FCC PART 15.247

TEST REPORT

For

Beijing InHand Networks Technology Co., Ltd.

101, West Wing, 11th Floor, No.101, Lize central Park, Wangjing, Chaoyang District, Beijing, 100102, China

FCC ID: 2AANYIR6X5

Report Type:	Product Name:
Original Report	Industrial cellular router

Test Engineer:	*Lorin Bian*
Report Number:	RBJ161008052
Report Date:	2016-10-28
Reviewed By:	Henry Ding EMC Leader
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Chengdu) 5040, HuiLongWan Plaza, No. 1, ShaWan Road, JinNiu District, ChengDu, China Tel: 028-65523123, Fax: 028-65525125 www.baclcorp.com

TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The ***Beijing InHand Networks Technology Co., Ltd.*** 's product, model number: ***IR615 (FCC ID: 2AANYIR6X5)*** (or the "EUT") in this report was a ***Industrial cellular router***, which was measured approximately: 12.1 cm (L) x 11.1 cm (W) x 3.5 cm (H), rated input voltage: DC12V from adapter. The device was build in a WWAN Module, the model name: PLS8-US, FCC ID: QIPPLS8-US

The products, test model: IR615, multiple model: IR605 , IR695, IR605-S, IR615-S, IR695-S. Their differences were presented in Product Difference Statement provided by the applicant. And we selected IR615 to fully test.

**All measurement and test data in this report was gathered from final production sample, serial number: 161008052 (assigned by the BACL, Chengdu). It may have deviation from any other sample. The EUT supplied by the applicant was received on 2016-10-09, and EUT conformed to test requirement.*

Objective

This report is prepared on behalf of ***Beijing InHand Networks Technology Co., Ltd.*** in accordance with Part 2, Subpart J, Part 15, Subparts A, B 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)

No Related Submittal.

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.

The uncertainty of any RF tests which use conducted method measurement is ±3.17 dB, the uncertainty of any radiation on emissions measurement is:

30M~200MHz: ±4.7 dB;
200M~1GHz: ±6.0 dB;
1G-6GHz: ±5.13dB;
6G~25GHz: ±5.47dB;

And the uncertainty will not be taken into consideration for all test data recorded in the report.

Test Facility

The test site used by BACL to collect test data is located in the 5040, HuiLongWan Plaza, No. 1, ShaWan Road, JinNiu District, ChengDu, 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 testing mode, which was provided by manufacturer. For 2.4GHz band, 11 channels are provided to testing:

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	/	/

For 802.11b, 802.11g, and 802.11n ht20 modes were tested with channel 1, 6 and 11.

The device support SISO and MIMO at 802.11n modes.

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 data rates bandwidths, and modulations. MIMO mode was the worst mode recorded in this report.

Equipment Modifications

No modification was made to the EUT tested.

EUT Exercise Software

The software “QA7620.exe” was used in test, which was provided by manufacturer, the worst condition with 100% duty cycle was setting by command as following table:

Test Mode	Test Software Version	QA7620.exe					
802.11b	Test Frequency	2412MHz		2437MHz		2462MHz	
	Data Rate	1Mbps		1Mbps		1Mbps	
	Chain	0	1	0	1	0	1
	Power Setting	0C	0E	0C	0E	0C	0E
802.11g	Test Frequency	2412MHz		2437MHz		2462MHz	
	Data Rate	6Mbps		6Mbps		6Mbps	
	Chain	0	1	0	1	0	1
	Power Setting	07	0B	07	0B	07	0B
802.11n ht20	Test Frequency	2412MHz		2437MHz		2462MHz	
	Data Rate	MCS8		MCS8		MCS8	
	Chain	0	1	0	1	0	1
	Power Setting	07	0B	07	0B	07	0B
802.11n ht40	Test Frequency	2422MHz		2437MHz		2452MHz	
	Data Rate	MCS8		MCS8		MCS8	
	Chain	0	1	0	1	0	1
	Power Setting	07	0A	07	0A	07	0A

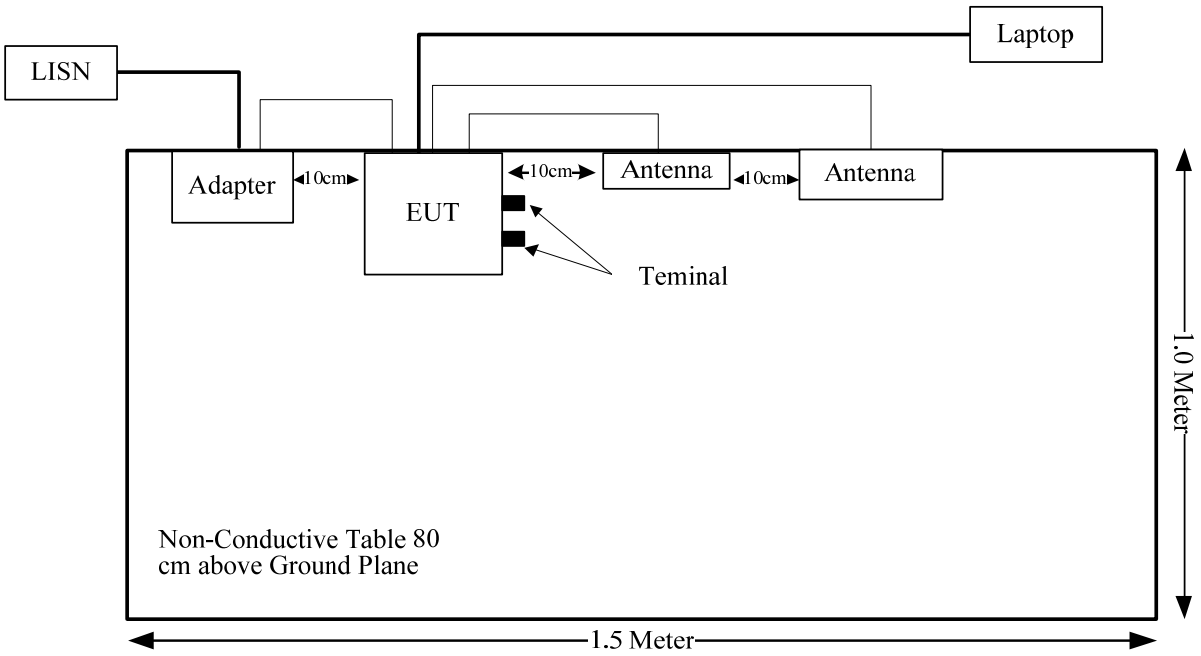
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Laptop	PP11L	QDS-BRCM1017
Something High Electric	SWITCHING POWER SUPPLY	P-046B-120150	N/A
N/A	50 ohm Teminal Load	N/A	N/A

External Cable

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
RJ45 Cable*1	Yes	No	10	EUT	Laptop
Antenna Cable	Yes	No	2	EUT	Antenna
Antenna Cable	Yes	No	2	EUT	Antenna
Adapter	No	No	1.5	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	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§15.247(i) and §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 Formulary:

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

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

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

Calculated Data:

The device was build in a WWAN module PLS8-US, FCC ID: QIPPLS8-US, which supports GSM/GPRS/EDGE 850 band and 1900 Band, WCDMA Band 2,4,5, and LTE band 2,4, 5, 17. The Tune-up power including tolerance as below:

Frequency Band	Tune-Up Power Including Tolerance (dBm)				
	GSM	GPRS	EDGE	WCDMA	LTE
Band 5 (824-849MHz)	**33.5**	33.5	27.5	24.5	23.5
Band 2 (1850-1910MHz)	**30.5**	30.5	26.5	24.5	23.5
Band 4 (1710-1755MHz)	/	/	/	24.5	23.5
Band 17 (704-716MHz)	/	/	/	/	23.5

The stand-alone MPE for the worst bands and antenna chain as below:

Frequency (MHz)	Mode	Antenna Gain		Max. Target Power including Tolerance		Evaluation Distance (cm)	Power Density (W/m^2)	MPE Limit (W/m^2)	S_i/S_{limit}
		(dBi)	(numeric)	(dBm)	(mW)				
824-849	GSM	2.50	1.78	33.50	2238.72	40.00	0.20	0.55	0.36
1850-1910	GSM	2.50	1.78	30.50	1122.02	40.00	0.10	1.00	0.10
1710-1755	WCDMA	2.50	1.78	24.50	281.84	40.00	0.02	1.00	0.02
704-716	LTE	2.50	1.78	23.50	223.87	40.00	0.02	0.47	0.04
2412-2462	WLAN Chain 1	2.00	1.58	21.5	199.53	40.00	0.01	1.00	0.01
2412-2462	WLAN Chain 2	2.00	1.58	21.5	199.53	40.00	0.01	1.00	0.01

The WWAN module can transmit simultaneously with WLAN, the maximum Ratio for WWAN in 824-849MHz band, and:

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

$=S_{WWAN}/S_{limit\_WWAN}+ S_{WLAN1}/S_{limit\_WLAN1}+ S_{WLAN2}/S_{limit\_WLAN2}$

=0.36+0.01+0.01

=0.38

< 1.0

Result: Compliance, The device meets MPE requirement for Devices Used by the General Public (Uncontrolled Environment) at distance ⩾40 cm.

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 has two detachable antennas with RP-SMA Connector, and the antenna gain is 2.0 dBi, that 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

Measurement Uncertainty

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

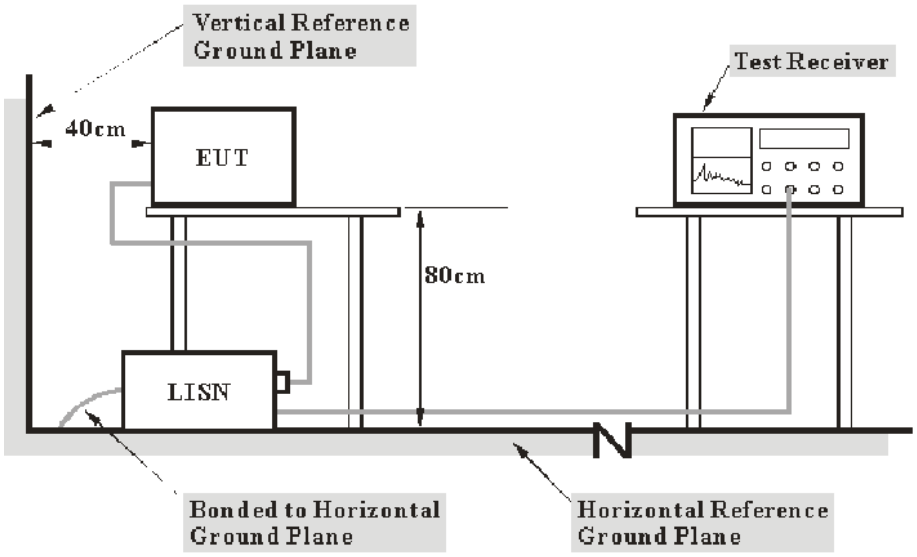
If U_{lab} is less than or equal to U_{cispr} of Table 1, then:
–compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
–non - compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.
If U_{lab} is greater than U_{cispr} of 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 an AC 120 V/60 Hz power source

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	2015-12-02	2016-12-01
Rohde & Schwarz	L.I.S.N.	ENV216	3560.6550.06	2015-12-02	2016-12-01
N/A	Conducted Cable	NO.5	N/A	2015-11-10	2016-11-09

*** 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

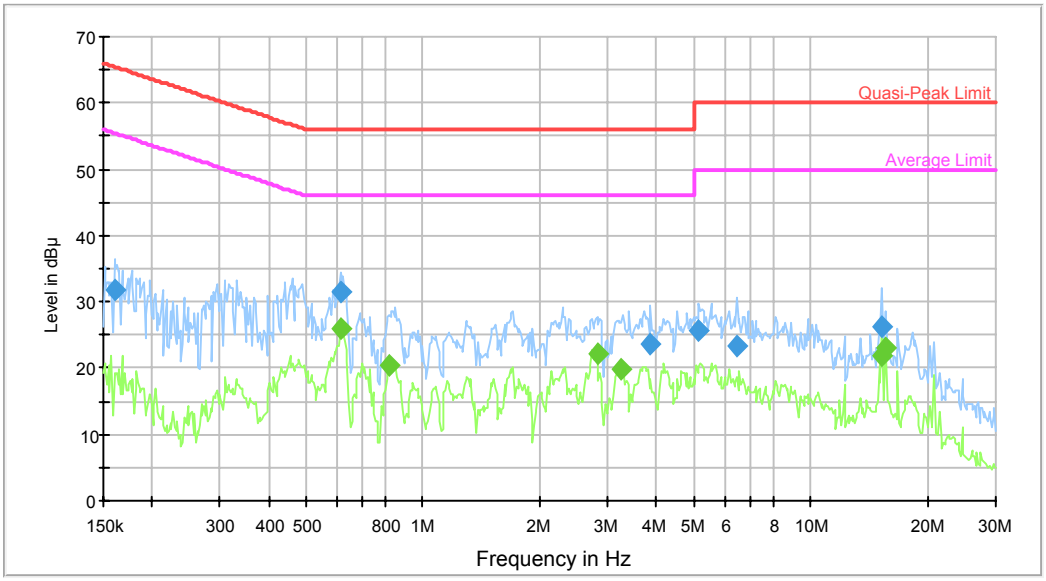
Environmental Conditions

Temperature:	27.6 °C
Relative Humidity:	50 %
ATM Pressure:	100.5 kPa

The testing was performed by Lorin Bian on 2016-10-11.

Test Mode: Transmitting

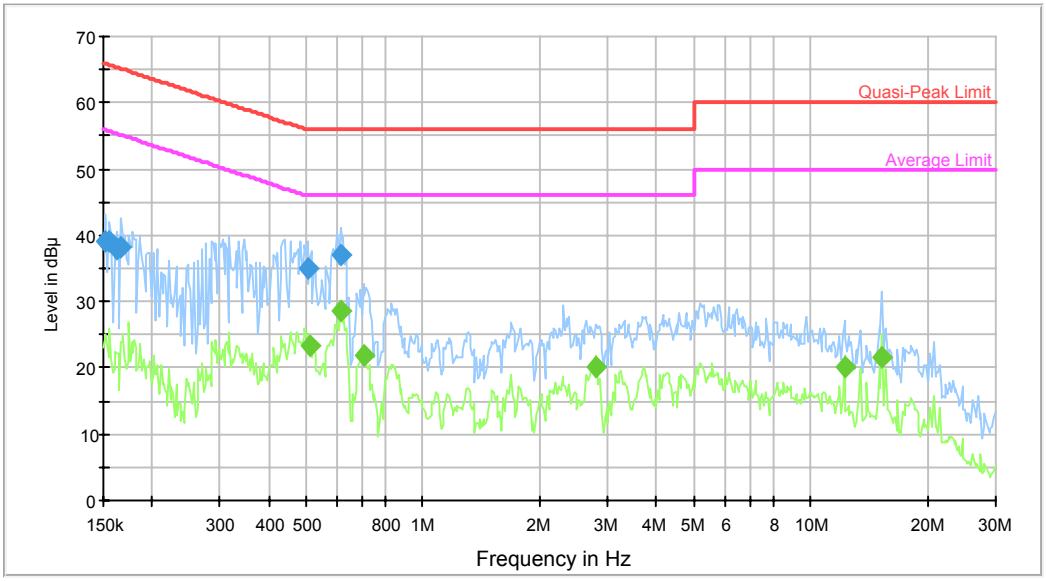
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.159873	31.7	9.000	L1	9.7	33.8	65.5	Compliance
0.614619	31.5	9.000	L1	9.7	24.5	56.0	Compliance
3.872475	23.5	9.000	L1	9.7	32.5	56.0	Compliance
5.159027	25.7	9.000	L1	9.7	34.3	60.0	Compliance
6.448559	23.3	9.000	L1	9.8	36.7	60.0	Compliance
15.247554	26.3	9.000	L1	10.0	33.7	60.0	Compliance

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.614619	26.0	9.000	L1	9.7	20.0	46.0	Compliance
0.818813	20.3	9.000	L1	9.7	25.7	46.0	Compliance
2.815577	22.3	9.000	L1	9.7	23.7	46.0	Compliance
3.249802	19.9	9.000	L1	9.7	26.1	46.0	Compliance
15.247554	22.0	9.000	L1	10.0	28.0	50.0	Compliance
15.616430	23.2	9.000	L1	10.0	26.8	50.0	Compliance

AC120 V, 60 Hz, Neutral:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.152410	39.1	9.000	N	9.6	26.8	65.9	Compliance
0.156097	38.9	9.000	N	9.6	26.8	65.7	Compliance
0.162441	37.9	9.000	N	9.6	27.4	65.3	Compliance
0.166371	38.3	9.000	N	9.6	26.8	65.1	Compliance
0.503608	35.0	9.000	N	9.6	21.0	56.0	Compliance
0.614619	37.1	9.000	N	9.6	18.9	56.0	Compliance

Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.511698	23.4	9.000	N	9.6	22.6	46.0	Compliance
0.614619	28.6	9.000	N	9.6	17.4	46.0	Compliance
0.703777	21.8	9.000	N	9.6	24.2	46.0	Compliance
2.793231	20.2	9.000	N	9.7	25.8	46.0	Compliance
12.198467	20.1	9.000	N	9.9	29.9	50.0	Compliance
15.247554	21.6	9.000	N	10.1	28.4	50.0	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.

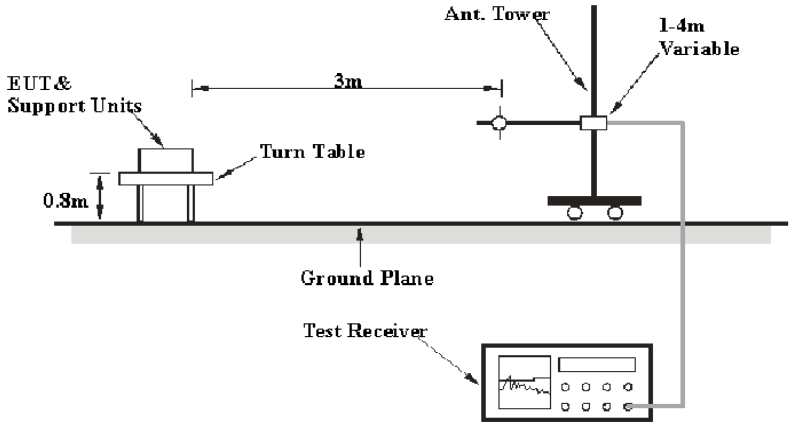
Based on CISPR 16-4-2-2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Chengdu) is:
30M~200MHz: ±4.7 dB ;
200M~1GHz: ±6.0 dB ;
1G-6GHz: ±5.13dB;
6G~25GHz: ±5.47 dB;

Table 2 – Values of U_{cispr}

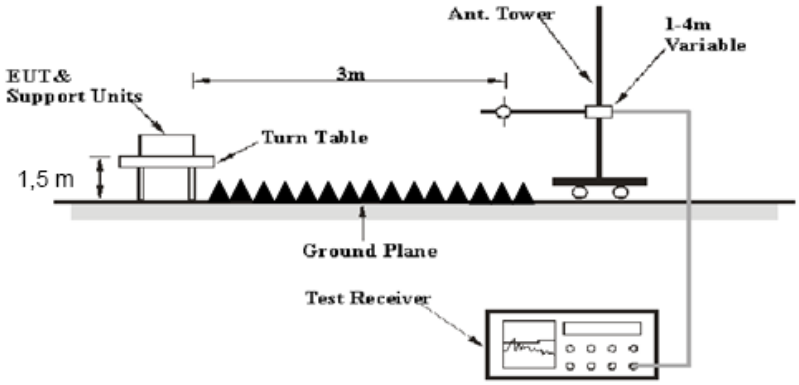
Measurement		U_{cispr}
Radiated disturbance (electric field strength at an OATS or in a SAC)	(30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR)	(1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR)	(6 GHz to 18 GHz)	5.5 dB

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	2015-12-02	2016-12-01
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2015-12-02	2016-12-01
Sunol Sciences	Broadband Antenna	JB3	A101808	2016-04-10	2019-04-09
Rohde & Schwarz	Spectrum Analyzer	FSEM30	100018	2015-12-02	2016-12-01
EM TEST	Horn Antenna	3115	003-6076	2015-12-02	2016-12-01
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-0113024	2014-06-16	2017-06-15
Mini-circuits	Amplifier	ZVA-213-S+	771001215	2016-05-20	2017-05-19
EMCT	Semi-Anechoic Chamber	966	N/A	2015-04-24	2018-04-23
N/A	RF Cable (below 1GHz)	NO.1	N/A	2015-11-10	2016-11-09
N/A	RF Cable (below 1GHz)	NO.4	N/A	2015-11-10	2016-11-09
N/A	RF Cable (above 1GHz)	NO.2	N/A	2015-11-10	2016-11-09

*** 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:	25.5 °C
Relative Humidity:	34 %
ATM Pressure:	100.2 kPa

** The testing was performed by Lorin Bian on 2016-10-19.*

30MHz-25GHz:

802.11b Mode

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	65.16	PK	H	23.50	3.00	0.00	91.66	N/A	N/A
2412	60.77	AV	H	23.50	3.00	0.00	87.27	N/A	N/A
2412	71.8	PK	V	23.50	3.00	0.00	98.30	N/A	N/A
2412	65.06	AV	V	23.50	3.00	0.00	91.56	N/A	N/A
2390	28.35	PK	V	23.57	3.00	0.00	54.92	74.00	19.08
2390	15.89	AV	V	23.57	3.00	0.00	42.46	54.00	11.54
4824	44.61	PK	V	30.84	5.11	26.87	53.69	74.00	20.31
4824	37.28	AV	V	30.84	5.11	26.87	46.36	54.00	7.64
7236	33.59	PK	V	34.77	6.18	26.36	48.18	74.00	25.82
7236	27.49	AV	V	34.77	6.18	26.36	42.08	54.00	11.92
3025	33.58	PK	V	24.34	3.47	26.42	34.97	74.00	39.03
3025	28.34	AV	V	24.34	3.47	26.42	29.73	54.00	24.27
296.75	36.86	QP	V	14.07	1.06	27.54	24.45	46.00	21.55
369.5	31.66	QP	V	15.70	1.42	27.97	20.81	46.00	25.19
Middle Channel: 2437 MHz									
2437	66.76	PK	H	23.41	3.00	0.00	93.17	N/A	N/A
2437	61.38	AV	H	23.41	3.00	0.00	87.79	N/A	N/A
2437	72.38	PK	V	23.41	3.00	0.00	98.79	N/A	N/A
2437	66.45	AV	V	23.41	3.00	0.00	92.86	N/A	N/A
4874	44.46	PK	V	31.00	5.09	26.87	53.68	74.00	20.32
4874	37.23	AV	V	31.00	5.09	26.87	46.45	54.00	7.55
7311	32.05	PK	V	34.92	6.21	26.40	46.78	74.00	27.22
7311	25.49	AV	V	34.92	6.21	26.40	40.22	54.00	13.78
1348	34.05	PK	V	23.70	2.46	26.48	33.73	74.00	40.27
1348	28.46	AV	V	23.70	2.46	26.48	28.14	54.00	25.86
3025	33.49	PK	V	24.34	3.47	26.42	34.88	74.00	39.12
3025	27.21	AV	V	24.34	3.47	26.42	28.60	54.00	25.40
296.75	38.71	QP	V	14.07	1.06	27.54	26.30	46.00	19.70
369.5	32.19	QP	V	15.70	1.42	27.97	21.34	46.00	24.66
High Channel: 2462 MHz									
2462	65.84	PK	H	23.33	2.99	0.00	92.16	N/A	N/A
2462	60.38	AV	H	23.33	2.99	0.00	86.70	N/A	N/A
2462	71.84	PK	V	23.33	2.99	0.00	98.16	N/A	N/A
2462	67.89	AV	V	23.33	2.99	0.00	94.21	N/A	N/A
2483.5	28.95	PK	V	23.26	2.99	0.00	55.20	74.00	18.80
2483.5	15.52	AV	V	23.26	2.99	0.00	41.77	54.00	12.23
4924	44.85	PK	V	31.16	5.07	26.88	54.20	74.00	19.80
4924	37.65	AV	V	31.16	5.07	26.88	47.00	54.00	7.00
7386	33.41	PK	V	35.07	6.25	26.43	48.30	74.00	25.70
7386	26.87	AV	V	35.07	6.25	26.43	41.76	54.00	12.24
3025	33.87	PK	V	24.34	3.47	26.42	35.26	74.00	38.74
3025	27.67	AV	V	24.34	3.47	26.42	29.06	54.00	24.94
296.75	39.88	QP	V	14.07	1.06	27.54	27.47	46.00	18.53
369.5	33.67	QP	V	15.70	1.42	27.97	22.82	46.00	23.18

802.11g Mode

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	63.75	PK	H	23.50	3.00	0.00	90.25	N/A	N/A
2412	53.49	AV	H	23.50	3.00	0.00	79.99	N/A	N/A
2412	72.37	PK	V	23.50	3.00	0.00	98.87	N/A	N/A
2412	61.22	AV	V	23.50	3.00	0.00	87.72	N/A	N/A
2390	33.74	PK	V	23.57	3.00	0.00	60.31	74.00	13.69
2390	18.31	AV	V	23.57	3.00	0.00	44.88	54.00	9.12
4824	35.94	PK	V	30.84	5.11	26.87	45.02	74.00	28.98
4824	27.12	AV	V	30.84	5.11	26.87	36.20	54.00	17.80
7236	33.64	PK	V	34.77	6.18	26.36	48.23	74.00	25.77
7236	25.73	AV	V	34.77	6.18	26.36	40.32	54.00	13.68
2014	33.12	PK	V	24.85	3.05	26.82	34.20	74.00	39.80
2014	25.53	AV	V	24.85	3.05	26.82	26.61	54.00	27.39
296.75	35.99	QP	V	14.07	1.06	27.54	23.58	46.00	22.42
369.5	34.25	QP	V	15.70	1.42	27.97	23.40	46.00	22.60
Middle Channel: 2437 MHz									
2437	65.38	PK	H	23.41	3.00	0.00	91.79	N/A	N/A
2437	55.73	AV	H	23.41	3.00	0.00	82.14	N/A	N/A
2437	72.56	PK	V	23.41	3.00	0.00	98.97	N/A	N/A
2437	62.22	AV	V	23.41	3.00	0.00	88.63	N/A	N/A
4874	36.46	PK	V	31.00	5.09	26.87	45.68	74.00	28.32
4874	27.81	AV	V	31.00	5.09	26.87	37.03	54.00	16.97
7311	33.46	PK	V	34.92	6.21	26.40	48.19	74.00	25.81
7311	26.11	AV	V	34.92	6.21	26.40	40.84	54.00	13.16
1438	33.33	PK	V	23.94	2.58	26.39	33.46	74.00	40.54
1438	24.33	AV	V	23.94	2.58	26.39	24.46	54.00	29.54
2014	33.49	PK	V	24.85	3.05	26.82	34.57	74.00	39.43
2014	25.17	AV	V	24.85	3.05	26.82	26.25	54.00	27.75
296.75	36.78	QP	V	14.07	1.06	27.54	24.37	46.00	21.63
369.5	34.57	QP	V	15.70	1.42	27.97	23.72	46.00	22.28
High Channel: 2462 MHz									
2462	66.58	PK	H	23.33	2.99	0.00	92.90	N/A	N/A
2462	57.34	AV	H	23.33	2.99	0.00	83.66	N/A	N/A
2462	72.32	PK	V	23.33	2.99	0.00	98.64	N/A	N/A
2462	61.29	AV	V	23.33	2.99	0.00	87.61	N/A	N/A
2483.5	33.75	PK	V	23.26	2.99	0.00	60.00	74.00	14.00
2483.5	18.18	AV	V	23.26	2.99	0.00	44.43	54.00	9.57
4924	36.59	PK	V	31.16	5.07	26.88	45.94	74.00	28.06
4924	27.38	AV	V	31.16	5.07	26.88	36.73	54.00	17.27
7386	34.25	PK	V	35.07	6.25	26.43	49.14	74.00	24.86
7386	25.53	AV	V	35.07	6.25	26.43	40.42	54.00	13.58
2014	33.49	PK	V	24.85	3.05	26.82	34.57	74.00	39.43
2014	24.75	AV	V	24.85	3.05	26.82	25.83	54.00	28.17
296.75	37.48	QP	V	14.07	1.06	27.54	25.07	46.00	20.93
369.5	35.29	QP	V	15.70	1.42	27.97	24.44	46.00	21.56

802.11 n ht20 Mode

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	64.27	PK	H	23.50	3.00	0.00	90.77	N/A	N/A
2412	53.48	AV	H	23.50	3.00	0.00	79.98	N/A	N/A
2412	72.8	PK	V	23.50	3.00	0.00	99.30	N/A	N/A
2412	61.38	AV	V	23.50	3.00	0.00	87.88	N/A	N/A
2390	35.07	PK	V	23.57	3.00	0.00	61.64	74.00	12.36
2390	19.85	AV	V	23.57	3.00	0.00	46.42	54.00	7.58
4824	35.71	PK	V	30.84	5.11	26.87	44.79	74.00	29.21
4824	25.2	AV	V	30.84	5.11	26.87	34.28	54.00	19.72
7236	34.04	PK	V	34.77	6.18	26.36	48.63	74.00	25.37
7236	21.54	AV	V	34.77	6.18	26.36	36.13	54.00	17.87
2258	34.73	PK	V	24.02	3.02	26.86	34.91	74.00	39.09
2258	21.98	AV	V	24.02	3.02	26.86	22.16	54.00	31.84
296.75	37.44	QP	V	14.07	1.06	27.54	25.03	46.00	20.97
369.5	36.25	QP	V	15.70	1.42	27.97	25.40	46.00	20.60
Middle Channel: 2437 MHz									
2437	64.22	PK	H	23.41	3.00	0.00	90.63	N/A	N/A
2437	53.46	AV	H	23.41	3.00	0.00	79.87	N/A	N/A
2437	72.83	PK	V	23.41	3.00	0.00	99.24	N/A	N/A
2437	60.49	AV	V	23.41	3.00	0.00	86.90	N/A	N/A
4874	35.63	PK	V	31.00	5.09	26.87	44.85	74.00	29.15
4874	24.85	AV	V	31.00	5.09	26.87	34.07	54.00	19.93
7311	33.11	PK	V	34.92	6.21	26.40	47.84	74.00	26.16
7311	21.94	AV	V	34.92	6.21	26.40	36.67	54.00	17.33
1625	34.67	PK	V	24.30	2.77	26.45	35.29	74.00	38.71
1625	23.11	AV	V	24.30	2.77	26.45	23.73	54.00	30.27
3085	33.12	PK	V	24.68	3.56	26.44	34.92	74.00	39.08
3085	21.56	AV	V	24.68	3.56	26.44	23.36	54.00	30.64
296.75	38.77	QP	V	14.07	1.06	27.54	26.36	46.00	19.64
369.5	34.59	QP	V	15.70	1.42	27.97	23.74	46.00	22.26
High Channel: 2462 MHz									
2462	65.65	PK	H	23.33	2.99	0.00	91.97	N/A	N/A
2462	53.49	AV	H	23.33	2.99	0.00	79.81	N/A	N/A
2462	72.53	PK	V	23.33	2.99	0.00	98.85	N/A	N/A
2462	60.27	AV	V	23.33	2.99	0.00	86.59	N/A	N/A
2483.5	32.6	PK	V	23.26	2.99	0.00	58.85	74.00	15.15
2483.5	19.33	AV	V	23.26	2.99	0.00	45.58	54.00	8.42
4924	36.25	PK	V	31.16	5.07	26.88	45.60	74.00	28.40
4924	24.58	AV	V	31.16	5.07	26.88	33.93	54.00	20.07
7386	33.46	PK	V	35.07	6.25	26.43	48.35	74.00	25.65
7386	21.79	AV	V	35.07	6.25	26.43	36.68	54.00	17.32
3085	34.08	PK	V	24.68	3.56	26.44	35.88	74.00	38.12
3085	22.43	AV	V	24.68	3.56	26.44	24.23	54.00	29.77
296.75	37.59	QP	V	14.07	1.06	27.54	25.18	46.00	20.82
369.5	34.28	QP	V	15.70	1.42	27.97	23.43	46.00	22.57

802.11 n ht40 Mode

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: 2422 MHz									
2422	64.59	PK	H	23.47	3.00	0.00	91.06	N/A	N/A
2422	52.17	AV	H	23.47	3.00	0.00	78.64	N/A	N/A
2422	72.85	PK	V	23.47	3.00	0.00	99.32	N/A	N/A
2422	59.29	AV	V	23.47	3.00	0.00	85.76	N/A	N/A
2390	37.3	PK	V	23.57	3.00	0.00	63.87	74.00	10.13
2390	20.13	AV	V	23.57	3.00	0.00	46.70	54.00	7.30
4844	36.63	PK	V	30.90	5.10	26.87	45.76	74.00	28.24
4844	24.7	AV	V	30.90	5.10	26.87	33.83	54.00	20.17
7266	33.87	PK	V	34.83	6.19	26.38	48.51	74.00	25.49
7266	22.71	AV	V	34.83	6.19	26.38	37.35	54.00	16.65
2950	34.24	PK	V	24.10	3.39	26.46	35.27	74.00	38.73
2950	20.39	AV	V	24.10	3.39	26.46	21.42	54.00	32.58
296.75	38.24	QP	V	14.07	1.06	27.54	25.83	46.00	20.17
369.5	35.48	QP	V	15.70	1.42	27.97	24.63	46.00	21.37
Middle Channel: 2437 MHz									
2437	64.55	PK	H	23.41	3.00	0.00	90.96	N/A	N/A
2437	52.67	AV	H	23.41	3.00	0.00	79.08	N/A	N/A
2437	73.06	PK	V	23.41	3.00	0.00	99.47	N/A	N/A
2437	60.48	AV	V	23.41	3.00	26.88	60.01	N/A	N/A
4874	36.83	PK	V	31.00	5.09	26.87	46.05	74.00	27.95
4874	26.12	AV	V	31.00	5.09	26.87	35.34	54.00	18.66
7311	34.97	PK	V	34.92	6.21	26.40	49.70	74.00	24.30
7311	22.84	AV	V	34.92	6.21	26.40	37.57	54.00	16.43
1654	33.04	PK	V	24.35	2.79	26.48	33.70	74.00	40.30
1654	20.82	AV	V	24.35	2.79	26.48	21.48	54.00	32.52
2075	33.68	PK	V	24.65	3.04	26.83	34.54	74.00	39.46
2075	21.82	AV	V	24.65	3.04	26.83	22.68	54.00	31.32
296.75	37.84	QP	V	14.07	1.06	27.54	25.43	46.00	20.57
369.5	36.22	QP	V	15.70	1.42	27.97	25.37	46.00	20.63
High Channel: 2452 MHz									
2452	65.82	PK	H	23.36	3.00	0.00	92.18	N/A	N/A
2452	53.16	AV	H	23.36	3.00	0.00	79.52	N/A	N/A
2452	72.61	PK	V	23.36	3.00	0.00	98.97	N/A	N/A
2452	59.68	AV	V	23.36	3.00	0.00	86.04	N/A	N/A
2483.5	37.86	PK	V	23.26	2.99	0.00	64.11	74.00	9.89
2483.5	20.19	AV	V	23.26	2.99	0.00	46.44	54.00	7.56
4904	37.25	PK	V	31.09	5.08	26.87	46.55	74.00	27.45
4904	25.39	AV	V	31.09	5.08	26.87	34.69	54.00	19.31
7356	34.58	PK	V	35.01	6.23	26.42	49.40	74.00	24.60
7356	22.47	AV	V	35.01	6.23	26.42	37.29	54.00	16.71
2075	33.83	PK	V	24.65	3.04	26.83	34.69	74.00	39.31
2075	21.05	AV	V	24.65	3.04	26.83	21.91	54.00	32.09
296.75	37.44	QP	V	14.07	1.06	27.54	25.03	46.00	20.97
369.5	35.95	QP	V	15.70	1.42	27.97	25.10	46.00	20.90

WLAN and WWAN transmit simultaneously(802.11b mode high channel and GSM850 transmit simultaneously 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)					
4924	35.25	PK	V	31.16	5.07	26.88	44.60	74.00	29.40
4924	23.95	AV	V	31.16	5.07	26.88	33.30	54.00	20.70
7386	34.85	PK	V	35.07	6.25	26.43	49.74	74.00	24.26
7386	22.67	AV	V	35.07	6.25	26.43	37.56	54.00	16.44
3085	32.18	PK	V	24.68	3.56	26.44	33.98	74.00	40.02
3085	23.59	AV	V	24.68	3.56	26.44	25.39	54.00	28.61
296.75	39.77	QP	V	14.07	1.06	27.54	27.36	46.00	18.64
369.5	35.94	QP	V	15.70	1.42	27.97	25.09	46.00	20.91
1673.2	42.66	PK	V	24.38	2.80	26.50	43.34	74.00	30.66
1673.2	35.47	AV	V	24.38	2.80	26.50	36.15	54.00	17.85

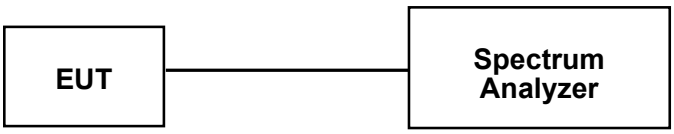
FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH

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:	28.4 °C
Relative Humidity:	31 %
ATM Pressure:	100.7 kPa

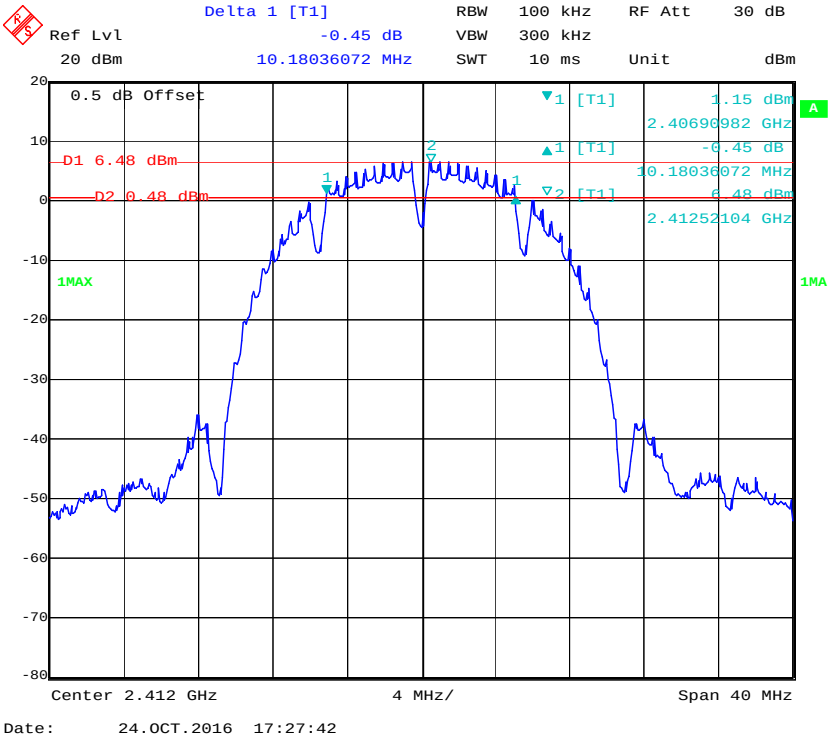
** The testing was performed by Lorin Bian on 2016-10-24.*

Test Mode: Transmitting(Test only performed at Chain 0)

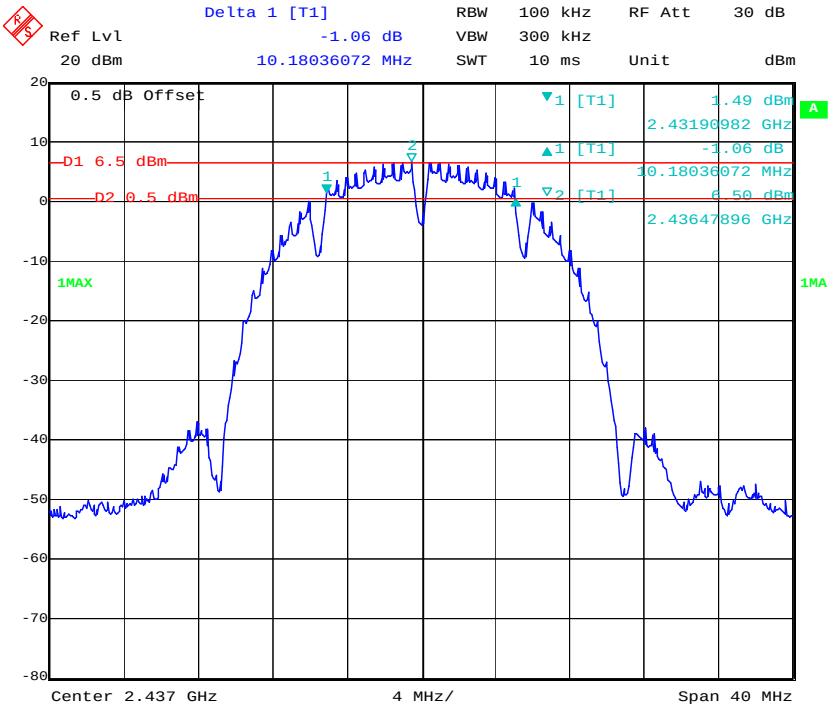
Test Result: Compliant. Please refer to the following table and plots.

Test mode	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)
802.11b	Low	2412	10.18	≥0.5
	Middle	2437	10.18	≥0.5
	High	2462	10.18	≥0.5
802.11g	Low	2412	16.59	≥0.5
	Middle	2437	16.59	≥0.5
	High	2462	16.59	≥0.5
802.11n20	Low	2412	17.88	≥0.5
	Middle	2437	17.72	≥0.5
	High	2462	17.72	≥0.5
802.11n40	Low	2422	36.71	≥0.5
	Middle	2437	36.71	≥0.5
	High	2452	36.71	≥0.5

802.11b Low Channel-Chain 0

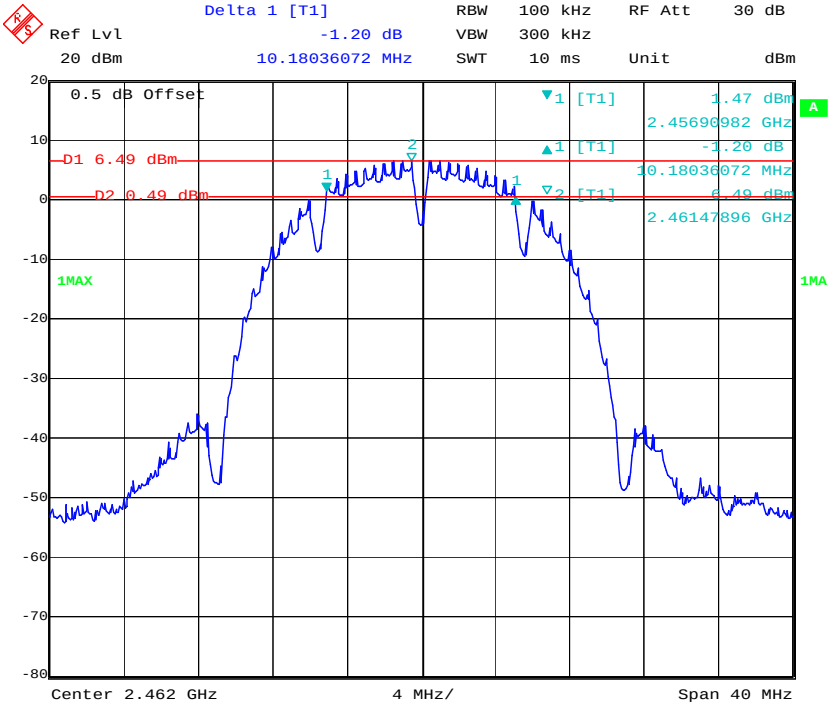


802.11b Middle Channel-Chain 0



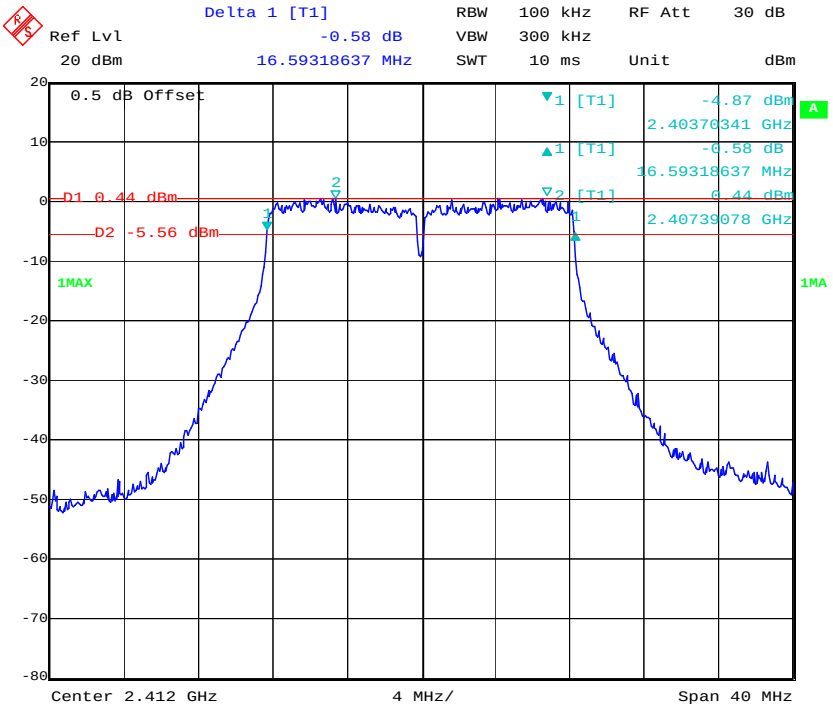
Date: 24.OCT.2016 17:30:14

802.11b High Channel-Chain 0



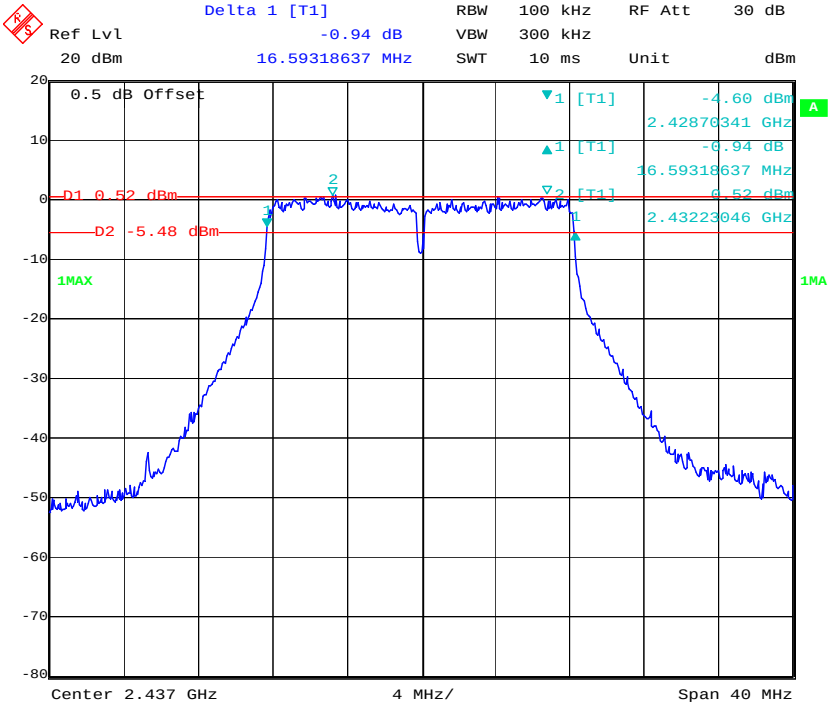
Date: 24.OCT.2016 17:34:42

802.11g Low Channel-Chain 0



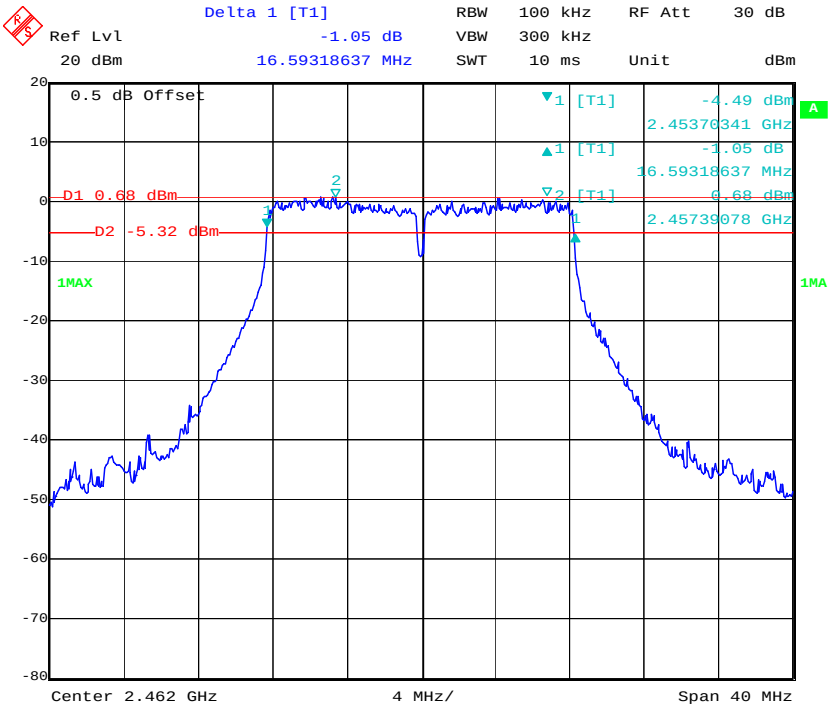
Date: 24.OCT.2016 18:00:10

802.11g Middle Channel-Chain 0



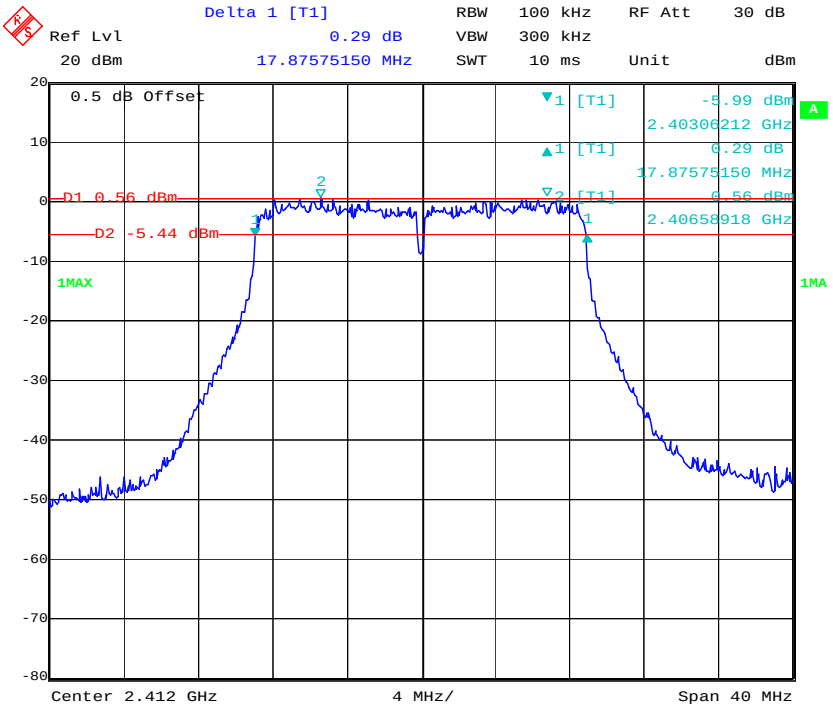
Date: 24.OCT.2016 18:03:08

802.11g High Channel-Chain 0



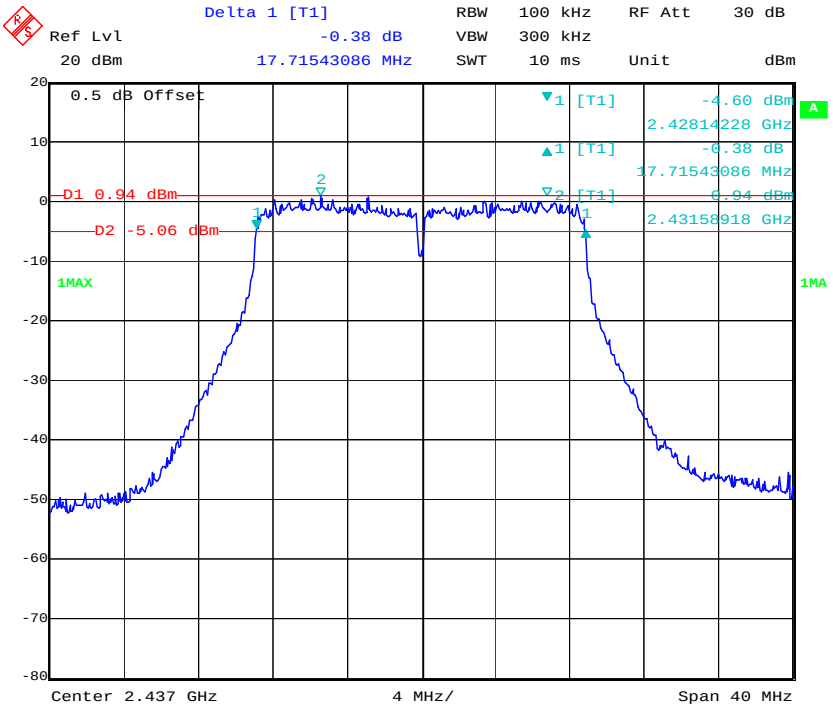
Date: 24.OCT.2016 18:06:23

802.11n ht20 Low Channel-Chain 0



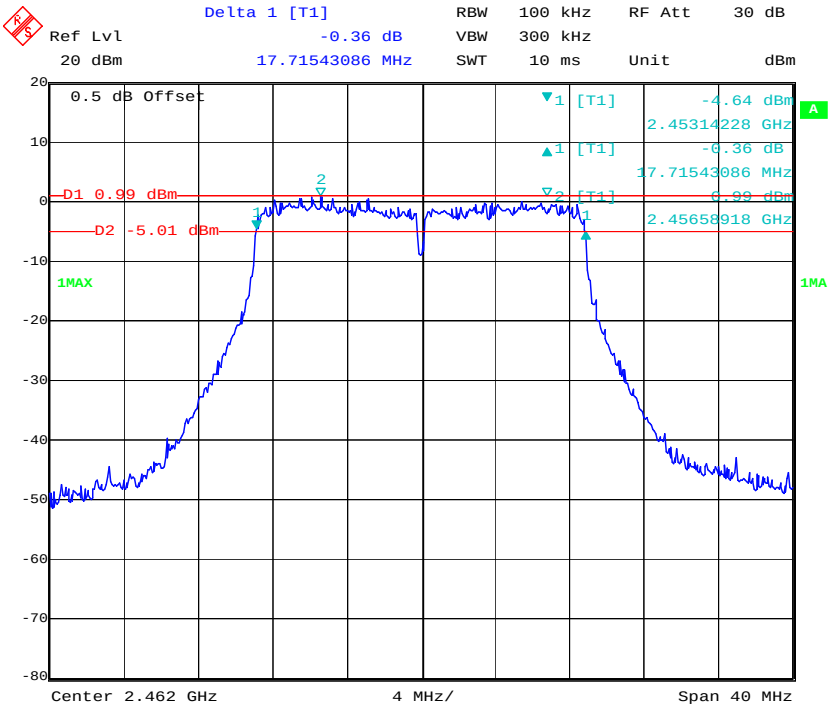
Date: 24.OCT.2016 18:17:12

802.11n ht20 Middle Channel-Chain 0



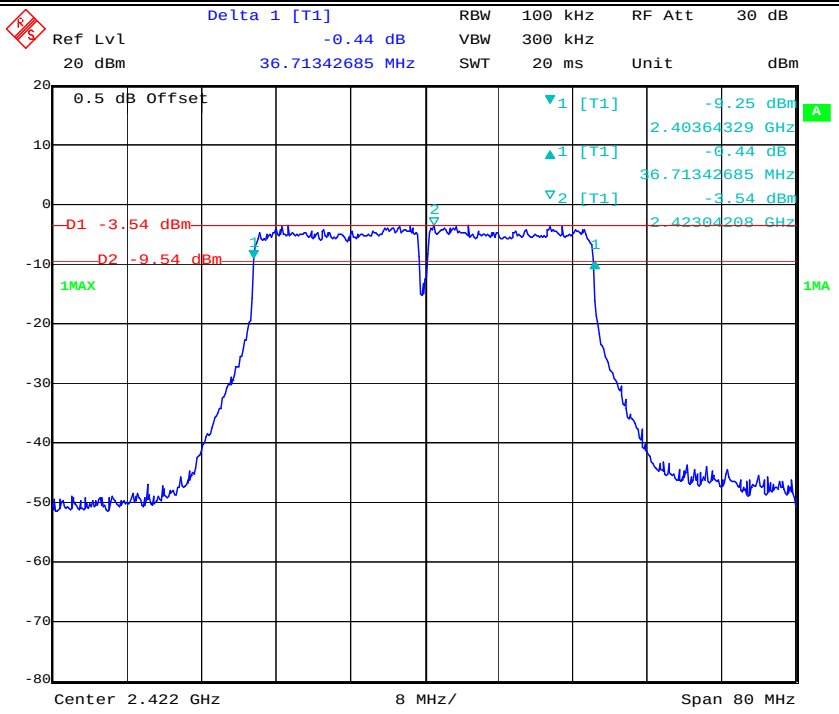
Date: 24.OCT.2016 18:14:45

802.11n ht20 High Channel-Chain 0

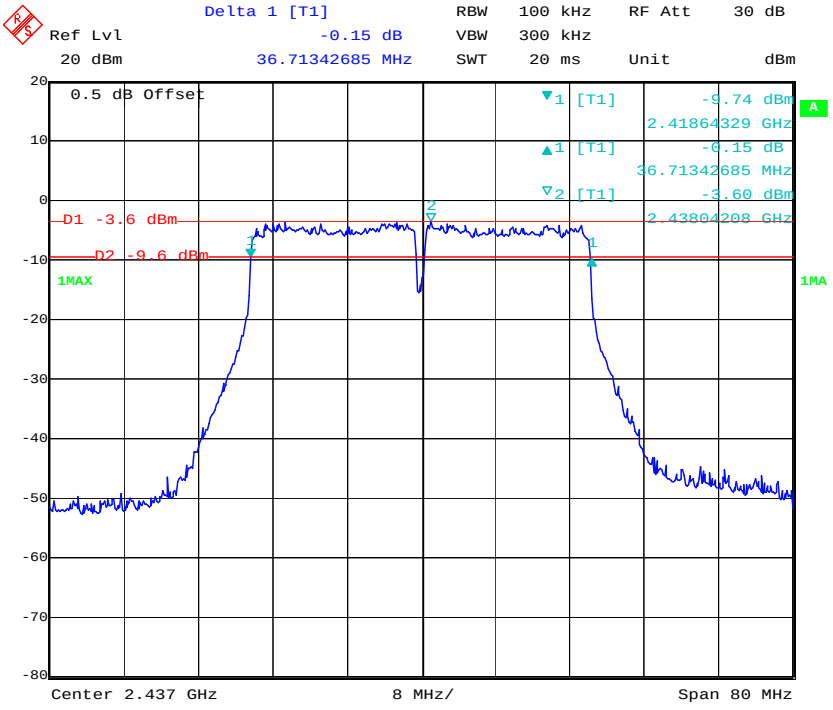


Date: 24.OCT.2016 18:10:27

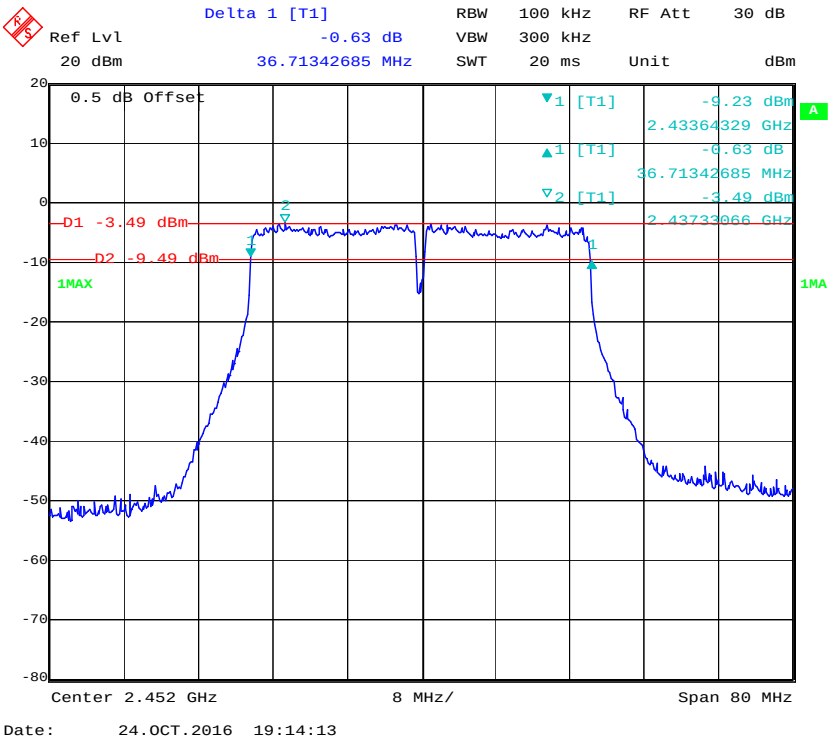
802.11n ht40 Low Channel-Chain 0



802.11n ht40 Middle Channel-Chain 0



802.11n ht40 High Channel-Chain 0



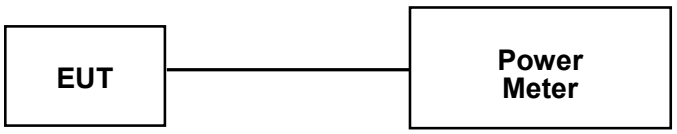
FCC §15.247(b) (3) - MAXIMUM CONDUCTED OUTPUT POWER

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	2016-01-03	2017-01-03
Agilent	P-Series Power Meter	N1912A	MY5000798	2016-01-03	2017-01-03
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:	29.6 °C
Relative Humidity:	35 %
ATM Pressure:	100.2 kPa

** The testing was performed by Lorin Bian on 2016-10-19.*

Test Mode: Transmitting

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

Test mode	Channel	Frequency	Max Peak Conducted Output Power (dBm)		Total	Limit
		(MHz)	Chain 0	Chain 1	(dBm)	(dBm)
802.11b	Low	2412	20.48	20.82	/	30
	Middle	2437	20.57	20.87	/	30
	High	2462	20.52	20.74	/	30
802.11g	Low	2412	20.22	20.16	/	30
	Middle	2437	20.48	20.41	/	30
	High	2462	20.71	20.59	/	30
802.11n20	Low	2412	20.35	20.40	23.39	30
	Middle	2437	20.43	20.75	23.60	30
	High	2462	20.66	20.98	23.83	30
802.11n40	Low	2422	20.53	21.06	23.81	30
	Middle	2437	20.70	20.43	23.58	30
	High	2452	20.82	20.90	23.87	30

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

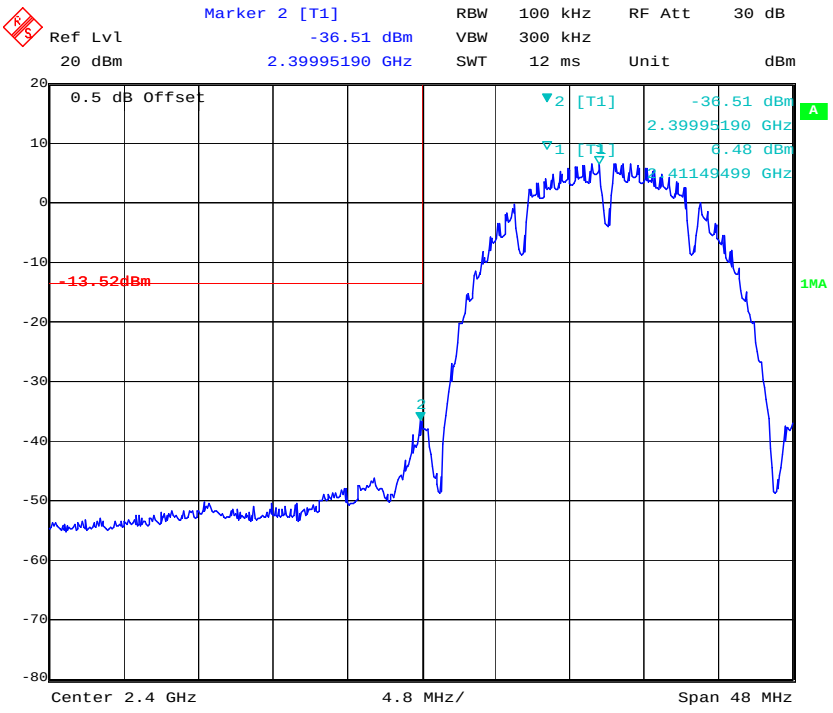
Temperature:	28.4 °C
Relative Humidity:	31 %
ATM Pressure:	100.7 kPa

** The testing was performed by Lorin Bian on 2016-10-24.*

Test mode: Transmitting

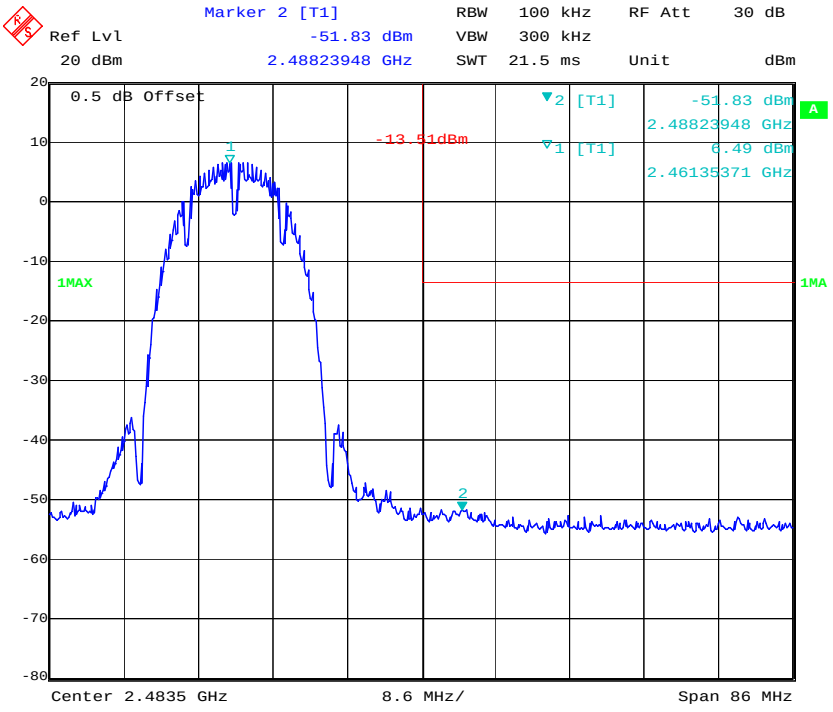
Test Result: Compliant. Please refer to following plots.

802.11b: Band Edge, Left Side, Chain 0



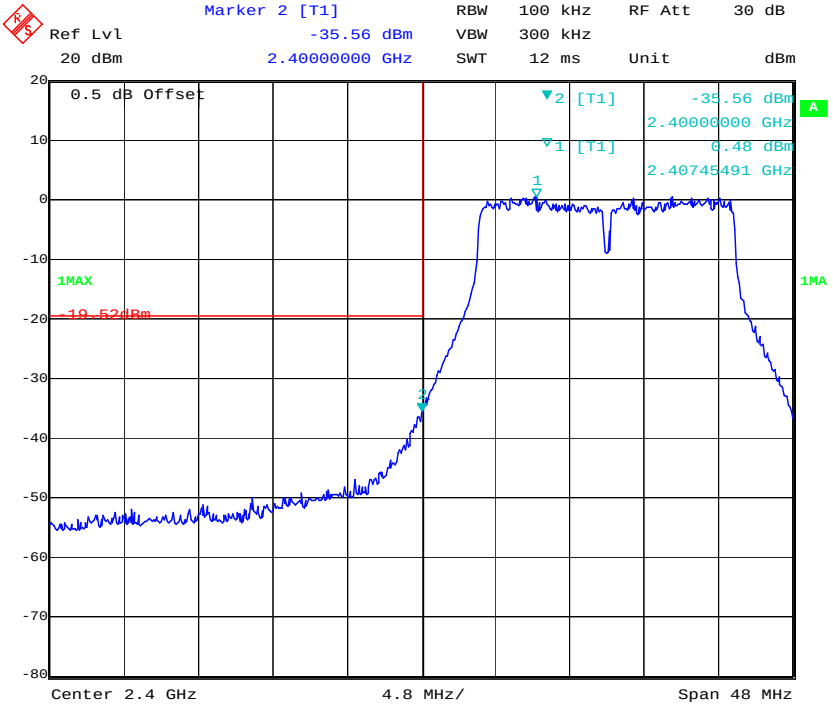
Date: 24.OCT.2016 17:29:24

802.11b: Band Edge, Right Side, Chain 0

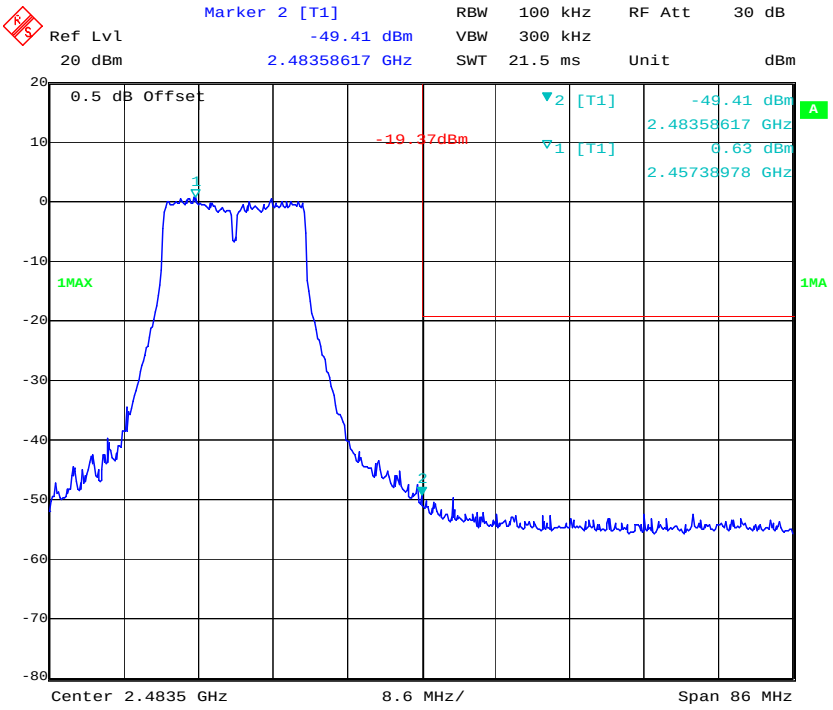


Date: 24.OCT.2016 17:36:24

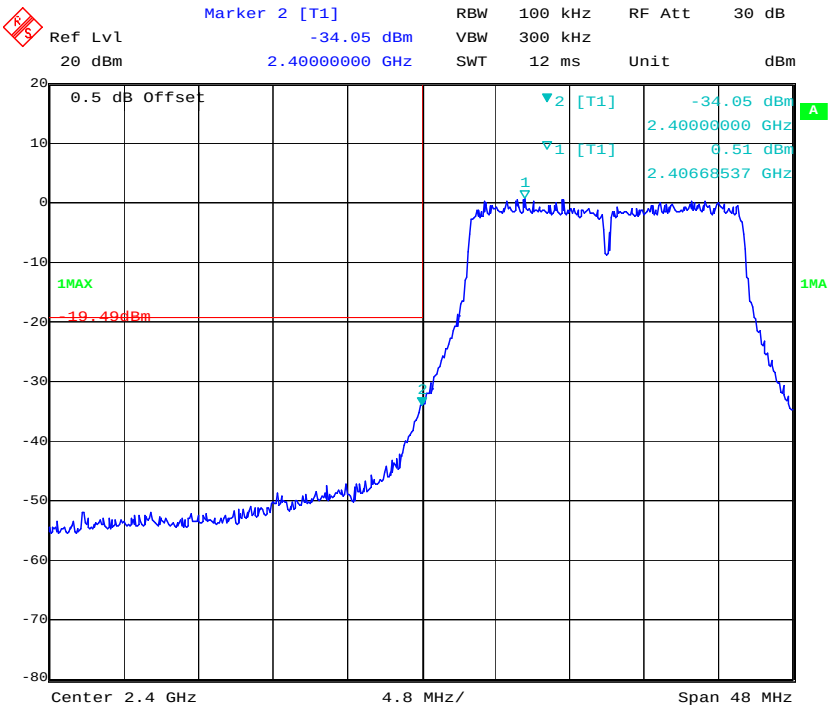
802.11g: Band Edge, Left Side, Chain 0



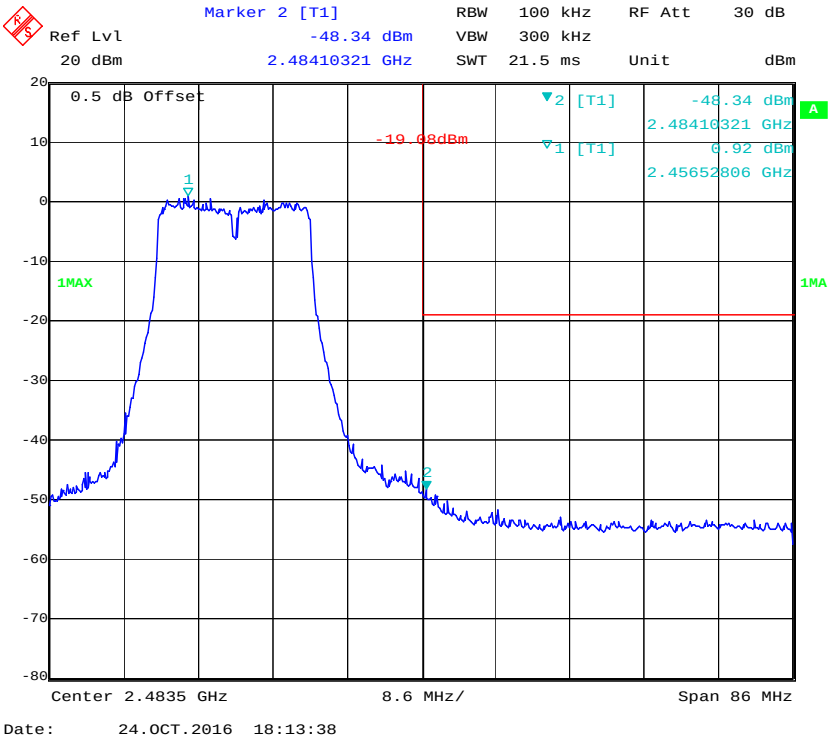
802.11g: Band Edge, Right Side, Chain 0



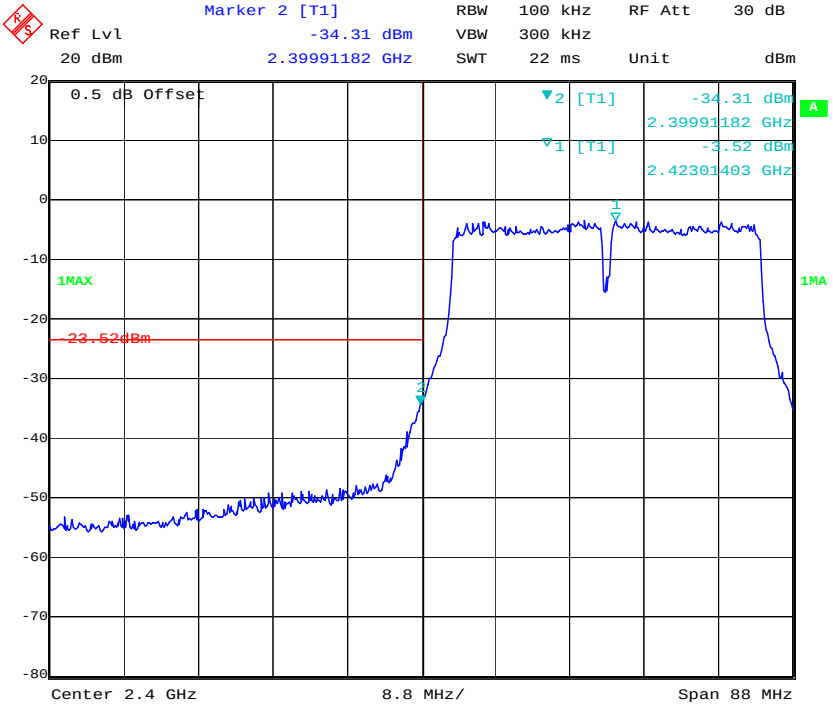
802.11n ht20 Band Edge, Left Side, Chain 0



802.11n ht20 Band Edge, Right Side, Chain 0

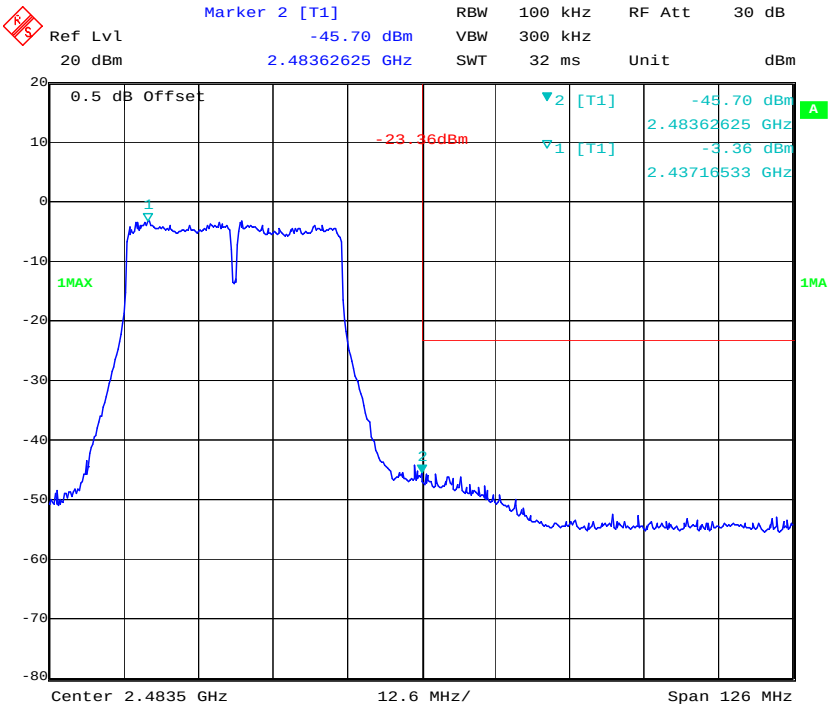


802.11n ht40 Band Edge, Left Side, Chain 0



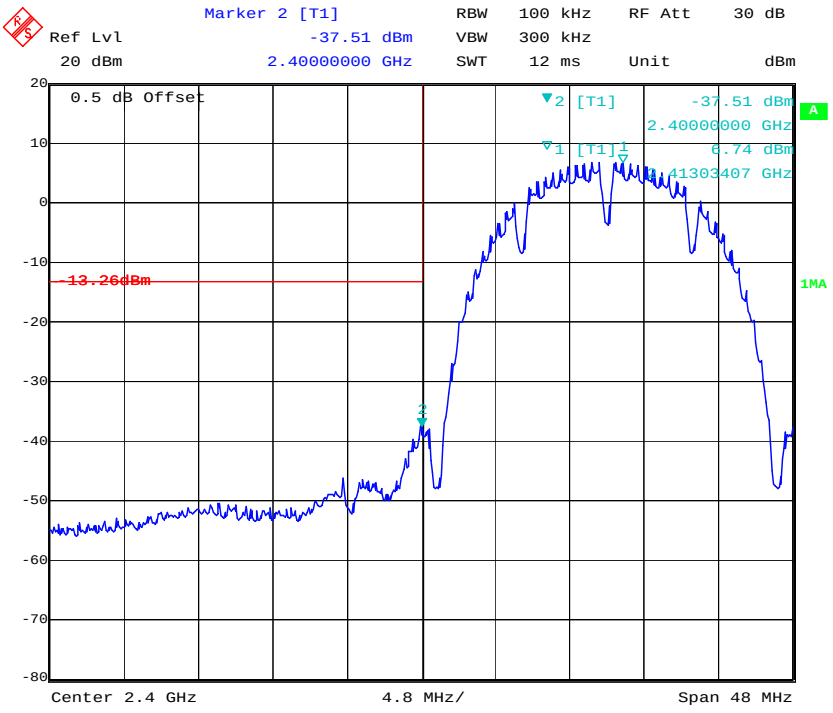
Date: 24.OCT.2016 19:08:47

802.11n ht40 Band Edge, Right Side, Chain 0



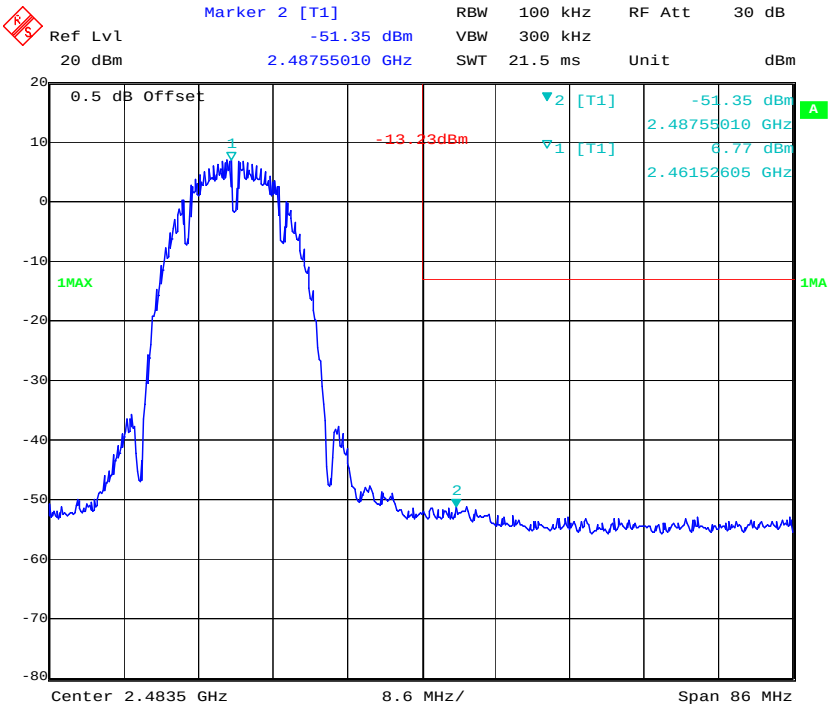
Date: 24.OCT.2016 19:17:06

802.11b: Band Edge, Left Side, Chain 1



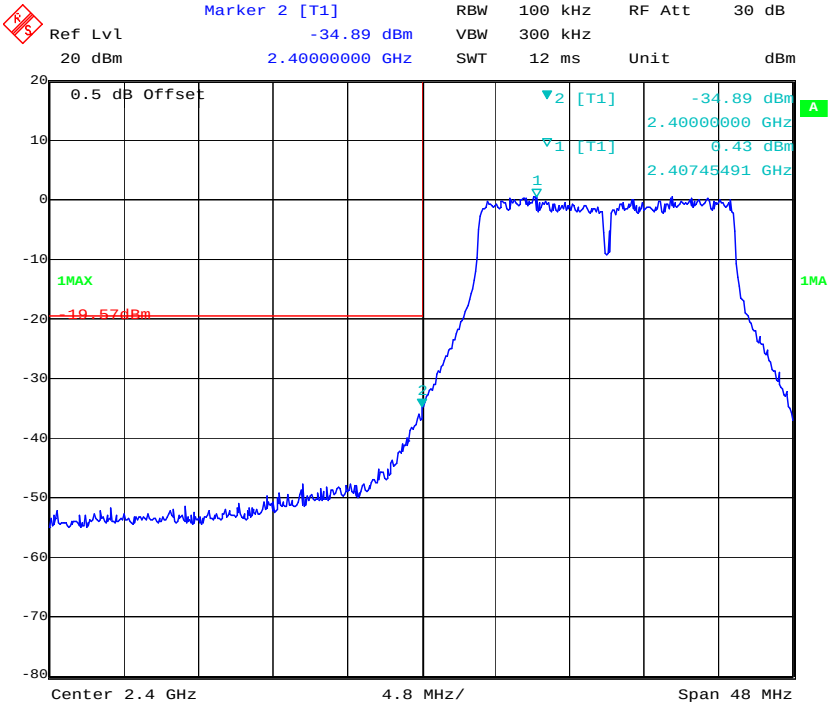
Date: 24.OCT.2016 17:38:47

802.11b: Band Edge, Right Side, Chain 1

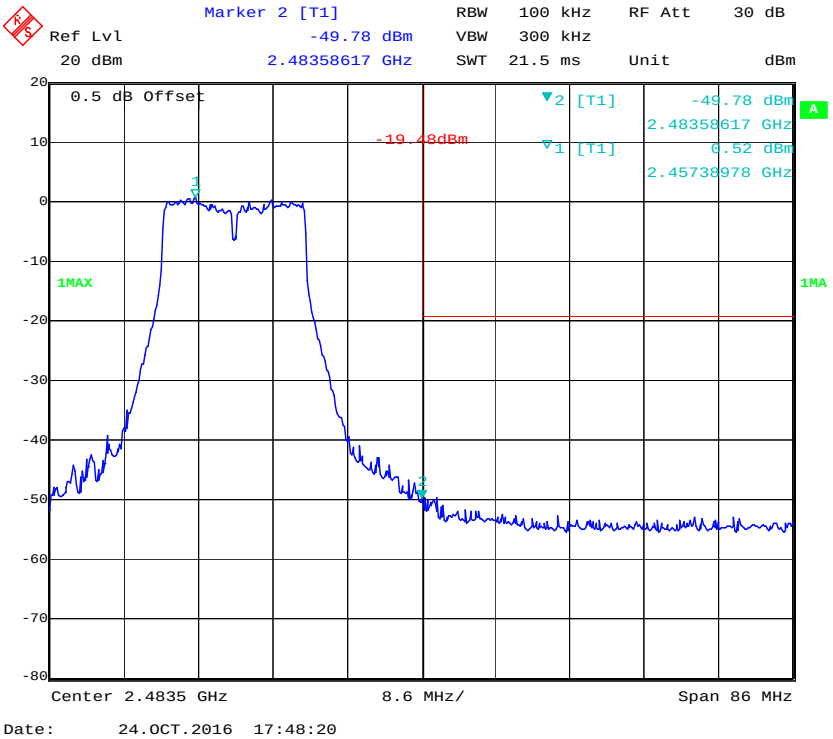


Date: 24.OCT.2016 17:43:08

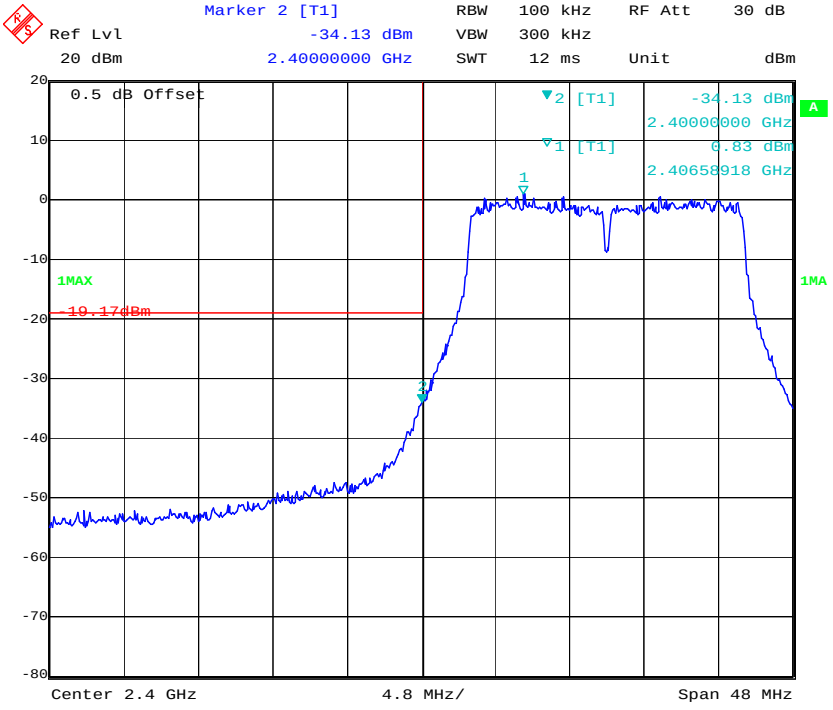
802.11g: Band Edge, Left Side, Chain 1



802.11g: Band Edge, Right Side, Chain 1

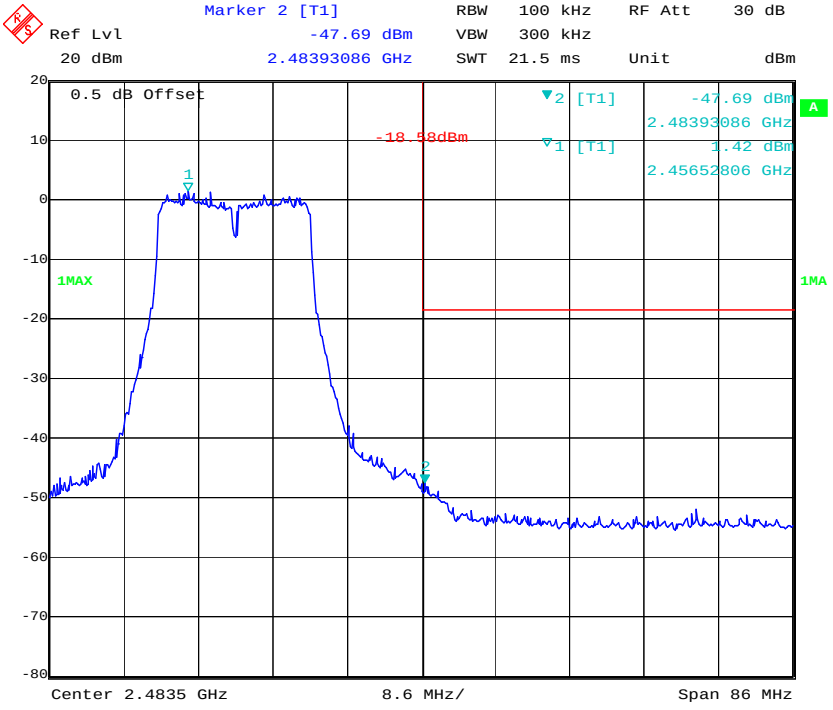


802.11n ht20 Band Edge, Left Side, Chain 1



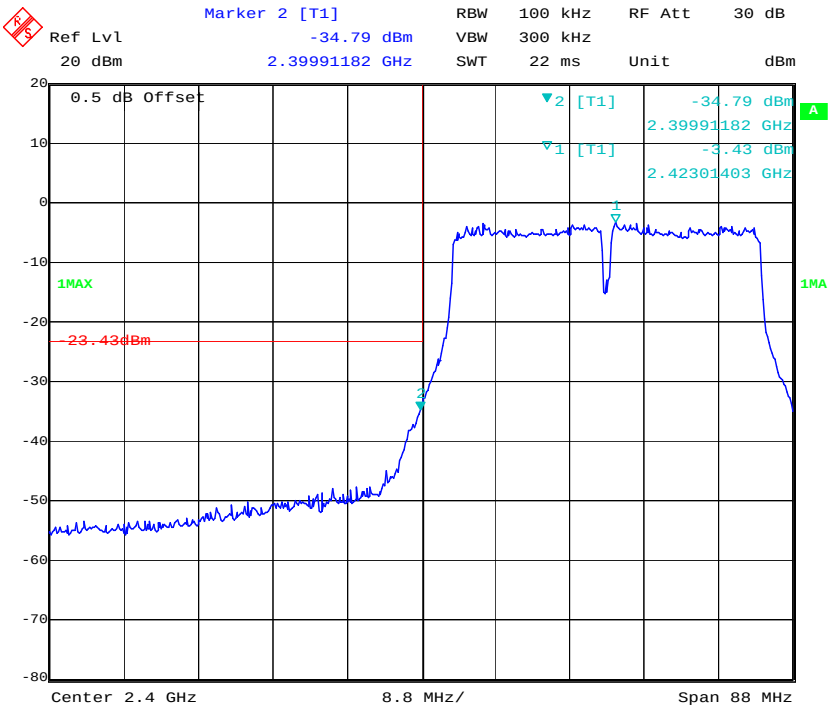
Date: 24.OCT.2016 18:31:44

802.11n ht20 Band Edge, Right Side, Chain 1



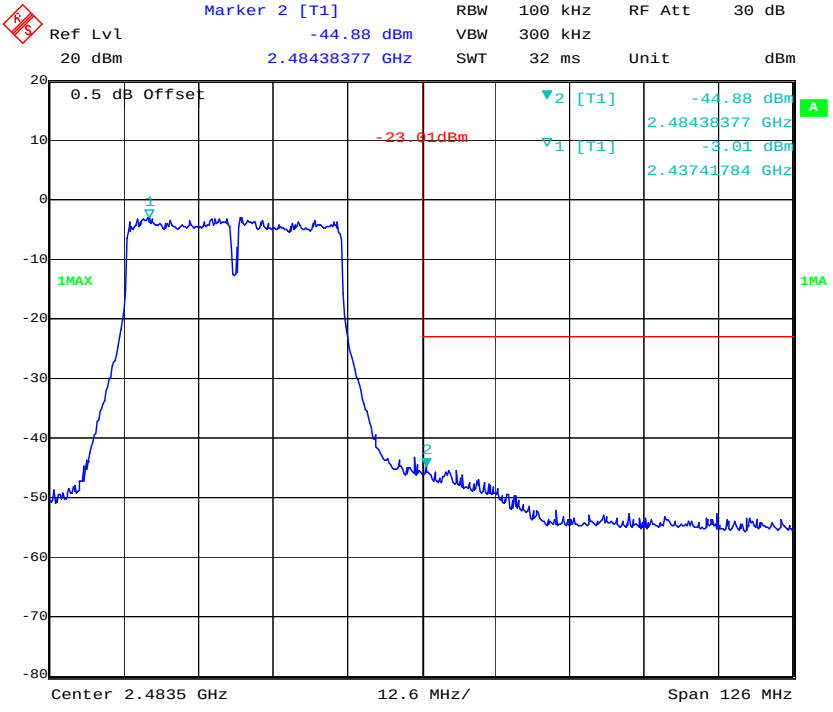
Date: 24.OCT.2016 18:45:11

802.11n ht40 Band Edge, Left Side, Chain 1



Date: 24.OCT.2016 19:01:00

802.11n ht40 Band Edge, Right Side, Chain 1



Date: 24.OCT.2016 18:50:16

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:	28.4 °C
Relative Humidity:	31 %
ATM Pressure:	100.7 kPa

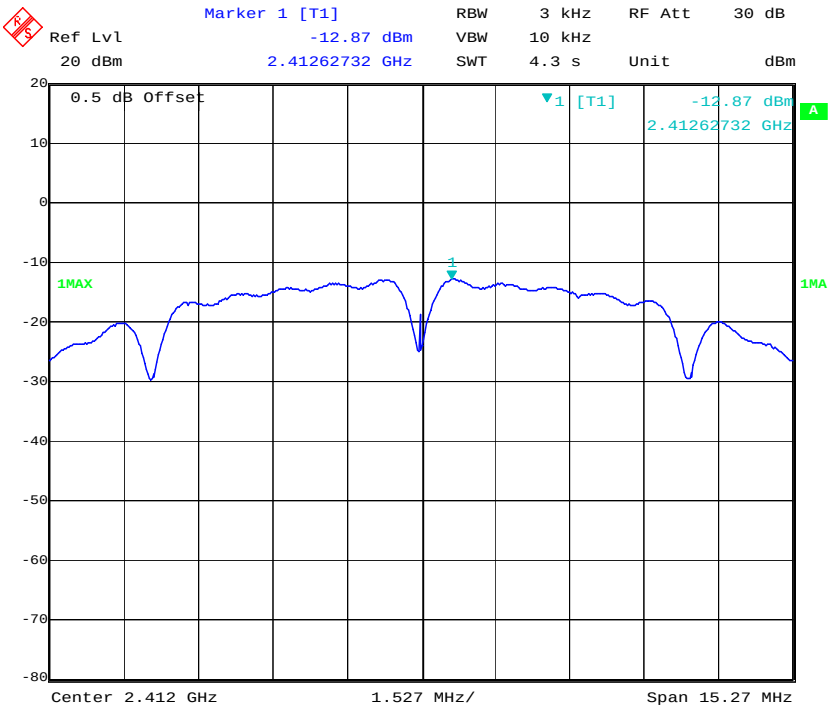
** The testing was performed by Lorin Bian on 2016-10-24.*

Test Mode: Transmitting

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

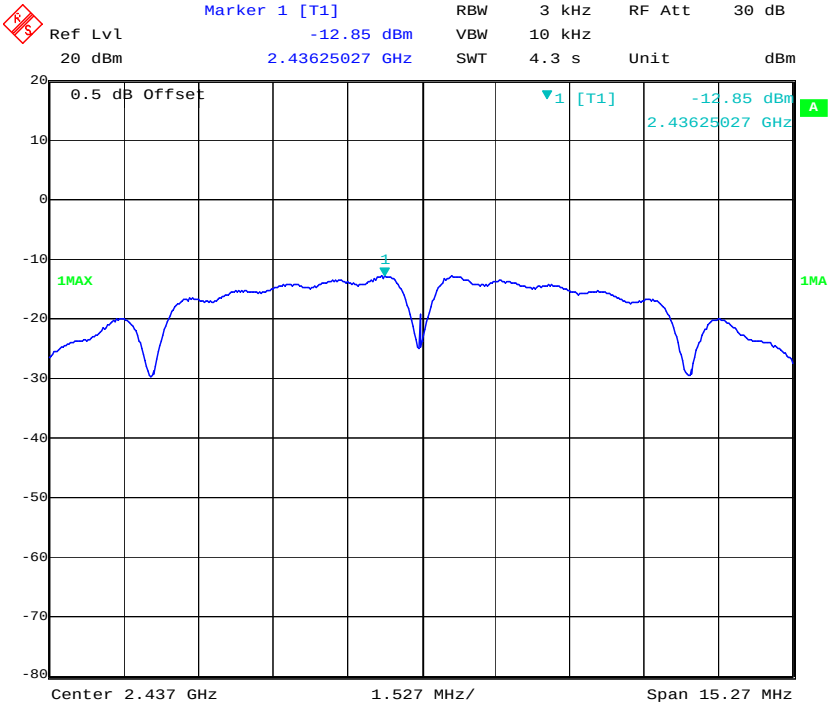
Test mode	Channel	Frequency (MHz)	PSD (dBm/3kHz)		Total (dBm/3kHz)	Limit (dBm/3kHz)
			Chain 0	Chain 1		
802.11b	Low	2412	-12.87	-12.62	/	≤8
	Middle	2437	-12.85	-12.61	/	≤8
	High	2462	-12.87	-12.67	/	≤8
802.11g	Low	2412	-13.98	-13.99	/	≤8
	Middle	2437	-13.79	-13.82	/	≤8
	High	2462	-13.59	-13.69	/	≤8
802.11n20	Low	2412	-12.76	-12.84	-9.79	≤6
	Middle	2437	-12.87	-12.58	-9.71	≤6
	High	2462	-12.63	-12.41	-9.51	≤6
802.11n40	Low	2422	-15.25	-15.00	-12.11	≤6
	Middle	2437	-15.19	-15.28	-12.22	≤6
	High	2452	-15.11	-15.10	-12.09	≤6

Power Spectral Density, 802.11b Low Channel-Chain 0



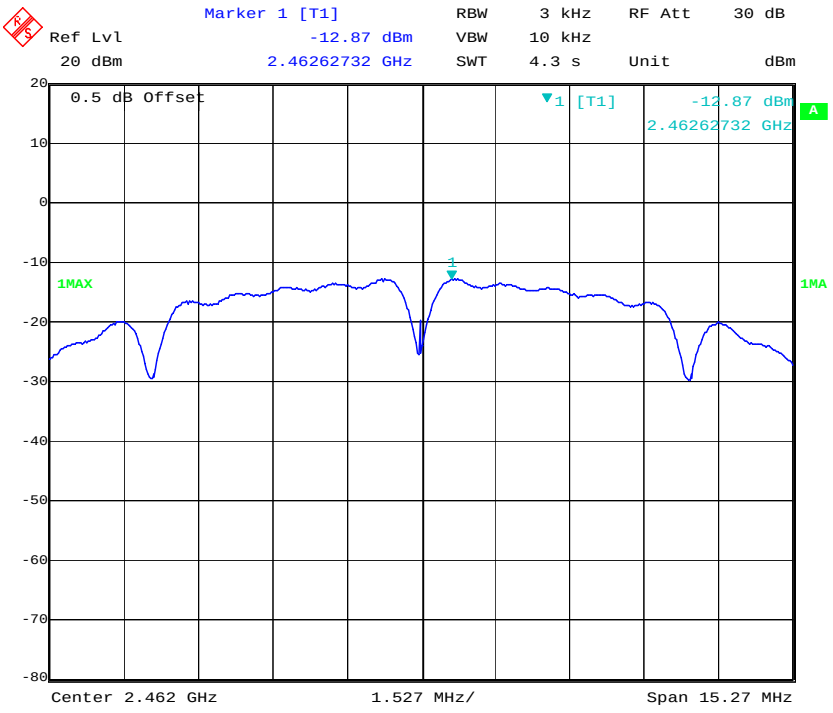
Date: 24.OCT.2016 17:28:59

Power Spectral Density, 802.11b Middle Channel-Chain 0



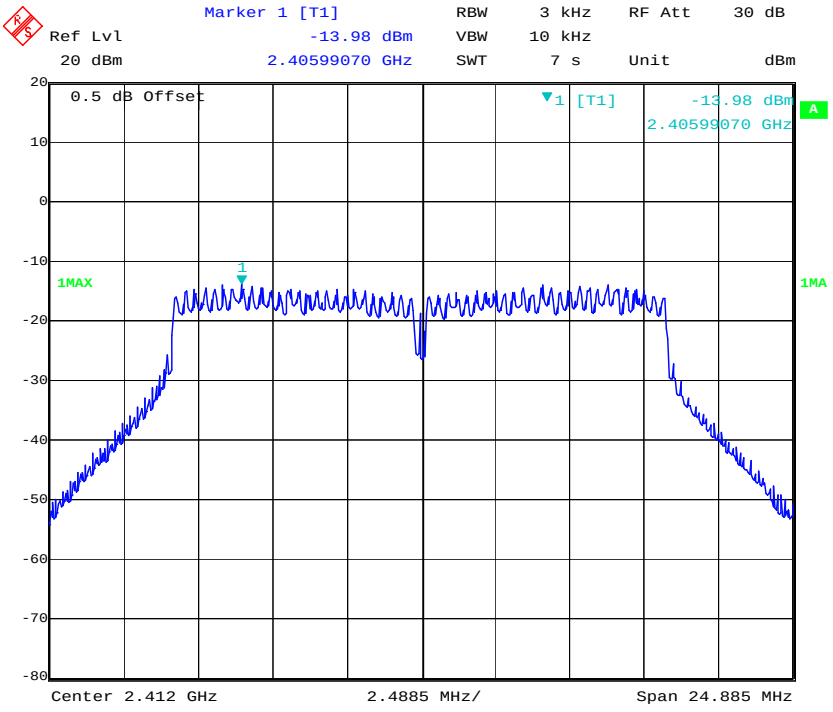
Date: 24.OCT.2016 17:31:47

Power Spectral Density, 802.11b High Channel-Chain 0



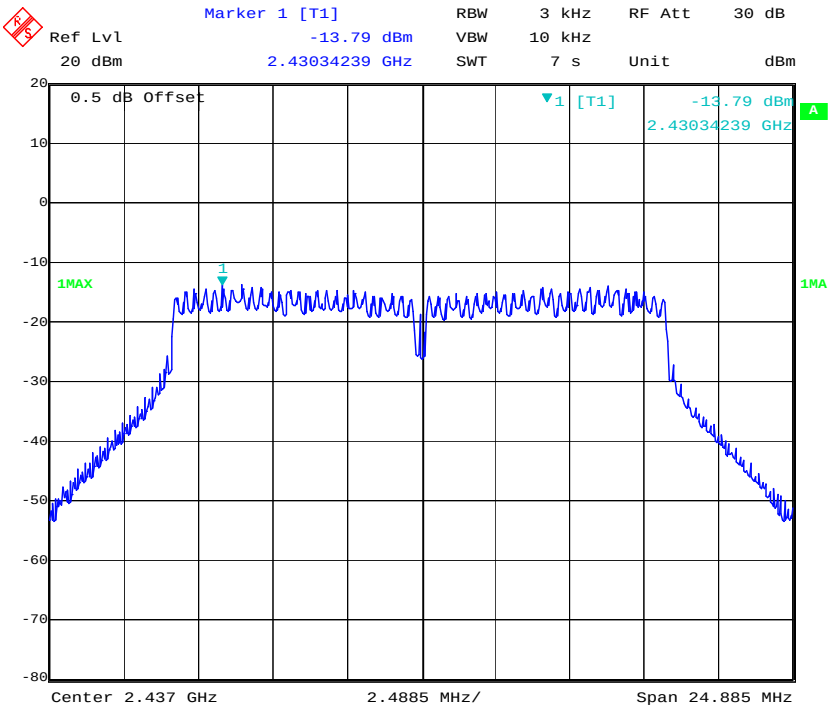
Date: 24.OCT.2016 17:36:07

Power Spectral Density, 802.11g Low Channel-Chain 0



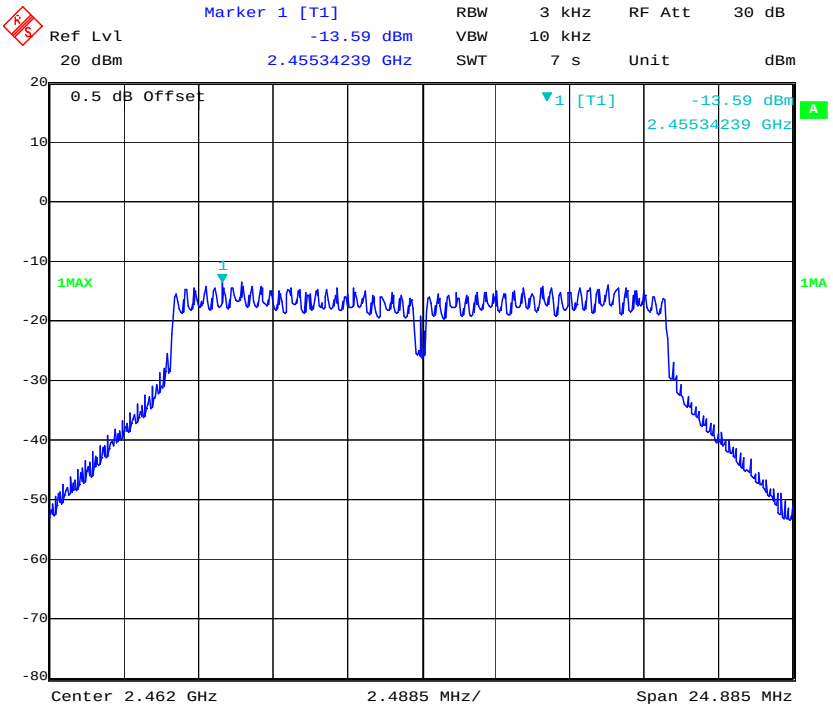
Date: 24.OCT.2016 18:01:48

Power Spectral Density, 802.11g Middle Channel-Chain 0



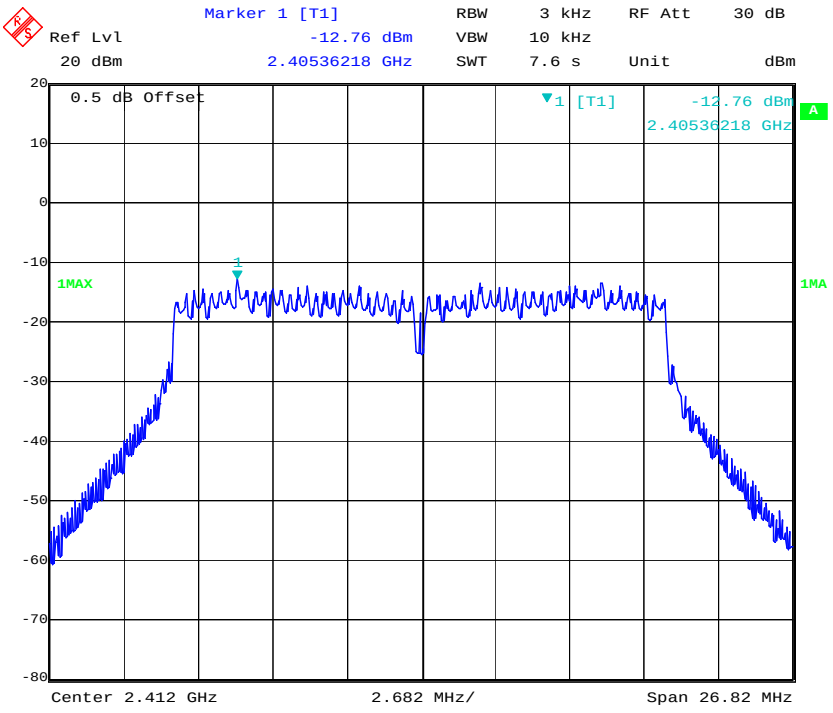
Date: 24.OCT.2016 18:05:21

Power Spectral Density, 802.11g High Channel-Chain 0



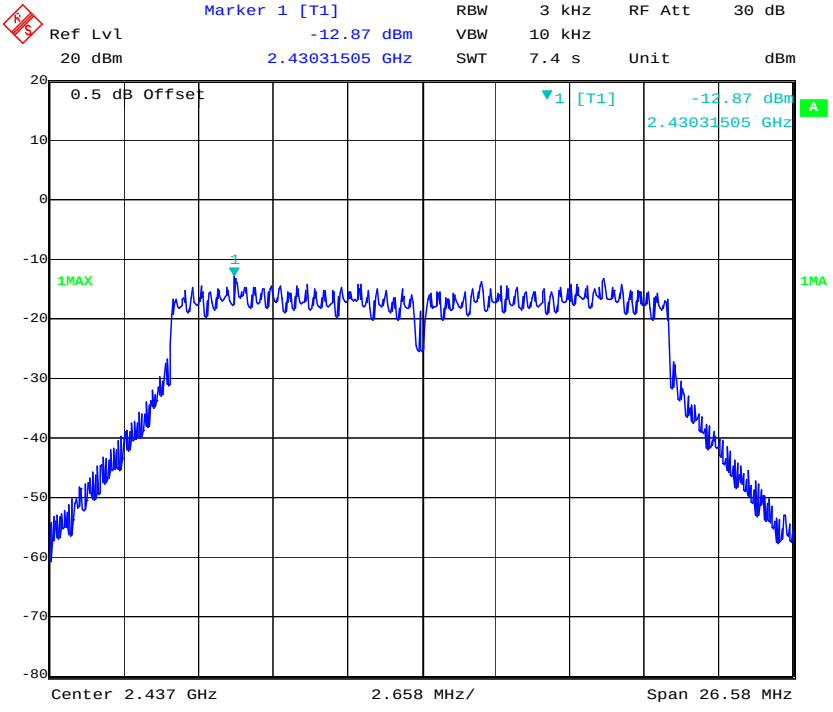
Date: 24.OCT.2016 18:08:31

Power Spectral Density, 802.11n ht20 Low Channel-Chain 0



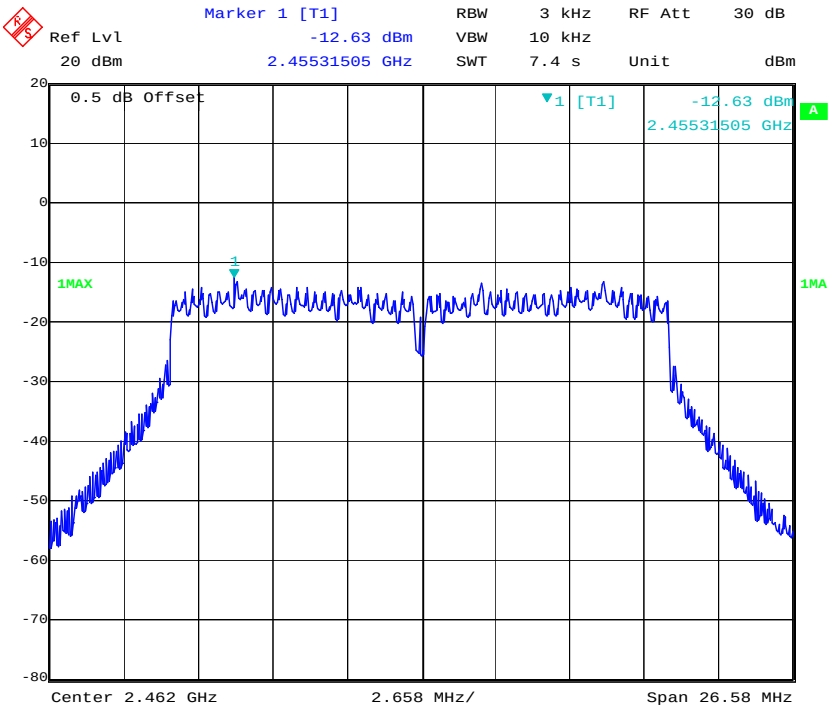
Date: 24.OCT.2016 18:18:50

Power Spectral Density, 802.11n ht20 Middle Channel-Chain 0



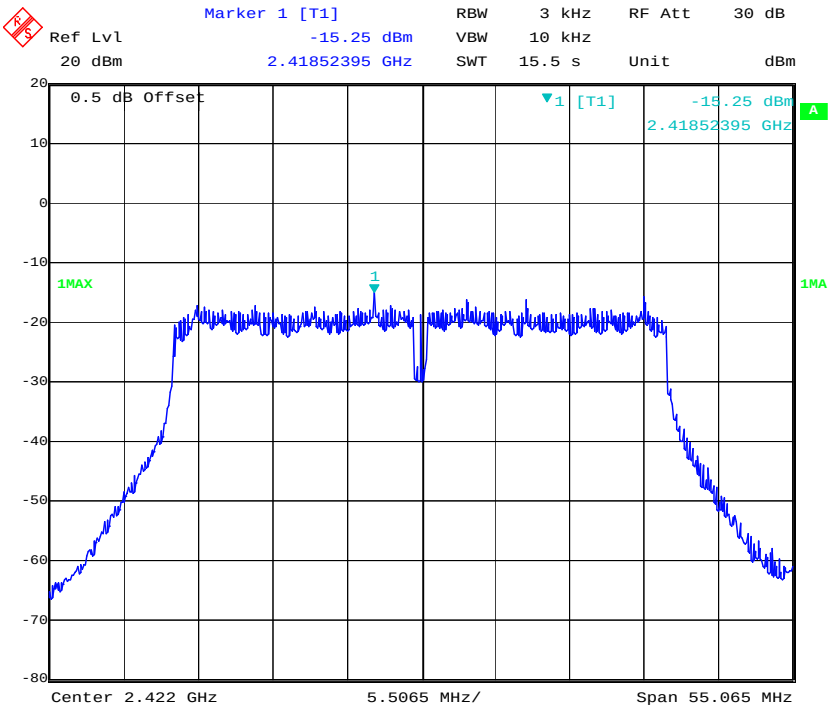
Date: 24.OCT.2016 18:16:27

Power Spectral Density, 802.11n ht20 High Channel-Chain 0



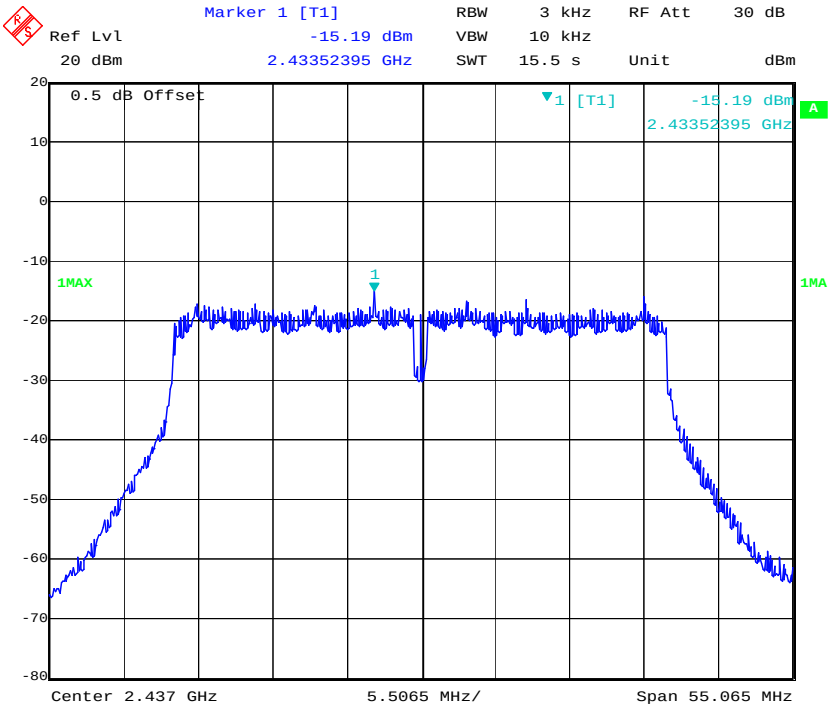
Date: 24.OCT.2016 18:13:13

Power Spectral Density, 802.11n ht40 Low Channel-Chain 0



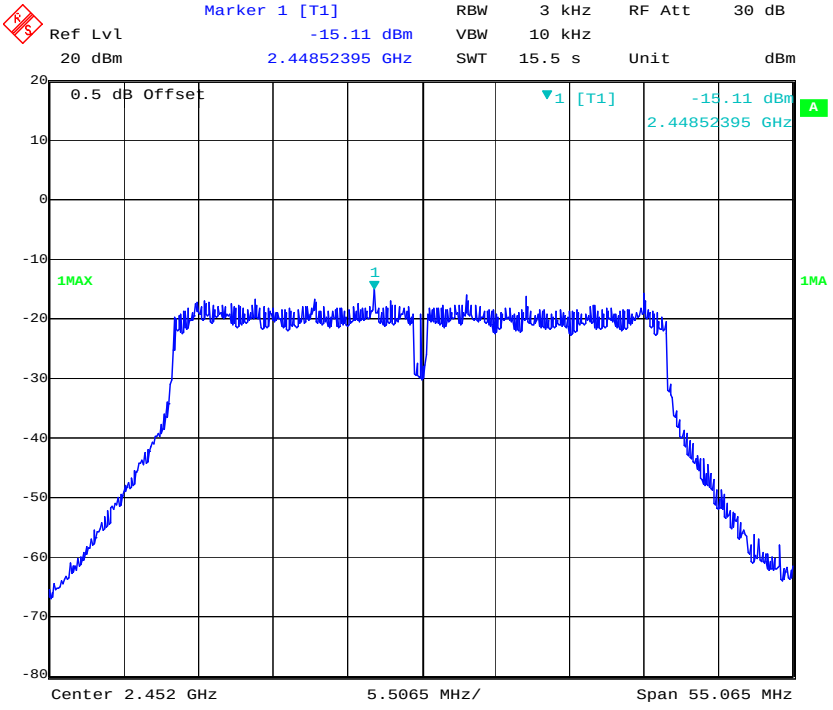
Date: 24.OCT.2016 19:08:22

Power Spectral Density, 802.11n ht40 Middle Channel-Chain 0



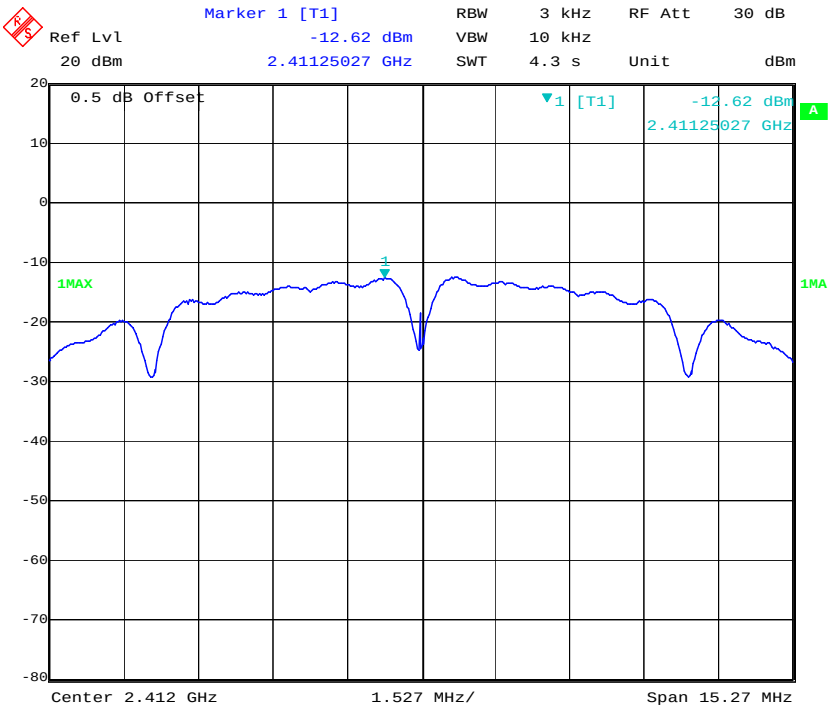
Date: 24.OCT.2016 19:12:43

Power Spectral Density, 802.11n ht40 High Channel-Chain 0



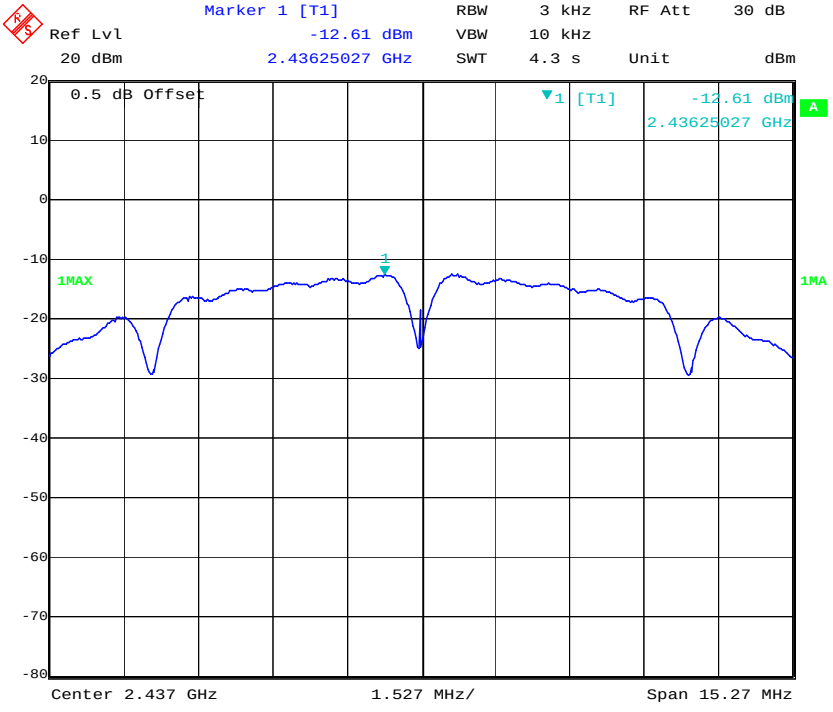
Date: 24.OCT.2016 19:16:41

Power Spectral Density, 802.11b Low Channel-Chain 1



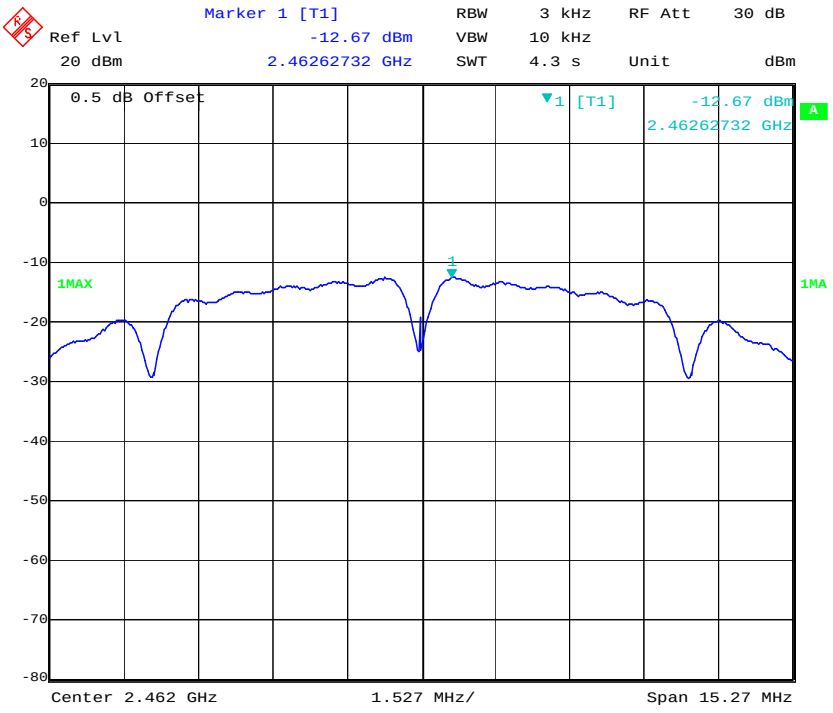
Date: 24.OCT.2016 17:38:30

Power Spectral Density, 802.11b Middle Channel-Chain 1



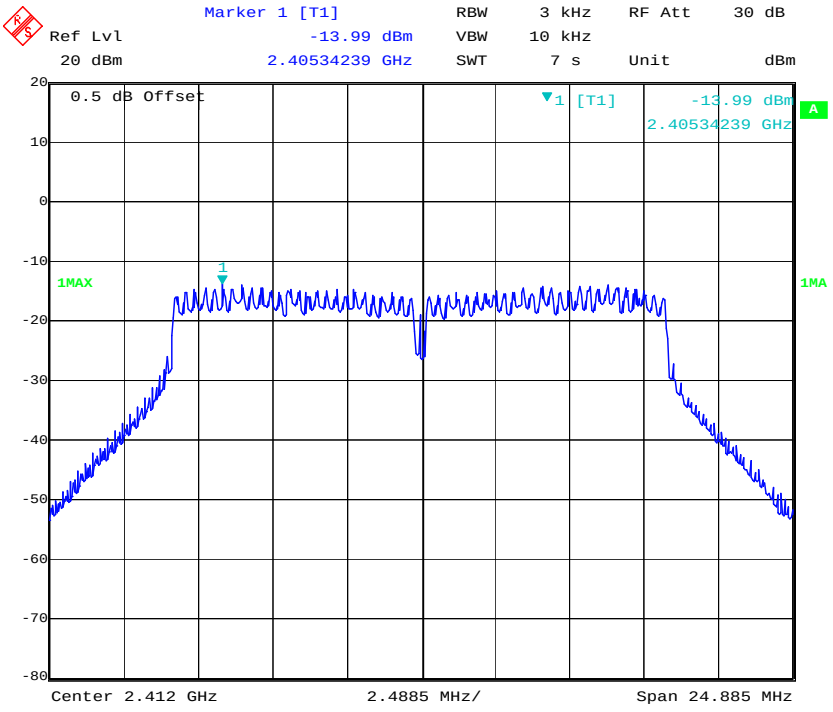
Date: 24.OCT.2016 17:40:55

Power Spectral Density, 802.11b High Channel-Chain 1



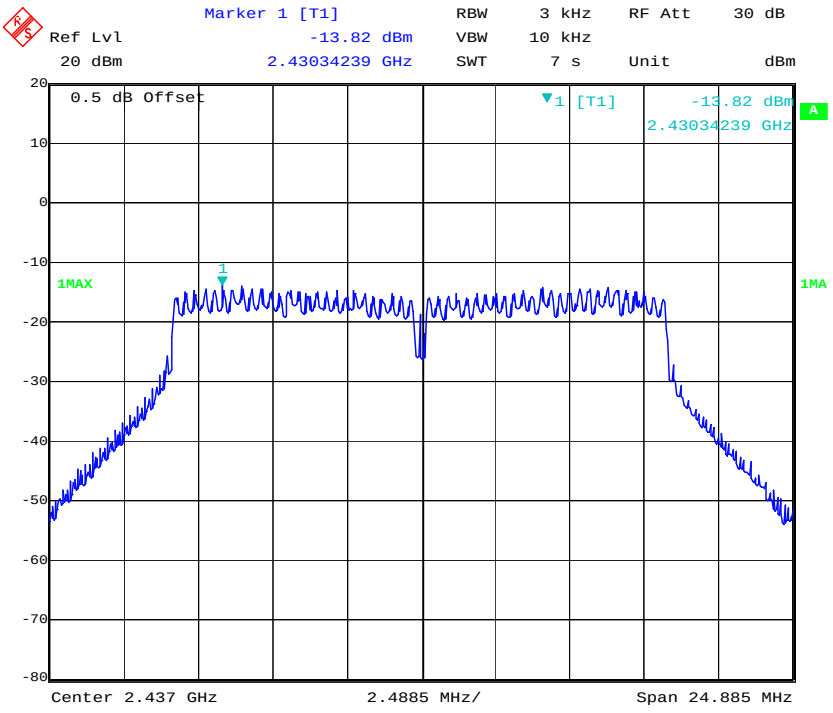
Date: 24.OCT.2016 17:42:51

Power Spectral Density, 802.11g Low Channel-Chain 1



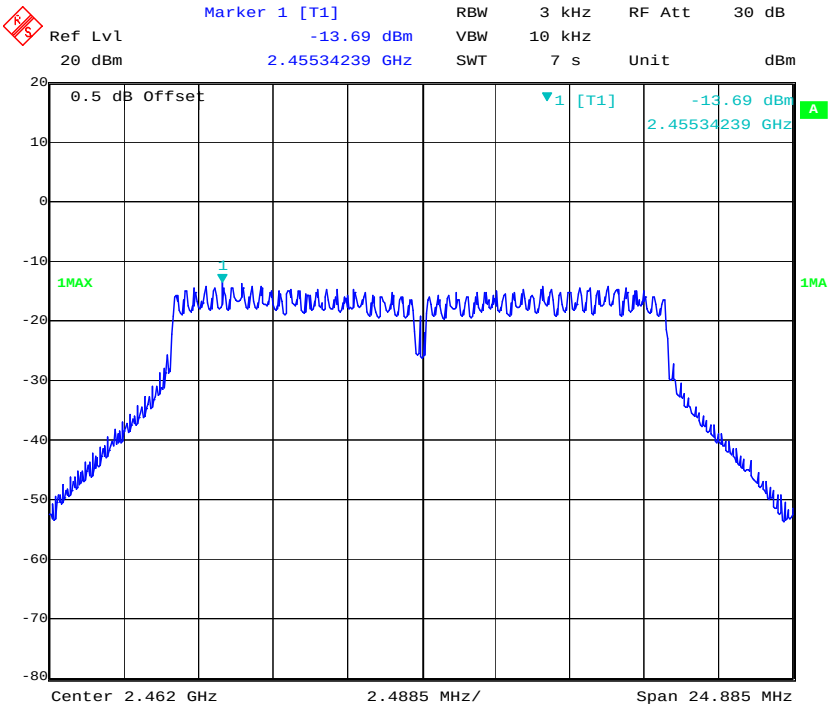
Date: 24.OCT.2016 17:53:52

Power Spectral Density, 802.11g Middle Channel-Chain 1



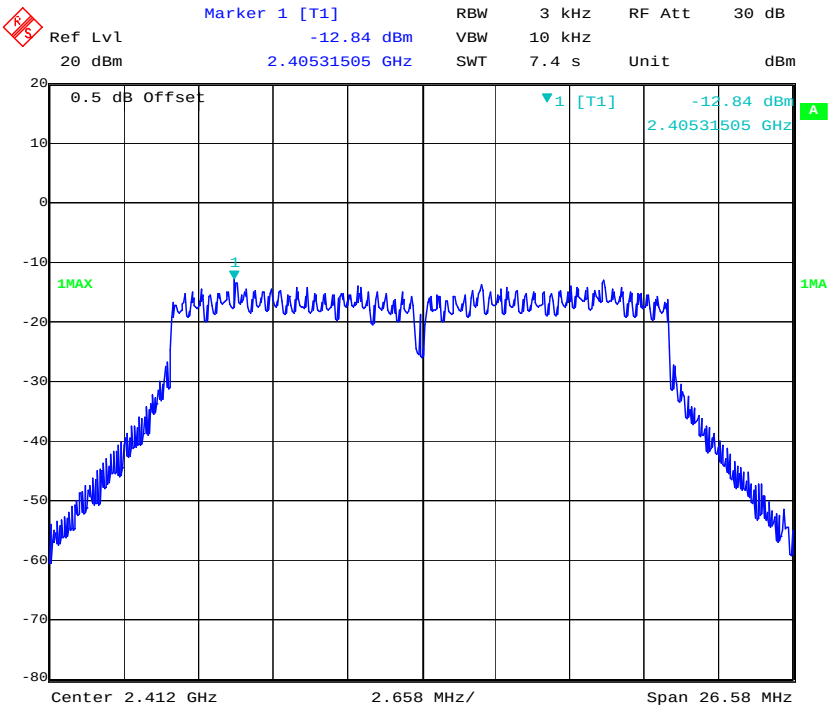
Date: 24.OCT.2016 17:51:27

Power Spectral Density, 802.11g High Channel-Chain 1



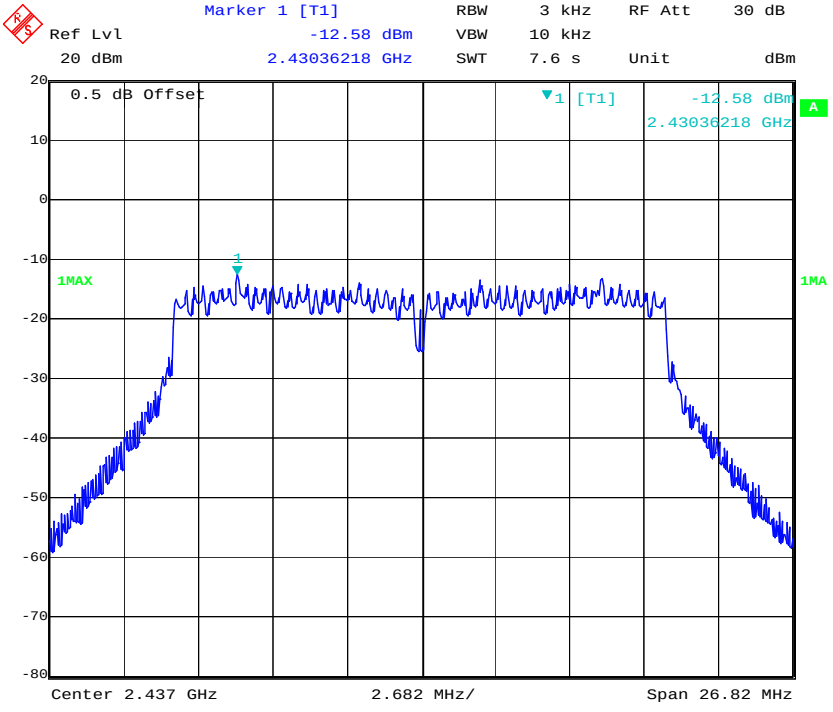
Date: 24.OCT.2016 17:47:55

Power Spectral Density, 802.11n ht20 Low Channel-Chain 1



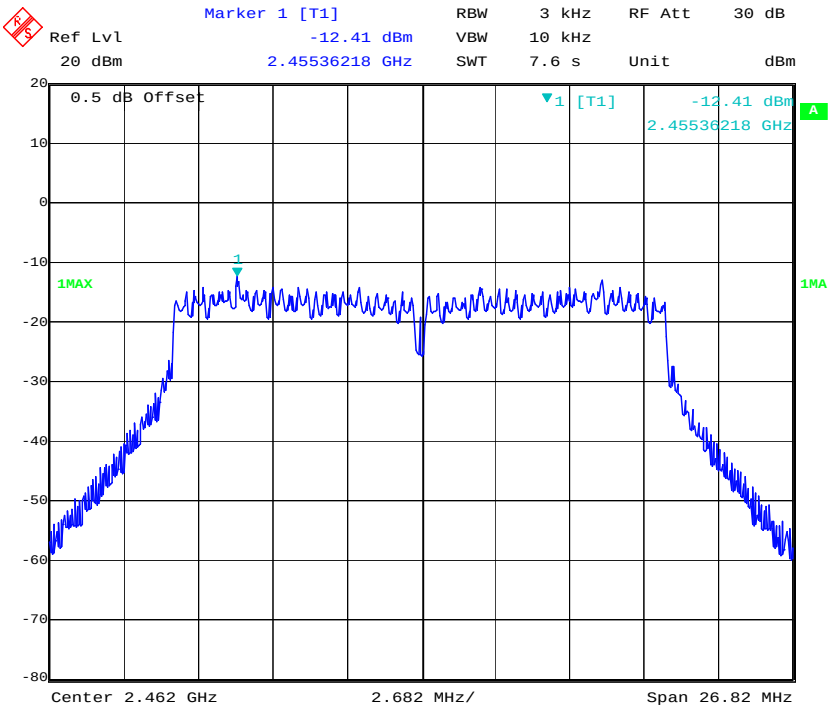
Date: 24.OCT.2016 18:31:14

Power Spectral Density, 802.11n ht20 Middle Channel-Chain 1



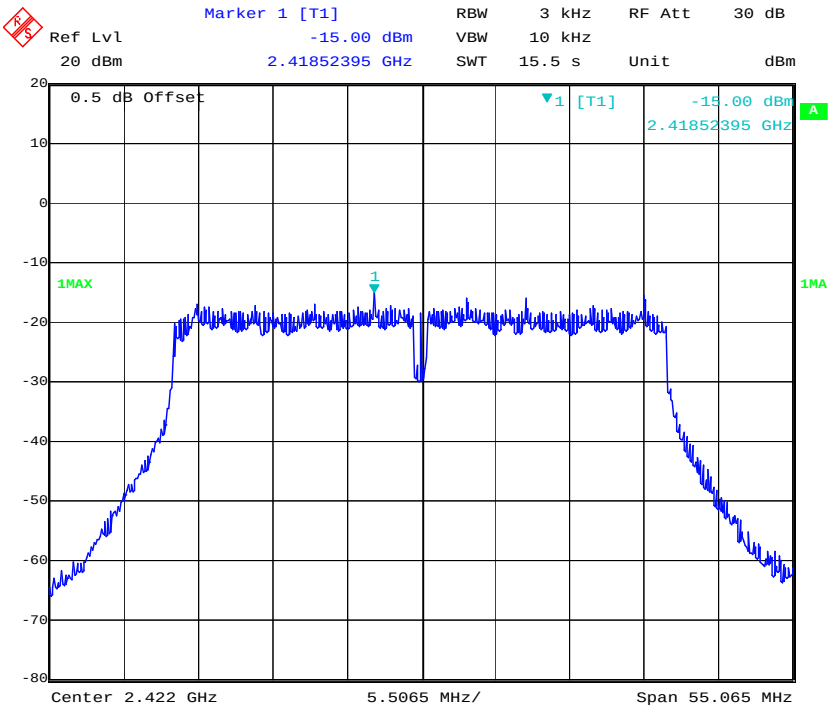
Date: 24.OCT.2016 18:40:31

Power Spectral Density, 802.11n ht20 High Channel-Chain 1



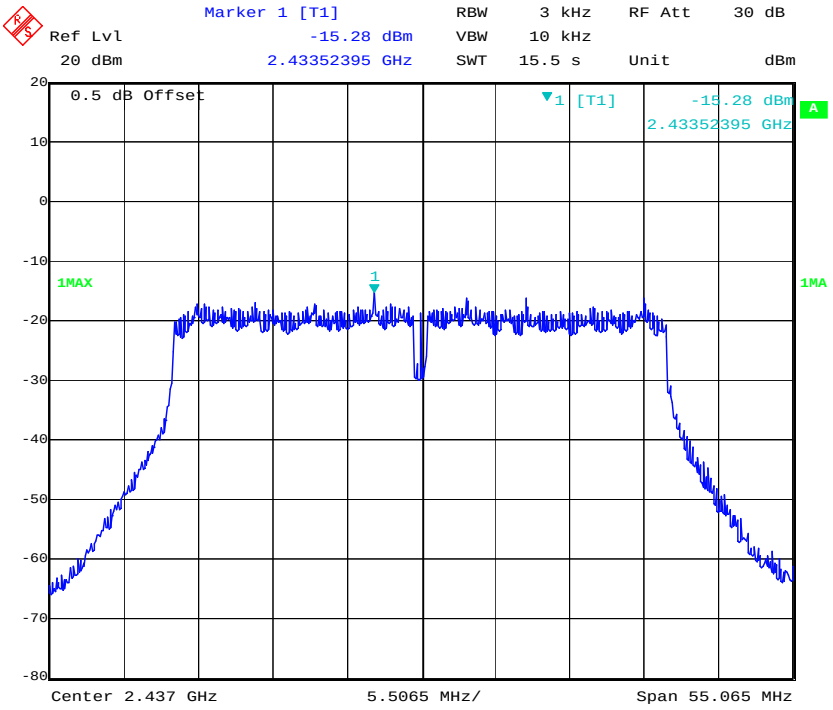
Date: 24.OCT.2016 18:43:28

Power Spectral Density, 802.11n ht40 Low Channel-Chain 1



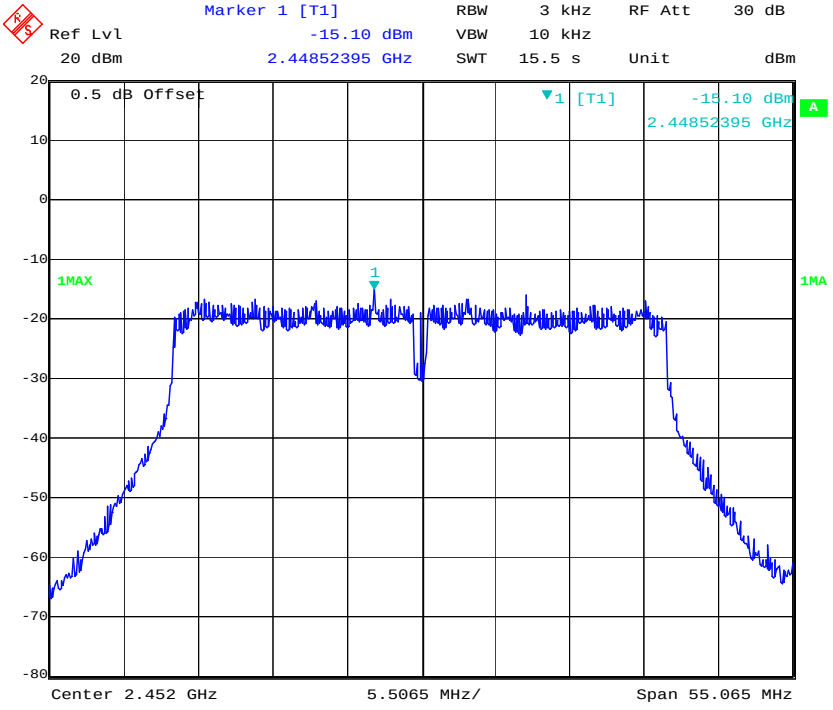
Date: 24.OCT.2016 19:00:41

Power Spectral Density, 802.11n ht40 Middle Channel-Chain 1



Date: 24.OCT.2016 19:04:54

Power Spectral Density, 802.11n ht40 High Channel-Chain 1



Date: 24.OCT.2016 18:49:51

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