FCC PART 15.247

TEST REPORT

For

SZ DJI TECHNOLOGY CO., LTD

14th floor, West Wing, Skyworth Semiconductor Design Building NO.18 Gaoxin South 4th Ave, Nanshan, Shenzhen, Guangdong, China

FCC ID: SS3-MM1A1702

Report Type:	Product Name:
Original Report	Spark

Test Engineer:	*Kevin Hu*
Report Number:	RDG170226002B
Report Date:	2017-03-22
Reviewed By:	Henry Ding EMC Leader
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Chengdu) No.5040, Huilongwan Plaza, No.1, Shawan Road, Jinniu District, Chengdu, Sichuan, China Tel: 028-65523123, Fax: 028-65525125 www.baclcorp.com

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The ***SZ DJI TECHNOLOGY CO., LTD***'s product, model number: ***MM1A*** ***(FCC ID: SS3-MM1A1702)*** (the "EUT") in this report was a ***Spark,*** which was measured approximately: 14.3 cm (L) × 14.3 cm (W) × 5.3 cm (H), rated input voltage: DC11.4V from battery or DC5V charging from adapter.

Adapter information:
MODEL: QC18-EU
INPUT: 100-240V~50/60HZ, 0.5A
OUTPUT: DC5V, 3A/DC9V, 2A/DC12V, 1.5A

**All measurement and test data in this report was gathered from final production sample, serial number: 170226002 (assigned by the BACL, Chengdu). It may have deviation from any other sample. The EUT supplied by the applicant was received on 2017-02-26, and EUT conformed to test requirement.*

Objective

This report is prepared on behalf of ***SZ DJI TECHNOLOGY CO., LTD*** in accordance with Part 2, Subpart J, Part 15, Subparts A, and C of the Federal Communications Commission's rules

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

Related Submittal(s)/Grant(s)

FCC Part 15B JBP submissions with FCC ID: SS3-MM1A1702.
FCC Part 15E NII submissions with FCC ID: SS3-MM1A1702.
Part of system submissions with FCC ID: SS3-GL100A1704.

Test Methodology

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

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

Measurement Uncertainty

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.62dB
Power Spectral Density, conducted	±0.62 dB
Unwanted Emissions, radiated	30M~200MHz: 4.7 dB for Horizontal, 4.7 dB for Vertical 200M~1GHz:6.0 dB for Horizontal, 6.0 for Vertical 1G~6GHz: 5.13 dB, 6G~18GHz: 5.47 dB
Temperature	±1℃
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
AC Power Lines Conducted Emission	3.17 dB (150 kHz to 30 MHz)

Test Facility

The test site used by BACL to collect test data is located in the No.5040, Huilongwan Plaza, No.1, Shawan Road, Jinniu District, Chengdu, Sichuan, China.

Test site at BACL has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on April 24, 2015. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 560332. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in Engineering Mode, which was provided by the manufacturer.

For 2.4GHz band, the device employed 802.11b/g/n ht20 and 5M modes.

For 802.11b, 802.11g, and 802.11n ht20 and 5M modes, 11 channels are provided:

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	/	/

Equipment Modifications

No modification was made to the EUT tested.

EUT Exercise Software

The software “DJI-RF Certification” was used for testing, which was provided by manufacturer. The worst-case data rates are determined to be as follows for each mode based upon investigations by measuring the average power and PSD across all date rates bandwidths, and modulations.

For 802.11b/g/n and 5M modes, the maximum power was as below setting, the power setting was provided by the manufacturer:

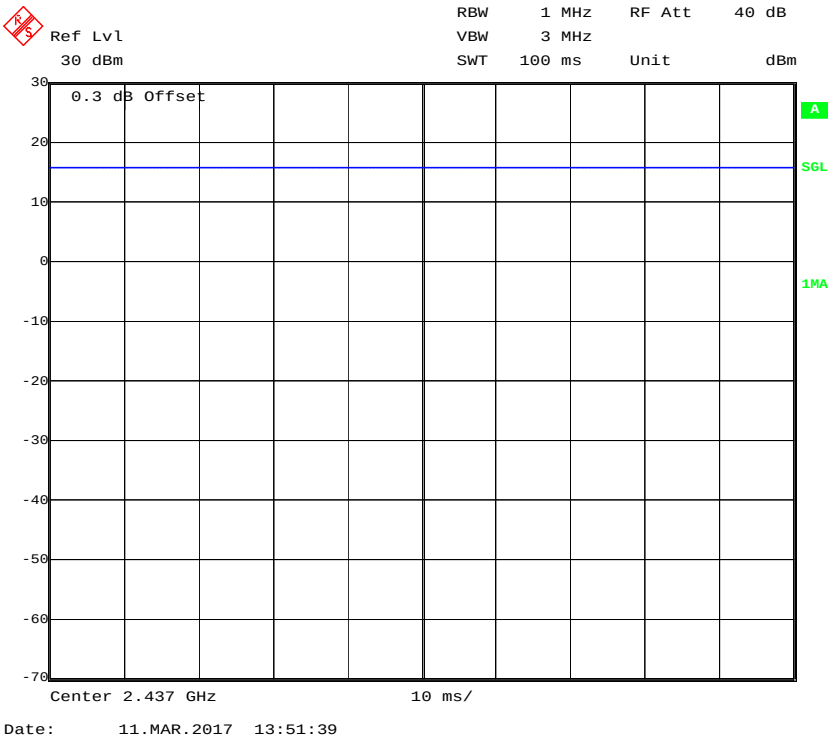
Test Mode	Antenna 0&1			
	Test Software Version	DJI-RF Certification		
802.11b	Frequency(MHz)	2412~2417MHz	2422MHz~2452MHz	2457~2462MHz
	Data Rate	1Mbps	1Mbps	1Mbps
	Power Level Setting	18	23	18
802.11g	Frequency(MHz)	2412~2417MHz	2422MHz~2452MHz	2457~2462MHz
	Data Rate	6Mbps	6Mbps	6Mbps
	Power Level Setting	18	23	18
802.11n ht20	Frequency(MHz)	2412~2417MHz	2422MHz~2452MHz	2457~2462MHz
	Data Rate	MCS0	MCS0	MCS0
	Power Level Setting	18	23	18
5M	Frequency(MHz)	2412~2462 MHz		
	Power Level Setting	17		

For difference power level configured by system default setting, all test items performed at Low, Middle and High Channel, output power, radiation bandedge test with additional channels according to the power setting and power test results.

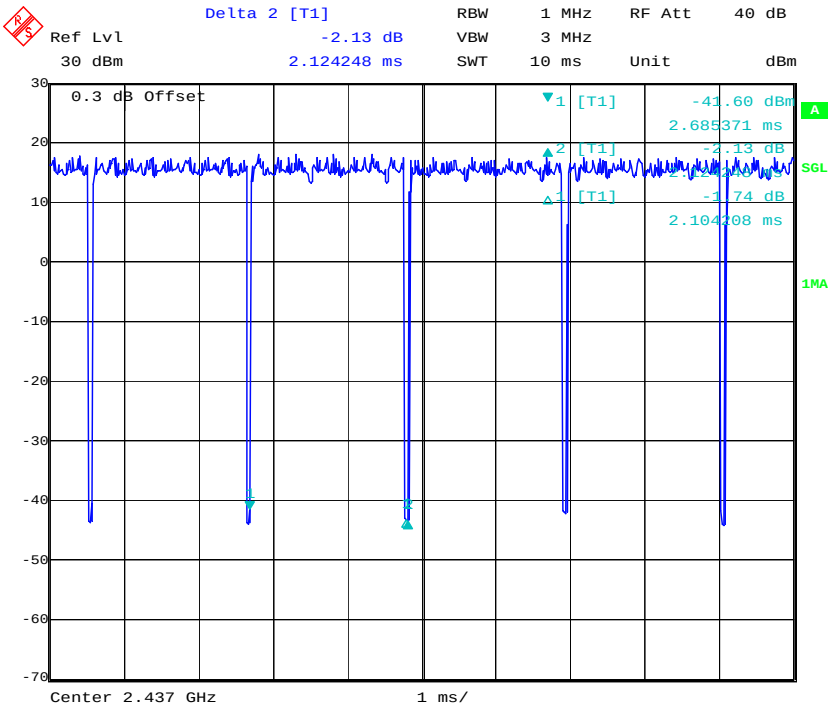
The duty cycle as below:

Test Mode	T_{on} (ms)	T_{on+off} (ms)	Duty Cycle (%)
802.11b	100	100	100
802.11g	2.104	2.124	99
802.11n ht20	1.964	1.984	99
5M	1.024	2.13	48

802.11b

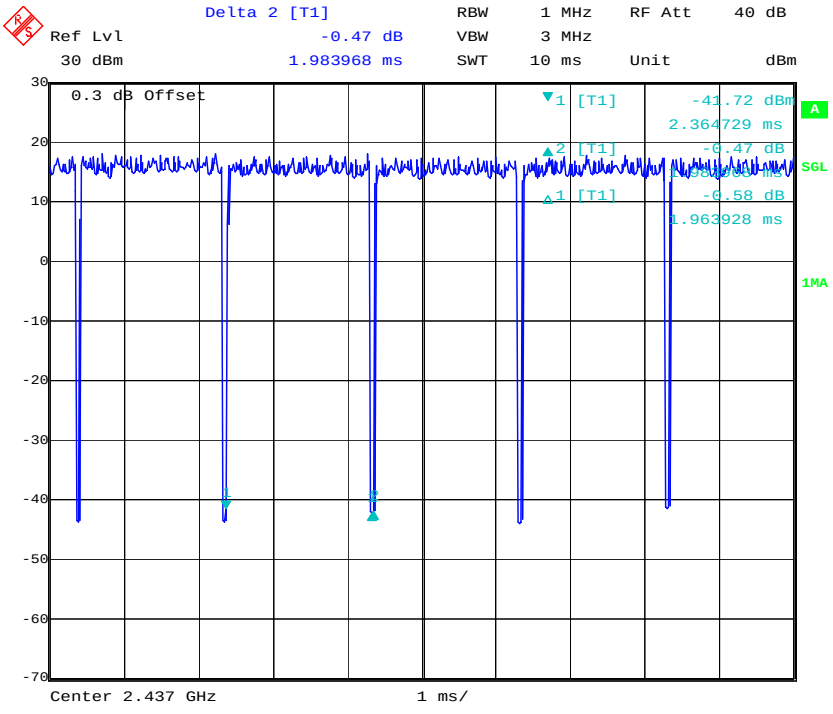


802.11g



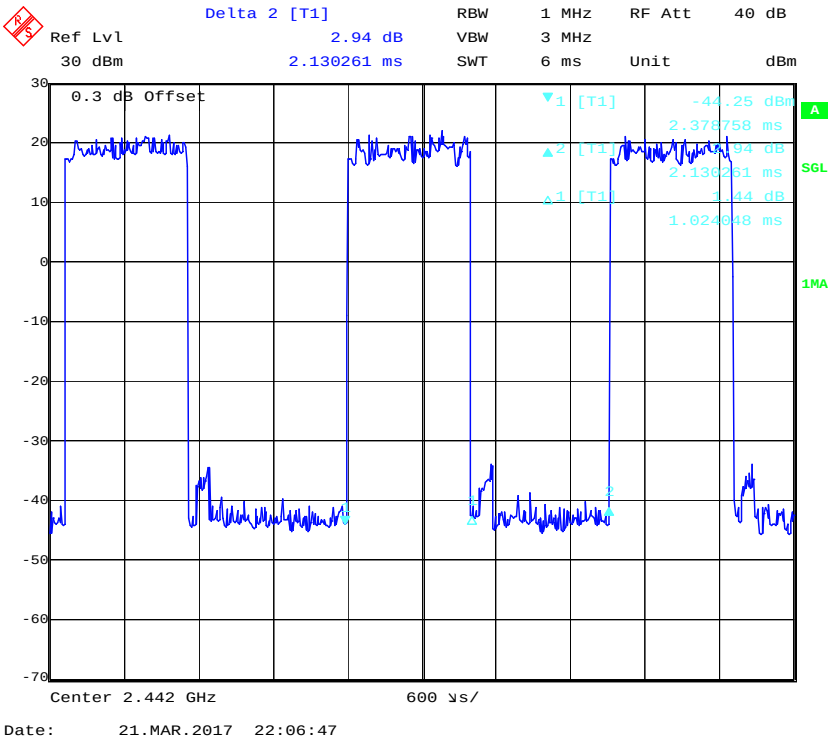
Date: 11.MAR.2017 13:53:21

802.11n ht20



Date: 11.MAR.2017 13:53:52

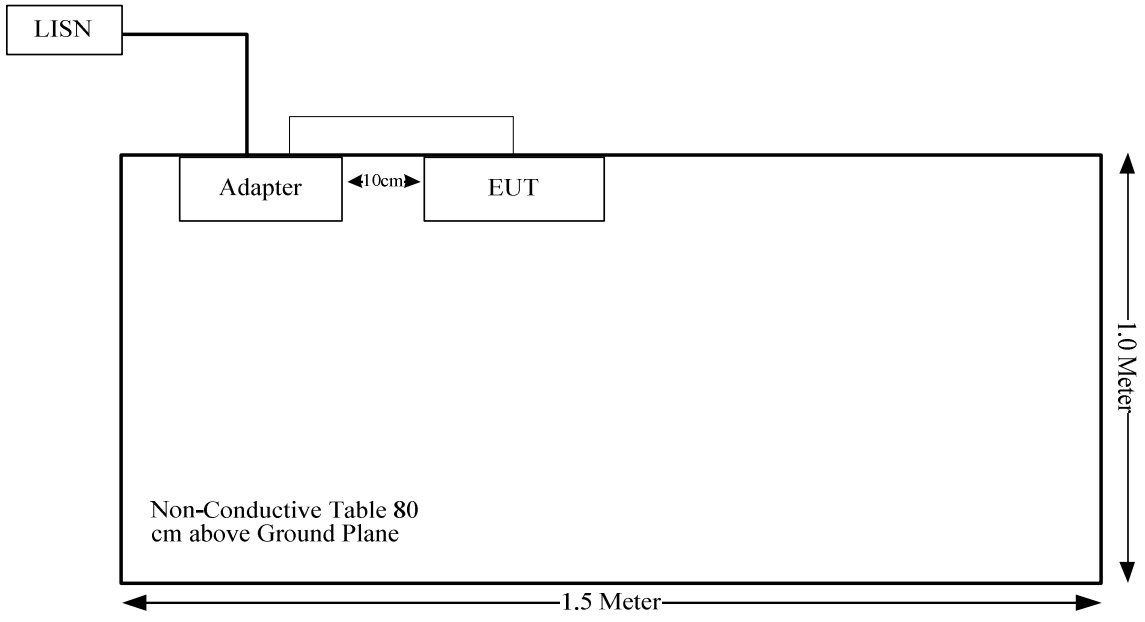
5M


Delta 2 [T1]
RBW 1 MHz
RF Att 40 dB
Ref Lvl
2.94 dB
VBW 3 MHz
30 dBm
2.130261 ms
SWT 6 ms
Unit dBm
0.3 dB Offset
1 [T1] -44.25 dBm
2.378758 ms
2 [T1] 2.94 dB
2.130261 ms
Δ1 [T1] 1.44 dB
1.024048 ms
A
SGL
1MA
30
20
10
0
-10
-20
-30
-40
-50
-60
-70
Center 2.442 GHz
600 µs/
Date: 21.MAR.2017 22:06:47

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
USB Cable	yes	no	0.8	USB port of Adapter	EUT

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §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
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliant
§15.247 (a)(2)	6 dB Emission Bandwidth	Compliant
§15.247(b)(3)	Maximum conducted output power	Compliant
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliant
§15.247(e)	Power Spectral Density	Compliant

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

Applicable Standard

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

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

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (minutes)**
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f²)	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 Formula:

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

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

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

Calculated Data:

Frequency (MHz)	Antenna Gain		Tune-up Power		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
	(dBi)	(numeric)	(dBm)	(mW)			
2400-2483.5	1.09	1.29	25	316.23	20.00	0.0809	1.0
5725-5850	3.57	2.28	23	199.53	20.00	0.0904	1.0

The 2.4GHz and 5GHz band can`t transmit simultaneously

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.

Antenna Connector Construction

The EUT have two internal antennas. For both antennas, the Maximum gains are 1.09dBi in 2.4GHz band, 3.57dBi in 5.8GHz band, compliance the requirements, Please refer to the EUT photos.

Result: Compliance.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207(a)

Measurement Uncertainty

Compliance or non- compliance with a disturbance limit shall be determined in the following manner:

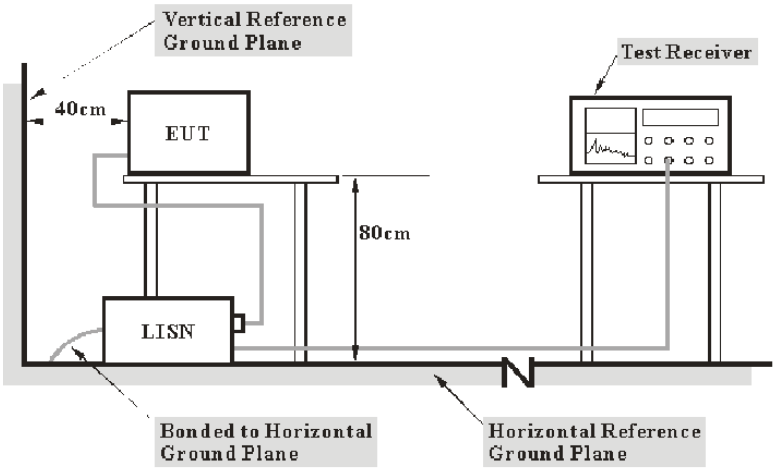
If U_{lab} is less than or equal to U_{cispr} of Table 1, then:
–compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
–non - compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.
If U_{lab} is greater than U_{cispr} of Table 1, then:
–compliance is deemed to occur if no measured disturbance level, increased by (U_{lab} − U_{cispr}), exceeds the disturbance limit;
–non - compliance is deemed to occur if any measured disturbance level, increased by (U_{lab} − U_{cispr}), exceeds the disturbance limit.

Based on CISPR 16-4-2:2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Chengdu) is ±3.17 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cispr}

Measurement	U_{cispr}
Conducted disturbance at mains port using AMN (150 kHz to 30 MHz)	3.4 dB

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.

The adapter was connected to the Main LISN with AC 120 V/60 Hz power

EMI Test Receiver Setup

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

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

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

Test Procedure

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

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

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

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$V_C = V_R + A_C + VDF$
$C_f = A_C + VDF$

Herein,
V_C (cord. Reading): corrected voltage amplitude
V_R: reading voltage amplitude
A_c: attenuation caused by cable loss
VDF: voltage division factor of AMN
C_f: Correction Factor

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

Margin = Limit – Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS 30	836858/0016	2016-12-02	2017-12-01
Rohde & Schwarz	L.I.S.N.	ENV216	100018	2016-12-02	2017-12-01
Rohde & Schwarz	PULSE LIMITER	ESH3Z2	DE14781	2016-10-31	2017-10-30
N/A	Conducted Cable	NO.5	N/A	2016-11-10	2017-11-09
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

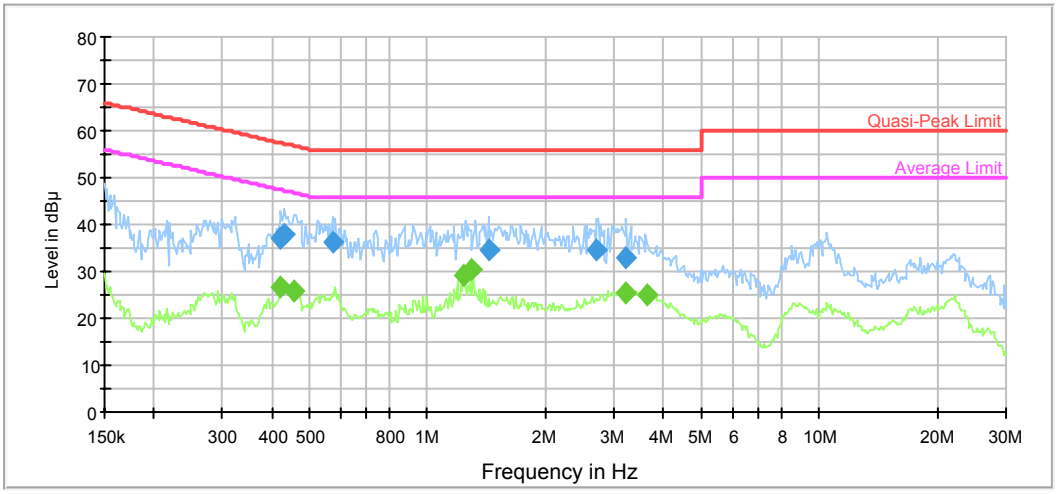
Environmental Conditions

Temperature:	19 °C
Relative Humidity:	56 %
ATM Pressure:	95.6 kPa

The testing was performed by Kevin Hu on 2017-03-08.

Test Mode: Charging

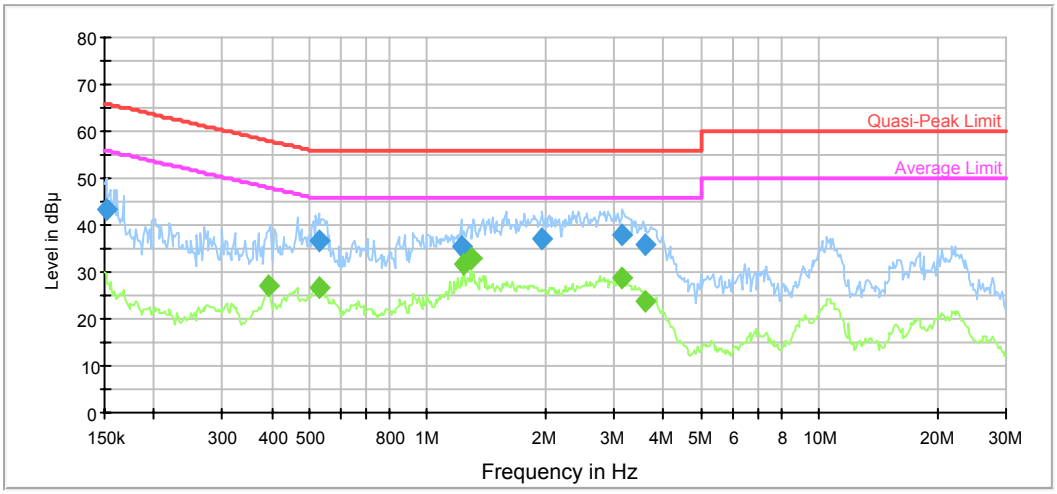
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.422630	37.2	9.000	L1	19.8	20.2	57.4	Compliance
0.432855	37.8	9.000	L1	19.7	19.4	57.2	Compliance
0.572086	36.4	9.000	L1	19.7	19.6	56.0	Compliance
1.430284	34.6	9.000	L1	19.7	21.4	56.0	Compliance
2.705607	34.7	9.000	L1	19.7	21.3	56.0	Compliance
3.224010	33.1	9.000	L1	19.7	22.9	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.422630	26.5	9.000	L1	19.8	20.9	47.4	Compliance
0.454052	25.9	9.000	L1	19.7	20.9	46.8	Compliance
1.239175	29.4	9.000	L1	19.7	16.6	46.0	Compliance
1.289541	30.3	9.000	L1	19.7	15.7	46.0	Compliance
3.224010	25.5	9.000	L1	19.7	20.5	46.0	Compliance
3.633326	25.1	9.000	L1	19.7	20.9	46.0	Compliance

AC120 V, 60 Hz, Neutral:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.151200	43.4	9.000	N	19.7	22.5	65.9	Compliance
0.528270	36.6	9.000	N	19.6	19.4	56.0	Compliance
1.219583	35.6	9.000	N	19.6	20.4	56.0	Compliance
1.967177	37.1	9.000	N	19.7	18.9	56.0	Compliance
3.147856	37.8	9.000	N	19.7	18.2	56.0	Compliance
3.604490	35.8	9.000	N	19.7	20.2	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.393383	27.1	9.000	N	19.6	20.9	48.0	Compliance
0.532496	26.9	9.000	N	19.6	19.1	46.0	Compliance
1.239175	31.5	9.000	N	19.6	14.5	46.0	Compliance
1.289541	32.8	9.000	N	19.6	13.2	46.0	Compliance
3.147856	28.9	9.000	N	19.7	17.1	46.0	Compliance
3.604490	23.7	9.000	N	19.7	22.3	46.0	Compliance

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

Applicable Standard

FCC §15.247 (d); §15.209; §15.205;

Measurement Uncertainty

Compliance or non- compliance with a disturbance limit shall be determined in the following manner:

If U_{lab} is less than or equal to U_{cispr} of Table 2, then:
–compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
–non - compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.
If U_{lab} is greater than U_{cispr} of Table 2, then:
–compliance is deemed to occur if no measured disturbance level, increased by ($U_{lab} - U_{cispr}$), exceeds the disturbance limit;
–non - compliance is deemed to occur if any measured disturbance level, increased by ($U_{lab} - U_{cispr}$), exceeds the disturbance limit.

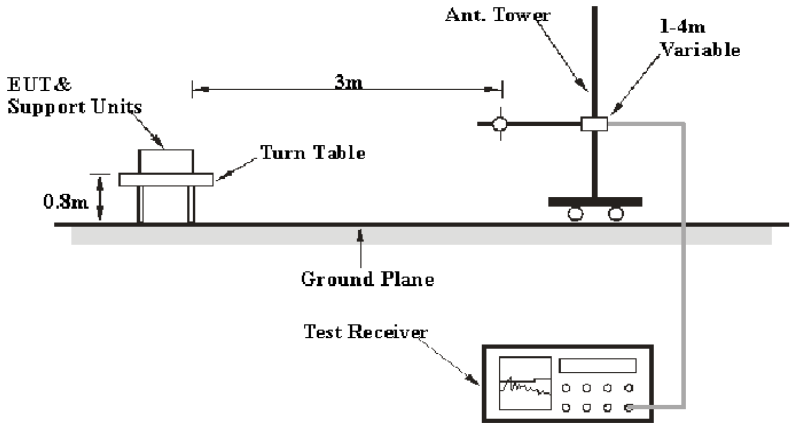
Based on CISPR 16-4-2-2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Chengdu) is:
30M~200MHz: ±4.7 dB;
200M~1GHz: ±6.0 dB;
1G~6GHz: ±5.13dB;
6G~25GHz: ±5.47 dB;

Table 2 – Values of U_{cispr}

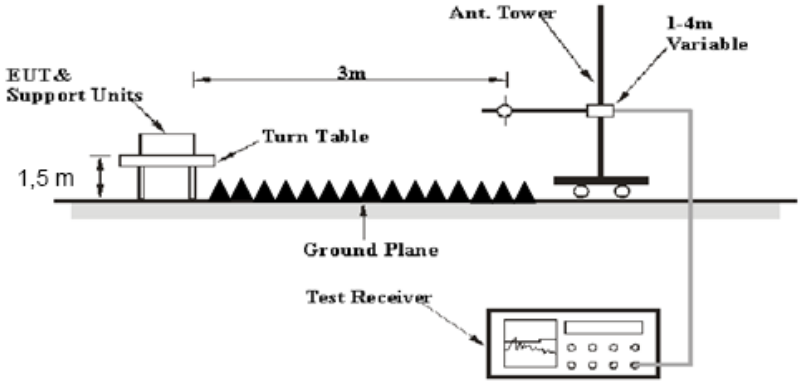
Measurement	U_{cispr}
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters chamber 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.

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

The spacing between the peripherals was 10 cm.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

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

30MHz-1000MHz:

Detector	RBW	Video B/W	IF B/W
QP	120 kHz	300 kHz	120kHz

1GHz- 25GHz:

Detector	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3 MHz
Ave.	>98%	1MHz	10 Hz
	<98%	1MHz	1/T

Note: T is minimum transmission duration

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 Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

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

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

Margin = Limit –Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	Amplifier	8447D	2944A10442	2016-12-02	2017-12-01
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2016-12-02	2017-12-01
Sunol Sciences	Broadband Antenna	JB3	A121808	2016-04-10	2019-04-09
Rohde & Schwarz	Spectrum Analyzer	FSEM30	100018	2016-12-02	2017-12-01
ETS	Horn Antenna	3115	003-6076	2016-12-02	2017-12-01
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-0113024	2014-06-16	2017-06-15
Mini-circuits	Amplifier	ZVA-183-S+	771001215	2016-05-20	2017-05-19
HP	Amplifier	8449B	3008A00277	2016-12-02	2017-12-01
EMCT	Semi-Anechoic Chamber	966	N/A	2015-04-24	2018-04-23
N/A	RF Cable (below 1GHz)	NO.1	N/A	2016-11-10	2017-11-09
N/A	RF Cable (below 1GHz)	NO.4	N/A	2016-11-10	2017-11-09
N/A	RF Cable (above 1GHz)	NO.2	N/A	2016-11-10	2017-11-09
WEINSCHEL ENGINEERING	Attenuator	1A10dB	AA4135	2016-11-10	2017-11-09
Rohde & Schwarz	EMC32	N/A	V 8.54.0	N/A	N/A

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	18 °C
Relative Humidity:	56 %
ATM Pressure:	95.4 kPa

** The testing was performed by Kevin Hu on 2017-03-10.*

Test Mode: Transmitting

30MHz-25GHz:

802.11b Mode (2TX was the worst)

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 2412 MHz									
2412	79.07	PK	H	23.50	3.00	0.00	105.57	N/A	N/A
2412	76.09	AV	H	23.50	3.00	0.00	102.59	N/A	N/A
2412	76.37	PK	V	23.50	3.00	0.00	102.87	N/A	N/A
2412	73.46	AV	V	23.50	3.00	0.00	99.96	N/A	N/A
2390	29.68	PK	H	23.57	3.00	0.00	56.25	74.00	17.75
2390	18.61	AV	H	23.57	3.00	0.00	45.18	54.00	8.82
4824	35.7	PK	H	30.84	5.11	26.87	44.78	74.00	29.22
4824	32.46	AV	H	30.84	5.11	26.87	41.54	54.00	12.46
7236	34.85	PK	H	34.77	6.18	26.36	49.44	74.00	24.56
7236	28.79	AV	H	34.77	6.18	26.36	43.38	54.00	10.62
1336	37.52	PK	H	23.67	2.44	26.49	37.14	74.00	36.86
1336	33.25	AV	H	23.67	2.44	26.49	32.87	54.00	21.13
287.05	45.4	QP	H	13.97	1.14	27.52	32.99	46.00	13.01
436.43	38.3	QP	H	16.88	1.57	28.43	28.32	46.00	17.68
Additional Channel: 2422 MHz									
2422	83.43	PK	H	23.47	3.00	0.00	109.90	N/A	N/A
2422	80.47	AV	H	23.47	3.00	0.00	106.94	N/A	N/A
2390	30.25	PK	H	23.57	3.00	0.00	56.82	74.00	17.18
2390	18.72	AV	H	23.57	3.00	0.00	45.29	54.00	8.71
Middle Channel: 2437 MHz									
2437	85.14	PK	H	23.41	3.00	0.00	111.55	N/A	N/A
2437	82.21	AV	H	23.41	3.00	0.00	108.62	N/A	N/A
2437	81.47	PK	V	23.41	3.00	0.00	107.88	N/A	N/A
2437	78.65	AV	V	23.41	3.00	0.00	105.06	N/A	N/A
4874	35.77	PK	H	31.00	5.09	26.87	44.99	74.00	29.01
4874	32.5	AV	H	31.00	5.09	26.87	41.72	54.00	12.28
7311	35.09	PK	H	34.92	6.21	26.40	49.82	74.00	24.18
7311	29.6	AV	H	34.92	6.21	26.40	44.33	54.00	9.67
3064	41.33	PK	H	24.56	3.53	26.43	42.99	74.00	31.01
3064	38.38	AV	H	24.56	3.53	26.43	40.04	54.00	13.96
1384	35.16	PK	H	23.80	2.51	26.44	35.03	74.00	38.97
1384	29.31	AV	H	23.80	2.51	26.44	29.18	54.00	24.82
287.05	45.1	QP	H	13.97	1.14	27.52	32.69	46.00	13.31
436.43	38.4	QP	H	16.88	1.57	28.43	28.42	46.00	17.58
Additional Channel: 2452 MHz									
2452	84.33	PK	H	23.36	3.00	0.00	110.69	N/A	N/A
2452	81.34	AV	H	23.36	3.00	0.00	107.70	N/A	N/A
2483.5	31.67	PK	H	23.26	2.99	0.00	57.92	74.00	16.08
2483.5	19.04	AV	H	23.26	2.99	0.00	45.29	54.00	8.71

High Channel: 2462 MHz									
2462	78.62	PK	H	23.33	2.99	0.00	104.94	N/A	N/A
2462	75.37	AV	H	23.33	2.99	0.00	101.69	N/A	N/A
2462	78.12	PK	V	23.33	2.99	0.00	104.44	N/A	N/A
2462	75.26	AV	V	23.33	2.99	0.00	101.58	N/A	N/A
2483.5	30.88	PK	H	23.26	2.99	0.00	57.13	74.00	16.87
2483.5	17.94	AV	H	23.26	2.99	0.00	44.19	54.00	9.81
4924	37.2	PK	H	31.16	5.07	26.88	46.55	74.00	27.45
4924	33.32	AV	H	31.16	5.07	26.88	42.67	54.00	11.33
7386	35.03	PK	H	35.07	6.25	26.43	49.92	74.00	24.08
7386	29.19	AV	H	35.07	6.25	26.43	44.08	54.00	9.92
1443	36.42	PK	H	23.95	2.59	26.38	36.58	74.00	37.42
1443	32.29	AV	H	23.95	2.59	26.38	32.45	54.00	21.55
287.05	45.5	QP	H	13.97	1.14	27.52	33.09	46.00	12.91
436.43	38.5	QP	H	16.88	1.57	28.43	28.52	46.00	17.48

802.11g Mode (2TX was the worst)

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 2412 MHz									
2412	80.08	PK	H	23.50	3.00	0.00	106.58	N/A	N/A
2412	69.6	AV	H	23.50	3.00	0.00	96.10	N/A	N/A
2412	78	PK	V	23.50	3.00	0.00	104.50	N/A	N/A
2412	67.17	AV	V	23.50	3.00	0.00	93.67	N/A	N/A
2390	37.17	PK	H	23.57	3.00	0.00	63.74	74.00	10.26
2390	19.55	AV	H	23.57	3.00	0.00	46.12	54.00	7.88
4824	36.8	PK	H	30.84	5.11	26.87	45.88	74.00	28.12
4824	25.52	AV	H	30.84	5.11	26.87	34.60	54.00	19.40
7236	35.36	PK	H	34.77	6.18	26.36	49.95	74.00	24.05
7236	24.49	AV	H	34.77	6.18	26.36	39.08	54.00	14.92
1336	36.65	PK	H	23.67	2.44	26.49	36.27	74.00	37.73
1336	25.19	AV	H	23.67	2.44	26.49	24.81	54.00	29.19
287.05	45.6	QP	H	13.97	1.14	27.52	33.19	46.00	12.81
436.43	38.5	QP	H	16.88	1.57	28.43	28.52	46.00	17.48
Additional Channel: 2422 MHz									
2422	84.69	PK	H	23.47	3.00	0.00	111.16	N/A	N/A
2422	74.57	AV	H	23.47	3.00	0.00	101.04	N/A	N/A
2390	37.35	PK	H	23.57	3.00	0.00	63.92	74.00	10.08
2390	19.67	AV	H	23.57	3.00	0.00	46.24	54.00	7.76
Middle Channel: 2437 MHz									
2437	85.99	PK	H	23.41	3.00	0.00	112.40	N/A	N/A
2437	75.31	AV	H	23.41	3.00	0.00	101.72	N/A	N/A
2437	84.74	PK	V	23.41	3.00	0.00	111.15	N/A	N/A
2437	74	AV	V	23.41	3.00	0.00	100.41	N/A	N/A
4874	37.37	PK	H	31.00	5.09	26.87	46.59	74.00	27.41
4874	25.23	AV	H	31.00	5.09	26.87	34.45	54.00	19.55
7311	35.86	PK	H	34.92	6.21	26.40	50.59	74.00	23.41
7311	24.74	AV	H	34.92	6.21	26.40	39.47	54.00	14.53
3064	41.23	PK	H	24.56	3.53	26.43	42.89	74.00	31.11
3064	38.31	AV	H	24.56	3.53	26.43	39.97	54.00	14.03
1384	36.59	PK	H	23.80	2.51	26.44	36.46	74.00	37.54
1384	24.87	AV	H	23.80	2.51	26.44	24.74	54.00	29.26
287.05	45.1	QP	H	13.97	1.14	27.52	32.69	46.00	13.31
436.43	38.1	QP	H	16.88	1.57	28.43	28.12	46.00	17.88
Additional Channel: 2452 MHz									
2452	86.06	PK	H	23.36	3.00	0.00	112.42	N/A	N/A
2452	72.43	AV	H	23.36	3.00	0.00	98.79	N/A	N/A
2483.5	38.75	PK	H	23.26	2.99	0.00	65.00	74.00	9.00
2483.5	19.62	AV	H	23.26	2.99	0.00	45.87	54.00	8.13

High Channel: 2462 MHz									
2462	81.71	PK	H	23.33	2.99	0.00	108.03	N/A	N/A
2462	68.44	AV	H	23.33	2.99	0.00	94.76	N/A	N/A
2462	80.74	PK	V	23.33	2.99	0.00	107.06	N/A	N/A
2462	67.66	AV	V	23.33	2.99	0.00	93.98	N/A	N/A
2483.5	35.57	PK	H	23.26	2.99	0.00	61.82	74.00	12.18
2483.5	19.71	AV	H	23.26	2.99	0.00	45.96	54.00	8.04
4924	37.04	PK	H	31.16	5.07	26.88	46.39	74.00	27.61
4924	25.51	AV	H	31.16	5.07	26.88	34.86	54.00	19.14
7386	36.08	PK	H	35.07	6.25	26.43	50.97	74.00	23.03
7386	24.79	AV	H	35.07	6.25	26.43	39.68	54.00	14.32
1443	35.71	PK	H	23.95	2.59	26.38	35.87	74.00	38.13
1443	24.6	AV	H	23.95	2.59	26.38	24.76	54.00	29.24
287.05	45.3	QP	H	13.97	1.14	27.52	32.89	46.00	13.11
436.43	38.3	QP	H	16.88	1.57	28.43	28.32	46.00	17.68

802.11 n ht20 Mode (2TX was the worst)

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 2412 MHz									
2412	81.1	PK	H	23.50	3.00	0.00	107.60	N/A	N/A
2412	68.19	AV	H	23.50	3.00	0.00	94.69	N/A	N/A
2412	79.49	PK	V	23.50	3.00	0.00	105.99	N/A	N/A
2412	66.12	AV	V	23.50	3.00	0.00	92.62	N/A	N/A
2390	38.5	PK	H	23.57	3.00	0.00	65.07	74.00	8.93
2390	18.23	AV	H	23.57	3.00	0.00	44.80	54.00	9.20
4824	36.93	PK	H	30.84	5.11	26.87	46.01	74.00	27.99
4824	25.66	AV	H	30.84	5.11	26.87	34.74	54.00	19.26
7236	35.21	PK	H	34.77	6.18	26.36	49.80	74.00	24.20
7236	23.68	AV	H	34.77	6.18	26.36	38.27	54.00	15.73
1336	36.94	PK	H	23.67	2.44	26.49	36.56	74.00	37.44
1336	25.39	AV	H	23.67	2.44	26.49	25.01	54.00	28.99
287.05	45.3	QP	H	13.97	1.14	27.52	32.89	46.00	13.11
436.43	38.4	QP	H	16.88	1.57	28.43	28.42	46.00	17.58
Additional Channel: 2422 MHz									
2422	84.2	PK	H	23.47	3.00	0.00	110.67	N/A	N/A
2422	70.53	AV	H	23.47	3.00	0.00	97.00	N/A	N/A
2390	39.47	PK	H	23.57	3.00	0.00	66.04	74.00	7.96
2390	19.03	AV	H	23.57	3.00	0.00	45.60	54.00	8.40
Middle Channel: 2437 MHz									
2437	85.45	PK	H	23.41	3.00	0.00	111.86	N/A	N/A
2437	72.62	AV	H	23.41	3.00	0.00	99.03	N/A	N/A
2437	84.54	PK	V	23.41	3.00	0.00	110.95	N/A	N/A
2437	71.29	AV	V	23.41	3.00	0.00	97.70	N/A	N/A
4874	36.88	PK	H	31.00	5.09	26.87	46.10	74.00	27.90
4874	25.37	AV	H	31.00	5.09	26.87	34.59	54.00	19.41
7311	35.56	PK	H	34.92	6.21	26.40	50.29	74.00	23.71
7311	24.71	AV	H	34.92	6.21	26.40	39.44	54.00	14.56
3064	41.17	PK	H	24.56	3.53	26.43	42.83	74.00	31.17
3064	38.25	AV	H	24.56	3.53	26.43	39.91	54.00	14.09
1384	36.06	PK	H	23.80	2.51	26.44	35.93	74.00	38.07
1384	24.85	AV	H	23.80	2.51	26.44	24.72	54.00	29.28
287.05	45.1	QP	H	13.97	1.14	27.52	32.69	46.00	13.31
436.43	38.2	QP	H	16.88	1.57	28.43	28.22	46.00	17.78
Additional Channel: 2452 MHz									
2452	85.38	PK	H	23.36	3.00	0.00	111.74	N/A	N/A
2452	71.62	AV	H	23.36	3.00	0.00	97.98	N/A	N/A
2483.5	38.97	PK	H	23.26	2.99	0.00	65.22	74.00	8.78
2483.5	19.22	AV	H	23.26	2.99	0.00	45.47	54.00	8.53

High Channel: 2462 MHz									
2462	80.98	PK	H	23.33	2.99	0.00	107.30	N/A	N/A
2462	67.44	AV	H	23.33	2.99	0.00	93.76	N/A	N/A
2462	79.57	PK	V	23.33	2.99	0.00	105.89	N/A	N/A
2462	66.01	AV	V	23.33	2.99	0.00	92.33	N/A	N/A
2483.5	35.67	PK	H	23.26	2.99	0.00	61.92	74.00	12.08
2483.5	19.56	AV	H	23.26	2.99	0.00	45.81	54.00	8.19
4924	36.3	PK	H	31.16	5.07	26.88	45.65	74.00	28.35
4924	24.67	AV	H	31.16	5.07	26.88	34.02	54.00	19.98
7386	35.8	PK	H	35.07	6.25	26.43	50.69	74.00	23.31
7386	25.11	AV	H	35.07	6.25	26.43	40.00	54.00	14.00
1443	36.55	PK	H	23.95	2.59	26.38	36.71	74.00	37.29
1443	25.11	AV	H	23.95	2.59	26.38	25.27	54.00	28.73
287.05	45.3	QP	H	13.97	1.14	27.52	32.89	46.00	13.11
436.43	38.3	QP	H	16.88	1.57	28.43	28.32	46.00	17.68

5M Mode (2TX was the worst)

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 2412 MHz									
2412	91.49	PK	H	23.50	3.00	0.00	117.99	N/A	N/A
2412	76.13	AV	H	23.50	3.00	0.00	102.63	N/A	N/A
2412	89.02	PK	V	23.50	3.00	0.00	115.52	N/A	N/A
2412	74.31	AV	V	23.50	3.00	0.00	100.81	N/A	N/A
2390	33.27	PK	H	23.57	3.00	0.00	59.84	74.00	14.16
2390	19.52	AV	H	23.57	3.00	0.00	46.09	54.00	7.91
4824	41.36	PK	H	30.84	5.11	26.87	50.44	74.00	23.56
4824	25.29	AV	H	30.84	5.11	26.87	34.37	54.00	19.63
7236	28.39	PK	H	34.77	6.18	26.36	42.98	74.00	31.02
7236	13.93	AV	H	34.77	6.18	26.36	28.52	54.00	25.48
1338	42.04	PK	H	23.68	2.45	26.49	41.68	74.00	32.32
1338	28.22	AV	H	23.68	2.45	26.49	27.86	54.00	26.14
291.9	49.5	QP	H	14.02	1.09	27.53	37.08	46.00	8.92
315.18	50.1	QP	H	14.48	1.18	27.59	38.17	46.00	7.83
Middle Channel: 2442 MHz									
2442	92.06	PK	H	23.40	3.00	0.00	118.46	N/A	N/A
2442	76.06	AV	H	23.40	3.00	0.00	102.46	N/A	N/A
2442	89.42	PK	V	23.40	3.00	0.00	115.82	N/A	N/A
2442	74.59	AV	V	23.40	3.00	0.00	100.99	N/A	N/A
4884	41.66	PK	H	31.03	5.09	26.87	50.91	74.00	23.09
4884	25.27	AV	H	31.03	5.09	26.87	34.52	54.00	19.48
7326	28.58	PK	H	34.95	6.22	26.40	43.35	74.00	30.65
7326	14.07	AV	H	34.95	6.22	26.40	28.84	54.00	25.16
1384	41.47	PK	H	23.80	2.51	26.44	41.34	74.00	32.66
1384	27.74	AV	H	23.80	2.51	26.44	27.61	54.00	26.39
2108	39.1	PK	H	24.53	3.04	26.84	39.83	74.00	34.17
2108	26.44	AV	H	24.53	3.04	26.84	27.17	54.00	26.83
291.9	49.3	QP	H	14.02	1.09	27.53	36.88	46.00	9.12
315.18	50.4	QP	H	14.48	1.18	27.59	38.47	46.00	7.53
High Channel: 2462 MHz									
2462	91.27	PK	H	23.33	2.99	0.00	117.59	N/A	N/A
2462	76.33	AV	H	23.33	2.99	0.00	102.65	N/A	N/A
2462	89.61	PK	V	23.33	2.99	0.00	115.93	N/A	N/A
2462	74.43	AV	V	23.33	2.99	0.00	100.75	N/A	N/A
2483.5	32.12	PK	H	23.26	2.99	0.00	58.37	74.00	15.63
2483.5	19.47	AV	H	23.26	2.99	0.00	45.72	54.00	8.28
4924	41.33	PK	H	31.16	5.07	26.88	50.68	74.00	23.32
4924	25.21	AV	H	31.16	5.07	26.88	34.56	54.00	19.44
7386	28.17	PK	H	35.07	6.25	26.43	43.06	74.00	30.94
7386	13.7	AV	H	35.07	6.25	26.43	28.59	54.00	25.41
1425	40.19	PK	H	23.91	2.57	26.40	40.27	74.00	33.73
1425	27.31	AV	H	23.91	2.57	26.40	27.39	54.00	26.61
291.9	49.2	QP	H	14.02	1.09	27.53	36.78	46.00	9.22
315.18	50.1	QP	H	14.48	1.18	27.59	38.17	46.00	7.83

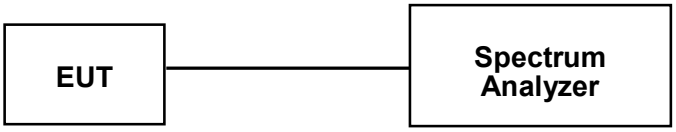
FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH

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

a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3×RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2016-09-21	2017-09-20
N/A	RF Cable	N/A	N/A	Each Time	/

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	18~18.5 °C
Relative Humidity:	52~54 %
ATM Pressure:	96.2~96.5 kPa

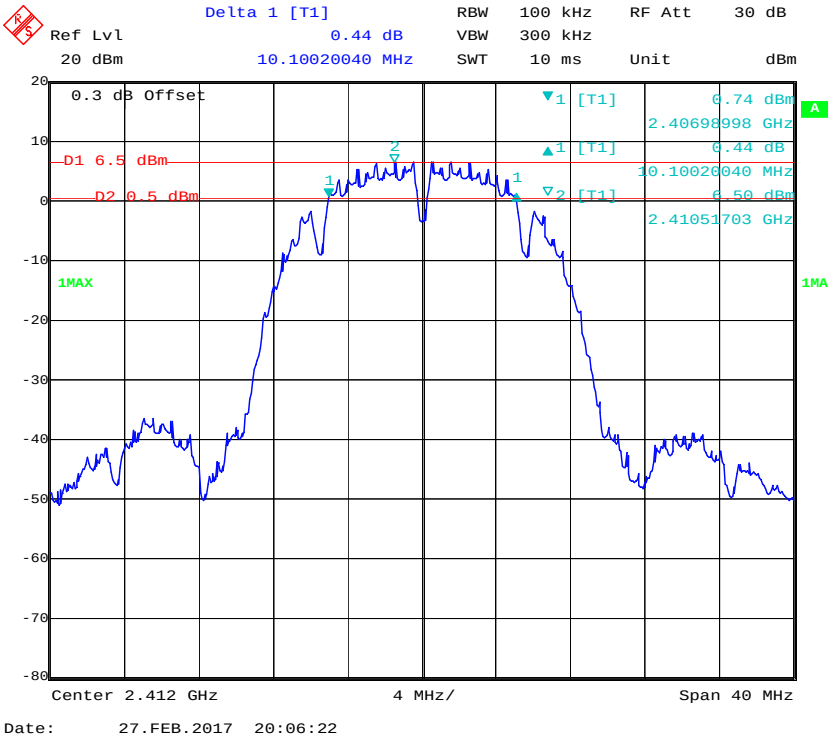
** The testing was performed by Kevin Hu on 2017-02-27&2017-03-11.*

Test Mode: Transmitting (Test performed at chain 0)

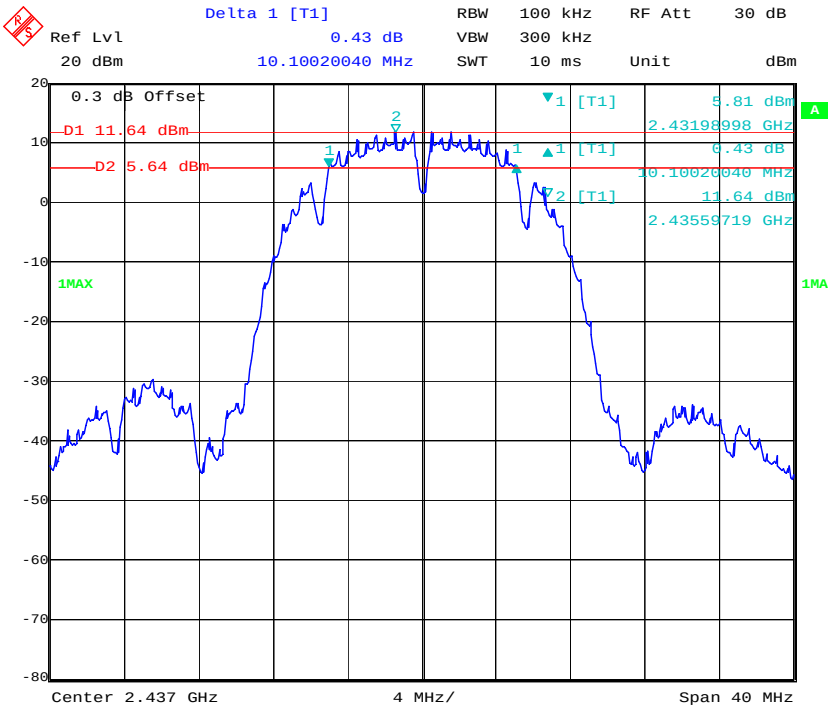
Test Result: Compliant. Please refer to the following table and plots.

Test mode	Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)	Limit (MHz)
802.11b	Low	2412	10.1	≥0.5
	Middle	2437	10.1	≥0.5
	High	2462	10.1	≥0.5
802.11g	Low	2412	16.43	≥0.5
	Middle	2437	16.43	≥0.5
	High	2462	16.43	≥0.5
802.11n ht20	Low	2412	17.47	≥0.5
	Middle	2437	17.64	≥0.5
	High	2462	17.56	≥0.5
5M	Low	2412	4.228	≥0.5
	Middle	2442	4.208	≥0.5
	High	2462	4.209	≥0.5

802.11b Low Channel

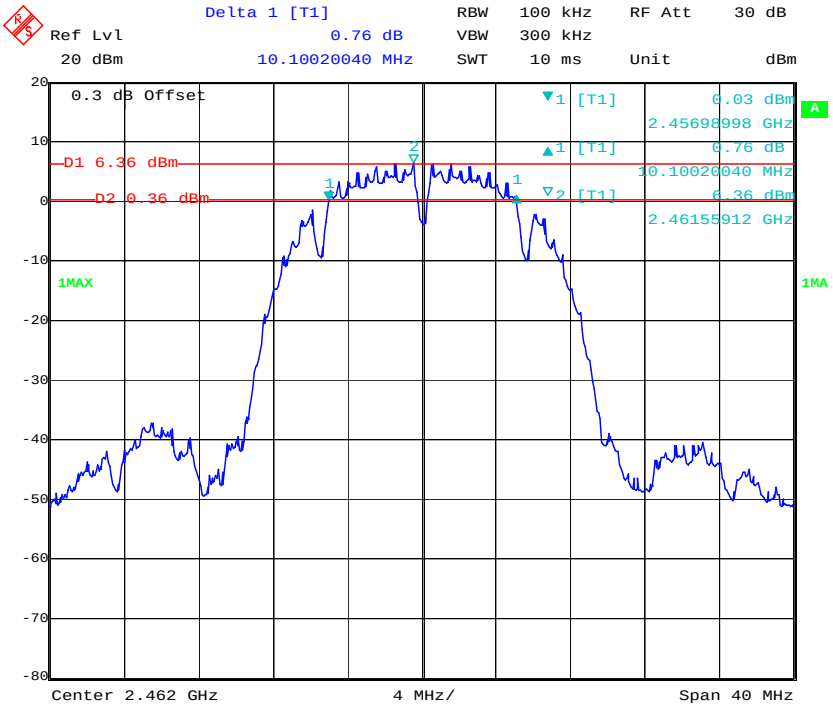


802.11b Middle Channel



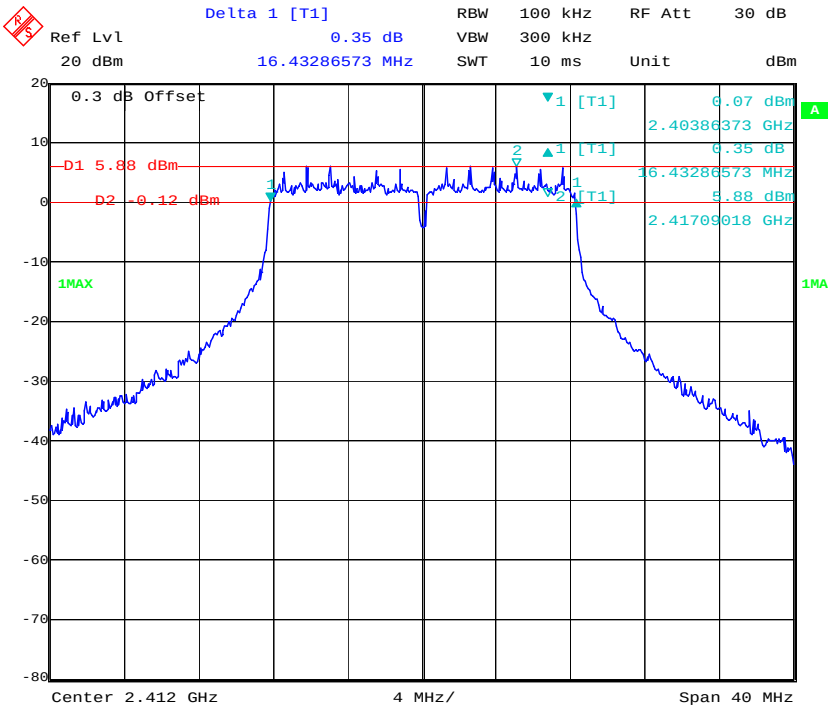
Date: 27.FEB.2017 20:08:40

802.11b High Channel



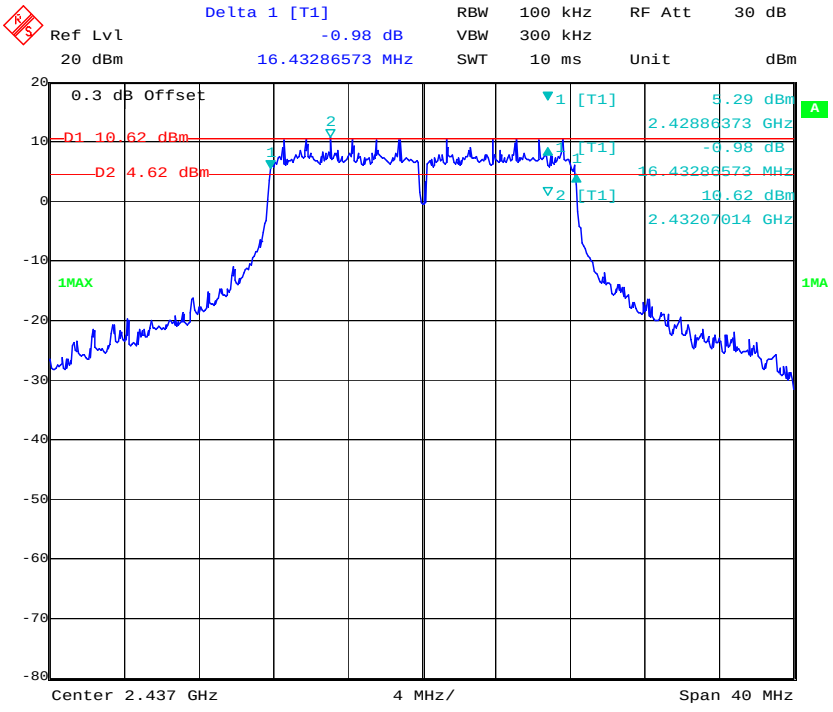
Date: 27.FEB.2017 20:10:20

802.11g Low Channel



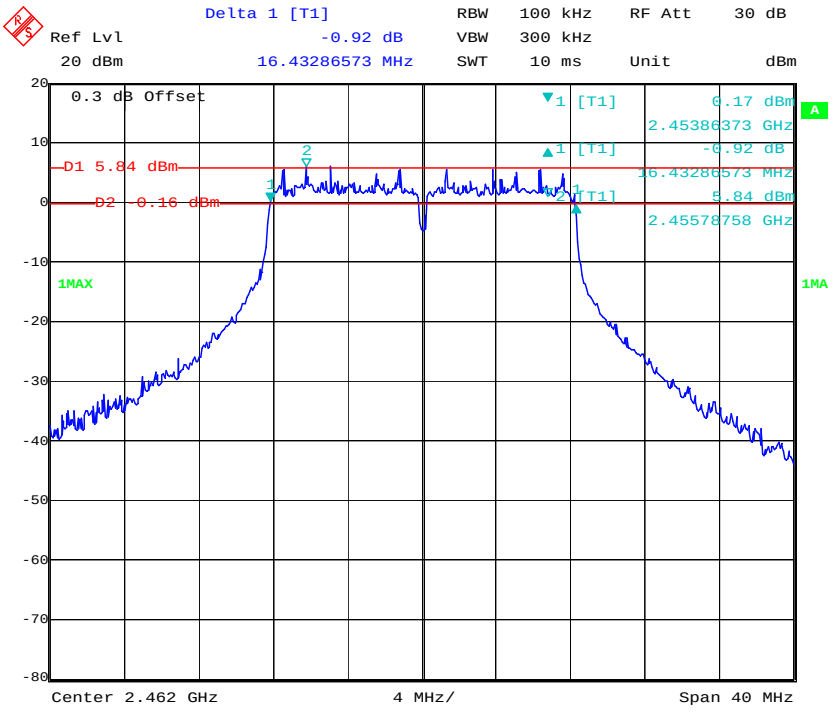
Date: 27.FEB.2017 20:16:32

802.11g Middle Channel



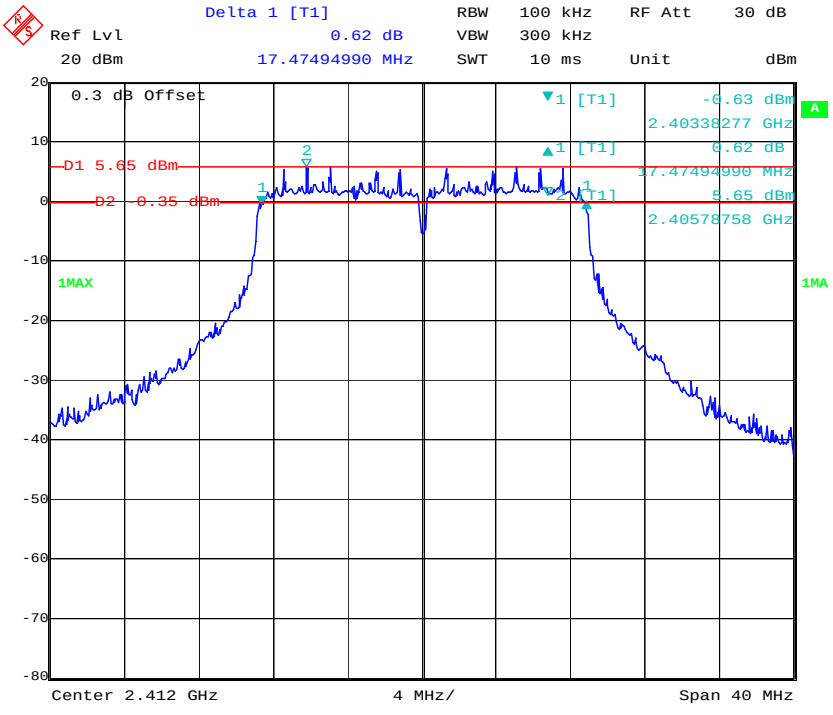
Date: 27.FEB.2017 20:14:35

802.11g High Channel



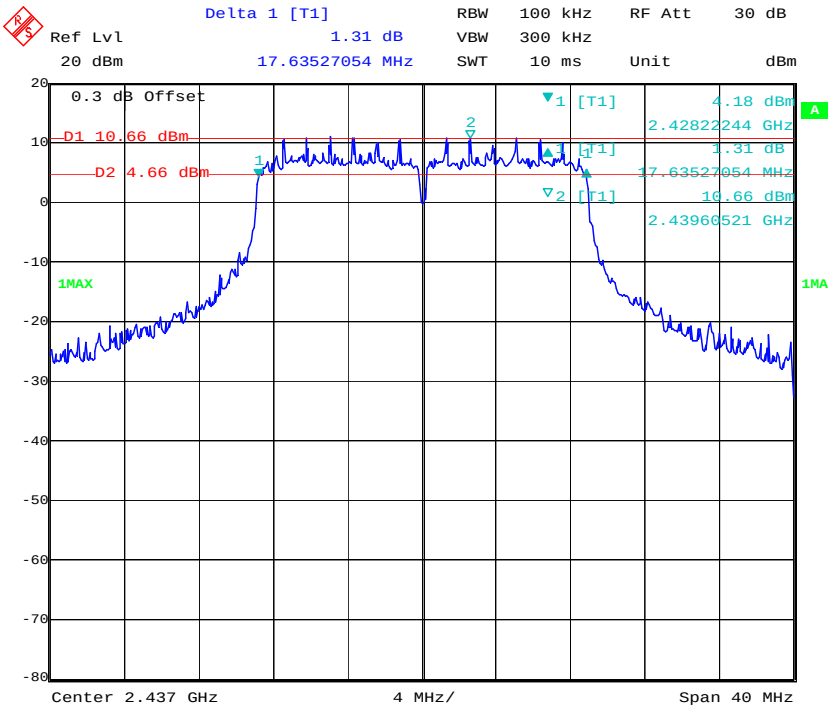
Date: 27.FEB.2017 20:12:22

802.11n ht20 Low Channel



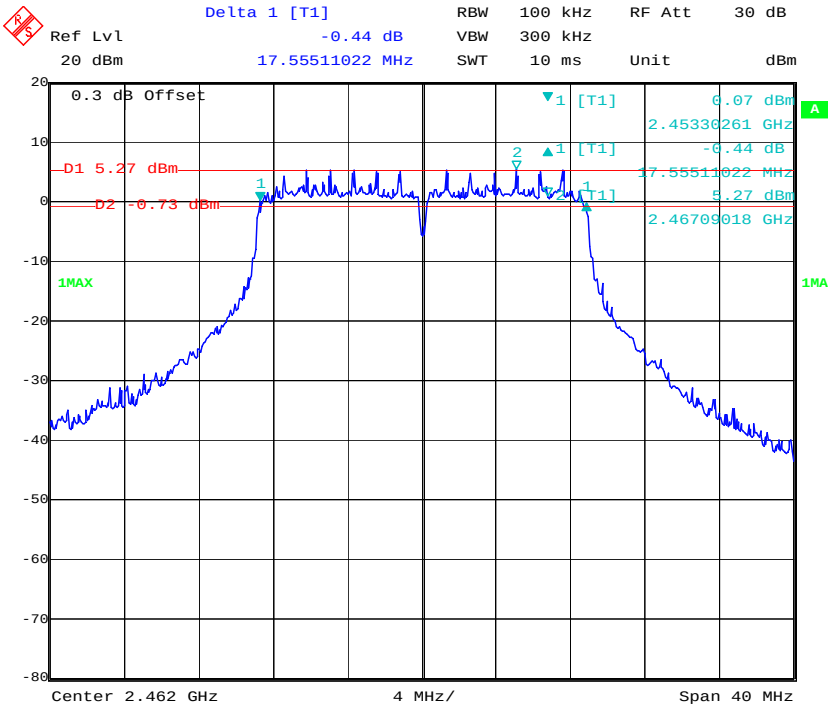
Date: 27.FEB.2017 20:20:16

802.11n ht20 Middle Channel



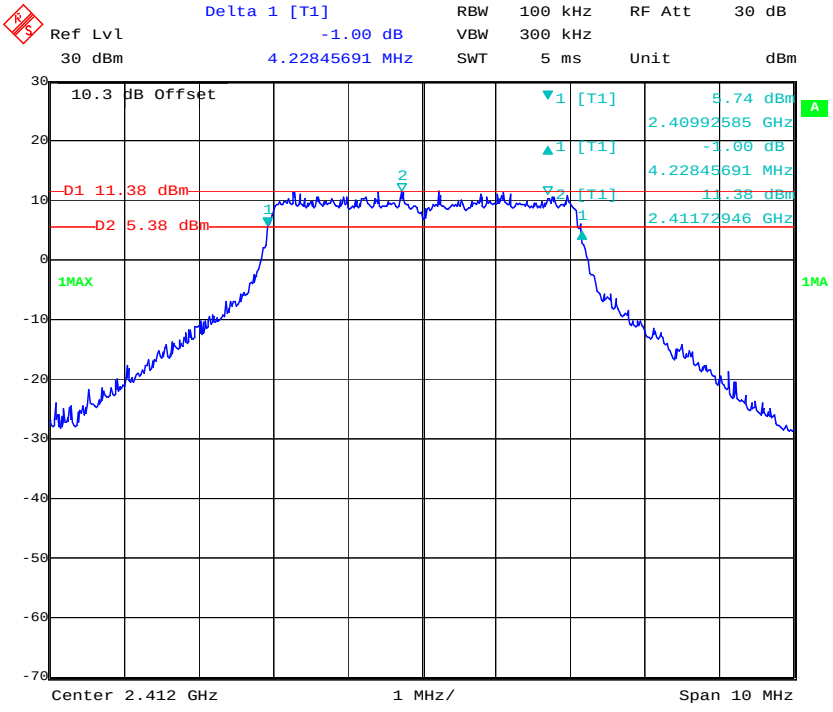
Date: 27.FEB.2017 20:22:54

802.11n ht20 High Channel



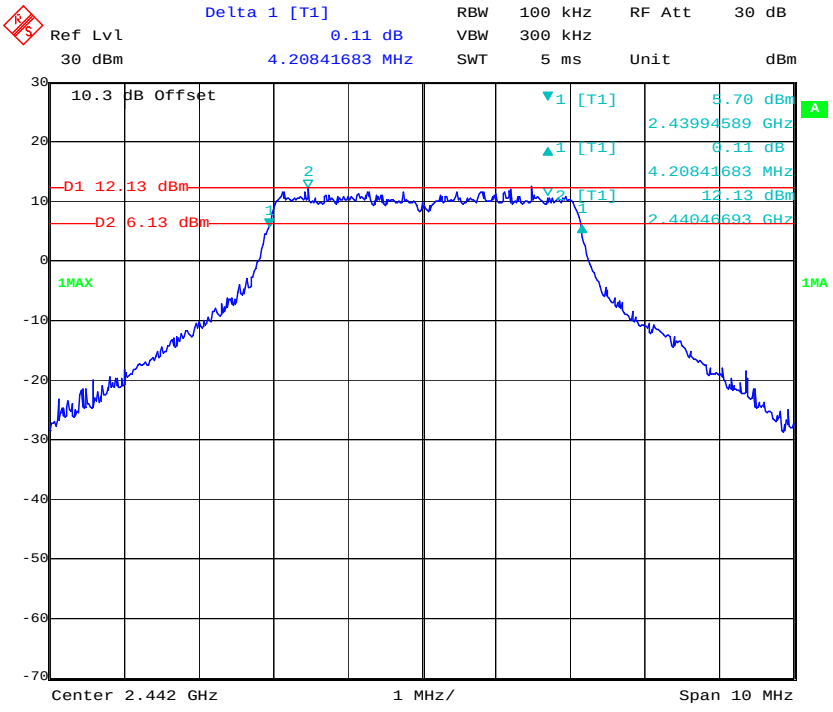
Date: 27.FEB.2017 20:25:59

5M Low Channel



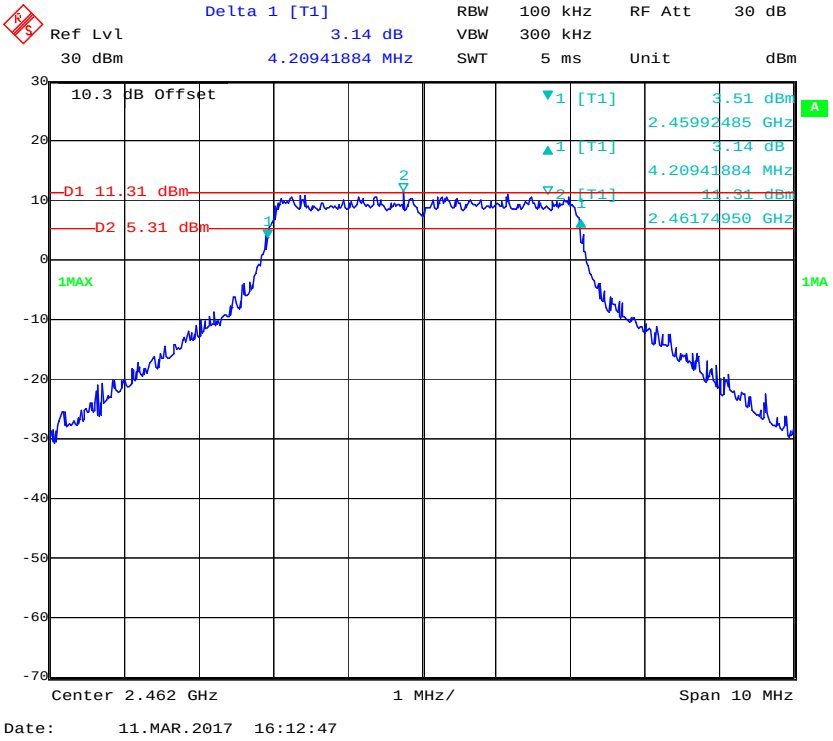
Date: 11.MAR.2017 15:25:56

5M Middle Channel



Date: 11.MAR.2017 15:35:06

5M High Channel



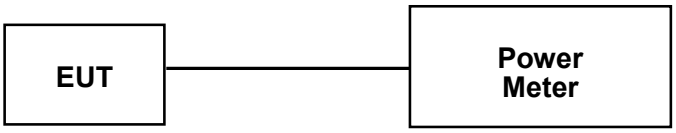
FCC §15.247(b) (3) - MAXIMUM CONDUCTED OUTPUT POWER

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 test equipment.
3. Add a correction factor to the display.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	Wideband Power Sensor	N1921A	MY54170074	2017-01-03	2018-01-03
Agilent	P-Series Power Meter	N1912A	MY5000798	2017-01-03	2018-01-03
N/A	RF Cable	N/A	N/A	Each Time	/

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	19 °C
Relative Humidity:	56 %
ATM Pressure:	95.6 kPa

** The testing was performed by Kevin Hu on 2017-03-08.*

Test Mode: Transmitting

Test Result: Compliant. Please refer to the following table.

Test mode	Channel	Frequency (MHz)	Max RMS Conducted Output Power (dBm)		Total (dBm)	Limit (dBm)
			Chain 0	Chain 1		
802.11b	Low	2412	16.51	16.78	19.66	30
	Additional	2422	21.09	20.85	23.98	30
	Middle	2437	21.47	21.37	24.43	30
	Additional	2452	20.91	20.84	23.89	30
	High	2462	16.41	16.71	19.57	30
802.11g	Low	2412	16.66	16.54	19.61	30
	Additional	2422	20.71	20.97	23.85	30
	Middle	2437	21.35	21.63	24.5	30
	Additional	2452	20.71	21.01	23.87	30
	High	2462	16.4	16.73	19.58	30
802.11n ht20	Low	2412	16.62	16.45	19.55	30
	Additional	2422	20.72	21.05	23.9	30
	Middle	2437	21.32	21.59	24.47	30
	Additional	2452	20.89	20.95	23.93	30
	High	2462	16.32	16.72	19.53	30
5M	Low	2412	16.51	16.78	19.66	30
	Middle	2442	21.09	20.85	23.98	30
	High	2462	21.47	21.37	24.43	30

Note: Duty cycle corrected factor has been added in the test result for 5M mode.

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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2016-09-21	2017-09-20
N/A	RF Cable	N/A	N/A	Each Time	/

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

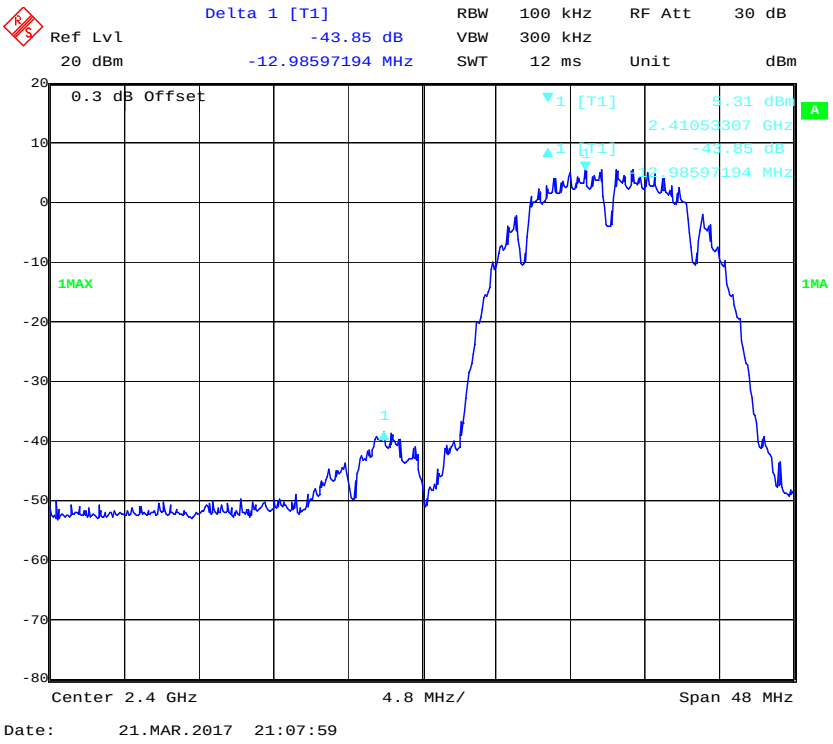
Temperature:	18~18.5 °C
Relative Humidity:	52~54 %
ATM Pressure:	96.2~96.5 kPa

** The testing was performed by Kevin Hu on 2017-03-11&2017-03-21.*

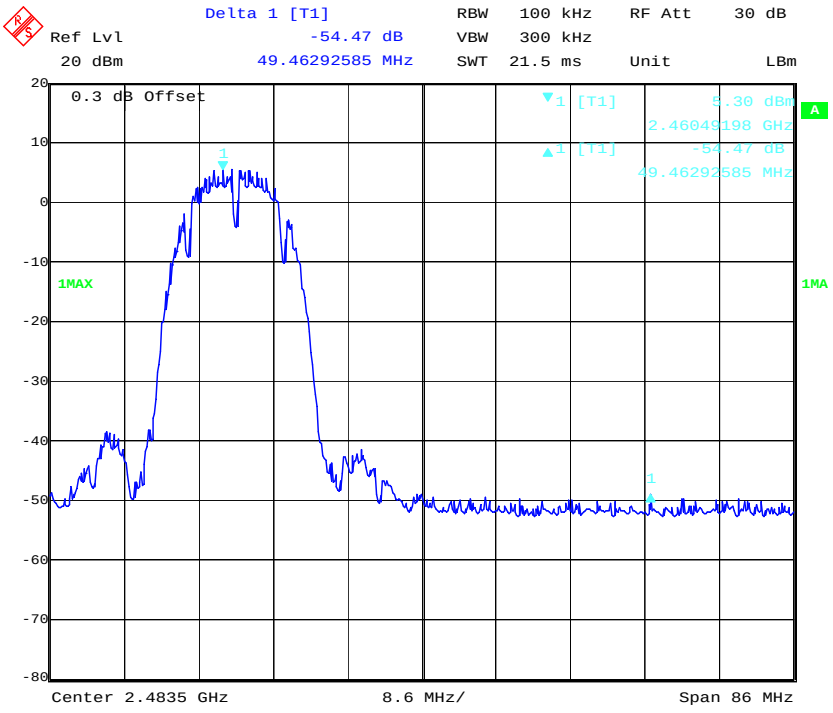
Test mode: Transmitting (the emissions out of the operation band are more 20dB below than the highest level of the desired power)

Test Result: Compliant. Please refer to following plots.

Chain 0, 802.11b: Band Edge, Left Side

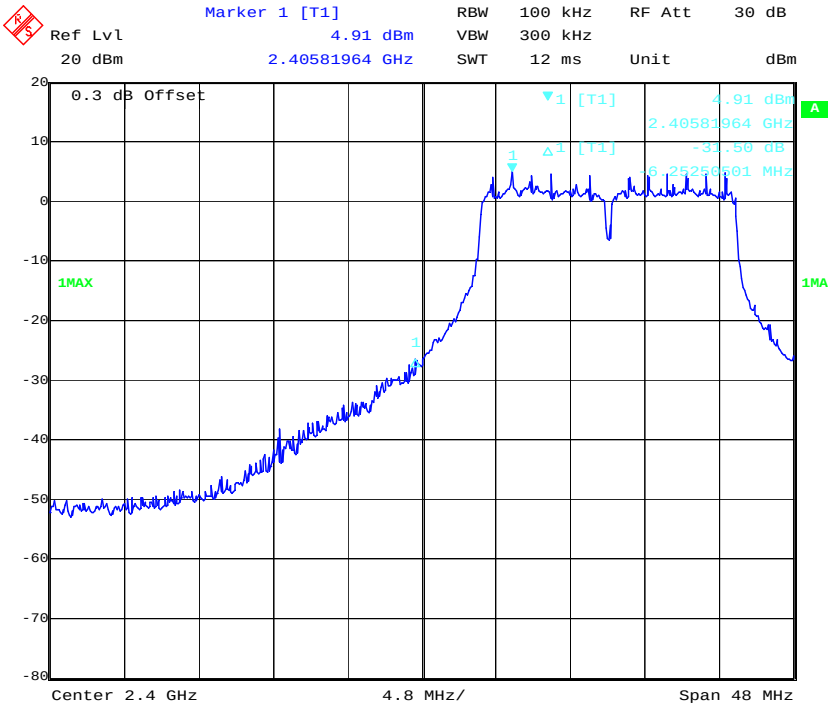


Chain 0, 802.11b: Band Edge, Right Side



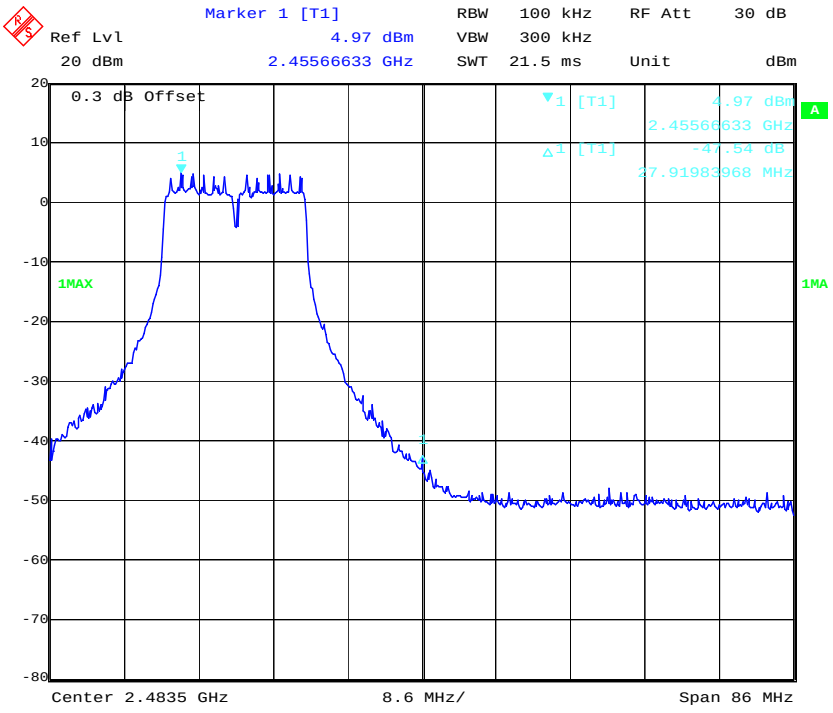
Date: 21.MAR.2017 20:16:22

Chain 0, 802.11g: Band Edge, Left Side

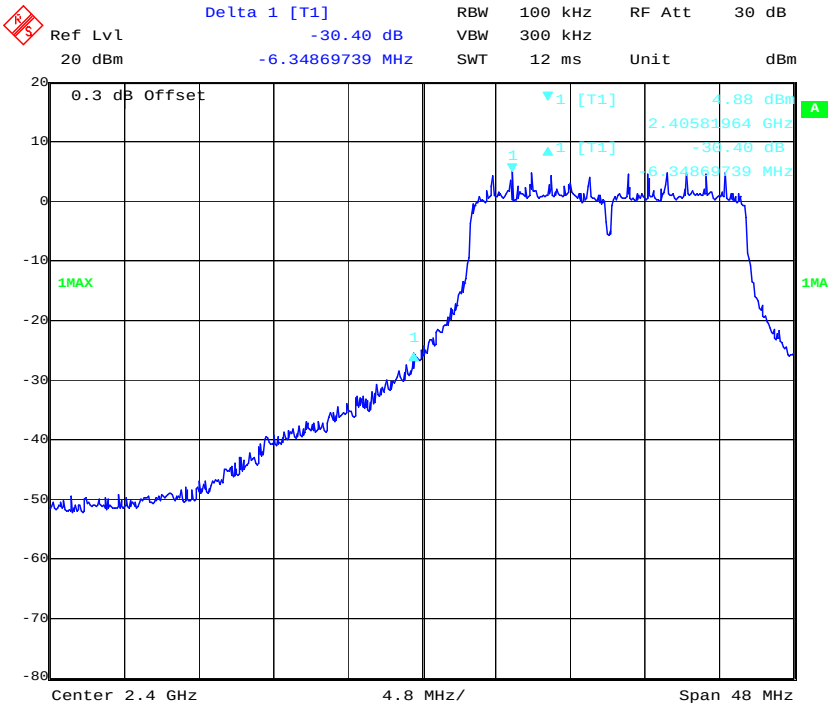


Date: 21.MAR.2017 21:06:59

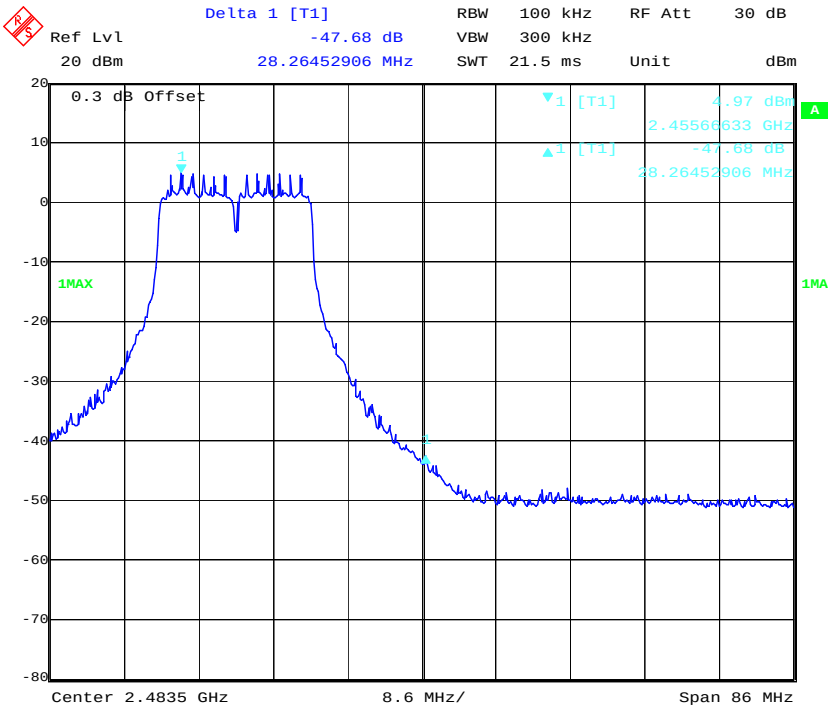
Chain 0, 802.11g: Band Edge, Right Side



Chain 0, 802.11n ht20 Band Edge, Left Side

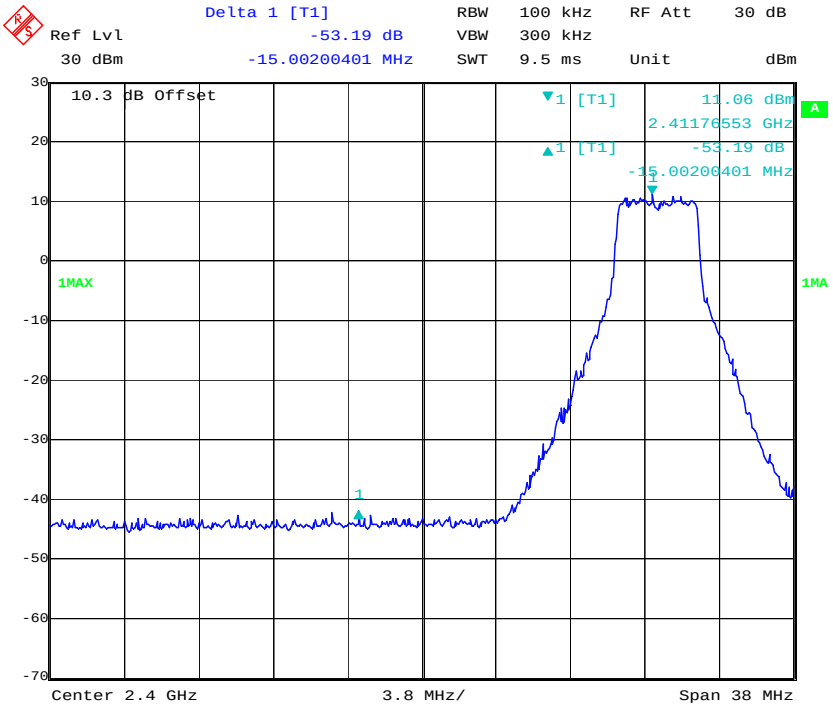


Chain 0, 802.11n ht20 Band Edge, Right Side



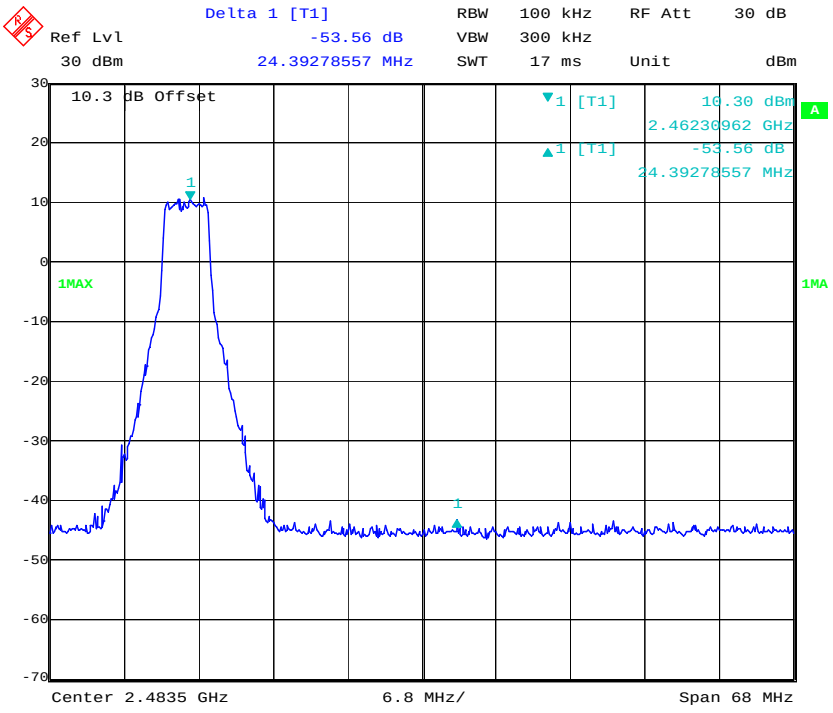
Date: 21.MAR.2017 20:14:01

Chain 0, 5M Band Edge, Left Side



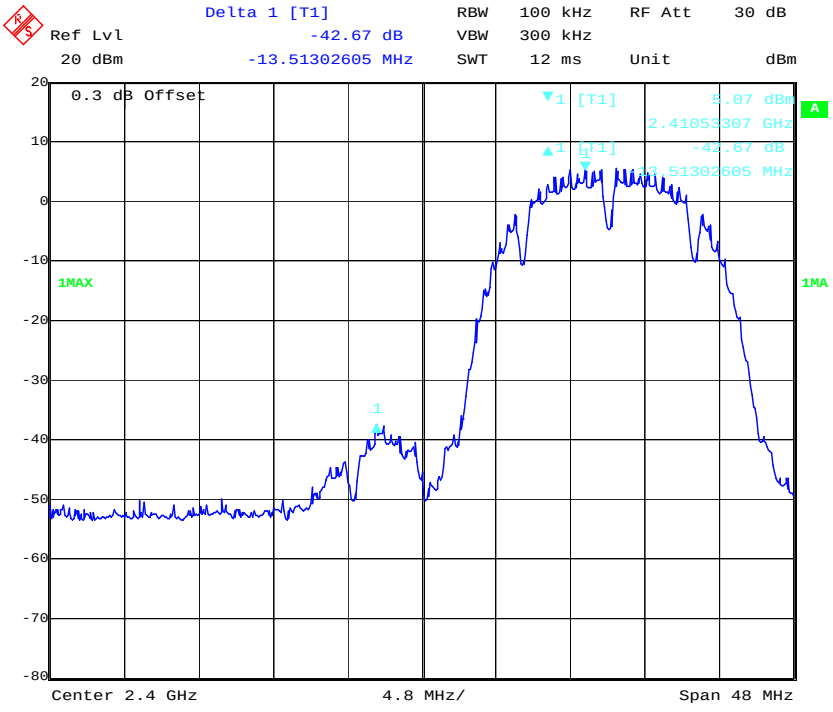
Date: 11.MAR.2017 14:47:10

Chain 0, 5M Band Edge, Right Side



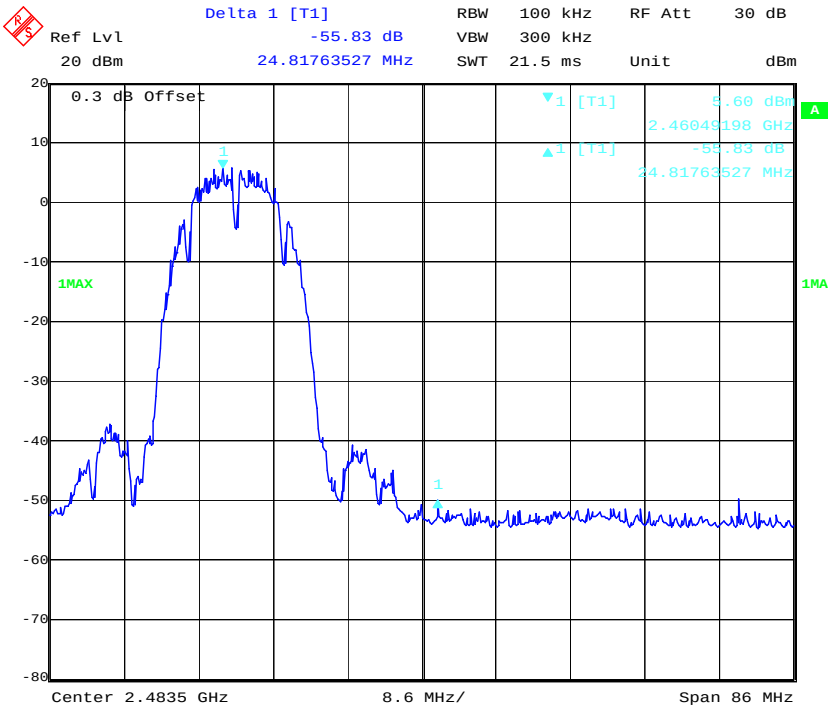
Date: 11.MAR.2017 16:11:04

Chain 1, 802.11b: Band Edge, Left Side



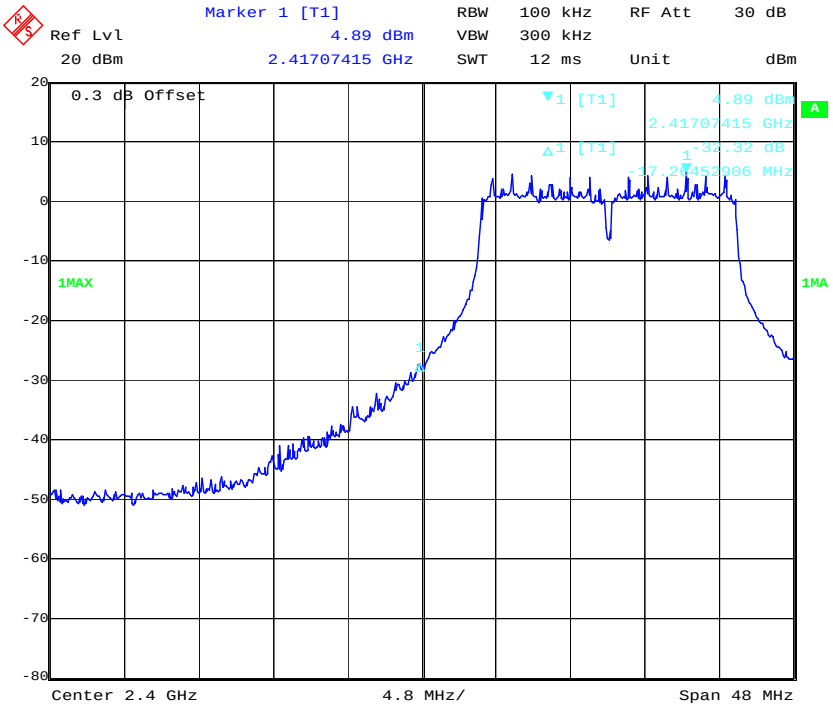
Date: 21.MAR.2017 21:17:47

Chain 1, 802.11b: Band Edge, Right Side



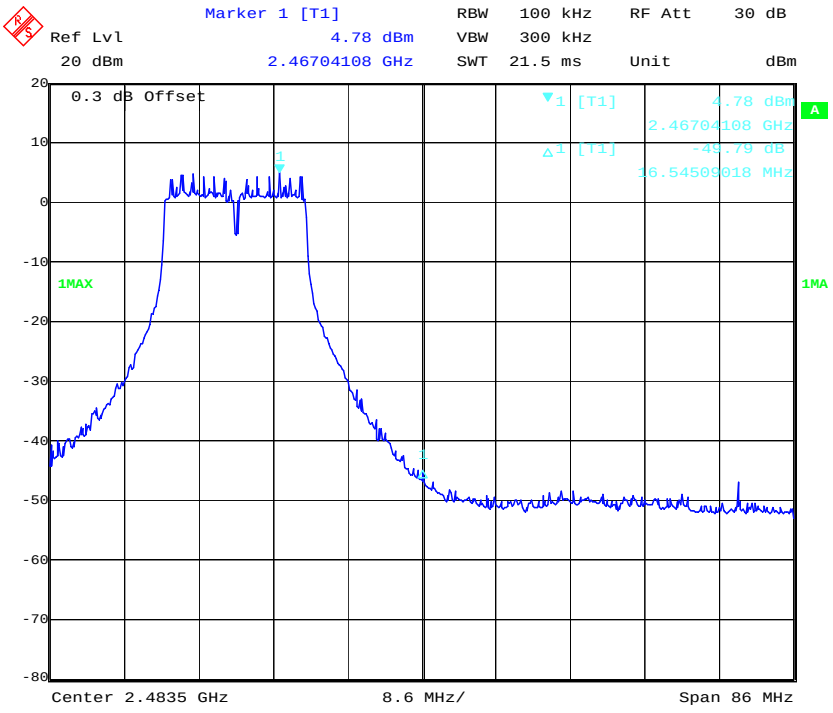
Date: 21.MAR.2017 21:14:46

Chain 1, 802.11g: Band Edge, Left Side

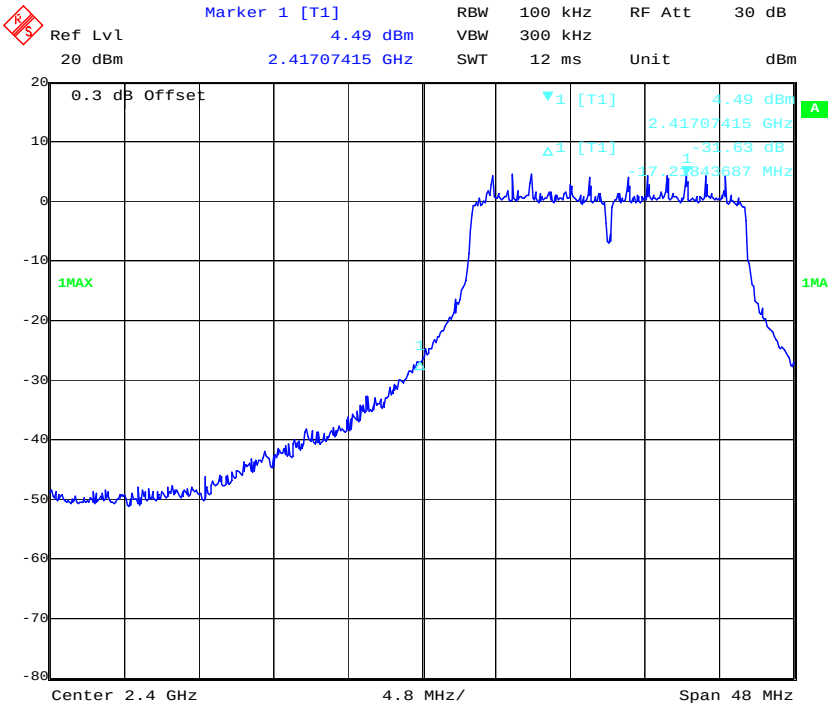


Date: 21.MAR.2017 21:17:04

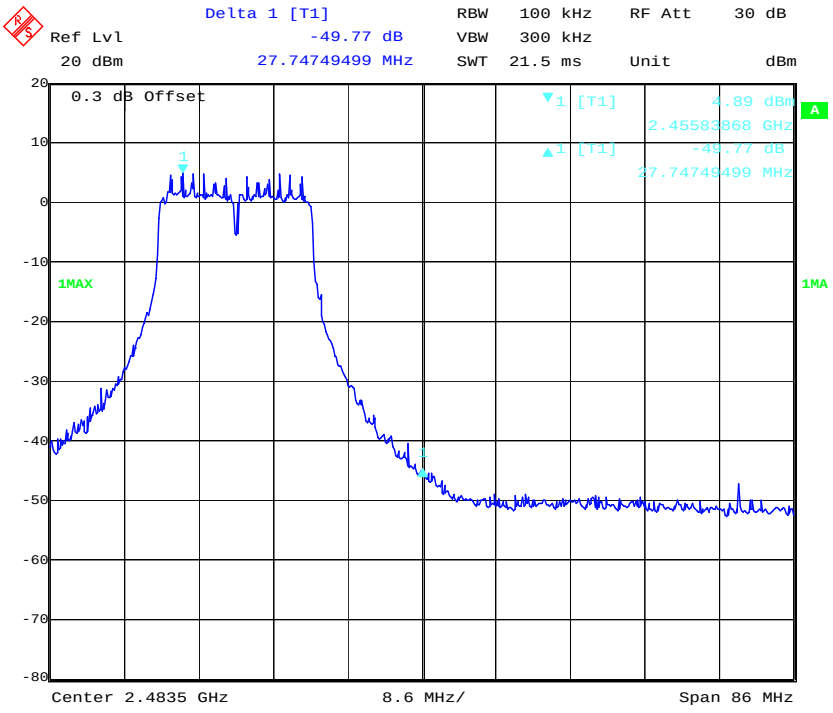
Chain 1, 802.11g: Band Edge, Right Side



Chain 1, 802.11n ht20 Band Edge, Left Side

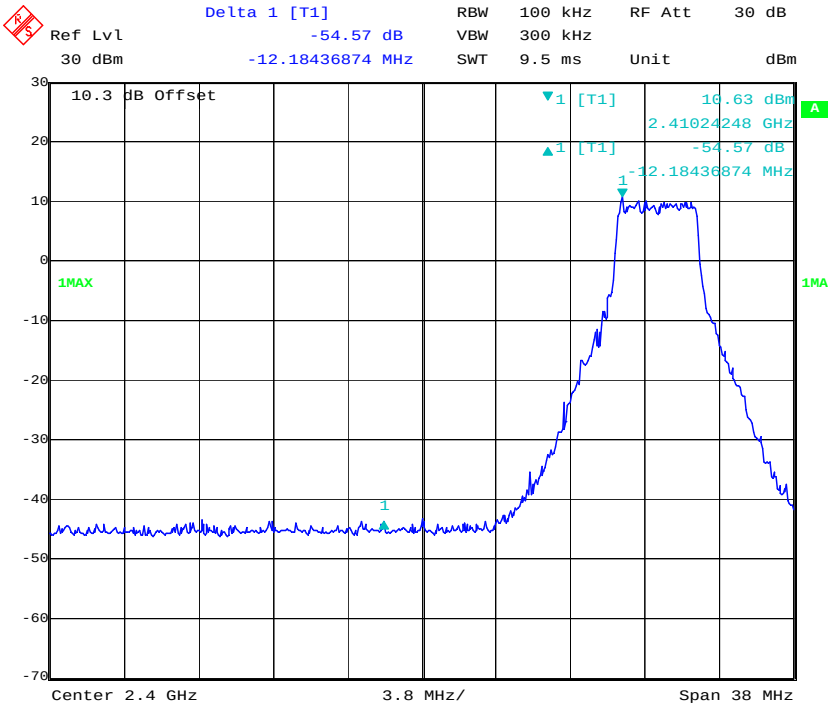


Chain 1, 802.11n ht20 Band Edge, Right Side



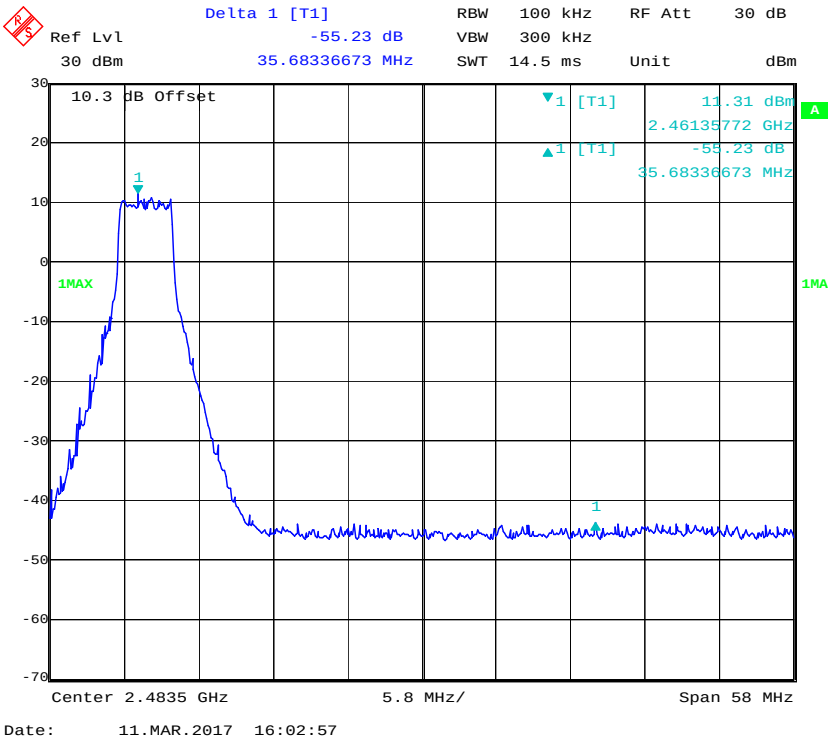
Date: 21.MAR.2017 21:13:53

Chain 1, 5M Band Edge, Left Side



Date: 11.MAR.2017 14:54:50

Chain 1, 5M Band Edge, Right Side



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

a) Set analyzer center frequency to DTS channel center frequency.
b) Set the span to 1.5 times the DTS bandwidth.
c) Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
d) Set the VBW ≥ 3×RBW.
e) Detector = peak.
f) Sweep time = auto couple.
g) Trace mode = max hold.
h) Allow trace to fully stabilize.
i) Use the peak marker function to determine the maximum amplitude level within the RBW.
j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	831929/005	2016-09-21	2017-09-20
N/A	RF Cable	N/A	N/A	Each Time	/

*** Statement of Traceability:** BACL (Chengdu) attested that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	18~18.5 °C
Relative Humidity:	52~54 %
ATM Pressure:	96.2~96.5 kPa

** The testing was performed by Kevin Hu on 2017-03-11&2017-03-21.*

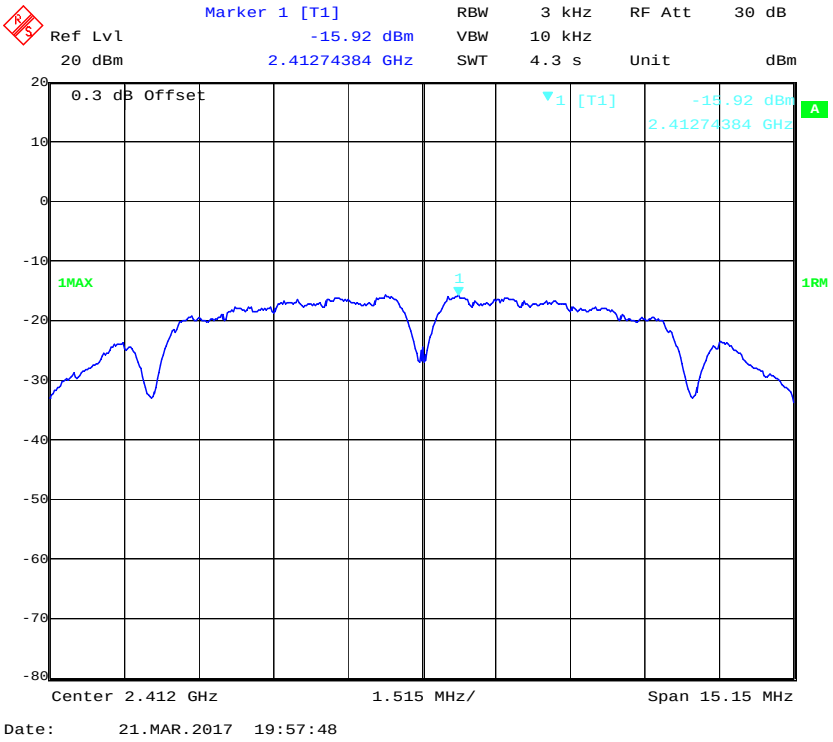
Test Mode: Transmitting

Test Result: Compliant. Please refer to the following table and plots

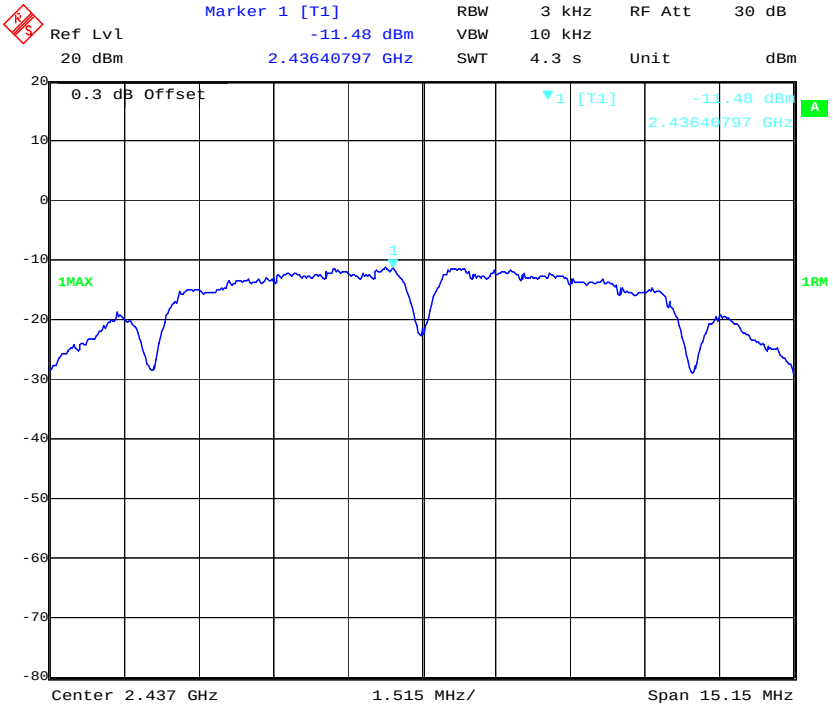
Test mode	Channel	Frequency (MHz)	PSD (dBm/3kHz)		Total (dBm/3kHz)	Limit (dBm/3kHz)
			Chain 0	Chain 1		
802.11b	Low	2412	-15.92	-17.31	-13.55	≤8
	Middle	2437	-11.48	-12.15	-8.79	≤8
	High	2462	-16.5	-16.92	-13.69	≤8
802.11g	Low	2412	-18.54	-17.31	-14.87	≤8
	Middle	2437	-13.46	-14.01	-10.72	≤8
	High	2462	-18.31	-19.19	-15.72	≤8
802.11n ht20	Low	2412	-18.7	-18.88	-15.78	≤8
	Middle	2437	-14	-13.85	-10.91	≤8
	High	2462	-18.89	-18.59	-15.73	≤8
5M	Low	2412	-11.23	-11.74	-8.47	≤8
	Middle	2442	-11.85	-11.35	-8.58	≤8
	High	2462	-11.1	-10.81	-7.94	≤8

Chain 0:

Power Spectral Density, 802.11b, Low Channel

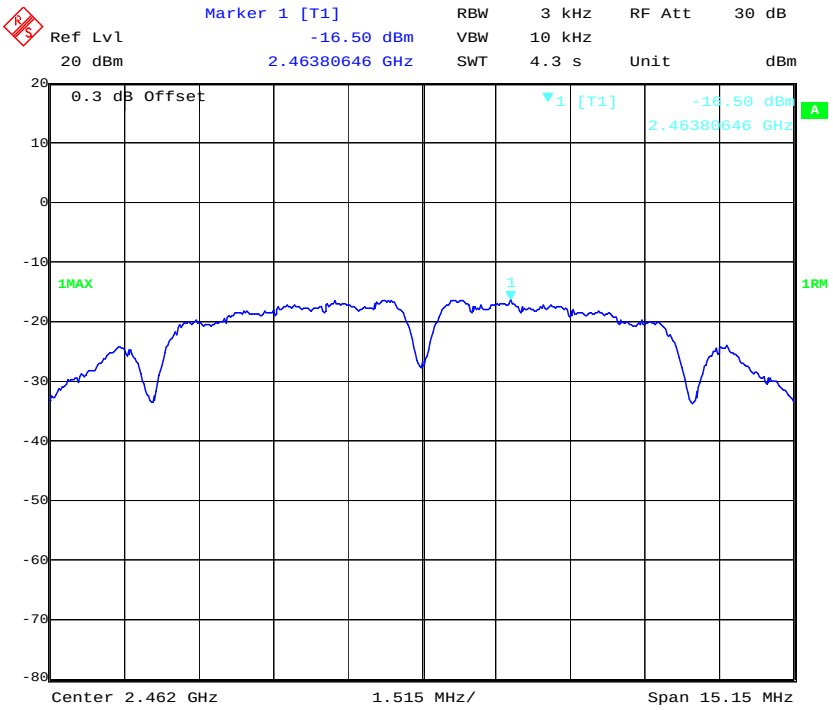


Power Spectral Density, 802.11b, Middle Channel



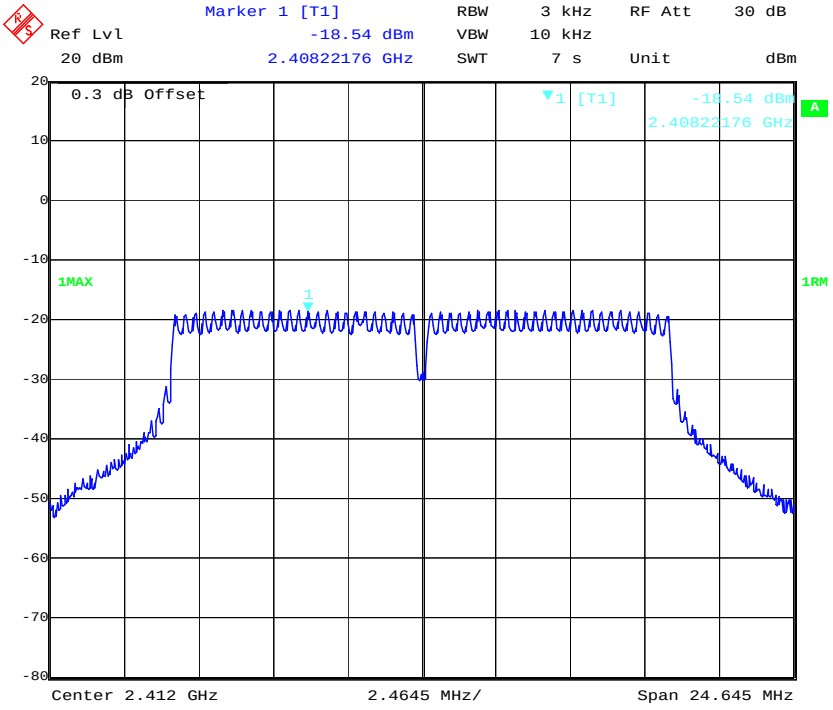
Date: 21.MAR.2017 19:59:03

Power Spectral Density, 802.11b, High Channel



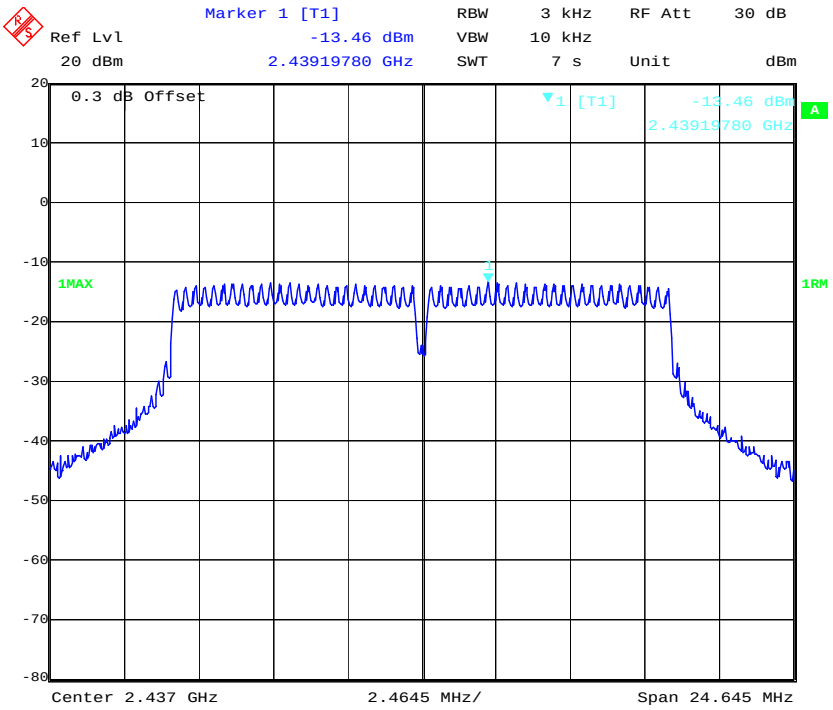
Date: 21.MAR.2017 19:59:58

Power Spectral Density, 802.11g, Low Channel



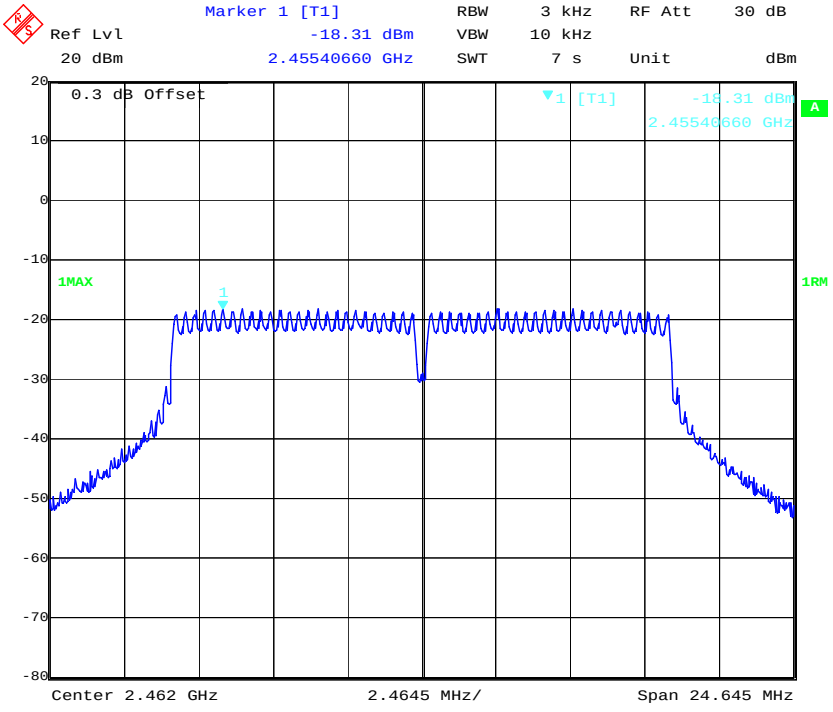
Date: 21.MAR.2017 20:02:42

Power Spectral Density, 802.11g, Middle Channel



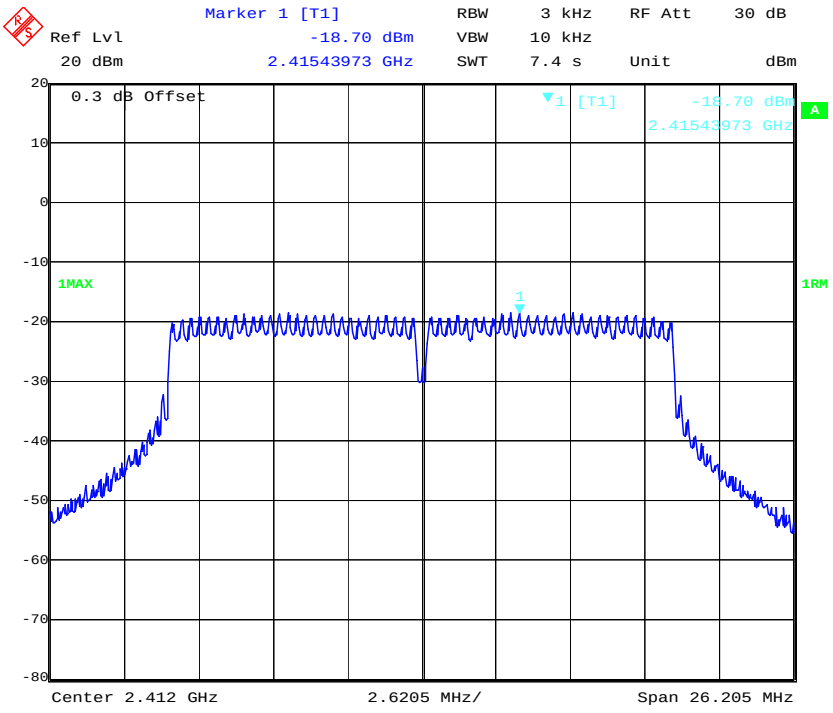
Date: 21.MAR.2017 20:02:00

Power Spectral Density, 802.11g, High Channel



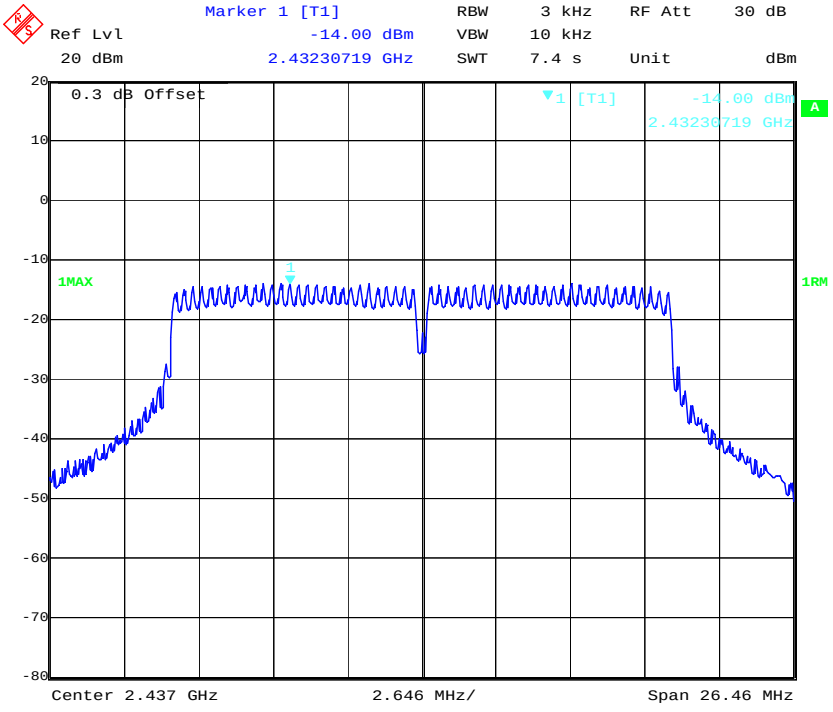
Date: 21.MAR.2017 20:01:17

Power Spectral Density, 802.11n ht20, Low Channel



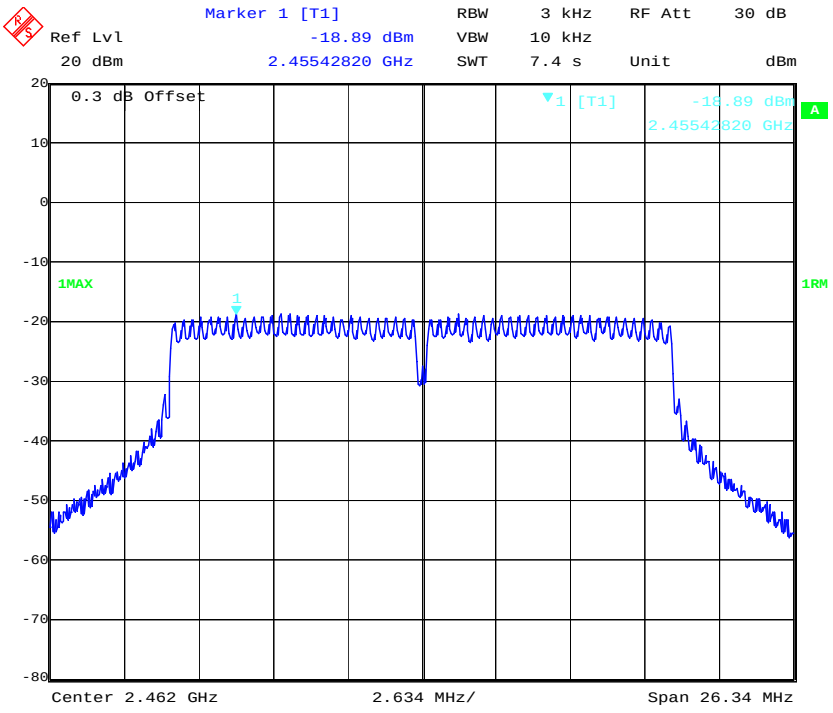
Date: 21.MAR.2017 20:03:49

Power Spectral Density, 802.11n ht20, Middle Channel



Date: 21.MAR.2017 20:04:51

Power Spectral Density, 802.11n ht20, High Channel



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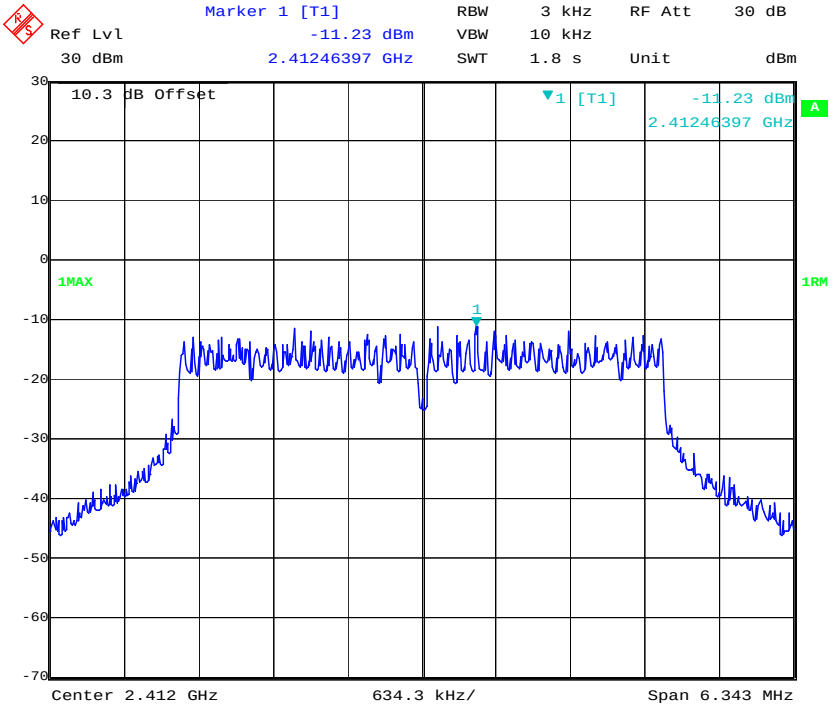
Power Spectral Density, 5M, Low Channel



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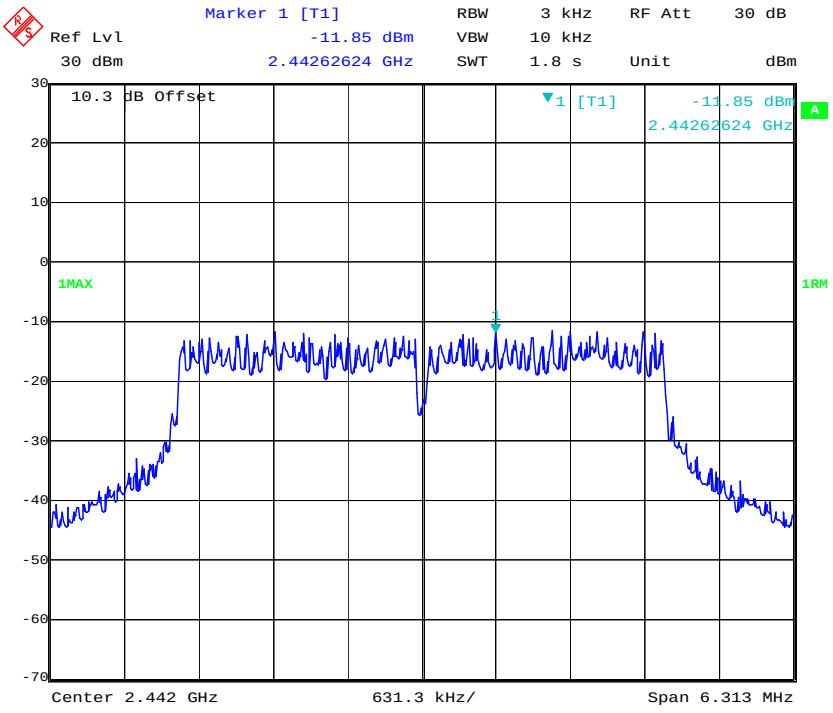
Power Spectral Density, 5M, Middle Channel



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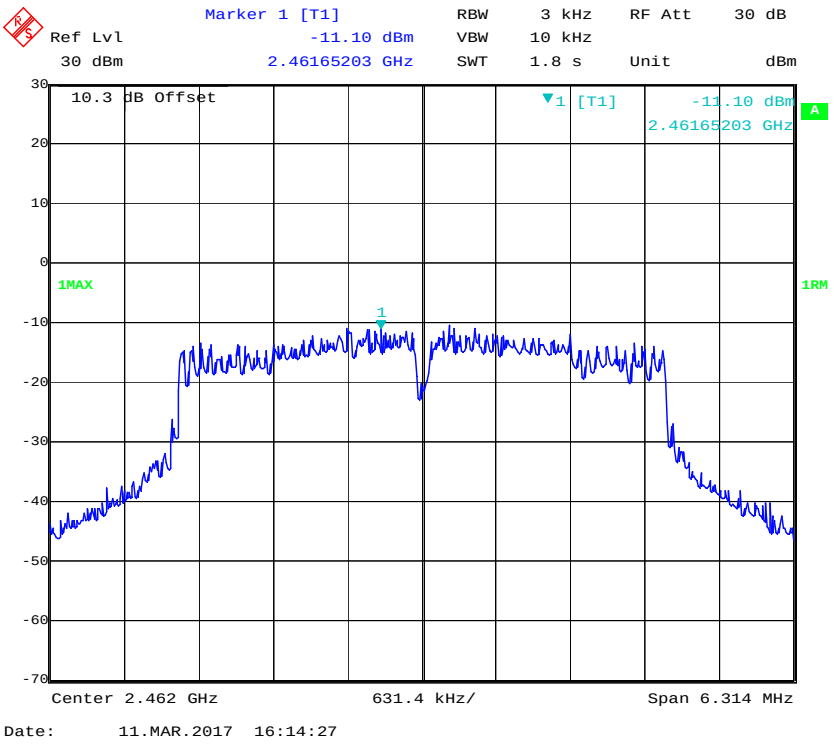
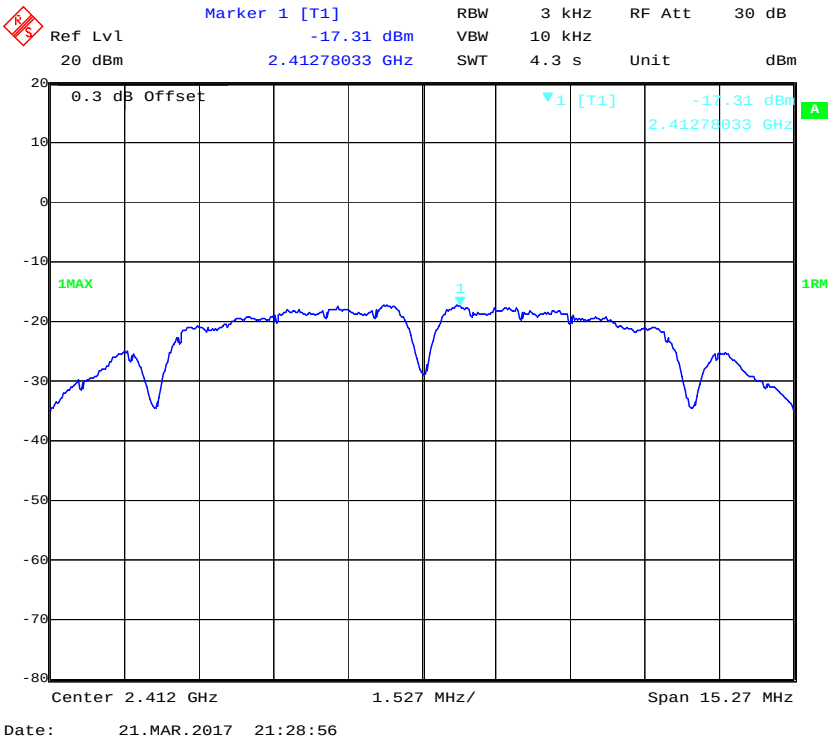
Power Spectral Density, 5M, High Channel



Chain 1:

Power Spectral Density, 802.11b, Low Channel



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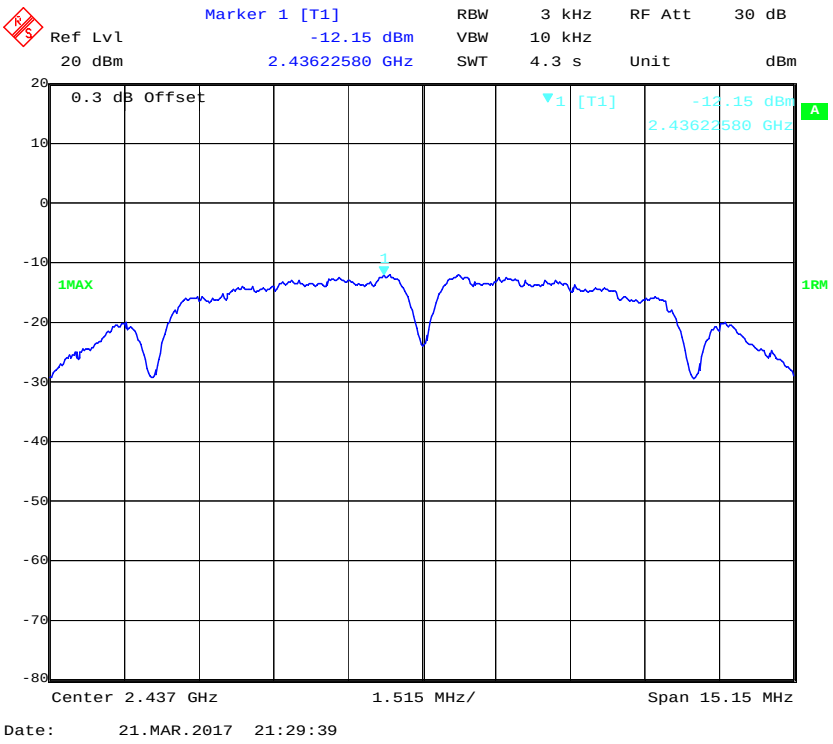
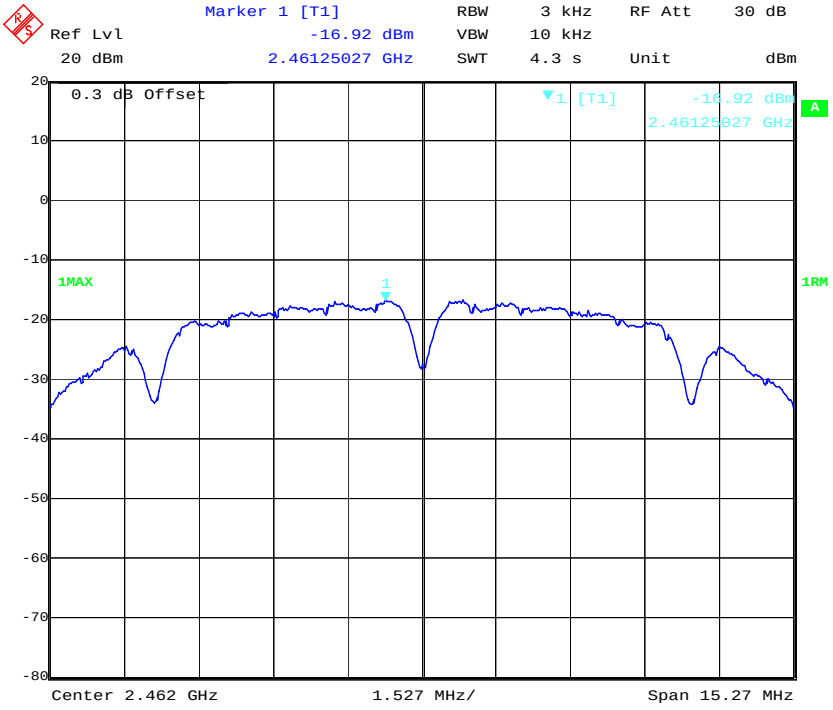
Power Spectral Density, 802.11b, Middle Channel



Date: 21.MAR.2017 21:29:39

Power Spectral Density, 802.11b, High Channel



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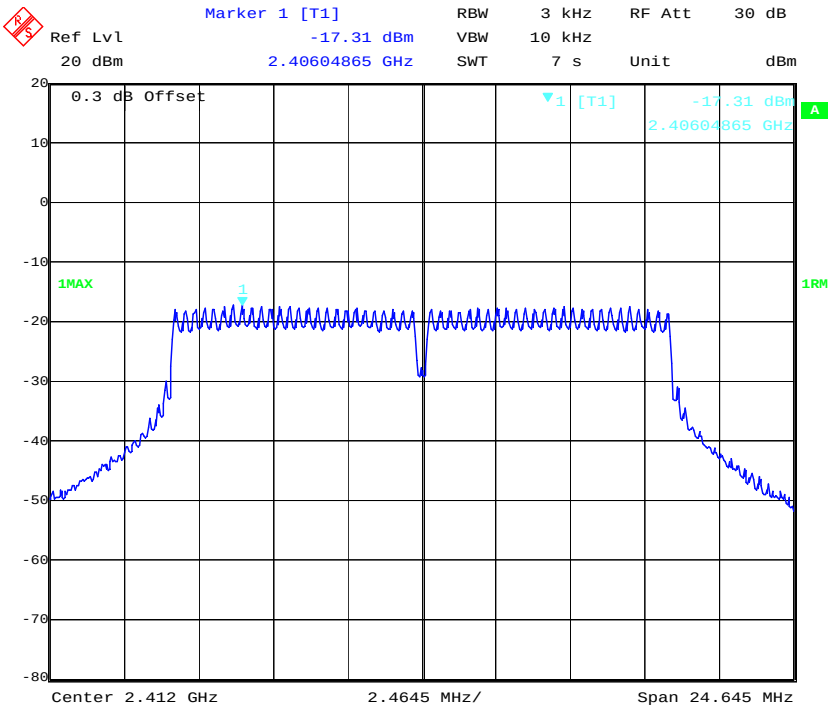
Power Spectral Density, 802.11g, Low Channel



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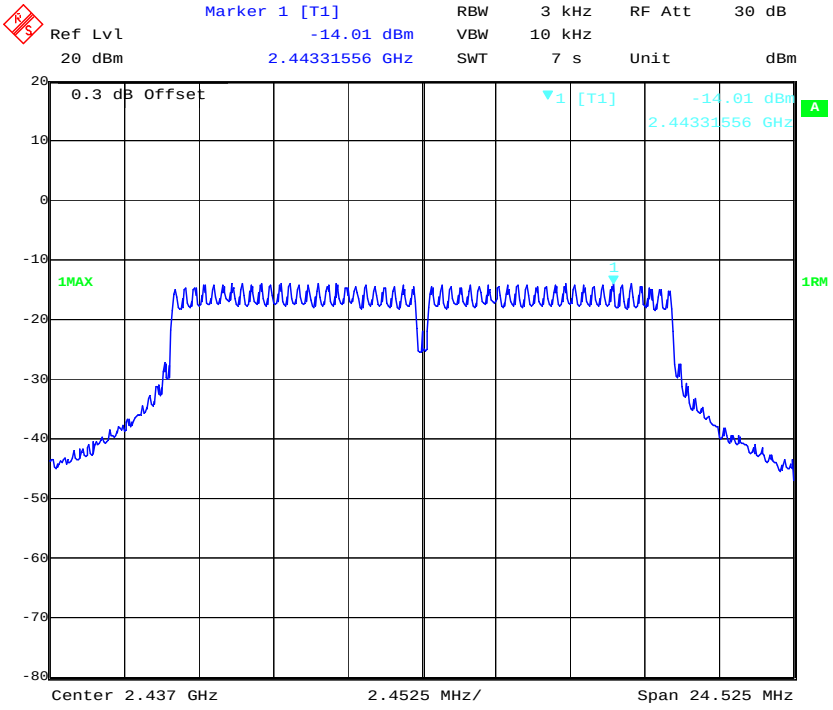
Power Spectral Density, 802.11g, Middle Channel



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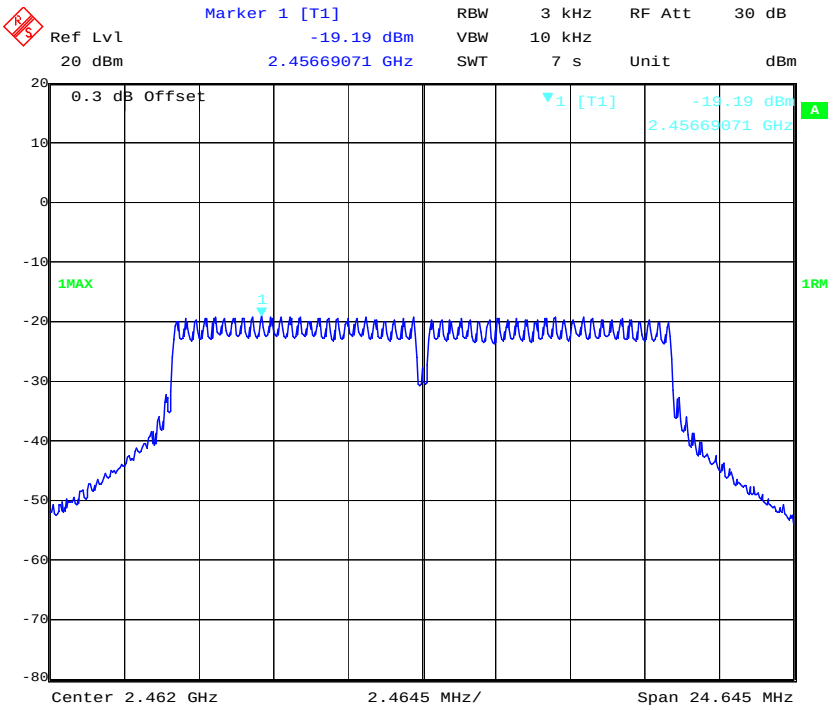
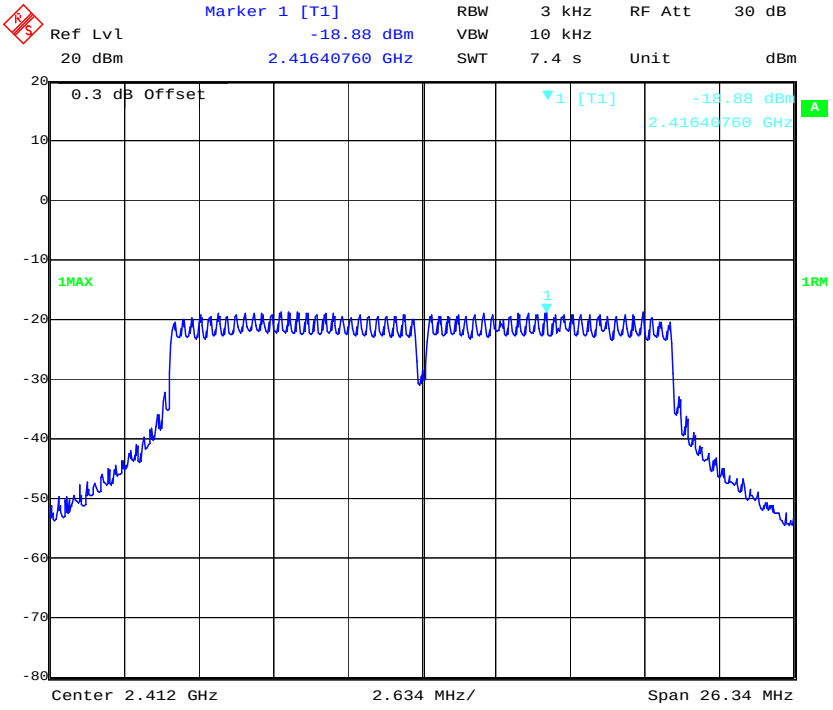
Power Spectral Density, 802.11g, High Channel



Date: 21.MAR.2017 21:31:58

Power Spectral Density, 802.11n ht20, Low Channel



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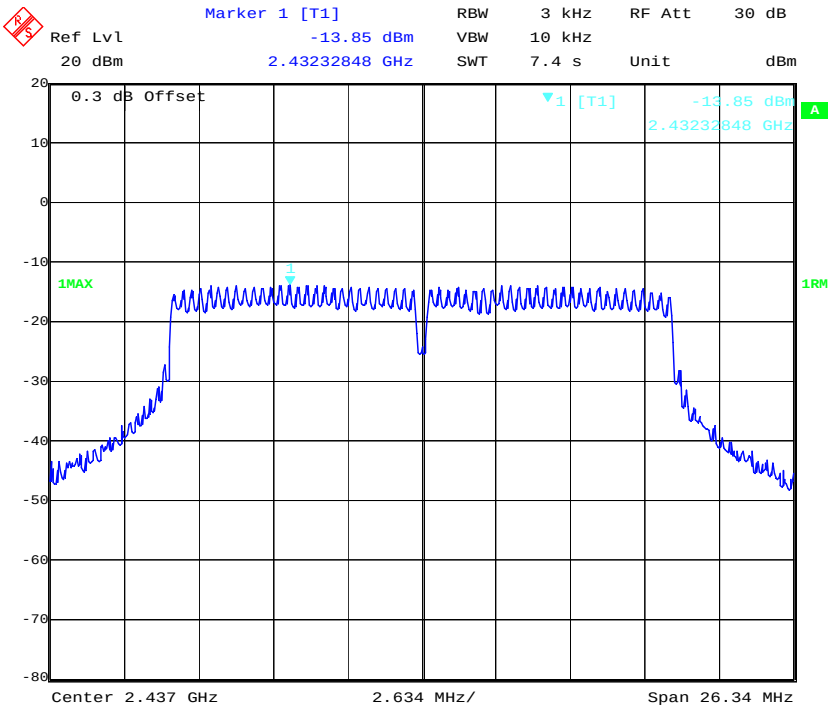
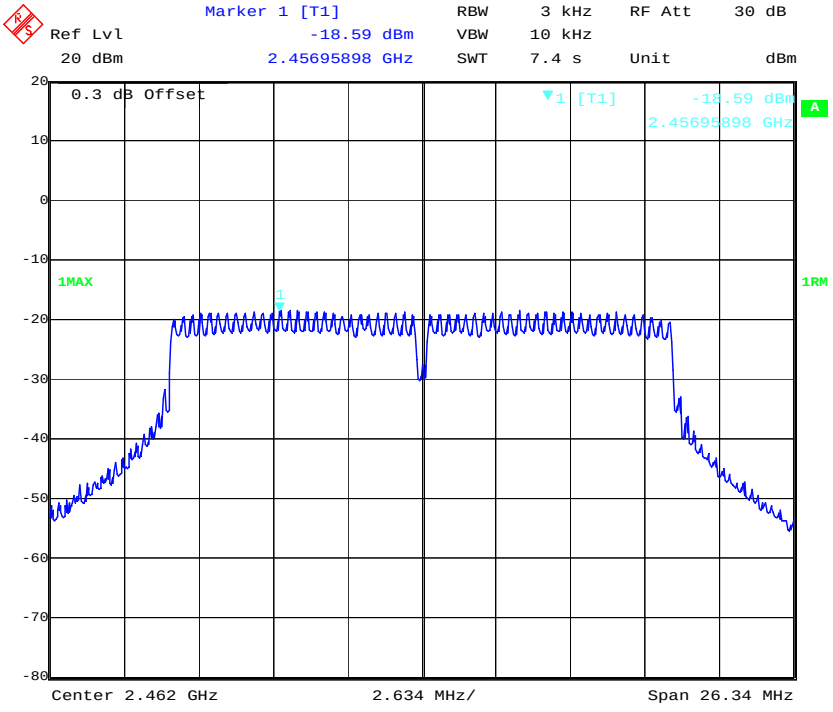
Power Spectral Density, 802.11n ht20, Middle Channel



Date: 21.MAR.2017 21:47:17

Power Spectral Density, 802.11n ht20, High Channel



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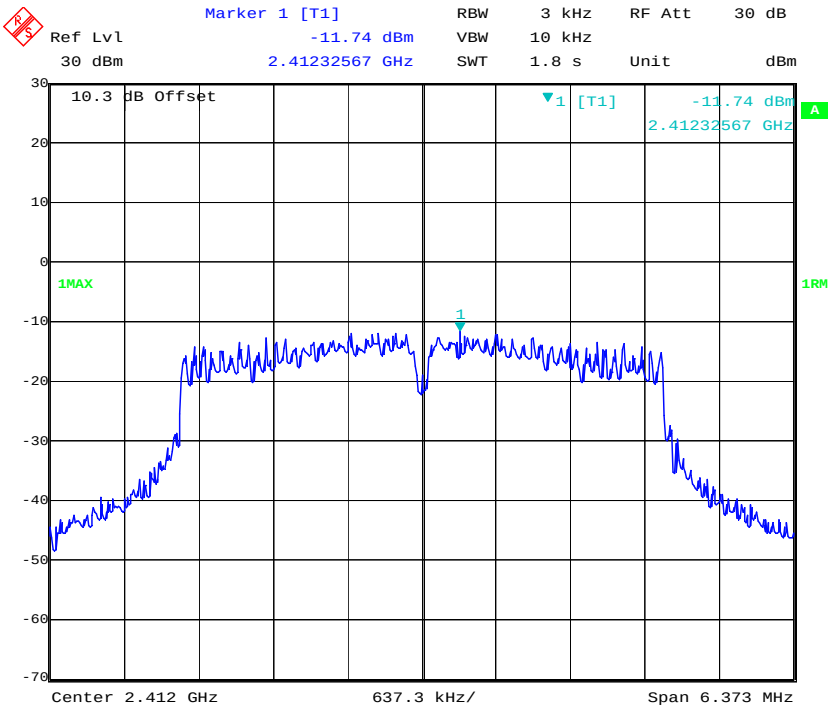
Power Spectral Density, 5M, Low Channel



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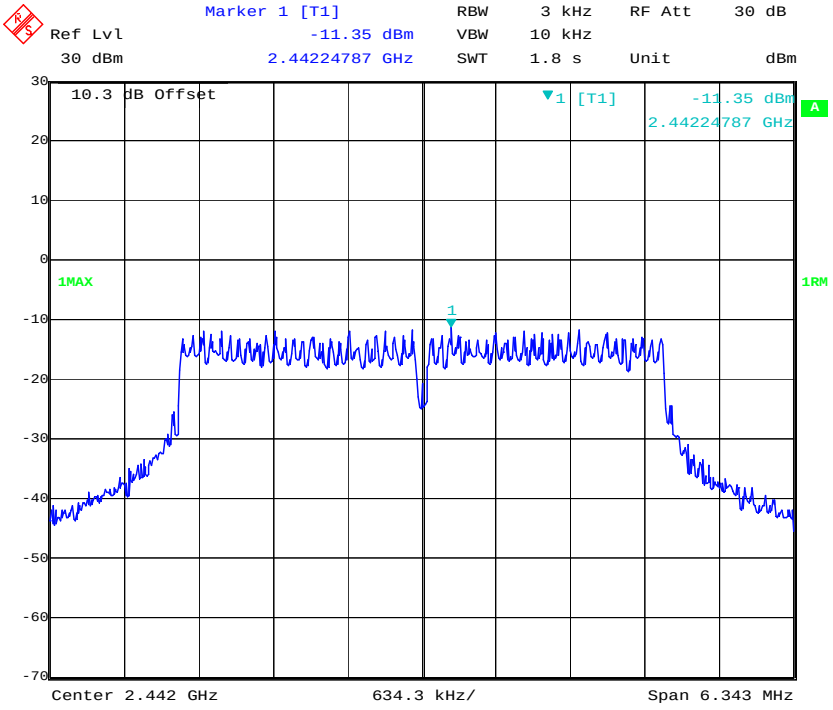
Power Spectral Density, 5M, Middle Channel



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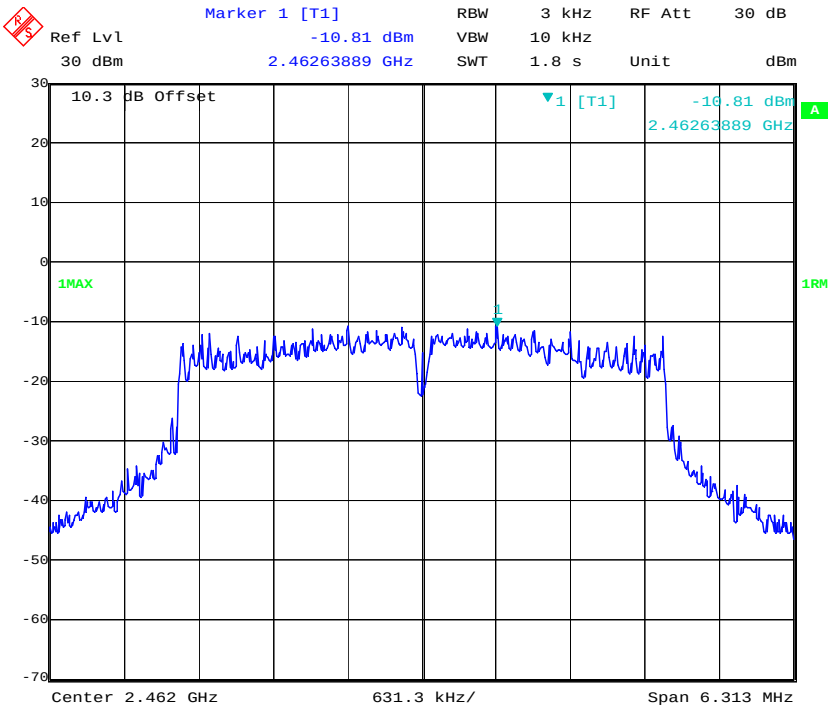
Power Spectral Density, 5M, High Channel



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