



TESTING LABORATORY
CERTIFICATE#4323.01



FCC PART 15.247

TEST REPORT

For

Shanghai Sunmi Technology Co.,Ltd.

Room 605, Block 7, KIC Plaza, No.388 Song Hu Road, Yang Pu District, Shanghai 200433 China

FCC ID: 2AH25TW010

Report Type: Original Report	Product Type: Wireless Router
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Report Number:	<u>RKSA200818001-00B</u>
Report Date:	<u>2020-10-10</u>
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Applicant:	Shanghai Sunmi Technology Co.,Ltd.
Product Type:	Wireless Router
Tested Model:	TW010
Power Supply:	AC 100-240V
RF Function:	2.4G Wi-Fi
Operating Band/Frequency:	802.11b/g/n-HT20: 2412-2462 MHz 802.11n-HT40: 2422-2452 MHz
Channel Number:	802.11b/g/n-HT20: 11 802.11n-HT40:7
Channel Separation:	2.4G Wi-Fi: 5 MHz
Modulation Type:	OFDM,DSSS
Antenna Type:	FPC Antenna
*Maximum Antenna Gain:	Chain 0: 2.64dBi Chain 1: 3.58dBi

Note: The antenna gain is provided by the applicant.

**All measurement and test data in this report was gathered from production sample serial number: 20200818001.
(Assigned by the BACL. The EUT supplied by the applicant was received on 2020-08-18)*

Objective

This report is prepared on behalf of *Shanghai Sunmi Technology Co.,Ltd.* in accordance with Part 2-Subpart J, Part 15-Subparts A and C of the Federal Communication Commission's rules.

The tests were performed in order to determine Compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

Related Submittal(s)/Grant(s)

FCC Part 15.407 NII submissions with FCC ID: 2AH25TW010

FCC Part 15B JAB submissions with FCC ID: 2AH25TW010

FCC Part 22H24E27Part 90 PCB submissions with FCC ID: 2AH25TW010

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 and FCC KDB 558074 D01 15.247 Meas Guidance v05r02.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Kunshan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

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

Test Facility

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

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

SYSTEM TEST CONFIGURATION

Description of Test Configuration

Test channel list is as below:

For 802.11b mode, EUT was tested with Channel 1, 6 and 11

For 802.11g and 802.11n-HT20 mode, EUT was tested with Channel 1,2, 6,10 and 11;

For 802.11n-HT40 mode, EUT was tested with Channel 3,4, 6, 8 and 9;

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437	/	/

Note: 802.11b/g supports SISO, 802.11n20/n40 supports SISO and MIMO mode. For Radiated Emission, according to pretest, the worst case for 802.11n20/n40 is MIMO mode. So 802.11n20/n40 MIMO mode test data were recorded in the report.

For Conducted Test:

802.11b & 802.11g & 802.11n: each transmit chains were tested.

For Radiated Test:

802.11b & 802.11g, SISO for each transmit chain

802.11n: MIMO for two transmit chains

Equipment Modifications

No modification was made to the EUT tested.

EUT Exercise Software

RF test software: QRCT3

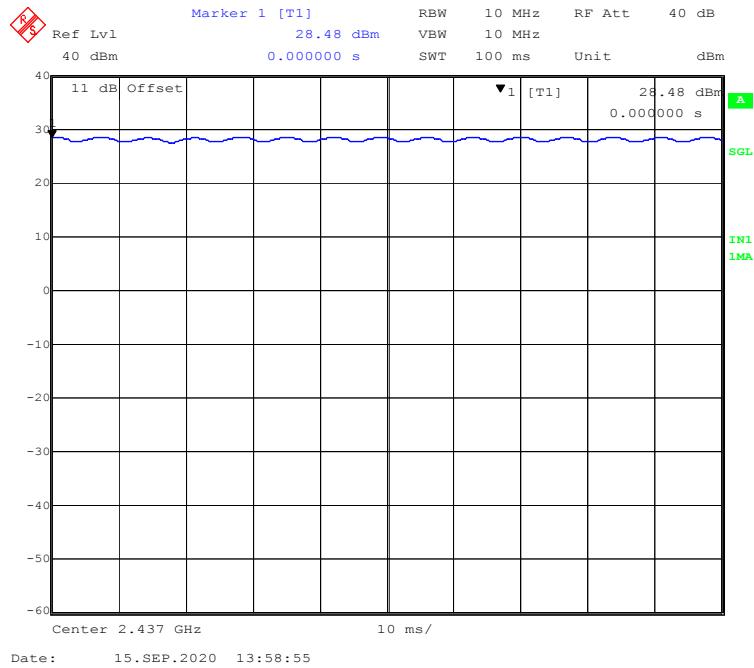
*Pre-scan with all the data rates, and the worst case was performed as below:

Mode	Frequency	Data Rate	Power Level	
			Chain 0	Chain 1
802.11b	2412	1 Mbps	23	26
	2437		23	27
	2462		23	26
802.11g	2412	6 Mbps	16	20
	2417		20	22
	2437		24	27
	2457		22	22
	2462		14	16
802.11n-HT20	2412	MCS0	17	17
	2417		22	22
	2437		23	23
	2457		21	21
	2462		15	15
802.11n-HT40	2422	MCS0	12	12
	2427		15	15
	2437		17	17
	2447		14	14
	2452		12	12

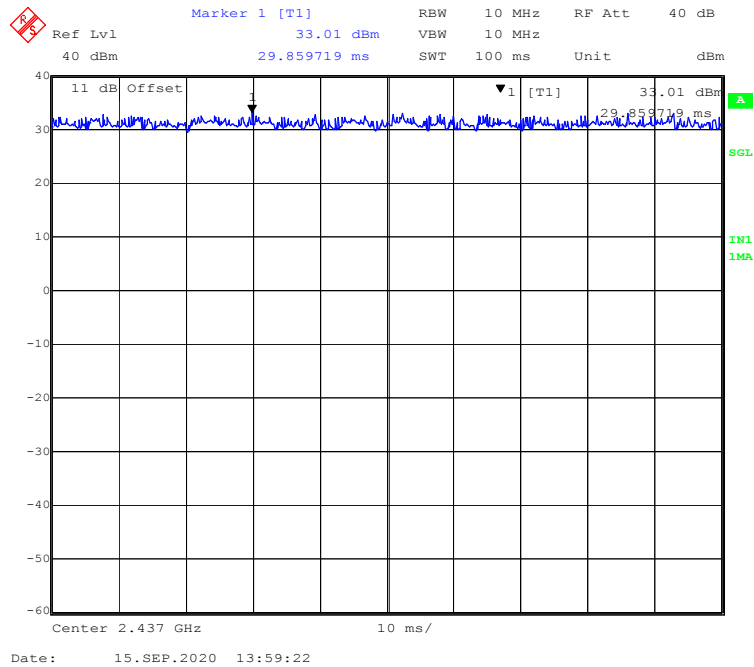
Note: The power level setting was declared by the applicant.

Duty Cycle(Chain 0):

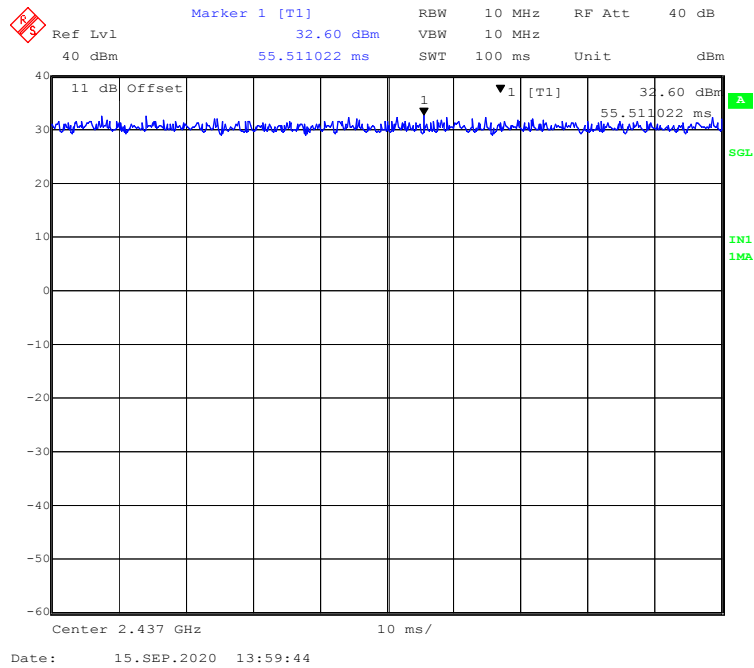
802.11b Mode Middle Channel



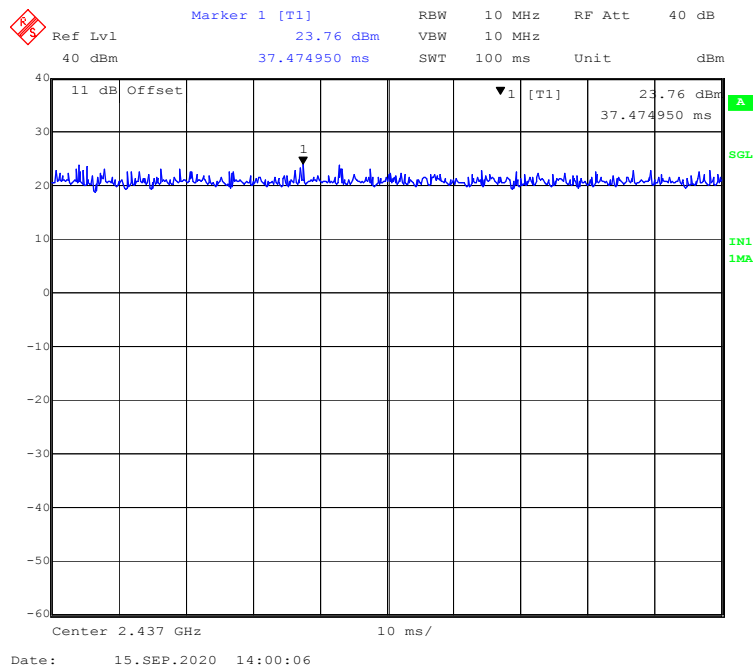
802.11g Mode Middle Channel



802.11n-HT20 Mode Middle Channel

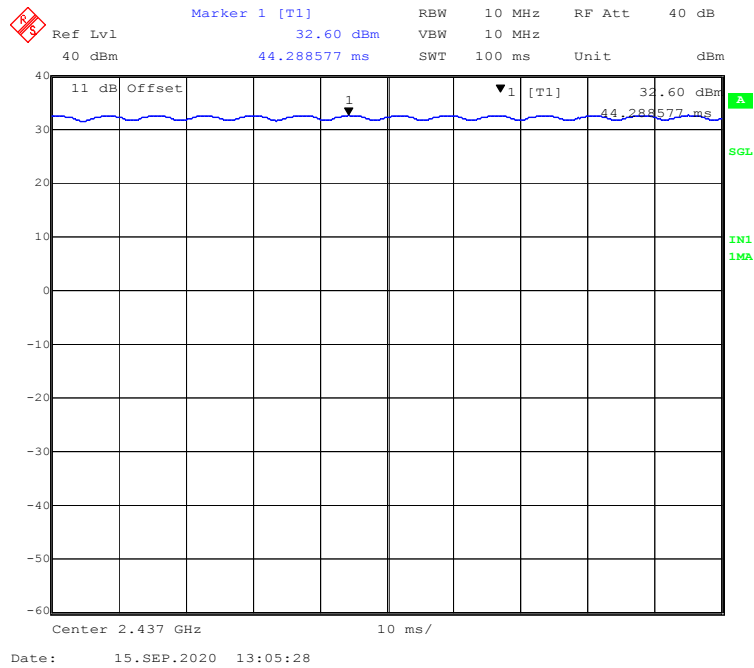


802.11n-HT40 Mode Middle Channel

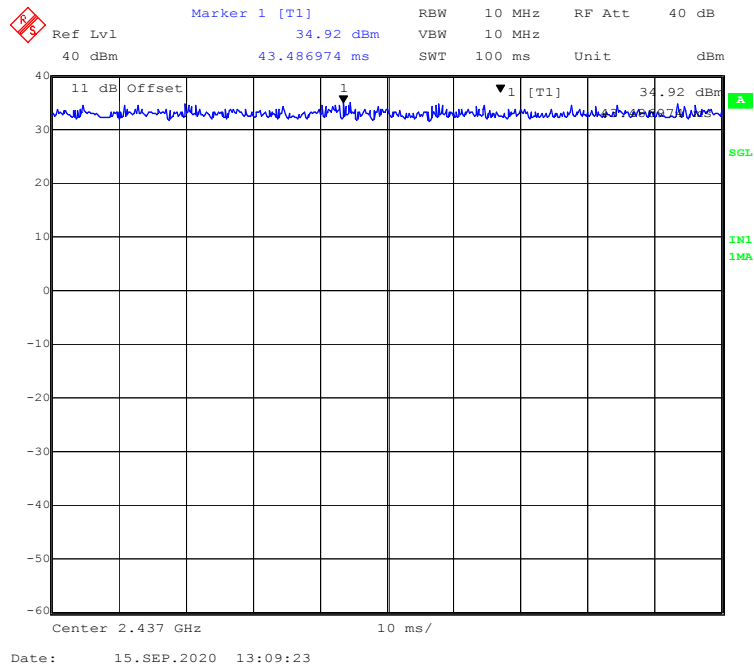


Duty Cycle(Chain 1):

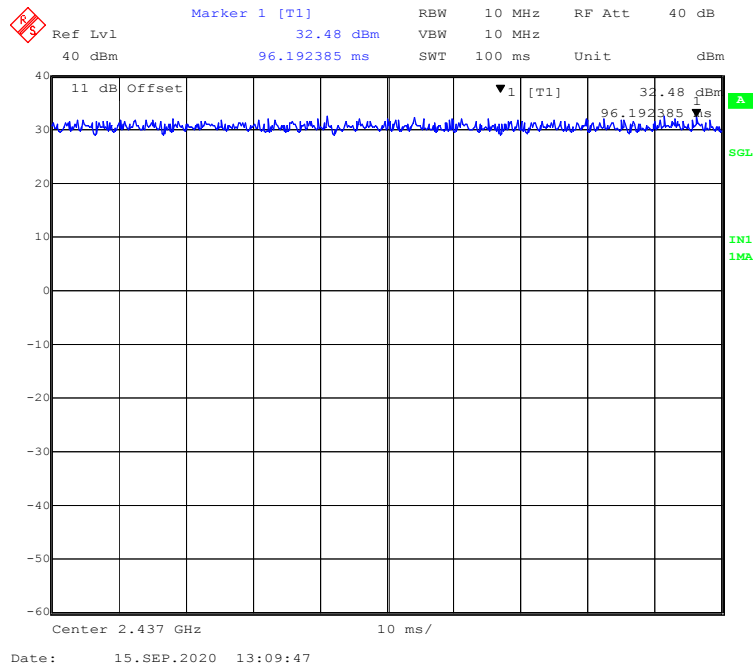
802.11b Mode Middle Channel



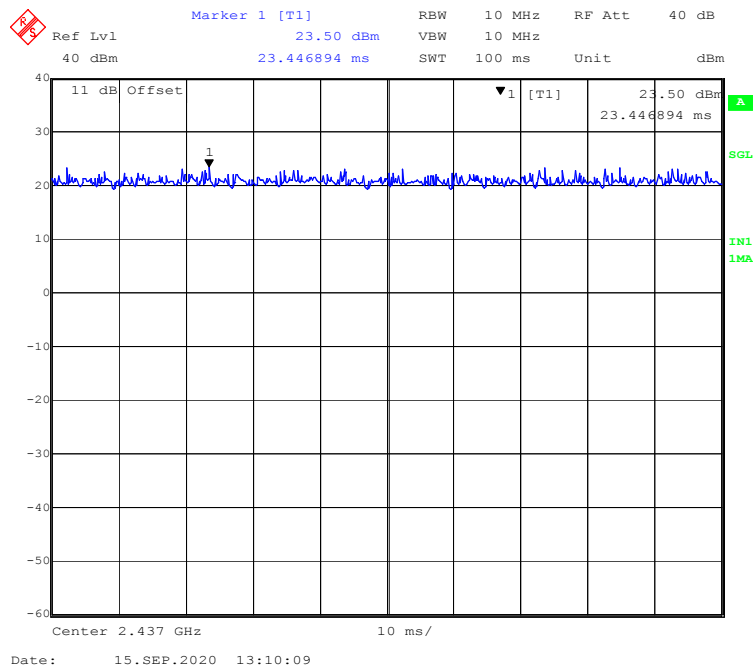
802.11g Mode Middle Channel



802.11n-HT20 Mode Middle Channel



802.11n-HT40 Mode Middle Channel



Chain 0:

Mode	Duty Cycle (%)	T(ms)	1/T(kHz)	10log(1/x)
802.11b	100.00	/	/	0.00
802.11g	100.00	/	/	0.00
802.11n-HT20	100.00	/	/	0.00
802.11n-HT40	100.00	/	/	0.00

Chain 1:

Mode	Duty Cycle (%)	T(ms)	1/T(kHz)	10log(1/x)
802.11b	100.00	/	/	0.00
802.11g	100.00	/	/	0.00
802.11n-HT20	100.00	/	/	0.00
802.11n-HT40	100.00	/	/	0.00

Note: “x” means the Duty Cycle.

Support Equipment List and Details

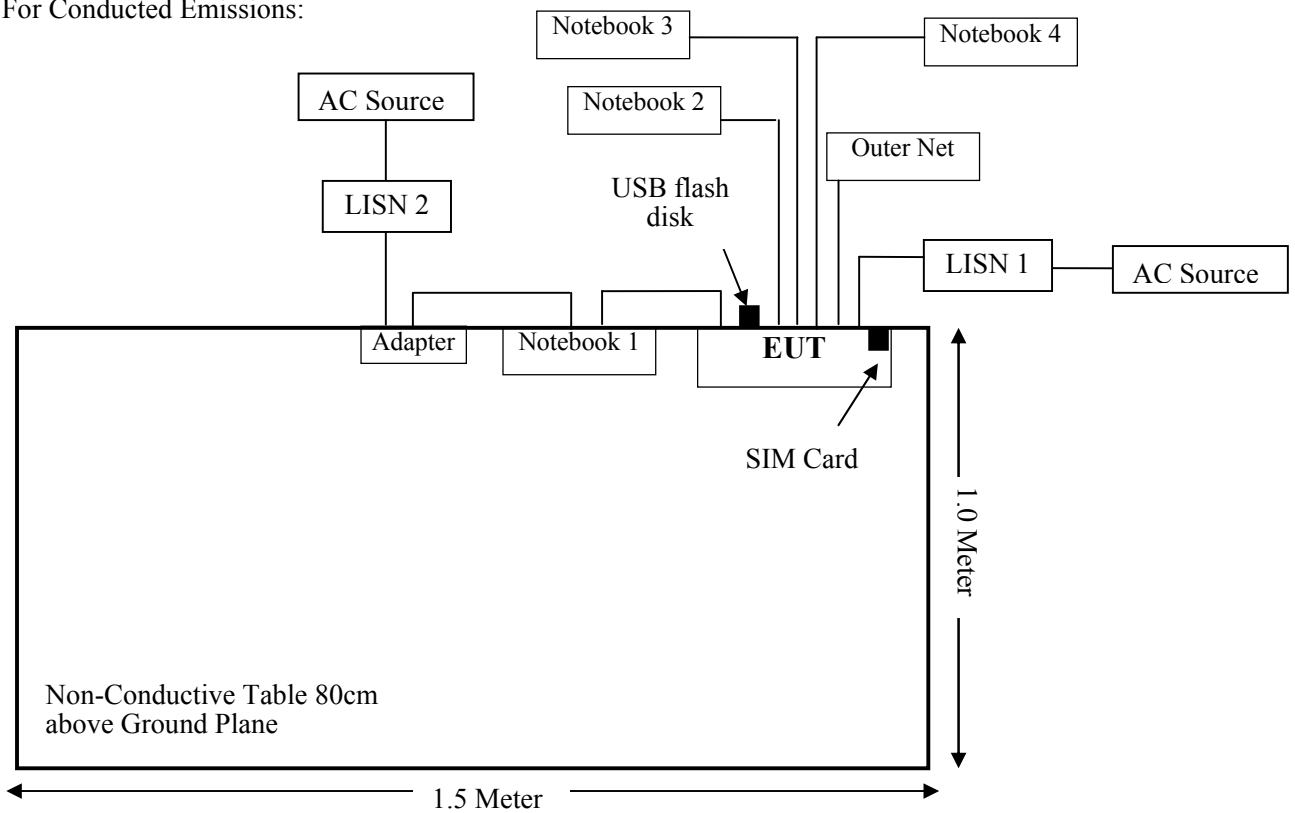
Manufacturer	Description	Model	Serial Number
DELL	Notebook 1	015K3N	00190-098-766-241
DELL	Notebook 2	0T7570	00045-644-426-785
DELL	Notebook 3	E6410	3094742521
DELL	Notebook 4	/	/
Guang Bao Technology Co.,Ltd	Adapter	SU10462	/
Sandisk	USB flash disk	/	/
/	SIM Card	/	/

External I/O Cable

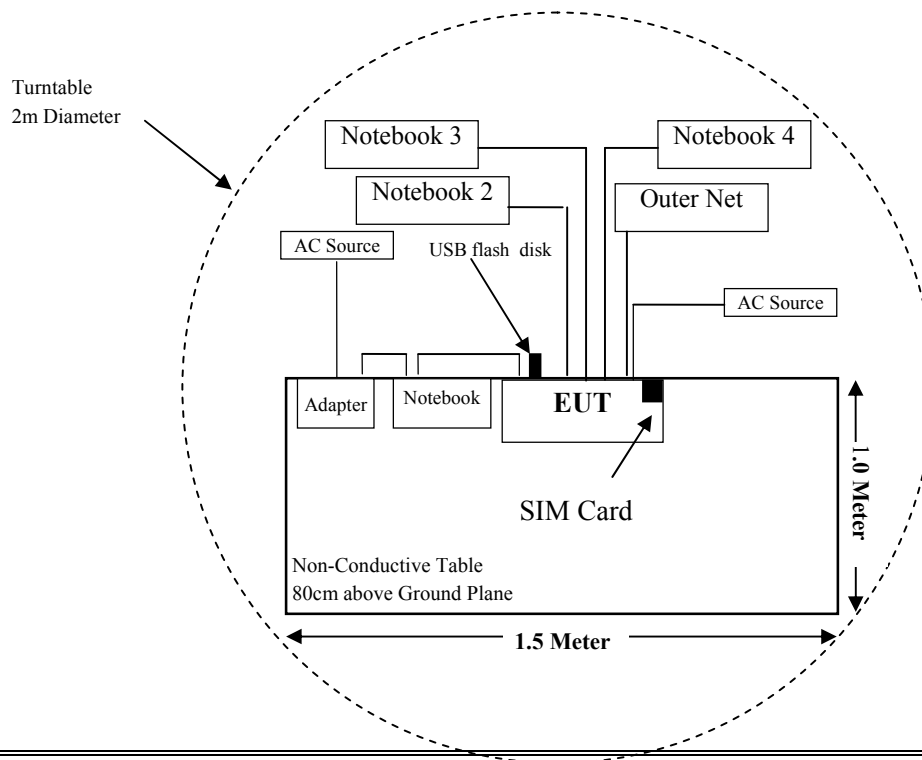
Cable Description	Shielding Type	Length (m)	From Port	To
RJ45 Cable	Un-shielding	15	EUT	Notebook2/3/4
RJ45 Cable	Un-shielding	1.5	EUT	Notebook1
Power Cable 1	Un-shielding	1.0	EUT	Adapter
Power Cable 2	Un-shielding	1.0	Adapter	AC Source

Block Diagram of Test Setup

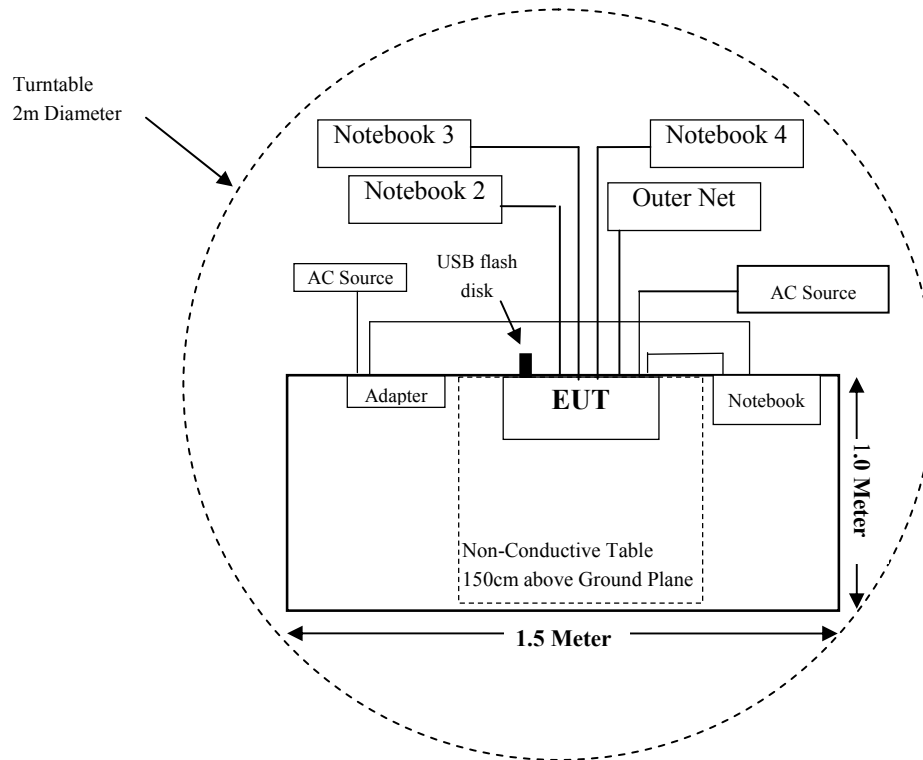
For Conducted Emissions:



For Radiated Emissions (Below 1GHz):



For Radiated Emissions (Above 1GHz):



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247 (I), §1.1310 & §2.1091	Maximum Permissible Exposure (MPE)	Compliant
§15.203	Antenna Requirement	Compliant
§15.207 (a)	AC Line Conducted Emissions	Compliant
§15.247(d)	Spurious Emissions at Antenna Port	Compliant
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliant
§15.247 (a)(2)	6 dB Emission Bandwidth	Compliant
§15.247(b)(3)	Maximum Conducted(Average) Output Power	Compliant
§15.247(d)	Band Edge	Compliant
§15.247(e)	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	6229	2020-01-10	2023-01-09
ETS-LINDGREN	Horn Antenna	3116	00084159	2019-10-18	2022-10-17
A.H.Systems,inc	Amplifier	PAM-0118P	512	2020-02-20	2021-02-19
EM Electronics Corporation	Amplifier	EM18G40G	060726	2020-03-22	2021-03-21
MICRO-TRONICS	Band Reject Filter	BRM50702	G024	2020-08-05	2021-08-04
Narda	Attenuator	10dB	010	2020-08-15	2021-08-14
Rohde & Schwarz	Auto test Software	EMC32	100361	/	/
MICRO-COAX	Coaxial Cable	Cable-6	006	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	Signal Analyzer	FSIQ26	836131/009	2019-12-14	2020-12-13
Rohde & Schwarz	Signal Analyzer	FSV40	101116	2020-08-05	2021-08-04
Narda	Attenuator	10dB	010	2020-08-15	2021-08-14
Agilent	Power Meter	N1912A	MY5000492	2019-11-18	2020-11-17
Agilent	Power Sensor	N1921A	MY54210024	2019-11-18	2020-11-17
Sunmi	RF Cable	01	Sunmi C01	Each Time	/
Conducted Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESR	1316.3003K03-101746-zn	2019-12-14	2020-12-13
Rohde & Schwarz	LISN	ENV216	3560655016	2019-11-30	2020-11-29
Rohde & Schwarz	LISN	ESH3-Z5	862770/011	2019-11-30	2020-11-29
Audix	Test Software	e3	V9	--	--
Rohde & Schwarz	Pulse limiter	ESH3-Z2	0357.8810.54	2020-08-10	2021-08-09
MICRO-COAX	Coaxial Cable	Cable-15	015	2020-08-15	2021-08-14

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

FCC §15.247 (I) & §1.1310 & §2.1091 - MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 15.247 (i) and subpart 1.1310, 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

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

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

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/cm²);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

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

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

Calculated Data:**2.4G WiFi:**

Mode	Frequency Range (MHz)	Maximum Antenna Gain		Tune-up Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
		(dBi)	(numeric)	(dBm)	(mW)			
802.11b	2412-2462	3.58	2.28	26.50	446.68	20	0.2026	1.0
802.11g		3.58	2.28	27.00	501.19	20	0.2273	1.0
802.11n-HT20		3.58	2.28	26.00	398.11	20	0.1806	1.0
802.11n-HT40	2422-2452	3.58	2.28	20.00	100.00	20	0.0454	1.0

5G Wi-Fi/WCDMA/LTE:

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	4.97	3.14	25.0	316.23	20	0.1975	1.0
	5725~5850	4.98	3.15	24.0	251.19	20	0.1573	1.0
802.11ac20	5150~5250	4.97	3.14	24.0	251.19	20	0.1569	1.0
	5725~5850	4.98	3.15	25.5	354.81	20	0.2222	1.0
802.11n20	5150~5250	4.97	3.14	22.0	158.49	20	0.0990	1.0
	5725~5850	4.98	3.15	25.5	354.81	20	0.2222	1.0
802.11ac40	5150~5250	4.97	3.14	24.5	281.84	20	0.1760	1.0
	5725~5850	4.98	3.15	26.0	398.11	20	0.2493	1.0
802.11n40	5150~5250	4.97	3.14	24.0	251.19	20	0.1569	1.0
	5725~5850	4.98	3.15	25.5	354.81	20	0.2222	1.0
802.11ac80	5210	4.97	3.14	21.0	125.89	20	0.0786	1.0
	5775	4.98	3.15	25.0	316.23	20	0.1980	1.0
WCDMA Band II	1850-1910	2.32	1.71	22.5	177.83	20	0.0603	1.0
WCDMA Band IV	1710-1755	3.53	2.25	22.5	177.83	20	0.0796	1.0
WCDMA Band V	824-849	2.61	1.82	22.5	177.83	20	0.0645	0.55
LTE Band 2	1850-1910	2.32	1.71	23.0	199.53	20	0.0679	1.0
LTE Band 4	1710-1755	3.53	2.25	22.5	177.83	20	0.0796	1.0
LTE Band 12	699-716	1.34	1.36	22.5	177.83	20	0.0482	0.47
LTE Band 13	777-787	2.25	1.68	22.5	177.83	20	0.0594	0.52
LTE Band 14	788-798	2.25	1.68	22.5	177.83	20	0.0594	0.53
LTE Band 66	1710-1780	3.53	2.25	23.0	199.53	20	0.0893	1.0
LTE Band 71	663-698	1.93	1.56	22.5	177.83	20	0.0552	0.44

Note:

1. For the above tune up power were declared by the manufacturer.
2. 2.4G Wi-Fi, 5G Wi-Fi and LTE can transmit simultaneously, The worst condition is 802.11g of 2.4G Wi-Fi, 802.11ac 40 of 5G Wi-Fi Band 4 & LTE Band 71, as below:

$$\sum_i \frac{S_i}{S_{Limit,i}} = 0.2273/1.00 + 0.2493/1.0 + 0.0552/0.44 = 0.6021 < 1.0$$

Result: The device meet FCC MPE at 20 cm distance.

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.

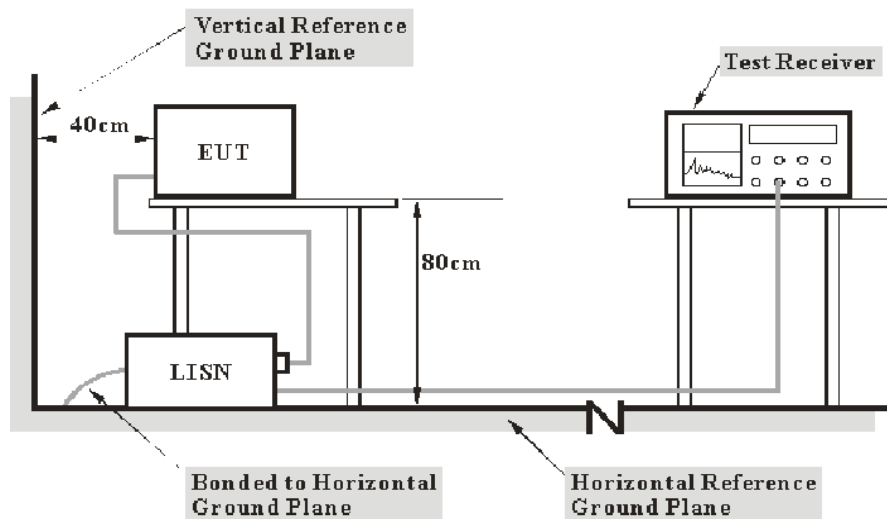
And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The EUT has two FPC antennas for WIFI ,one antenna gain is 2.64 dBi, another antenna gain is 3.58 dBi, which were permanently attached, fulfill the requirement of this section. Please refer to the EUT photos.

Result: Compliant.

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 spacing between the peripherals was 10 cm.

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

ANSI C63.10-2013 clause 6.2

During the conducted emission test, the EUT was connected to the outlet of the LISN.

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

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

Factor & Over Limit Calculation

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

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

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

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

Test Results Summary

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

Test Data**Environmental Conditions**

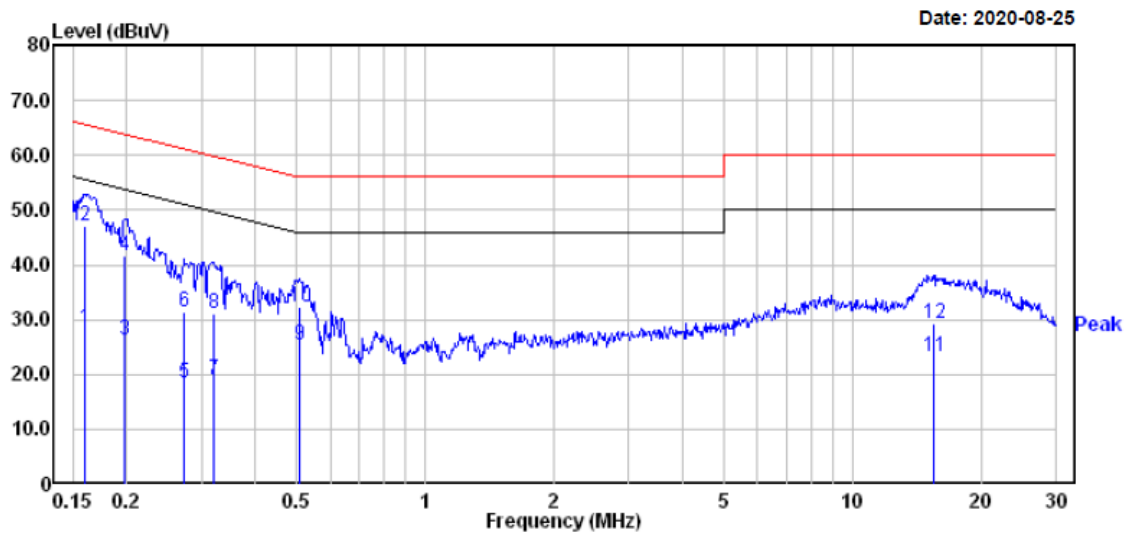
Temperature:	22.8~24.6 °C
Relative Humidity:	49~51 %
ATM Pressure:	100.7~101.5 kPa

The testing was performed by CK Huang from 2020-08-25 to 2020-09-13.

Test Result: Compliant.

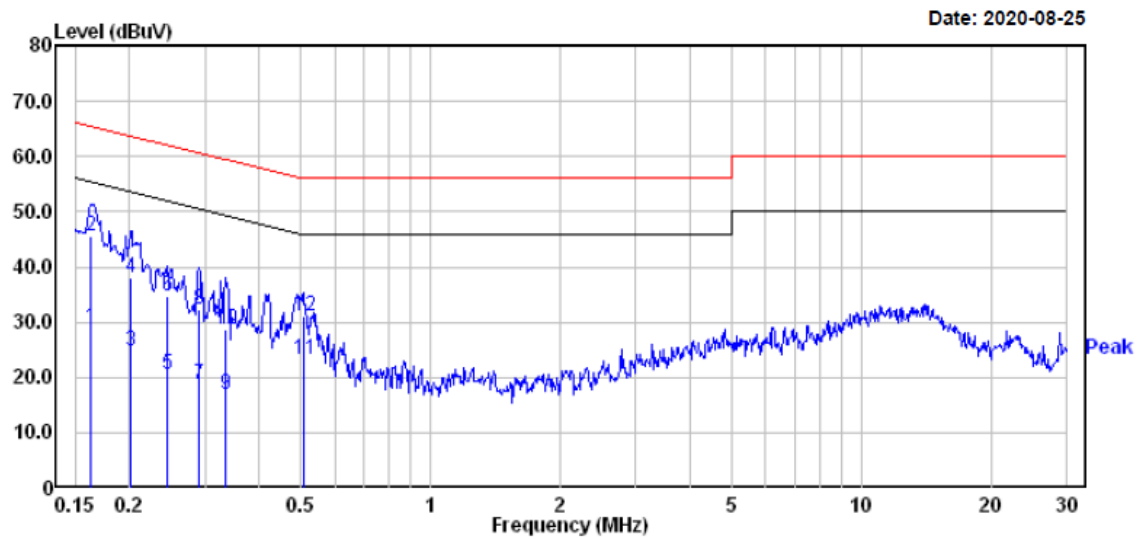
EUT operation mode: Transmitting in 802.11g mode channel 6 (worst case)

AC 120V/60 Hz, Line



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.160	8.60	19.83	28.43	55.47	-27.04	Average
2	0.160	27.40	19.83	47.23	65.47	-18.24	QP
3	0.199	6.50	19.82	26.32	53.67	-27.35	Average
4	0.199	21.70	19.82	41.52	63.67	-22.15	QP
5	0.272	-1.50	19.82	18.32	51.07	-32.75	Average
6	0.272	11.70	19.82	31.52	61.07	-29.55	QP
7	0.320	-0.80	19.82	19.02	49.71	-30.69	Average
8	0.320	11.40	19.82	31.22	59.71	-28.49	QP
9	0.507	5.60	19.76	25.36	46.00	-20.64	Average
10	0.507	12.60	19.76	32.36	56.00	-23.64	QP
11	15.470	3.70	19.66	23.36	50.00	-26.64	Average
12	15.470	9.50	19.66	29.16	60.00	-30.84	QP

AC 120V/60 Hz, Neutral

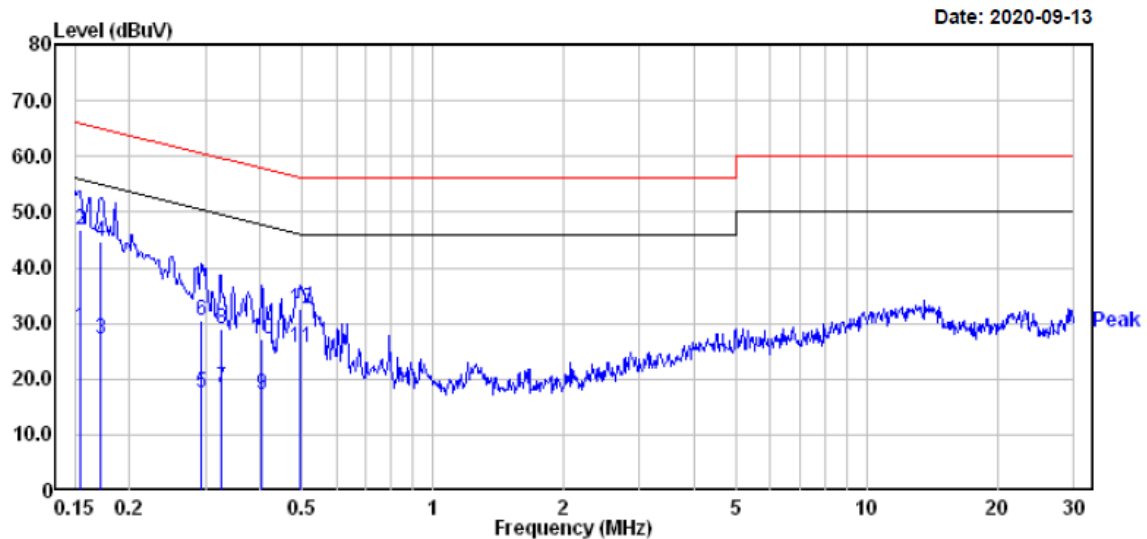


	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.163	9.20	19.83	29.03	55.30	-26.27	Average
2	0.163	25.70	19.83	45.53	65.30	-19.77	QP
3	0.202	4.80	19.82	24.62	53.54	-28.92	Average
4	0.202	18.10	19.82	37.92	63.54	-25.62	QP
5	0.244	0.60	19.82	20.42	51.95	-31.53	Average
6	0.244	14.80	19.82	34.62	61.95	-27.33	QP
7	0.289	-1.10	19.82	18.72	50.54	-31.82	Average
8	0.289	12.40	19.82	32.22	60.54	-28.32	QP
9	0.336	-2.91	19.82	16.91	49.31	-32.40	Average
10	0.336	8.79	19.82	28.61	59.31	-30.70	QP
11	0.507	3.60	19.76	23.36	46.00	-22.64	Average
12	0.507	11.20	19.76	30.96	56.00	-25.04	QP

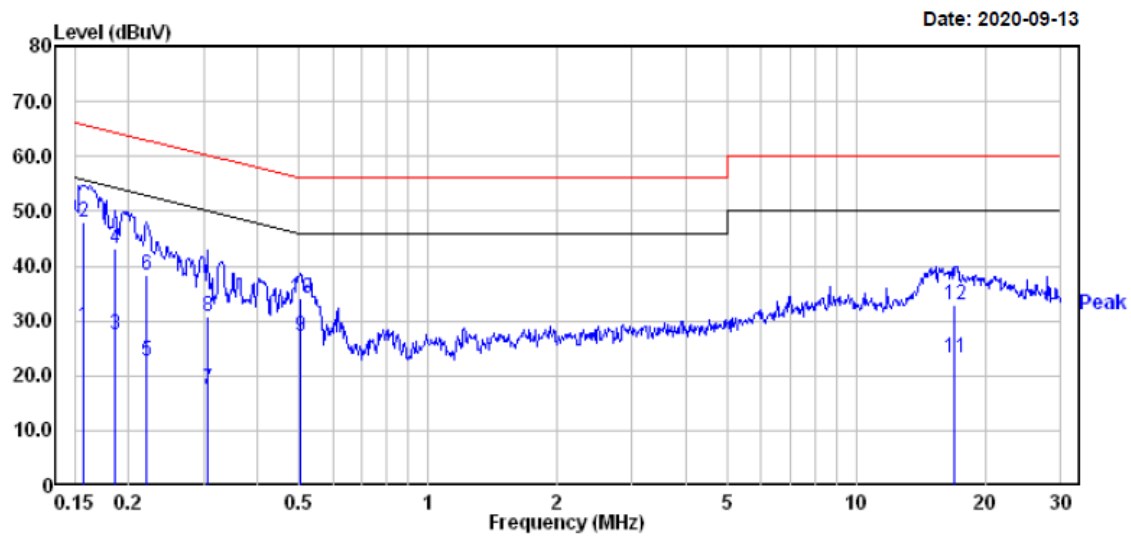
Transmitting simultaneously test:

(The worst case Band 2 of LTE, 802.11a high Channel of 5G Wi-Fi Band 1 and 802.11g Channel 6 of Wi-Fi mode transmitting simultaneously was recorded)

AC 120V/60 Hz, Line



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.154	9.50	19.82	29.32	55.78	-26.46	Average
2	0.154	27.10	19.82	46.92	65.78	-18.86	QP
3	0.171	7.20	19.83	27.03	54.90	-27.87	Average
4	0.171	24.80	19.83	44.63	64.90	-20.27	QP
5	0.294	-2.40	19.83	17.43	50.41	-32.98	Average
6	0.294	10.70	19.83	30.53	60.41	-29.88	QP
7	0.325	-1.40	19.82	18.42	49.57	-31.15	Average
8	0.325	9.20	19.82	29.02	59.57	-30.55	QP
9	0.404	-2.40	19.74	17.34	47.77	-30.43	Average
10	0.404	7.50	19.74	27.24	57.77	-30.53	QP
11	0.497	5.90	19.76	25.66	46.05	-20.39	Average
12	0.497	12.80	19.76	32.56	56.05	-23.49	QP

AC 120V/60 Hz, Neutral

	Freq	Read		Limit	Over	
	MHz	Level	Factor	Line	Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB
1	0.157	9.20	19.82	29.02	55.60	-26.58 Average
2	0.157	28.10	19.82	47.92	65.60	-17.68 QP
3	0.186	7.61	19.82	27.43	54.20	-26.77 Average
4	0.186	23.21	19.82	43.03	64.20	-21.17 QP
5	0.220	2.80	19.82	22.62	52.83	-30.21 Average
6	0.220	18.40	19.82	38.22	62.83	-24.61 QP
7	0.305	-2.21	19.83	17.62	50.10	-32.48 Average
8	0.305	11.09	19.83	30.92	60.10	-29.18 QP
9	0.505	7.30	19.76	27.06	46.00	-18.94 Average
10	0.505	14.30	19.76	34.06	56.00	-21.94 QP
11	17.018	3.40	19.77	23.17	50.00	-26.83 Average
12	17.018	13.00	19.77	32.77	60.00	-27.23 QP

Note:

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

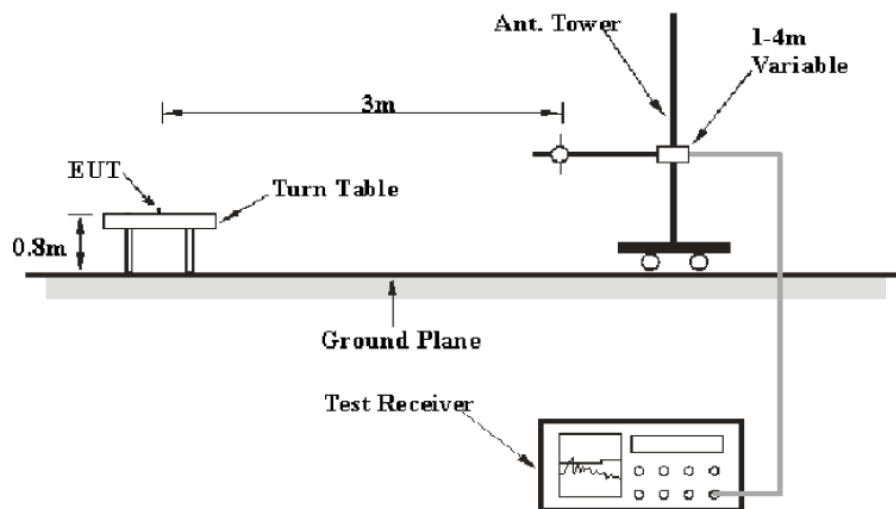
2) Over Limit (dB) = Read level (dBUV) + Factor (dB) - Limit (dBUV)

FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS**Applicable Standard**

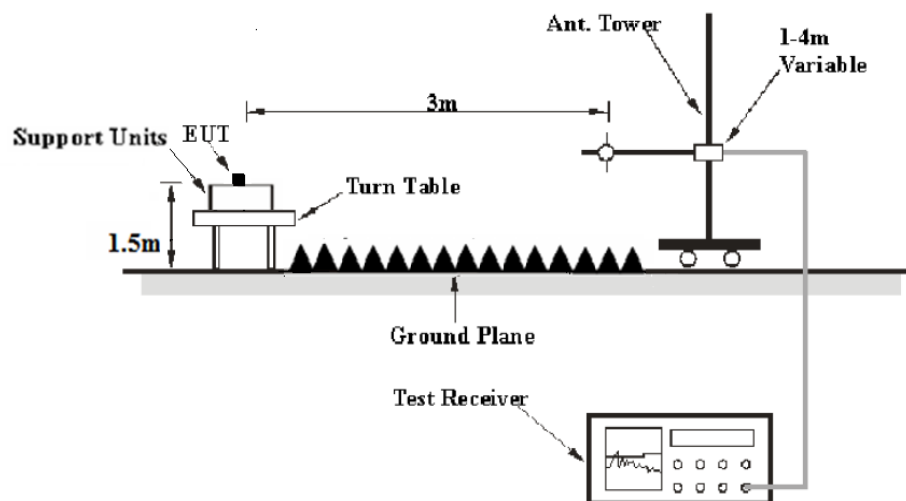
FCC §15.247 (d); §15.209; §15.205;

EUT Setup

Below 1 GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, and FCC 15.247 limits.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 25 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

According to ANSI C63.10-2013 clause 6.5, 6.6 and 6.7.

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-1 GHz, peak and Average detection mode for frequencies above 1 GHz.

Corrected Amplitude & Margin Calculation

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

$$\text{Corrected Amplitude (dB}\mu\text{V /m)} = \text{Meter Reading (dB}\mu\text{V)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} - \text{Amplifier Gain (dB)}$$

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

$$\text{Margin (dB)} = \text{Limit (dB}\mu\text{V/m)} - \text{Corrected Amplitude (dB}\mu\text{V /m)}$$

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Subpart C, section 15.205, 15.209 and 15.247.

Test Data**Environmental Conditions**

Temperature:	22.8-24.5°C
Relative Humidity:	49-53%
ATM Pressure:	101.0-101.2kPa

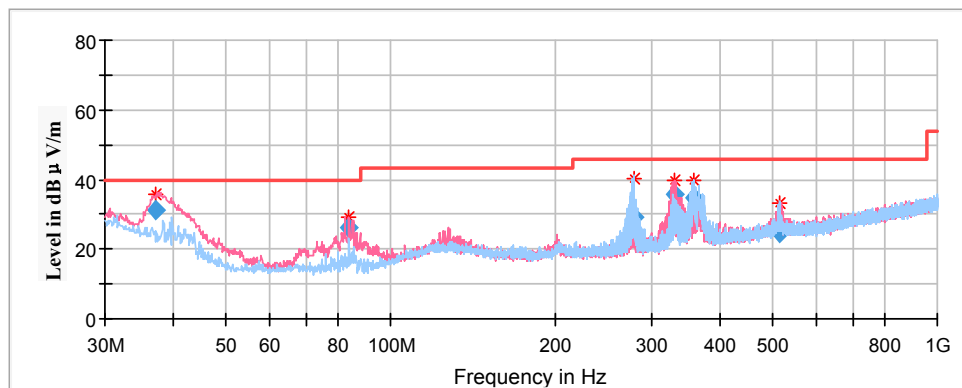
The testing was performed by CK Huang from 2020-08-25 to 2020-09-15.

Test Result: Compliant.

EUT operation mode: Transmitting

Spurious Emission Test:**30MHz-1GHz:**

Pre-Scan with 802.11b, 802.11g, 802.11n-HT20 and 802.11n-HT40 modes of operation in the X,Y and Z axes of orientation, the worst case **channel 6 of 802.11g Mode in Z-axis of orientation** was recorded



Frequency (MHz)	Corrected Amplitude	Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
	Quasi-peak (dBµV/m)	Height (cm)	Polar (H/V)				
37.03	31.25	100.0	V	84.0	-9.2	40.00	8.75
83.97	25.98	100.0	V	257.0	-18.1	40.00	14.02
277.93	28.98	100.0	H	239.0	-11.7	46.00	17.02
330.62	35.64	200.0	V	294.0	-10.3	46.00	10.36
358.20	34.70	100.0	H	83.0	-9.6	46.00	11.30
513.54	24.83	200.0	H	286.0	-6.0	46.00	21.17

Chain 0:**1GHz-18GHz:****802.11b Mode:**

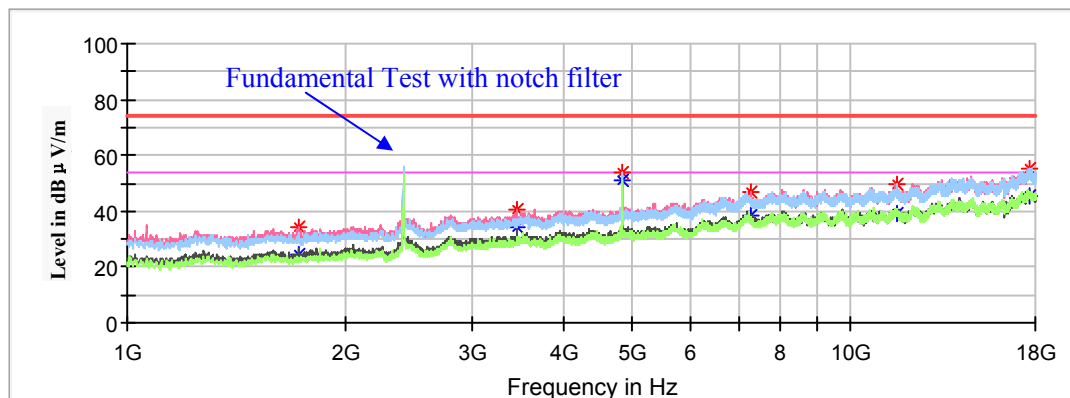
(Pre-scan in the X,Y and Z axes of orientation, the worst case **Z-axis of orientation** was recorded)

Note:

1. This test was performed with the 2.4-2.5GHz notch filter.
2. Corrected Factor (dB/m) = Antenna factor (RX) (dB/m) + Cable Loss (dB) – Amplifier Factor (dB)
 Corrected Amplitude (dBμV/m) = Corrected Factor (dB/m) + Reading (dBμV)
 Margin (dB) = Limit (dBμV/m) – Corrected Amplitude (dBμV/m)

Channel 1: 2412MHz

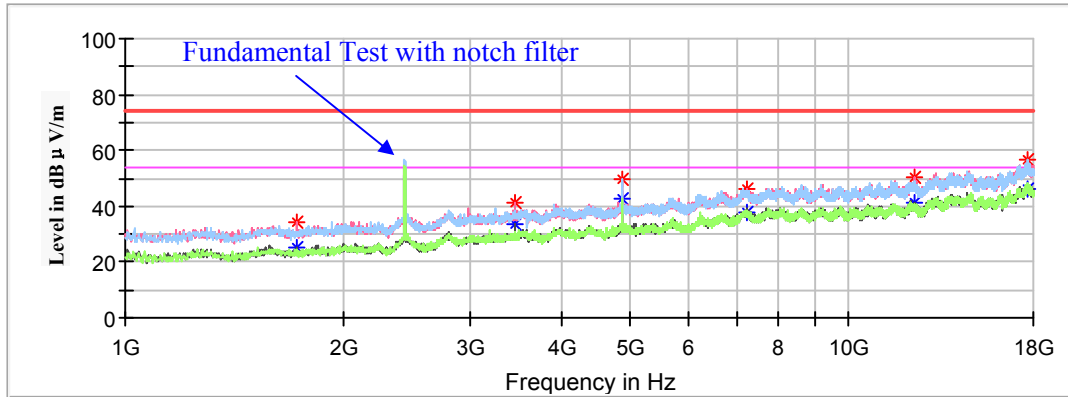
Full Spectrum



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)				
1729.30	---	24.68	200	V	39.0	-15.5	54.00	29.32
1729.30	34.11	---	200	V	39.0	-15.5	74.00	39.89
3454.80	---	34.26	150	V	351.0	-8.9	54.00	19.74
3454.80	40.61	---	150	V	351.0	-8.9	74.00	33.39
4824.00	---	50.86	150	H	139.0	-5.5	54.00	3.14
4824.00	54.17	---	150	H	139.0	-5.5	74.00	19.83
7236.00	---	38.81	200	V	336.0	0.5	54.00	15.19
7236.00	47.04	---	200	V	336.0	0.5	74.00	26.96
11563.80	---	39.41	200	V	141.0	2.9	54.00	14.59
11563.80	49.77	---	200	V	141.0	2.9	74.00	24.23
17637.90	---	45.60	200	H	181.0	8.9	54.00	8.40
17637.90	55.41	---	200	H	181.0	8.9	74.00	18.59

Channel 6: 2437MHz

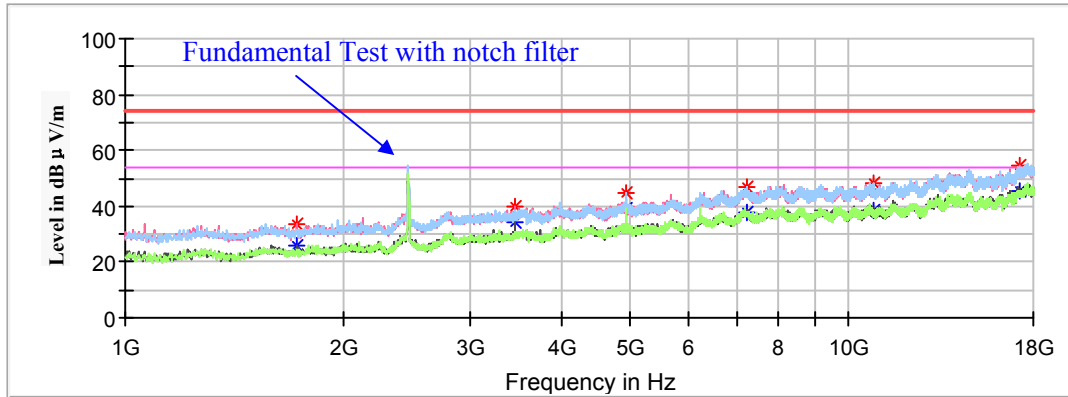
Full Spectrum



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)				
1725.90	---	25.39	200	V	206.0	-15.5	54.00	28.61
1725.90	34.55	---	200	V	206.0	-15.5	74.00	39.45
3454.80	---	33.34	200	V	311.0	-8.9	54.00	20.66
3454.80	41.10	---	200	V	311.0	-8.9	74.00	32.90
4874.00	---	42.41	200	H	352.0	-5.4	54.00	11.59
4874.00	49.50	---	200	H	352.0	-5.4	74.00	24.50
7225.40	---	37.94	150	V	330.0	0.4	54.00	16.06
7225.40	46.35	---	150	V	330.0	0.4	74.00	27.65
12357.70	---	41.11	200	V	66.0	3.2	54.00	12.89
12357.70	50.16	---	200	V	66.0	3.2	74.00	23.84
17702.50	---	45.89	150	H	154.0	8.9	54.00	8.11
17702.50	56.38	---	150	H	154.0	8.9	74.00	17.62

Channel 11: 2462MHz

Full Spectrum



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)				
1724.20	---	26.15	200	V	212.0	-15.5	54.00	27.85
1724.20	33.79	---	200	V	212.0	-15.5	74.00	40.21
3454.80	---	34.22	200	V	305.0	-8.9	54.00	19.78
3454.80	39.52	---	200	V	305.0	-8.9	74.00	34.48
4924.00	---	39.43	200	H	335.0	-5.3	54.00	14.57
4924.00	44.84	---	200	H	335.0	-5.3	74.00	29.16
7244.10	---	37.53	150	H	310.0	0.5	54.00	16.47
7244.10	47.12	---	150	H	310.0	0.5	74.00	26.88
10827.70	---	38.57	150	H	111.0	2.7	54.00	15.43
10827.70	48.02	---	150	H	111.0	2.7	74.00	25.98
17214.60	---	45.18	200	V	322.0	7.9	54.00	8.82
17214.60	54.26	---	200	V	322.0	7.9	74.00	19.74

802.11g Mode:

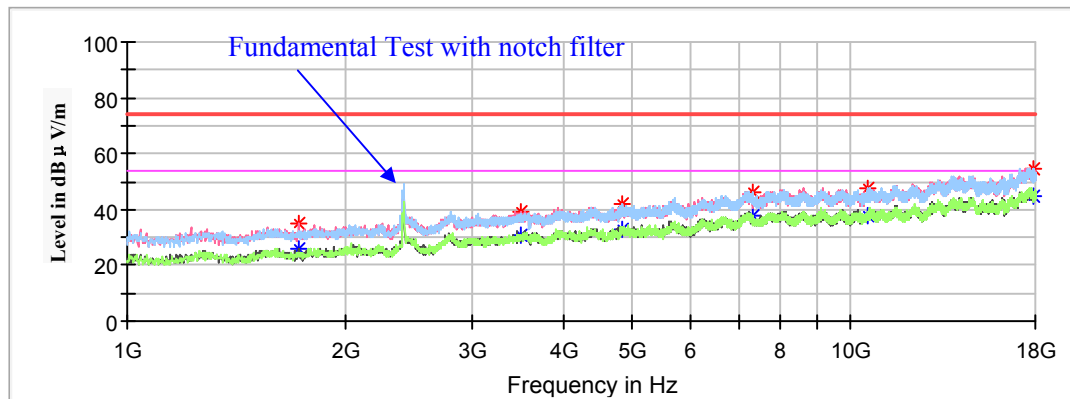
(Pre-scan in the X,Y and Z axes of orientation, the worst case **Z-axis of orientation** was recorded)

Note:

1. This test was performed with the 2.4-2.5GHz notch filter.
2. Corrected Factor (dB/m) = Antenna factor (RX) (dB/m) + Cable Loss (dB) – Amplifier Factor (dB)
 Corrected Amplitude (dBμV/m) = Corrected Factor (dB/m) + Reading (dBμV)
 Margin (dB) = Limit (dBμV/m) – Corrected Amplitude (dBμV/m)

Channel 1: 2412MHz

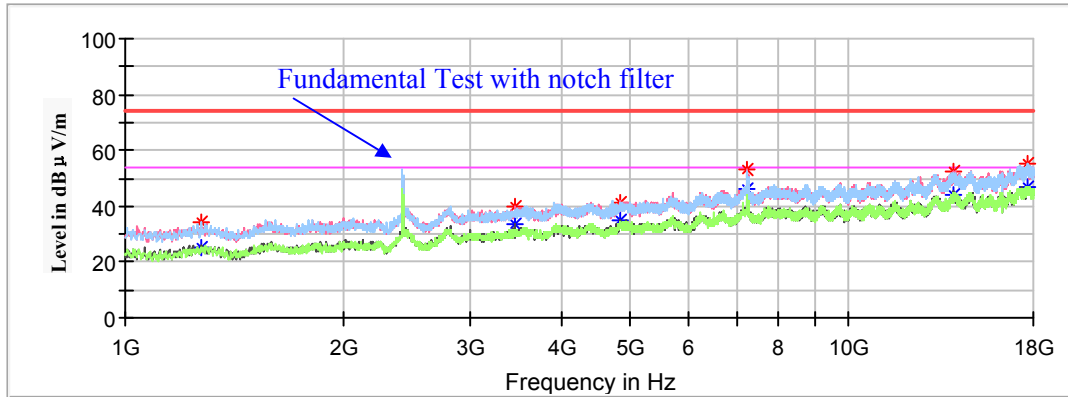
Full Spectrum



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)				
1725.90	---	25.55	150	V	0.0	-15.5	54.00	28.45
1725.90	34.68	---	150	V	0.0	-15.5	74.00	39.32
3493.90	---	30.75	150	H	33.0	-8.8	54.00	23.25
3493.90	39.34	---	150	H	33.0	-8.8	74.00	34.66
4824.00	---	32.62	150	V	50.0	-5.5	54.00	21.38
4824.00	41.69	---	150	V	50.0	-5.5	74.00	32.31
7308.70	---	37.72	150	V	7.0	0.6	54.00	16.28
7308.70	45.84	---	150	V	7.0	0.6	74.00	28.16
10555.70	---	37.72	150	V	301.0	2.4	54.00	16.28
10555.70	47.65	---	150	V	301.0	2.4	74.00	26.35
17928.60	---	45.02	150	H	33.0	8.8	54.00	8.98
17928.60	54.86	---	150	H	33.0	8.8	74.00	19.14

Channel 2: 2417MHz

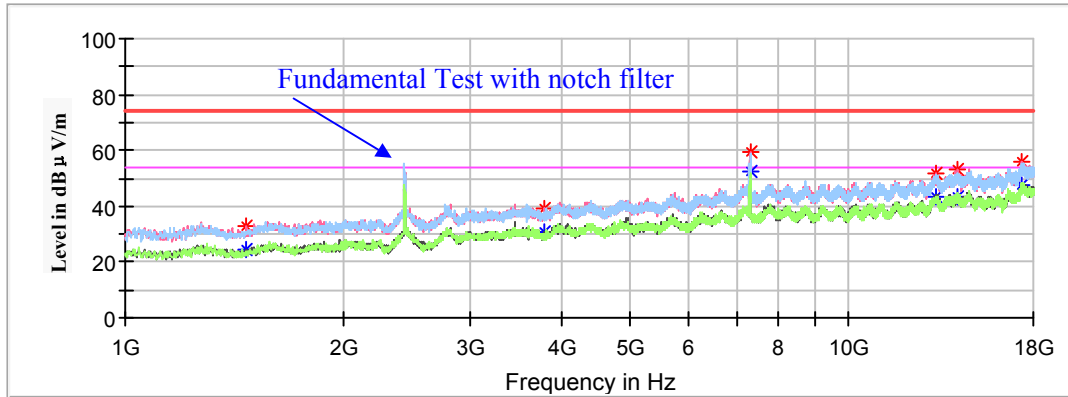
Full Spectrum



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)				
1273.70	---	25.37	150	H	123.0	-17.6	54.00	28.63
1273.70	34.07	---	150	H	123.0	-17.6	74.00	39.93
3454.80	---	33.69	150	V	288.0	-8.9	54.00	20.31
3454.80	39.62	---	150	V	288.0	-8.9	74.00	34.38
4834.00	---	35.26	150	V	326.0	-5.5	54.00	18.74
4834.00	41.21	---	150	V	326.0	-5.5	74.00	32.79
7251.00	---	46.07	150	V	313.0	0.5	54.00	7.93
7251.00	52.99	---	150	V	313.0	0.5	74.00	21.01
13976.10	---	43.73	150	V	36.0	6.1	54.00	10.27
13976.10	52.36	---	150	V	36.0	6.1	74.00	21.64
17639.60	---	47.16	150	H	226.0	8.9	54.00	6.84
17639.60	55.40	---	150	H	226.0	8.9	74.00	18.60

Channel 6: 2437MHz

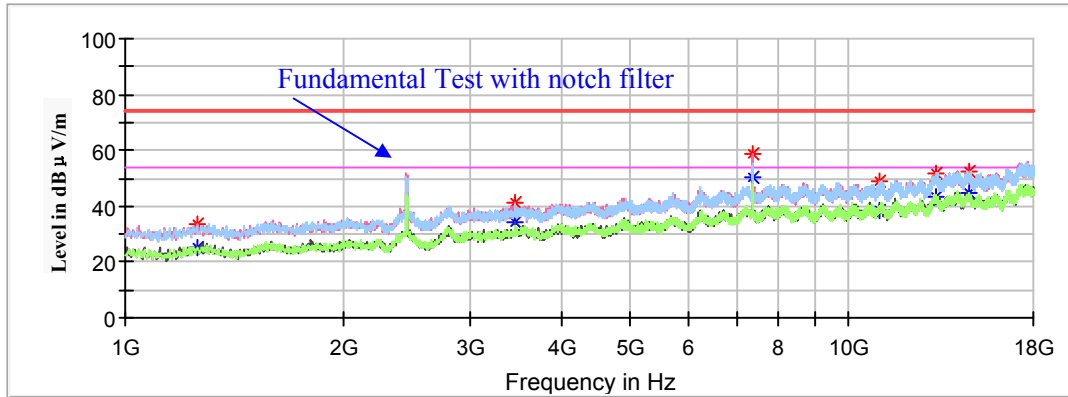
Full Spectrum



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)				
1472.60	---	24.63	150	V	198.0	-16.5	54.00	29.37
1472.60	33.09	---	150	V	198.0	-16.5	74.00	40.91
3788.00	---	30.70	150	V	92.0	-7.8	54.00	23.30
3788.00	39.31	---	150	V	92.0	-7.8	74.00	34.69
7311.00	---	52.49	150	V	198.0	0.6	54.00	1.51
7311.00	59.49	---	150	V	198.0	0.6	74.00	14.51
13180.50	---	43.28	150	V	288.0	5.4	54.00	10.72
13180.50	51.79	---	150	V	288.0	5.4	74.00	22.21
14175.00	---	43.53	150	V	64.0	6.3	54.00	10.47
14175.00	53.34	---	150	V	64.0	6.3	74.00	20.66
17384.60	---	47.24	150	V	326.0	8.5	54.00	6.76
17384.60	55.71	---	150	V	326.0	8.5	74.00	18.29

Channel 10: 2457MHz

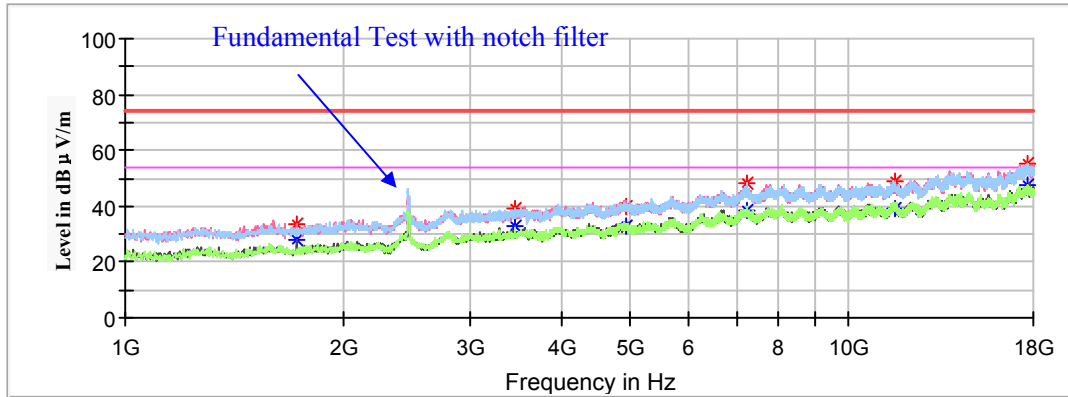
Full Spectrum



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)				
1258.40	---	25.16	150	H	356.0	-17.7	54.00	28.84
1258.40	33.72	---	150	H	356.0	-17.7	74.00	40.28
3454.80	---	34.25	150	V	244.0	-8.9	54.00	19.75
3454.80	41.39	---	150	V	244.0	-8.9	74.00	32.61
7371.00	---	50.43	150	V	324.0	0.7	54.00	3.57
7371.00	58.83	---	150	V	324.0	0.7	74.00	15.17
11024.90	---	38.45	150	V	35.0	2.9	54.00	15.55
11024.90	48.81	---	150	V	35.0	2.9	74.00	25.19
13187.30	---	43.12	150	H	100.0	5.4	54.00	10.88
13187.30	51.70	---	150	H	100.0	5.4	74.00	22.30
14671.40	---	44.85	150	V	60.0	6.0	54.00	9.15
14671.40	52.45	---	150	V	60.0	6.0	74.00	21.55

Channel 11: 2462MHz

Full Spectrum



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)				
1724.20	33.90	---	150	V	194.0	-15.5	74.00	40.10
1724.20	---	27.72	150	V	194.0	-15.5	54.00	26.28
3454.80	39.36	---	200	V	310.0	-8.9	74.00	34.64
3454.80	---	33.12	200	V	310.0	-8.9	54.00	20.88
4924.00	39.96	---	200	H	288.0	-5.3	74.00	34.04
4924.00	---	32.82	200	H	288.0	-5.3	54.00	21.18
7222.00	48.07	---	150	H	125.0	0.4	74.00	25.93
7222.00	---	38.17	150	H	125.0	0.4	54.00	15.83
11604.60	49.20	---	150	V	155.0	3.0	74.00	24.80
11604.60	---	39.21	150	V	155.0	3.0	54.00	14.79
17660.00	55.56	---	200	V	141.0	8.9	74.00	18.44
17660.00	---	47.89	200	V	141.0	8.9	54.00	6.11

Chain 1:**1GHz-18GHz:****802.11b Mode:**

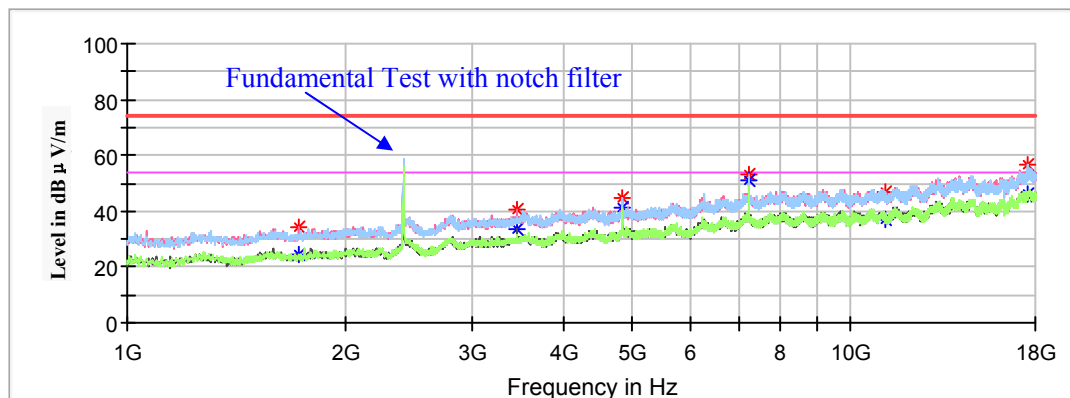
(Pre-scan in the X,Y and Z axes of orientation, the worst case **Z-axis of orientation** was recorded)

Note:

1. This test was performed with the 2.4-2.5GHz notch filter.
2. Corrected Factor (dB/m) = Antenna factor (RX) (dB/m) + Cable Loss (dB) – Amplifier Factor (dB)
 Corrected Amplitude (dB μ V/m) = Corrected Factor (dB/m) + Reading (dB μ V)
 Margin (dB) = Limit (dB μ V/m) – Corrected Amplitude (dB μ V/m)

Channel 1: 2412MHz

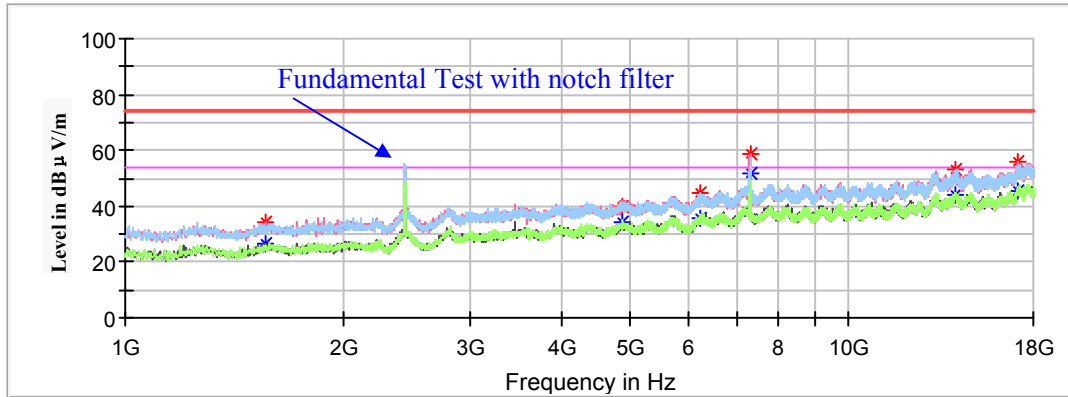
Full Spectrum



Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dB μ V/m)	Margin (dB)
	MaxPeak (dB μ V/m)	Average (dB μ V/m)	Height (cm)	Polar (H/V)				
1725.90	---	24.29	200	V	211.0	-15.5	54.00	29.71
1725.90	34.19	---	200	V	211.0	-15.5	74.00	39.81
3454.80	---	33.73	200	V	304.0	-8.9	54.00	20.27
3454.80	40.52	---	200	V	304.0	-8.9	74.00	33.48
4824.00	---	41.02	150	H	155.0	-5.5	54.00	12.98
4824.00	44.96	---	150	H	155.0	-5.5	74.00	29.04
7236.00	---	51.04	150	V	224.0	0.4	54.00	2.96
7236.00	53.46	---	150	V	224.0	0.4	74.00	20.54
11167.70	---	37.09	200	V	71.0	2.9	54.00	16.91
11167.70	47.18	---	200	V	71.0	2.9	74.00	26.82
17569.90	---	46.29	200	H	295.0	8.9	54.00	7.71
17569.90	56.58	---	200	H	295.0	8.9	74.00	17.42

Channel 6: 2437MHz

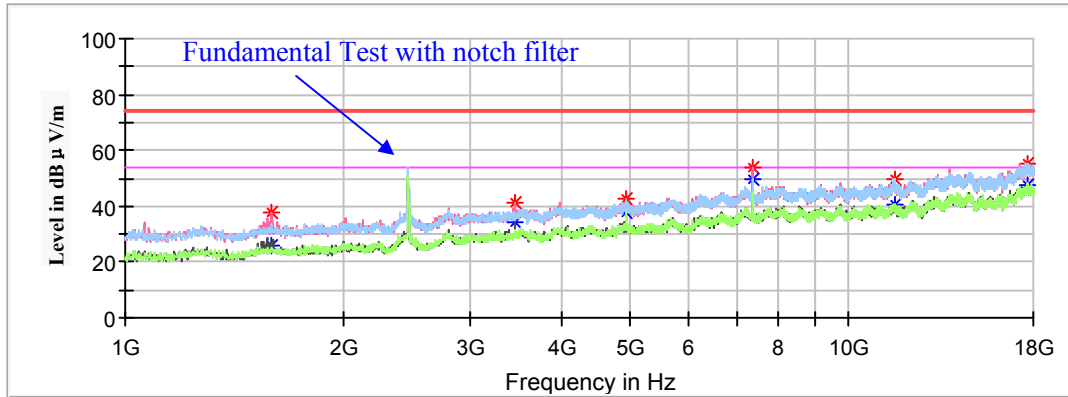
Full Spectrum



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)				
1564.40	---	26.48	150	V	180.0	-16.1	54.00	27.52
1564.40	33.97	---	150	V	180.0	-16.1	74.00	40.03
4874.30	---	34.20	150	V	53.0	-5.4	54.00	19.80
4874.30	39.75	---	150	V	53.0	-5.4	74.00	34.25
6251.30	---	35.75	150	V	77.0	-2.1	54.00	18.25
6251.30	45.03	---	150	H	77.0	-2.1	74.00	28.97
7311.00	---	51.62	150	V	324.0	0.6	54.00	2.38
7311.00	58.73	---	150	V	324.0	0.6	74.00	15.27
14078.10	---	43.81	150	V	6.0	6.2	54.00	10.19
14078.10	53.25	---	150	V	6.0	6.2	74.00	20.75
17121.10	---	45.51	150	H	359.0	7.6	54.00	8.49
17121.10	55.89	---	150	H	359.0	7.6	74.00	18.11

Channel 11: 2462MHz

Full Spectrum



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)				
1596.70	37.51	---	200	V	284.0	-16.0	74.00	36.49
1596.70	---	25.67	200	V	284.0	-16.0	54.00	28.33
3454.80	41.11	---	200	V	311.0	-8.9	74.00	32.89
3454.80	---	34.16	200	V	311.0	-8.9	54.00	19.84
4924.00	42.65	---	200	V	111.0	-5.3	74.00	31.35
4924.00	---	37.97	200	V	111.0	-5.3	54.00	16.03
7386.00	53.77	---	200	V	226.0	0.8	74.00	20.23
7386.00	---	49.60	200	V	226.0	0.8	54.00	4.40
11563.80	49.71	---	150	H	349.0	2.9	74.00	24.29
11563.80	---	40.82	150	H	349.0	2.9	54.00	13.18
17680.40	55.20	---	200	V	46.0	8.9	74.00	18.80
17680.40	---	47.56	200	V	46.0	8.9	54.00	6.44

802.11g Mode:

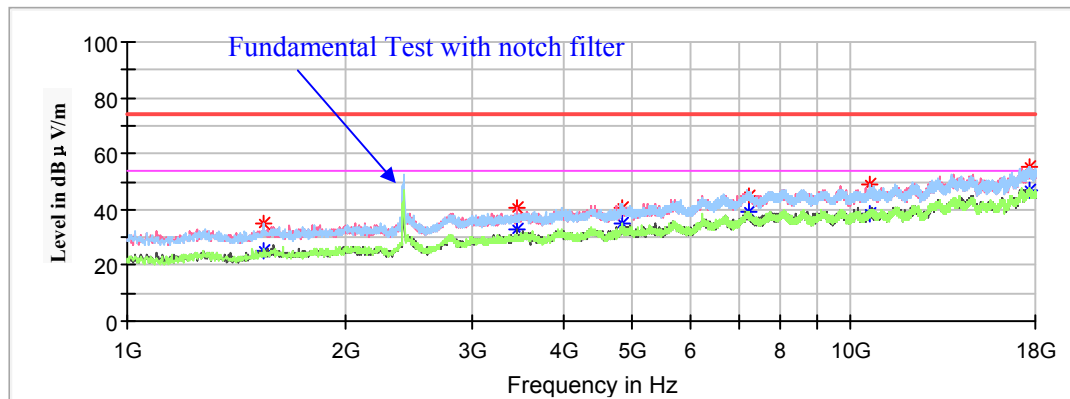
(Pre-scan in the X,Y and Z axes of orientation, the worst case **Z-axis of orientation** was recorded)

Note:

1. This test was performed with the 2.4-2.5GHz notch filter.
2. Corrected Factor (dB/m) = Antenna factor (RX) (dB/m) + Cable Loss (dB) – Amplifier Factor (dB)
 Corrected Amplitude (dBμV/m) = Corrected Factor (dB/m) + Reading (dBμV)
 Margin (dB) = Limit (dBμV/m) – Corrected Amplitude (dBμV/m)

Channel 1: 2412MHz

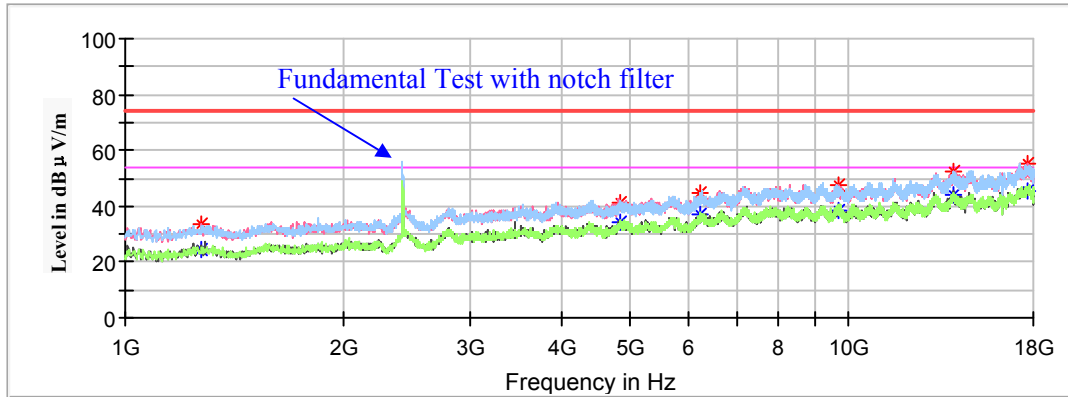
Full Spectrum



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)				
1544.00	---	25.17	200	H	295.0	-16.2	54.00	28.83
1544.00	35.09	---	200	H	295.0	-16.2	74.00	38.91
3454.80	---	32.94	200	V	264.0	-8.9	54.00	21.06
3454.80	40.21	---	200	V	264.0	-8.9	74.00	33.79
4824.00	---	35.31	200	H	321.0	-5.5	54.00	18.69
4824.00	40.25	---	200	H	321.0	-5.5	74.00	33.75
7236.00	---	39.23	200	V	358.0	0.5	54.00	14.77
7236.00	44.86	---	200	V	358.0	0.5	74.00	29.14
10650.90	---	38.49	200	H	15.0	2.5	54.00	15.51
10650.90	48.85	---	200	H	15.0	2.5	74.00	25.15
17700.80	---	46.94	150	H	161.0	8.9	54.00	7.06
17700.80	55.35	---	150	H	161.0	8.9	74.00	18.65

Channel 2: 2417MHz

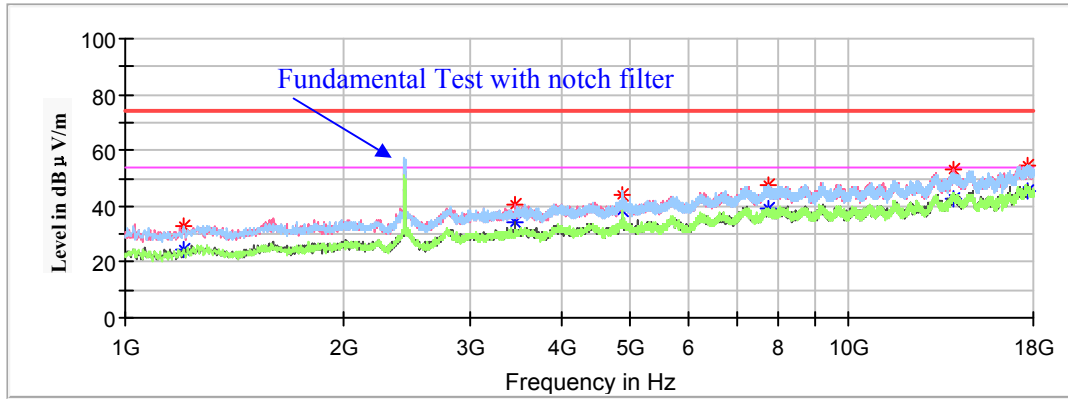
Full Spectrum



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)				
1273.70	---	24.81	150	V	155.0	-17.6	54.00	29.19
1273.70	33.54	---	150	V	155.0	-17.6	74.00	40.46
4834.00	---	34.61	150	V	129.0	-5.5	54.00	19.39
4834.00	41.28	---	150	V	129.0	-5.5	74.00	32.72
6239.40	---	36.96	150	H	6.0	-2.1	54.00	17.04
6239.40	44.98	---	150	H	6.0	-2.1	74.00	29.02
9687.00	---	38.14	150	V	206.0	2.0	54.00	15.86
9687.00	47.47	---	150	V	206.0	2.0	74.00	26.53
13989.70	---	43.86	150	H	358.0	6.1	54.00	10.14
13989.70	52.30	---	150	H	358.0	6.1	74.00	21.70
17721.20	---	45.32	150	V	270.0	8.9	54.00	8.68
17721.20	55.51	---	150	V	270.0	8.9	74.00	18.49

Channel 6: 2437MHz

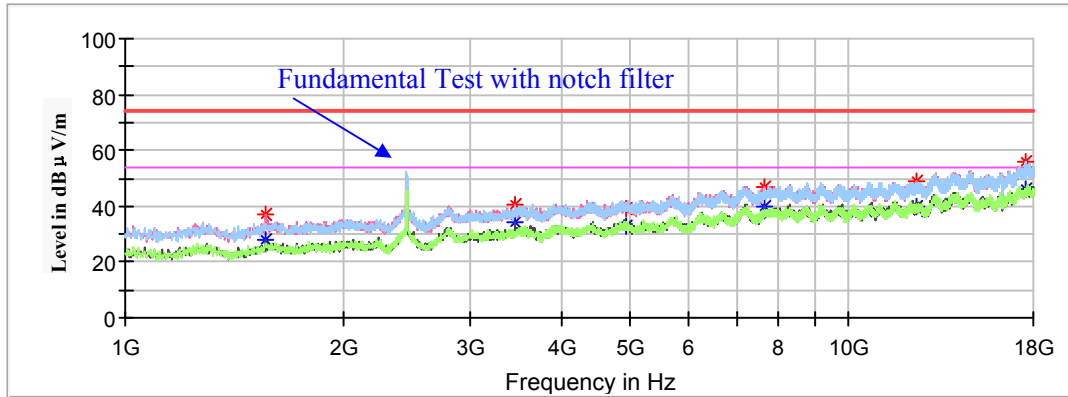
Full Spectrum



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)				
1207.40	32.83	---	150	H	165.0	-17.9	74.00	41.17
1207.40	---	24.22	150	H	165.0	-17.9	54.00	29.78
3454.80	40.67	---	150	V	286.0	-8.9	74.00	33.33
3454.80	---	34.53	150	V	286.0	-8.9	54.00	19.47
4874.00	44.24	---	150	H	84.0	-5.4	74.00	29.76
4874.00	---	38.68	150	H	84.0	-5.4	54.00	15.32
7757.50	47.38	---	150	H	33.0	1.4	74.00	26.62
7757.50	---	38.92	150	H	33.0	1.4	54.00	15.08
13991.40	53.33	---	150	V	286.0	6.1	74.00	20.67
13991.40	---	42.83	150	V	286.0	6.1	54.00	11.17
17670.20	54.67	---	150	V	157.0	8.9	74.00	19.33
17670.20	---	45.50	150	V	157.0	8.9	54.00	8.50

Channel 10: 2457MHz

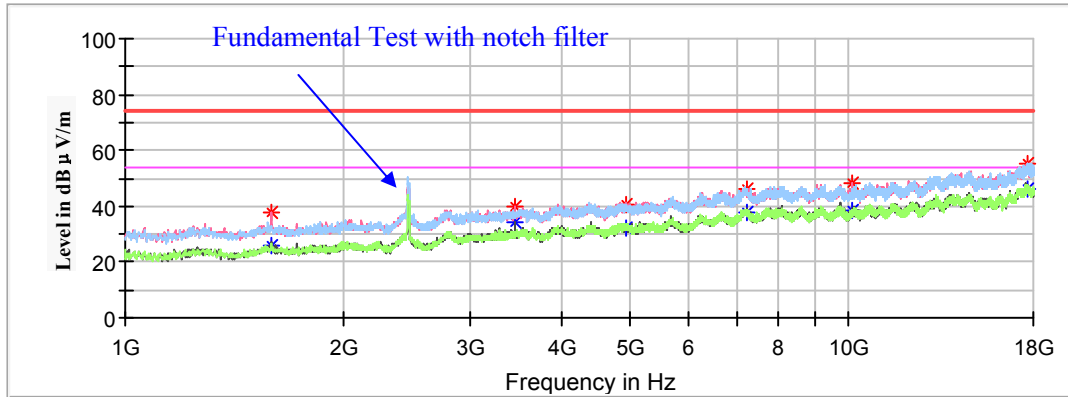
Full Spectrum



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)				
1567.80	37.01	---	150	V	270.0	-16.1	74.00	36.99
1567.80	---	28.18	150	V	270.0	-16.1	54.00	25.82
3454.80	40.30	---	150	V	283.0	-8.9	74.00	33.70
3454.80	---	34.27	150	V	283.0	-8.9	54.00	19.73
4914.00	39.36	---	150	H	149.0	-5.4	74.00	34.64
4914.00	---	33.16	150	H	149.0	-5.4	54.00	20.84
7662.30	47.06	---	150	V	187.0	1.3	74.00	26.94
7662.30	---	39.53	150	V	187.0	1.3	54.00	14.47
12415.50	48.84	---	150	V	297.0	3.1	74.00	25.16
12415.50	---	39.55	150	V	297.0	3.1	54.00	14.45
17598.80	55.95	---	150	H	300.0	8.9	74.00	18.05
17598.80	---	46.24	150	H	300.0	8.9	54.00	7.76

Channel 11: 2462MHz

Full Spectrum



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)				
1593.30	---	26.14	150	V	282.0	-16.0	54.00	27.86
1593.30	38.02	---	150	V	282.0	-16.0	74.00	35.98
3454.80	---	34.01	200	V	123.0	-8.9	54.00	19.99
3454.80	39.94	---	200	V	123.0	-8.9	74.00	34.06
4924.00	---	32.51	200	V	59.0	-5.3	54.00	21.49
4924.00	40.82	---	200	V	59.0	-5.3	74.00	33.18
7247.50	---	37.56	200	V	148.0	0.5	54.00	16.44
7247.50	46.30	---	200	V	148.0	0.5	74.00	27.70
10123.90	---	38.79	200	V	97.0	2.0	54.00	15.21
10123.90	48.02	---	200	V	97.0	2.0	74.00	25.98
17629.40	---	46.34	150	H	40.0	8.9	54.00	7.66
17629.40	55.37	---	150	H	40.0	8.9	74.00	18.63

Chain 0&1:**802.11n-HT20 Mode:**

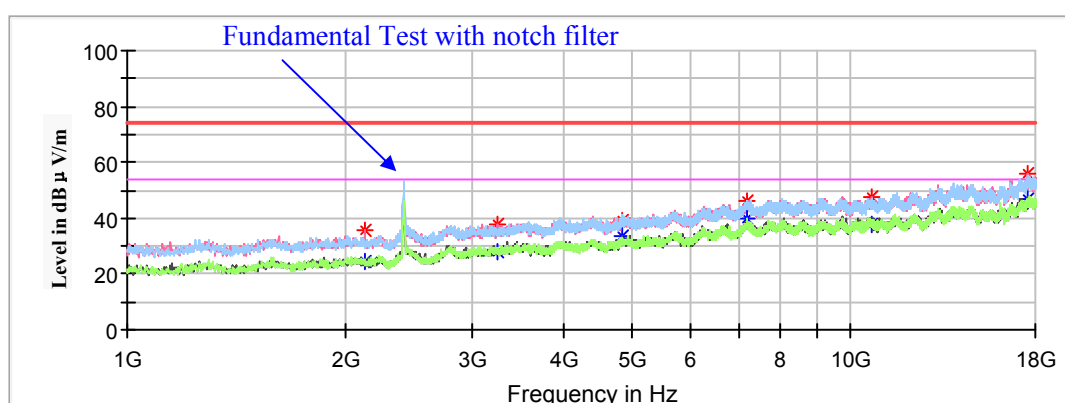
(Pre-scan in the X,Y and Z axes of orientation, the worst case **Z-axis of orientation** was recorded)

Note:

1. This test was performed with the 2.4-2.5GHz notch filter.
2. Corrected Factor (dB/m) = Antenna factor (RX) (dB/m) + Cable Loss (dB) – Amplifier Factor (dB)
 Corrected Amplitude (dBμV/m) = Corrected Factor (dB/m) + Reading (dBμV)
 Margin (dB) = Limit (dBμV/m) – Corrected Amplitude (dBμV/m)

Channel 1: 2412MHz

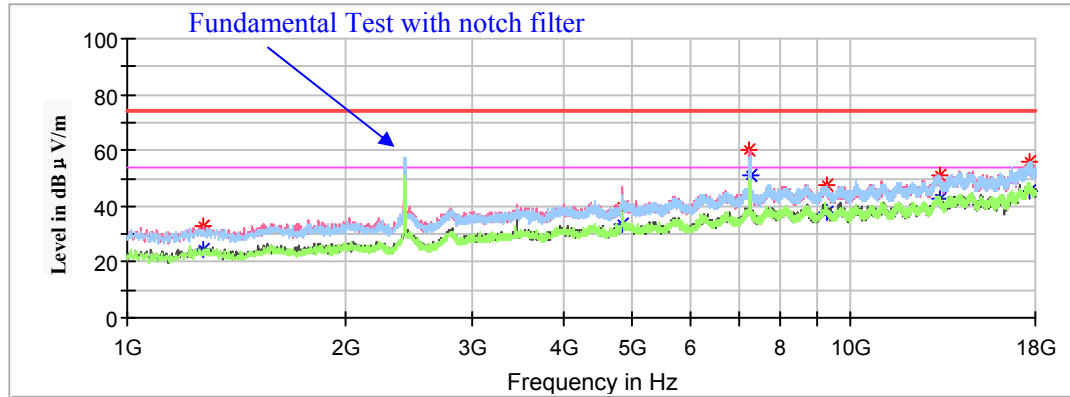
Full Spectrum



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)				
2127.10	---	24.50	150	V	0.0	-13.9	54.00	29.50
2127.10	36.00	---	150	V	0.0	-13.9	74.00	38.00
3254.20	---	27.83	150	H	54.0	-9.4	54.00	26.17
3254.20	37.50	---	150	H	54.0	-9.4	74.00	36.50
4824.00	---	33.67	150	V	160.0	-5.5	54.00	20.33
4824.00	38.95	---	150	V	160.0	-5.5	74.00	35.05
7236.00	---	39.74	150	H	232.0	0.4	54.00	14.26
7236.00	46.27	---	150	H	232.0	0.4	74.00	27.73
10681.50	---	37.87	150	H	219.0	2.5	54.00	16.13
10681.50	47.26	---	150	H	219.0	2.5	74.00	26.74
17607.30	---	46.87	150	V	356.0	8.9	54.00	7.13
17607.30	55.82	---	150	V	356.0	8.9	74.00	18.18

Channel 2: 2417MHz

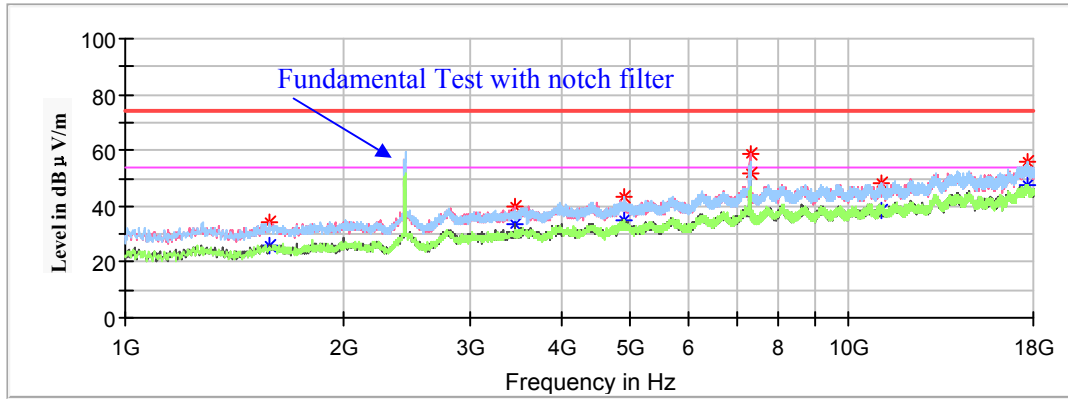
Full Spectrum



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)				
1277.10	---	24.62	150	V	288.0	-17.6	54.00	29.38
1277.10	32.77	---	150	V	288.0	-17.6	74.00	41.23
4834.00	---	33.38	150	H	212.0	-5.5	54.00	20.62
4834.00	39.98	---	150	H	212.0	-5.5	74.00	34.02
7251.00	---	51.40	150	V	314.0	0.5	54.00	2.60
7251.00	60.40	---	150	V	314.0	0.5	74.00	13.60
9246.70	---	38.07	150	V	186.0	2.0	54.00	15.93
9246.70	47.69	---	150	V	186.0	2.0	74.00	26.31
13257.00	---	42.86	150	V	212.0	5.5	54.00	11.14
13257.00	51.19	---	150	V	212.0	5.5	74.00	22.81
17619.20	---	45.80	150	V	326.0	8.9	54.00	8.20
17619.20	55.88	---	150	V	326.0	8.9	74.00	18.12

Channel 6: 2437MHz

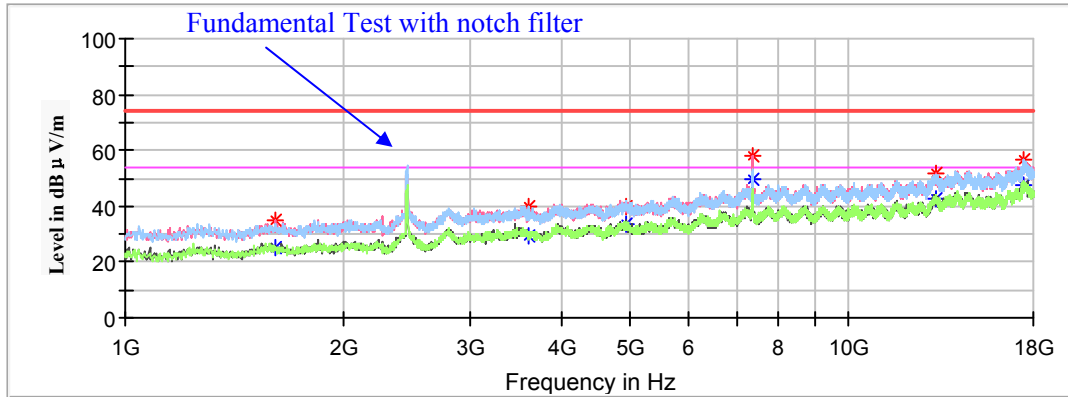
Full Spectrum



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)				
1579.70	34.04	---	150	V	230.0	-16.1	74.00	39.96
1579.70	---	25.56	150	V	230.0	-16.1	54.00	28.44
3454.80	39.86	---	150	V	282.0	-8.9	74.00	34.14
3454.80	---	33.68	150	V	282.0	-8.9	54.00	20.32
4874.00	43.66	---	150	H	129.0	-5.4	74.00	30.34
4874.00	---	35.07	150	H	129.0	-5.4	54.00	18.93
7311.00	58.85	---	150	V	26.0	0.6	74.00	15.15
7311.00	---	51.53	150	V	26.0	0.6	54.00	2.47
11128.60	48.13	---	150	H	51.0	2.9	74.00	25.87
11128.60	---	38.55	150	H	51.0	2.9	54.00	15.45
17704.20	55.82	---	150	H	14.0	8.9	74.00	18.18
17704.20	---	47.74	150	H	14.0	8.9	54.00	6.26

Channel 10: 2457MHz

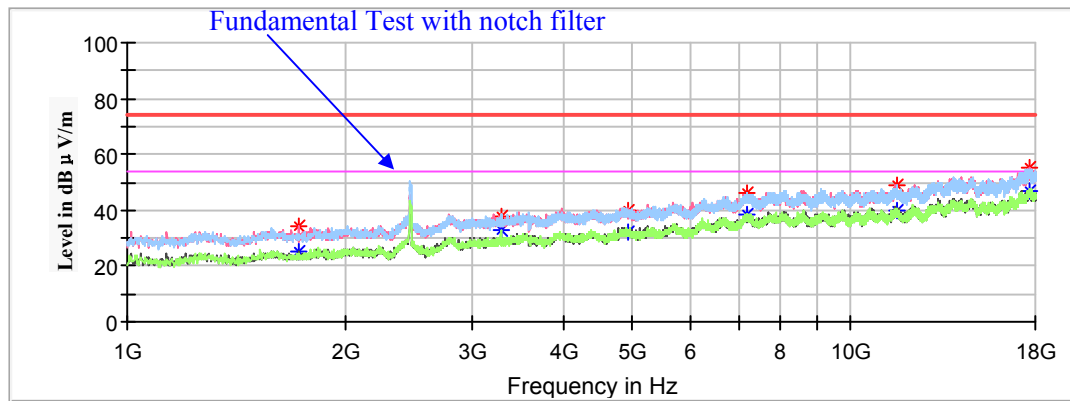
Full Spectrum



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)				
1613.70	---	25.00	150	V	36.0	-15.9	54.00	29.00
1613.70	34.89	---	150	V	36.0	-15.9	74.00	39.11
3614.60	---	29.63	150	V	354.0	-8.4	54.00	24.37
3614.60	39.57	---	150	V	354.0	-8.4	74.00	34.43
4914.00	---	33.71	150	H	191.0	-5.4	54.00	20.29
4914.00	39.70	---	150	H	191.0	-5.4	74.00	34.30
7371.00	---	49.73	150	V	308.0	0.7	54.00	4.27
7371.00	58.38	---	150	V	308.0	0.8	74.00	15.62
13207.70	---	42.42	150	V	90.0	5.4	54.00	11.58
13207.70	51.78	---	150	V	90.0	5.4	74.00	22.22
17490.00	---	47.73	150	V	181.0	8.9	54.00	6.27
17490.00	56.84	---	150	V	181.0	8.9	74.00	17.16

Channel 11: 2462MHz

Full Spectrum



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)				
1724.20	34.29	---	150	V	198.0	-15.5	74.00	39.71
1724.20	---	25.23	150	V	198.0	-15.5	54.00	28.77
3281.40	37.78	---	150	H	27.0	-9.4	74.00	36.22
3281.40	---	32.74	150	H	27.0	-9.4	54.00	21.26
4924.00	39.79	---	150	V	0.0	-5.3	74.00	34.21
4924.00	---	31.87	150	V	0.0	-5.3	54.00	22.13
7181.20	46.16	---	150	H	0.0	0.3	74.00	27.84
7181.20	---	38.18	150	H	0.0	0.3	54.00	15.82
11565.50	48.66	---	150	V	236.0	2.9	74.00	25.34
11565.50	---	40.02	150	V	236.0	2.9	54.00	13.98
17626.00	55.51	---	150	H	284.0	8.9	74.00	18.49
17626.00	---	47.09	150	H	284.0	8.9	54.00	6.91

802.11n-HT40 Mode:

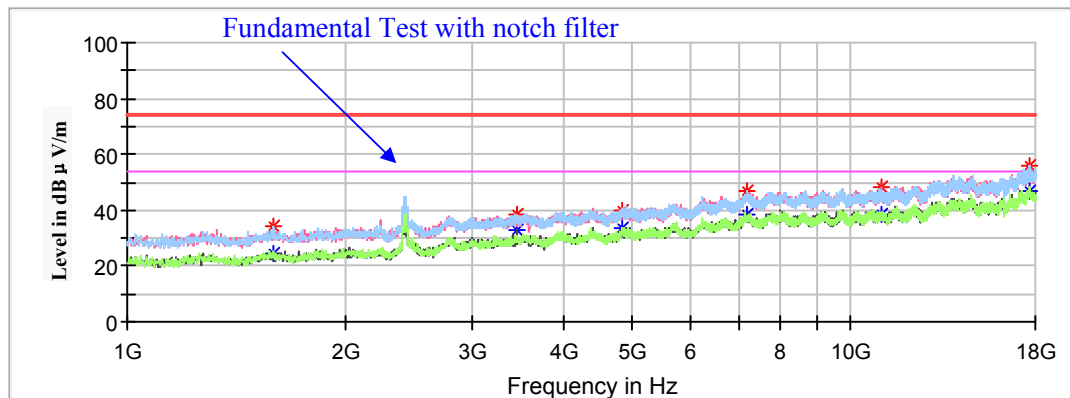
(Pre-scan in the X,Y and Z axes of orientation, the worst case **Z-axis of orientation** was recorded)

Note:

1. This test was performed with the 2.4-2.5GHz notch filter.
2. Corrected Factor (dB/m) = Antenna factor (RX) (dB/m) + Cable Loss (dB) – Amplifier Factor (dB)
 Corrected Amplitude (dBμV/m) = Corrected Factor (dB/m) + Reading (dBμV)
 Margin (dB) = Limit (dBμV/m) – Corrected Amplitude (dBμV/m)

Channel 3: 2422MHz

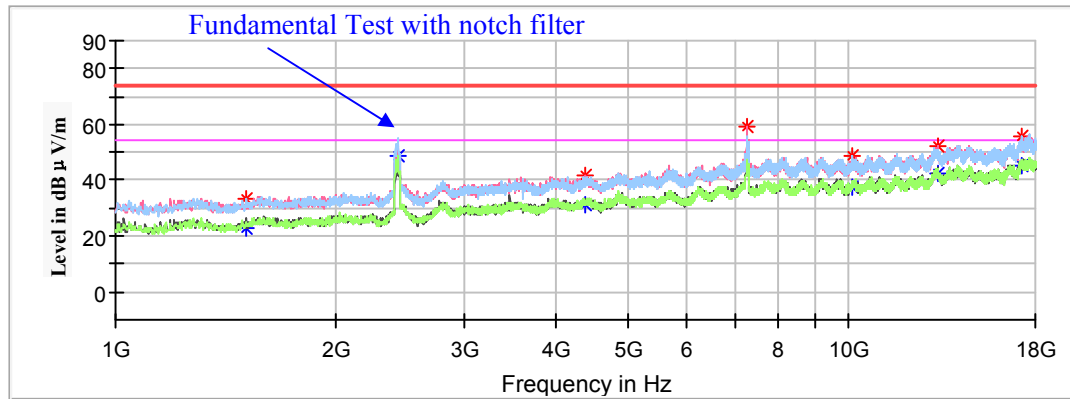
Full Spectrum



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)				
1596.70	---	24.37	150	H	335.0	-16.0	54.00	29.63
1596.70	34.42	---	150	H	335.0	-16.0	74.00	39.58
3454.80	---	32.77	150	V	310.0	-8.9	54.00	21.23
3454.80	38.26	---	150	V	310.0	-8.9	74.00	35.74
4844.00	---	33.66	150	H	154.0	-5.5	54.00	20.34
4844.00	39.73	---	150	H	154.0	-5.5	74.00	34.27
7184.60	---	38.28	150	H	192.0	0.3	54.00	15.72
7184.60	46.73	---	150	H	192.0	0.3	74.00	27.27
11009.60	---	38.48	150	V	310.0	2.9	54.00	15.52
11009.60	48.02	---	150	V	310.0	2.9	74.00	25.98
17665.10	---	47.00	150	V	359.0	8.9	54.00	7.00
17665.10	55.91	---	150	V	359.0	8.9	74.00	18.09

Channel 4: 2427MHz

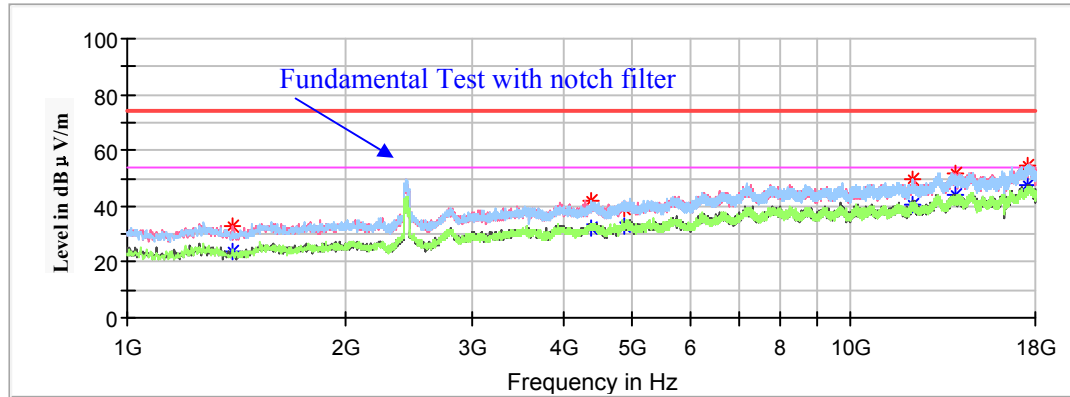
Full Spectrum



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)				
1510.00	---	22.98	150	V	6.0	-16.3	54.00	31.02
1510.00	33.47	---	150	V	6.0	-16.3	74.00	40.53
4386.40	---	31.19	150	H	315.0	-6.4	54.00	22.81
4386.40	41.78	---	150	H	315.0	-6.4	74.00	32.22
7281.00	---	50.69	150	H	0.0	0.5	54.00	3.31
7281.00	60.82	---	150	H	0.0	0.5	74.00	13.18
10149.40	---	37.64	150	V	77.0	2.0	54.00	16.36
10149.40	49.04	---	150	V	77.0	2.0	74.00	24.96
13236.60	---	42.33	150	V	345.0	5.4	54.00	11.67
13236.60	52.10	---	150	V	345.0	5.4	74.00	21.90
17243.50	---	44.99	150	H	51.0	8.0	54.00	9.01
17243.50	55.67	---	150	H	51.0	8.0	74.00	18.33

Channel 6: 2437MHz

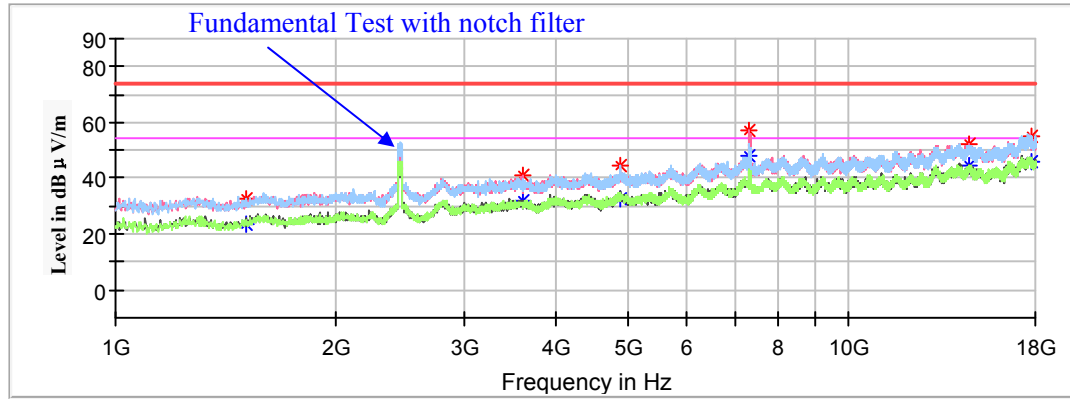
Full Spectrum



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)				
1399.50	---	24.00	150	V	134.0	-16.9	54.00	30.00
1399.50	32.97	---	150	V	134.0	-16.9	74.00	41.03
4372.80	---	32.37	150	H	166.0	-6.4	54.00	21.63
4372.80	41.65	---	150	H	166.0	-6.4	74.00	32.35
4874.00	---	32.94	150	V	0.0	-5.4	54.00	21.06
4874.00	38.88	---	150	V	0.0	-5.4	74.00	35.12
12186.00	---	40.70	150	H	39.0	3.5	54.00	13.30
12186.00	49.97	---	150	H	39.0	3.5	74.00	24.03
13999.90	---	44.09	150	V	300.0	6.1	54.00	9.91
13999.90	51.69	---	150	V	300.0	6.1	74.00	22.31
17592.00	---	47.41	150	V	198.0	8.9	54.00	6.59
17592.00	54.71	---	150	V	198.0	8.9	74.00	19.29

Channel 8: 2447MHz

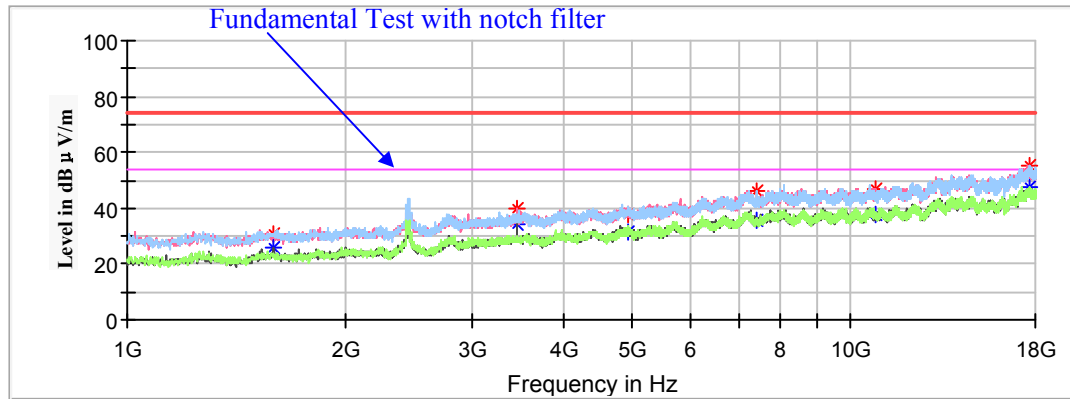
Full Spectrum



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)				
1510.00	---	23.79	150	H	314.0	-16.3	54.00	30.21
1510.00	32.38	---	150	H	314.0	-16.3	74.00	41.62
3585.70	---	31.79	150	V	165.0	-8.5	54.00	22.21
3585.70	41.36	---	150	V	165.0	-8.5	74.00	32.64
4894.00	---	32.84	150	H	301.0	-5.4	54.00	21.16
4894.00	44.25	---	150	H	301.0	-5.4	74.00	29.75
7341.00	---	47.86	150	V	323.0	0.6	54.00	6.14
7341.00	57.09	---	150	V	323.0	0.6	74.00	16.91
14603.40	---	44.20	150	V	21.0	6.2	54.00	9.80
14603.40	52.00	---	150	V	21.0	6.2	74.00	22.00
17782.40	---	46.15	150	H	237.0	8.8	54.00	7.85
17782.40	54.87	---	150	H	237.0	8.8	74.00	19.13

Channel 9: 2452MHz

Full Spectrum

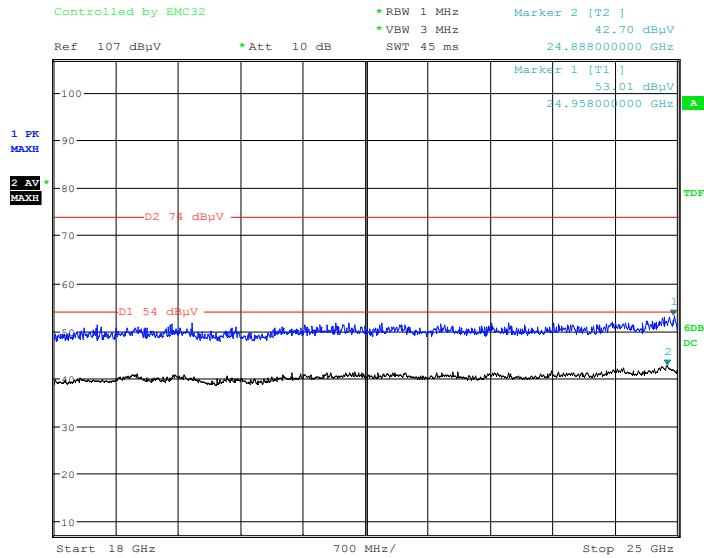


Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
1596.70	---	26.00	150	H	169.0	-16.0	54.00	28.00
1596.70	30.91	---	150	H	169.0	-16.0	74.00	43.09
3454.80	---	34.37	150	V	301.0	-8.9	54.00	19.63
3454.80	39.82	---	150	V	301.0	-8.9	74.00	34.18
4904.00	---	31.54	150	V	186.0	-5.3	54.00	22.46
4904.00	37.56	---	150	V	186.0	-5.3	74.00	36.44
7424.30	---	35.80	150	H	40.0	0.9	54.00	18.20
7424.30	46.49	---	150	H	40.0	0.9	74.00	27.51
10839.60	---	37.89	150	V	301.0	2.7	54.00	16.11
10839.60	46.52	---	150	V	301.0	2.7	74.00	27.48
17651.50	---	47.59	150	H	291.0	8.9	54.00	6.41
17651.50	55.34	---	150	H	291.0	8.9	74.00	18.66

18GHz-25GHz:

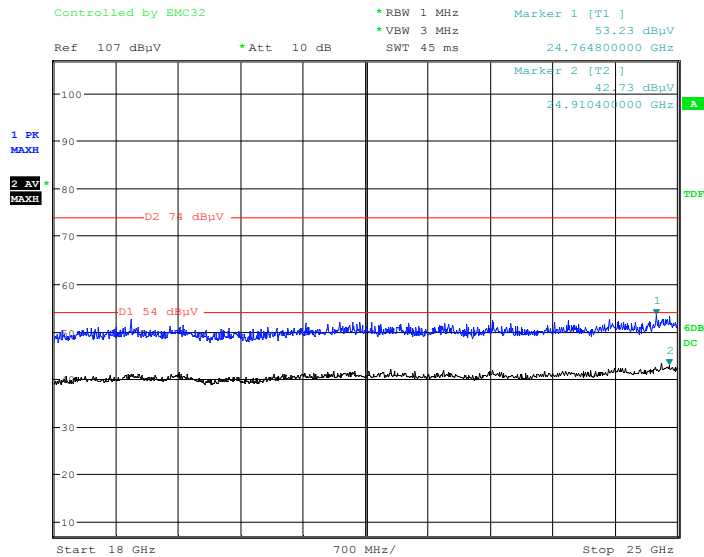
Pre-scan with 802.11b, 802.11g, 802.11n-HT20 and 802.11n-HT40 modes of operation in the X,Y and Z axes of orientation, the worst case **channel 6 of 802.11g mode in Z-axis of orientation** was recorded

Horizontal



Date: 14.SEP.2020 23:31:26

Vertical



Date: 14.SEP.2020 23:23:38

Restricted Bands Emissions Test:

Note:

1. Corrected Factor (dB/m) = Antenna factor (RX) (dB/m) + Cable Loss (dB) – Amplifier Factor (dB)

Corrected Amplitude (dB μ V/m) = Corrected Factor (dB/m) + Reading (dB μ V)Margin (dB) = Limit (dB μ V/m) – Corrected Amplitude (dB μ V/m)**Chain 0:****802.11b Mode:** (Pre-scan in the X, Y and Z axes of orientation, the worst case 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)				
Channel 1: 2412MHz								
2390.00	---	51.65	150.0	H	70.0	-2.9	54.00	2.35
2390.00	53.20	---	150.0	H	70.0	-2.9	74.00	20.80
Channel 11: 2462MHz								
2483.50	---	45.04	200.0	H	62.0	-2.5	54.00	8.96
2483.50	51.37	---	200.0	H	62.0	-2.5	74.00	22.63

802.11g Mode: (Pre-scan in the X,Y and Z axes of orientation, the worst case 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)				
Channel 1: 2412MHz								
2390.00	---	46.86	200.0	H	244.0	-2.9	54.00	7.14
2390.00	55.50	---	200.0	H	244.0	-2.9	74.00	18.50
Channel 2: 2417MHz								
2390.00	57.34	---	200.0	H	255.0	-2.9	74.00	16.66
2390.00	---	48.40	200.0	H	255.0	-2.9	54.00	5.60
Channel10: 2457MHz								
2483.50	59.52	---	150.0	H	265.0	-2.5	74.00	14.48
2483.50	---	52.31	150.0	H	265.0	-2.5	54.00	1.69
Channel11: 2462MHz								
2483.50	---	50.41	150.0	H	269.0	-2.5	54.00	3.59
2483.50	56.80	---	150.0	H	269.0	-2.5	74.00	17.20

Chain 1:**802.11b Mode:** (Pre-scan in the X, Y and Z axes of orientation, the worst case 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)				
Channel 1: 2412MHz								
2390.00	51.67	---	150.0	H	270.0	-2.9	74.00	22.33
2390.00	---	49.76	150.0	H	270.0	-2.9	54.00	4.24
Channel 11: 2462MHz								
2483.50	52.15	---	150.0	H	279.0	-2.5	74.00	21.85
2483.50	---	50.82	150.0	H	279.0	-2.5	54.00	3.18

802.11g Mode: (Pre-scan in the X,Y and Z axes of orientation, the worst case 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)				
Channel 1: 2412MHz								
2390.00	62.11	---	150.0	H	65.0	-2.9	74.00	11.89
2390.00	---	53.69	150.0	H	65.0	-2.9	54.00	0.31
Channel 2: 2417MHz								
2390.00	58.14	---	200.0	H	116.0	-2.9	74.00	15.86
2390.00	---	51.16	200.0	H	116.0	-2.9	54.00	2.84
Channel10: 2457MHz								
2483.50	53.63	---	200.0	H	109.0	-2.5	74.00	20.37
2483.50	---	51.00	200.0	H	109.0	-2.5	54.00	3.00
Channel11: 2462MHz								
2483.50	57.70	---	200.0	H	54.0	-2.5	74.00	16.30
2483.50	---	51.89	200.0	H	54.0	-2.5	54.00	2.11

Chain 0&1:

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

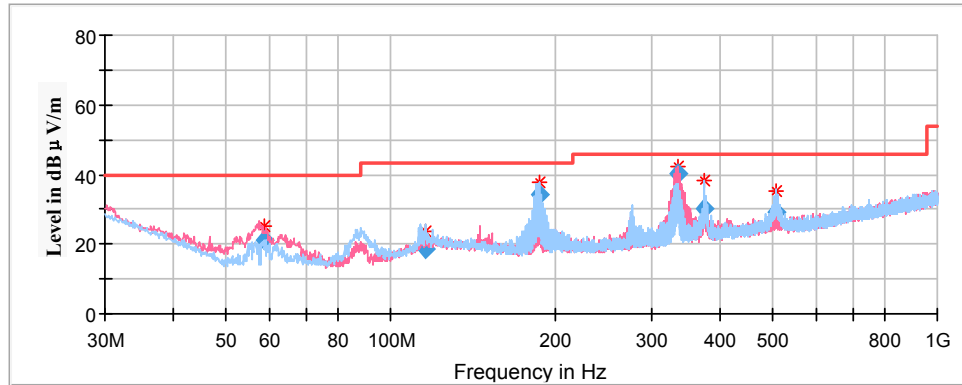
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
Channel 1: 2412MHz								
2390.00	58.53	---	150.0	H	281.0	-2.9	74.00	15.47
2390.00	---	49.31	150.0	H	281.0	-2.9	54.00	4.69
Channel 2: 2417MHz								
2390.00	63.67	---	150.0	H	94.0	-2.9	74.00	10.33
2390.00	---	51.89	150.0	H	94.0	-2.9	54.00	2.11
Channel 10: 2457MHz								
2483.50	56.63	---	150.0	H	103.0	-2.5	74.00	17.37
2483.50	---	48.59	150.0	H	103.0	-2.5	54.00	5.41
Channel 11: 2462MHz								
2483.50	61.91	---	150.0	H	269.0	-2.5	74.00	12.09
2483.50	---	53.74	150.0	H	269.0	-2.5	54.00	0.26

802.11n-HT40 Mode: (Pre-scan in the X,Y and Z axes of orientation, the worst case 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)				
Channel 3: 2422MHz								
2390.00	---	49.18	200.0	H	340.0	-2.9	54.00	4.82
2390.00	55.04	---	200.0	H	186.0	-2.9	74.00	18.96
Channel 4: 2427MHz								
2390.00	59.55	---	150.0	H	310.0	-2.9	74.00	14.45
2390.00	---	53.18	150.0	H	310.0	-2.9	54.00	0.82
Channel 8: 2447MHz								
2483.50	56.08	---	150.0	H	259.0	-2.5	74.00	17.92
2483.50	---	51.79	150.0	H	259.0	-2.5	54.00	2.21
Channel 9: 2452MHz								
2483.50	55.91	---	150.0	H	180.0	-2.5	74.00	18.09
2483.50	---	50.11	150.0	H	180.0	-2.5	54.00	3.89

Transmitting simultaneously test:**30MHz-1GHz**

(The worst case Band 2 of LTE, 802.11a high Channel of 5G Wi-Fi Band 1 and 802.11g Channel 6 of 2.4G Wi-Fi mode transmitting simultaneously in Z-axis of orientation was recorded)

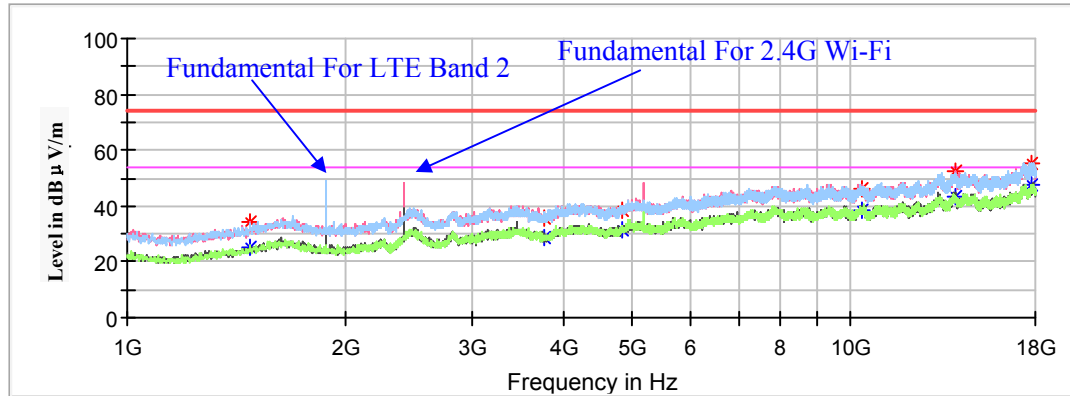


Frequency (MHz)	Corrected Amplitude	Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	QuasiPeak (dBμV/m)	Height (cm)	Polar (H/V)				
58.77	20.94	100	V	39.0	-18.3	40.00	19.06
115.73	18.54	200	H	62.0	-12.4	43.50	24.96
187.42	34.05	200	H	308.0	-13.6	43.50	9.45
335.53	40.44	100	V	341.0	-10.2	46.00	5.56
374.74	29.98	200	H	120.0	-9.2	46.00	16.02
505.90	29.38	100	H	202.0	-6.1	46.00	16.62

1GHz-18GHz

(The worst case Band 2 of LTE, 802.11a high Channel of 5G Wi-Fi Band 1 and 802.11g Channel 6 of 2.4G Wi-Fi mode transmitting simultaneously in Z-axis of orientation was recorded)

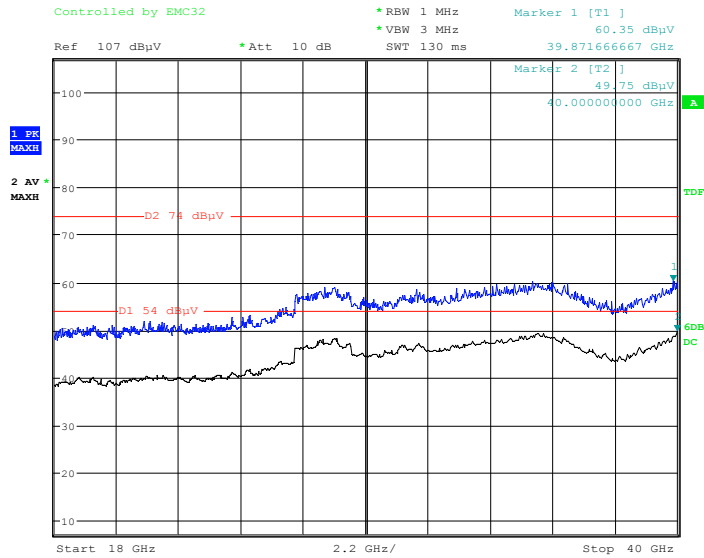
Full Spectrum



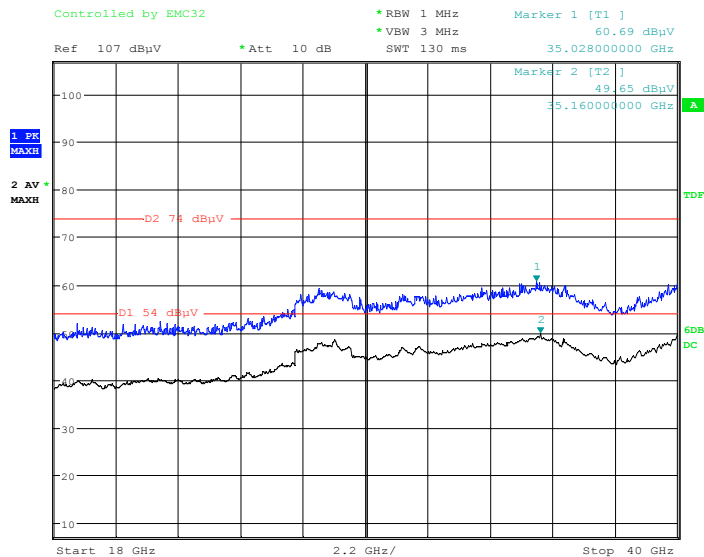
Frequency (MHz)	Corrected Amplitude		Rx Antenna		Turntable Degree	Corrected Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
	MaxPeak (dBμV/m)	Average (dBμV/m)	Height (cm)	Polar (H/V)				
1479.40	---	25.21	150.0	V	358.0	-16.5	54.00	28.79
1479.40	34.61	---	150.0	V	358.0	-16.5	74.00	39.39
3760.80	---	28.88	150.0	H	262.0	-7.9	54.00	25.12
3760.80	35.75	---	150.0	H	262.0	-7.9	74.00	38.25
4823.30	---	31.51	150.0	V	356.0	-5.5	54.00	22.49
4823.30	38.13	---	150.0	V	356.0	-5.5	74.00	35.87
10358.50	---	38.63	150.0	H	198.0	2.2	54.00	15.37
10358.50	46.22	---	150.0	H	198.0	2.2	74.00	27.78
13937.00	---	43.25	150.0	H	210.0	6.1	54.00	10.75
13937.00	52.12	---	150.0	H	210.0	6.1	74.00	21.88
17806.20	---	47.37	150.0	V	9.0	8.8	54.00	6.63
17804.50	55.53	---	150.0	V	9.0	8.8	74.00	18.47

18GHz-40GHz:

(The worst case Band 2 of LTE, 802.11a high Channel of 5G Wi-Fi Band 1 and 802.11g Channel 6 of 2.4G Wi-Fi mode transmitting simultaneously in Z-axis of orientation was recorded)

Vertical

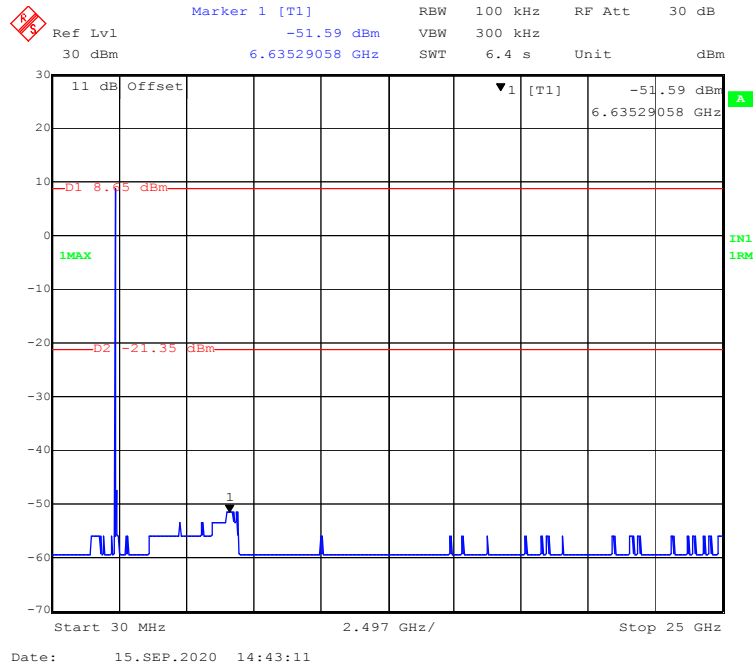
Date: 4.SEP.2020 17:26:51

Horizontal

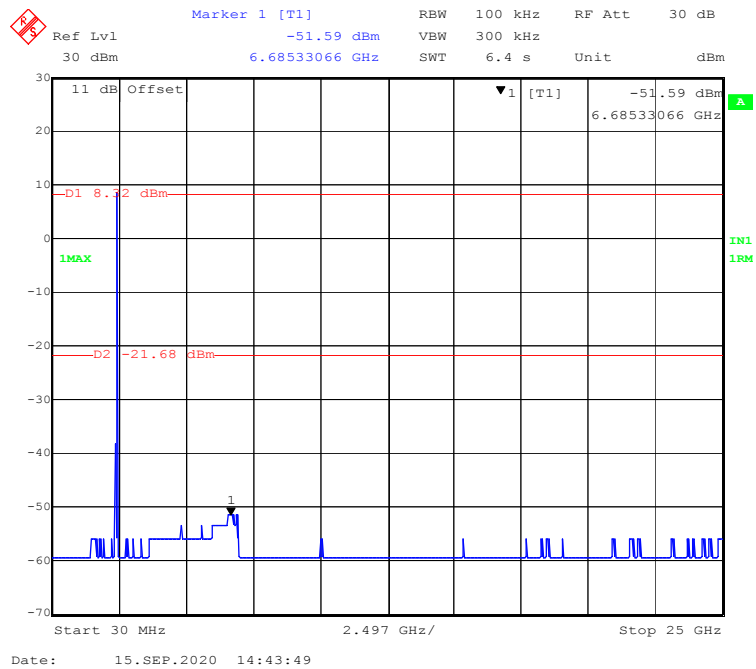
Date: 4.SEP.2020 17:39:24

Conducted Spurious Emissions at Antenna Port

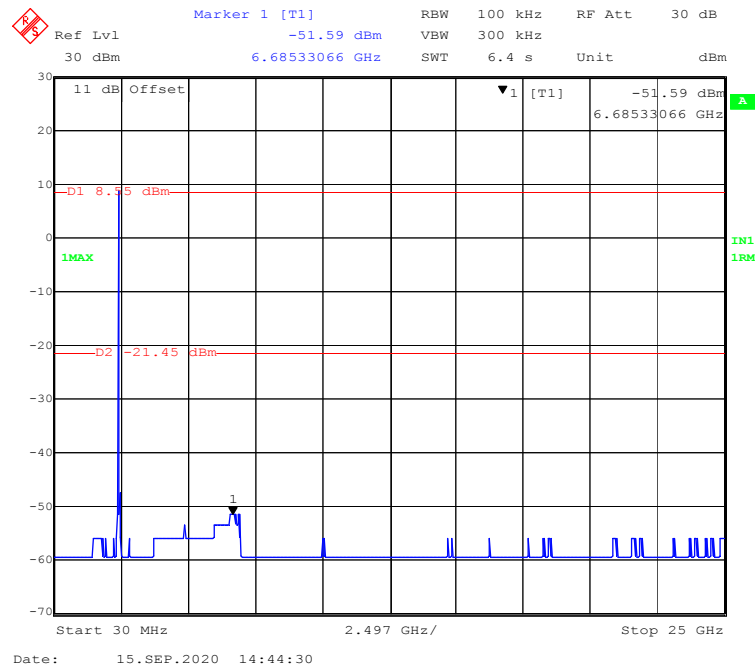
Chain 0:802.11b Mode Channel 1



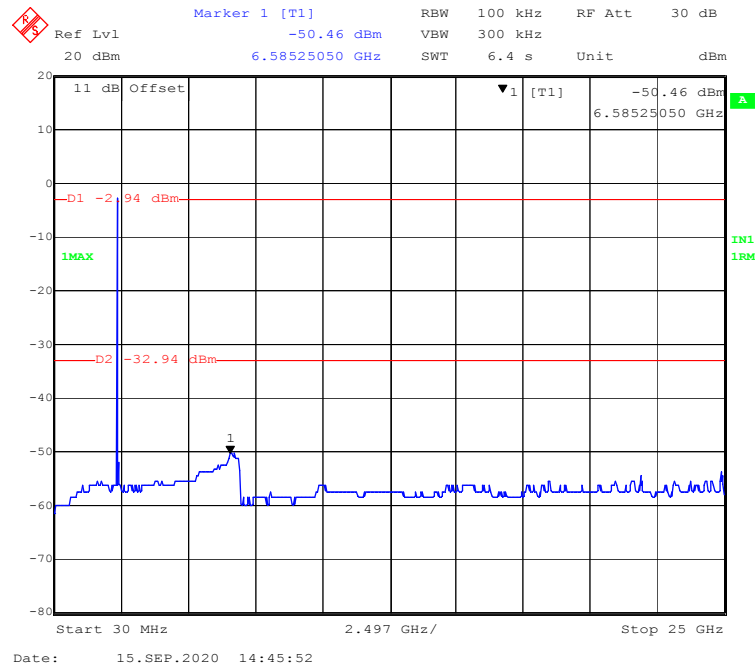
Chain 0:802.11b Mode Channel 6



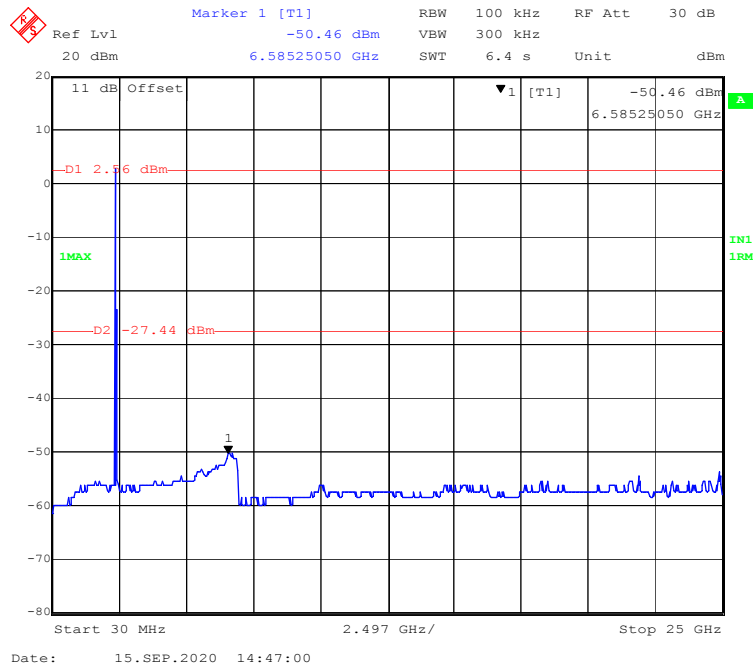
Chain 0:802.11b Mode Channel 11



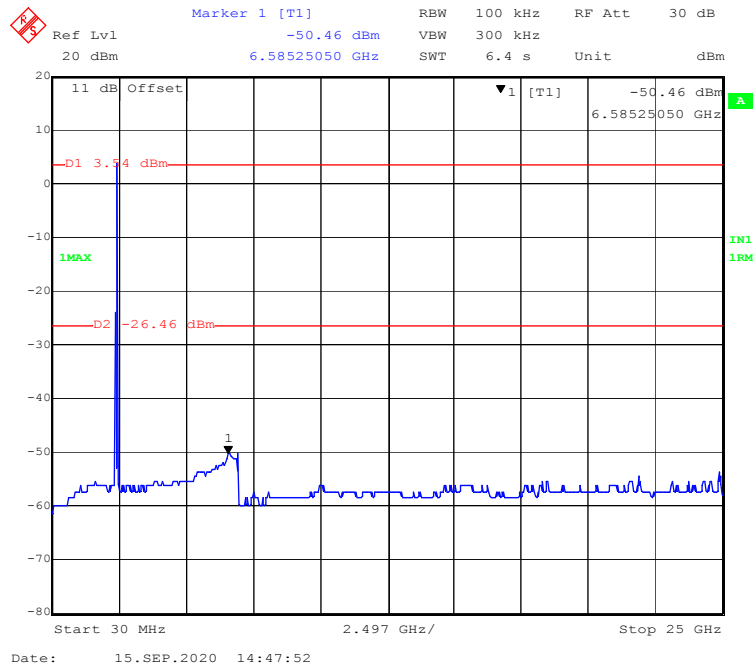
Chain 0:802.11g Mode Channel 1



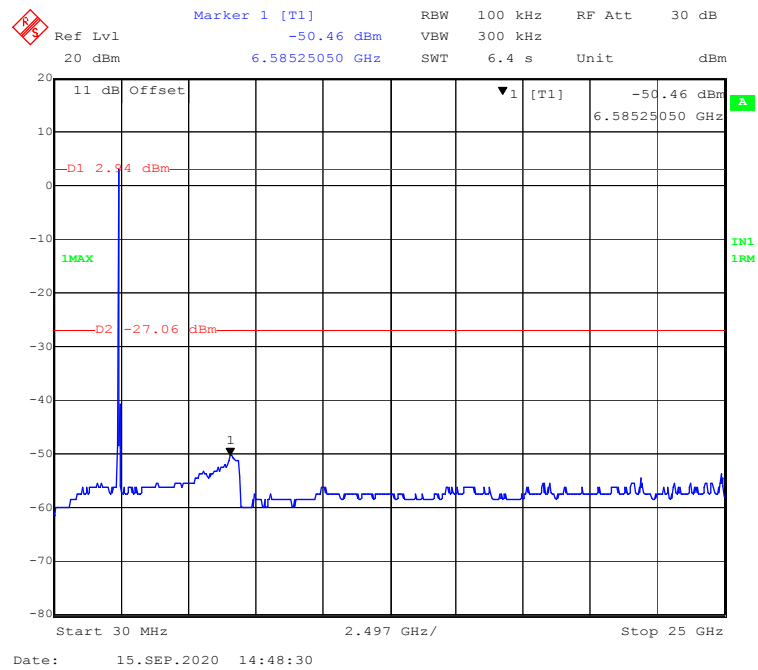
Chain 0:802.11g Mode Channel 2



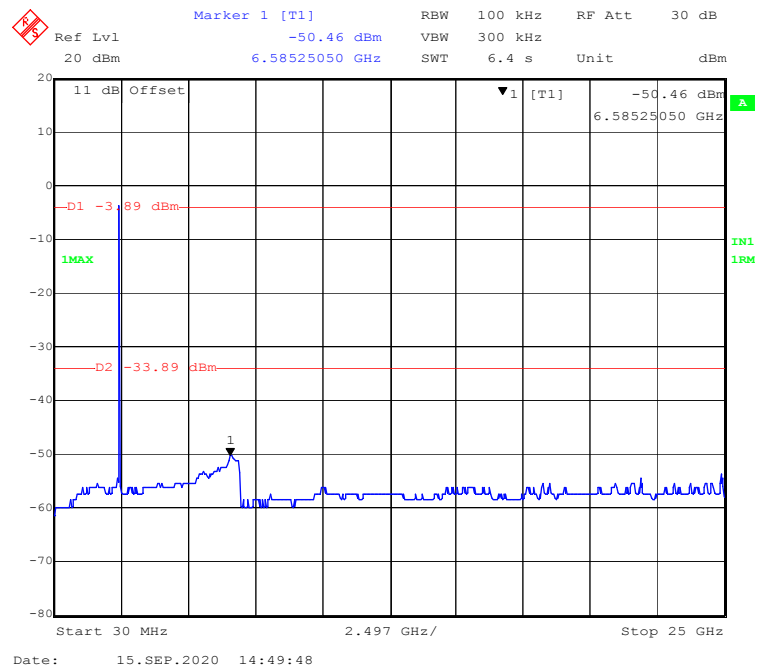
Chain 0:802.11g Mode Channel 6



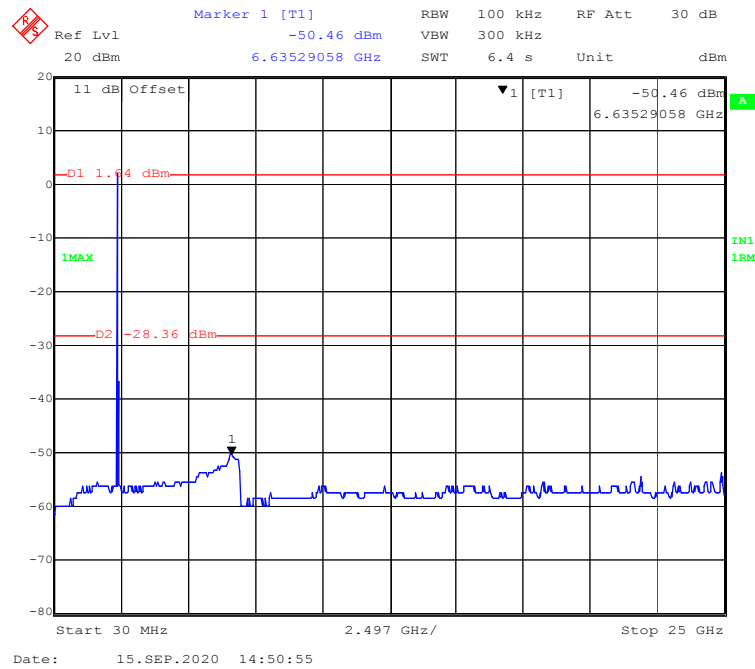
Chain 0:802.11g Mode Channel 10



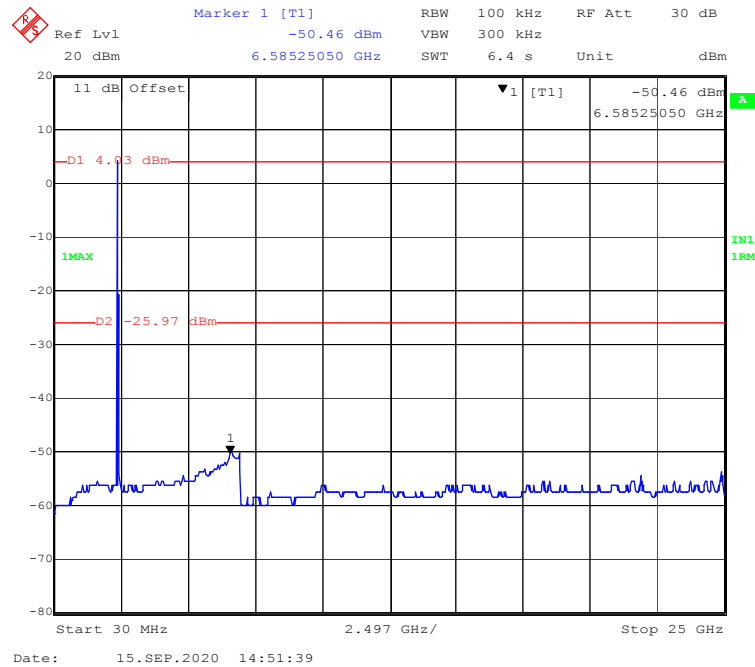
Chain 0:802.11g Mode Channel 11



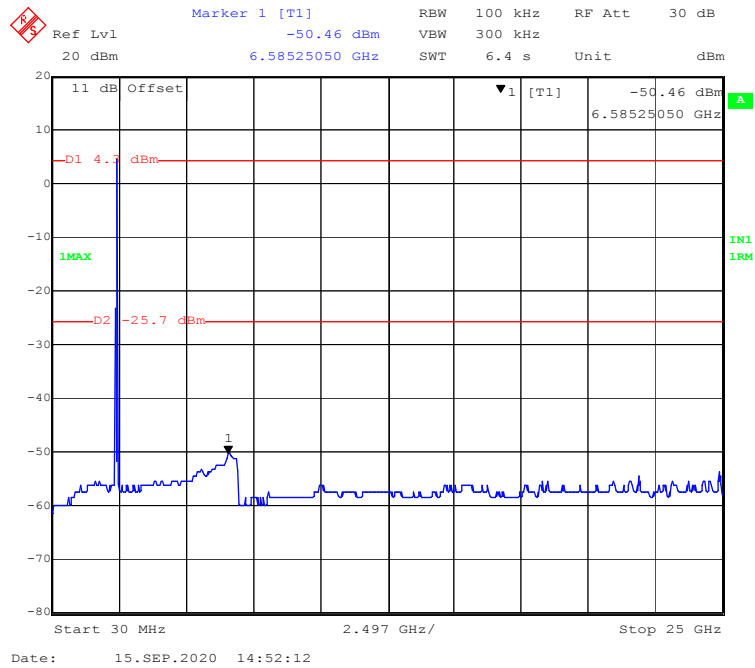
Chain 0:802.11n-HT20 Mode Channel 1



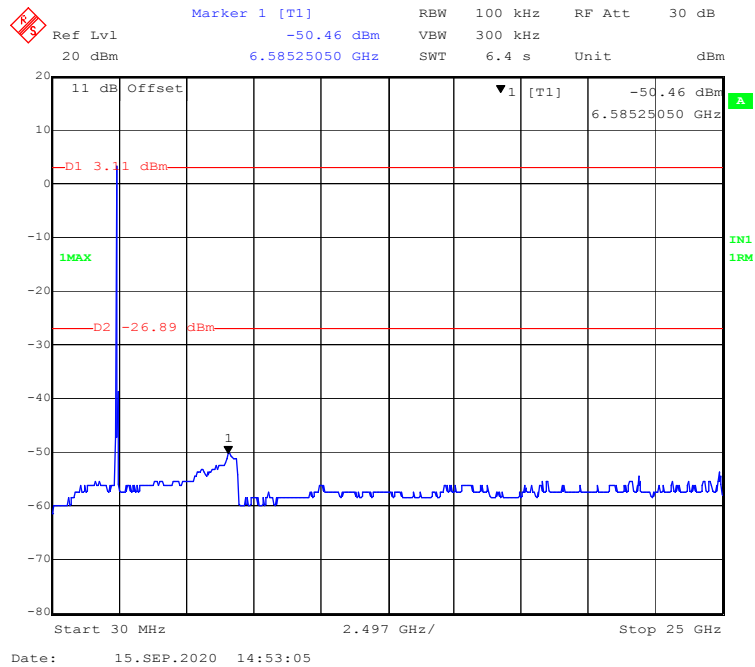
Chain 0:802.11n-HT20 Mode Channel 2



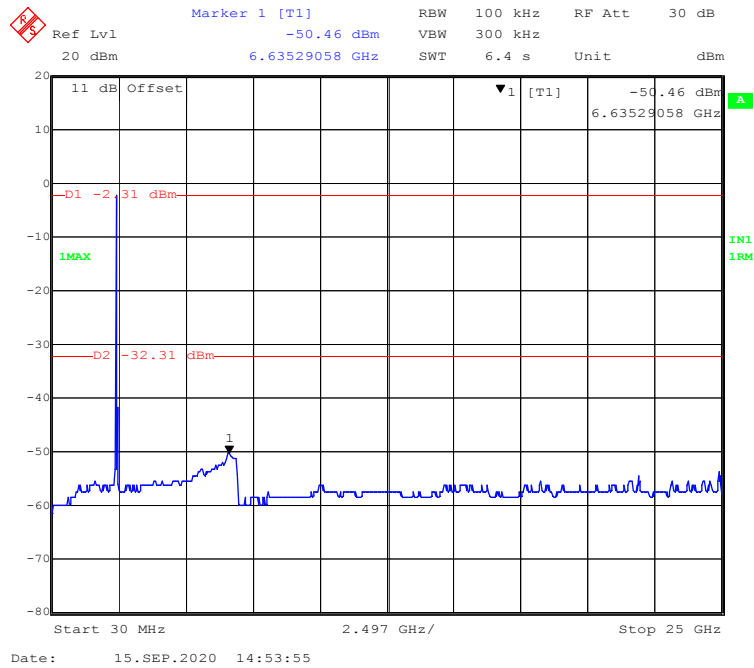
Chain 0:802.11n-HT20 Mode Channel 6



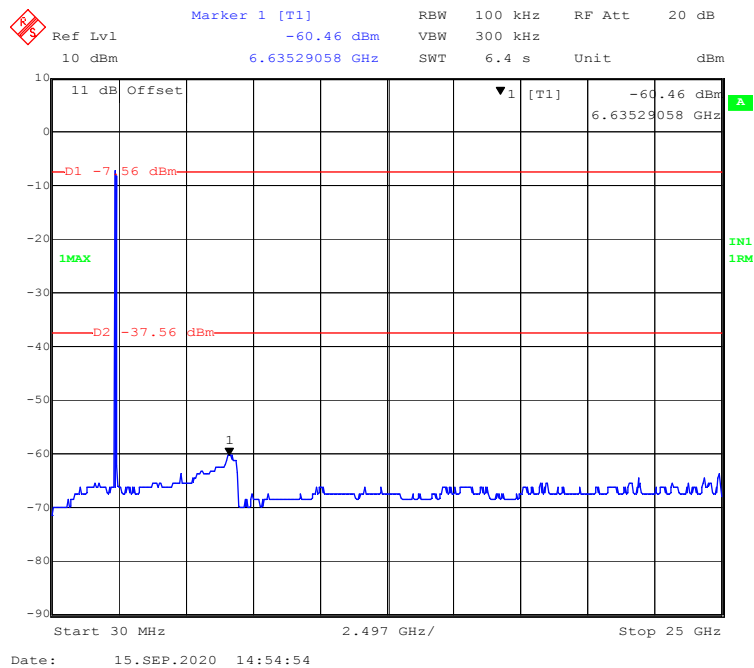
Chain 0:802.11n-HT20 Mode Channel 10



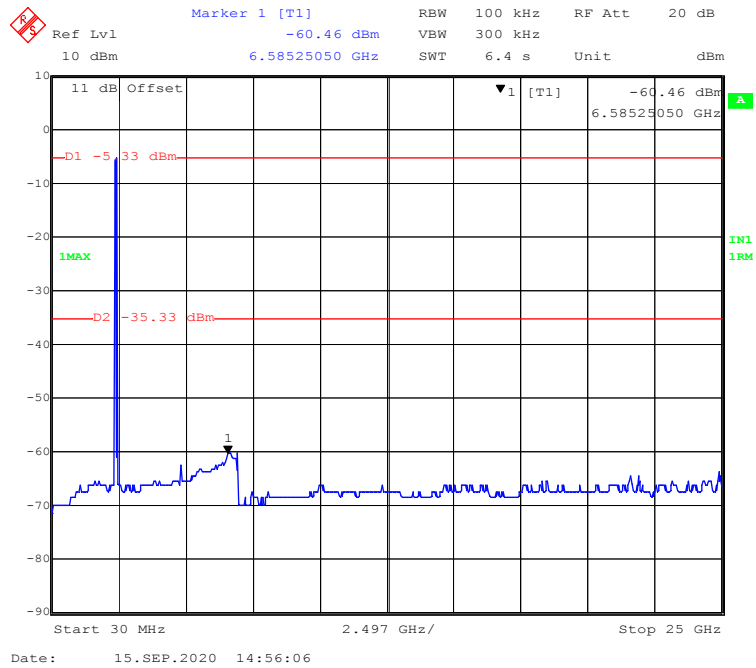
Chain 0:802.11n-HT20 Mode Channel 11



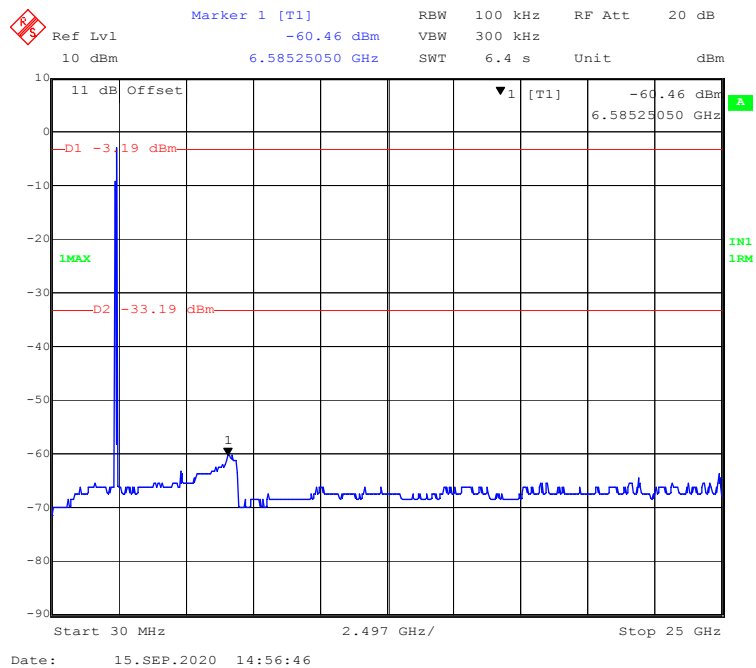
Chain 0:802.11n-HT40 Mode Channel 3



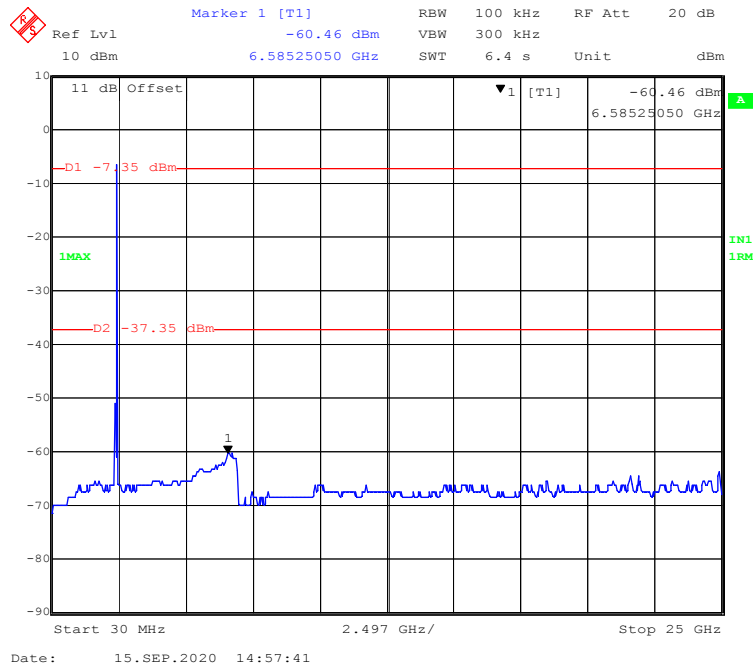
Chain 0:802.11n-HT40 Mode Channel 4



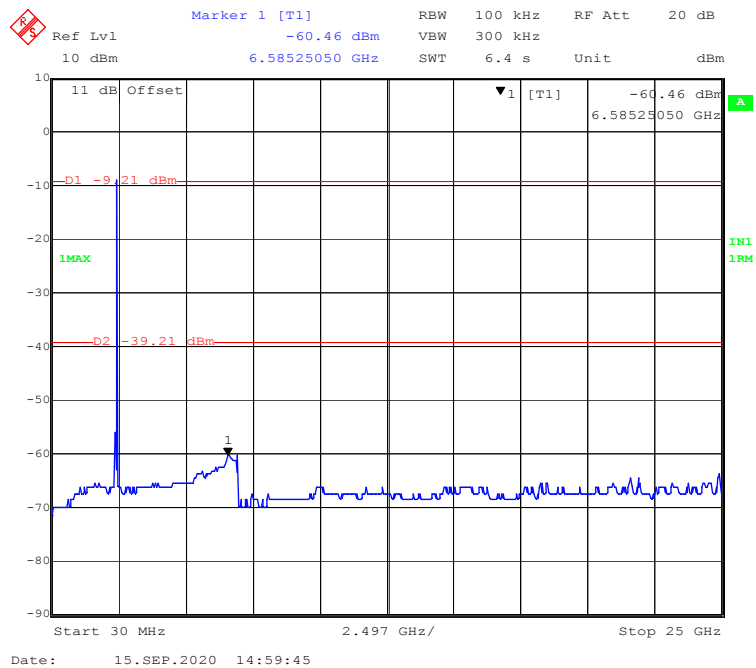
Chain 0:802.11n-HT40 Mode Channel 6



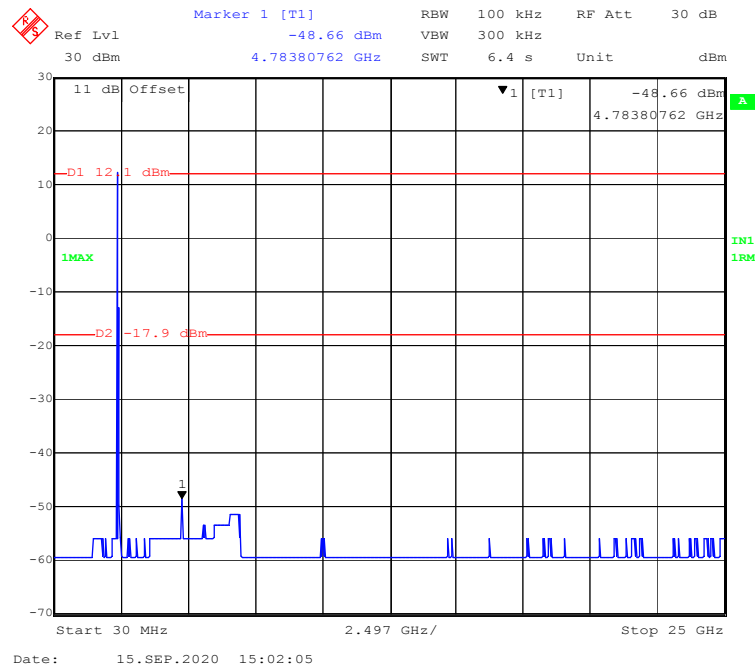
Chain 0:802.11n-HT40 Mode Channel 8



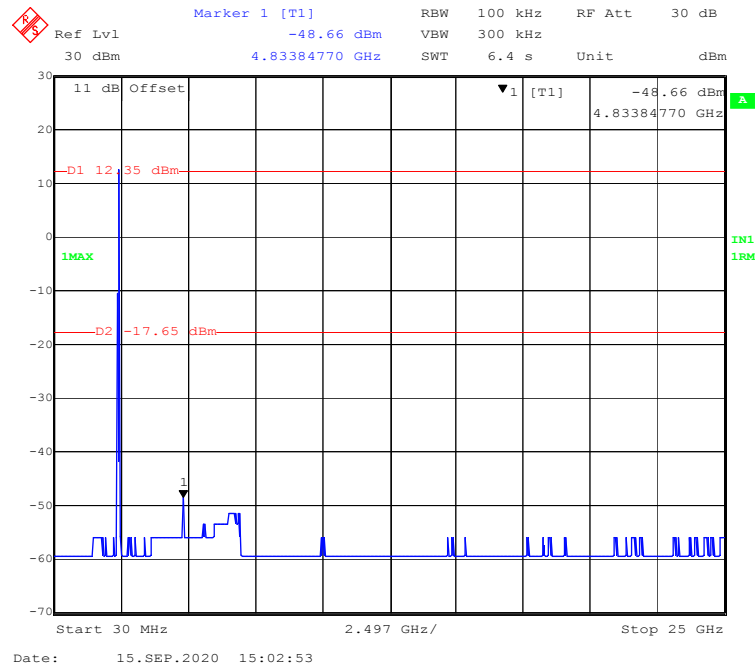
Chain 0:802.11n-HT40 Mode Channel 9



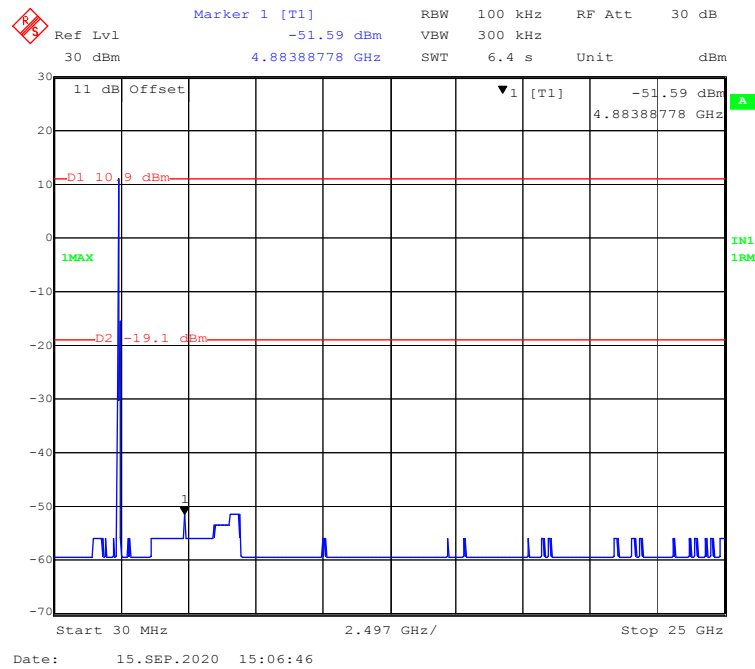
Chain 1:802.11b Mode Channel 1



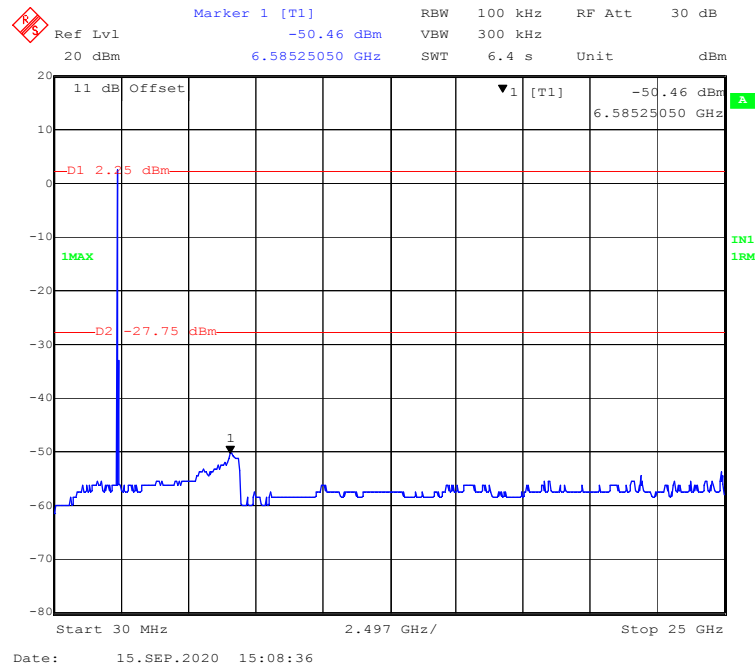
Chain 1:802.11b Mode Channel 6



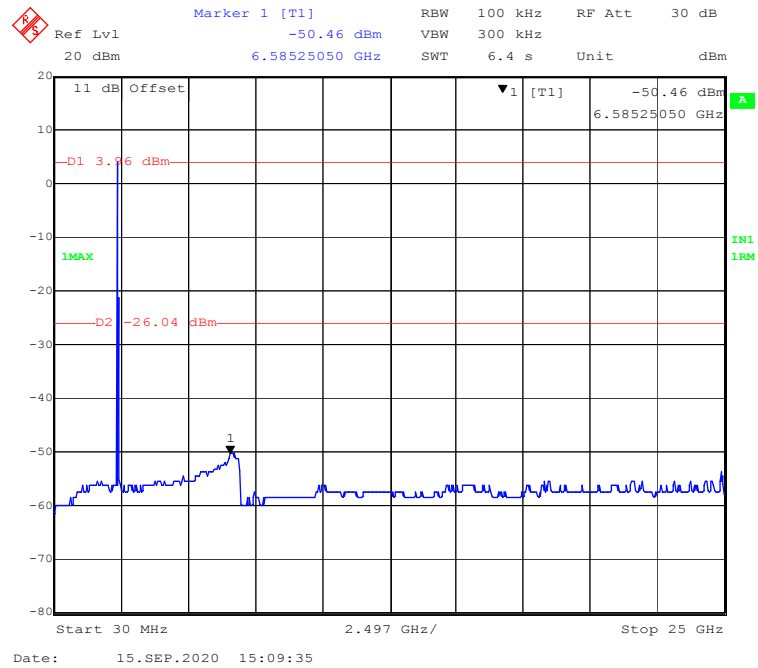
Chain 1:802.11b Mode Channel 11



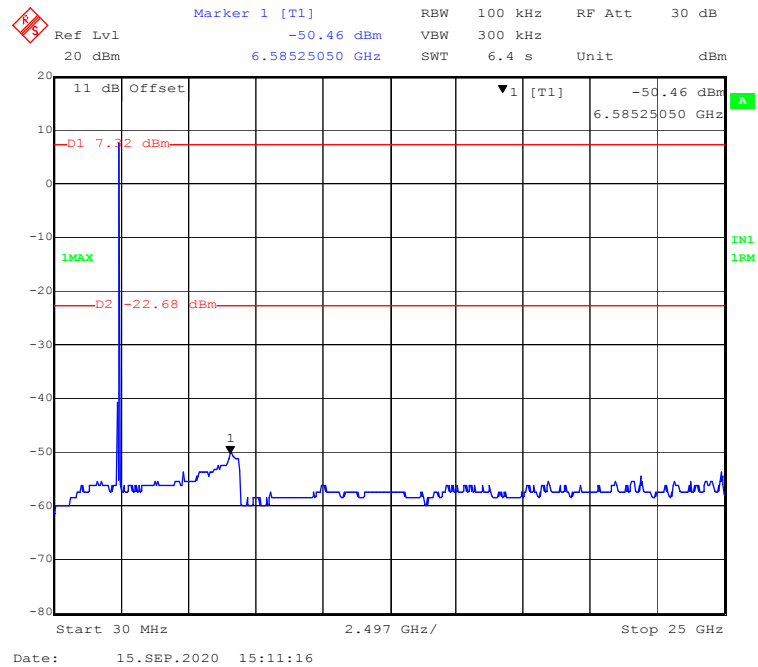
Chain 1:802.11g Mode Channel 1



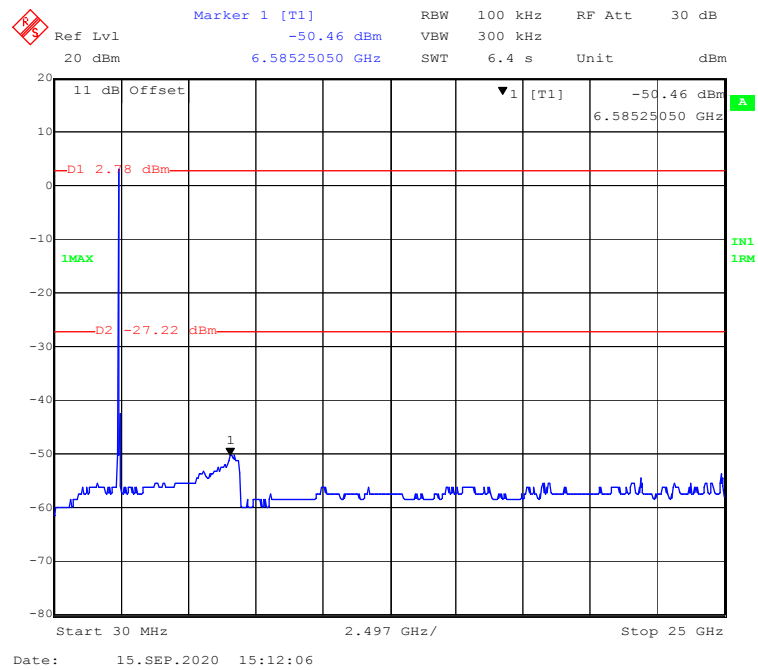
Chain 1:802.11g Mode Channel 2



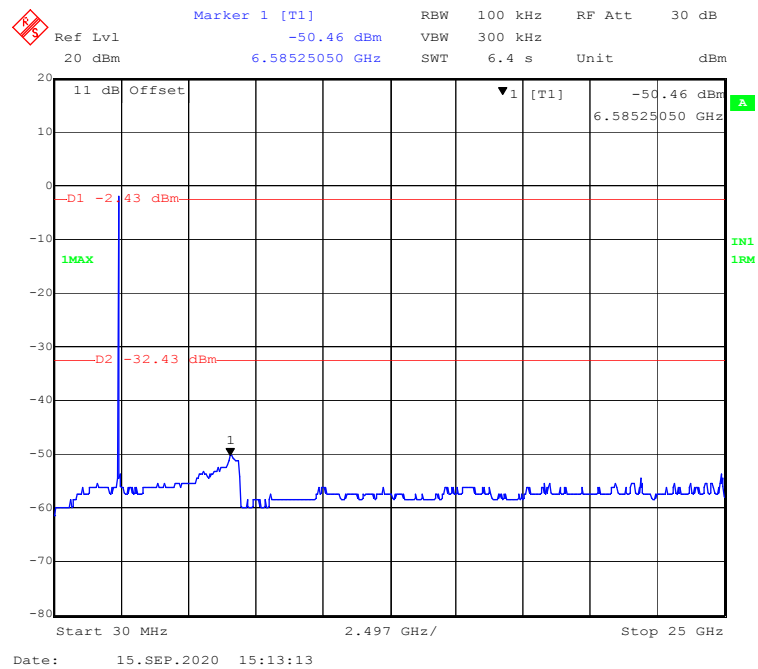
Chain 1:802.11g Mode Channel 6



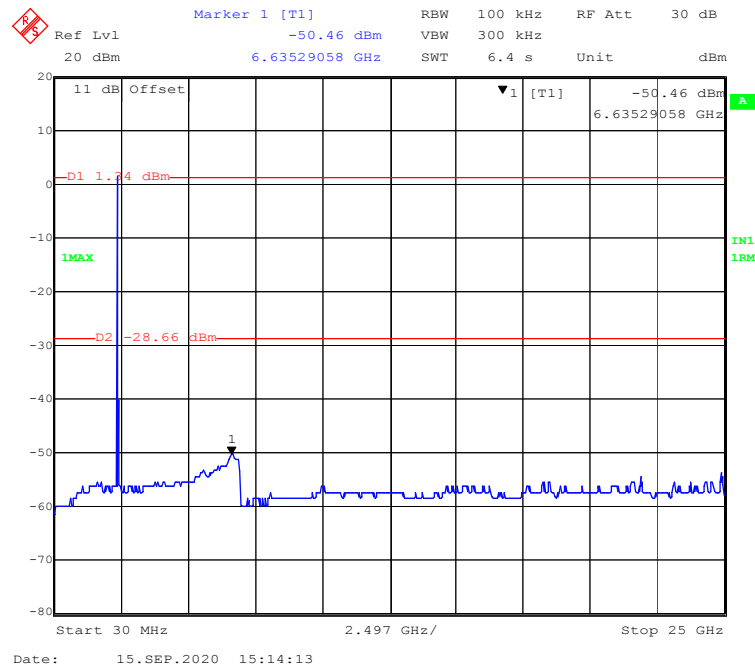
Chain 1:802.11g Mode Channel 10



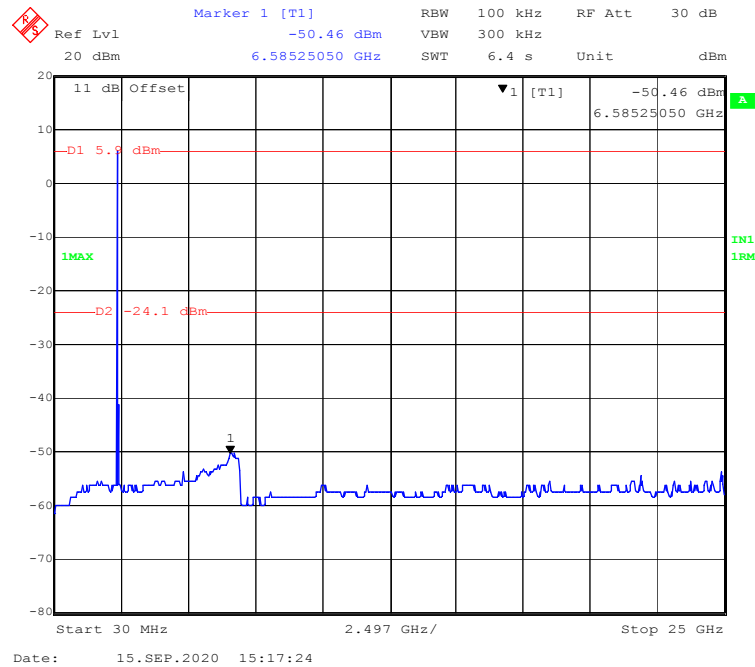
Chain 1:802.11g Mode Channel 11



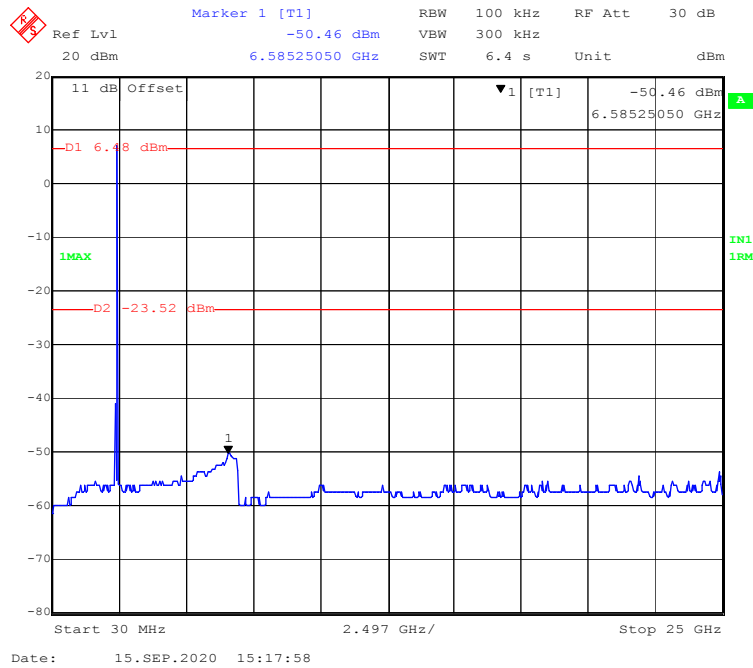
Chain 1:802.11n-HT20 Mode Channel 1



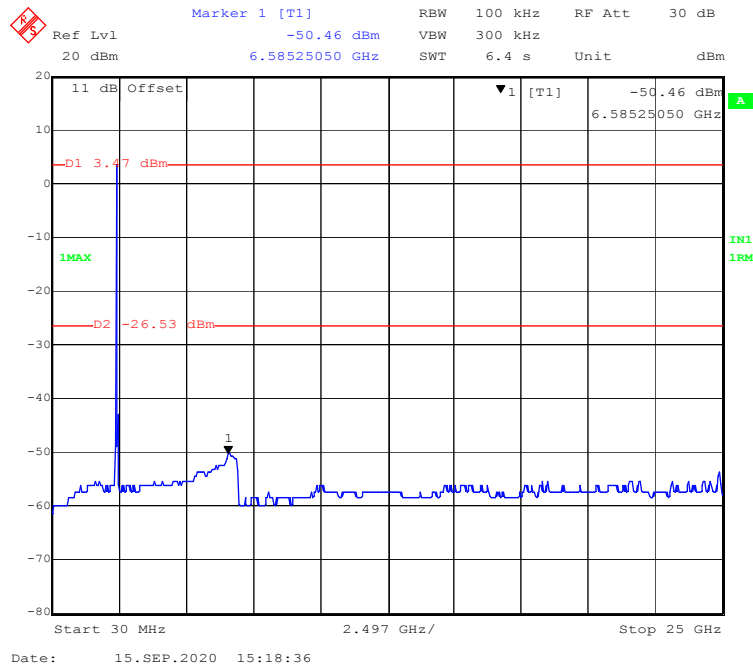
Chain 1:802.11n-HT20 Mode Channel 2



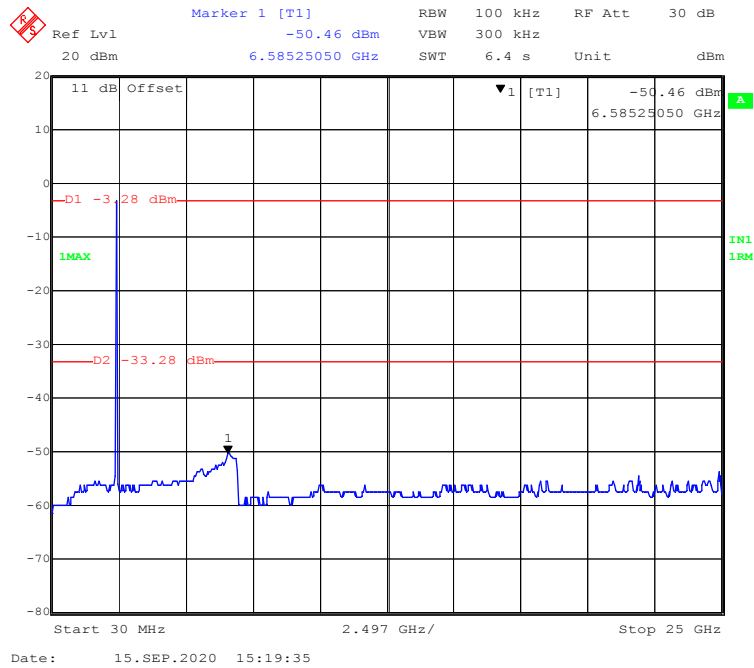
Chain 1:802.11n-HT20 Mode Channel 6



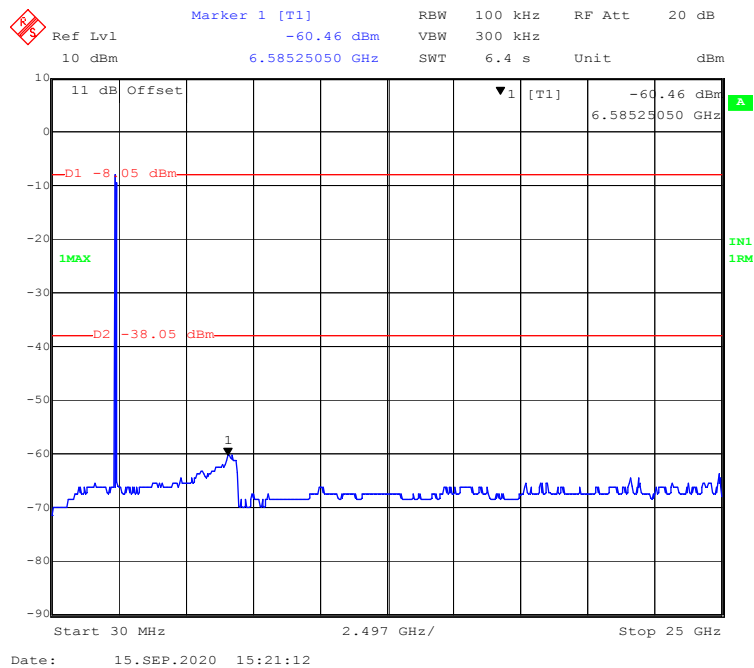
Chain 1:802.11n-HT20 Mode Channel 10



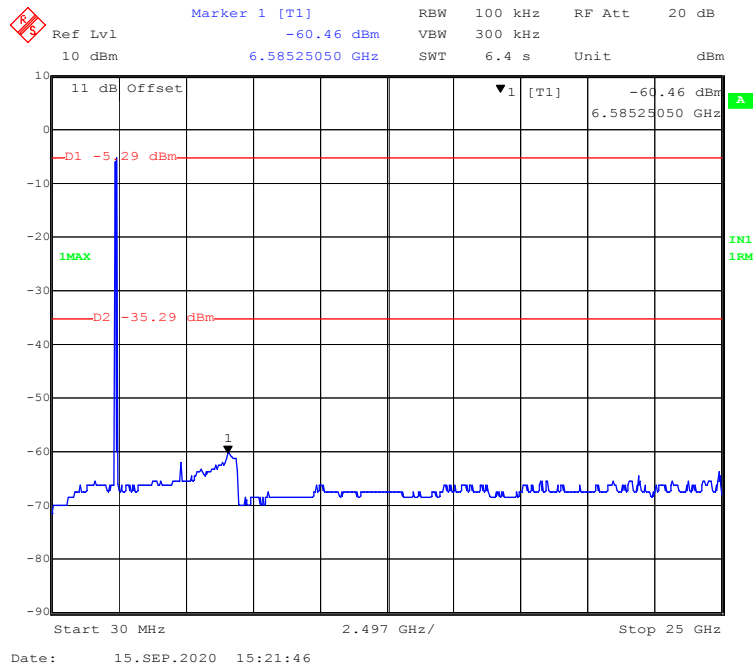
Chain 1:802.11n-HT20 Mode Channel 11



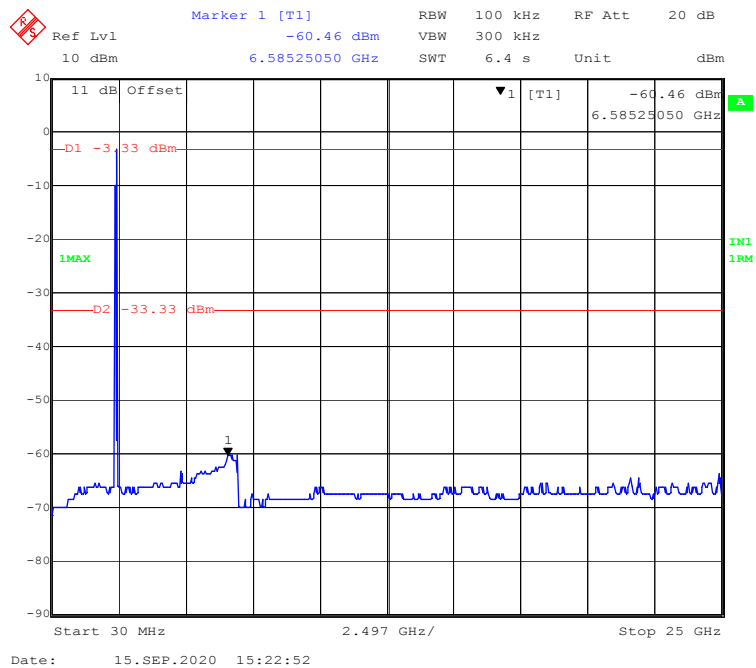
Chain 1:802.11n-HT40 Mode Channel 3



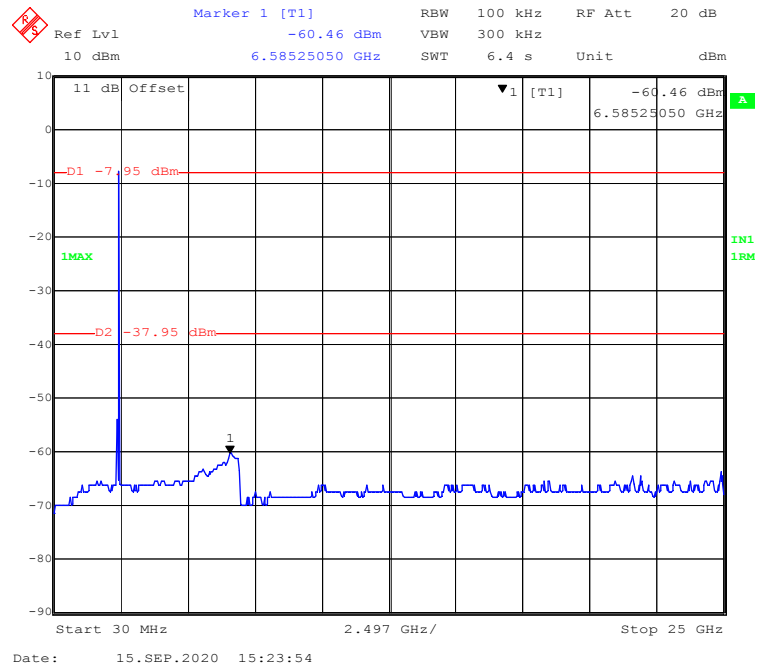
Chain 1:802.11n-HT40 Mode Channel 4



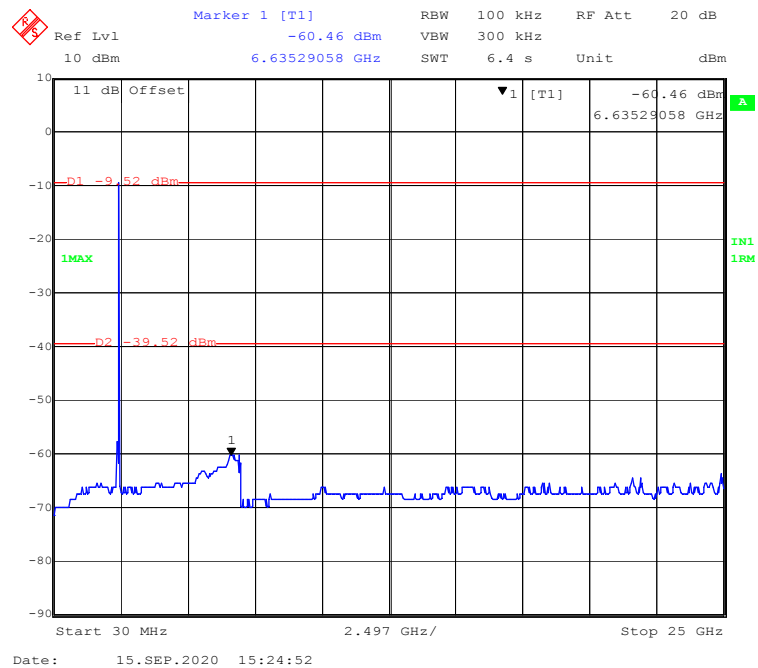
Chain 1:802.11n-HT40 Mode Channel 6



Chain 1:802.11n-HT40 Mode Channel 8



Chain 1:802.11n-HT40 Mode Channel 9



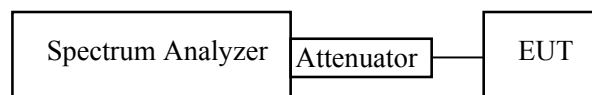
FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH**Applicable Standard**

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

Test Procedure

According to ANSI C63.10-2013 sub-clause 11.8.1

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

**Test Data****Environmental Conditions**

Temperature:	23.3~23.4°C
Relative Humidity:	48~50 %
ATM Pressure:	100.7~101.2kPa

The testing was performed by CK Huang from 2020-09-14 to 2020-09-15.

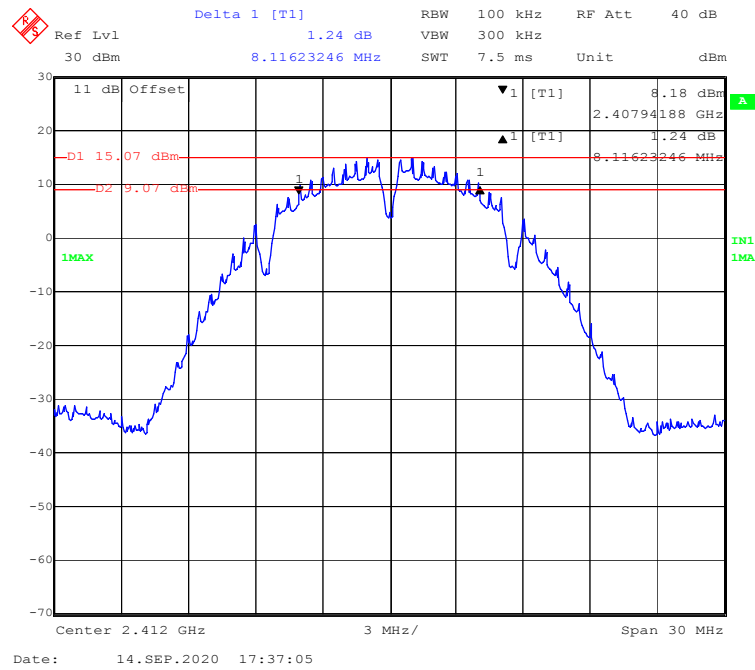
Test Result: Compliant.

*EUT operation mode: Transmitting***Chain 0:**

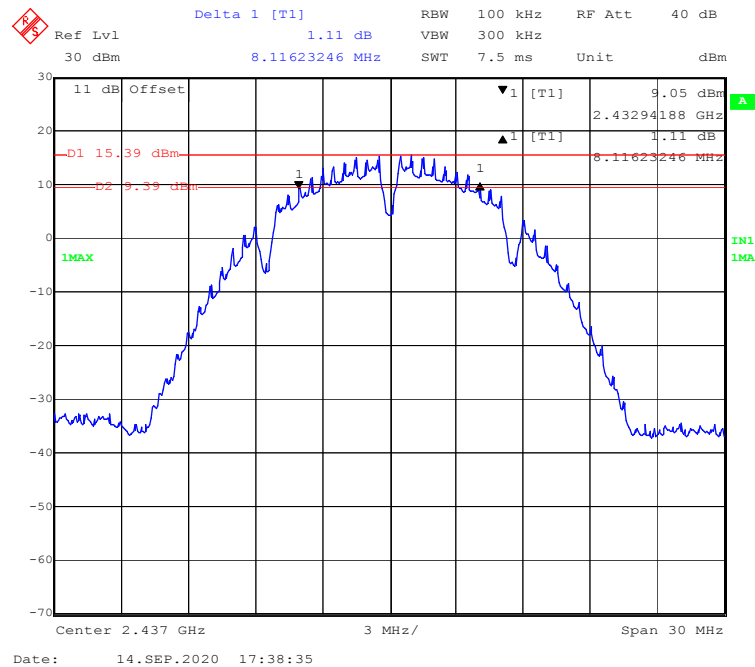
Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
802.11b Mode				
1	2412	8.12	12.75	≥ 0.5
6	2437	8.12	12.87	≥ 0.5
11	2462	8.60	12.99	≥ 0.5
802.11g Mode				
1	2412	16.05	16.47	≥ 0.5
2	2417	16.41	16.53	≥ 0.5
6	2437	16.35	16.59	≥ 0.5
10	2457	16.41	16.53	≥ 0.5
11	2462	16.35	16.53	≥ 0.5
802.11n-HT20 Mode				
1	2412	17.31	17.62	≥ 0.5
2	2417	17.49	17.74	≥ 0.5
6	2437	17.56	17.68	≥ 0.5
10	2457	17.37	17.68	≥ 0.5
11	2462	17.62	17.68	≥ 0.5
802.11n-HT40 Mode				
3	2422	35.59	35.95	≥ 0.5
4	2427	35.71	35.95	≥ 0.5
6	2437	35.47	35.83	≥ 0.5
8	2447	35.35	35.83	≥ 0.5
9	2452	35.47	35.95	≥ 0.5

6 dB Emission Bandwidth:

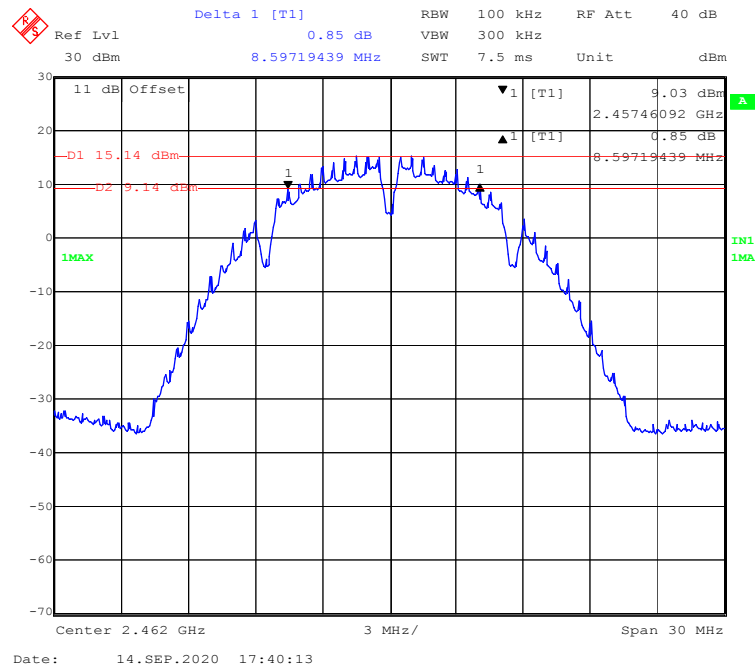
802.11b Mode Channel 1



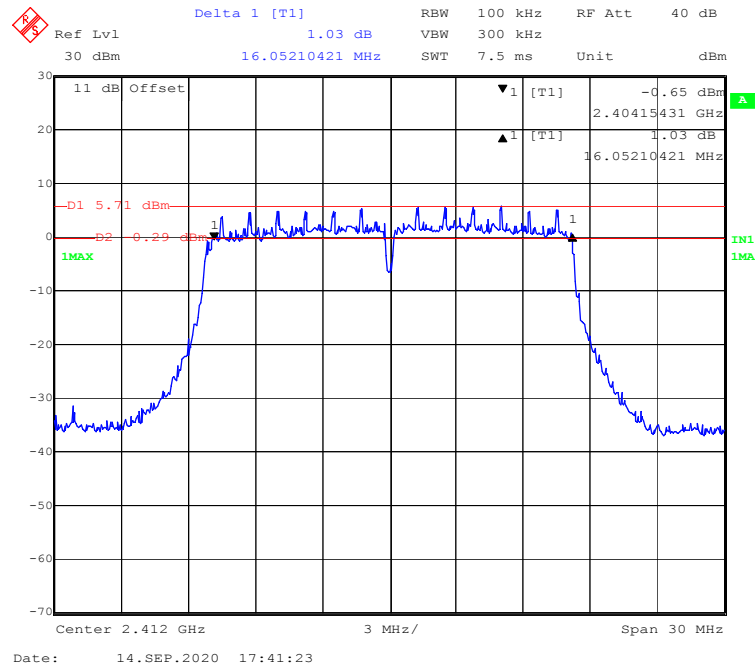
802.11b Mode Channel 6



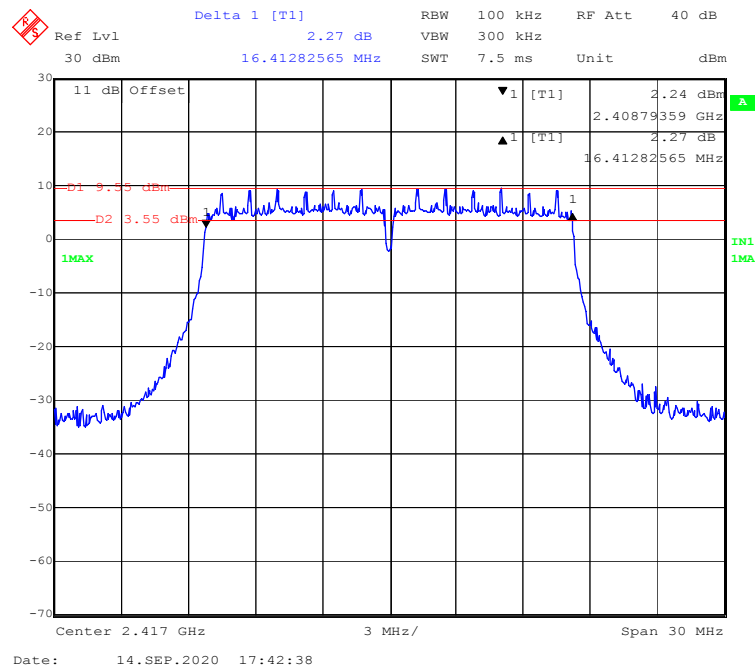
802.11b Mode Channel 11



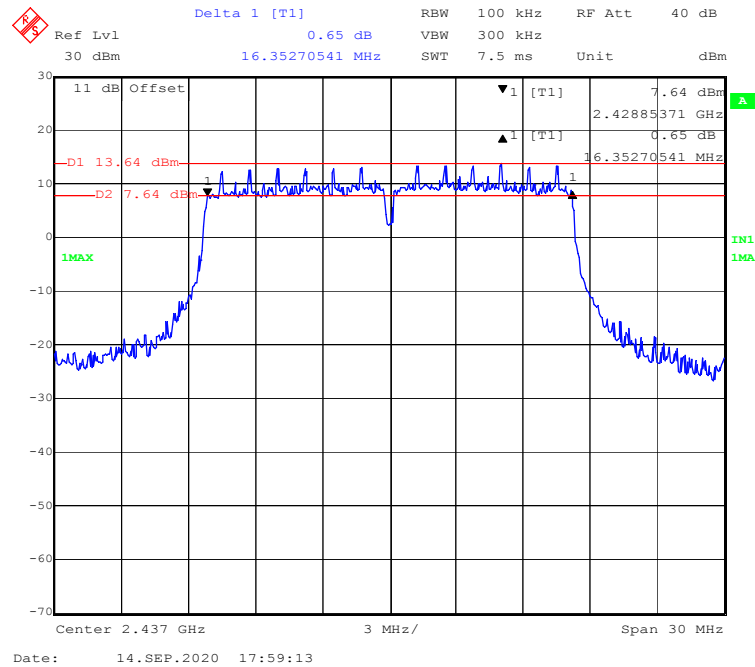
802.11g Mode Channel 1



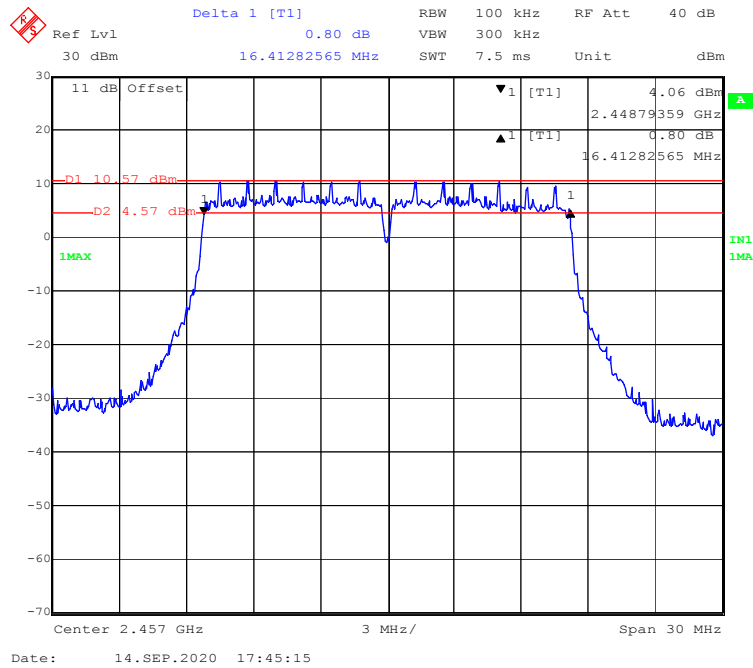
802.11g Mode Channel 2



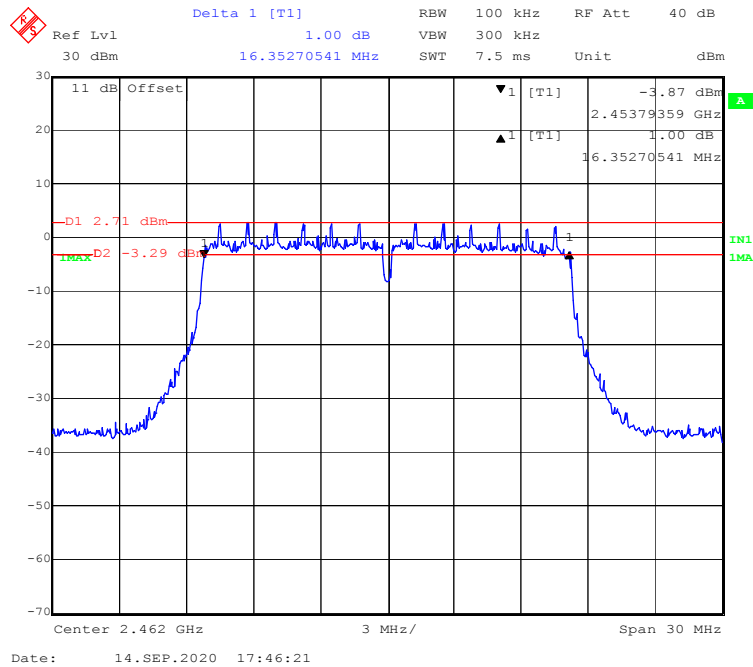
802.11g Mode Channel 6



802.11g Mode Channel 10



802.11g Mode Channel 11



Delta 1 [T1] 0.13 dB

Ref Lvl 30 dBm

17.31462926 MHz

RBW 100 kHz

VBW 300 kHz

SWT 7.5 ms

RF Att 40 dB

Unit dBm

11 dB Offset

▼ 1 [T1] 0.80 dBm

▲ 1 [T1] 0.13 dB

17.31462926 MHz

D1 6.65 dBm

D2 0.65 dBm

1MAX

Center 2.412 GHz

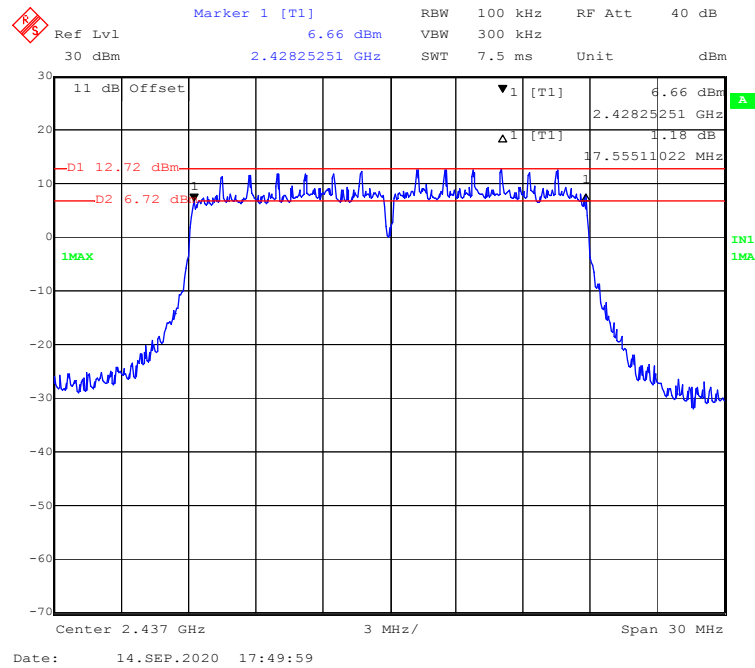
3 MHz/

Span 30 MHz

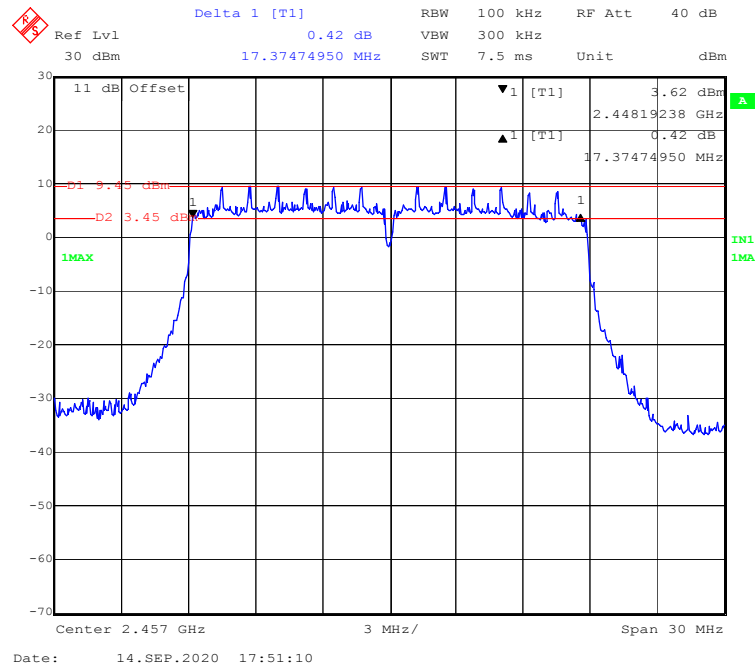
Date: 14.SEP.2020 17:47:39

The screenshot displays a spectrum analyzer interface. At the top, various settings are listed: Ref Lvl (30 dBm), Marker 1 [T1] (5.53 dBm), RBW (100 kHz), RF Att (40 dB), Span (30 MHz), Center (2.417 GHz), and SWT (7.5 ms). The main plot area shows a blue trace representing the signal spectrum. Two horizontal red lines indicate power levels: D1 at 11.41 dBm and D2 at 5.41 dBm. A green label '1MAX' points to the peak of the signal. On the right side, there are additional measurements: 5.53 dBm, 2.40825251 GHz, 0.08 dB, and 17.49498998 MHz. The bottom status bar shows the date and time: Date: 14.SEP.2020 17:48:55.

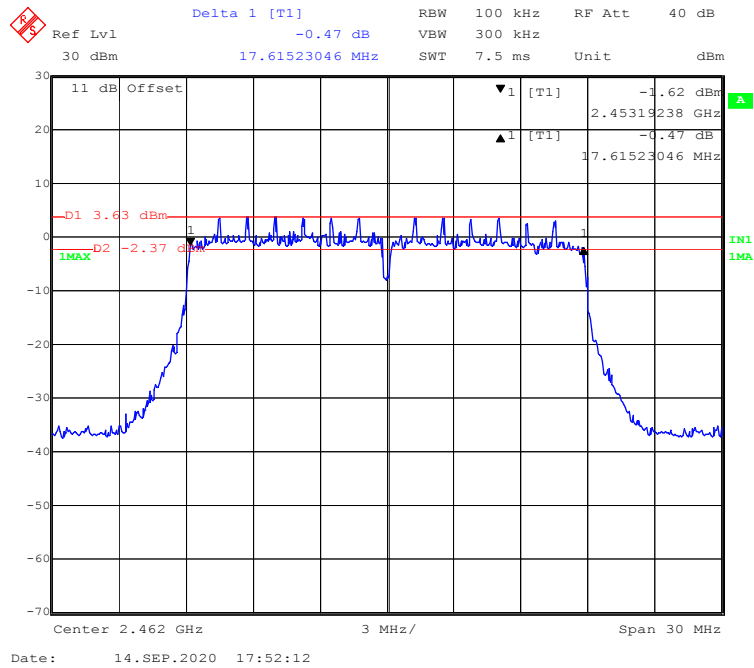
802.11n-HT20 Mode Channel 6



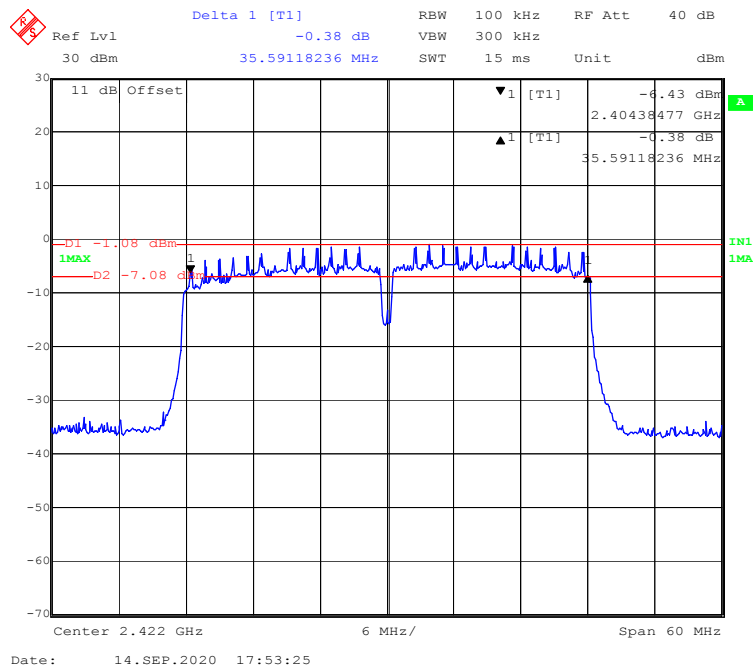
802.11n-HT20 Mode Channel 10



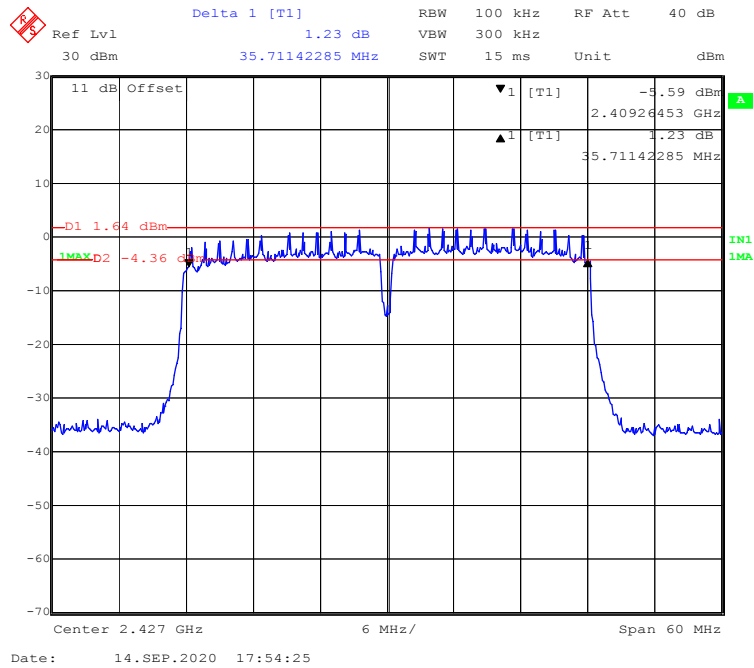
802.11n-HT20 Mode Channel 11



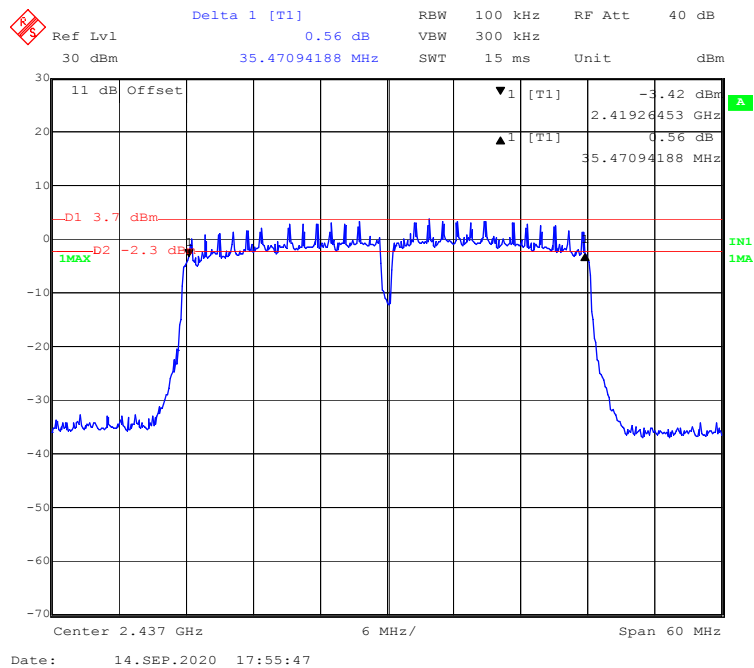
802.11n-HT40 Mode Channel 3



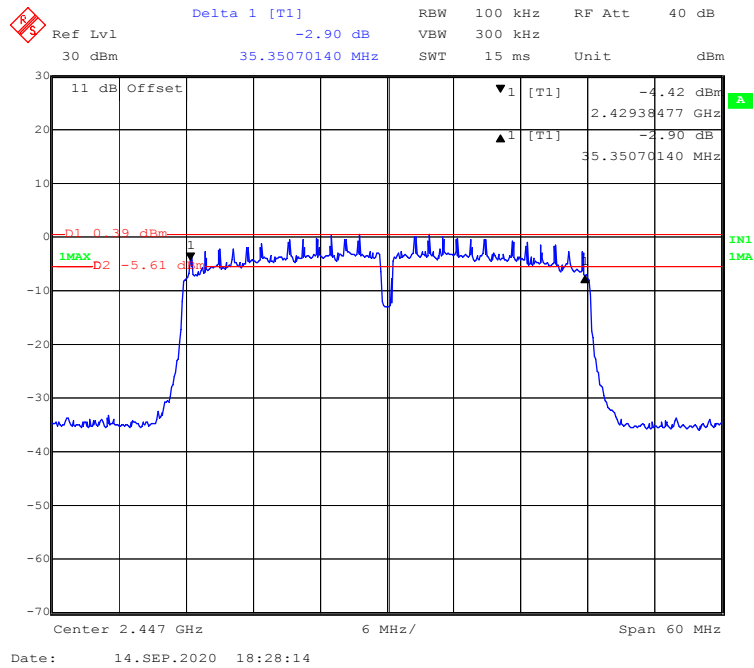
802.11n-HT40 Mode Channel 4



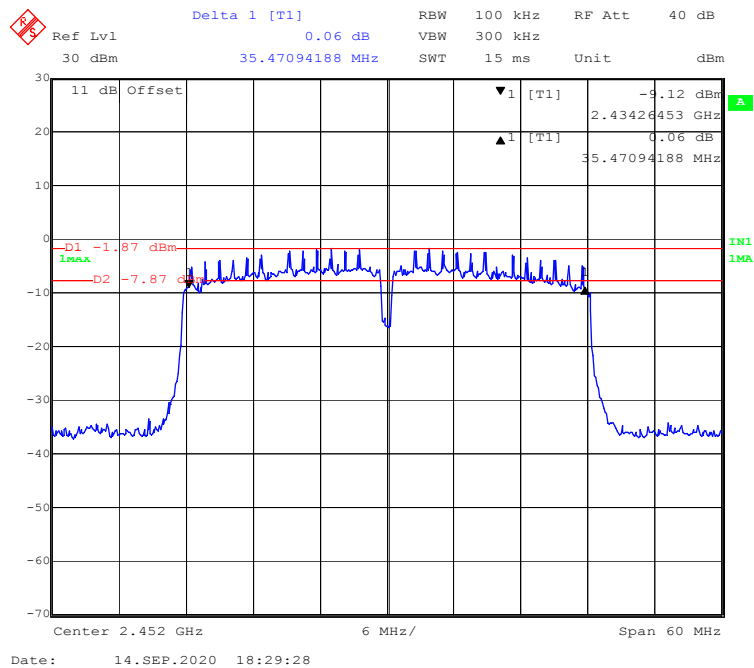
802.11n-HT40 Mode Channel 6



802.11n-HT40 Mode Channel 8

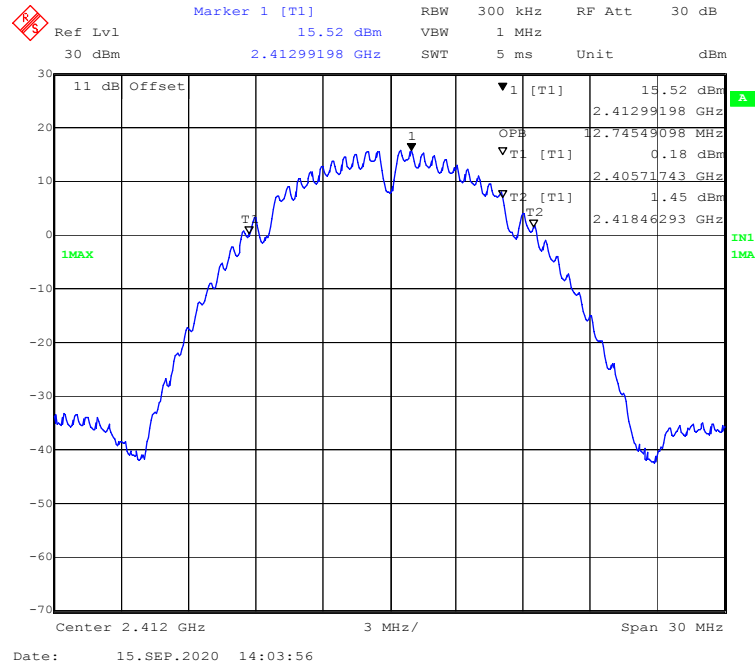


802.11n-HT40 Mode Channel 9

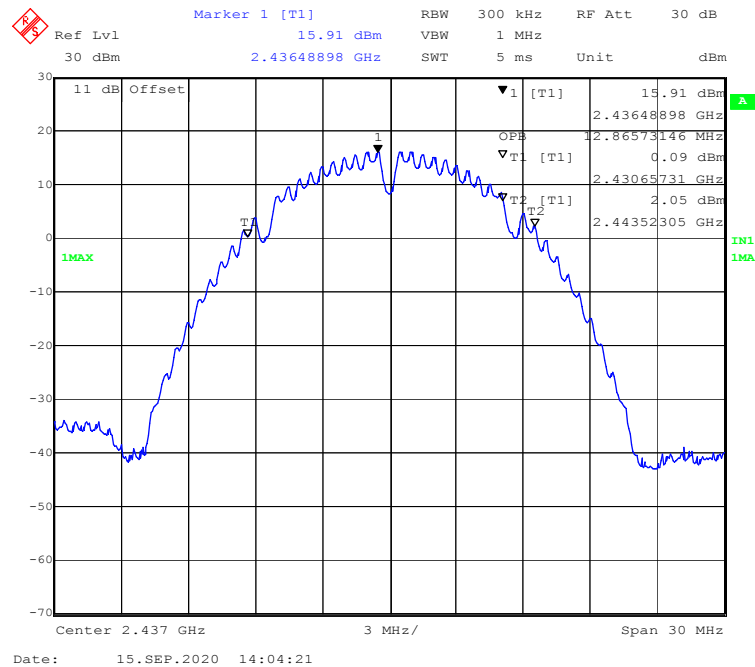


99 dB Emission Bandwidth:

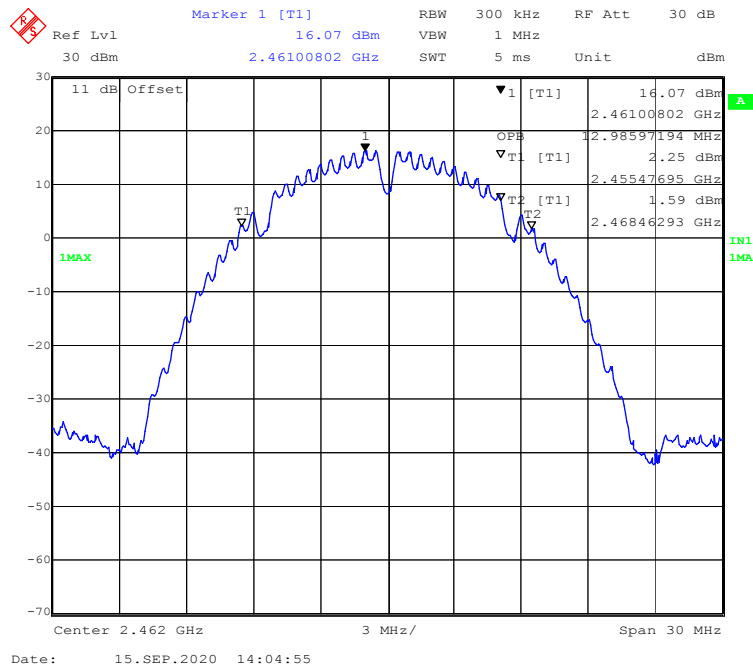
802.11b Mode Channel 1



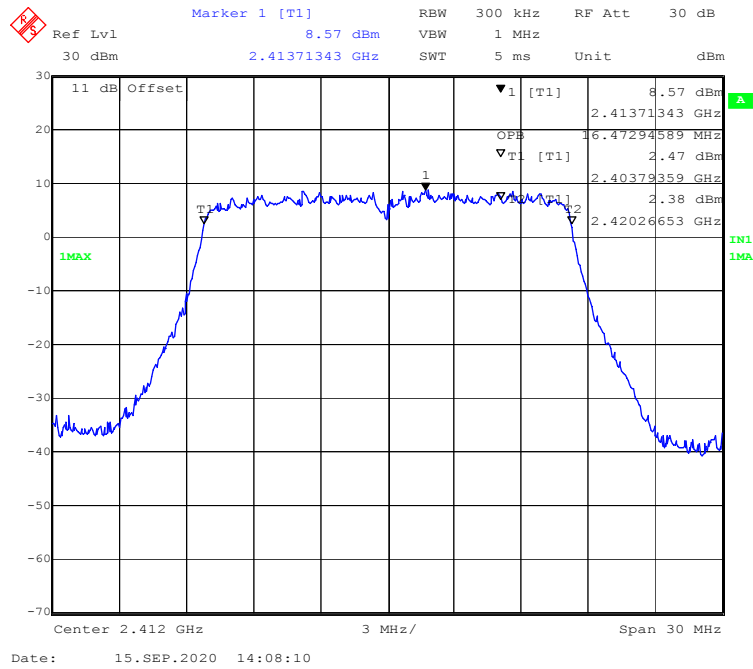
802.11b Mode Channel 6



802.11b Mode Channel 11



802.11g Mode Channel 1

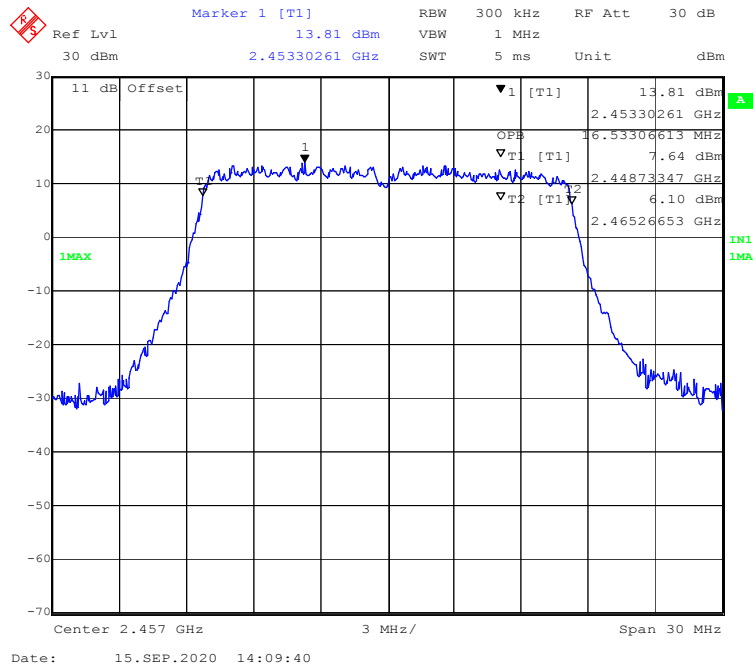


A spectrum analyzer screenshot showing a signal at 2.413 GHz. The plot displays a signal with a peak at 12.60 dBm. The x-axis represents frequency, ranging from 2.407 GHz to 2.425 GHz, with a center frequency of 2.417 GHz and a span of 30 MHz. The y-axis represents power, ranging from -70 dBm to 30 dBm. The plot includes a grid and various measurement markers.

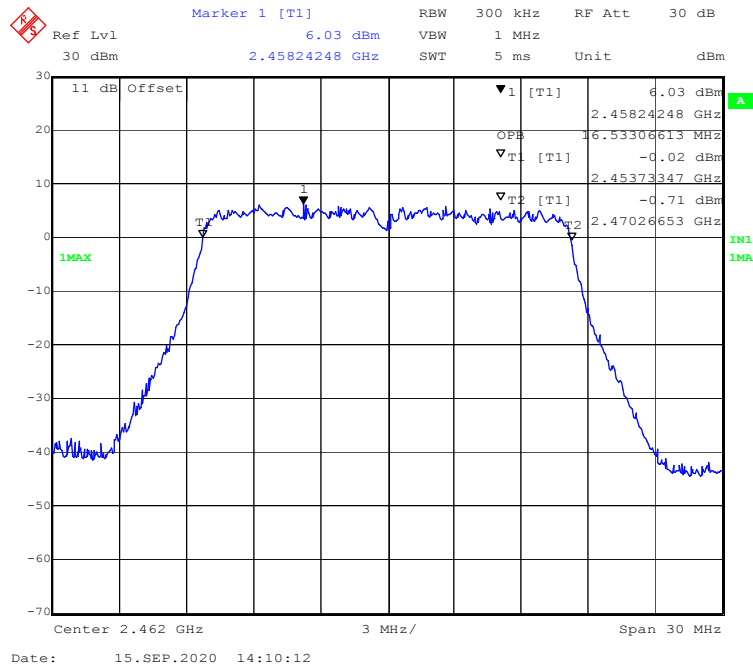
Measurement	Value
Ref Lvl	30 dBm
Marker 1 [T1]	12.60 dBm
RBW	300 kHz
RF Att	30 dB
VBW	1 MHz
SWT	5 ms
Unit	dBm
Center	2.417 GHz
Span	30 MHz
Date	15.SEP.2020 14:08:41

[illegible]

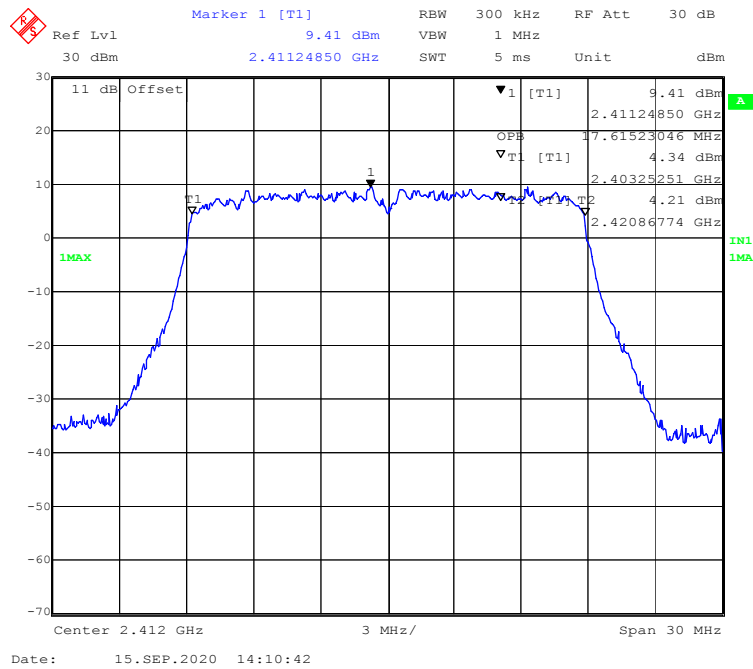
802.11g Mode Channel 10



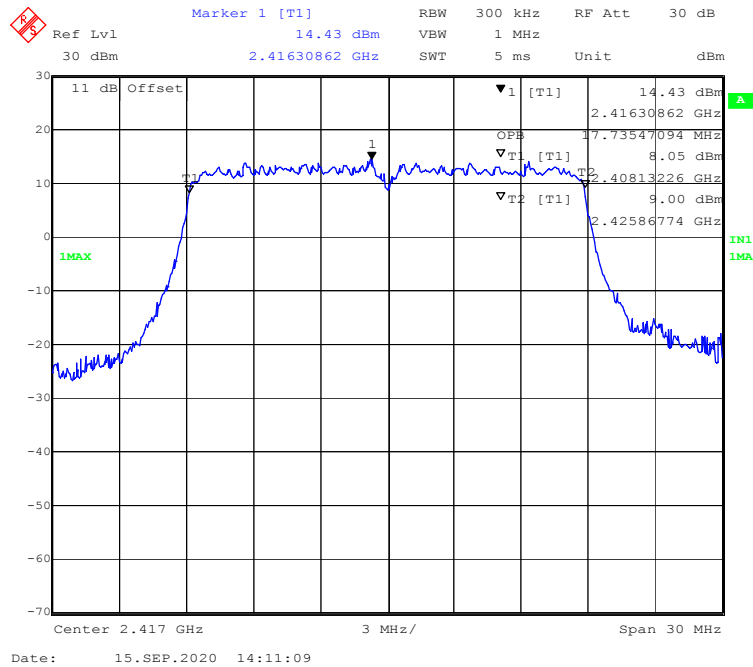
802.11g Mode Channel 11



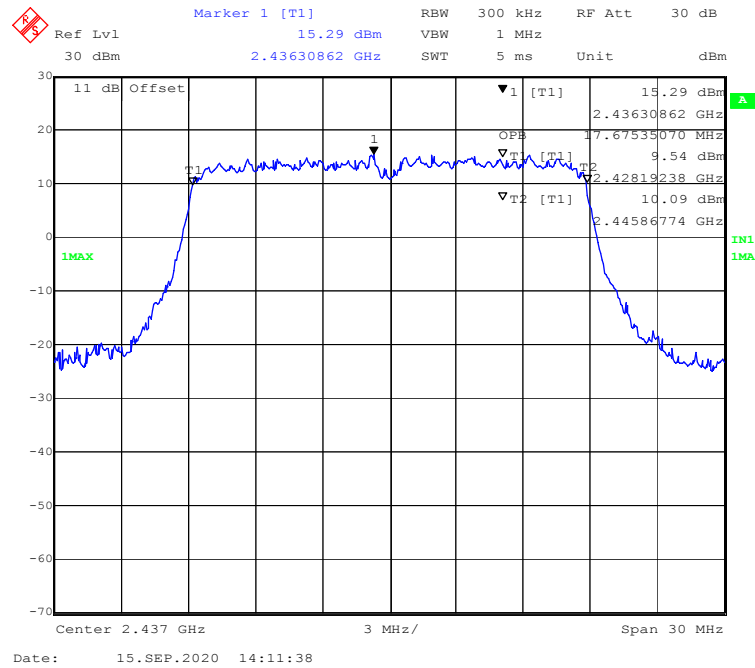
802.11n-HT20 Mode Channel 1



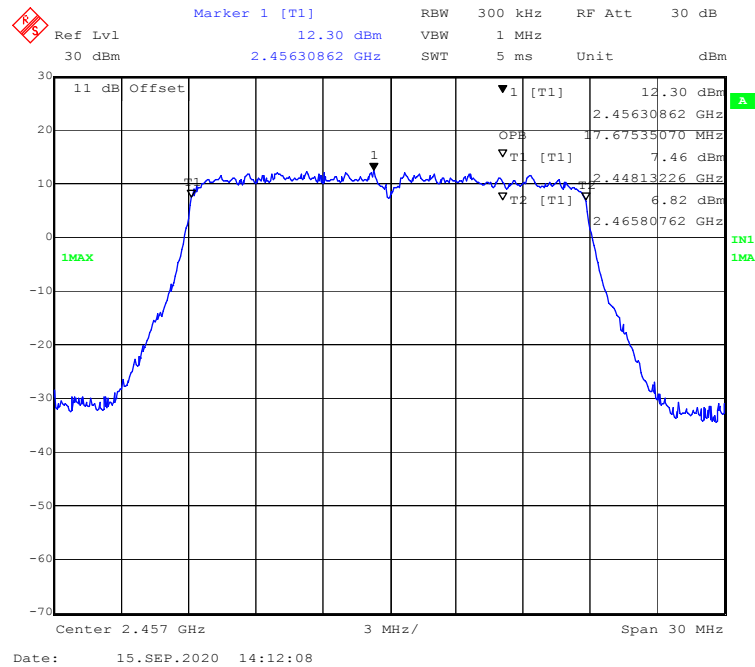
802.11n-HT20 Mode Channel 2



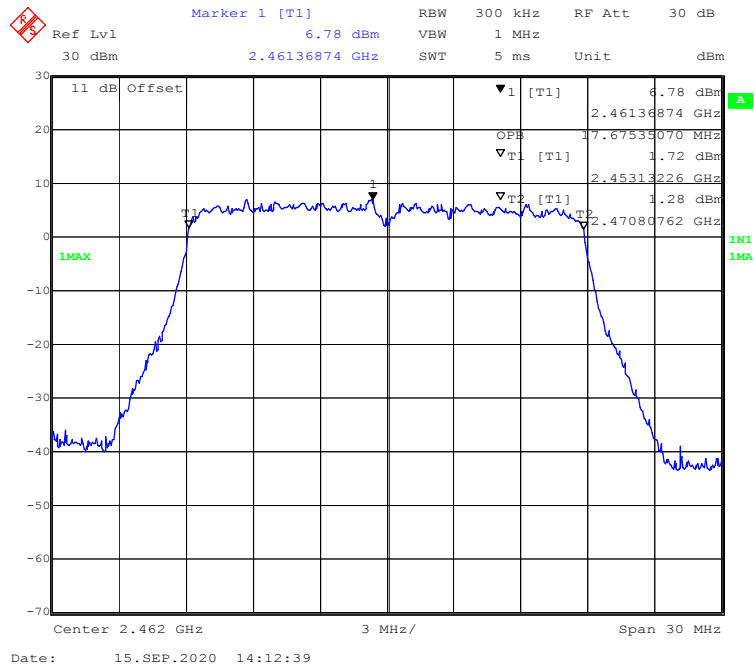
802.11n-HT20 Mode Channel 6



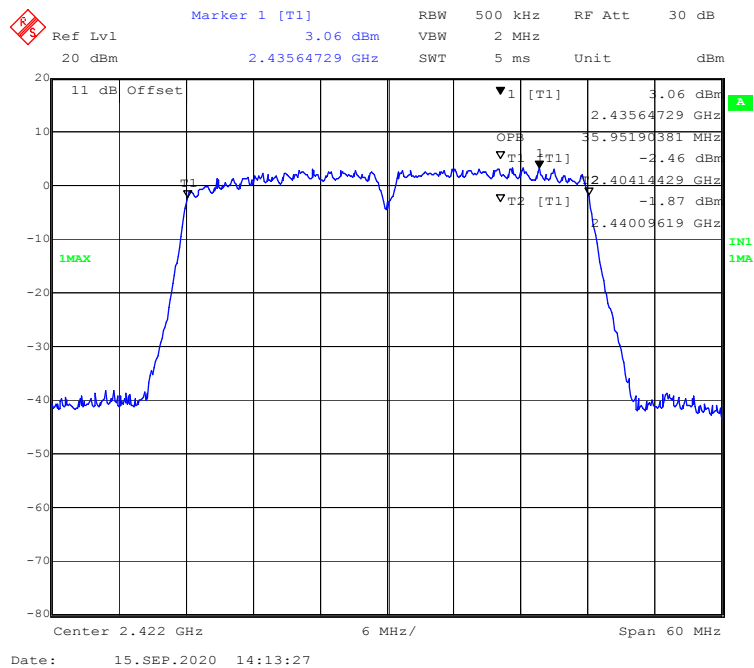
802.11n-HT20 Mode Channel 10



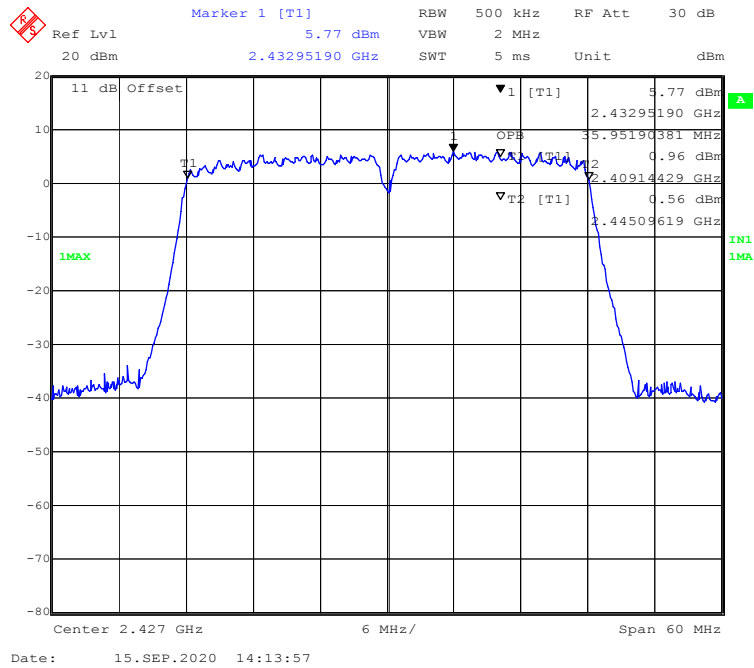
802.11n-HT20 Mode Channel 11



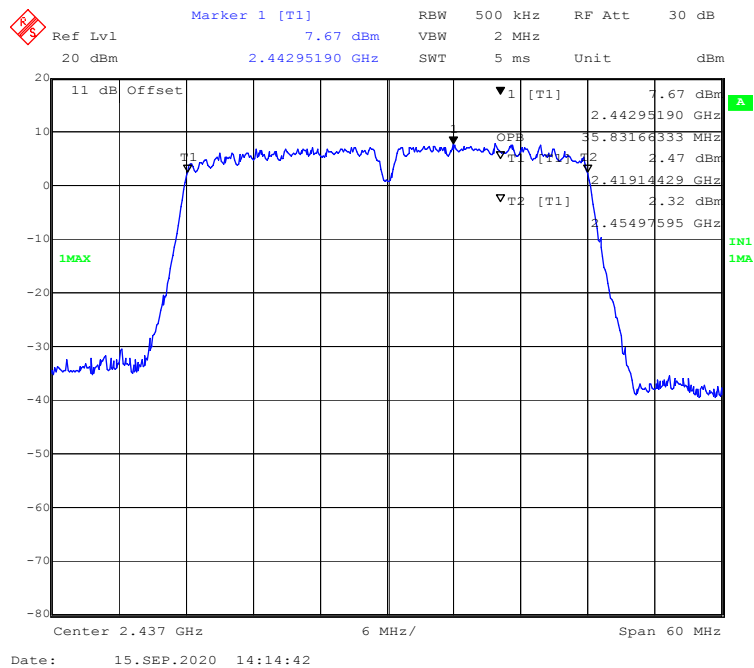
802.11n-HT40 Mode Channel 3



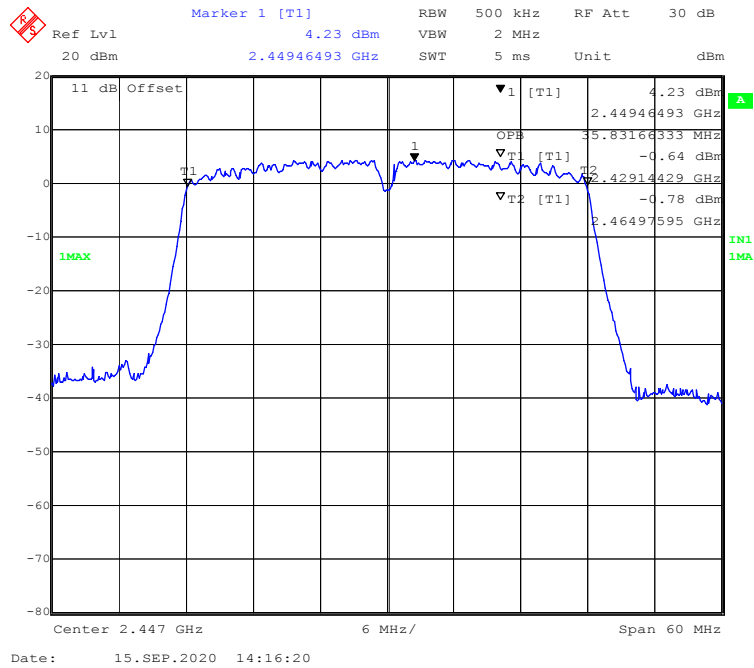
802.11n-HT40 Mode Channel 4



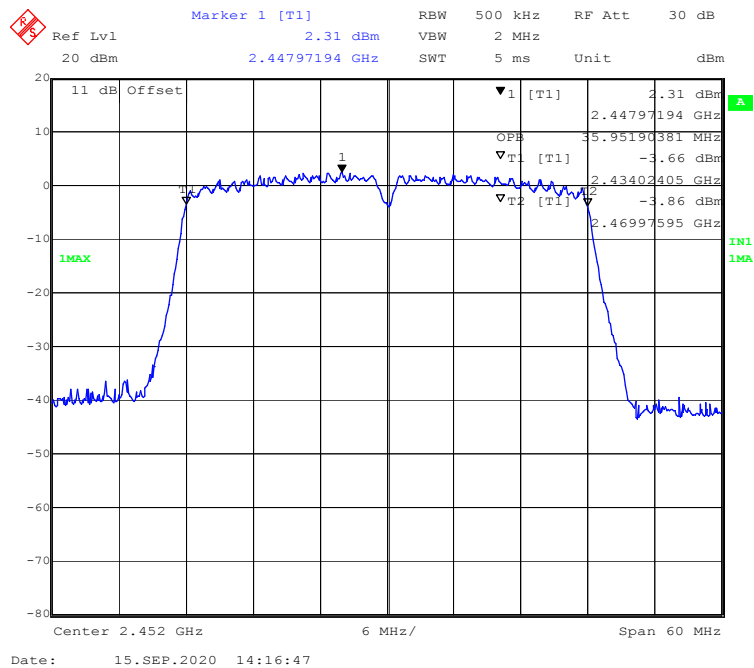
802.11n-HT40 Mode Channel 6



802.11n-HT40 Mode Channel 8



802.11n-HT40 Mode Channel 9

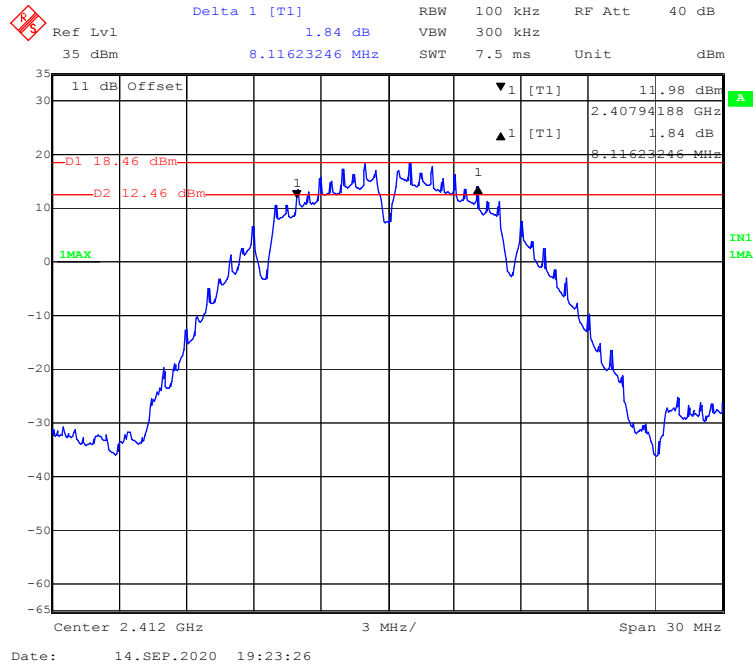


Chain 1:

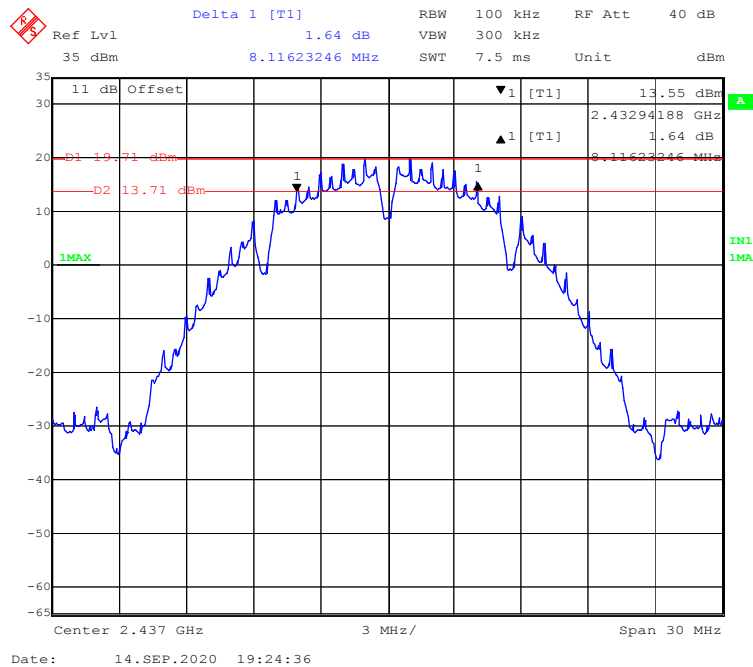
Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)	99% Bandwidth (MHz)	Limit (MHz)
802.11b Mode				
1	2412	8.12	13.05	≥ 0.5
6	2437	8.12	13.17	≥ 0.5
11	2462	8.12	13.11	≥ 0.5
802.11g Mode				
1	2412	15.87	16.47	≥ 0.5
2	2417	16.35	16.53	≥ 0.5
6	2437	16.05	16.83	≥ 0.5
10	2457	16.41	16.53	≥ 0.5
11	2462	16.41	16.53	≥ 0.5
802.11n-HT20 Mode				
1	2412	16.53	17.62	≥ 0.5
2	2417	17.37	17.68	≥ 0.5
6	2437	17.56	17.68	≥ 0.5
10	2457	17.62	17.68	≥ 0.5
11	2462	17.62	17.68	≥ 0.5
802.11n-HT40 Mode				
3	2422	35.59	35.83	≥ 0.5
4	2427	35.95	35.95	≥ 0.5
6	2437	35.35	35.95	≥ 0.5
8	2447	35.35	35.83	≥ 0.5
9	2452	35.35	35.83	≥ 0.5

6 dB Emission Bandwidth:

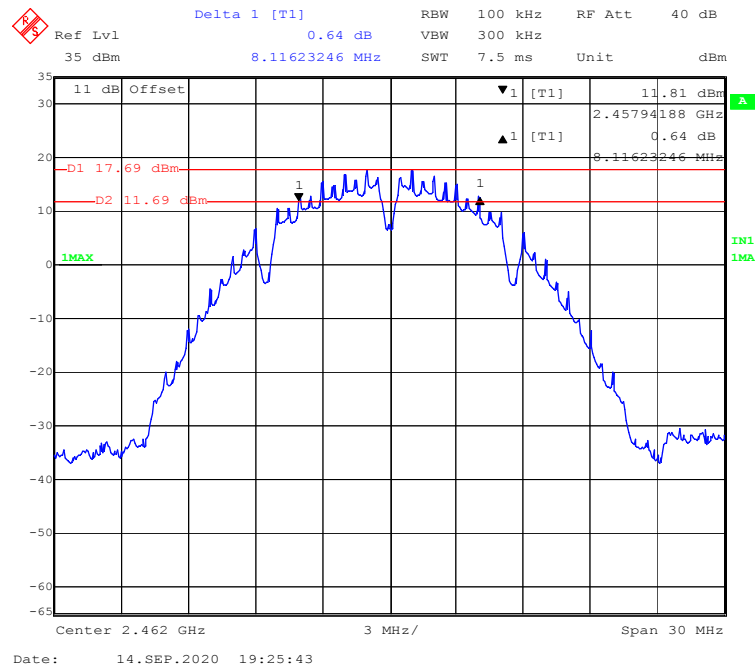
802.11b Mode Channel 1



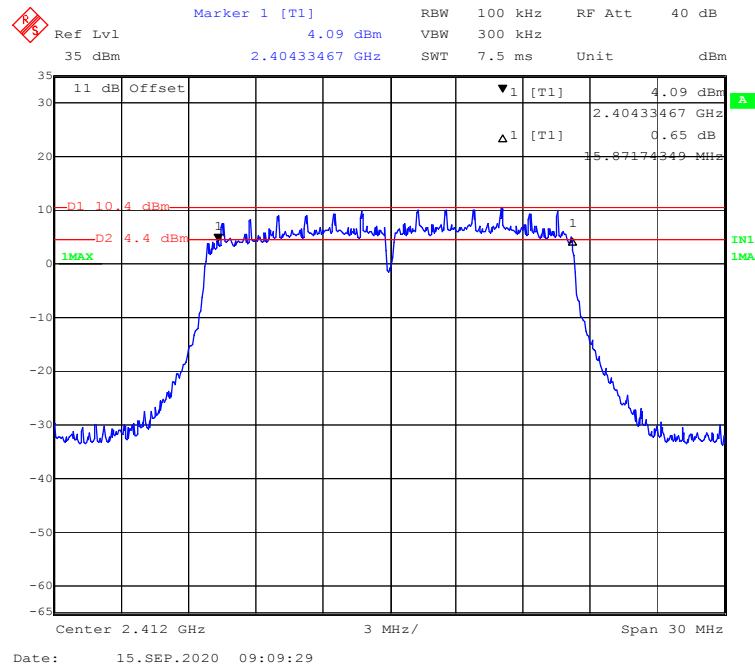
802.11b Mode Channel 6



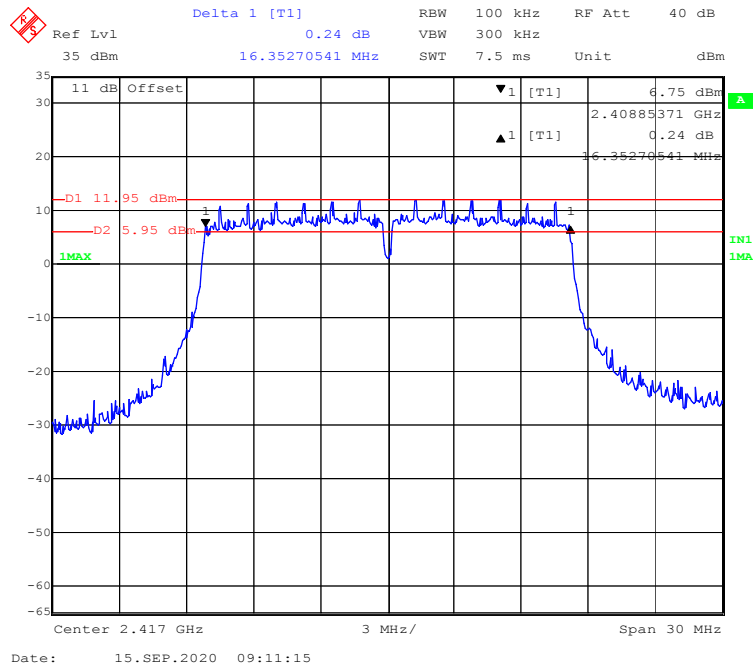
802.11b Mode Channel 11



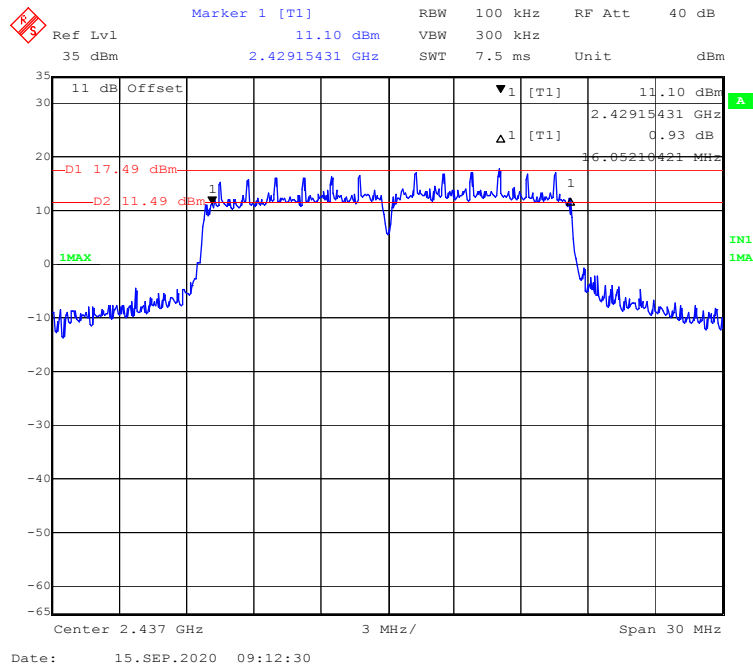
802.11g Mode Channel 1



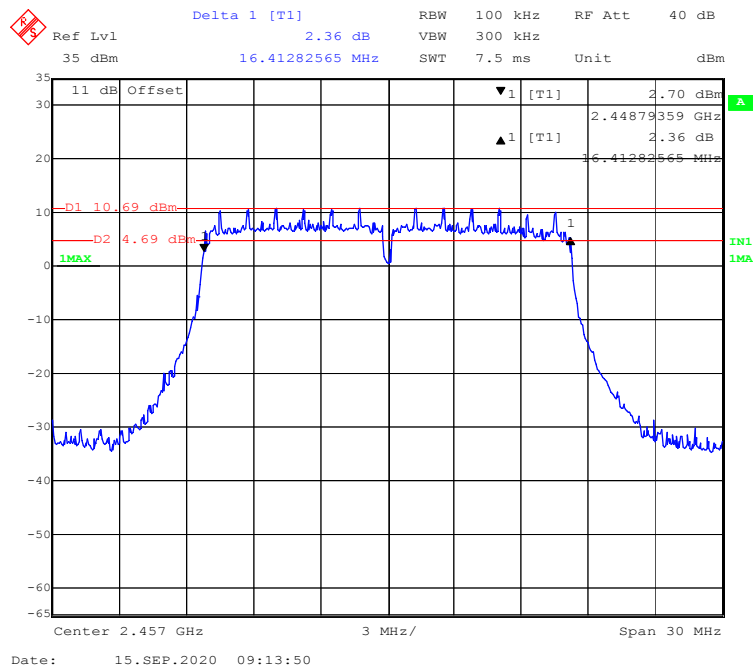
802.11g Mode Channel 2



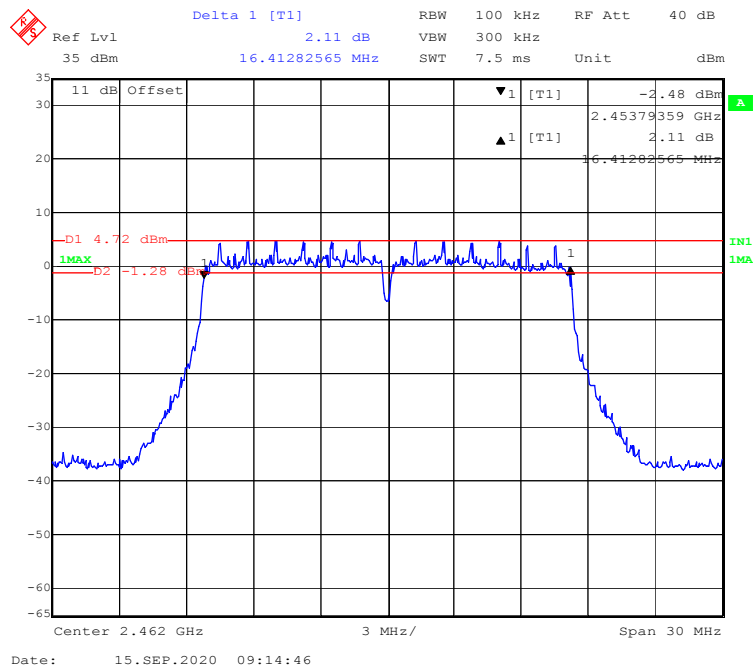
802.11g Mode Channel 6



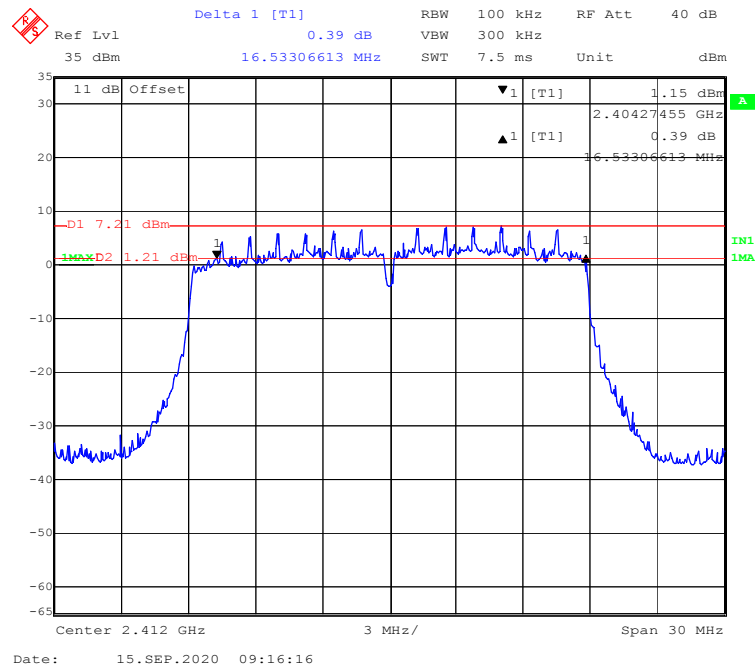
802.11g Mode Channel 10



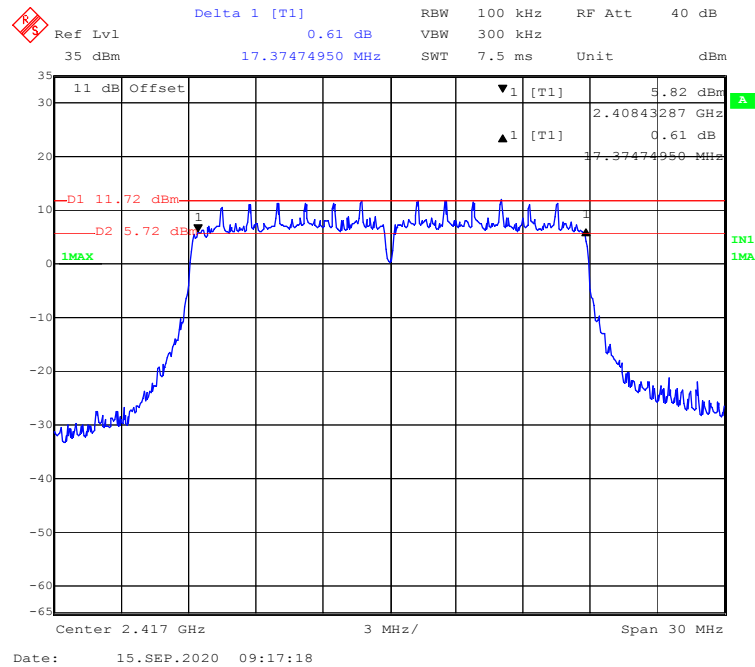
802.11g Mode Channel 11



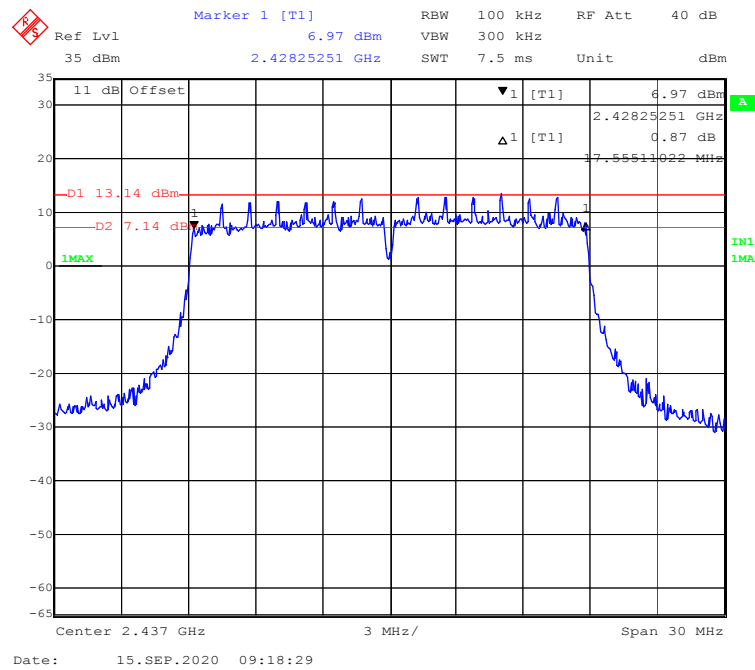
802.11n-HT20 Mode Channel 1



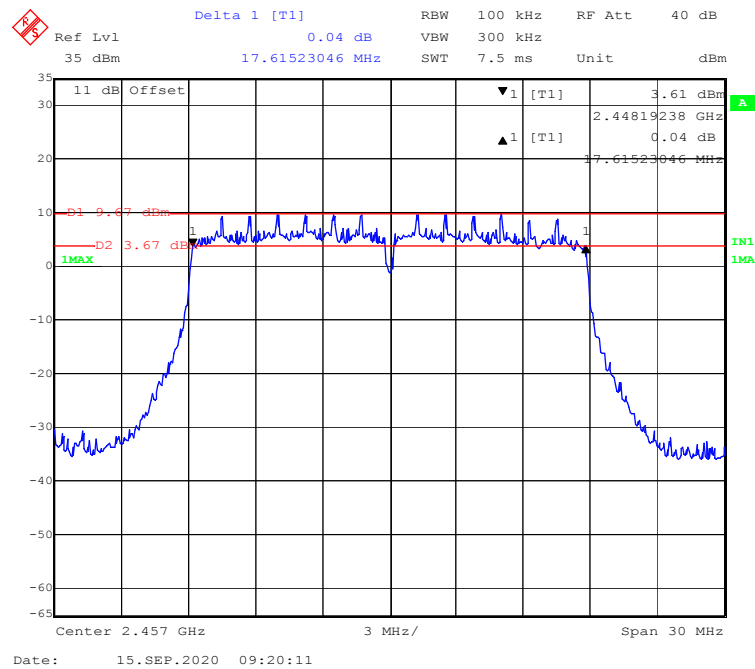
802.11n-HT20 Mode Channel 2



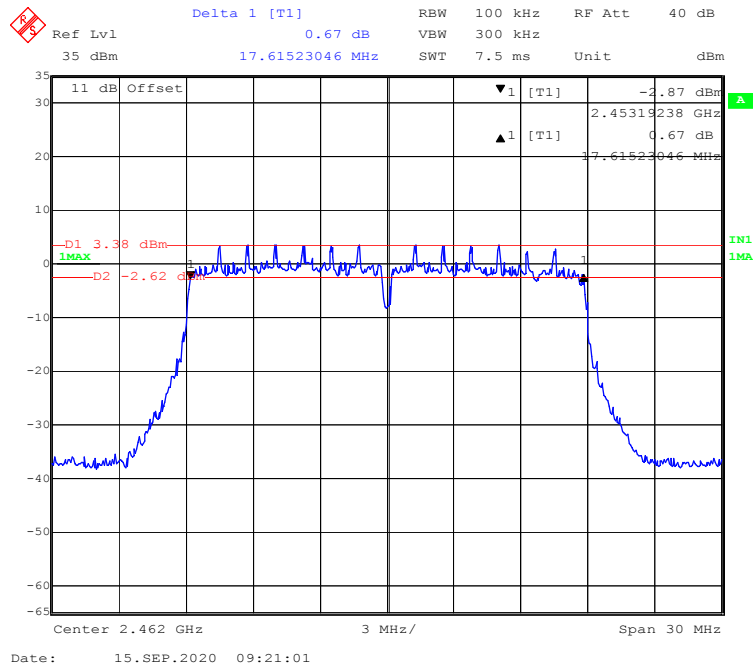
802.11n-HT20 Mode Channel 6



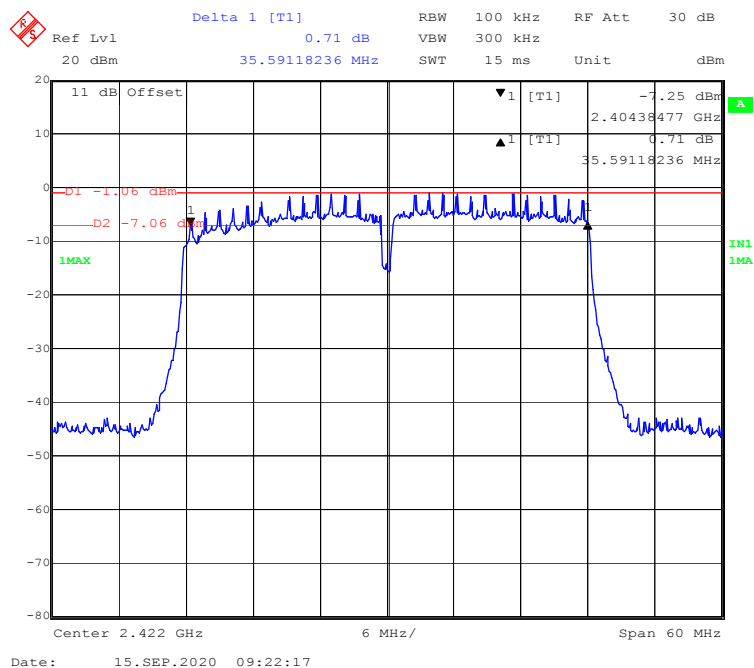
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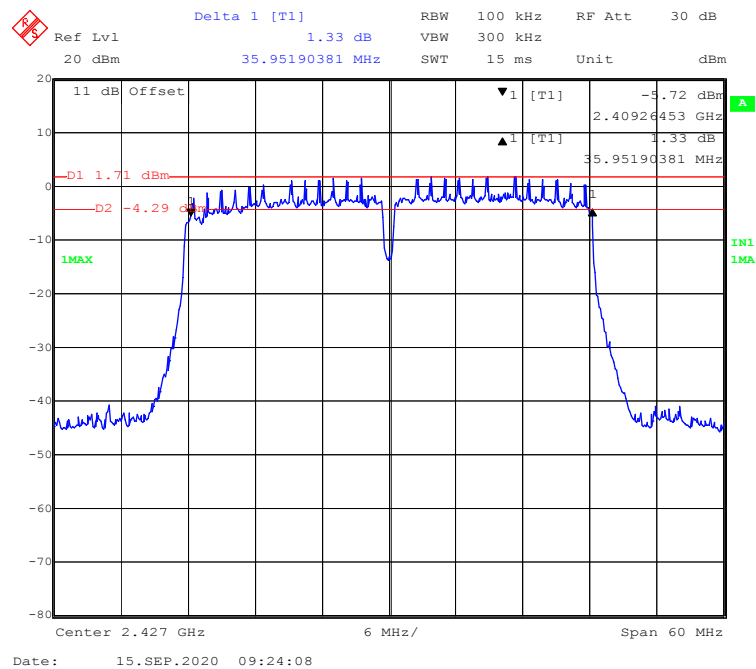
802.11n-HT20 Mode Channel 11



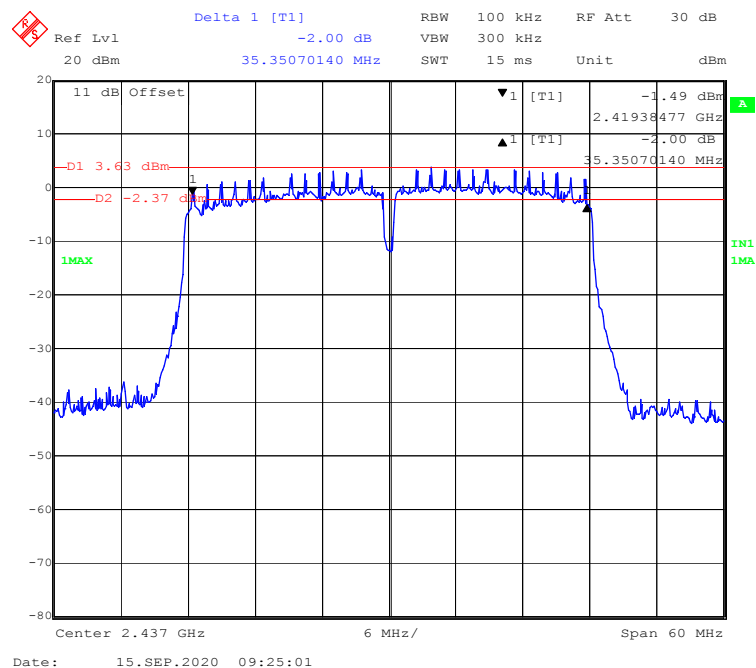
802.11n-HT40 Mode Channel 3



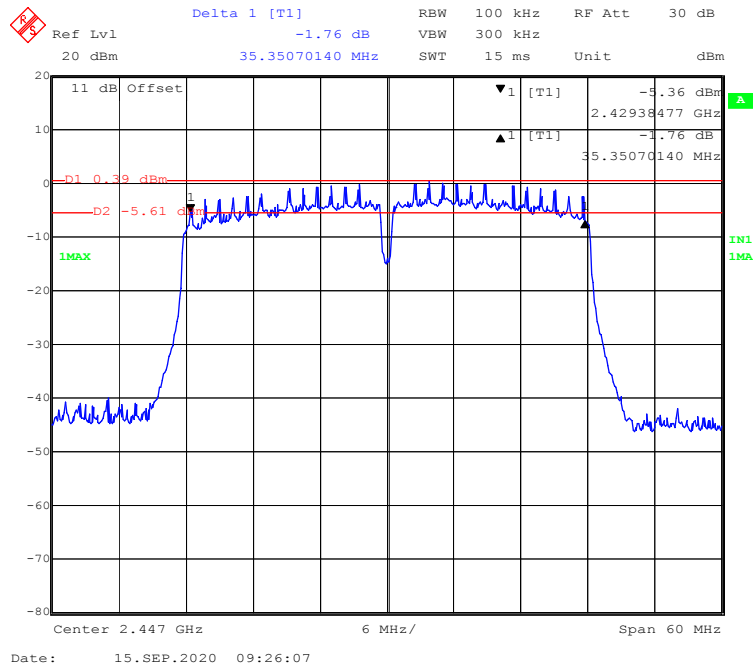
802.11n-HT40 Mode Channel 4



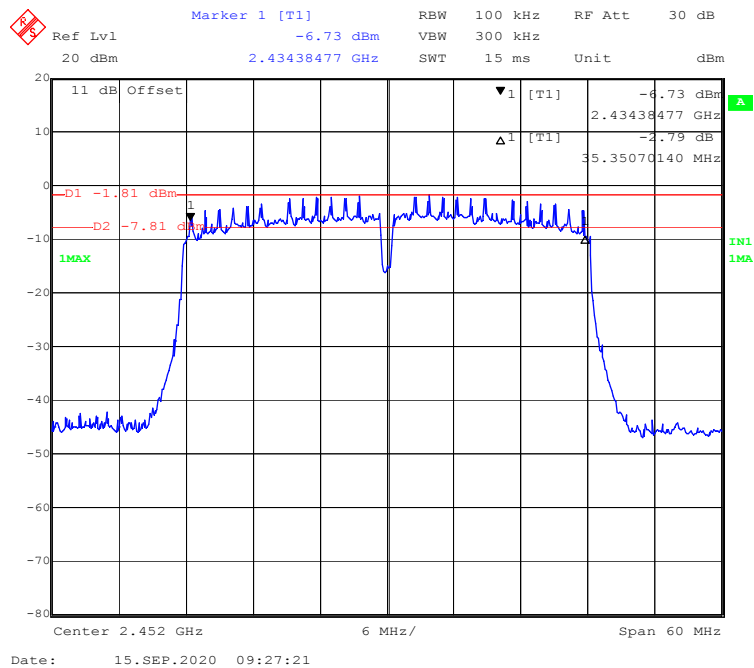
802.11n-HT40 Mode Channel 6



802.11n-HT40 Mode Channel 8

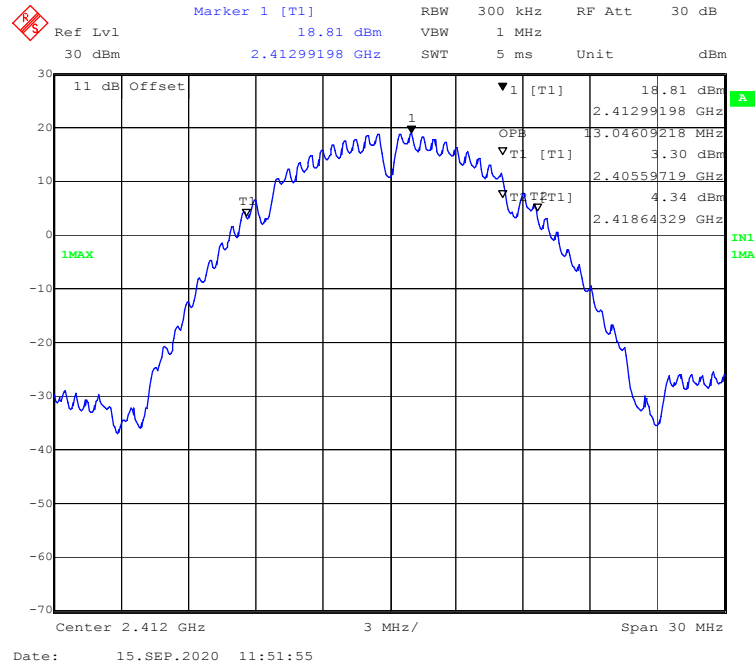


802.11n-HT40 Mode Channel 9

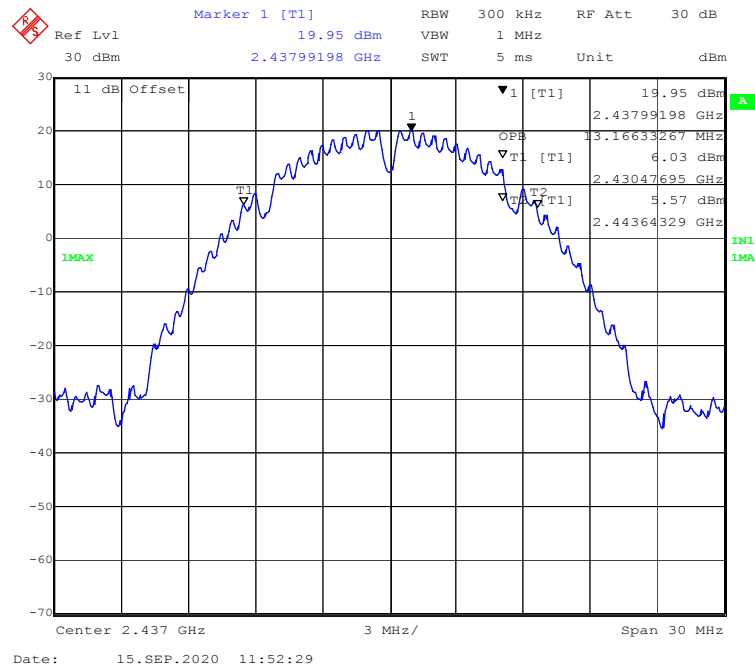


99% Bandwidth:

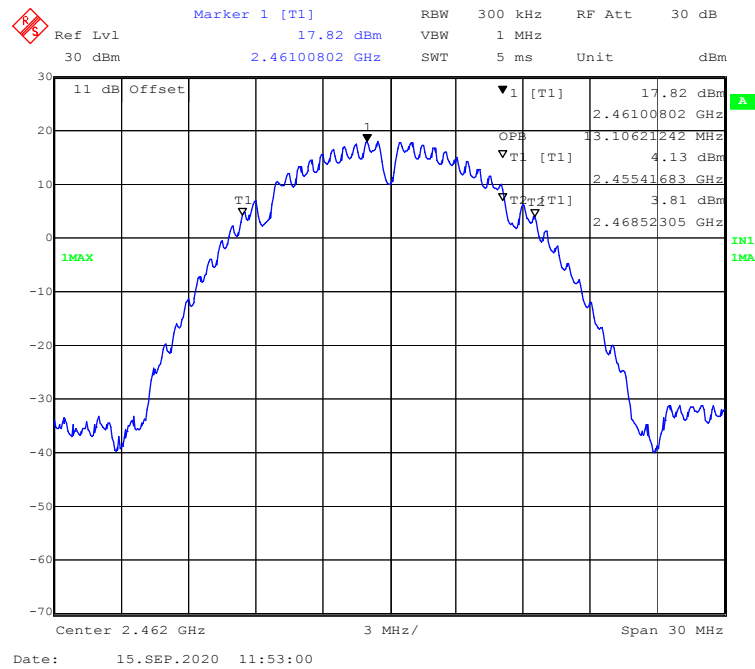
802.11b Mode Channel 1



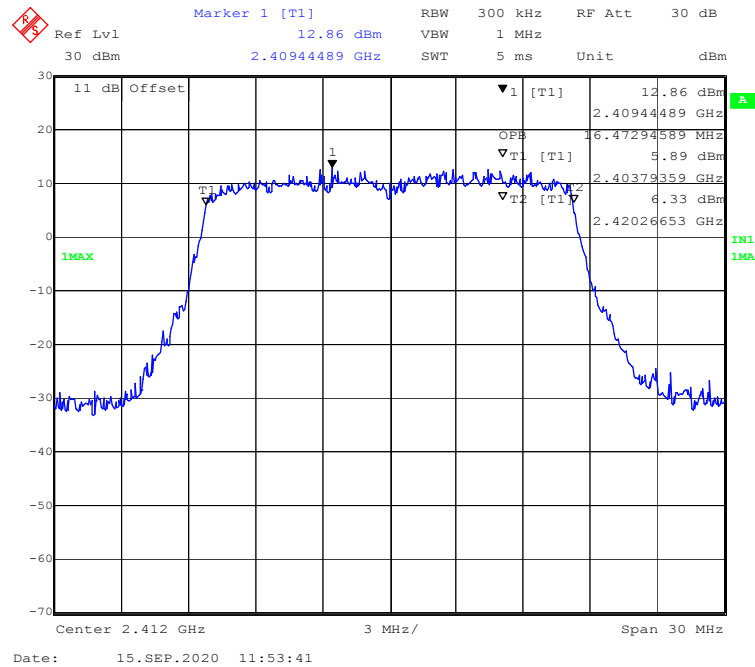
802.11b Mode Channel 6



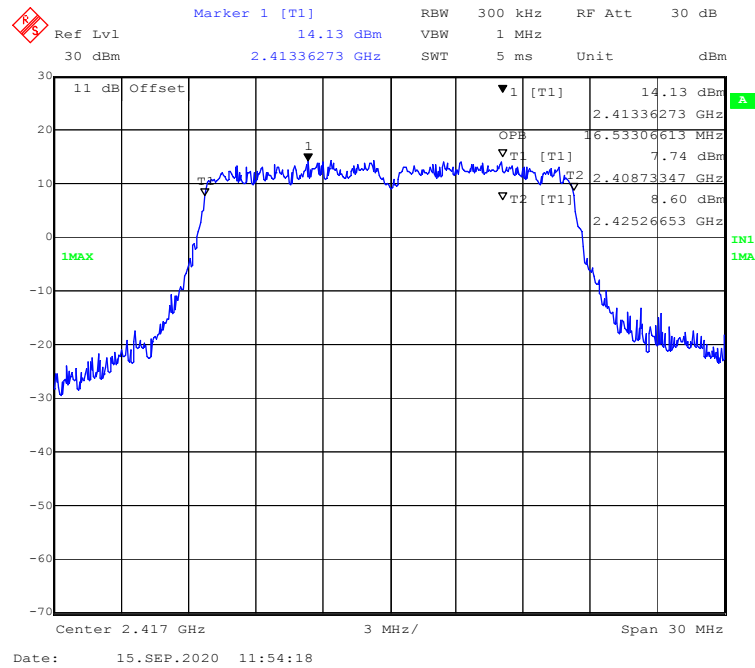
802.11b Mode Channel 11



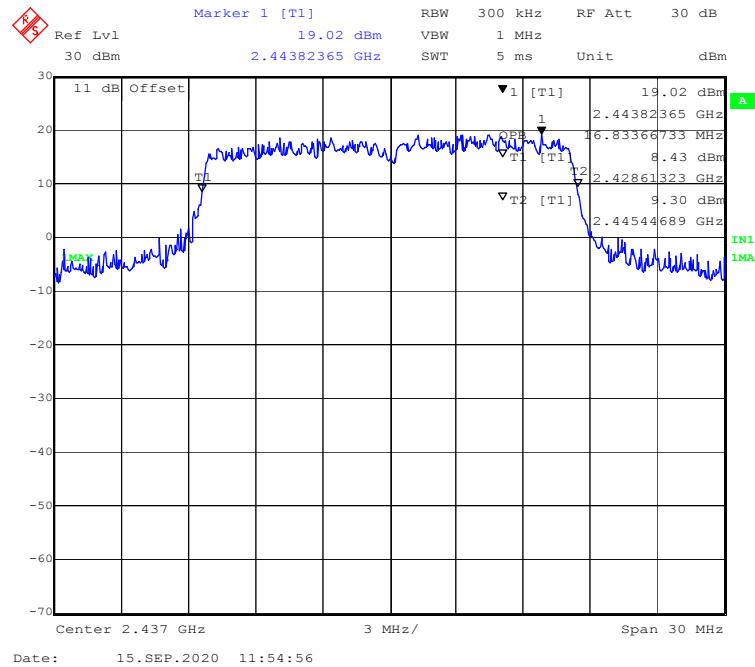
802.11g Mode Channel 1



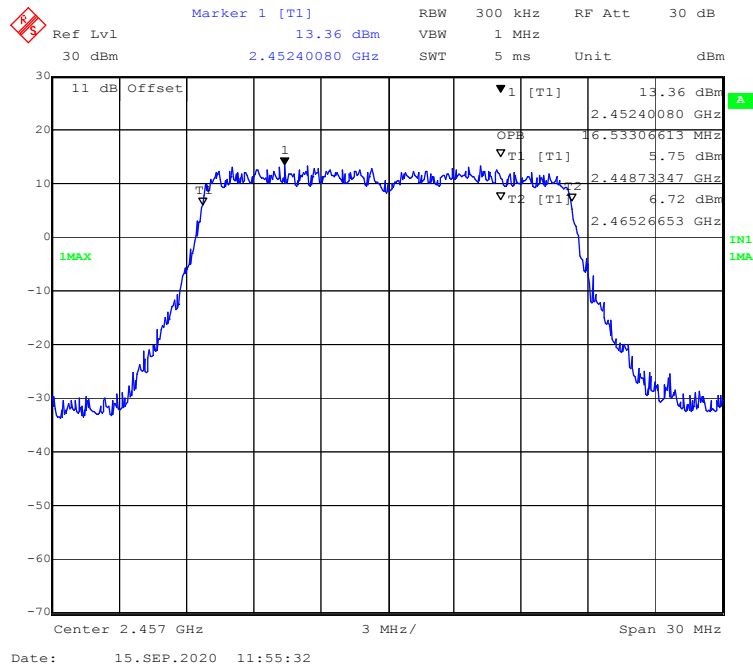
802.11g Mode Channel 2



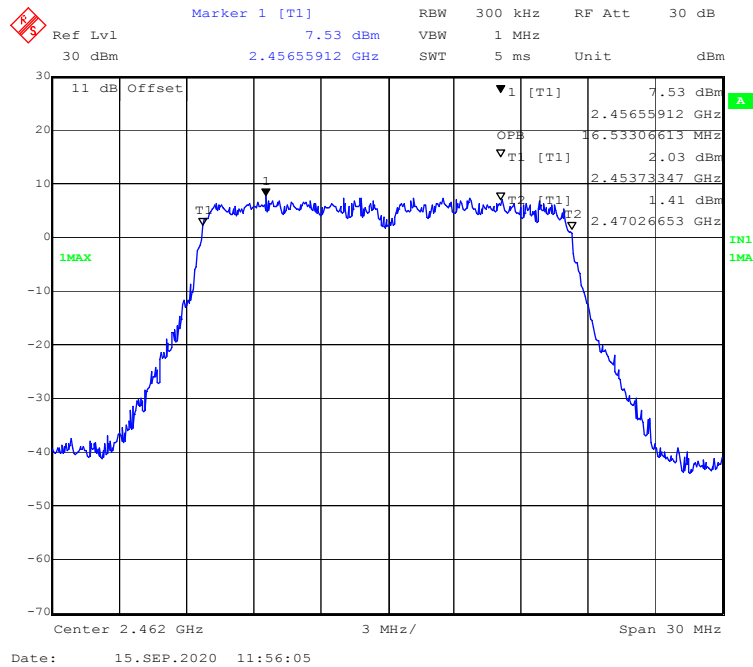
802.11g Mode Channel 6



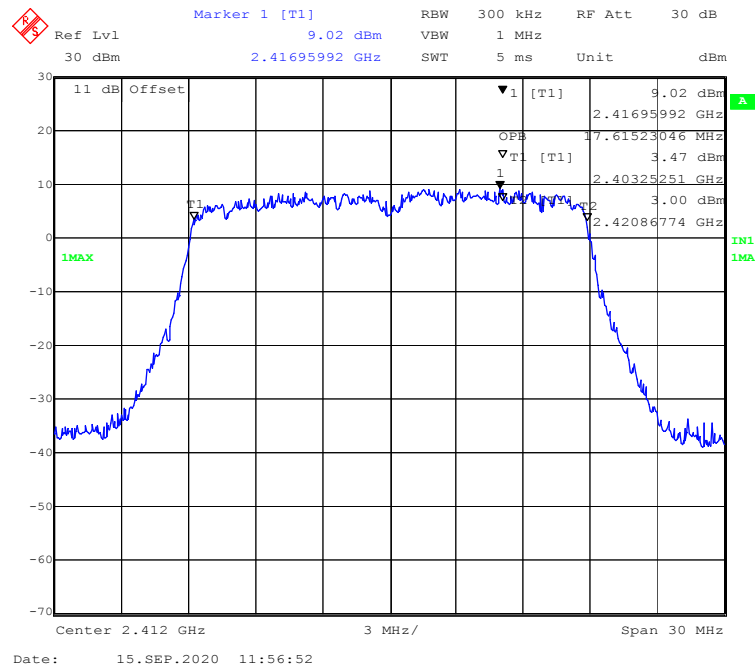
802.11g Mode Channel 10



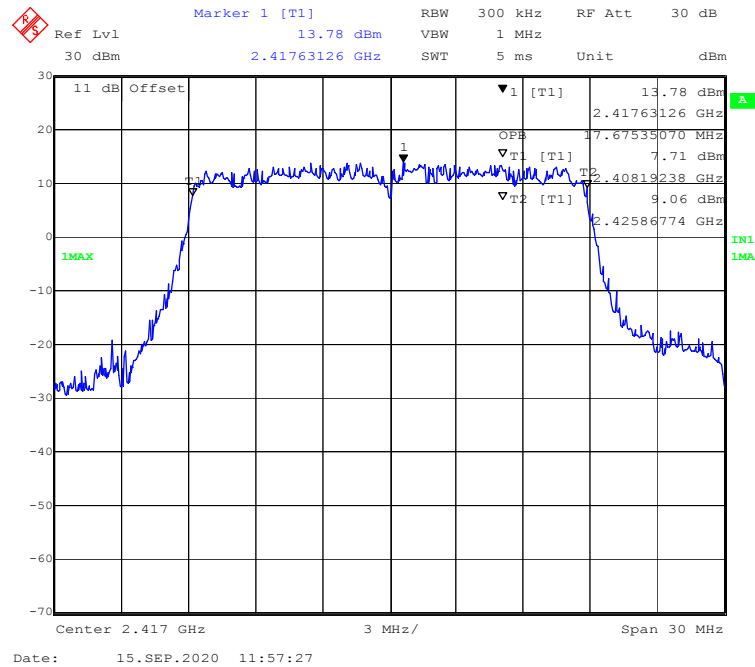
802.11g Mode Channel 11



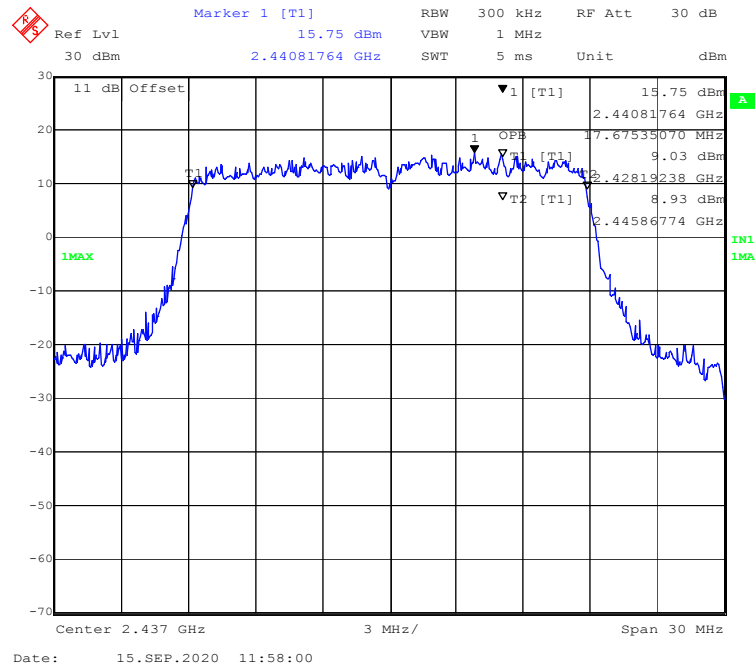
802.11n-HT20 Mode Channel 1



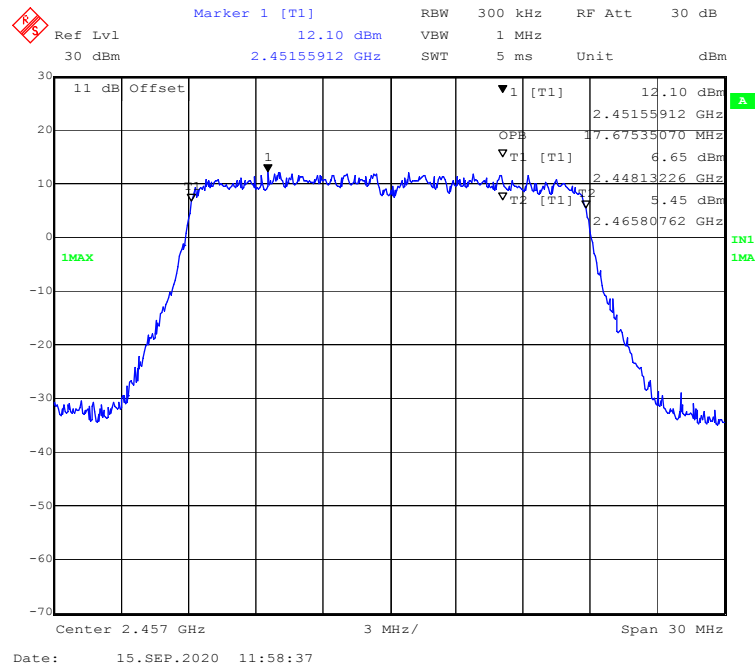
802.11n-HT20 Mode Channel 2



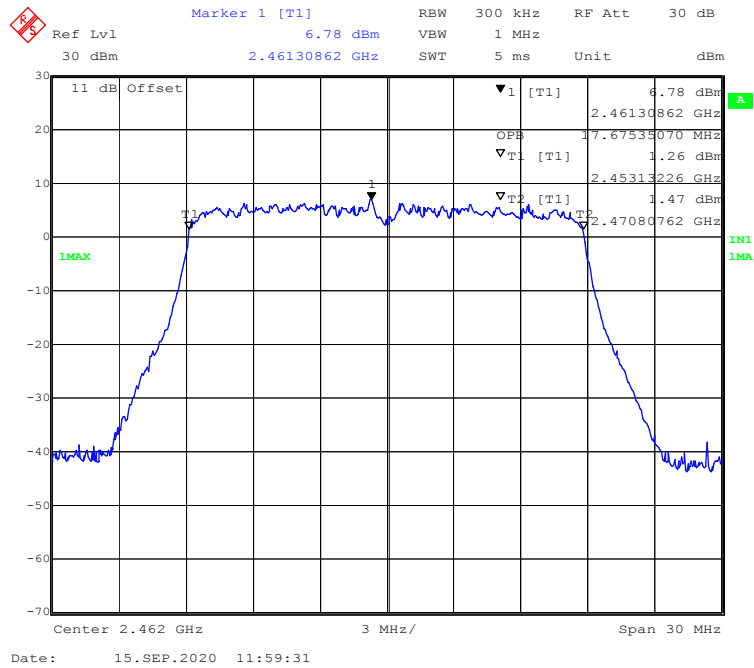
802.11n-HT20 Mode Channel 6



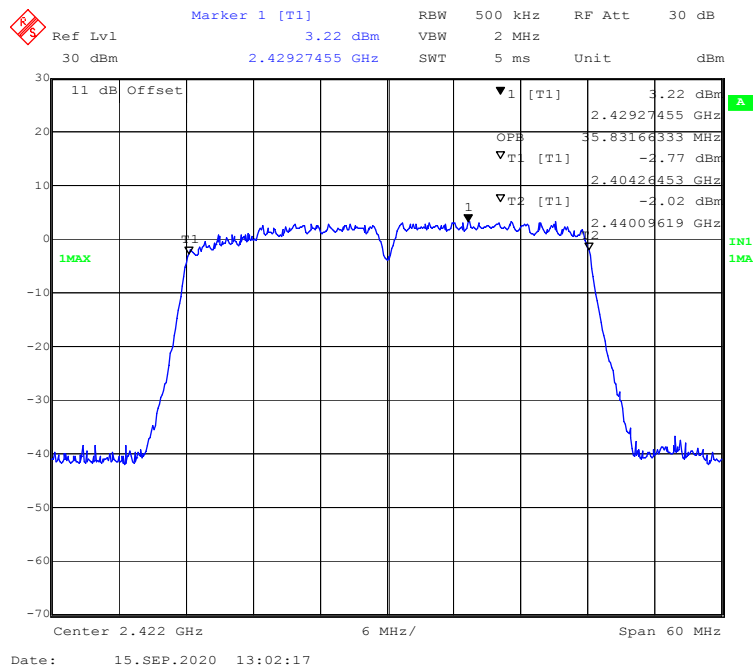
802.11n-HT20 Mode Channel 10



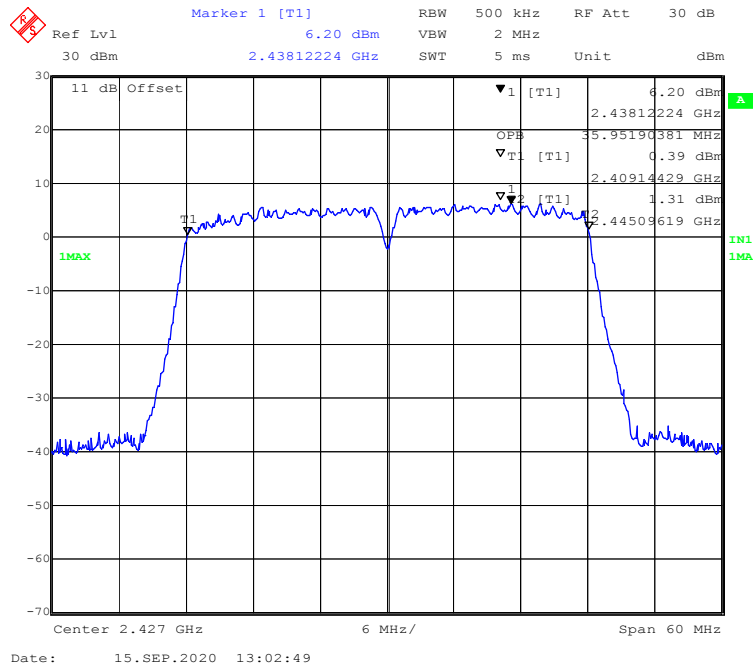
802.11n-HT20 Mode Channel 11



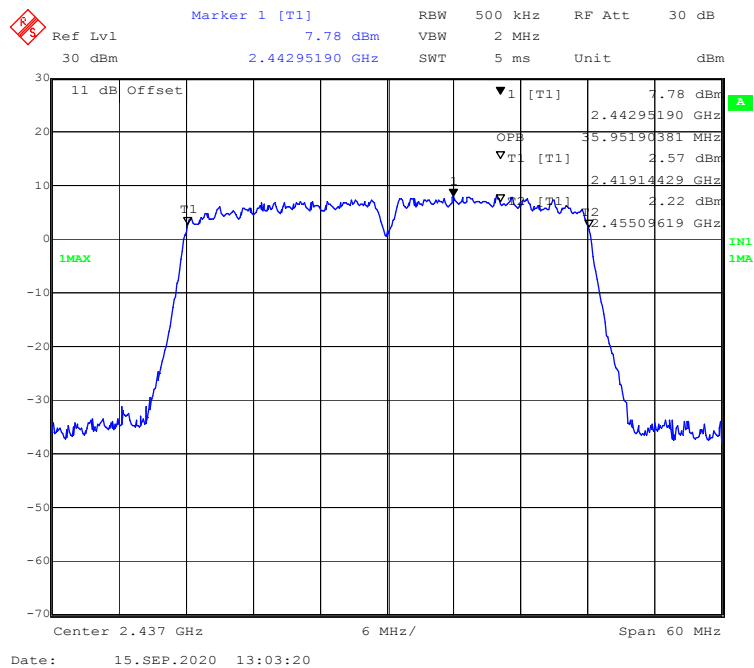
802.11n-HT40 Mode Channel 3



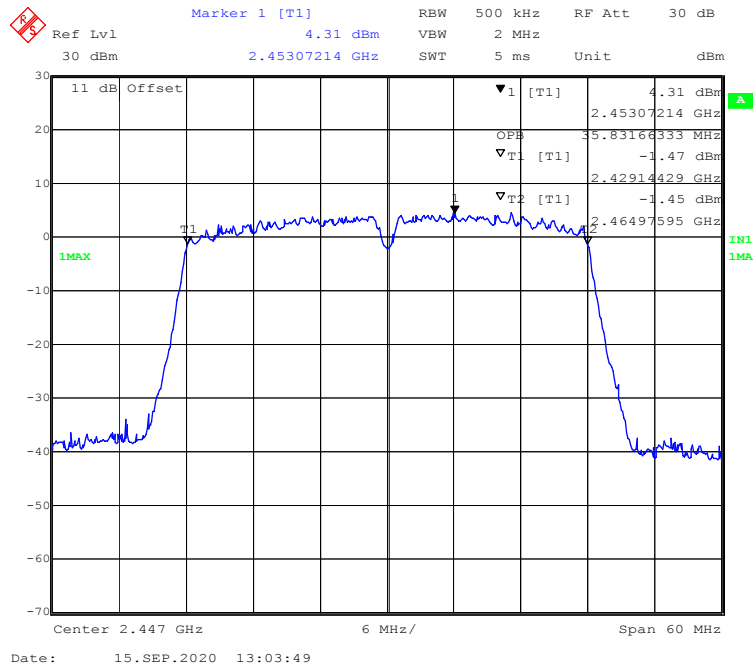
802.11n-HT40 Mode Channel 4



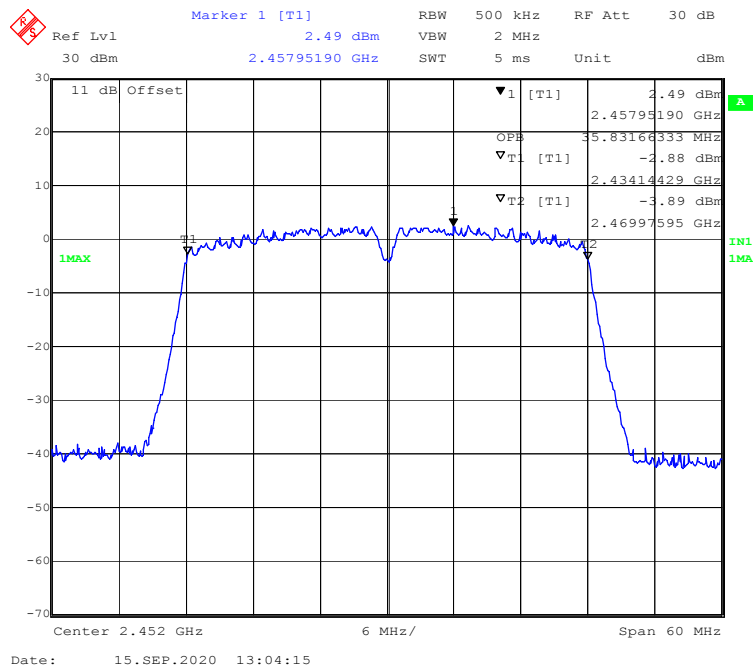
802.11n-HT40 Mode Channel 6



802.11n-HT40 Mode Channel 8



802.11n-HT40 Mode Channel 9



FCC §15.247(b) (3) - MAXIMUM CONDUCTED(AVERAGE) OUTPUT POWER

Applicable Standard

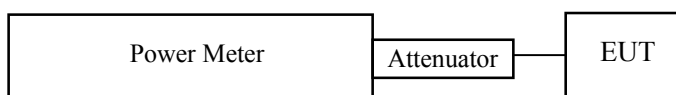
According to FCC §15.247(b) (3), for systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, Compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

Test Procedure

According to ANSI C63.10-2013 sub-clause 11.9.2.3.1

The maximum average conducted output power may be measured using a wideband RF average power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall use a fast-responding diode detector.

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 duty factor to the display.



Test Data

Environmental Conditions

Temperature:	23.6 °C~24 °C
Relative Humidity:	49%~50%
ATM Pressure:	101.1kPa~101.2kPa

The testing was performed by CK Huang from 2020-08-28 to 2020-09-15.

Test Result: Compliant.

EUT operation mode: Transmitting

Test mode	Channel	Frequency (MHz)	Average Output Power (dBm)			Limit (dBm)	Result
			Chain0	Chain1	Total		
802.11b	1	2412	22.23	24.84	/	30	Pass
	6	2437	23.04	26.32	/	30	Pass
	11	2462	21.64	23.97	/	30	Pass
802.11g	1	2412	15.73	19.38	/	30	Pass
	2	2417	19.79	21.38	/	30	Pass
	6	2437	23.17	26.52	/	30	Pass
	10	2457	20.84	20.20	/	30	Pass
	11	2462	13.35	14.82	/	30	Pass
802.11n-HT20	1	2412	16.94	16.05	19.53	30	Pass
	2	2417	21.64	21.32	24.49	30	Pass
	6	2437	22.85	22.69	25.78	30	Pass
	10	2457	20.67	19.29	23.04	30	Pass
	11	2462	14.35	13.94	17.16	30	Pass
802.11n-HT40	3	2422	11.91	11.69	14.81	30	Pass
	4	2427	14.26	15.07	17.69	30	Pass
	6	2437	15.51	16.45	19.02	30	Pass
	8	2447	12.78	13.58	16.21	30	Pass
	9	2452	10.88	10.86	13.88	30	Pass

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

The maximum antenna gain is 3.58dBi, 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 $N_{ANT} \leq 4$;

So: Directional gain = $G_{ANT} + \text{Array Gain} = 3.58\text{dBi} < 6\text{dBi}$, no RF out power limit was reduced

FCC §15.247(d) – BAND EDGE

Applicable Standard

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates Compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Test Procedure

According to ANSI C63.10-2013 sub-clause 6.10.

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

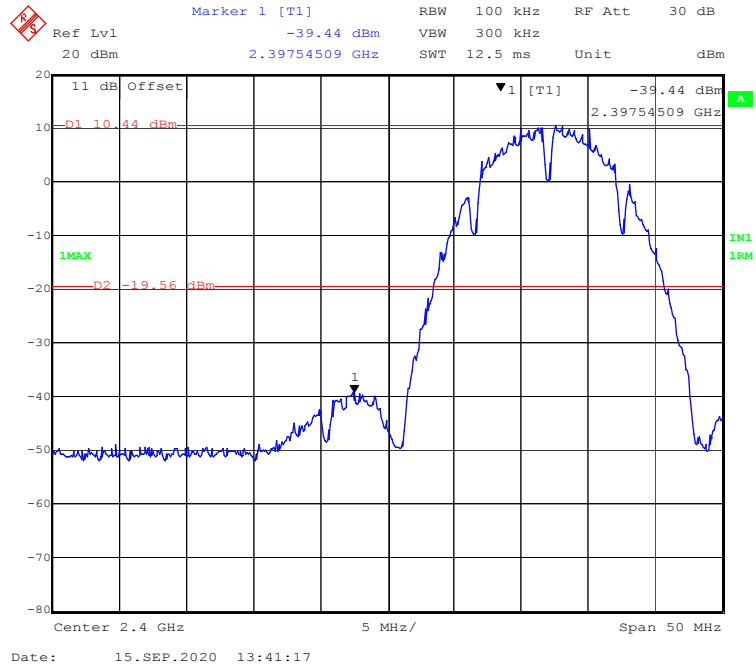
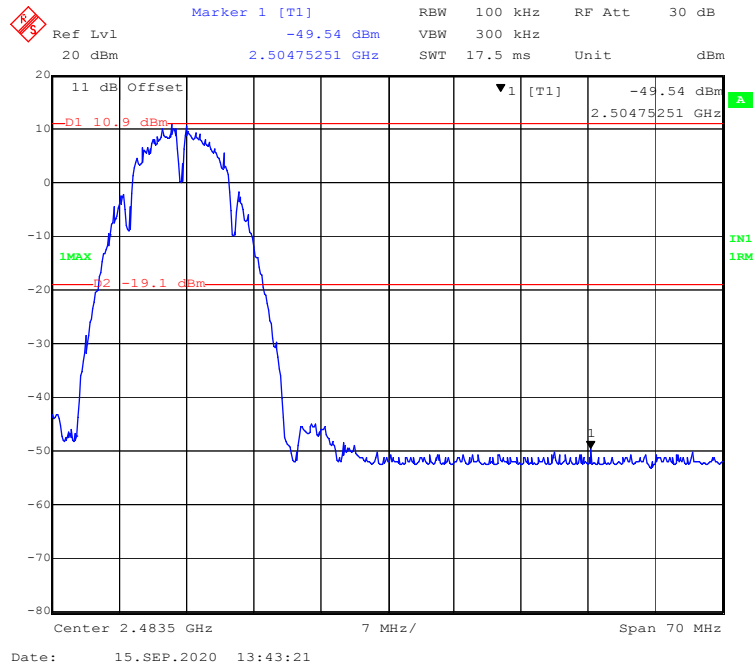
Test Data

Environmental Conditions

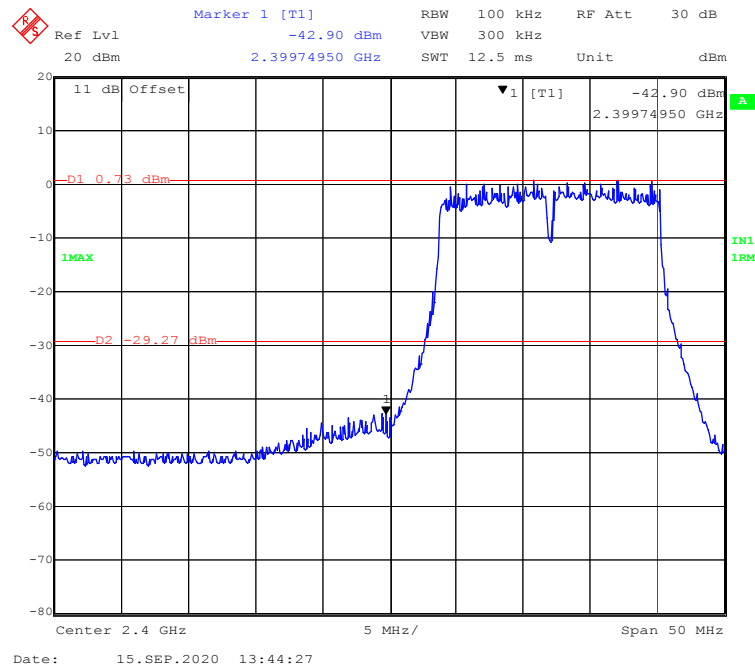
Temperature:	23.6 °C
Relative Humidity:	50 %
ATM Pressure:	101.1kPa

The testing was performed by CK Huang on 2020-09-15.

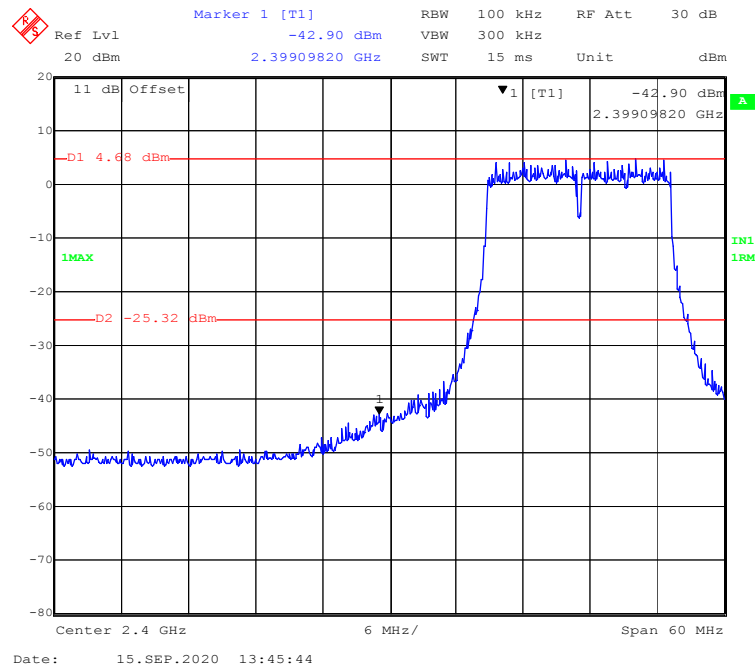
Test Result: Compliant.

*EUT operation mode: Transmitting***Chain 0:****802.11b Mode Channel 1****802.11b Mode Channel 11**

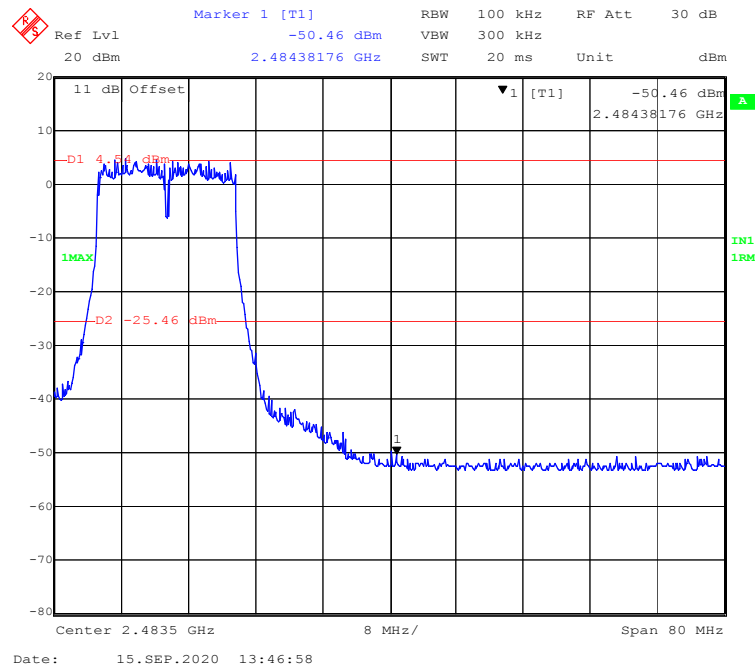
802.11g Mode Channel 1



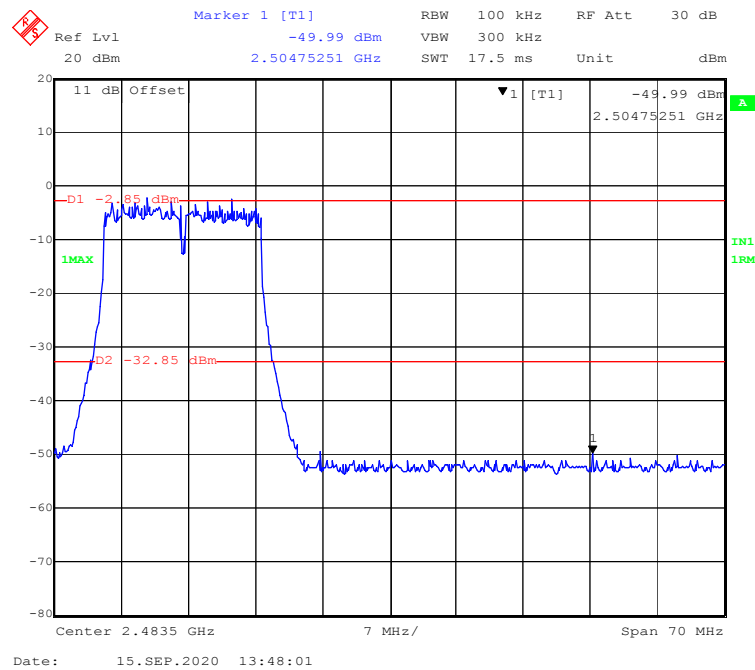
802.11g Mode Channel 2



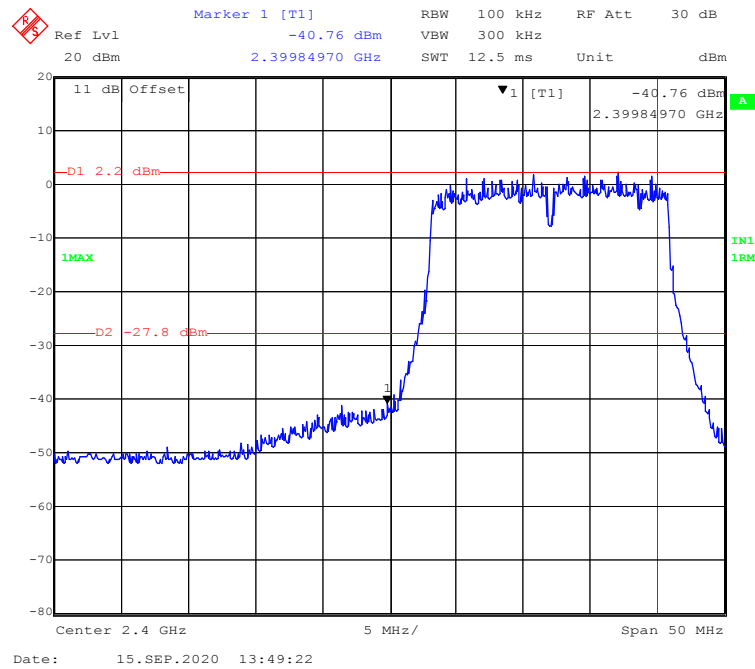
802.11g Mode Channel 10



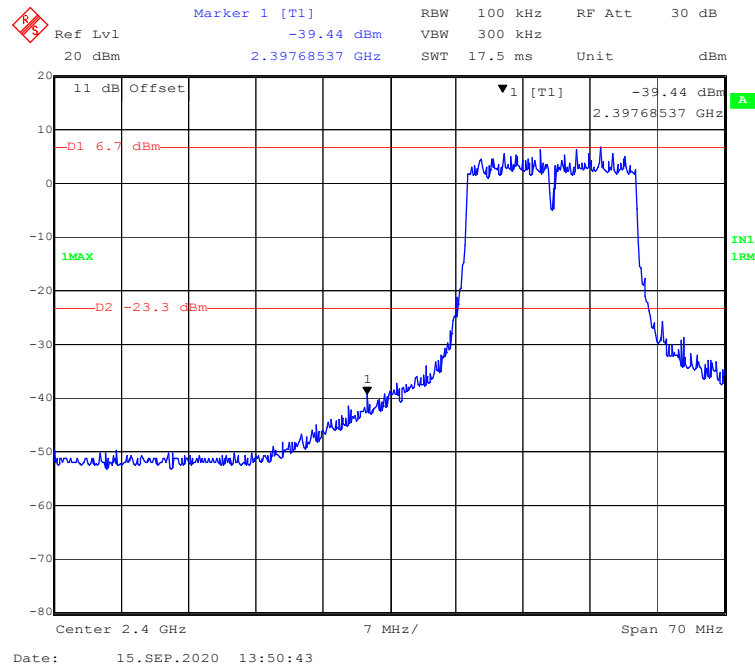
802.11g Mode Channel 11



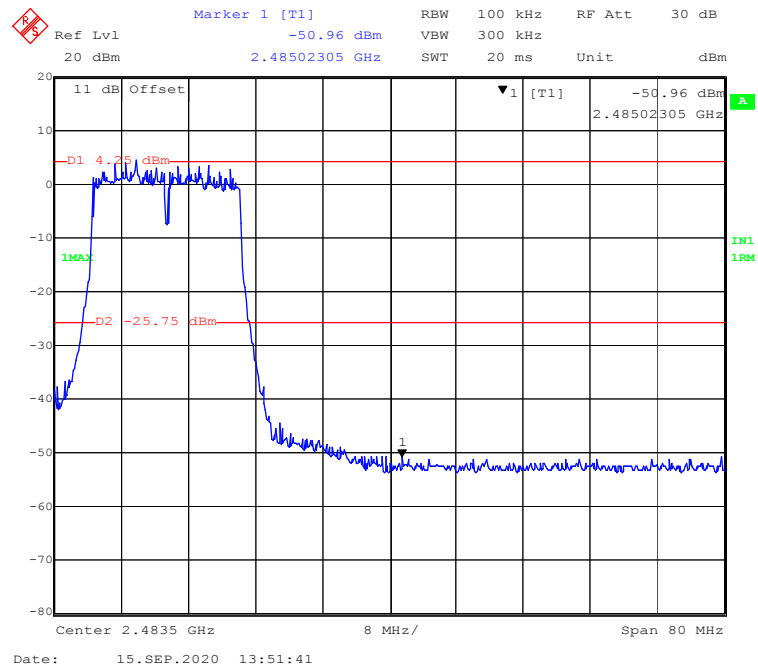
802.11n-HT20 Mode Channel 1



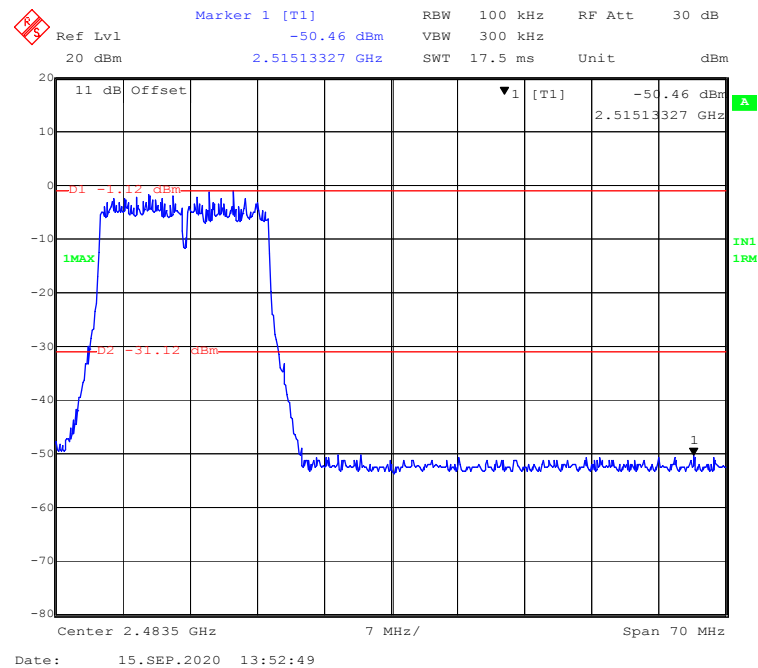
802.11n-HT20 Mode Channel 2



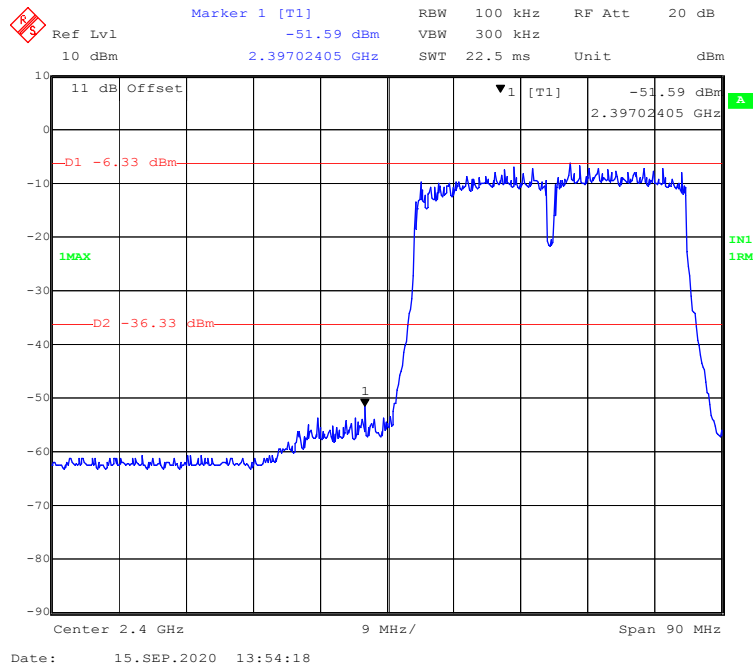
802.11n-HT20 Mode Channel 10



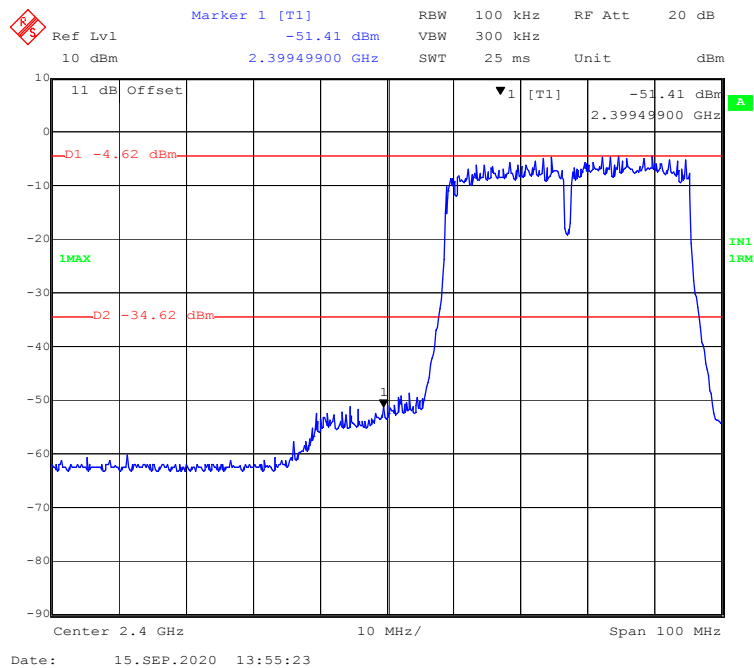
802.11n-HT20 Mode Channel 11



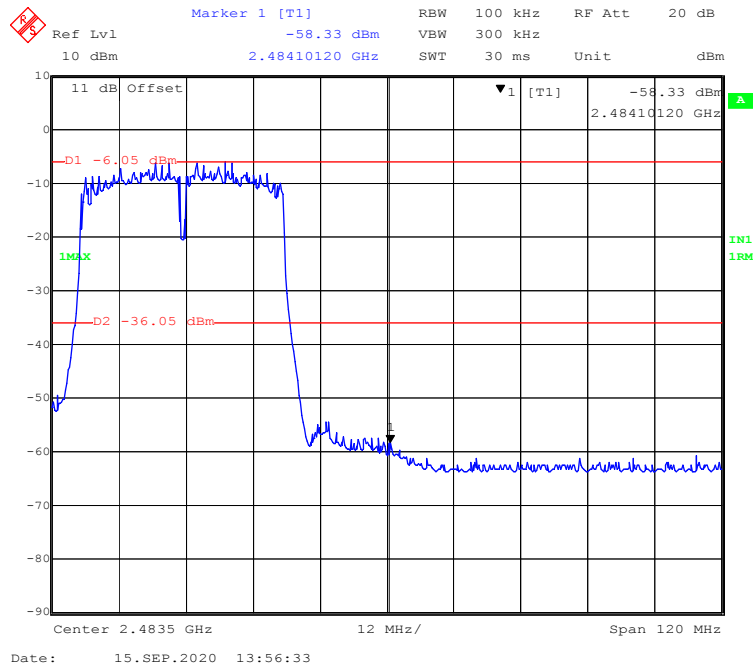
802.11n-HT40 Mode Channel 3



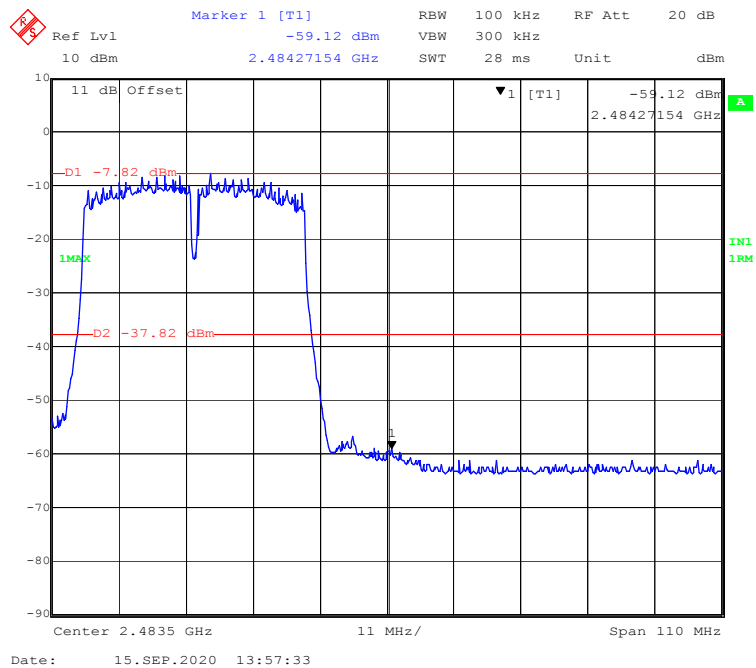
802.11n-HT40 Mode Channel 4



802.11n-HT40 Mode Channel 8

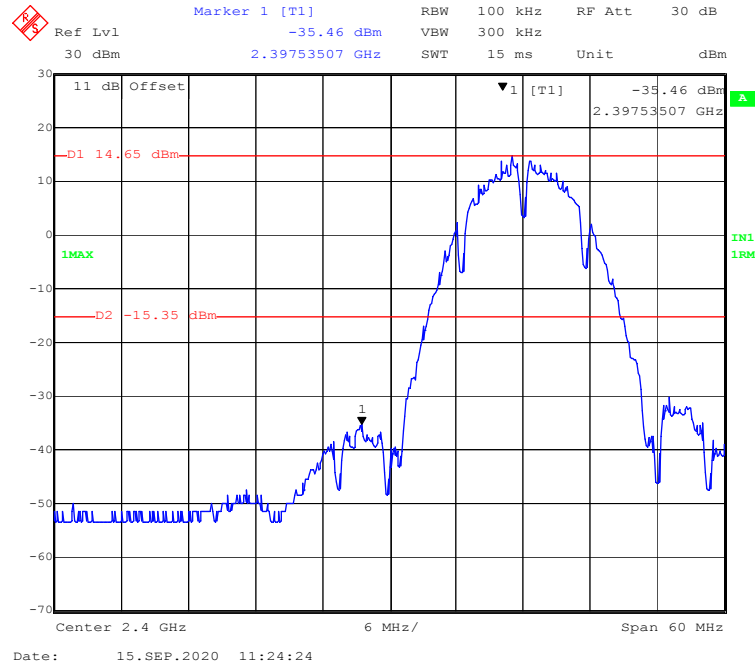


802.11n-HT40 Mode Channel 9

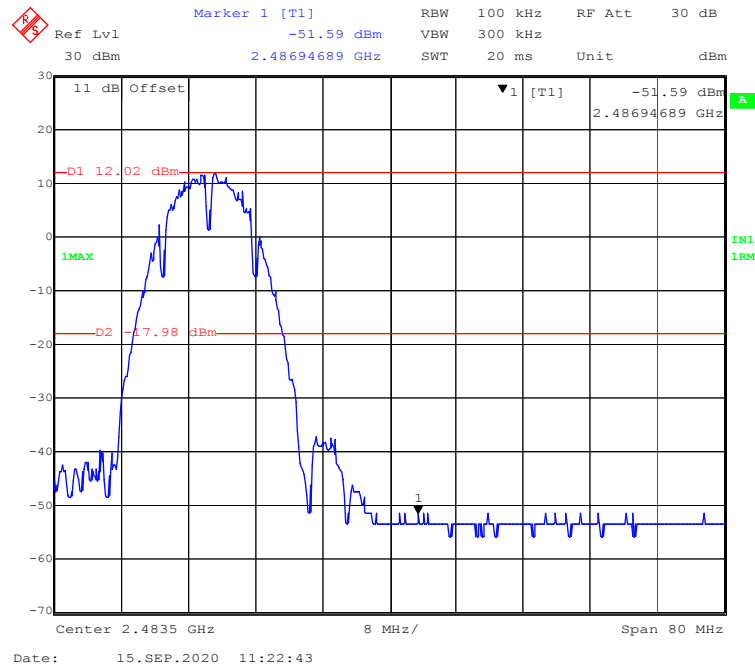


Chain 1:

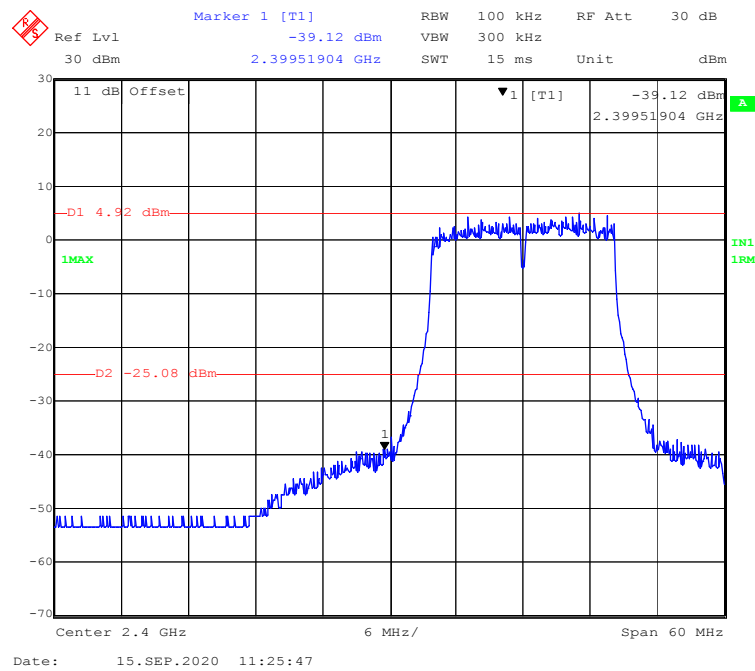
802.11b Mode Channel 1



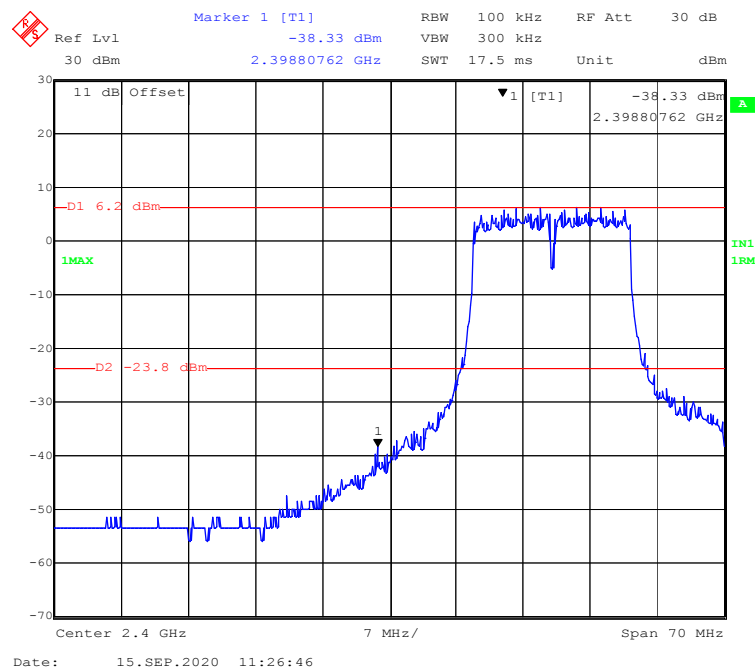
802.11b Mode Channel 11



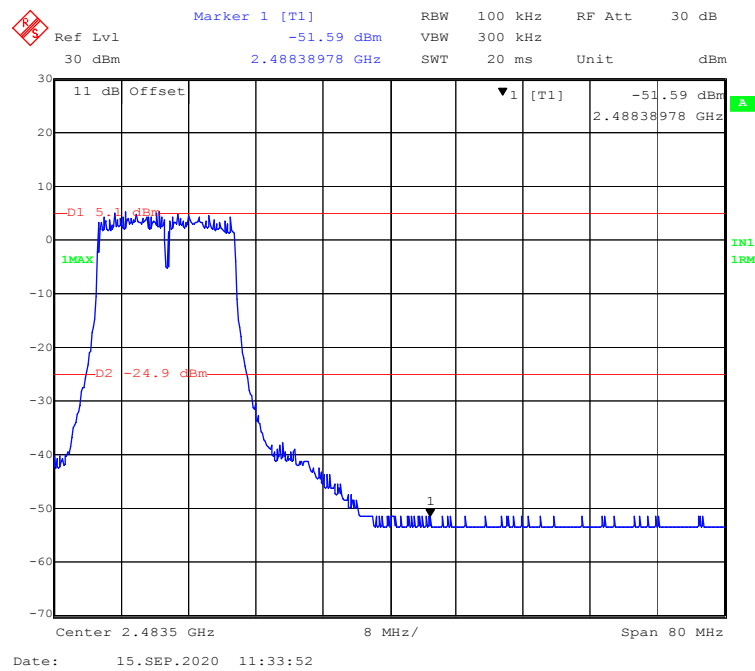
802.11g Mode Channel 1



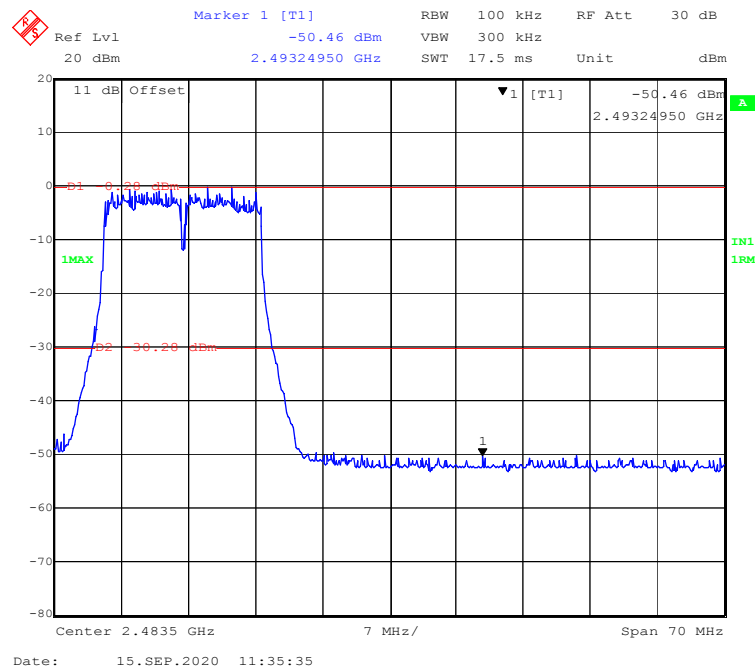
802.11g Mode Channel 2



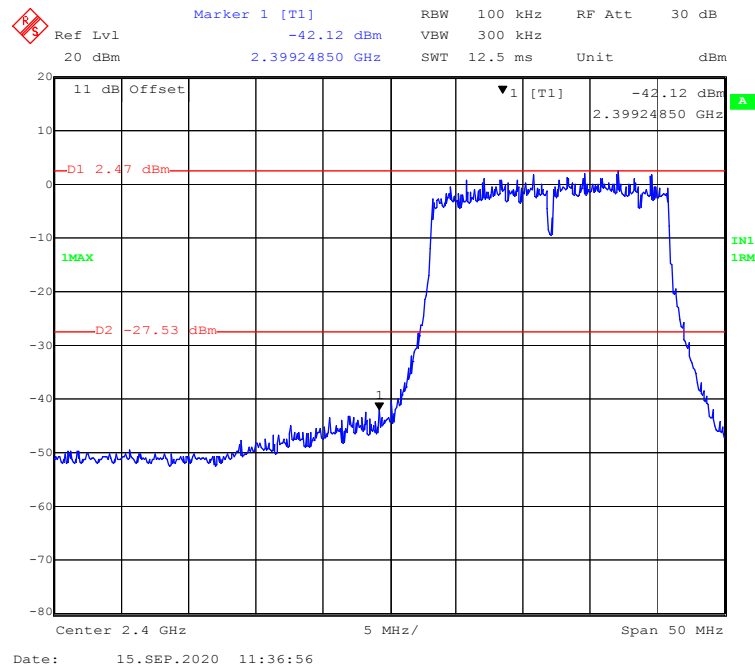
802.11g Mode Channel 10



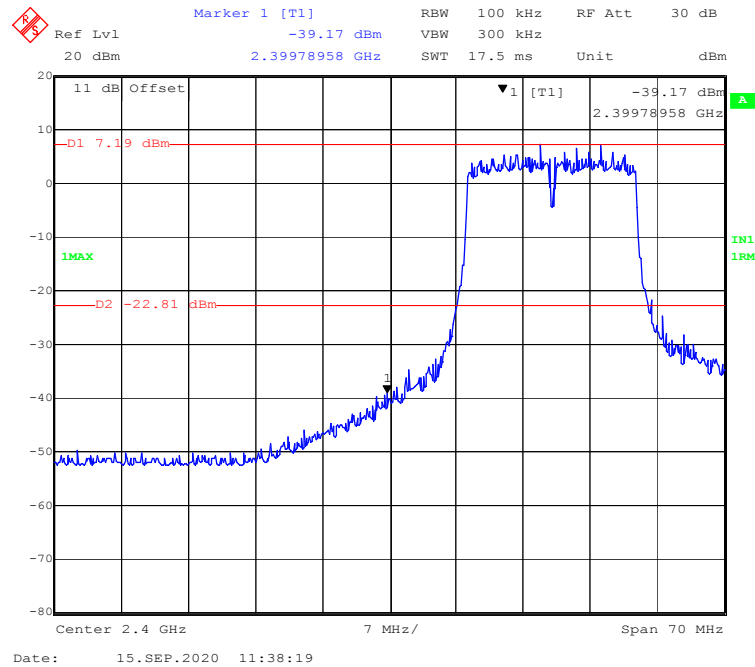
802.11g Mode Channel 11



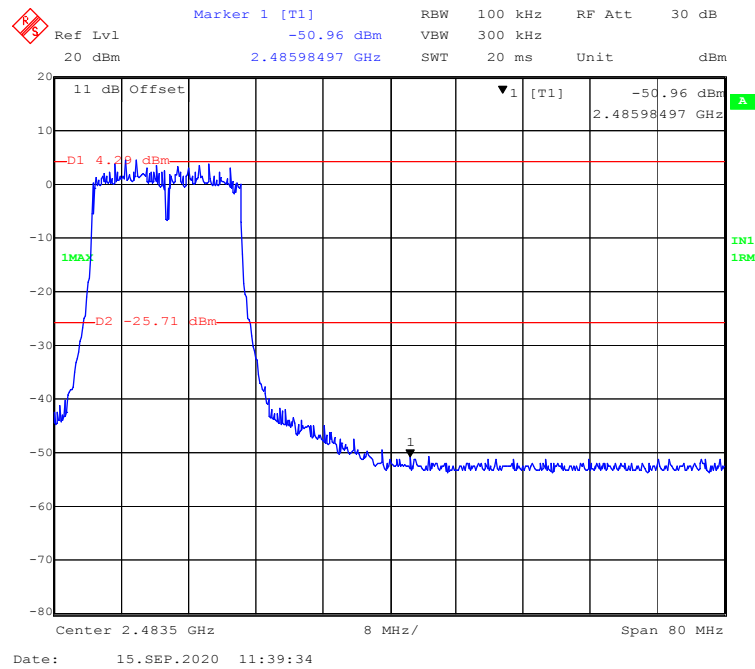
802.11n-HT20 Mode Channel 1



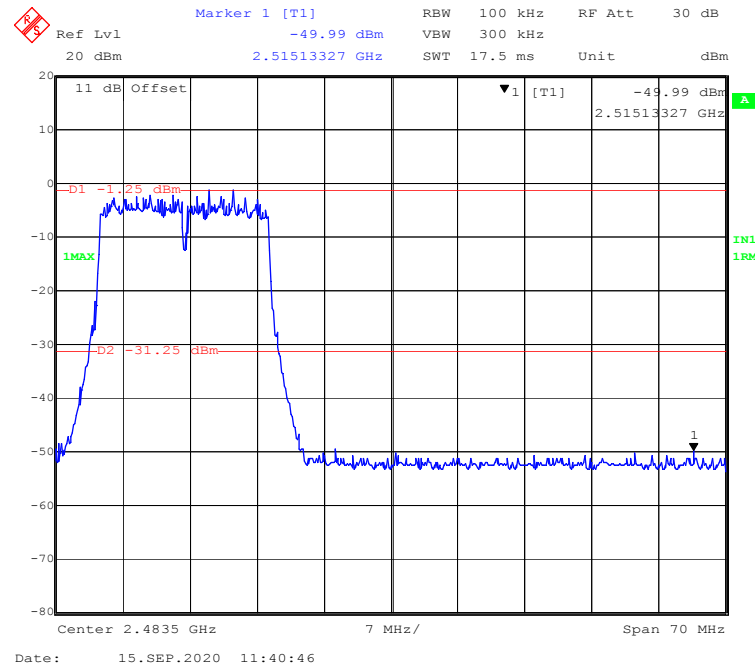
802.11n-HT20 Mode Channel 2



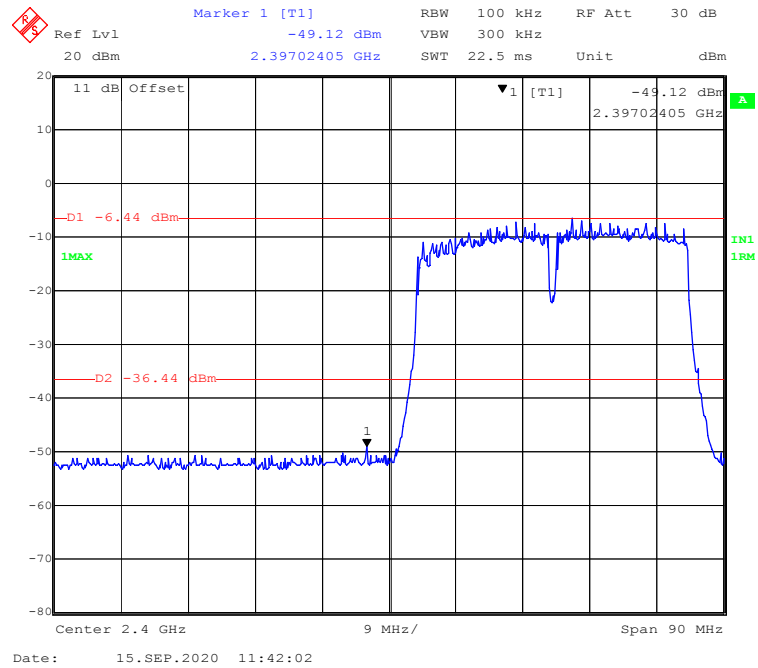
802.11n-HT20 Mode Channel 10



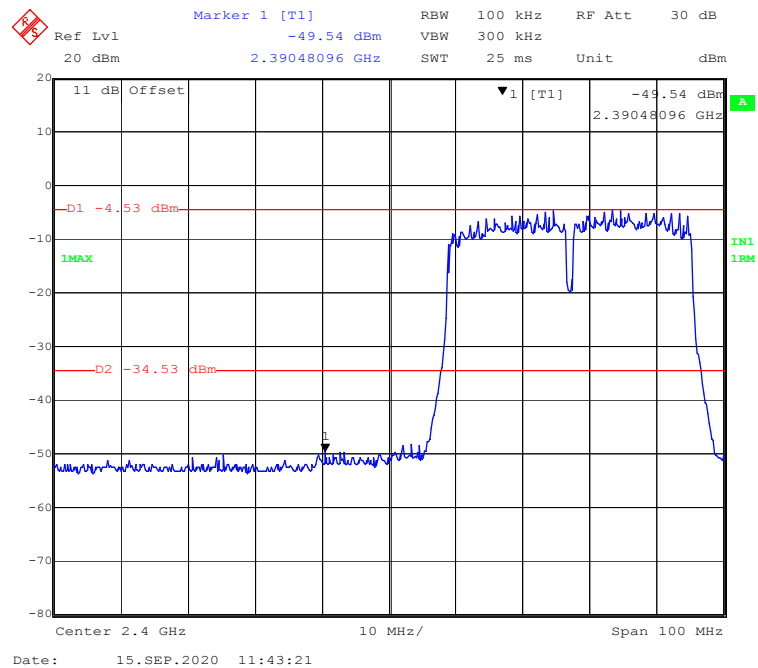
802.11n-HT20 Mode Channel 11



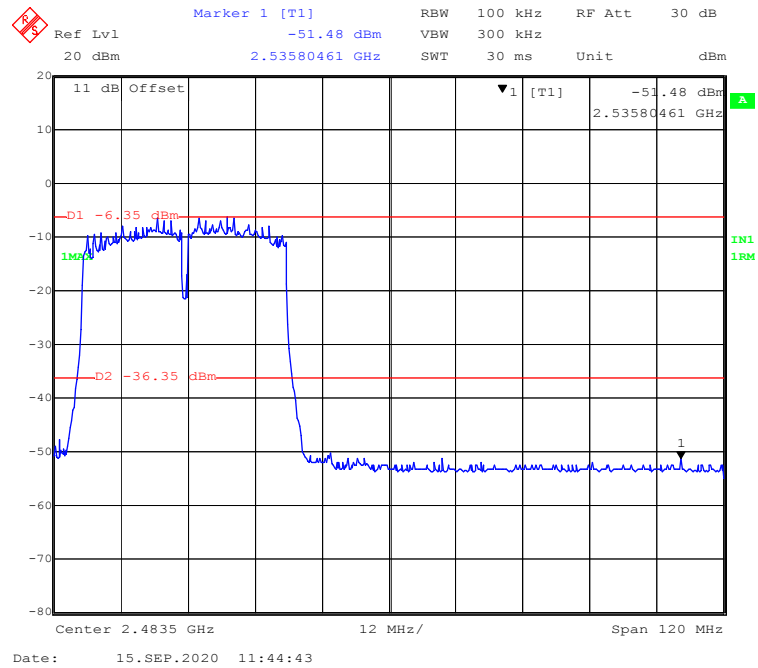
802.11n-HT40 Mode Channel 3



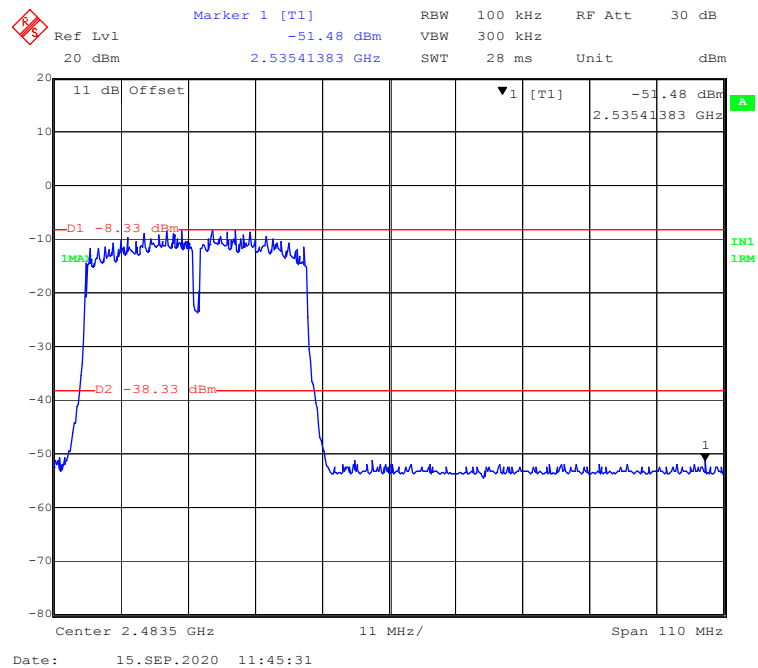
802.11n-HT40 Mode Channel 4



802.11n-HT40 Mode Channel 8



802.11n-HT40 Mode Channel 9



FCC §15.247(e) - POWER SPECTRAL DENSITY

Applicable Standard

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

Test Procedure

According to ANSI C63.10-2013 sub-clause 11.10.3

The following procedure shall be used if maximum peak conducted output power was used to determine compliance, and it is optional if the maximum conducted (average) output power was used to determine compliance:

- a) Set instrument center frequency to DTS channel center frequency.
- b) Set span to at least 1.5 times the OBW.
- c) Set RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- d) Set VBW $\geq [3 \times \text{RBW}]$.
- e) Detector = power averaging (rms)
- f) Ensure that the number of measurement points in the sweep $\geq [2 \times \text{span} / \text{RBW}]$.
- g) Sweep time = auto couple.
- h) Employ trace averaging (rms) mode over a minimum of 100 traces.
- i) Use the peak marker function to determine the maximum amplitude level.
- j) If the measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat (note that this may require zooming in on the emission of interest and reducing the span to meet the minimum measurement point requirement as the RBW is reduced).

Test Data

Environmental Conditions

Temperature:	23.1 °C
Relative Humidity:	50 %
ATM Pressure:	101.1kPa

The testing was performed by CK Huang on 2020-10-09.

Test Result: Compliant.

EUT operation mode: Transmitting

Channel	Frequency (MHz)	PSD (dBm/3kHz)			Limit (dBm/3kHz)
		Chain0	Chain1	Total	
802.11b mode					
1	2412	-10.35	-6.32	/	≤8
6	2437	-9.85	-5.43	/	≤8
11	2462	-9.68	-7.90	/	≤8
802.11g mode					
1	2412	-22.31	-17.49	/	≤8
2	2417	-17.82	-16.03	/	≤8
6	2437	-14.83	-10.72	/	≤8
10	2457	-16.83	-16.77	/	≤8
11	2462	-24.22	-22.32	/	≤8
802.11n-HT20 mode					
1	2412	-21.17	-19.78	-16.99	≤7.41
2	2417	-14.43	-14.98	-11.55	≤7.41
6	2437	-13.64	-13.04	-10.46	≤7.41
10	2457	-17.03	-16.96	-13.98	≤7.41
11	2462	-22.87	-22.39	-16.99	≤7.41
802.11n-HT40 mode					
3	2422	-23.76	-26.87	-23.77	≤7.41
4	2427	-24.80	-24.33	-24.32	≤7.41
6	2437	-22.50	-22.77	-16.99	≤7.41
8	2447	-25.93	-26.20	-25.85	≤7.41
9	2452	-27.51	-27.67	-27.45	≤7.41

The total PSD = $10 \log (10^{\wedge} (\text{Chain } 0/10) + 10^{\wedge} (\text{Chain } 1/10))$

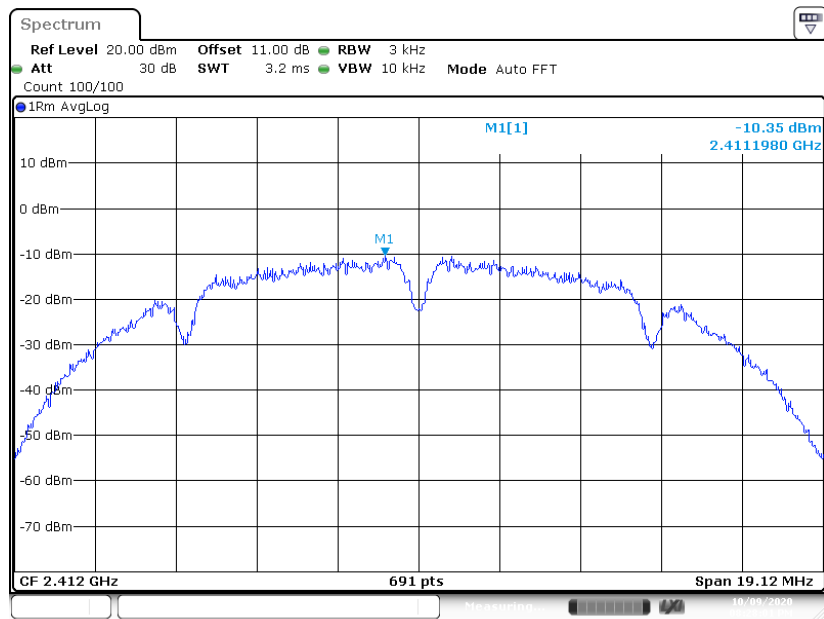
The maximum antenna gain is 3.58 dBi. The device employed Cyclic Delay Diversity (CDD) for 802.11MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power spectral density (PSD) measurements on the devices:

Array Gain = $10 \log (N_{\text{ANT}}/N_{\text{SS}})$ dB.

So:

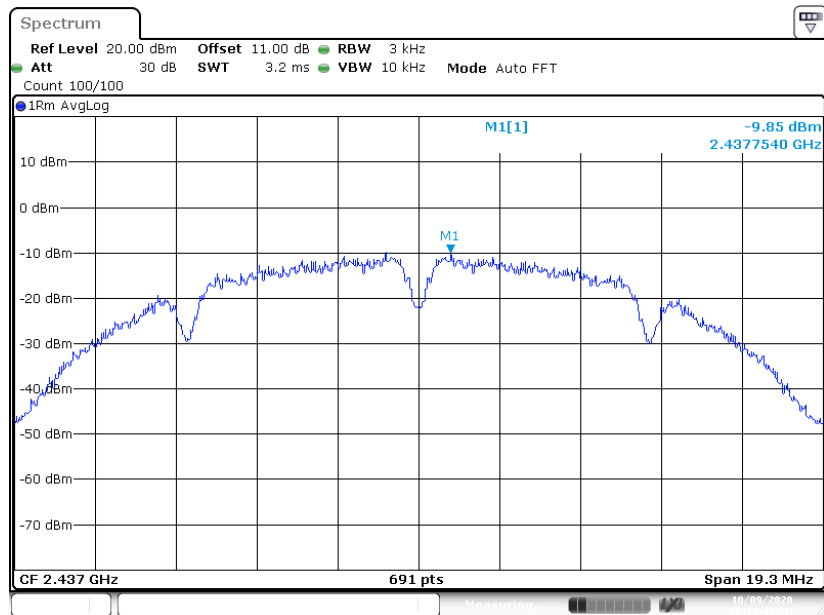
Directional gain = GANT + Array Gain = $3.58 + 10 \log (2/1) = 6.59 \text{ dBi} > 6 \text{ dBi}$, power spectral density limit was reduced 0.59 dBi.

802.11b Mode Channel 1



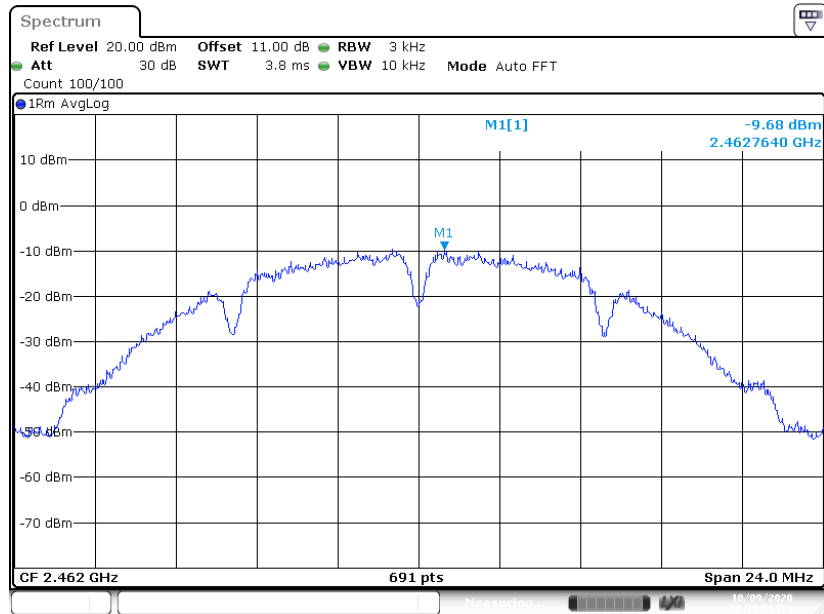
Date: 9.OCT.2020 20:28:01

802.11b Mode Channel 6



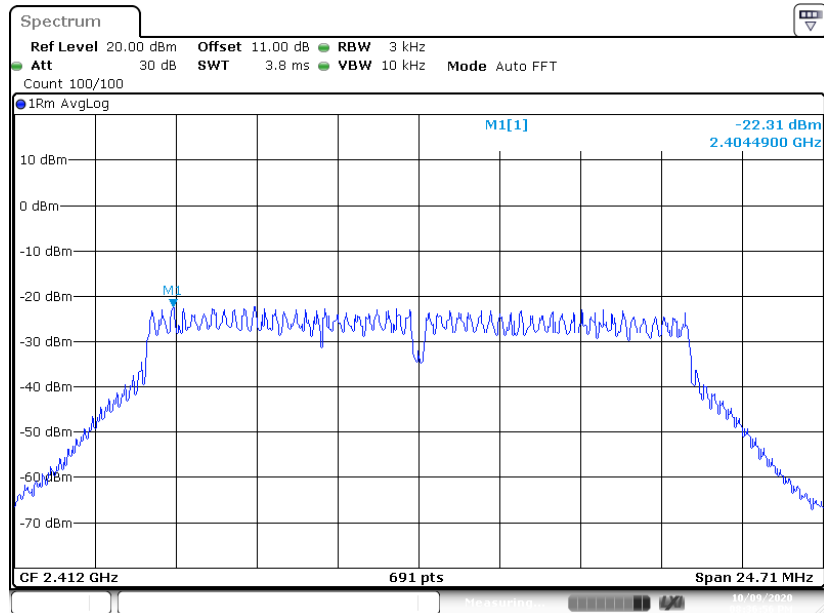
Date: 9.OCT.2020 20:34:46

802.11b Mode Channel 11



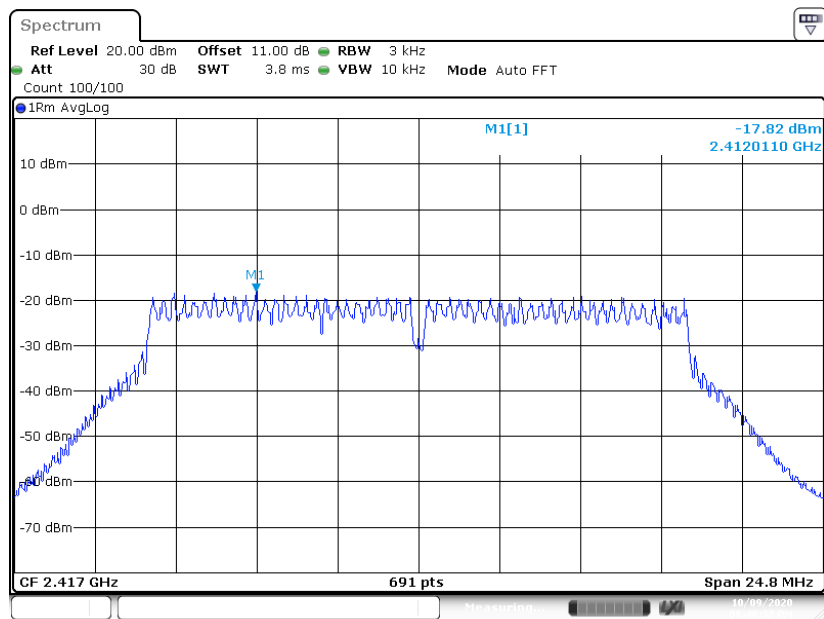
Date: 9.OCT.2020 20:33:01

802.11g Mode Channel 1



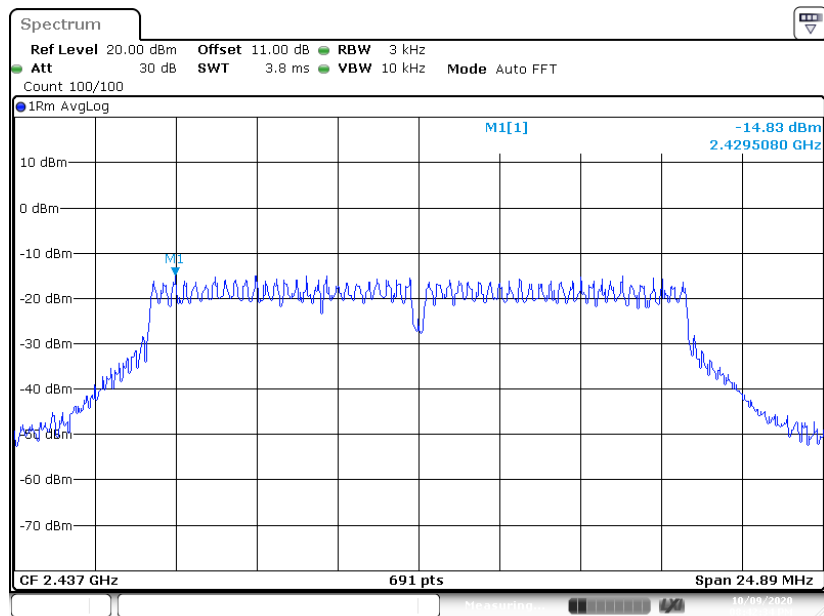
Date: 9.OCT.2020 20:36:56

802.11g Mode Channel 2



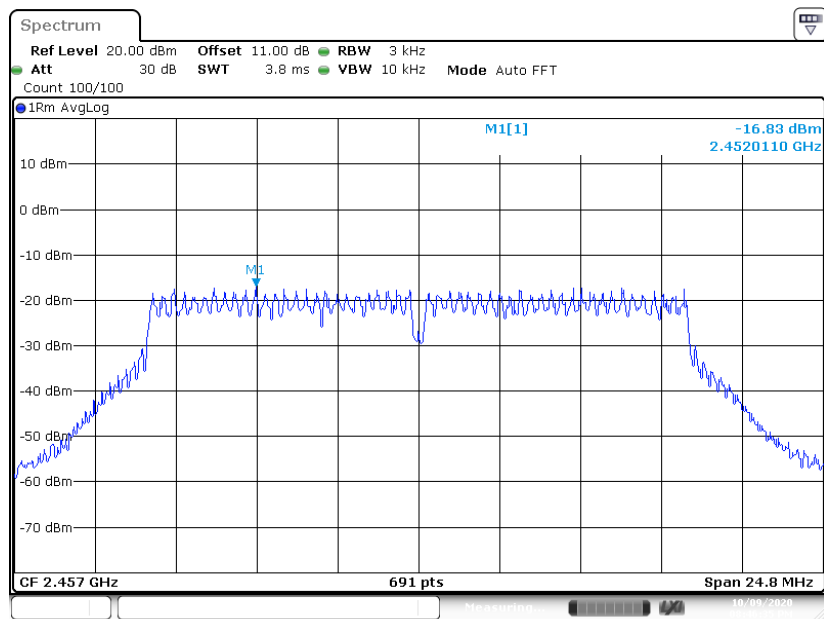
Date: 9.OCT.2020 20:40:37

802.11g Mode Channel 6

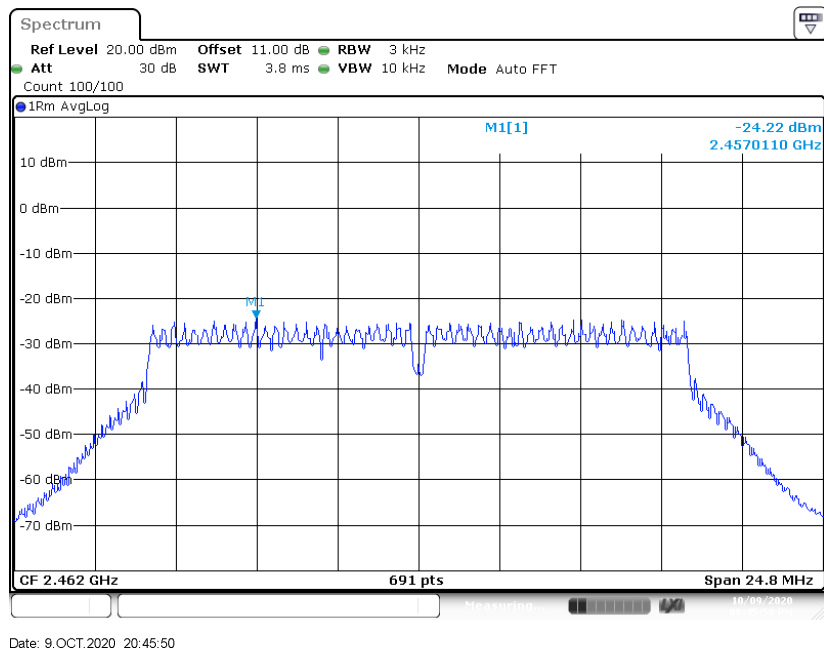


Date: 9.OCT.2020 20:42:34

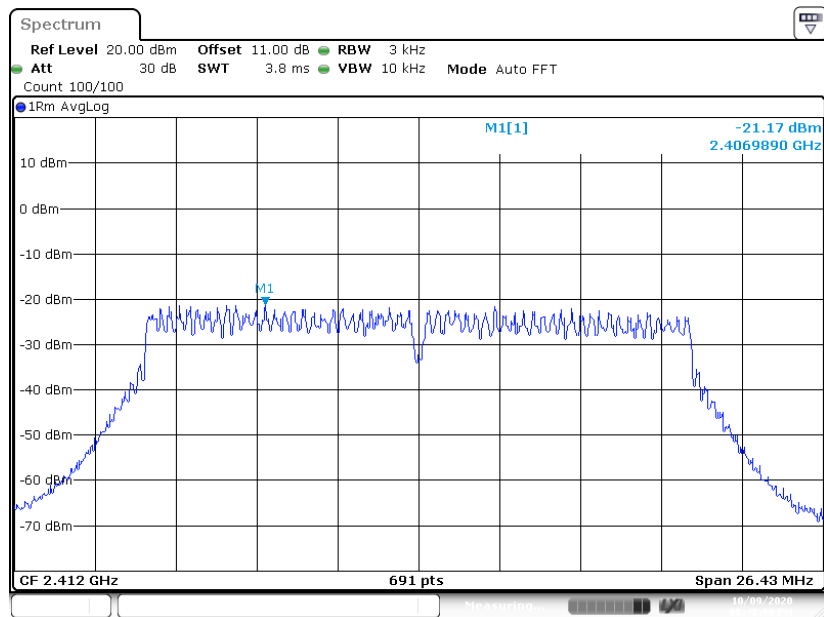
802.11g Mode Channel 10



802.11g Mode Channel 11

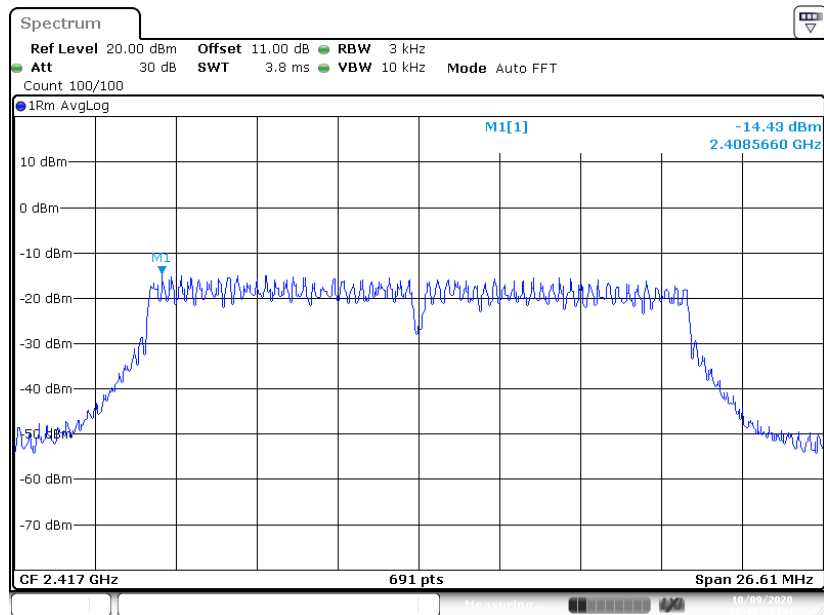


802.11n-HT20 Mode Channel 1



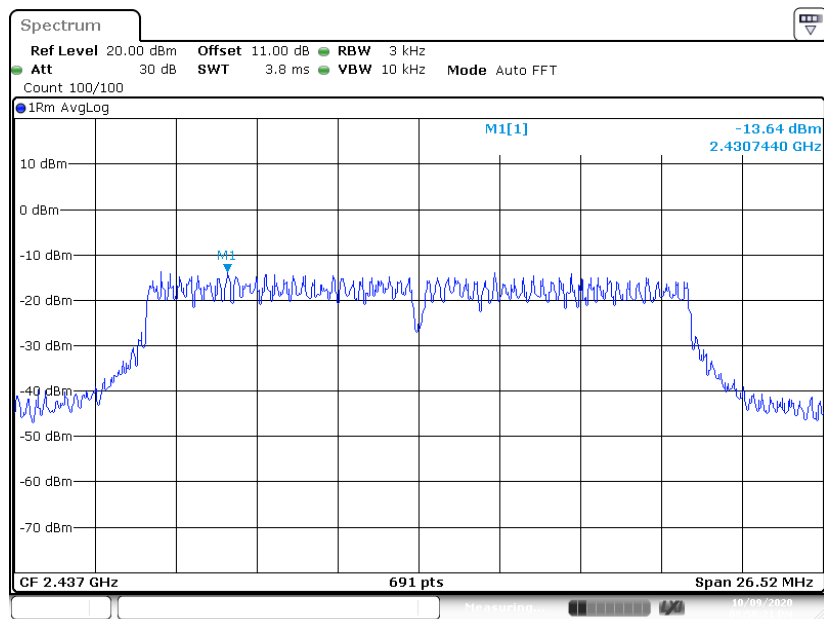
Date: 9.OCT.2020 20:48:01

802.11n-HT20 Mode Channel 2



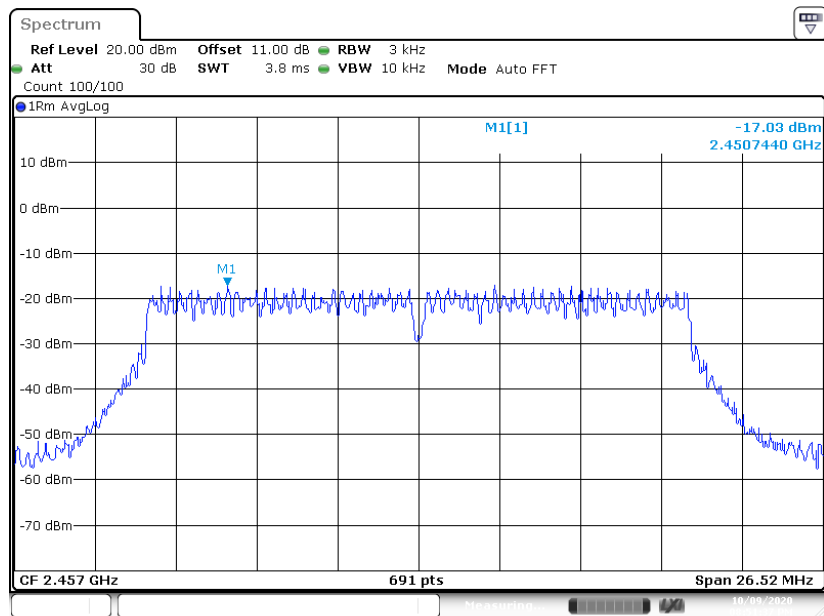
Date: 9.OCT.2020 20:48:58

802.11n-HT20 Mode Channel 6



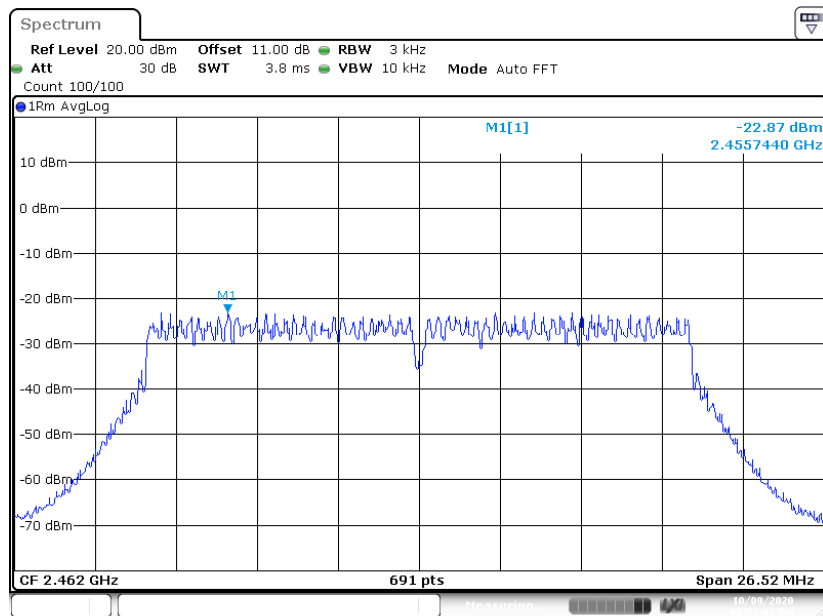
Date: 9.OCT.2020 20:50:22

802.11n-HT20 Mode Channel 10



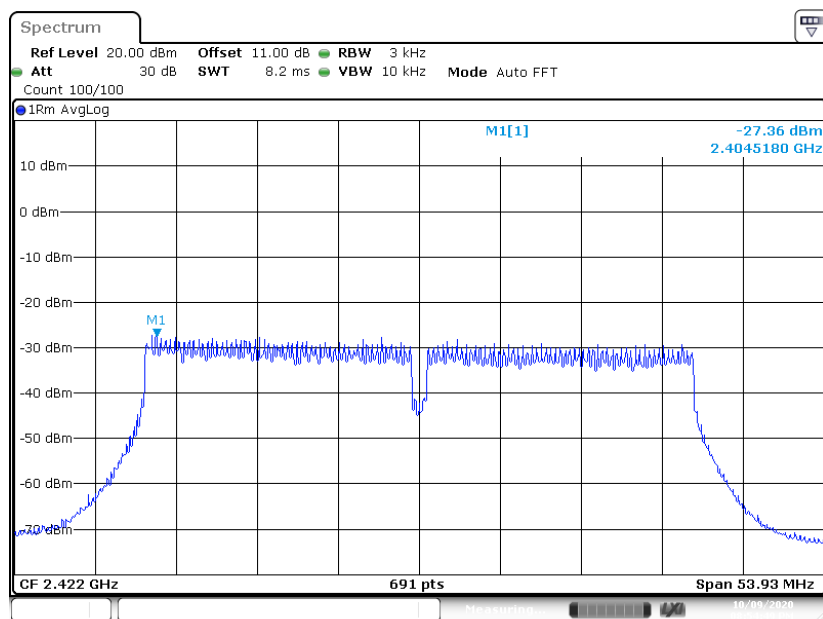
Date: 9.OCT.2020 20:51:37

802.11n-HT20 Mode Channel 11



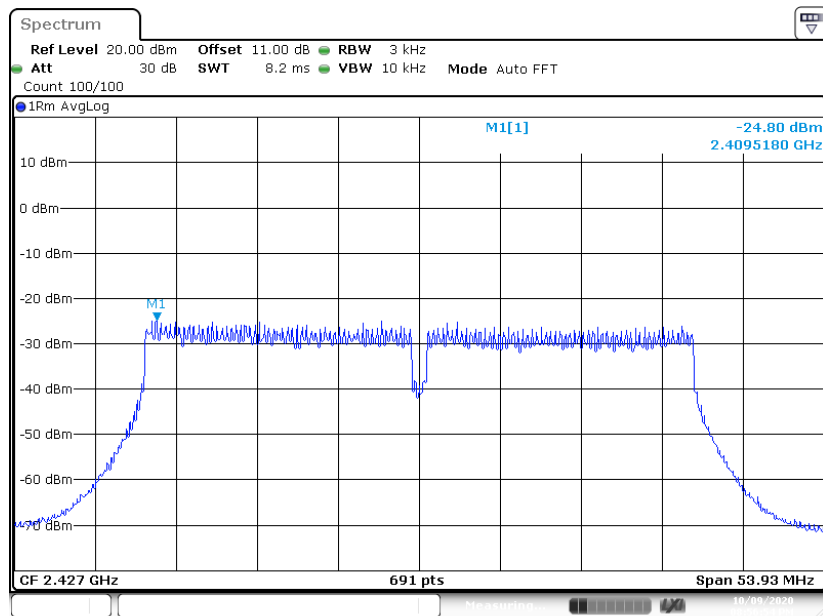
Date: 9.OCT.2020 20:53:03

802.11n-HT40 Mode Channel 3



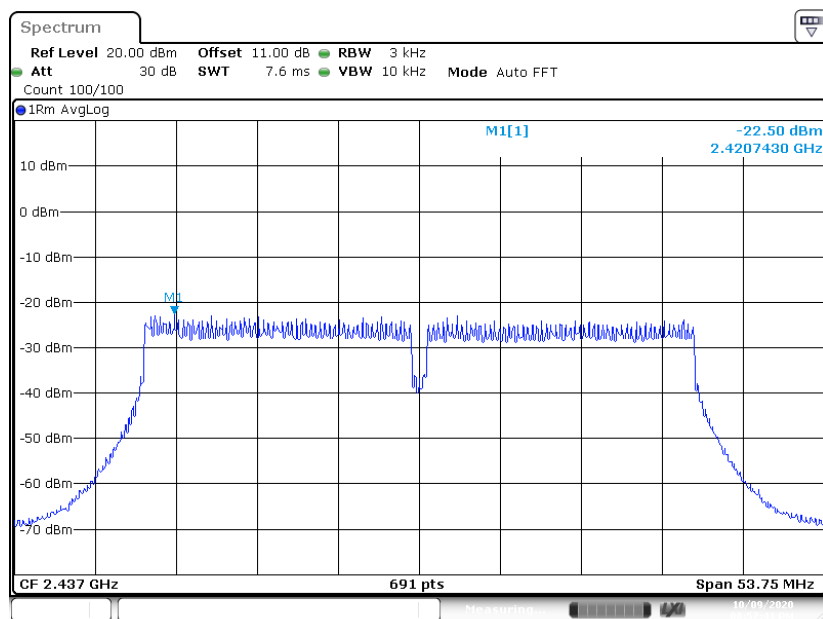
Date: 9.OCT.2020 20:54:49

802.11n-HT40 Mode Channel 4



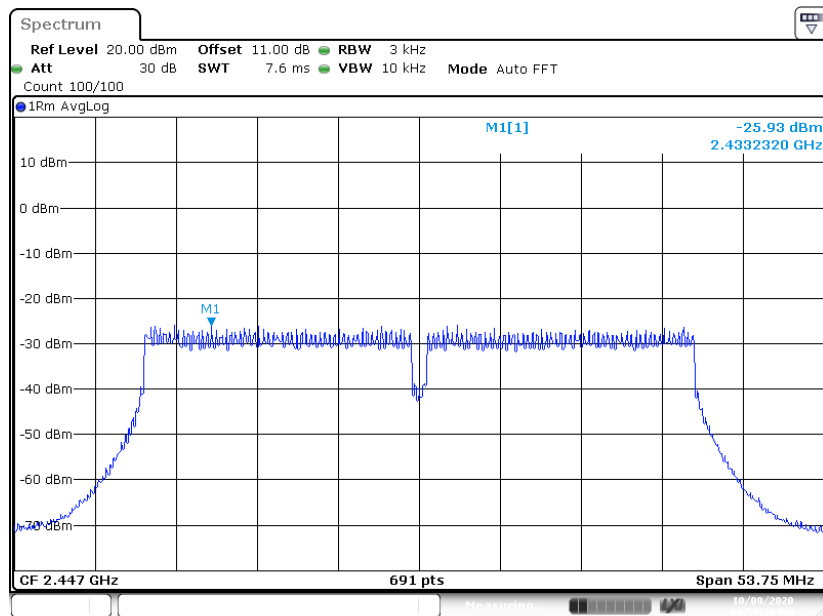
Date: 9.OCT.2020 20:56:54

802.11n-HT40 Mode Channel 6



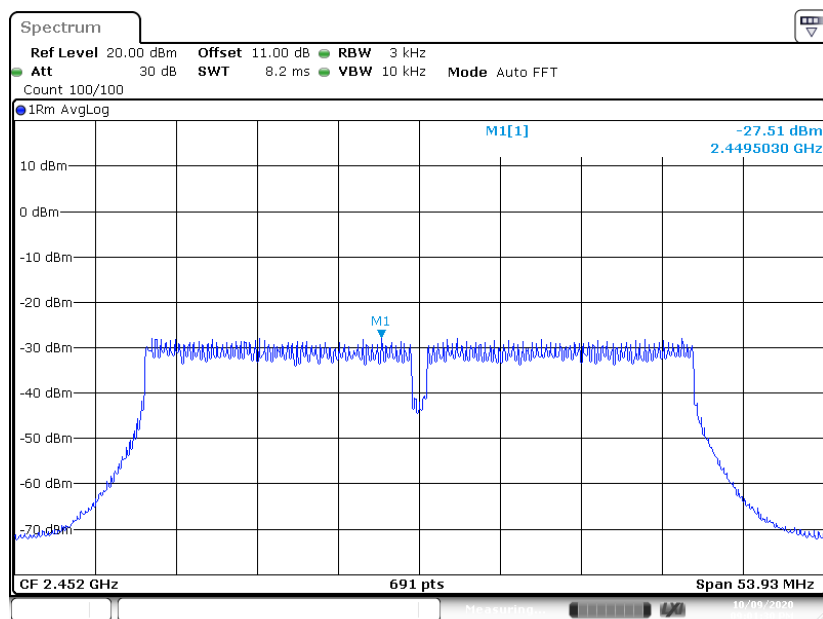
Date: 9.OCT.2020 20:57:42

802.11n-HT40 Mode Channel 8



Date: 9.OCT.2020 20:59:36

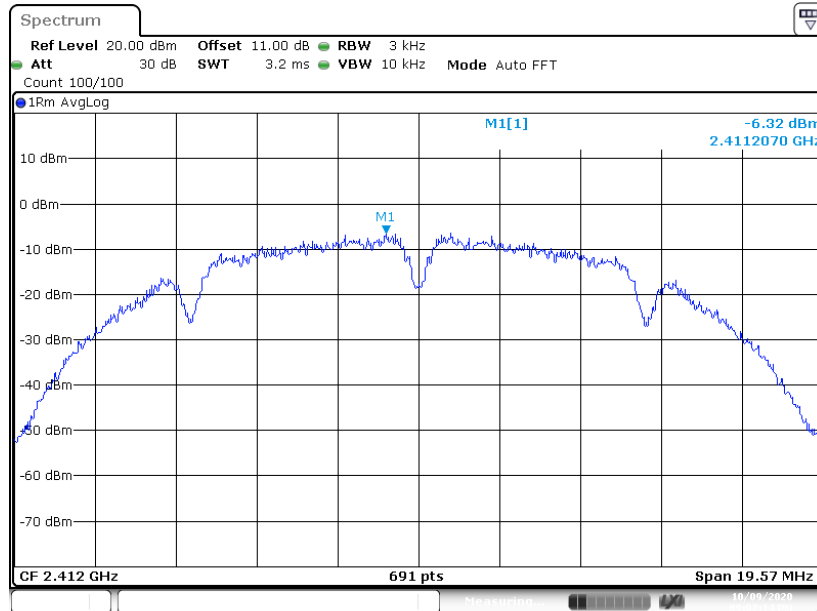
802.11n-HT40 Mode Channel 9



Date: 9.OCT.2020 21:01:30

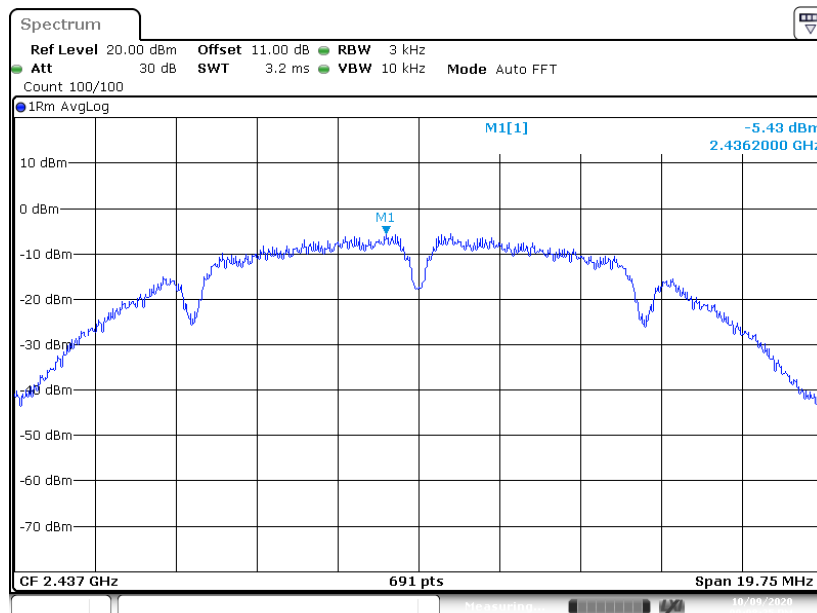
Chain 1:

802.11b Mode Channel 1



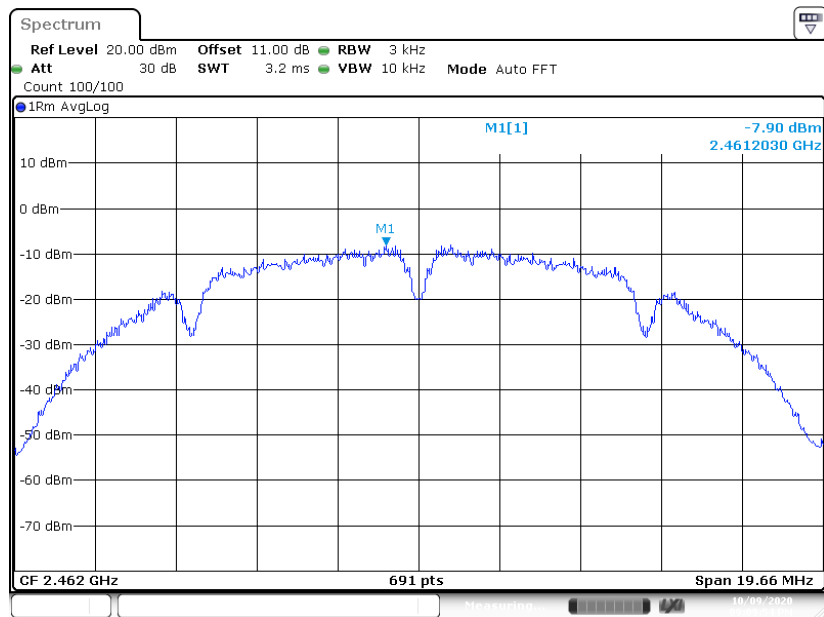
Date: 9.OCT.2020 21:07:15

802.11b Mode Channel 6



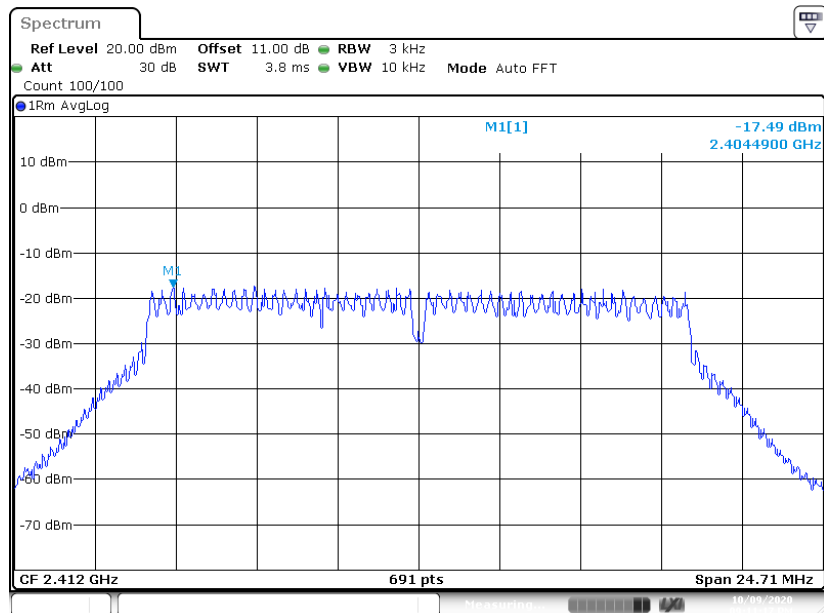
Date: 9.OCT.2020 21:08:25

802.11b Mode Channel 11



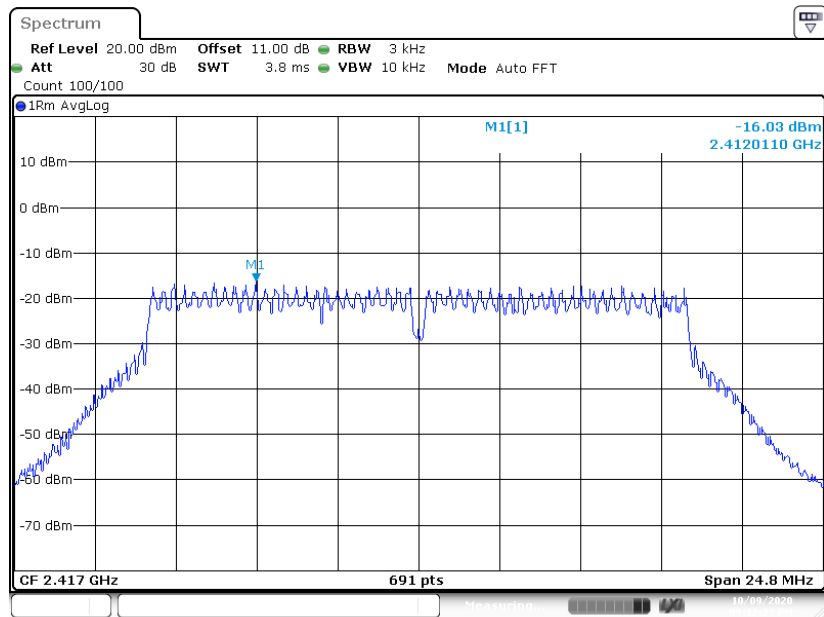
Date: 9.OCT.2020 21:09:54

802.11g Mode Channel 1



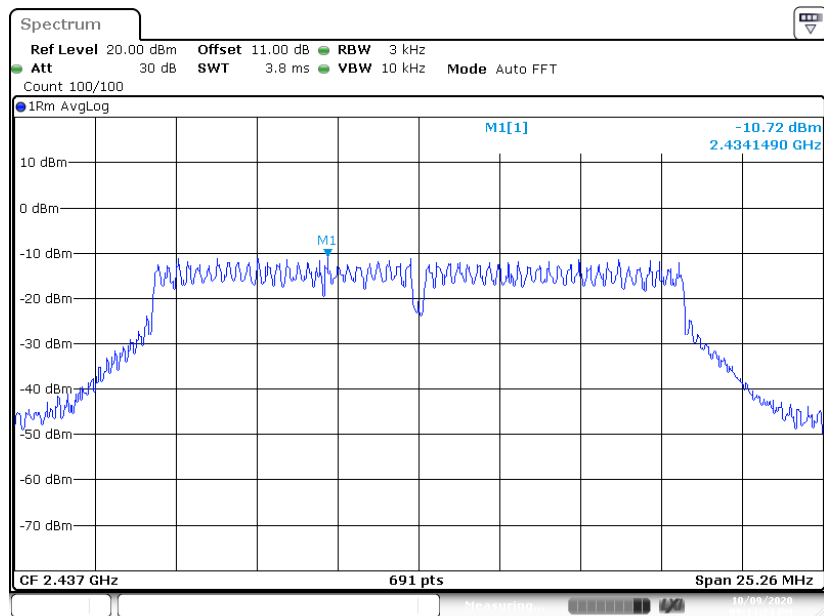
Date: 9.OCT.2020 21:11:17

802.11g Mode Channel 2



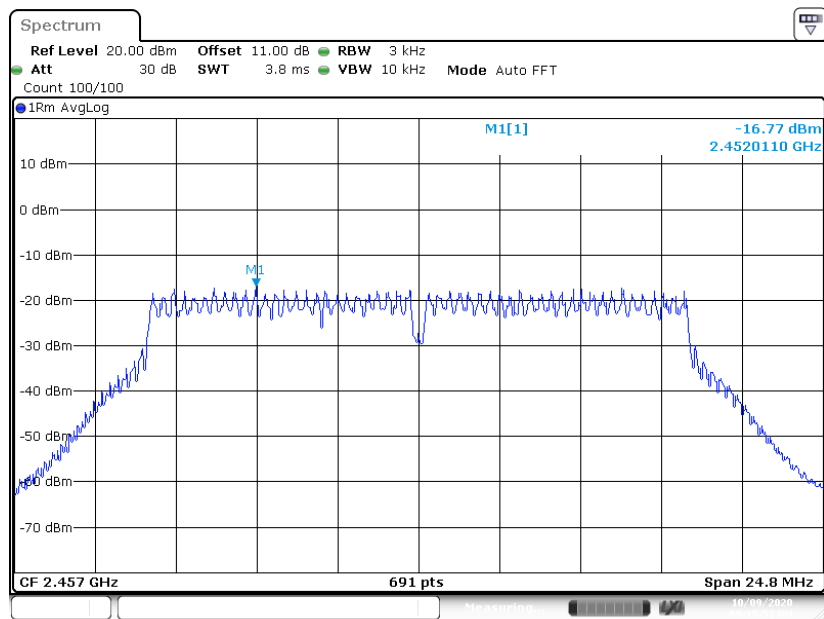
Date: 9.OCT.2020 21:12:33

802.11g Mode Channel 6



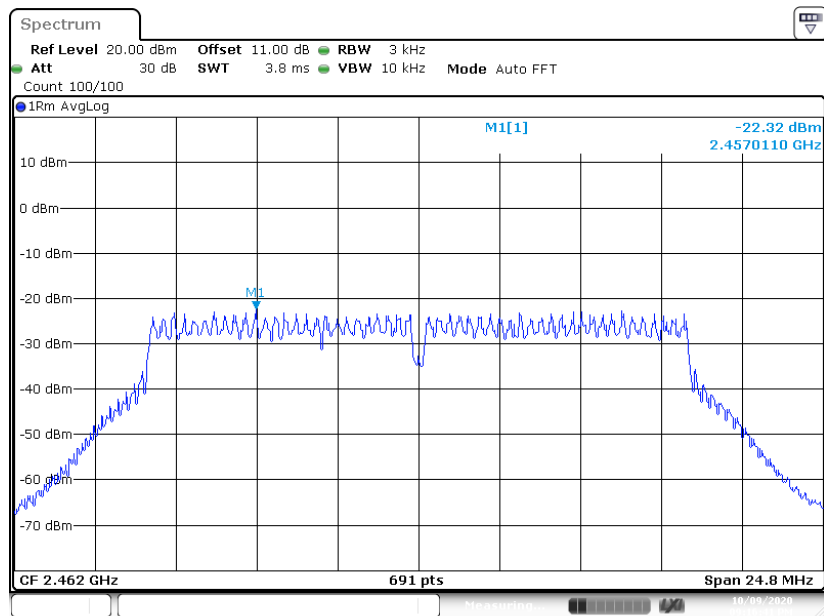
Date: 9.OCT.2020 21:14:24

802.11g Mode Channel 10



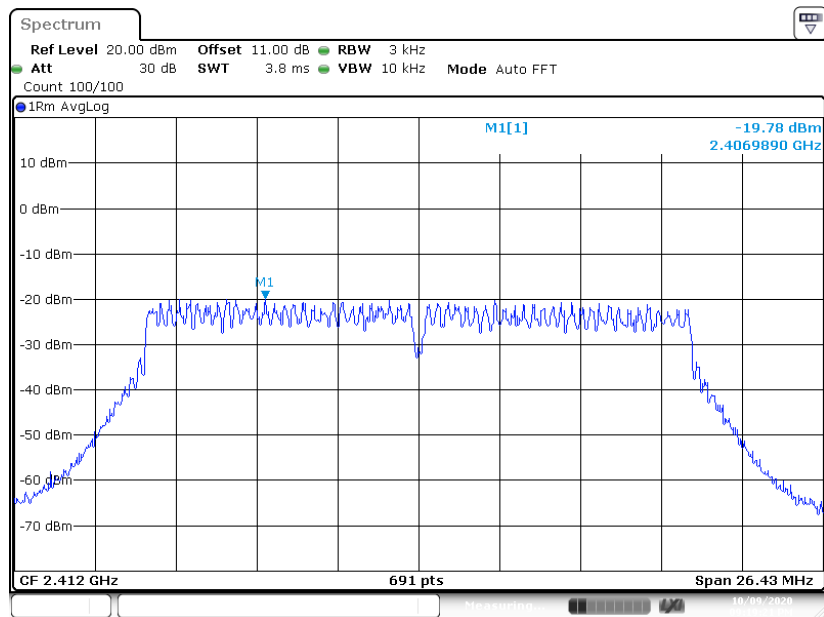
Date: 9.OCT.2020 21:15:52

802.11g Mode Channel 11

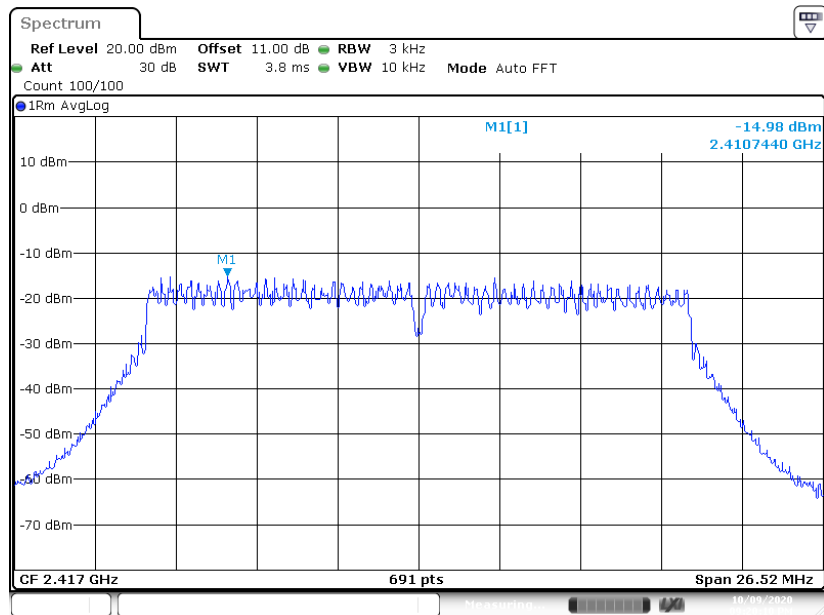


Date: 9.OCT.2020 21:16:41

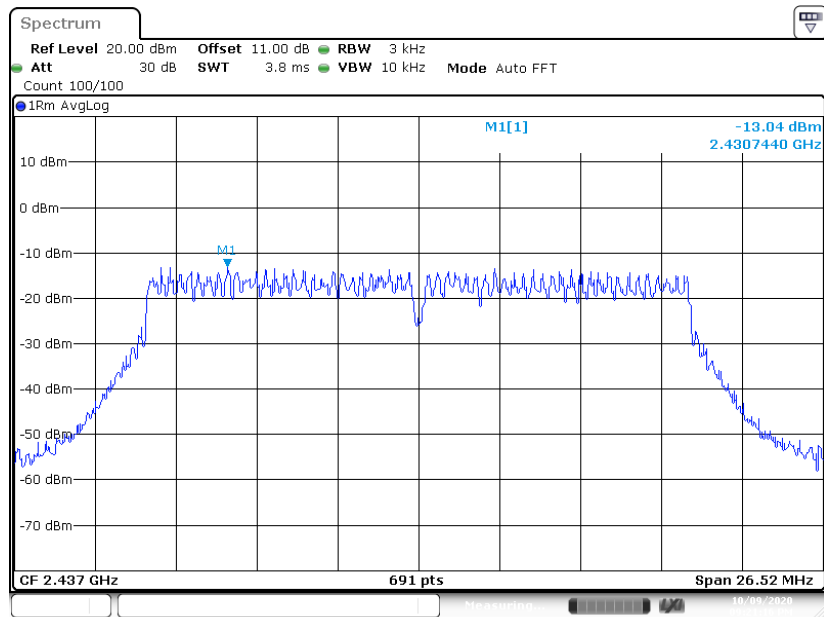
802.11n-HT20 Mode Channel 1



802.11n-HT20 Mode Channel 2

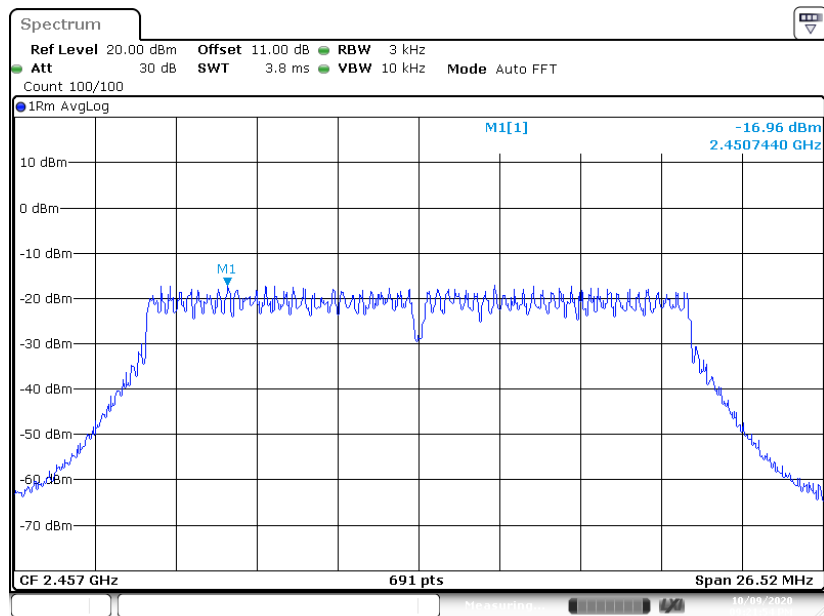


802.11n-HT20 Mode Channel 6



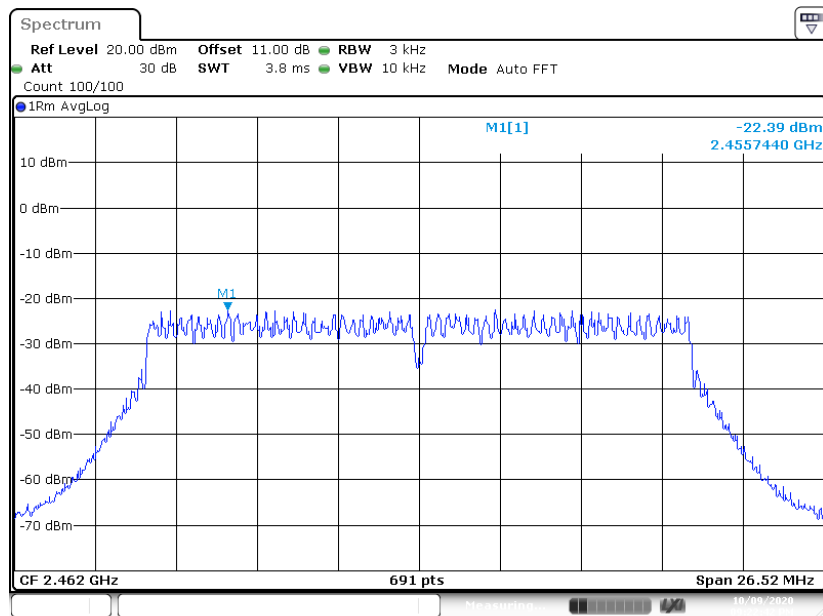
Date: 9.OCT.2020 21:21:17

802.11n-HT20 Mode Channel 10



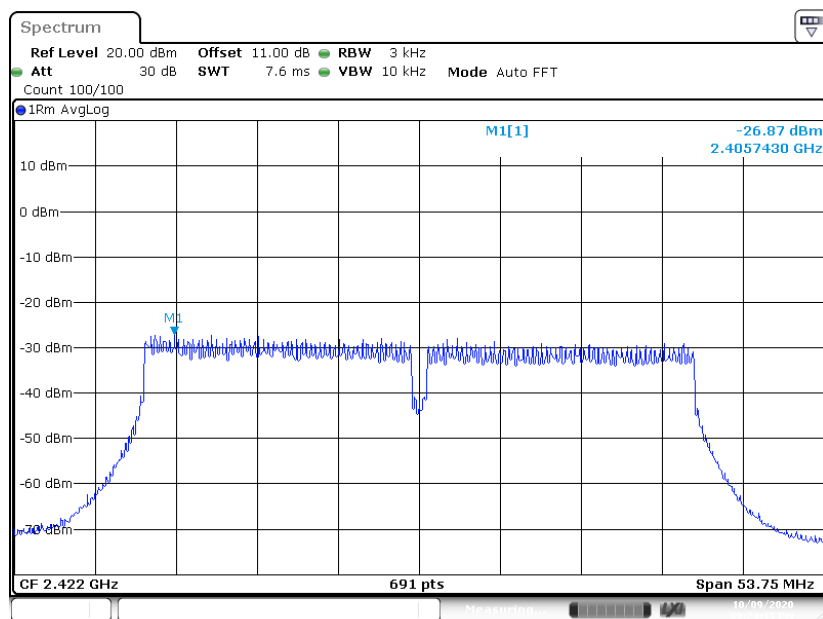
Date: 9.OCT.2020 21:21:53

802.11n-HT20 Mode Channel 11



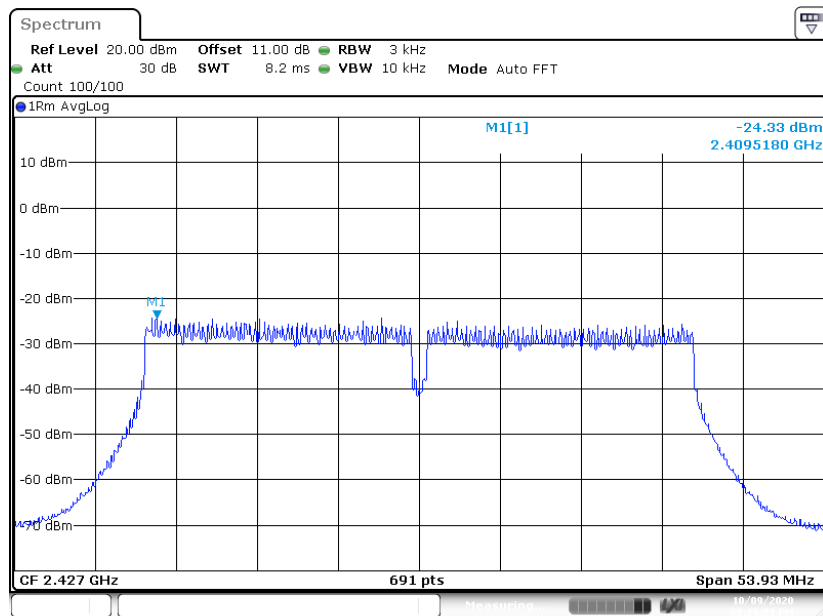
Date: 9.OCT.2020 21:22:42

802.11n-HT40 Mode Channel 3



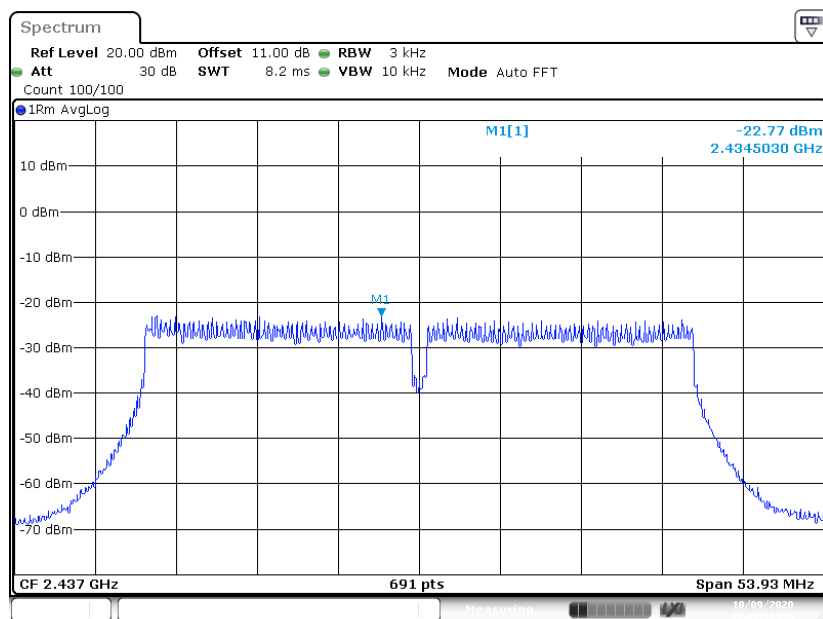
Date: 9.OCT.2020 21:24:11

802.11n-HT40 Mode Channel 4



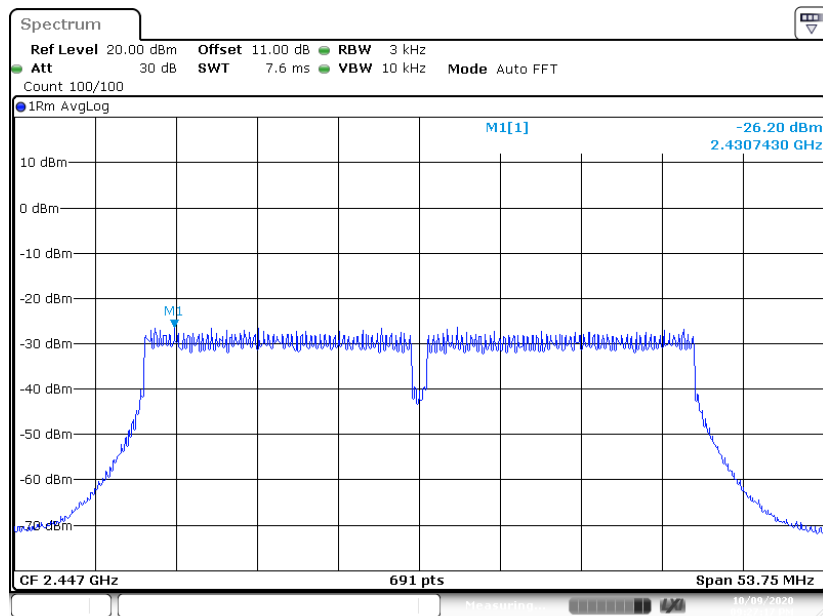
Date: 9.OCT.2020 21:25:10

802.11n-HT40 Mode Channel 6



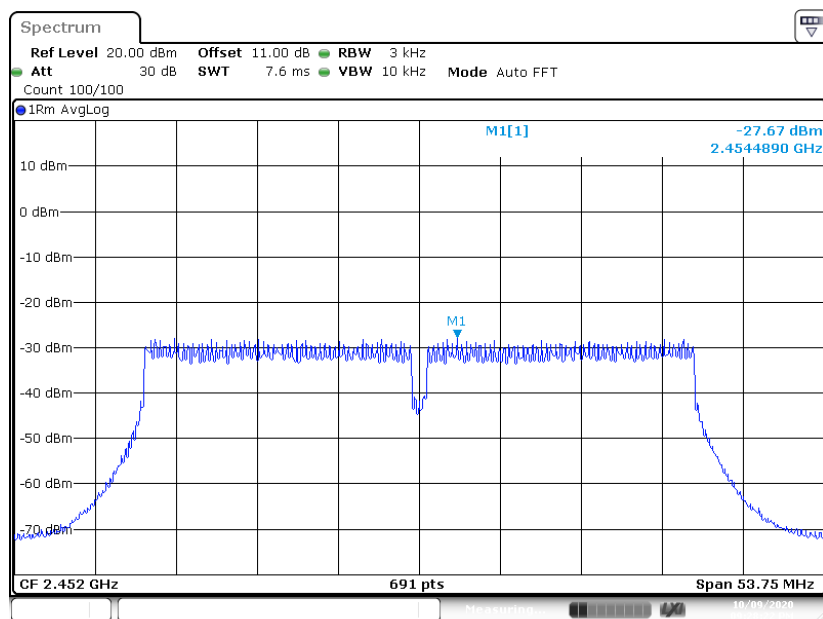
Date: 9.OCT.2020 21:25:52

802.11n-HT40 Mode Channel 8



Date: 9.OCT.2020 21:27:17

802.11n-HT40 Mode Channel 9



Date: 9.OCT.2020 21:28:22

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- 2: Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.
- 3: Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.
- 4: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.
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