FCC PART 15.247

TEST REPORT

For

ZIONCOM ELECTRONICS (SHENZHEN) LTD.

Building A1~A2, Lantian Science and Technology Park, Xinyu Road Xinqiao Henggang Block Shajing Street, Baoan District, Shenzhen City, China

FCC ID: X7D-IP04226

Report Type:	**Product Type:**
Original Report	300Mbps Long Range Wireless N Router

Test Engineer:	Dean Liu
Report Number:	RDG141023003-00
Report Date:	2014-11-03
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 *ZIONCOM ELECTRONICS (SHENZHEN) LTD.*'s product, model number: *N300RH (FCC ID: X7D-IP04226) or* ("EUT") in this report is a *300Mbps Long Range Wireless N Router*, which was measured approximately: 17.0 cm (L) x10.0 cm (W) x 3.0 cm (H), rated input voltage: DC 12.0V from adapter.

Adapter information: KUANTEN
Model: KT10W120100USD
Input: AC100-240V, 50/60Hz, 0.4A
Out put: DC 12V, 1.0A

Note: The series product, model N300RH, IP04226 are electrically identical, the only difference between them is the model name, we selected N300RH for fully testing, the details was explained in the attached declaration letter.

** All measurement and test data in this report was gathered from production sample serial number: 141023003 (Assigned by BACL.Dongguan). The EUT was received on 2014-10-23.*

Objective

This report is prepared on behalf of *ZIONCOM ELECTRONICS (SHENZHEN) 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)

N/A

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, 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 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 February 02, 2012. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

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 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 802.11n ht40 mode were tested with Channel 3, 6 and 9.

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 "MP_v1.1.1" was used for testing, which was provided by manufacturer. The worst condition (maximum power with 100% duty cycle) was setting by the software as following table:

Test Mode	Test Software Version	MP_v1.1.1					
802.11b	Test Frequency	2412MHz		2437MHz		2462MHz	
	Data Rate	1Mbps		1Mbps		1Mbps	
	Power Level Setting	Chain0	Chain1	Chain0	Chain1	Chain0	Chain1
		2	2	6	6	8	8
802.11g	Test Frequency	2412MHz		2437MHz		2462MHz	
	Data Rate	6Mbps		6Mbps		6Mbps	
	Power Level Setting	Chain0	Chain1	Chain0	Chain1	Chain0	Chain1
		14	16	16	18	18	20
802.11n ht20	Test Frequency	2412MHz		2437MHz		2462MHz	
	Data Rate	MCS0		MCS0		MCS0	
	Power Level Setting	Chain0	Chain1	Chain0	Chain1	Chain0	Chain1
		13	18	16	20	18	22
802.11n ht40	Test Frequency	2422MHz		2437MHz		2452MHz	
	Data Rate	MCS0		MCS0		MCS0	
	Power Level Setting	Chain0	Chain1	Chain0	Chain1	Chain0	Chain1
		15	20	17	20	19	22

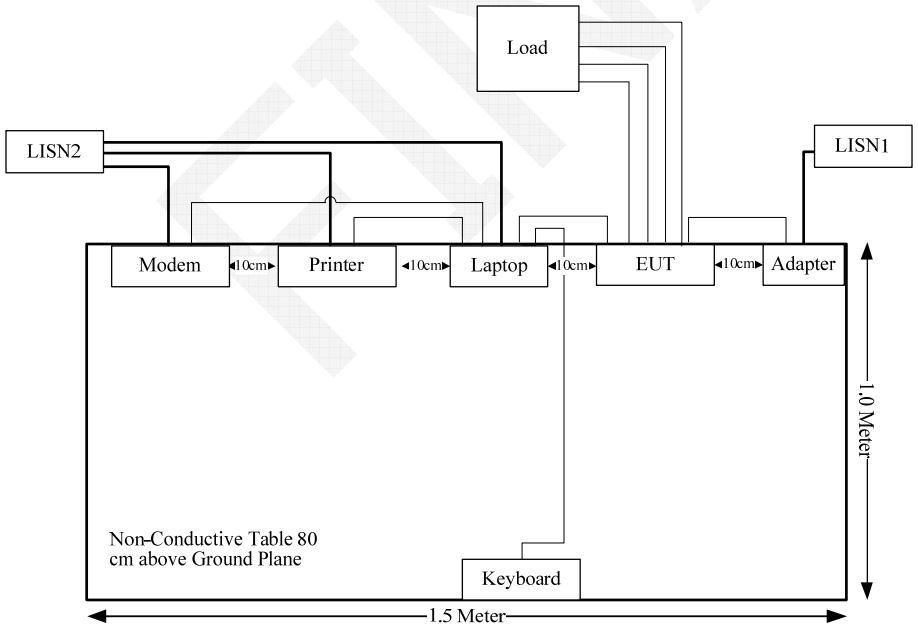
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Laptop	PP11L	QDS-BRCM1017
HP	Printer	C3941A	JPTVOB2337
DELL	Keyboard	L100	CNORH656658907BL05DC
SAST	Modem	AEM-2100	0293

External Cable

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Parallel Cable	Yes	No	1.2	ParallelPort of Laptop	Printer
Serial Cable	Yes	No	1.2	Serial Port of Laptop	Modem
Keyboard Cable	Yes	Yes	1.8	USB Port of Laptop	Keyboard
RJ45 Cable*4	No	No	10	EUT	Load
RJ45 Cable	No	No	1.5	EUT	Laptop

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.247 (i) & §1.1310 & §2.1091	Maximum Permissible Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.207 (a)	AC Line Conducted Emissions	Compliance
§15.247(d)	Spurious Emissions at Antenna Port	Compliance
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliance
§15.247 (a)(2)	6 dB Emission Bandwidth	Compliance
§15.247(b)(3)	Maximum conducted output power	Compliance
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliance
§15.247(e)	Power Spectral Density	Compliance

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

Applicable Standard

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

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

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (minutes)**
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f²)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

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

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

Calculated Formulary:

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

Calculated Data:

Mode	**Frequency (MHz)**	**Antenna Gain**		**Conducted Power**		**Evaluation Distance (cm)**	**Power Density (mW/cm^2)**	**MPE Limit (mW/cm^2)**
		(dBi)	**(numeric)**	**(dBm)**	**(mW)**			
802.11b	2412	5	3.16	18.67	73.62	20	0.046	1.0
802.11g	2412	5	3.16	20.82	120.78	20	0.076	1.0
802.11n HT20	2462	5	3.16	23.76	237.68	20	0.150	1.0
802.11n HT40	2437	5	3.16	23.76	237.68	20	0.150	1.0

Result: The device meet FCC MPE at 20 cm distance

FCC §15.203 - ANTENNA REQUIREMENT

Applicable Standard

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

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

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

Antenna Connector Construction

This product used two external detachable monopole antennas and with RP-SMA female connector, the maximum gain is 5.0 dBi, which 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：

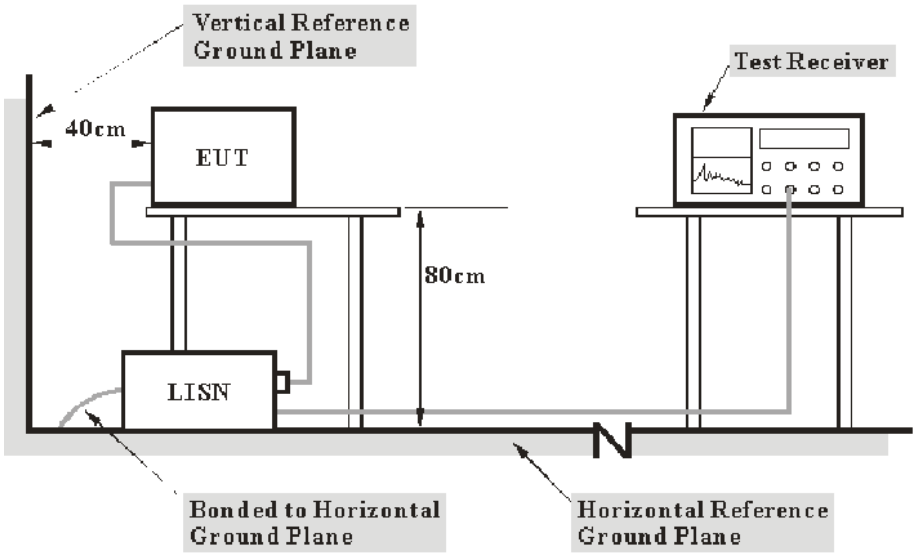
If U_{lab} is less than or equal to U_{cispr} of Table 1, then:
– compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
– non - compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.
If U_{lab} is greater than U_{cispr} of 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 C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

The adapter of EUT 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	2013-11-20	2014-11-20
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	2014-01-22	2015-01-22
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:

0.4 dB at **0.536756 MHz** in the **Neutral** conducted mode

Test Data

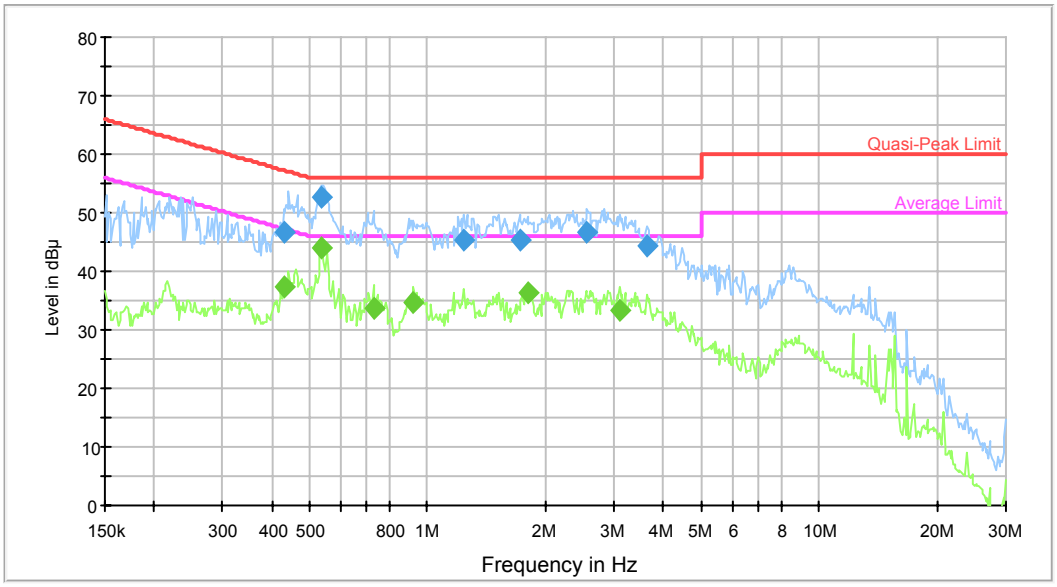
Environmental Conditions

Temperature:	27.2 °C
Relative Humidity:	51 %
ATM Pressure:	101 kPa

The testing was performed by Dean Liu on 2014-10-24.

Test Mode: Transmitting

AC120 V, 60 Hz, Line:

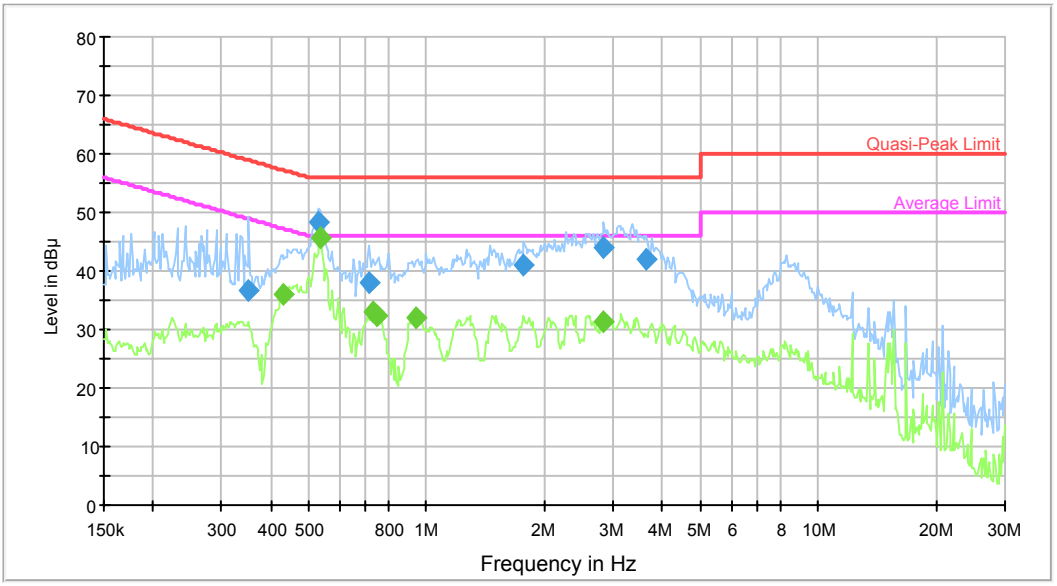


Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.429420	46.6	9.000	L1	10.5	10.6	57.3	Compliance
0.536756	52.6	9.000	L1	10.3	3.4	56.0	Compliance
1.239175	45.3	9.000	L1	10.4	10.7	56.0	Compliance
1.717965	45.3	9.000	L1	10.4	10.7	56.0	Compliance
2.558827	46.8	9.000	L1	10.5	9.2	56.0	Compliance
3.633326	44.3	9.000	L1	10.7	11.7	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.429420	37.5	9.000	L1	10.5	9.8	47.3	Compliance
0.536756	44.1	9.000	L1	10.3	1.9*	46.0	Compliance
0.726569	33.8	9.000	L1	10.6	12.2	46.0	Compliance
0.922769	34.6	9.000	L1	10.5	11.4	46.0	Compliance
1.802095	36.4	9.000	L1	10.4	9.6	46.0	Compliance
3.098088	33.4	9.000	L1	10.6	12.6	46.0	Compliance

*Within measurement uncertainty!

AC120 V, 60 Hz, Neutral:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.351859	36.6	9.000	N	11.0	22.3	58.9	Compliance
0.528270	48.2	9.000	N	10.3	7.8	56.0	Compliance
0.715082	38.1	9.000	N	10.6	17.9	56.0	Compliance
1.773603	41.2	9.000	N	10.5	14.8	56.0	Compliance
2.838101	44.0	9.000	N	10.6	12.0	56.0	Compliance
3.633326	41.8	9.000	N	10.7	14.2	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.429420	36.0	9.000	N	10.6	11.2	47.3	Compliance
0.536756	45.6	9.000	N	10.3	0.4*	46.0	Compliance
0.726569	33.1	9.000	N	10.6	12.9	46.0	Compliance
0.744147	32.5	9.000	N	10.6	13.5	46.0	Compliance
0.937592	31.9	9.000	N	10.5	14.1	46.0	Compliance
2.838101	31.2	9.000	N	10.6	14.8	46.0	Compliance

*Within measurement uncertainty!

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.

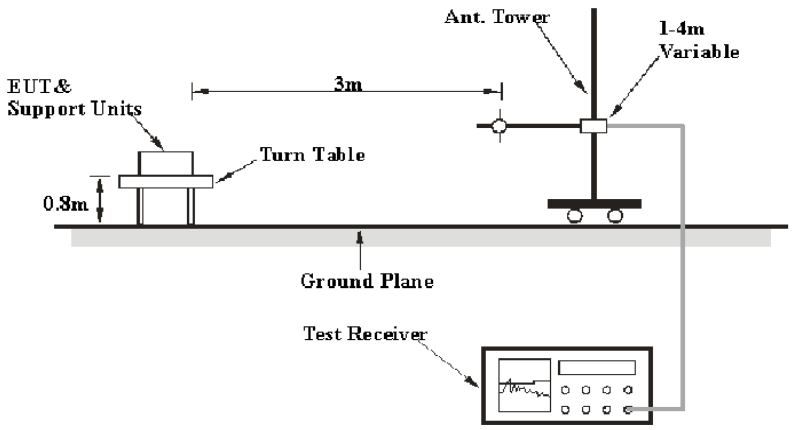
Based on CISPR 16-4-2-2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:
30M~200MHz: 5.0 dB
200M~1GHz: 6.2 dB
1G~6GHz: 4.45 dB
6G~18GHz: 5.23 dB

Table 2 – Values of U_{cispr}

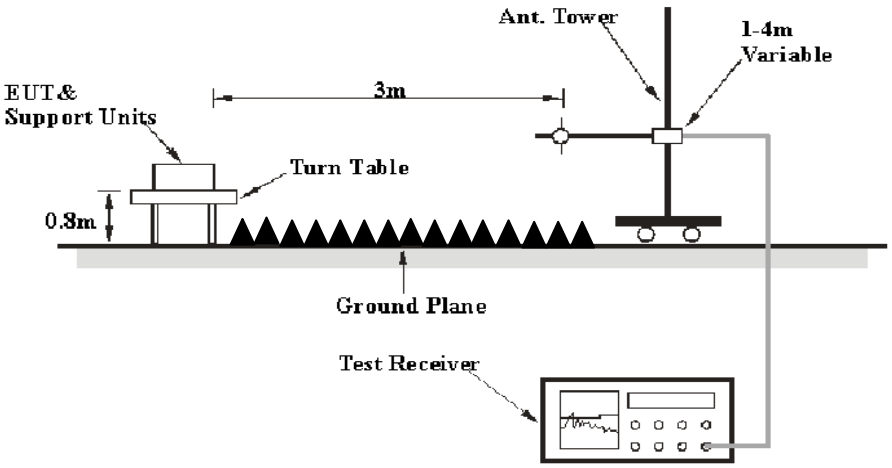
Measurement	U_{cispr}
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

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 C63.4-2003. 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 of EUT 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 of EUT 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:

2.63 dB at **2390MHz** in the **Vertical** polarization for 802.11n40 Mode

Test Data

Environmental Conditions

Temperature:	25.3 °C
Relative Humidity:	55 %
ATM Pressure:	100.9 kPa

The testing was performed by Dean Liu on 2014-10-29.

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	67.14	PK	H	25.67	4.42	0.00	97.23	N/A	N/A
2412	63.19	AV	H	25.67	4.42	0.00	93.28	N/A	N/A
2412	80.30	PK	V	25.67	4.42	0.00	110.39	N/A	N/A
2412	76.12	AV	V	25.67	4.42	0.00	106.21	N/A	N/A
2390	28.50	PK	V	25.61	4.39	0.00	58.50	74.00	15.50
2390	16.15	AV	V	25.61	4.39	0.00	46.15	54.00	7.85
4824	29.97	PK	V	30.64	6.03	27.41	39.23	74.00	34.77
4824	16.77	AV	V	30.64	6.03	27.41	26.03	54.00	27.97
7236	31.69	PK	V	34.17	7.47	25.90	47.43	74.00	26.57
7236	19.68	AV	V	34.17	7.47	25.90	35.42	54.00	18.58
9648	28.65	PK	V	36.06	8.81	27.46	46.06	74.00	27.94
9648	17.50	AV	V	36.06	8.81	27.46	34.91	54.00	19.09
12060	30.03	PK	V	37.84	9.07	24.37	52.57	74.00	21.43
12060	18.61	AV	V	37.84	9.07	24.37	41.15	54.00	12.85
245.34	37.4	QP	H	12.24	1.88	21.49	30.03	46.00	15.97
Middle Channel: 2437 MHz									
2437	67.60	PK	H	25.74	4.41	0.00	97.75	N/A	N/A
2437	63.81	AV	H	25.74	4.41	0.00	93.96	N/A	N/A
2437	79.79	PK	V	25.74	4.41	0.00	109.94	N/A	N/A
2437	76.16	AV	V	25.74	4.41	0.00	106.31	N/A	N/A
4874	28.97	PK	V	30.77	6.09	27.42	38.41	74.00	35.59
4874	16.81	AV	V	30.77	6.09	27.42	26.25	54.00	27.75
7311	31.84	PK	V	34.35	7.51	25.88	47.82	74.00	26.18
7311	20.23	AV	V	34.35	7.51	25.88	36.21	54.00	17.79
9748	28.98	PK	V	36.30	8.83	27.24	46.87	74.00	27.13
9748	17.48	AV	V	36.30	8.83	27.24	35.37	54.00	18.63
12185	29.76	PK	V	37.72	9.16	24.35	52.29	74.00	21.71
12185	17.49	AV	V	37.72	9.16	24.35	40.02	54.00	13.98
2755	31.05	PK	V	26.56	5.18	27.53	35.26	74.00	38.74
2755	14.99	AV	V	26.56	5.18	27.53	19.20	54.00	34.80
245.34	37.3	QP	H	12.24	1.88	21.49	29.93	46.00	16.07
High Channel: 2462 MHz									
2462	67.52	PK	H	25.80	4.43	0.00	97.75	N/A	N/A
2462	63.79	AV	H	25.80	4.43	0.00	94.02	N/A	N/A
2462	79.08	PK	V	25.80	4.43	0.00	109.31	N/A	N/A
2462	75.36	AV	V	25.80	4.43	0.00	105.59	N/A	N/A
2483.5	28.66	PK	V	25.86	4.49	0.00	59.01	74.00	14.99
2483.5	16.67	AV	V	25.86	4.49	0.00	47.02	54.00	6.98
4924	28.65	PK	V	30.90	5.97	27.43	38.09	74.00	35.91
4924	16.84	AV	V	30.90	5.97	27.43	26.28	54.00	27.72
7386	31.20	PK	V	34.53	7.55	25.86	47.42	74.00	26.58
7386	19.98	AV	V	34.53	7.55	25.86	36.20	54.00	17.80
9848	29.03	PK	V	36.54	8.85	26.94	47.48	74.00	26.52
9848	17.61	AV	V	36.54	8.85	26.94	36.06	54.00	17.94
12310	31.44	PK	V	37.59	9.24	24.82	53.45	74.00	20.55
12310	19.23	AV	V	37.59	9.24	24.82	41.24	54.00	12.76
245.34	39.1	QP	H	12.24	1.88	21.49	31.73	46.00	14.27

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	72.88	PK	H	25.67	4.42	0.00	102.97	N/A	N/A
2412	63.18	AV	H	25.67	4.42	0.00	93.27	N/A	N/A
2412	78.80	PK	V	25.67	4.42	0.00	108.89	N/A	N/A
2412	69.12	AV	V	25.67	4.42	0.00	99.21	N/A	N/A
2390	34.45	PK	V	25.61	4.39	0.00	64.45	74.00	9.55
2390	20.77	AV	V	25.61	4.39	0.00	50.77	54.00	3.23*
4824	35.13	PK	V	30.64	6.03	27.41	44.39	74.00	29.61
4824	21.62	AV	V	30.64	6.03	27.41	30.88	54.00	23.12
7236	37.10	PK	V	34.17	7.47	25.90	52.84	74.00	21.16
7236	24.52	AV	V	34.17	7.47	25.90	40.26	54.00	13.74
9648	34.89	PK	V	36.06	8.81	27.46	52.30	74.00	21.70
9648	22.17	AV	V	36.06	8.81	27.46	39.58	54.00	14.42
12060	30.23	PK	V	37.84	9.07	24.37	52.77	74.00	21.23
12060	18.63	AV	V	37.84	9.07	24.37	41.17	54.00	12.83
245.34	39.24	QP	H	12.24	1.88	21.49	31.87	46.00	14.13
Middle Channel: 2437 MHz									
2437	71.19	PK	H	25.74	4.41	0.00	101.34	N/A	N/A
2437	62.77	AV	H	25.74	4.41	0.00	92.92	N/A	N/A
2437	78.55	PK	V	25.74	4.41	0.00	108.70	N/A	N/A
2437	68.86	AV	V	25.74	4.41	0.00	99.01	N/A	N/A
4874	34.72	PK	V	30.77	6.09	27.42	44.16	74.00	29.84
4874	21.64	AV	V	30.77	6.09	27.42	31.08	54.00	22.92
7311	37.39	PK	V	34.35	7.51	25.88	53.37	74.00	20.63
7311	24.89	AV	V	34.35	7.51	25.88	40.87	54.00	13.13
9748	35.62	PK	V	36.30	8.83	27.24	53.51	74.00	20.49
9748	22.24	AV	V	36.30	8.83	27.24	40.13	54.00	13.87
12185	31.76	PK	V	37.72	9.16	24.35	54.29	74.00	19.71
12185	19.29	AV	V	37.72	9.16	24.35	41.82	54.00	12.18
2755	32.73	PK	V	26.56	5.18	27.53	36.94	74.00	37.06
2755	14.58	AV	V	26.56	5.18	27.53	18.79	54.00	35.21
245.34	39.6	QP	H	12.24	1.88	21.49	32.23	46.00	13.77
High Channel: 2462 MHz									
2462	72.65	PK	H	25.80	4.43	0.00	102.88	N/A	N/A
2462	62.97	AV	H	25.80	4.43	0.00	93.20	N/A	N/A
2462	79.63	PK	V	25.80	4.43	0.00	109.86	N/A	N/A
2462	69.52	AV	V	25.80	4.43	0.00	99.75	N/A	N/A
2483.5	30.11	PK	V	25.86	4.49	0.00	60.46	74.00	13.54
2483.5	18.63	AV	V	25.86	4.49	0.00	48.98	54.00	5.02*
4924	34.92	PK	V	30.90	5.97	27.43	44.36	74.00	29.64
4924	20.41	AV	V	30.90	5.97	27.43	29.85	54.00	24.15
7386	36.74	PK	V	34.53	7.55	25.86	52.96	74.00	21.04
7386	22.53	AV	V	34.53	7.55	25.86	38.75	54.00	15.25
9848	36.21	PK	V	36.54	8.85	26.94	54.66	74.00	19.34
9848	22.24	AV	V	36.54	8.85	26.94	40.69	54.00	13.31
12310	33.54	PK	V	37.59	9.24	24.82	55.55	74.00	18.45
12310	21.43	AV	V	37.59	9.24	24.82	43.44	54.00	10.56
245.34	39.6	QP	H	12.24	1.88	21.49	32.23	46.00	13.77

*Within measurement uncertainty!

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	71.19	PK	H	25.67	4.42	0.00	101.28	N/A	N/A
2412	59.12	AV	H	25.67	4.42	0.00	89.21	N/A	N/A
2412	80.74	PK	V	25.67	4.42	0.00	110.83	N/A	N/A
2412	69.50	AV	V	25.67	4.42	0.00	99.59	N/A	N/A
2390	30.05	PK	V	25.61	4.39	0.00	60.05	74.00	13.95
2390	19.05	AV	V	25.61	4.39	0.00	49.05	54.00	4.95*
4824	32.85	PK	V	30.64	6.03	27.41	42.11	74.00	31.89
4824	19.39	AV	V	30.64	6.03	27.41	28.65	54.00	25.35
7236	35.01	PK	V	34.17	7.47	25.90	50.75	74.00	23.25
7236	21.23	AV	V	34.17	7.47	25.90	36.97	54.00	17.03
9648	33.20	PK	V	36.06	8.81	27.46	50.61	74.00	23.39
9648	20.21	AV	V	36.06	8.81	27.46	37.62	54.00	16.38
12060	31.00	PK	V	37.84	9.07	24.37	53.54	74.00	20.46
12060	20.03	AV	V	37.84	9.07	24.37	42.57	54.00	11.43
245.34	39.3	QP	H	12.24	1.88	21.49	31.93	46.00	14.07
Middle Channel: 2437 MHz									
2437	70.16	PK	H	25.74	4.41	0.00	100.31	N/A	N/A
2437	58.29	AV	H	25.74	4.41	0.00	88.44	N/A	N/A
2437	82.41	PK	V	25.74	4.41	0.00	112.56	N/A	N/A
2437	72.35	AV	V	25.74	4.41	0.00	102.50	N/A	N/A
4874	33.11	PK	V	30.77	6.09	27.42	42.55	74.00	31.45
4874	19.66	AV	V	30.77	6.09	27.42	29.10	54.00	24.90
7311	35.31	PK	V	34.35	7.51	25.88	51.29	74.00	22.71
7311	21.60	AV	V	34.35	7.51	25.88	37.58	54.00	16.42
9748	33.92	PK	V	36.30	8.83	27.24	51.81	74.00	22.19
9748	20.17	AV	V	36.30	8.83	27.24	38.06	54.00	15.94
12185	34.50	PK	V	37.72	9.16	24.35	57.03	74.00	16.97
12185	20.49	AV	V	37.72	9.16	24.35	43.02	54.00	10.98
2755	30.45	PK	V	26.56	5.18	27.53	34.66	74.00	39.34
2755	14.39	AV	V	26.56	5.18	27.53	18.60	54.00	35.40
245.34	39.2	QP	H	12.24	1.88	21.49	31.83	46.00	14.17
High Channel: 2462 MHz									
2462	69.72	PK	H	25.80	4.43	0.00	99.95	N/A	N/A
2462	57.82	AV	H	25.80	4.43	0.00	88.05	N/A	N/A
2462	82.16	PK	V	25.80	4.43	0.00	112.39	N/A	N/A
2462	72.02	AV	V	25.80	4.43	0.00	102.25	N/A	N/A
2483.5	37.73	PK	V	25.86	4.49	0.00	68.08	74.00	5.92*
2483.5	20.36	AV	V	25.86	4.49	0.00	50.71	54.00	3.29*
4924	32.45	PK	V	30.90	5.97	27.43	41.89	74.00	32.11
4924	19.68	AV	V	30.90	5.97	27.43	29.12	54.00	24.88
7386	35.64	PK	V	34.53	7.55	25.86	51.86	74.00	22.14
7386	22.75	AV	V	34.53	7.55	25.86	38.97	54.00	15.03
9848	33.63	PK	V	36.54	8.85	26.94	52.08	74.00	21.92
9848	20.35	AV	V	36.54	8.85	26.94	38.80	54.00	15.20
12310	33.74	PK	V	37.59	9.24	24.82	55.75	74.00	18.25
12310	21.43	AV	V	37.59	9.24	24.82	43.44	54.00	10.56
245.34	39.3	QP	H	12.24	1.88	21.49	31.93	46.00	14.07

*Within measurement uncertainty!

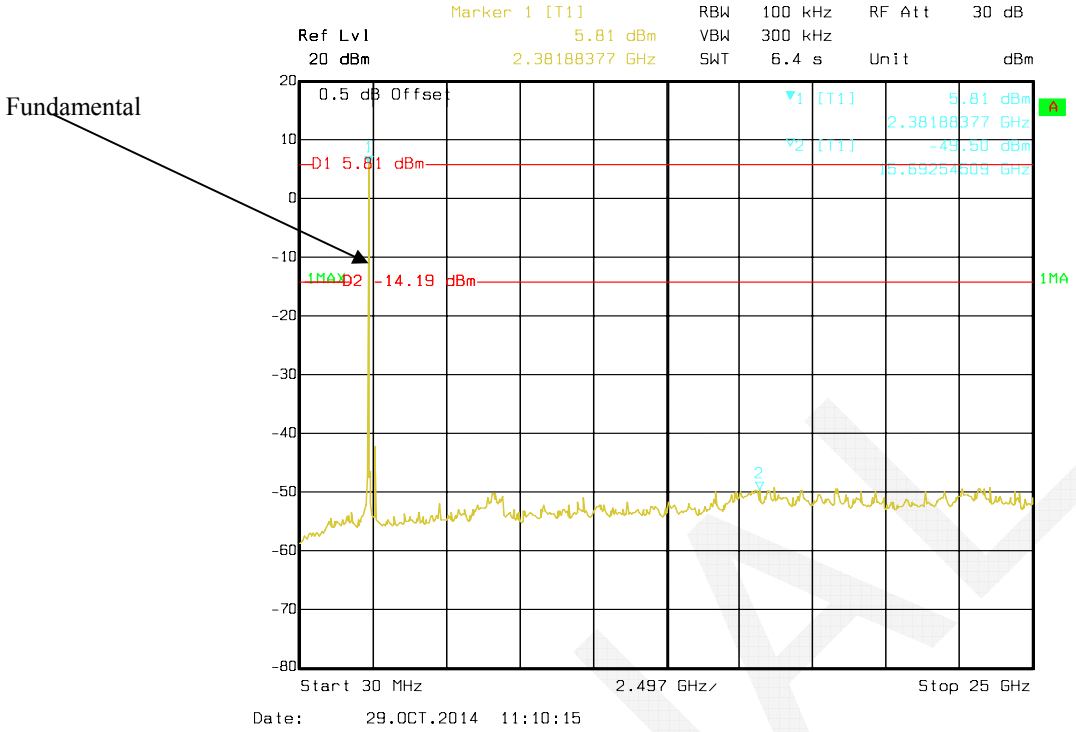
802.11 n ht40 Mode

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 2422 MHz									
2422	66.37	PK	H	25.70	4.41	0.00	96.48	N/A	N/A
2422	55.14	AV	H	25.70	4.41	0.00	85.25	N/A	N/A
2422	78.96	PK	V	25.70	4.41	0.00	109.07	N/A	N/A
2422	66.86	AV	V	25.70	4.41	0.00	96.97	N/A	N/A
2390	33.34	PK	V	25.61	4.39	0.00	63.34	74.00	10.66
2390	21.37	AV	V	25.61	4.39	0.00	51.37	54.00	2.63*
4844	33.63	PK	V	30.69	6.08	27.42	42.98	74.00	31.02
4844	19.65	AV	V	30.69	6.08	27.42	29.00	54.00	25.00
7266	35.07	PK	V	34.24	7.48	25.89	50.90	74.00	23.10
7266	22.80	AV	V	34.24	7.48	25.89	38.63	54.00	15.37
9688	33.45	PK	V	36.15	8.82	27.37	51.05	74.00	22.95
9688	19.97	AV	V	36.15	8.82	27.37	37.57	54.00	16.43
12110	34.88	PK	V	37.79	9.10	24.36	57.41	74.00	16.59
12110	21.41	AV	V	37.79	9.10	24.36	43.94	54.00	10.06
245.34	39.5	QP	H	12.24	1.88	21.49	32.13	46.00	13.87
Middle Channel: 2437 MHz									
2437	66.71	PK	H	25.74	4.41	0.00	96.86	N/A	N/A
2437	55.94	AV	H	25.74	4.41	0.00	86.09	N/A	N/A
2437	78.79	PK	V	25.74	4.41	0.00	108.94	N/A	N/A
2437	67.02	AV	V	25.74	4.41	0.00	97.17	N/A	N/A
4874	32.70	PK	V	30.77	6.09	27.42	42.14	74.00	31.86
4874	19.67	AV	V	30.77	6.09	27.42	29.11	54.00	24.89
7311	36.09	PK	V	34.35	7.51	25.88	52.07	74.00	21.93
7311	22.99	AV	V	34.35	7.51	25.88	38.97	54.00	15.03
9748	32.96	PK	V	36.30	8.83	27.24	50.85	74.00	23.15
9748	20.33	AV	V	36.30	8.83	27.24	38.22	54.00	15.78
12185	31.56	PK	V	37.72	9.16	24.35	54.09	74.00	19.91
12185	20.09	AV	V	37.72	9.16	24.35	42.62	54.00	11.38
2755	31.08	PK	V	26.56	5.18	27.53	35.29	74.00	38.71
2755	14.19	AV	V	26.56	5.18	27.53	18.40	54.00	35.60
245.34	39.4	QP	H	12.24	1.88	21.49	32.03	46.00	13.97
High Channel: 2452 MHz									
2452	66.00	PK	H	25.78	4.41	0.00	96.19	N/A	N/A
2452	55.74	AV	H	25.78	4.41	0.00	85.93	N/A	N/A
2452	79.69	PK	V	25.78	4.41	0.00	109.88	N/A	N/A
2452	69.79	AV	V	25.78	4.41	0.00	99.98	N/A	N/A
2483.5	33.13	PK	V	25.86	4.49	0.00	63.48	74.00	10.52
2483.5	20.93	AV	V	25.86	4.49	0.00	51.28	54.00	2.72*
4904	33.19	PK	V	30.85	6.06	27.43	42.67	74.00	31.33
4904	21.08	AV	V	30.85	6.06	27.43	30.56	54.00	23.44
7356	35.05	PK	V	34.45	7.53	25.87	51.16	74.00	22.84
7356	21.53	AV	V	34.45	7.53	25.87	37.64	54.00	16.36
9808	34.52	PK	V	36.44	8.84	27.09	52.71	74.00	21.29
9808	20.32	AV	V	36.44	8.84	27.09	38.51	54.00	15.49
12310	33.44	PK	V	37.59	9.24	24.82	55.45	74.00	18.55
12310	20.27	AV	V	37.59	9.24	24.82	42.28	54.00	11.72
245.34	40.1	QP	H	12.24	1.88	21.49	32.73	46.00	13.27

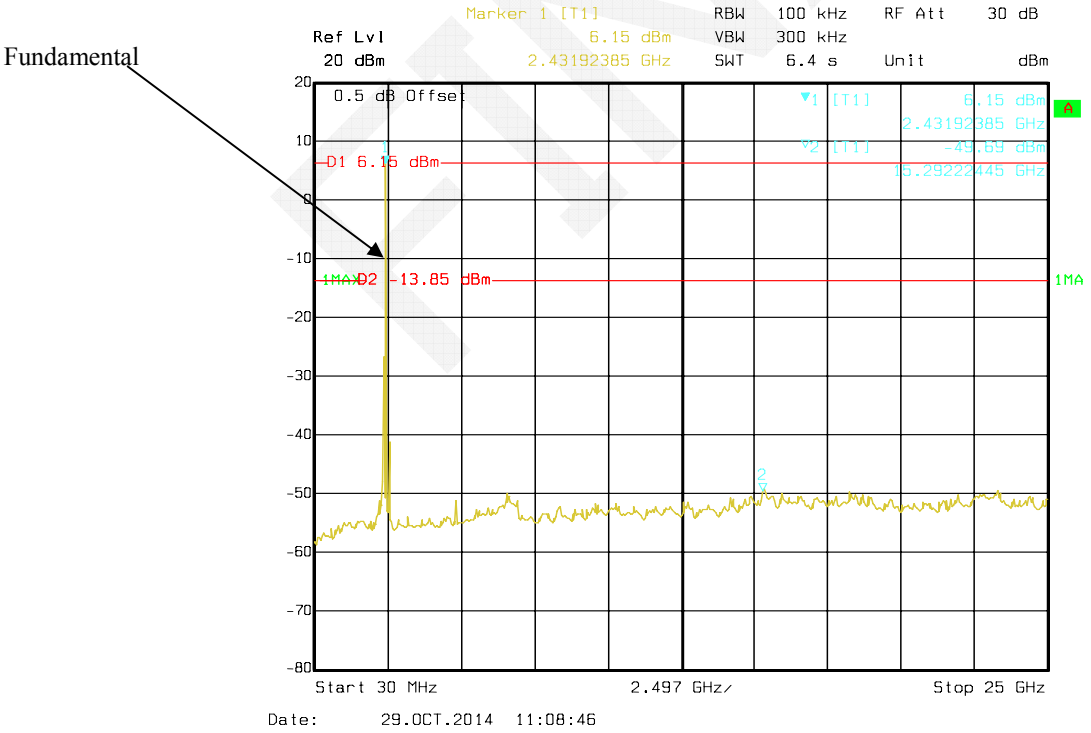
*Within measurement uncertainty!

Conducted Spurious Emissions at Antenna Port

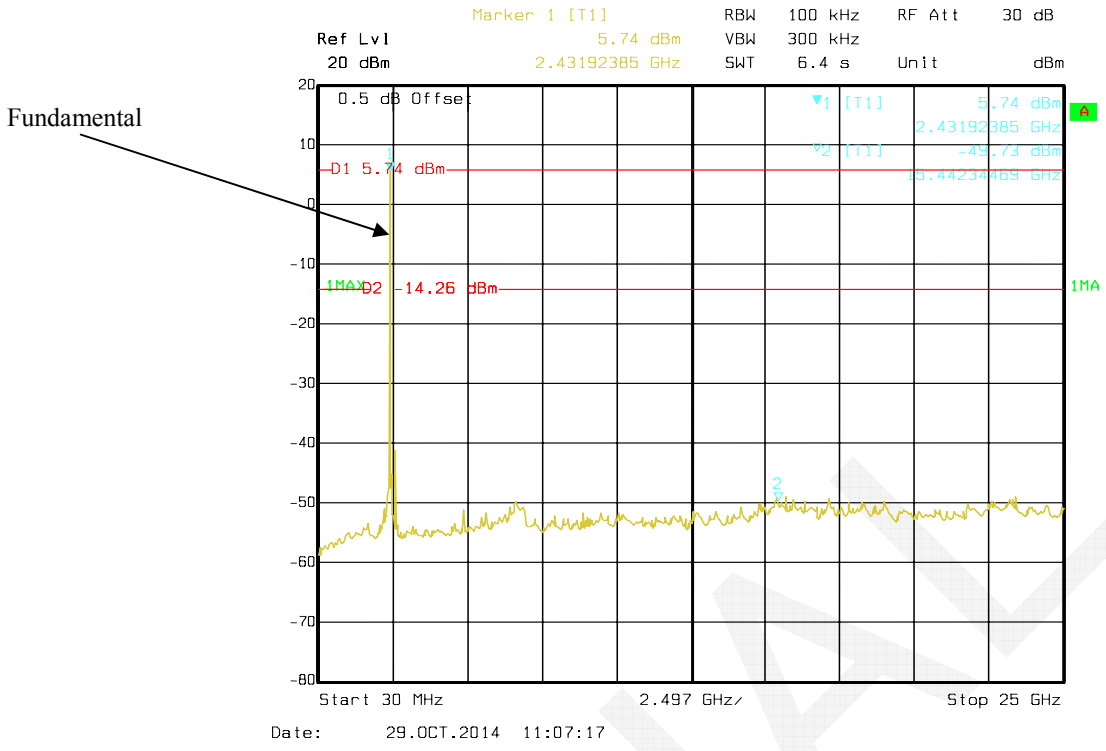
Chain 0: 802.11b Low Channel



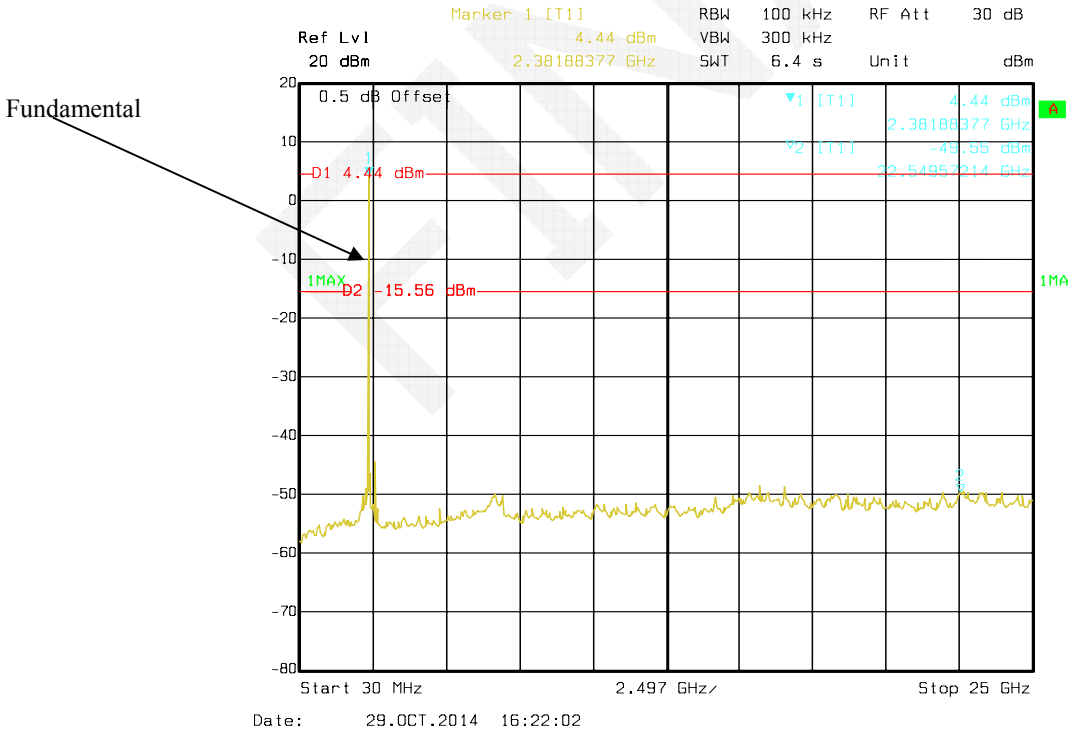
Chain 0: 802.11b Middle Channel



Chain 0: 802.11b High Channel

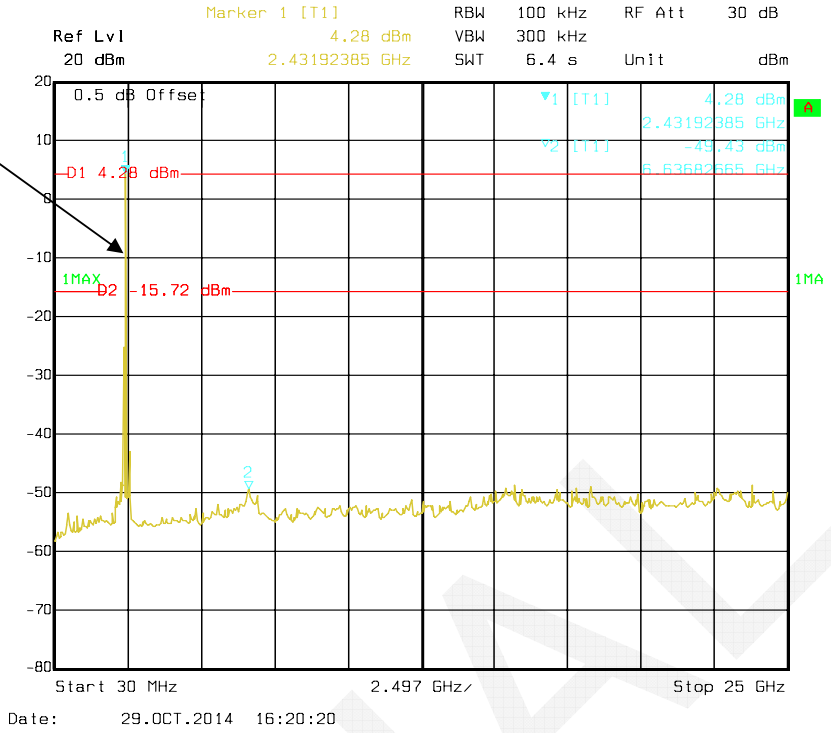


Chain 1: 802.11b Low Channel



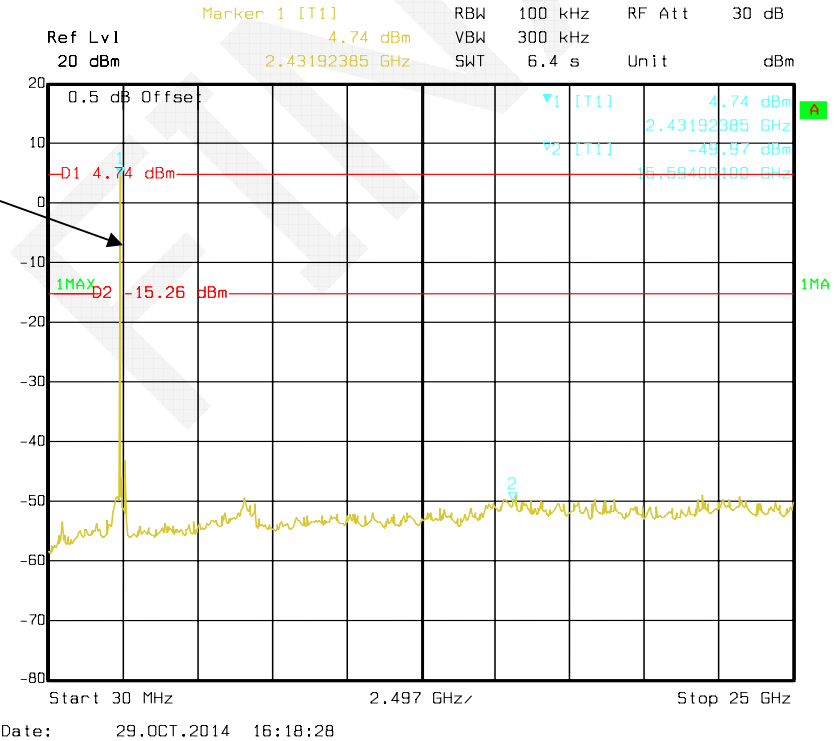
Chain 1: 802.11b Middle Channel

Fundamental

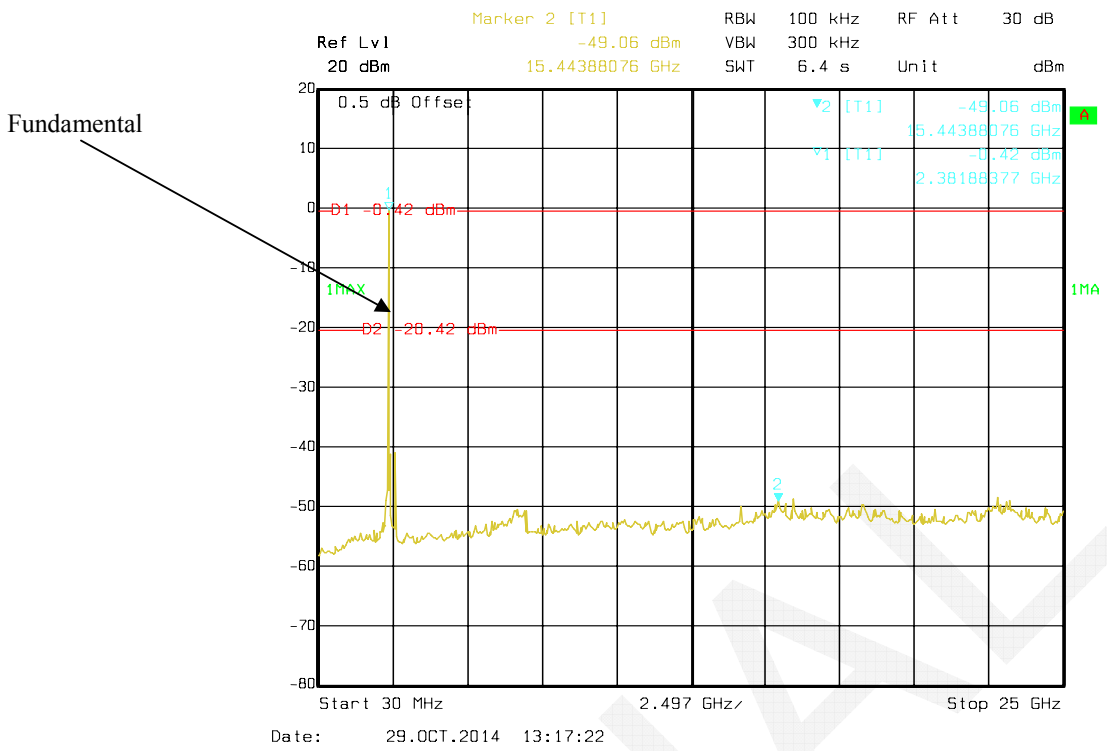


Chain 1: 802.11b High Channel

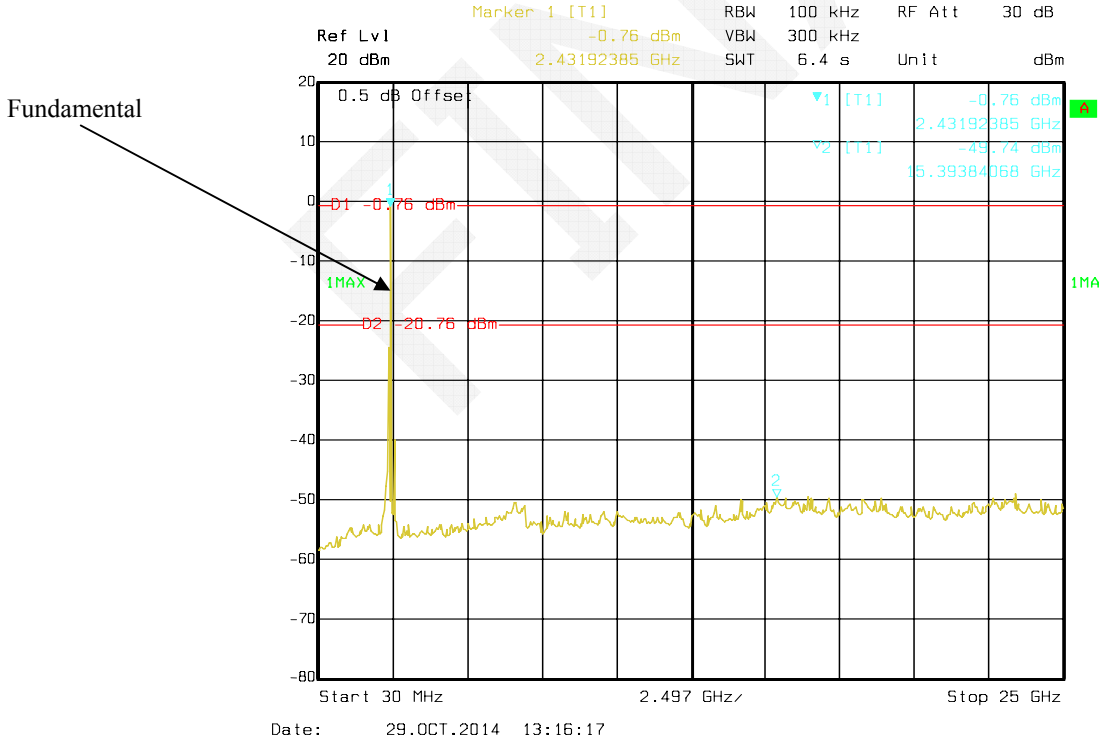
Fundamental



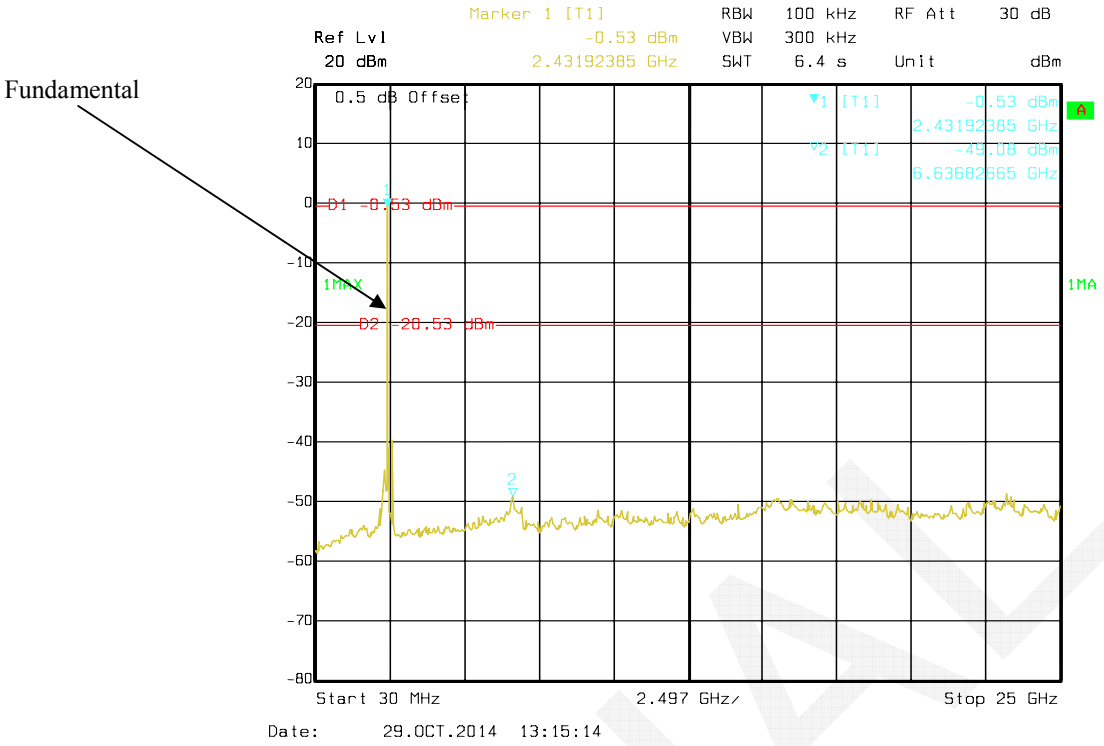
Chain 0: 802.11g Low Channel



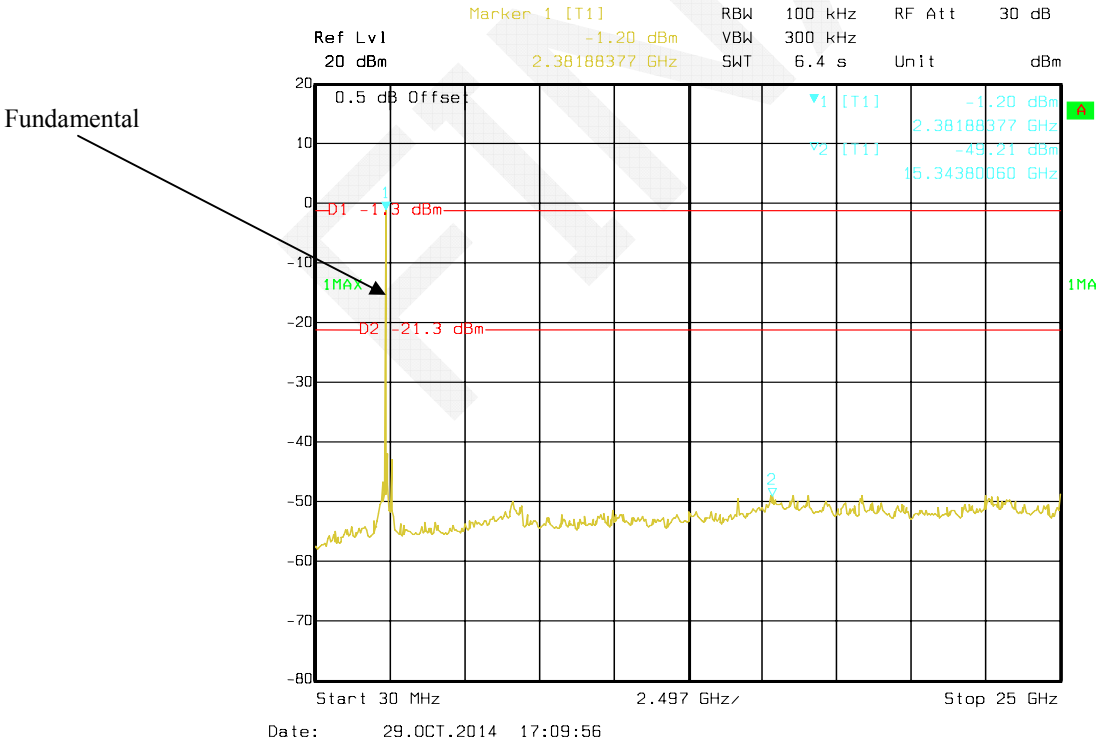
Chain 0: 802.11g Middle Channel



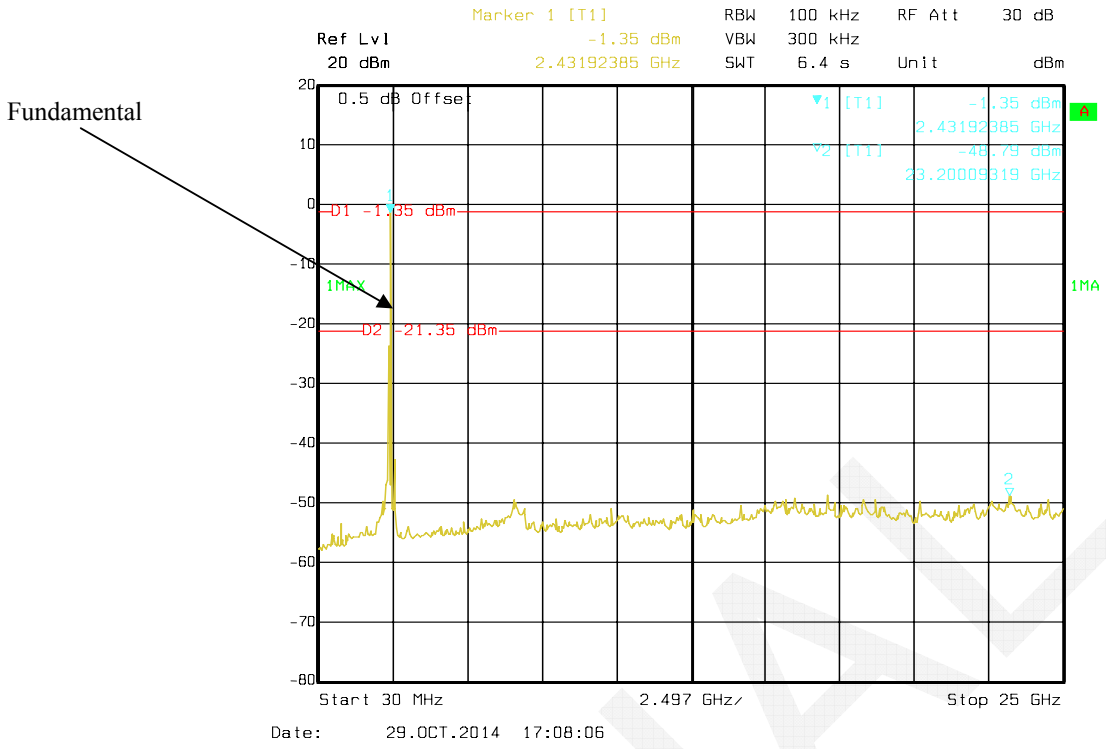
Chain 0: 802.11g High Channel



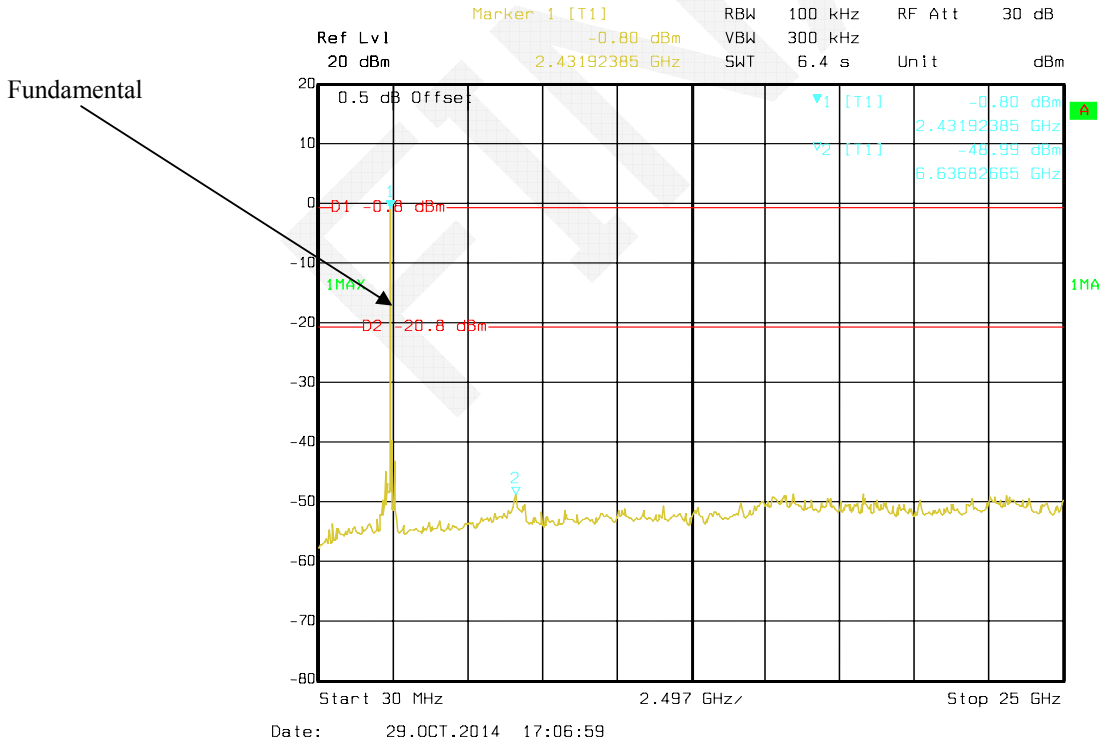
Chain 1: 802.11g Low Channel



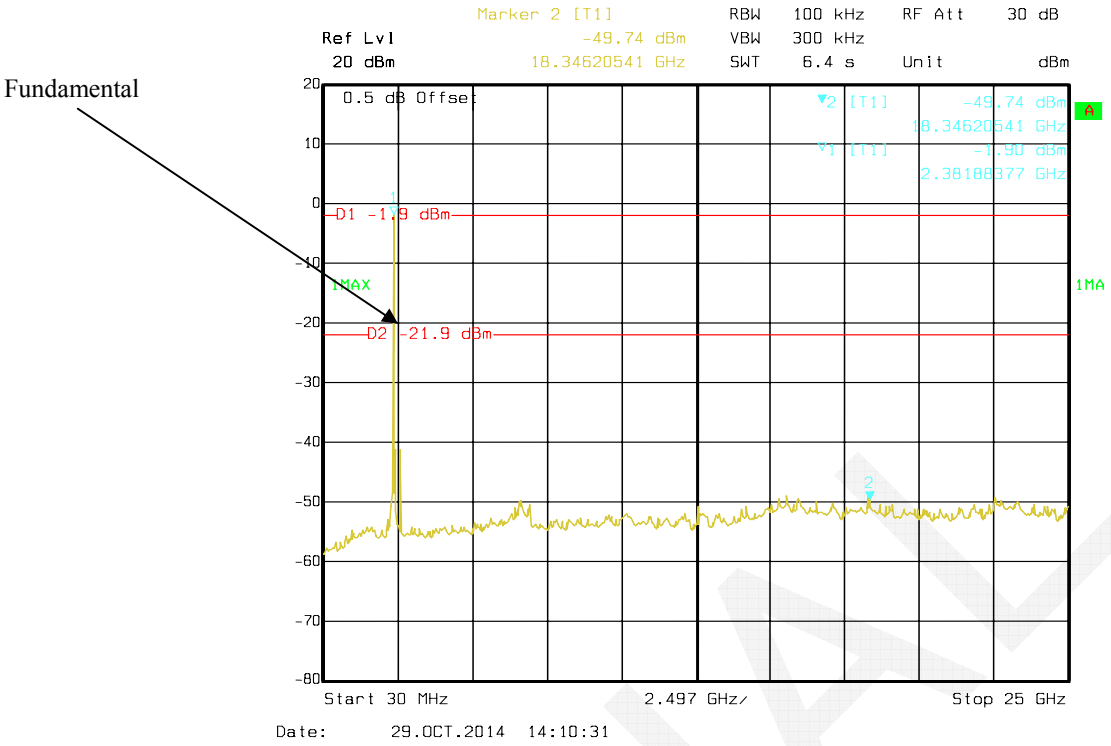
Chain 1: 802.11g Middle Channel



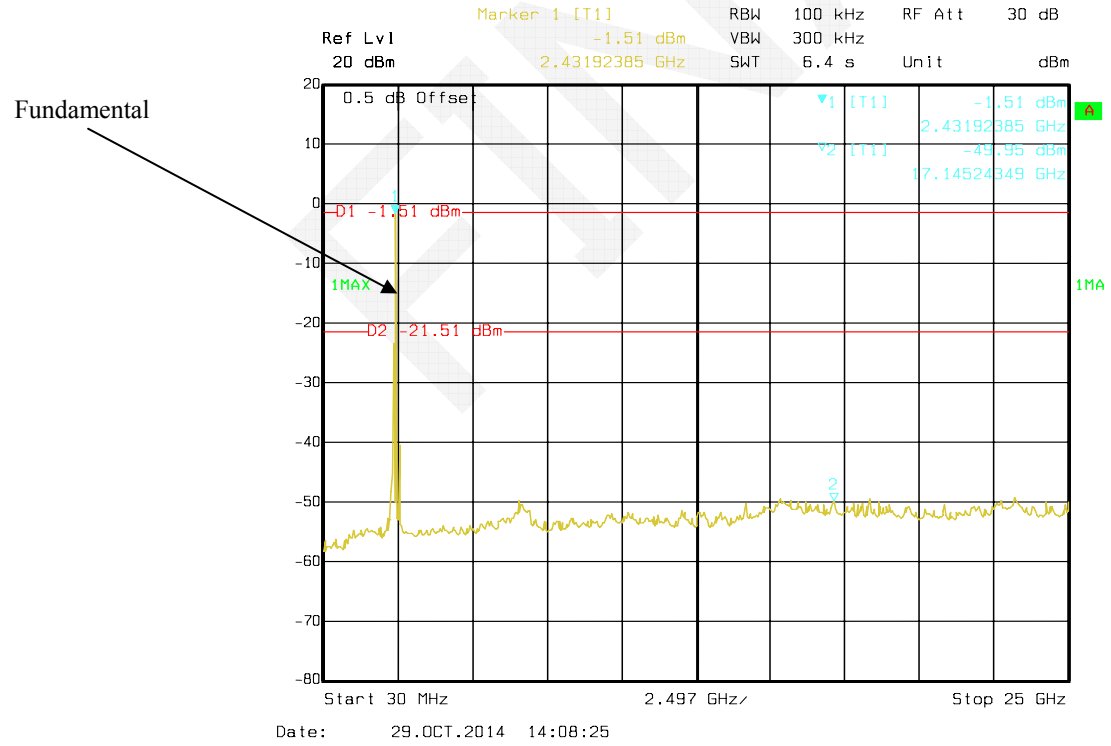
Chain 1: 802.11g High Channel



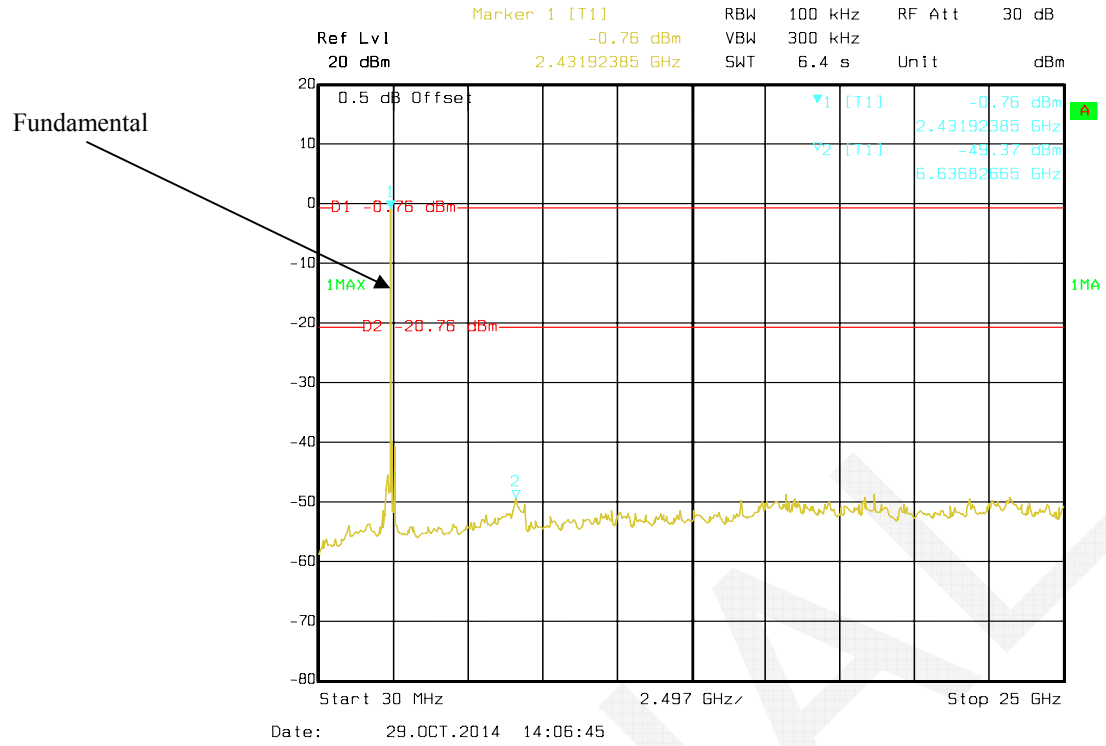
Chain 0: 802.11n ht20 Low Channel



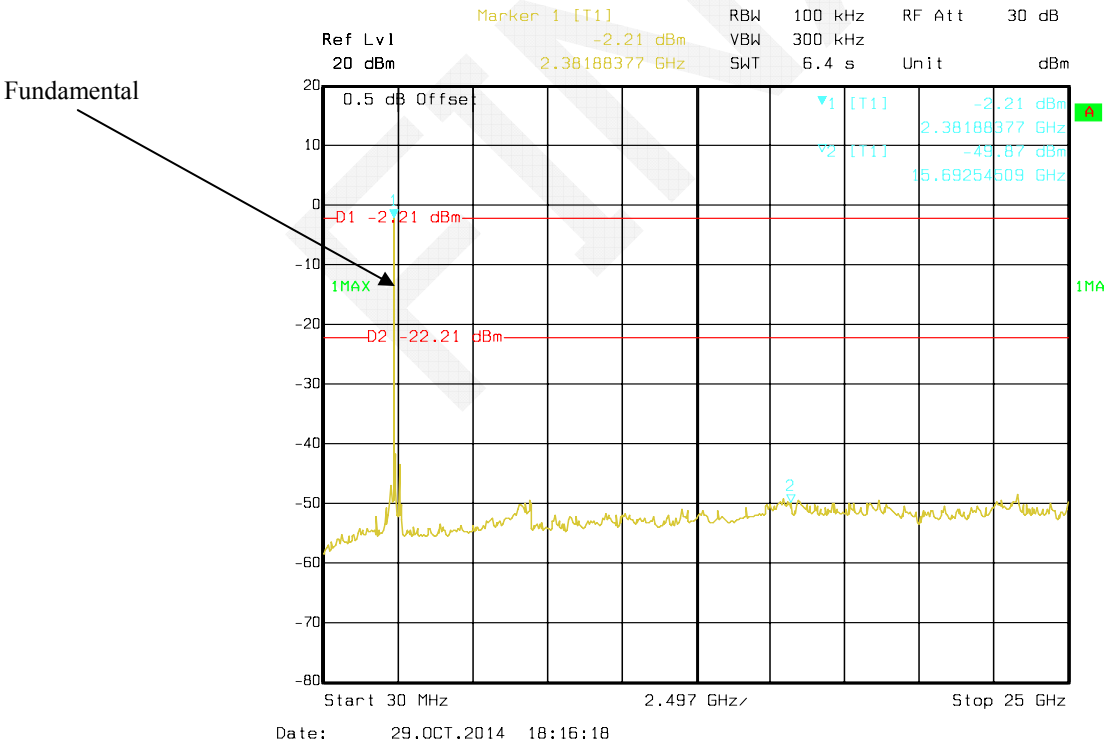
Chain 0: 802.11n ht20 Middle Channel



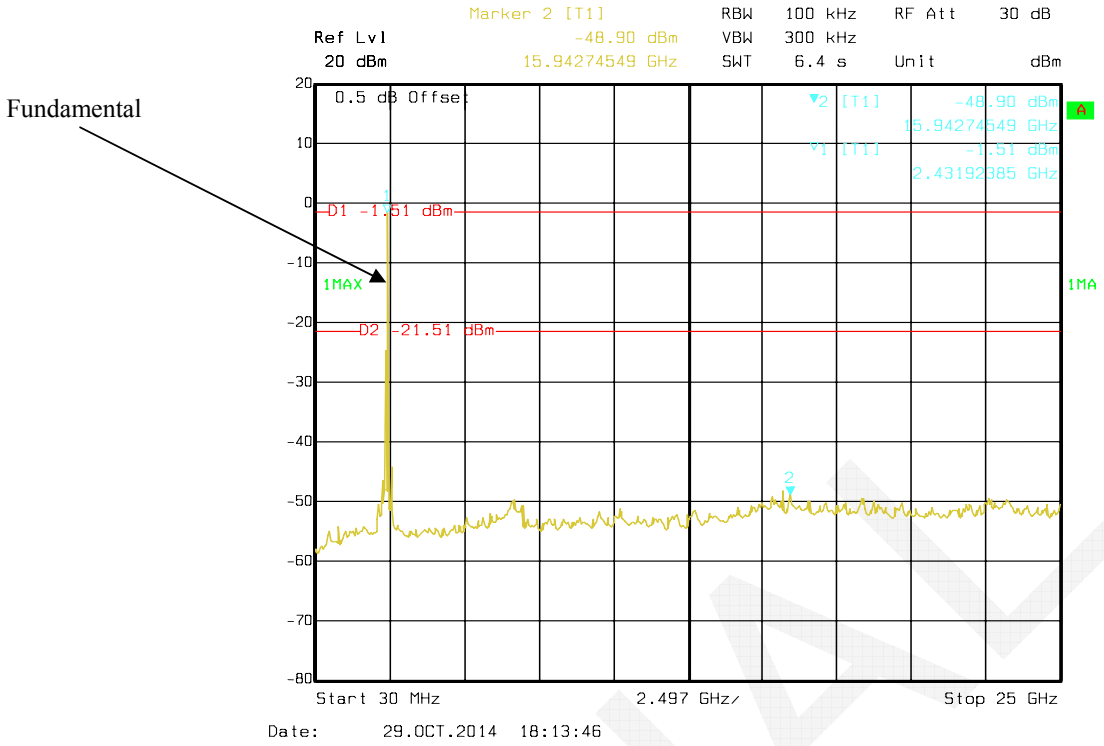
Chain 0: 802.11n ht20 High Channel



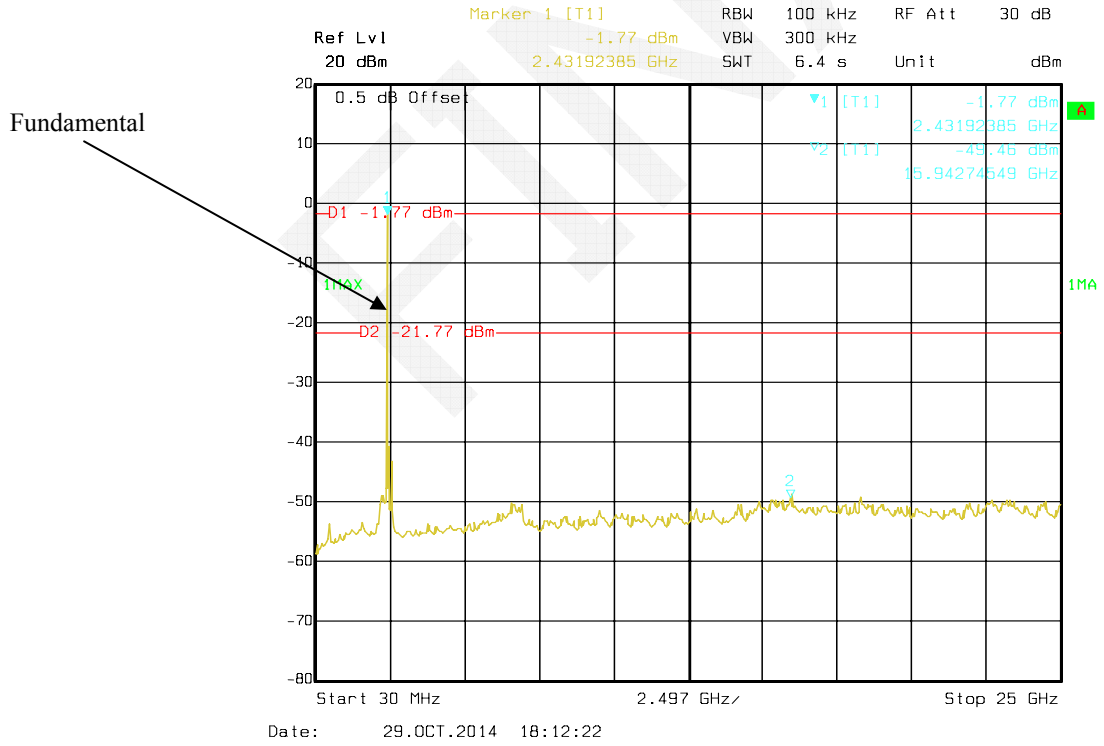
Chain 1: 802.11n ht20 Low Channel



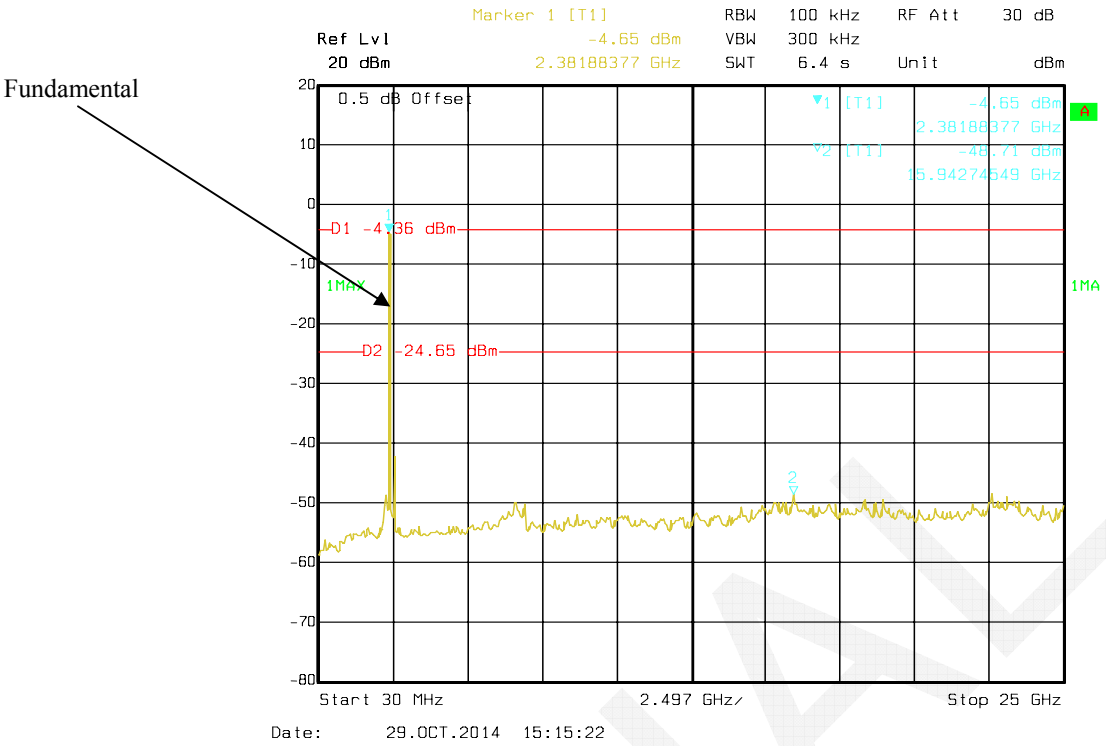
Chain 1: 802.11n ht20 Middle Channel



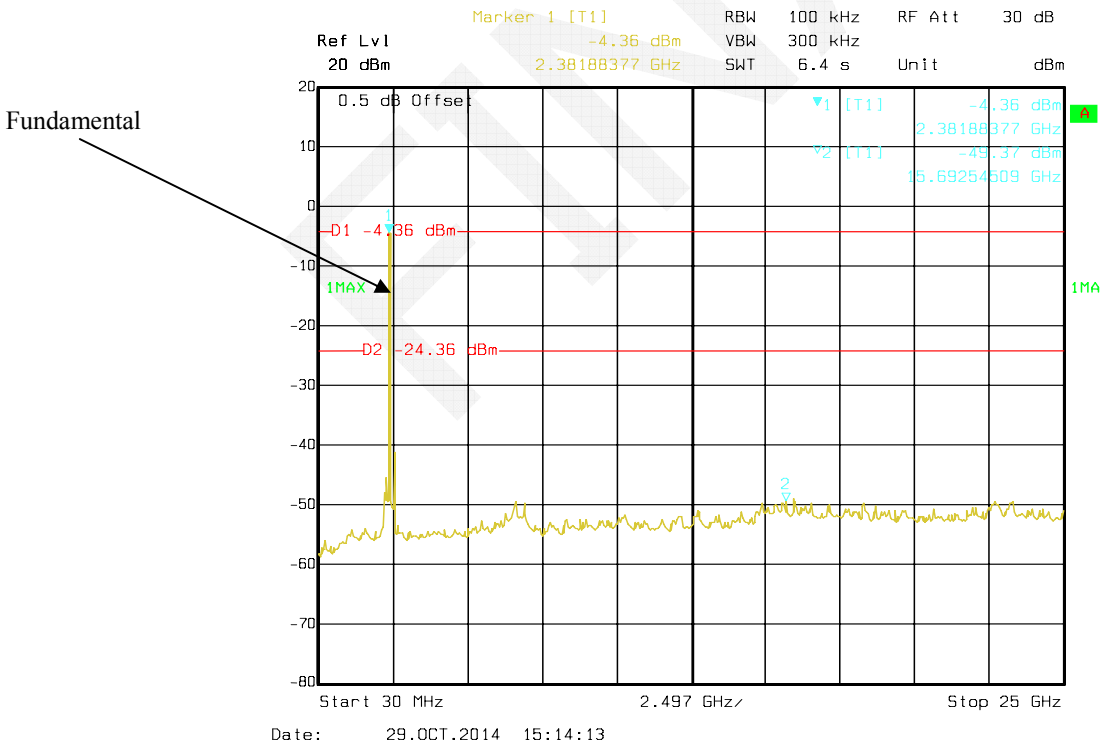
Chain 1: 802.11n ht20 High Channel



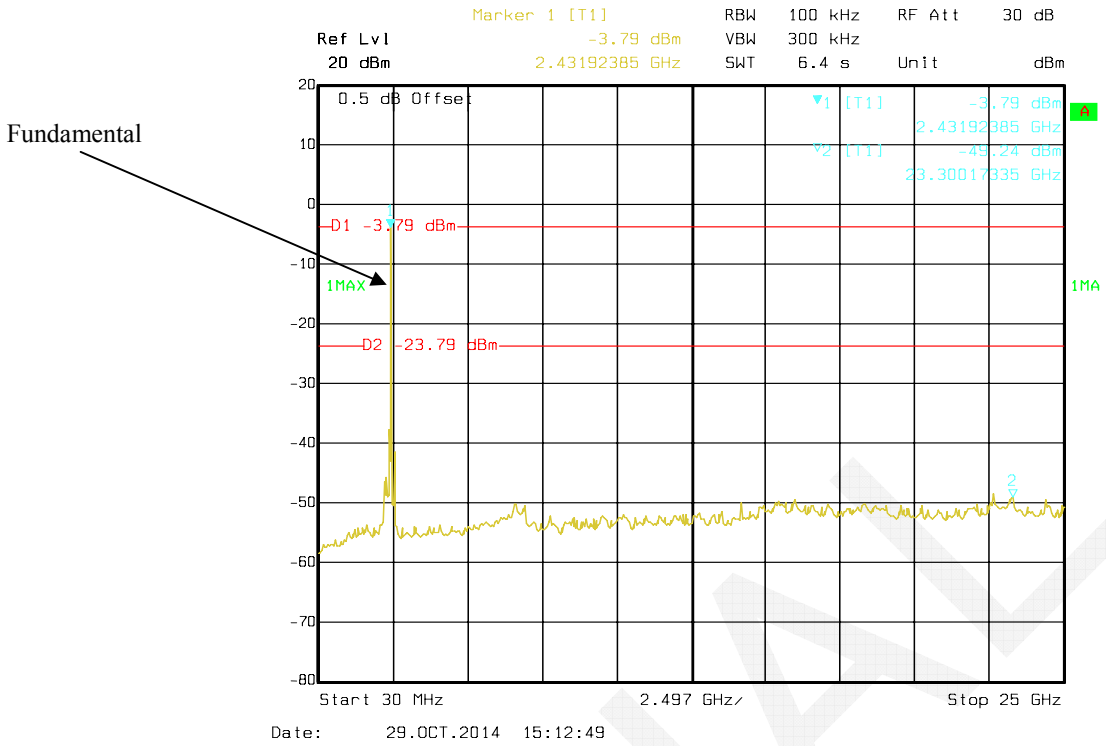
Chain 0: 802.11n ht40 Low Channel



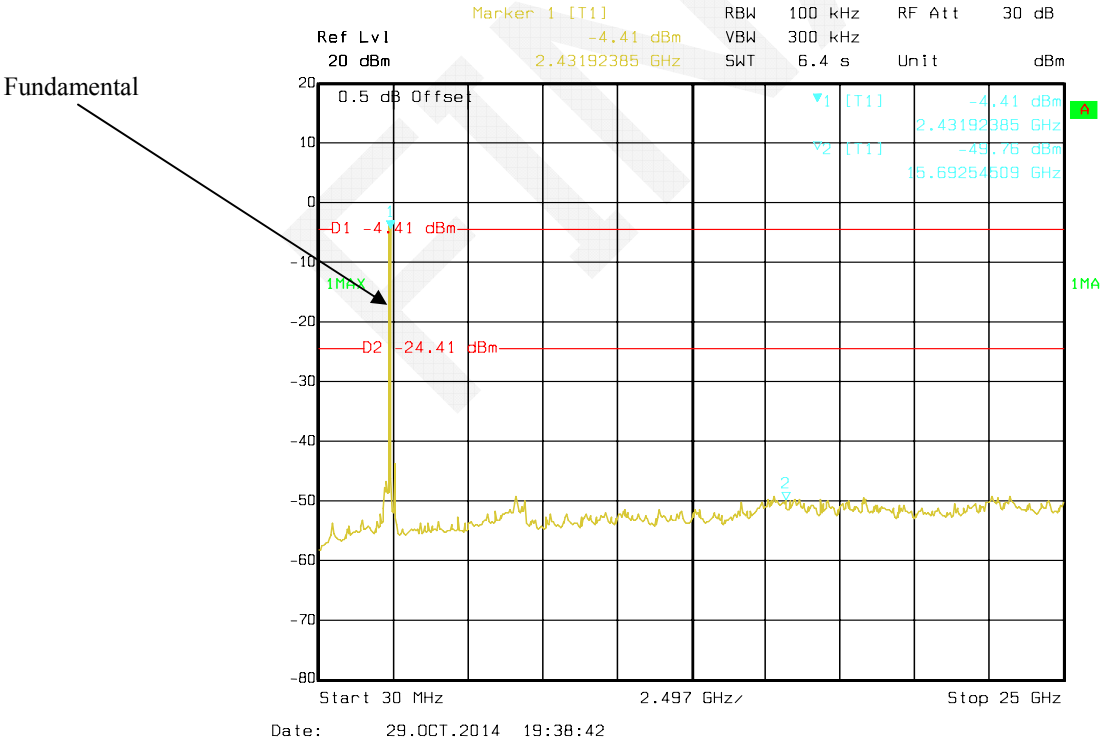
Chain 0: 802.11n ht40 Middle Channel



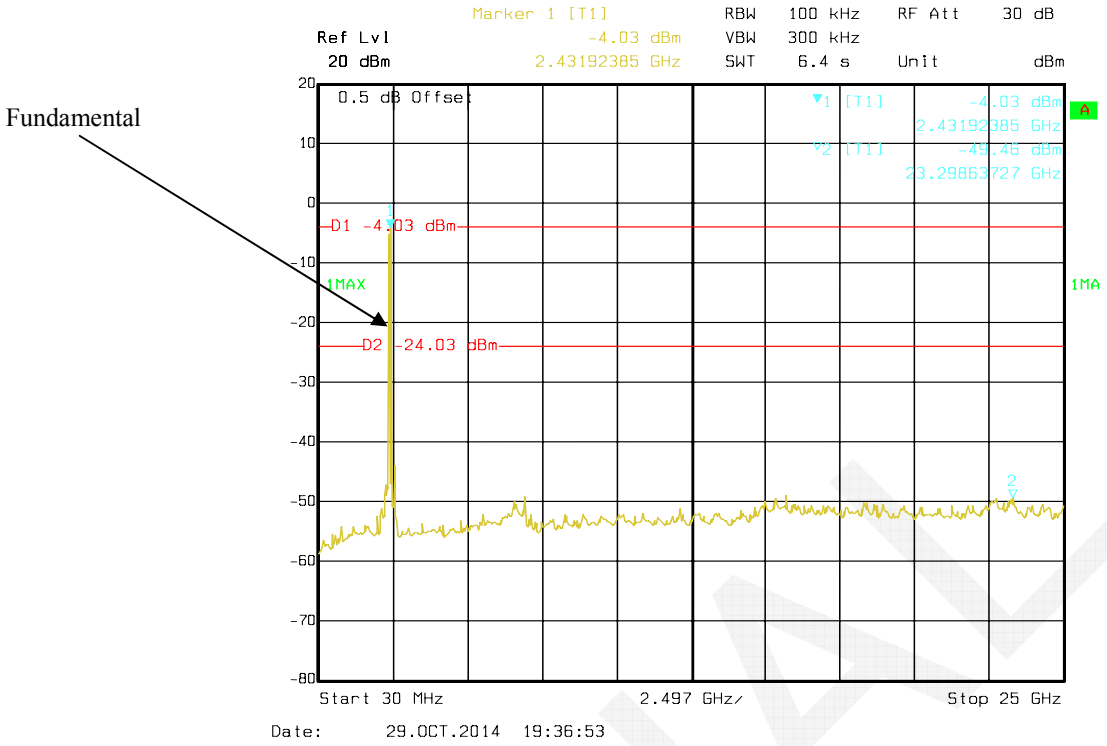
Chain 0: 802.11n ht40 High Channel



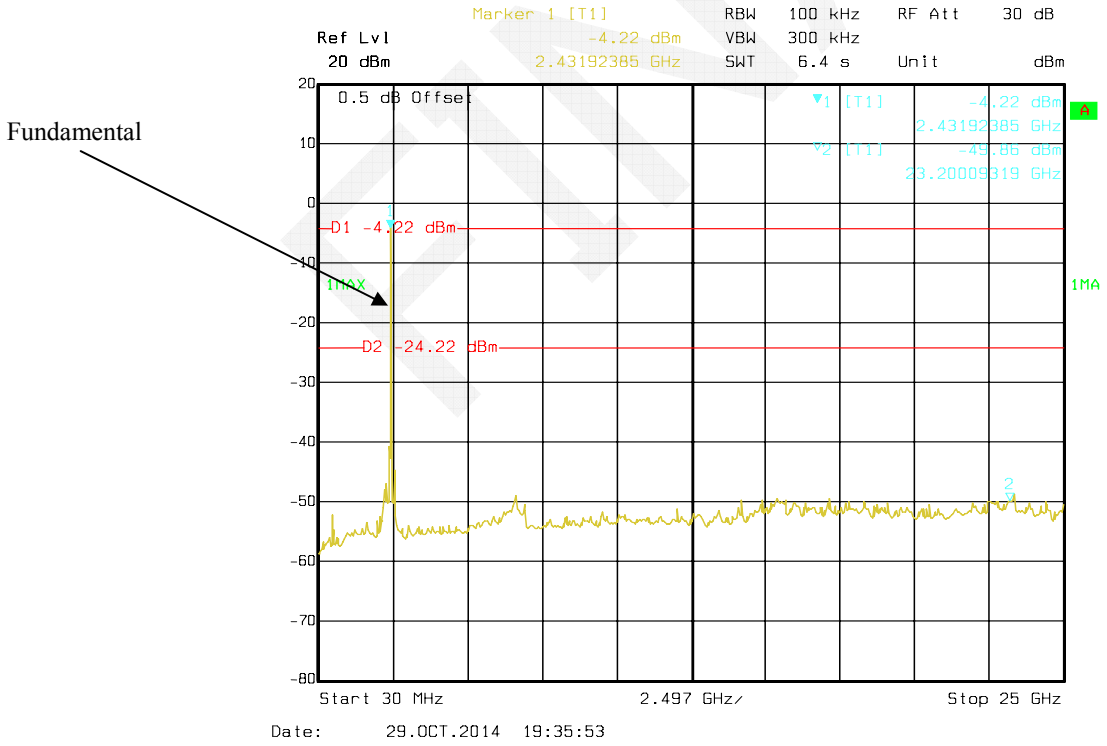
Chain 1: 802.11n ht40 Low Channel



Chain 1: 802.11n ht40 Middle Channel



Chain 1: 802.11n ht40 High Channel



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

Applicable Standard

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

Test Procedure

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:	27.1 °C
Relative Humidity:	51 %
ATM Pressure:	100.9 kPa

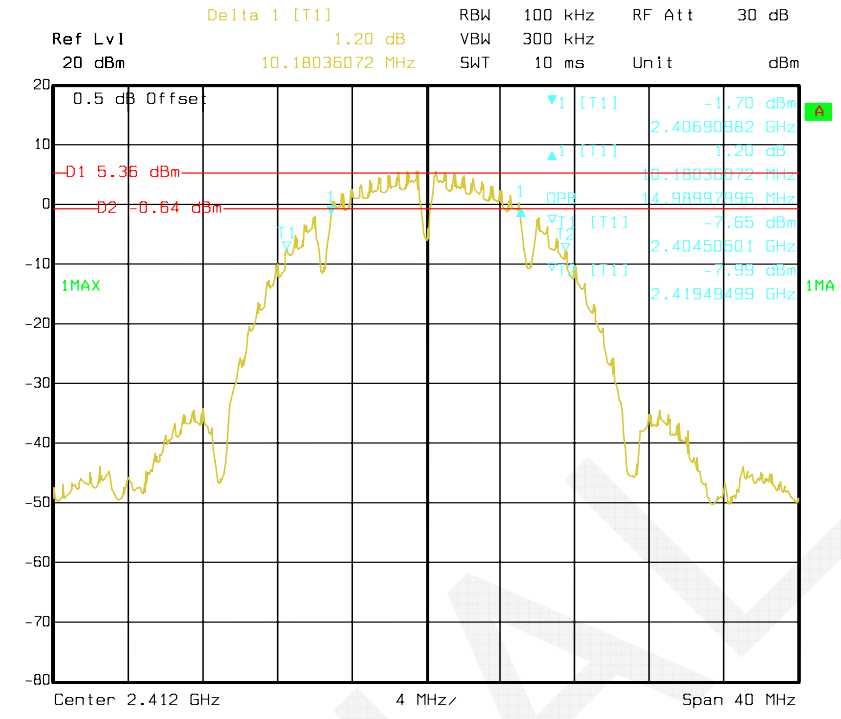
The testing was performed by Dean Liu on2014-10-29.

Test Mode: Transmitting

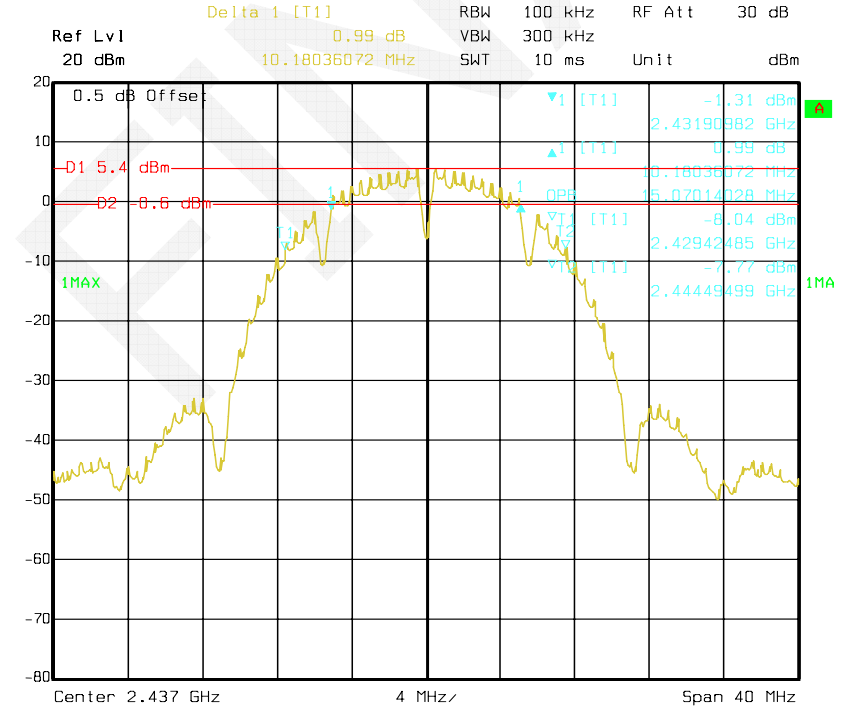
Test Result: Compliant. Please refer to the following table and plots.

Test mode	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Limit (kHz)
			Chain 0	Chain 1	
802.11b	Low	2412	10.18	10.18	≥500
	Middle	2437	10.18	10.19	≥500
	High	2462	10.1	10.18	≥500
802.11g	Low	2412	16.67	16.67	≥500
	Middle	2437	16.68	16.68	≥500
	High	2462	16.69	16.69	≥500
802.11n ht20	Low	2412	17.87	17.79	≥500
	Middle	2437	17.88	17.81	≥500
	High	2462	17.87	17.81	≥500
802.11nht40	Low	2422	36.71	36.71	≥500
	Middle	2437	36.71	36.46	≥500
	High	2452	36.78	36.37	≥500

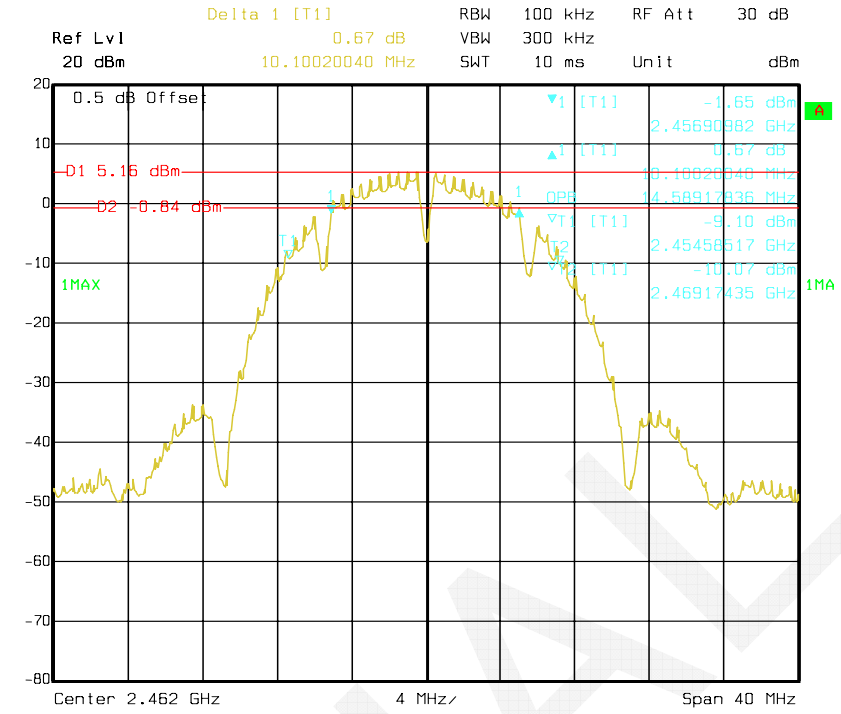
Chain 0: 802.11b Low Channel



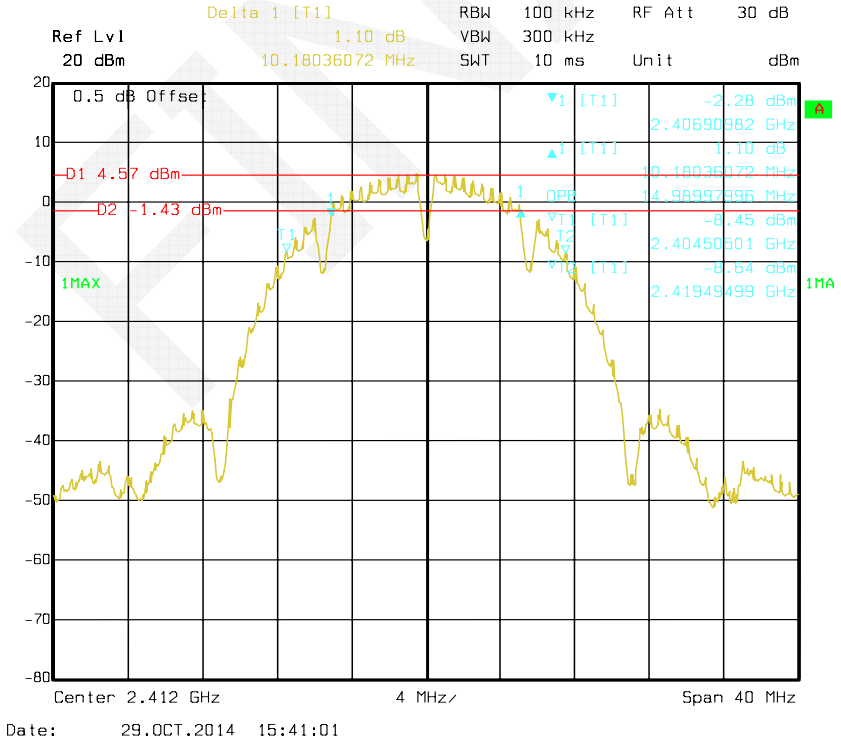
Chain 0: 802.11b Middle Channel



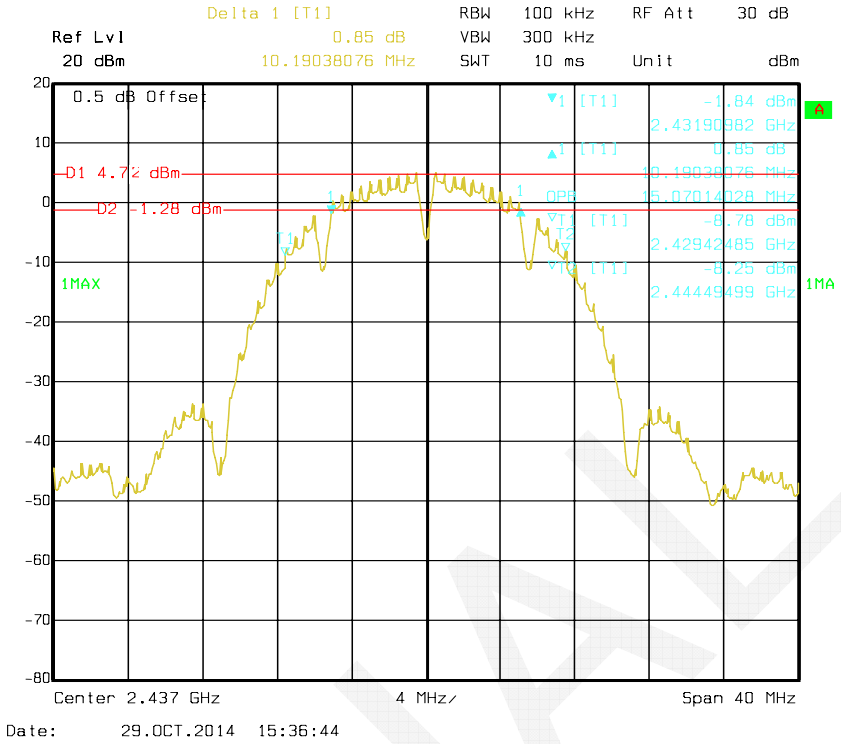
Chain 0: 802.11b High Channel



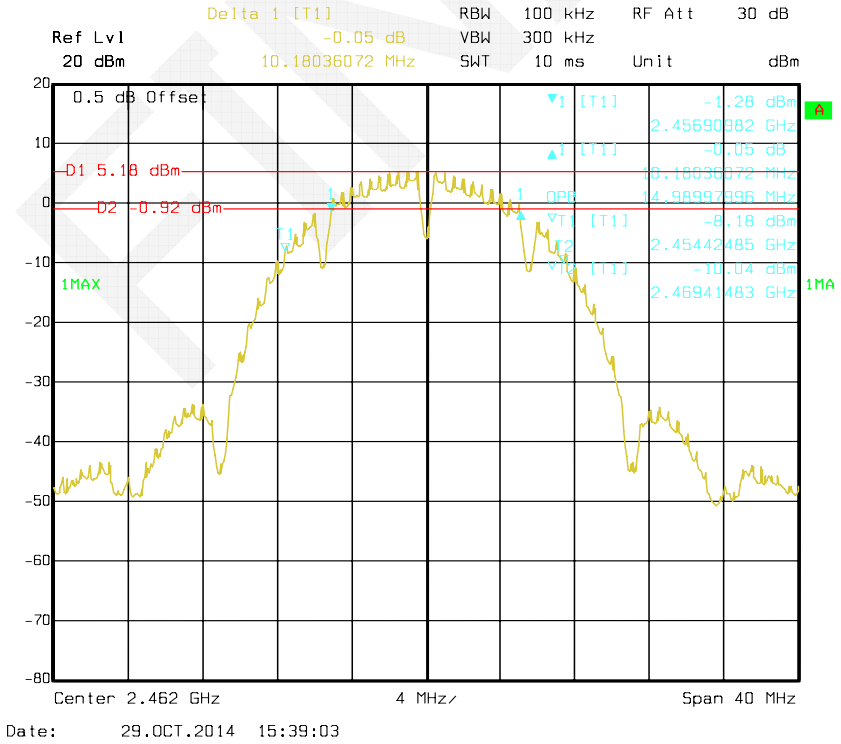
Chain 1: 802.11b Low Channel



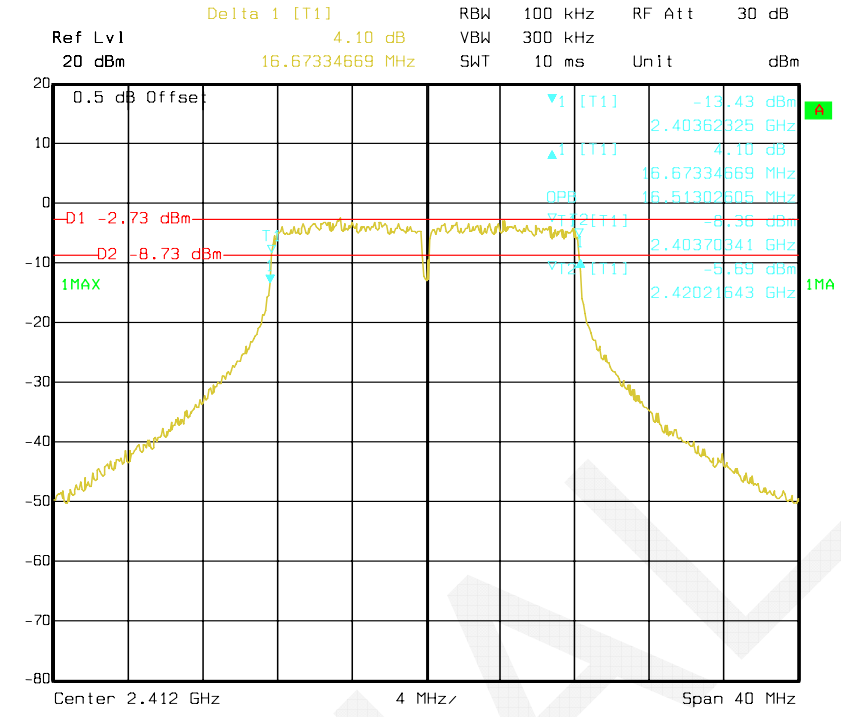
Chain 1: 802.11b Middle Channel



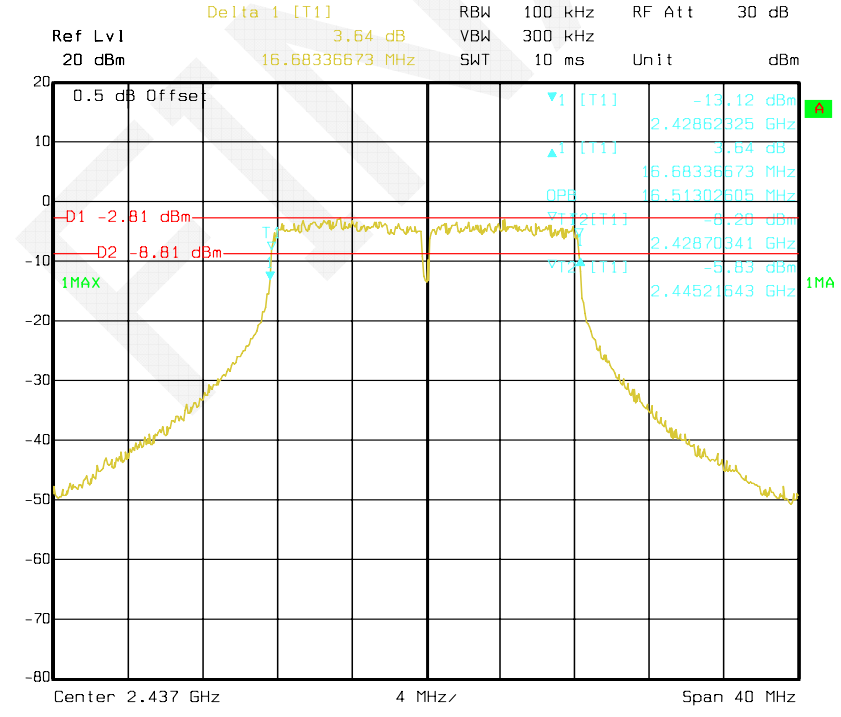
Chain 1: 802.11b High Channel



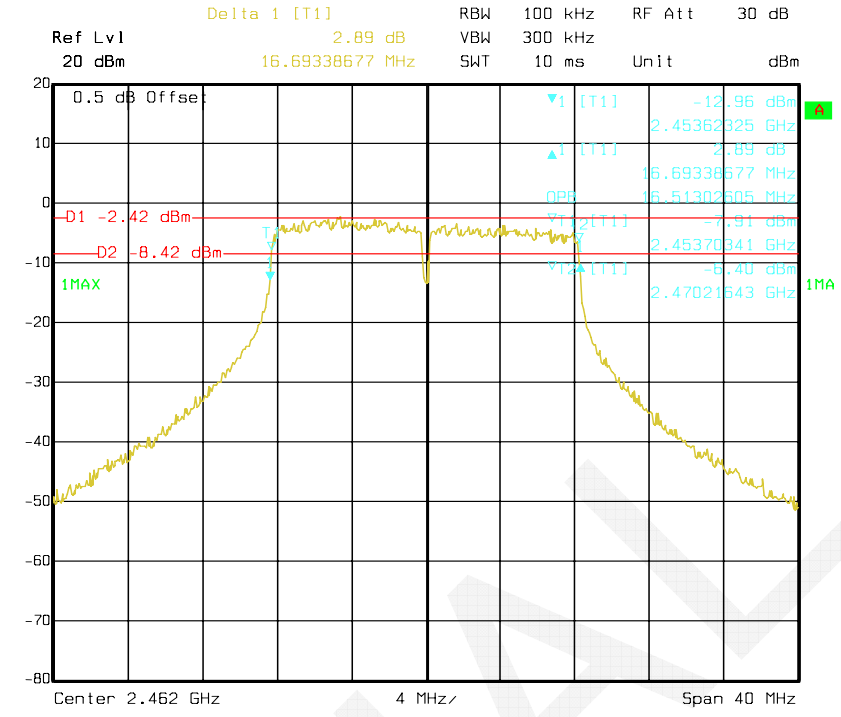
Chain 0: 802.11g Low Channel



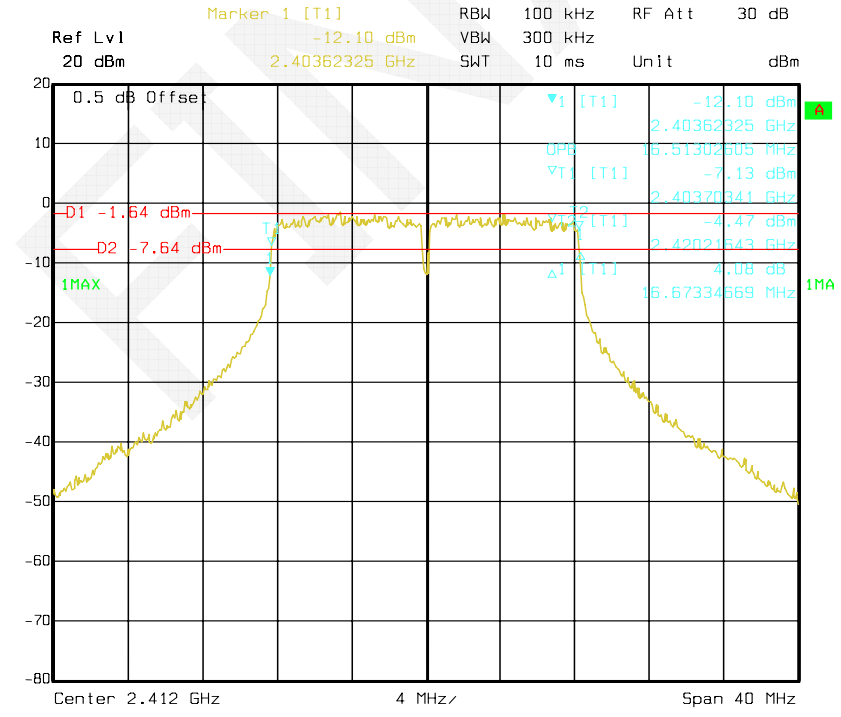
Chain 0: 802.11g Middle Channel



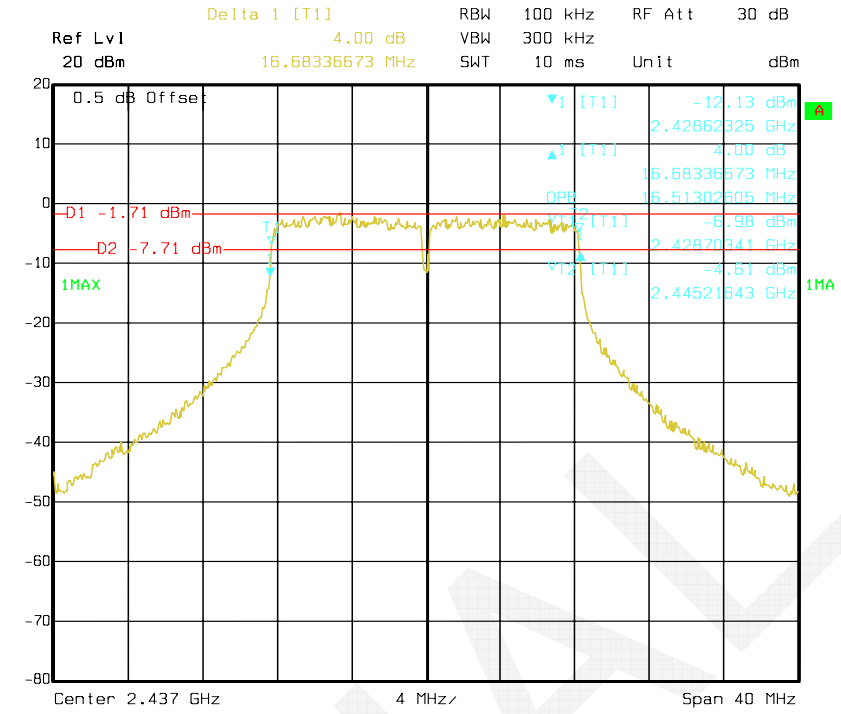
Chain 0: 802.11g High Channel



Chain 1: 802.11g Low Channel

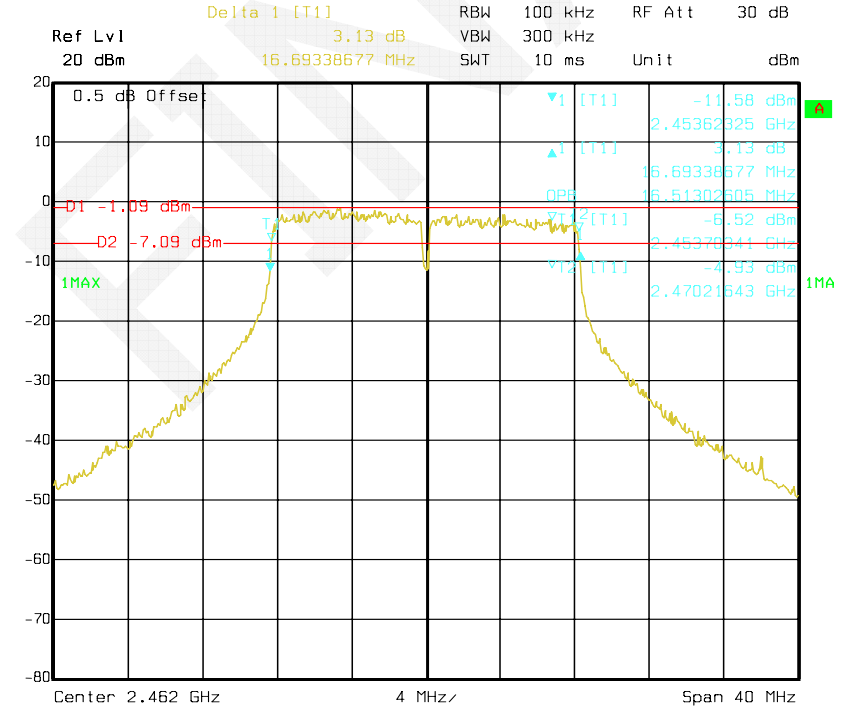


Chain 1: 802.11g Middle Channel



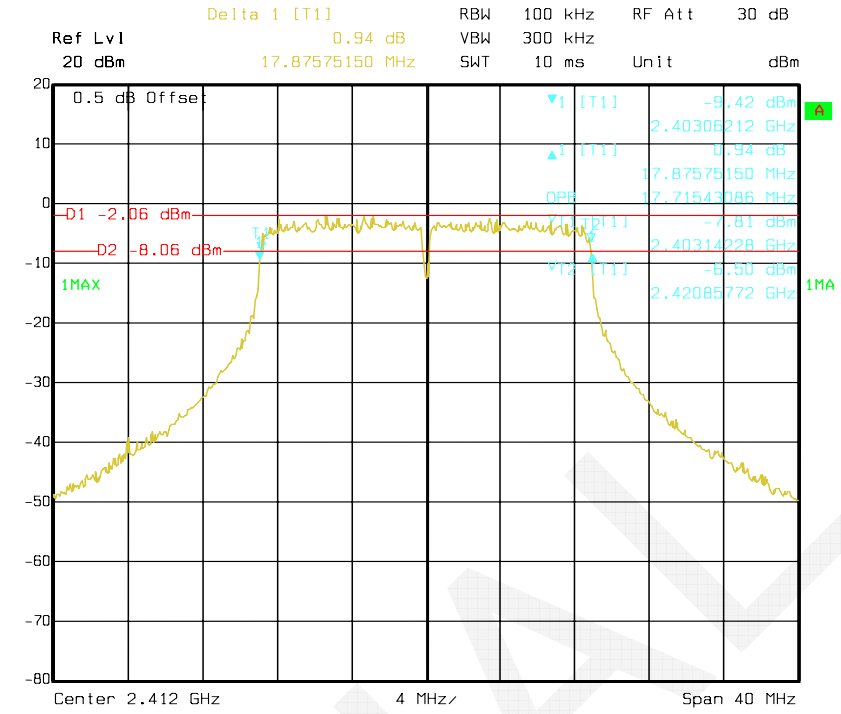
Date: 29.OCT.2014 16:31:14

Chain 1: 802.11g High Channel

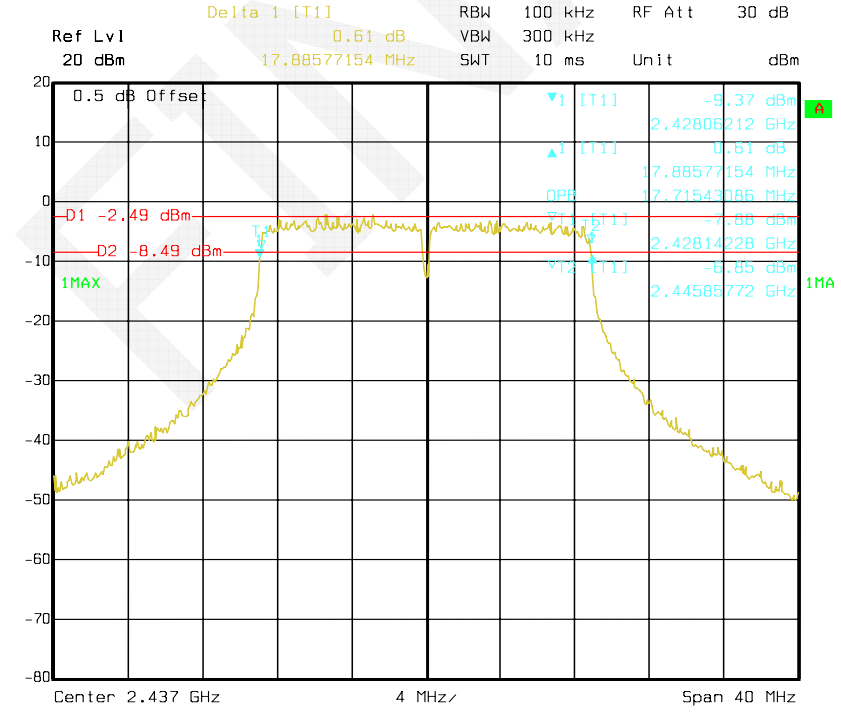


Date: 29.OCT.2014 16:35:09

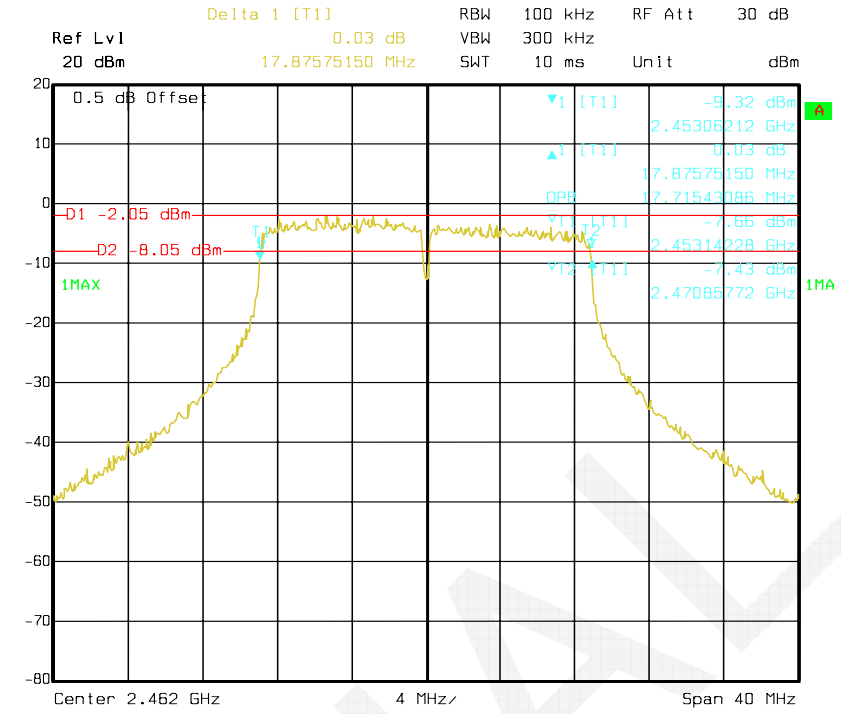
Chain 0: 802.11n ht20 Low Channel



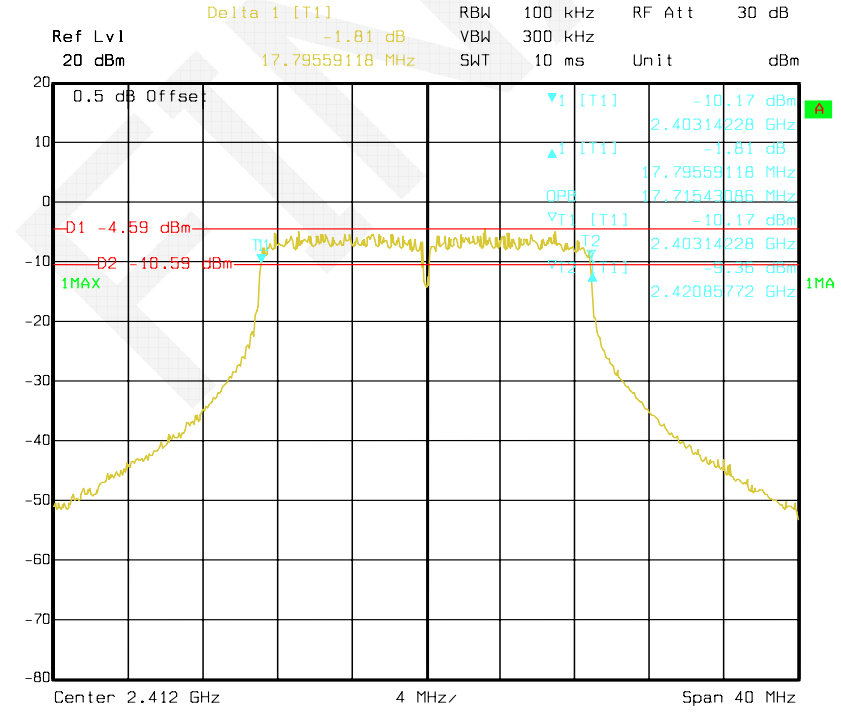
Chain 0: 802.11n ht20 Middle Channel



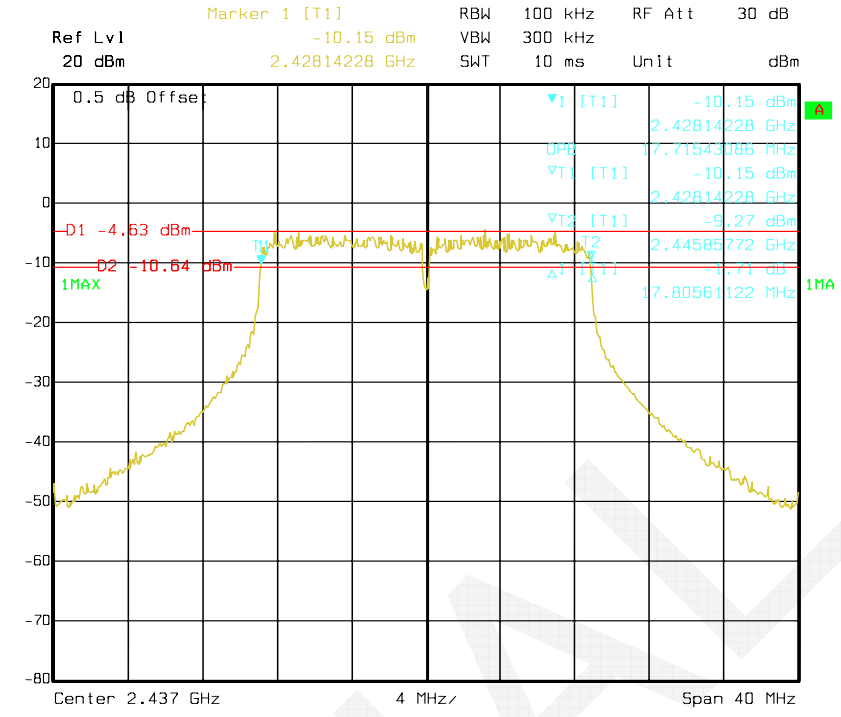
Chain 0: 802.11n ht20 High Channel



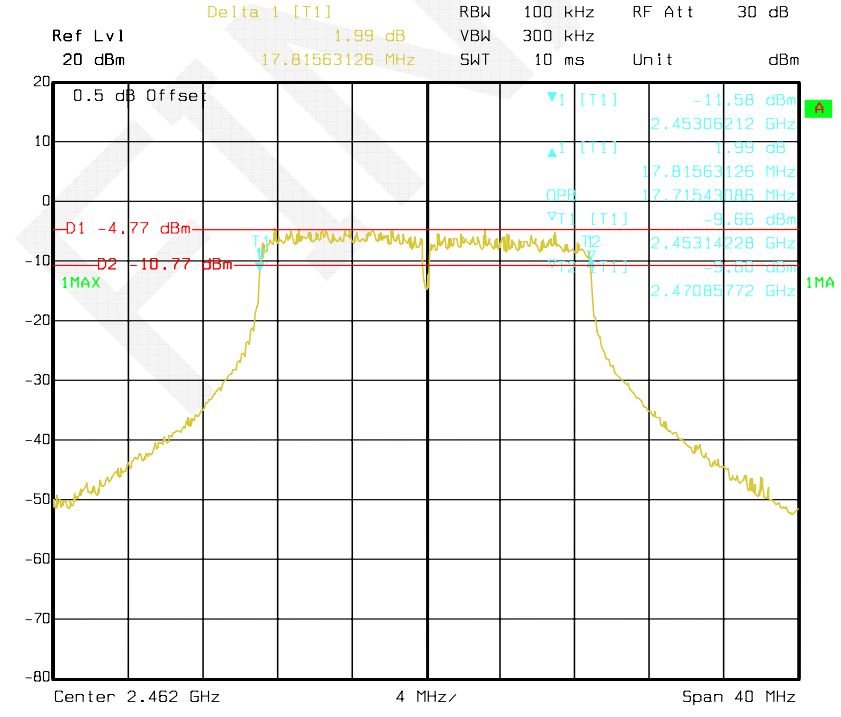
Chain 1: 802.11n ht20 Low Channel



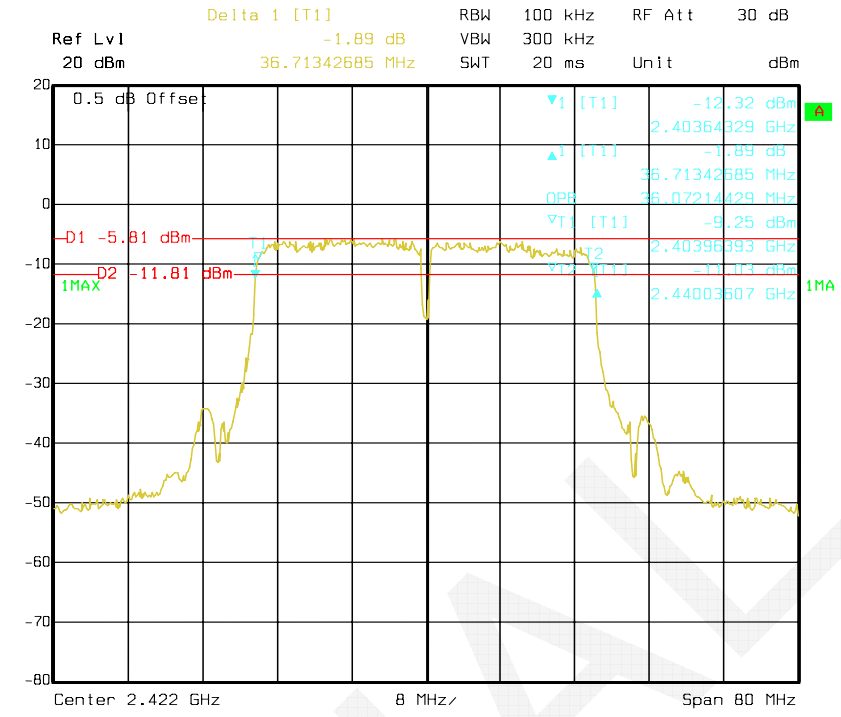
Chain 1: 802.11n ht20 Middle Channel



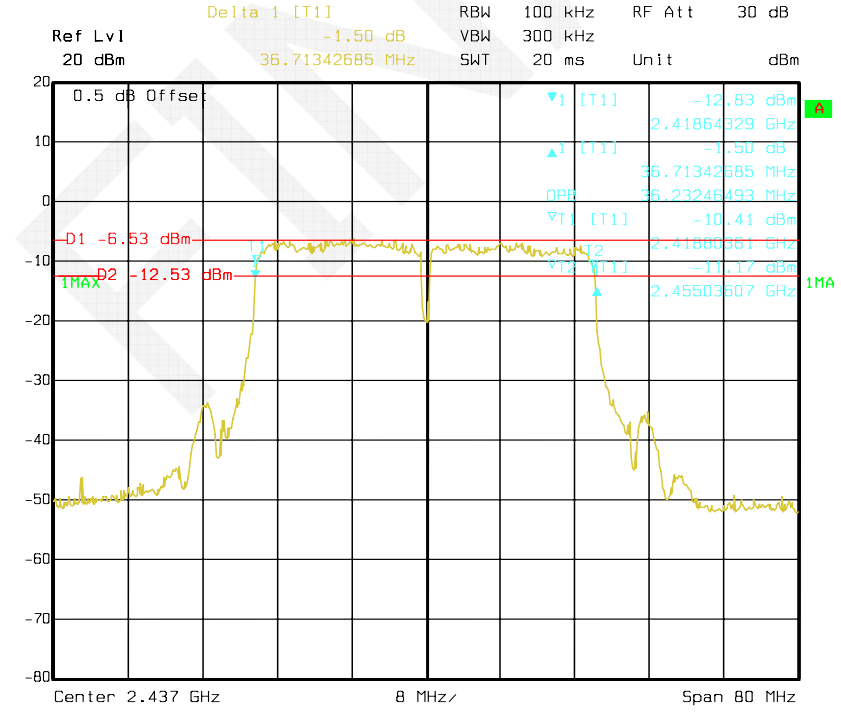
Chain 1: 802.11n ht20 High Channel



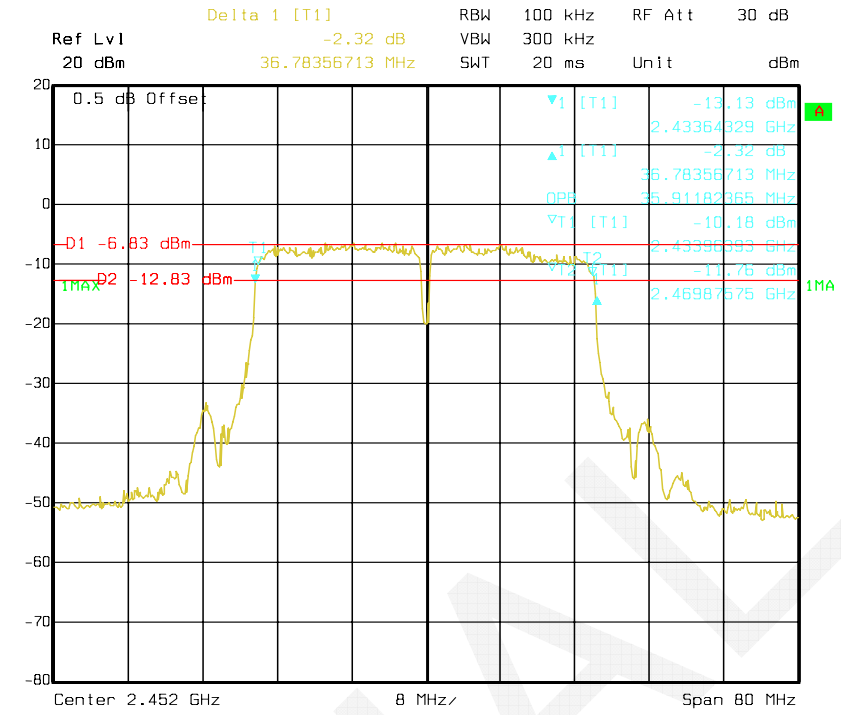
Chain 0: 802.11n ht40 Low Channel



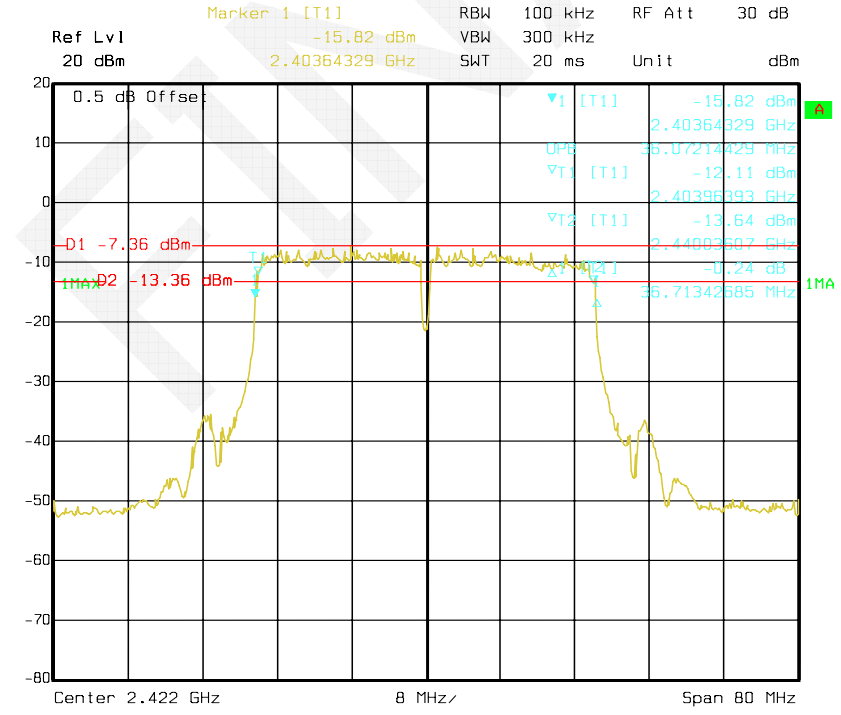
Chain 0: 802.11n ht40 Middle Channel



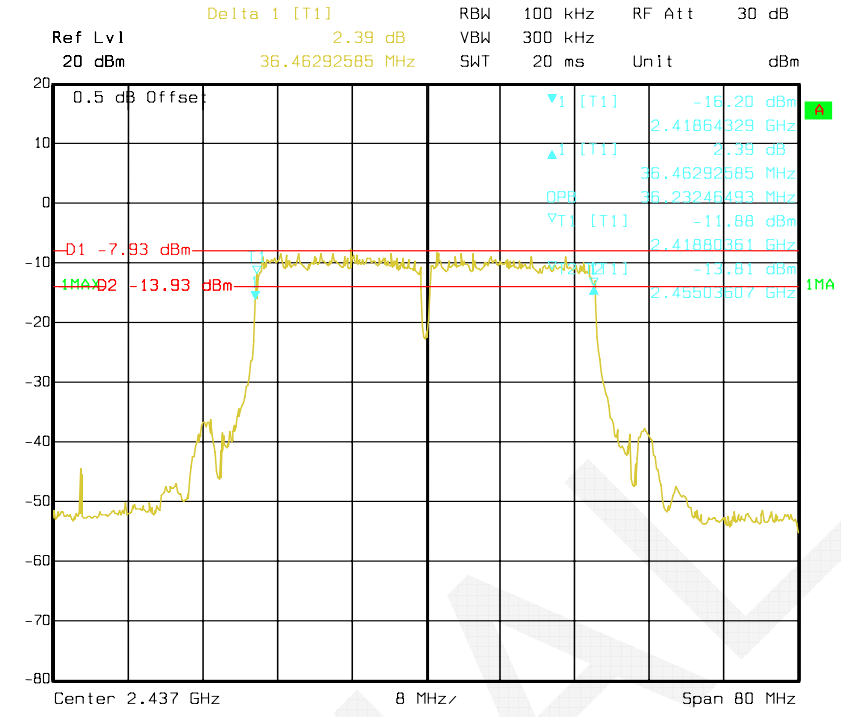
Chain 0: 802.11n ht40 High Channel



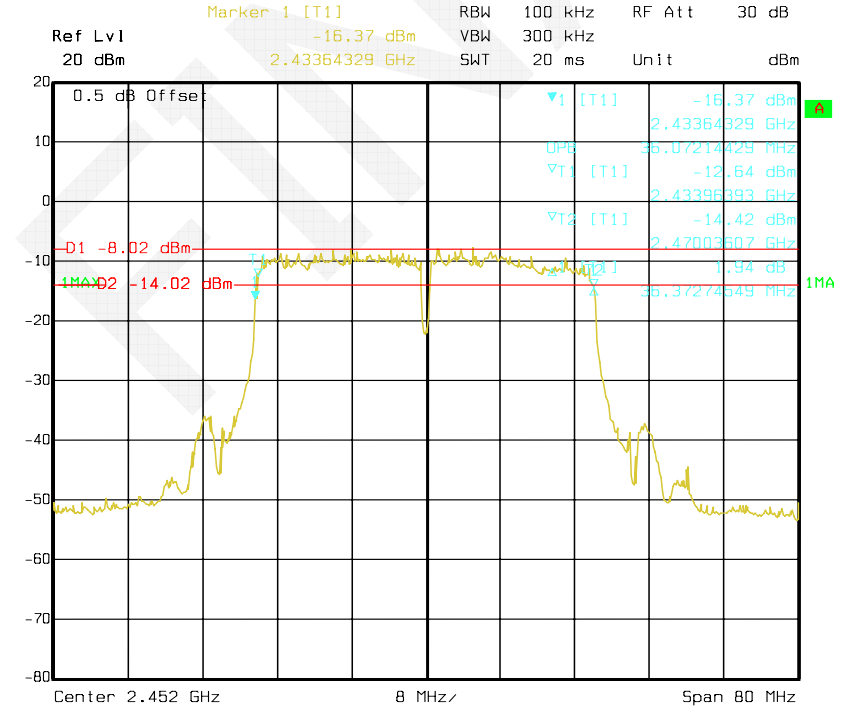
Chain 1: 802.11n ht40 Low Channel



Chain 1: 802.11n ht40 Middle Channel



Chain 1: 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

According to KDB 558074 D01 DTS Meas Guidance v03r02 clause9.2.2.2

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	2013-12-12	2014-12-12
Agilent	Wideband Power Sensor	N1921A	MY54170013	2013-12-12	2014-12-12
Agilent	P-Series Power Meter	N1912A	MY5000448	2013-12-12	2014-12-12

*** 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:	27.1 °C
Relative Humidity:	51 %
ATM Pressure:	100.9 kPa

The testing was performed by Dean Liu on2014-10-29.

Test Mode: Transmitting

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

Test mode	Channel	Frequency	Max Peak Conducted Output Power (dBm)			Limit	Result
		(MHz)	Chain 0	Chain 1	Total	(dBm)	
802.11b	Low	2412	18.67	17.58	/	30	PASS
	Middle	2437	18.59	17.53	/	30	PASS
	High	2462	18.64	17.65	/	30	PASS
802.11g	Low	2412	20.82	20.30	/	30	PASS
	Middle	2437	20.53	20.39	/	30	PASS
	High	2462	20.64	20.71	/	30	PASS
802.11n ht20	Low	2412	20.58	20.13	23.37	30	PASS
	Middle	2437	20.66	20.22	23.46	30	PASS
	High	2462	20.92	20.58	23.76	30	PASS
802.11n ht40	Low	2422	20.52	20.25	23.40	30	PASS
	Middle	2437	20.78	20.71	23.76	30	PASS
	High	2452	20.71	20.19	23.47	30	PASS

Test mode	Channel	Frequency	Max e Conducted Averag Output Power (dBm)			Limit	Result
		(MHz)	Chain 0	Chain 1	Total	(dBm)	
802.11b	Low	2412	18.34	17.23	/	30	PASS
	Middle	2437	18.43	17.23	/	30	PASS
	High	2462	18.41	17.24	/	30	PASS
802.11g	Low	2412	15.32	14.74	/	30	PASS
	Middle	2437	15.10	14.88	/	30	PASS
	High	2462	15.18	14.92	/	30	PASS
802.11n ht20	Low	2412	15.35	14.79	18.09	30	PASS
	Middle	2437	15.22	14.89	18.07	30	PASS
	High	2462	15.27	15.34	18.32	30	PASS
802.11n ht40	Low	2422	13.61	14.59	17.14	30	PASS
	Middle	2437	13.75	14.32	17.05	30	PASS
	High	2452	14.14	14.71	17.44	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

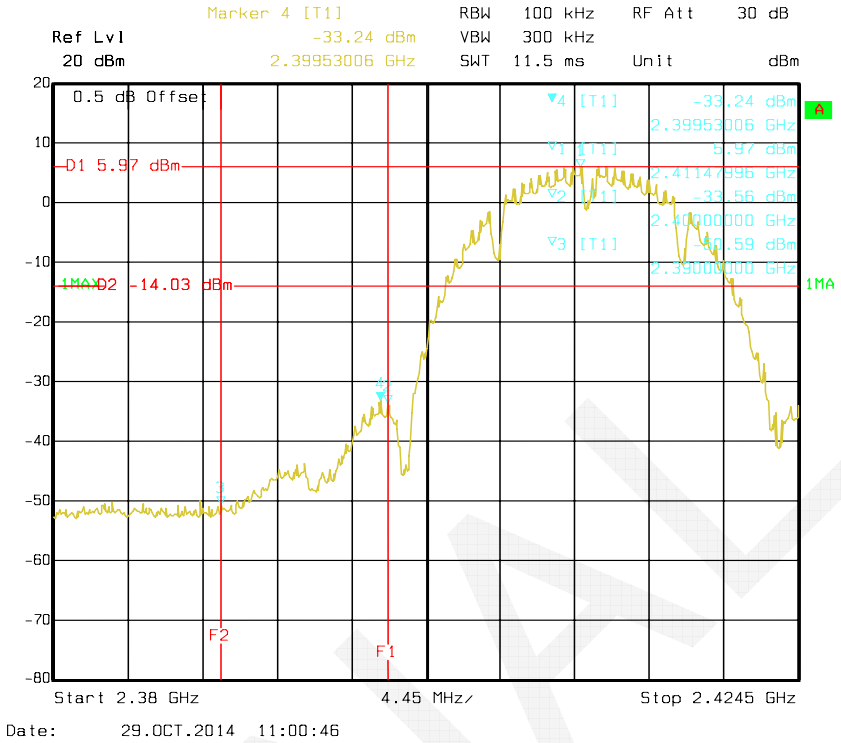
Temperature:	27.1 °C
Relative Humidity:	51 %
ATM Pressure:	100.9 kPa

The testing was performed by Dean Liu on2014-10-29.

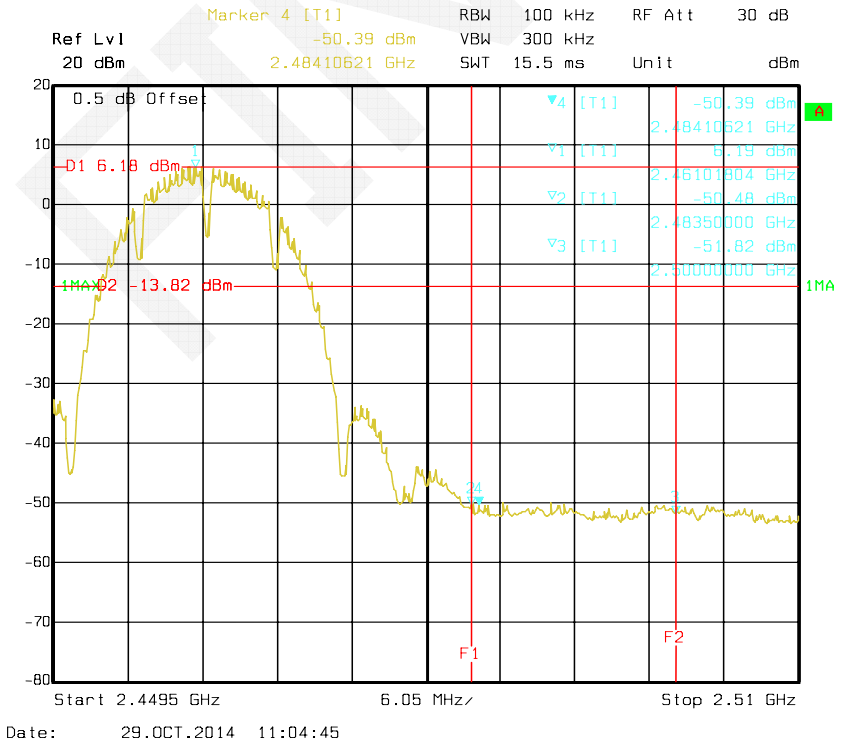
Test mode: Transmitting

Test Result: Compliant. Please refer to following plots.

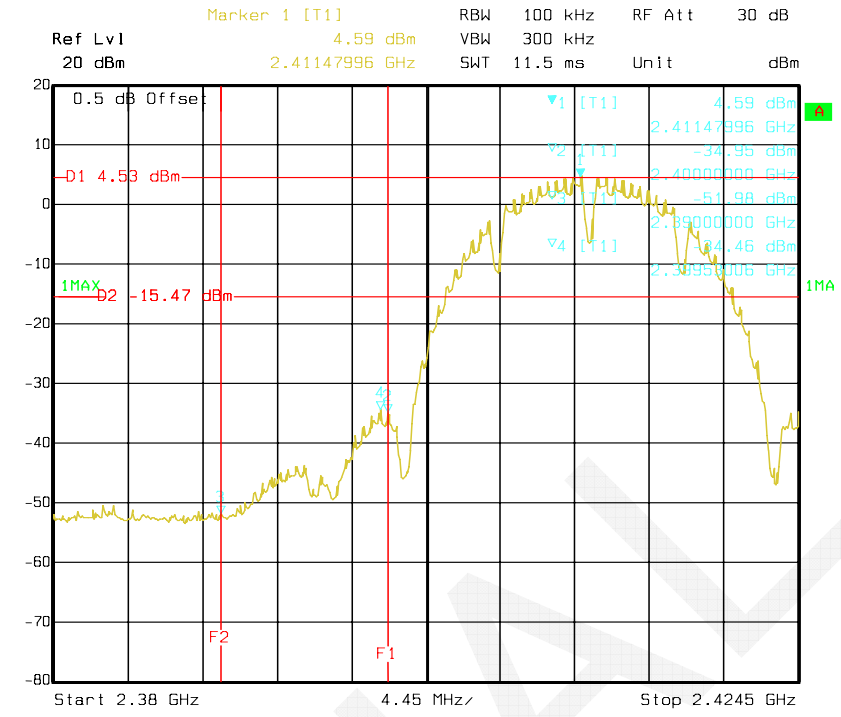
Chain 0: 802.11b: Band Edge, Left Side



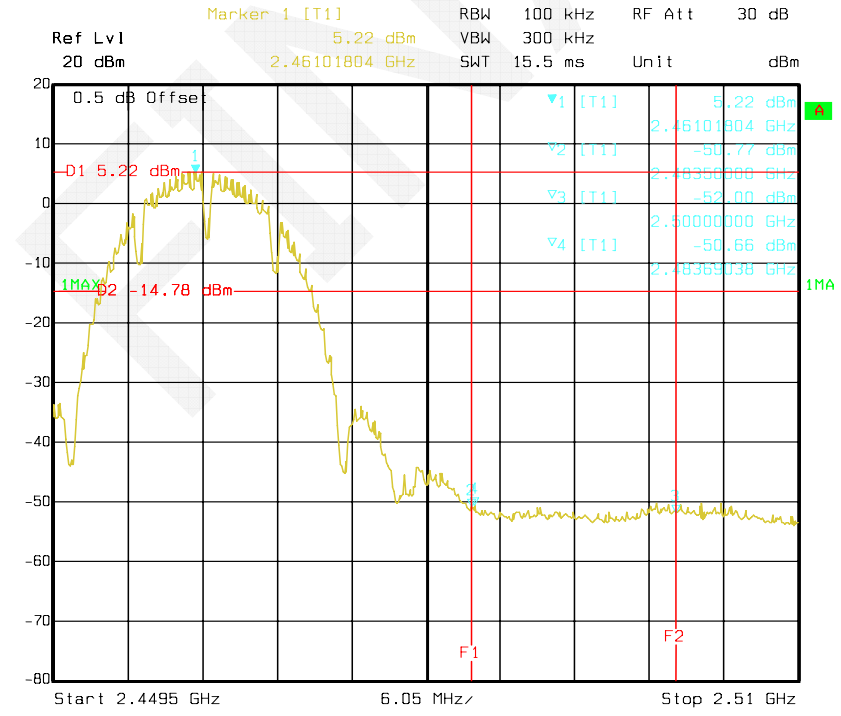
Chain 0: 802.11b: Band Edge, Right Side



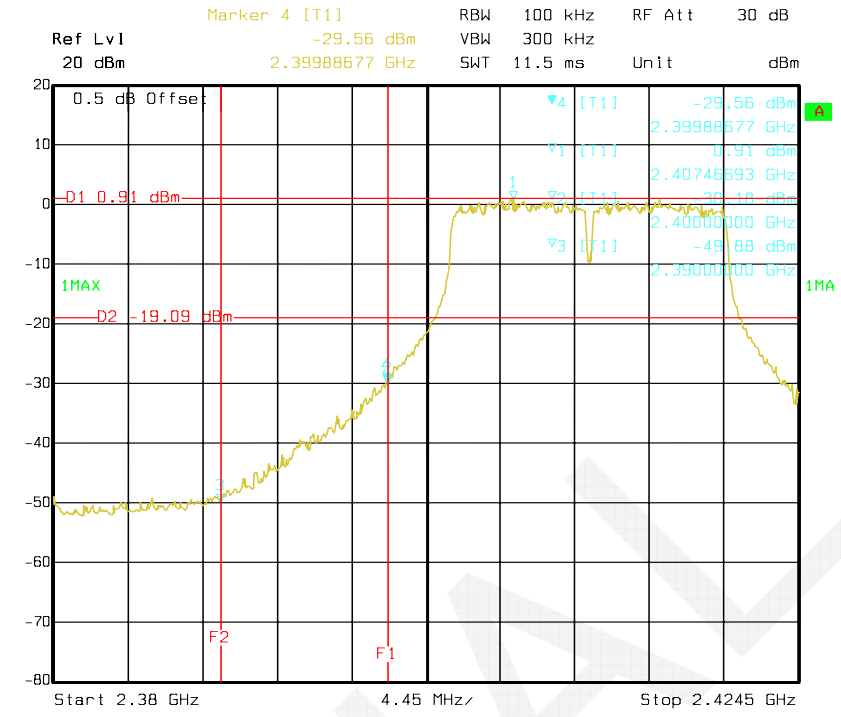
Chain 1: 802.11b: Band Edge, Left Side



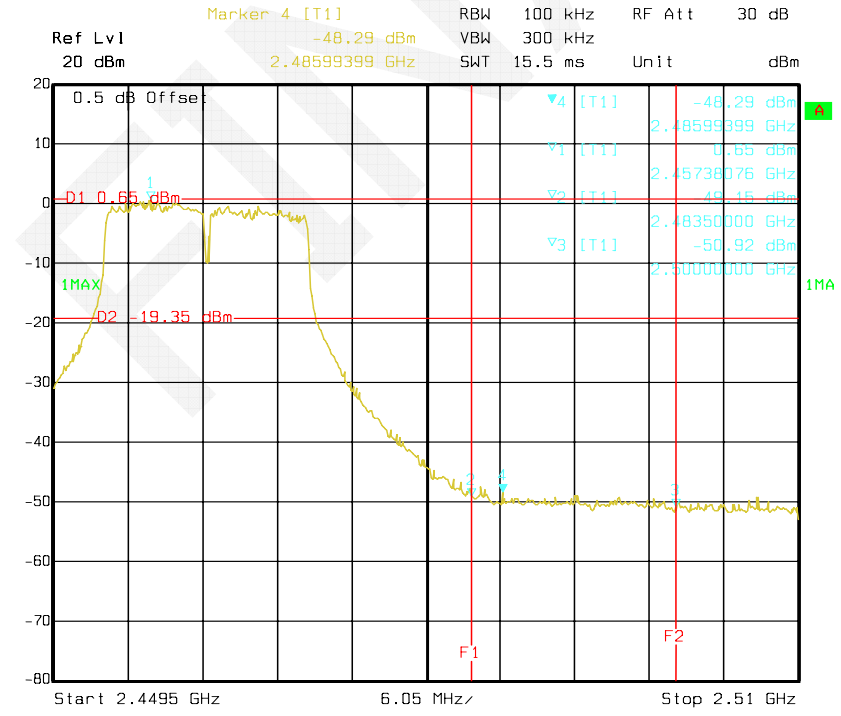
Chain 1: 802.11b: Band Edge, Right Side



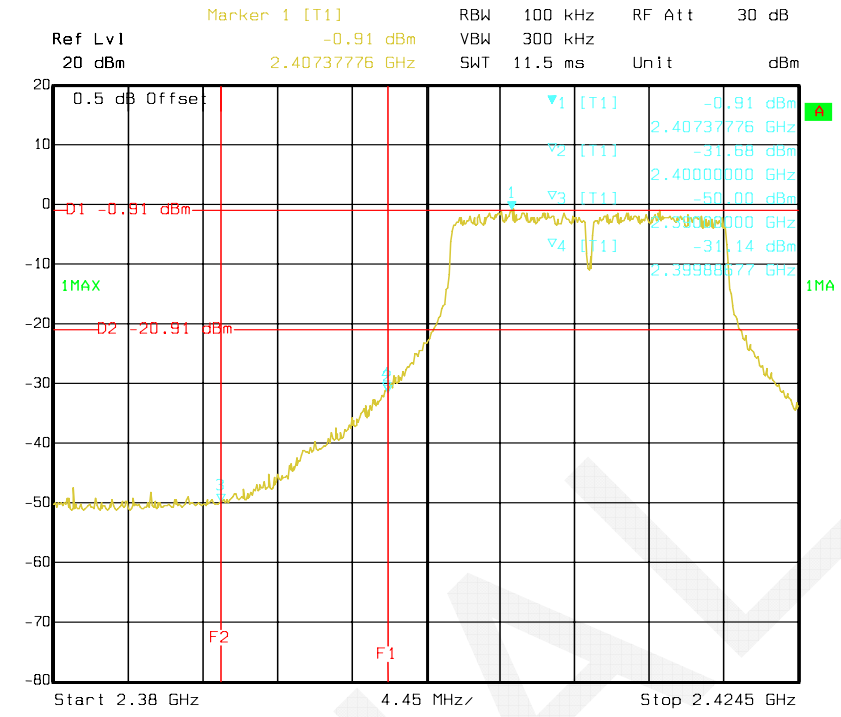
Chain 0: 802.11g: Band Edge, Left Side



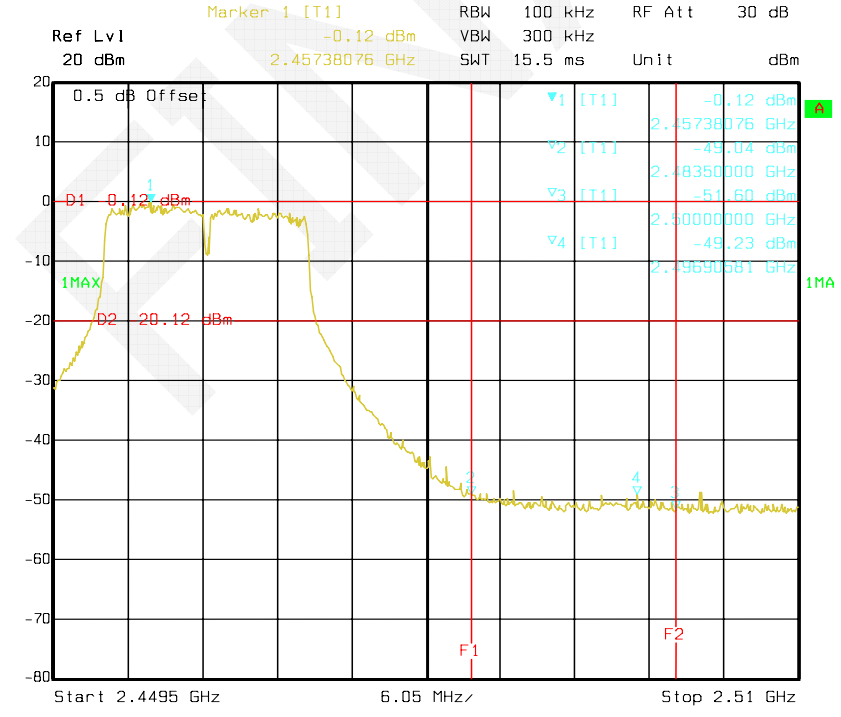
Chain 0: 802.11g: Band Edge, Right Side



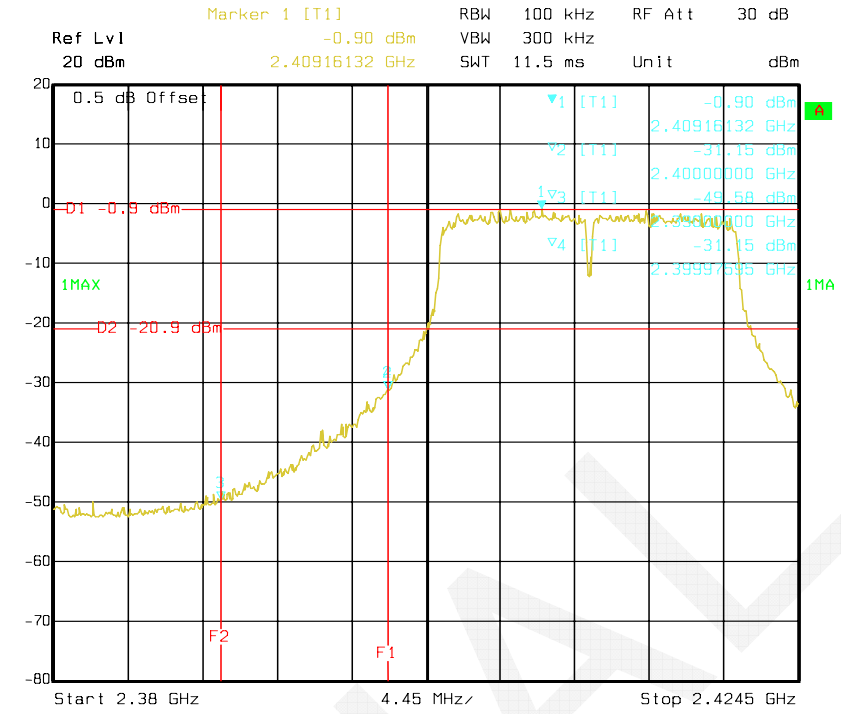
Chain 1: 802.11g: Band Edge, Left Side



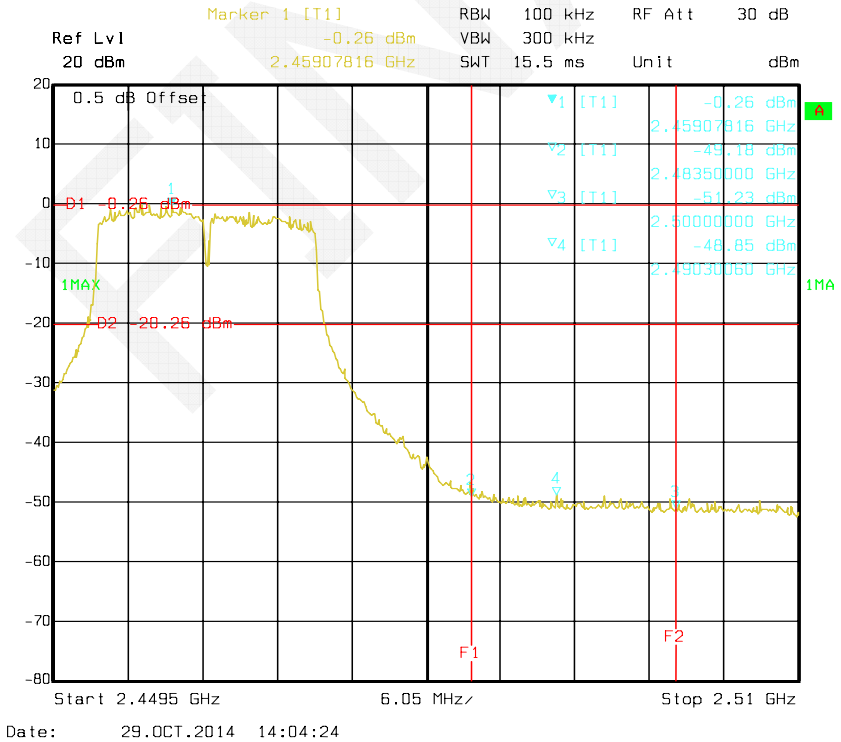
Chain 1: 802.11g: Band Edge, Right Side



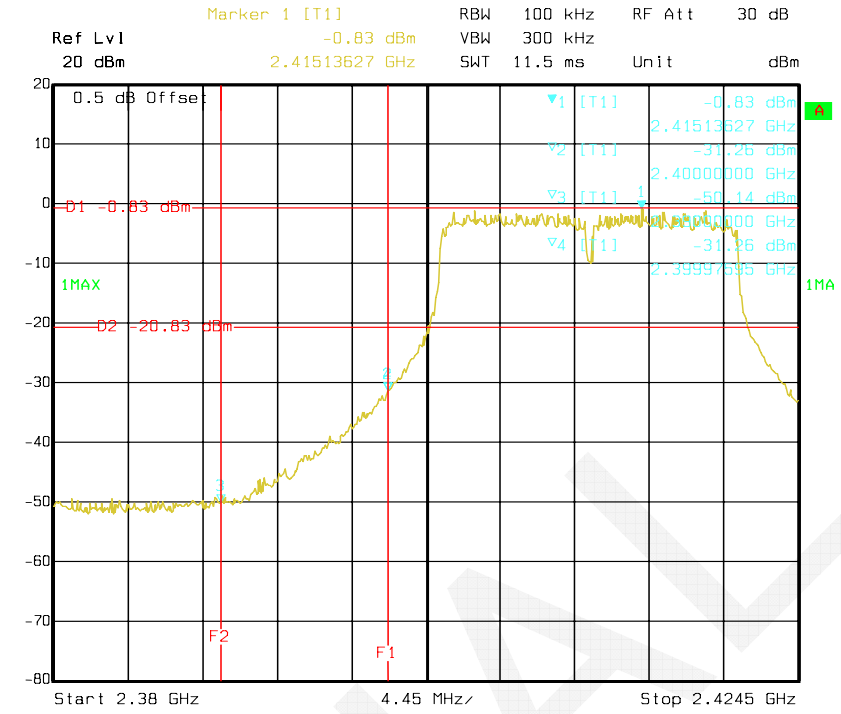
Chain 0: 802.11n ht20 Band Edge, Left Side



Chain 0: 802.11n ht20 Band Edge, Right Side

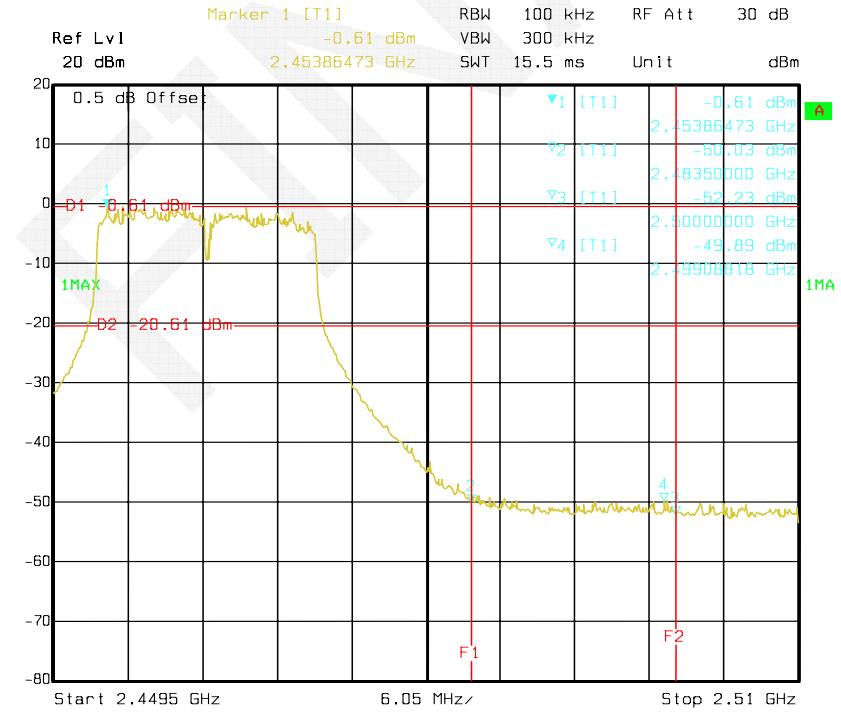


Chain 1: 802.11n ht20 Band Edge, Left Side



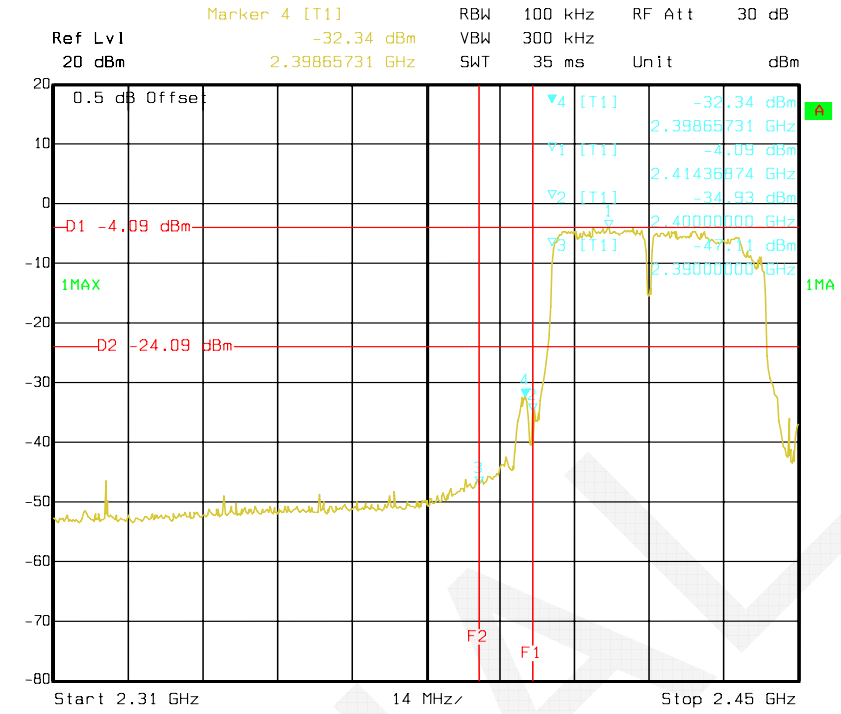
Date: 29.OCT.2014 18:19:33

Chain 1: 802.11n ht20 Band Edge, Right Side



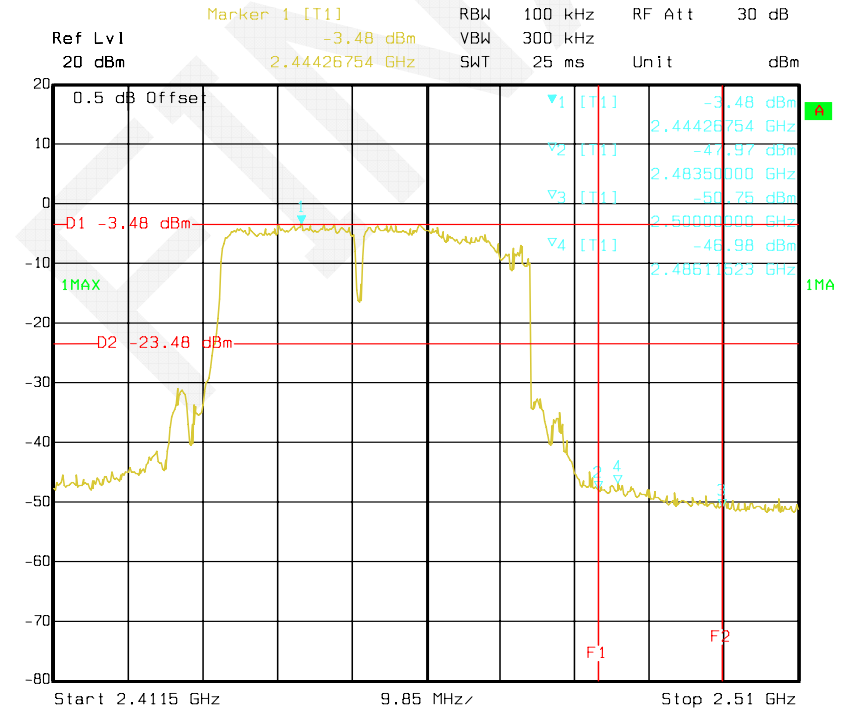
Date: 29.OCT.2014 18:22:49

Chain 0: 802.11n ht40 Band Edge, Left Side



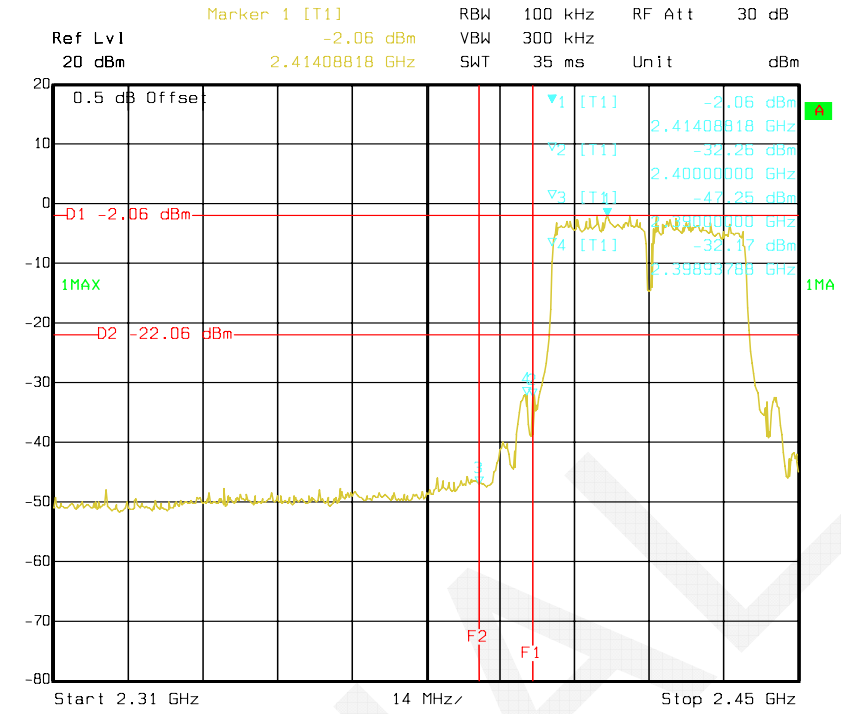
Date: 29.OCT.2014 15:07:33

Chain 0: 802.11n ht40 Band Edge, Right Side



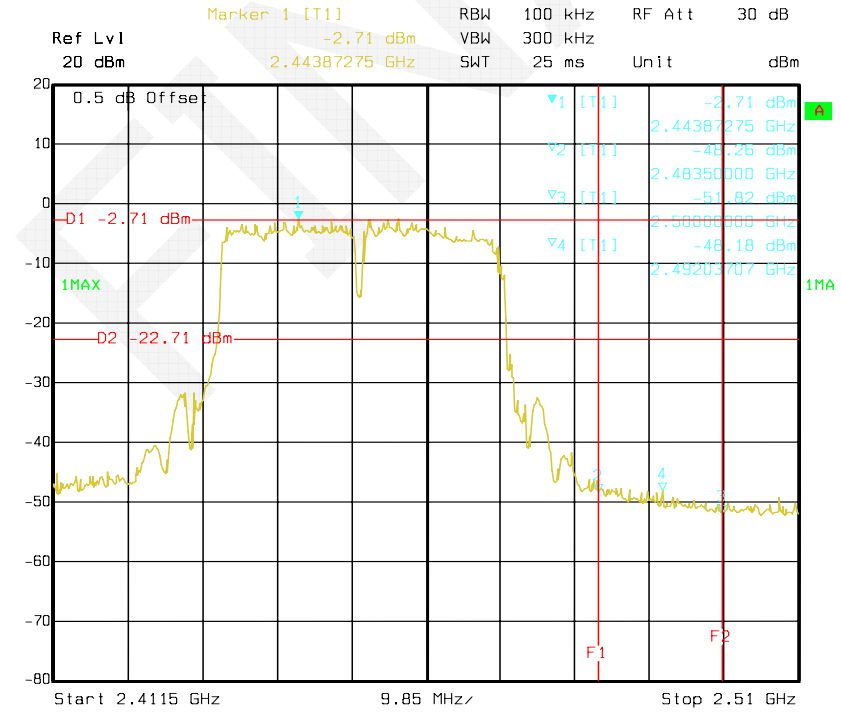
Date: 29.OCT.2014 15:10:47

Chain 1: 802.11n ht40 Band Edge, Left Side



Date: 29.OCT.2014 19:31:55

Chain 1: 802.11n ht40 Band Edge, Right Side



Date: 29.OCT.2014 19:34:09

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:	27.1 °C
Relative Humidity:	51 %
ATM Pressure:	100.9 kPa

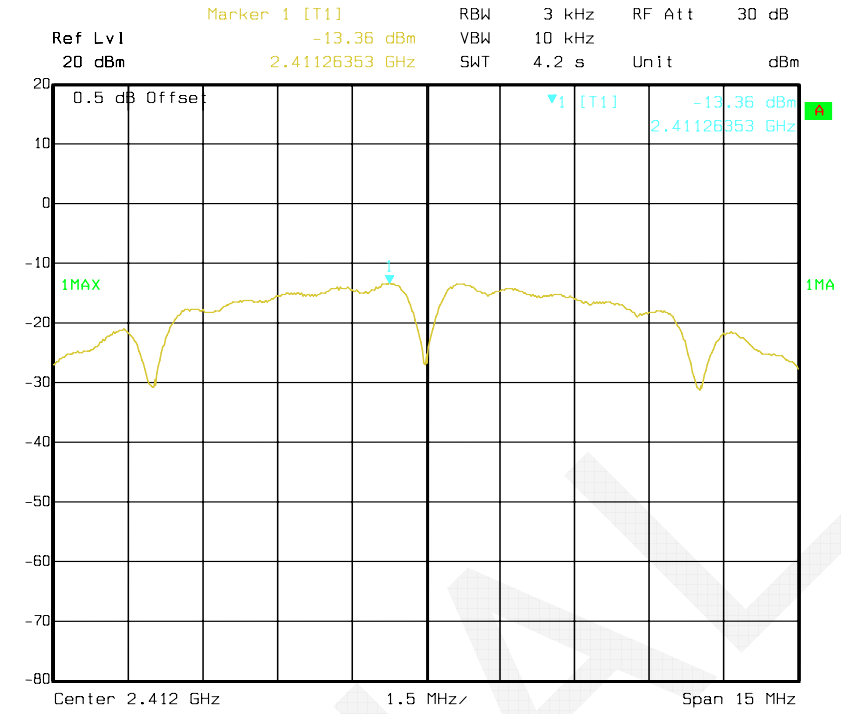
The testing was performed by Dean Liu on2014-10-29.

Test Mode: Transmitting

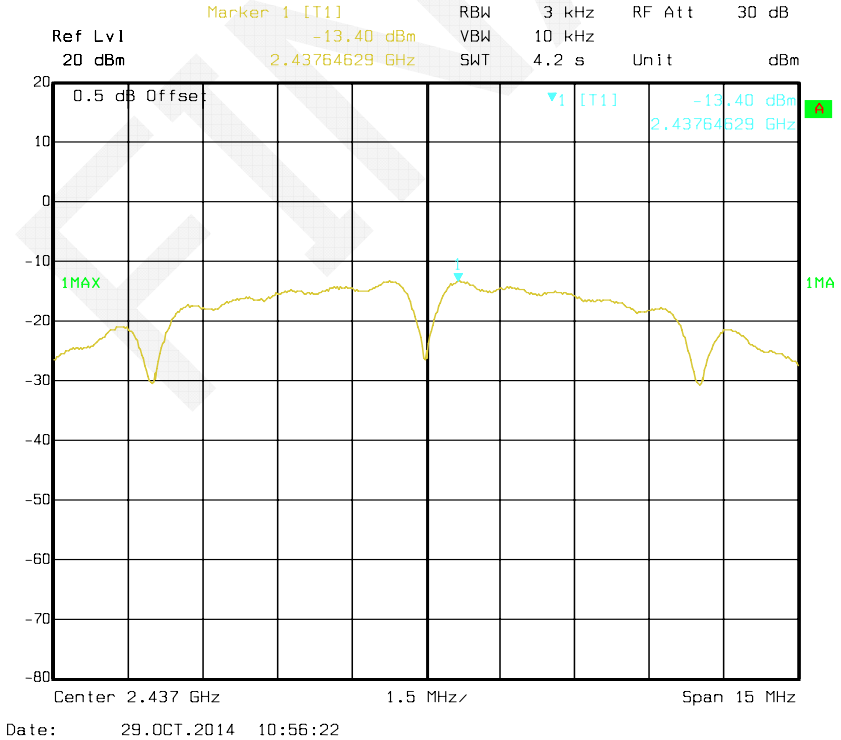
Test Result: Compliant. Please refer to the following table and plots

Test mode	Channel	Frequency (MHz)	PSD (dBm/3kHz)			Limit (dBm/3kHz)	Result
			Chain 0	Chain 1	Total		
802.11b	Low	2412	-13.36	-14.91	-11.06	≤8	PASS
	Middle	2437	-13.40	-14.64	-10.97	≤8	PASS
	High	2462	-13.17	-14.31	-10.69	≤8	PASS
802.11g	Low	2412	-15.21	-15.79	-12.48	≤8	PASS
	Middle	2437	-15.25	-15.60	-12.41	≤8	PASS
	High	2462	-15.04	-15.19	-12.10	≤8	PASS
802.11n ht20	Low	2412	-14.99	-15.75	-12.34	≤8	PASS
	Middle	2437	-14.76	-15.06	-11.90	≤8	PASS
	High	2462	-14.31	-15.35	-11.79	≤8	PASS
802.11n ht40	Low	2422	-16.51	-19.01	-14.57	≤8	PASS
	Middle	2437	-16.50	-18.46	-14.36	≤8	PASS
	High	2452	-16.08	-18.53	-14.12	≤8	PASS

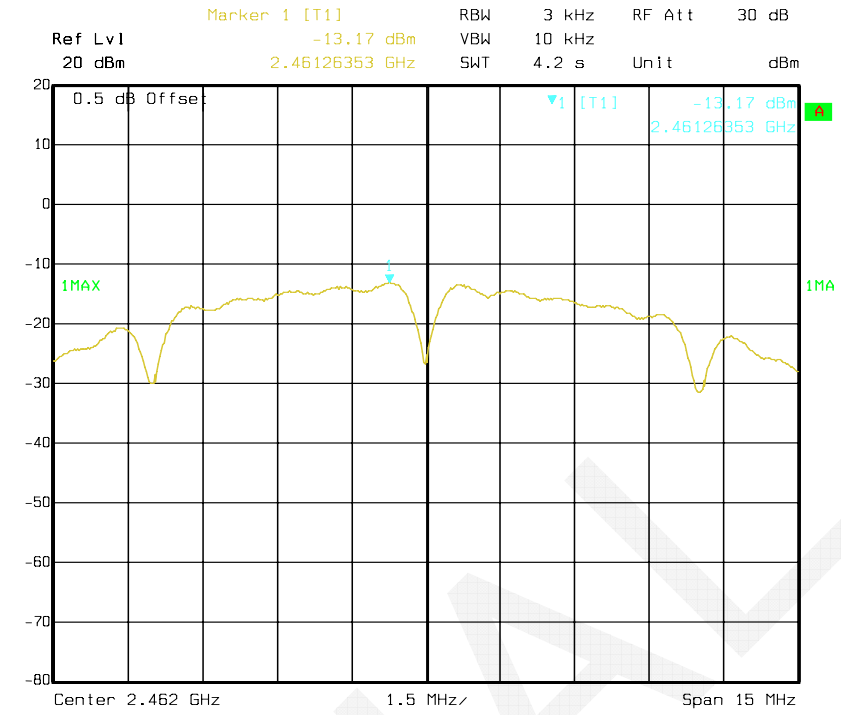
Chain 0: Power Spectral Density, 802.11b Low Channel



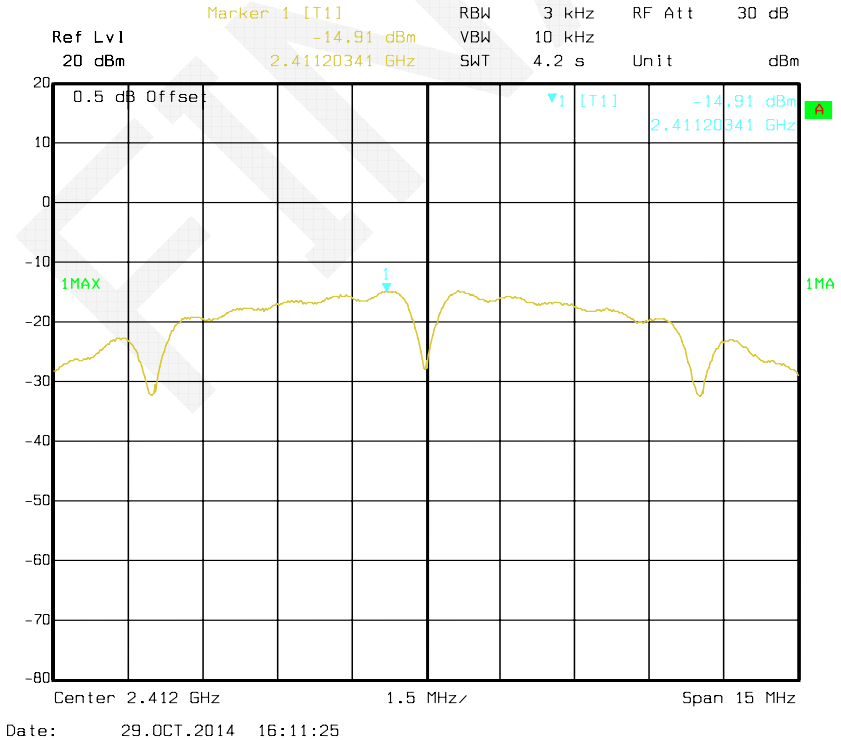
Chain 0: Power Spectral Density, 802.11b Middle Channel



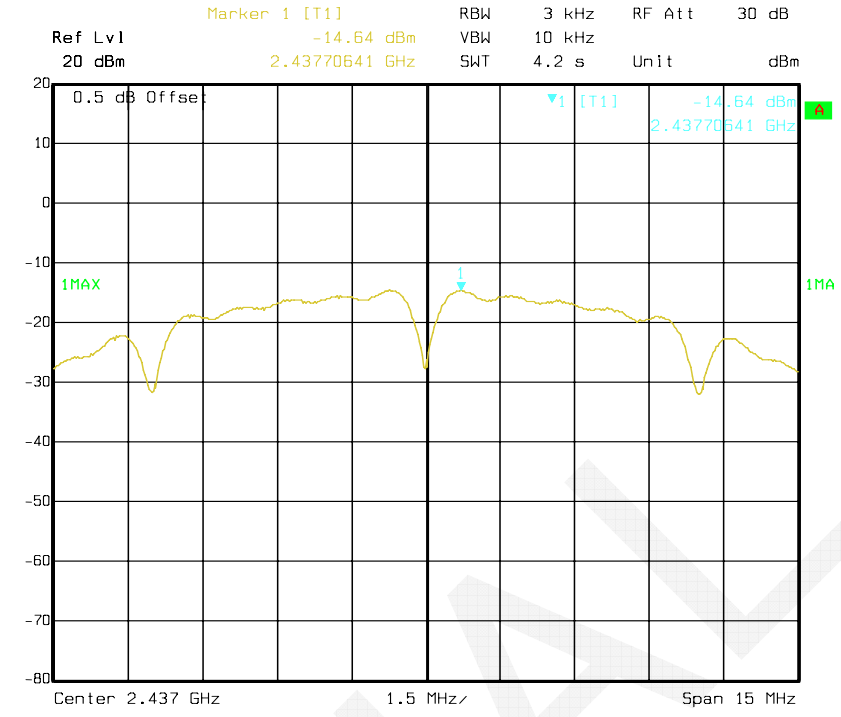
Chain 0: Power Spectral Density, 802.11b High Channel



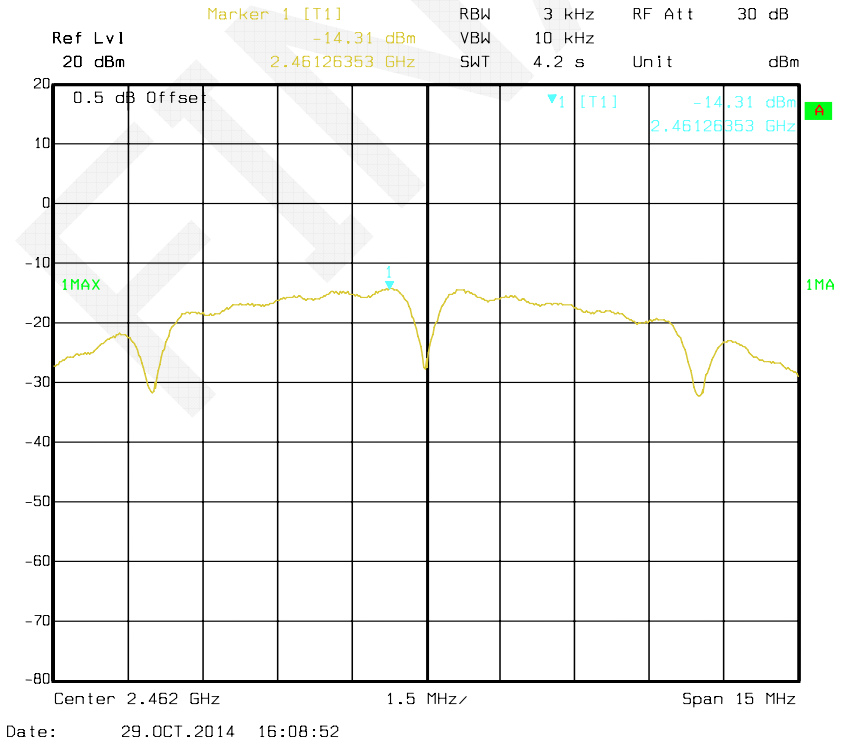
Chain 1: Power Spectral Density, 802.11b Low Channel



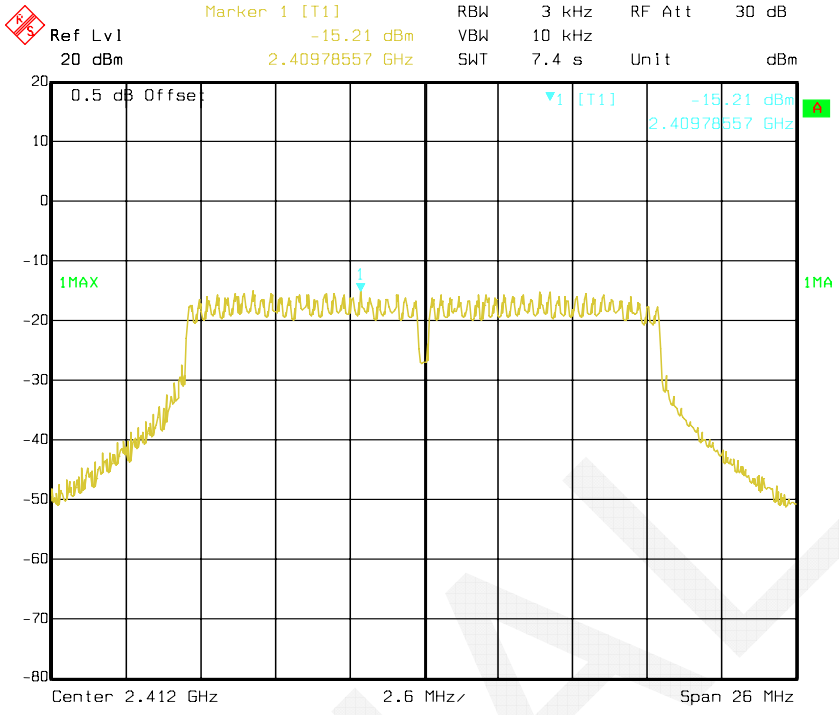
Chain 1: Power Spectral Density, 802.11b Middle Channel



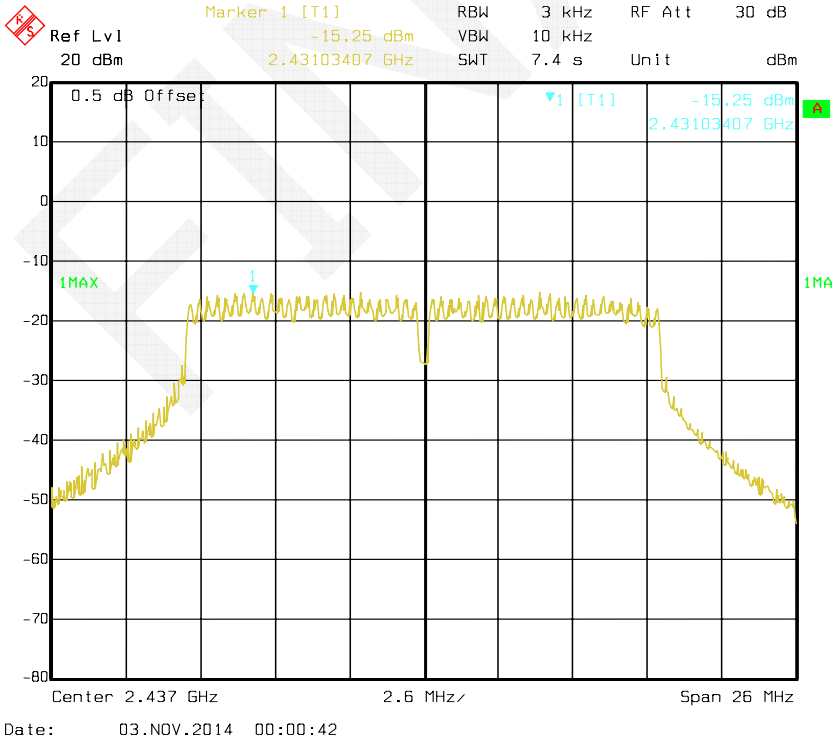
Chain 1: Power Spectral Density, 802.11b High Channel



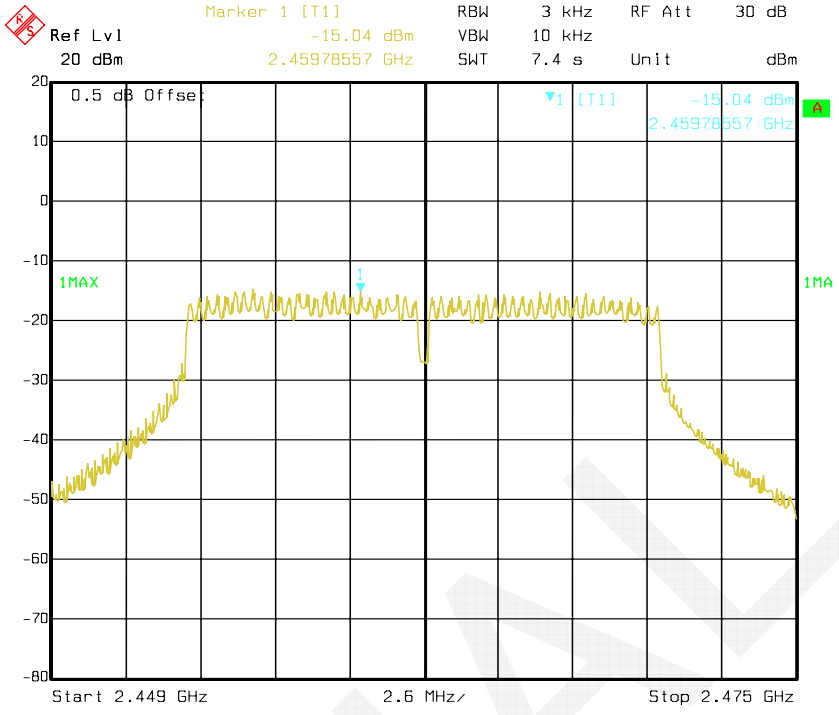
Chain 0: Power Spectral Density, 802.11g Low Channel



Chain 0: Power Spectral Density, 802.11g Middle Channel



Chain 0: Power Spectral Density, 802.11g High Channel



Date: 03.NOV.2014 00:02:22

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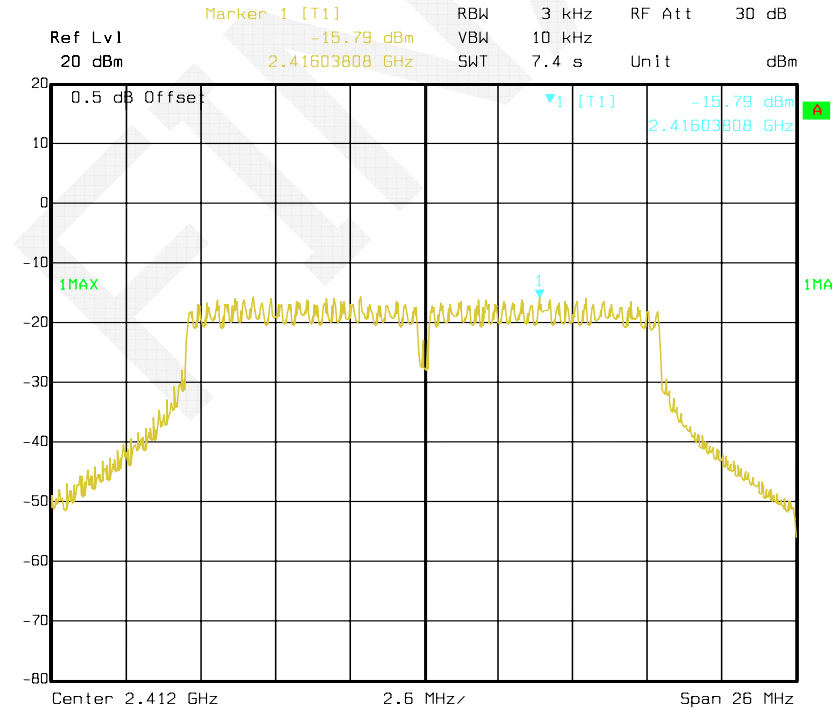

Date: 29.OCT.2014 16:55:51

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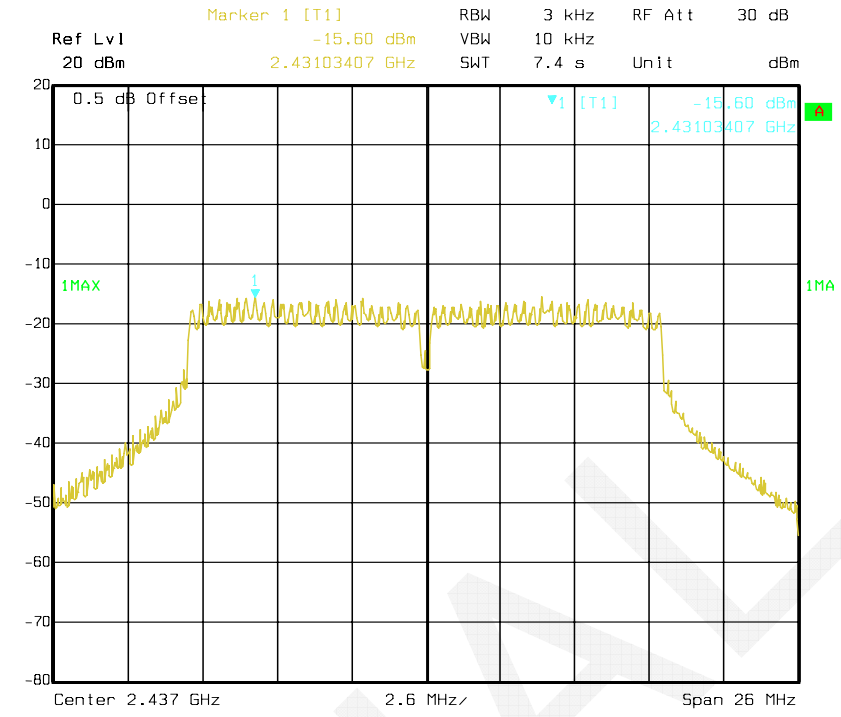
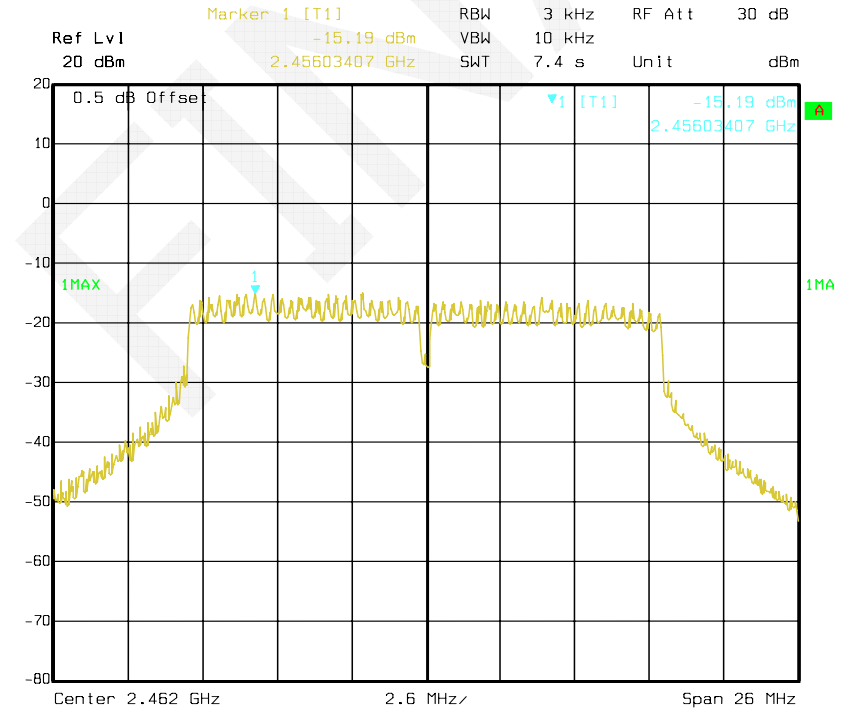
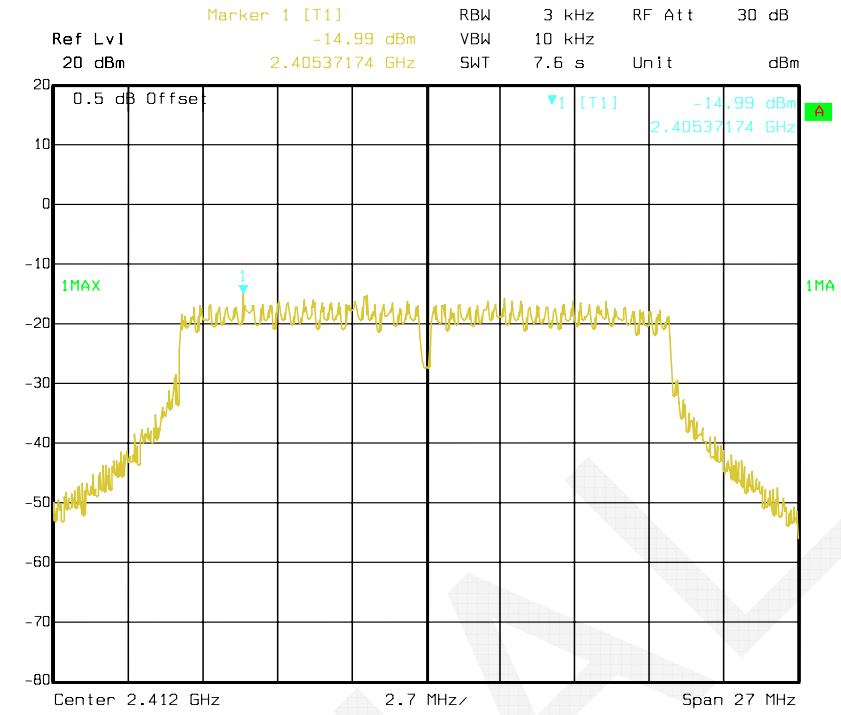


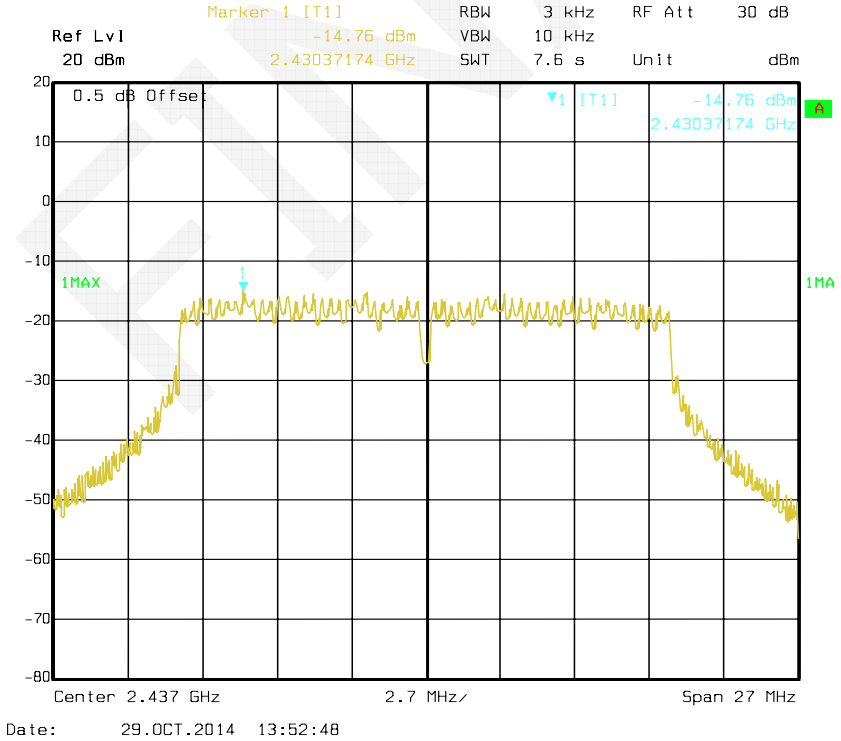
Chain 1: Power Spectral Density, 802.11g High Channel



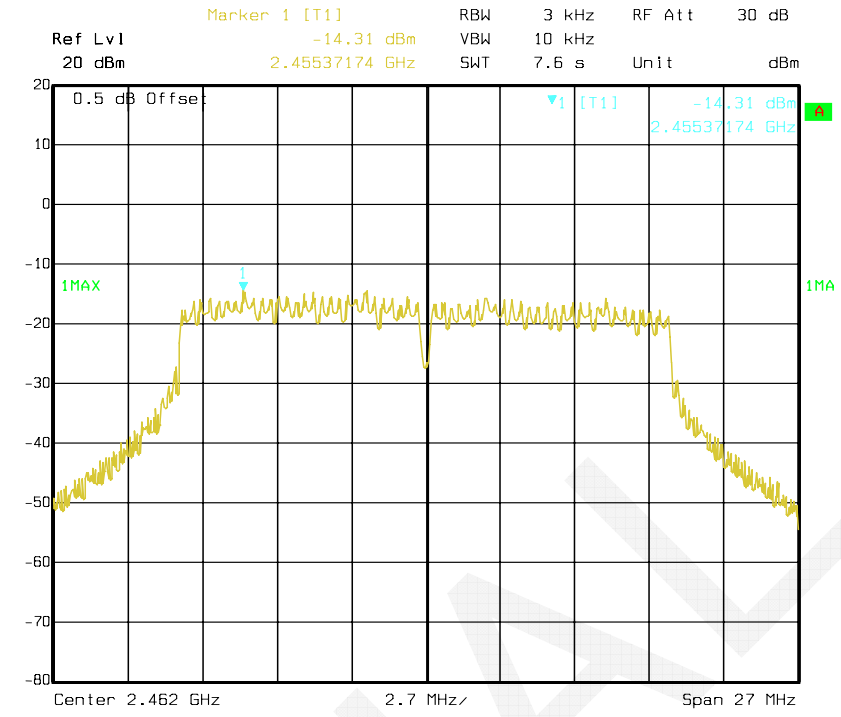
Chain 0: Power Spectral Density, 802.11n ht20 Low Channel



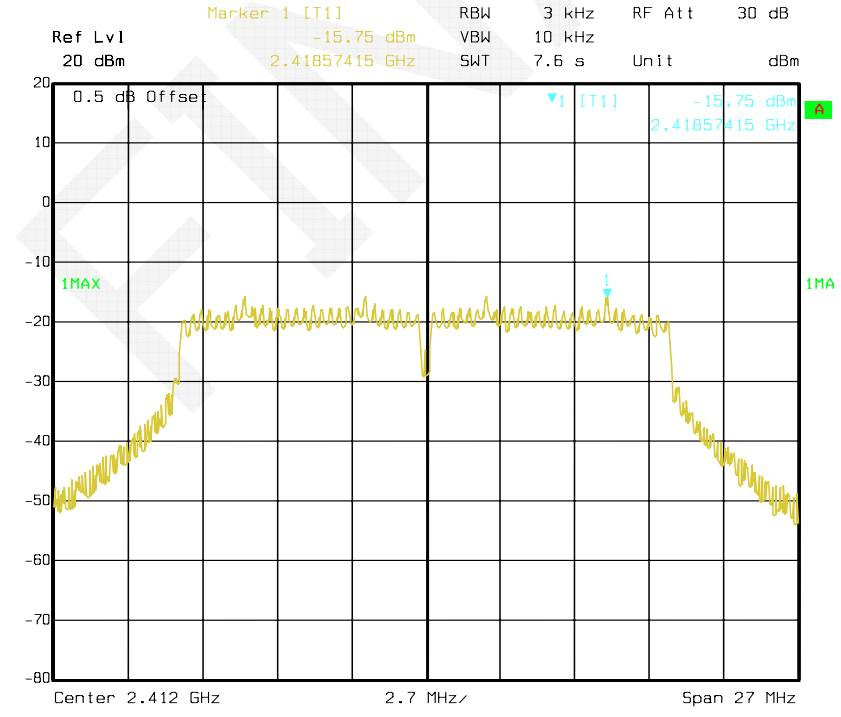
Chain 0: Power Spectral Density, 802.11n ht20 Middle Channel



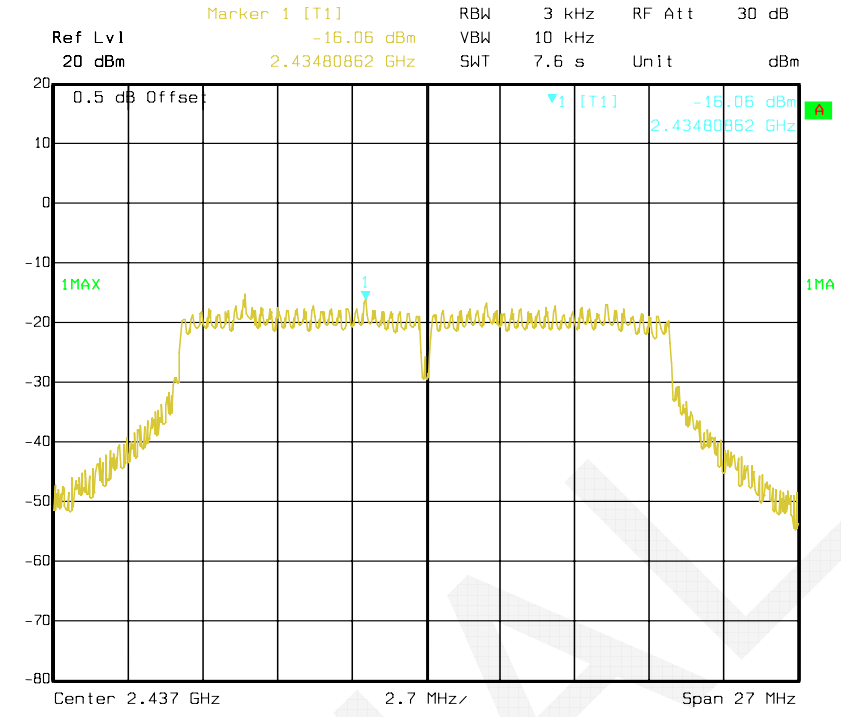
Chain 0: Power Spectral Density, 802.11n ht20 High Channel



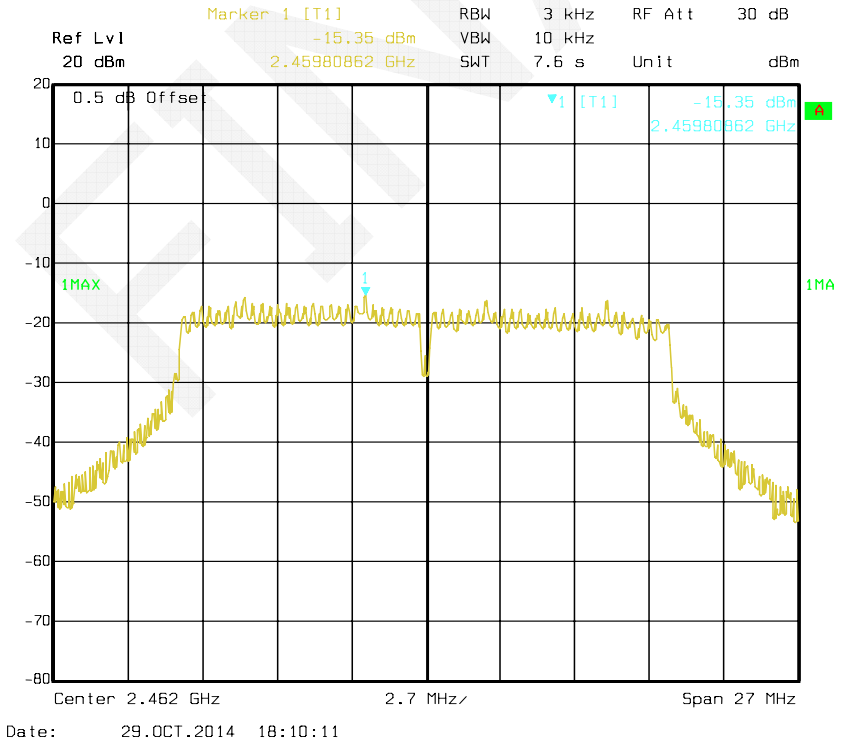
Chain 1: Power Spectral Density, 802.11n ht20 Low Channel



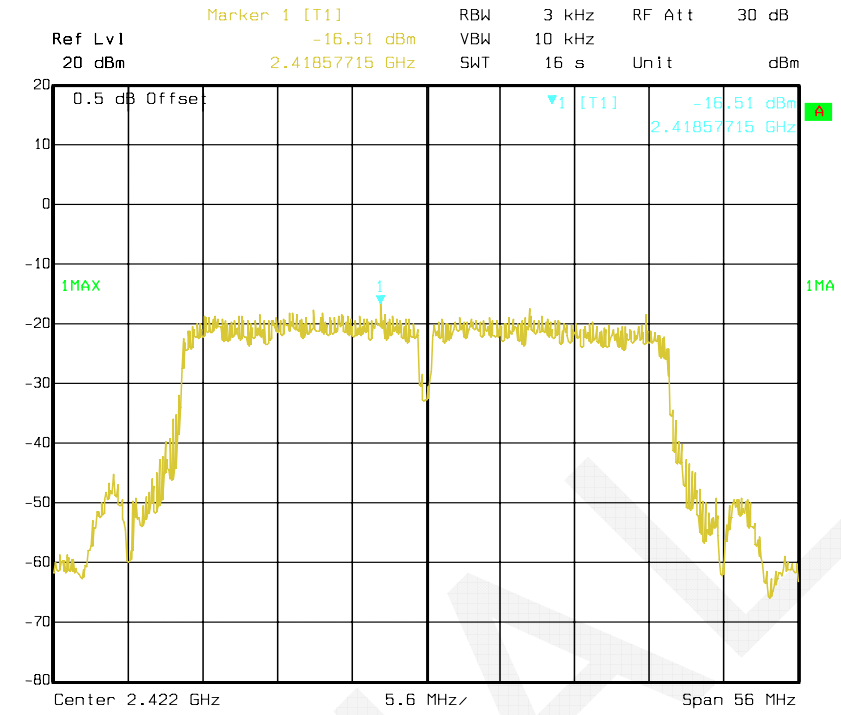
Chain 1: Power Spectral Density, 802.11n ht20 Middle Channel



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

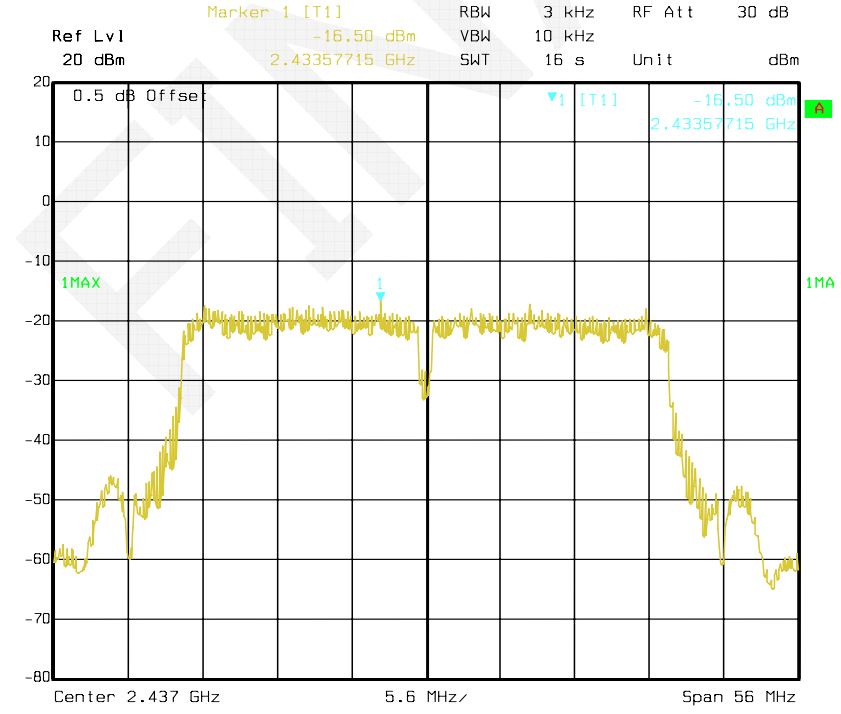


Chain 0: Power Spectral Density, 802.11n ht40 Low Channel



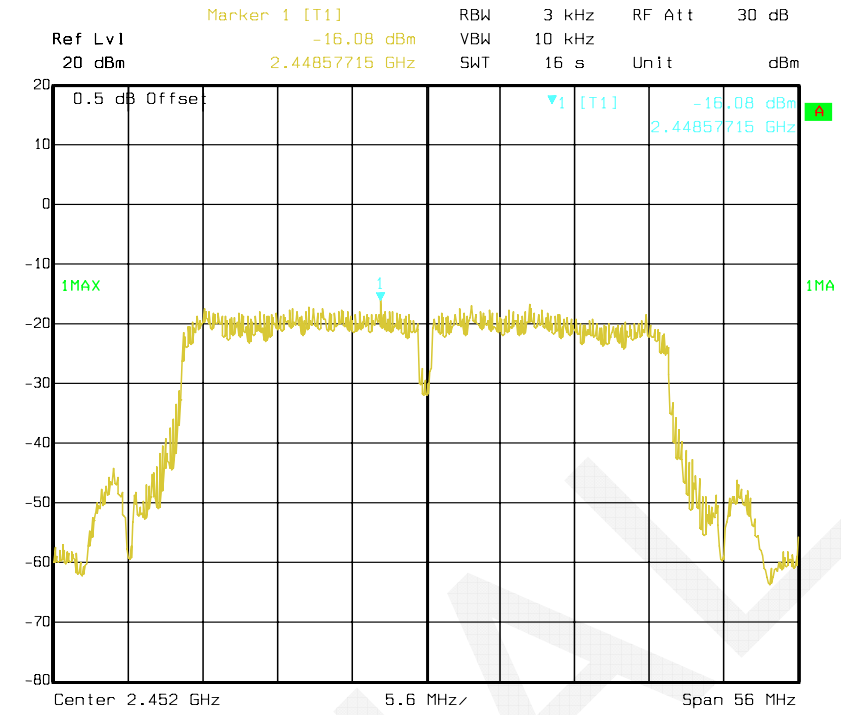
Date: 29.OCT.2014 15:01:51

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

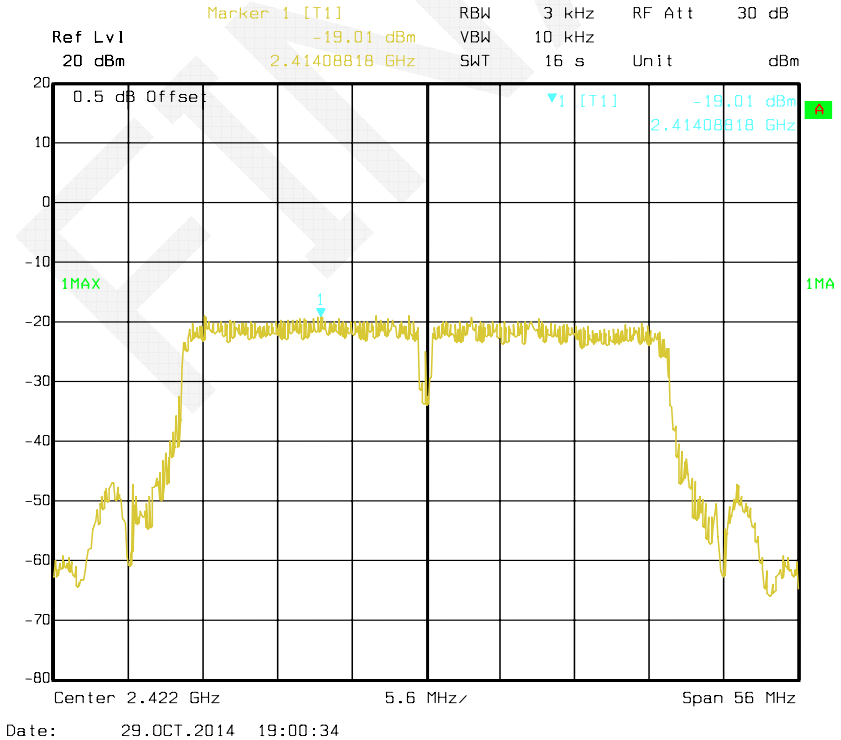


Date: 29.OCT.2014 14:59:39

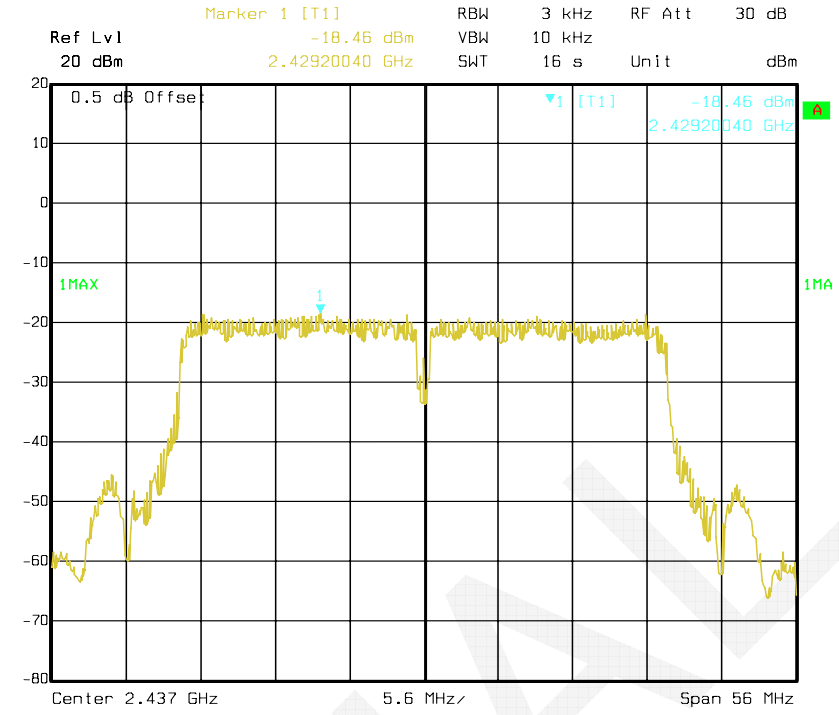
Chain 0: Power Spectral Density, 802.11n ht40 High Channel



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

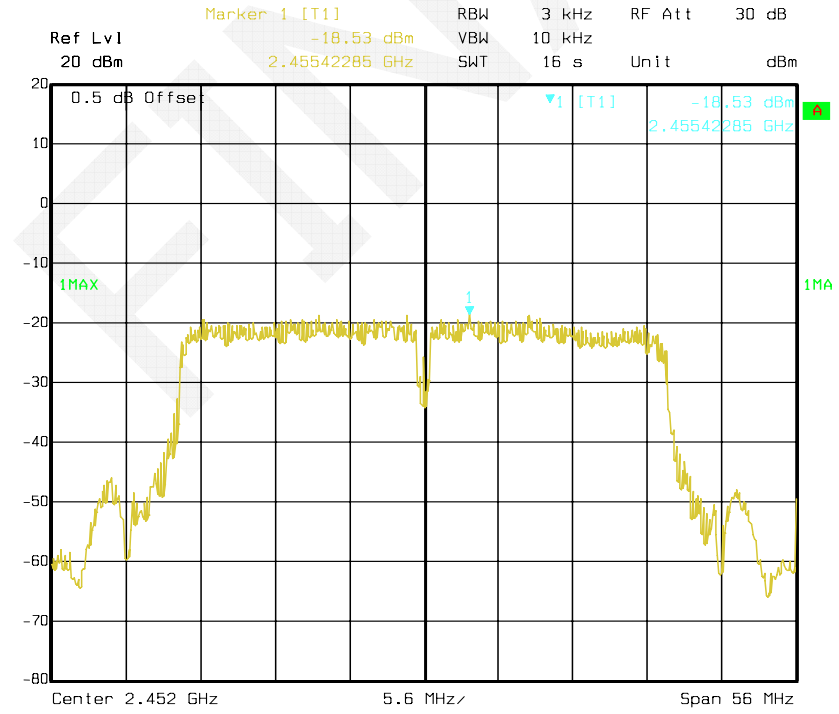


Chain 1: Power Spectral Density, 802.11n ht40 Middle Channel



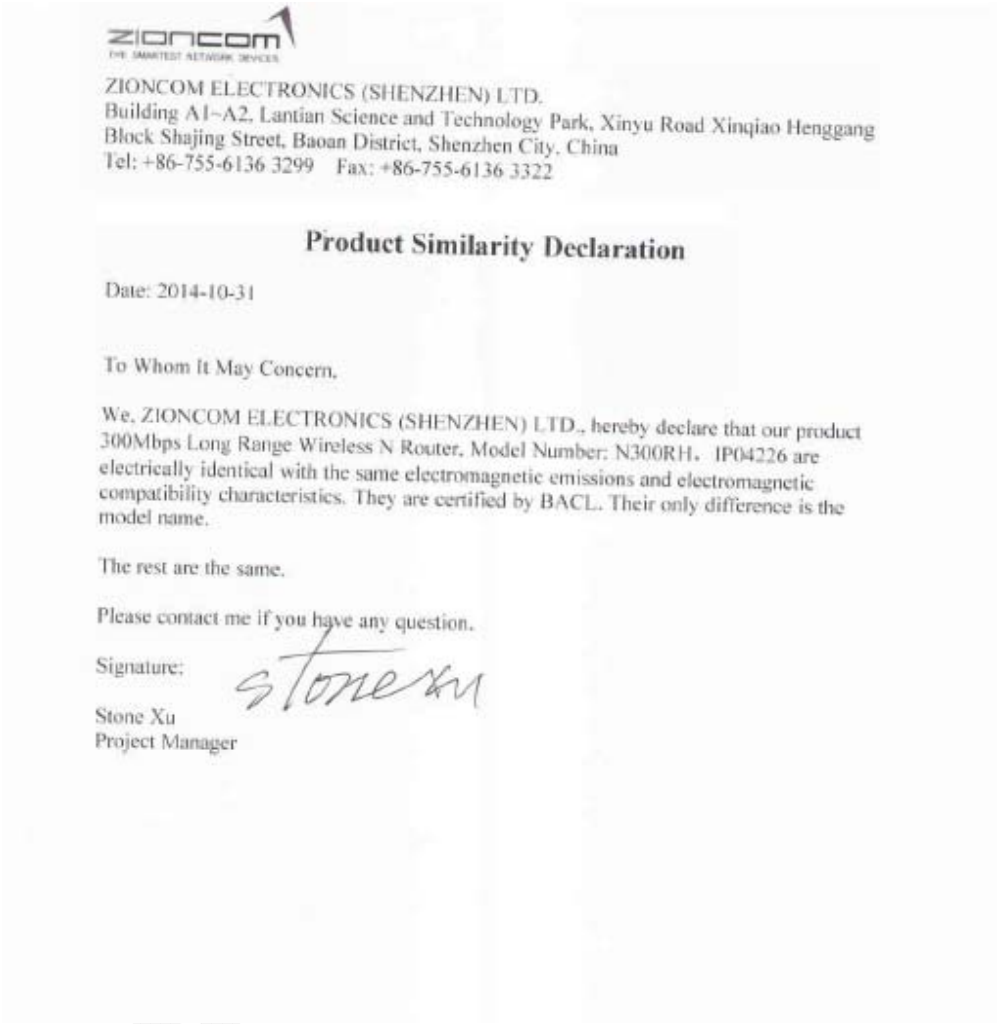
Date: 29.OCT.2014 19:01:39

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



Date: 29.OCT.2014 19:04:27

DECLARATION LETTER



ZIONCOM ELECTRONICS (SHENZHEN) LTD.
Building A1~A2, Lantian Science and Technology Park, Xinyu Road Xinqiao Henggang Block Shajing Street, Baoan District, Shenzhen City, China
Tel: +86-755-6136 3299 Fax: +86-755-6136 3322

Product Similarity Declaration

Date: 2014-10-31

To Whom It May Concern,

We, ZIONCOM ELECTRONICS (SHENZHEN) LTD., hereby declare that our product 300Mbps Long Range Wireless N Router, Model Number: N300RH, IP04226 are electrically identical with the same electromagnetic emissions and electromagnetic compatibility characteristics. They are certified by BACL. Their only difference is the model name.

The rest are the same.

Please contact me if you have any question.

Signature:

Stone Xu
Project Manager

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