

FCC PART 15.247

TEST REPORT

For

Iconnect

No.9, Aly. 58, Ln. 112, Ruiguang Rd., Neihu Dist., Taipei City, Taiwan

FCC ID: 2AB87197D

Report Type: Original Report	Product Type: 802.11ac AC1200 Wide-Range Wi Fi Router
Test Engineer:	Allen Qiao 
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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

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Iconnect* 's product, model number: *AC1200R* (FCC ID: 2AB87197D) or ("EUT") in this report is a *802.11ac AC1200 Wide-Range Wi Fi Router* , which was measured approximately: 17 cm (L) x 11.4 cm (W) x 3.2 cm (H), rated input voltage: DC 12V from adapter.

Adapter Information: Sunny

Model: SYS1308-2412-W2

Input: AC 100-240V, 50/60Hz, MAX 1.0A

Output: DC 12V, 2.0A

Note: The series product, model AC1200R, AC1200RV2, AC1200RU, AC1200RU2, AC1200RI, AC1200RUI, C1200RIV2, AC1200RUIV2, AC1200RG, AC600R, AC600RV2, AC600RU, AC600RUV2, AC600RI, AC600RIV2 are electrically identical, the difference between them is just the model name, we selected AC1200R for fully testing, the details was explained in the attached

** All measurement and test data in this report was gathered from production sample serial number: 154AAC12R0004 (Assigned by applicant). The EUT was received on 2015-04-03.*

Objective

This report is prepared on behalf of *Iconnect* in accordance with Part 2, Subpart J, Part 15, Subparts A, B and C of the Federal Communications Commission's rules

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

Related Submittal(s)/Grant(s)

FCC Part 15B submissions with FCC ID: 2AB87197D

FCC Part 15C NII submissions with FCC ID: 2AB87197D

Test Methodology

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

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

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxihu 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 06, 2015. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

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

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in testing mode, which was provided by manufacturer. For 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-TEST” 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:

Chain 0:

Test Mode	Test Software Version	MP-TEST		
802.11b	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	(CCK)1Mbps	(CCK)1Mbps	(CCK)1Mbps
	Power Level Setting	25	22	22
802.11g	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	(OFDM)6Mbps	(OFDM)6Mbps	(OFDM)6Mbps
	Power Level Setting	33	33	33
802.11n ht20	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	(HT Mixmode) MCS0	(HT Mixmode) MCS0	(HT Mixmode) MCS0
	Power Level Setting	33	33	33
802.11n ht40	Test Frequency	2422MHz	2437MHz	2452MHz
	Data Rate	(HT Mixmode) MCS0	(HT Mixmode) MCS0	(HT Mixmode) MCS0
	Power Level Setting	38	38	38

Chain 1:

Test Mode	Test Software Version	MP-TEST		
802.11b	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	(CCK)1Mbps	(CCK)1Mbps	(CCK)1Mbps
	Power Level Setting	20	19	18
802.11g	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	(OFDM)6Mbps	(OFDM)6Mbps	(OFDM)6Mbps
	Power Level Setting	26	25	25
802.11n ht20	Test Frequency	2412MHz	2437MHz	2462MHz
	Data Rate	(HT Mixmode) MCS0	(HT Mixmode) MCS0	(HT Mixmode) MCS0
	Power Level Setting	28	26	26
802.11n ht40	Test Frequency	2422MHz	2437MHz	2452MHz
	Data Rate	(HT Mixmode) MCS0	(HT Mixmode) MCS0	(HT Mixmode) MCS0
	Power Level Setting	31	31	31

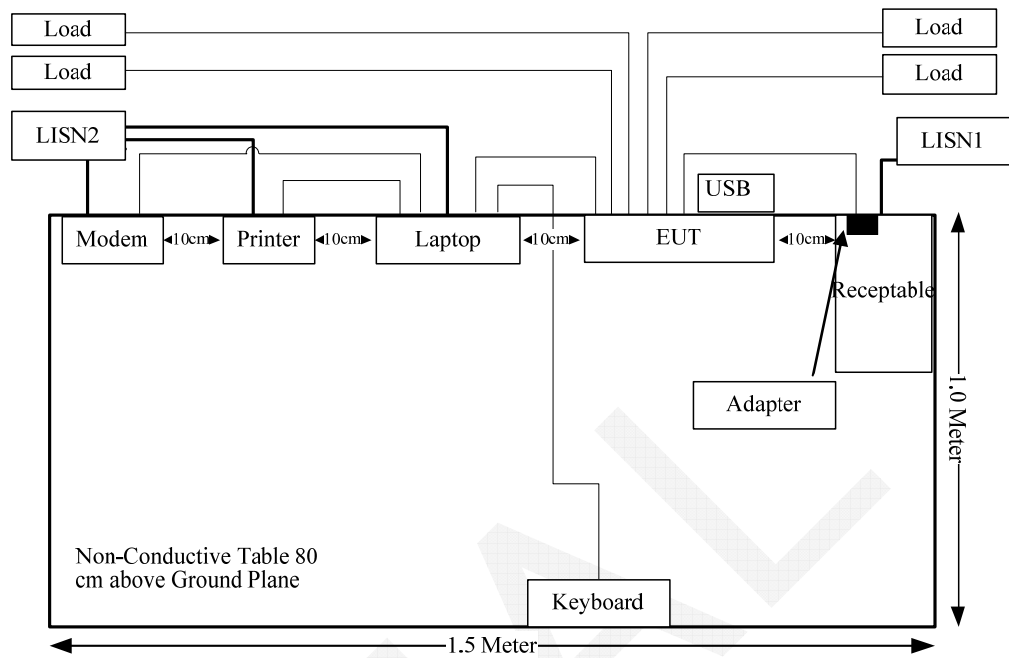
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Laptop	PP11L	QDS-BRCM1017
HP	Printer	C3941A	JPTVOB2337
DELL	Keyboard	L100	CNORH656658907BL05DC
SAST	Modem	AEM-2100	0293
DELL	Laptop	PP11L	1CVM0C1
Kingston	USB storage	/	/

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From	To
Serial Cable	Yes	No	1.2	Serial Port of Laptop	Modem
Parallel Cable	Yes	No	1.2	Parallel Port of Laptop	Printer
Keyboard Cable	Yes	Yes	1.8	USB Port of Laptop	Keyboard
RJ45 Cable*1	No	No	1.0	EUT	Laptop
RJ45 Cable*4	No	No	10	EUT	Load

Configuration of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.247 (i) & §1.1310 & §2.1091	Maximum Permissible exposure (MPE)	Compliance
§15.203	Antenna Requirement	Compliance
§15.207 (a)	AC Line Conducted Emissions	Compliance
§15.247(d)	Spurious Emissions at Antenna Port	Compliance
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliance
§15.247 (a)(2)	6 dB Emission Bandwidth	Compliance
§15.247(b)(3)	Maximum conducted output power	Compliance
§15.247(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/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

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

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

Calculated Formulary:

Predication of MPE limit at a given distance

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

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);

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

Calculated Data:**MPE evaluation for single transmission:**

Frequency Range (MHz)	Mode	Frequency (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
			(dBi)	(numeric)	(dBm)	(mW)			
2412-2462	2.4G-802.11b	2412	5.0	3.16	17.09	51.17	20	0.032	1.0
	2.4G-802.11g	2462	5.0	3.16	16.98	49.89	20	0.031	1.0
	2.4G-802.11n HT20	2462	5.0	3.16	16.82	48.08	20	0.030	1.0
	2.4G-802.11n HT40	2452	5.0	3.16	16.70	46.77	20	0.029	1.0
5150-5250	5G-802.11a	5180	5.0	3.16	18.03	63.53	20	0.040	1.0
	5G-802.11n HT20	5240	5.0	3.16	18.16	65.46	20	0.041	1.0
	5G-802.11n HT40	5230	5.0	3.16	15.08	32.21	20	0.020	1.0
	802.11ac80	5210	5.0	3.16	12.69	18.58	20	0.012	1.0
5725-5850	802.11a	5745	5.0	3.16	16.92	49.20	20	0.031	1.0
	5G-802.11n HT20	5825	5.0	3.16	15.14	32.66	20	0.021	1.0
	5G-802.11n HT40	5755	5.0	3.16	16.44	44.06	20	0.028	1.0
	802.11ac80	5775	5.0	3.16	17.30	53.70	20	0.034	1.0

MPE evaluation for simultaneous transmission:

2.4 G and 5G can transmit at the same time, MPE evaluation is as below formula:

$PD1/Limit1 + PD2/Limit2 + \dots < 1$, PD (Power Density)

MPE evaluation = Max MPE of 2.4G + Max MPE of 5G = $0.032/1 + 0.041/1 = 0.073 < 1.0$

Result: MPE evaluation of single and simultaneous transmission meet the requirement of standard.

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 4 x external detachable high gain dual band antenna and with RP-SMA female connector, two of them are for 2.4G band and the maximum gain is 5 dBi, the other two are for 5.0 G band and the maximum gain is 5 dBi, which fulfill the requirement of this section, and please refer to the EUT photos.

Result: Compliance.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207

Measurement Uncertainty

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

If U_{lab} is less than or equal to U_{cispr} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cispr} of Table 1, then:

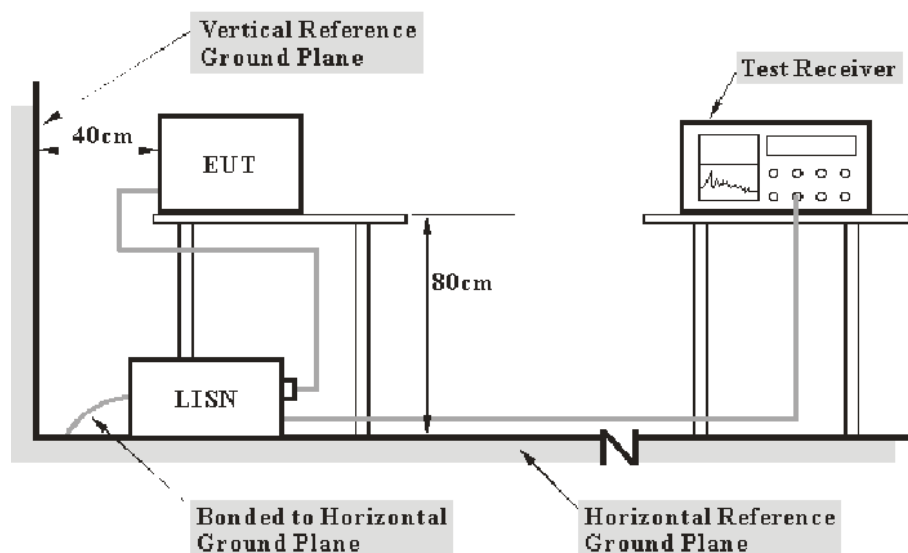
- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cispr})$, exceeds the disturbance limit.

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

Table 1 – Values of U_{cispr}

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

EUT Setup



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

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

The spacing between the peripherals was 10 cm.

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

EMI Test Receiver Setup

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

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

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

Test Procedure

During the conducted emission test, the adapter was connected to the first 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:

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

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2014-10-20	2015-10-20
R&S	L.I.S.N	ESH2-Z5	892107/021	2014-06-09	2015-06-09
R&S	Two-line V-network	ENV 216	3560.6550.12	2014-12-11	2015-12-11
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A

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

Test Results Summary

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

2.7 dB at 0.412647 MHz in the Line conducted mode

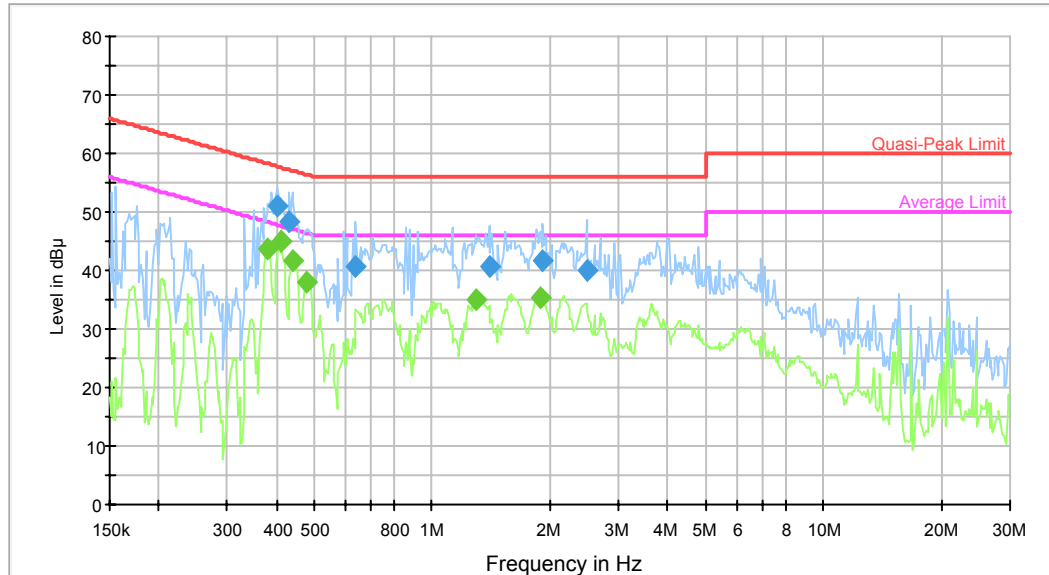
Test Data**Environmental Conditions**

Temperature:	26.2 °C
Relative Humidity:	64 %
ATM Pressure:	100.1 kPa

The testing was performed by Allen Qiao on 2015-04-03.

Test Mode: Transmitting

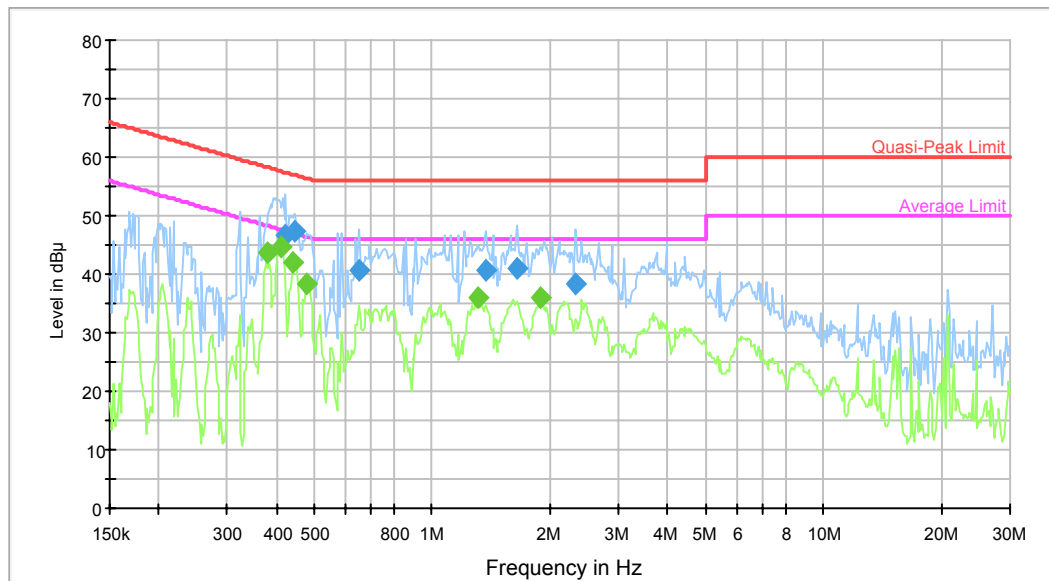
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.402900	51.0	9.000	L1	10.2	6.8	57.8	Compliance
0.432855	48.3	9.000	L1	10.2	8.9	57.2	Compliance
0.639600	40.6	9.000	L1	10.4	15.4	56.0	Compliance
1.396499	40.7	9.000	L1	10.4	15.3	56.0	Compliance
1.920710	41.7	9.000	L1	10.4	14.3	56.0	Compliance
2.478557	39.9	9.000	L1	10.4	16.1	56.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.381043	43.6	9.000	L1	10.3	4.7	48.3	Compliance
0.412647	44.9	9.000	L1	10.2	2.7*	47.6	Compliance
0.443327	41.6	9.000	L1	10.2	5.4	47.0	Compliance
0.480097	38.0	9.000	L1	10.1	8.3	46.3	Compliance
1.289541	35.2	9.000	L1	10.4	10.8	46.0	Compliance
1.890344	35.4	9.000	L1	10.4	10.6	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
0.422630	46.8	9.000	N	10.2	10.6	57.4	Compliance
0.446873	47.2	9.000	N	10.2	9.7	56.9	Compliance
0.649874	40.6	9.000	N	10.4	15.4	56.0	Compliance
1.374420	40.6	9.000	N	10.4	15.4	56.0	Compliance
1.650866	41.1	9.000	N	10.4	14.9	56.0	Compliance
2.325491	38.5	9.000	N	10.4	17.5	56.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.378019	43.6	9.000	N	10.3	4.7	48.3	Compliance
0.412647	44.5	9.000	N	10.2	3.1*	47.6	Compliance
0.443327	41.9	9.000	N	10.2	5.1	47.0	Compliance
0.476287	38.4	9.000	N	10.1	8.0	46.4	Compliance
1.310256	36.2	9.000	N	10.4	9.8	46.0	Compliance
1.890344	36.0	9.000	N	10.4	10.0	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_{cisp} 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_{cisp} of Table 2, then:

- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} - U_{cisp})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} - U_{cisp})$, 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

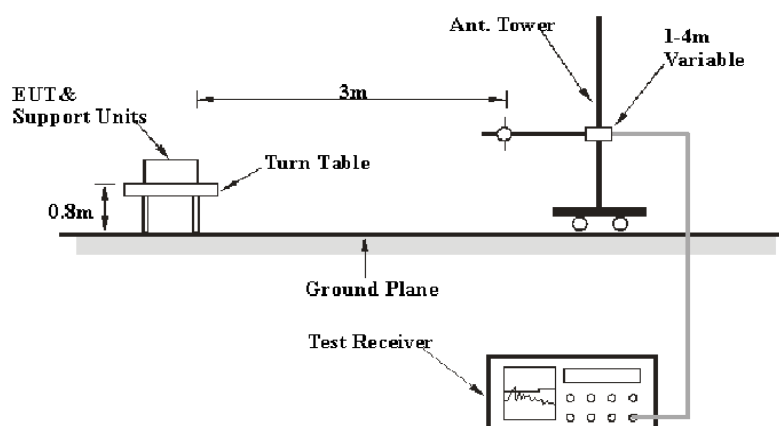
6G~18GHz: 5.23 dB

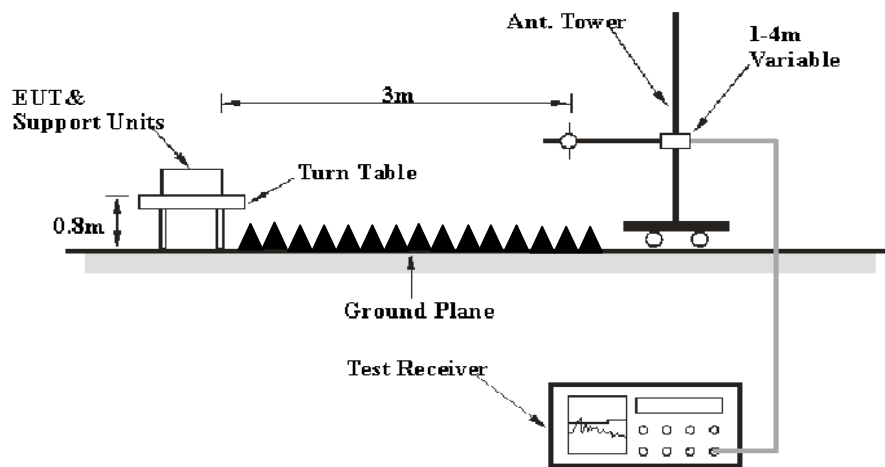
Table 2 – Values of U_{cisp}

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

EUT Setup

Below 1GHz:



Above 1GHz:

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

The spacing between the peripherals was 10 cm.

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

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

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

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

Test Procedure

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

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

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

Corrected Amplitude & Margin Calculation

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

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

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

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

Test 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	2014-11-06	2017-11-05
HP	Amplifier	8447E	2434A02181	2014-09-01	2015-09-01
Agilent	Spectrum Analyzer	E4440A	SG43360054	2014-12-04	2015-12-04
ETS-Lindgren	Horn Antenna	3115	000 527 35	2012-09-06	2015-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2015-02-19	2016-02-19
R&S	Spectrum Analyzer	FSP 38	100478	2014-05-09	2015-05-09
Ducommun Technologies	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:

2.86 dB at 4924MHz in the Vertical polarization for 802.11b Mode

Test Data

Environmental Conditions

Temperature:	23.9°C
Relative Humidity:	65 %
ATM Pressure:	101 kPa

The testing was performed by Allen Qiao on 2015-04-09.

Test Mode: Transmitting

Note: Pre-scan with single (2.4G band) and simultaneously (2.4G&5G band) transmit respectively, the worst case is as follows:

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	72.36	PK	H	25.67	3.68	0.00	101.71	N/A	N/A
2412	67.69	AV	H	25.67	3.68	0.00	97.04	N/A	N/A
2412	76.18	PK	V	25.67	3.68	0.00	105.53	N/A	N/A
2412	72.25	AV	V	25.67	3.68	0.00	101.60	N/A	N/A
2390	25.68	PK	H	25.61	3.63	0.00	54.92	74.00	19.08
2390	15.36	AV	H	25.61	3.63	0.00	44.60	54.00	9.40
4824	47.25	PK	H	30.64	5.03	27.41	55.51	74.00	18.49
4824	42.57	AV	H	30.64	5.03	27.41	50.83	54.00	3.17*
7236	31.18	PK	H	34.17	6.65	25.90	46.10	74.00	27.90
7236	18.42	AV	H	34.17	6.65	25.90	33.34	54.00	20.66
9648	29.61	PK	H	36.06	8.55	27.46	46.76	74.00	27.24
9648	16.31	AV	H	36.06	8.55	27.46	33.46	54.00	20.54
4232	33.03	PK	H	29.85	5.08	27.04	40.92	74.00	33.08
4232	19.73	AV	H	29.85	5.08	27.04	27.62	54.00	26.38
500.45	43.25	QP	H	18.10	2.72	22.02	42.05	46.00	3.95*
Middle Channel: 2437 MHz									
2437	72.61	PK	H	25.74	3.75	0.00	102.10	N/A	N/A
2437	67.84	AV	H	25.74	3.75	0.00	97.33	N/A	N/A
2437	76.3	PK	V	25.74	3.75	0.00	105.79	N/A	N/A
2437	72.47	AV	V	25.74	3.75	0.00	101.96	N/A	N/A
4874	47.29	PK	H	30.77	5.14	27.42	55.78	74.00	18.22
4874	41.87	AV	H	30.77	5.14	27.42	50.36	54.00	3.64*
7311	31.72	PK	H	34.35	6.74	25.88	46.93	74.00	27.07
7311	18.86	AV	H	34.35	6.74	25.88	34.07	54.00	19.93
9748	30.09	PK	H	36.30	8.61	27.24	47.76	74.00	26.24
9748	16.89	AV	H	36.30	8.61	27.24	34.56	54.00	19.44
4232	33.36	PK	H	29.85	5.08	27.04	41.25	74.00	32.75
4232	20.14	AV	H	29.85	5.08	27.04	28.03	54.00	25.97
3190	35.45	PK	H	27.81	6.26	27.38	42.14	74.00	31.86
3190	21.28	AV	H	27.81	6.26	27.38	27.97	54.00	26.03
500.45	43.62	QP	H	18.10	2.72	22.02	42.42	46.00	3.58*
High Channel: 2462 MHz									
2462	72.82	PK	H	25.80	3.75	0.00	102.37	N/A	N/A
2462	68.17	AV	H	25.80	3.75	0.00	97.72	N/A	N/A
2462	77.24	PK	V	25.80	3.75	0.00	106.79	N/A	N/A
2462	73.76	AV	V	25.80	3.75	0.00	103.31	N/A	N/A
2483.5	26.72	PK	V	25.86	3.67	0.00	56.25	74.00	17.75
2483.5	19.34	AV	V	25.86	3.67	0.00	48.87	54.00	5.13
4924	47.69	PK	V	30.90	5.34	27.43	56.50	74.00	17.50
4924	42.33	AV	V	30.90	5.34	27.43	51.14	54.00	2.86*
7386	32.25	PK	V	34.53	6.83	25.86	47.75	74.00	26.25
7386	19.43	AV	V	34.53	6.83	25.86	34.93	54.00	19.07
9848	30.47	PK	V	36.54	8.66	26.94	48.73	74.00	25.27
9848	17.26	AV	V	36.54	8.66	26.94	35.52	54.00	18.48
4232	33.69	PK	V	29.85	5.08	27.04	41.58	74.00	32.42
4232	20.47	AV	V	29.85	5.08	27.04	28.36	54.00	25.64
500.45	43.58	QP	H	18.10	2.72	22.02	42.38	46.00	3.62*

*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	73.25	PK	H	25.67	3.68	0.00	102.60	N/A	N/A
2412	65.12	AV	H	25.67	3.68	0.00	94.47	N/A	N/A
2412	75.47	PK	V	25.67	3.68	0.00	104.82	N/A	N/A
2412	67.27	AV	V	25.67	3.68	0.00	96.62	N/A	N/A
2390	29.23	PK	V	25.61	3.63	0.00	58.47	74.00	15.53
2390	17.57	AV	H	25.61	3.63	0.00	46.81	54.00	7.19
4824	45.15	PK	H	30.64	5.03	27.41	53.41	74.00	20.59
4824	28.41	AV	H	30.64	5.03	27.41	36.67	54.00	17.33
7236	30.83	PK	H	34.17	6.65	25.90	45.75	74.00	28.25
7236	18.11	AV	H	34.17	6.65	25.90	33.03	54.00	20.97
9648	29.18	PK	H	36.06	8.55	27.46	46.33	74.00	27.67
9648	15.98	AV	H	36.06	8.55	27.46	33.13	54.00	20.87
3426	32.69	PK	H	28.56	5.05	27.21	39.09	74.00	34.91
3426	19.41	AV	H	28.56	5.05	27.21	25.81	54.00	28.19
500.45	43.85	QP	H	18.10	2.72	22.02	42.65	46.00	3.35*
Middle Channel: 2437 MHz									
2437	73.58	PK	H	25.74	3.75	0.00	103.07	N/A	N/A
2437	65.24	AV	H	25.74	3.75	0.00	94.73	N/A	N/A
2437	75.79	PK	V	25.74	3.75	0.00	105.28	N/A	N/A
2437	67.64	AV	V	25.74	3.75	0.00	97.13	N/A	N/A
4874	46.75	PK	H	30.77	5.14	27.42	55.24	74.00	18.76
4874	29.29	AV	H	30.77	5.14	27.42	37.78	54.00	16.22
7311	31.33	PK	H	34.35	6.74	25.88	46.54	74.00	27.46
7311	18.5	AV	H	34.35	6.74	25.88	33.71	54.00	20.29
9748	29.65	PK	H	36.30	8.61	27.24	47.32	74.00	26.68
9748	16.56	AV	H	36.30	8.61	27.24	34.23	54.00	19.77
3426	32.97	PK	H	28.56	5.05	27.21	39.37	74.00	34.63
3426	19.75	AV	H	28.56	5.05	27.21	26.15	54.00	27.85
3610	34.87	PK	H	29.04	4.61	27.28	41.24	74.00	32.76
3610	20.85	AV	H	29.04	4.61	27.28	27.22	54.00	26.78
500.45	43.62	QP	H	18.10	2.72	22.02	42.42	46.00	3.58*
High Channel: 2462 MHz									
2462	73.96	PK	H	25.80	3.75	0.00	103.51	N/A	N/A
2462	65.56	AV	H	25.80	3.75	0.00	95.11	N/A	N/A
2462	76.67	PK	V	25.80	3.75	0.00	106.22	N/A	N/A
2462	68.31	AV	V	25.80	3.75	0.00	97.86	N/A	N/A
2483.5	29.28	PK	H	25.86	3.67	0.00	58.81	74.00	15.19
2483.5	17.46	AV	H	25.86	3.67	0.00	46.99	54.00	7.01
4924	46.63	PK	H	30.90	5.34	27.43	55.44	74.00	18.56
4924	29.12	AV	H	30.90	5.34	27.43	37.93	54.00	16.07
7386	31.91	PK	H	34.53	6.83	25.86	47.41	74.00	26.59
7386	18.99	AV	H	34.53	6.83	25.86	34.49	54.00	19.51
9848	29.93	PK	H	36.54	8.66	26.94	48.19	74.00	25.81
9848	16.71	AV	H	36.54	8.66	26.94	34.97	54.00	19.03
3426	33.2	PK	H	28.56	5.05	27.21	39.60	74.00	34.40
3426	20.01	AV	H	28.56	5.05	27.21	26.41	54.00	27.59
500.45	43.82	QP	H	18.10	2.72	22.02	42.62	46.00	3.38*

*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	72.48	PK	H	25.67	3.68	0.00	101.83	N/A	N/A
2412	63.23	AV	H	25.67	3.68	0.00	92.58	N/A	N/A
2412	76.04	PK	V	25.67	3.68	0.00	105.39	N/A	N/A
2412	67.62	AV	V	25.67	3.68	0.00	96.97	N/A	N/A
2390	34.38	PK	V	25.61	3.63	0.00	63.62	74.00	10.38
2390	18.64	AV	V	25.61	3.63	0.00	47.88	54.00	6.12
4824	46.74	PK	V	30.64	5.03	27.41	55.00	74.00	19.00
4824	28.24	AV	V	30.64	5.03	27.41	36.50	54.00	17.50
7236	31.16	PK	V	34.17	6.65	25.90	46.08	74.00	27.92
7236	18.61	AV	V	34.17	6.65	25.90	33.53	54.00	20.47
9648	29.73	PK	V	36.06	8.55	27.46	46.88	74.00	27.12
9648	16.33	AV	V	36.06	8.55	27.46	33.48	54.00	20.52
3426	33.05	PK	V	28.56	5.05	27.21	39.45	74.00	34.55
3426	19.96	AV	V	28.56	5.05	27.21	26.36	54.00	27.64
500.45	43.53	QP	H	18.10	2.72	22.02	42.33	46.00	3.67*
Middle Channel: 2437 MHz									
2437	73.07	PK	H	25.74	3.75	0.00	102.56	N/A	N/A
2437	63.77	AV	H	25.74	3.75	0.00	93.26	N/A	N/A
2437	76.38	PK	V	25.74	3.75	0.00	105.87	N/A	N/A
2437	68.1	AV	V	25.74	3.75	0.00	97.59	N/A	N/A
4874	47.18	PK	H	30.77	5.14	27.42	55.67	74.00	18.33
4874	28.6	AV	H	30.77	5.14	27.42	37.09	54.00	16.91
7311	31.64	PK	H	34.35	6.74	25.88	46.85	74.00	27.15
7311	19.15	AV	H	34.35	6.74	25.88	34.36	54.00	19.64
9748	30.11	PK	H	36.30	8.61	27.24	47.78	74.00	26.22
9748	16.66	AV	H	36.30	8.61	27.24	34.33	54.00	19.67
3426	33.61	PK	H	28.56	5.05	27.21	40.01	74.00	33.99
3426	20.31	AV	H	28.56	5.05	27.21	26.71	54.00	27.29
3610	35.47	PK	H	29.04	4.61	27.28	41.84	74.00	32.16
3610	22.13	AV	H	29.04	4.61	27.28	28.50	54.00	25.50
500.45	43.75	QP	H	18.10	2.72	22.02	42.55	46.00	3.45*
High Channel: 2462 MHz									
2462	73.61	PK	H	25.80	3.75	0.00	103.16	N/A	N/A
2462	64.34	AV	H	25.80	3.75	0.00	93.89	N/A	N/A
2462	76.45	PK	V	25.80	3.75	0.00	106.00	N/A	N/A
2462	68.41	AV	V	25.80	3.75	0.00	97.96	N/A	N/A
2483.5	27.25	PK	V	25.86	3.67	0.00	56.78	74.00	17.22
2483.5	16.14	AV	V	25.86	3.67	0.00	45.67	54.00	8.33
4924	47.48	PK	V	30.90	5.34	27.43	56.29	74.00	17.71
4924	29.36	AV	V	30.90	5.34	27.43	38.17	54.00	15.83
7386	32.22	PK	V	34.53	6.83	25.86	47.72	74.00	26.28
7386	19.66	AV	V	34.53	6.83	25.86	35.16	54.00	18.84
9848	30.45	PK	V	36.54	8.66	26.94	48.71	74.00	25.29
9848	17.1	AV	V	36.54	8.66	26.94	35.36	54.00	18.64
3426	34.12	PK	V	28.56	5.05	27.21	40.52	74.00	33.48
3426	20.7	AV	V	28.56	5.05	27.21	27.10	54.00	26.90
500.45	43.67	QP	H	18.10	2.72	22.02	42.47	46.00	3.53*

*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	70.36	PK	H	25.70	3.71	0.00	99.77	N/A	N/A
2422	61.58	AV	H	25.70	3.71	0.00	90.99	N/A	N/A
2422	72.72	PK	V	25.70	3.71	0.00	102.13	N/A	N/A
2422	63.55	AV	V	25.70	3.71	0.00	92.96	N/A	N/A
2390	30.37	PK	V	25.61	3.63	0.00	59.61	74.00	14.39
2390	17.65	AV	V	25.61	3.63	0.00	46.89	54.00	7.11
4844	41.25	PK	V	30.69	4.99	27.42	49.51	74.00	24.49
4844	27.65	AV	V	30.69	4.99	27.42	39.03	54.00	14.97
7266	30.77	PK	V	34.24	6.68	25.89	33.24	74.00	40.76
7266	18.21	AV	V	34.24	6.68	25.89	33.24	54.00	20.76
9688	29.37	PK	V	36.15	8.58	27.37	46.73	74.00	27.27
9688	16.04	AV	V	36.15	8.58	27.37	33.40	54.00	20.60
3924	32.7	PK	V	29.73	4.58	27.27	39.74	74.00	34.26
3924	19.75	AV	V	29.73	4.58	27.27	26.79	54.00	27.21
500.45	43.28	QP	H	18.10	2.72	22.02	42.08	46.00	3.92*
Middle Channel: 2437 MHz									
2437	70.72	PK	H	25.74	3.75	0.00	100.21	N/A	N/A
2437	61.73	AV	H	25.74	3.75	0.00	91.22	N/A	N/A
2437	73.09	PK	V	25.74	3.75	0.00	102.58	N/A	N/A
2437	63.88	AV	V	25.74	3.75	0.00	93.37	N/A	N/A
4874	40.91	PK	H	30.77	5.14	27.42	49.40	74.00	24.60
4874	27.32	AV	H	30.77	5.14	27.42	37.35	54.00	16.65
7311	30.38	PK	H	34.35	6.74	25.88	45.59	74.00	28.41
7311	18.01	AV	H	34.35	6.74	25.88	33.22	54.00	20.78
9748	29	PK	H	36.30	8.61	27.24	46.67	74.00	27.33
9748	15.65	AV	H	36.30	8.61	27.24	33.32	54.00	20.68
3924	32.28	PK	H	29.73	4.58	27.27	39.32	74.00	34.68
3924	19.41	AV	H	29.73	4.58	27.27	26.45	54.00	27.55
3610	32.25	PK	H	29.04	4.61	27.28	38.62	74.00	35.38
3610	19.47	AV	H	29.04	4.61	27.28	25.84	54.00	28.16
500.45	43.69	QP	H	18.10	2.72	22.02	42.49	46.00	3.51*
High Channel: 2452 MHz									
2452	72.25	PK	H	25.78	3.78	0.00	101.81	N/A	N/A
2452	62.39	AV	H	25.78	3.78	0.00	91.95	N/A	N/A
2452	75.85	PK	V	25.78	3.78	0.00	105.41	N/A	N/A
2452	67.07	AV	V	25.78	3.78	0.00	96.63	N/A	N/A
2483.5	31.77	PK	V	25.86	3.67	0.00	61.30	74.00	12.70
2483.5	19.88	AV	V	25.86	3.67	0.00	49.41	54.00	4.59
4904	44.05	PK	V	30.85	5.31	27.43	52.78	74.00	21.22
4904	28.86	AV	V	30.85	5.31	27.43	37.59	54.00	16.41
7356	30	PK	V	34.45	6.79	25.87	45.37	74.00	28.63
7356	17.66	AV	V	34.45	6.79	25.87	33.03	54.00	20.97
9808	28.69	PK	V	36.44	8.64	27.09	46.68	74.00	27.32
9808	15.24	AV	V	36.44	8.64	27.09	33.23	54.00	20.77
3924	32.07	PK	V	29.73	4.58	27.27	39.11	74.00	34.89
3924	19.17	AV	V	29.73	4.58	27.27	26.21	54.00	27.79
500.45	43.27	QP	H	18.10	2.72	22.02	42.07	46.00	3.93*

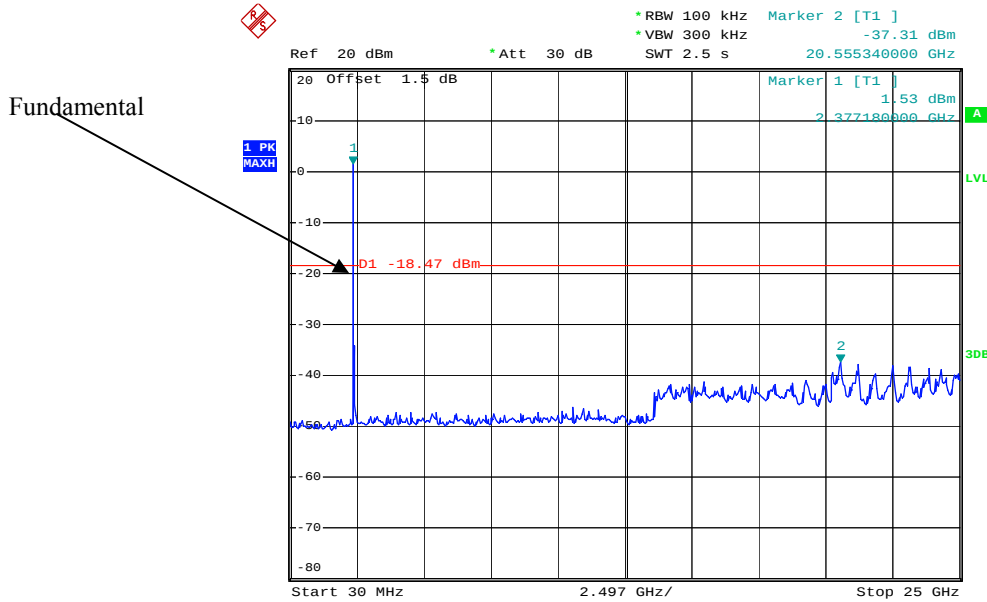
*Within measurement uncertainty!

Co-location Radiated Emission

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
	Reading (dB μ V)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
1125	42.13	PK	H	22.63	3.01	26.69	41.08	74.00	32.92
1125	29.67	AV	H	22.63	3.01	26.69	28.62	54.00	25.38
1632.5	44.24	PK	H	23.87	2.78	27.76	43.13	74.00	30.87
1632.5	33.16	AV	H	23.87	2.78	27.76	32.05	54.00	21.95
1947.5	44.56	PK	H	24.50	2.97	27.49	44.54	74.00	29.46
1947.5	31.87	AV	H	24.50	2.97	27.49	31.85	54.00	22.15
1125	42.92	PK	V	22.63	3.01	26.69	41.87	74.00	32.13
1125	30.43	AV	V	22.63	3.01	26.69	29.38	54.00	24.62
1947.5	41.65	PK	V	24.50	2.97	27.49	41.63	74.00	32.37
1947.5	28.74	AV	V	24.50	2.97	27.49	28.72	54.00	25.28
2962.5	40.69	PK	V	27.10	6.66	27.54	46.91	74.00	27.09
2962.5	27.25	AV	V	27.10	6.66	27.54	33.47	54.00	20.53
125.06	44.83	QP	V	14.30	1.35	21.42	39.06	43.50	4.44

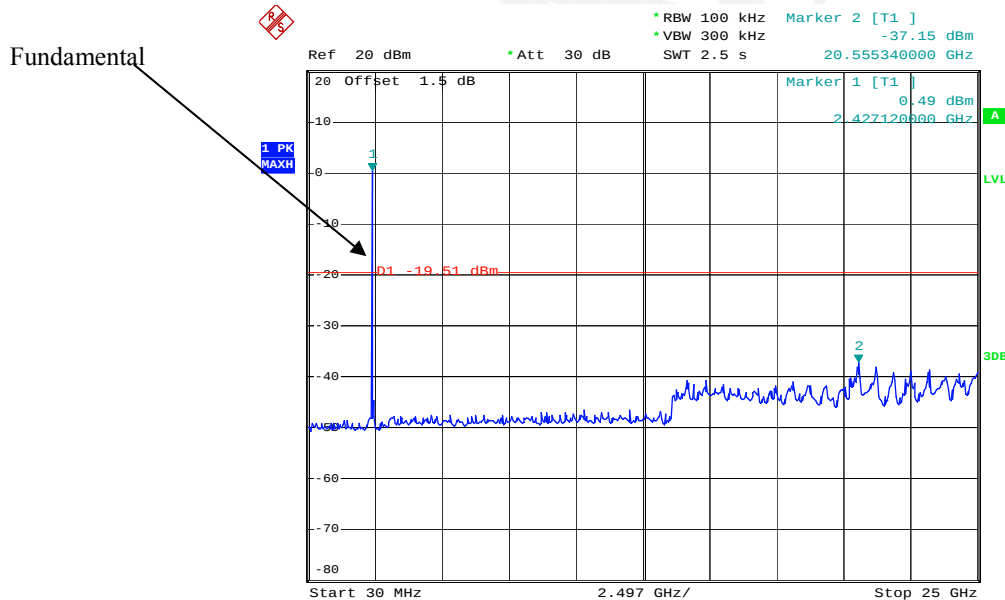
Conducted Spurious Emissions at Antenna Port

802.11b Low Channel - Chain0



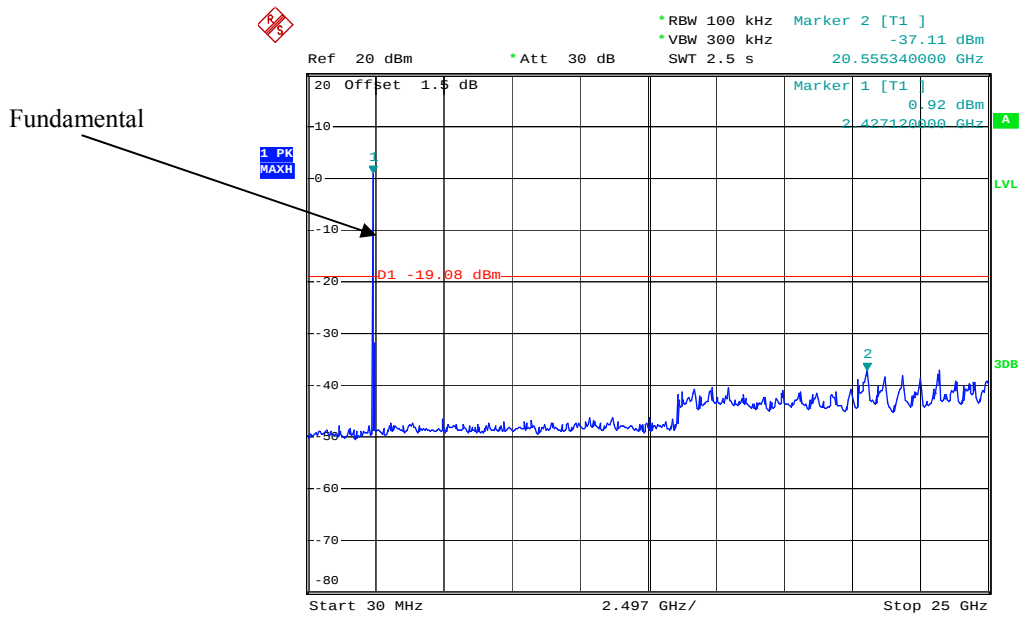
Date: 9.APR.2015 07:10:52

802.11b Middle Channel - Chain0



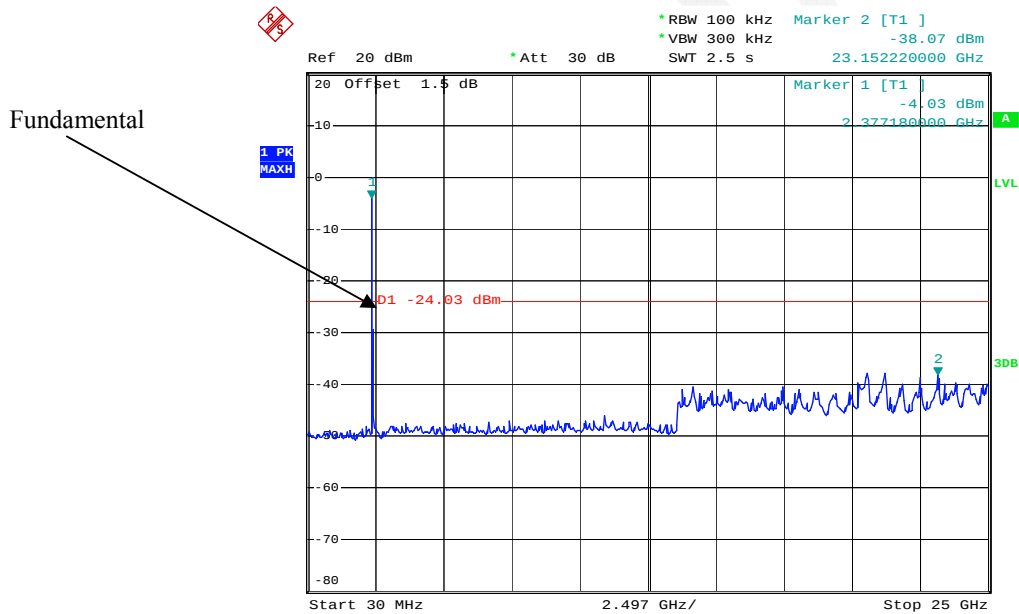
Date: 9.APR.2015 07:09:36

802.11b High Channel - Chain0

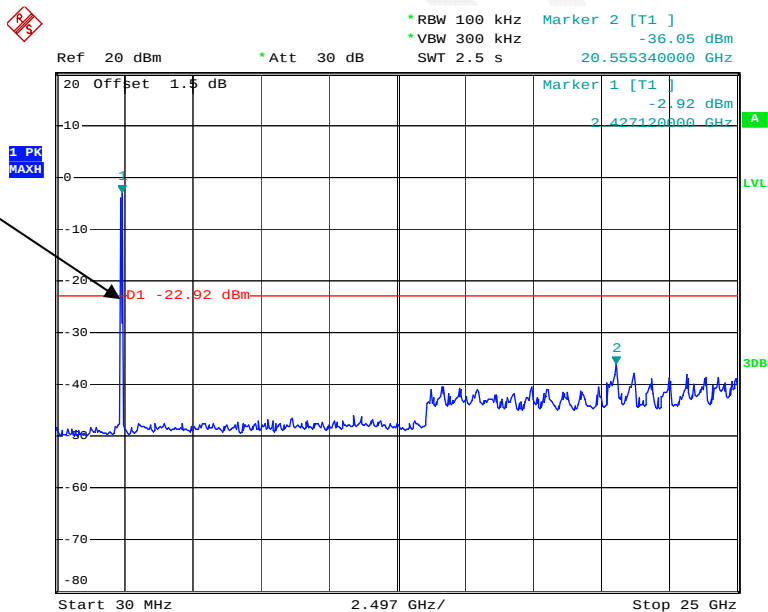
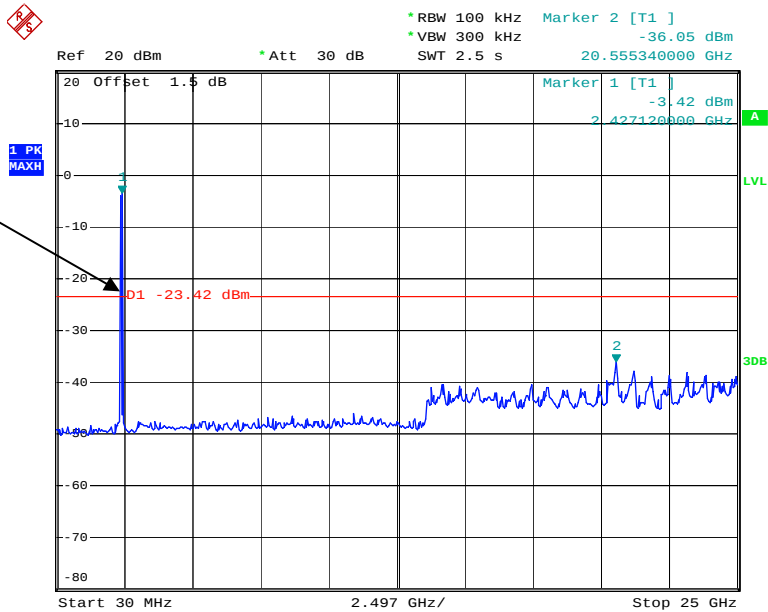


Date: 9.APR.2015 07:07:58

802.11g Low Channel - Chain0

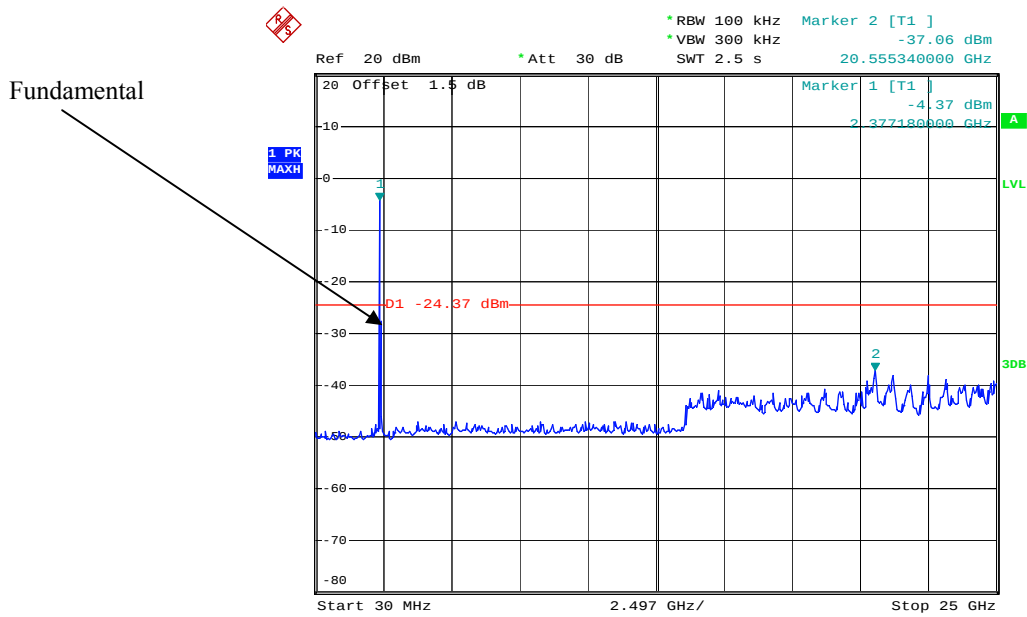


Date: 9.APR.2015 07:13:12



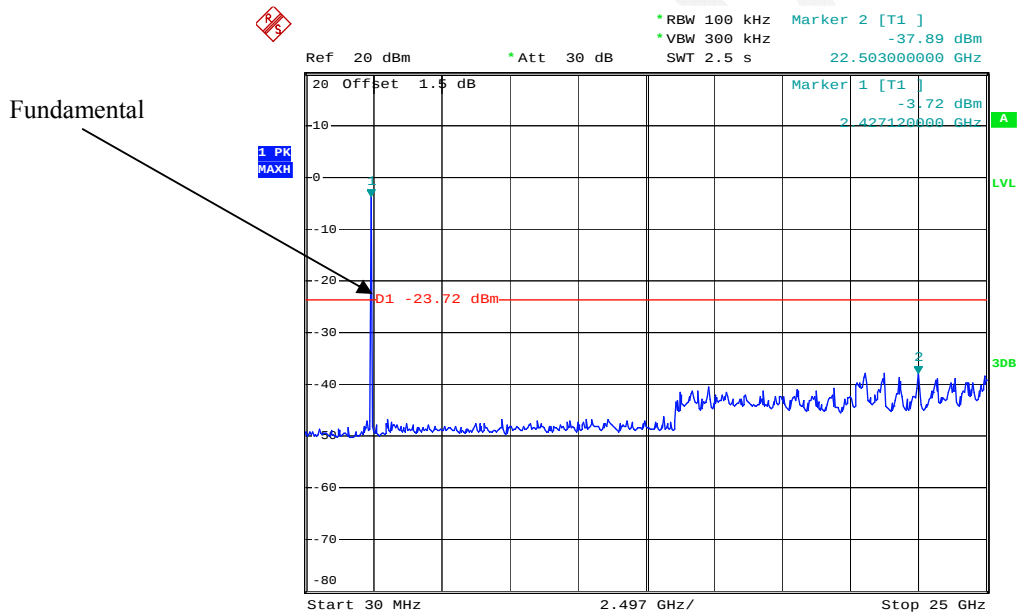
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802.11n ht20 Low Channel - Chain0



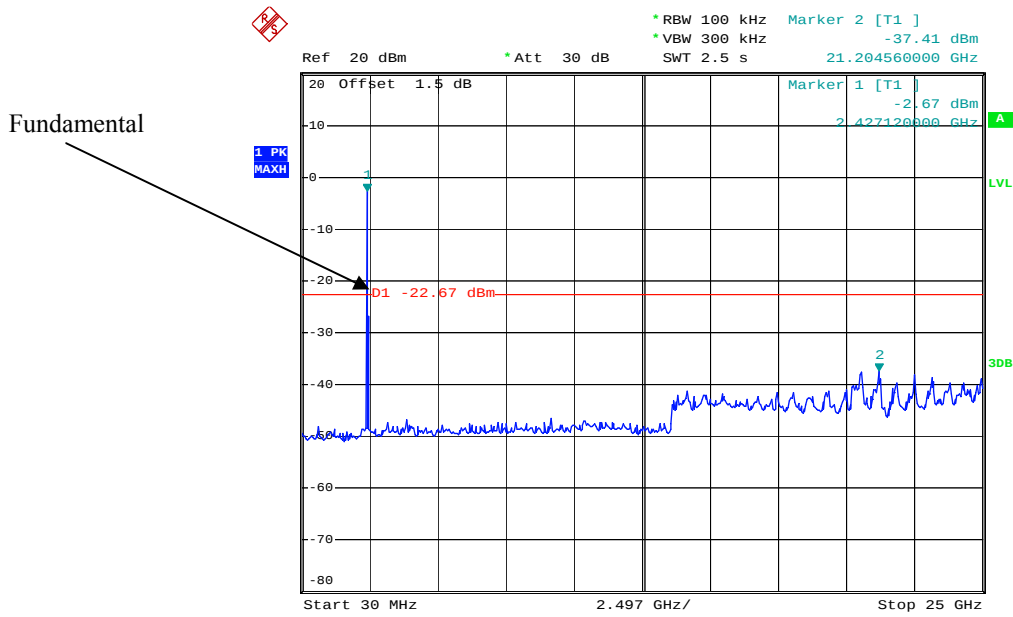
Date: 9.APR.2015 07:24:31

802.11n ht20 Middle Channel - Chain0



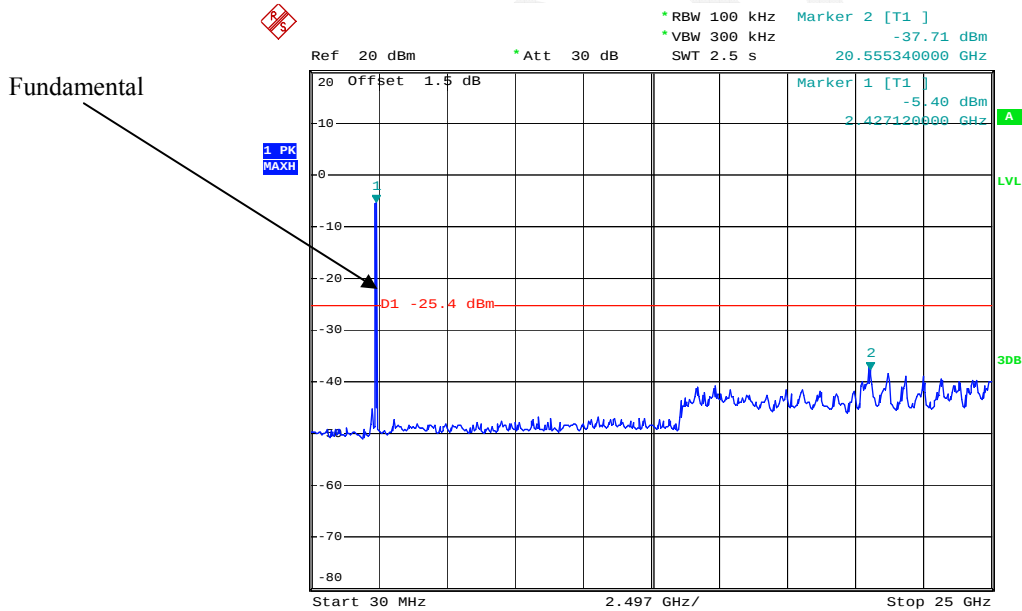
Date: 9.APR.2015 07:19:05

802.11n ht20 High Channel - Chain0

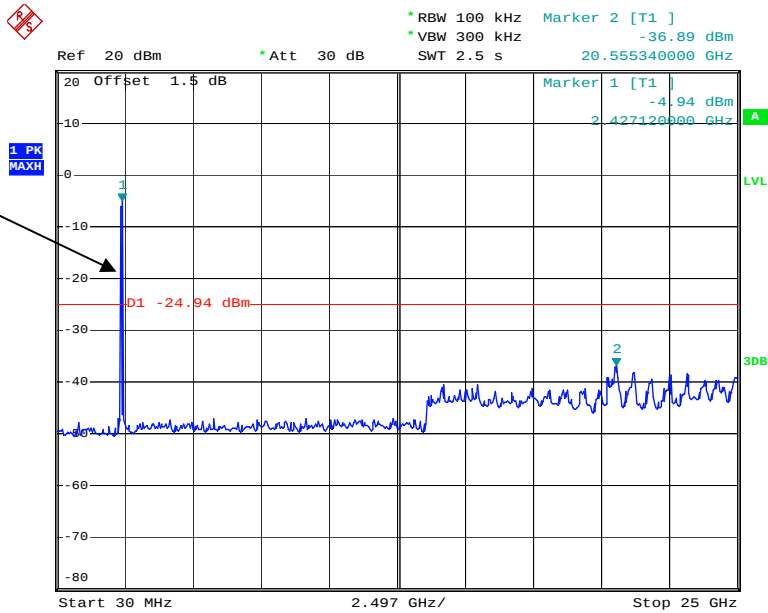


Date: 9.APR.2015 07:16:43

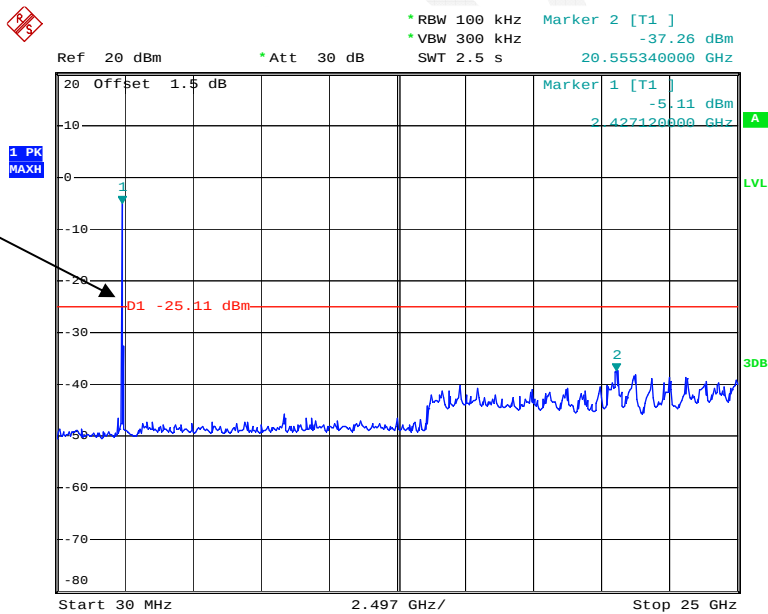
802.11n ht40 Low Channel - Chain0



Date: 9.APR.2015 07:27:04

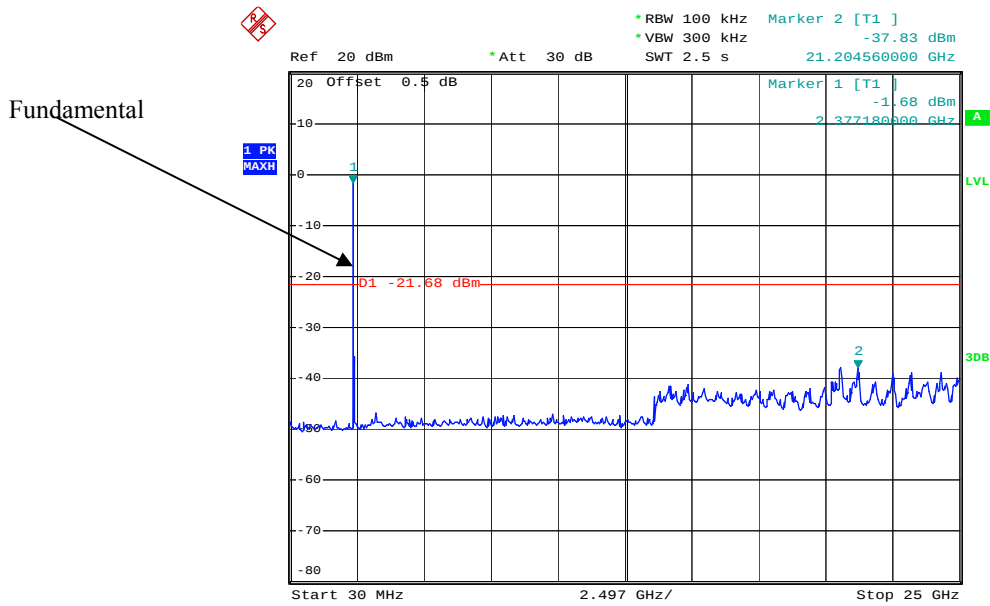


802.11n ht40 High Channel - Chain0



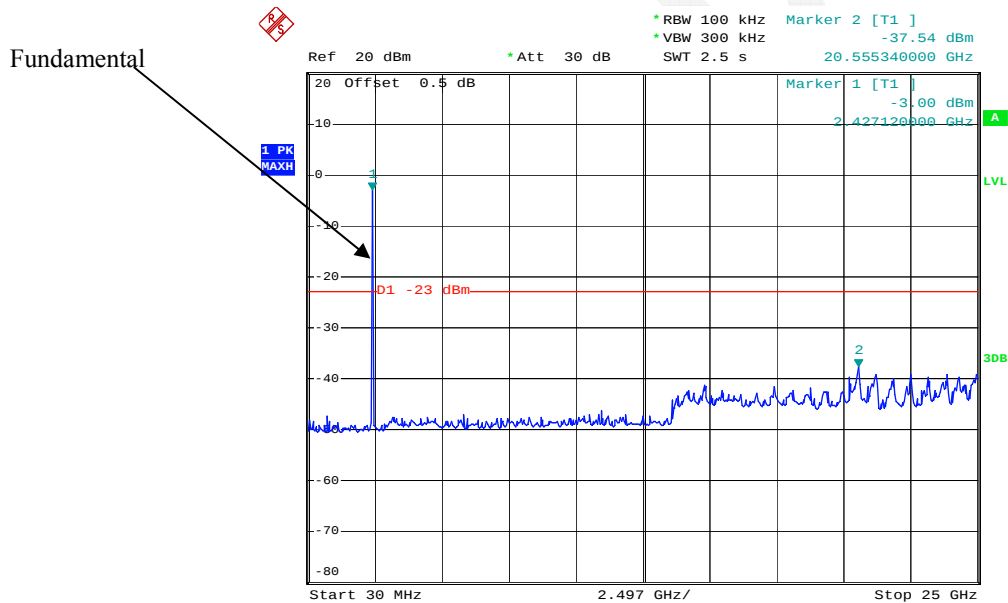
Page 31 of 77

802.11b Low Channel – Chain1



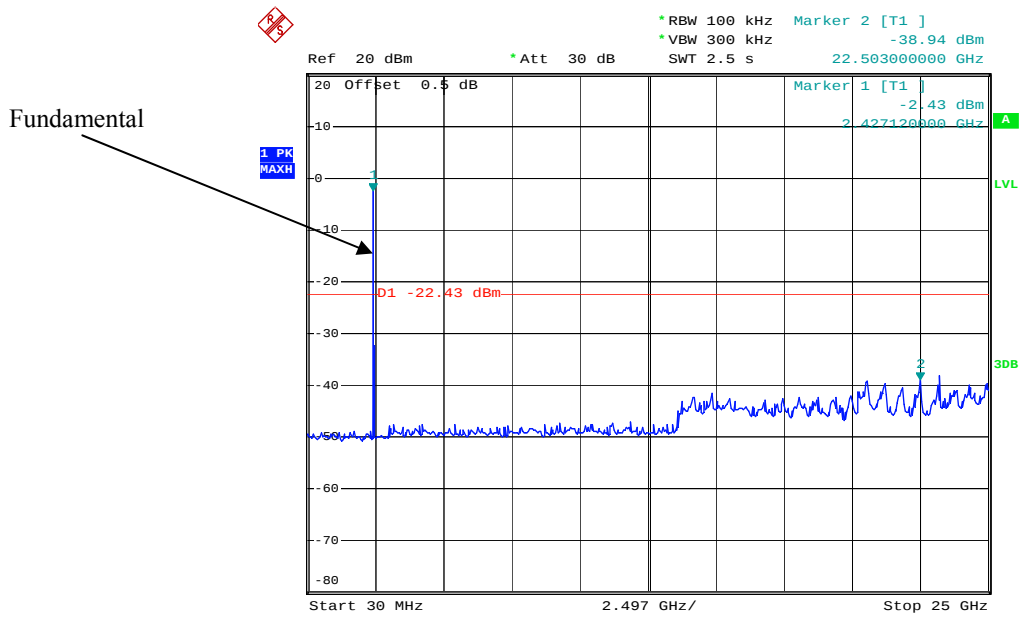
Date: 9.APR.2015 10:53:05

802.11b Middle Channel – Chain1



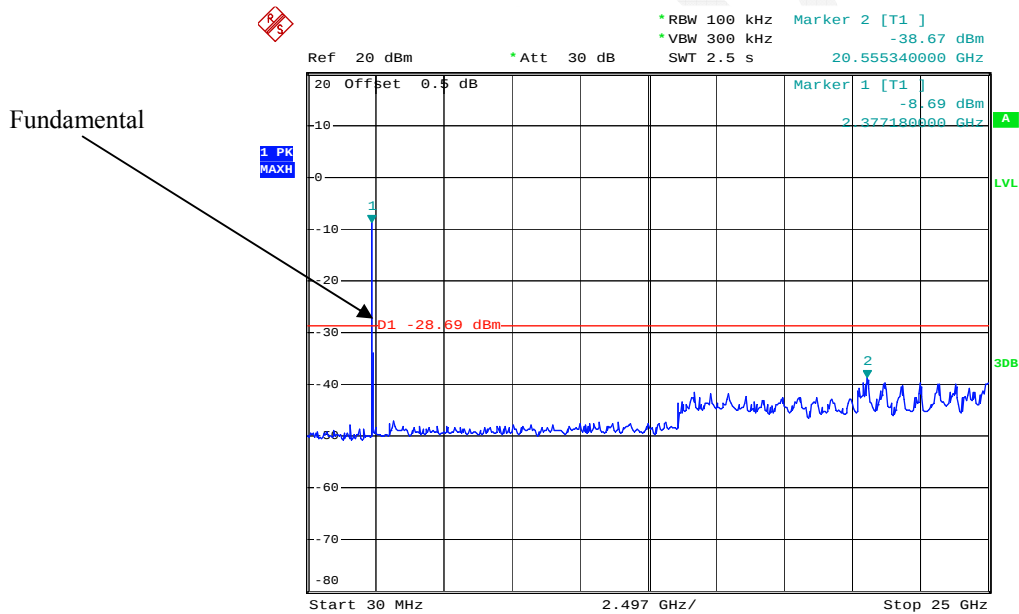
Date: 9.APR.2015 10:54:55

802.11b High Channel – Chain1



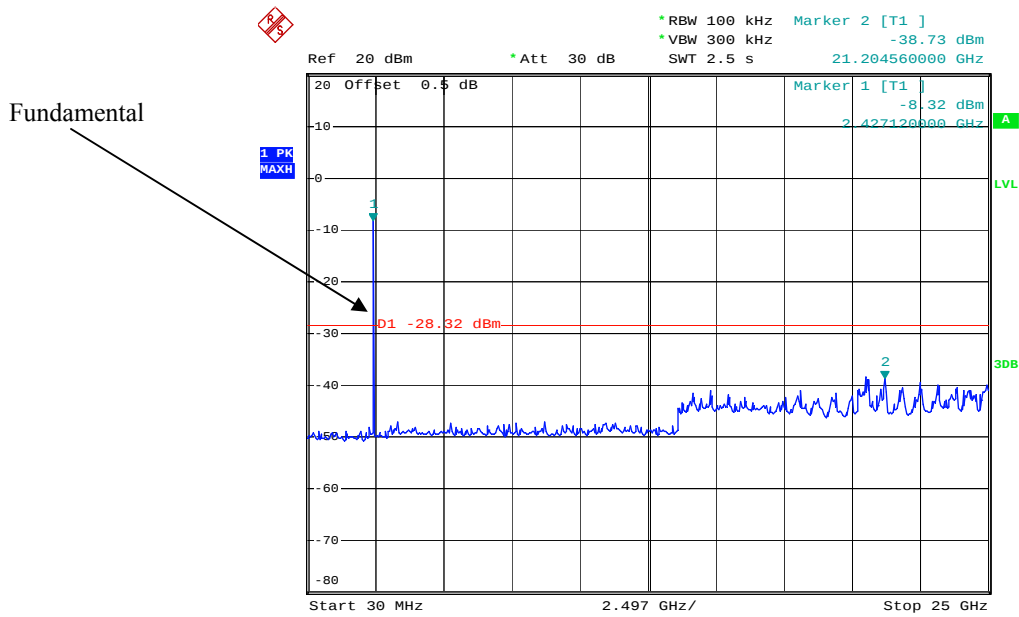
Date: 9.APR.2015 10:55:54

802.11g Low Channel – Chain1



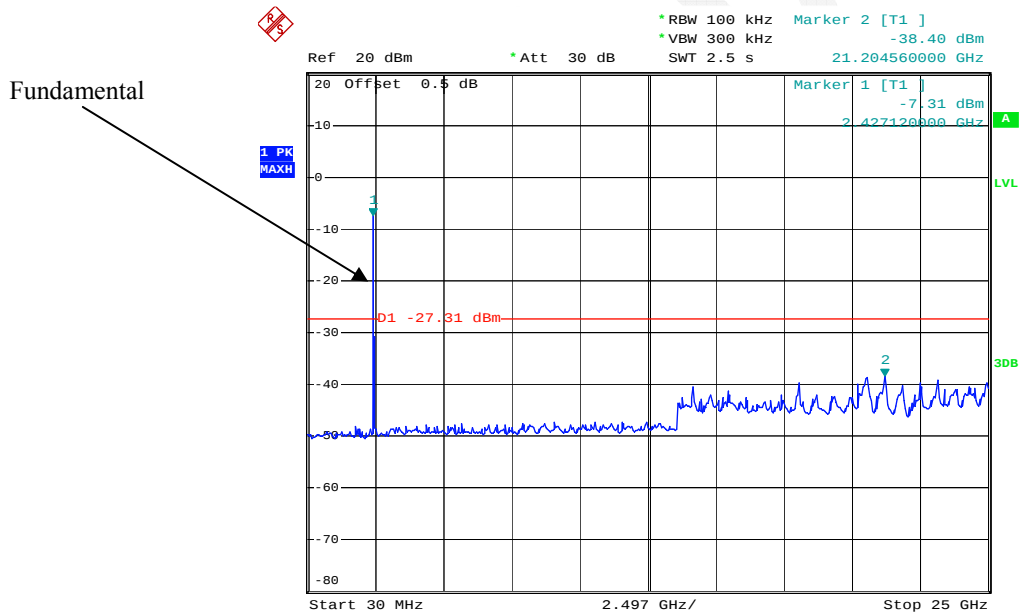
Date: 9.APR.2015 11:00:58

802.11g Middle Channel – Chain1



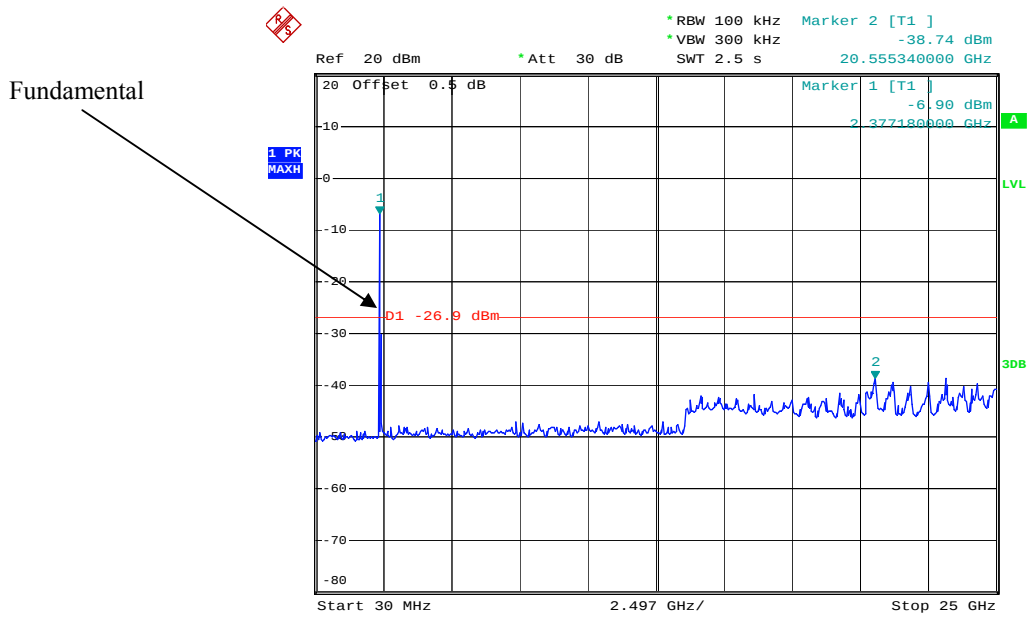
Date: 9.APR.2015 11:02:12

802.11g High Channel – Chain1



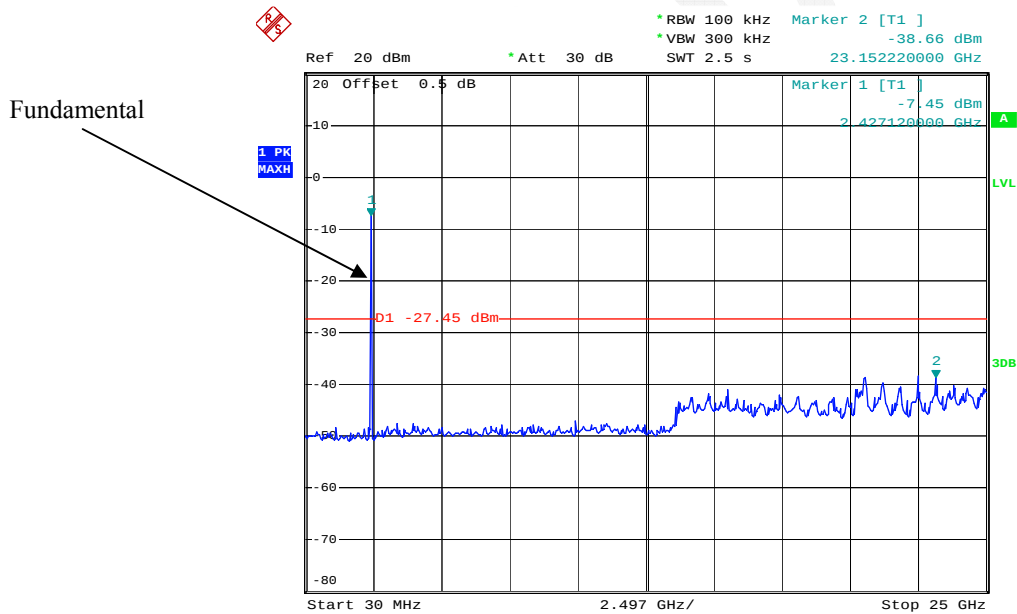
Date: 9.APR.2015 11:03:39

802.11n ht20 Low Channel – Chain1



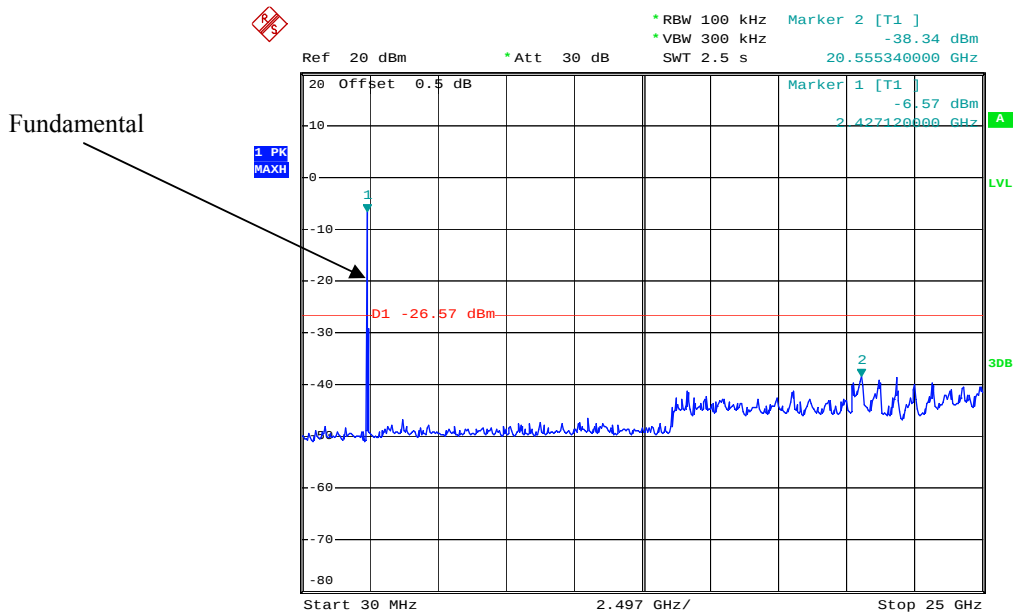
Date: 9.APR.2015 11:05:10

802.11n ht20 Middle Channel – Chain1



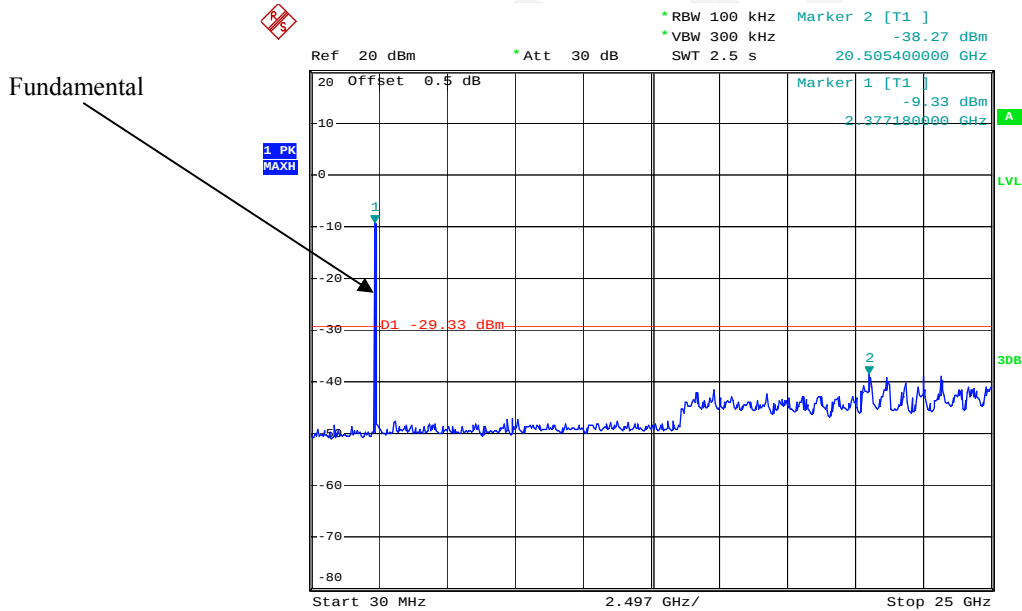
Date: 9.APR.2015 11:06:09

802.11n ht20 High Channel – Chain1



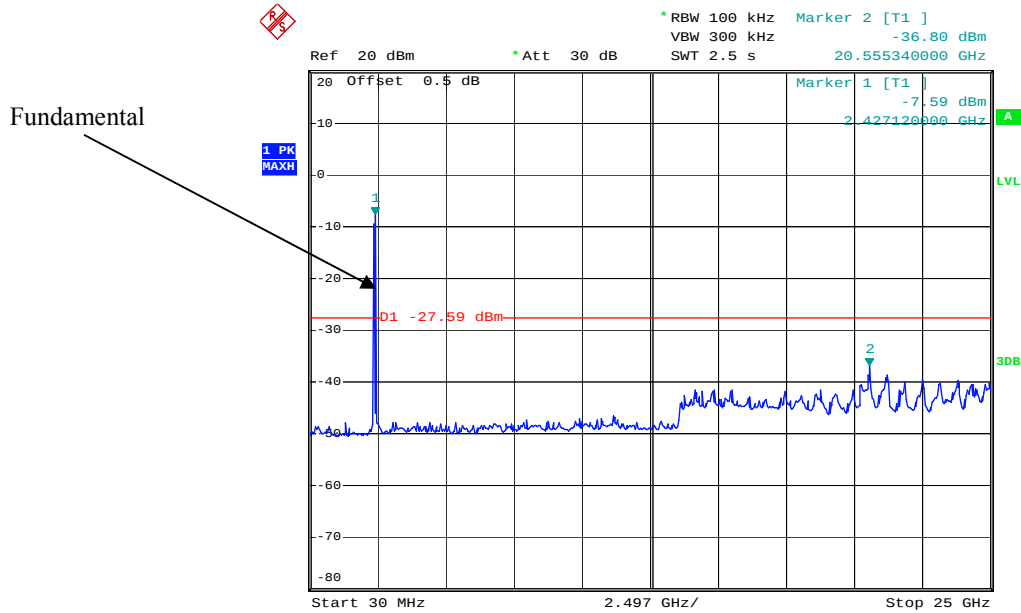
Date: 9.APR.2015 11:07:12

802.11n ht40 Low Channel – Chain1



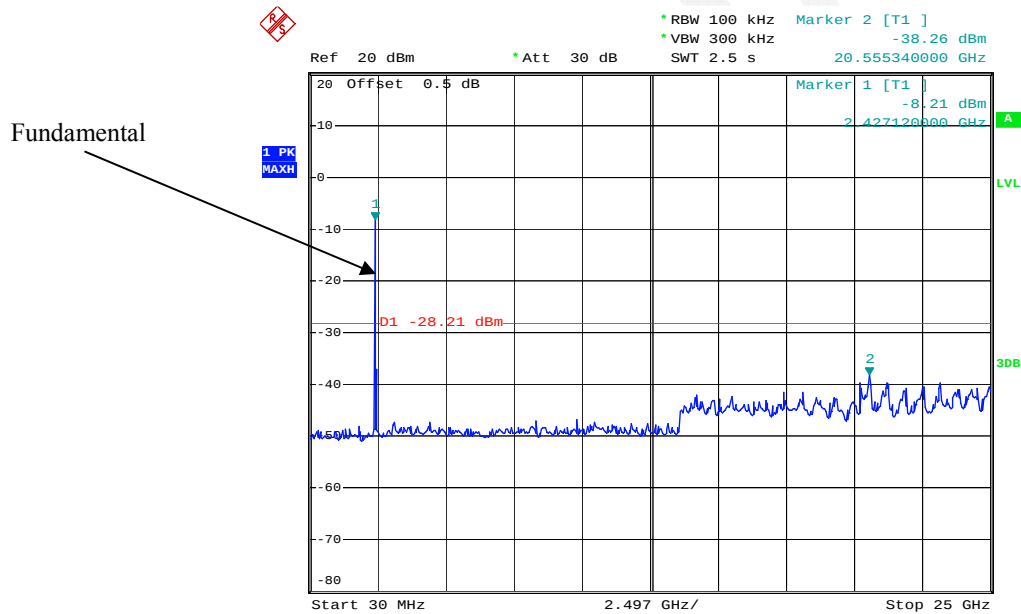
Date: 9.APR.2015 11:09:22

802.11n ht40 Middle Channel – Chain1



Date: 9.APR.2015 12:54:17

802.11n ht40 High Channel – Chain1



Date: 9.APR.2015 11:11:08

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:

- Set RBW = 100 kHz.
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW.
- Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Allow the trace to stabilize.
- 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	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:	25.2 °C
Relative Humidity:	53 %
ATM Pressure:	101.1 kPa

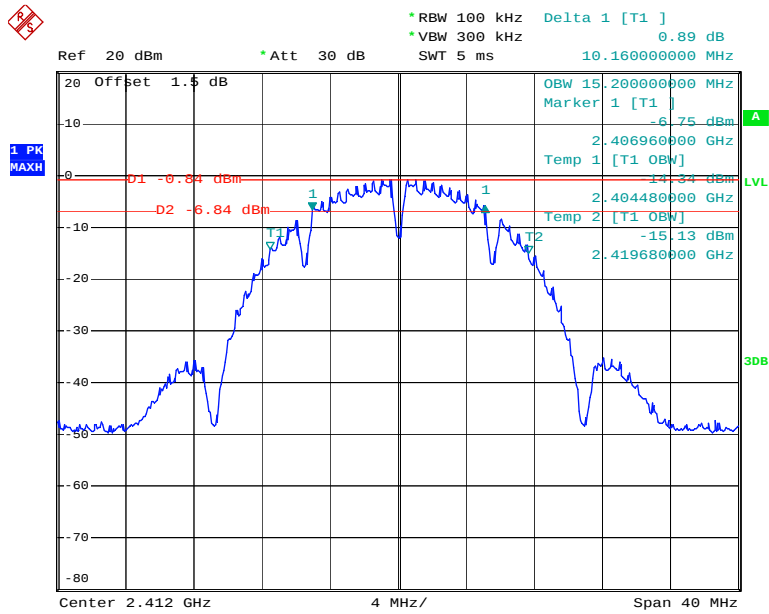
The testing was performed by Allen Qiao on 2015-04-09.

Test Mode: Transmitting

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

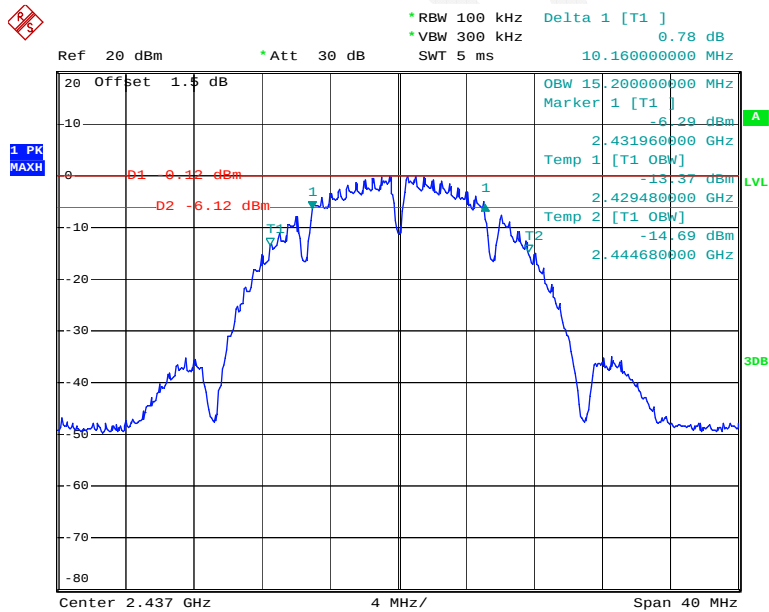
Mode	Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Limit (MHz)
			Chain0	Chain1	
802.11b	Low	2412	10.16	10.16	≥ 0.5
	Middle	2437	10.16	10.12	≥ 0.5
	High	2462	10.16	10.16	≥ 0.5
802.11g	Low	2412	16.64	16.64	≥ 0.5
	Middle	2437	16.64	16.64	≥ 0.5
	High	2462	16.64	16.64	≥ 0.5
802.11n20	Low	2412	17.84	17.84	≥ 0.5
	Middle	2437	17.84	17.80	≥ 0.5
	High	2462	17.80	17.84	≥ 0.5
802.11n40	Low	2422	36.64	36.64	≥ 0.5
	Middle	2437	36.64	36.64	≥ 0.5
	High	2452	36.52	36.64	≥ 0.5

802.11b Low Channel – Chain0



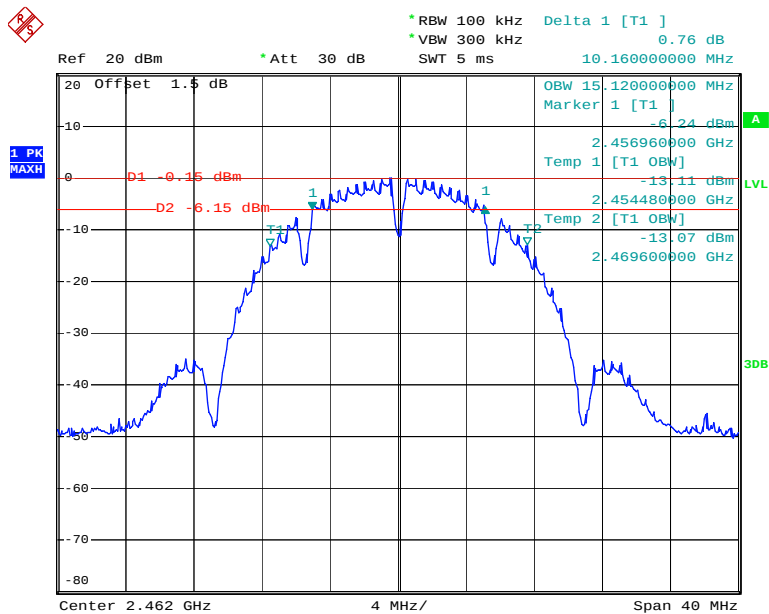
Date: 9.APR.2015 03:24:26

802.11b Middle Channel – Chain0



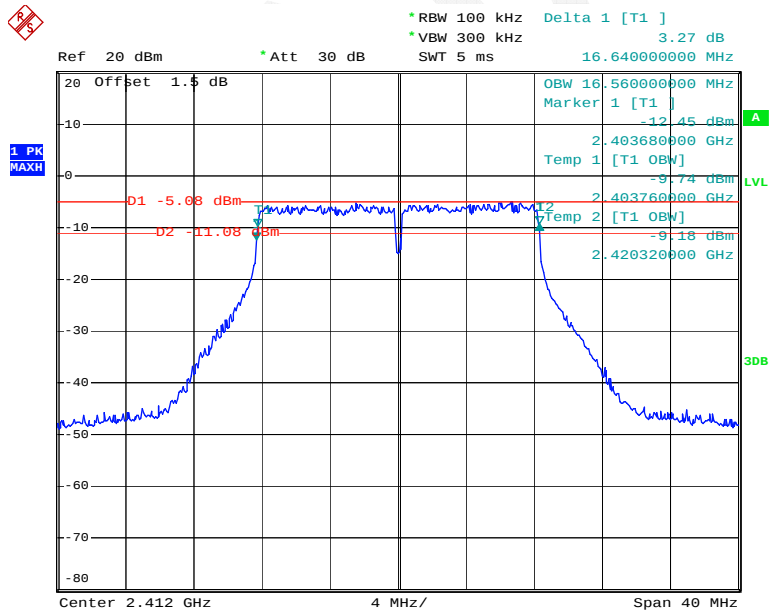
Date: 9.APR.2015 03:22:05

802.11b High Channel – Chain0

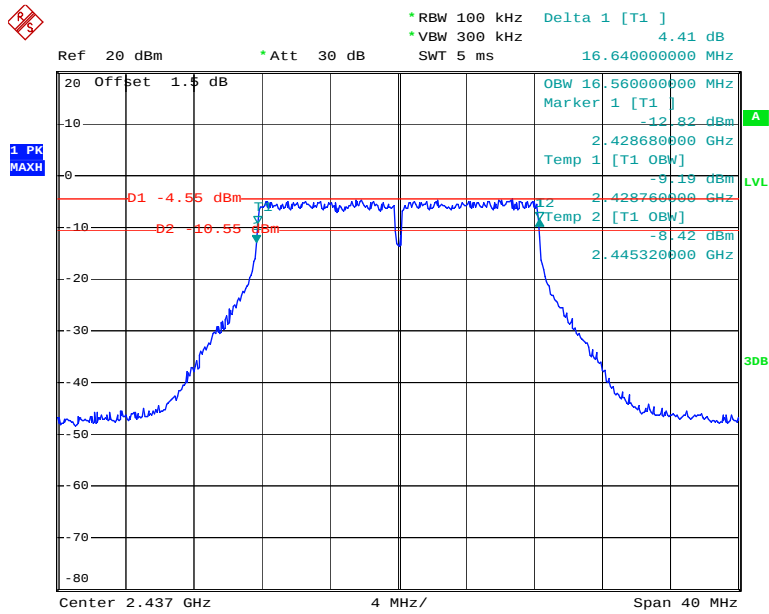


Date: 9.APR.2015 03:26:07

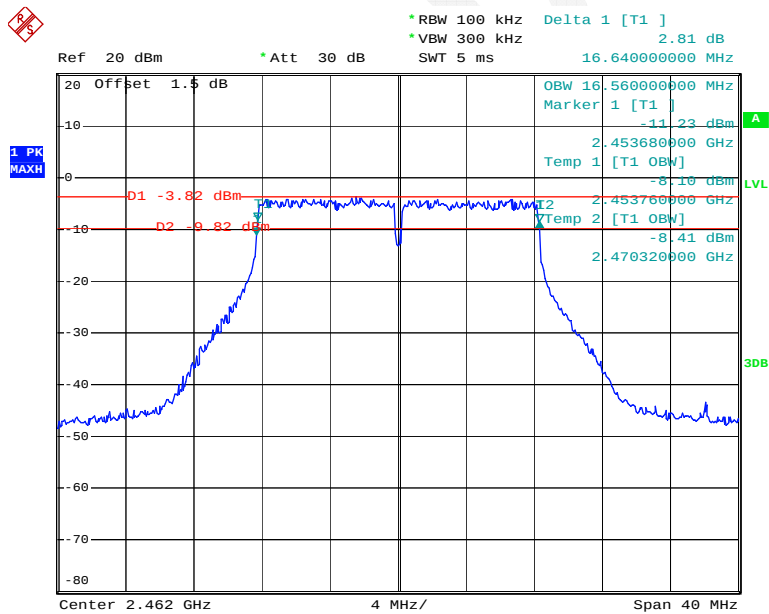
802.11g Low Channel – Chain0



Date: 9.APR.2015 03:33:51

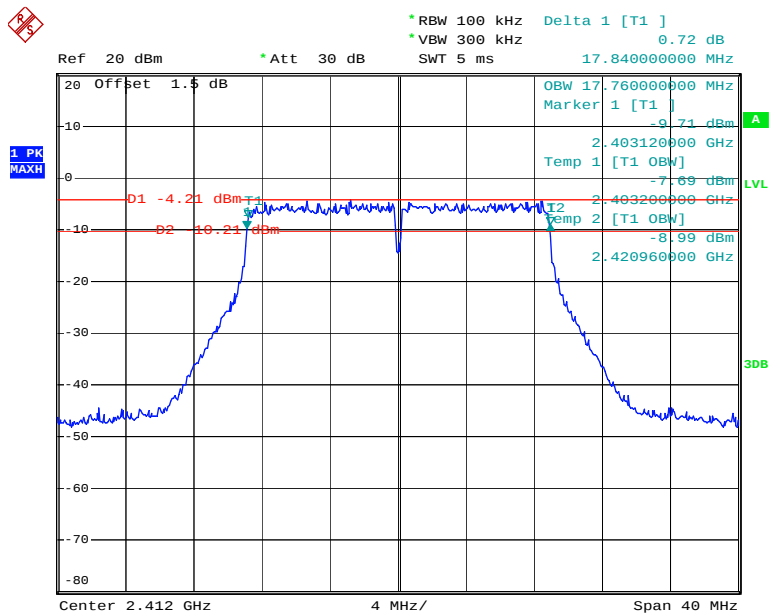
802.11g Middle Channel – Chain0

Date: 9.APR.2015 03:32:28

802.11g High Channel – Chain0

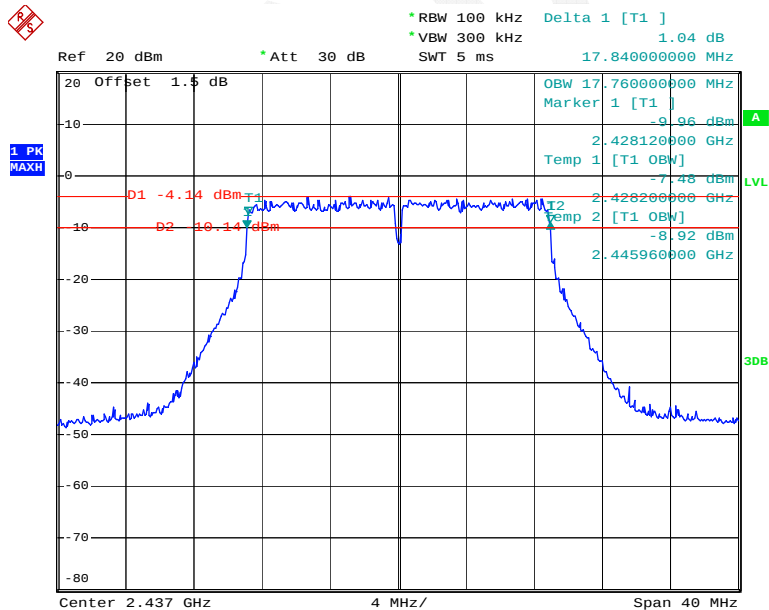
Date: 9.APR.2015 03:30:19

802.11n ht20 Low Channel – Chain0



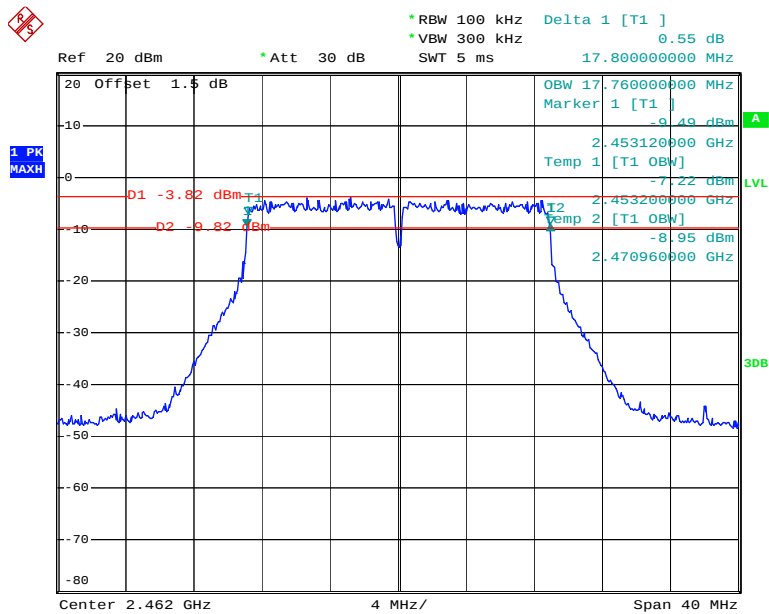
Date: 9.APR.2015 03:35:56

802.11n ht20 Middle Channel – Chain0



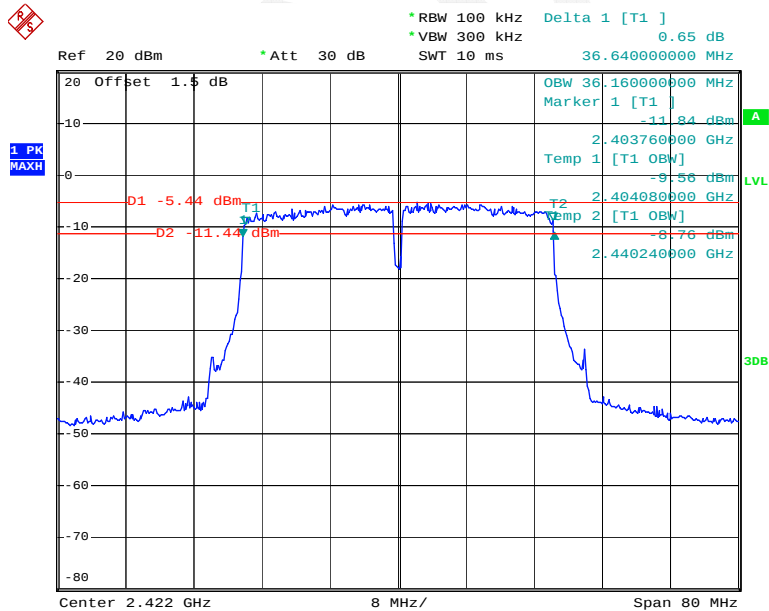
Date: 9.APR.2015 03:37:35

802.11n ht20 High Channel – Chain0



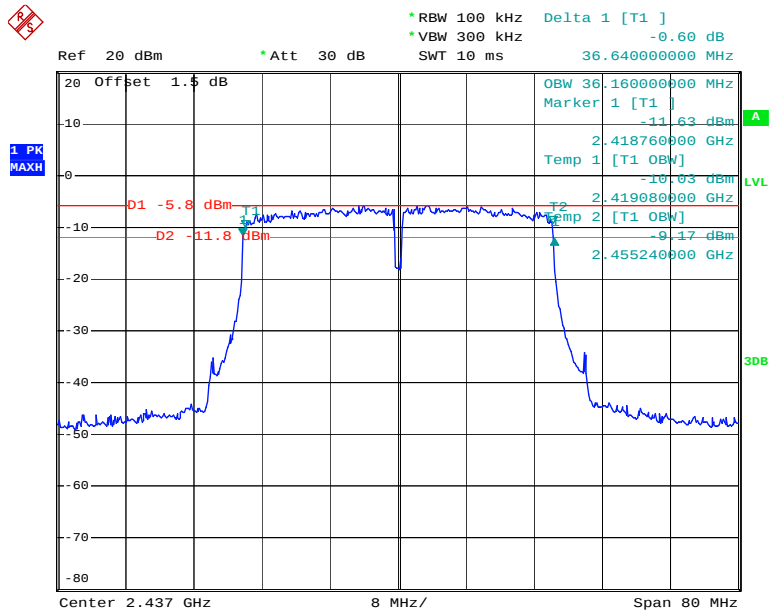
Date: 9.APR.2015 03:38:58

802.11n ht40 Low Channel – Chain0



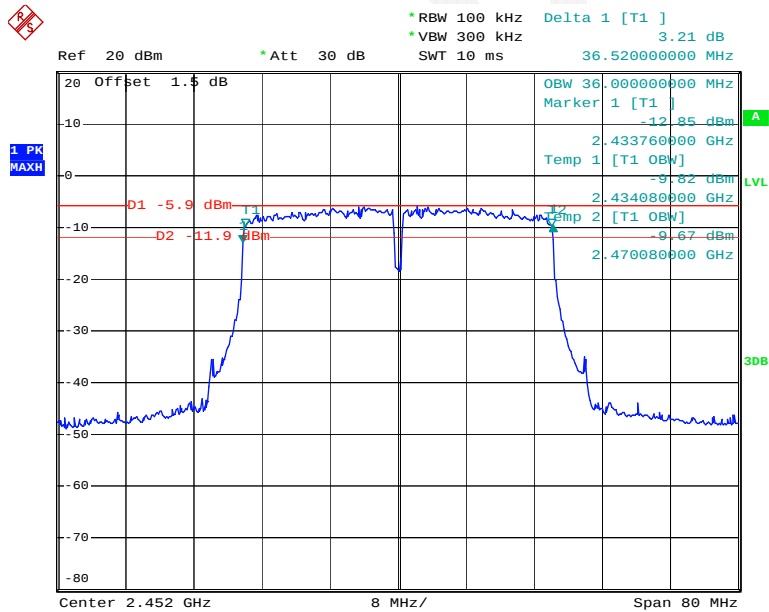
Date: 9.APR.2015 03:43:03

802.11n ht40 Middle Channel – Chain0



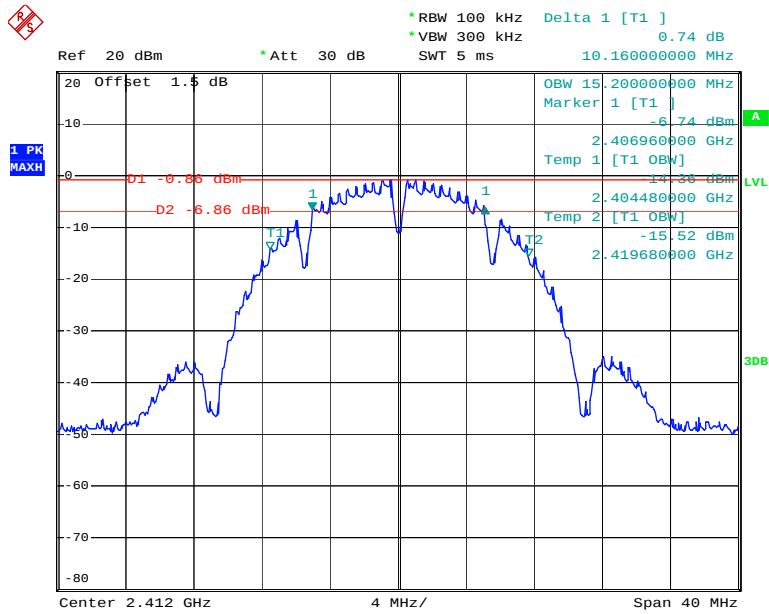
Date: 9.APR.2015 03:44:48

802.11n ht40 High Channel – Chain0



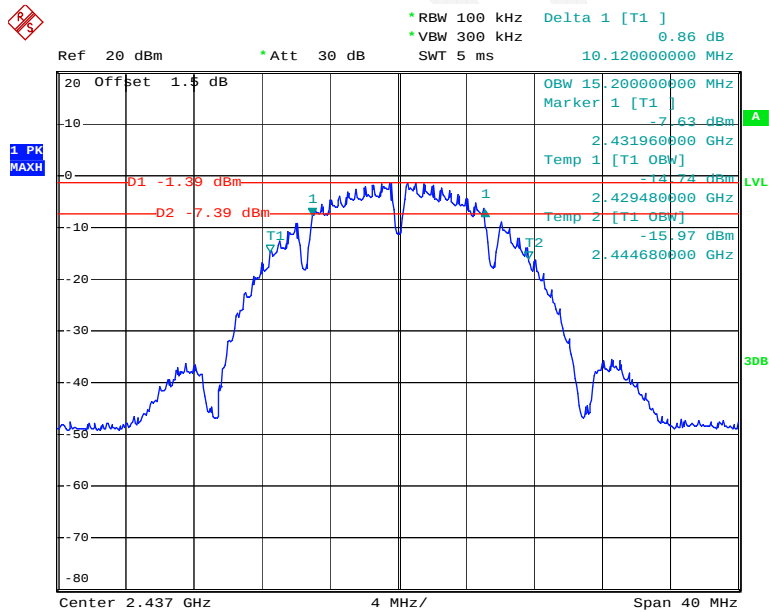
Date: 9.APR.2015 03:49:25

802.11b Low Channel – Chain1



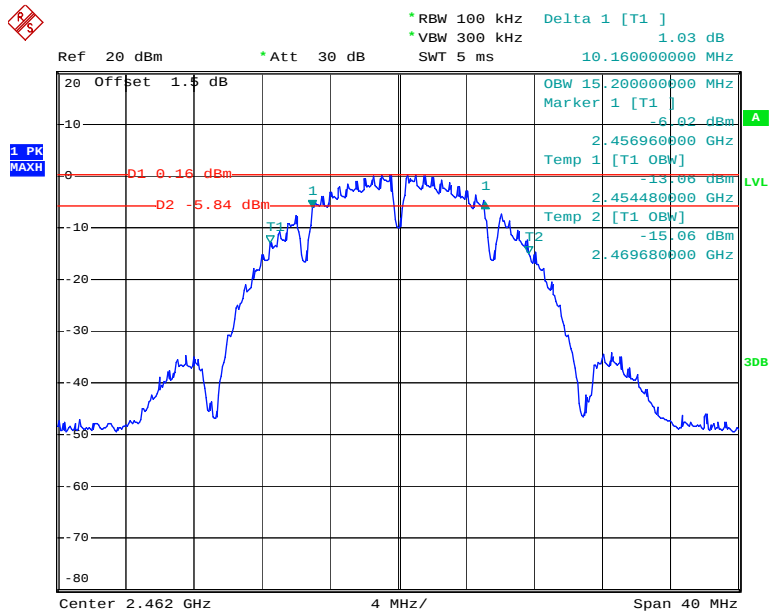
Date: 9.APR.2015 09:30:22

802.11b Middle Channel – Chain1



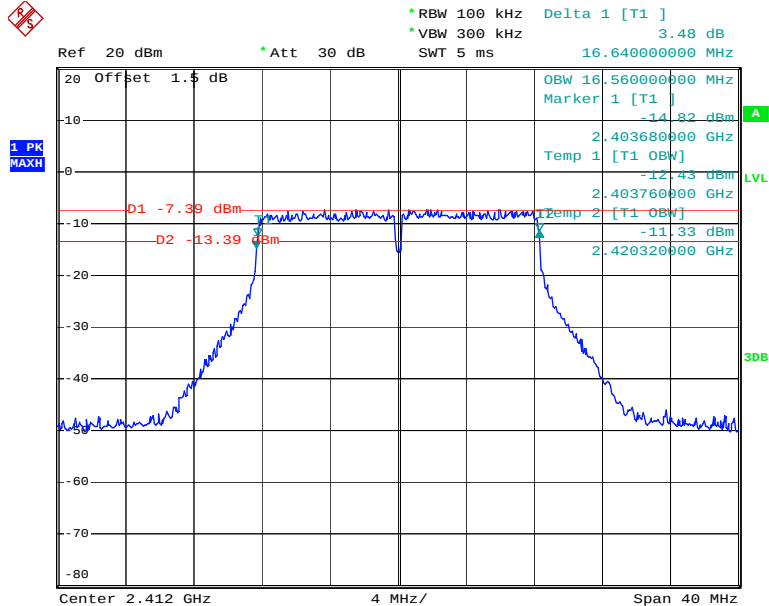
Date: 9.APR.2015 09:33:00

802.11b High Channel – Chain1



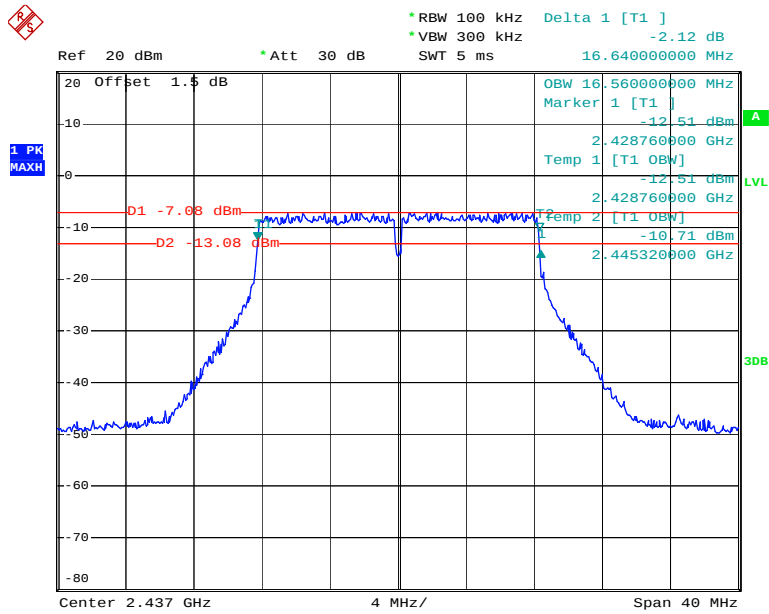
Date: 9.APR.2015 09:34:53

802.11g Low Channel – Chain1



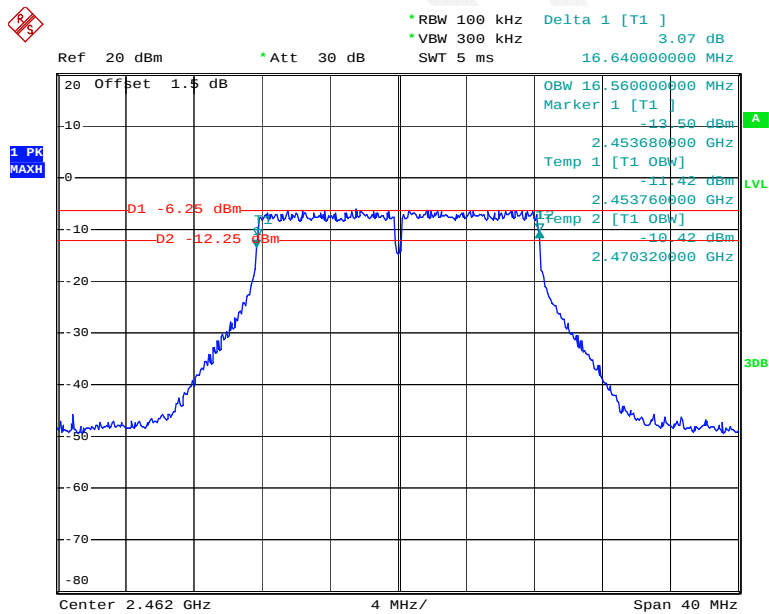
Date: 9.APR.2015 09:40:19

802.11g Middle Channel – Chain1



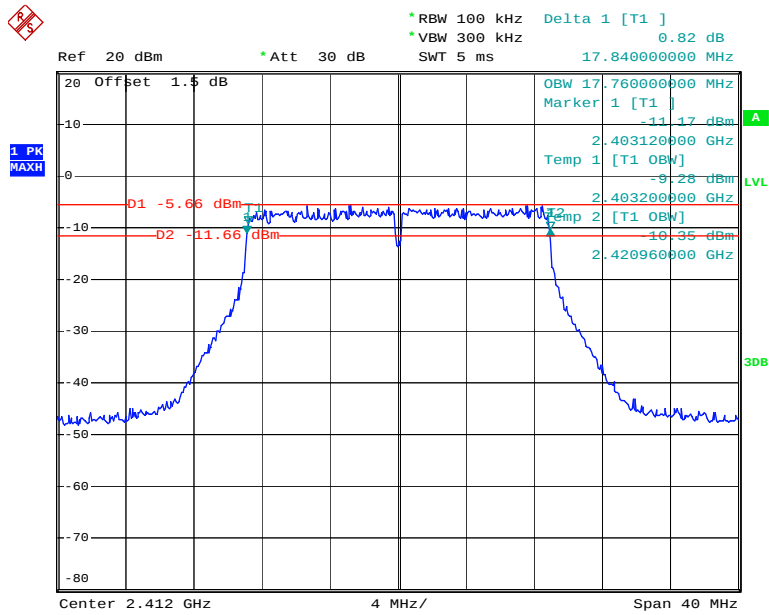
Date: 9.APR.2015 09:38:44

802.11g High Channel – Chain1



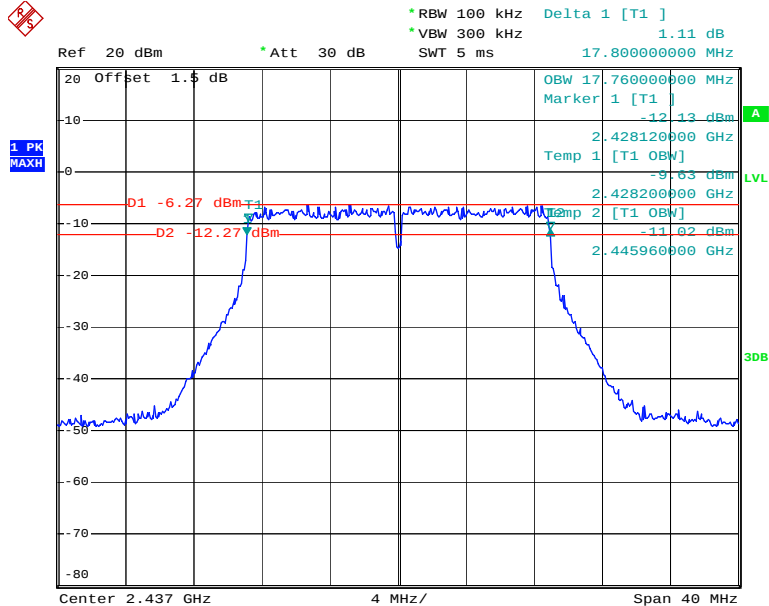
Date: 9.APR.2015 09:37:24

802.11n ht20 Low Channel – Chain1



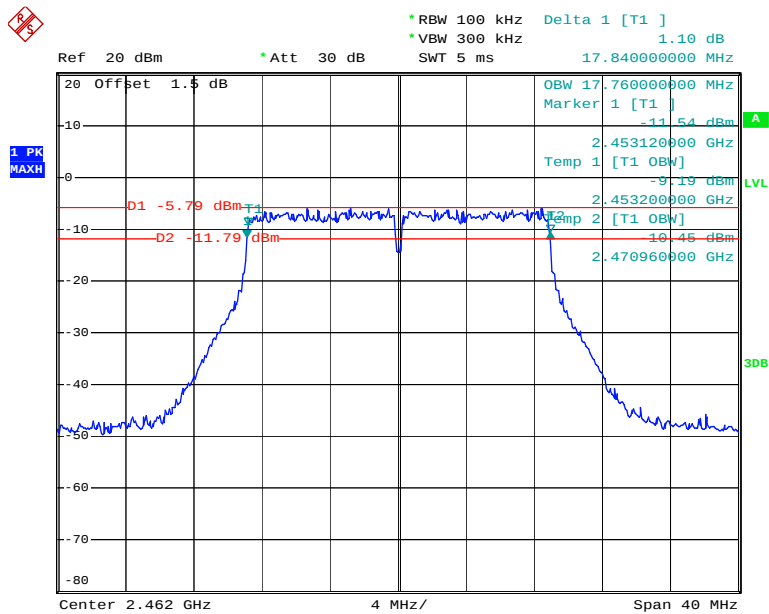
Date: 9.APR.2015 09:42:18

802.11n ht20 Middle Channel – Chain1



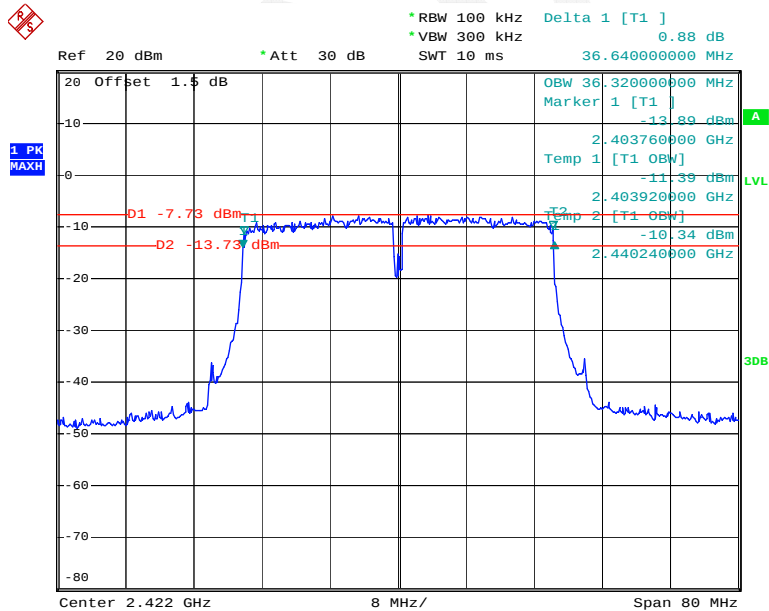
Date: 9.APR.2015 09:44:40

802.11n ht20 High Channel – Chain1



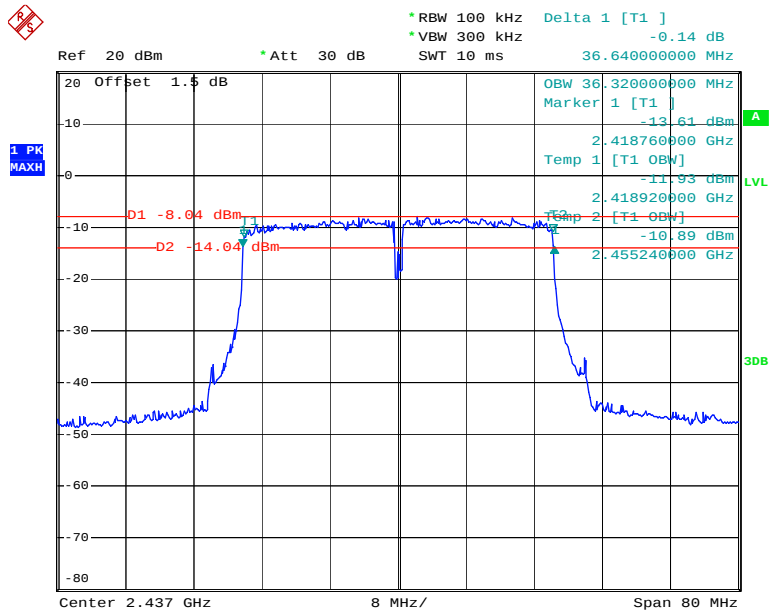
Date: 9.APR.2015 09:46:50

802.11n ht40 Low Channel – Chain1



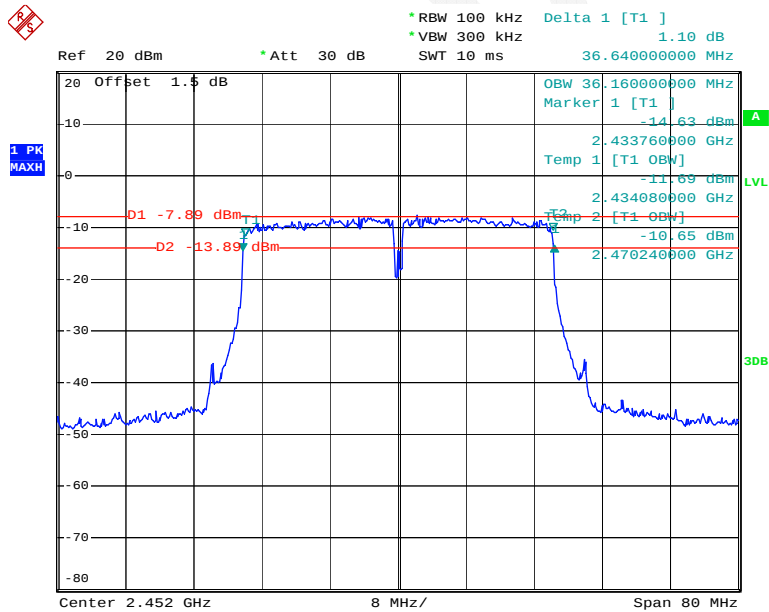
Date: 9.APR.2015 09:49:25

802.11n ht40 Middle Channel – Chain1



Date: 9.APR.2015 09:51:45

802.11n ht40 High Channel – Chain1



Date: 9.APR.2015 09:53:13

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

Applicable Standard

According to FCC §15.247(b) (3), for systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

Test Procedure

According to KDB 558074 D01 DTS Meas Guidance v03r02

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



Test Equipment List and Details

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

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

Test Data

Environmental Conditions

Temperature:	24.1 °C
Relative Humidity:	54 %
ATM Pressure:	101.3 kPa

The testing was performed by Allen Qiao on 2015-04-10

Test Mode: Transmitting

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

Mode	Channel	Frequency	Maximum Conducted Average Output Power (dBm)			Limit
		MHz	Chain 0	Chain 1	Total	dBm
802.11b	Low	2412	13.95	14.20	17.09	29
	Middle	2437	12.44	12.52	15.49	29
	High	2462	12.79	12.83	15.82	29
802.11g	Low	2412	13.67	12.80	16.27	29
	Middle	2437	13.88	13.03	16.49	29
	High	2462	14.05	13.88	16.98	29
802.11n20	Low	2412	13.64	12.41	16.08	29
	Middle	2437	13.99	12.59	16.36	29
	High	2462	14.03	13.58	16.82	29
802.11n40	Low	2422	12.50	13.23	15.89	29
	Middle	2437	12.72	13.64	16.21	29
	High	2452	13.24	14.10	16.70	29

Note: 1. Directional gain = $G_{ANT} + 10 \log(N_{ANT})$ dBi
 $= 8\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $30-1=29\text{dBm}$
 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	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).

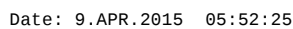
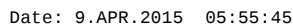
Test Data**Environmental Conditions**

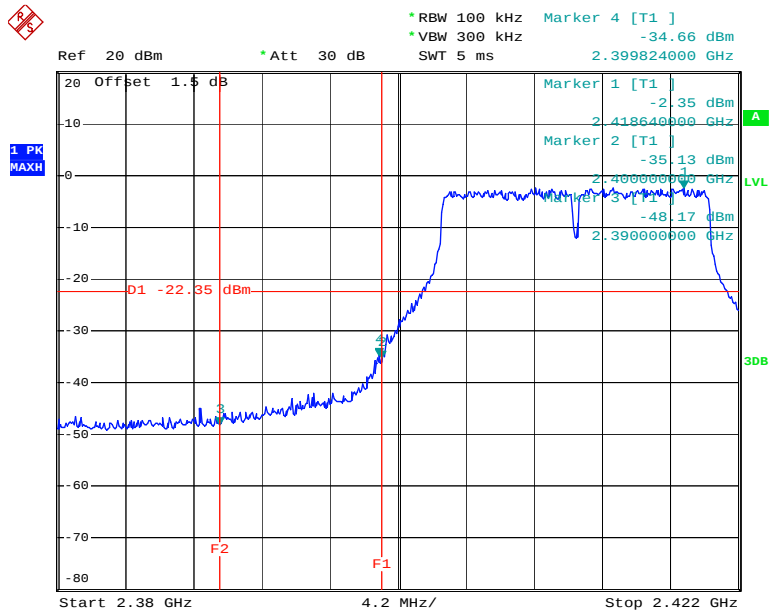
Temperature:	25.2 °C
Relative Humidity:	53 %
ATM Pressure:	101.1 kPa

The testing was performed by Allen Qiao on 2015-04-09.

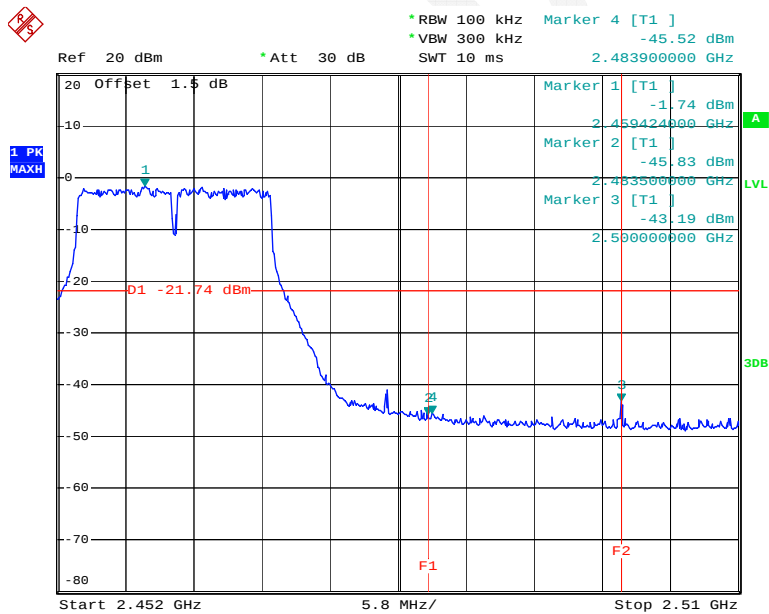
Test mode: Transmitting

802.11b: Band Edge, Left Side – Chain0



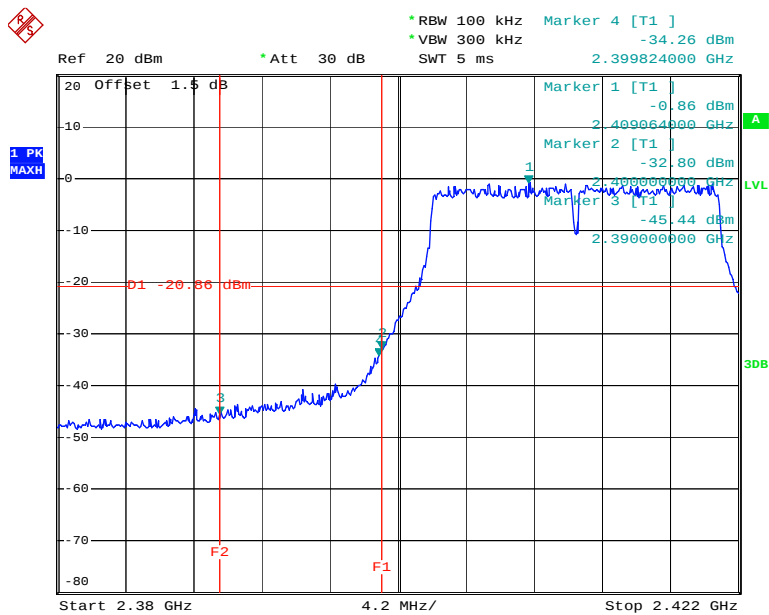
802.11g: Band Edge, Left Side – Chain0

Date: 9.APR.2015 05:45:58

802.11g: Band Edge, Right Side – Chain0

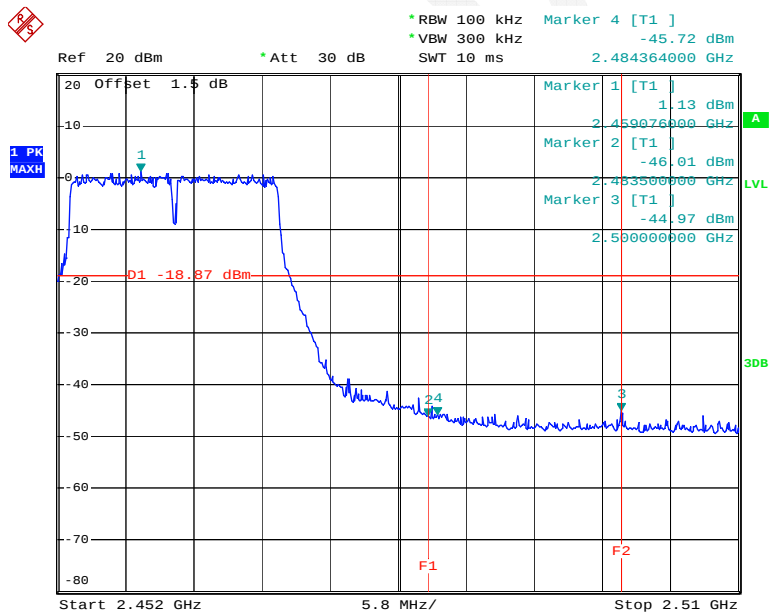
Date: 9.APR.2015 05:49:28

802.11n ht20 Band Edge, Left Side – Chain0



Date: 9.APR.2015 05:43:08

802.11n ht20 Band Edge, Right Side – Chain0



Date: 9.APR.2015 05:24:35

1 PK MAXH

Ref 20 dBm Att 30 dB RBW 100 kHz VBW 300 kHz SWT 10 ms

Marker 1 [T1] -4.55 dBm 2.42144000 GHz

Marker 2 [T1] -36.21 dBm 2.399964000 GHz

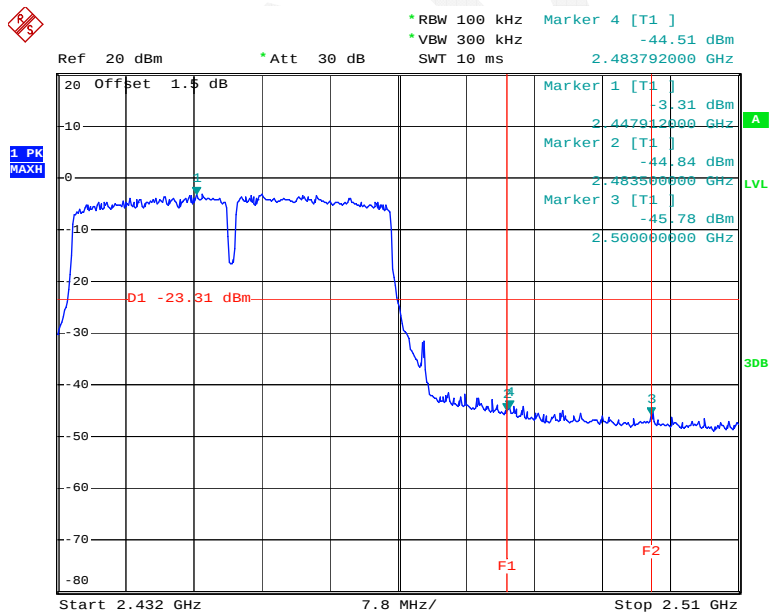
Marker 3 [T1] -46.19 dBm 2.390000000 GHz

D1 -24.55 dBm

F2 F1

Start 2.38 GHz 6.2 MHz/ Stop 2.442 GHz

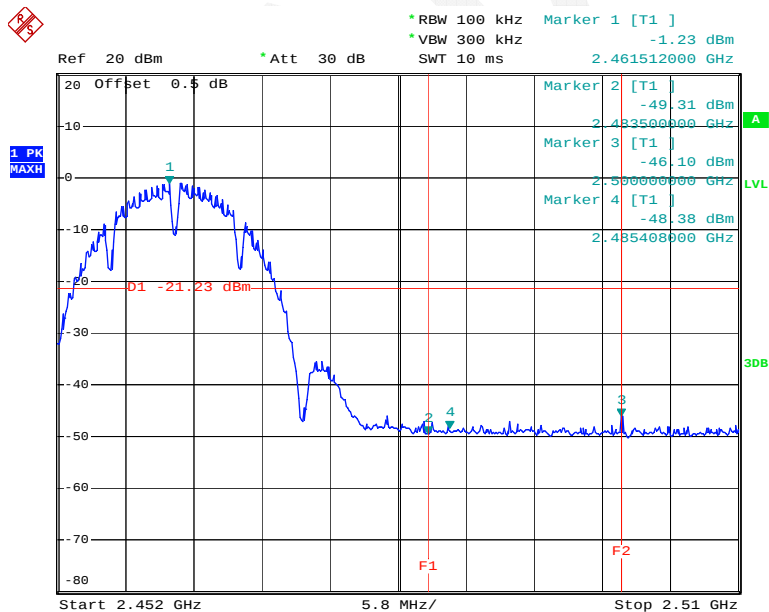
802.11n ht40 Band Edge, Right Side – Chain0



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* RBW 100 kHz
 * VBW 300 kHz
 * Att 30 dB
 SWT 5 ms
 Marker 4 [T1] -36.03 dBm
 2.399488000 GHz
 20 Offset 0.5 dB
 1 PK MAXH
 Marker 1 [T1] -1.02 dBm
 2.411500000 GHz
 Marker 2 [T1] -36.12 dBm
 2.400000000 GHz
 Marker 3 [T1] -39.70 dBm
 2.390000000 GHz
 D1 -21.02 dBm
 F2
 F1
 Start 2.38 GHz
 4.2 MHz/
 Stop 2.422 GHz

802.11b: Band Edge, Right Side – Chain1



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1 PK MAXH

Ref 20 dBm Att 30 dB RBW 100 kHz VBW 300 kHz SWT 5 ms

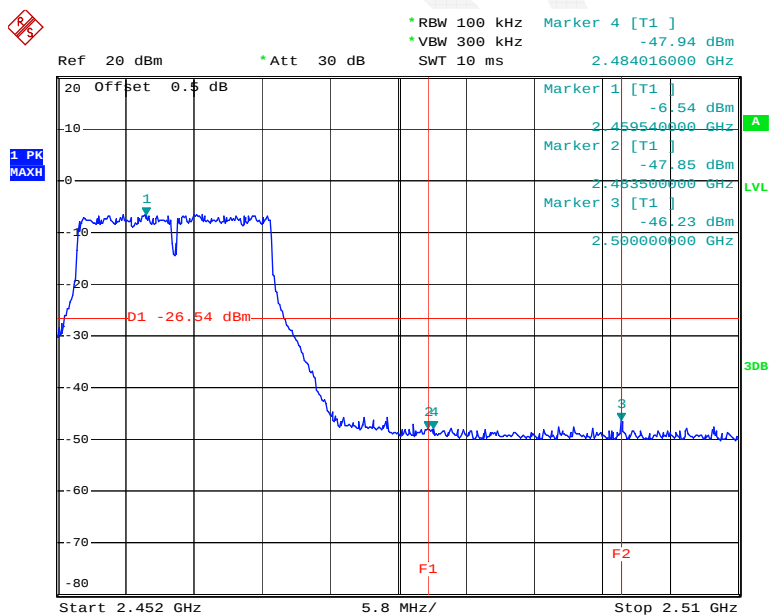
Marker 1 [T1] -27.64 dBm 2.39740000 GHz

Marker 2 [T1] -41.69 dBm 2.40000000 GHz

Marker 3 [T1] -41.69 dBm 2.39740000 GHz

Start 2.38 GHz Stop 2.422 GHz

802.11g: Band Edge, Right Side – Chain1

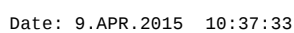


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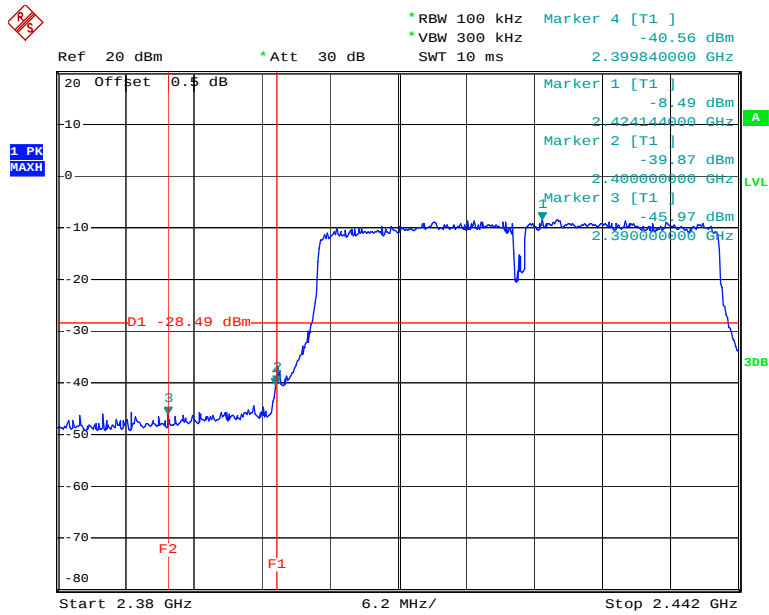
*RBW 100 kHz Marker 4 [T1]
 VBW 300 kHz -37.61 dBm
 *Att 30 dB SWT 5 ms 2.399824000 GHz

20 Offset 0.5 dB
 1 PK MAXH
 D1 -24.47 dBm
 F2
 F1
 Marker 1 [T1] -4.47 dBm 2.400148000 GHz
 Marker 2 [T1] -36.81 dBm 2.400000000 GHz
 Marker 3 [T1] -46.76 dBm 2.390000000 GHz
 Start 2.38 GHz 4.2 MHz/ Stop 2.422 GHz

802.11n ht20 Band Edge, Right Side – Chain1

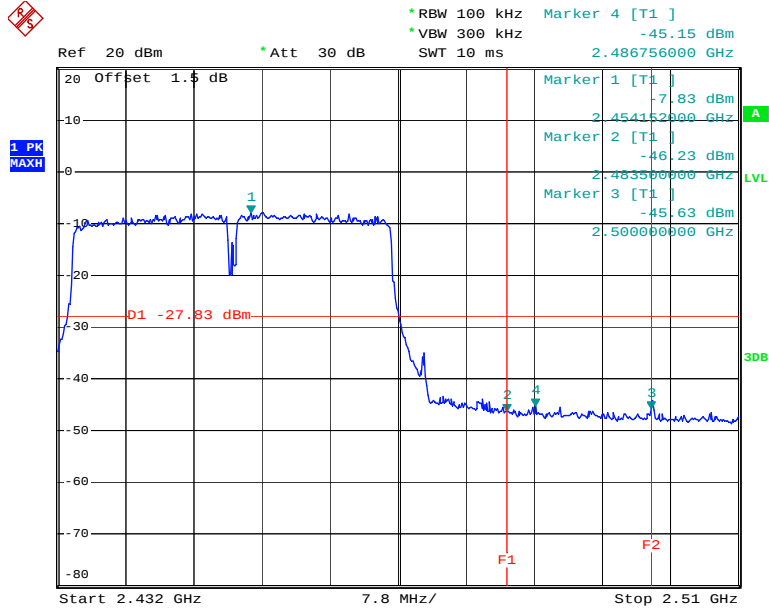


802.11n ht40 Band Edge, Left Side – Chain1



Date: 9.APR.2015 10:30:59

802.11n ht40 Band Edge, Right Side – Chain1



Date: 9.APR.2015 09:59:02

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:

- Set analyzer center frequency to DTS channel center frequency.
- Set the span to 1.5 times the DTS bandwidth.
- Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- Set the VBW $\geq 3 \times \text{RBW}$.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level within the RBW.
- 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	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:	22.9~25.2 °C
Relative Humidity:	53~54 %
ATM Pressure:	101~101.3 kPa

The testing was performed by Allen Qiao from 2015-04-09 to 2015-04-12.

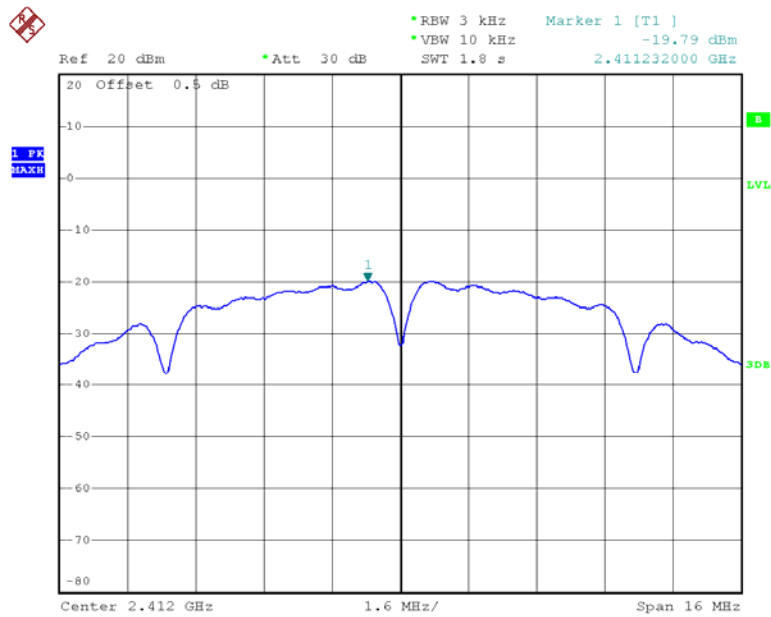
Test Mode: Transmitting

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

Mode	Channel	Frequency	Power Spectral Density (dBm)			Limit
		MHz	Chain 0	Chain 1	Total	dBm/3kHz
802.11b	Low	2412	-19.79	-18.56	-16.12	≤ 7
	Middle	2437	-19.81	-20.09	-16.94	≤ 7
	High	2462	-19.88	-19.89	-16.87	≤ 7
802.11g	Low	2412	-19.42	-20.85	-17.07	≤ 7
	Middle	2437	-18.63	-20.53	-16.47	≤ 7
	High	2462	-17.86	-20.20	-15.86	≤ 7
802.11n20	Low	2412	-17.74	-19.30	-15.44	≤ 7
	Middle	2437	-17.99	-19.87	-15.82	≤ 7
	High	2462	-18.58	-19.67	-16.08	≤ 7
802.11n40	Low	2422	-16.67	-18.81	-14.60	≤ 7
	Middle	2437	-17.04	-18.41	-14.66	≤ 7
	High	2452	-15.61	-19.06	-13.99	≤ 7

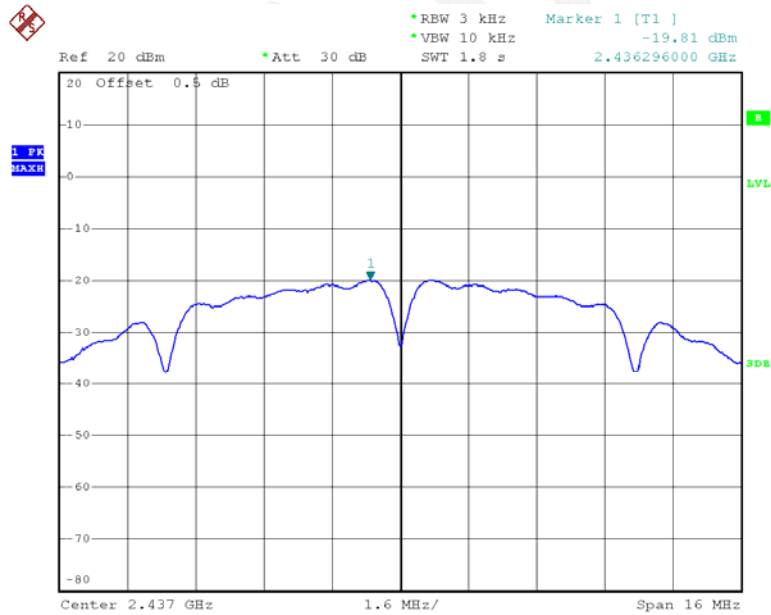
Note: 1. Directional gain = $G_{ANT} + 10 \log(N_{ANT})$ dBi
 $= 8\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $8-1 = 7\text{dBm}$
 2. Duty cycle is 100%.

Power Spectral Density, 802.11b Low Channel – Chain0



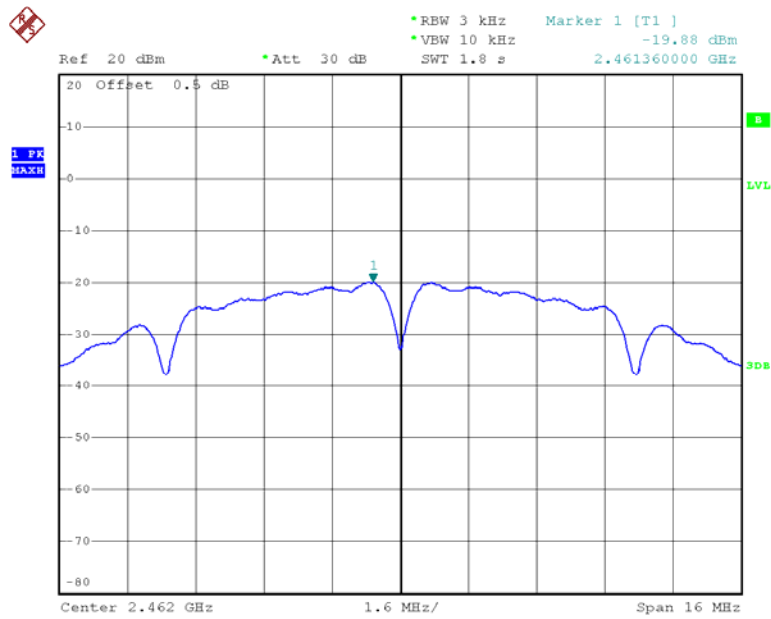
Date: 12.APR.2015 04:02:17

Power Spectral Density, 802.11b Middle Channel – Chain0



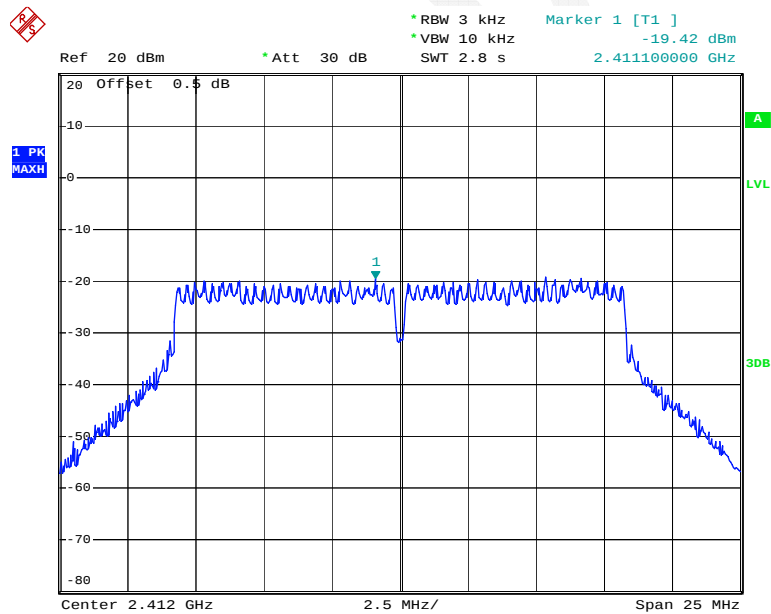
Date: 12.APR.2015 04:02:43

Power Spectral Density, 802.11b High Channel – Chain0



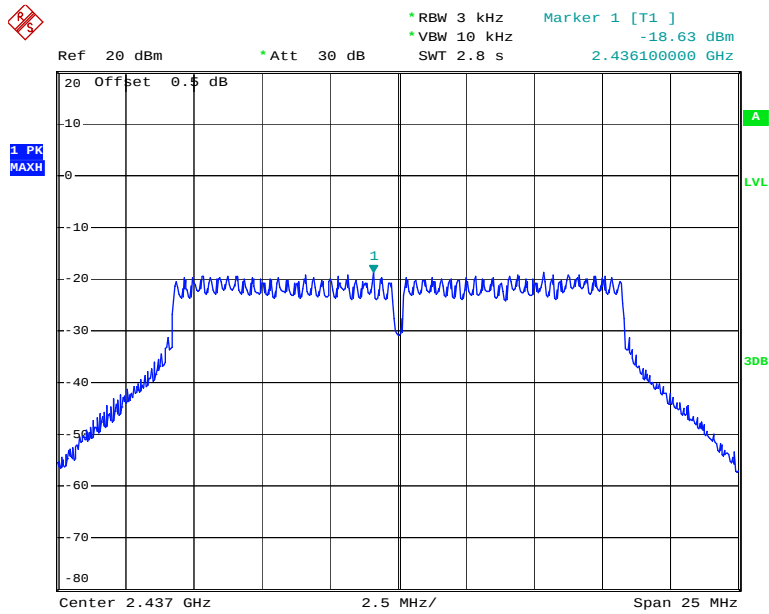
Date: 12.APR.2015 04:02:59

Power Spectral Density, 802.11g Low Channel – Chain0



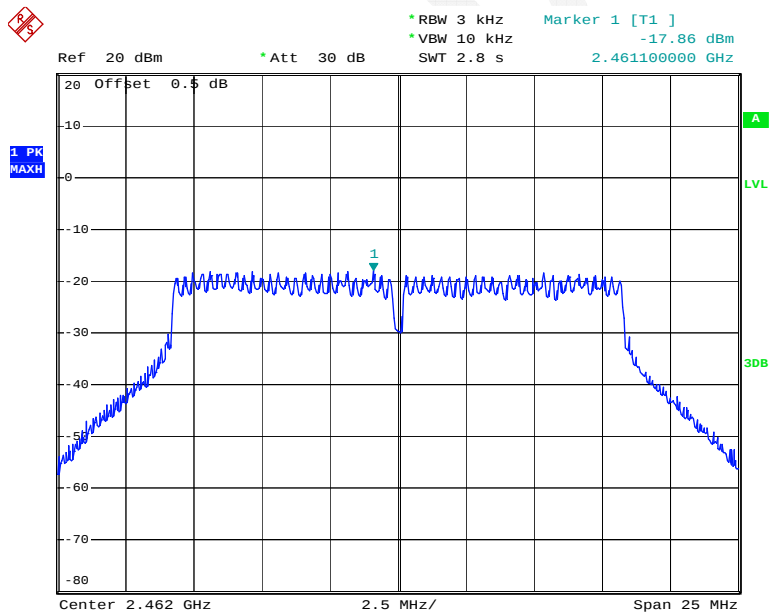
Date: 9.APR.2015 12:18:53

Power Spectral Density, 802.11g Middle Channel – Chain0



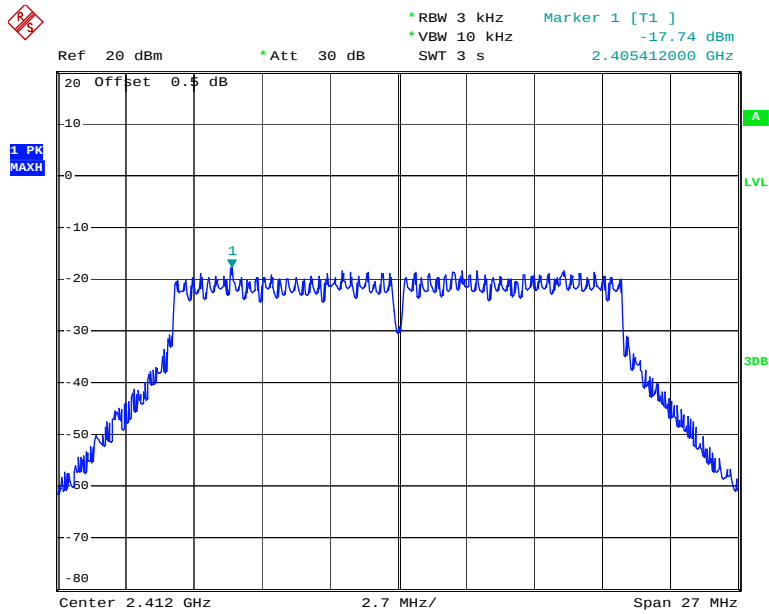
Date: 9.APR.2015 12:18:12

Power Spectral Density, 802.11g High Channel – Chain0



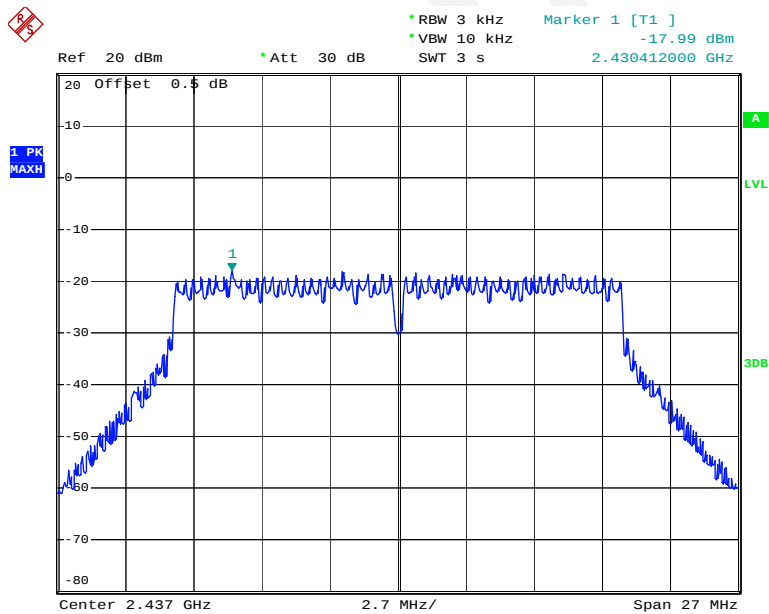
Date: 9.APR.2015 12:17:37

Power Spectral Density, 802.11n ht20 Low Channel – Chain0



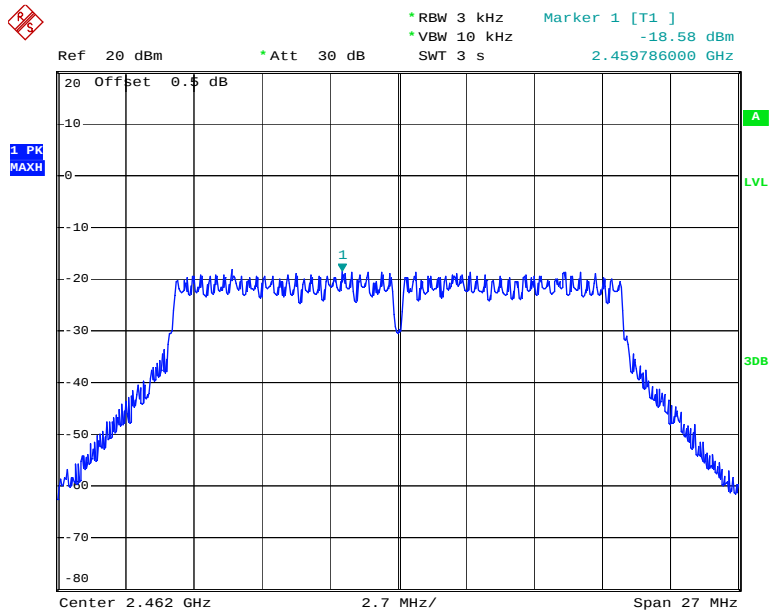
Date: 9.APR.2015 12:15:46

Power Spectral Density, 802.11n ht20 Middle Channel – Chain0



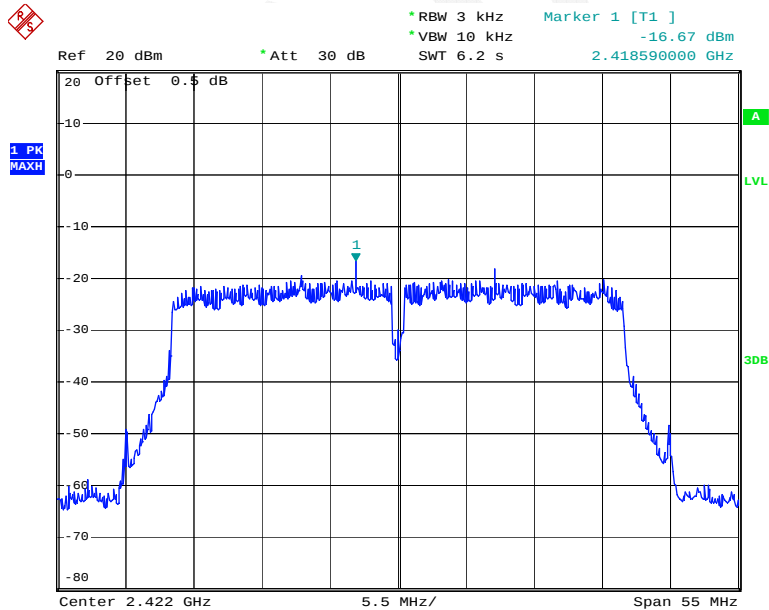
Date: 9.APR.2015 12:16:15

Power Spectral Density, 802.11n ht20 High Channel – Chain0



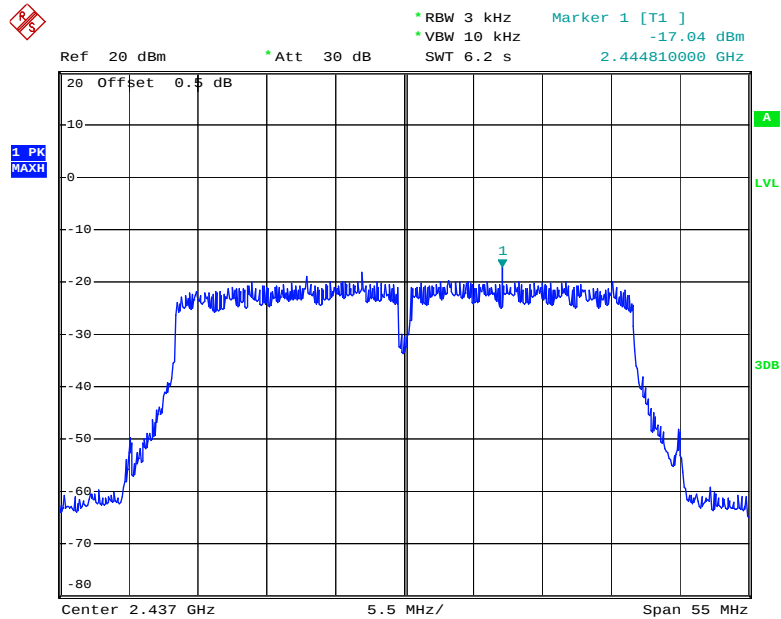
Date: 9.APR.2015 12:16:40

Power Spectral Density, 802.11n ht40 Low Channel – Chain0



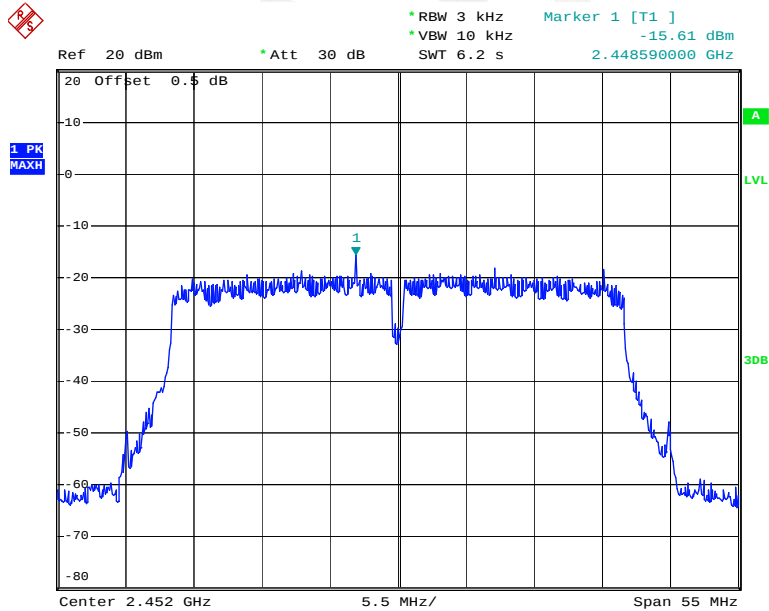
Date: 9.APR.2015 12:14:37

Power Spectral Density, 802.11n ht40 Middle Channel – Chain0



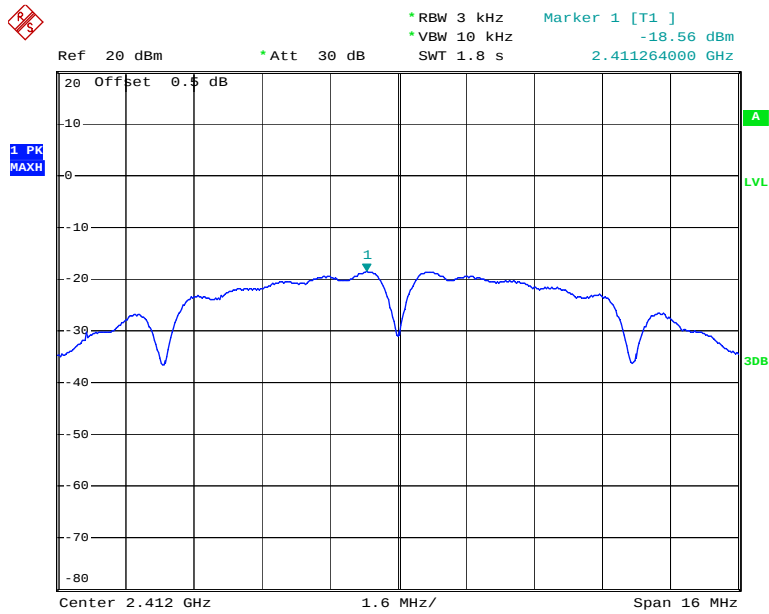
Date: 9.APR.2015 12:14:03

Power Spectral Density, 802.11n ht40 High Channel – Chain0



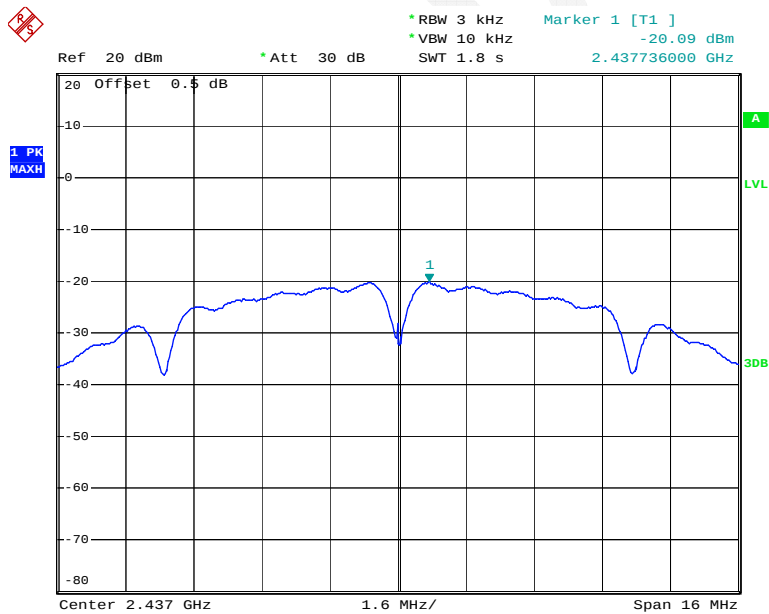
Date: 9.APR.2015 12:13:28

Power Spectral Density, 802.11b Low Channel – Chain1



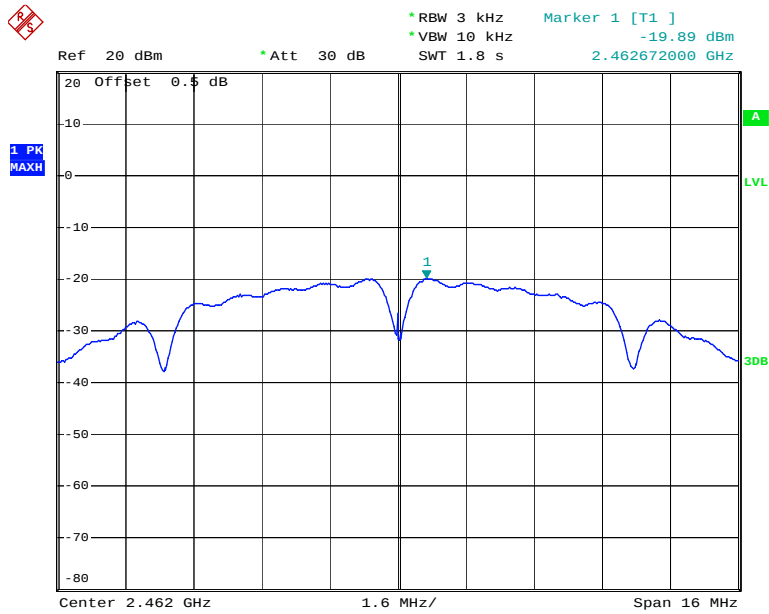
Date: 9.APR.2015 11:56:14

Power Spectral Density, 802.11b Middle Channel – Chain1



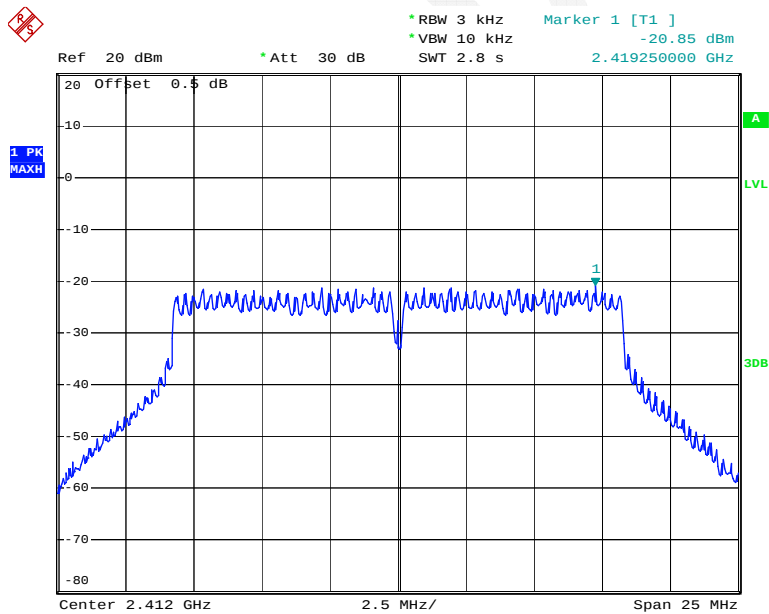
Date: 9.APR.2015 11:57:16

Power Spectral Density, 802.11b High Channel – Chain1



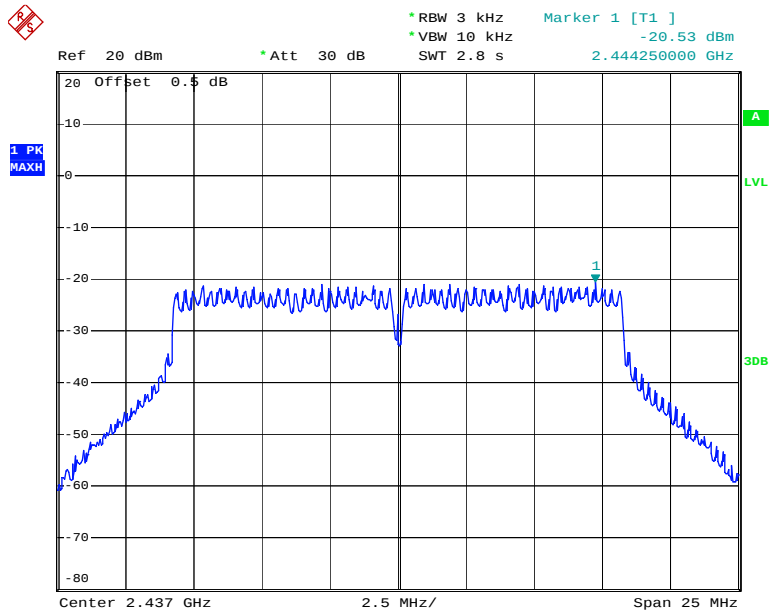
Date: 9.APR.2015 11:58:10

Power Spectral Density, 802.11g Low Channel – Chain1



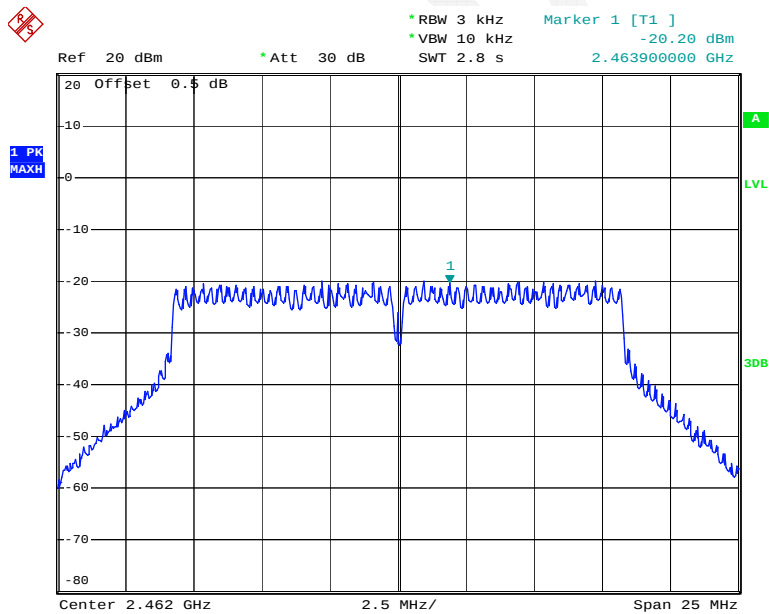
Date: 9.APR.2015 12:01:29

Power Spectral Density, 802.11g Middle Channel – Chain1



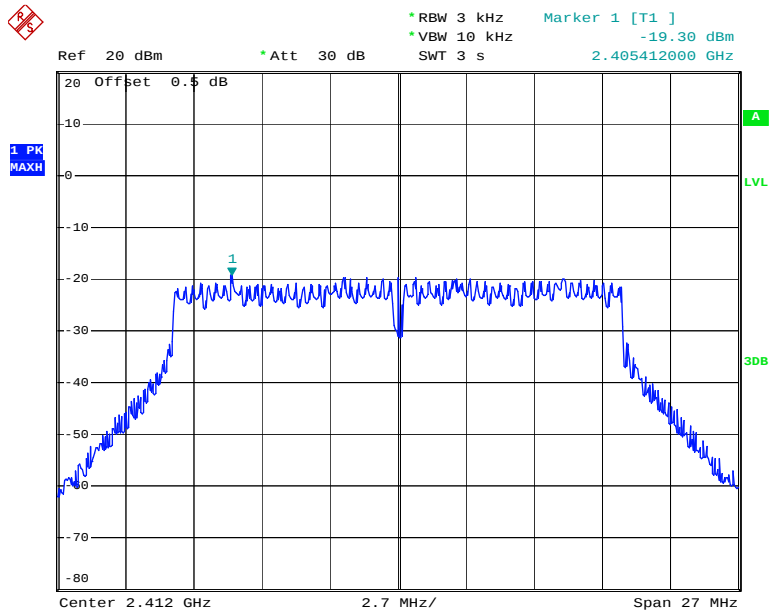
Date: 9.APR.2015 12:00:38

Power Spectral Density, 802.11g High Channel – Chain1



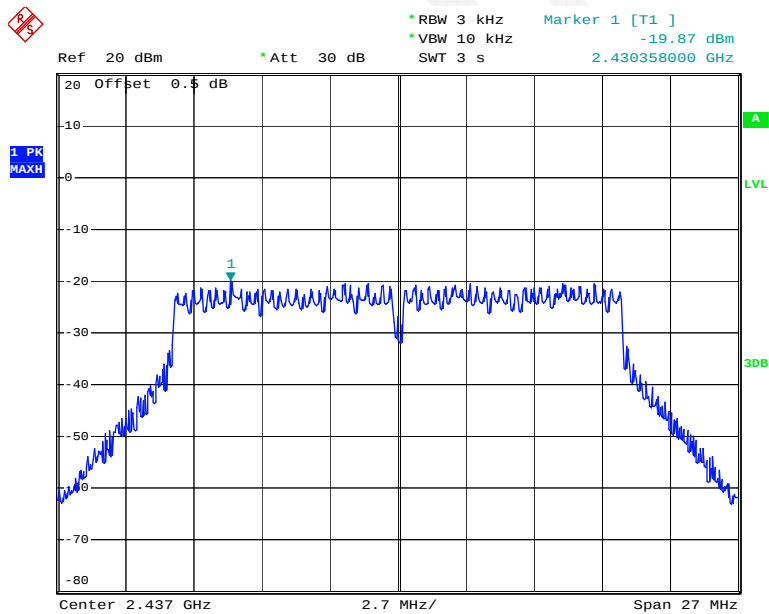
Date: 9.APR.2015 12:00:00

Power Spectral Density, 802.11n ht20 Low Channel – Chain1



Date: 9.APR.2015 12:02:30

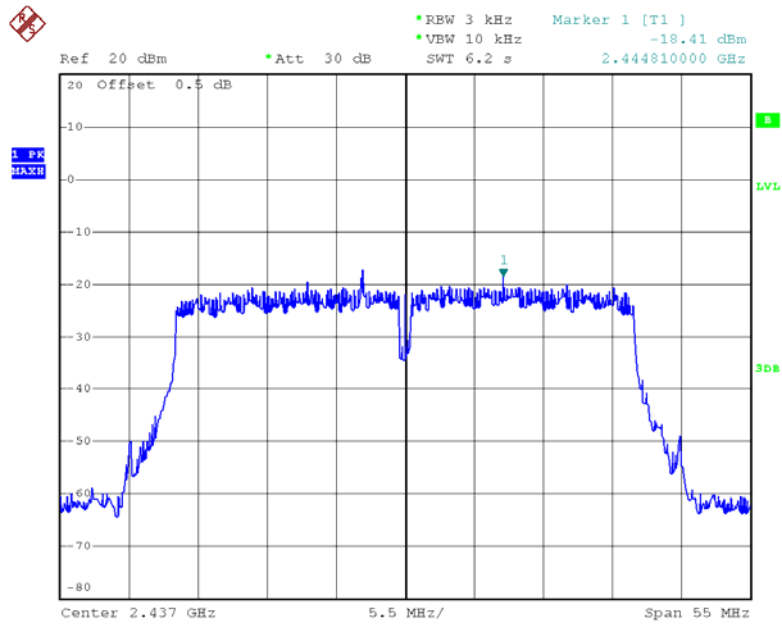
Power Spectral Density, 802.11n ht20 Middle Channel – Chain1



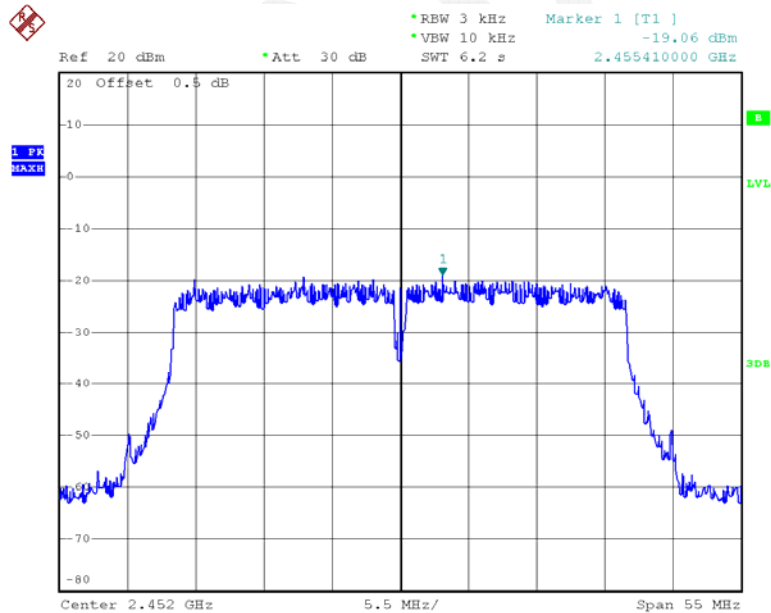
Date: 9.APR.2015 12:03:11



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Power Spectral Density, 802.11n ht40 Middle Channel – Chain1

Date: 12.APR.2015 03:59:22

Power Spectral Density, 802.11n ht40 High Channel – Chain1

Date: 12.APR.2015 03:59:48

DECLARATION LETTER**Declaration of Alteration**

To Whom It May Concern,

We, Iconnect, hereby declare that there are some differences between our Multiple Models and testing products. Details as below:

(This is for your reference only.)

(This is for your reference only)

Products Description	Name	802.11ac AC1200 Wide-Range Wi Fi Router		
	Brand	ALFA		
	Manufacturer	Iconnect		
	Project No.	RDG150401003		
Differences Description				
Testing Products	Multiple Models		Differences Items	Details
AC1200R	AC1200RV2,AC1200RU, AC1200RU2,AC1200RI, AC1200RUI,AC1200RIV2, AC1200RUIV2,AC1200RG, AC600R,AC600RV2,AC600RU, AC600RUV2,AC600RI, AC600RIV2		Model name	They are the same product, and just have the different model name.

Notes: Testing products-the products tested by BACL

Multiple Model- have the same or similar appearance, structure, PCB, Material and function to the testing products, and only are different for little parameters.

Besides the differences in the table above, we declare the products are identical
We guarantee all the information provided above is true, and notice that we'll bear all the consequences caused by any false information or concealing

Best Regards,

Signature:

Print Name: Johnson Wang

Title: Manager



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