

# FCC PART 15.247

## TEST REPORT

For

### **SHENZHEN TENDA TECHNOLOGY CO.,LTD.**

6-8 Floor, Tower E3, No. 1001, Zhongshanyuan Road, Nanshan District, Shenzhen, China. 518052

**FCC ID: V7T03**

<b>Report Type:</b> Original Report	<b>Product Type:</b> 2.4G Long Range Outdoor Access Point
<b>Test Engineer:</b> Lion Xiao	<i>Lion Xiao</i>
<b>Report Number:</b> RDG150921006-00	
<b>Report Date:</b> 2015-10-21	
<b>Reviewed By:</b> Sula Huang RF Leader	<i>Sula Huang</i>
<b>Test Laboratory:</b> Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 <a href="http://www.baclcorp.com.cn">www.baclcorp.com.cn</a>	

**Note:** This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Dongguan). This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

## TABLE OF CONTENTS

<b>GENERAL INFORMATION.....</b>	<b>4</b>
PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....	4
OBJECTIVE.....	4
RELATED SUBMITTAL(S)/GRANT(S).....	4
TEST METHODOLOGY.....	4
TEST FACILITY.....	4
<b>SYSTEM TEST CONFIGURATION.....</b>	<b>5</b>
DESCRIPTION OF TEST CONFIGURATION.....	5
EQUIPMENT MODIFICATIONS.....	5
EUT EXERCISE SOFTWARE.....	6
SUPPORT EQUIPMENT LIST AND DETAILS.....	6
EXTERNAL CABLE.....	7
BLOCK DIAGRAM OF TEST SETUP.....	7
<b>SUMMARY OF TEST RESULTS.....</b>	<b>8</b>
<b>FCC §15.247 (I) &amp; §1.1310 &amp; §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE).....</b>	<b>9</b>
1.1    APPLICABLE STANDARD.....	9
<b>FCC §15.203 - ANTENNA REQUIREMENT.....</b>	<b>10</b>
APPLICABLE STANDARD.....	10
ANTENNA CONNECTOR CONSTRUCTION.....	10
<b>FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS.....</b>	<b>11</b>
APPLICABLE STANDARD.....	11
MEASUREMENT UNCERTAINTY.....	11
EUT SETUP.....	11
EMI TEST RECEIVER SETUP.....	12
TEST PROCEDURE.....	12
CORRECTED AMPLITUDE & MARGIN CALCULATION.....	12
TEST EQUIPMENT LIST AND DETAILS.....	13
TEST RESULTS SUMMARY.....	13
TEST DATA.....	13
<b>FCC §15.209, §15.205 &amp; §15.247(d) - SPURIOUS EMISSIONS.....</b>	<b>16</b>
APPLICABLE STANDARD.....	16
MEASUREMENT UNCERTAINTY.....	16
EUT SETUP.....	16
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP.....	17
TEST PROCEDURE.....	17
CORRECTED AMPLITUDE & MARGIN CALCULATION.....	18
TEST EQUIPMENT LIST AND DETAILS.....	18
TEST RESULTS SUMMARY.....	18
TEST DATA.....	18
<b>FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH.....</b>	<b>44</b>
APPLICABLE STANDARD.....	44
TEST PROCEDURE.....	44
TEST EQUIPMENT LIST AND DETAILS.....	44
TEST DATA.....	44
<b>FCC §15.247(b) (3) - MAXIMUM CONDUCTED OUTPUT POWER.....</b>	<b>64</b>

APPLICABLE STANDARD ..... 64  
TEST PROCEDURE ..... 64  
TEST EQUIPMENT LIST AND DETAILS..... 64  
TEST DATA ..... 64

**FCC §15.247(d) – 100 kHz BANDWIDTH OF FREQUENCY BAND EDGE..... 66**

APPLICABLE STANDARD ..... 66  
TEST PROCEDURE ..... 66  
TEST EQUIPMENT LIST AND DETAILS..... 66  
TEST DATA ..... 66

**FCC §15.247(e) - POWER SPECTRAL DENSITY ..... 81**

APPLICABLE STANDARD ..... 81  
TEST PROCEDURE ..... 81  
TEST EQUIPMENT LIST AND DETAILS..... 81  
TEST DATA ..... 81

## GENERAL INFORMATION

---

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

The *SHENZHEN TENDA TECHNOLOGY CO.,LTD.*'s product, model number: *O3 (FCC ID: V7T03)* (the "EUT") in this report was a *2.4G Long Range Outdoor Access Point*, which was measured approximately: 27.0 cm (L) x 9.5 cm (W) x 6.8 cm (H), rated input voltage: DC12V from adapter.

Adapter information: SWITCHING ADAPTER  
MODEL: BN036-A12012U  
INPUT: 100-240V~50/60Hz 0.4A;  
OUTPUT: DC12V, 1.0A

*All measurement and test data in this report was gathered from production sample serial number: 150921006 (Assigned by applicant). The EUT was received on 2015-09-24.*

### Objective

This report is prepared on behalf of *SHENZHEN TENDA TECHNOLOGY 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).

### 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 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 worst condition (maximum power with 100% duty cycle) was setting by the software as following table:

Test Mode	Test Software Version	M_TOOL 2.0.0.3									
802.11b	Test Frequency	2412MHz			2437MHz			2462MHz			
	Data Rate	(CCK)1Mbps			(CCK)1Mbps			(CCK)1Mbps			
	Chain	H	V	H	V	H	V	H	V	H	V
	Power Level Setting	79	78	79	78	79	78	79	78	79	78
802.11g	Test Frequency	2412MHz		2417 MHz		2437MHz		2457 MHz		2462MHz	
	Data Rate	(OFDM)6Mbps		(OFDM)6Mbps		(OFDM)6Mbps		(OFDM)6Mbps		(OFDM)6Mbps	
	Chain	H	V	H	V	H	V	H	V	H	V
	Power Level Setting	68	64	78	77	78	77	78	77	68	64
802.11n ht20	Test Frequency	2412MHz		2417 MHz		2437MHz		2457 MHz		2462MHz	
	Data Rate	MCS0		MCS0		MCS0		MCS0		MCS0	
	Chain	H	V	H	V	H	V	H	V	H	V
	Power Level Setting	68	64	78	77	78	77	78	77	68	64
802.11n ht40	Test Frequency	2422MHz		2427 MHz		2437MHz		2447 MHz		2452MHz	
	Data Rate	MCS0		MCS0		MCS0		MCS0		MCS0	
	Chain	H	V	H	V	H	V	H	V	H	V
	Power Level Setting	55	52	70	68	70	68	70	68	55	52

Note: The EUT use two antennas (H &V) which can not transmitting simultaneously, they transmit by switch only. In other words, it was not one MIMO device.

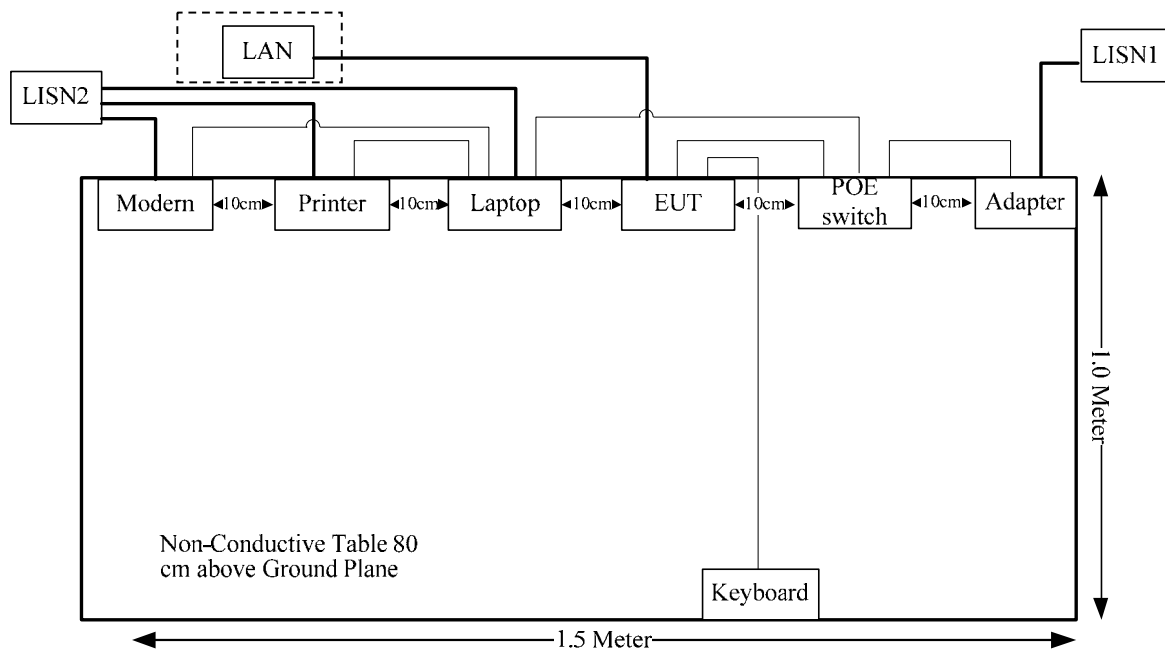
**Support Equipment List and Details**

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

**External Cable**

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	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	No	No	1.0	LAN Port of Laptop	POE switch
RJ45 Cable	No	No	1.0	POE Port of EUT	POE switch

**Block Diagram of Test Setup**



**SUMMARY OF TEST RESULTS**

<b>FCC Rules</b>	<b>Description of Test</b>	<b>Result</b>
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)

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

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

According to §1.1310 and §2.1091 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<sup>2</sup>);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

### Calculated Data:

Mode	Frequency (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm <sup>2</sup> )	MPE Limit (mW/cm <sup>2</sup> )
		(dBi)	(numeric)	(dBm)	(mW)			
802.11b	2412	10	10	22.25	167.88	20	0.33	1.0
802.11g	2457	10	10	25.22	332.66	20	0.66	1.0
802.11n20	2457	10	10	25.41	347.54	20	0.69	1.0
802.11n40	2427	10	10	25.63	365.59	20	0.73	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**

The EUT use two integral antennas arrangement, which was permanently attached and the max antenna gain is 10 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

**Result:** Compliance.

## FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

### Applicable Standard

FCC§15.207

### Measurement Uncertainty

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:

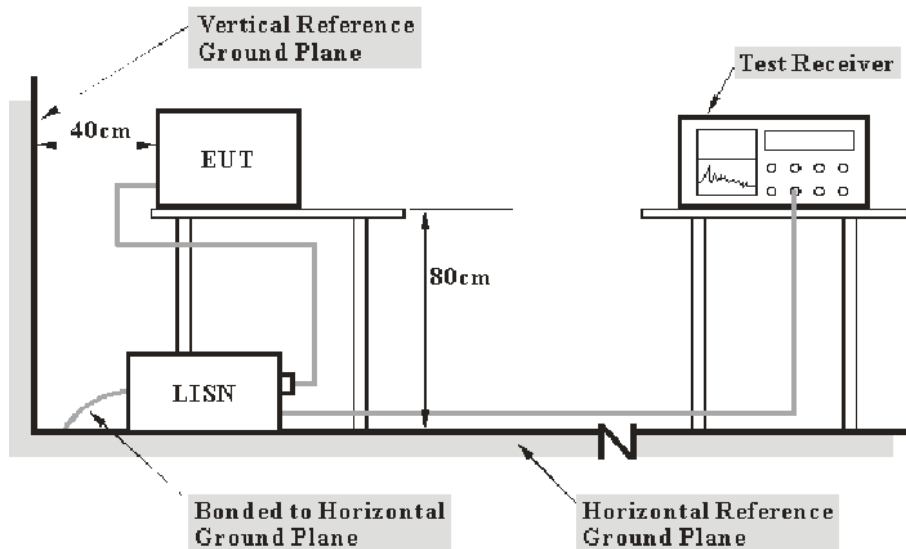
- compliance is deemed to occur if no measured disturbance level, increased by  $(U_{lab} - U_{cispr})$ , exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by  $(U_{lab} - U_{cispr})$ , exceeds the disturbance limit.

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 C63.10-2013 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, and the other support equipments were connected to 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	2015-07-16	2016-07-15
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:

**8.4 dB at 12.198467 MHz in the Line conducted mode.**

### Test Data

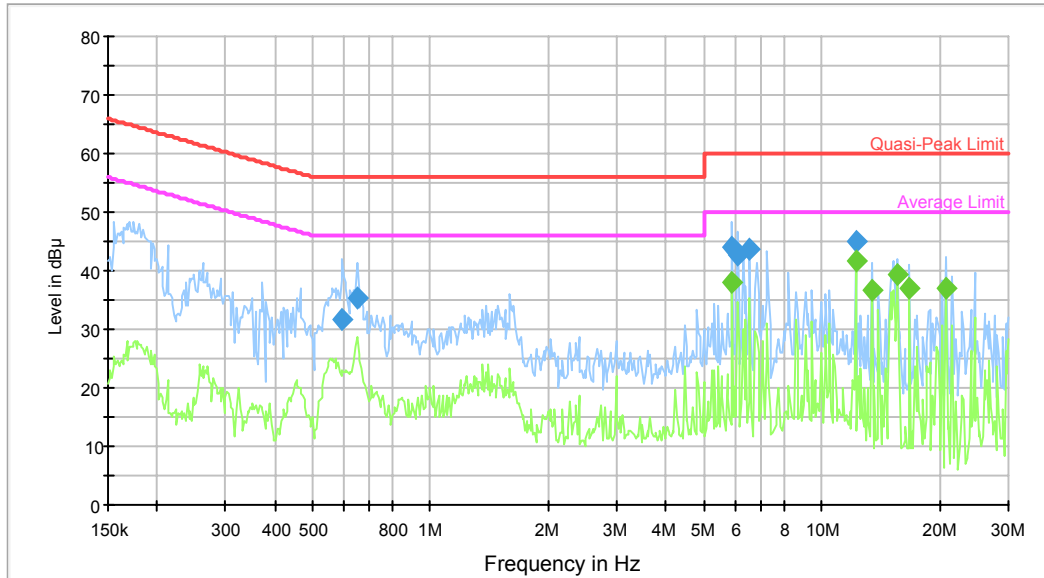
#### Environmental Conditions

<b>Temperature:</b>	27.6°C
<b>Relative Humidity:</b>	47 %
<b>ATM Pressure:</b>	100 kPa

*The testing was performed by Lion Xiao on 2015-09-24.*

Test Mode: Transmitting

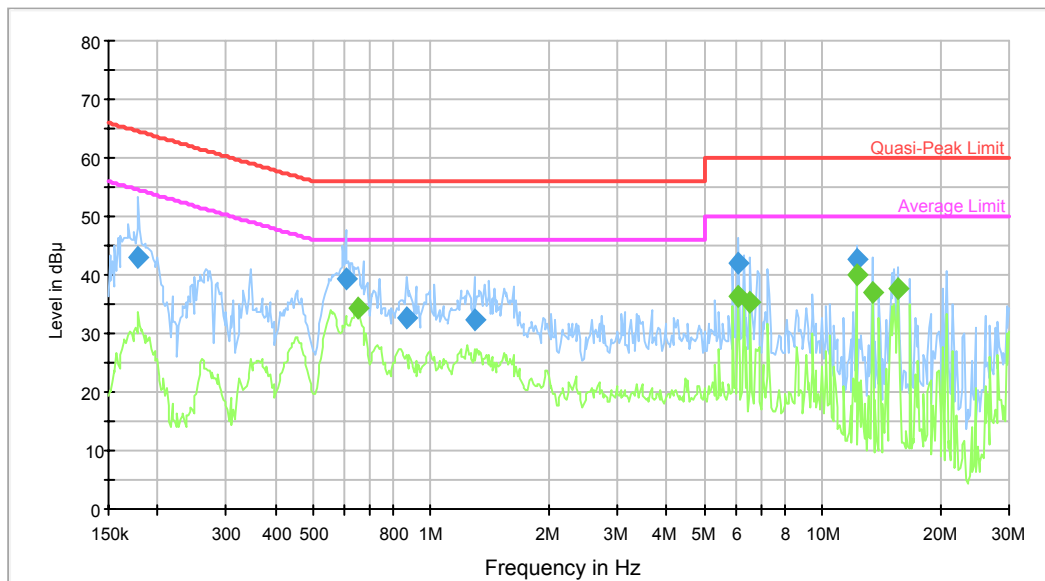
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.595338	31.7	9.000	L1	9.8	24.3	56.0	Compliance
0.649874	35.3	9.000	L1	9.8	20.7	56.0	Compliance
5.907406	43.8	9.000	L1	9.9	16.2	60.0	Compliance
6.098724	42.8	9.000	L1	9.9	17.2	60.0	Compliance
6.552149	43.7	9.000	L1	9.9	16.3	60.0	Compliance
12.198467	44.9	9.000	L1	10.0	15.1	60.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
5.907406	38.1	9.000	L1	9.9	11.9	50.0	Compliance
12.198467	41.6	9.000	L1	10.0	8.4	50.0	Compliance
13.422446	36.8	9.000	L1	10.1	13.2	50.0	Compliance
15.616430	39.3	9.000	L1	10.1	10.7	50.0	Compliance
16.777473	37.0	9.000	L1	10.1	13.0	50.0	Compliance
20.804674	37.0	9.000	L1	10.0	13.0	50.0	Compliance

**AC120 V, 60 Hz, Neutral:**



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.178741	42.9	9.000	N	9.8	21.6	64.5	Compliance
0.604902	39.2	9.000	N	9.8	16.8	56.0	Compliance
0.865782	32.6	9.000	N	9.8	23.4	56.0	Compliance
1.289541	32.5	9.000	N	9.8	23.5	56.0	Compliance
6.098724	41.9	9.000	N	10.0	18.1	60.0	Compliance
12.198467	42.7	9.000	N	10.1	17.3	60.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.649874	34.3	9.000	N	9.8	11.7	46.0	Compliance
6.098724	36.2	9.000	N	10.0	13.8	50.0	Compliance
6.552149	35.4	9.000	N	10.0	14.6	50.0	Compliance
12.198467	39.9	9.000	N	10.1	10.1	50.0	Compliance
13.422446	36.8	9.000	N	10.1	13.2	50.0	Compliance
15.616430	37.6	9.000	N	10.2	12.4	50.0	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

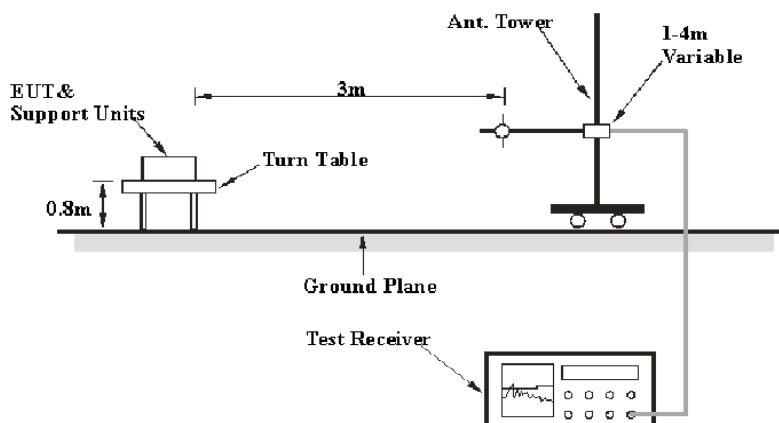
6G~18GHz: 5.23 dB

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

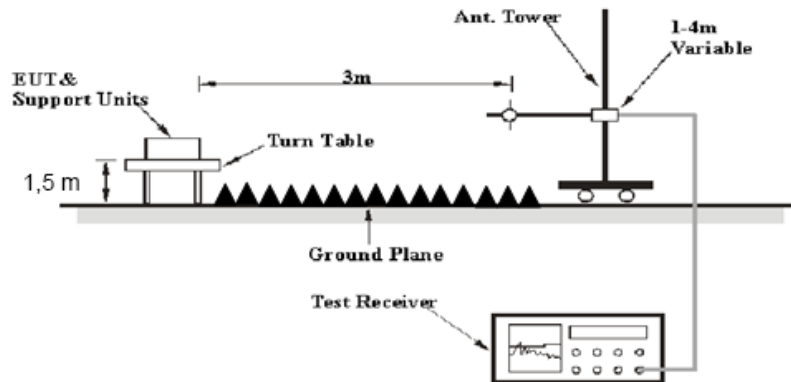
### EUT Setup

#### 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.

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	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	2014-12-04	2015-12-04
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	2015-05-09	2016-05-09
Ducommun Technologies	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:

**1.26 dB at 2483.5 MHz in the Horizontal polarization for WiFi Mode (802.11g)**

## Test Data

### Environmental Conditions

<b>Temperature:</b>	26.5~27.2 °C
<b>Relative Humidity:</b>	48~57 %
<b>ATM Pressure:</b>	99.9~100.8 kPa

\* The testing was performed by Lion Xiao on 2015-09-29 & 2015-10-15.

*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)					
<b>Frequency: 2412 MHz</b>									
2412	80.65	PK	H	25.67	3.68	0.00	110.00	N/A	N/A
2412	76.7	AV	H	25.67	3.68	0.00	106.05	N/A	N/A
2412	73.67	PK	V	25.67	3.68	0.00	103.02	N/A	N/A
2412	69.58	AV	V	25.67	3.68	0.00	98.93	N/A	N/A
2390	32.05	PK	H	25.61	3.63	0.00	61.29	74.00	12.71
2390	19.79	AV	H	25.61	3.63	0.00	49.03	54.00	4.97
4824	59.11	PK	H	30.64	5.03	27.41	67.37	74.00	6.63
4824	43.39	AV	H	30.64	5.03	27.41	51.65	54.00	2.35 *
7236	32.83	PK	H	34.17	6.65	25.90	47.75	74.00	26.25
7236	19.31	AV	H	34.17	6.65	25.90	34.23	54.00	19.77
9648	30.48	PK	H	36.06	8.55	27.46	47.63	74.00	26.37
9648	17.55	AV	H	36.06	8.55	27.46	34.70	54.00	19.30
3250	36.82	PK	H	28.00	6.31	27.33	43.80	74.00	30.20
3250	23.59	AV	H	28.00	6.31	27.33	30.57	54.00	23.43
400.1	37.5	QP	H	16.18	2.43	21.77	34.34	46.00	11.66
<b>Frequency: 2437 MHz</b>									
2437	80.09	PK	H	25.74	3.75	0.00	109.58	N/A	N/A
2437	76.18	AV	H	25.74	3.75	0.00	105.67	N/A	N/A
2437	73.12	PK	V	25.74	3.75	0.00	102.61	N/A	N/A
2437	69.25	AV	V	25.74	3.75	0.00	98.74	N/A	N/A
4874	59.05	PK	H	30.77	5.14	27.42	67.54	74.00	6.46
4874	43.37	AV	H	30.77	5.14	27.42	51.86	54.00	2.14*
7311	32.45	PK	H	34.35	6.74	25.88	47.66	74.00	26.34
7311	19.22	AV	H	34.35	6.74	25.88	34.43	54.00	19.57
9748	30.44	PK	H	36.30	8.61	27.24	48.11	74.00	25.89
9748	17.5	AV	H	36.30	8.61	27.24	35.17	54.00	18.83
3250	37.77	PK	H	28.00	6.31	27.33	44.75	74.00	29.25
3250	24.56	AV	H	28.00	6.31	27.33	31.54	54.00	22.46
3505	36.4	PK	H	28.81	4.52	27.24	42.49	74.00	31.51
3505	23.13	AV	H	28.81	4.52	27.24	29.22	54.00	24.78
400.1	37.2	QP	H	16.18	2.43	21.77	34.04	46.00	11.96
<b>Frequency: 2462 MHz</b>									
2462	80.93	PK	H	25.80	3.75	0.00	110.48	N/A	N/A
2462	76.1	AV	H	25.80	3.75	0.00	105.65	N/A	N/A
2462	73.14	PK	V	25.80	3.75	0.00	102.69	N/A	N/A
2462	69.22	AV	V	25.80	3.75	0.00	98.77	N/A	N/A
2483.5	32.29	PK	H	25.86	3.67	0.00	61.82	74.00	12.18
2483.5	20.14	AV	H	25.86	3.67	0.00	49.67	54.00	4.33 *
4924	59.92	PK	H	30.90	5.34	27.43	68.73	74.00	5.27
4924	43.21	AV	H	30.90	5.34	27.43	52.02	54.00	1.98 *
7386	32.48	PK	H	34.53	6.83	25.86	47.98	74.00	26.02
7386	19.13	AV	H	34.53	6.83	25.86	34.63	54.00	19.37
9848	30.16	PK	H	36.54	8.66	26.94	48.42	74.00	25.58
9848	17.09	AV	H	36.54	8.66	26.94	35.35	54.00	18.65
3250	36.35	PK	H	28.00	6.31	27.33	43.33	74.00	30.67
3250	23.12	AV	H	28.00	6.31	27.33	30.10	54.00	23.90
400.1	37.9	QP	H	16.18	2.43	21.77	34.74	46.00	11.26

\*within uncertainty measurement!

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)					
<b>Frequency: 2412 MHz</b>									
2412	74.26	PK	H	25.67	3.68	0.00	103.61	N/A	N/A
2412	64.98	AV	H	25.67	3.68	0.00	94.33	N/A	N/A
2412	70.59	PK	V	25.67	3.68	0.00	99.94	N/A	N/A
2412	60.79	AV	V	25.67	3.68	0.00	90.14	N/A	N/A
2390	39.6	PK	H	25.61	3.63	0.00	68.84	74.00	5.16
2390	23.01	AV	H	25.61	3.63	0.00	52.25	54.00	1.75*
4824	32.08	PK	H	30.64	5.03	27.41	40.34	74.00	33.66
4824	18.94	AV	H	30.64	5.03	27.41	27.20	54.00	26.80
7236	31.81	PK	H	34.17	6.65	25.90	46.73	74.00	27.27
7236	18.71	AV	H	34.17	6.65	25.90	33.63	54.00	20.37
9648	30.24	PK	H	36.06	8.55	27.46	47.39	74.00	26.61
9648	17.2	AV	H	36.06	8.55	27.46	34.35	54.00	19.65
3220	36.66	PK	H	27.90	6.17	27.35	43.38	74.00	30.62
3220	23.39	AV	H	27.90	6.17	27.35	30.11	54.00	23.89
400.1	37.6	QP	H	16.18	2.43	21.77	34.44	46.00	11.56
<b>Frequency: 2417 MHz</b>									
2417	77.36	PK	H	25.68	3.70	0.00	106.74	N/A	N/A
2417	67.16	AV	H	25.68	3.70	0.00	96.54	N/A	N/A
2417	73.75	PK	V	25.68	3.70	0.00	103.13	N/A	N/A
2417	63.65	AV	V	25.68	3.70	0.00	93.03	N/A	N/A
2390	34.29	PK	H	25.61	3.63	0.00	63.53	74.00	10.47
2390	21.12	AV	H	25.61	3.63	0.00	50.36	54.00	3.64*
4834	33	PK	H	30.67	5.01	27.42	41.26	74.00	32.74
4834	20.96	AV	H	30.67	5.01	27.42	29.22	54.00	24.78
7251	30.47	PK	H	34.20	6.67	25.90	45.44	74.00	28.56
7251	18.12	AV	H	34.20	6.67	25.90	33.09	54.00	20.91
9668	29.49	PK	H	36.10	8.56	27.42	46.73	74.00	27.27
9668	18.36	AV	H	36.10	8.56	27.42	35.60	54.00	18.40
3220	36.52	PK	H	27.90	6.17	27.35	43.24	74.00	30.76
3220	23.15	AV	H	27.90	6.17	27.35	29.87	54.00	24.13
400.1	37.2	QP	H	16.18	2.43	21.77	34.04	46.00	11.96
<b>Frequency: 2437 MHz</b>									
2437	77.88	PK	H	25.74	3.75	0.00	107.37	N/A	N/A
2437	67.45	AV	H	25.74	3.75	0.00	96.94	N/A	N/A
2437	73.05	PK	V	25.74	3.75	0.00	102.54	N/A	N/A
2437	63.67	AV	V	25.74	3.75	0.00	93.16	N/A	N/A
4874	33.84	PK	H	30.77	5.14	27.42	42.33	74.00	31.67
4874	21.48	AV	H	30.77	5.14	27.42	29.97	54.00	24.03
7311	31.38	PK	H	34.35	6.74	25.88	46.59	74.00	27.41
7311	18.21	AV	H	34.35	6.74	25.88	33.42	54.00	20.58
9748	29.9	PK	H	36.30	8.61	27.24	47.57	74.00	26.43
9748	16.85	AV	H	36.30	8.61	27.24	34.52	54.00	19.48
3220	36.78	PK	H	27.90	6.17	27.35	43.50	74.00	30.50
3220	23.41	AV	H	27.90	6.17	27.35	30.13	54.00	23.87
3610	36.49	PK	H	29.04	4.61	27.28	42.86	74.00	31.14
3610	23.27	AV	H	29.04	4.61	27.28	29.64	54.00	24.36
400.1	37.1	QP	H	16.18	2.43	21.77	33.94	46.00	12.06

\*within uncertainty measurement!

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)					
<b>Frequency: 2457 MHz</b>									
2457	77.57	PK	H	25.79	3.76	0.00	107.12	N/A	N/A
2457	67.3	AV	H	25.79	3.76	0.00	96.85	N/A	N/A
2457	72.68	PK	V	25.79	3.76	0.00	102.23	N/A	N/A
2457	63.72	AV	V	25.79	3.76	0.00	93.27	N/A	N/A
2483.5	34.45	PK	H	25.86	3.67	0.00	63.98	74.00	10.02
2483.5	21.39	AV	H	25.86	3.67	0.00	50.92	54.00	3.08*
4914	33.47	PK	H	30.88	5.33	27.43	42.25	74.00	31.75
4914	21.53	AV	H	30.88	5.33	27.43	30.31	54.00	23.69
7371	30.9	PK	H	34.49	6.81	25.87	46.33	74.00	27.67
7371	18.66	AV	H	34.49	6.81	25.87	34.09	54.00	19.91
9828	29.84	PK	H	36.49	8.65	27.01	47.97	74.00	26.03
9828	18.41	AV	H	36.49	8.65	27.01	36.54	54.00	17.46
3220	36.6	PK	H	27.90	6.17	27.35	43.32	74.00	30.68
3220	23.28	AV	H	27.90	6.17	27.35	30.00	54.00	24.00
400.1	37.9	QP	H	16.18	2.43	21.77	34.74	46.00	11.26
<b>Frequency: 2462 MHz</b>									
2462	74.87	PK	H	25.80	3.75	0.00	104.42	N/A	N/A
2462	64.66	AV	H	25.80	3.75	0.00	94.21	N/A	N/A
2462	70.03	PK	V	25.80	3.75	0.00	99.58	N/A	N/A
2462	60.89	AV	V	25.80	3.75	0.00	90.44	N/A	N/A
2483.5	39.52	PK	H	25.86	3.67	0.00	69.05	74.00	4.95
2483.5	23.21	AV	H	25.86	3.67	0.00	52.74	54.00	1.26*
4924	31.81	PK	H	30.90	5.34	27.43	40.62	74.00	33.38
4924	18.51	AV	H	30.90	5.34	27.43	27.32	54.00	26.68
7386	31.36	PK	H	34.53	6.83	25.86	46.86	74.00	27.14
7386	18.24	AV	H	34.53	6.83	25.86	33.74	54.00	20.26
9848	29.88	PK	H	36.54	8.66	26.94	48.14	74.00	25.86
9848	16.82	AV	H	36.54	8.66	26.94	35.08	54.00	18.92
3220	36.28	PK	H	27.90	6.17	27.35	43.00	74.00	31.00
3220	23.09	AV	H	27.90	6.17	27.35	29.81	54.00	24.19
400.1	37.4	QP	H	16.18	2.43	21.77	34.24	46.00	11.76

*\*within uncertainty measurement!*

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)					
<b>Frequency: 2412 MHz</b>									
2412	74.15	PK	H	25.67	3.68	0.00	103.50	N/A	N/A
2412	62.34	AV	H	25.67	3.68	0.00	91.69	N/A	N/A
2412	71.17	PK	V	25.67	3.68	0.00	100.52	N/A	N/A
2412	59.84	AV	V	25.67	3.68	0.00	89.19	N/A	N/A
2390	41.99	PK	H	25.61	3.63	0.00	71.23	74.00	2.77
2390	23.34	AV	H	25.61	3.63	0.00	52.58	54.00	1.42*
4824	31.94	PK	H	30.64	5.03	27.41	40.20	74.00	33.80
4824	18.55	AV	H	30.64	5.03	27.41	26.81	54.00	27.19
7236	31.38	PK	H	34.17	6.65	25.90	46.30	74.00	27.70
7236	18.32	AV	H	34.17	6.65	25.90	33.24	54.00	20.76
9648	29.78	PK	H	36.06	8.55	27.46	46.93	74.00	27.07
9648	16.84	AV	H	36.06	8.55	27.46	33.99	54.00	20.01
3220	36.23	PK	H	27.90	6.17	27.35	42.95	74.00	31.05
3220	23.02	AV	H	27.90	6.17	27.35	29.74	54.00	24.26
400.1	37.8	QP	H	16.18	2.43	21.77	34.64	46.00	11.36
<b>Frequency: 2417 MHz</b>									
2417	76.93	PK	H	25.68	3.70	0.00	106.31	N/A	N/A
2417	64.04	AV	H	25.68	3.70	0.00	93.42	N/A	N/A
2417	74.17	PK	V	25.68	3.70	0.00	103.55	N/A	N/A
2417	62.3	AV	V	25.68	3.70	0.00	91.68	N/A	N/A
2390	34.45	PK	H	25.61	3.63	0.00	63.69	74.00	10.31
2390	20.29	AV	H	25.61	3.63	0.00	49.53	54.00	4.47
4834	31.34	PK	H	30.67	5.01	27.42	39.60	74.00	34.40
4834	18.37	AV	H	30.67	5.01	27.42	26.63	54.00	27.37
7251	31.39	PK	H	34.20	6.67	25.90	46.36	74.00	27.64
7251	18.24	AV	H	34.20	6.67	25.90	33.21	54.00	20.79
9668	29.52	PK	H	36.10	8.56	27.42	46.76	74.00	27.24
9668	16.66	AV	H	36.10	8.56	27.42	33.90	54.00	20.10
3220	36.32	PK	H	27.90	6.17	27.35	43.04	74.00	30.96
3220	22.43	AV	H	27.90	6.17	27.35	29.15	54.00	24.85
400.1	37.3	QP	H	16.18	2.43	21.77	34.14	46.00	11.86
<b>Frequency: 2437 MHz</b>									
2437	77.01	PK	H	25.74	3.75	0.00	106.50	N/A	N/A
2437	65.04	AV	H	25.74	3.75	0.00	94.53	N/A	N/A
2437	74.25	PK	V	25.74	3.75	0.00	103.74	N/A	N/A
2437	62.32	AV	V	25.74	3.75	0.00	91.81	N/A	N/A
4874	31.86	PK	H	30.77	5.14	27.42	40.35	74.00	33.65
4874	18.49	AV	H	30.77	5.14	27.42	26.98	54.00	27.02
7311	31.35	PK	H	34.35	6.74	25.88	46.56	74.00	27.44
7311	18.3	AV	H	34.35	6.74	25.88	33.51	54.00	20.49
9748	29.82	PK	H	36.30	8.61	27.24	47.49	74.00	26.51
9748	16.86	AV	H	36.30	8.61	27.24	34.53	54.00	19.47
3220	36.34	PK	H	27.90	6.17	27.35	43.06	74.00	30.94
3220	22.97	AV	H	27.90	6.17	27.35	29.69	54.00	24.31
3610	36.14	PK	H	29.04	4.61	27.28	42.51	74.00	31.49
3610	22.85	AV	H	29.04	4.61	27.28	29.22	54.00	24.78
400.1	37	QP	H	16.18	2.43	21.77	33.84	46.00	12.16

\*within uncertainty measurement!

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)					
<b>Frequency: 2457 MHz</b>									
2457	77.02	PK	H	25.79	3.76	0.00	106.57	N/A	N/A
2457	65.1	AV	H	25.79	3.76	0.00	94.65	N/A	N/A
2457	74.25	PK	V	25.79	3.76	0.00	103.80	N/A	N/A
2457	62.32	AV	V	25.79	3.76	0.00	91.87	N/A	N/A
2483.5	34.37	PK	H	25.86	3.67	0.00	63.90	74.00	10.10
2483.5	20.02	AV	H	25.86	3.67	0.00	49.55	54.00	4.45*
4914	31.79	PK	H	30.88	5.33	27.43	40.57	74.00	33.43
4914	19.82	AV	H	30.88	5.33	27.43	28.60	54.00	25.40
7371	31.16	PK	H	34.49	6.81	25.87	46.59	74.00	27.41
7371	17.71	AV	H	34.49	6.81	25.87	33.14	54.00	20.86
9828	29.19	PK	H	36.49	8.65	27.01	47.32	74.00	26.68
9828	16.54	AV	H	36.49	8.65	27.01	34.67	54.00	19.33
3220	36.39	PK	H	27.90	6.17	27.35	43.11	74.00	30.89
3220	22.08	AV	H	27.90	6.17	27.35	28.80	54.00	25.20
400.1	37.2	QP	H	16.18	2.43	21.77	34.04	46.00	11.96
<b>Frequency: 2462 MHz</b>									
2462	74.84	PK	H	25.80	3.75	0.00	104.39	N/A	N/A
2462	62.53	AV	H	25.80	3.75	0.00	92.08	N/A	N/A
2462	71.71	PK	V	25.80	3.75	0.00	101.26	N/A	N/A
2462	59.45	AV	V	25.80	3.75	0.00	89.00	N/A	N/A
2483.5	40.39	PK	H	25.86	3.67	0.00	69.92	74.00	4.08*
2483.5	23.02	AV	H	25.86	3.67	0.00	52.55	54.00	1.45*
4924	31.82	PK	H	30.90	5.34	27.43	40.63	74.00	33.37
4924	18.47	AV	H	30.90	5.34	27.43	27.28	54.00	26.72
7386	31.48	PK	H	34.53	6.83	25.86	46.98	74.00	27.02
7386	18.35	AV	H	34.53	6.83	25.86	33.85	54.00	20.15
9848	29.84	PK	H	36.54	8.66	26.94	48.10	74.00	25.90
9848	16.87	AV	H	36.54	8.66	26.94	35.13	54.00	18.87
3220	36.32	PK	H	27.90	6.17	27.35	43.04	74.00	30.96
3220	23.05	AV	H	27.90	6.17	27.35	29.77	54.00	24.23
400.1	37.7	QP	H	16.18	2.43	21.77	34.54	46.00	11.46

*\*within uncertainty measurement!*

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)					
<b>Frequency: 2422 MHz</b>									
2422	72.37	PK	H	25.70	3.71	0.00	101.78	N/A	N/A
2422	60.78	AV	H	25.70	3.71	0.00	90.19	N/A	N/A
2422	70.48	PK	V	25.70	3.71	0.00	99.89	N/A	N/A
2422	58.75	AV	V	25.70	3.71	0.00	88.16	N/A	N/A
2390	37.68	PK	H	25.61	3.63	0.00	66.92	74.00	7.08
2390	23.36	AV	H	25.61	3.63	0.00	52.60	54.00	1.40 *
4844	33.05	PK	H	30.69	4.99	27.42	41.31	74.00	32.69
4844	19.81	AV	H	30.69	4.99	27.42	28.07	54.00	25.93
7266	32.48	PK	H	34.24	6.68	25.89	47.51	74.00	26.49
7266	19.31	AV	H	34.24	6.68	25.89	34.34	54.00	19.66
9688	30.06	PK	H	36.15	8.58	27.37	47.42	74.00	26.58
9688	16.97	AV	H	36.15	8.58	27.37	34.33	54.00	19.67
3265	37.06	PK	H	28.05	5.96	27.31	43.76	74.00	30.24
3265	23.96	AV	H	28.05	5.96	27.31	30.66	54.00	23.34
400.1	37.3	QP	H	16.18	2.43	21.77	34.14	46.00	11.86
<b>Frequency: 2427 MHz</b>									
2427	74.89	PK	H	25.71	3.73	0.00	104.33	N/A	N/A
2427	62.61	AV	H	25.71	3.73	0.00	92.05	N/A	N/A
2427	72.04	PK	V	25.71	3.73	0.00	101.48	N/A	N/A
2427	60.09	AV	V	25.71	3.73	0.00	89.53	N/A	N/A
2390	35.81	PK	H	25.61	3.63	0.00	65.05	74.00	8.95
2390	21.08	AV	H	25.61	3.63	0.00	50.32	54.00	3.68 *
4854	32.88	PK	H	30.72	5.01	27.42	41.19	74.00	32.81
4854	19.77	AV	H	30.72	5.01	27.42	28.08	54.00	25.92
7281	31.94	PK	H	34.27	6.70	25.89	47.02	74.00	26.98
7281	19.04	AV	H	34.27	6.70	25.89	34.12	54.00	19.88
9708	29.7	PK	H	36.20	8.59	27.33	47.16	74.00	26.84
9708	16.66	AV	H	36.20	8.59	27.33	34.12	54.00	19.88
3265	36.78	PK	H	28.05	5.96	27.31	43.48	74.00	30.52
3265	23.74	AV	H	28.05	5.96	27.31	30.44	54.00	23.56
400.1	37.9	QP	H	16.18	2.43	21.77	34.74	46.00	11.26
<b>Frequency: 2437 MHz</b>									
2437	75.64	PK	H	25.74	3.75	0.00	105.13	N/A	N/A
2437	63.92	AV	H	25.74	3.75	0.00	93.41	N/A	N/A
2437	70.52	PK	V	25.74	3.75	0.00	100.01	N/A	N/A
2437	58.89	AV	V	25.74	3.75	0.00	88.38	N/A	N/A
4874	32.95	PK	H	30.77	5.14	27.42	41.44	74.00	32.56
4874	19.76	AV	H	30.77	5.14	27.42	28.25	54.00	25.75
7311	32.61	PK	H	34.35	6.74	25.88	47.82	74.00	26.18
7311	19.36	AV	H	34.35	6.74	25.88	34.57	54.00	19.43
9748	30.11	PK	H	36.30	8.61	27.24	47.78	74.00	26.22
9748	17.04	AV	H	36.30	8.61	27.24	34.71	54.00	19.29
3265	37.23	PK	H	28.05	5.96	27.31	43.93	74.00	30.07
3265	23.97	AV	H	28.05	5.96	27.31	30.67	54.00	23.33
3610	37.01	PK	H	29.04	4.61	27.28	43.38	74.00	30.62
3610	23.94	AV	H	29.04	4.61	27.28	30.31	54.00	23.69
400.1	37.6	QP	H	16.18	2.43	21.77	34.44	46.00	11.56

\*within uncertainty measurement!



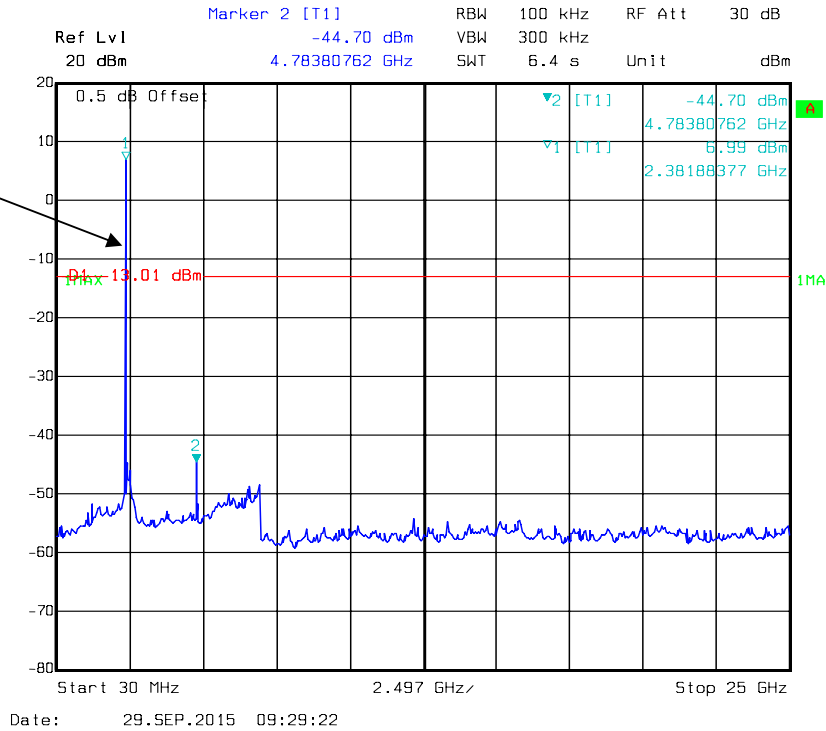
Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
<b>Frequency: 2447 MHz</b>									
2447	74.37	PK	H	25.76	3.78	0.00	103.91	N/A	N/A
2447	62.57	AV	H	25.76	3.78	0.00	92.11	N/A	N/A
2447	71.96	PK	V	25.76	3.78	0.00	101.50	N/A	N/A
2447	59.67	AV	V	25.76	3.78	0.00	89.21	N/A	N/A
2483.5	35.25	PK	H	25.86	3.67	0.00	64.78	74.00	9.22
2483.5	21.03	AV	H	25.86	3.67	0.00	50.56	54.00	3.44 *
4894	32.51	PK	H	30.82	5.27	27.42	41.18	74.00	32.82
4894	19.57	AV	H	30.82	5.27	27.42	28.24	54.00	25.76
7341	32	PK	H	34.42	6.77	25.87	47.32	74.00	26.68
7341	18.58	AV	H	34.42	6.77	25.87	33.90	54.00	20.10
9788	29.65	PK	H	36.39	8.63	27.15	47.52	74.00	26.48
9788	16.34	AV	H	36.39	8.63	27.15	34.21	54.00	19.79
3265	36.82	PK	H	28.05	5.96	27.31	43.52	74.00	30.48
3265	23.67	AV	H	28.05	5.96	27.31	30.37	54.00	23.63
400.1	37.3	QP	H	16.18	2.43	21.77	34.14	46.00	11.86
<b>Frequency: 2452 MHz</b>									
2452	72.41	PK	H	25.78	3.78	0.00	101.97	N/A	N/A
2452	60.45	AV	H	25.78	3.78	0.00	90.01	N/A	N/A
2452	70.62	PK	V	25.78	3.78	0.00	100.18	N/A	N/A
2452	58.36	AV	V	25.78	3.78	0.00	87.92	N/A	N/A
2483.5	37.2	PK	H	25.86	3.67	0.00	66.73	74.00	7.27
2483.5	22.69	AV	H	25.86	3.67	0.00	52.22	54.00	1.78 *
4904	32.38	PK	H	30.85	5.31	27.43	41.11	74.00	32.89
4904	19.27	AV	H	30.85	5.31	27.43	28.00	54.00	26.00
7356	32.16	PK	H	34.45	6.79	25.87	47.53	74.00	26.47
7356	19.04	AV	H	34.45	6.79	25.87	34.41	54.00	19.59
9808	29.74	PK	H	36.44	8.64	27.09	47.73	74.00	26.27
9808	16.63	AV	H	36.44	8.64	27.09	34.62	54.00	19.38
3265	36.74	PK	H	28.05	5.96	27.31	43.44	74.00	30.56
3265	23.48	AV	H	28.05	5.96	27.31	30.18	54.00	23.82
400.1	37.7	QP	H	16.18	2.43	21.77	34.54	46.00	11.46

*\*within uncertainty measurement!*

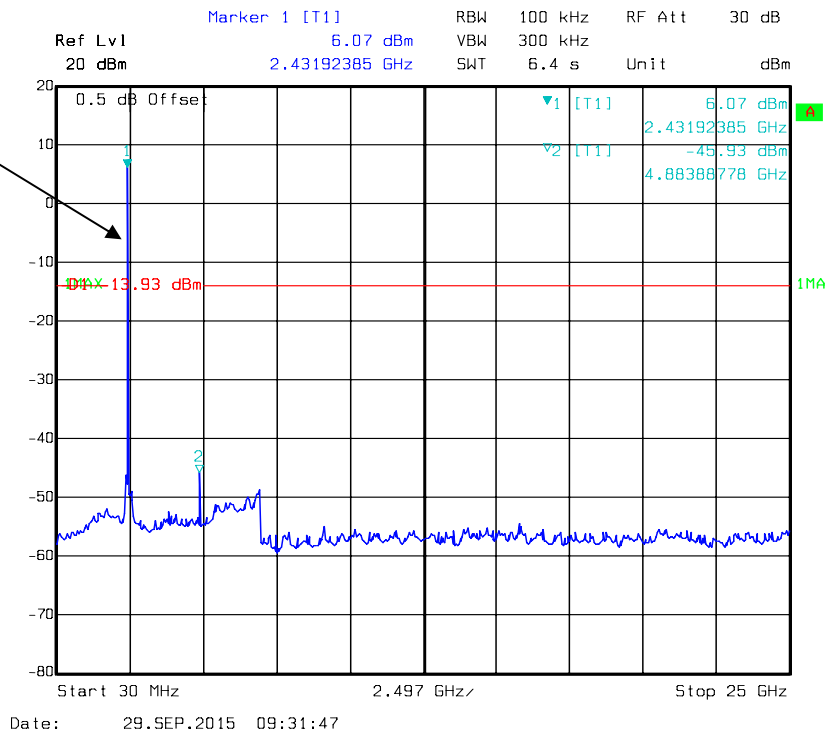
**Conducted Spurious Emissions at Antenna Port**

**Chain H**

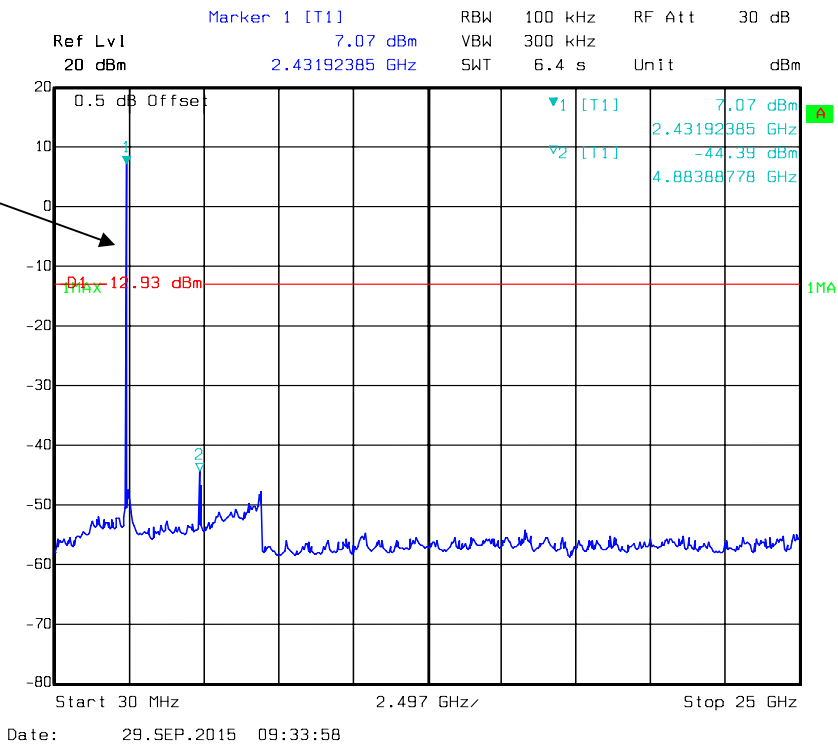
**802.11b Channel:2412MHz**



**802.11b Channel:2437MHz**

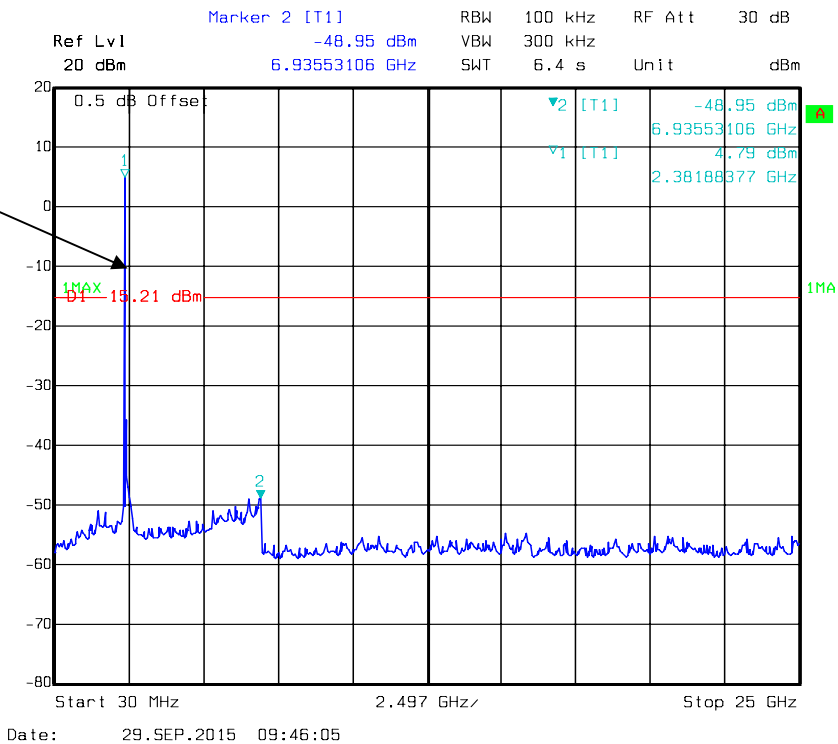


**802.11b Channel:2462MHz**



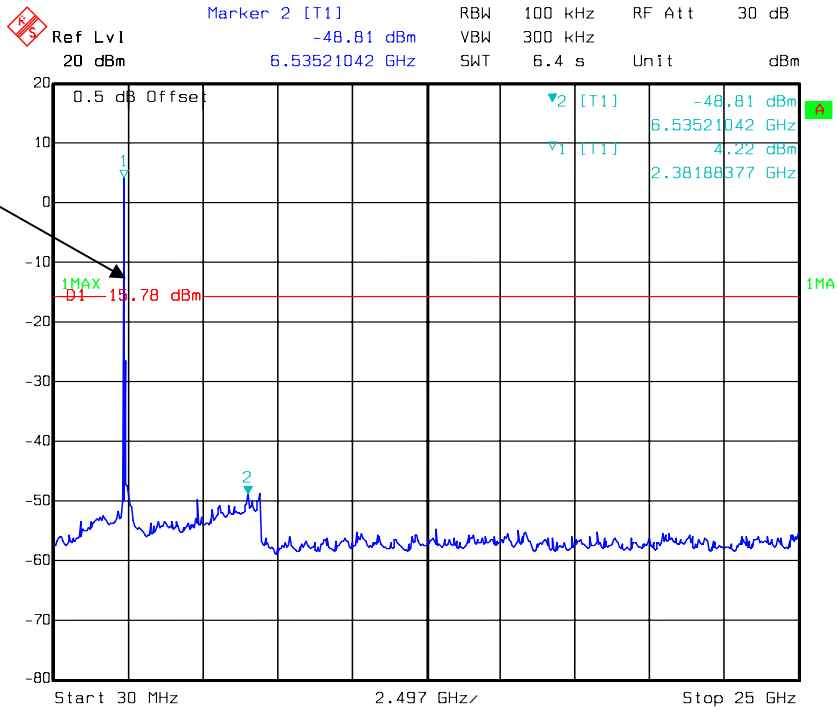
Fundamental

**802.11g Channel:2412MHz**



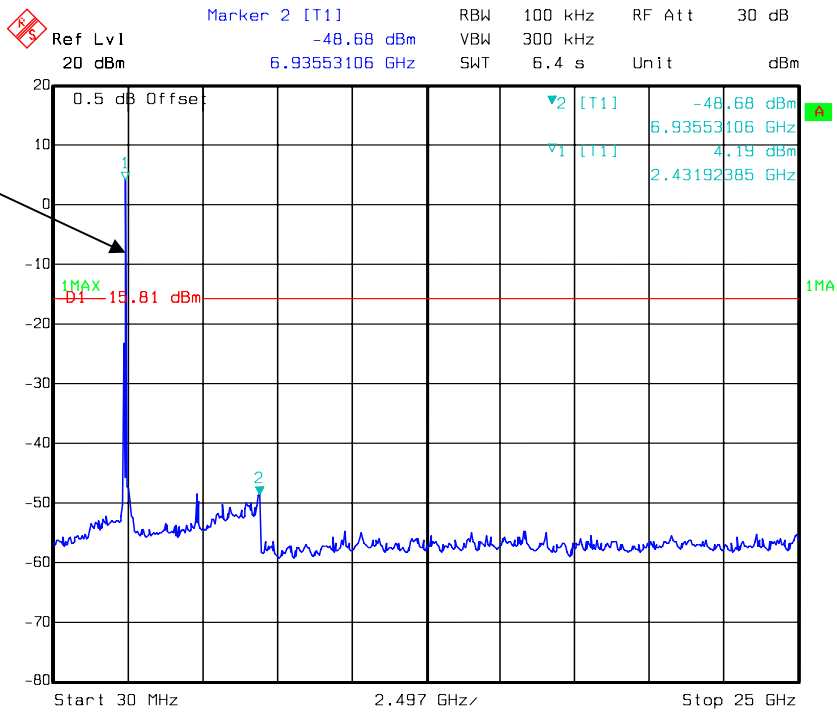
Fundamental

**802.11g Channel:2417MHz**



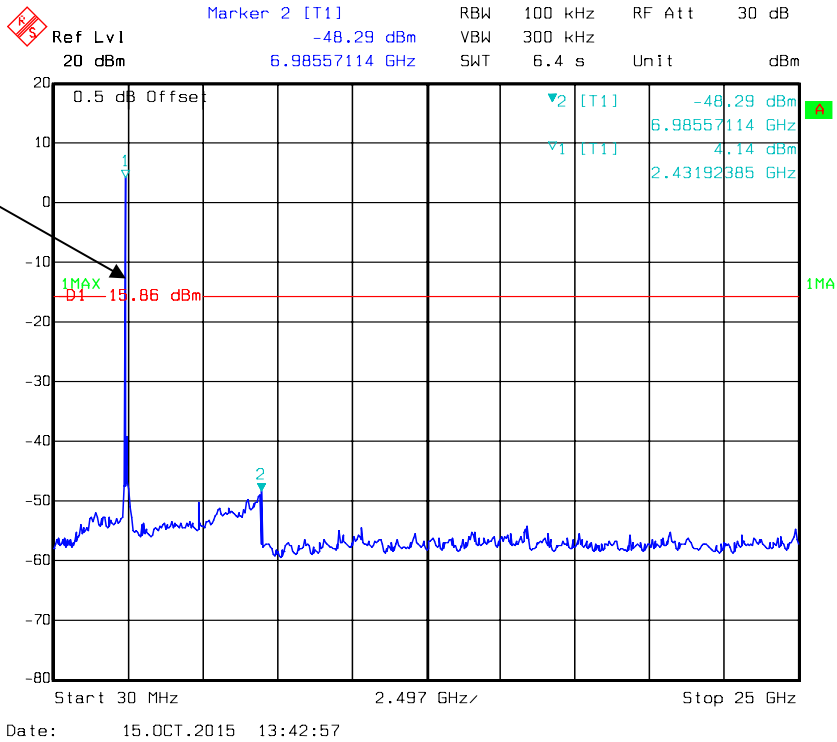
Date: 15.OCT.2015 13:37:39

**802.11g Channel:2437MHz**

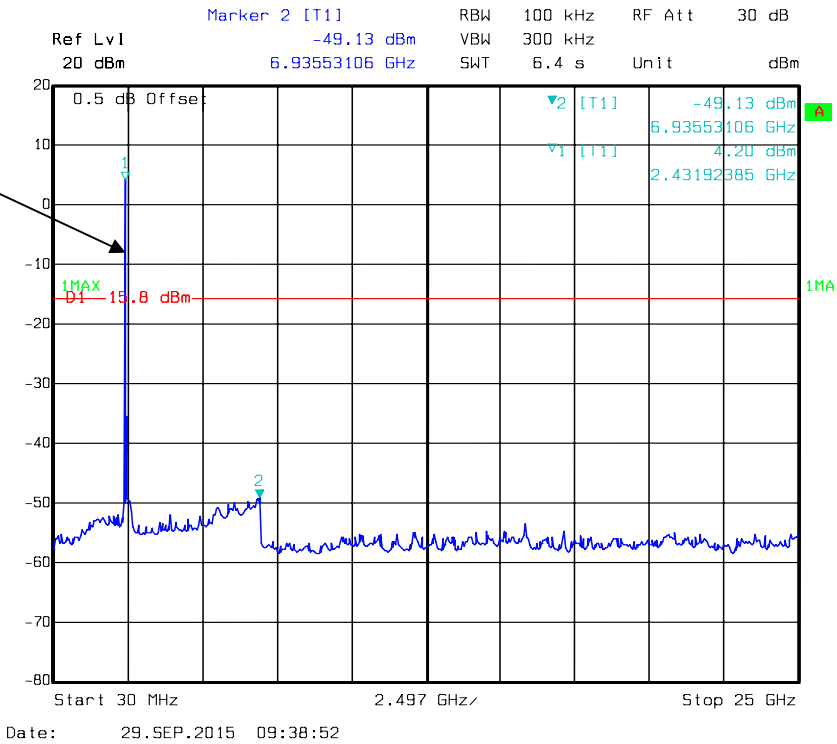


Date: 15.OCT.2015 13:41:43

**802.11g Channel:2457MHz**



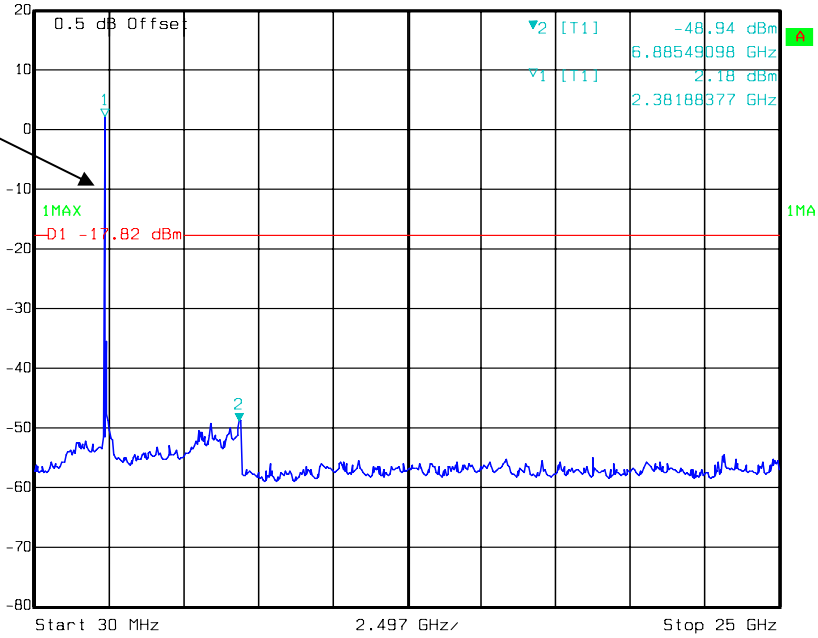
**802.11g Channel:2462MHz**



**802.11n ht20 Channel:2412MHz**

Marker 2 [T1] RBW 100 kHz RF Att 30 dB  
 Ref Lvl -48.94 dBm VBW 300 kHz  
 20 dBm 6.88549098 GHz SWT 6.4 s Unit dBm

Fundamental

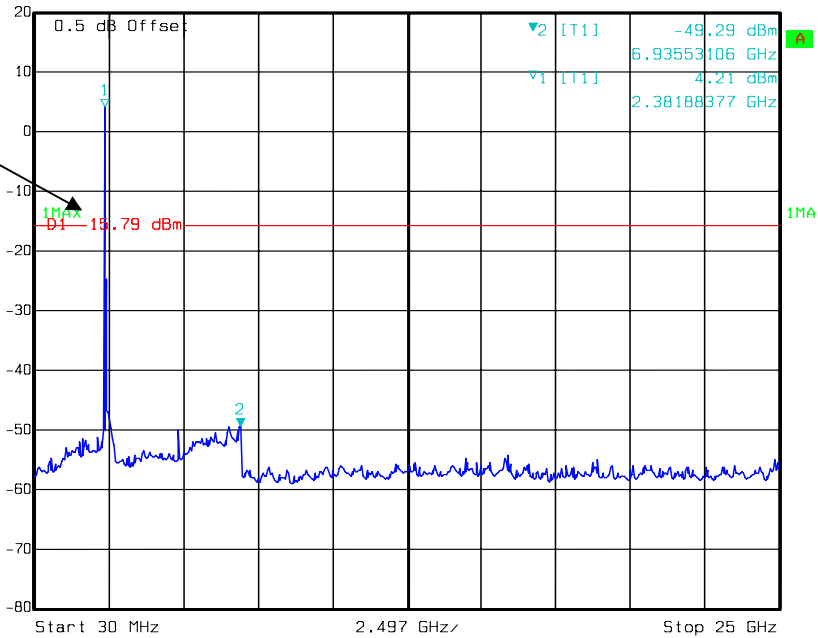


Date: 29.SEP.2015 09:50:00

**802.11n ht20 Channel:2417MHz**

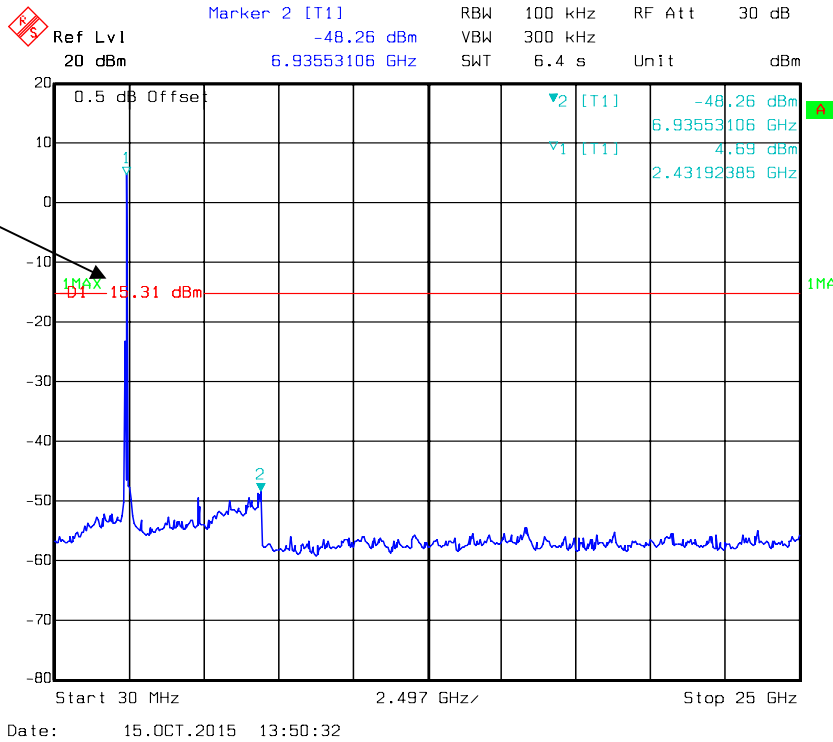
Marker 2 [T1] RBW 100 kHz RF Att 30 dB  
 Ref Lvl -49.29 dBm VBW 300 kHz  
 20 dBm 6.93553106 GHz SWT 6.4 s Unit dBm

Fundamental

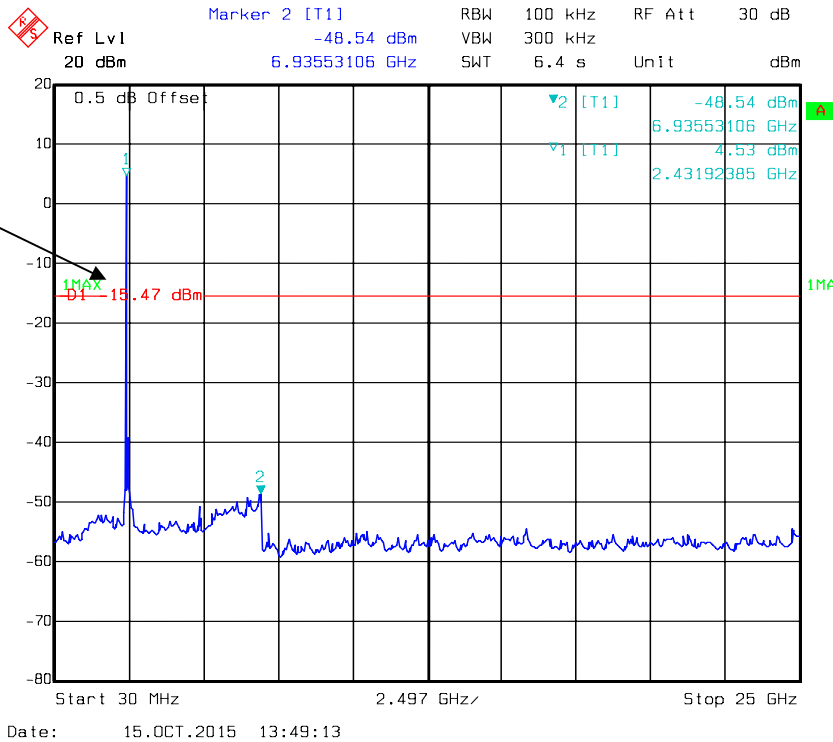


Date: 15.OCT.2015 13:51:46

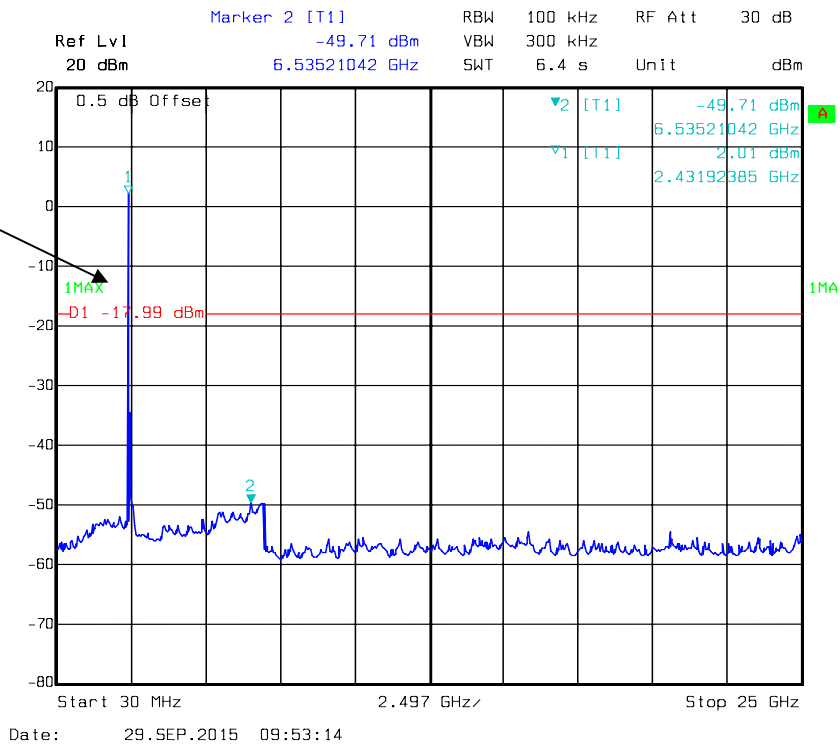
**802.11n ht20 Channel:2437MHz**



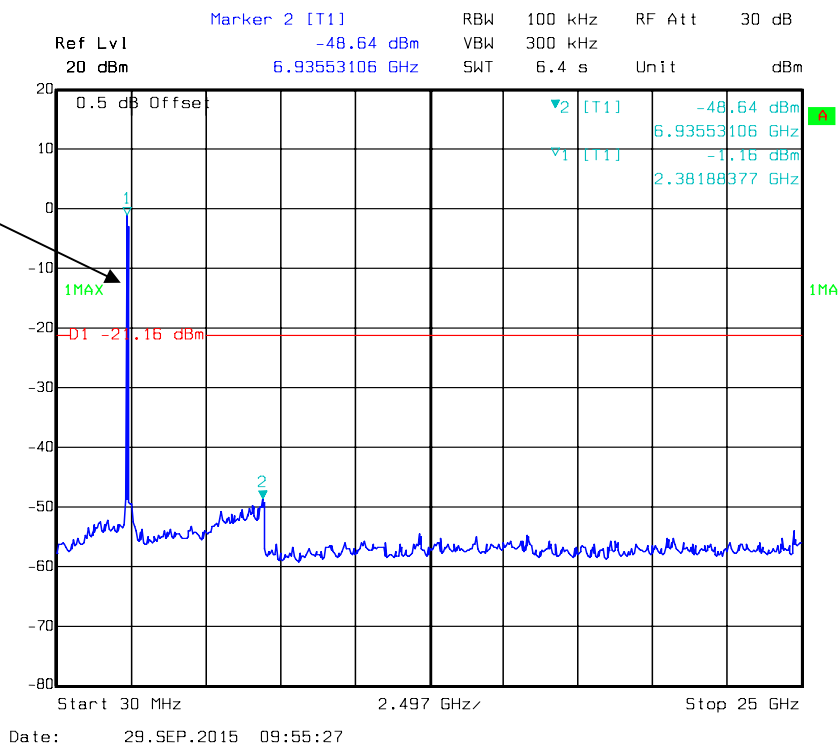
**802.11n ht20 Channel:2457MHz**



**802.11n ht20 Channel:2462MHz**



**802.11n ht40 Channel:2422MHz**





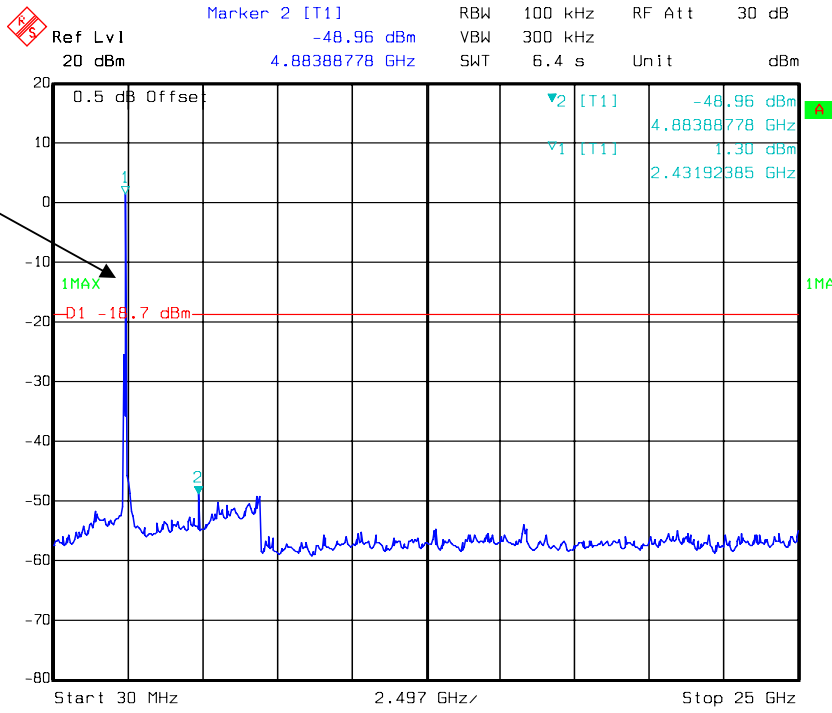
**802.11n ht40 Channel:2427MHz**



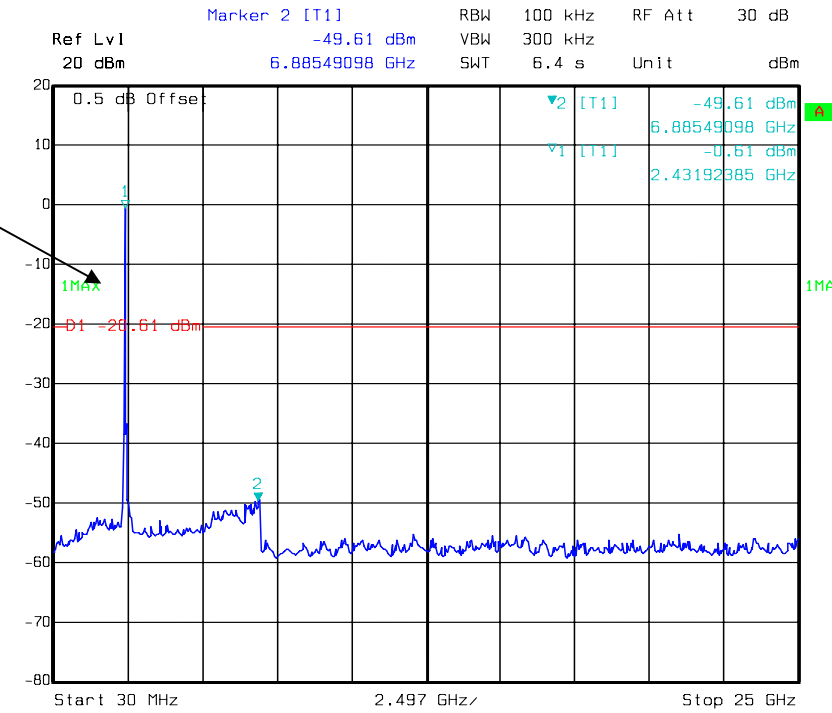
**802.11n ht40 Channel:2437MHz**



**802.11n ht40 Channel:2447MHz**

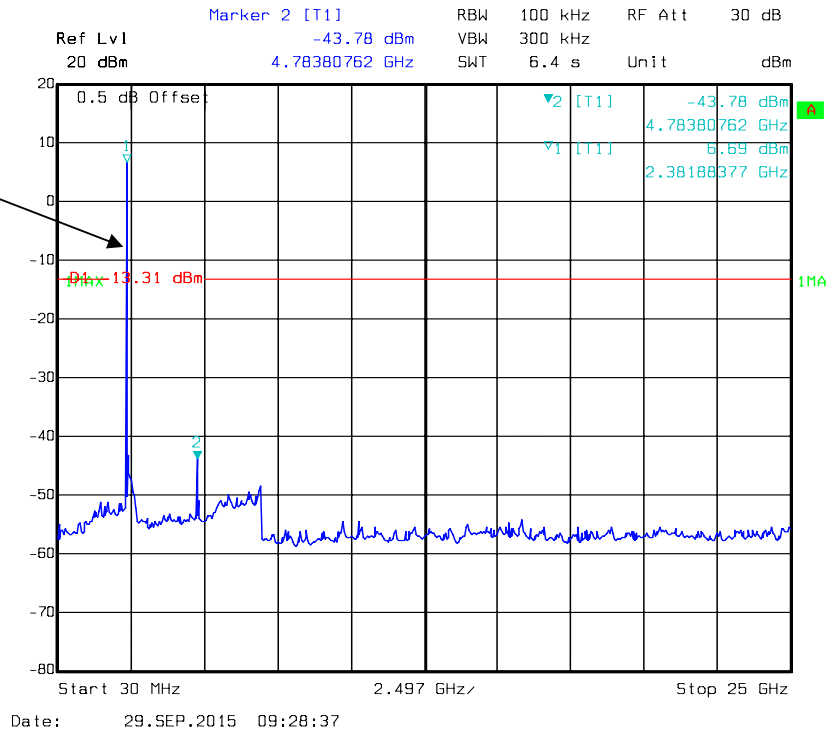


**802.11n ht40 Channel:2452MHz**

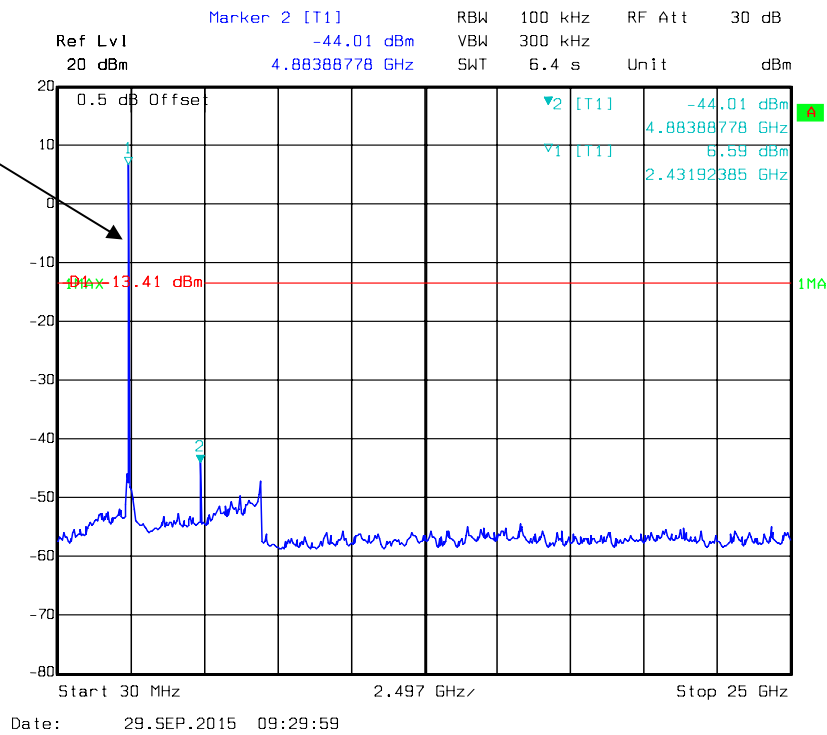


Chain V

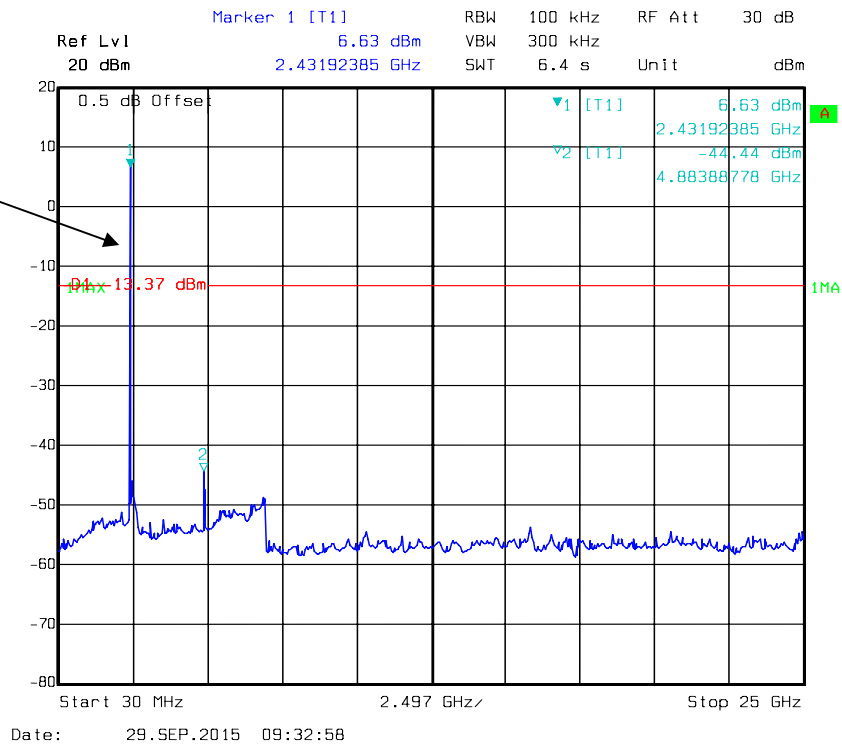
802.11b Channel:2412MHz



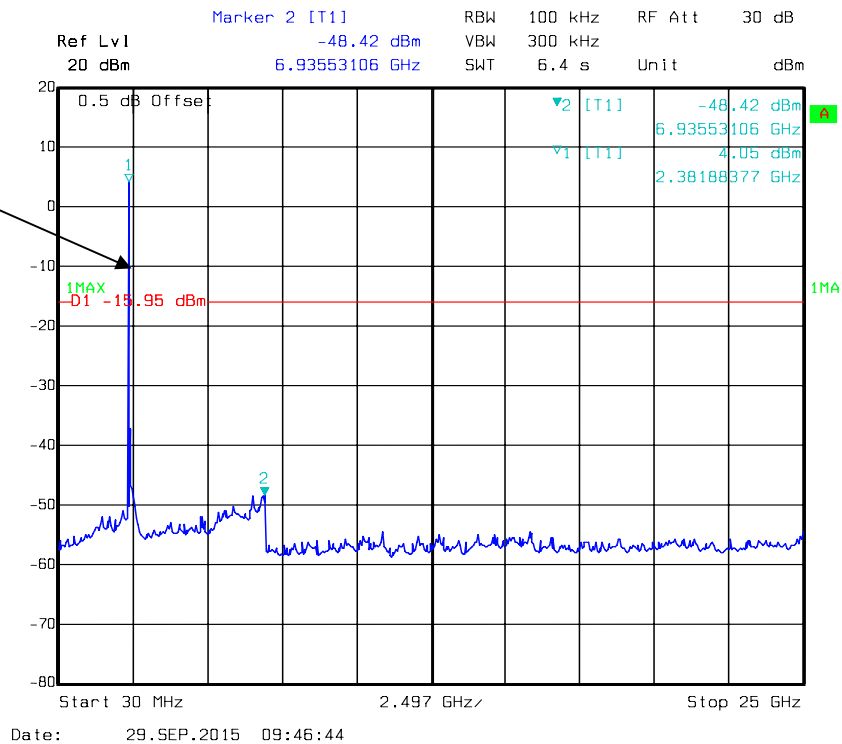
802.11b Channel:2437MHz



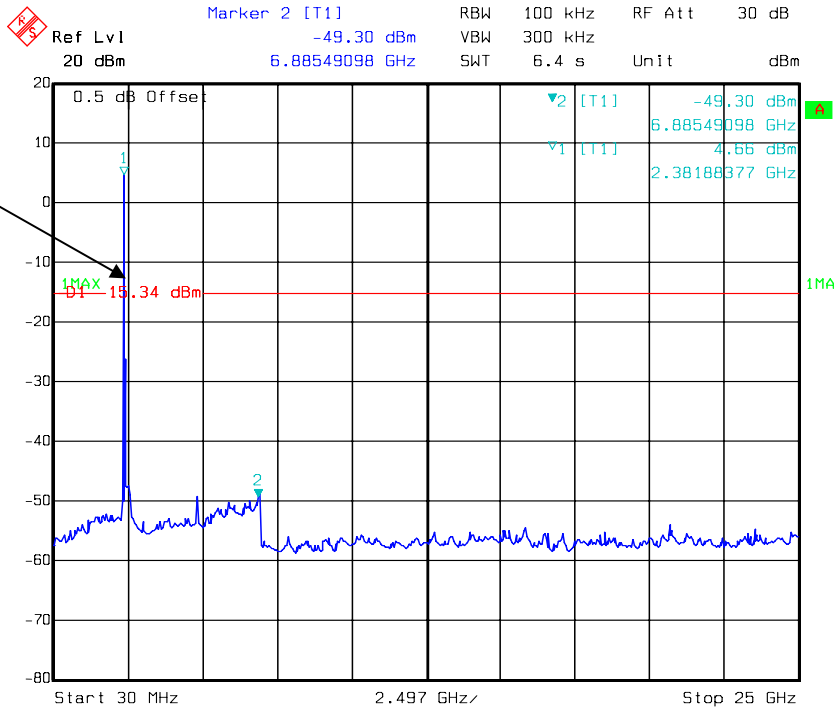
**802.11b Channel:2462MHz**



**802.11g Channel:2412MHz**

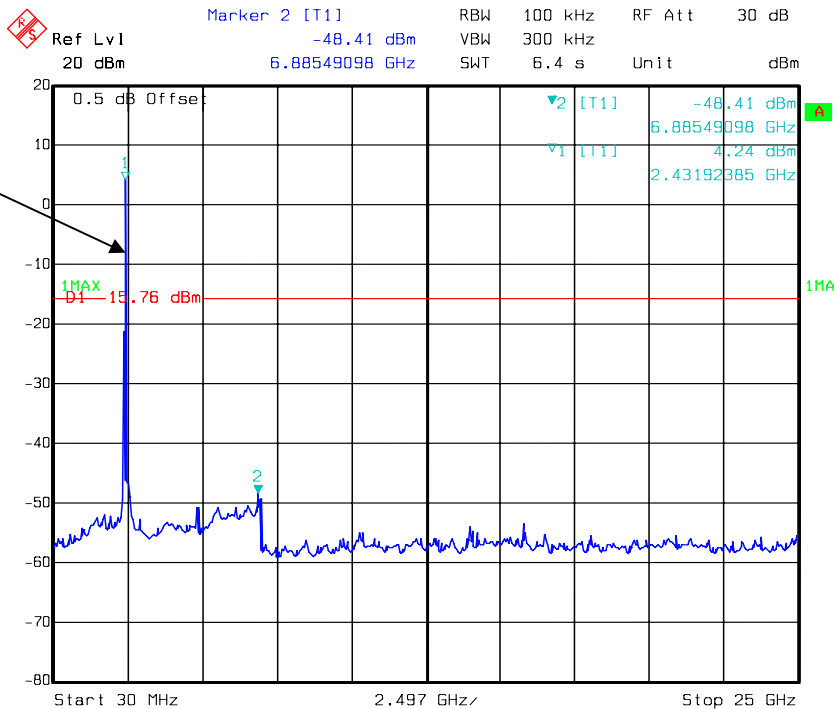


**802.11g Channel:2417MHz**



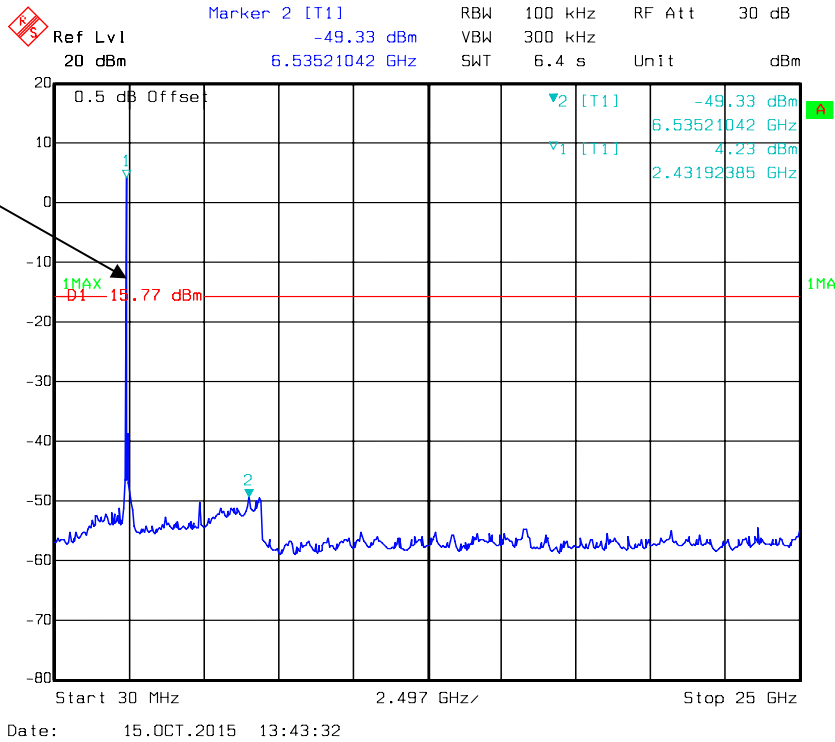
Date: 15.OCT.2015 13:41:08

**802.11g Channel:2437MHz**

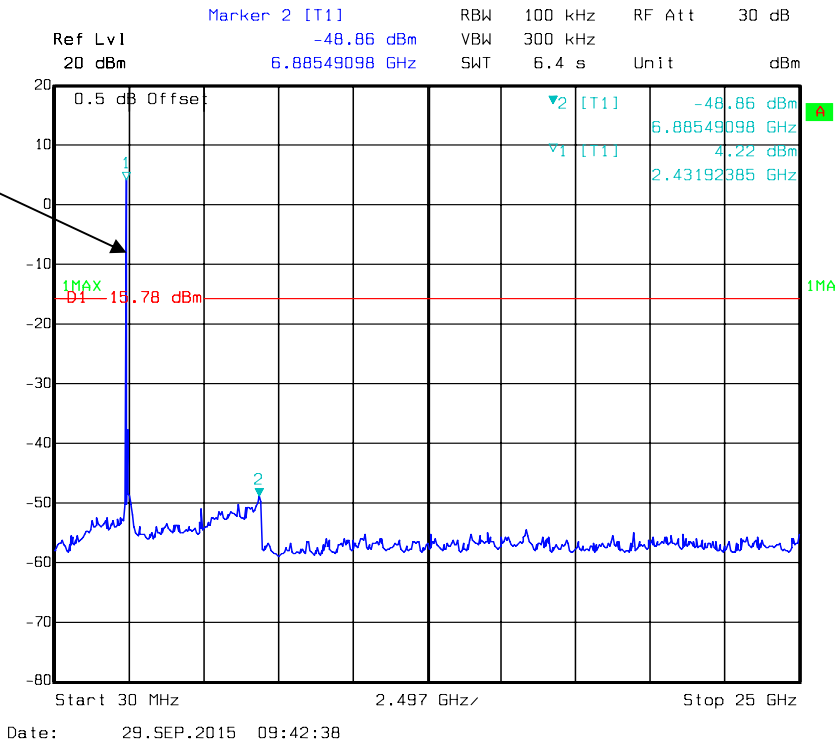


Date: 15.OCT.2015 13:42:17

**802.11g Channel:2457MHz**



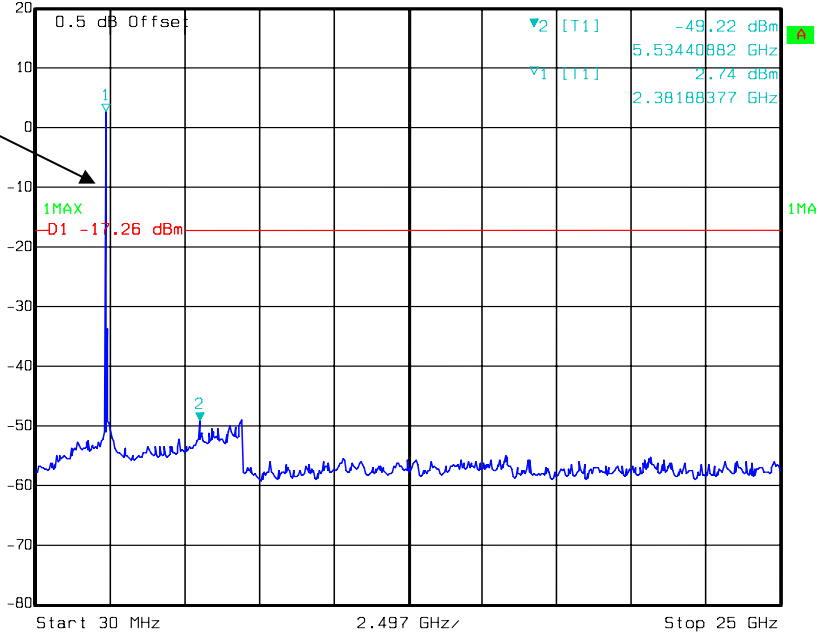
**802.11g Channel:2462MHz**



**802.11n ht20 Channel:2412MHz**

Marker 2 [T1] RBW 100 kHz RF Att 30 dB  
 Ref Lvl -49.22 dBm VBW 300 kHz  
 20 dBm 5.53440882 GHz SWT 6.4 s Unit dBm

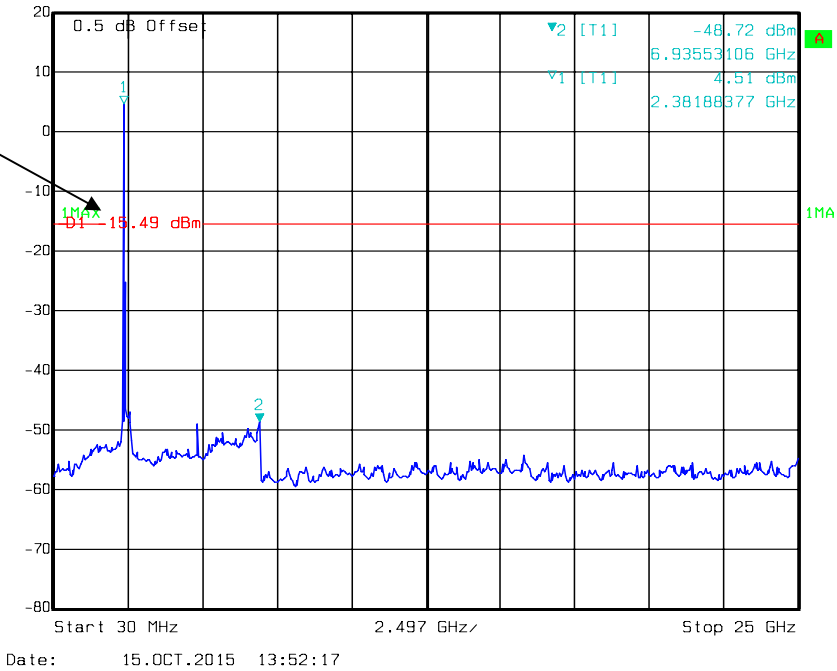
Fundamental



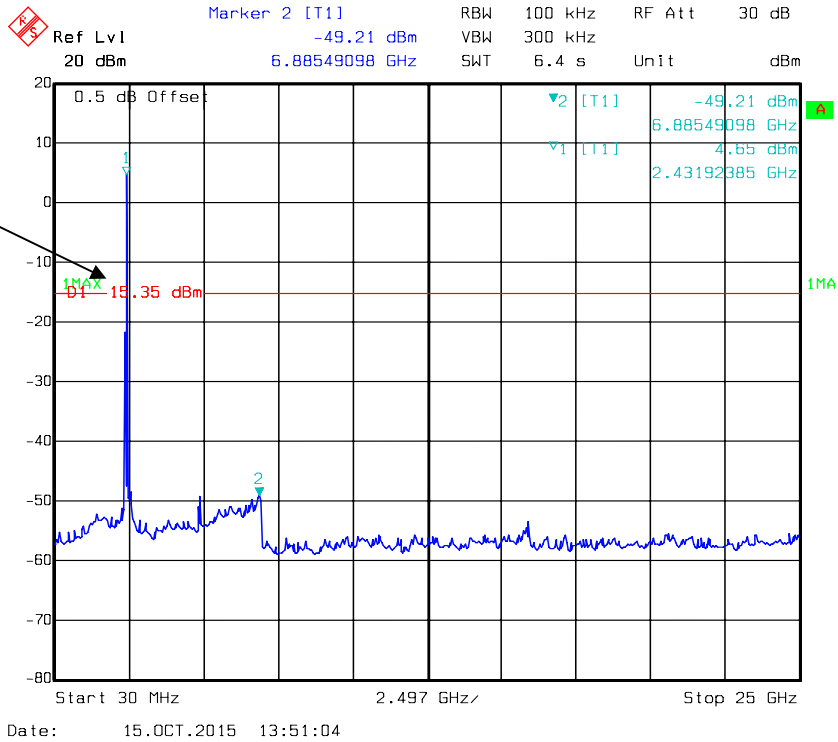
**802.11n ht20 Channel:2417MHz**

Marker 2 [T1] RBW 100 kHz RF Att 30 dB  
 Ref Lvl -48.72 dBm VBW 300 kHz  
 20 dBm 6.93553106 GHz SWT 6.4 s Unit dBm

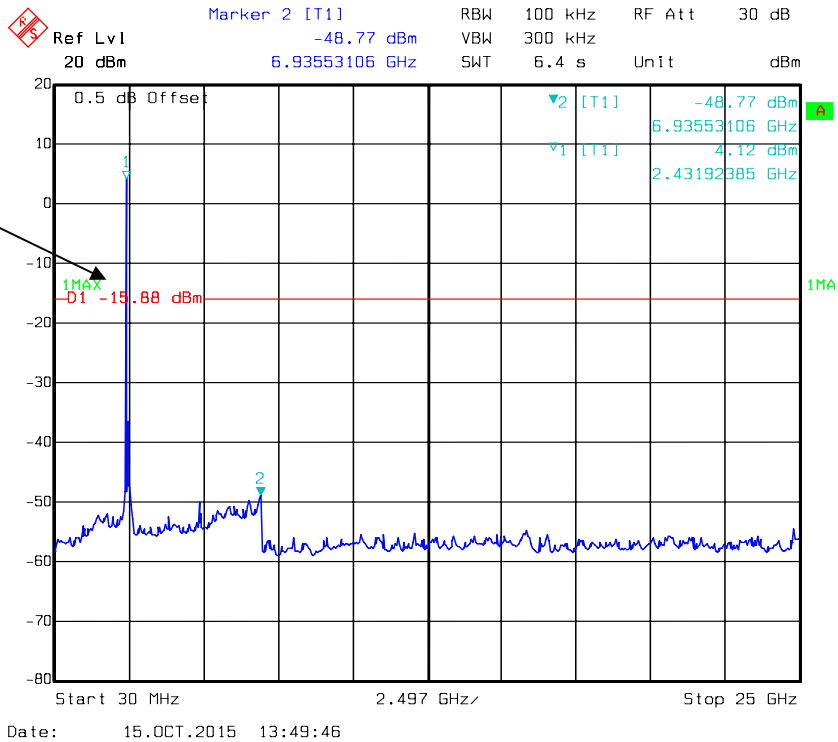
Fundamental



**802.11n ht20 Channel:2437MHz**

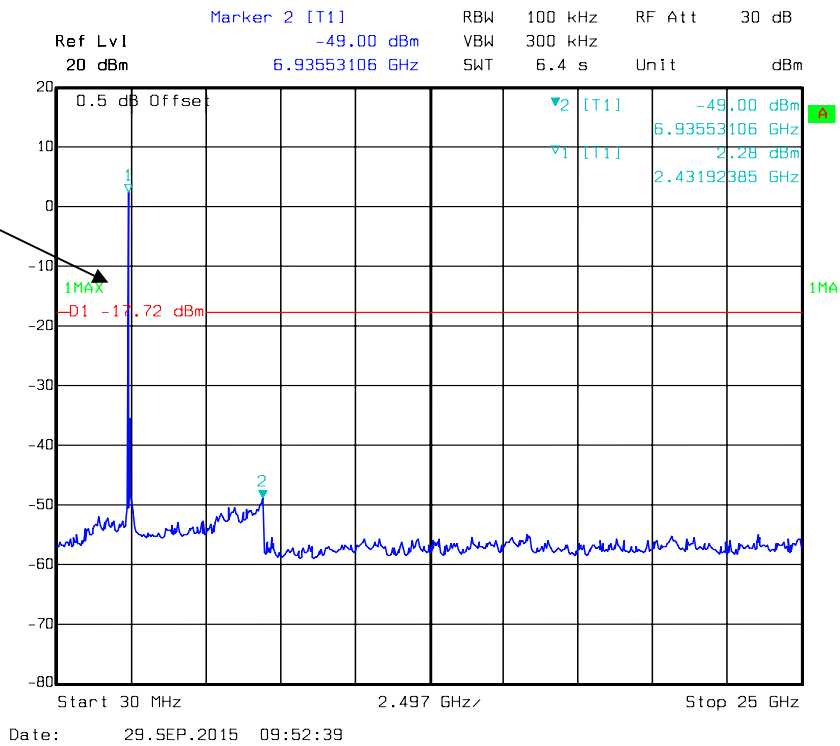


**802.11n ht20 Channel:2457MHz**



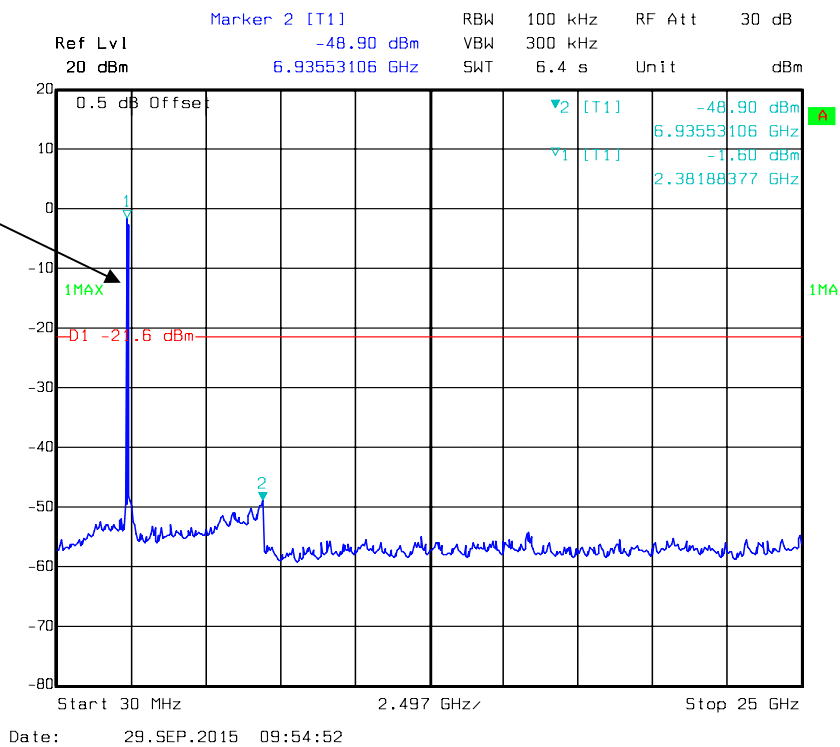


**802.11n ht20 Channel:2462MHz**



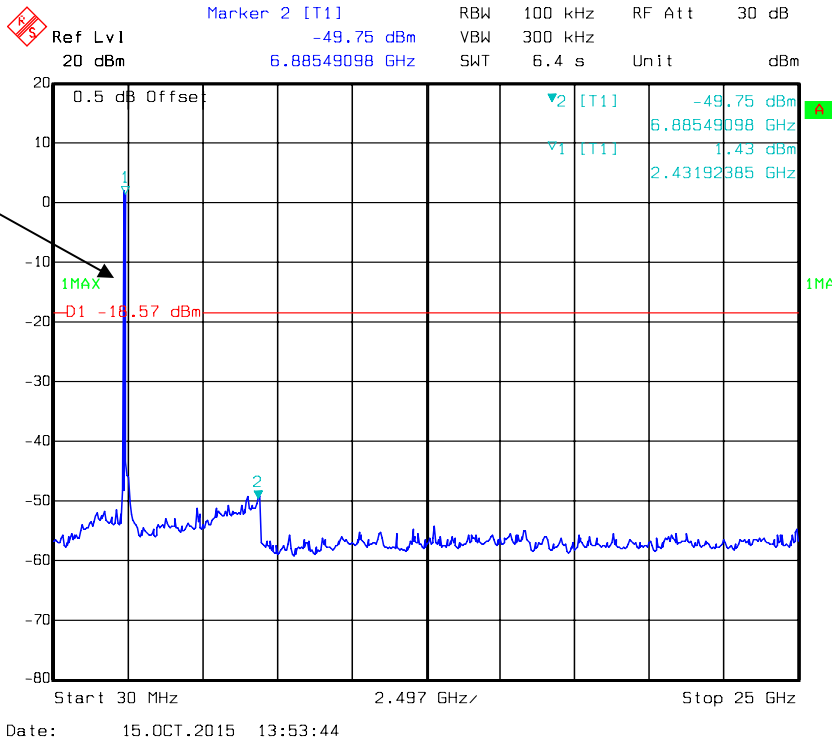
Fundamental

**802.11n ht40 Channel:2422MHz**

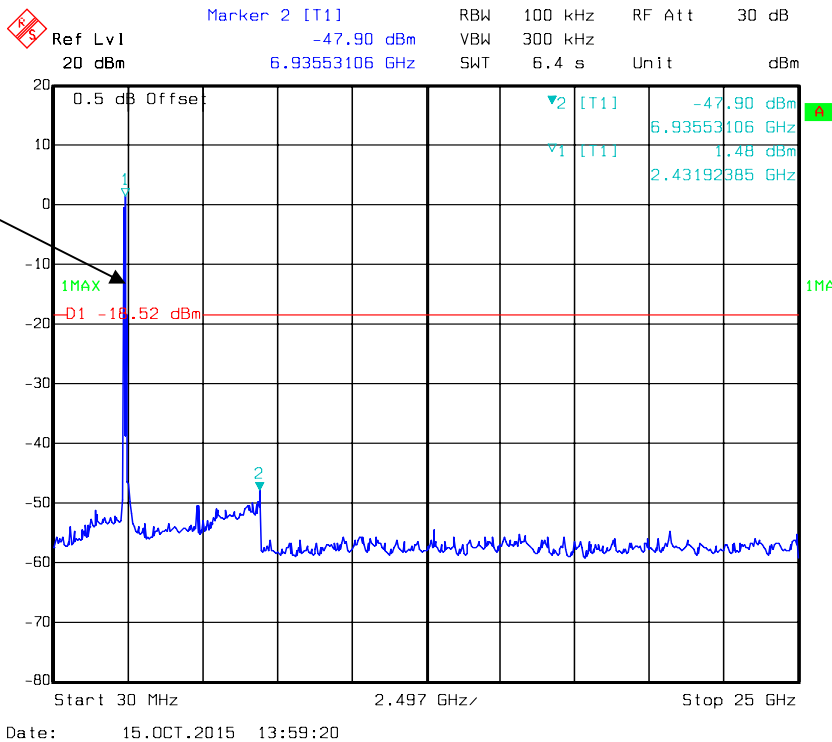


Fundamental

**802.11n ht40 Channel:2427MHz**



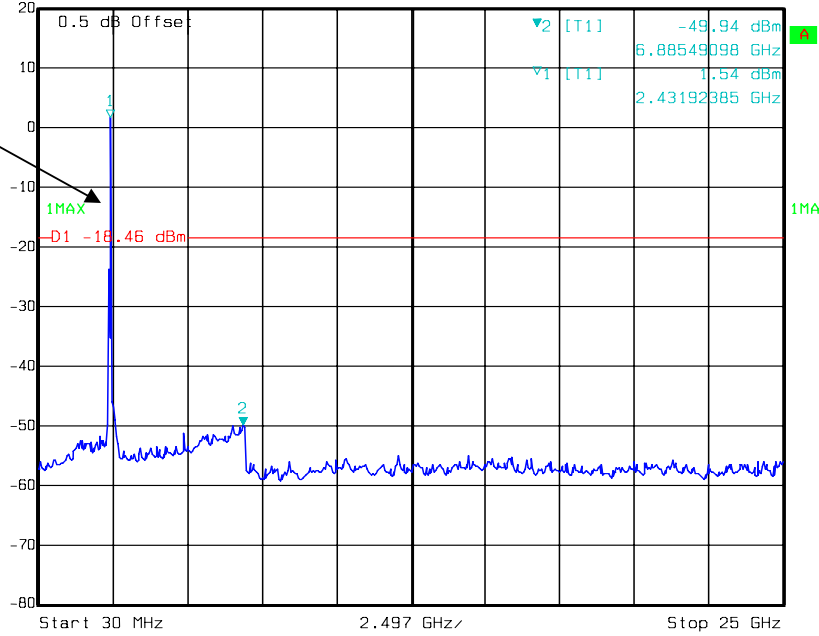
**802.11n ht40 Channel:2437MHz**



**802.11n ht40 Channel:2447MHz**

✖ Ref Lvl 20 dBm  
 Marker 2 [T1] -49.94 dBm  
 6.88549098 GHz  
 RBW 100 kHz RF Att 30 dB  
 VBW 300 kHz  
 SWT 6.4 s Unit dBm

Fundamental

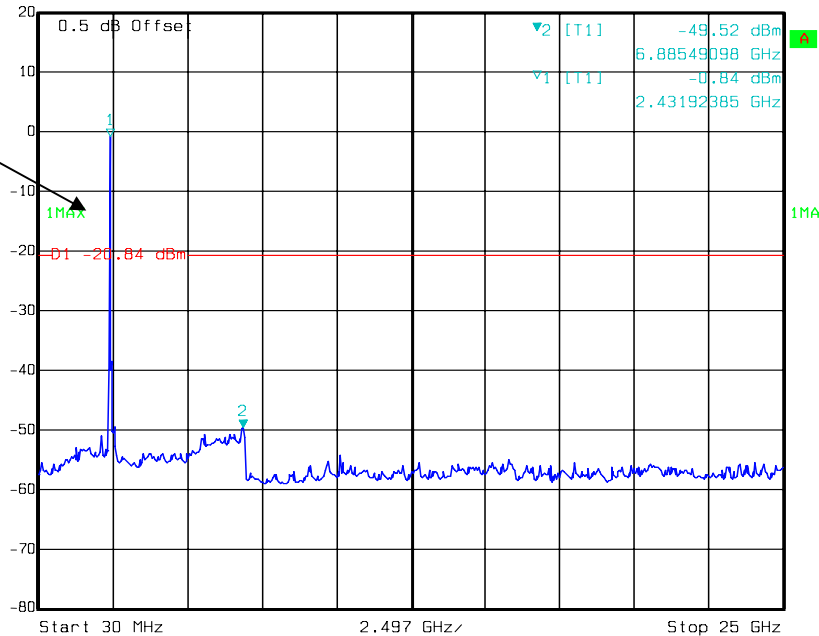


Date: 15.OCT.2015 14:00:25

**802.11n ht40 Channel:2452MHz**

✖ Ref Lvl 20 dBm  
 Marker 2 [T1] -49.52 dBm  
 6.88549098 GHz  
 RBW 100 kHz RF Att 30 dB  
 VBW 300 kHz  
 SWT 6.4 s Unit dBm

Fundamental



Date: 29.SEP.2015 09:57:16

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

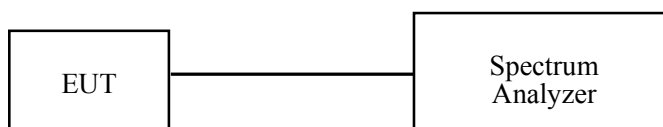
### Applicable Standard

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)  $3 \times$  RBW
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Sweep = auto couple.
- f) Allow the trace to stabilize.
- g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.



### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSEM	DE31388	2015-05-09	2016-05-09

\* **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

<b>Temperature:</b>	26.8~27.2 °C
<b>Relative Humidity:</b>	50~55 %
<b>ATM Pressure:</b>	99.9~100.4 kPa

\* The testing was performed by Lion Xiao from 2015-09-28 to 2015-10-14.

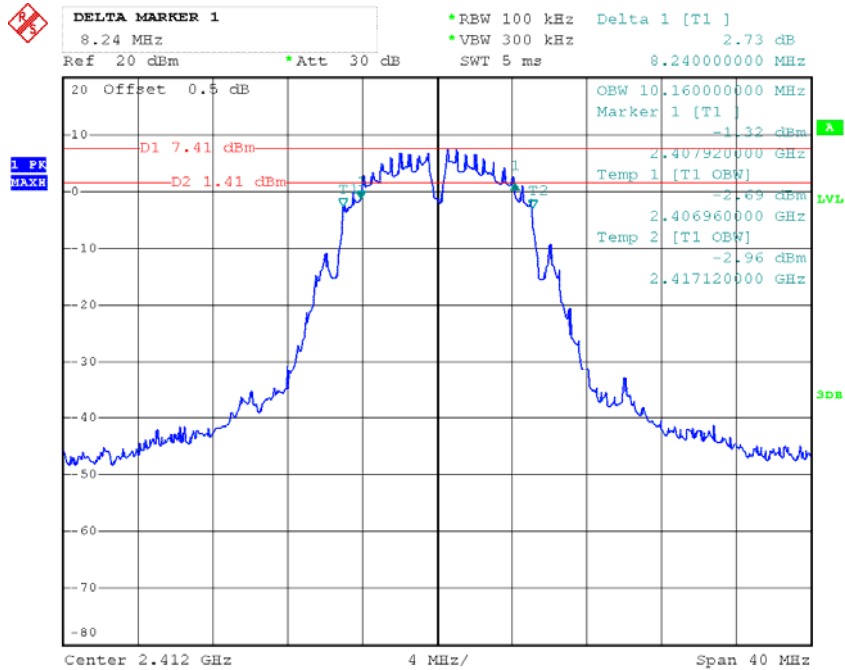
Test Mode: Transmitting

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

Test mode	Frequency (MHz)	6 dB Bandwidth (MHz)		Limit (MHz)
		Chain H	Chain V	
802.11b	2412	8.24	8.32	0.5
	2437	8.24	8.32	0.5
	2462	8.24	8.32	0.5
802.11g	2412	16.56	16.56	0.5
	2417	16.56	16.56	0.5
	2437	16.56	16.56	0.5
	2457	16.56	16.56	0.5
802.11n20	2412	17.68	17.76	0.5
	2417	17.68	17.68	0.5
	2437	17.76	17.76	0.5
	2457	17.68	17.68	0.5
	2462	17.68	17.76	0.5
802.11n40	2422	36.00	36.00	0.5
	2427	36.00	36.00	0.5
	2437	36.00	36.00	0.5
	2447	36.00	36.00	0.5
	2452	36.00	36.00	0.5

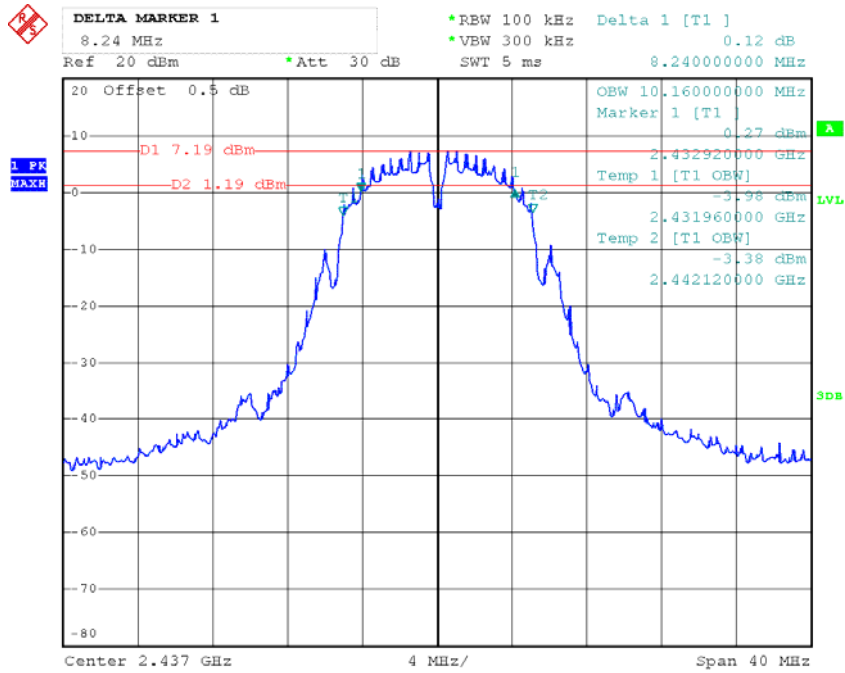
Chain H

802.11b Channel: 2412MHz

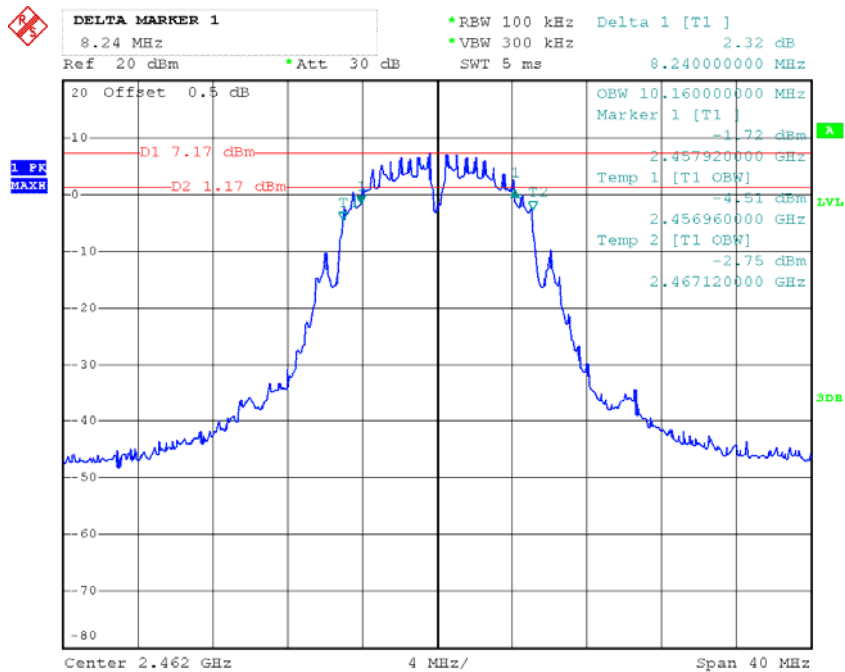


Date: 29.SEP.2015 15:51:08

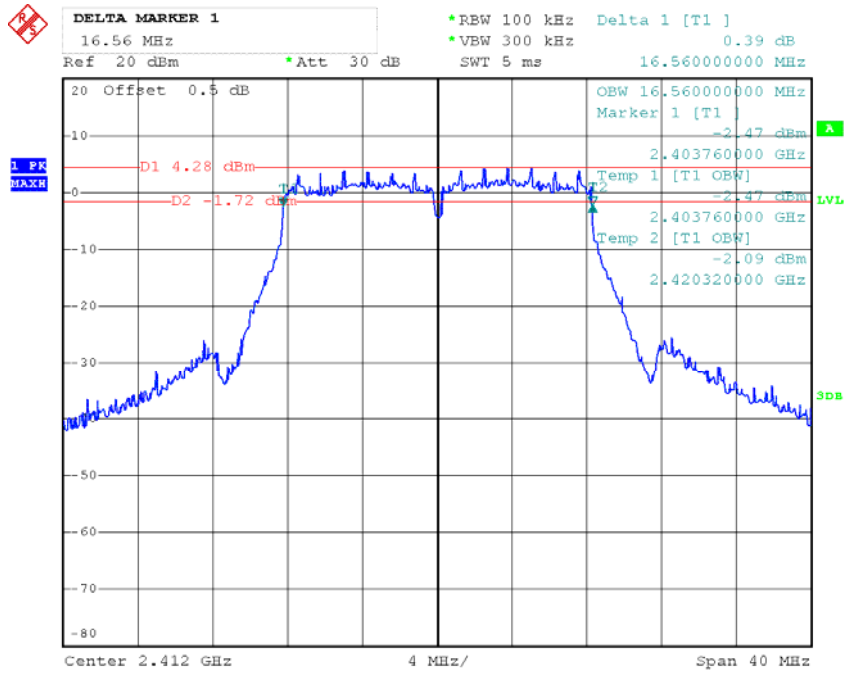
802.11b Channel: 2437 MHz



802.11b Channel: 2462MHz

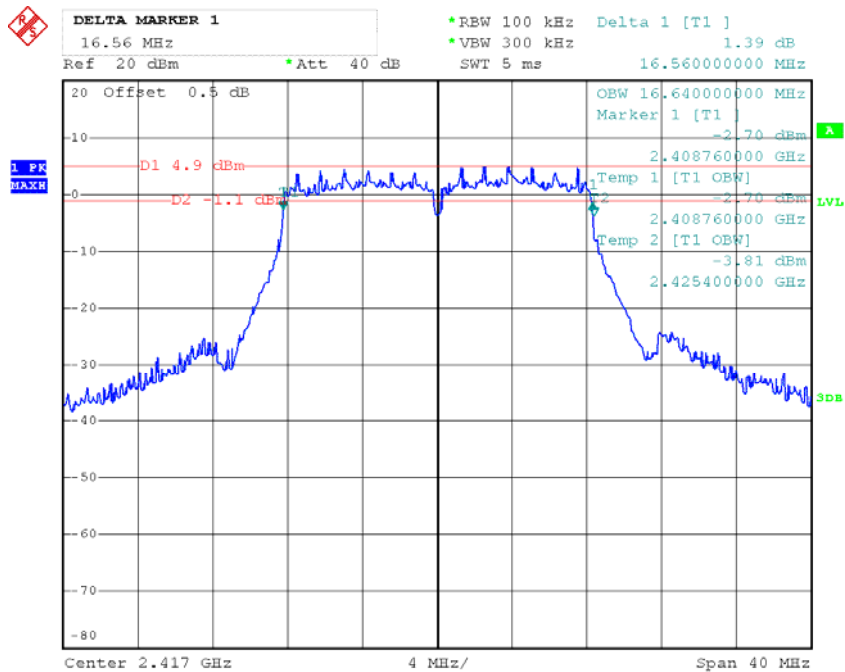


**802.11g Channel: 2412MHz**



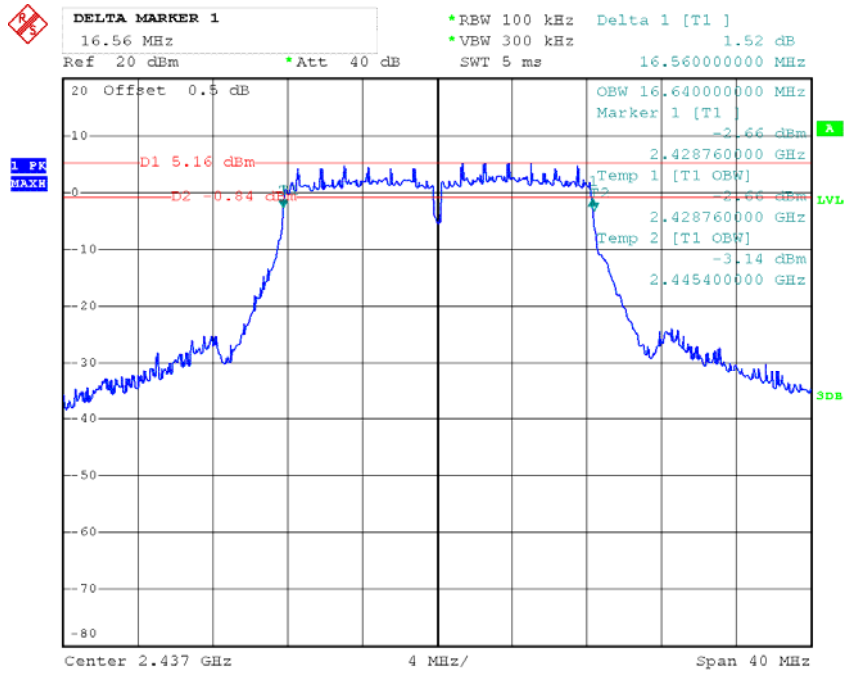
Date: 29.SEP.2015 16:18:24

**802.11g Channel: 2417MHz**



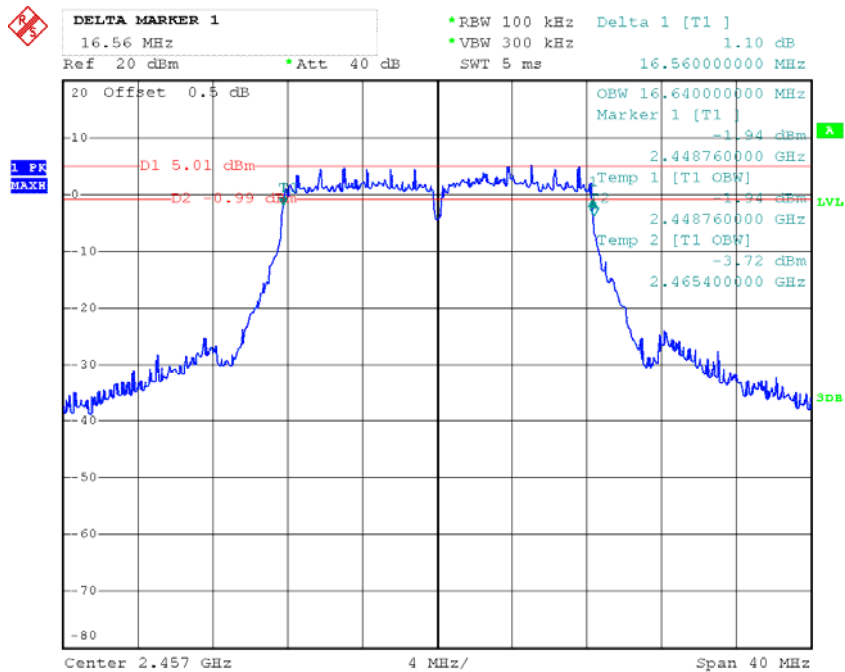
Date: 14.OCT.2015 19:38:06

802.11g Channel: 2437MHz



Date: 14.OCT.2015 20:10:16

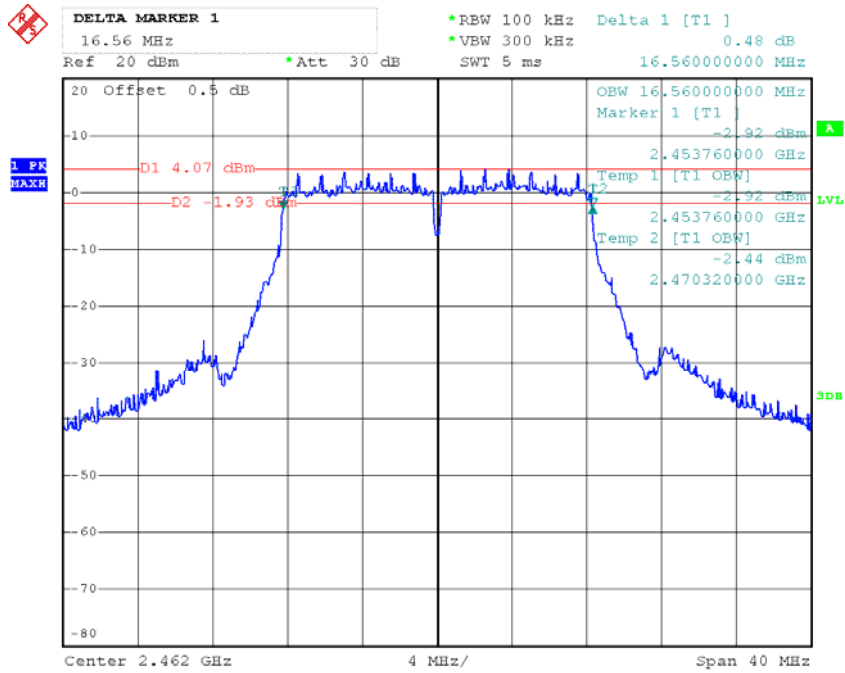
802.11g Channel: 2457MHz



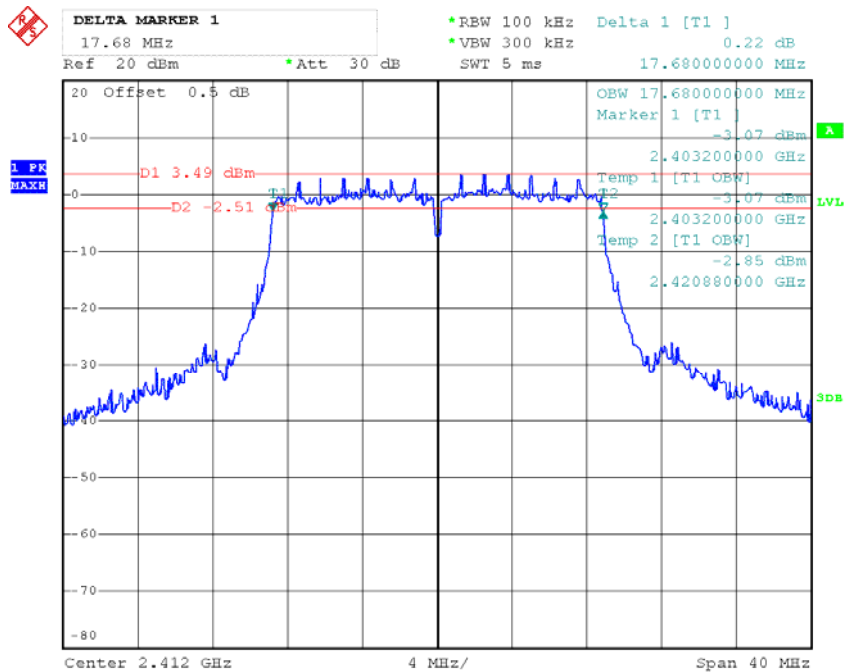
Date: 14.OCT.2015 19:58:17



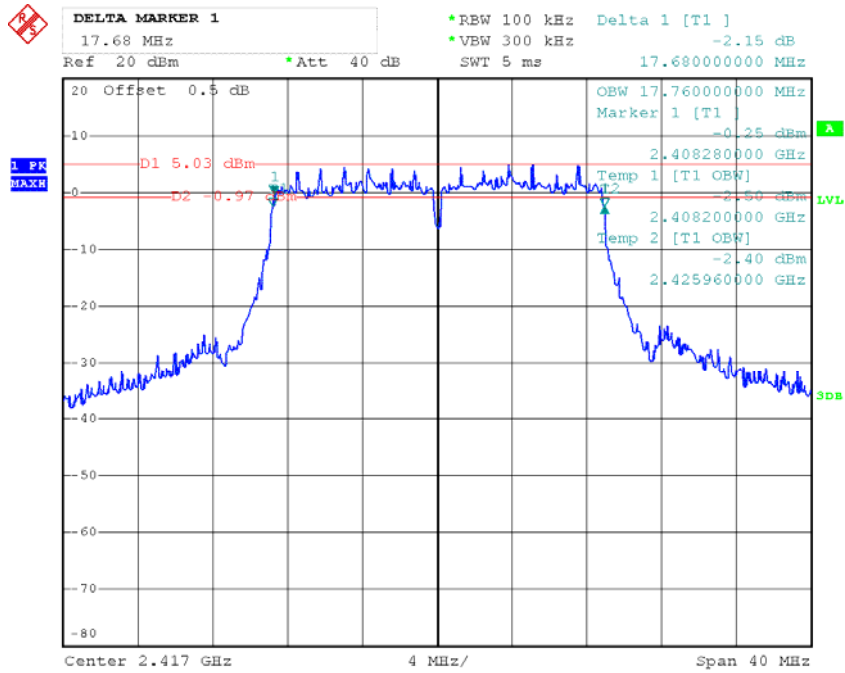
**802.11g Channel: 2462MHz**



**802.11n ht20 Channel: 2412MHz**

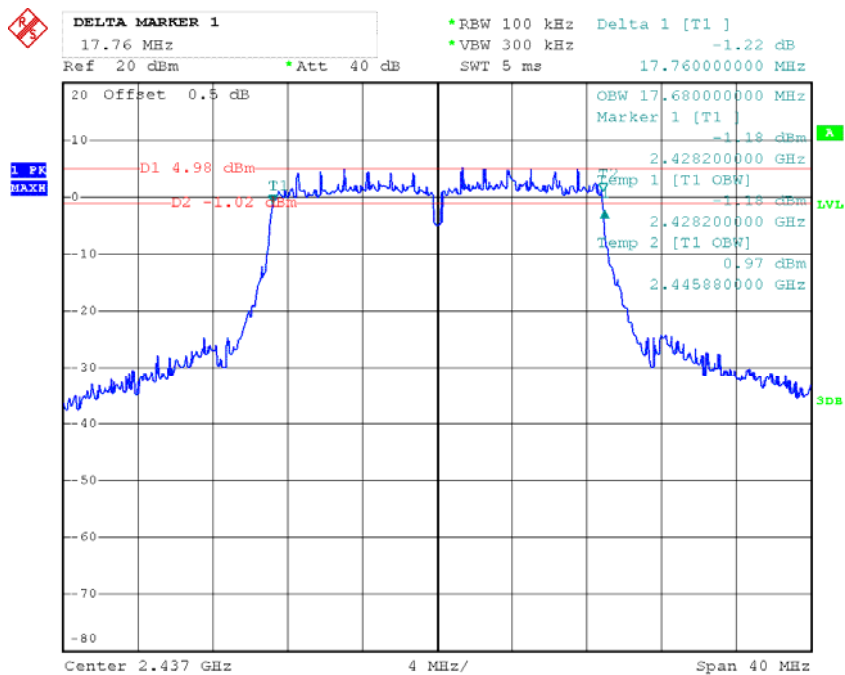


**802.11n ht20 Channel: 2417MHz**



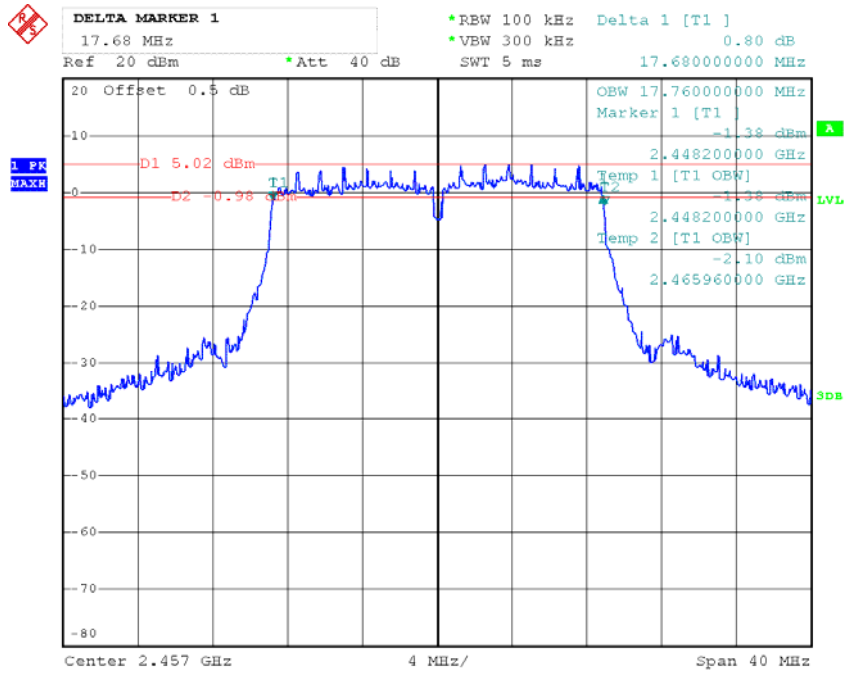
Date: 14.OCT.2015 21:37:51

**802.11n ht20 Channel: 2437MHz**



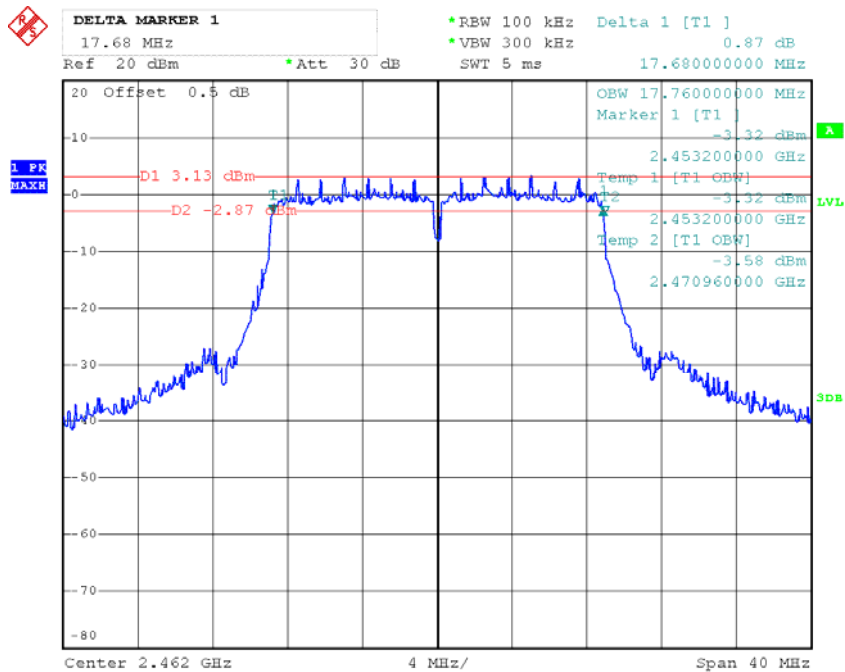
Date: 14.OCT.2015 20:26:25

**802.11n ht20 Channel: 2457MHz**



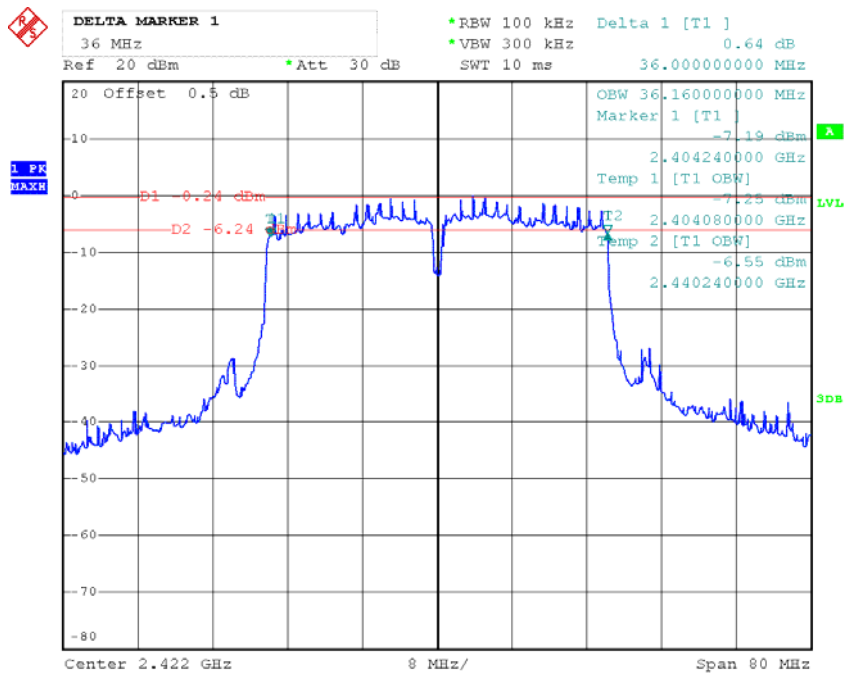
Date: 14.OCT.2015 21:21:58

**802.11n ht20 Channel: 2462MHz**



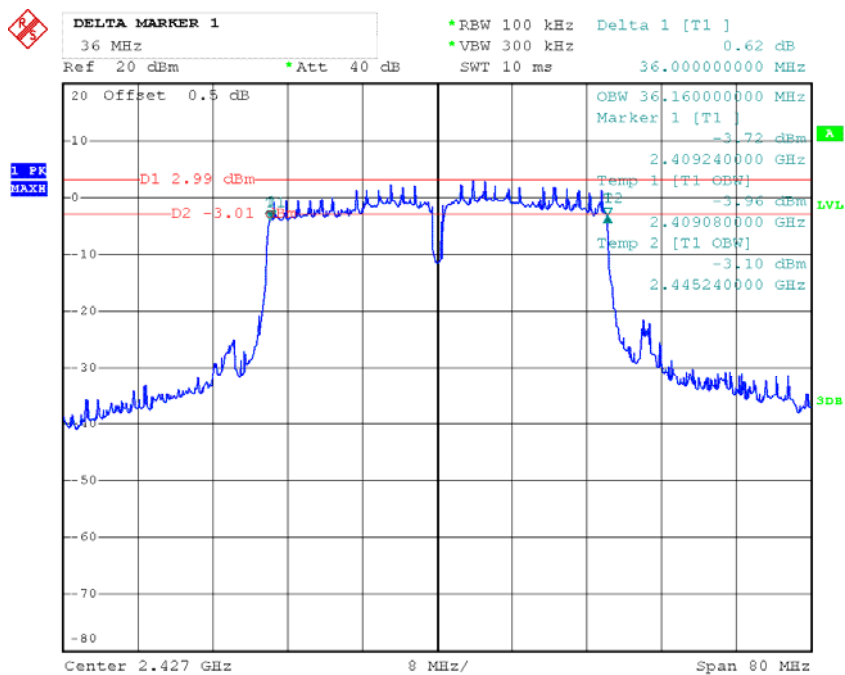
Date: 29.SEP.2015 16:35:08

**802.11n ht40 Channel: 2422MHz**



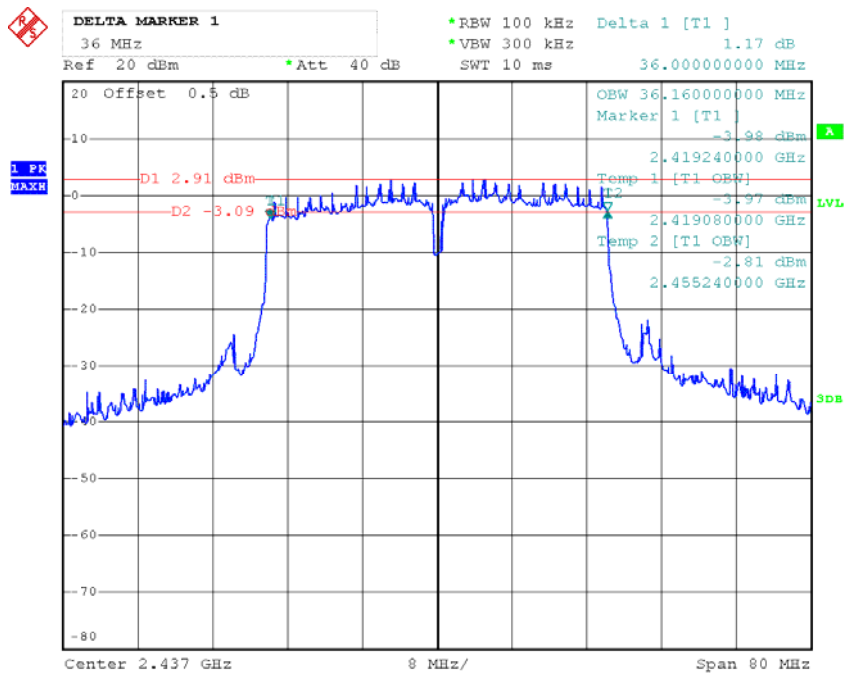
Date: 29.SEP.2015 16:44:13

**802.11n ht40 Channel: 2427MHz**



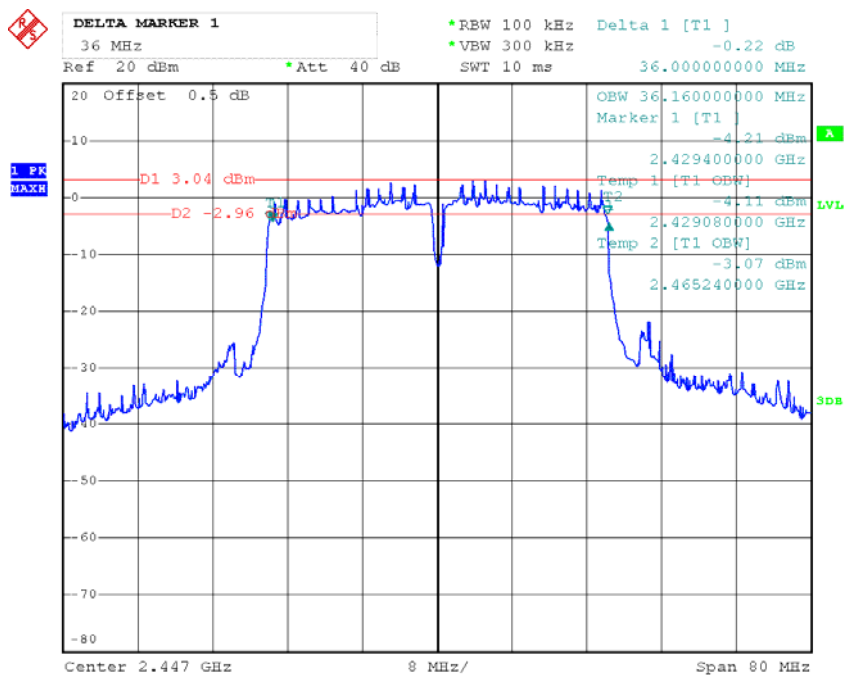
Date: 14.OCT.2015 21:50:46

**802.11n ht40 Channel: 2437MHz**



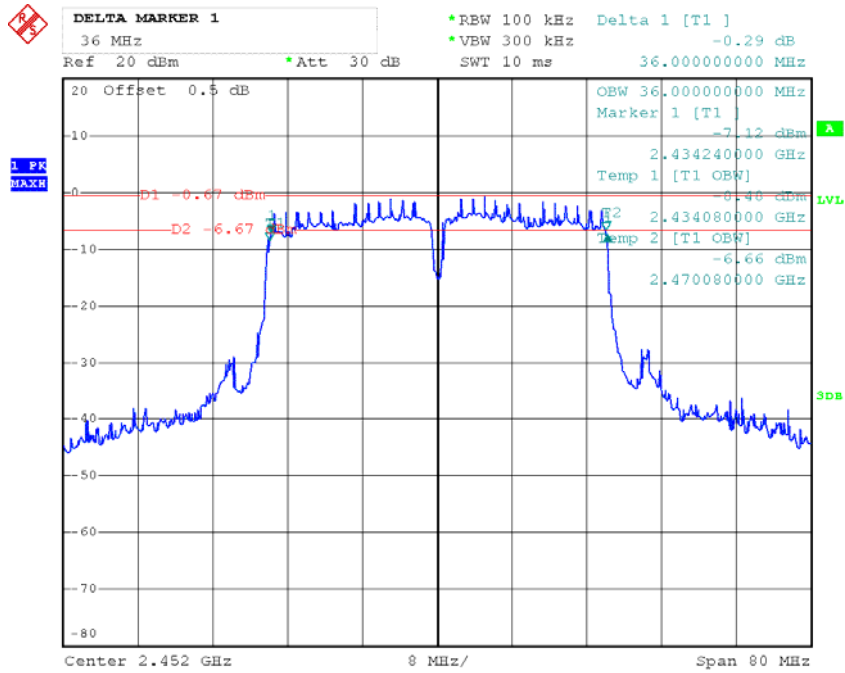
Date: 14.OCT.2015 22:25:43

**802.11n ht40 Channel: 2447MHz**



Date: 14.OCT.2015 22:18:47

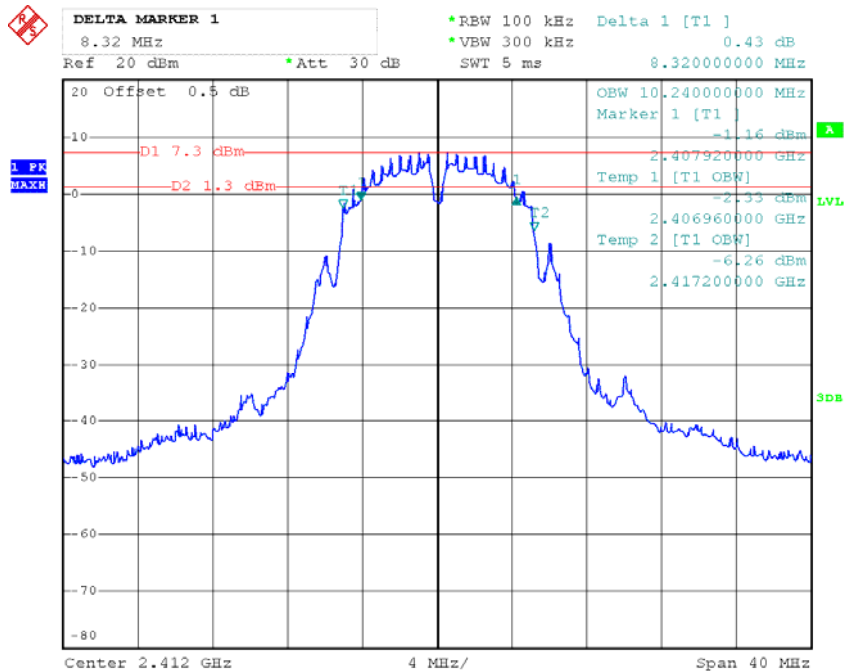
**802.11n ht40 Channel: 2452MHz**



Date: 29.SEP.2015 16:55:13

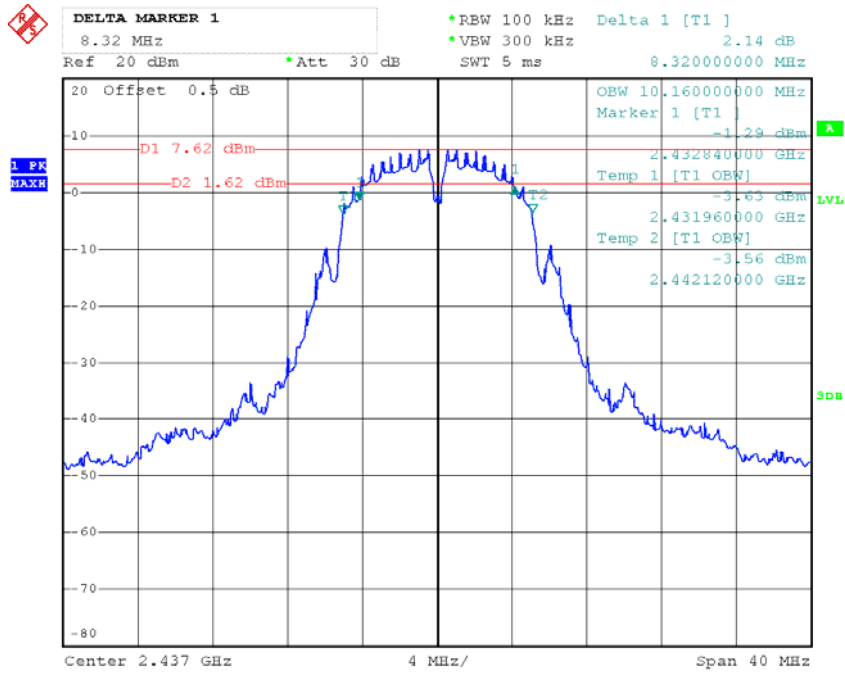
**Chain V**

**802.11b Channel: 2412MHz**



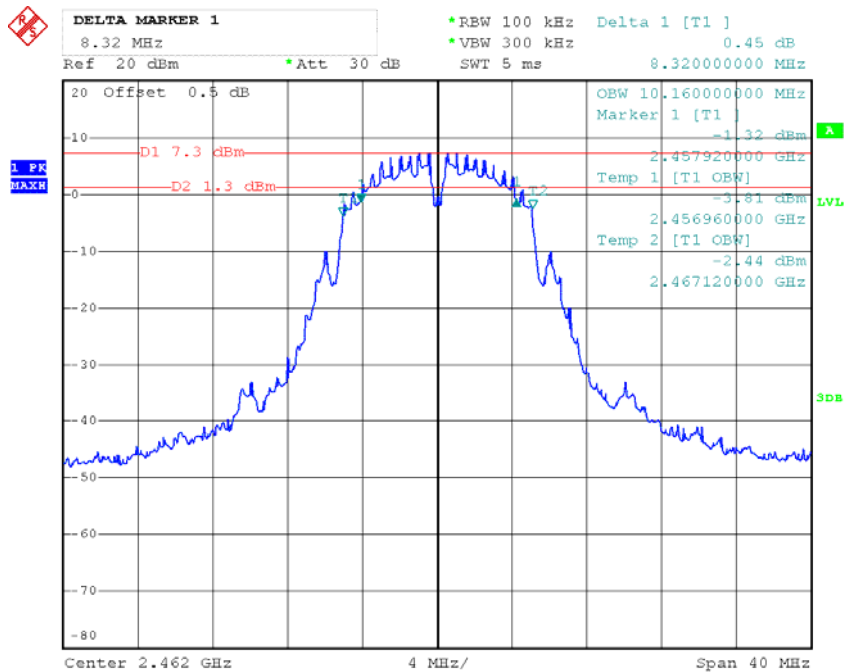
Date: 28.SEP.2015 16:29:51

802.11b Channel: 2437MHz



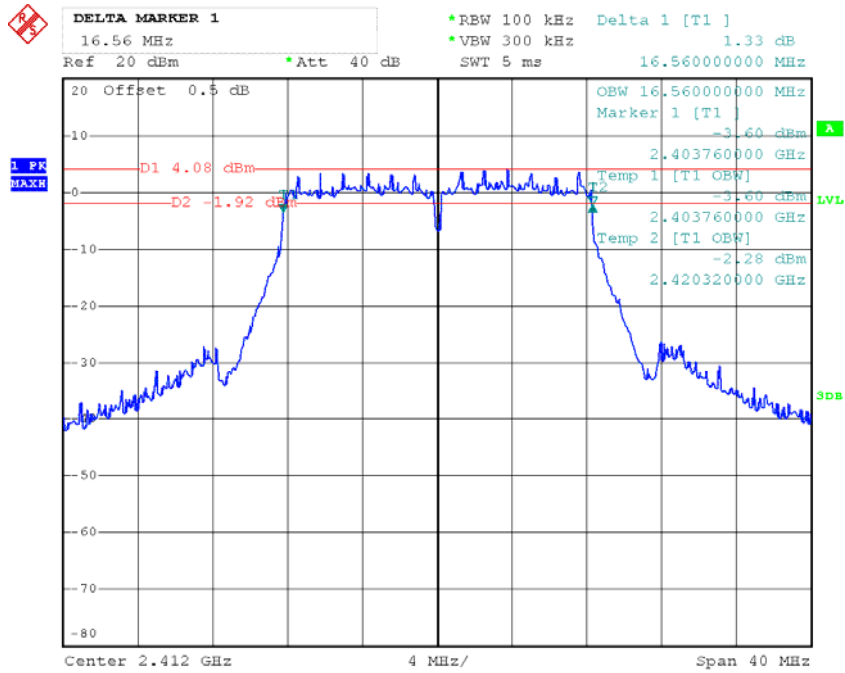
Date: 28.SEP.2015 16:39:51

802.11b Channel: 2462MHz

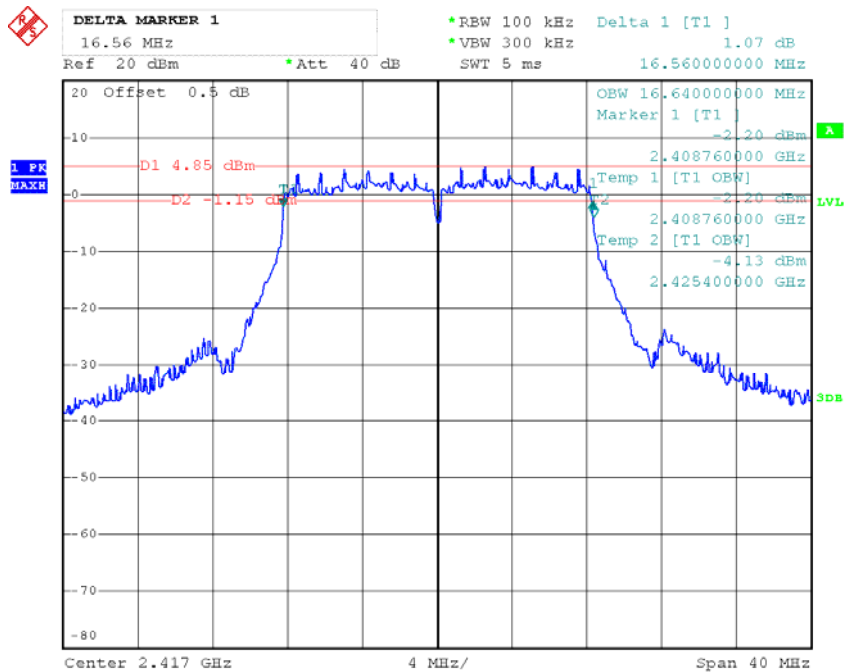


Date: 28.SEP.2015 16:44:41

802.11g Channel: 2412MHz

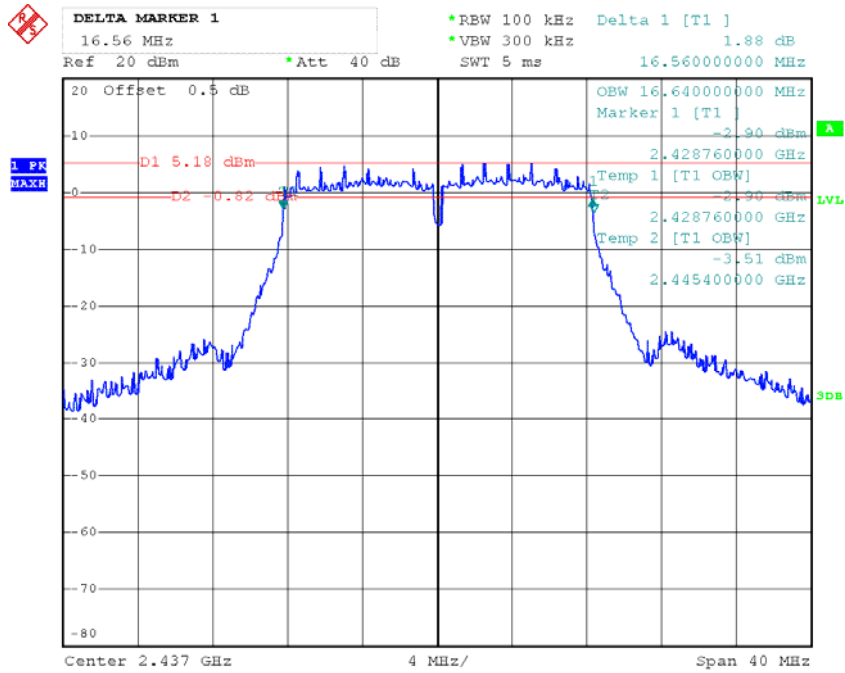


802.11g Channel: 2417MHz



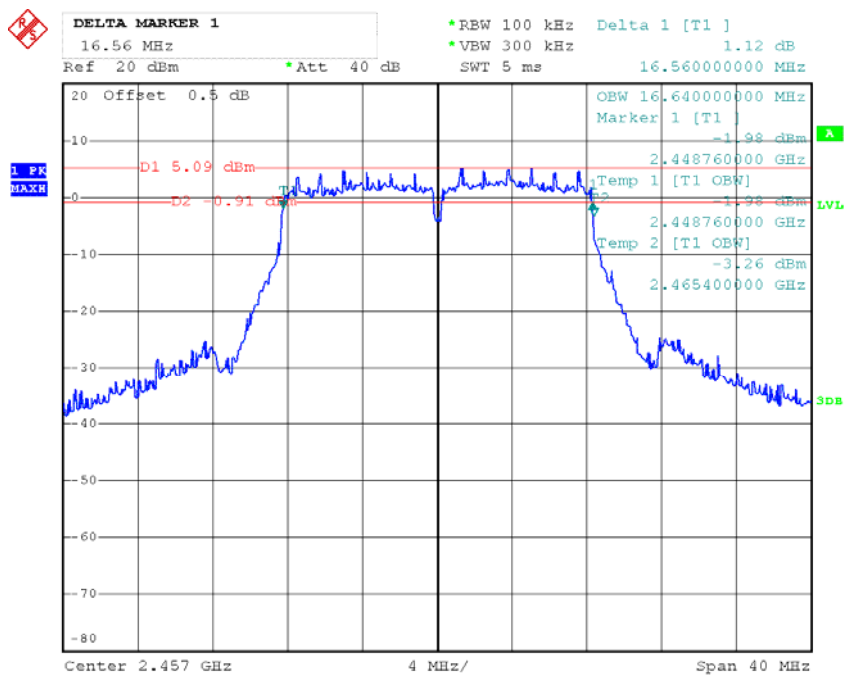


802.11g Channel: 2437MHz



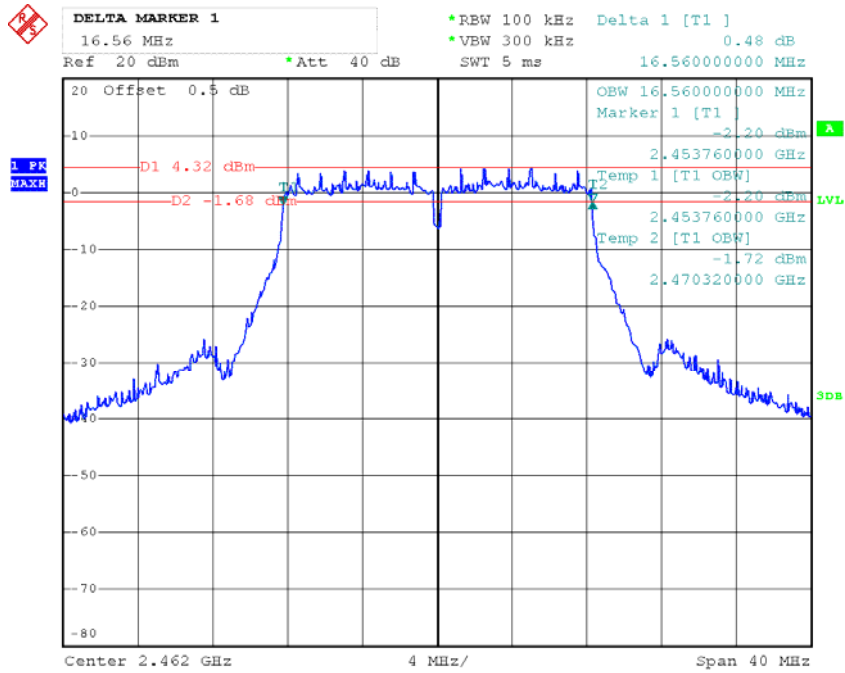
Date: 14.OCT.2015 20:05:11

802.11g Channel: 2457MHz



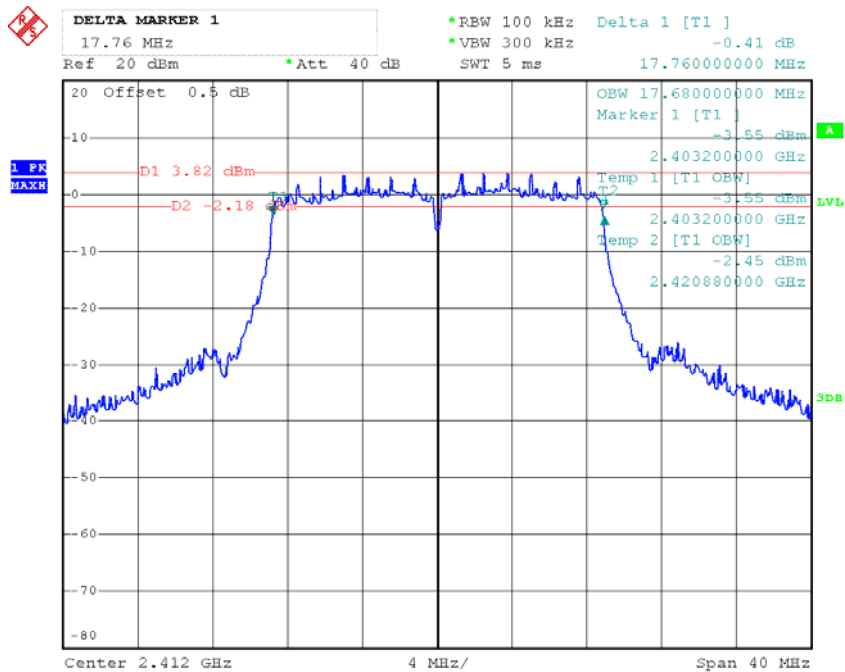
Date: 14.OCT.2015 19:57:33

**802.11g Channel: 2462MHz**



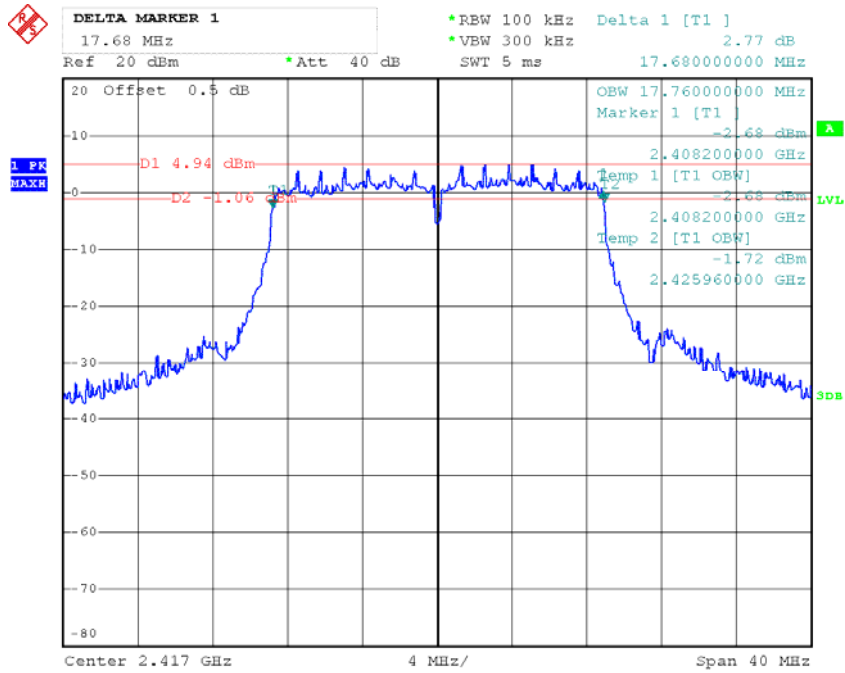
Date: 28.SEP.2015 16:55:38

**802.11n ht20 Channel: 2412MHz**



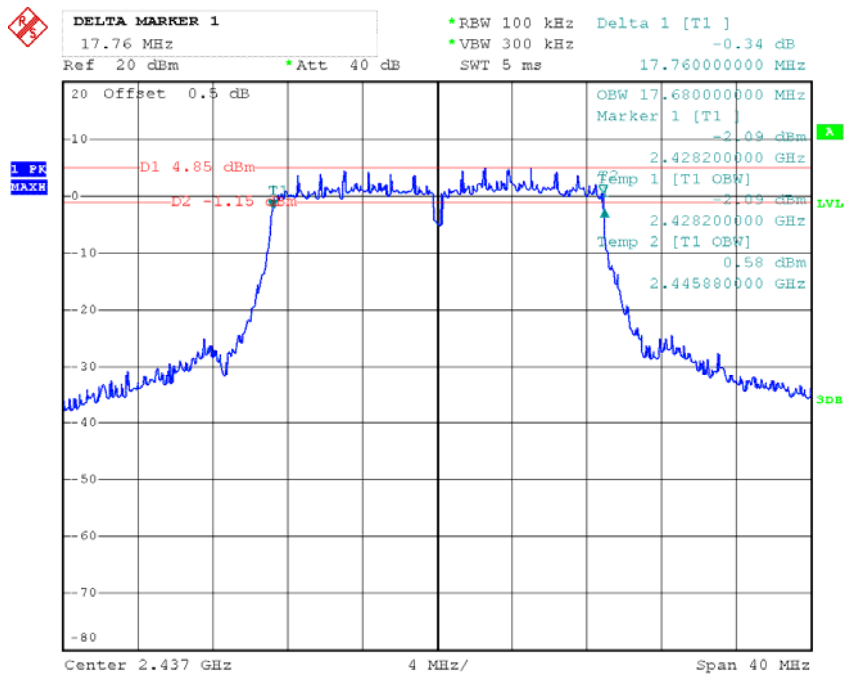
Date: 28.SEP.2015 17:32:20

**802.11n ht20 Channel: 2417MHz**



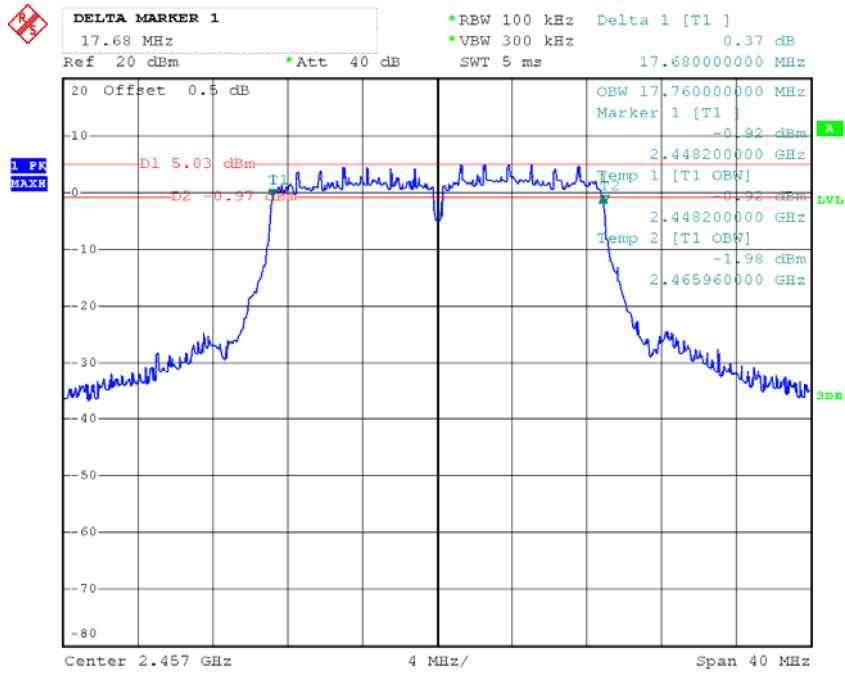
Date: 14.OCT.2015 21:41:35

**802.11n ht20 Channel: 2437MHz**



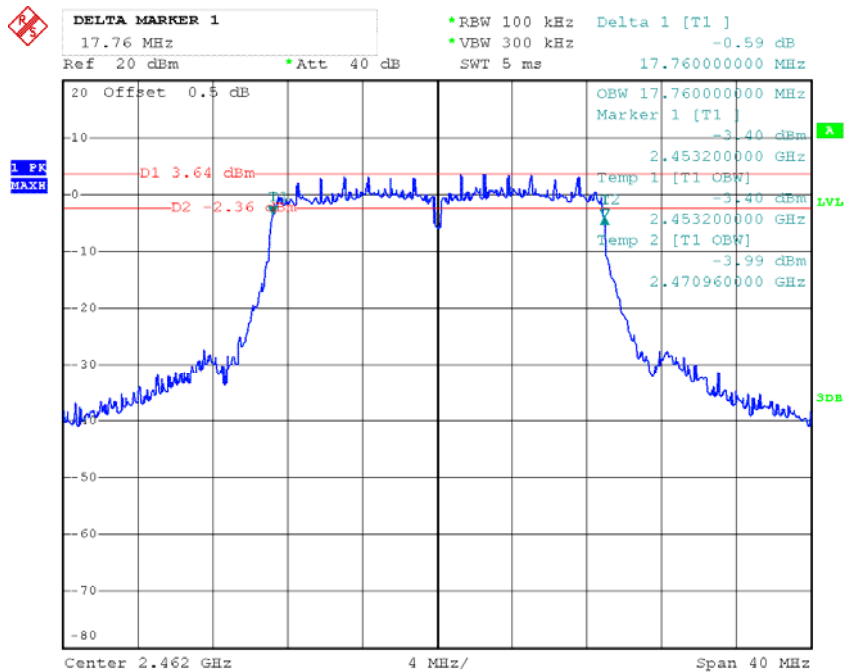
Date: 14.OCT.2015 20:27:48

**802.11n ht20 Channel: 2457MHz**



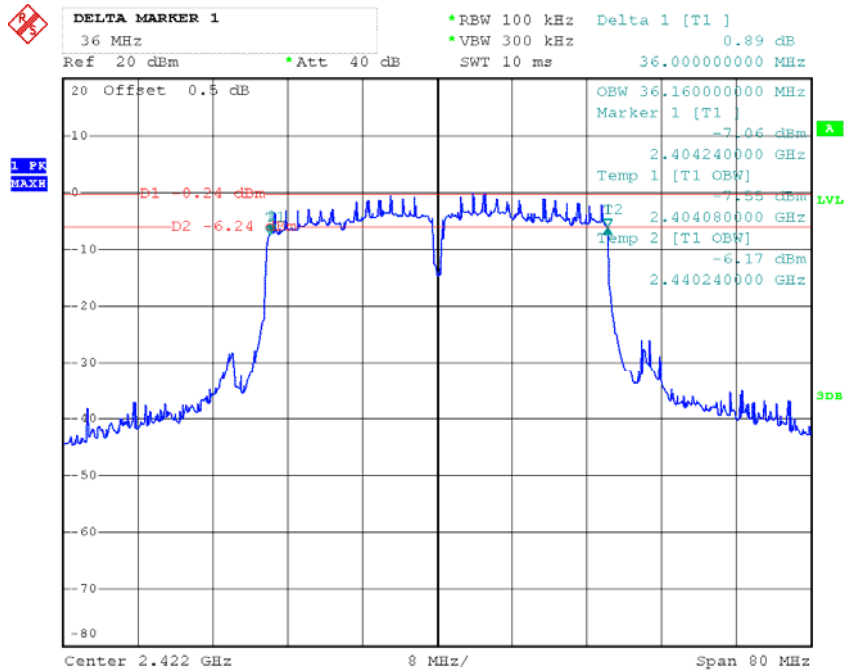
Date: 14.OCT.2015 21:23:58

**802.11n ht20 Channel: 2462MHz**



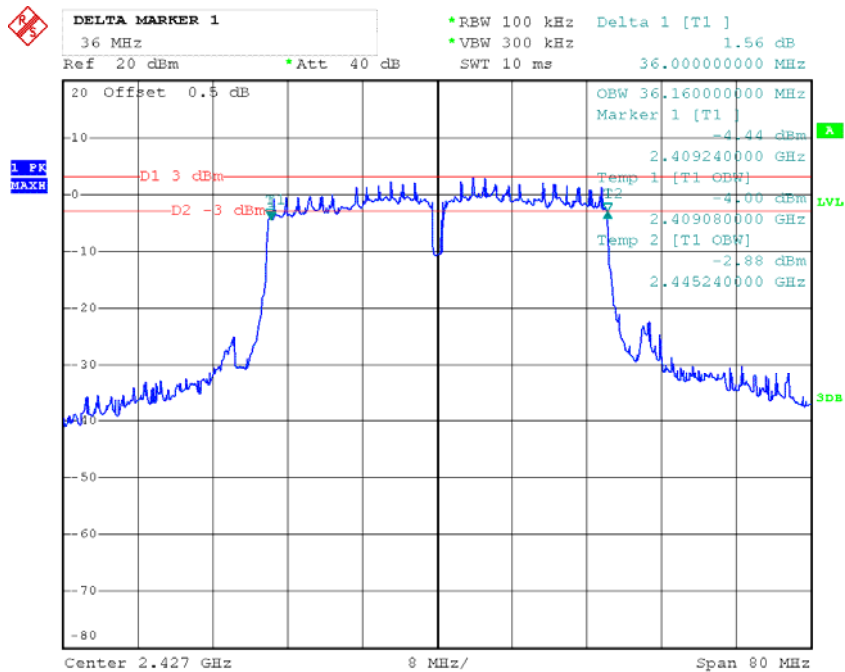
Date: 28.SEP.2015 17:39:25

**802.11n ht40 Channel: 2422MHz**



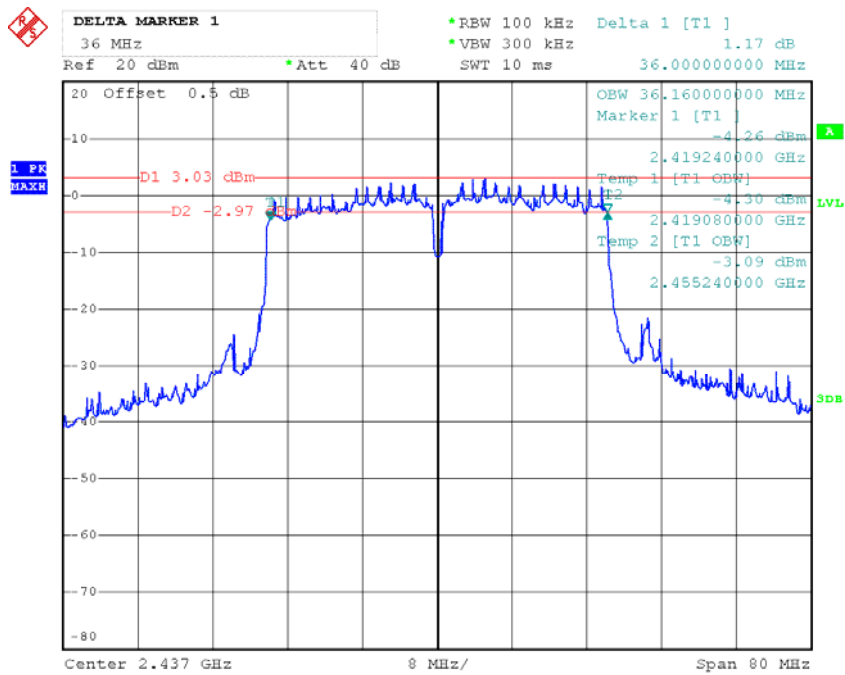
Date: 28.SEP.2015 18:00:18

**802.11n ht40 Channel: 2427MHz**



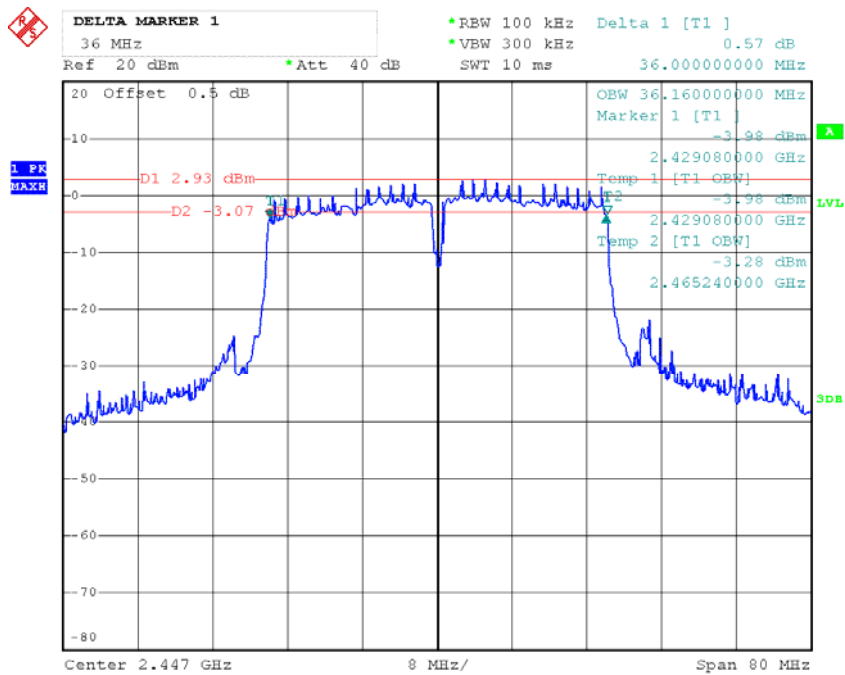
Date: 14.OCT.2015 21:46:06

**802.11n ht40 Channel: 2437MHz**



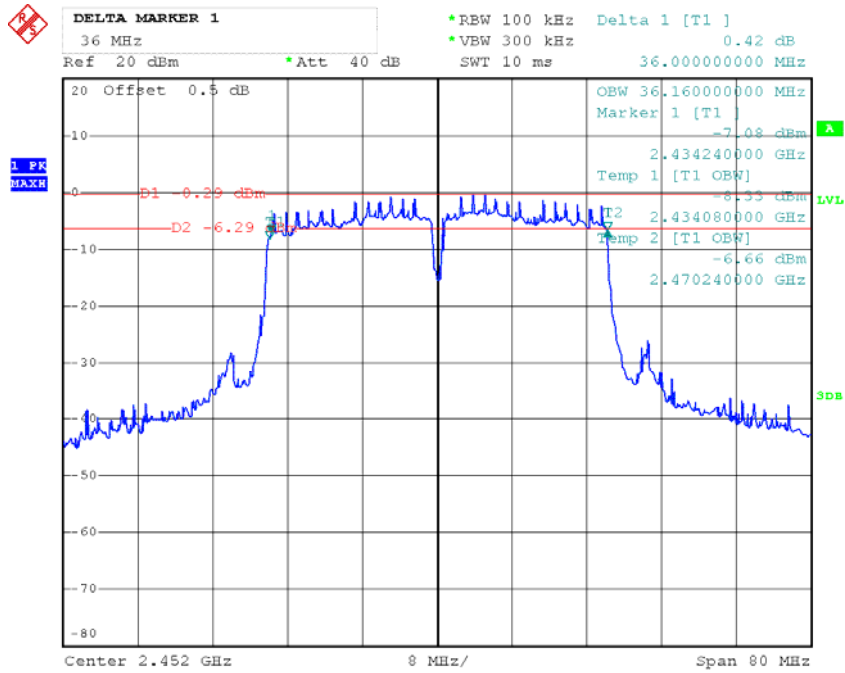
Date: 14.OCT.2015 22:20:04

**802.11n ht40 Channel: 2447MHz**



Date: 14.OCT.2015 22:14:55

802.11n ht40 Channel: 2452MHz



Date: 28.SEP.2015 17:49:34

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

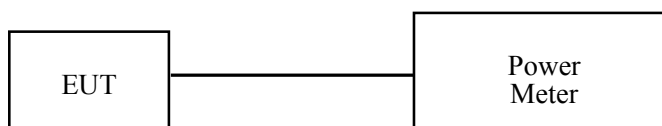
### Applicable Standard

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	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

<b>Temperature:</b>	27.3 °C
<b>Relative Humidity:</b>	48 %
<b>ATM Pressure:</b>	100 kPa

\* The testing was performed by Lion Xiao on 2015-09-29.

Test Mode: Transmitting



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

Test mode	Frequency	Max Peak Conducted Output Power (dBm)		Max Conducted Average Output Power (dBm)		Limit
	(MHz)	Chain H	Chain V	Chain H	Chain V	(dBm)
802.11b	2412	22.22	22.25	17.45	17.47	28
	2437	22.14	22.19	17.33	17.41	28
	2462	22.17	19.21	17.38	17.42	28
802.11g	2412	22.85	22.91	15.08	15.14	28
	2417	25.07	25.14	17.32	17.35	28
	2437	25.19	25.20	17.36	17.39	28
	2457	25.22	25.13	17.41	17.34	28
	2462	22.92	22.95	15.15	15.19	28
802.11n20	2412	23.09	23.18	15.12	15.26	28
	2417	25.34	25.40	17.29	17.34	28
	2437	25.37	25.27	17.32	17.22	28
	2457	25.41	25.30	17.37	17.26	28
	2462	23.18	23.19	15.25	15.27	28
802.11n40	2422	22.30	22.14	13.01	12.86	28
	2427	25.61	25.63	16.40	16.43	28
	2437	25.54	25.58	16.35	16.38	28
	2447	25.48	25.51	16.29	16.32	28
	2452	22.11	22.23	12.84	12.95	28

Note: 1. Directional = 10 dBi > 6dBi, so the limit shall be reduced to 30-2= 28 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	FSEM	DE31388	2015-05-09	2016-05-09

\* **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:	26.3~27.5°C
Relative Humidity:	49~56 %
ATM Pressure:	99.9~100.4 kPa

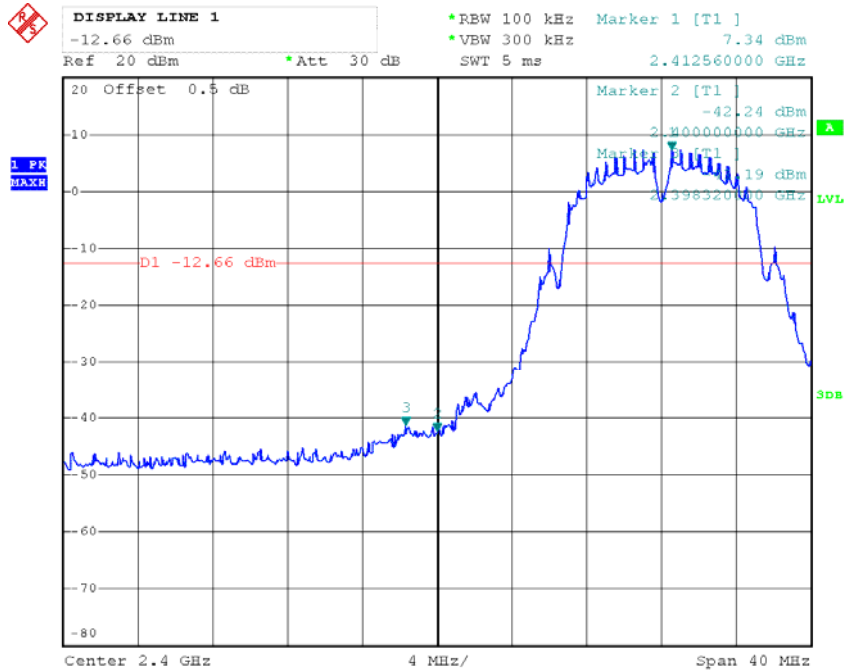
\* The testing was performed by Lion Xiao from 2015-09-28 to 2015-10-14.

Test mode: Transmitting

Test Result: Compliant. Please refer to following plots.

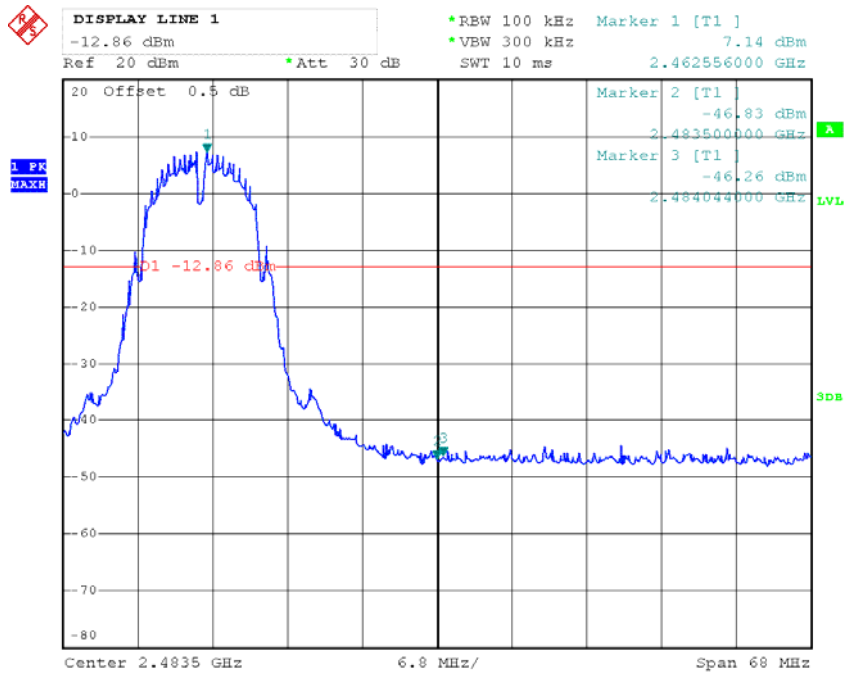
Chain H

802.11b: Band Edge, Left Side



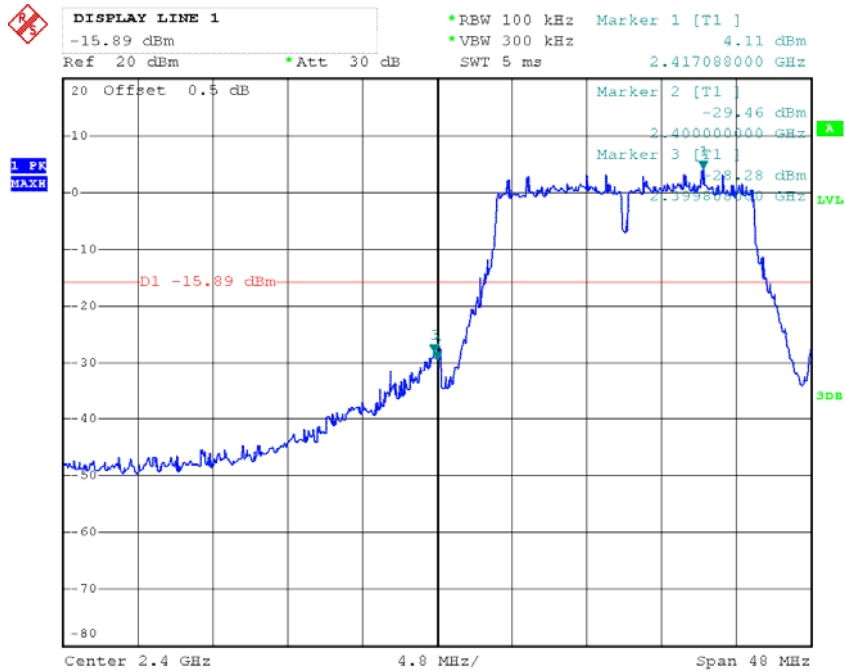
Date: 29.SEP.2015 15:51:59

802.11b: Band Edge, Right Side



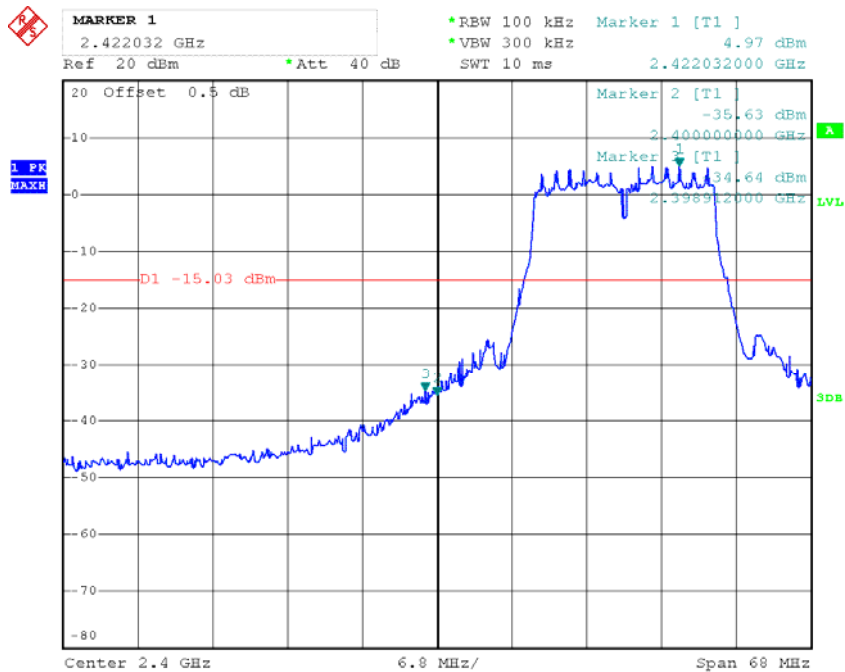
Date: 29.SEP.2015 16:06:41

**802.11g: Band Edge, Left Side(2412MHz)**



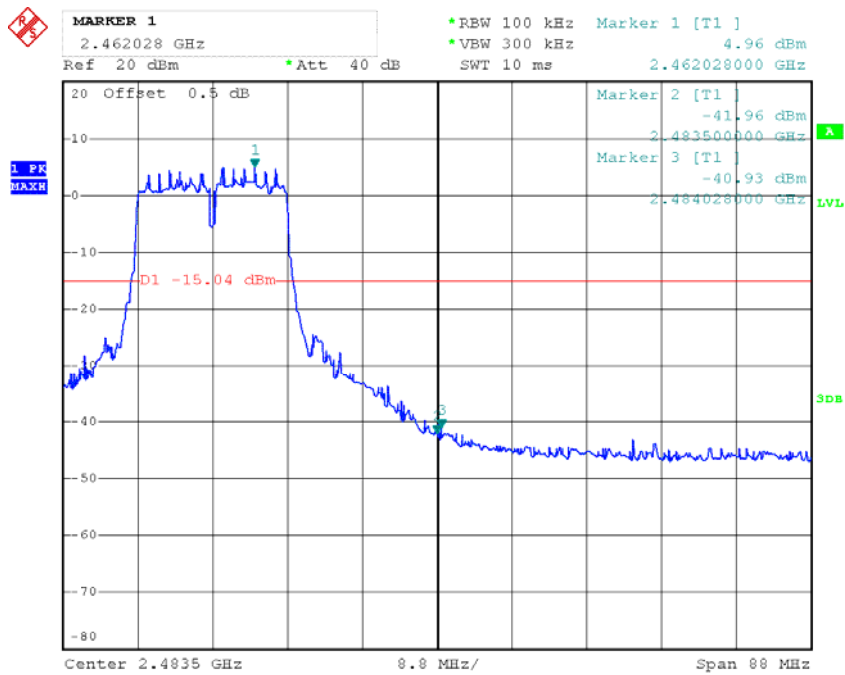
Date: 29.SEP.2015 16:20:17

**802.11g: Band Edge, Left Side(2417MHz)**



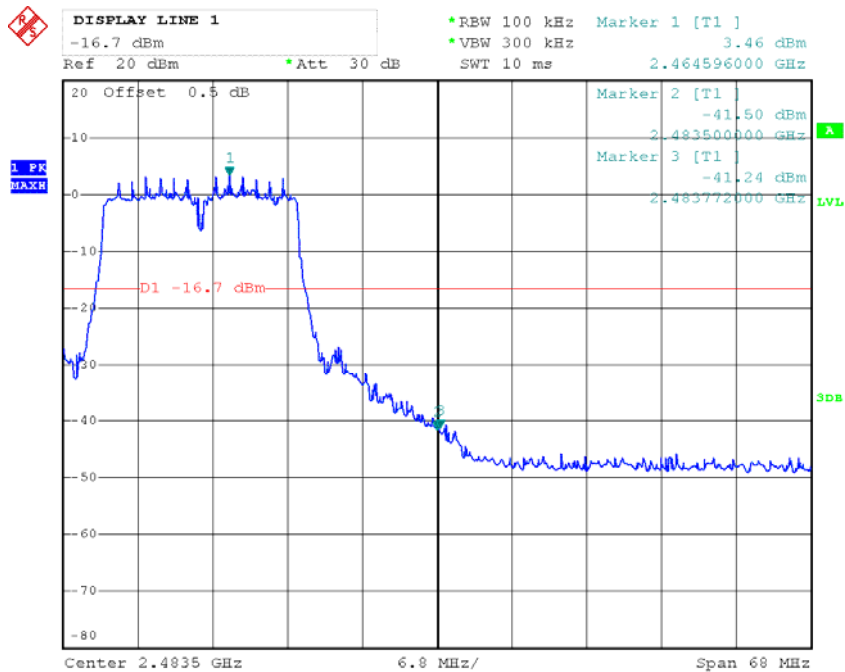
Date: 14.OCT.2015 19:39:01

**802.11g: Band Edge, Right Side (2457MHz)**



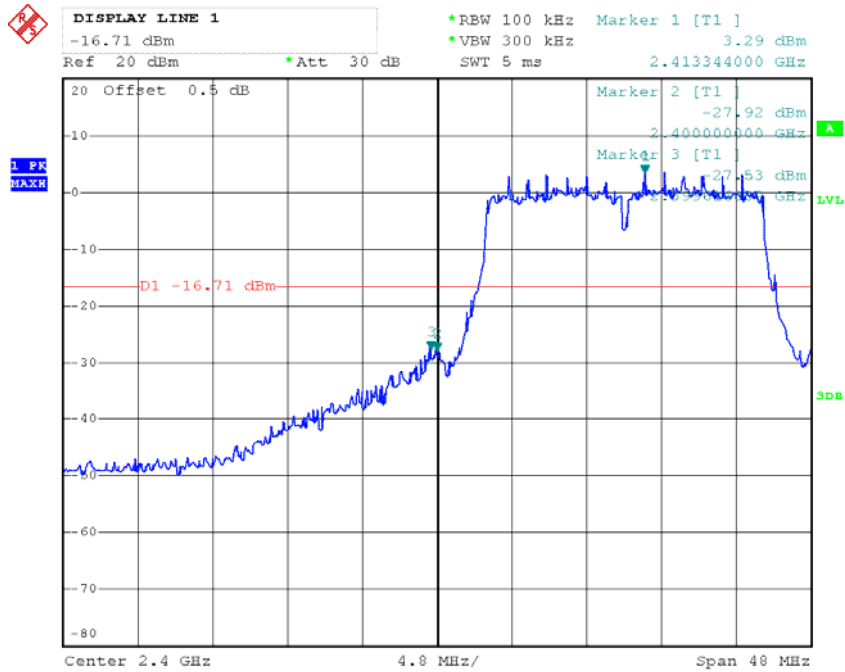
Date: 14.OCT.2015 21:25:37

**802.11g: Band Edge, Right Side(2462MHz)**



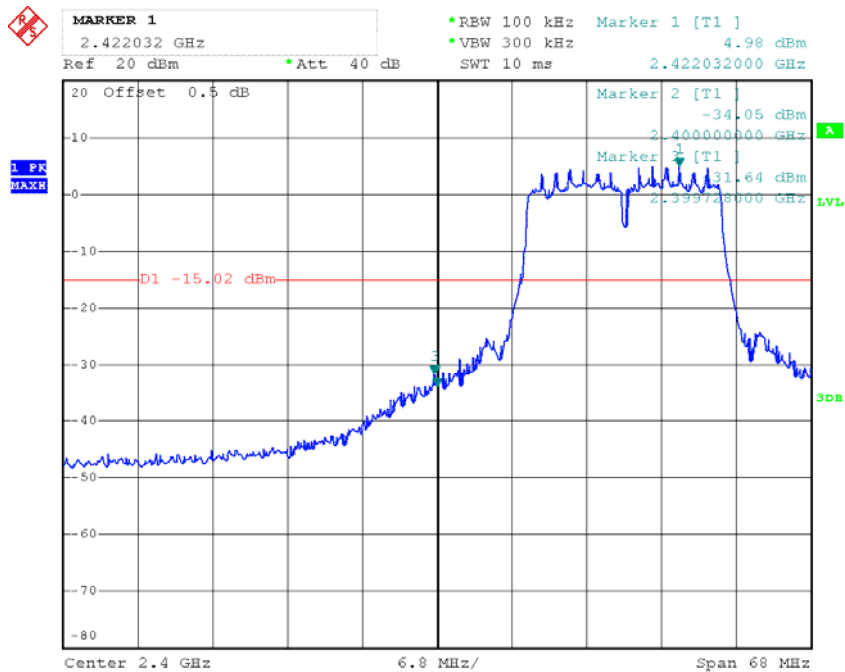
Date: 29.SEP.2015 16:35:42

### 802.11n ht20 Band Edge, Left Side(2412MHz)



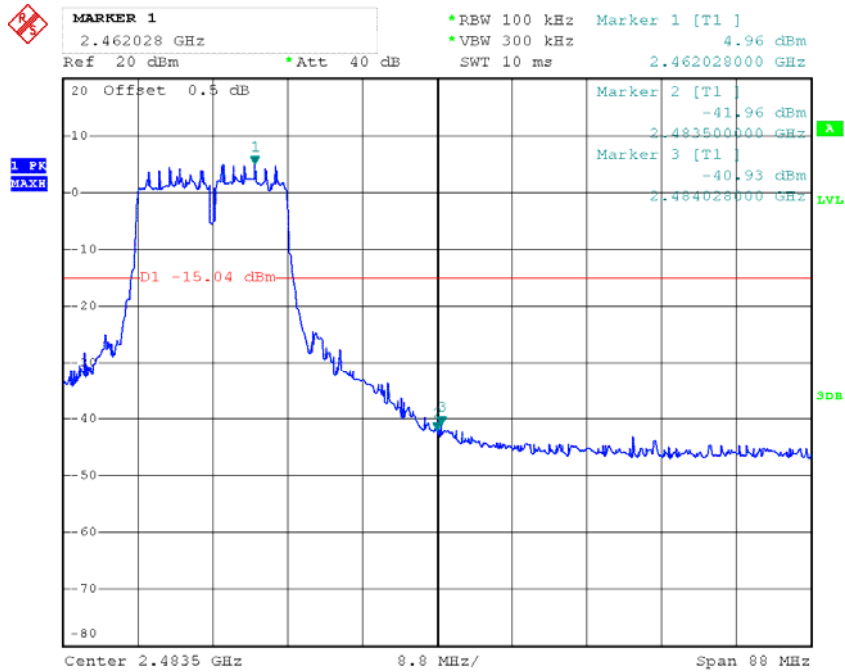
Date: 29.SEP.2015 16:27:22

### 802.11n ht20 Band Edge, Left Side(2417MHz)



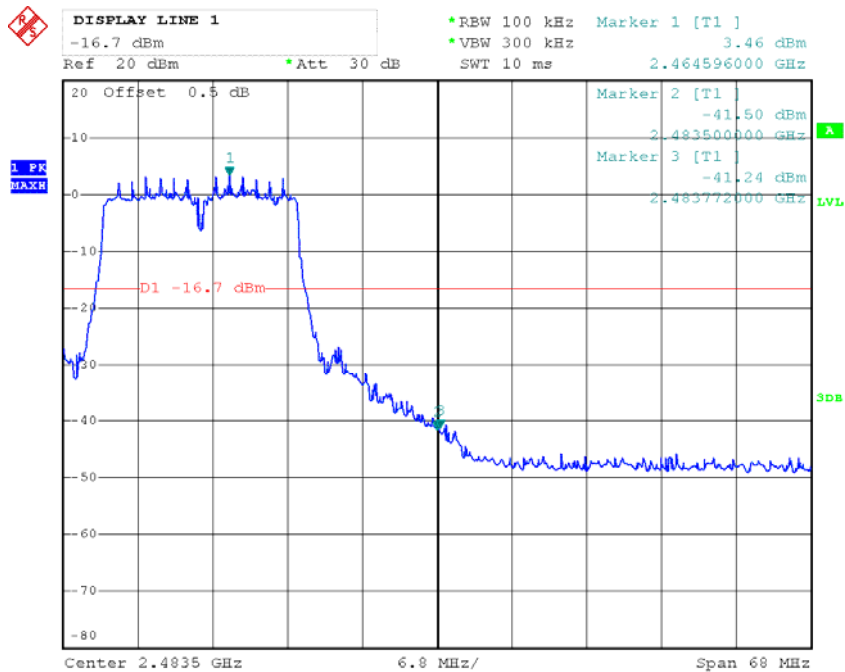
Date: 14.OCT.2015 21:31:56

**802.11n ht20 Band Edge, Right Side (2457MHz)**



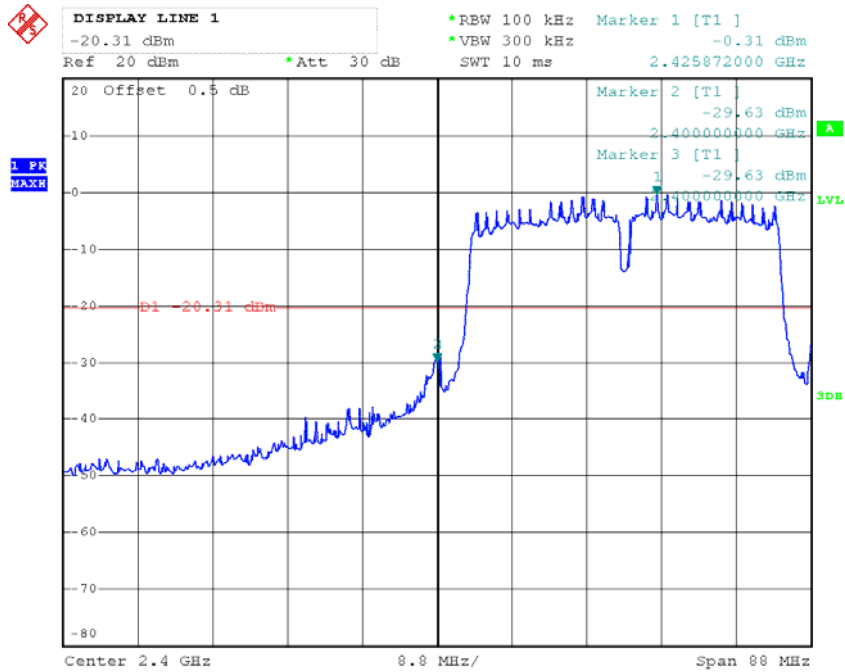
Date: 14.OCT.2015 21:25:37

**802.11n ht20 Band Edge, Right Side (2462MHz)**



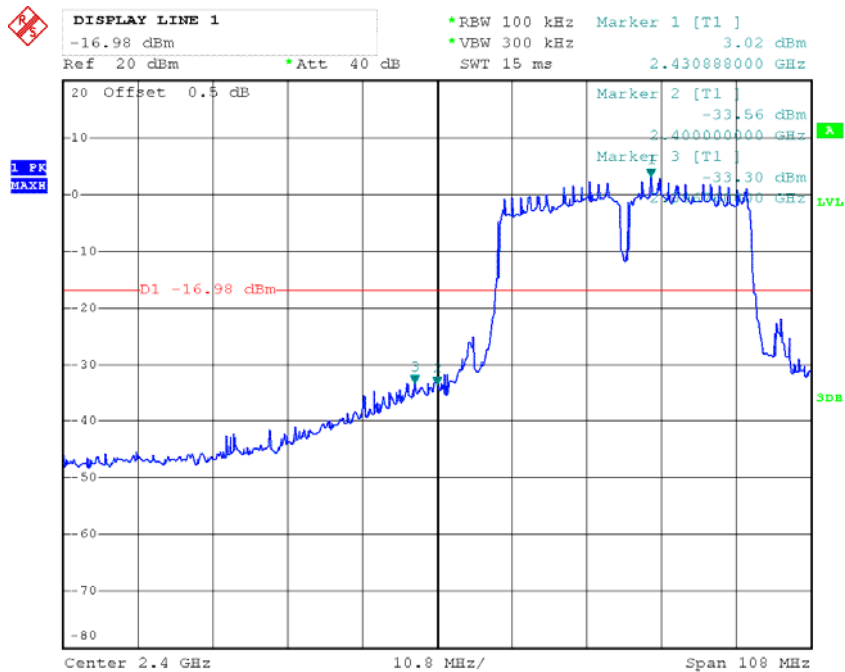
Date: 29.SEP.2015 16:35:42

### 802.11n ht40 Band Edge, Left Side(2422MHz)



Date: 29.SEP.2015 16:42:02

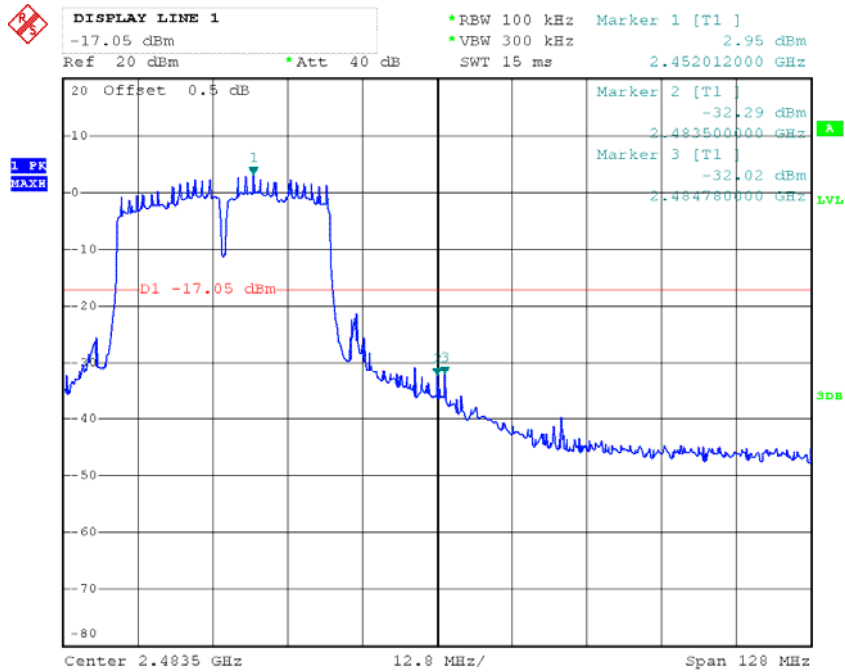
### 802.11n ht40 Band Edge, Left Side(2427MHz)



Date: 14.OCT.2015 21:51:46

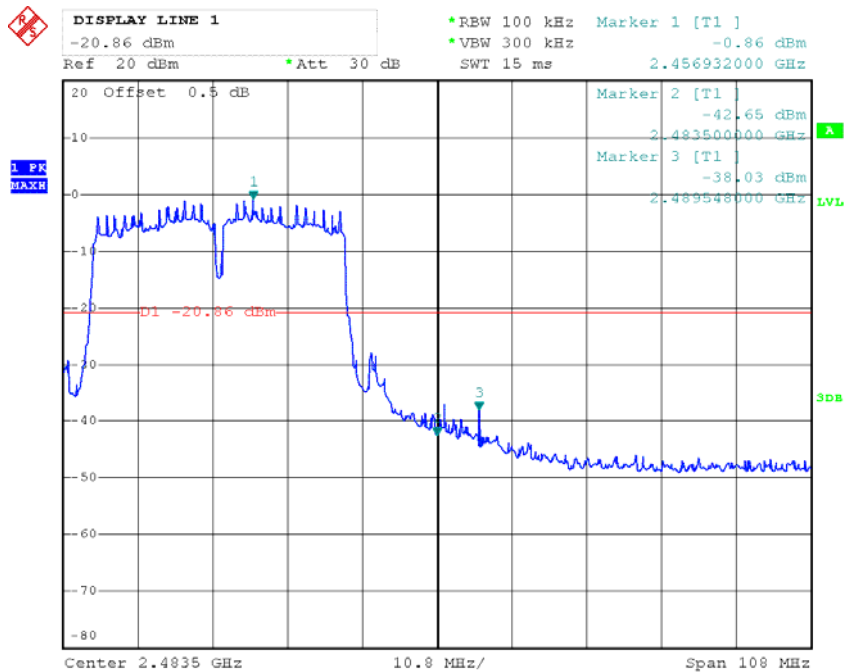


**802.11n ht40 Band Edge, Right Side (2447MHz)**



Date: 14.OCT.2015 22:28:20

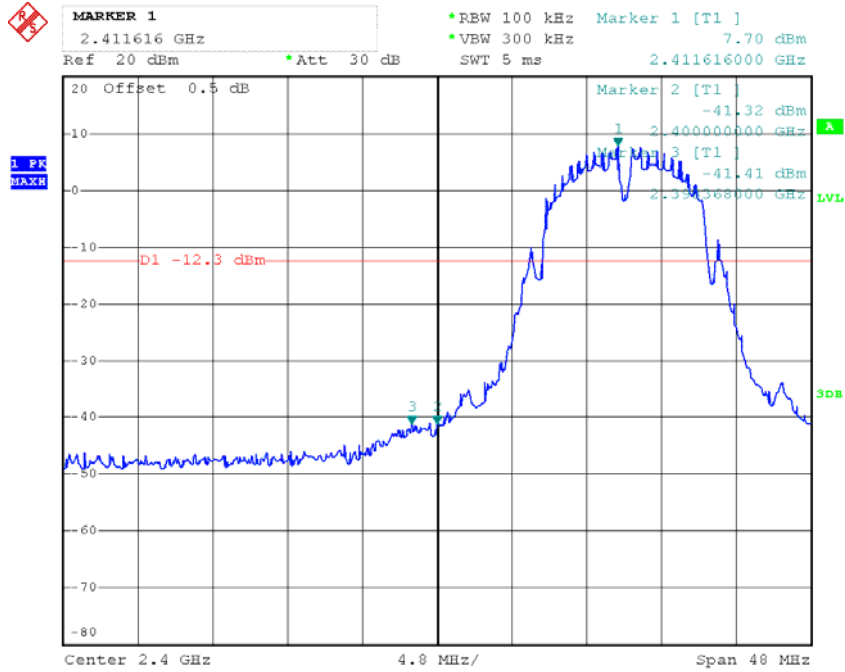
**802.11n ht40 Band Edge, Right Side (2452MHz)**



Date: 29.SEP.2015 16:55:46

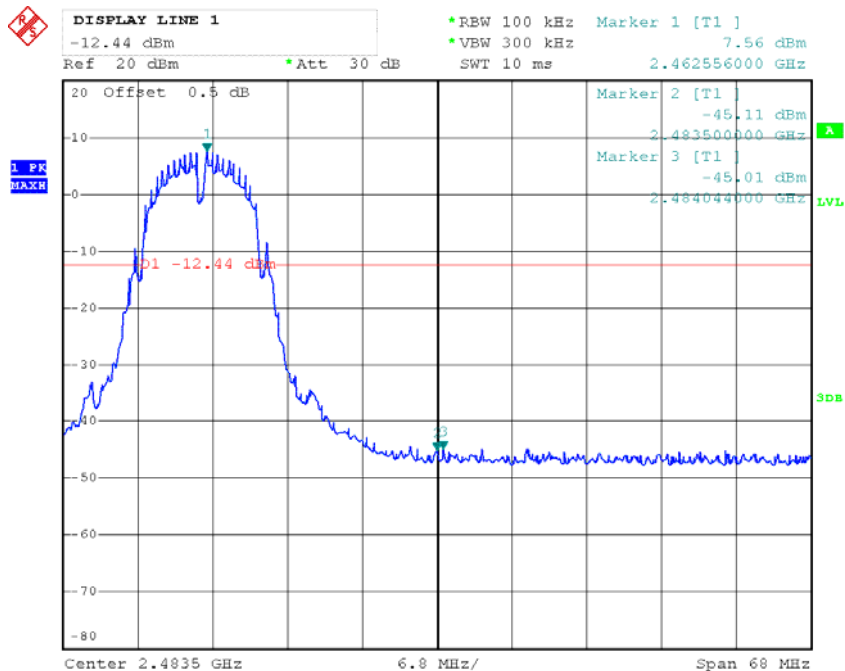
Chain V

802.11b: Band Edge, Left Side



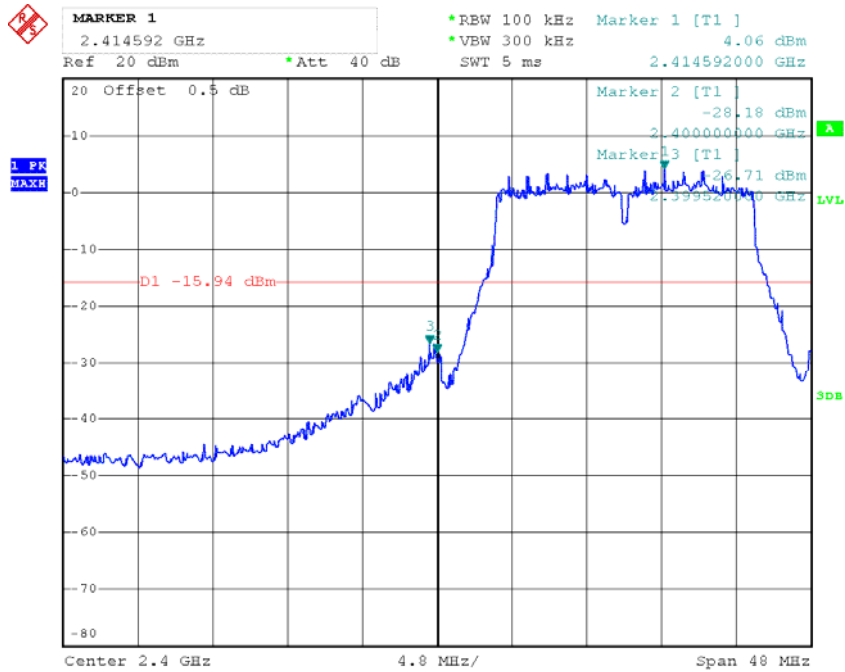
Date: 28.SEP.2015 16:34:45

802.11b: Band Edge, Right Side



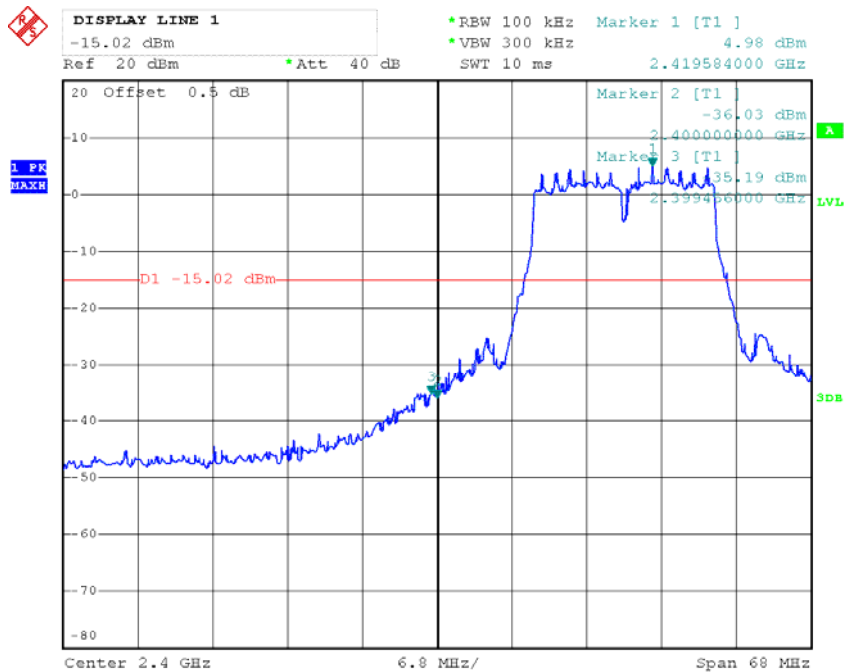
Date: 28.SEP.2015 16:46:05

### 802.11g: Band Edge, Left Side(2412MHz)



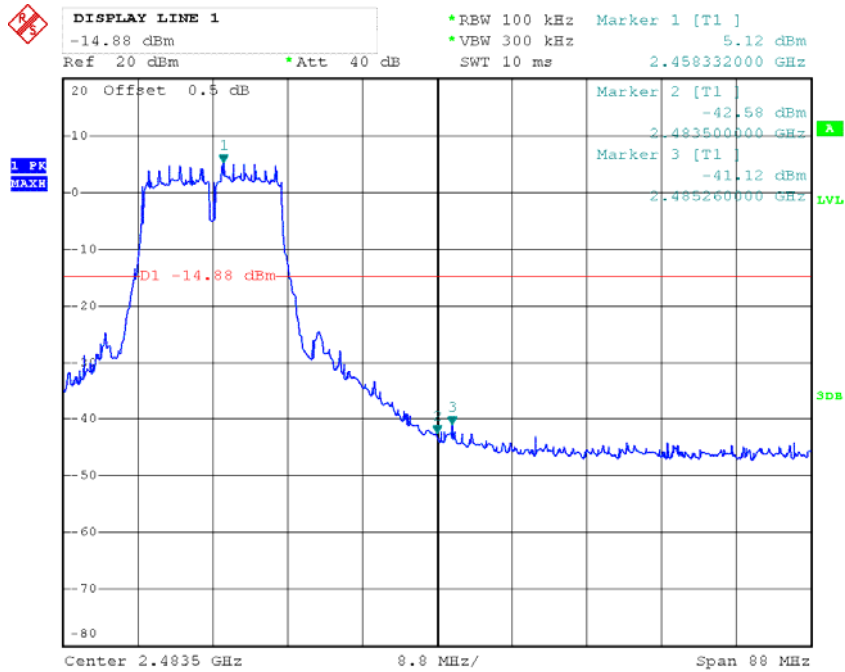
Date: 28.SEP.2015 17:09:04

### 802.11g: Band Edge, Left Side(2417MHz)



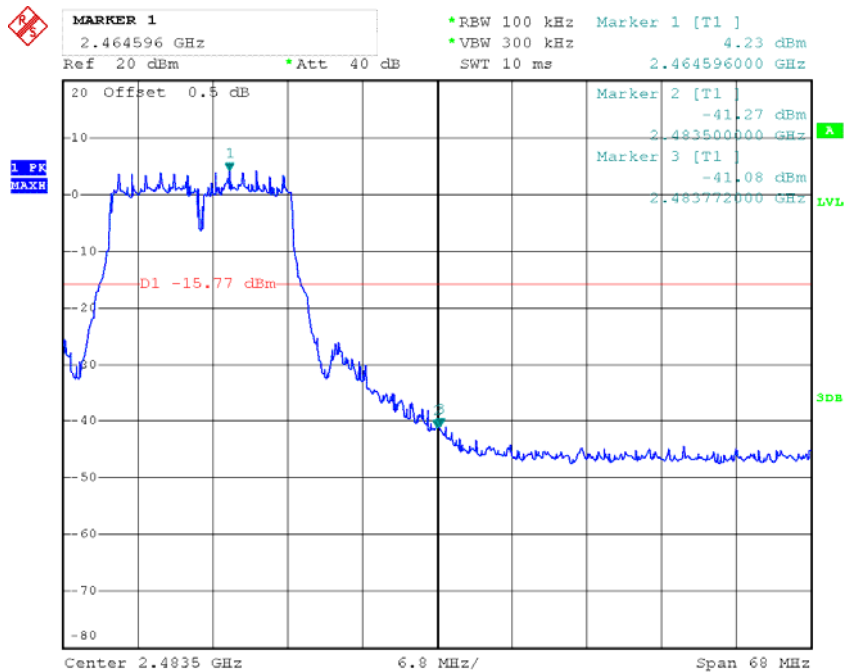
Date: 14.OCT.2015 19:42:37

**802.11g: Band Edge, Right Side (2457MHz)**



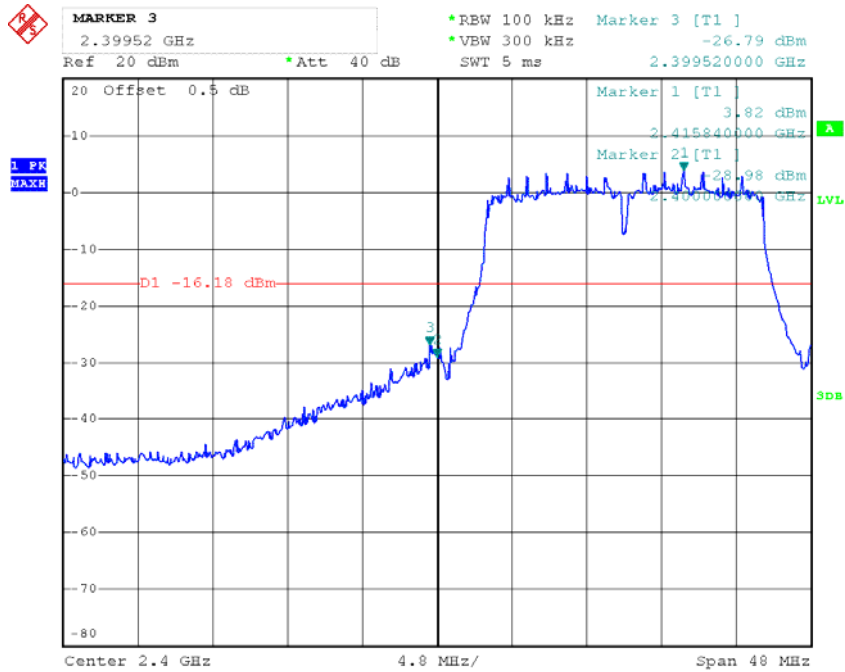
Date: 14.OCT.2015 20:04:00

**802.11g: Band Edge, Right Side(2462MHz)**



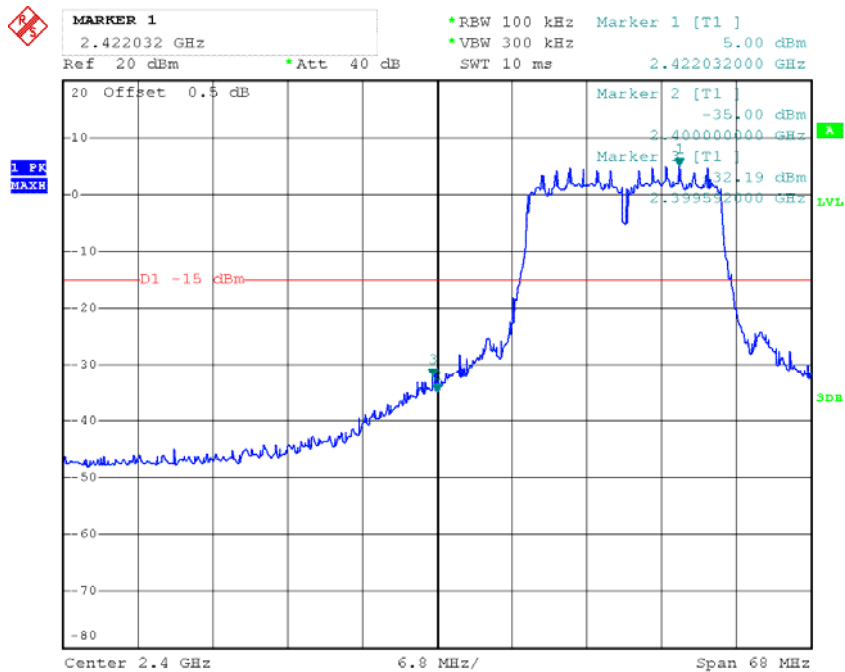
Date: 28.SEP.2015 16:56:26

**802.11n ht20 Band Edge, Left Side(2412MHz)**



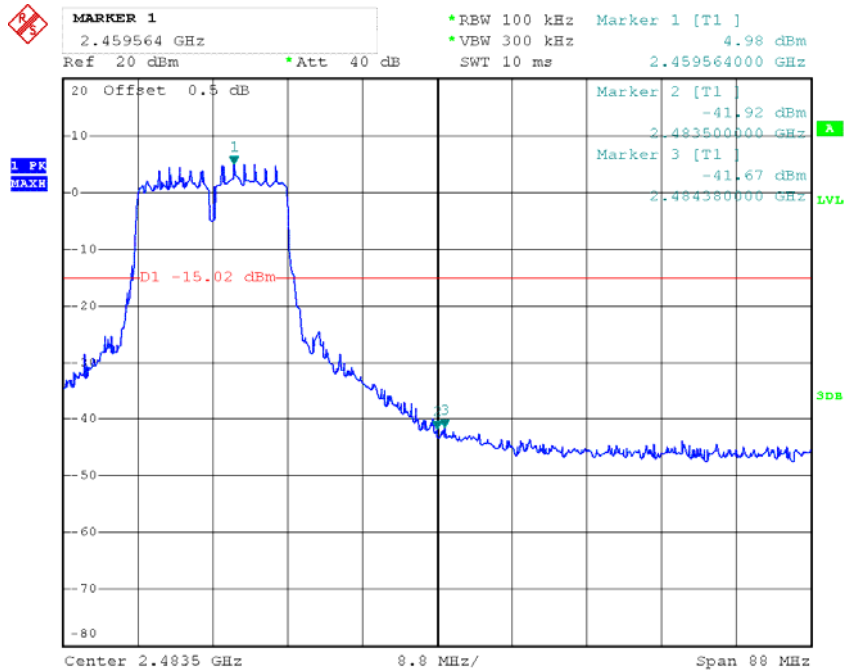
Date: 28.SEP.2015 17:34:12

**802.11n ht20 Band Edge, Left Side(2417MHz)**



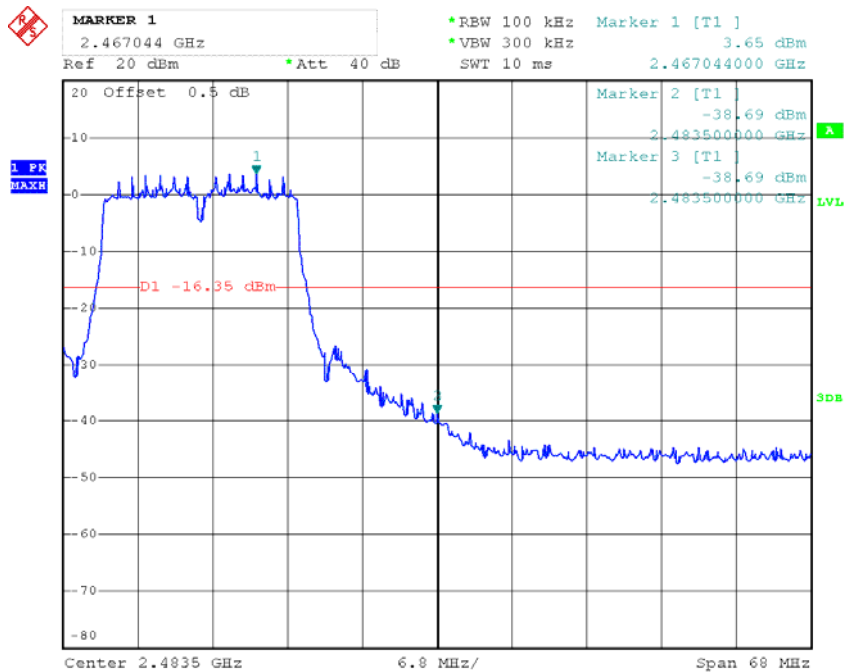
Date: 14.OCT.2015 21:37:09

**802.11n ht20 Band Edge, Right Side (2457MHz)**



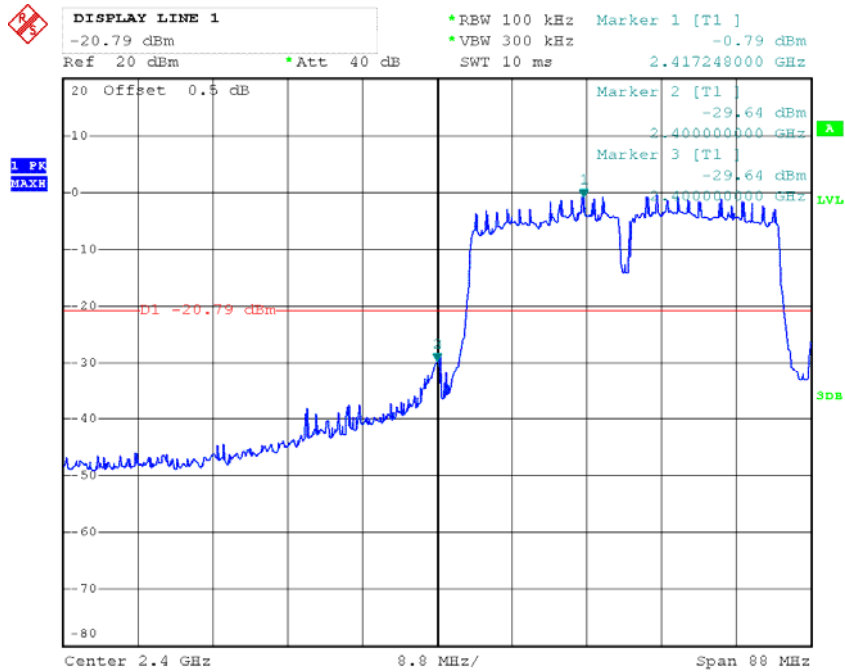
Date: 14.OCT.2015 21:30:41

**802.11n ht20 Band Edge, Right Side (2462MHz)**



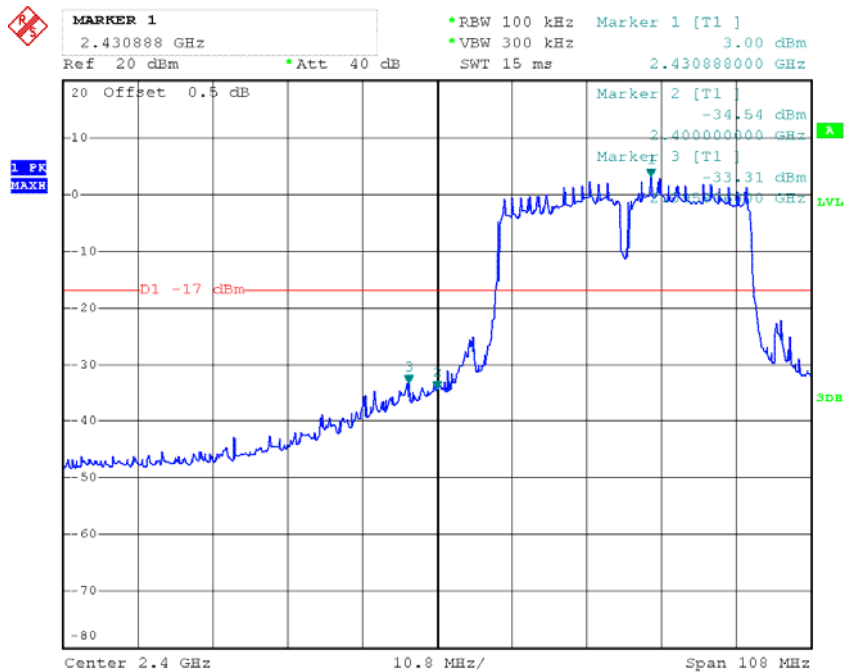
Date: 28.SEP.2015 17:40:53

**802.11n ht40 Band Edge, Left Side(2422MHz)**



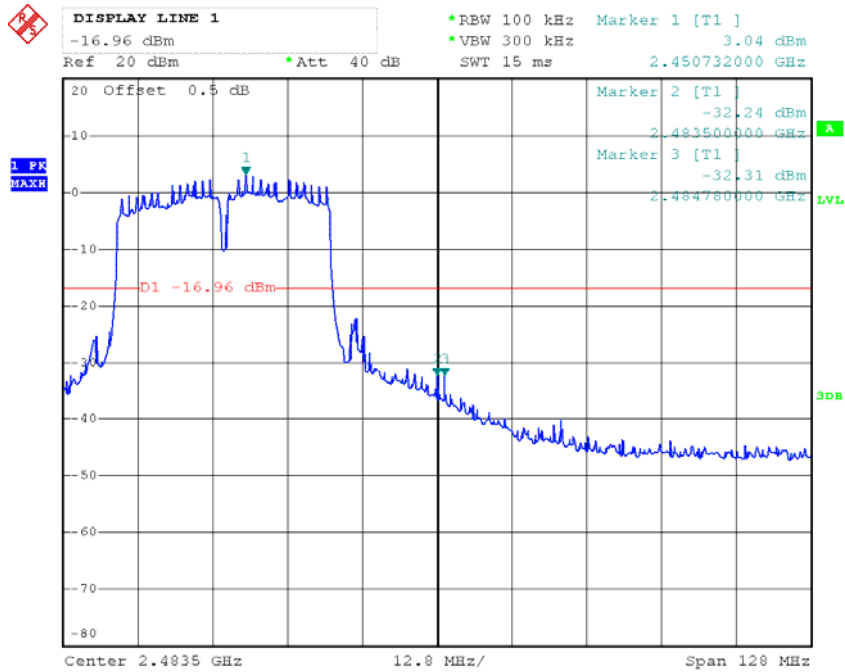
Date: 28.SEP.2015 18:01:19

**802.11n ht40 Band Edge, Left Side(2427MHz)**



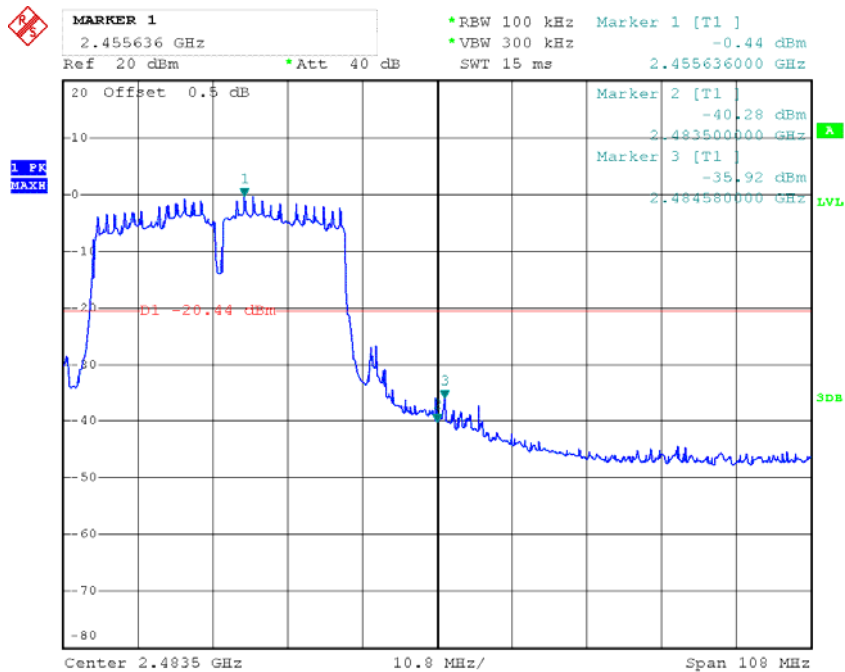
Date: 14.OCT.2015 21:55:20

### 802.11n ht40 Band Edge, Right Side (2447MHz)



Date: 14.OCT.2015 22:33:52

### 802.11n ht40 Band Edge, Right Side (2452MHz)



Date: 28.SEP.2015 17:50:24



## 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:  $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$ .
- d) Set the VBW  $\geq 3 \times \text{RBW}$ .
- e) Detector = peak.
- f) Sweep time = auto couple.
- g) Trace mode = max hold.
- h) Allow trace to fully stabilize.
- i) Use the peak marker function to determine the maximum amplitude level within the RBW.
- j) If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

### Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSEM	DE31388	2015-05-09	2016-05-09

\* **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

<b>Temperature:</b>	26.8~27.3 °C
<b>Relative Humidity:</b>	50~56%
<b>ATM Pressure:</b>	99.9~100.4 kPa

\* The testing was performed by Lion Xiao from 2015-09-28 to 2015-10-14.

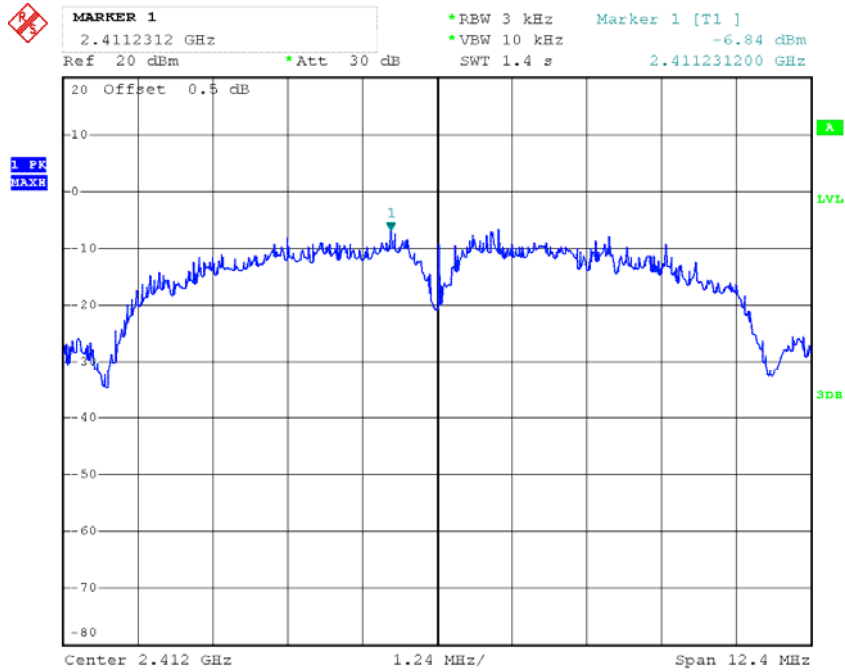
Test Mode: Transmitting

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

Test mode	Frequency (MHz)	PSD (dBm/3kHz)		Limit (dBm/3kHz)
		Chain H	Chain V	
802.11b	2412	-6.84	-6.83	6
	2437	-6.92	-6.87	6
	2462	-6.91	-6.85	6
802.11g	2412	-10.04	-9.98	6
	2417	-9.47	-9.44	6
	2437	-9.41	-9.40	6
	2457	-9.38	-9.44	6
	2462	-9.98	-9.96	6
802.11n20	2412	-10.40	-10.32	6
	2417	-9.62	-9.60	6
	2437	-9.61	-9.69	6
	2457	-9.60	-9.68	6
	2462	-10.32	-10.32	6
802.11n40	2422	-15.45	-15.54	6
	2427	-12.62	-12.59	6
	2437	-12.64	-12.62	6
	2447	-12.70	-12.67	6
	2452	-15.57	-15.51	6

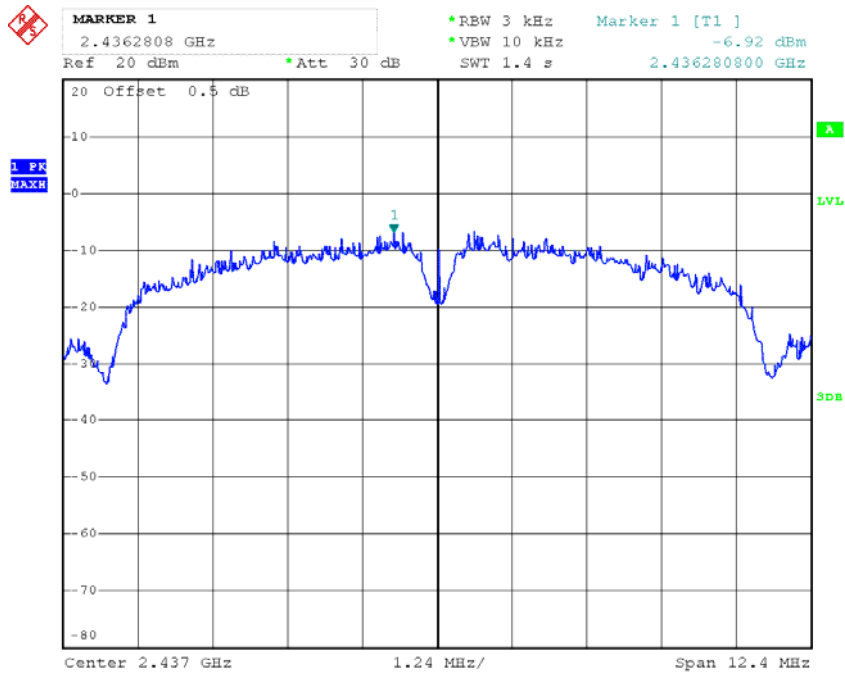
Note: 1. Directional = 10 dBi > 6dBi, so the limit shall be reduced to 8-2= 6dBm  
 2. Duty cycle is 100%.

### Chain H Power Spectral Density, 802.11b 2412 MHz



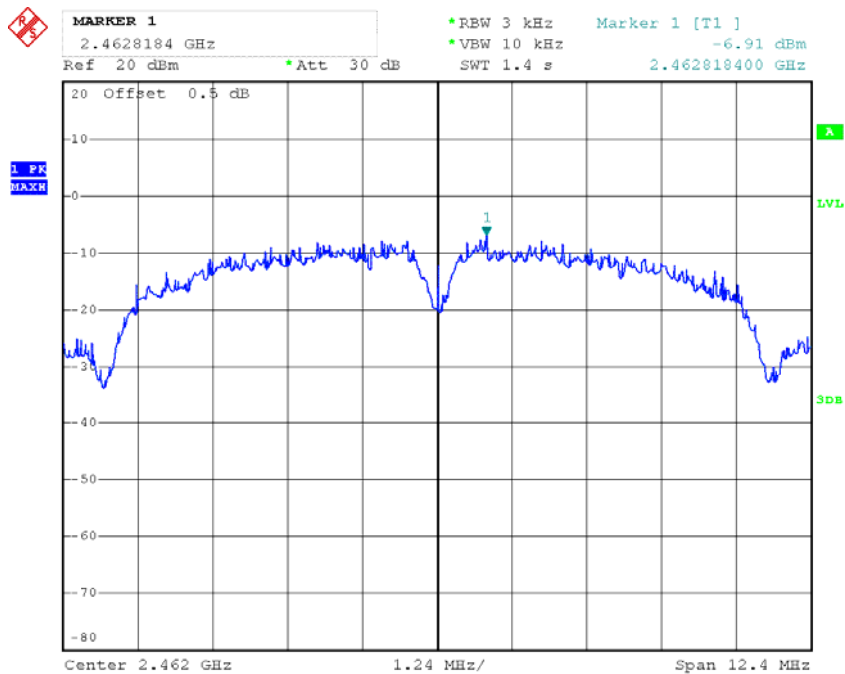
Date: 29.SEP.2015 15:55:23

### Power Spectral Density, 802.11b 2437 MHz



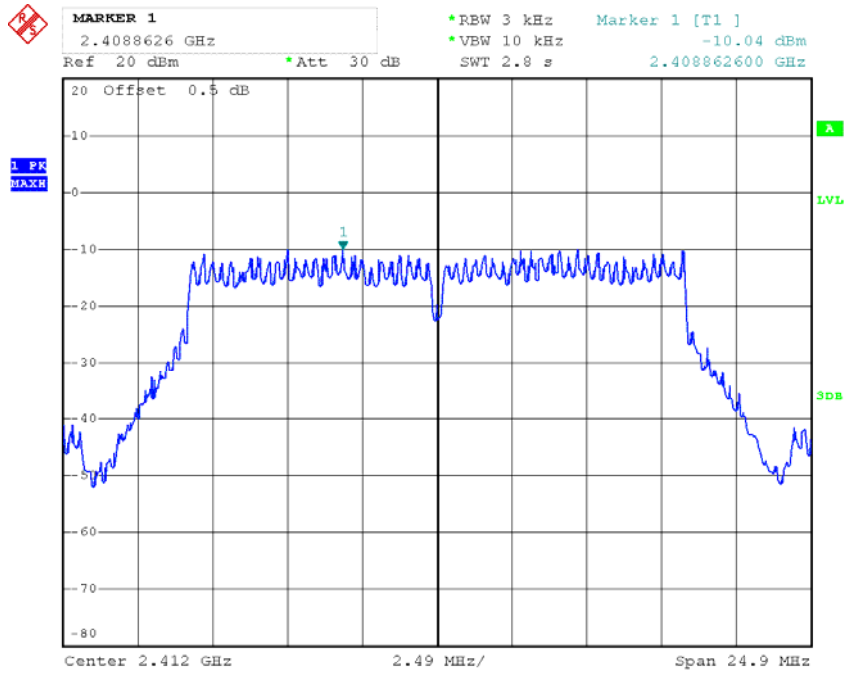
Date: 29.SEP.2015 15:56:10

### Power Spectral Density, 802.11b 2462 MHz



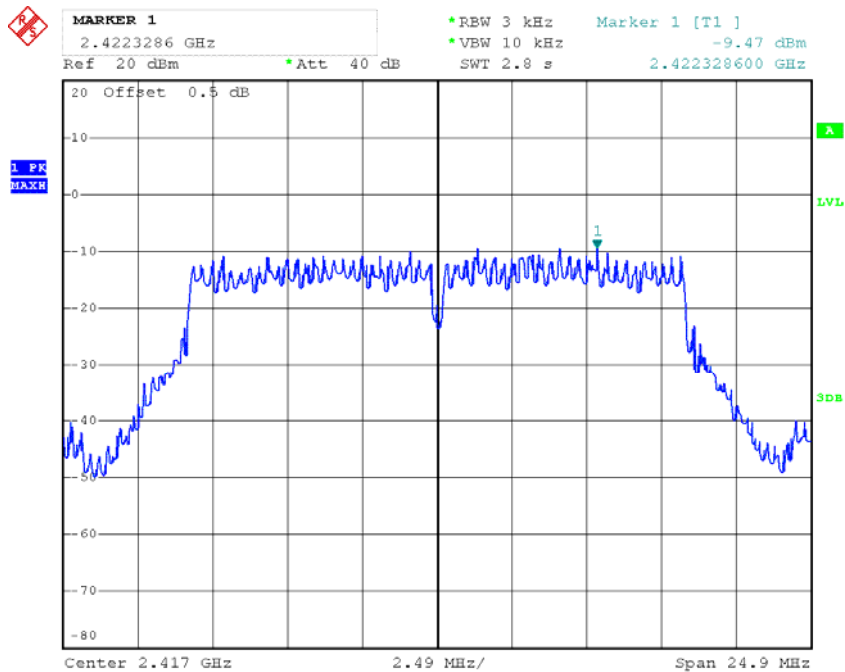
Date: 29.SEP.2015 16:01:58

### Power Spectral Density, 802.11g 2412 MHz



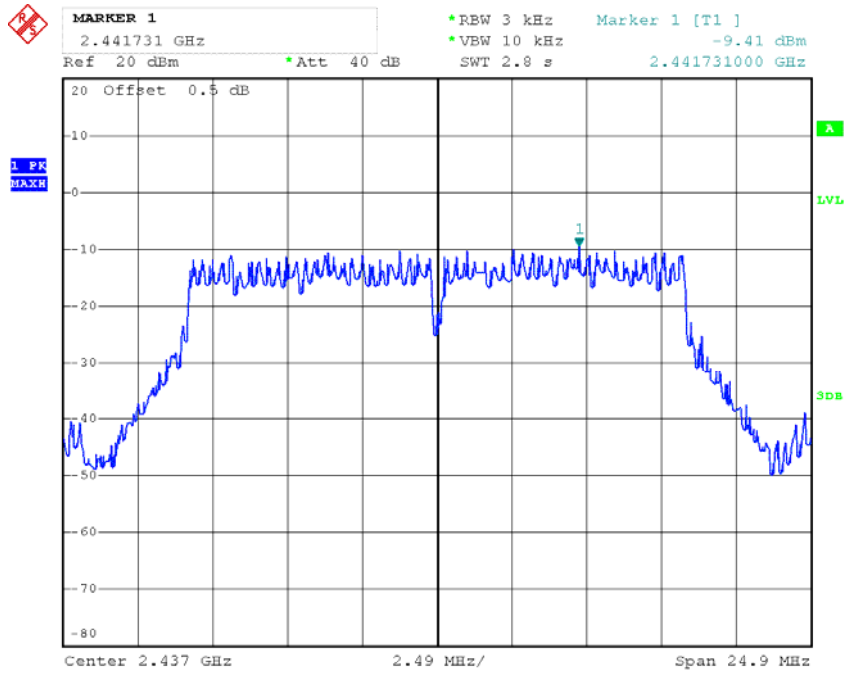
Date: 29.SEP.2015 16:21:41

### Power Spectral Density, 802.11g 2417 MHz



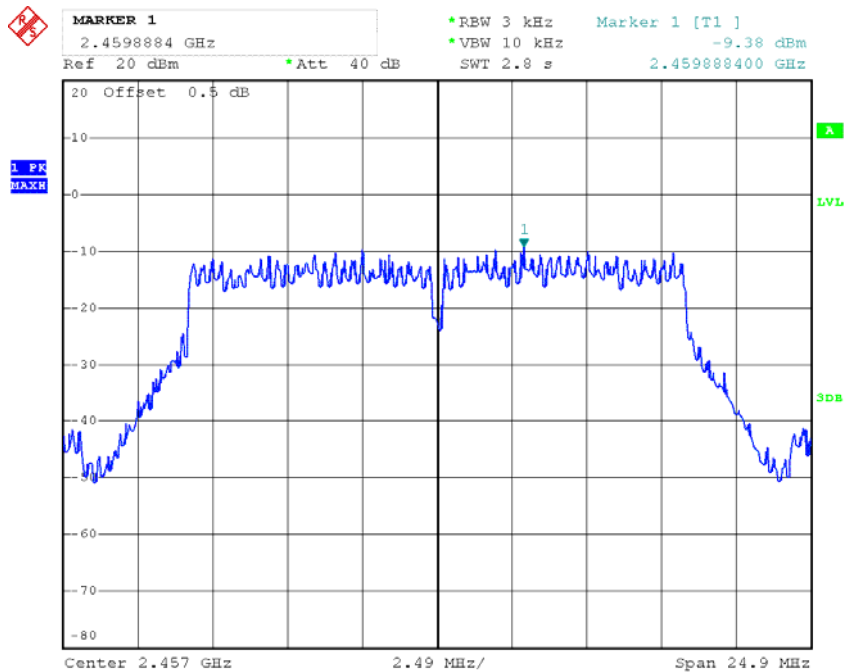
Date: 14.OCT.2015 19:43:28

### Power Spectral Density, 802.11g 2437 MHz



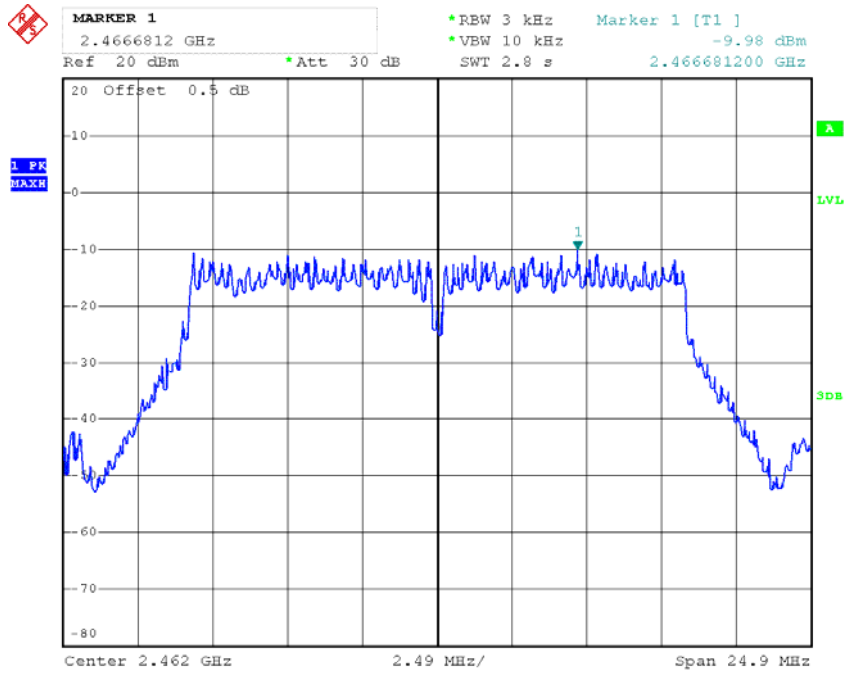
Date: 14.OCT.2015 19:46:53

### Power Spectral Density, 802.11g 2457MHz



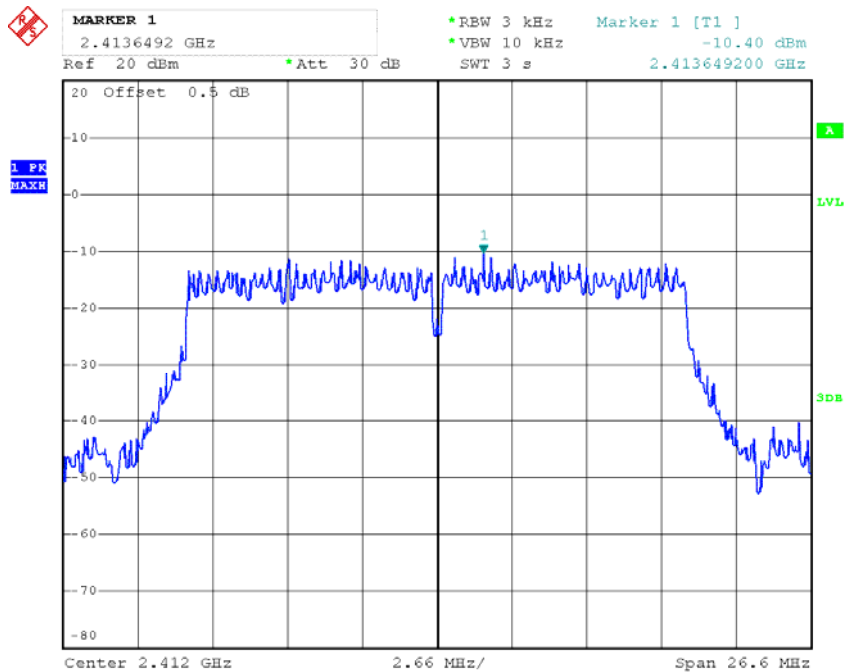
Date: 14.OCT.2015 19:49:16

### Power Spectral Density, 802.11g 2462 MHz



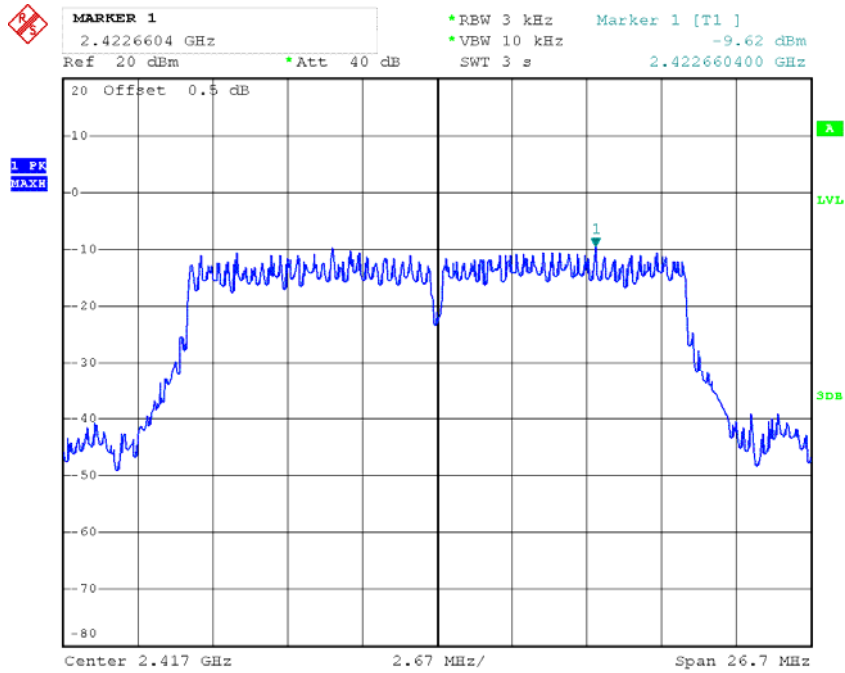
Date: 29.SEP.2015 16:08:41

### Power Spectral Density, 802.11n ht20 2412 MHz



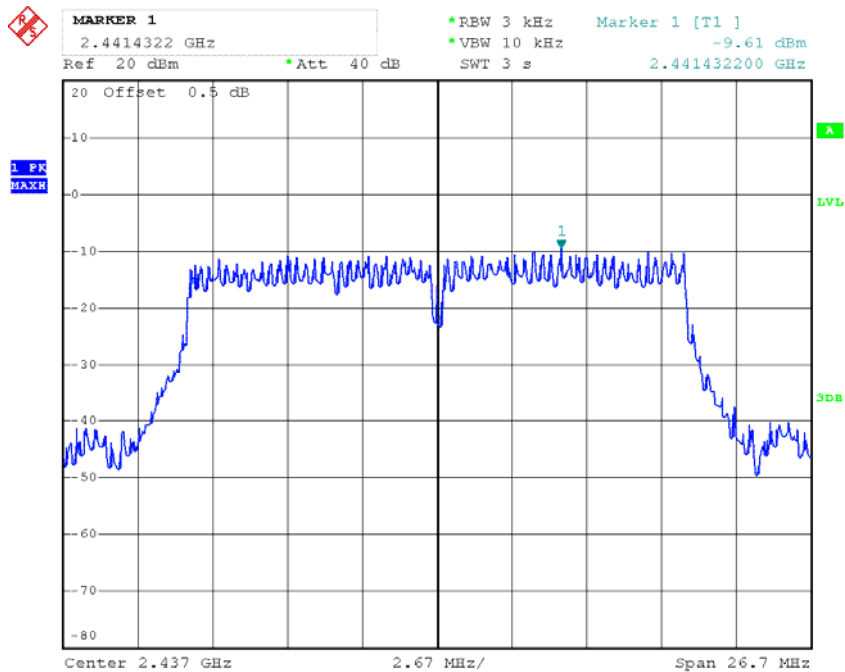
Date: 29.SEP.2015 16:29:29

### Power Spectral Density, 802.11n ht20 2417MHz



Date: 14.OCT.2015 21:05:47

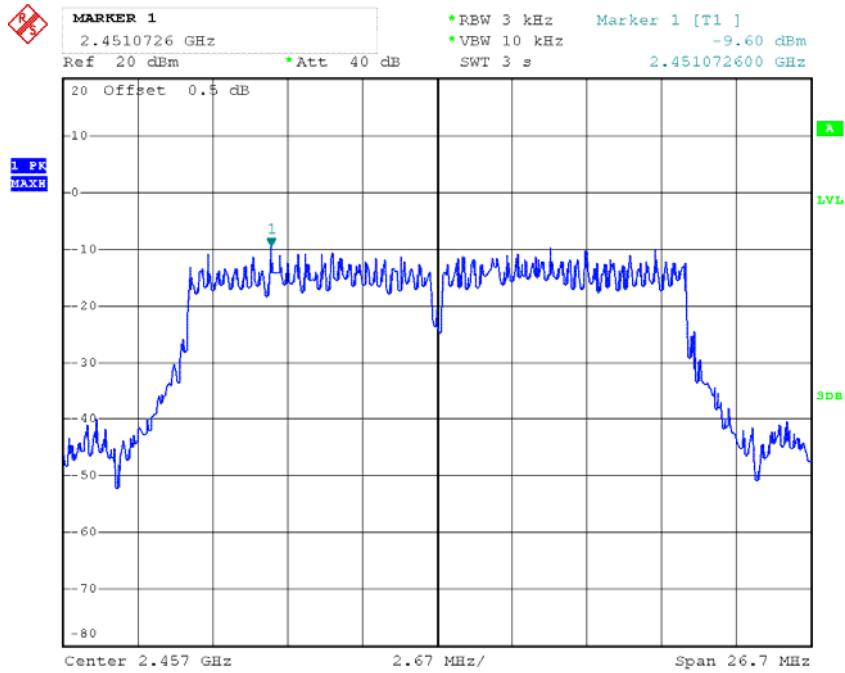
### Power Spectral Density, 802.11n ht20 2437 MHz



Date: 14.OCT.2015 20:29:00

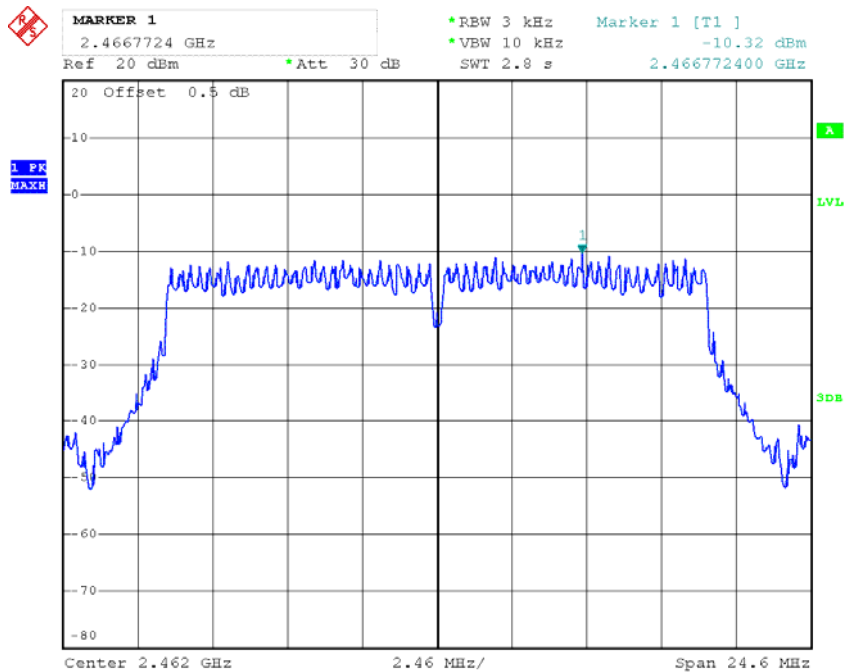


### Power Spectral Density, 802.11n ht20 2457MHz



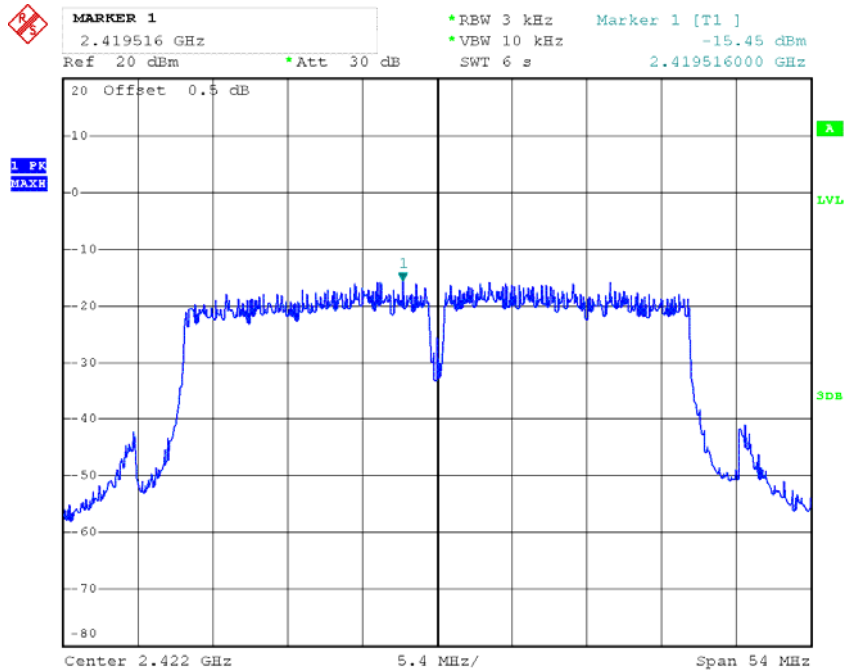
Date: 14.OCT.2015 21:11:32

### Power Spectral Density, 802.11n ht20 2462 MHz



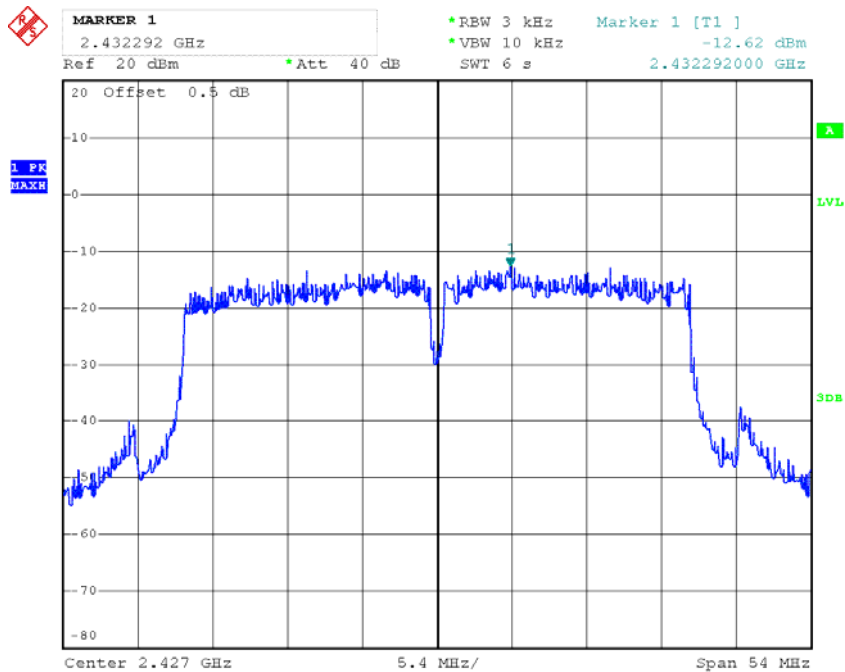
Date: 29.SEP.2015 16:36:59

### Power Spectral Density, 802.11n ht40 2422MHz



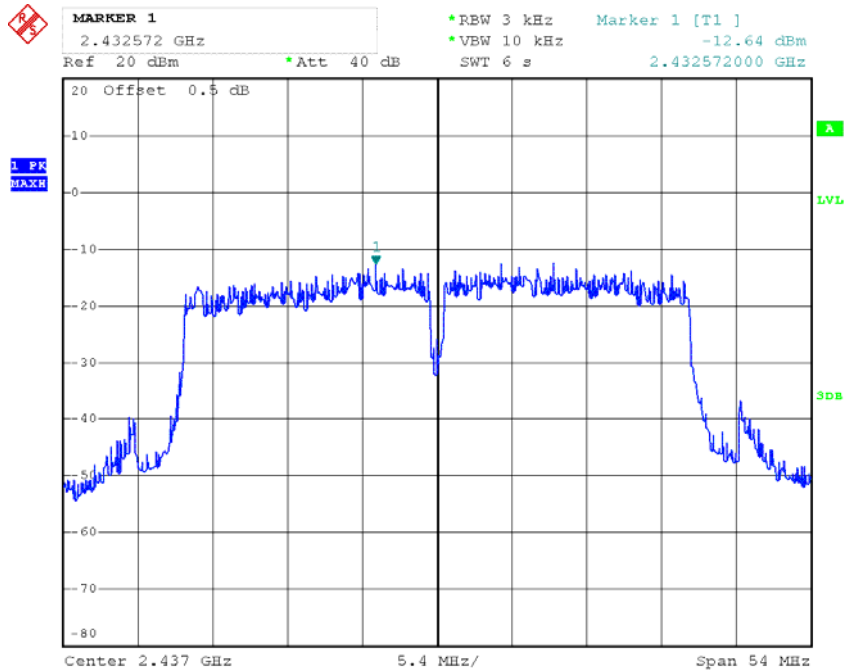
Date: 29.SEP.2015 16:50:36

### Power Spectral Density, 802.11n ht40 2427MHz



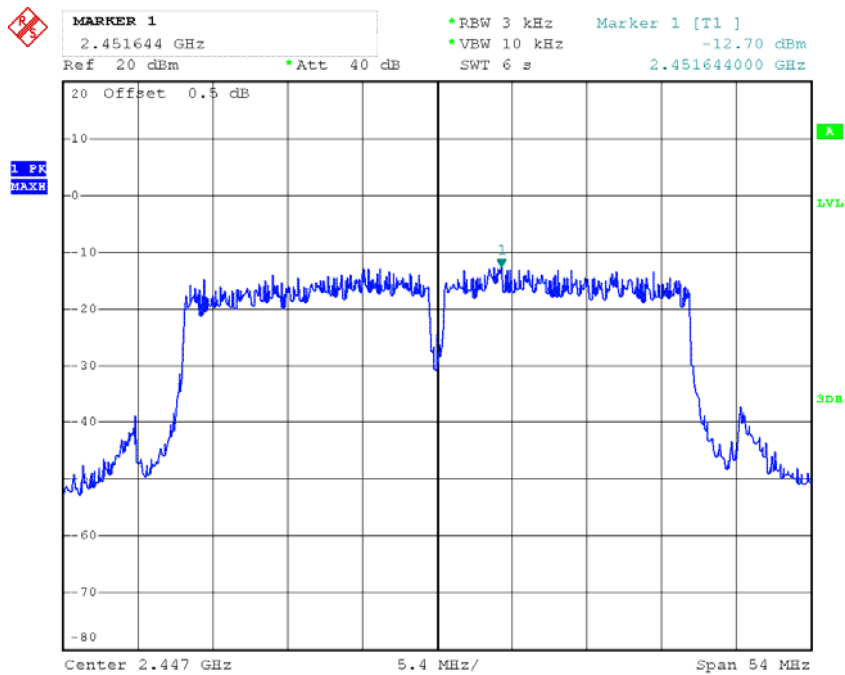
Date: 14.OCT.2015 22:00:17

### Power Spectral Density, 802.11n ht40 2437MHz



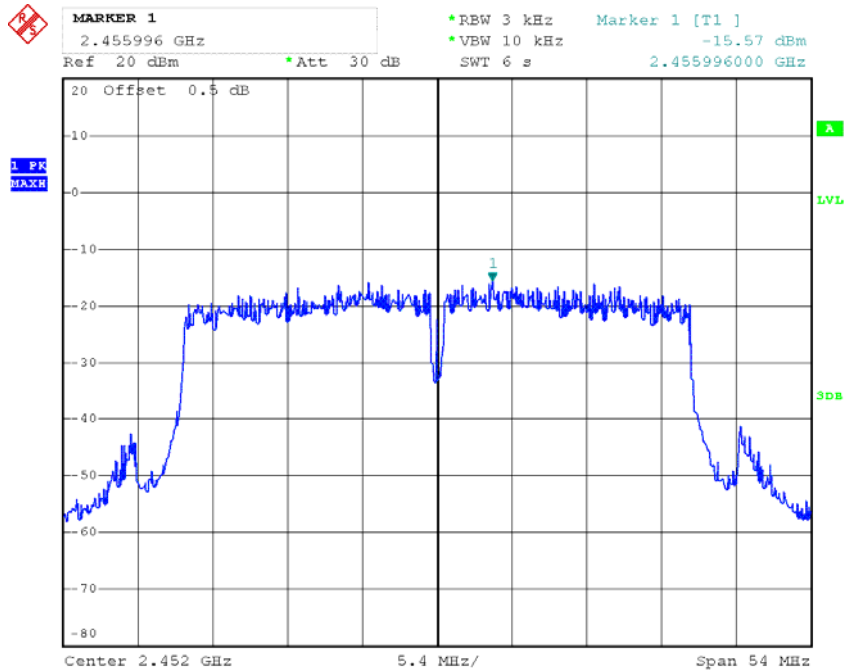
Date: 14.OCT.2015 22:03:56

### Power Spectral Density, 802.11n ht40 2447MHz



Date: 14.OCT.2015 22:11:13

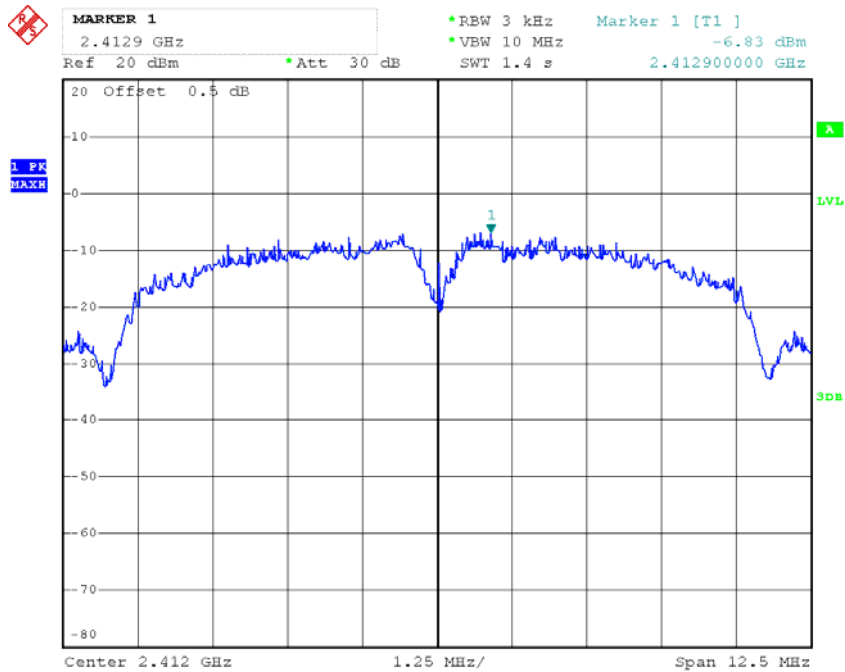
### Power Spectral Density, 802.11n ht40 2452MHz



Date: 29.SEP.2015 16:56:23

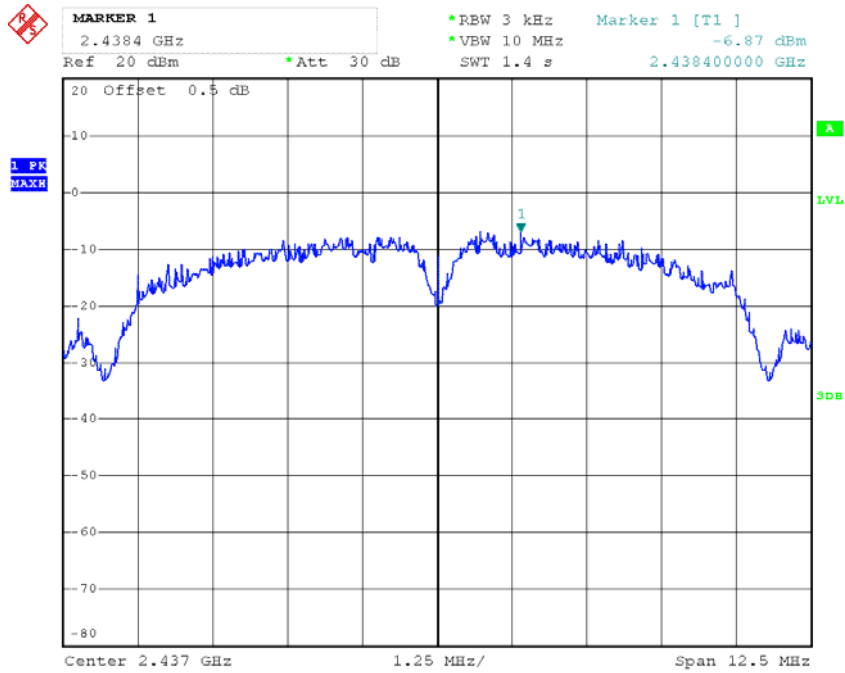
### Chain V

### Power Spectral Density, 802.11b 2412MHz



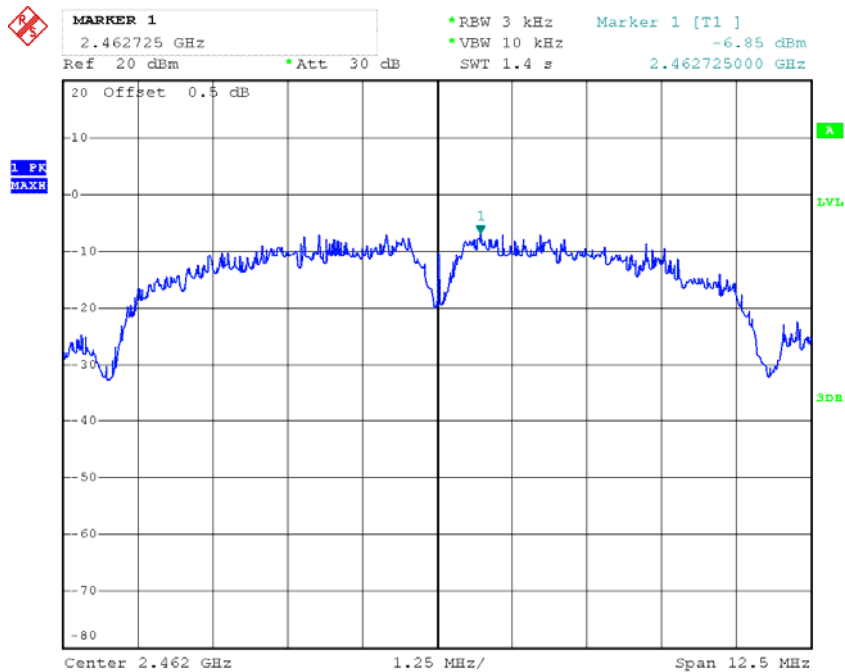
Date: 28.SEP.2015 16:35:52

### Power Spectral Density, 802.11b 2437MHz



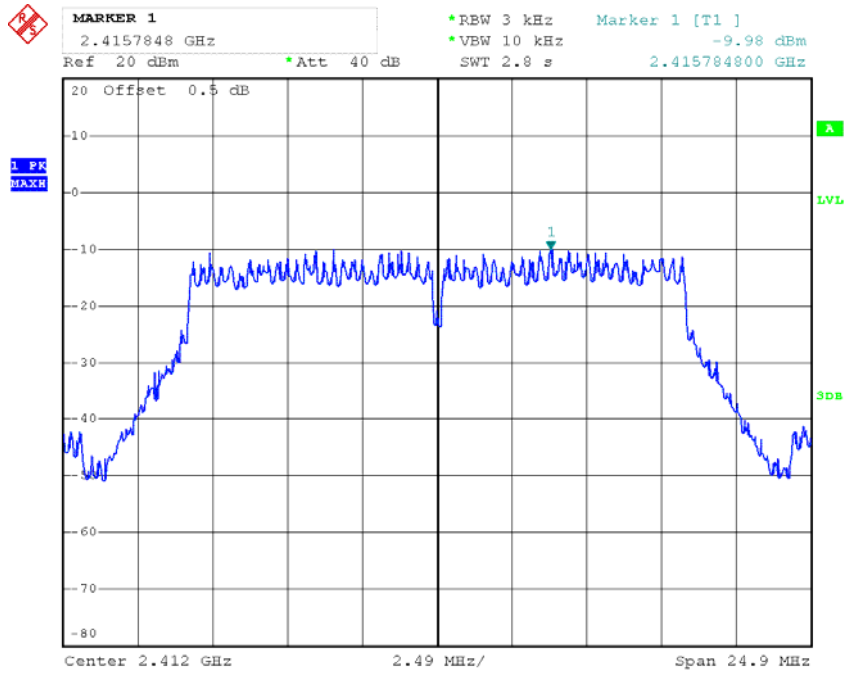
Date: 28.SEP.2015 16:38:09

### Power Spectral Density, 802.11b 2462MHz



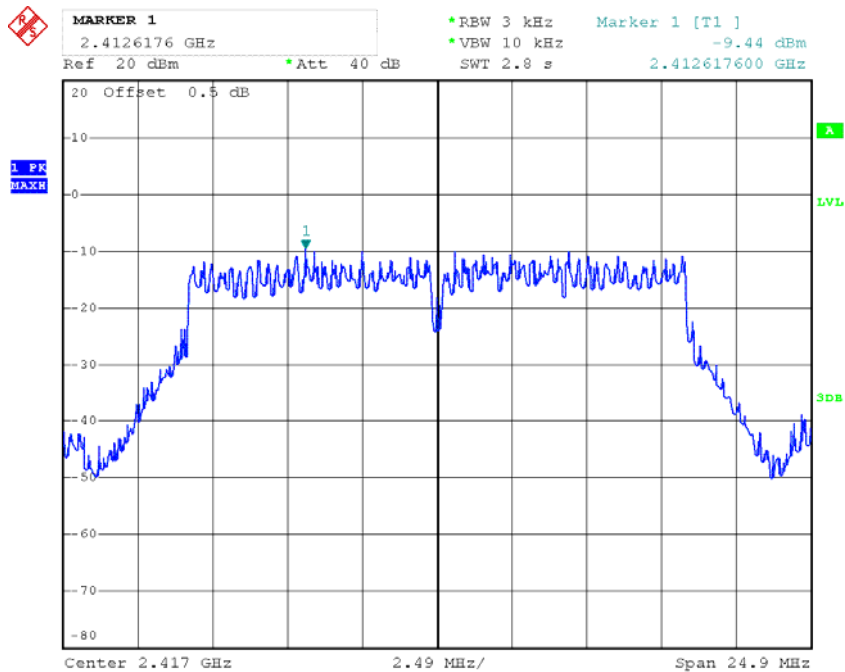
Date: 28.SEP.2015 16:48:59

### Power Spectral Density, 802.11g 2412MHz



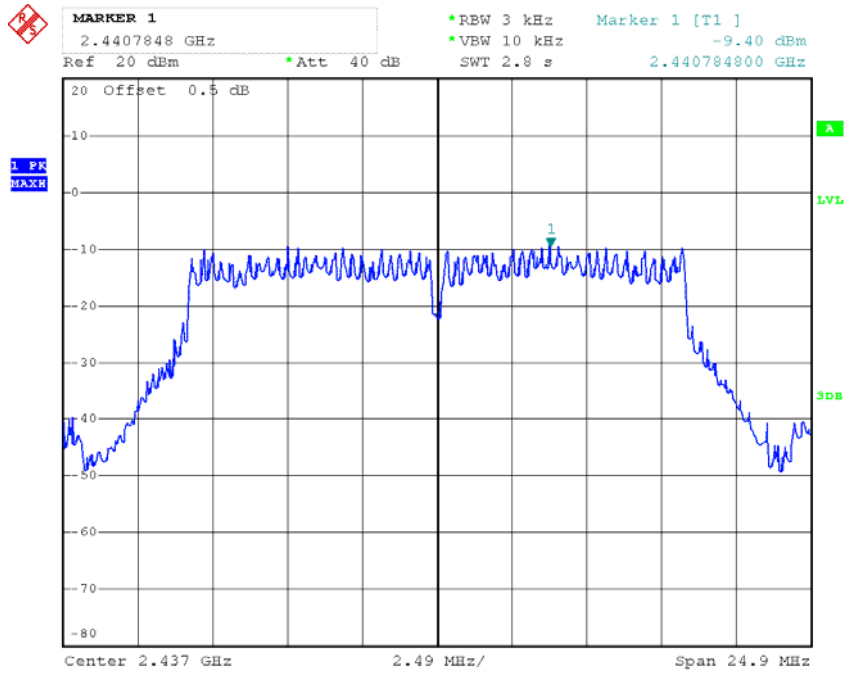
Date: 28.SEP.2015 17:13:55

### Power Spectral Density, 802.11g 2417MHz



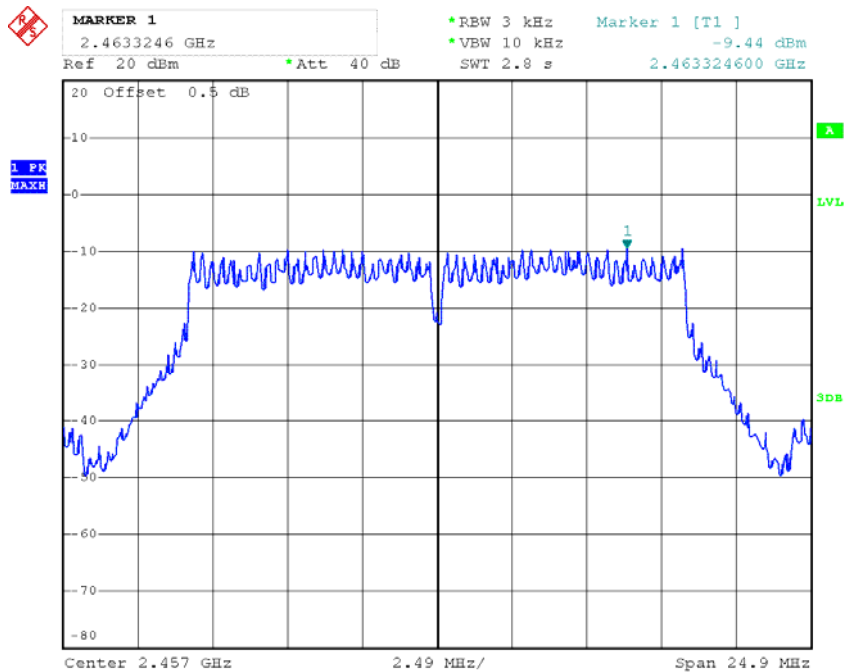
Date: 14.OCT.2015 19:43:41

### Power Spectral Density, 802.11g 2437MHz



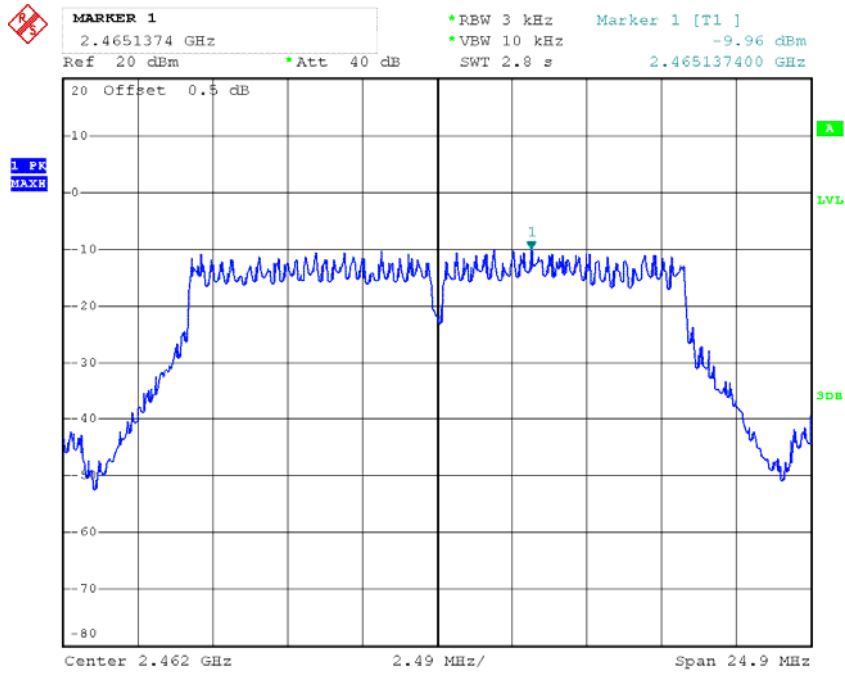
Date: 14.OCT.2015 19:48:09

### Power Spectral Density, 802.11g 2457MHz



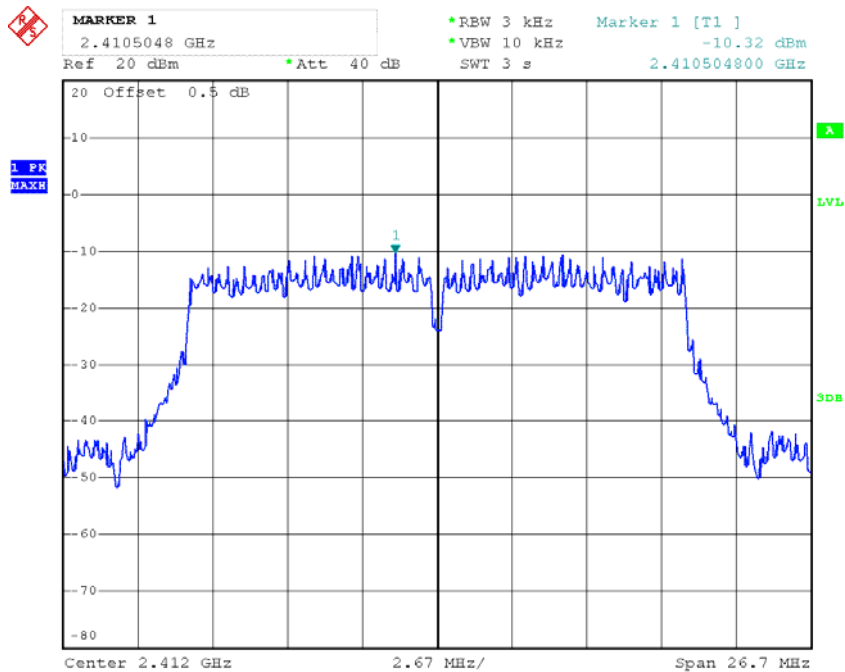
Date: 14.OCT.2015 19:51:59

### Power Spectral Density, 802.11g 2462MHz



Date: 28.SEP.2015 17:02:46

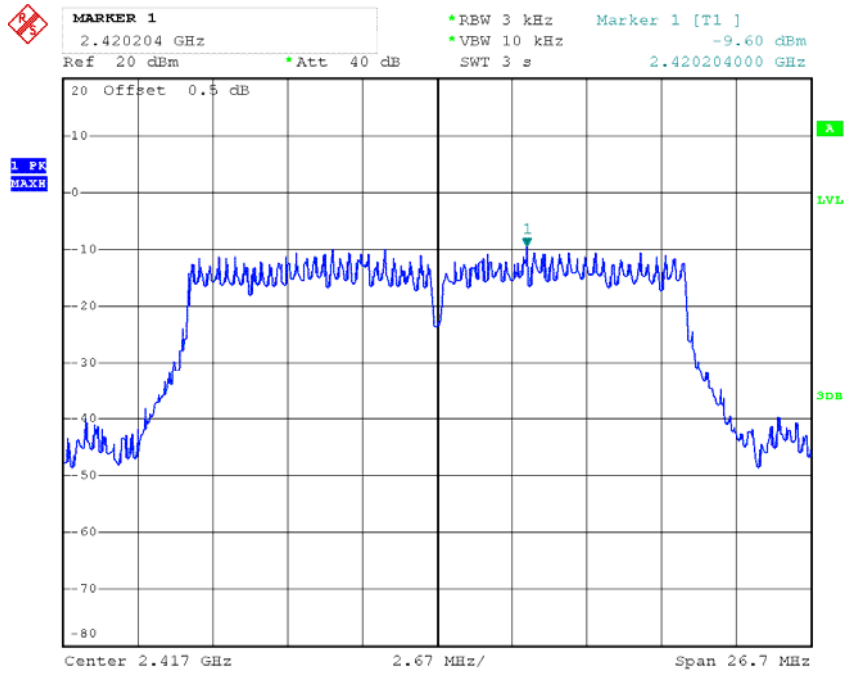
### Power Spectral Density, 802.11n ht20 2412MHz



Date: 28.SEP.2015 17:35:06

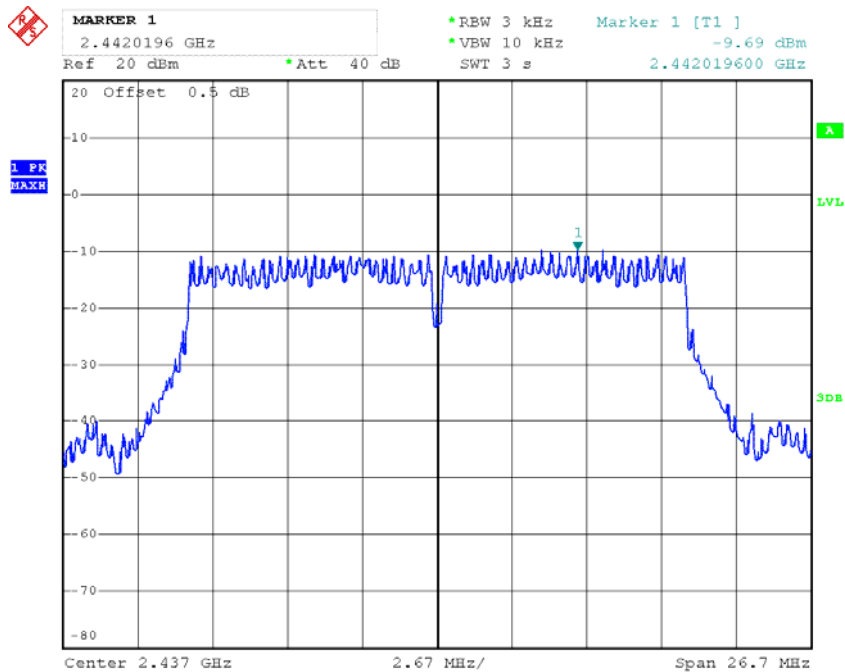


### Power Spectral Density, 802.11n ht20 2417MHz



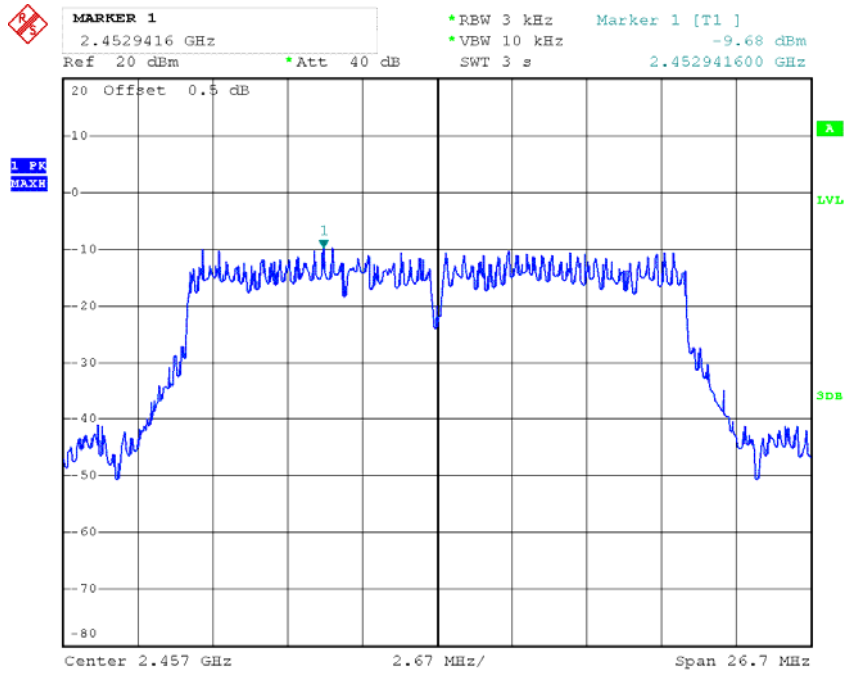
Date: 14.OCT.2015 21:10:54

### Power Spectral Density, 802.11n ht20 2437MHz



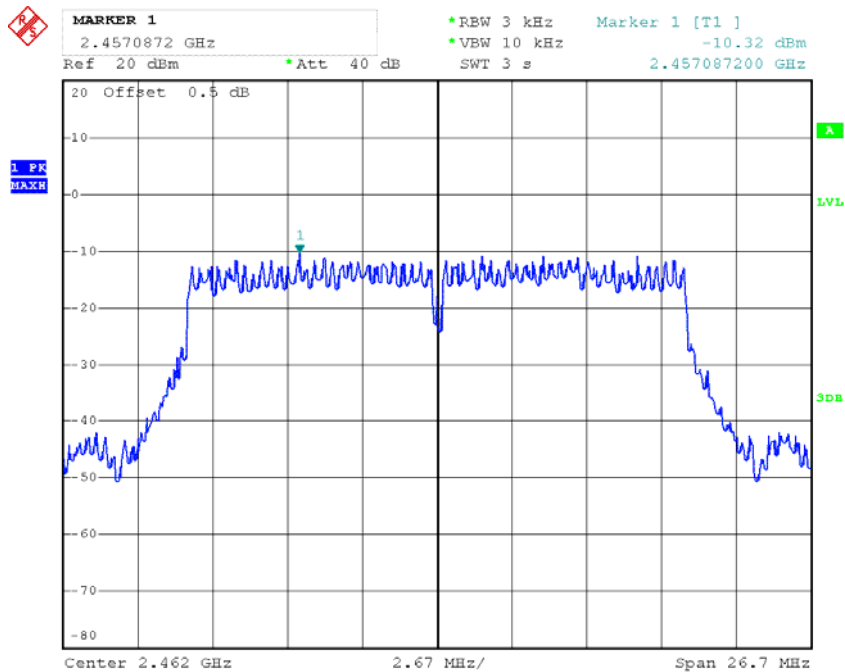
Date: 14.OCT.2015 20:34:00

### Power Spectral Density, 802.11n ht20 2457MHz



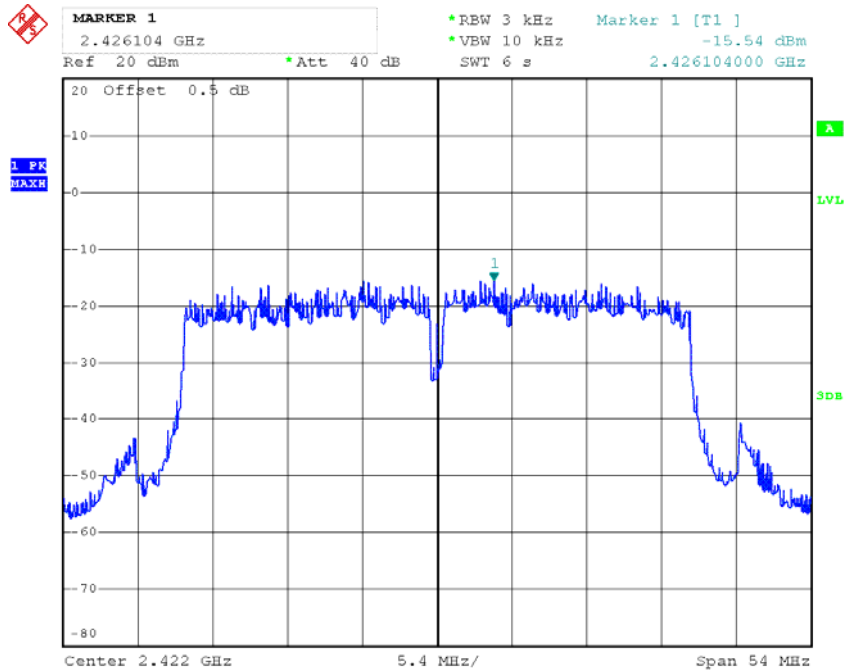
Date: 14.OCT.2015 21:18:19

### Power Spectral Density, 802.11n ht20 2462MHz



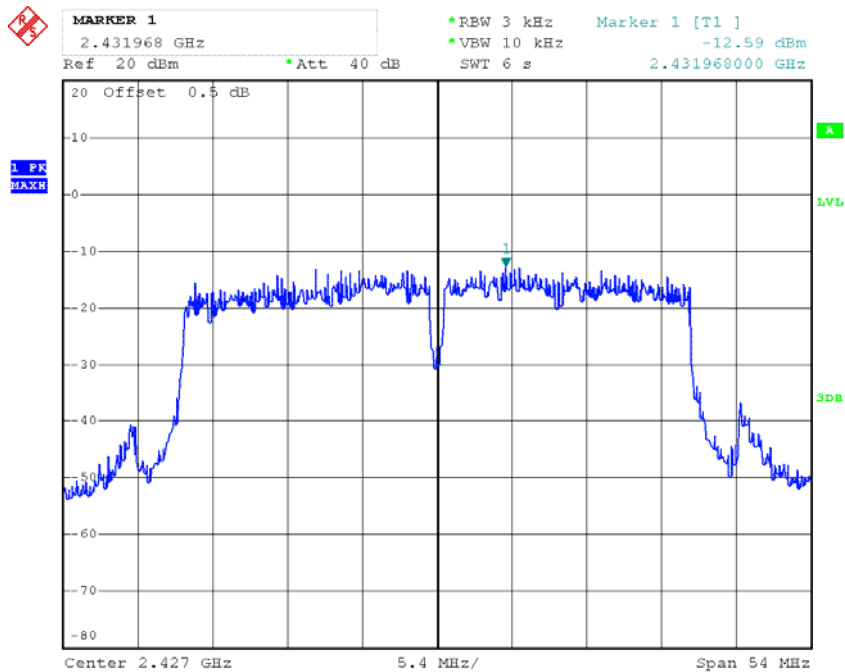
Date: 28.SEP.2015 17:44:16

### Power Spectral Density, 802.11n ht40 2422MHz



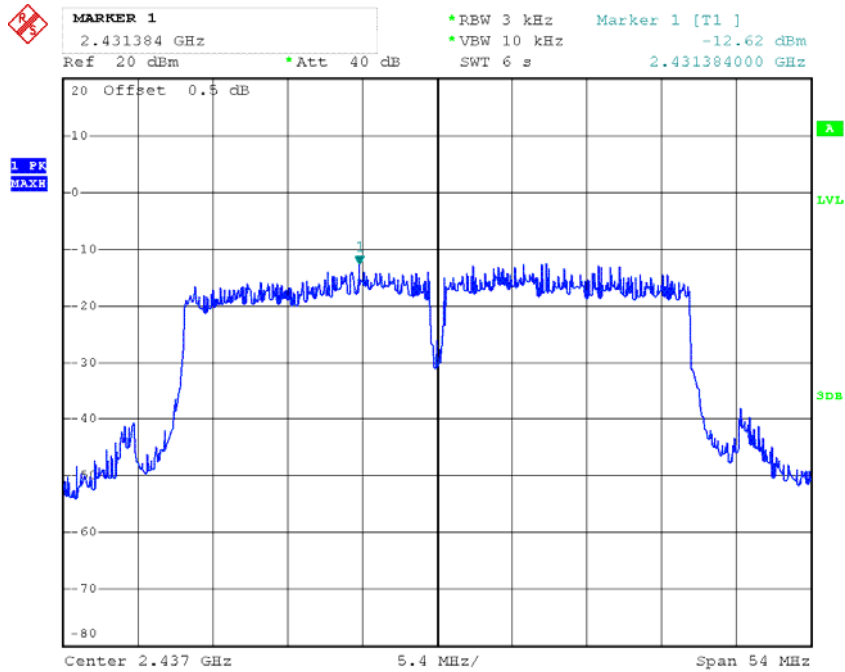
Date: 28.SEP.2015 18:02:42

### Power Spectral Density, 802.11n ht40 2427MHz



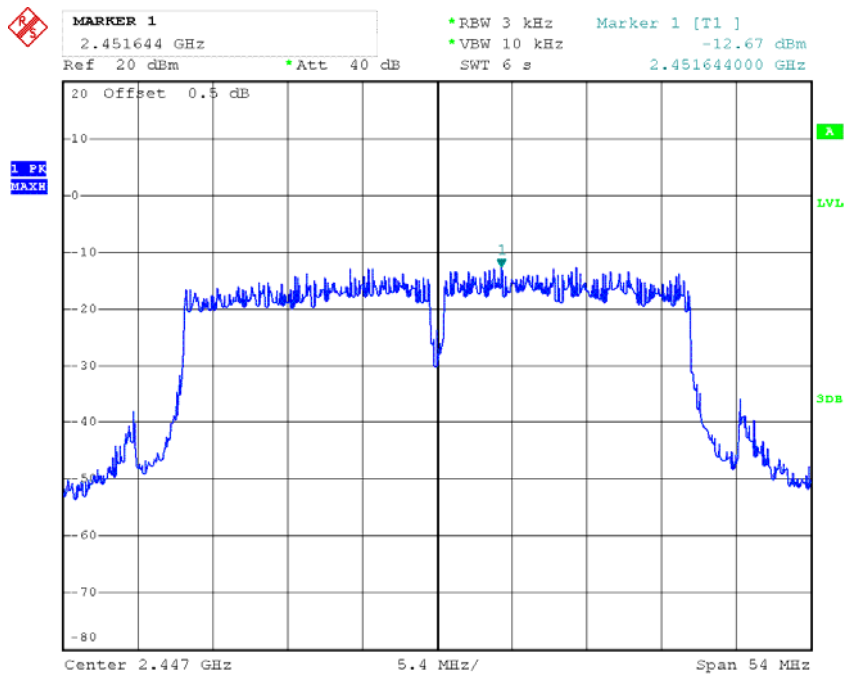
Date: 14.OCT.2015 22:00:58

### Power Spectral Density, 802.11n ht40 2437MHz



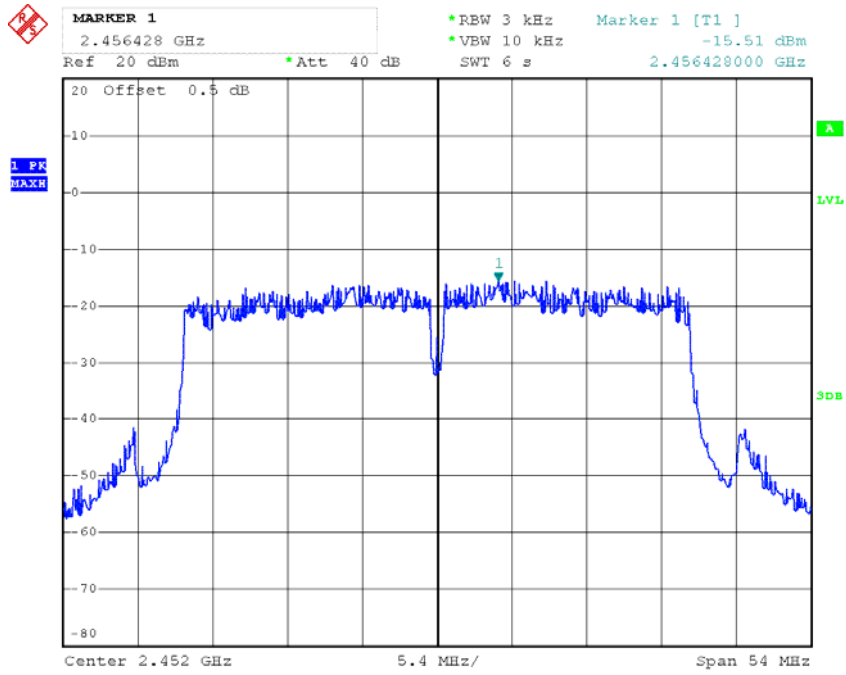
Date: 14.OCT.2015 22:08:29

### Power Spectral Density, 802.11n ht40 2447MHz



Date: 14.OCT.2015 22:12:26

### Power Spectral Density, 802.11n ht40 2452MHz



Date: 28.SEP.2015 17:51:21

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