TESTING LABORATORY
CERTIFICATE#4323.01

FCC PART 15.407

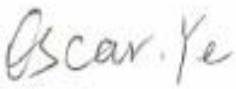
TEST REPORT

For

Communication Networks LLC

3 Corporate Drive, Danbury, Connecticut, 06810, United States

FCC ID: 2ANZ6NW1

Report Type: Original Report	**Product Type:** Wireless AP	
Test Engineer:	Jack Jiao	
Report Number:	RKSA200911001-00A	
Report Date:	2020-11-04	
Reviewed By:	Oscar Ye EMC Manager	
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Kunshan) No.248 Chenghu Road,Kunshan,Jiangsu province,China Tel: +86-0512-86175000 Fax: +86-0512-88934268 www.baclcorp.com.cn	

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant	Communication Networks LLC
Tested Model:	NW1
Series Model:	NW9, NW1/M
Product Type	Wireless AP
Power Supply	DC 48V
RF Function	5G Wi-Fi
Operating Band/Frequency:	Band 1:5150~5250 MHz, Band 4: 5725~5850 MHz
Channel Number:	Band 1: 7, Band 4: 8
Channel Separation:	802.11a/802.11ac20/n20: 20MHz; 802.11n40/802.11ac40:40 MHz, 802.11ac80: 80 MHz
Modulation Type	OFDM
Antenna Type:	Directional Antenna
*Maximum Antenna Gain:	NW1: 19.0 dBi; NW9: 18.0 dBi; NW1/M: 16.0 dBi

Note: The antenna gain was provided by the applicant.

Note: The difference between tested model and series model was explained in the attached declaration letter. And We choose NW1 for full test, which the antenna gain is the largest and NW9 ,NW1/M for AC Power Line Conducted Emissions and radiated emission below 1GHz test.

**All measurement and test data in this report was gathered from production sample serial number: 20200911001. (Assigned by the BACL. The EUT supplied by the applicant was received on 2020-09-11)*

Objective

This type approval report is prepared on behalf of *Communication Networks LLC* 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)

No Related Submittal(s)

Test Methodology

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

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

Measurement Uncertainty

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

Test Facility

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

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

SYSTEM TEST CONFIGURATION

Description of Test Configuration

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

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: QRCT

The worst case was performed under:

5150MHz-5250MHz Band:

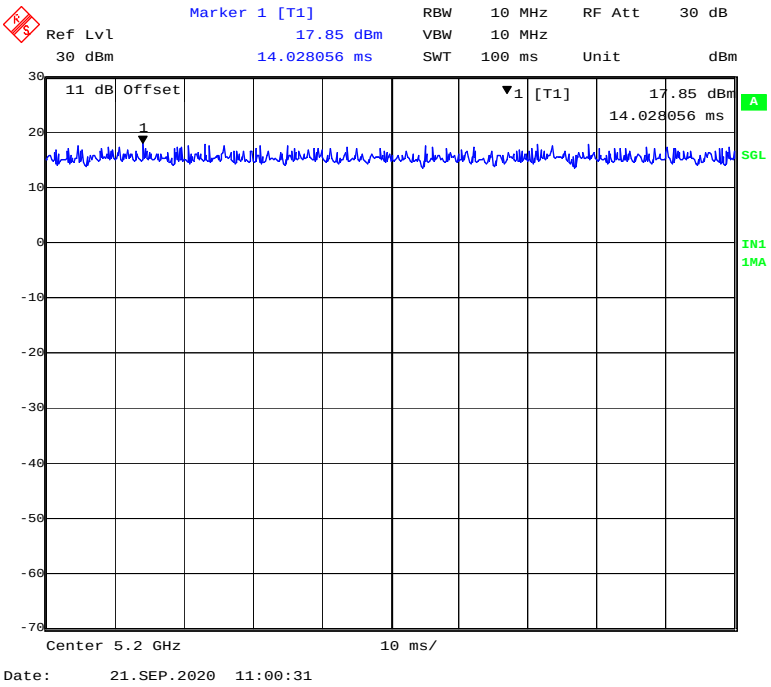
Mode	Data rate	Channel	Power Setting	
			Chain 0	Chain 1
802.11a	6 Mbps	5180	10	10
		5200		
		5240		
802.11ac20	MCS0	5180	10	10
		5200		
		5240		
802.11n-HT20	MCS0	5180	10	10
		5200		
		5240		
802.11ac40	MCS0	5190	10	10
		5230		
802.11n-HT40	MCS0	5190	10	10
		5230		
802.11ac80	MCS0	5210	10	10

5725MHz-5850MHz Band:

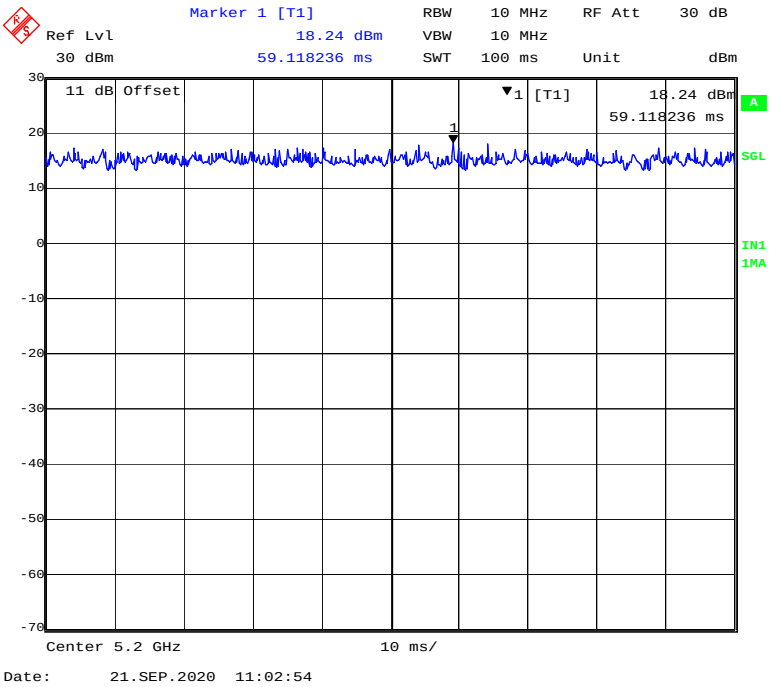
Mode	Data rate	Channel	Power Setting	
			Chain 0	Chain 1
802.11a	6 Mbps	5745	10	10
		5785		
		5825		
802.11ac20	MCS0	5745	10	10
		5785		
		5825		
802.11n-HT20	MCS0	5745	10	10
		5785		
		5825		
802.11ac40	MCS0	5755	10	10
		5795		
802.11n-HT40	MCS0	5755	10	10
		5795		
802.11ac80	MCS0	5775	10	10

Duty Cycle
5150MHz-5250MHz Band-Chain0:

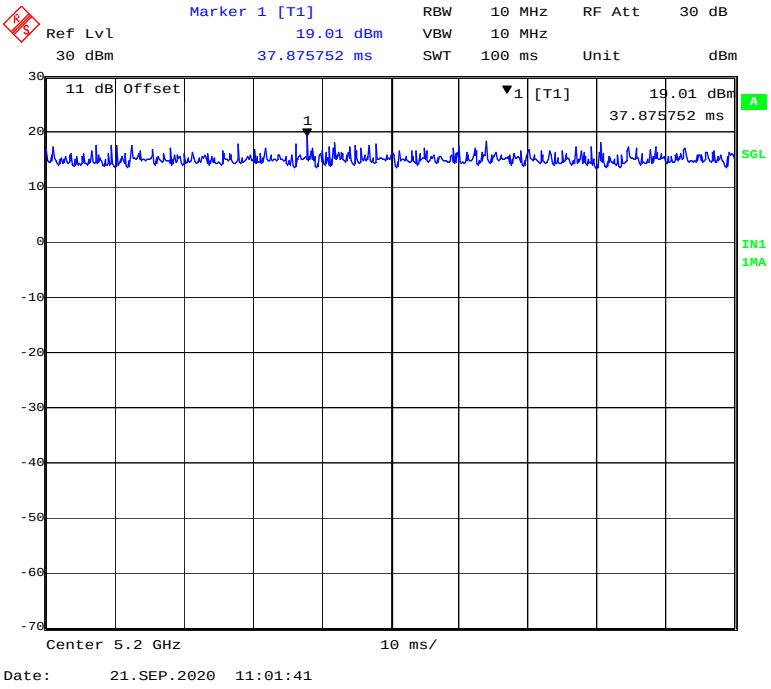
802.11a mode



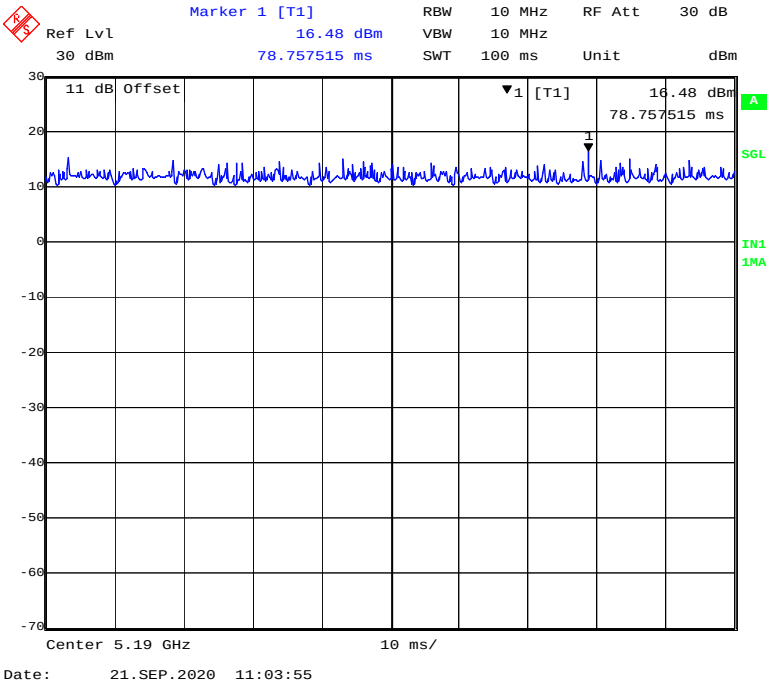
802.11ac20 mode



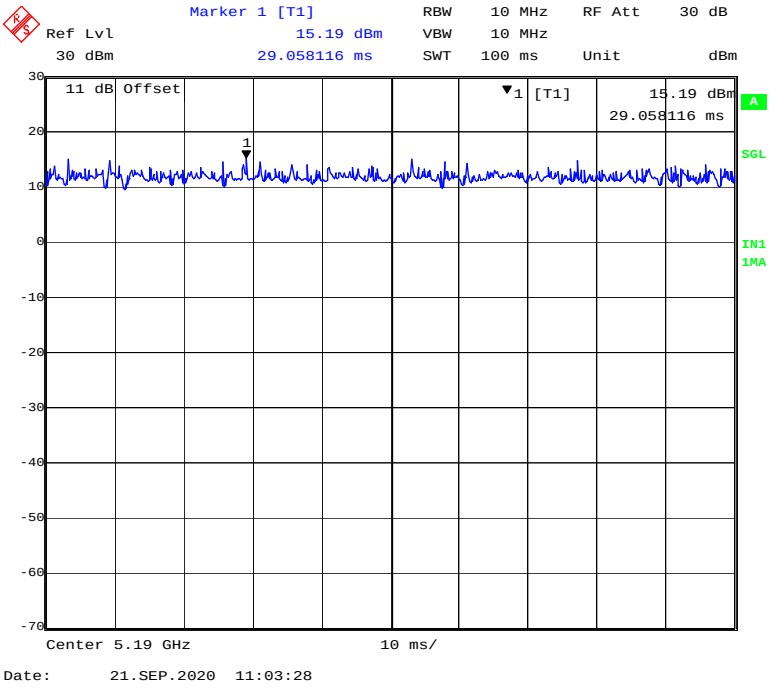
802.11n-HT20 mode



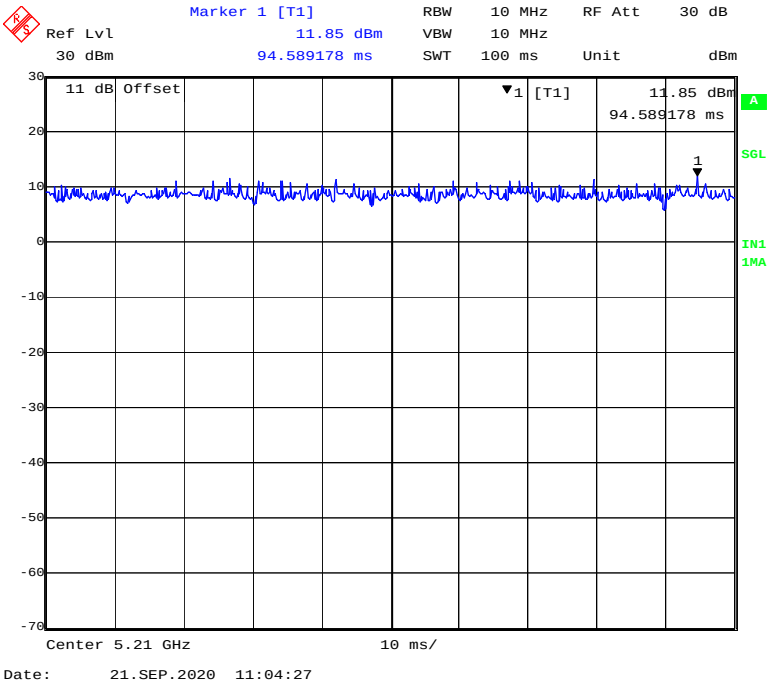
802.11 ac40 mode



802.11n-HT40 mode

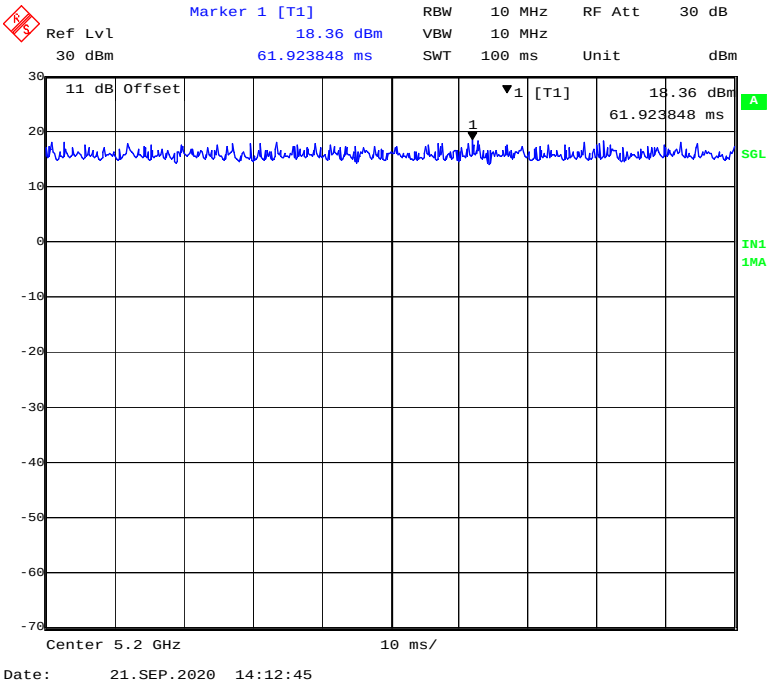


802.11 ac80 mode

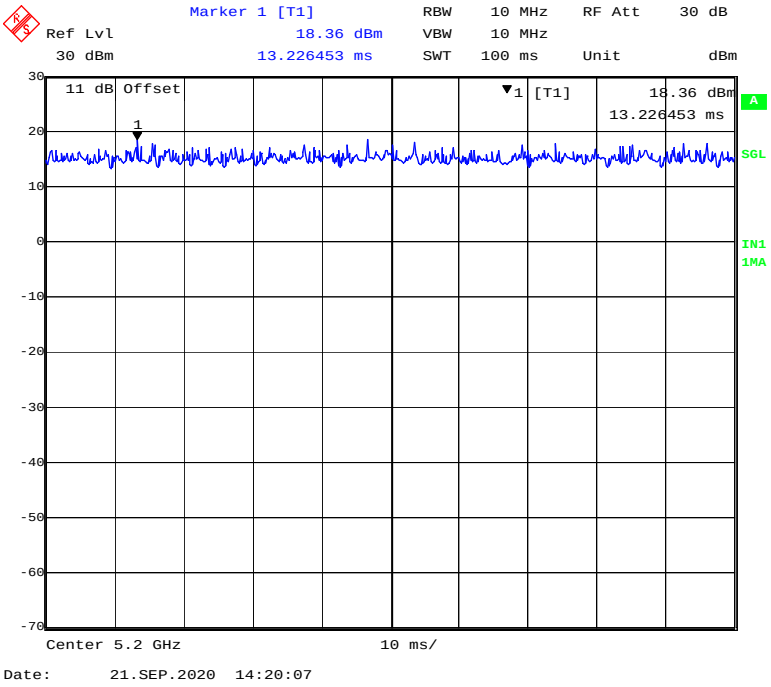


5150MHz-5250MHz Band-Chain1:

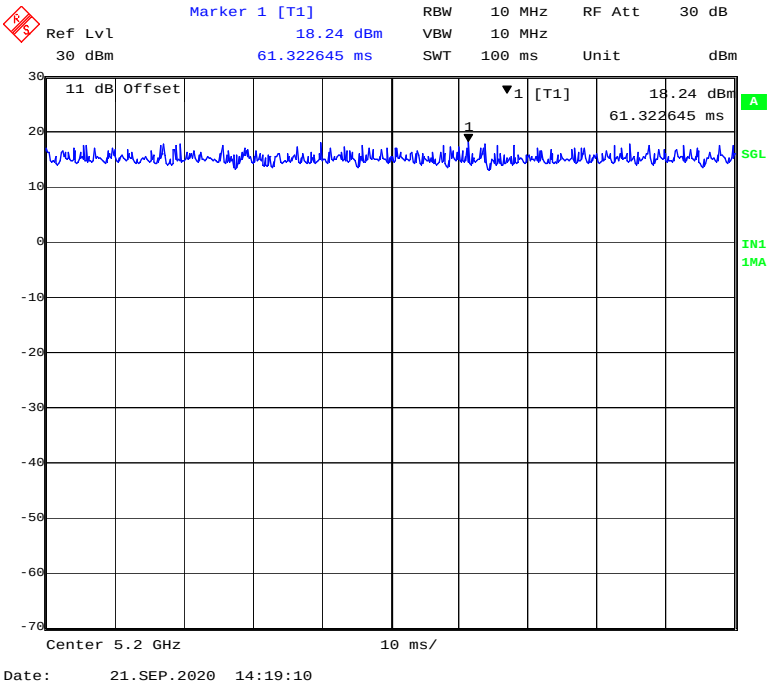
802.11a mode



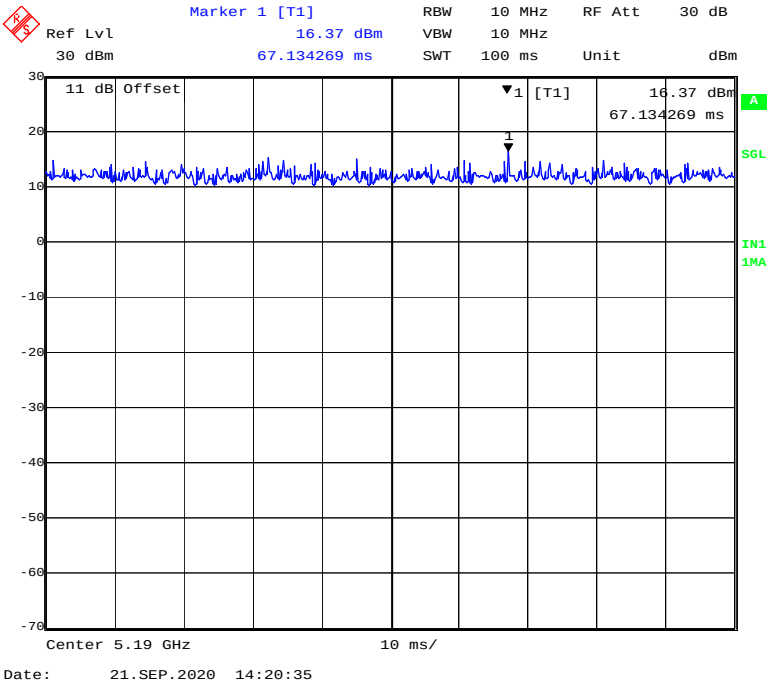
802.11ac20 mode



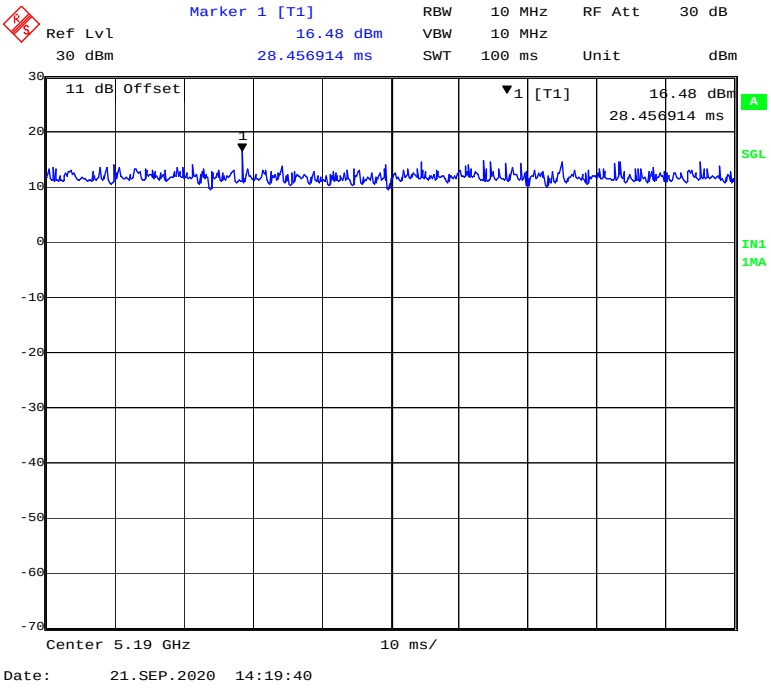
802.11n-HT20 mode



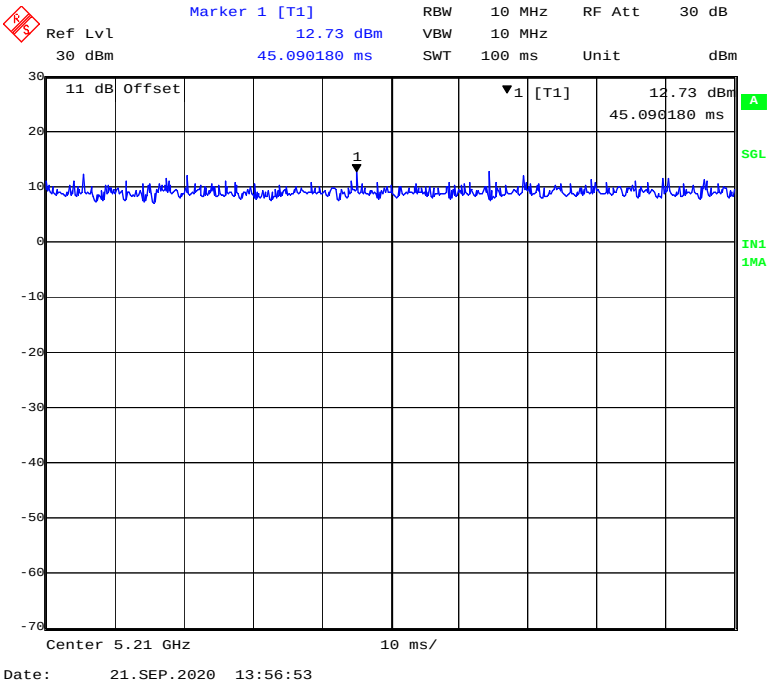
802.11 ac40 mode



802.11n-HT40 mode

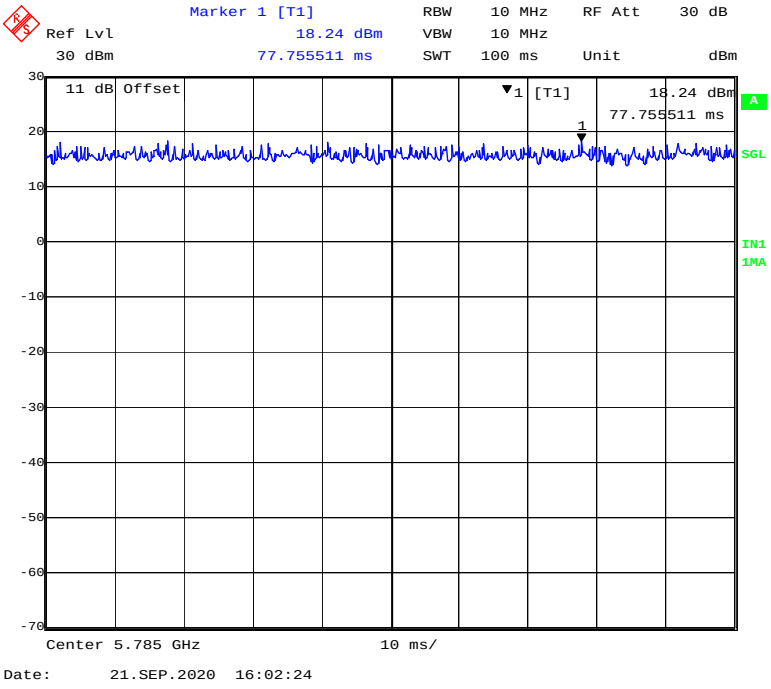


802.11 ac80 mode

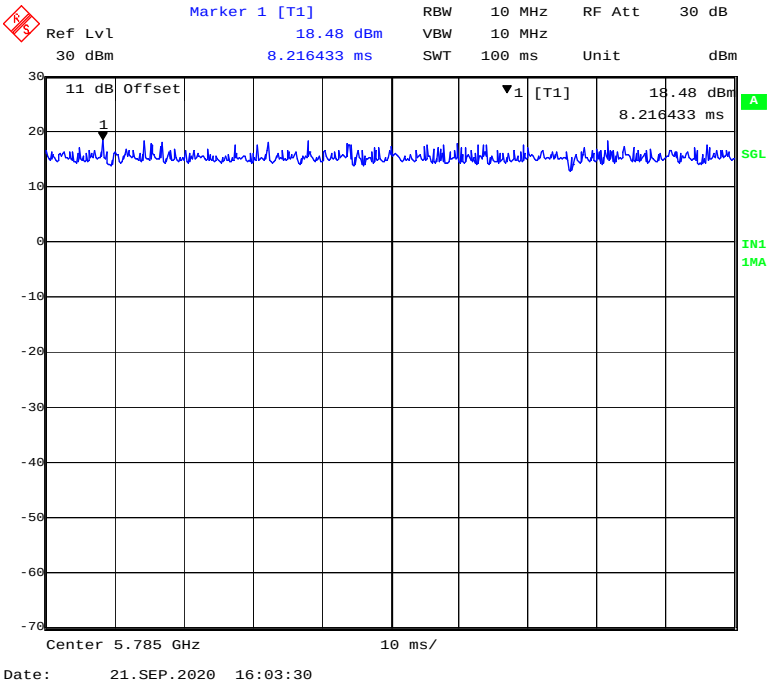


5725MHz-5850MHz Band-Chain0:

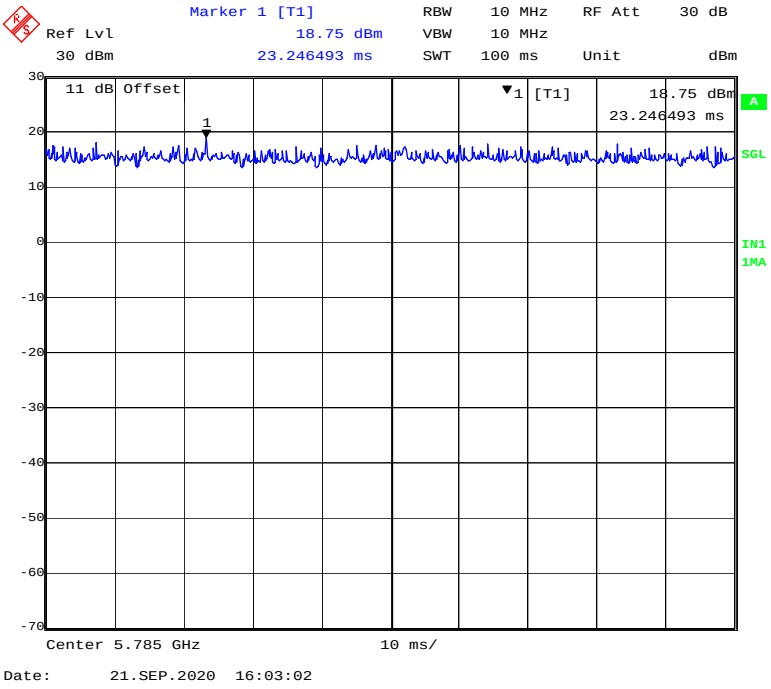
802.11a mode



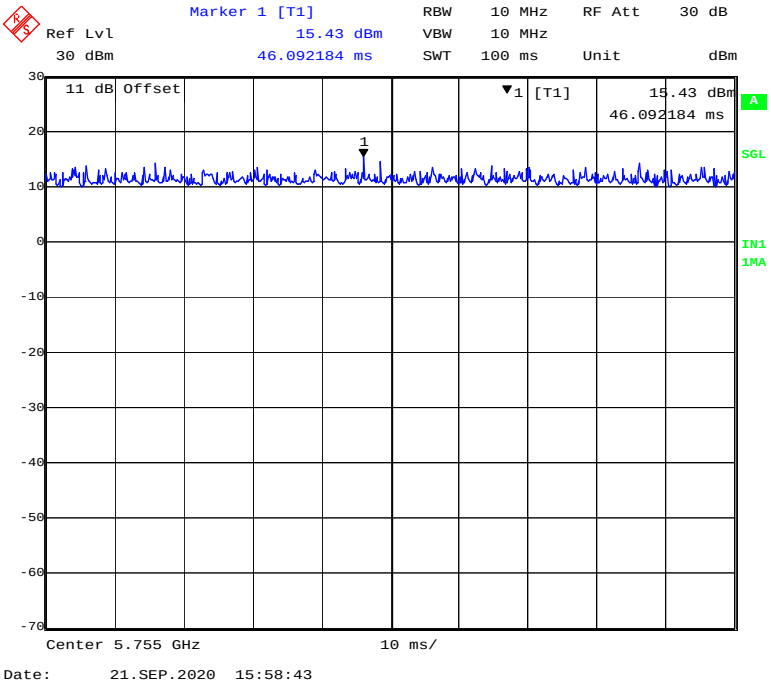
802.11ac20 mode



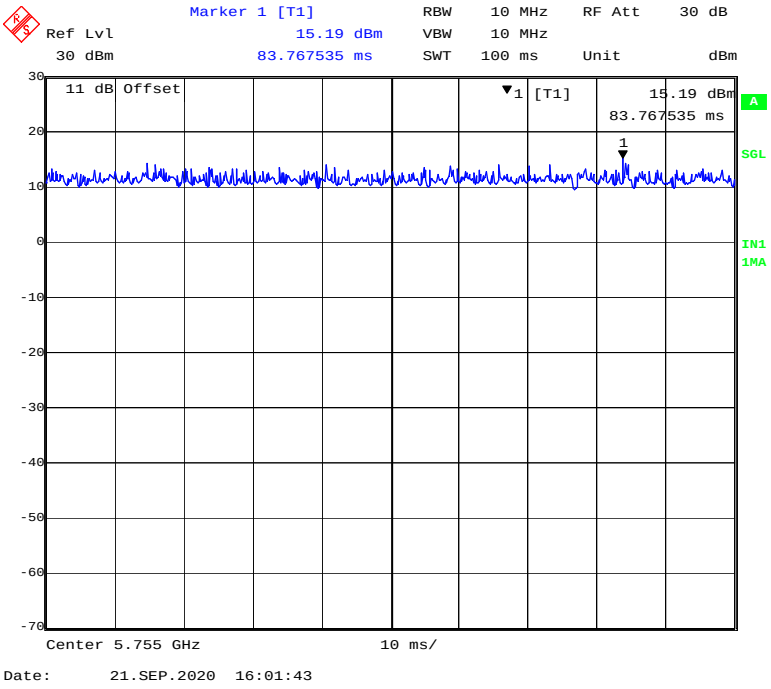
802.11n-HT20 mode



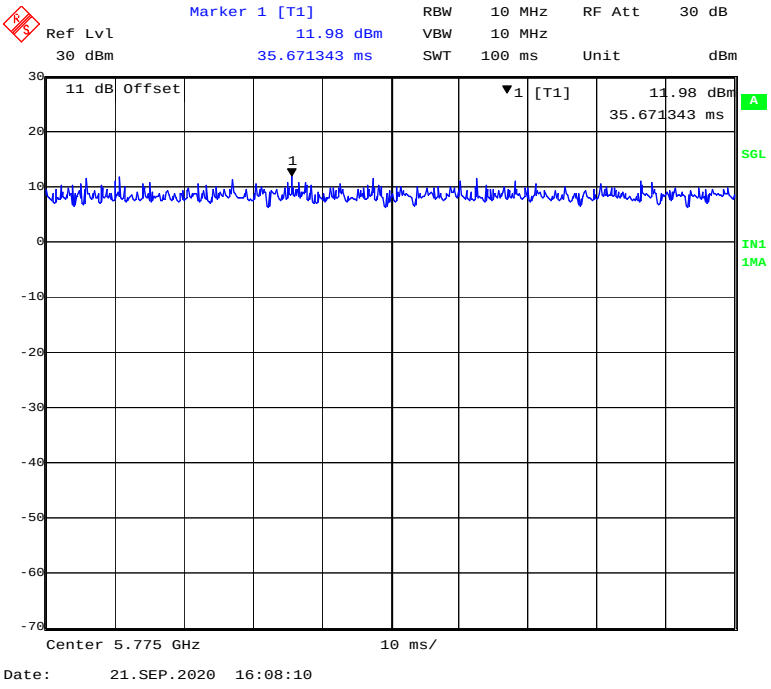
802.11 ac40 mode



802.11n-HT40 mode

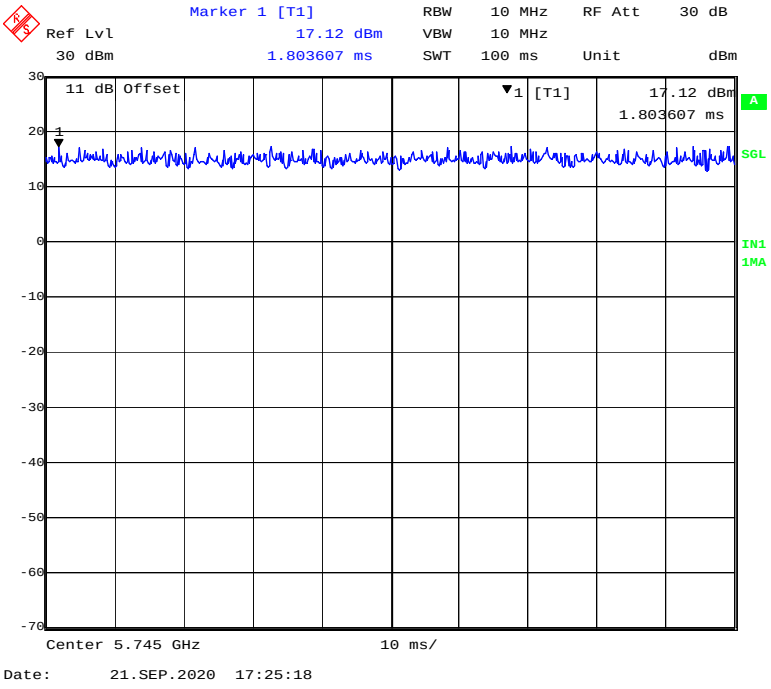


802.11n- ac80 mode

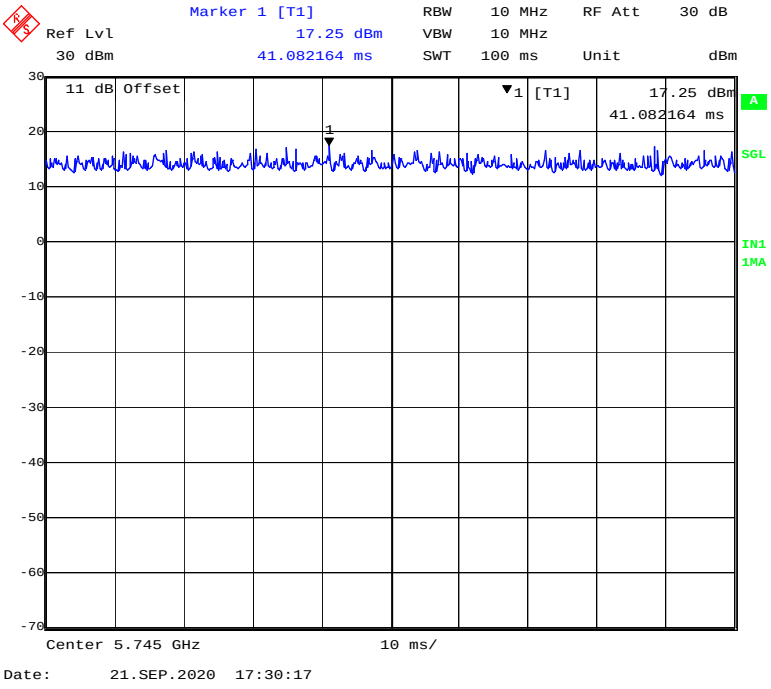


5725MHz-5850MHz Band-Chain1:

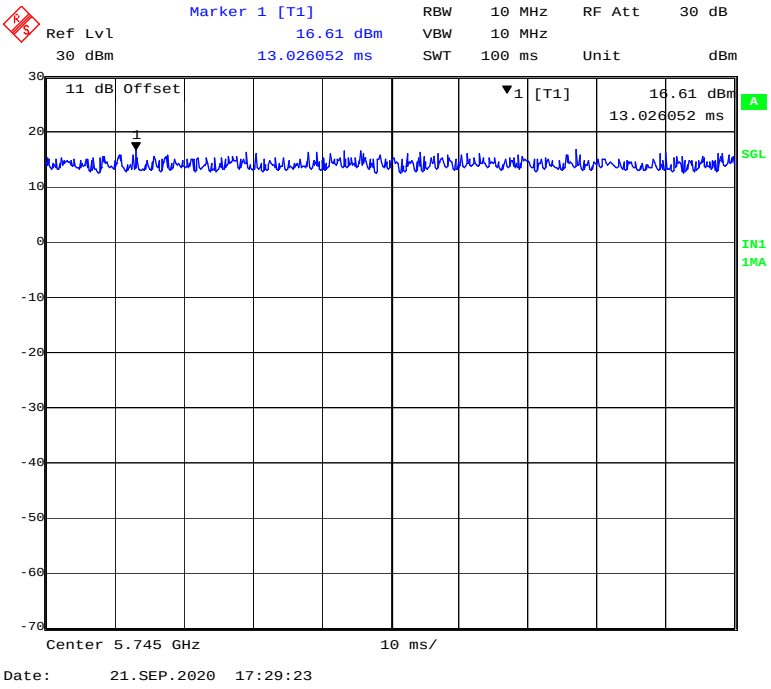
802.11a mode



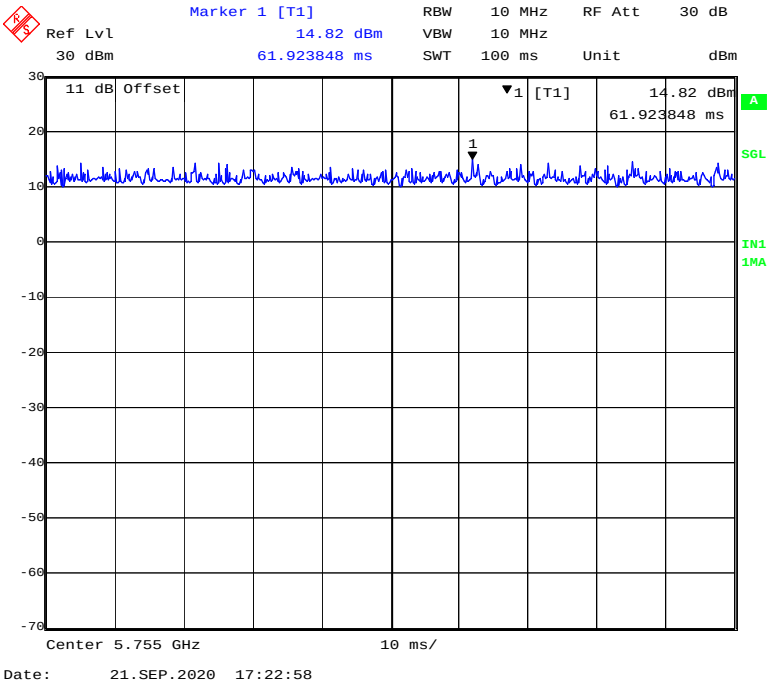
802.11ac20 mode



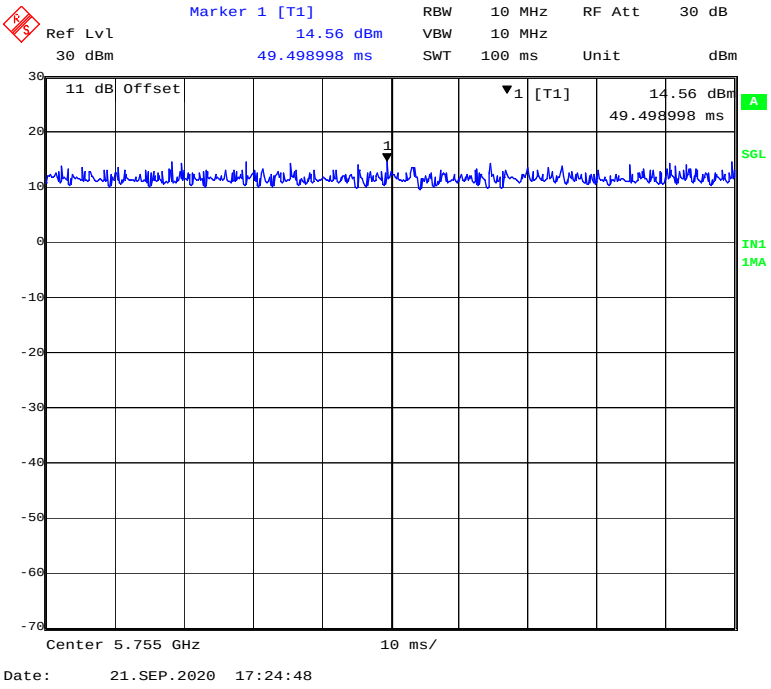
802.11n-HT20 mode



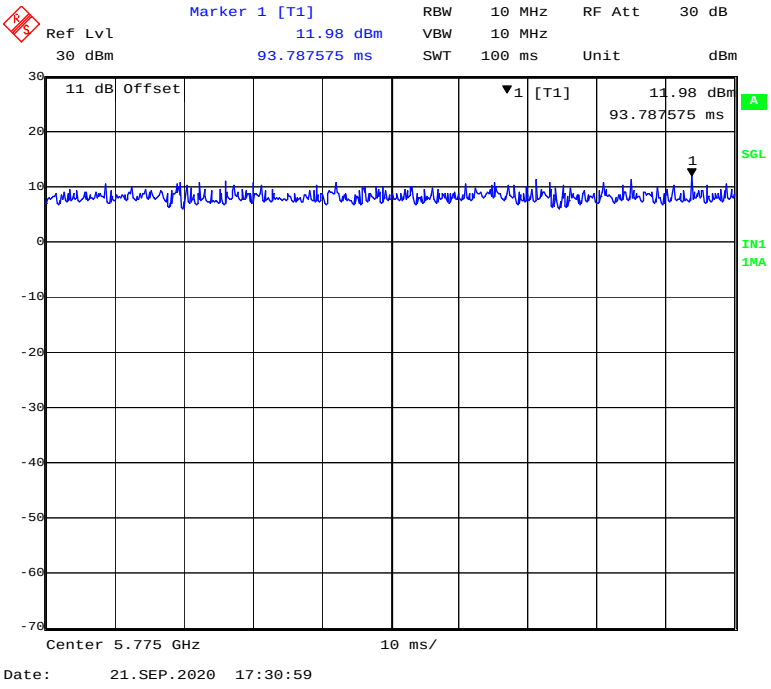
802.11 ac40 mode



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

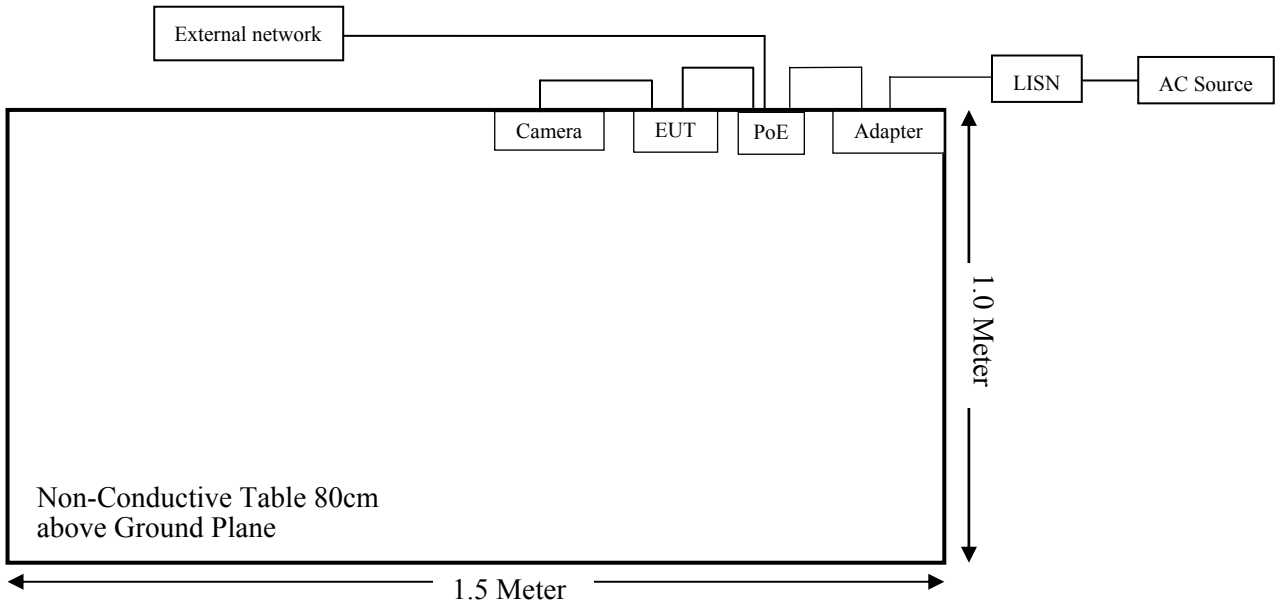
Manufacturer	Description	Model	Serial Number
NETGEAR	Adapter	332-10771-01	/
JDVISIDN	Camera	/	/
NETGEAR	POE	GS308P	/

External I/O Cable

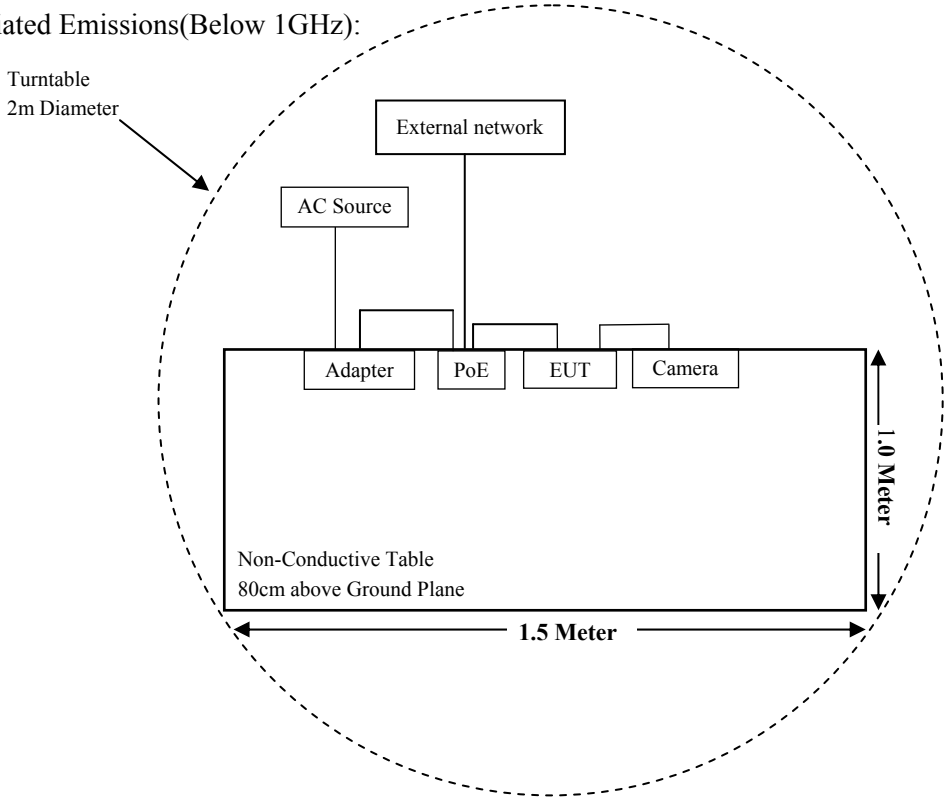
Cable Description	Length (m)	From Port	To
RJ45 Cable	1.5	EUT	Camera
RJ45 Cable	0.8	EUT	PoE
Power Cable	1.0	PoE	Adapter
Power Cable	1.0	Power Cable	LISN/AC Source

Block Diagram of Test Setup

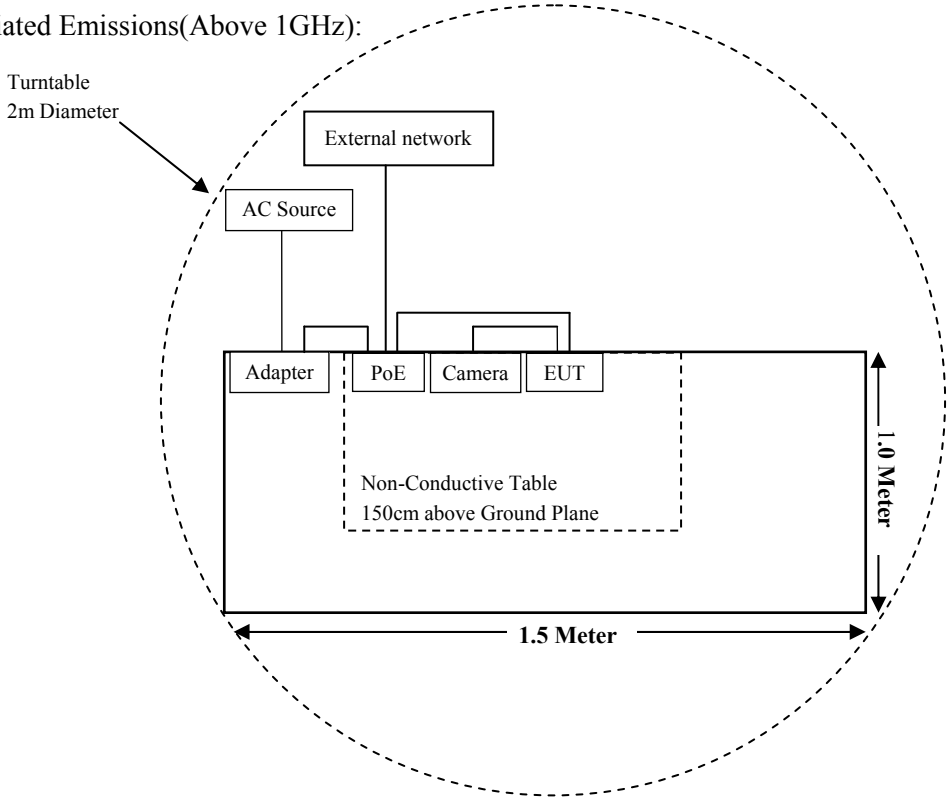
For Conducted Emissions:



For Radiated Emissions(Below 1GHz):



For Radiated Emissions(Above 1GHz):



SUMMARY OF TEST RESULTS

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

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test（Chamber 1#）					
Rohde & Schwarz	EMI Test Receiver	ESCI	100195	2019-12-14	2020-12-13
Sunol Sciences	Broadband Antenna	JB3	A090413-1	2017-12-26	2020-12-25
Sonoma Instrunent	Pre-amplifier	310N	171205	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	2020-04-01	2021-03-31
ETS-LINDGREN	Horn Antenna	3115	9207-3900	2020-07-15	2023-07-14
ETS-LINDGREN	Horn Antenna	3116	00084159	2019-12-12	2022-12-11
A.H.Systems, inc	Amplifier	PAM-0118P	512	2020-02-20	2021-02-19
SELECTOR	Amplifier	EM18G40G	060726	2020-03-22	2021-03-21
MICRO-TRONICS	Band Reject Filter	BRC50703	G094	2020-08-05	2021-08-04
MICRO-TRONICS	Band Reject Filter	BRC50705	G085	2020-08-05	2021-08-04
Rohde & Schwarz	Auto test Software	EMC32	100361	/	/
MICRO-COAX	Coaxial Cable	Cable-6	006	2019-12-12	2020-12-11
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	2019-12-14	2020-12-13
Agilent	Power Meter	N1912A	MY5000492	2019-11-18	2020-11-17
Agilent	Power Sensor	N1921A	MY54210024	2019-11-18	2020-11-17
Narda	Attenuator	10dB	010	2020-08-15	2021-08-14
Communication Networks LLC	RF Cable	Communication Networks LLC C01	C01	Each Time	N/A
Conducted Emission Test					
ROHDE&SCHWARZ	EMI Test receiver	ESR	1316.3003K03-101746-zn	2020-08-05	2021-08-04
Rohde & Schwarz	LISN	ENV216	101115	2019-12-14	2020-12-13
Audix	Test Software	e3	V9	---	---
Rohde & Schwarz	Pulse limiter	ESH3-Z2	100552	2020-03-01	2021-02-28
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).

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

Applicable Standard

According to subpart 15.247(i) and subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

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

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

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary:

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

Calculated Data:

5G Wi-Fi(worst case):

Mode	Frequency Range (MHz)	Antenna Gain		Tune-up Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
		(dBi)	(numeric)	(dBm)	(mW)			
802.11a	5150~5250	19.0	79.43	17.00	50.12	20	07919	1.0
	5725~5850	19.0	79.43	17.00	50.12	20	0.7919	1.0
802.11ac20	5150~5250	19.0	79.43	14.00	25.12	20	0.3969	1.0
	5725~5850	19.0	79.43	14.00	25.12	20	0.3969	1.0
802.11n20	5150~5250	19.0	79.43	14.00	25.12	20	0.3969	1.0
	5725~5850	19.0	79.43	14.00	25.12	20	0.3969	1.0
802.11ac40	5150~5250	19.0	79.43	14.00	25.12	20	0.3969	1.0
	5725~5850	19.0	79.43	14.00	25.12	20	0.3969	1.0
802.11n40	5150~5250	19.0	79.43	14.00	25.12	20	0.3969	1.0
	5725~5850	19.0	79.43	14.00	25.12	20	0.3969	1.0
802.11ac80	5150~5250	19.0	79.43	14.00	25.12	20	0.3969	1.0
	5725~5850	19.0	79.43	13.50	22.39	20	0.3538	1.0

Note: For the above tune up power were declared by the manufacturer.

Conclusion: The device meets MPE at distance 20cm.

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

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

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

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

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

Antenna Connector Construction

The EUT has a directional antenna for 5G Wi-Fi which was permanently attached, fulfill the requirement of this section. Please refer to the EUT photos.

Model	Antenna Type	Model number	manufacturer	Max. Antenna Gain
NW1	Directional Antenna	PRA5019DP-COMNET	ITELITE	19.0 dBi
NW9	Directional Antenna	TDJ-5158BKR×2-C	ITELITE	18.0 dBi
NW1/M	Directional Antenna	MRA5016DP	ITELITE	16.0 dBi

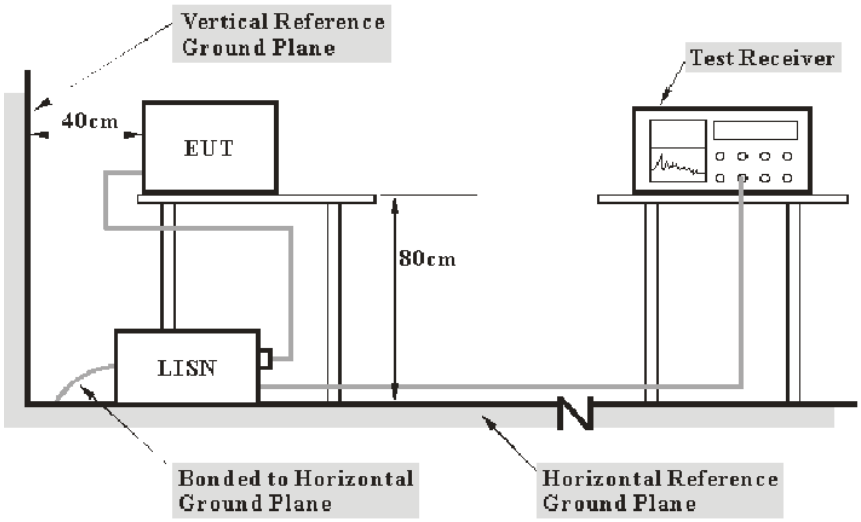
Result: Compliant.

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 first LISN and the other support equipments were connected to the outlet of the second LISN.

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

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

Corrected Factor & Over Limit Calculation

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

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

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

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

Test Results Summary

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

Test Data

Environmental Conditions

Temperature:	25.4 ℃
Relative Humidity:	51 %
ATM Pressure:	101.3 kPa

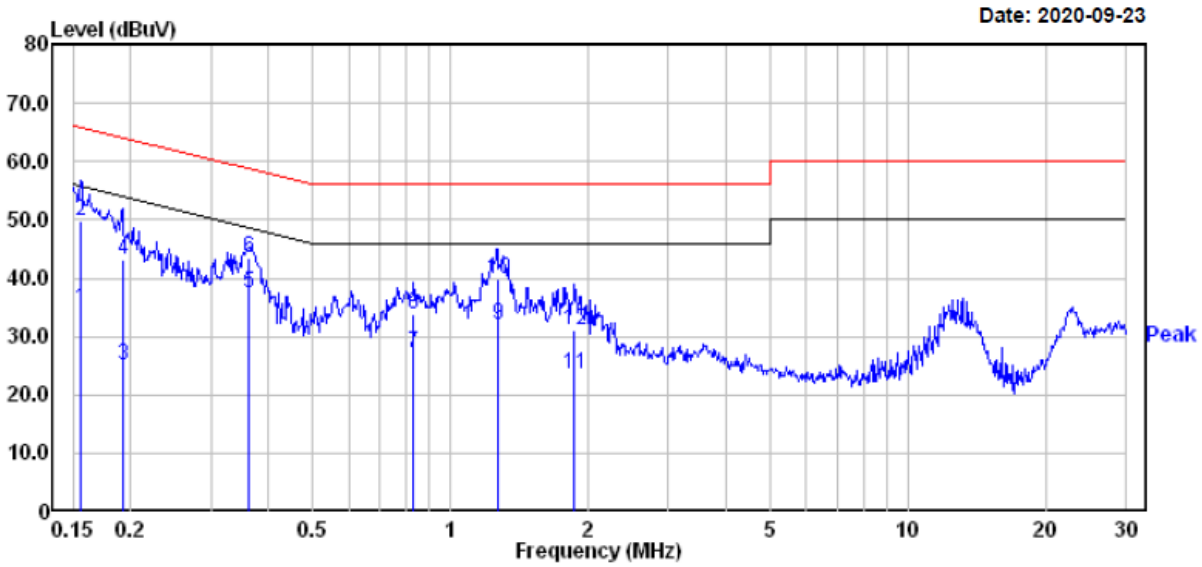
The testing was performed by Jack Jiao from 2020-09-23 to 2020-09-27.

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

Note: Both 5150~5250MHz and 5725-5850MHz packet data have been tested, the worst 5150~5250MHz were recorded in this report.

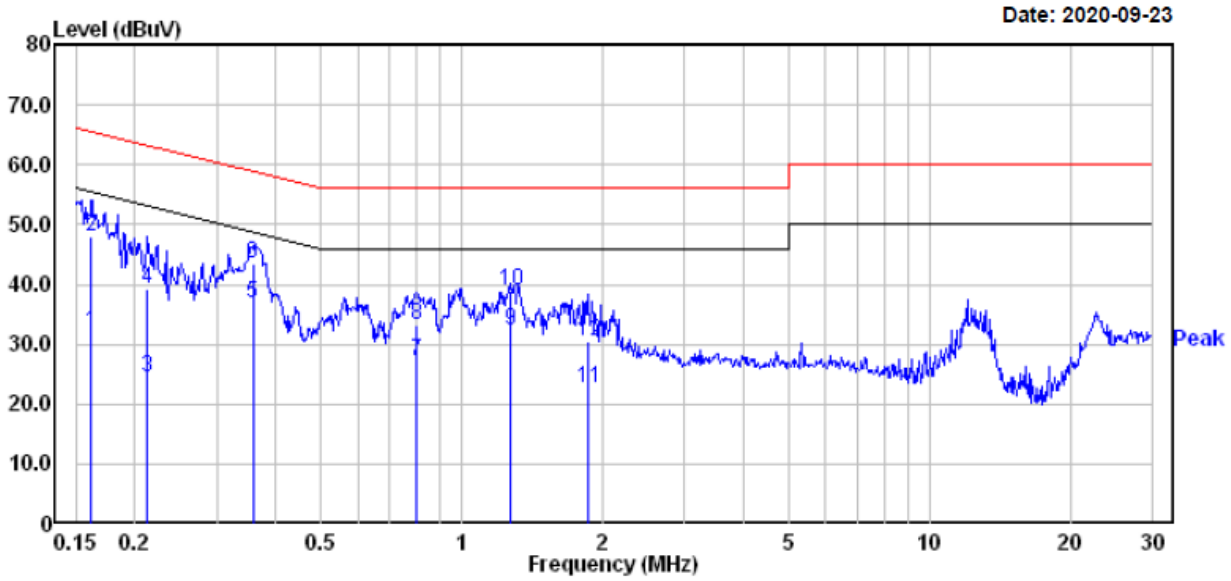
Model: NW1

AC 120V/60 Hz, Line



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.156	15.00	19.68	34.68	55.69	-21.01	Average
2	0.156	30.00	19.68	49.68	65.69	-16.01	QP
3	0.192	5.40	19.67	25.07	53.93	-28.86	Average
4	0.192	23.50	19.67	43.17	63.93	-20.76	QP
5	0.363	17.90	19.66	37.56	48.65	-11.09	Average
6	0.363	23.90	19.66	43.56	58.65	-15.09	QP
7	0.830	7.50	19.68	27.18	46.00	-18.82	Average
8	0.830	14.10	19.68	33.78	56.00	-22.22	QP
9	1.269	12.30	19.72	32.02	46.00	-13.98	Average
10	1.269	20.20	19.72	39.92	56.00	-16.08	QP
11	1.868	3.69	19.76	23.45	46.00	-22.55	Average
12	1.868	11.19	19.76	30.95	56.00	-25.05	QP

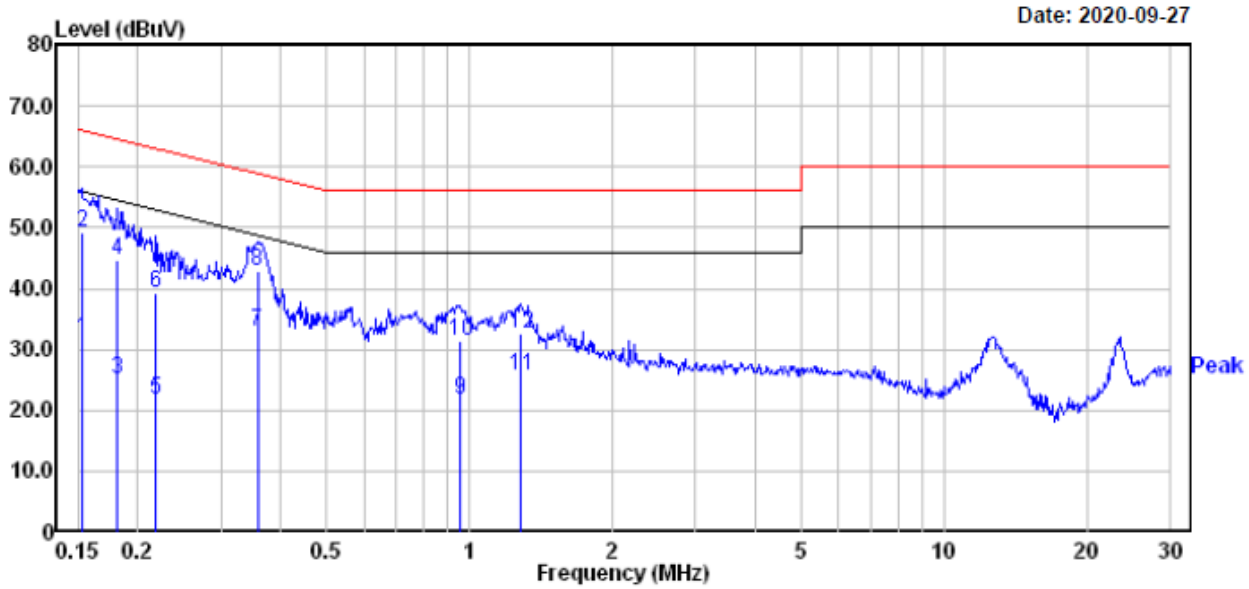
AC 120V/60 Hz, Neutral



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.162	12.30	19.68	31.98	55.38	-23.40	Average
2	0.162	28.20	19.68	47.88	65.38	-17.50	QP
3	0.213	4.80	19.65	24.45	53.10	-28.65	Average
4	0.213	19.70	19.65	39.35	63.10	-23.75	QP
5	0.358	17.30	19.66	36.96	48.78	-11.82	Average
6	0.358	23.90	19.66	43.56	58.78	-15.22	QP
7	0.800	7.51	19.67	27.18	46.00	-18.82	Average
8	0.800	13.61	19.67	33.28	56.00	-22.72	QP
9	1.269	12.70	19.72	32.42	46.00	-13.58	Average
10	1.269	19.10	19.72	38.82	56.00	-17.18	QP
11	1.858	2.90	19.75	22.65	46.00	-23.35	Average
12	1.858	10.80	19.75	30.55	56.00	-25.45	QP

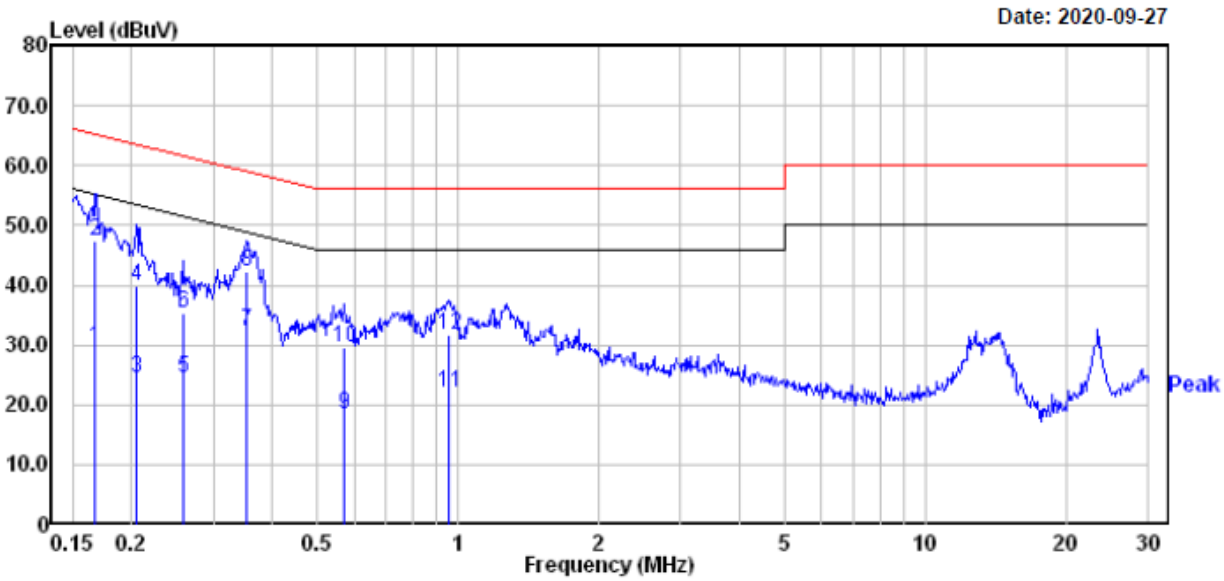
Model: NW9

AC 120V/60 Hz, Line



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.152	12.00	19.82	31.82	55.87	-24.05	Average
2	0.152	29.40	19.82	49.22	65.87	-16.65	QP
3	0.181	5.30	19.83	25.13	54.46	-29.33	Average
4	0.181	24.70	19.83	44.53	64.46	-19.93	QP
5	0.219	1.80	19.82	21.62	52.88	-31.26	Average
6	0.219	19.40	19.82	39.22	62.88	-23.66	QP
7	0.358	13.10	19.80	32.90	48.78	-15.88	Average
8	0.358	23.00	19.80	42.80	58.78	-15.98	QP
9	0.958	2.10	19.78	21.88	46.00	-24.12	Average
10	0.958	11.50	19.78	31.28	56.00	-24.72	QP
11	1.282	5.90	19.82	25.72	46.00	-20.28	Average
12	1.282	12.80	19.82	32.62	56.00	-23.38	QP

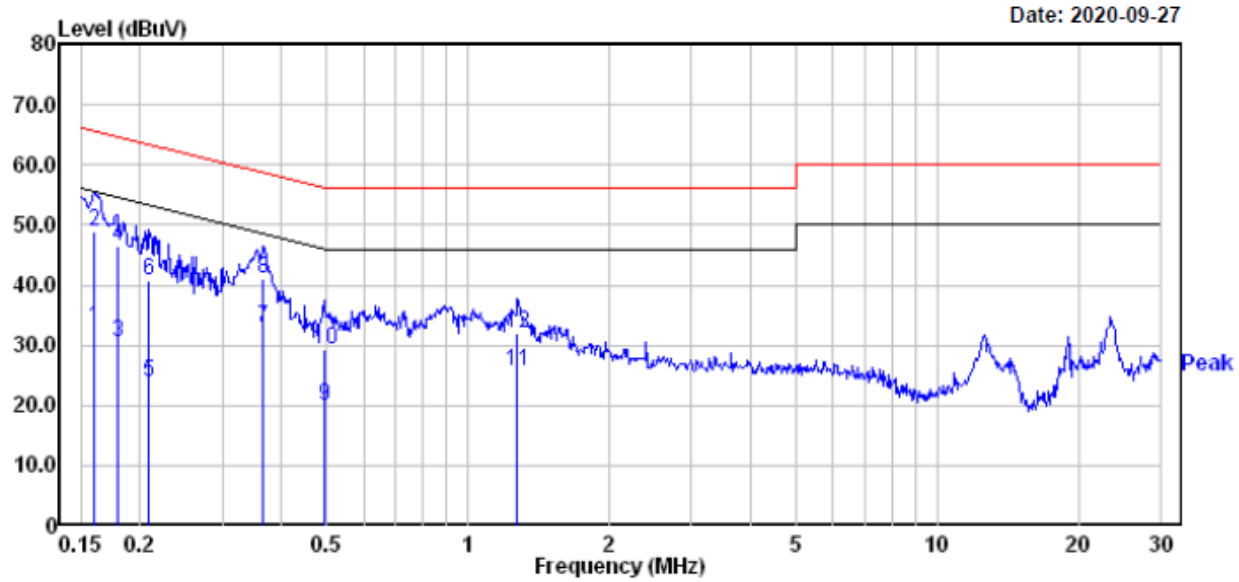
AC 120V/60 Hz, Neutral



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.168	9.70	19.83	29.53	55.08	-25.55	Average
2	0.168	27.50	19.83	47.33	65.08	-17.75	QP
3	0.205	4.60	19.82	24.42	53.40	-28.98	Average
4	0.205	20.10	19.82	39.92	63.40	-23.48	QP
5	0.258	4.60	19.82	24.42	51.51	-27.09	Average
6	0.258	15.60	19.82	35.42	61.51	-26.09	QP
7	0.354	12.40	19.80	32.20	48.87	-16.67	Average
8	0.354	22.50	19.80	42.30	58.87	-16.57	QP
9	0.570	-1.20	19.75	18.55	46.00	-27.45	Average
10	0.570	9.70	19.75	29.45	56.00	-26.55	QP
11	0.953	2.40	19.78	22.18	46.00	-23.82	Average
12	0.953	11.80	19.78	31.58	56.00	-24.42	QP

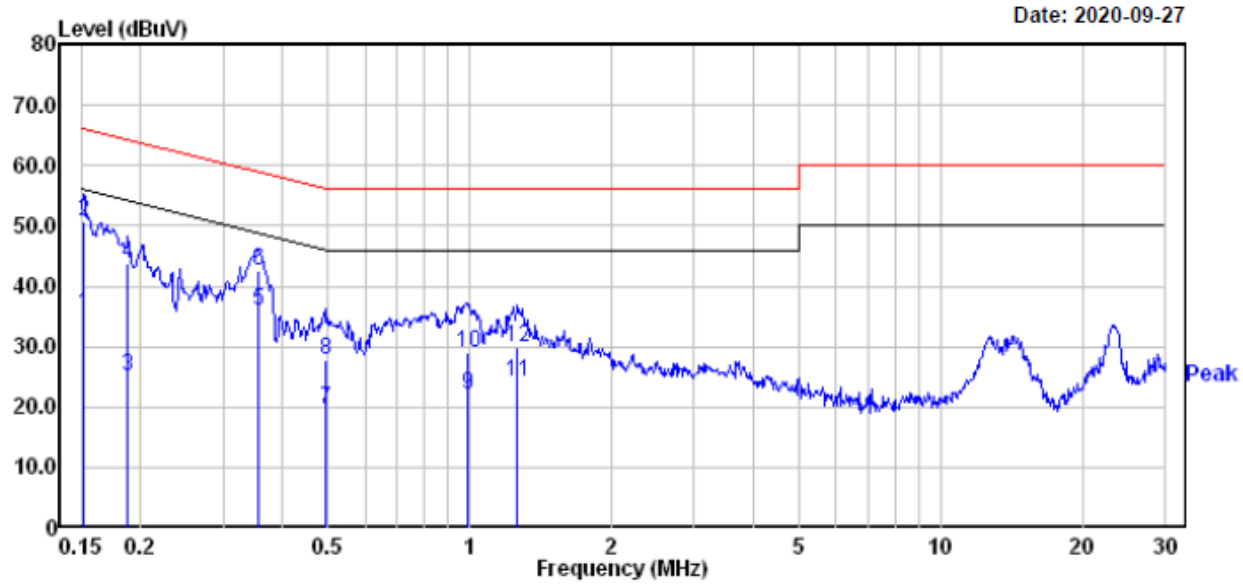
Model: NW1/M

AC 120V/60 Hz, Line



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.160	13.10	19.83	32.93	55.47	-22.54	Average
2	0.160	29.10	19.83	48.93	65.47	-16.54	QP
3	0.179	10.70	19.83	30.53	54.55	-24.02	Average
4	0.179	26.60	19.83	46.43	64.55	-18.12	QP
5	0.209	3.90	19.82	23.72	53.23	-29.51	Average
6	0.209	20.90	19.82	40.72	63.23	-22.51	QP
7	0.367	13.20	19.78	32.98	48.56	-15.58	Average
8	0.367	21.40	19.78	41.18	58.56	-17.38	QP
9	0.494	0.30	19.76	20.06	46.10	-26.04	Average
10	0.494	9.40	19.76	29.16	56.10	-26.94	QP
11	1.276	5.90	19.82	25.72	46.00	-20.28	Average
12	1.276	12.10	19.82	31.92	56.00	-24.08	QP

AC 120V/60 Hz, Neutral



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.152	15.40	19.82	35.22	55.91	-20.69	Average
2	0.152	31.00	19.82	50.82	65.91	-15.09	QP
3	0.188	5.31	19.82	25.13	54.11	-28.98	Average
4	0.188	23.81	19.82	43.63	64.11	-20.48	QP
5	0.356	16.20	19.80	36.00	48.83	-12.83	Average
6	0.356	22.80	19.80	42.60	58.83	-16.23	QP
7	0.497	-0.20	19.76	19.56	46.05	-26.49	Average
8	0.497	8.10	19.76	27.86	56.05	-28.19	QP
9	0.989	2.10	19.81	21.91	46.00	-24.09	Average
10	0.989	9.30	19.81	29.11	56.00	-26.89	QP
11	1.262	4.20	19.82	24.02	46.00	-21.98	Average
12	1.262	10.10	19.82	29.92	56.00	-26.08	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 e.i.r.p. of −27 dBm/MHz.

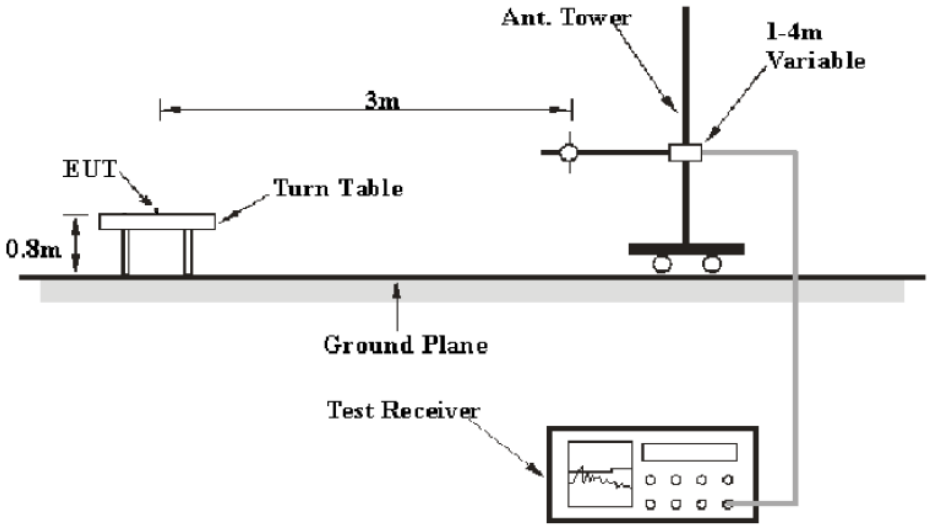
For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

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

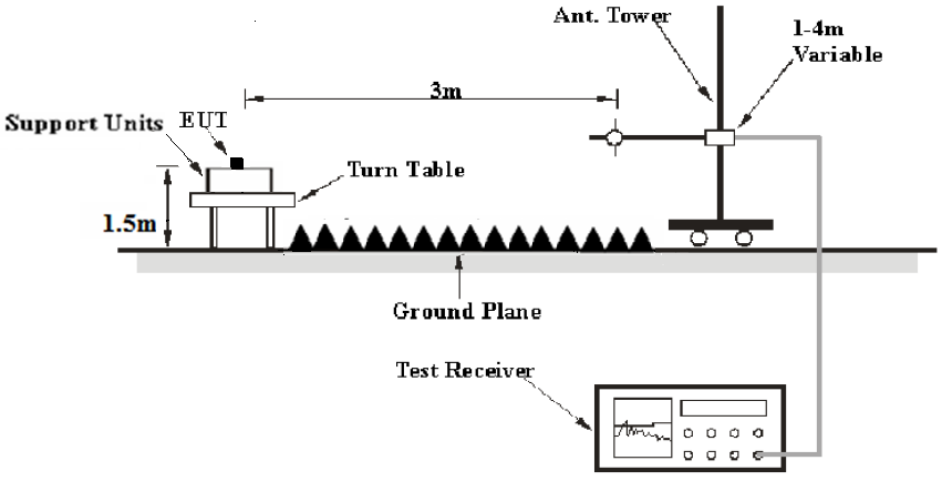
According to 789033 D02 General UNII Test Procedures New Rules v02r01, emission shall be computed as: E [dBμV/m] = EIRP [dBm] + 95.2, for d = 3 meters.

EUT Setup

Below 1 GHz:



1 GHz-40GHz:



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

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

The spacing between the peripherals was 10 cm.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 40 GHz.

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

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

Test Procedure

During the radiated emission test, the adapter was connected to 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:

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

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

Margin = Limit –Extrapolation result

Test Data

Environmental Conditions

Temperature:	24.8~25.2 ℃
Relative Humidity:	48~51 %
ATM Pressure:	101.1~101.3 kPa

The testing was performed by Jack Jiao from 2020-09-18 to 2020-09-28.

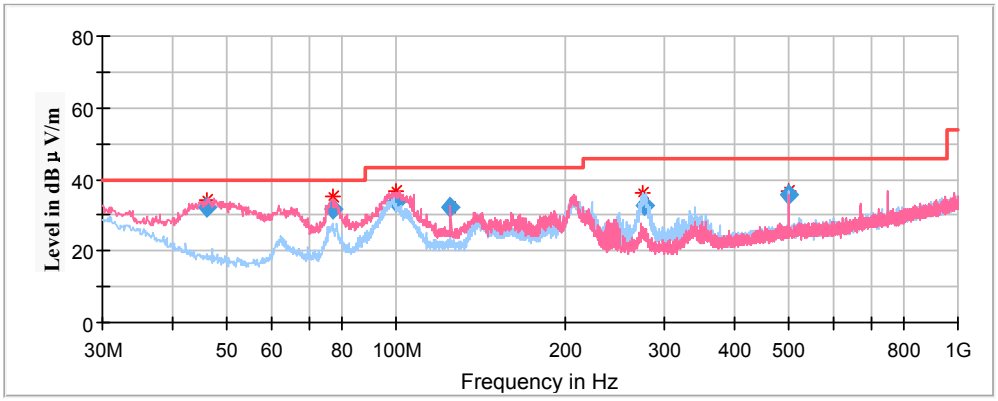
Test Mode: Transmitting

Spurious Emission Test

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

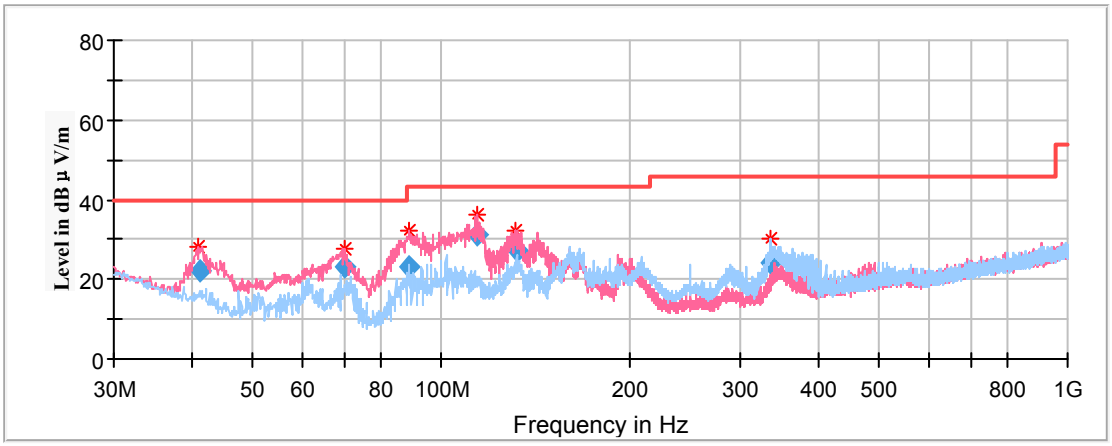
Pre-scan with 802.11a, 802.11ac20, 802.11n-HT20, 802.11ac40, 802.11n-HT40 and 802.11 ac80 modes of operation in the X,Y and Z axes of orientation, the worst case 802.11a mode in channel 5240MHz(Chain0) in Z-axis of orientation was recorded.

Model: NW1



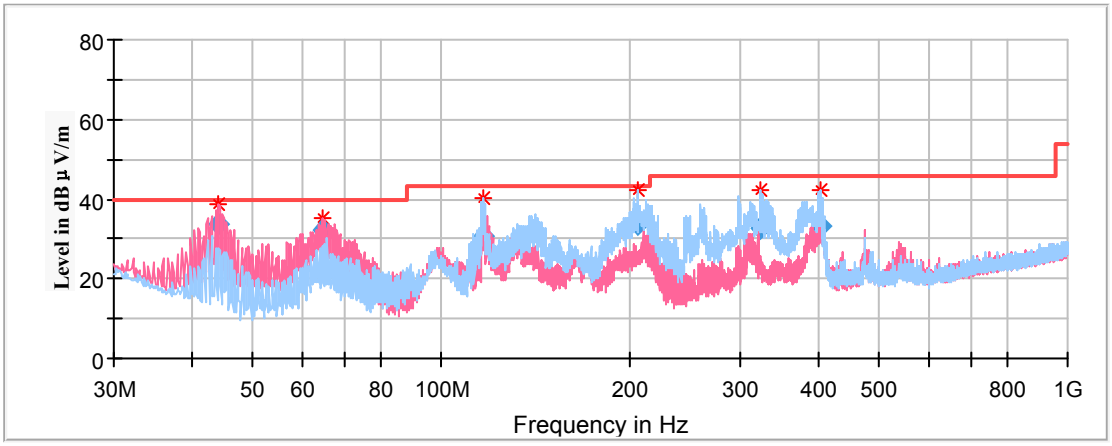
Frequency (MHz)	Corrected Amplitude	Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	QuasiPeak (dBµV/m)	Height (cm)	Polar (H/V)				
45.992550	32.19	100.0	V	205.0	-15.2	40.00	7.81
76.976600	31.76	100.0	V	62.0	-18.0	40.00	8.24
100.255450	33.71	100.0	V	78.0	-15.3	43.50	9.79
124.987350	32.08	100.0	V	221.0	-11.8	43.50	11.42
276.170750	32.60	100.0	H	74.0	-11.8	46.00	13.40
500.000400	35.86	100.0	H	34.0	-6.1	46.00	10.14

Model: NW9



Frequency (MHz)	Corrected Amplitude Quasi-Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
41.097650	21.91	40.00	18.09	100.0	V	289.0	-18.0
69.899350	23.06	40.00	16.94	200.0	V	57.0	-23.1
88.901650	22.95	43.50	20.55	200.0	V	57.0	-23.7
114.088650	31.24	43.50	12.26	100.0	V	187.0	-18.9
132.098750	27.32	43.50	16.18	100.0	V	283.0	-17.5
335.421250	24.09	46.00	21.91	100.0	H	209.0	-16.2

Model: NW1/M



Frequency (MHz)	Corrected Amplitude Quasi-Peak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
44.187050	33.75	40.00	6.25	100.0	V	193.0	-19.3
64.430000	32.07	40.00	7.93	100.0	V	209.0	-23.6
117.069450	30.54	43.50	12.96	200.0	H	109.0	-18.4
205.795600	33.56	43.50	9.94	100.0	H	231.0	-18.0
322.114250	32.86	46.00	13.14	100.0	H	210.0	-16.5
403.532050	33.34	46.00	12.66	100.0	H	0.0	-14.5

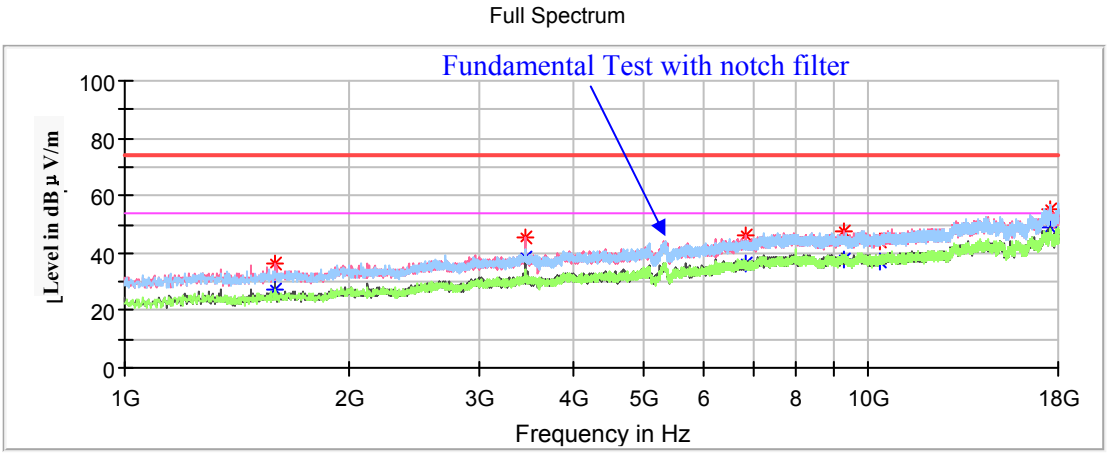
1GHz-18GHz (5150-5250MHz Band):

802.11a Mode(Chain0):

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

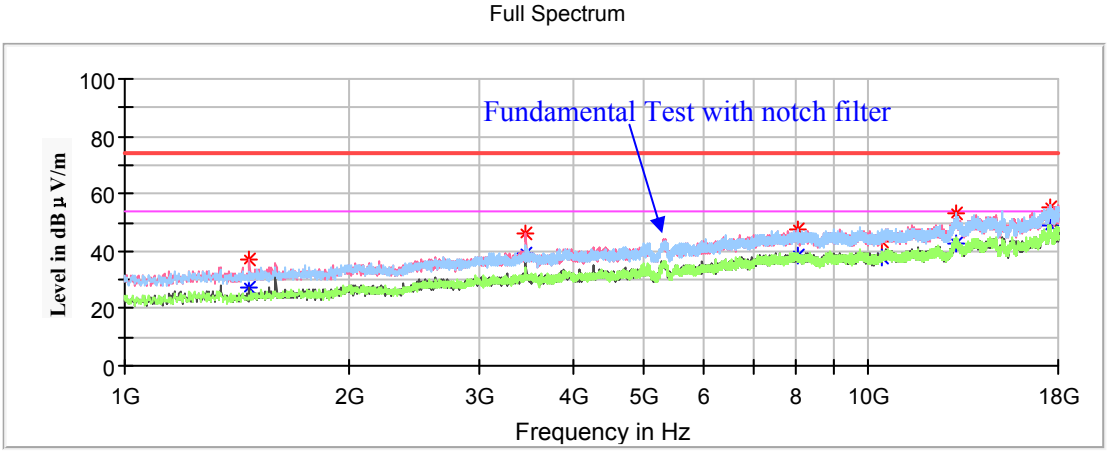
Note:
1. This test was performed with the 5150-5250MHz band reject filter.
2. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
   Corrected Amplitude = Corrected Factor + Reading
   Margin = Limit - Corrected. Amplitude

Low Channel: 5180MHz



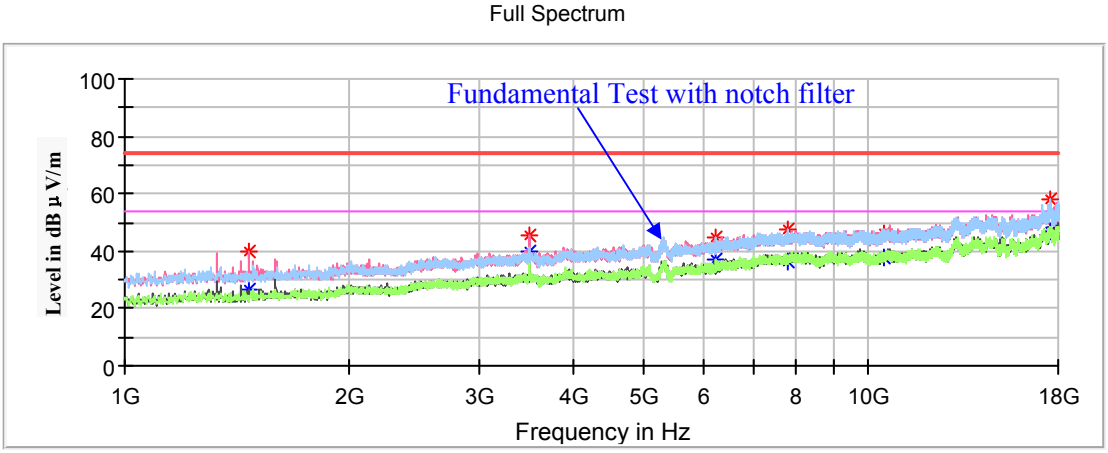
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1596.700000	36.08	---	150.0	H	142.0	-16.0	74.00	37.92
1596.700000	---	27.03	150.0	H	142.0	-16.0	54.00	26.97
3453.100000	45.36	---	150.0	V	295.0	-8.9	68.20	22.84
6822.500000	46.44	---	200.0	V	295.0	-0.5	68.20	21.76
9277.300000	47.61	---	150.0	V	354.0	2.0	68.20	20.59
10360.200000	44.26	---	150.0	V	0.0	2.2	68.20	23.94
17563.100000	54.95	---	200.0	V	333.0	8.9	68.20	13.25

Middle Channel: 5200MHz



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1472.600000	37.21	---	150.0	V	66.0	-16.5	74.00	36.79
1472.600000	---	27.02	150.0	V	66.0	-16.5	54.00	26.98
3465.000000	45.88	---	200.0	V	303.0	-8.9	68.20	22.32
8044.800000	---	38.46	150.0	H	0.0	1.8	54.00	15.54
8044.800000	47.82	---	200.0	H	0.0	1.8	74.00	26.18
10399.300000	43.27	---	150.0	H	278.0	2.2	68.20	24.93
13156.700000	52.87	---	150.0	H	239.0	5.4	68.20	15.33
17508.700000	55.25	---	150.0	H	335.0	8.9	68.20	12.95

High Channel: 5240MHz



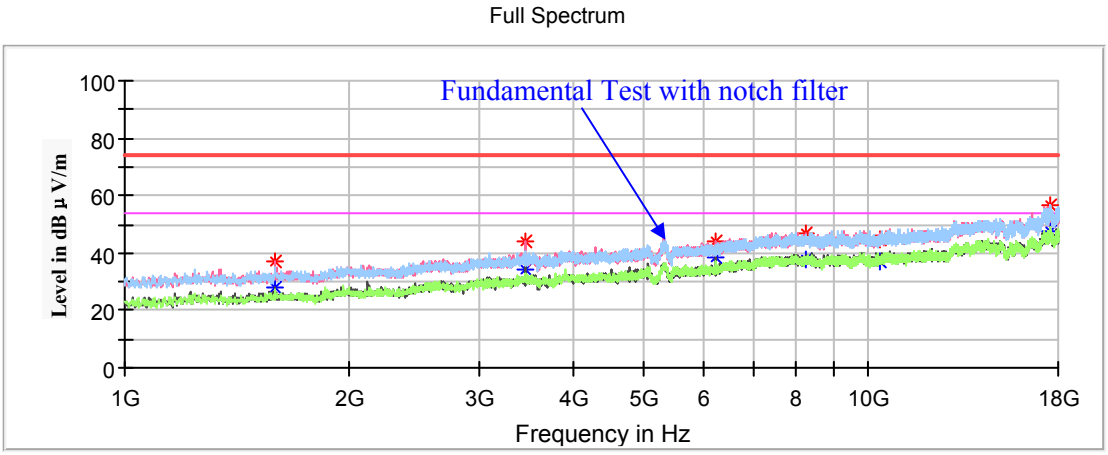
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1470.900000	---	26.65	150.0	V	108.0	-16.5	54.00	27.35
1470.900000	39.71	---	150.0	V	108.0	-16.5	74.00	34.29
3492.200000	45.55	---	150.0	V	300.0	-8.8	68.20	22.65
6249.600000	45.09	---	200.0	H	283.0	-2.1	68.20	23.11
7811.900000	47.33	---	200.0	H	127.0	1.5	68.20	20.87
10480.900000	45.90	---	150.0	V	0.0	2.3	68.20	22.30
17522.300000	57.75	---	150.0	H	270.0	8.9	68.20	10.45

802.11a Mode(Chain1):

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

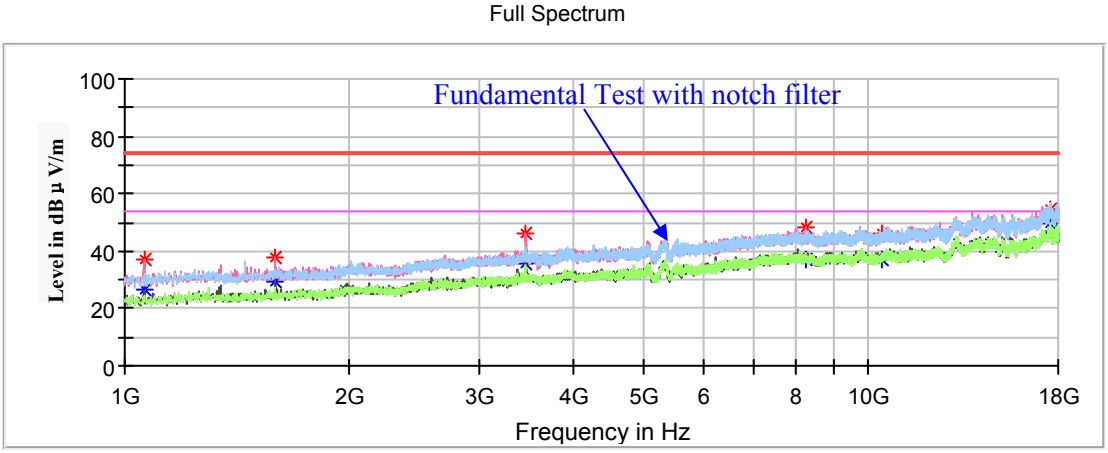
Note:
1. This test was performed with the 5150-5250MHz band reject filter.
2. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
   Corrected Amplitude = Corrected Factor + Reading
   Margin = Limit - Corrected. Amplitude

Low Channel: 5180MHz



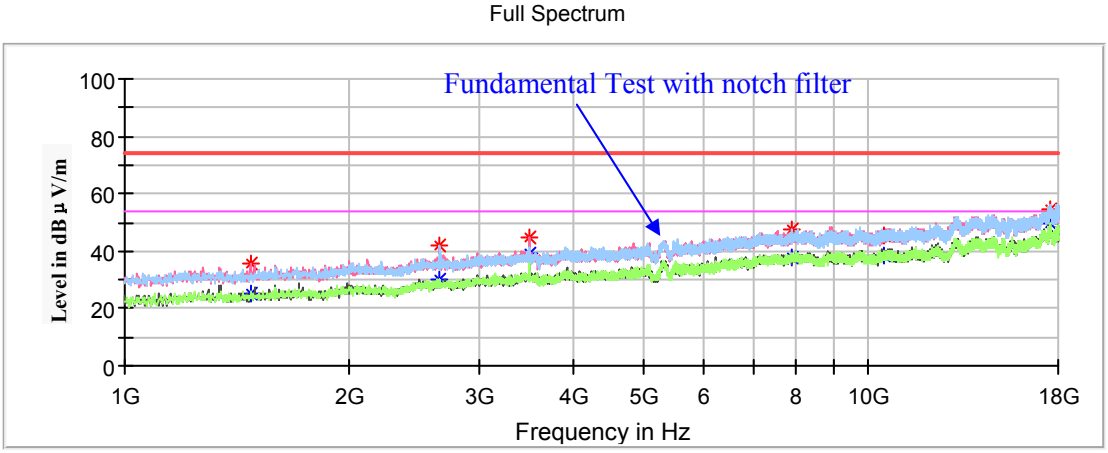
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1593.300000	---	28.22	200.0	V	142.0	-16.0	54.00	25.78
1593.300000	36.81	---	200.0	V	142.0	-16.0	74.00	37.19
3451.400000	43.96	---	150.0	V	307.0	-8.9	68.20	24.24
6249.600000	44.29	---	150.0	V	0.0	-2.1	68.20	23.91
8230.100000	---	37.73	150.0	V	344.0	1.6	54.00	16.27
8230.100000	46.80	---	150.0	V	344.0	1.6	74.00	27.20
10360.200000	44.71	---	150.0	V	0.0	2.2	68.20	23.49
17546.100000	56.57	---	200.0	H	46.0	8.9	68.20	11.63

Middle Channel: 5200MHz



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1061.200000	36.96	---	150.0	V	311.0	-18.7	74.00	37.04
1061.200000	---	26.71	150.0	V	311.0	-18.7	54.00	27.29
1593.300000	37.80	---	200.0	V	130.0	-16.0	74.00	36.20
1593.300000	---	29.14	200.0	V	130.0	-16.0	54.00	24.86
3466.700000	45.92	---	150.0	V	299.0	-8.9	68.20	22.28
8260.700000	---	37.23	150.0	V	247.0	1.6	54.00	16.77
8260.700000	47.95	---	150.0	V	247.0	1.6	74.00	26.05
10401.000000	46.33	---	200.0	H	74.0	2.2	68.20	21.87
17520.600000	54.87	---	150.0	H	294.0	8.9	68.20	13.33

High Channel: 5240MHz



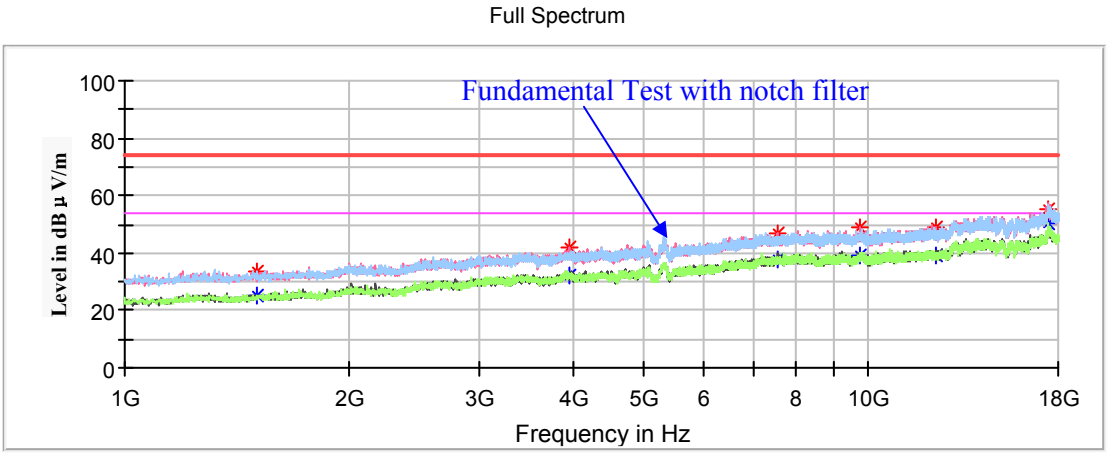
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1474.300000	---	25.44	150.0	V	103.0	-16.5	54.00	28.56
1474.300000	35.68	---	150.0	V	103.0	-16.5	74.00	38.32
2655.800000	42.25	---	200.0	H	270.0	-11.7	68.20	25.95
3492.200000	44.44	---	150.0	V	295.0	-8.8	68.20	23.76
7874.800000	47.54	---	150.0	H	22.0	1.6	68.20	20.66
10480.900000	45.34	---	150.0	H	22.0	2.3	68.20	22.86
17551.200000	54.41	---	200.0	H	47.0	8.9	68.20	13.79

802.11ac20 Mode(Chain0+Chain1):

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

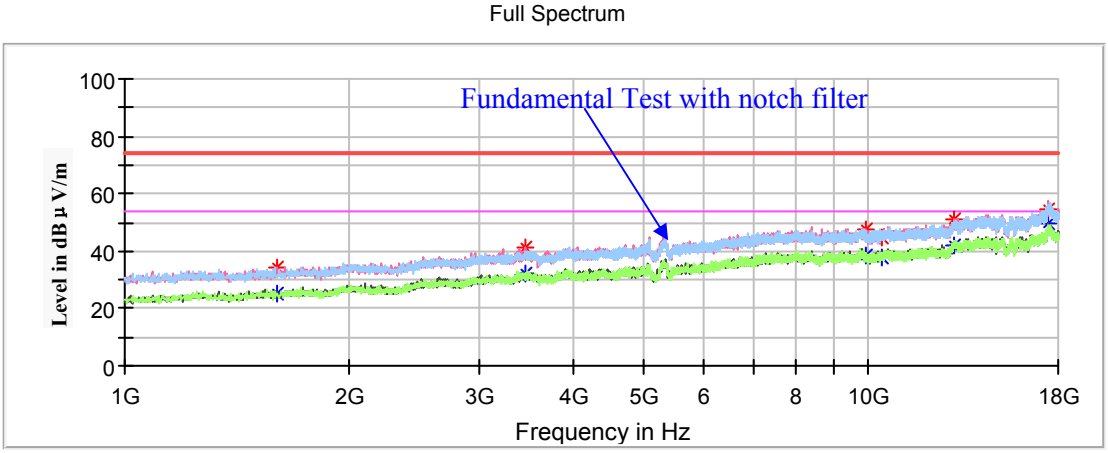
Note:
1. This test was performed with the 5150-5250MHz band reject filter.
2. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
   Corrected Amplitude = Corrected Factor + Reading
   Margin = Limit - Corrected. Amplitude

Low Channel: 5180MHz



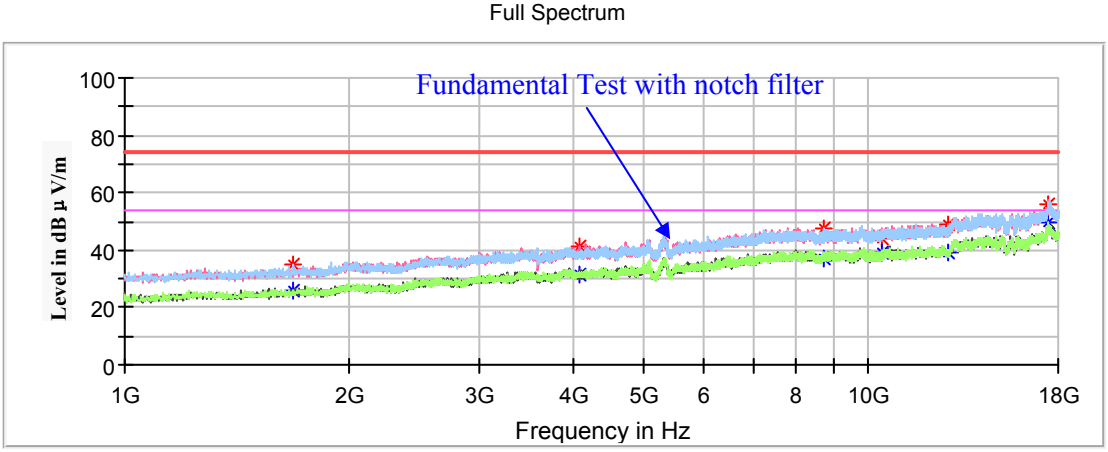
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1506.600000	---	25.36	200.0	H	43.0	-16.3	54.00	28.64
1506.600000	33.52	---	200.0	H	43.0	-16.3	74.00	40.48
3952.900000	---	31.96	150.0	H	184.0	-7.2	54.00	22.04
3952.900000	42.21	---	150.0	H	184.0	-7.2	74.00	31.79
7546.700000	---	37.49	150.0	H	289.0	1.1	54.00	16.51
7546.700000	47.17	---	150.0	H	289.0	1.1	74.00	26.83
9721.000000	48.71	---	150.0	V	109.0	2.0	68.20	19.49
12299.900000	---	39.30	200.0	V	230.0	3.3	54.00	14.70
12299.900000	49.24	---	200.0	V	230.0	3.3	74.00	24.76
17483.200000	55.36	---	150.0	H	342.0	8.8	68.20	12.84

Middle Channel: 5200MHz



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1600.100000	---	25.01	200.0	H	142.0	-16.0	54.00	28.99
1600.100000	34.18	---	200.0	H	142.0	-16.0	74.00	39.82
3465.000000	41.00	---	150.0	V	36.0	-8.9	68.20	27.20
9940.300000	47.90	---	200.0	V	52.0	1.9	68.20	20.30
10399.300000	45.05	---	200.0	V	26.0	2.2	68.20	23.15
13010.500000	50.95	---	150.0	V	274.0	5.2	68.20	17.25
17422.000000	54.58	---	200.0	H	244.0	8.6	68.20	13.62

High Channel: 5240MHz

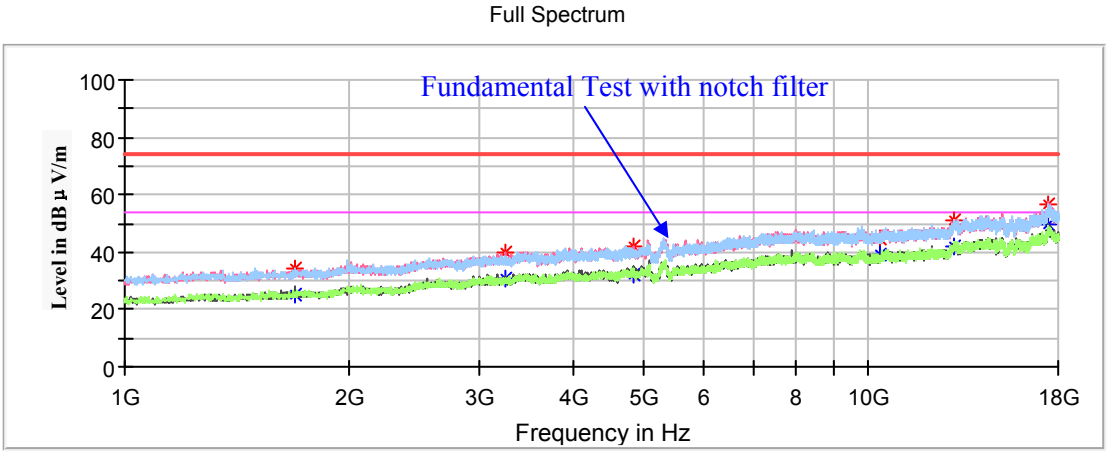


Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1688.500000	34.72	---	150.0	H	72.0	-15.6	74.00	39.28
1688.500000	---	25.92	150.0	H	72.0	-15.6	54.00	28.08
4095.700000	---	31.31	200.0	H	357.0	-6.8	54.00	22.69
4095.700000	41.34	---	200.0	H	357.0	-6.8	74.00	32.66
8701.000000	47.44	---	150.0	H	279.0	1.6	68.20	20.76
10399.300000	44.38	---	200.0	H	0.0	2.2	68.20	23.82
12774.200000	49.24	---	200.0	V	0.0	4.2	68.20	18.96
17490.000000	55.90	---	200.0	V	179.0	8.9	68.20	12.30

802.11n-HT20 Mode*(Chain0+Chain1):*
*Pre-scan with X,Y and Z axes of orientation, the worst case **Z-axis of orientation** was recorded*

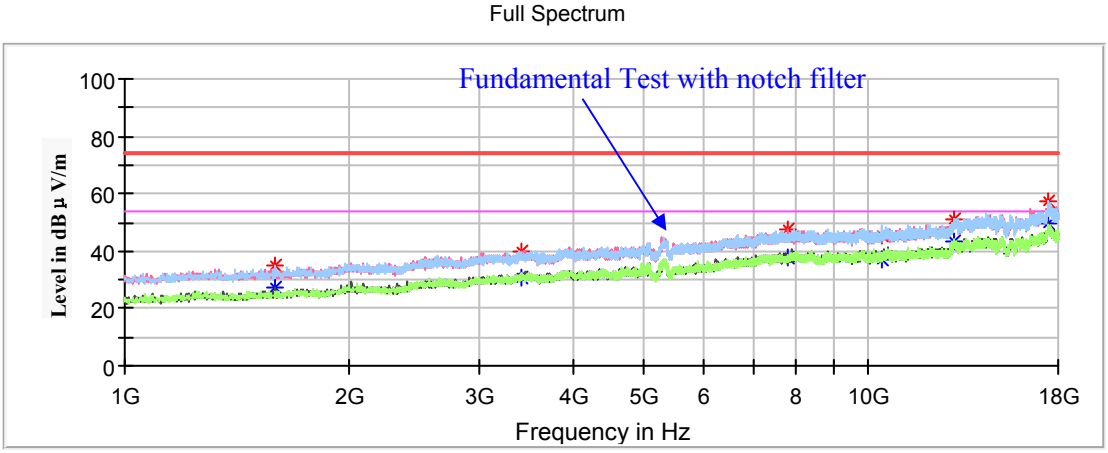
Note:
1. This test was performed with the 5150-5250MHz band reject filter.
2. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
   Corrected Amplitude = Corrected Factor + Reading
   Margin = Limit - Corrected. Amplitude

Low Channel: 5180MHz



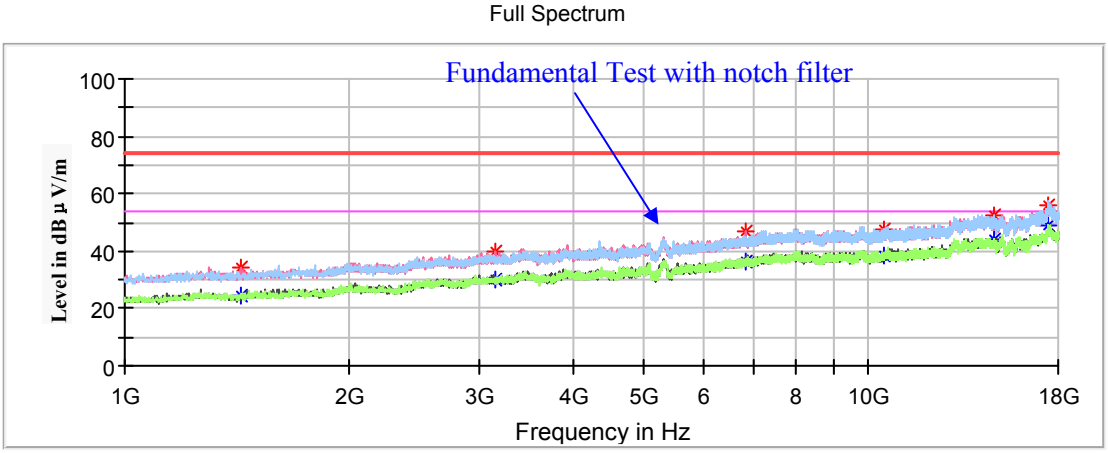
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1691.900000	---	25.11	200.0	H	117.0	-15.6	54.00	28.89
1691.900000	34.58	---	200.0	H	117.0	-15.6	74.00	39.42
3254.200000	39.78	---	200.0	V	84.0	-9.4	68.20	28.42
4835.200000	---	32.20	150.0	V	0.0	-5.5	54.00	21.80
4835.200000	42.03	---	150.0	V	0.0	-5.5	74.00	31.97
10360.200000	44.69	---	200.0	H	90.0	2.2	68.20	23.51
13039.400000	51.31	---	150.0	H	34.0	5.3	68.20	16.89
17501.900000	56.63	---	200.0	H	181.0	8.9	68.20	11.57

Middle Channel: 5200MHz



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1596.700000	---	27.11	150.0	V	155.0	-16.0	54.00	26.89
1596.700000	35.24	---	150.0	V	155.0	-16.0	74.00	38.76
3420.800000	39.98	---	200.0	V	174.0	-9.0	68.20	28.22
7769.400000	47.34	---	150.0	V	296.0	1.5	68.20	20.86
10401.000000	45.17	---	150.0	H	323.0	2.2	68.20	23.03
13061.500000	51.34	---	200.0	V	187.0	5.3	68.20	16.86
17484.900000	57.00	---	150.0	V	116.0	8.8	68.20	11.20

High Channel: 5240MHz



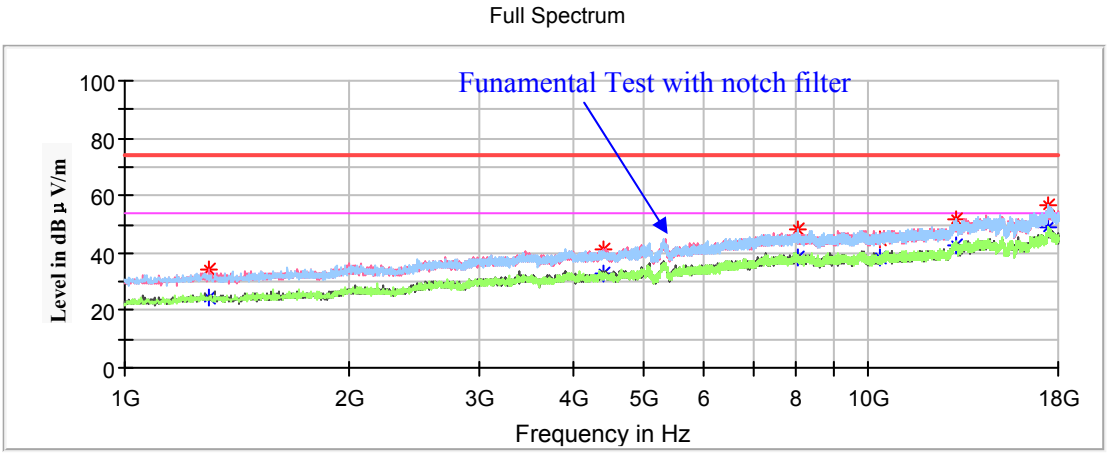
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1430.100000	34.24	---	150.0	V	103.0	-16.7	68.20	33.96
3157.300000	39.92	---	150.0	V	339.0	-9.7	68.20	28.28
6848.000000	46.78	---	200.0	V	0.0	-0.4	68.20	21.42
10479.200000	47.23	---	150.0	V	301.0	2.3	68.20	20.97
14798.900000	52.52	---	150.0	H	22.0	5.7	68.20	15.68
17495.100000	55.97	---	150.0	H	0.0	8.9	68.20	12.23

802.11ac40 Mode(Chain0+Chain1):

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

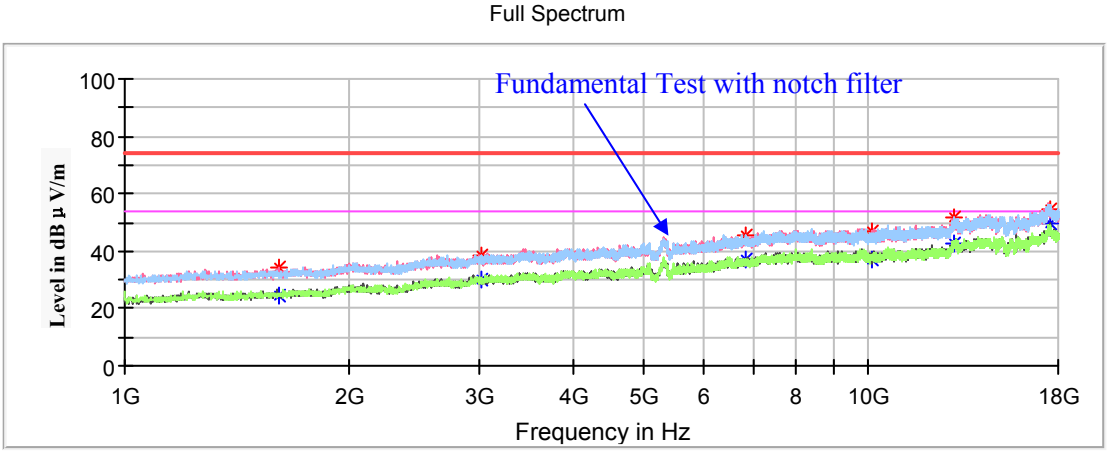
Note:
1. This test was performed with the 5150-5250MHz band reject filter.
2. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
   Corrected Amplitude = Corrected Factor + Reading
   Margin = Limit - Corrected. Amplitude

Low Channel: 5190MHz



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1299.200000	34.34	---	200.0	V	135.0	-17.4	68.20	33.86
4393.200000	---	32.53	200.0	H	0.0	-6.4	54.00	21.47
4393.200000	41.38	---	200.0	H	0.0	-6.4	74.00	32.62
8017.600000	48.39	---	150.0	H	34.0	1.8	68.20	19.81
10378.900000	44.54	---	200.0	H	15.0	2.2	68.20	23.66
13087.000000	51.65	---	200.0	V	59.0	5.3	68.20	16.55
17486.600000	56.85	---	200.0	V	4.0	8.8	68.20	11.35

High Channel: 5230MHz

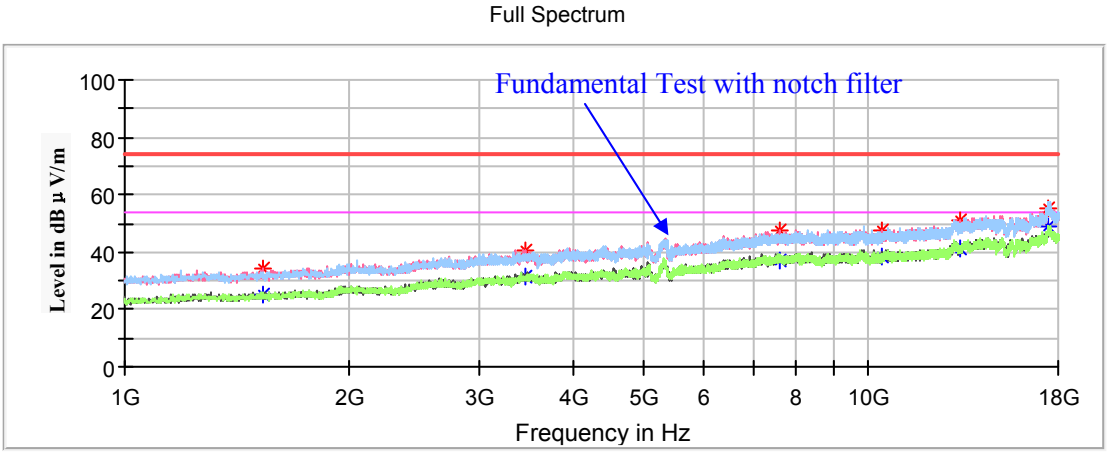


Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1608.600000	---	24.61	150.0	H	0.0	-15.9	54.00	29.39
1608.600000	33.94	---	150.0	H	0.0	-15.9	74.00	40.06
3012.800000	38.22	---	200.0	V	0.0	-10.1	68.20	29.98
6832.700000	45.38	---	150.0	H	191.0	-0.4	68.20	22.82
10115.400000	46.75	---	150.0	V	0.0	2.0	68.20	21.45
13042.800000	51.86	---	150.0	H	235.0	5.3	68.20	16.34
17525.700000	54.86	---	150.0	V	325.0	8.9	68.20	13.34

802.11n-HT40 Mode*(Chain0+Chain1)*:
*Pre-scan with X,Y and Z axes of orientation, the worst case **Z-axis of orientation** was recorded*

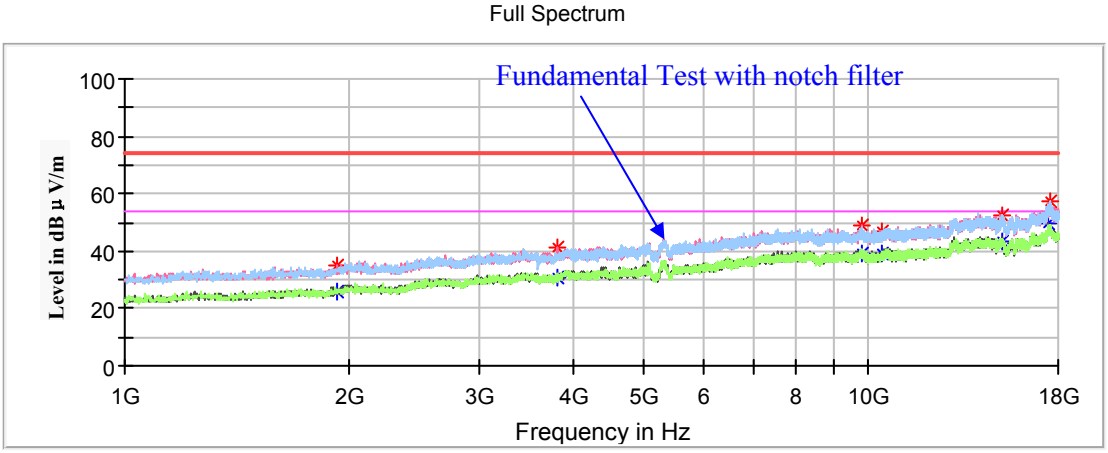
Note:
1. This test was performed with the 5150-5250MHz band reject filter.
2. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
   Corrected Amplitude = Corrected Factor + Reading
   Margin = Limit - Corrected. Amplitude

Low Channel: 5190MHz



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1532.100000	---	24.84	200.0	H	173.0	-16.2	54.00	29.16
1532.100000	34.50	---	200.0	H	173.0	-16.2	74.00	39.50
3458.200000	40.40	---	200.0	V	9.0	-8.9	68.20	27.80
7616.400000	---	37.19	150.0	H	271.0	1.2	54.00	16.81
7616.400000	47.56	---	150.0	H	271.0	1.2	74.00	26.44
10453.700000	47.88	---	150.0	V	297.0	2.3	68.20	20.32
13313.100000	---	41.36	150.0	V	355.0	5.5	54.00	12.64
13313.100000	50.94	---	150.0	V	355.0	5.5	74.00	23.06
17473.000000	54.91	---	200.0	H	349.0	8.8	68.20	13.29

High Channel: 5230MHz

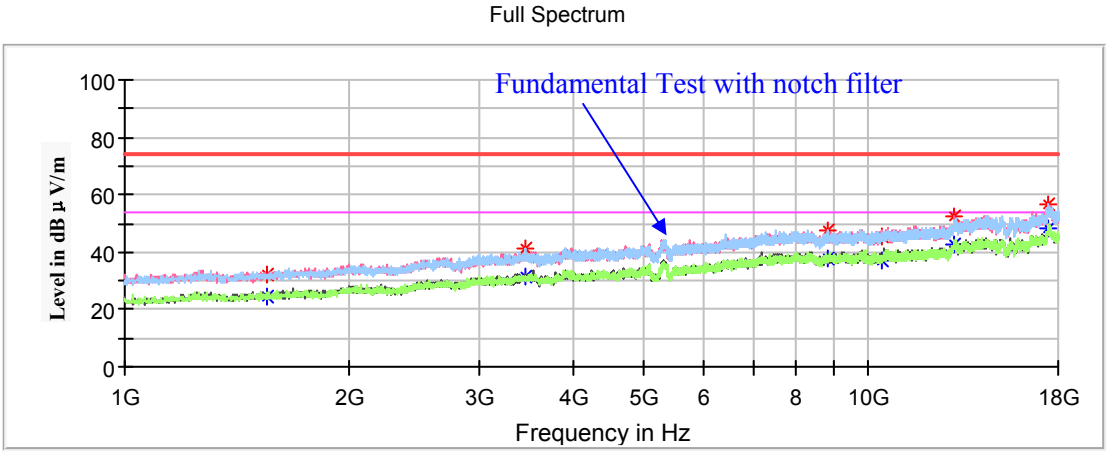


Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1931.600000	35.26	---	200.0	V	0.0	-14.7	68.20	32.94
3823.700000	---	30.83	150.0	V	137.0	-7.6	54.00	23.17
3823.700000	41.27	---	150.0	V	137.0	-7.6	74.00	32.73
9794.100000	48.68	---	200.0	V	256.0	2.0	68.20	19.52
10460.500000	46.56	---	150.0	H	5.0	2.3	68.20	21.64
15127.000000	52.77	---	200.0	H	314.0	5.0	68.20	15.43
17513.800000	57.11	---	150.0	H	13.0	8.9	68.20	11.09

802.11ac80 Mode*(Chain0+Chain1)*:
*Pre-scan with X,Y and Z axes of orientation, the worst case **Z-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



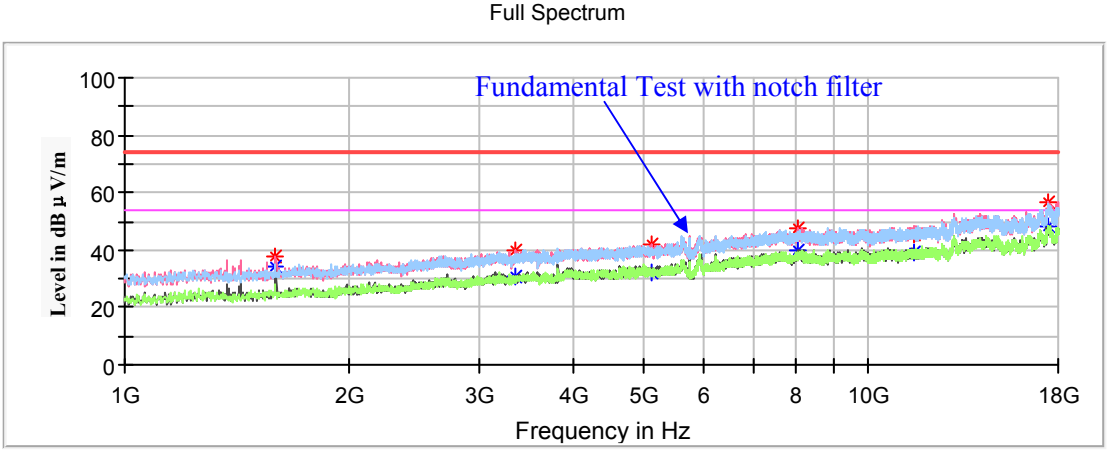
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1550.800000	---	24.50	150.0	V	299.0	-16.2	54.00	29.50
1550.800000	32.18	---	150.0	V	299.0	-16.2	74.00	41.82
3456.500000	41.07	---	150.0	H	140.0	-8.9	68.20	27.13
8816.600000	47.52	---	200.0	V	91.0	1.7	74.00	26.48
10419.700000	45.77	---	200.0	H	129.0	2.2	74.00	28.23
13046.200000	52.61	---	150.0	V	54.0	5.3	74.00	21.39
17491.700000	56.87	---	150.0	V	248.0	8.9	68.20	11.33

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

802.11a Mode(Chain0):
*(Pre-scan in the X,Y and Z axes of orientation, the worst case **Z-axis of orientation** was recorded.)*

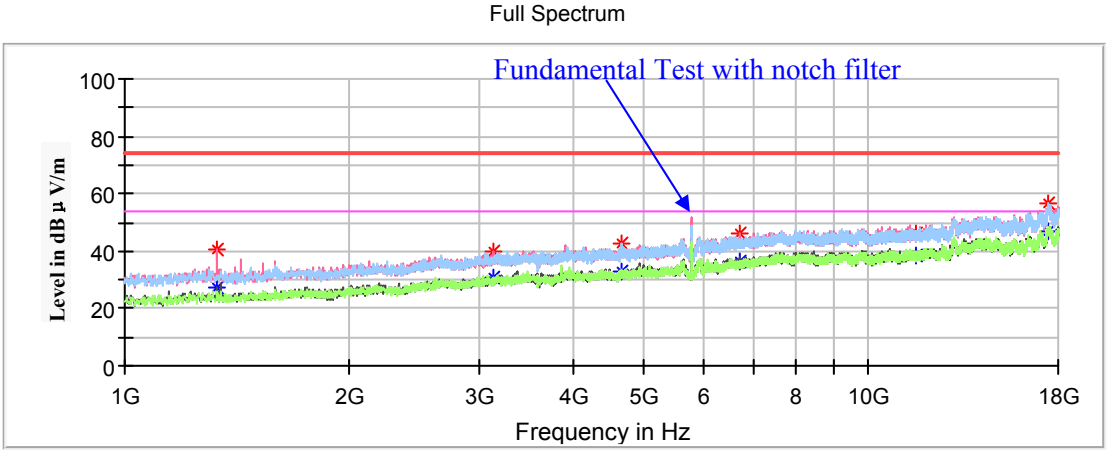
Note:
1. This test was performed with the 5725-5850MHz band reject filter.
2. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
   Corrected Amplitude = Corrected Factor + Reading
   Margin = Limit - Corrected. Amplitude

Low Channel: 5745MHz



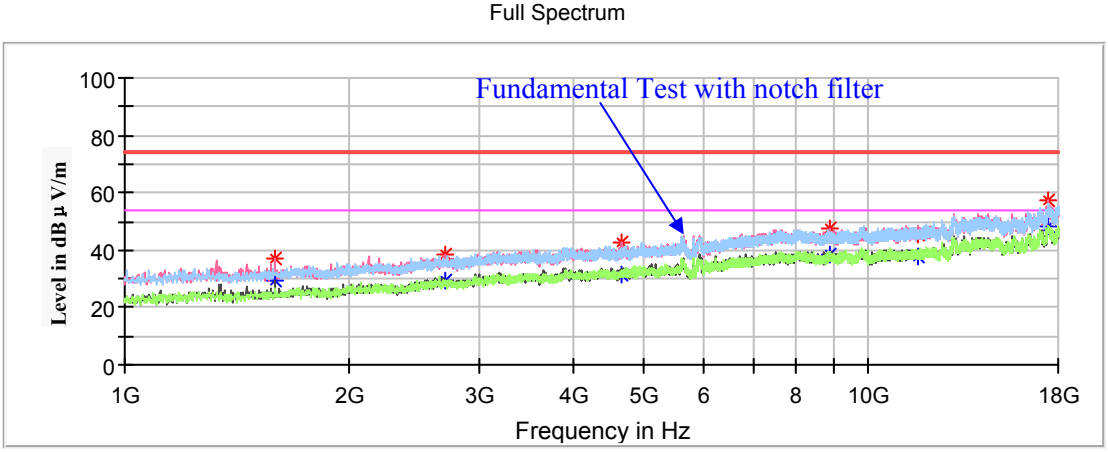
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1596.700000	---	34.18	150.0	V	135.0	-16.0	54.00	19.82
1596.700000	37.79	---	150.0	V	135.0	-16.0	74.00	36.21
3359.600000	40.10	---	150.0	V	50.0	-9.2	68.20	28.10
5097.000000	---	32.19	150.0	V	314.0	-4.9	54.00	21.81
5097.000000	41.76	---	150.0	V	314.0	-4.9	74.00	32.24
8038.000000	---	39.93	150.0	V	225.0	1.8	54.00	14.07
8038.000000	47.32	---	150.0	V	225.0	1.8	74.00	26.68
11490.700000	45.46	---	200.0	V	301.0	2.8	74.00	28.54
11490.700000	---	38.83	200.0	V	301.0	2.8	54.00	15.17
17471.300000	56.82	---	150.0	V	135.0	8.8	68.20	11.38

Middle Channel: 5785MHz



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1329.800000	40.38	---	150.0	V	149.0	-17.3	74.00	33.62
1329.800000	---	27.58	150.0	V	149.0	-17.3	54.00	26.42
3138.600000	39.68	---	150.0	V	347.0	-9.7	68.20	28.52
4644.800000	---	32.94	200.0	H	221.0	-5.9	54.00	21.06
4644.800000	42.80	---	200.0	H	221.0	-5.9	74.00	31.20
6701.800000	46.16	---	150.0	V	41.0	-0.7	68.20	22.04
11570.600000	---	38.74	150.0	V	355.0	2.9	54.00	15.26
11570.600000	46.18	---	150.0	V	355.0	2.9	74.00	27.82
17423.700000	56.45	---	150.0	V	162.0	8.6	68.20	11.75

High Channel: 5825MHz



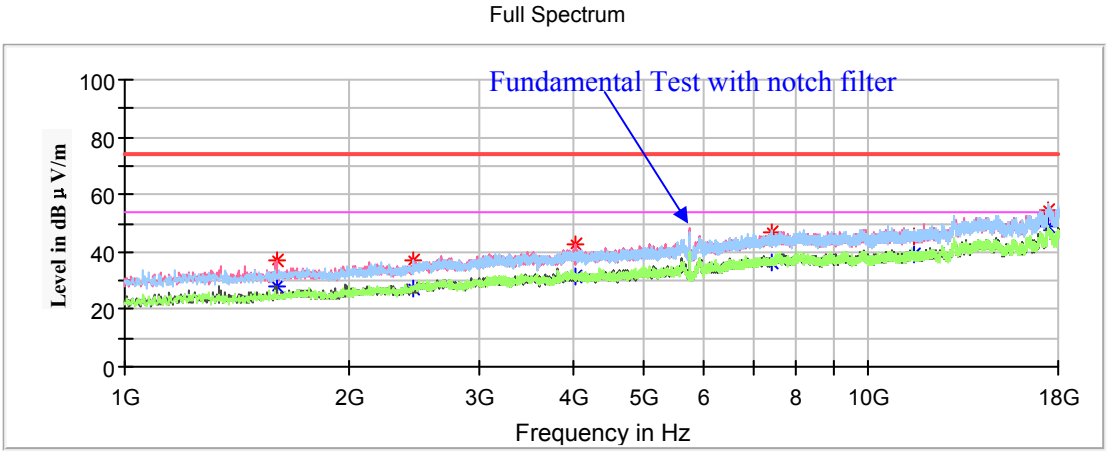
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1591.600000	---	29.67	150.0	V	142.0	-16.0	54.00	24.33
1591.600000	36.94	---	150.0	V	142.0	-16.0	74.00	37.06
2689.800000	38.65	---	150.0	V	49.0	-11.5	68.20	29.55
4644.800000	42.47	---	150.0	V	295.0	-5.9	74.00	31.53
4644.800000	---	31.69	150.0	V	295.0	-5.9	54.00	22.31
8848.900000	47.46	---	150.0	V	103.0	1.7	68.20	20.74
11660.700000	45.40	---	200.0	V	129.0	3.1	74.00	28.60
11660.700000	---	38.04	200.0	V	129.0	3.1	54.00	15.96
17457.700000	57.17	---	200.0	V	194.0	8.7	68.20	11.03

802.11a Mode(Chain1):

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

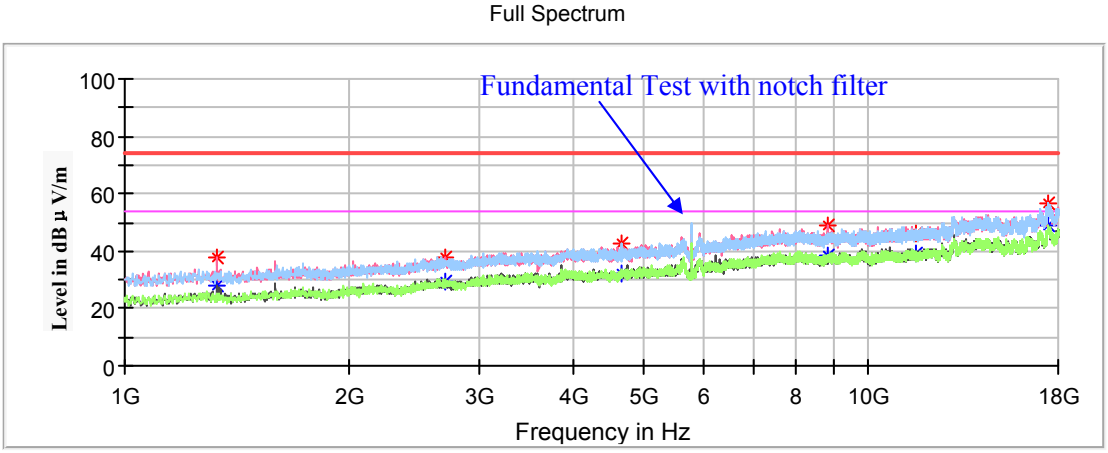
Note:
1. This test was performed with the 5725-5850MHz band reject filter.
2. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
   Corrected Amplitude = Corrected Factor + Reading
   Margin = Limit - Corrected. Amplitude

Low Channel: 5745MHz



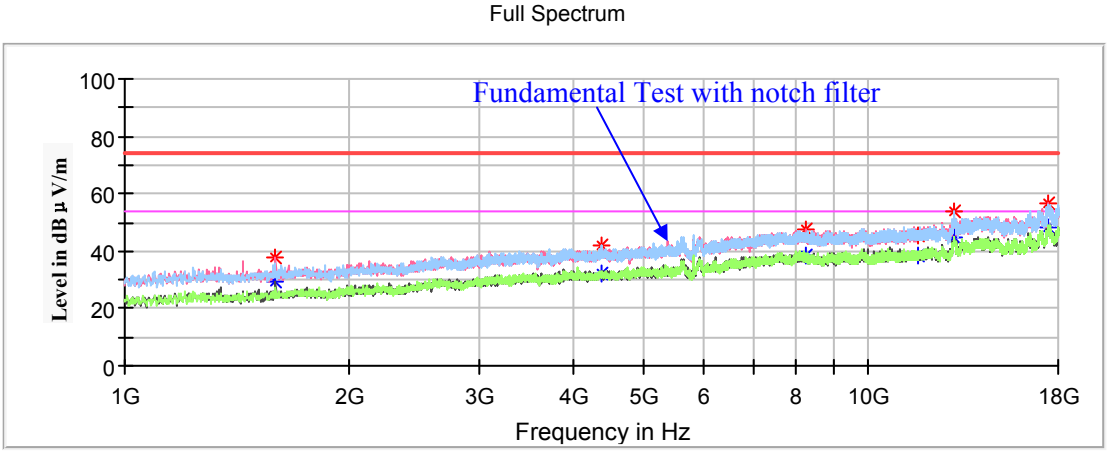
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1598.400000	36.79	---	150.0	V	142.0	-16.0	74.00	37.21
1598.400000	---	28.04	150.0	V	142.0	-16.0	54.00	25.96
2445.000000	37.09	---	200.0	H	78.0	-12.6	68.20	31.11
4034.500000	42.32	---	150.0	V	231.0	-6.9	74.00	31.68
4034.500000	---	31.55	150.0	V	231.0	-6.9	54.00	22.45
7427.700000	---	36.23	200.0	H	129.0	0.9	54.00	17.77
7427.700000	46.61	---	200.0	H	129.0	0.9	74.00	27.39
11490.700000	45.77	---	150.0	V	308.0	2.8	74.00	28.23
11490.700000	---	39.05	150.0	V	308.0	2.8	54.00	14.95
17454.300000	54.43	---	200.0	V	308.0	8.7	68.20	13.77

Middle Channel: 5785MHz



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1328.100000	---	28.29	150.0	V	184.0	-17.3	54.00	25.71
1328.100000	37.84	---	150.0	V	184.0	-17.3	74.00	36.16
2691.500000	---	29.56	150.0	V	260.0	-11.5	54.00	24.44
2691.500000	37.99	---	150.0	V	260.0	-11.5	74.00	36.01
4665.200000	---	31.92	200.0	H	283.0	-5.9	54.00	22.08
4665.200000	42.51	---	200.0	H	283.0	-5.9	74.00	31.49
8828.500000	48.80	---	150.0	V	39.0	1.7	68.20	19.40
11570.600000	---	38.92	200.0	H	15.0	2.9	54.00	15.08
11570.600000	46.15	---	200.0	H	15.0	2.9	74.00	27.85
17433.900000	56.77	---	150.0	H	39.0	8.7	68.20	11.43

High Channel: 5825MHz



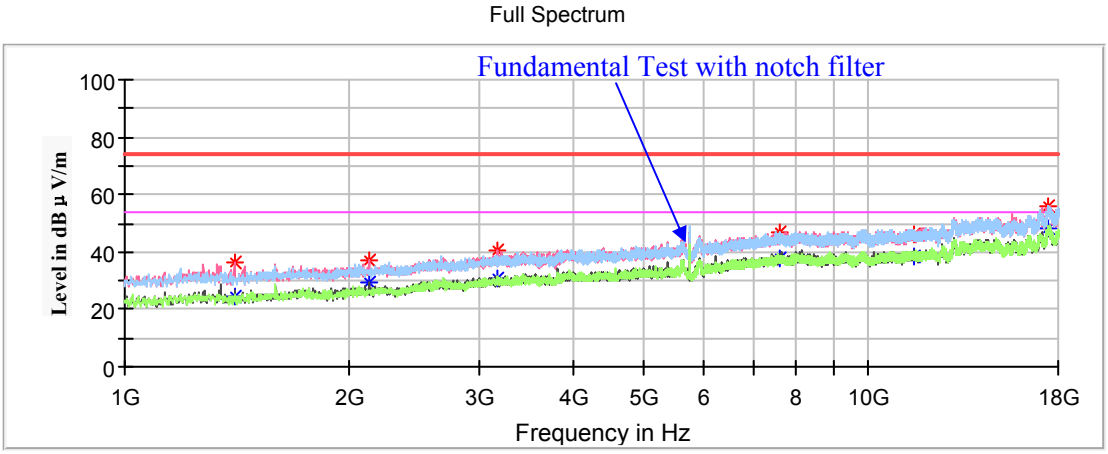
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1596.700000	37.46	---	150.0	V	233.0	-16.0	74.00	36.54
1596.700000	---	29.61	150.0	V	233.0	-16.0	54.00	24.39
4383.000000	---	32.40	150.0	V	129.0	-6.4	54.00	21.60
4383.000000	41.81	---	150.0	V	129.0	-6.4	74.00	32.19
8231.800000	---	38.38	150.0	V	220.0	1.6	54.00	15.62
8231.800000	47.50	---	150.0	V	220.0	1.6	74.00	26.50
11650.500000	---	38.50	200.0	H	195.0	3.1	54.00	15.50
11650.500000	45.68	---	200.0	H	195.0	3.1	74.00	28.32
13051.300000	53.71	---	200.0	H	285.0	5.3	68.20	14.49
17467.900000	56.36	---	150.0	V	354.0	8.8	68.20	11.84

802.11ac20 Mode(Chain0+Chain1):

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

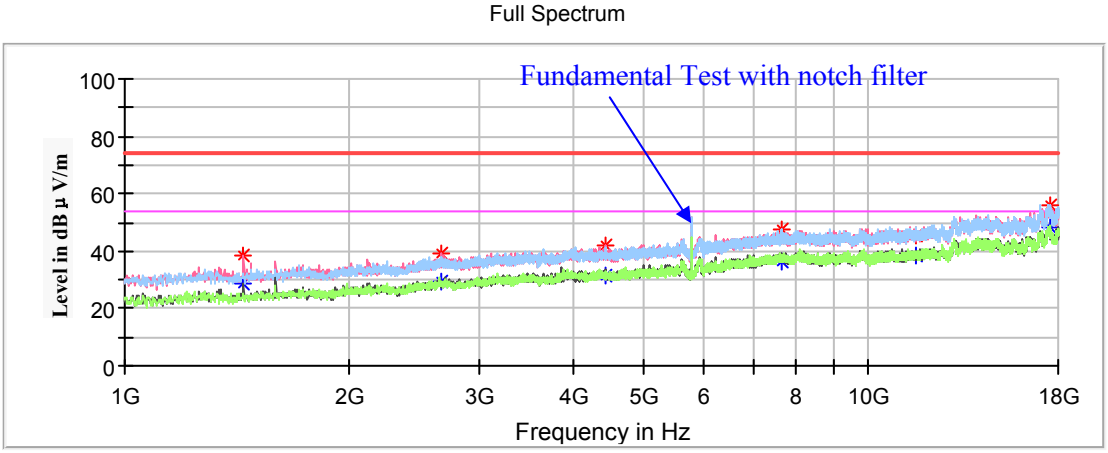
Note:
1. This test was performed with the 5725-5850MHz band reject filter.
2. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
   Corrected Amplitude = Corrected Factor + Reading
   Margin = Limit - Corrected. Amplitude

Low Channel: 5745MHz



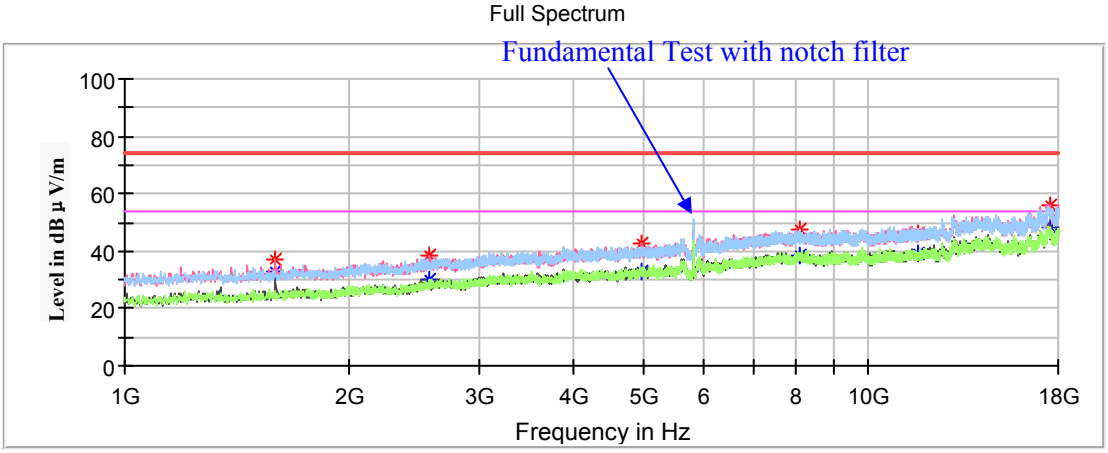
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1402.900000	36.11	---	150.0	V	220.0	-16.9	74.00	37.89
1402.900000	---	24.75	150.0	V	220.0	-16.9	54.00	29.25
2128.800000	36.72	---	150.0	V	182.0	-13.9	68.20	31.48
3177.700000	40.31	---	150.0	V	15.0	-9.6	68.20	27.89
7611.300000	---	37.79	200.0	H	324.0	1.2	54.00	16.21
7611.300000	46.92	---	200.0	H	324.0	1.2	74.00	27.08
11490.700000	---	38.37	200.0	H	231.0	2.8	54.00	15.63
11490.700000	46.43	---	200.0	H	231.0	2.8	74.00	27.57
17467.900000	56.22	---	200.0	H	10.0	8.8	68.20	11.98

Middle Channel: 5785MHz



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1445.400000	---	29.00	150.0	V	104.0	-16.7	54.00	25.00
1445.400000	38.65	---	150.0	V	104.0	-16.7	74.00	35.35
2659.200000	39.11	---	150.0	V	169.0	-11.7	68.20	29.09
4428.900000	42.11	---	150.0	V	156.0	-6.3	68.20	26.09
7636.800000	---	36.50	150.0	V	117.0	1.2	54.00	17.50
7636.800000	47.69	---	150.0	V	117.0	1.2	74.00	26.31
11570.600000	45.18	---	150.0	H	60.0	2.9	74.00	28.82
11570.600000	---	38.19	150.0	H	60.0	2.9	54.00	15.81
17568.200000	56.16	---	150.0	V	77.0	8.9	68.20	12.04

High Channel: 5825MHz

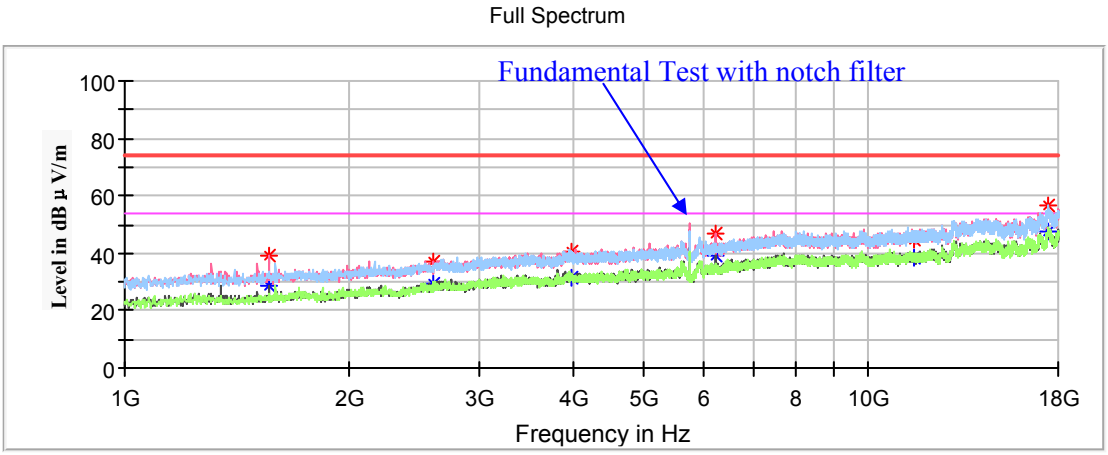


Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1593.300000	37.17	---	150.0	V	134.0	-16.0	74.00	36.83
1593.300000	---	32.70	150.0	V	134.0	-16.0	54.00	21.30
2574.200000	38.71	---	150.0	V	0.0	-12.1	68.20	29.49
4952.500000	---	32.87	200.0	V	236.0	-5.3	54.00	21.13
4952.500000	43.00	---	200.0	V	236.0	-5.3	74.00	31.00
8099.200000	---	38.49	150.0	V	349.0	1.7	54.00	15.51
8099.200000	47.81	---	150.0	V	349.0	1.7	74.00	26.19
11650.500000	---	39.32	150.0	V	325.0	3.1	54.00	14.68
11650.500000	46.10	---	150.0	V	325.0	3.1	74.00	27.90
17512.100000	56.18	---	150.0	V	147.0	8.9	68.20	12.02

802.11n-HT20 Mode*(Chain0+Chain1):*
*(Pre-scan with X,Y and Z axes of orientation, the worst case **Z-axis of orientation** was recorded)*

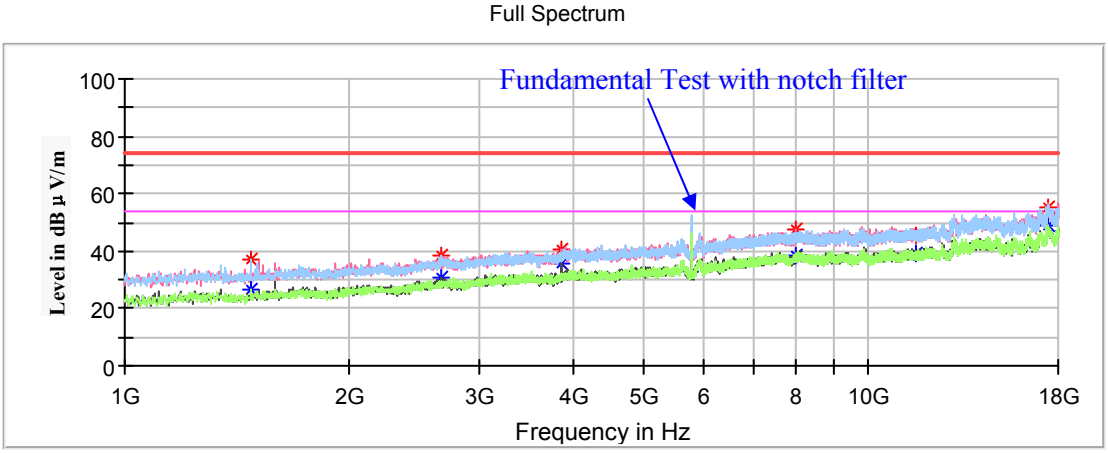
Note:
1. This test was performed with the 5725-5850MHz band reject filter.
2. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
   Corrected Amplitude = Corrected Factor + Reading
   Margin = Limit - Corrected. Amplitude

Low Channel: 5745MHz



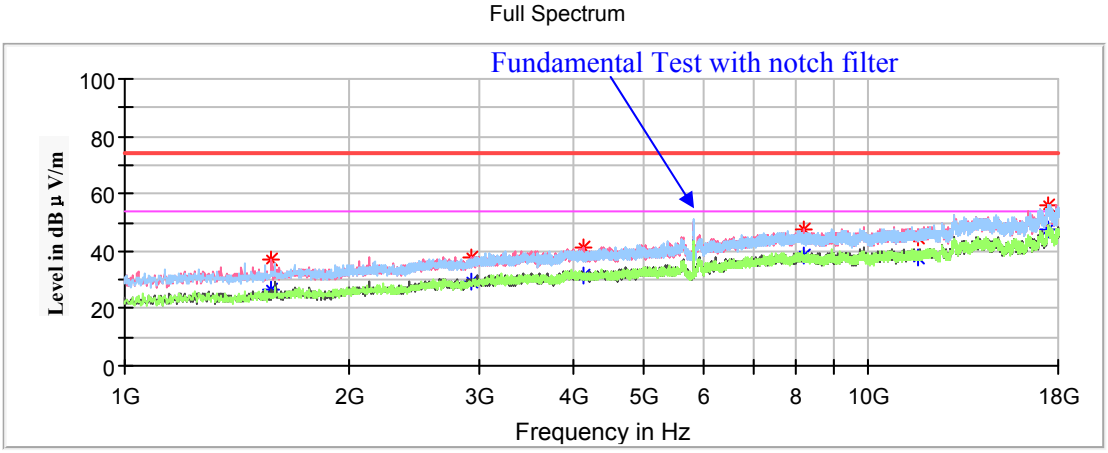
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1562.700000	39.06	---	150.0	V	142.0	-16.1	74.00	34.94
1562.700000	---	28.56	150.0	V	142.0	-16.1	54.00	25.44
2592.900000	37.25	---	150.0	V	353.0	-12.0	68.20	30.95
3983.500000	---	31.73	150.0	H	257.0	-7.1	54.00	22.27
3983.500000	40.52	---	150.0	H	257.0	-7.1	74.00	33.48
6249.600000	46.56	---	150.0	V	243.0	-2.1	68.20	21.64
11490.700000	---	38.31	200.0	V	294.0	2.8	54.00	15.69
11490.700000	45.04	---	200.0	V	294.0	2.8	74.00	28.96
17457.700000	56.36	---	150.0	H	297.0	8.7	68.20	11.84

Middle Channel: 5785MHz



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1477.700000	36.97	---	200.0	H	71.0	-16.5	74.00	37.03
1477.700000	---	26.39	200.0	H	71.0	-16.5	54.00	27.61
2667.700000	38.20	---	200.0	H	256.0	-11.6	68.20	30.00
3856.000000	---	35.79	150.0	V	297.0	-7.5	54.00	18.21
3856.000000	40.83	---	150.0	V	297.0	-7.5	74.00	33.17
7995.500000	47.32	---	150.0	V	357.0	1.8	68.20	20.88
11570.600000	45.25	---	150.0	V	91.0	2.9	74.00	28.75
11570.600000	---	39.04	150.0	V	91.0	2.9	54.00	14.96
17493.400000	55.11	---	150.0	V	271.0	8.9	68.20	13.09

High Channel: 5825MHz



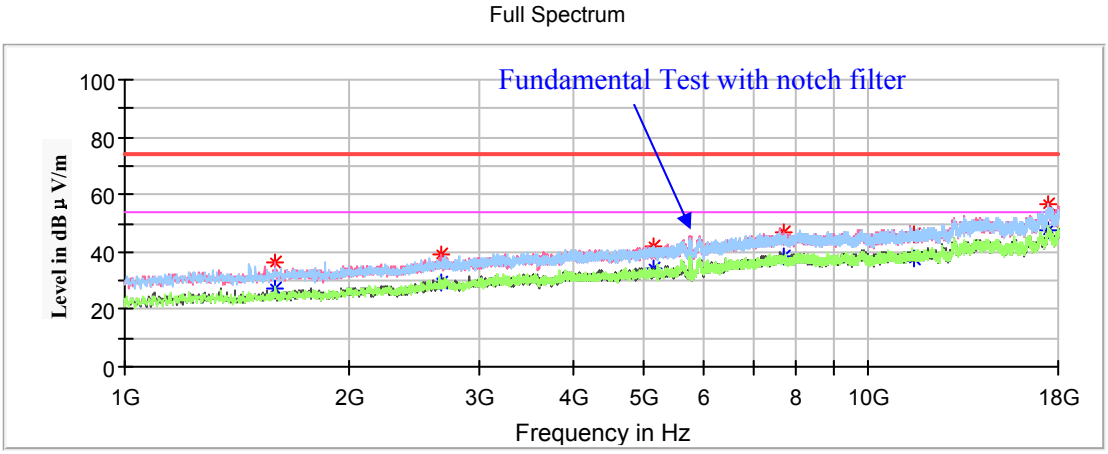
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1576.300000	---	26.89	150.0	V	24.0	-16.1	54.00	27.11
1576.300000	36.82	---	150.0	V	24.0	-16.1	74.00	37.18
2924.400000	38.03	---	150.0	V	155.0	-10.5	68.20	30.17
4145.000000	---	31.45	150.0	V	89.0	-6.8	54.00	22.55
4145.000000	41.39	---	150.0	V	89.0	-6.8	74.00	32.61
8167.200000	---	38.48	150.0	V	282.0	1.6	54.00	15.52
8167.200000	47.51	---	150.0	V	282.0	1.6	74.00	26.49
11650.500000	---	37.91	150.0	V	63.0	3.1	54.00	16.09
11650.500000	44.55	---	150.0	V	63.0	3.1	74.00	29.45
17461.100000	56.12	---	200.0	H	0.0	8.8	68.20	12.08

802.11ac40 Mode(Chain0+Chain1):

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

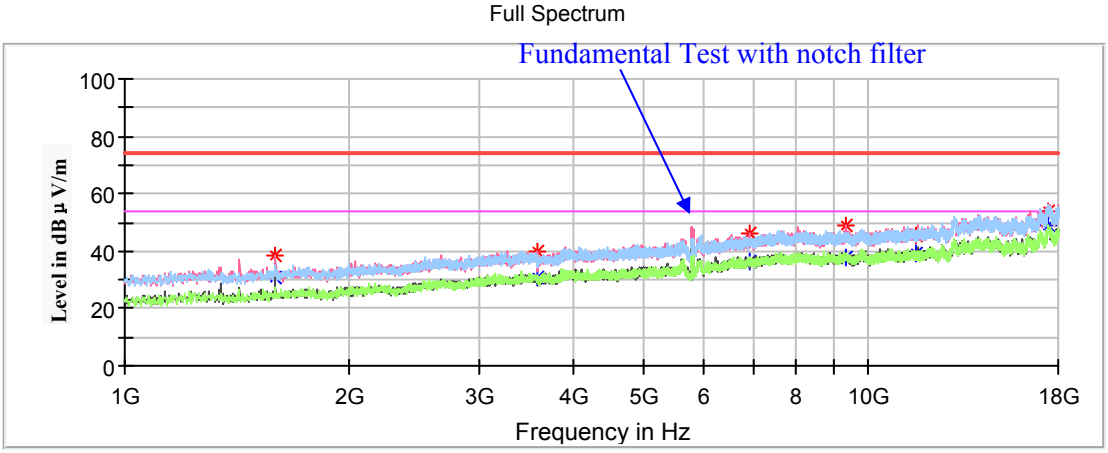
Note:
1. This test was performed with the 5725-5850MHz band reject filter.
2. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
   Corrected Amplitude = Corrected Factor + Reading
   Margin = Limit - Corrected. Amplitude

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)				
1595.000000	---	27.27	150.0	V	143.0	-16.0	54.00	26.73
1595.000000	36.34	---	150.0	V	143.0	-16.0	74.00	37.66
2657.500000	39.11	---	150.0	V	276.0	-11.7	68.20	29.09
5132.700000	41.62	---	200.0	H	152.0	-4.8	74.00	32.38
5132.700000	---	34.40	200.0	H	152.0	-4.8	54.00	19.60
7684.400000	---	38.35	150.0	V	182.0	1.3	54.00	15.65
7684.400000	46.89	---	150.0	V	182.0	1.3	74.00	27.11
11511.100000	46.10	---	150.0	H	321.0	2.8	74.00	27.90
11511.100000	---	37.97	150.0	H	321.0	2.8	54.00	16.03
17478.100000	56.53	---	150.0	H	5.0	8.8	68.20	11.67

High Channel: 5795MHz

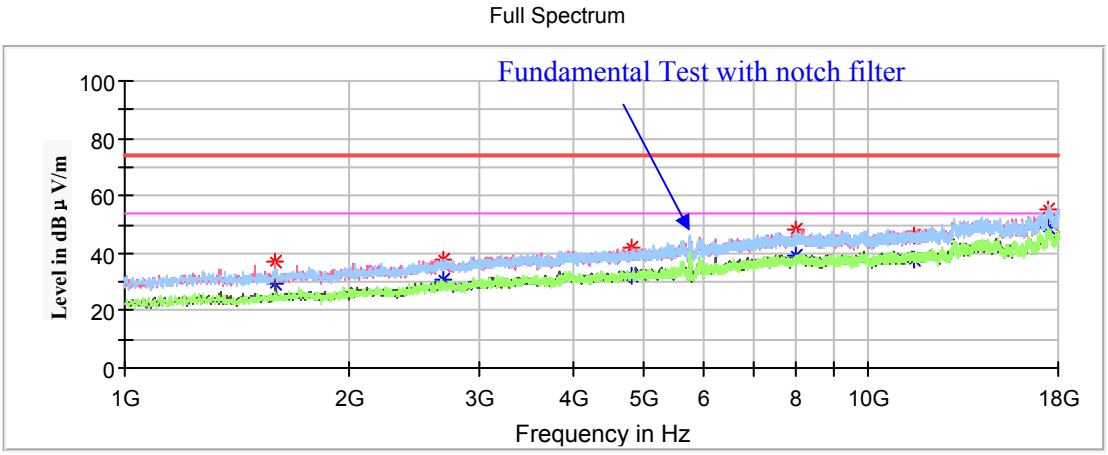


Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1595.000000	---	30.88	150.0	V	135.0	-16.0	54.00	23.12
1595.000000	38.46	---	150.0	V	135.0	-16.0	74.00	35.54
3594.200000	39.64	---	150.0	V	262.0	-8.5	68.20	28.56
6912.600000	45.97	---	150.0	V	275.0	-0.3	68.20	22.23
9307.900000	---	37.98	200.0	H	116.0	2.0	54.00	16.02
9307.900000	48.86	---	200.0	H	116.0	2.0	74.00	25.14
11589.300000	45.48	---	200.0	H	0.0	3.0	74.00	28.52
11589.300000	---	39.41	200.0	H	0.0	3.0	54.00	14.59
17406.700000	54.13	---	150.0	V	313.0	8.6	68.20	14.07

802.11n-HT40 Mode*(Chain0+Chain1)*:
*(Pre-scan with X,Y and Z axes of orientation, the worst case **Z-axis of orientation** was recorded)*

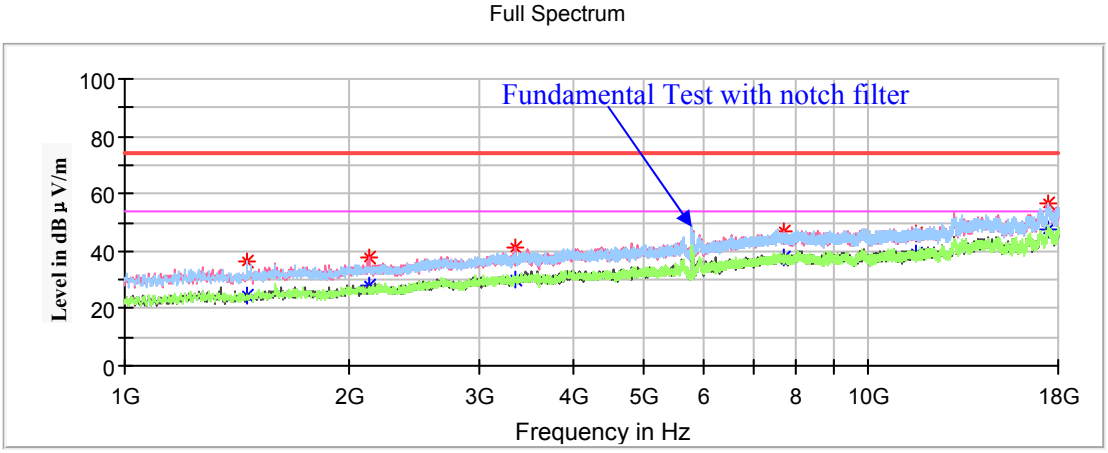
Note:
1. This test was performed with the 5725-5850MHz band reject filter.
2. Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
   Corrected Amplitude = Corrected Factor + Reading
   Margin = Limit - Corrected. Amplitude

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)				
1591.600000	36.72	---	150.0	V	143.0	-16.0	74.00	37.28
1591.600000	---	29.24	150.0	V	143.0	-16.0	54.00	24.76
2683.000000	37.73	---	150.0	V	50.0	-11.6	68.20	30.47
4809.700000	---	32.47	200.0	H	166.0	-5.6	54.00	21.53
4809.700000	41.81	---	200.0	H	166.0	-5.6	74.00	32.19
7988.700000	47.92	---	150.0	H	141.0	1.8	68.20	20.28
11511.100000	---	37.83	150.0	V	284.0	2.8	54.00	16.17
11511.100000	46.19	---	150.0	V	284.0	2.8	74.00	27.81
17469.600000	54.91	---	200.0	H	15.0	8.8	68.20	13.29

High Channel: 5795MHz



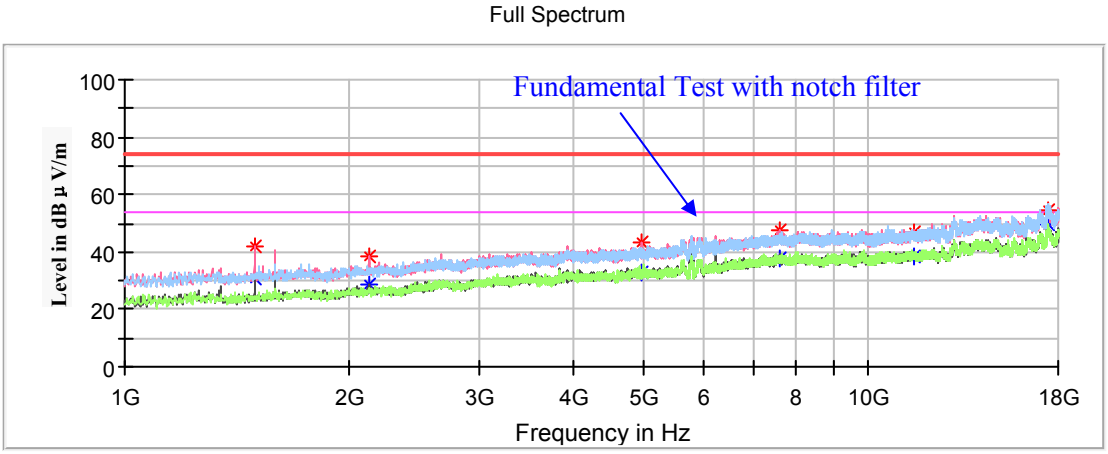
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1459.000000	36.42	---	200.0	H	257.0	-16.6	74.00	37.58
1459.000000	---	24.56	200.0	H	257.0	-16.6	54.00	29.44
2128.800000	37.55	---	150.0	V	271.0	-13.9	68.20	30.65
3356.200000	---	30.35	150.0	V	327.0	-9.2	54.00	23.65
3356.200000	41.10	---	150.0	V	327.0	-9.2	74.00	32.90
7709.900000	---	37.63	200.0	V	2.0	1.4	54.00	16.37
7709.900000	47.13	---	200.0	V	2.0	1.4	74.00	26.87
11591.000000	---	39.15	150.0	V	0.0	3.0	54.00	14.85
11591.000000	46.46	---	150.0	V	0.0	3.0	74.00	27.54
17440.700000	56.84	---	150.0	H	283.0	8.7	68.20	11.36

802.11ac80 Mode(Chain0+Chain1):

*(Pre-scan in the X,Y and Z axes of orientation, the worst case **Z-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

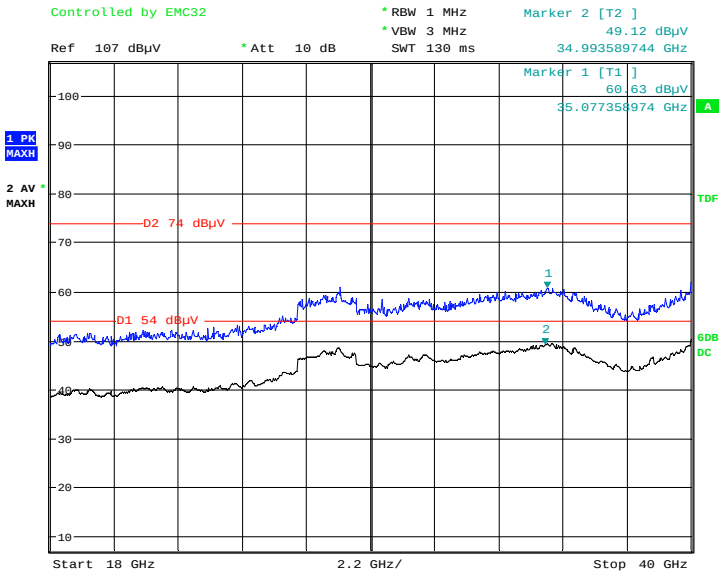


Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Correct Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	MaxPeak (dBµV/m)	Average (dBµV/m)	Height (cm)	Polar (H/V)				
1494.700000	42.09	---	150.0	V	103.0	-16.4	74.00	31.91
1494.700000	---	31.01	150.0	V	103.0	-16.4	54.00	22.99
2128.800000	38.24	---	150.0	V	206.0	-13.9	68.20	29.96
4969.500000	43.11	---	200.0	V	7.0	-5.2	74.00	30.89
4969.500000	---	33.19	200.0	V	7.0	-5.2	54.00	20.81
7587.500000	47.52	---	150.0	V	2.0	1.2	74.00	26.48
7587.500000	---	38.03	150.0	V	2.0	1.2	54.00	15.97
11550.200000	47.01	---	150.0	V	333.0	2.9	74.00	26.99
11550.200000	---	38.78	150.0	V	333.0	2.9	54.00	15.22
17469.600000	54.34	---	150.0	V	168.0	8.8	68.20	13.86

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

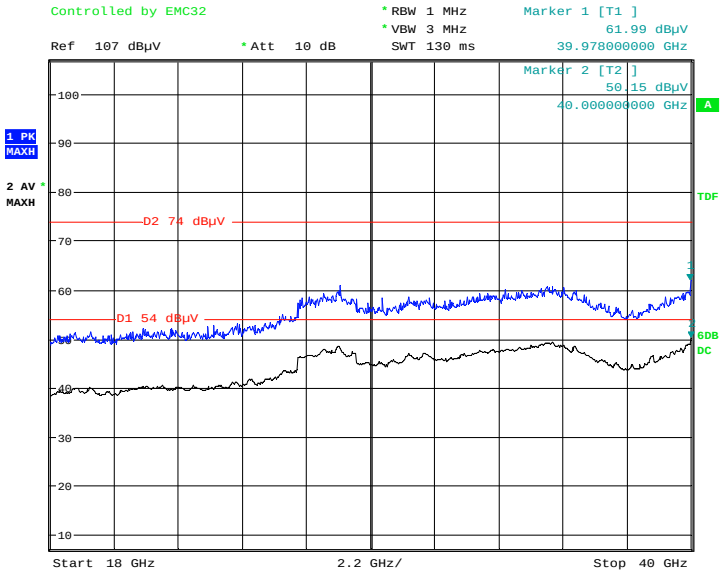
Pre-scan with 802.11a, 802.11ac20, 802.11n-HT20, 802.11ac40, 802.11n-HT40 and 802.11 ac80 modes of operation in the X,Y and Z axes of orientation, the worst case 802.11a mode in channel 5240 in Z-axis of orientation was recorded.

Horizontal



Date: 24.SEP.2020 23:25:17

Vertical

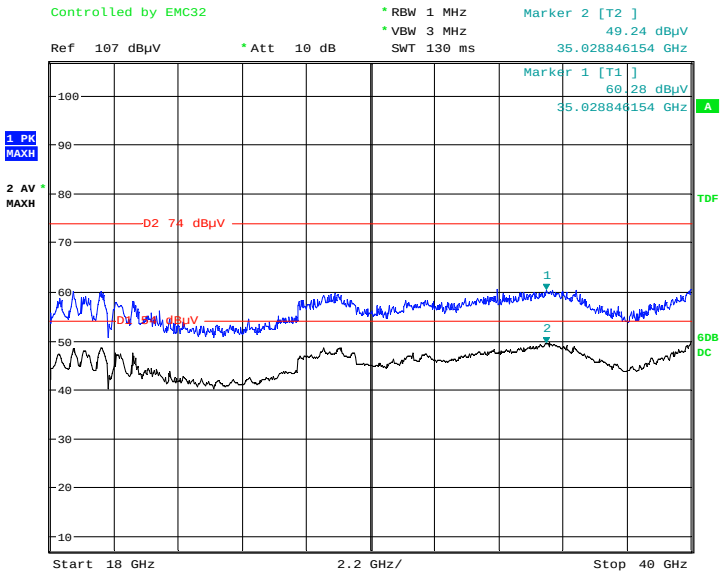


Date: 24.SEP.2020 23:24:31

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

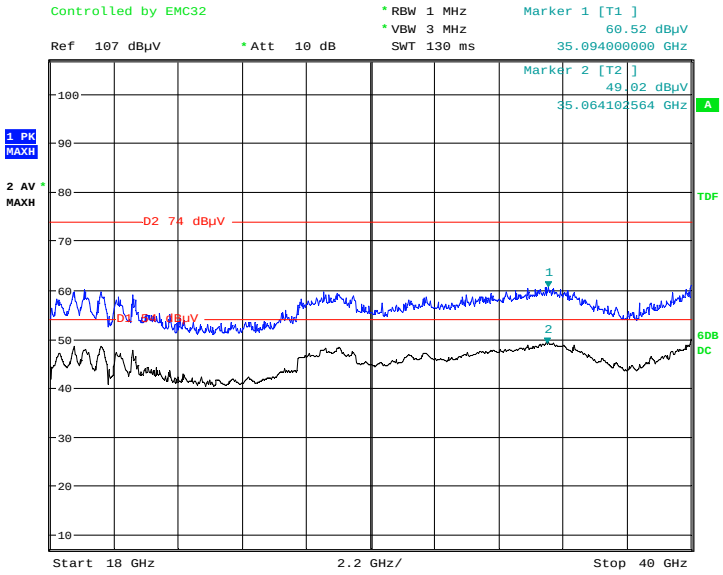
Pre-scan with 802.11a, 802.11ac20, 802.11n-HT20, 802.11ac40, 802.11n-HT40 and 802.11 ac80 modes of operation in the X,Y and Z axes of orientation, the worst case 802.11a mode in channel 5825 in Z-axis of orientation was recorded.

Horizontal



Date: 27.SEP.2020 19:43:30

Vertical



Date: 27.SEP.2020 19:40:07

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

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

802.11a Mode-Chain0: *(Pre-scan in the X, Y and Z axes of orientation, the worst case in Z-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	---	49.01	150.0	V	322.0	5.2	54.00	4.99
5150.00	56.96	---	150.0	V	322.0	5.2	74.00	17.04
High Channel: 5240MHz								
5350.00	55.07	---	200.0	V	0.0	5.7	74.00	18.93
5350.00	---	50.88	200.0	V	0.0	5.7	54.00	3.12

802.11a Mode-Chain1: *(Pre-scan in the X, Y and Z axes of orientation, the worst case in Z-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	54.19	---	150.0	V	236.0	5.2	74.00	19.81
5150.00	---	50.20	150.0	V	236.0	5.2	54.00	3.80
High Channel: 5240MHz								
5350.00	54.79	---	200.0	V	331.0	5.7	74.00	19.21
5350.00	---	50.90	200.0	V	331.0	5.7	54.00	3.10

802.11ac20 Mode (Chain0+ Chain1): *(Pre-scan in the X, Y and Z axes of orientation, the worst case in Z-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	53.57	---	150.0	V	136.0	5.2	74.00	20.43
5150.00	---	51.10	150.0	V	136.0	5.2	54.00	2.90
High Channel: 5240MHz								
5350.00	55.23	---	150.0	V	200.0	5.7	74.00	18.77
5350.00	---	51.09	150.0	V	200.0	5.7	54.00	2.91

802.11n-HT20 Mode (Chain0+ Chain1): *(Pre-scan in the X, Y and Z axes of orientation, the worst case in Z-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	53.09	---	200.0	V	124.0	5.2	74.00	20.91
5150.00	---	50.78	200.0	V	124.0	5.2	54.00	3.22
High Channel: 5240MHz								
5350.00	54.94	---	200.0	V	155.0	5.7	74.00	19.06
5350.00	---	51.20	200.0	V	155.0	5.7	54.00	2.80

802.11ac40 Mode (Chain0+ Chain1): *(Pre-scan in the X, Y and Z axes of orientation, the worst case in Z-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	54.32	---	200.0	V	90.0	5.2	74.00	19.68
5150.00	---	50.57	200.0	V	90.0	5.2	54.00	3.43
High Channel: 5230MHz								
5350.00	55.26	---	150.0	V	214.0	5.7	74.00	18.74
5350.00	---	51.05	150.0	V	214.0	5.7	54.00	2.95

802.11n-HT40 Mode (Chain0+ Chain1): *(Pre-scan in the X, Y and Z axes of orientation, the worst case in Z-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	54.62	---	200.0	V	257.0	5.2	74.00	19.38
5150.00	---	50.02	200.0	V	257.0	5.2	54.00	3.98
High Channel: 5230MHz								
5350.00	---	51.13	150.0	V	203.0	5.8	54.00	2.87
5350.00	56.88	---	150.0	V	203.0	5.8	74.00	17.12

802.11ac80 Mode (Chain0+ Chain1): *(Pre-scan in the X, Y and Z axes of orientation, the worst case in Z-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	56.56	---	150.0	V	349.0	5.2	74.00	17.44
5150.00	---	51.36	150.0	V	349.0	5.2	54.00	2.64
5350.00	54.23	---	200.0	V	71.0	5.7	74.00	19.77
5350.00	---	51.39	200.0	V	71.0	5.7	54.00	2.61

Band Edge Emissions Test (5725-5850MHz band):

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

802.11a Mode-Chain0: *(Pre-scan in the X, Y and Z axes of orientation, the worst case in Z-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	53.56	---	150.0	H	0.0	6.4	68.20	14.64
5700.00	53.68	---	200.0	H	286.0	6.5	105.20	51.52
5720.00	53.84	---	150.0	H	38.0	6.5	110.80	56.96
5725.00	54.72	---	200.0	H	38.0	6.5	122.20	67.48
High Channel: 5825MHz								
5850.00	55.29	---	150.0	V	302.0	6.7	122.20	66.91
5855.00	54.36	---	200.0	H	0.0	6.7	110.80	56.44
5875.00	54.42	---	150.0	H	287.0	6.8	105.20	50.78
5925.00	55.47	---	200.0	H	93.0	6.9	68.20	12.73

802.11a Mode-Chain1: *(Pre-scan in the X, Y and Z axes of orientation, the worst case in Z-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	53.48	---	150.0	V	22.0	6.4	68.20	14.72
5700.00	54.87	---	200.0	H	0.0	6.5	105.20	50.33
5720.00	53.00	---	150.0	H	316.0	6.5	110.80	57.80
5725.00	54.92	---	200.0	H	356.0	6.5	122.20	67.28
High Channel: 5825MHz								
5850.00	54.64	---	150.0	V	133.0	6.7	122.20	67.56
5855.00	55.31	---	150.0	V	86.0	6.7	110.80	55.49
5875.00	54.07	---	200.0	V	0.0	6.8	105.20	51.13
5925.00	54.25	---	150.0	V	337.0	6.9	68.20	13.95

802.11ac20 Mode-Chain0+ Chain1: *(Pre-scan in the X, Y and Z axes of orientation, the worst case in Z-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	54.14	---	150.0	V	2.0	6.4	68.20	14.06
5700.00	53.60	---	200.0	H	356.0	6.5	105.20	51.60
5720.00	54.24	---	150.0	V	2.0	6.5	110.80	56.56
5725.00	54.78	---	150.0	H	356.0	6.5	122.20	67.42
High Channel: 5825MHz								
5850.00	53.69	---	200.0	H	79.0	6.7	122.20	68.51
5855.00	54.25	---	150.0	H	306.0	6.7	110.80	56.55
5875.00	56.03	---	150.0	V	170.0	6.8	105.20	49.17
5925.00	54.89	---	200.0	H	129.0	6.9	68.20	13.31

802.11n-HT20 Mode- Chain0+ Chain1: *(Pre-scan in the X, Y and Z axes of orientation, the worst case in Z-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	53.96	---	200.0	H	321.0	6.4	68.20	14.24
5700.00	54.30	---	150.0	H	289.0	6.5	105.20	50.90
5720.00	54.59	---	150.0	H	258.0	6.5	110.80	56.21
5725.00	53.93	---	150.0	V	76.0	6.5	122.20	68.27
High Channel: 5825MHz								
5850.00	53.66	---	200.0	H	191.0	6.7	122.20	68.54
5855.00	54.26	---	150.0	H	286.0	6.7	110.80	56.54
5875.00	54.96	---	200.0	H	348.0	6.8	105.20	50.24
5925.00	54.86	---	150.0	V	152.0	6.9	68.20	13.34

802.11ac40 Mode- Chain0+ Chain1: *(Pre-scan in the X, Y and Z axes of orientation, the worst case in Z-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	53.06	---	200.0	H	338.0	6.4	68.20	15.14
5700.00	53.46	---	150.0	V	115.0	6.5	105.20	51.74
5720.00	54.30	---	150.0	V	67.0	6.5	110.80	56.50
5725.00	55.29	---	150.0	V	83.0	6.5	122.20	66.91
High Channel: 5795MHz								
5850.00	54.72	---	200.0	H	243.0	6.7	122.20	67.48
5855.00	53.91	---	150.0	V	57.0	6.7	110.80	56.89
5875.00	54.68	---	200.0	H	243.0	6.8	105.20	50.52
5925.00	54.28	---	150.0	V	26.0	6.9	68.20	13.92

802.11n-HT40 Mode- Chain0+ Chain1: *(Pre-scan in the X, Y and Z axes of orientation, the worst case in Z-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	54.36	---	200.0	H	189.0	6.5	68.20	13.84
5700.00	56.18	---	150.0	V	2.0	6.5	105.20	49.02
5720.00	53.52	---	150.0	V	43.0	6.5	110.80	57.28
5725.00	55.34	---	200.0	H	345.0	6.6	122.20	66.86
High Channel: 5795MHz								
5850.00	54.67	---	150.0	V	322.0	6.7	122.20	67.53
5855.00	55.37	---	200.0	H	275.0	6.7	110.80	55.43
5875.00	54.59	---	150.0	H	212.0	6.8	105.20	50.61
5925.00	56.13	---	150.0	H	359.0	6.9	68.20	12.07

802.11ac80 Mode- Chain0+ Chain1: *(Pre-scan in the X, Y and Z axes of orientation, the worst case in Z-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	52.93	---	150.0	V	250.0	6.4	68.20	15.27
5700.00	55.04	---	150.0	V	0.0	6.5	105.20	50.16
5720.00	54.57	---	200.0	H	190.0	6.5	110.80	56.23
5725.00	53.98	---	150.0	H	10.0	6.5	122.20	68.22
5850.00	53.85	---	150.0	V	138.0	6.7	122.20	68.35
5855.00	54.71	---	150.0	H	284.0	6.7	110.80	56.09
5875.00	54.48	---	150.0	V	90.0	6.8	105.20	50.72
5925.00	54.25	---	200.0	V	70.0	6.9	68.20	13.95

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

Applicable Standard

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

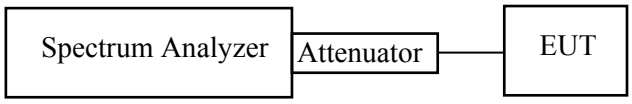
Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.

Test Procedure

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

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

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



Test Data

Environmental Conditions

Temperature:	24.5~25.3 °C
Relative Humidity:	50~52 %
ATM Pressure:	101.2~101.7 kPa

The testing was performed by Jack Jiao from 2020-09-21 to 2020-11-24.

Test Result: Pass.

5150-5250 MHz:

Test mode	Channel	Frequency (MHz)	26dB Bandwidth (MHz)		99% Bandwidth (MHz)	
			Chain0	Chain1	Chain0	Chain1
802.11a	Low	5180	19.719	19.960	16.473	16.473
	Middle	5200	19.840	19.900	16.533	16.533
	High	5240	19.719	19.780	16.533	16.533
802.11ac20	Low	5180	20.441	20.561	17.675	17.675
	Middle	5200	20.621	20.561	17.675	17.675
	High	5240	20.561	20.681	17.675	17.675
802.11n-HT20	Low	5180	20.441	20.741	17.735	17.675
	Middle	5200	20.681	20.802	17.675	17.735
	High	5240	20.741	20.621	17.735	17.675
802.11ac40	Low	5190	39.920	40.160	36.192	36.072
	High	5230	40.040	39.920	36.072	36.072
802.11n-HT40	Low	5190	40.040	40.160	35.952	36.072
	High	5230	40.160	40.040	36.072	36.072
802.11ac80	Low	5210	84.649	84.649	75.992	75.992

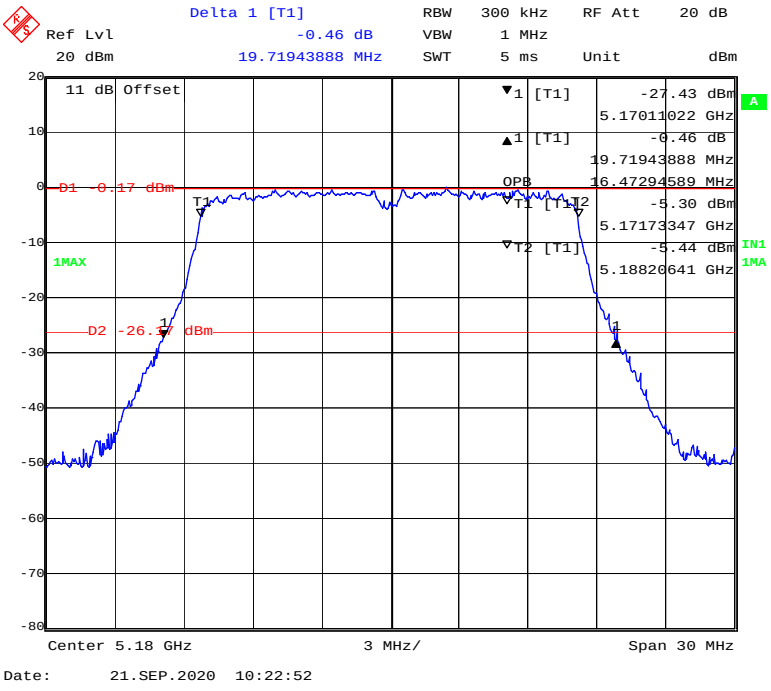
5725-5850MHz:

Test mode	Channel	Frequency (MHz)	6dB Bandwidth (MHz)		99% Bandwidth (MHz)		Limit (MHz)
			Chain0	Chain1	Chain0	Chain1	
802.11a	Low	5745	16.413	16.473	16.533	16.533	≥0.5
	Middle	5785	16.413	16.413	16.473	16.533	≥0.5
	High	5825	16.413	16.413	16.533	16.533	≥0.5
802.11ac20	Low	5745	17.735	17.675	17.735	17.675	≥0.5
	Middle	5785	17.735	17.675	17.675	17.675	≥0.5
	High	5825	17.735	17.675	17.675	17.735	≥0.5
802.11n-HT20	Low	5745	17.735	17.615	17.675	17.675	≥0.5
	Middle	5785	17.735	17.735	17.675	17.735	≥0.5
	High	5825	17.735	17.735	17.675	17.675	≥0.5
802.11ac40	Low	5755	35.711	35.471	36.072	36.192	≥0.5
	High	5795	35.711	35.351	35.952	36.072	≥0.5
802.11n-HT40	Low	5755	35.351	35.711	36.072	36.072	≥0.5
	High	5795	35.591	35.711	36.072	35.952	≥0.5
802.11ac80	Low	5775	75.992	76.473	75.992	75.752	≥0.5

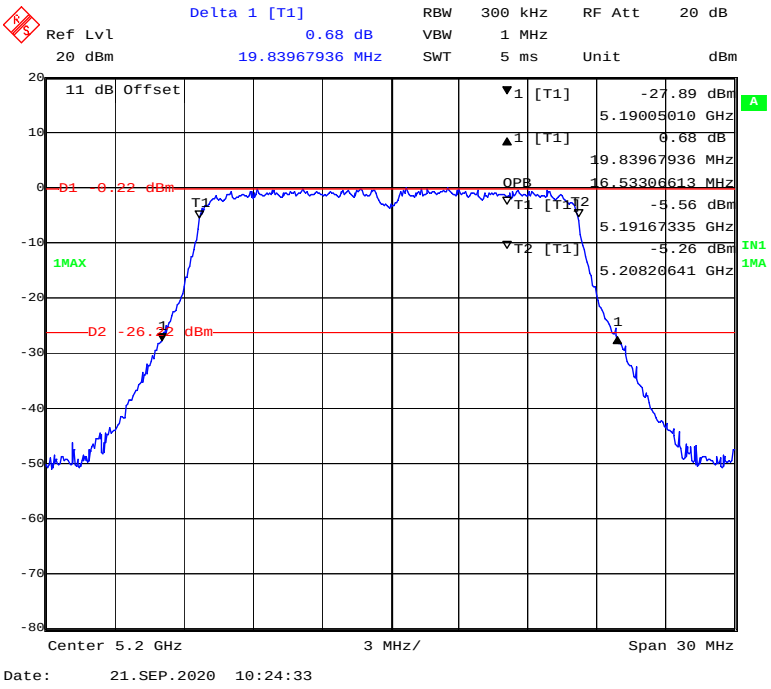
Note: No transmitted signal in the 99% bandwidth extends into the U-NII-2A and U-NII-2C band.

5150-5250 MHz Band:
Chain0:
26 Bandwidth&99% Occupied Bandwidth

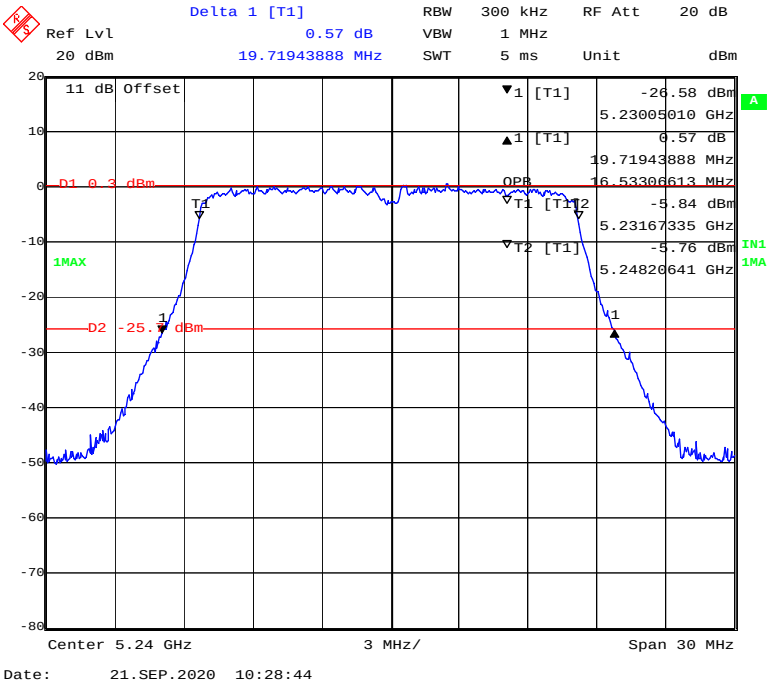
802.11a mode, 5180MHz



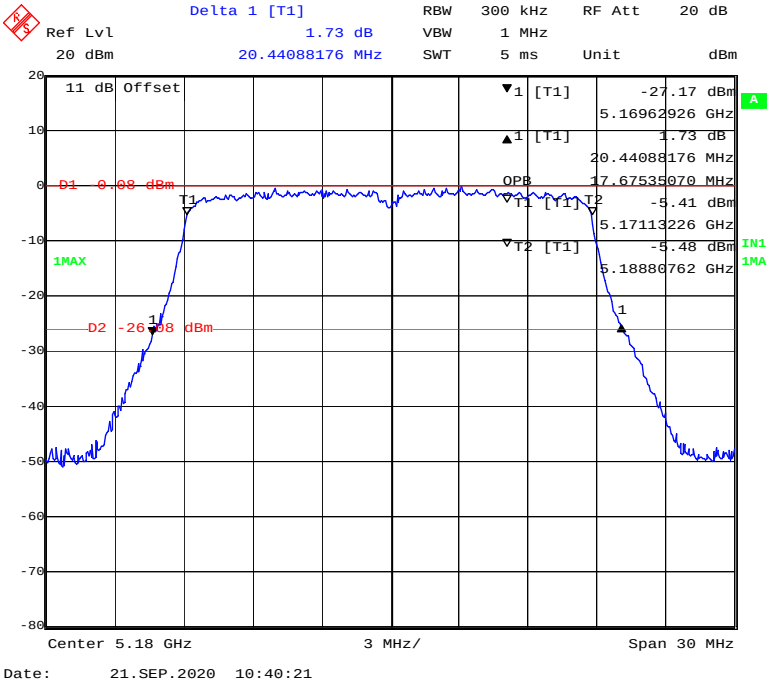
802.11a mode, 5200MHz



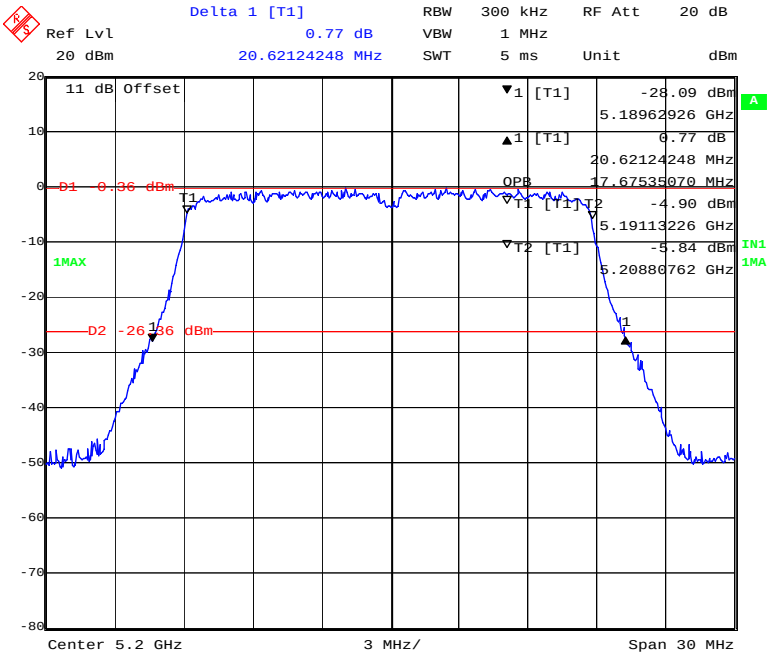
802.11a mode, 5240MHz



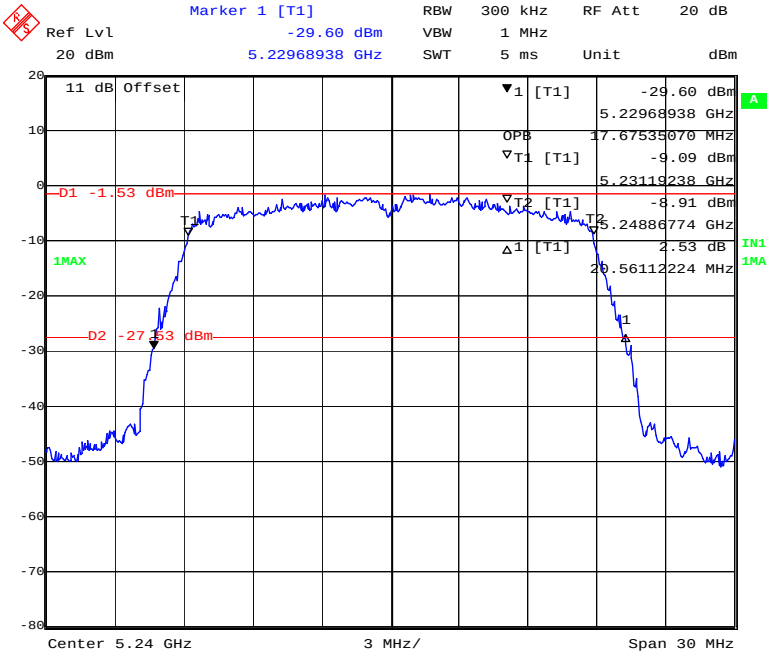
802.11ac20 mode, 5180MHz



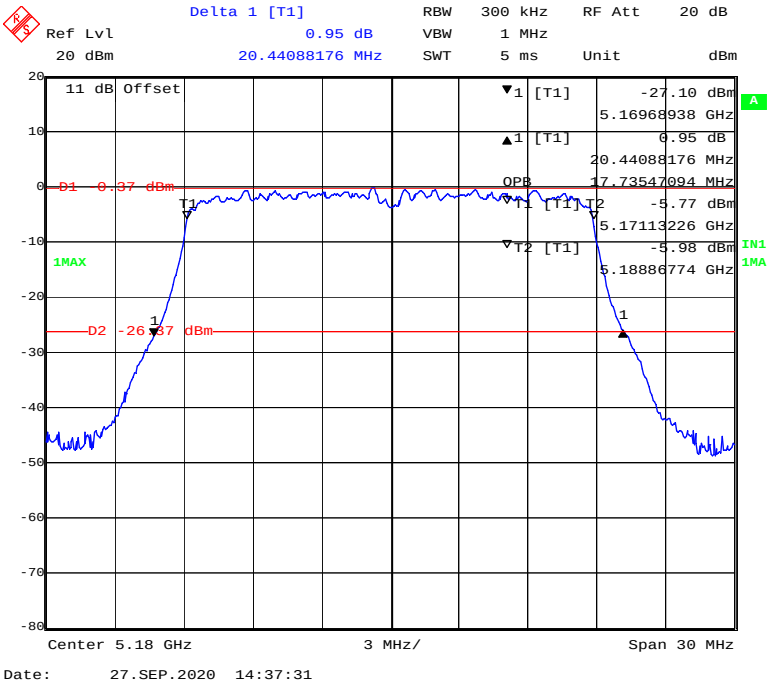
802.11 ac20 mode, 5200MHz



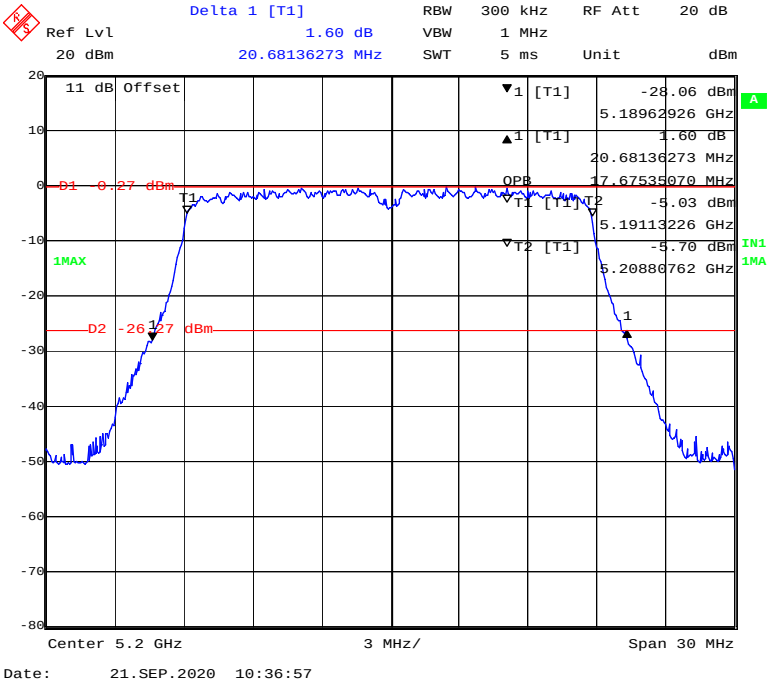
802.11 ac20 mode, 5240MHz



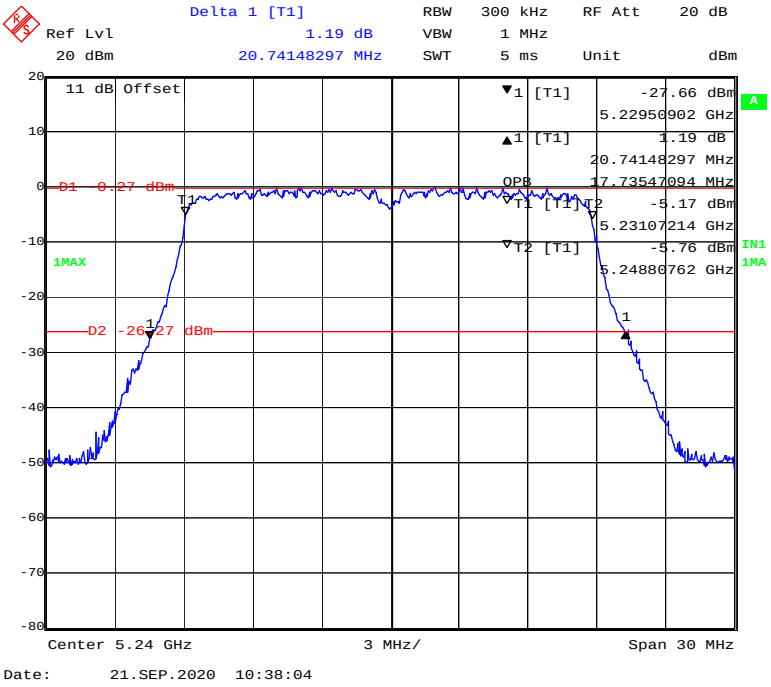
802.11n-HT20 mode, 5180MHz



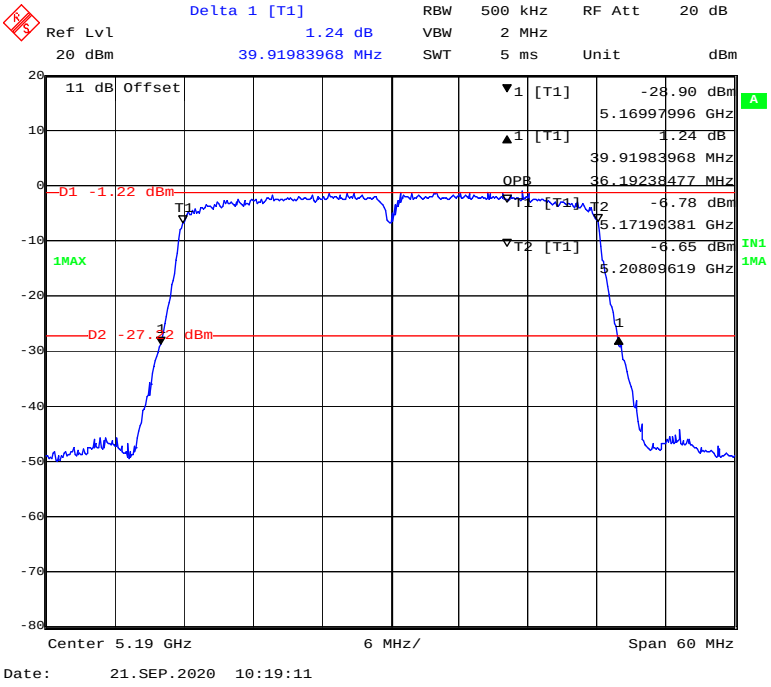
802.11n-HT20 mode, 5200MHz



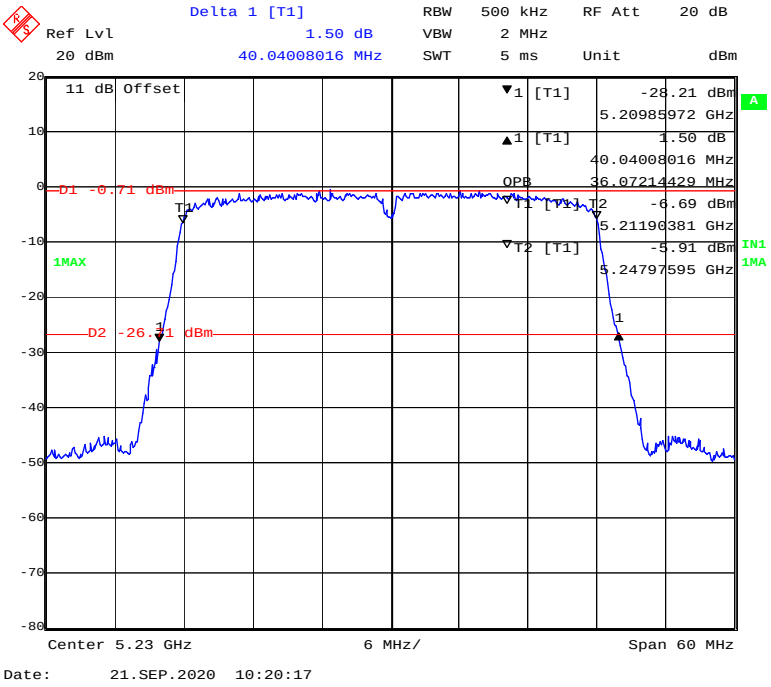
802.11n-HT20 mode, 5240MHz



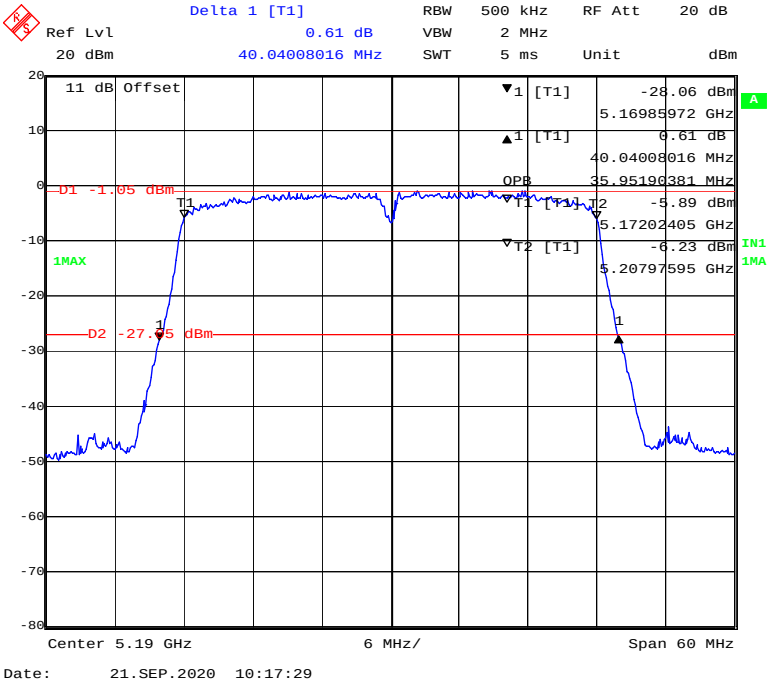
802.11ac40 mode, 5190MHz



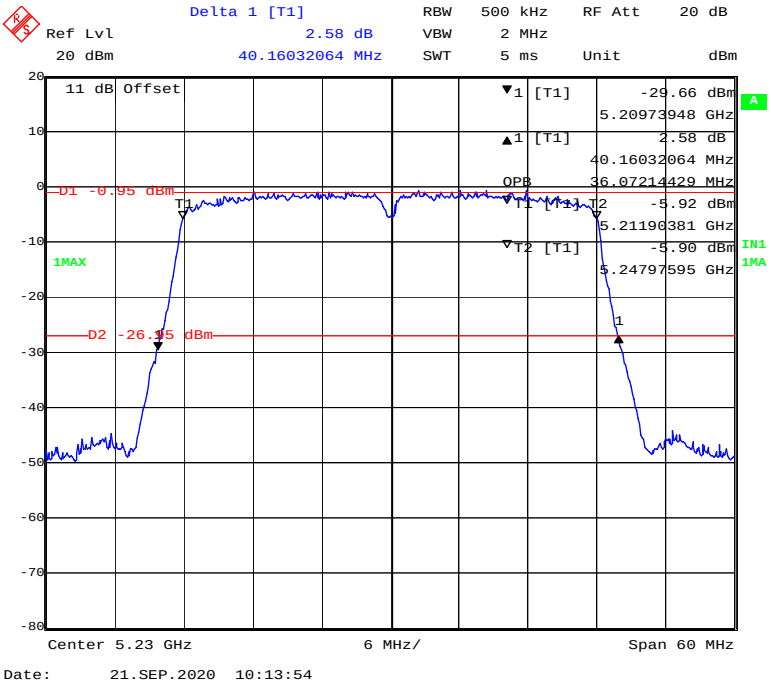
802.11 ac40 mode, 5230MHz



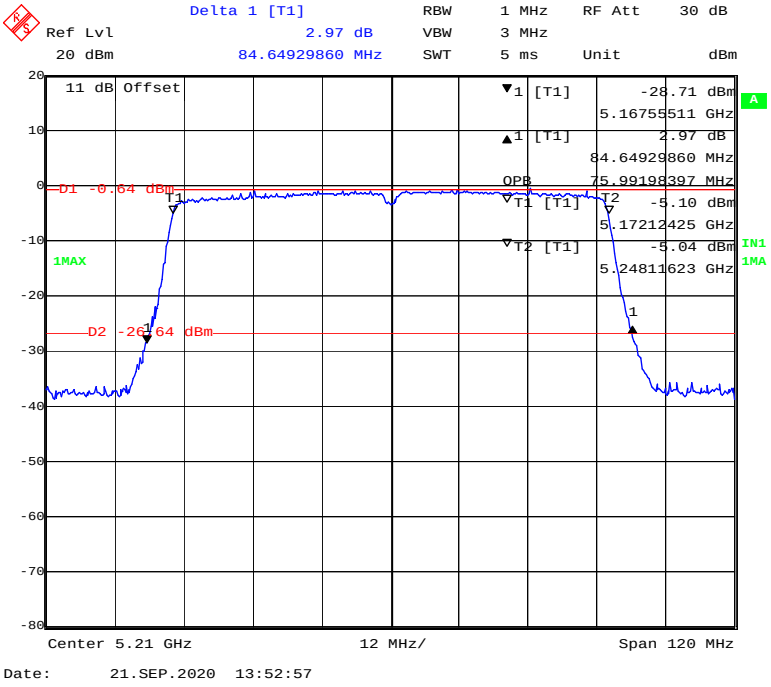
802.11n-HT40 mode, 5190MHz



802.11n-HT40 mode, 5230MHz



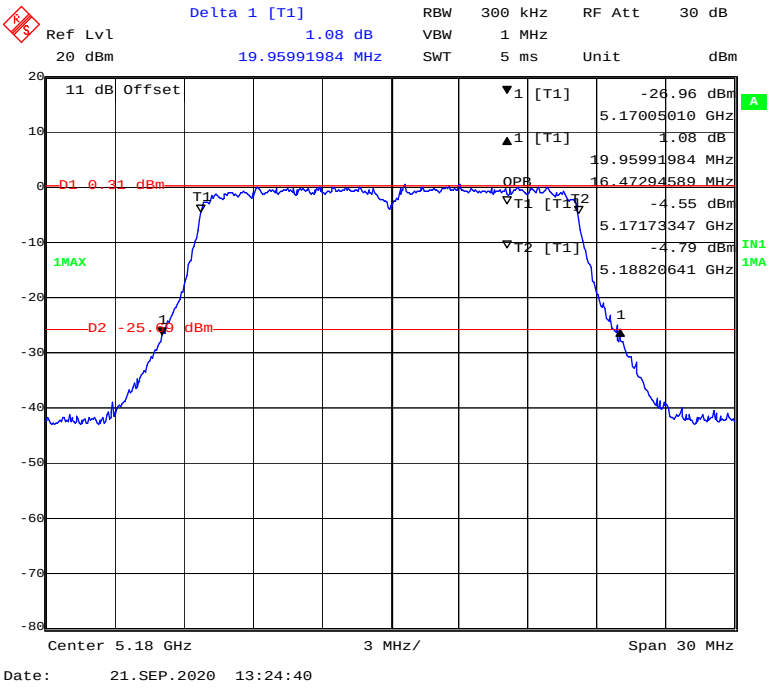
802.11ac80 mode, 5210MHz



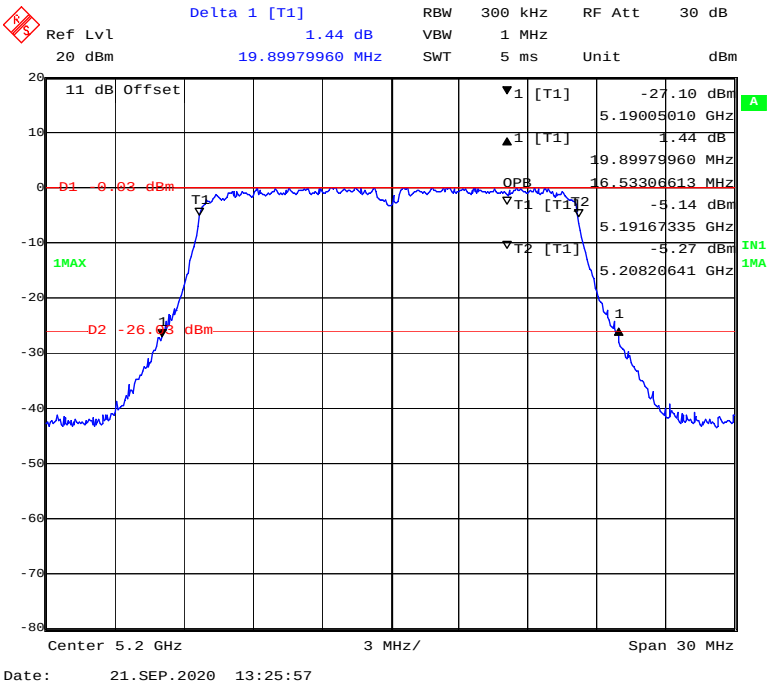
Chain1:

26 Bandwidth&99% Occupied Bandwidth

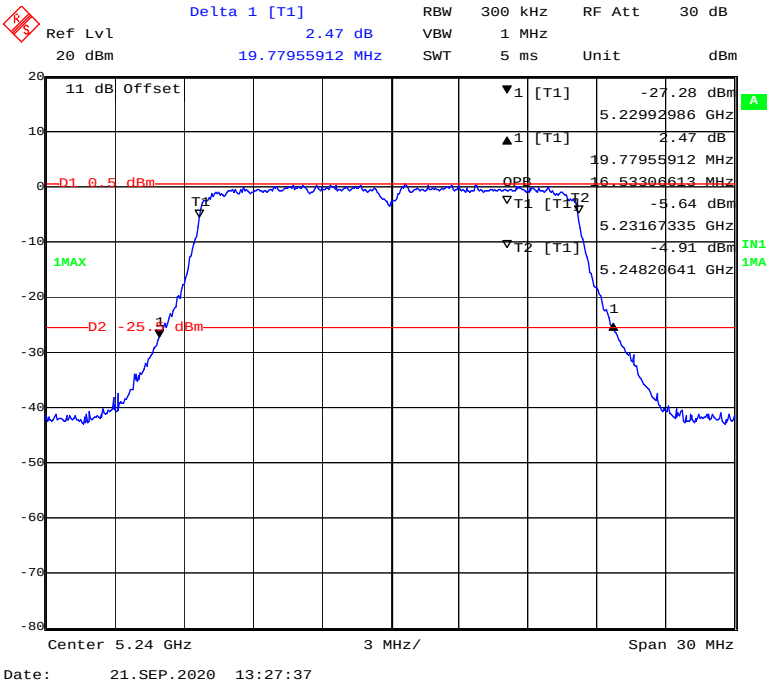
802.11a mode, 5180MHz



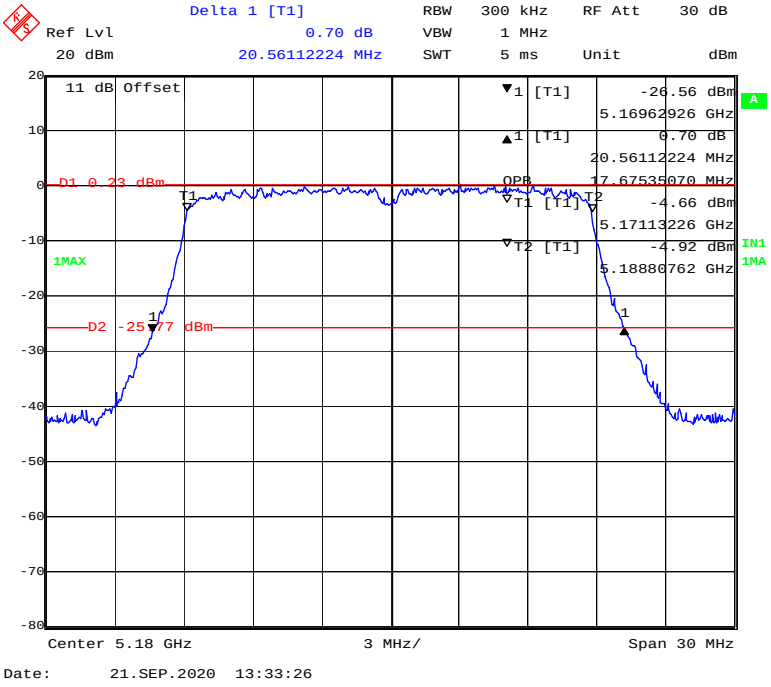
802.11a mode, 5200MHz



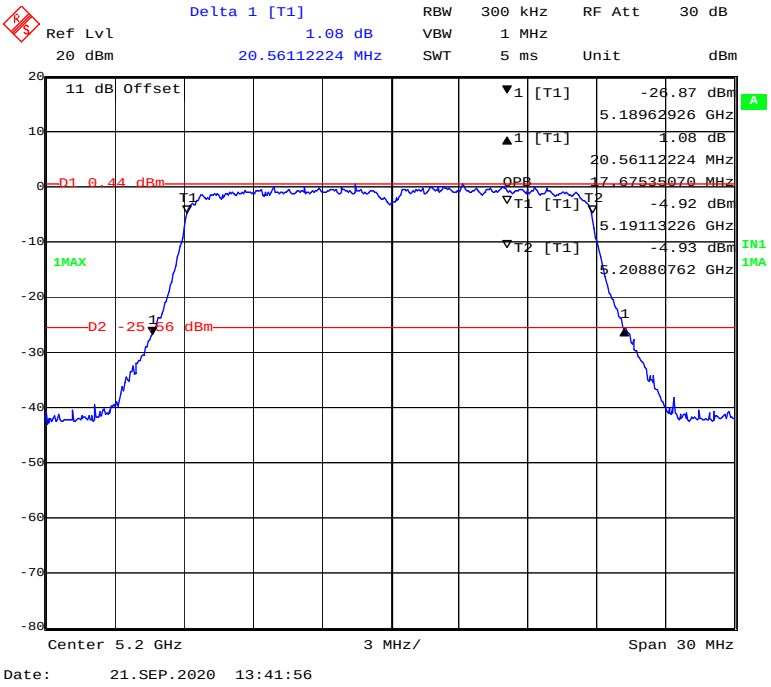
802.11a mode, 5240MHz



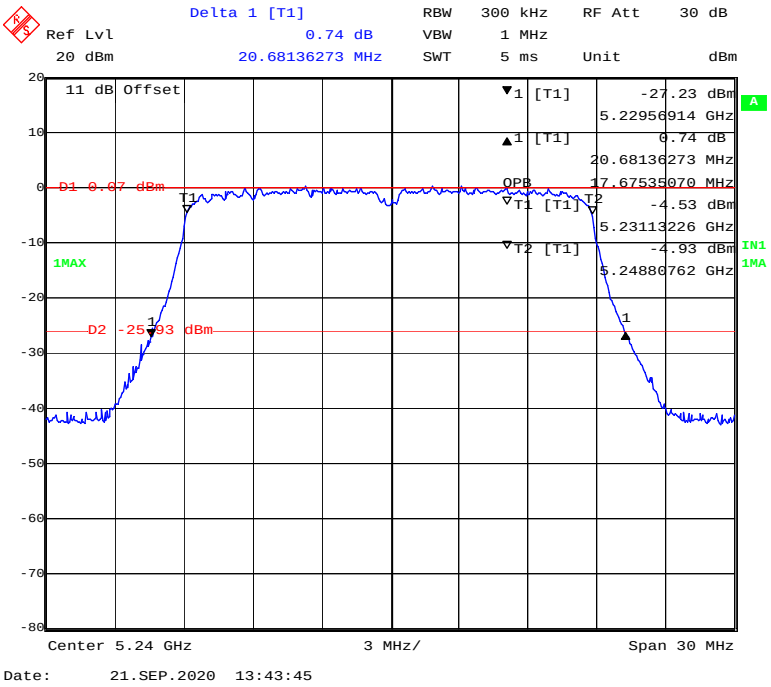
802.11ac20 mode, 5180MHz



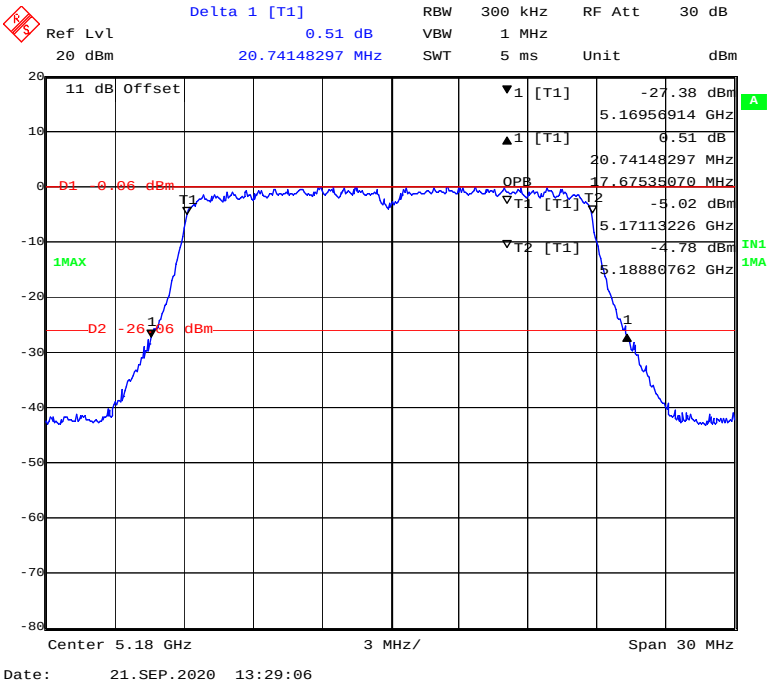
802.11 ac20 mode, 5200MHz



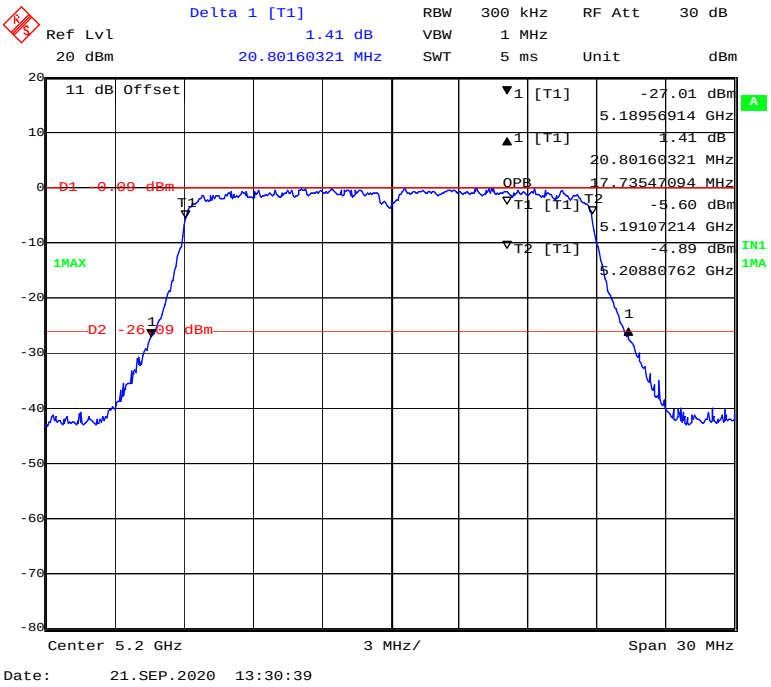
802.11 ac20 mode, 5240MHz



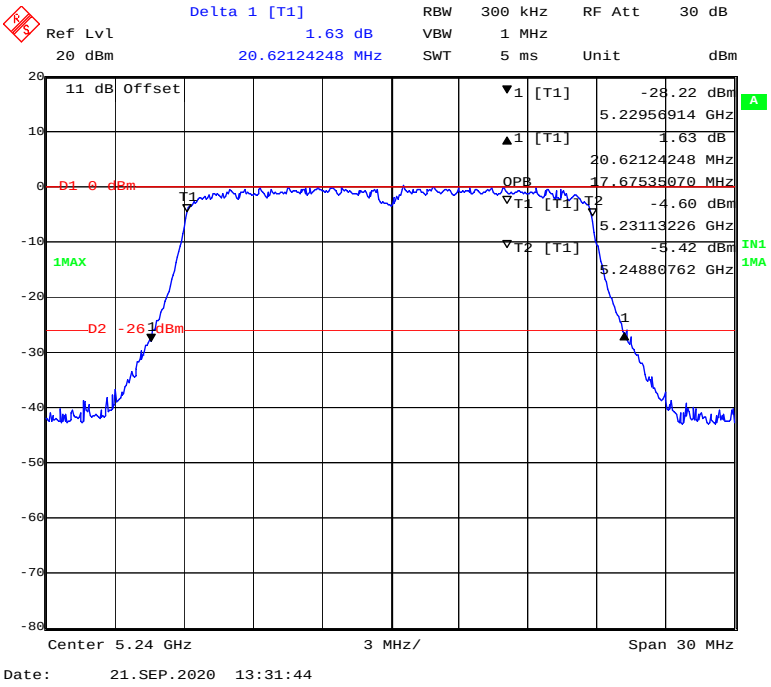
802.11n-HT20 mode, 5180MHz



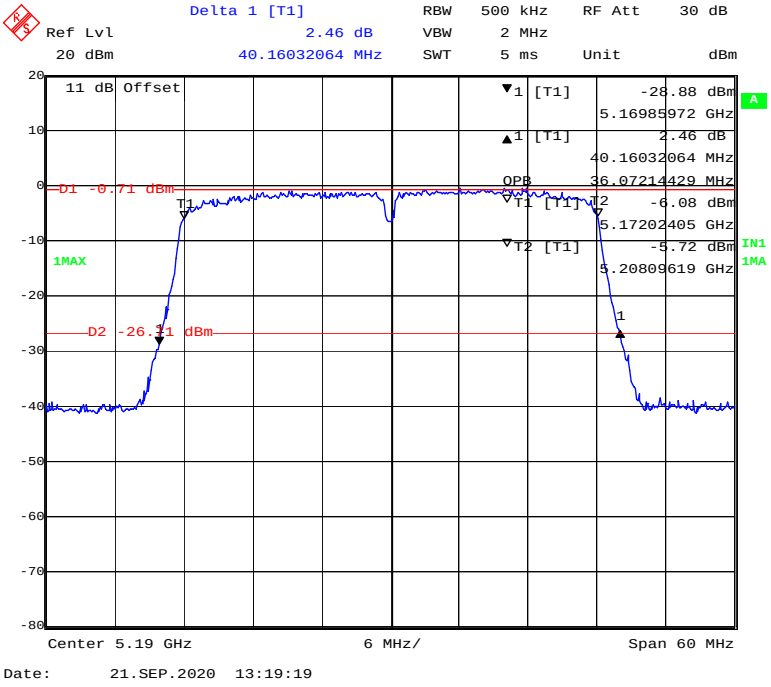
802.11n-HT20 mode, 5200MHz



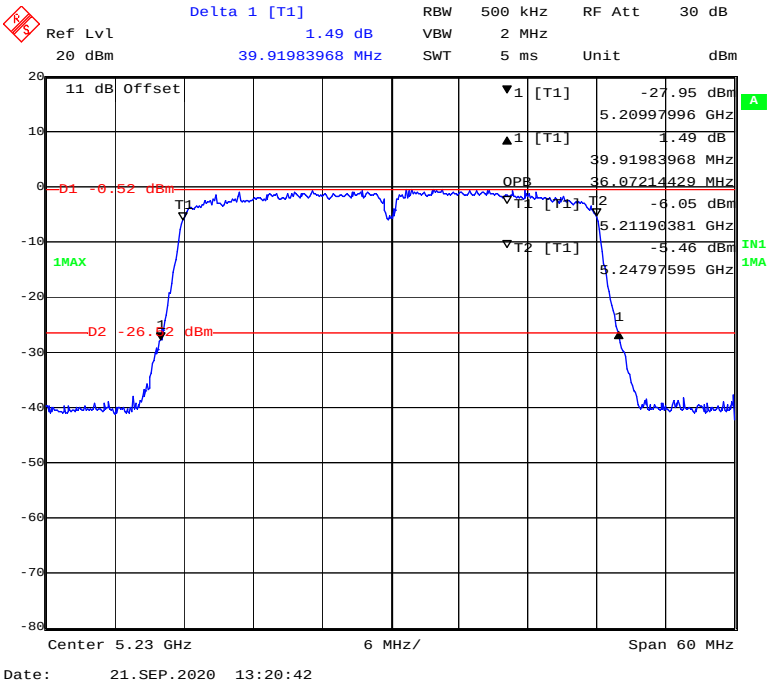
802.11n-HT20 mode, 5240MHz



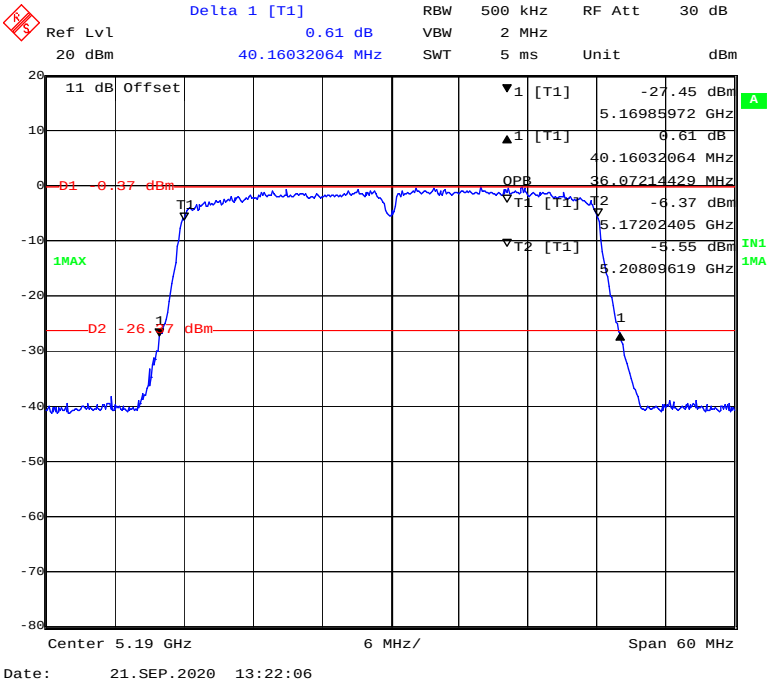
802.11ac40 mode, 5190MHz



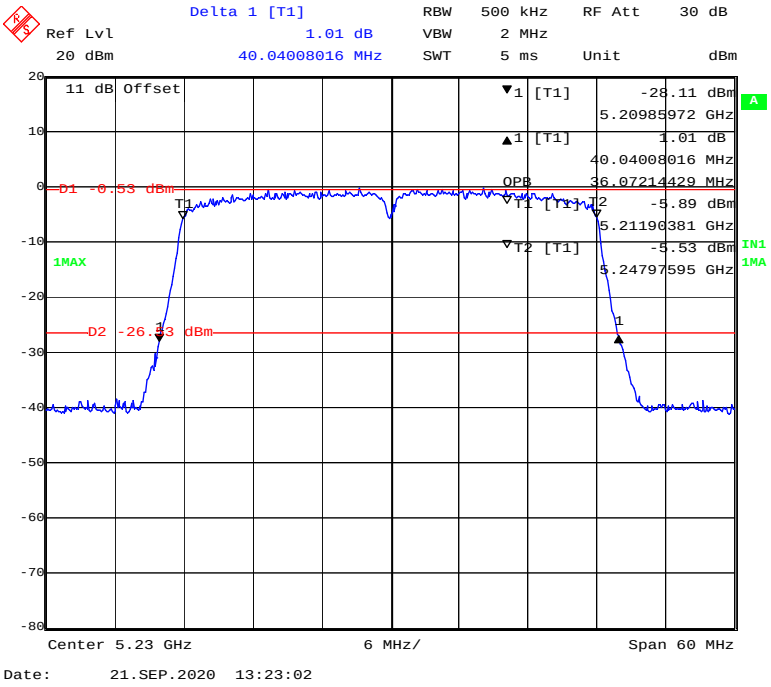
802.11 ac40 mode, 5230MHz



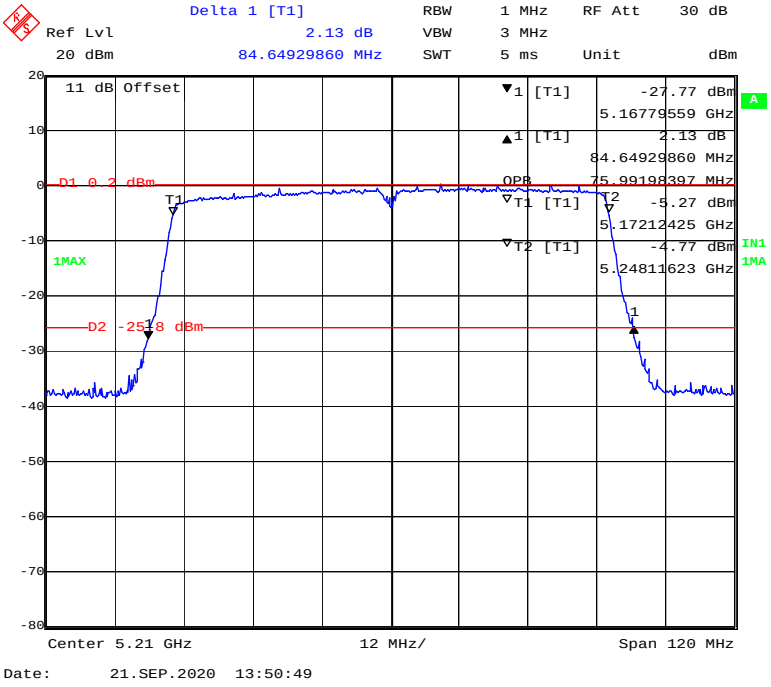
802.11n-HT40 mode, 5190MHz



802.11n-HT40 mode, 5230MHz

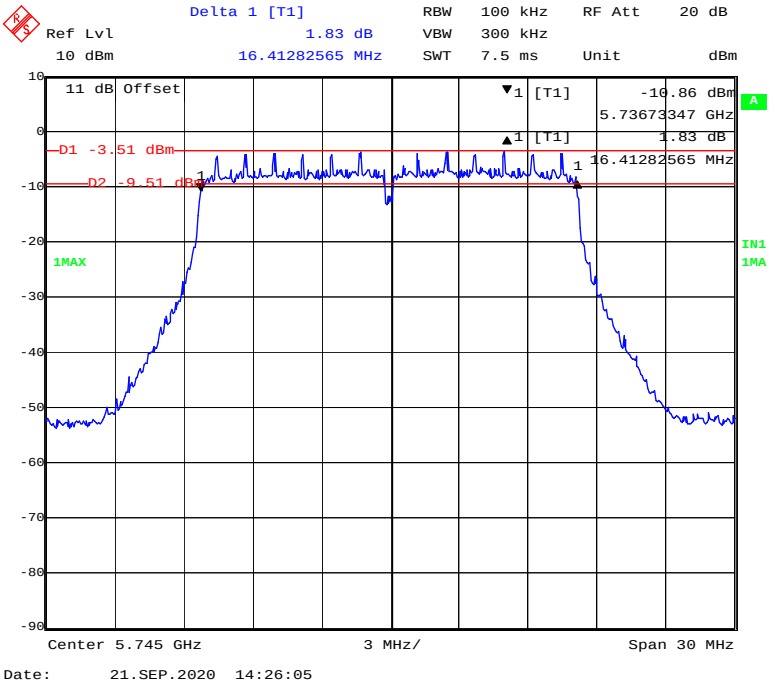


802.11ac80 mode, 5210MHz

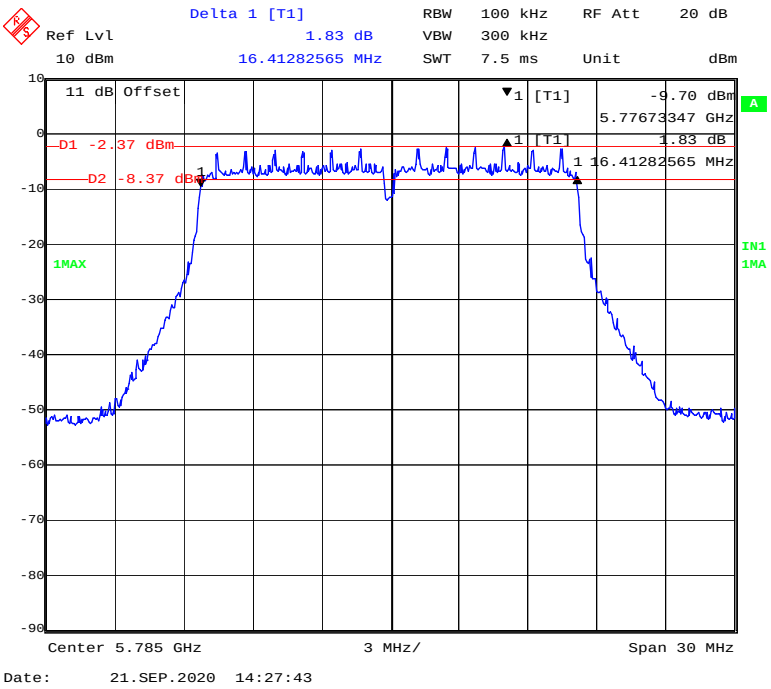


5725-5850 MHz Band
Chain0:
6 Bandwidth

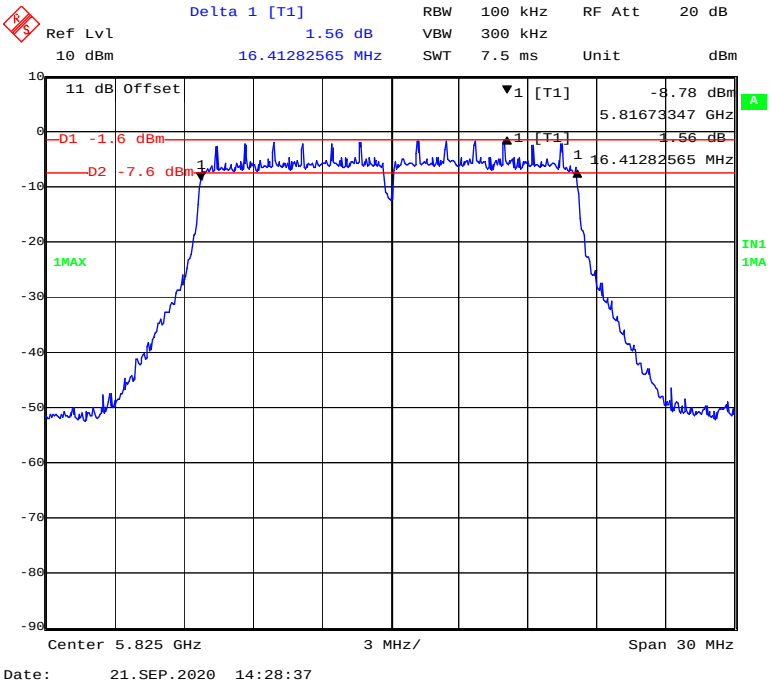
802.11a mode, 5745MHz



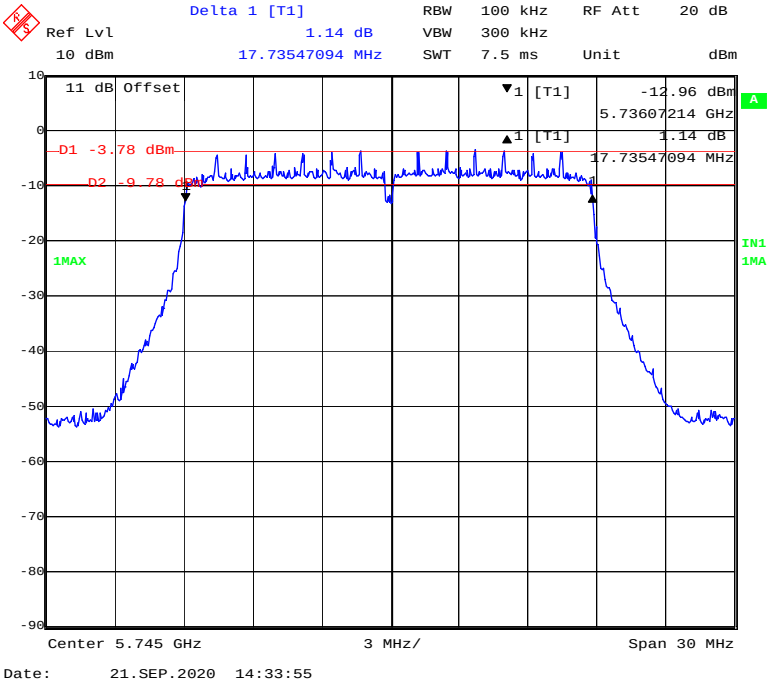
802.11a mode, 5785MHz



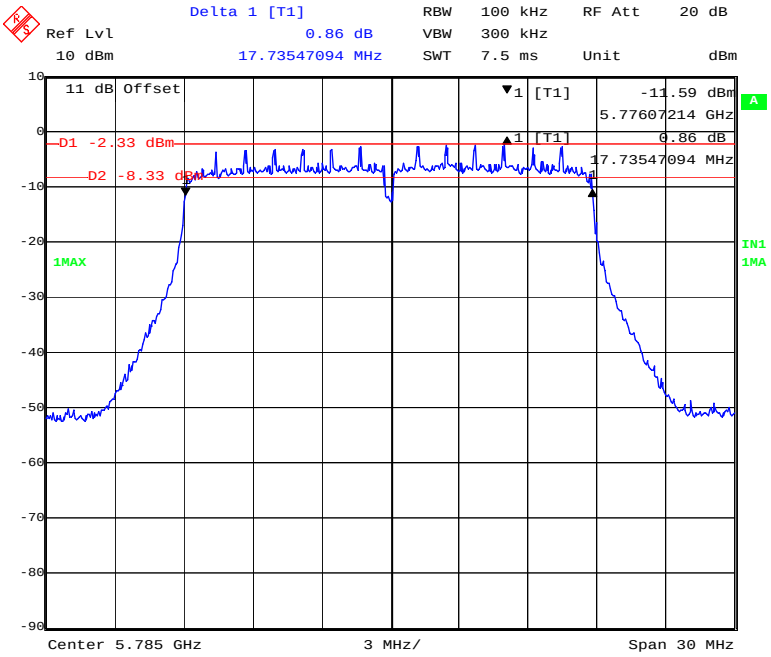
802.11a mode, 5825MHz



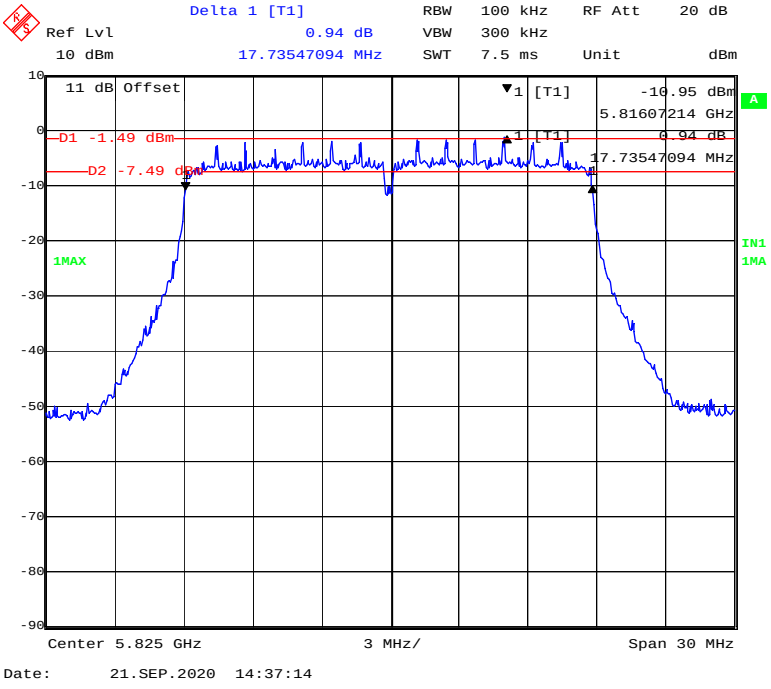
802.11ac20 mode, 5745MHz



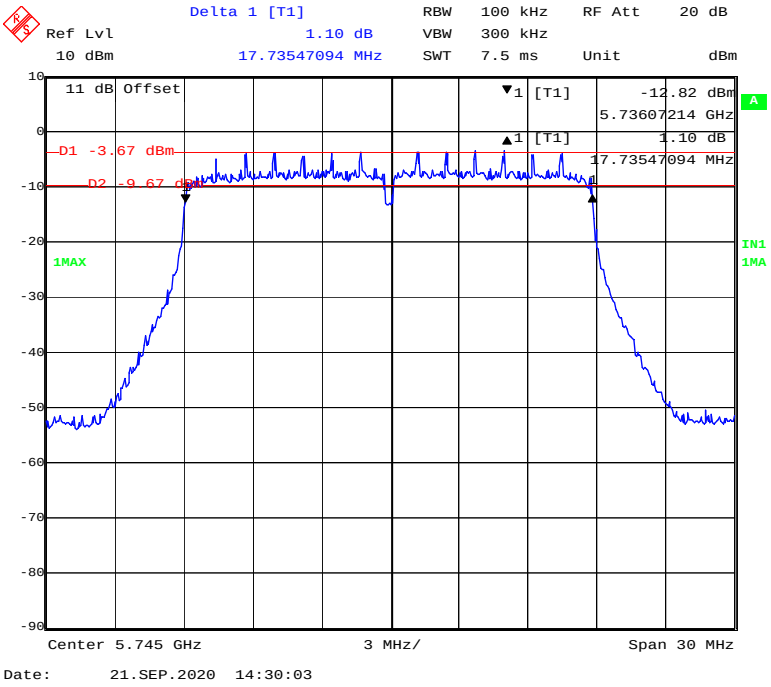
802.11 ac20 mode, 5785MHz



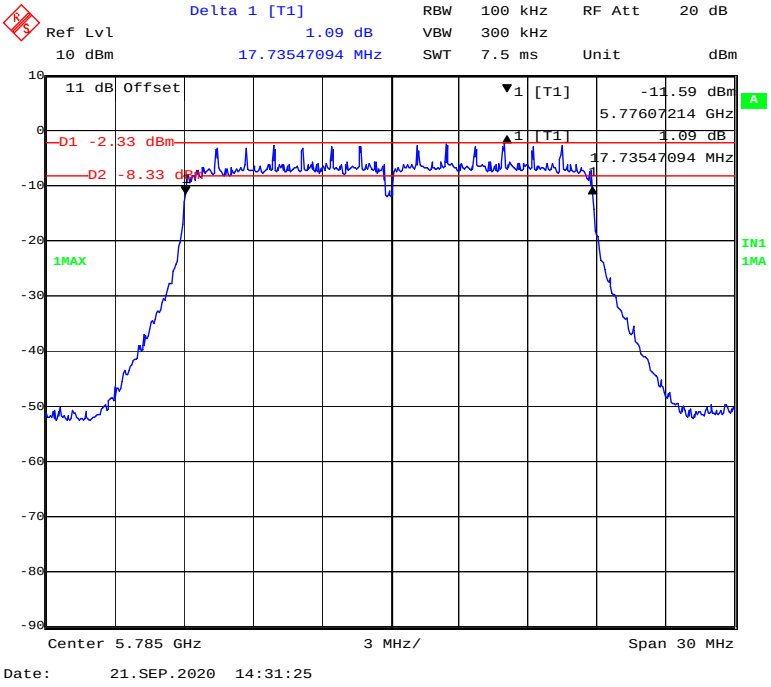
802.11 ac20 mode, 5825MHz



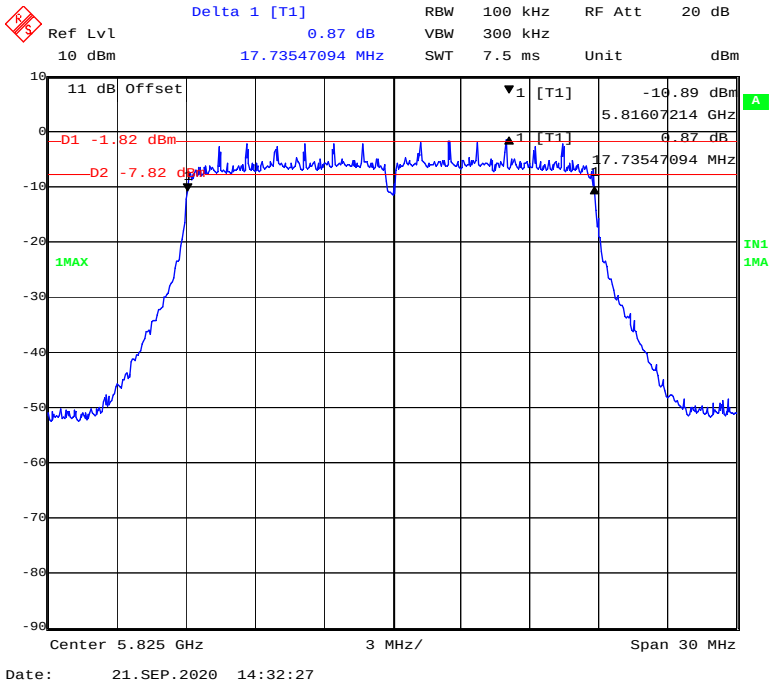
802.11n-HT20 mode, 5745MHz



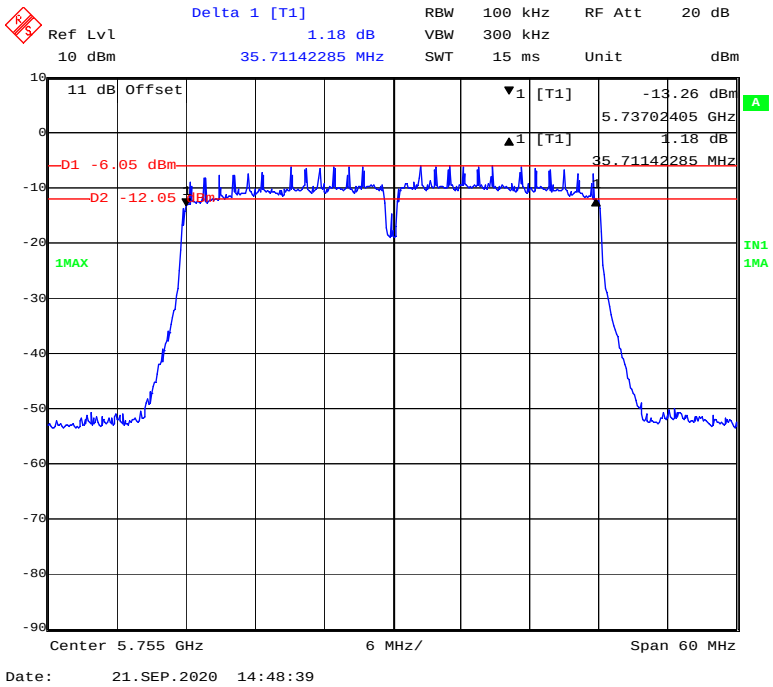
802.11n-HT20 mode, 5785MHz



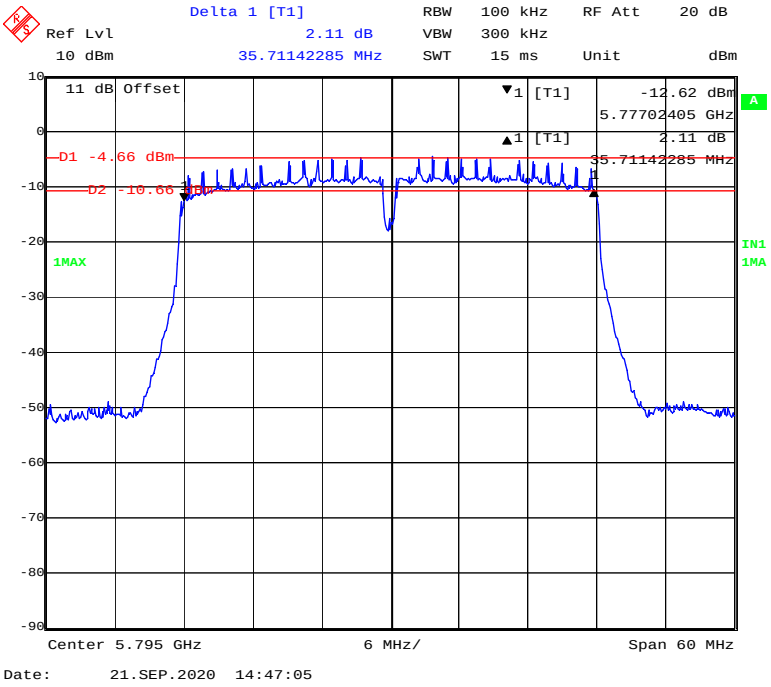
802.11n-HT20 mode, 5825MHz



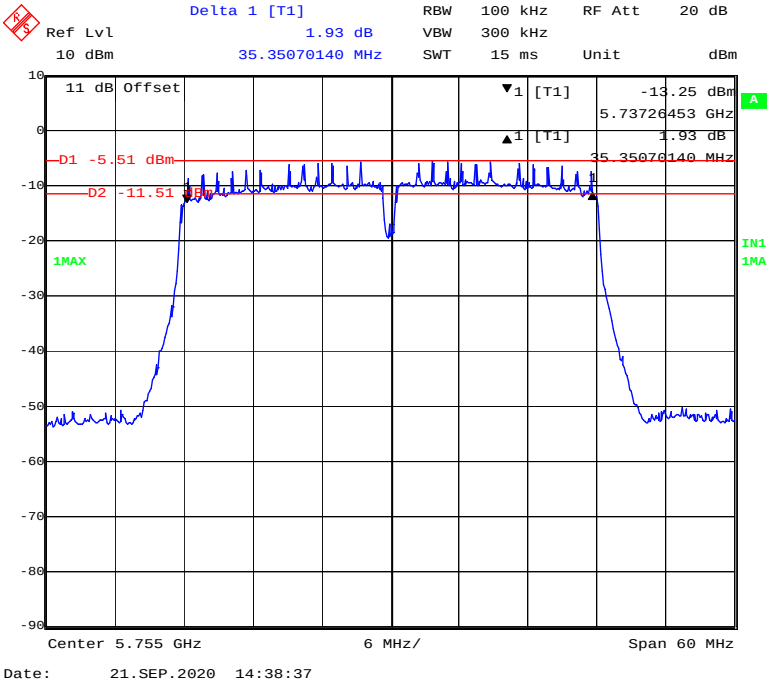
802.11ac40 mode, 5755MHz



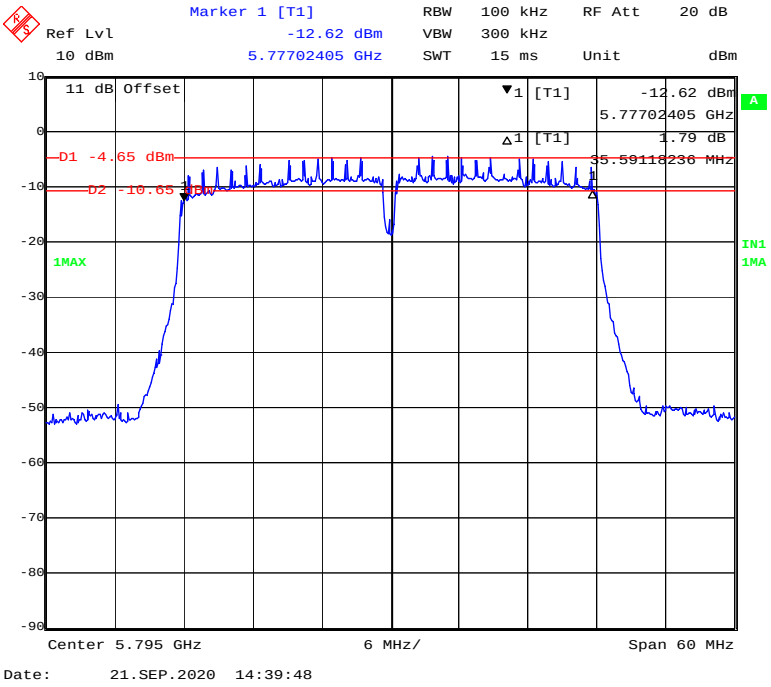
802.11 ac40 mode, 5795MHz



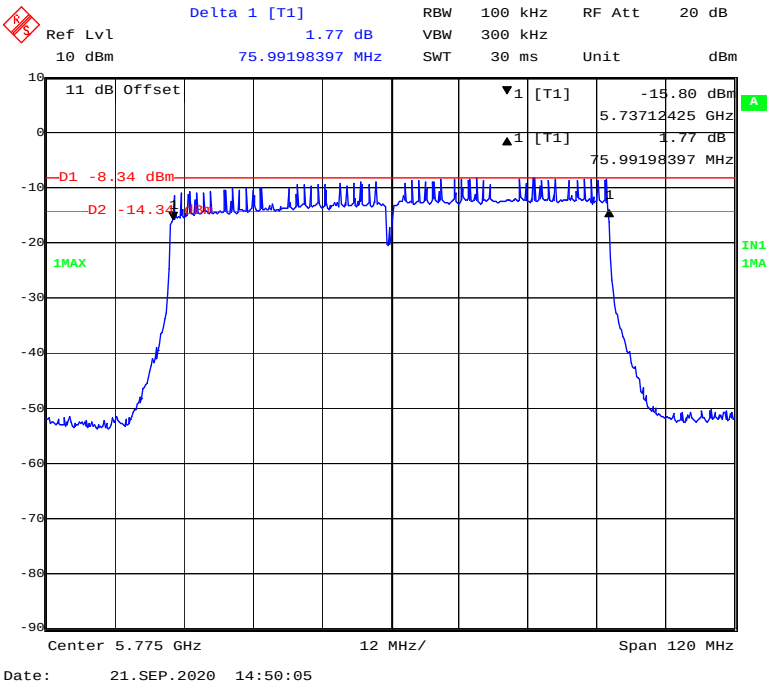
802.11n-HT40 mode, 5755MHz



802.11n-HT40 mode, 5795MHz



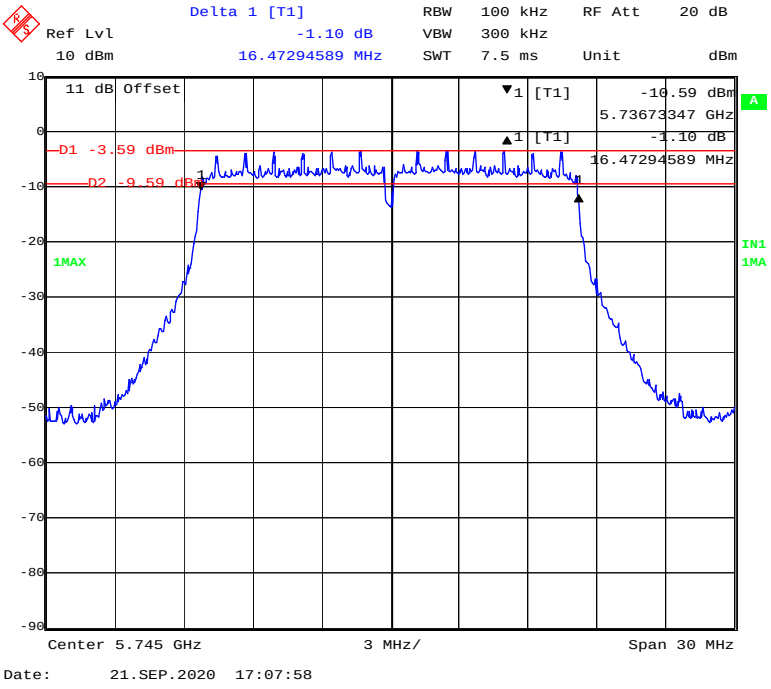
802.11ac80 mode, 5775MHz



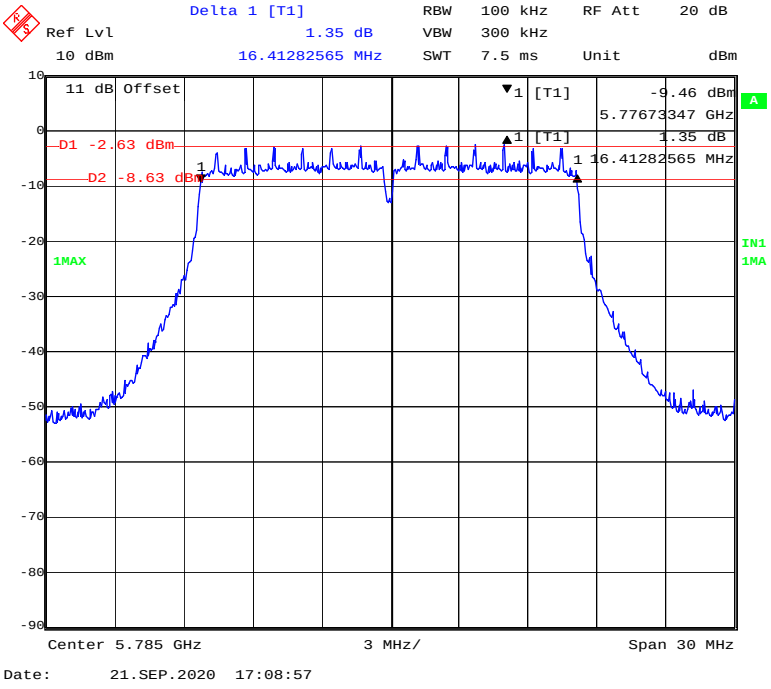
Chain1:

6 Bandwidth

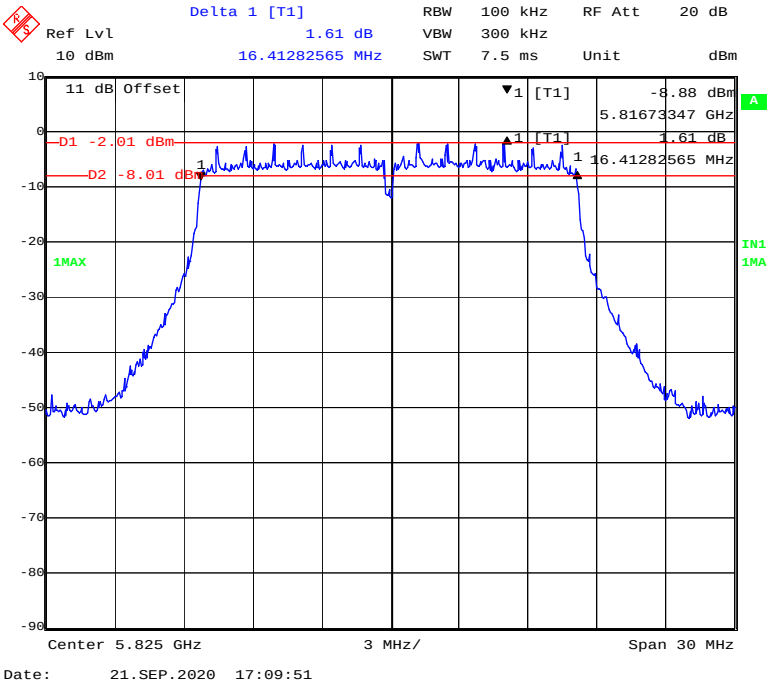
802.11a mode, 5745MHz



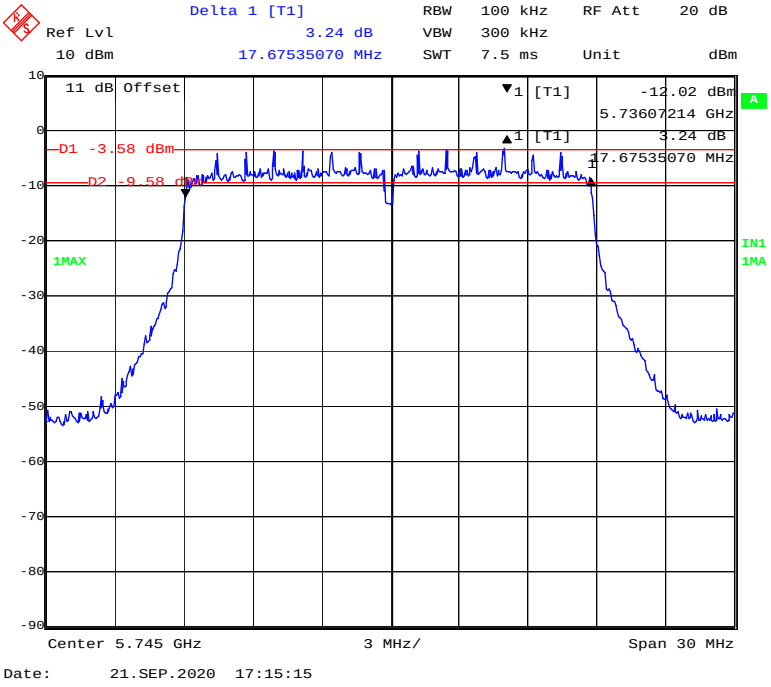
802.11a mode, 5785MHz



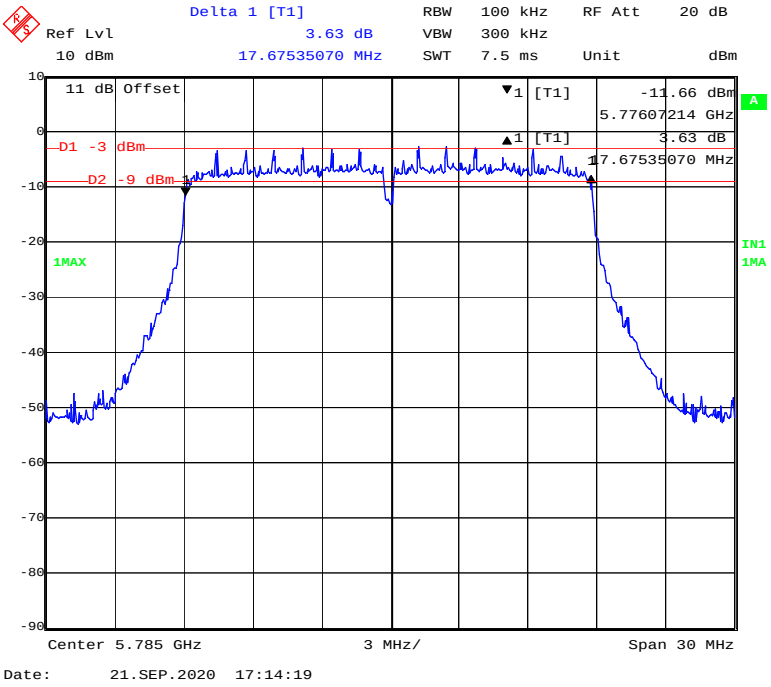
802.11a mode, 5825MHz



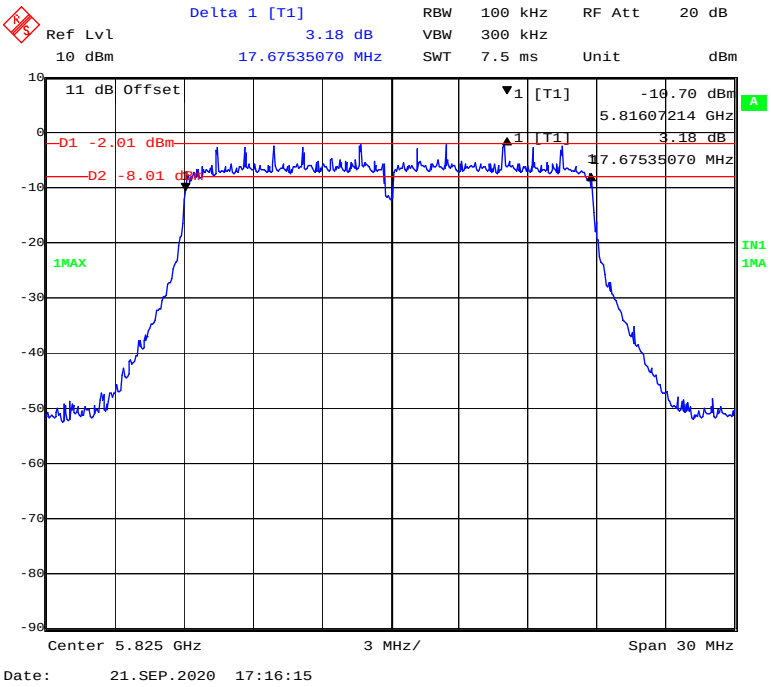
802.11ac20 mode, 5745MHz



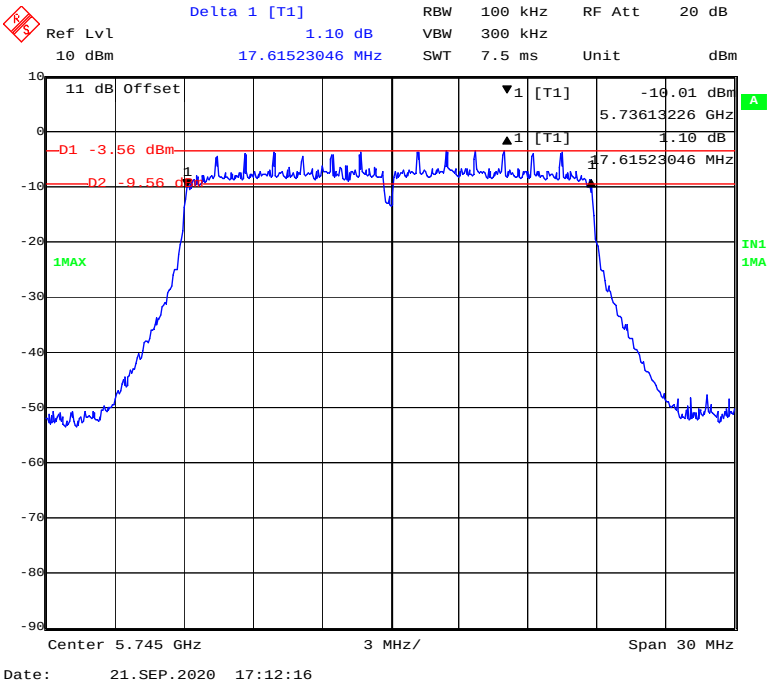
802.11 ac20 mode, 5785MHz



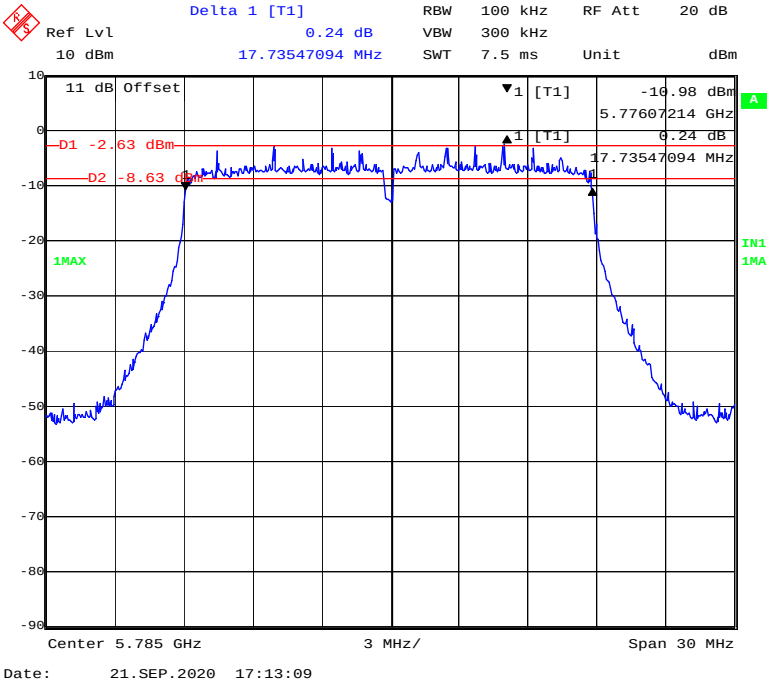
802.11 ac20 mode, 5825MHz



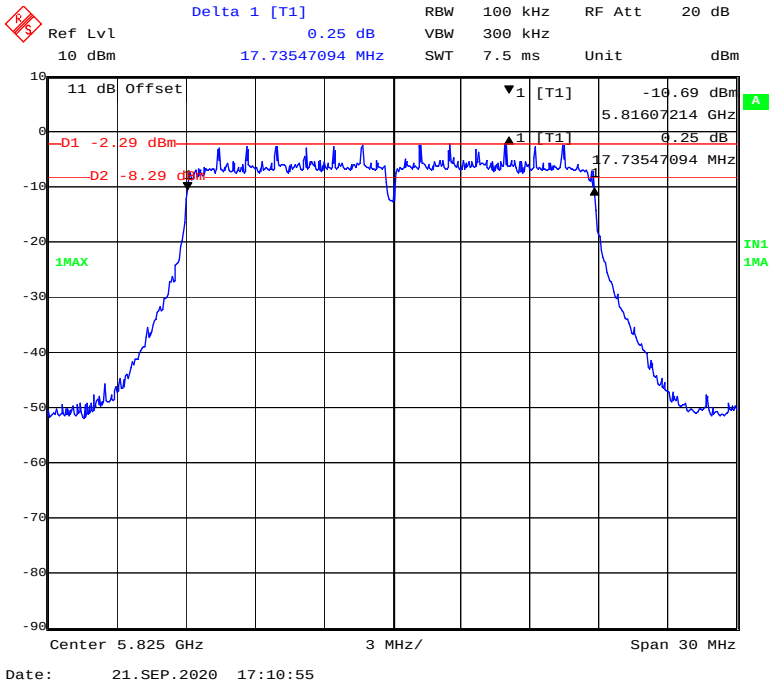
802.11n-HT20 mode, 5745MHz



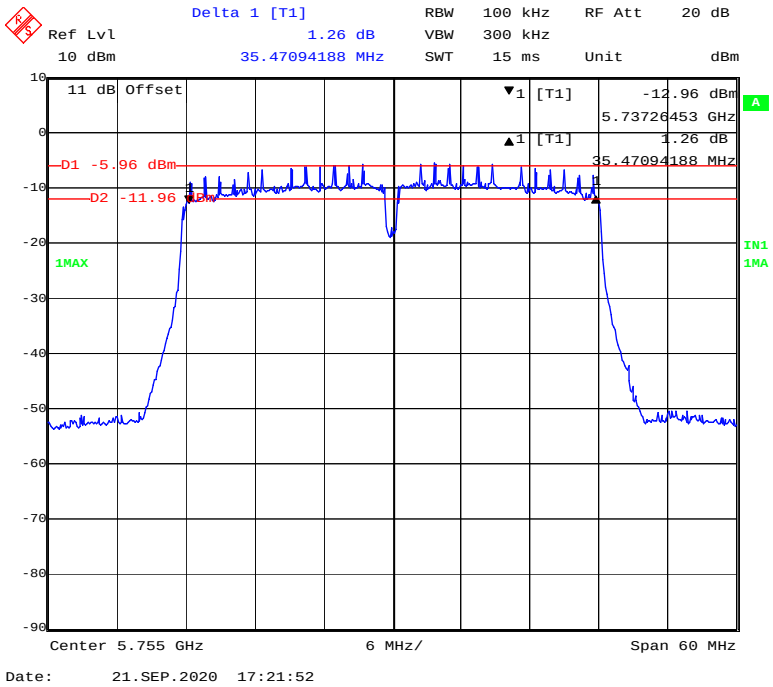
802.11n-HT20 mode, 5785MHz



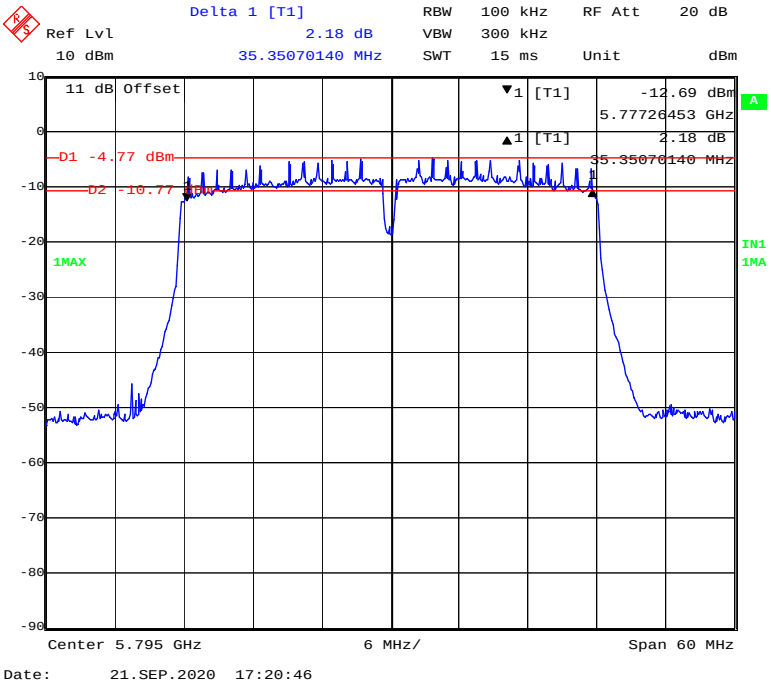
802.11n-HT20 mode, 5825MHz



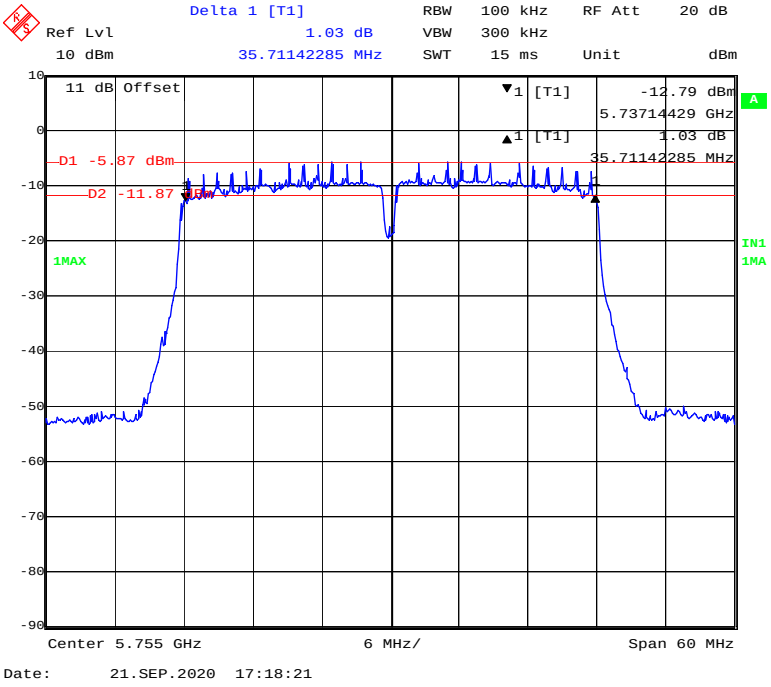
802.11ac40 mode, 5755MHz



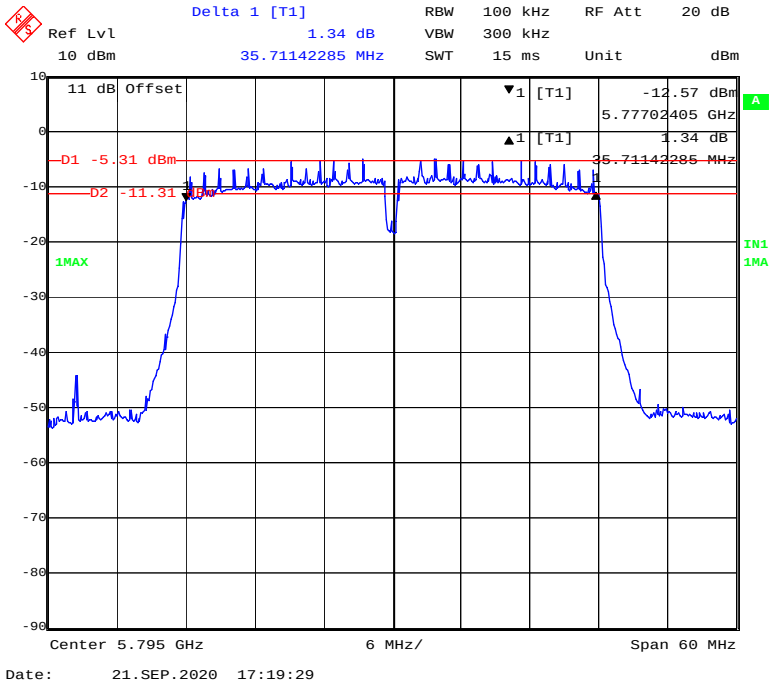
802.11 ac40 mode, 5795MHz



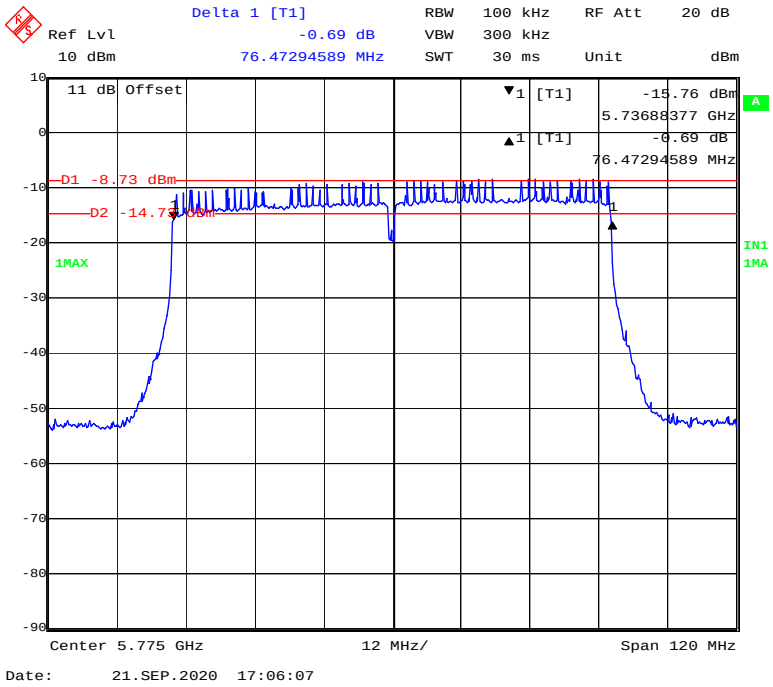
802.11n-HT40 mode, 5755MHz



802.11n-HT40 mode, 5795MHz

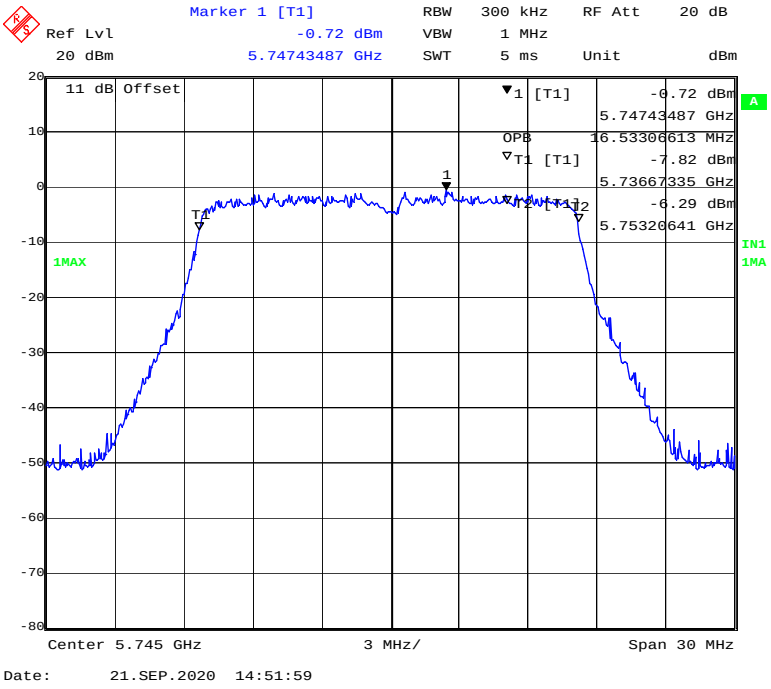


802.11ac80 mode, 5775MHz

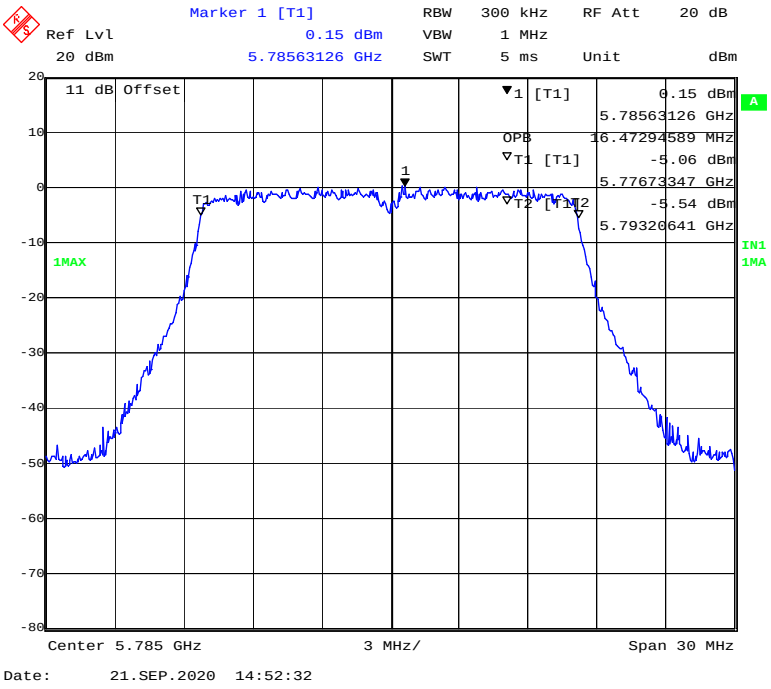


99% Occupied Bandwidth-Chain0

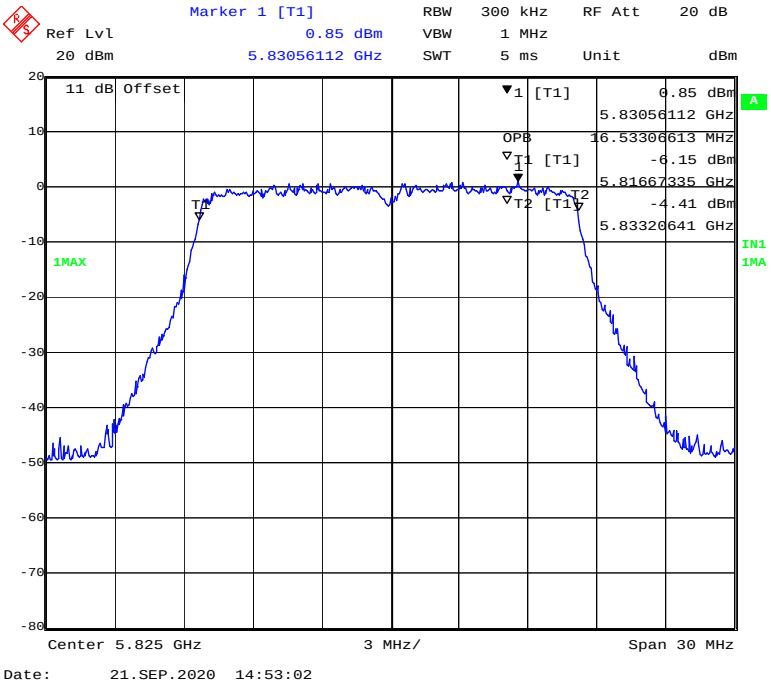
802.11a mode, 5745MHz



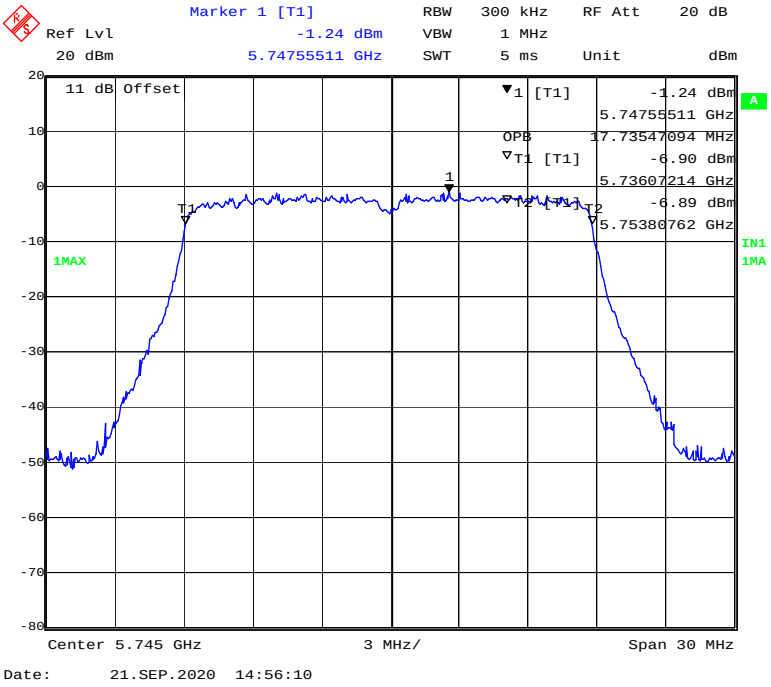
802.11a mode, 5785MHz



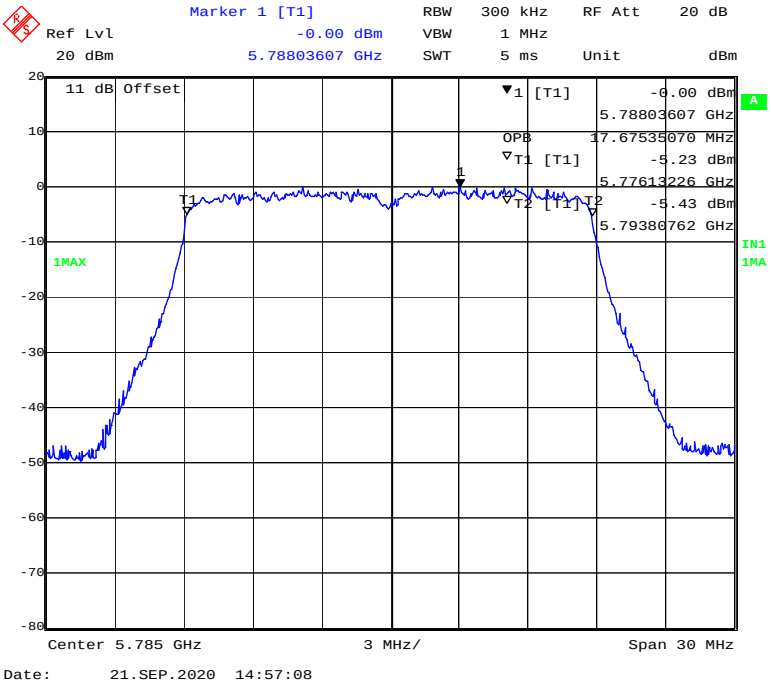
802.11a mode, 5825MHz



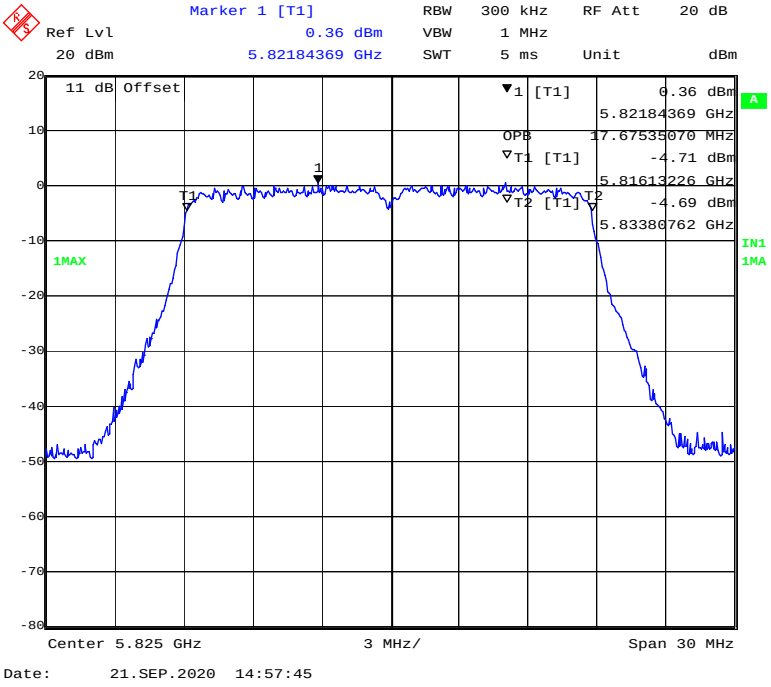
802.11ac20 mode, 5745MHz



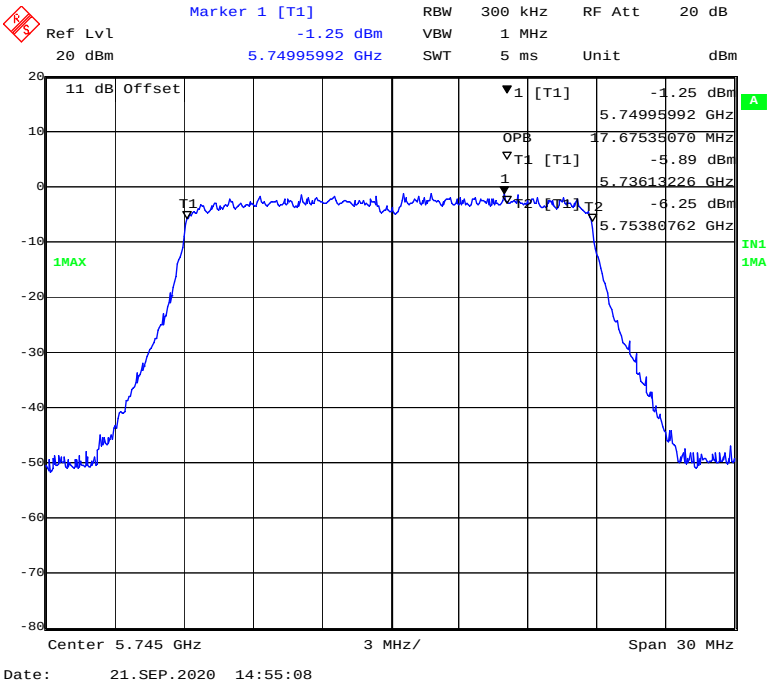
802.11 ac20 mode, 5785MHz



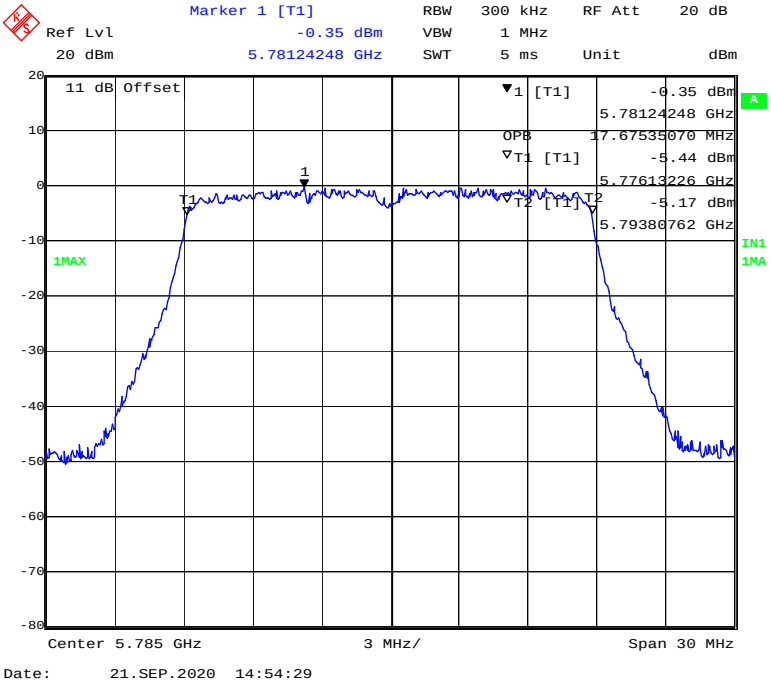
802.11 ac20 mode, 5825MHz



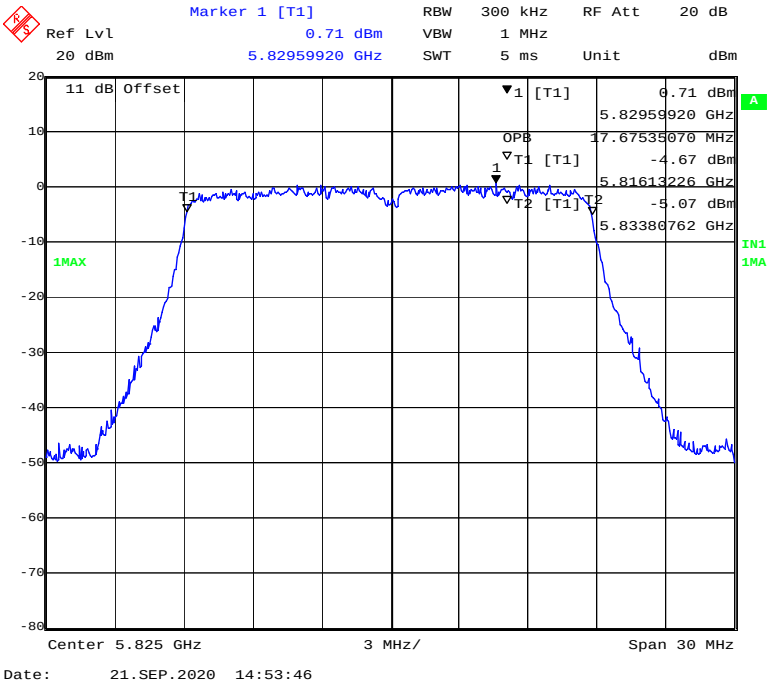
802.11n-HT20 mode, 5745MHz



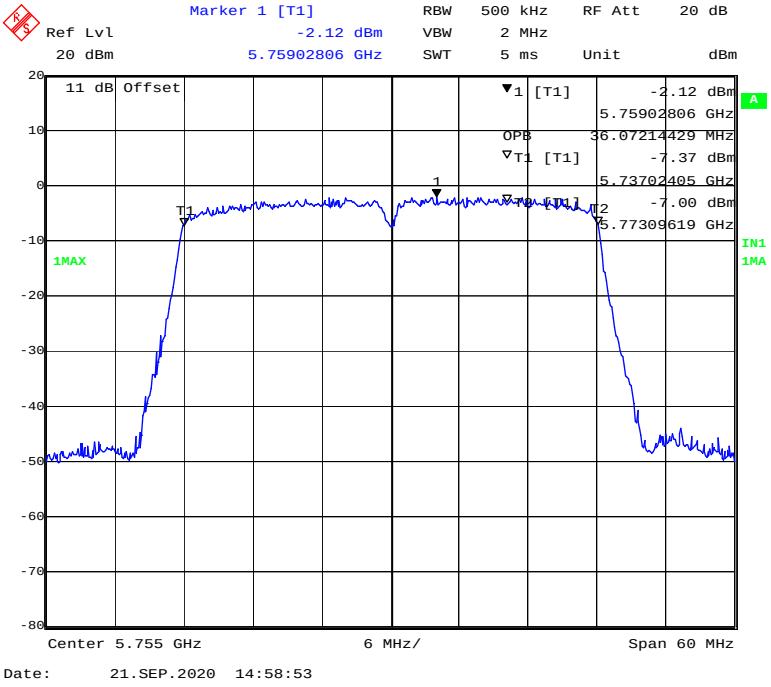
802.11n-HT20 mode, 5785MHz



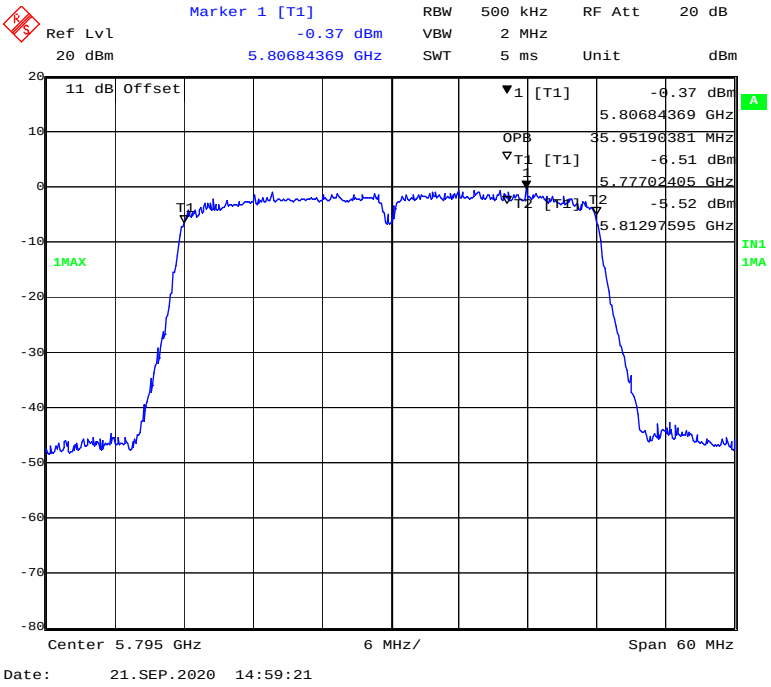
802.11n-HT20 mode, 5825MHz



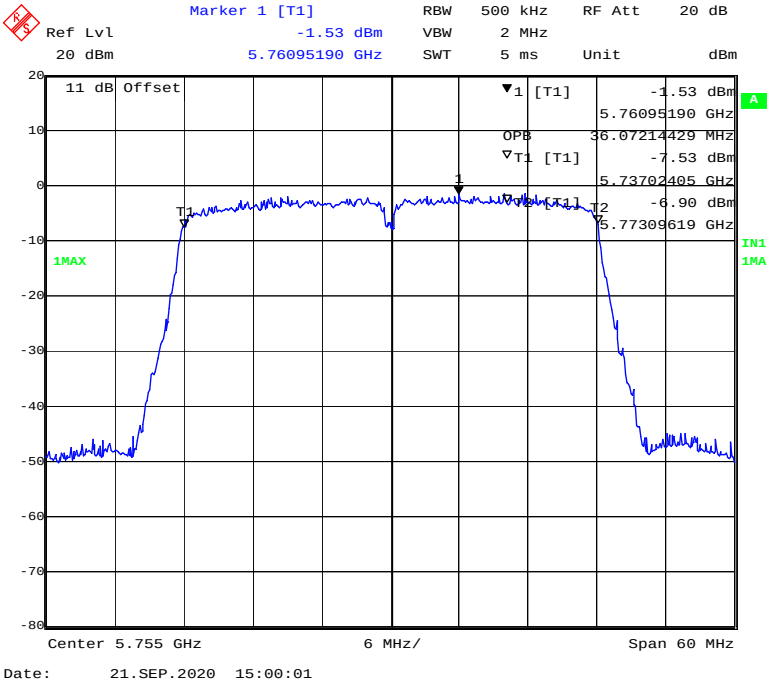
802.11ac40 mode, 5755MHz



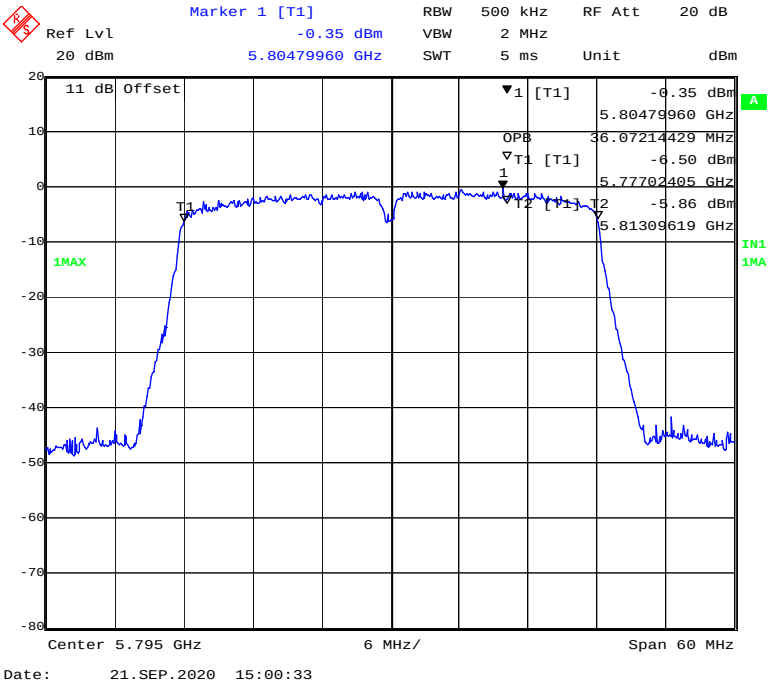
802.11 ac40 mode, 5795MHz



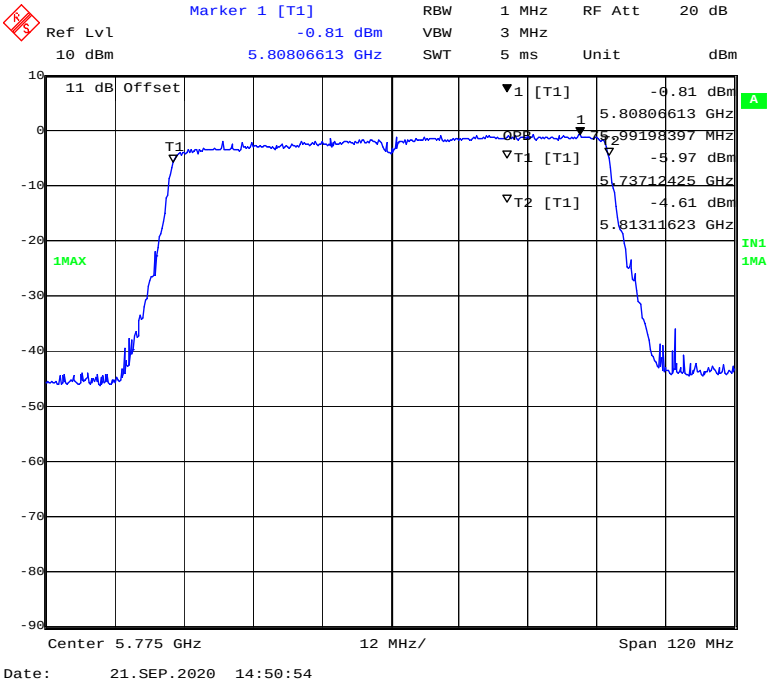
802.11n-HT40 mode, 5755MHz



802.11n-HT40 mode, 5795MHz

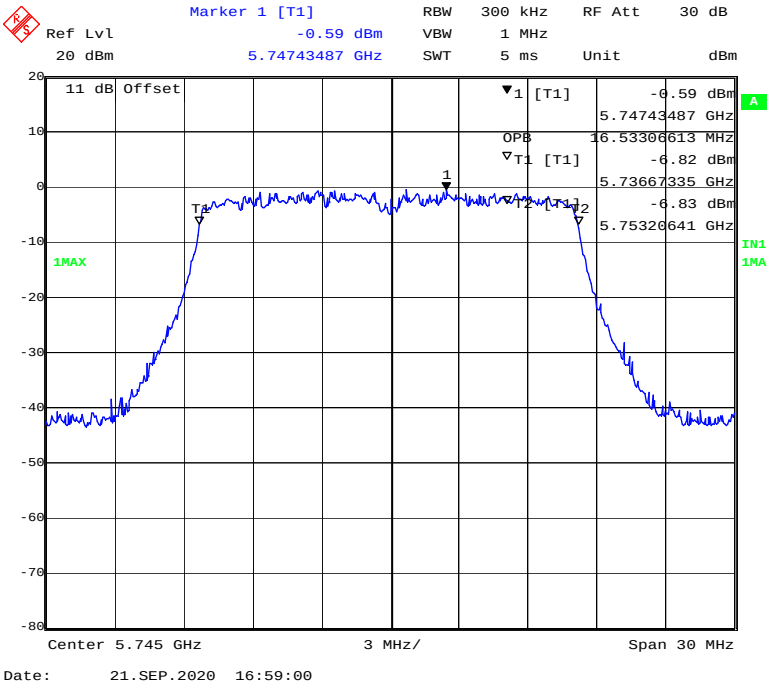


802.11n-ac80 mode, 5775MHz

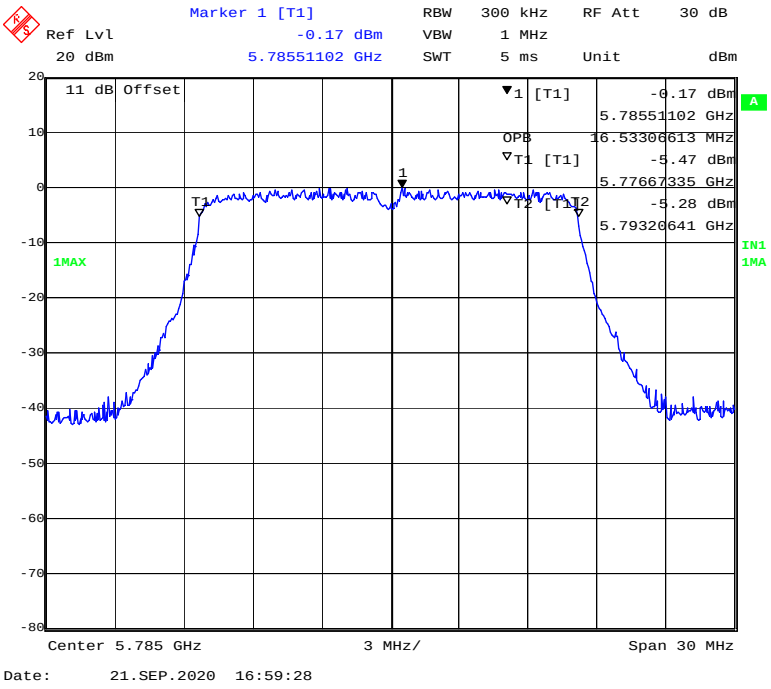


99% Occupied Bandwidth-Chain1

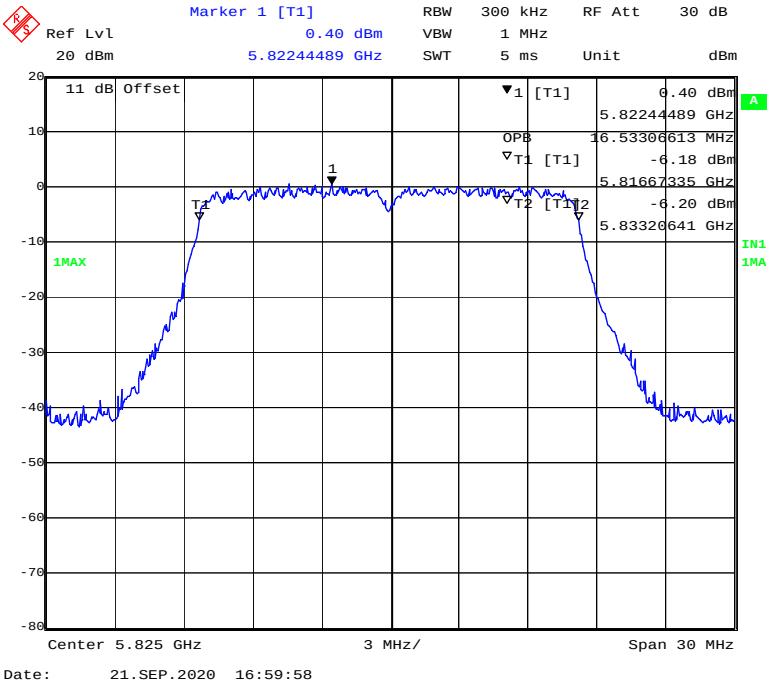
802.11a mode, 5745MHz



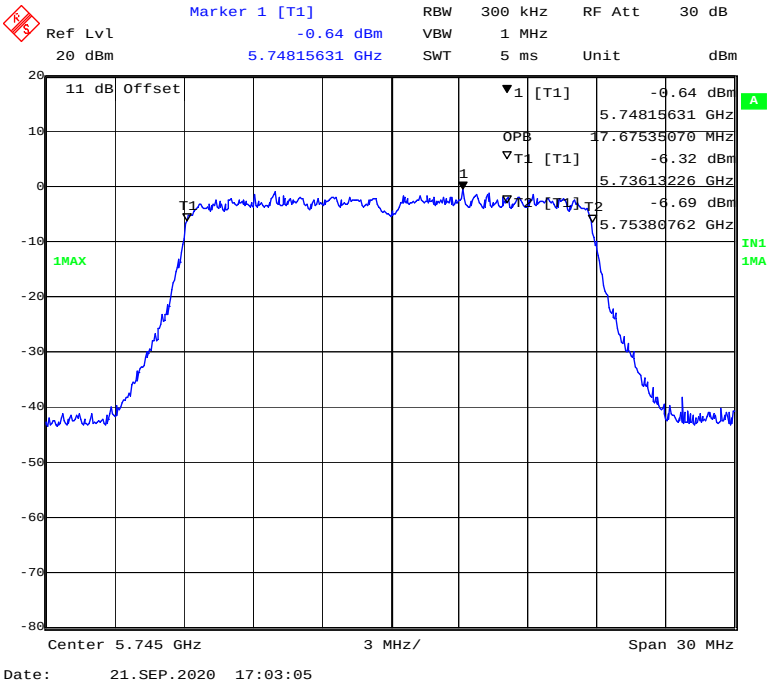
802.11a mode, 5785MHz



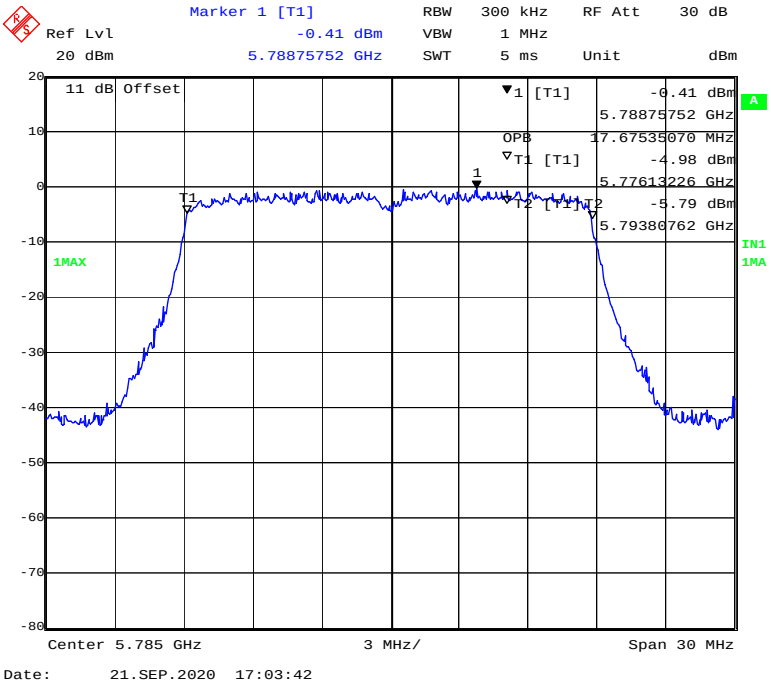
802.11a mode, 5825MHz



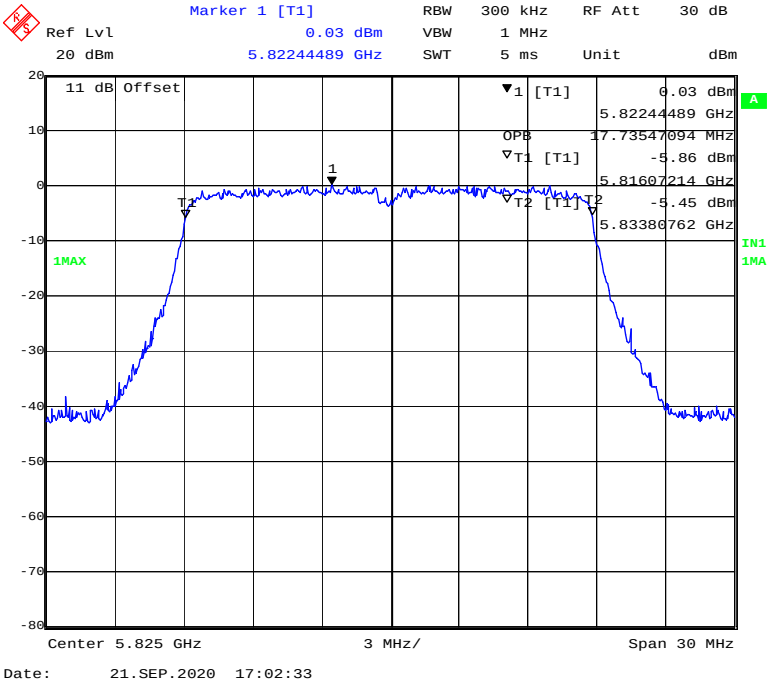
802.11ac20 mode, 5745MHz



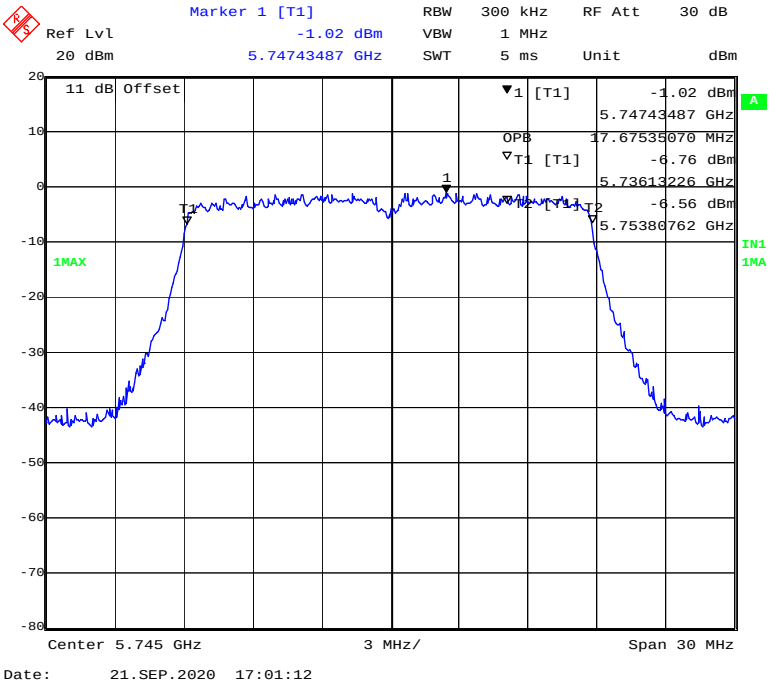
802.11 ac20 mode, 5785MHz



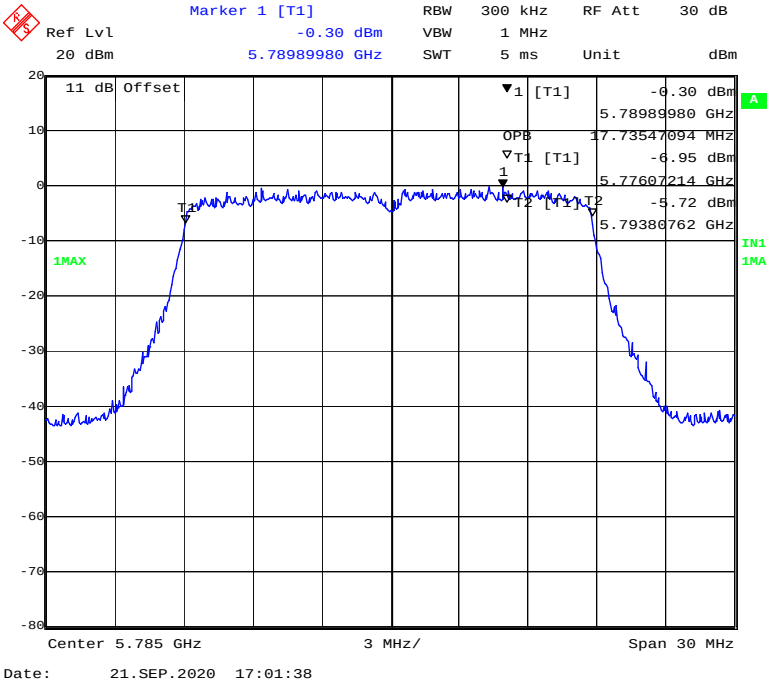
802.11 ac20 mode, 5825MHz



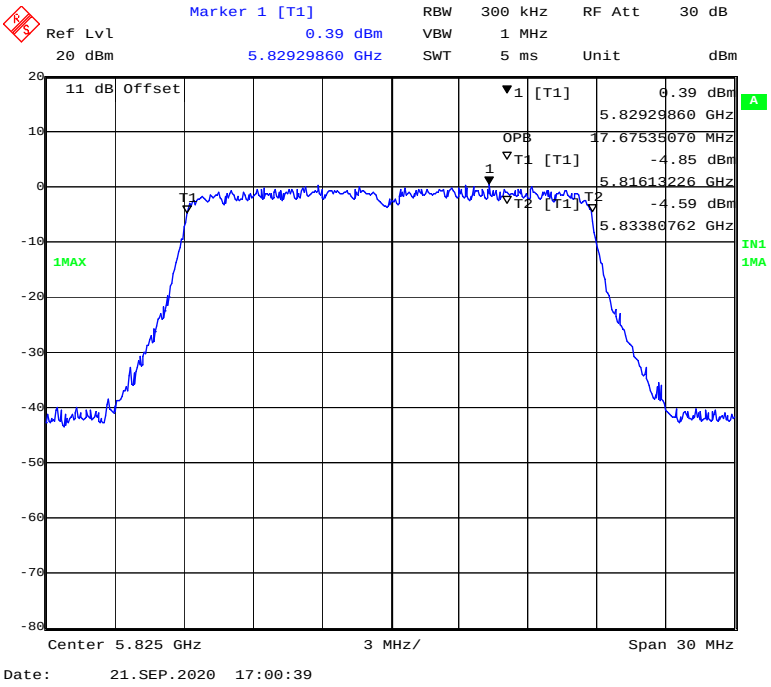
802.11n-HT20 mode, 5745MHz



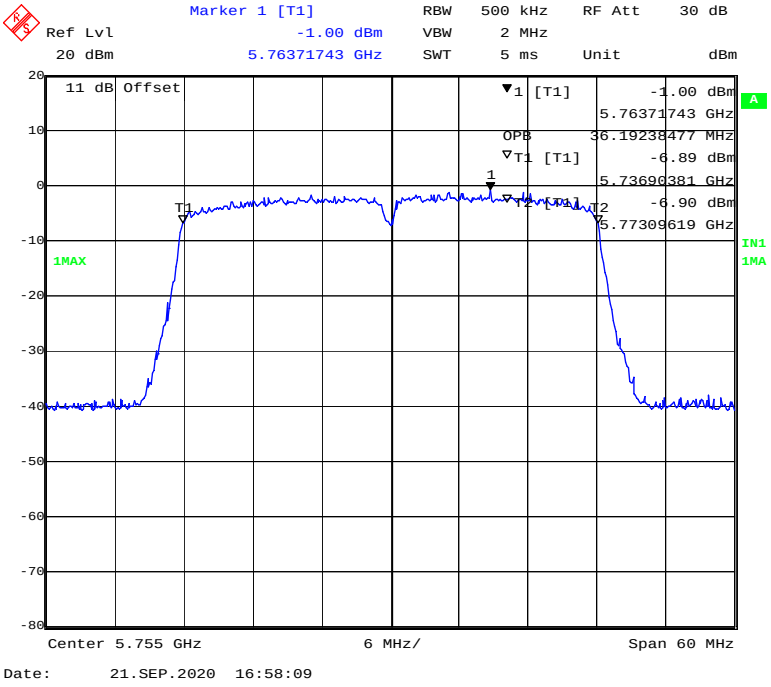
802.11n-HT20 mode, 5785MHz



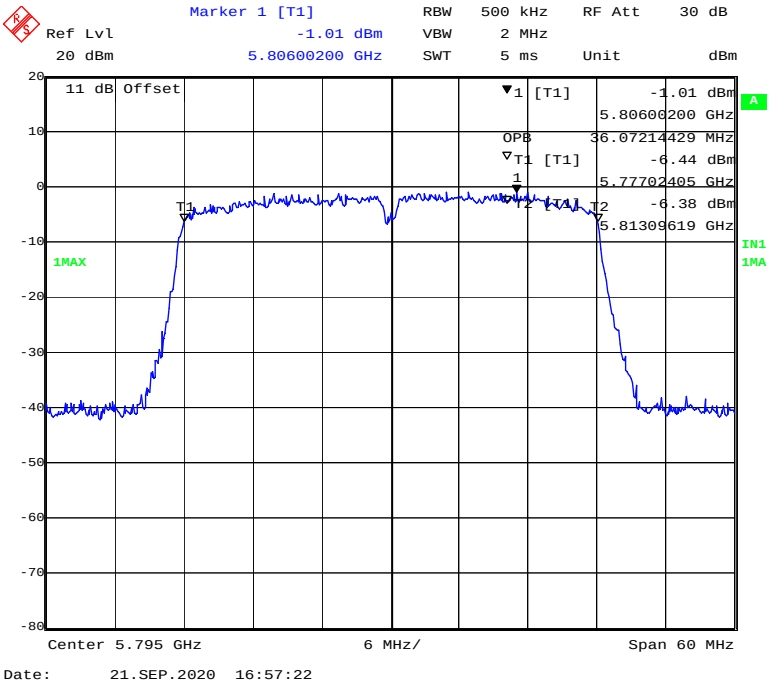
802.11n-HT20 mode, 5825MHz



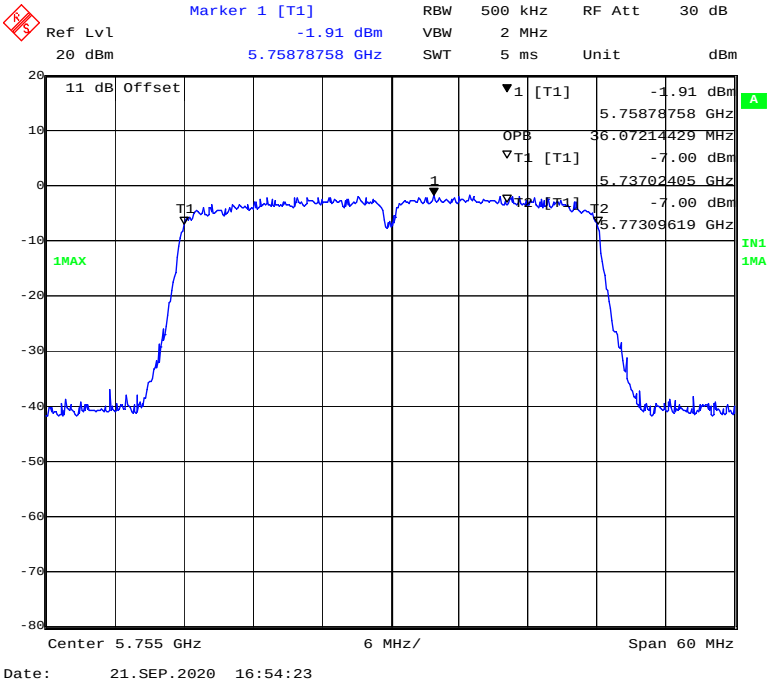
802.11ac40 mode, 5755MHz



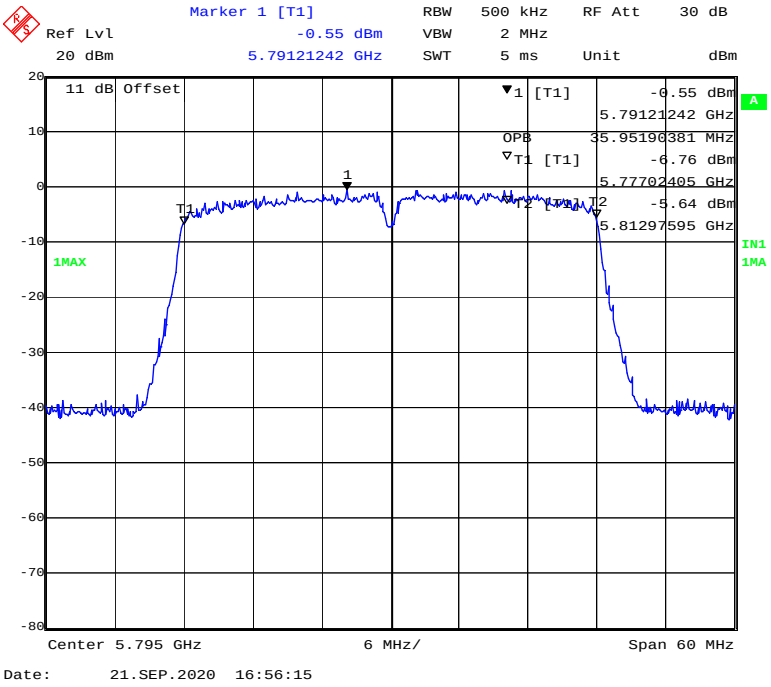
802.11 ac40 mode, 5795MHz



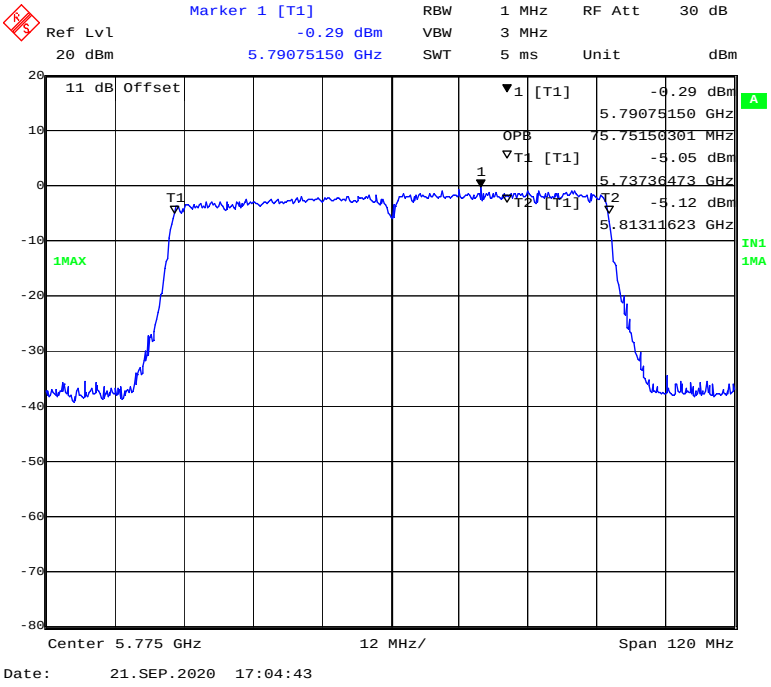
802.11n-HT40 mode, 5755MHz



802.11n-HT40 mode, 5795MHz



802.11n-ac80 mode, 5775MHz



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

Applicable Standard

According to §15.407(a)(1)

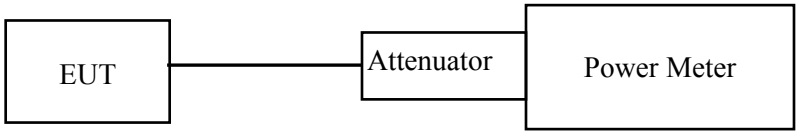
(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz 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. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm)

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:	25.2 °C
Relative Humidity:	50 %
ATM Pressure:	101.9 kPa

The testing was performed by Jack Jiao on 2020-09-21.

Test Mode: Transmitting

Test mode	Band	Channel	Frequency (MHz)	Average Conducted Output Power (dBm)			Limit	Result
				Chain0	Chain1	Total	(dBm)	
802.11a	5150-5250 MHz	Low	5180	16.85	16.69	/	17	PASS
		Middle	5200	16.96	16.38	/	17	PASS
		High	5240	16.42	16.56	/	17	PASS
	5725-5850 MHz	Low	5745	15.36	15.60	/	17	PASS
		Middle	5785	16.41	16.16	/	17	PASS
		High	5825	16.85	16.72	/	17	PASS
802.11n-HT20	5150-5250 MHz	Low	5180	13.21	13.25	16.24	17	PASS
		Middle	5200	12.98	13.54	16.28	17	PASS
		High	5240	12.88	13.36	16.14	17	PASS
	5725-5850 MHz	Low	5745	13.21	13.42	16.33	17	PASS
		Middle	5785	13.25	13.65	16.46	17	PASS
		High	5825	13.65	13.21	16.45	17	PASS
802.11n-HT40	5150-5250 MHz	Low	5190	13.12	13.48	16.31	17	PASS
		High	5230	13.58	13.66	16.63	17	PASS
	5725-5850 MHz	Low	5755	13.51	13.25	16.39	17	PASS
		High	5795	13.48	13.15	16.33	17	PASS
802.11ac20	5150-5250 MHz	Low	5180	13.65	13.35	16.51	17	PASS
		Middle	5200	13.48	13.42	16.46	17	PASS
		High	5240	13.54	13.65	16.61	17	PASS
	5725-5850 MHz	Low	5745	13.53	13.55	16.55	17	PASS
		Middle	5785	13.67	13.21	16.46	17	PASS
		High	5825	13.51	13.53	16.53	17	PASS
802.11ac40	5150-5250 MHz	Low	5190	13.55	13.22	16.40	17	PASS
		High	5230	13.43	13.54	16.50	17	PASS
	5725-5850 MHz	Low	5755	13.54	13.43	16.50	17	PASS
		High	5795	13.43	13.47	16.46	17	PASS
802.11ac80	5150-5250 MHz	/	5210	13.58	13.22	16.41	17	PASS
	5725-5850 MHz	/	5775	13.21	13.19	16.21	17	PASS

Note 1: The total output power=10*Log_{10}(10^(Chain 1/10)+10^(Chain 2/10))
Note 2: The maximum antenna gain is 19.0 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 ≤ 4;
So: Directional gain = GANT + Array Gain = 19.0dBi ＞ 6dBi = 19-6 = 13 dBi

Maximum e.i.r.p. at any elevation angle above 30 degrees

(*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 in X-axis of orientation was recorded.)*

For 19dBi Antenna:

Mode	Frequency	Reading	Correct Factor	E-Field	Rx Antenna		EIRP	Limit
	(MHz)	(dB μ V/m)	(dB/m)	(dBμV/m)	Height(cm)	Polar(H/V)	(dBm)	(dBm)
802.11a	5180	75.20	34.70	109.90	150	V	14.70	21
	5200	75.49	34.70	110.19	150	V	14.99	21
	5240	76.16	34.60	110.76	150	V	15.56	21
	5180	55.32	34.70	90.02	150	H	-5.18	21
	5200	55.09	34.70	89.79	150	H	-5.41	21
	5240	56.00	34.60	90.60	150	H	-4.60	21
802.11ac20	5180	75.36	34.70	110.06	150	V	14.86	21
	5200	75.07	34.70	109.77	150	V	14.57	21
	5240	76.03	34.60	110.63	150	V	15.43	21
	5180	55.31	34.70	90.01	150	H	-5.19	21
	5200	55.12	34.70	89.82	150	H	-5.38	21
	5240	56.08	34.60	90.68	150	H	-4.52	21
802.11n-HT20	5180	75.11	34.70	109.81	150	V	14.61	21
	5200	75.30	34.70	110.00	150	V	14.80	21
	5240	76.06	34.60	110.66	150	V	15.46	21
	5180	55.13	34.70	89.83	150	H	-5.37	21
	5200	55.38	34.70	90.08	150	H	-5.12	21
	5240	56.17	34.60	90.77	150	H	-4.43	21
802.11n-HT40	5190	72.07	34.70	106.77	150	V	11.57	21
	5230	72.63	34.60	107.23	150	V	12.03	21
	5190	51.77	34.70	86.47	150	H	-8.73	21
	5230	51.28	34.60	85.88	150	H	-9.32	21
802.11ac40	5190	72.19	34.70	106.89	150	V	11.69	21
	5230	72.57	34.60	107.17	150	V	11.97	21
	5190	51.89	34.70	86.59	150	H	-8.61	21
	5230	52.07	34.60	86.67	150	H	-8.53	21
802.11ac80	5210	68.62	34.70	103.32	150	V	8.12	21
	5210	49.03	34.70	83.73	150	H	-11.47	21

For 18dBi Antenna:

Mode	Frequency	Reading	Correct Factor	E-Field	Rx Antenna		EIRP	Limit
	(MHz)	(dB μ V/m)	(dB/m)	(dBμV/m)	Height(cm)	Polar(H/V)	(dBm)	(dBm)
802.11a	5180	63.15	34.70	97.85	150	V	2.65	21
	5200	63.87	34.70	98.57	150	V	3.37	21
	5240	63.43	34.60	98.03	150	V	2.83	21
	5180	44.52	34.70	79.22	150	H	-15.98	21
	5200	44.25	34.70	78.95	150	H	-16.25	21
	5240	43.97	34.60	78.57	150	H	-16.63	21
802.11ac20	5180	64.24	34.70	98.94	150	V	3.74	21
	5200	64.82	34.70	99.52	150	V	4.32	21
	5240	63.95	34.60	98.55	150	V	3.35	21
	5180	44.56	34.70	79.26	150	H	-15.94	21
	5200	44.28	34.70	78.98	150	H	-16.22	21
	5240	43.93	34.60	78.53	150	H	-16.67	21
802.11n-HT20	5180	65.82	34.70	100.52	150	V	5.32	21
	5200	66.21	34.70	100.91	150	V	5.71	21
	5240	66.13	34.60	100.73	150	V	5.53	21
	5180	45.32	34.70	80.02	150	H	-15.18	21
	5200	44.43	34.70	79.13	150	H	-16.07	21
	5240	45.84	34.60	80.44	150	H	-14.76	21
802.11n-HT40	5190	62.87	34.70	97.57	150	V	2.37	21
	5230	62.16	34.60	96.76	150	V	1.56	21
	5190	40.85	34.70	75.55	150	H	-19.65	21
	5230	41.32	34.60	75.92	150	H	-19.28	21
802.11ac40	5190	63.42	34.70	98.12	150	V	2.92	21
	5230	62.31	34.60	96.91	150	V	1.71	21
	5190	42.87	34.70	77.57	150	H	-17.63	21
	5230	42.16	34.60	76.76	150	H	-18.44	21
802.11ac80	5210	64.89	34.70	99.59	150	V	4.39	21
	5210	41.34	34.70	73.04	150	H	-19.16	21

For 16dBi Antenna:

Mode	Frequency	Reading	Correct Factor	E-Field	Rx Antenna		EIRP	Limit
	(MHz)	(dB μ V/m)	(dB/m)	(dBμV/m)	Height(cm)	Polar(H/V)	(dBm)	(dBm)
802.11a	5180	67.60	34.70	102.30	150	V	7.10	21
	5200	67.92	34.70	102.62	150	V	7.42	21
	5240	68.67	34.60	103.27	150	V	8.07	21
	5180	48.89	34.70	83.59	150	H	-11.61	21
	5200	49.10	34.70	83.80	150	H	-11.40	21
	5240	49.20	34.60	83.80	150	H	-11.40	21
802.11ac20	5180	68.93	34.70	103.63	150	V	8.43	21
	5200	69.15	34.70	103.85	150	V	8.65	21
	5240	69.23	34.60	103.83	150	V	8.63	21
	5180	48.24	34.70	82.94	150	H	-12.26	21
	5200	48.82	34.70	83.52	150	H	-11.68	21
	5240	48.95	34.60	83.55	150	H	-11.65	21
802.11n-HT20	5180	69.17	34.70	103.87	150	V	8.67	21
	5200	68.93	34.70	103.63	150	V	8.43	21
	5240	68.42	34.60	103.02	150	V	7.82	21
	5180	48.01	34.70	82.71	150	H	-12.49	21
	5200	47.52	34.70	82.22	150	H	-12.98	21
	5240	48.04	34.60	82.64	150	H	-12.56	21
802.11n-HT40	5190	66.63	34.70	101.33	150	V	6.13	21
	5230	66.17	34.60	100.77	150	V	5.57	21
	5190	44.05	34.70	78.75	150	H	-16.45	21
	5230	44.63	34.60	79.23	150	H	-15.97	21
802.11ac40	5190	65.75	34.70	100.45	150	V	5.25	21
	5230	65.73	34.60	100.33	150	V	5.13	21
	5190	43.42	34.70	78.12	150	H	-17.08	21
	5230	42.31	34.60	76.91	150	H	-18.29	21
802.11ac80	5210	68.11	34.70	102.81	150	V	7.61	21
	5210	47.43	34.70	82.13	150	H	-13.07	21

Note:

1. E-Field (dBμV/m)=Reading (dB μ V/m)+ Correct Factor(dB/m).

2. The test degrees is 30° ~ 90° and 270° ~ 330° the worst case was recorded in report.

3. E-Field (dBμV/m) = EIRP(dBm) + 95.2, for d = 3 m.

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

Applicable Standard

According to §15.407(a) (1)

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 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. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm)

According to §15.407(a) (3)

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

Test Procedure

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

Test Data

Environmental Conditions

Temperature:	24.7~25.9 °C
Relative Humidity:	49~50 %
ATM Pressure:	102.9~103.7 kPa

The testing was performed by Jack Jiao from 2020-09-21 to 2020-11-04.

Test Mode: Transmitting

5150MHz-5250MHz:

Mode	Channel	Frequency (MHz)	PSD (dBm/MHz)			Limit (dBm/MHz)	Result
			Chain0	Chain1	Total		
802.11a	Low	5180	-1.62	-1.26	/	1	PASS
	Middle	5200	-1.59	-1.23	/	1	PASS
	High	5240	-1.55	-1.46	/	1	PASS
802.11ac20	Low	5180	-2.84	-2.54	0.32	1	PASS
	Middle	5200	-2.29	-2.37	0.68	1	PASS
	High	5240	-2.11	-2.09	0.91	1	PASS
802.11n20	Low	5180	-2.84	-2.83	0.18	1	PASS
	Middle	5200	-2.65	-2.69	0.34	1	PASS
	High	5240	-2.14	-2.41	0.74	1	PASS
802.11ac40	Low	5190	-5.16	-4.47	-1.79	1	PASS
	High	5230	-4.37	-3.62	-0.97	1	PASS
802.11n40	Low	5190	-4.55	-4.46	-1.49	1	PASS
	High	5230	-4.18	-4.47	-1.31	1	PASS
802.11ac80	/	5210	-7.91	-7.54	-4.71	1	PASS

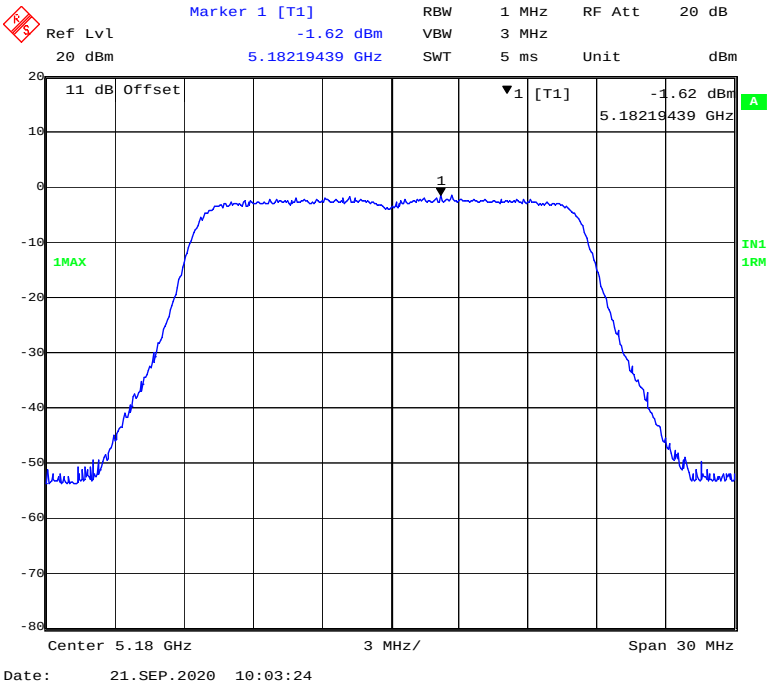
5725MHz-5850MHz:

Mode	Channel	Frequency MHz	PSD (dBm/500kHz)			Limit (dBm/500kHz)	Result
			Chain0	Chain1	Total		
802.11a	Low	5745	-2.11	-3.09	/	14	PASS
	Middle	5785	-1.92	-2.03	/	14	PASS
	High	5825	-1.23	-1.27	/	14	PASS
802.11ac20	Low	5745	-2.43	-2.34	0.63	14	PASS
	Middle	5785	-1.28	-2.04	1.37	14	PASS
	High	5825	-0.59	-1.49	1.99	14	PASS
802.11n20	Low	5745	-2.39	-2.39	0.62	14	PASS
	Middle	5785	-1.46	-2.12	1.23	14	PASS
	High	5825	-0.34	-1.27	2.23	14	PASS
802.11ac40	Low	5755	-4.86	-4.96	-1.90	14	PASS
	High	5795	-3.97	-4.04	-0.99	14	PASS
802.11n40	Low	5755	-4.96	-4.96	-1.95	14	PASS
	High	5795	-3.81	-4.08	-0.93	14	PASS
802.11ac80	/	5775	-7.61	-7.57	-4.58	14	PASS

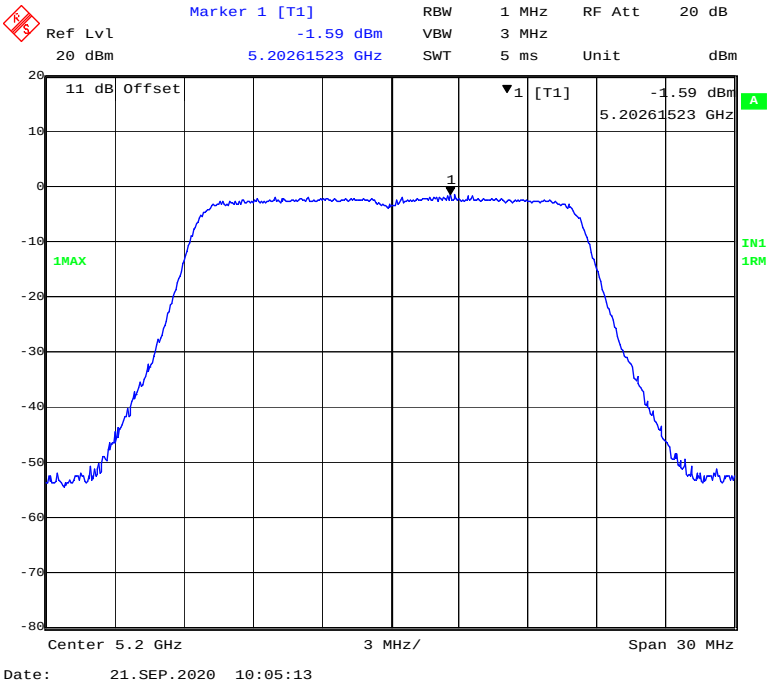
Note1: The total PSD=10*Log$_{10}$(10^(Chain 0/10)+10^(Chain 1/10))
Note2: The maximum antenna gain is 19.0 dBi. The device employed Cyclic Delay Diversity (CDD) for 802.11MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power spectral density (PSD)measurements on the devices:
Array Gain = 10 log(N_{ANT}/N_{SS}) dB.
So: Directional gain = GANT + Array Gain = 19.0+10*log(2/1) =22.0 dBi, power spectral density limit reduced 22.0-6.0=16.0dB.

5150MHz-5250MHz Band-Chain0 :

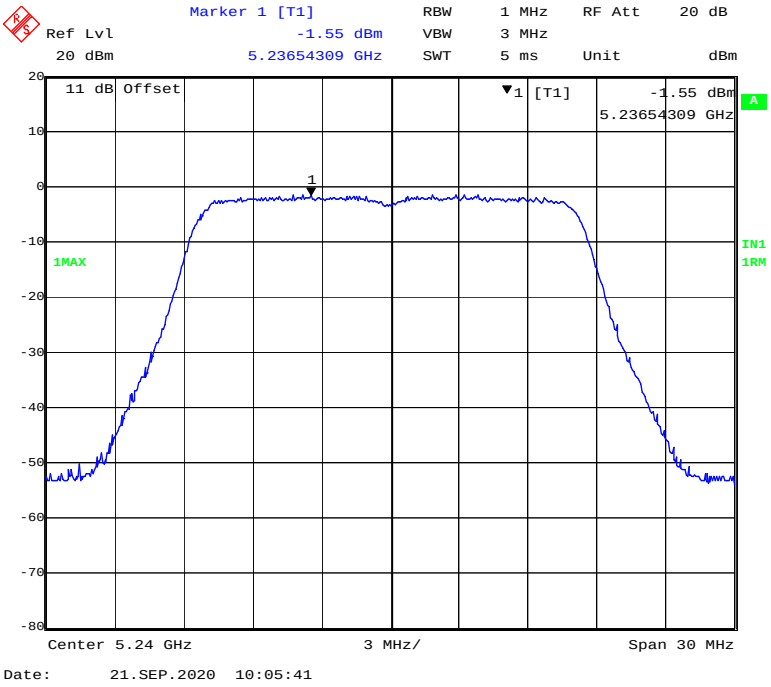
802.11a mode, Power spectral density-5180MHz



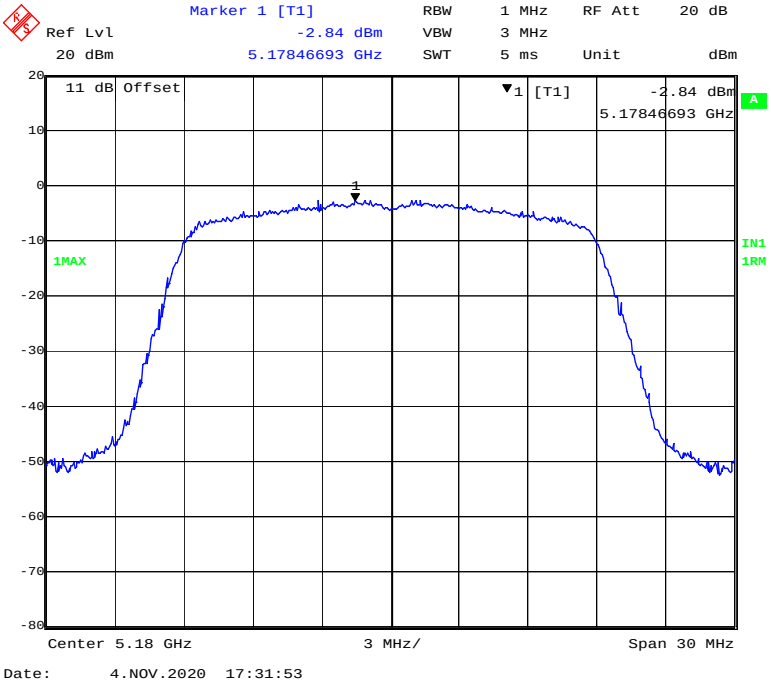
802.11a mode, Power spectral density-5200MHz



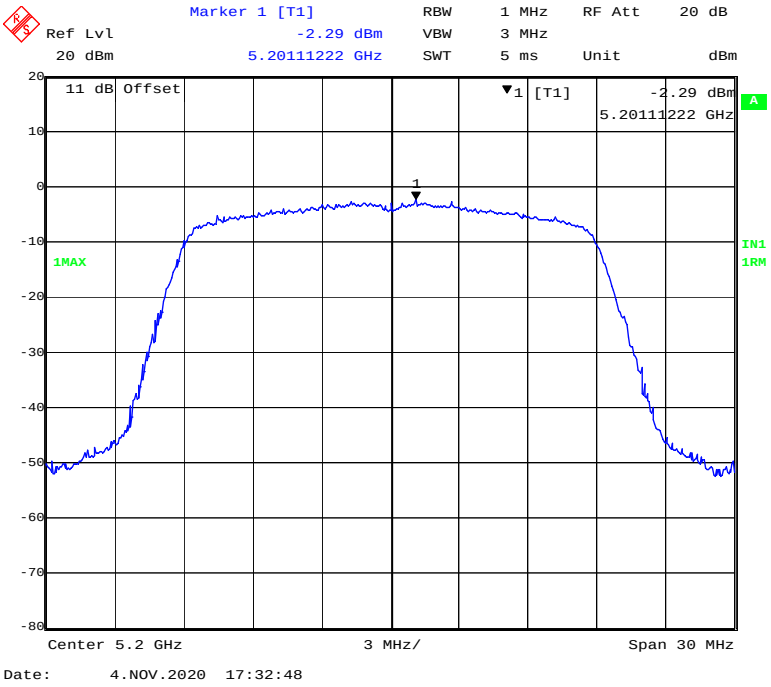
802.11a mode, Power spectral density-5240MHz



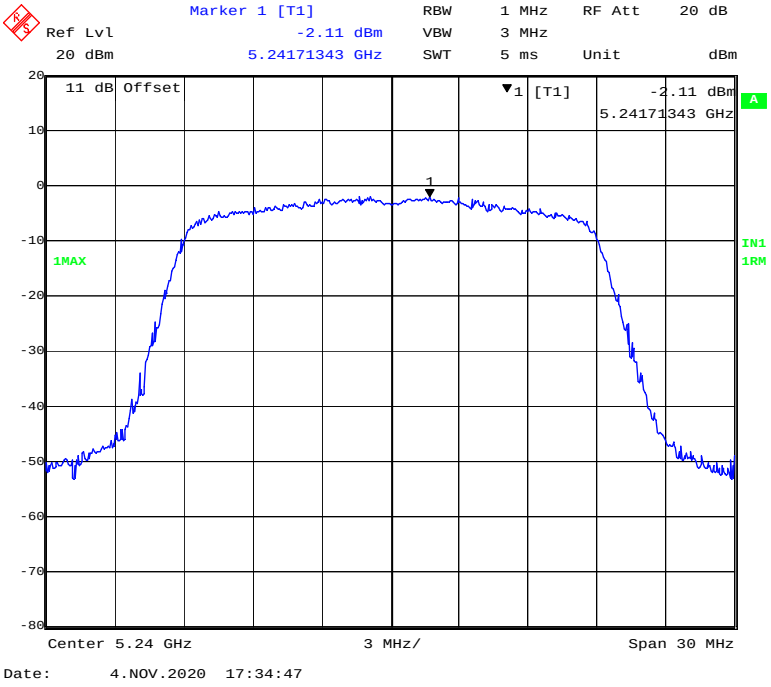
802.11ac20 mode, Power spectral density-5180MHz



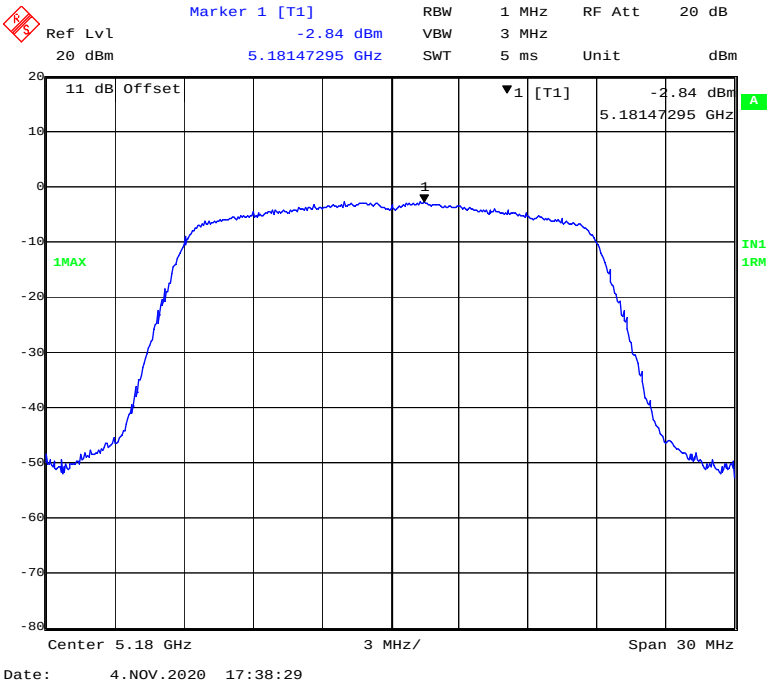
802.11 ac20 mode, Power spectral density-5200MHz



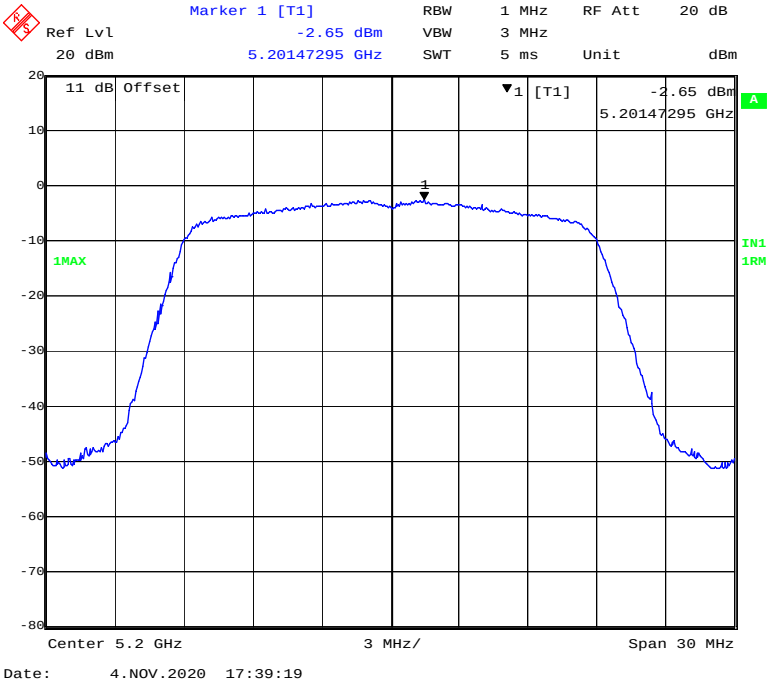
802.11ac20 mode, Power spectral density-5240MHz



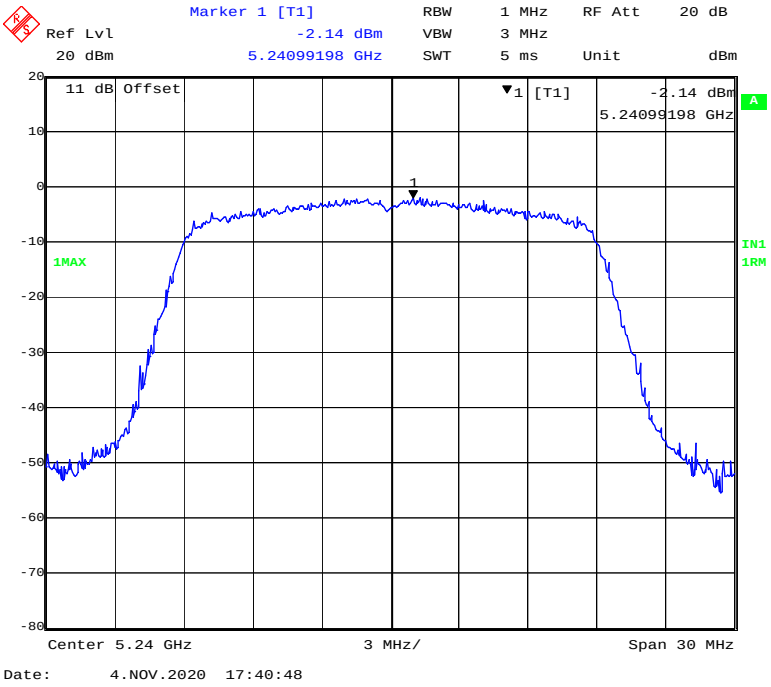
802.11n-HT20 mode, Power spectral density-5180MHz



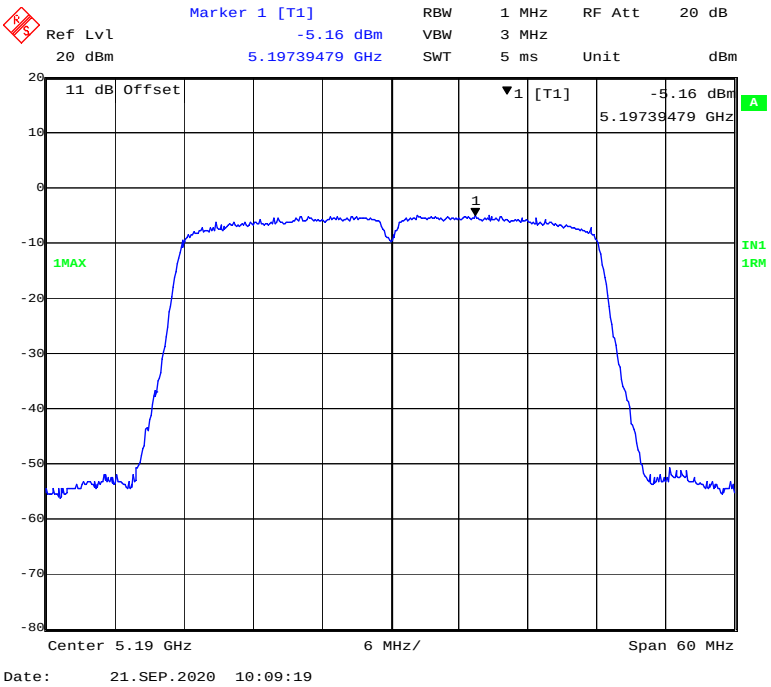
802.11n-HT20 mode, Power spectral density-5200MHz



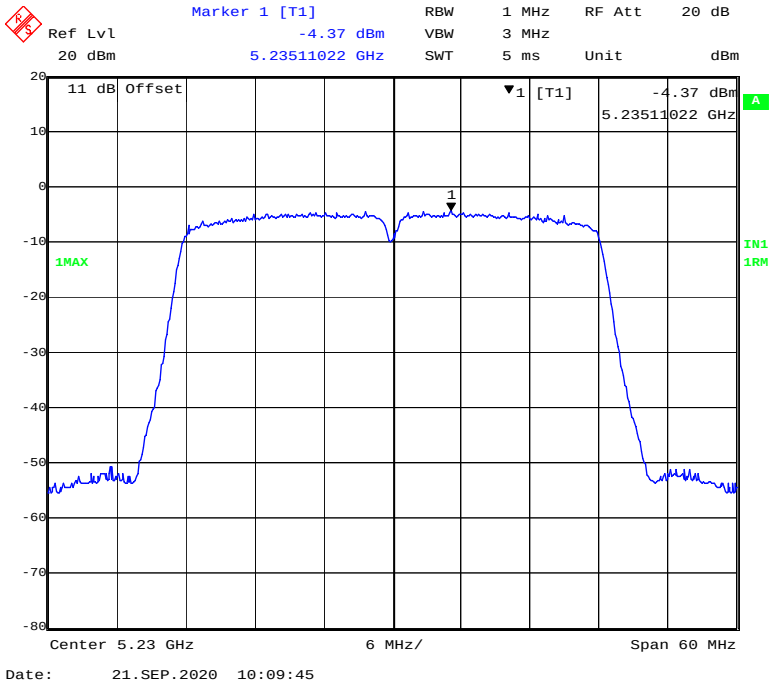
802.11n-HT20 mode, Power spectral density-5240MHz



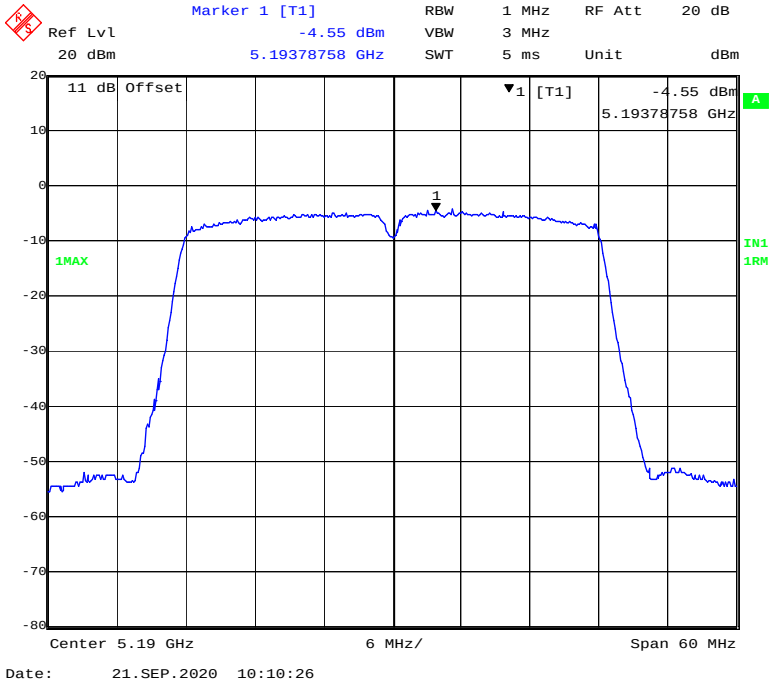
802.11ac40 mode, Power spectral density-5190MHz



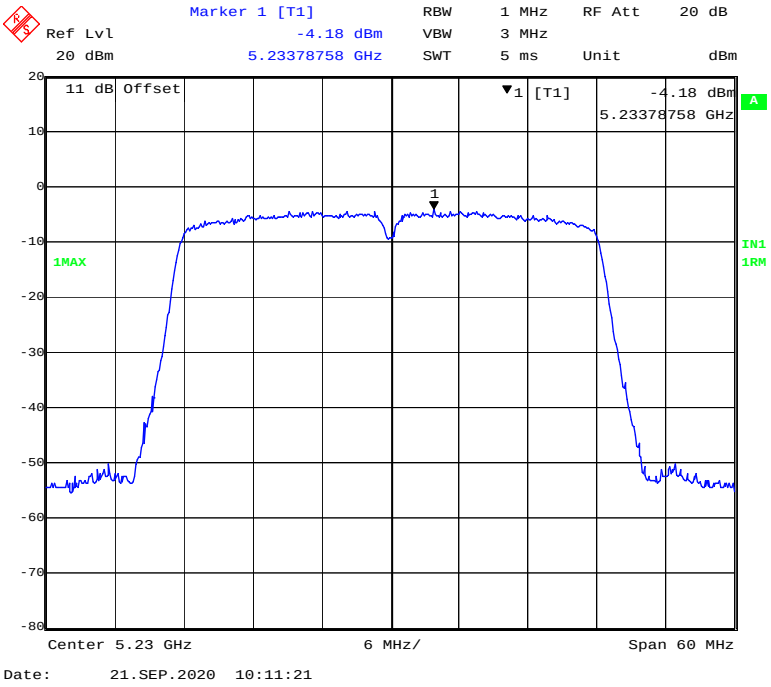
802.11 ac40 mode, Power spectral density-5230MHz



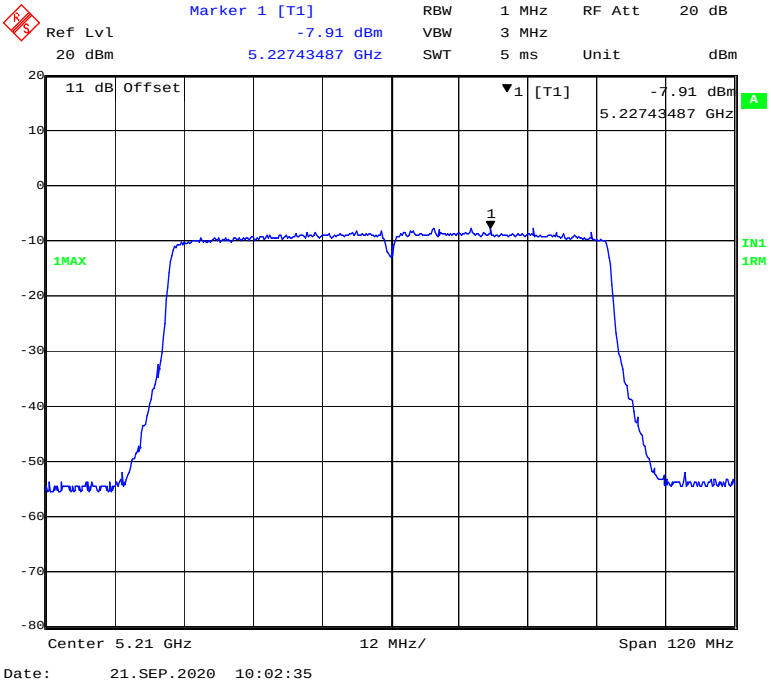
802.11n-HT40 mode, Power spectral density-5190MHz



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

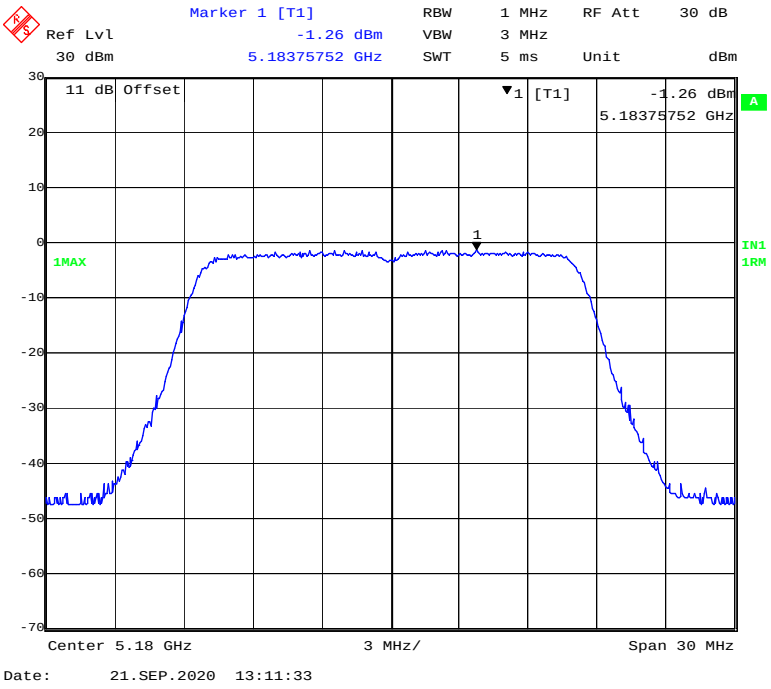


802.11n- ac80 mode, Power spectral density-5210MHz

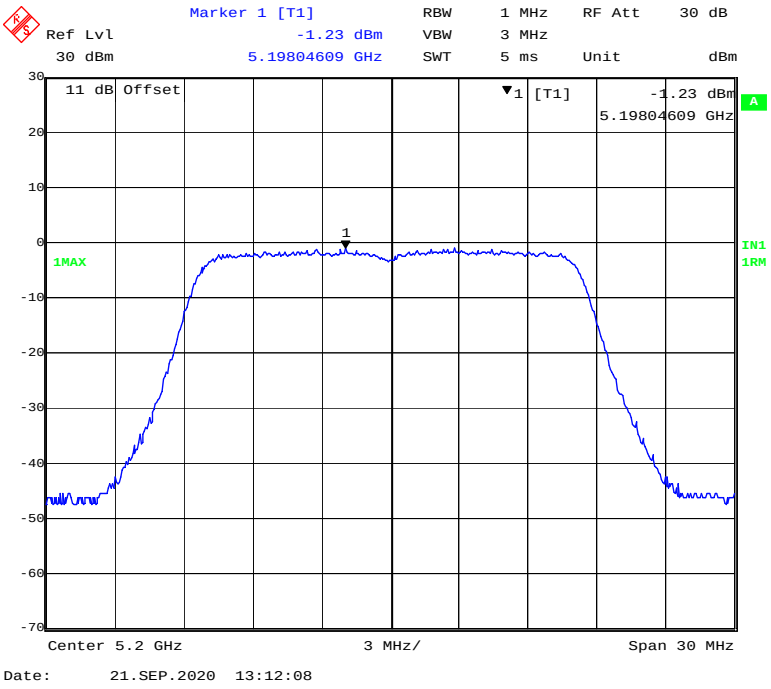


5150MHz-5250MHz Band-Chain1 :

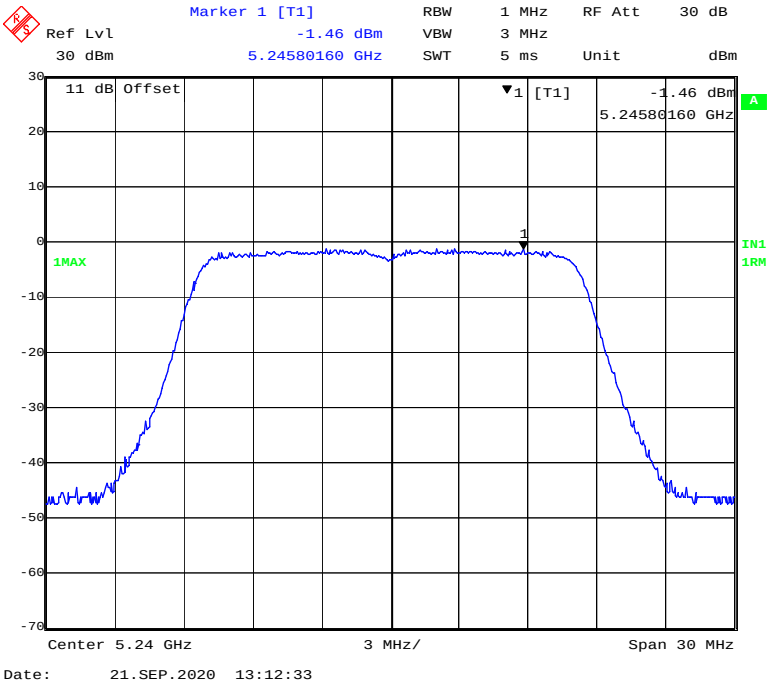
802.11a mode, Power spectral density-5180MHz



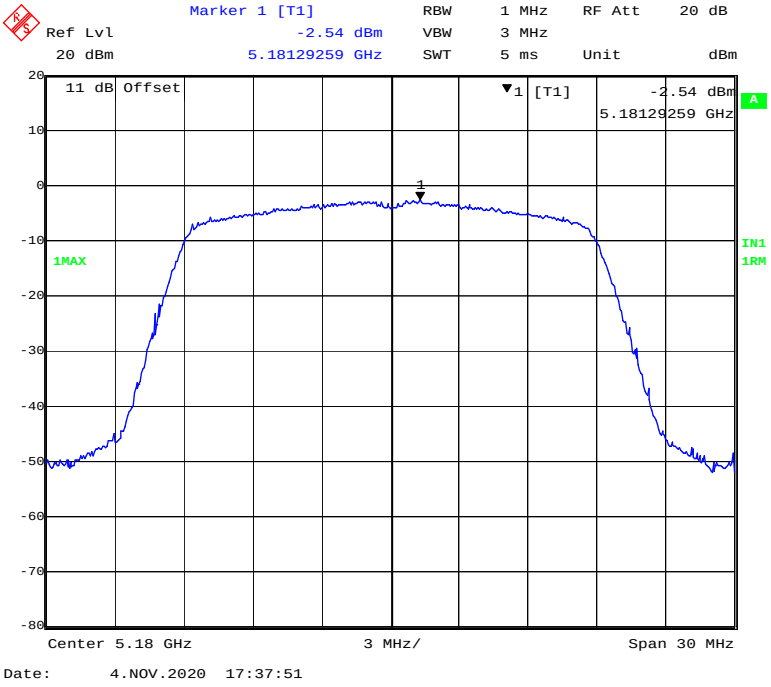
802.11a mode, Power spectral density-5200MHz



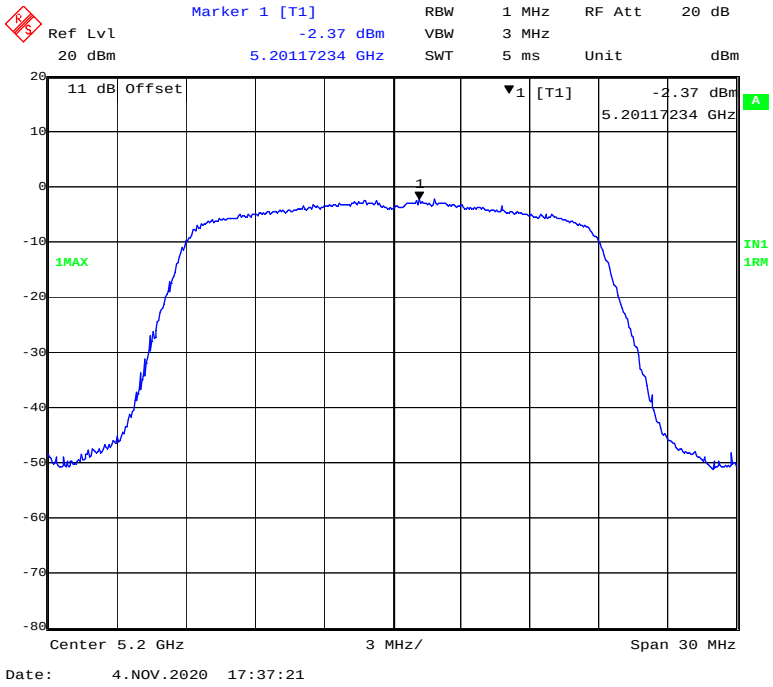
802.11a mode, Power spectral density-5240MHz



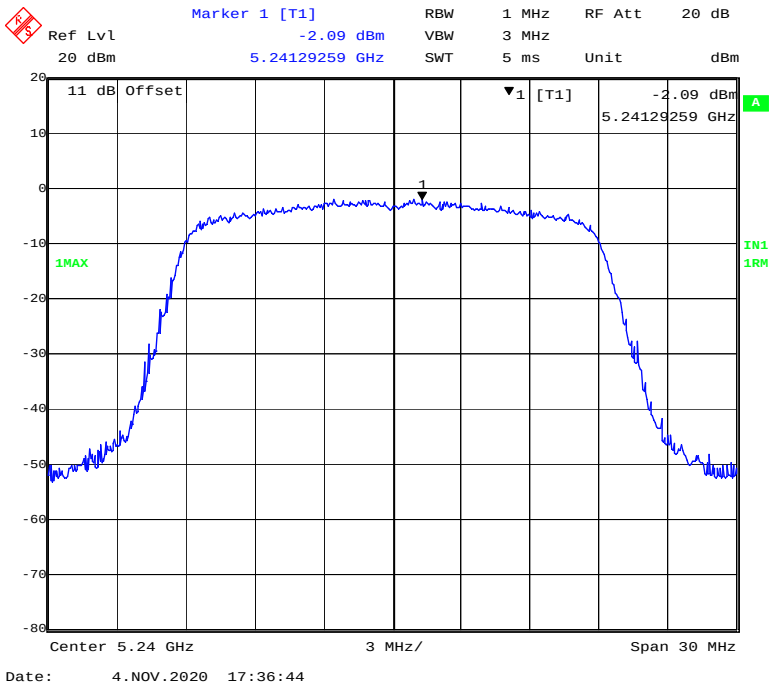
802.11ac20 mode, Power spectral density-5180MHz



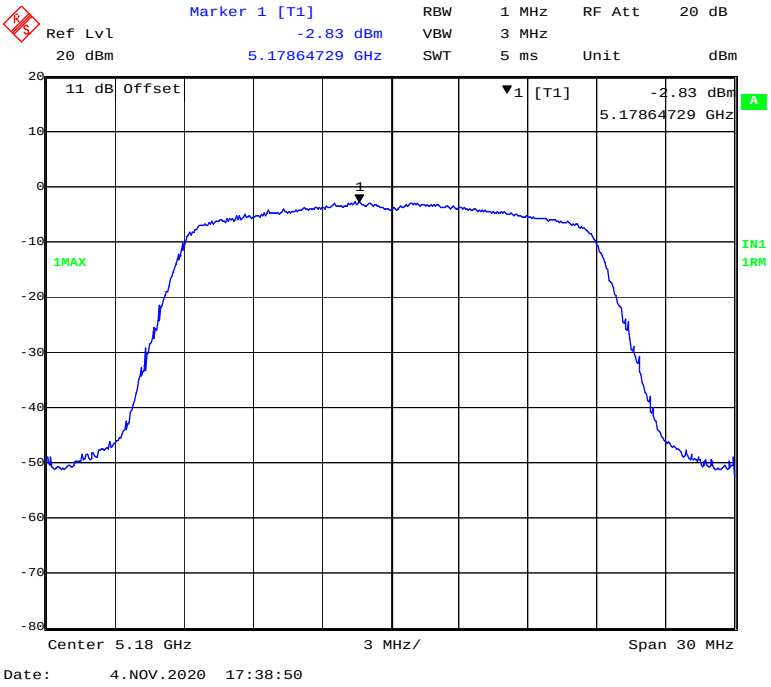
802.11 ac20 mode, Power spectral density-5200MHz



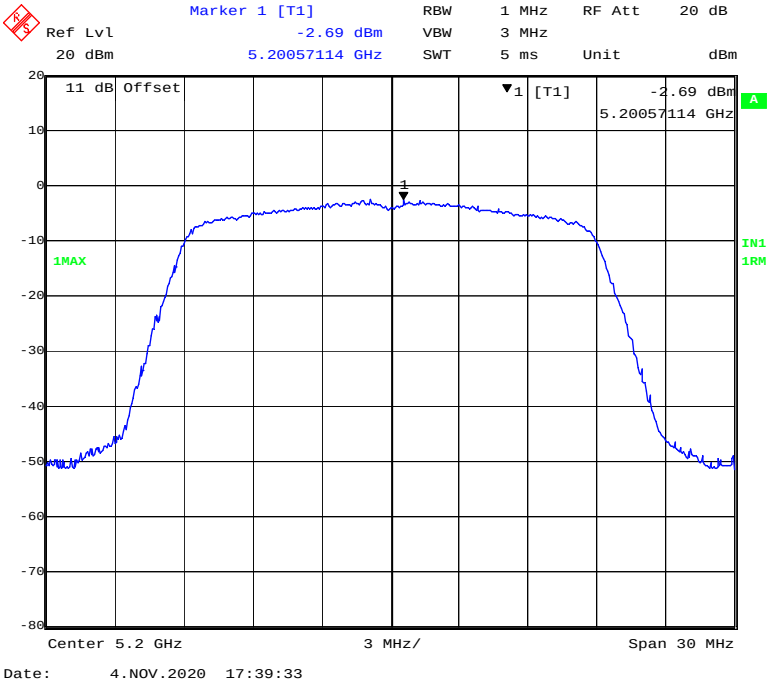
802.11ac20 mode, Power spectral density-5240MHz



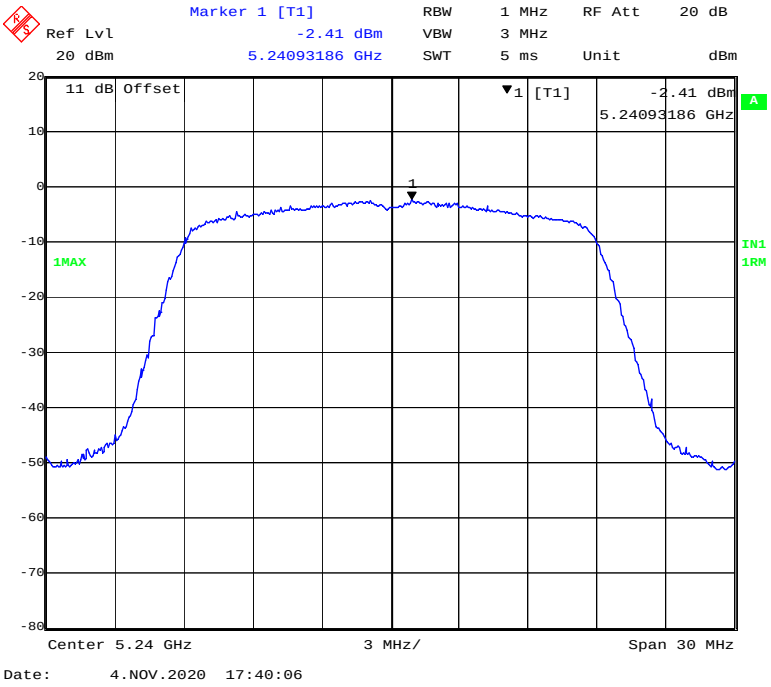
802.11n-HT20 mode, Power spectral density-5180MHz



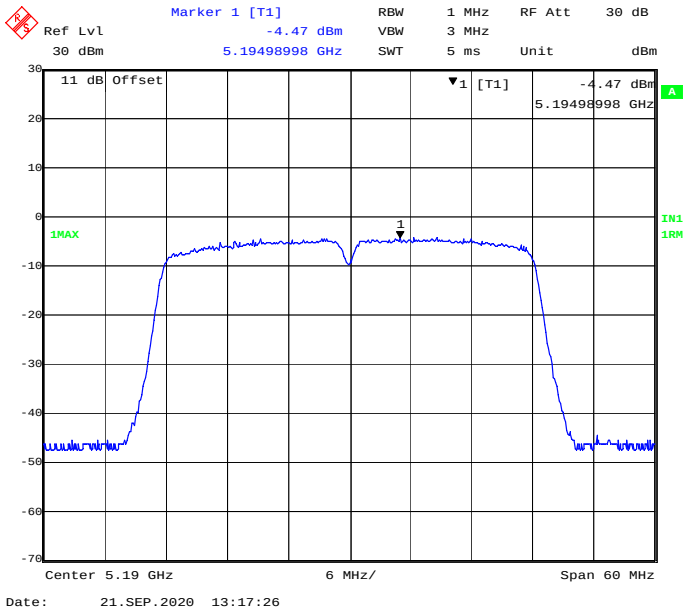
802.11n-HT20 mode, Power spectral density-5200MHz



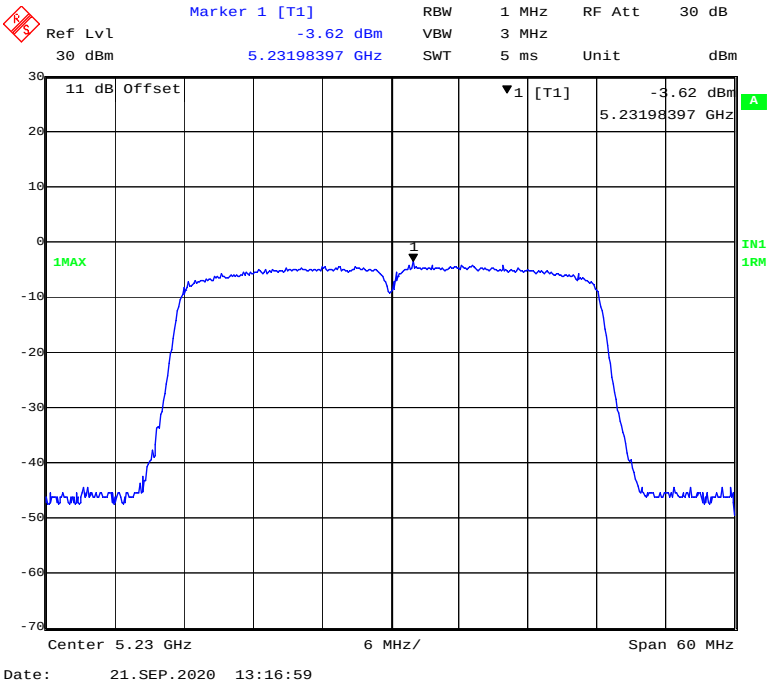
802.11n-HT20 mode, Power spectral density-5240MHz



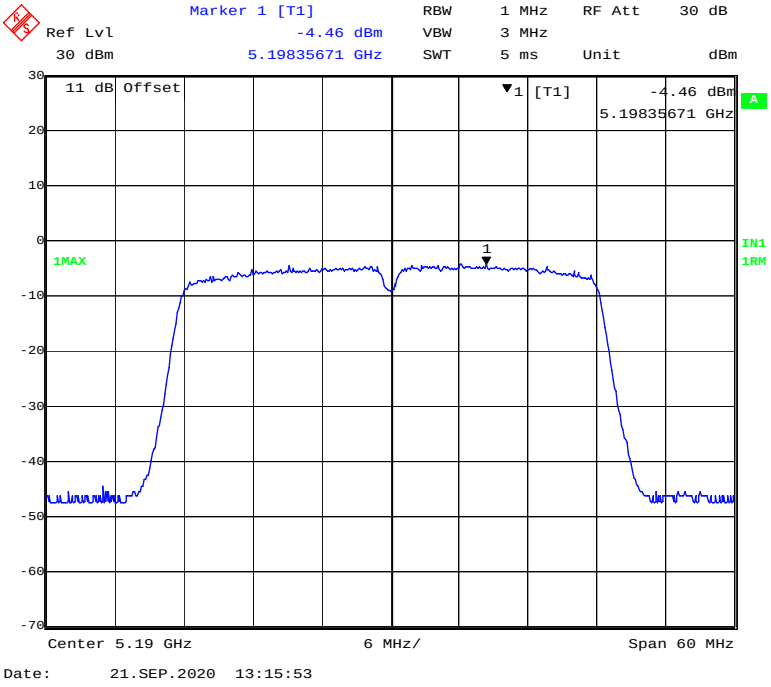
802.11ac40 mode, Power spectral density-5190MHz



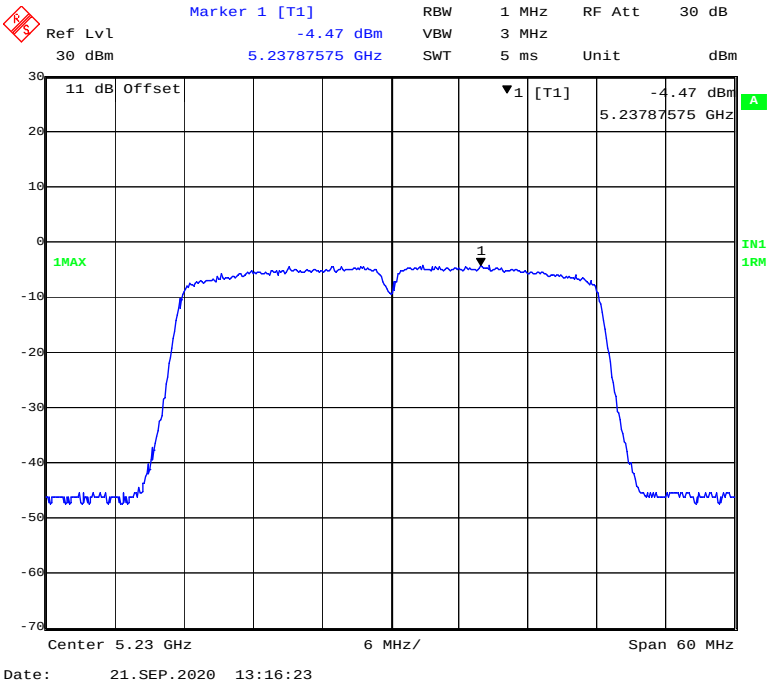
802.11 ac40 mode, Power spectral density-5230MHz



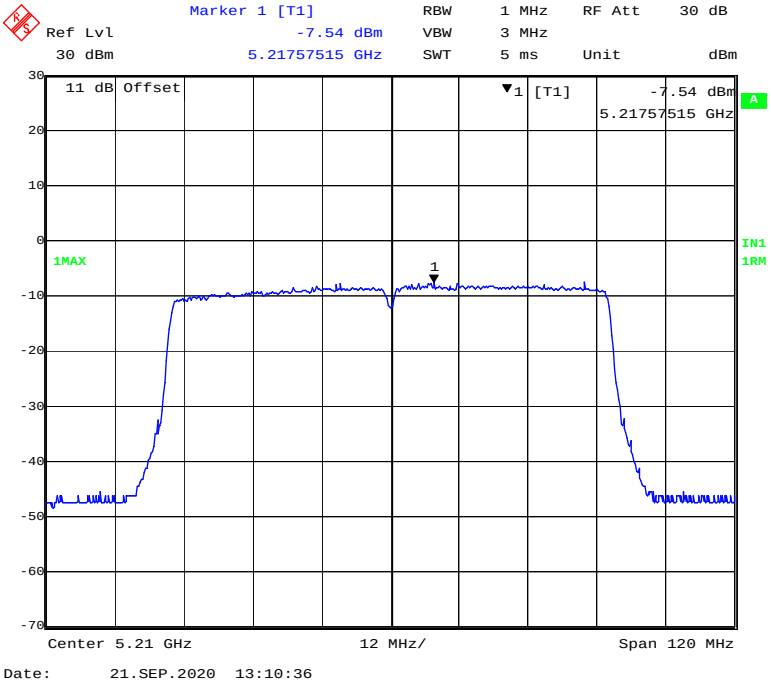
802.11n-HT40 mode, Power spectral density-5190MHz



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

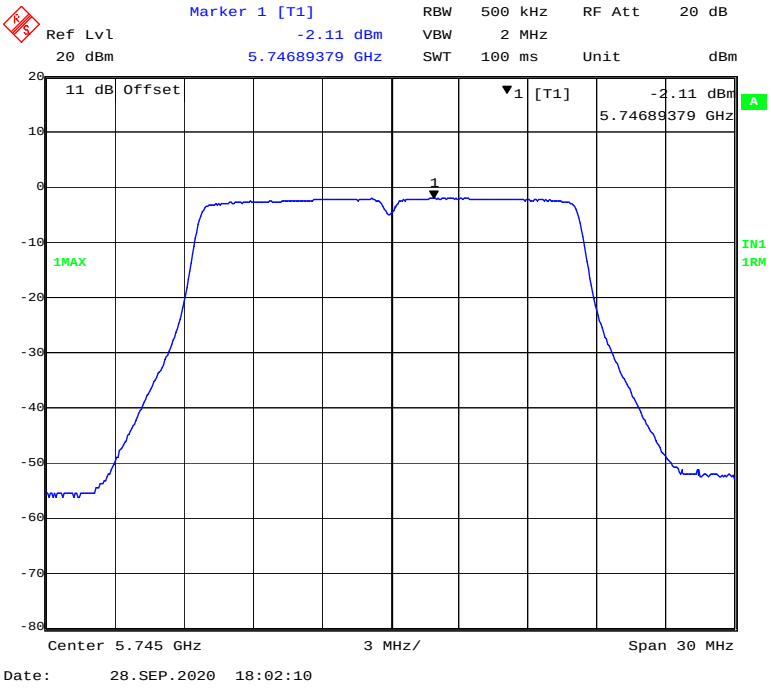


802.11n- ac80 mode, Power spectral density-5210MHz

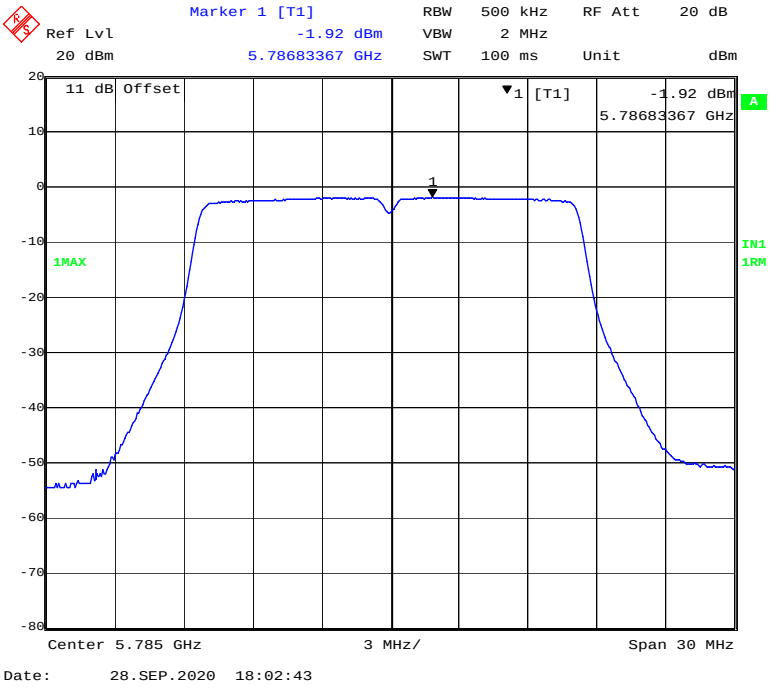


5725MHz-5850 MHz Band-Chain0:

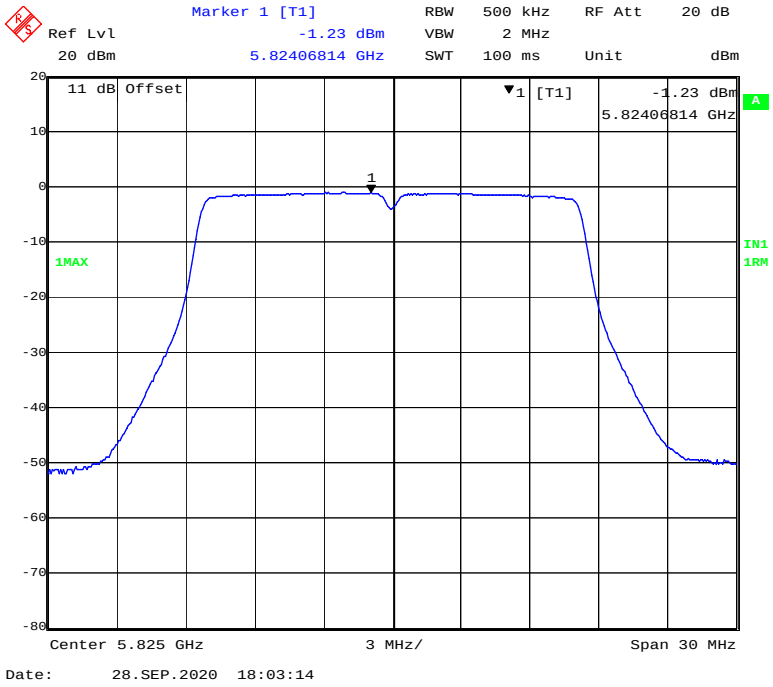
802.11a mode, Power spectral density-5745MHz



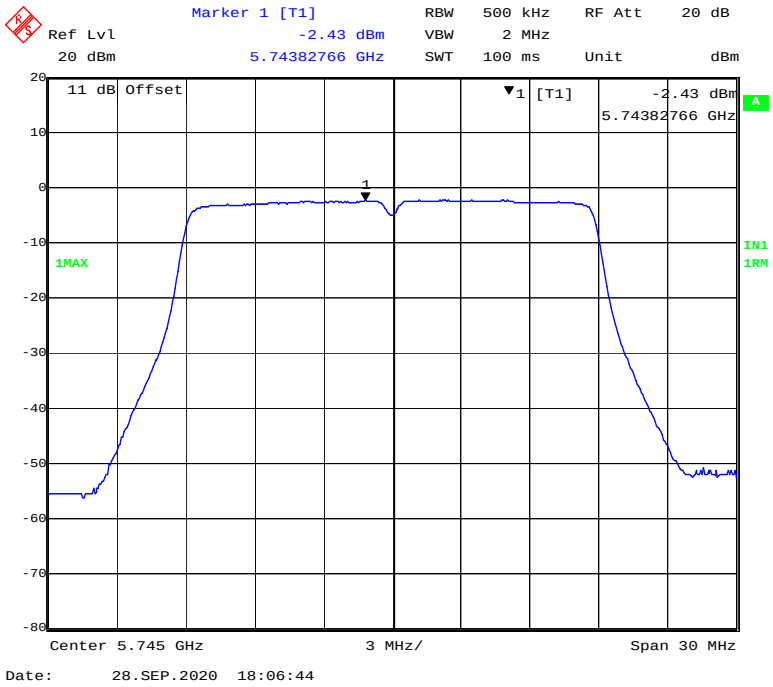
802.11a mode, Power spectral density-5785MHz



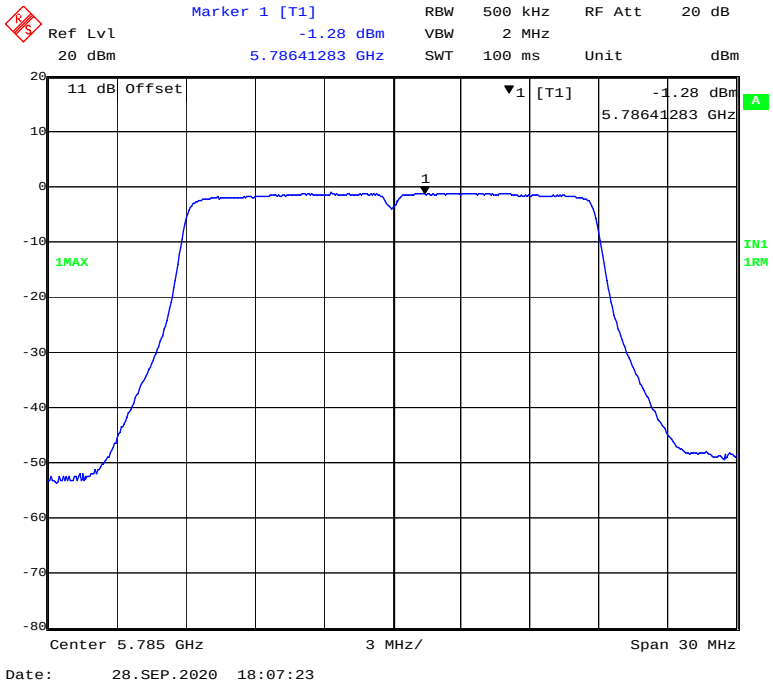
802.11a mode, Power spectral density-5825MHz



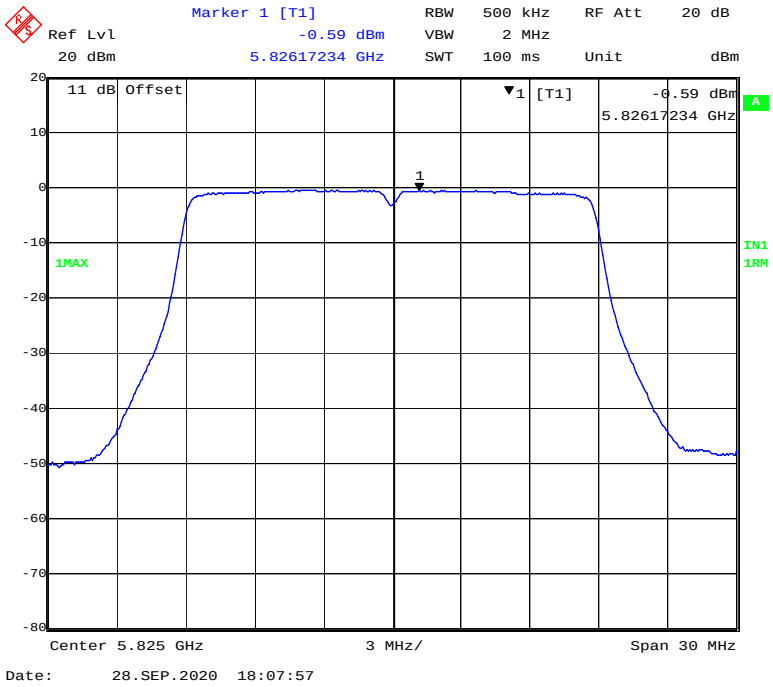
802.11ac20 mode, Power spectral density-5745MHz



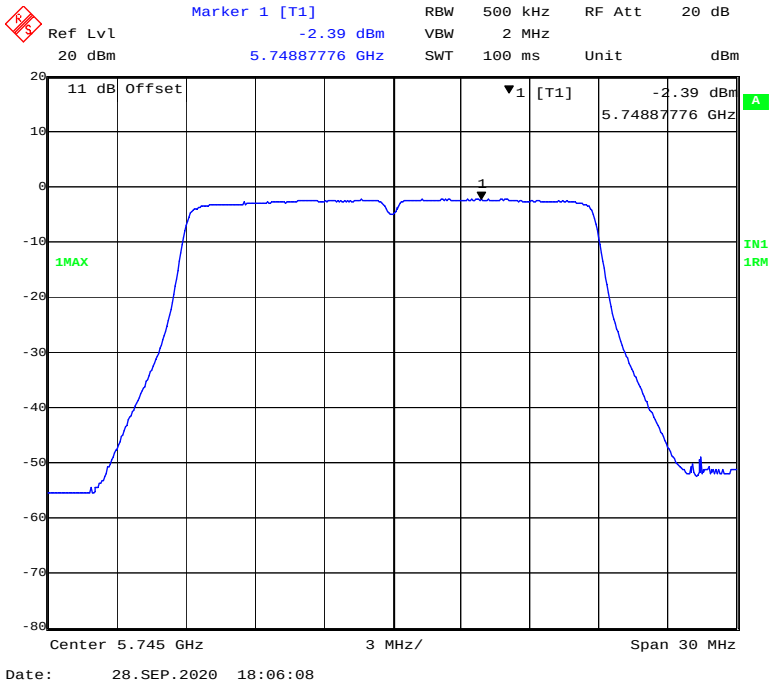
802.11 ac20 mode, Power spectral density-5785MHz



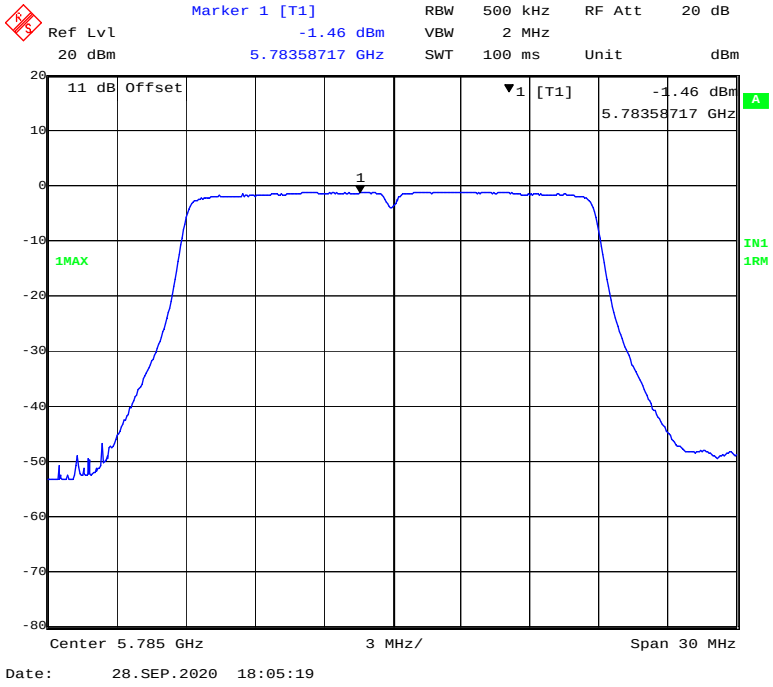
802.11 ac20 mode, Power spectral density-5825MHz



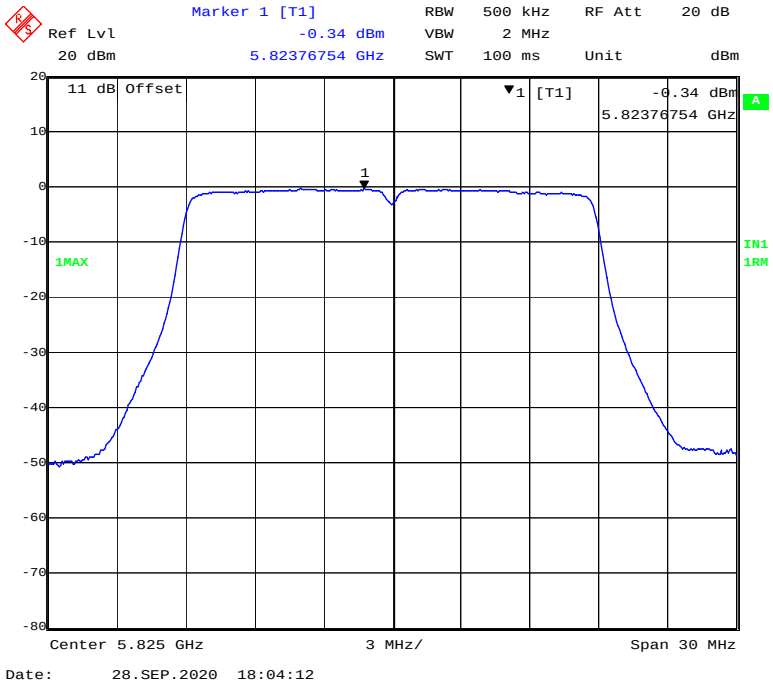
802.11n-HT20 mode, Power spectral density-5745MHz



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

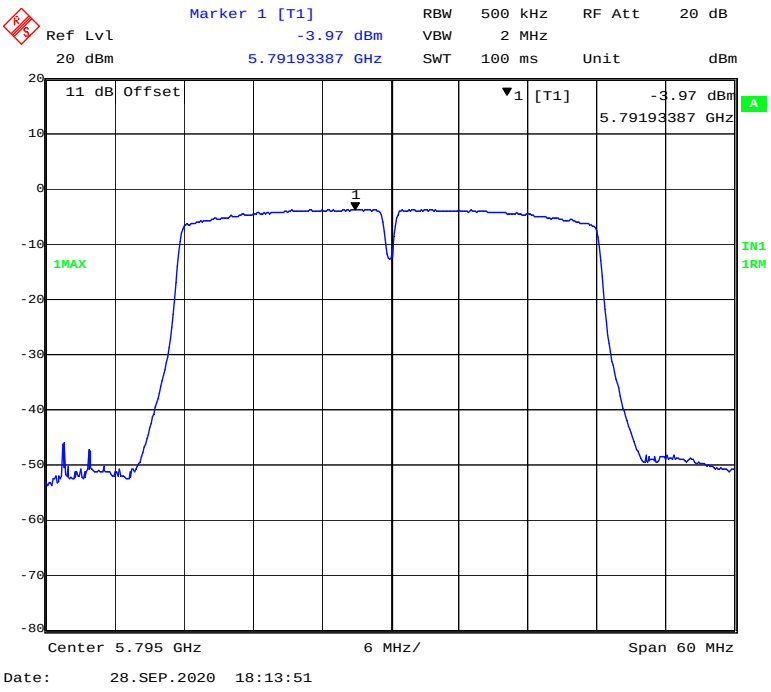


802.11n-HT20 mode, Power spectral density-5825MHz

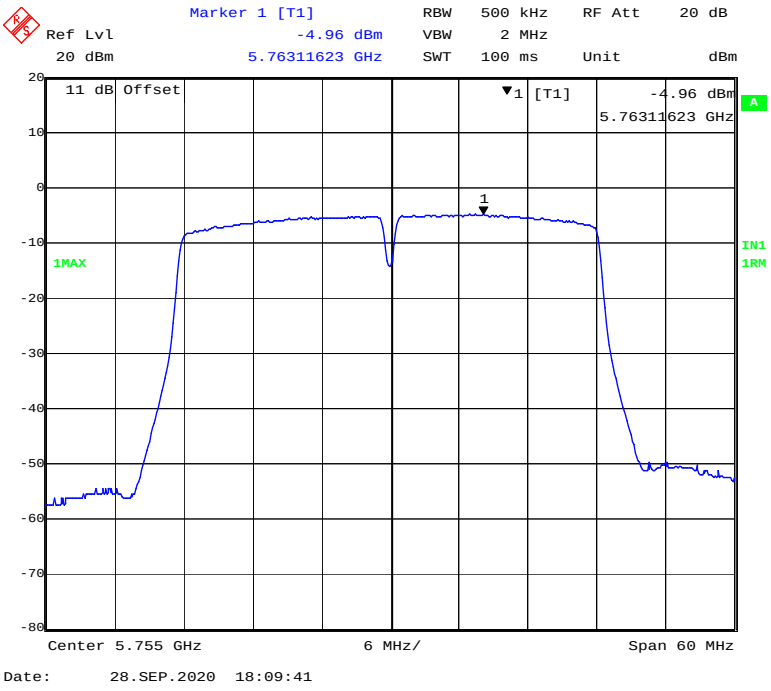


802.11ac40 mode, Power spectral density-5755MHz

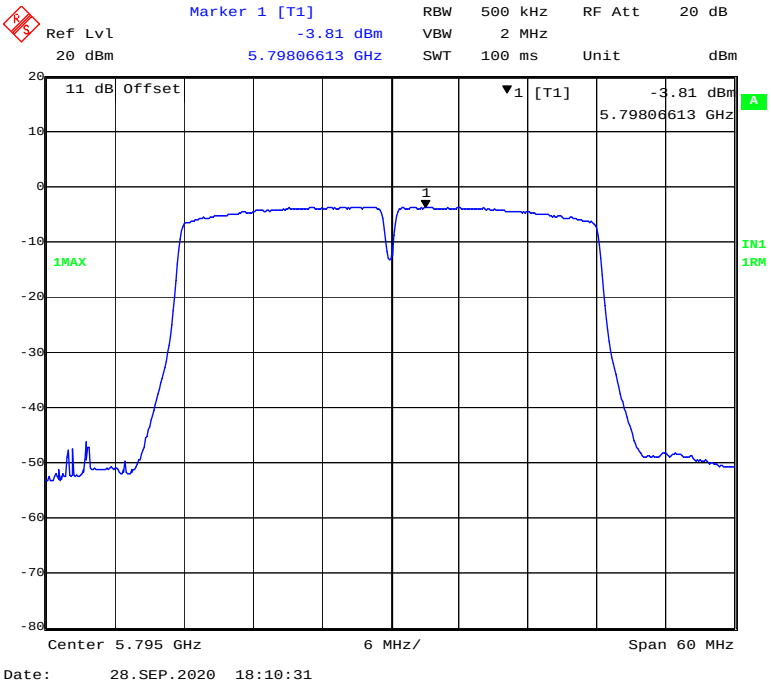
802.11 ac40 mode, Power spectral density-5795MHz



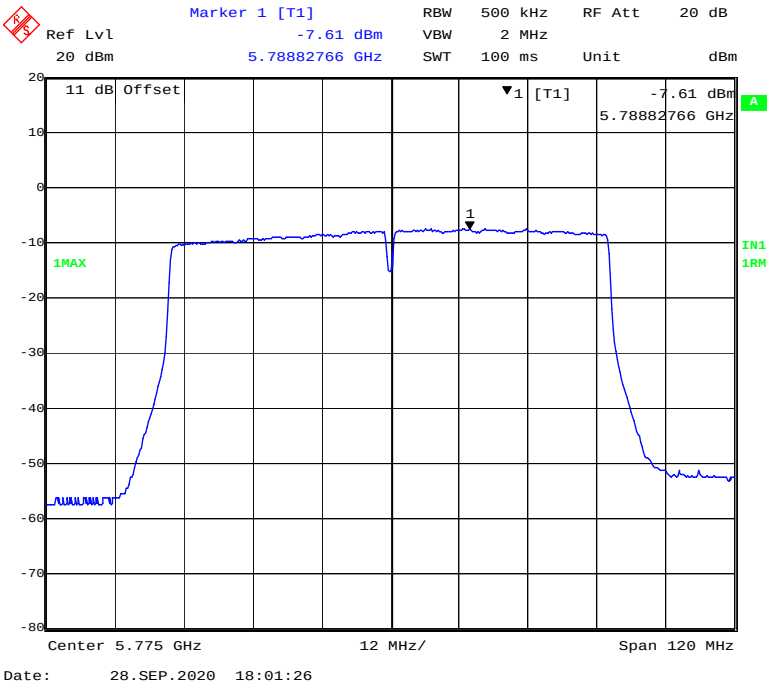
802.11n-HT40 mode, Power spectral density-5755MHz



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

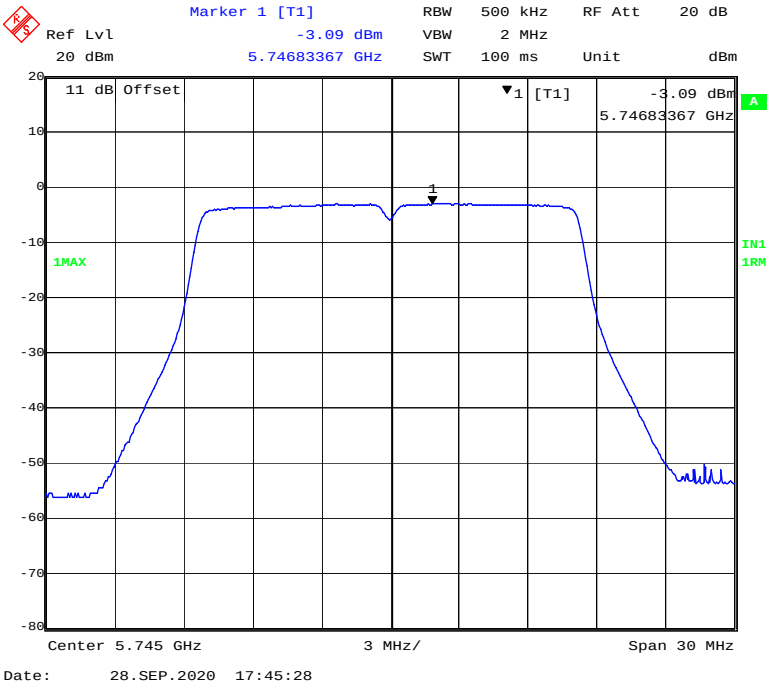


802.11 ac80 mode, Power spectral density-5775MHz

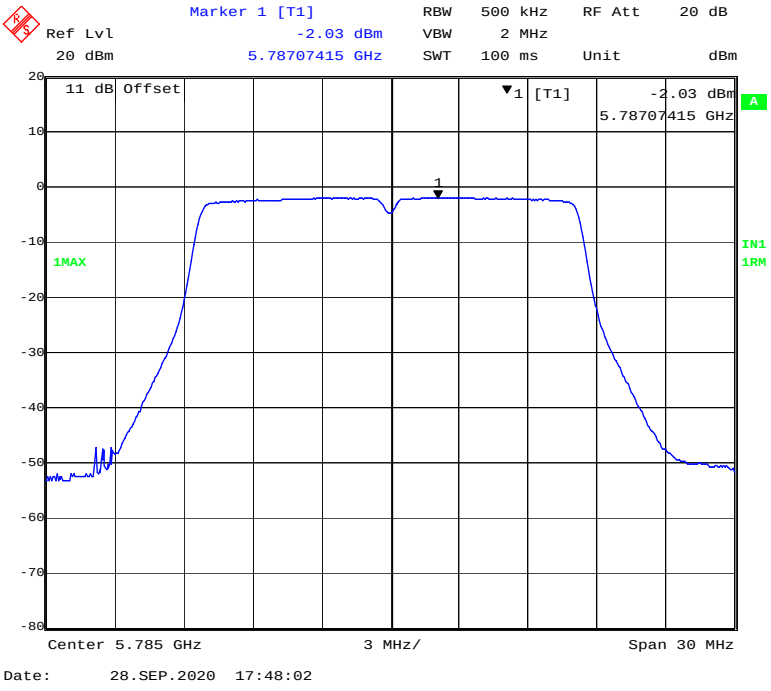


5725MHz-5850 MHz Band-Chain1:

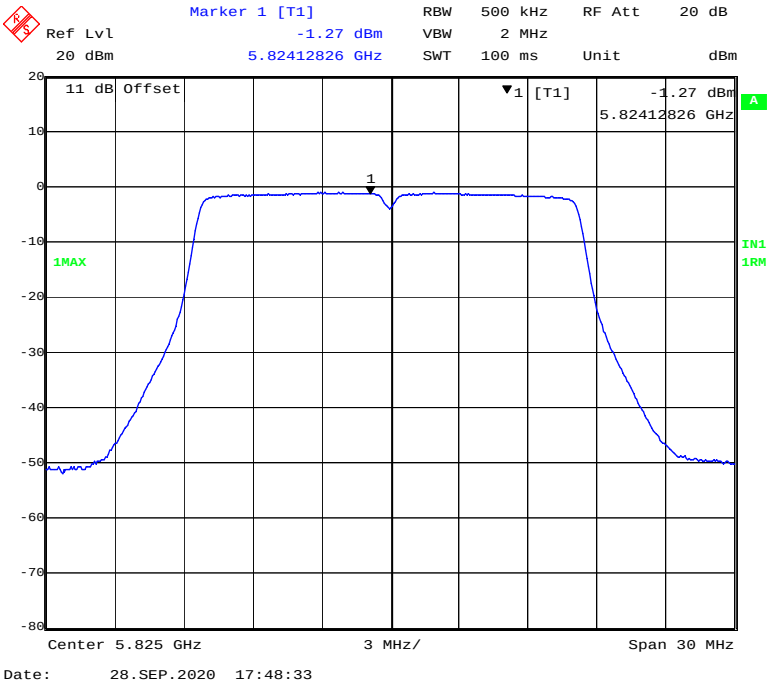
802.11a mode, Power spectral density-5745MHz



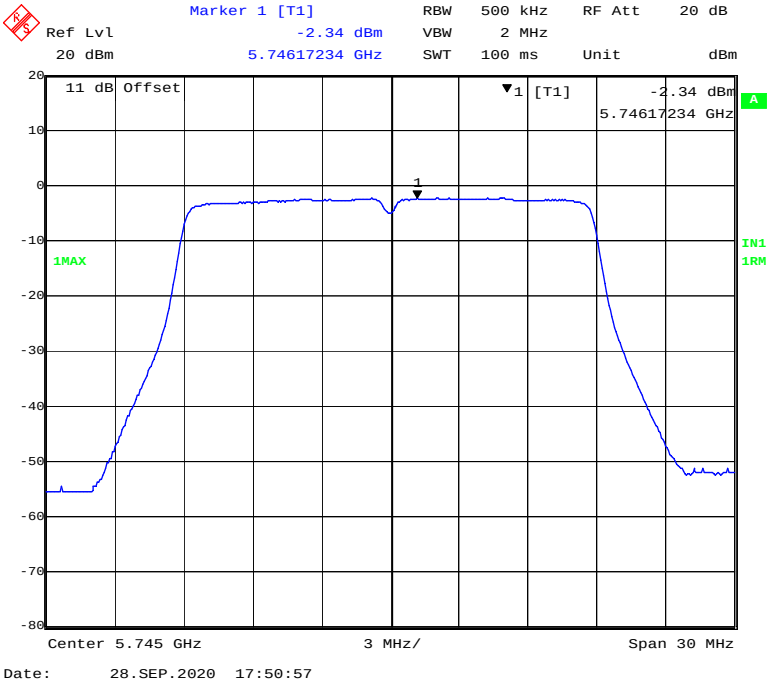
802.11a mode, Power spectral density-5785MHz



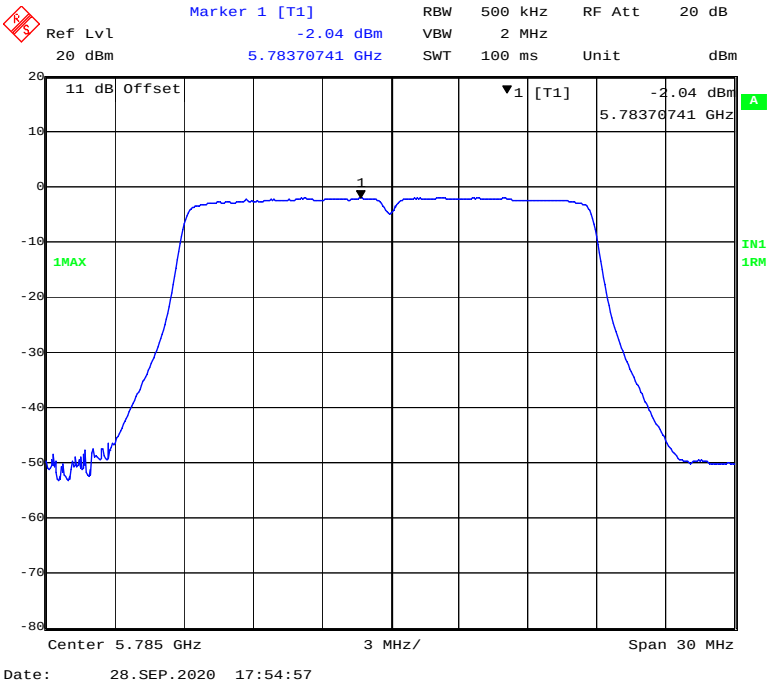
802.11a mode, Power spectral density-5825MHz



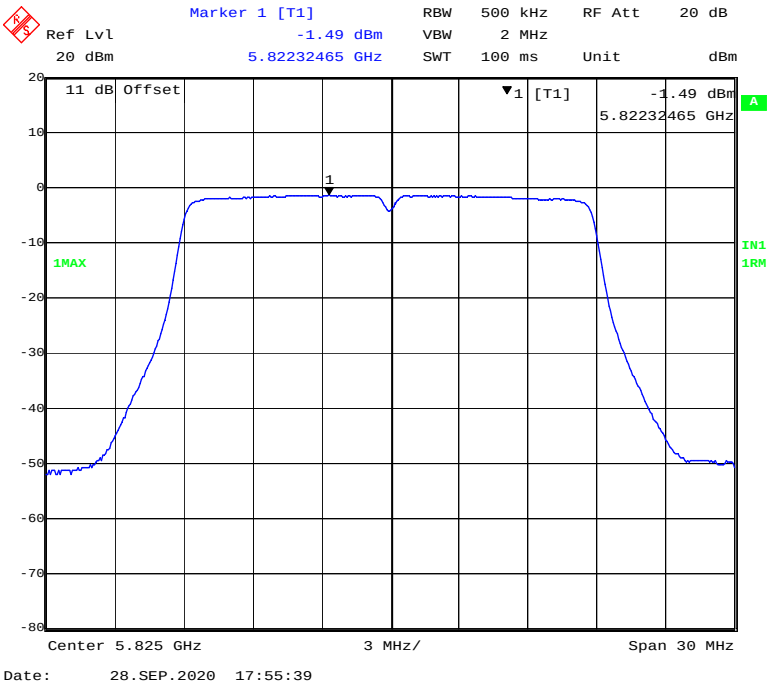
802.11ac20 mode, Power spectral density-5745MHz



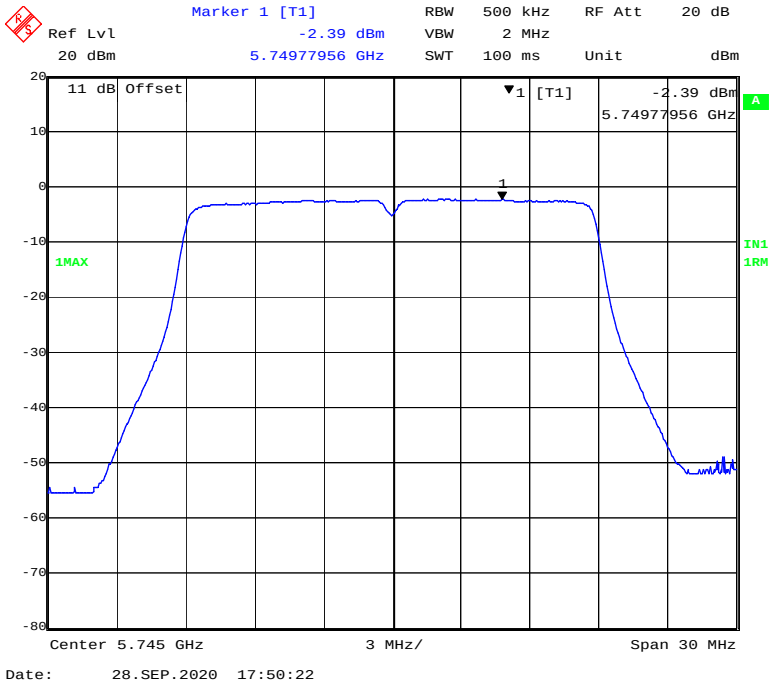
802.11 ac20 mode, Power spectral density-5785MHz



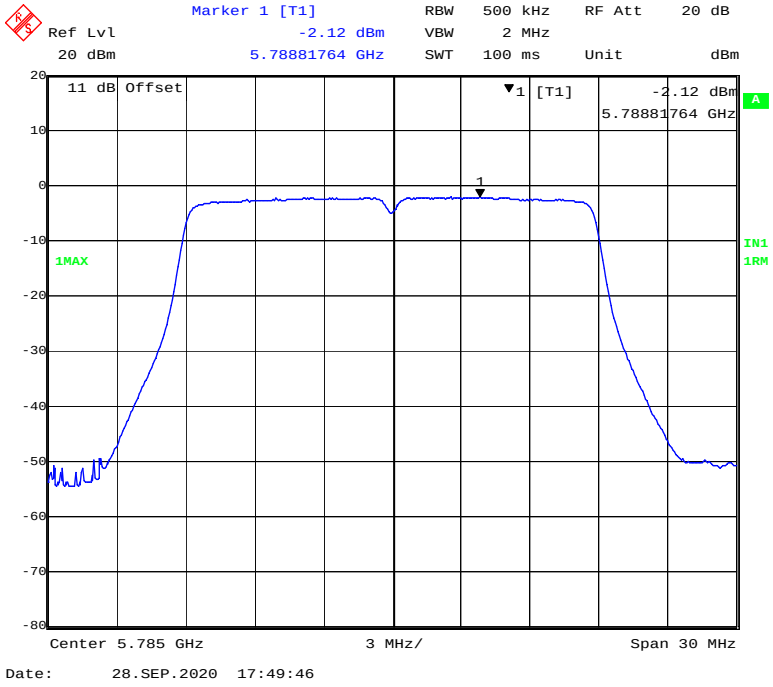
802.11 ac20 mode, Power spectral density-5825MHz



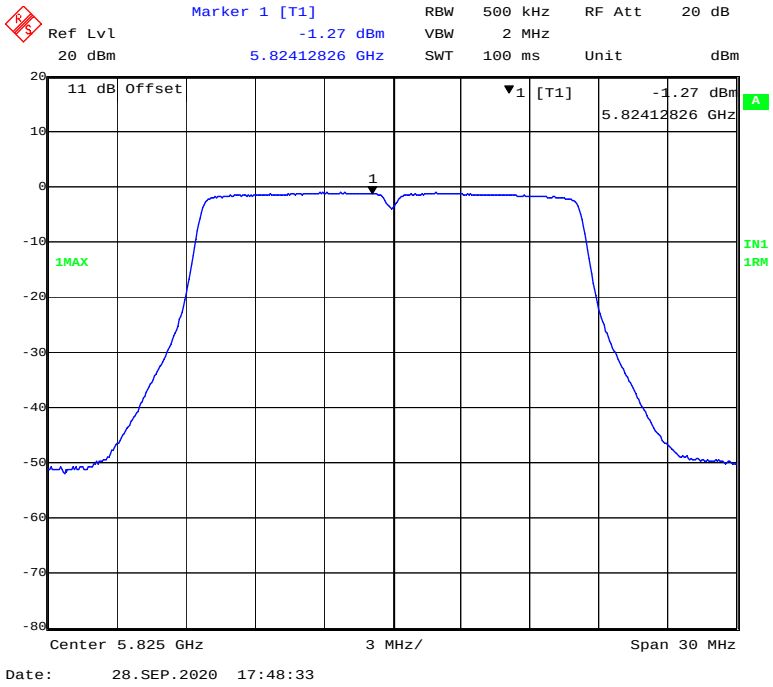
802.11n-HT20 mode, Power spectral density-5745MHz



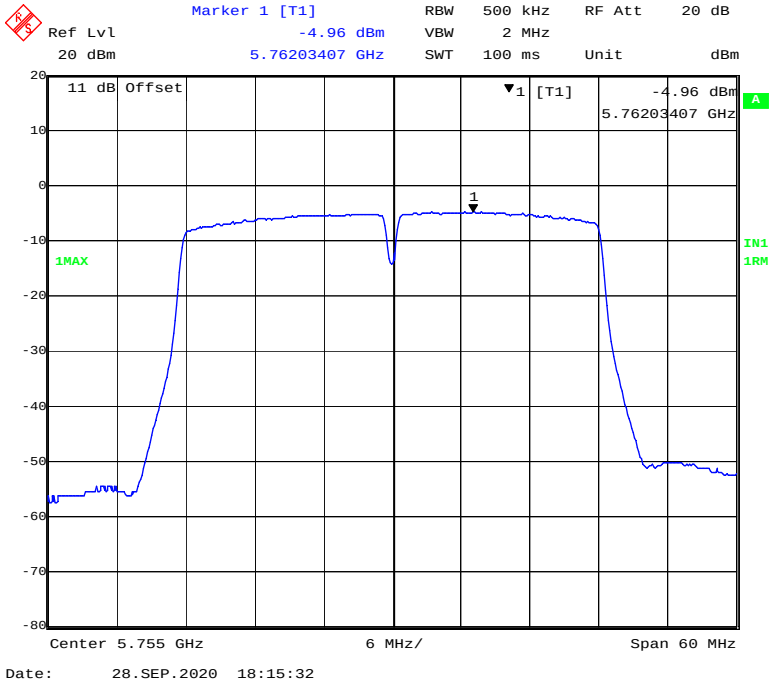
802.11n-HT20 mode, Power spectral density-5785MHz



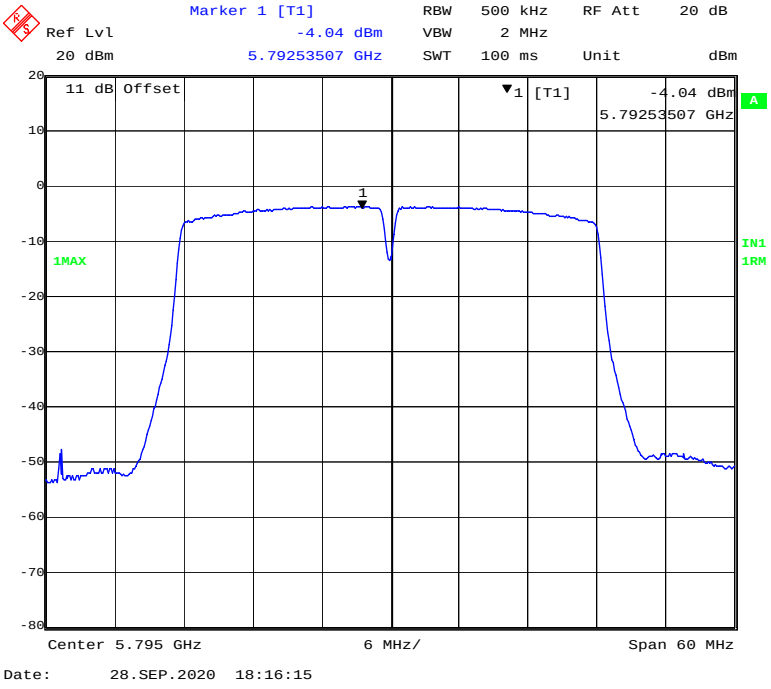
802.11n-HT20 mode, Power spectral density-5825MHz



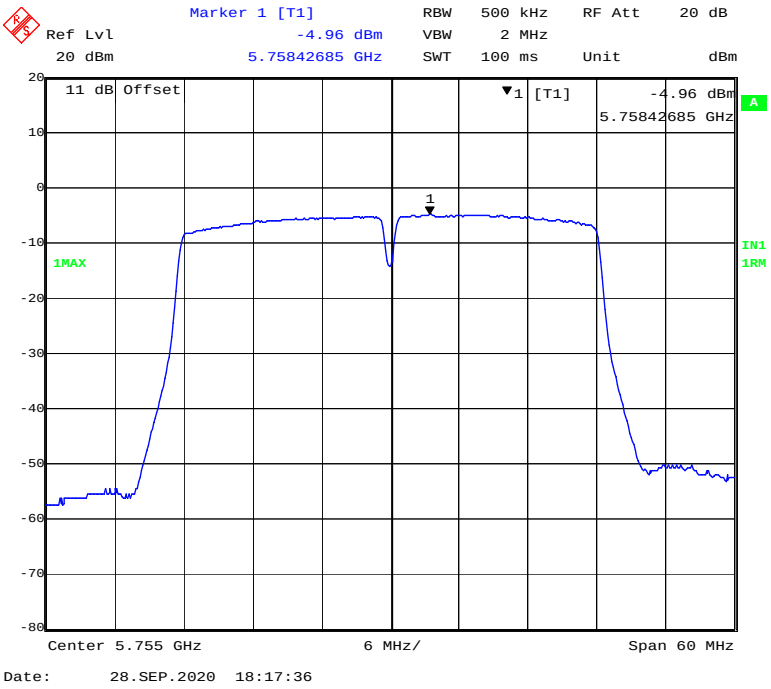
802.11ac40 mode, Power spectral density-5755MHz



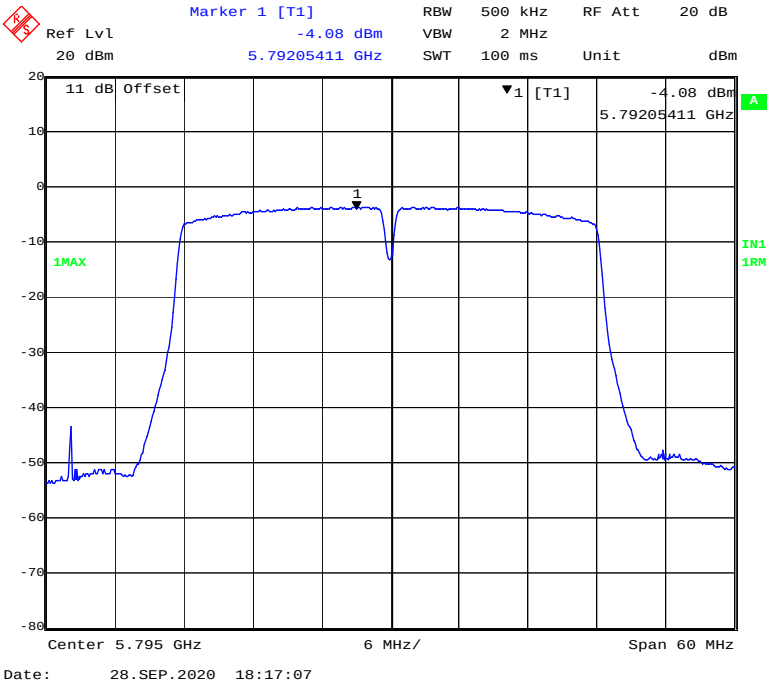
802.11 ac40 mode, Power spectral density-5795MHz



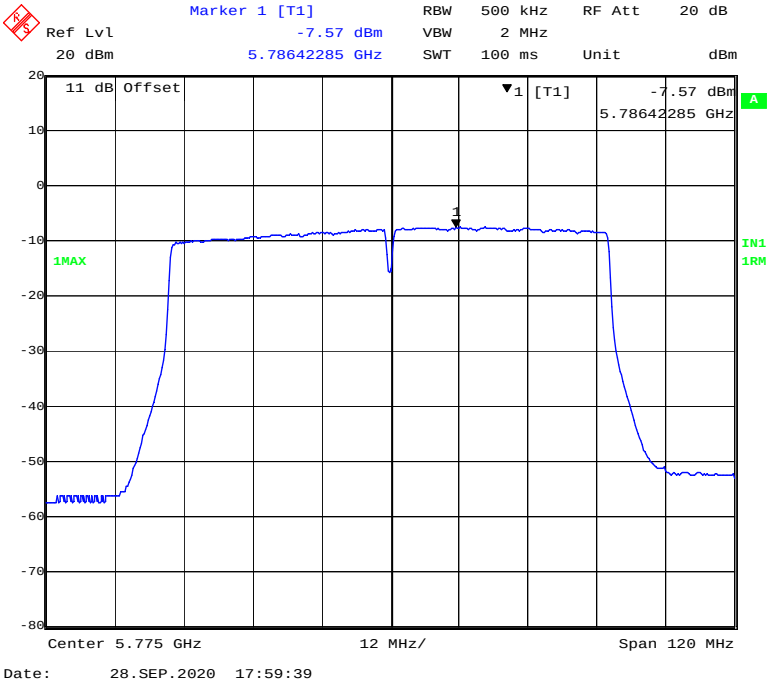
802.11n-HT40 mode, Power spectral density-5755MHz



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



802.11 ac80 mode, Power spectral density-5775MHz



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