FCC PART 15.247

TEST REPORT

For

Shenzhen TongFang Information Technologies CO., LTD

Floor3, Building D, TongFang Information Harbour, LangShan Road, High-tech Industrial Park North, NanShan District, ShenZhen, P.R.China 518058

FCC ID: 2ABKZ-UA791909

Report Type:	Product Type:
Original Report	MID

Test Engineer:	Allen Qiao
Report Number:	RDG150209002-00B
Report Date:	2015-02-15
Reviewed By:	Sula Huang RF Engineer
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Shenzhen TongFang Information Technologies CO., LTD*'s product, model number: *B9SS (FCC ID: 2ABKZ-UA791909)* (the "EUT") in this report was a *MID,* which was measured approximately: 24.7 cm (L) x 19.4 cm (W) x 1.2 cm (H), rated input voltage: DC 3.7V rechargeable Li-ion battery or DC5V charging from USB port.

Adapter information:
Model: FEF0500200A1BU
Input: 100-240V~50/80Hz, 0.3A
Output: 5V, 2.0A

All measurement and test data in this report was gathered from production sample serial number: 150209002 (Assigned by BACL, Dongguan). The EUT was received on 2015-02-10

Objective

This report is prepared on behalf of *Shenzhen TongFang Information Technologies CO., LTD* in accordance with Part 2, Subpart J, Part 15, Subparts A, B and C of the Federal Communications Commission's rules

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

Related Submittal(s)/Grant(s)

FCC Part 15B JBP submissions with FCC ID: 2ABKZ-UA791909.
FCC Part 15C DSS submissions with FCC ID: 2ABKZ-UA791909.
FCC Part 15E NII submissions with FCC ID: 2ABKZ-UA791909.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2009, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Dongguan).

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communications 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 February 06, 2015. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in testing mode, which was provided by manufacturer.
For WIFI 2.4GHz band, 11 channels are provided to testing:

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

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

For Bluetooth LE mode, 40 channels are provided for testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2442
1	2404	…	…
…	…	…	…
…	…	…	…
..	…	38	2478
19	2440	39	2480

EUT was tested with channel 0, 19 and 39.

The worst-case data rates are determined to be as follows for each mode based upon investigations by measuring the average power and PSD across all data rates bandwidths, and modulations.

Equipment Modifications

No modification was made to the EUT tested.

EUT Exercise Software

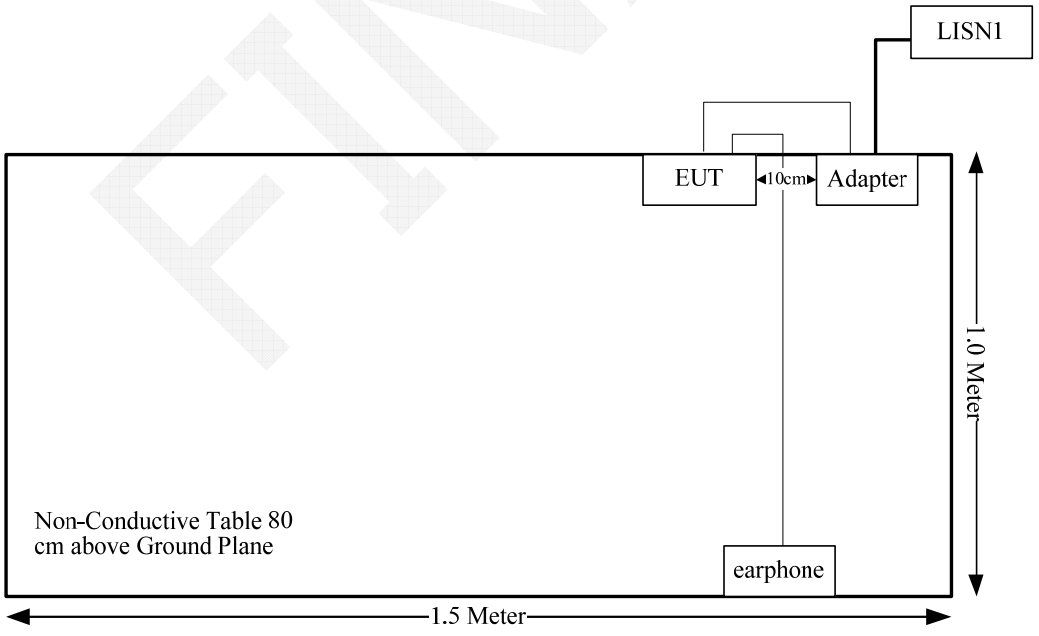
The software "AmpakRFTestTool V5.0" was used for testing. The worst condition (maximum power with 100% duty cycle) was confured by default value and the data rate of wifi was set by the software as following table:

Test Mode	Test Software Version	AmpakRFTestTool V5.0		
802.11b	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	1Mbps	1Mbps	1Mbps
802.11g	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	6Mbps	6Mbps	6Mbps
802.11n ht20	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	MCS0	MCS0	MCS0

External Cable

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Earphone Cable	no	no	1.2	EUT	Earphone
USB Cable	yes	no	1.0	Adapter	EUT

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.247 (i) & §1.1310 & §2.1093	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 & §2.1093- RF EXPOSURE

Applicable Standard

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

According to KDB447498 D01 General RF Exposure Guidance v05r02:

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

Measurement Result

WIFI:
The maximum conducted average output power= 9.37 dBm (8.65mW) at 2412MHz
[(max. power of channel, mW)/(min. test separation distance, mm)] [√f(GHz)]
= 8.65/5*(√2.412) = 2.69 < 3.0

BLE:
The maximum conducted average output power= 8.31 dBm (6.78mW) at 2440MHz
[(max. power of channel, mW)/(min. test separation distance, mm)] [√f(GHz)]
= 6.78/5*(√2.440) = 2.12 < 3.0

So the stand-alone SAR evaluation is not necessary.

FCC §15.203 - ANTENNA REQUIREMENT

Applicable Standard

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

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

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

Antenna Connector Construction

The EUT has one internal antenna arrangement, which was permanently attached and the antenna gain is 1 dBi at 2.4GHz band, fulfill the requirement of this section. Please refer to the EUT photos.

Result: Compliance.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207

Measurement Uncertainty

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

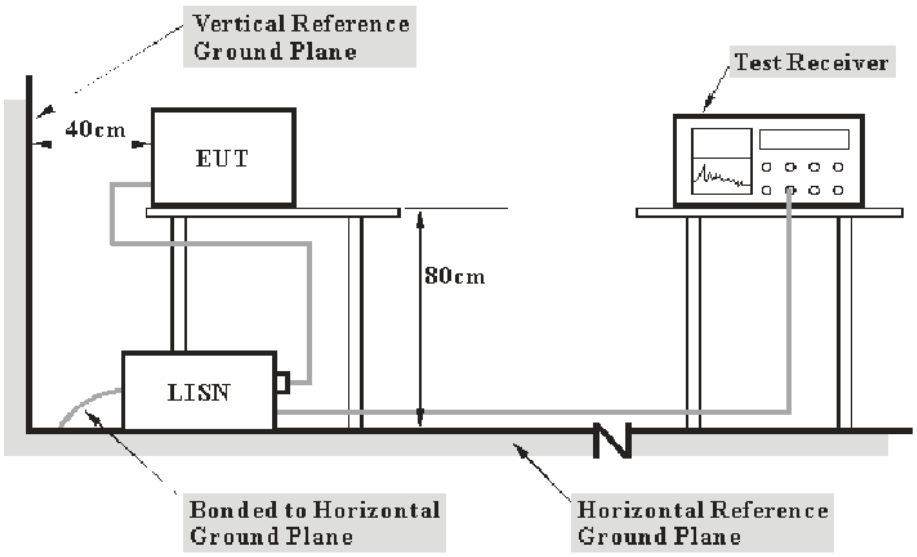
If U_{lab} is less than or equal to U_{cispr} of Table 1, then:
– compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
– non - compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.
If U_{lab} is greater than U_{cispr} of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

Based on CISPR 16-4-2-2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.46 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cispr}

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

EUT Setup



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

The setup of EUT is according with per ANSI C63.4-2009 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

The adapter was connected to 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 of EUT was connected to thefirst LISN and the other support equipments were connected to the outlet of the second LISN.

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

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

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

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

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

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

Margin = Limit – Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2014-10-16	2015-10-16
R&S	L.I.S.N	ESH3-Z5	843331/015	N/A	N/A
R&S	Two-line V-network	ENV 216	3560.6550.12	2014-12-11	2015-12-11
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A

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

Test Results Summary

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

11.5 dB at **0.852094 MHz** in the **Neutral** conducted mode for Wi-Fi.

Test Data

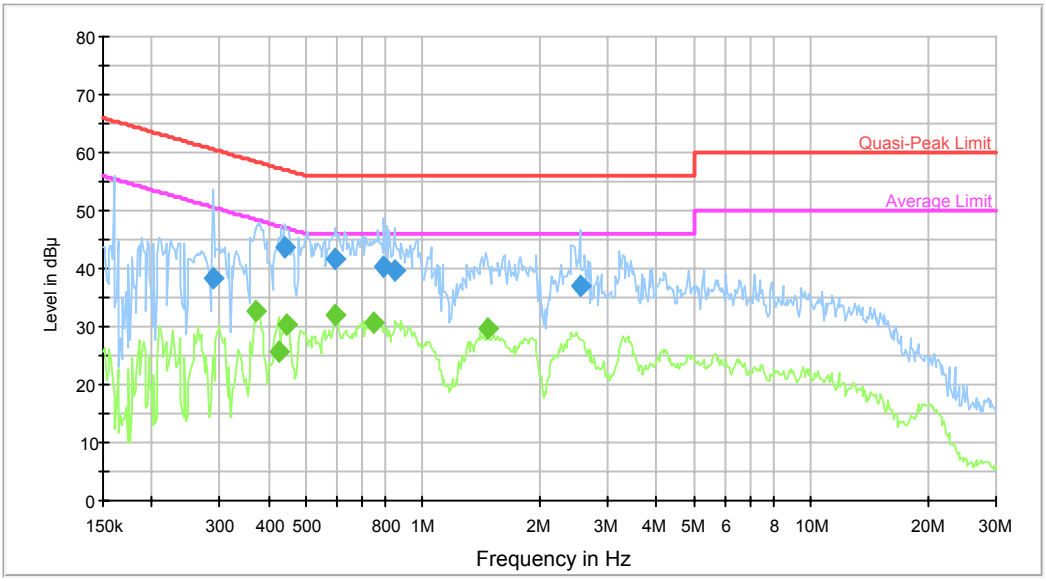
Environmental Conditions

Temperature:	20.3 °C
Relative Humidity:	32%
ATM Pressure:	101.4 kPa

The testing was performed by Allen Qiao on 2015-02-13.

Test Mode: Transmitting (Wi-Fi)

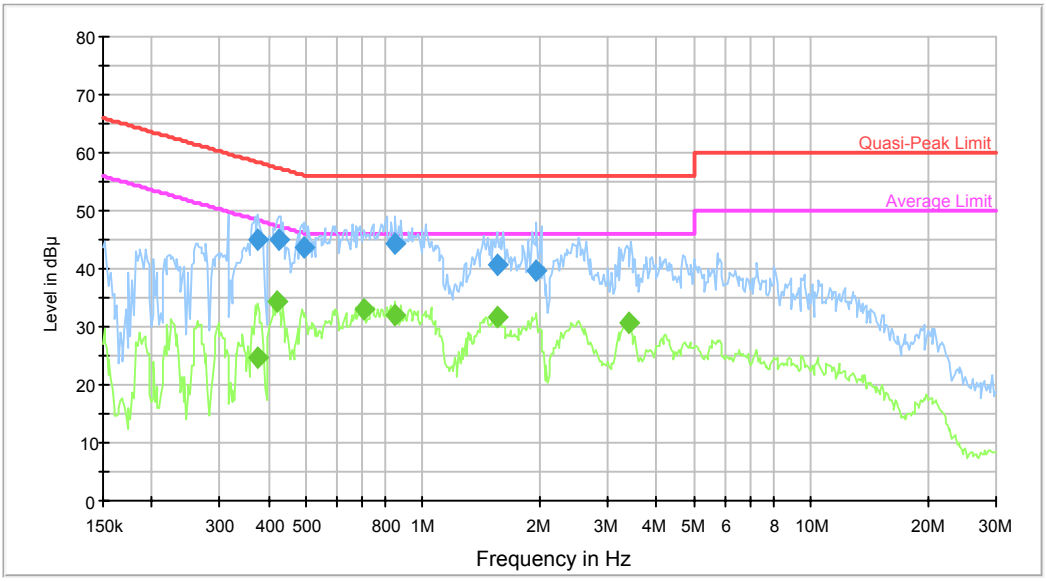
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.288307	38.3	9.000	L1	10.7	22.3	60.6	Compliance
0.443327	43.7	9.000	L1	10.5	13.3	57.0	Compliance
0.595338	41.8	9.000	L1	10.4	14.2	56.0	Compliance
0.793127	40.2	9.000	L1	10.5	15.8	56.0	Compliance
0.845331	39.6	9.000	L1	10.5	16.4	56.0	Compliance
2.538519	36.9	9.000	L1	10.5	19.1	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.372042	32.7	9.000	L1	10.7	15.8	48.5	Compliance
0.426011	25.8	9.000	L1	10.5	21.5	47.3	Compliance
0.446873	30.3	9.000	L1	10.5	16.6	46.9	Compliance
0.595338	32.0	9.000	L1	10.4	14.0	46.0	Compliance
0.744147	30.8	9.000	L1	10.5	15.2	46.0	Compliance
1.476605	29.7	9.000	L1	10.4	16.4	46.0	Compliance

AC120 V, 60 Hz, Neutral:

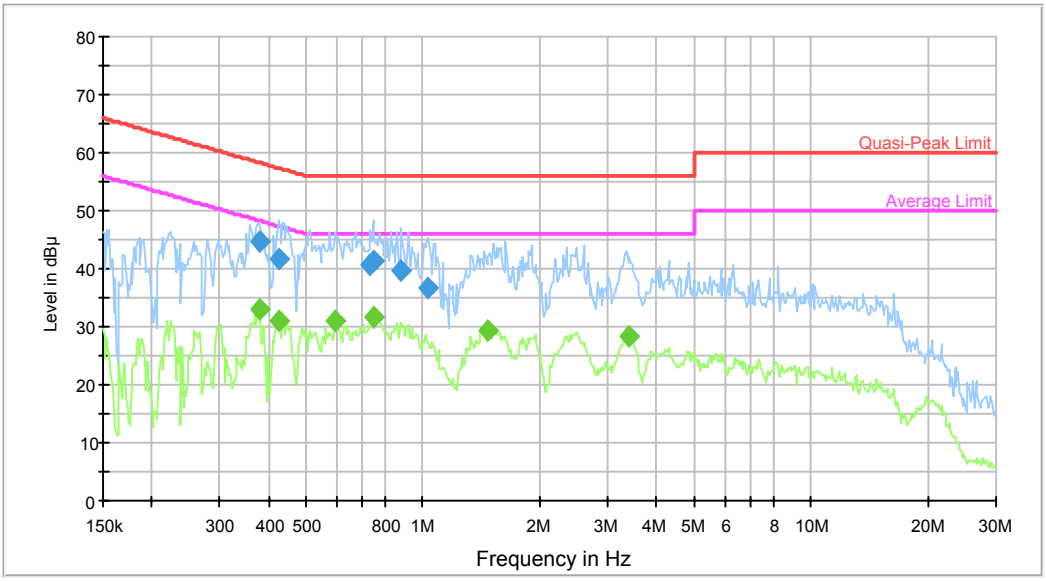


Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.375019	44.9	9.000	N	10.9	13.5	58.4	Compliance
0.426011	44.9	9.000	N	10.7	12.4	57.3	Compliance
0.495646	43.6	9.000	N	10.4	12.5	56.1	Compliance
0.852094	44.5	9.000	N	10.5	**11.5**	56.0	Compliance
1.548915	40.5	9.000	N	10.5	15.5	56.0	Compliance
1.967177	39.7	9.000	N	10.5	16.3	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.375019	24.6	9.000	N	10.9	23.8	48.4	Compliance
0.422630	34.3	9.000	N	10.7	13.1	47.4	Compliance
0.709407	33.0	9.000	N	10.6	13.0	46.0	Compliance
0.852094	32.0	9.000	N	10.5	14.0	46.0	Compliance
1.561306	31.6	9.000	N	10.5	14.4	46.0	Compliance
3.381891	30.7	9.000	N	10.7	15.3	46.0	Compliance

Test Mode: Transmitting (BLE)

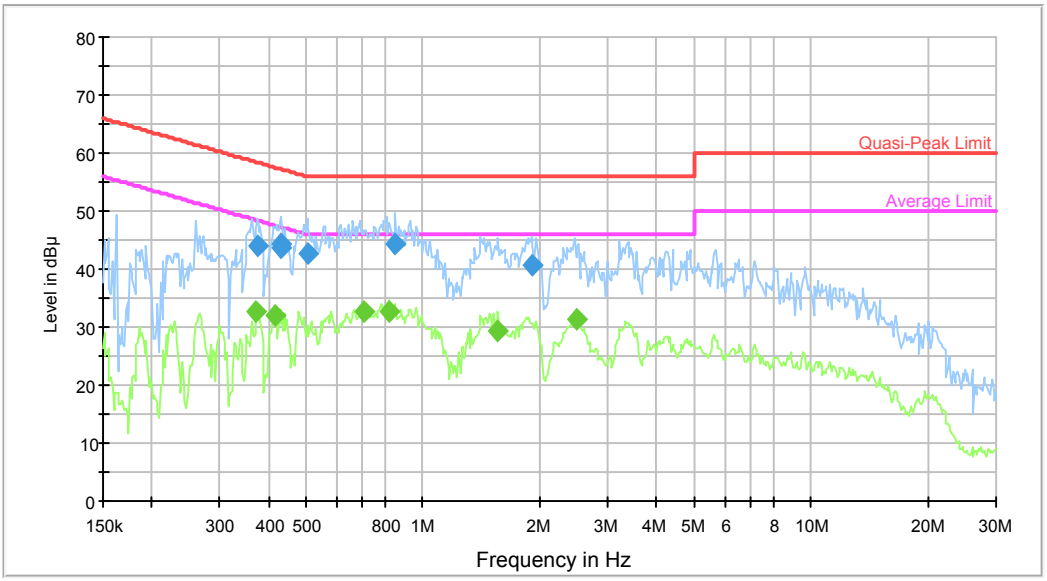
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.378019	44.6	9.000	L1	10.6	13.8	58.3	Compliance
0.426011	41.7	9.000	L1	10.5	15.7	57.3	Compliance
0.732382	40.8	9.000	L1	10.6	15.2	56.0	Compliance
0.744147	41.2	9.000	L1	10.5	14.8	56.0	Compliance
0.879690	39.8	9.000	L1	10.5	16.2	56.0	Compliance
1.031669	36.6	9.000	L1	10.4	19.4	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.378019	32.8	9.000	L1	10.6	15.5	48.3	Compliance
0.426011	30.9	9.000	L1	10.5	16.4	47.3	Compliance
0.595338	31.0	9.000	L1	10.4	15.0	46.0	Compliance
0.744147	31.6	9.000	L1	10.5	14.4	46.0	Compliance
1.476605	29.5	9.000	L1	10.4	16.5	46.0	Compliance
3.381891	28.5	9.000	L1	10.6	17.5	46.0	Compliance

AC120 V, 60 Hz, Neutral:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.375019	44.0	9.000	N	10.9	14.4	58.4	Compliance
0.429420	44.3	9.000	N	10.6	12.9	57.3	Compliance
0.432855	43.6	9.000	N	10.6	13.6	57.2	Compliance
0.503608	42.6	9.000	N	10.3	13.4	56.0	Compliance
0.852094	44.3	9.000	N	10.5	11.7	56.0	Compliance
1.905466	40.7	9.000	N	10.5	15.3	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.372042	32.8	9.000	N	10.9	15.7	48.5	Compliance
0.415949	32.1	9.000	N	10.7	15.5	47.5	Compliance
0.703777	32.8	9.000	N	10.6	13.2	46.0	Compliance
0.818813	32.8	9.000	N	10.5	13.2	46.0	Compliance
1.561306	29.4	9.000	N	10.5	16.6	46.0	Compliance
2.498385	31.3	9.000	N	10.5	14.7	46.0	Compliance

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

Applicable Standard

FCC §15.247 (d); §15.209; §15.205;

Measurement Uncertainty

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

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

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

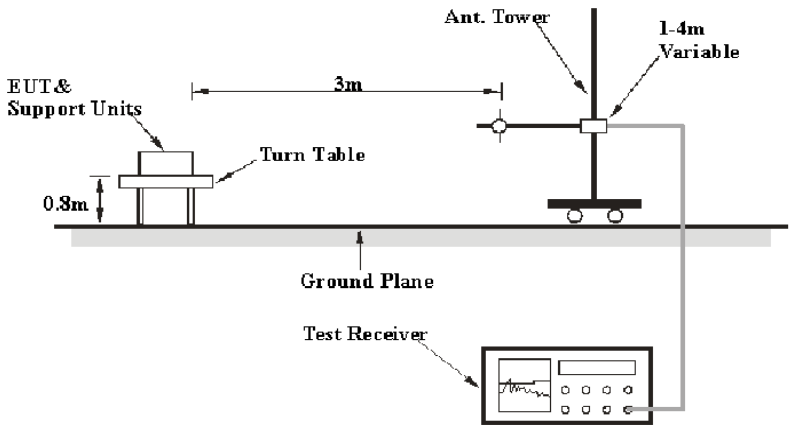
Based on CISPR 16-4-2-2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:
30M~200MHz: 5.0 dB
200M~1GHz: 6.2 dB
1G~6GHz: 4.45 dB
6G~18GHz: 5.23 dB

Table 2 – Values of U_{cispr}

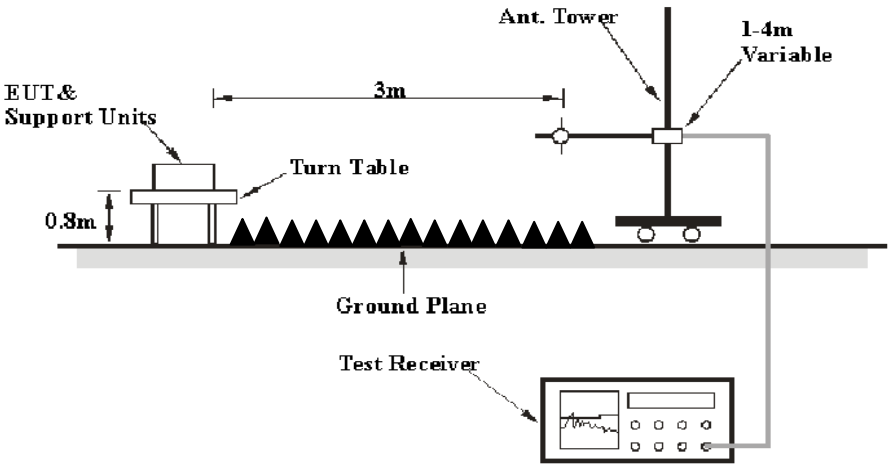
Measurement	U_{cispr}
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC 15.209, and FCC 15.247 limits.
The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

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	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	Ave.

Test Procedure

During the radiated emission test, the adapter was connected to the first AC floor outlet and the other support equipments were connected to the second AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1 GHz, peak and Average detection modes for frequencies above 1 GHz.

Corrected Amplitude & Margin Calculation

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

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

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

Margin = Limit –Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2014-05-09	2015-05-09
Sunol Sciences	Antenna	JB3	A060611-3	2014-07-28	2017-07-27
HP	Amplifier	8447E	2434A02181	2014-09-01	2015-09-01
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-09
ETS LINDGREN	Horn Antenna	3115	000 527 35	2012-09-06	2015-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2014-02-19	2015-02-19
R&S	Spectrum Analyzer	FSP 38	100478	2014-05-09	2015-05-09
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-01 1304	2014-06-16	2017-06-15
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2014-09-06	2015-09-06

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

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Section 15.205, 15.209 and 15.247, with the worst margin reading of:

7.26 dB at **2483.5MHz** in the **Horizontal** polarization for 802.11g Mode

Test Data

Environmental Conditions

Temperature:	21.2°C
Relative Humidity:	42 %
ATM Pressure:	101.4 kPa

** The testing was performed by Allen Qiao on 2015-02-13.*

Test Mode: Transmitting
802.11b Mode

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 2412 MHz									
2412	69.54	PK	H	25.67	3.68	0.00	98.89	N/A	N/A
2412	66.09	AV	H	25.67	3.68	0.00	95.44	N/A	N/A
2412	58.32	PK	V	25.67	3.68	0.00	87.67	N/A	N/A
2412	54.95	AV	V	25.67	3.68	0.00	84.30	N/A	N/A
2390	27.34	PK	H	25.61	3.63	0.00	56.58	74.00	17.42
2390	17.22	AV	H	25.61	3.63	0.00	46.46	54.00	7.54
4824	32.91	PK	H	30.64	5.03	27.41	41.17	74.00	32.83
4824	20.02	AV	H	30.64	5.03	27.41	28.28	54.00	25.72
7236	31.25	PK	H	34.17	6.65	25.90	46.17	74.00	27.83
7236	19.24	AV	H	34.17	6.65	25.90	34.16	54.00	19.84
9648	30.17	PK	H	36.06	8.55	27.46	47.32	74.00	26.68
9648	18.67	AV	H	36.06	8.55	27.46	35.82	54.00	18.18
3187	34.25	PK	H	27.80	6.31	27.38	40.98	74.00	33.02
3187	22.13	AV	H	27.80	6.31	27.38	28.86	54.00	25.14
432.6	38.13	QP	H	16.81	2.49	21.85	35.58	46.00	10.42
Middle Channel: 2437 MHz									
2437	69.54	PK	H	25.74	3.75	0.00	99.03	N/A	N/A
2437	66.44	AV	H	25.74	3.75	0.00	95.93	N/A	N/A
2437	58.15	PK	V	25.74	3.75	0.00	87.64	N/A	N/A
2437	54.36	AV	V	25.74	3.75	0.00	83.85	N/A	N/A
4874	32.94	PK	H	30.77	5.14	27.42	41.43	74.00	32.57
4874	20.15	AV	H	30.77	5.14	27.42	28.64	54.00	25.36
7311	31.44	PK	H	34.35	6.74	25.88	46.65	74.00	27.35
7311	19.11	AV	H	34.35	6.74	25.88	34.32	54.00	19.68
9748	30.05	PK	H	36.30	8.61	27.24	47.72	74.00	26.28
9748	18.51	AV	H	36.30	8.61	27.24	36.18	54.00	17.82
3187	34.05	PK	H	27.80	6.31	27.38	40.78	74.00	33.22
3187	22.14	AV	H	27.80	6.31	27.38	28.87	54.00	25.13
3190	36.13	PK	H	27.81	6.26	27.38	42.82	74.00	31.18
3190	23.37	AV	H	27.81	6.26	27.38	30.06	54.00	23.94
432.6	38.27	QP	H	16.81	2.49	21.85	35.72	46.00	10.28
High Channel: 2462 MHz									
2462	69.64	PK	H	25.80	3.75	0.00	99.19	N/A	N/A
2462	66.07	AV	H	25.80	3.75	0.00	95.62	N/A	N/A
2462	58.99	PK	V	25.80	3.75	0.00	88.54	N/A	N/A
2462	54.54	AV	V	25.80	3.75	0.00	84.09	N/A	N/A
2483.5	27.33	PK	H	25.86	3.67	0.00	56.86	74.00	17.14
2483.5	16.6	AV	H	25.86	3.67	0.00	46.13	54.00	7.87
4924	32.9	PK	H	30.90	5.34	27.43	41.71	74.00	32.29
4924	20.32	AV	H	30.90	5.34	27.43	29.13	54.00	24.87
7386	31.26	PK	H	34.53	6.83	25.86	46.76	74.00	27.24
7386	19.28	AV	H	34.53	6.83	25.86	34.78	54.00	19.22
9848	30.17	PK	H	36.54	8.66	26.94	48.43	74.00	25.57
9848	18.51	AV	H	36.54	8.66	26.94	36.77	54.00	17.23
3187	34.01	PK	H	27.80	6.31	27.38	40.74	74.00	33.26
3187	22.2	AV	H	27.80	6.31	27.38	28.93	54.00	25.07
432.6	38.2	QP	H	16.81	2.49	21.85	35.65	46.00	10.35

802.11g Mode

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 2412 MHz									
2412	68.33	PK	H	25.67	3.68	0.00	97.68	N/A	N/A
2412	58.22	AV	H	25.67	3.68	0.00	87.57	N/A	N/A
2412	55.57	PK	V	25.67	3.68	0.00	84.92	N/A	N/A
2412	45.12	AV	V	25.67	3.68	0.00	74.47	N/A	N/A
2390	28.68	PK	H	25.61	3.63	0.00	57.92	74.00	16.08
2390	16.35	AV	H	25.61	3.63	0.00	45.59	54.00	8.41
4824	33.24	PK	H	30.64	5.03	27.41	41.50	74.00	32.50
4824	20.53	AV	H	30.64	5.03	27.41	28.79	54.00	25.21
7236	31.58	PK	H	34.17	6.65	25.90	46.50	74.00	27.50
7236	19.54	AV	H	34.17	6.65	25.90	34.46	54.00	19.54
9648	30.48	PK	H	36.06	8.55	27.46	47.63	74.00	26.37
9648	18.91	AV	H	36.06	8.55	27.46	36.06	54.00	17.94
2933	34.26	PK	H	27.03	6.37	27.54	40.12	74.00	33.88
2933	22.43	AV	H	27.03	6.37	27.54	28.29	54.00	25.71
432.6	38.68	QP	H	16.81	2.49	21.85	36.13	46.00	9.87
Middle Channel: 2437 MHz									
2437	68.23	PK	H	25.74	3.75	0.00	97.72	N/A	N/A
2437	58.49	AV	H	25.74	3.75	0.00	87.98	N/A	N/A
2437	55.45	PK	V	25.74	3.75	0.00	84.94	N/A	N/A
2437	45.25	AV	V	25.74	3.75	0.00	74.74	N/A	N/A
4874	33.43	PK	H	30.77	5.14	27.42	41.92	74.00	32.08
4874	20.69	AV	H	30.77	5.14	27.42	29.18	54.00	24.82
7311	31.62	PK	H	34.35	6.74	25.88	46.83	74.00	27.17
7311	19.71	AV	H	34.35	6.74	25.88	34.92	54.00	19.08
9748	30.49	PK	H	36.30	8.61	27.24	48.16	74.00	25.84
9748	18.86	AV	H	36.30	8.61	27.24	36.53	54.00	17.47
3187	34.4	PK	H	27.80	6.31	27.38	41.13	74.00	32.87
3187	22.33	AV	H	27.80	6.31	27.38	29.06	54.00	24.94
432.6	38.09	QP	H	16.81	2.49	21.85	35.54	46.00	10.46
High Channel: 2462 MHz									
2462	68.17	PK	H	25.80	3.75	0.00	97.72	N/A	N/A
2462	58.03	AV	H	25.80	3.75	0.00	87.58	N/A	N/A
2462	55.13	PK	V	25.80	3.75	0.00	84.68	N/A	N/A
2462	45.49	AV	V	25.80	3.75	0.00	75.04	N/A	N/A
2483.5	29.59	PK	H	25.86	3.67	0.00	59.12	74.00	14.88
2483.5	17.21	AV	H	25.86	3.67	0.00	46.74	54.00	7.26
4924	33.63	PK	H	30.90	5.34	27.43	42.44	74.00	31.56
4924	20.58	AV	H	30.90	5.34	27.43	29.39	54.00	24.61
7386	31.69	PK	H	34.53	6.83	25.86	47.19	74.00	26.81
7386	19.58	AV	H	34.53	6.83	25.86	35.08	54.00	18.92
9848	30.68	PK	H	36.54	8.66	26.94	48.94	74.00	25.06
9848	19.05	AV	H	36.54	8.66	26.94	37.31	54.00	16.69
2933	34.26	PK	H	27.03	6.37	27.54	40.12	74.00	33.88
2933	22.41	AV	H	27.03	6.37	27.54	28.27	54.00	25.73
432.6	38.45	QP	H	16.81	2.49	21.85	35.90	46.00	10.10

802.11 n ht20 Mode

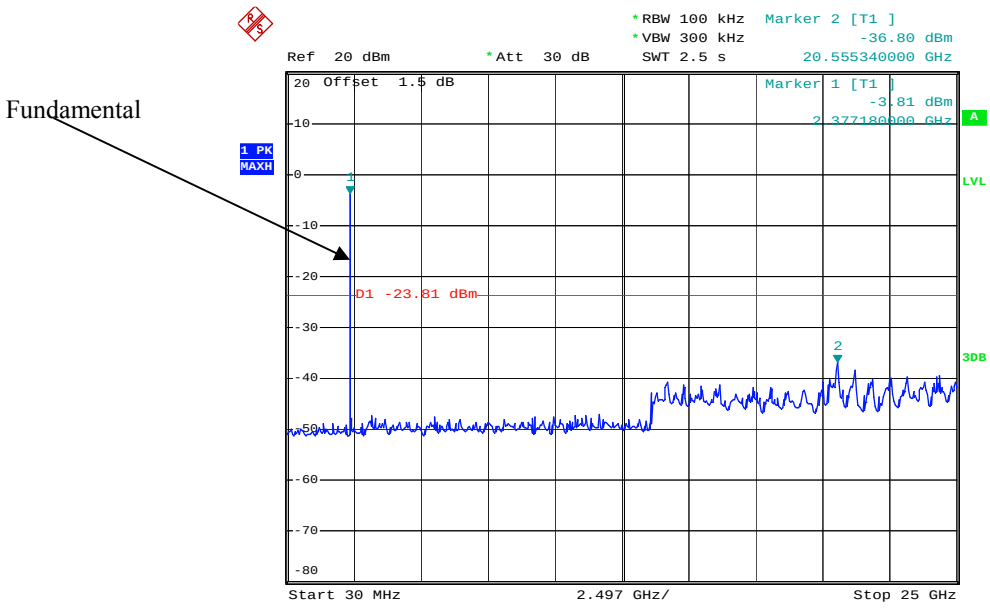
Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 2412 MHz									
2412	69.42	PK	H	25.67	3.68	0.00	98.77	N/A	N/A
2412	57.69	AV	H	25.67	3.68	0.00	87.04	N/A	N/A
2412	58.43	PK	V	25.67	3.68	0.00	87.78	N/A	N/A
2412	46.21	AV	V	25.67	3.68	0.00	75.56	N/A	N/A
2390	28.56	PK	H	25.61	3.63	0.00	57.80	74.00	16.20
2390	16.78	AV	H	25.61	3.63	0.00	46.02	54.00	7.98
4824	33.12	PK	H	30.64	5.03	27.41	41.38	74.00	32.62
4824	20.34	AV	H	30.64	5.03	27.41	28.60	54.00	25.40
7236	31.45	PK	H	34.17	6.65	25.90	46.37	74.00	27.63
7236	19.38	AV	H	34.17	6.65	25.90	34.30	54.00	19.70
9648	30.29	PK	H	36.06	8.55	27.46	47.44	74.00	26.56
9648	18.74	AV	H	36.06	8.55	27.46	35.89	54.00	18.11
2933	34.08	PK	H	27.03	6.37	27.54	39.94	74.00	34.06
2933	22.28	AV	H	27.03	6.37	27.54	28.14	54.00	25.86
432.6	38.92	QP	H	16.81	2.49	21.85	36.37	46.00	9.63
Middle Channel: 2437 MHz									
2437	69.35	PK	H	25.74	3.75	0.00	98.84	N/A	N/A
2437	57.18	AV	H	25.74	3.75	0.00	86.67	N/A	N/A
2437	58.53	PK	V	25.74	3.75	0.00	88.02	N/A	N/A
2437	46.06	AV	V	25.74	3.75	0.00	75.55	N/A	N/A
4874	33.43	PK	H	30.77	5.14	27.42	41.92	74.00	32.08
4874	20.69	AV	H	30.77	5.14	27.42	29.18	54.00	24.82
7311	31.62	PK	H	34.35	6.74	25.88	46.83	74.00	27.17
7311	19.71	AV	H	34.35	6.74	25.88	34.92	54.00	19.08
9748	30.49	PK	H	36.30	8.61	27.24	48.16	74.00	25.84
9748	18.86	AV	H	36.30	8.61	27.24	36.53	54.00	17.47
2933	34.4	PK	H	27.03	6.37	27.54	40.26	74.00	33.74
2933	22.33	AV	H	27.03	6.37	27.54	28.19	54.00	25.81
3897	33.67	PK	H	29.67	4.35	27.29	40.40	74.00	33.60
3897	21.13	AV	H	29.67	4.35	27.29	27.86	54.00	26.14
432.6	38.33	QP	H	16.81	2.49	21.85	35.78	46.00	10.22
High Channel: 2462 MHz									
2462	69.39	PK	H	25.80	3.75	0.00	98.94	N/A	N/A
2462	57.01	AV	H	25.80	3.75	0.00	86.56	N/A	N/A
2462	58.16	PK	V	25.80	3.75	0.00	87.71	N/A	N/A
2462	46.18	AV	V	25.80	3.75	0.00	75.73	N/A	N/A
2483.5	28.92	PK	H	25.86	3.67	0.00	58.45	74.00	15.55
2483.5	16.44	AV	H	25.86	3.67	0.00	45.97	54.00	8.03
4924	33.15	PK	H	30.90	5.34	27.43	41.96	74.00	32.04
4924	20.59	AV	H	30.90	5.34	27.43	29.40	54.00	24.60
7386	31.6	PK	H	34.53	6.83	25.86	47.10	74.00	26.90
7386	19.34	AV	H	34.53	6.83	25.86	34.84	54.00	19.16
9848	30.34	PK	H	36.54	8.66	26.94	48.60	74.00	25.40
9848	18.99	AV	H	36.54	8.66	26.94	37.25	54.00	16.75
2933	34.21	PK	H	27.03	6.37	27.54	40.07	74.00	33.93
2933	22.47	AV	H	27.03	6.37	27.54	28.33	54.00	25.67
432.6	38.41	QP	H	16.81	2.49	21.85	35.86	46.00	10.14

BLE Mode

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 2402 MHz									
2402	72.24	PK	H	25.65	3.66	0.00	101.55	N/A	N/A
2402	65.93	AV	H	25.65	3.66	0.00	95.24	N/A	N/A
2402	67.24	PK	V	25.65	3.66	0.00	96.55	N/A	N/A
2402	60.15	AV	V	25.65	3.66	0.00	89.46	N/A	N/A
2390	26.07	PK	H	25.61	3.63	0.00	55.31	74.00	18.69
2390	14.12	AV	H	25.61	3.63	0.00	43.36	54.00	10.64
4804	33.53	PK	H	30.59	5.06	27.41	41.77	74.00	32.23
4804	21.46	AV	H	30.59	5.06	27.41	29.70	54.00	24.30
7206	32.19	PK	H	34.09	6.61	25.91	46.98	74.00	27.02
7206	30.43	AV	H	34.09	6.61	25.91	45.22	54.00	8.78
9608	31.04	PK	H	35.96	8.53	27.55	47.98	74.00	26.02
9608	18.17	AV	H	35.96	8.53	27.55	35.11	54.00	18.89
1624	40.62	PK	H	23.85	2.72	27.78	39.41	74.00	34.59
1624	23.63	AV	H	23.85	2.72	27.78	22.42	54.00	31.58
467.1	37.53	QP	H	17.70	2.62	21.94	35.91	46.00	10.09
Middle Channel: 2440 MHz									
2440	72.17	PK	H	25.74	3.76	0.00	101.67	N/A	N/A
2440	65.15	AV	H	25.74	3.76	0.00	94.65	N/A	N/A
2440	67.03	PK	V	25.74	3.76	0.00	96.53	N/A	N/A
2440	60.32	AV	V	25.74	3.76	0.00	89.82	N/A	N/A
4880	33.81	PK	H	30.79	5.18	27.42	42.36	74.00	31.64
4880	21.44	AV	H	30.79	5.18	27.42	29.99	54.00	24.01
7320	32.29	PK	H	34.37	6.75	25.88	47.53	74.00	26.47
7320	30.57	AV	H	34.37	6.75	25.88	45.81	54.00	8.19
9760	30.95	PK	H	36.32	8.62	27.21	48.68	74.00	25.32
9760	17.93	AV	H	36.32	8.62	27.21	35.66	54.00	18.34
1624	40.74	PK	H	23.85	2.72	27.78	39.53	74.00	34.47
1624	23.7	AV	H	23.85	2.72	27.78	22.49	54.00	31.51
2652	33.63	PK	H	26.30	4.74	27.46	37.21	74.00	36.79
2652	21.38	AV	H	26.30	4.74	27.46	24.96	54.00	29.04
467.1	37.14	QP	H	17.70	2.62	21.94	35.52	46.00	10.48
High Channel: 2480 MHz									
2480	72.53	PK	H	25.85	3.68	0.00	102.06	N/A	N/A
2480	67.75	AV	H	25.85	3.68	0.00	97.28	N/A	N/A
2480	67.73	PK	V	25.85	3.68	0.00	97.26	N/A	N/A
2480	60.32	AV	V	25.85	3.68	0.00	89.85	N/A	N/A
2483.5	26.99	PK	H	25.86	3.67	0.00	56.52	74.00	17.48
2483.5	14.63	AV	H	25.86	3.67	0.00	44.16	54.00	9.84
4960	33.83	PK	H	31.00	5.34	27.43	42.74	74.00	31.26
4960	21.3	AV	H	31.00	5.34	27.43	30.21	54.00	23.79
7440	32.57	PK	H	34.66	6.89	25.97	48.15	74.00	25.85
7440	30.38	AV	H	34.66	6.89	25.97	45.96	54.00	8.04
9920	30.76	PK	H	36.71	8.71	26.66	49.52	74.00	24.48
9920	18.19	AV	H	36.71	8.71	26.66	36.95	54.00	17.05
1624	40.47	PK	H	23.85	2.72	27.78	39.26	74.00	34.74
1624	23.81	AV	H	23.85	2.72	27.78	22.60	54.00	31.40
467.1	37.62	QP	H	17.70	2.62	21.94	36.00	46.00	10.00

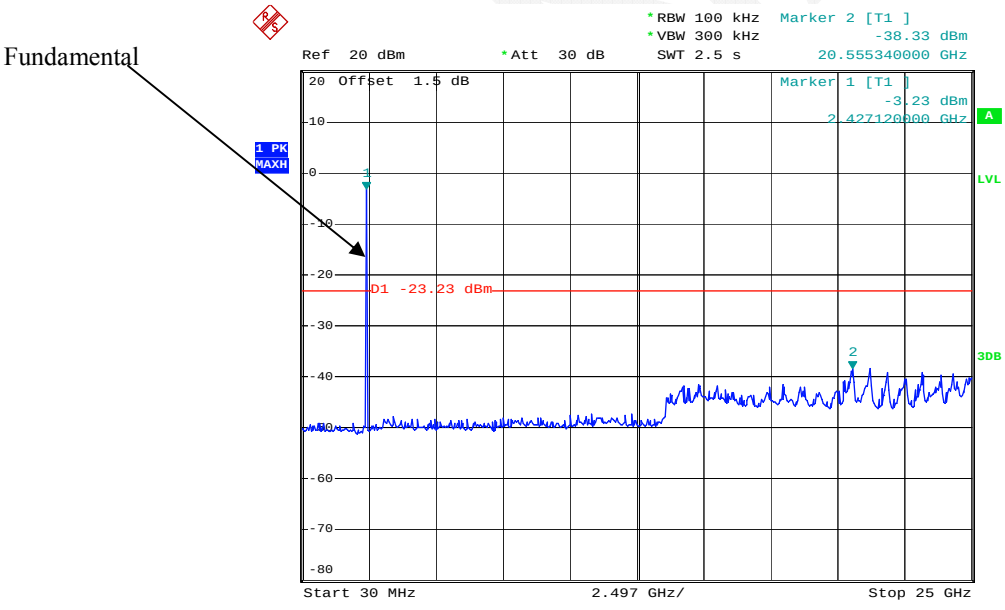
Conducted Spurious Emissions at Antenna Port

802.11b Low Channel



Date: 13.FEB.2015 12:02:30

802.11b Middle Channel



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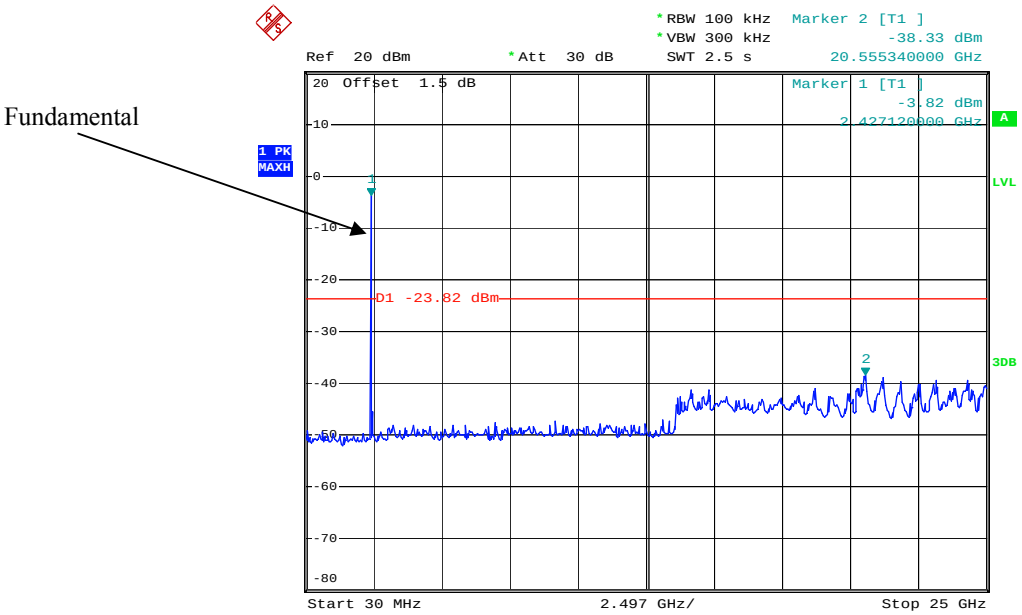
802.11b High Channel



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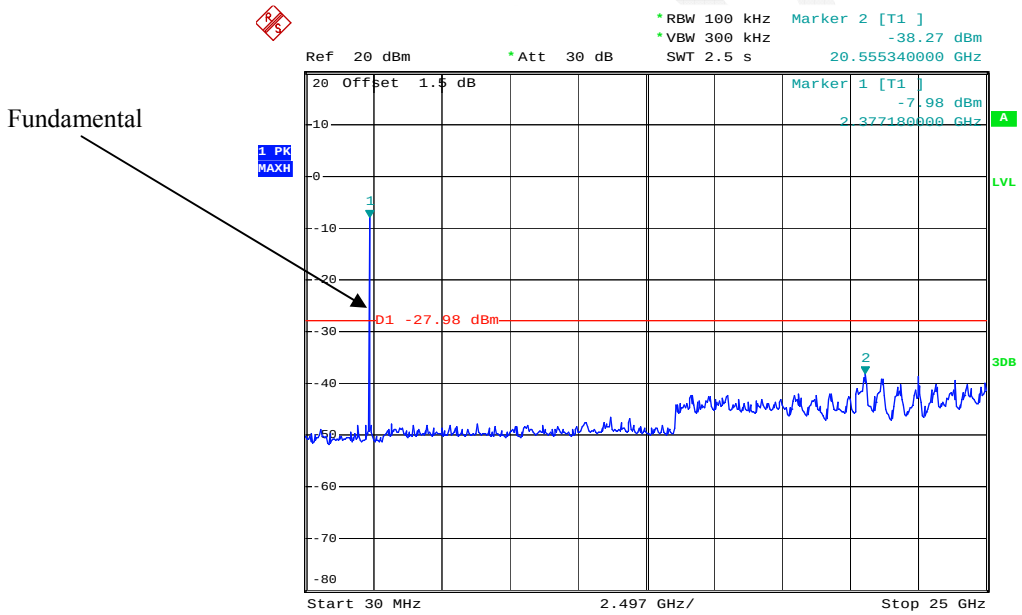
802.11g Low Channel



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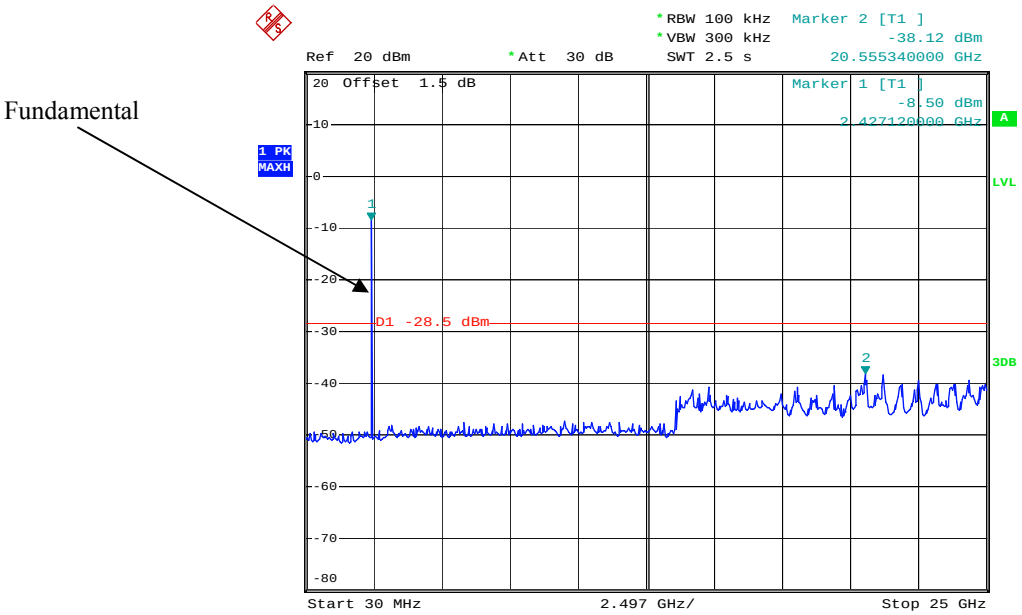
802.11g Middle Channel



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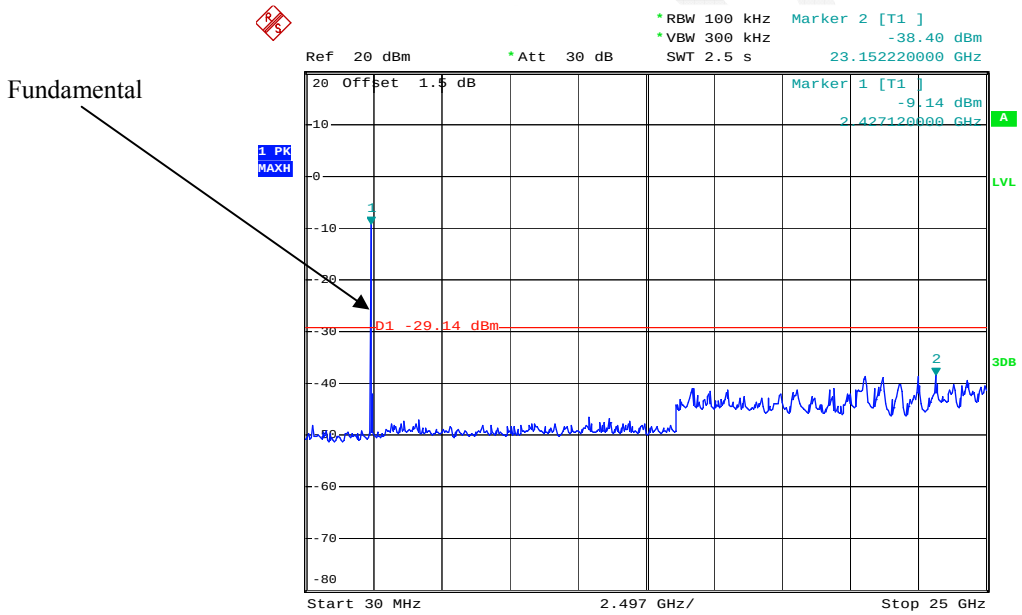
802.11g High Channel



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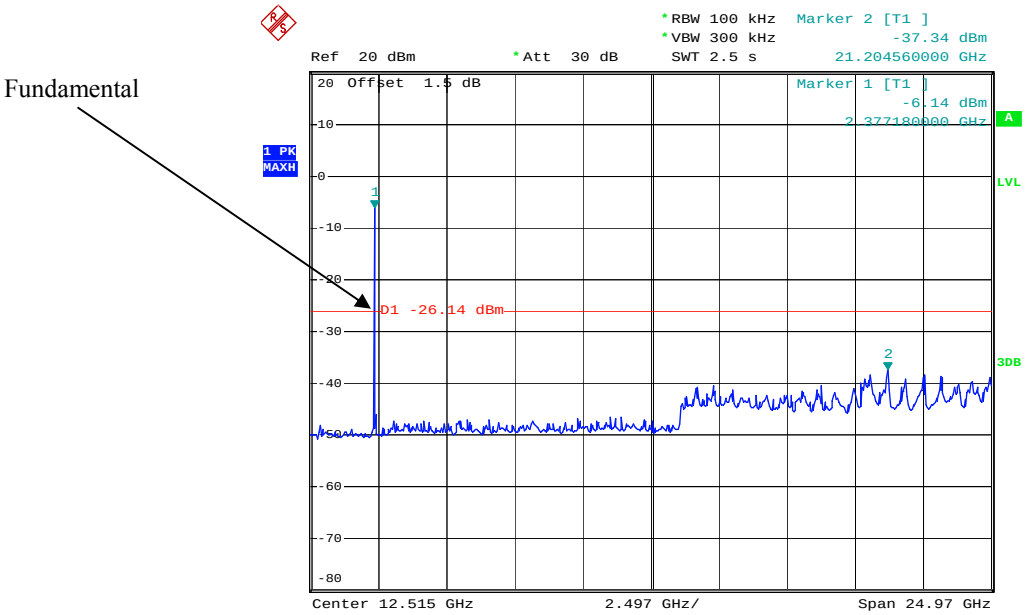
802.11n ht20 Low Channel



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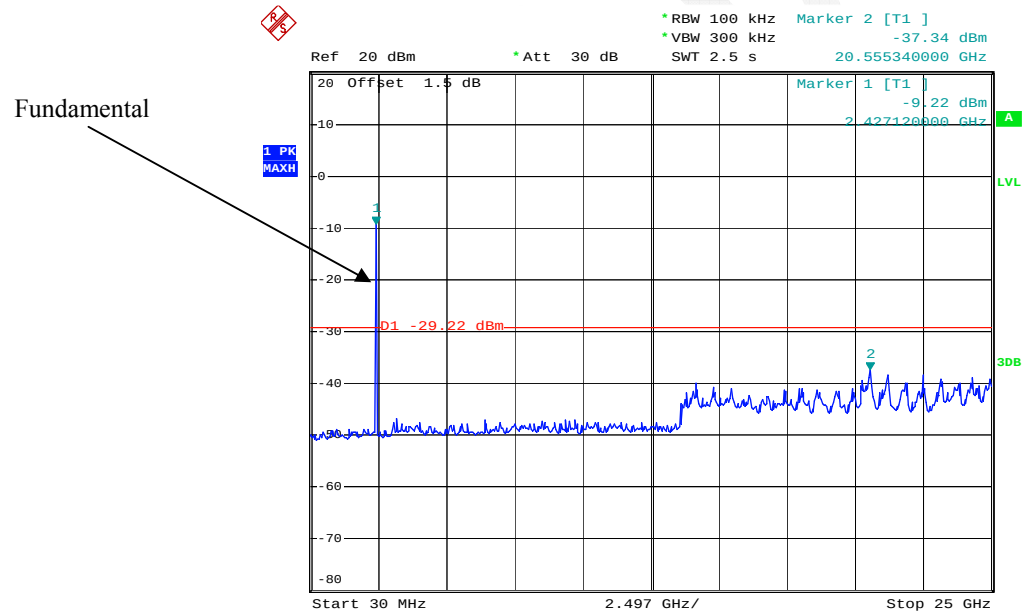
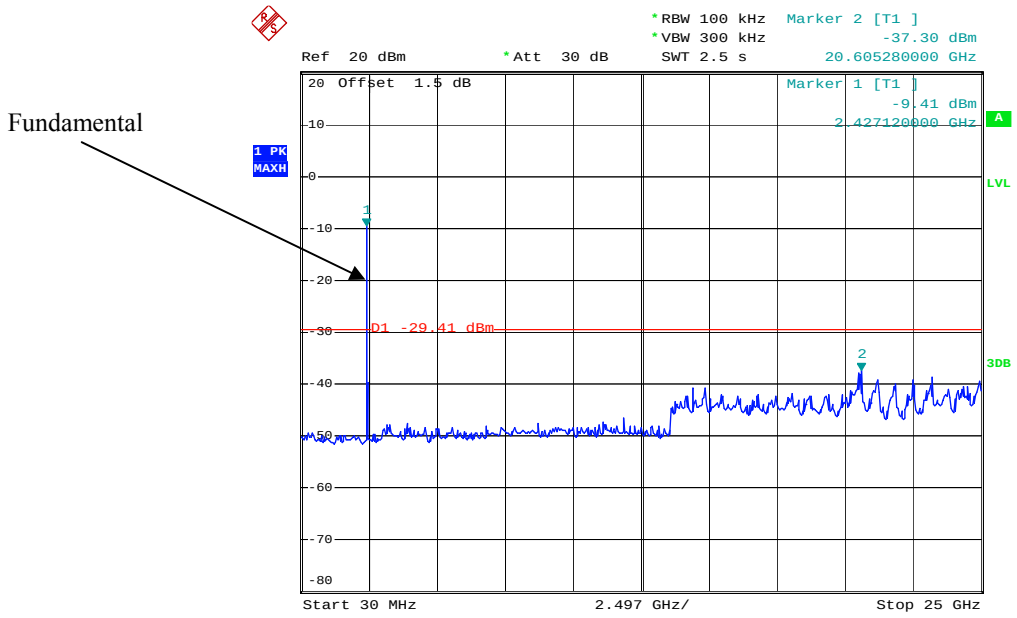
802.11n ht20 Middle Channel



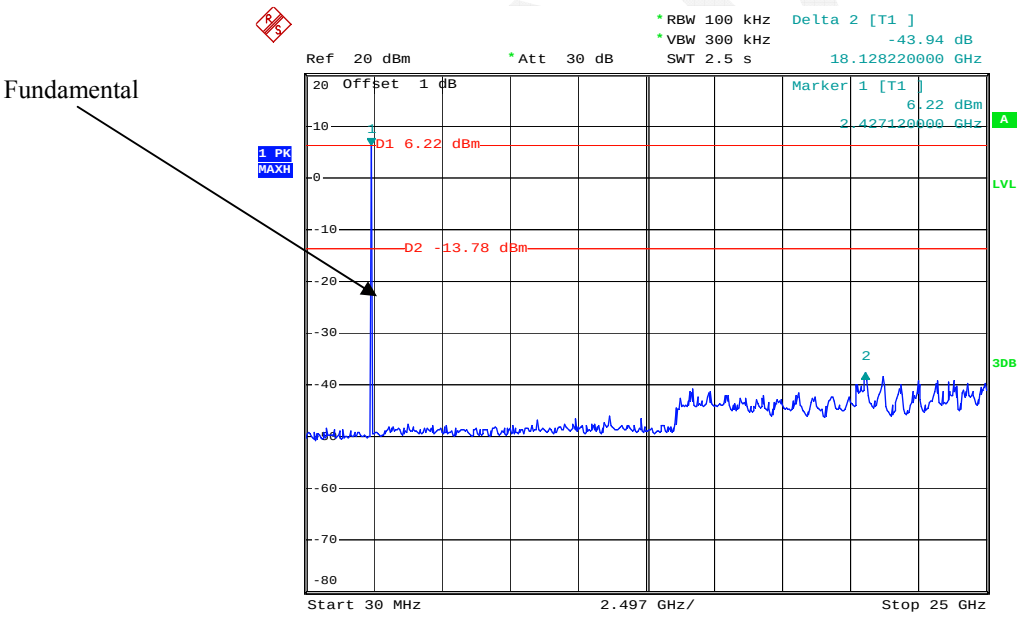
Date: 13.FEB.2015 13:34:18

802.11n ht20 High Channel



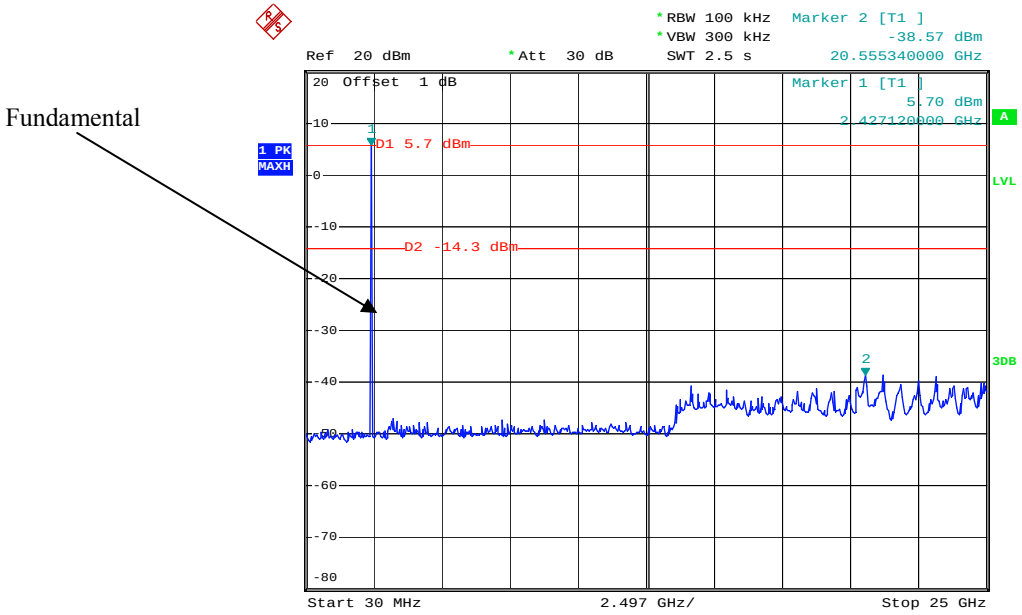
Date: 13.FEB.2015 13:37:46

BLE Low Channel



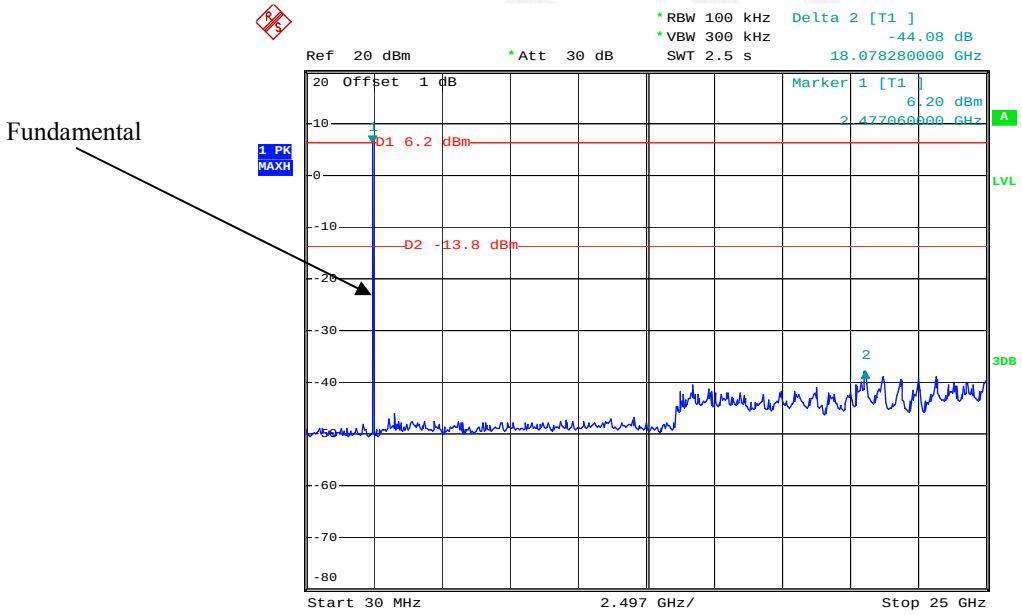
Date: 12.FEB.2015 18:43:19

BLE Middle Channel



Date: 13.FEB.2015 18:31:01

BLE High Channel



Date: 12.FEB.2015 18:41:59

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

According to KDB 558074 D01 DTS Meas Guidance v03r02 clause8.1 Option 1:
a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3×RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-09

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

Test Data

Environmental Conditions

Temperature:	21.2 °C
Relative Humidity:	402%
ATM Pressure:	101.4kPa

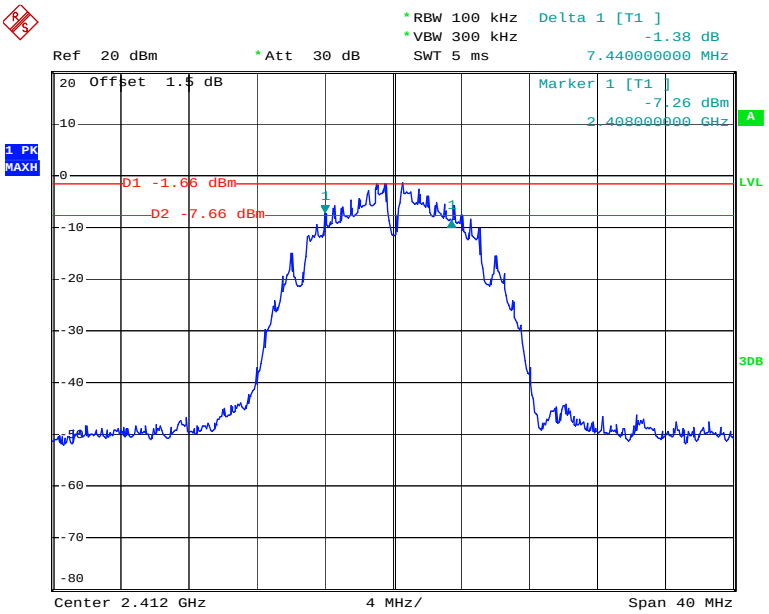
The testing was performed by Allen Qiao on2015-02-13

Test Mode: Transmitting

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

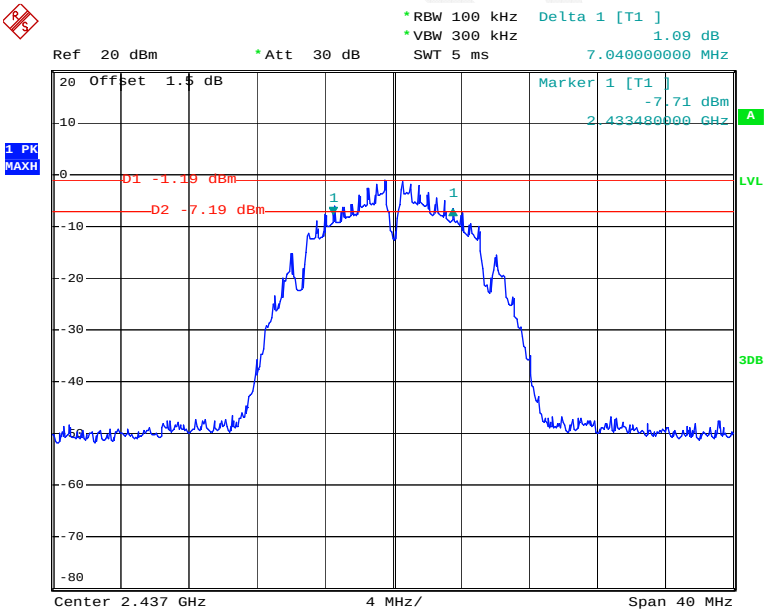
Test mode	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (MHz)
802.11b	Low	2412	7.44	≥0.5
	Middle	2437	7.04	≥0.5
	High	2462	6.64	≥0.5
802.11g	Low	2412	15.04	≥0.5
	Middle	2437	15.44	≥0.5
	High	2462	14.96	≥0.5
802.11n20	Low	2412	17.76	≥0.5
	Middle	2437	14.96	≥0.5
	High	2462	17.04	≥0.5
BLE	Low	2402	0.732	≥0.5
	Middle	2440	0.732	≥0.5
	High	2480	0.732	≥0.5

802.11b Low Channel



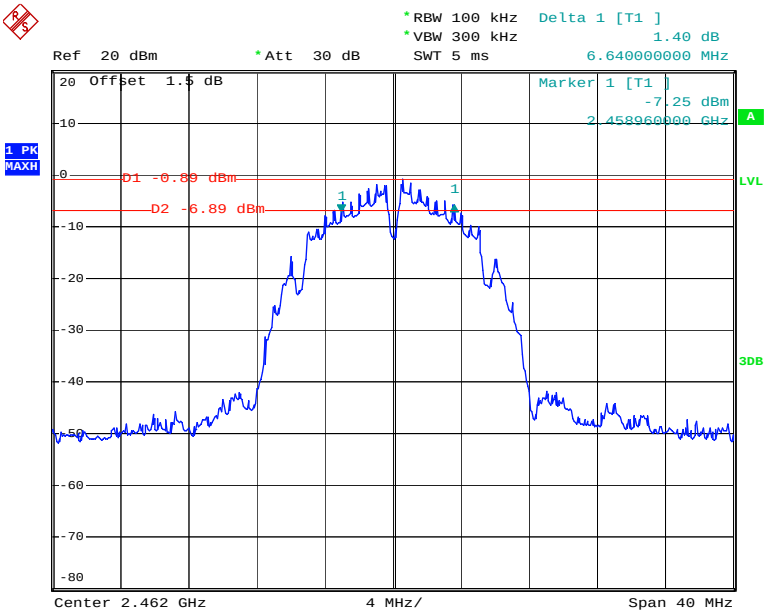
Date: 13.FEB.2015 12:01:52

802.11b Middle Channel



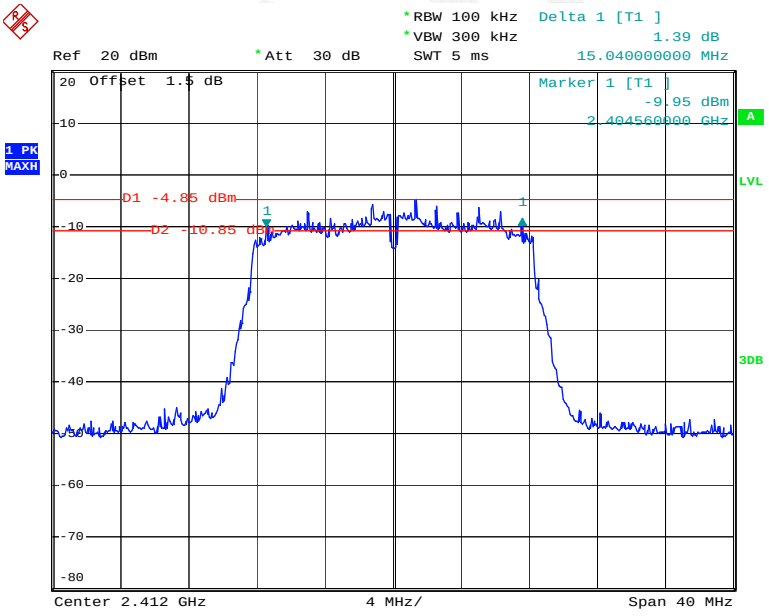
Date: 13.FEB.2015 12:03:08

802.11b High Channel



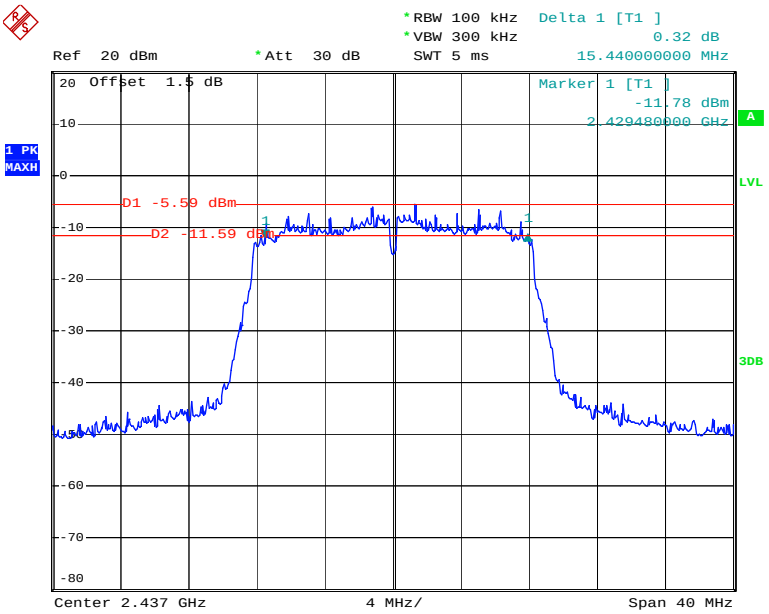
Date: 13.FEB.2015 12:05:34

802.11g Low Channel



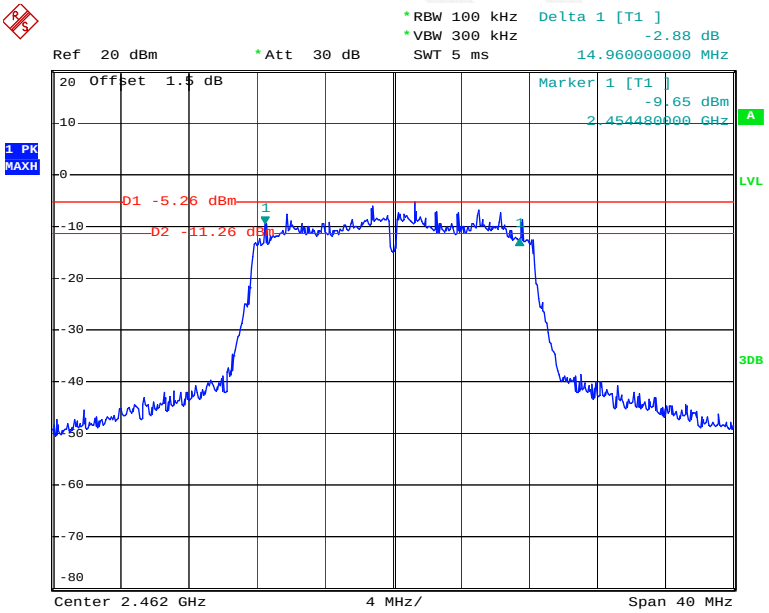
Date: 13.FEB.2015 12:08:30

802.11g Middle Channel



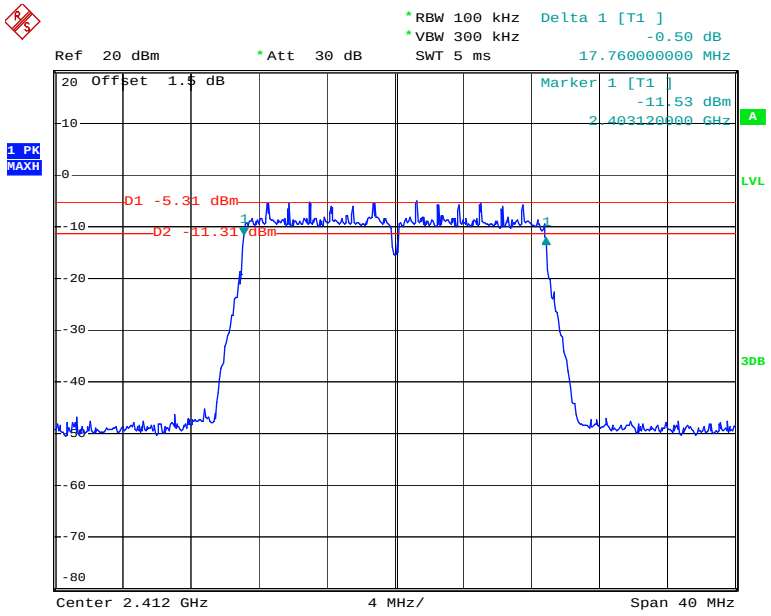
Date: 13.FEB.2015 13:13:40

802.11g High Channel



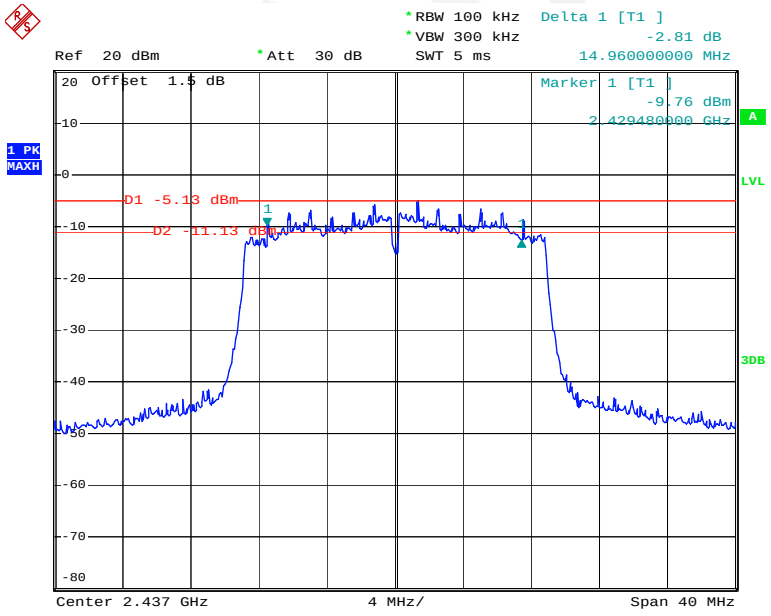
Date: 13.FEB.2015 13:20:25

802.11n ht20 Low Channel



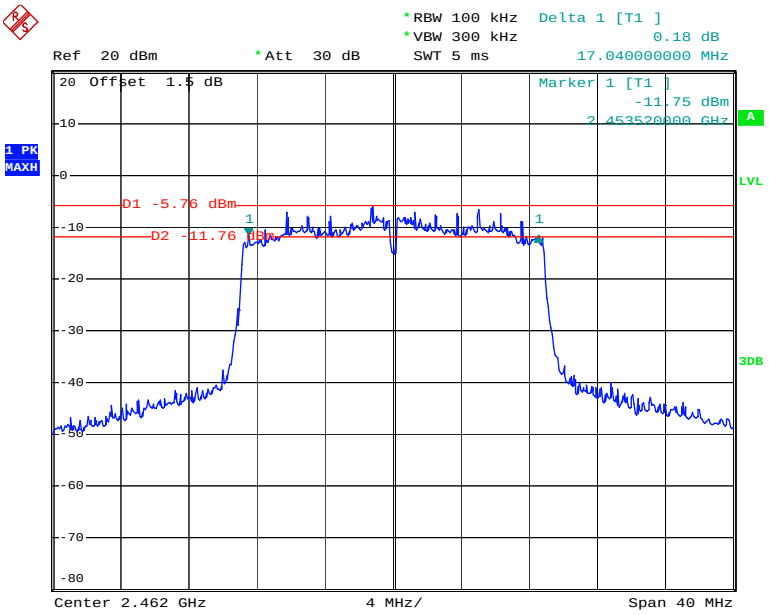
Date: 15.FEB.2015 14:49:03

802.11n ht20 Middle Channel



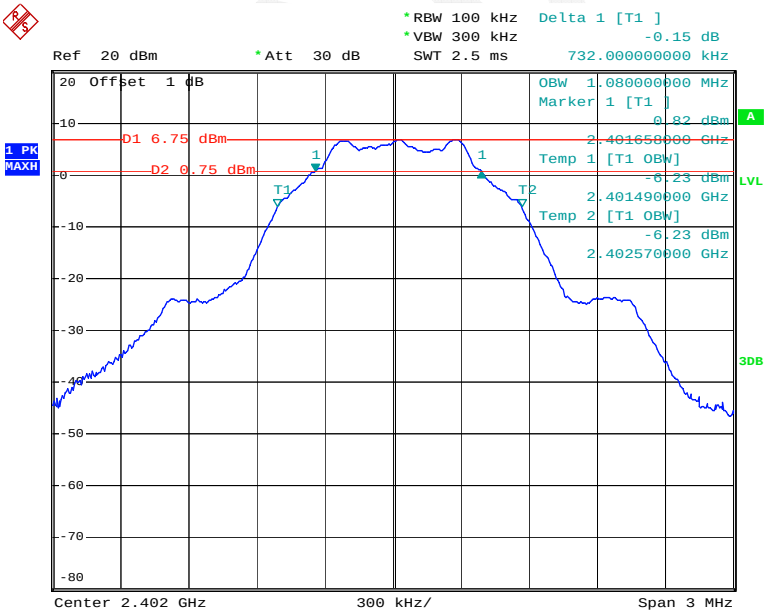
Date: 13.FEB.2015 13:33:16

802.11n ht20 High Channel



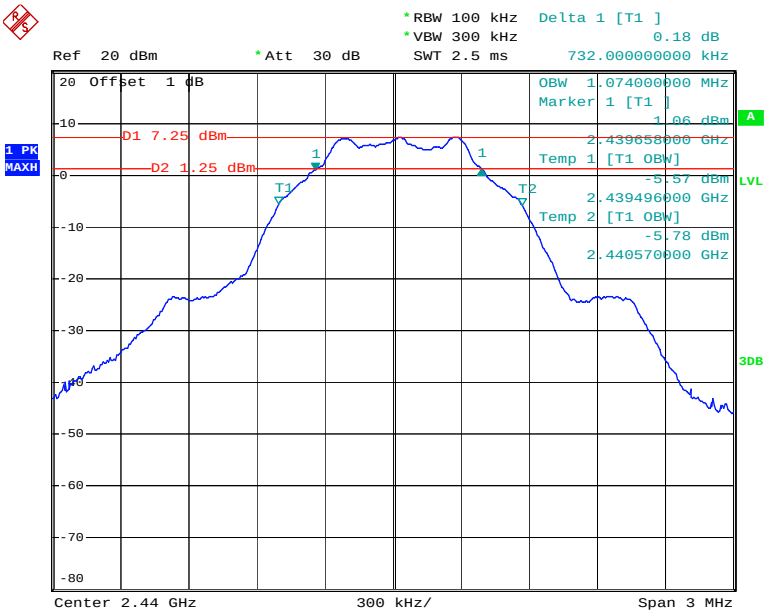
Date: 13.FEB.2015 13:34:53

BLE Low Channel



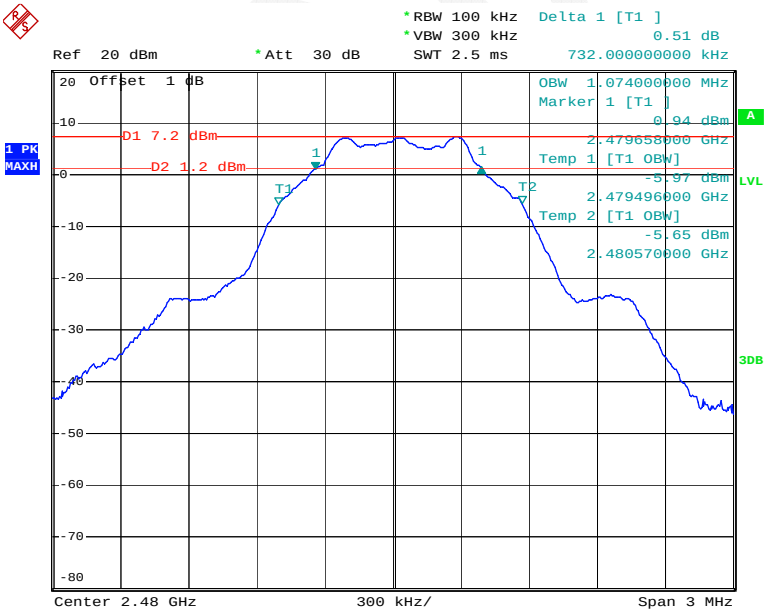
Date: 13.FEB.2015 18:33:34

BLE Middle Channel



Date: 13.FEB.2015 18:32:12

BLE High Channel



Date: 13.FEB.2015 18:32:49

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

According to KDB 558074 D01 DTS Meas Guidance v03r02

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	Wideband Power Sensor	N1921A	MY54210016	2014-11-03	2015-11-03
Agilent	Wideband Power Sensor	N1921A	MY54170013	2014-11-03	2015-11-03
Agilent	P-Series Power Meter	N1912A	MY5000448	2014-11-03	2015-11-03

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

Test Data

Environmental Conditions

Temperature:	21.2 °C
Relative Humidity:	42 %
ATM Pressure:	101.4kPa

The testing was performed by Allen Qiao on2015-02-13

Test Mode: Transmitting

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

Wifi:

Test mode	Channel	Frequency	Max Conducted Peak Output Power	Max Conducted Average Output Power	Limit	Result
		(MHz)	(dBm)	(dBm)	(dBm)	
802.11b	Low	2412	9.6	9.37	30	PASS
	Middle	2437	9.36	9.12	30	PASS
	High	2462	9.39	9.1	30	PASS
802.11g	Low	2412	13.67	9.15	30	PASS
	Middle	2437	13.32	9.19	30	PASS
	High	2462	13.38	9.13	30	PASS
802.11n20	Low	2412	13.62	9.22	30	PASS
	Middle	2437	13.25	9.17	30	PASS
	High	2462	13.3	9.16	30	PASS

BLE:

Test mode	Channel	Frequency	Max Peak Conducted Output Power	Limit	Result
		(MHz)	(dBm)	(dBm)	
BLE	Low	2402	7.86	30	PASS
	Middle	2440	8.31	30	PASS
	High	2480	8.22	30	PASS

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

Applicable Standard

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-09

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

Test Data

Environmental Conditions

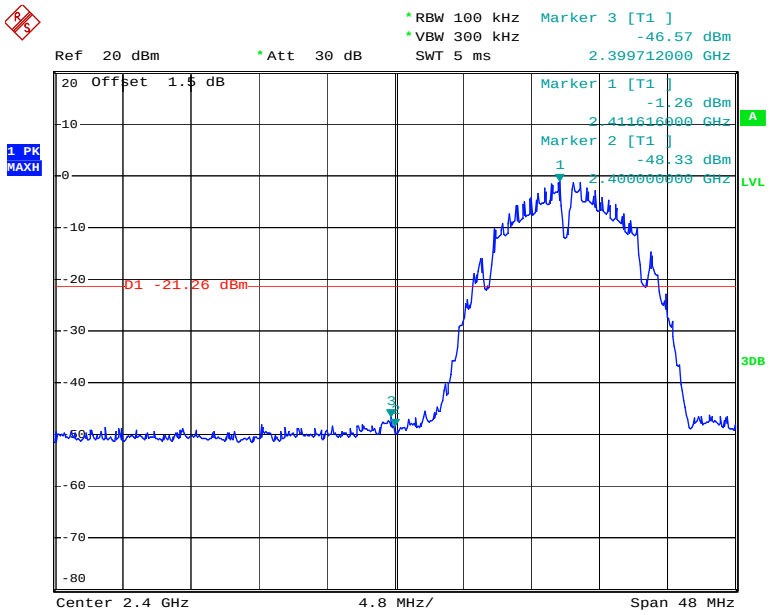
Temperature:	21.2~21.5 °C
Relative Humidity:	42 %
ATM Pressure:	101.3~101.4kPa

The testing was performed by Allen Qiao from 2015-02-12 to 2015-02-13

Test mode: Transmitting

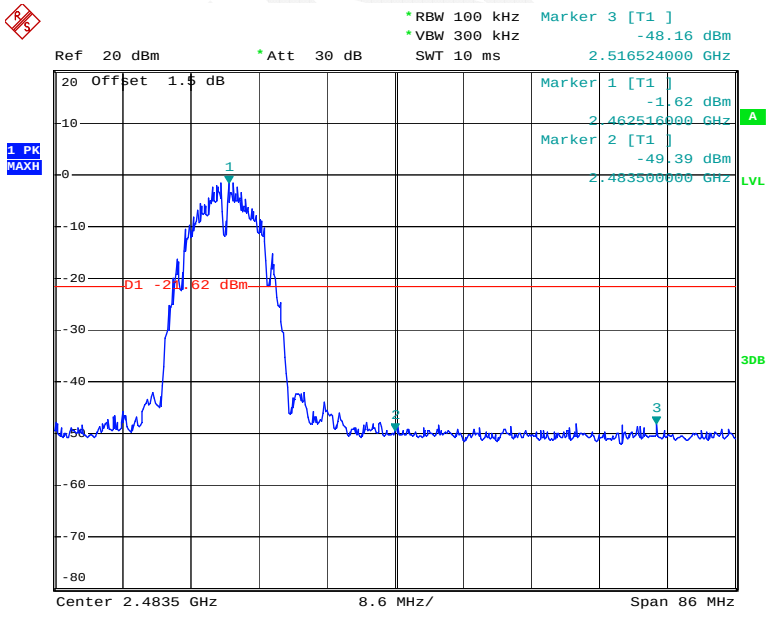
Test Result: Compliant. Please refer to following plots.

802.11b: Band Edge, Left Side



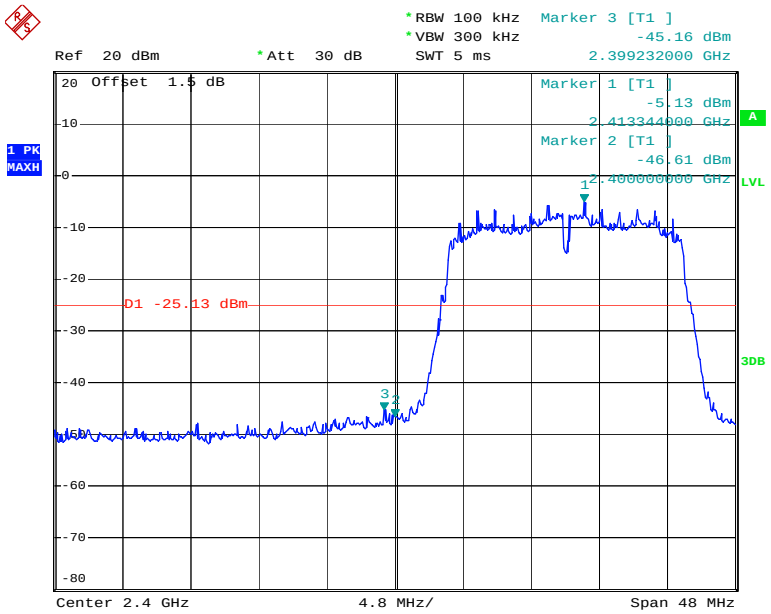
Date: 13.FEB.2015 11:53:30

802.11b: Band Edge, Right Side



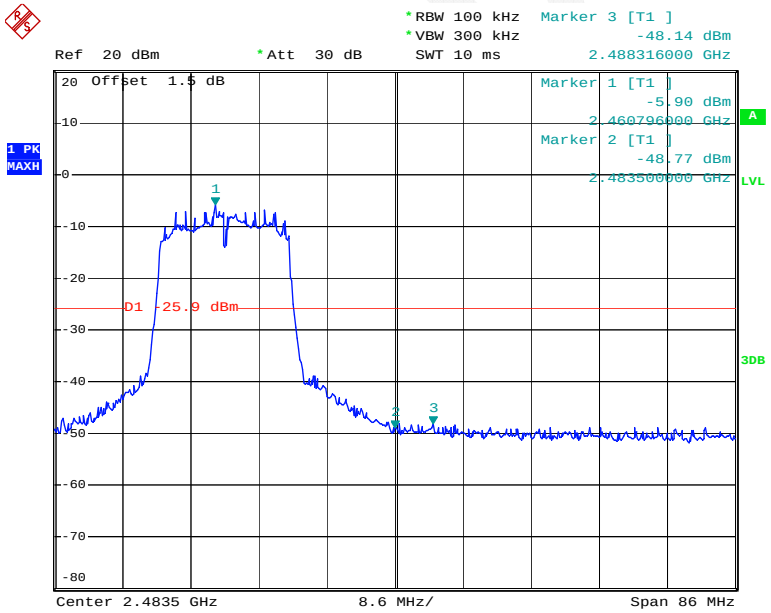
Date: 13.FEB.2015 12:07:41

802.11g: Band Edge, Left Side



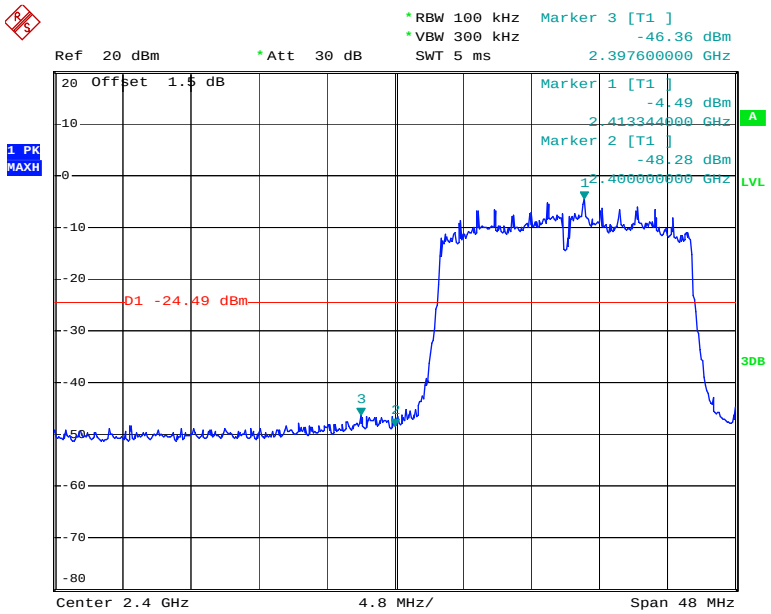
Date: 13.FEB.2015 12:11:16

802.11g: Band Edge, Right Side



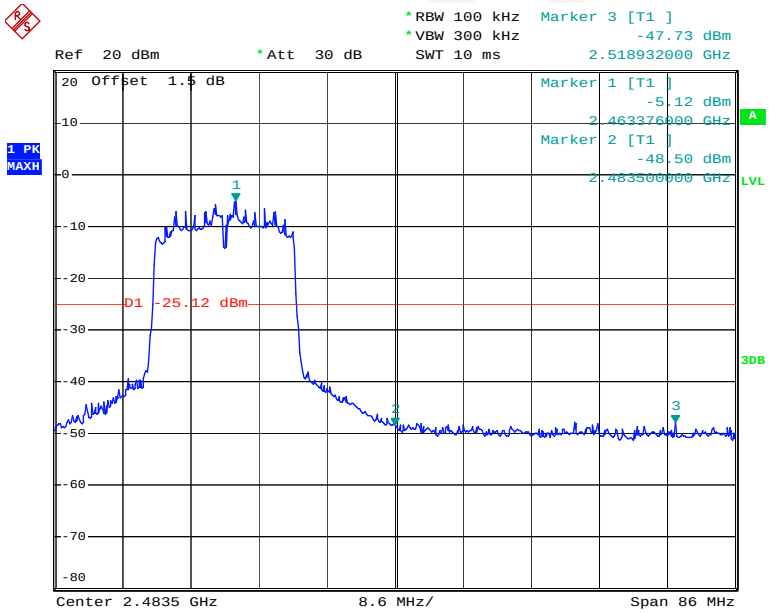
Date: 13.FEB.2015 13:19:51

802.11n ht20 Band Edge, Left Side



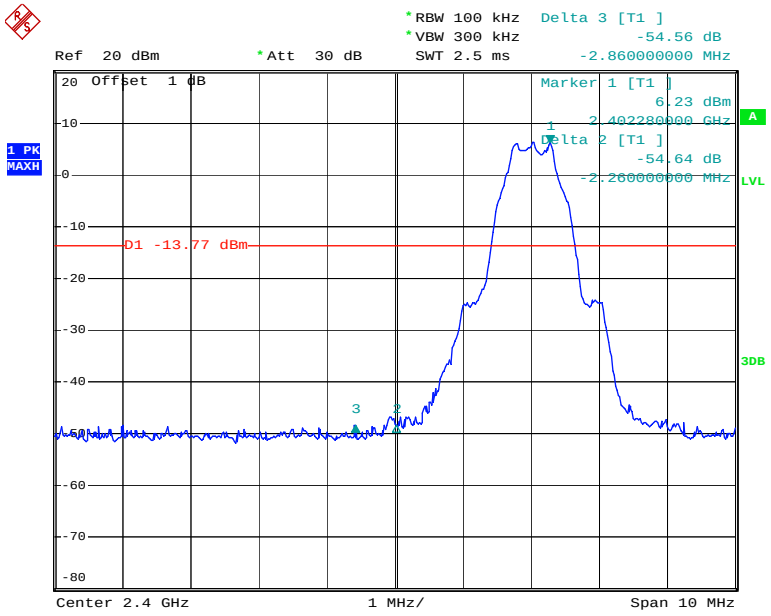
Date: 13.FEB.2015 13:28:25

802.11n ht20 Band Edge, Right Side



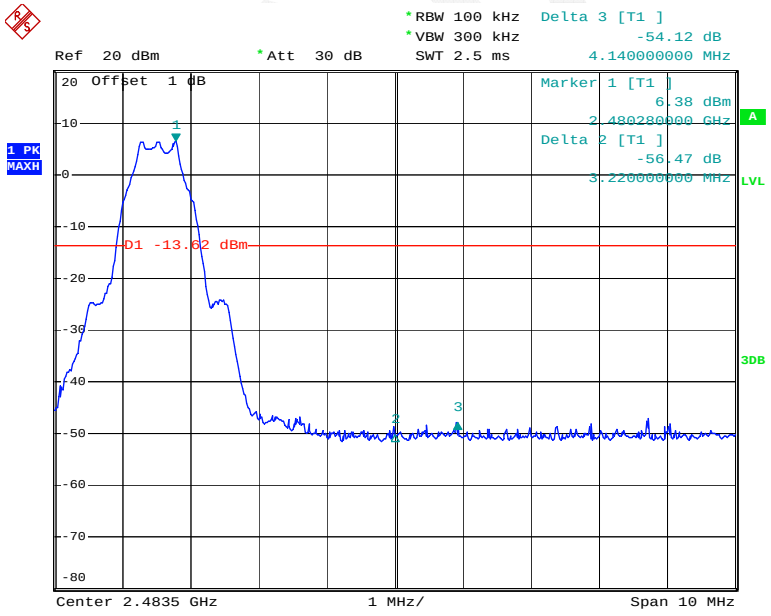
Date: 13.FEB.2015 13:38:44

BLE Band Edge， Left Side



Date: 12.FEB.2015 19:03:43

BLE Band Edge, Right Side



Date: 12.FEB.2015 19:01:29

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 KDB 558074 D01 DTS Meas Guidance v03r02 clause10.2:

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-09

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

Test Data

Environmental Conditions

Temperature:	21.2 °C
Relative Humidity:	42 %
ATM Pressure:	101.4kPa

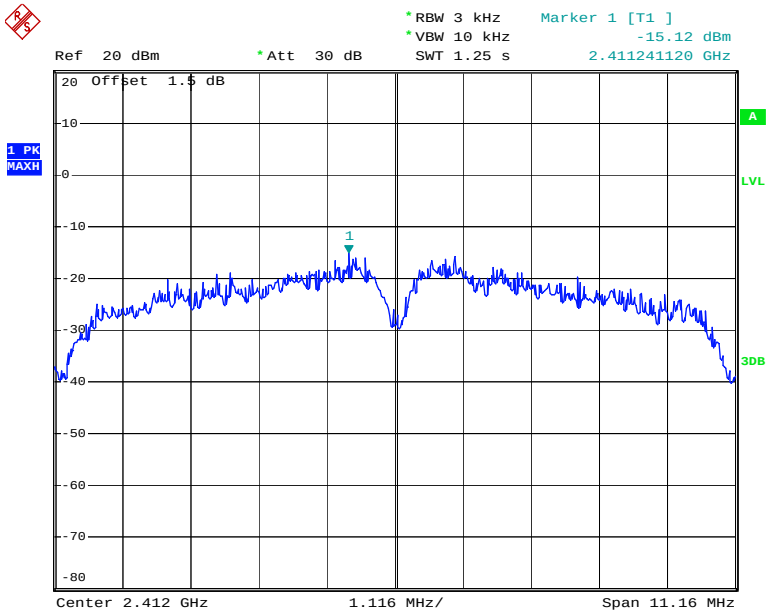
The testing was performed by Allen Qiao on2015-02-13

Test Mode: Transmitting

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

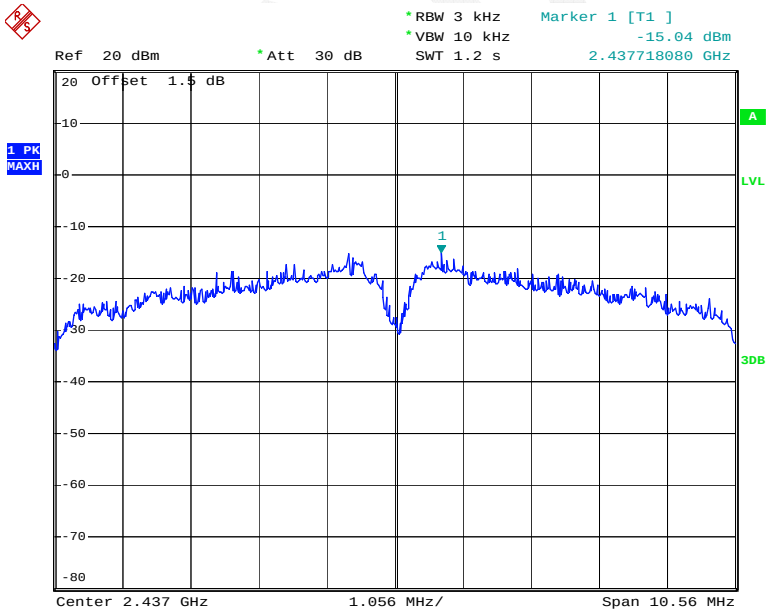
Test mode	Channel	Frequency (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)
802.11b	Low	2412	-15.12	≤8
	Middle	2437	-15.04	≤8
	High	2462	-15.44	≤8
802.11g	Low	2412	-18.55	≤8
	Middle	2437	-19.15	≤8
	High	2462	-18.75	≤8
802.11n20	Low	2412	-19.17	≤8
	Middle	2437	-19.83	≤8
	High	2462	-19.81	≤8
BLE	Low	2402	-7.13	≤8
	Middle	2440	-6.63	≤8
	High	2480	-6.71	≤8

Power Spectral Density, 802.11b Low Channel



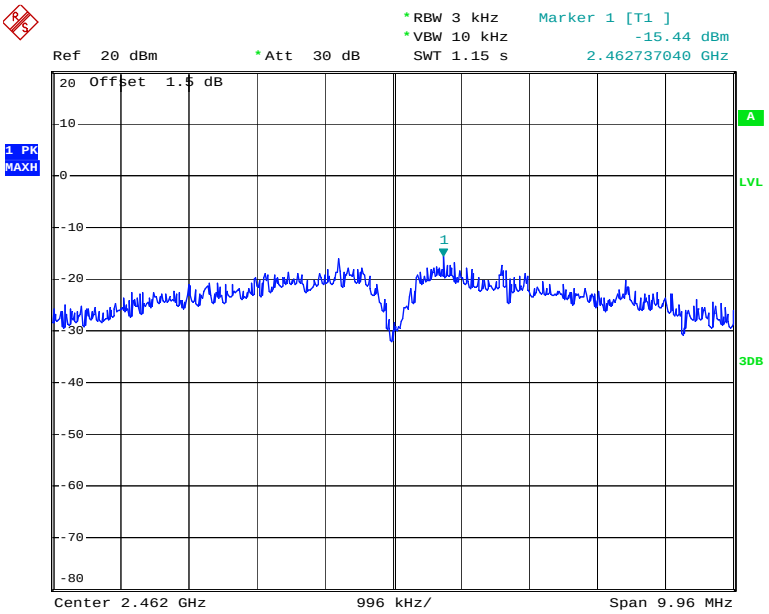
Date: 13.FEB.2015 12:02:07

Power Spectral Density, 802.11b Middle Channel



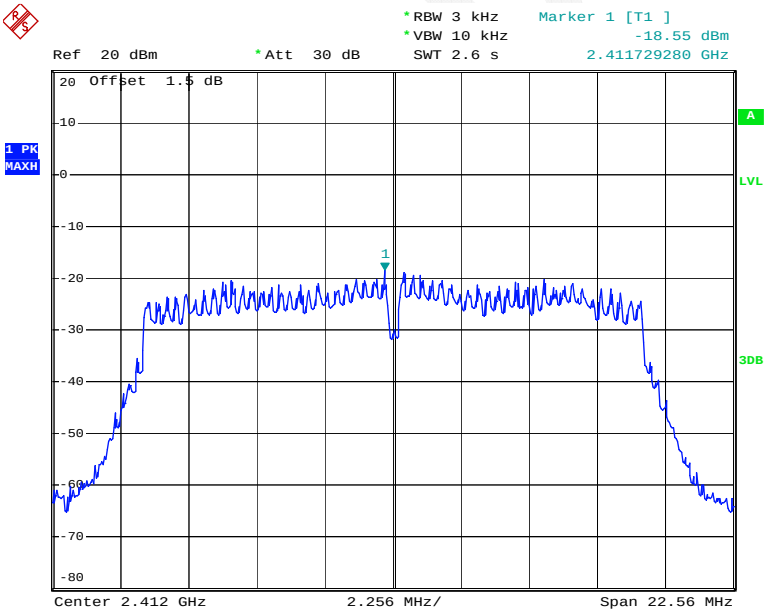
Date: 13.FEB.2015 12:04:33

Power Spectral Density, 802.11b High Channel



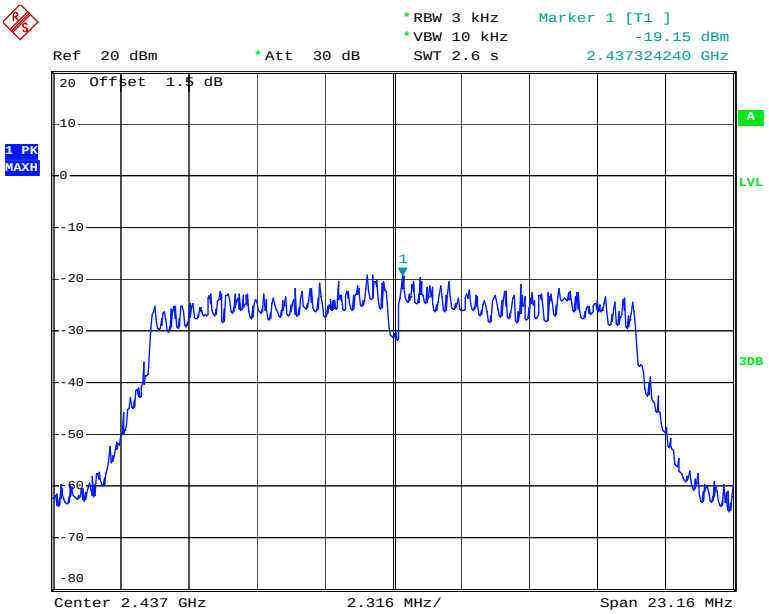
Date: 13.FEB.2015 12:06:53

Power Spectral Density, 802.11g Low Channel



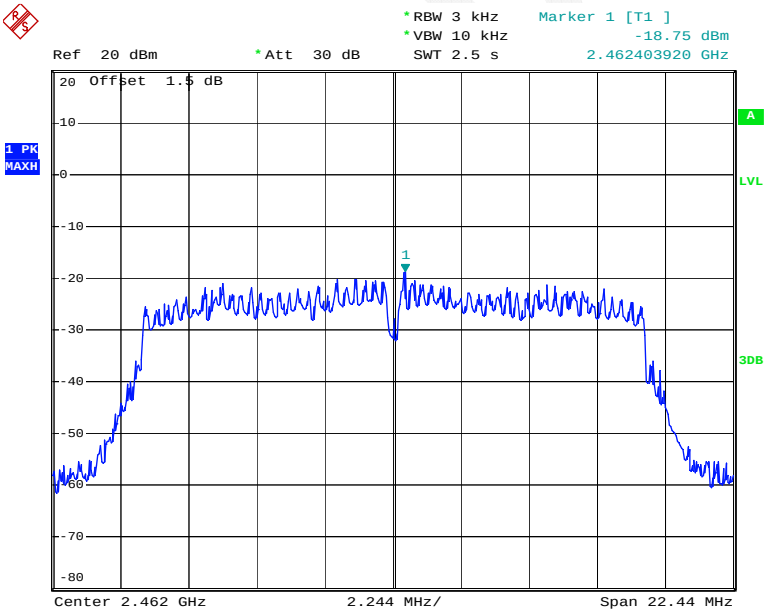
Date: 13.FEB.2015 12:10:07

Power Spectral Density, 802.11g Middle Channel



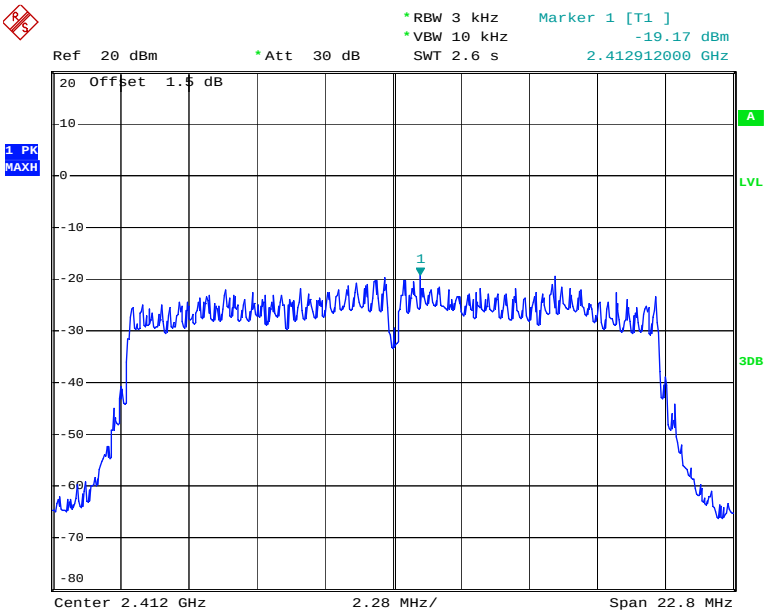
Date: 13.FEB.2015 13:15:07

Power Spectral Density, 802.11g High Channel



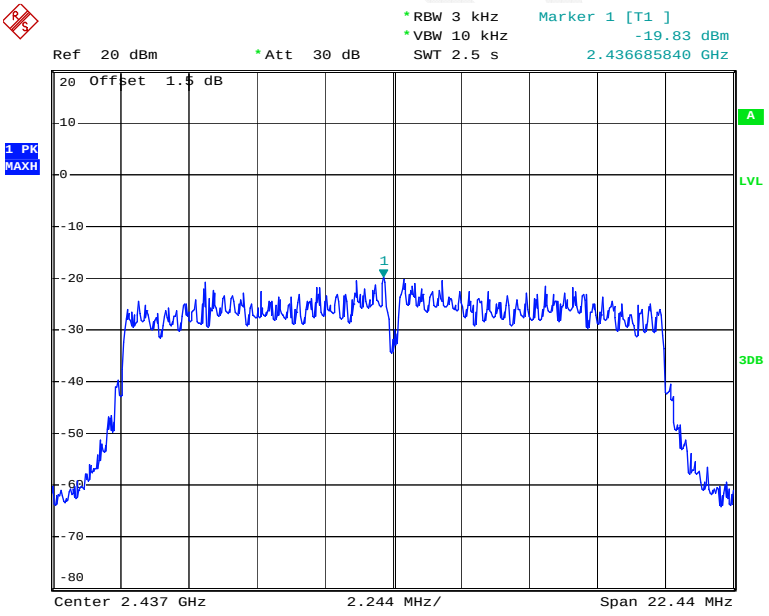
Date: 13.FEB.2015 13:22:09

Power Spectral Density, 802.11n ht20 Low Channel



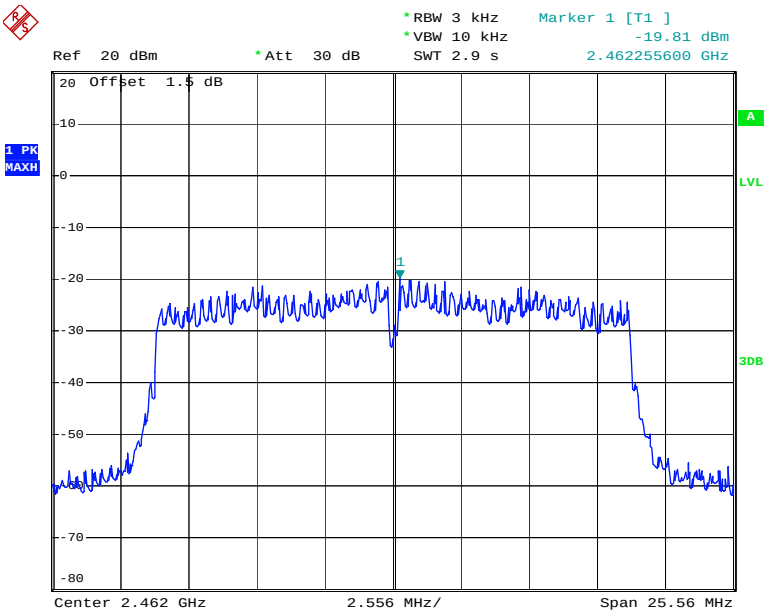
Date: 13.FEB.2015 13:39:49

Power Spectral Density, 802.11n ht20 Middle Channel



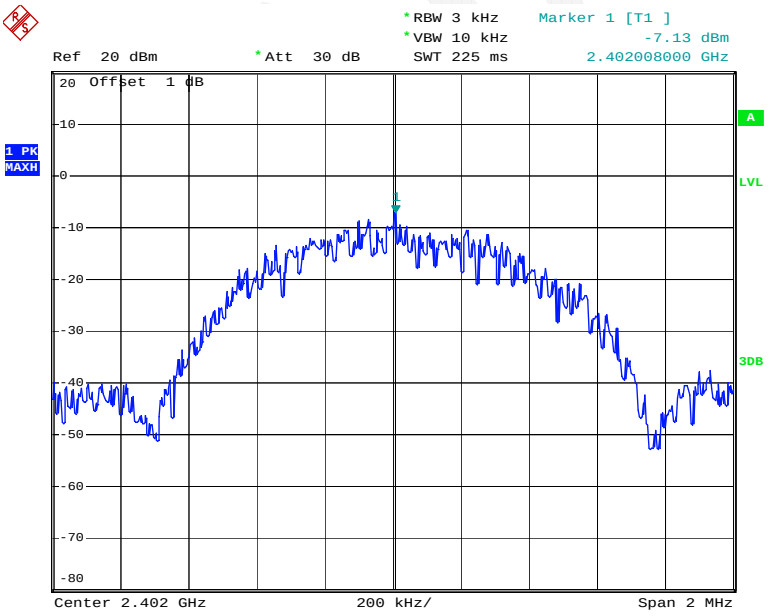
Date: 13.FEB.2015 13:33:32

Power Spectral Density, 802.11n ht20 High Channel



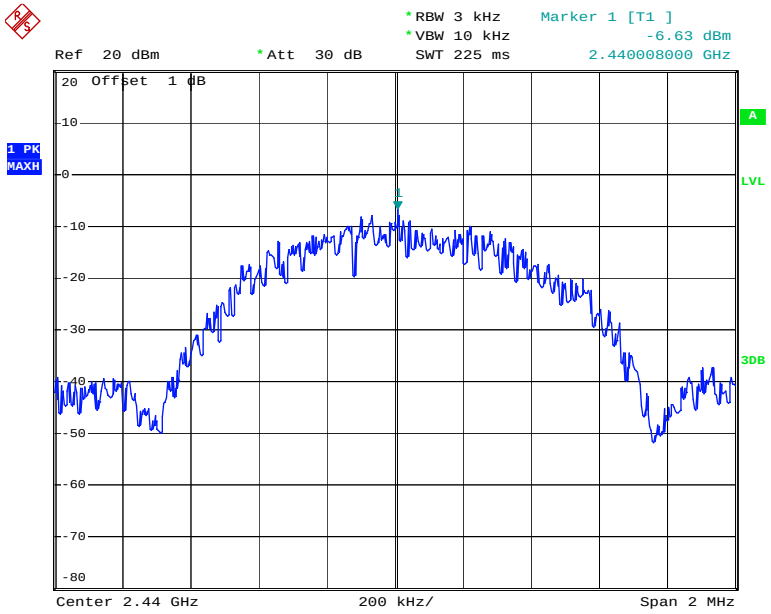
Date: 13.FEB.2015 13:37:20

Power Spectral Density, BLE Low Channel



Date: 13.FEB.2015 18:27:57

Power Spectral Density, BLE Middle Channel



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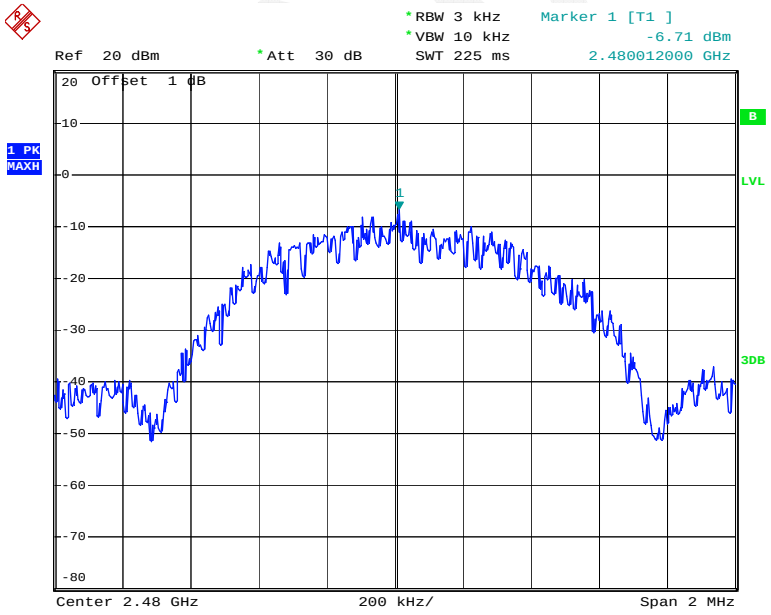
Power Spectral Density, BLE High Channel



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