FCC PART 15.247

TEST REPORT

For

SHENZHEN IP-COM NETWORKS CO.,LTD.

Unit A, First Floor, Tower E3, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, China. 518052

FCC ID: 2ABZMAP340

Report Type:	Product Type:
Original Report	Wireless Access Point

Test Engineer:	Dean Lau
Report Number:	RDG151223003-00A
Report Date:	2016-01-05
Reviewed By:	Sula Huang RF Leader
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

TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *SHENZHEN IP-COM NETWORKS CO.,LTD.* 's product, model number: AP340 *(FCC ID: 2ABZMAP340)* (the "EUT") in this report was a *Wireless Access Point,* which was measured approximately: 19.95cm (L) x19.95cm (W) x 4.25 cm (H), rated input voltage: DC51V from adapter.

Adapter information:
Model:BN031-A65051
Input: AC100-240V, 50/60 Hz,1.5A;
Output: DC 51V-1.25A

All measurement and test data in this report was gathered from production sample serial number: 151223003 (Assigned by BACL Dongguan). The EUT was received on 2015-12-24.

Objective

This report is prepared on behalf of *SHENZHEN IP-COM NETWORKS CO.,LTD.* in accordance with Part 2, Subpart J, Part 15, Subparts A, B and C of the Federal Communications Commission's rules

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

Related Submittal(s)/Grant(s)

No related submittal(s)/grant(s).

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (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 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 WLAN, 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 worst condition (maximum power with 100% duty cycle) was setting by the software as following table:

Test Mode	Test Software Version	Mtool 2.0.0.3					
802.11b	Test Frequency	2412 MHz		2437 MHz		2462 MHz	
	Data Rate	1Mbps		1Mbps		1Mbps	
	Chain	Chain0	Chain1	Chain0	Chain1	Chain0	Chain1
	Power Level Setting	106	108	106	108	107	108
802.11g	Test Frequency	2412 MHz		2437 MHz		2462 MHz	
	Data Rate	6Mbps		6Mbps		6Mbps	
	Chain	Chain0	Chain1	Chain0	Chain1	Chain0	Chain1
	Power Level Setting	90	100	96	100	96	100
802.11n ht20	Test Frequency	2412 MHz		2437 MHz		2462 MHz	
	Data Rate	MCS8		MCS8		MCS8	
	Chain	Chain0	Chain1	Chain0	Chain1	Chain0	Chain1
	Power Level Setting	80	80	80	80	80	80
802.11n ht40	Test Frequency	2422 MHz		2437 MHz		2452 MHz	
	Data Rate	MCS8		MCS8		MCS8	
	Chain	Chain0	Chain1	Chain0	Chain1	Chain0	Chain1
	Power Level Setting	76	76	76	76	76	76

Support Equipment List and Details

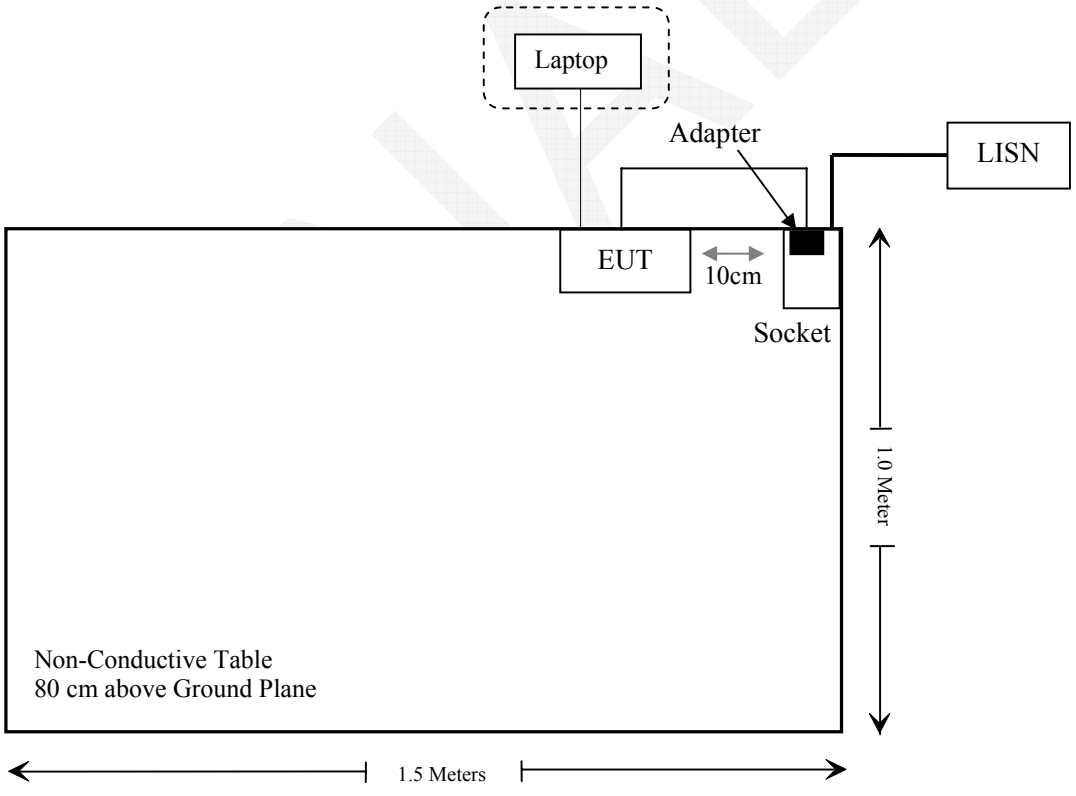
Manufacturer	Description	Model	Serial Number
DELL	Laptop	PP11L	QDS-BRCM1017

External I/O Cable

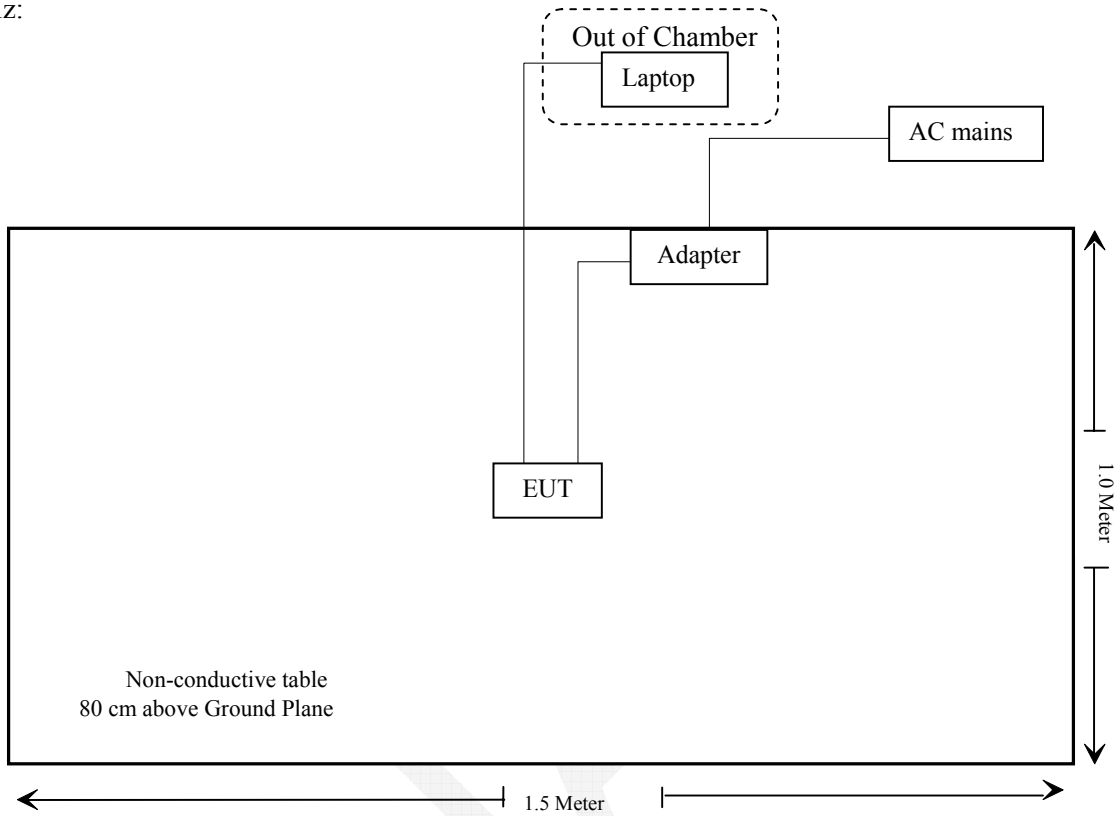
Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
RJ45	No	No	10	LAN port of EUT	Laptop

Block Diagram of Test Setup

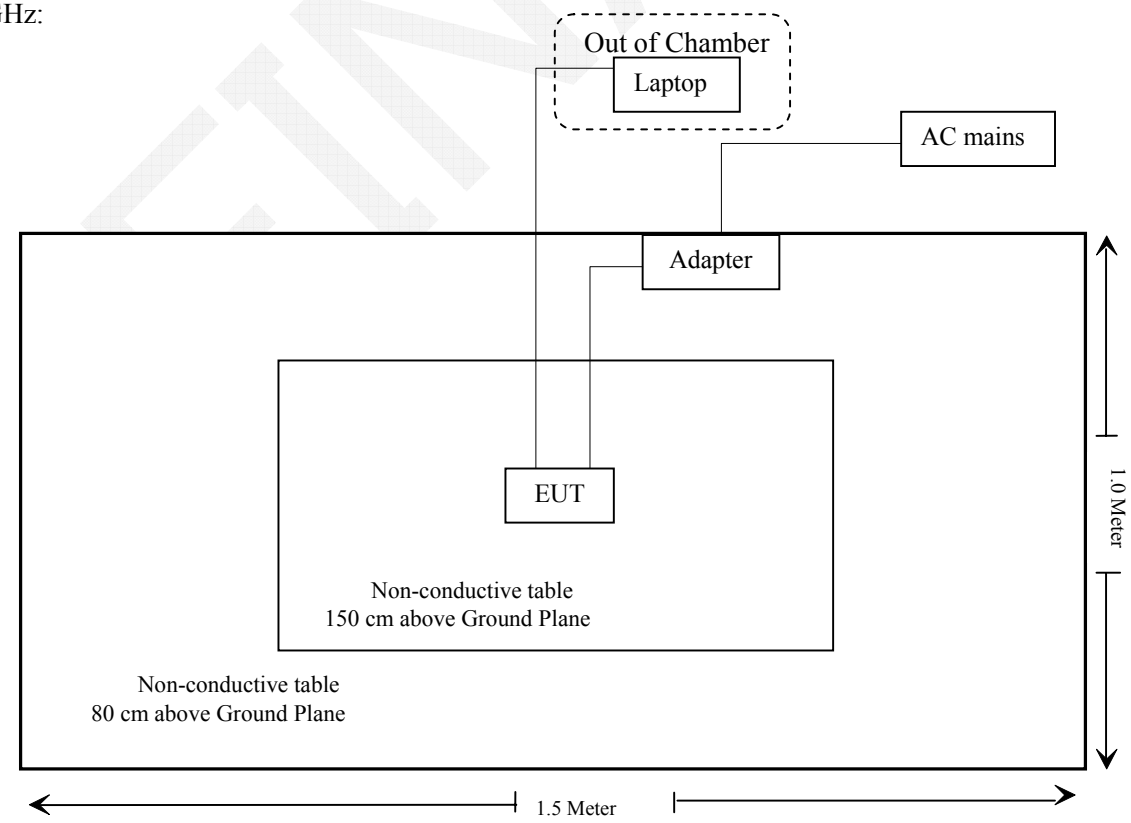
AC Line Conducted Emissions



Below1 GHz:



Above 1 GHz:



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:

Frequency Range (MHz)	**Antenna Gain**		**Tune-up Power**		**Evaluation Distance (cm)**	**Power Density (mW/cm^2)**	**MPE Limit (mW/cm^2)**
	(dBi)	**(numeric)**	**(dBm)**	**(mW)**			
2412-2462	3.43	2.20	29.5	891.25	20	0.390	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 2T2R internal undetachable 2.4G antennas and the maximum each antenna gain is 3.43 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.

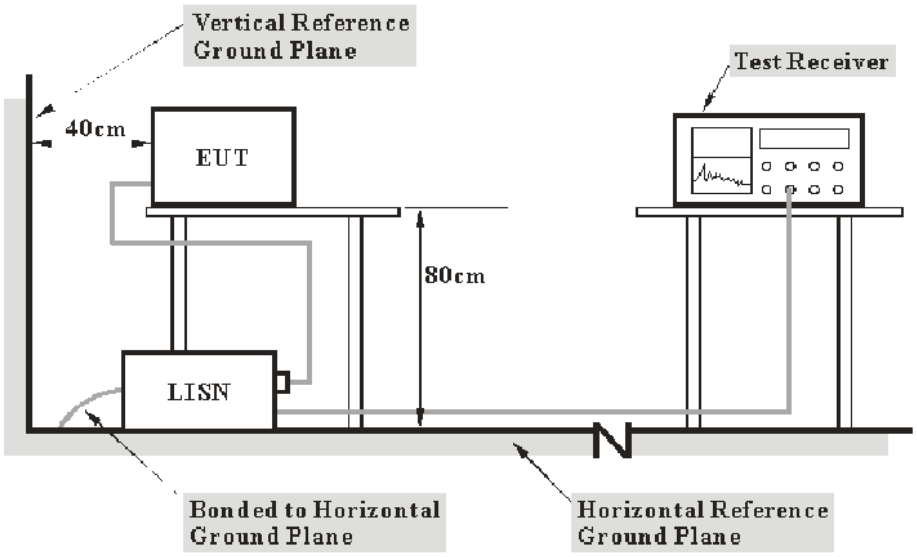
Based on CISPR 16-4-2-2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.46 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cispr}

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

Note: The $U_{lab} > U_{cispr}$, so the U_{lab} is add in the calculation.

EUT Setup



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

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

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

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter was connected to the first LISN.

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

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

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

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

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

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

Margin = Limit – Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2015-12-10	2016-12-09
R&S	L.I.S.N	ESH2-Z5	892107/021	2015-07-16	2016-07-15
R&S	Two-line V-network	ENV 216	3560.6550.12	2015-11-26	2016-11-25
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:

5.1 dB at **01.065081 MHz** in the **Line** conducted (Powered by POE)

Test Data

Environmental Conditions

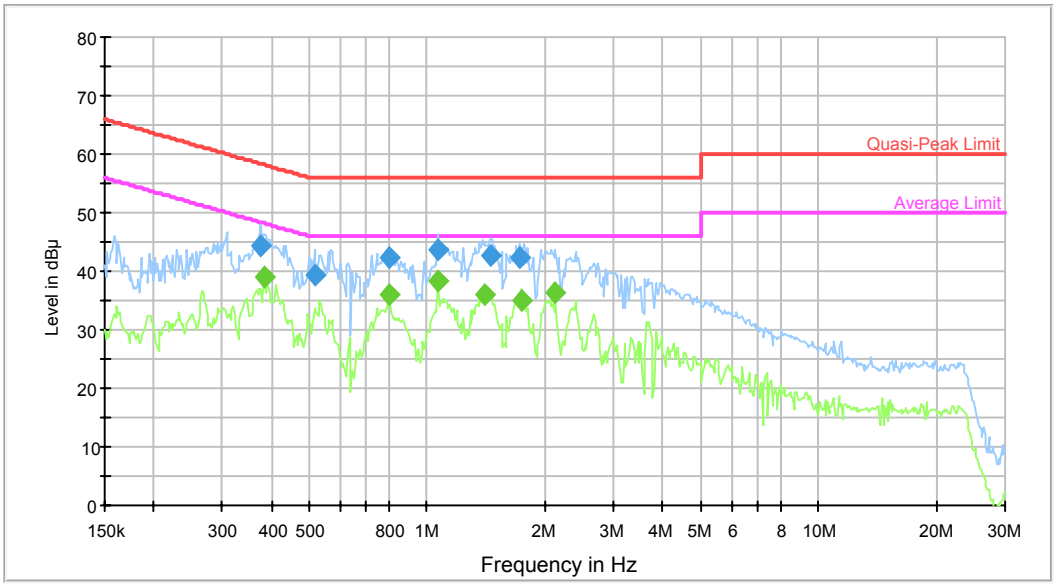
Temperature:	25.5°C
Relative Humidity:	61 %
ATM Pressure:	101.7kPa

The testing was performed by Dean Lau on 2015-12-25

Test Mode: Transmitting

Power by Adapter

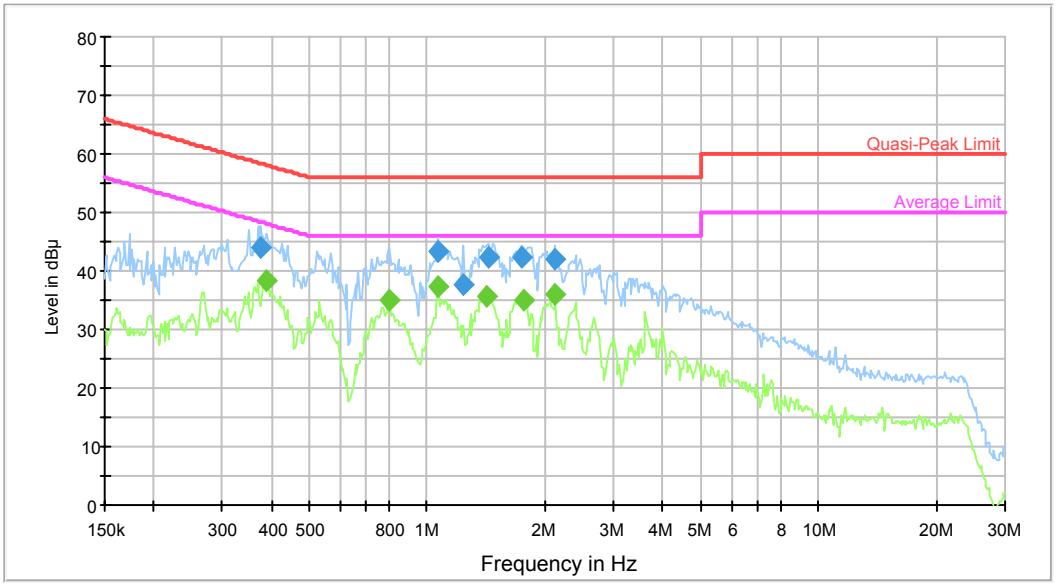
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.375019	44.3	9.000	L1	9.7	14.1	58.4	Compliance
0.515791	39.4	9.000	L1	9.8	16.6	56.0	Compliance
0.799472	42.3	9.000	L1	9.8	13.7	56.0	Compliance
1.065081	43.6	9.000	L1	9.8	12.4	56.0	Compliance
1.453260	42.6	9.000	L1	9.8	13.4	56.0	Compliance
1.717965	42.4	9.000	L1	9.8	13.6	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.384091	38.9	9.000	L1	9.8	9.3	48.2	Compliance
0.799472	36.0	9.000	L1	9.8	10.0	46.0	Compliance
1.065081	38.4	9.000	L1	9.8	7.6	46.0	Compliance
1.407671	35.9	9.000	L1	9.8	10.1	46.0	Compliance
1.745563	35.0	9.000	L1	9.8	11.0	46.0	Compliance
2.130339	36.5	9.000	L1	9.8	9.5	46.0	Compliance

AC120 V, 60 Hz, Neutral:

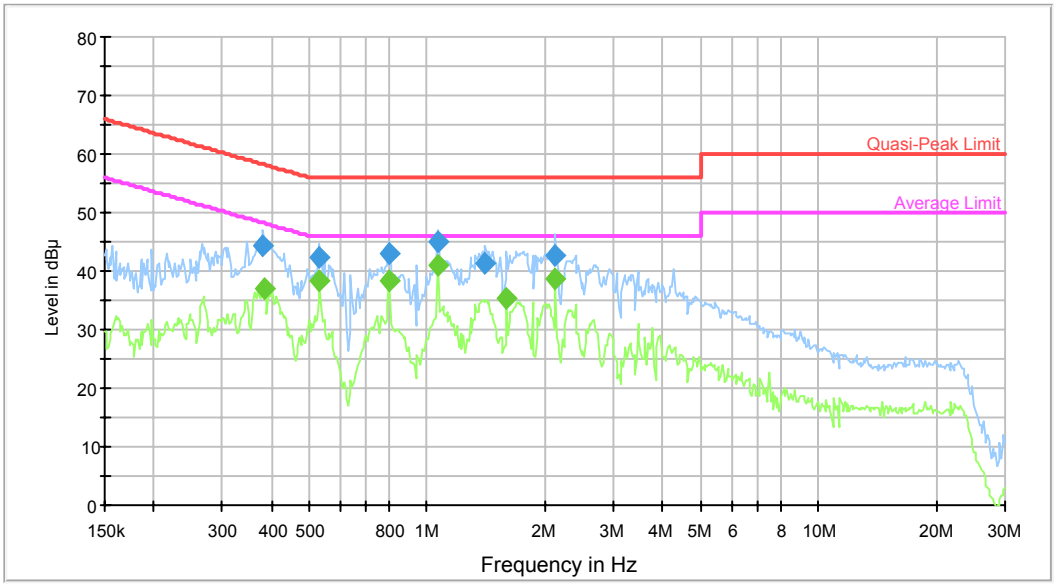


Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.375019	44.0	9.000	N	9.7	14.4	58.4	Compliance
1.065081	43.3	9.000	N	9.8	12.7	56.0	Compliance
1.239175	37.6	9.000	N	9.8	18.4	56.0	Compliance
1.430284	42.5	9.000	N	9.8	13.5	56.0	Compliance
1.745563	42.2	9.000	N	9.8	13.8	56.0	Compliance
2.130339	41.9	9.000	N	9.8	14.1	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.387164	38.2	9.000	N	9.7	9.9	48.1	Compliance
0.799472	35.1	9.000	N	9.7	10.9	46.0	Compliance
1.065081	37.3	9.000	N	9.8	8.7	46.0	Compliance
1.418932	35.8	9.000	N	9.8	10.2	46.0	Compliance
1.773603	35.0	9.000	N	9.8	11.0	46.0	Compliance
2.130339	36.0	9.000	N	9.8	10.0	46.0	Compliance

Power by POE

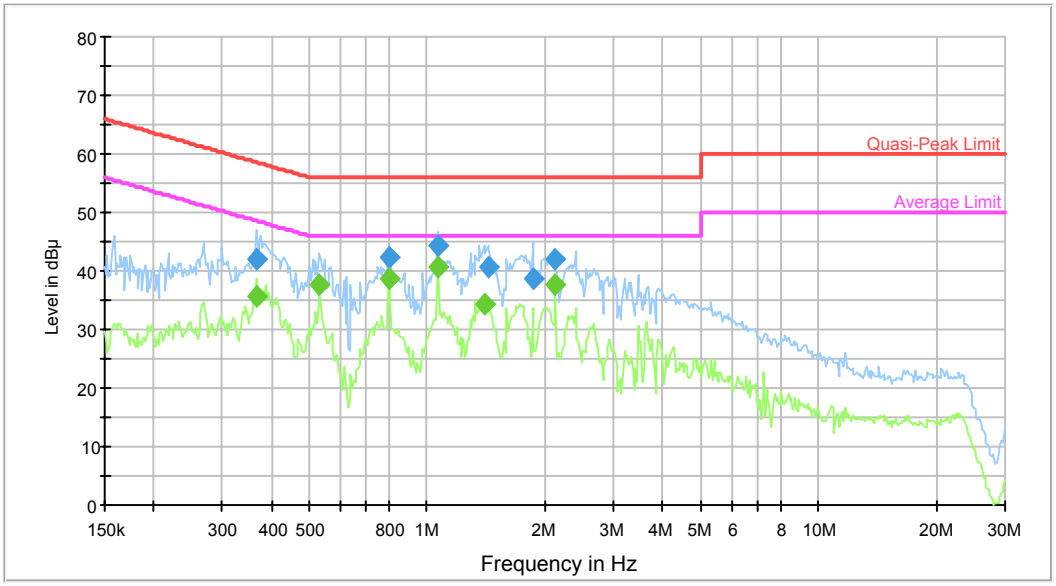
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.381043	44.3	9.000	L1	9.8	14.0	58.3	Compliance
0.532496	42.5	9.000	L1	9.8	13.5	56.0	Compliance
0.799472	42.9	9.000	L1	9.8	13.1	56.0	Compliance
1.065081	45.0	9.000	L1	9.8	11.0	56.0	Compliance
1.407671	41.4	9.000	L1	9.8	14.6	56.0	Compliance
2.130339	42.5	9.000	L1	9.8	13.5	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.384091	36.9	9.000	L1	9.8	11.3	48.2	Compliance
0.532496	38.3	9.000	L1	9.8	7.7	46.0	Compliance
0.799472	38.4	9.000	L1	9.8	7.6	46.0	Compliance
1.065081	40.9	9.000	L1	9.8	5.1	46.0	Compliance
1.599078	35.5	9.000	L1	9.8	10.5	46.0	Compliance
2.130339	38.6	9.000	L1	9.8	7.4	46.0	Compliance

AC120 V, 60 Hz, Neutral:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.366160	42.0	9.000	N	9.7	16.6	58.6	Compliance
0.799472	42.4	9.000	N	9.7	13.6	56.0	Compliance
1.065081	44.4	9.000	N	9.8	11.6	56.0	Compliance
1.430284	40.7	9.000	N	9.8	15.3	56.0	Compliance
1.860457	38.6	9.000	N	9.8	17.4	56.0	Compliance
2.130339	42.0	9.000	N	9.8	14.0	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.366160	35.5	9.000	N	9.7	13.1	48.6	Compliance
0.532496	37.7	9.000	N	9.7	8.3	46.0	Compliance
0.799472	38.5	9.000	N	9.7	7.5	46.0	Compliance
1.065081	40.6	9.000	N	9.8	5.4	46.0	Compliance
1.407671	34.2	9.000	N	9.8	11.8	46.0	Compliance
2.130339	37.6	9.000	N	9.8	8.4	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.

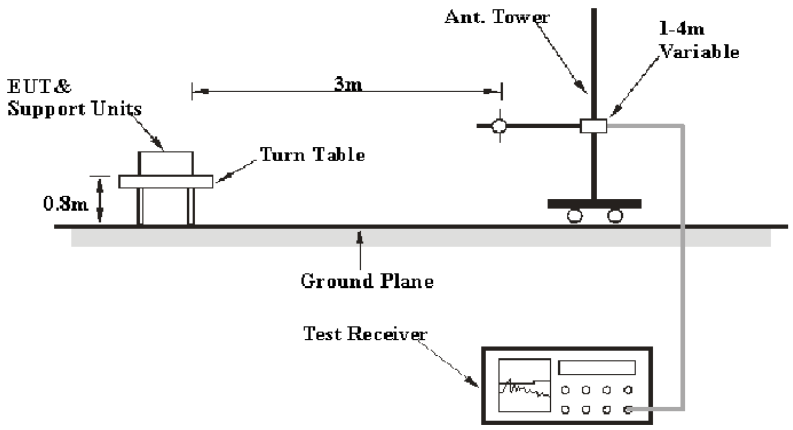
Based on CISPR 16-4-2-2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:
30M~200MHz: 5.0 dB
200M~1GHz: 6.2 dB
1G~6GHz: 4.45 dB
6G~18GHz: 5.23 dB

Table 2 – Values of U_{cispr}

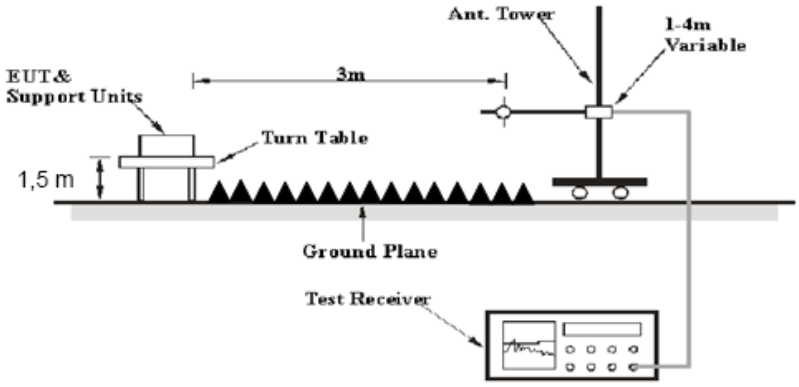
Measurement	U_{cispr}
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

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 C63.10-2013. The specification used was the FCC 15.209, and FCC 15.247 limits.
The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

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

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

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	2015-08-03	2016-08-02
Sunol Sciences	Antenna	JB3	A060611-3	2014-11-06	2017-11-05
HP	Amplifier	8447E	2434A02181	2015-09-01	2016-09-01
Agilent	Spectrum Analyzer	E4440A	SG43360054	2015-11-23	2016-11-22
ETS-Lindgren	Horn Antenna	3115	9808-5557	2015-09-06	2018-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2015-02-19	2016-02-19
R&S	Spectrum Analyzer	FSP 38	100478	2015-11-23	2016-11-22
Ducommun Technolagies	Horn Antenna	ARH-4223-02	1007726-01 1304	2014-06-16	2017-06-15
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2015-09-06	2016-09-06

*** 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:

1.15 dB at **2390 MHz** in the **Vertical** polarization for 802.11g mode

Test Data

Environmental Conditions

Temperature:	24.3~25.3 °C
Relative Humidity:	53~55%
ATM Pressure:	101.1~101.2 kPa

** The testing was performed by Dean Lau on 2015-12-22 to2015-12-23.*

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	77.85	PK	H	24.84	3.68	0.00	106.37	N/A	N/A
2412	73.96	AV	H	24.84	3.68	0.00	102.48	N/A	N/A
2412	82.61	PK	V	24.84	3.68	0.00	111.13	N/A	N/A
2412	78.86	AV	V	24.84	3.68	0.00	107.38	N/A	N/A
2390	33.64	PK	V	24.80	3.63	0.00	62.07	74.00	11.93
2390	21.17	AV	V	24.80	3.63	0.00	49.60	54.00	4.40*
4824	39.24	PK	V	29.75	5.03	27.41	46.61	74.00	27.39
4824	34.99	AV	V	29.75	5.03	27.41	42.36	54.00	11.64
7236	34.15	PK	V	33.98	6.65	25.90	48.88	74.00	25.12
7236	23.9	AV	V	33.98	6.65	25.90	38.63	54.00	15.37
9648	29.86	PK	V	36.39	8.55	27.46	47.34	74.00	26.66
9648	16.57	AV	V	36.39	8.55	27.46	34.05	54.00	19.95
3131	34.86	PK	V	26.09	6.93	27.43	40.45	74.00	33.55
3131	22.64	AV	V	26.09	6.93	27.43	28.23	54.00	25.77
232.7	33.7	QP	V	12.02	1.84	21.48	26.08	46.00	19.92
Middle Channel: 2437 MHz									
2437	77.44	PK	H	24.89	3.75	0.00	106.08	N/A	N/A
2437	73.68	AV	H	24.89	3.75	0.00	102.32	N/A	N/A
2437	82.22	PK	V	24.89	3.75	0.00	110.86	N/A	N/A
2437	78.40	AV	V	24.89	3.75	0.00	107.04	N/A	N/A
4874	38.54	PK	V	29.85	5.14	27.42	46.11	74.00	27.89
4874	33.7	AV	V	29.85	5.14	27.42	41.27	54.00	12.73
7311	33.62	PK	V	34.10	6.74	25.88	48.58	74.00	25.42
7311	22.37	AV	V	34.10	6.74	25.88	37.33	54.00	16.67
9748	29.75	PK	V	36.45	8.61	27.24	47.57	74.00	26.43
9748	16.52	AV	V	36.45	8.61	27.24	34.34	54.00	19.66
3131	34.71	PK	V	26.09	6.93	27.43	40.30	74.00	33.70
3131	22.53	AV	V	26.09	6.93	27.43	28.12	54.00	25.88
3190	33.91	PK	V	26.27	6.26	27.38	39.06	74.00	34.94
3190	21.75	AV	V	26.27	6.26	27.38	26.90	54.00	27.10
232.7	33.2	QP	V	12.02	1.84	21.48	25.58	46.00	20.42
300.6	31.5	QP	V	14.05	2.09	21.52	26.12	46.00	19.88
High Channel: 2462 MHz									
2462	76.96	PK	H	24.93	3.75	0.00	105.64	N/A	N/A
2462	73.05	AV	H	24.93	3.75	0.00	101.73	N/A	N/A
2462	81.73	PK	V	24.93	3.75	0.00	110.41	N/A	N/A
2462	77.79	AV	V	24.93	3.75	0.00	106.47	N/A	N/A
2483.5	33.57	PK	V	24.97	3.67	0.00	62.21	74.00	11.79
2483.5	22.03	AV	V	24.97	3.67	0.00	50.67	54.00	3.33*
4924	37.63	PK	V	29.95	5.34	27.43	45.49	74.00	28.51
4924	32.2	AV	V	29.95	5.34	27.43	40.06	54.00	13.94
7386	32.75	PK	V	34.22	6.83	25.86	47.94	74.00	26.06
7386	20.81	AV	V	34.22	6.83	25.86	36.00	54.00	18.00
9848	29.69	PK	V	36.51	8.66	26.94	47.92	74.00	26.08
9848	16.47	AV	V	36.51	8.66	26.94	34.70	54.00	19.30
3131	34.57	PK	V	26.09	6.93	27.43	40.16	74.00	33.84
3131	22.4	AV	V	26.09	6.93	27.43	27.99	54.00	26.01
232.7	33.5	QP	V	12.02	1.84	21.48	25.88	46.00	20.12

*Within measurement uncertainty!

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	72.37	PK	H	24.84	3.68	0.00	100.89	N/A	N/A
2412	62.23	AV	H	24.84	3.68	0.00	90.75	N/A	N/A
2412	77.32	PK	V	24.84	3.68	0.00	105.84	N/A	N/A
2412	67.16	AV	V	24.84	3.68	0.00	95.68	N/A	N/A
2390	44.42	PK	V	24.80	3.63	0.00	72.85	74.00	1.15 *
2390	19.04	AV	V	24.80	3.63	0.00	47.47	54.00	6.53
4824	33.16	PK	V	29.75	5.03	27.41	40.53	74.00	33.47
4824	20.12	AV	V	29.75	5.03	27.41	27.49	54.00	26.51
7236	32.49	PK	V	33.98	6.65	25.90	47.22	74.00	26.78
7236	19.59	AV	V	33.98	6.65	25.90	34.32	54.00	19.68
9648	29.04	PK	V	36.39	8.55	27.46	46.52	74.00	27.48
9648	16.54	AV	V	36.39	8.55	27.46	34.02	54.00	19.98
3131	34.45	PK	V	26.09	6.93	27.43	40.04	74.00	33.96
3131	22.29	AV	V	26.09	6.93	27.43	27.88	54.00	26.12
232.7	33.2	QP	V	12.02	1.84	21.48	25.58	46.00	20.42
Middle Channel: 2437 MHz									
2437	74.56	PK	H	24.89	3.75	0.00	103.20	N/A	N/A
2437	65.39	AV	H	24.89	3.75	0.00	94.03	N/A	N/A
2437	79.55	PK	V	24.89	3.75	0.00	108.19	N/A	N/A
2437	70.34	AV	V	24.89	3.75	0.00	98.98	N/A	N/A
4874	38.57	PK	V	29.85	5.14	27.42	46.14	74.00	27.86
4874	20.29	AV	V	29.85	5.14	27.42	27.86	54.00	26.14
7311	32.64	PK	V	34.10	6.74	25.88	47.60	74.00	26.40
7311	19.74	AV	V	34.10	6.74	25.88	34.70	54.00	19.30
9748	29.16	PK	V	36.45	8.61	27.24	46.98	74.00	27.02
9748	16.7	AV	V	36.45	8.61	27.24	34.52	54.00	19.48
3131	34.67	PK	V	26.09	6.93	27.43	40.26	74.00	33.74
3131	22.41	AV	V	26.09	6.93	27.43	28.00	54.00	26.00
3190	33.85	PK	V	26.27	6.26	27.38	39.00	74.00	35.00
3190	21.86	AV	V	26.27	6.26	27.38	27.01	54.00	26.99
232.7	33.4	QP	V	12.02	1.84	21.48	25.78	46.00	20.22
300.6	31.6	QP	V	14.05	2.09	21.52	26.22	46.00	19.78
High Channel: 2462 MHz									
2462	74.81	PK	H	24.93	3.75	0.00	103.49	N/A	N/A
2462	64.54	AV	H	24.93	3.75	0.00	93.22	N/A	N/A
2462	79.87	PK	V	24.93	3.75	0.00	108.55	N/A	N/A
2462	69.55	AV	V	24.93	3.75	0.00	98.23	N/A	N/A
2483.5	38.81	PK	V	24.97	3.67	0.00	67.45	74.00	6.55
2483.5	19.77	AV	V	24.97	3.67	0.00	48.41	54.00	5.59
4924	32.13	PK	V	29.95	5.34	27.43	39.99	74.00	34.01
4924	19.27	AV	V	29.95	5.34	27.43	27.13	54.00	26.87
7386	32.48	PK	V	34.22	6.83	25.86	47.67	74.00	26.33
7386	19.52	AV	V	34.22	6.83	25.86	34.71	54.00	19.29
9848	29.02	PK	V	36.51	8.66	26.94	47.25	74.00	26.75
9848	16.48	AV	V	36.51	8.66	26.94	34.71	54.00	19.29
3131	34.42	PK	V	26.09	6.93	27.43	40.01	74.00	33.99
3131	22.21	AV	V	26.09	6.93	27.43	27.80	54.00	26.20
232.7	33.1	QP	V	12.02	1.84	21.48	25.48	46.00	20.52

*Within measurement uncertainty!

802.11n 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	70.52	PK	H	24.84	3.68	0.00	99.04	N/A	N/A
2412	59.23	AV	H	24.84	3.68	0.00	87.75	N/A	N/A
2412	75.48	PK	V	24.84	3.68	0.00	104.00	N/A	N/A
2412	63.72	AV	V	24.84	3.68	0.00	92.24	N/A	N/A
2390	37.71	PK	V	24.80	3.63	0.00	66.14	74.00	7.86
2390	21.33	AV	V	24.80	3.63	0.00	49.76	54.00	4.24*
4824	36.32	PK	V	29.75	5.03	27.41	43.69	74.00	30.31
4824	21.47	AV	V	29.75	5.03	27.41	28.84	54.00	25.16
7236	32.63	PK	V	33.98	6.65	25.90	47.36	74.00	26.64
7236	19.67	AV	V	33.98	6.65	25.90	34.40	54.00	19.60
9648	29.11	PK	V	36.39	8.55	27.46	46.59	74.00	27.41
9648	16.69	AV	V	36.39	8.55	27.46	34.17	54.00	19.83
3131	34.58	PK	V	26.09	6.93	27.43	40.17	74.00	33.83
3131	22.36	AV	V	26.09	6.93	27.43	27.95	54.00	26.05
232.7	32.5	QP	V	12.02	1.84	21.48	24.88	46.00	21.12
Middle Channel: 2437 MHz									
2437	70.15	PK	H	24.89	3.75	0.00	98.79	N/A	N/A
2437	59.83	AV	H	24.89	3.75	0.00	88.47	N/A	N/A
2437	75	PK	V	24.89	3.75	0.00	103.64	N/A	N/A
2437	63.77	AV	V	24.89	3.75	0.00	92.41	N/A	N/A
4874	36.83	PK	V	29.85	5.14	27.42	44.40	74.00	29.60
4874	21.84	AV	V	29.85	5.14	27.42	29.41	54.00	24.59
7311	32.96	PK	V	34.10	6.74	25.88	47.92	74.00	26.08
7311	20.05	AV	V	34.10	6.74	25.88	35.01	54.00	18.99
9748	29.47	PK	V	36.45	8.61	27.24	47.29	74.00	26.71
9748	17.03	AV	V	36.45	8.61	27.24	34.85	54.00	19.15
3131	34.93	PK	V	26.09	6.93	27.43	40.52	74.00	33.48
3131	22.68	AV	V	26.09	6.93	27.43	28.27	54.00	25.73
3190	34.1	PK	V	26.27	6.26	27.38	39.25	74.00	34.75
3190	21.93	AV	V	26.27	6.26	27.38	27.08	54.00	26.92
232.7	32.8	QP	V	12.02	1.84	21.48	25.18	46.00	20.82
300.6	30.4	QP	V	14.05	2.09	21.52	25.02	46.00	20.98
High Channel: 2462 MHz									
2462	69.97	PK	H	24.93	3.75	0.00	98.65	N/A	N/A
2462	68.58	AV	H	24.93	3.75	0.00	97.26	N/A	N/A
2462	74.83	PK	V	24.93	3.75	0.00	103.51	N/A	N/A
2462	63.49	AV	V	24.93	3.75	0.00	92.17	N/A	N/A
2483.5	37.49	PK	V	24.97	3.67	0.00	66.13	74.00	7.87
2483.5	19.88	AV	V	24.97	3.67	0.00	48.52	54.00	5.48
4924	36.24	PK	V	29.95	5.34	27.43	44.10	74.00	29.90
4924	20.87	AV	V	29.95	5.34	27.43	28.73	54.00	25.27
7386	32.52	PK	V	34.22	6.83	25.86	47.71	74.00	26.29
7386	19.58	AV	V	34.22	6.83	25.86	34.77	54.00	19.23
9848	29.03	PK	V	36.51	8.66	26.94	47.26	74.00	26.74
9848	16.61	AV	V	36.51	8.66	26.94	34.84	54.00	19.16
3131	34.5	PK	V	26.09	6.93	27.43	40.09	74.00	33.91
3131	22.31	AV	V	26.09	6.93	27.43	27.90	54.00	26.10
232.7	32	QP	V	12.02	1.84	21.48	24.38	46.00	21.62

*Within measurement uncertainty!

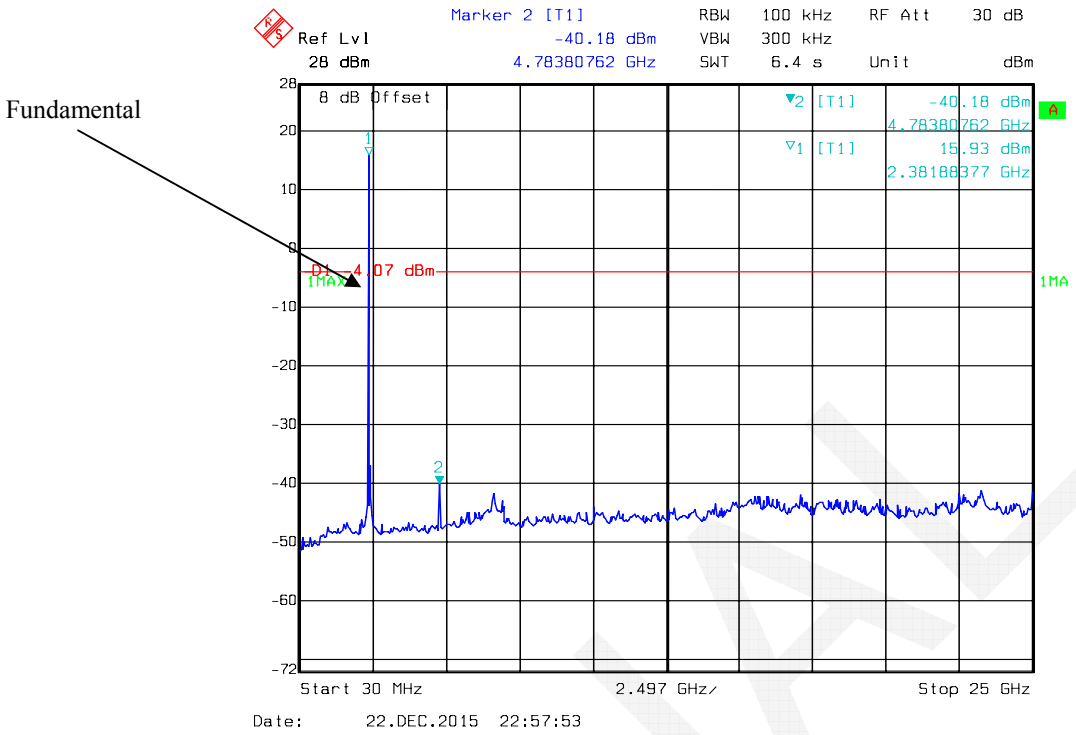
802.11 n ht40 Mode

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	69.89	PK	H	24.86	3.71	0.00	98.46	N/A	N/A
2422	57.63	AV	H	24.86	3.71	0.00	86.20	N/A	N/A
2422	74.85	PK	V	24.86	3.71	0.00	103.42	N/A	N/A
2422	62.59	AV	V	24.86	3.71	0.00	91.16	N/A	N/A
2390	40.84	PK	V	24.80	3.63	0.00	69.27	74.00	4.73
2390	22.17	AV	V	24.80	3.63	0.00	50.60	54.00	3.40*
4844	36.47	PK	V	29.79	4.99	27.42	43.83	74.00	30.17
4844	20.84	AV	V	29.79	4.99	27.42	28.20	54.00	25.80
7266	32.31	PK	V	34.03	6.68	25.89	47.13	74.00	26.87
7266	19.38	AV	V	34.03	6.68	25.89	34.20	54.00	19.80
9688	28.87	PK	V	36.41	8.58	27.37	46.49	74.00	27.51
9688	16.29	AV	V	36.41	8.58	27.37	33.91	54.00	20.09
3131	34.26	PK	V	26.09	6.93	27.43	39.85	74.00	34.15
3131	22.01	AV	V	26.09	6.93	27.43	27.60	54.00	26.40
232.7	32.7	QP	V	12.02	1.84	21.48	25.08	46.00	20.92
Middle Channel: 2437 MHz									
2437	70.03	PK	H	24.89	3.75	0.00	98.67	N/A	N/A
2437	57.72	AV	H	24.89	3.75	0.00	86.36	N/A	N/A
2437	74.96	PK	V	24.89	3.75	0.00	103.60	N/A	N/A
2437	62.79	AV	V	24.89	3.75	0.00	91.43	N/A	N/A
4874	36.26	PK	V	29.85	5.14	27.42	43.83	74.00	30.17
4874	20.05	AV	V	29.85	5.14	27.42	27.62	54.00	26.38
7311	32.75	PK	V	34.10	6.74	25.88	47.71	74.00	26.29
7311	19.81	AV	V	34.10	6.74	25.88	34.77	54.00	19.23
9748	29.3	PK	V	36.45	8.61	27.24	47.12	74.00	26.88
9748	16.85	AV	V	36.45	8.61	27.24	34.67	54.00	19.33
3131	34.7	PK	V	26.09	6.93	27.43	40.29	74.00	33.71
3131	22.46	AV	V	26.09	6.93	27.43	28.05	54.00	25.95
3190	33.9	PK	V	26.27	6.26	27.38	39.05	74.00	34.95
3190	21.87	AV	V	26.27	6.26	27.38	27.02	54.00	26.98
232.7	32.3	QP	V	12.02	1.84	21.48	24.68	46.00	21.32
300.6	30.6	QP	V	14.05	2.09	21.52	25.22	46.00	20.78
High Channel: 2452 MHz									
2452	70.61	PK	H	24.91	3.78	0.00	99.30	N/A	N/A
2452	58.43	AV	H	24.91	3.78	0.00	87.12	N/A	N/A
2452	75.49	PK	V	24.91	3.78	0.00	104.18	N/A	N/A
2452	63.55	AV	V	24.91	3.78	0.00	92.24	N/A	N/A
2483.5	40.79	PK	V	24.97	3.67	0.00	69.43	74.00	4.57
2483.5	21.28	AV	V	24.97	3.67	0.00	49.92	54.00	4.08 *
4904	36.14	PK	V	29.91	5.31	27.43	43.93	74.00	30.07
4904	20.25	AV	V	29.91	5.31	27.43	28.04	54.00	25.96
7356	32.46	PK	V	34.17	6.79	25.87	47.55	74.00	26.45
7356	19.5	AV	V	34.17	6.79	25.87	34.59	54.00	19.41
9808	29.01	PK	V	36.48	8.64	27.09	47.04	74.00	26.96
9808	16.44	AV	V	36.48	8.64	27.09	34.47	54.00	19.53
3131	34.38	PK	V	26.09	6.93	27.43	39.97	74.00	34.03
3131	22.16	AV	V	26.09	6.93	27.43	27.75	54.00	26.25
232.7	32.4	QP	V	12.02	1.84	21.48	24.78	46.00	21.22

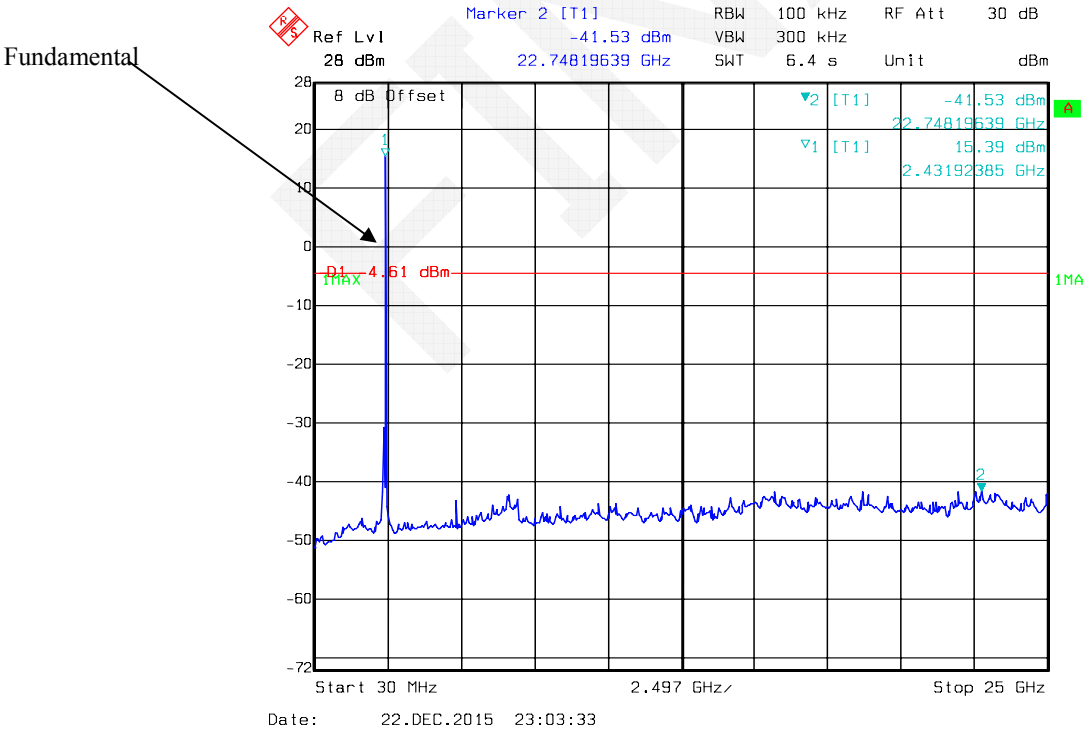
*Within measurement uncertainty!

Conducted Spurious Emissions at Antenna Port

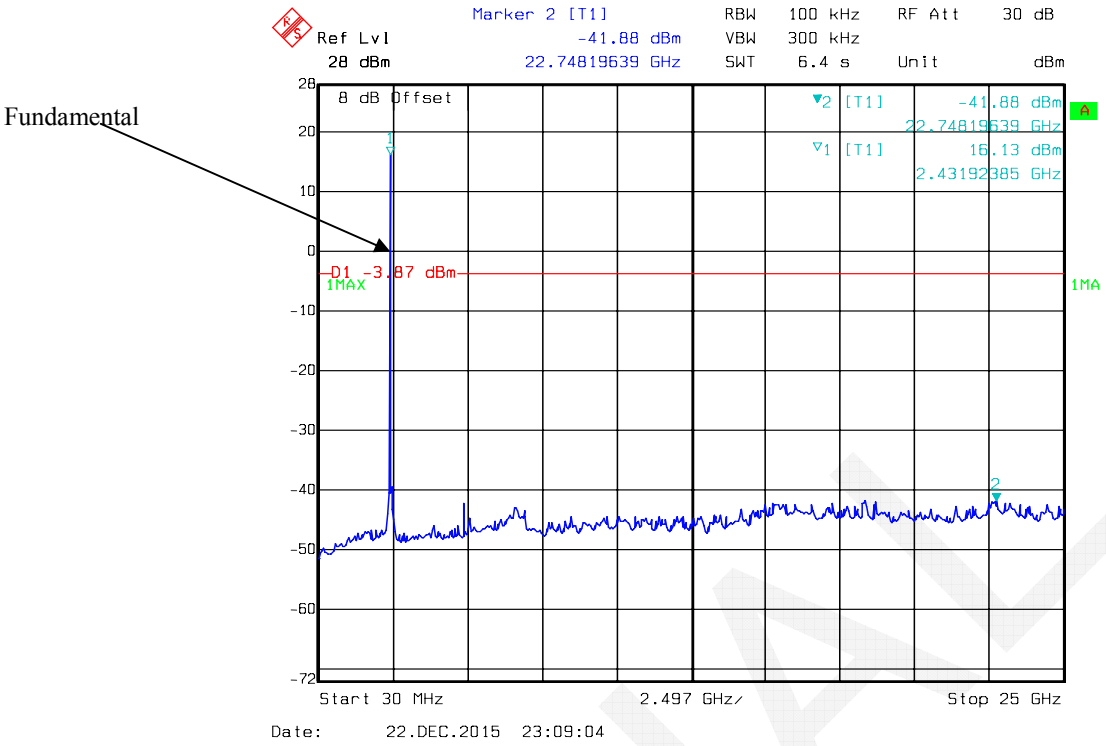
802.11b Low Channel (Chain 0)



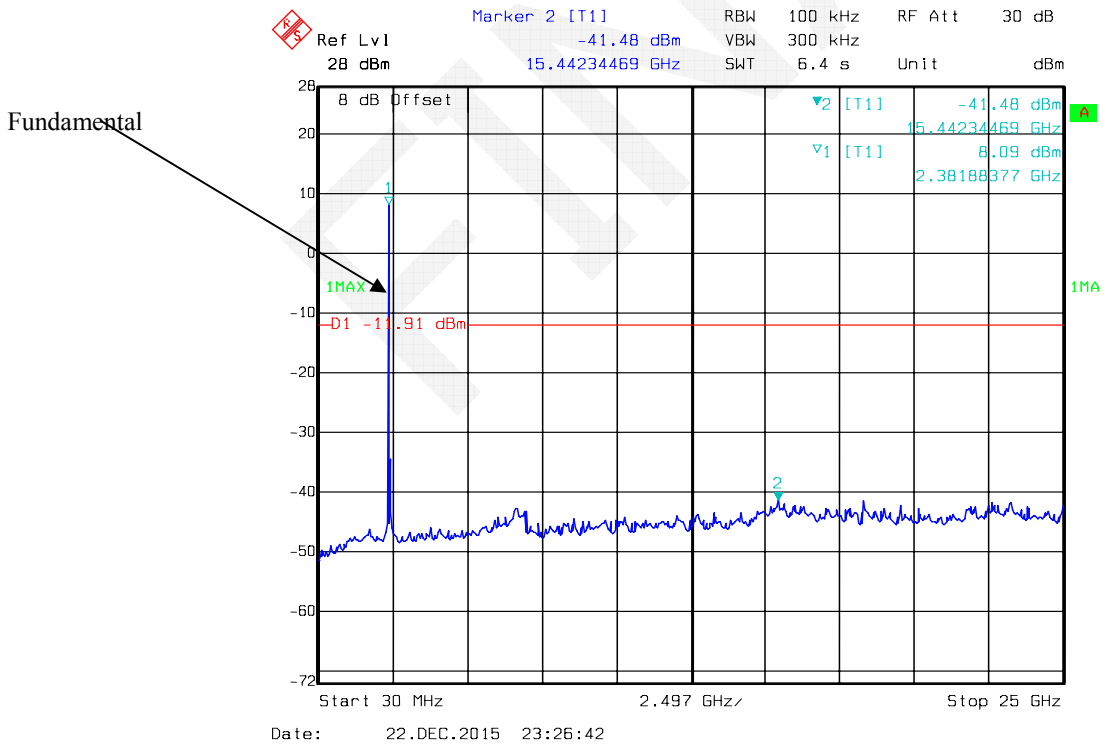
802.11b Middle Channel (Chain 0)



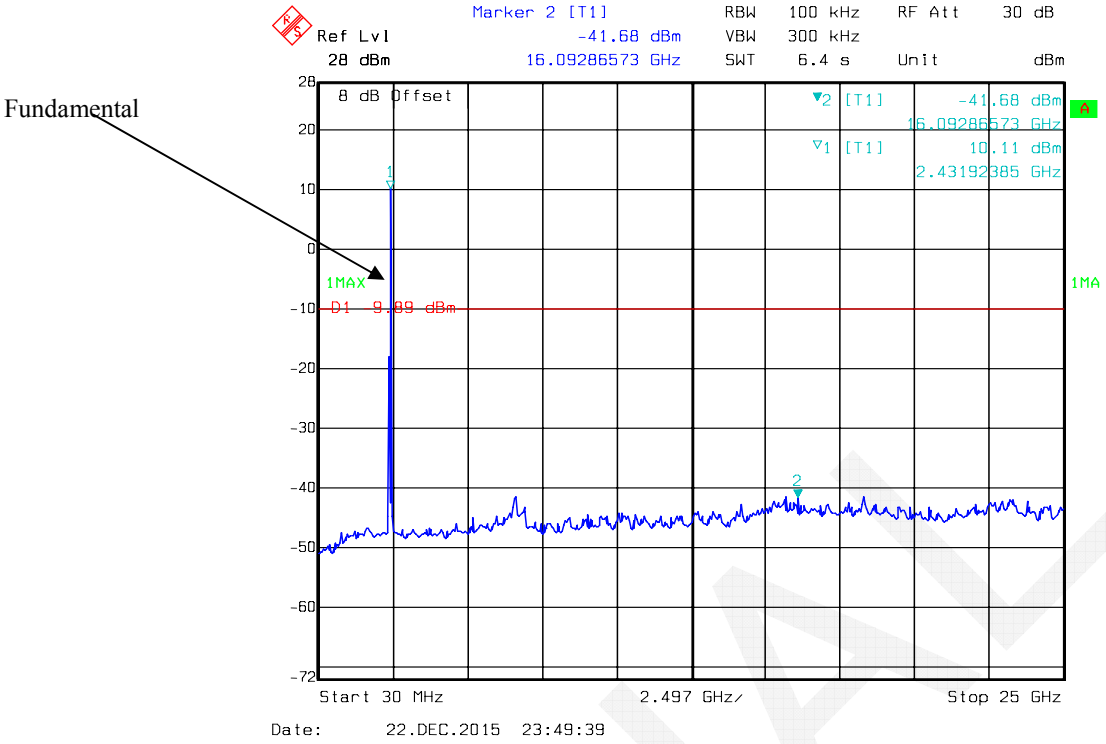
802.11b High Channel (Chain 0)



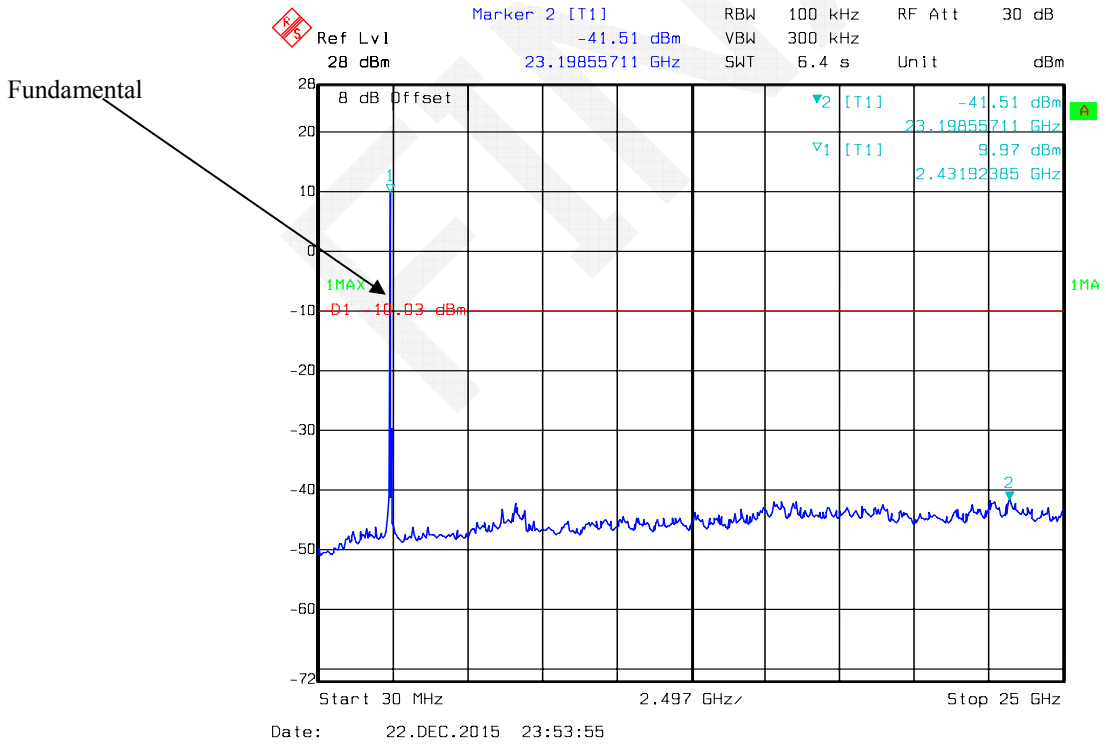
802.11g Low Channel (Chain 0)



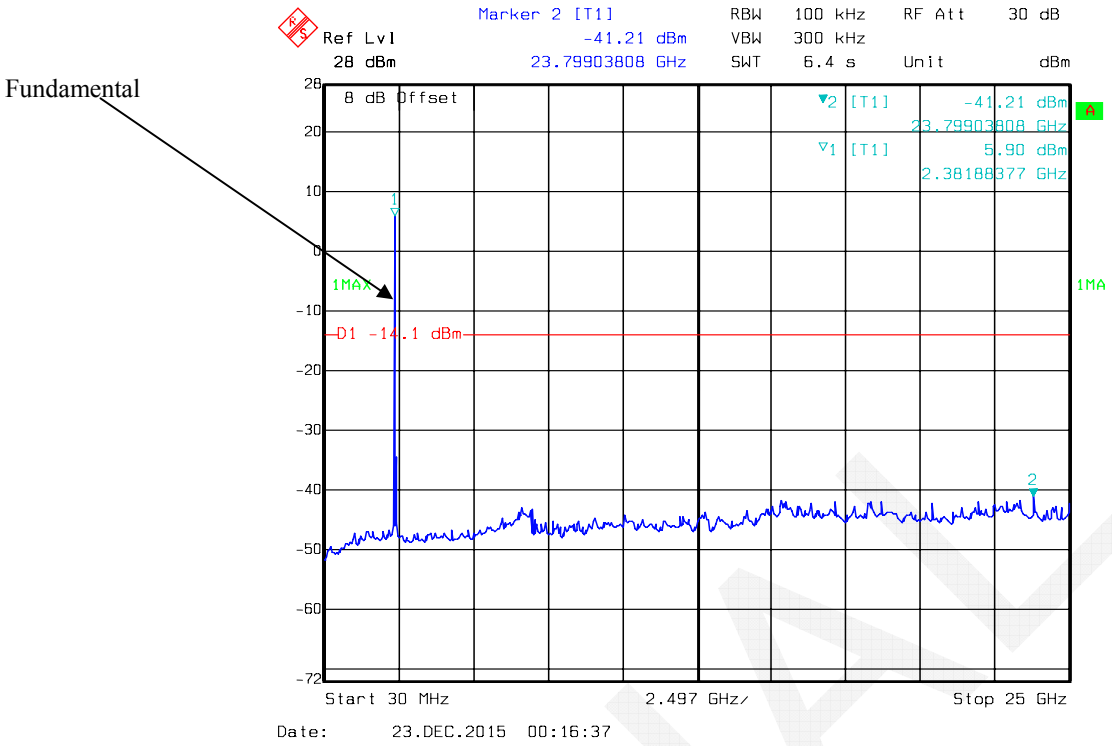
802.11g Middle Channel (Chain 0)



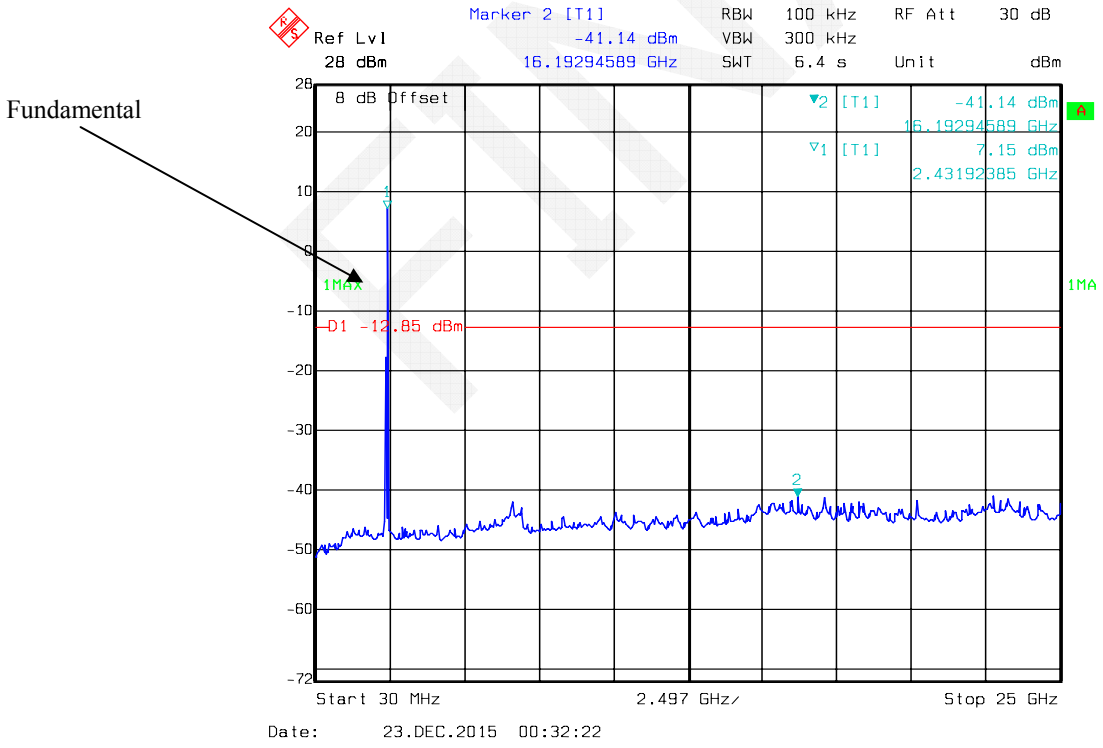
802.11g High Channel (Chain 0)



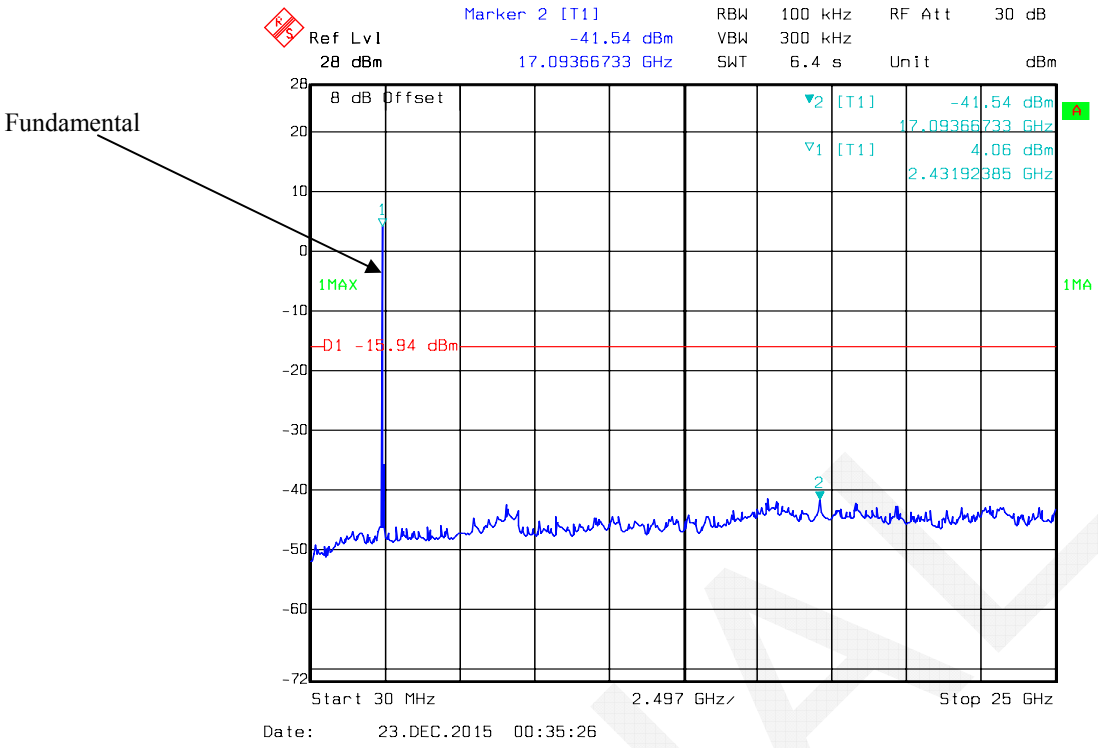
802.11n ht20 Low Channel (Chain 0)



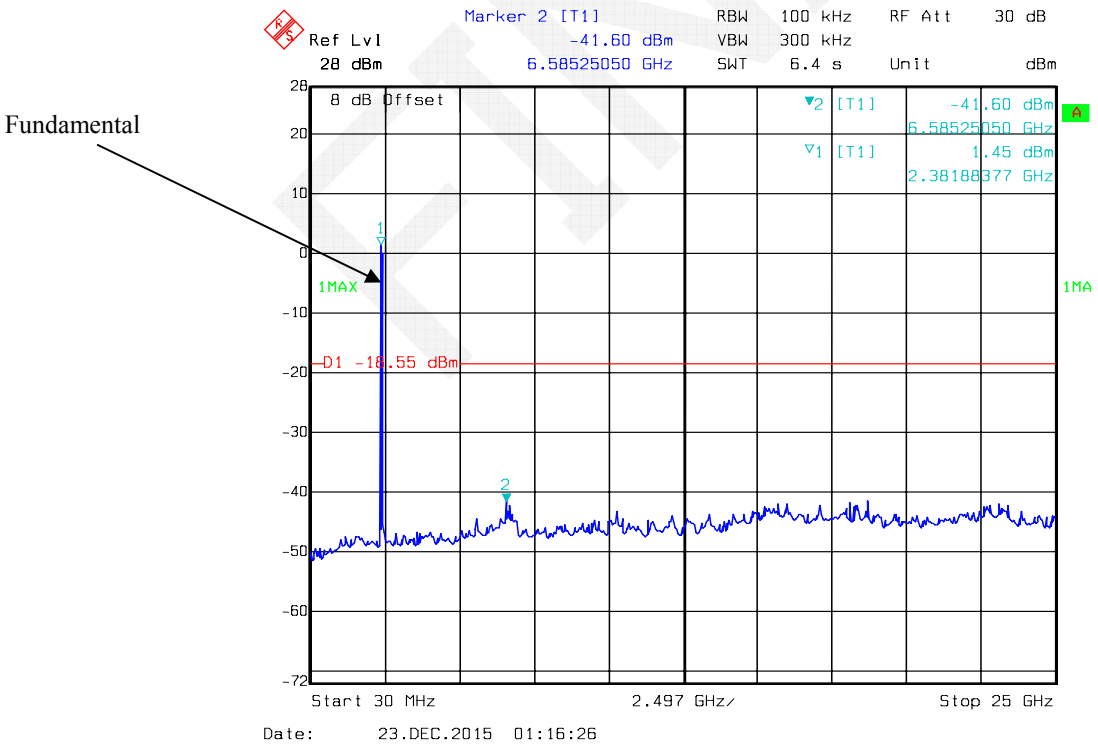
802.11n ht20 Middle Channel (Chain 0)



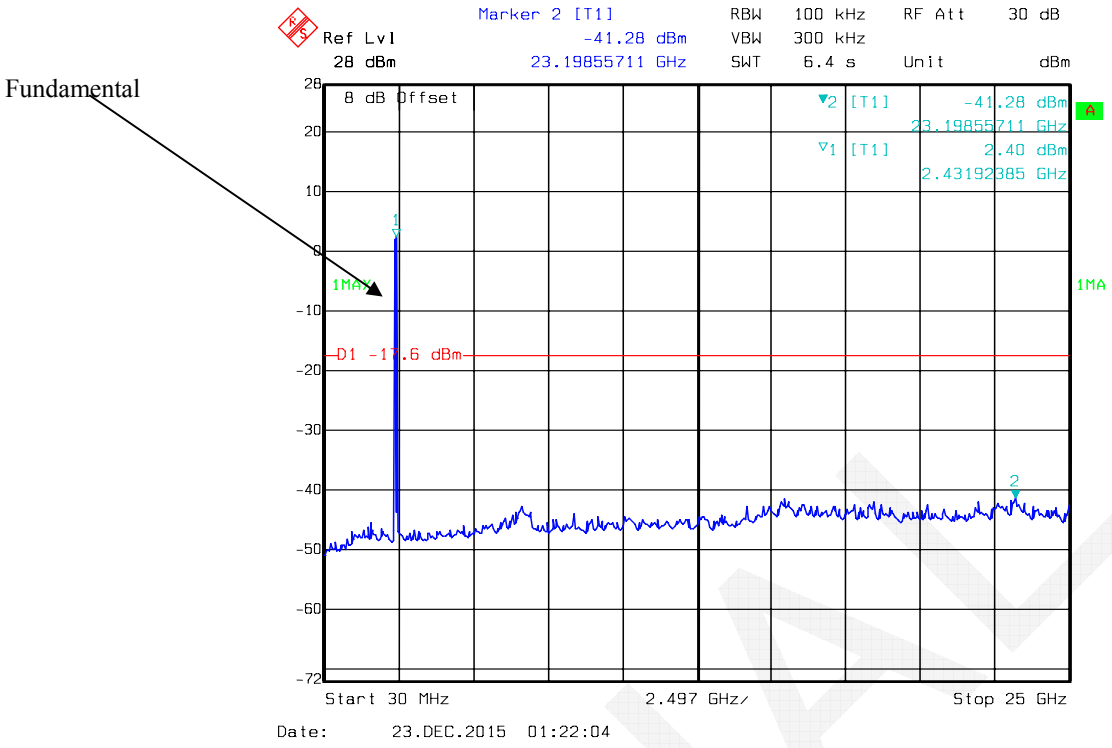
802.11n ht20 High Channel (Chain 0)



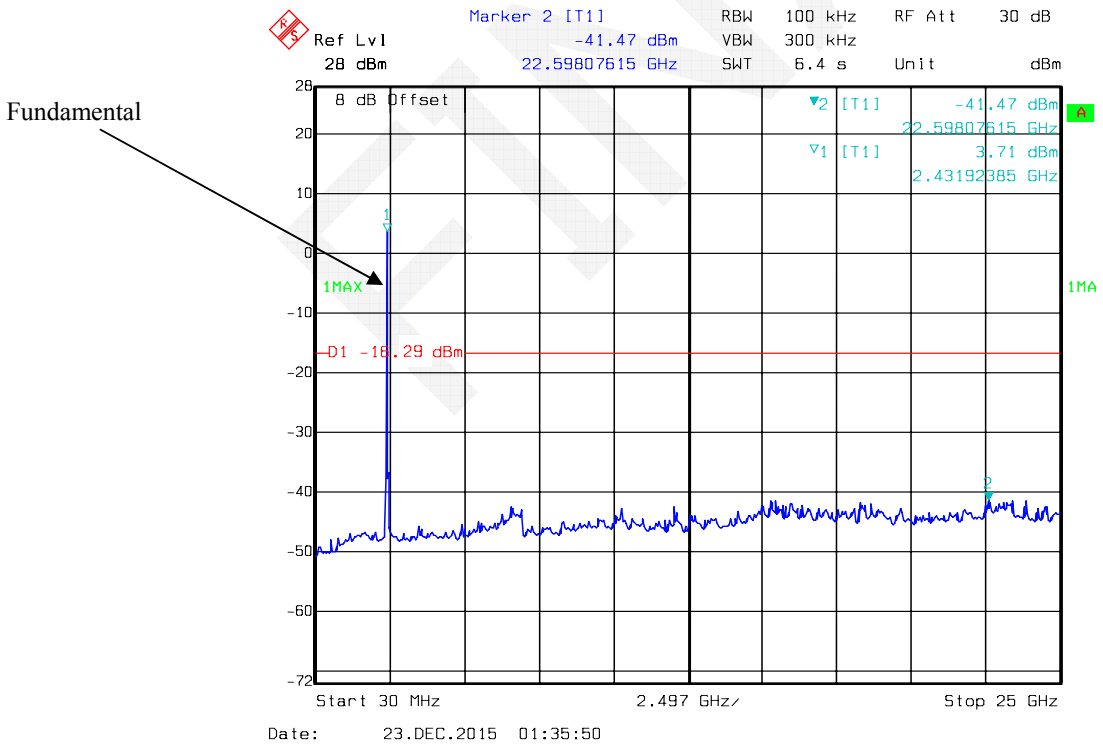
802.11n ht40 Low Channel (Chain 0)



802.11n ht40 Middle Channel (Chain 0)

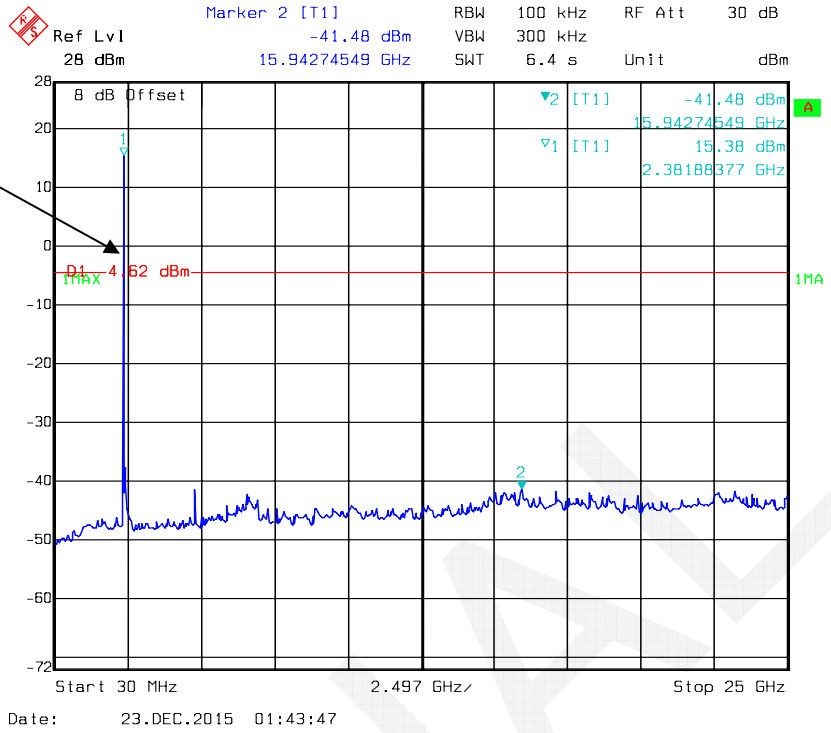


802.11n ht40 High Channel (Chain 0)



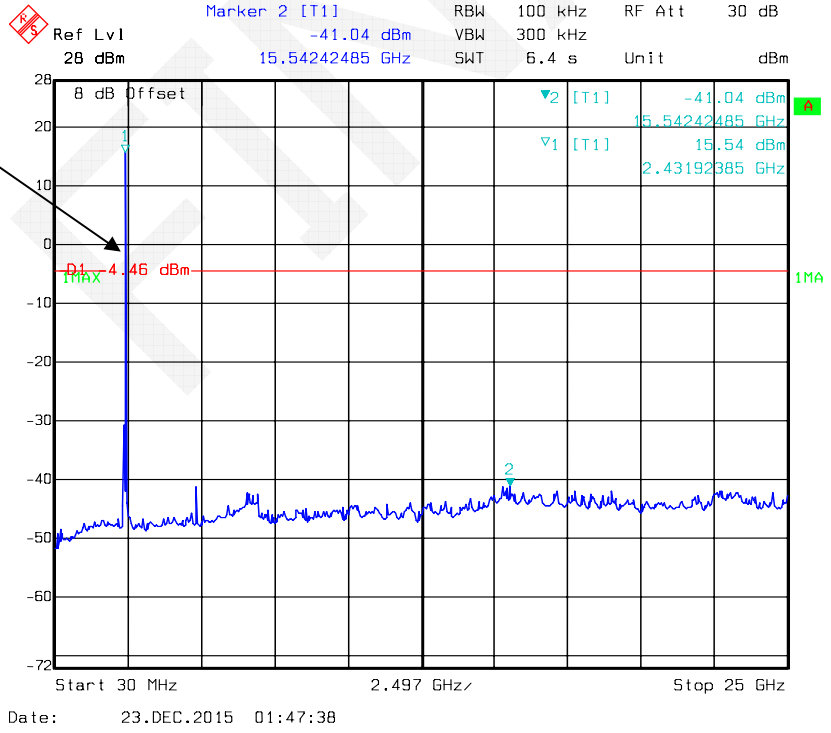
802.11b Low Channel (Chain 1)

Fundamental

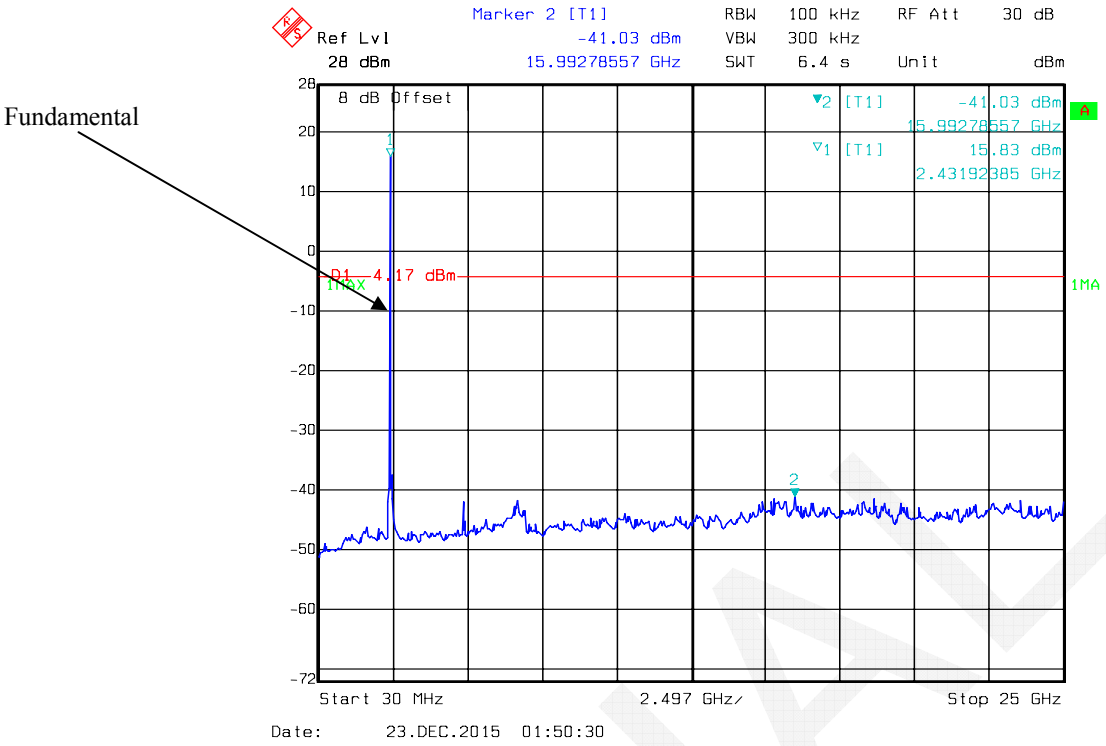


802.11b Middle Channel (Chain 1)

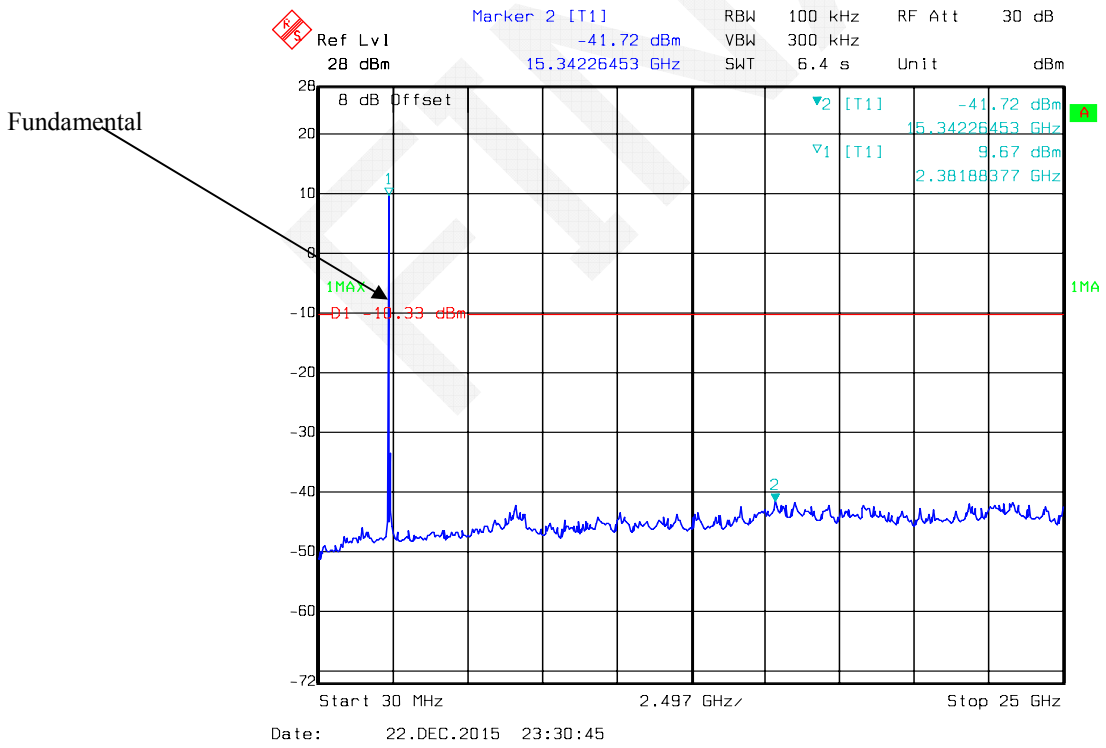
Fundamental



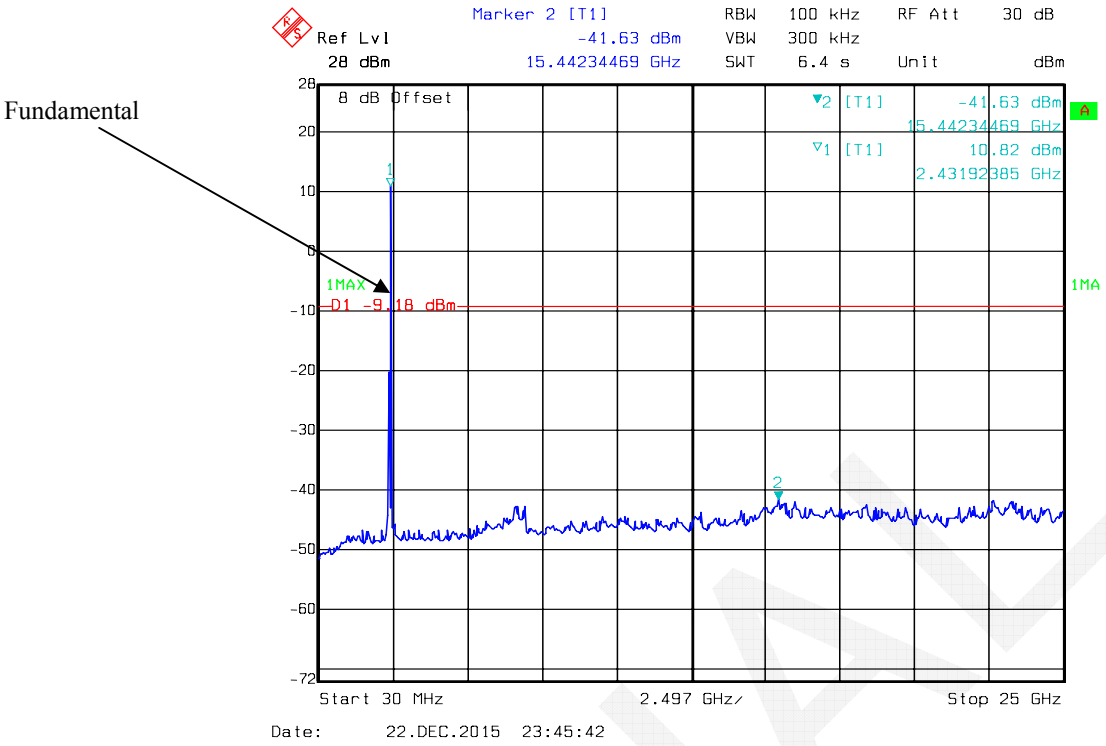
802.11b High Channel (Chain 1)



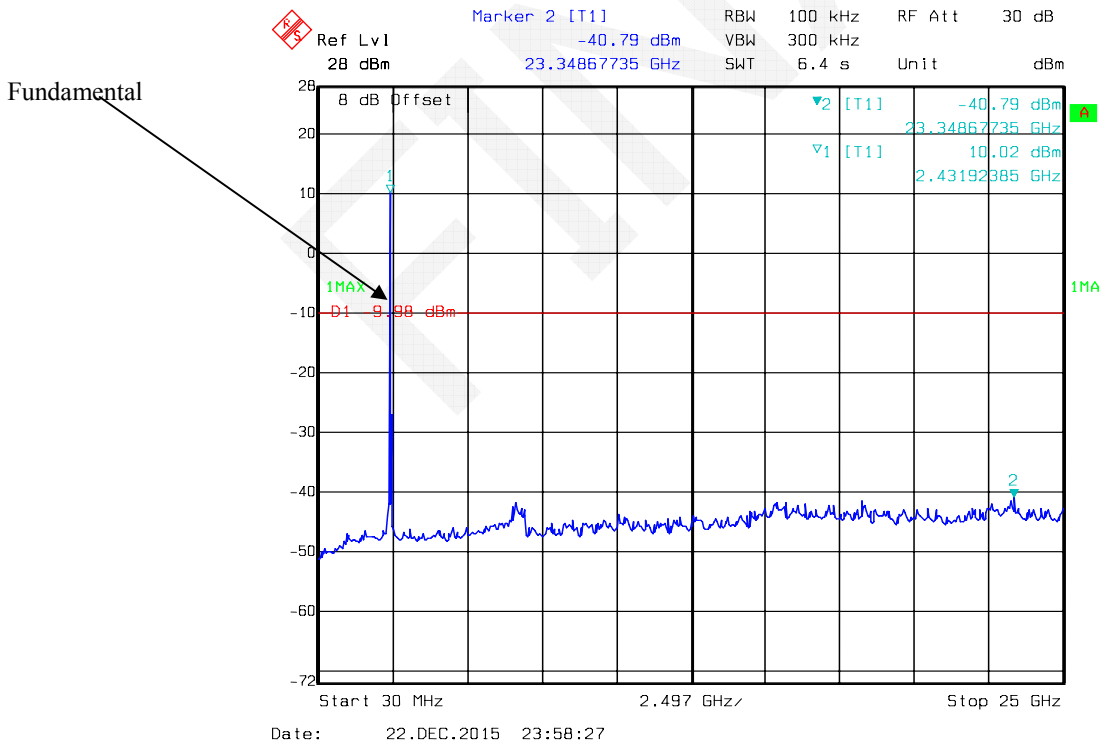
802.11g Low Channel (Chain 1)



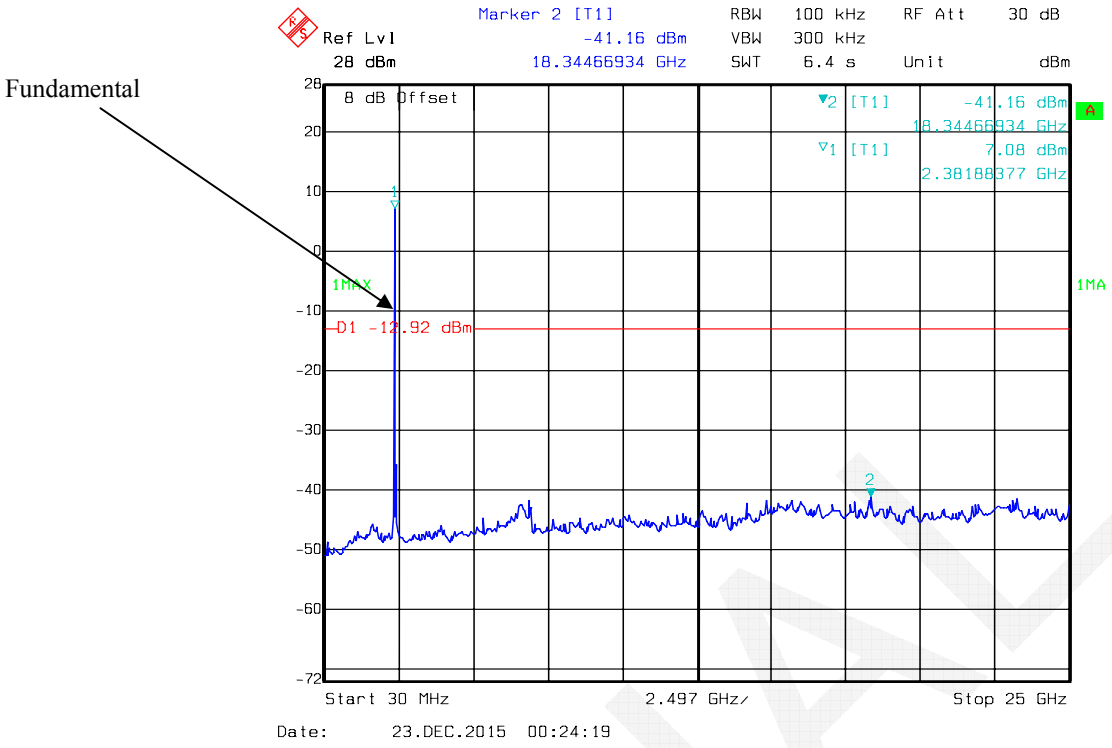
802.11g Middle Channel (Chain 1)



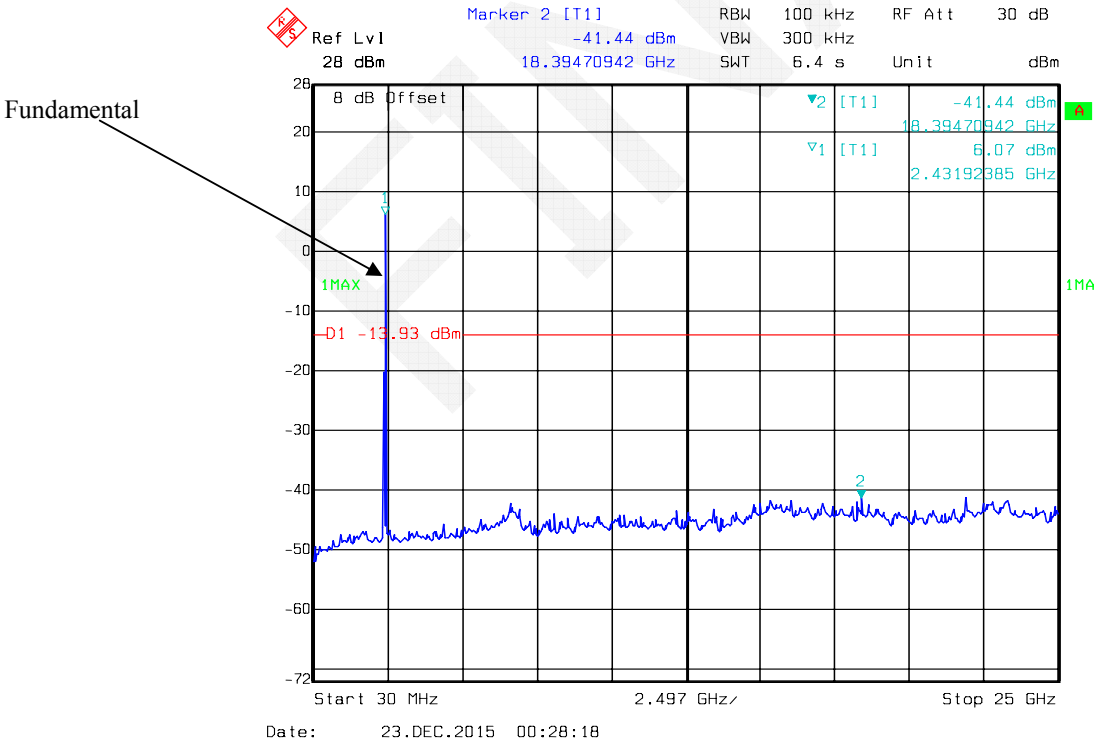
802.11g High Channel (Chain 1)



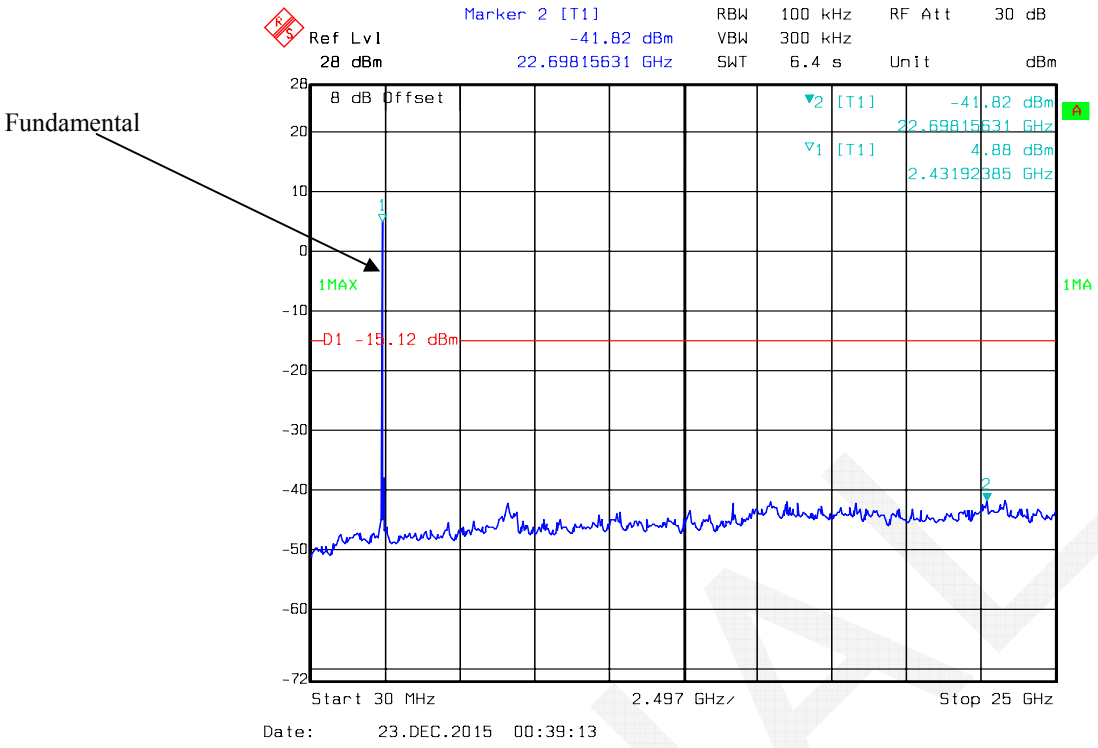
802.11n ht20 Low Channel (Chain 1)



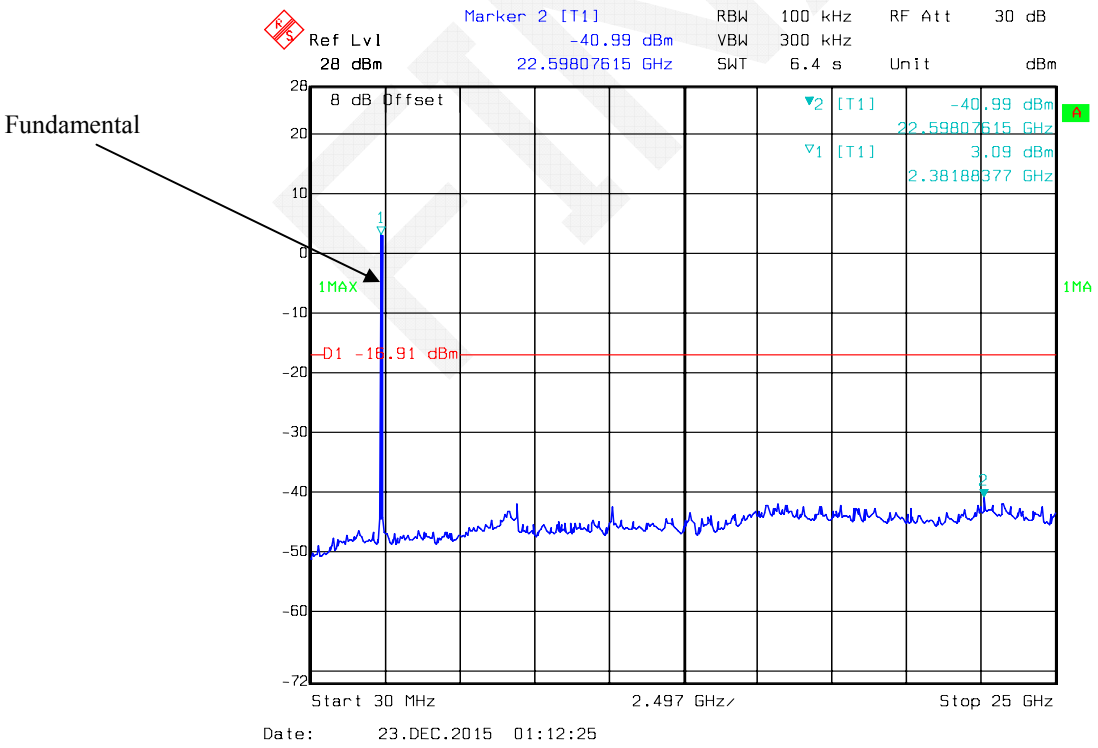
802.11n ht20 Middle Channel (Chain 1)



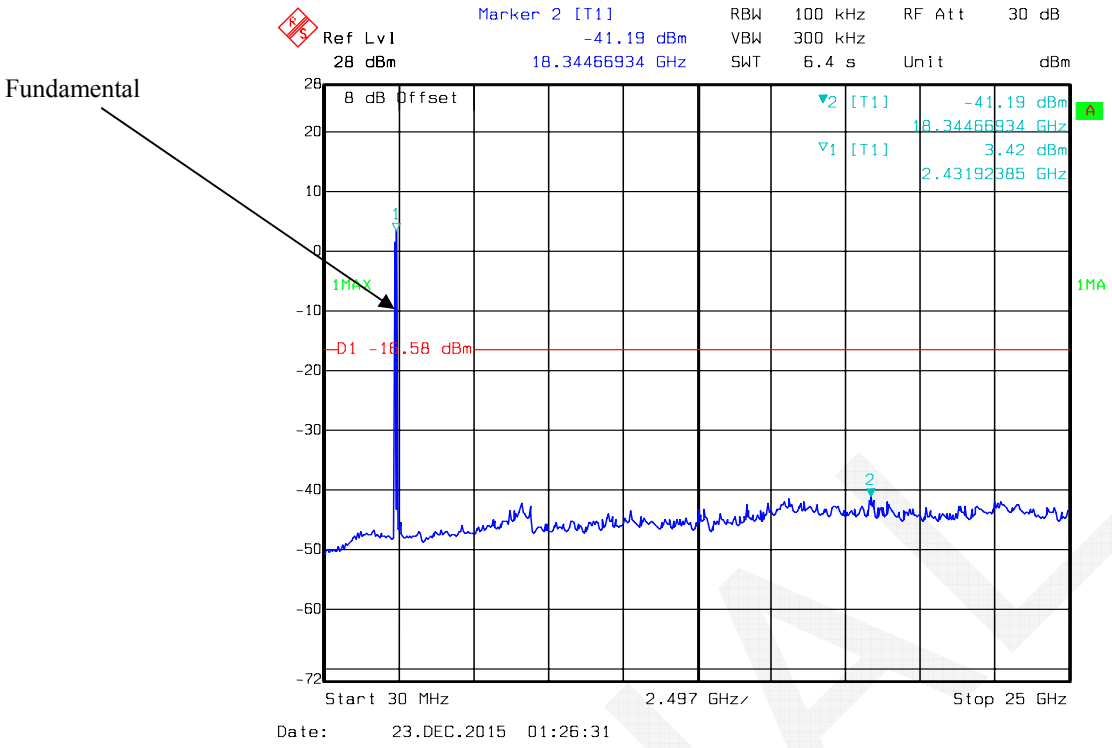
802.11n ht20 High Channel (Chain 1)



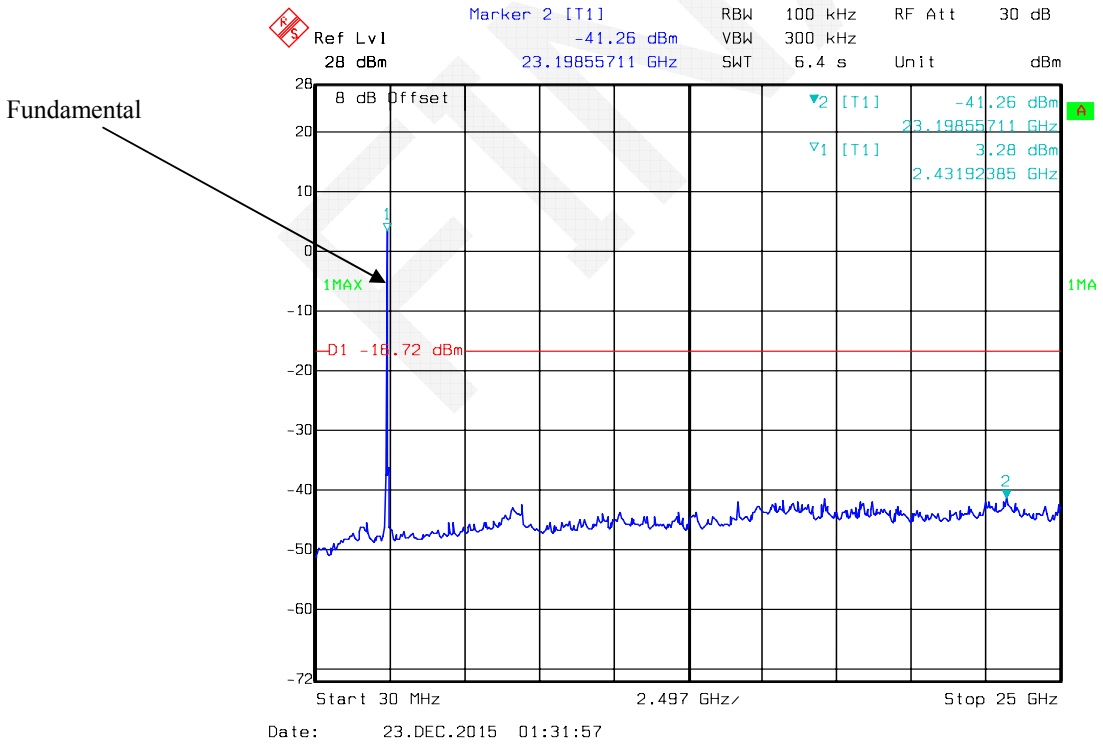
802.11n ht40 Low Channel (Chain 1)



802.11n ht40 Middle Channel (Chain 1)



802.11n ht40 High Channel (Chain 1)



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 v03r03
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	FSP 38	100478	2015-11-23	2016-11-22

*** 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:	22.1 °C
Relative Humidity:	70 %
ATM Pressure:	101.2 kPa

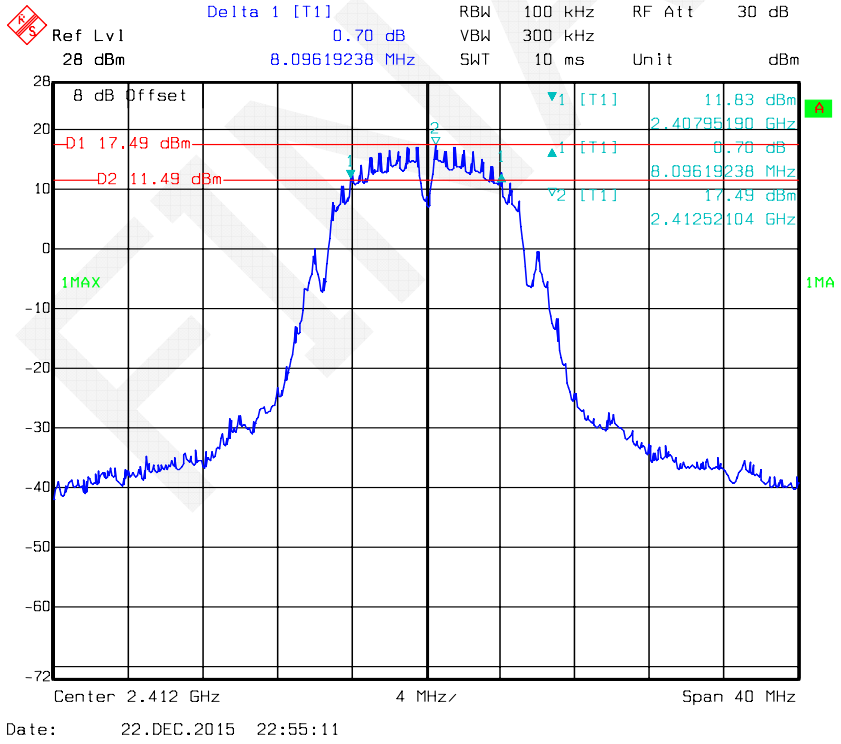
** The testing was performed by Dean Lau from 2015-12-23.*

Test Mode: Transmitting

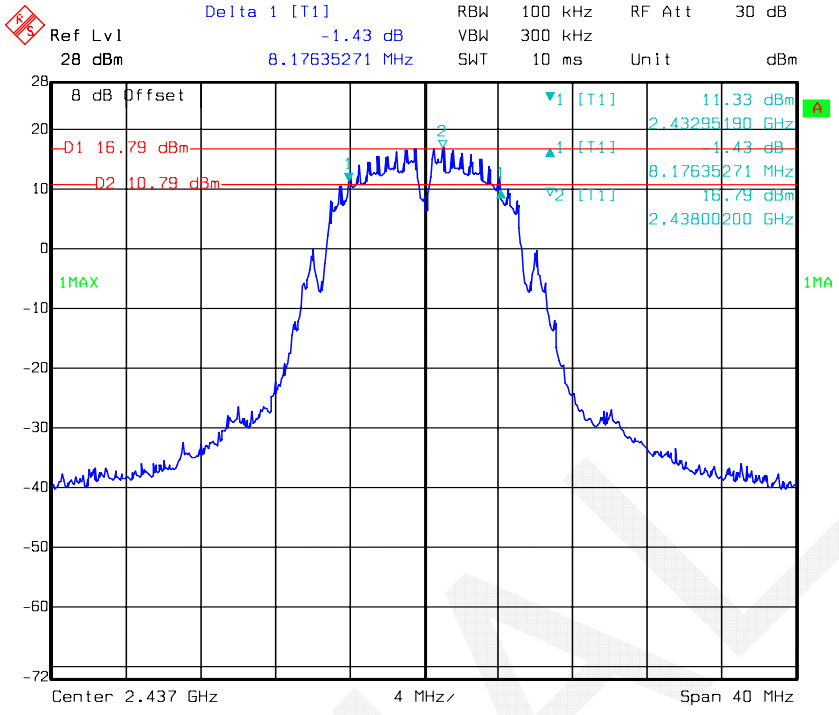
Test Result: Compliant. Please refer to the following table and plots.

Test mode	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Limit (MHz)
			Chain 0	Chain 1	
802.11b	Low	2412	8.10	8.18	≥0.5
	Middle	2437	8.18	8.18	≥0.5
	High	2462	8.10	8.10	≥0.5
802.11g	Low	2412	16.51	16.59	≥0.5
	Middle	2437	16.51	16.51	≥0.5
	High	2462	16.43	16.43	≥0.5
802.11n20	Low	2412	17.64	17.64	≥0.5
	Middle	2437	17.64	17.72	≥0.5
	High	2462	17.47	17.56	≥0.5
802.11n40	Low	2422	35.75	35.43	≥0.5
	Middle	2437	35.75	35.91	≥0.5
	High	2452	35.43	35.43	≥0.5

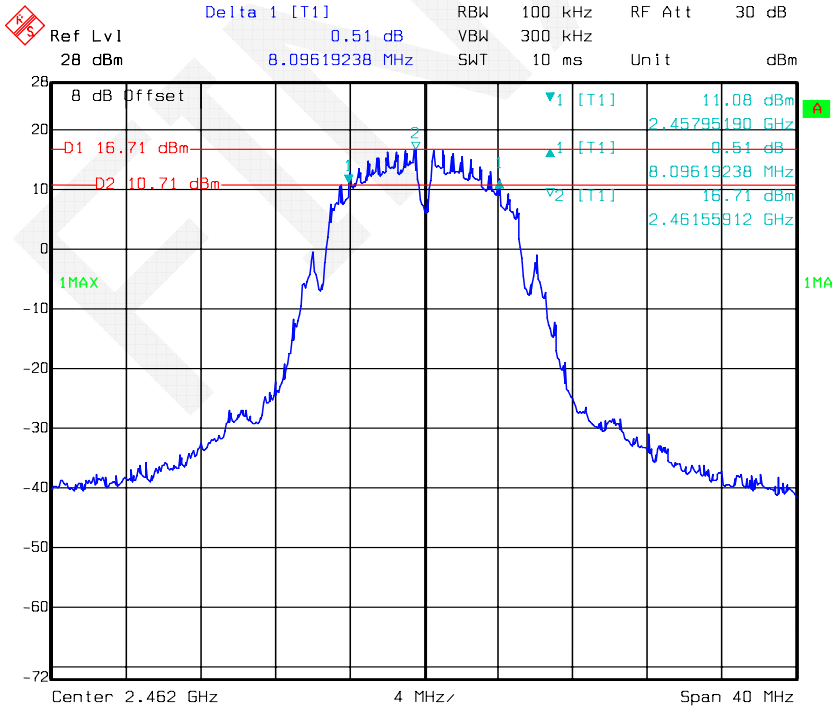
802.11b Low Channel (Chain 0)



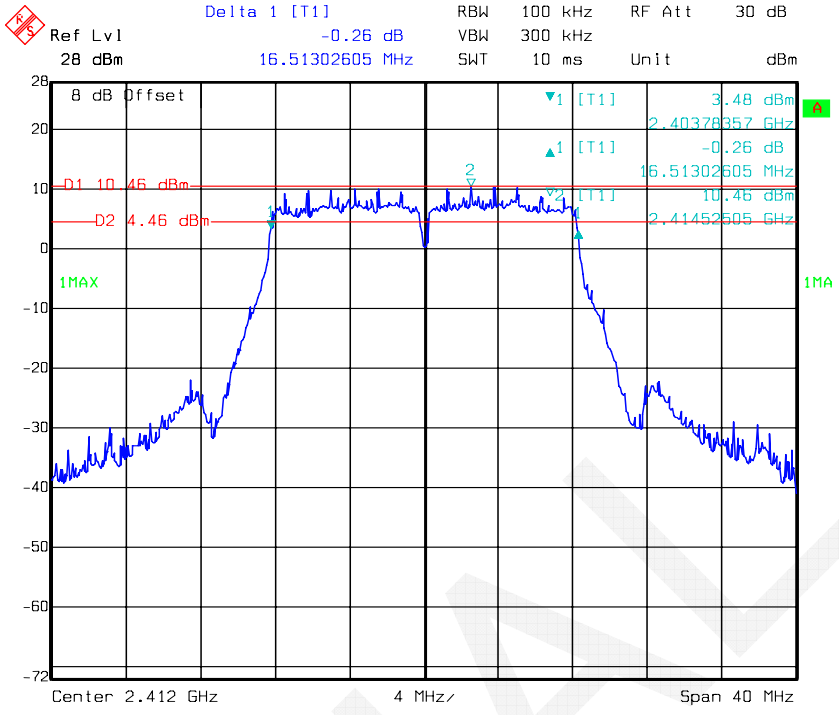
802.11b Middle Channel (Chain 0)



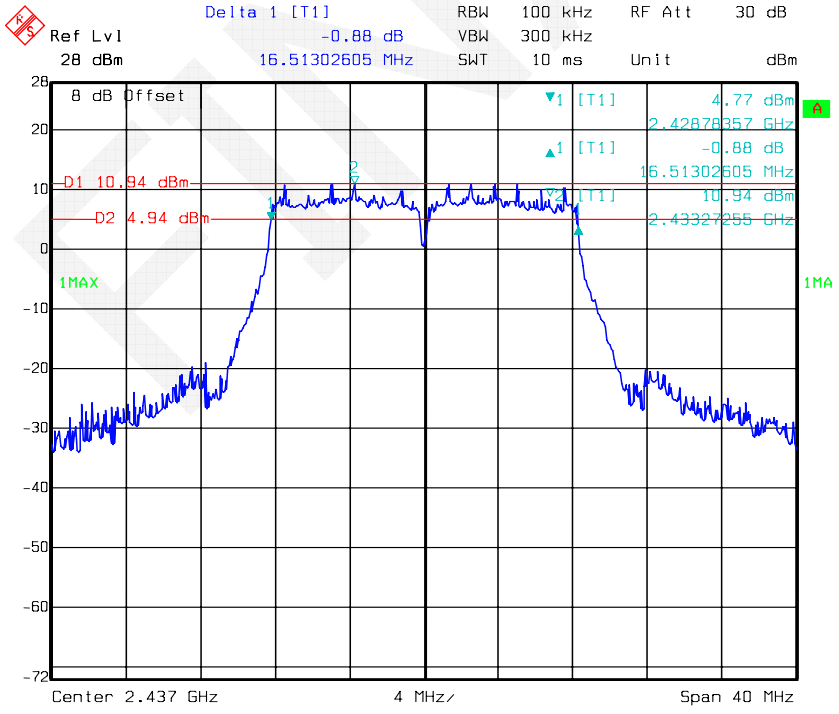
802.11b High Channel (Chain 0)



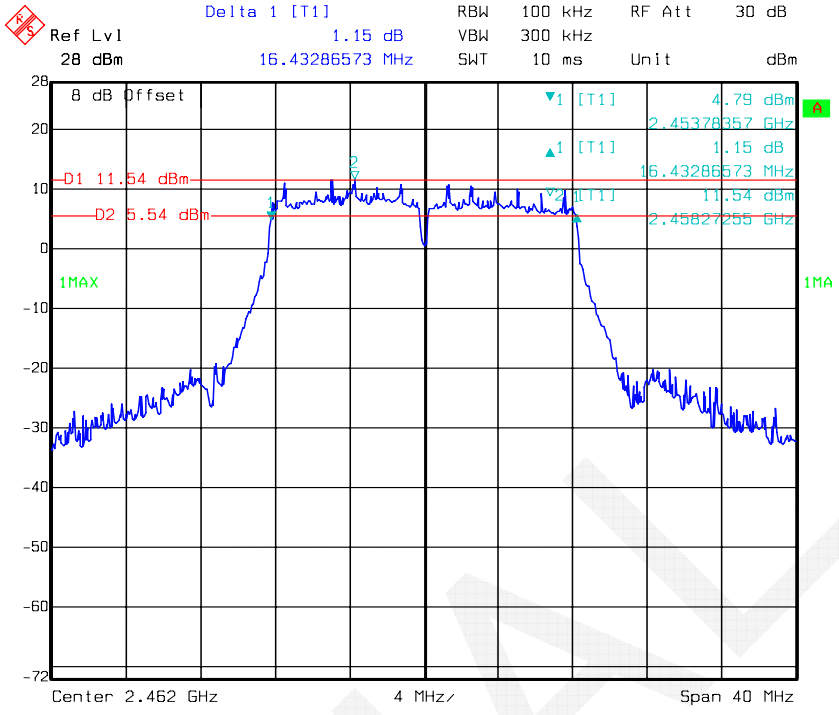
802.11g Low Channel (Chain 0)



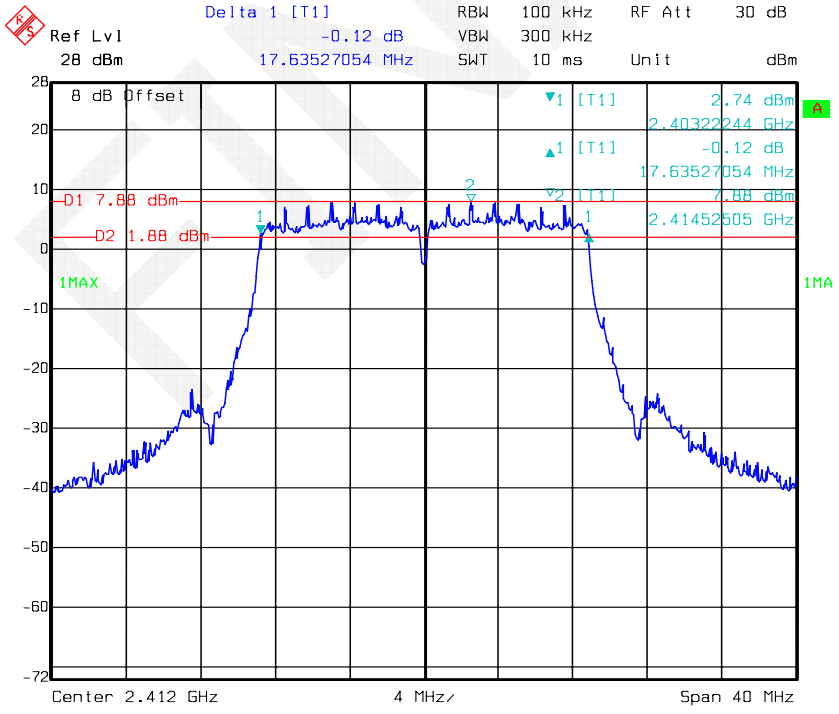
802.11g Middle Channel (Chain 0)



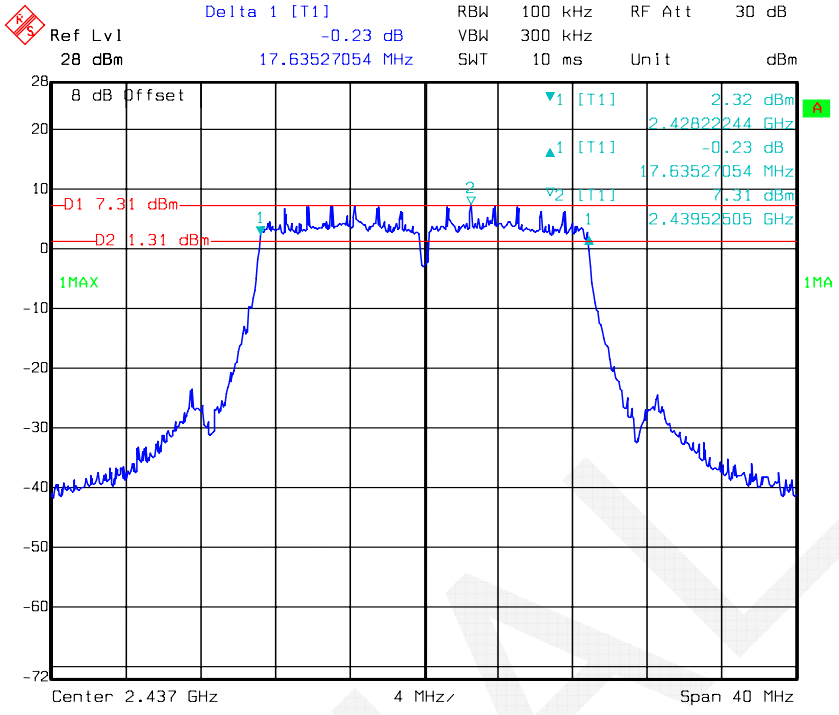
802.11g High Channel (Chain 0)



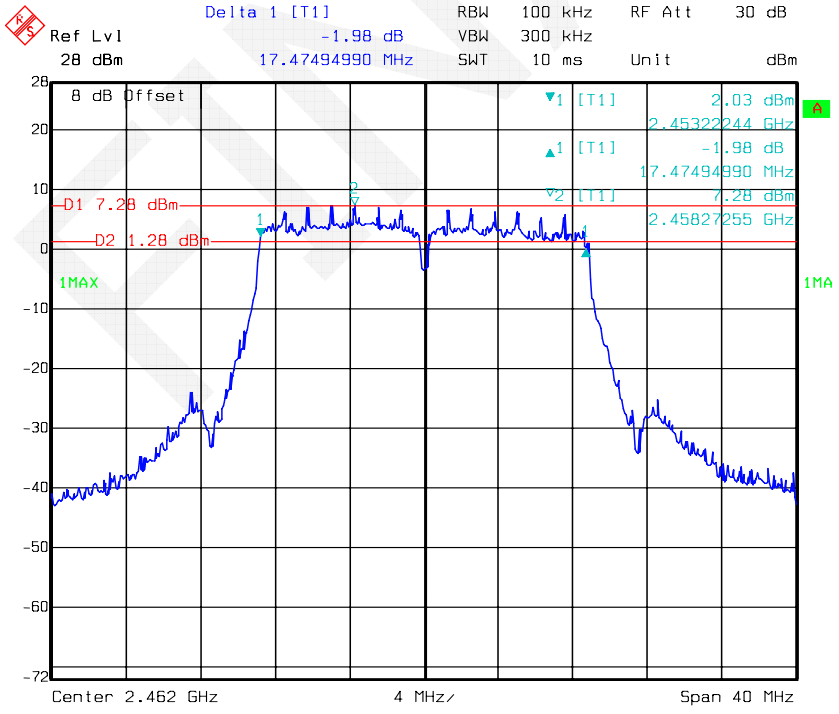
802.11n ht20 Low Channel (Chain 0)



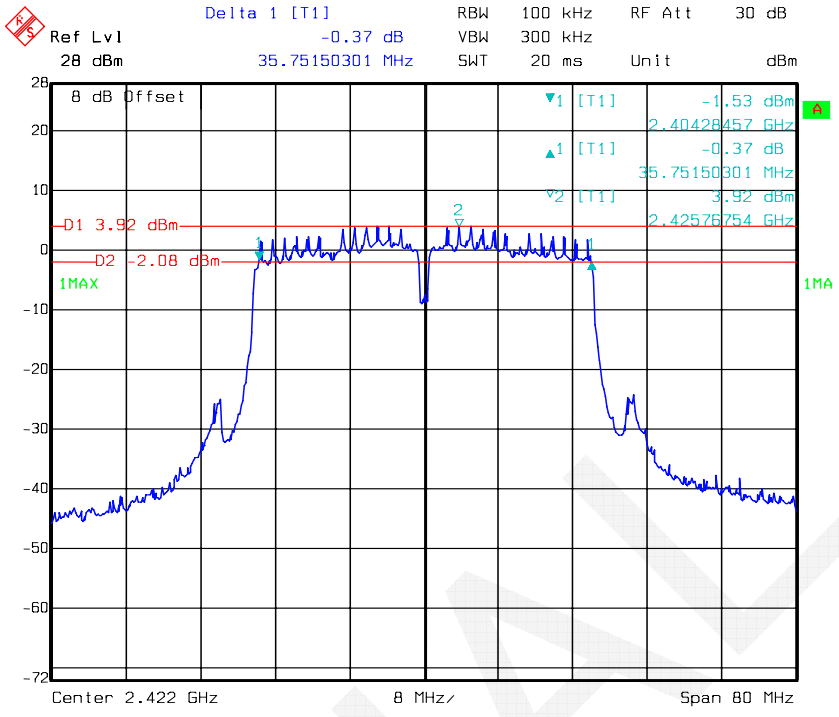
802.11n ht20 Middle Channel (Chain 0)



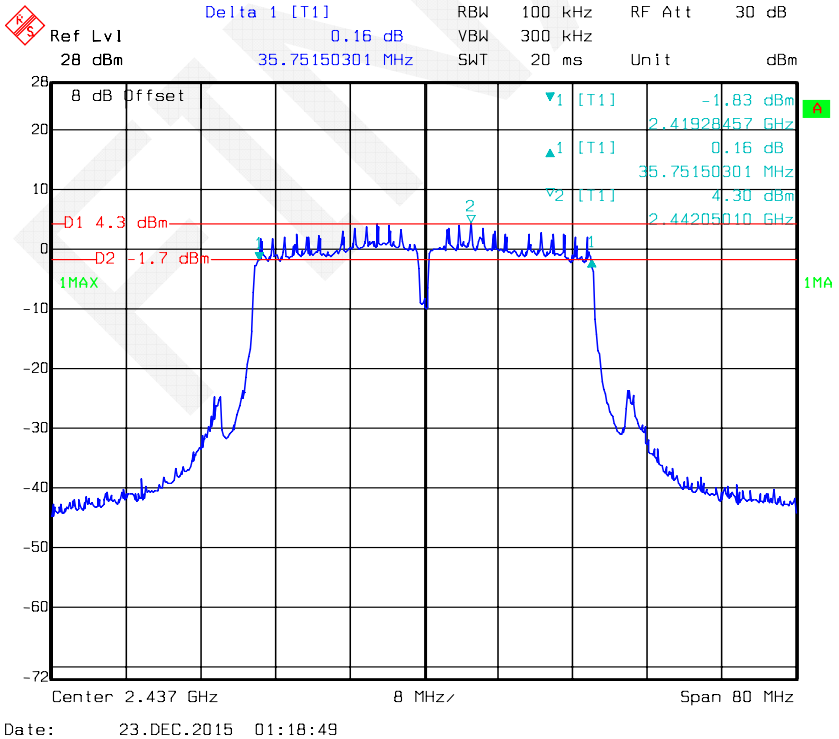
802.11n ht20 High Channel (Chain 0)



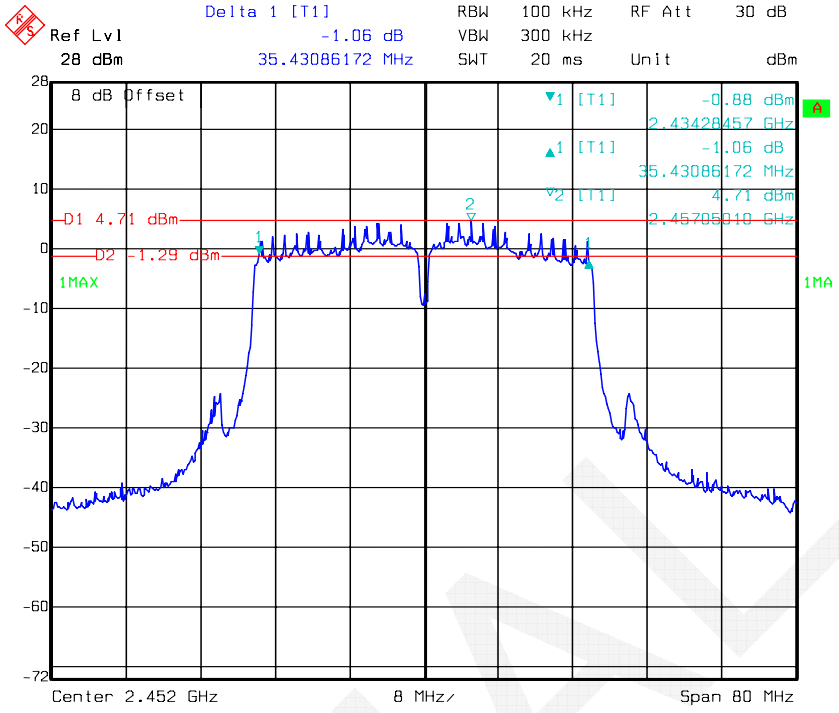
802.11n ht40 Low Channel (Chain 0)



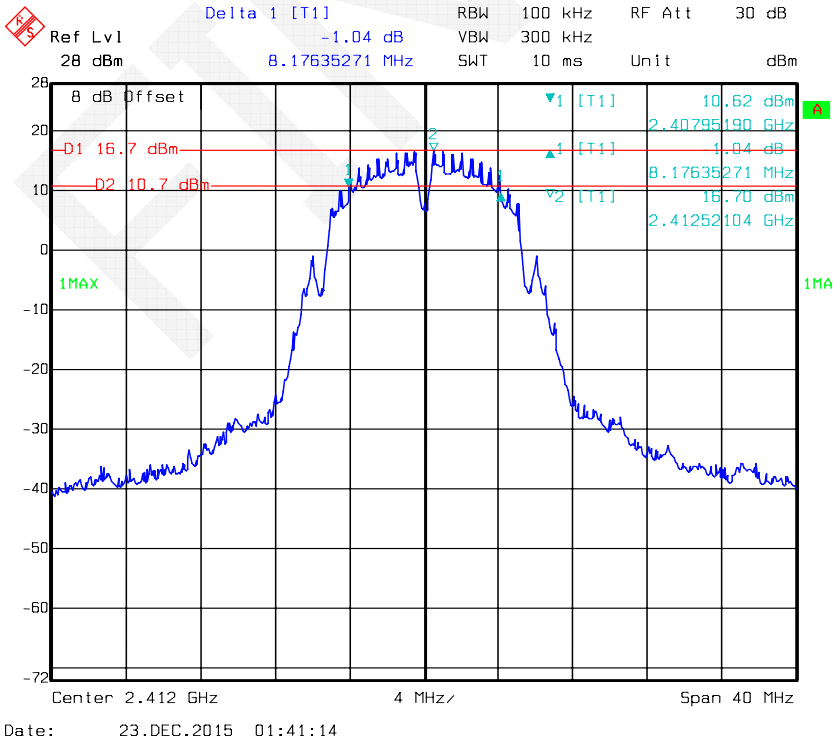
802.11n ht40 Middle Channel (Chain 0)



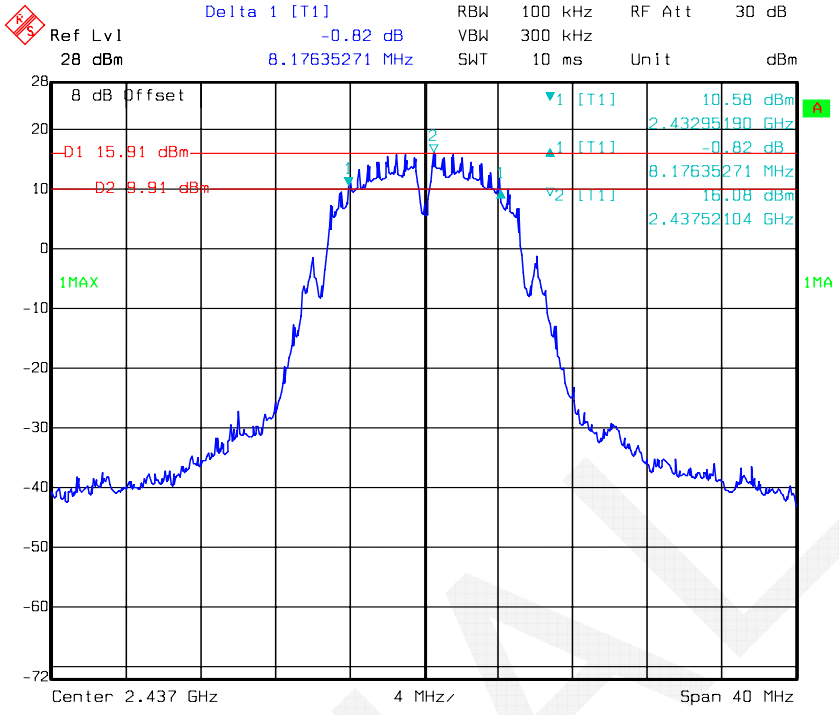
802.11n ht40 High Channel (Chain 0)



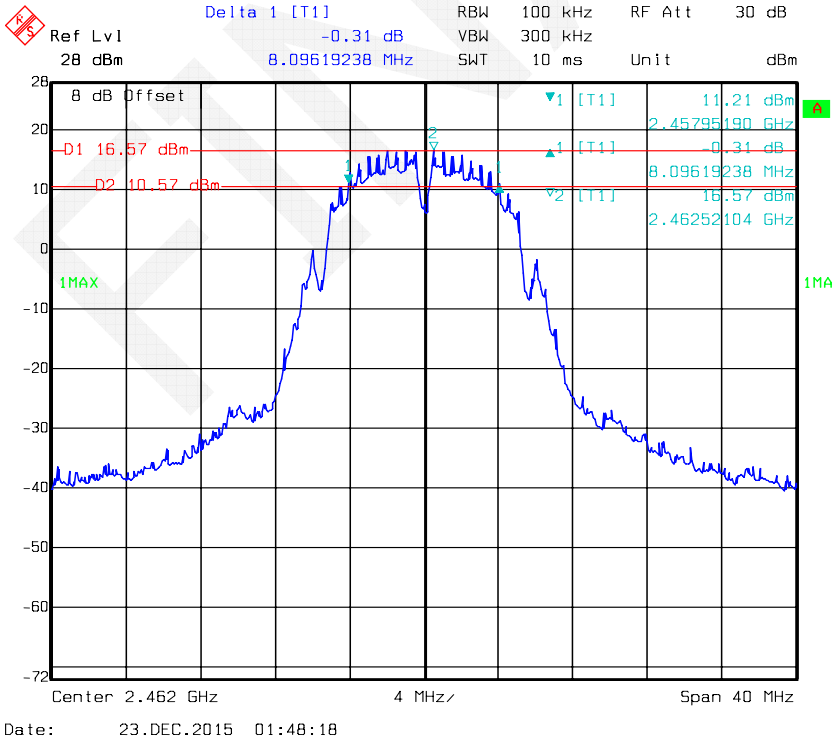
802.11b Low Channel (Chain 1)



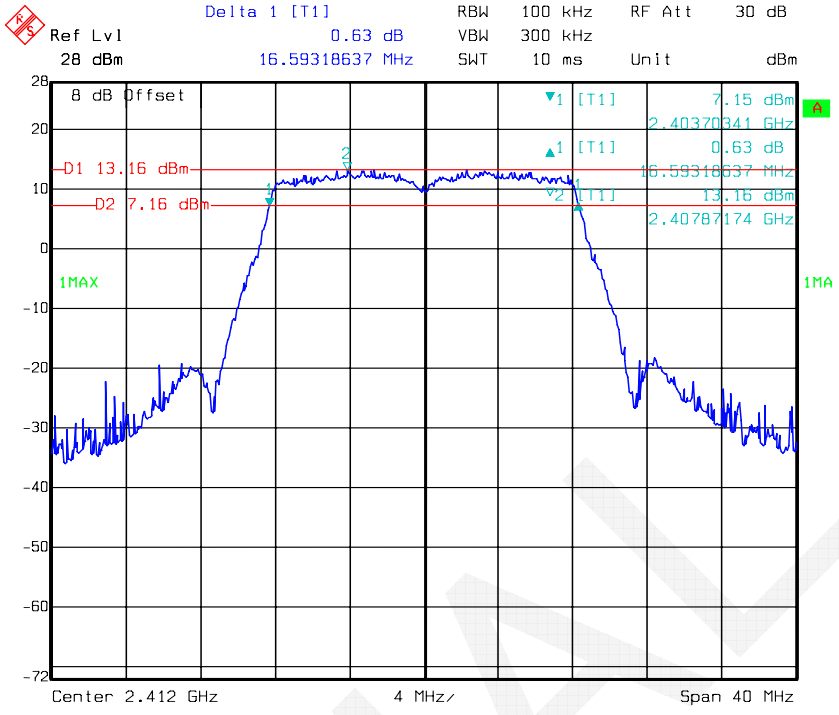
802.11b Middle Channel (Chain 1)



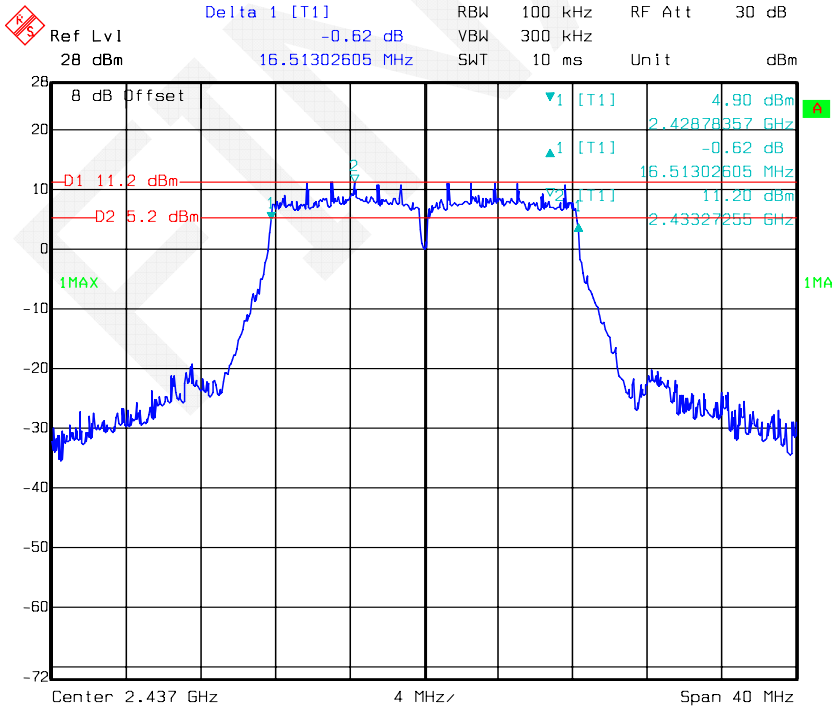
802.11b High Channel (Chain 1)



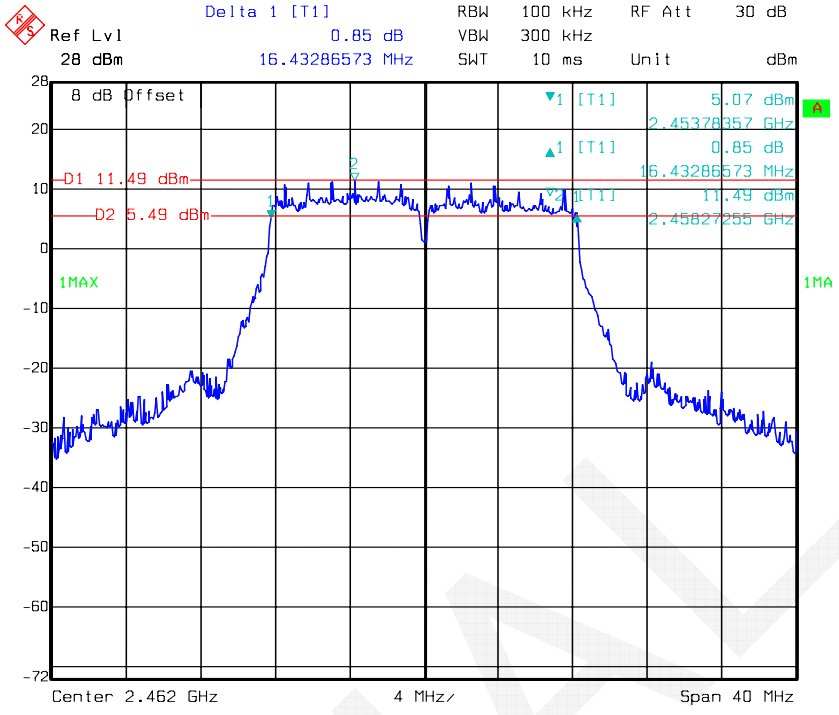
802.11g Low Channel (Chain 1)



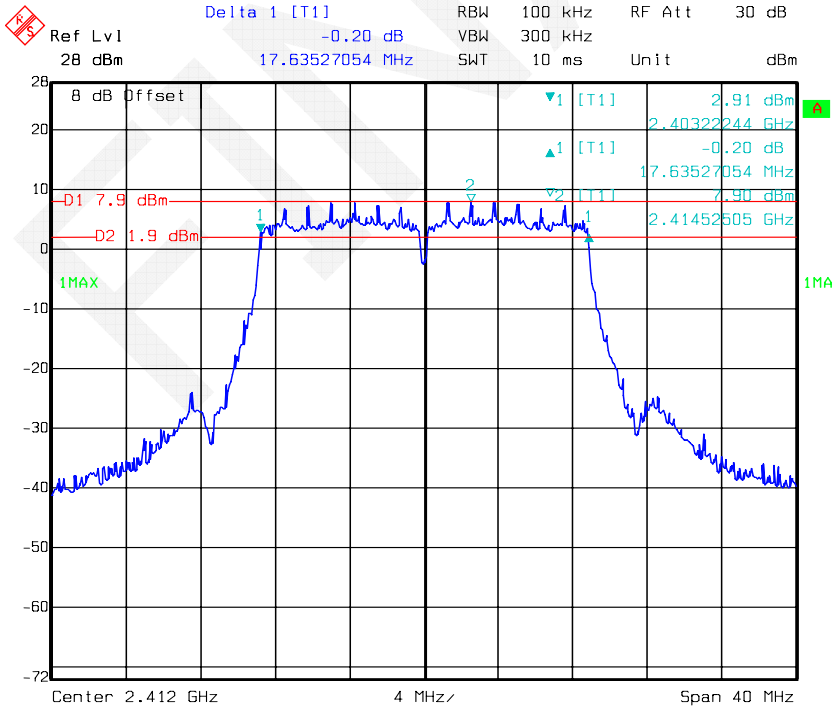
802.11g Middle Channel (Chain 1)



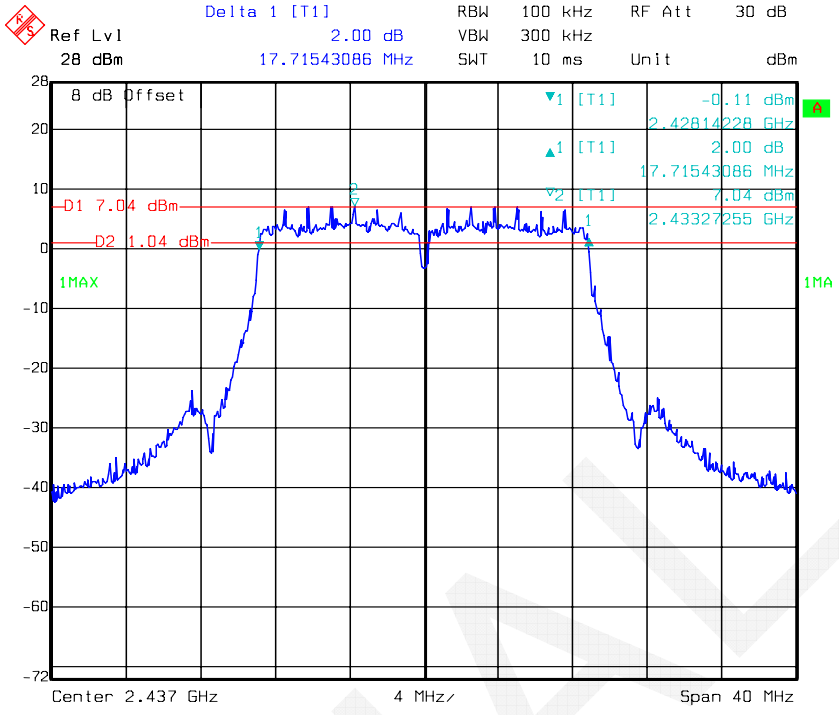
802.11g High Channel (Chain 1)



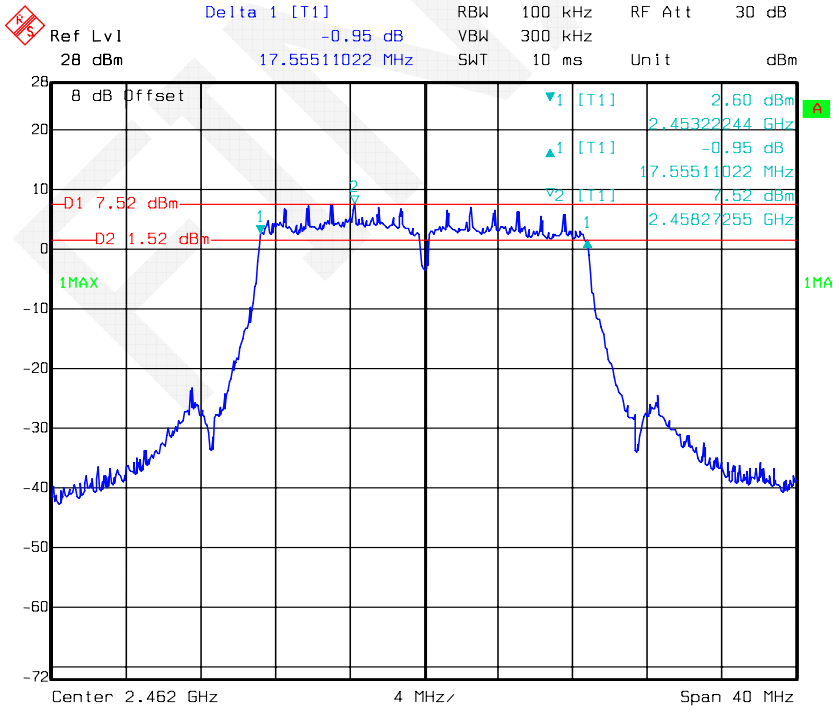
802.11n ht20 Low Channel (Chain 1)



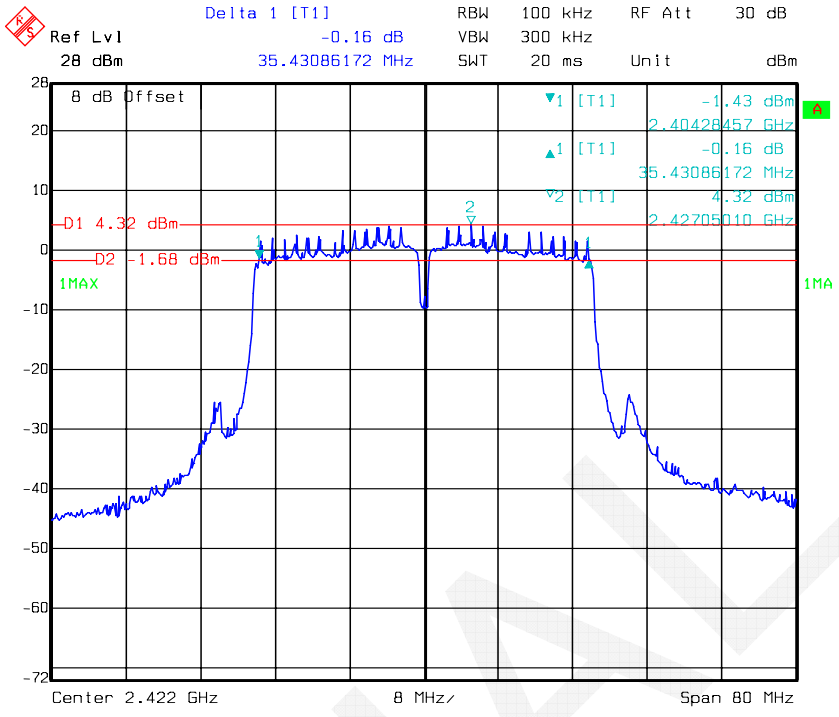
802.11n ht20 Middle Channel (Chain 1)



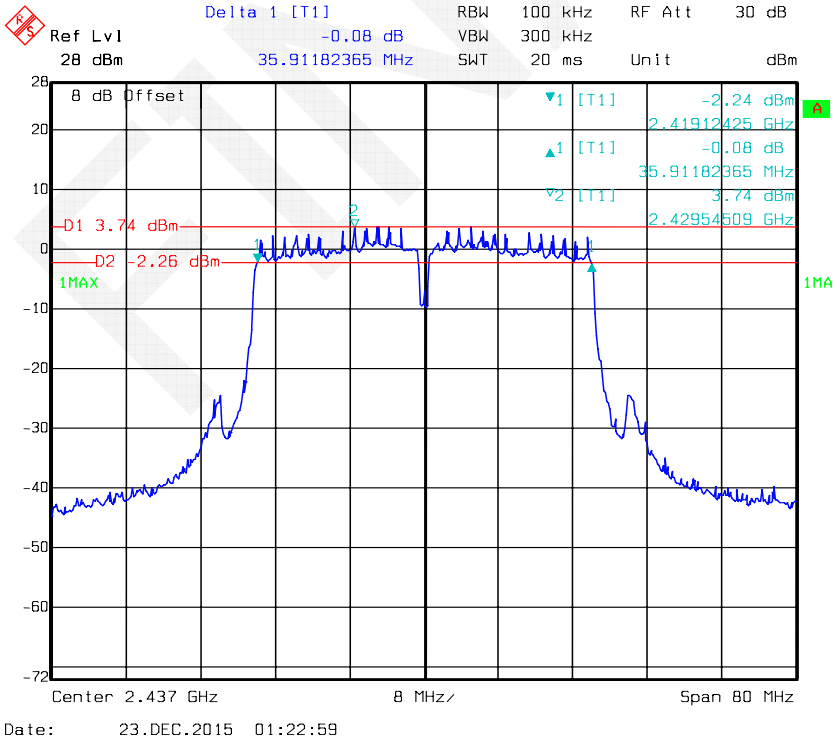
802.11n ht20 High Channel (Chain 1)



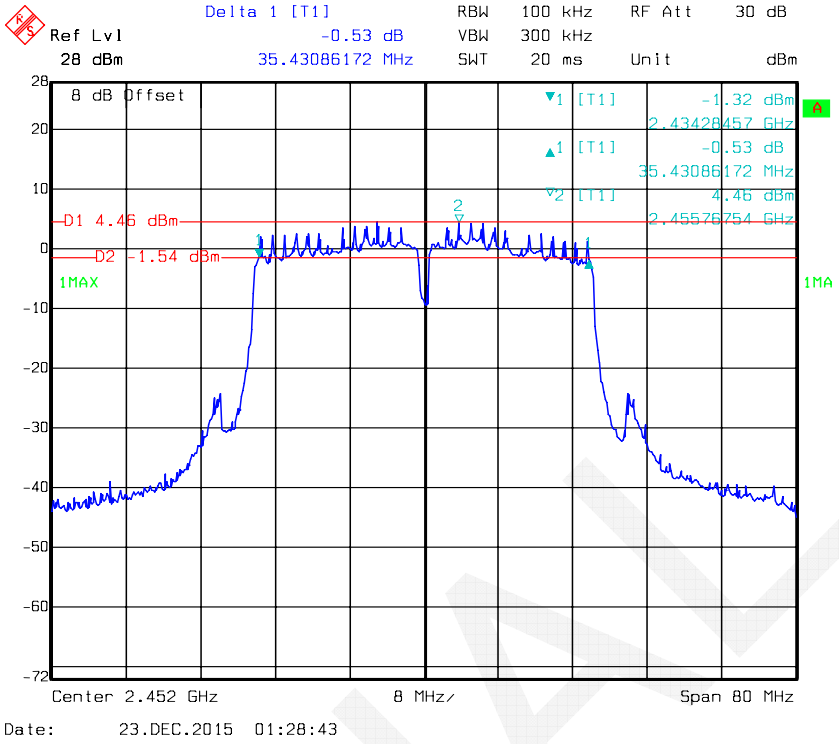
802.11n ht40 Low Channel (Chain 1)



802.11n ht40 Middle Channel (Chain 1)



802.11n ht40 High Channel (Chain 1)



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 v03r03

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	2015-11-03	2016-11-03
Agilent	Wideband Power Sensor	N1921A	MY54170013	2015-11-03	2016-11-03
Agilent	P-Series Power Meter	N1912A	MY5000448	2015-11-03	2016-11-03

*** 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:	25.1°C
Relative Humidity:	55 %
ATM Pressure:	101.1 kPa

** The testing was performed by Dean Lau on 2015-12-23*

Test Mode: Transmitting

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

Test mode	Channel	Frequency	Max Peak Conducted Output Power(dBm)		Total	Limit
		(MHz)	Chain 0	Chain 1	(dBm)	(dBm)
802.11b	Low	2412	29.28	28.68	/	30
	Middle	2437	28.79	28.33	/	30
	High	2462	28.67	28.63	/	30
802.11g	Low	2412	28.33	28.36	/	30
	Middle	2437	29.08	29.11	/	30
	High	2462	28.95	28.88	/	30
802.11n20	Low	2412	25.89	25.72	28.82	29
	Middle	2437	25.31	25.33	28.33	29
	High	2462	25.15	25.10	28.14	29
802.11n40	Low	2422	25.39	25.42	28.42	29
	Middle	2437	25.55	25.36	28.47	29
	High	2452	25.40	25.56	28.49	29

Test mode	Channel	Frequency	Max Conducted Average Output Power(dBm)		Total	Limit
		(MHz)	Chain 0	Chain 1	(dBm)	(dBm)
802.11b	Low	2412	27.62	27.04	/	30
	Middle	2437	27.13	26.73	/	30
	High	2462	27.03	26.95	/	30
802.11g	Low	2412	23.56	23.63	/	30
	Middle	2437	24.41	24.42	/	30
	High	2462	24.22	24.15	/	30
802.11n20	Low	2412	21.22	21.21	24.23	29
	Middle	2437	20.58	20.53	23.57	29
	High	2462	20.45	20.49	23.48	29
802.11n40	Low	2422	18.31	18.46	21.40	29
	Middle	2437	18.57	18.33	21.46	29
	High	2452	18.43	18.57	21.51	29

Note: 1. Directional gain = G_{ANT} +10 log (N_{ANT}) dBi = 3.43+ 10 log (*2*) = 6.43 dBi, so the limit shall be reduced to 30-1= 29 dBm
2. Duty cycle is 100%.

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	FSP 38	100478	2015-11-23	2016-11-22

*** 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

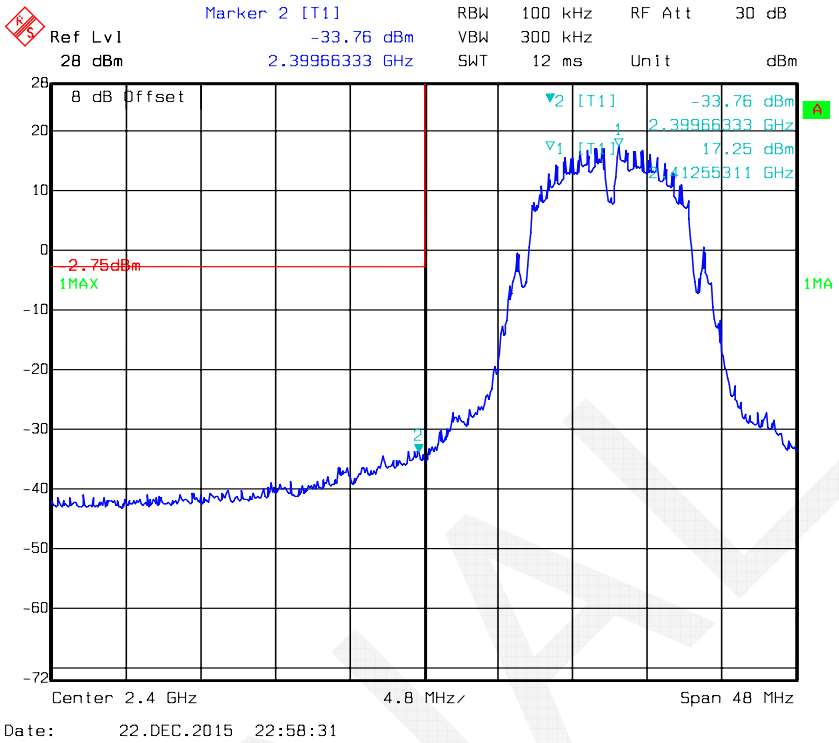
Temperature:	24.9~25.1°C
Relative Humidity:	52~55 %
ATM Pressure:	101.1~101.2 kPa

** The testing was performed by Dean Lau from 2015-12-22 to 2015-12-23*

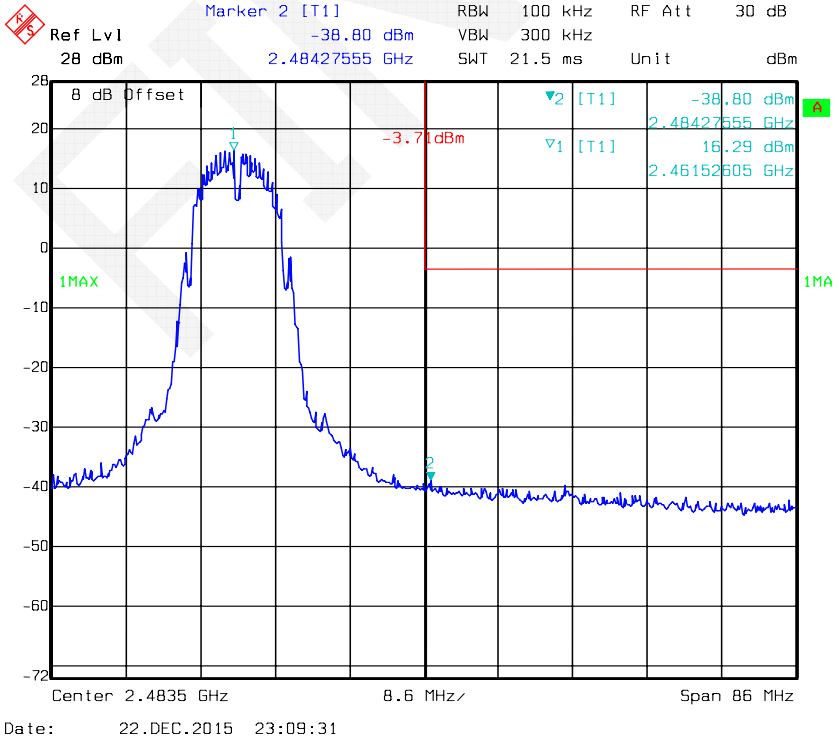
Test mode: Transmitting

Test Result: Compliant. Please refer to following plots.

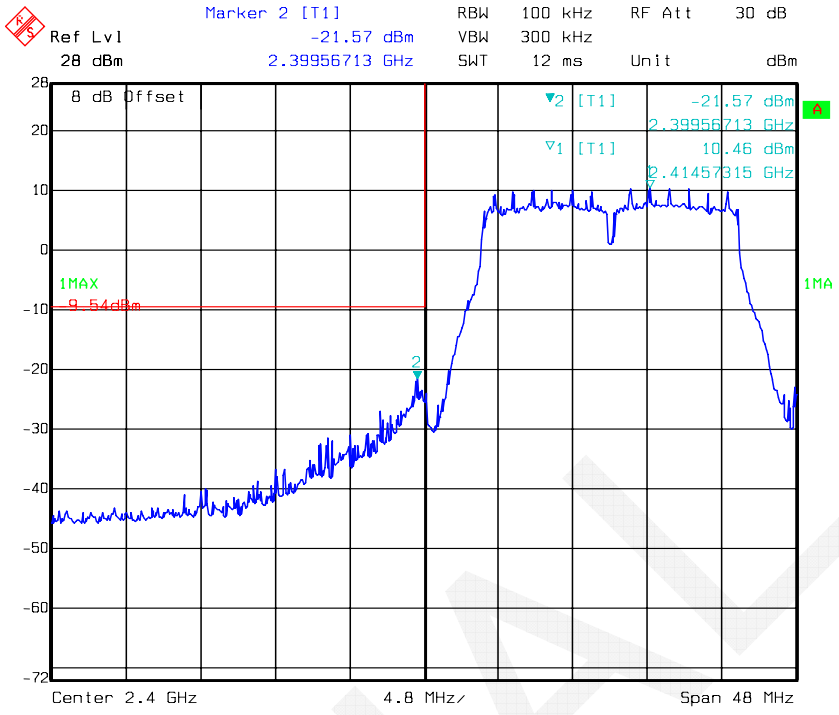
802.11b: Band Edge, Left Side (Chain 0)



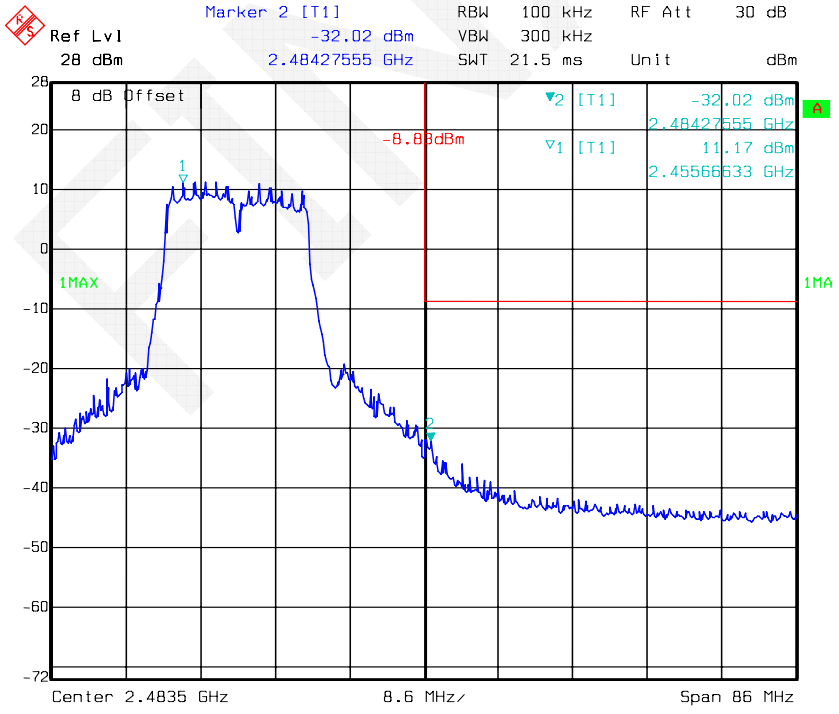
802.11b: Band Edge, Right Side (Chain 0)



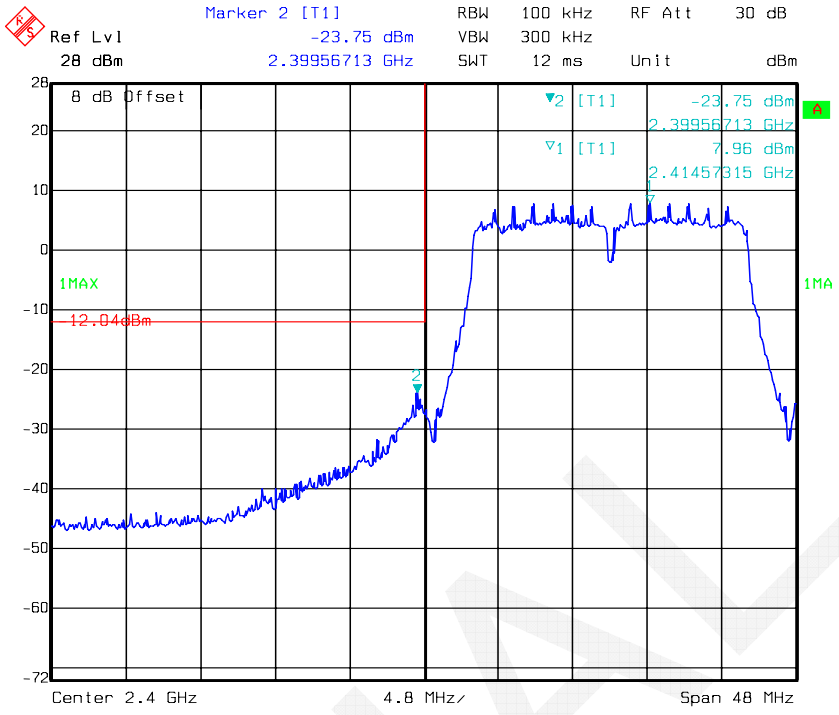
802.11g: Band Edge, Left Side (Chain 0)



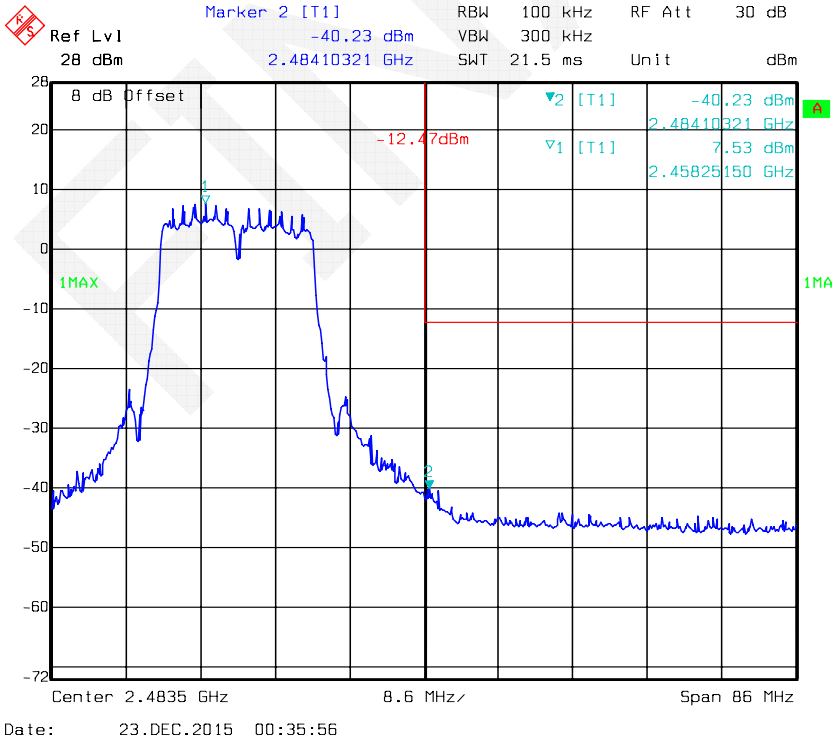
802.11g: Band Edge, Right Side (Chain 0)



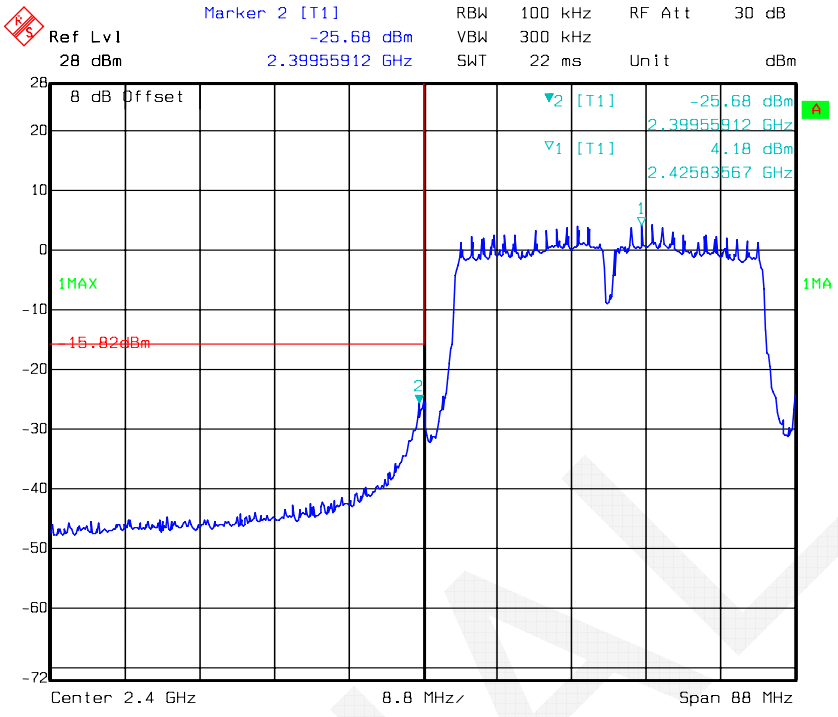
802.11n ht20 Band Edge, Left Side (Chain 0)



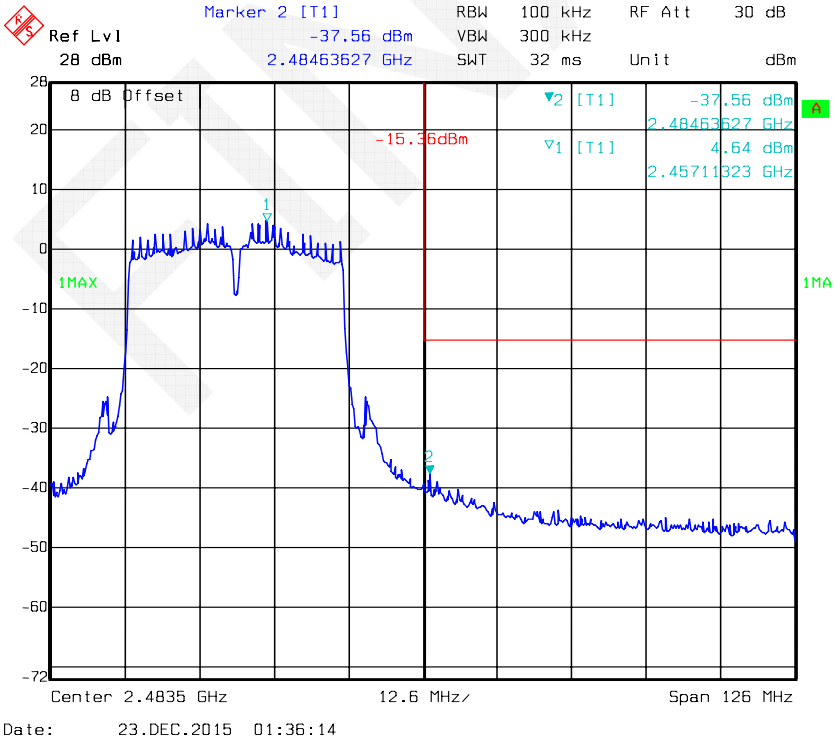
802.11n ht20 Band Edge, Right Side (Chain 0)



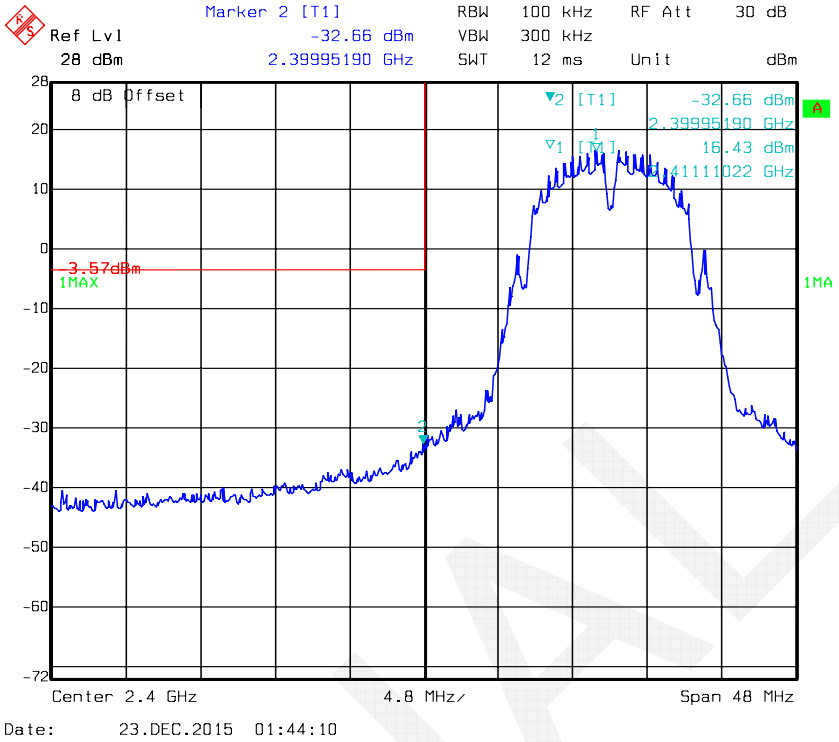
802.11n ht40 Band Edge, Left Side (Chain 0)



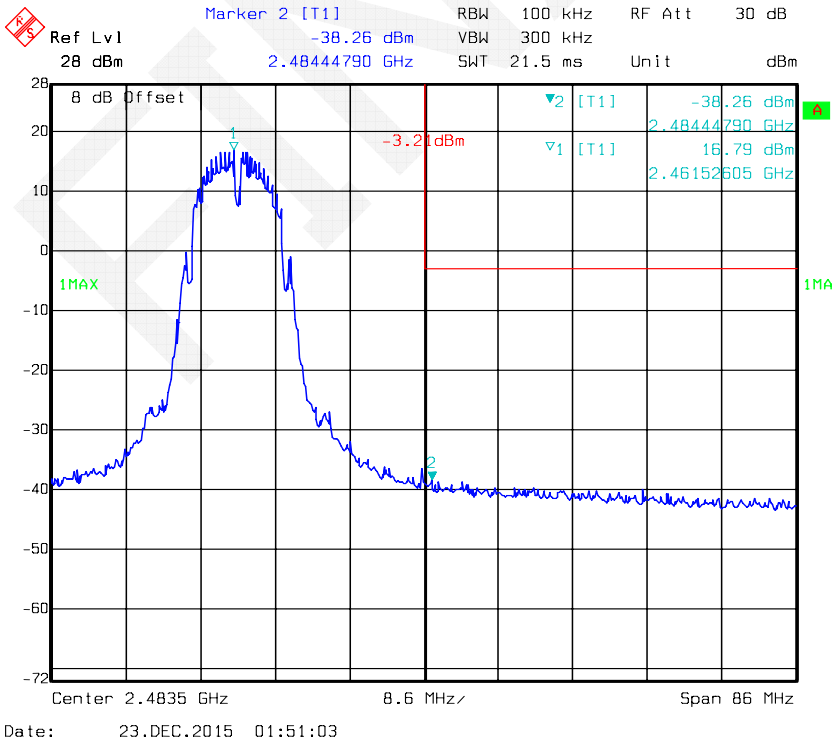
802.11n ht40 Band Edge, Right Side (Chain 0)



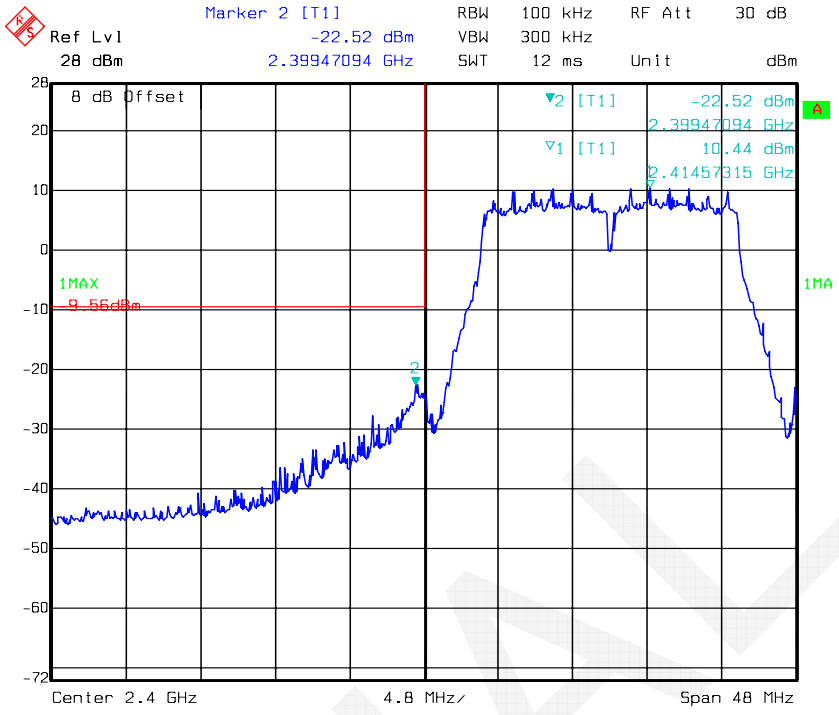
802.11b: Band Edge, Left Side (Chain 1)



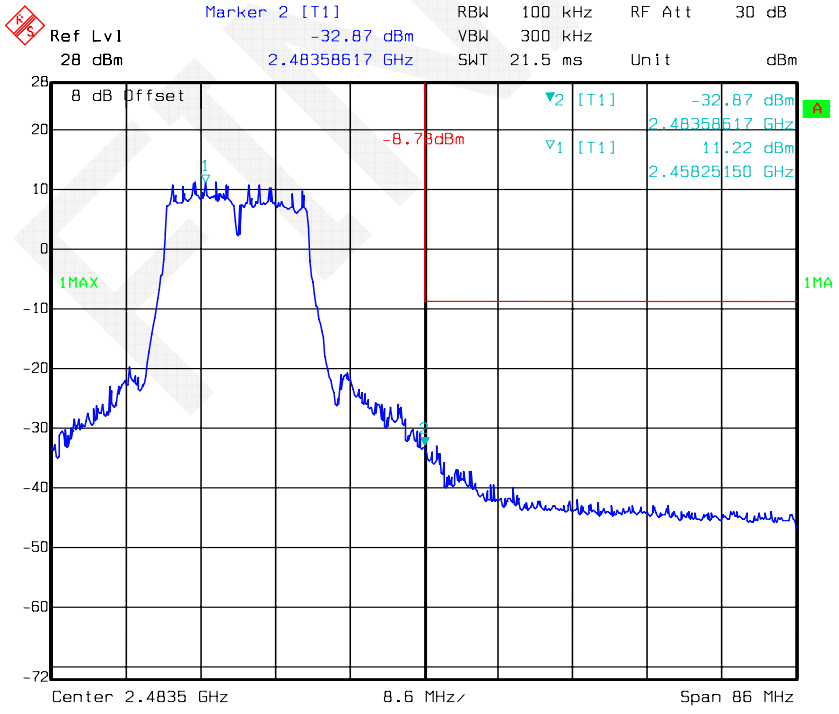
802.11b: Band Edge, Right Side (Chain 1)



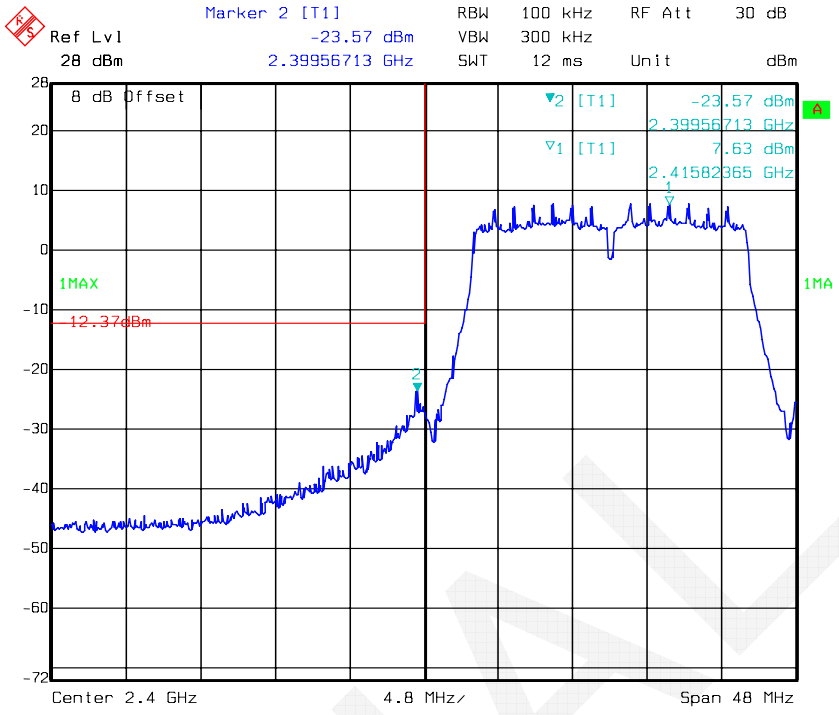
802.11g: Band Edge, Left Side (Chain 1)



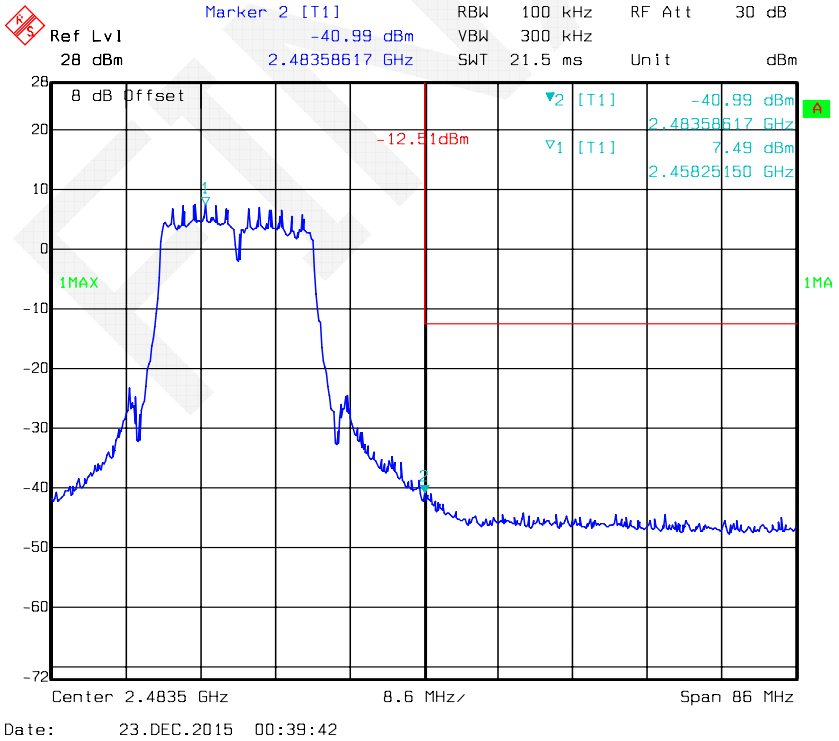
802.11g: Band Edge, Right Side (Chain 1)



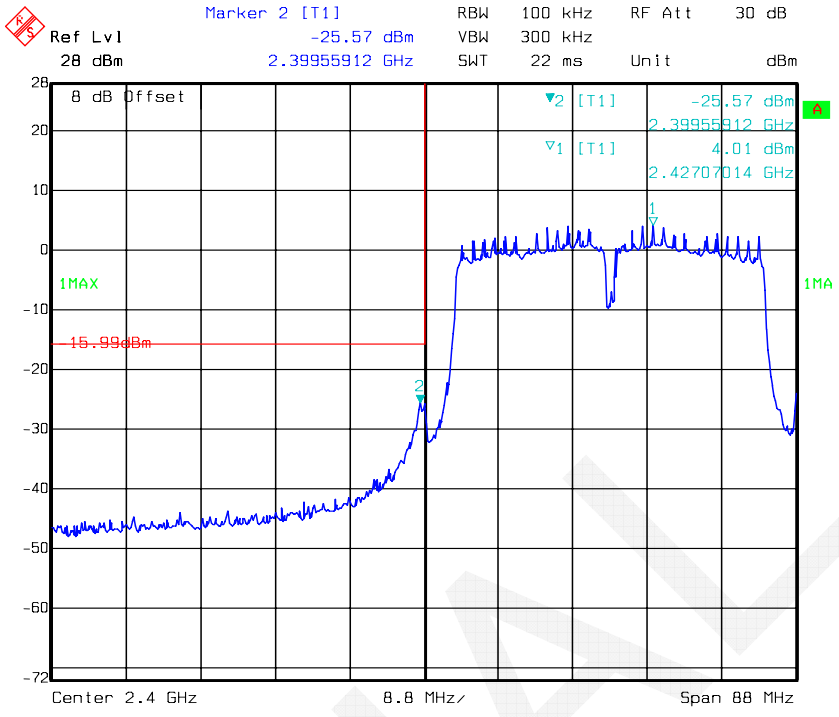
802.11n ht20 Band Edge, Left Side (Chain 1)



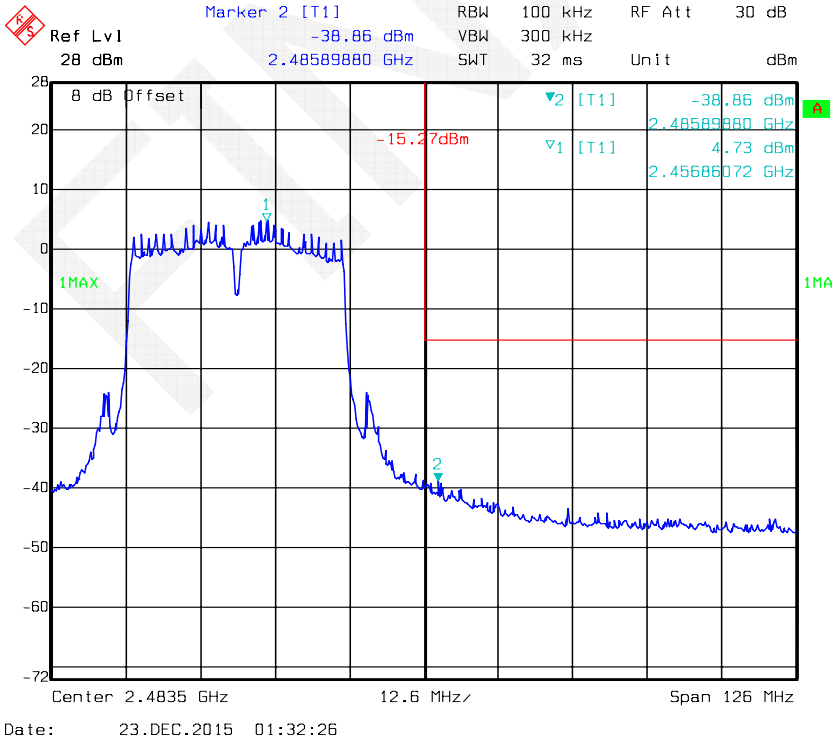
802.11n ht20 Band Edge, Right Side (Chain 1)



802.11n ht40 Band Edge, Left Side (Chain 1)



802.11n ht40 Band Edge, Right Side (Chain 1)



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 v03r03

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	FSP 38	100478	2015-11-23	2016-11-22

*** 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:	24.9~25.1°C
Relative Humidity:	52~55 %
ATM Pressure:	101.1~101.2kPa

** The testing was performed by Dean Lau from 2015-12-22 to 2015-12-23*

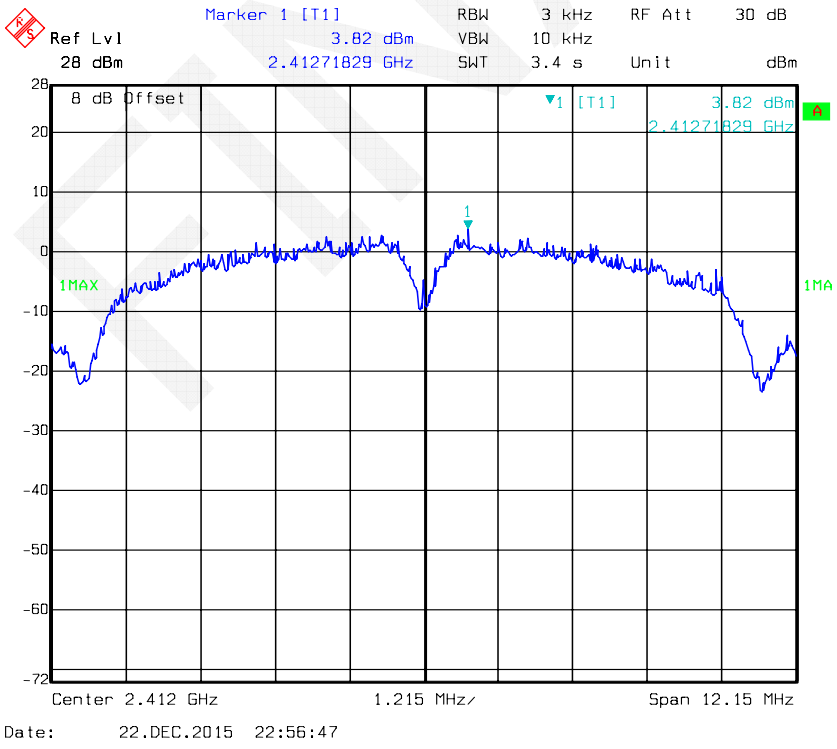
Test Mode: Transmitting

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

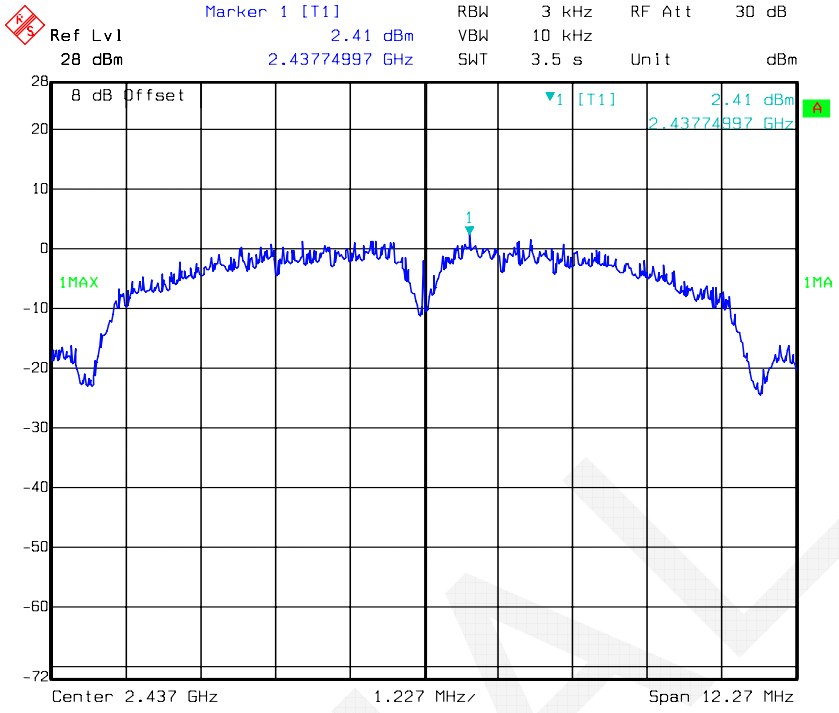
Test mode	Channel	Frequency (MHz)	PSD (dBm/3kHz)		Limit (dBm/3kHz)
			Chain 0	Chain 1	
802.11b	Low	2412	3.82	3.78	≤8
	Middle	2437	2.41	4.16	≤8
	High	2462	2.26	1.89	≤8
802.11g	Low	2412	-3.50	-3.50	≤8
	Middle	2437	-2.88	-2.24	≤8
	High	2462	-2.86	-3.00	≤8
802.11n20	Low	2412	-6.31	-6.22	≤7
	Middle	2437	-6.08	-5.49	≤7
	High	2462	-6.55	-6.47	≤7
802.11n40	Low	2422	-10.47	-10.52	≤7
	Middle	2437	-10.85	-11.07	≤7
	High	2452	-10.82	-9.40	≤7

Note: 1. Directional gain = G_{ANT} +10 log (N_{ANT}) dBi = 3.43+ 10 log (2) = 6.43 dBi, so the limit shall be reduced to 8-1= 7 dBm
2. Duty cycle is 100%.

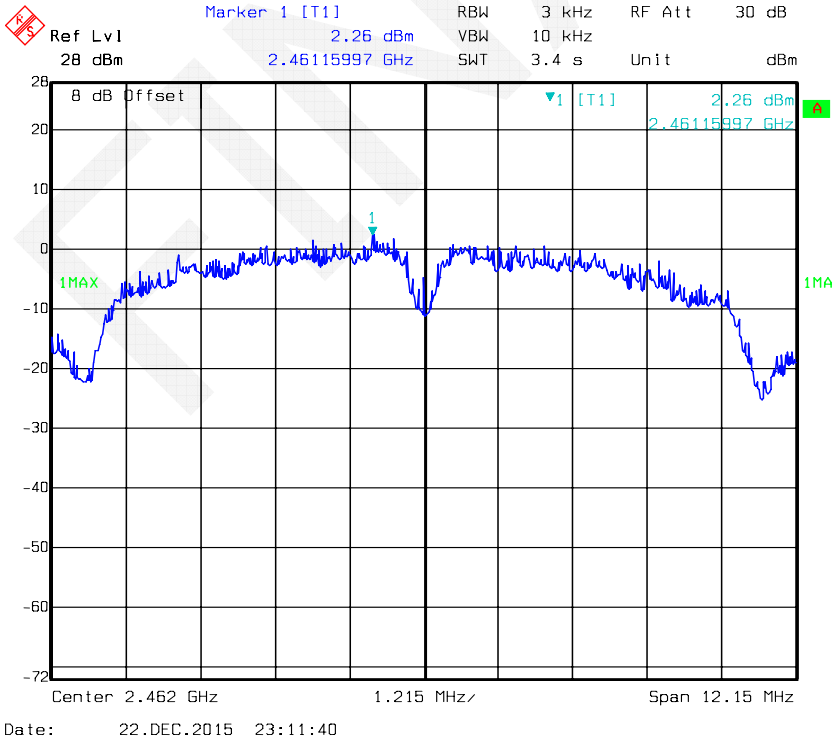
Power Spectral Density, 802.11b Low Channel (Chain 0)



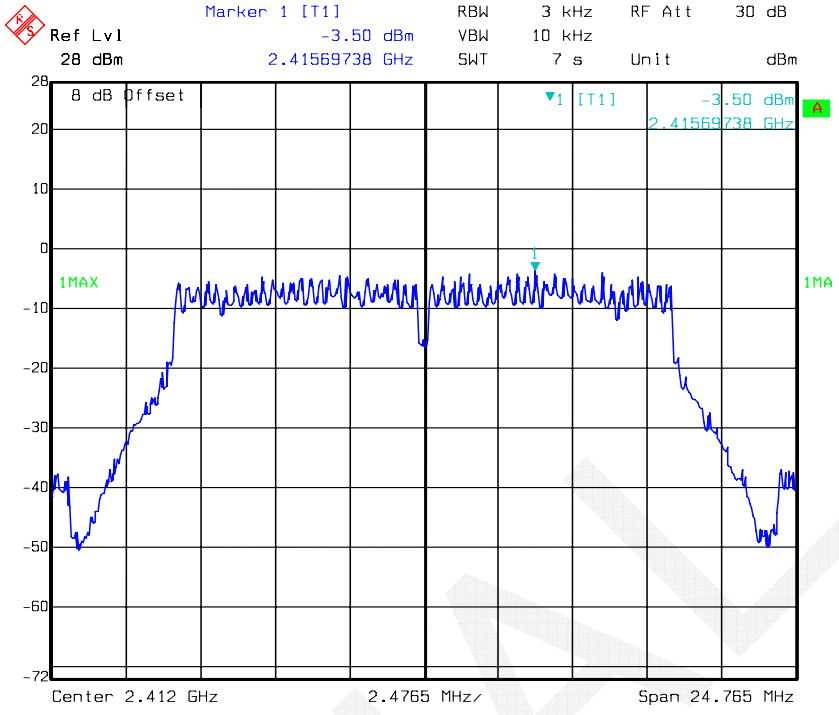
Power Spectral Density, 802.11b Middle Channel (Chain 0)



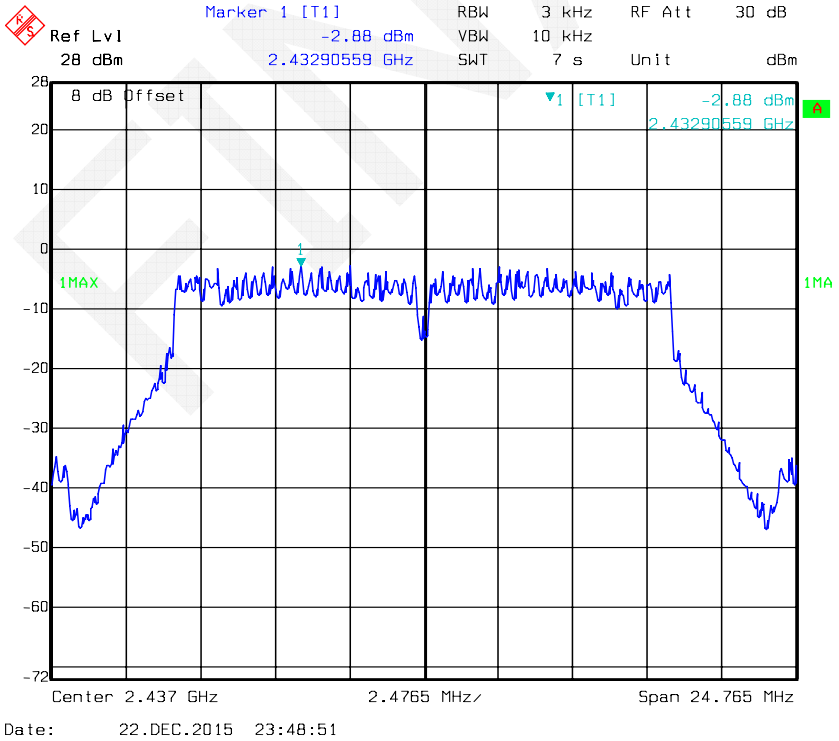
Power Spectral Density, 802.11b High Channel (Chain 0)



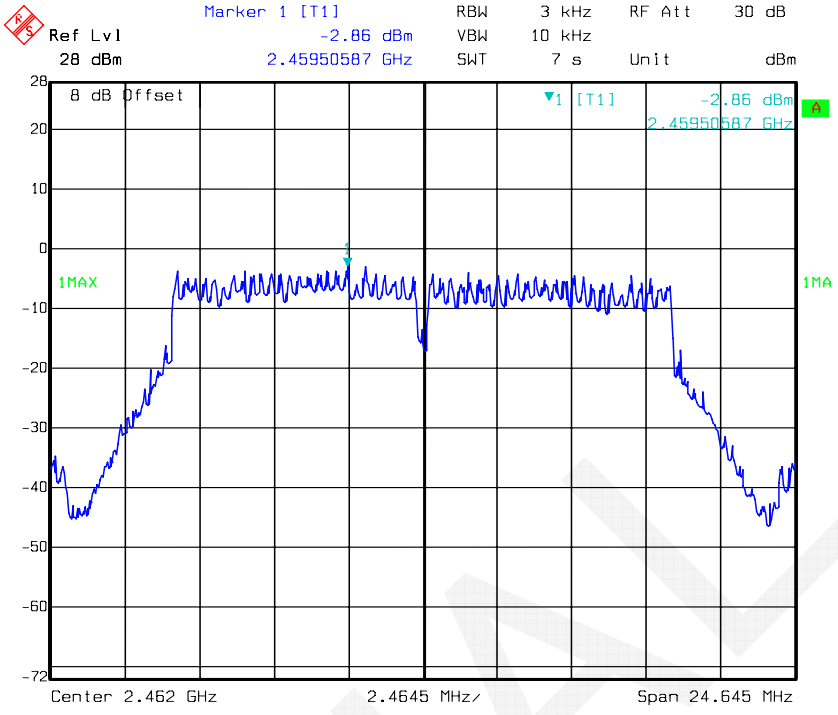
Power Spectral Density, 802.11g Low Channel (Chain 0)



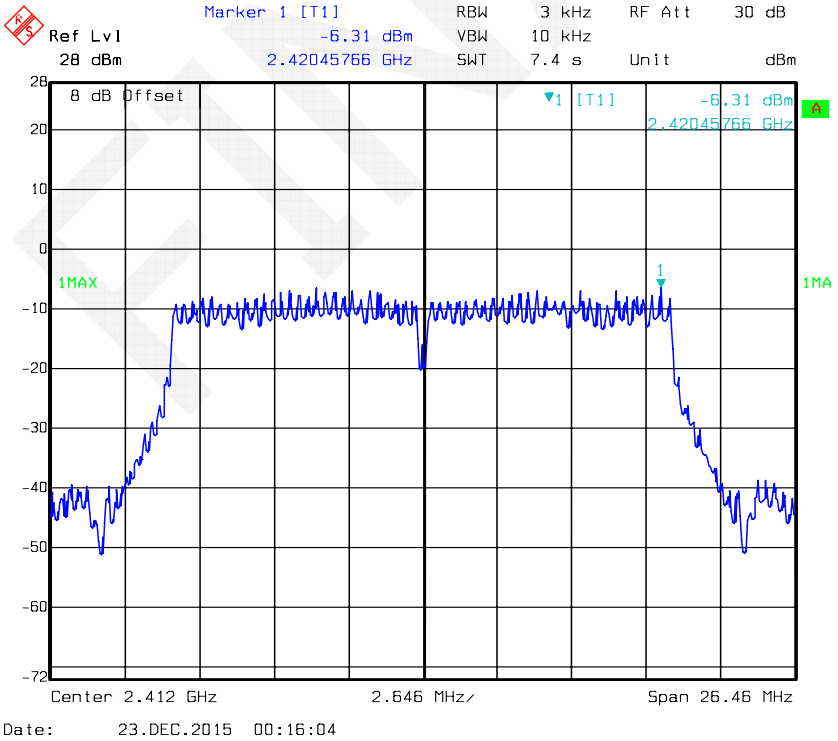
Power Spectral Density, 802.11g Middle Channel (Chain 0)



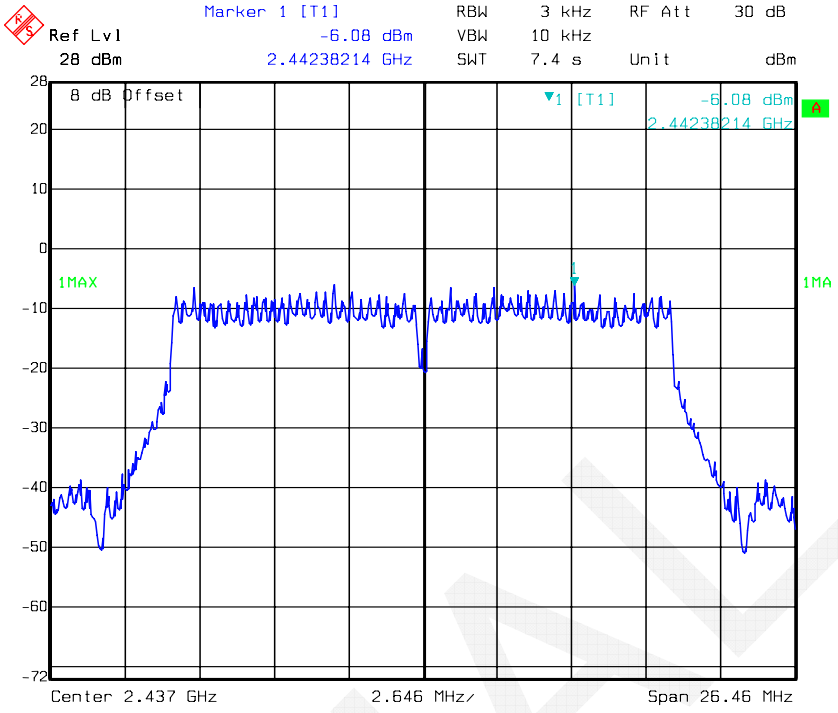
Power Spectral Density, 802.11g High Channel (Chain 0)



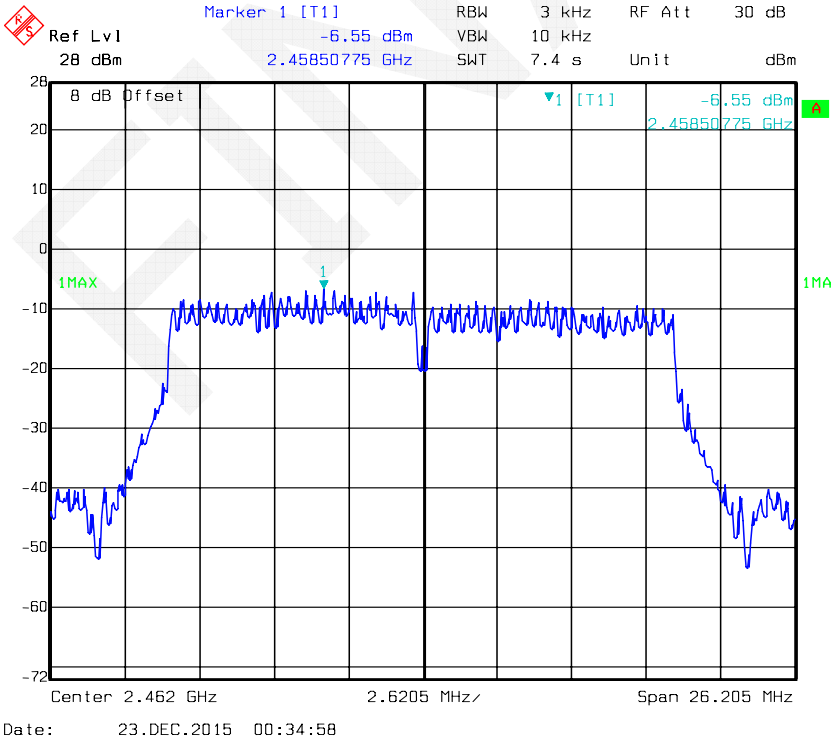
Power Spectral Density, 802.11n ht20 Low Channel (Chain 0)



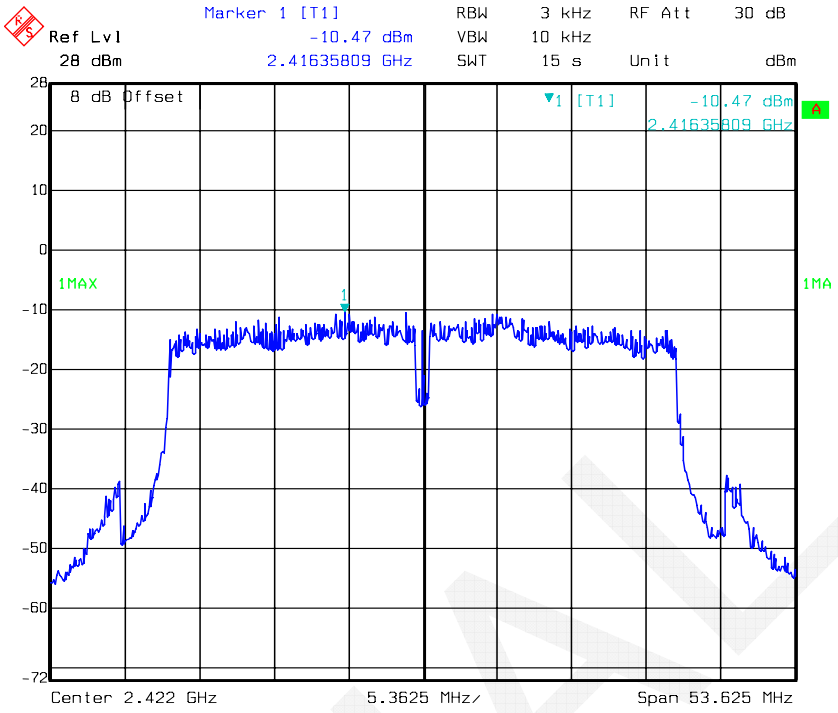
Power Spectral Density, 802.11n ht20 Middle Channel (Chain 0)



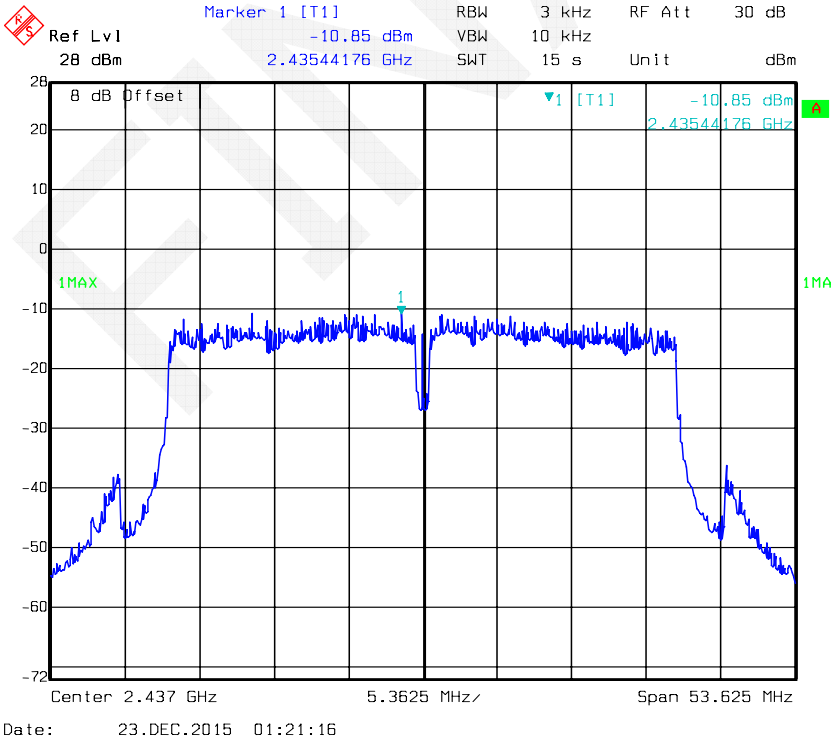
Power Spectral Density, 802.11n ht20 High Channel (Chain 0)



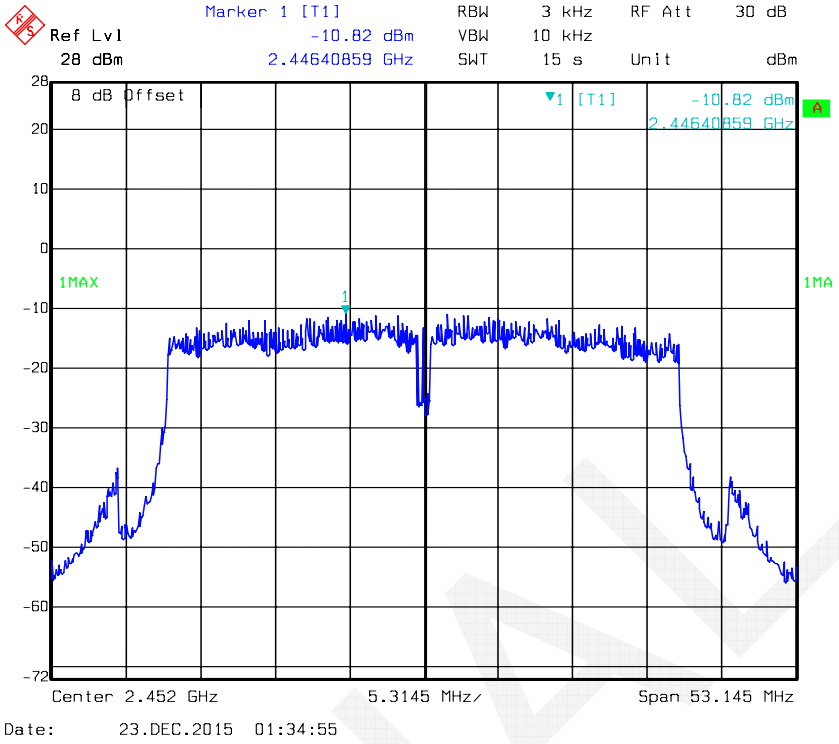
Power Spectral Density, 802.11n ht40 Low Channel (Chain 0)



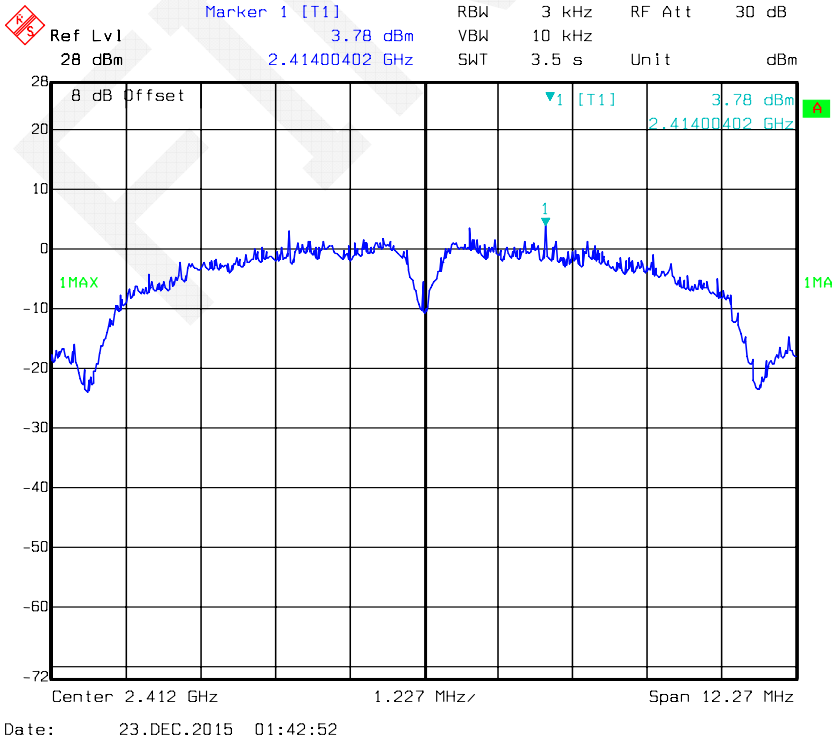
Power Spectral Density, 802.11n ht40 Middle Channel (Chain 0)



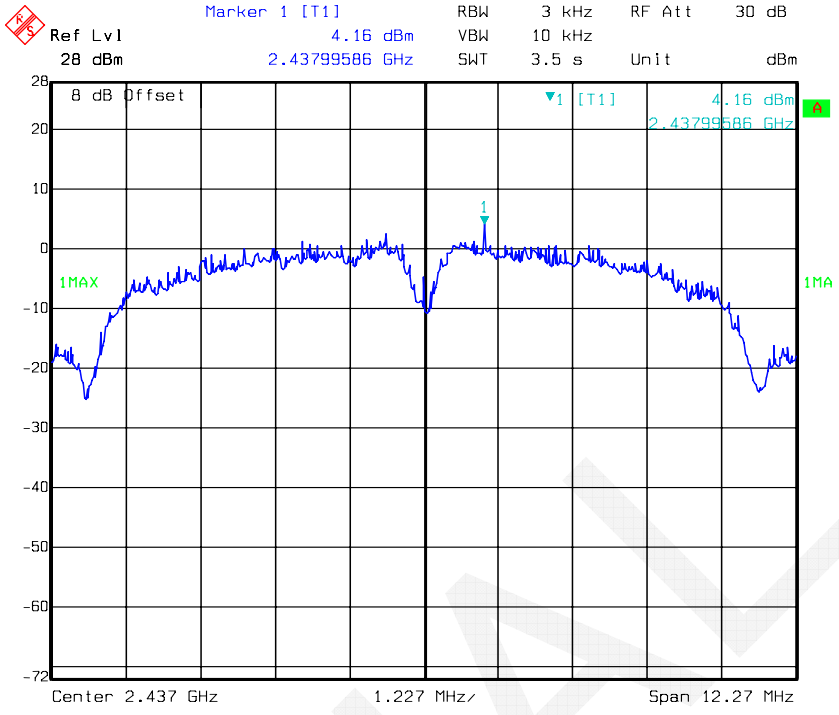
Power Spectral Density, 802.11n ht40 High Channel (Chain 0)



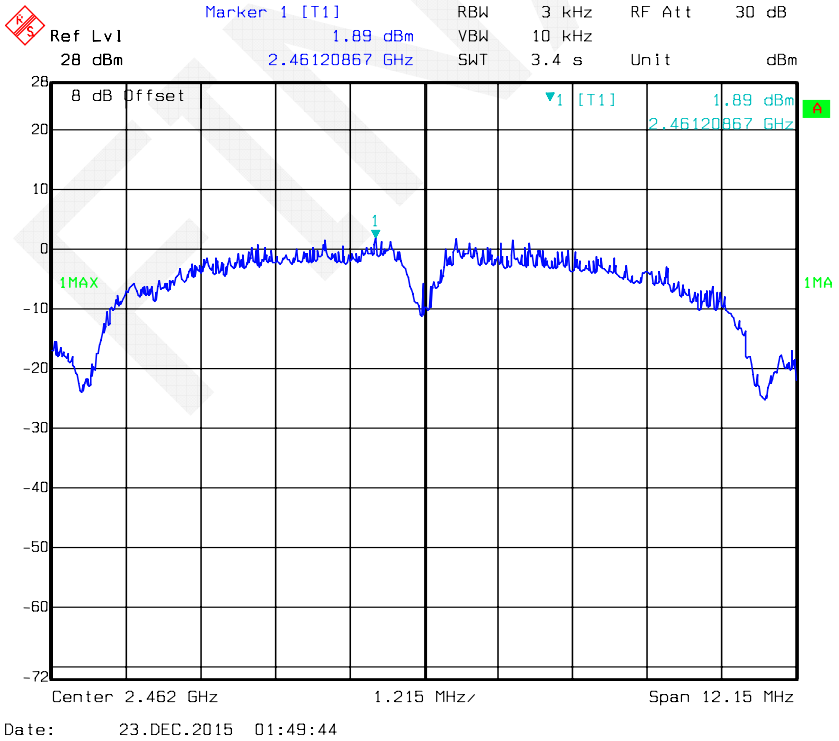
Power Spectral Density, 802.11b Low Channel (Chain 1)



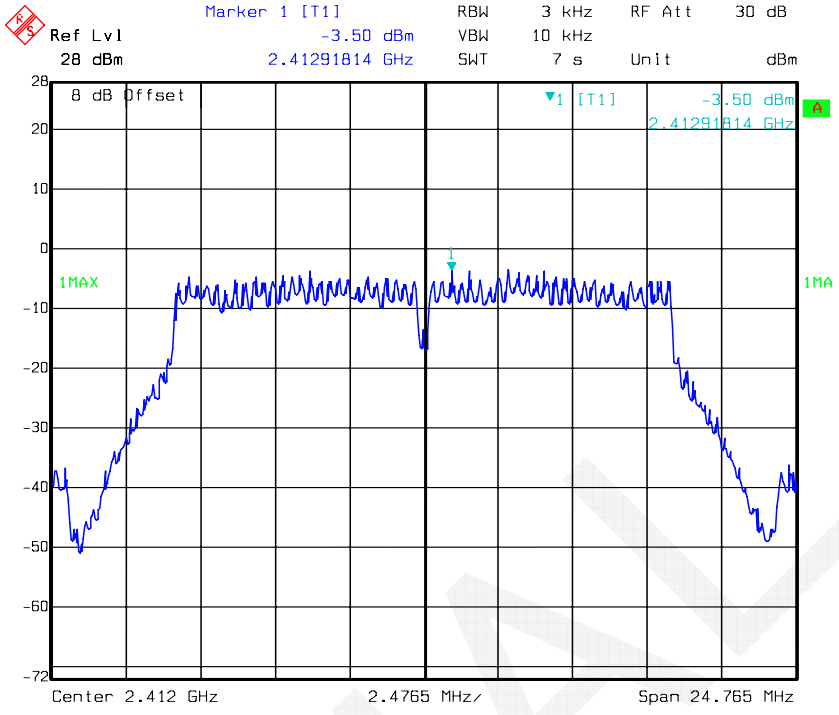
Power Spectral Density, 802.11b Middle Channel (Chain 1)



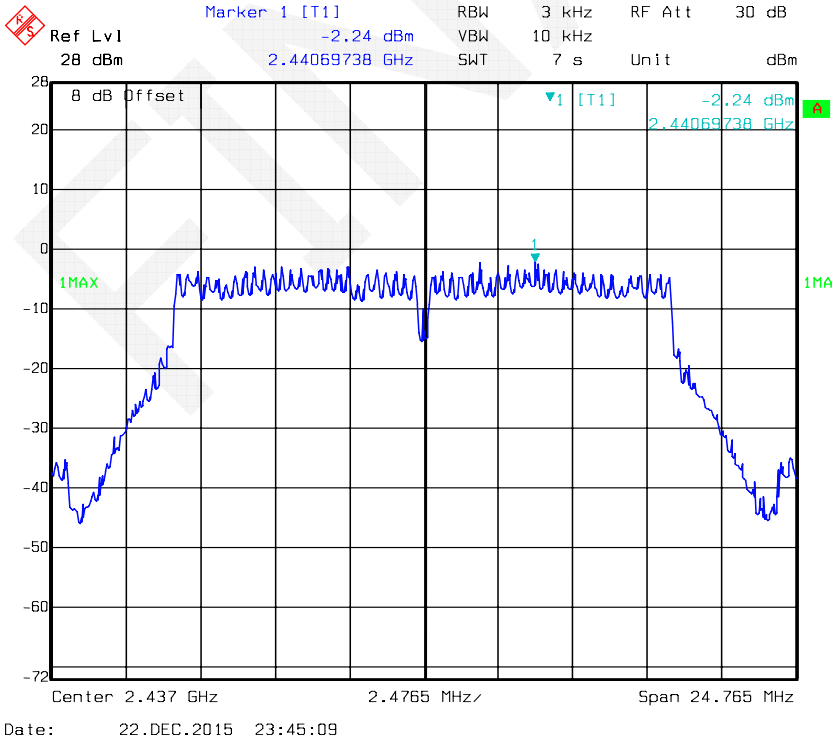
Power Spectral Density, 802.11b High Channel (Chain 1)



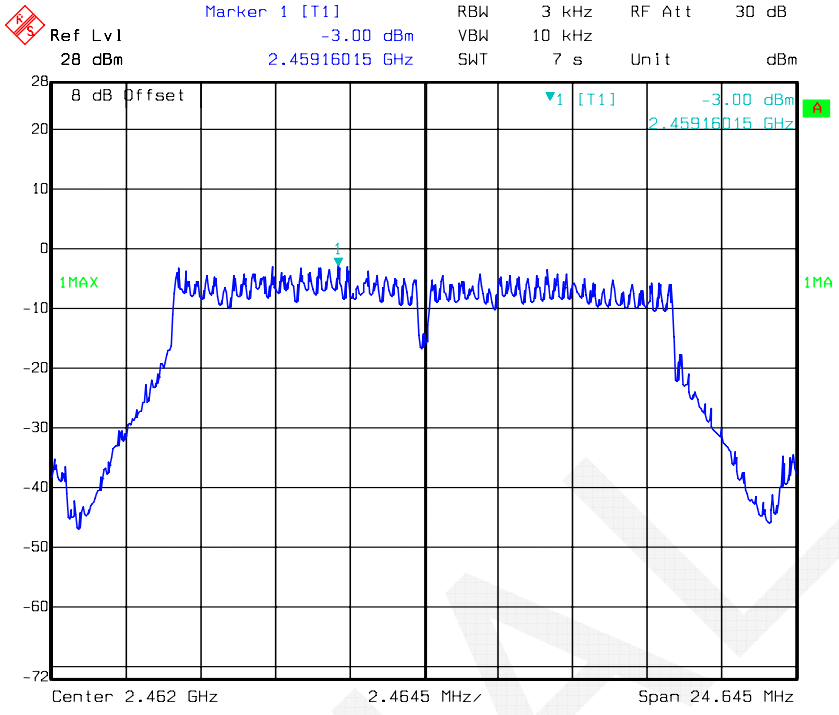
Power Spectral Density, 802.11g Low Channel (Chain 1)



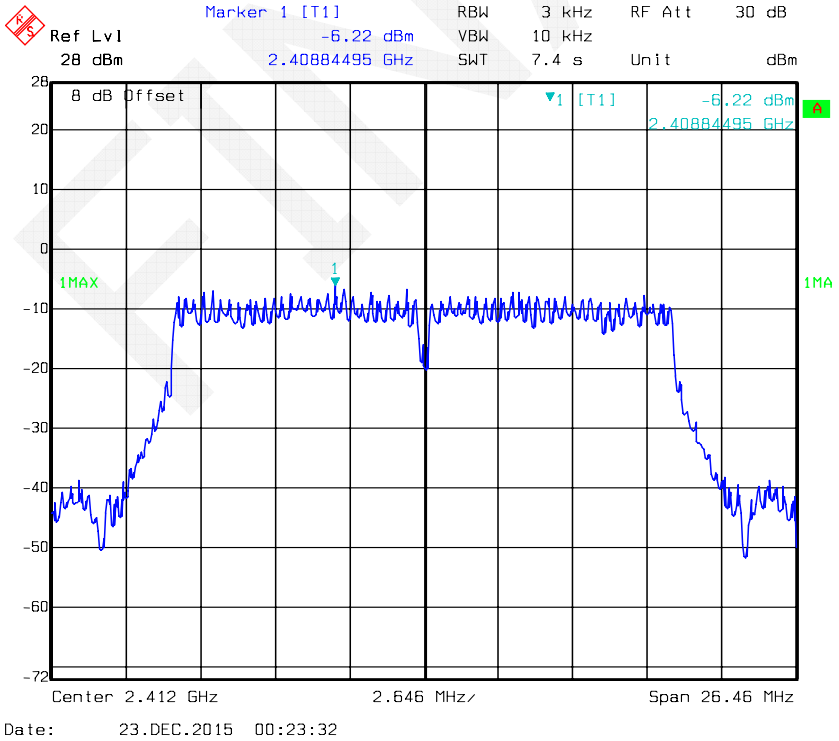
Power Spectral Density, 802.11g Middle Channel (Chain 1)



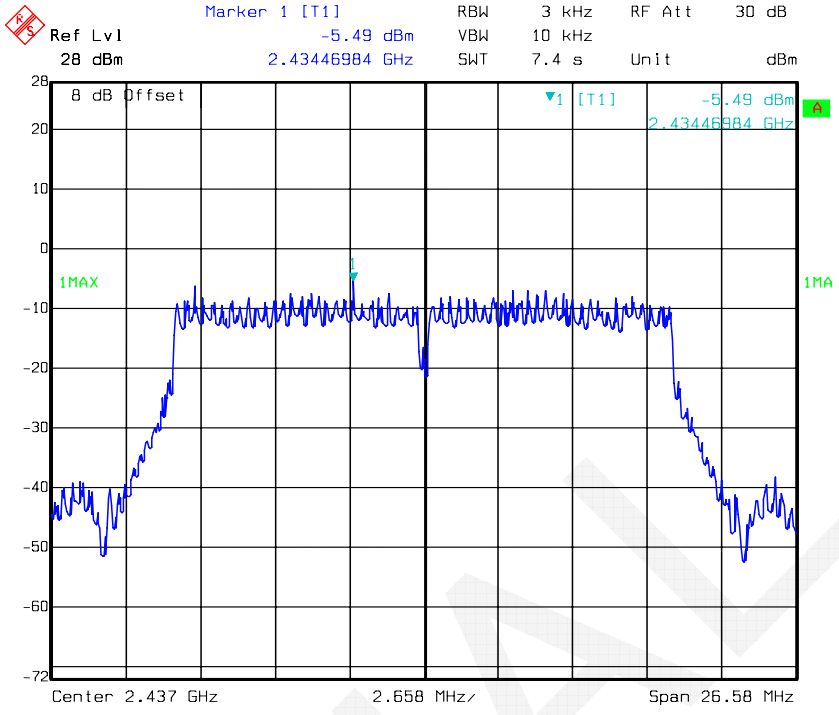
Power Spectral Density, 802.11g High Channel (Chain 1)



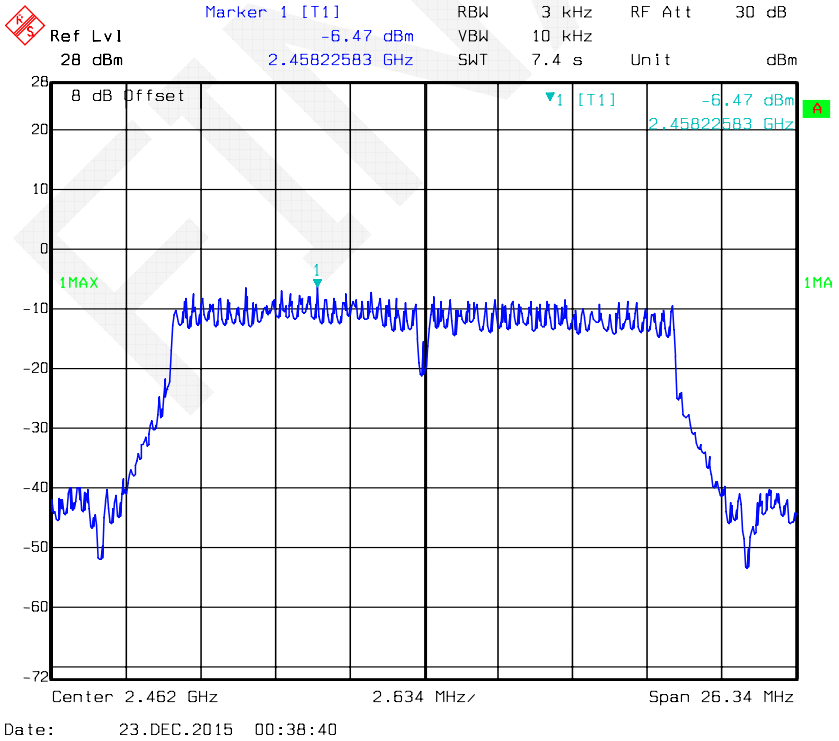
Power Spectral Density, 802.11n ht20 Low Channel (Chain 1)



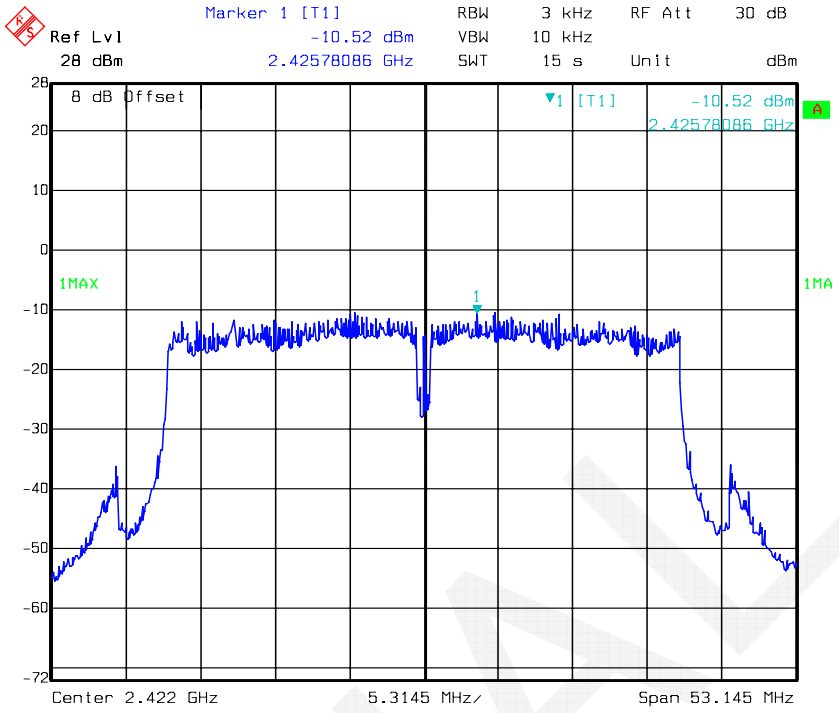
Power Spectral Density, 802.11n ht20 Middle Channel (Chain 1)



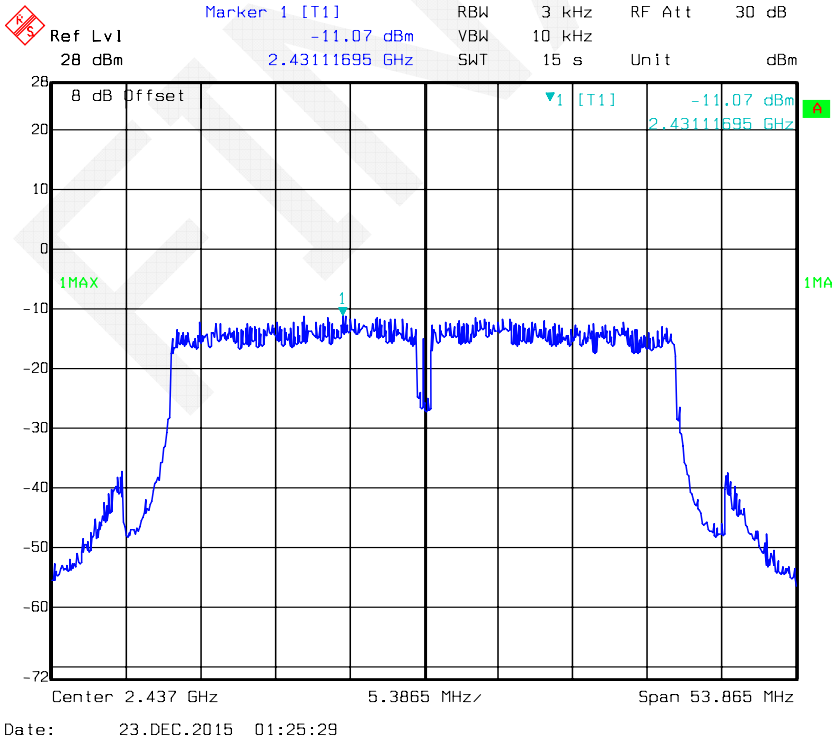
Power Spectral Density, 802.11n ht20 High Channel (Chain 1)



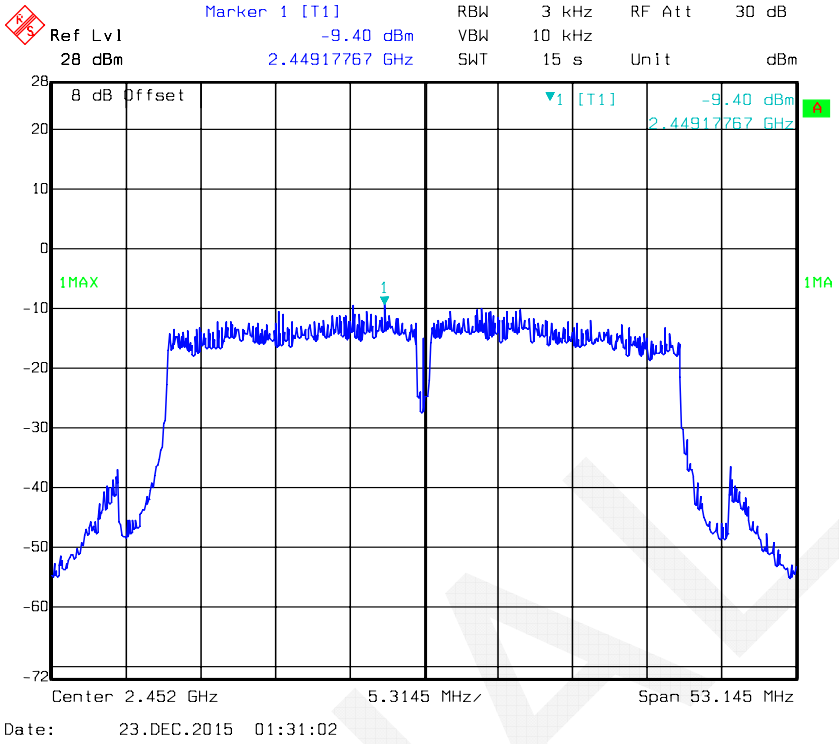
Power Spectral Density, 802.11n ht40 Low Channel (Chain 1)



Power Spectral Density, 802.11n ht40 Middle Channel (Chain 1)



Power Spectral Density, 802.11n ht40 High Channel (Chain 1)



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