



FCC Part 15C Test Report

FCC ID: 2A4OZ-D16

Applicant: CRE ELECTRONIC TECHNOLOGY CO.,LIMITED

Address: 5 floor, A3#Jingrong Tongxin Industry Zone, High-tech Park Changsha Hunan Province P.R.C

Manufacturer: CRE ELECTRONIC TECHNOLOGY CO.,LIMITED

Address: 5 floor, A3#Jingrong Tongxin Industry Zone, High-tech Park Changsha Hunan Province P.R.C

EUT: PROJECTOR

Trade Mark: N/A

Model Number: D16, C16, C26, D38, D9, D12, D30, D32, D46, D50, D58

Date of Receipt: Feb. 15, 2022

Test Date: Feb. 15, 2022 – Feb. 21, 2022

Date of Report: Feb. 21, 2022

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Applicable Standards: FCC PART 15 C 15.407
ANSI C63.10:2013

Test Result: Pass

Report Number: DL-20220222031E

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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.



Table of Contents	Page
1 . SUMMARY OF TEST RESULTS	5
1.1 MEASUREMENT UNCERTAINTY	5
2 . GENERAL INFORMATION	6
2.1 GENERAL DESCRIPTION OF EUT	6
2.2 DESCRIPTION OF TEST MODES	8
2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	9
2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)	9
2.5 TABLE OF PARAMETERS OF TEST SOFTWARE SETTING	9
2.6 EQUIPMENTS LIST FOR ALL TEST ITEMS	10
3 . EMC EMISSION TEST	11
3.1 CONDUCTED EMISSION MEASUREMENT	11
3.1.1 POWER LINE CONDUCTED EMISSION LIMITS	11
3.1.2 TEST PROCEDURE	11
3.1.3 DEVIATION FROM TEST STANDARD	11
3.1.4 TEST SETUP	12
3.1.5 EUT OPERATING CONDITIONS	12
3.1.6 TEST RESULTS	12
3.2 RADIATED EMISSION MEASUREMENT	15
3.2.1 RADIATED EMISSION LIMITS	15
3.2.2 TEST PROCEDURE	16
3.2.3 DEVIATION FROM TEST STANDARD	16
3.2.4 TEST SETUP	16
3.2.5 EUT OPERATING CONDITIONS	17
3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)	18
3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)	19
3.2.8 TEST RESULTS (1GHZ~40GHZ)	21
3.3 RADIATED BAND EMISSION MEASUREMENT	33
3.3.1 TEST REQUIREMENT:	33
3.3.2 TEST PROCEDURE	33
3.3.3 DEVIATION FROM TEST STANDARD	33
3.3.4 TEST SETUP	33
3.3.5 EUT OPERATING CONDITIONS	33
4 . PEAK OUTPUT POWER	39
4.1 APPLIED PROCEDURES / LIMIT	39
4.1.1 TEST PROCEDURE	39
4.1.2 DEVIATION FROM STANDARD	39
4.1.3 TEST SETUP	39



Table of Contents	Page
4.1.4 EUT OPERATION CONDITIONS	39
4.1.5 TEST RESULTS	40
5 . POWER SPECTRAL DENSITY TEST	47
5.1 APPLIED PROCEDURES / LIMIT	47
5.1.1 TEST PROCEDURE	47
5.1.2 DEVIATION FROM STANDARD	47
5.1.3 TEST SETUP	47
5.1.4 EUT OPERATION CONDITIONS	47
5.1.5 TEST RESULTS	48
6 . 6DB&26DB&99% BANDWIDTH TEST	55
6.1 APPLIED PROCEDURES / LIMIT	55
6.1.1 TEST PROCEDURE	55
6.1.2 DEVIATION FROM STANDARD	55
6.1.3 TEST SETUP	55
6.1.4 EUT OPERATION CONDITIONS	56
6.1.5 TEST RESULTS	56
7 . DUTY CYCLE TEST SIGNAL	63
7.1 APPLIED PROCEDURES / LIMIT	63
7.1.1 TEST PROCEDURE	63
7.1.2 DEVIATION FROM STANDARD	63
7.1.3 TEST SETUP	63
7.1.4 EUT OPERATION CONDITIONS	63
7.1.5 TEST RESULTS	64
8 . FREQUENCY STABILITY	67
8.1 APPLIED PROCEDURES / LIMIT	67
8.1.1 TEST PROCEDURE	67
8.1.2 DEVIATION FROM STANDARD	67
8.1.3 TEST SETUP	67
8.1.4 EUT OPERATION CONDITIONS	67
8.1.5 TEST RESULTS	68
9 . TRANSMISSION IN THE ABSENCE OF DATA	70
9.1 STANDARD REQUIREMENT	70
9.2 TEST RESULT	70
10 . ANTENNA REQUIREMENT	70
10.1 STANDARD REQUIREMENT	70
10.2 EUT ANTENNA	70
11 . TEST SEUUP PHOTO	71



Table of Contents

Page

12 . EUT PHOTO

73



1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.407) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.407(b), 15.209	Radiated Spurious Emission	PASS	
15.407 (b)	Band Edge Emission	PASS	
15.407 (a)	Peak Output Power	PASS	
15.407 (a)	Power Spectral Density	PASS	
15.403(i) 15.407(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

1.1 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, where expended 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	$\pm 2\%$



2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product Name:	PROJECTOR
Trademark	N/A
Model No.:	D16, C16, C26, D38, D9, D12, D30, D32, D46, D50, D58
Model Difference	All samples are the same except the model name, so we prepare "D16" for test only.
Operation Frequency:	5180-5240, 5745-5825MHz(802.11a/n/ac(HT20)) 5190-5230, 5755-5795MHz(802.11n/ac(HT40)) 5210MHz , 5775MHz (802.11ac(HT80))
Channel numbers:	See channel list
Channel separation:	20MHz
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 500Mbps
Antenna Type:	Internal antenna
Antenna gain:	4dBi
Power supply:	DC 19V from adapter
Adapter:	Model Number: NSA60ED-1904740 Input: 100-240V~ 50/60Hz 1.5A Output: 19.0V  4.74A 90.0W

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 802.11a/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)
38	5190	46	5230

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

Channel List for 802.11ac(HT80)			
Channel	Frequency (MHz)	Channel	Frequency (MHz)
42	5210	/	/

Channel List for 802.11ac(HT80)			
Channel	Frequency (MHz)	Channel	Frequency (MHz)
155	5775	/	/



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	802.11acHT80	CH42	CH155
Mode 4	Other	Link Mode	

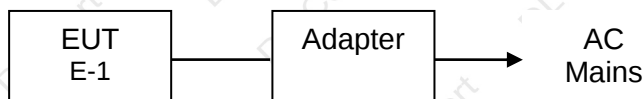
For Radiated Emission			
Pretest Mode	Channel	Band 1	Band 4
Mode 1	802.11a/n/acHT20	CH36, CH44, CH48	CH149, CH157, CH165
Mode 2	802.11n/acHT40	CH38, CH46	CH151, CH159
Mode 3	802.11acHT80	CH42	CH155
Mode 4	Other	Link Mode	

Note: 1. The measurements are performed at the highest, middle, lowest available channels.
2. During the test, the duty cycle >98%, 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.

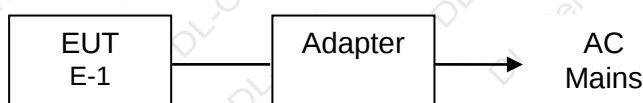


2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Spurious Emission Test



Conducted Spurious 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	D16	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: AXDN-0002.0			
Mode	802.11a	802.11n HT20	802.11n HT40	802.11ac HT20/HT40/HT80
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. 06, 2021	Nov. 05, 2022
2	Test Receiver (9kHz-7GHz)	R&S	ESRP7	101393	Nov. 06, 2021	Nov. 05, 2022
3	Bilog Antenna (30MHz-1GHz)	R&S	VULB9162	00306	Nov. 06, 2021	Nov. 05, 2022
4	Horn Antenna (1GHz-18GHz)	Schwarzbeck	BBHA9120D	02139	Nov. 06, 2021	Nov. 05, 2022
5	Horn Antenna (18GHz-40GHz)	A.H. Systems	SAS-574	588	Nov. 06, 2021	Nov. 05, 2022
6	Amplifier (9KHz-6GHz)	Schwarzbeck	BBV9743B	00153	Nov. 06, 2021	Nov. 05, 2022
7	Amplifier (1GHz-18GHz)	EMEC	EM01G8GA	00270	Nov. 06, 2021	Nov. 05, 2022
8	Amplifier (18GHz-40GHz)	Quanjuda	DLE-161	97	Nov. 06, 2021	Nov. 05, 2022
9	Loop Antenna (9KHz-30MHz)	Schwarzbeck	FMZB1519B	00014	Nov. 06, 2021	Nov. 05, 2022
10	RF cables1 (9kHz-1GHz)	ChengYu	966	004	Nov. 06, 2021	Nov. 05, 2022
11	RF cables2 (1GHz-40GHz)	ChengYu	966	003	Nov. 06, 2021	Nov. 05, 2022
12	Antenna connector	Florida RF Labs	N/A	RF 01#	Nov. 06, 2021	Nov. 05, 2022
13	Power probe	KEYSIGHT	U2021XA	MY55210018	Nov. 06, 2021	Nov. 05, 2022
14	Signal Analyzer 9kHz-26.5GHz	Agilent	N9020A	MY55370280	Nov. 06, 2021	Nov. 05, 2022
15	Test Receiver 20kHz-40GHz	R&S	ESU 40	100376	Nov. 06, 2021	Nov. 05, 2022
16	D.C. Power Supply	LongWei	PS-305D	010964729	Nov. 06, 2021	Nov. 05, 2022

Conduction Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	843 Shielded Room	ChengYu	843 Room	843	Nov. 25, 2019	Nov. 24, 2022
2	EMI Receiver	R&S	ESR	101421	Nov. 06, 2021	Nov. 05, 2022
3	LISN	R&S	ENV216	102417	Nov. 06, 2021	Nov. 05, 2022
4	843 Cable 1#	ChengYu	CE Cable	001	Nov. 06, 2021	Nov. 05, 2022

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

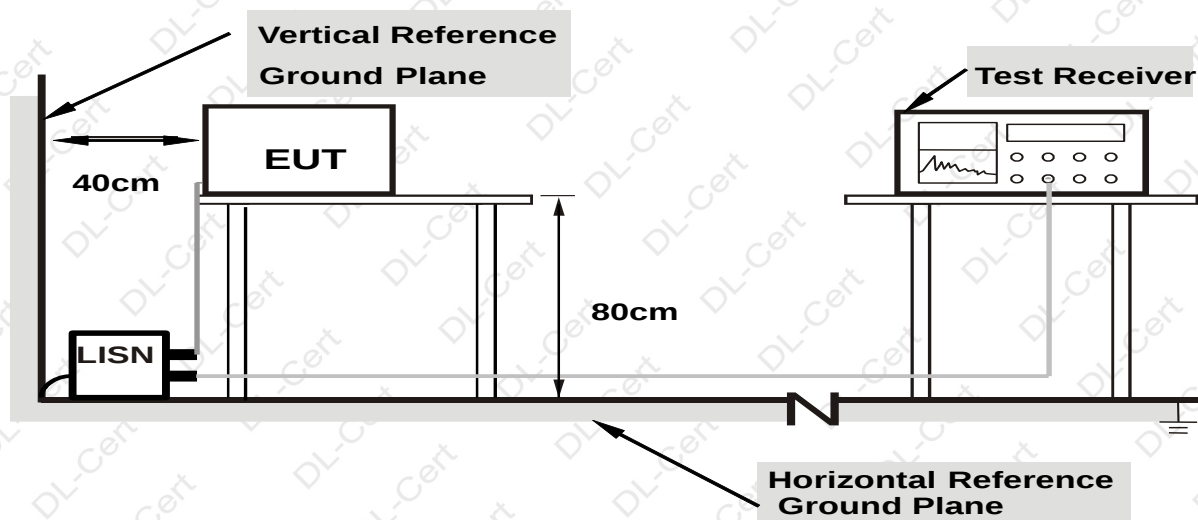
- a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- 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

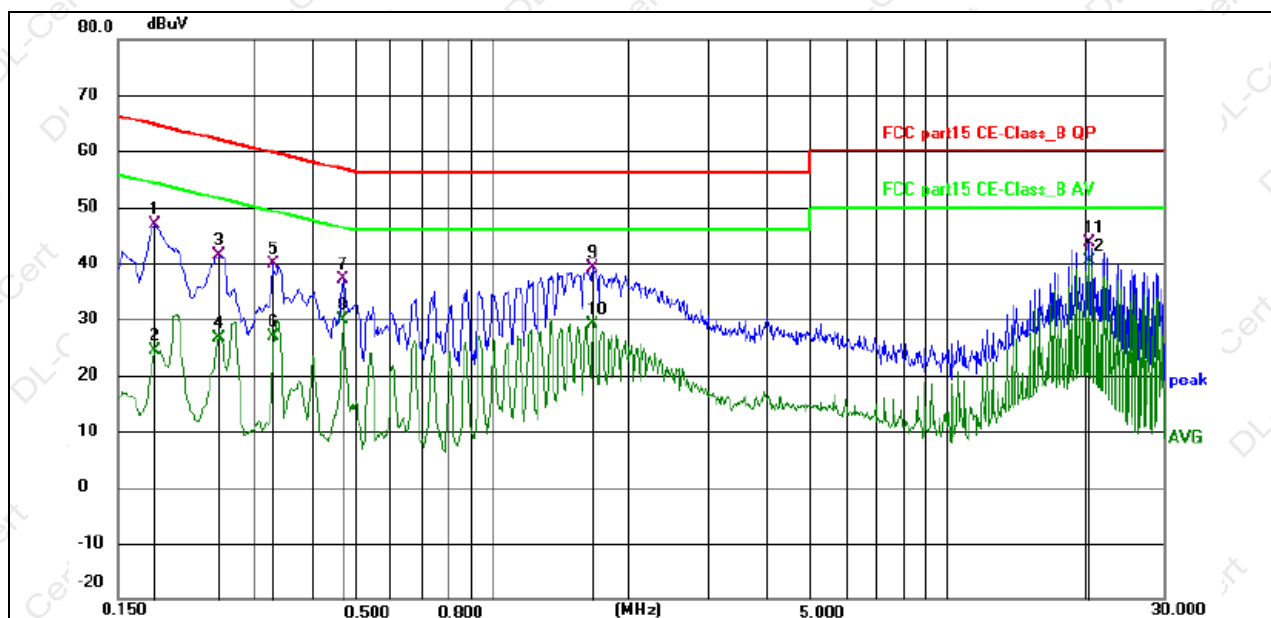
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

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 4



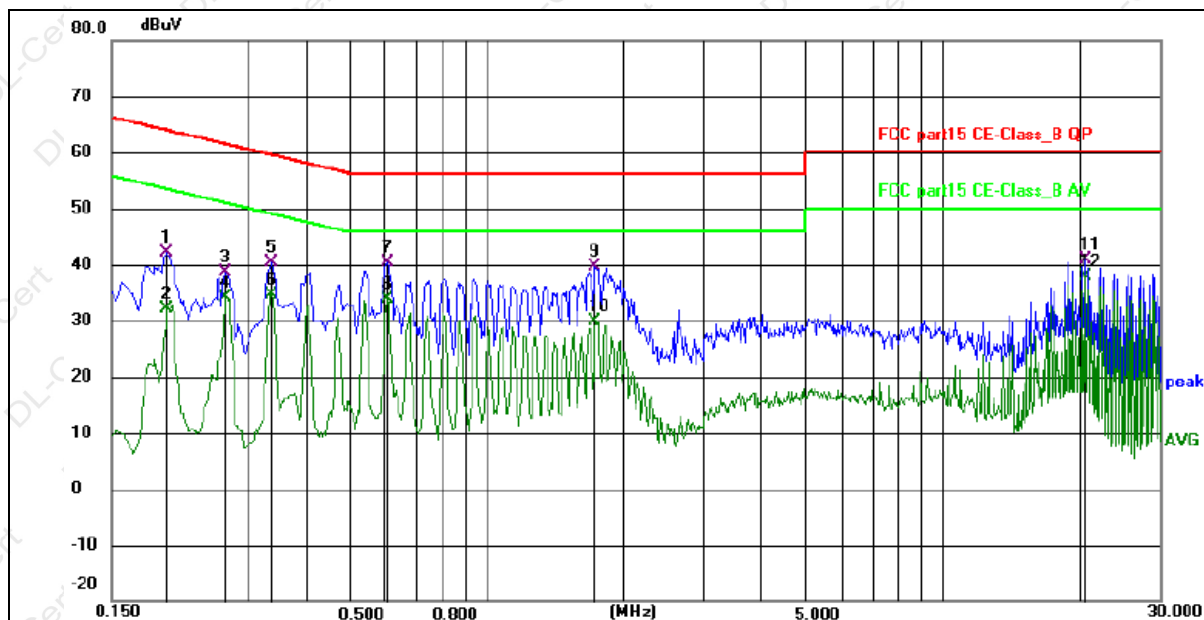
Remark:

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	0.1814	36.95	9.85	46.80	64.42	17.62	QP	P	
2	0.1814	14.46	9.85	24.31	54.42	30.11	AVG	P	
3	0.2505	32.12	9.34	41.46	61.74	20.28	QP	P	
4	0.2505	17.25	9.34	26.59	51.74	25.15	AVG	P	
5	0.3300	30.77	9.04	39.81	59.45	19.64	QP	P	
6	0.3300	17.93	9.04	26.97	49.45	22.48	AVG	P	
7	0.4692	28.03	9.17	37.20	56.53	19.33	QP	P	
8	0.4692	20.83	9.17	30.00	46.53	16.53	AVG	P	
9	1.6709	29.42	9.68	39.10	56.00	16.90	QP	P	
10	1.6709	19.57	9.68	29.25	46.00	16.75	AVG	P	
11	20.5620	33.22	10.50	43.72	60.00	16.28	QP	P	
12 *	20.5620	29.84	10.50	40.34	50.00	9.66	AVG	P	



Temperature:	25 °C	Relative Humidity:	54%
Pressure:	1010hPa	Phase :	N
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 4



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	33.26	8.86	42.12	63.63	21.51	QP	P	
2	0.1995	23.38	8.86	32.24	53.63	21.39	AVG	P	
3	0.2670	29.61	8.99	38.60	61.21	22.61	QP	P	
4	0.2670	25.14	8.99	34.13	51.21	17.08	AVG	P	
5	0.3390	31.23	9.12	40.35	59.23	18.88	QP	P	
6	0.3390	25.51	9.12	34.63	49.23	14.60	AVG	P	
7	0.6044	31.04	9.25	40.29	56.00	15.71	QP	P	
8	0.6044	24.65	9.25	33.90	46.00	12.10	AVG	P	
9	1.7338	29.81	9.73	39.54	56.00	16.46	QP	P	
10	1.7338	20.06	9.73	29.79	46.00	16.21	AVG	P	
11	20.5800	30.46	10.52	40.98	60.00	19.02	QP	P	
12 *	20.5800	27.45	10.52	37.97	50.00	12.03	AVG	P	



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

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 (microvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
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	25GHz
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(Above 18GHz the distance is 1 meter and table is 1.5 metre).
- Test the EUT in the lowest channel, the middle channel, the Highest channel

Note:

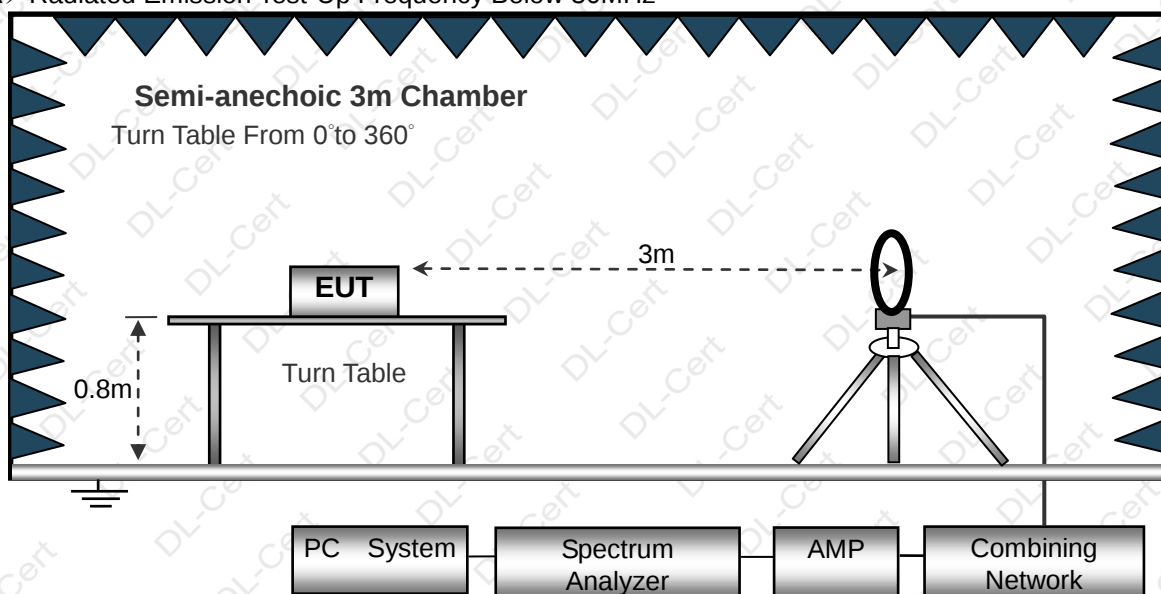
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

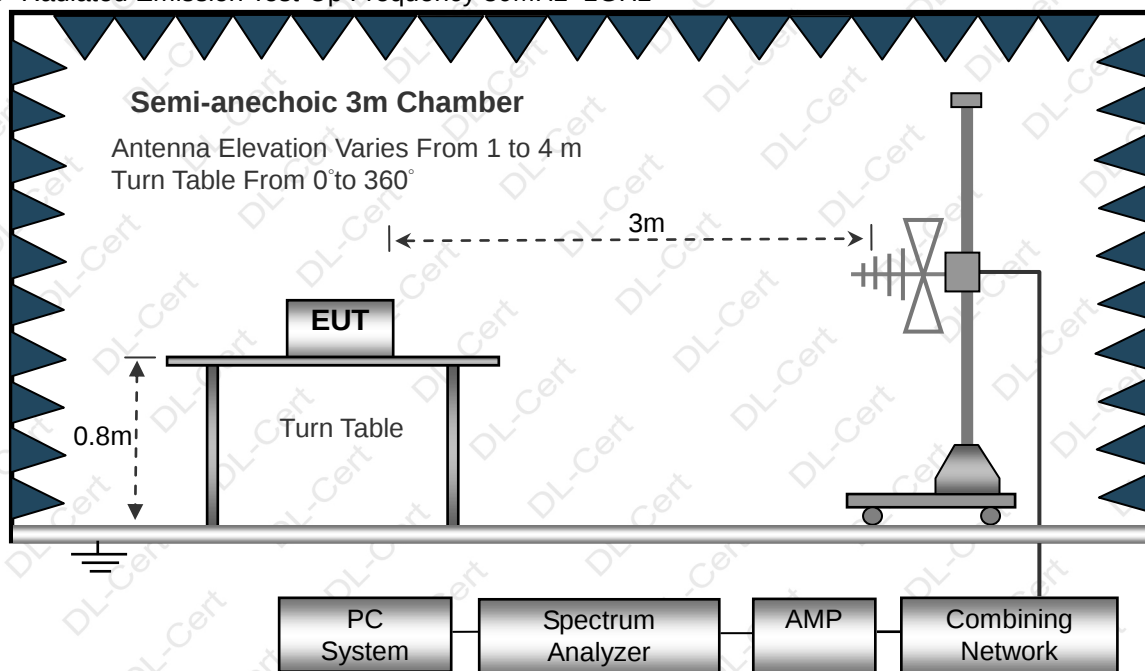
No deviation

3.2.4 TEST SETUP

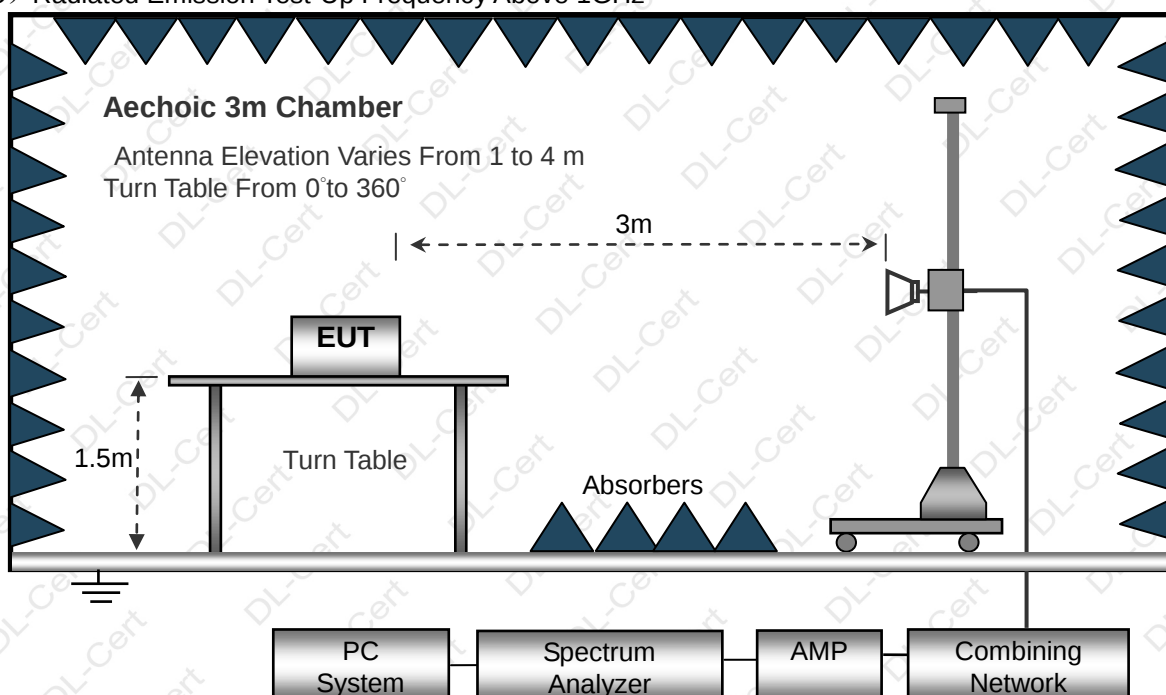
(A) Radiated Emission Test-Up Frequency Below 30MHz



(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°C	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	Mode 4	Polarization :	--

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

NOTE:

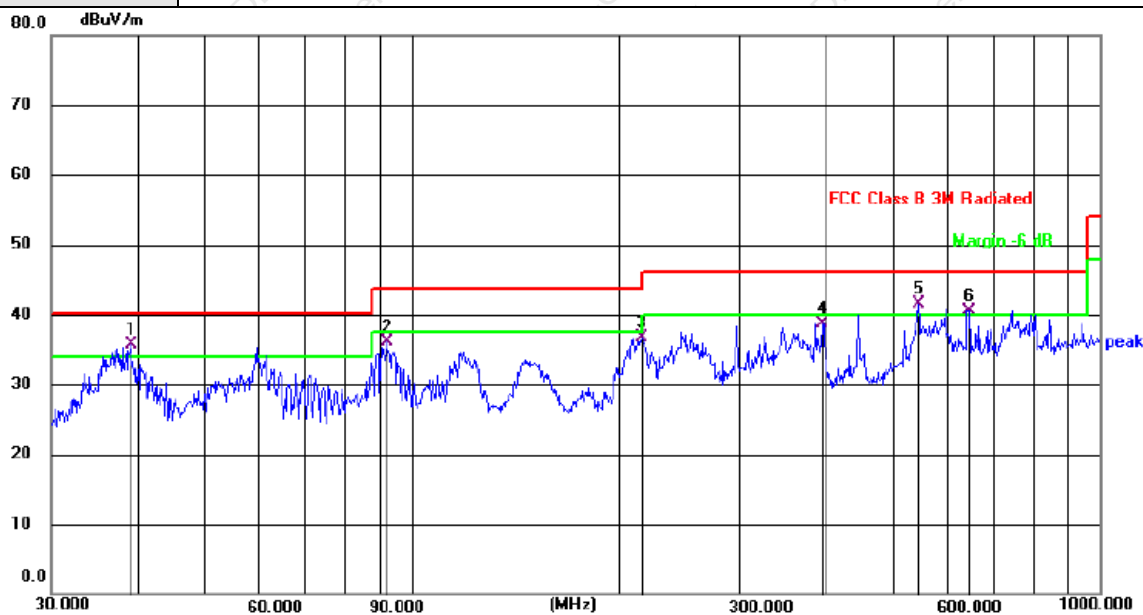
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log(\text{specific distance/test distance})$ (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 4		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1	*	39.1613	48.04	-12.32	35.72	40.00	4.28	QP
2		92.1386	51.53	-15.52	36.01	43.50	7.49	QP
3		216.0235	49.42	-12.80	36.62	46.00	9.38	QP
4		394.8543	48.17	-9.37	38.80	46.00	7.20	QP
5	!	545.1825	47.87	-6.28	41.59	46.00	4.41	QP
6	!	645.1194	45.34	-4.84	40.50	46.00	5.50	QP

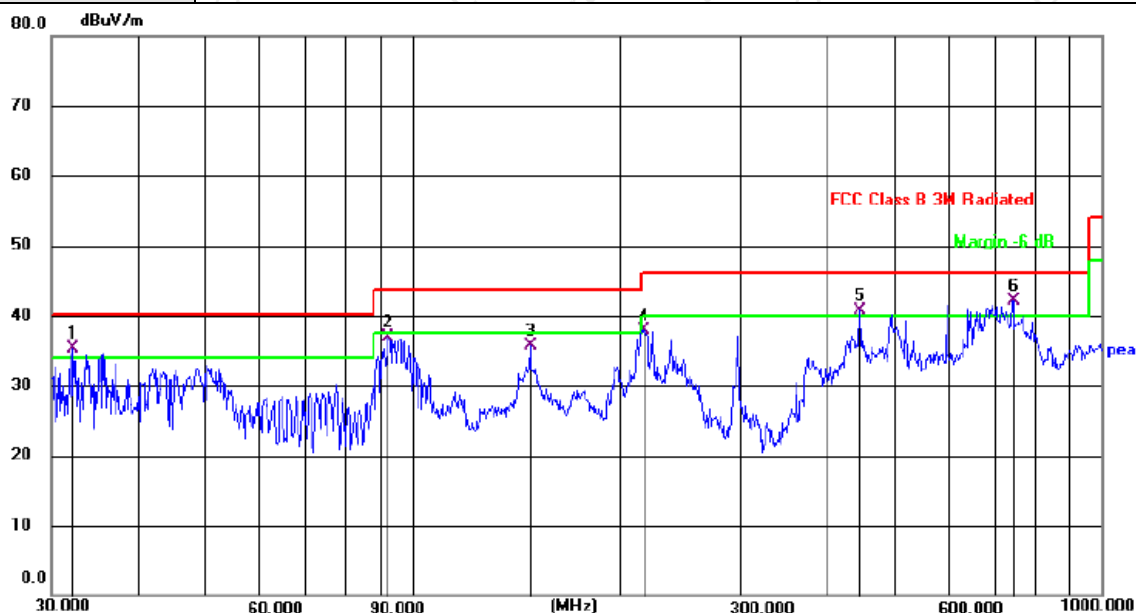
Remark:

Correct Factor = Cable loss + Antenna factor – Preamplifier;

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



Temperature:	26℃	Relative Humidity:	54%
Pressure:	1010 hPa	Polarization :	Vertical
test voltage :	AC 120V/60Hz		
Test Mode :	Mode 4		



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1	!	32.1794	49.55	-14.33	35.22	40.00	4.78	QP
2		92.4624	51.87	-15.03	36.84	43.50	6.66	QP
3		148.4410	52.11	-16.45	35.66	43.50	7.84	QP
4		217.5440	50.25	-12.27	37.98	46.00	8.02	QP
5	!	446.4139	47.79	-7.16	40.63	46.00	5.37	QP
6	*	744.8659	44.07	-2.02	42.05	46.00	3.95	QP

Remark:

Correct Factor = Cable loss + Antenna factor – Preamplifier;

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

**3.2.8 TEST RESULTS (1ghz~40ghz)**

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:5180									
V	10360	56.45	49.05	15.3	37.39	60.09	74	-13.91	PK
V	10360	45.25	49.05	15.3	37.39	48.89	54	-5.11	AV
V	15540	56.63	49.16	15.27	40.45	63.19	74	-10.81	PK
V	15540	43.55	49.16	15.27	40.45	50.11	54	-3.89	AV
H	10360	56.08	49.05	15.3	37.39	59.72	74	-14.28	PK
H	10360	45.41	49.05	15.3	37.39	49.05	54	-4.95	AV
H	15540	59.13	49.16	15.27	40.45	65.69	74	-8.31	PK
H	15540	43.07	49.16	15.27	40.45	49.63	54	-4.37	AV
operation frequency:5200									
V	10400	57.45	49.09	15.34	37.42	61.12	74	-12.88	PK
V	10400	45.31	49.09	15.34	37.42	48.98	54	-5.02	AV
V	15600	59.43	49.18	15.29	40.47	66.01	74	-7.99	PK
V	15600	43.11	49.18	15.29	40.47	49.69	54	-4.31	AV
H	10400	56.68	49.09	15.34	37.42	60.35	74	-13.65	PK
H	10400	45.74	49.09	15.34	37.42	49.41	54	-4.59	AV
H	15600	59.43	49.18	15.29	40.47	66.01	74	-7.99	PK
H	15600	43.35	49.18	15.29	40.47	49.93	54	-4.07	AV
operation frequency:5240									
V	10480	58.52	49.11	15.37	37.46	62.24	74	-11.76	PK
V	10480	45.33	49.11	15.37	37.46	49.05	54	-4.95	AV
V	15720	59.15	49.21	15.34	40.51	65.79	74	-8.21	PK
V	15720	43.36	49.21	15.34	40.51	50	54	-4.00	AV
H	10480	57.01	49.11	15.37	31.31	54.58	74	-19.42	PK
H	10480	45.54	49.11	15.37	31.31	43.11	54	-10.89	AV
H	15720	57.43	49.21	15.34	40.51	64.07	74	-9.93	PK
H	15720	42.55	49.21	15.34	40.51	49.19	54	-4.81	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:5180									
V	10360	56.72	49.05	15.3	37.39	60.36	74	-13.64	PK
V	10360	45.67	49.05	15.3	37.39	49.31	54	-4.69	AV
V	15540	56.24	49.16	15.27	40.45	62.8	74	-11.20	PK
V	15540	43.33	49.16	15.27	40.45	49.89	54	-4.11	AV
H	10360	56.64	49.05	15.3	37.39	60.28	74	-13.72	PK
H	10360	45.31	49.05	15.3	37.39	48.95	54	-5.05	AV
H	15540	54.13	49.16	15.27	40.45	60.69	74	-13.31	PK
H	15540	44.34	49.16	15.27	40.45	50.9	54	-3.10	AV
operation frequency:5200									
V	10400	56.25	49.09	15.34	37.42	59.92	74	-14.08	PK
V	10400	44.77	49.09	15.34	37.42	48.44	54	-5.56	AV
V	15600	55.34	49.18	15.29	40.47	61.92	74	-12.08	PK
V	15600	43.43	49.18	15.29	40.47	50.01	54	-3.99	AV
H	10400	55.55	49.09	15.34	37.42	59.22	74	-14.78	PK
H	10400	43.32	49.09	15.34	37.42	46.99	54	-7.01	AV
H	15600	55.05	49.18	15.29	40.47	61.63	74	-12.37	PK
H	15600	43.21	49.18	15.29	40.47	49.79	54	-4.21	AV
operation frequency:5240									
V	10480	57.12	49.11	15.37	37.46	60.84	74	-13.16	PK
V	10480	44.63	49.11	15.37	37.46	48.35	54	-5.65	AV
V	15720	54.35	49.21	15.34	40.51	60.99	74	-13.01	PK
V	15720	43.47	49.21	15.34	40.51	50.11	54	-3.89	AV
H	10480	57.16	49.11	15.37	31.31	54.73	74	-19.27	PK
H	10480	44.64	49.11	15.37	31.31	42.21	54	-11.79	AV
H	15720	55.33	49.21	15.34	40.51	61.97	74	-12.03	PK
H	15720	44.24	49.21	15.34	40.51	50.88	54	-3.12	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	10380	56.76	49.07	15.33	37.41	60.43	74	-13.57	PK
V	10380	45.25	49.07	15.33	37.41	48.92	54	-5.08	AV
V	15570	56.24	49.17	15.28	40.46	62.81	74	-11.19	PK
V	15570	43.38	49.17	15.28	40.46	49.95	54	-4.05	AV
H	10380	56.63	49.07	15.33	37.41	60.3	74	-13.70	PK
H	10380	45.31	49.07	15.33	37.41	48.98	54	-5.02	AV
H	15570	54.64	49.17	15.28	40.46	61.21	74	-12.79	PK
H	15570	44.23	49.17	15.28	40.46	50.8	54	-3.20	AV
operation frequency:5230									
V	10460	57.18	49.11	15.37	37.46	60.9	74	-13.10	PK
V	10460	44.46	49.11	15.37	37.46	48.18	54	-5.82	AV
V	15690	54.41	49.21	15.34	40.51	61.05	74	-12.95	PK
V	15690	43.33	49.21	15.34	40.51	49.97	54	-4.03	AV
H	10460	57.35	49.11	15.37	31.31	54.92	74	-19.08	PK
H	10460	44.81	49.11	15.37	31.31	42.38	54	-11.62	AV
H	15690	55.36	49.21	15.34	40.51	62	74	-12.00	PK
H	15690	44.05	49.21	15.34	40.51	50.69	54	-3.31	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:5180									
V	10360	56.76	49.05	15.3	37.39	60.4	74	-13.60	PK
V	10360	45.54	49.05	15.3	37.39	49.18	54	-4.82	AV
V	15540	56.11	49.16	15.27	40.45	62.67	74	-11.33	PK
V	15540	43.38	49.16	15.27	40.45	49.94	54	-4.06	AV
H	10360	56.54	49.05	15.3	37.39	60.18	74	-13.82	PK
H	10360	45.17	49.05	15.3	37.39	48.81	54	-5.19	AV
H	15540	54.28	49.16	15.27	40.45	60.84	74	-13.16	PK
H	15540	44.36	49.16	15.27	40.45	50.92	54	-3.08	AV
operation frequency:5200									
V	10400	56.58	49.09	15.34	37.42	60.25	74	-13.75	PK
V	10400	44.74	49.09	15.34	37.42	48.41	54	-5.59	AV
V	15600	55.53	49.18	15.29	40.47	62.11	74	-11.89	PK
V	15600	43.39	49.18	15.29	40.47	49.97	54	-4.03	AV
H	10400	55.14	49.09	15.34	37.42	58.81	74	-15.19	PK
H	10400	43.54	49.09	15.34	37.42	47.21	54	-6.79	AV
H	15600	55.07	49.18	15.29	40.47	61.65	74	-12.35	PK
H	15600	43.25	49.18	15.29	40.47	49.83	54	-4.17	AV
operation frequency:5240									
V	10480	57.46	49.11	15.37	37.46	61.18	74	-12.82	PK
V	10480	44.61	49.11	15.37	37.46	48.33	54	-5.67	AV
V	15720	54.39	49.21	15.34	40.51	61.03	74	-12.97	PK
V	15720	43.34	49.21	15.34	40.51	49.98	54	-4.02	AV
H	10480	57.15	49.11	15.37	31.31	54.72	74	-19.28	PK
H	10480	44.56	49.11	15.37	31.31	42.13	54	-11.87	AV
H	15720	55.21	49.21	15.34	40.51	61.85	74	-12.15	PK
H	15720	44.07	49.21	15.34	40.51	50.71	54	-3.29	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	10380	56.75	49.07	15.33	37.41	60.42	74	-13.58	PK
V	10380	45.21	49.07	15.33	37.41	48.88	54	-5.12	AV
V	15570	56.36	49.17	15.28	40.46	62.93	74	-11.07	PK
V	15570	43.75	49.17	15.28	40.46	50.32	54	-3.68	AV
H	10380	56.51	49.07	15.33	37.41	60.18	74	-13.82	PK
H	10380	45.47	49.07	15.33	37.41	49.14	54	-4.86	AV
H	15570	54.54	49.17	15.28	40.46	61.11	74	-12.89	PK
H	15570	44.31	49.17	15.28	40.46	50.88	54	-3.12	AV
operation frequency:5230									
V	10460	57.15	49.11	15.37	37.46	60.87	74	-13.13	PK
V	10460	44.65	49.11	15.37	37.46	48.37	54	-5.63	AV
V	15690	54.47	49.21	15.34	40.51	61.11	74	-12.89	PK
V	15690	43.37	49.21	15.34	40.51	50.01	54	-3.99	AV
H	10460	57.11	49.11	15.37	31.31	54.68	74	-19.32	PK
H	10460	44.56	49.11	15.37	31.31	42.13	54	-11.87	AV
H	15690	55.37	49.21	15.34	40.51	62.01	74	-11.99	PK
H	15690	44.05	49.21	15.34	40.51	50.69	54	-3.31	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 HT80

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:5210									
V	10420	56.26	49.07	15.33	37.41	59.93	74	-14.07	PK
V	10420	45.64	49.07	15.33	37.41	49.31	54	-4.69	AV
V	15630	56.13	49.17	15.28	40.46	62.7	74	-11.30	PK
V	15630	43.15	49.17	15.28	40.46	49.72	54	-4.28	AV
H	10420	56.37	49.07	15.33	37.41	60.04	74	-13.96	PK
H	10420	45.26	49.07	15.33	37.41	48.93	54	-5.07	AV
H	15630	54.05	49.17	15.28	40.46	60.62	74	-13.38	PK
H	15630	44.31	49.17	15.28	40.46	50.88	54	-3.12	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 (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:5745									
V	11490	57.35	49.05	15.3	37.39	60.99	74	-13.01	PK
V	11490	45.23	49.05	15.3	37.39	48.87	54	-5.13	AV
V	17235	56.18	49.16	15.27	40.45	62.74	74	-11.26	PK
V	17235	43.77	49.16	15.27	40.45	50.33	54	-3.67	AV
H	11490	55.75	49.05	15.3	37.39	59.39	74	-14.61	PK
H	11490	45.46	49.05	15.3	37.39	49.1	54	-4.90	AV
H	17235	59.34	49.16	15.27	40.45	65.9	74	-8.10	PK
H	17235	43.25	49.16	15.27	40.45	49.81	54	-4.19	AV
operation frequency:5785									
V	11570	57.53	49.09	15.34	37.42	61.2	74	-12.80	PK
V	11570	45.25	49.09	15.34	37.42	48.92	54	-5.08	AV
V	17355	59.44	49.18	15.29	40.47	66.02	74	-7.98	PK
V	17355	43.06	49.18	15.29	40.47	49.64	54	-4.36	AV
H	11570	56.65	49.09	15.34	37.42	60.32	74	-13.68	PK
H	11570	45.31	49.09	15.34	37.42	48.98	54	-5.02	AV
H	17355	52.15	49.18	15.29	40.47	58.73	74	-15.27	PK
H	17355	43.64	49.18	15.29	40.47	50.22	54	-3.78	AV
operation frequency:5825									
V	11650	58.18	49.11	15.37	37.46	61.9	74	-12.10	PK
V	11650	45.55	49.11	15.37	37.46	49.27	54	-4.73	AV
V	17475	59.46	49.21	15.34	40.51	66.1	74	-7.90	PK
V	17475	43.34	49.21	15.34	40.51	49.98	54	-4.02	AV
H	11650	57.11	49.11	15.37	31.31	54.68	74	-19.32	PK
H	11650	45.55	49.11	15.37	31.31	43.12	54	-10.88	AV
H	17475	57.34	49.21	15.34	40.51	63.98	74	-10.02	PK
H	17475	42.36	49.21	15.34	40.51	49	54	-5.00	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	11490	56.78	49.05	15.3	37.39	60.42	74	-13.58	PK
V	11490	45.74	49.05	15.3	37.39	49.38	54	-4.62	AV
V	17235	56.16	49.16	15.27	40.45	62.72	74	-11.28	PK
V	17235	43.35	49.16	15.27	40.45	49.91	54	-4.09	AV
H	11490	56.43	49.05	15.3	37.39	60.07	74	-13.93	PK
H	11490	45.67	49.05	15.3	37.39	49.31	54	-4.69	AV
H	17235	54.35	49.16	15.27	40.45	60.91	74	-13.09	PK
H	17235	44.15	49.16	15.27	40.45	50.71	54	-3.29	AV
operation frequency:5785									
V	11570	56.73	49.09	15.34	37.42	60.4	74	-13.60	PK
V	11570	44.83	49.09	15.34	37.42	48.5	54	-5.50	AV
V	17355	55.35	49.18	15.29	40.47	61.93	74	-12.07	PK
V	17355	43.35	49.18	15.29	40.47	49.93	54	-4.07	AV
H	11570	55.24	49.09	15.34	37.42	58.91	74	-15.09	PK
H	11570	43.55	49.09	15.34	37.42	47.22	54	-6.78	AV
H	17355	55.01	49.18	15.29	40.47	61.59	74	-12.41	PK
H	17355	43.23	49.18	15.29	40.47	49.81	54	-4.19	AV
operation frequency:5825									
V	11650	57.24	49.11	15.37	37.46	60.96	74	-13.04	PK
V	11650	44.35	49.11	15.37	37.46	48.07	54	-5.93	AV
V	17475	54.43	49.21	15.34	40.51	61.07	74	-12.93	PK
V	17475	43.18	49.21	15.34	40.51	49.82	54	-4.18	AV
H	11650	57.47	49.11	15.37	31.31	55.04	74	-18.96	PK
H	11650	44.71	49.11	15.37	31.31	42.28	54	-11.72	AV
H	17475	55.13	49.21	15.34	40.51	61.77	74	-12.23	PK
H	17475	44.05	49.21	15.34	40.51	50.69	54	-3.31	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:5755									
V	11510	56.57	49.07	15.33	37.41	60.24	74	-13.76	PK
V	11510	45.25	49.07	15.33	37.41	48.92	54	-5.08	AV
V	17265	56.14	49.17	15.28	40.46	62.71	74	-11.29	PK
V	17265	43.35	49.17	15.28	40.46	49.92	54	-4.08	AV
H	11510	56.23	49.07	15.33	37.41	59.9	74	-14.10	PK
H	11510	45.52	49.07	15.33	37.41	49.19	54	-4.81	AV
H	17265	54.37	49.17	15.28	40.46	60.94	74	-13.06	PK
H	17265	44.23	49.17	15.28	40.46	50.8	54	-3.20	AV
operation frequency:5795									
V	11590	57.54	49.11	15.37	37.46	61.26	74	-12.74	PK
V	11590	44.66	49.11	15.37	37.46	48.38	54	-5.62	AV
V	17385	54.54	49.21	15.34	40.51	61.18	74	-12.82	PK
V	17385	43.26	49.21	15.34	40.51	49.9	54	-4.10	AV
H	11590	57.56	49.11	15.37	31.31	55.13	74	-18.87	PK
H	11590	44.72	49.11	15.37	31.31	42.29	54	-11.71	AV
H	17385	55.23	49.21	15.34	40.51	61.87	74	-12.13	PK
H	17385	44.01	49.21	15.34	40.51	50.65	54	-3.35	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	56.55	49.05	15.3	37.39	60.19	74	-13.81	PK
V	11490	45.73	49.05	15.3	37.39	49.37	54	-4.63	AV
V	17235	56.62	49.16	15.27	40.45	63.18	74	-10.82	PK
V	17235	43.39	49.16	15.27	40.45	49.95	54	-4.05	AV
H	11490	56.54	49.05	15.3	37.39	60.18	74	-13.82	PK
H	11490	45.63	49.05	15.3	37.39	49.27	54	-4.73	AV
H	17235	54.35	49.16	15.27	40.45	60.91	74	-13.09	PK
H	17235	44.17	49.16	15.27	40.45	50.73	54	-3.27	AV
operation frequency:5785									
V	11570	56.73	49.09	15.34	37.42	60.4	74	-13.60	PK
V	11570	44.95	49.09	15.34	37.42	48.62	54	-5.38	AV
V	17355	55.36	49.18	15.29	40.47	61.94	74	-12.06	PK
V	17355	43.41	49.18	15.29	40.47	49.99	54	-4.01	AV
H	11570	55.37	49.09	15.34	37.42	59.04	74	-14.96	PK
H	11570	43.56	49.09	15.34	37.42	47.23	54	-6.77	AV
H	17355	55.03	49.18	15.29	40.47	61.61	74	-12.39	PK
H	17355	43.25	49.18	15.29	40.47	49.83	54	-4.17	AV
operation frequency:5825									
V	11650	57.36	49.11	15.37	37.46	61.08	74	-12.92	PK
V	11650	44.51	49.11	15.37	37.46	48.23	54	-5.77	AV
V	17475	54.67	49.21	15.34	40.51	61.31	74	-12.69	PK
V	17475	43.08	49.21	15.34	40.51	49.72	54	-4.28	AV
H	11650	57.36	49.11	15.37	31.31	54.93	74	-19.07	PK
H	11650	44.75	49.11	15.37	31.31	42.32	54	-11.68	AV
H	17475	55.31	49.21	15.34	40.51	61.95	74	-12.05	PK
H	17475	44.01	49.21	15.34	40.51	50.65	54	-3.35	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:5755									
V	11510	56.75	49.07	15.33	37.41	60.42	74	-13.58	PK
V	11510	45.73	49.07	15.33	37.41	49.4	54	-4.60	AV
V	17265	56.12	49.17	15.28	40.46	62.69	74	-11.31	PK
V	17265	43.36	49.17	15.28	40.46	49.93	54	-4.07	AV
H	11510	56.55	49.07	15.33	37.41	60.22	74	-13.78	PK
H	11510	45.61	49.07	15.33	37.41	49.28	54	-4.72	AV
H	17265	54.86	49.17	15.28	40.46	61.43	74	-12.57	PK
H	17265	44.37	49.17	15.28	40.46	50.94	54	-3.06	AV
operation frequency:5795									
V	11590	57.62	49.11	15.37	37.46	61.34	74	-12.66	PK
V	11590	44.57	49.11	15.37	37.46	48.29	54	-5.71	AV
V	17385	54.42	49.21	15.34	40.51	61.06	74	-12.94	PK
V	17385	43.45	49.21	15.34	40.51	50.09	54	-3.91	AV
H	11590	57.51	49.11	15.37	31.31	55.08	74	-18.92	PK
H	11590	44.54	49.11	15.37	31.31	42.11	54	-11.89	AV
H	17385	55.26	49.21	15.34	40.51	61.9	74	-12.10	PK
H	17385	44.02	49.21	15.34	40.51	50.66	54	-3.34	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 HT80

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:5775									
V	11550	56.53	49.07	15.33	37.41	60.2	74	-13.80	PK
V	11550	45.74	49.07	15.33	37.41	49.41	54	-4.59	AV
V	17325	56.21	49.17	15.28	40.46	62.78	74	-11.22	PK
V	17325	43.37	49.17	15.28	40.46	49.94	54	-4.06	AV
H	11550	56.62	49.07	15.33	37.41	60.29	74	-13.71	PK
H	11550	45.44	49.07	15.33	37.41	49.11	54	-4.89	AV
H	17325	54.36	49.17	15.28	40.46	60.93	74	-13.07	PK
H	17325	44.33	49.17	15.28	40.46	50.9	54	-3.10	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.

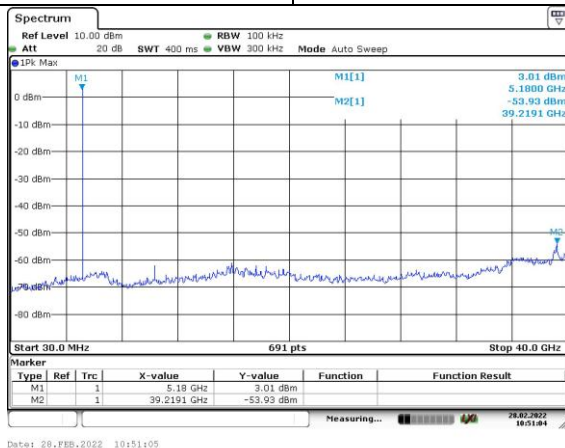


For Conducted

During the test, pre-scan the all modulation, the modulation below were found to have the worst test results, as reflected in the report.

Test channel:

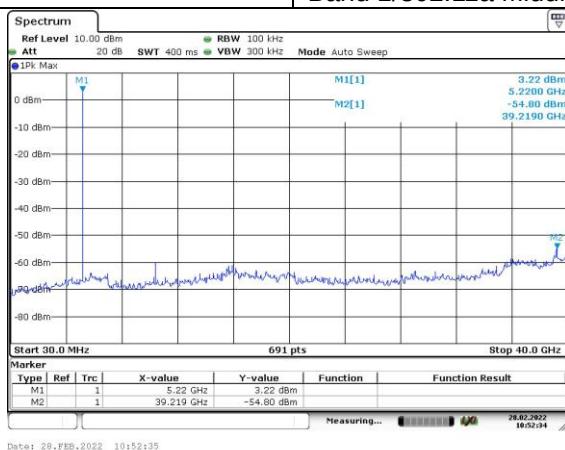
Band 1/802.11a Lowest channel



0.03Hz~40GHz

Test channel:

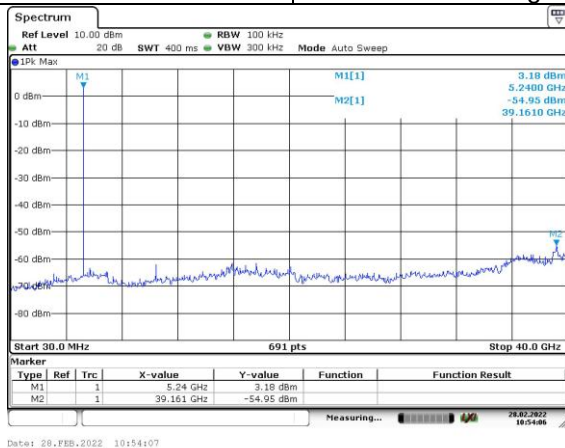
Band 1/802.11a Middle channel



0.03GHz~40GHz

Test channel:

Band 1/802.11a Highest channel

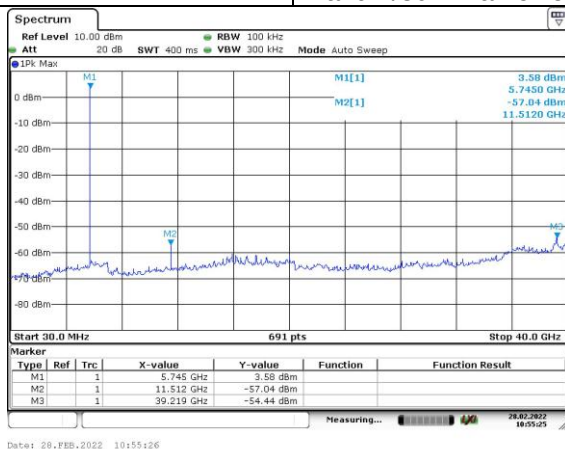


0.03GHz~40GHz



Test channel:

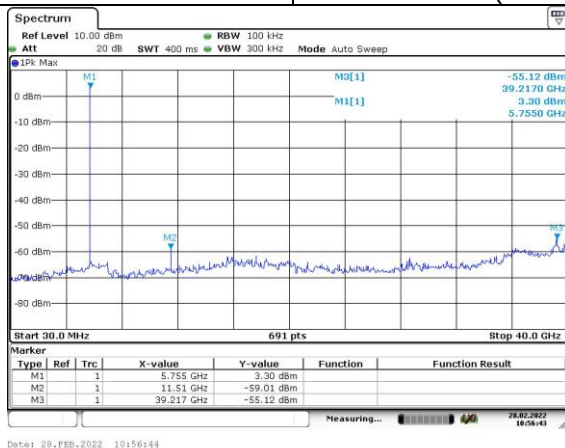
Band 4/802.11a Lowest channel



0.03Hz~40GHz

Test channel:

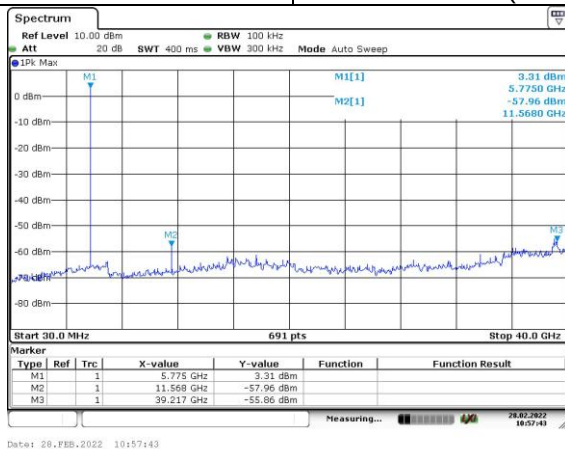
Band 4/802.11n(HT40) Lowest channel



0.03GHz~40GHz

Test channel:

Band 4/802.11ac(HT80)



0.03GHz~40GHz



3.3 RADIATED BAND EMISSION MEASUREMENT

3.3.1 TEST REQUIREMENT:

FCC Part15 C Section 15.209 and 15.407

(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.

(4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of -27 dBm/MHz.

Spectrum Parameter	Setting	
Attenuation	Auto	
Start Frequency	5150MHz	5725MHz
Stop Frequency	5250MHz	5850MHz
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average	

3.3.2 TEST PROCEDURE

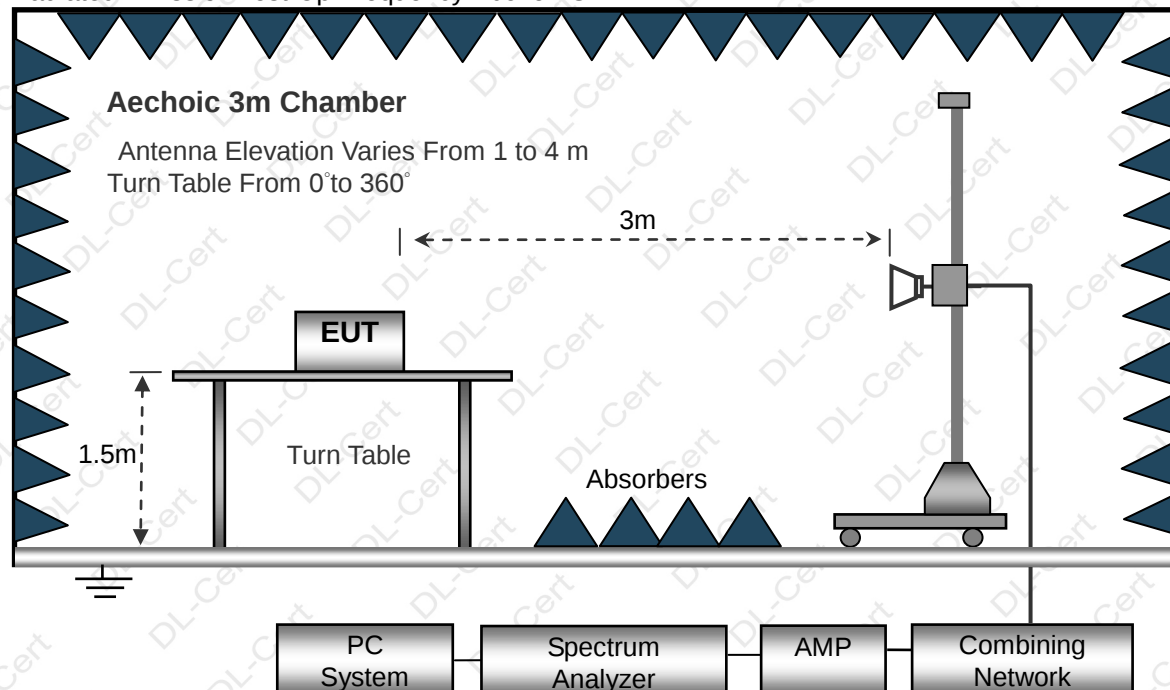
Test method: FCC KDB 789033 G)& Parts 15.407(b)(4) & 15.209(a)

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

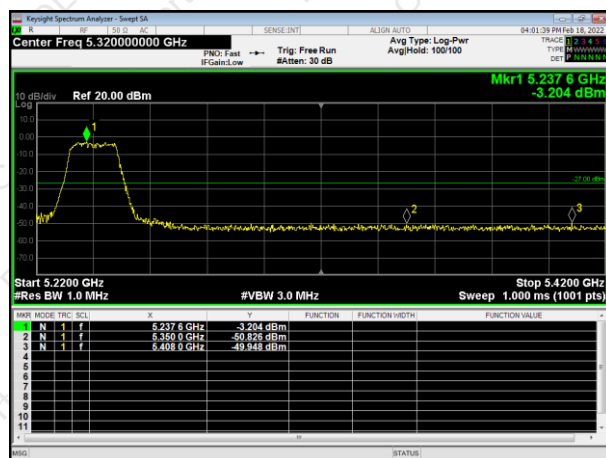
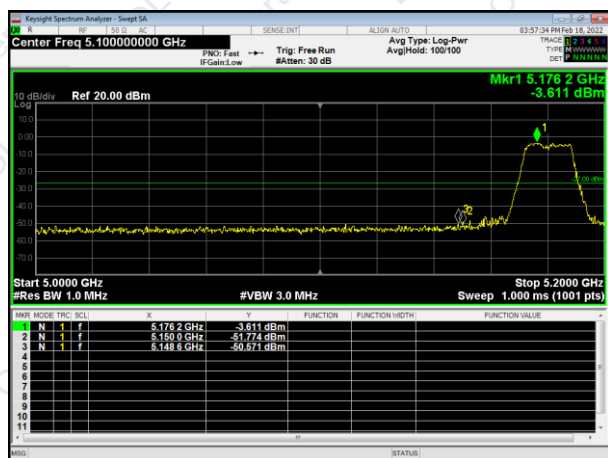
Modulation	Test Frequency (MHz)	Max Level Frequency (MHz)	Max Level (dBμV/m)	EIRP (dBm)	Limit (dBm)	Result
802.11a	5180	5148.16	51.65	-43.55	-27.00	Pass
	5240	5255.37	53.16	-42.04	-27.00	Pass
	5745	5723.25	52.61	-42.59	-27.00	Pass
	5825	5853.71	51.54	-43.66	-27.00	Pass
802.11n(HT20)	5180	5146.32	52.16	-43.04	-27.00	Pass
	5240	5253.27	52.25	-42.95	-27.00	Pass
	5745	5723.14	51.56	-43.64	-27.00	Pass
	5825	5853.56	52.31	-42.89	-27.00	Pass
802.11n(HT40)	5190	5147.38	51.43	-43.77	-27.00	Pass
	5230	5253.47	52.34	-42.86	-27.00	Pass
	5755	5723.62	51.24	-43.96	-27.00	Pass
	5795	5853.43	51.11	-44.09	-27.00	Pass
802.11ac(HT20)	5180	5145.75	52.53	-42.67	-27.00	Pass
	5240	5256.62	52.37	-42.83	-27.00	Pass
	5745	5735.75	51.68	-43.52	-27.00	Pass
	5825	5849.65	52.63	-42.57	-27.00	Pass
802.11ac(HT40)	5190	5145.35	51.04	-44.16	-27.00	Pass
	5230	5252.35	52.25	-42.95	-27.00	Pass
	5755	5736.42	53.54	-41.66	-27.00	Pass
	5795	5856.53	52.26	-42.94	-27.00	Pass
802.11ac(HT80)	5210	5235.13	54.17	-41.03	-27.00	Pass
	5775	5769.27	51.67	-43.53	-27.00	Pass

Remark: 1. According to KDB 789033 D02 section H) d) (iii), for measurement above 1000MHz@3m distance, the limit of EIRP is calculated as follows: $EIRP[dBm] = E[dB\mu V/m] - 95.2$



For Conducted

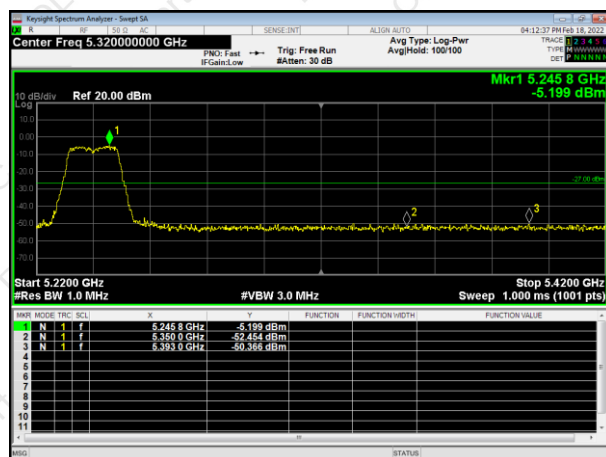
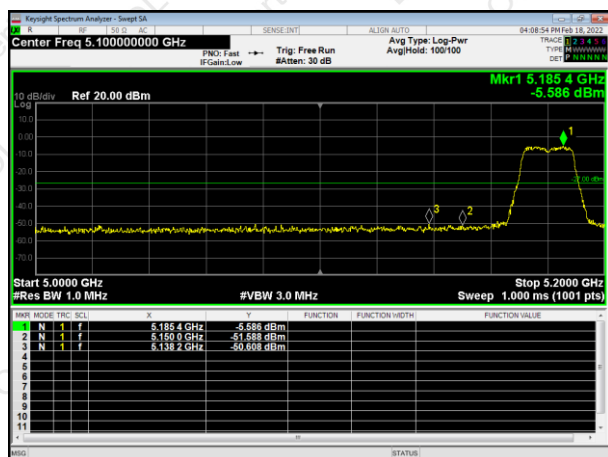
802.11a



5180MHz

5240MHz

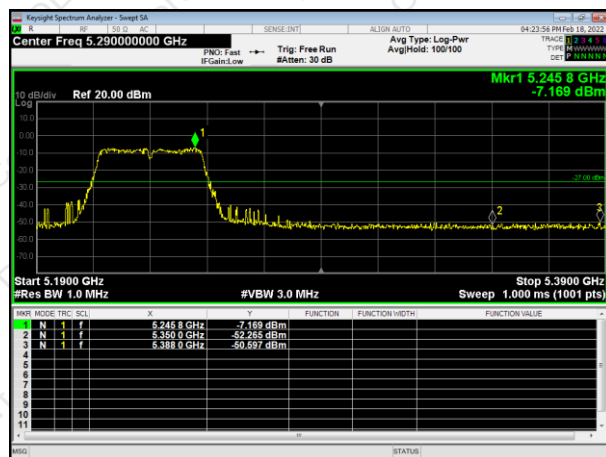
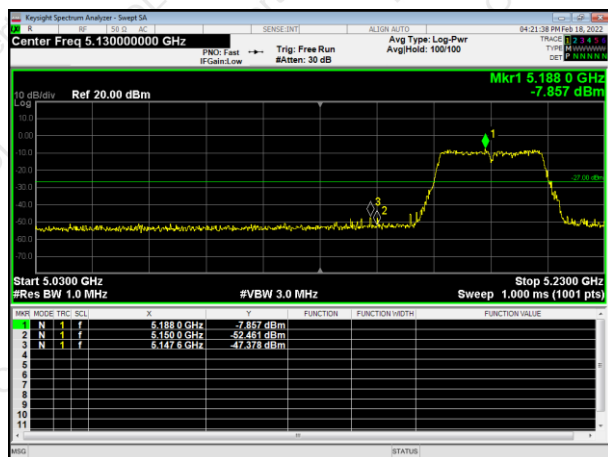
802.11n HT20



5180MHz

5240MHz

802.11n HT40

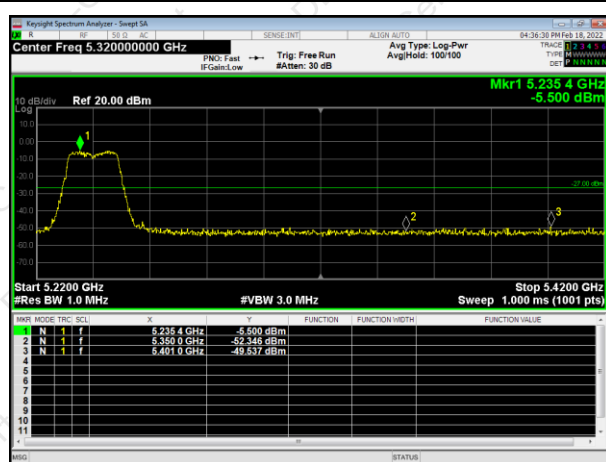
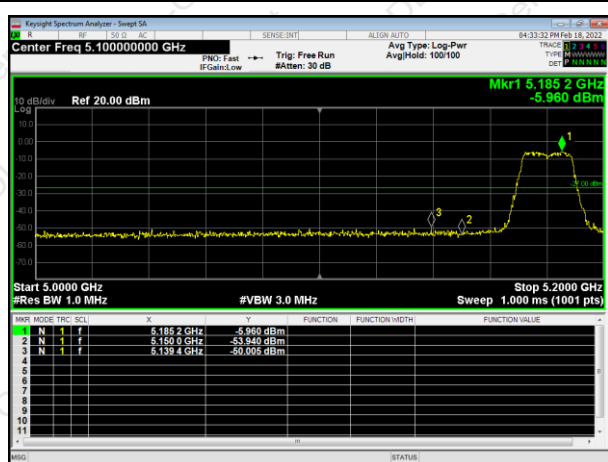


5190MHz

5230MHz



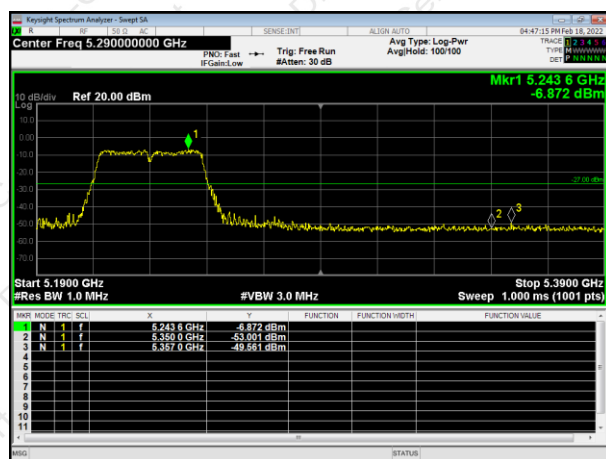
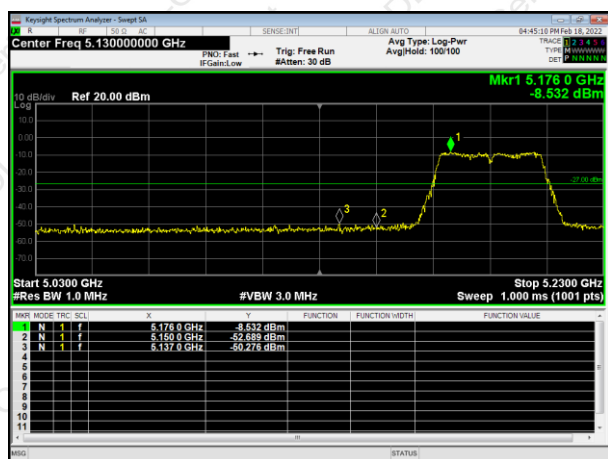
802.11ac HT20



5180MHz

5240MHz

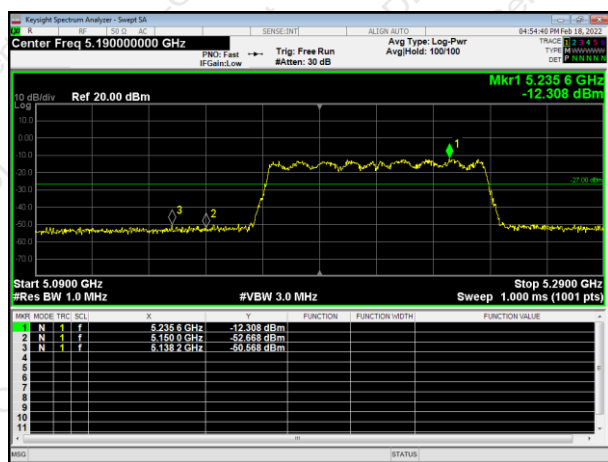
802.11ac HT40



5190MHz

5230MHz

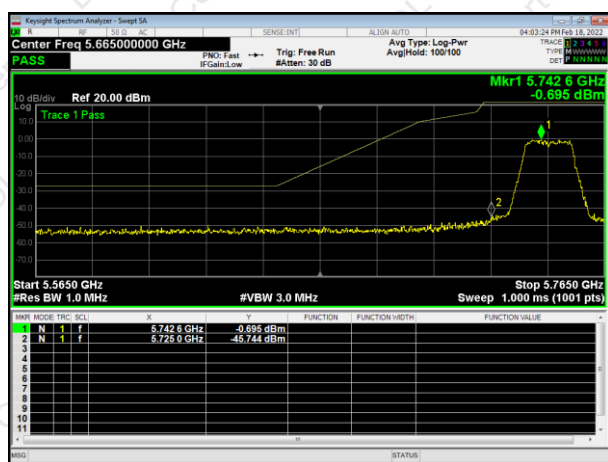
802.11ac HT80



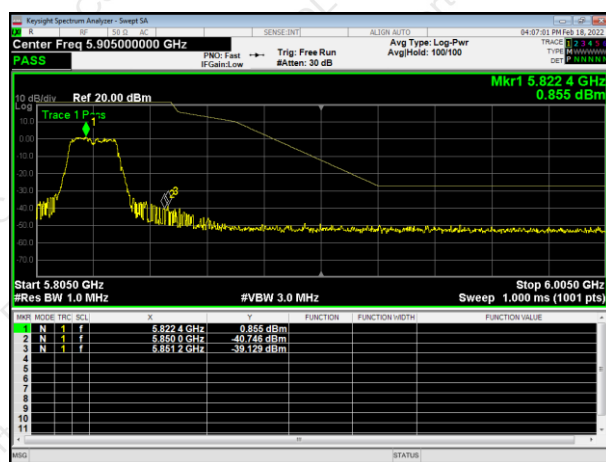
5210MHz



802.11a

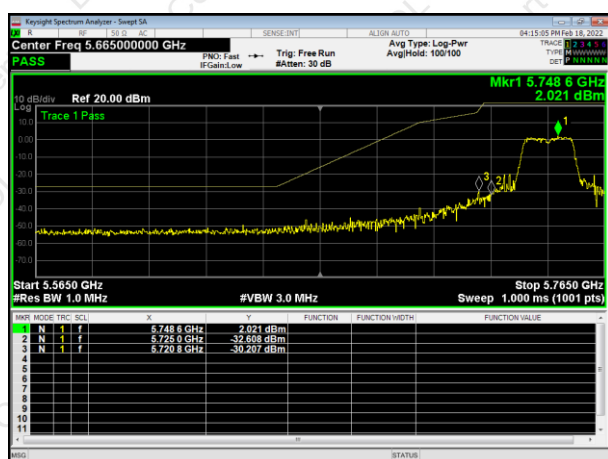


5745MHz



5825MHz

802.11n HT20

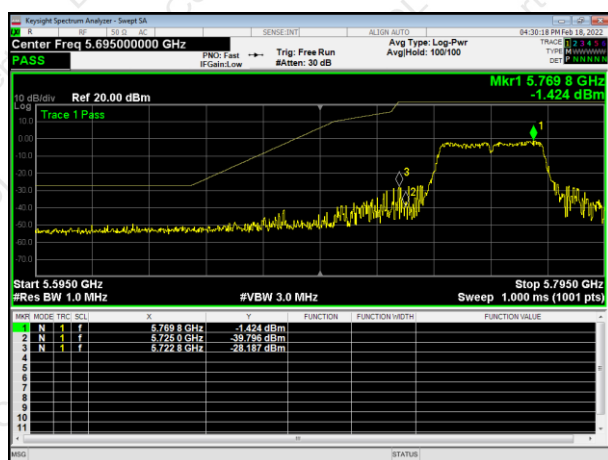


5745MHz



5825MHz

802.11n HT40



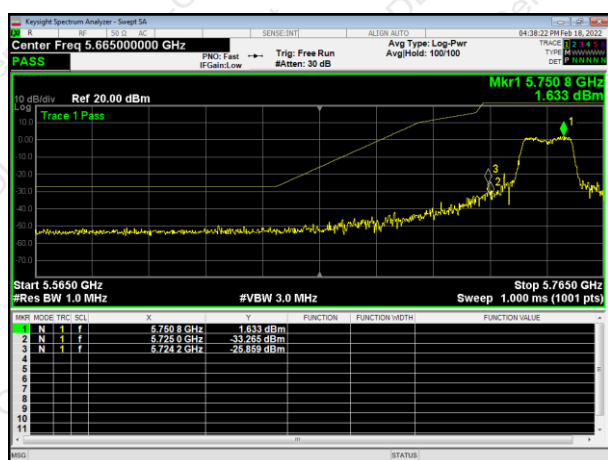
5755MHz



5795MHz



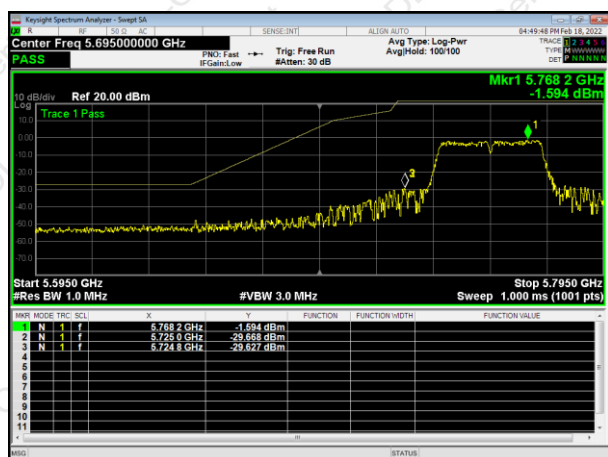
802.11ac HT20



5745MHz

5825MHz

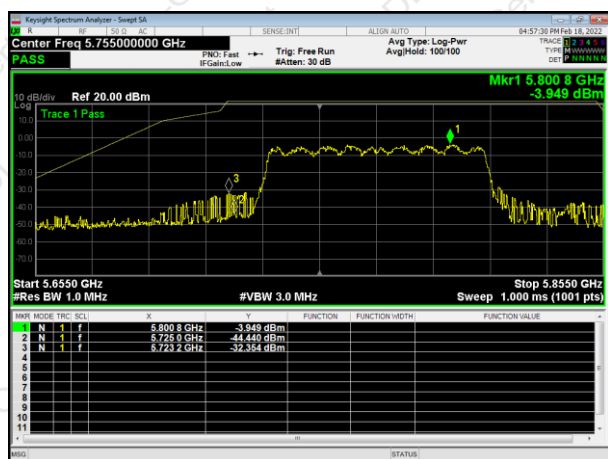
802.11ac HT40



5755MHz

5795MHz

802.11ac HT80



5775MHz



4. PEAK 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

- The EUT was directly connected to the power meter and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW > the 20 dB bandwidth of the emission being measured
Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel
VBW $\geq$ RBW
Sweep = auto
Detector function = peak
Trace = max hold

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

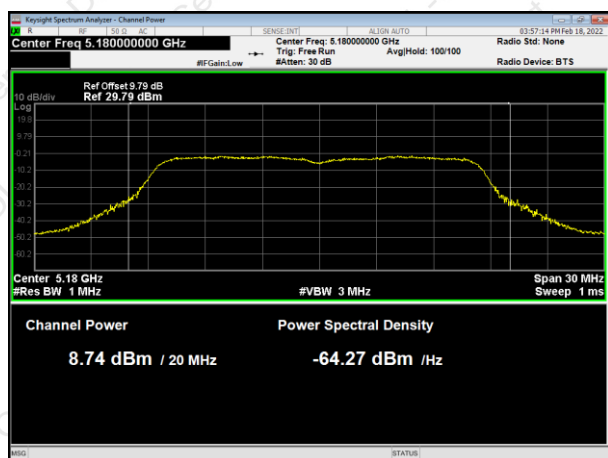
Temperature:	25 °C	Relative Humidity:	60%
Pressure:	1012 hPa	Test Voltage :	AC 120V/60Hz

Band	Mode	Test Channel	Peak Output Power (dBm)	LIMIT (dBm)
Band 1	802.11a	Low	8.74	23.98
		Moddle	9.13	23.98
		High	9.24	23.98
	802.11n HT20	Low	7.84	23.98
		Moddle	8.19	23.98
		High	8.23	23.98
	802.11n HT40	Low	7.54	23.98
		High	9.07	23.98
	802.11ac HT20	Low	7.46	23.98
		Moddle	7.81	23.98
		High	7.91	23.98
	802.11ac HT40	Low	7.55	23.98
		High	9.02	23.98
	802.11ac HT80	/	5.41	23.98

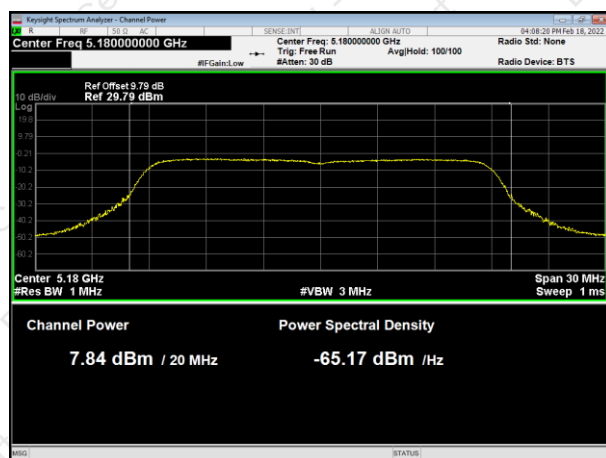
Band	Mode	Test Channel	Peak Output Power (dBm)	LIMIT (dBm)
Band 4	802.11a	Low	11.51	30
		Moddle	12.36	30
		High	12.67	30
	802.11n HT20	Low	14.94	30
		Moddle	15.66	30
		High	15.82	30
	802.11n HT40	Low	14.30	30
		High	15.28	30
	802.11ac HT20	Low	15.07	30
		Moddle	15.70	30
		High	15.84	30
	802.11ac HT40	Low	14.51	30
		High	15.21	30
	802.11ac HT80	/	13.92	30



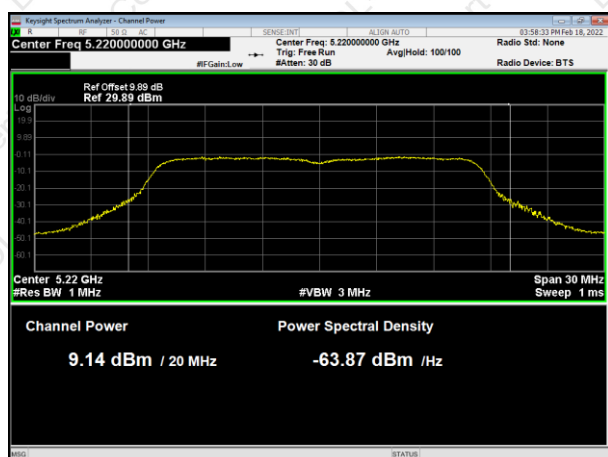
802.11a



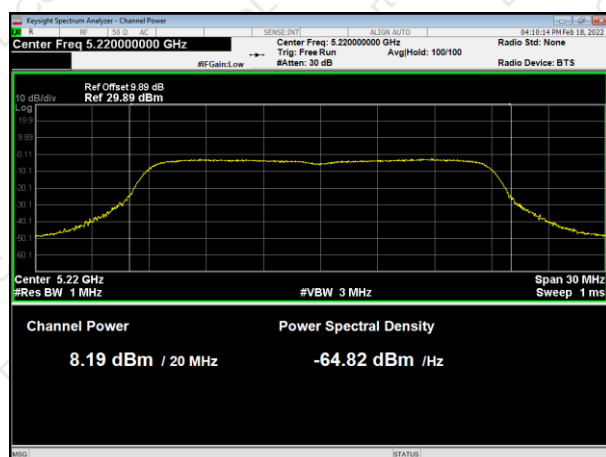
802.11n HT20



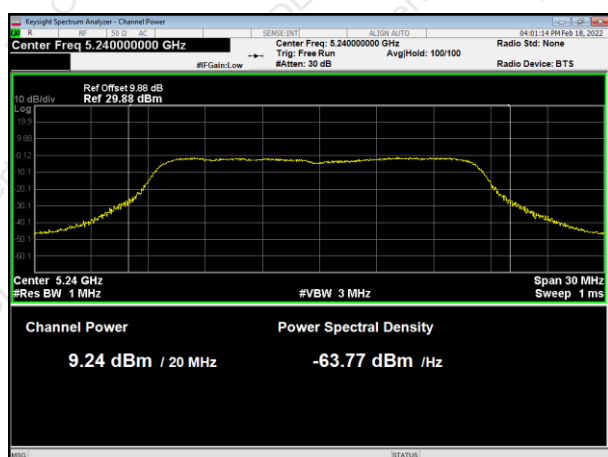
5180MHz



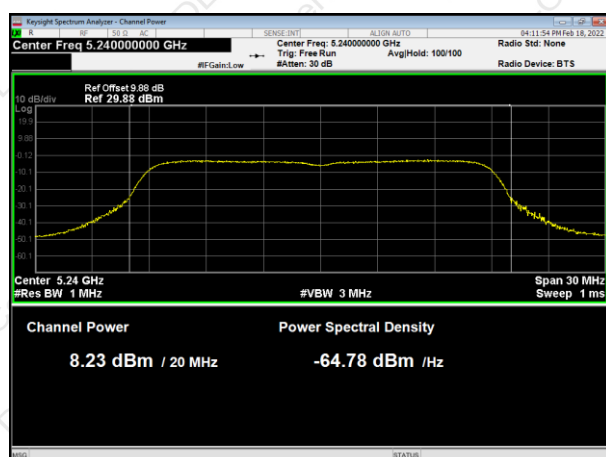
5180MHz



5200MHz

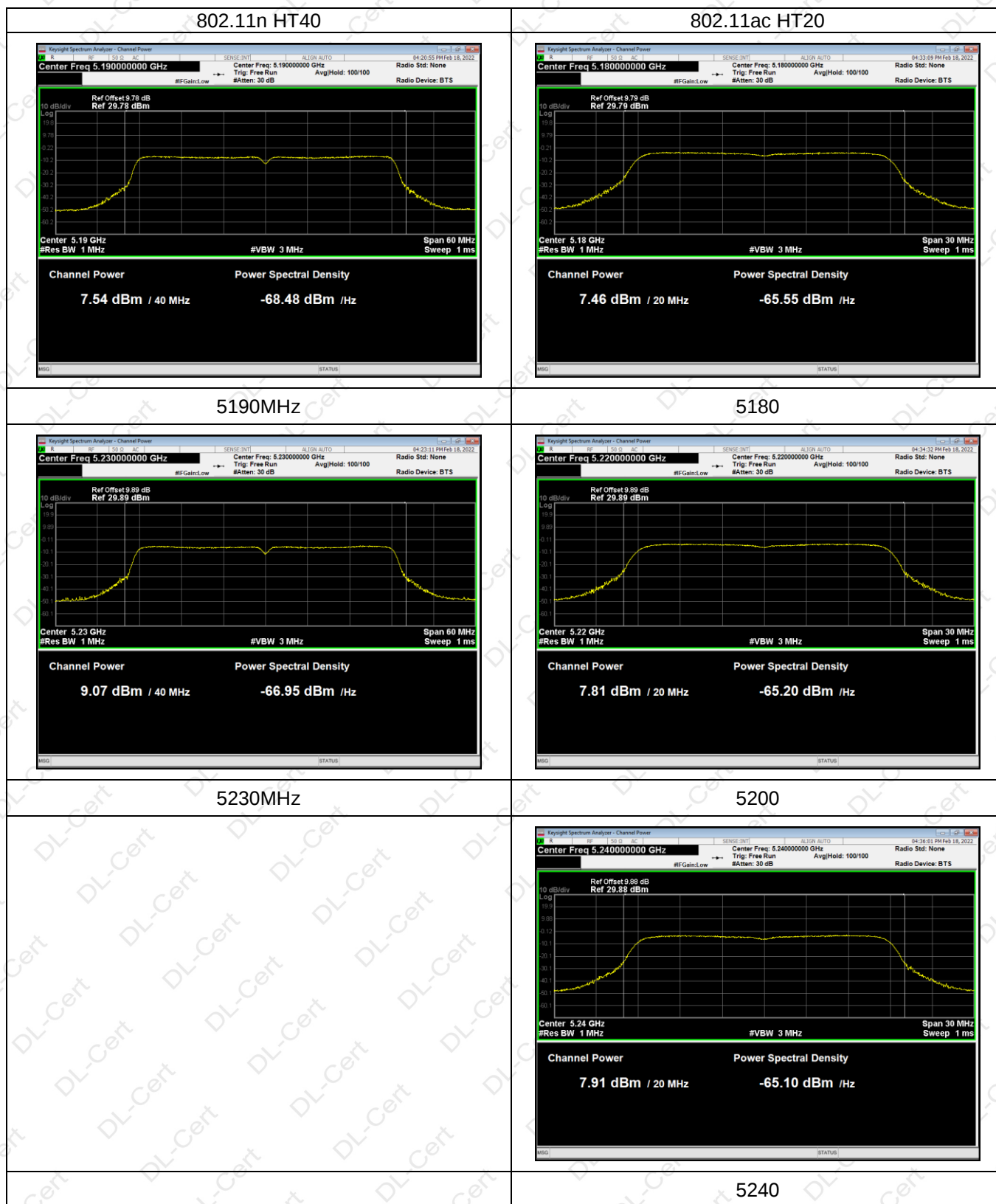


5200MHz



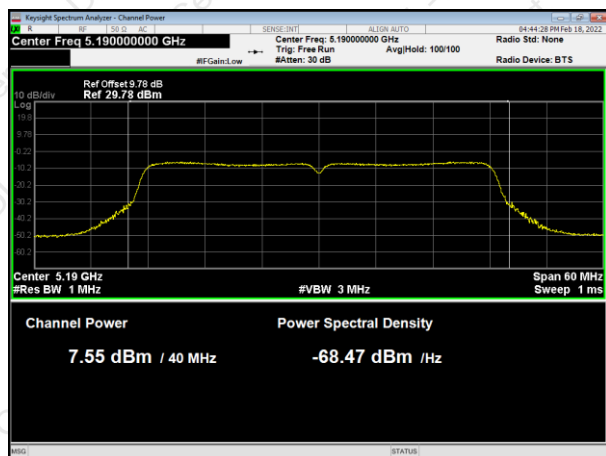
5240MHz

5240MHz

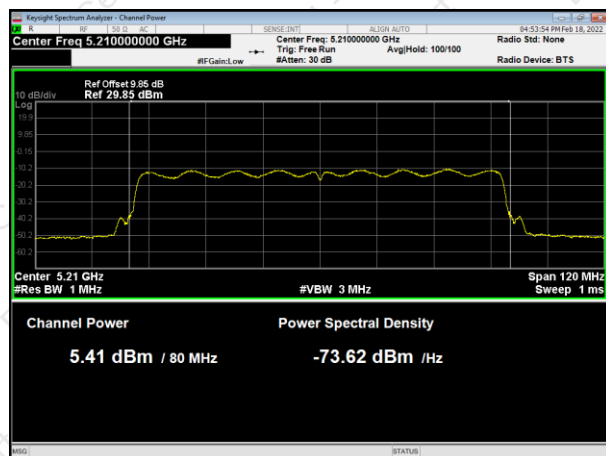




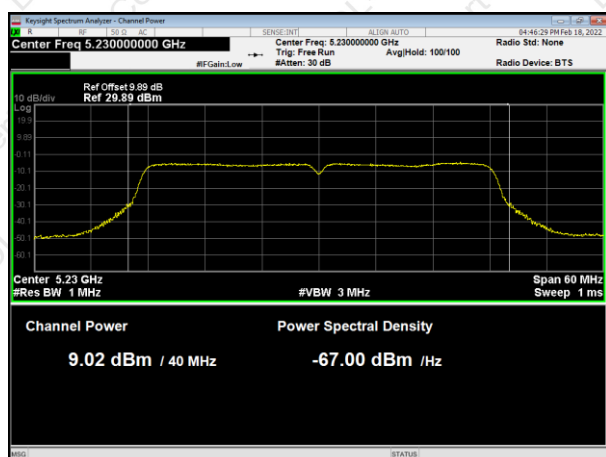
802.11ac HT40



802.11ac HT80



5190MHz

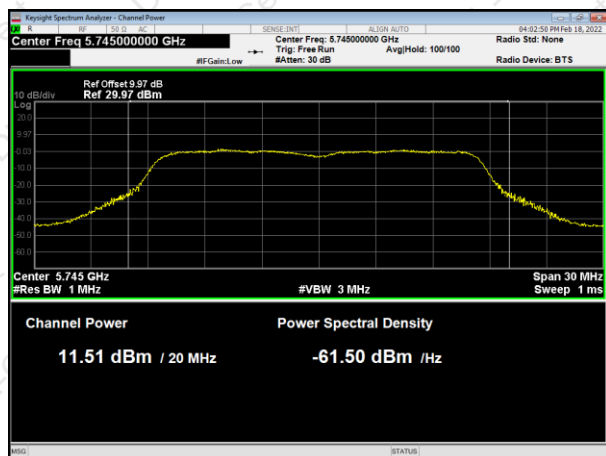


5210

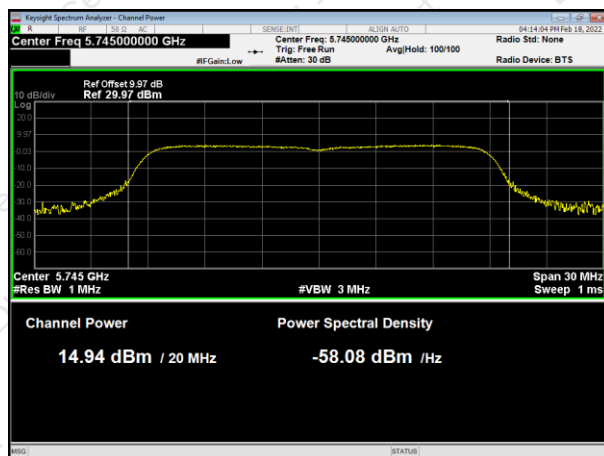
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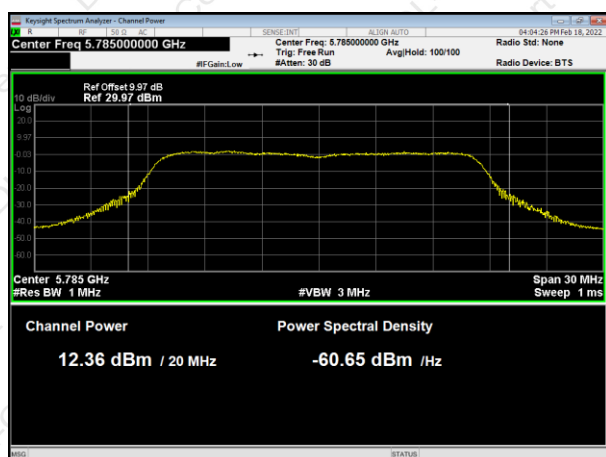
802.11a



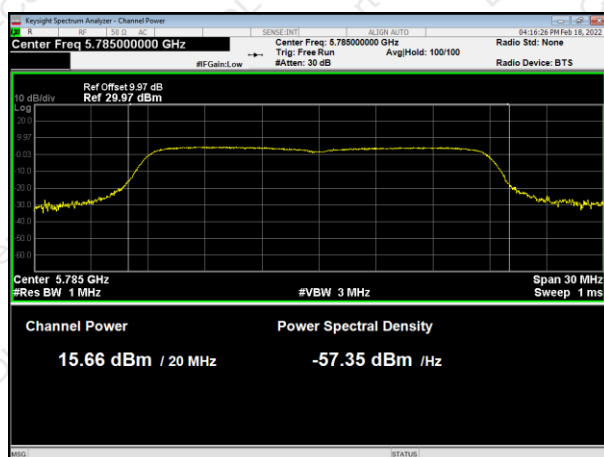
802.11n HT20



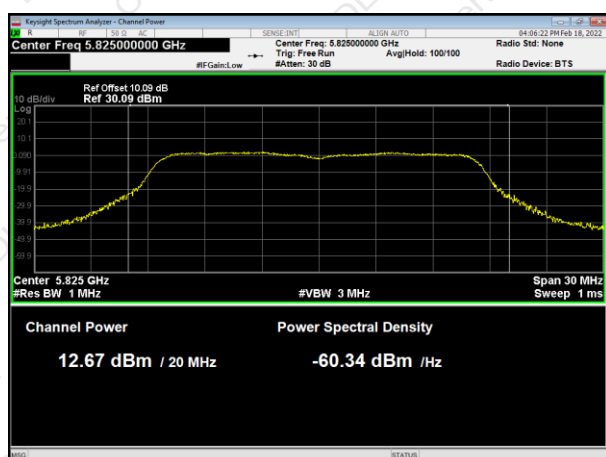
5745MHz



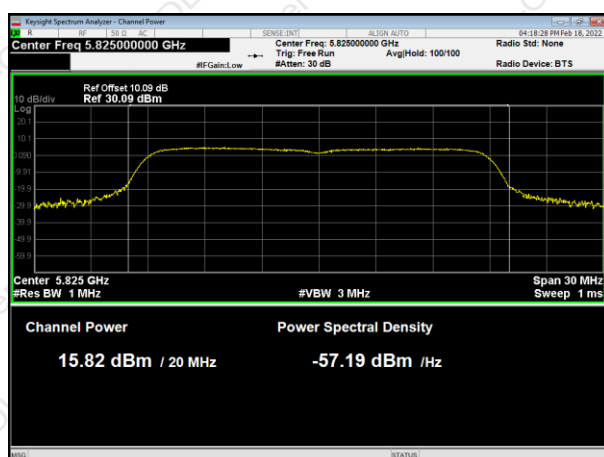
5745MHz



5785MHz



5785MHz

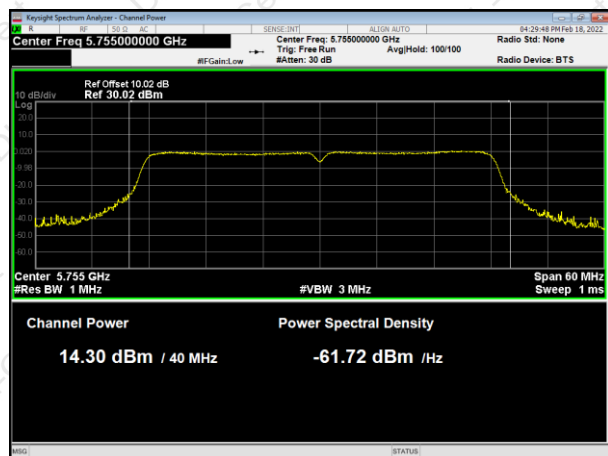


5825MHz

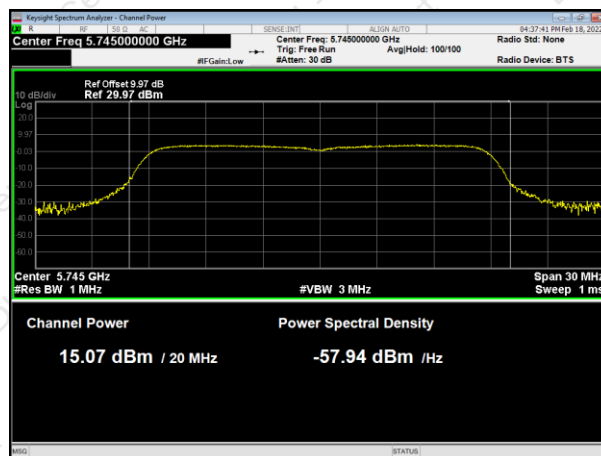
5825MHz



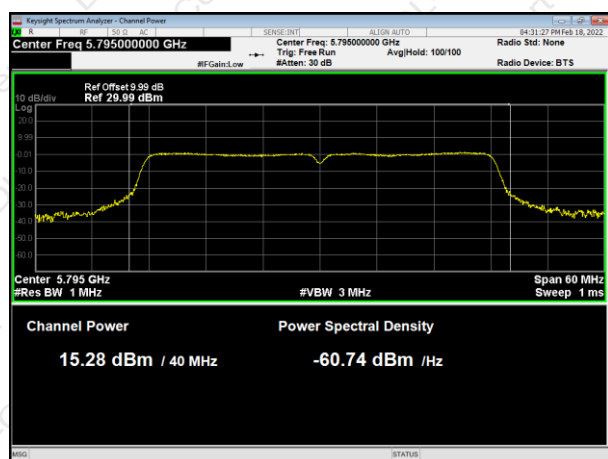
802.11n HT40



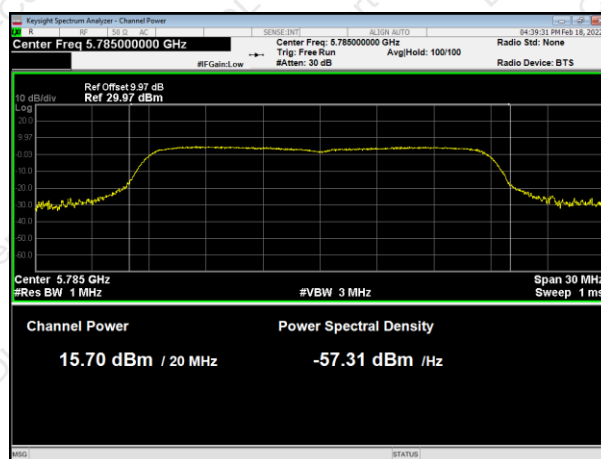
802.11ac HT20



5755MHz

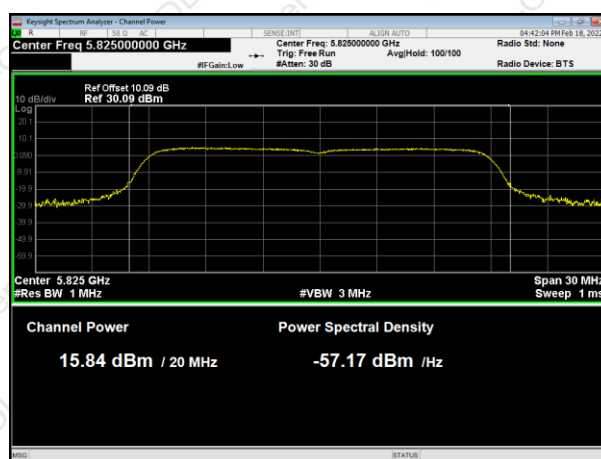


5745MHz



5795MHz

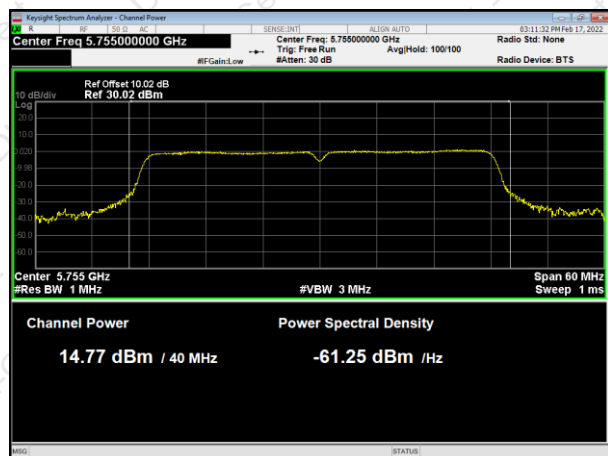
5785MHz



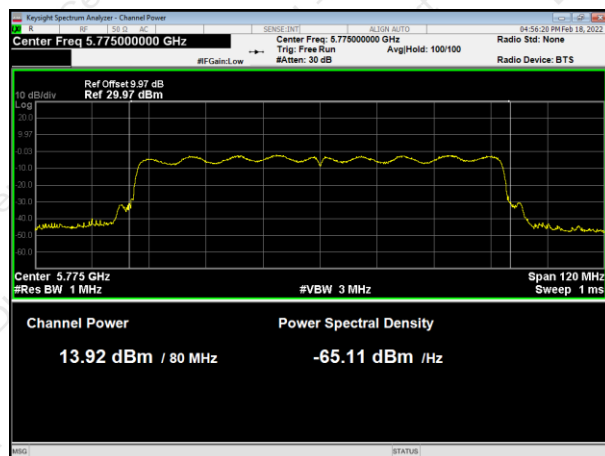
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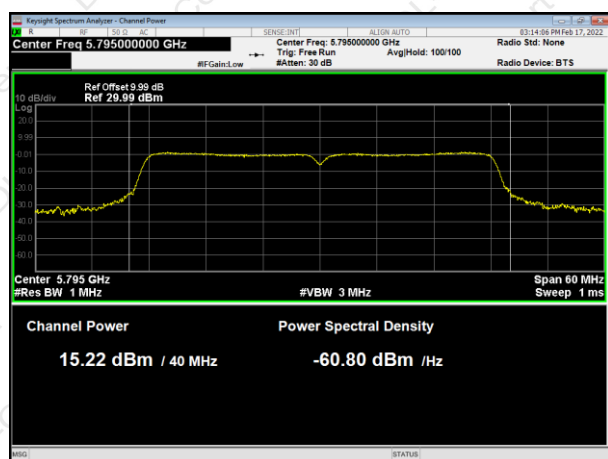
802.11ac HT40



802.11ac HT80



5755MHz



5775MHz

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	Peak
Trace	Max Hold
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.



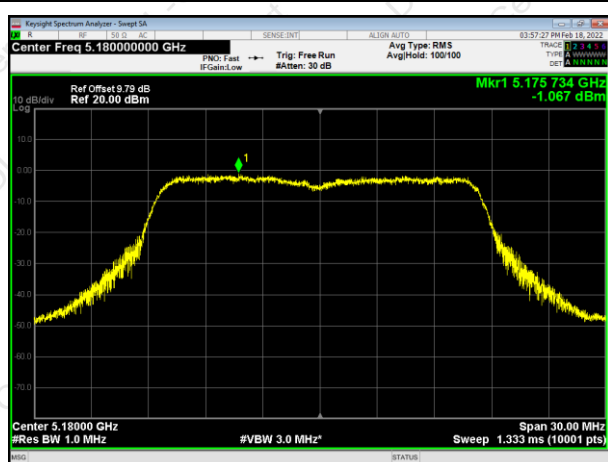
5.1.5 TEST RESULTS

	Mode	Test Channel	Reading Level (dBm)	Duty factor (dB)	PSD (dBm/MHz)	Limit (dBm)	Result
Band1	802.11a	Low	-1.067	0.95	-0.117	11.00	PASS
		Moddle	-1.042	0.95	-0.092	11.00	PASS
		High	-0.961	0.95	-0.011	11.00	PASS
	802.11n20	Low	-2.892	0.13	-2.762	11.00	PASS
		Moddle	-2.549	0.13	-2.419	11.00	PASS
		High	-2.386	0.13	-2.256	11.00	PASS
	802.11n40	Low	-5.869	0.26	-5.609	11.00	PASS
		High	-4.419	0.26	-4.159	11.00	PASS
	802.11ac20	Low	-3.138	0.14	-2.998	11.00	PASS
		Moddle	-2.761	0.14	-2.621	11.00	PASS
		High	-2.614	0.14	-2.474	11.00	PASS
	802.11ac40	Low	-5.742	0.27	-5.472	11.00	PASS
		High	-4.39	0.27	-4.12	11.00	PASS
	802.11ac80	/	-9.81	0.52	-9.29	11.00	PASS

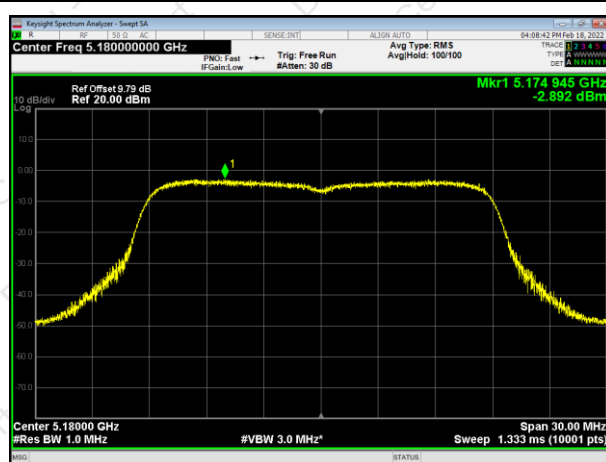
	Mode	Test Channel	Reading Level (dBm)	Duty factor (dB)	PSD (dBm/500kHz)	Limit (dBm)	Result
Band4	802.11a	Low	-1.524	0.85	-0.674	30.00	PASS
		Moddle	-0.285	0.85	0.565	30.00	PASS
		High	0.187	0.85	1.037	30.00	PASS
	802.11n20	Low	1.189	0.13	1.319	30.00	PASS
		Moddle	1.925	0.13	2.055	30.00	PASS
		High	2.538	0.13	2.668	30.00	PASS
	802.11n40	Low	-2.037	0.28	-1.757	30.00	PASS
		High	-1.093	0.28	-0.813	30.00	PASS
	802.11ac20	Low	1.184	0.14	1.324	30.00	PASS
		Moddle	2.003	0.14	2.143	30.00	PASS
		High	2.418	0.14	2.558	30.00	PASS
	802.11ac40	Low	-1.558	0.27	-1.288	30.00	PASS
		High	-1.496	0.27	-1.226	30.00	PASS
	802.11ac80	/	-4.779	0.51	-4.269	30.00	PASS



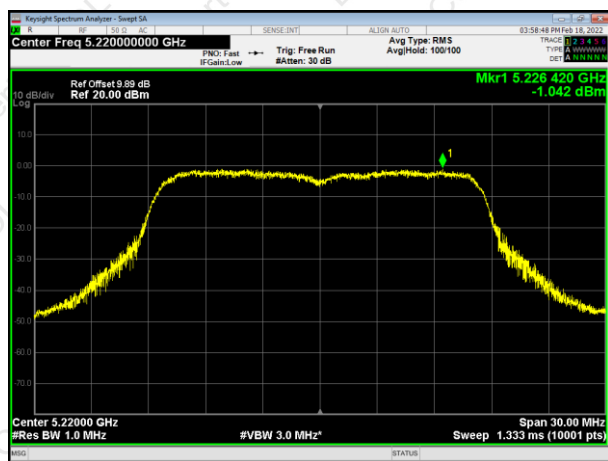
802.11a



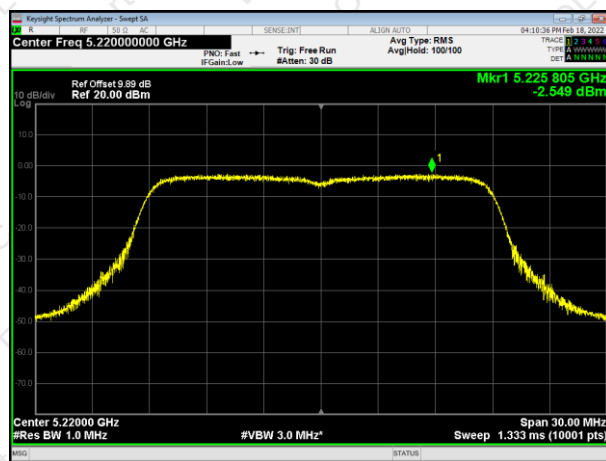
802.11n HT20



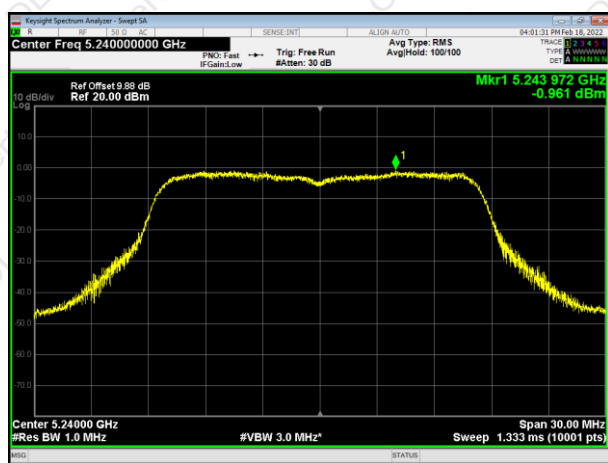
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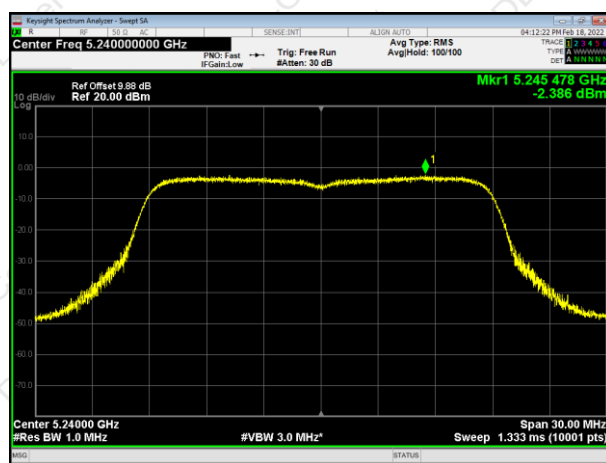
5180MHz



5200MHz



5200MHz

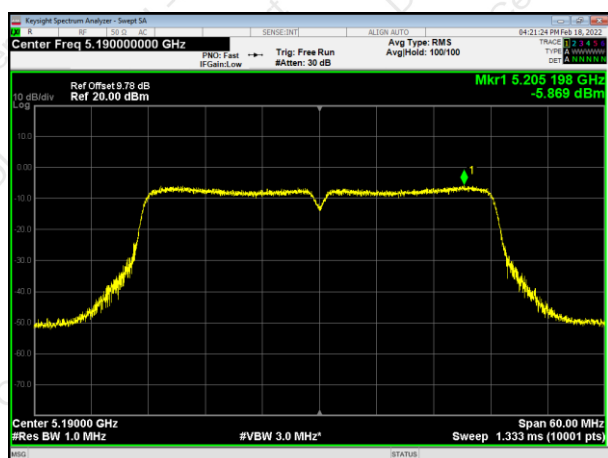


5240MHz

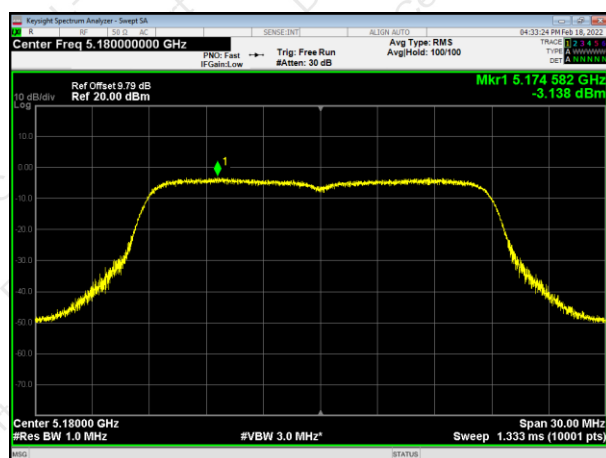
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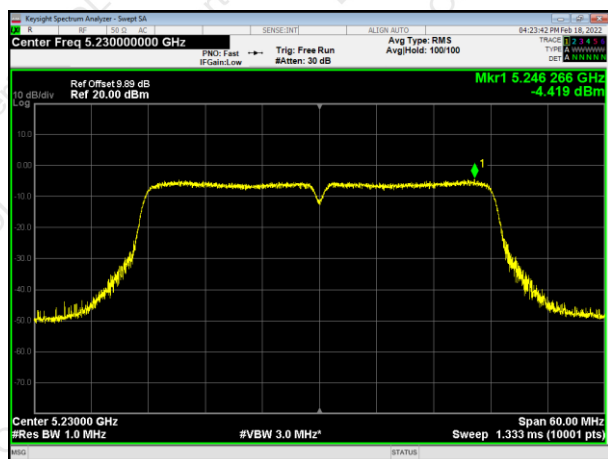
802.11n HT40



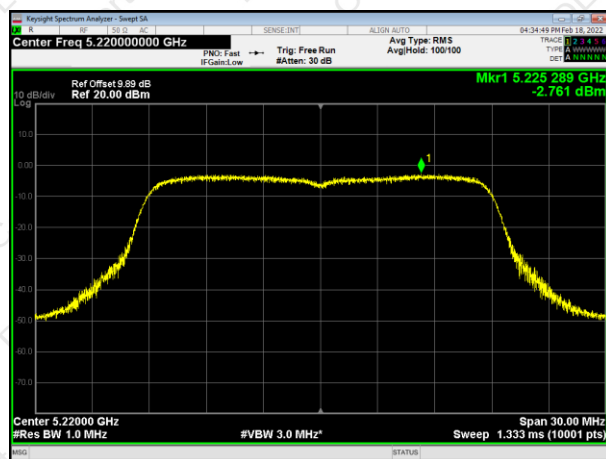
802.11ac HT20



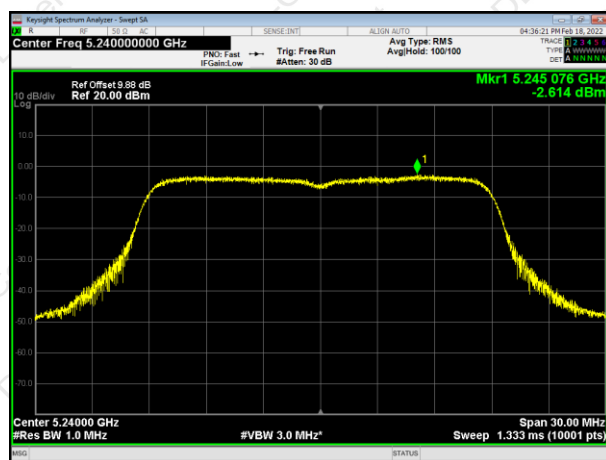
5190MHz



5180

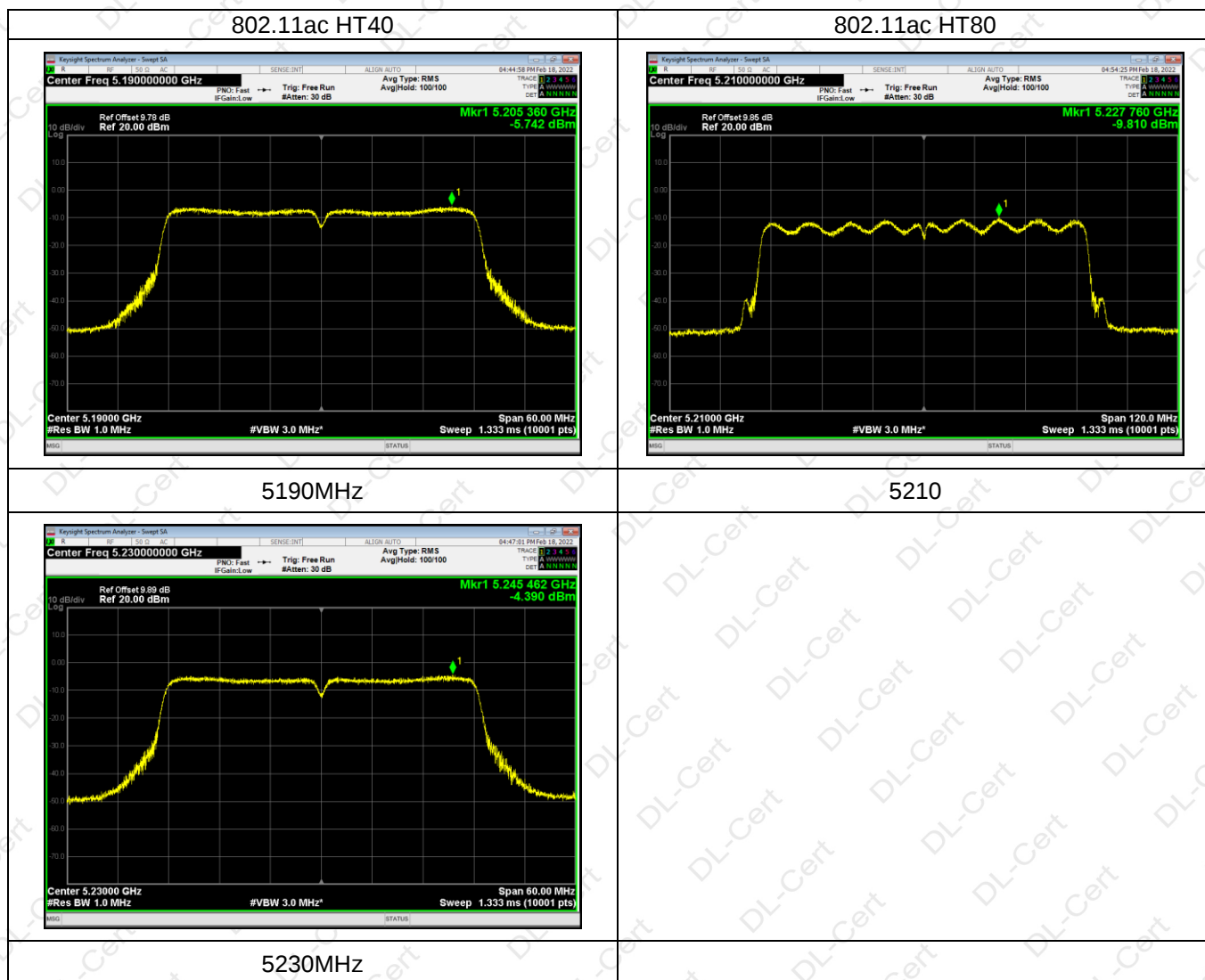


5230MHz



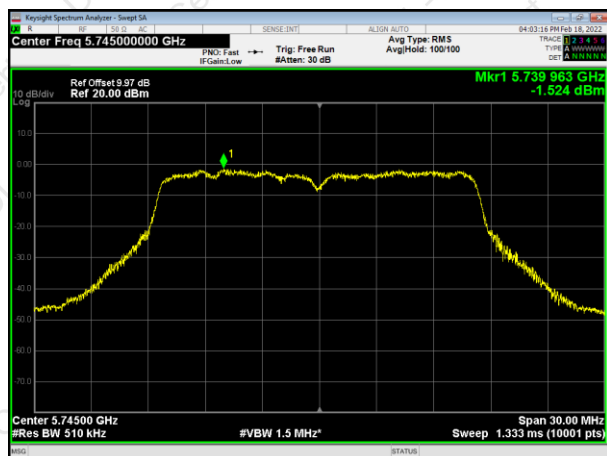
5200

5240

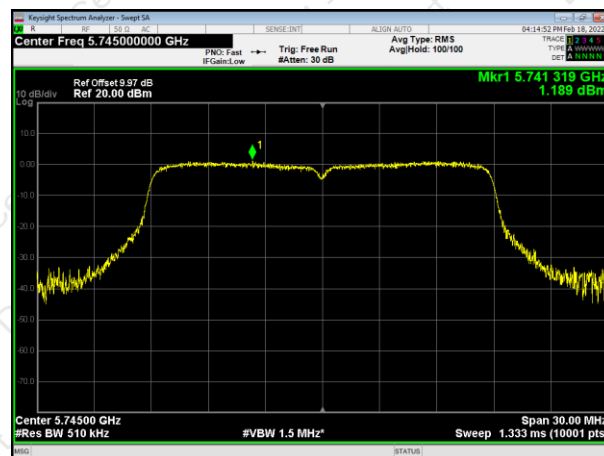




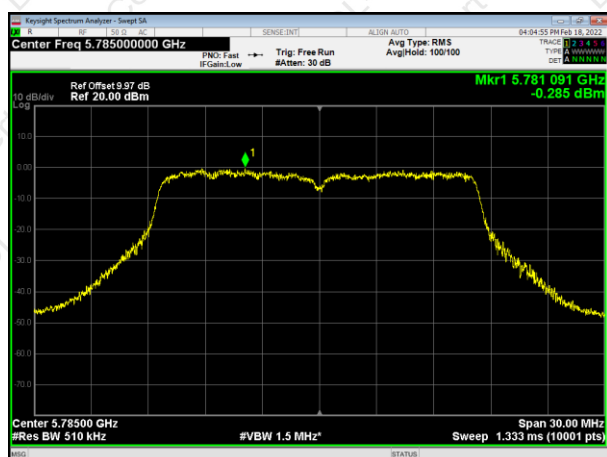
802.11a



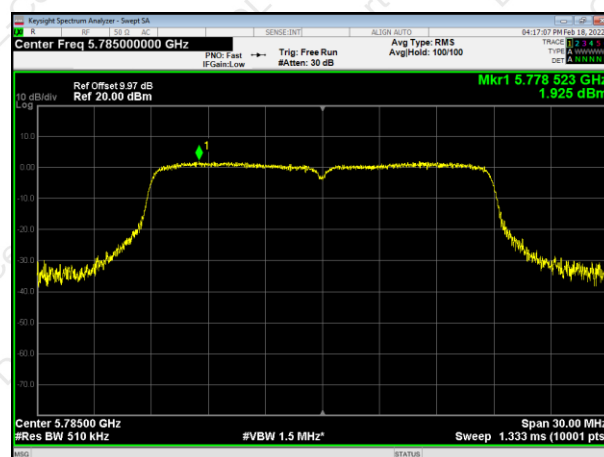
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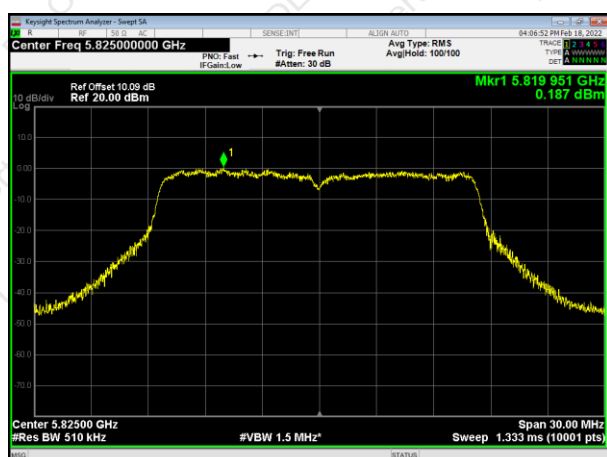
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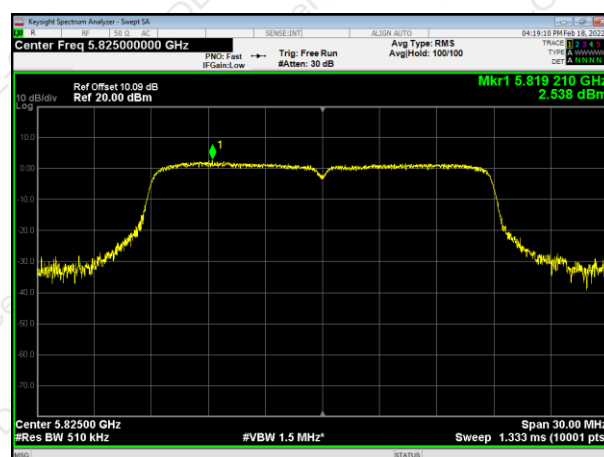
5745MHz



5785MHz



5785MHz



5825MHz

5825MHz

