FCC PART 15.247

TEST REPORT

For

ESPRESSIF SYSTEMS (SHANGHAI) PTE LTD

456 Bibo Road Room A201, Shanghai, China

FCC ID: 2AC7Z-ESP32

Report Type:	Product Type:
Original Report	Wi-Fi Internet of Things Module

Test Engineer:	Matt Yao
Report Number:	RKS160114001-00A
Report Date:	2016-02-17
Reviewed By:	Jesse Huang EMC Manager
Prepared By:	Bay Area Compliance Laboratories Corp. (Kunshan) Chenghu Road,Kunshan Development Zone No.248,Kunshan, Jiangsu, China Tel: +86-0512-86175000 Fax: +86-0512-88934268 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The ESPRESSIF SYSTEMS (SHANGHAI) PTE LTD.'s product, model number: ESP32 (FCC ID: 2AC7Z-ESP32) or the "EUT" in this report was a Wi-Fi Internet of Things Module, which was measured approximately: 18mm (L) x25.5mm (W)) x1.2mm (H).

**All measurement and test data in this report was gathered from production sample serial number: 20160114006 (Assigned by the BACL. The EUT supplied by the applicant was received on 2016-01-14)*

Objective

This report is prepared on behalf of ESPRESSIF SYSTEMS (SHANGHAI) PTE LTD. in accordance with Part 2-Subpart J, Part 15-Subparts A, B and C of the Federal Communication Commissions rules.

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

Related Submittal(s)/Grant(s)

N/A

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices and FCC KDB558074 D01 DTS Meas Guidance v03r04.

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

Measurement uncertainty with RF radiated emission is 5.91 dB for 30MHz-1GHz.and 4.92 dB for above 1GHz, 1.95dB for conducted measurement.

Test Facility

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

Test site at Bay Area Compliance Laboratories Corp. (Kunshan) 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 November 06, 2014. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 815570. 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

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

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

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

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

Channel	Frequency (MHz)	Channel	Frequency (MHz)
3	2422	8	2447
4	2427	9	2452
5	2432	/	/
6	2437	/	/
7	2442	/	/

EUT was tested with Channel 3, 6 and 9.

Equipment Modifications

No modification was made to the EUT tested.

EUT Exercise Software

RF test tool built-in the EUT.

The worst case was performed under:
802.11b: Data rate:1 Mbps, Power level: 12
802.11g: Data rate: 6 Mbps, Power level: 40
802.11n-HT20: Data rate: MCS0, Power level: 40
802.11n-HT40: Data rate: MCS0, Power level: 40

Support Equipment List and Details

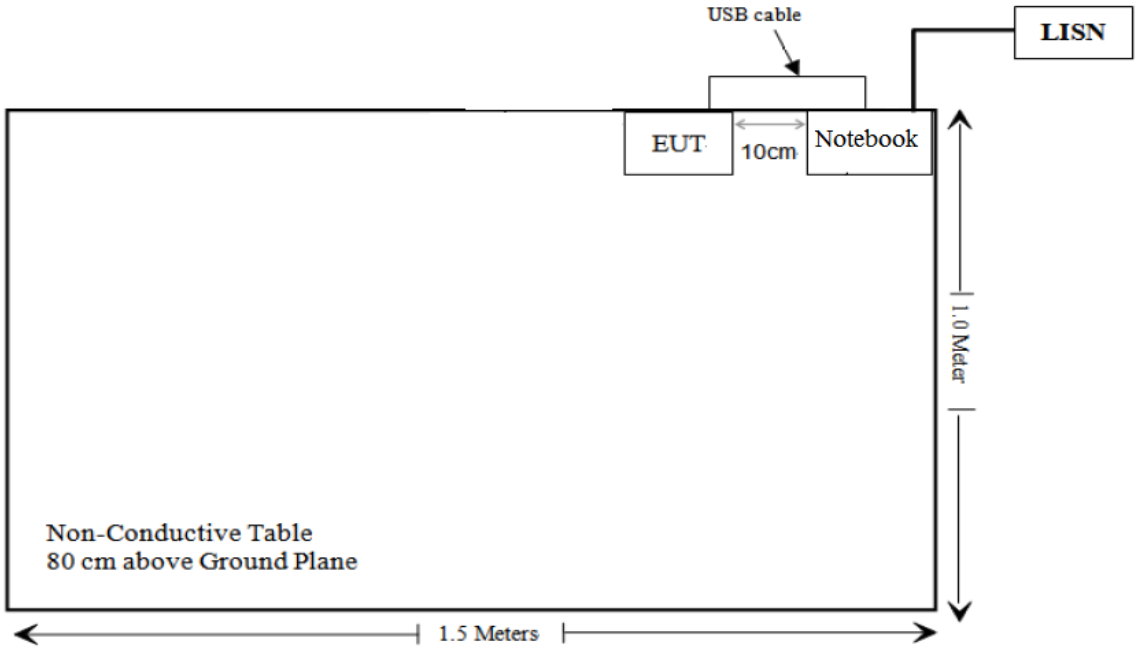
Manufacturer	Description	Model	Serial Number
Lenovo	Notebook	T400	N/A

External I/O Cable

Cable Description	Length (m)	From Port	To
USB Cable	0.9	EUT	PC

Block Diagram of Test Setup

For conducted emission



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247 (i), §1.1307 (b) (1)& §2.1091	RF Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.207 (a)	AC Line Conducted Emissions	Compliance
§15.247(d)	Spurious Emissions at Antenna Port	Compliance
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliance
§15.247 (a)(2)	6 dB Emission Bandwidth	Compliance
§15.247(b)(3)	Maximum Conducted Output Power	Compliance
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliance
§15.247(e)	Power Spectral Density	Compliance

FCC§15.247 (i), §1.1310& §2.1091 –RF Exposure

Applicable Standard

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

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

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

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

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

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

Calculated Data:

Mode	Frequency (MHz)	Antenna Gain		Target Power		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
		(dBi)	(numeric)	(dBm)	(mW)			
802.11b	2412	2	1.585	22.5	177.83	20	0.056	1.0
802.11g	2412	2	1.585	21.5	141.25	20	0.045	1.0
802.11n HT20	2412	2	1.585	21.5	141.25	20	0.045	1.0
802.11n HT40	2422	2	1.585	21.5	141.25	20	0.045	1.0

Note: The target output power: 802.11b:22 ±0.5dBm,
802.11g:21±0.5dBm,
802.11n（HT20）:21±0.5dBm
802.11n（HT40）:21±0.5dBm

Please refer to the Technical Specification, which declared by the Manufacturer.

Result: The device meet FCC MPE at 20 cm distance

FCC §15.203 - ANTENNA REQUIREMENT

Applicable Standard

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

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

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.
And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The EUT has a antenna arrangement for wifi, which the antenna gain is 2 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Result: Compliance.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207

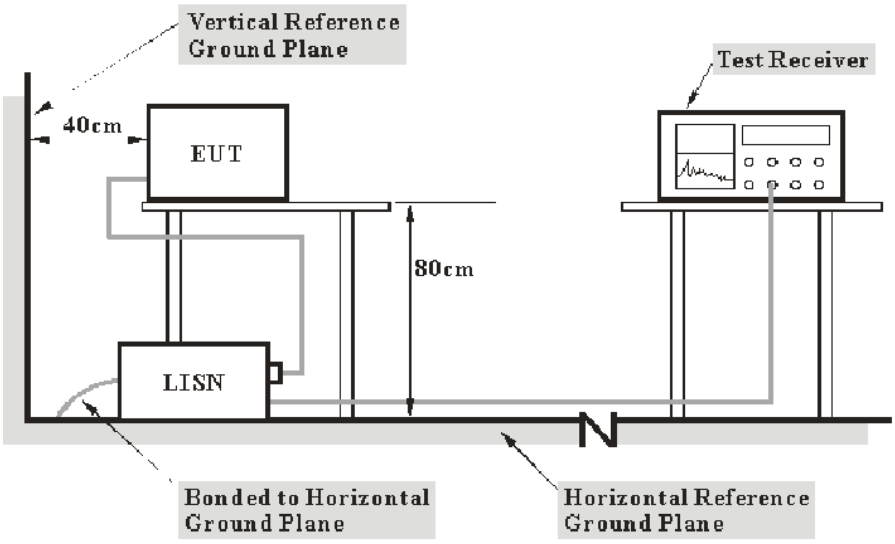
Measurement Uncertainty

Input quantities to be considered for conducted disturbance measurements maybe receiver reading, attenuation of the connection between LISN and receiver, LISN voltage division factor, LISN VDF frequency interpolation and receiver related input quantities, etc.

Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of conducted disturbance test at Bay Area Compliance Laboratories Corp. (Kunshan) is shown as below. And the uncertainty will not be taken into consideration for the test data recorded in the report.

Port	Expanded Measurement uncertainty
AC Mains	3.26 dB (k=2, 95% level of confidence)
CAT 3	3.70 dB (k=2, 95% level of confidence)
CAT 5	3.86 dB (k=2, 95% level of confidence)
CAT 6	4.64 dB (k=2, 95% level of confidence)

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 adapter was connected to a 120 VAC/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 outlet of the 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.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	934115/007	2015-11-12	2016-11-11
Rohde & Schwarz	LISN	ESH3-Z5	862770/011	2015-11-12	2016-11-11
Rohde & Schwarz	LISN	ESH3-Z5	892239/018	2015-06-23	2016-06-22
Rohde & Schwarz	Pulse limiter	ESH3-Z2	879940/0058	2015-06-19	2016-06-18
HP	Current probe	8710-1744	636	2015-06-19	2016-06-18
FCC	ISN	FCC-TLISN-T8-02	20376	2015-06-23	2016-06-22
Rohde & Schwarz	CE Test software	EMC 32	V 09.10.0	--	--

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

Corrected Factor & Margin Calculation

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

Correction Factor = LISN VDF + Cable Loss

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

Margin = Limit – Corrected Amplitude

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207, the worst margin reading as below:

9.80 dB at **0.180000 MHz** in the **Line** conducted mode

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

In BACL, $U_{(Lm)}$ is less than U_{cispr}, if L_m is less than L_{lim}, it implies that the EUT complies with the limit.

Test Data

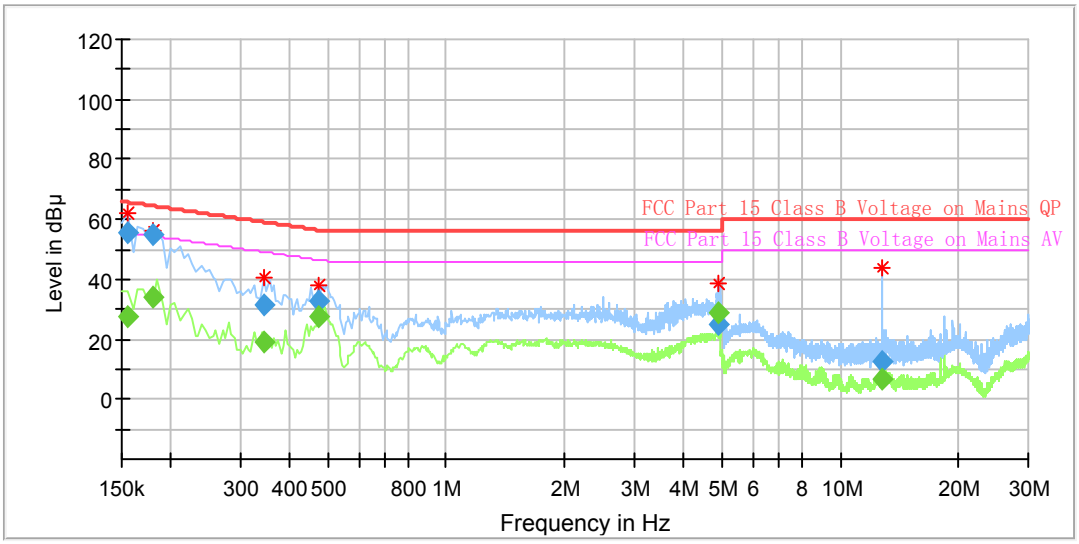
Environmental Conditions

Temperature:	23 ℃
Relative Humidity:	56 %
ATM Pressure:	101.0 kPa

The testing was performed by Matt Yao on 2016-02-17.

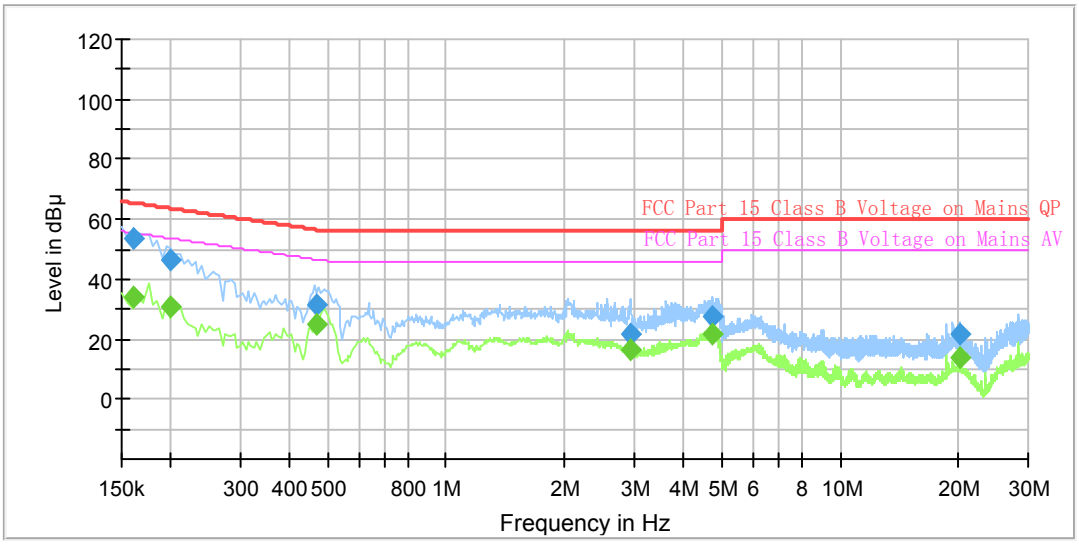
EUT operation mode: Transmitting

AC 120V/60 Hz, Line



Frequency (MHz)	QuasiPeak (dBµV)	Average (dB µ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.155000	---	27.74	9.000	L1	11.0	27.99	55.73	Compliance
0.155000	55.26	---	9.000	L1	11.0	10.47	65.73	Compliance
0.180000	---	33.77	9.000	L1	11.0	20.72	54.49	Compliance
0.180000	54.69	---	9.000	L1	11.0	9.80	64.49	Compliance
0.345000	---	19.39	9.000	L1	11.0	29.69	49.08	Compliance
0.345000	31.18	---	9.000	L1	11.0	27.90	59.08	Compliance
0.475000	---	27.22	9.000	L1	11.0	19.21	46.43	Compliance
0.475000	32.74	---	9.000	L1	11.0	23.69	56.43	Compliance
4.895000	---	28.61	9.000	L1	11.3	17.39	46.00	Compliance
4.895000	25.04	---	9.000	L1	11.3	30.96	56.00	Compliance
12.825000	---	6.89	9.000	L1	11.3	43.11	50.00	Compliance
12.825000	12.46	---	9.000	L1	11.3	47.54	60.00	Compliance

AC 120V/60 Hz, Neutral



Frequency (MHz)	QuasiPeak (dBµV)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.160000	---	33.99	9.000	N	11.0	21.47	55.46	Compliance
0.160000	53.60	---	9.000	N	11.0	11.86	65.46	Compliance
0.200000	---	30.84	9.000	N	11.0	22.77	53.61	Compliance
0.200000	46.11	---	9.000	N	11.0	17.50	63.61	Compliance
0.470000	---	25.14	9.000	N	11.0	21.37	46.51	Compliance
0.470000	31.49	---	9.000	N	11.0	25.02	56.51	Compliance
2.935000	---	16.37	9.000	N	11.3	29.63	46.00	Compliance
2.935000	21.66	---	9.000	N	11.3	34.34	56.00	Compliance
4.745000	---	21.92	9.000	N	11.4	24.08	46.00	Compliance
4.745000	27.44	---	9.000	N	11.4	28.56	56.00	Compliance
20.035000	---	13.65	9.000	N	11.4	36.35	50.00	Compliance
20.035000	21.63	---	9.000	N	11.4	38.37	60.00	Compliance

Note:
1) Corr.=LISN VDF (Voltage Division Factor) + Cable Loss
2) Corrected Amplitude = Reading + Corr.
3) Margin = Limit –Corrected Amplitude

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

Applicable Standard

FCC §15.247 (d); §15.209; §15.205;

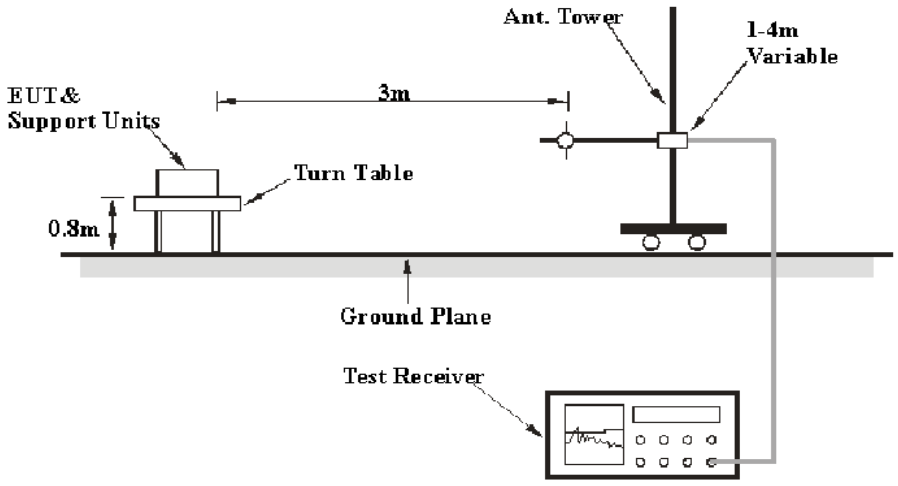
Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

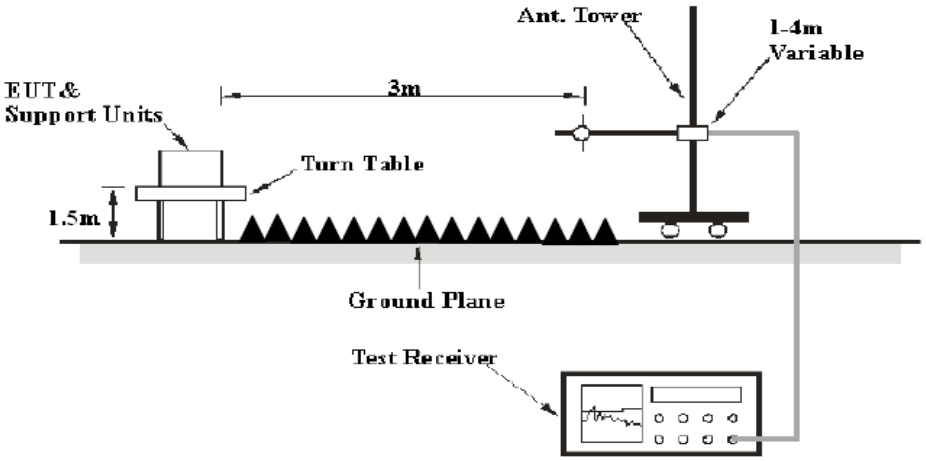
Based on CISPR 16-4-2:2011, the expended combined standard uncertainty of radiation emissions at Bay Area Compliance Laboratories Corp. (Kunshan) is 5.91 dB for 30MHz-1GHz and 4.92 dB for above 1GHz, 1.95dB for conducted measurement at antenna port. And the uncertainty will not be taken into consideration for the test data recorded in the report

EUT Setup

Below 1 GHz:



Above 1GHz:



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

The adapter was connected to a 120 VAC/60 Hz power source.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

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

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	Ave.

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.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sonoma Instrunent	Amplifier	330	171377	2015-09-16	2016-09-16
Rohde & Schwarz	EMI Test Receiver	ESCI	100195	2015-11-12	2016-11-11
Sunol Sciences	Broadband Antenna	JB3	A090314-2	2015-11-07	2016-11-06
ETS	Horn Antenna	3115	6229	2015-11-07	2016-11-06
Rohde & Schwarz	Signal Analyzer	FSIQ26	100048	2015-11-12	2016-11-11
Mini	Pre-amplifier	ZVA-183-S+	857001418	2015-09-16	2016-09-16
R&S	Auto test Software	EMC32	V 09.10.0	-	-
BACL	RF cable	KS-LAB-012	KS-LAB-012	2015-06-16	2016-12-15

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

Corrected Amplitude & Margin Calculation

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

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

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

Margin = Limit – Corrected Amplitude

Test Results Summary

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

7.33 dB at **479.990000 MHz** in the **Horizontal** polarization

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

In BACL, $U_{(Lm)}$ is less than U_{cispr}, if L_m is less than L_{lim}, it implies that the EUT complies with the limit.

Test Data

Environmental Conditions

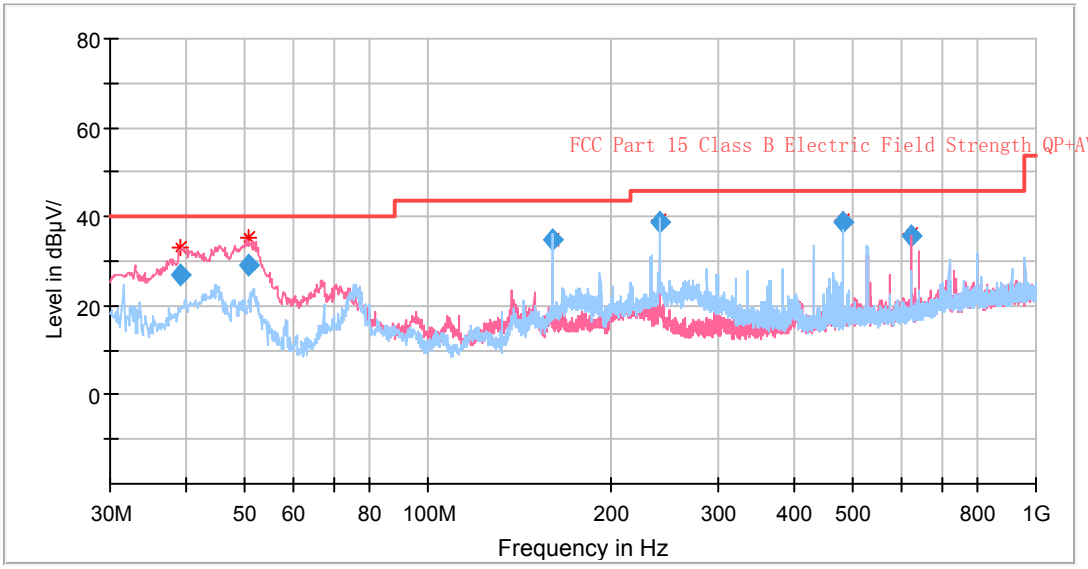
Temperature:	25 ℃
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Matt Yao on2016-02-14& 2016-02-17.

EUT operation mode: Transmitting

30 MHz-1 GHz:

The worst case was performed under 802.11b mode



Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBµV/m)	FCC Part 15.247/205/209	
	Reading (dBµV)	Detector (PK/QP/Ave.)		Height (cm)	Polar (H/V)			Limit (dB µ V/m)	Margin (dB)
39.051400	37.29	QP	9.0	100.0	V	-10.3	26.99	40.00	13.01
50.753900	45.81	QP	226.0	100.0	V	-16.5	29.31	40.00	10.69
160.000400	47.07	QP	52.0	100.0	H	-12.3	34.77	43.50	8.73
240.001700	50.55	QP	101.0	100.0	H	-11.9	38.65	46.00	7.35
479.990000	44.67	QP	206.0	100.0	H	-6.0	38.67	46.00	7.33
623.985150	39.94	QP	197.0	100.0	V	-4.3	35.64	46.00	10.36

1GHz-25GHz

802.11b Mode:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (cm)	Polar (H/V)			Limit (dB μ V/m)	Margin (dB)
Low Channel (2412 MHz)									
2412	97.08	PK	159 .0	150.0	V	2.90	103.98	/	/
2412	85.23	Ave	159.0	150.0	V	2.90	98.13	/	/
2412	96.55	PK	36.0	150.0	H	2.90	102.45	/	/
2412	83.86	Ave	36.0	150.0	H	2.90	97.76	/	/
2382	33.45	Ave	324.0	150.0	V	4.90	38.35	54	15.65
2382	42.24	PK	324.0	150.0	V	4.90	47.14	74	26.86
2390	30.17	Ave	340.0	150.0	V	4.90	35.07	54	18.93
2390	41.90	PK	340.0	150.0	V	4.90	46.80	74	27.20
3469	34.41	PK	249.0	150.0	V	8.10	42.51	74	31.49
3469	21.28	Ave	249.0	150.0	V	8.10	29.38	54	24.62
4824	35.23	PK	153.0	150.0	V	13.40	48.63	74	25.37
4824	26.69	Ave	153.0	150.0	V	13.40	40.09	54	13.91
7236	16.77	Ave	66.0	150.0	V	20.30	37.07	54	16.93
7236	31.28	PK	66.0	150.0	V	20.30	51.58	74	22.42

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (cm)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
Middle Channel (2437 MHz)									
2437	96.01	PK	150.0	150.0	V	3.10	103.11	/	/
2437	83.13	Ave	150.0	150.0	V	3.10	98.23	/	/
2437	94.41	PK	100.0	150.0	H	3.10	102.51	/	/
2437	81.93	Ave	100.0	150.0	H	3.10	97.03	/	/
1603	34.37	PK	161.0	150.0	H	3.30	37.67	74	36.33
1603	20.02	Ave	161.0	150.0	H	3.30	23.32	54	30.68
1954	20.47	Ave	233.0	150.0	V	4.80	25.27	54	28.73
1954	34.30	PK	233.0	150.0	V	4.80	39.10	74	34.90
3244	34.15	PK	54.0	150.0	V	7.60	41.75	74	32.25
3244	20.87	Ave	54.0	150.0	V	7.60	28.47	54	25.53
4874	34.69	PK	95.0	150.0	H	13.70	48.39	74	25.61
4874	23.96	Ave	95.0	150.0	H	13.70	37.66	54	16.34
7311	31.72	PK	20.0	150.0	V	18.90	50.62	74	23.38
7311	18.35	Ave	20.0	150.0	V	18.90	37.25	54	16.75

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (cm)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
High Channel (2462 MHz)									
2462	95.62	PK	110.0	150.0	V	3.10	103.72	/	/
2462	82.31	Ave	110.0	150.0	V	3.10	98.41	/	/
2462	94.02	PK	85.0	100.0	H	3.10	103.12	/	/
2462	81.46	Ave	85.0	100.0	H	3.10	97.56	/	/
1491	34.40	PK	177.0	150.0	V	2.90	37.30	74	36.70
1491	20.89	Ave	177.0	150.0	V	2.90	23.79	54	30.21
2483.5	28.93	Ave	320.0	150.0	V	4.90	33.83	54	20.17
2483.5	41.57	PK	320.0	150.0	V	4.90	46.47	74	27.53
2488	36.03	Ave	338.0	150.0	V	4.90	40.93	54	13.07
2488	44.26	PK	338.0	150.0	V	4.90	49.16	74	24.84
4924	33.92	PK	77.0	150.0	V	14.00	47.92	74	26.08
4924	21.88	Ave	77.0	150.0	V	14.00	35.88	54	18.12
7386	22.86	Ave	253.0	150.0	V	19.80	42.66	54	11.34
7386	33.74	PK	253.0	150.0	V	19.80	53.54	74	20.46

802.11g Mode:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (cm)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
Low Channel (2412 MHz)									
2412	96.64	PK	155.0	200.0	V	3.10	99.74	/	/
2412	83.22	Ave	155.0	200.0	V	3.10	86.32	/	/
2412	95.02	PK	90.0	100.0	H	3.10	98.12	/	/
2412	81.91	Ave	90.0	100.0	H	3.10	85.01	/	/
1603	20.47	Ave	156.0	150.0	H	3.30	23.77	54	30.23
1603	34.73	PK	156.0	150.0	H	3.30	38.03	74	35.97
2379	45.16	PK	343.0	150.0	H	4.90	50.06	74	23.94
2379	24.57	Ave	343.0	150.0	H	4.90	29.47	54	24.53
2390	52.13	PK	343.0	150.0	H	4.90	57.03	74	16.97
2390	30.17	Ave	343.0	150.0	H	4.90	35.07	54	18.93
4824	35.98	PK	146.0	150.0	V	13.40	49.38	74	24.62
4824	22.45	Ave	146.0	150.0	V	13.40	35.85	54	18.15
7236	31.51	PK	172.0	150.0	H	18.90	50.41	74	23.59
7236	18.13	Ave	172.0	150.0	H	18.90	37.03	54	16.97

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (cm)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
Middle Channel (2437 MHz)									
2437	95.48	PK	125.0	200.0	V	3.10	98.58	/	/
2437	81.27	Ave	125.0	200.0	V	3.10	84.37	/	/
2437	92.96	PK	65.0	150.0	H	3.10	96.06	/	/
2437	80.16	Ave	65.0	150.0	H	3.10	83.26	/	/
1589	35.11	PK	171.0	150.0	V	3.30	38.41	74	35.59
1589	20.84	Ave	171.0	150.0	V	3.30	24.14	54	29.86
3259	21.3	Ave	76.0	150.0	H	7.60	28.90	54	25.10
3259	34.59	PK	76.0	150.0	H	7.60	42.19	74	31.81
4874	21.76	Ave	97.0	150.0	V	13.90	35.66	54	18.34
4874	34.86	PK	97.0	150.0	V	13.90	48.76	74	25.24
6611	34.89	PK	299.0	150.0	V	18.10	52.99	74	21.01
6611	21.71	Ave	299.0	150.0	V	18.10	39.81	54	14.19
7311	18.17	Ave	32.0	150.0	H	18.90	37.07	54	16.93
7311	31.58	PK	32.0	150.0	H	18.90	50.48	74	23.52

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (cm)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
High Channel (2462 MHz)									
2462	95.45	PK	96.0	200.0	V	3.10	98.55	/	/
2462	81.22	Ave	96.0	200.0	V	3.10	84.32	/	/
2462	93.02	PK	35.0	150.0	H	3.10	96.12	/	/
2462	82.53	Ave	35.0	150.0	H	3.10	85.63	/	/
1589	35.17	PK	164.0	150.0	H	3.30	38.47	74	35.53
1589	20.84	Ave	164.0	150.0	H	3.30	24.14	54	29.86
2483.5	51.61	PK	359.0	150.0	H	4.90	56.51	74	17.49
2483.5	31.95	Ave	359.0	150.0	H	4.90	36.85	54	17.15
2496	44.26	PK	345.0	150.0	H	4.90	49.16	74	24.84
2496	25.33	Ave	345.0	150.0	H	4.90	30.23	54	23.77
4924	36.77	PK	77.0	150.0	H	13.80	50.57	74	23.43
4924	22.44	Ave	77.0	150.0	H	13.80	36.24	54	17.76
7386	31.46	PK	177.0	150.0	V	19.80	51.26	74	22.74
7386	18.73	Ave	177.0	150.0	V	19.80	38.53	54	15.47

802.11n-HT20 Mode:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (cm)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
Low Channel (2412 MHz)									
2412	95.87	PK	125.0	150.0	V	2.90	98.77	/	/
2412	82.44	Ave	125.0	150.0	V	2.90	85.34	/	/
2412	92.65	PK	65.0	200.0	H	2.90	95.55	/	/
2412	81.31	Ave	65.0	200.0	H	2.90	84.21	/	/
2374	42.38	PK	343.0	150.0	V	4.90	47.28	74	26.72
2374	23.72	Ave	343.0	150.0	V	4.90	28.62	54	25.38
2390	47.94	PK	316.0	150.0	H	4.90	52.84	74	21.16
2390	26.06	Ave	316.0	150.0	H	4.90	30.96	54	23.04
1589	20.84	Ave	169.0	150.0	V	3.30	24.14	54	29.86
1589	34.98	PK	169.0	150.0	V	3.30	38.28	74	35.72
4824	36.71	PK	91.0	150.0	V	13.50	50.21	74	23.79
4824	21.63	Ave	91.0	150.0	V	13.50	35.13	54	18.87
7236	31.98	PK	130.0	150.0	V	18.30	50.28	74	23.72
7236	18.7	Ave	130.0	150.0	V	18.30	37.00	54	17.00

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (cm)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
Middle Channel (2437 MHz)									
2437	94.22	PK	140.0	200.0	V	3.10	97.32	/	/
2437	81.12	Ave	140.0	200.0	V	3.10	84.22	/	/
2437	92.51	PK	80.0	150.0	H	3.10	95.61	/	/
2437	80.63	Ave	80.0	150.0	H	3.10	83.73	/	/
1491	20.89	Ave	177.0	150.0	V	2.90	23.79	54	30.21
1491	34.14	PK	177.0	150.0	V	2.90	37.04	74	36.96
1603	20.02	Ave	179.0	150.0	V	3.30	23.32	54	30.68
1603	33.8	PK	179.0	150.0	V	3.30	37.10	74	36.90
3244	20.87	Ave	19.0	150.0	V	7.60	28.47	54	25.53
3244	34.52	PK	19.0	150.0	V	7.60	42.12	74	31.88
4874	36.88	PK	95.0	150.0	H	13.90	50.78	74	23.22
4874	22.12	Ave	95.0	150.0	H	13.90	36.02	54	17.98
7311	31.74	PK	38.0	150.0	H	18.90	50.64	74	23.36
7311	18.17	Ave	38.0	150.0	H	18.90	37.07	54	16.93

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (cm)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
High Channel (2462 MHz)									
2462	94.72	PK	220.0	150.0	V	3.10	97.82	/	/
2462	81.21	Ave	220.0	150.0	V	3.10	84.31	/	/
2462	92.17	PK	101.0	150.0	H	3.10	95.27	/	/
2462	80.21	Ave	101.0	150.0	H	3.10	83.31	/	/
2483.5	34.00	Ave	2.0	150.0	V	4.90	38.90	54	15.10
2483.5	51.05	PK	2.0	150.0	V	4.90	55.95	74	18.05
2497	24.82	Ave	313.0	150.0	V	4.90	29.72	54	24.28
2497	43.45	PK	313.0	150.0	V	4.90	48.35	74	25.65
1603	20.47	Ave	157.0	150.0	V	3.30	23.77	54	30.23
1603	34.37	PK	157.0	150.0	V	3.30	37.67	74	36.33
4924	29.83	PK	83.0	150.0	H	18.70	48.53	74	25.47
4924	15.97	Ave	83.0	150.0	H	18.70	34.67	54	19.33
7386	31.00	PK	44.0	150.0	V	19.80	50.80	74	23.20
7386	17.48	Ave	44.0	150.0	V	19.80	37.28	54	16.72

802.11n-HT40 Mode:

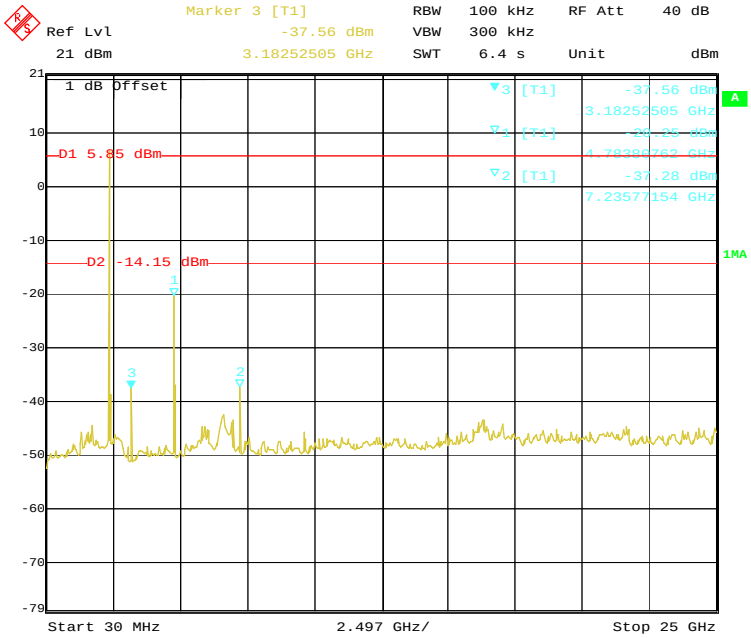
Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (cm)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
Low Channel (2422 MHz)									
2422	95.03	PK	286.0	200.0	V	2.90	97.93	/	/
2422	82.52	Ave	286.0	200.0	V	2.90	85.42	/	/
2422	91.35	PK	100.0	200.0	H	2.90	94.25	/	/
2422	78.13	Ave	100.0	200.0	H	2.90	81.03	/	/
2372	43.71	PK	139.0	150.0	V	4.90	48.61	74	25.39
2372	25.35	Ave	139.0	150.0	V	4.90	30.25	54	23.75
2390	54.56	PK	2.0	150.0	V	4.90	59.46	74	14.54
2390	32.19	Ave	2.0	150.0	V	4.90	37.09	54	16.91
1589	20.84	Ave	157.0	150.0	H	3.30	24.14	54	29.86
1589	35.71	PK	157.0	150.0	H	3.30	39.01	74	34.99
4844	22.85	Ave	181.0	150.0	H	13.40	36.25	54	17.75
4844	37.91	PK	181.0	150.0	H	13.40	51.31	74	22.69
7266	15.87	Ave	269.0	150.0	H	21.10	36.97	54	17.03
7266	29.99	PK	269.0	150.0	H	21.10	51.09	74	22.91

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (cm)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
Middle Channel (2437 MHz)									
2437	93.46	PK	300.0	200.0	V	3.10	96.56	/	/
2437	91.25	Ave	300.0	200.0	V	3.10	94.35	/	/
2437	90.47	PK	165.0	150.0	H	3.10	93.57	/	/
2437	88.47	Ave	165.0	150.0	H	3.10	91.57	/	/
1589	36.19	PK	160.0	150.0	V	3.30	39.49	74	34.51
1589	20.84	Ave	160.0	150.0	V	3.30	24.14	54	29.86
3244	34.46	PK	105.0	150.0	V	7.60	42.06	74	31.94
3244	20.87	Ave	105.0	150.0	V	7.60	28.47	54	25.53
4874	35.62	PK	85.0	150.0	V	13.90	49.52	74	24.48
4874	21.01	Ave	85.0	150.0	V	13.90	34.91	54	19.09
6920	19.97	Ave	79.0	150.0	V	19.50	39.47	54	14.53
6920	32.92	PK	79.0	150.0	V	19.50	52.42	74	21.58
7311	31.95	PK	123.0	150.0	V	18.90	50.85	74	23.15
7311	18.26	Ave	123.0	150.0	V	18.90	37.16	54	16.84

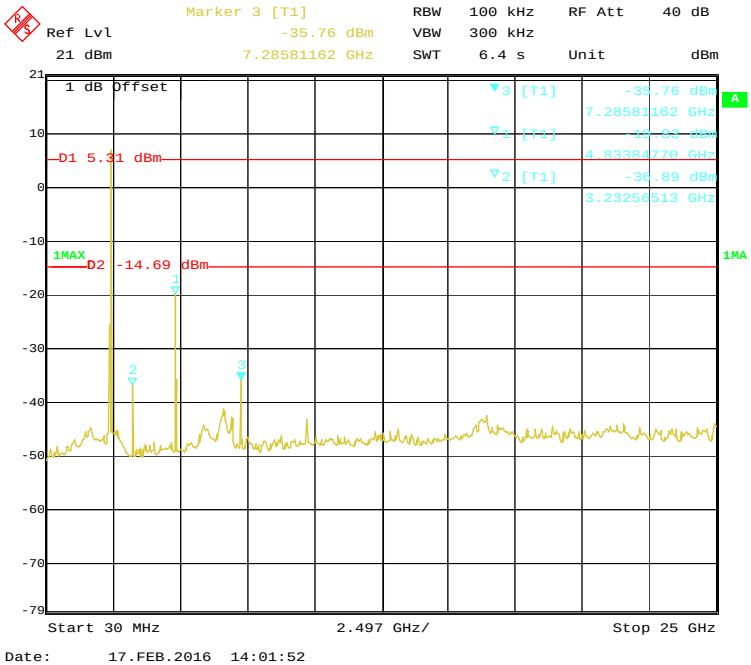
Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (cm)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
High Channel (2452 MHz)									
2452	94.46	PK	110.0	150.0	V	3.10	97.56	/	/
2452	90.63	Ave	110.0	150.0	V	3.10	93.73	/	/
2452	91.45	PK	75.0	200.0	H	3.10	94.55	/	/
2452	89.16	Ave	75.0	200.0	H	3.10	92.26	/	/
2483.5	34.36	Ave	312.0	150.0	H	4.90	39.26	54	14.74
2483.5	52.35	PK	312.0	150.0	H	4.90	57.25	74	16.75
2495	46.10	PK	5.0	150.0	H	4.90	51.00	74	23.00
2495	29.25	Ave	5.0	150.0	H	4.90	34.15	54	19.85
1589	20.84	Ave	172.0	150.0	H	3.30	24.14	54	29.86
1589	35.21	PK	172.0	150.0	H	3.30	38.51	74	35.49
4904	31.20	PK	100.0	150.0	V	18.70	49.90	74	24.10
4904	16.70	Ave	100.0	150.0	V	18.70	35.40	54	18.60
7356	32.14	PK	356.0	150.0	H	19.80	51.94	74	22.06
7356	17.42	Ave	356.0	150.0	H	19.80	37.22	54	16.78

Conducted Spurious Emissions at Antenna Port

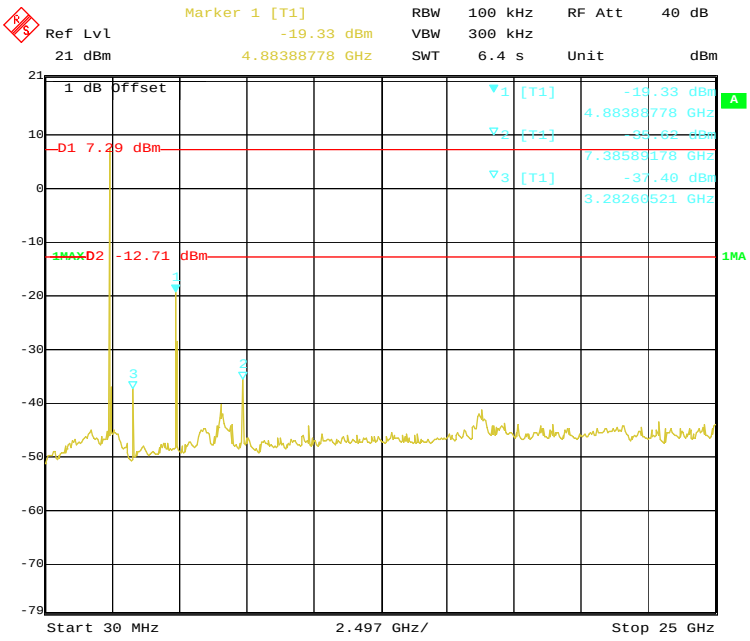
802.11b Low Channel



802.11b Middle Channel



802.11b High Channel



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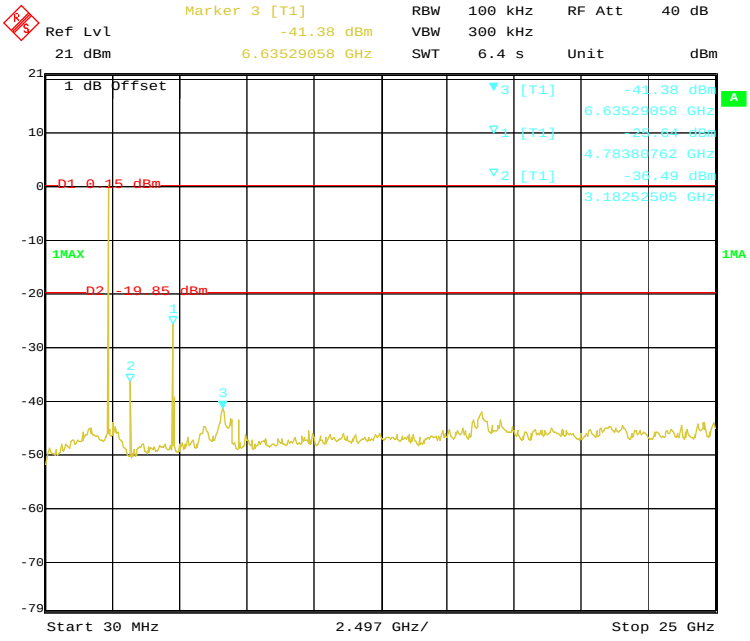
802.11g Low Channel



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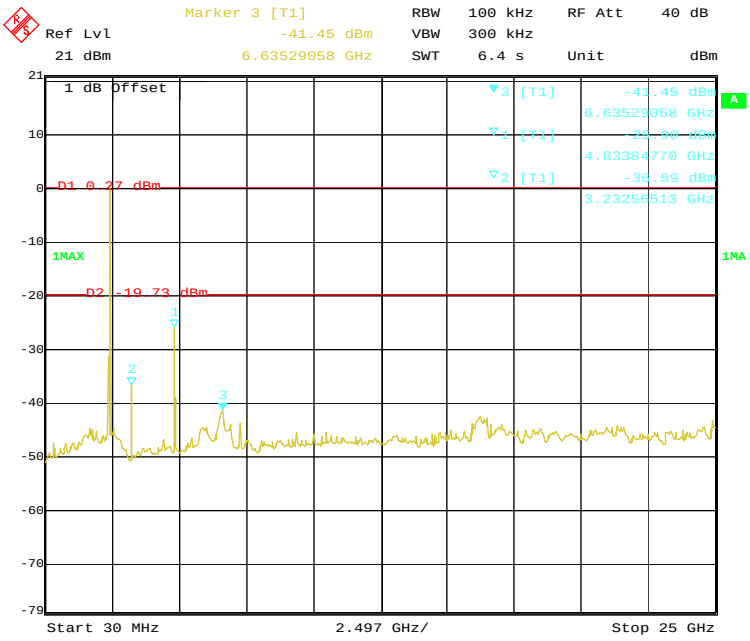
802.11g Middle Channel



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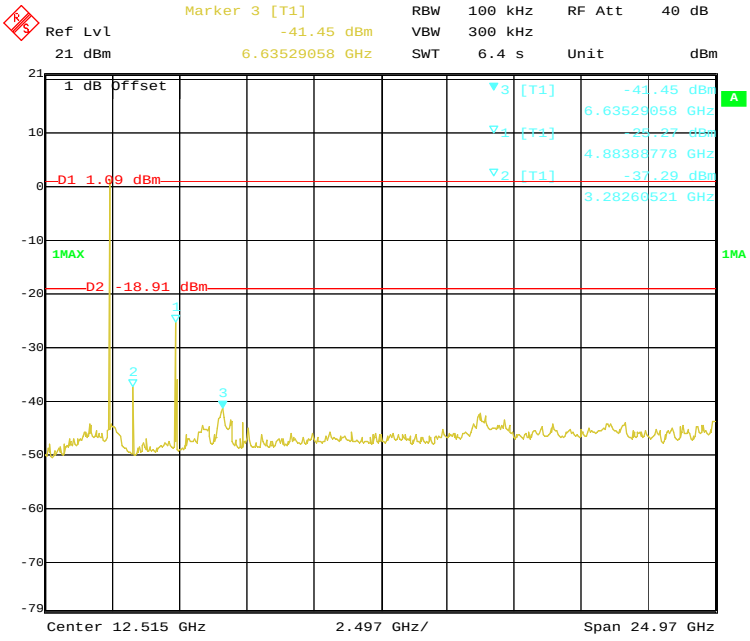
802.11g High Channel



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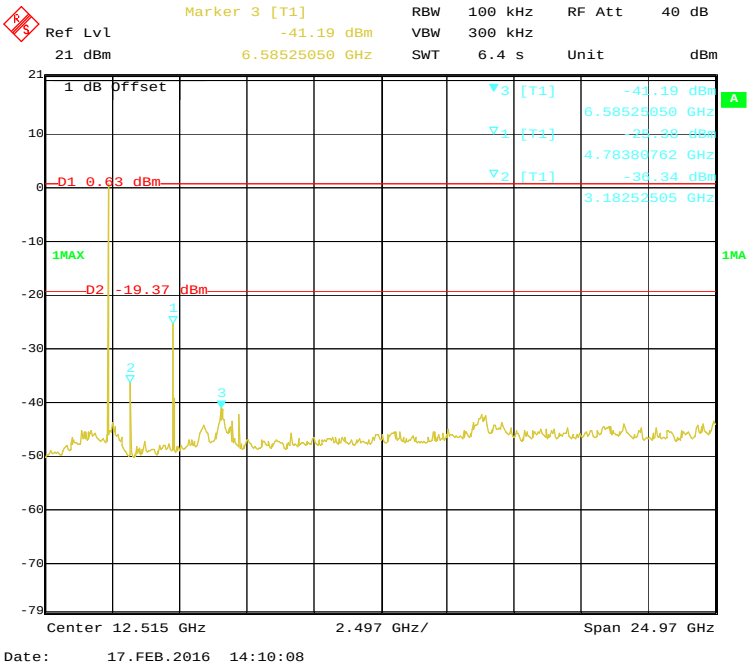
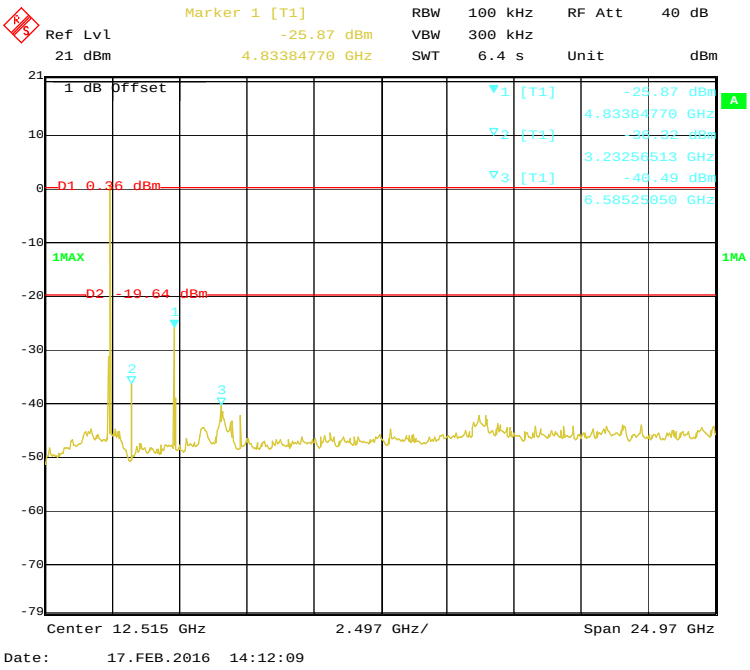
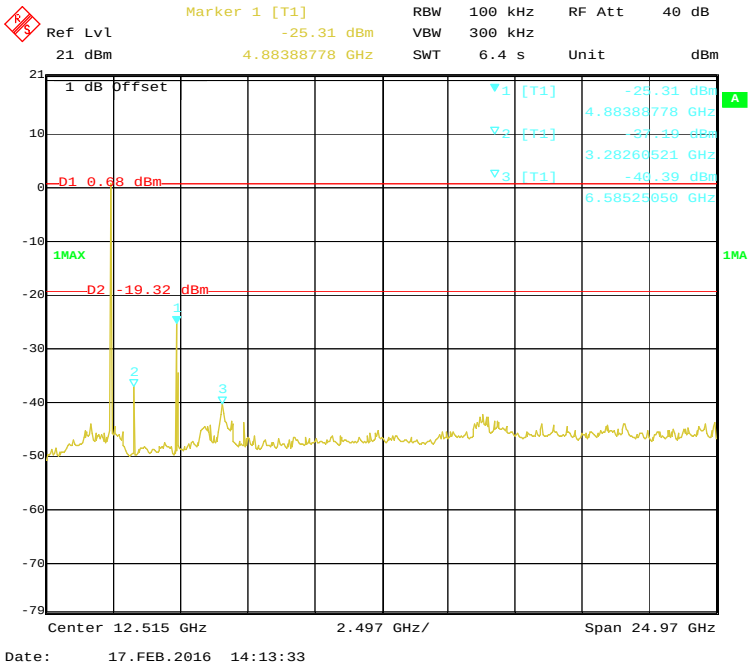
802.11n-HT20 Low Channel



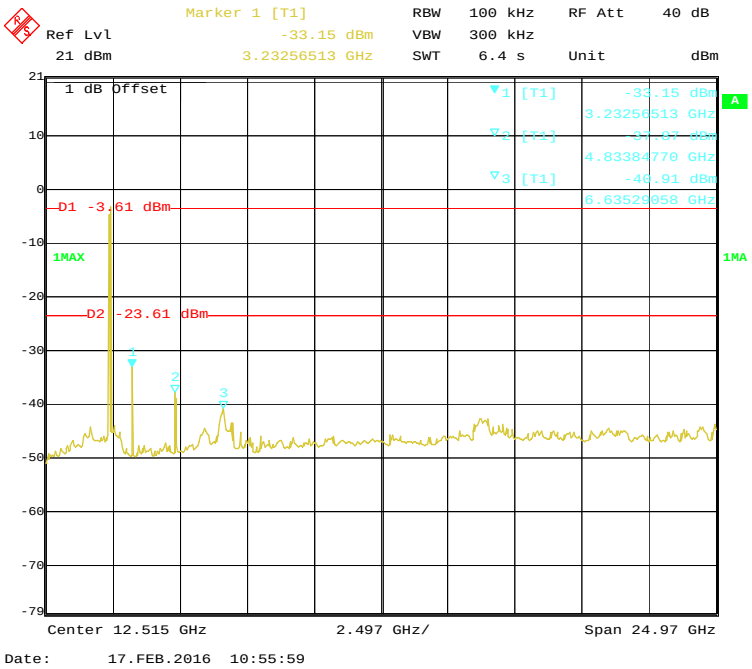
802.11n-HT20 Middle Channel



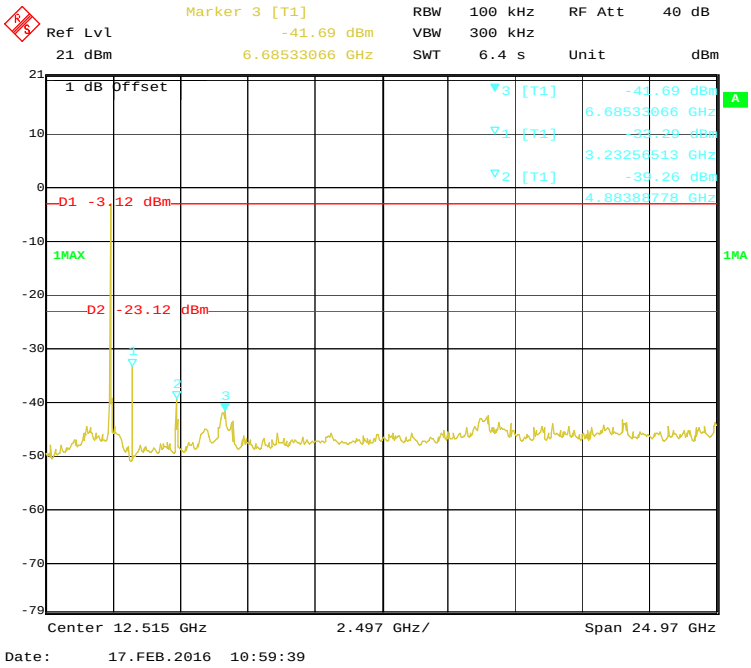
802.11n-HT20 High Channel



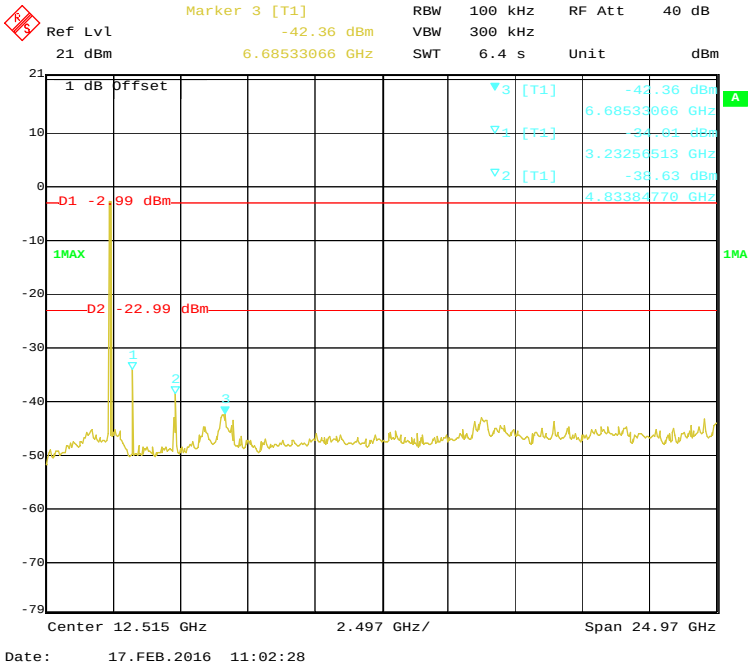
802.11n-HT40 Low Channel



802.11n-HT40 Middle Channel



802.11n-HT40 High Channel



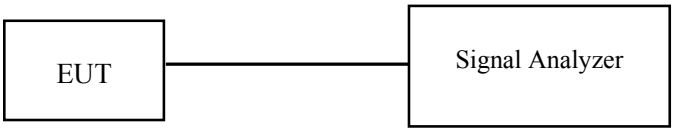
FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH

Applicable Standard

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

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 6 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	100048	2015-11-12	2016-11-11
BACL	RF cable	KS-LAB-012	KS-LAB-012	2015-06-16	2016-12-15

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

Test Data

Environmental Conditions

Temperature:	27 ℃
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Matt Yao on 2016-02-16.

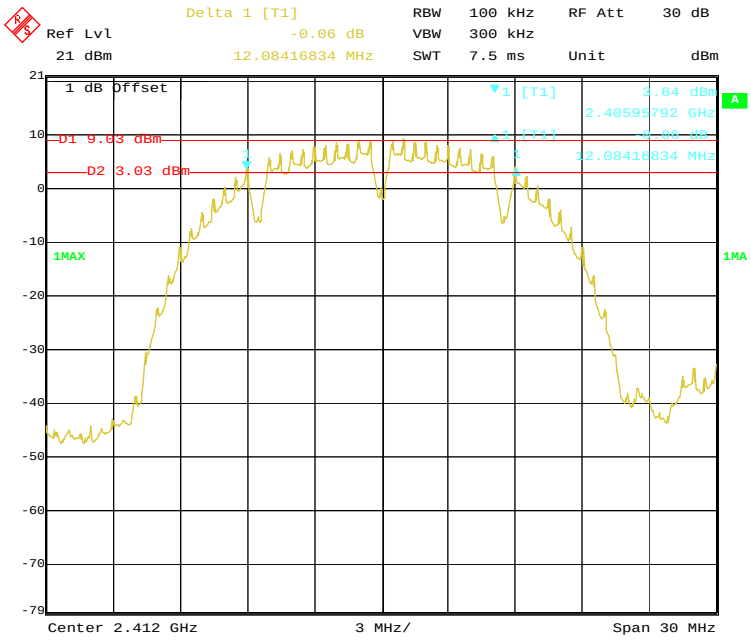
Test Result: Pass.

Please refer to the following tables and plots.

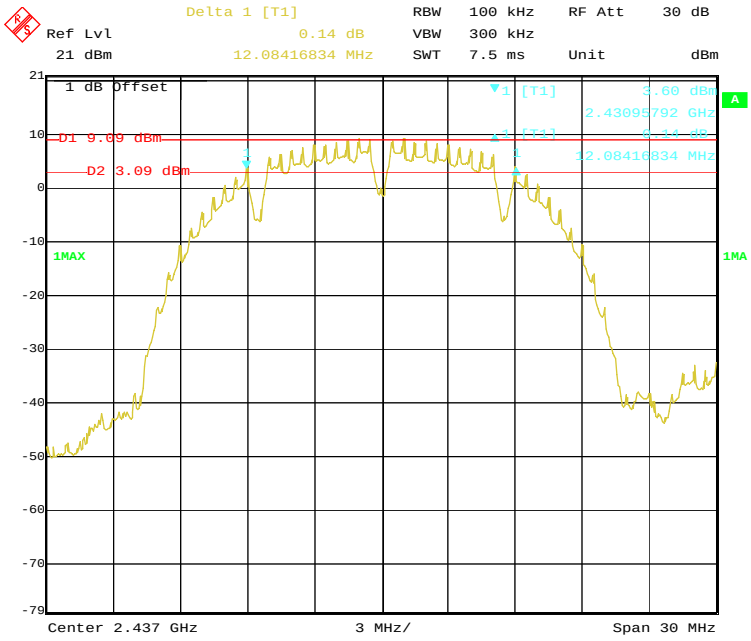
EUT operation mode: Transmitting

Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)	Limit (kHz)
802.11b mode			
Low	2412	12.08	≥500
Middle	2437	12.08	≥500
High	2462	12.02	≥500
802.11g mode			
Low	2412	16.41	≥500
Middle	2437	16.47	≥500
High	2462	16.41	≥500
802.11n-HT20 mode			
Low	2412	17.74	≥500
Middle	2437	17.74	≥500
High	2462	17.68	≥500
802.11n-HT40 mode			
Low	2422	36.43	≥500
Middle	2437	36.55	≥500
High	2452	36.43	≥500

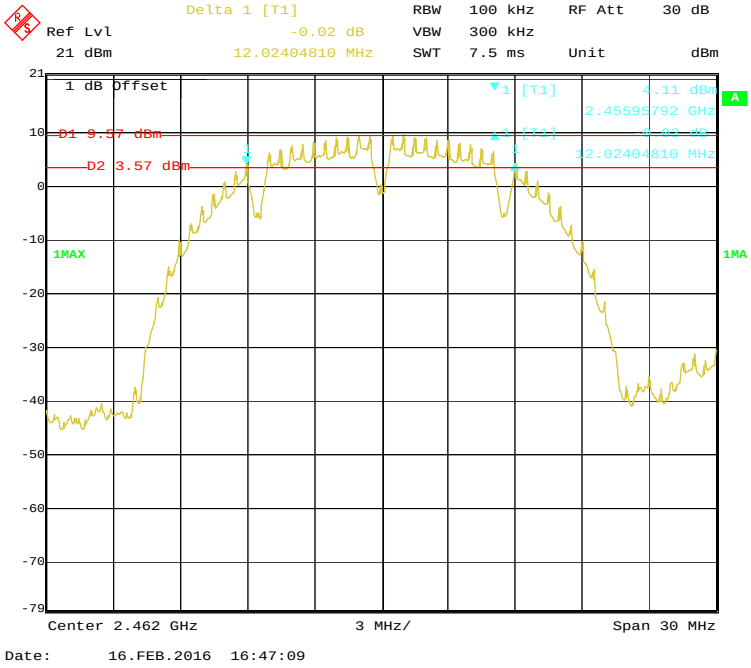
802.11b Low Channel



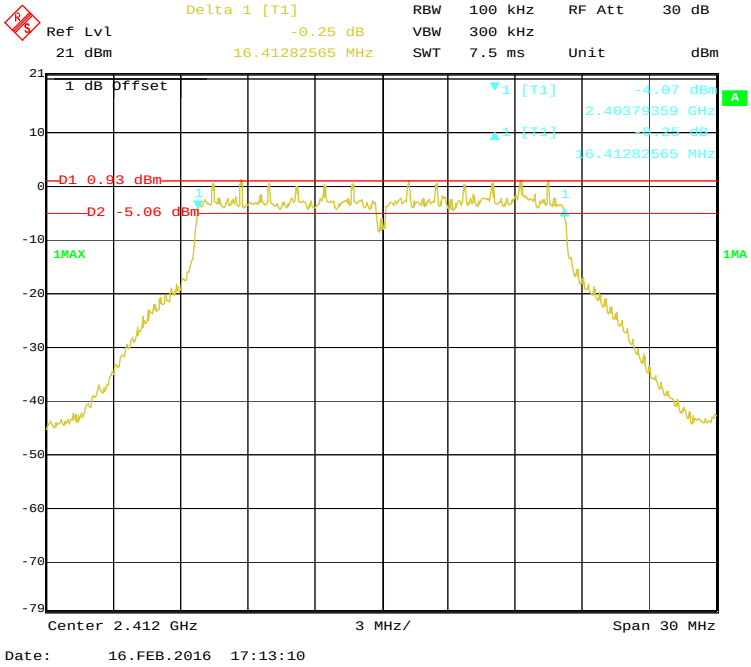
802.11b Middle Channel



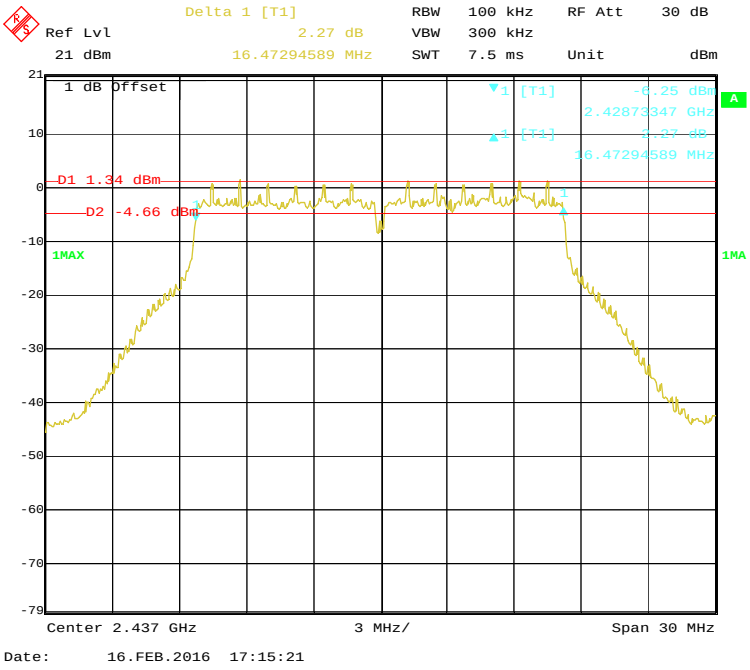
802.11b High Channel



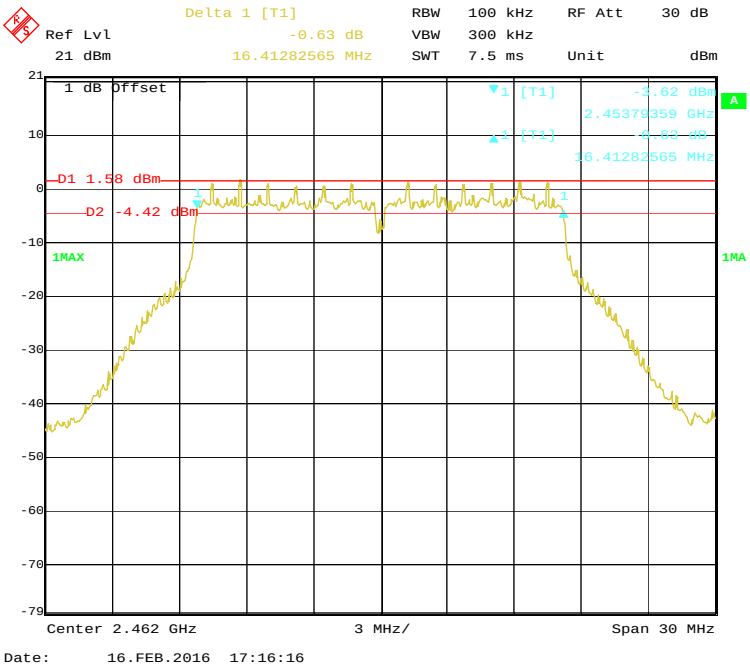
802.11g Low Channel



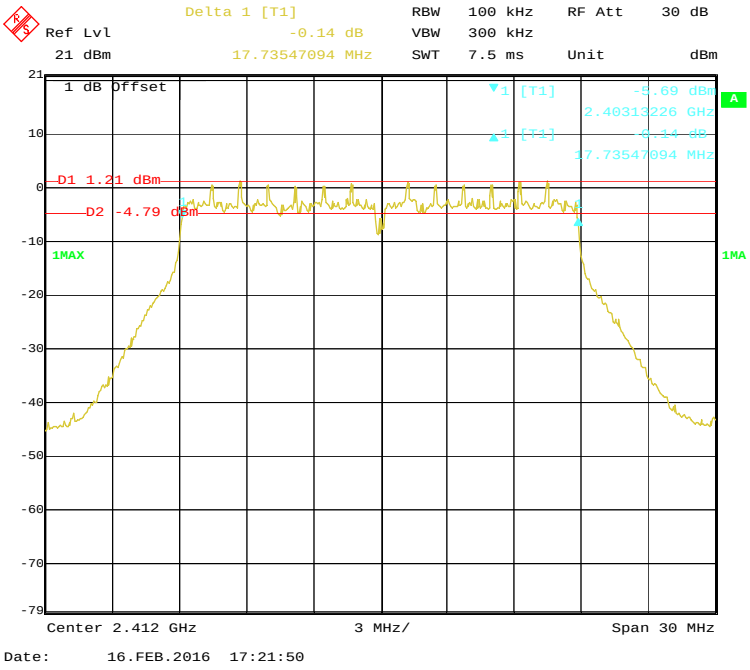
802.11g Middle Channel



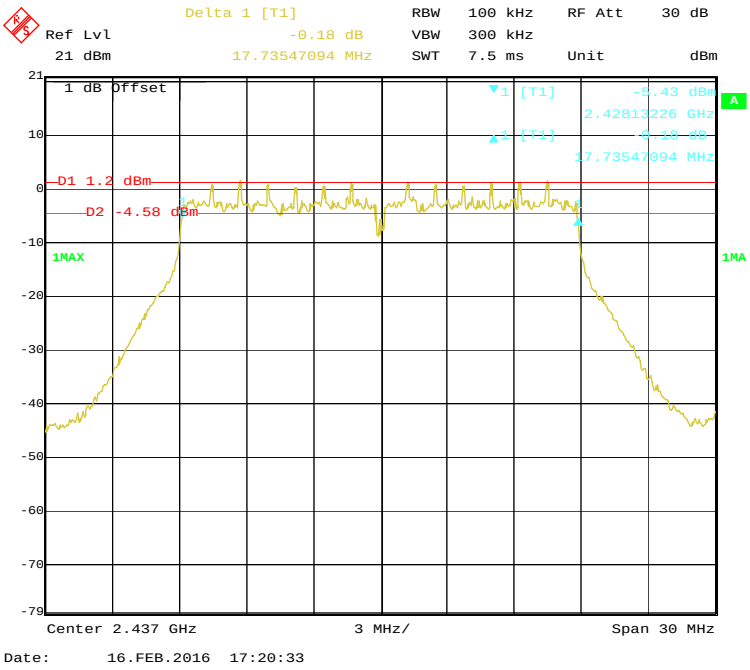
802.11g High Channel



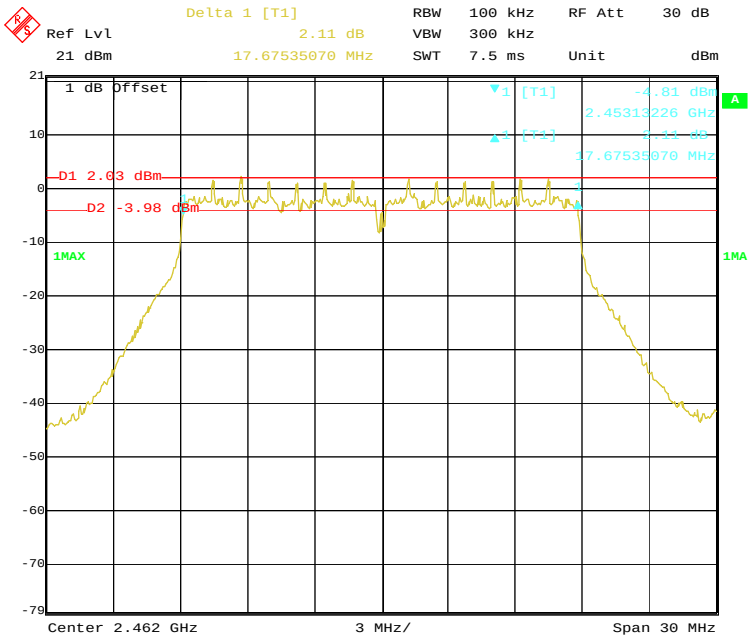
802.11n-HT20 Low Channel



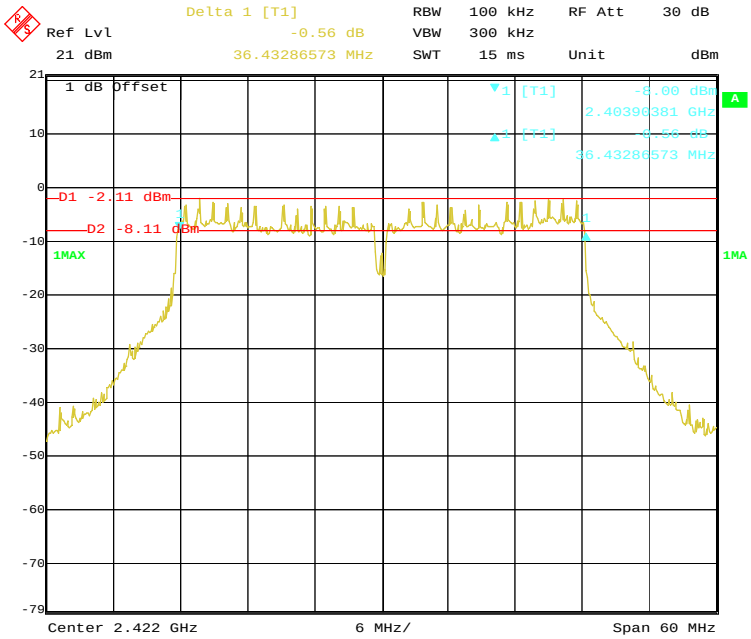
802.11n-HT20 Middle Channel



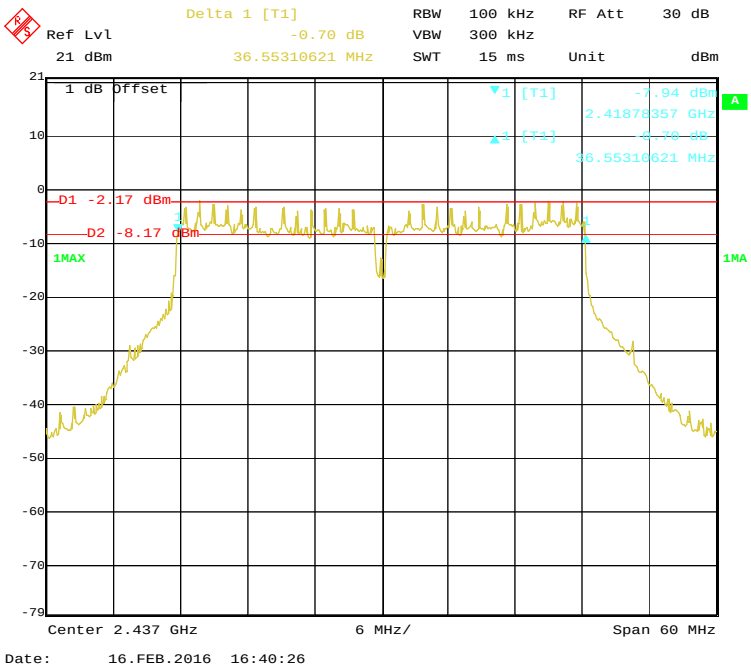
802.11n-HT20 High Channel



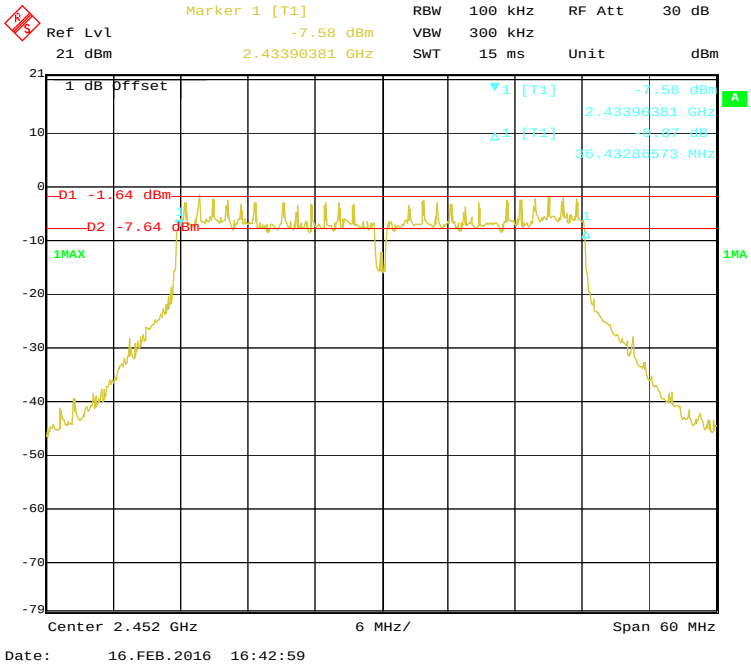
802.11n-HT40 Low Channel



802.11n-HT40 Middle Channel



802.11n-HT40 High Channel



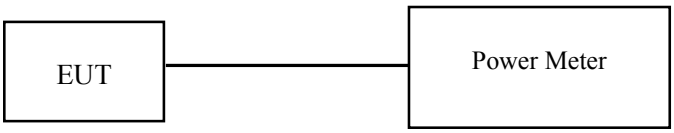
FCC §15.247(b) (3) - MAXIMUM CONDUCTED OUTPUT POWER

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 one 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
Rohde & Schwarz	OSP120 BASE UNIT	OSP120	101247	2014-5-27	2016-5-27
Rohde & Schwarz	Power Sensor	NRP-Z91	200014	2015-8-1	2017-7-31
BACL	RF cable	KS-LAB-012	KS-LAB-012	2015-06-16	2016-12-15

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

Test Data

Environmental Conditions

Temperature:	27 ℃
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Matt Yao on 2016-02-17

EUT operation mode: Transmitting

Channel	Frequency (MHz)	Max Conducted Peak Output Power (dBm)	Limit (dBm)
802.11b			
Low	2412	22.04	30
Middle	2437	22.15	30
High	2462	22.17	30
802.11g			
Low	2412	21.20	30
Middle	2437	21.04	30
High	2462	21.30	30
802.11n-HT20			
Low	2412	21.11	30
Middle	2437	21.06	30
High	2462	21.25	30
802.11n-HT40			
Low	2422	21.08	30
Middle	2437	21.00	30
High	2452	21.15	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	100048	2015-11-12	2016-11-11
BACL	RF cable	KS-LAB-012	KS-LAB-012	2015-06-16	2016-12-15

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

Test Data

Environmental Conditions

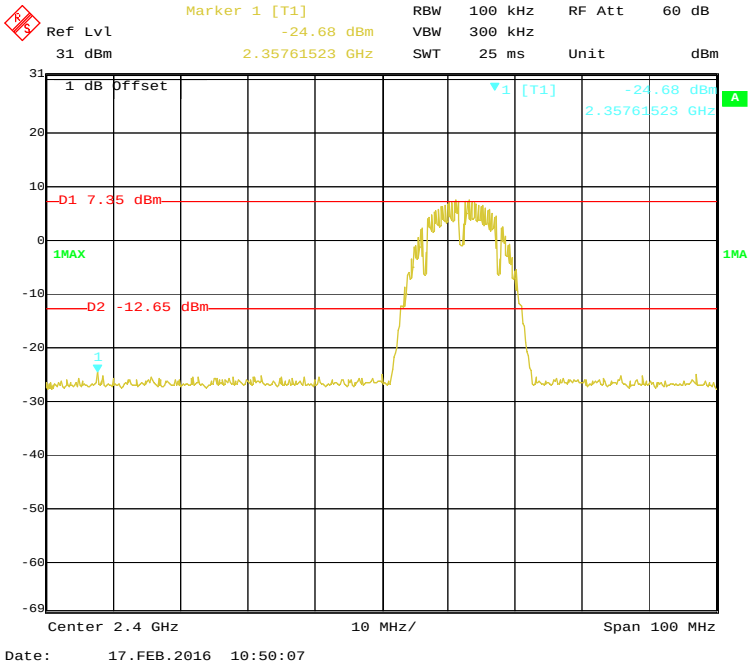
Temperature:	27 ℃
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Matt Yao on 2016-02-17.

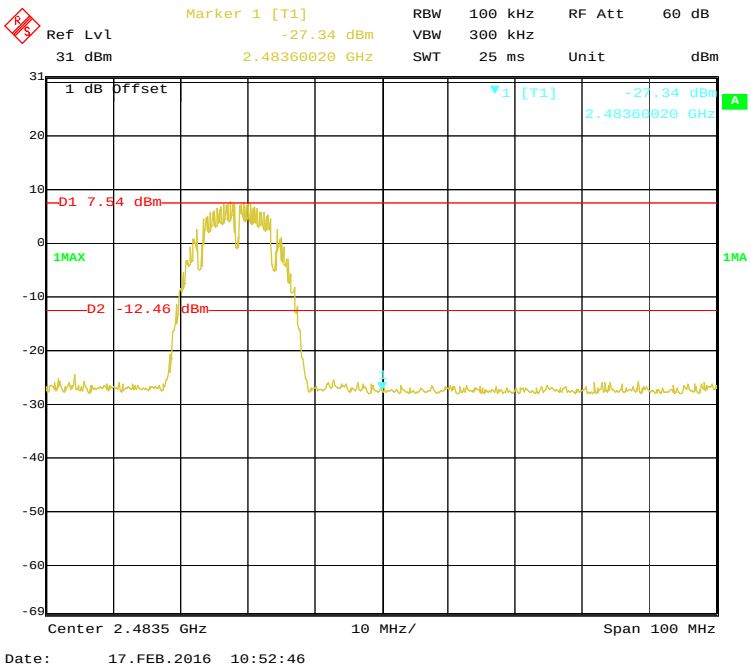
Test Result: *Compliance*

Please refer to the following table and plots.

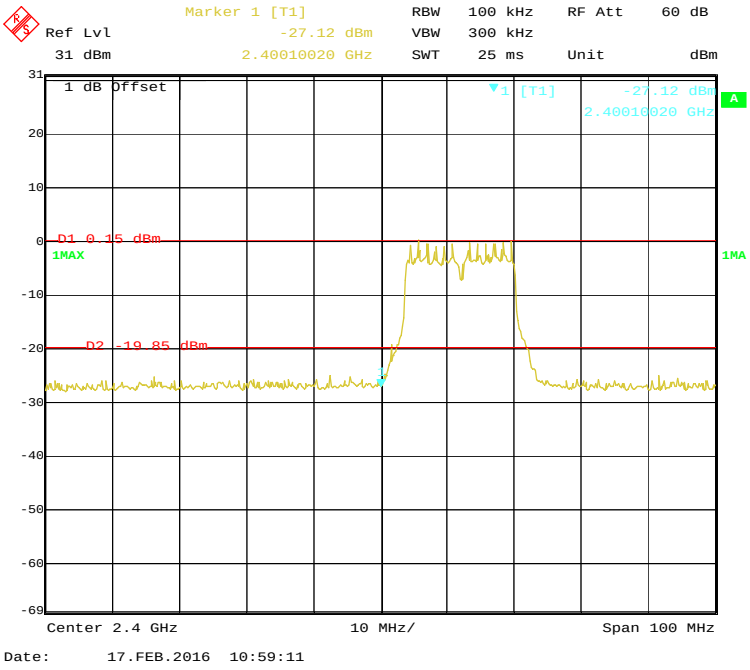
802.11b: Band Edge, Left Side



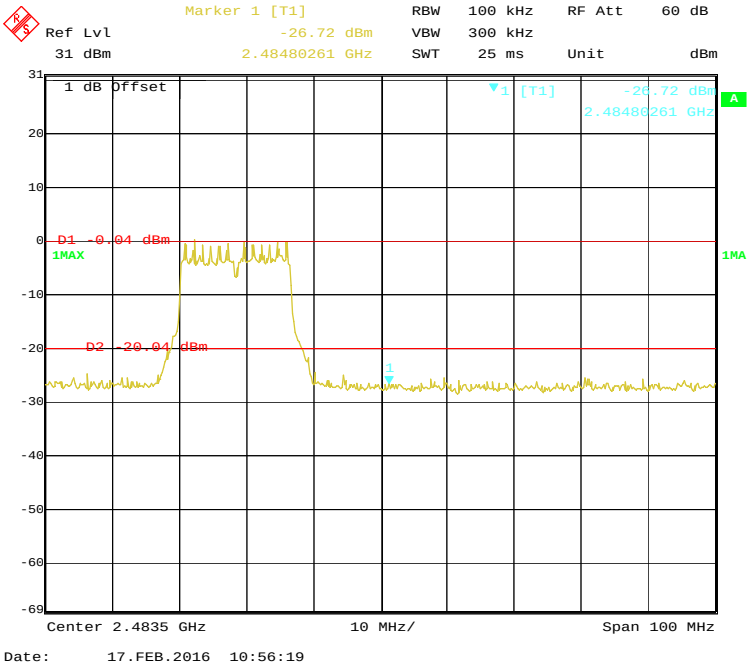
802.11b: Band Edge, Right Side



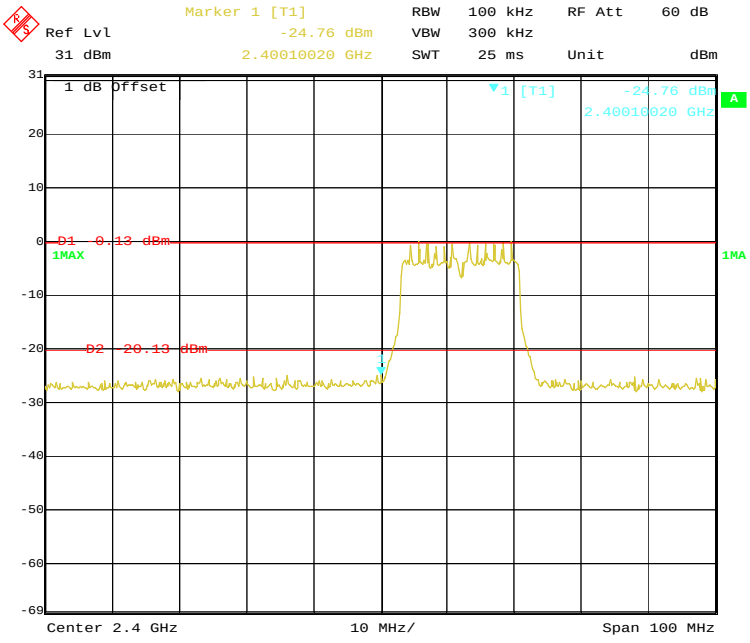
802.11g: Band Edge, Left Side



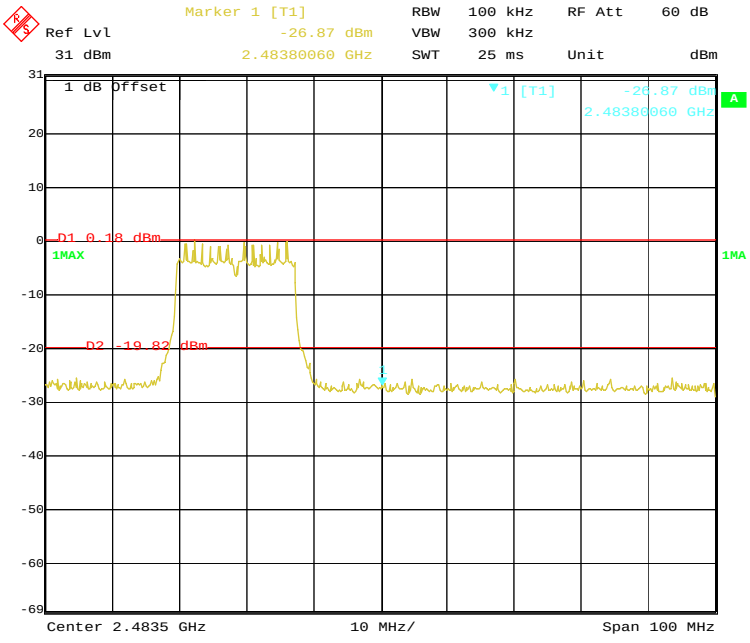
802.11g: Band Edge, Right Side



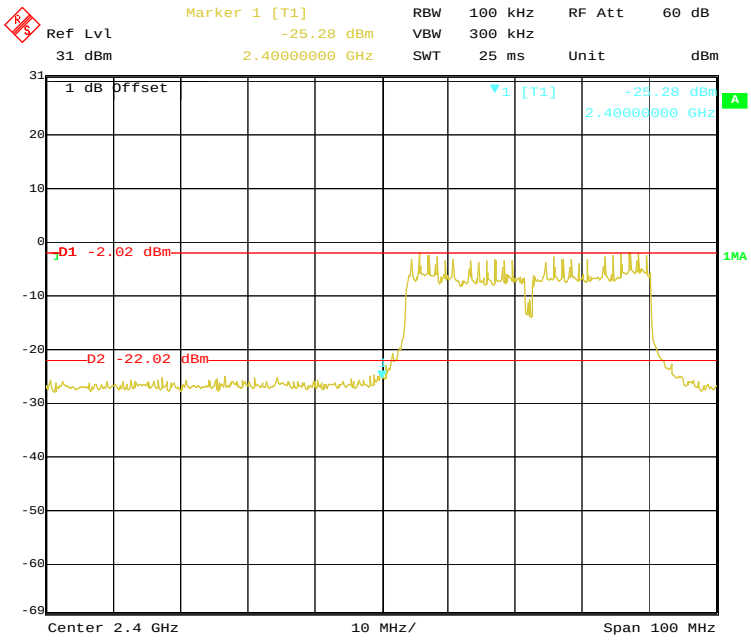
802.11n-HT20: Band Edge, Left Side



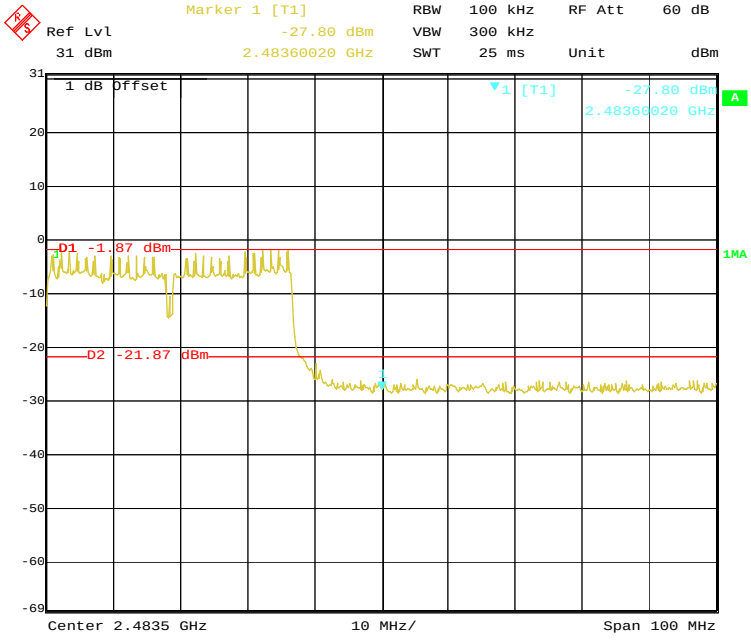
802.11n-HT20: Band Edge, Right Side



802.11n-HT40: Band Edge, Left Side



802.11n-HT40: 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

According to KDB558074 D01 DTS Meas Guidance v03r04 sub-clause 10.2

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	100048	2015-11-12	2016-11-11
BACL	RF cable	KS-LAB-012	KS-LAB-012	2015-06-16	2016-12-15

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

Test Data

Environmental Conditions

Temperature:	27 ℃
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

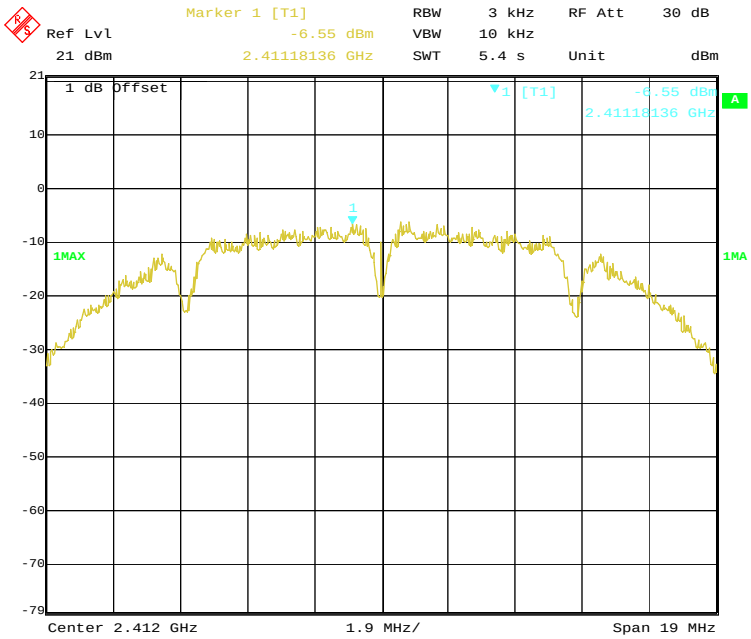
The testing was performed by Matt Yao on 2016-02-16.

EUT operation mode: Transmitting

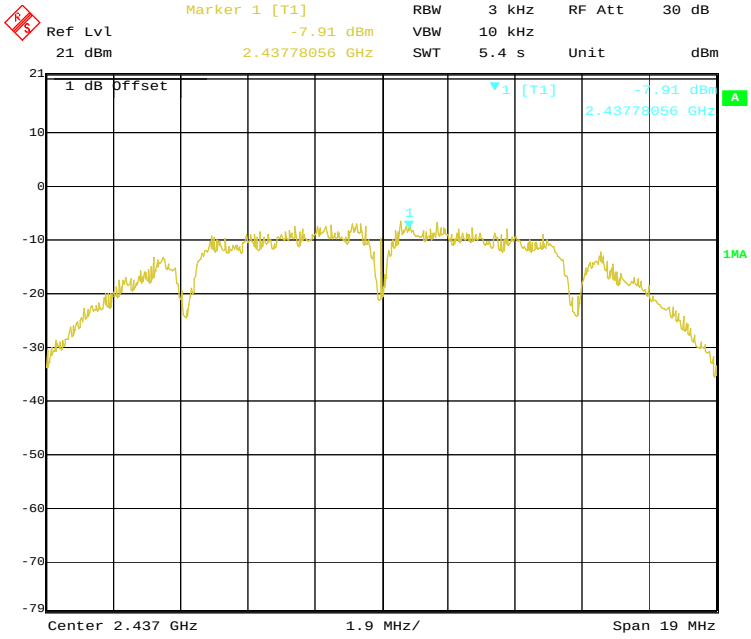
Test Result: Pass

Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)
802.11b mode			
Low	2412	-6.55	≤8
Middle	2437	-7.91	≤8
High	2462	-6.17	≤8
802.11g mode			
Low	2412	-13.48	≤8
Middle	2437	-12.86	≤8
High	2462	-13.13	≤8
802.11n-HT20 mode			
Low	2412	-12.79	≤8
Middle	2437	-13.48	≤8
High	2462	-12.45	≤8
802.11n-HT40 mode			
Low	2422	-16.07	≤8
Middle	2437	-16.37	≤8
High	2452	-16.05	≤8

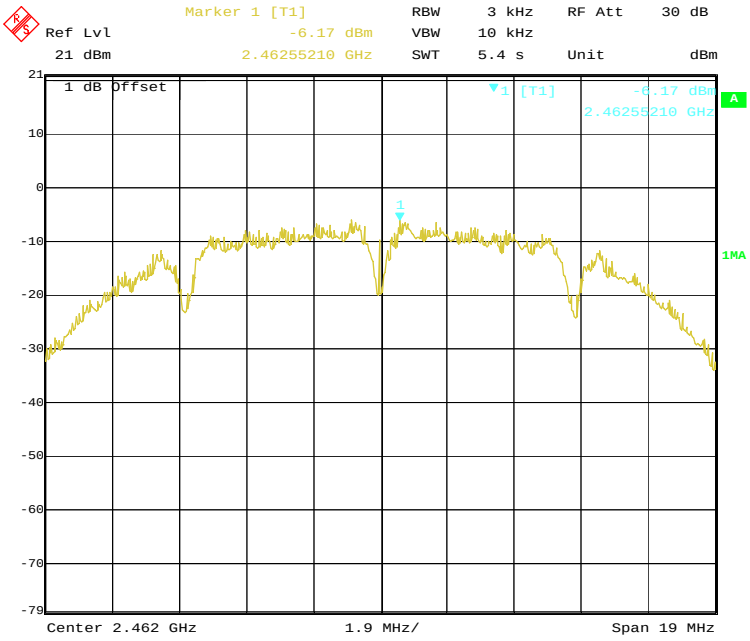
Power Spectral Density, 802.11b Low Channel



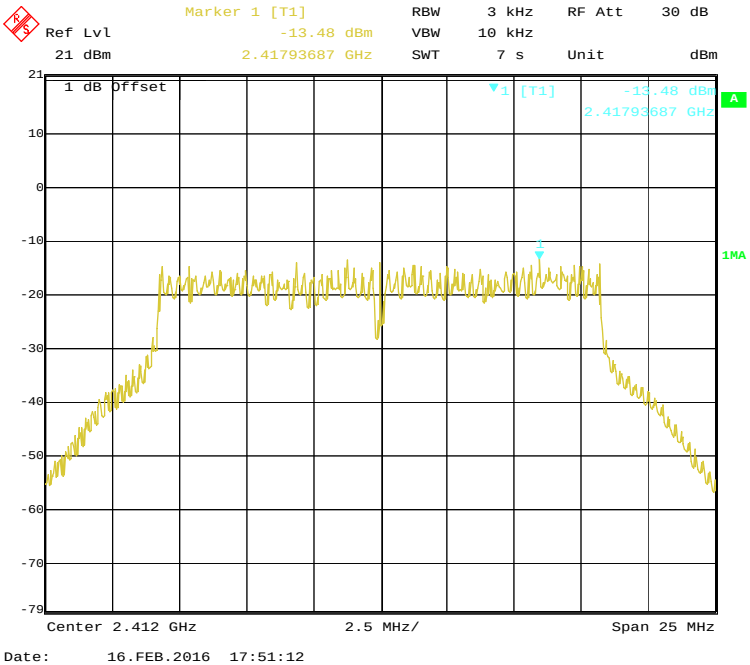
Power Spectral Density, 802.11b Middle Channel



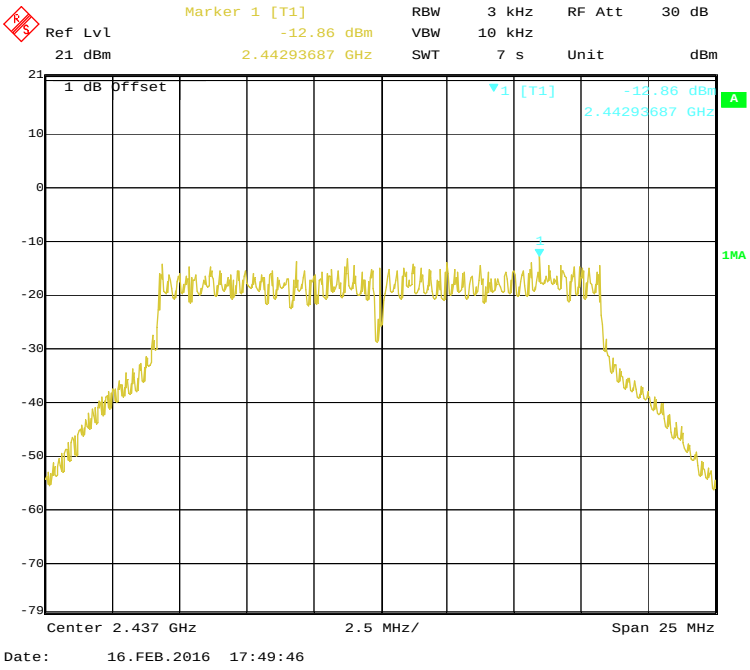
Power Spectral Density, 802.11b High Channel



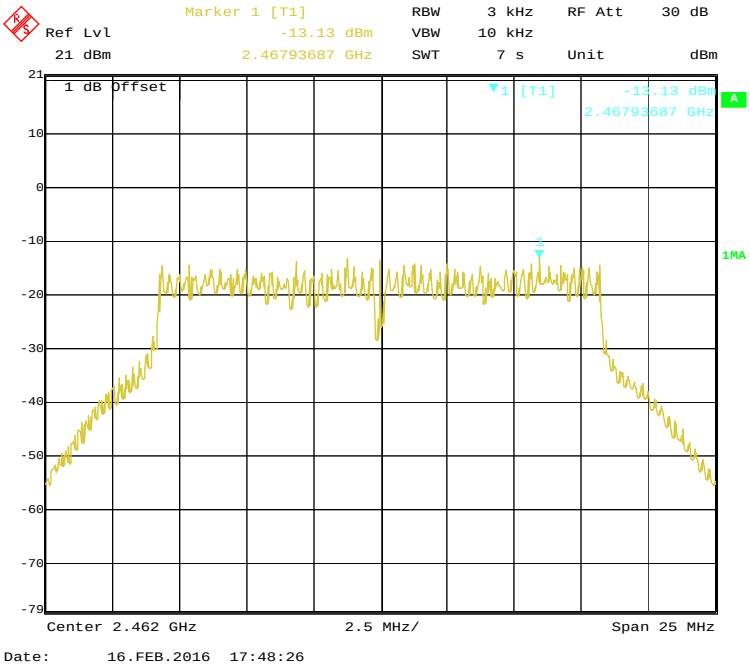
Power Spectral Density, 802.11g Low Channel



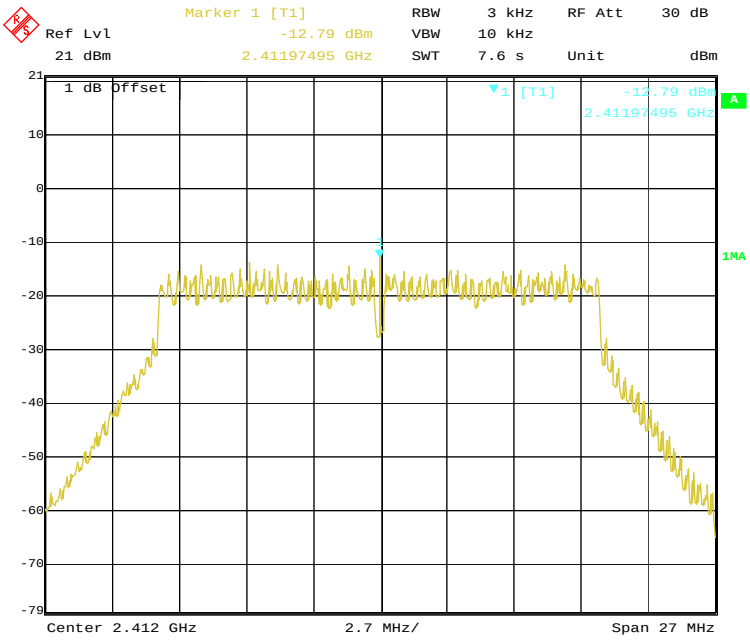
Power Spectral Density, 802.11g Middle Channel



Power Spectral Density, 802.11g High Channel

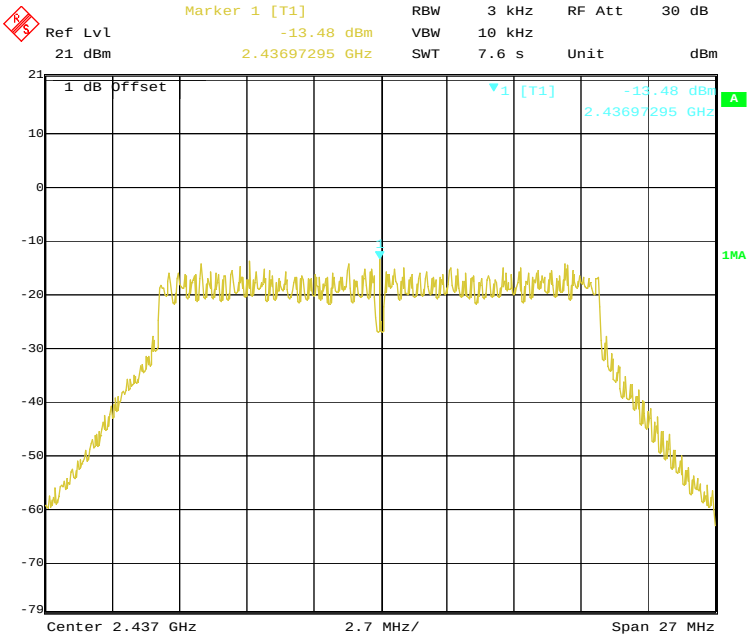


Power Spectral Density, 802.11n-HT20 Low Channel



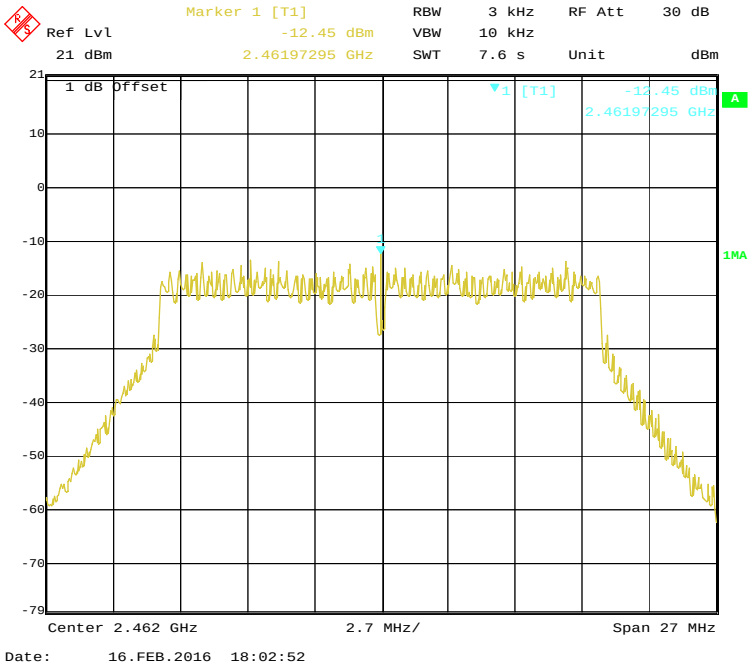
Date: 16.FEB.2016 18:00:48

Power Spectral Density, 802.11n-HT20 Middle Channel

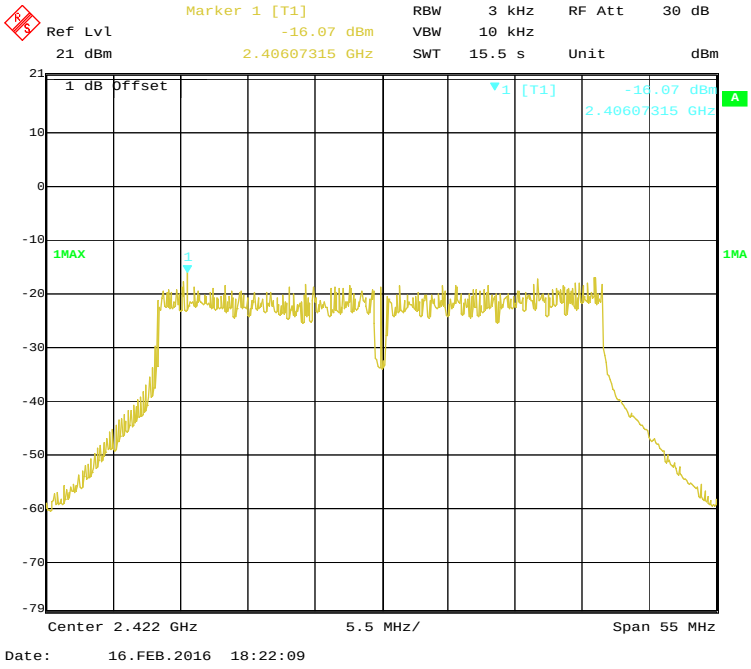


Date: 16.FEB.2016 18:02:17

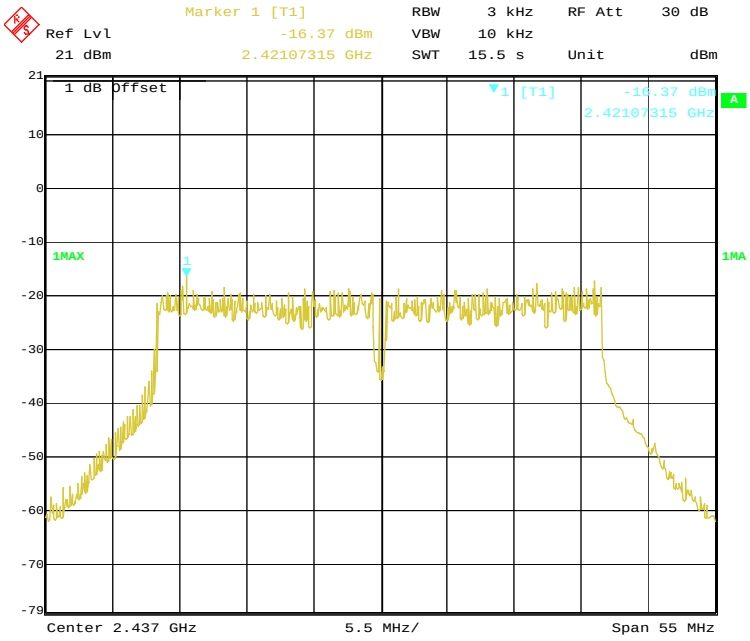
Power Spectral Density, 802.11n-HT20 High Channel



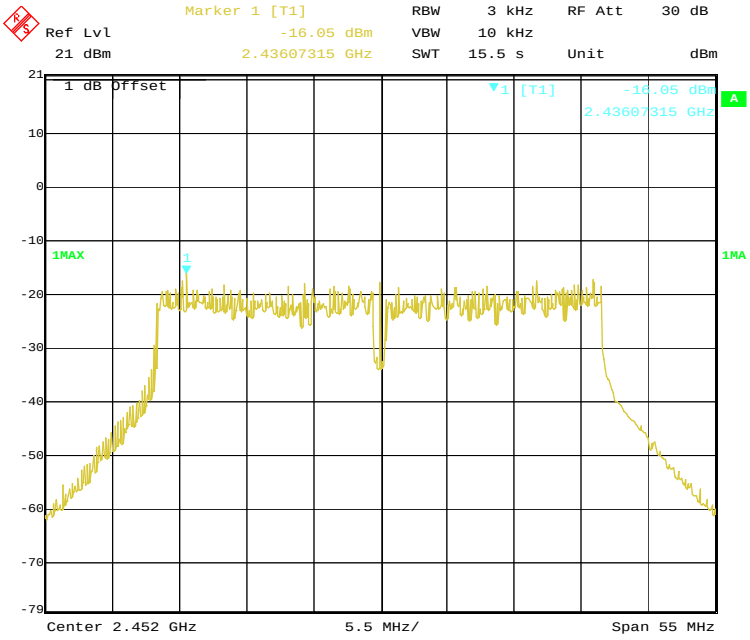
Power Spectral Density, 802.11n-HT40 Low Channel



Power Spectral Density, 802.11n-HT40 Middle Channel



Power Spectral Density, 802.11n-HT40 High Channel



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