



FCC PART 15.247

TEST REPORT

For

Grandstream Networks, Inc.

126 Brookline Ave, 3rd Floor Boston, MA 02215, USA

FCC ID: YZZGWN7630LR

Report Type: Original Report	Product Type: Outdoor Long-Range High-Performance 802.11ac Wi-Fi Access Point
Report Number: <u>RSZ190917002-00B</u>	
Report Date: <u>2019-11-19</u>	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

Product	Outdoor Long-Range High-Performance 802.11ac Wi-Fi Access Point
Model	GWN7630LR
Frequency Range	Wi-Fi: 2412~2462MHz
Average Output Power	Wi-Fi: 802.11b: 26.85 dBm, 802.11g: 23.28 dBm 802.11n-HT20: 22.11 dBm 802.11n-HT40: 20.74 dBm
Modulation Technique	Wi-Fi: DSSS, OFDM
Antenna Specification	3.5dBi
Voltage Range	DC 48V from POE
Date of Test	2019/09/21~2019/11/18
Sample serial number	190917002
Received date	2019/09/17
Sample/EUT Status	Good condition

Objective

This report is prepared on behalf of *Grandstream Networks, Inc.* 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 15B JAB and Part 15.407 NII submissions with FCC ID: YZZGWN7630LR.

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 KDB 558074 D01 15.247 Meas Guidance v05r02.

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

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		±5%
RF Output Power with Power meter		±0.73dB
RF conducted test with spectrum		±1.6dB
AC Power Lines Conducted Emissions		±1.95dB
Emissions, Radiated	Below 1GHz	±4.75dB
	Above 1GHz	±4.88dB
Temperature		±1 °C
Humidity		±6%
Supply voltages		±0.4%

Note: The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval. Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty.

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No.: 342867, the FCC Designation No.: CN1221.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062B.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

For 802.11b, 802.11g and 802.11n-HT20 mode, 11 channels are provided to testing:

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

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

For 802.11n-HT40 mode, 7 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2422	6	2447
2	2427	7	2452
3	2432	/	/
4	2437	/	/
5	2442	/	/

EUT was tested with Channel 1, 2, 4, 6 and 7.

Note: 802.11b/g/n20/n40 all support SISO&MIMO mode, the pre-scan result for MIMO mode is the worst, so just test MIMO mode.

Equipment Modifications

No modification was made to the EUT tested.

EUT Exercise Software

“Putty, QATool” was used in the test.

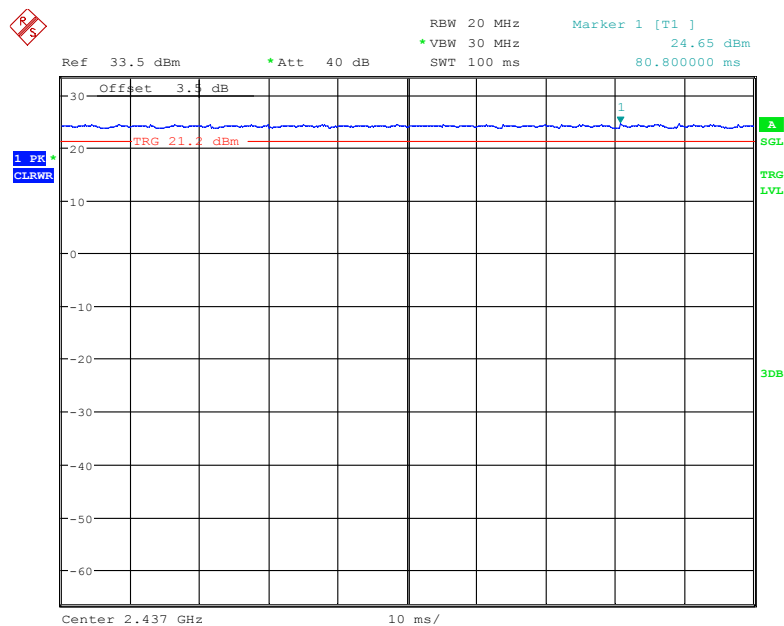
The device was tested with the worst case was performed as below (Antenna 0&1&2&3 used the same power level):

Mode	Data Rate	Power level				
		Low Channel	2417 MHz	Middle Channel	2457 MHz	High Channel
802.11b	1 Mbps	15.5	15.0	17.5	14	14.0
802.11g	6 Mbps	11.5	15.5	17.5	14.5	12.0
802.11n-HT20	MCS0	12.0	17.0	17.5	17.5	14.5

Mode	Data Rate	Power level				
		Low Channel	2427 MHz	Middle Channel	2447 MHz	High Channel
802.11n-HT40	MCS0	8.5	10.0	17.5	13.0	13.0

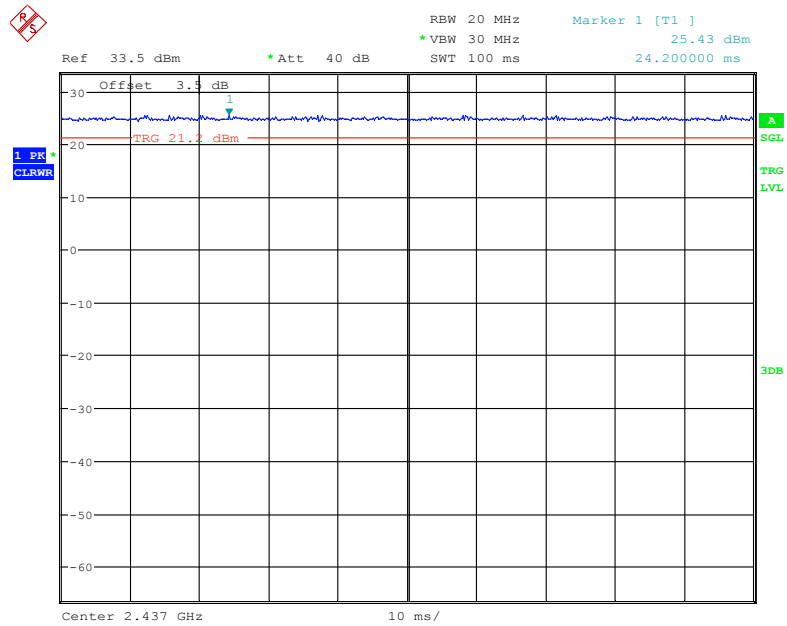
Duty cycle

802.11b mode



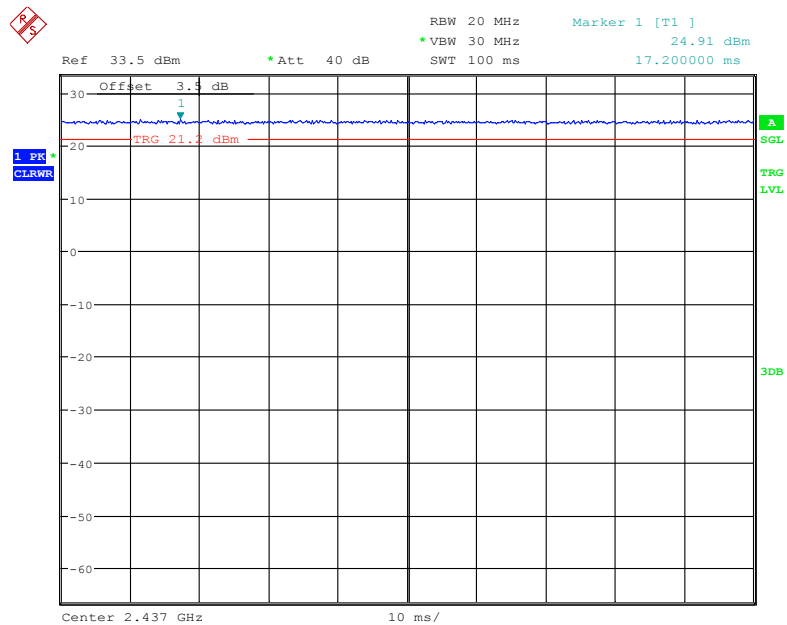
Date: 17.OCT.2019 23:03:19

802.11g mode



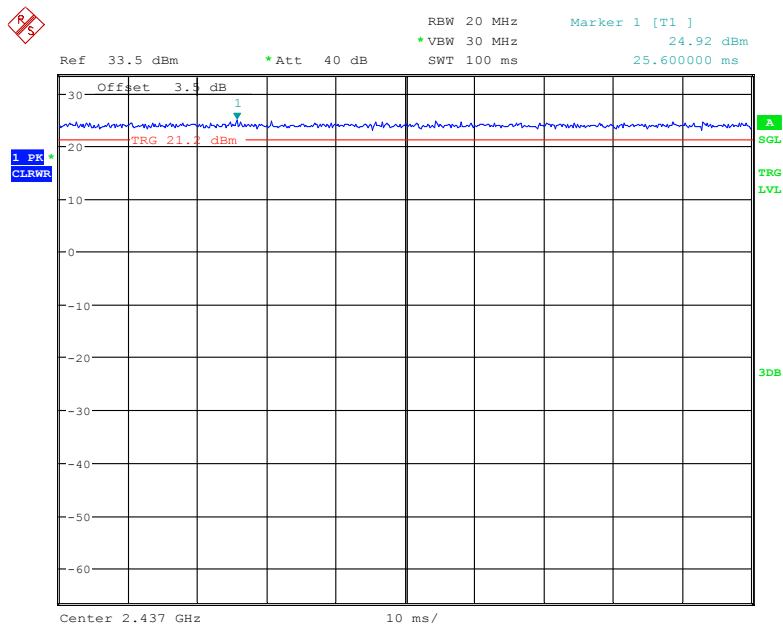
Date: 17.OCT.2019 23:03:00

802.11n-HT20 Mode



Date: 17.OCT.2019 23:02:44

802.11n-HT40 Mode



Date: 17.OCT.2019 23:01:50

Support Equipment List and Details

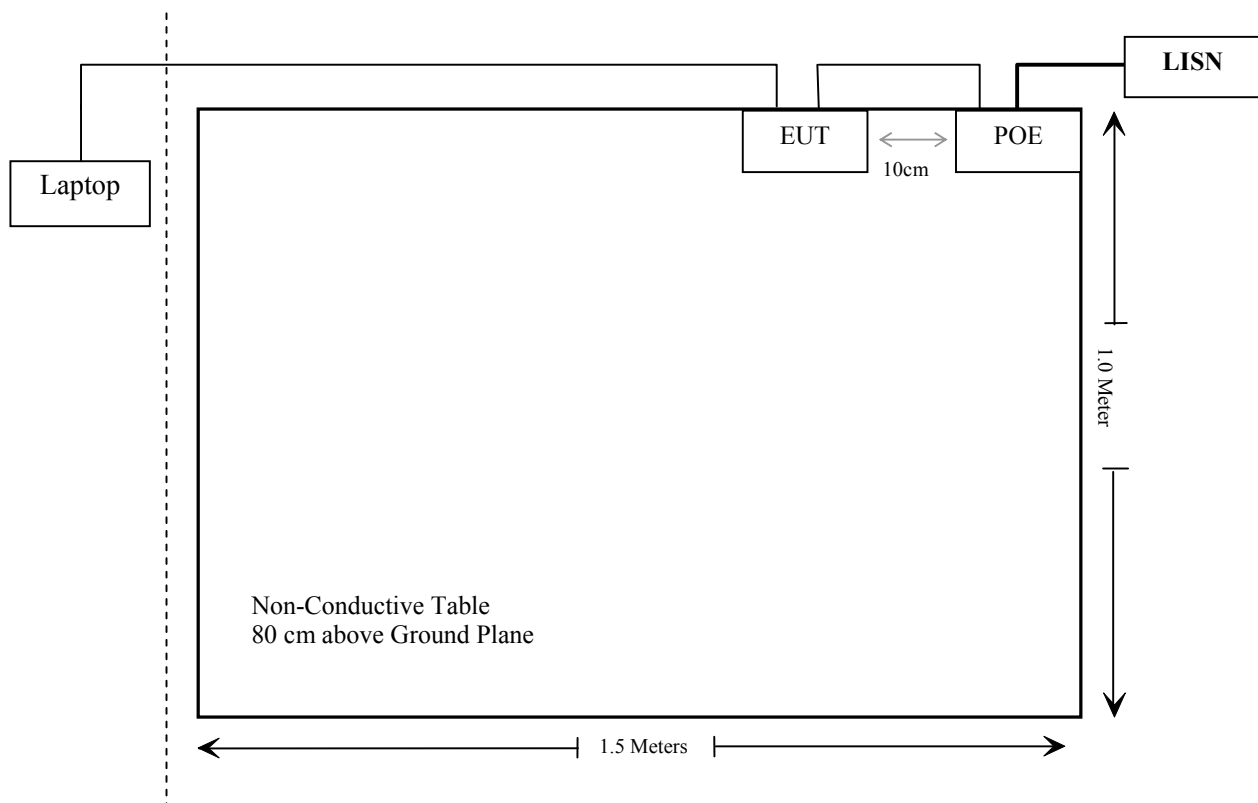
Manufacturer	Description	Model	Serial Number
Unknown	POE	VX-P11000GB	Unknown
HP	Laptop	Compaq CQ45	5CG33407QL

External I/O Cable

Cable Description	Length (m)	From/Port	To
Unshielded Detachable AC Cable	1.0	LISN	POE
Unshielded Detachable RJ45 Cable	1.2	POE	EUT
Unshielded Detachable RJ45 Cable	1.8	EUT	Laptop

Block Diagram of Test Setup

For conducted emission:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247 (i), §2.1091	Maximum Permissible Exposure(MPE)	Compliance
§15.203	Antenna Requirement	Compliance
§15.207 (a)	AC Line Conducted Emissions	Compliance
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliance
§15.247 (a)(2)	6 dB Emission Bandwidth	Compliance
§15.247(b)(3)	Maximum Conducted Output Power	Compliance
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliance
§15.247(e)	Power Spectral Density	Compliance

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
AC Line Conducted Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2019-07-11	2020-07-11
Rohde & Schwarz	LISN	ENV216	3560.6650.12-101613-Yb	2019-01-25	2020-01-25
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2019-03-02	2020-03-02
Rohde & Schwarz	CE Test software	EMC 32	V8.53.0	NCR	NCR
Un-known	Conducted Emission Cable	78652	UF A210B-1-0720-504504	2018-11-12	2019-11-12
Radiated Emission Test (Below 1GHz)					
Sonoma Instrument	Amplifier	310N	186238	2018-11-12	2019-11-12
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2017-12-22	2020-12-21
Rohde & Schwarz	EMI Test Receiver	ESR3	102455	2019-07-09	2020-07-08
Ducommun technologies	RF Cable	UFA147A-2362-100100	MFR64639 231029-003	2018-11-12	2019-11-12
Ducommun technologies	RF Cable	104PEA	218124002	2018-11-12	2019-11-12
Rohde & Schwarz	Auto test software	EMC 32	V9.10	NCR	NCR

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Radiated Emission Test (Above 1GHz)					
A.H. System	Horn Antenna	SAS-200/571	135	2018-09-01	2021-08-31
Rohde & Schwarz	Spectrum Analyzer	FSV40-N	102259	2019-07-22	2020-07-21
COM-POWER	Pre-amplifier (just for below 18GHz)	PA-122	181919	2019-11-12	2020-11-12
Ducommun technologies	RF Cable	RG-214	1	2018-11-12	2019-11-12
Ducommun technologies	RF Cable	RG-214	1	2019-11-12	2020-11-12
Ducommun technologies	RF Cable	RG-214	2	2018-11-12	2019-11-12
Ducommun technologies	RF Cable	RG-214	2	2019-11-12	2020-11-12
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-04	2017-12-29	2020-12-28
Heatsink Required	Amplifier (just for above 18GHz)	QLW-18405536-J0	15964001002	2018-11-12	2019-11-12
Sinoscite	Band Reject Filter (just for below 18GHz)	BSF2402-2480MN-0898-001	99632	2019-11-12	2020-11-12
RF Conducted Test					
Agilent	USB wideband power meter	U2021XA	MY54250003	2019-07-10	2020-07-09
WEINSCHTEL	3dB Attenuator	6231	666	Each Time	
Rohde & Schwarz	Spectrum Analyzer	FSU26	200120	2018-12-24	2019-12-24
Ducommun technologies	RF Cable	RG-214	3	Each Time	

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) 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) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 15.247 (i) and subpart 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

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

Result

Calculated Formulary:

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

S = 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:

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

Frequency (MHz)	Antenna Gain		Tune up conducted power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
	(dBi)	(numeric)	(dBm)	(mW)			
2412-2462	3.5	2.24	27	501.19	20	0.22	1

Note:

- 1) To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.
- 2) 2.4GHz or 5GHz Wi-Fi can transmit simultaneously for this device.
- 3) Simultaneous transmitting consideration: (referring to the 5G band report, the highest MPE for 5G band is 0.11mW/cm²)

The ratio= $MPE_{DTS}/limit + MPE_{UNII}/limit = 0.22 + 0.11 = 0.33 < 1.0$, simultaneous exposure is not required.

Result: Compliance

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 four external antennas use a unique type of connector to attach to the EUT. The gain is 3.5 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

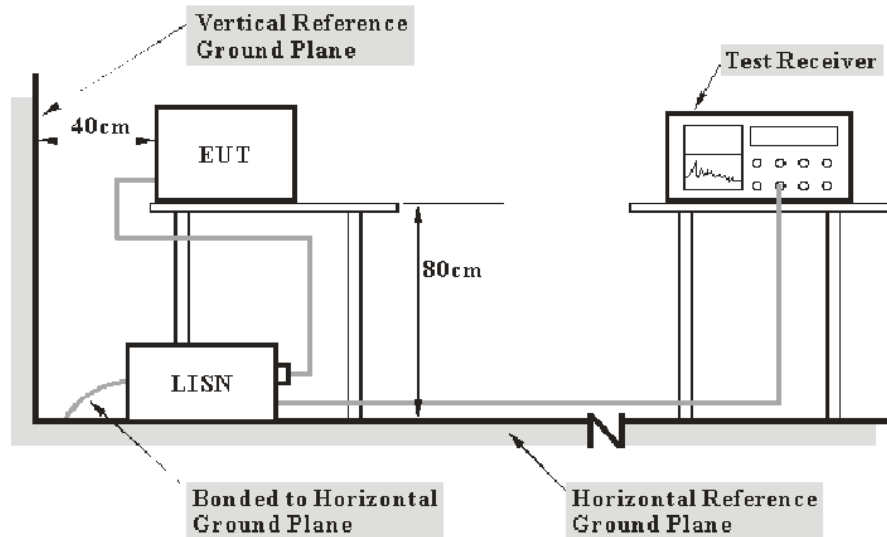
Result: Compliance.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207

EUT Setup



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

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

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

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

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

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

Test Procedure

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

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

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

Corrected Factor & Margin Calculation

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

$$\text{Correction Factor} = \text{LISN VDF} + \text{Cable Loss} + \text{Transient Limiter Attenuation}$$

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

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

Test Results Summary

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

Test Data

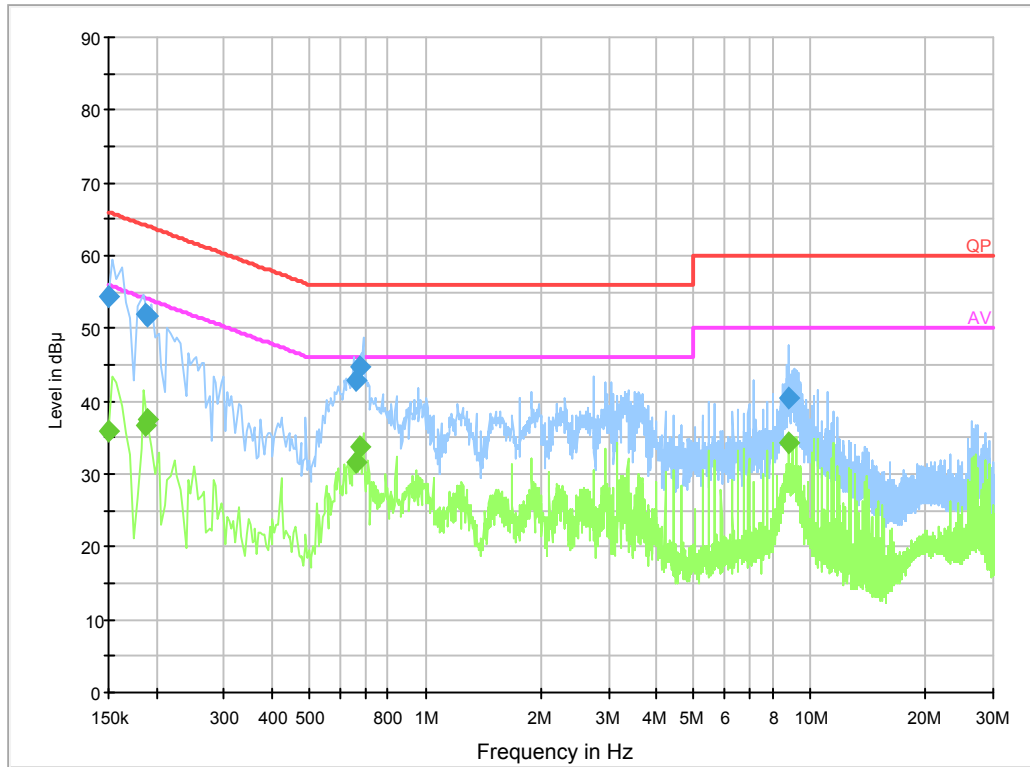
Environmental Conditions

Temperature:	25 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

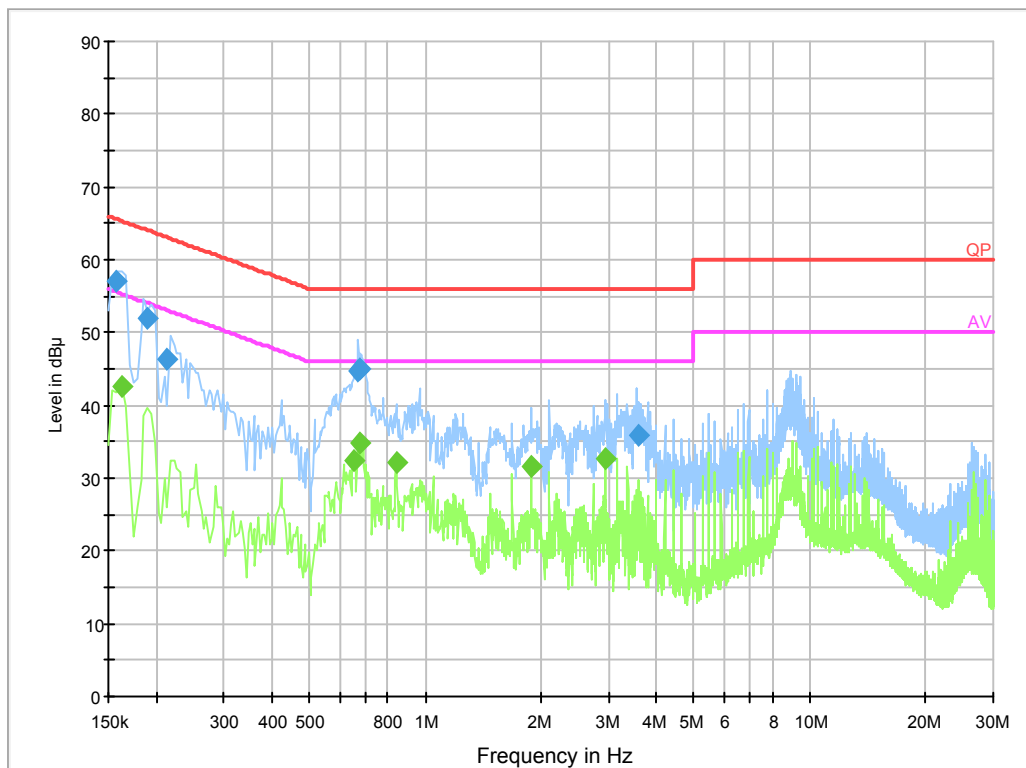
The testing was performed by Kiki Geng on 2019-09-21.

EUT operation mode: Transmitting (the worst case is Wi-Fi 802.11b Mode in MIMO, Middle channel)

Note: The MIMO is the worst mode

AC 120 V/60 Hz, Line:

Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.150000	54.3	19.8	66.0	11.7	QP
0.186500	52.1	19.8	64.2	12.1	QP
0.190501	51.7	19.8	64.0	12.3	QP
0.659750	42.8	19.8	56.0	13.2	QP
0.679650	44.7	19.8	56.0	11.3	QP
8.829430	40.4	20.0	60.0	19.6	QP
0.150000	36.0	19.8	56.0	20.0	Ave.
0.186500	36.7	19.8	54.2	17.5	Ave.
0.190501	37.6	19.8	54.0	16.4	Ave.
0.659750	31.7	19.8	46.0	14.3	Ave.
0.679650	33.7	19.8	46.0	12.3	Ave.
8.829430	34.4	20.0	50.0	15.6	Ave.

AC 120V/ 60 Hz, Neutral:

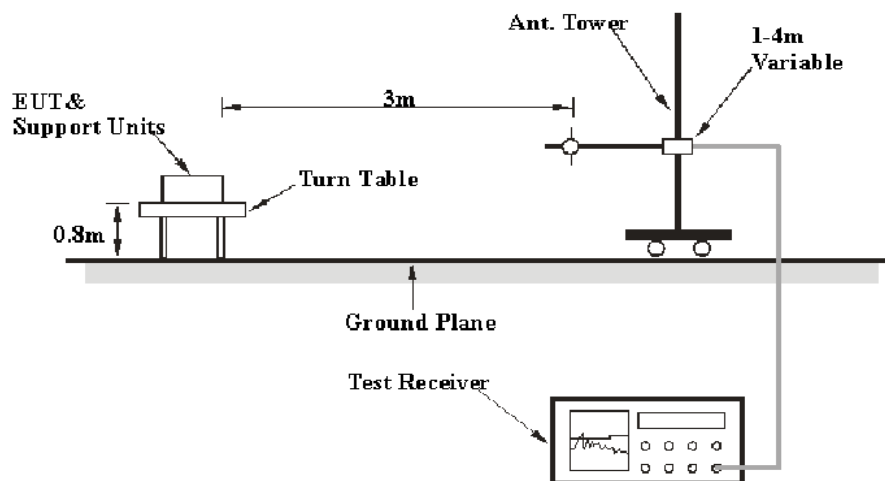
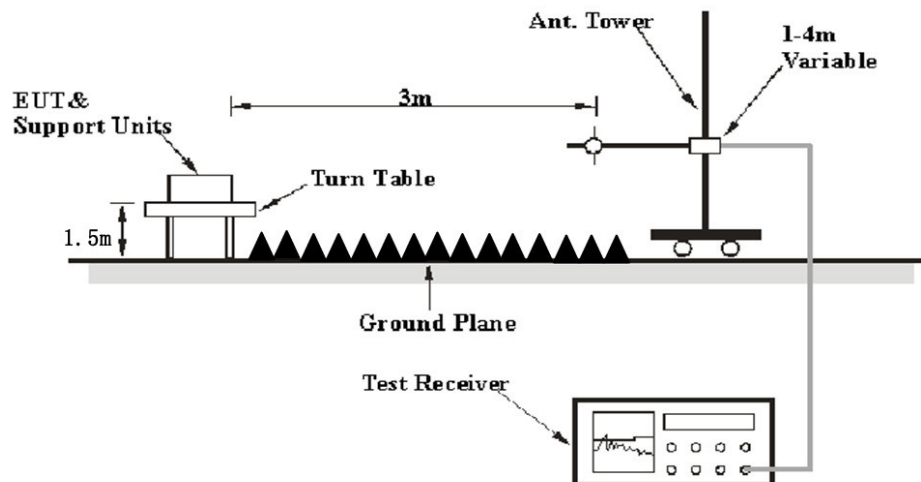
Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.157500	57.1	19.8	65.6	8.5	QP
0.190501	51.9	19.8	64.0	12.1	QP
0.213500	46.2	19.8	63.1	16.8	QP
0.667870	44.6	19.8	56.0	11.4	QP
0.675950	45.1	19.8	56.0	10.9	QP
3.580690	35.8	19.9	56.0	20.2	QP
0.162000	42.6	19.8	55.4	12.8	Ave.
0.650000	32.3	19.8	46.0	13.7	Ave.
0.678000	34.7	19.8	46.0	11.3	Ave.
0.842000	32.1	19.8	46.0	13.9	Ave.
1.894000	31.6	19.9	46.0	14.4	Ave.
2.942000	32.7	19.9	46.0	13.3	Ave.

Note:

- 1) Correction Factor = LISN VDF (Voltage Division Factor) + Cable Loss + Transient Limiter Attenuation
- 2) Corrected Amplitude = Reading + Correction Factor
- 3) Margin = Limit – Corrected Amplitude

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 & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz ^{Note 1}	/	Average
	1MHz	> 1/T ^{Note 2}	/	Average

Note 1: when duty cycle is no less than 98%

Note 2: when duty cycle is less than 98%

Test Procedure

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 modes 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:

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

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

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

Test 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

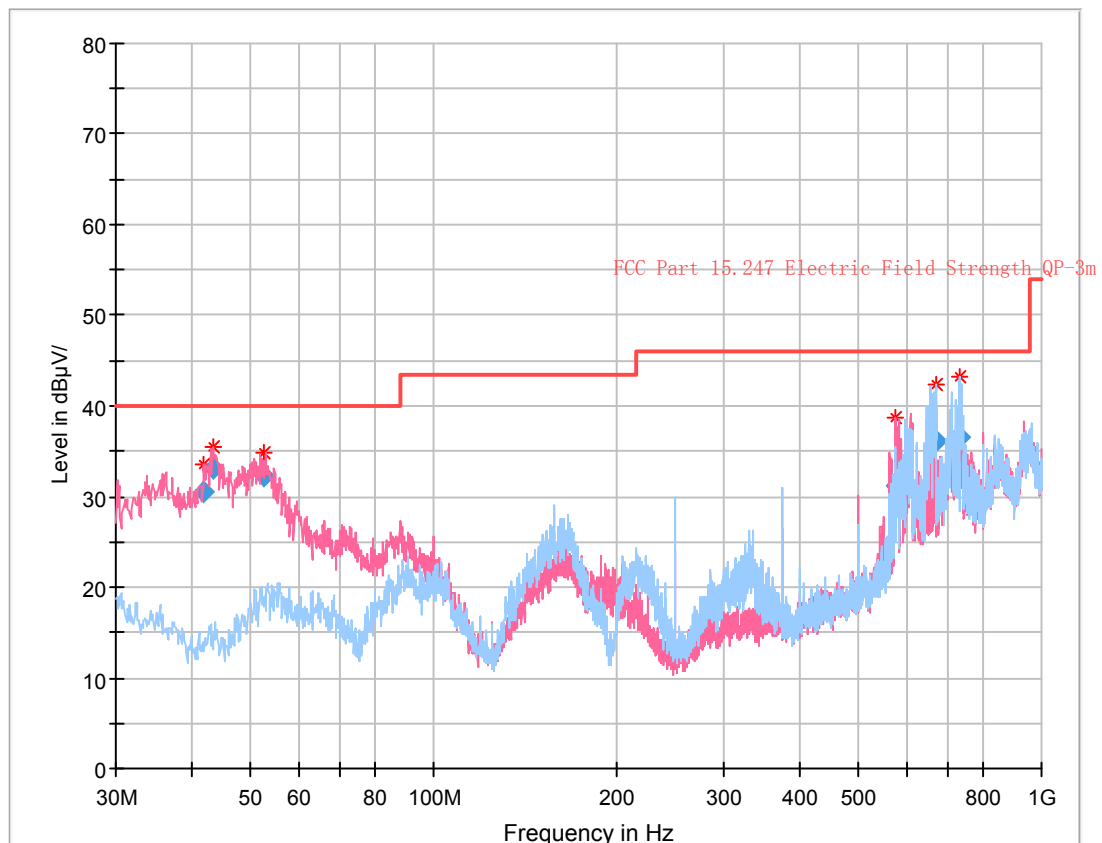
Temperature:	24~25 °C
Relative Humidity:	51~52 %
ATM Pressure:	101.0 kPa

The testing was performed by Zero Yan on 2019-09-23 for below 1G, by Curry Xiang on 2019-11-18 for 1~18GHz and by Curry Xiang on 2019-11-04 for above 18GHz.

Note: The MIMO is the worst mode, the data below all tested in MIMO mode.

30 MHz~1 GHz:

EUT operation mode: Transmitting (the worst case is 802.11b Mode in MIMO, Middle channel)



Frequency (MHz)	Corrected Amplitude (dBμV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBμV/m)	Margin (dB)
41.844125	30.47	102.0	V	91.0	-15.1	40.00	9.53
43.518125	33.22	109.0	V	144.0	-16.3	40.00	6.78
52.655500	32.29	116.0	V	164.0	-19.8	40.00	7.71
573.526500	31.13	102.0	V	158.0	-3.6	46.00	14.87
669.827375	36.15	126.0	H	286.0	-2.6	46.00	9.85
735.061375	36.46	102.0	H	284.0	-0.6	46.00	9.54

1 GHz-25 GHz (2.4G Wi-Fi):**802.11b Mode:**

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)				
Low Channel (2412 MHz)									
2412.00	85.51	PK	244	2.5	H	31.87	117.38	/	/
2412.00	81.55	Ave.	244	2.5	H	31.87	113.42	/	/
2412.00	78.35	PK	266	2.3	V	31.87	110.22	/	/
2412.00	74.43	Ave.	266	2.3	V	31.87	106.30	/	/
2389.94	30.33	PK	93	2.0	H	31.87	62.20	74	11.80
2389.94	19.13	Ave.	93	2.0	H	31.87	51.00	54	3.00
2489.03	29.56	PK	116	2.0	H	32.13	61.69	74	12.31
2489.03	14.75	Ave.	116	2.0	H	32.13	46.88	54	7.12
1540.98	55.46	PK	20	1.8	H	-2.51	52.95	74	21.05
1540.98	26.38	Ave.	20	1.8	H	-2.51	23.87	54	30.13
4413.22	64.59	PK	325	1.2	H	4.56	69.15	74	4.85
4413.22	36.92	Ave.	325	1.2	H	4.56	41.48	54	12.52
4824.00	44.32	PK	284	2.2	H	5.40	49.72	74	24.28
4824.00	31.86	Ave.	284	2.2	H	5.40	37.26	54	16.74
Low Channel (2417 MHz)									
2417.00	85.5	PK	277	2.2	H	31.97	117.47	/	/
2417.00	81.06	Ave.	277	2.2	H	31.97	113.03	/	/
2417.00	78.17	PK	243	2.1	V	31.97	110.14	/	/
2417.00	73.4	Ave.	243	2.1	V	31.97	105.37	/	/
2389.25	30.89	PK	71	1.7	H	31.87	62.76	74	11.24
2389.25	19.39	Ave.	71	1.7	H	31.87	51.26	54	2.74
2495.19	28.44	PK	158	1.8	H	32.13	60.57	74	13.43
2495.19	13.77	Ave.	158	1.8	H	32.13	45.90	54	8.10
1540.98	56.52	PK	216	1.8	H	-2.46	54.06	74	19.94
1540.98	25.44	Ave.	216	1.8	H	-2.46	22.98	54	31.02
4413.12	60.99	PK	234	1.6	H	5.20	66.19	74	7.81
4413.12	27.52	Ave.	234	1.6	H	5.20	32.72	54	21.28
4834.00	43.24	PK	239	1.9	H	6.28	49.52	74	24.48
4834.00	28.57	Ave.	239	1.9	H	6.28	34.85	54	19.15

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	PK/QP/Ave.		Height (m)	Polar (H/V)				
Middle Channel (2437MHz)									
2437.00	87.61	PK	192	1.1	H	31.97	119.58	/	/
2437.00	83.29	Ave.	192	1.1	H	31.97	115.26	/	/
2437.00	81.44	PK	244	1.6	V	31.97	113.41	/	/
2437.00	77.61	Ave.	244	1.6	V	31.97	109.58	/	/
1540.98	58.82	PK	139	1.2	H	-2.51	56.31	74	17.69
1540.98	27.06	Ave.	139	1.2	H	-2.51	24.55	54	29.45
4413.22	66.26	PK	268	1.1	H	4.56	70.82	74	3.18
4413.22	28.78	Ave.	268	1.1	H	4.56	33.34	54	20.66
4874.00	44.85	PK	72	2.1	H	6.43	51.28	74	22.72
4874.00	33.69	Ave.	72	2.1	H	6.43	40.12	54	13.88
High Channel (2457 MHz)									
2457.00	84.89	PK	159	1.7	H	32.03	116.92	/	/
2457.00	80.82	Ave.	159	1.7	H	32.03	112.85	/	/
2457.00	78.16	PK	304	1.1	V	32.03	110.19	/	/
2457.00	73.47	Ave.	304	1.1	V	32.03	105.50	/	/
2388.65	29.61	PK	46	1.0	H	31.87	61.48	74	12.52
2388.65	13.84	Ave.	46	1.0	H	31.87	45.71	54	8.29
2483.87	31.51	PK	82	1.8	H	32.13	63.64	74	10.36
2483.87	19.14	Ave.	82	1.8	H	32.13	51.27	54	2.73
1540.98	51.23	PK	160	2.5	H	-2.46	48.77	74	25.23
1540.98	27.89	Ave.	160	2.5	H	-2.46	25.43	54	28.57
4413.22	62.00	PK	280	1.5	H	4.98	66.98	74	7.02
4413.22	28.77	Ave.	280	1.5	H	4.98	33.75	54	20.25
4914.00	42.61	PK	145	2.1	H	6.43	49.04	74	24.96
4914.00	28.63	Ave.	145	2.1	H	6.43	35.06	54	18.94
High Channel (2462 MHz)									
2462.00	84.44	PK	353	2.2	H	32.03	116.47	/	/
2462.00	80.52	Ave.	353	2.2	H	32.03	112.55	/	/
2462.00	81.61	PK	311	2.1	V	32.03	113.64	/	/
2462.00	77.7	Ave.	311	2.1	V	32.03	109.73	/	/
2370.96	28.16	PK	327	2.1	H	31.87	60.03	74	13.97
2370.96	13.87	Ave.	327	2.1	H	31.87	45.74	54	8.26
2486.62	31.09	PK	243	2.0	H	32.13	63.22	74	10.78
2486.62	19.87	Ave.	243	2.0	H	32.13	52.00	54	2.00
1540.98	58.34	PK	94	1.8	H	-2.51	55.83	74	18.17
1540.98	26.76	Ave.	94	1.8	H	-2.51	24.25	54	29.75
4413.22	64.93	PK	124	1.4	H	4.56	69.49	74	4.51
4413.22	28.3	Ave.	124	1.4	H	4.56	32.86	54	21.14
4924.00	43.58	PK	190	1.4	H	6.43	50.01	74	23.99
4924.00	30.13	Ave.	190	1.4	H	6.43	36.56	54	17.44

802.11g Mode:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)				
Low Channel (2412 MHz)									
2412.00	84.03	PK	311	2.1	H	31.87	115.90	/	/
2412.00	73.95	Ave.	311	2.1	H	31.87	105.82	/	/
2412.00	76.64	PK	227	1.6	V	31.87	108.51	/	/
2412.00	65.97	Ave.	227	1.6	V	31.87	97.84	/	/
2389.83	36.52	PK	94	2.3	H	31.87	68.39	74	5.61
2389.83	19.46	Ave.	94	2.3	H	31.87	51.33	54	2.67
2489.48	29.23	PK	214	1.3	H	32.13	61.36	74	12.64
2489.48	15.55	Ave.	214	1.3	H	32.13	47.68	54	6.32
1540.98	59.53	PK	28	1.5	H	-2.51	57.02	74	16.98
1540.98	26.19	Ave.	28	1.5	H	-2.51	23.68	54	30.32
4413.22	64.51	PK	87	1.4	H	4.56	69.07	74	4.93
4413.22	28.21	Ave.	87	1.4	H	4.56	32.77	54	21.23
4824.00	43.86	PK	113	2.2	H	5.40	49.26	74	24.74
4824.00	28.63	Ave.	113	2.2	H	5.40	34.03	54	19.97
Low Channel (2417 MHz)									
2417.00	84.86	PK	180	1.3	H	31.97	116.83	/	/
2417.00	74.84	Ave.	180	1.3	H	31.97	106.81	/	/
2417.00	78.55	PK	97	1.1	V	31.97	110.52	/	/
2417.00	67.3	Ave.	97	1.1	V	31.97	99.27	/	/
2389.94	41.03	PK	277	1.5	H	31.87	72.90	74	1.10
2389.94	20.05	Ave.	277	1.5	H	31.87	51.92	54	2.08
2494.32	28.60	PK	325	1.3	H	32.13	60.73	74	13.27
2494.32	15.53	Ave.	325	1.3	H	32.13	47.66	54	6.34
1540.04	58.64	PK	240	1.1	H	-2.46	56.18	74	17.82
1540.04	28.64	Ave.	240	1.1	H	-2.46	26.18	54	27.82
4413.22	59.45	PK	266	1.4	H	4.98	64.43	74	9.57
4413.22	29.71	Ave.	266	1.4	H	4.98	34.69	54	19.31
4834.00	44.34	PK	162	2.2	H	5.40	49.74	74	24.26
4834.00	29.39	Ave.	162	2.2	H	5.40	34.79	54	19.21

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)				
Middle Channel (2437MHz)									
2437.00	89.96	PK	337	2.1	H	31.97	121.93	/	/
2437.00	79.35	Ave.	337	2.1	H	31.97	111.32	/	/
2437.00	83.75	PK	331	2.4	V	31.97	115.72	/	/
2437.00	73.24	Ave.	331	2.4	V	31.97	105.21	/	/
1540.98	58.62	PK	72	1.8	H	-2.51	56.11	74	17.89
1540.98	26.49	Ave.	72	1.8	H	-2.51	23.98	54	30.02
4413.22	66.34	PK	71	2.1	H	4.56	70.90	74	3.10
4413.22	28.39	Ave.	71	2.1	H	4.56	32.95	54	21.05
4874.00	44.02	PK	163	1.6	H	6.43	50.45	74	23.55
4874.00	29.33	Ave.	163	1.6	H	6.43	35.76	54	18.24
High Channel (2457 MHz)									
2457.00	85.39	PK	83	2.3	H	32.03	117.42	/	/
2457.00	74.63	Ave.	83	2.3	H	32.03	106.66	/	/
2457.00	82.22	PK	265	2.4	V	32.03	114.25	/	/
2457.00	71.03	Ave.	265	2.4	V	32.03	103.06	/	/
2362.58	28.69	PK	311	1.1	H	31.87	60.56	74	13.44
2362.58	14.87	Ave.	311	1.1	H	31.87	46.74	54	7.26
2488.12	37.50	PK	48	2.5	H	32.13	69.63	74	4.37
2488.12	19.90	Ave.	48	2.5	H	32.13	52.03	54	1.97
1540.98	57.41	PK	160	1.4	H	-2.46	54.95	74	19.05
1540.98	29.85	Ave.	160	1.4	H	-2.46	27.39	54	26.61
4413.22	62.33	PK	286	1.9	H	4.98	67.31	74	6.69
4413.22	28.04	Ave.	286	1.9	H	4.98	33.02	54	20.98
4914.00	43.85	PK	84	1.8	H	6.43	50.28	74	23.72
4914.00	28.62	Ave.	84	1.8	H	6.43	35.05	54	18.95
High Channel (2462 MHz)									
2462.00	85.82	PK	349	1.9	H	32.03	117.85	/	/
2462.00	75.95	Ave.	349	1.9	H	32.03	107.98	/	/
2462.00	77.06	PK	312	1.4	V	32.03	109.09	/	/
2462.00	67.00	Ave.	312	1.4	V	32.03	99.03	/	/
2358.45	28.71	PK	271	2.3	H	31.77	60.48	74	13.52
2358.45	14.94	Ave.	271	2.3	H	31.77	46.71	54	7.29
2483.51	37.99	PK	217	2.3	H	32.13	70.12	74	3.88
2483.51	19.74	Ave.	217	2.3	H	32.13	51.87	54	2.13
1540.98	57.12	PK	0	2.0	H	-2.51	54.61	74	19.39
1540.98	26.08	Ave.	0	2.0	H	-2.51	23.57	54	30.43
4413.22	66.74	PK	106	1.9	H	4.56	71.30	74	2.70
4413.22	28.52	Ave.	106	1.9	H	4.56	33.08	54	20.92
4924.00	43.75	PK	292	1.7	H	6.43	50.18	74	23.82
4924.00	28.68	Ave.	292	1.7	H	6.43	35.11	54	18.89

802.11n-HT20 Mode:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)				
Low Channel (2412 MHz)									
2412.00	77.65	PK	359	1.4	H	31.87	109.52	/	/
2412.00	67.59	Ave.	359	1.4	H	31.87	99.46	/	/
2412.00	66.22	PK	162	2.2	V	31.87	98.09	/	/
2412.00	56.01	Ave.	162	2.2	V	31.87	87.88	/	/
2388.78	34.97	PK	8	1.5	H	31.87	66.84	74	7.16
2388.78	19.19	Ave.	8	1.5	H	31.87	51.06	54	2.94
2492.37	29.03	PK	306	2.3	H	32.13	61.16	74	12.84
2492.37	15.31	Ave.	306	2.3	H	32.13	47.44	54	6.56
1540.98	55.28	PK	235	1.1	H	-2.51	52.77	74	21.23
1540.98	26.15	Ave.	235	1.1	H	-2.51	23.64	54	30.36
4413.22	63.43	PK	203	2.4	H	4.56	67.99	74	6.01
4413.22	28.31	Ave.	203	2.4	H	4.56	32.87	54	21.13
4824.00	43.11	PK	292	1.7	H	5.40	48.51	74	25.49
4824.00	29.11	Ave.	292	1.7	H	5.40	34.51	54	19.49
Low Channel (2417 MHz)									
2417.00	79.34	PK	1	2.3	H	31.97	111.31	/	/
2417.00	69.58	Ave.	1	2.3	H	31.97	101.55	/	/
2417.00	71.44	PK	137	1.2	V	31.97	103.41	/	/
2417.00	60.81	Ave.	137	1.2	V	31.97	92.78	/	/
2389.25	40.89	PK	84	2.5	H	31.87	72.76	74	1.24
2389.25	20.94	Ave.	84	2.5	H	31.87	52.81	54	1.19
2494.52	28.83	PK	318	1.9	H	32.13	60.96	74	13.04
2494.52	15.45	Ave.	318	1.9	H	32.13	47.58	54	6.42
1540.04	57.41	PK	65	1.9	H	-2.46	54.95	74	19.05
1540.04	28.15	Ave.	65	1.9	H	-2.46	25.69	54	28.31
4413.22	60.43	PK	135	1.1	H	4.98	65.41	74	8.59
4413.22	29.88	Ave.	135	1.1	H	4.98	34.86	54	19.14
4834.00	43.82	PK	6	1.2	H	5.40	49.22	74	24.78
4834.00	29.74	Ave.	6	1.2	H	5.40	35.14	54	18.86

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)				
Middle Channel (2437MHz)									
2437.00	82.93	PK	11	2.0	H	31.97	114.90	/	/
2437.00	72.93	Ave.	11	2.0	H	31.97	104.90	/	/
2437.00	75.94	PK	197	1.8	V	31.97	107.91	/	/
2437.00	65.61	Ave.	197	1.8	V	31.97	97.58	/	/
1540.98	57.35	PK	318	1.6	H	-2.51	54.84	74	19.16
1540.98	26.63	Ave.	318	1.6	H	-2.51	24.12	54	29.88
4413.22	64.52	PK	315	2.1	H	4.56	69.08	74	4.92
4413.22	28.59	Ave.	315	2.1	H	4.56	33.15	54	20.85
4874.00	43.58	PK	302	1.6	H	6.43	50.01	74	23.99
4874.00	28.57	Ave.	302	1.6	H	6.43	35.00	54	19.00
High Channel (2457 MHz)									
2457.00	80.77	PK	357	2.4	H	32.03	112.80	/	/
2457.00	69.26	Ave.	357	2.4	H	32.03	101.29	/	/
2457.00	73.49	PK	138	1.5	V	32.03	105.52	/	/
2457.00	63.43	Ave.	138	1.5	V	32.03	95.46	/	/
2386.71	28.11	PK	354	1.8	H	31.87	59.98	74	14.02
2386.71	15.06	Ave.	354	1.8	H	31.87	46.93	54	7.07
2483.63	40.47	PK	237	2.2	H	32.13	72.60	74	1.40
2483.63	20.32	Ave.	237	2.2	H	32.13	52.45	54	1.55
1540.04	55.81	PK	257	1.5	H	-2.46	53.35	74	20.65
1540.04	28.79	Ave.	257	1.5	H	-2.46	26.33	54	27.67
4413.22	62.33	PK	143	1.2	H	4.98	67.31	74	6.69
4413.22	29.85	Ave.	143	1.2	H	4.98	34.83	54	19.17
4914.00	44.58	PK	245	1.7	H	6.43	51.01	74	22.99
4914.00	29.63	Ave.	245	1.7	H	6.43	36.06	54	17.94
High Channel (2462 MHz)									
2462.00	78.65	PK	3	1.1	H	32.03	110.68	/	/
2462.00	68.38	Ave.	3	1.1	H	32.03	100.41	/	/
2462.00	72.74	PK	169	1.6	V	32.03	104.77	/	/
2462.00	61.83	Ave.	169	1.6	V	32.03	93.86	/	/
2319.09	29.21	PK	270	2.4	H	31.64	60.85	74	13.15
2319.09	16.13	Ave.	270	2.4	H	31.64	47.77	54	6.23
2483.87	37.70	PK	202	1.6	H	32.13	69.83	74	4.17
2483.87	19.46	Ave.	202	1.6	H	32.13	51.59	54	2.41
1540.98	58.16	PK	354	1.2	H	-2.51	55.65	74	18.35
1540.98	26.74	Ave.	354	1.2	H	-2.51	24.23	54	29.77
4413.22	62.69	PK	305	1.4	H	4.56	67.25	74	6.75
4413.22	28.34	Ave.	305	1.4	H	4.56	32.90	54	21.1
4924.00	43.53	PK	59	1.8	H	6.43	49.96	74	24.04
4924.00	28.56	Ave.	59	1.8	H	6.43	34.99	54	19.01

802.11n-HT40 Mode:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)				
Low Channel (2422 MHz)									
2422.00	73.2	PK	2	1.8	H	31.97	105.17	/	/
2422.00	63.36	Ave.	2	1.8	H	31.97	95.33	/	/
2422.00	60.14	PK	207	2.4	V	31.97	92.11	/	/
2422.00	50.22	Ave.	207	2.4	V	31.97	82.19	/	/
2389.59	35.37	PK	92	1.3	H	31.87	67.24	74	6.76
2389.59	19.14	Ave.	92	1.3	H	31.87	51.01	54	2.99
2492.01	28.56	PK	83	2.0	H	32.13	60.69	74	13.31
2492.01	15.57	Ave.	83	2.0	H	32.13	47.70	54	6.30
1540.98	57.61	PK	305	2.0	H	-2.51	55.10	74	18.90
1540.98	26.57	Ave.	305	2.0	H	-2.51	24.06	54	29.94
4413.22	62.33	PK	232	1.9	H	4.56	66.89	74	7.11
4413.22	28.1	Ave.	232	1.9	H	4.56	32.66	54	21.34
4844.00	43.41	PK	74	2.4	H	5.40	48.81	74	25.19
4844.00	28.46	Ave.	74	2.4	H	5.40	33.86	54	20.14
Low Channel (2427 MHz)									
2427.00	70.71	PK	77	1.2	H	31.97	102.68	/	/
2427.00	61.07	Ave.	77	1.2	H	31.97	93.04	/	/
2427.00	66.52	PK	199	2.4	V	31.97	98.49	/	/
2427.00	56.33	Ave.	199	2.4	V	31.97	88.30	/	/
2389.93	36.13	PK	360	1.4	H	31.87	68.00	74	6.00
2389.93	20.03	Ave.	360	1.4	H	31.87	51.90	54	2.10
2494.54	28.68	PK	62	2.2	H	32.13	60.81	74	13.19
2494.54	15.68	Ave.	62	2.2	H	32.13	47.81	54	6.19
1540.98	56.92	PK	114	1.5	H	-2.46	54.46	74	19.54
1540.98	28.39	Ave.	114	1.5	H	-2.46	25.93	54	28.07
4413.22	60.37	PK	30	2.3	H	4.98	65.35	74	8.65
4413.22	28.55	Ave.	30	2.3	H	4.98	33.53	54	20.47
4854.00	44.15	PK	135	2.1	H	6.43	50.58	74	23.42
4854.00	29.30	Ave.	135	2.1	H	6.43	35.73	54	18.27

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)				
Middle Channel (2437MHz)									
2437.00	79.92	PK	29	2.3	H	31.97	111.89	/	/
2437.00	69.98	Ave.	29	2.3	H	31.97	101.95	/	/
2437.00	75.04	PK	165	1.5	V	31.97	107.01	/	/
2437.00	65.07	Ave.	165	1.5	V	31.97	97.04	/	/
1540.98	58.75	PK	73	2.0	H	-2.51	56.24	74	17.76
1540.98	26.69	Ave.	73	2.0	H	-2.51	24.18	54	29.82
4413.22	62.45	PK	18	2.4	H	4.56	67.01	74	6.99
4413.22	28.12	Ave.	18	2.4	H	4.56	32.68	54	21.32
4874.00	43.39	PK	328	1.8	H	6.43	49.82	74	24.18
4874.00	28.52	Ave.	328	1.8	H	6.43	34.95	54	19.05
High Channel (2447 MHz)									
2447.00	79.07	PK	234	1.3	H	31.97	111.04	/	/
2447.00	69.56	Ave.	234	1.3	H	31.97	101.53	/	/
2447.00	75.49	PK	62	1.3	V	31.97	107.46	/	/
2447.00	65.38	Ave.	62	1.3	V	31.97	97.35	/	/
2373.62	28.12	PK	241	1.1	H	31.87	59.99	74	14.01
2373.62	14.88	Ave.	241	1.1	H	31.87	46.75	54	7.25
2488.12	38.19	PK	266	1.5	H	32.13	70.32	74	3.68
2488.12	20.59	Ave.	266	1.5	H	32.13	52.72	54	1.28
1540.98	56.92	PK	64	1.3	H	-2.46	54.46	74	19.54
1540.98	28.30	Ave.	64	1.3	H	-2.46	25.84	54	28.16
4413.22	61.53	PK	59	1.1	H	4.98	66.51	74	7.49
4413.22	28.16	Ave.	59	1.1	H	4.98	33.14	54	20.86
4894.00	44.20	PK	31	1.7	H	6.43	50.63	74	23.37
4894.00	29.43	Ave.	31	1.7	H	6.43	35.86	54	18.14
High Channel (2452 MHz)									
2452.00	75.68	PK	354	1.8	H	32.03	107.71	/	/
2452.00	65.83	Ave.	354	1.8	H	32.03	97.86	/	/
2452.00	66.15	PK	180	2.1	V	32.03	98.18	/	/
2452.00	55.56	Ave.	180	2.1	V	32.03	87.59	/	/
2356.14	28.29	PK	1	1.2	H	31.77	60.06	74	13.94
2356.14	15.66	Ave.	1	1.2	H	31.77	47.43	54	6.57
2484.63	37.61	PK	182	1.2	H	32.13	69.74	74	4.26
2484.63	19.47	Ave.	182	1.2	H	32.13	51.60	54	2.40
1540.98	58.62	PK	32	2.0	H	-2.51	56.11	74	17.89
1540.98	26.64	Ave.	32	2.0	H	-2.51	24.13	54	29.87
4413.22	63.54	PK	213	1.7	H	4.56	68.10	74	5.90
4413.22	28.13	Ave.	213	1.7	H	4.56	32.69	54	21.31
4904.00	43.35	PK	68	1.6	H	6.43	49.78	74	24.22
4904.00	28.56	Ave.	68	1.6	H	6.43	34.99	54	19.01

2.4G Wi-Fi (802.11b mode, 2412MHz) & 5G Wi-Fi (802.11a mode, 5180MHz) simultaneously transmission:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	PK/QP/Ave.		Height (m)	Polar (H/V)				
727.66	40.32	QP	54	1.8	H	-0.7	39.62	46	6.38
727.66	38.03	QP	88	2.3	V	-0.7	37.33	46	8.67
2590.00	60.60	PK	196	1.9	H	0.04	60.64	74	13.36
2590.00	29.16	Ave.	196	1.9	H	0.04	29.20	54	24.80
4413.00	64.23	PK	56	2.0	H	4.56	68.79	74	5.21
4413.00	35.87	Ave.	56	2.0	H	4.56	40.43	54	13.57
4824.00	44.02	PK	39	2.1	H	5.40	49.42	74	24.58
4824.00	31.29	Ave.	39	2.1	H	5.40	36.69	54	17.31

Note:

Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor

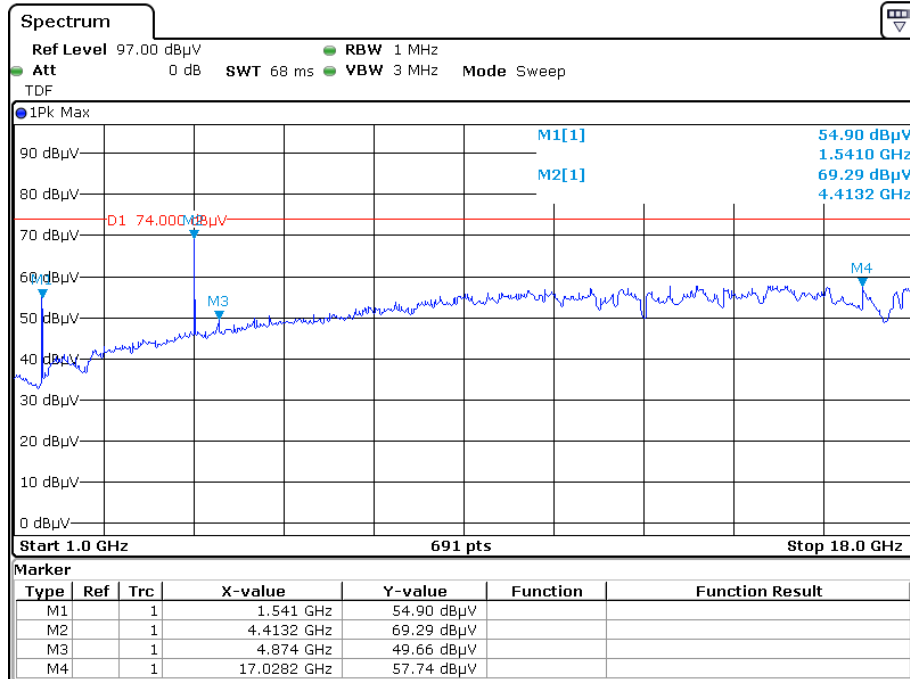
Corrected Amplitude = Corrected Factor + Reading

Margin = Limit - Corrected. Amplitude

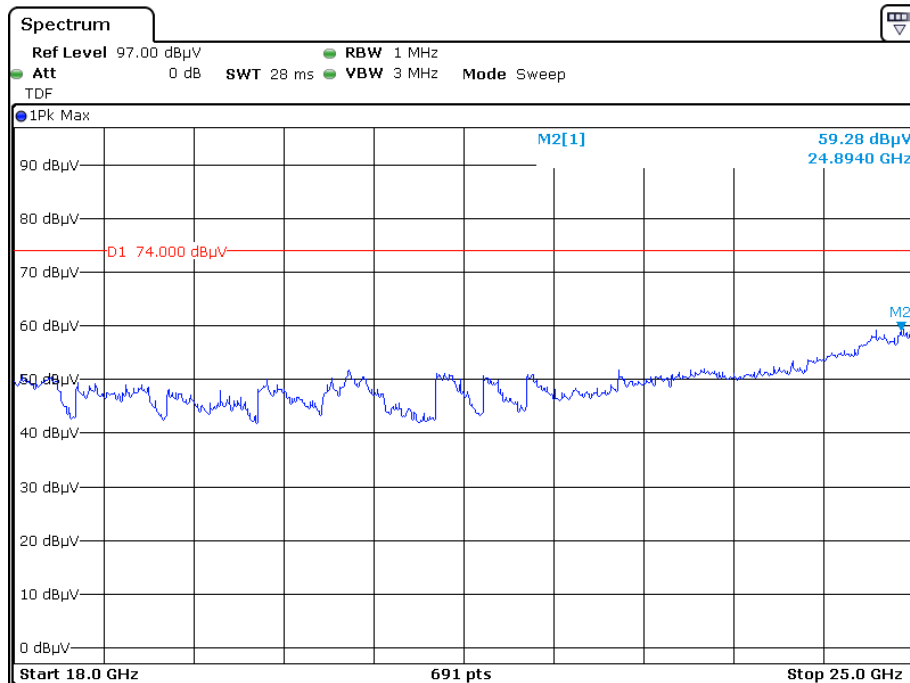
The other spurious emission which is 20dB to the limit was not recorded.

And for the pre-scan is performed with the 2400-2483.5MHz band filter.

Pre-scan with 802.11b Mode, Middle channel
Horizontal

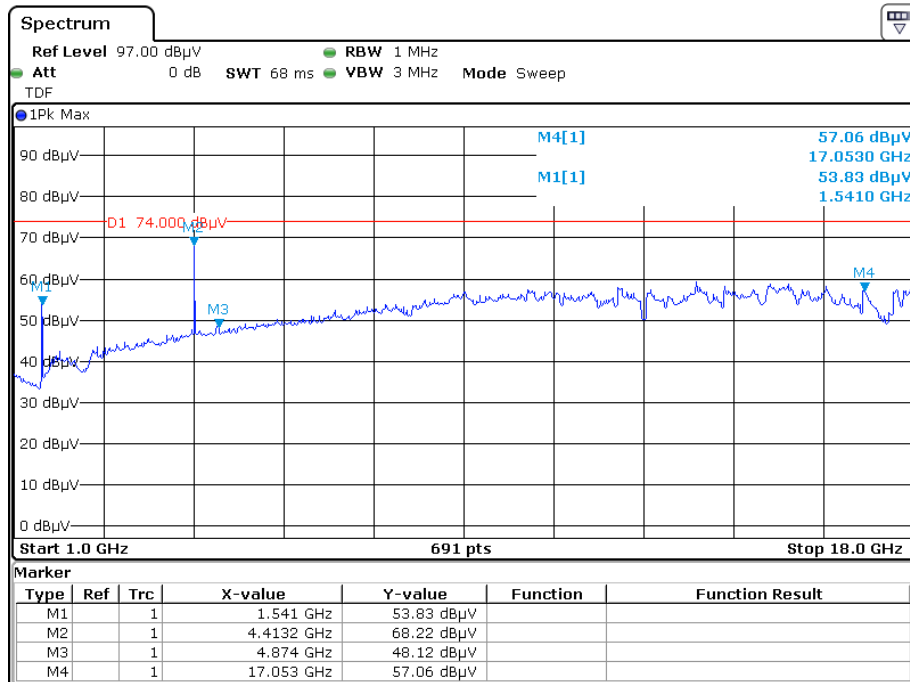


Date: 18.NOV.2019 20:31:57

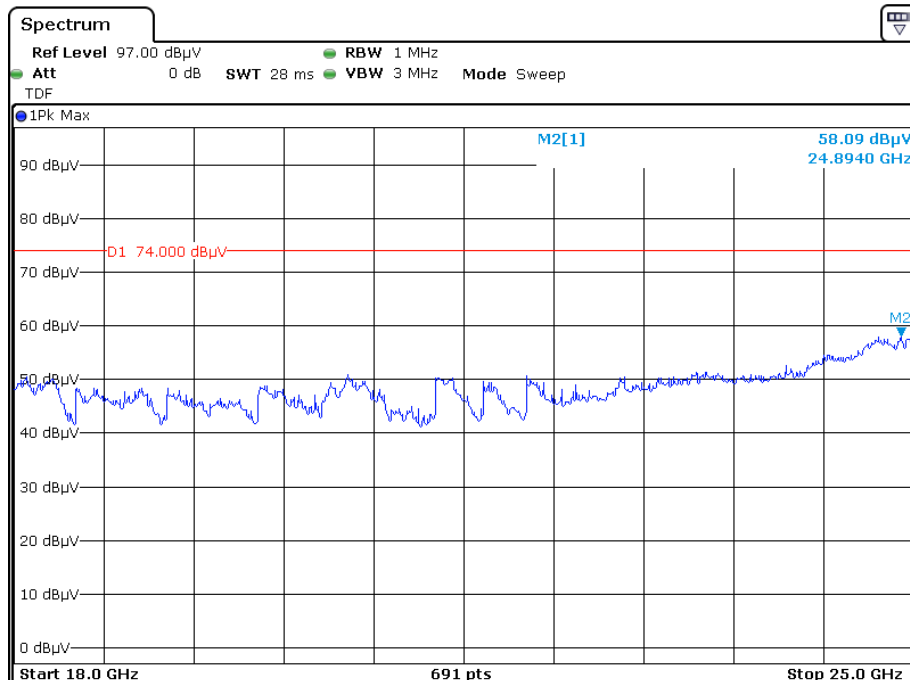


Date: 4.NOV.2019 17:47:59

Vertical

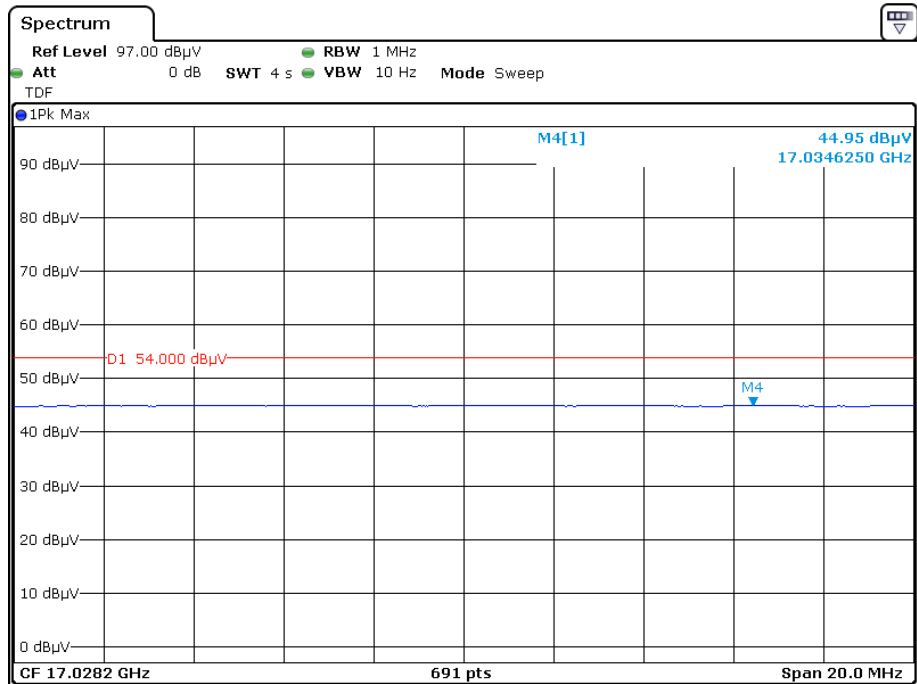


Date: 18.NOV.2019 20:40:43

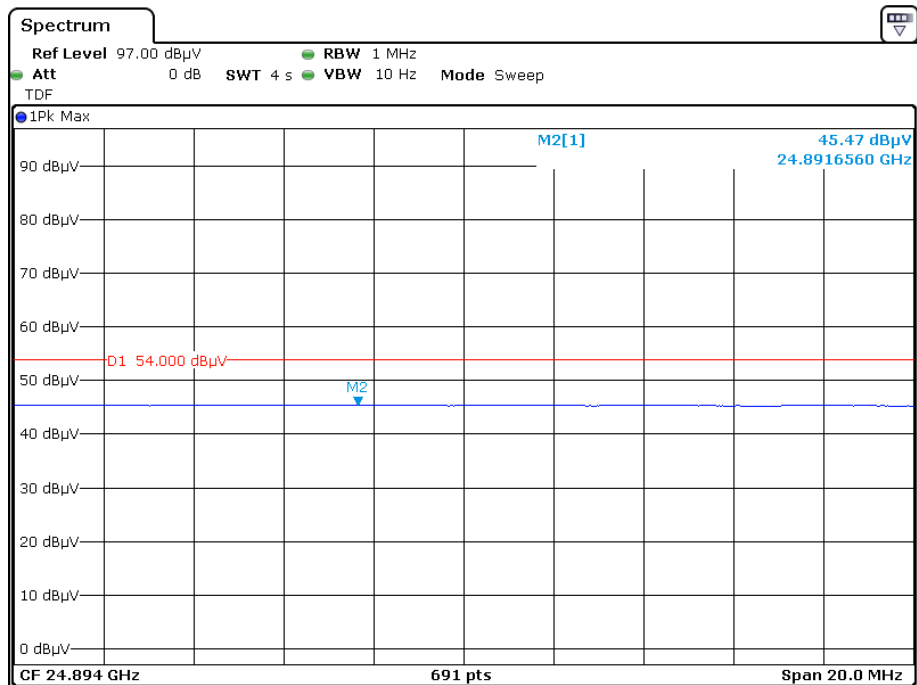


Date: 4.NOV.2019 17:57:18

Pre-scan for Average Horizontal

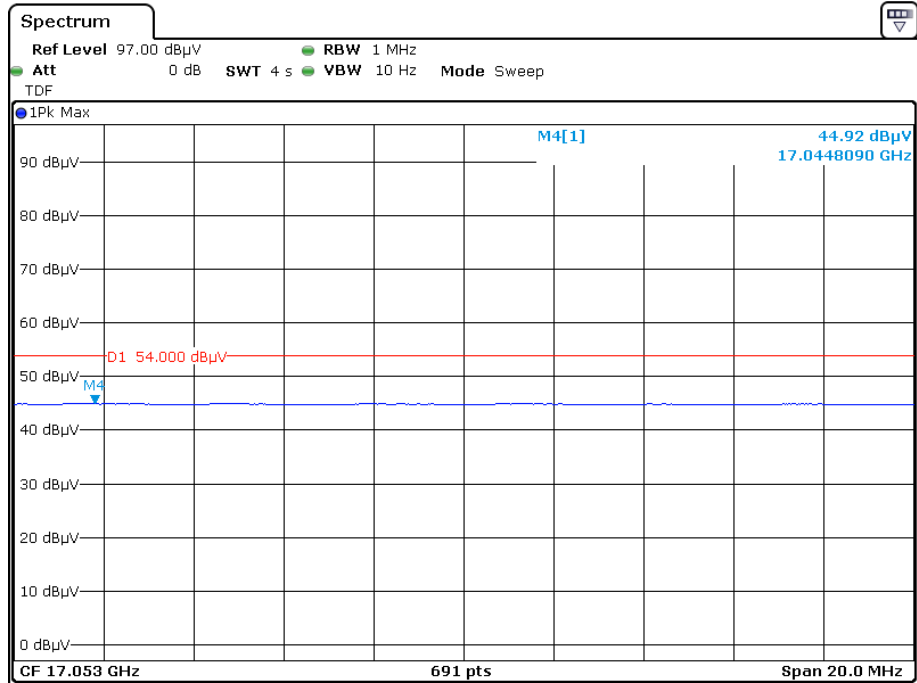


Date: 18.NOV.2019 20:36:05

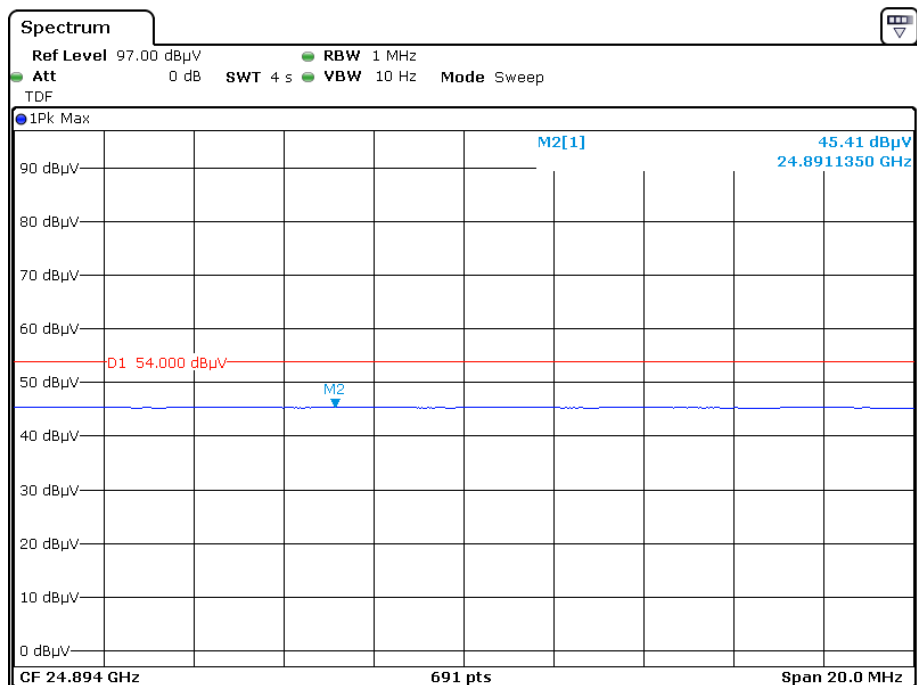


Date: 4.NOV.2019 17:54:40

Vertical



Date: 18.NOV.2019 20:45:44



Date: 4.NOV.2019 18:01:49

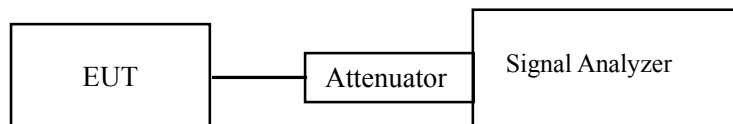
FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH

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

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 it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 6 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.



Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by George Zhong from 2019-10-17 to 2019-10-18.

Test Result: Pass.

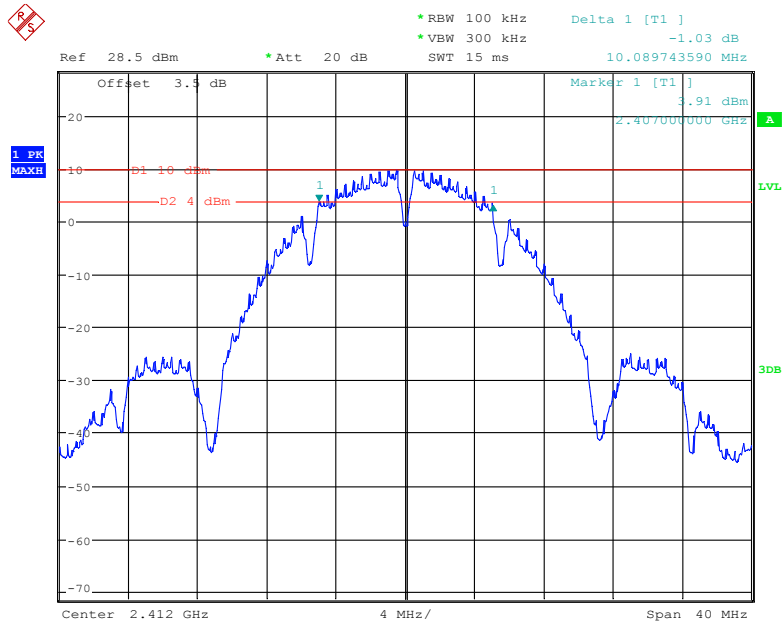
Please refer to the following table and plots.

For Antenna 0:

EUT operation mode: Transmitting

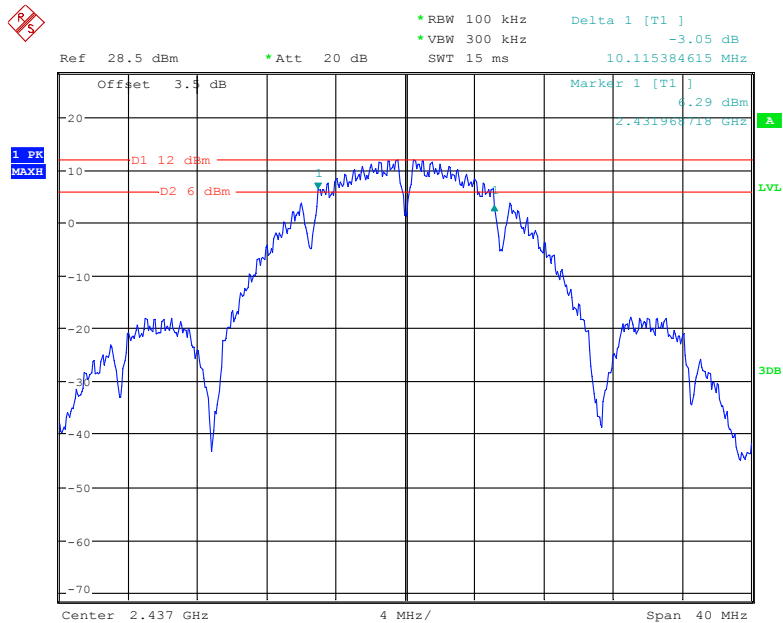
Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)	Limit (kHz)
802.11b mode			
Low	2412	10.090	≥ 500
Middle	2437	10.115	≥ 500
High	2462	9.192	≥ 500
802.11g mode			
Low	2412	15.218	≥ 500
Middle	2437	15.214	≥ 500
High	2462	15.218	≥ 500
802.11n-HT20 mode			
Low	2412	15.205	≥ 500
Middle	2437	15.308	≥ 500
High	2462	15.167	≥ 500
802.11n-HT40 mode			
Low	2422	35.231	≥ 500
Middle	2437	35.359	≥ 500
High	2452	35.231	≥ 500

802.11b Low Channel



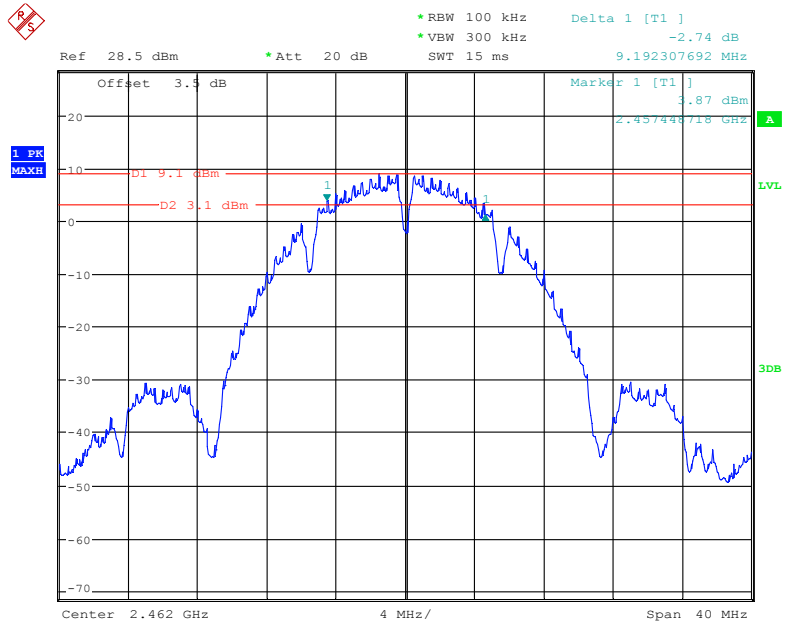
Date: 18.OCT.2019 21:40:44

802.11b Middle Channel



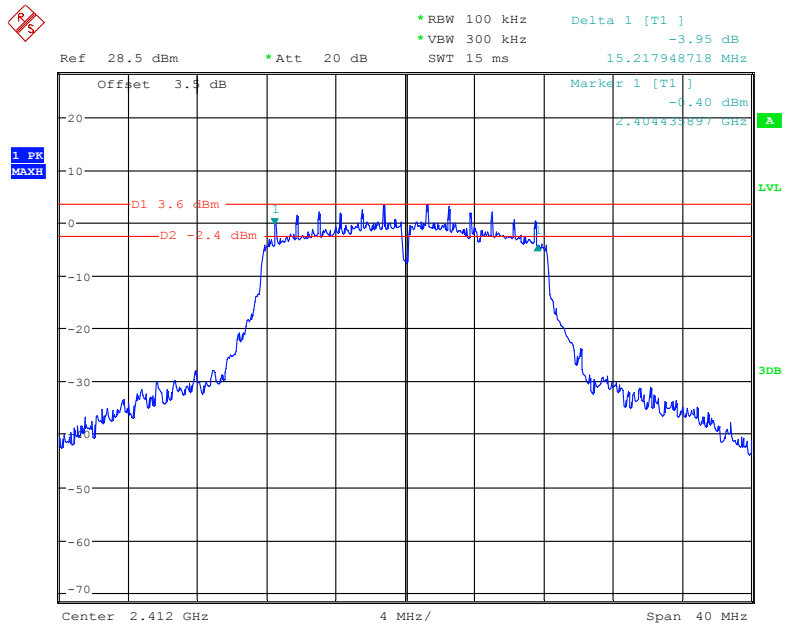
Date: 17.OCT.2019 23:09:40

802.11b High Channel



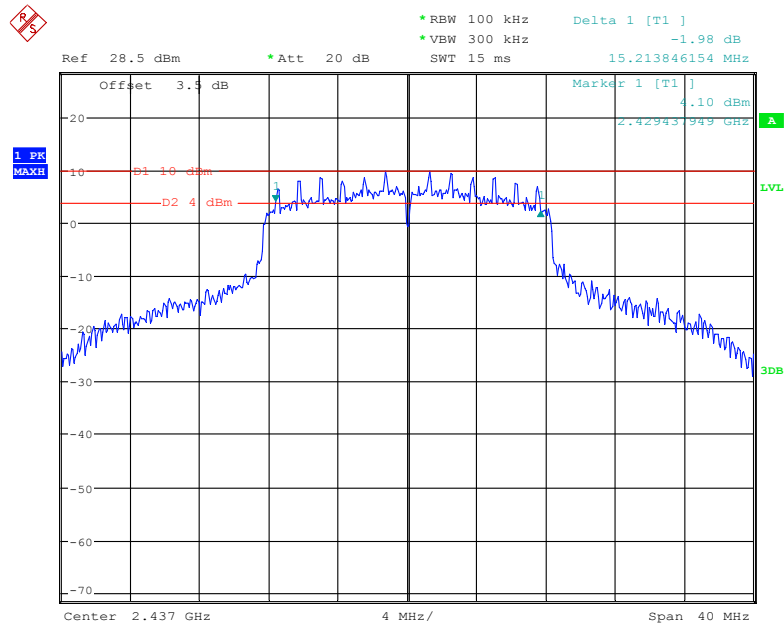
Date: 18.OCT.2019 21:43:21

802.11g Low Channel



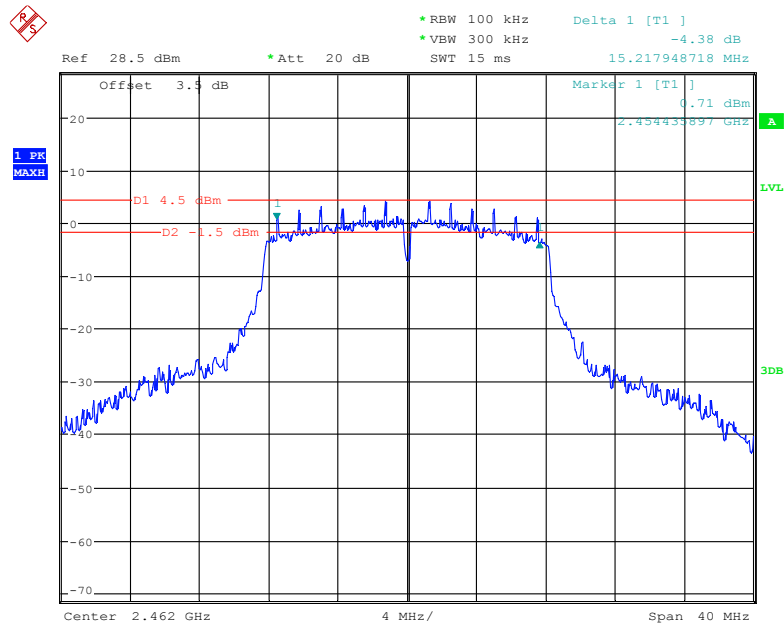
Date: 18.OCT.2019 21:47:14

802.11g Middle Channel



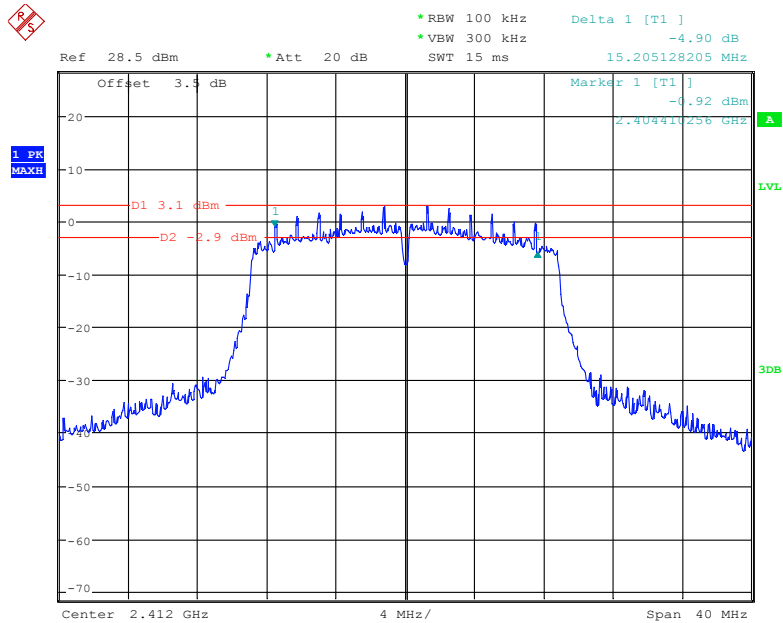
Date: 17.OCT.2019 23:13:54

802.11g High Channel



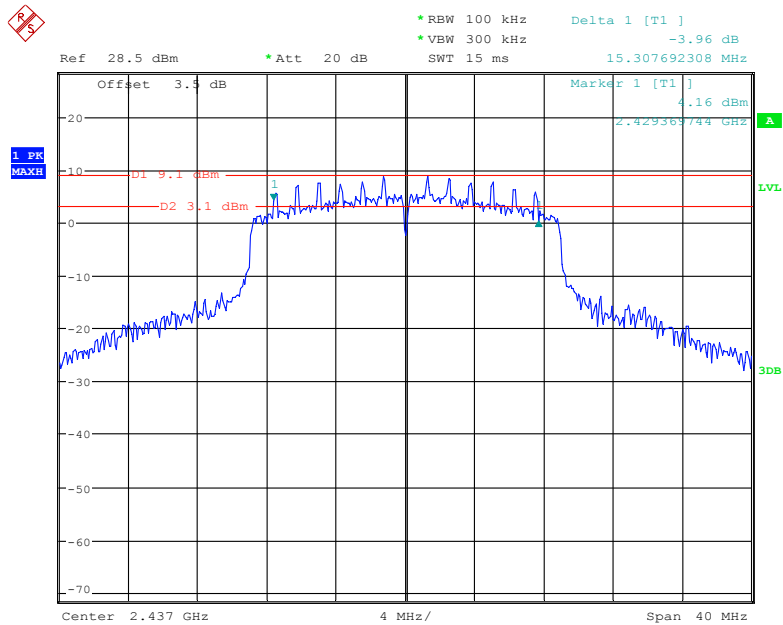
Date: 18.OCT.2019 21:45:46

802.11n-HT20 Low Channel



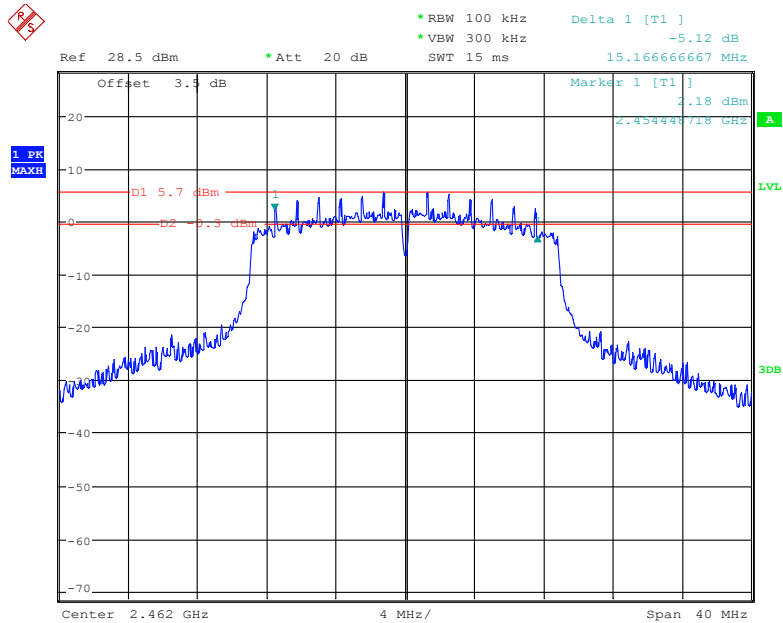
Date: 18.OCT.2019 21:49:58

802.11n-HT20 Middle Channel



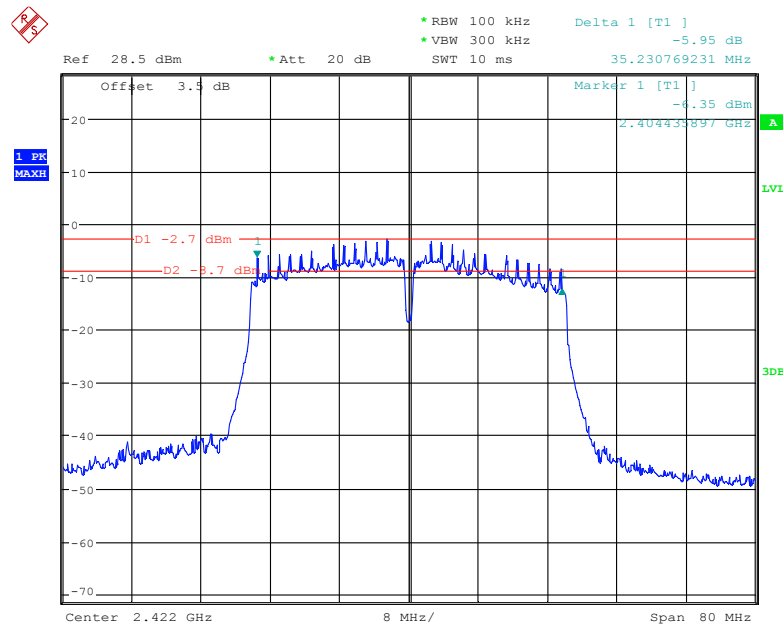
Date: 17.OCT.2019 23:17:21

802.11n-HT20 High Channel



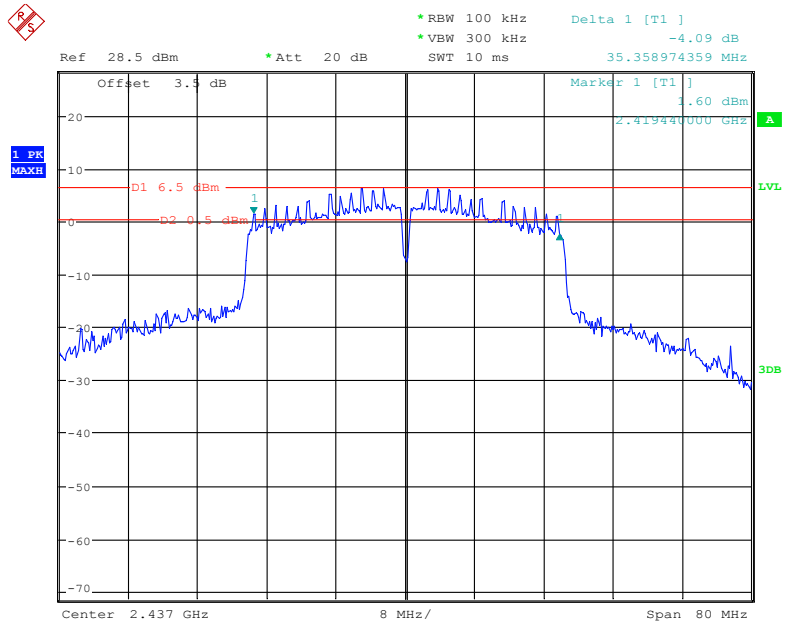
Date: 18.OCT.2019 21:51:24

802.11n-HT40 Low Channel



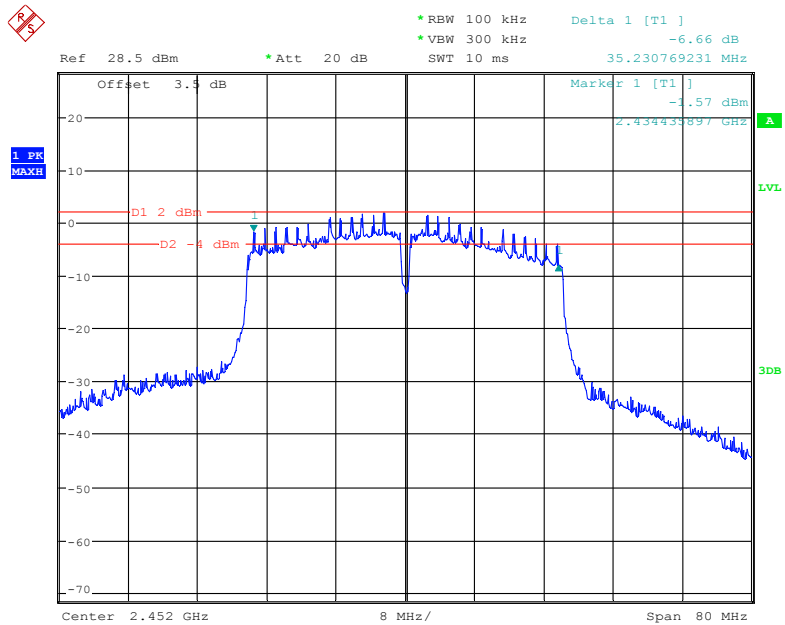
Date: 18.OCT.2019 21:53:02

802.11n-HT40 Middle Channel



Date: 17.OCT.2019 23:25:03

802.11n-HT40 High Channel



Date: 18.OCT.2019 21:56:26

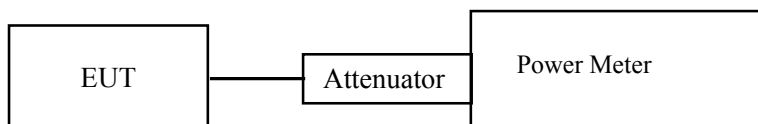
FCC §15.247(b) (3) - MAXIMUM CONDUCTED OUTPUT POWER

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

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



Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by George Zhong on 2019-10-17.

EUT operation mode: Transmitting

Note: According to KDB 662911 D01 v02r01, For power measurement on IEEE 802.11 devices Array Gain =0 dB(i.e., no array gain) for $N_{Ant} \leq 4$; So the directional gain in this chapter is 3.5dBi, it's less than 6dBi.

Wi-Fi mode

Test Mode	Antenna Port	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)	Result
802.11b	Ant 0	2412	18.91	<=30	PASS
	Ant 1	2412	18.74	<=30	PASS
	Ant 2	2412	18.84	<=30	PASS
	Ant 3	2412	18.21	<=30	PASS
	Total	2412	24.70	<=30	PASS
	Ant 0	2417	18.23	<=30	PASS
	Ant 1	2417	18.14	<=30	PASS
	Ant 2	2417	18.28	<=30	PASS
	Ant 3	2417	18.01	<=30	PASS
	Total	2417	24.19	<=30	PASS
	Ant 0	2437	21.35	<=30	PASS
	Ant 1	2437	20.94	<=30	PASS
	Ant 2	2437	20.79	<=30	PASS
	Ant 3	2437	20.16	<=30	PASS
	Total	2437	26.85	<=30	PASS
	Ant 0	2457	17.34	<=30	PASS
	Ant 1	2457	17.18	<=30	PASS
	Ant 2	2457	17.01	<=30	PASS
	Ant 3	2457	16.93	<=30	PASS
	Total	2457	23.14	<=30	PASS
	Ant 0	2462	17.43	<=30	PASS
	Ant 1	2462	17.28	<=30	PASS
	Ant 2	2462	17.04	<=30	PASS
	Ant 3	2462	16.92	<=30	PASS
	Total	2462	23.19	<=30	PASS

Test Mode	Antenna Port	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)	Result
802.11g	Ant 0	2412	12.27	<=30	PASS
	Ant 1	2412	12.37	<=30	PASS
	Ant 2	2412	12.04	<=30	PASS
	Ant 3	2412	11.52	<=30	PASS
	Total	2412	18.08	<=30	PASS
	Ant 0	2417	15.34	<=30	PASS
	Ant 1	2417	15.42	<=30	PASS
	Ant 2	2417	15.21	<=30	PASS
	Ant 3	2417	15.03	<=30	PASS
	Total	2417	21.27	<=30	PASS
	Ant 0	2437	17.43	<=30	PASS
	Ant 1	2437	17.39	<=30	PASS
	Ant 2	2437	17.32	<=30	PASS
	Ant 3	2437	16.89	<=30	PASS
	Total	2437	23.28	<=30	PASS
	Ant 0	2457	14.88	<=30	PASS
	Ant 1	2457	14.62	<=30	PASS
	Ant 2	2457	14.57	<=30	PASS
	Ant 3	2457	13.92	<=30	PASS
	Total	2457	20.53	<=30	PASS
	Ant 0	2462	12.67	<=30	PASS
	Ant 1	2462	12.97	<=30	PASS
	Ant 2	2462	12.26	<=30	PASS
	Ant 3	2462	11.92	<=30	PASS
	Total	2462	18.49	<=30	PASS

Test Mode	Antenna Port	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)	Result
802.11n-HT20	Ant 0	2412	11.52	<=30	PASS
	Ant 1	2412	11.47	<=30	PASS
	Ant 2	2412	11.12	<=30	PASS
	Ant 3	2412	10.93	<=30	PASS
	Total	2412	17.29	<=30	PASS
	Ant 0	2417	15.88	<=30	PASS
	Ant 1	2417	15.92	<=30	PASS
	Ant 2	2417	15.43	<=30	PASS
	Ant 3	2417	15.02	<=30	PASS
	Total	2417	21.60	<=30	PASS
	Ant 0	2437	16.22	<=30	PASS
	Ant 1	2437	16.32	<=30	PASS
	Ant 2	2437	16.05	<=30	PASS
	Ant 3	2437	15.71	<=30	PASS
	Total	2437	22.10	<=30	PASS
	Ant 0	2457	16.18	<=30	PASS
	Ant 1	2457	16.23	<=30	PASS
	Ant 2	2457	16.11	<=30	PASS
	Ant 3	2457	15.83	<=30	PASS
	Total	2457	22.11	<=30	PASS
	Ant 0	2462	14.18	<=30	PASS
	Ant 1	2462	14.08	<=30	PASS
	Ant 2	2462	13.92	<=30	PASS
	Ant 3	2462	13.57	<=30	PASS
	Total	2462	19.96	<=30	PASS

Test Mode	Antenna Port	Frequency (MHz)	Average Output Power (dBm)	Limit (dBm)	Result
802.11n-HT40	Ant 0	2422	7.25	<=30	PASS
	Ant 1	2422	7.27	<=30	PASS
	Ant 2	2422	6.63	<=30	PASS
	Ant 3	2422	6.55	<=30	PASS
	Total	2422	12.96	<=30	PASS
	Ant 0	2427	9.33	<=30	PASS
	Ant 1	2427	9.18	<=30	PASS
	Ant 2	2427	8.92	<=30	PASS
	Ant 3	2427	8.67	<=30	PASS
	Total	2427	15.05	<=30	PASS
	Ant 0	2437	14.72	<=30	PASS
	Ant 1	2437	15.04	<=30	PASS
	Ant 2	2437	14.77	<=30	PASS
	Ant 3	2437	14.33	<=30	PASS
	Total	2437	20.74	<=30	PASS
	Ant 0	2447	12.03	<=30	PASS
	Ant 1	2447	12.13	<=30	PASS
	Ant 2	2447	11.93	<=30	PASS
	Ant 3	2447	11.62	<=30	PASS
	Total	2447	17.95	<=30	PASS
	Ant 0	2452	11.80	<=30	PASS
	Ant 1	2452	12.06	<=30	PASS
	Ant 2	2452	11.47	<=30	PASS
	Ant 3	2452	11.38	<=30	PASS
	Total	2452	17.71	<=30	PASS

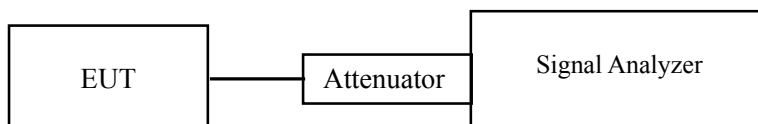
FCC §15.247(d) – 100 kHz BANDWIDTH OF FREQUENCY BAND EDGE

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

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:	25 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by George Zhong on 2019-10-18.

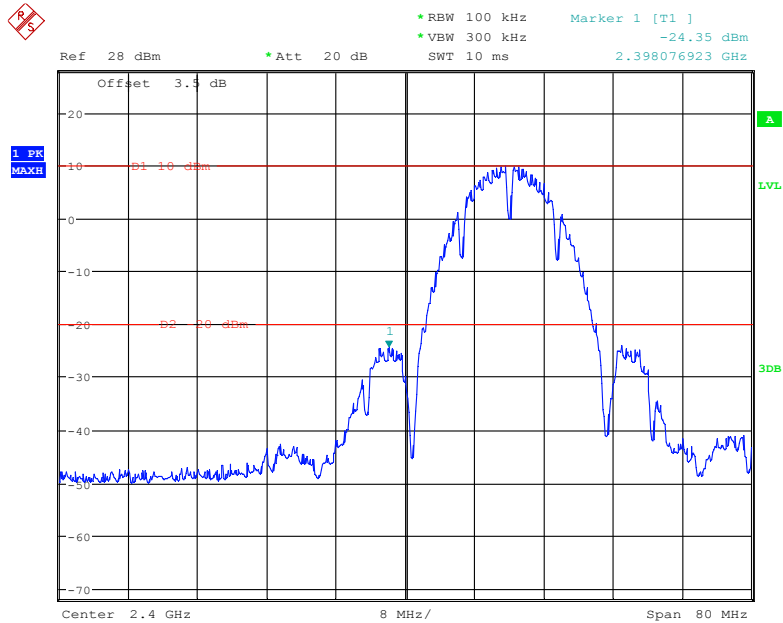
EUT operation mode: Transmitting

Test Result: Compliance

Please refer to the following plots.

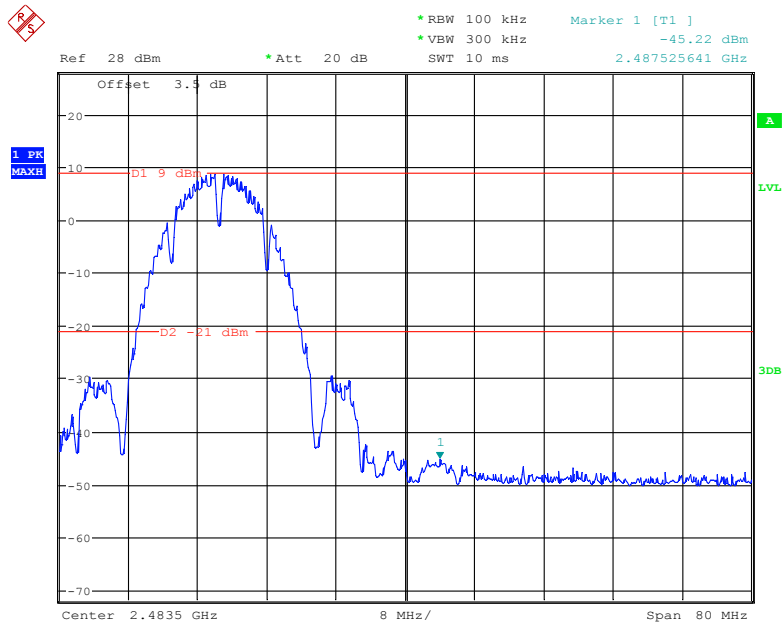
For Antenna 0:

802.11b: Band Edge, Left Side



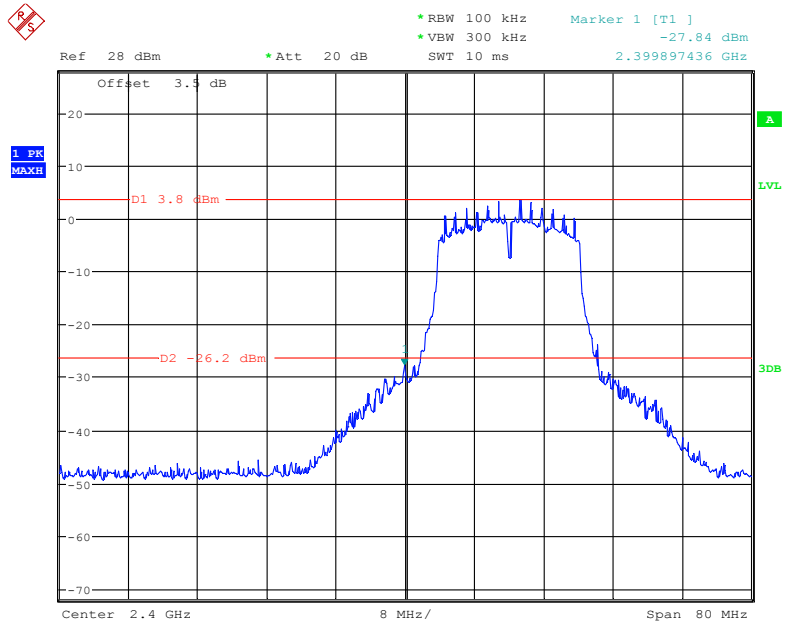
Date: 18.OCT.2019 19:51:03

802.11b: Band Edge, Right Side



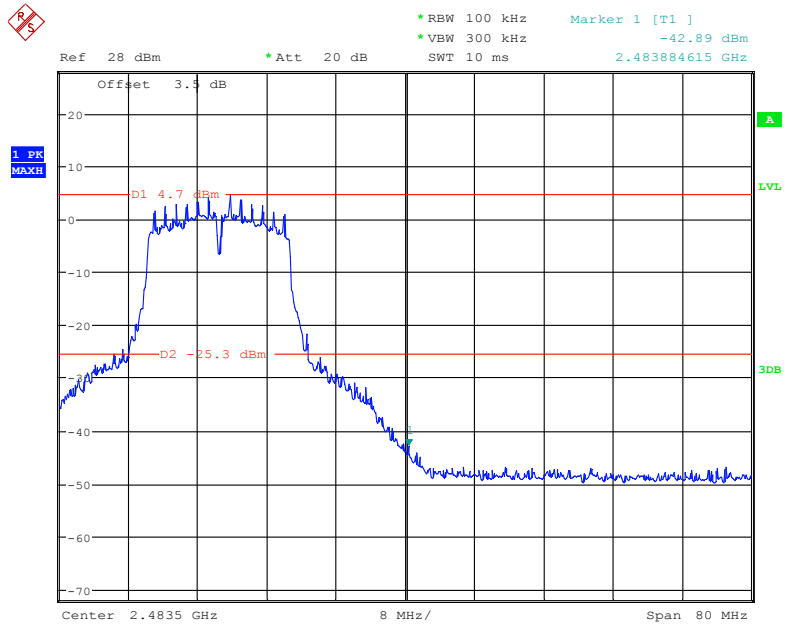
Date: 18.OCT.2019 19:52:32

802.11g: Band Edge, Left Side



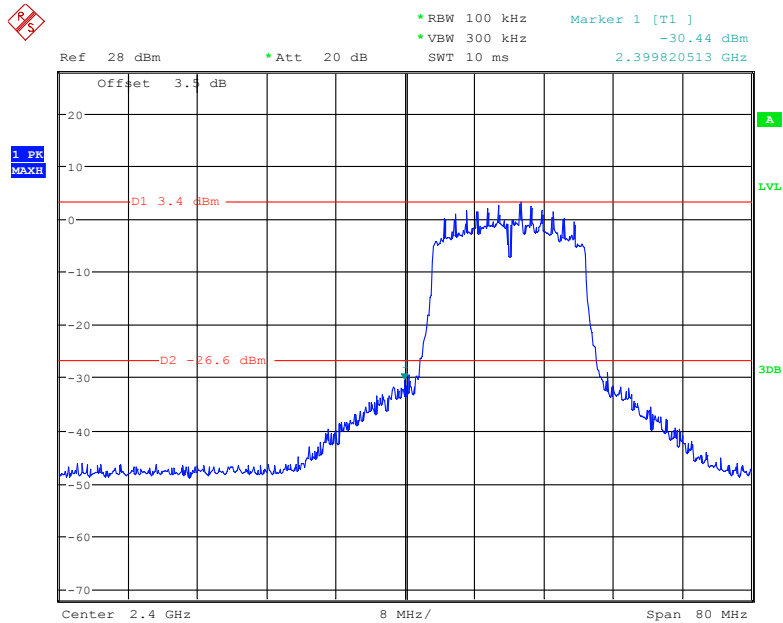
Date: 18.OCT.2019 19:55:39

802.11g: Band Edge, Right Side



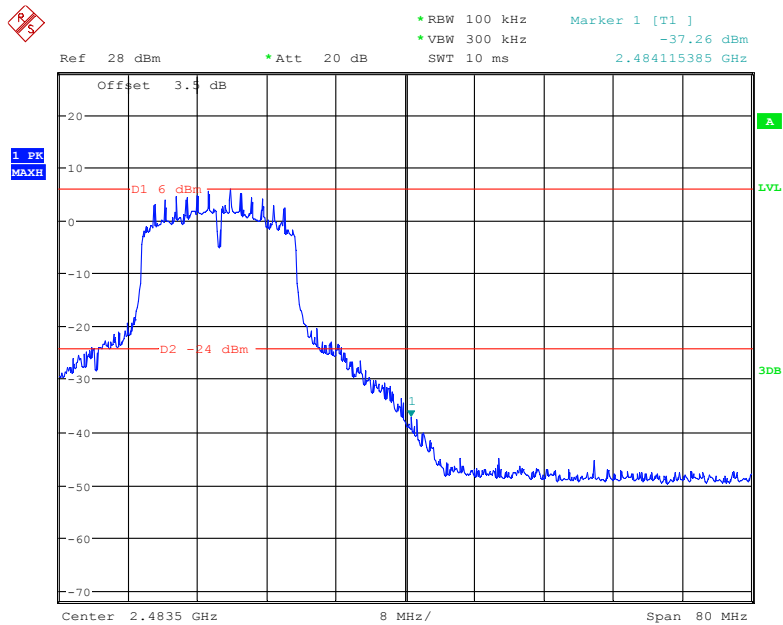
Date: 18.OCT.2019 19:54:39

802.11n-HT20: Band Edge, Left Side



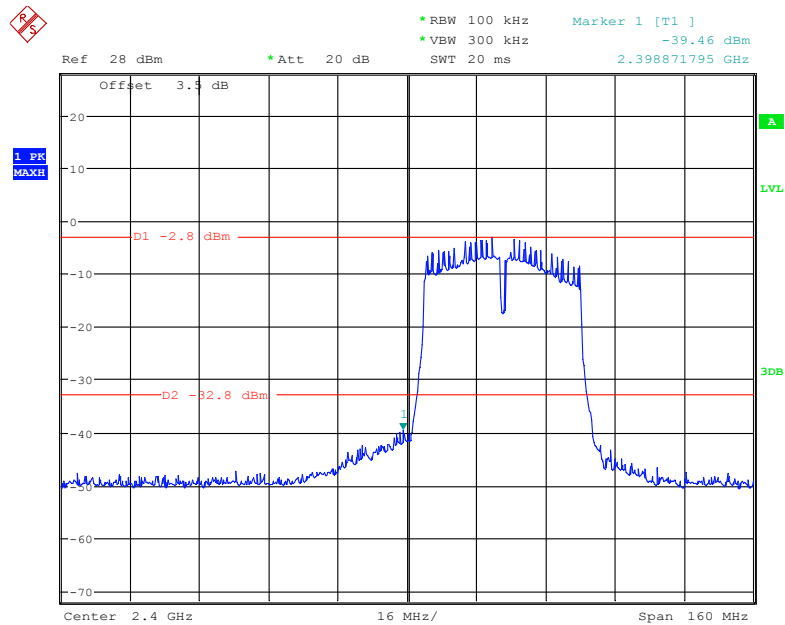
Date: 18.OCT.2019 19:57:29

802.11n-HT20: Band Edge, Right Side



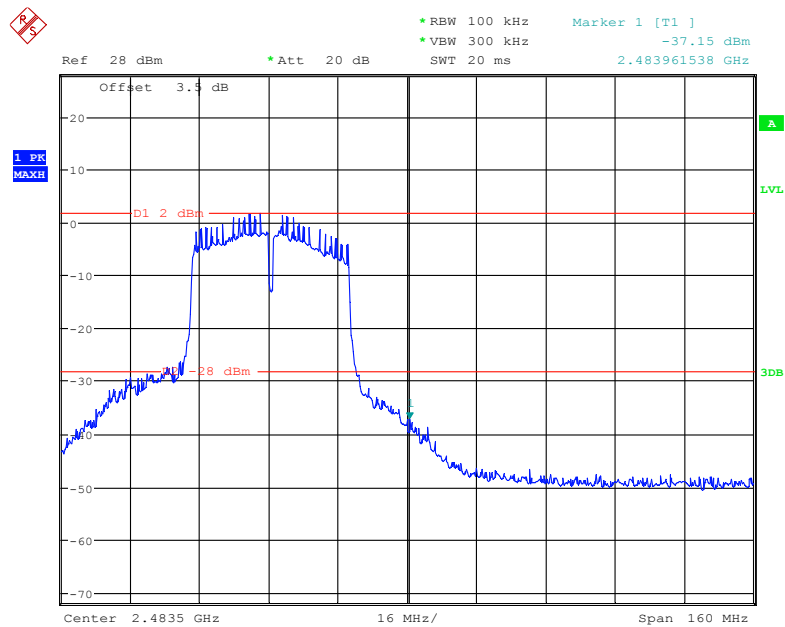
Date: 18.OCT.2019 19:59:06

802.11n-HT40: Band Edge, Left Side



Date: 18.OCT.2019 20:01:24

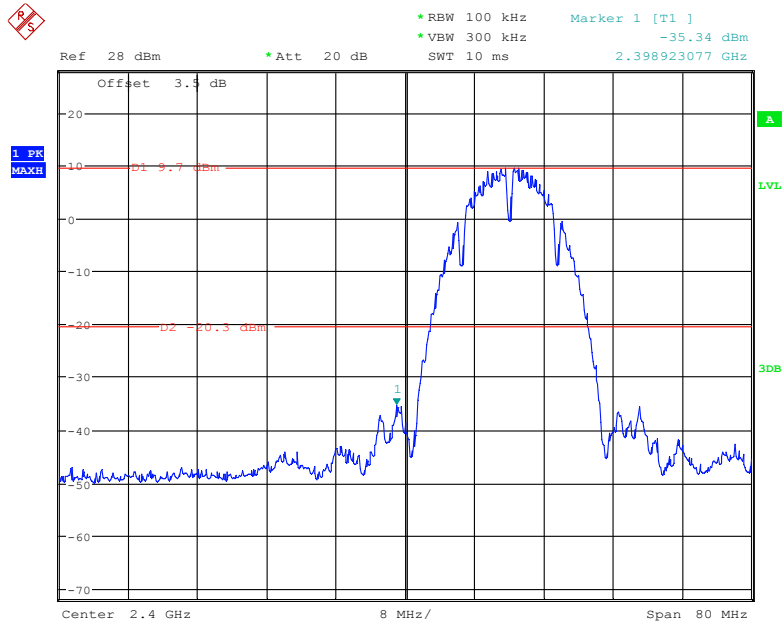
802.11n-HT40: Band Edge, Right Side



Date: 18.OCT.2019 20:00:27

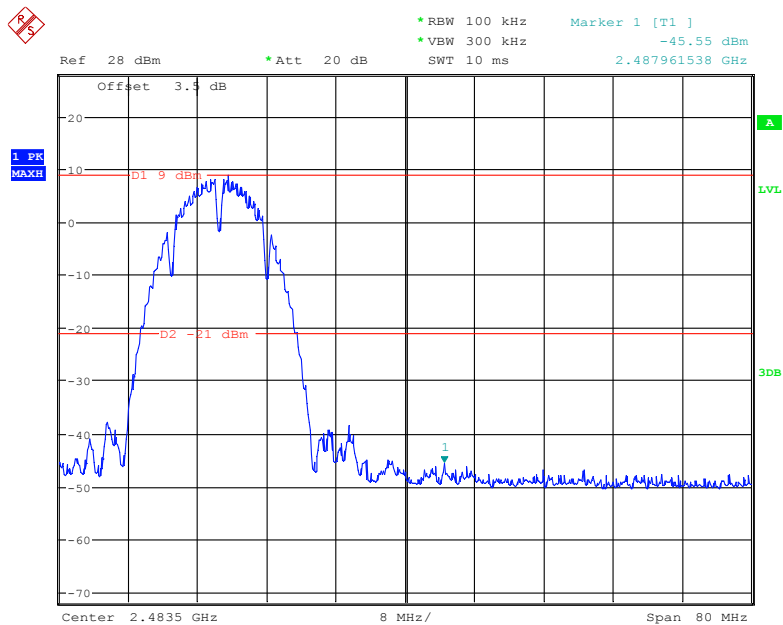
For Antenna 1:

802.11b: Band Edge, Left Side



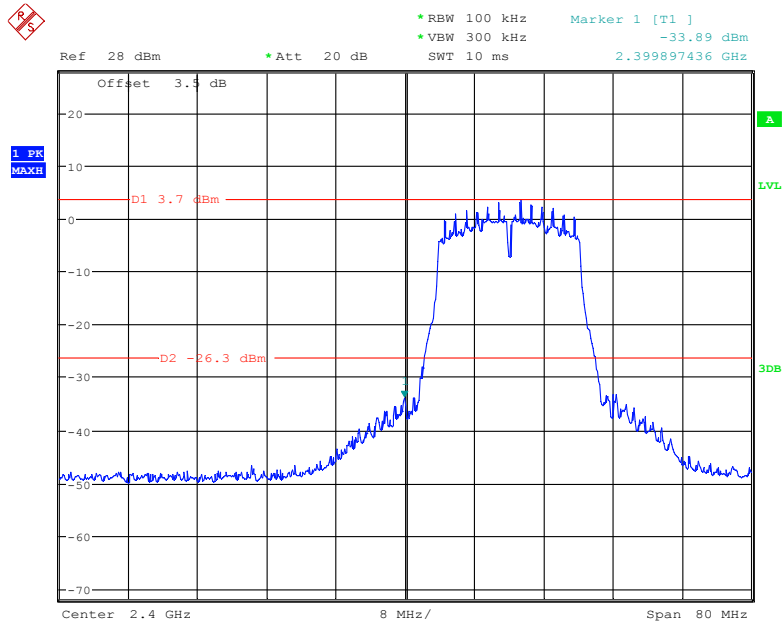
Date: 18.OCT.2019 20:18:33

802.11b: Band Edge, Right Side



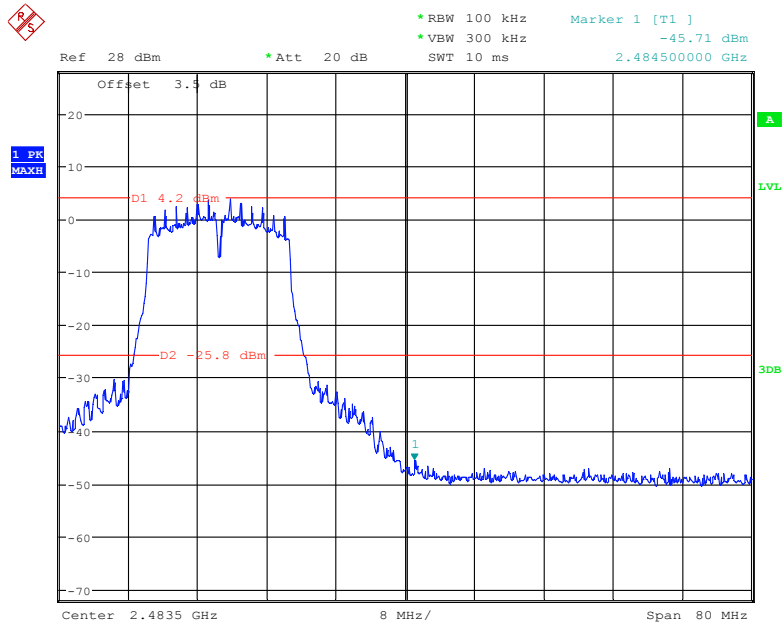
Date: 18.OCT.2019 20:16:46

802.11g: Band Edge, Left Side



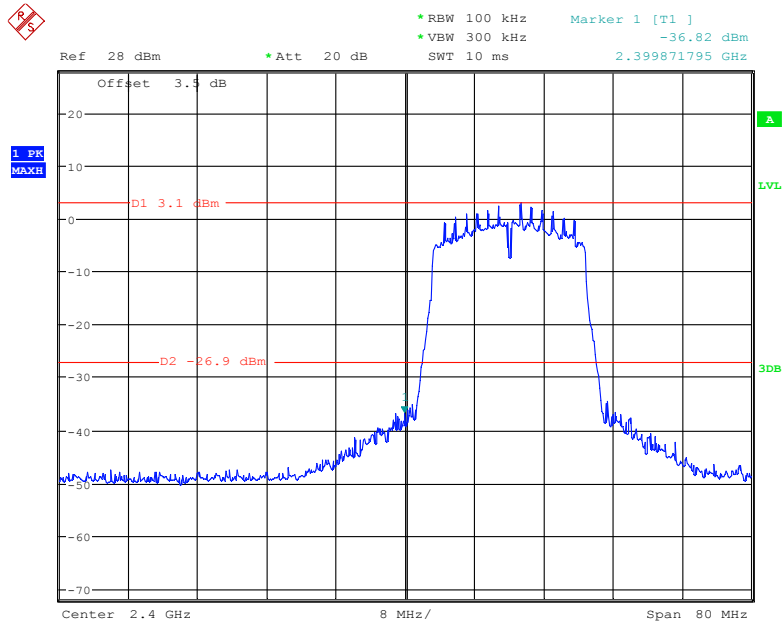
Date: 18.OCT.2019 20:14:50

802.11g: Band Edge, Right Side



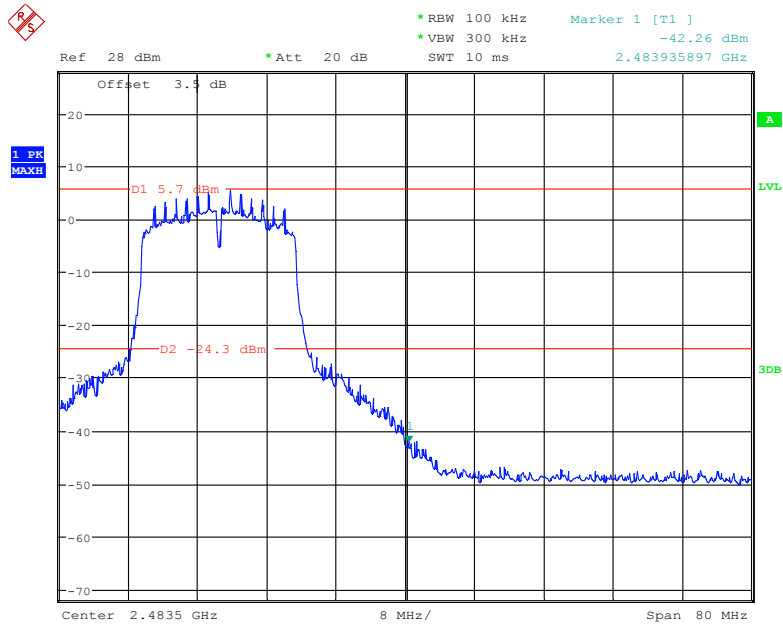
Date: 18.OCT.2019 20:15:49

802.11n-HT20: Band Edge, Left Side



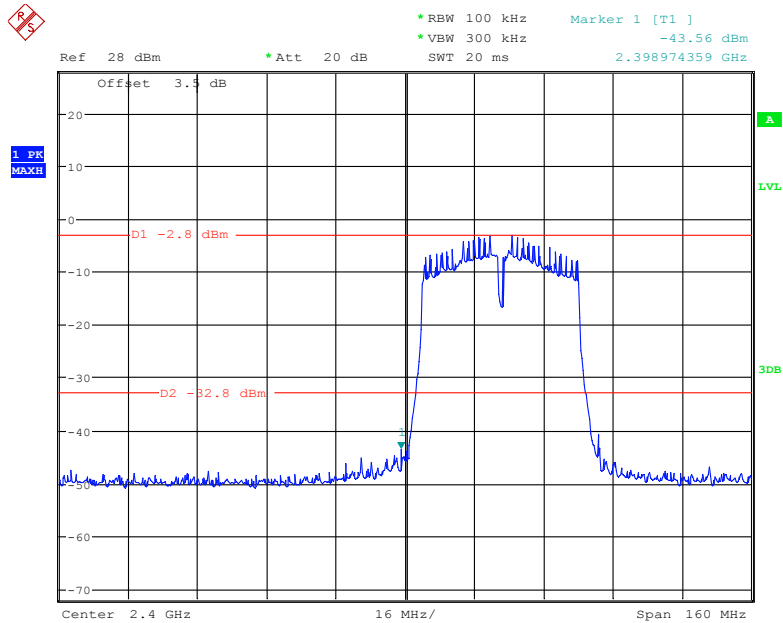
Date: 18.OCT.2019 20:12:46

802.11n-HT20: Band Edge, Right Side



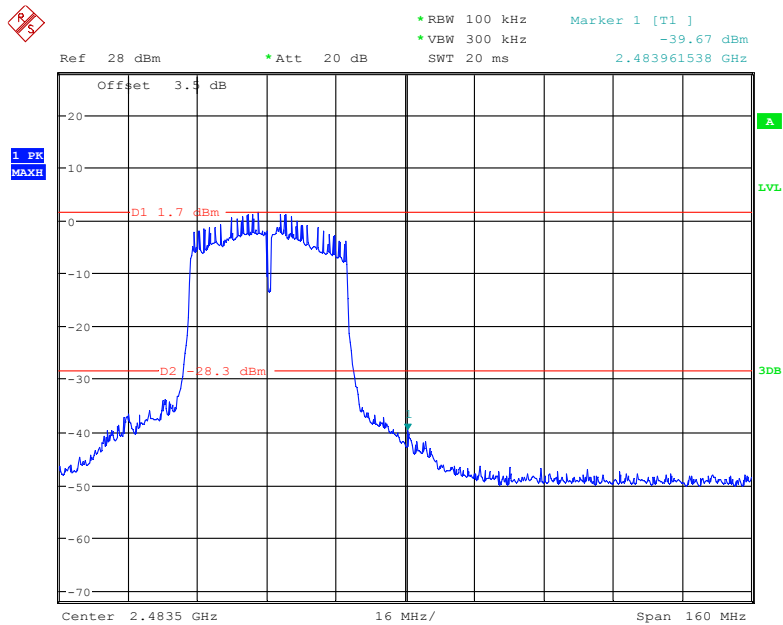
Date: 18.OCT.2019 20:11:17

802.11n-HT40: Band Edge, Left Side



Date: 18.OCT.2019 20:08:51

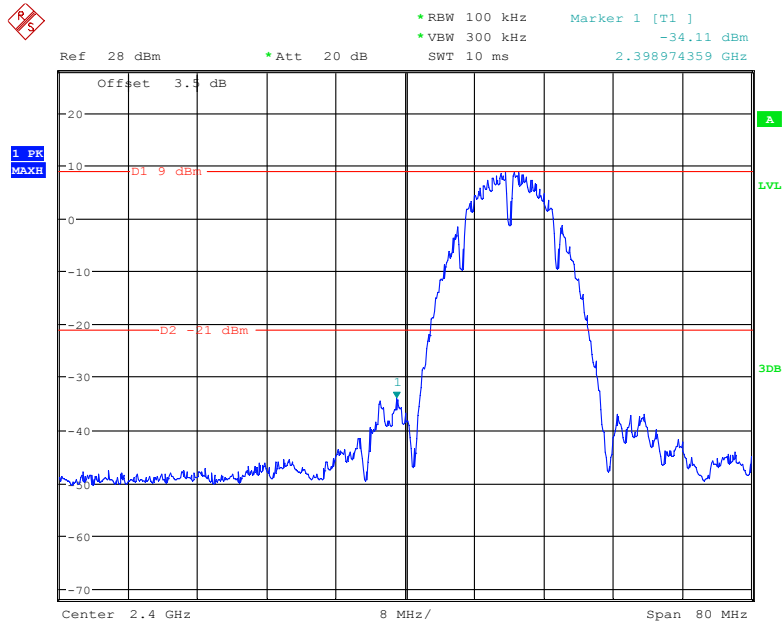
802.11n-HT40: Band Edge, Right Side



Date: 18.OCT.2019 20:10:05

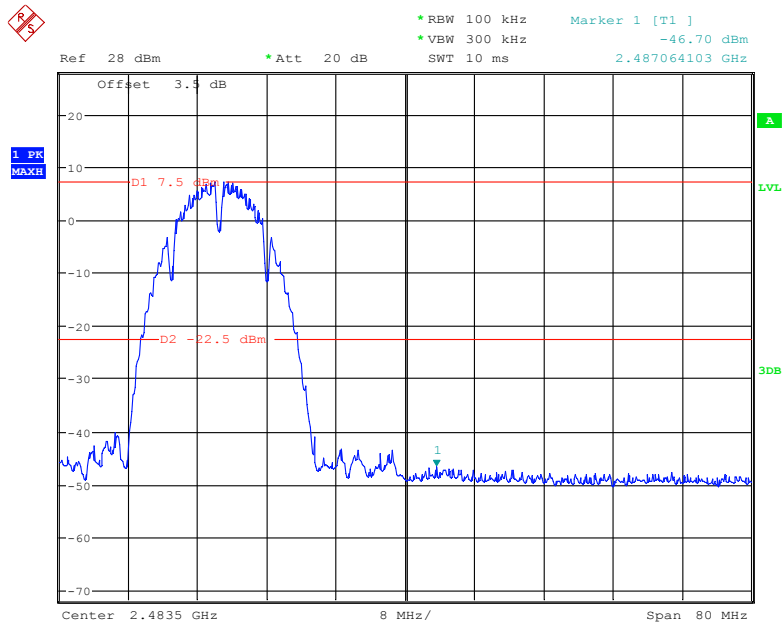
For Antenna 2:

802.11b: Band Edge, Left Side



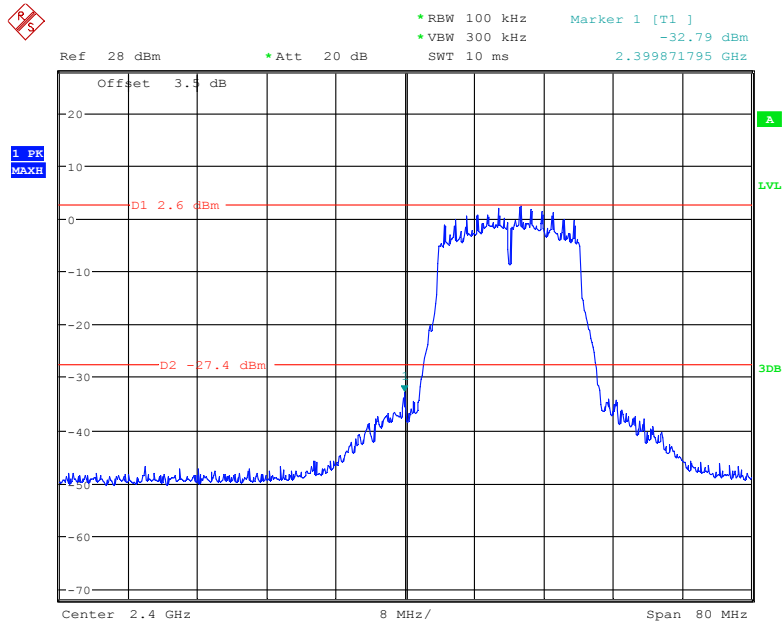
Date: 18.OCT.2019 20:21:01

802.11b: Band Edge, Right Side



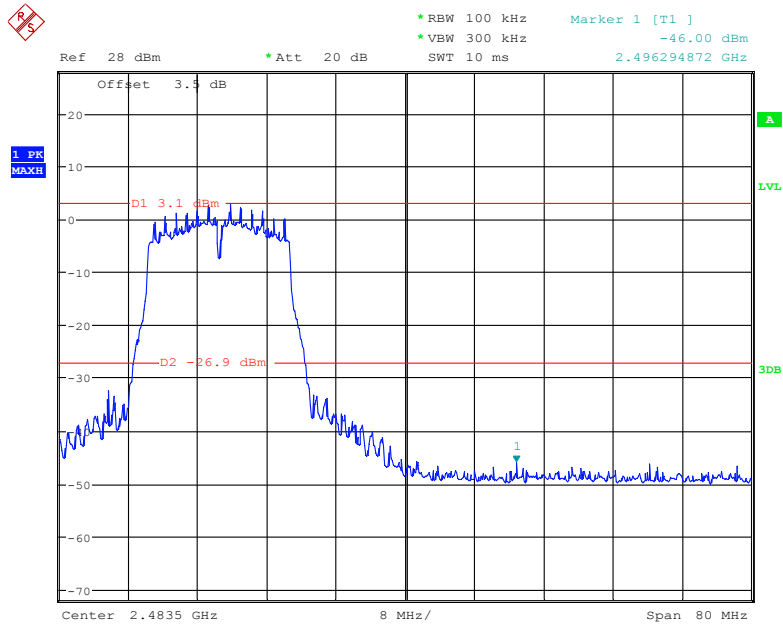
Date: 18.OCT.2019 20:22:11

802.11g: Band Edge, Left Side



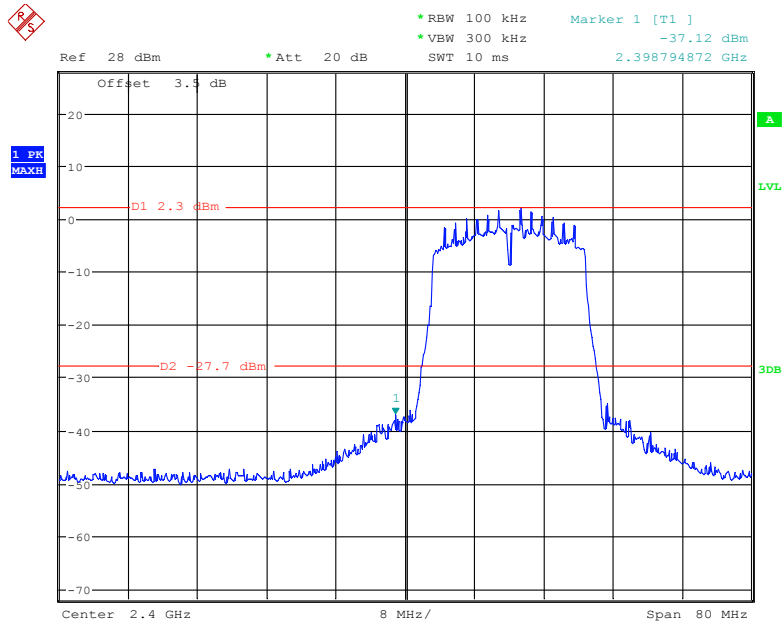
Date: 18.OCT.2019 20:25:17

802.11g: Band Edge, Right Side



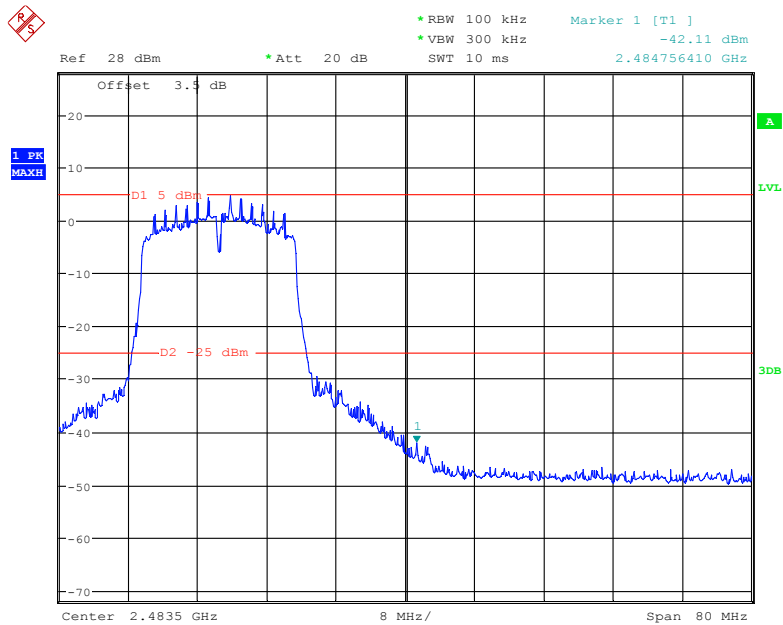
Date: 18.OCT.2019 20:24:11

802.11n-HT20: Band Edge, Left Side



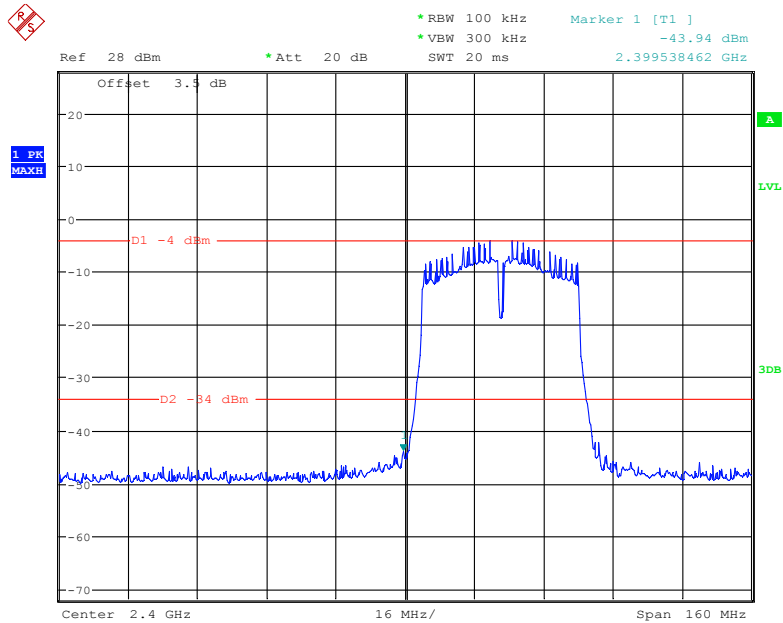
Date: 18.OCT.2019 20:26:48

802.11n-HT20: Band Edge, Right Side



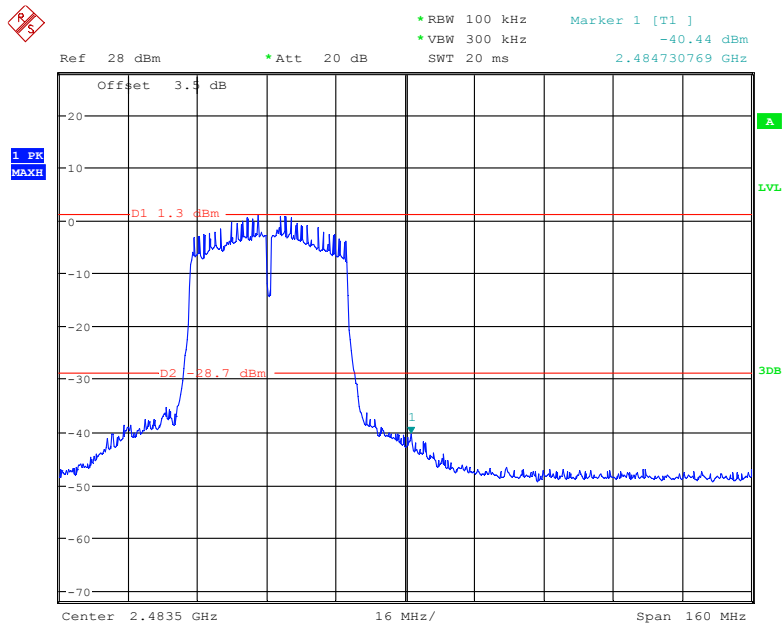
Date: 18.OCT.2019 20:28:32

802.11n-HT40: Band Edge, Left Side



Date: 18.OCT.2019 20:32:26

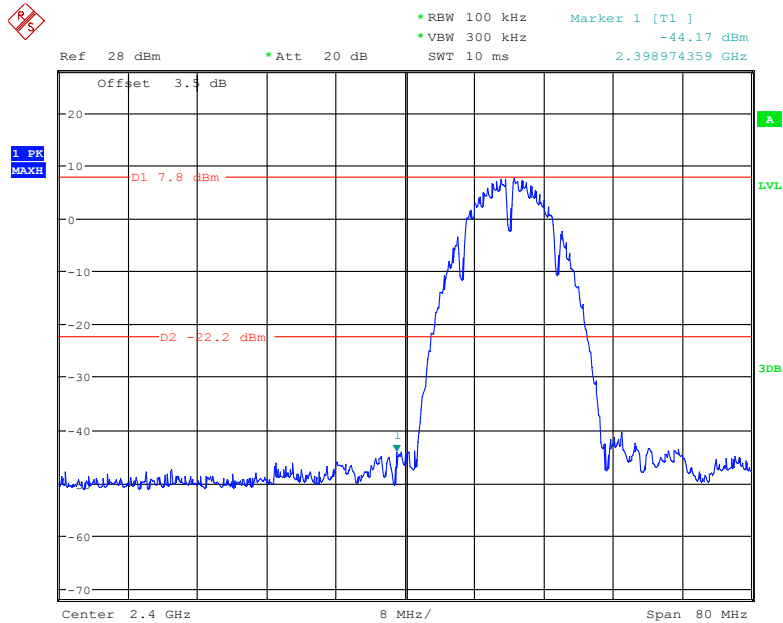
802.11n-HT40: Band Edge, Right Side



Date: 18.OCT.2019 20:30:49

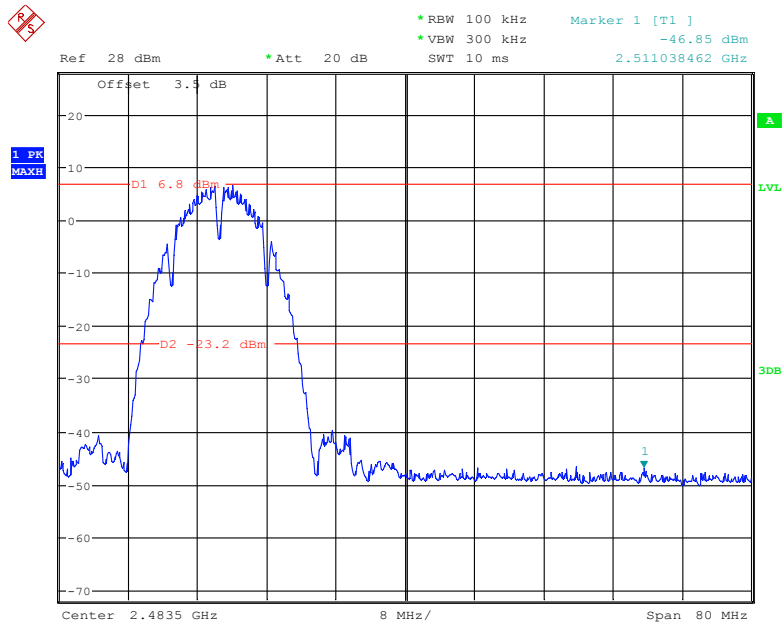
For Antenna 3:

802.11b: Band Edge, Left Side



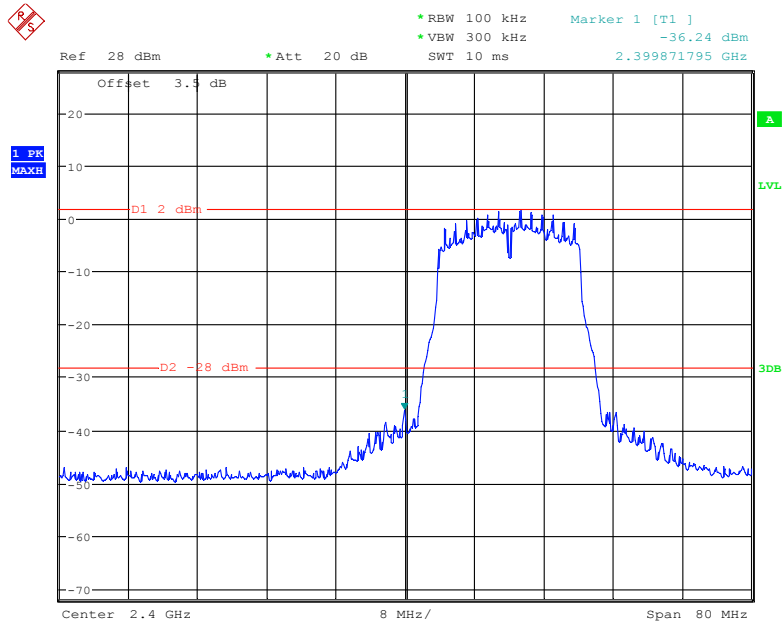
Date: 18.OCT.2019 20:56:49

802.11b: Band Edge, Right Side



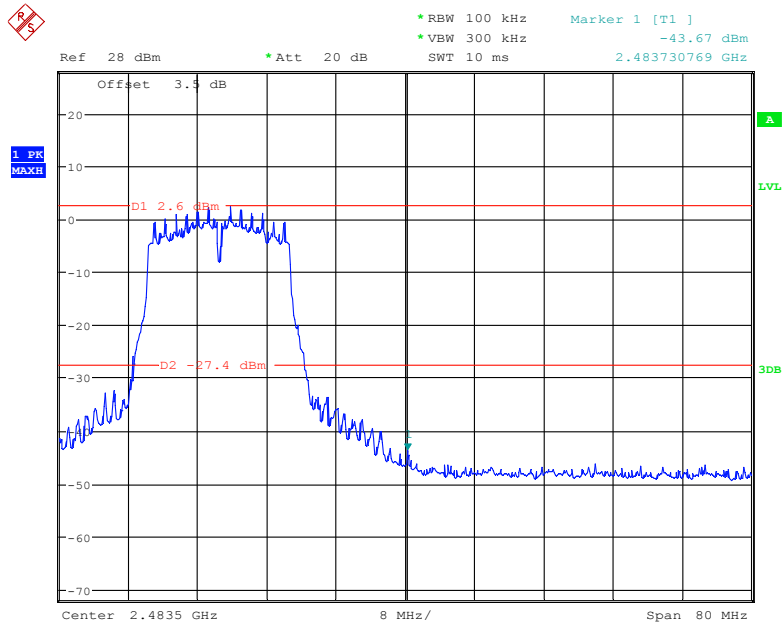
Date: 18.OCT.2019 20:58:14

802.11g: Band Edge, Left Side



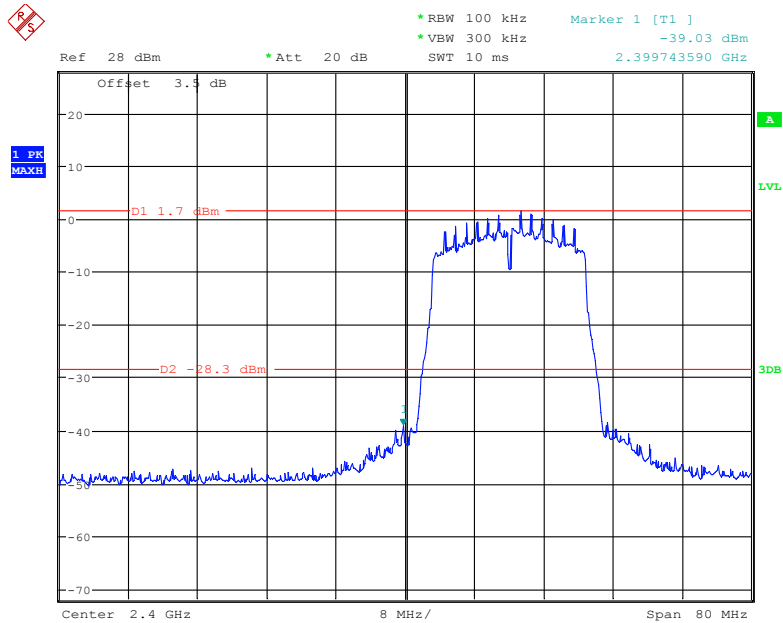
Date: 18.OCT.2019 21:02:29

802.11g: Band Edge, Right Side



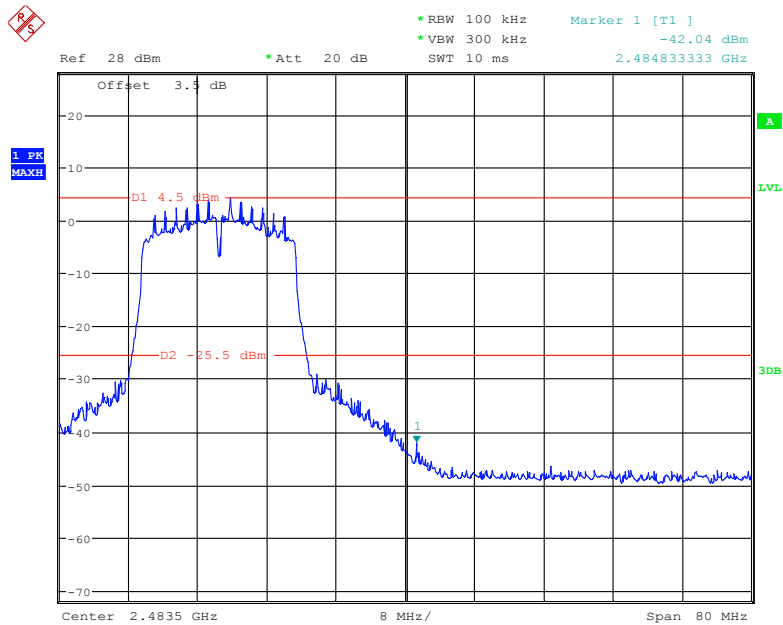
Date: 18.OCT.2019 21:00:36

802.11n-HT20: Band Edge, Left Side



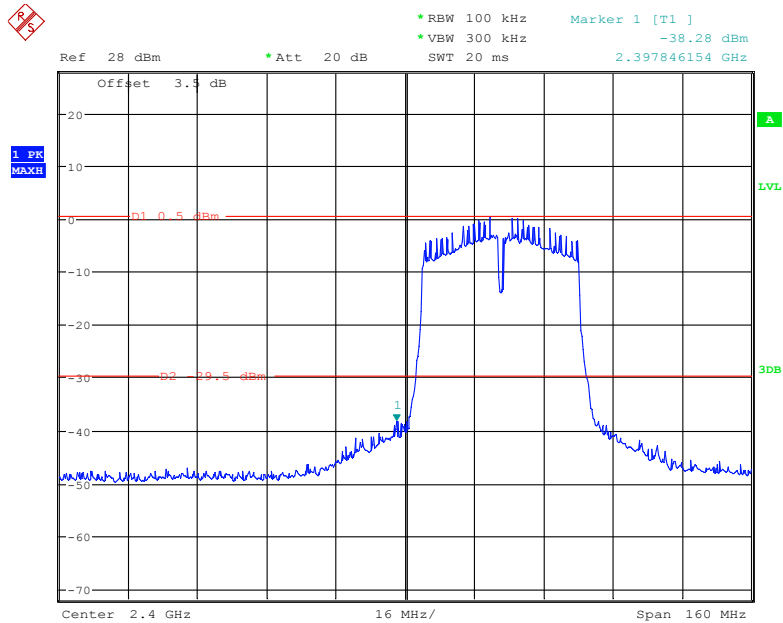
Date: 18.OCT.2019 21:12:50

802.11n-HT20: Band Edge, Right Side



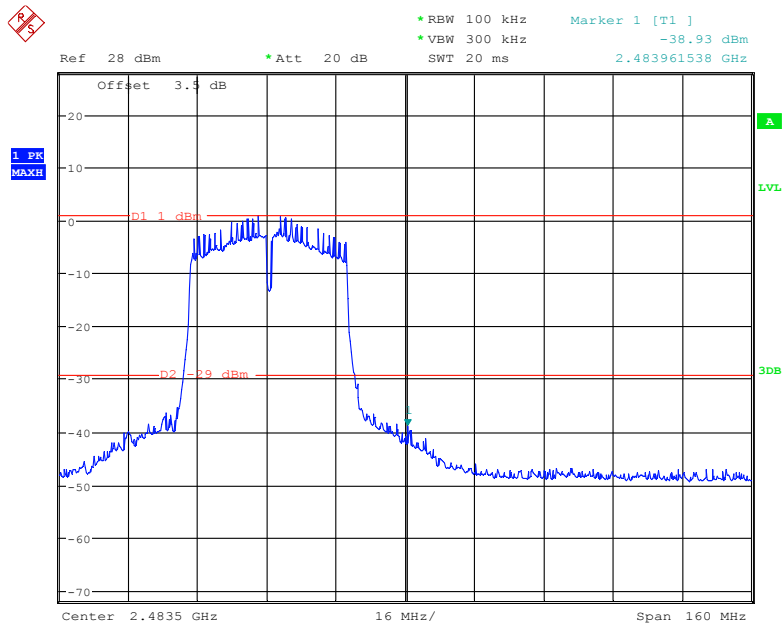
Date: 18.OCT.2019 21:14:20

802.11n-HT40: Band Edge, Left Side



Date: 18.OCT.2019 21:17:48

802.11n-HT40: Band Edge, Right Side



Date: 18.OCT.2019 21:16:05

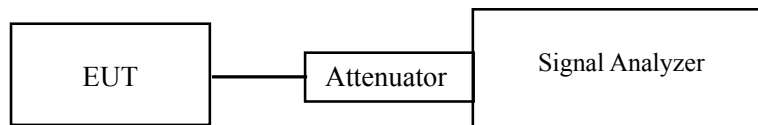
FCC §15.247(e) - POWER SPECTRAL DENSITY

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

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW to: $3\text{ kHz} \leq \text{RBW} \leq 100\text{ kHz}$.
3. Set the VBW $\geq 3 \times \text{RBW}$.
4. Set the span to 1.5 times the DTS bandwidth.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.



Test Data

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by George Zhong on 2019-10-18.

EUT operation mode: Transmitting

Note: directional gain=array gain+Ant gain= $10 \times \log(N_{ant}/N_{ss}) + 3.5\text{ dBi} = 9.5\text{ dBi}$
 $\text{Limit}_{\text{psd}} = 8 - (\text{directional gain} - 6)\text{ dBm/MHz} = 4.5\text{ dBm/MHz}$

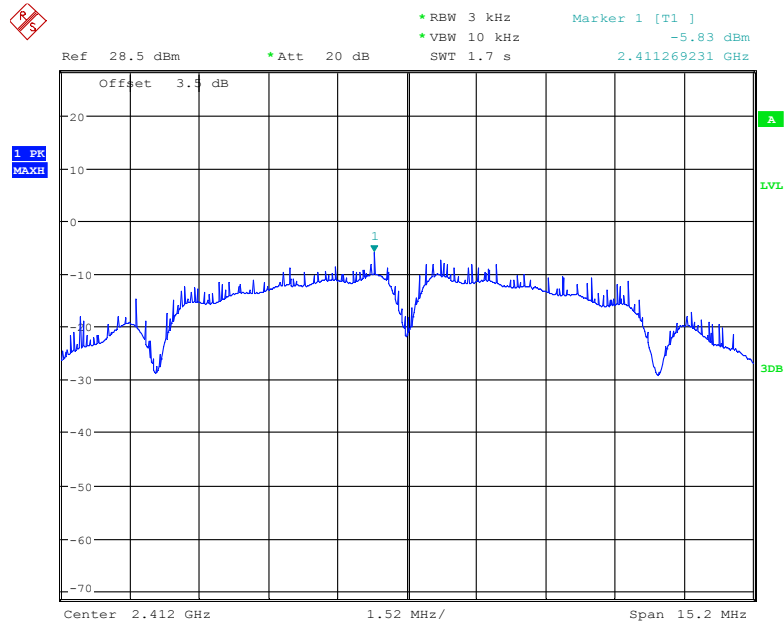
Test Result: Pass

Frequency (MHz)	Antenna Port	PSD (dBm/3kHz)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)
802.11b				
2412	0	-5.83	-0.81	≤4.5
	1	-6.77		
	2	-6.72		
	3	-8.40		
2437	0	-4.61	0.55	
	1	-4.97		
	2	-5.77		
	3	-6.87		
2462	0	-7.74	-2.41	
	1	-8.88		
	2	-8.30		
	3	-8.93		
802.11g				
2412	0	-11.97	-7.24	
	1	-13.14		
	2	-13.70		
	3	-14.65		
2437	0	-6.20	-1.49	
	1	-7.90		
	2	-7.77		
	3	-8.54		
2462	0	-11.75	-6.82	
	1	-11.88		
	2	-14.15		
	3	-14.23		

Frequency (MHz)	Antenna Port	PSD (dBm/3kHz)	Total PSD (dBm/3kHz)	Limit (dBm/3kHz)
802.11n-HT20				
2412	0	-13.66	-7.93	≤4.5
	1	-12.86		
	2	-14.33		
	3	-15.35		
2437	0	-7.04	-2.44	
	1	-8.75		
	2	-8.91		
	3	-9.58		
2462	0	-10.53	-5.59	
	1	-11.43		
	2	-11.99		
	3	-12.83		
802.11n-HT40				
2422	0	-18.96	-14.1	≤4.5
	1	-19.42		
	2	-21.21		
	3	-21.40		
2437	0	-10.32	-4.57	
	1	-10.17		
	2	-10.66		
	3	-11.29		
2452	0	-15.33	-8.58	
	1	-13.57		
	2	-14.32		
	3	-15.47		

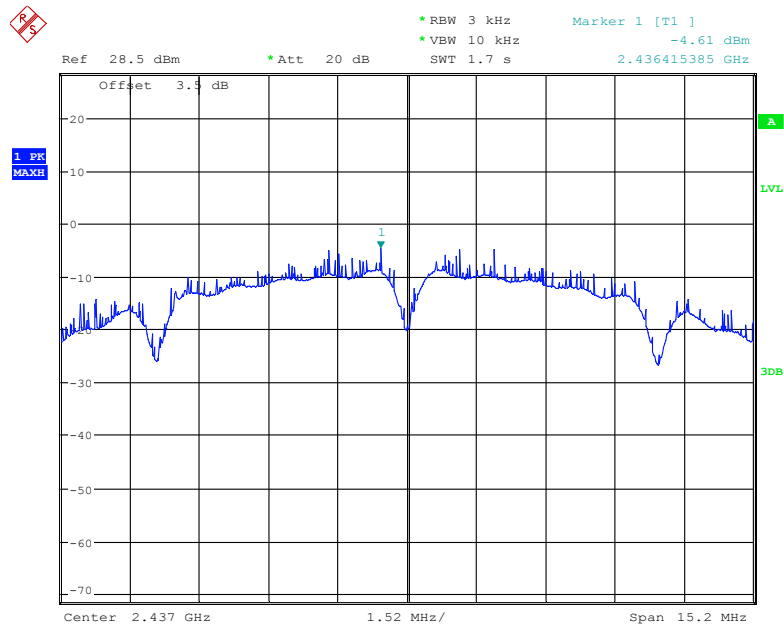
For Antenna 0:

Power Spectral Density, 802.11b Low Channel (2412MHz)



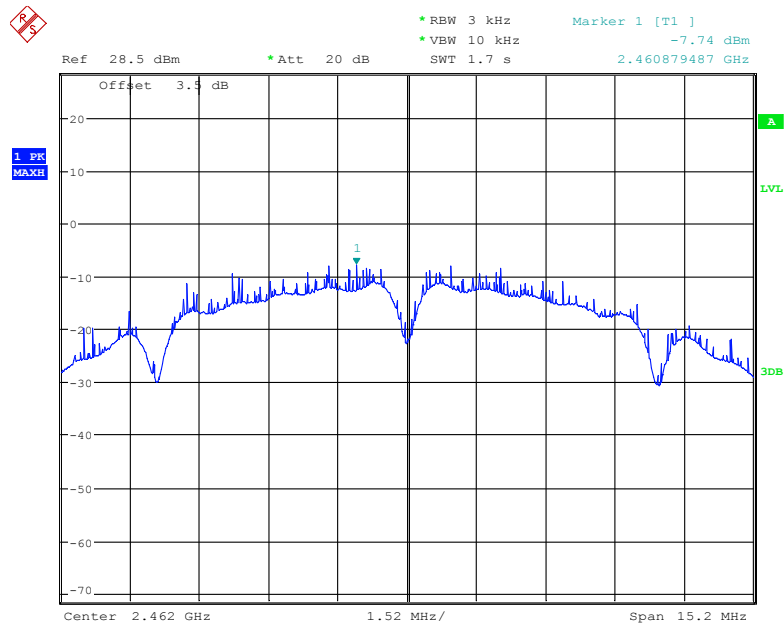
Date: 18.OCT.2019 22:32:24

Power Spectral Density, 802.11b Middle Channel (2437MHz)



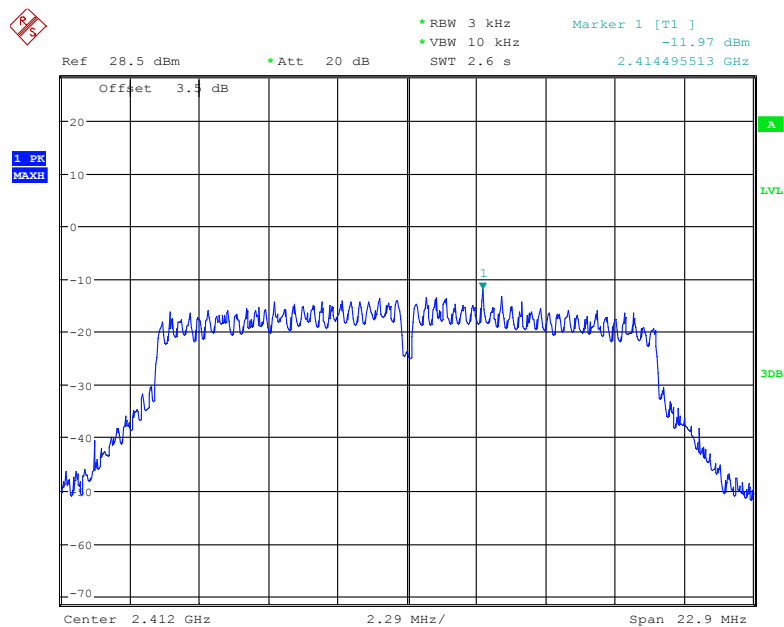
Date: 18.OCT.2019 22:33:45

Power Spectral Density, 802.11b High Channel (2462MHz)



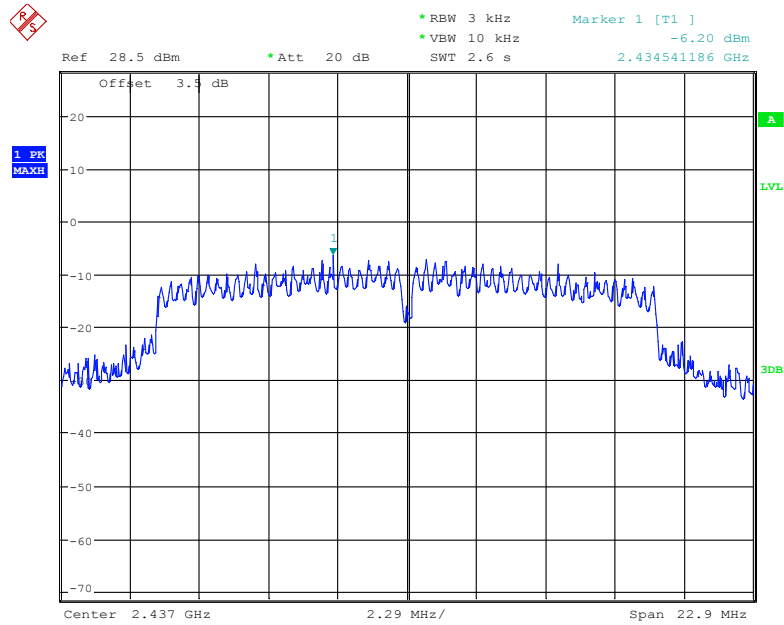
Date: 18.OCT.2019 22:35:11

Power Spectral Density, 802.11g Low Channel (2412MHz)



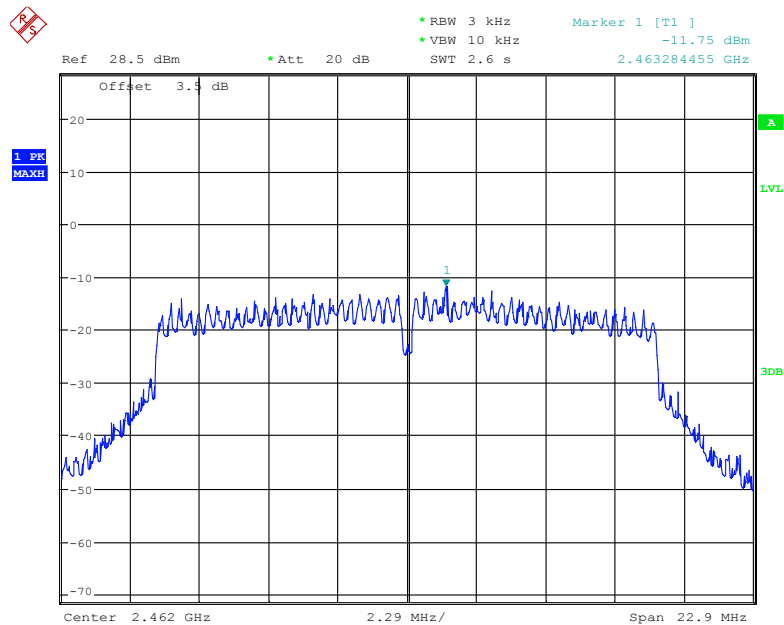
Date: 18.OCT.2019 22:30:41

Power Spectral Density, 802.11g Middle Channel (2437MHz)



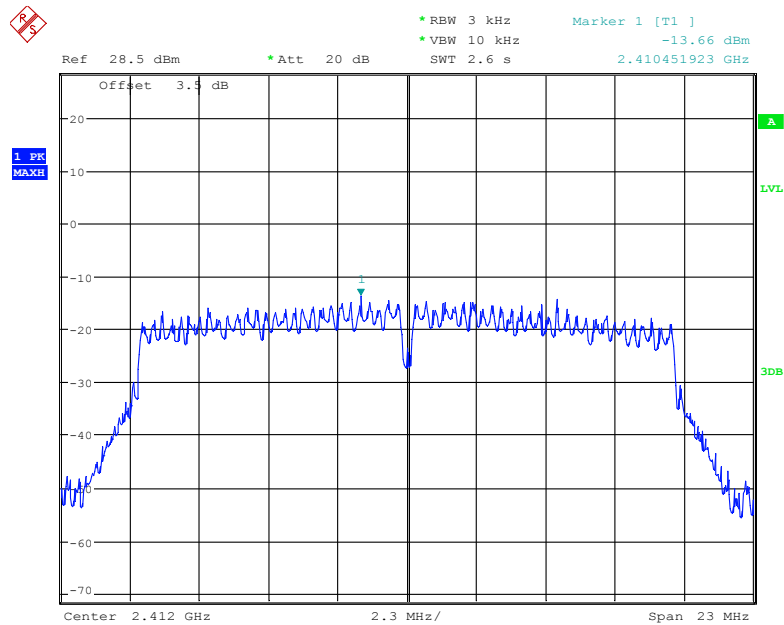
Date: 18.OCT.2019 22:29:20

Power Spectral Density, 802.11g High Channel (2462MHz)



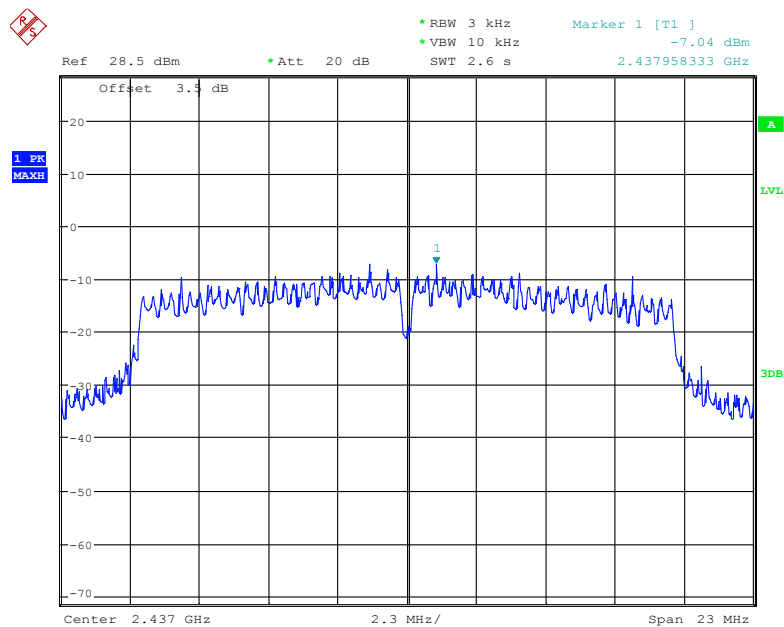
Date: 18.OCT.2019 22:27:48

Power Spectral Density, 802.11n-HT20 Low Channel (2412MHz)



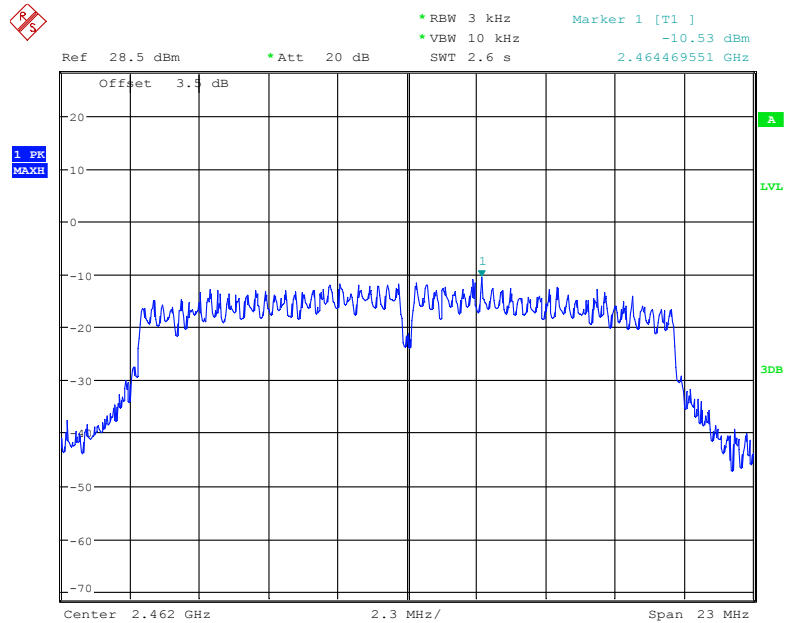
Date: 18.OCT.2019 22:23:45

Power Spectral Density, 802.11n-HT20 Middle Channel (2437MHz)



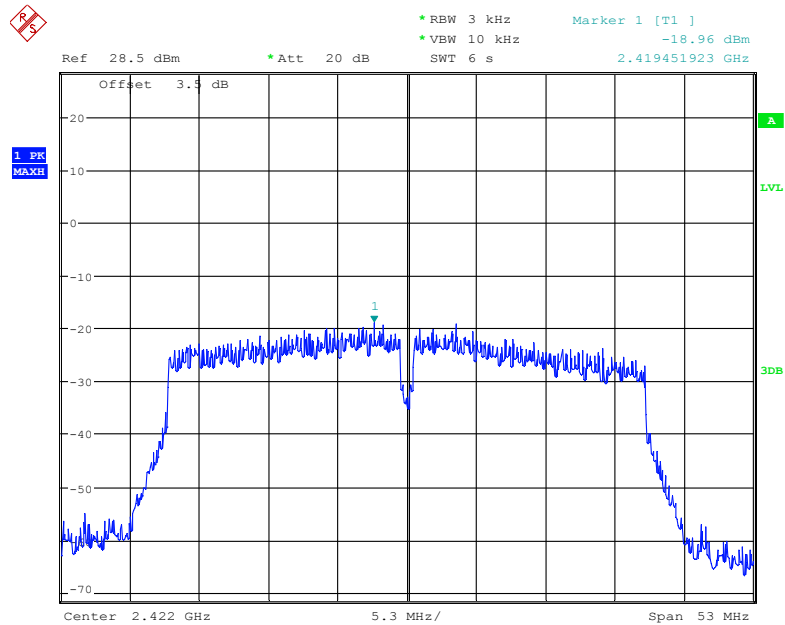
Date: 18.OCT.2019 22:25:24

Power Spectral Density, 802.11n-HT20 High Channel (2462MHz)



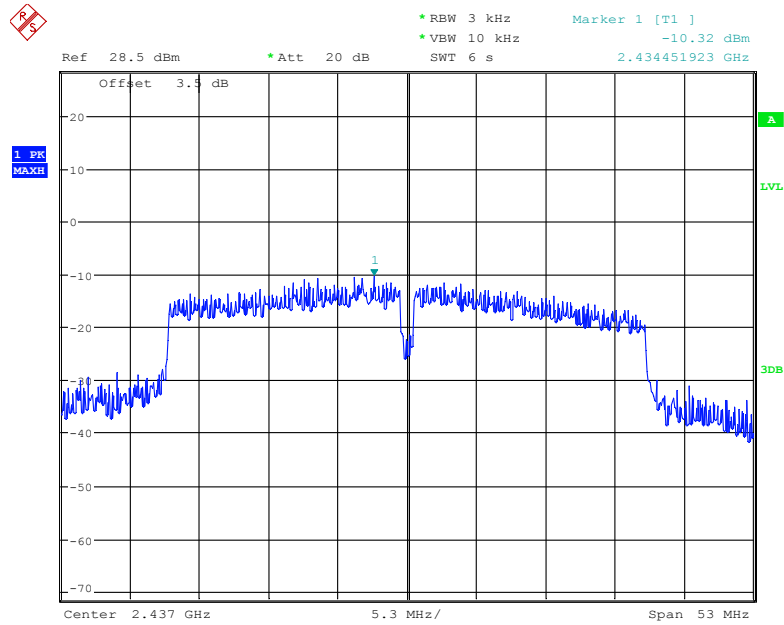
Date: 18.OCT.2019 22:26:33

Power Spectral Density, 802.11n-HT40 Low Channel (2422MHz)



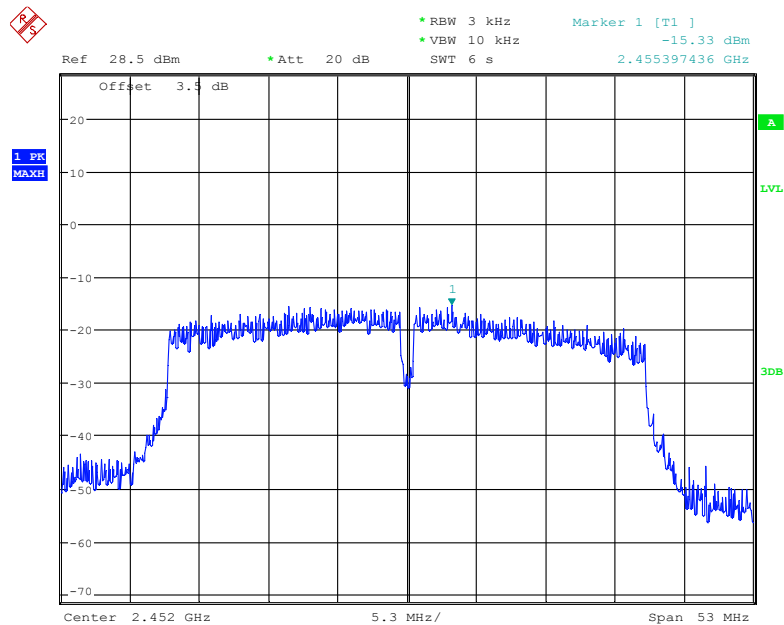
Date: 18.OCT.2019 22:22:35

Power Spectral Density, 802.11n-HT40 Middle Channel (2437MHz)



Date: 18.OCT.2019 22:21:26

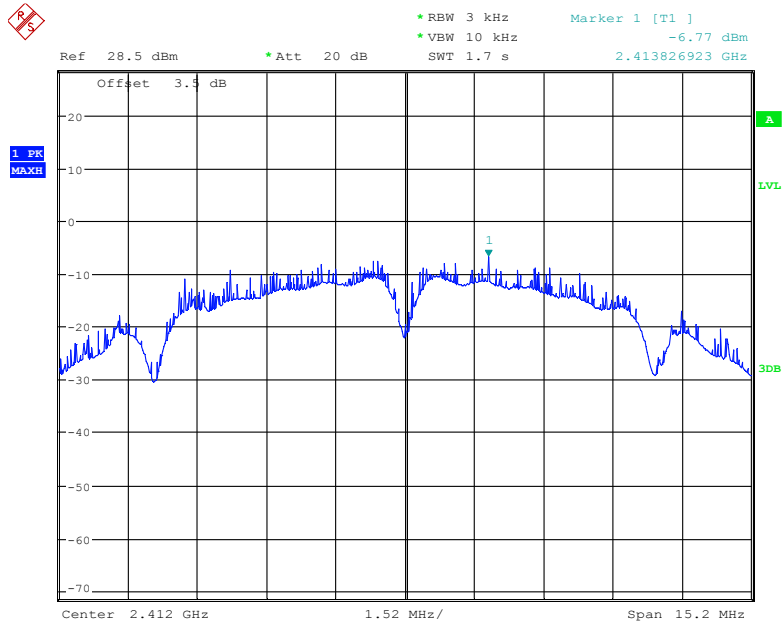
Power Spectral Density, 802.11n-HT40 High Channel (2452MHz)



Date: 18.OCT.2019 22:19:39

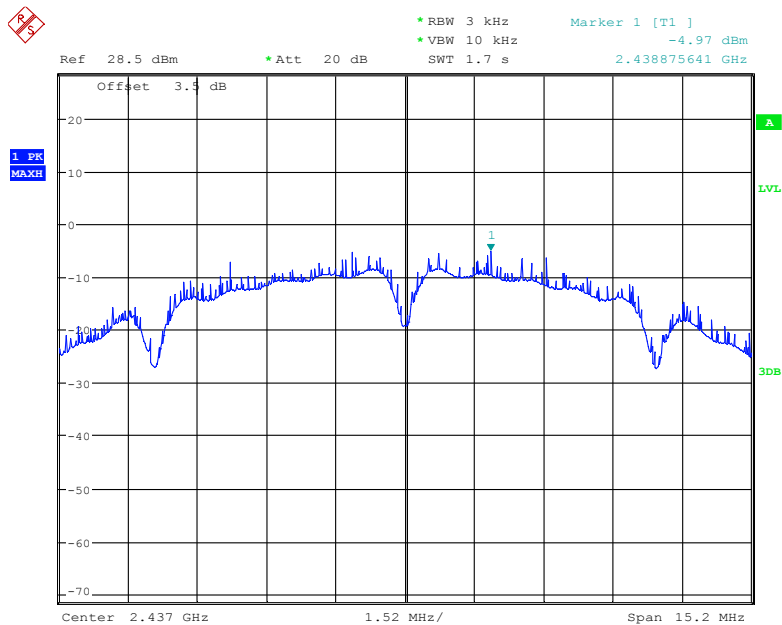
For Antenna 1:

Power Spectral Density, 802.11b Low Channel (2412MHz)



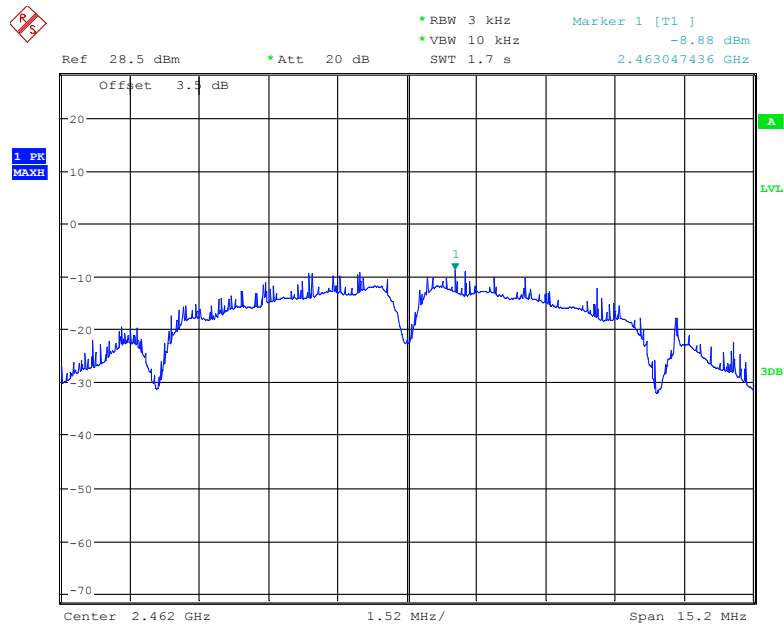
Date: 18.OCT.2019 22:38:58

Power Spectral Density, 802.11b Middle Channel (2437MHz)



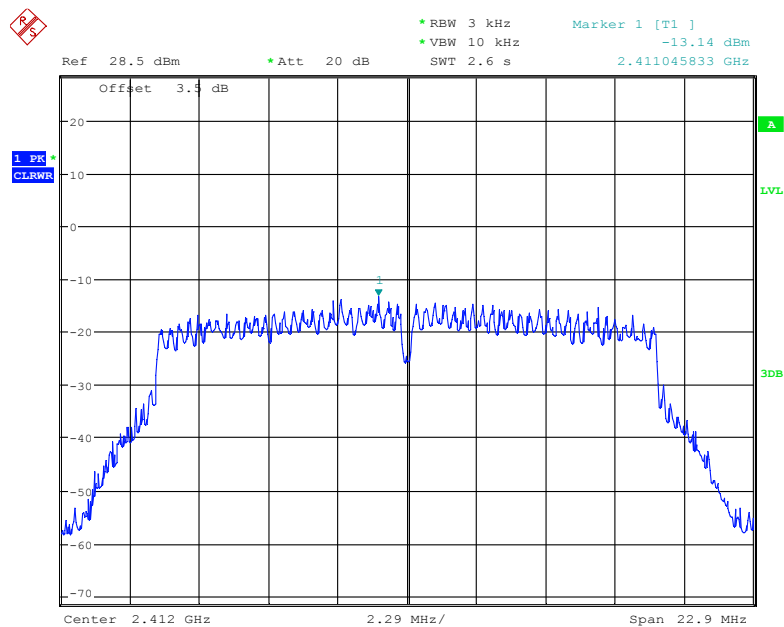
Date: 18.OCT.2019 22:37:52

Power Spectral Density, 802.11b High Channel (2462MHz)



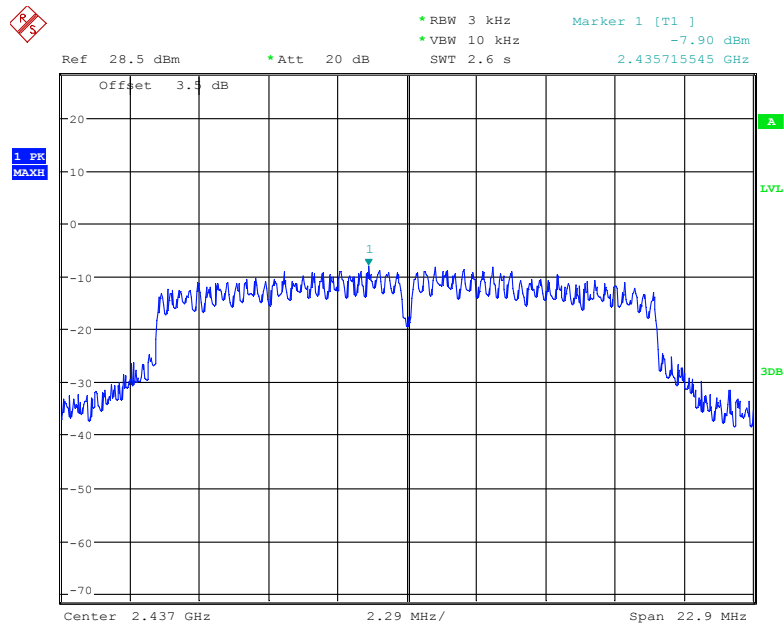
Date: 18.OCT.2019 22:36:42

Power Spectral Density, 802.11g Low Channel (2412MHz)



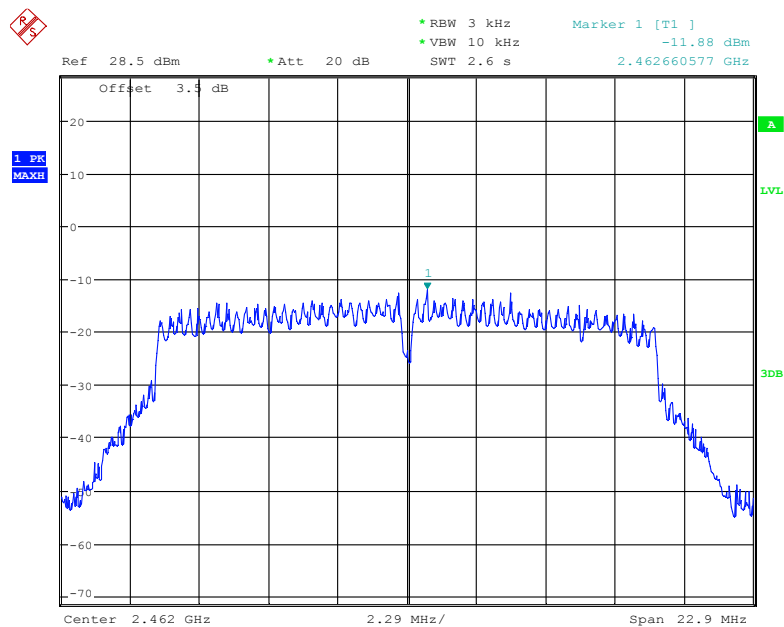
Date: 18.OCT.2019 22:41:52

Power Spectral Density, 802.11g Middle Channel (2437MHz)



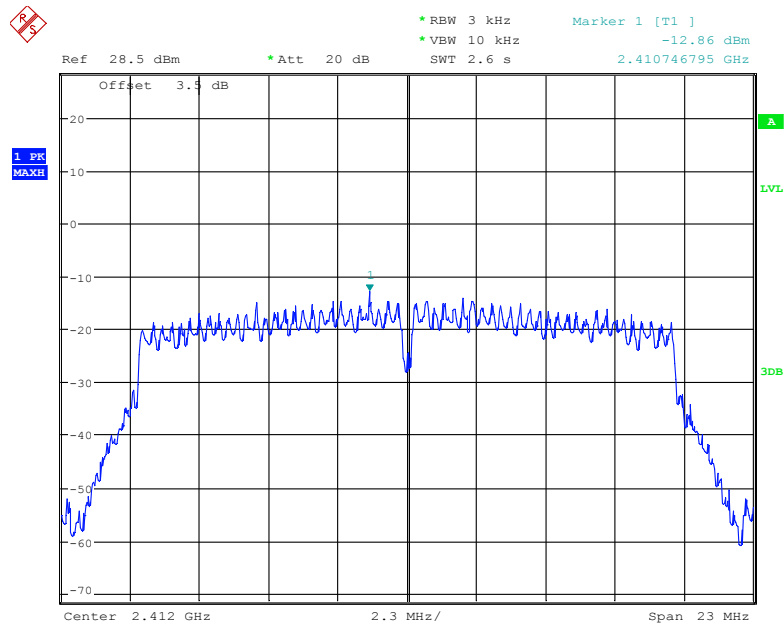
Date: 18.OCT.2019 22:42:48

Power Spectral Density, 802.11g High Channel (2462MHz)



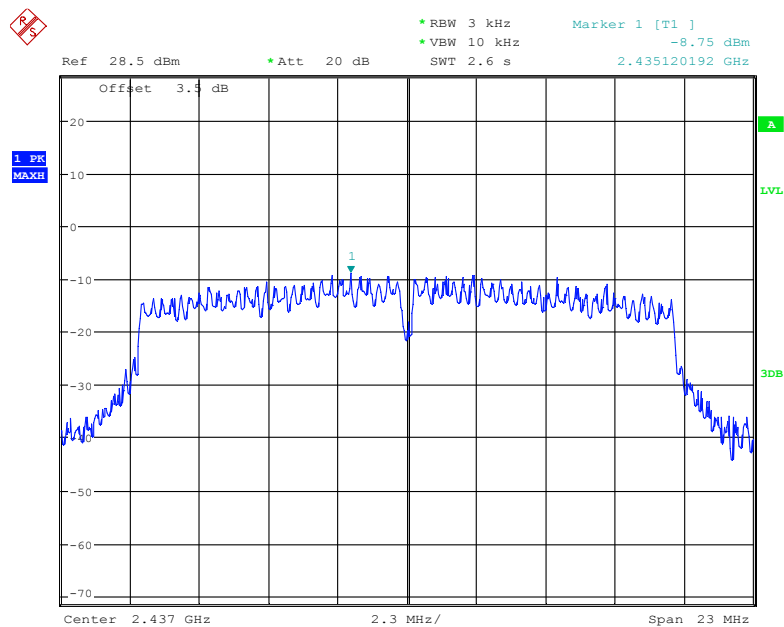
Date: 18.OCT.2019 22:43:42

Power Spectral Density, 802.11n-HT20 Low Channel (2412MHz)



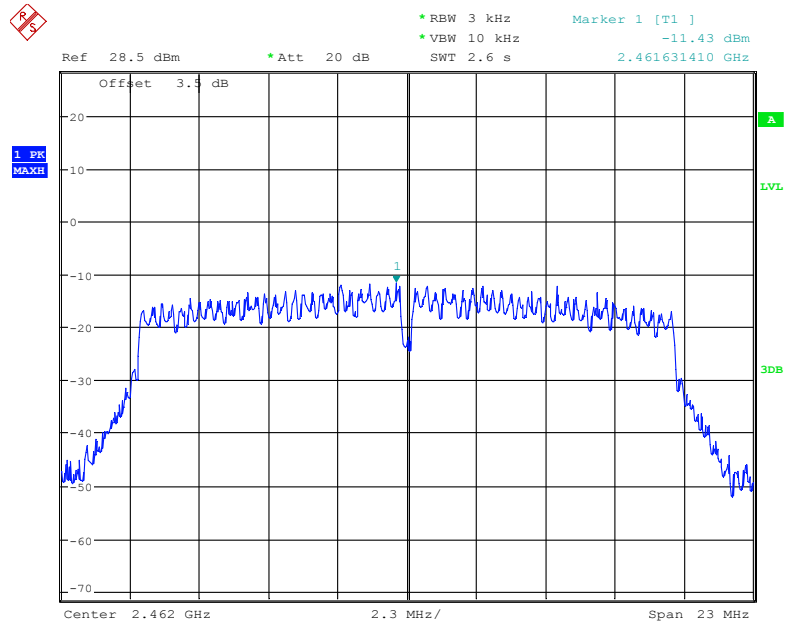
Date: 18.OCT.2019 22:46:46

Power Spectral Density, 802.11n-HT20 Middle Channel (2437MHz)



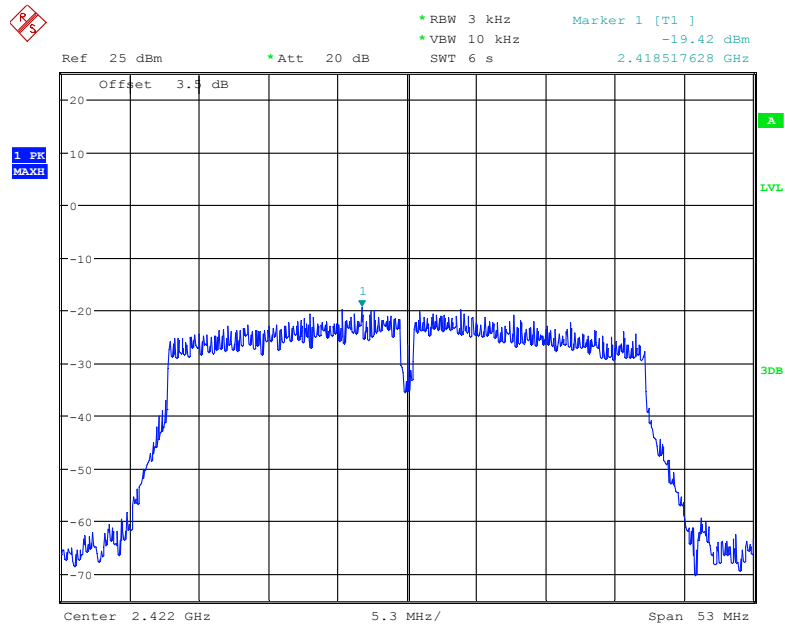
Date: 18.OCT.2019 22:45:58

Power Spectral Density, 802.11n-HT20 High Channel (2462MHz)



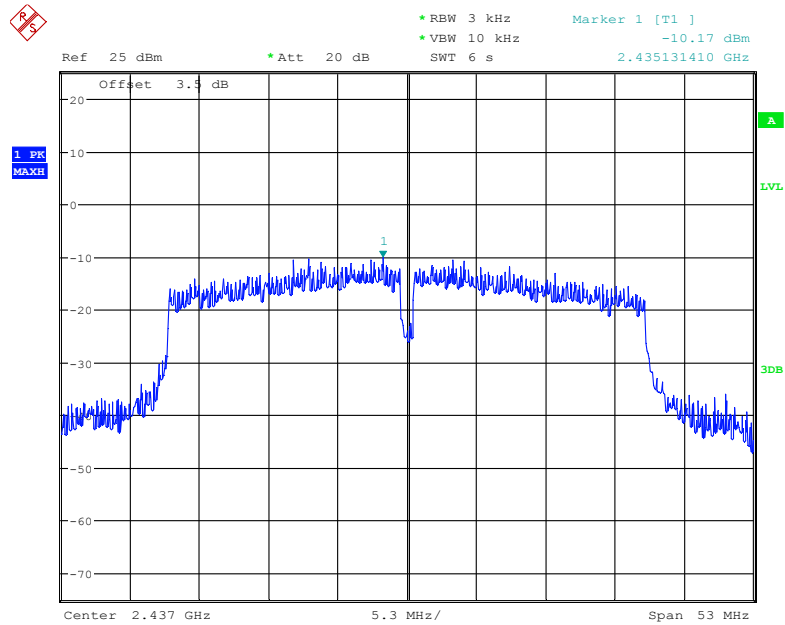
Date: 18.OCT.2019 22:44:37

Power Spectral Density, 802.11n-HT40 Low Channel (2422MHz)



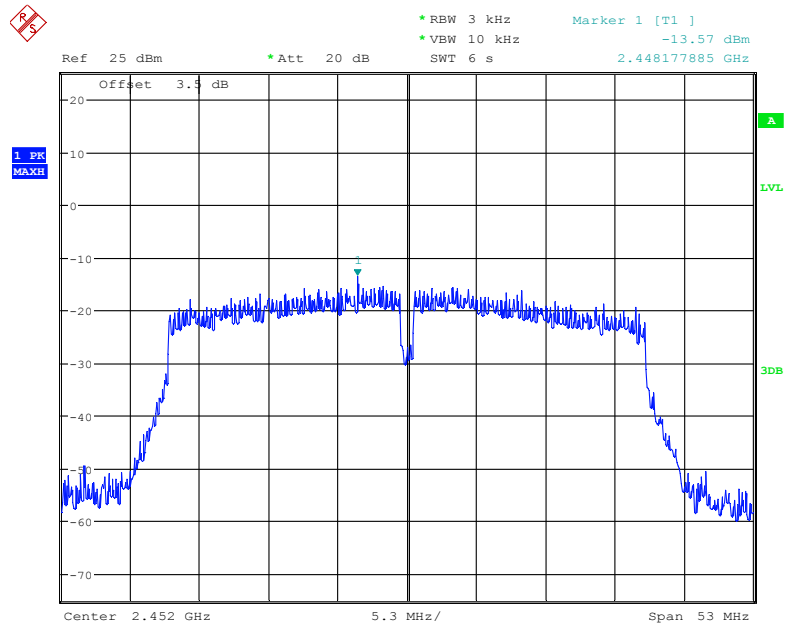
Date: 18.OCT.2019 22:47:36

Power Spectral Density, 802.11n-HT40 Middle Channel (2437MHz)



Date: 18.OCT.2019 22:49:02

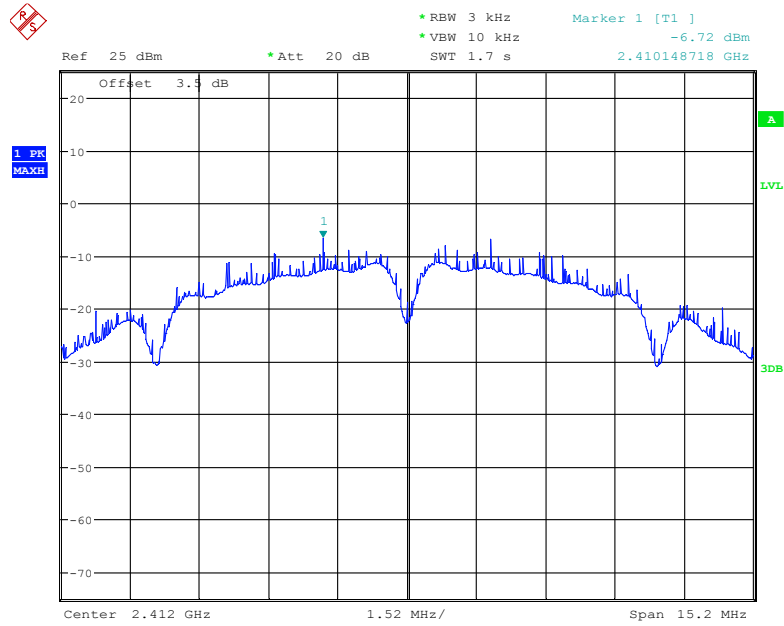
Power Spectral Density, 802.11n-HT40 High Channel (2452MHz)



Date: 18.OCT.2019 22:50:02

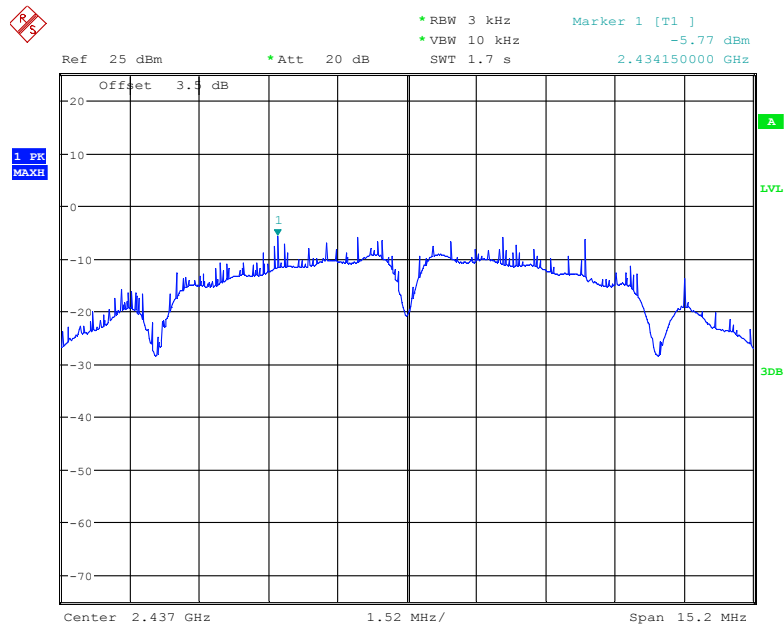
For Antenna 2:

Power Spectral Density, 802.11b Low Channel (2412MHz)



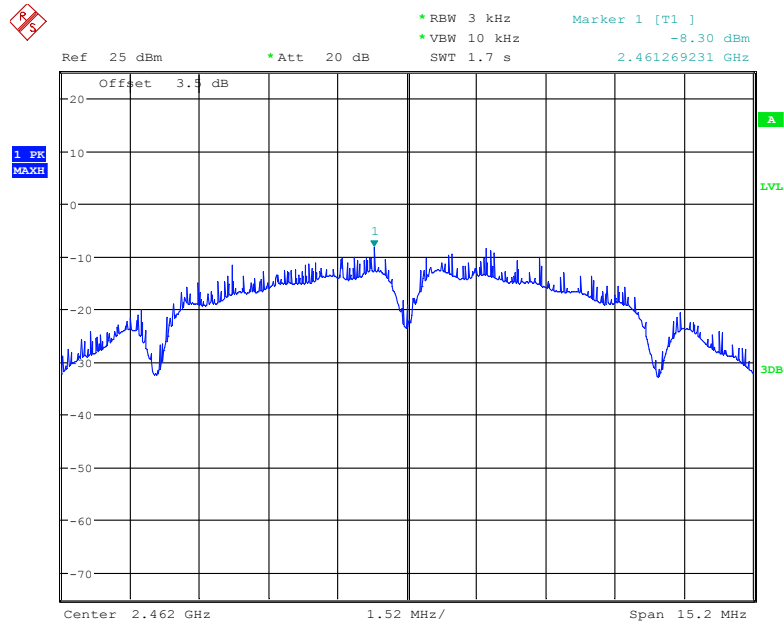
Date: 18.OCT.2019 23:14:01

Power Spectral Density, 802.11b Middle Channel (2437MHz)

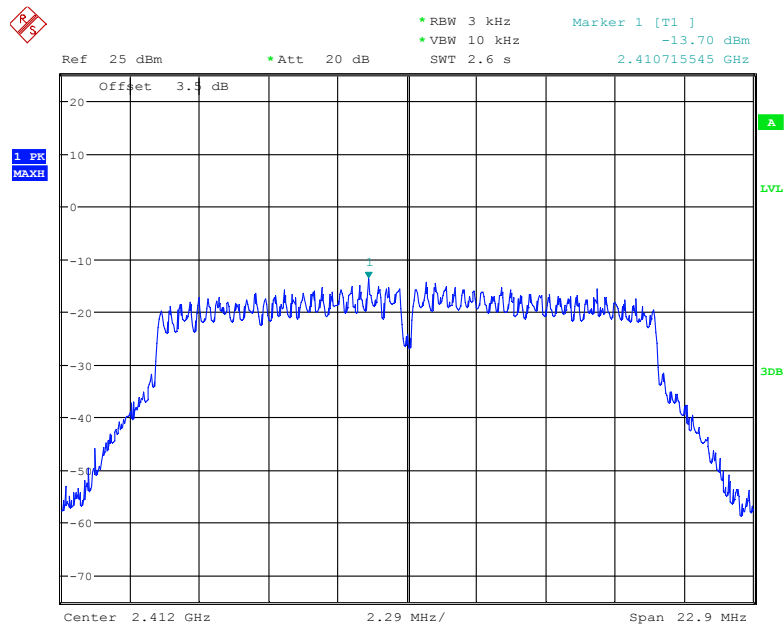


Date: 18.OCT.2019 23:15:14

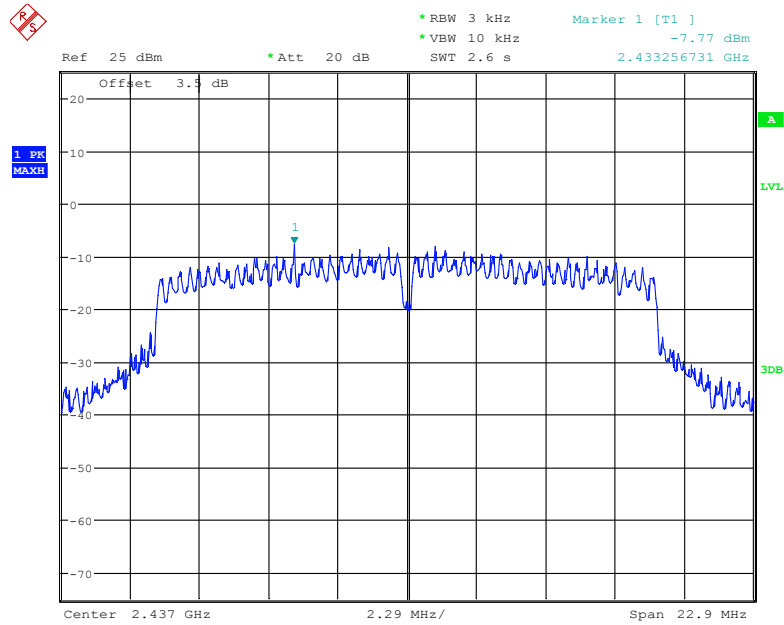
Power Spectral Density, 802.11b High Channel (2462MHz)



Power Spectral Density, 802.11g Low Channel (2412MHz)

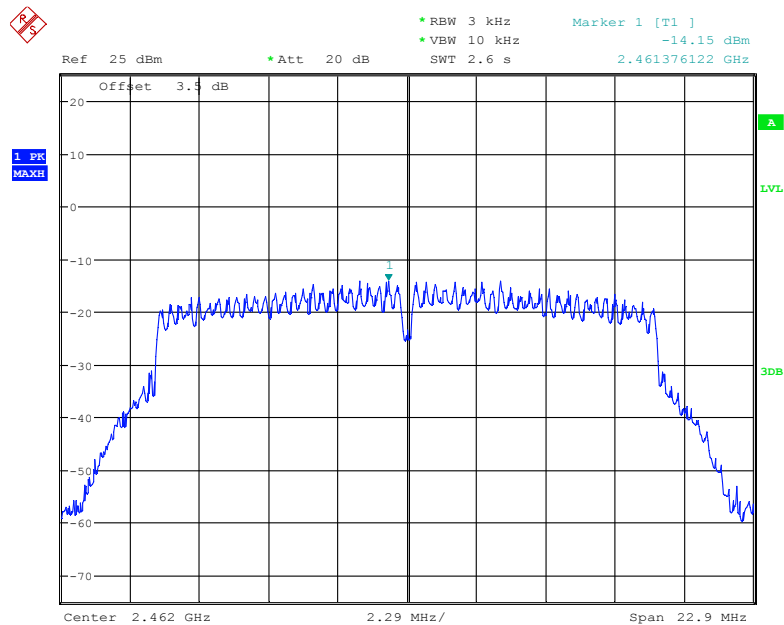


Power Spectral Density, 802.11g Middle Channel (2437MHz)



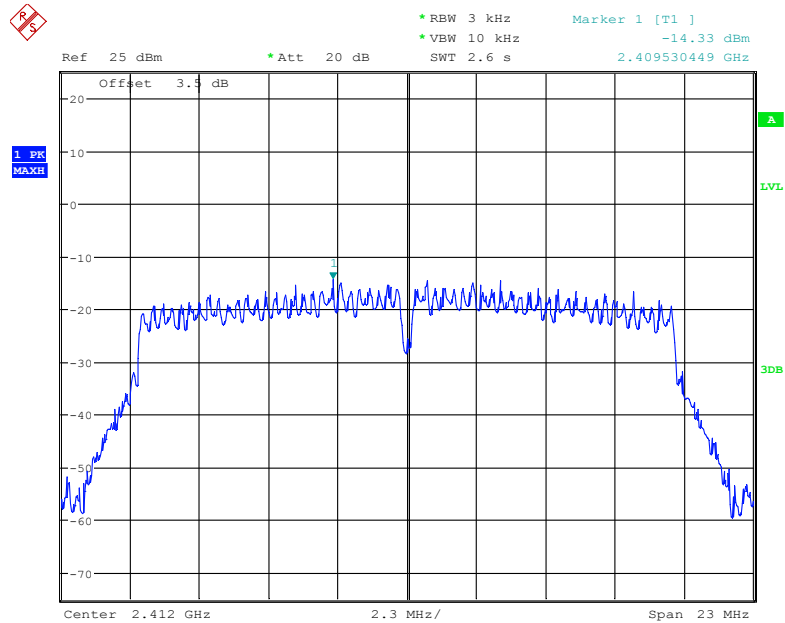
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Power Spectral Density, 802.11g High Channel (2462MHz)



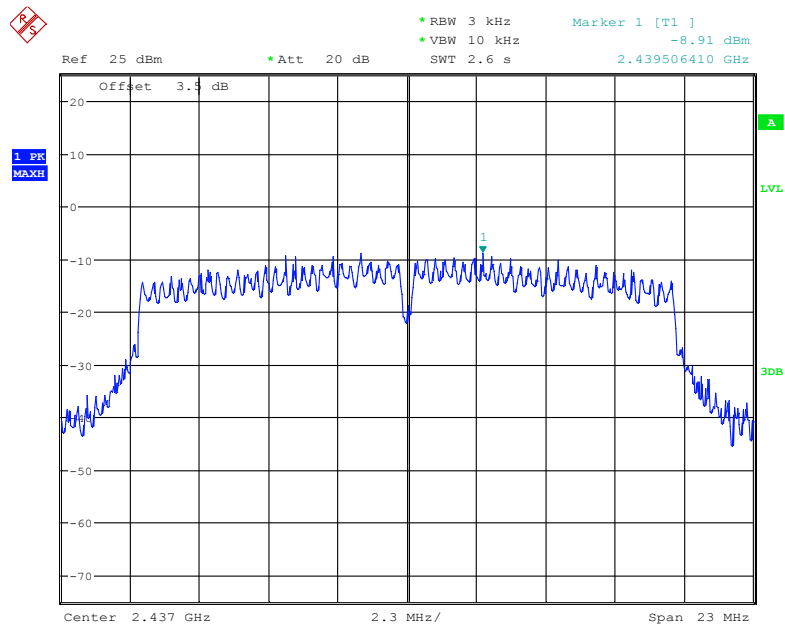
Date: 18.OCT.2019 23:11:08

Power Spectral Density, 802.11n-HT20 Low Channel (2412MHz)



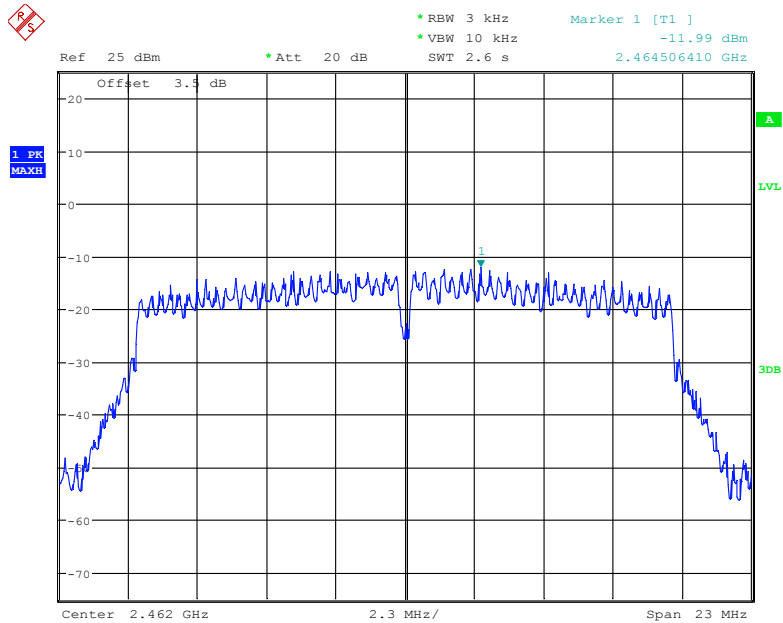
Date: 18.OCT.2019 23:08:27

Power Spectral Density, 802.11n-HT20 Middle Channel (2437MHz)



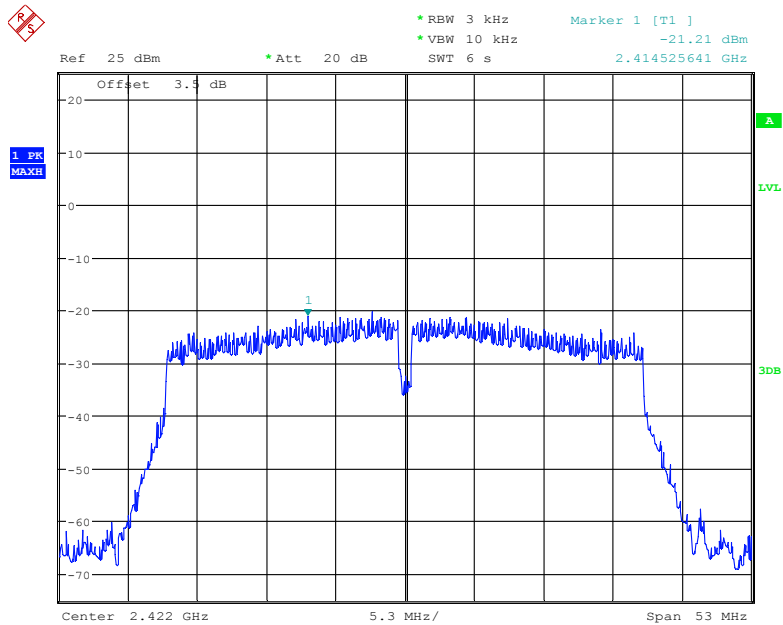
Date: 18.OCT.2019 23:09:27

Power Spectral Density, 802.11n-HT20 High Channel (2462MHz)



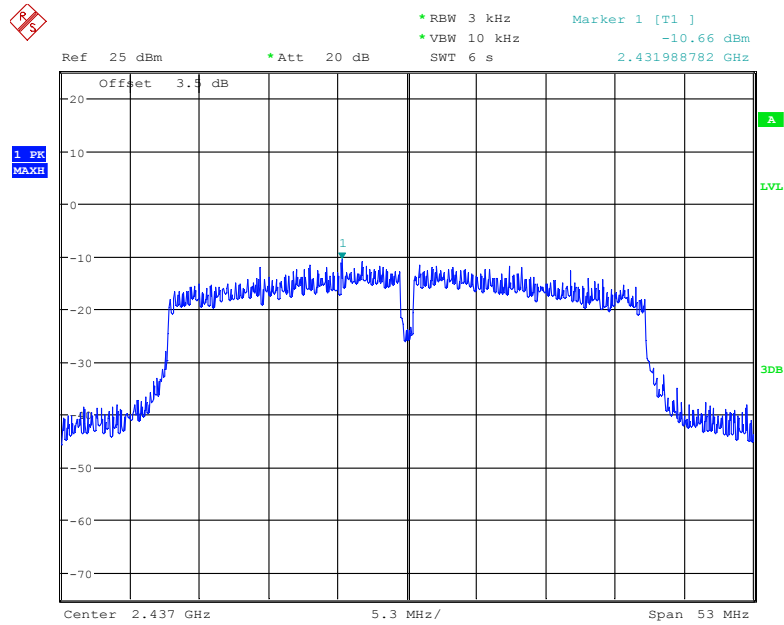
Date: 18.OCT.2019 23:10:34

Power Spectral Density, 802.11n-HT40 Low Channel (2422MHz)



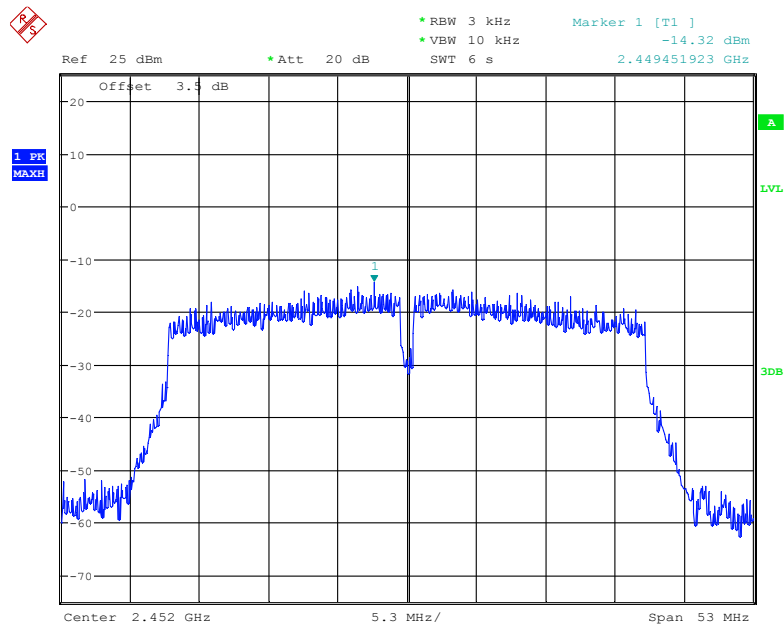
Date: 18.OCT.2019 23:07:49

Power Spectral Density, 802.11n-HT40 Middle Channel (2437MHz)



Date: 18.OCT.2019 23:06:31

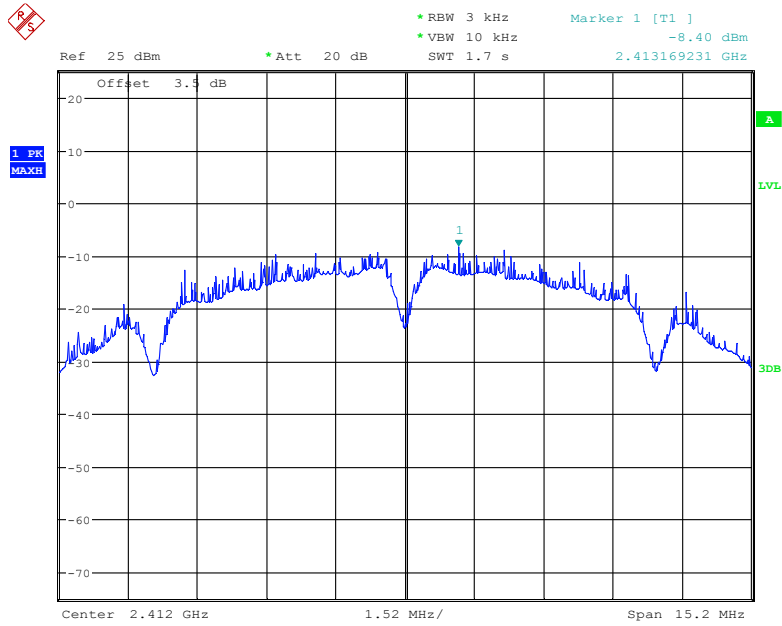
Power Spectral Density, 802.11n-HT40 High Channel (2452MHz)



Date: 18.OCT.2019 23:04:11

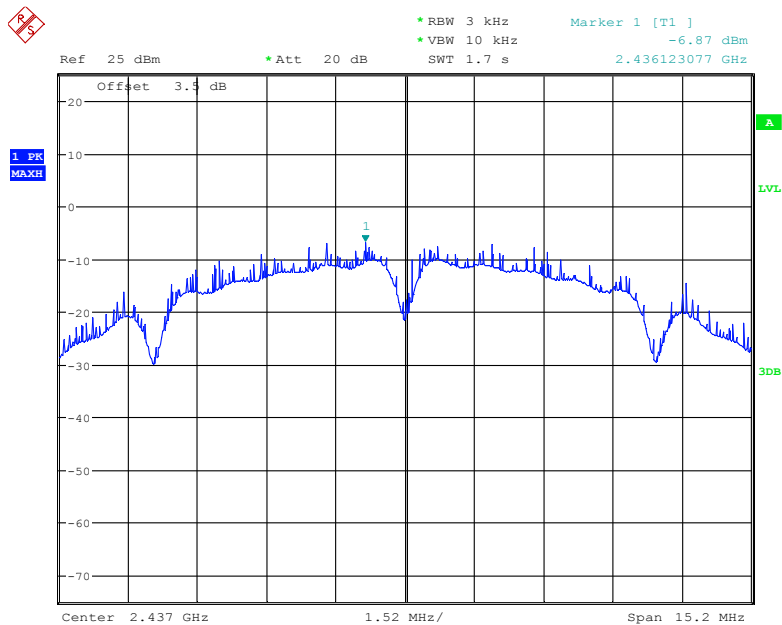
For Antenna 3:

Power Spectral Density, 802.11b Low Channel (2412MHz)



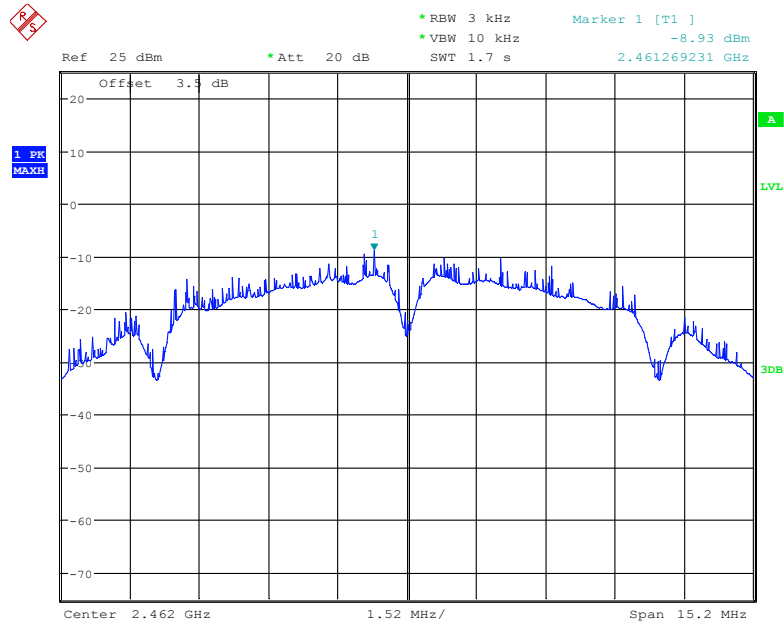
Date: 18.OCT.2019 23:20:15

Power Spectral Density, 802.11b Middle Channel (2437MHz)



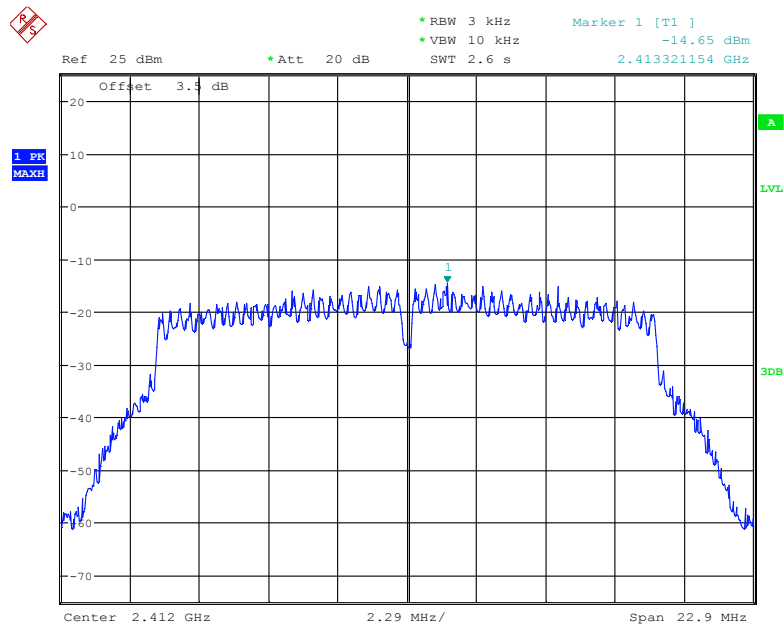
Date: 18.OCT.2019 23:18:35

Power Spectral Density, 802.11b High Channel (2462MHz)



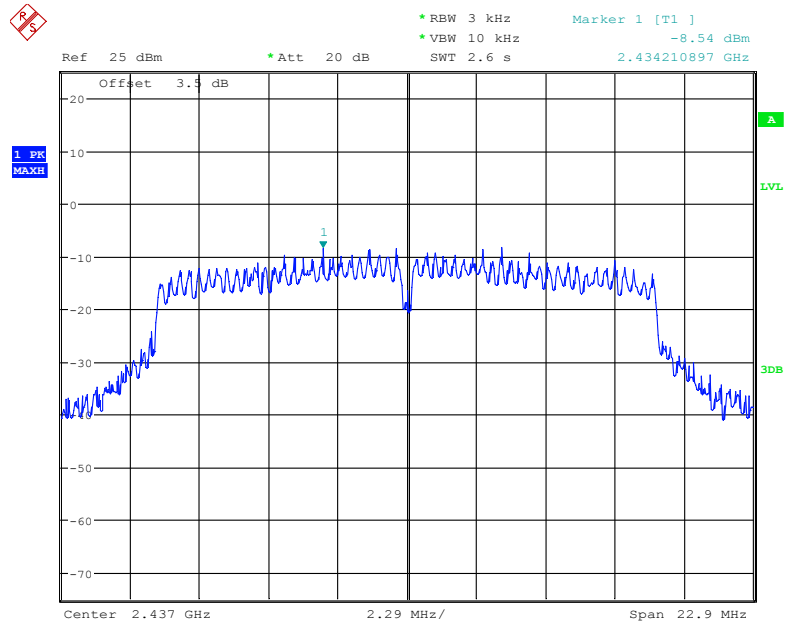
Date: 18.OCT.2019 23:17:16

Power Spectral Density, 802.11g Low Channel (2412MHz)



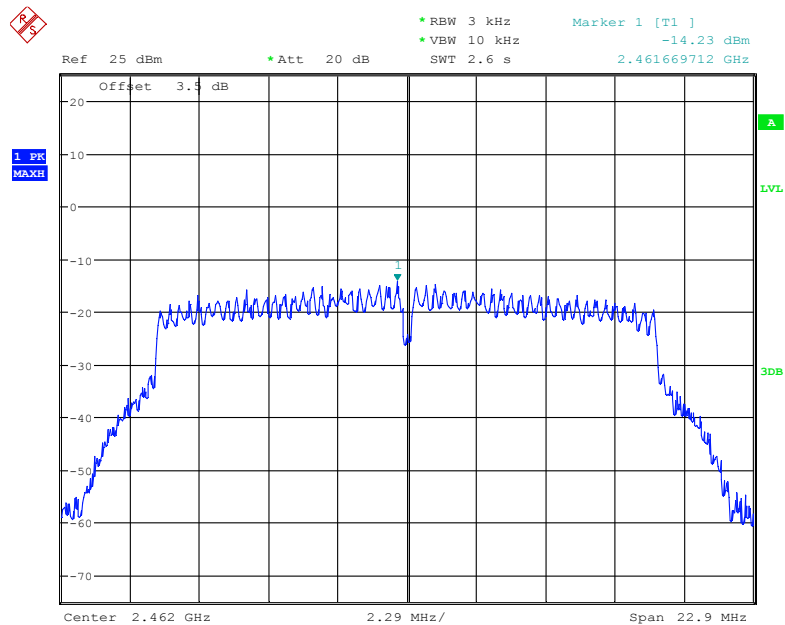
Date: 18.OCT.2019 23:23:32

Power Spectral Density, 802.11g Middle Channel (2437MHz)



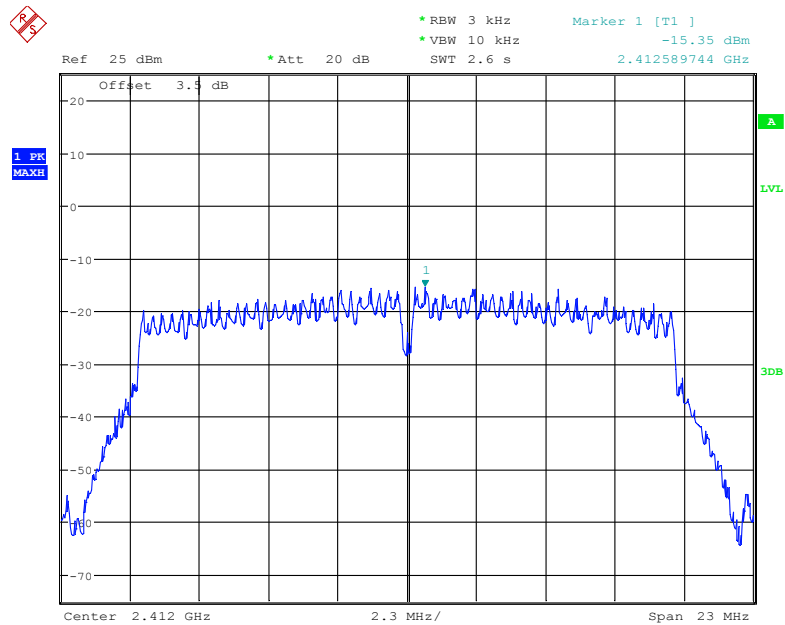
Date: 18.OCT.2019 23:24:44

Power Spectral Density, 802.11g High Channel (2462MHz)



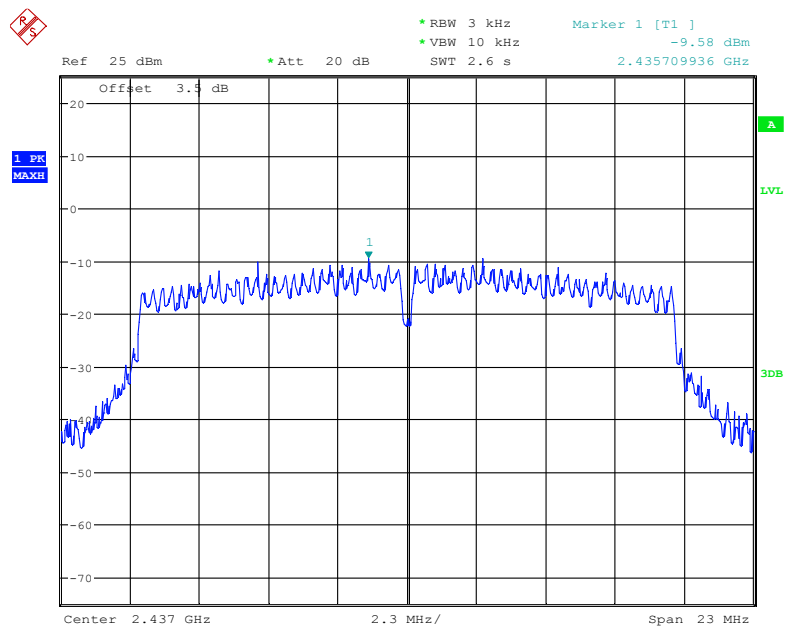
Date: 18.OCT.2019 23:25:47

Power Spectral Density, 802.11n-HT20 Low Channel (2412MHz)



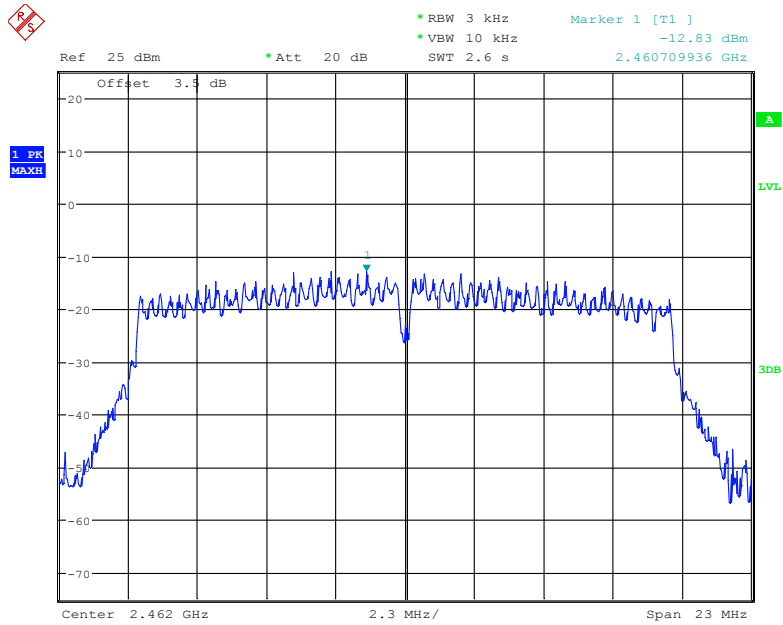
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Power Spectral Density, 802.11n-HT20 Middle Channel (2437MHz)



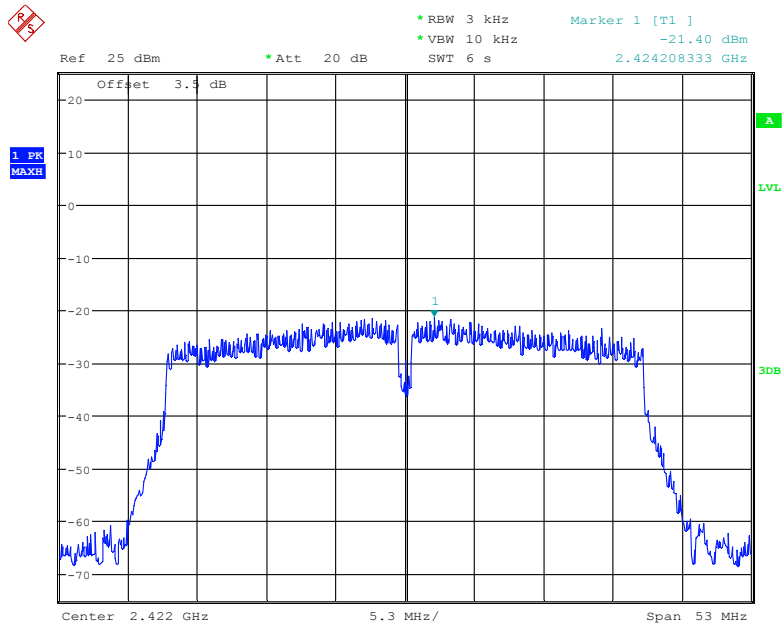
Date: 18.OCT.2019 23:28:52

Power Spectral Density, 802.11n-HT20 High Channel (2462MHz)



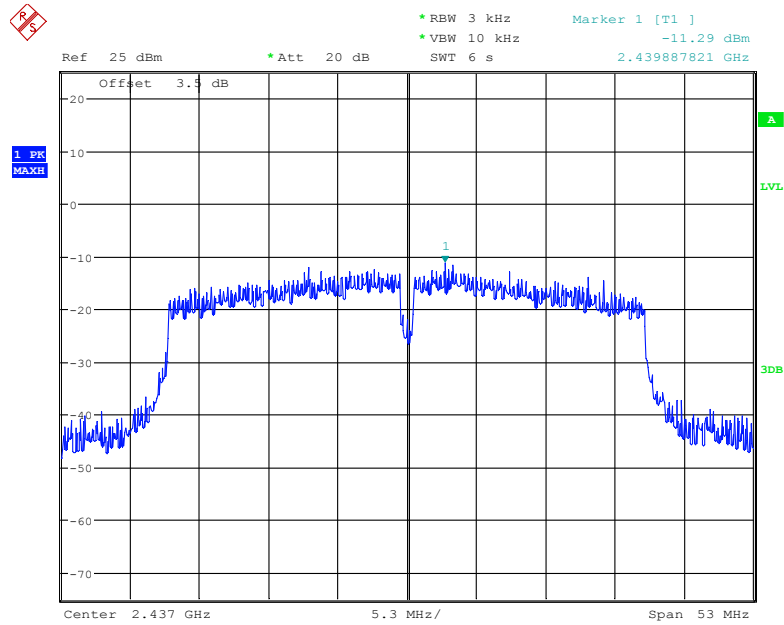
Date: 18.OCT.2019 23:27:47

Power Spectral Density, 802.11n-HT40 Low Channel (2422MHz)



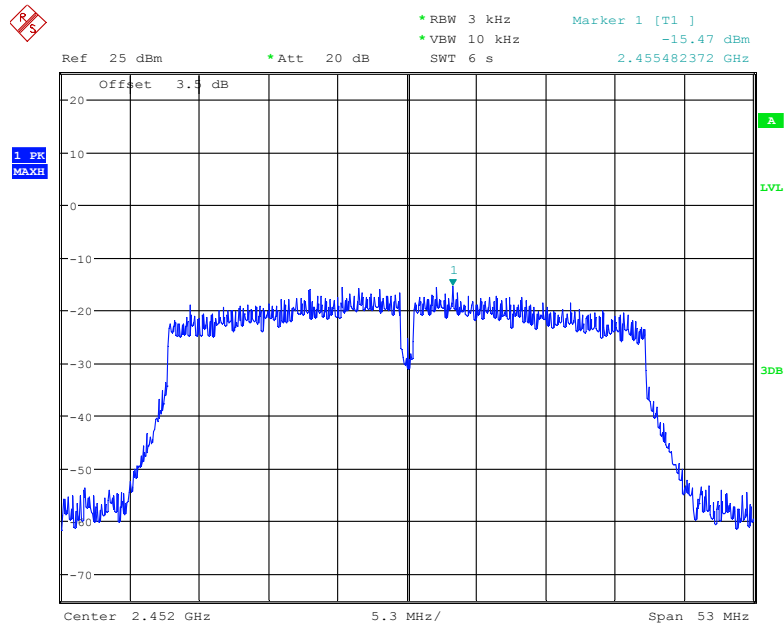
Date: 18.OCT.2019 23:34:24

Power Spectral Density, 802.11n-HT40 Middle Channel (2437MHz)



Date: 18.OCT.2019 23:35:39

Power Spectral Density, 802.11n-HT40 High Channel (2452MHz)



Date: 18.OCT.2019 23:36:41

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