

FCC PART 15.407

TEST REPORT

For

Shanghai Sunmi Technology Co.,Ltd.

Room 505, KIC Plaza, No.388 Song Hu Road, Yang Pu District, Shanghai, China

FCC ID: 2AH25TF701

Report Type: Original Report	Product Type: WIRELESS DATA TERMINAL
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Report Number:	RKSA200706001-00E
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GENERAL INFORMATION**Product Description for Equipment under Test (EUT)**

Applicant:	Shanghai Sunmi Technology Co.,Ltd.
Product Type:	WIRELESS DATA TERMINAL
Test Model	TF701
Power Supply:	DC 3.85V from battery DC 5.0/9.0/12.0/3.6~6.0/6.0~9.0/9.0~12.0V from adapter
Maximum Output Power:	802.11a:9.50 dBm 802.11ac20:11.44 dBm 802.11 n20:11.49 dBm 802.11ac40:11.29 dBm 802.11n40:11.26 dBm 802.11ac80:10.69 dBm
RF Function:	5G Wi-Fi
Operating Band/Frequency:	5G Wi-Fi B1: 5150-5250 MHz, B4: 5725-5850 MHz
Channel Number:	5G Wi-Fi B1: 7, B4: 8
Channel Separation:	802.11a/802.11ac20/n20: 20 MHz; 802.11n40/802.11ac40:40 MHz, 802.11ac80: 80 MHz
Modulation Type:	OFDM
Antenna Type:	FPC Antenna
*Maximum Antenna Gain:	Band 1 Chain 0 & Chain 1: -2.2 dBi Band 4 Chain 0 & Chain 1: -2.2 dBi

*Adapter-1 Information:**Model: CK18W02U**Input: AC 100-240V~50/60Hz 0.5A**Output: DC 5.0V/3A, 9V/2A, 12V/1.5A**Adapter-2 Information:**Model: TPA-10120150UU**Input: AC 100-240V 50/60Hz 0.6A**Output: DC 3.6-6V/3A, 6-9V/2A, 9-12V/1.5A**Adapter-3 Information:**Model: TPA-23A050200UU01**Input: AC100-240V 50/60Hz 0.3A**Output:5.0V, 2.0A**Adapter-4 Information:**Model: UC13US**Input: AC100-240V 50/60Hz 0.35A**Output:5.0V, 2.0A**Note: The Maximum Antenna Gain was declared by the manufacturer.***All measurement and test data in this report was gathered from production sample serial number:**RKSA200706001-1 (Assigned by the BACL. The EUT supplied by the applicant was received on 2020-07-06)*

Objective

This type approval report is prepared on behalf of *Shanghai Sunmi 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 submissions with FCC ID: 2AH25TF701

FCC Part 15.247 DSS submissions with FCC ID: 2AH25TF701

FCC Part 22H/24E/27/90 PCB submissions with FCC ID: 2AH25TF701

FCC Part 15.225 DXX submissions with FCC ID: 2AH25TF701

FCC Part 15B JBP submissions with FCC ID: 2AH25TF701

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°C
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.

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

802.11a/802.11ac20/n20 mode Channel 36, 40, 48 were tested.

802.11n40/802.11ac40 mode Channel 38, 46 were tested.

802.11ac80 mode Channel 42 was 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/802.11ac20/n20 mode Channel 149, 157, 165 were tested.

802.11n40/802.11ac40 mode Channel 151, 159 were tested.

802.11ac80 mode Channel 155 was 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: QRCT3

The worst case was performed under:

5150MHz-5250MHz Band:

Mode	Data rate	Frequency (MHz)	Power Level Setting	
			Chain 0	Chain 1
802.11a	6 Mbps	5180	18.5	18.5
		5200	18.5	18.5
		5240	18.5	18.5
802.11ac20	MCS0	5180	18.5	18.5
		5200	18.5	18.5
		5240	18.5	18.5
802.11n-HT20	MCS0	5180	18.5	18.5
		5200	18.5	18.5
		5240	18.5	18.5
802.11ac40	MCS0	5190	18.5	18.5
		5230	18.5	18.5
802.11n-HT40	MCS0	5190	18.5	18.5
		5230	18.5	18.5
802.11ac80	MCS0	5210	18.5	18.5

5725MHz-5850MHz Band:

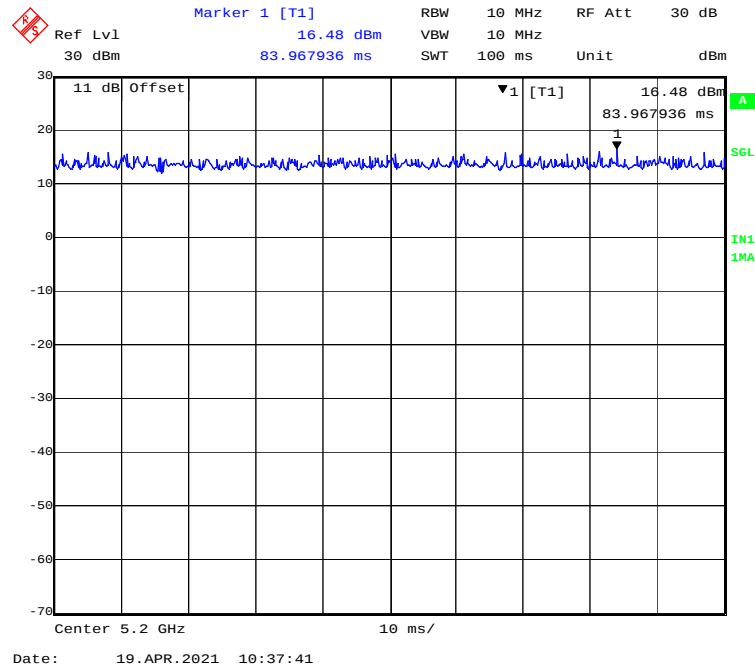
Mode	Data rate	Channel	Power Level Setting	
			Chain 0	Chain 1
802.11a	6 Mbps	5745	18.5	18.5
		5785	18.5	18.5
		5825	18.5	18.5
802.11ac20	MCS0	5745	18.5	18.5
		5785	18.5	18.5
		5825	18.5	18.5
802.11n- HT20	MCS0	5745	18.5	18.5
		5785	18.5	18.5
		5825	18.5	18.5
802.11ac40	MCS0	5755	18.5	18.5
		5795	18.5	18.5
802.11n- HT40	MCS0	5755	18.5	18.5
		5795	18.5	18.5
802.11ac80	MCS0	5775	18.5	18.5

Note: The power level setting was declared by the applicant.

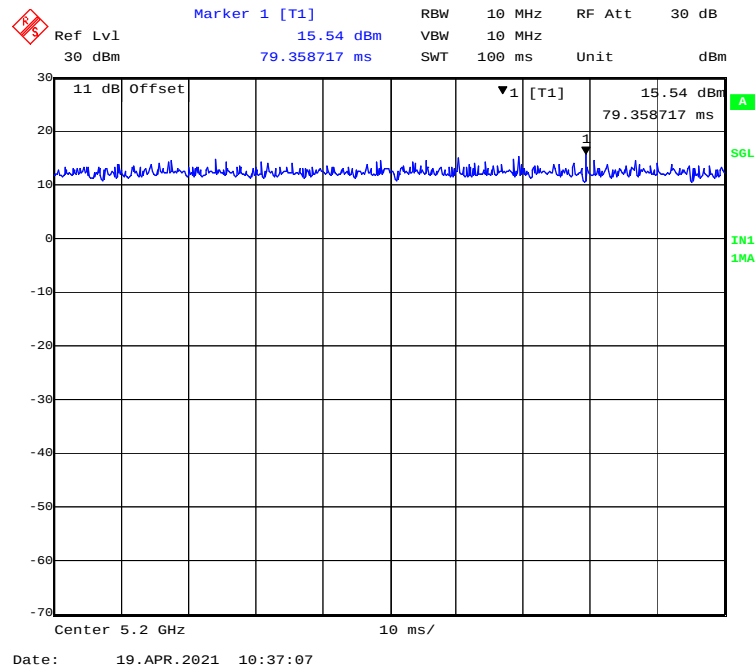
Duty Cycle (Chain 0)

5150MHz-5250MHz Band:

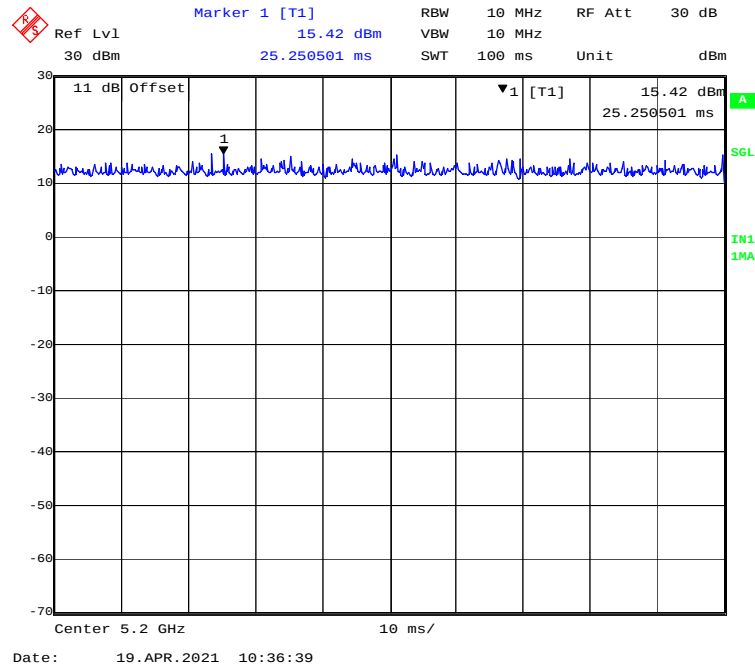
802.11a mode



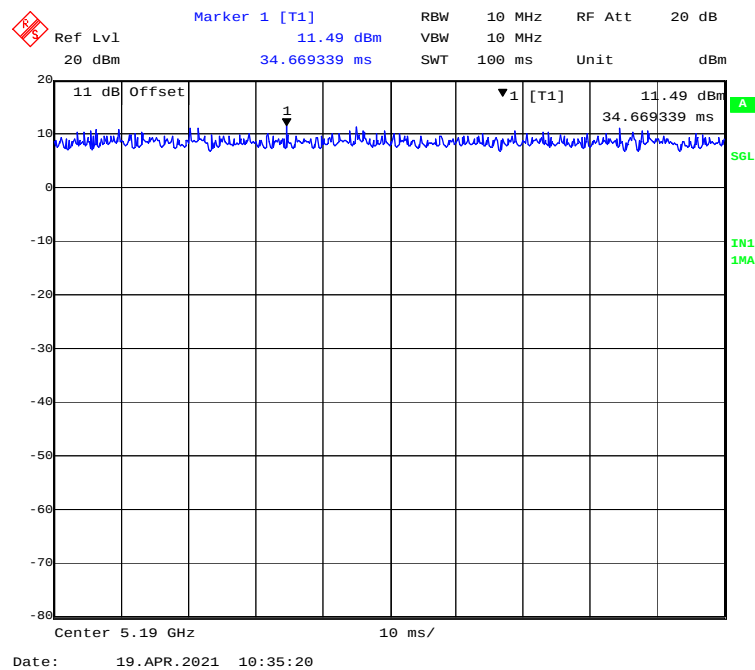
802.11ac20 mode



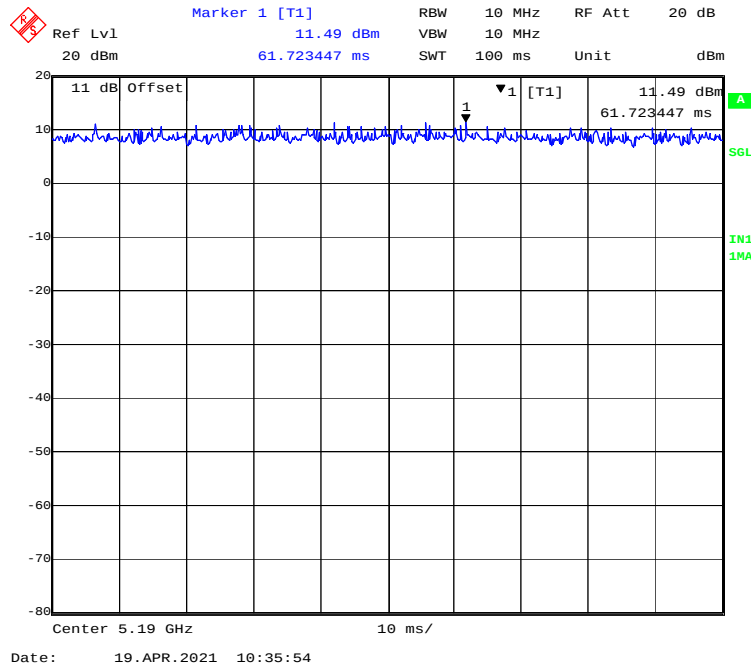
802.11n-HT20 mode



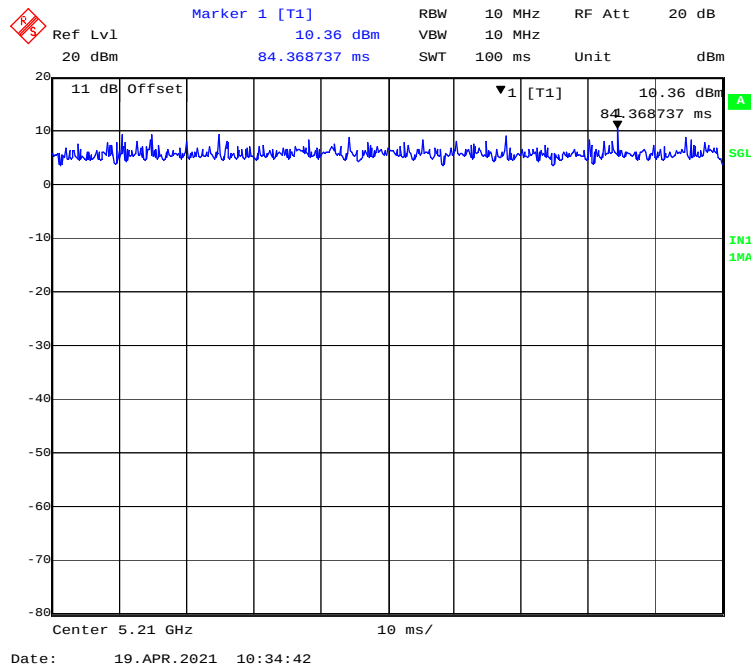
802.11 ac40 mode

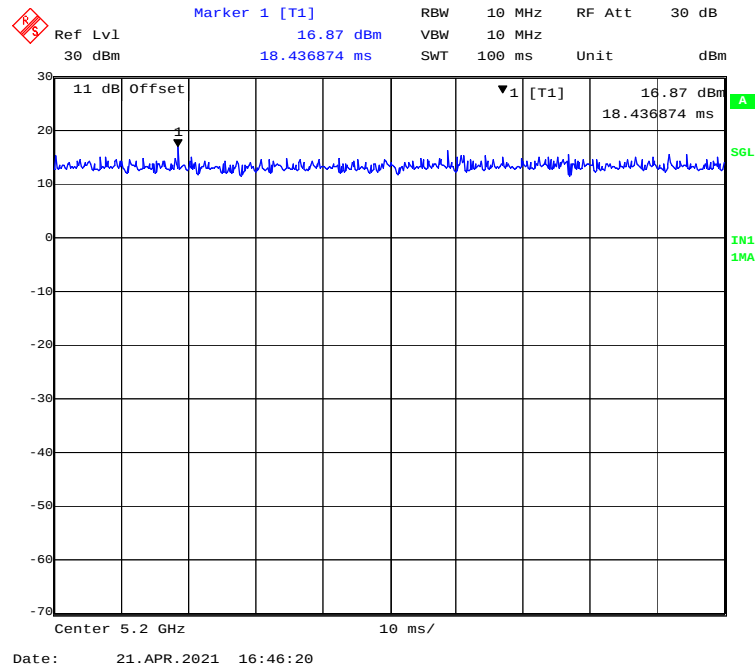
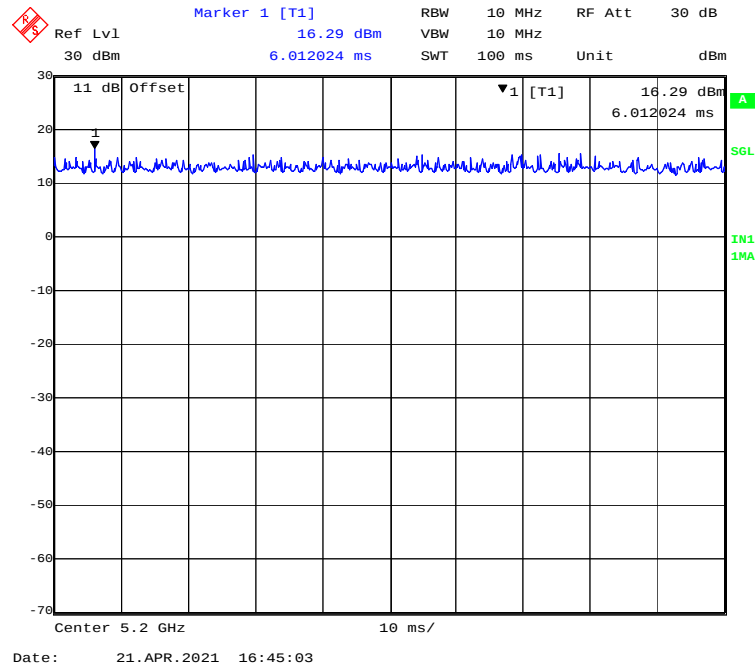


802.11n-HT40 mode

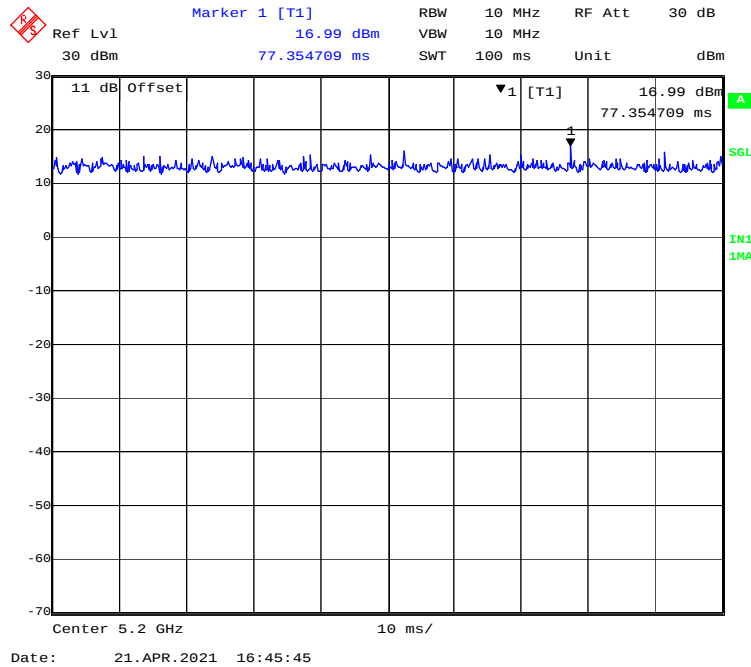


802.11 ac80 mode

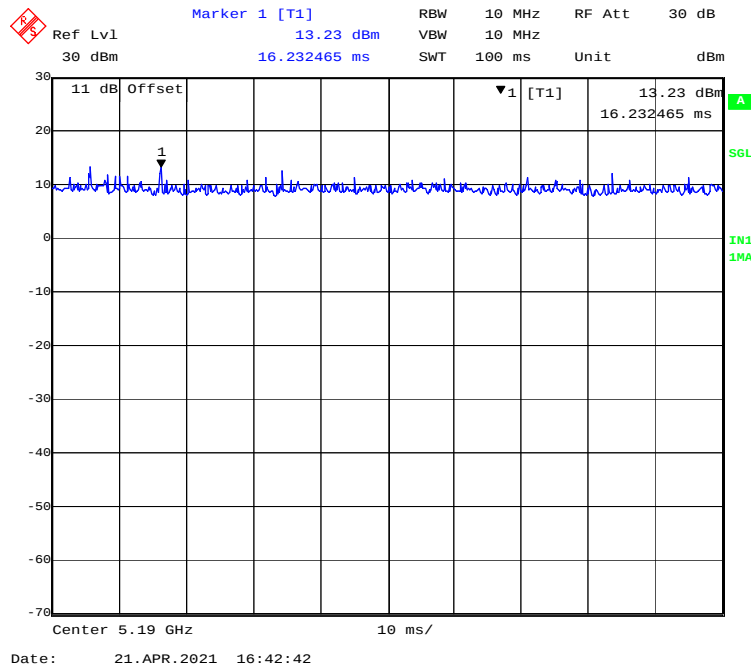


Duty Cycle(Chain 1)**5150MHz-5250MHz Band:****802.11a mode****802.11ac20 mode**

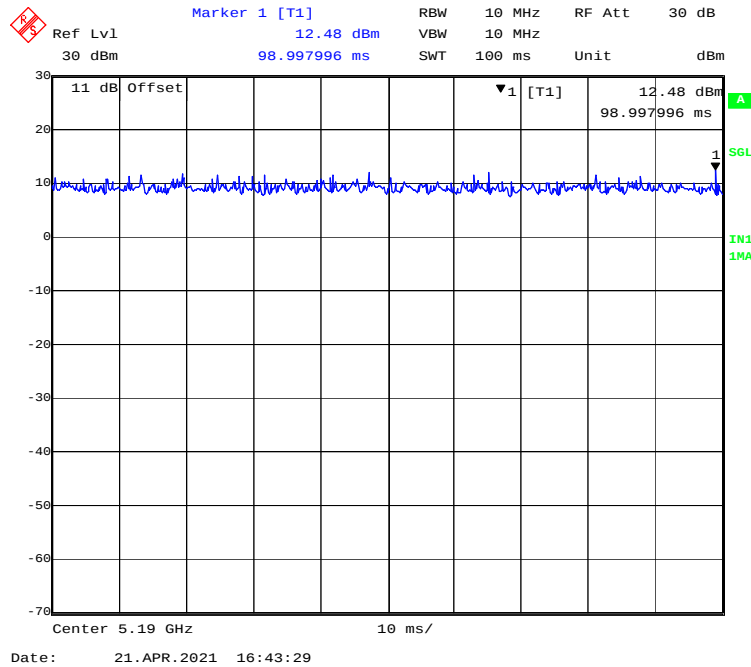
802.11n-HT20 mode



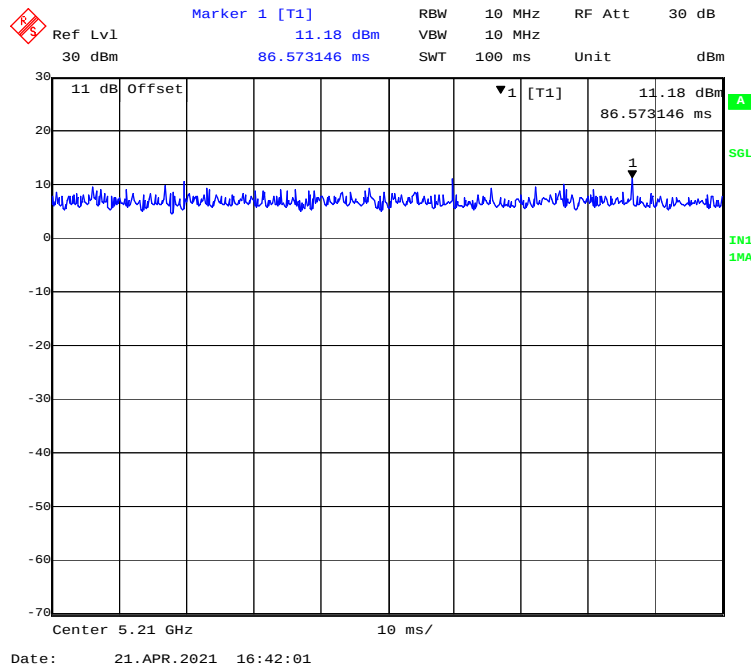
802.11 ac40 mode



802.11n-HT40 mode



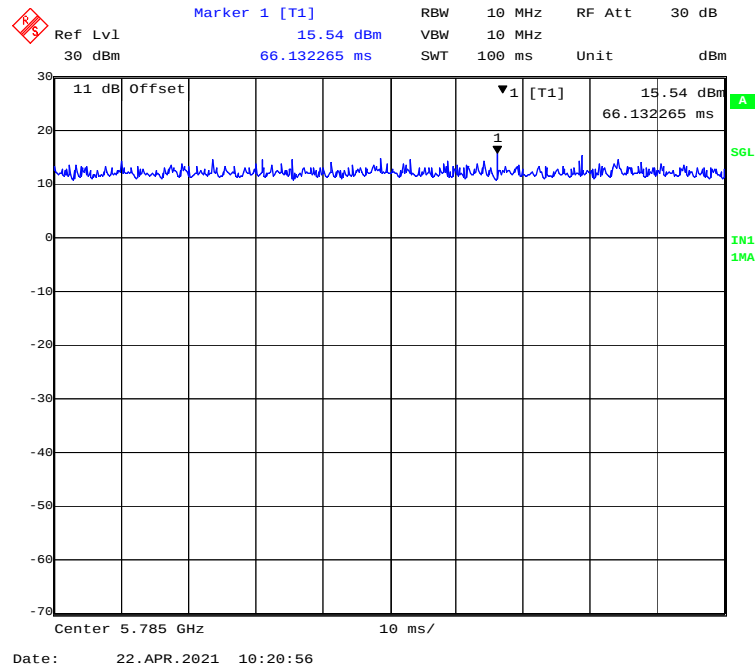
802.11 ac80 mode



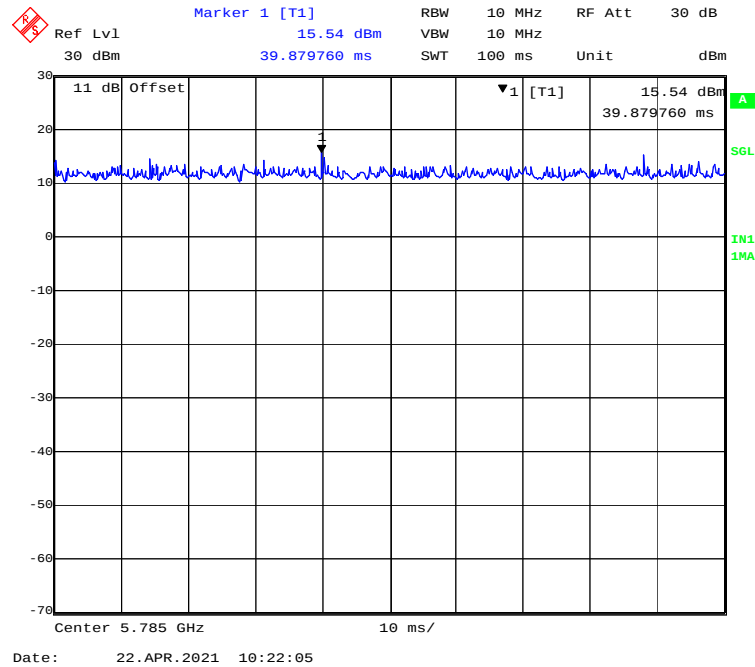
Chain 0:

5725MHz-5850MHz Band:

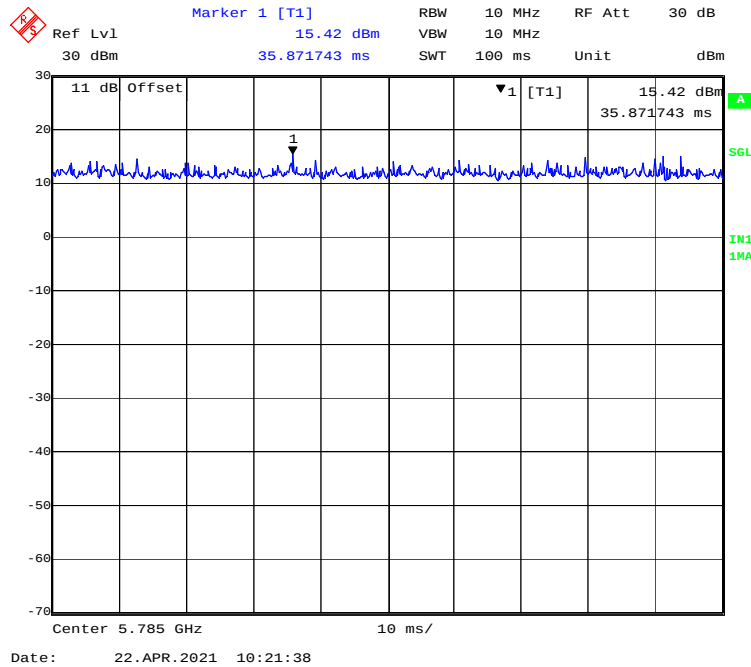
802.11a mode



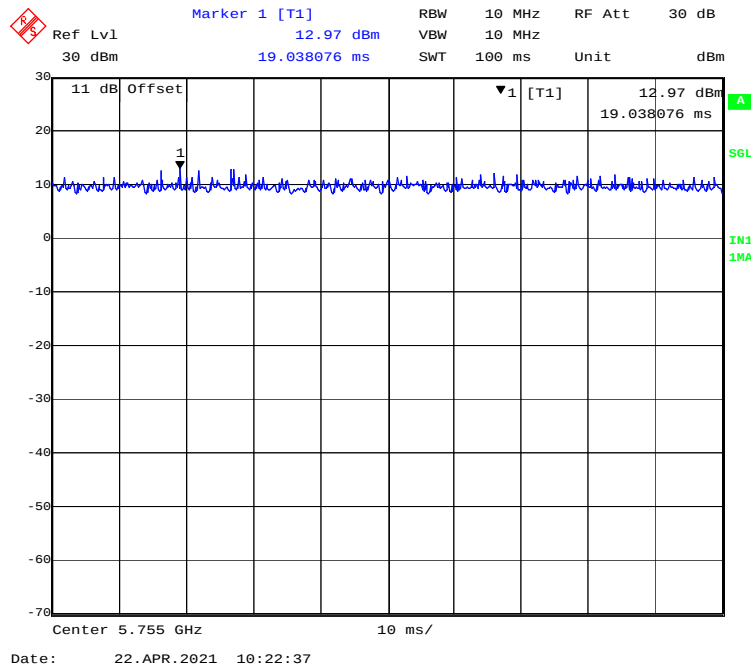
802.11ac20 mode



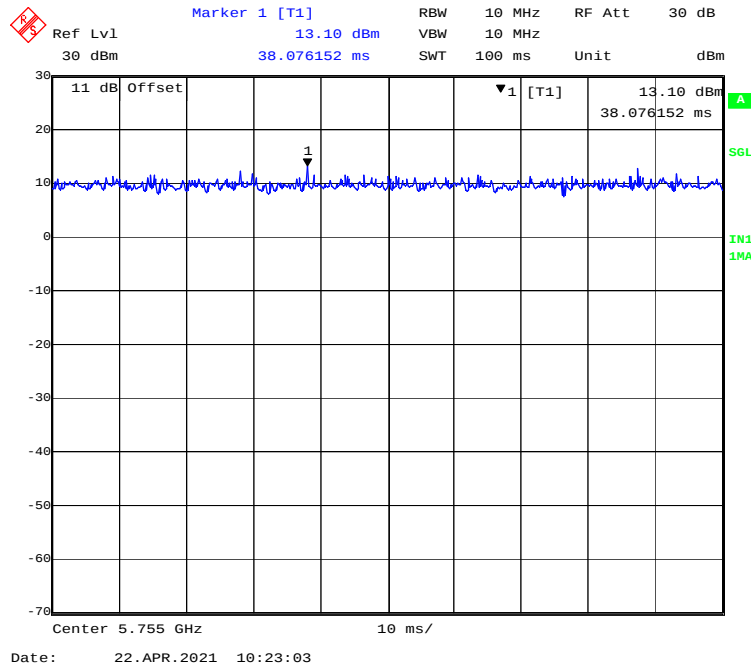
802.11n-HT20 mode



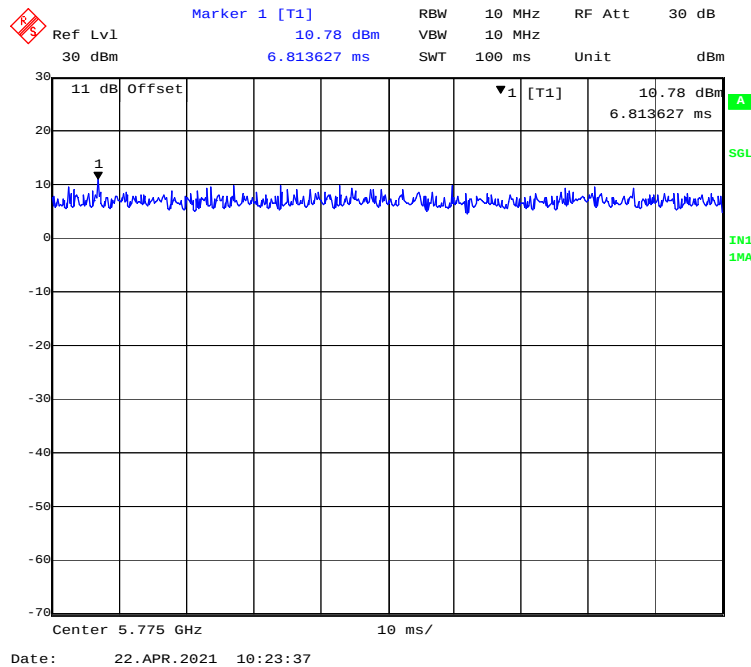
802.11 ac40 mode



802.11n-HT40 mode



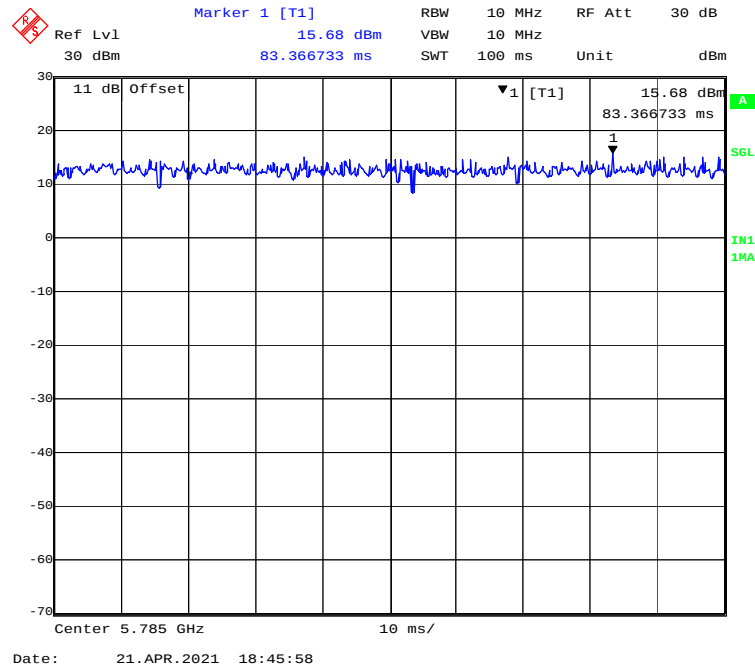
802.11n- ac80 mode



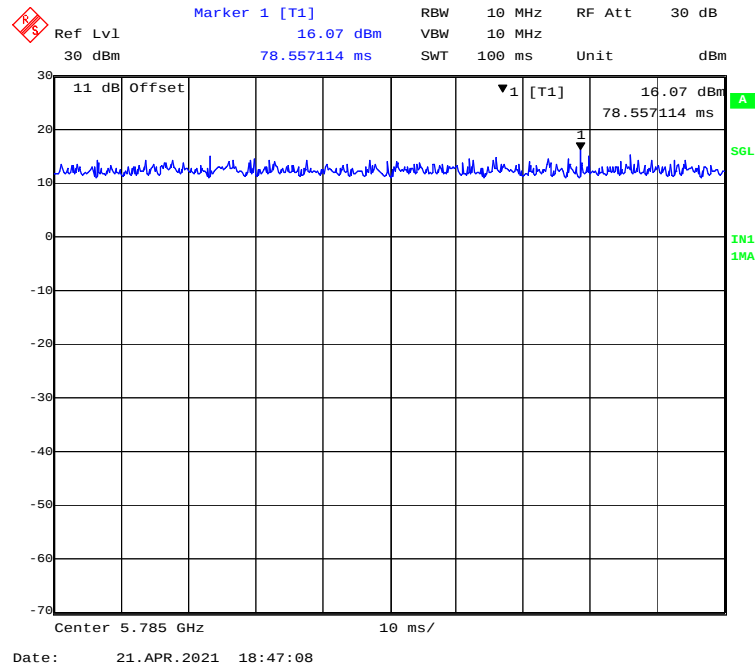
Chain 1:

5725MHz-5850MHz Band:

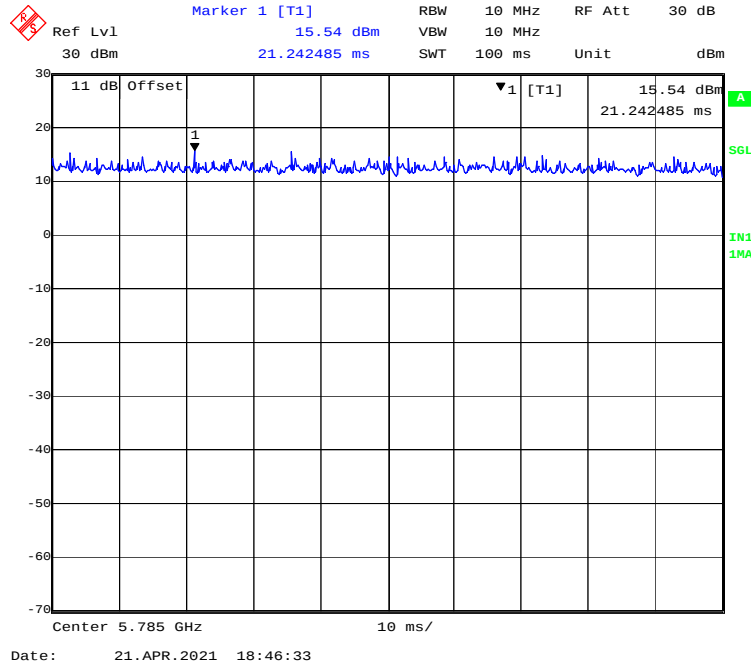
802.11a mode



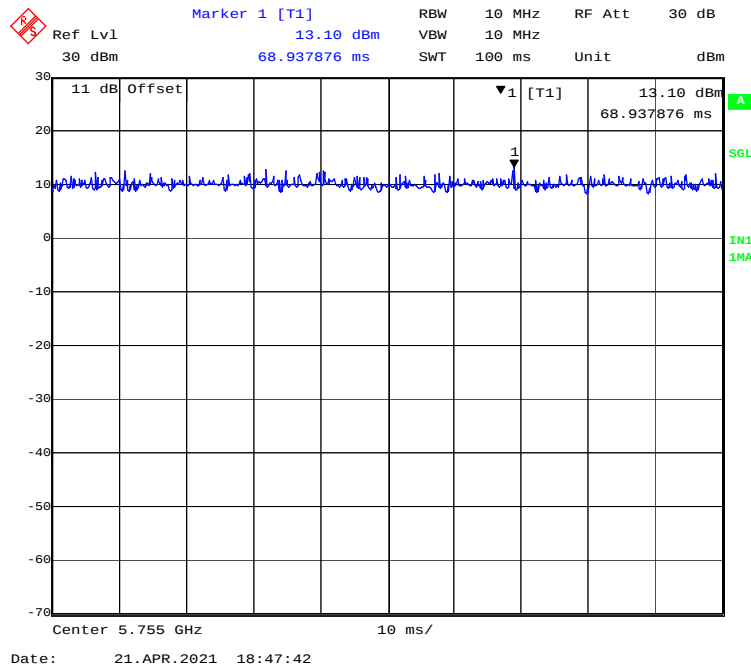
802.11ac20 mode



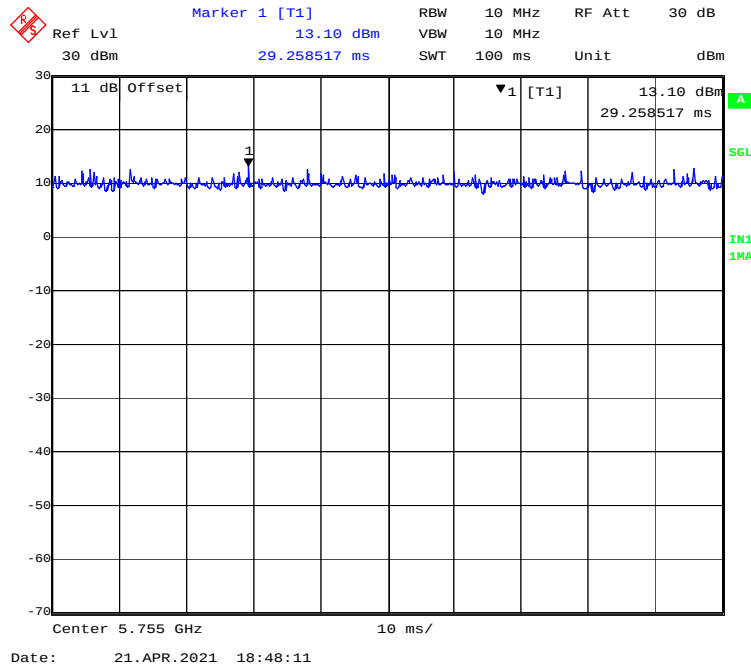
802.11n-HT20 mode



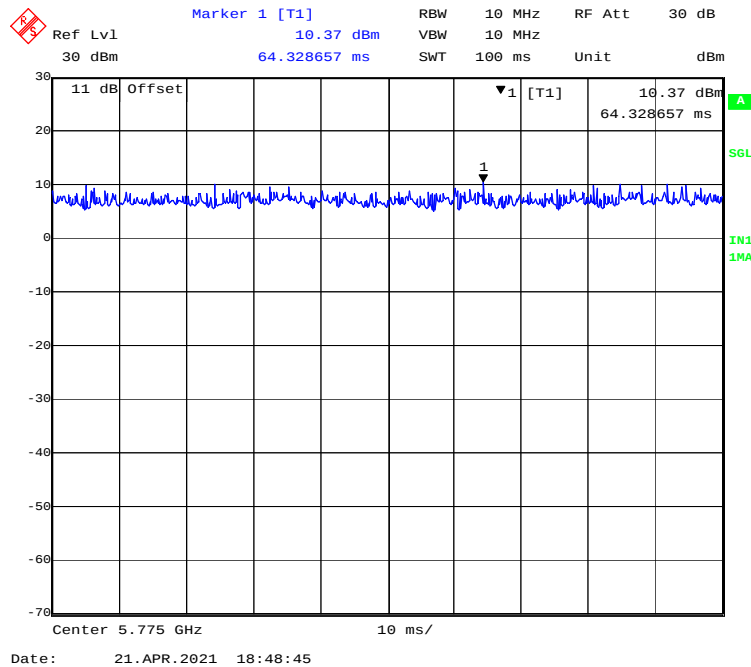
802.11 ac40 mode



802.11n-HT40 mode



802.11n- ac80 mode



Chain 0:

Mode	Frequency Range (MHz)	Duty Cycle (%)	T (ms)	1/T (kHz)	10log(1/x)
802.11a	5150-5250	100	/	/	0
802.11ac20		100	/	/	0
802.11n-HT20		100	/	/	0
802.11ac40		100	/	/	0
802.11n-HT40		100	/	/	0
802.11ac80		100	/	/	0
802.11a	5725-5850	100	/	/	0
802.11ac20		100	/	/	0
802.11n-HT20		100	/	/	0
802.11ac40		100	/	/	0
802.11n-HT40		100	/	/	0
802.11ac80		100	/	/	0

Chain 1:

Mode	Frequency Range (MHz)	Duty Cycle (%)	T (ms)	1/T (kHz)	10log(1/x)
802.11a	5150-5250	100	/	/	0
802.11ac20		100	/	/	0
802.11n-HT20		100	/	/	0
802.11ac40		100	/	/	0
802.11n-HT40		100	/	/	0
802.11ac80		100	/	/	0
802.11a	5725-5850	100	/	/	0
802.11ac20		100	/	/	0
802.11n-HT20		100	/	/	0
802.11ac40		100	/	/	0
802.11n-HT40		100	/	/	0
802.11ac80		100	/	/	0

Note: “x” means duty cycle.

Equipment Modifications

No modification was made to the EUT.

Support Equipment List and Details

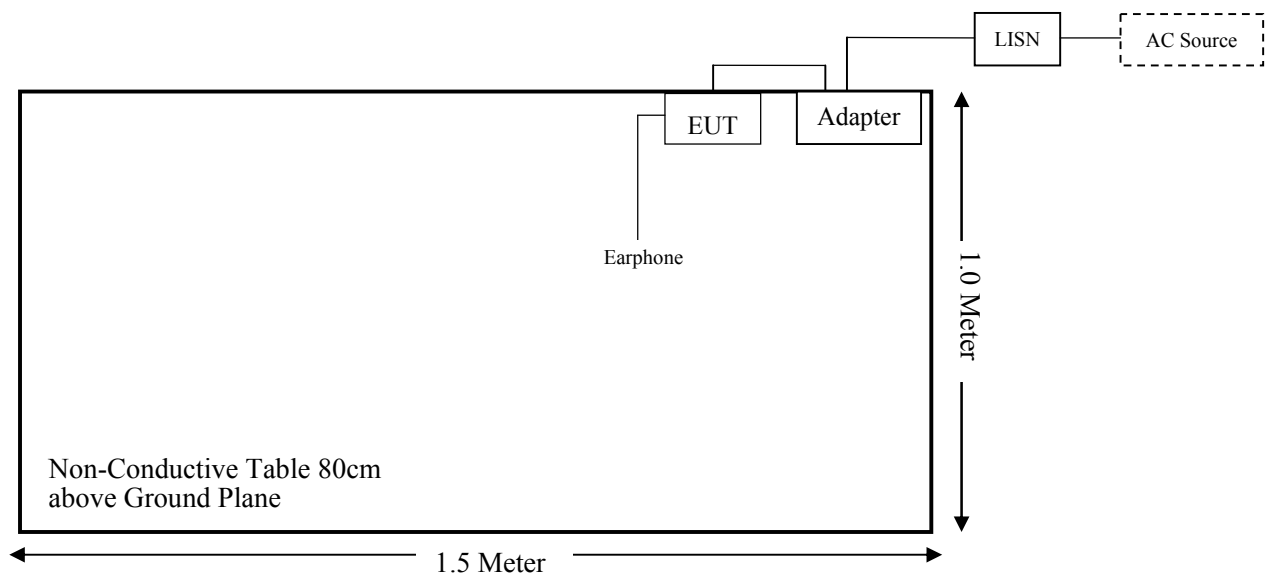
Manufacturer	Description	Model	Serial Number
BOLD	Earphone	/	/

External I/O Cable

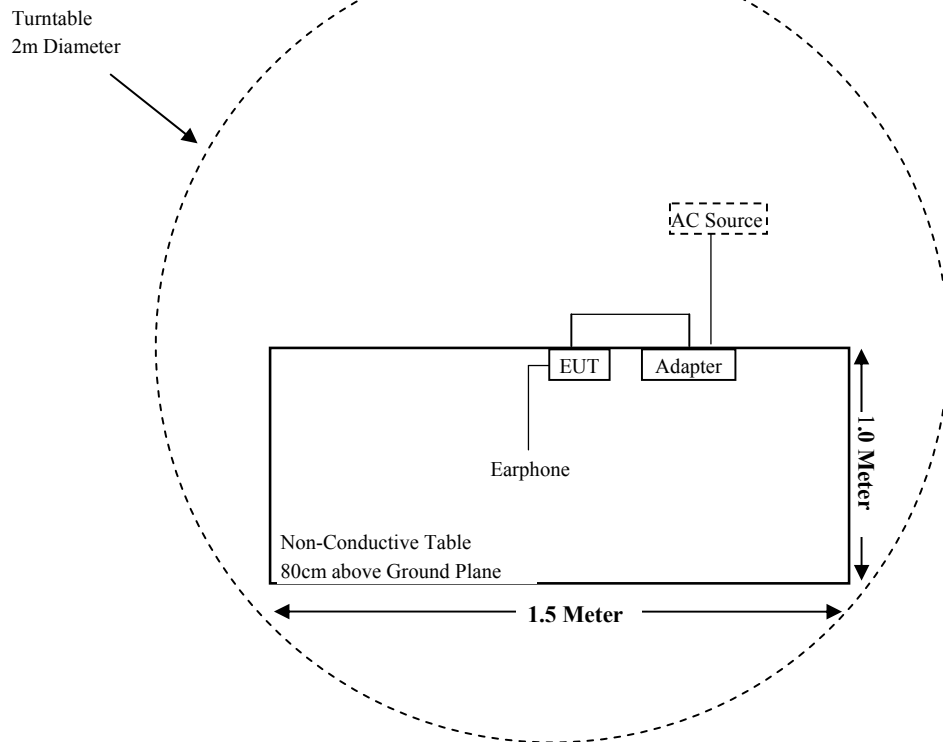
Cable Description	Length (m)	From Port	To
Power Cable	1.0	EUT	Adapter
Power Cable	1.0	Adapter	LISN/AC source

Block Diagram of Test Setup

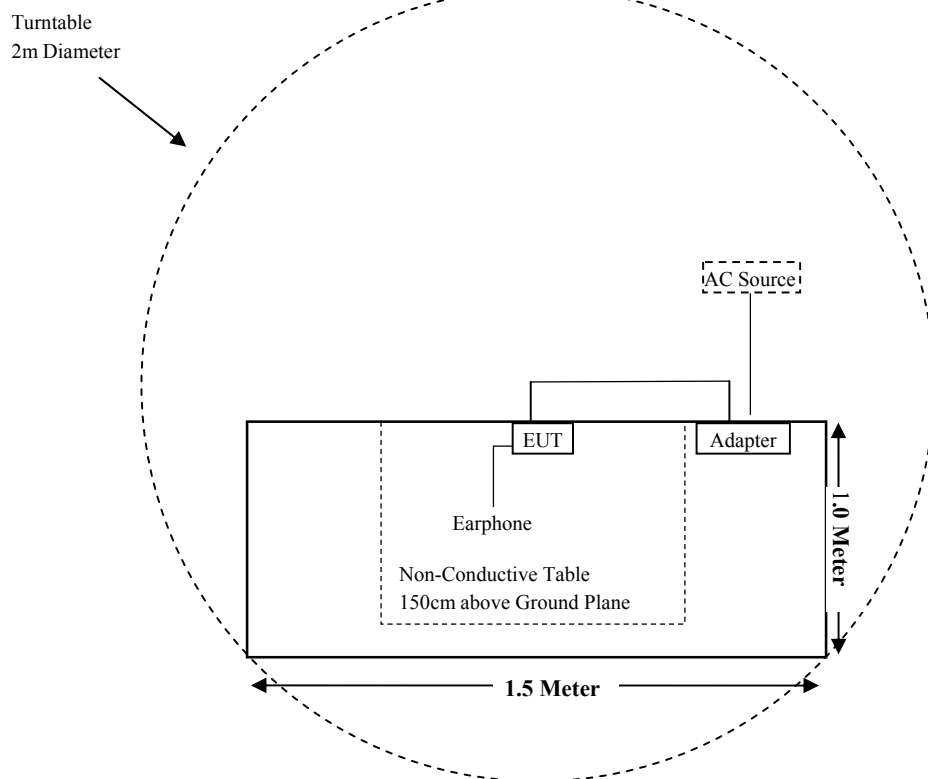
For Conducted Emissions:



For Radiated Emissions (Below 1GHz):



For Radiated Emissions (Above 1GHz):



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§1.1310 & §2.1093	RF Exposure Information	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	2019-11-27	2020-11-26
Sunol Sciences	Broadband Antenna	JB3	A090314-1	2020-08-05	2023-08-04
Sonoma Instrument	Pre-amplifier	310N	171205	2020-08-14	2021-08-13
Rohde & Schwarz	Auto Test Software	EMC32	100361	/	/
MICRO-COAX	Coaxial Cable	Cable-8	008	2020-08-15	2021-08-14
MICRO-COAX	Coaxial Cable	Cable-9	009	2020-08-15	2021-08-14
MICRO-COAX	Coaxial Cable	Cable-10	010	2020-08-15	2021-08-14
Radiated Emission Test (Chamber 2#)					
Rohde & Schwarz	EMI Test Receiver	ESU40	100207/040	2020-04-01	2021-03-31
ETS-LINDGREN	Horn Antenna	3115	9311-4159	2020-07-15	2023-07-14
ETS-LINDGREN	Horn Antenna	3116	84159	2019-12-12	2022-12-11
A.H.Systems, inc	Amplifier	PAM-0118P	512	2020-08-14	2021-08-13
SELECTOR	Amplifier	EM18G40G	060726	2020-03-22	2021-03-21
MICRO-TRONICS	Band Reject Filter	BRC50703	G094	2020-08-05	2021-08-04
MICRO-TRONICS	Band Reject Filter	BRC50705	G085	2020-08-05	2021-08-04
Narda	Attenuator	10dB	010	2020-08-15	2021-08-14
Rohde & Schwarz	Auto test Software	EMC32	100361	/	/
MICRO-COAX	Coaxial Cable	Cable-6	006	2020-08-15	2021-08-14
MICRO-COAX	Coaxial Cable	Cable-11	011	2020-08-15	2021-08-14
MICRO-COAX	Coaxial Cable	Cable-12	012	2020-08-15	2021-08-14
MICRO-COAX	Coaxial Cable	Cable-13	013	2020-08-15	2021-08-14
RF Conducted Test					
Rohde & Schwarz	EMI Test Receiver	ESIB26	100146	2020-11-27	2021-11-26
Agilent	Power Meter	N1912A	MY5000492	2020-11-18	2021-11-17
Agilent	Power Sensor	N1921A	MY54210024	2020-11-18	2021-11-17
Narda	Attenuator	10dB	010	2020-08-15	2021-08-14
Sunmi	RF Cable	Sunmi C01	C01	Each Time	N/A
Conducted Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESR	1316.3003K03-101746-zn	2020-07-28	2021-07-27
Rohde & Schwarz	LISN	ENV216	101115	2020-11-27	2021-11-26
Audix	Test Software	e3	V9	N/A	N/A
Rohde & Schwarz	Pulse limiter	ESH3-Z2	100552	2020-08-10	2021-08-09
MICRO-COAX	Coaxial Cable	Cable-15	015	2020-08-15	2021-08-14

* **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& §2.1093 - RF EXPOSURE INFORMATION

Applicable Standard

FCC§1.1307, §2.1093.

Test Result

Compliance, please refer to the SAR report: RKSA200706001-20A

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 6dBi.

Antenna Connector Construction

The EUT has two FPC antennas for 5G Wi-Fi, the antenna gain is -2.2dBi for chain0 and chain1, The antennas are permanently attached to the unit, fulfill the requirement of this section. Please refer to the EUT photos.

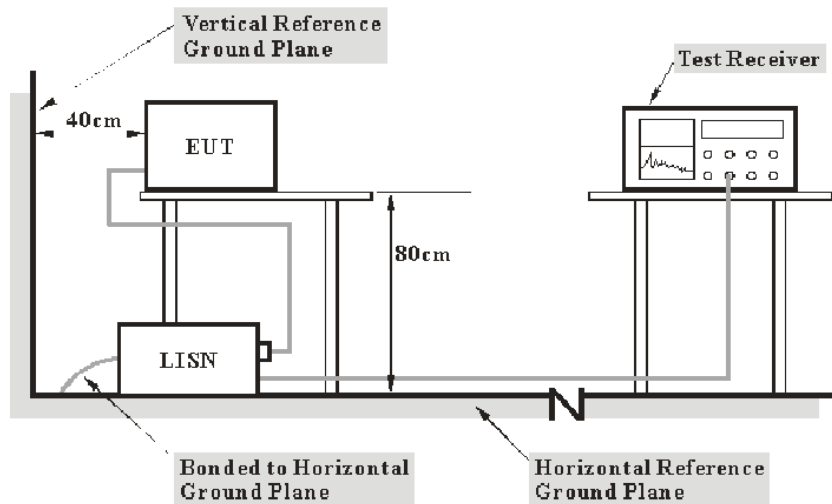
Result: Compliant.

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 outlet of 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.

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:

$$\text{Factor (dB)} = \text{LISN VDF (dB)} + \text{Cable Loss (dB)} + \text{Transient Limiter Attenuation (dB)}$$

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:

$$\text{Over Limit (dB)} = \text{Read level (dB}\mu\text{V)} + \text{Factor (dB)} - \text{Limit (dB}\mu\text{V)}$$

Test Results Summary

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

Test Data

Environmental Conditions

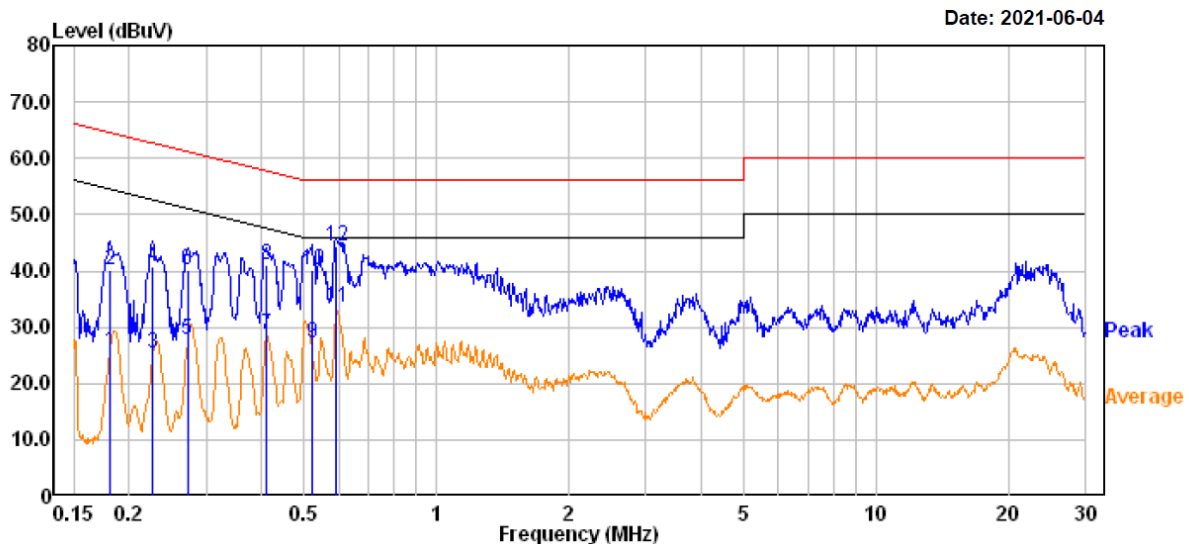
Temperature:	24.9 °C
Relative Humidity:	52 %
ATM Pressure:	101.1 kPa

The testing was performed by Stone Zhang on 2021-06-04 .

EUT operation mode: Transmitting in 802.11a mode high channel Chain 0 of 5150~5250MHz (worst case)

Note: Adapter1/2/3/4 are all have been tested, the worst Adapter 4 data were recorded in this report.

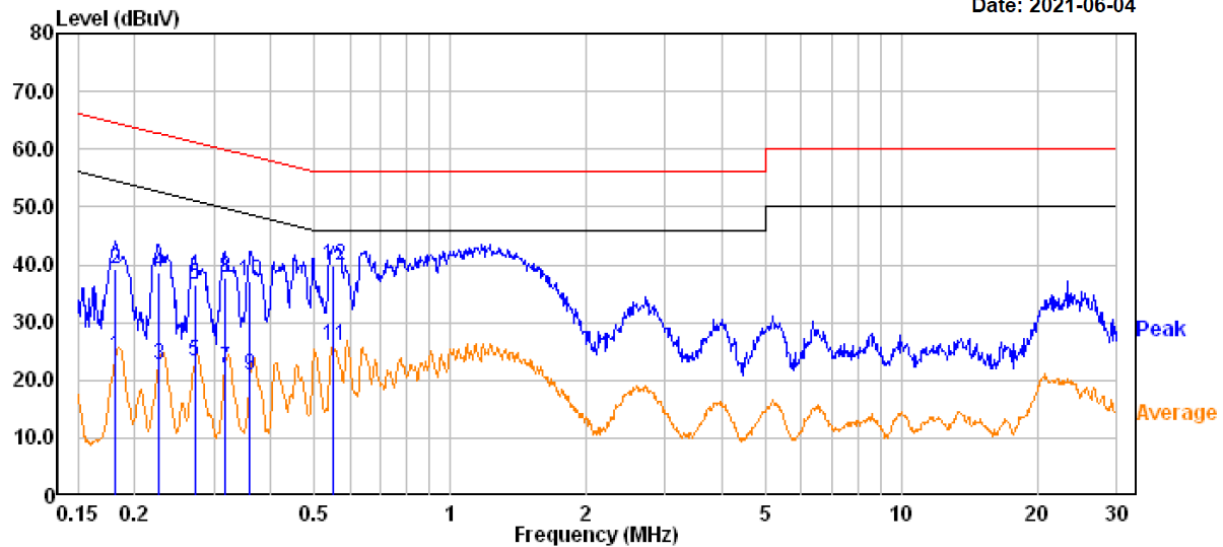
AC 120V/60 Hz, Line



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.180	5.70	19.83	25.53	54.47	-28.94	Average
2	0.180	20.40	19.83	40.23	64.47	-24.24	QP
3	0.227	5.60	19.82	25.42	52.56	-27.14	Average
4	0.227	20.90	19.82	40.72	62.56	-21.84	QP
5	0.271	7.80	19.82	27.62	51.07	-23.45	Average
6	0.271	20.40	19.82	40.22	61.07	-20.85	QP
7	0.411	8.80	19.74	28.54	47.64	-19.10	Average
8	0.411	21.30	19.74	41.04	57.64	-16.60	QP
9	0.524	7.31	19.75	27.06	46.00	-18.94	Average
10	0.524	20.51	19.75	40.26	56.00	-15.74	QP
11	0.594	13.80	19.75	33.55	46.00	-12.45	Average
12	0.594	24.70	19.75	44.45	56.00	-11.55	QP

AC 120V/60 Hz, Neutral

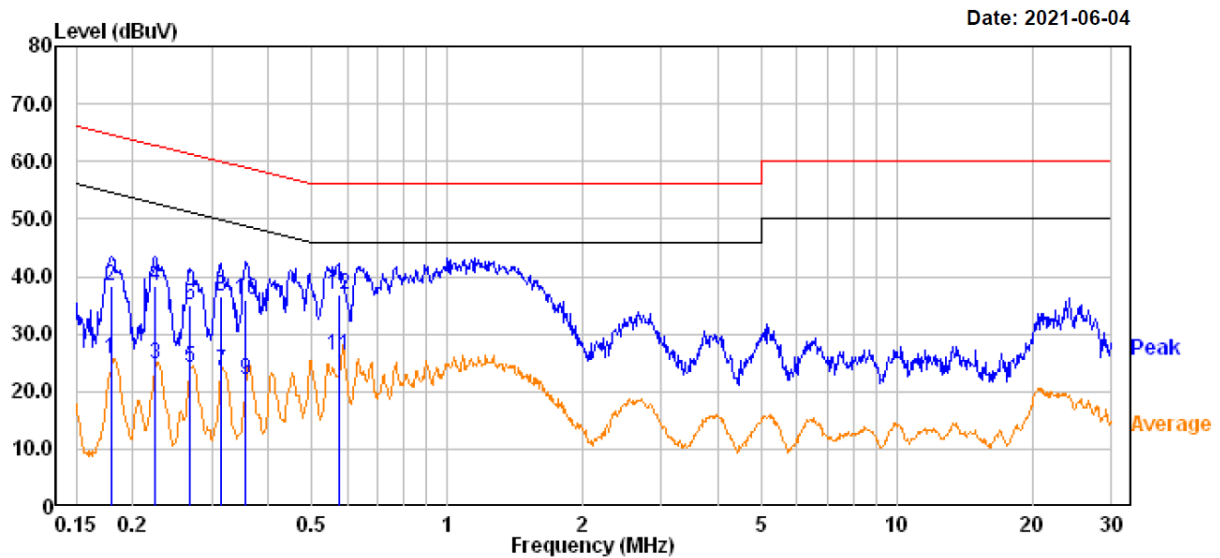
Date: 2021-06-04



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.181	4.30	19.83	24.13	54.43	-30.30	Average
2	0.181	19.30	19.83	39.13	64.43	-25.30	QP
3	0.226	2.90	19.82	22.72	52.61	-29.89	Average
4	0.226	18.90	19.82	38.72	62.61	-23.89	QP
5	0.271	3.30	19.82	23.12	51.07	-27.95	Average
6	0.271	16.60	19.82	36.42	61.07	-24.65	QP
7	0.317	2.30	19.82	22.12	49.79	-27.67	Average
8	0.317	17.90	19.82	37.72	59.79	-22.07	QP
9	0.361	1.00	19.79	20.79	48.71	-27.92	Average
10	0.361	17.40	19.79	37.19	58.71	-21.52	QP
11	0.551	6.10	19.75	25.85	46.00	-20.15	Average
12	0.551	20.10	19.75	39.85	56.00	-16.15	QP

EUT operation mode: Transmitting in 802.11ac40 mode high channel (Chain 0+ Chain 1) of 5725-5850MHz (worst case)

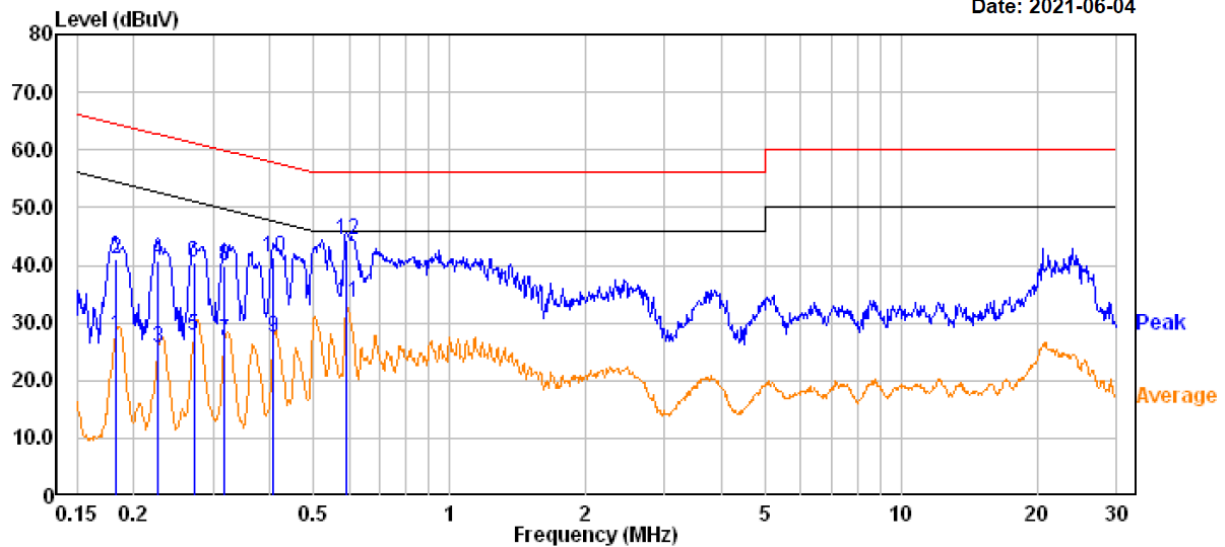
AC 120V/60 Hz, Line



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.179	5.80	19.83	25.63	54.55	-28.92	Average
2	0.179	18.50	19.83	38.33	64.55	-26.22	QP
3	0.223	5.00	19.82	24.82	52.69	-27.87	Average
4	0.223	18.40	19.82	38.22	62.69	-24.47	QP
5	0.267	4.20	19.82	24.02	51.20	-27.18	Average
6	0.267	15.30	19.82	35.12	61.20	-26.08	QP
7	0.315	3.80	19.82	23.62	49.83	-26.21	Average
8	0.315	16.60	19.82	36.42	59.83	-23.41	QP
9	0.355	2.30	19.80	22.10	48.84	-26.74	Average
10	0.355	16.00	19.80	35.80	58.84	-23.04	QP
11	0.573	6.41	19.74	26.15	46.00	-19.85	Average
12	0.573	17.01	19.74	36.75	56.00	-19.25	QP

AC 120V/60 Hz, Neutral

Date: 2021-06-04



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.182	7.90	19.83	27.73	54.39	-26.66	Average
2	0.182	21.20	19.83	41.03	64.39	-23.36	QP
3	0.227	5.80	19.82	25.62	52.56	-26.94	Average
4	0.227	20.90	19.82	40.72	62.56	-21.84	QP
5	0.271	7.90	19.82	27.72	51.07	-23.35	Average
6	0.271	20.50	19.82	40.32	61.07	-20.75	QP
7	0.318	7.10	19.82	26.92	49.75	-22.83	Average
8	0.318	20.00	19.82	39.82	59.75	-19.93	QP
9	0.408	7.60	19.74	27.34	47.68	-20.34	Average
10	0.408	21.50	19.74	41.24	57.68	-16.44	QP
11	0.594	13.90	19.75	33.65	46.00	-12.35	Average
12	0.594	24.70	19.75	44.45	56.00	-11.55	QP

§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 EIRP of –27dBm/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.

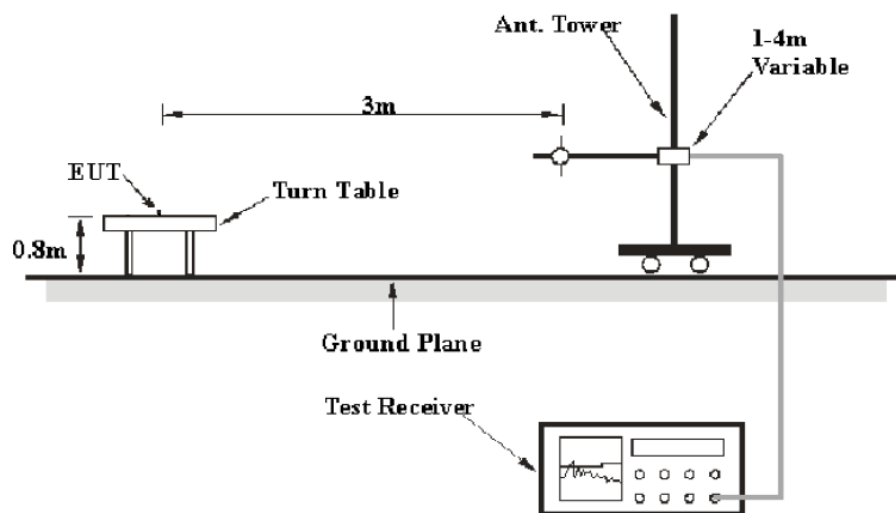
Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

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

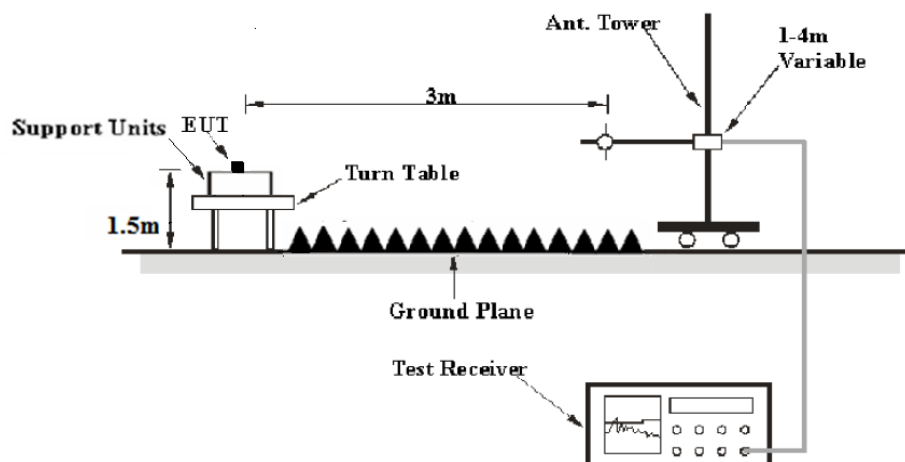
According to 789033 D02 General UNII Test Procedures New Rules v02r01, emission shall be computed as: $E \text{ [dB}\mu\text{V/m]} = \text{EIRP [dBm]} + 95.2$, for $d = 3$ meters.

EUT Setup

Below 1 GHz:



Above 1 GHz:



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 the first AC floor outlet and the other support equipments were connected to the second 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:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

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:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Data

Environmental Conditions

Temperature:	25.0 °C
Relative Humidity:	53 %
ATM Pressure:	101.3 kPa

The testing was performed by Stone Zhang on 2020-11-14.

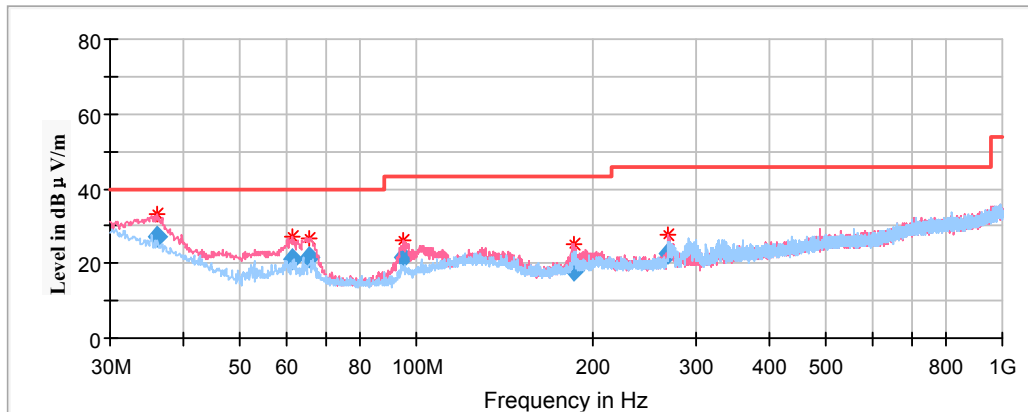
Test Mode: Transmitting

Note: Adapter1/2/3/4 have been tested, the worst Adapter4 data were recorded in this report.

Spurious Emission Test

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

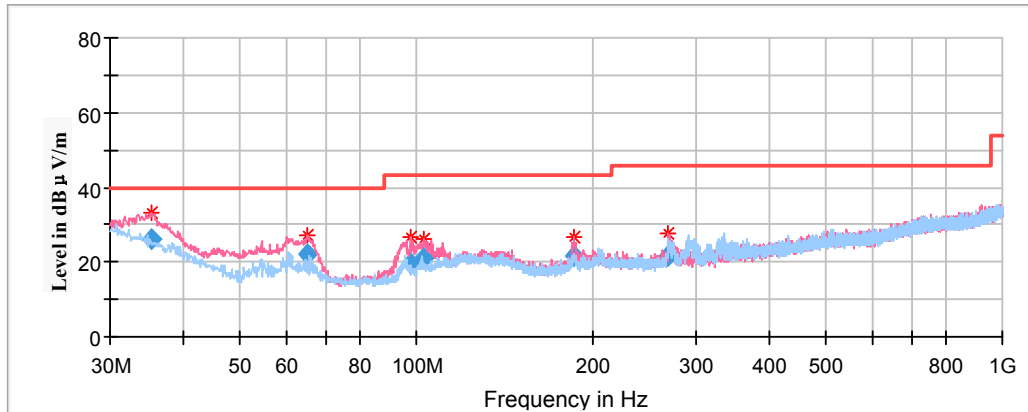
Pre-scan with 802.11a, 802.11ac20, 802.11n-HT20, 802.11ac40, 802.11n-HT40 and 802.11 ac80 modes of operation in the X,Y and Z axes of orientation, the worst case 802.11a mode in high channel 5180MHz(Chain1) in Y-axis of orientation was recorded.



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)				
36.184950	27.22	100.0	V	236.0	-7.4	40.00	12.78
61.405150	21.36	100.0	V	225.0	-14.7	40.00	18.64
65.526300	21.81	100.0	V	242.0	-15.7	40.00	18.19
95.231500	21.70	100.0	V	92.0	-15.5	43.50	21.80
185.440800	18.32	100.0	V	268.0	-13.0	43.50	25.18
268.749950	22.55	100.0	V	258.0	-11.5	46.00	23.45

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

Pre-scan with 802.11a, 802.11ac20, 802.11n-HT20, 802.11ac40, 802.11n-HT40 and 802.11 ac80 modes of operation in the X,Y and Z axes of orientation, the worst case 802.11ac40 mode in high channel 5825MHz(Chain0+ Chain1) in Y-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)				
35.213050	25.93	120.0	V	79.0	-6.9	40.00	14.07
65.284050	21.99	150.0	V	269.0	-15.7	40.00	18.01
97.770850	19.75	200.0	V	95.0	-15.2	43.50	23.75
102.741400	21.06	150.0	V	95.0	-14.2	43.50	22.44
185.441400	21.71	100.0	V	313.0	-13.0	43.50	21.79
269.592600	21.67	100.0	V	275.0	-11.5	46.00	24.33

1GHz-18GHz(5150-5250MHz Band):**802.11a Mode(Chain 0):**

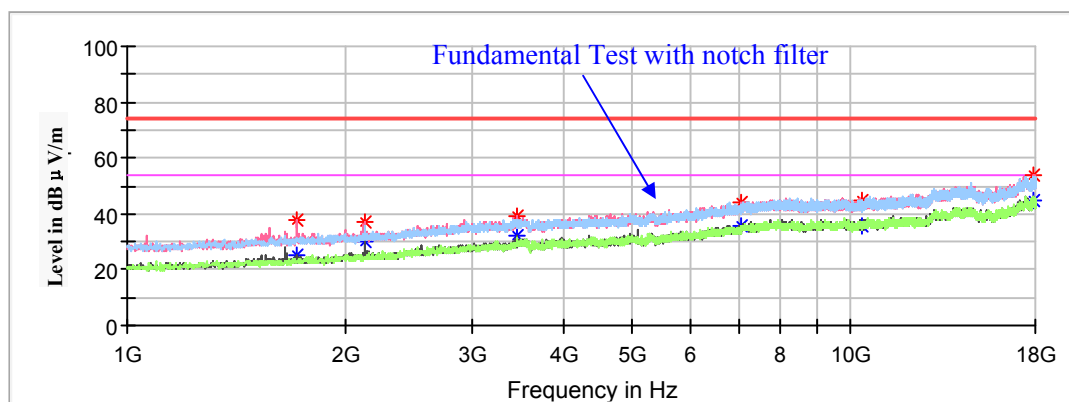
(Pre-scan in the X, Y and Z axes of orientation, the worst case **Y-axis of orientation** was recorded.)

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

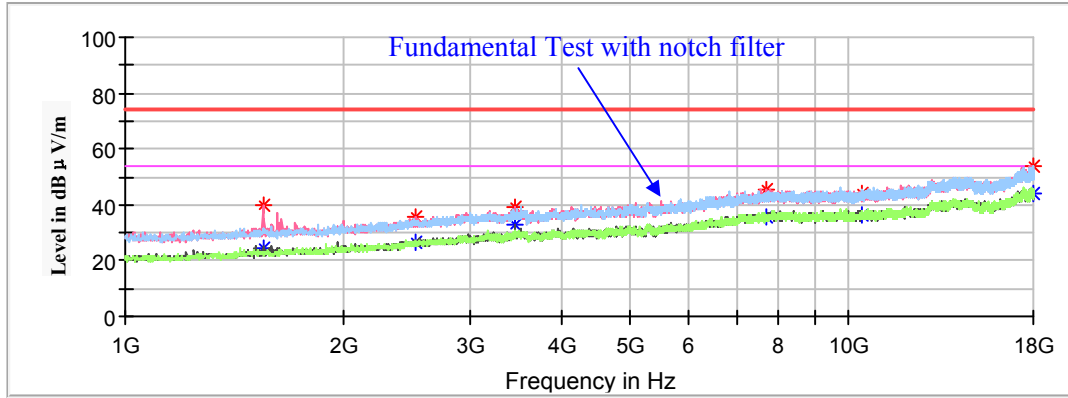
Full Spectrum



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)				
1715.700000	37.82	---	200.0	V	275.0	-15.5	68.20	30.38
2128.800000	37.23	---	200.0	V	262.0	-13.9	68.20	30.97
3454.800000	39.15	---	200.0	V	300.0	-8.9	68.20	29.05
7075.800000	44.40	---	200.0	V	36.0	0.1	68.20	23.80
10343.200000	44.74	---	200.0	V	168.0	2.2	68.20	23.46
17943.900000	---	44.93	200.0	H	33.0	8.8	54.00	9.07
17943.900000	53.89	---	200.0	H	33.0	8.8	74.00	20.11

Middle Channel: 5200MHz

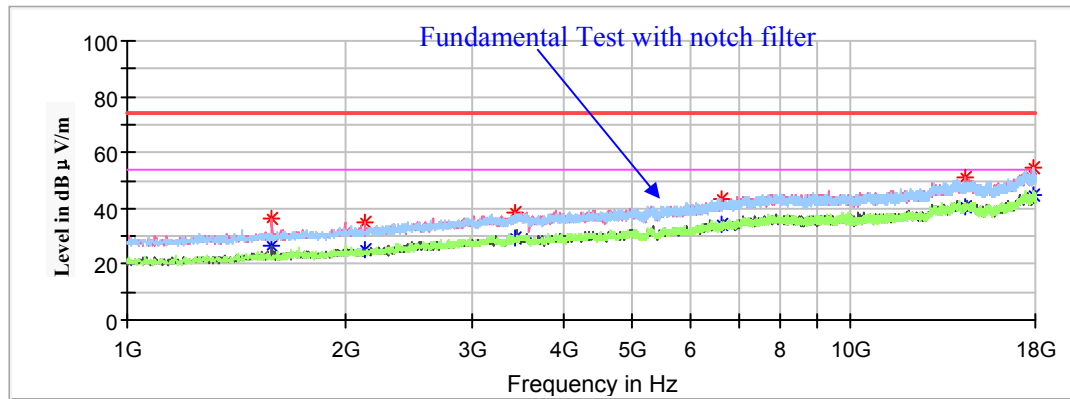
Full Spectrum



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)				
1549.100000	39.75	---	200.0	V	271.0	-16.2	74.00	34.25
1549.100000	---	24.21	200.0	V	271.0	-16.2	54.00	29.79
2524.900000	35.62	---	150.0	V	291.0	-12.3	68.20	32.58
3454.800000	38.89	---	200.0	V	309.0	-8.9	68.20	29.31
7677.600000	---	35.47	200.0	V	297.0	1.3	54.00	18.53
7677.600000	45.27	---	200.0	V	297.0	1.3	74.00	28.73
10399.300000	44.03	---	200.0	H	60.0	2.2	68.20	24.17
17957.500000	---	44.04	200.0	H	179.0	8.8	54.00	9.96
17957.500000	53.78	---	200.0	H	179.0	8.8	74.00	20.22

High Channel: 5240MHz

Full Spectrum



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)				
1586.500000	---	26.54	150.0	V	251.0	-16.0	54.00	27.46
1586.500000	36.58	---	150.0	V	251.0	-16.0	74.00	37.42
2127.100000	34.74	---	150.0	V	3.0	-13.9	68.20	33.46
3444.600000	38.57	---	200.0	V	103.0	-9.0	68.20	29.63
6637.200000	43.67	---	150.0	V	238.0	-0.9	68.20	24.53
14413.000000	50.89	---	200.0	V	15.0	6.5	68.20	17.31
17921.800000	54.66	---	150.0	H	356.0	8.8	74.00	19.34
17921.800000	---	44.85	150.0	H	356.0	8.8	54.00	9.15

802.11a Mode(Chain 1):

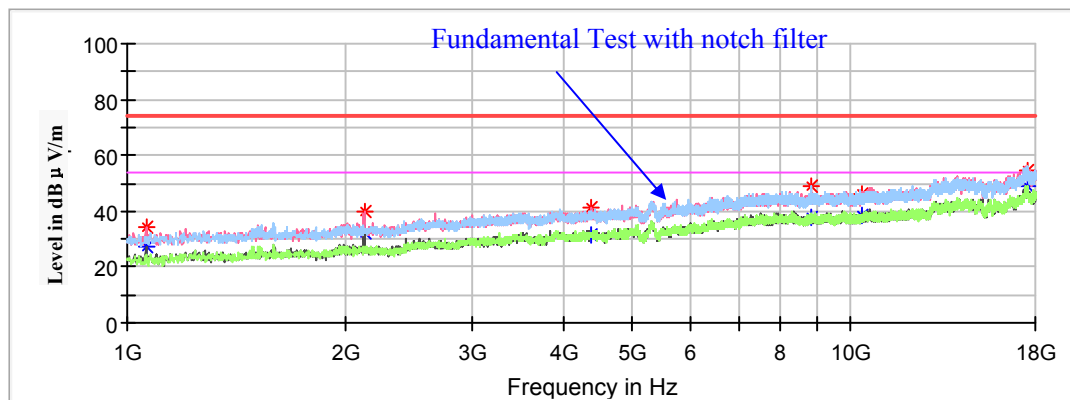
(Pre-scan in the X, Y and Z axes of orientation, the worst case **Y-axis of orientation** was recorded.)

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

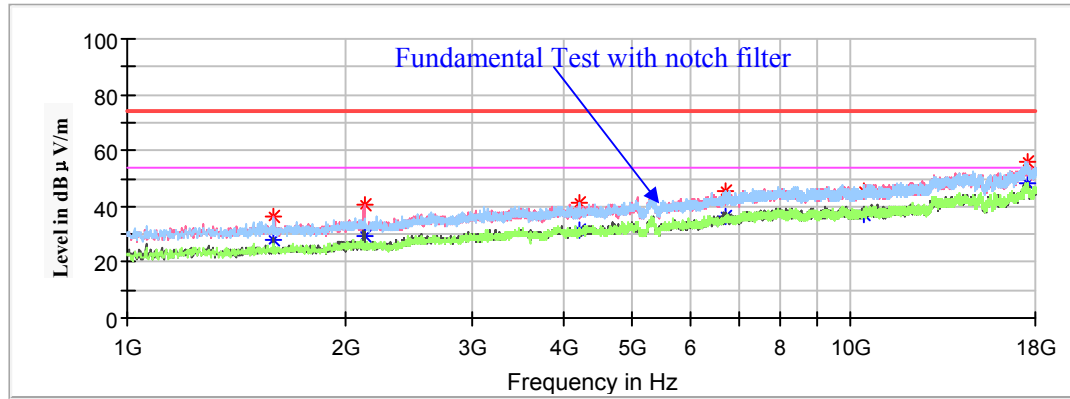
Full Spectrum



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)				
1061.200000	34.00	---	150.0	V	90.0	-18.7	74.00	40.00
1061.200000	---	27.19	150.0	V	90.0	-18.7	54.00	26.81
2130.500000	40.07	---	150.0	V	77.0	-13.9	68.20	28.13
4389.800000	---	31.73	200.0	H	143.0	-6.4	54.00	22.27
4389.800000	41.14	---	200.0	H	143.0	-6.4	74.00	32.86
8814.900000	48.97	---	150.0	H	103.0	1.7	68.20	19.23
10361.900000	46.20	---	200.0	H	0.0	2.2	68.20	22.00
17513.800000	54.89	---	200.0	H	63.0	8.9	68.20	13.31

Middle Channel: 5200MHz

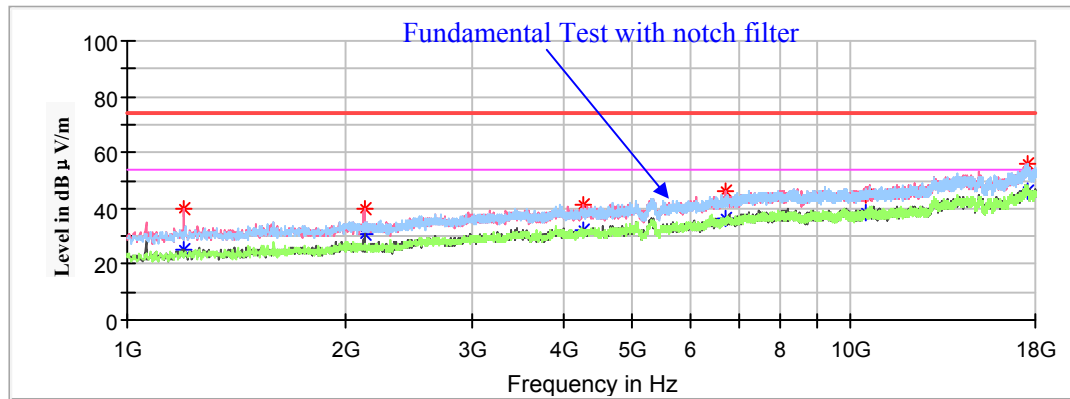
Full Spectrum



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	---	28.04	150.0	V	33.0	-16.0	54.00	25.96
1593.300000	36.38	---	150.0	V	33.0	-16.0	74.00	37.62
2125.400000	40.44	---	150.0	V	270.0	-14.0	68.20	27.76
4206.200000	41.04	---	200.0	H	64.0	-6.7	68.20	27.16
6723.900000	45.64	---	150.0	H	264.0	-0.7	68.20	22.56
10401.000000	45.46	---	200.0	H	350.0	2.2	68.20	22.74
17542.700000	55.88	---	150.0	V	20.0	8.9	68.20	12.32

High Channel: 5240MHz

Full Spectrum



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)				
1195.500000	39.68	---	150.0	V	76.0	-18.0	74.00	34.32
1195.500000	---	25.27	150.0	V	76.0	-18.0	54.00	28.73
2130.500000	39.99	---	200.0	V	76.0	-13.9	68.20	28.21
4275.900000	---	32.01	150.0	V	25.0	-6.6	54.00	21.99
4275.900000	40.94	---	150.0	V	25.0	-6.6	74.00	33.06
6695.000000	45.86	---	150.0	V	140.0	-0.7	68.20	22.34
10480.900000	44.61	---	200.0	H	350.0	2.3	68.20	23.59
17586.900000	56.03	---	200.0	H	0.0	8.9	68.20	12.17

Chain 0&1:**802.11ac20 Mode:**

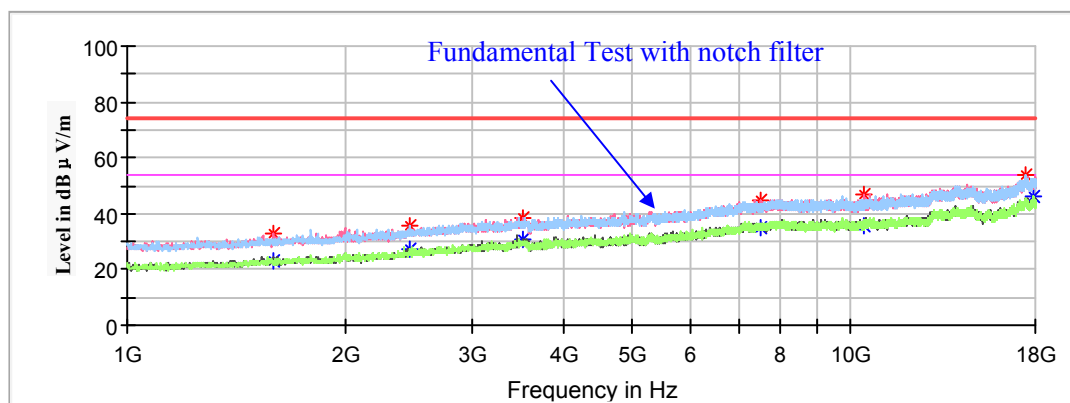
(Pre-scan in the X, Y and Z axes of orientation, the worst case **Y-axis of orientation** was recorded.)

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

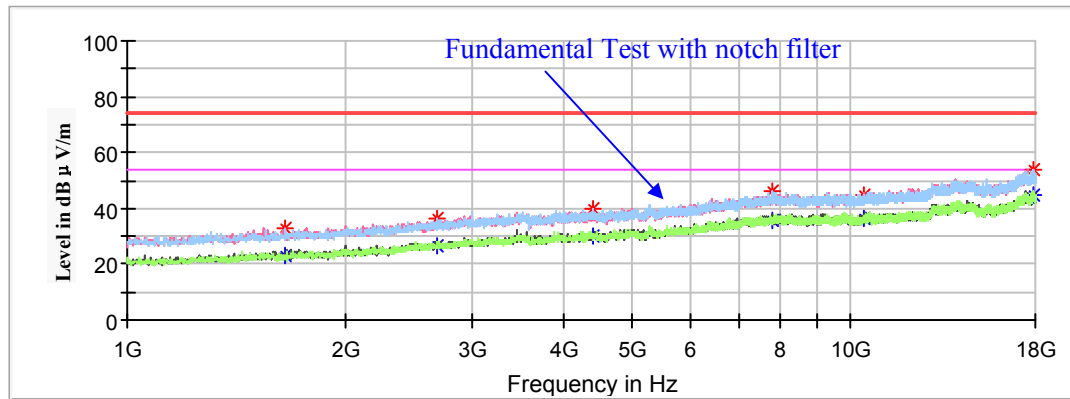
Full Spectrum



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	---	23.09	200.0	V	0.0	-16.0	54.00	30.91
1593.300000	32.76	---	200.0	V	0.0	-16.0	74.00	41.24
2458.600000	35.70	---	200.0	H	217.0	-12.6	68.20	32.50
3524.500000	38.36	---	200.0	V	310.0	-8.7	68.20	29.84
7528.000000	---	35.11	150.0	H	143.0	1.1	54.00	18.89
7528.000000	45.04	---	150.0	H	143.0	1.1	74.00	28.96
10460.500000	46.56	---	200.0	V	130.0	2.3	68.20	21.64
17920.100000	53.59	---	150.0	H	155.0	8.8	74.00	20.41
17920.100000	---	46.50	150.0	H	155.0	8.8	54.00	7.50

Middle Channel: 5200MHz

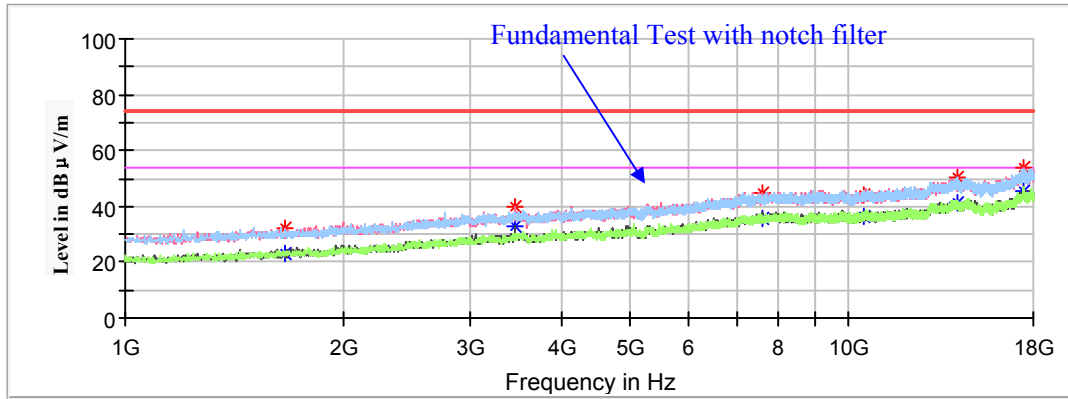
Full Spectrum



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dB μ V/m)	Margin (dB)
	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Height (cm)	Polar (H/V)				
1656.200000	32.73	---	150.0	H	8.0	-15.8	68.20	35.47
2679.600000	36.61	---	150.0	H	245.0	-11.6	68.20	31.59
4393.200000	---	30.07	150.0	V	204.0	-6.4	54.00	23.93
4393.200000	39.81	---	150.0	V	204.0	-6.4	74.00	34.19
7783.000000	46.02	---	150.0	H	8.0	1.5	68.20	22.18
10406.100000	44.97	---	150.0	V	153.0	2.2	68.20	23.23
17937.100000	---	45.07	200.0	H	27.0	8.8	54.00	8.93
17937.100000	53.72	---	200.0	H	27.0	8.8	74.00	20.28

High Channel: 5240MHz

Full Spectrum



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)				
1668.100000	---	23.40	200.0	H	217.0	-15.7	54.00	30.60
1668.100000	32.44	---	200.0	H	217.0	-15.7	74.00	41.56
3454.800000	40.02	---	200.0	V	356.0	-8.9	68.20	28.18
7577.300000	---	35.63	200.0	V	147.0	1.2	54.00	18.37
7577.300000	44.72	---	200.0	V	147.0	1.2	74.00	29.28
10482.600000	44.27	---	200.0	V	147.0	2.3	68.20	23.93
14147.800000	50.16	---	200.0	H	115.0	6.3	68.20	18.04
17474.700000	53.82	---	200.0	V	313.0	8.8	68.20	14.38

802.11n-HT20 Mode:

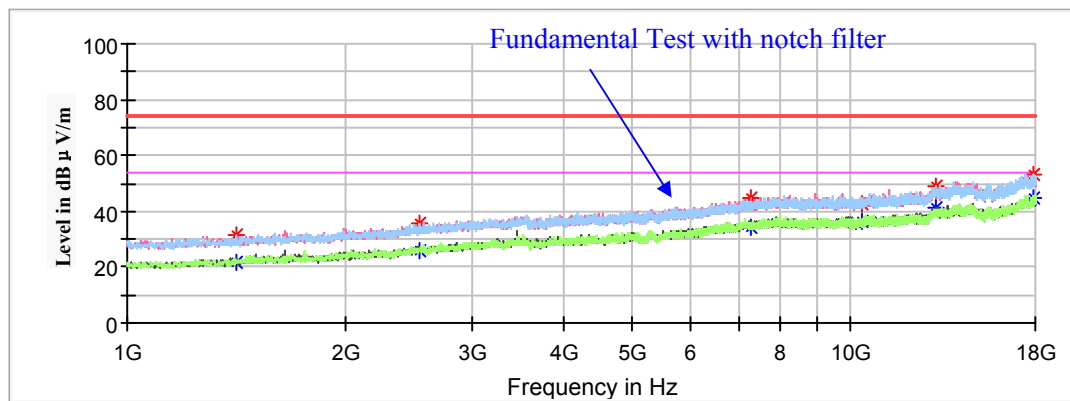
Pre-scan with X,Y and Z axes of orientation, the worst case Y-axis of orientation was recorded

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

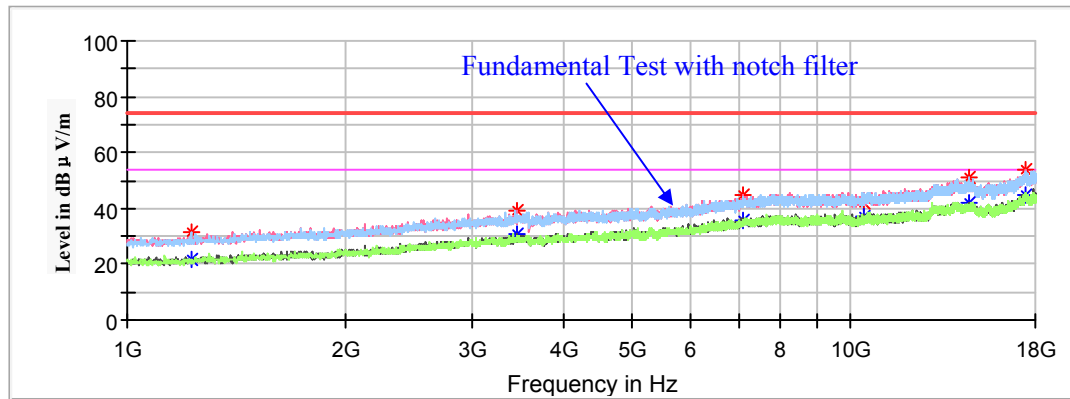
Full Spectrum



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)				
1411.400000	31.77	---	200.0	H	289.0	-16.8	74.00	42.23
1411.400000	---	21.94	200.0	H	289.0	-16.8	54.00	32.06
2528.300000	35.64	---	150.0	H	319.0	-12.3	68.20	32.56
7278.100000	44.87	---	150.0	V	0.0	0.5	68.20	23.33
10360.200000	42.98	---	150.0	H	0.0	2.2	68.20	25.22
13122.700000	49.29	---	200.0	V	335.0	5.3	68.20	18.91
17938.800000	53.40	---	150.0	V	314.0	8.8	74.00	20.60
17938.800000	---	44.73	150.0	V	314.0	8.8	54.00	9.27

Middle Channel: 5200MHz

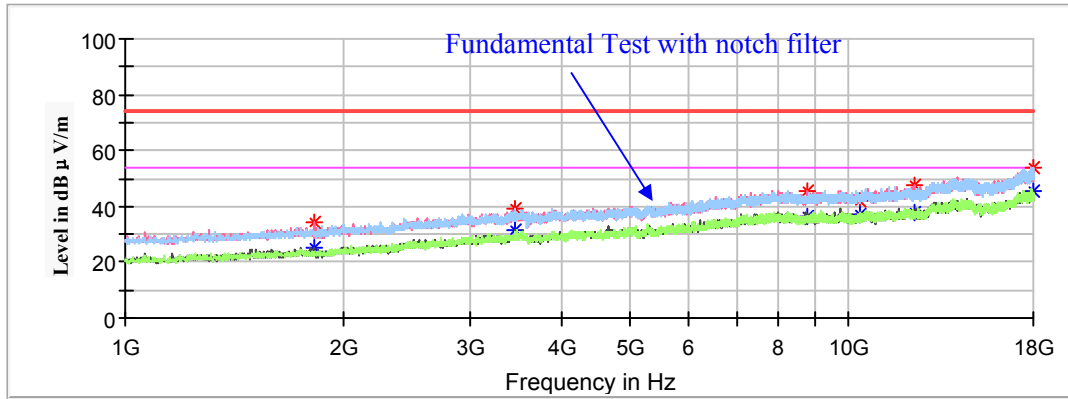
Full Spectrum



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dB μ V/m)	Margin (dB)
	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Height (cm)	Polar (H/V)				
1224.400000	---	21.78	150.0	V	89.0	-17.9	54.00	32.22
1224.400000	31.21	---	150.0	V	89.0	-17.9	74.00	42.79
3454.800000	39.07	---	200.0	V	187.0	-8.9	68.20	29.13
7094.500000	44.49	---	150.0	V	102.0	0.1	68.20	23.71
10399.300000	42.17	---	200.0	H	76.0	2.2	68.20	26.03
14574.500000	50.93	---	200.0	H	103.0	6.3	68.20	17.27
17473.000000	53.50	---	200.0	V	4.0	8.8	68.20	14.70

High Channel: 5240MHz

Full Spectrum



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dB μ V/m)	Margin (dB)
	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Height (cm)	Polar (H/V)				
1822.800000	34.37	---	200.0	V	101.0	-15.1	68.20	33.83
3454.800000	39.20	---	200.0	H	288.0	-8.9	68.20	29.00
8743.500000	45.43	---	200.0	V	25.0	1.6	68.20	22.77
10361.900000	42.08	---	200.0	V	0.0	2.2	68.20	26.12
12344.100000	47.83	---	200.0	V	0.0	3.2	74.00	26.17
12344.100000	---	37.54	200.0	V	0.0	3.2	54.00	16.46
17947.300000	53.89	---	200.0	V	152.0	8.8	74.00	20.11
17947.300000	---	45.70	200.0	V	152.0	8.8	54.00	8.30

802.11ac40 Mode:

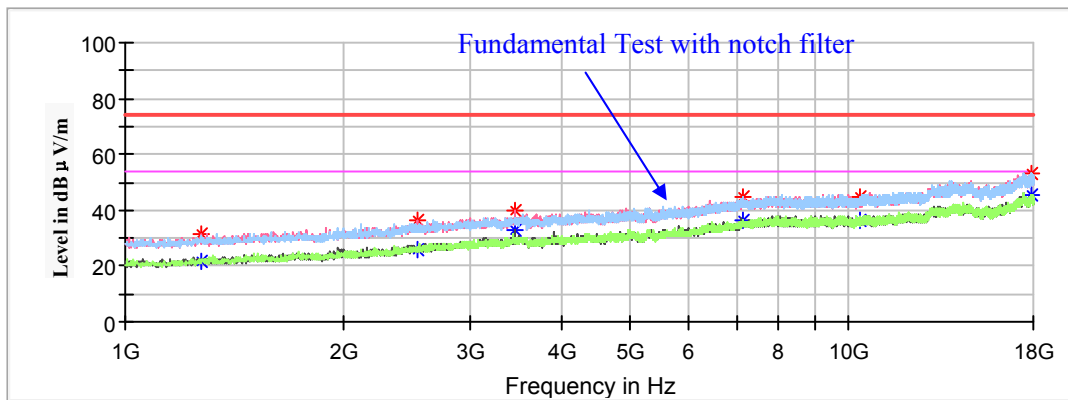
(Pre-scan in the X, Y and Z axes of orientation, the worst case **Y-axis of orientation** was recorded.)

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

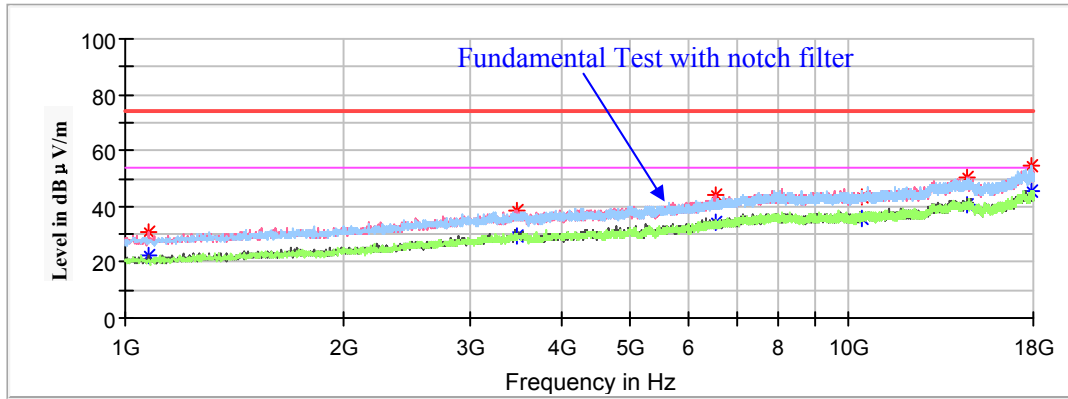
Full Spectrum



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)				
1270.300000	31.34	---	200.0	V	148.0	-17.6	68.20	36.86
2528.300000	36.56	---	200.0	V	25.0	-12.3	68.20	31.64
3454.800000	39.59	---	200.0	V	301.0	-8.9	68.20	28.61
7150.600000	44.59	---	200.0	H	77.0	0.3	68.20	23.61
10361.900000	45.04	---	200.0	V	276.0	2.2	68.20	23.16
17933.700000	53.45	---	150.0	H	339.0	8.8	74.00	20.55
17933.700000	---	45.77	150.0	H	339.0	8.8	54.00	8.23

High Channel: 5230MHz

Full Spectrum



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)				
1076.500000	---	22.09	150.0	V	358.0	-18.7	54.00	31.91
1076.500000	30.45	---	150.0	V	358.0	-18.7	74.00	43.55
3473.500000	38.59	---	200.0	V	296.0	-8.9	68.20	29.61
6530.100000	43.95	---	200.0	V	245.0	-1.1	68.20	24.25
10460.500000	43.34	---	150.0	H	333.0	2.3	68.20	24.86
14549.000000	50.65	---	200.0	V	270.0	6.4	68.20	17.55
17926.900000	54.77	---	150.0	H	283.0	8.8	74.00	19.23
17932.000000	---	45.54	150.0	H	283.0	8.8	54.00	8.46

802.11n-HT40 Mode:

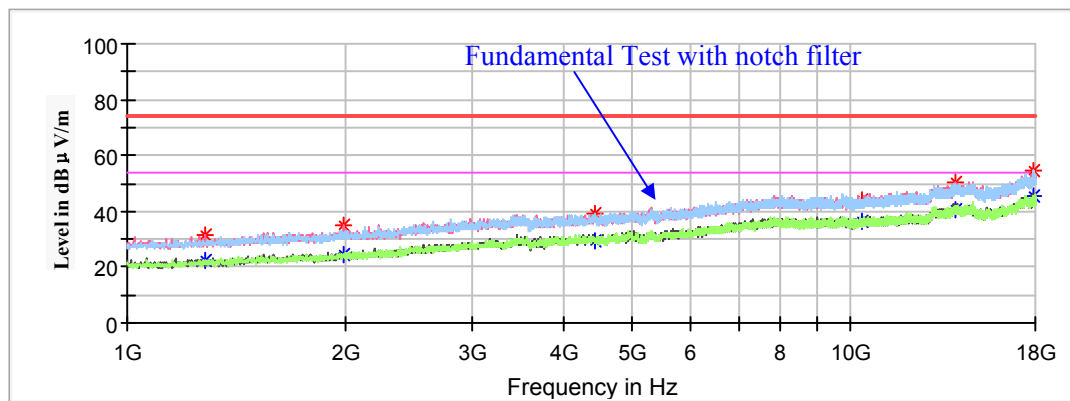
Pre-scan with X,Y and Z axes of orientation, the worst case Y-axis of orientation was recorded

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

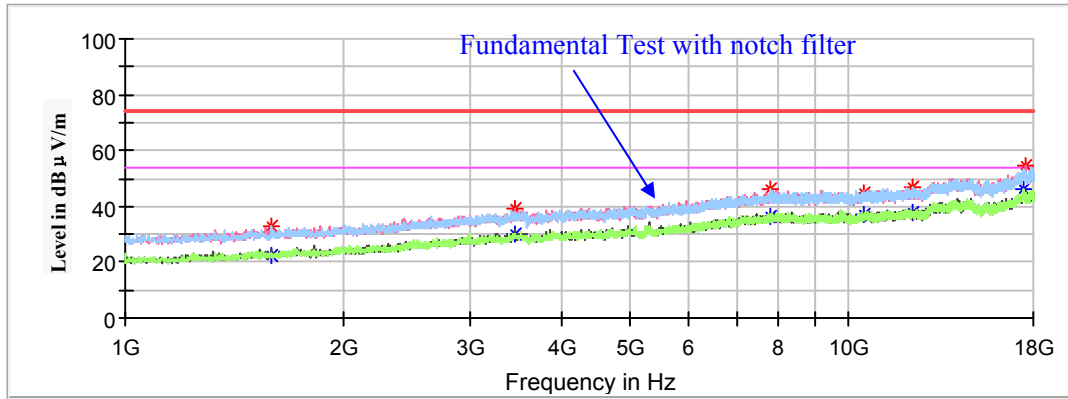
Full Spectrum



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)				
1282.200000	31.50	---	150.0	V	237.0	-17.5	68.20	36.70
1992.800000	35.14	---	200.0	V	323.0	-14.5	68.20	33.06
4422.100000	39.35	---	200.0	H	194.0	-6.3	68.20	28.85
10361.900000	44.28	---	200.0	V	77.0	2.2	68.20	23.92
13998.200000	50.14	---	200.0	V	141.0	6.1	68.20	18.06
17930.300000	---	45.38	200.0	H	207.0	8.8	54.00	8.62
17930.300000	54.56	---	200.0	H	207.0	8.8	74.00	19.44

High Channel: 5230MHz

Full Spectrum



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	---	22.48	150.0	H	90.0	-16.0	54.00	31.52
1593.300000	33.02	---	150.0	H	90.0	-16.0	74.00	40.98
3456.500000	38.85	---	200.0	V	90.0	-8.9	68.20	29.35
7777.900000	45.82	---	150.0	H	257.0	1.5	68.20	22.38
10479.200000	44.76	---	150.0	H	271.0	2.3	68.20	23.44
12247.200000	---	37.43	150.0	H	244.0	3.4	54.00	16.57
12247.200000	47.13	---	150.0	H	244.0	3.4	74.00	26.87
17508.700000	54.44	---	200.0	V	335.0	8.9	68.20	13.76

802.11ac80 Mode:

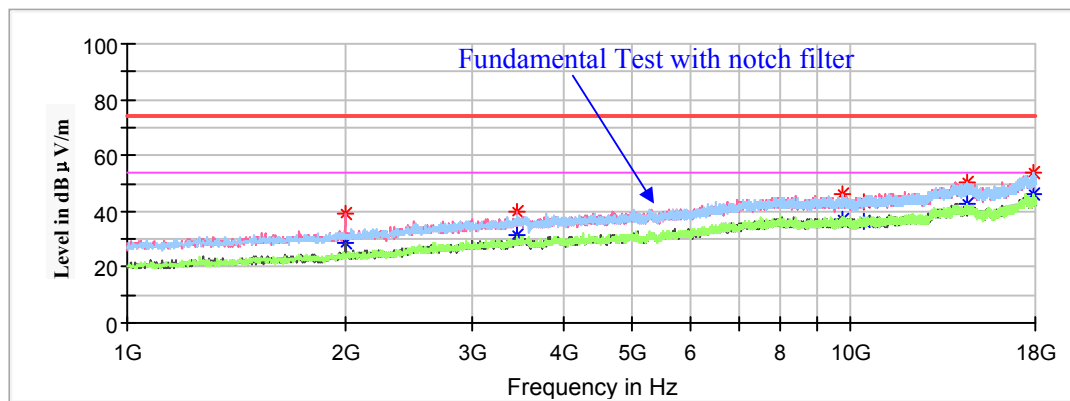
Pre-scan with X,Y and Z axes of orientation, the worst case Y-axis of orientation was recorded

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: 5210MHz

Full Spectrum



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)				
1999.600000	39.17	---	150.0	V	142.0	-14.5	68.20	29.03
3454.800000	39.69	---	150.0	V	295.0	-8.9	68.20	28.51
9770.300000	45.90	---	150.0	H	0.0	2.0	68.20	22.30
10419.700000	43.11	---	200.0	H	36.0	2.2	68.20	25.09
14472.500000	---	42.75	200.0	H	7.0	6.5	54.00	11.25
14472.500000	50.63	---	200.0	H	7.0	6.5	74.00	23.37
17938.800000	---	46.01	200.0	H	332.0	8.8	54.00	7.99
17938.800000	54.03	---	200.0	H	332.0	8.8	74.00	19.97

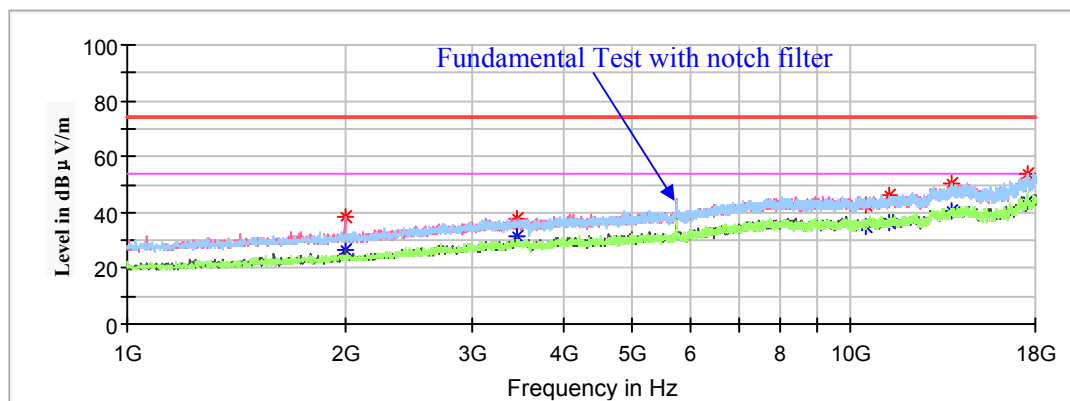
5725-5850MHz Band:**1GHz-18GHz:****802.11a Mode(Chain 0):***(Pre-scan in the X,Y and Z axes of orientation, the worst case Y-axis of orientation was recorded.)*

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

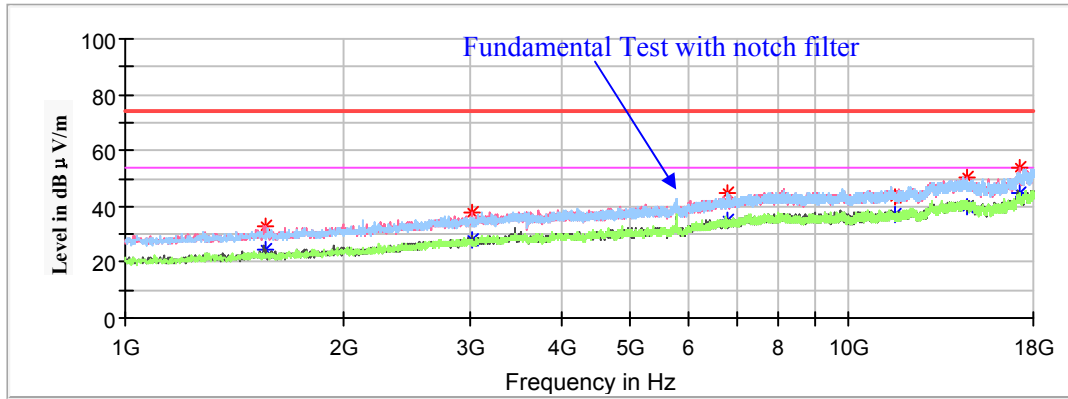
Full Spectrum



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)				
1999.600000	38.43	---	200.0	V	333.0	-14.5	68.20	29.77
3454.800000	37.95	---	200.0	V	307.0	-8.9	68.20	30.25
10489.400000	42.31	---	200.0	H	230.0	2.3	68.20	25.89
11336.000000	46.37	---	200.0	V	231.0	2.8	74.00	27.63
11336.000000	---	36.02	200.0	V	231.0	2.8	54.00	17.98
13821.400000	50.46	---	200.0	H	134.0	6.0	68.20	17.74
17581.800000	53.74	---	200.0	H	0.0	8.9	68.20	14.46

Middle Channel: 5785MHz

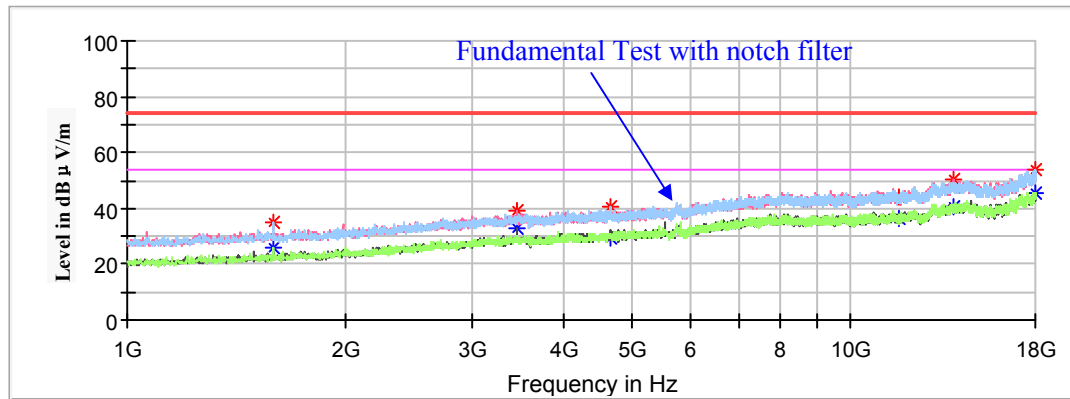
Full Spectrum



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dB μ V/m)	Margin (dB)
	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Height (cm)	Polar (H/V)				
1564.400000	---	24.75	200.0	V	270.0	-16.1	54.00	29.25
1564.400000	32.91	---	200.0	V	270.0	-16.1	74.00	41.09
3011.100000	37.47	---	200.0	V	77.0	-10.1	68.20	30.73
6791.900000	44.56	---	150.0	H	346.0	-0.5	68.20	23.64
11570.600000	43.58	---	150.0	V	191.0	2.9	74.00	30.42
11570.600000	---	37.02	150.0	V	191.0	2.9	54.00	16.98
14535.400000	50.39	---	150.0	V	64.0	6.4	68.20	17.81
17209.500000	54.13	---	200.0	V	207.0	7.9	68.20	14.07

High Channel: 5825MHz

Full Spectrum



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dB μ V/m)	Margin (dB)
	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Height (cm)	Polar (H/V)				
1593.300000	34.74	---	200.0	H	323.0	-16.0	74.00	39.26
1593.300000	---	26.02	200.0	H	323.0	-16.0	54.00	27.98
3454.800000	39.28	---	200.0	V	300.0	-8.9	68.20	28.92
4660.100000	---	29.67	150.0	V	21.0	-5.9	54.00	24.33
4660.100000	40.33	---	150.0	V	21.0	-5.9	74.00	33.67
11648.800000	---	36.62	150.0	H	313.0	3.1	54.00	17.38
11648.800000	44.30	---	150.0	H	313.0	3.1	74.00	29.70
13855.400000	50.11	---	200.0	V	249.0	6.0	68.20	18.09
17949.000000	---	45.58	150.0	V	4.0	8.8	54.00	8.42
17949.000000	53.65	---	150.0	V	4.0	8.8	74.00	20.35

802.11a Mode(Chain 1):

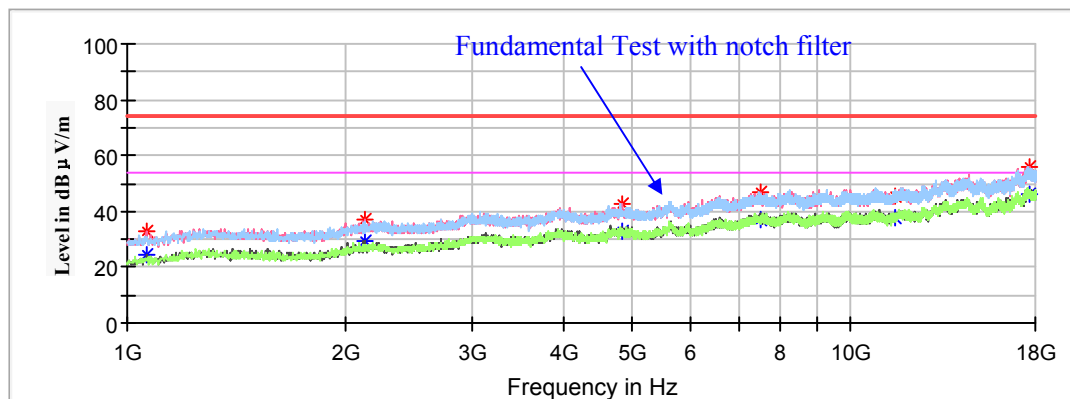
(Pre-scan in the X,Y and Z axes of orientation, the worst case **Y-axis of orientation** was recorded.)

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

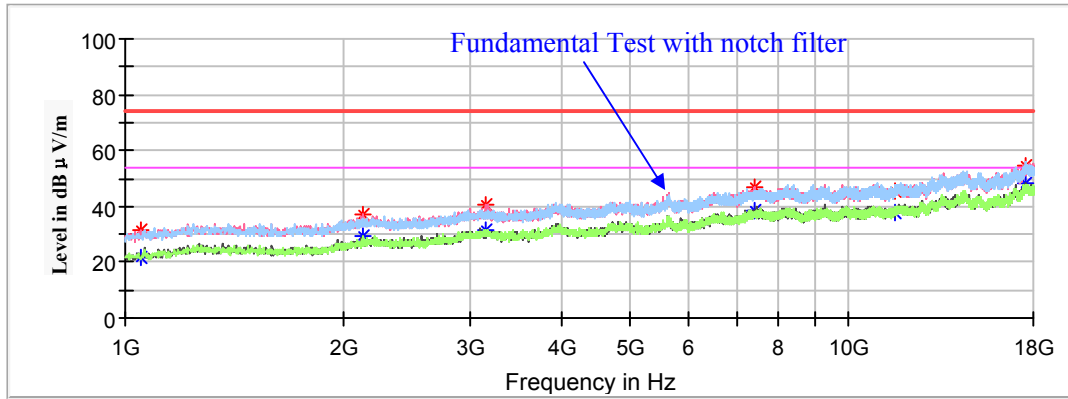
Full Spectrum



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)				
1062.900000	---	24.56	150.0	V	117.0	-18.7	54.00	29.44
1062.900000	32.83	---	150.0	V	117.0	-18.7	74.00	41.17
2130.500000	37.41	---	150.0	V	251.0	-13.9	68.20	30.79
4826.700000	---	32.59	150.0	V	170.0	-5.5	54.00	21.41
4826.700000	42.74	---	150.0	V	170.0	-5.5	74.00	31.26
7483.800000	---	37.04	150.0	H	211.0	1.0	54.00	16.96
7483.800000	46.94	---	150.0	H	211.0	1.0	74.00	27.06
11490.700000	---	37.84	150.0	V	276.0	2.8	54.00	16.16
11490.700000	45.47	---	150.0	V	276.0	2.8	74.00	28.53
17624.300000	55.83	---	150.0	V	315.0	8.9	68.20	12.37

Middle Channel: 5785MHz

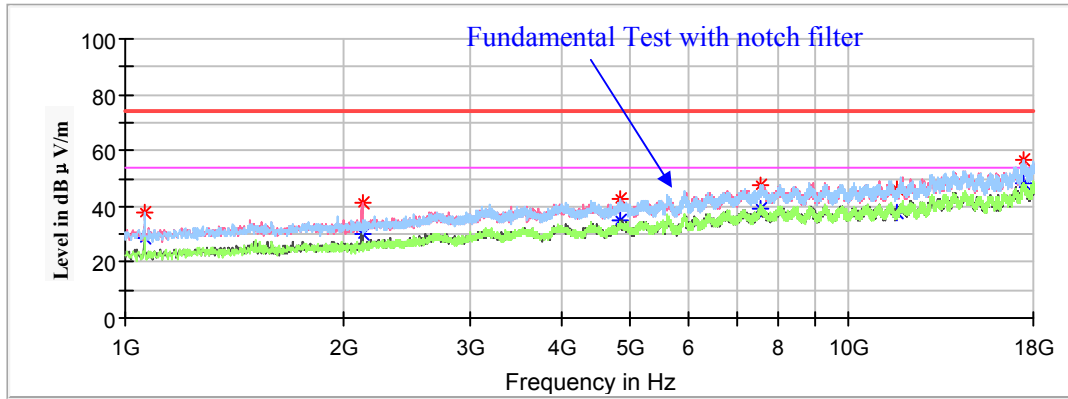
Full Spectrum



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)				
1049.300000	31.65	---	150.0	V	170.0	-18.8	74.00	42.35
1049.300000	---	21.98	150.0	V	170.0	-18.8	54.00	32.02
2130.500000	37.37	---	150.0	V	261.0	-13.9	68.20	30.83
3143.700000	40.54	---	150.0	V	324.0	-9.7	68.20	27.66
7422.600000	---	38.49	150.0	V	0.0	0.9	54.00	15.51
7422.600000	46.85	---	150.0	V	0.0	0.9	74.00	27.15
11570.600000	---	37.58	150.0	V	248.0	2.9	54.00	16.42
11570.600000	45.46	---	150.0	V	248.0	2.9	74.00	28.54
17590.300000	54.39	---	150.0	H	38.0	8.9	68.20	13.81

High Channel: 5825MHz

Full Spectrum



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)				
1062.900000	---	28.59	200.0	H	0.0	-18.7	54.00	25.41
1062.900000	37.54	---	200.0	H	0.0	-18.7	74.00	36.46
2125.400000	41.55	---	150.0	V	288.0	-14.0	68.20	26.65
4819.900000	---	34.93	150.0	V	326.0	-5.6	54.00	19.07
4819.900000	42.31	---	150.0	V	326.0	-5.6	74.00	31.69
7567.100000	---	38.86	150.0	V	207.0	1.1	54.00	15.14
7567.100000	47.63	---	150.0	V	207.0	1.1	74.00	26.37
11652.200000	---	37.45	150.0	H	147.0	1.1	54.00	16.55
11652.200000	46.10	---	150.0	H	147.0	1.1	74.00	27.90
17488.300000	56.50	---	200.0	H	256.0	8.8	68.20	11.70

Chain 0&1:**802.11ac20 Mode:**

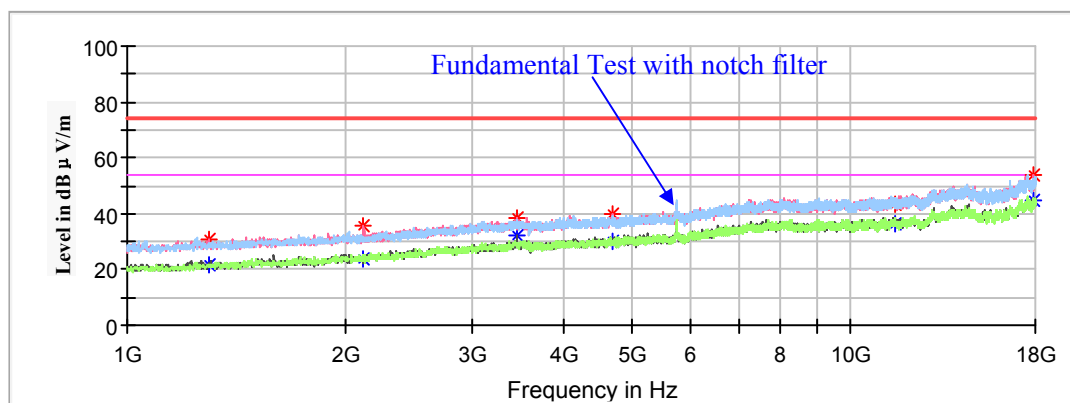
(Pre-scan in the X,Y and Z axes of orientation, the worst case **Y-axis of orientation** was recorded.)

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

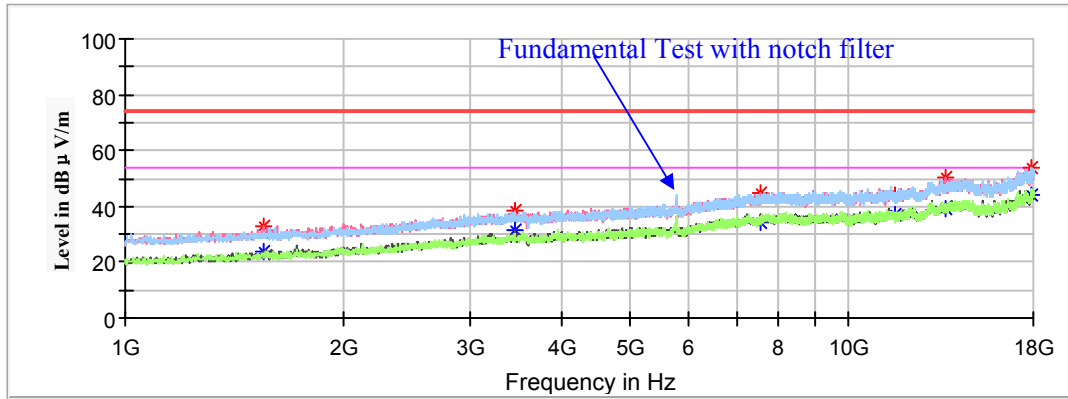
Full Spectrum



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)				
1297.500000	31.00	---	150.0	V	262.0	-17.5	68.20	37.20
2123.700000	35.47	---	200.0	V	77.0	-14.0	68.20	32.73
3454.800000	38.70	---	200.0	V	310.0	-8.9	68.20	29.50
4695.800000	---	29.91	200.0	H	313.0	-5.8	54.00	24.09
4695.800000	40.05	---	200.0	H	313.0	-5.8	74.00	33.95
11490.700000	---	36.39	200.0	V	52.0	2.8	54.00	17.61
11490.700000	43.61	---	200.0	V	52.0	2.8	74.00	30.39
17930.300000	54.02	---	150.0	V	0.0	8.8	74.00	19.98
17930.300000	---	44.77	150.0	V	0.0	8.8	54.00	9.23

Middle Channel: 5785MHz

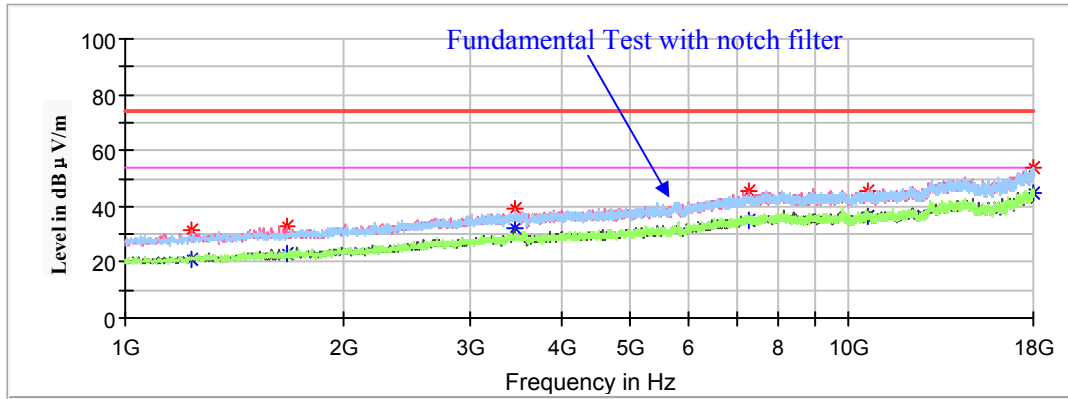
Full Spectrum



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)				
1555.900000	32.69	---	150.0	V	288.0	-16.1	74.00	41.31
1555.900000	---	23.91	150.0	V	288.0	-16.1	54.00	30.09
3454.800000	38.34	---	200.0	V	310.0	-8.9	68.20	29.86
7533.100000	---	34.57	200.0	H	218.0	1.1	54.00	19.43
7533.100000	44.54	---	200.0	H	218.0	1.1	74.00	29.46
11570.600000	44.39	---	150.0	V	263.0	2.9	74.00	29.61
11570.600000	---	37.12	150.0	V	263.0	2.9	54.00	16.88
13602.100000	50.08	---	200.0	V	25.0	5.8	68.20	18.12
17940.500000	---	44.40	150.0	H	8.0	8.8	54.00	9.60
17940.500000	53.76	---	150.0	H	8.0	8.8	74.00	20.24

High Channel: 5825MHz

Full Spectrum



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dB μ V/m)	Margin (dB)
	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Height (cm)	Polar (H/V)				
1238.000000	---	21.29	200.0	V	135.0	-17.8	54.00	32.71
1238.000000	31.74	---	200.0	V	135.0	-17.8	74.00	42.26
1669.800000	---	22.78	200.0	V	10.0	-15.7	54.00	31.22
1669.800000	32.77	---	200.0	V	10.0	-15.7	74.00	41.23
3454.800000	39.37	---	150.0	V	300.0	-8.9	68.20	28.83
7256.000000	---	34.72	150.0	H	20.0	0.5	54.00	19.28
7256.000000	45.47	---	150.0	H	20.0	0.5	74.00	28.53
10650.900000	45.68	---	200.0	H	63.0	2.5	74.00	28.32
10650.900000	---	36.49	200.0	H	63.0	2.5	54.00	17.51
17979.600000	---	44.60	200.0	V	252.0	8.8	54.00	9.40
17979.600000	53.81	---	200.0	V	252.0	8.8	74.00	20.19

802.11n-HT20 Mode:

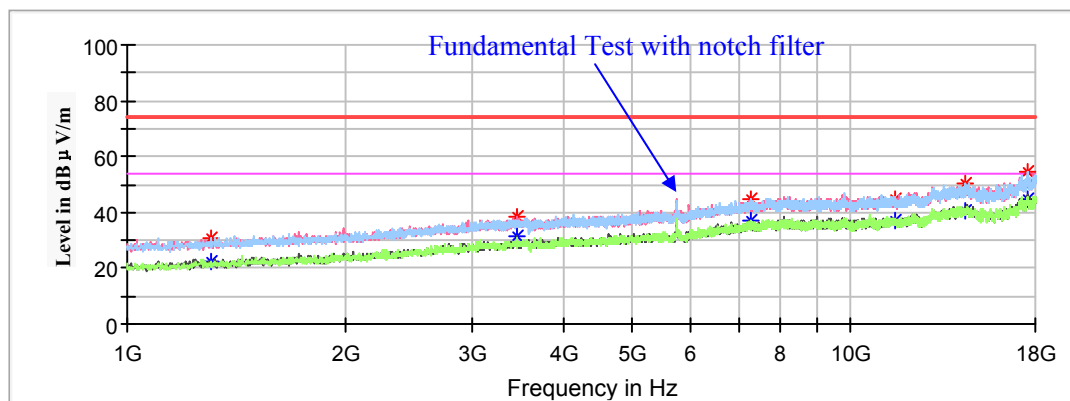
(Pre-scan with X,Y and Z axes of orientation, the worst case **Y-axis of orientation** was recorded)

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

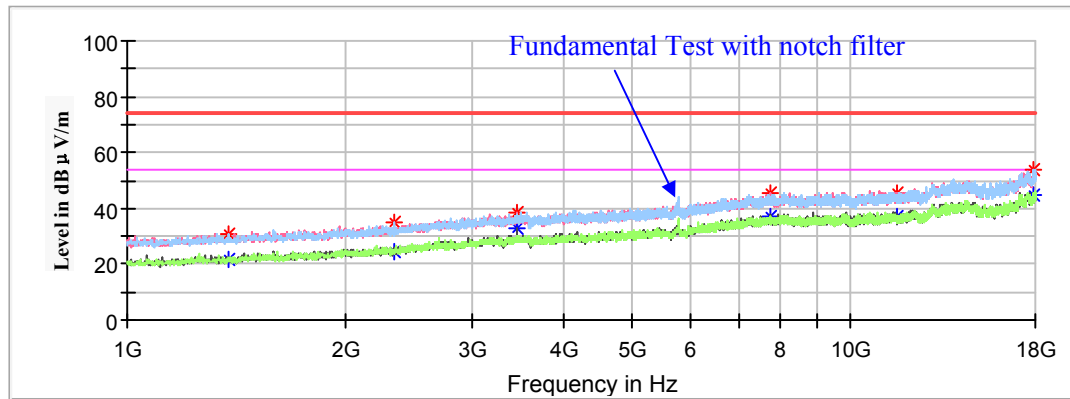
Full Spectrum



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)				
1307.700000	---	22.06	200.0	H	76.0	-17.4	54.00	31.94
1307.700000	31.07	---	200.0	H	76.0	-17.4	74.00	42.93
3454.800000	38.76	---	150.0	V	299.0	-8.9	68.20	29.44
7262.800000	---	36.77	200.0	H	24.0	0.5	54.00	17.23
7262.800000	44.55	---	200.0	H	24.0	0.5	74.00	29.45
11490.700000	44.77	---	150.0	H	244.0	2.8	74.00	29.23
11490.700000	---	36.79	150.0	H	244.0	2.8	54.00	17.21
14363.700000	50.63	---	150.0	H	283.0	6.4	68.20	17.57
17581.800000	54.49	---	150.0	H	73.0	8.9	68.20	13.71

Middle Channel: 5785MHz

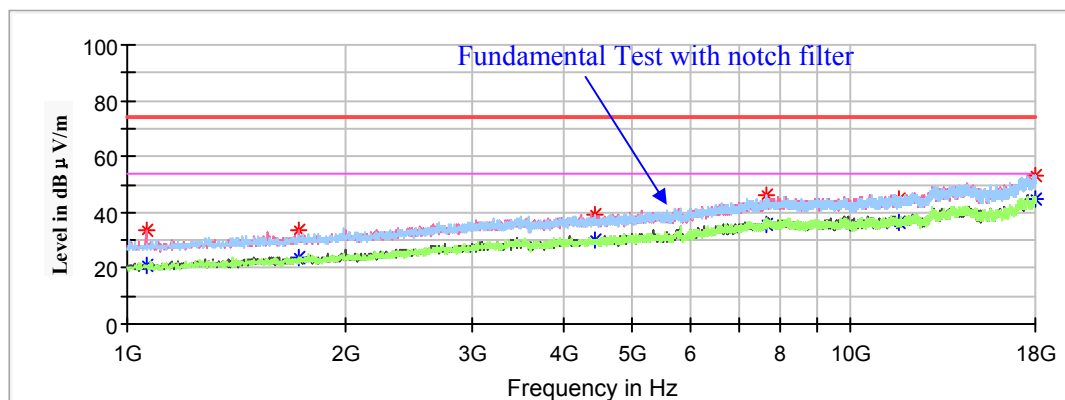
Full Spectrum



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dB μ V/m)	Margin (dB)
	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Height (cm)	Polar (H/V)				
1379.100000	---	21.85	150.0	H	60.0	-17.0	54.00	32.15
1379.100000	31.01	---	150.0	H	60.0	-17.0	74.00	42.99
2336.200000	34.66	---	200.0	H	236.0	-13.1	74.00	39.34
2336.200000	---	24.64	200.0	H	236.0	-13.1	54.00	29.36
3454.800000	38.48	---	150.0	V	300.0	-8.9	68.20	29.72
7742.200000	---	36.81	200.0	V	6.0	1.4	54.00	17.19
7742.200000	45.43	---	200.0	V	6.0	1.4	74.00	28.57
11570.600000	---	36.88	200.0	V	90.0	2.9	54.00	17.12
11570.600000	45.23	---	200.0	V	90.0	2.9	74.00	28.77
17920.100000	53.78	---	150.0	V	160.0	8.8	74.00	20.22
17920.100000	---	45.08	150.0	V	160.0	8.8	54.00	8.92

High Channel: 5825MHz

Full Spectrum



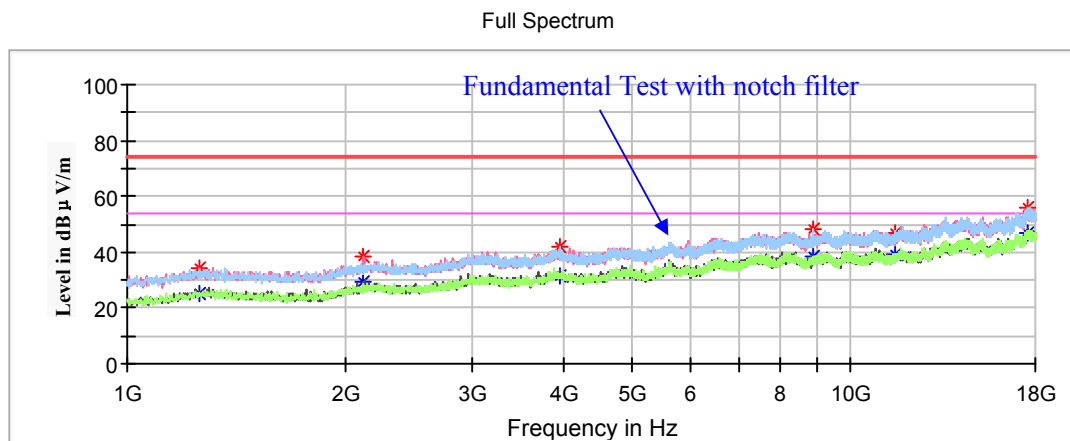
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dB μ V/m)	Margin (dB)
	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Height (cm)	Polar (H/V)				
1061.200000	33.63	---	150.0	V	314.0	-18.7	74.00	40.37
1061.200000	---	20.97	150.0	V	314.0	-18.7	54.00	33.03
1727.600000	33.77	---	200.0	V	87.0	-15.5	68.20	34.43
4418.700000	39.50	---	150.0	H	167.0	-6.3	68.20	28.70
7657.200000	---	35.94	150.0	H	0.0	1.3	54.00	18.06
7657.200000	45.92	---	150.0	H	0.0	1.3	74.00	28.08
11648.800000	---	36.08	200.0	V	358.0	3.1	54.00	17.92
11648.800000	44.56	---	200.0	V	358.0	3.1	74.00	29.44
17947.300000	---	45.10	150.0	H	4.0	8.8	54.00	8.90
17947.300000	53.36	---	150.0	H	4.0	8.8	74.00	20.64

802.11ac40 Mode:

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

Note:

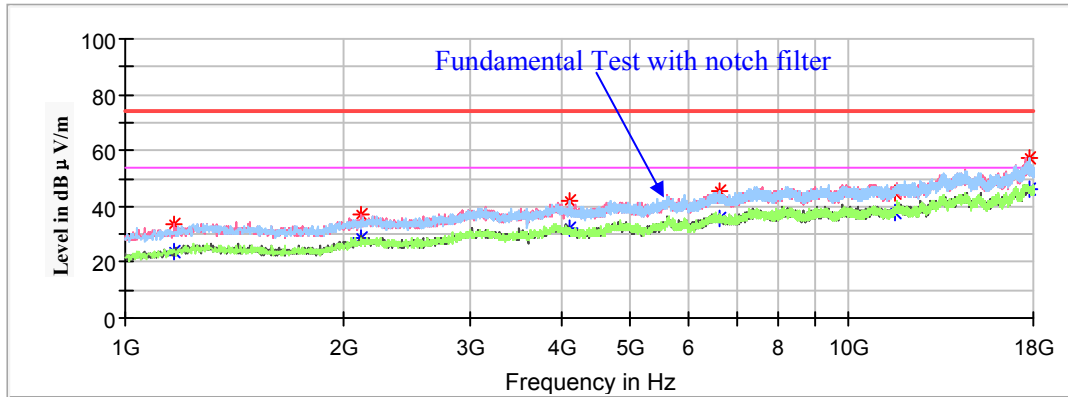
1. This test was performed with the 5725-5850MHz band reject filter.
2. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
Corrected Amplitude = Corrected Factor + Reading
Margin = Limit - Corrected. Amplitude

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)				
1260.100000	34.06	---	150.0	V	359.0	-17.7	68.20	34.14
2123.700000	38.48	---	150.0	V	310.0	-14.0	68.20	29.72
3952.900000	41.68	---	150.0	H	345.0	-7.2	74.00	32.32
3952.900000	---	31.49	150.0	H	345.0	-7.2	54.00	22.51
8891.400000	47.98	---	150.0	H	77.0	1.8	68.20	20.22
11511.100000	46.95	---	150.0	V	310.0	2.8	74.00	27.05
11511.100000	---	38.97	150.0	V	310.0	2.8	54.00	15.03
17590.300000	56.17	---	150.0	H	22.0	8.9	68.20	12.03

High Channel: 5795MHz

Full Spectrum



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dB μ V/m)	Margin (dB)
	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Height (cm)	Polar (H/V)				
1166.600000	---	23.87	150.0	H	357.0	-18.2	54.00	30.13
1166.600000	33.63	---	150.0	H	357.0	-18.2	74.00	40.37
2123.700000	37.06	---	150.0	V	230.0	-14.0	68.20	31.14
4107.600000	---	31.85	150.0	V	5.0	-6.8	54.00	22.15
4107.600000	41.75	---	150.0	V	5.0	-6.8	74.00	32.25
6613.400000	45.69	---	150.0	H	195.0	-0.9	68.20	22.51
11589.300000	44.77	---	150.0	H	350.0	3.0	74.00	29.23
11589.300000	---	37.49	150.0	H	350.0	3.0	54.00	16.51
17743.300000	---	45.84	150.0	H	170.0	8.8	54.00	8.16
17743.300000	57.07	---	150.0	H	170.0	8.8	74.00	16.93

802.11n-HT40 Mode:

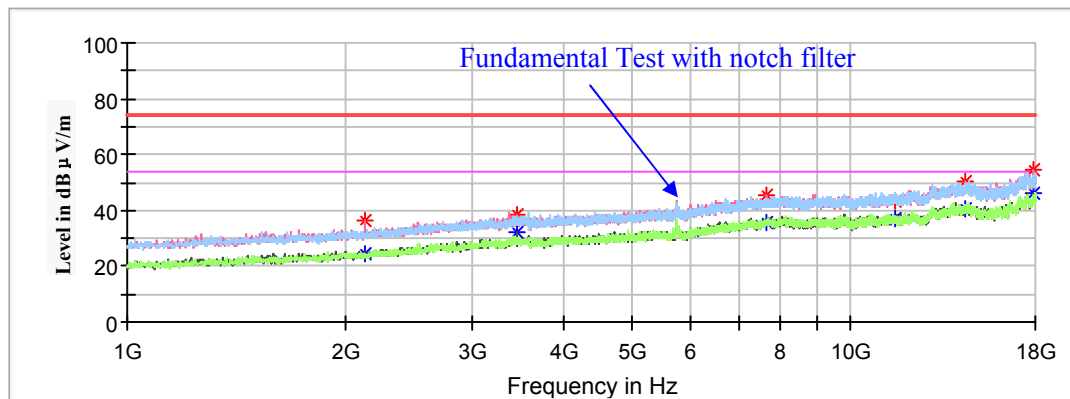
(Pre-scan with X,Y and Z axes of orientation, the worst case **Y-axis of orientation** was recorded)

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

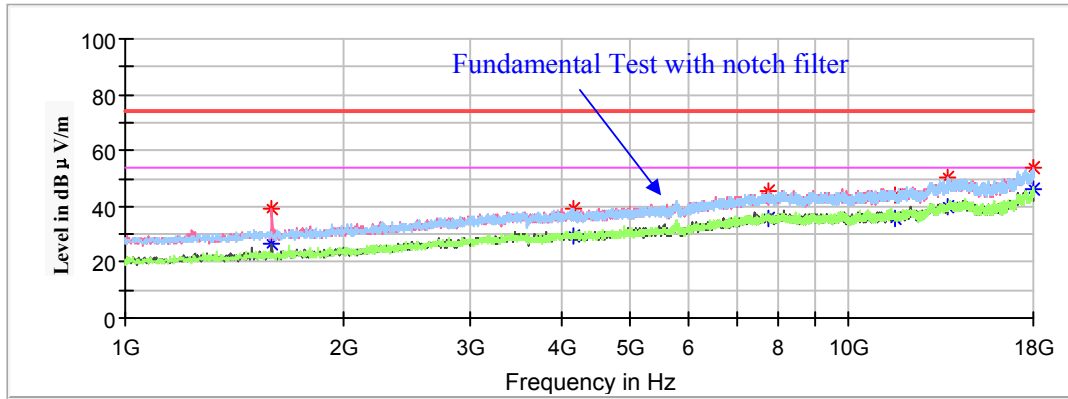
Full Spectrum



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)				
2130.500000	36.67	---	200.0	V	89.0	-13.9	68.20	31.53
3454.800000	38.43	---	200.0	V	310.0	-8.9	68.20	29.77
7630.000000	---	35.49	200.0	H	236.0	1.2	54.00	18.51
7630.000000	45.75	---	200.0	H	236.0	1.2	74.00	28.25
11509.400000	43.65	---	150.0	H	139.0	2.8	74.00	30.35
11509.400000	---	37.27	150.0	H	139.0	2.8	54.00	16.73
14409.600000	50.10	---	200.0	V	270.0	6.5	68.20	18.10
17928.600000	---	46.00	200.0	V	310.0	8.8	54.00	8.00
17928.600000	54.32	---	200.0	V	310.0	8.8	74.00	19.68

High Channel: 5795MHz

Full Spectrum



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dB μ V/m)	Margin (dB)
	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Height (cm)	Polar (H/V)				
1596.700000	38.93	---	200.0	V	213.0	-16.0	74.00	35.07
1596.700000	---	26.38	200.0	V	213.0	-16.0	54.00	27.62
4162.000000	39.49	---	150.0	H	40.0	-6.7	74.00	34.51
4162.000000	---	29.17	150.0	H	40.0	-6.7	54.00	24.83
7735.400000	---	35.33	150.0	H	0.0	1.4	54.00	18.67
7735.400000	45.52	---	150.0	H	0.0	1.4	74.00	28.48
11591.000000	43.74	---	200.0	H	25.0	3.0	74.00	30.26
11591.000000	---	35.77	200.0	H	25.0	3.0	54.00	18.23
13738.100000	50.19	---	200.0	H	219.0	5.9	68.20	18.01
17964.300000	---	46.31	200.0	V	136.0	8.8	54.00	7.69
17964.300000	53.82	---	200.0	V	136.0	8.8	74.00	20.18

802.11ac80 Mode:

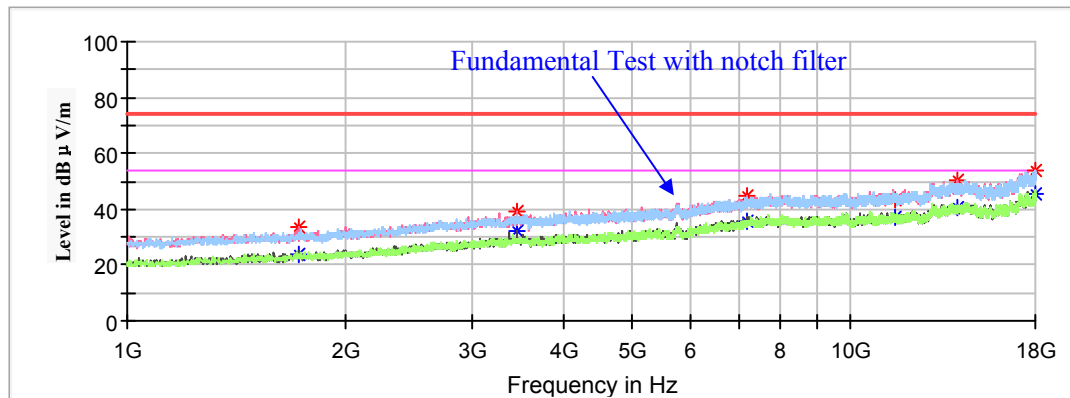
(Pre-scan in the X,Y and Z axes of orientation, the worst case **Y-axis of orientation** was recorded.)

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: 5775MHz

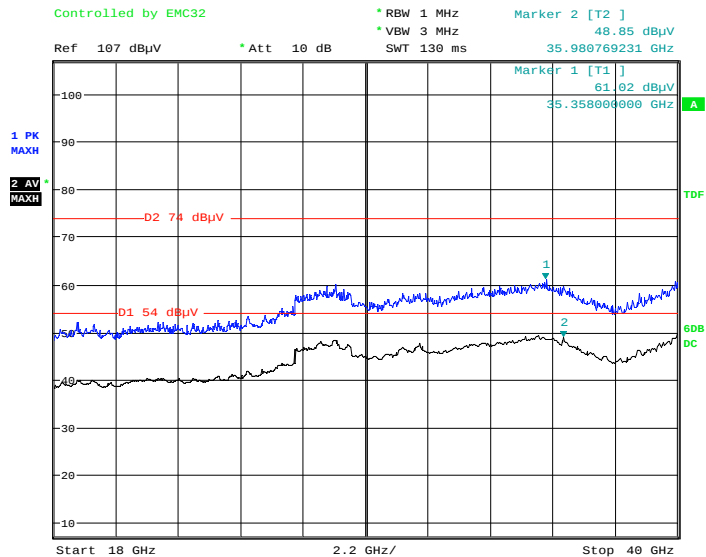
Full Spectrum



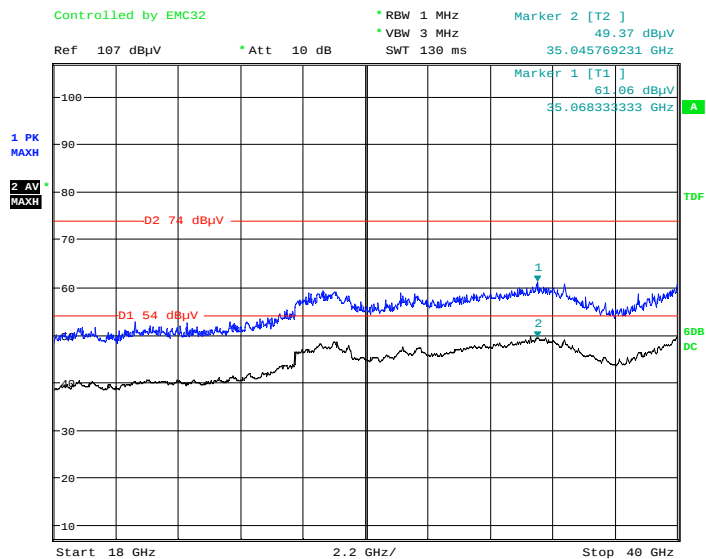
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
1727.600000	33.42	---	200.0	V	218.0	-15.5	68.20	34.78
3454.800000	38.96	---	200.0	V	311.0	-8.9	68.20	29.24
7201.600000	44.68	---	200.0	V	116.0	0.4	68.20	23.52
11550.200000	---	36.76	150.0	V	181.0	2.9	54.00	17.24
11550.200000	43.22	---	150.0	V	181.0	2.9	74.00	30.78
14062.800000	50.30	---	200.0	V	179.0	6.2	68.20	17.90
17971.100000	---	45.59	200.0	V	11.0	8.8	54.00	8.41
17971.100000	54.00	---	200.0	V	11.0	8.8	74.00	20.00

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

Pre-scan with 802.11a, 802.11ac20, 802.11n-HT20, 802.11ac40, 802.11n-HT40 and 802.11 ac80 modes of operation in the X,Y and Z axes of orientation, the worst case 802.11a mode in high channel 5180(Chain1) in Y-axis of orientation was recorded.

Horizontal

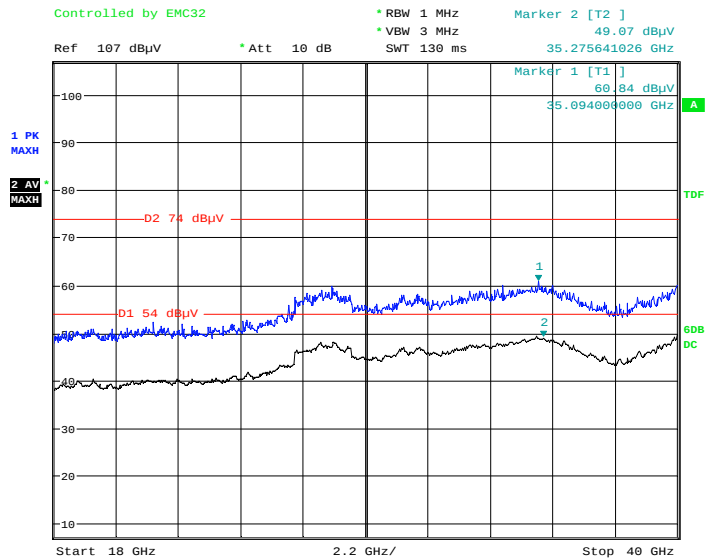
Date: 14.NOV.2020 05:21:13

Vertical

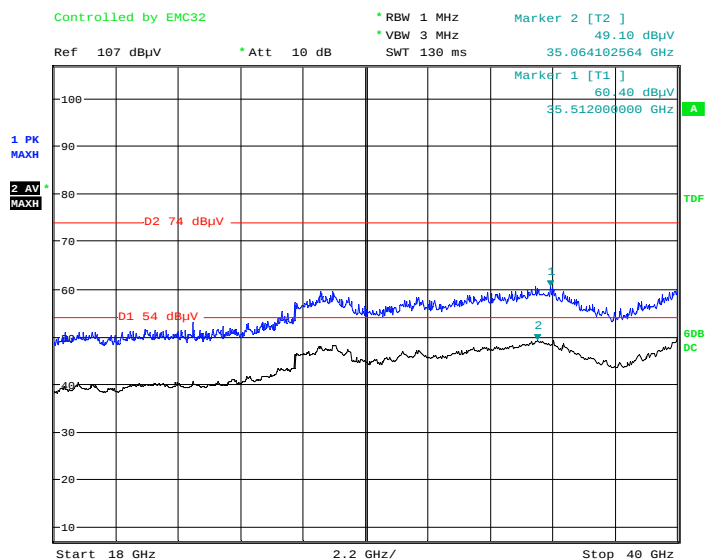
Date: 14.NOV.2020 05:33:09

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

Pre-scan with 802.11a, 802.11ac20, 802.11n-HT20, 802.11ac40, 802.11n-HT40 and 802.11 ac80 modes of operation in the X,Y and Z axes of orientation, the worst case 802.11a mode in high channel 5825(Chain1) in Y-axis of orientation was recorded.

Horizontal

Date: 14.NOV.2020 05:46:38

Vertical

Date: 14.NOV.2020 05:56:08

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

Chain 0:**802.11a Mode:** (Pre-scan in the X, Y and Z axes of orientation, the worst case in Y-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	53.90	---	200.0	V	55.0	5.2	74.00	20.10
5150.00	---	50.48	200.0	V	55.0	5.2	54.00	3.52
High Channel: 5240MHz								
5350.00	54.10	---	200.0	V	269.0	5.7	74.00	19.90
5350.00	---	50.64	200.0	V	269.0	5.7	54.00	3.36

Chain 1:**802.11a Mode:** (Pre-scan in the X, Y and Z axes of orientation, the worst case in Y-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	54.59	---	150.0	V	153.0	5.2	74.00	19.41
5150.00	---	50.43	150.0	V	153.0	5.2	54.00	3.57
High Channel: 5240MHz								
5350.00	54.80	---	150.0	V	2.0	5.7	74.00	19.20
5350.00	---	51.26	150.0	V	2.0	5.7	54.00	2.74

Chain 0&1:

802.11ac20 Mode: (Pre-scan in the X, Y and Z axes of orientation, the worst case in Y-axis of orientation was recorded)

Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
Low Channel: 5180MHz								
5150.00	52.22	---	150.0	H	268.0	5.2	74.00	21.78
5150.00	---	50.39	150.0	H	268.0	5.2	54.00	3.61
High Channel: 5240MHz								
5350.00	56.29	---	200.0	H	109.0	5.7	74.00	17.71
5350.00	---	50.79	200.0	H	109.0	5.7	54.00	3.21

802.11n-HT20 Mode: (Pre-scan in the X, Y and Z axes of orientation, the worst case in Y-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	54.80	---	150.0	H	197.0	5.2	74.00	19.20
5150.00	---	50.67	150.0	H	197.0	5.2	54.00	3.33
High Channel: 5240MHz								
5350.00	52.92	---	200.0	V	29.0	5.7	74.00	21.08
5350.00	---	50.09	200.0	V	29.0	5.7	54.00	3.91

802.11ac40 Mode: (Pre-scan in the X, Y and Z axes of orientation, the worst case in Y-axis of orientation was recorded)

Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
Low Channel: 5190MHz								
5150.00	55.45	---	150.0	H	164.0	5.2	74.00	18.55
5150.00	---	51.61	150.0	H	164.0	5.2	54.00	2.39
High Channel: 5230MHz								
5350.00	53.89	---	150.0	H	250.0	5.7	74.00	20.11
5350.00	---	50.98	150.0	H	250.0	5.7	54.00	3.02

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

Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
Low Channel: 5190MHz								
5150.00	55.11	---	150.0	V	0.0	5.2	74.00	18.89
5150.00	---	50.85	150.0	V	0.0	5.2	54.00	3.15
High Channel: 5230MHz								
5350.00	53.30	---	150.0	V	224.0	5.7	74.00	20.70
5350.00	---	50.43	150.0	V	224.0	5.7	54.00	3.57

802.11ac80 Mode: (Pre-scan in the X, Y and Z axes of orientation, the worst case in Y-axis of orientation was recorded)

Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
Low Channel: 5210MHz								
5150.00	54.57	---	150.0	H	336.0	5.2	74.00	19.43
5150.00	---	50.43	150.0	H	336.0	5.2	54.00	3.57
5350.00	53.43	---	200.0	H	323.0	5.7	74.00	20.57
5350.00	---	51.12	200.0	H	323.0	5.7	54.00	2.88

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

Chain 0:**802.11a Mode:** (Pre-scan in the X, Y and Z axes of orientation, the worst case in Y-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	56.23	---	200.0	V	350.0	6.4	68.20	11.97
5700.00	52.45	---	150.0	V	38.0	6.5	105.20	52.75
5720.00	54.21	---	150.0	V	359.0	6.5	110.80	56.59
5725.00	59.88	---	150.0	H	286.0	6.5	122.20	62.32
High Channel: 5825MHz								
5850.00	54.00	---	200.0	H	77.0	6.7	122.20	68.20
5855.00	52.94	---	150.0	V	239.0	6.7	110.80	57.86
5875.00	54.07	---	150.0	H	358.0	6.8	105.20	51.13
5925.00	53.62	---	200.0	H	210.0	6.9	68.20	14.58

Chain 1:**802.11a Mode:** (Pre-scan in the X, Y and Z axes of orientation, the worst case in Y-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	54.66	---	150.0	H	124.0	6.4	68.20	13.54
5700.00	56.36	---	200.0	H	0.0	6.5	105.20	48.84
5720.00	56.25	---	150.0	H	124.0	6.5	110.80	54.55
5725.00	57.36	---	200.0	H	175.0	6.5	122.20	64.84
High Channel: 5825MHz								
5850.00	53.73	---	150.0	V	39.0	6.7	122.20	68.47
5855.00	55.15	---	200.0	H	0.0	6.7	110.80	55.65
5875.00	55.57	---	150.0	V	181.0	6.8	105.20	49.63
5925.00	54.79	---	150.0	H	289.0	6.9	68.20	13.41

Chain 0&1:

802.11ac20 Mode: (Pre-scan in the X, Y and Z axes of orientation, the worst case in Y-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	53.77	---	200.0	H	27.0	6.4	68.20	14.43
5700.00	53.42	---	150.0	V	0.0	6.5	105.20	51.78
5720.00	54.83	---	150.0	H	289.0	6.5	110.80	55.97
5725.00	58.13	---	150.0	H	336.0	6.5	122.20	64.07
High Channel: 5825MHz								
5850.00	54.61	---	200.0	H	303.0	6.7	122.20	67.59
5855.00	53.47	---	200.0	V	351.0	6.7	110.80	57.33
5875.00	54.22	---	200.0	H	138.0	6.8	105.20	50.98
5925.00	53.17	---	150.0	V	43.0	6.9	68.20	15.03

802.11n-HT20 Mode: (Pre-scan in the X, Y and Z axes of orientation, the worst case in Y-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	53.12	---	200.0	V	257.0	6.4	68.20	15.08
5700.00	53.96	---	150.0	V	61.0	6.5	105.20	51.24
5720.00	54.65	---	200.0	H	122.0	6.5	110.80	56.15
5725.00	60.30	---	200.0	V	350.0	6.5	122.20	61.90
High Channel: 5825MHz								
5850.00	55.05	---	200.0	H	46.0	6.7	122.20	67.15
5855.00	56.12	---	150.0	V	267.0	6.7	110.80	54.68
5875.00	55.75	---	150.0	H	75.0	6.8	105.20	49.45
5925.00	54.33	---	200.0	H	249.0	6.9	68.20	13.87

802.11ac40 Mode: (Pre-scan in the X, Y and Z axes of orientation, the worst case in Y-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	53.20	---	150.0	H	98.0	6.4	68.20	15.00
5700.00	53.59	---	200.0	V	358.0	6.5	105.20	51.61
5720.00	61.43	---	200.0	H	15.0	6.5	110.80	49.37
5725.00	63.32	---	150.0	H	274.0	6.5	122.20	58.88
High Channel: 5795MHz								
5850.00	55.61	---	200.0	V	322.0	6.7	122.20	66.59
5855.00	53.94	---	200.0	H	138.0	6.7	110.80	56.86
5875.00	55.12	---	150.0	H	180.0	6.8	105.20	50.08
5925.00	53.88	---	200.0	H	2.0	6.9	68.20	14.32

802.11n-HT40 Mode: (Pre-scan in the X, Y and Z axes of orientation, the worst case in Y-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	53.93	---	150.0	V	139.0	6.4	68.20	14.27
5700.00	55.09	---	150.0	H	143.0	6.5	105.20	50.11
5720.00	62.28	---	200.0	V	350.0	6.5	110.80	48.52
5725.00	63.93	---	150.0	H	279.0	6.5	122.20	58.27
High Channel: 5795MHz								
5850.00	53.66	---	200.0	H	101.0	6.7	122.20	68.54
5855.00	54.70	---	150.0	V	185.0	6.7	110.80	56.10
5875.00	54.83	---	200.0	V	319.0	6.8	105.20	50.37
5925.00	54.48	---	150.0	H	305.0	6.9	68.20	13.72

802.11ac80 Mode: (Pre-scan in the X, Y and Z axes of orientation, the worst case in Y-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: 5775MHz								
5650.00	55.60	---	150.0	H	338.0	6.4	68.20	12.60
5700.00	54.27	---	150.0	H	275.0	6.5	105.20	50.93
5720.00	57.53	---	200.0	H	13.0	6.5	110.80	53.27
5725.00	59.95	---	200.0	V	337.0	6.5	122.20	62.25
5850.00	56.11	---	150.0	V	285.0	6.7	122.20	66.09
5855.00	58.38	---	200.0	H	321.0	6.7	110.80	52.42
5875.00	54.24	---	150.0	V	154.0	6.8	105.20	50.96
5925.00	55.11	---	150.0	V	5.0	6.9	68.20	13.09

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, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are 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

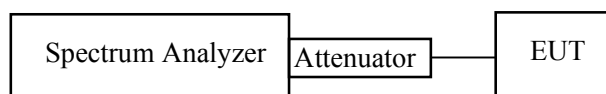
1. Emission Bandwidth (EBW)

- 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) $\geq 3 \times$ 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:	23.5~24.8 °C
Relative Humidity:	49~54 %
ATM Pressure:	100.7~101.5 kPa

The testing was performed by Stone Zhang from 2021-04-17 to 2021-05-06.

Test Result: Compliant

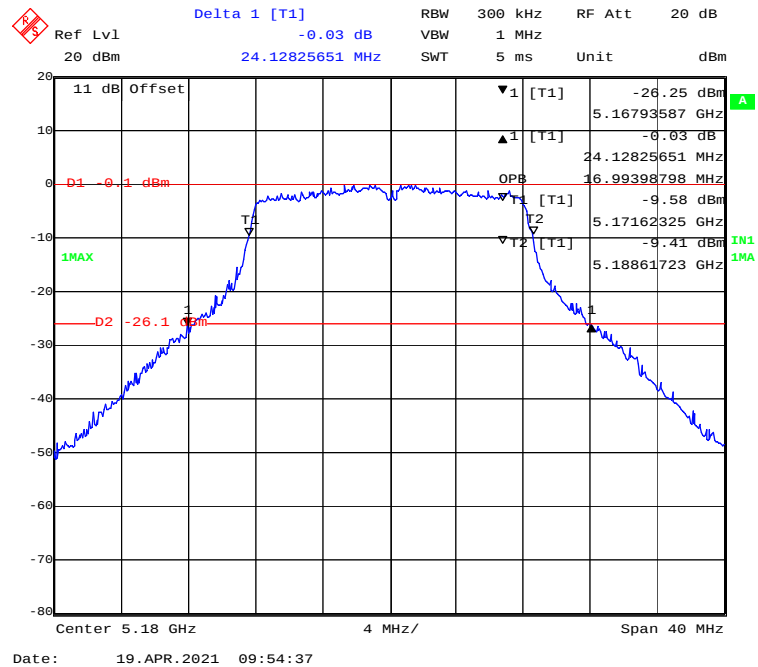
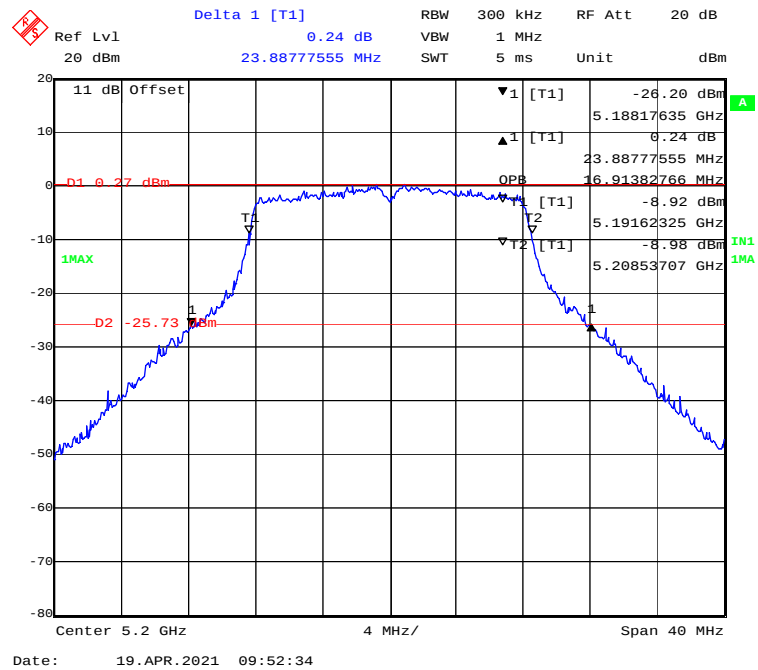
5150-5250 MHz:

Test mode	Channel	Frequency (MHz)	26dB Bandwidth (MHz)		99% Bandwidth (MHz)	
			Chain 0	Chain 1	Chain 0	Chain 1
802.11a	Low	5180	24.128	23.567	16.994	16.914
	Middle	5200	23.888	24.609	16.914	16.914
	High	5240	23.968	23.407	16.914	16.914
802.11ac20	Low	5180	25.651	25.331	18.116	18.036
	Middle	5200	24.369	25.170	18.036	18.036
	High	5240	25.170	24.850	18.036	18.036
802.11n-HT20	Low	5180	25.250	24.529	18.036	18.036
	Middle	5200	24.529	25.251	18.036	18.036
	High	5240	25.090	24.529	18.036	18.036
802.11ac40	Low	5190	42.004	42.325	36.393	36.553
	High	5230	42.285	41.964	36.393	36.393
802.11n-HT40	Low	5190	41.844	41.844	36.393	36.393
	High	5230	42.164	42.164	36.553	36.393
802.11ac80	/	5210	83.687	84.329	75.992	75.992

5725-5850MHz:

Test mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)		99% Bandwidth (MHz)		Limit (MHz)
			Chain 0	Chain 1	Chain 0	Chain 1	
802.11a	Low	5745	16.032	16.192	16.834	16.834	≥0.5
	Middle	5785	16.192	16.192	16.994	16.754	≥0.5
	High	5825	16.273	16.112	16.834	16.914	≥0.5
802.11ac20	Low	5745	16.994	16.994	18.036	18.036	≥0.5
	Middle	5785	16.994	16.753	17.956	18.036	≥0.5
	High	5825	16.834	16.914	18.036	18.036	≥0.5
802.11n-HT20	Low	5745	16.513	16.513	18.036	17.956	≥0.5
	Middle	5785	16.914	17.234	17.956	18.036	≥0.5
	High	5825	16.513	16.994	17.956	17.876	≥0.5
802.11ac40	Low	5755	36.072	36.072	36.393	36.553	≥0.5
	High	5795	36.232	36.232	36.553	36.393	≥0.5
802.11n-HT40	Low	5755	36.072	36.232	36.553	36.393	≥0.5
	High	5795	36.232	36.393	36.393	36.393	≥0.5
802.11ac80	/	5775	75.752	76.313	75.671	75.992	≥0.5

Note: No transmitted signal in the 99% bandwidth extends into the U-NII-2A and U-NII-2C band.

5150-5250 MHz Band:**26 Bandwidth&99% Bandwidth (Chain 0)****802.11a mode, 5180MHz****802.11a mode, 5200MHz**

Delta 1 [T1] 0.23 dB

Ref Lvl 20 dBm

23.96793587 MHz

RBW 300 kHz

1 MHz

SWT 5 ms

RF Att 20 dB

Unit dBm

11 dB Offset

D1 0.92 dBm

1MAX

D2 -25.08 dBm

1

T1

▼1 [T1] -25.81 dBm

▲1 [T1] 0.23 dB

OPD 23.96793587 MHz

▼1 [T1] -8.01 dBm

▼12 [T1] -8.87 dBm

▼12 [T1] 5.23162325 GHz

▼12 [T1] 5.24853707 GHz

1

1

Center 5.24 GHz

4 MHz/

Span 40 MHz

Date: 19. APR. 2021 09:51:19

[illegible]

[illegible][illegible]

Delta 1 [T1] -0.17 dB

Ref Lvl 20 dBm

25.25050100 MHz

RBW 300 kHz

RF Att 20 dB

VBW 1 MHz

SWT 5 ms

Unit dBm

11 dB Offset

D1 -1.34 dBm

1MAX

D2 -27.34 dBm

1

T1

T2

▼1 [T1] -27.32 dBm

▲1 [T1] -0.17 dB

OPB 25.25050100 MHz

▼T1 [T1] 18.03607214 MHz

▼T2 [T1] 5.17106212 GHz

▼T2 [T1] 5.18909820 GHz

IN1

IN1A

Center 5.18 GHz

4 MHz/

Span 40 MHz

Date: 17. APR. 2021 16:55:27

Ref Lvl 20 dBm

Delta 1 [T1] -0.69 dB

RBW 300 kHz RF Att 20 dB

VBW 1 MHz

SWT 5 ms Unit dBm

11 dB Offset

D1 -0.61 dBm

1MAX

D2 -26.81 dBm

T1

T2

1

▼1 [T1] -27.25 dBm

▲1 [T1] -0.69 dB

OPB

5.18817635 GHz

24.52905812 MHz

18.03607214 MHz

▼T1 [T1] -10.73 dBm

▼T2 [T1] -10.69 dBm

5.19106212 GHz

5.20909820 GHz

Center 5.2 GHz

4 MHz/

Span 40 MHz

Date: 17. APR. 2021 16:54:30

Delta 1 [T1]

Ref Lvl 0.18 dB

20 dBm 25.09018036 MHz

RBW 300 kHz RF Att 20 dB

SWT 5 ms Unit dBm

11 dB Offset

D1 -0.75 dBm

1MAX

T1

D2 -26.75 dBm

1

▼1 [T1] -27.21 dBm

▲1 [T1] 0.18 dB

OPB

▼2 [T1] 25.09018036 MHz

▼12 [T1] 18.03607214 MHz

T2 -10.36 dBm

5.23106212 GHz

-10.55 dBm

5.24909820 GHz

IN1 1MA

Center 5.24 GHz

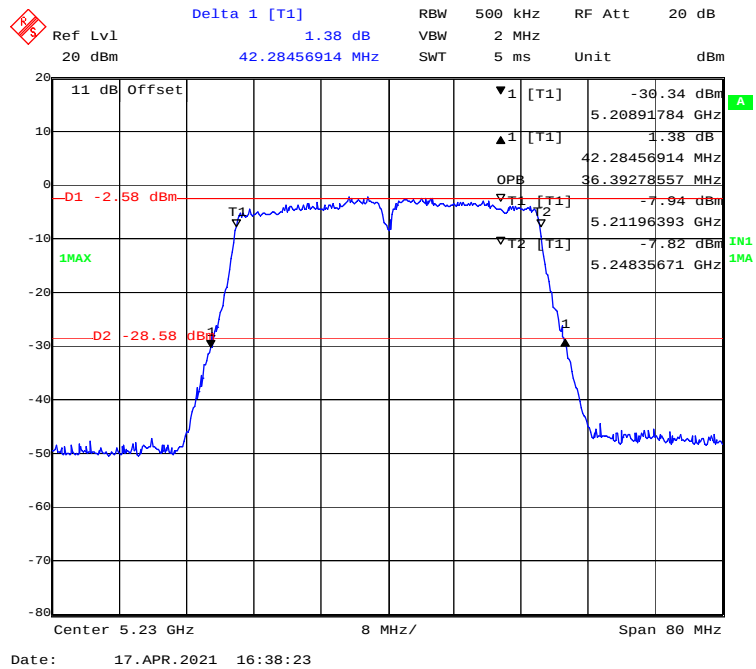
4 MHz/

Span 40 MHz

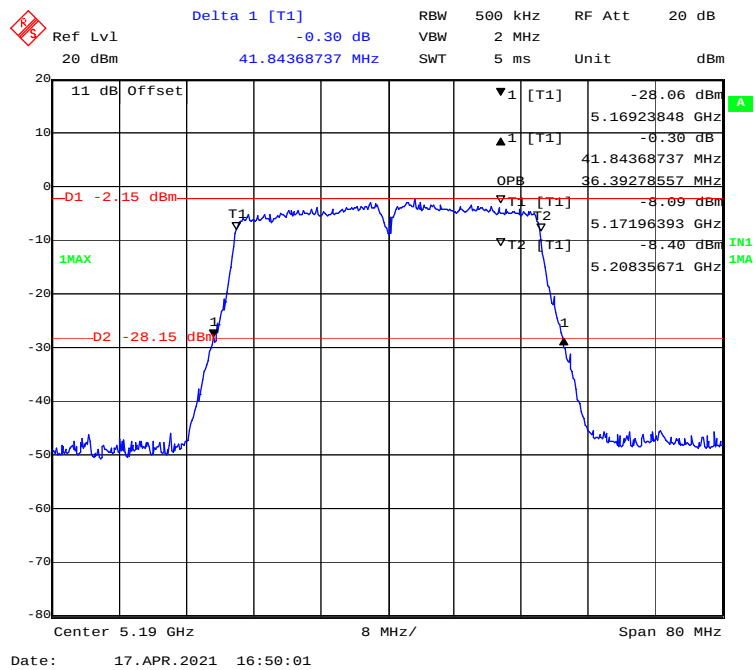
Date: 17. APR. 2021 16:53:26

[illegible]

802.11 ac40 mode, 5230MHz



802.11n-HT40 mode, 5190MHz



Delta 1 [T1]

Ref Lvl 0.17 dB

20 dBm 42.16432866 MHz

RBW 500 KHz

VBW 2 MHz

SWT 5 ms

RF Att 20 dB

Unit dBm

11 dB Offset

-D1 -2.18 dBm

1MAX

D2 -28.18 dBm

▼1 [T1] -29.01 dBm

▲1 [T1] 0.17 dB

OPB 42.16432866 MHz

▼T1 [T1] -8.67 dBm

▼T2 [T1] -7.92 dBm

5.20907816 GHz

5.21180361 GHz

5.24835671 GHz

IN1 1MA

Center 5.23 GHz

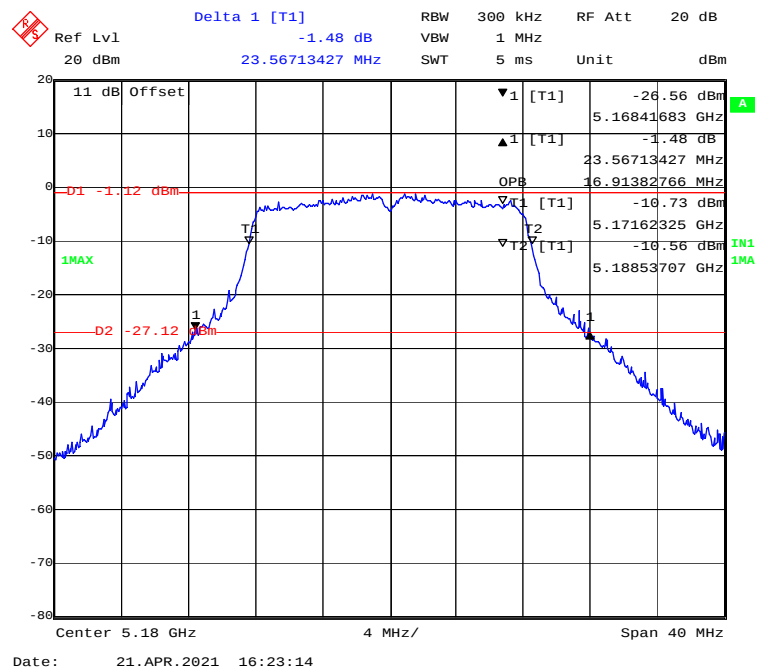
8 MHz/

Span 80 MHz

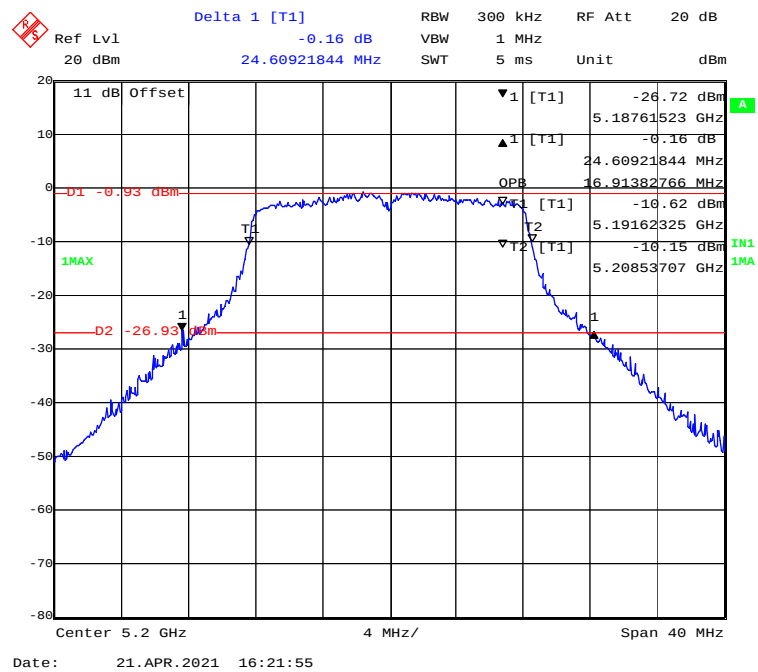
Date: 17. APR. 2021 16:51:54

[illegible]

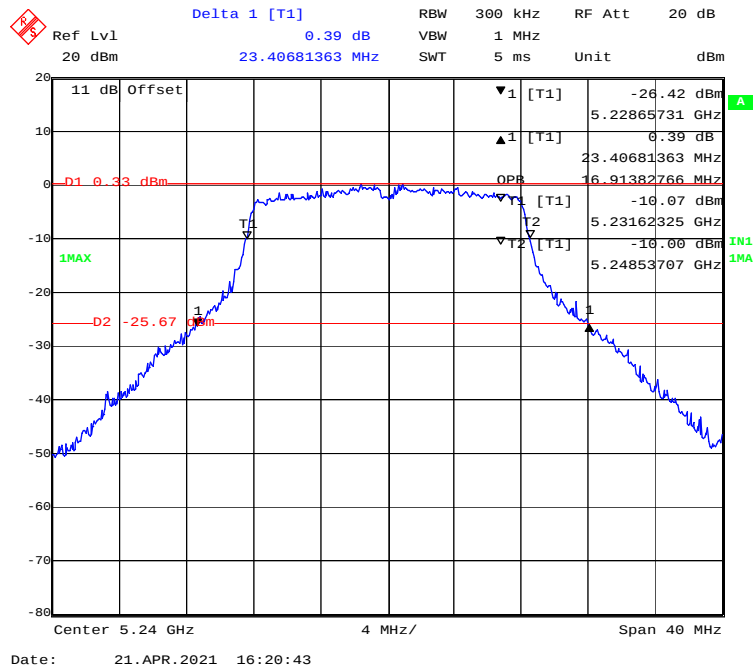
802.11a mode, 5180MHz



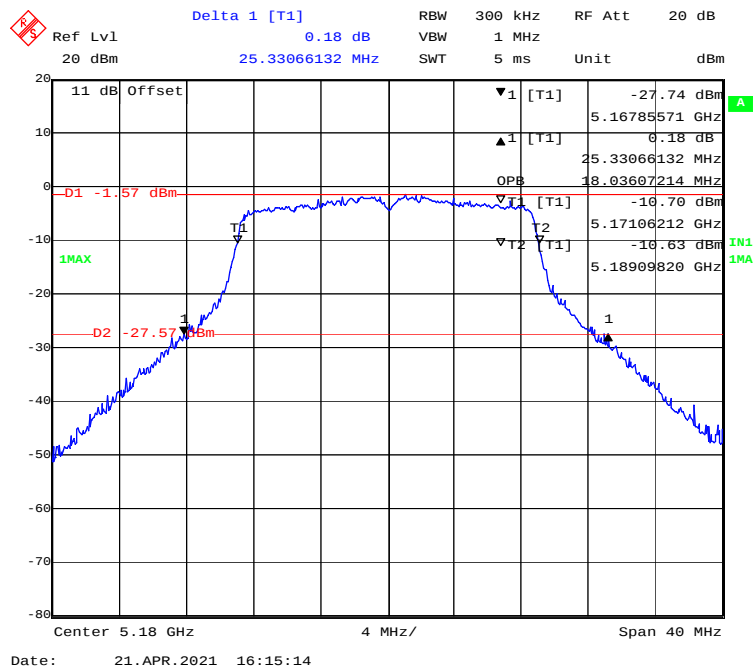
802.11a mode, 5200MHz



802.11a mode, 5240MHz



802.11ac20 mode, 5180MHz



Delta 1 [T1]

Ref Lvl -0.44 dB

20 dBm 25.17034068 MHz

RBW 300 kHz RF Att 20 dB

VBW 1 MHz

SWT 5 ms Unit dBm

11 dB Offset

D1 -0.73 dBm

1MAX

D2 -26.73 dBm

1

T1

T2

1

▼1 [T1] -26.46 dBm

▲1 [T1] -0.44 dBm

OPB

▼T1 [T1] 25.17034068 MHz

▼T2 [T1] 18.03607214 MHz

▼T1 [T1] 5.19106212 GHz

▼T2 [T1] 5.20909820 GHz

IN1

1MA

Center 5.2 GHz

4 MHz/

Span 40 MHz

Date: 21. APR. 2021 16:17:45

Ref Lvl 20 dBm

Delta 1 [T1] -0.93 dB

20 dBm 24.84969940 MHz

RBW 300 kHz RF Att 20 dB

VBW 1 MHz

SWT 5 ms Unit dBm

11 dB Offset

D1 0.11 dBm

1MAX

D2 -25.89 dBm

T1

▼1 [T1] -25.52 dBm 5.22817635 GHz

▲1 [T1] -0.93 dB 24.84969940 MHz

OPB

▼ [T1] -9.10 dBm 5.23106212 GHz

▼T2 [T1] -9.59 dBm 5.24909820 GHz

1

Center 5.24 GHz 4 MHz/ Span 40 MHz

Date: 21.APR.2021 16:19:30

[illegible][illegible]

Delta 1 [T1] -0.06 dB
 RBW 300 kHz RF Att 20 dB
 Ref Lvl 20 dBm
 20 dBm 24.52905812 MHz
 VBW 1 MHz
 SWT 5 ms Unit dBm

11 dB Offset
 D1 0.77 dBm
 1MAX
 D2 -25.23 dBm
 T1
 1
 T2
 1

-25.57 dBm
 5.22825651 GHz
 -0.06 dB
 24.52905812 MHz
 -9.57 dBm
 5.23106212 GHz
 -9.23 dBm
 5.24909820 GHz

Center 5.24 GHz
 4 MHz/
 Span 40 MHz

Date: 21. APR. 2021 16:09:00

Ref Lvl 20 dBm Delta 1 [T1] 0.91 dB RBW 2 MHz RF Att 20 dB

20 dBm 42.32464930 MHz SWT 5 ms Unit dBm

11 dB Offset

▼1 [T1] -29.90 dBm 5.16891784 GHz

▲1 [T1] 0.91 dB 42.32464930 MHz

OPB 36.55310621 MHz

-D1 -2.78 dBm

1MAX

T1 -7.97 dBm 5.17180361 GHz

T2 -7.71 dBm 5.20835671 GHz

D2 -28.78 dBm

1

Center 5.19 GHz 8 MHz/ Span 80 MHz

Date: 21.APR.2021 16:02:51

Delta 1 [T1]

Ref Lvl -1.71 dB

20 dBm 41.96392786 MHz

RBW 500 KHz RF Att 20 dB

VBW 2 MHz

SWT 5 ms Unit dBm

11 dB Offset

-D1 -1.83 dBm

1MAX

D2 -27.83 dBm

1

▼1 [T1] -27.20 dBm

▲1 [T1] -1.71 dBm

OPB 41.96392786 MHz

▼T1 [T1] -7.22 dBm

▼T2 [T1] -6.94 dBm

▼T2 [T1] 5.21196393 GHz

▼T2 [T1] 5.24835671 GHz

IN1 1MA

Center 5.23 GHz

8 MHz/

Span 80 MHz

Date: 21.APR.2021 16:00:43

Delta 1 [T1]

Ref Lvl -0.10 dB

20 dBm 41.84368737 MHz

RBW 500 kHz RF Att 20 dB

VBW 2 MHz

SWT 5 ms Unit dBm

11 dB Offset

-29.41 dBm

5.16923848 GHz

-0.10 dB

41.84368737 MHz

36.39278557 MHz

-D1 -2.7 dBm

T1

1MAX

-7.74 dBm

5.17196393 GHz

-7.75 dBm

5.20835671 GHz

D2 -28.7 dBm

1

IN1 1MA

Center 5.19 GHz

8 MHz/

Span 80 MHz

Date: 21.APR.2021 16:05:25

Delta 1 [T1]

Ref Lvl -0.45 dB

20 dBm 42.16432866 MHz

RBW 500 KHz

VBW 2 MHz

SWT 5 ms

RF Att 20 dB

Unit dBm

11 dB Offset

D1 -1.97 dBm

1MAX

D2 -27.97 dBm

1

▼1 [T1] -27.36 dBm

▲1 [T1] -0.45 dB

OPB 42.16432866 MHz

▼1 [T1] -7.39 dBm

▼12 [T1] -6.85 dBm

5.20939880 GHz

5.21196393 GHz

5.24835671 GHz

Center 5.23 GHz

8 MHz/

Span 80 MHz

Date: 21.APR.2021 16:06:54

Ref Lvl 20 dBm

Delta 1 [T1] 0.75 dB

84.32865731 MHz

RBW 1 MHz

VBW 3 MHz

SWT 5 ms

RF Att 20 dB

Unit dBm

11 dB Offset

D1 -0.55 dBm

1MAX

D2 -26.55 dBm

▼1 [T1] -28.27 dBm

▲1 [T1] 0.75 dB

OPB 84.32865731 MHz

▼2 [T1] -7.16 dBm

▲2 [T1] 5.16847695 GHz

▼T2 [T1] -5.49 dBm

▲T2 [T1] 5.17232465 GHz

5.24831663 GHz

Center 5.21 GHz

16 MHz/

Span 160 MHz

Date: 21.APR.2021 15:58:42

6 Bandwidth(Chain 0)

Delta 1 [T1]
 Ref Lvl 20 dBm
 -0.31 dB
 16.19238477 MHz
 RBW 100 kHz
 RF Att 20 dB
 VBW 300 kHz
 SWT 10 ms
 Unit dBm

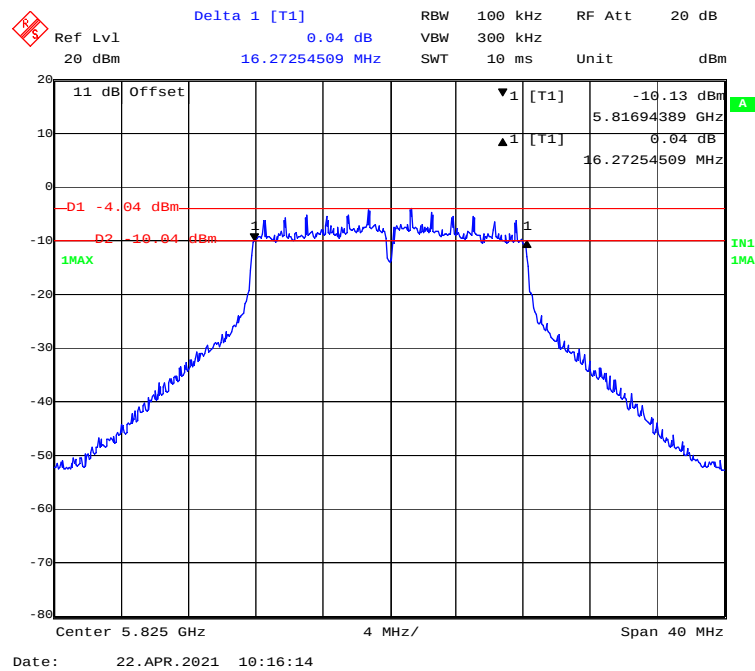
11 dB Offset
 -10.09 dBm
 5.77702405 GHz
 -0.31 dB
 16.19238477 MHz

-D1 -3.94 dBm
 D2 -9.94 dBm
 1MAX

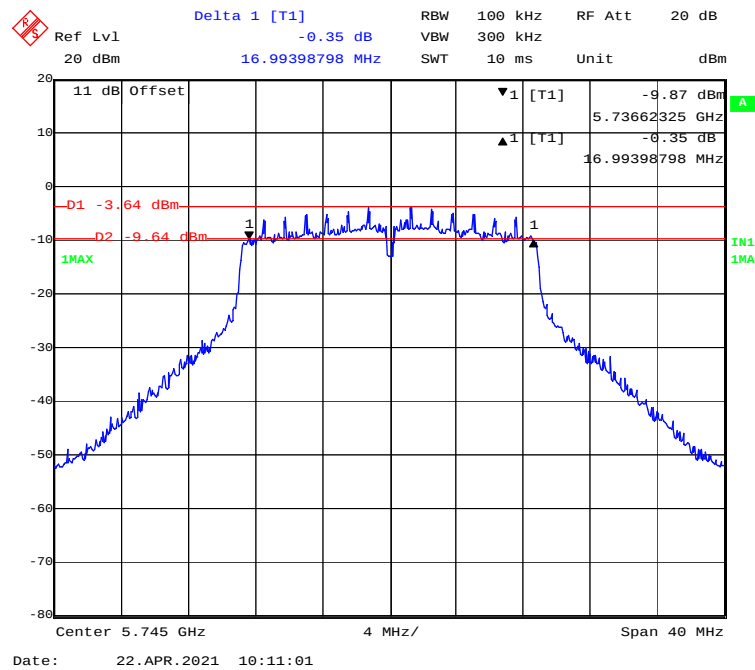
Center 5.785 GHz
 4 MHz/
 Span 40 MHz

Date: 22.APR.2021 10:18:11

802.11a mode, 5825MHz



802.11ac20 mode, 5745MHz



[illegible]

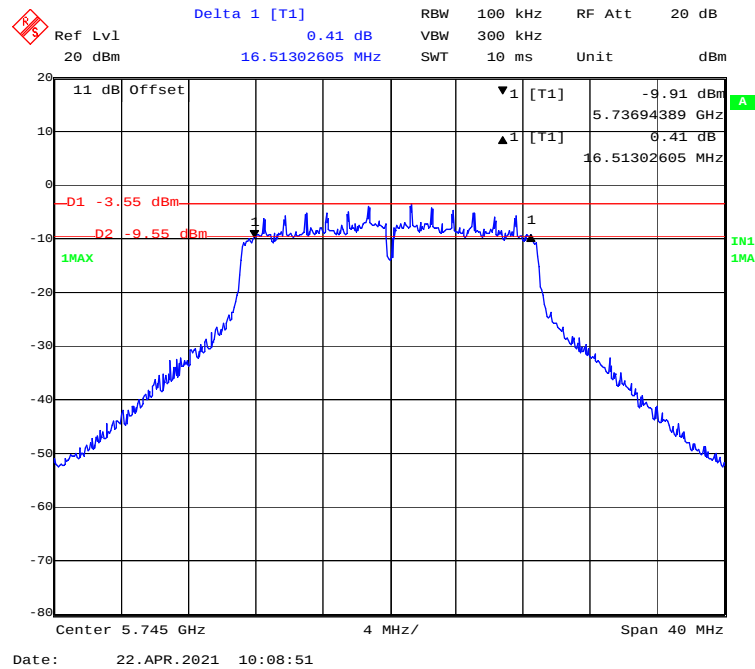
Delta 1 [T1]
 Ref Lvl 20 dBm
 0.34 dB
 16.83366733 MHz
 RBW 100 kHz
 RF Att 20 dB
 300 kHz
 10 ms
 Unit dBm

11 dB Offset
 -10.18 dBm
 5.81662325 GHz
 0.34 dB
 16.83366733 MHz
 -D1 -4.02 dBm
 -D2 -10.02 dBm
 1MAX
 IN1
 1MA

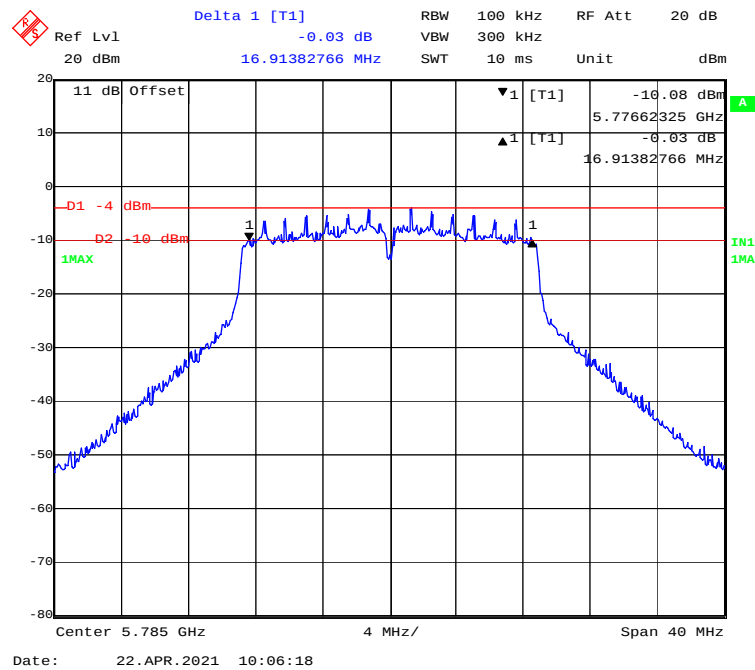
Center 5.825 GHz
 4 MHz/
 Span 40 MHz

Date: 22.APR.2021 10:14:38

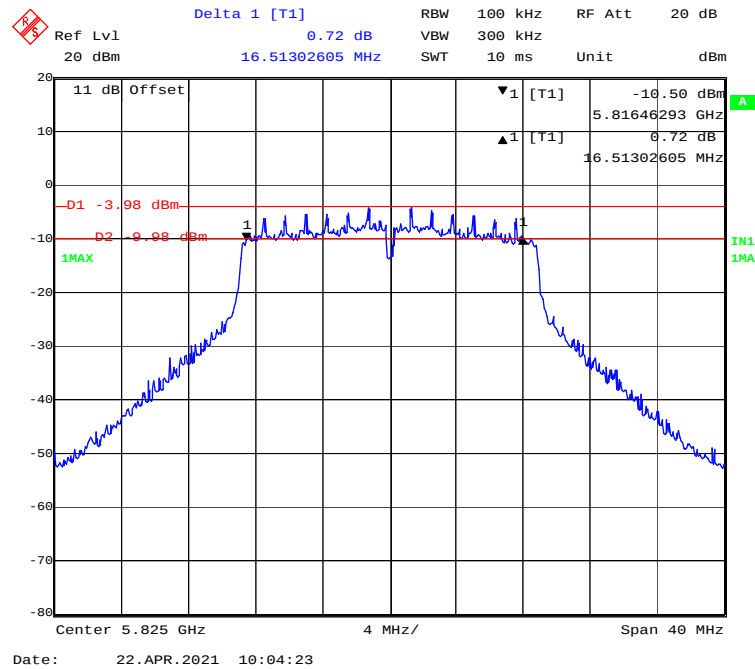
802.11n-HT20 mode, 5745MHz



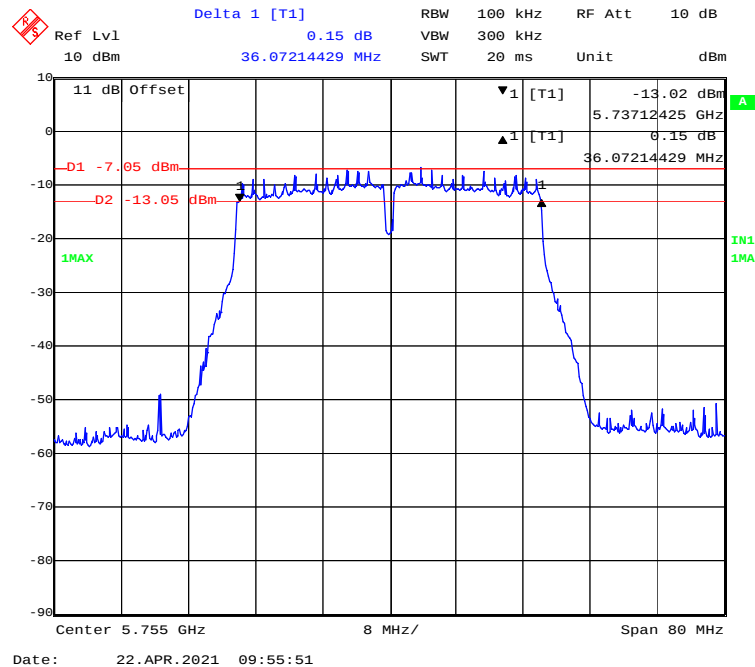
802.11n-HT20 mode, 5785MHz



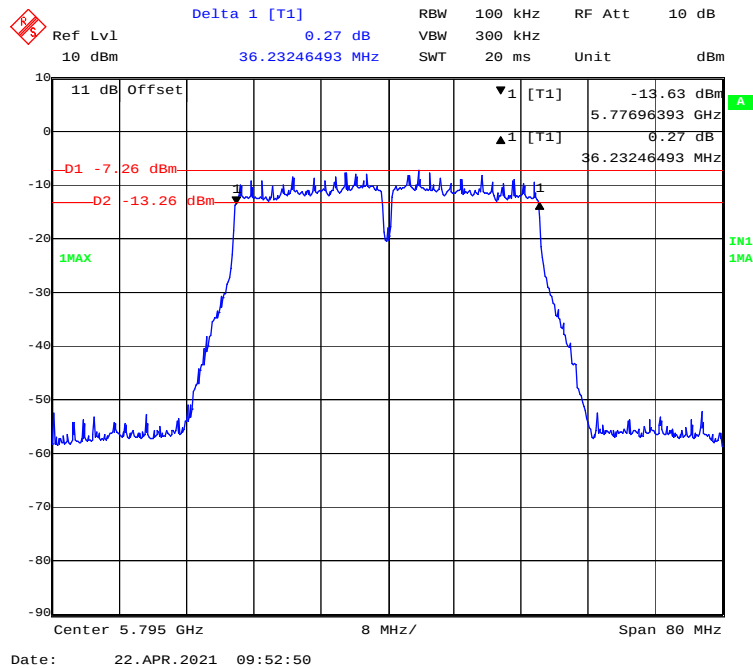
802.11n-HT20 mode, 5825MHz



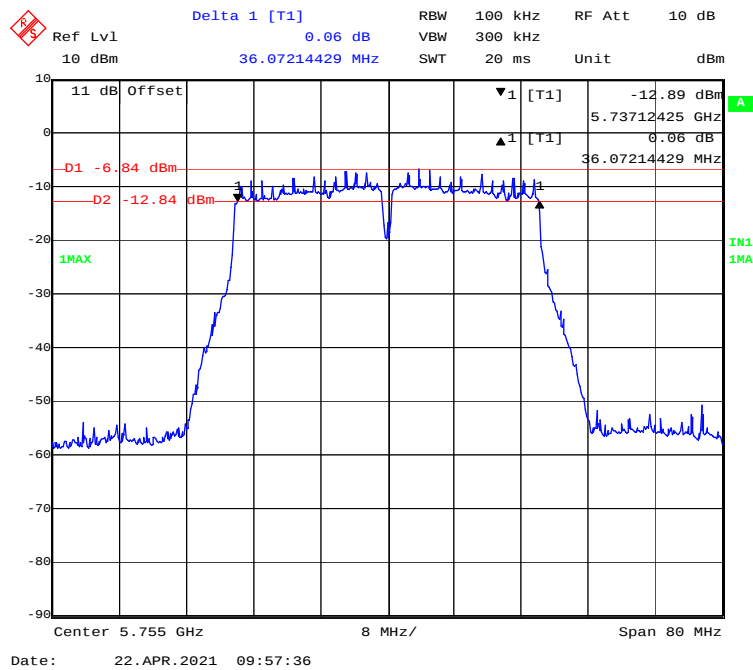
802.11ac40 mode, 5755MHz



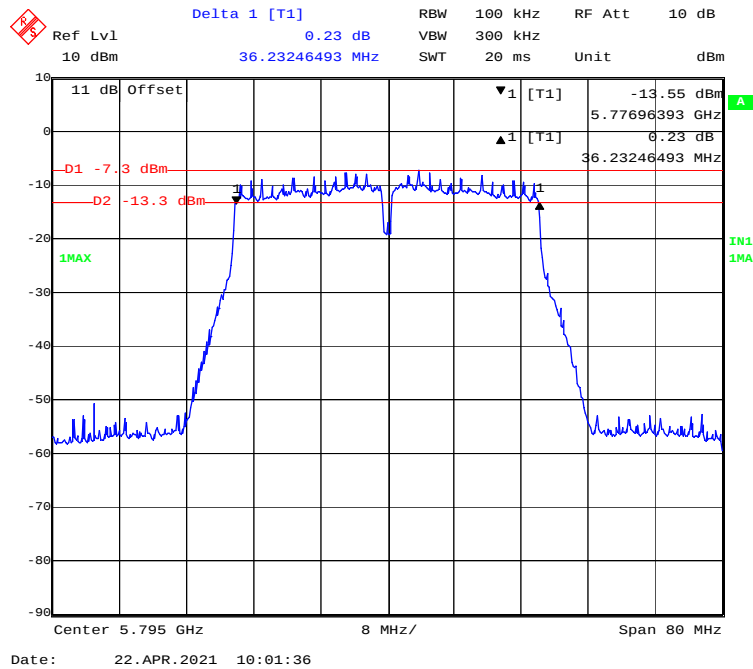
802.11 ac40 mode, 5795MHz



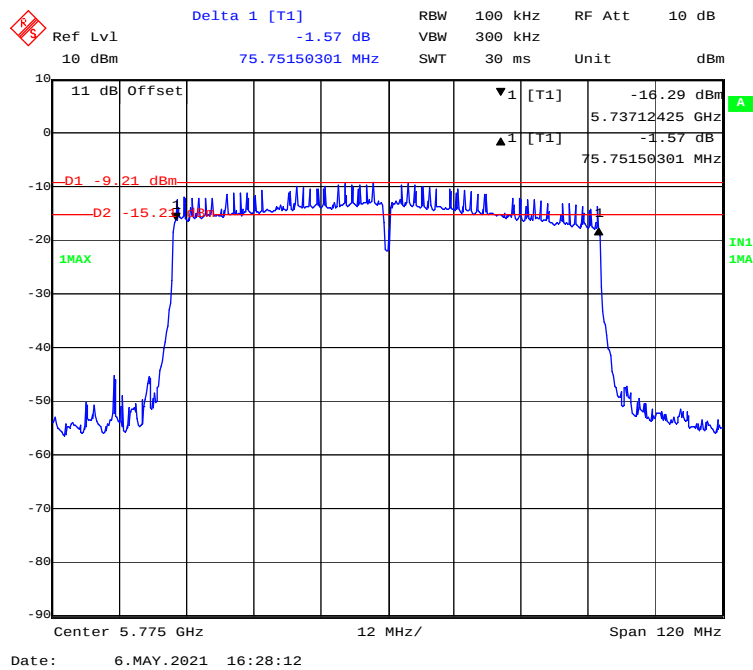
802.11n-HT40 mode, 5755MHz



802.11n-HT40 mode, 5795MHz

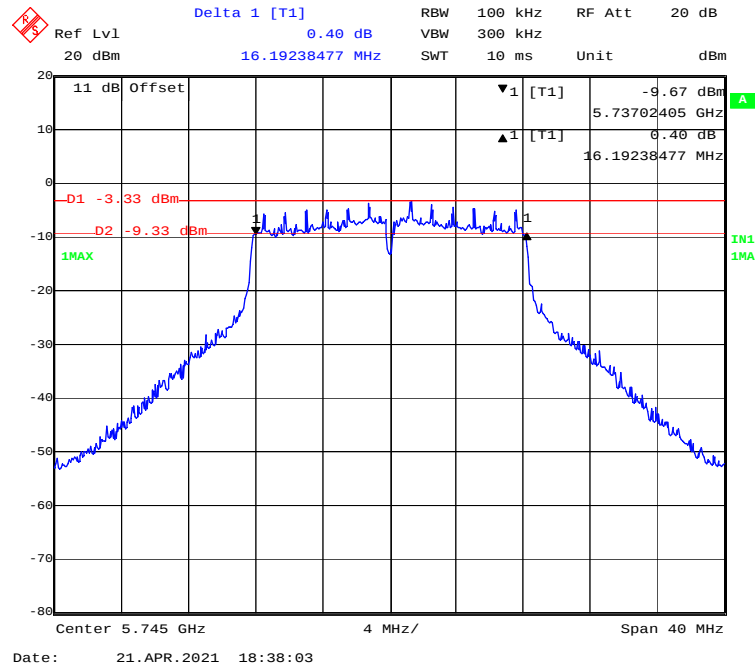


802.11ac80 mode, 5775MHz

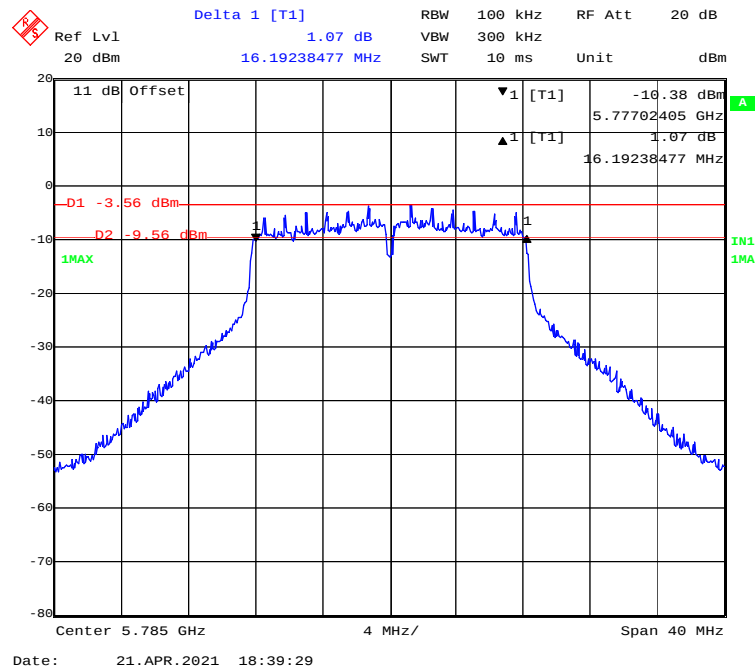


6 Bandwidth(Chain 1)

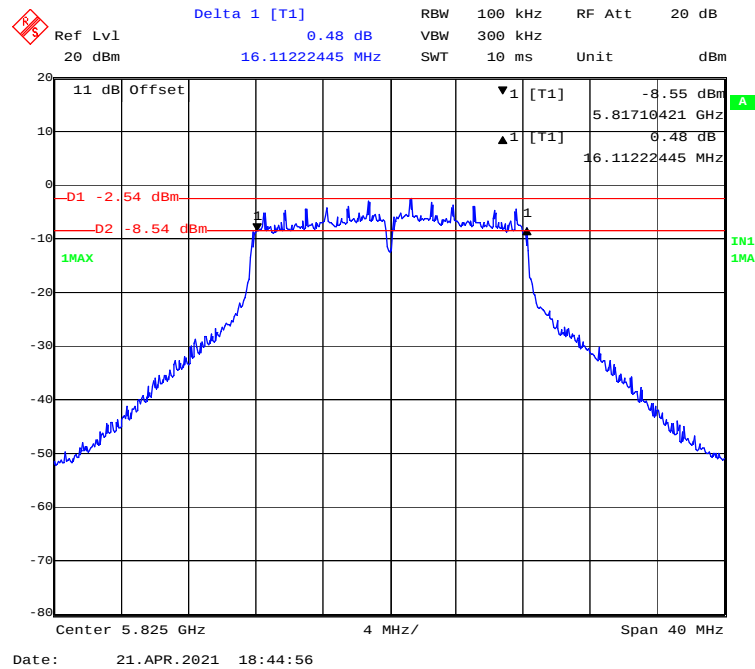
802.11a mode, 5745MHz



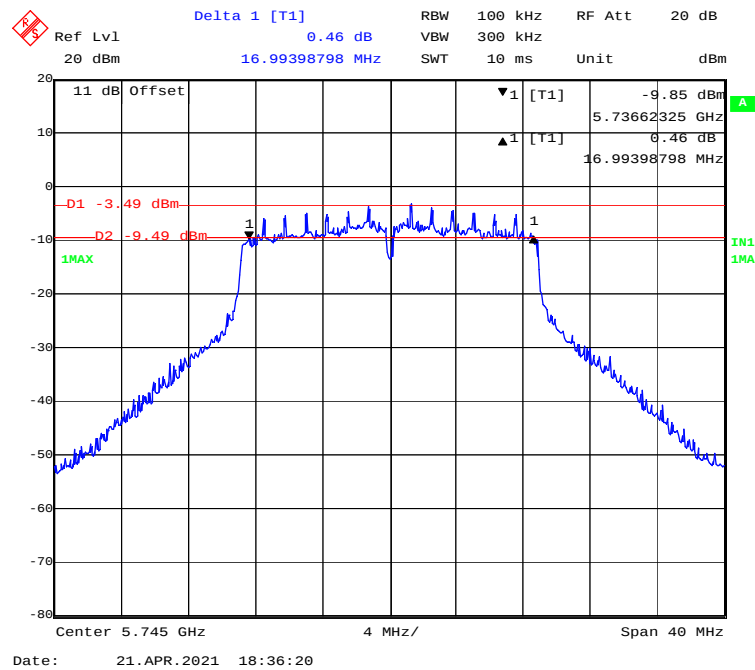
802.11a mode, 5785MHz



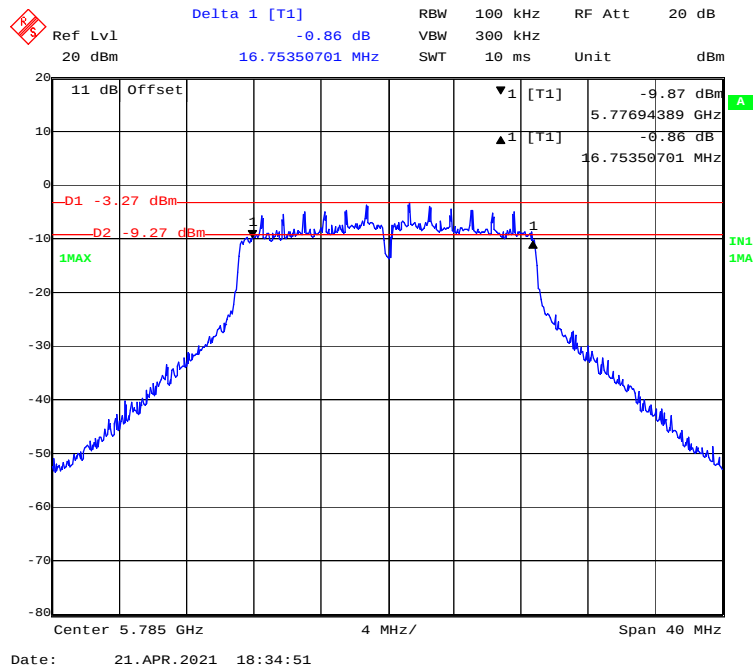
802.11a mode, 5825MHz



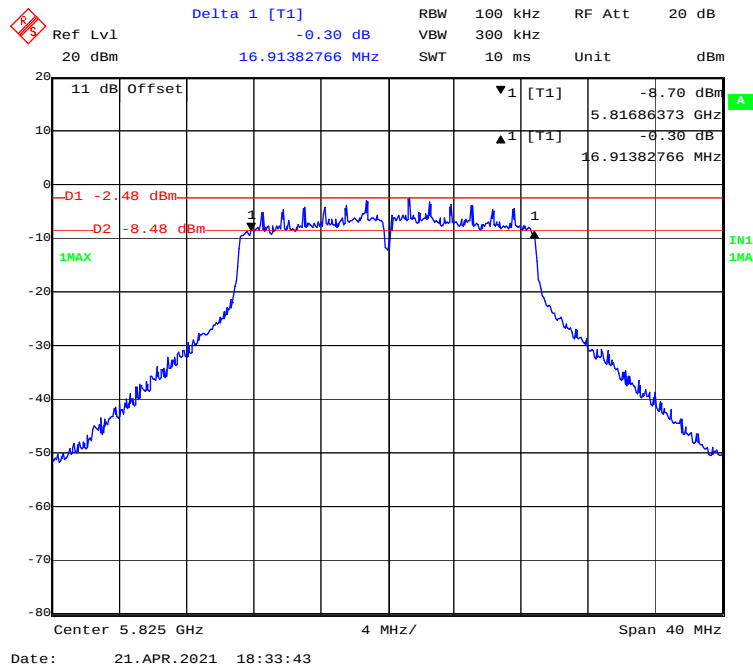
802.11ac20 mode, 5745MHz



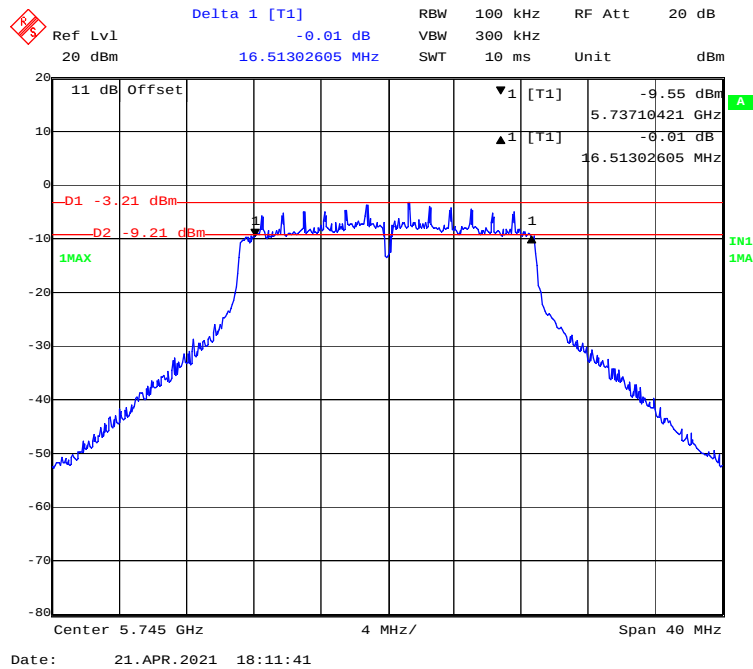
802.11 ac20 mode, 5785MHz



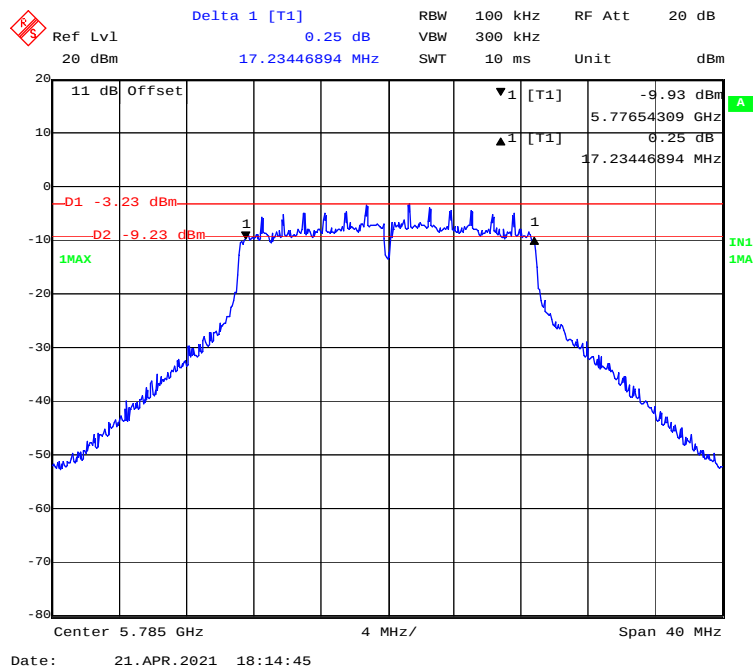
802.11 ac20 mode, 5825MHz



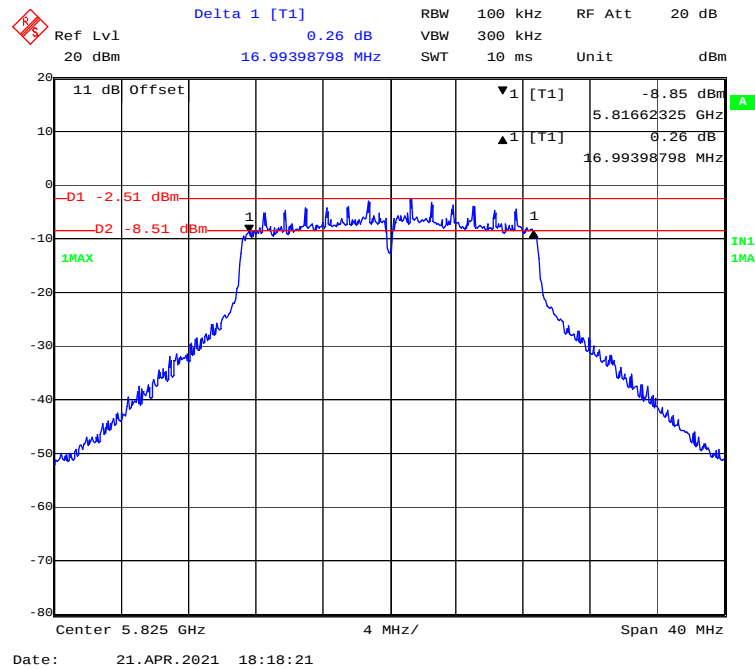
802.11n-HT20 mode, 5745MHz



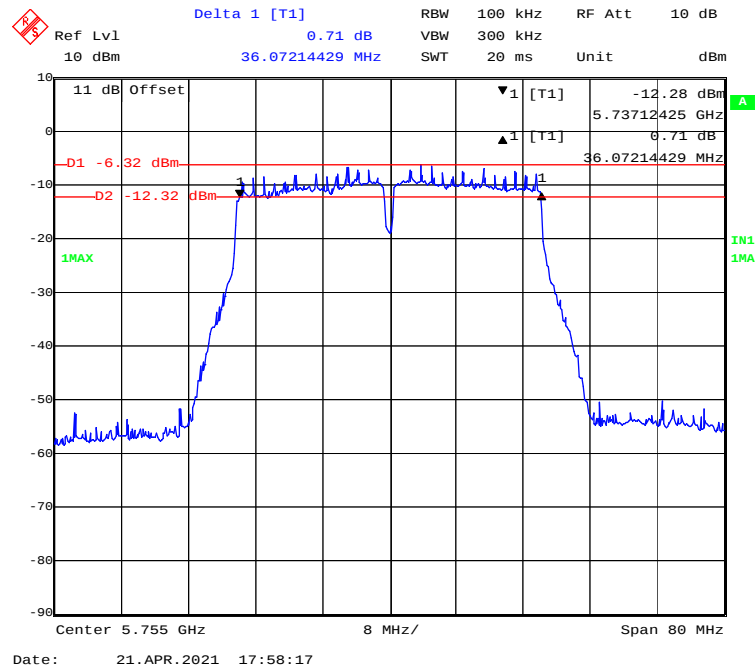
802.11n-HT20 mode, 5785MHz



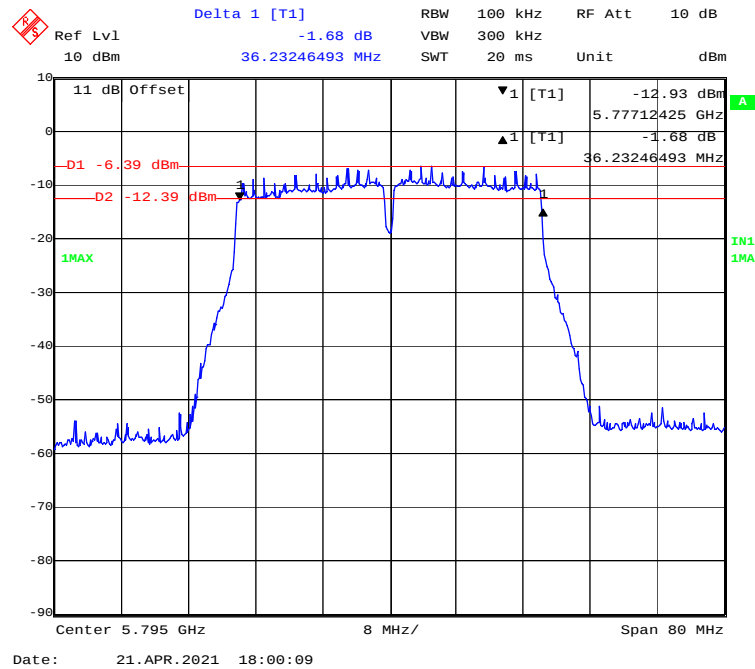
802.11n-HT20 mode, 5825MHz



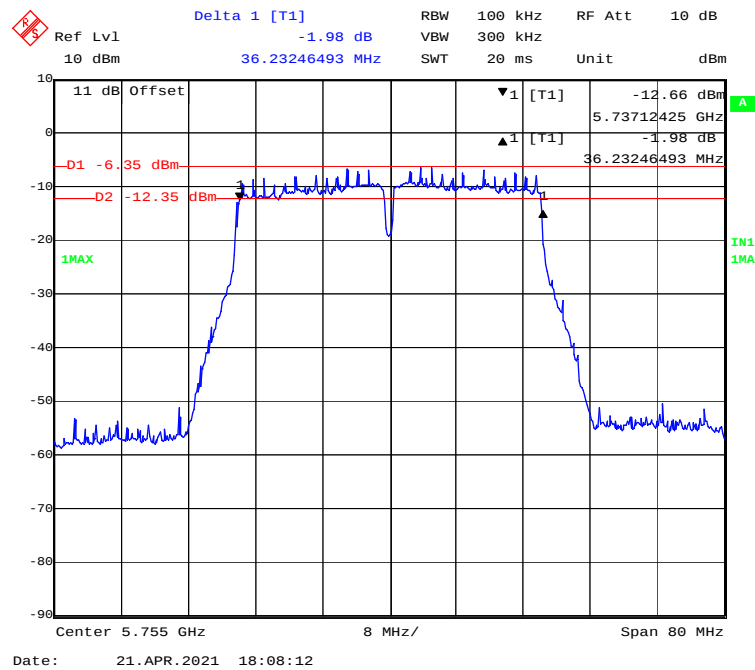
802.11ac40 mode, 5755MHz



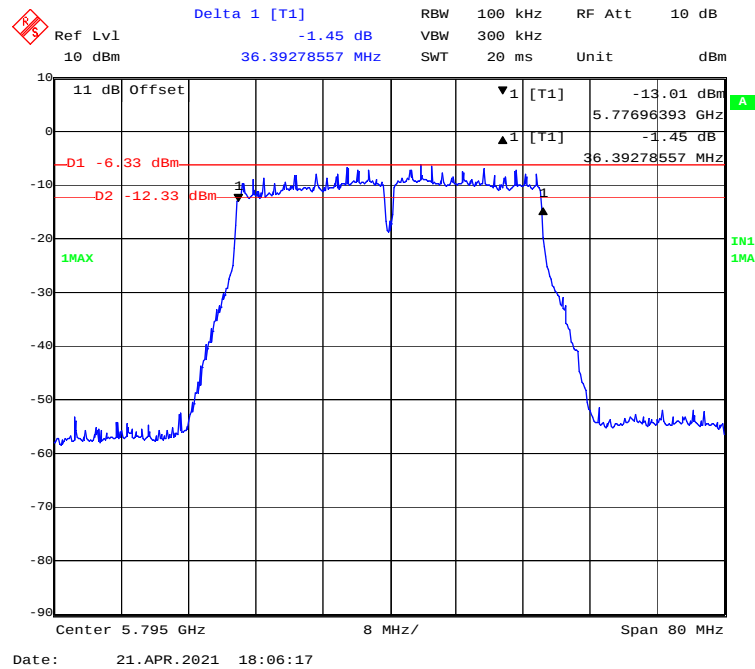
802.11 ac40 mode, 5795MHz



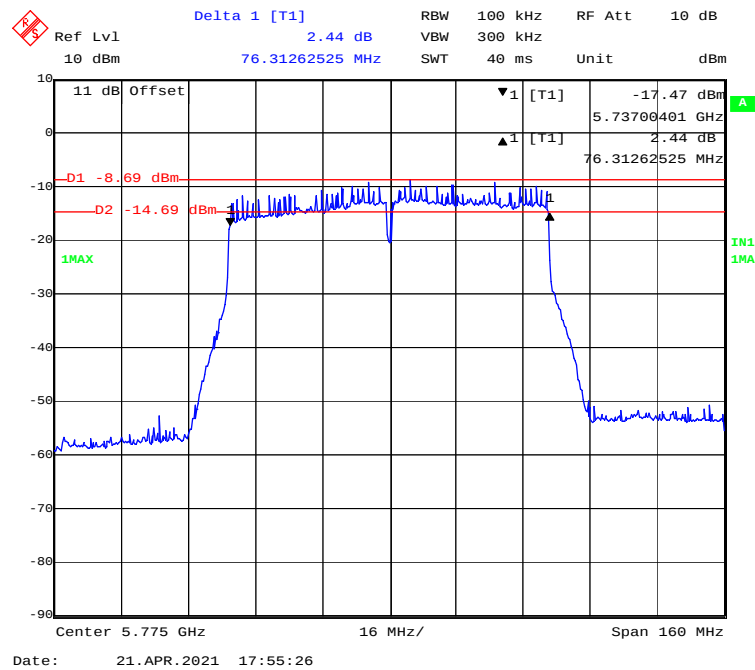
802.11n-HT40 mode, 5755MHz



802.11n-HT40 mode, 5795MHz

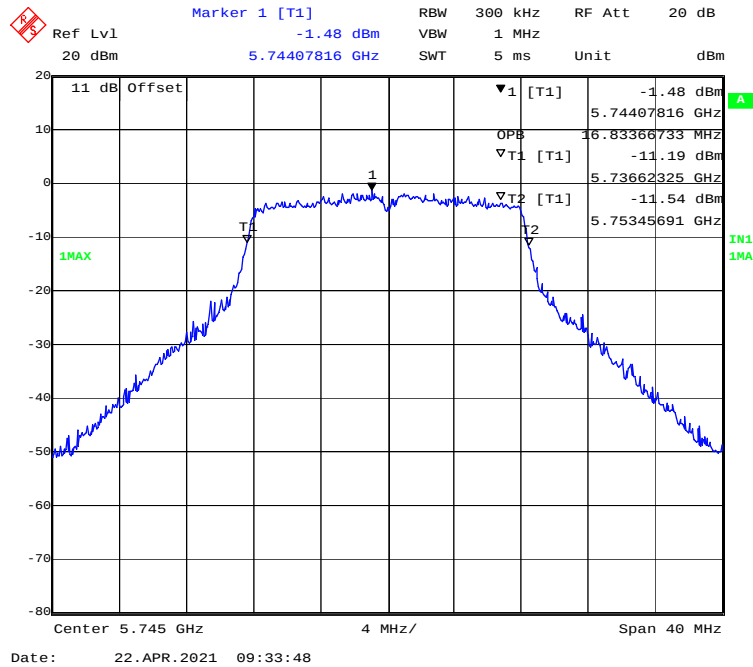


802.11ac80 mode, 5775MHz

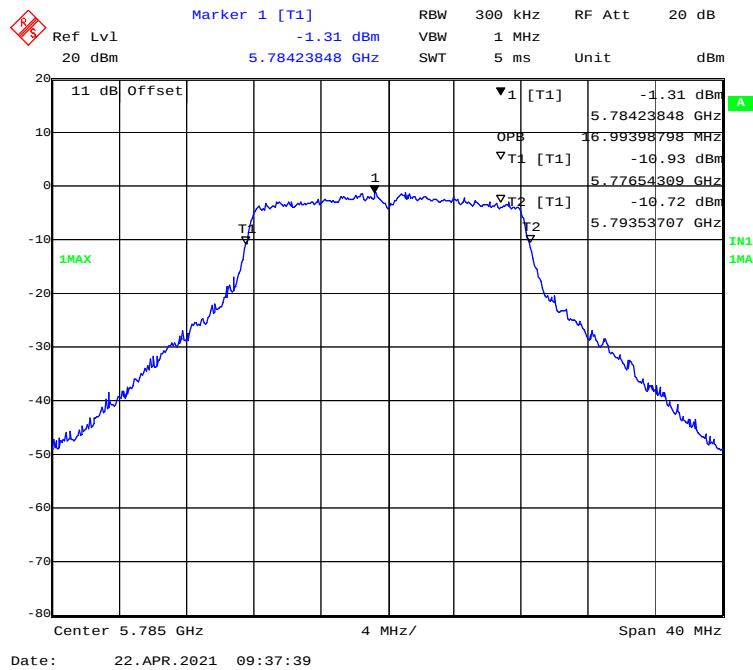


99% Bandwidth (Chain 0):

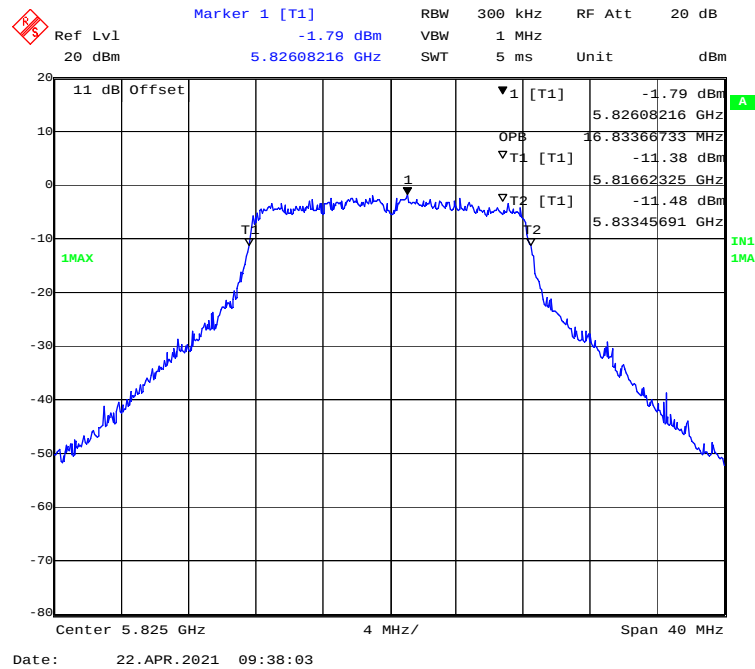
802.11a mode, 5745MHz



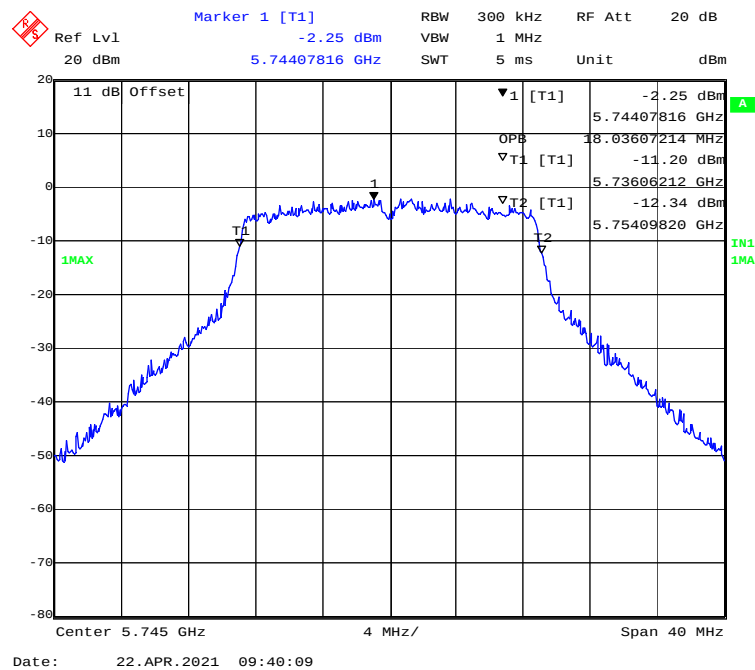
802.11a mode, 5785MHz



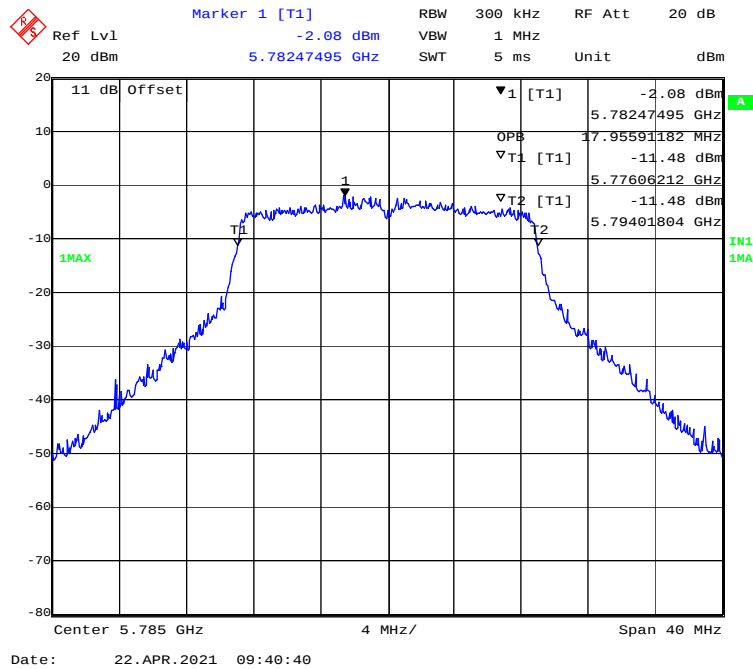
802.11a mode, 5825MHz



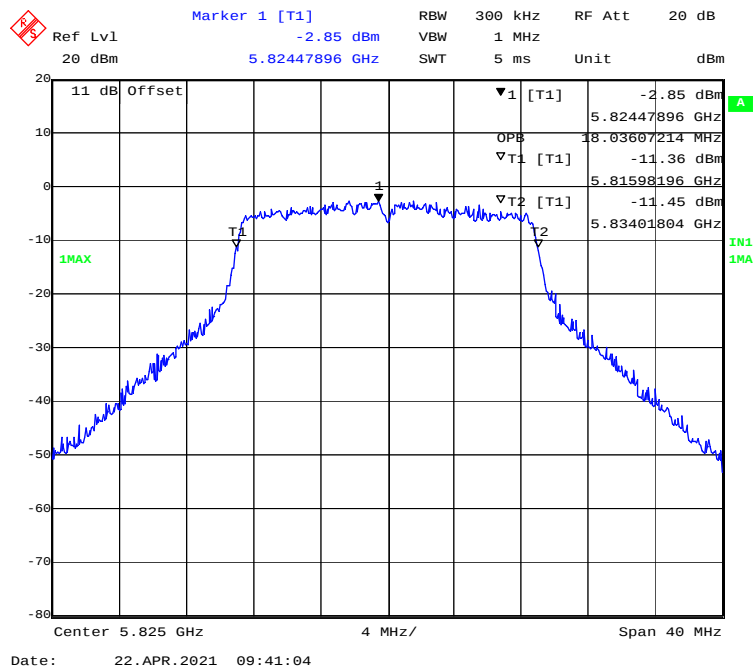
802.11ac20 mode, 5745MHz



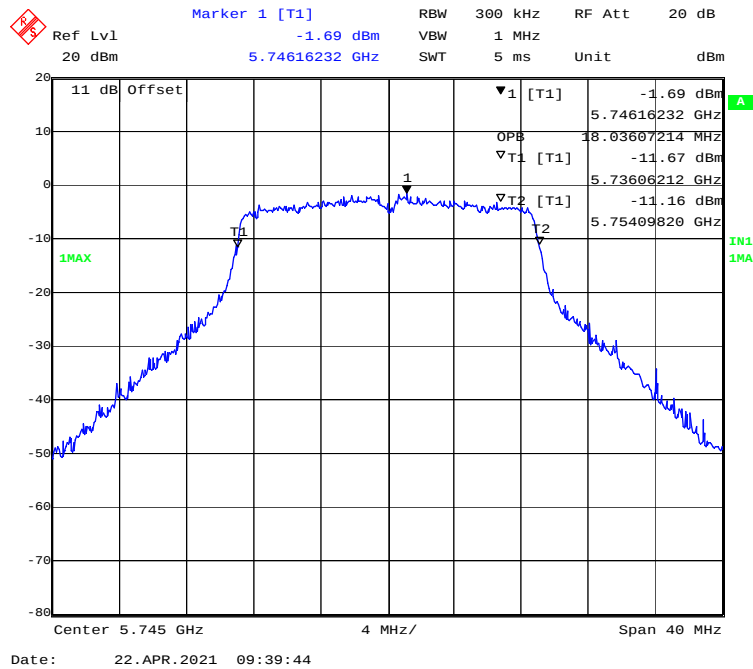
802.11 ac20 mode, 5785MHz



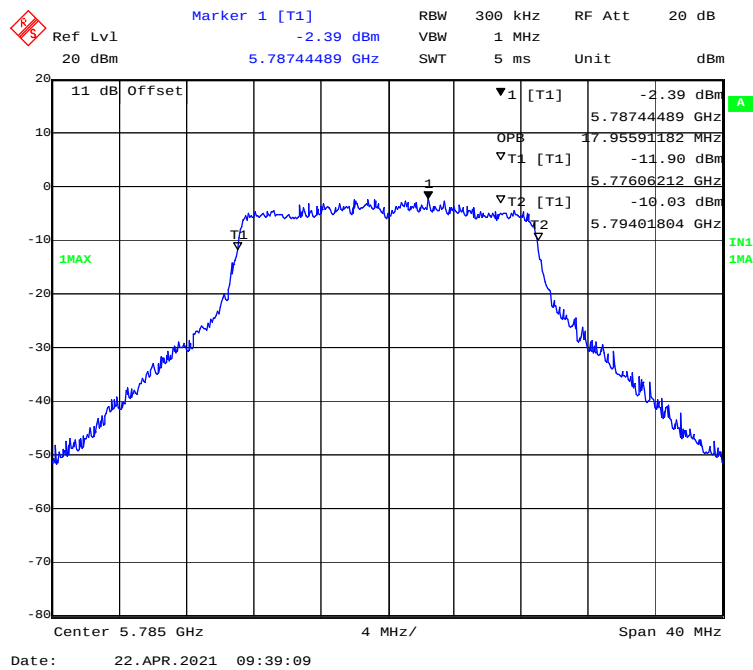
802.11 ac20 mode, 5825MHz



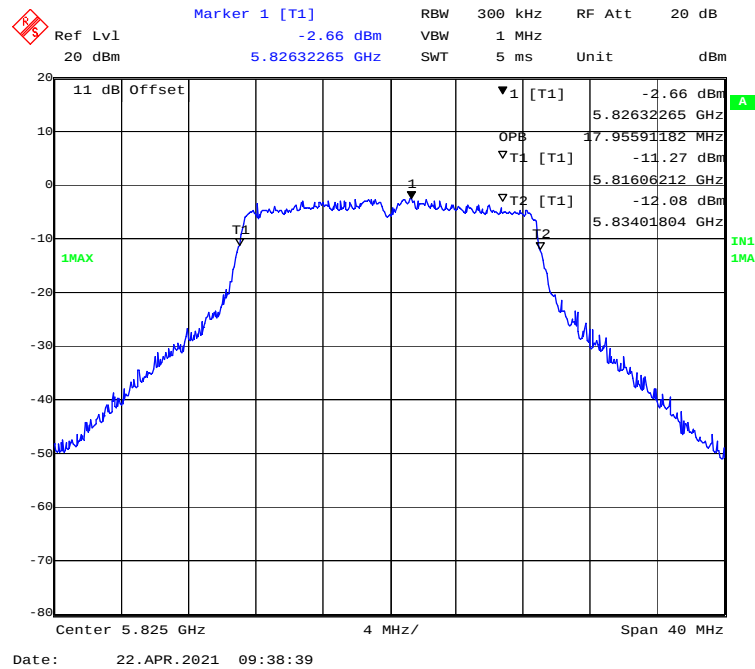
802.11n-HT20 mode, 5745MHz



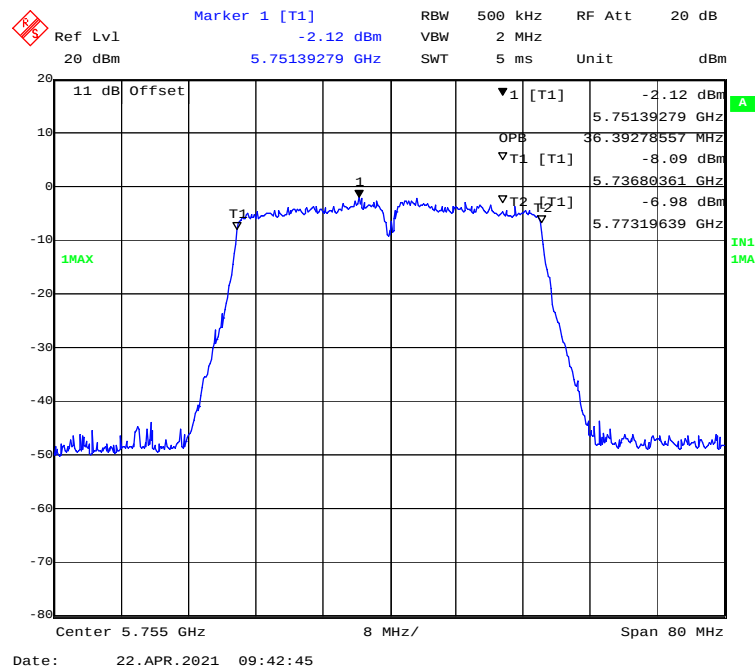
802.11n-HT20 mode, 5785MHz



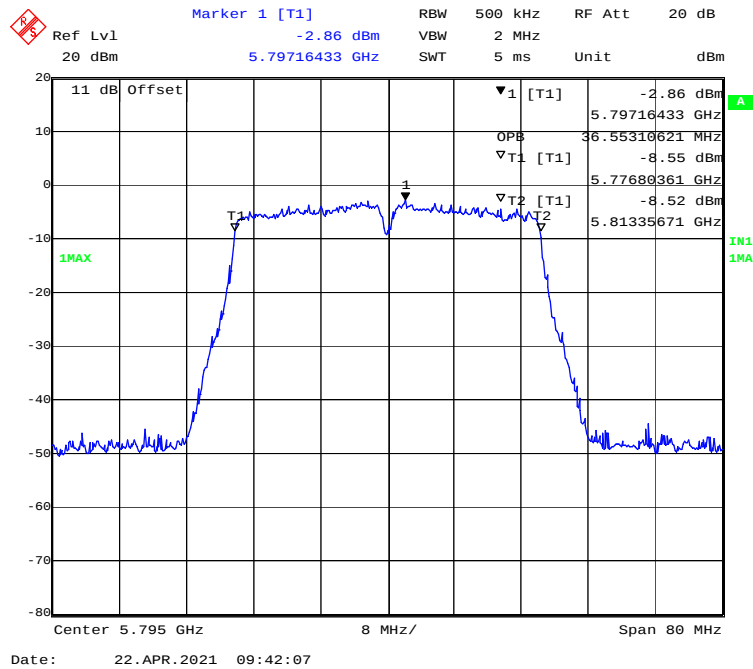
802.11n-HT20 mode, 5825MHz



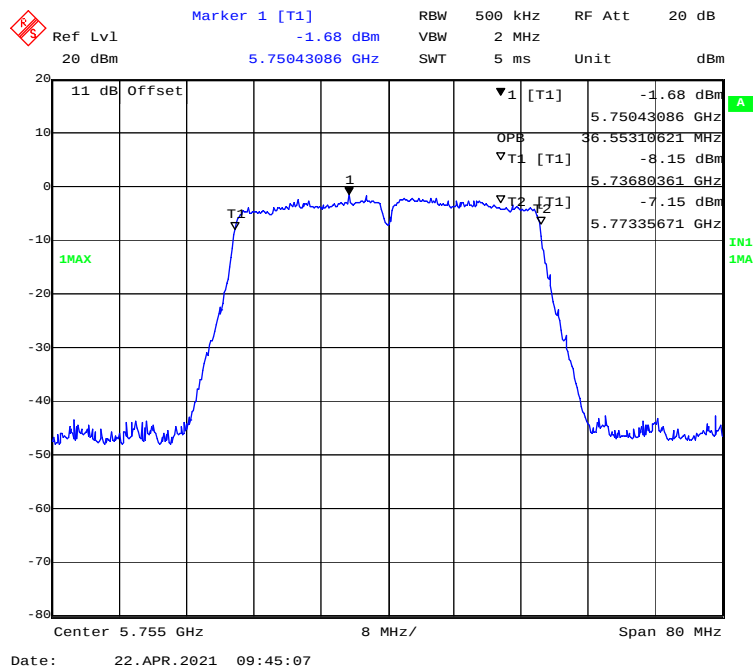
802.11ac40 mode, 5755MHz



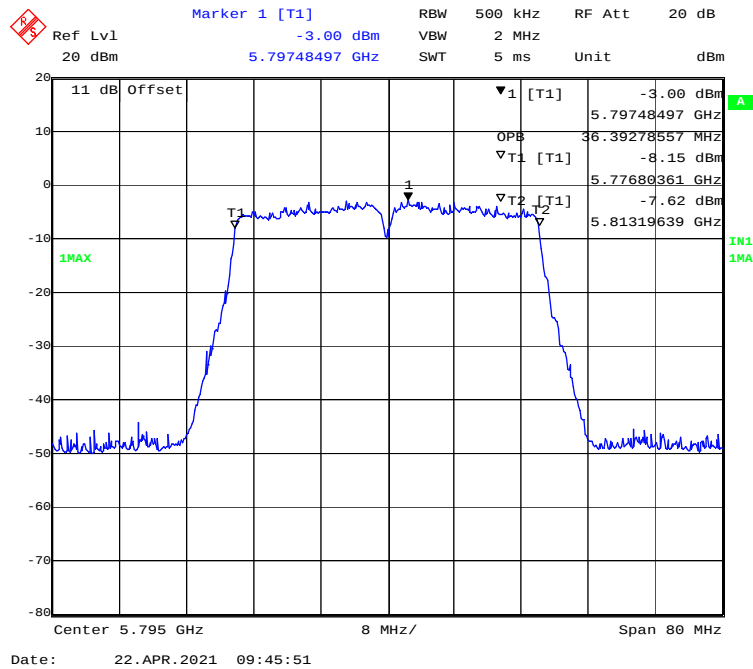
802.11 ac40 mode, 5795MHz



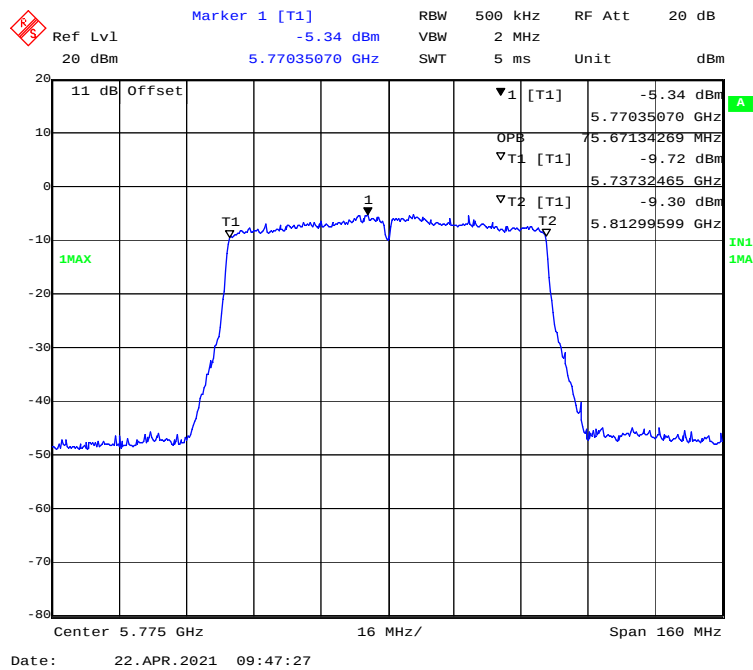
802.11n-HT40 mode, 5755MHz

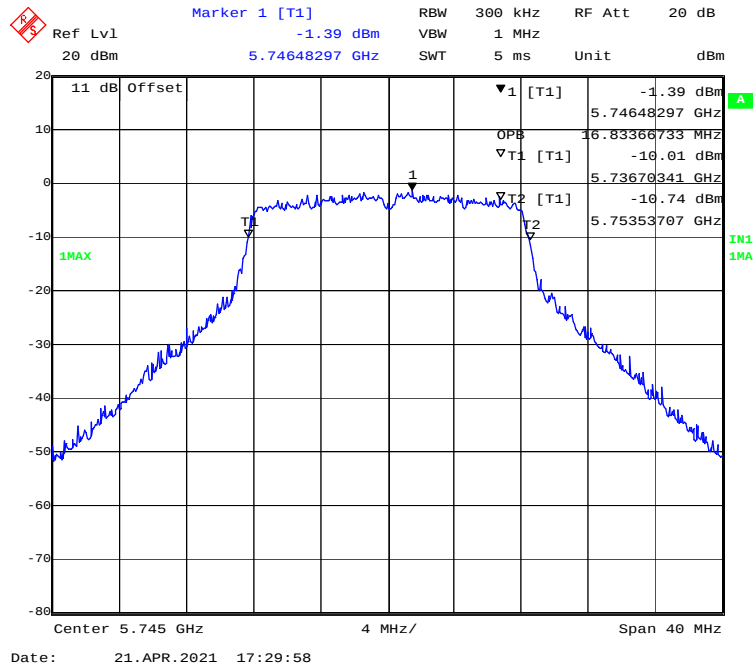
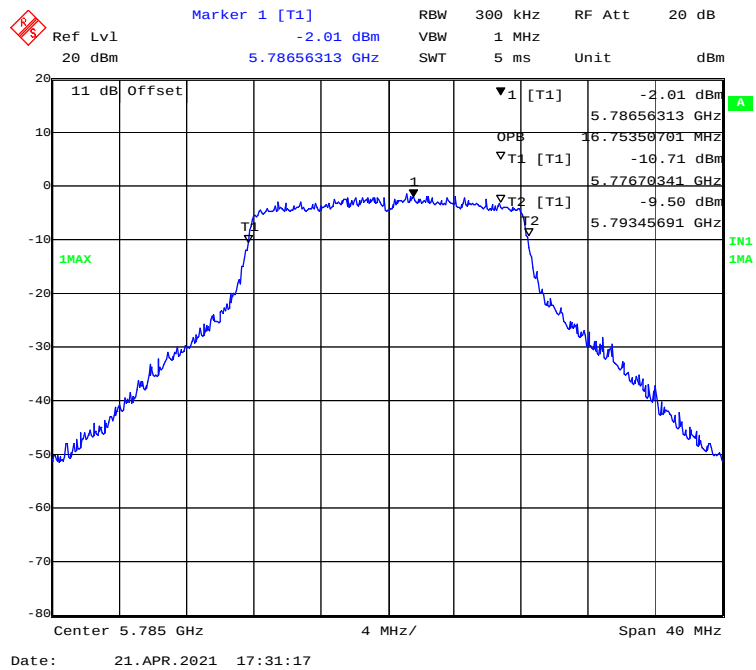


802.11n-HT40 mode, 5795MHz

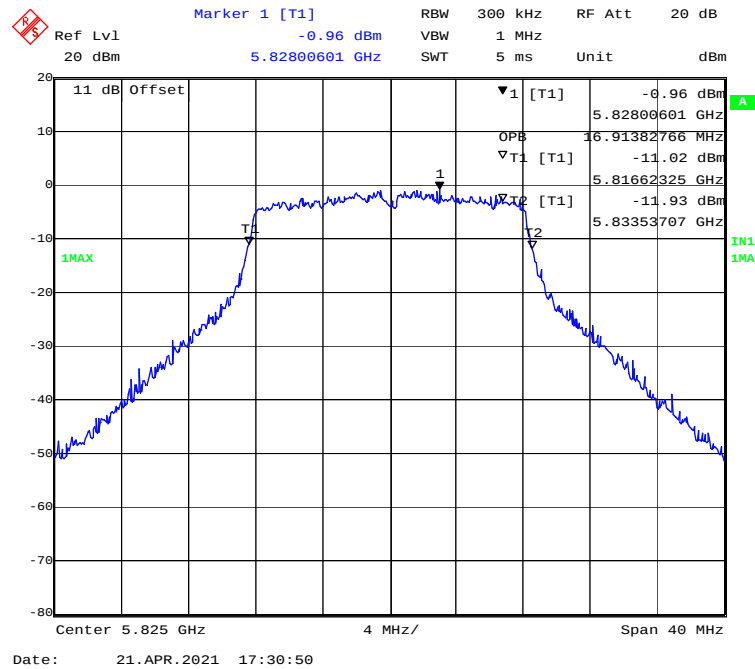


802.11n-ac80 mode, 5775MHz

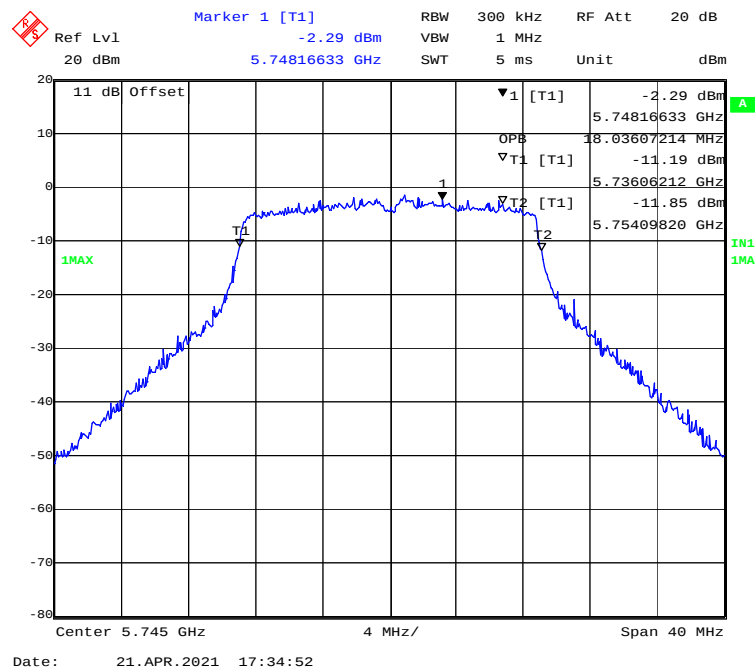


99% Bandwidth (Chain 1):**802.11a mode, 5745MHz****802.11a mode, 5785MHz**

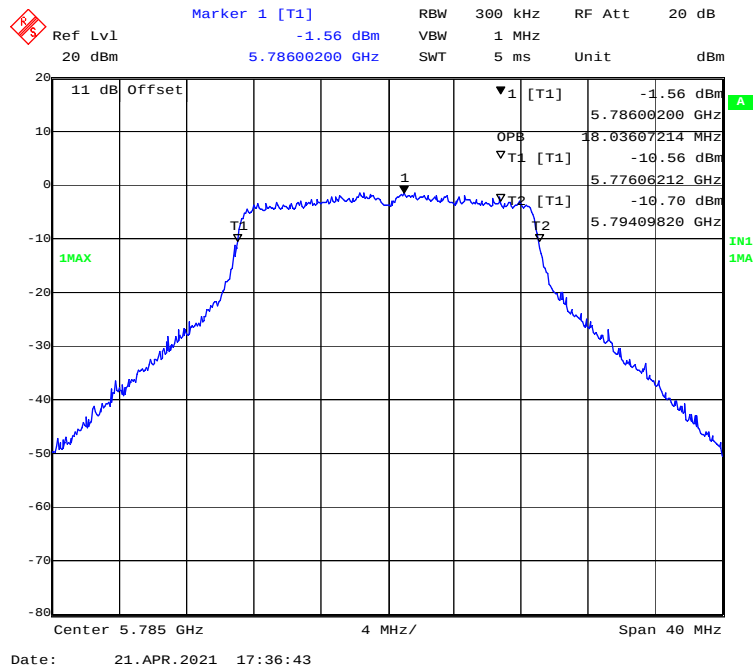
802.11a mode, 5825MHz



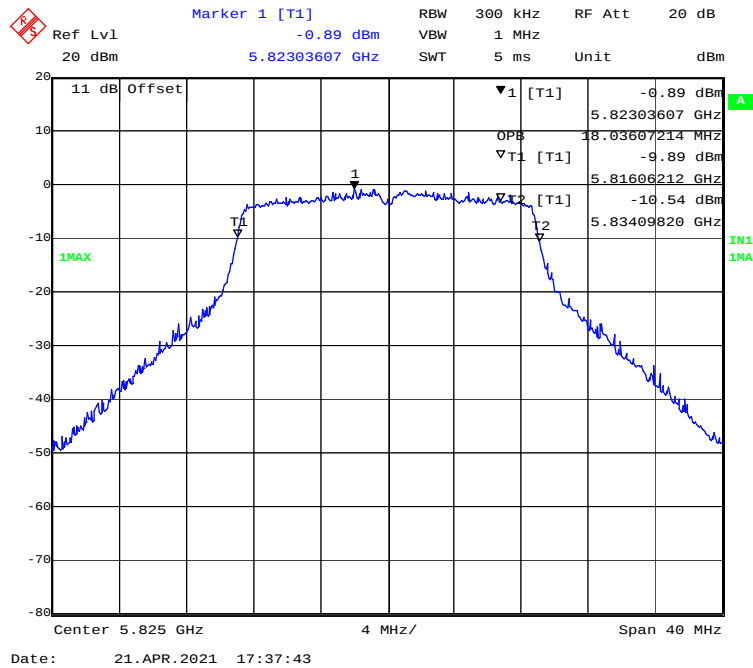
802.11ac20 mode, 5745MHz



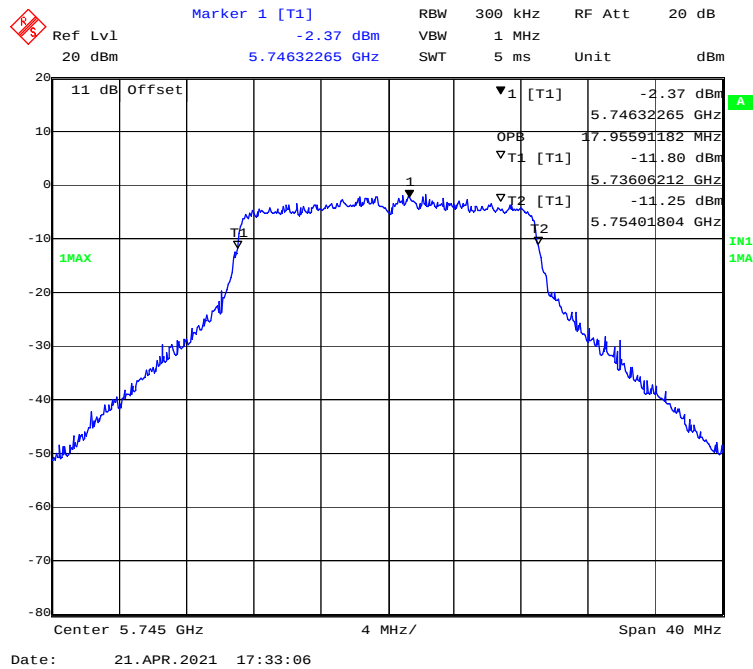
802.11 ac20 mode, 5785MHz



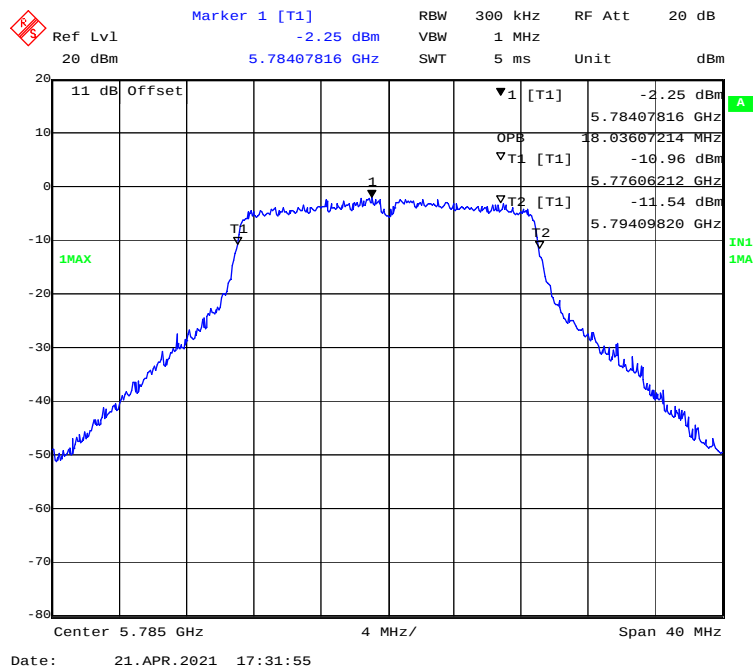
802.11 ac20 mode, 5825MHz



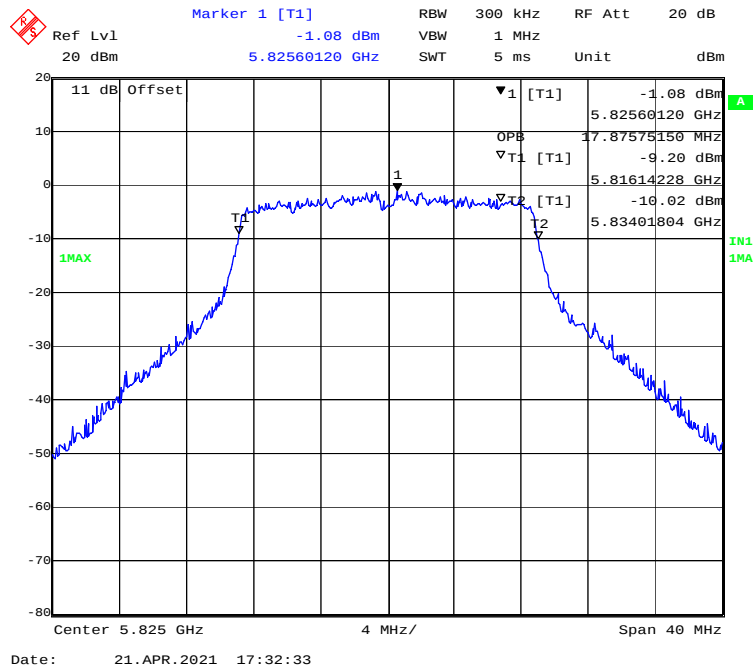
802.11n-HT20 mode, 5745MHz



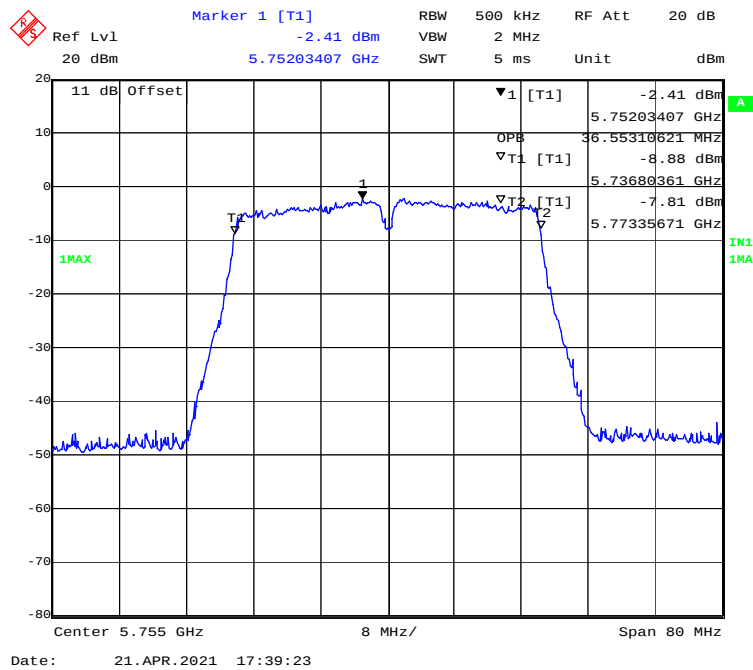
802.11n-HT20 mode, 5785MHz



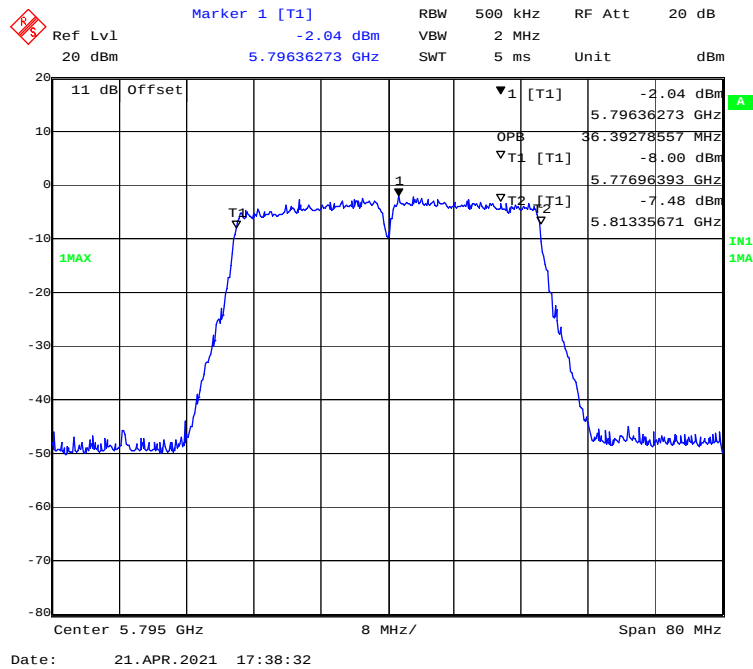
802.11n-HT20 mode, 5825MHz



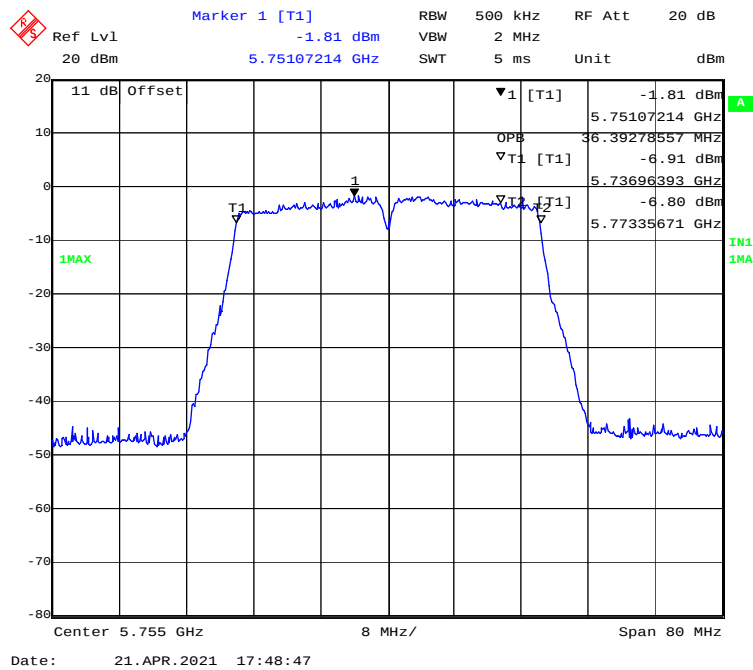
802.11ac40 mode, 5755MHz



802.11 ac40 mode, 5795MHz



802.11n-HT40 mode, 5755MHz



[illegible]

Ref Lvl 20 dBm

Marker 1 [T1] -1.62 dBm

RBW 3 MHz

VBW 3 MHz

SWT 5 ms

RF Att 20 dB

Unit dBm

11 dB Offset

1MAX

▼1 [T1] -1.62 dBm

5.77708417 GHz

OPB 5.99198397 MHz

▽T1 [T1] -6.61 dBm

5.73732465 GHz

▽T1 [T1] -5.90 dBm

5.81331663 GHz

Center 5.775 GHz

16 MHz/

Span 160 MHz

Date: 21.APR.2021 17:52:42

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

According to §15.407(a)(1)

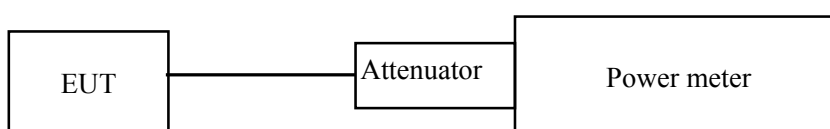
(iv) For client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. 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:	24.9~25.1 °C
Relative Humidity:	49~50 %
ATM Pressure:	101.7~101.9 kPa

The testing was performed by Stone Zhang from 2021-04-17 to 2021-04-22.

Test Mode: Transmitting

Test Mode: Transmitting

Test mode	Band	Channel	Frequency (MHz)	Average Conducted Output Power (dBm)			Limit (dBm)	Result
				Chain 0	Chain 1	Total		
802.11a	5150-5250 MHz	Low	5180	8.54	7.71	/	24	PASS
		Middle	5200	8.44	8.19	/	24	PASS
		High	5240	8.85	9.50	/	24	PASS
	5725-5850 MHz	Low	5745	7.55	7.58	/	30	PASS
		Middle	5785	7.33	7.25	/	30	PASS
		High	5825	7.27	7.90	/	30	PASS
802.11n-HT20	5150-5250 MHz	Low	5180	7.60	7.38	10.50	24	PASS
		Middle	5200	7.53	8.27	10.93	24	PASS
		High	5240	8.03	8.89	11.49	24	PASS
	5725-5850 MHz	Low	5745	7.33	7.48	10.42	30	PASS
		Middle	5785	7.23	7.56	10.41	30	PASS
		High	5825	7.18	7.83	10.53	30	PASS
802.11n-HT40	5150-5250 MHz	Low	5190	7.57	7.38	10.49	24	PASS
		High	5230	8.13	8.36	11.26	24	PASS
	5725-5850 MHz	Low	5755	7.90	8.02	10.74	30	PASS
		High	5795	7.22	7.70	10.48	30	PASS
802.11ac20	5150-5250 MHz	Low	5180	7.40	7.45	10.44	24	PASS
		Middle	5200	7.60	8.06	10.85	24	PASS
		High	5240	8.06	8.77	11.44	24	PASS
	5725-5850 MHz	Low	5745	7.43	7.28	10.37	30	PASS
		Middle	5785	7.12	7.49	10.32	30	PASS
		High	5825	7.21	7.87	10.56	30	PASS
802.11ac40	5150-5250 MHz	Low	5190	7.65	7.30	10.49	24	PASS
		High	5230	8.21	8.35	11.29	24	PASS
	5725-5850 MHz	Low	5755	7.60	7.76	10.69	30	PASS
		High	5795	7.24	7.93	10.61	30	PASS
802.11ac80	5150-5250 MHz	/	5210	7.66	7.70	10.69	24	PASS
	5725-5850 MHz	/	5775	7.48	7.61	10.56	30	PASS

Note 1: The total output power= $10\log_{10}(10^{Chain\ 0/10}+10^{Chain\ 1/10})$

Note 2: The maximum antenna gain is -2.2 dBi, the device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power measurements on IEEE 802.11 devices:

Array Gain = 0 dB (i.e., no array gain) for $NANT \leq 4$;

So: Directional gain = GANT + Array Gain = -2.2dBi < 6dBi

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 Procedures 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:	24.3~24.7 °C
Relative Humidity:	49~50 %
ATM Pressure:	101.2 ~101.5 kPa

The testing was performed by Stone Zhang from 2021-04-19 to 2021-04-25.

Test Mode: Transmitting

5150MHz-5250MHz:

Mode	Channel	Frequency (MHz)	PSD (dBm/MHz)			Limit (dBm/MHz)	Result
			Chain 0	Chain 1	Total		
802.11a	Low	5180	-0.88	-2.7	/	11	PASS
	Middle	5200	-1.51	-1.93	/	11	PASS
	High	5240	-1.03	-1.35	/	11	PASS
802.11ac20	Low	5180	-3.04	-2.55	0.22	11	PASS
	Middle	5200	-2.74	-2.45	0.42	11	PASS
	High	5240	-3.49	-1.52	0.62	11	PASS
802.11n20	Low	5180	-2.91	-2.93	0.09	11	PASS
	Middle	5200	-2.59	-2.13	0.66	11	PASS
	High	5240	-1.94	-1.57	1.26	11	PASS
802.11ac40	Low	5190	-6.65	-6.35	-3.49	11	PASS
	High	5230	-6.17	-5.52	-2.82	11	PASS
802.11n40	Low	5190	-6.51	-6.62	-3.55	11	PASS
	High	5230	-5.55	-5.39	-2.46	11	PASS
802.11ac80	/	5210	-9.38	-8.94	-6.14	11	PASS

5725MHz-5850MHz:

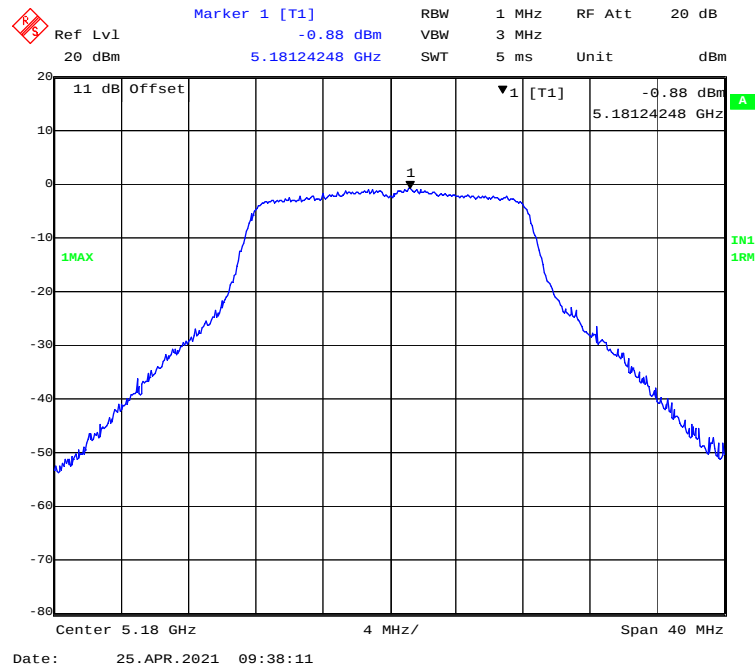
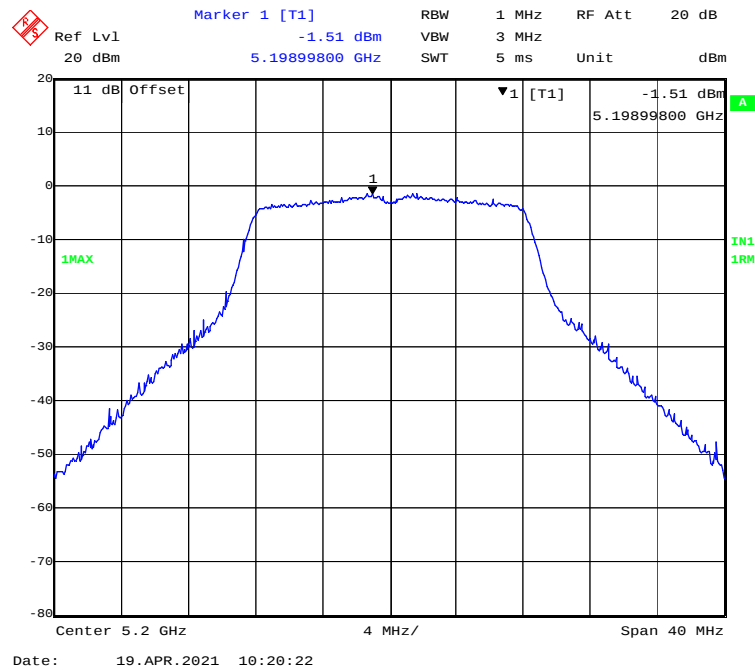
Mode	Channel	Frequency MHz	PSD (dBm/500kHz)			Limit (dBm/500kHz)	Result
			Chain 0	Chain 1	Total		
802.11a	Low	5745	-3.42	-4.13	/	30	PASS
	Middle	5785	-4.33	-2.78	/	30	PASS
	High	5825	-4.75	-2.10	/	30	PASS
802.11ac20	Low	5745	-4.03	-3.64	-0.82	30	PASS
	Middle	5785	-3.75	-4.31	-1.01	30	PASS
	High	5825	-3.69	-2.66	-0.13	30	PASS
802.11n20	Low	5745	-4.23	-3.36	-0.76	30	PASS
	Middle	5785	-4.34	-3.11	-0.67	30	PASS
	High	5825	-4.80	-2.75	-0.64	30	PASS
802.11ac40	Low	5755	-7.09	-6.89	-3.98	30	PASS
	High	5795	-8.66	-6.28	-4.30	30	PASS
802.11n40	Low	5755	-7.94	-6.85	-4.35	30	PASS
	High	5795	-7.40	-7.13	-4.25	30	PASS
802.11ac80	/	5775	-10.13	-10.32	-7.21	30	PASS

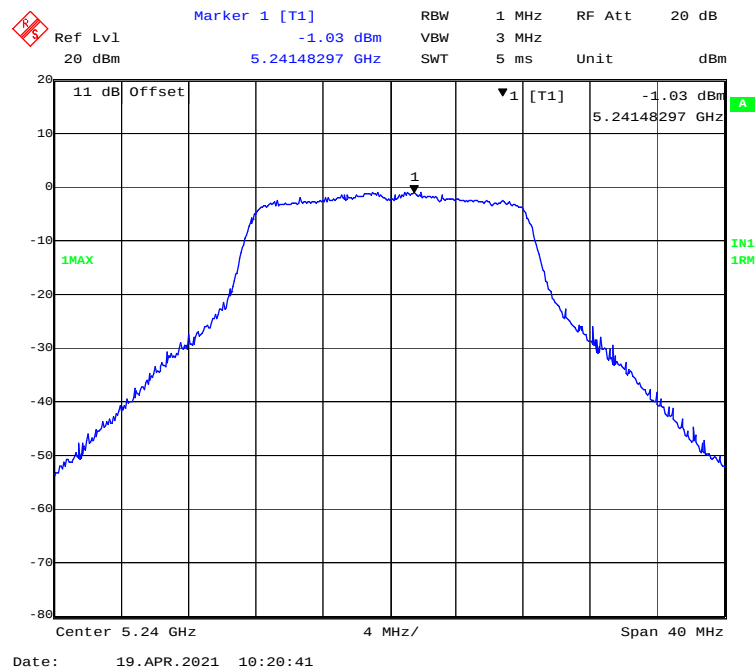
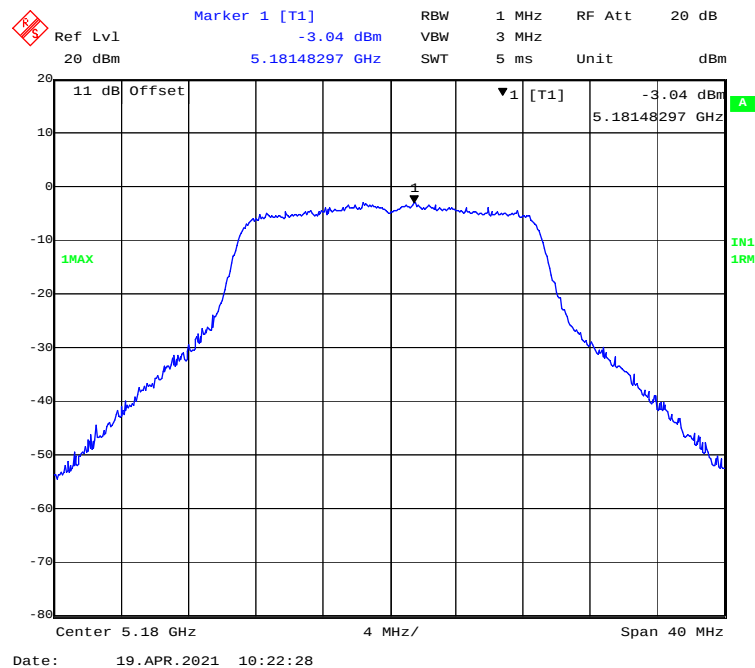
Note1: The total PSD= $10\log_{10}(10^{\text{Chain 0/10}}+10^{\text{Chain 1/10}})$

Note2: The maximum antenna gain is -2.2dBi. The device employed Cyclic Delay Diversity (CDD) for 802.11MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power spectral density (PSD) measurements on the devices:

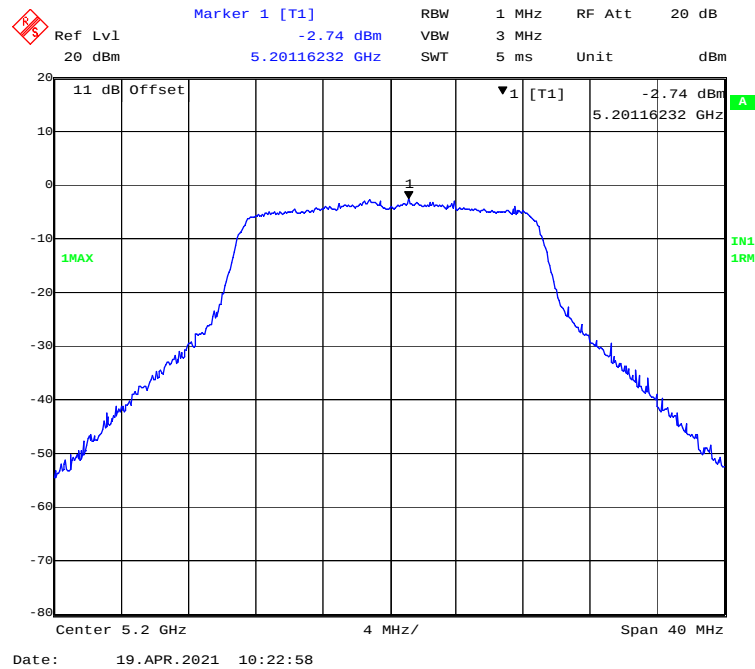
Array Gain = $10 \log(\text{NANT/NSS})$ dB.

So: Directional gain = GANT + Array Gain = $-2.2 + 10 \cdot \log(2/1) = 0.81\text{dBi}$

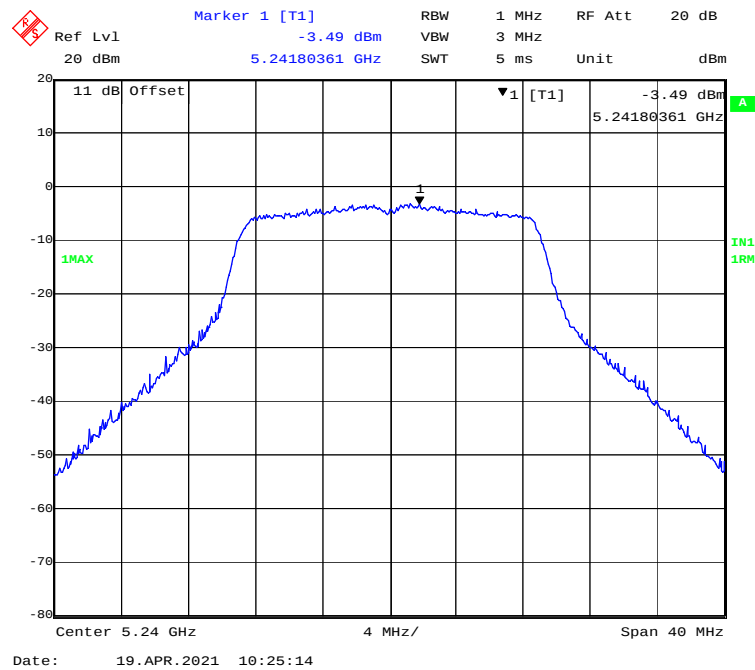
5150MHz-5250MHz Band:**Chain 0:****802.11a mode, Power spectral density-5180MHz****802.11a mode, Power spectral density-5200MHz**

802.11a mode, Power spectral density-5240MHz**802.11ac20 mode, Power spectral density-5180MHz**

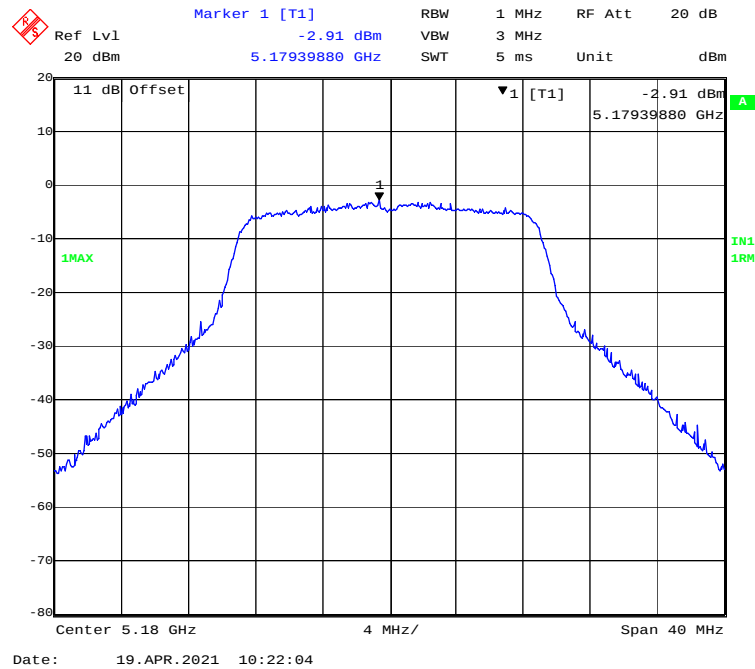
802.11 ac20 mode, Power spectral density-5200MHz



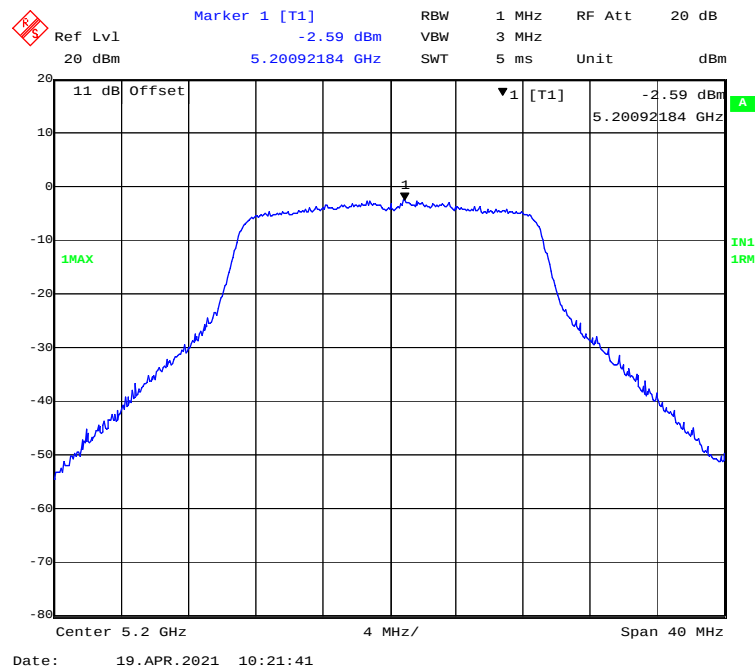
802.11ac20 mode, Power spectral density-5240MHz



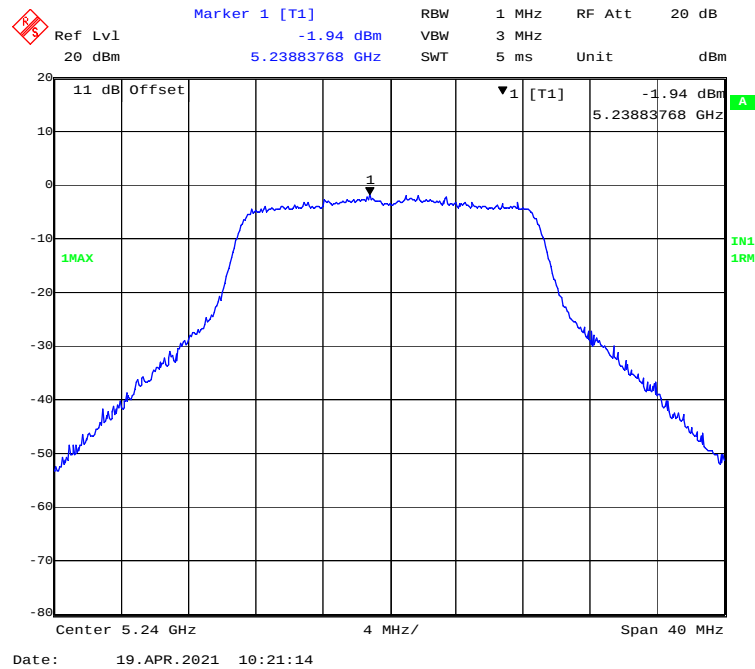
802.11n-HT20 mode, Power spectral density-5180MHz



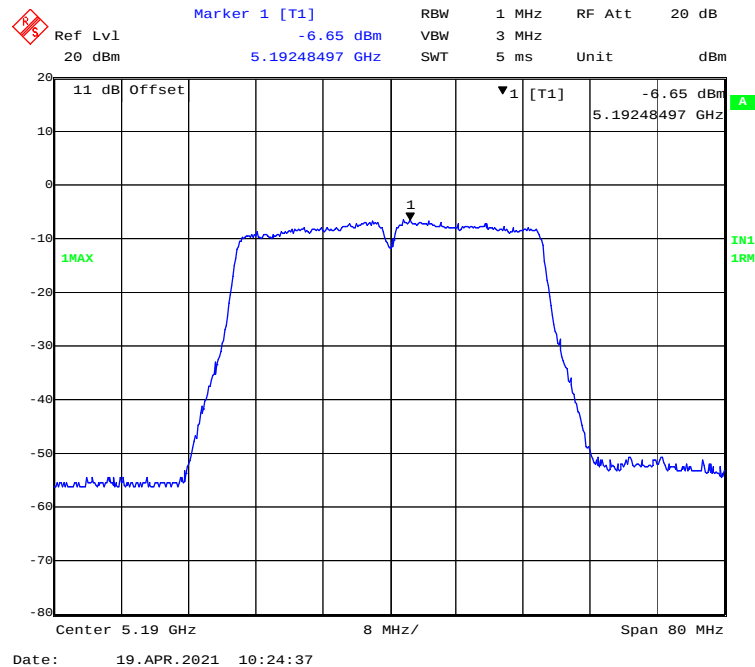
802.11n-HT20 mode, Power spectral density-5200MHz



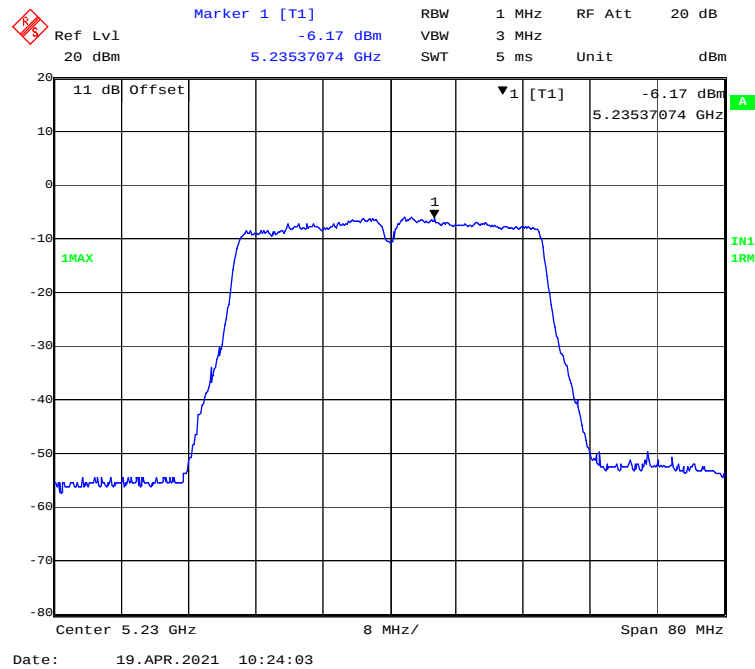
802.11n-HT20 mode, Power spectral density-5240MHz



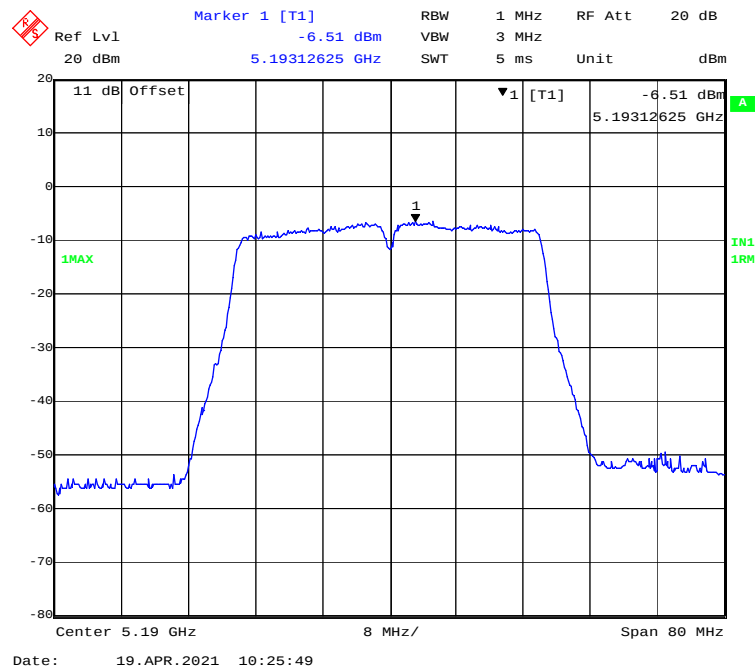
802.11ac40 mode, Power spectral density-5190MHz



802.11 ac40 mode, Power spectral density-5230MHz



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



Ref Lvl 20 dBm RBW 1 MHz RF Att 20 dB
 20 dBm 5.23264529 GHz 3 MHz 5 ms Unit dBm

11 dB Offset ▼1 [T1] -5.55 dBm
 5.23264529 GHz

1MAX IN1 1RM

Center 5.23 GHz 8 MHz/ Span 80 MHz

Date: 19. APR. 2021 10:26:25

Ref Lvl 20 dBm
 RBW 1 MHz
 VBW 3 MHz
 SWT 5 ms
 RF Att 20 dB
 Unit dBm

Marker 1 [T1]
 -9.38 dBm
 5.21529058 GHz

11 dB Offset
 1 [T1]
 -9.38 dBm
 5.21529058 GHz

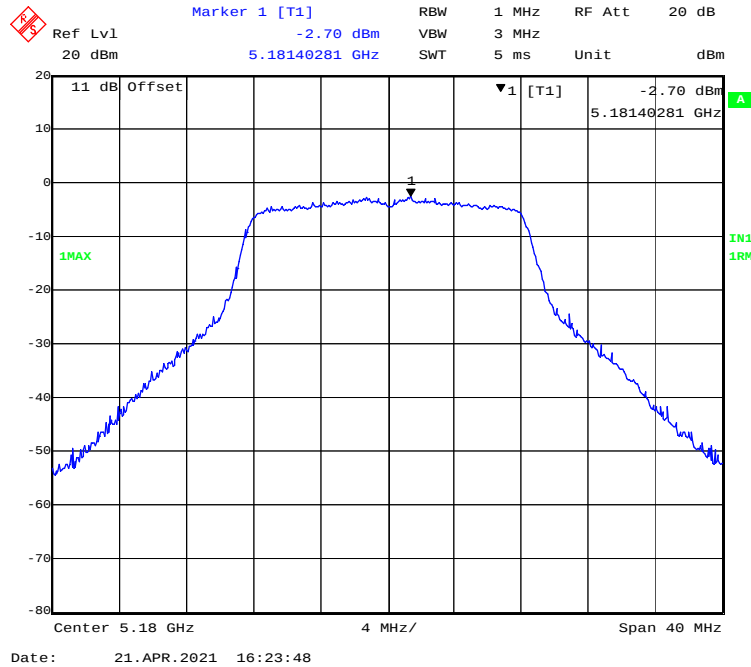
1MAX
 IN1
 1RM

Center 5.21 GHz
 16 MHz/
 Span 160 MHz

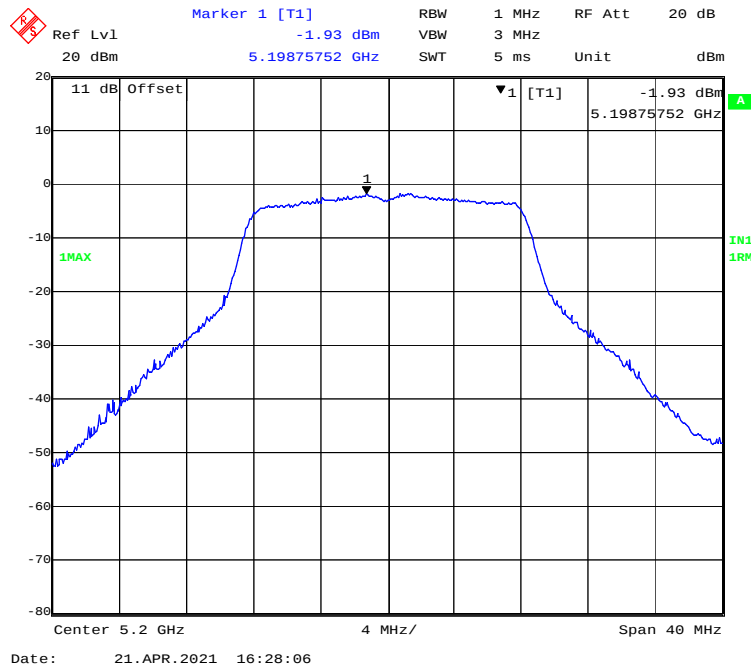
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Chain 1:

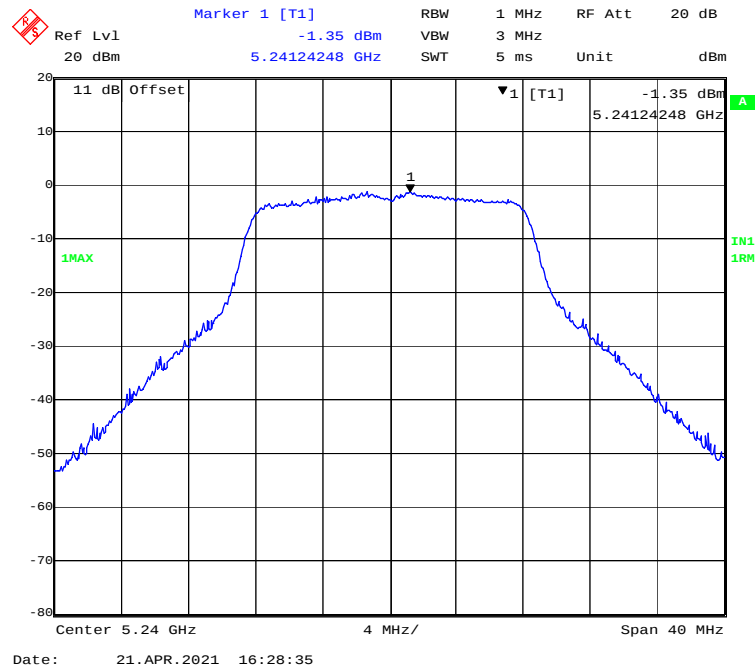
802.11a mode, Power spectral density-5180MHz



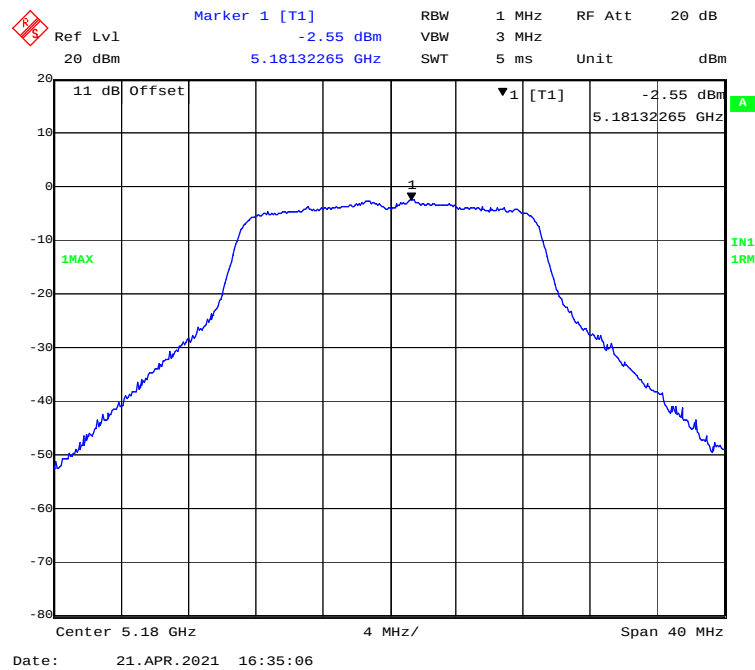
802.11a mode, Power spectral density-5200MHz



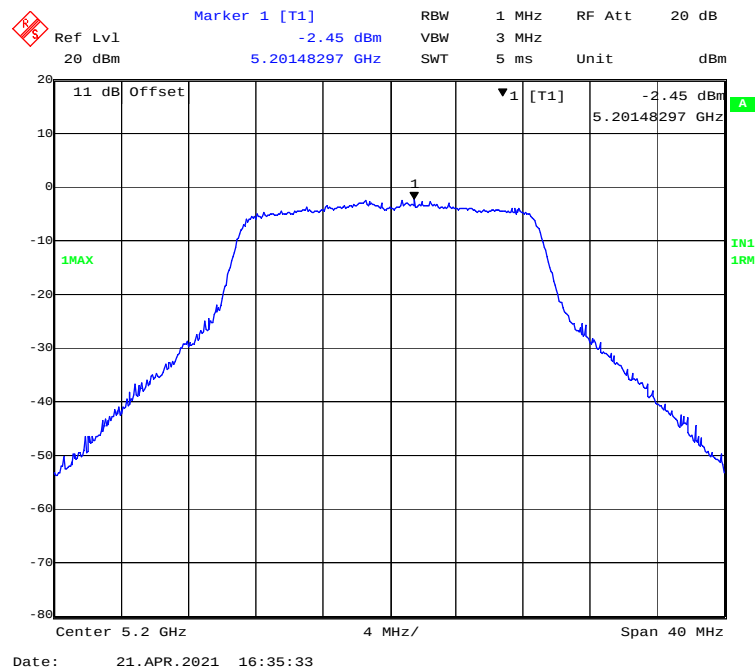
802.11a mode, Power spectral density-5240MHz



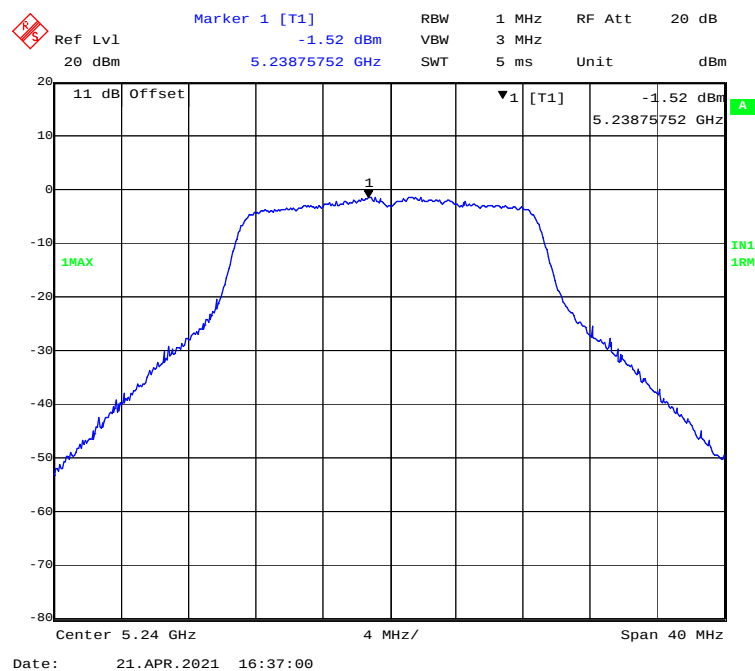
802.11ac20 mode, Power spectral density-5180MHz



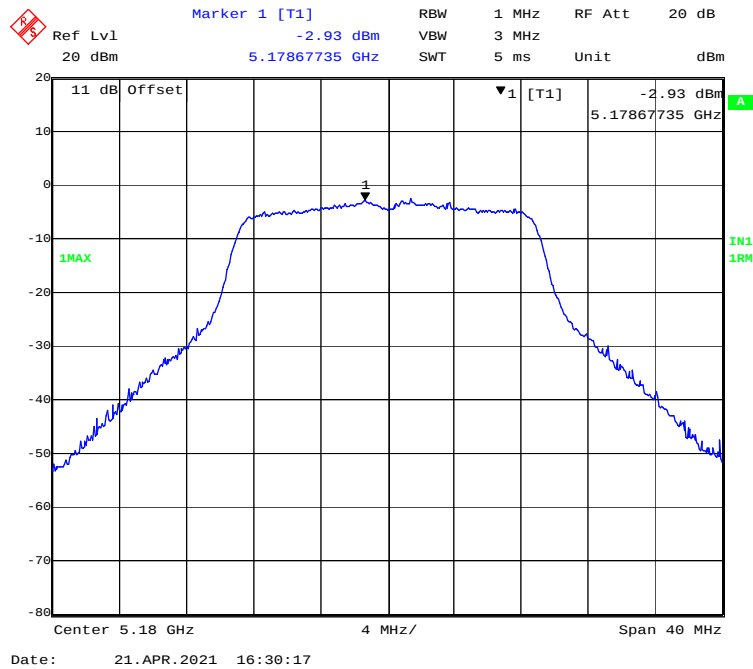
802.11 ac20 mode, Power spectral density-5200MHz



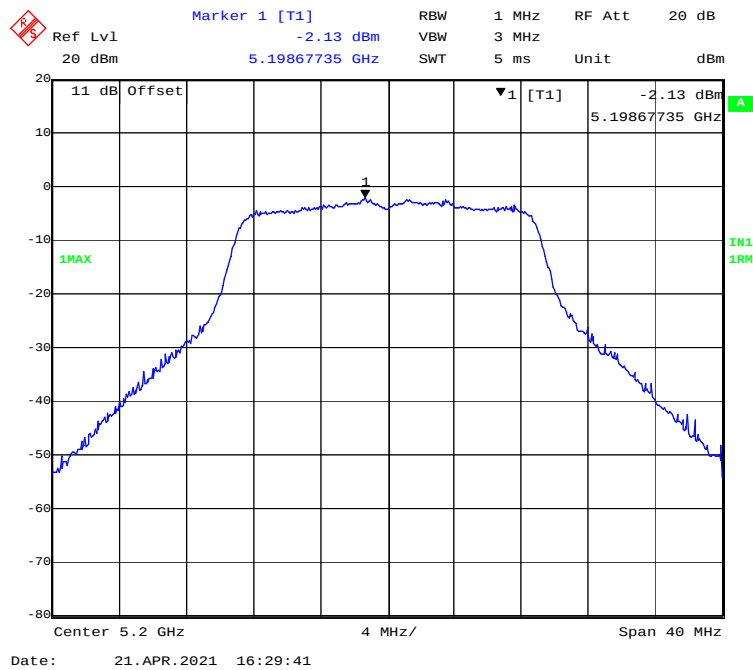
802.11ac20 mode, Power spectral density-5240MHz



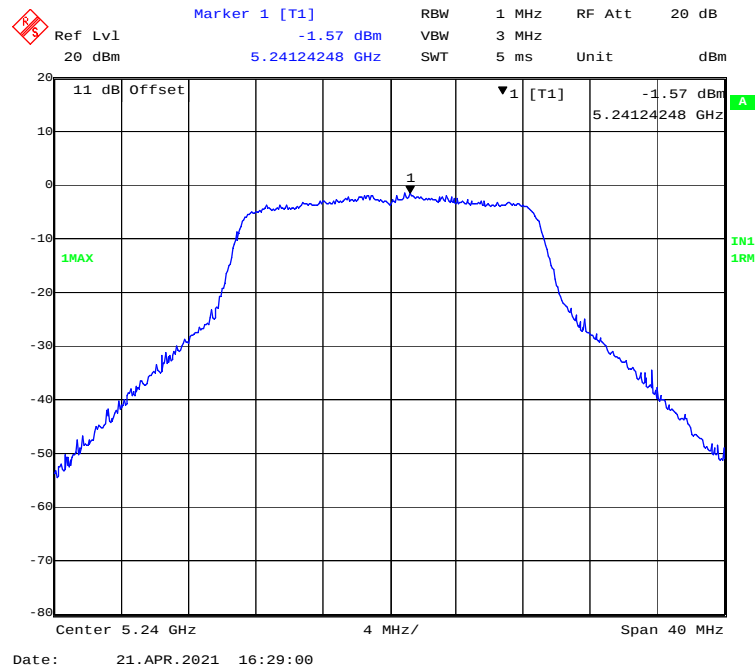
802.11n-HT20 mode, Power spectral density-5180MHz



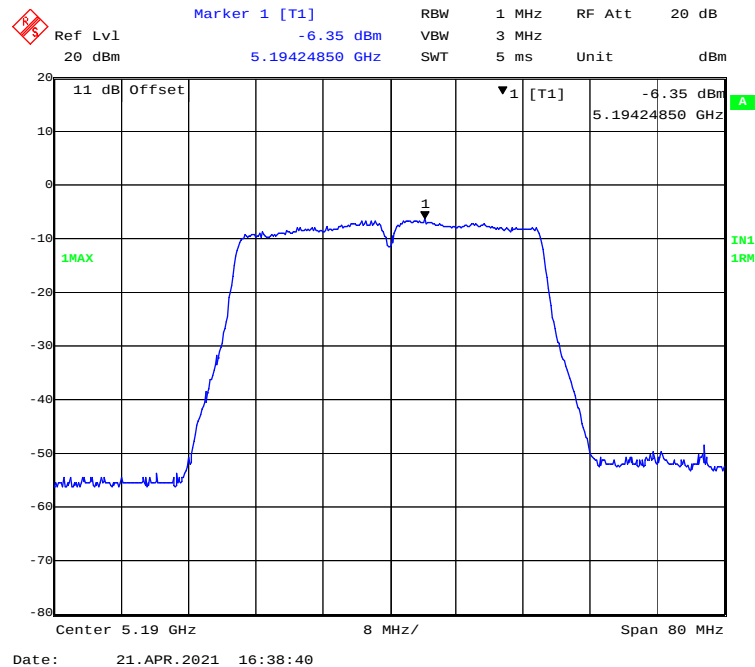
802.11n-HT20 mode, Power spectral density-5200MHz



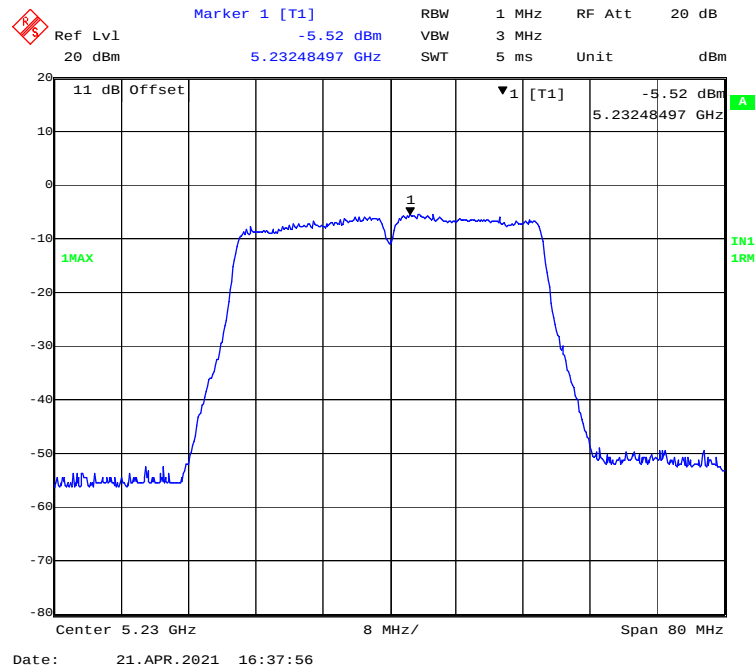
802.11n-HT20 mode, Power spectral density-5240MHz



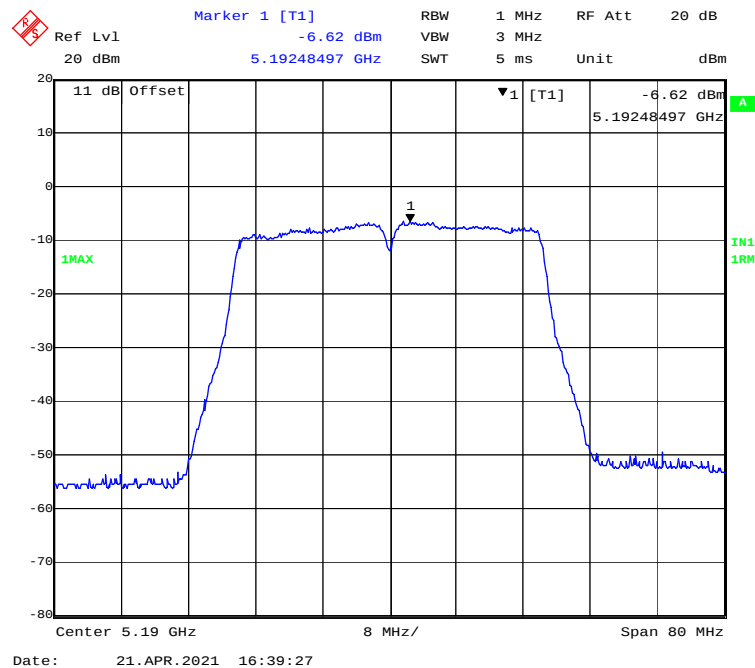
802.11ac40 mode, Power spectral density-5190MHz



802.11 ac40 mode, Power spectral density-5230MHz



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



Ref Lvl 20 dBm
 RBW 1 MHz
 RF Att 20 dB
 Marker 1 [T1] -5.39 dBm
 VBW 3 MHz
 Unit dBm
 5.23376754 GHz
 5 ms
 20 dB

11 dB Offset
 1 [T1]
 -5.39 dBm
 5.23376754 GHz

1MAX
 IN1
 1RM

Center 5.23 GHz
 8 MHz/
 Span 80 MHz

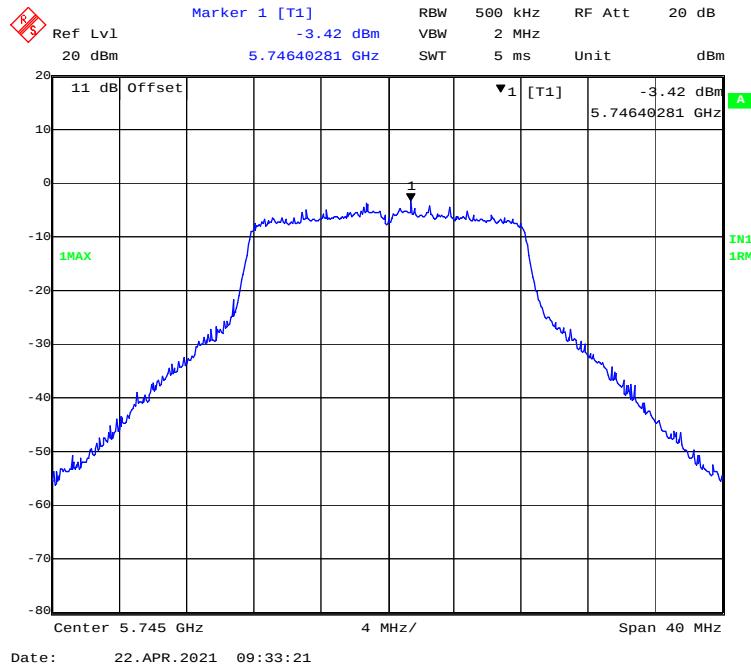
Date: 21. APR. 2021 16:40:25

Ref Lvl 20 dBm
 20 dBm
 11 dB Offset
 Marker 1 [T1]
 -8.94 dBm
 5.23517034 GHz
 RBW 1 MHz
 VBW 3 MHz
 SWT 5 ms
 RF Att 20 dB
 Unit dBm
 1 [T1]
 -8.94 dBm
 5.23517034 GHz
 1MAX
 IN1
 1RM
 Center 5.21 GHz
 16 MHz/
 Span 160 MHz
 Date: 21.APR.2021 16:41:13

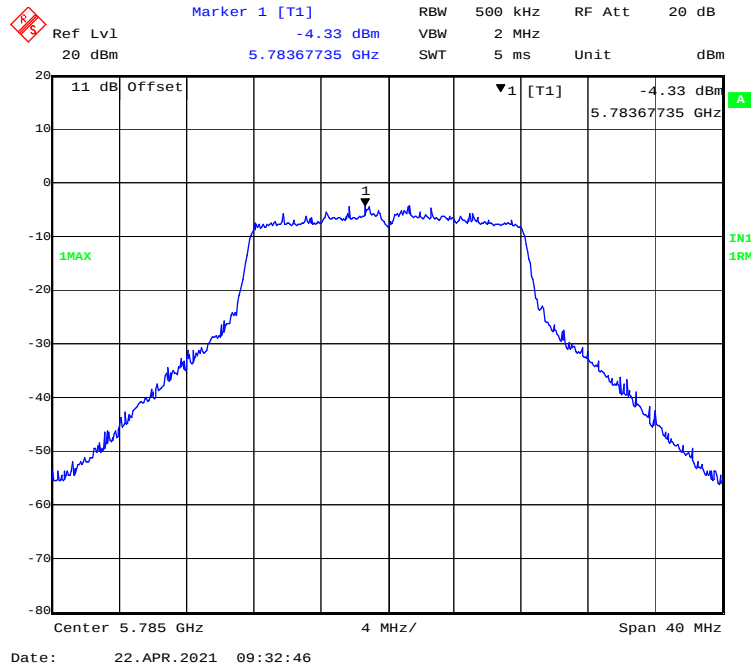
5725MHz-5850 MHz Band:

Chain 0:

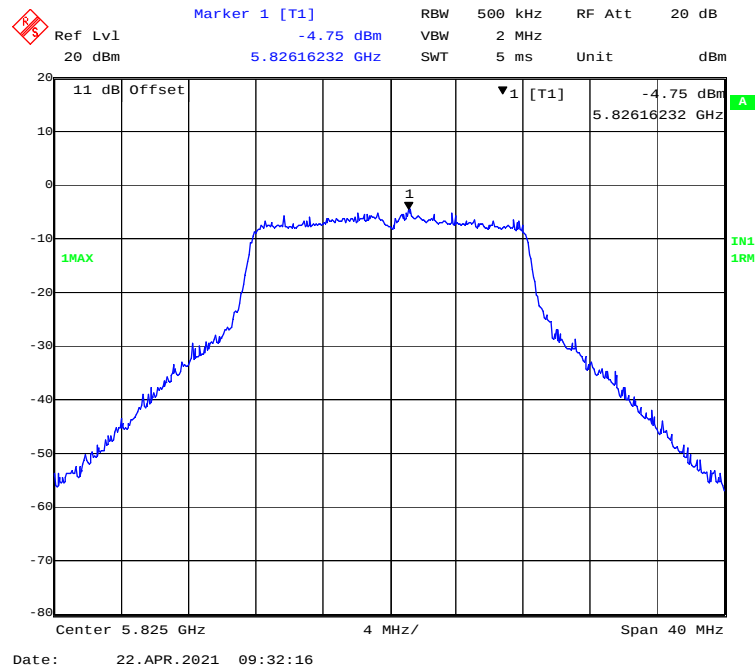
802.11a mode, Power spectral density-5745MHz



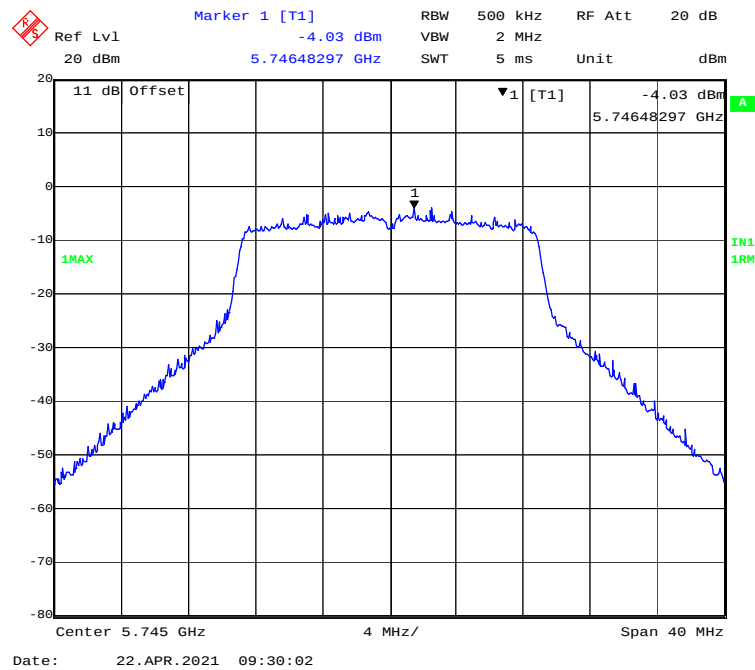
802.11a mode, Power spectral density-5785MHz



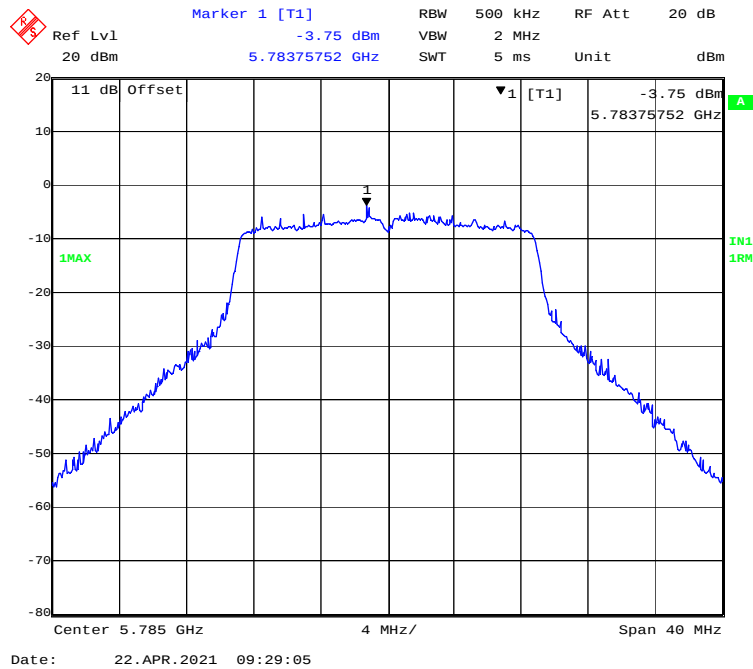
802.11a mode, Power spectral density-5825MHz



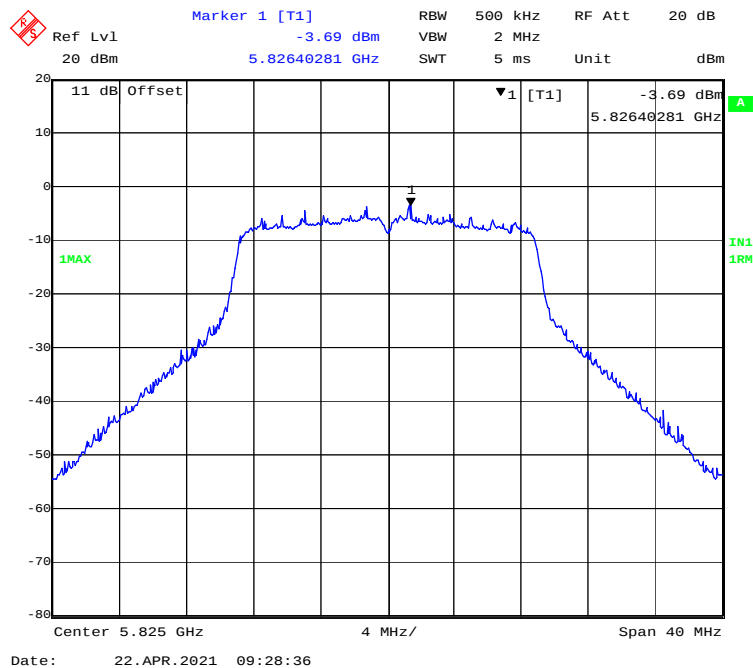
802.11ac20 mode, Power spectral density-5745MHz

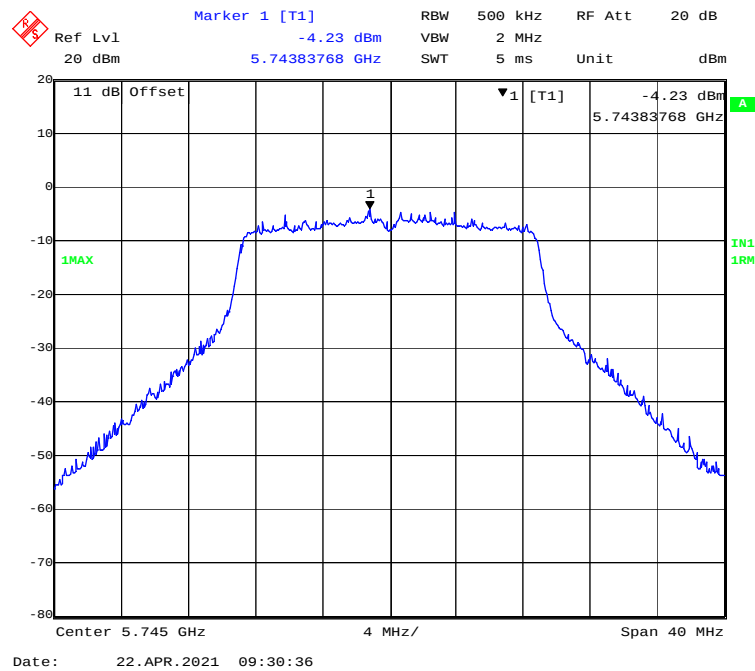
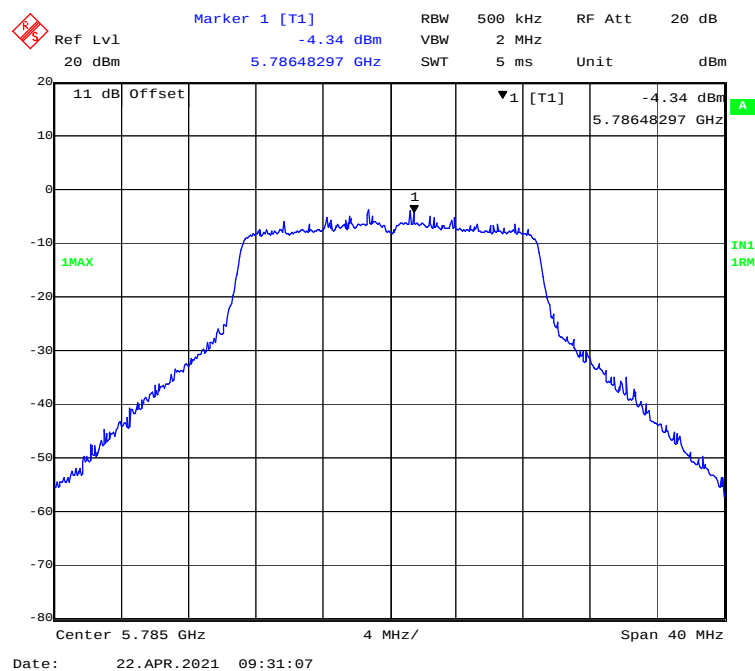


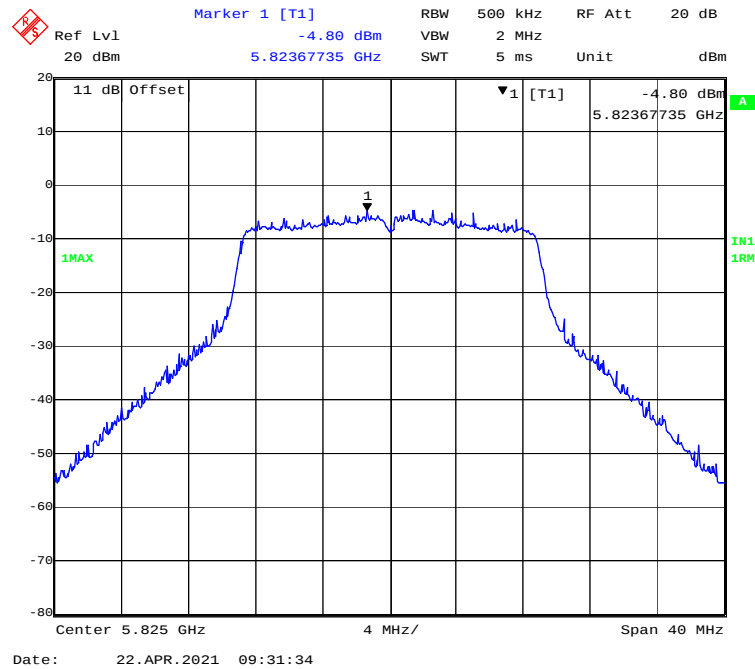
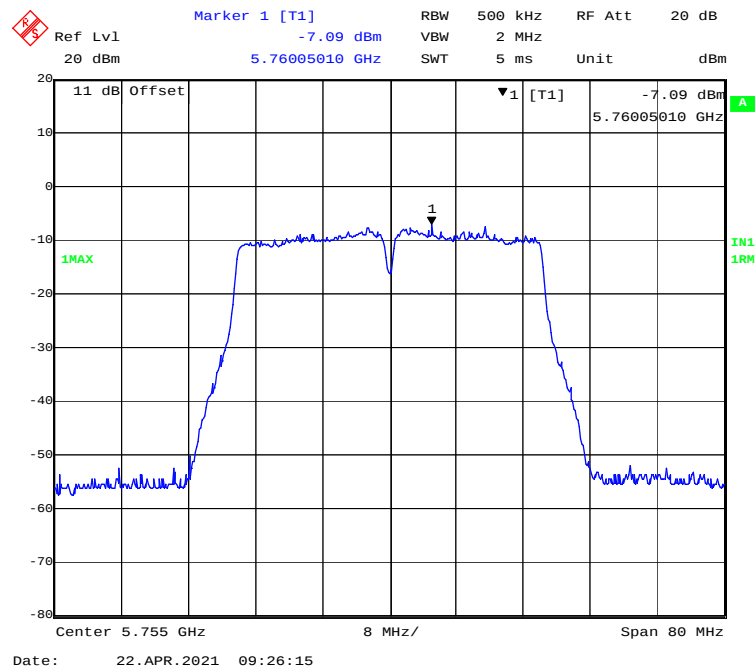
802.11 ac20 mode, Power spectral density-5785MHz



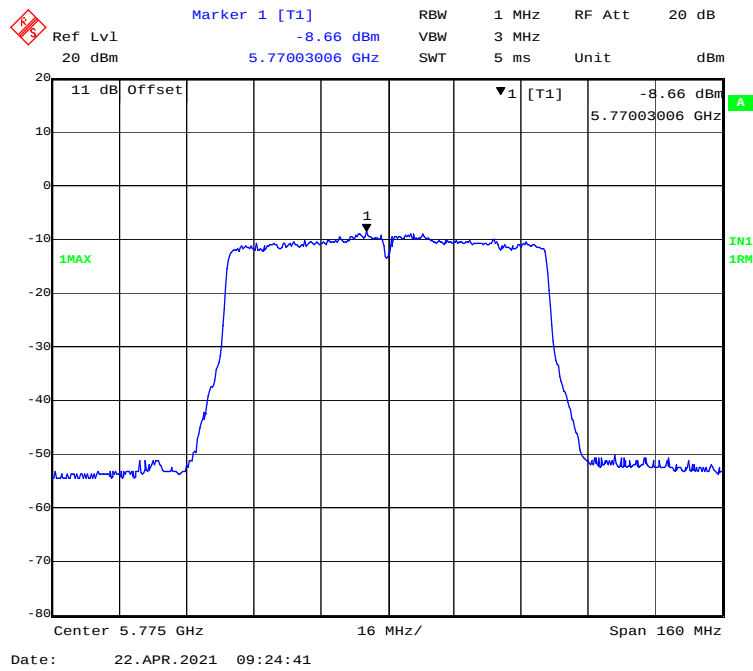
802.11 ac20 mode, Power spectral density-5825MHz



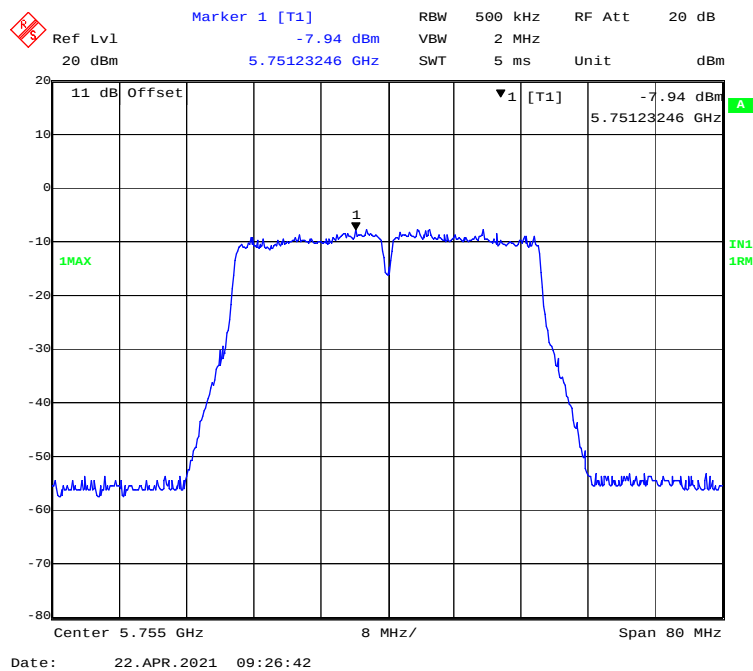
802.11n-HT20 mode, Power spectral density-5745MHz**802.11n-HT20 mode, Power spectral density-5785MHz**

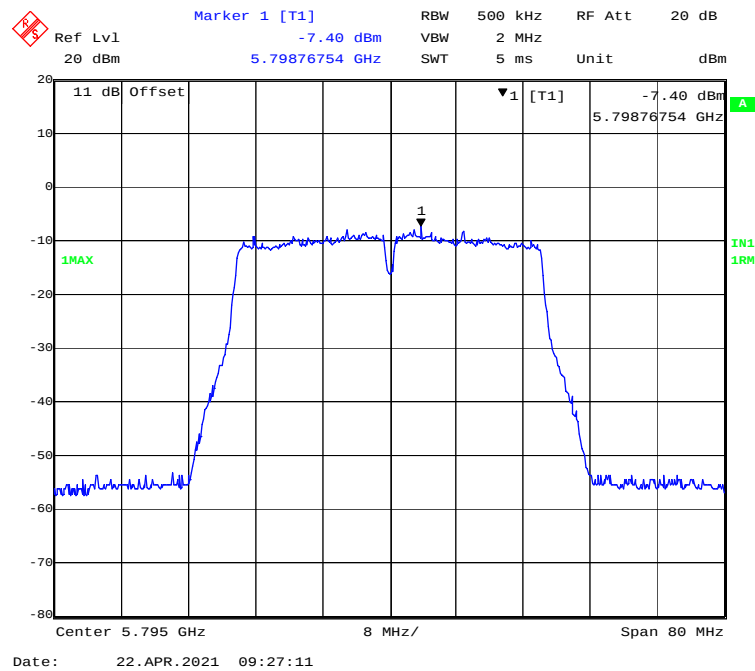
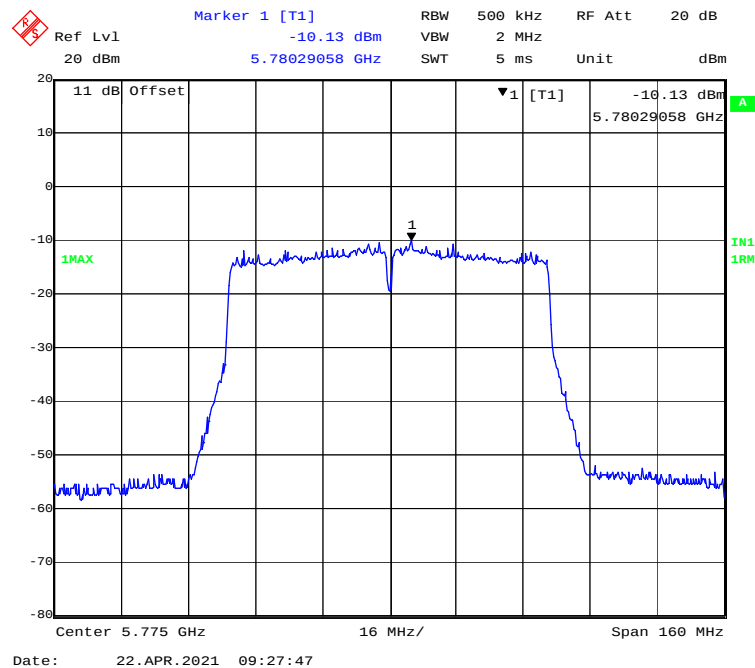
802.11n-HT20 mode, Power spectral density-5825MHz**802.11ac40 mode, Power spectral density-5755MHz**

802.11 ac40 mode, Power spectral density-5795MHz



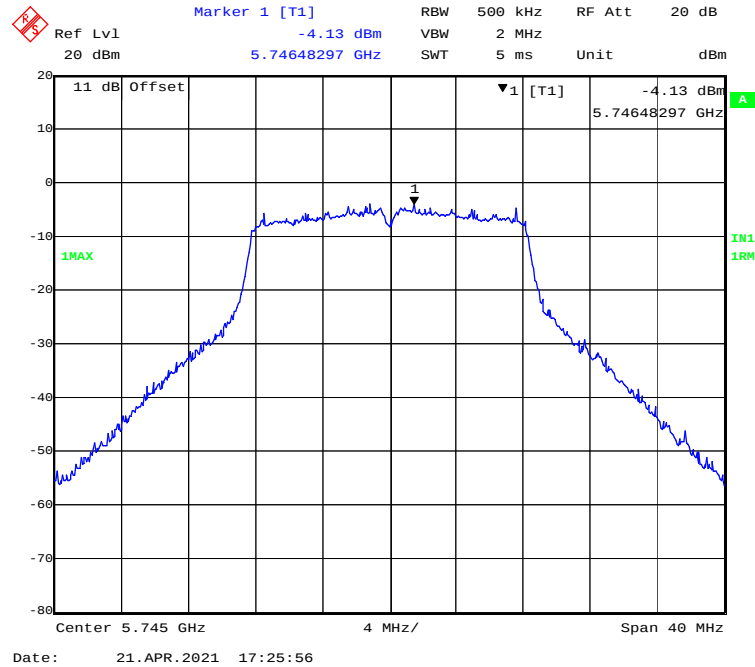
802.11n-HT40 mode, Power spectral density-5755MHz



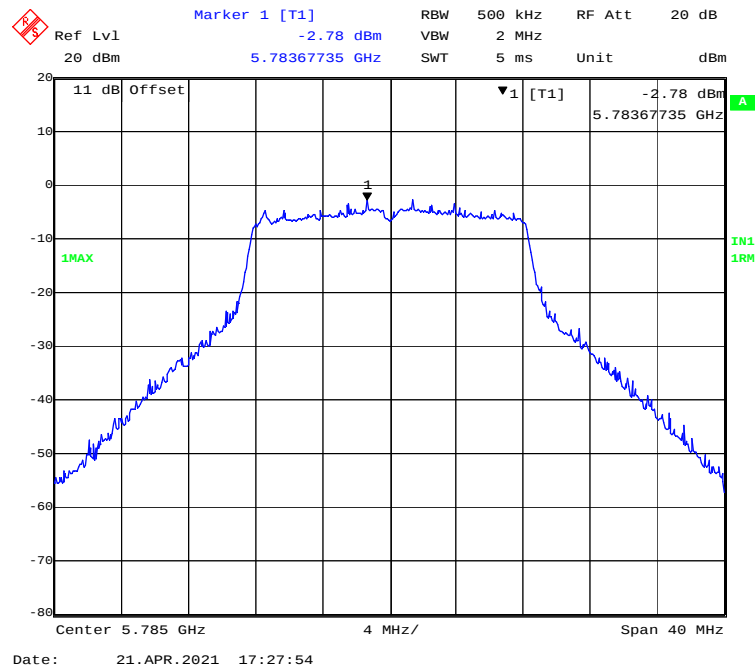
802.11n-HT40 mode, Power spectral density-5795MHz**802.11 ac80 mode, Power spectral density-5775MHz**

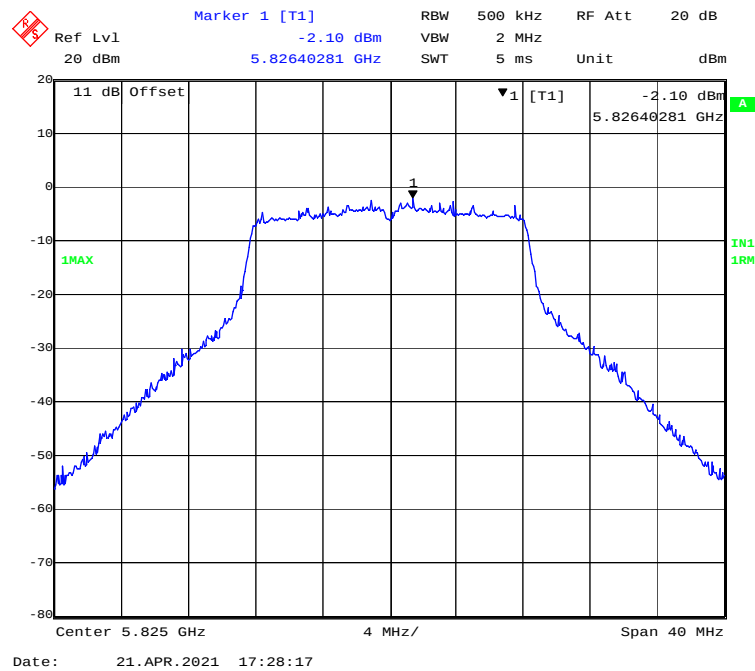
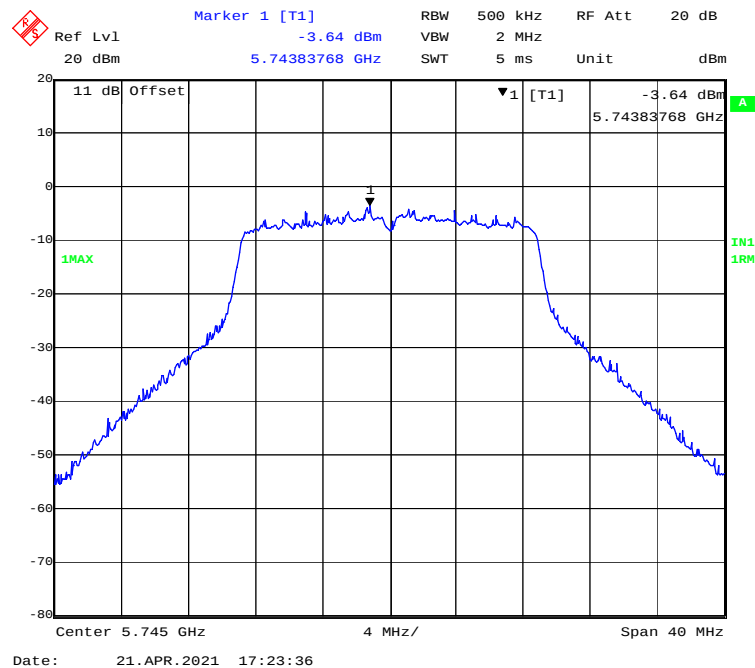
Chain 1:

802.11a mode, Power spectral density-5745MHz

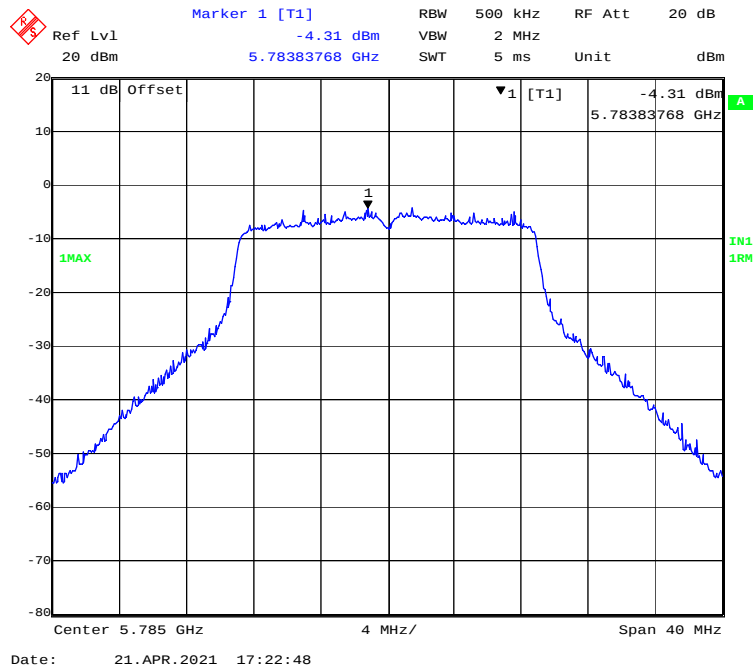


802.11a mode, Power spectral density-5785MHz

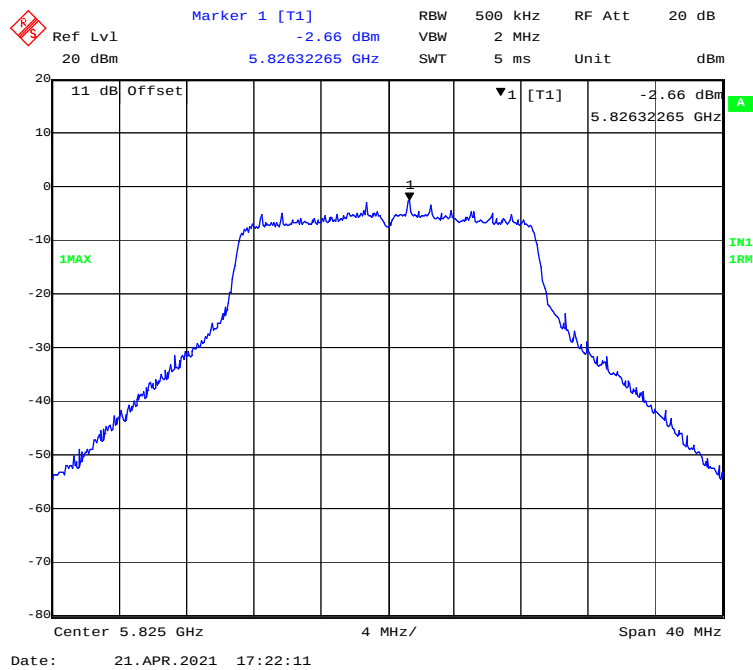


802.11a mode, Power spectral density-5825MHz**802.11ac20 mode, Power spectral density-5745MHz**

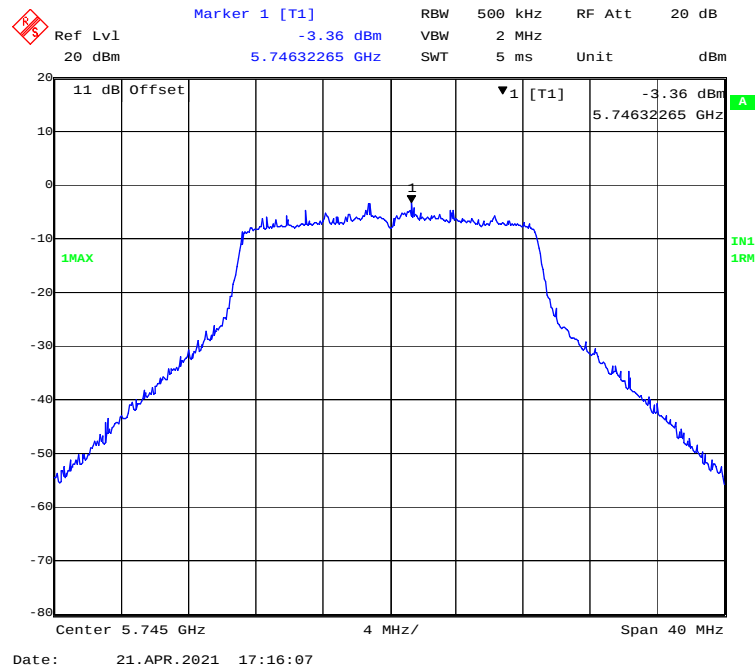
802.11 ac20 mode, Power spectral density-5785MHz



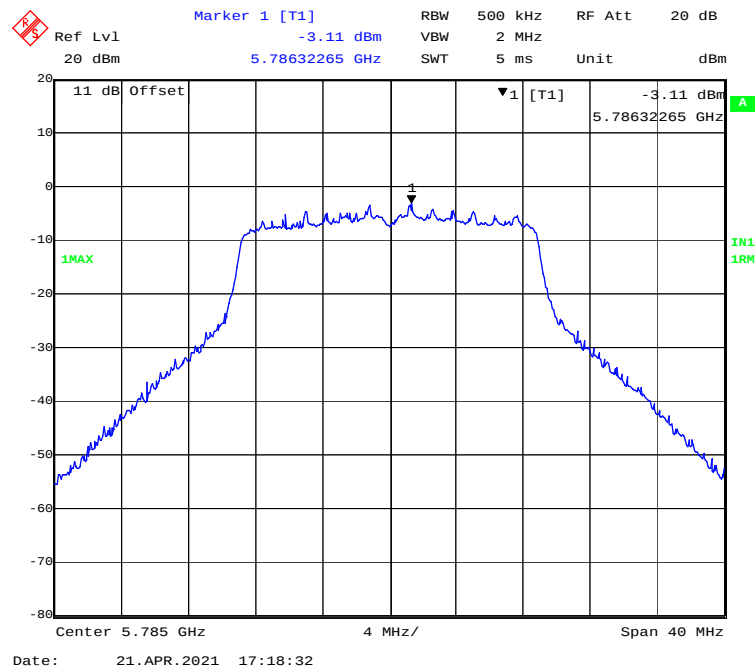
802.11 ac20 mode, Power spectral density-5825MHz



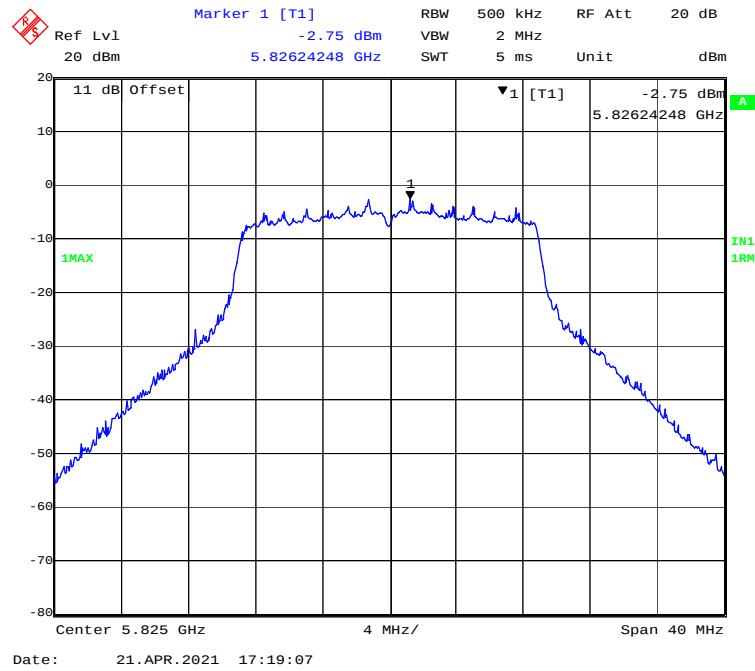
802.11n-HT20 mode, Power spectral density-5745MHz



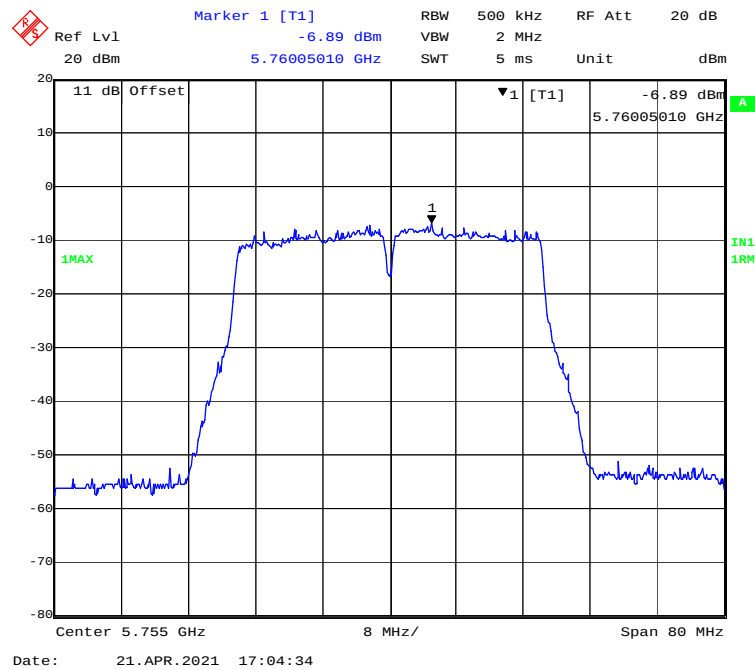
802.11n-HT20 mode, Power spectral density-5785MHz

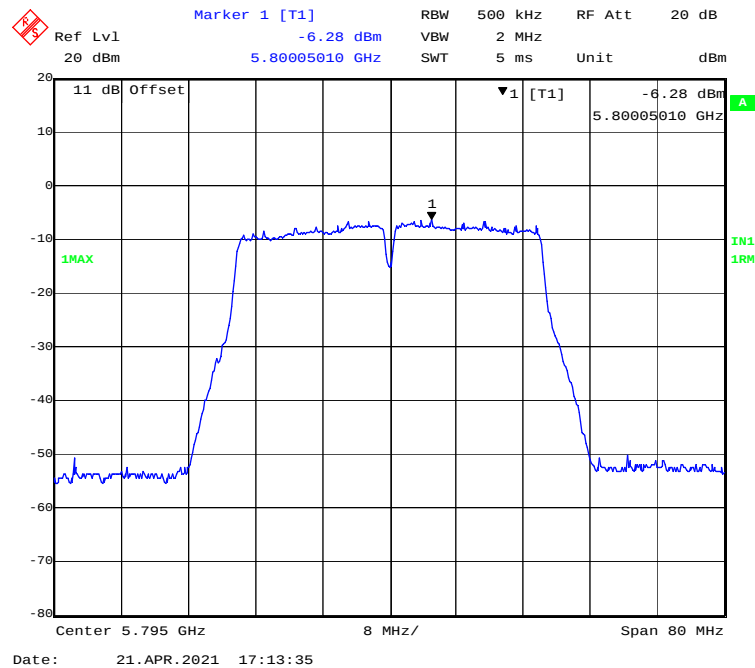
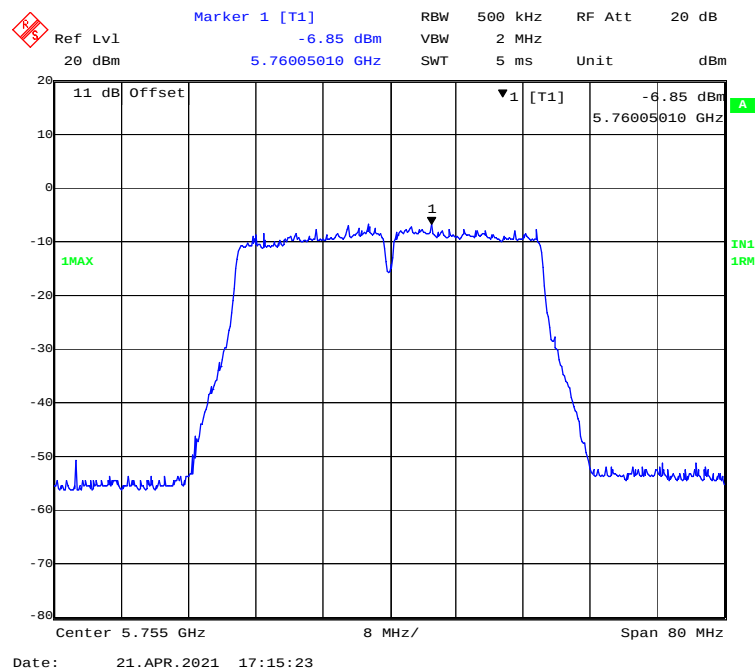


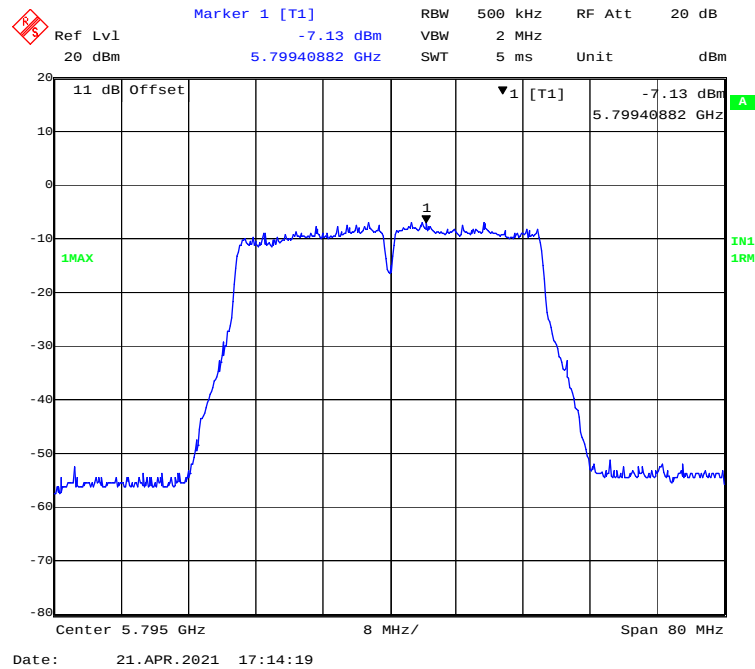
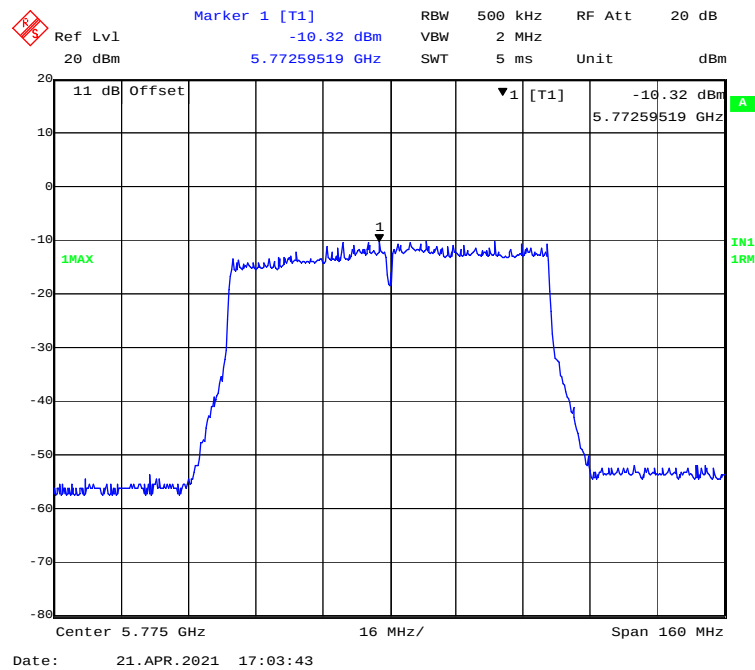
802.11n-HT20 mode, Power spectral density-5825MHz



802.11ac40 mode, Power spectral density-5755MHz



802.11 ac40 mode, Power spectral density-5795MHz**802.11n-HT40 mode, Power spectral density-5755MHz**

802.11n-HT40 mode, Power spectral density-5795MHz**802.11 ac80 mode, Power spectral density-5775MHz**

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.

5: This report cannot be reproduced except in full, without prior written approval of the Company.

6: This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

******* END OF REPORT *******