

FCC PART 15.247


TEST REPORT

For

**KUNSHAN KONKA ELECTRONIC CO.,LTD.**

No.189 East QianjinRoad, KUNSHAN JIANGSU

**FCC ID: 2AHAK-WD48FW2490**

<b>Report Type:</b> Original Report	<b>Product Type:</b> LCD TV
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**Note:** This test report is prepared for the customer shown above and for the equipment described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

## **TABLE OF CONTENTS**

<b>GENERAL INFORMATION.....</b>	<b>4</b>
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT) .....	4
OBJECTIVE .....	4
RELATED SUBMITTAL(S)/GRANT(S).....	4
TEST METHODOLOGY .....	4
TEST FACILITY .....	5
<b>SYSTEM TEST CONFIGURATION.....</b>	<b>6</b>
DESCRIPTION OF TEST CONFIGURATION .....	6
EQUIPMENT MODIFICATIONS .....	6
EUT EXERCISE SOFTWARE .....	6
SUPPORT EQUIPMENT LIST AND DETAILS .....	7
EXTERNAL I/O CABLE.....	7
BLOCK DIAGRAM OF TEST SETUP .....	8
<b>SUMMARY OF TEST RESULTS .....</b>	<b>9</b>
<b>FCC§15.247 (i), §1.1310&amp; §2.1091 –MAXIMUM PERMISSIBLE.....</b>	<b>10</b>
<b>EXPOSURE (MPE).....</b>	<b>10</b>
APPLICABLE STANDARD .....	10
<b>FCC §15.203 - ANTENNA REQUIREMENT.....</b>	<b>11</b>
APPLICABLE STANDARD .....	11
ANTENNA CONNECTOR CONSTRUCTION .....	11
<b>FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS .....</b>	<b>12</b>
APPLICABLE STANDARD .....	12
MEASUREMENT UNCERTAINTY.....	12
EUT SETUP .....	12
EMI TEST RECEIVER SETUP.....	13
TEST PROCEDURE .....	13
TEST EQUIPMENT LIST AND DETAILS.....	13
CORRECTED FACTOR & MARGIN CALCULATION .....	13
TEST RESULTS SUMMARY .....	14
TEST DATA .....	14
<b>FCC §15.209, §15.205 &amp; §15.247(d) - SPURIOUS EMISSIONS.....</b>	<b>17</b>
APPLICABLE STANDARD .....	17
MEASUREMENT UNCERTAINTY.....	17
EUT SETUP .....	17
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP .....	18
TEST PROCEDURE .....	18
TEST EQUIPMENT LIST AND DETAILS.....	19
CORRECTED AMPLITUDE & MARGIN CALCULATION .....	19
TEST RESULTS SUMMARY .....	19
TEST DATA .....	20
<b>FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH.....</b>	<b>27</b>
APPLICABLE STANDARD .....	27
TEST PROCEDURE .....	27
TEST EQUIPMENT LIST AND DETAILS.....	27

TEST DATA .....	27
<b>FCC §15.247(b) (3) - MAXIMUM CONDUCTED OUTPUT POWER.....</b>	<b>35</b>
APPLICABLE STANDARD .....	35
TEST PROCEDURE .....	35
TEST EQUIPMENT LIST AND DETAILS.....	35
TEST DATA .....	35
<b>FCC §15.247(e) - POWER SPECTRAL DENSITY .....</b>	<b>37</b>
APPLICABLE STANDARD .....	37
TEST PROCEDURE .....	37
TEST EQUIPMENT LIST AND DETAILS.....	37
TEST DATA .....	37

## GENERAL INFORMATION

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### Product Description for Equipment under Test (EUT)

The KUNSHAN KONKA ELECTRONIC CO.,LTD.'s product, model number: WD48FW2490 (FCC ID: 2AHAK-WD48FW2490) or the "EUT" in this report is a LCD TV, which was measured approximately: 109 cm (L) \*62 cm (W) \* 5 cm (H).

*\*All measurement and test data in this report was gathered from production sample serial number: 160317004 (Assigned by BACL, Kunshan). The EUT supplied by the applicant was received on 2016-03-17*

### Objective

This report is prepared on behalf of KUNSHAN KONKA ELECTRONIC CO.,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	/	/

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

Labtool

The worst condition(maximum power with 100% duty cycle) was performed under:

802.11b: Data rate:1 Mbps, Power level: 18

802.11g: Data rate: 6 Mbps, Power level: 15

802.11n-HT20: Data rate: MCS0, Power level: 12

802.11n-HT40: Data rate: MCS0, Power level: 12

**Support Equipment List and Details**

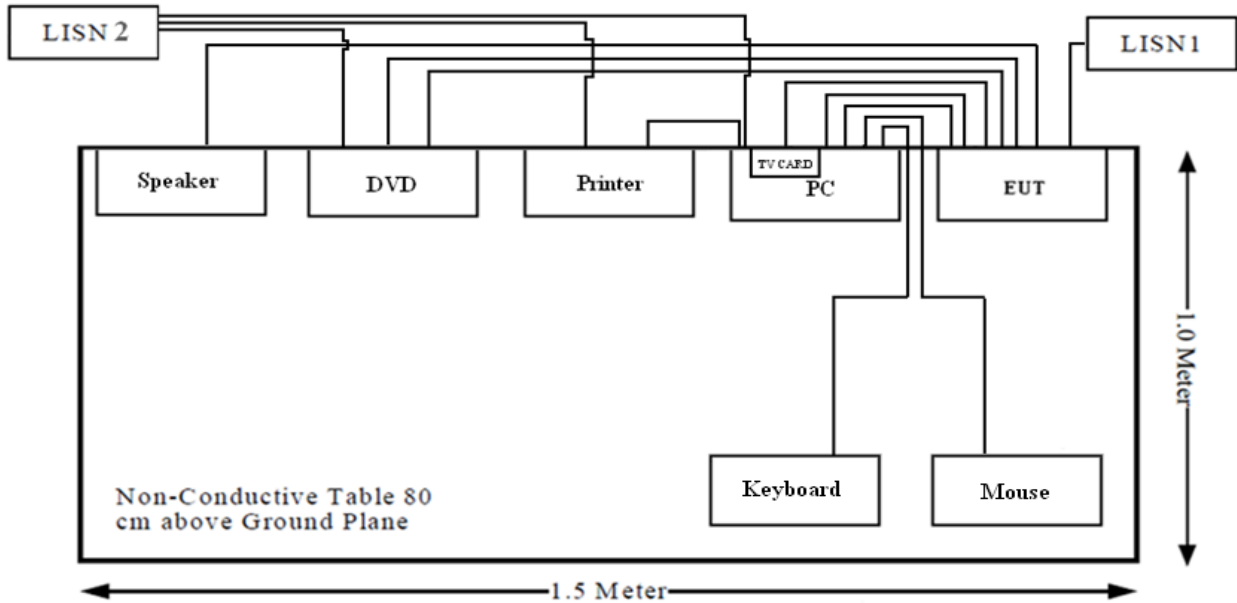
Manufacturer	Description	Model	Serial Number
DELL	PC	GX620	D65874152
PIONEER	DVD	DV-696AV-G	57413
JBL	Speaker	Micro II	98512
DELL	Keyboard	KB-BL919EB	K12082301042
DELL	Mouse	MO-1008BU	M1008

**External I/O Cable**

Cable Description	Length (m)	From/Port	To
Unshielded Undetachable AC Cable	1.8	EUT	Mains
Unshielded Undetachable AC Cable	1.8	DVD	Mains
Unshielded Undetachable AC Cable	1.8	Printer	Mains
Unshielded Undetachable AC Cable	1.8	PC	Mains
Shielded Detachable HDMI Cable	1.0	EUT	DVD
Unshielded Detachable Audio Cable	1.0	EUT	Speaker
Unshielded Detachable Audio Cable	1.0	EUT	PC
Unshielded Detachable Video Cable	1.5	EUT	DVD
Shielded Detachable coaxial cable	1.9	EUT	PC
Unshielded Detachable VGA Cable	1.5	EUT	PC
Unshielded USB Cable	0.9	Printer	PC
Unshielded Undetachable USB Cable	0.9	PC	Keyboard
Unshielded Undetachable USB Cable	0.9	PC	Mouse

## 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	MAXIMUM PERMISSIBLE EXPOSURE (MPE)	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(e)	Power Spectral Density	Compliance

## FCC§15.247 (i), §1.1310& §2.1091 –MAXIMUM PERMISSIBLE EXPOSURE (MPE)

### Applicable Standard

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

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1093)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time (minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	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 §2.1093 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<sup>2</sup>);

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 <sup>2</sup> )	MPE Limit (mW/cm <sup>2</sup> )
		(dBi)	(numeric)	(dBm)	(mW)			
802.11b	2412	2.0	1.585	19.0	79.43	20	0.025	1.0
802.11g	2412	2.0	1.585	16.0	39.81	20	0.013	1.0
802.11n HT20	2412	2.0	1.585	13.0	19.95	20	0.006	1.0
802.11n HT40	2422	2.0	1.585	13.0	19.95	20	0.006	1.0

Note: The target power : 802.11b:  $18 \pm 1$  dBm,  
 802.11g:  $15 \pm 1$  dBm,  
 802.11n(HT20):  $12 \pm 1$  dBm,  
 802.11n(HT40):  $12 \pm 1$  dBm

which declared by the Manufacturer.

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

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## **FCC §15.203 - ANTENNA REQUIREMENT**

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### **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 an antenna arrangement for wifi, which the antenna gain is 2.0 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

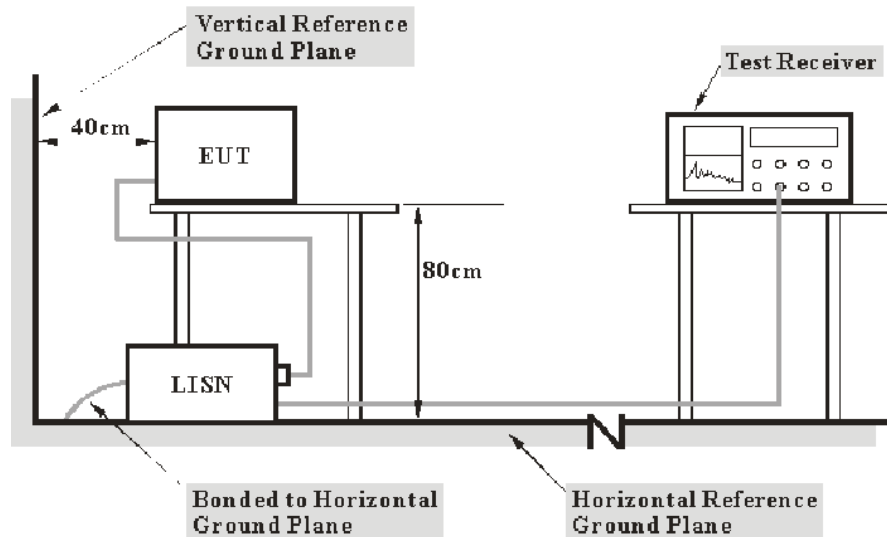
### Measurement Uncertainty

Input quantities to be considered for conducted disturbance measurements may be 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 expanded 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.

## 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	2015-6-23	2016-6-22
Rohde & Schwarz	Pulse limiter	ESH3-Z2	879940/0058	2015-6-19	2016-6-18
HP	Current probe	8710-1744	636	2015-6-19	2016-6-18
FCC	ISN	FCC-TLISN-T8-02	20376	2015-6-23	2016-6-22
MICRO-COAX	Coaxial line	UFB-293B-1-0480-50X50	97F0173	2015-10-01	2016-10-01
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:

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

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:

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

## Test Results Summary

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

**10.07 dB at 0.320000 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

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

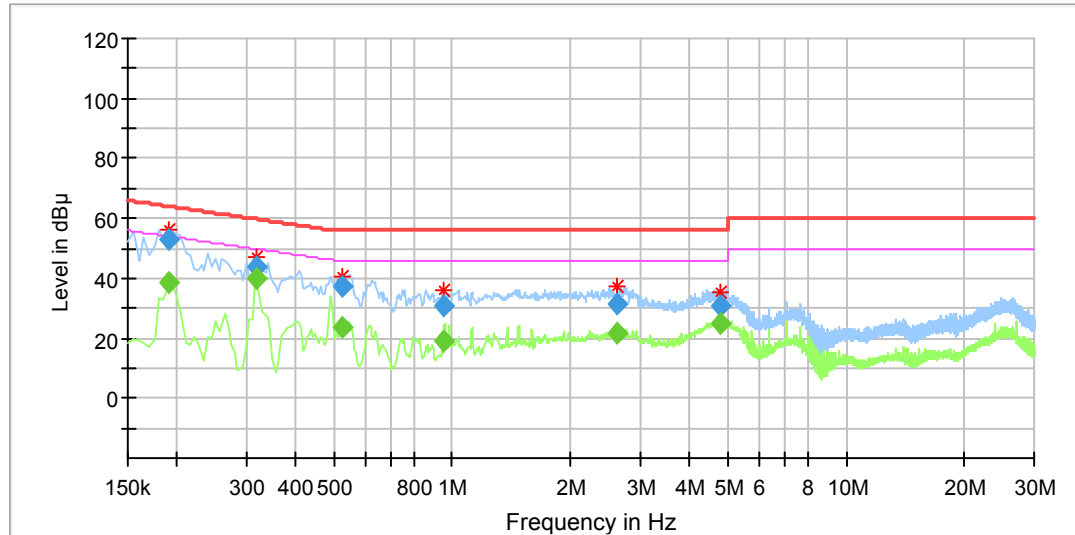
In BACL,  $U_{(Lm)}$  is less than  $U_{cispr}$ , if  $L_m$  is less than  $L_{lim}$ , it implies that the EUT complies with the limit.

## Test Data

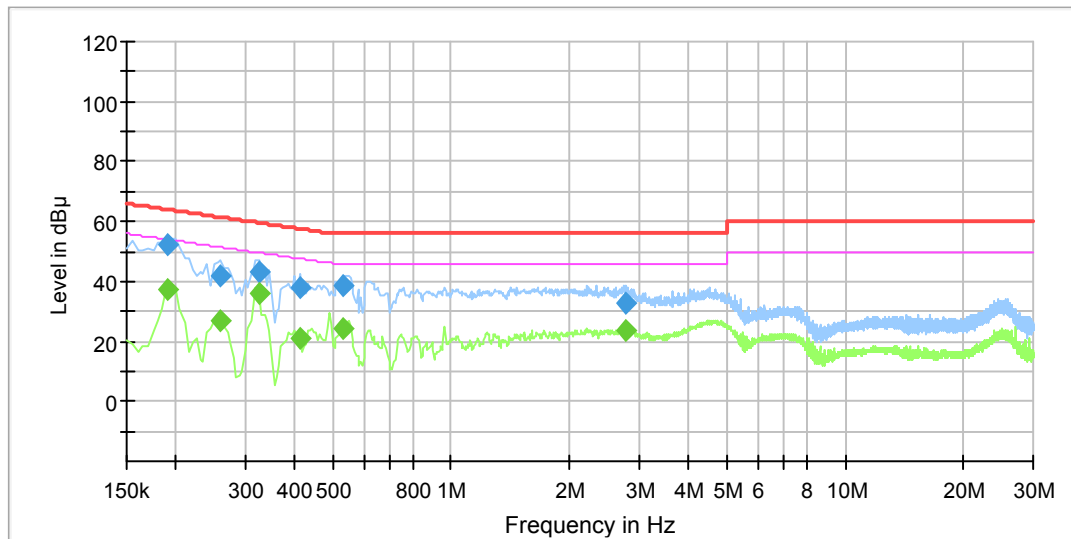
### Environmental Conditions

<b>Temperature:</b>	23 °C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by Matt Yao on 2016-03-17*

**AC 120V/60 Hz, Line**

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.190000	---	38.33	9.000	L1	11.0	15.71	54.04	Compliance
0.190000	53.18	---	9.000	L1	11.0	10.86	64.04	Compliance
0.320000	---	39.64	9.000	L1	11.0	10.07	49.71	Compliance
0.320000	44.12	---	9.000	L1	11.0	15.59	59.71	Compliance
0.525000	---	23.59	9.000	L1	11.0	22.41	46.00	Compliance
0.525000	37.30	---	9.000	L1	11.0	18.70	56.00	Compliance
0.955000	---	18.86	9.000	L1	11.1	27.14	46.00	Compliance
0.955000	30.88	---	9.000	L1	11.1	25.12	56.00	Compliance
2.625000	---	21.78	9.000	L1	11.2	24.22	46.00	Compliance
2.625000	31.16	---	9.000	L1	11.2	24.84	56.00	Compliance
4.780000	---	25.05	9.000	L1	11.3	20.95	46.00	Compliance
4.780000	30.47	---	9.000	L1	11.3	25.53	56.00	Compliance

**AC 120V/60 Hz, Neutral**

Frequency (MHz)	QuasiPeak (dBμV)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.190000	---	37.09	9.000	N	11.0	16.95	54.04	Compliance
0.190000	52.29	---	9.000	N	11.0	11.75	64.04	Compliance
0.260000	---	26.64	9.000	N	11.0	24.79	51.43	Compliance
0.260000	41.75	---	9.000	N	11.0	19.68	61.43	Compliance
0.325000	---	36.29	9.000	N	11.0	13.29	49.58	Compliance
0.325000	43.12	---	9.000	N	11.0	16.46	59.58	Compliance
0.415000	---	20.99	9.000	N	11.0	26.56	47.55	Compliance
0.415000	38.14	---	9.000	N	11.0	19.41	57.55	Compliance
0.530000	---	24.38	9.000	N	11.0	21.62	46.00	Compliance
0.530000	38.47	---	9.000	N	11.0	17.53	56.00	Compliance
2.765000	---	23.59	9.000	N	11.3	22.41	46.00	Compliance
2.765000	32.92	---	9.000	N	11.3	23.08	56.00	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;

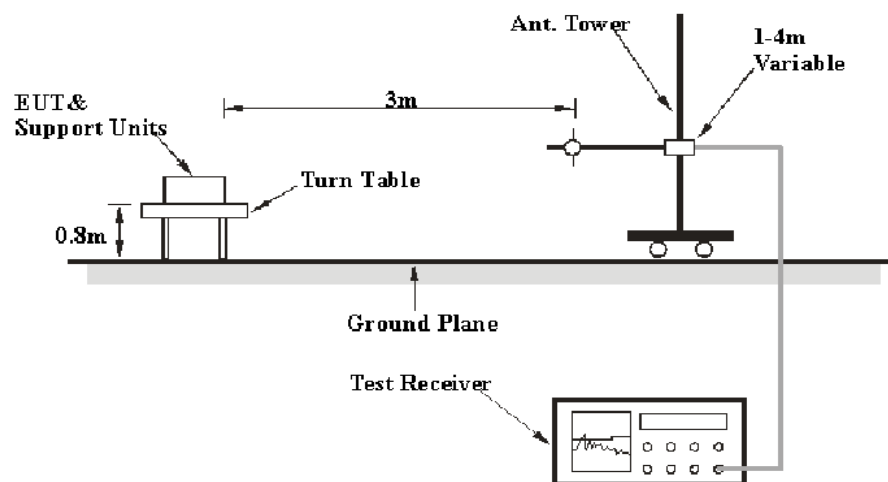
### Measurement Uncertainty

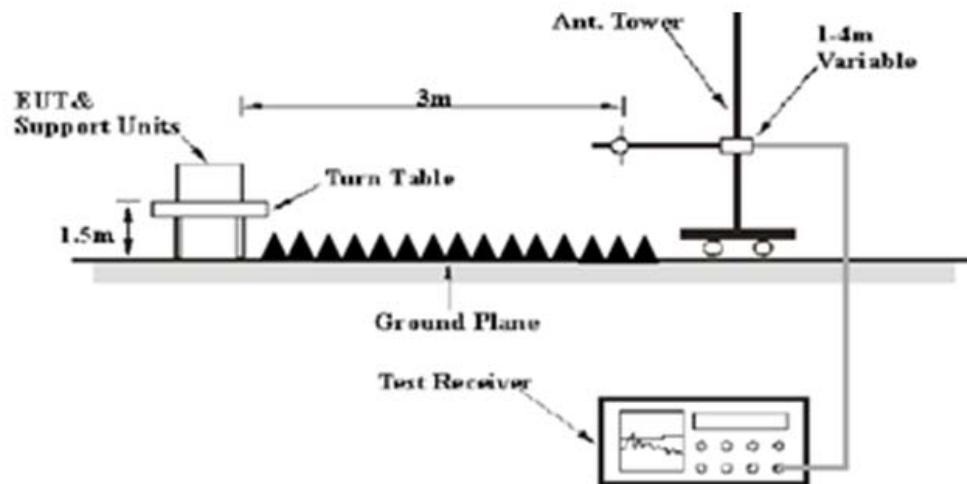
All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency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

Based on CISPR 16-4-2:2011, the expanded 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.

**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
EMCO	Horn Antenna	3116	9510-2384	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
DUCOMMUN	Pre-amplifier	ALN-22093530-01	990147	2015-09-16	2016-09-16
champrotek	Chamber	Chamber A	1#	2015-09-17	2016-09-17
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
BACL	RF cable	KS-LAB-010	KS-LAB-010	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:

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

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

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

**Test Results Summary**

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

**2.15 dB at 2390 MHz in the vertical polarization for  
802.11n-HT40 Mode**

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

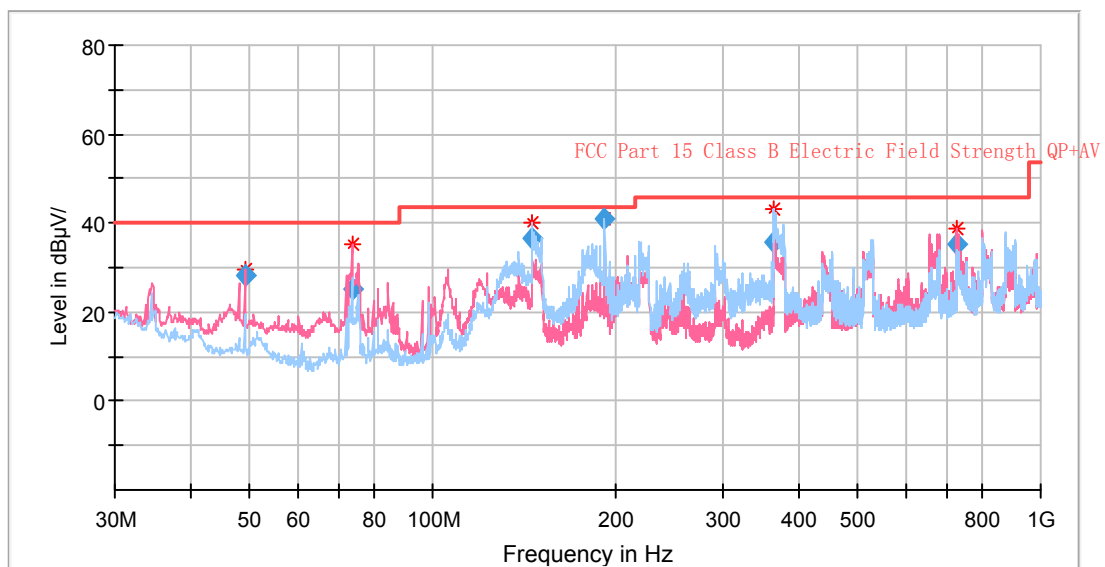
$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

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**

<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	55 %
<b>ATM Pressure:</b>	101.0 kPa

The testing was performed by Matt Yao on 2016-03-21 to 2016-04-07.

**30 MHz-1 GHz:**

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)
49.157500	44.34	QP	342.0	100.0	V	-16.0	28.34	40.00	11.66
73.650000	42.07	QP	143.0	100.0	V	-17.1	24.97	40.00	15.03
145.915000	48.69	QP	0.0	100.0	H	-12.1	36.59	43.50	6.91
191.990000	53.10	QP	145.0	100.0	H	-12.3	40.80	43.50	2.70
364.892500	44.61	QP	222.0	100.0	H	-9.1	35.51	46.00	10.49
729.127500	37.62	QP	182.0	100.0	V	-2.3	35.32	46.00	10.68

**1GHz-25GHz***EUT operation mode: Transmitting***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	93.12	PK	20.00	150.00	V	3.00	96.12	/	/
2412	90.80	Ave	20.00	150.00	V	3.00	93.80	/	/
2412	94.89	PK	82.00	150.00	H	3.00	97.89	/	/
2412	90.52	Ave	82.00	150.00	H	3.00	93.52	/	/
2369	49.42	PK	178.00	150.00	V	2.50	51.92	74.00	22.08
2369	28.04	Ave	178.00	150.00	V	2.50	30.54	54.00	23.46
2390	57.77	PK	289.00	200.00	V	2.90	60.67	74.00	13.33
2390	32.44	Ave	289.00	200.00	V	2.90	35.34	54.00	18.66
4824	42.07	PK	24.00	150.00	H	13.80	55.87	74.00	18.13
4824	33.76	Ave	24.00	150.00	H	13.80	47.56	54.00	6.44
6610	37.10	PK	119.00	200.00	V	18.80	55.90	74.00	18.10
6610	16.49	Ave	119.00	200.00	V	18.80	35.29	54.00	18.71
7236	32.08	PK	110.00	200.00	H	18.80	50.88	74.00	23.12
7236	17.41	Ave	110.00	200.00	H	18.80	36.21	54.00	17.79
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	95.89	PK	49.00	150.00	V	3.00	98.89	/	/
2437	90.09	Ave	49.00	150.00	V	3.00	93.09	/	/
2437	94.76	PK	113.00	200.00	H	3.00	97.76	/	/
2437	90.16	Ave	113.00	200.00	H	3.00	93.16	/	/
1511	40.89	PK	147.00	150.00	V	0.00	40.89	74.00	33.11
1511	25.54	Ave	147.00	150.00	V	0.00	25.54	54.00	28.46
1890	44.89	PK	178.00	200.00	H	0.70	45.59	74.00	28.41
1890	26.20	Ave	178.00	200.00	H	0.70	26.90	54.00	27.10
4874	39.95	PK	19.00	150.00	V	13.90	53.85	74.00	20.15
4874	34.53	Ave	19.00	150.00	V	13.90	48.43	54.00	5.57
6681	32.09	PK	390.00	200.00	H	18.80	50.89	74.00	23.11
6681	17.09	Ave	390.00	200.00	H	18.80	35.89	54.00	18.11
7311	31.64	PK	217.00	150.00	H	18.90	50.54	74.00	23.46
7311	16.61	Ave	217.00	150.00	H	18.90	35.51	54.00	18.49

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	94.14	PK	190.00	150.00	V	3.00	97.14	/	/
2462	90.76	Ave	190.00	150.00	V	3.00	93.76	/	/
2462	95.18	PK	140.00	100.00	H	3.00	98.18	/	/
2462	91.89	Ave	140.00	100.00	H	3.00	94.89	/	/
2483.5	51.81	PK	115.00	200.00	V	3.20	55.01	74.00	18.99
2483.5	36.91	Ave	115.00	200.00	V	3.20	40.11	54.00	13.89
2645	40.59	PK	331.00	200.00	V	4.20	44.79	74.00	29.21
2645	30.69	Ave	331.00	200.00	V	4.20	34.89	54.00	19.11
4924	44.09	PK	67.00	200.00	H	14.00	58.09	74.00	15.91
4924	31.89	Ave	67.00	200.00	H	14.00	45.89	54.00	8.11
6765	36.09	PK	193.00	100.00	H	18.80	54.89	74.00	19.11
6765	17.29	Ave	193.00	100.00	H	18.80	36.09	54.00	17.91
7386	33.17	PK	260.00	200.00	H	19.80	52.97	74.00	21.03
7386	17.06	Ave	260.00	200.00	H	19.80	36.86	54.00	17.14

**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	93.34	PK	112.0	100.00	V	3.00	96.34	/	/
2412	90.23	Ave	112.0	100.00	V	3.00	93.23	/	/
2412	92.90	PK	43.0	150.00	H	3.00	95.90	/	/
2412	87.90	Ave	43.0	150.00	H	3.00	90.90	/	/
2359	61.04	PK	198.0	200.00	V	2.50	63.54	74.00	10.46
2359	35.72	Ave	198.0	200.00	V	2.50	38.22	54.00	15.78
2390	65.35	PK	63.0	200.00	H	2.90	68.25	74.00	5.75
2390	42.78	Ave	63.0	200.00	H	2.90	45.68	54.00	8.32
4824	38.02	PK	21.0	200.00	H	13.80	51.82	74.00	22.18
4824	29.02	Ave	21.0	200.00	H	13.80	42.82	54.00	11.18
6612	31.46	PK	232.0	150.00	V	18.80	50.26	74.00	23.74
6612	13.46	Ave	232.0	150.00	V	18.80	32.26	54.00	21.74
7236	25.45	PK	170.0	200.00	H	18.80	44.25	74.00	29.75
7236	15.84	Ave	170.0	200.00	H	18.80	34.64	54.00	19.36

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	92.26	PK	120.0	100.00	V	3.00	95.26	/	/
2437	87.36	Ave	120.0	100.00	V	3.00	90.36	/	/
2437	94.62	PK	60.0	150.00	H	3.00	97.62	/	/
2437	88.18	Ave	60.0	150.00	H	3.00	91.18	/	/
1534	40.65	PK	190.0	200.00	V	0.00	40.65	74.00	33.35
1534	28.61	Ave	190.0	200.00	V	0.00	28.61	54.00	25.39
1687	47.28	PK	90.0	200.00	H	0.70	47.98	74.00	26.02
1687	25.47	Ave	90.0	200.00	H	0.70	26.17	54.00	27.83
4874	42.53	PK	2.0	200.00	V	13.90	56.43	74.00	17.57
4874	30.71	Ave	2.0	200.00	V	13.90	44.61	54.00	9.39
6692	31.42	PK	198.0	150.00	H	18.80	50.22	74.00	23.78
6692	12.64	Ave	198.0	150.00	H	18.80	31.44	54.00	22.56
7311	27.46	PK	63.0	200.00	H	18.90	46.36	74.00	27.64
7311	22.22	Ave	63.0	200.00	H	18.90	41.12	54.00	12.88
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	95.56	PK	92.0	200.0	V	3.00	98.56	/	/
2462	91.32	Ave	92.0	200.0	V	3.00	94.32	/	/
2462	92.23	PK	31.0	150.0	H	3.00	95.23	/	/
2462	88.32	Ave	31.0	150.0	H	3.00	91.32	/	/
2483.5	52.03	PK	162.0	150.0	V	3.20	55.23	74.00	18.77
2483.5	39.06	Ave	162.0	150.0	V	3.20	42.26	54.00	11.74
2643	36.13	PK	67.0	150.0	H	4.20	40.33	74.00	33.67
2643	27.39	Ave	67.0	150.0	H	4.20	31.59	54.00	22.41
4924	39.62	PK	22.0	200.0	V	14.00	53.62	74.00	20.38
4924	29.69	Ave	22.0	200.0	V	14.00	43.69	54.00	10.31
6642	31.47	PK	283.0	200.0	H	18.70	50.17	74.00	23.83
6642	15.94	Ave	283.0	200.0	H	18.70	34.64	54.00	19.36
7386	22.79	PK	171.0	200.0	V	19.80	42.59	74.00	31.41
7386	27.10	Ave	171.0	200.0	V	19.80	46.90	54.00	7.10

## 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	95.12	PK	152.0	200.00	V	3.00	98.12	/	/
2412	87.21	Ave	152.0	200.00	V	3.00	90.21	/	/
2412	92.11	PK	100.0	200.00	H	3.00	95.11	/	/
2412	84.05	Ave	100.0	200.00	H	3.00	87.05	/	/
2357	63.68	PK	291.0	150.00	H	2.90	66.58	74.00	7.42
2357	41.46	Ave	291.0	150.00	H	2.90	44.36	54.00	9.64
2390	66.68	PK	112.0	150.00	V	2.90	69.58	74.00	4.42
2390	45.79	Ave	112.0	150.00	V	2.90	48.69	54.00	5.31
4824	34.53	PK	63.0	200.00	H	13.80	48.33	74.00	25.67
4824	30.15	Ave	63.0	200.00	H	13.80	43.95	54.00	10.05
6671	30.49	PK	312.0	150.00	V	18.80	49.29	74.00	24.71
6671	20.86	Ave	312.0	150.00	V	18.80	39.66	54.00	14.34
7236	39.84	PK	182.0	200.00	H	18.80	58.64	74.00	15.36
7236	27.14	Ave	182.0	200.00	H	18.80	45.94	54.00	8.06
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	92.24	PK	130.0	200.00	V	3.00	95.24	/	/
2437	84.21	Ave	130.0	200.00	V	3.00	87.21	/	/
2437	90.24	PK	100.0	200.00	H	3.00	93.24	/	/
2437	82.11	Ave	100.0	200.00	H	3.00	85.11	/	/
1575	36.25	PK	224.0	200.00	V	0.00	36.25	74.00	37.75
1575	25.17	Ave	224.0	200.00	V	0.00	25.17	54.00	28.83
2293	38.93	PK	110.0	200.00	H	0.70	39.63	74.00	34.37
2293	24.91	Ave	110.0	200.00	H	0.70	25.61	54.00	28.39
4874	43.46	PK	30.0	200.00	V	13.90	57.36	74.00	16.64
4874	28.29	Ave	30.0	200.00	V	13.90	42.19	54.00	11.81
6679	31.53	PK	340.0	150.00	H	18.80	50.33	74.00	23.67
6679	16.96	Ave	340.0	150.00	H	18.80	35.76	54.00	18.24
7311	27.05	PK	224.0	150.00	H	18.90	45.95	74.00	28.05
7311	14.17	Ave	224.0	150.00	H	18.90	33.07	54.00	20.93



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	93.87	PK	126.0	200.0	V	3.00	96.87	/	/
2462	85.06	Ave	126.0	200.0	V	3.00	88.06	/	/
2462	92.14	PK	90.0	150.0	H	3.00	95.14	/	/
2462	84.44	Ave	90.0	150.0	H	3.00	87.44	/	/
2483.5	61.04	PK	180.0	150.0	V	3.20	64.24	74.00	9.76
2483.5	36.35	Ave	180.0	150.0	V	3.20	39.55	54.00	14.45
2501	45.16	PK	90.0	150.0	H	4.20	49.36	74.00	24.64
2501	25.21	Ave	90.0	150.0	H	4.20	29.41	54.00	24.59
4924	45.69	PK	230.0	200.0	V	14.00	59.69	74.00	14.31
4924	29.85	Ave	230.0	200.0	V	14.00	43.85	54.00	10.15
6678	33.66	PK	289.0	150.0	H	18.70	52.36	74.00	21.64
6678	20.48	Ave	289.0	150.0	H	18.70	39.18	54.00	14.82
7386	28.38	PK	188.0	200.0	V	19.80	48.18	74.00	25.82
7386	16.79	Ave	188.0	200.0	V	19.80	36.59	54.00	17.41

## 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 (dB μ V/m)	Margin (dB)
Low Channel (2422 MHz)									
2422	93.57	PK	153.0	150.00	V	3.00	96.57	/	/
2422	83.11	Ave	153.0	150.00	V	3.00	86.11	/	/
2422	92.46	PK	100.0	200.00	H	3.00	95.46	/	/
2422	82.09	Ave	100.0	200.00	H	3.00	85.09	/	/
2349	61.68	PK	270.0	150.00	H	2.90	64.58	74.00	9.42
2349	39.35	Ave	270.0	150.00	H	2.90	42.25	54.00	11.75
2390	68.95	PK	168.0	150.00	V	2.90	71.85	74.00	2.15
2390	47.35	Ave	168.0	150.00	V	2.90	50.25	54.00	3.75
4844	38.07	PK	330.0	200.00	H	13.80	51.87	74.00	22.13
4844	31.28	Ave	330.0	200.00	H	13.80	45.08	54.00	8.92
6687	27.29	PK	178.0	150.00	V	18.80	46.09	74.00	27.91
6687	15.27	Ave	178.0	150.00	V	18.80	34.07	54.00	19.93
7266	26.48	PK	217.0	200.00	H	18.80	45.28	74.00	28.72
7266	12.91	Ave	217.0	200.00	H	18.80	31.71	54.00	22.29

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)
Middle Channel (2437MHz)									
2437	93.85	PK	147.0	200.00	V	3.00	96.85	/	/
2437	83.41	Ave	147.0	200.00	V	3.00	86.41	/	/
2437	94.25	PK	89.0	200.00	H	3.00	97.25	/	/
2437	84.02	Ave	89.0	200.00	H	3.00	87.02	/	/
1600	35.81	PK	154.0	150.00	V	0.00	35.81	74.00	38.19
1600	25.09	Ave	154.0	150.00	V	0.00	25.09	54.00	28.91
2311	36.01	PK	120.0	200.00	H	0.70	36.71	74.00	37.29
2311	26.82	Ave	120.0	200.00	H	0.70	27.52	54.00	26.48
4874	36.92	PK	49.0	200.00	V	13.90	50.82	74.00	23.18
4874	31.31	Ave	49.0	200.00	V	13.90	45.21	54.00	8.79
6668	26.40	PK	336.0	150.00	H	18.80	45.20	74.00	28.80
6668	15.01	Ave	336.0	150.00	H	18.80	33.81	54.00	20.19
7311	28.97	PK	246.0	150.00	H	18.90	47.87	74.00	26.13
7311	11.99	Ave	246.0	150.00	H	18.90	30.89	54.00	23.11
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)
High Channel (2452MHz)									
2452	93.52	PK	126.0	200.0	V	3.00	96.52	/	/
2452	82.78	Ave	126.0	200.0	V	3.00	85.78	/	/
2452	92.18	PK	90.0	150.0	H	3.00	95.18	/	/
2452	82.89	Ave	90.0	150.0	H	3.00	85.89	/	/
2483.5	67.01	PK	180.0	150.0	V	3.20	70.21	74.00	3.79
2483.5	46.38	Ave	180.0	150.0	V	3.20	49.58	54.00	4.42
2509	58.25	PK	90.0	150.0	H	4.20	62.45	74.00	11.55
2509	36.37	Ave	90.0	150.0	H	4.20	40.57	54.00	13.43
4904	36.20	PK	230.0	200.0	V	14.00	50.20	74.00	23.80
4904	31.88	Ave	230.0	200.0	V	14.00	45.88	54.00	8.12
6679	28.23	PK	289.0	150.0	H	18.70	46.93	74.00	27.07
6679	17.00	Ave	289.0	150.0	H	18.70	35.70	54.00	18.30
7356	25.73	PK	188.0	200.0	V	19.80	45.53	74.00	28.47
7356	12.10	Ave	188.0	200.0	V	19.80	31.90	54.00	22.10

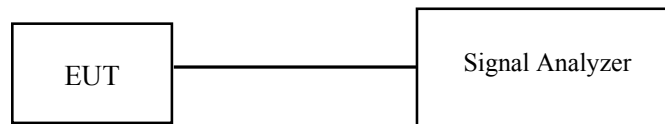
## FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH

### 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 °C
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

*The testing was performed by Matt Yao on 2016-03-19.*

**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	10.16	$\geq 500$
Middle	2437	10.16	$\geq 500$
High	2462	10.22	$\geq 500$
802.11g mode			
Low	2412	16.47	$\geq 500$
Middle	2437	16.53	$\geq 500$
High	2462	16.41	$\geq 500$
802.11n-HT20 mode			
Low	2412	16.41	$\geq 500$
Middle	2437	16.41	$\geq 500$
High	2462	16.53	$\geq 500$
802.11n-HT40 mode			
Low	2422	36.58	$\geq 500$
Middle	2437	36.40	$\geq 500$
High	2452	36.43	$\geq 500$

[illegible]

Delta 1 [T1]

RBW 100 kHz RF Att 60 dB

Ref Lvl 31 dBm 2.51 dB VBW 300 kHz

SWT 7.5 ms Unit dBm

1 dB Offset

1 [T1] 2.01 dBm

2 [T1] 2.43191984 GHz

3 [T1] 2.43191984 GHz

4 [T1] 2.43191984 GHz

5 [T1] 2.43191984 GHz

6 [T1] 2.43191984 GHz

7 [T1] 2.43191984 GHz

8 [T1] 2.43191984 GHz

9 [T1] 2.43191984 GHz

10 [T1] 2.43191984 GHz

11 [T1] 2.43191984 GHz

12 [T1] 2.43191984 GHz

13 [T1] 2.43191984 GHz

14 [T1] 2.43191984 GHz

15 [T1] 2.43191984 GHz

16 [T1] 2.43191984 GHz

17 [T1] 2.43191984 GHz

18 [T1] 2.43191984 GHz

19 [T1] 2.43191984 GHz

20 [T1] 2.43191984 GHz

21 [T1] 2.43191984 GHz

22 [T1] 2.43191984 GHz

23 [T1] 2.43191984 GHz

24 [T1] 2.43191984 GHz

25 [T1] 2.43191984 GHz

26 [T1] 2.43191984 GHz

27 [T1] 2.43191984 GHz

28 [T1] 2.43191984 GHz

29 [T1] 2.43191984 GHz

30 [T1] 2.43191984 GHz

31 [T1] 2.43191984 GHz

32 [T1] 2.43191984 GHz

33 [T1] 2.43191984 GHz

34 [T1] 2.43191984 GHz

35 [T1] 2.43191984 GHz

36 [T1] 2.43191984 GHz

37 [T1] 2.43191984 GHz

38 [T1] 2.43191984 GHz

39 [T1] 2.43191984 GHz

40 [T1] 2.43191984 GHz

41 [T1] 2.43191984 GHz

42 [T1] 2.43191984 GHz

43 [T1] 2.43191984 GHz

44 [T1] 2.43191984 GHz

45 [T1] 2.43191984 GHz

46 [T1] 2.43191984 GHz

47 [T1] 2.43191984 GHz

48 [T1] 2.43191984 GHz

49 [T1] 2.43191984 GHz

50 [T1] 2.43191984 GHz

51 [T1] 2.43191984 GHz

52 [T1] 2.43191984 GHz

53 [T1] 2.43191984 GHz

54 [T1] 2.43191984 GHz

55 [T1] 2.43191984 GHz

56 [T1] 2.43191984 GHz

57 [T1] 2.43191984 GHz

58 [T1] 2.43191984 GHz

59 [T1] 2.43191984 GHz

60 [T1] 2.43191984 GHz

61 [T1] 2.43191984 GHz

62 [T1] 2.43191984 GHz

63 [T1] 2.43191984 GHz

64 [T1] 2.43191984 GHz

65 [T1] 2.43191984 GHz

66 [T1] 2.43191984 GHz

67 [T1] 2.43191984 GHz

68 [T1] 2.43191984 GHz

69 [T1] 2.43191984 GHz

70 [T1] 2.43191984 GHz

71 [T1] 2.43191984 GHz

72 [T1] 2.43191984 GHz

73 [T1] 2.43191984 GHz

74 [T1] 2.43191984 GHz

75 [T1] 2.43191984 GHz

76 [T1] 2.43191984 GHz

77 [T1] 2.43191984 GHz

78 [T1] 2.43191984 GHz

79 [T1] 2.43191984 GHz

80 [T1] 2.43191984 GHz

81 [T1] 2.43191984 GHz

82 [T1] 2.43191984 GHz

83 [T1] 2.43191984 GHz

84 [T1] 2.43191984 GHz

85 [T1] 2.43191984 GHz

86 [T1] 2.43191984 GHz

87 [T1] 2.43191984 GHz

88 [T1] 2.43191984 GHz

89 [T1] 2.43191984 GHz

90 [T1] 2.43191984 GHz

91 [T1] 2.43191984 GHz

92 [T1] 2.43191984 GHz

93 [T1] 2.43191984 GHz

94 [T1] 2.43191984 GHz

95 [T1] 2.43191984 GHz

96 [T1] 2.43191984 GHz

97 [T1] 2.43191984 GHz

98 [T1] 2.43191984 GHz

99 [T1] 2.43191984 GHz

100 [T1] 2.43191984 GHz

101 [T1] 2.43191984 GHz

102 [T1] 2.43191984 GHz

103 [T1] 2.43191984 GHz

104 [T1] 2.43191984 GHz

105 [T1] 2.43191984 GHz

106 [T1] 2.43191984 GHz

107 [T1] 2.43191984 GHz

108 [T1] 2.43191984 GHz

109 [T1] 2.43191984 GHz

110 [T1] 2.43191984 GHz

111 [T1] 2.43191984 GHz

112 [T1] 2.43191984 GHz

113 [T1] 2.43191984 GHz

114 [T1] 2.43191984 GHz

115 [T1] 2.43191984 GHz

116 [T1] 2.43191984 GHz

117 [T1] 2.43191984 GHz

118 [T1] 2.43191984 GHz

119 [T1] 2.43191984 GHz

120 [T1] 2.43191984 GHz

121 [T1] 2.43191984 GHz

122 [T1] 2.43191984 GHz

123 [T1] 2.43191984 GHz

124 [T1] 2.43191984 GHz

125 [T1] 2.43191984 GHz

126 [T1] 2.43191984 GHz

127 [T1] 2.43191984 GHz

128 [T1] 2.43191984 GHz

129 [T1] 2.43191984 GHz

130 [T1] 2.43191984 GHz

131 [T1] 2.43191984 GHz

132 [T1] 2.43191984 GHz

133 [T1] 2.43191984 GHz

134 [T1] 2.43191984 GHz

135 [T1] 2.43191984 GHz

136 [T1] 2.43191984 GHz

137 [T1] 2.43191984 GHz

138 [T1] 2.43191984 GHz

139 [T1] 2.43191984 GHz

140 [T1] 2.43191984 GHz

141 [T1] 2.43191984 GHz

142 [T1] 2.43191984 GHz

143 [T1] 2.43191984 GHz

144 [T1] 2.43191984 GHz

145 [T1] 2.43191984 GHz

146 [T1] 2.43191984 GHz

147 [T1] 2.43191984 GHz

148 [T1] 2.43191984 GHz

149 [T1] 2.43191984 GHz

150 [T1] 2.43191984 GHz

151 [T1] 2.43191984 GHz

152 [T1] 2.43191984 GHz

153 [T1] 2.43191984 GHz

154 [T1] 2.43191984 GHz

155 [T1] 2.43191984 GHz

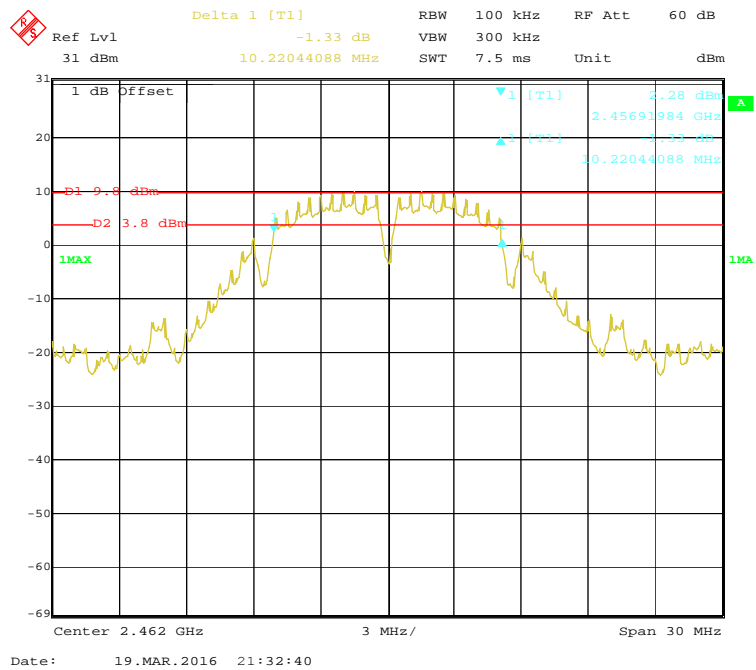
156 [T1] 2.43191984 GHz

157 [T1] 2.43191984 GHz

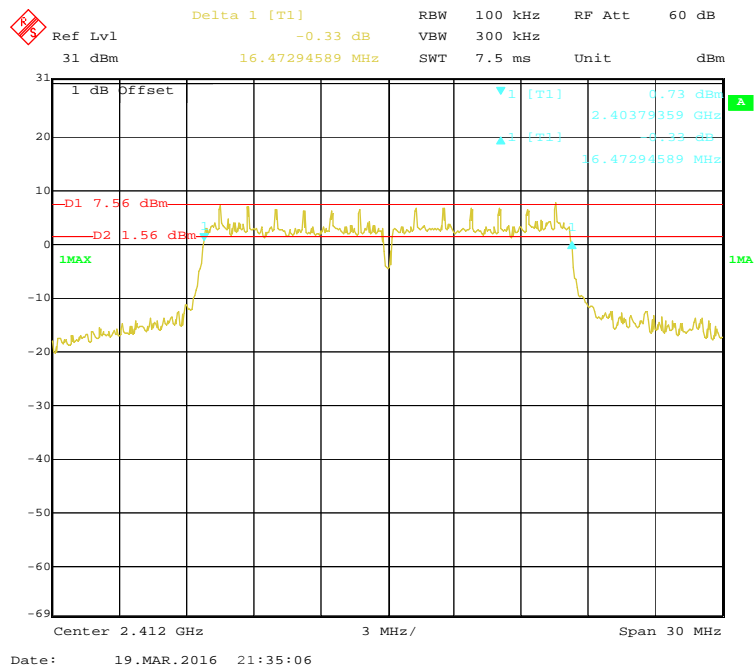
158 [T1] 2.43191984 GHz

159 [T1] 2.43191984

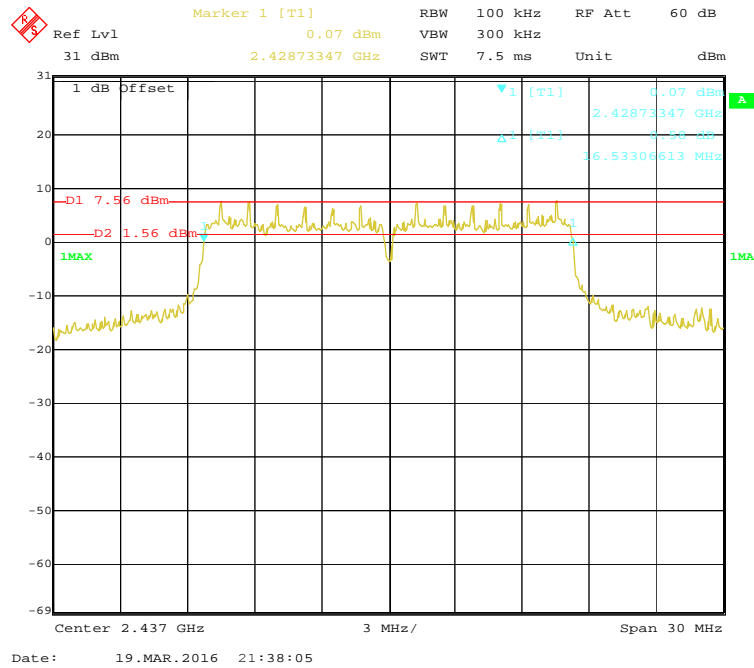
### 802.11b High Channel



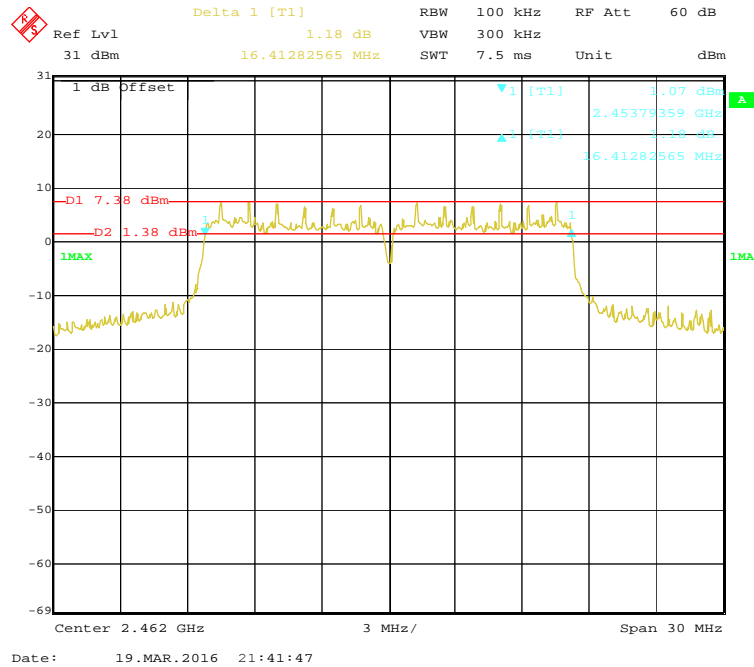
### 802.11g Low Channel



### 802.11g Middle Channel



### 802.11g High Channel



Delta 1 [T1]

RBW 100 kHz RF Att 60 dB

Ref Lvl 1.92 dB VBW 300 kHz

31 dBm 16.41282565 MHz SWT 7.5 ms Unit dBm

1 dB Offset

1 [T1] 2.40379359 GHz 7.66 dBm

1 [T1] 2.40379359 GHz 1.92 dBm

1 [T1] 2.40379359 GHz 16.41282565 MHz

D1 7.72 dBm

D2 1.72 dBm

IMAX

Center 2.412 GHz 3 MHz/ Span 30 MHz

Date: 19.MAR.2016 21:44:24

Delta 1 [T1] 1.73 dB RBW 100 kHz RF Att 60 dB  
 Ref Lvl 31 dBm VBW 300 kHz  
 31 dBm 16.41282565 MHz SWT 7.5 ms Unit dBm

1 dB Offset

1 [T1] 1.10 dBm  
 1 [T1] 2.42879359 GHz  
 1 [T1] 1.73 dBm  
 1 [T1] 16.41282565 MHz

D1 7.61 dBm  
 D2 1.61 dBm

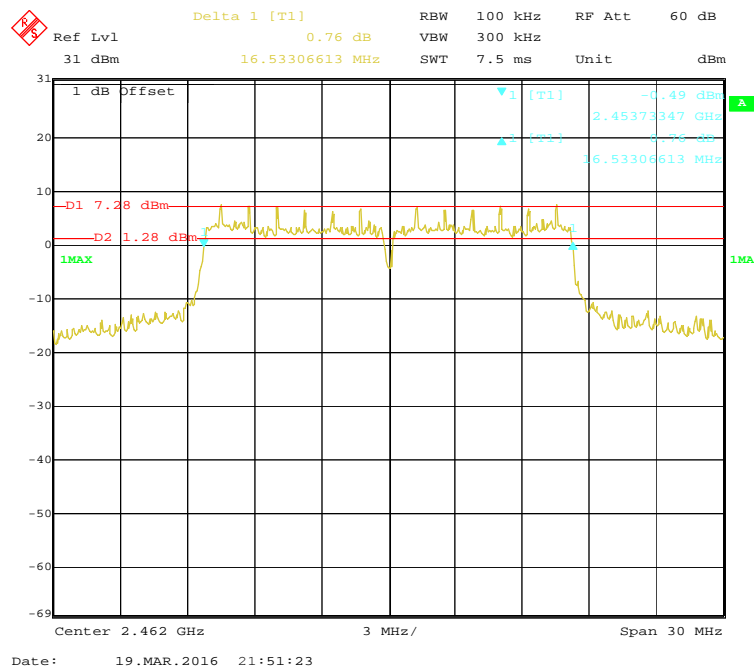
1MAX

Center 2.437 GHz 3 MHz/ Span 30 MHz

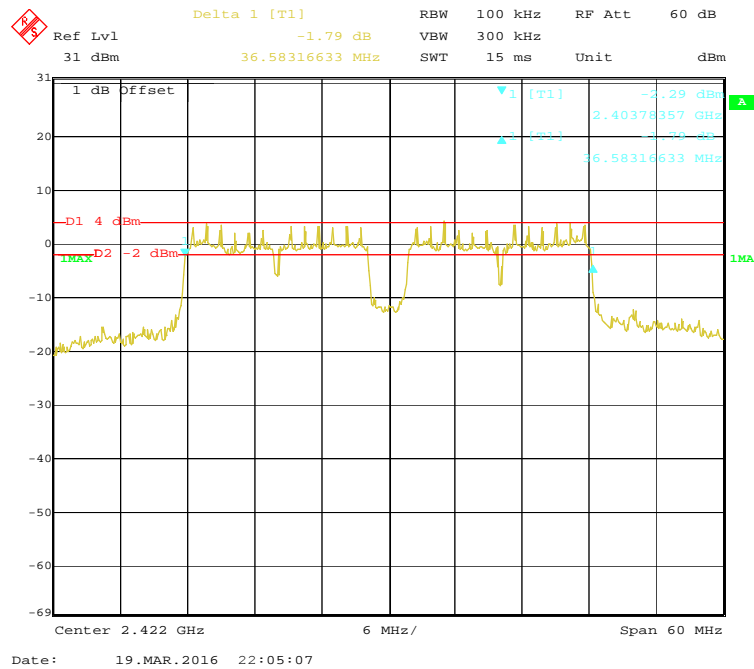
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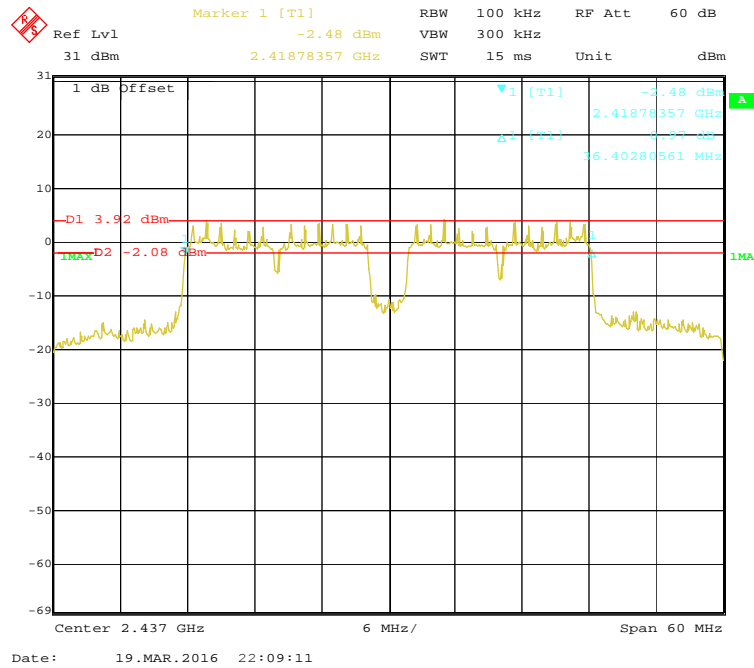
### 802.11n-HT20 High Channel



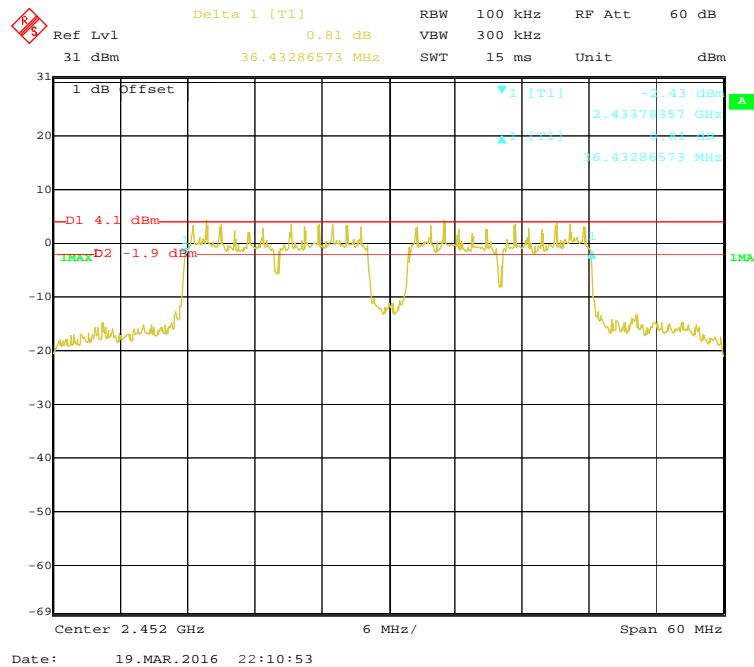
### 802.11n-HT40 Low Channel



## 802.11n-HT40 Middle Channel



## 802.11n-HT40 High Channel



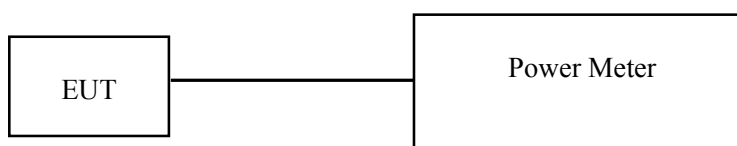
## FCC §15.247(b) (3) - MAXIMUM CONDUCTED OUTPUT POWER

### 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	2014-05-27	2016-05-27
Rohde & Schwarz	Power Sensor	NRP-Z91	200014	2015-08-01	2017-07-31
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 °C
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

*The testing was performed by Matt Yao on 2016-03-19.*

*EUT operation mode: Transmitting*

Channel	Frequency (MHz)	Max Conducted Average Output Power (dBm)	Max Conducted Peak Output Power (dBm)	Limit (dBm)	Result
802.11b					
Low	2412	18.33	19.25	30	Pass
Middle	2437	17.78	18.36	30	Pass
High	2462	16.52	17.69	30	Pass
802.11g					
Low	2412	15.41	16.68	30	Pass
Middle	2437	14.67	15.98	30	Pass
High	2462	13.85	14.77	30	Pass
802.11n-HT20					
Low	2412	12.36	13.65	30	Pass
Middle	2437	11.74	12.85	30	Pass
High	2462	10.59	11.69	30	Pass
802.11n-HT40					
Low	2422	12.55	13.74	30	Pass
Middle	2437	11.46	12.56	30	Pass
High	2452	10.38	11.54	30	Pass

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

### Test 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

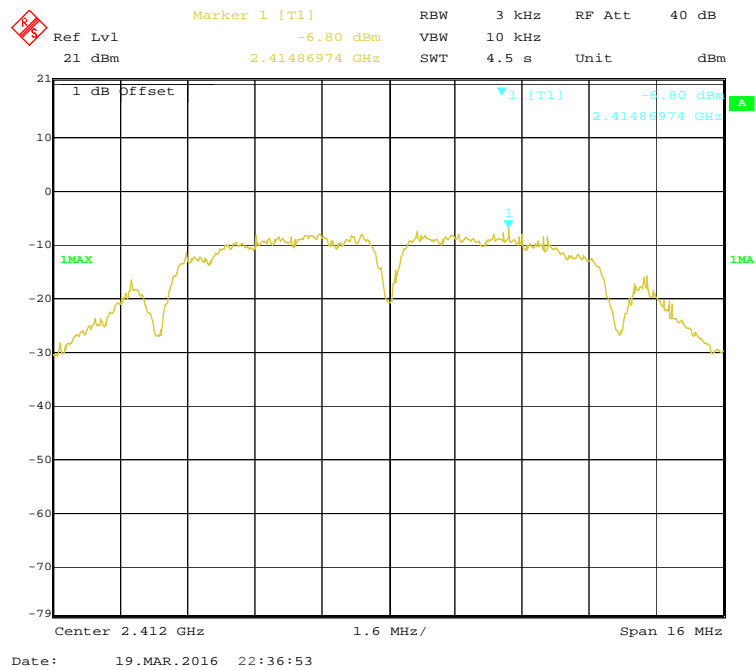
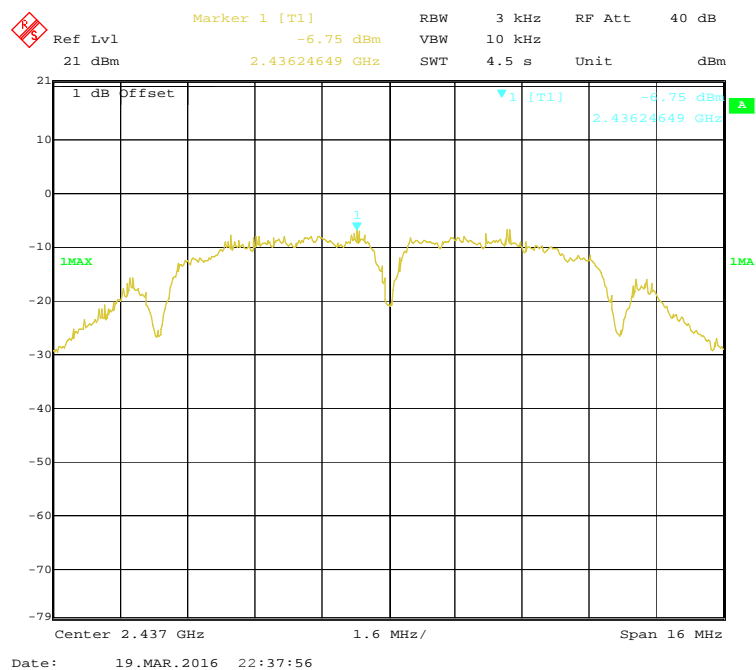
Temperature:	27 °C
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

*The testing was performed by Matt Yao on 2016-03-19.*

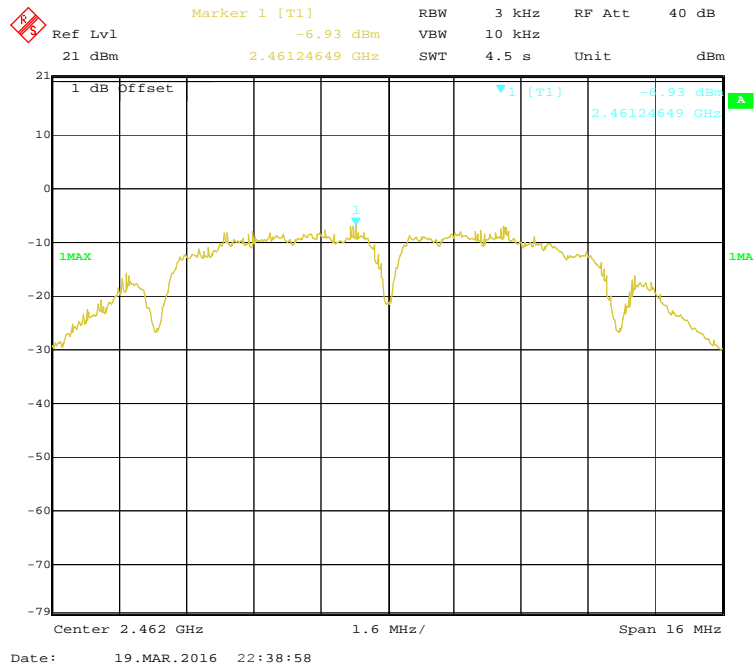
*EUT operation mode: Transmitting*

**Test Result: Pass**

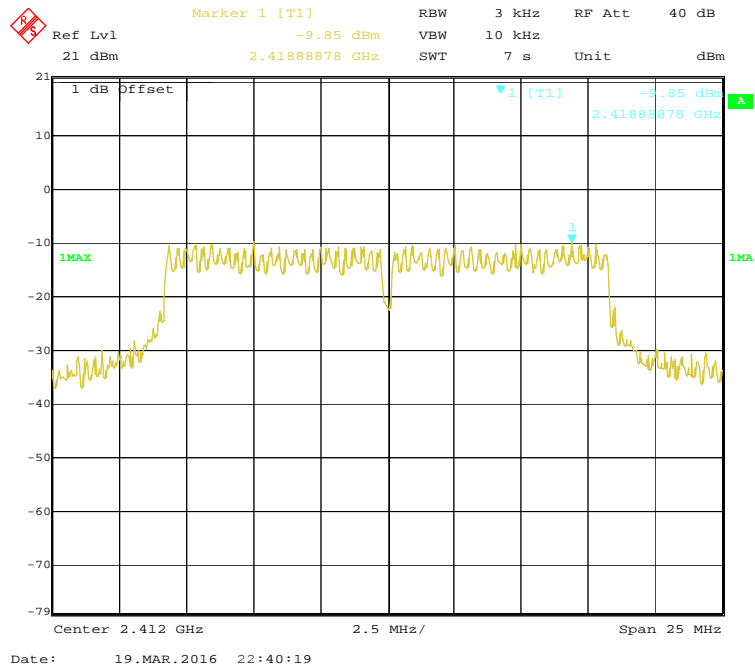
Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)
802.11b mode			
Low	2412	-6.80	$\leq 8$
Middle	2437	-6.75	$\leq 8$
High	2462	-6.93	$\leq 8$
802.11g mode			
Low	2412	-9.85	$\leq 8$
Middle	2437	-8.98	$\leq 8$
High	2462	-9.18	$\leq 8$
802.11n-HT20 mode			
Low	2412	-9.31	$\leq 8$
Middle	2437	-9.02	$\leq 8$
High	2462	-9.45	$\leq 8$
802.11n-HT40 mode			
Low	2422	-13.31	$\leq 8$
Middle	2437	-13.20	$\leq 8$
High	2452	-13.44	$\leq 8$

**Power Spectral Density, 802.11b Low Channel****Power Spectral Density, 802.11b Middle Channel**

### Power Spectral Density, 802.11b High Channel

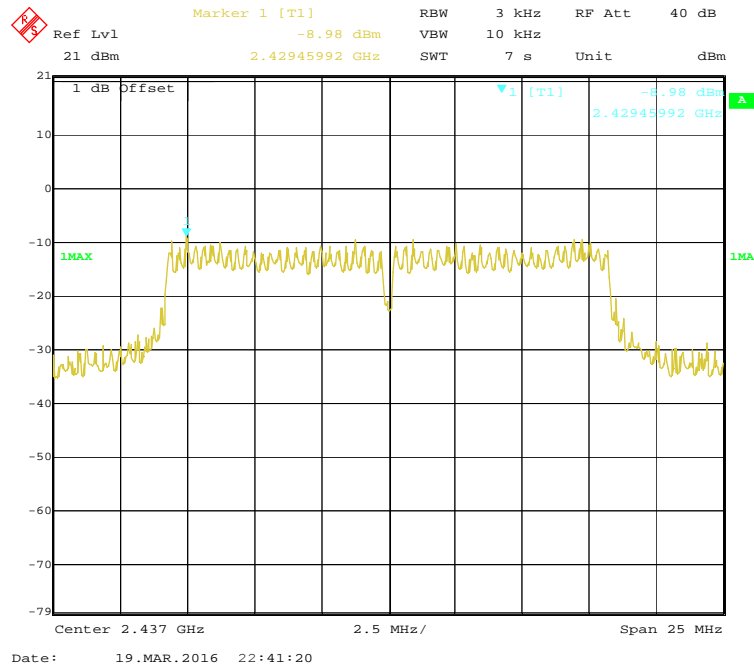


### Power Spectral Density, 802.11g Low Channel

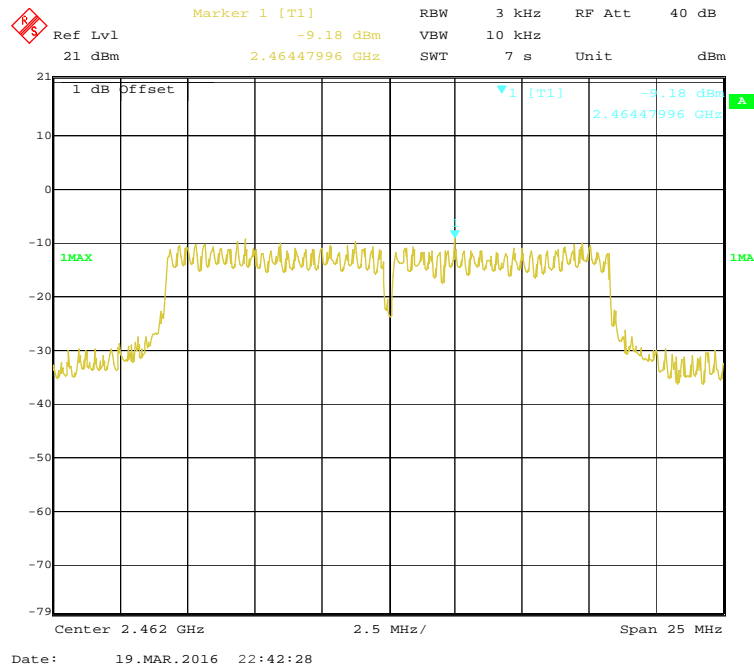




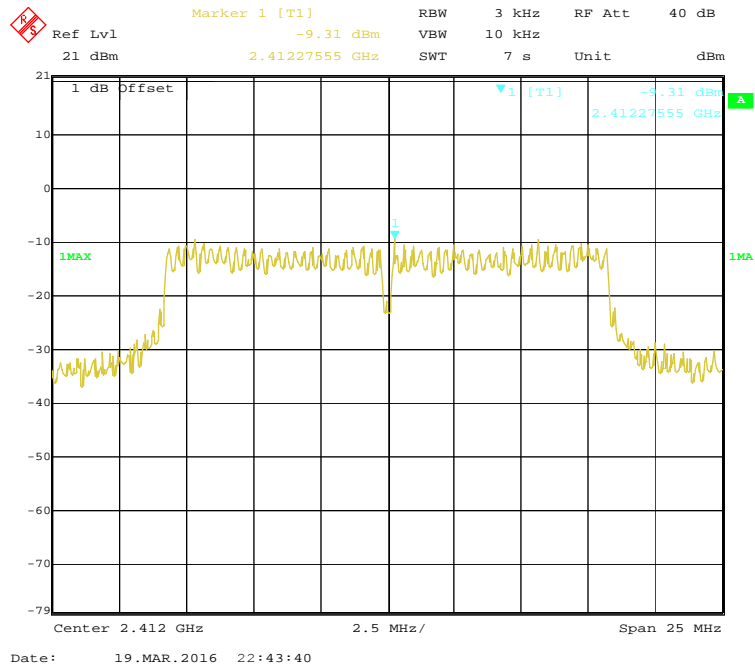
### Power Spectral Density, 802.11g Middle Channel



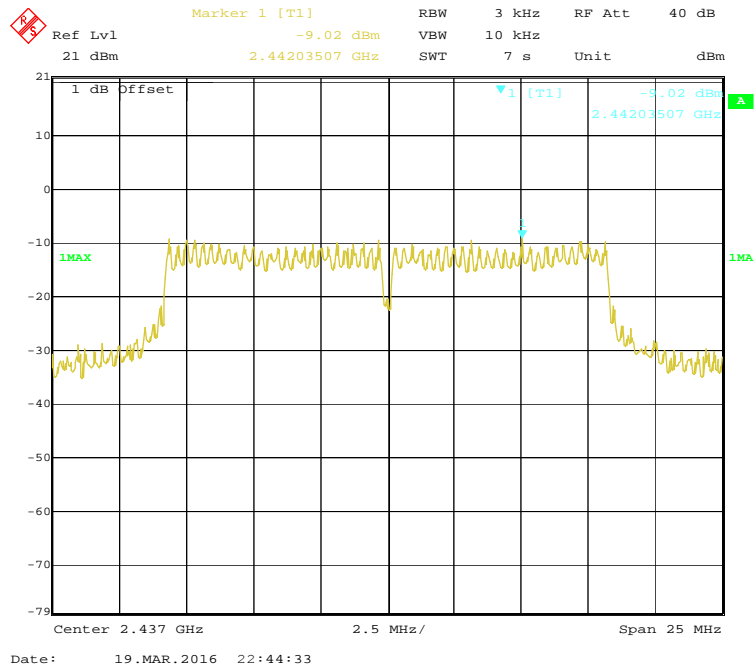
### Power Spectral Density, 802.11g High Channel



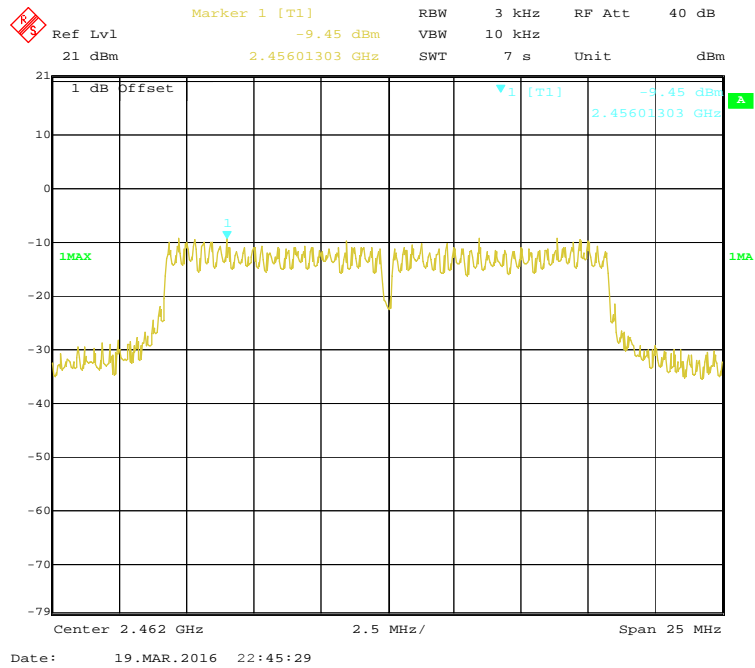
### Power Spectral Density, 802.11n-HT20 Low Channel



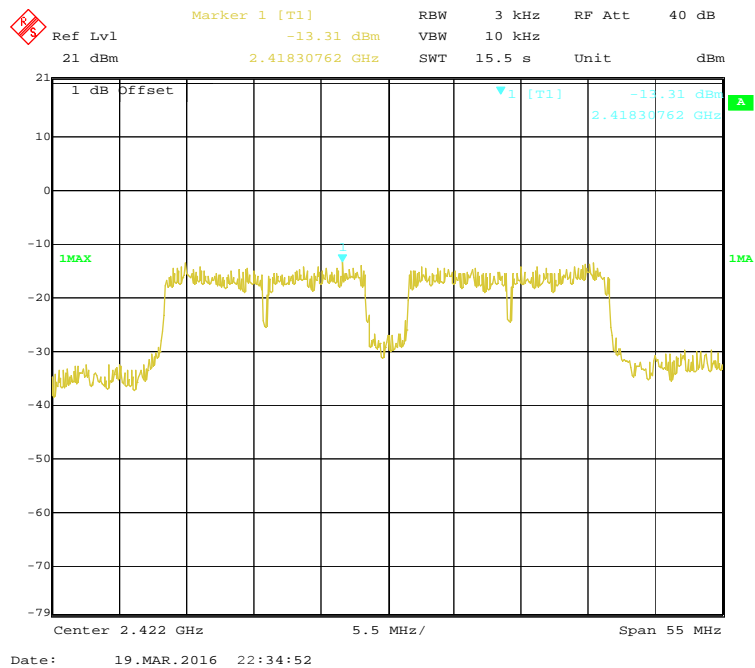
### Power Spectral Density, 802.11n-HT20 Middle Channel



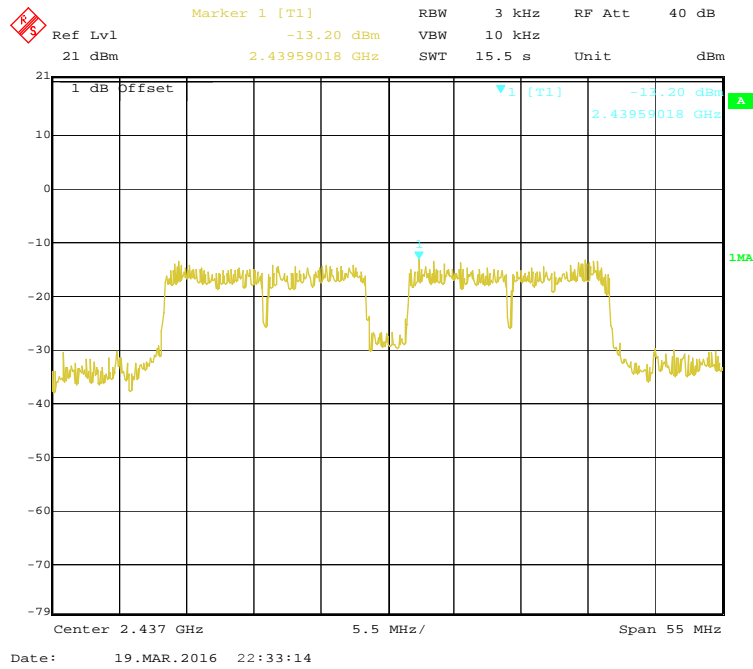
### Power Spectral Density, 802.11n-HT20 High Channel



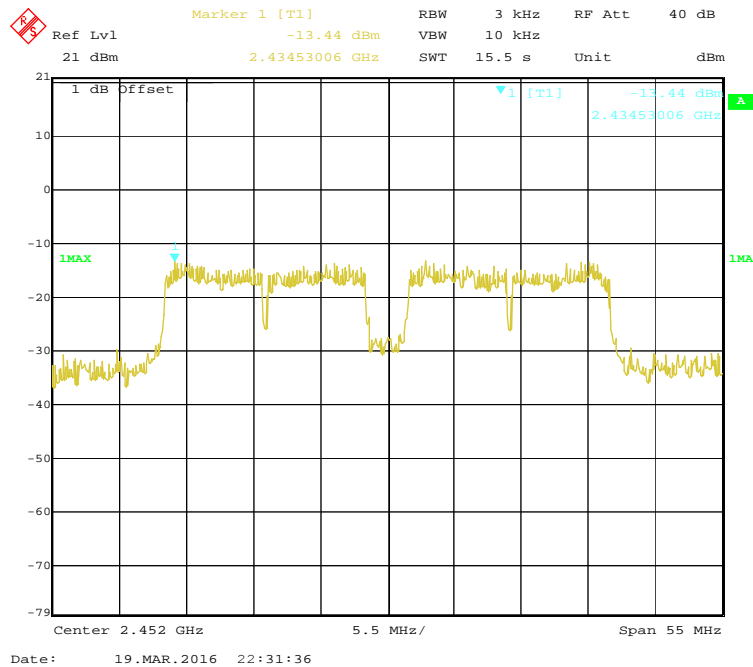
### Power Spectral Density, 802.11n-HT40 Low Channel



### Power Spectral Density, 802.11n-HT40 Middle Channel



### Power Spectral Density, 802.11n-HT40 High Channel



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