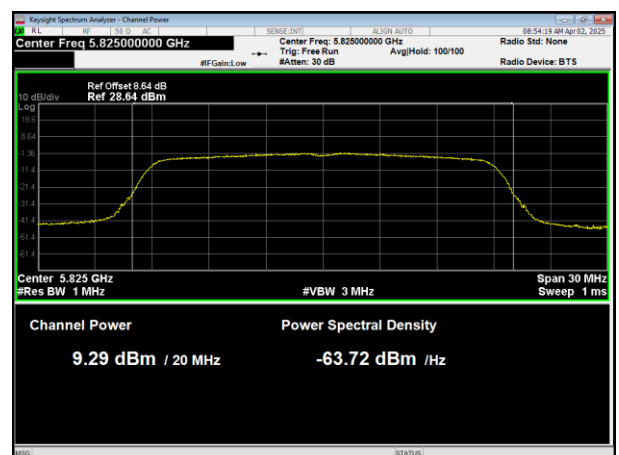
5745MHz



5785MHz



5785MHz

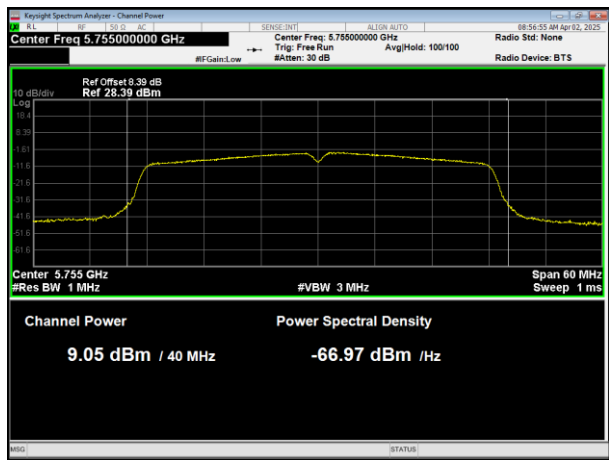


5825MHz

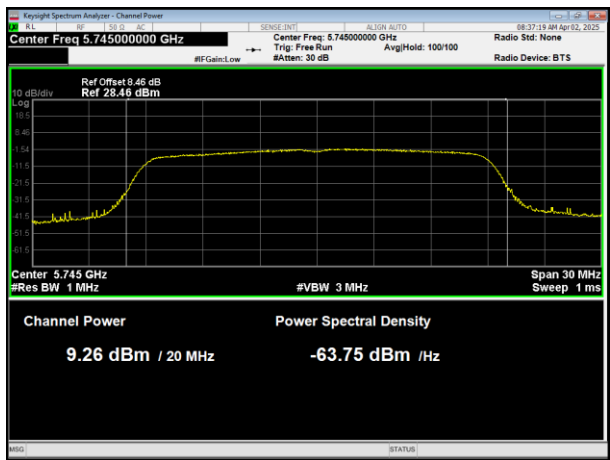
5825MHz



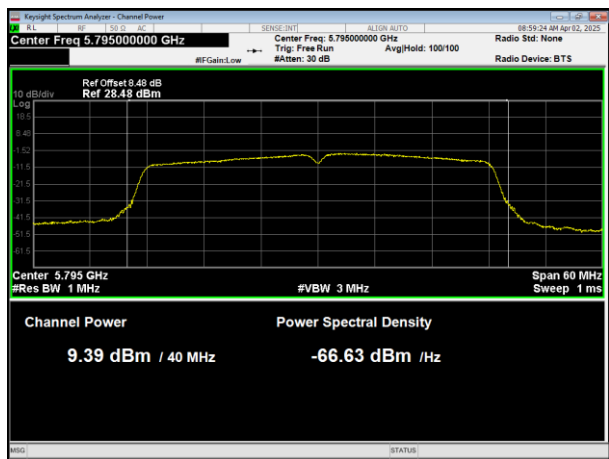
802.11ac HT40



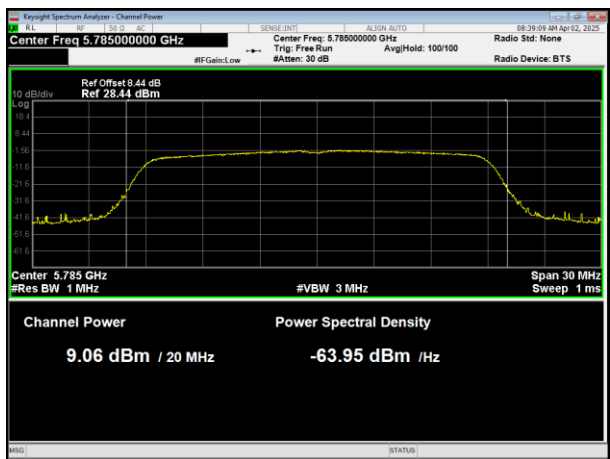
802.11n HT20



5755MHz



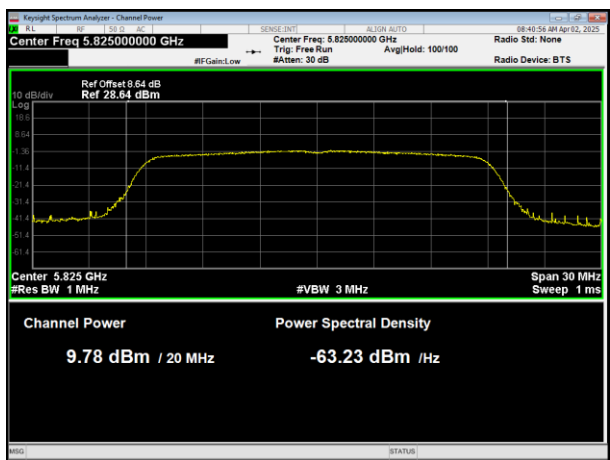
5745MHz



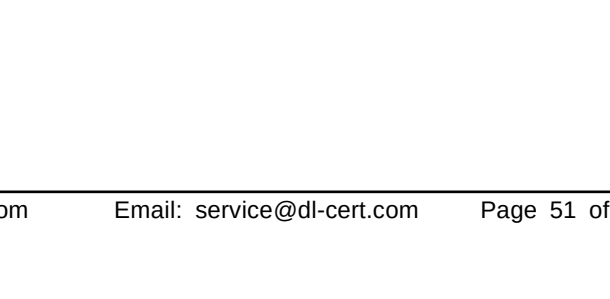
5795MHz



5785MHz

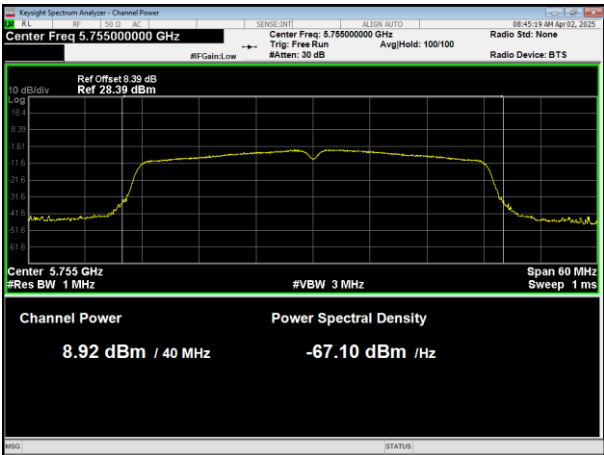


5825MHz

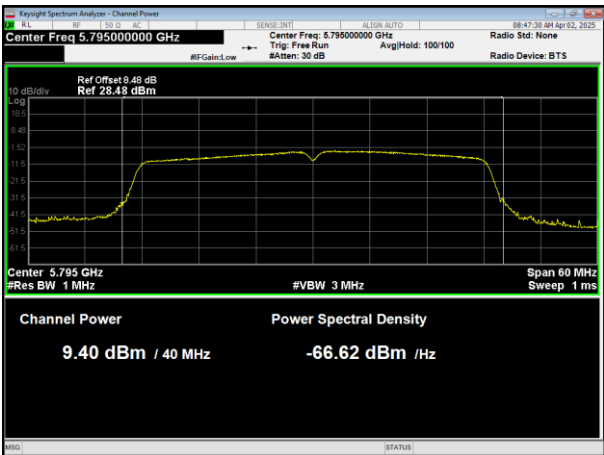




802.11n HT40



5755MHz



5795MHz



5. POWER SPECTRAL DENSITY TEST

5.1 APPLIED PROCEDURES / LIMIT

In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.
In addition, the maximum power spectral density shall not exceed 30 dBm in any 500 kHz band.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	= the frequency band of operation
RB	RBW $\geq$ 1MHz for band 1 RBW $\geq$ 510KHz for band 4
VB	VBW $\geq$ 3RBW
Detector	RMS (i.e., power averaging).
Trace	Average
Sweep Time	Auto

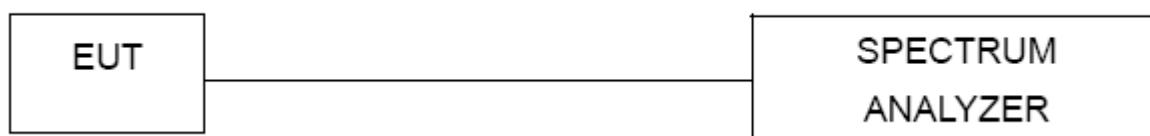
5.1.1 TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02.
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Spectrum.
4. For U-NII1, U-NII-2A, U-NII-2C Band:
Set RBW=1MHz, VBW=3MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)
For U-NII-3 Band:
Set RBW=510 kHz, VBW=3*RBW, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)
5. Use the cursor on spectrum to peak search the highest level of trace
6. Record the max. reading and add 10 log(1/duty cycle).
we test all antennas, the antenna 1 was worst mode and the data recording in the report.
7. Duty factor Reference is made to the test results in Section 7.1.5.

5.1.2 DEVIATION FROM STANDARD

No deviation.

5.1.3 TEST SETUP



5.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

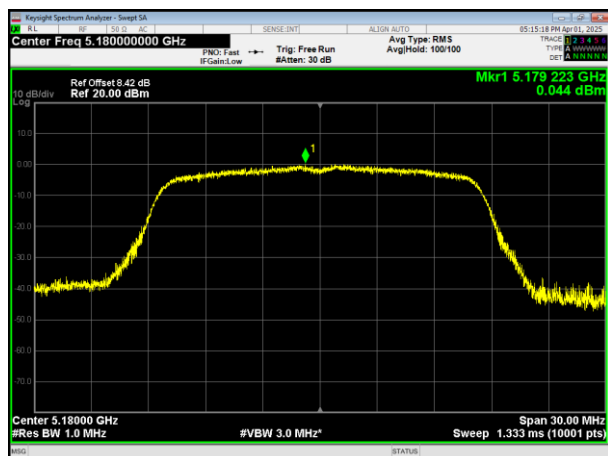
**5.1.5 TEST RESULTS**

	Mode	Test Channel	Reading Level (dBm/MHz)	Duty factor (dB)	PSD (dBm/MHz)	Limit (dBm)	Result
Band1	802.11a	Low	0.044	0.87	0.914	11.00	PASS
		Middle	0.042	0.87	0.912	11.00	PASS
		High	1.769	0.87	2.639	11.00	PASS
	802.11ac20	Low	0.189	0.16	0.349	11.00	PASS
		Middle	-0.213	0.13	-0.083	11.00	PASS
		High	1.641	0.13	1.771	11.00	PASS
	802.11ac40	Low	-1.919	0.26	-1.659	11.00	PASS
		High	-2.468	0.32	-2.148	11.00	PASS
	802.11n20	Low	0.103	0.16	0.263	11.00	PASS
		Middle	-0.539	0.13	-0.409	11.00	PASS
		High	1.688	0.13	1.818	11.00	PASS
	802.11n40	Low	-2.235	0.26	-1.975	11.00	PASS
		High	-2.341	0.26	-2.081	11.00	PASS

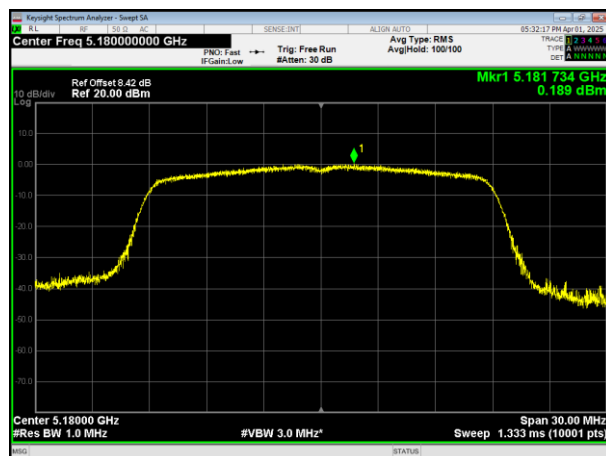
	Mode	Test Channel	Reading Level (dBm/510kHz)	Duty factor (dB)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
Band4	802.11a	Low	-3.693	0.87	-2.823	30.00	PASS
		Middle	-4.386	1.12	-3.266	30.00	PASS
		High	-3.085	0.87	-2.215	30.00	PASS
	802.11ac20	Low	-4.17	0.13	-4.04	30.00	PASS
		Middle	-4.184	0.16	-4.024	30.00	PASS
		High	-3.423	0.13	-3.293	30.00	PASS
	802.11ac40	Low	-5.862	0.26	-5.602	30.00	PASS
		High	-6.006	0.26	-5.746	30.00	PASS
	802.11n20	Low	-3.661	0.16	-3.501	30.00	PASS
		Middle	-3.851	0.13	-3.721	30.00	PASS
		High	-2.763	0.13	-2.633	30.00	PASS
	802.11n40	Low	-5.693	0.26	-5.433	30.00	PASS
		High	-5.685	0.26	-5.425	30.00	PASS



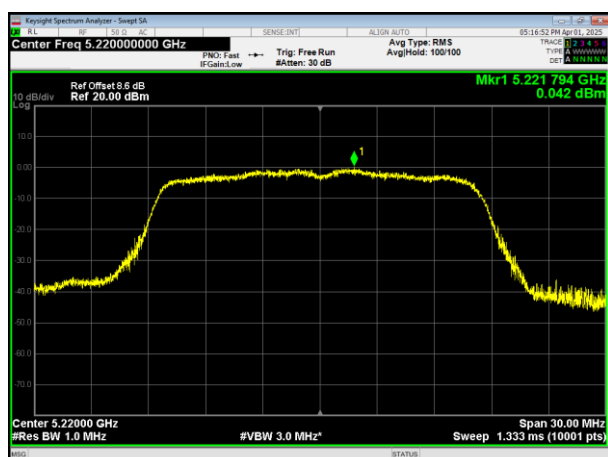
802.11a



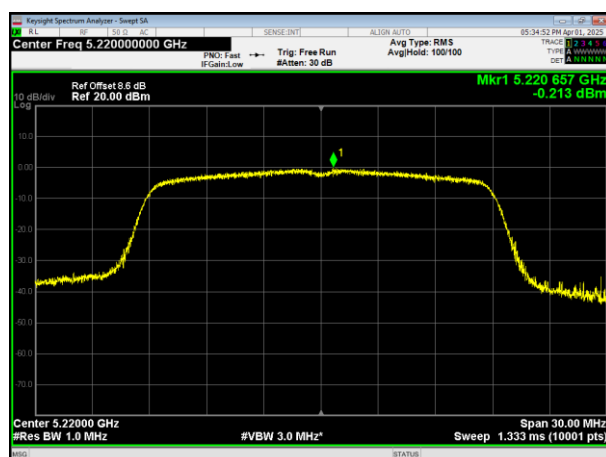
802.11ac HT20



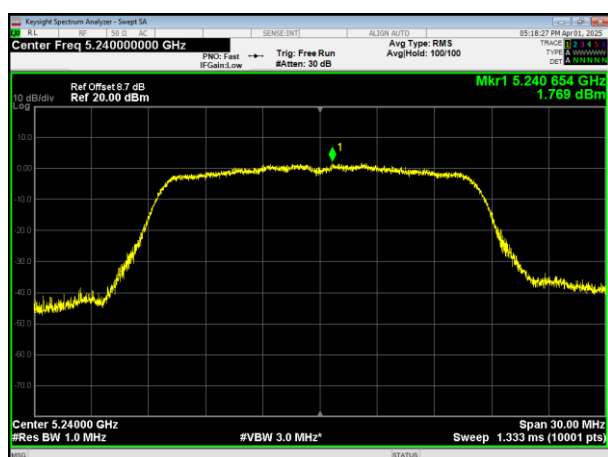
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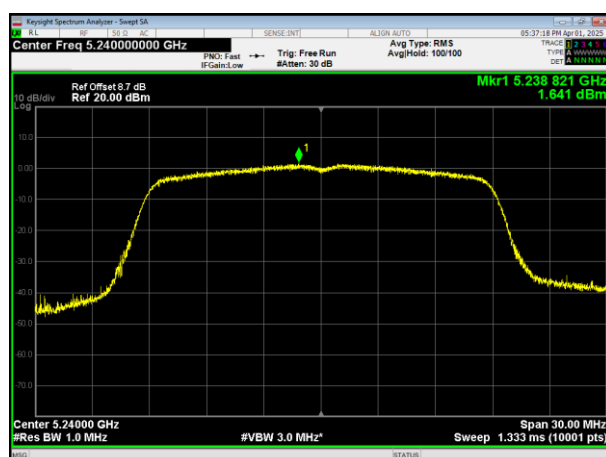
5180MHz



5200MHz



5200MHz

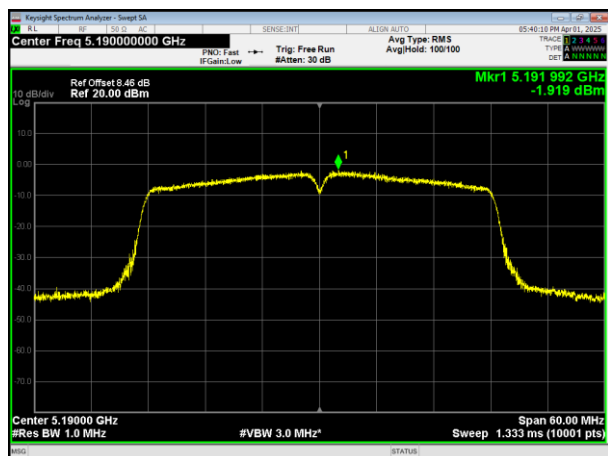


5240MHz

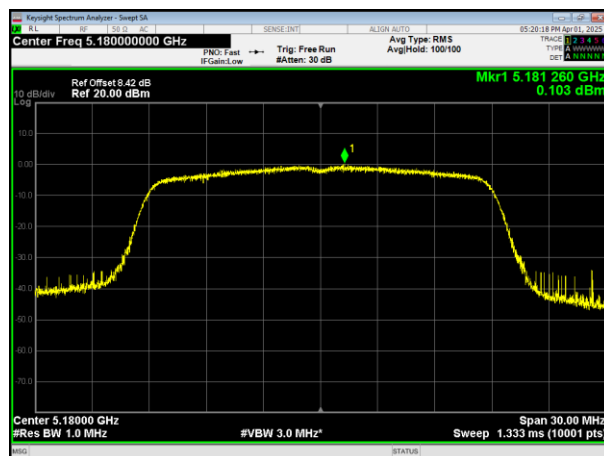
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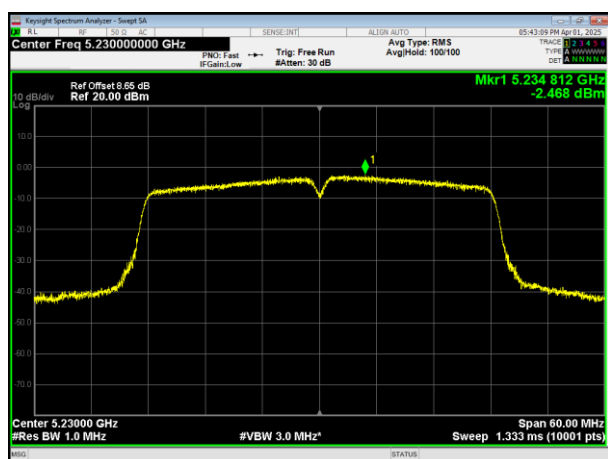
802.11ac HT40



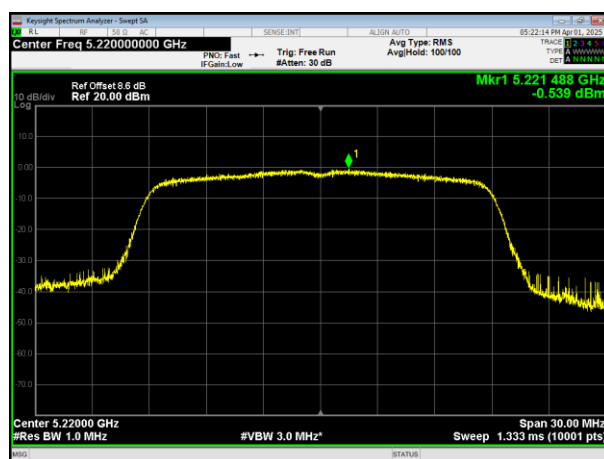
802.11n HT20



5190MHz

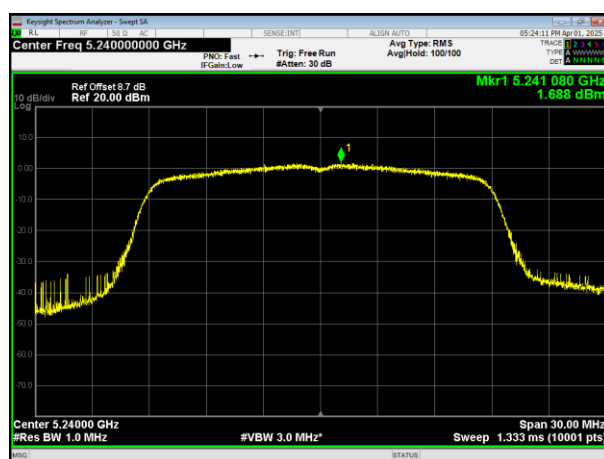


5180MHz



5230MHz

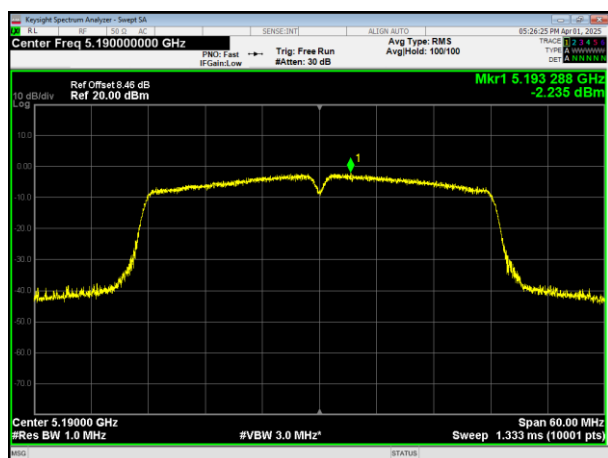
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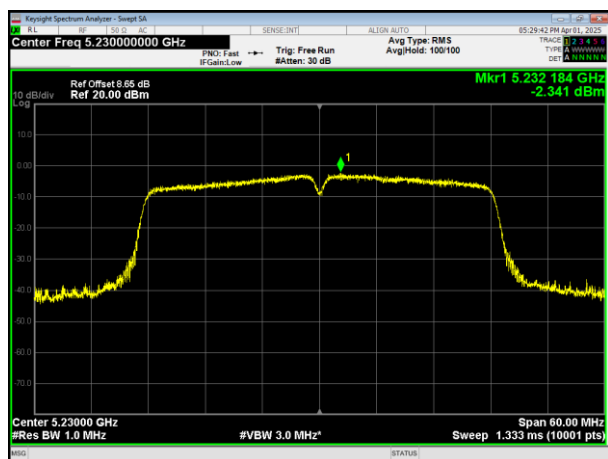
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802.11n HT40



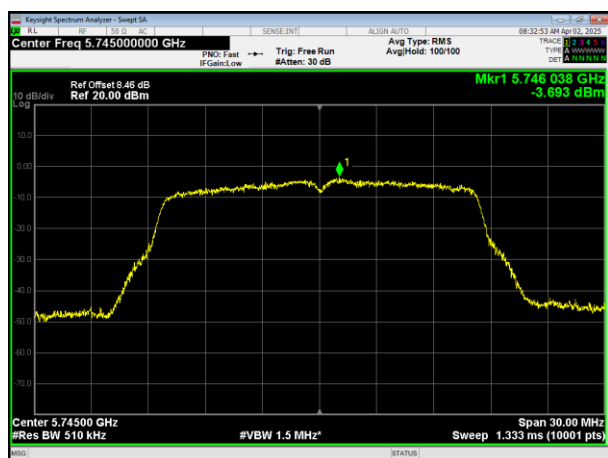
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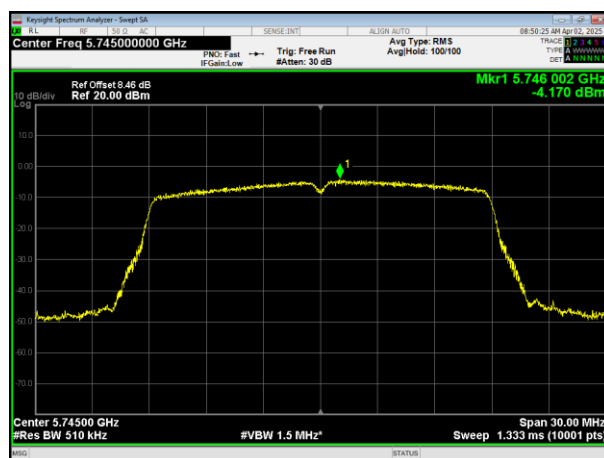
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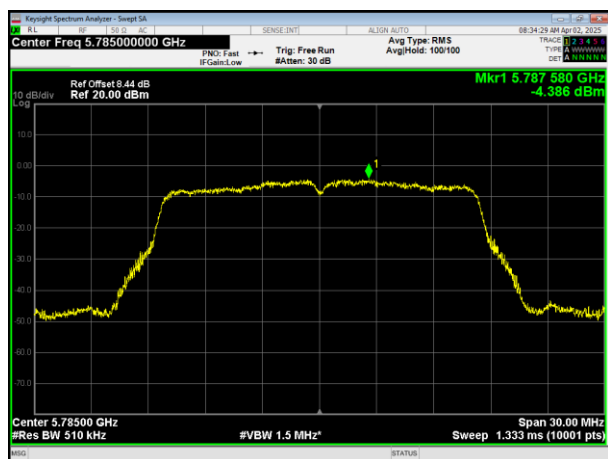
802.11a



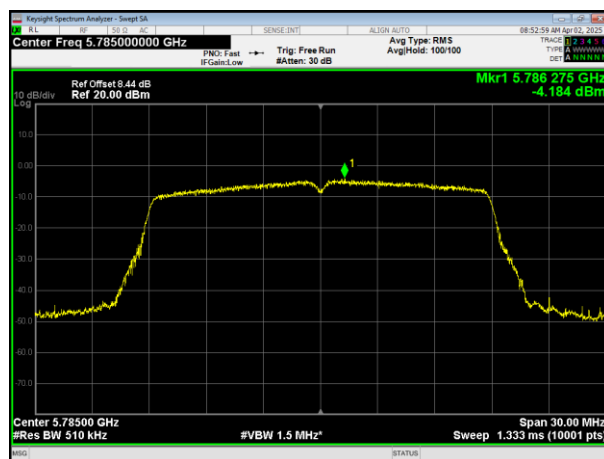
802.11ac HT20



5745MHz



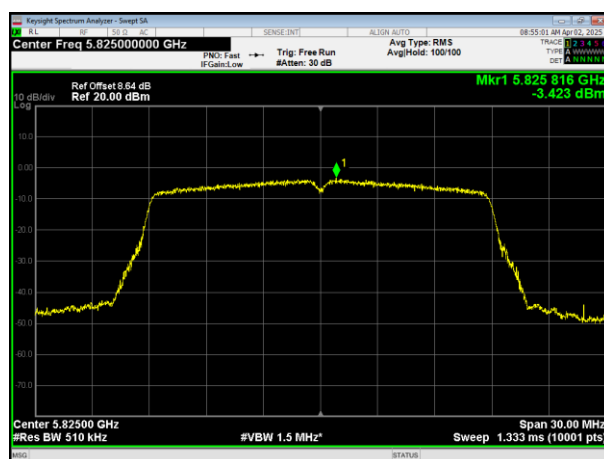
5745MHz



5785MHz



5785MHz

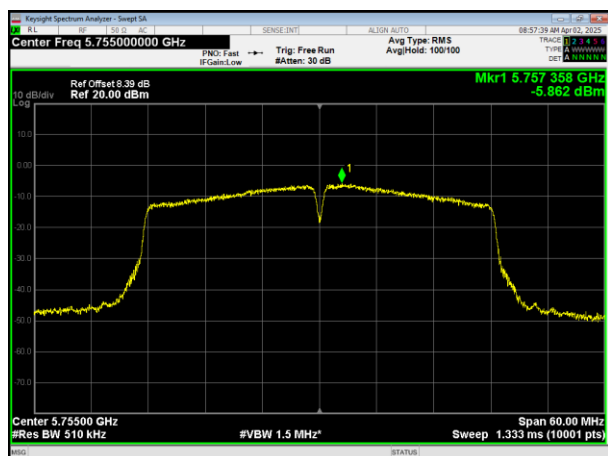


5825MHz

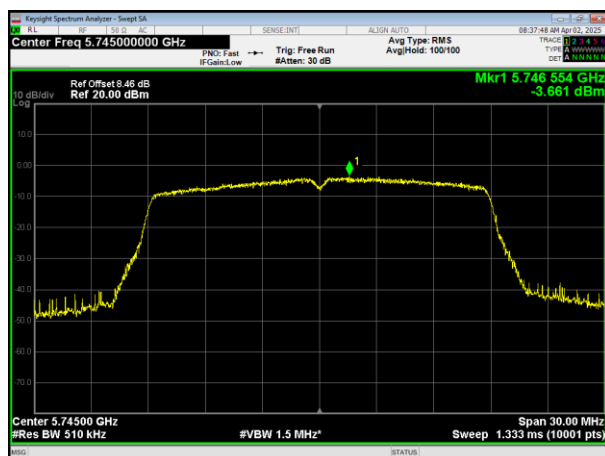
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802.11ac HT40



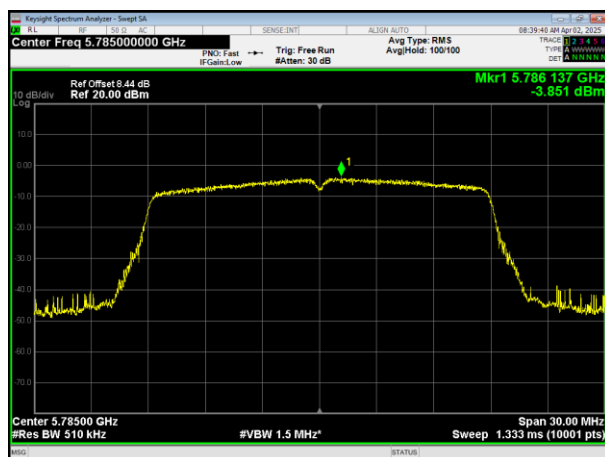
802.11n HT20



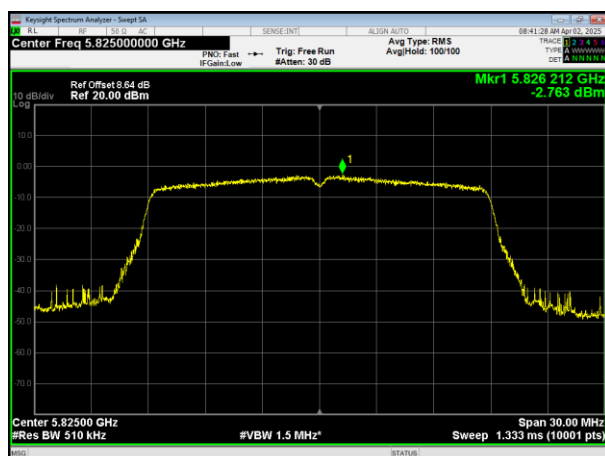
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5745MHz



5795MHz

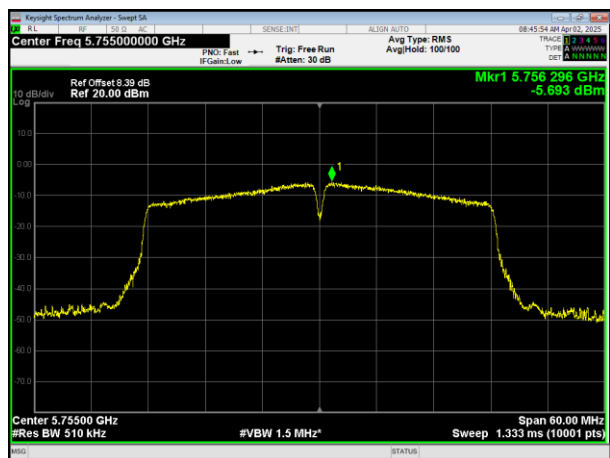


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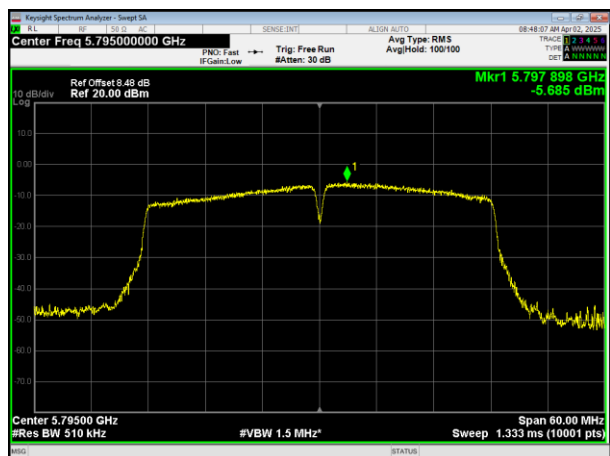
5825MHz



802.11n HT40



5755MHz



5795MHz