TESTING LABORATORY
CERTIFICATE#4323.01

FCC PART 15.407

TEST REPORT

For

ShangHai Ehong Technology Co.,Ltd.

Suite501,No.3 building,No.439 Jinglian road, Minhang district,Shanghai,China

FCC ID: 2ACCRHOMEHUB100

Report Type:	**Product Type:**
Original Report	Development Kit

Test Engineer:	Winnie Yang
Report Number:	RSHF200528002-00D
Report Date:	2020-08-10
Reviewed By:	Oscar Ye EMC Manager
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Kunshan) No.248 Chenghu Road,Kunshan,Jiangsu province,China Tel: +86-0512-86175000 Fax: +86-0512-88934268 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant	ShangHai Ehong Technology Co.,Ltd.
Tested Model	Home Hub 100
Product Type	Development Kit
Operating Frequency	5G Wi-Fi B1: 5180-5240 MHz, B4: 5745-5825 MHz
Channel Number	5G Wi-Fi B1: 7, B4: 8
Channel Separation	5G Wi-Fi: a/n-HT20: 20 MHz, 802.11n40:40 MHz
Power Supply	DC 5V
Modulation Type	OFDM
Antenna Type	PCB Antenna
Maximum Antenna Gain	1.0 dBi

**All measurement and test data in this report was gathered from production sample serial number: 20200528002. (Assigned by the BACL. The EUT supplied by the applicant was received on 2020-05-28)*

Objective

This type approval report is prepared on behalf of *ShangHai Ehong Technology Co.,Ltd.* in accordance with Part 2-Subpart J, Part 15-Subparts A and E of the Federal Communication Commissions' rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart E, section 15.203, 15.205, 15.207, 15.209 and 15.407 rules.

Related Submittal(s)/Grant(s)

FCC Part 15.247 DTS for WIFI & BLE, ZigBee Submittal with FCC ID: 2ACCRHOMEHUB100

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Kunshan).

Measurement Uncertainty

Item		Uncertainty
AC Power Lines Conducted Emissions		3.19 dB
RF conducted test with spectrum		0.9dB
RF Output Power with Power meter		0.5dB
Radiated emission	30MHz~1GHz	6.11dB
	1GHz~6GHz	4.45dB
	6GHz~18GHz	5.23dB
	18GHz~40GHz	5.65dB
Occupied Bandwidth		0.5kHz
Temperature		1.0℃
Humidity		6%

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the No.248 Chenghu Road, Kunshan, Jiangsu province, China.

Bay Area Compliance Laboratories Corp. (Kunshan) Lab is accredited to ISO/IEC 17025 by A2LA (Lab code: 4323.01), the FCC designation No. CN1185 under the FCC KDB 974614 D01 and CAB identifier CN0004 under the ISED requirement. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The EUT was configured for testing in an engineering mode which was provided by the manufacturer.

For **5150~5250 MHz** band, test channel list is as below,

802.11a/n20 mode Channel 36, 40, 48 were tested, 802.11 n40 mode Channel 38, 46 were tested

Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220
38	5190	46	5230
40	5200	48	5240
42	5210	/	/

For **5725~5850 MHz** band,

802.11a /n20 mode Channel 149, 157, 165 were tested, 802.11n40 mode Channel 151, 159 were tested.

Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	159	5795
151	5755	161	5805
153	5765	165	5825
155	5775	/	/
157	5785	/	/

EUT Exercise Software

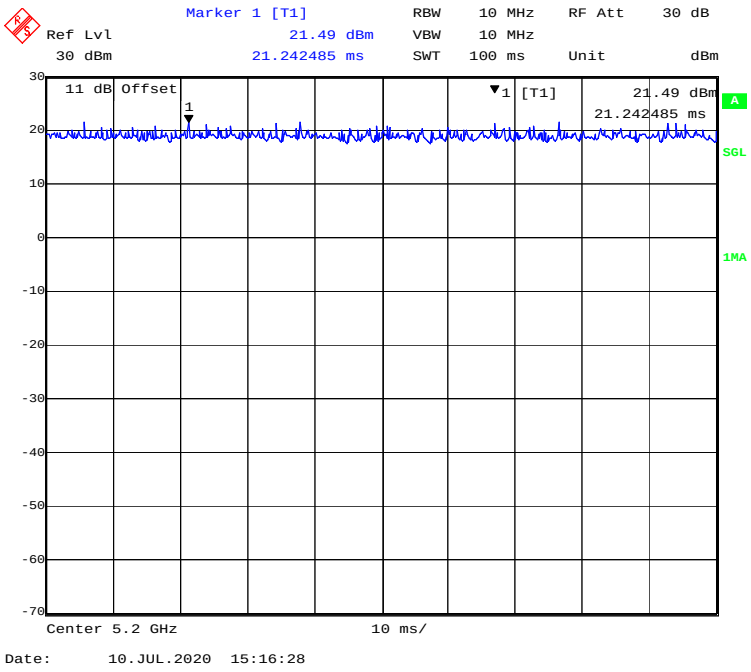
RF test tool: QRCT4.0

The worst case was performed under:

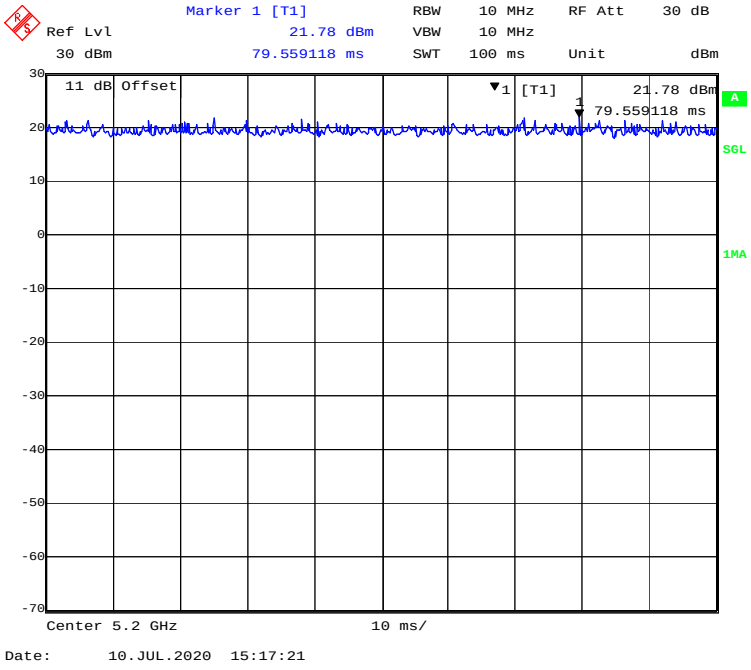
Mode	Data rate	Power level	
		5150-5250 Band	5725-5850 Band
802.11a	6 Mbps	14	10
802.11n-HT20	MCS0	14	11
802.11n-HT40	MCS0	14	11

Duty Cycle:
5150MHz-5250MHz Band:

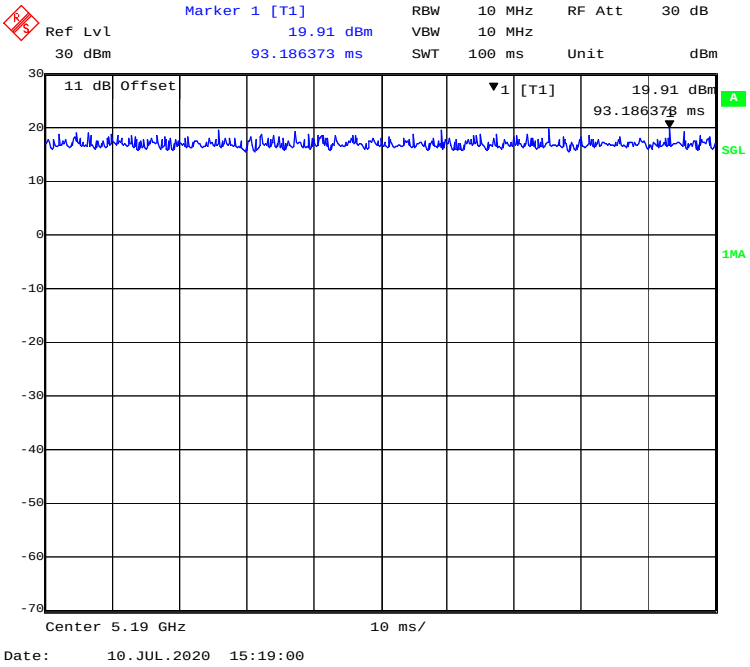
802.11a mode



802.11n-HT20 mode

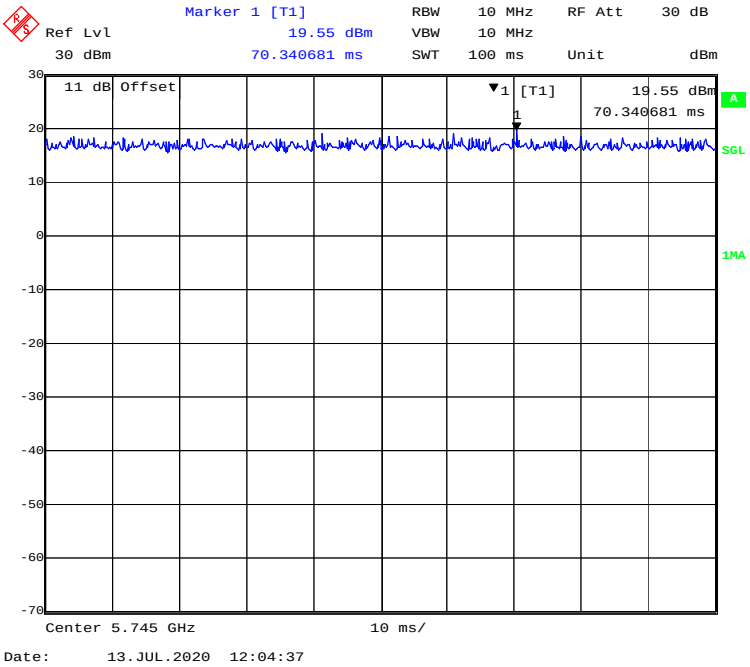


802.11n-HT40 mode

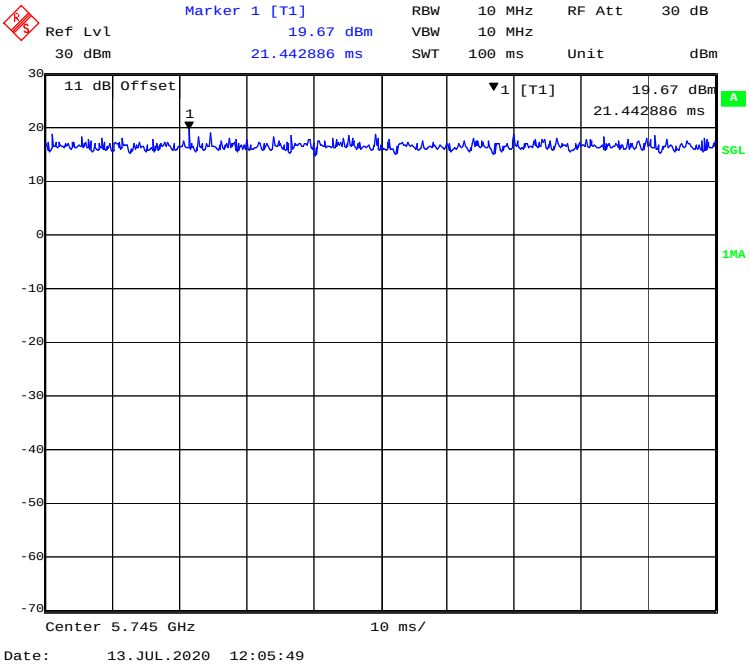


5725MHz-5850MHz Band:

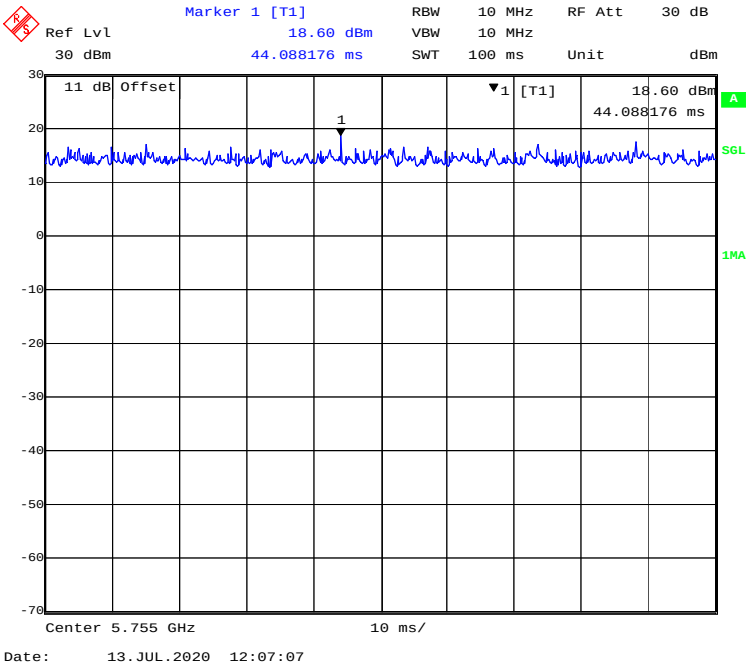
802.11a mode



802.11n-HT20 mode



802.11n-HT40 mode



Mode	Frequency Range (MHz)	Duty Cycle (%)	T (ms)	1/T (kHz)	10log(1/x)
802.11a	5150-5250	100	/	/	0
802.11n-HT20		100	/	/	0
802.11n-HT40		100	/	/	0
802.11a	5725-5850	100	/	/	0
802.11n-HT20		100	/	/	0
802.11n-HT40		100	/	/	0

Note: "x" means duty cycle.

Equipment Modifications

No modification was made to the EUT.

Support Equipment List and Details

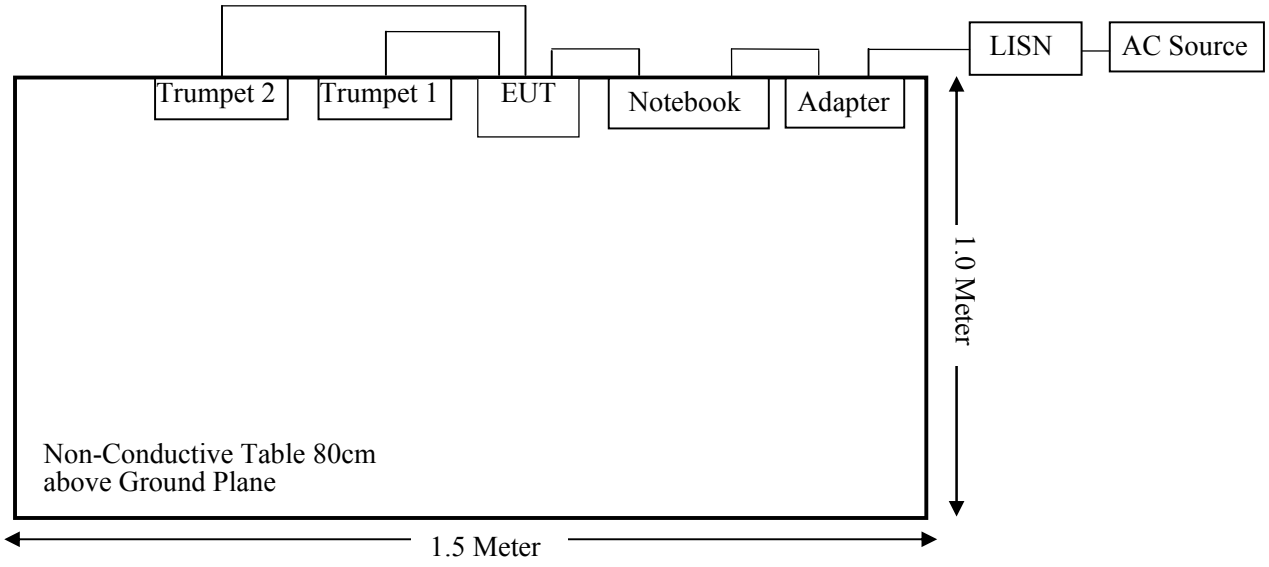
Manufacturer	Description	Model	Serial Number
DELL	Notebook	E6410	3094742521
DELL	Adapter	LA65NS0-00	DF263
/	Trumpet 1	/	/
/	Trumpet 2	/	/

External I/O Cable

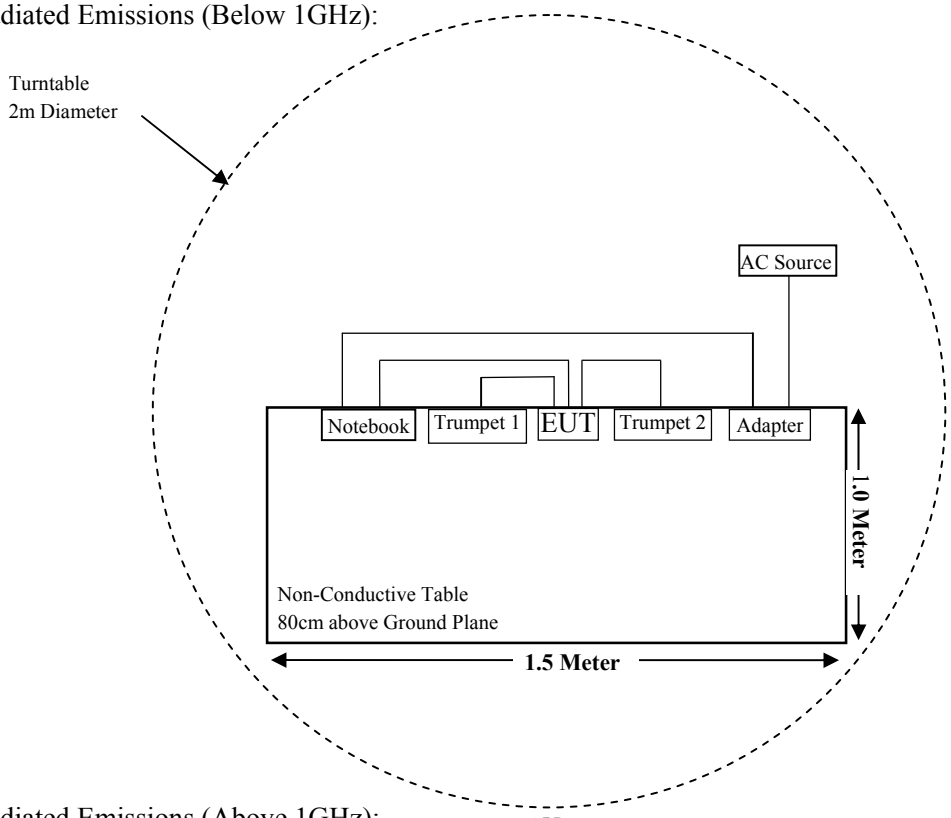
Cable Description	Length (m)	From Port	To
USB Cable	1.0	Debug Board	Notebook
Power Cable	2.0	Notebook	Adapter
Power Cable	2.0	Adapter	LISN/AC source
Power Cable	1.0	EUT	Trumpet 1
Power Cable	1.0	EUT	Trumpet 2

Block Diagram of Test Setup

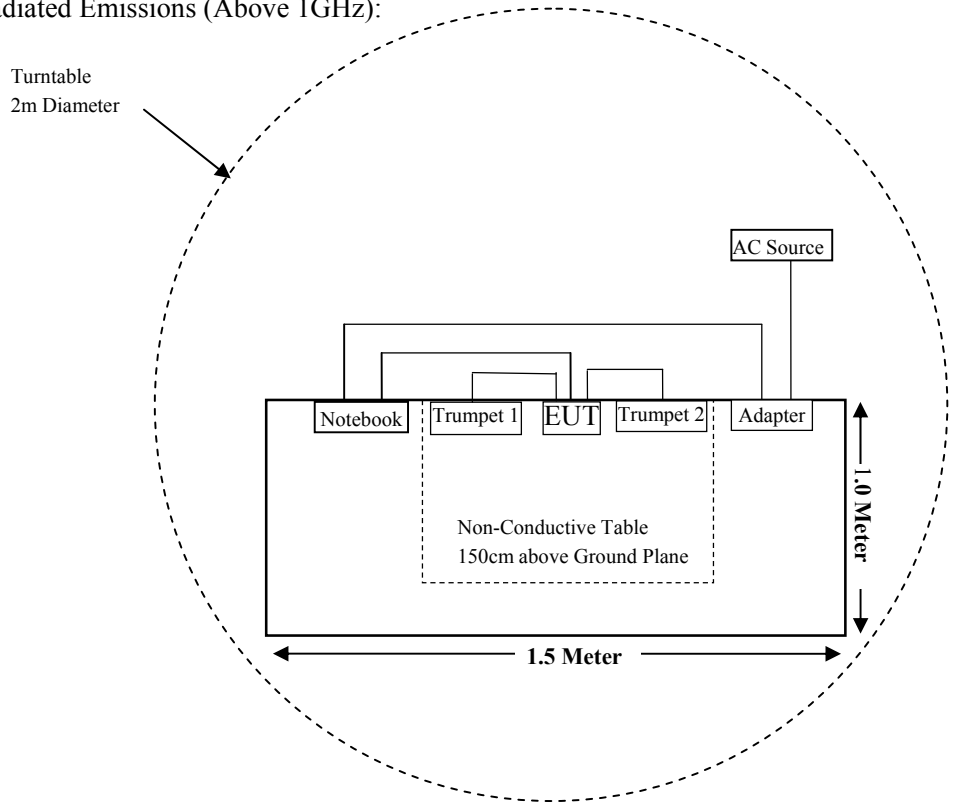
For Conducted Emissions:



For Radiated Emissions (Below 1GHz):



For Radiated Emissions (Above 1GHz):



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1310 & §2.1091	Maximum Permissible Exposure (MPE)	Compliant
§15.203	Antenna Requirement	Compliant
§15.207 & §15.407(b) (8)	AC Power Line Conducted Emissions	Compliant
§ 15.205 & §15.209 & §15.407(b) (1), (4), (8),(9)	Undesirable Emission & Restricted Bands	Compliant
§§15.407(a) &§15.407(e)	Emission Bandwidth	Compliant
§15.407(a) (1) (3)	Conducted Transmitter Output Power	Compliant
§15.407(a) (1) (3)	Power Spectral Density	Compliant

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test（Chamber 1#）					
Rohde & Schwarz	EMI Test Receiver	ESCI	100195	2019-12-14	2020-12-13
Sunol Sciences	Broadband Antenna	JB3	A090413-1	2017-12-26	2020-12-25
Sonoma Instrunent	Pre-amplifier	310N	171205	2019-08-14	2020-08-13
Rohde & Schwarz	Auto Test Software	EMC32	100361	N/A	N/A
MICRO-COAX	Coaxial Cable	Cable-8	008	2019-08-15	2020-08-14
MICRO-COAX	Coaxial Cable	Cable-9	009	2019-08-15	2020-08-14
MICRO-COAX	Coaxial Cable	Cable-10	010	2019-08-15	2020-08-14
Radiated Emission Test（Chamber 2#）					
Rohde & Schwarz	EMI Test Receiver	ESU40	100207	2020-04-01	2021-03-31
ETS-LINDGREN	Horn Antenna	3115	9207-3900	2017-07-15	2020-07-14
ETS-LINDGREN	Horn Antenna	3115	9207-3900	2020-07-15	2023-07-14
ETS-LINDGREN	Horn Antenna	3116	00084159	2019-12-12	2022-12-11
A.H.Systems, inc	Amplifier	PAM-0118P	512	2020-02-20	2021-02-19
SELECTOR	Amplifier	EM18G40G	060726	2020-03-22	2021-03-21
MICRO-TRONICS	Band Reject Filter	BRC50703	G094	2019-08-05	2020-08-04
MICRO-TRONICS	Band Reject Filter	BRC50705	G085	2019-08-05	2020-08-04
Narda	Attenuator	10dB	010	2019-08-15	2020-08-14
Rohde & Schwarz	Auto test Software	EMC32	100361	/	/
MICRO-COAX	Coaxial Cable	Cable-6	006	2019-08-15	2020-08-14
MICRO-COAX	Coaxial Cable	Cable-11	011	2019-08-15	2020-08-14
MICRO-COAX	Coaxial Cable	Cable-12	012	2019-08-15	2020-08-14
RF Conducted Test					
Rohde & Schwarz	EMI Test Receiver	ESIB26	100146	2019-12-14	2020-12-13
Agilent	Power Meter	N1912A	MY5000492	2019-11-18	2020-11-17
Agilent	Power Sensor	N1921A	MY54210024	2019-11-18	2020-11-17
Narda	Attenuator	10dB	010	2019-08-15	2020-08-14
Ehong	RF Cable	Ehong C01	C01	Each Time	/
Conducted Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESR	1316.3003K03-101746-zn	2019-08-05	2020-08-04
Rohde & Schwarz	LISN	ENV216	3560655016	2019-11-30	2020-11-29
Audix	Test Software	e3	V9	--	--
Rohde & Schwarz	Pulse limiter	ESH3-Z2	0357.8810.54	2020-04-03	2021-04-02
MICRO-COAX	Coaxial Cable	Cable-15	015	2019-08-15	2020-08-14

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Kunshan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §1.1310 & §2.1091 - MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 1.1310, 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (minutes)**
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*($180/f^2$)	30
30-300	27.5	0.073	0.2	30
300-1500	/		f/1500	30
1500-100,000	/		1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density

Calculated Formulary:

Predication of MPE limit at a given distance

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm^2);
P = power input to the antenna (in appropriate units, e.g., mW);
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

Calculated Data (worst case):

Mode	Frequency (MHz)	Maximum Antenna Gain		Tune-up Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
		(dBi)	(numeric)	(dBm)	(mW)			
2.4G WiFi 802.11b	2412-2462	1.0	1.26	23.00	199.53	20	0.0500	1.0
2.4G WiFi 802.11g		1.0	1.26	24.00	251.19	20	**0.0630**	**1.0**
802.11n-HT20		1.0	1.26	23.50	223.87	20	0.0561	1.0
802.11n-HT40	2422-2452	1.0	1.26	22.00	158.49	20	0.0397	1.0
BLE(1Mbps)	2402-2480	1.0	1.26	2.50	1.78	20	**0.0004**	**1.0**
BLE(2Mbps)	2402-2480	1.0	1.26	1.50	1.41	20	0.0004	1.0
Zigbee	2405~2475	1.0	1.26	1.00	1.26	20	0.0003	1.0
5G WiFi	5180-5240	1.0	1.26	22.00	158.49	20	0.0397	1.0
5G WiFi	5745-5825	1.0	1.26	19.00	79.43	20	0.0199	1.0

Note: 2.4G Wi-Fi/5G Wi-Fi and BLE/Zigbee can transmit simultaneously; the worst condition as below:

$$\sum_i \frac{S_i}{S_{Limit,i}} = 0.0630/1.00+0.0004/1.00=0.0634 < 1.0$$

Conclusion: The device meets MPE at distance 20cm.

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.
b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.407, if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The EUT has a PCB antenna for 5G Wi-Fi which the antenna gain is 1.0 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Max. Antenna Gain	Input impedance
1 dBi	50 Ω

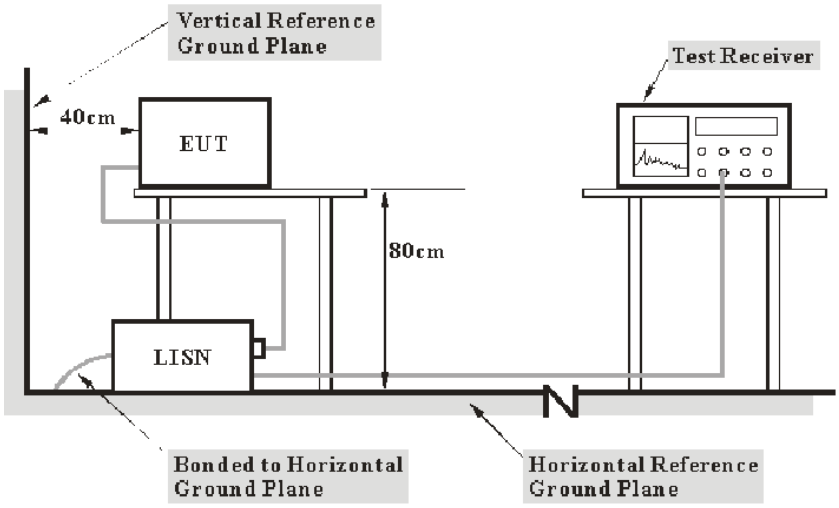
Result: Compliant.

FCC §15.407 (b) (8) §15.207 (a) – AC POWER LINE CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207(a), §15.407(b) (8)

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter was connected to the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Corrected Factor & Over Limit Calculation

The Corrected factor is calculated by adding LISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

Factor (dB) = LISN VDF (dB) + Cable Loss (dB) + Transient Limiter Attenuation (dB)

The "**Over Limit**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over Limit of 7dB means the emission is 7 dB above the limit. The equation for Over Limit calculation is as follows:

Over Limit (dB) = Read level (dBμV) + Factor (dB) - Limit (dBμV)

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207.

Test Data

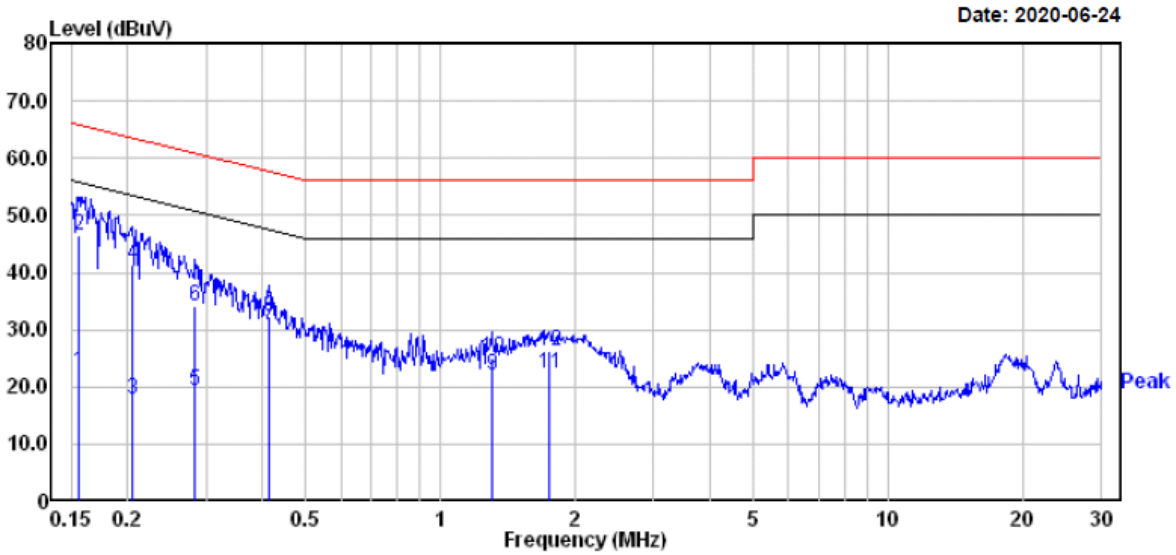
Environmental Conditions

Temperature:	24.7 ℃
Relative Humidity:	71 %
ATM Pressure:	101.3 kPa

The testing was performed by Winnie Yang on 2020-06-24.

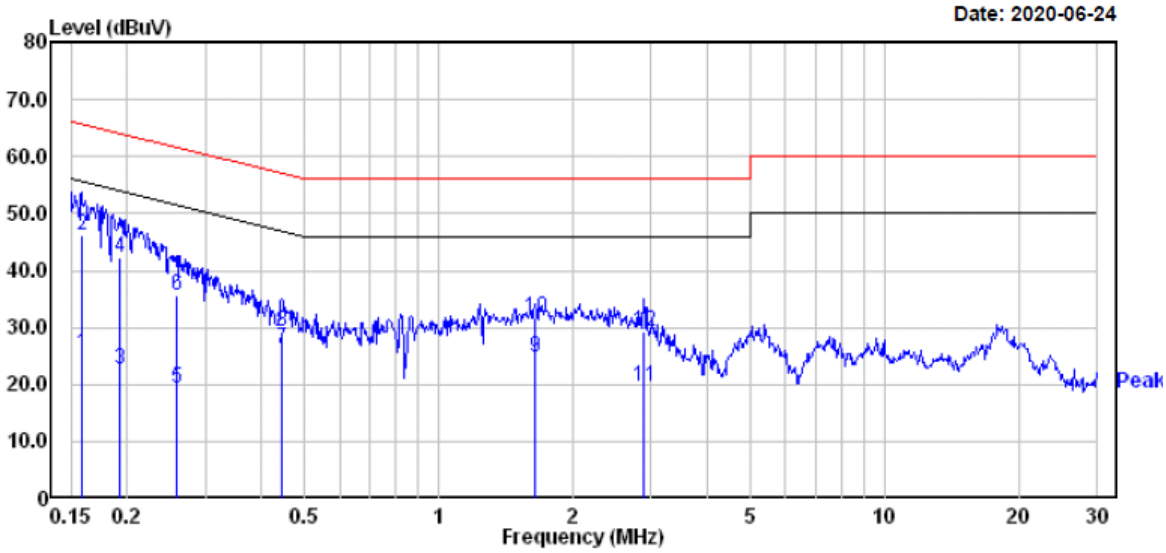
EUT operation mode: Transmitting in 802.11n-HT20 mode high channel of 5150~5250MHz (worst case).

AC 120V/60 Hz, Line



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.156	2.90	19.82	22.72	55.69	-32.97	Average
2	0.156	26.80	19.82	46.62	65.69	-19.07	QP
3	0.205	-1.90	19.82	17.92	53.40	-35.48	Average
4	0.205	21.60	19.82	41.42	63.40	-21.98	QP
5	0.283	-0.60	19.82	19.22	50.72	-31.50	Average
6	0.283	14.30	19.82	34.12	60.72	-26.60	QP
7	0.415	11.10	19.74	30.84	47.55	-16.71	Average
8	0.415	12.70	19.74	32.44	57.55	-25.11	QP
9	1.303	2.20	19.82	22.02	46.00	-23.98	Average
10	1.303	5.20	19.82	25.02	56.00	-30.98	QP
11	1.753	2.40	19.84	22.24	46.00	-23.76	Average
12	1.753	6.50	19.84	26.34	56.00	-29.66	QP

AC 120V/60 Hz, Neutral

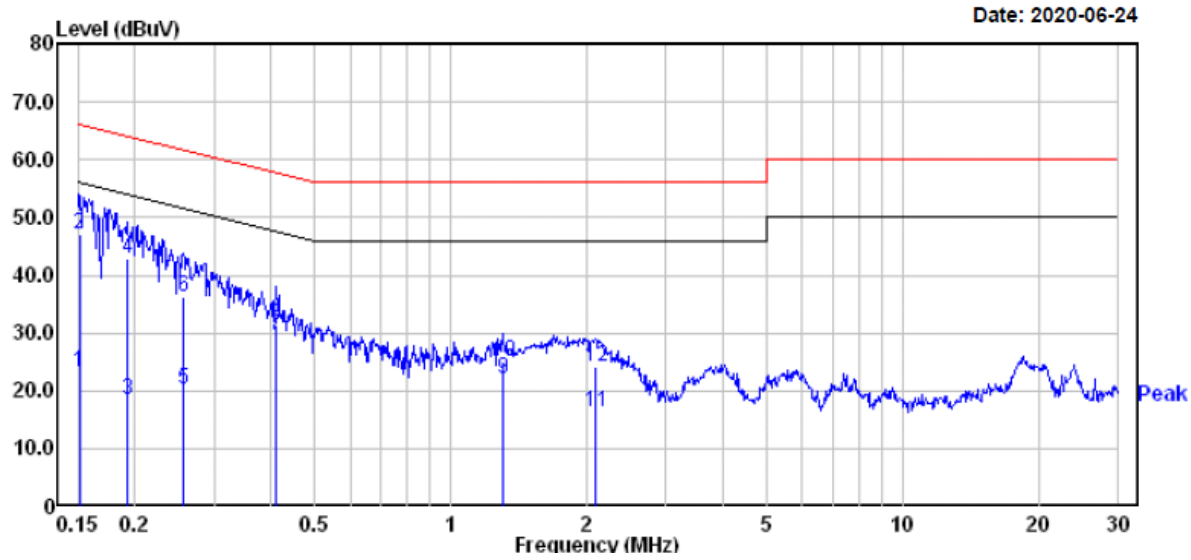


	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.158	5.60	19.82	25.42	55.56	-30.14	Average
2	0.158	26.40	19.82	46.22	65.56	-19.34	QP
3	0.193	2.80	19.82	22.62	53.89	-31.27	Average
4	0.193	22.40	19.82	42.22	63.89	-21.67	QP
5	0.259	-0.50	19.82	19.32	51.47	-32.15	Average
6	0.259	15.90	19.82	35.72	61.47	-25.75	QP
7	0.444	6.60	19.75	26.35	46.98	-20.63	Average
8	0.444	9.40	19.75	29.15	56.98	-27.83	QP
9	1.645	4.90	19.84	24.74	46.00	-21.26	Average
10	1.645	11.80	19.84	31.64	56.00	-24.36	QP
11	2.884	0.30	19.46	19.76	46.00	-26.24	Average
12	2.884	9.70	19.46	29.16	56.00	-26.84	QP

Note:
1) Factor (dB) = LISN VDF (dB) + Cable Loss (dB) + Transient Limiter Attenuation (dB)
2) Over Limit (dB) = Read level (dBµV) + Factor (dB) - Limit (dBµV)

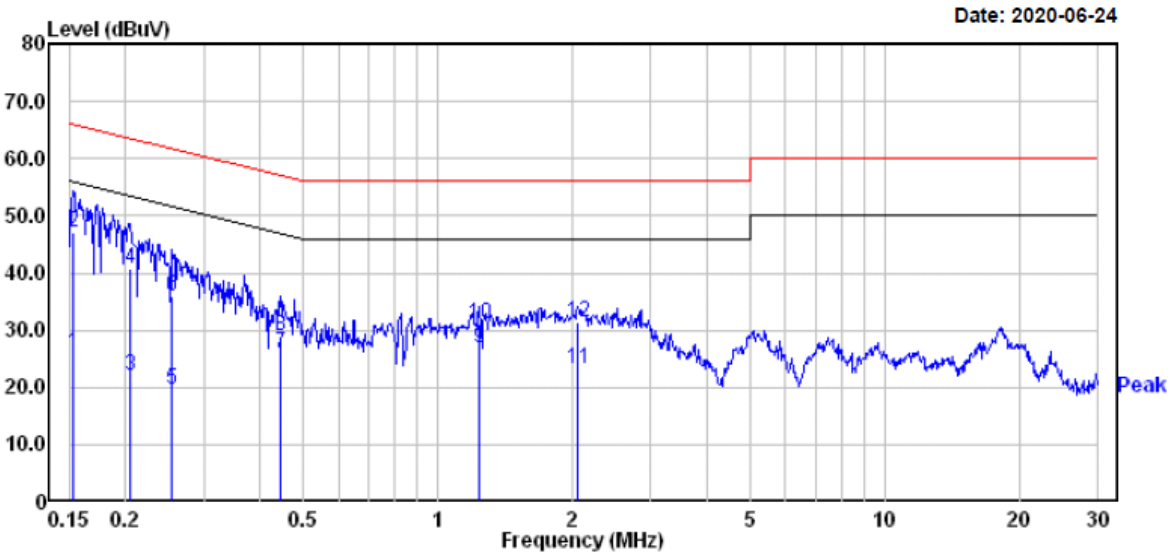
EUT operation mode: Transmitting in 802.11n-HT40 mode low channel of 5725~5850MHz (worst case).

AC 120V/60 Hz, Line



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.151	3.50	19.82	23.32	55.96	-32.64	Average
2	0.151	27.40	19.82	47.22	65.96	-18.74	QP
3	0.192	-1.40	19.82	18.42	53.93	-35.51	Average
4	0.192	22.90	19.82	42.72	63.93	-21.21	QP
5	0.256	0.30	19.82	20.12	51.56	-31.44	Average
6	0.256	16.40	19.82	36.22	61.56	-25.34	QP
7	0.410	9.80	19.74	29.54	47.64	-18.10	Average
8	0.410	11.60	19.74	31.34	57.64	-26.30	QP
9	1.303	2.10	19.82	21.92	46.00	-24.08	Average
10	1.303	5.10	19.82	24.92	56.00	-31.08	QP
11	2.088	-3.50	19.76	16.26	46.00	-29.74	Average
12	2.088	4.40	19.76	24.16	56.00	-31.84	QP

AC 120V/60 Hz, Neutral



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.153	6.00	19.82	25.82	55.82	-30.00	Average
2	0.153	27.20	19.82	47.02	65.82	-18.80	QP
3	0.205	2.10	19.82	21.92	53.40	-31.48	Average
4	0.205	21.00	19.82	40.82	63.40	-22.58	QP
5	0.255	-0.10	19.82	19.72	51.60	-31.88	Average
6	0.255	16.20	19.82	36.02	61.60	-25.58	QP
7	0.444	6.30	19.75	26.05	46.98	-20.93	Average
8	0.444	9.20	19.75	28.95	56.98	-28.03	QP
9	1.242	7.11	19.81	26.92	46.00	-19.08	Average
10	1.242	11.41	19.81	31.22	56.00	-24.78	QP
11	2.055	3.50	19.79	23.29	46.00	-22.71	Average
12	2.055	11.60	19.79	31.39	56.00	-24.61	QP

Note:
1) Factor (dB) = LISN VDF (dB) + Cable Loss (dB) + Transient Limiter Attenuation (dB)
2) Over Limit (dB) = Read level (dBµV) + Factor (dB) - Limit (dBµV)

§15.205 & §15.209 & §15.407(B) (1), (4), (8),(9) – UNDESIRABLE EMISSION & RESTRICTED BANDS

Applicable Standard

FCC §15.407 (b) (1), (4), (8), (9); §15.209; §15.205;

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.

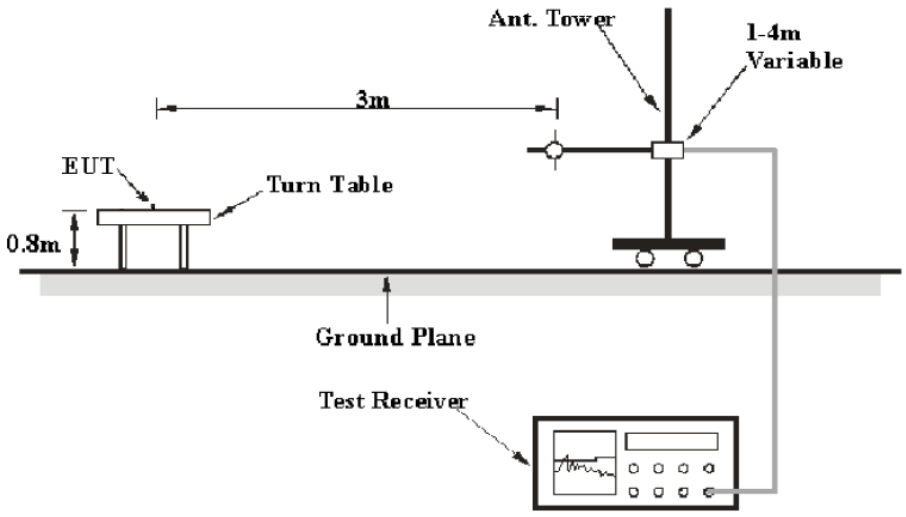
For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to 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.

As per FCC §15.35(d):Unless otherwise specified, on any frenquency or frequencies above 1000MHz,the radiated emission limits are based on the use of measurement instrunmentation employing an average detector function. Unless otherwise specified, measurements above 1000MHz shall be performed using a minimum resolution bandwidth of 1MHz.

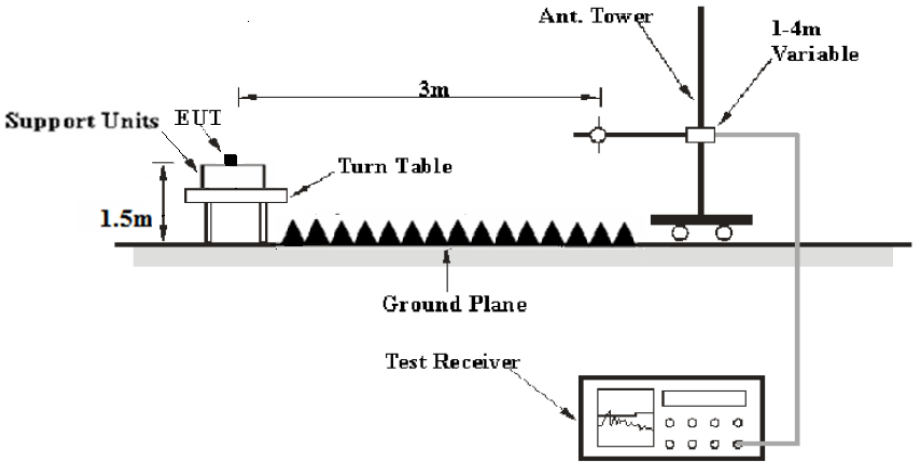
According to 789033 D02 General UNII Test Procedures New Rules v02r01, emission shall be computed as: E [dBμV/m] = EIRP [dBm] + 95.2, for d = 3 meters.

EUT Setup

Below 1 GHz:



1 GHz-40GHz:



The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC 15.209 and FCC 15.407 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 40 GHz.

During the radiated emission test, the EMI test receiver Setup was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1GHz	1MHz	3 MHz	/	PK
	1MHz	3 MHz	/	Ave.

Test Procedure

During the radiated emission test, the adapter was connected to AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1GHz, peak and Average detection modes for frequencies above 1GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude = Meter Reading + Antenna factor + Cable Loss - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin = Limit –Corrected Amplitude

Test Data

Environmental Conditions

Temperature:	23.2~25.9 ℃
Relative Humidity:	53~71 %
ATM Pressure:	101.1~101.7 kPa

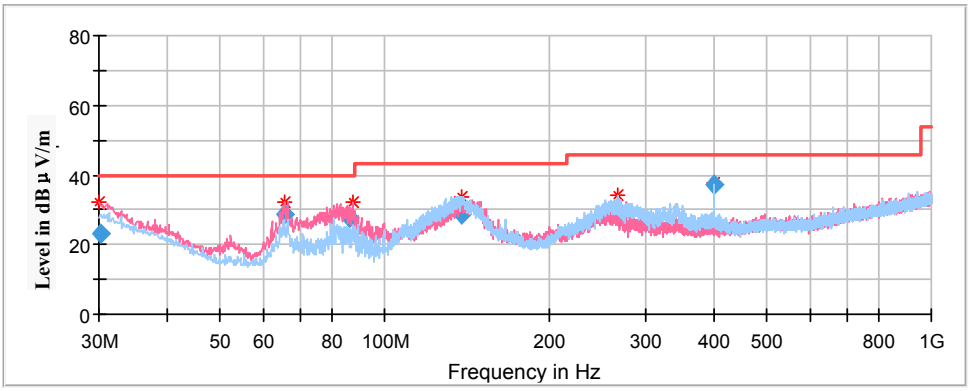
The testing was performed by Winnie Yang from 2020-06-28 to 2020-07-17.

Test Mode: Transmitting

Spurious Emission Test

30MHz-1GHz(5150-5250MHz Band):

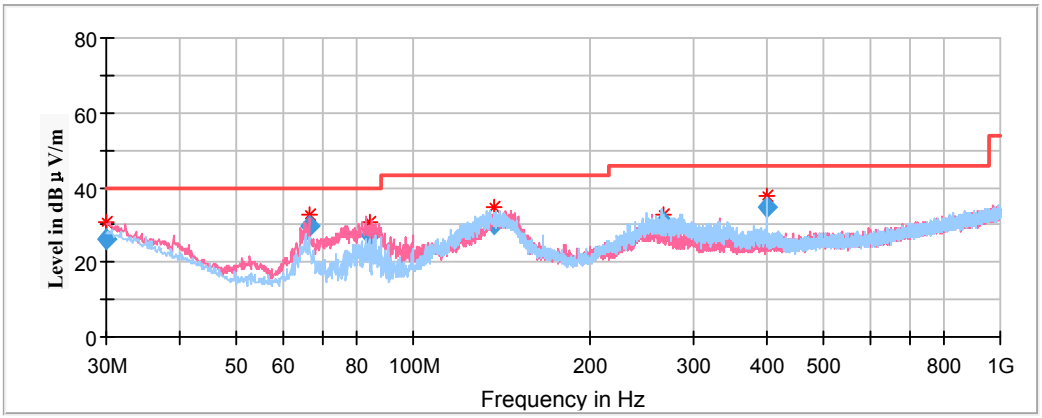
Pre-scan with 802.11a, 802.11n-HT20 and 802.11n-HT40 modes of operation in the X,Y and Z axes of orientation, the worst case 802.11a mode in X-axis of orientation was recorded



Frequency (MHz)	Corrected Amplitude	Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	QuasiPeak (dBµV/m)	Height (cm)	Polar (H/V)				
30.188700	23.25	200.0	V	247.0	-4.5	40.00	16.75
65.428550	28.64	100.0	V	287.0	-18.0	40.00	11.36
86.285300	27.80	100.0	V	160.0	-18.0	40.00	12.20
137.951300	28.93	200.0	H	200.0	-12.3	43.50	14.57
267.409400	29.30	100.0	H	305.0	-12.0	46.00	16.70
400.007000	37.35	100.0	H	169.0	-8.6	46.00	8.65

30MHz-1GHz(5725-5850MHz Band):

Pre-scan with 802.11a, 802.11n-HT20 and 802.11n-HT40 modes of operation in the X,Y and Z axes of orientation, the worst case 802.11n-HT20 mode in channel 5825 in X-axis of orientation was recorded



Frequency (MHz)	Corrected Amplitude	Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	QuasiPeak (dBµV/m)	Height (cm)	Polar (H/V)				
30.066264	26.11	100.0	V	110.0	-4.4	40.00	13.89
66.423050	29.74	100.0	V	290.0	-18.0	40.00	10.26
84.072550	27.05	100.0	V	215.0	-18.1	40.00	12.95
137.715700	30.01	200.0	H	200.0	-12.3	43.50	13.49
266.412700	30.47	100.0	H	308.0	-12.1	46.00	15.53
399.974600	34.80	100.0	H	181.0	-8.6	46.00	11.20

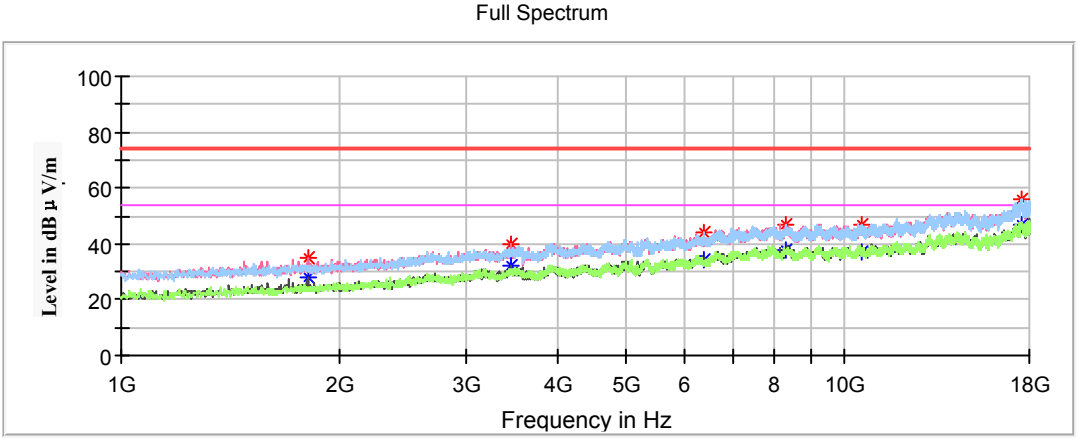
1GHz-18GHz(5150-5250MHz Band):

802.11a Mode:

*(Pre-scan in the X, Y and Z axes of orientation, the worst case **X-axis of orientation** was recorded.)*

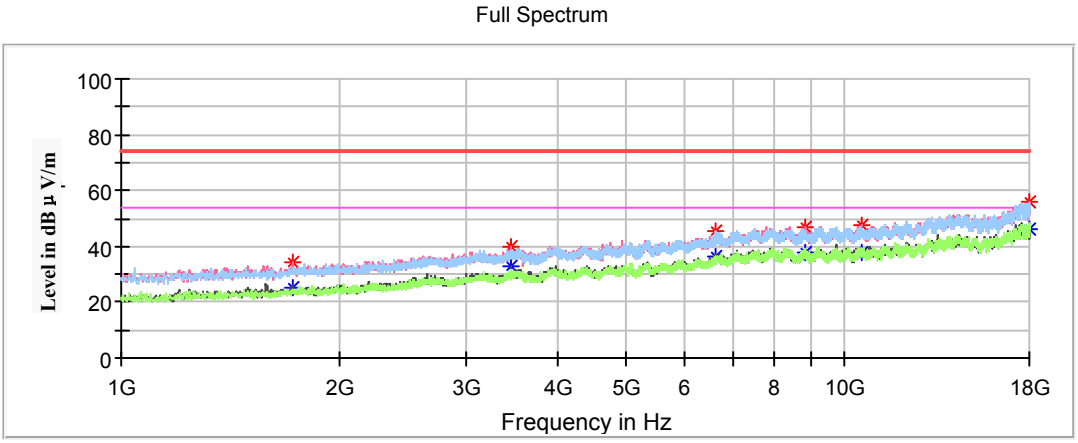
Note:
1. This test was performed with the 5150-5250MHz band reject filter.
2. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
   Corrected Amplitude = Corrected Factor + Reading
   Margin = Limit - Corrected. Amplitude

Low Channel: 5180MHz



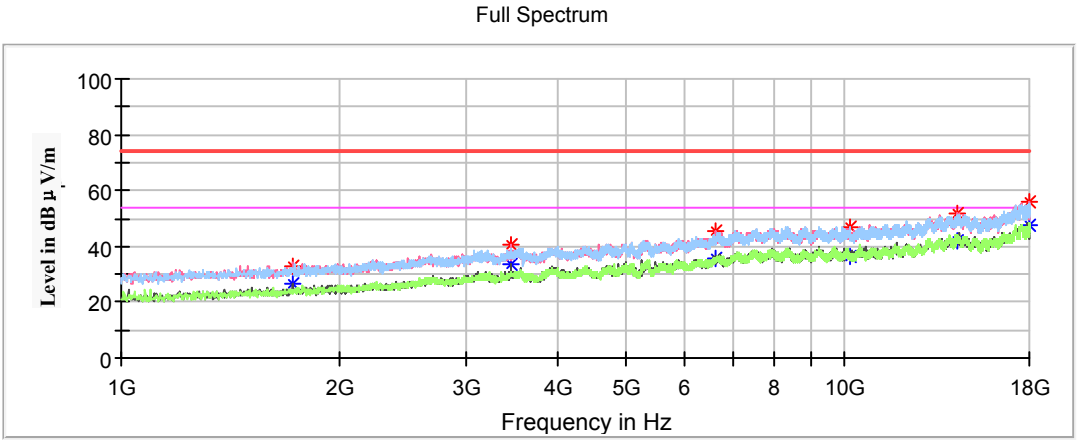
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1809.200000	34.84	---	200.0	V	259.0	-15.2	68.20	33.36
3454.800000	39.87	---	200.0	V	198.0	-8.9	68.20	28.33
6399.200000	43.90	---	200.0	V	274.0	-1.6	68.20	24.30
8301.500000	---	37.45	150.0	V	9.0	1.5	54.00	16.55
8301.500000	47.04	---	150.0	V	9.0	1.5	74.00	26.96
10542.100000	46.75	---	200.0	V	337.0	2.4	68.20	21.45
17578.400000	55.99	---	150.0	H	295.0	8.9	68.20	12.21

Middle Channel: 5200MHz



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1729.300000	34.30	---	150.0	V	214.0	-15.5	68.20	33.90
3454.800000	39.75	---	150.0	V	303.0	-8.9	68.20	28.45
6640.600000	45.14	---	150.0	V	317.0	-0.9	68.20	23.06
8828.500000	46.54	---	150.0	V	170.0	1.7	68.20	21.66
10560.800000	47.33	---	200.0	V	348.0	2.4	68.20	20.87
17979.600000	---	46.20	150.0	V	288.0	8.8	54.00	7.80
17979.600000	55.77	---	150.0	V	288.0	8.8	74.00	18.23

High Channel: 5240MHz



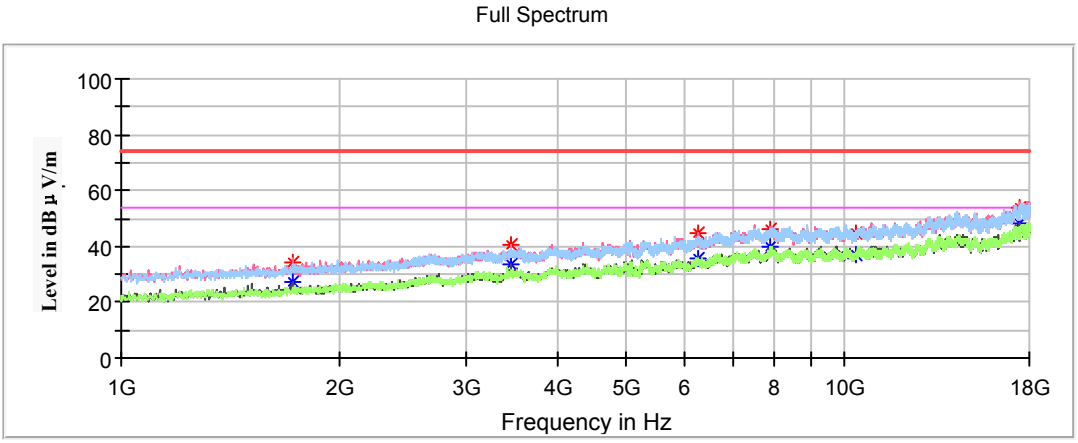
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1729.300000	32.93	---	200.0	V	199.0	-15.5	68.20	35.27
3454.800000	40.49	---	200.0	V	3.0	-8.9	68.20	27.71
6645.700000	45.49	---	200.0	V	169.0	-0.9	68.20	22.71
10164.700000	46.92	---	200.0	V	216.0	2.0	68.20	21.28
14275.300000	52.03	---	200.0	V	351.0	6.4	68.20	16.17
17967.700000	---	47.45	200.0	V	184.0	8.8	54.00	6.55
17967.700000	56.05	---	200.0	V	184.0	8.8	74.00	17.95

802.11n-HT20 Mode:

*Pre-scan with X,Y and Z axes of orientation, the worst case **X-axis of orientation** was recorded*

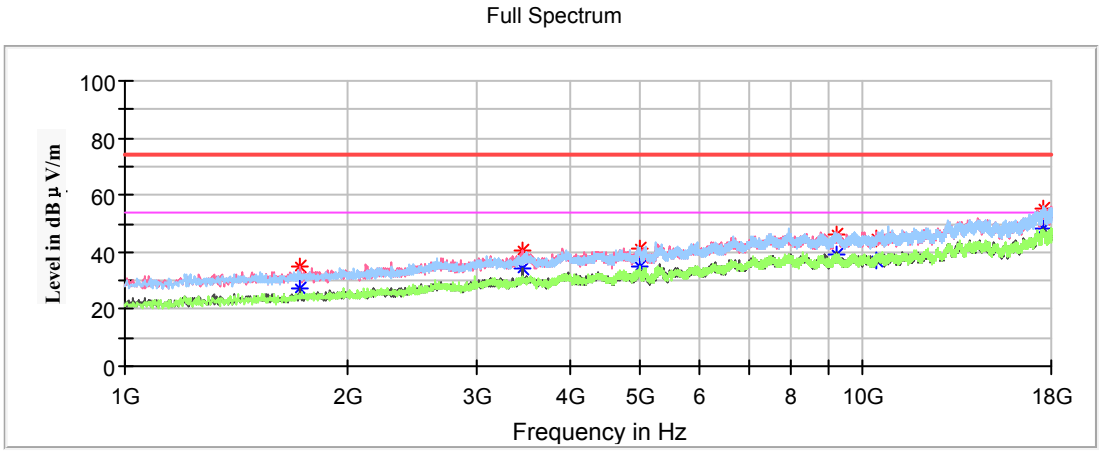
Note:
1. This test was performed with the 5150-5250MHz band reject filter.
2. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
   Corrected Amplitude = Corrected Factor + Reading
   Margin = Limit - Corrected. Amplitude

Low Channel: 5180MHz



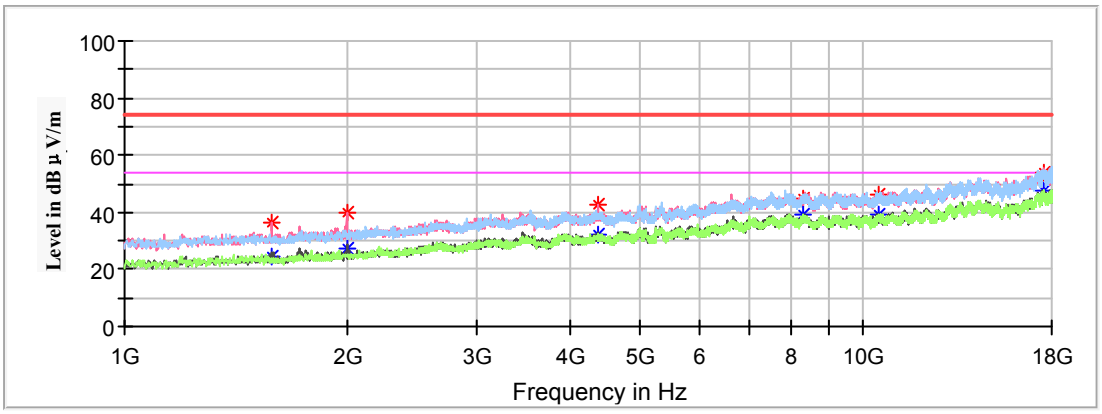
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1731.000000	34.32	---	200.0	V	201.0	-15.5	68.20	33.88
3454.800000	40.70	---	150.0	V	312.0	-8.9	68.20	27.50
6258.100000	44.50	---	150.0	V	14.0	-2.1	68.20	23.70
7900.300000	46.48	---	200.0	H	65.0	1.7	68.20	21.72
10360.000000	44.93	---	150.0	H	339.0	2.2	68.20	23.27
17484.900000	53.83	---	200.0	V	201.0	8.8	68.20	14.37

Middle Channel: 5200MHz



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1731.000000	34.68	---	200.0	V	171.0	-15.5	68.20	33.52
3454.800000	40.37	---	200.0	V	304.0	-8.9	68.20	27.83
4991.600000	---	34.77	150.0	H	246.0	-5.2	54.00	19.23
4991.600000	41.21	---	150.0	H	246.0	-5.2	74.00	32.79
9222.900000	45.98	---	200.0	V	124.0	2.0	68.20	22.22
10400.000000	44.99	---	150.0	V	154.0	2.2	68.20	23.21
17561.400000	54.95	---	200.0	V	19.0	8.9	68.20	13.25

High Channel: 5240MHz



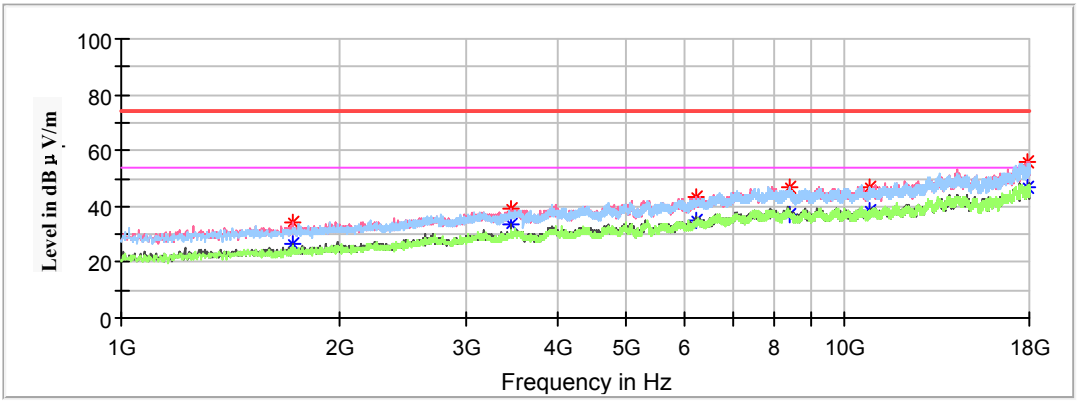
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1584.800000	---	24.37	150.0	V	264.0	-16.0	54.00	29.63
1584.800000	36.45	---	150.0	V	264.0	-16.0	74.00	37.55
1997.900000	39.58	---	150.0	V	327.0	-14.5	68.20	28.62
4374.500000	---	31.92	150.0	V	174.0	-6.4	54.00	22.08
4374.500000	42.63	---	150.0	V	174.0	-6.4	74.00	31.37
8294.700000	---	39.37	200.0	V	250.0	1.5	54.00	14.63
8294.700000	44.69	---	200.0	V	250.0	1.5	74.00	29.31
10480.000000	46.50	---	200.0	H	142.0	2.3	68.20	21.70
17612.400000	53.73	---	150.0	V	308.0	8.9	68.20	14.47

802.11n-HT40 Mode:

*Pre-scan with X,Y and Z axes of orientation, the worst case **X-axis of orientation** was recorded*

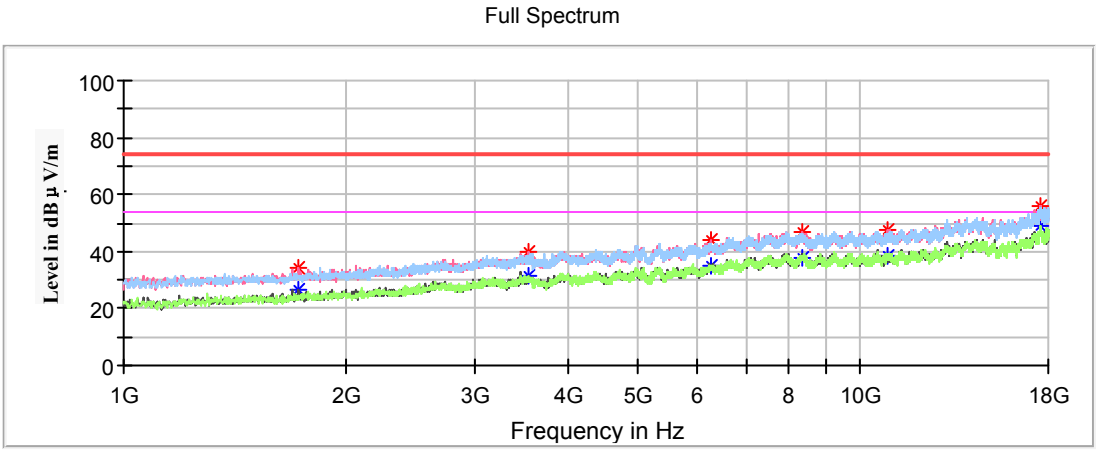
Note:
1. This test was performed with the 5150-5250MHz band reject filter.
2. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
   Corrected Amplitude = Corrected Factor + Reading
   Margin = Limit - Corrected. Amplitude

Low Channel: 5190MHz



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1725.900000	33.97	---	200.0	V	350.0	-15.5	68.20	34.23
3454.800000	39.05	---	150.0	V	309.0	-8.9	68.20	29.15
6249.600000	43.60	---	200.0	V	274.0	-2.1	68.20	24.60
8383.100000	---	37.23	150.0	H	153.0	1.4	54.00	16.77
8383.100000	46.65	---	150.0	H	153.0	1.4	74.00	27.35
10841.300000	47.00	---	200.0	H	260.0	2.7	74.00	27.00
10841.300000	---	38.64	200.0	H	260.0	2.7	54.00	15.36
17942.200000	---	47.00	200.0	V	197.0	8.8	54.00	7.00
17942.200000	55.80	---	200.0	V	197.0	8.8	74.00	18.20

Middle Channel: 5230MHz



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1724.200000	34.58	---	200.0	V	183.0	-15.5	68.20	33.62
3553.400000	40.17	---	150.0	V	302.0	-8.6	68.20	28.03
6253.000000	43.75	---	200.0	V	183.0	-2.1	68.20	24.45
8332.100000	---	37.84	200.0	V	22.0	1.5	54.00	16.16
8332.100000	46.90	---	200.0	V	22.0	1.5	74.00	27.10
10880.400000	47.84	---	200.0	V	296.0	2.8	74.00	26.16
10880.400000	---	38.22	200.0	V	296.0	2.8	54.00	15.78
17552.900000	56.10	---	200.0	H	333.0	8.9	68.20	12.10

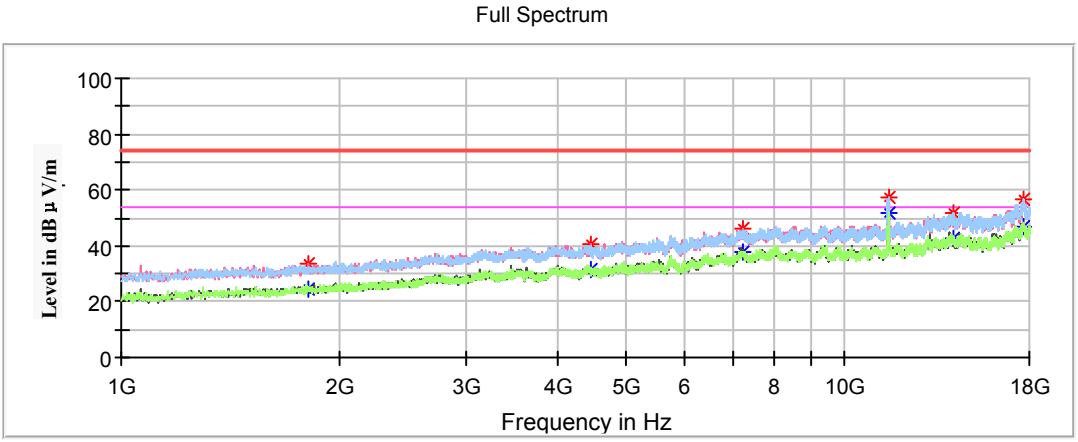
1GHz-18GHz(5725-5850MHz Band):

802.11a Mode:

*(Pre-scan in the X, Y and Z axes of orientation, the worst case **X-axis of orientation** was recorded.)*

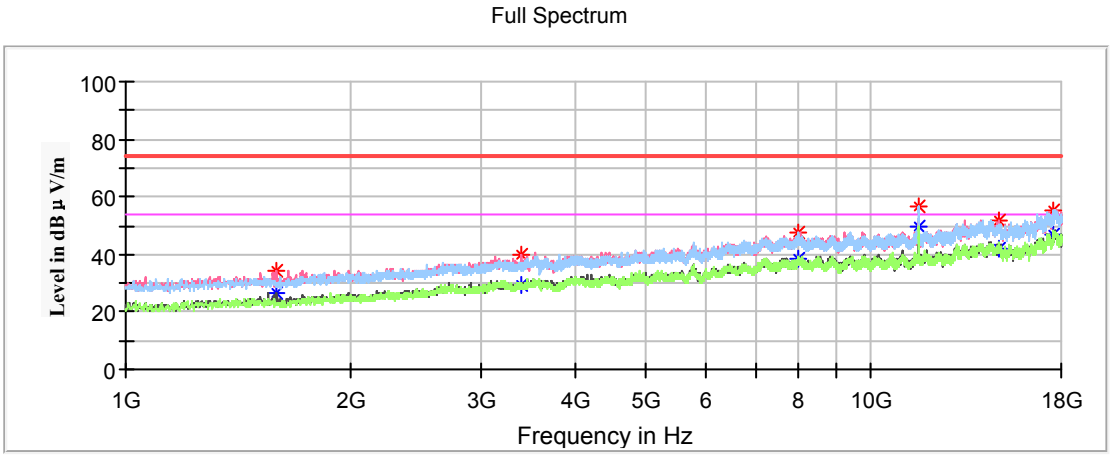
Note:
1. This test was performed with the 5725-5850MHz band reject filter.
2. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
   Corrected Amplitude = Corrected Factor + Reading
   Margin = Limit - Corrected. Amplitude

Low Channel: 5745MHz



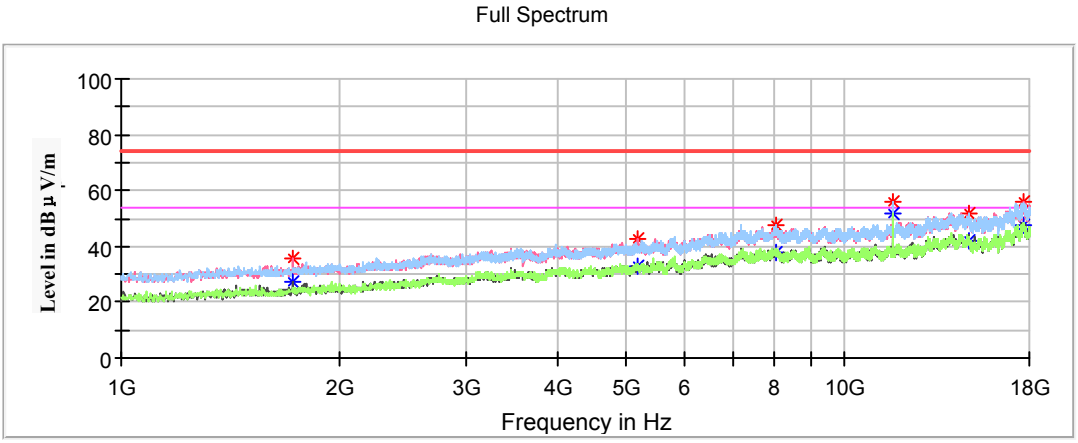
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1814.300000	33.29	---	150.0	H	292.0	-15.2	68.20	34.91
4464.600000	40.50	---	150.0	V	6.0	-6.3	68.20	27.70
7218.600000	46.26	---	200.0	V	64.0	0.4	68.20	21.94
11490.000000	57.03	---	150.0	H	141.0	2.8	74.00	16.97
11490.000000	---	51.95	150.0	H	141.0	2.8	54.00	2.05
14147.800000	51.97	---	150.0	H	235.0	6.3	68.20	16.23
17636.200000	56.36	---	150.0	H	308.0	8.9	68.20	11.84

Middle Channel: 5785MHz



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1589.900000	---	26.73	150.0	V	295.0	-16.0	54.00	27.27
1589.900000	34.47	---	150.0	V	295.0	-16.0	74.00	39.53
3402.100000	40.08	---	200.0	V	218.0	-9.1	68.20	28.12
7988.700000	47.66	---	150.0	V	1.0	1.8	68.20	20.54
11570.000000	---	49.84	200.0	H	153.0	2.9	54.00	4.16
11570.000000	56.75	---	200.0	H	153.0	3.0	74.00	17.25
14836.300000	51.69	---	150.0	V	356.0	5.6	68.20	16.51
17592.000000	55.22	---	150.0	V	0.0	8.9	68.20	12.98

High Channel: 5825MHz



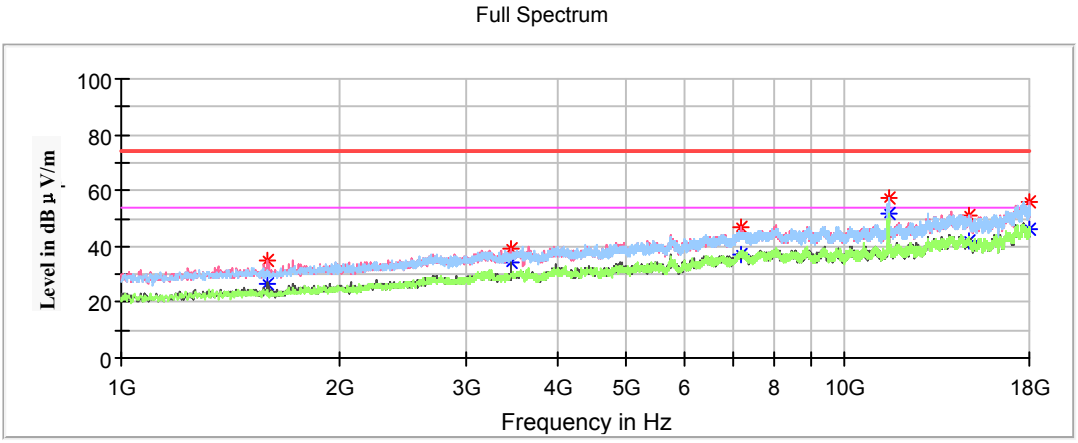
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1725.900000	35.55	---	200.0	V	198.0	-15.5	68.20	32.65
5183.700000	42.54	---	200.0	V	63.0	-4.7	68.20	25.66
8024.400000	47.32	---	150.0	H	52.0	1.8	68.20	20.88
11650.000000	---	51.67	150.0	H	142.0	3.1	54.00	2.33
11650.000000	56.04	---	150.0	H	142.0	3.1	74.00	17.96
14846.500000	51.60	---	150.0	H	201.0	5.5	68.20	16.60
17665.100000	55.82	---	200.0	V	124.0	8.9	68.20	12.38

802.11n-HT20 Mode:

*Pre-scan with X,Y and Z axes of orientation, the worst case **X-axis of orientation** was recorded*

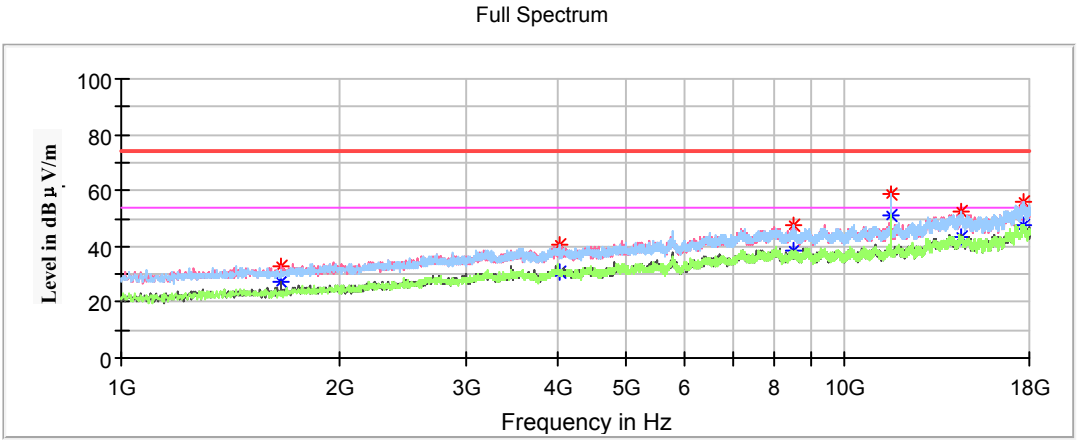
Note:
1. This test was performed with the 5725-5850MHz band reject filter.
2. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
   Corrected Amplitude = Corrected Factor + Reading
   Margin = Limit - Corrected. Amplitude

Low Channel: 5745MHz



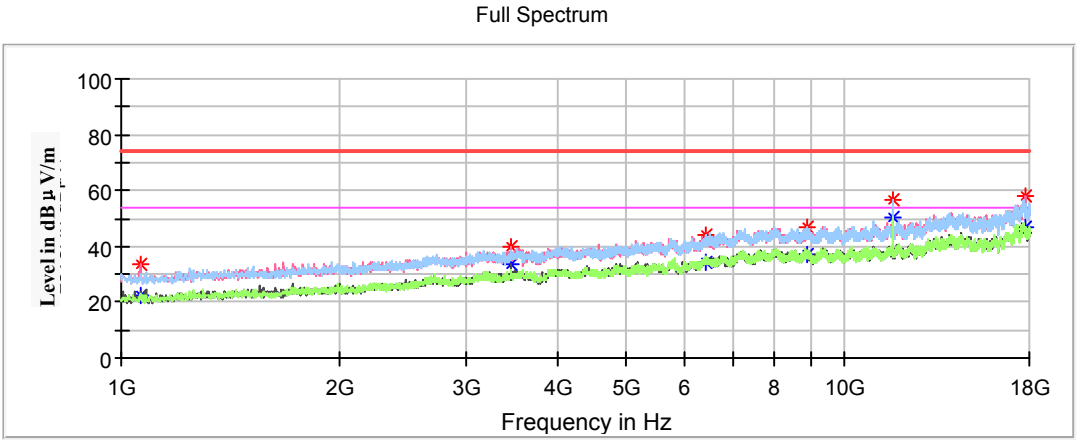
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1593.300000	---	26.60	200.0	V	280.0	-16.0	54.00	27.40
1593.300000	34.78	---	200.0	V	280.0	-16.0	74.00	39.22
3454.800000	39.15	---	200.0	V	309.0	-8.9	68.20	29.05
7186.300000	46.76	---	200.0	V	111.0	0.3	68.20	21.44
11490.000000	---	51.72	150.0	H	140.0	2.8	54.00	2.28
11490.000000	57.14	---	150.0	H	140.0	2.8	74.00	16.86
14819.300000	51.29	---	200.0	V	177.0	5.6	68.20	16.91
17974.500000	---	46.20	150.0	H	279.0	8.8	54.00	7.80
17974.500000	55.63	---	150.0	H	279.0	8.8	74.00	18.37

Middle Channel: 5785MHz



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1659.600000	33.14	---	200.0	V	2.0	-15.8	68.20	35.06
4043.000000	---	30.76	200.0	H	158.0	-6.9	54.00	23.24
4043.000000	40.65	---	200.0	H	158.0	-6.9	74.00	33.35
8517.400000	47.34	---	150.0	V	245.0	1.3	68.20	20.86
11570.000000	58.75	---	200.0	H	158.0	2.9	74.00	15.25
11570.000000	---	51.10	200.0	H	158.0	2.9	54.00	2.90
14520.100000	52.18	---	200.0	H	203.0	6.5	68.20	16.02
17660.000000	56.22	---	200.0	V	261.0	8.9	68.20	11.98

High Channel: 5825MHz



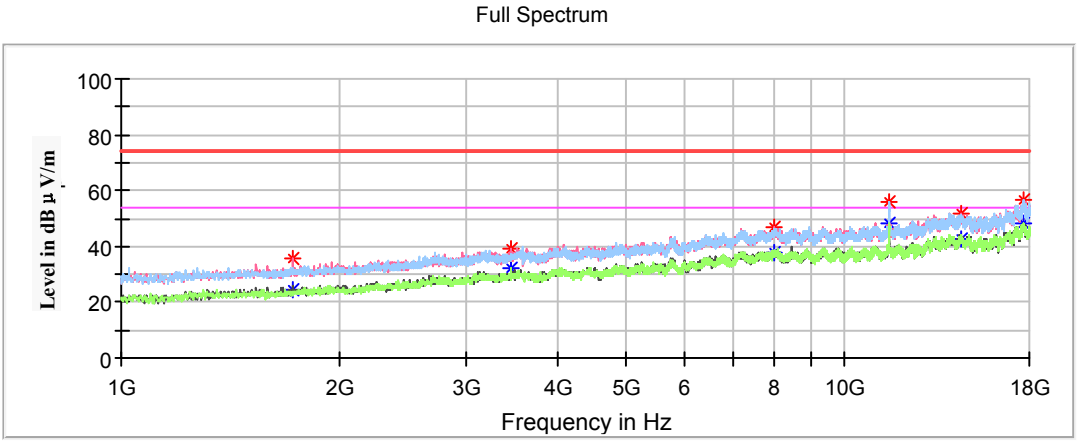
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1064.600000	---	22.50	200.0	V	278.0	-18.7	54.00	31.50
1064.600000	33.45	---	200.0	V	278.0	-18.7	74.00	40.55
3454.800000	40.05	---	150.0	V	312.0	-8.9	68.20	28.15
6424.700000	44.26	---	200.0	H	43.0	-1.5	68.20	23.94
8881.200000	46.66	---	150.0	V	233.0	1.7	68.20	21.54
11650.000000	---	50.14	150.0	H	142.0	3.1	54.00	3.86
11650.000000	56.70	---	150.0	H	142.0	3.1	74.00	17.30
17746.700000	---	46.75	200.0	V	348.0	8.8	54.00	7.25
17746.700000	57.73	---	200.0	V	348.0	8.8	74.00	16.27

802.11n-HT40 Mode:

*Pre-scan with X,Y and Z axes of orientation, the worst case **X-axis of orientation** was recorded*

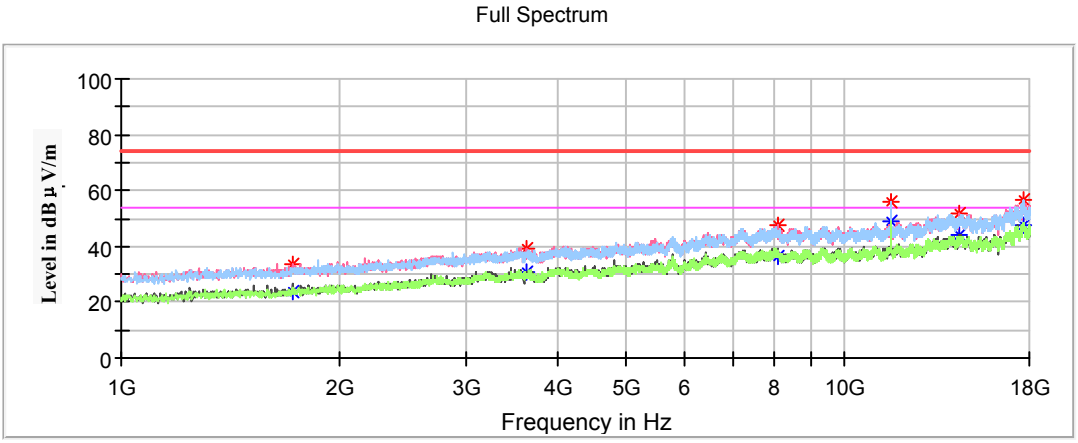
Note:
1. This test was performed with the 5725-5850MHz band reject filter.
2. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
   Corrected Amplitude = Corrected Factor + Reading
   Margin = Limit - Corrected. Amplitude

Low Channel: 5755MHz



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1727.600000	35.74	---	150.0	V	199.0	-15.5	68.20	32.46
3454.800000	39.47	---	150.0	H	323.0	-8.9	68.20	28.73
7980.200000	46.72	---	150.0	V	96.0	1.8	68.20	21.48
11510.000000	---	48.24	200.0	H	186.0	2.8	54.00	5.76
11510.000000	55.88	---	200.0	H	186.0	2.8	74.00	18.12
14501.400000	51.65	---	150.0	V	184.0	6.5	68.20	16.55
17678.700000	56.37	---	200.0	H	279.0	8.9	68.20	11.83

Middle Channel: 5795MHz

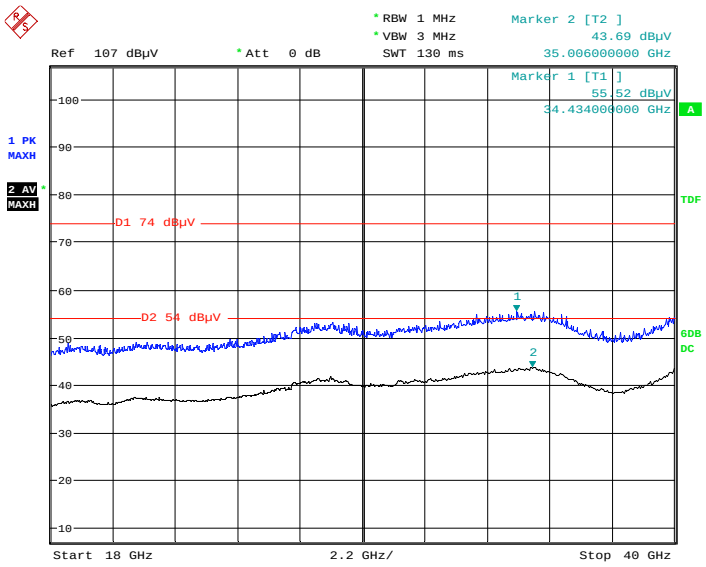


Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1727.600000	33.54	---	200.0	V	55.0	-15.5	68.20	34.66
3624.800000	39.24	---	150.0	V	273.0	-8.4	74.00	34.76
3624.800000	---	30.65	150.0	V	273.0	-8.4	54.00	23.35
8109.400000	---	36.52	150.0	V	0.0	1.7	54.00	17.48
8109.400000	47.33	---	150.0	V	0.0	1.7	74.00	26.67
11590.000000	55.80	---	200.0	H	152.0	3.0	74.00	18.20
11590.000000	---	48.74	200.0	H	152.0	3.0	54.00	5.26
14402.800000	51.69	---	200.0	V	280.0	6.5	68.20	16.51
17614.100000	56.78	---	150.0	H	125.0	8.9	68.20	11.42

18GHz-40GHz(5150-5250MHz Band):

*Pre-scan with 802.11a, 802.11n-HT20 and 802.11n-HT40 modes of operation in the X,Y and Z axes of orientation, the worst case **802.11a mode high channel** in X-axis of orientation was recorded*

Horizontal



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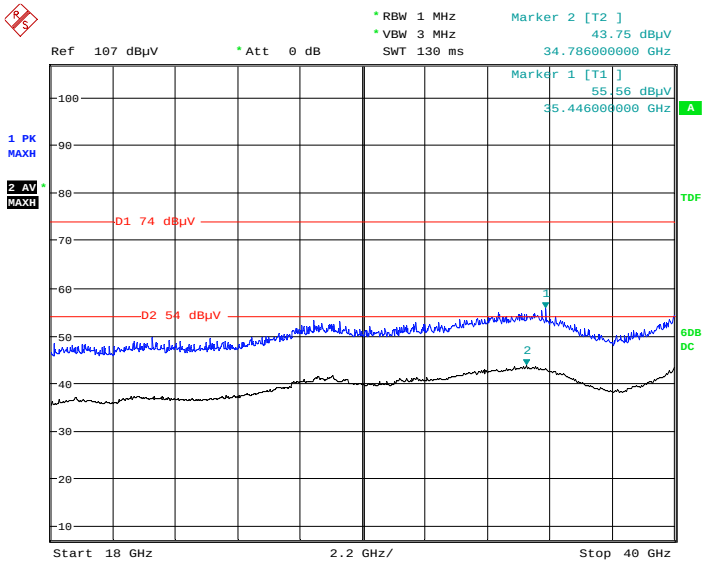
Vertical

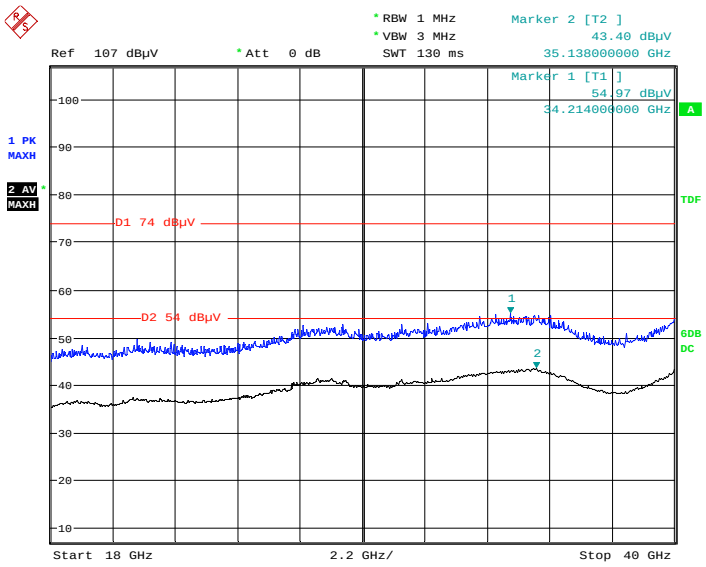


Date: 17.JUL.2020 07:39:42

18GHz-40GHz(5725-5850MHz Band):

Pre-scan with 802.11a, 802.11n-HT20 and 802.11n-HT40 modes of operation in the X,Y and Z axes of orientation, the worst case ***802.11n-HT20 mode low channel*** *in X-axis of orientation was recorded*

Horizontal



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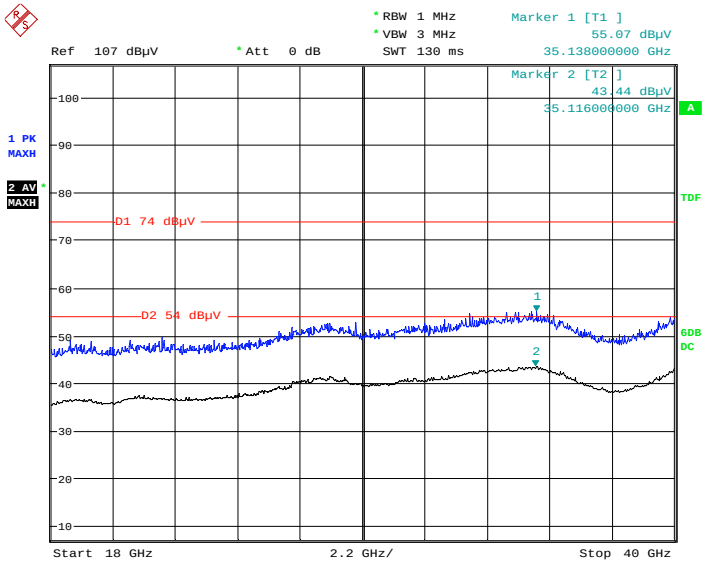
Vertical



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Restricted Bands Emissions Test (5150-5250MHz Band):

Note:
1. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
2. Corrected Amplitude = Corrected Factor + Reading
3. Margin = Limit - Corrected. Amplitude

802.11a Mode: *(Pre-scan in the X, Y and Z axes of orientation, the worst case in X-axis of orientation was recorded)*

Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
Low Channel: 5180MHz								
5150.00	57.87	---	200.0	V	76.0	5.2	74.00	16.13
5150.00	---	51.21	200.0	V	76.0	5.2	54.00	2.79
High Channel: 5240MHz								
5350.00	49.32	---	150.0	V	14.0	5.7	74.00	24.68
5350.00	---	43.90	150.0	V	14.0	5.7	54.00	10.10

802.11n-HT20 Mode: *(Pre-scan in the X, Y and Z axes of orientation, the worst case in X-axis of orientation was recorded)*

Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
Low Channel: 5180MHz								
5150.00	57.60	---	150.0	V	276.0	5.2	74.00	16.40
5150.00	---	51.38	150.0	V	276.0	5.2	54.00	2.62
High Channel: 5240MHz								
5350.00	---	41.68	200.0	V	358.0	5.7	54.00	12.32
5350.00	51.06	---	200.0	V	358.0	5.7	74.00	22.94

802.11n-HT40 Mode: *(Pre-scan in the X, Y and Z axes of orientation, the worst case in X-axis of orientation was recorded)*

Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
Low Channel: 5190MHz								
5150.00	57.93	---	200.0	V	52.0	5.2	74.00	16.07
5150.00	---	51.00	200.0	V	52.0	5.2	54.00	3.00
High Channel: 5230MHz								
5350.00	48.97	---	150.0	V	109.0	5.7	74.00	25.03
5350.00	---	43.71	150.0	V	109.0	5.7	54.00	10.29

Restricted Bands Emissions Test (5725-5850MHz Band):

Note:
1. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
2. Corrected Amplitude = Corrected Factor + Reading
3. Margin = Limit - Corrected. Amplitude

802.11a Mode: *(Pre-scan in the X, Y and Z axes of orientation, the worst case in X-axis of orientation was recorded)*

Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
Low Channel: 5745MHz								
5650.00	50.24	---	200.0	V	114.0	6.4	67.80	17.96
5700.00	60.38	---	200.0	V	275.0	6.5	105.20	44.82
5720.00	74.79	---	150.0	V	248.0	6.5	110.80	36.01
5725.00	81.55	---	150.0	V	296.0	6.5	122.20	40.65
High Channel: 5825MHz								
5850.00	75.22	---	200.0	V	276.0	6.7	122.20	46.98
5855.00	72.99	---	150.0	V	296.0	6.7	110.80	37.81
5875.00	58.18	---	150.0	V	124.0	6.8	104.83	46.65
5925.00	50.01	---	200.0	V	253.0	6.9	67.80	17.79

802.11n-HT20 Mode: *(Pre-scan in the X, Y and Z axes of orientation, the worst case in X-axis of orientation was recorded)*

Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
Low Channel: 5745MHz								
5650.00	51.02	---	200.0	V	98.0	6.4	67.80	16.78
5700.00	66.28	---	150.0	V	325.0	6.5	105.20	38.92
5720.00	81.38	---	150.0	V	267.0	6.5	110.80	29.42
5725.00	85.08	---	200.0	V	260.0	6.5	122.20	37.12
High Channel: 5825MHz								
5850.00	78.47	---	150.0	V	259.0	6.7	122.20	43.73
5855.00	74.83	---	150.0	V	259.0	6.7	110.80	35.97
5875.00	64.14	---	150.0	V	274.0	6.8	105.20	41.06
5925.00	49.46	---	200.0	V	239.0	6.9	67.80	18.34

802.11n-HT40 Mode: *(Pre-scan in the X, Y and Z axes of orientation, the worst case in X-axis of orientation was recorded)*

Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
Low Channel: 5755MHz								
5650.00	60.18	---	200.0	V	255.0	6.4	68.20	8.02
5700.00	73.09	---	200.0	V	311.0	6.5	105.20	32.11
5720.00	82.12	---	150.0	V	245.0	6.5	110.80	28.68
5725.00	83.27	---	150.0	V	277.0	6.5	122.20	38.93
High Channel: 5795MHz								
5850.00	74.59	---	150.0	V	71.0	6.7	122.20	47.61
5855.00	70.73	---	200.0	V	78.0	6.7	110.80	40.07
5875.00	68.05	---	200.0	V	303.0	6.8	105.20	37.15
5925.00	55.33	---	200.0	V	234.0	6.9	67.80	12.47

FCC §15.407(a) &§15.407(e)–EMISSION BANDWIDTH

Applicable Standard

.
The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz band is made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.

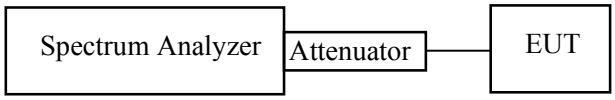
Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

Test Procedure

1. Emission Bandwidth (EBW)
a) Set RBW = approximately 1% of the emission bandwidth.
b) Set the VBW > RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

2. **Minimum Emission Bandwidth for the band 5.725-5.85 GHz**
Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.725-5.85 GHz. The following procedure shall be used for measuring this bandwidth:
a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3 × RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.

g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.



Test Data

Environmental Conditions

Temperature:	24.5-26.3 °C
Relative Humidity:	50-69 %
ATM Pressure:	101.3-102.1 kPa

The testing was performed by Winnie Yang from 2020-07-10 to 2020-07-13.

Test Result: Compliant

5150-5250 MHz:

Test mode	Channel	Frequency (MHz)	26dB Bandwidth (MHz)	99% Bandwidth (MHz)
802.11a	Low	5180	21.082	16.673
	Middle	5200	21.483	16.754
	High	5240	22.846	16.754
802.11n-HT20	Low	5180	21.964	17.796
	Middle	5200	22.525	17.796
	High	5240	22.525	17.876
802.11n-HT40	Low	5190	43.287	36.072
	High	5230	42.966	35.912

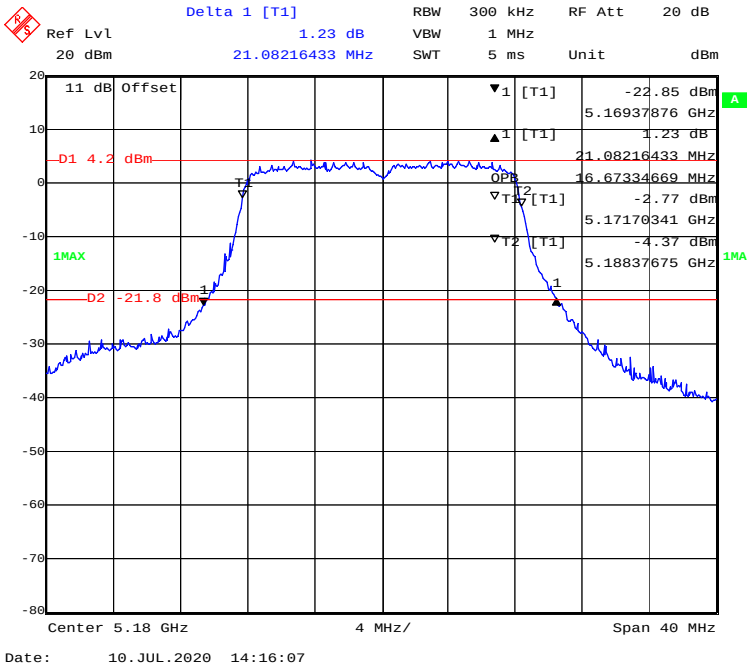
5725-5850MHz:

Test mode	Channel	Frequency (MHz)	99% Bandwidth (MHz)	99% Bandwidth (MHz)
802.11a	Low	5745	16.413	16.954
	Middle	5785	16.413	16.834
	High	5825	16.353	16.894
802.11n-HT20	Low	5745	17.555	18.036
	Middle	5785	17.375	17.856
	High	5825	17.375	17.856
802.11n-HT40	Low	5755	35.230	36.433
	Middle	5795	35.230	36.192

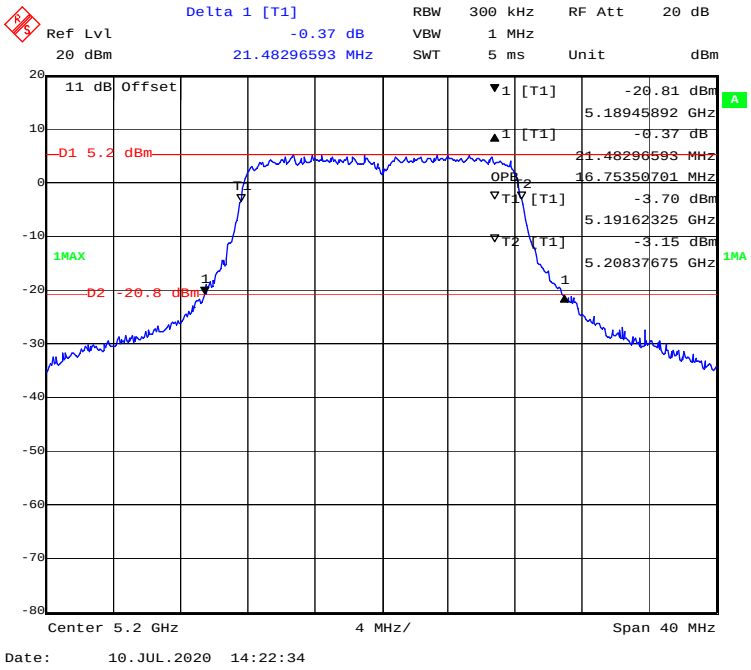
5150-5250 MHz Band:

26 Bandwidth&99% Occupied Bandwidth

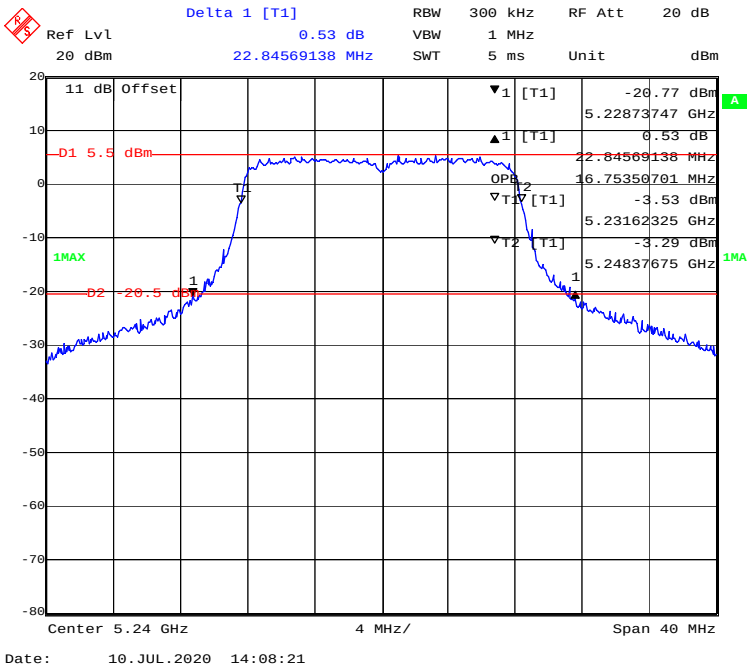
802.11a mode, 5180MHz



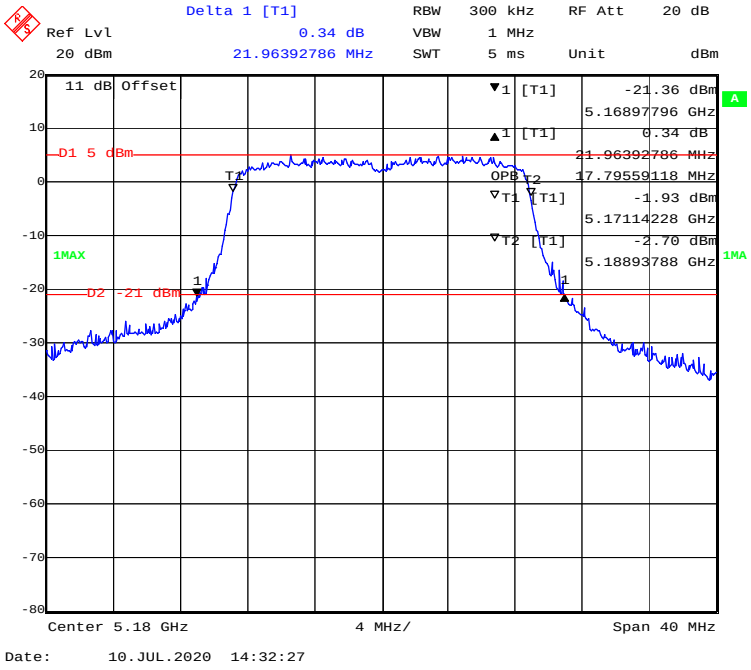
802.11a mode, 5200MHz



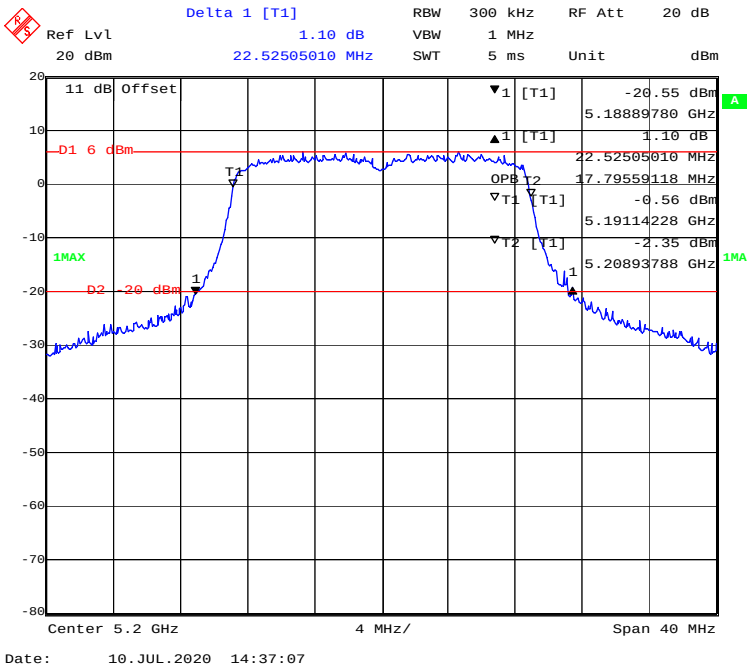
802.11a mode, 5240MHz



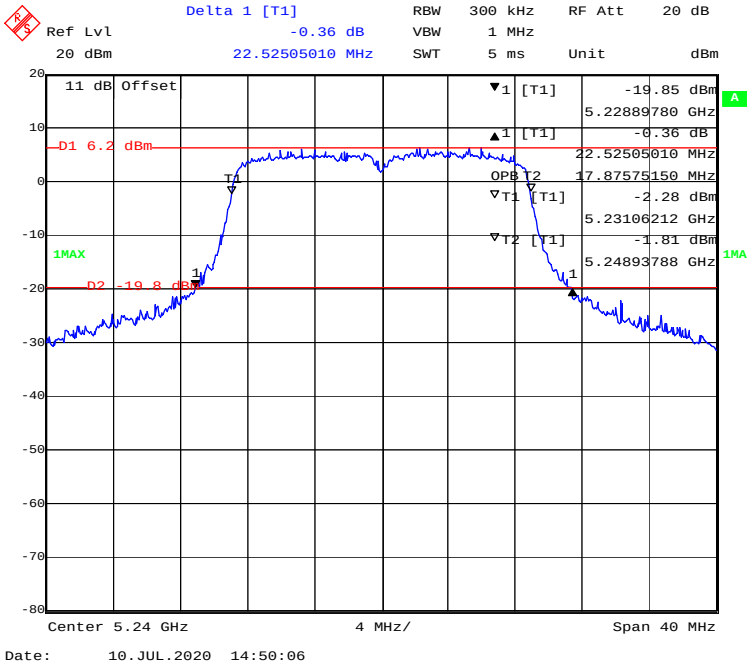
802.11n-HT20 mode, 5180MHz



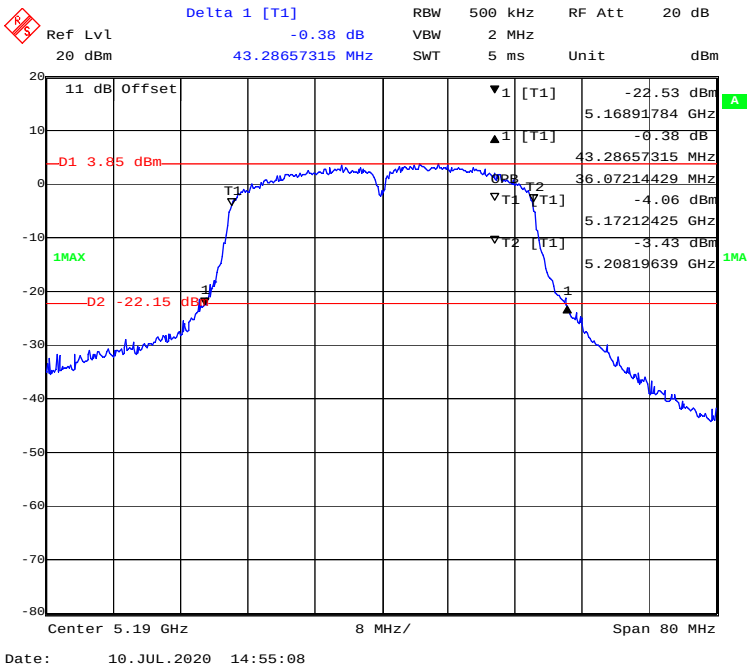
802.11n-HT20 mode, 5200MHz



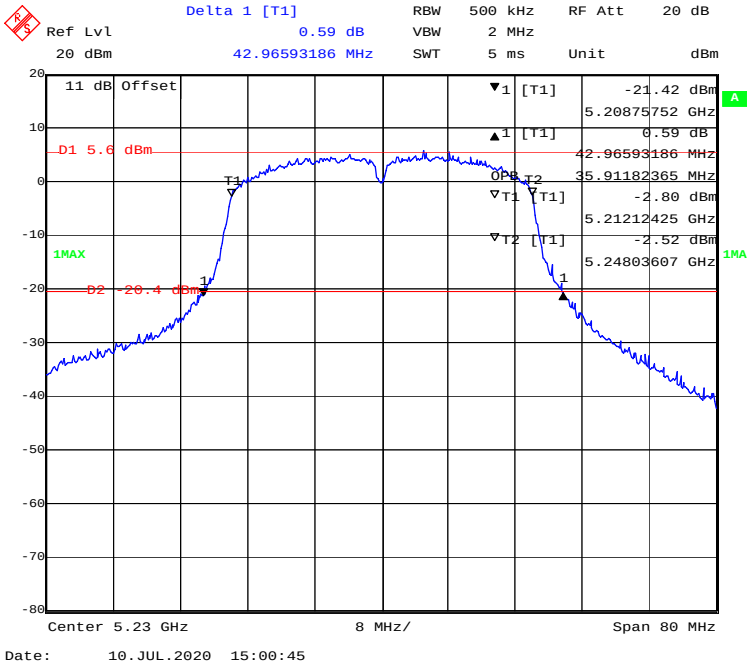
802.11n-HT20 mode, 5240MHz



802.11n-HT40 mode, 5190MHz

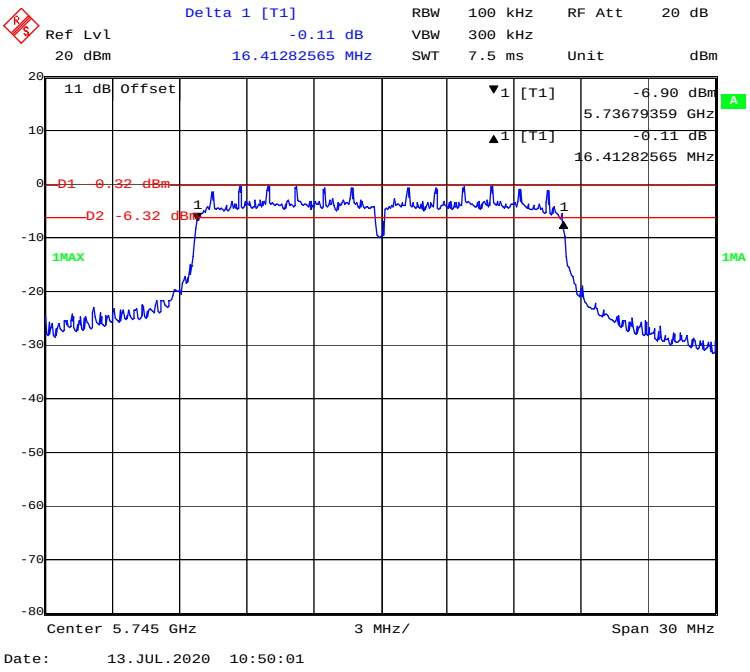


802.11n-HT40 mode, 5230MHz

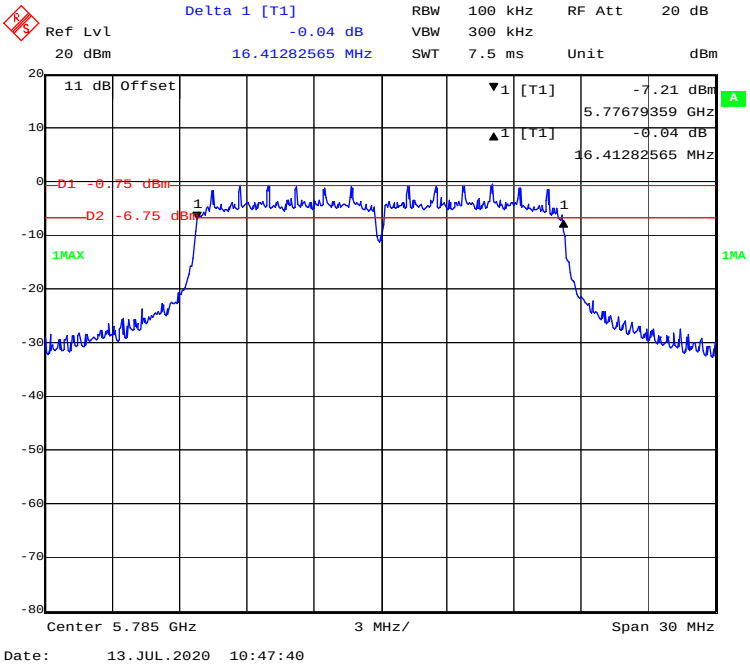


5725-5850 MHz Band
99% Occupied Bandwidth

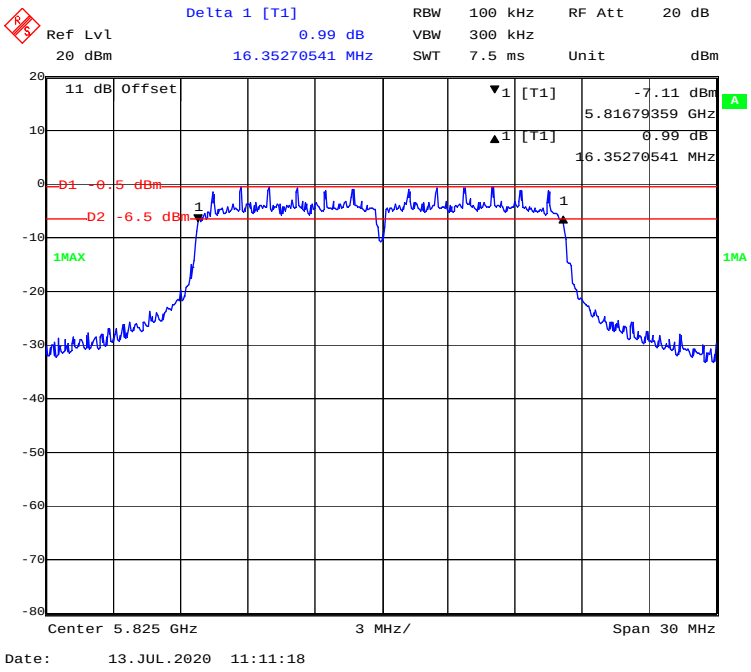
802.11a mode, 5745MHz



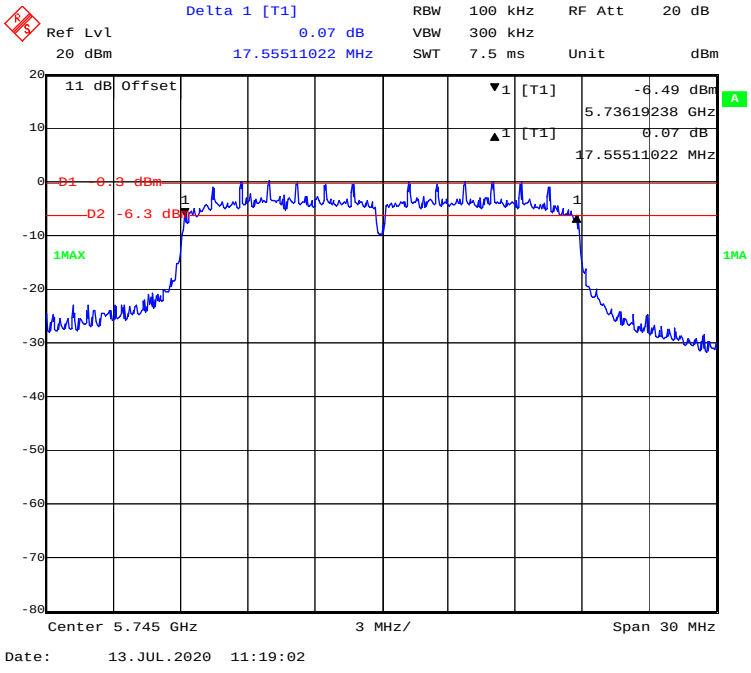
802.11a mode, 5785MHz



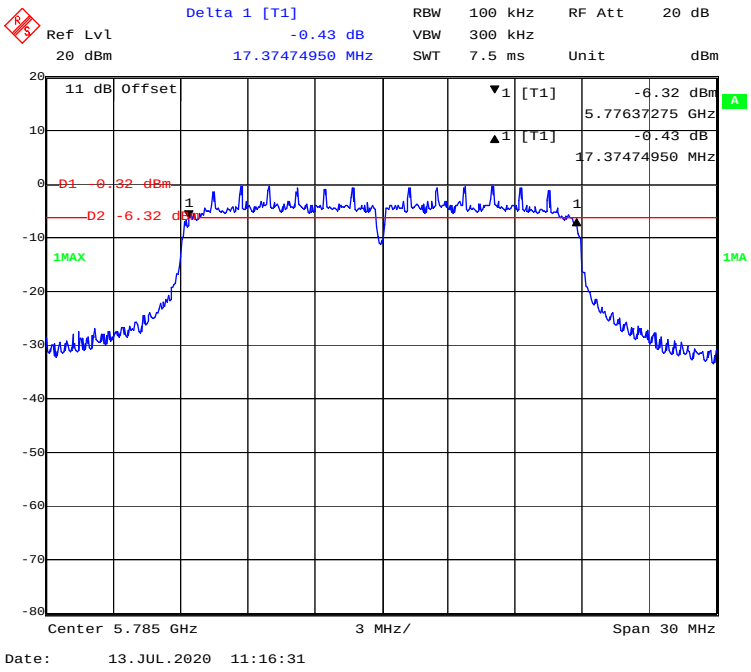
802.11a mode, 5825MHz



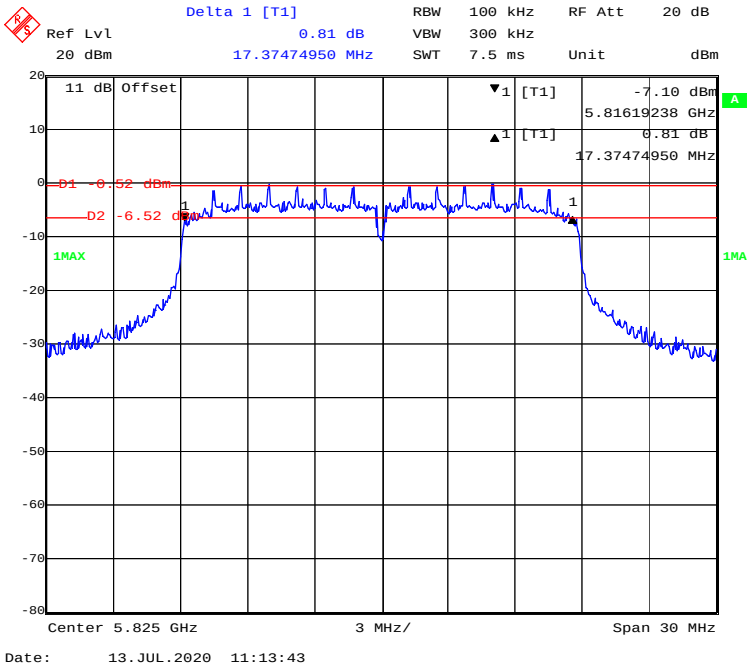
802.11n-HT20 mode, 5745MHz



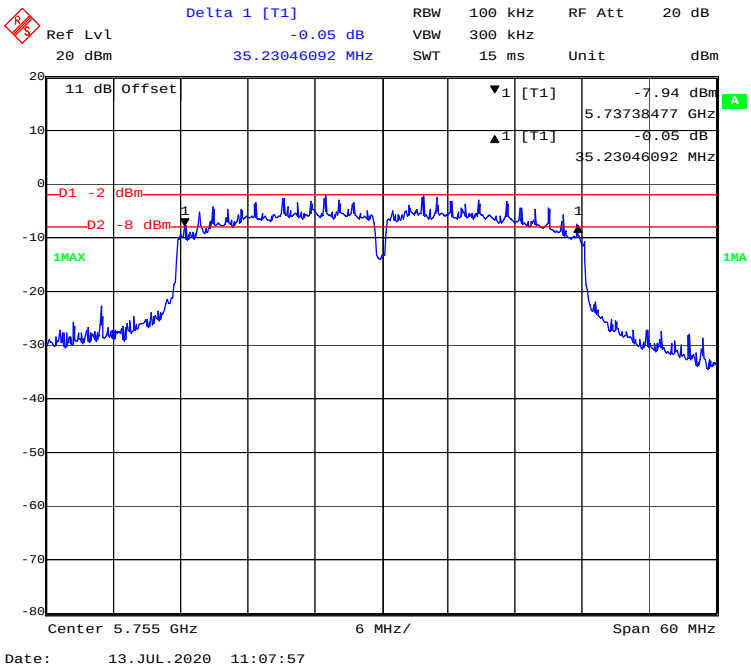
802.11n-HT20 mode, 5785MHz



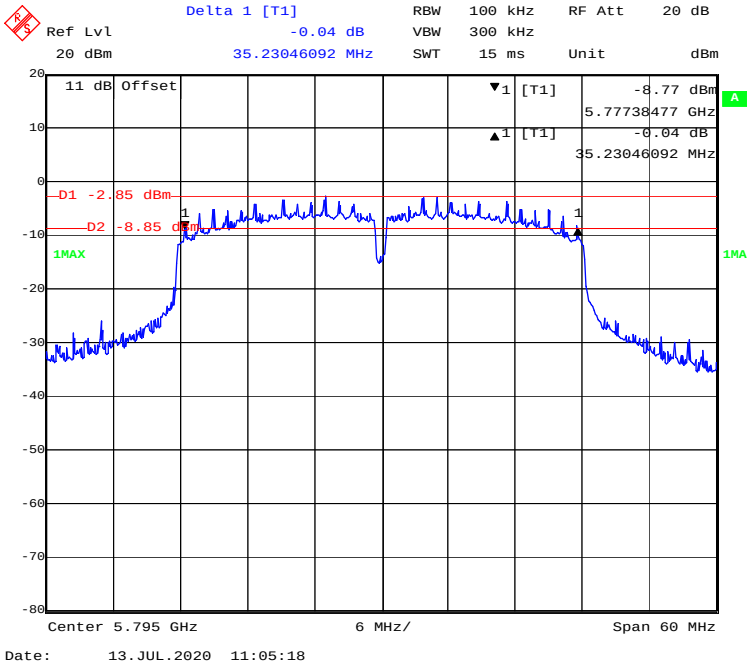
802.11n-HT20 mode, 5825MHz



802.11n-HT40 mode, 5755MHz



802.11n-HT40 mode, 5795MHz



FCC §15.407(a) (1) (3) – CONDUCTED TRANSMITTER OUTPUT POWER

Applicable Standard

According to §15.407(a)(1)

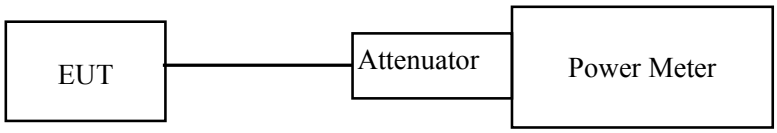
(iv) For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

According to §15.407(a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Test Procedure

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to one test equipment.
3. Add a correction factor to the display.



Test Data

Environmental Conditions

Temperature:	24.2 °C
Relative Humidity:	67 %
ATM Pressure:	101.3 kPa

The testing was performed by Winnie Yang on 2020-07-13.

Test Mode: Transmitting

Test mode	Band	Frequency (MHz)	Average Conducted Output Power (dBm)	Limit (dBm)	Result
802.11a	5150-5250 MHz	5180	19.79	24	PASS
		5200	20.87	24	PASS
		5240	21.27	24	PASS
802.11n-HT20	5150-5250 MHz	5180	20.50	24	PASS
		5200	21.36	24	PASS
		5240	21.95	24	PASS
802.11n-HT40	5150-5250 MHz	5190	20.57	24	PASS
		5230	21.69	24	PASS

Test mode	Band	Frequency (MHz)	Average Conducted Output Power (dBm)	Limit	Result
802.11a	5725-5850 MHz	5745	18.62	30	PASS
		5785	18.26	30	PASS
		5825	18.11	30	PASS
802.11n-HT20	5725-5850 MHz	5745	18.53	30	PASS
		5785	18.23	30	PASS
		5825	18.34	30	PASS
802.11n-HT40	5725-5850 MHz	5755	18.92	30	PASS
		5795	18.81	30	PASS

Note: The maximum antenna gain is 1 dBi.

FCC §15.407(a) (1) (3) - POWER SPECTRAL DENSITY

Applicable Standard

According to §15.407(a) (1)

(iv) For 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. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

According to §15.407(a) (3)

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Test Procedure

The measurements are base on FCC KDB 789033 D02 General UNII Test Procedyres New Rules v02r01: Guidelines for Compliance Testing of Unlicensed National Information Infrastructure (U-NII) Devices section F: Maximum power spectral density (PPSD)

Test Data

Environmental Conditions

Temperature:	24.5-26.3 °C
Relative Humidity:	50-69 %
ATM Pressure:	101.3-102.1 kPa

The testing was performed by Winnie Yang from 2020-07-10 to 2020-07-13.

Test Mode: Transmitting

5150MHz-5250MHz:

Mode	Channel	Frequency (MHz)	PSD (dBm/MHz)	Limit (dBm/MHz)	Result
802.11a	Low	5180	1.96	11	PASS
	Middle	5200	2.90	11	PASS
	High	5240	3.23	11	PASS
802.11n-HT20	Low	5180	2.66	11	PASS
	Middle	5200	3.21	11	PASS
	High	5240	3.96	11	PASS
802.11n-HT40	Low	5190	1.29	11	PASS
	High	5230	1.72	11	PASS

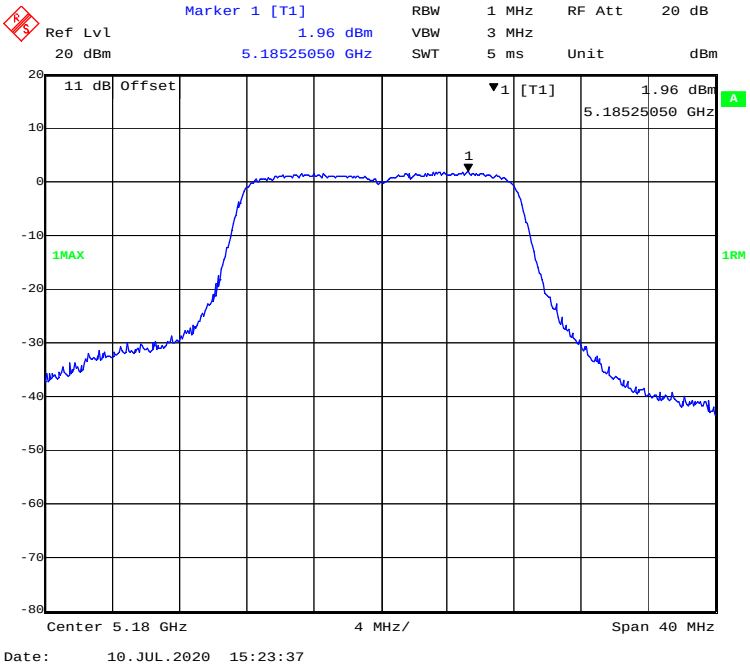
5725MHz-5850MHz:

Mode	Channel	Frequency (MHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
802.11a	Low	5745	0.15	30	PASS
	Middle	5785	-0.09	30	PASS
	High	5825	-0.07	30	PASS
802.11n-HT20	Low	5745	0.17	30	PASS
	Middle	5785	0.15	30	PASS
	High	5825	-0.17	30	PASS
802.11n-HT40	Low	5755	-2.36	30	PASS
	High	5795	-2.76	30	PASS

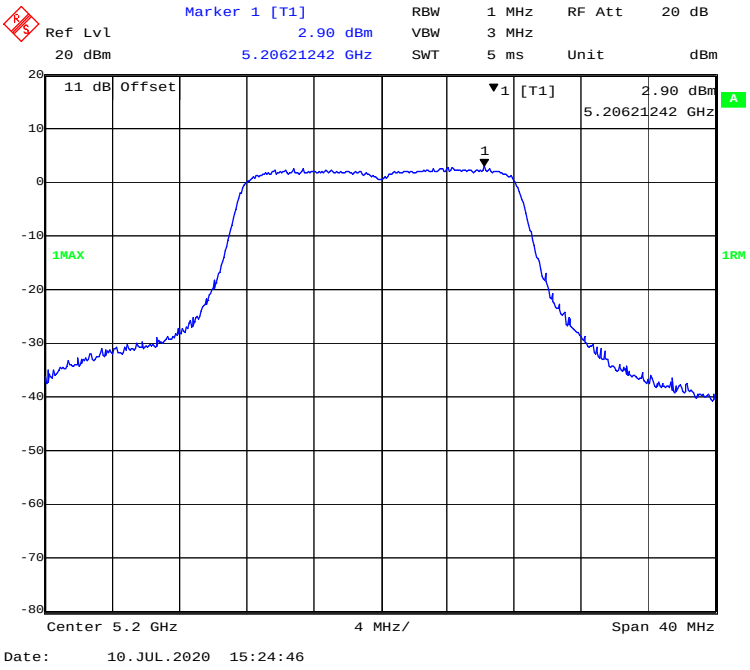
Note:
The maximum antenna gain is 1.0 dBi.

5150MHz-5250MHz:

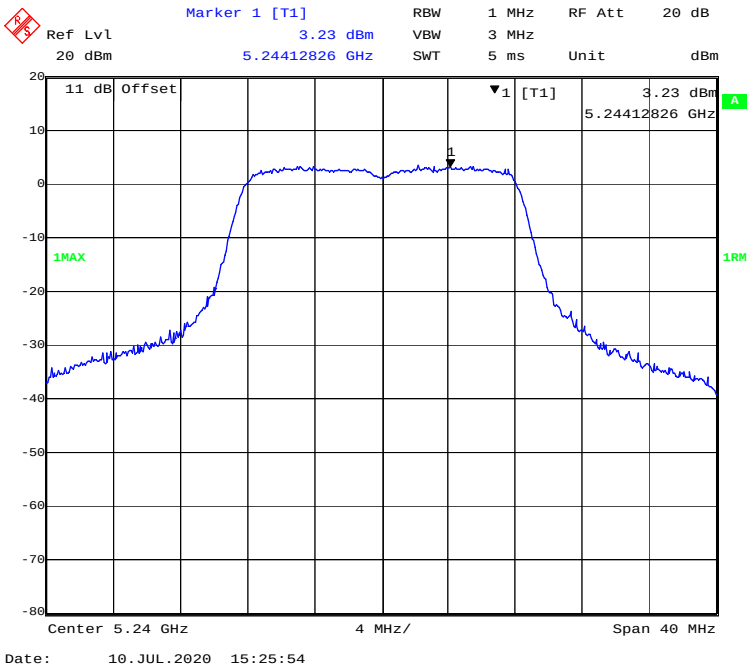
802.11a mode, Power spectral density-5180MHz



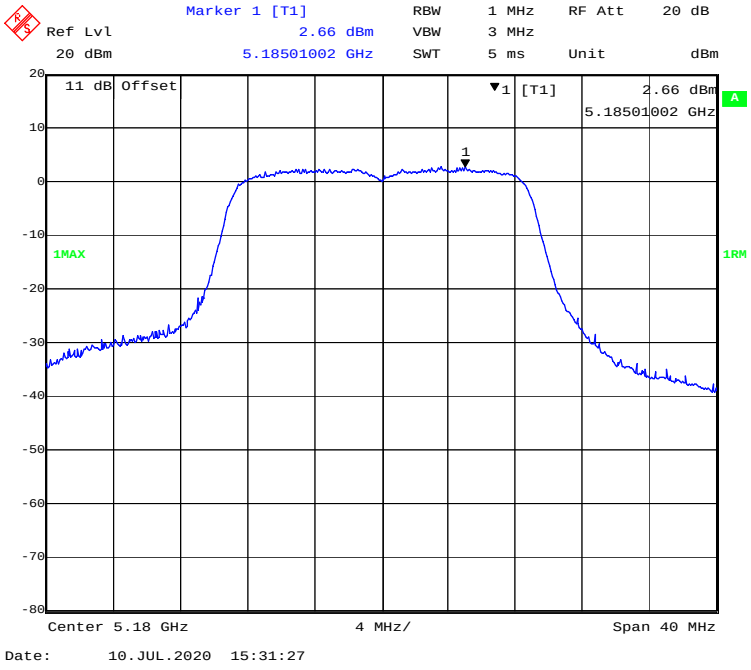
802.11a mode, Power spectral density-5200MHz



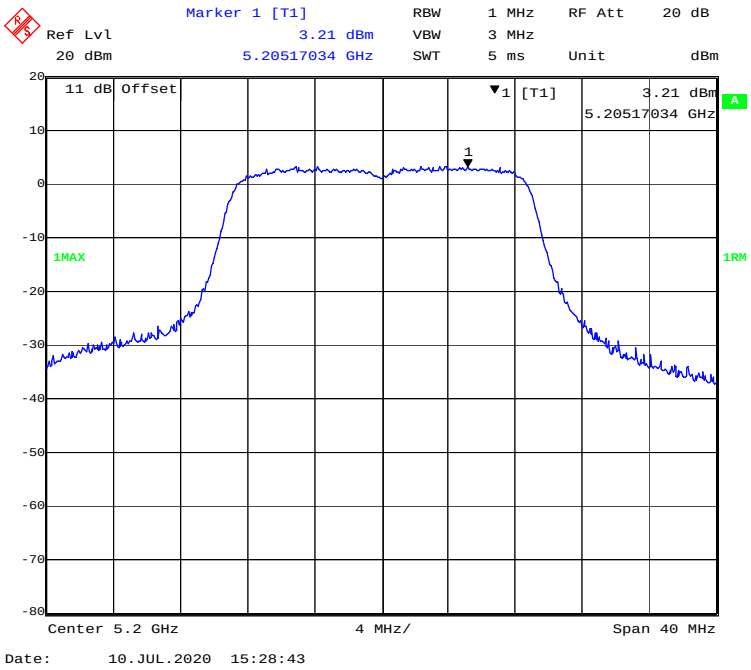
802.11a mode, Power spectral density-5240MHz



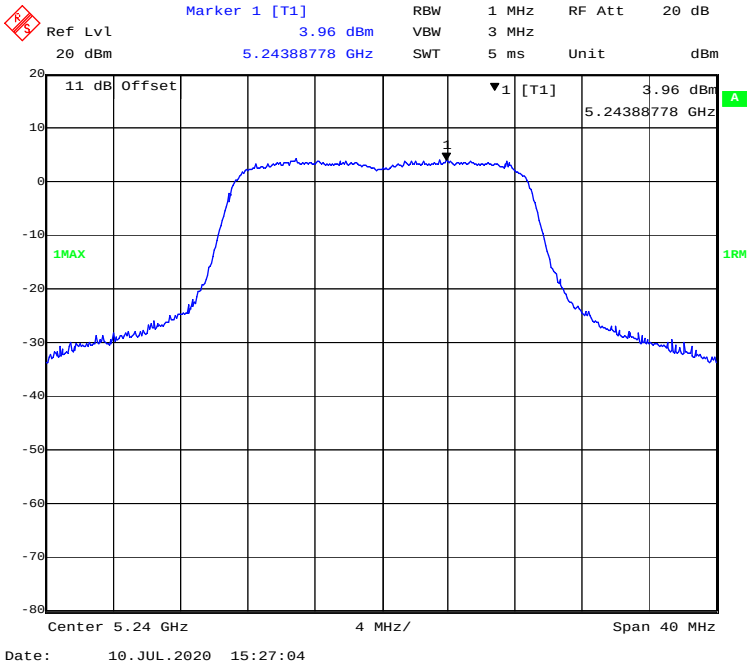
802.11n-HT20 mode, Power spectral density-5180MHz



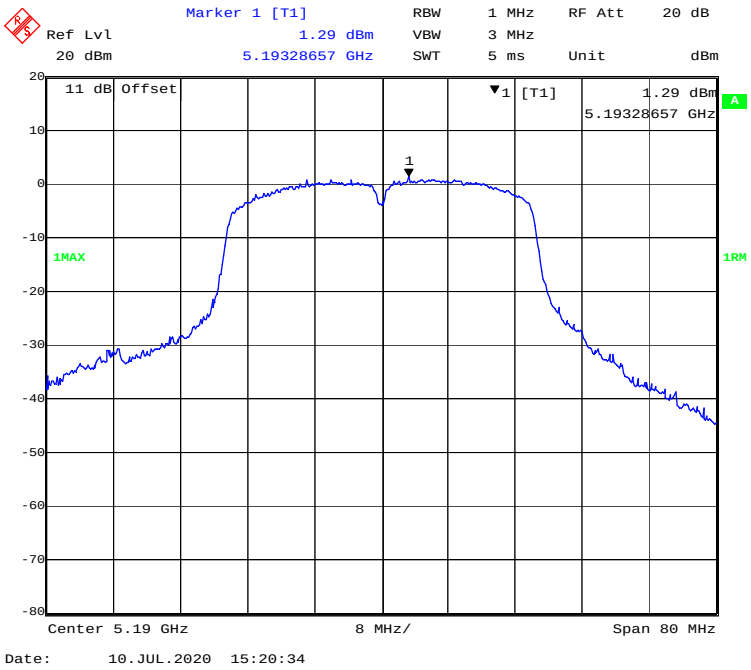
802.11n-HT20 mode, Power spectral density-5200MHz



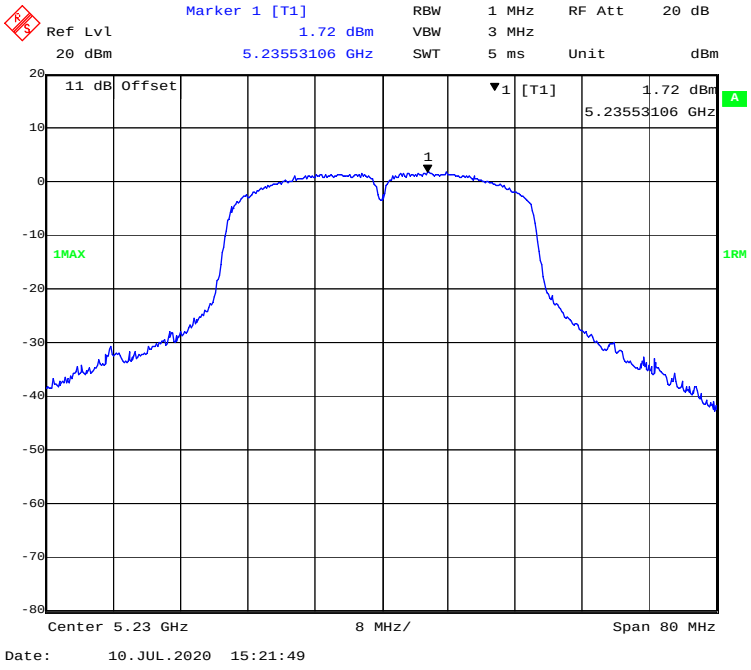
802.11n-HT20 mode, Power spectral density-5240MHz



802.11n-HT40 mode, Power spectral density-5190MHz

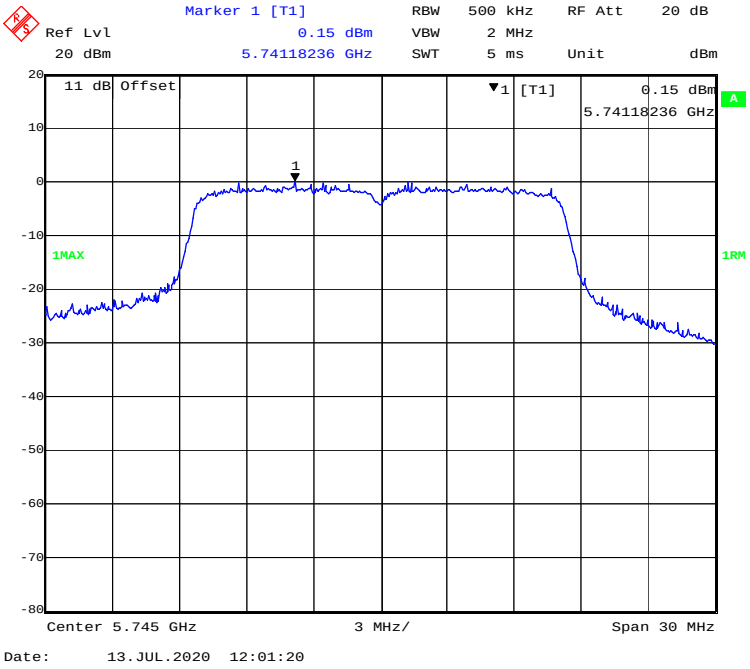


802.11n-HT40 mode, Power spectral density-5230MHz

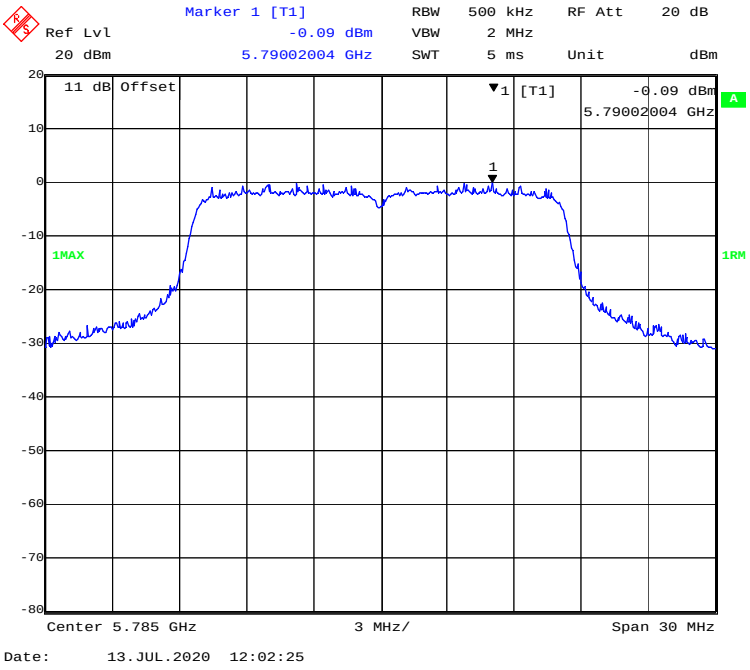


5725MHz-5850MHz:

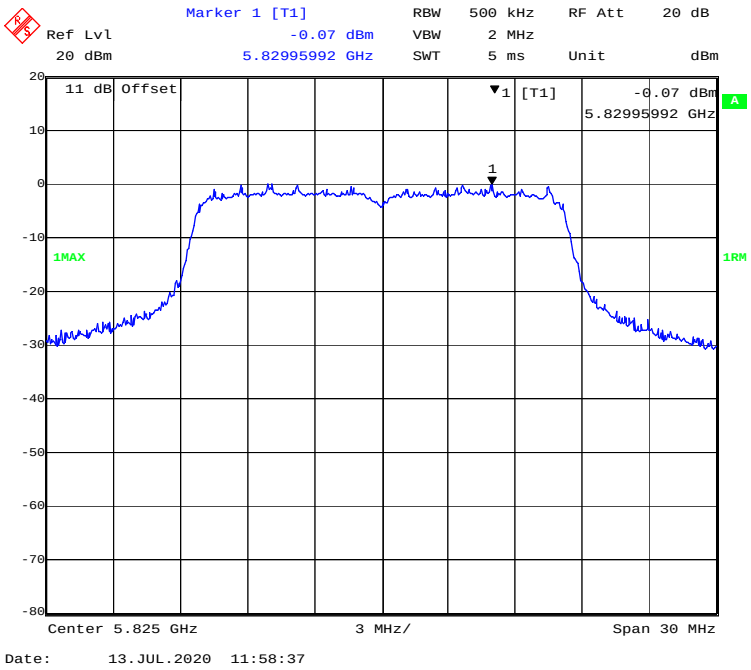
802.11a mode, Power spectral density-5745MHz



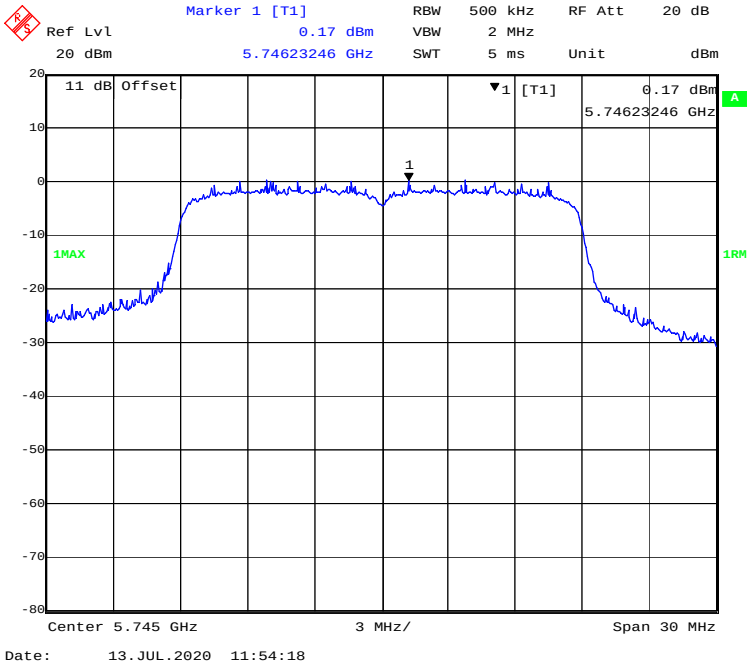
802.11a mode, Power spectral density-5785MHz



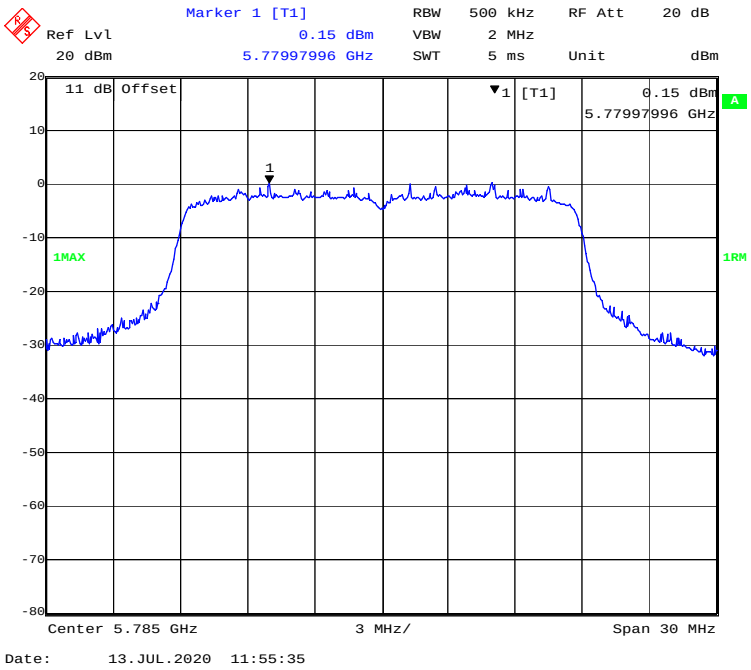
802.11a mode, Power spectral density-5825MHz



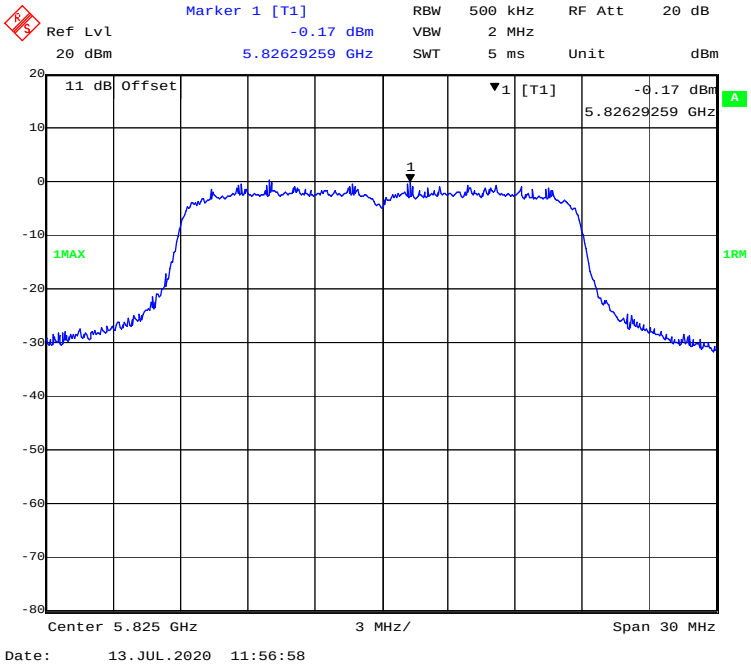
802.11n-HT20 mode, Power spectral density-5745MHz



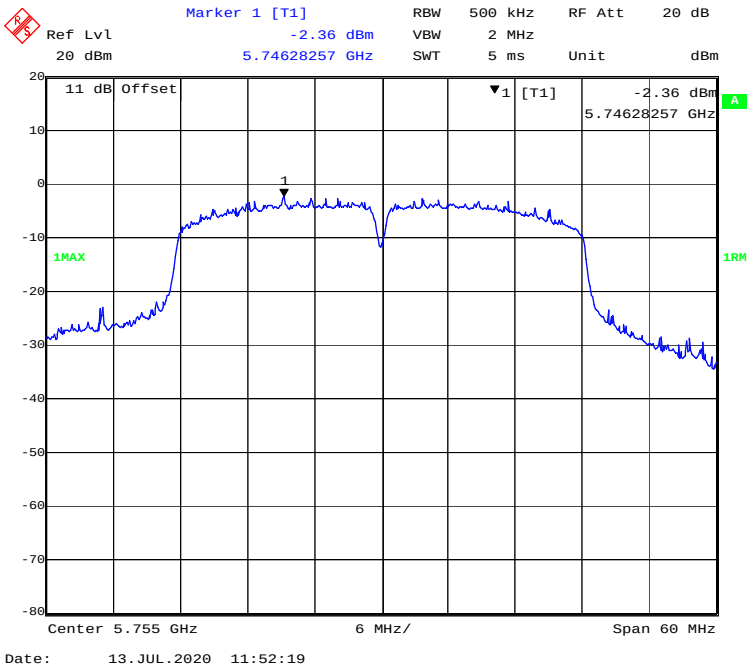
802.11n-HT20 mode, Power spectral density-5785MHz



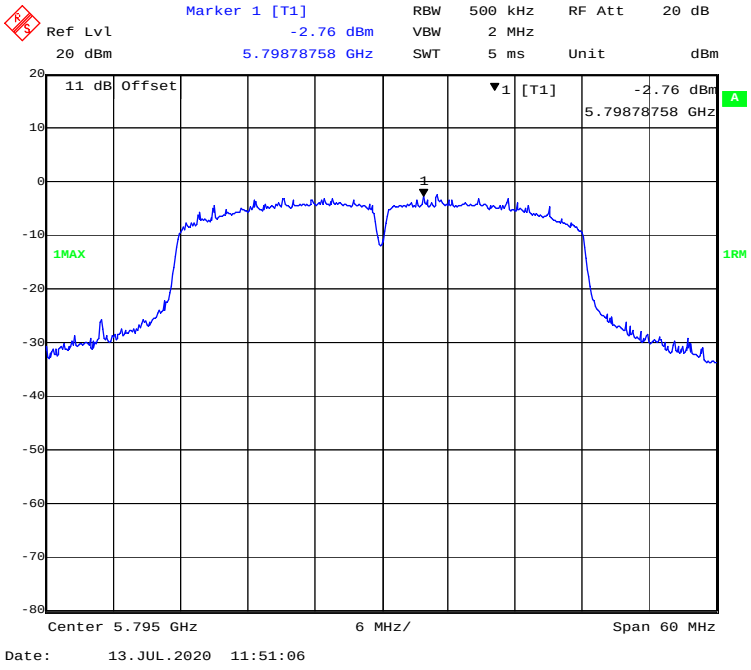
802.11n-HT20 mode, Power spectral density-5825MHz



802.11n-HT40 mode, Power spectral density-5755MHz



802.11n-HT40 mode, Power spectral density-5795MHz



Declarations

1: BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with an asterisk '*'. Customer model name, addresses, names, trademarks etc. are not considered data.

2: Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

3: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

4: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

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