

# FCC PART 15.407

## TEST REPORT

For

### Iconnect

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

**FCC ID: 2AB87934**

<b>Report Type:</b> Original Report	<b>Product Type:</b> Concurrent Dual-Radios 2.4GHz+5GHz MIMO AP/CPE
<b>Test Engineer:</b> Allen Qiao	<i>Allen Qiao</i>
<b>Report Number:</b> RDG150401005-00B	
<b>Report Date:</b> 2015-04-16	
<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>6</b>
DESCRIPTION OF TEST CONFIGURATION .....	6
EUT EXERCISE SOFTWARE .....	7
EQUIPMENT MODIFICATIONS .....	9
SUPPORT EQUIPMENT LIST AND DETAILS .....	9
SUPPORT CABLE LIST AND DETAILS .....	9
BLOCK DIAGRAM OF TEST SETUP .....	10
<b>SUMMARY OF TEST RESULTS .....</b>	<b>12</b>
<b>FCC §15.407(f) &amp; §1.1310 &amp; §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE) .....</b>	<b>13</b>
APPLICABLE STANDARD .....	13
<b>FCC §15.203 – ANTENNA REQUIREMENT .....</b>	<b>15</b>
APPLICABLE STANDARD .....	15
ANTENNA CONNECTOR CONSTRUCTION .....	15
<b>FCC §15.407 (b) (6) §15.207 (a) – CONDUCTED EMISSIONS .....</b>	<b>16</b>
APPLICABLE STANDARD .....	16
MEASUREMENT UNCERTAINTY.....	16
EUT SETUP .....	16
EMI TEST RECEIVER SETUP.....	17
CORRECTED AMPLITUDE & MARGIN CALCULATION .....	17
TEST EQUIPMENT LIST AND DETAILS.....	17
TEST PROCEDURE .....	18
TEST RESULTS SUMMARY .....	18
TEST DATA .....	18
<b>FCC §15.209, §15.205 &amp; §15.407(b) (1) (6) (7) –UNWANTED EMISSION.....</b>	<b>23</b>
APPLICABLE STANDARD .....	23
MEASUREMENT UNCERTAINTY .....	23
EUT SETUP .....	24
EMI TEST RECEIVER & SPECTRUM ANALYZER SETUP .....	25
TEST PROCEDURE .....	25
CORRECTED AMPLITUDE & MARGIN CALCULATION .....	25
TEST EQUIPMENT LIST AND DETAILS.....	26
TEST RESULTS SUMMARY .....	26
TEST DATA .....	26
<b>FCC §15.407(b) (1) –BAND EDGE.....</b>	<b>82</b>
APPLICABLE STANDARD .....	82
TEST PROCEDURE .....	82
TEST EQUIPMENT LIST AND DETAILS.....	82
TEST DATA .....	83
<b>FCC §15.407(a) –EMISSION BANDWIDTH AND OCCUPIED BANDWIDTH.....</b>	<b>96</b>

APPLICABLE STANDARD .....96  
TEST EQUIPMENT LIST AND DETAILS.....96  
TEST PROCEDURE .....96  
TEST DATA .....96

**FCC §15.407(a) (1) (ii) (4) –MAXIMUM CONDUCTED OUTPUT POWER.....122**  
APPLICABLE STANDARD .....122  
TEST EQUIPMENT LIST AND DETAILS.....123  
TEST PROCEDURE .....123  
TEST DATA .....123

**FCC §15.407(a) - POWER SPECTRAL DENSITY .....141**  
APPLICABLE STANDARD .....141  
TEST PROCEDURE .....142  
TEST EQUIPMENT LIST AND DETAILS.....142  
TEST DATA .....142

**DECLARATION LETTER .....160**

FEMVA

## GENERAL INFORMATION

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

The *Iconnect*'s product, model number: *AP120C* (FCC ID: 2AB87934) or ("EUT") in this report is a *Concurrent Dual-Radios 2.4GHz+5GHz MIMO AP/CPE*, which was measured approximately: 19.5 cm (L) x 19.5 cm (W) x 4.7 cm (H), rated input voltage: DC 12V from adapter or DC48V from POE..

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 AP120C, Matrix-Pro, Matrix, AP120C-AC, Matrix-Pro-AC, Matrix-AC, AP120C-ACU, AP120RC, AP120RC-AC, AP120RC-ACU are electrically identical, the difference between them is just the model name, we selected AP120C for fully testing, the details was explained in the attached declaration letter.*

*\* All measurement and test data in this report was gathered from production sample serial number: 153UAP12C0007 (Assigned by Applicant). The EUT was received on 2015-04-03.*

### Objective

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

The tests were performed in order to determine compliance with FCC Part 15, Subpart E, section 15.203, 15.205, 15.207, 15.209 and 15.407 rules.

### Related Submittal(s)/Grant(s)

FCC Part 15C DTS submissions with FCC ID: 2AB87934.  
FCC Part 15C JBP submissions with FCC ID: 2AB87934.

### Test Methodology

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

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

### Test Facility

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

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communications Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 06, 2015. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

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

FEMVAL

## SYSTEM TEST CONFIGURATION

### Description of Test Configuration

The EUT was configured for testing in an engineering mode which was provided by the manufacturer.

For 5150~5250 MHz band, channels are provided to test as follows:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220
38	5190	46	5230
40	5200	48	5240
42	5210	/	/

For 802.11a, 802.11n ht20, Channel 36, 40 and 48 were tested, for 802.11n ht40, Channel 38, 46 were tested.

For 5725~5850 MHz band, channels are provided to test as follows:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	159	5795
151	5755	161	5805
153	5765	163	5815
155	5775	165	5825
157	5785	/	/

For 802.11a, 802.11n ht20, Channel 149, 157 and 165 were tested, for 802.11n ht40, Channel 151, 159 were tested.

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.

**EUT Exercise Software**

The software “Atheros Radio Test 2” was used for testing, and the commands were provided by manufacturer. The worst condition (maximum power) was setting by the software as following table:

5150–5250MHz Band:

Test Mode	Test Software Version	Atheros Radio Test 2-Chain0		
802.11a	Test Frequency	5180MHz	5200MHz	5240MHz
	Data Rate	(OFDM)6Mbps	(OFDM)6Mbps	(OFDM)6Mbps
	Power Level Setting	15	15	15
802.11n ht20	Test Frequency	5180MHz	5200MHz	5240MHz
	Data Rate	(HT Mixmode) MCS0	(HT Mixmode) MCS0	(HT Mixmode) MCS0
	Power Level Setting	14.5	14.5	14.5
802.11n ht40	Test Frequency	5190MHz	5230MHz	/
	Data Rate	(HT Mix mode) MCS0	(HT Mix mode) MCS0	/
	Power Level Setting	9.5	9.5	/

Test Mode	Test Software Version	Atheros Radio Test 2-Chain1		
802.11a	Test Frequency	5180MHz	5200MHz	5240MHz
	Data Rate	(OFDM)6Mbps	(OFDM)6Mbps	(OFDM)6Mbps
	Power Level Setting	15	15	15
802.11n ht20	Test Frequency	5180MHz	5200MHz	5240MHz
	Data Rate	(HT Mixmode) MCS0	(HT Mixmode) MCS0	(HT Mixmode) MCS0
	Power Level Setting	14.5	14.5	14.5
802.11n ht40	Test Frequency	5190MHz	5230MHz	/
	Data Rate	(HT Mix mode) MCS0	(HT Mix mode) MCS0	/
	Power Level Setting	9.5	9.5	/

5725-5850MHz Band:

Test Mode	Test Software Version	Atheros Radio Test 2-Chain0		
802.11a	Test Frequency	5745MHz	5785MHz	5825MHz
	Data Rate	(OFDM)6Mbps	(OFDM)6Mbps	(OFDM)6Mbps
	Power Level Setting	15	15	15
802.11n ht20	Test Frequency	5745MHz	5785MHz	5825MHz
	Data Rate	(HT Mix mode) MCS0	(HT Mix mode) MCS0	(HT Mix mode) MCS0
	Power Level Setting	14	14	14
802.11n ht40	Test Frequency	5755MHz	5795MHz	/
	Data Rate	(HT Mix mode) MCS0	(HT Mix mode) MCS0	/
	Power Level Setting	8.5	8.5	/

Test Mode	Test Software Version	Atheros Radio Test 2-Chain1		
802.11a	Test Frequency	5745MHz	5785MHz	5825MHz
	Data Rate	(OFDM)6Mbps	(OFDM)6Mbps	(OFDM)6Mbps
	Power Level Setting	13.5	13.5	13.5
802.11n ht20	Test Frequency	5745MHz	5785MHz	5825MHz
	Data Rate	(HT Mix mode) MCS0	(HT Mix mode) MCS0	(HT Mix mode) MCS0
	Power Level Setting	12	12	12
802.11n ht40	Test Frequency	5755MHz	5795MHz	/
	Data Rate	(HT Mix mode) MCS0	(HT Mix mode) MCS0	/
	Power Level Setting	8.5	8.5	/



## Equipment Modifications

No modification was made to the EUT.

## 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
ALFA	802.3af/at Gigabit PoE Adapter	PSE-1000GU	1411-0002460

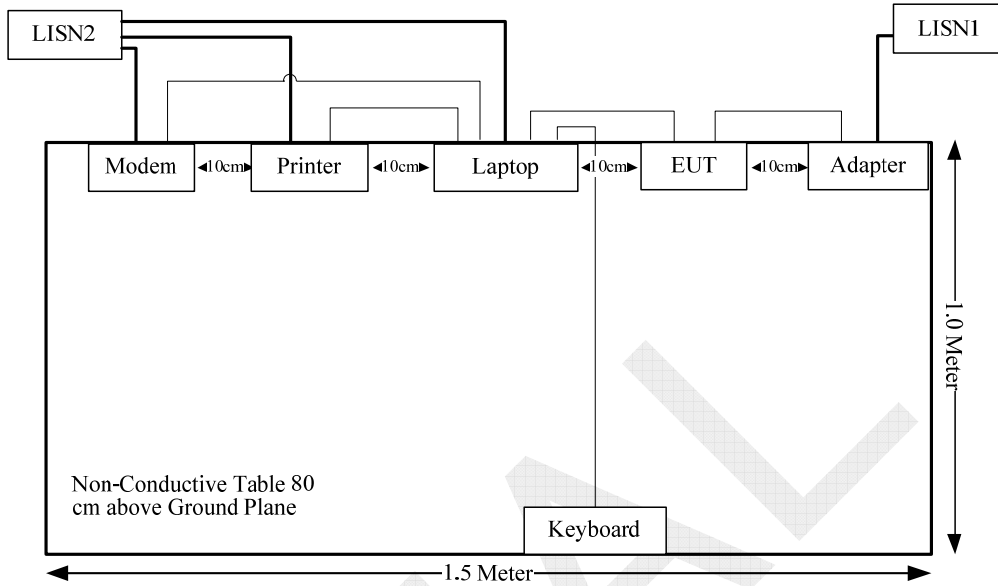
## Support Cable List and Details

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	No	1.8	USB Port of Laptop	Keyboard
RJ45 Cable	No	No	0.8	RJ45 Port of Laptop	EUT
Adapter Cable	No	No	1.5	DC Jack of EUT	Adapter
RJ45 Cable	No	No	1.5	POE	EUT
RJ45 Cable	No	No	1.5	POE	Laptop

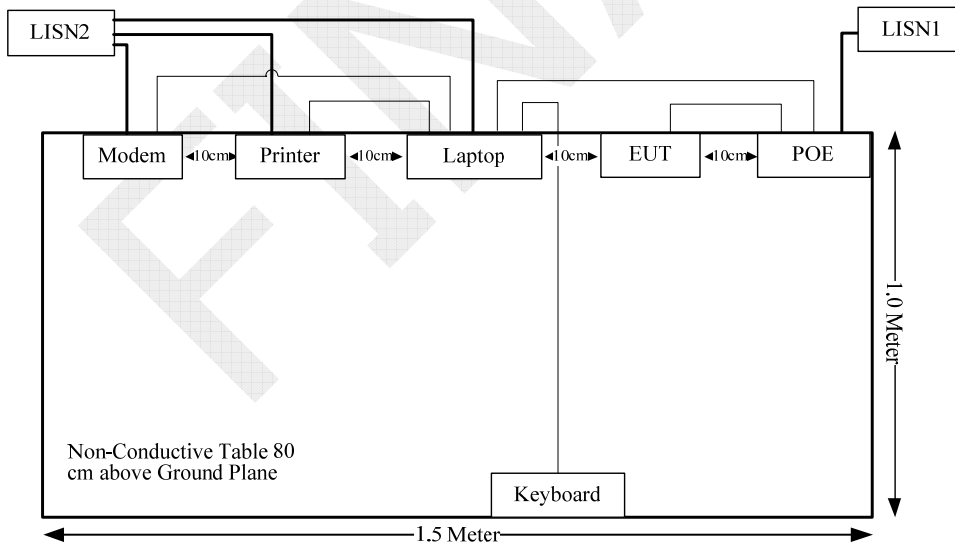
### Block Diagram of Test Setup

For AC Line Conducted Emissions Test

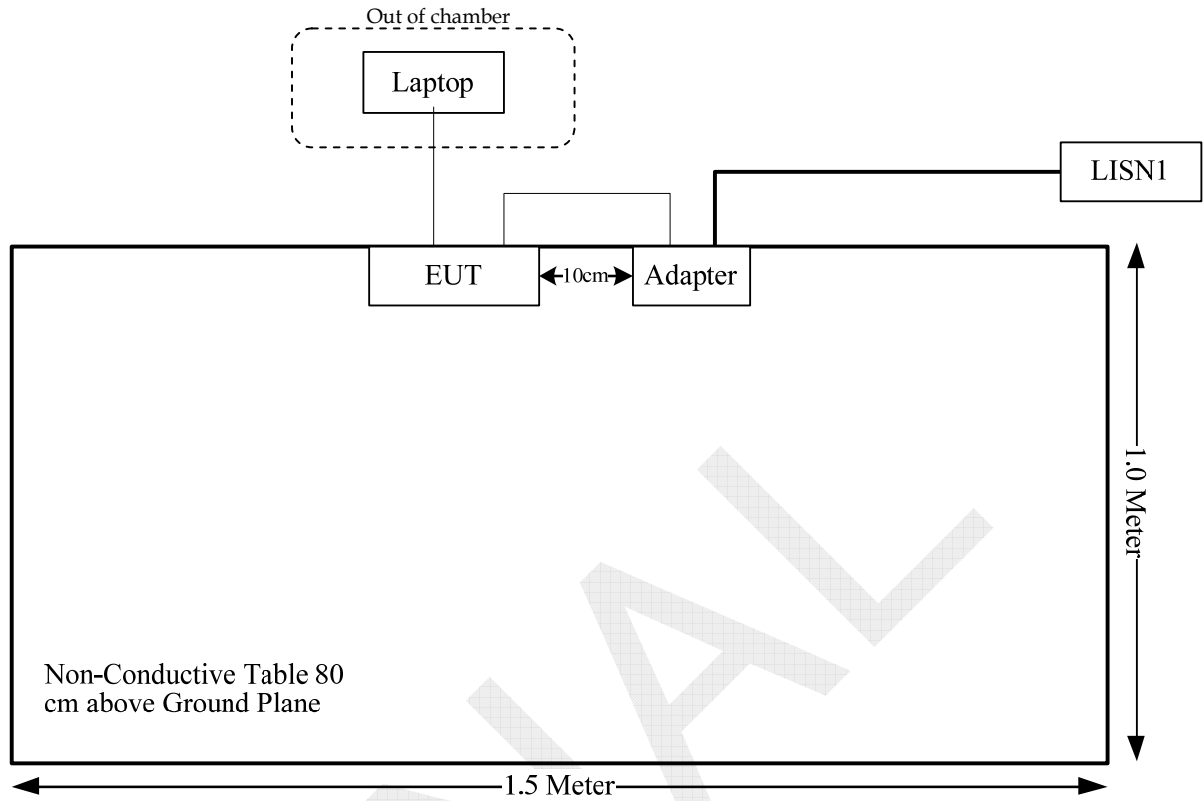
**Powered by Adapter:**



**Powered by POE:**



For Radiated Emissions Test



**SUMMARY OF TEST RESULTS**

<b>FCC Rules</b>	<b>Description of Test</b>	<b>Result</b>
FCC §15.407 (f) & §1.1310 & §2.1091	Maximum Permissible Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.407(b)(6)& §15.207(a)	Conducted Emissions	Compliance
§15.205& §15.209 & §15.407(b) (1),(6),(7)	Undesirable Emission& Restricted Bands	Compliance
§15.407(b) (1),(2),(3),(4)	Out Of Band Emissions	Compliance
§15.407(a) (1)	26 dB Bandwidth	Compliance
§15.407(a)(1),	Conducted Transmitter Output Power	Compliance
§15.407 (a)(1),(5)	Power Spectral Density	Compliance

**FCC §15.407(f) & §1.1310 & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)**

**Applicable Standard**

According to subpart 15.407(f) 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>				
<b>Frequency Range (MHz)</b>	<b>Electric Field Strength (V/m)</b>	<b>Magnetic Field Strength (A/m)</b>	<b>Power Density (mW/cm<sup>2</sup>)</b>	<b>Averaging Time (minutes)</b>
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/4πR<sup>2</sup> = 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);

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 <sup>2</sup> )	MPE Limit (mW/cm <sup>2</sup> )
			(dBi)	(numeric)	(dBm)	(mW)			
2412-2462	2.4G-802.11b	2462	5.0	3.16	23.00	199.53	20	0.125	1.0
	2.4G-802.11g	2437	5.0	3.16	25.59	362.24	20	0.228	1.0
	2.4G-802.11n HT20	2412	5.0	3.16	24.92	310.46	20	0.195	1.0
	2.4G-802.11n HT40	2422	5.0	3.16	23.70	234.42	20	0.147	1.0
5150-5250	5G-802.11a	5180	5.0	3.16	17.32	53.95	20	0.034	1.0
	5G-802.11n HT20	5180	5.0	3.16	15.59	36.22	20	0.023	1.0
	5G-802.11n HT40	5190	5.0	3.16	12.21	16.63	20	0.010	1.0
5725-5850	802.11a	5825	5.0	3.16	14.81	30.27	20	0.019	1.0
	5G-802.11n HT20	5825	5.0	3.16	14.18	26.18	20	0.016	1.0
	5G-802.11n HT40	5755	5.0	3.16	10.36	10.86	20	0.007	1.0

**MPE evaluation for simultaneous transmission:**

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

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

$$MPE\ evaluation = Max\ MPE\ of\ 2.4G + Max\ MPE\ of\ 5G = 0.228/1+0.034/1=0.262 < 1$$

**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 use of a standard antenna jack or electrical connector is prohibited.

And according to FCC 47 CFR section 15.407 (a)(1), if transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

### **Antenna Connector Construction**

This product used four internal dipole antennas which were connected to the mainboard with I-PEX socket, two of them is for 2.4G band and the maximum gain is 5 dBi, the other two is 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 §15.407 (b) (6) §15.207 (a) – CONDUCTED EMISSIONS**

**Applicable Standard**

FCC §15.207, §15.407(b) (6)

**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:

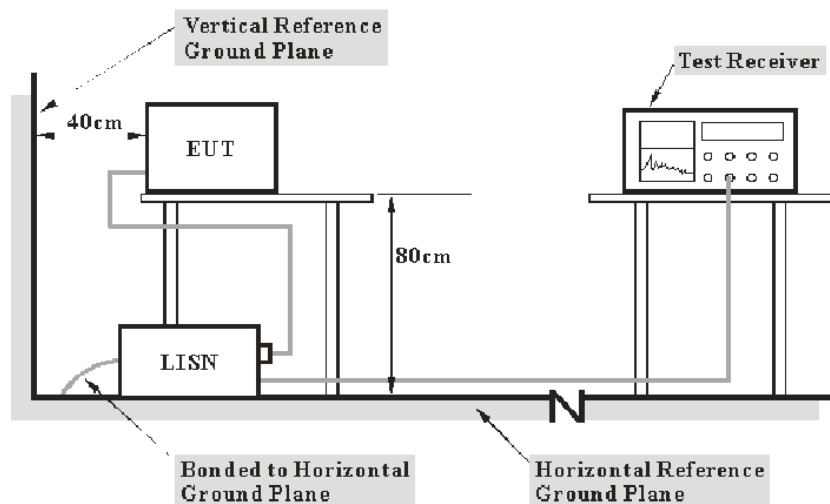
- compliance is deemed to occur if no measured disturbance level, increased by  $(U_{lab} - U_{cispr})$ , exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by  $(U_{lab} - U_{cispr})$ , exceeds the disturbance limit.

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

### 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 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.

## 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:

**2.80 dB at 0.266226 MHz in the Line** conducted mode for powered by POE.

## Test Data

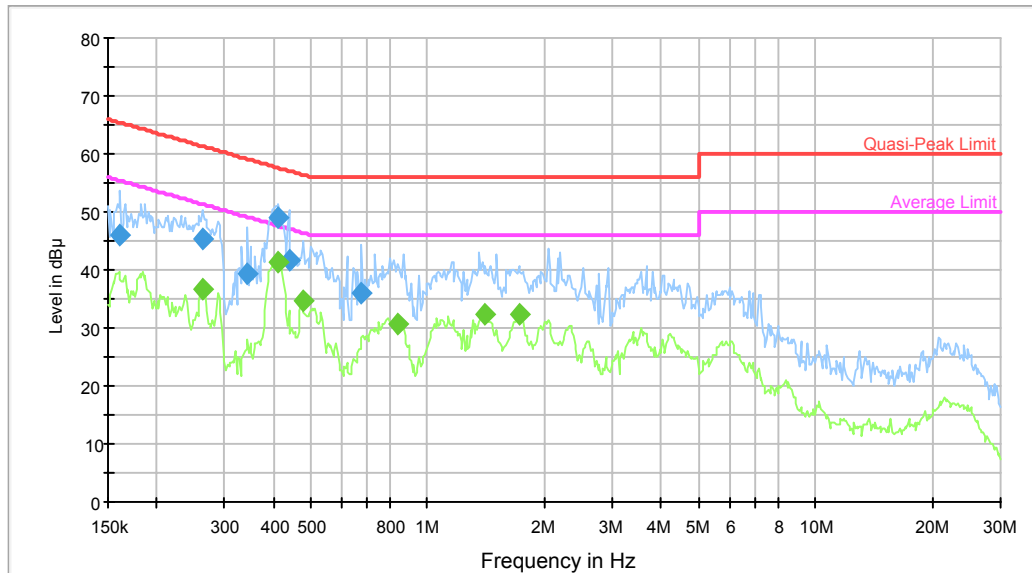
### Environmental Conditions

<b>Temperature:</b>	26.2 °C
<b>Relative Humidity:</b>	64 %
<b>ATM Pressure:</b>	100.1 kPa

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

Test Mode: Powered by Adapter

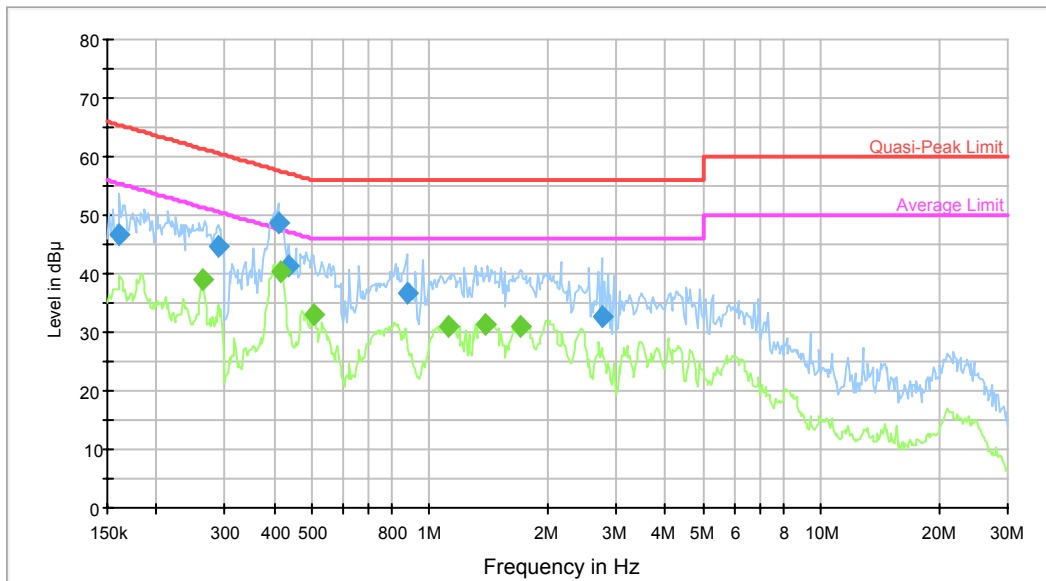
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.161152	45.8	9.000	L1	10.2	19.6	65.4	Compliance
0.262017	45.4	9.000	L1	10.2	16.0	61.4	Compliance
0.343548	39.3	9.000	L1	10.3	19.8	59.1	Compliance
0.412647	49.1	9.000	L1	10.2	8.5	57.6	Compliance
0.439808	41.8	9.000	L1	10.2	15.3	57.1	Compliance
0.676289	36.1	9.000	L1	10.4	19.9	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.262017	36.6	9.000	L1	10.2	14.8	51.4	Compliance
0.409372	41.2	9.000	L1	10.2	6.5	47.7	Compliance
0.476287	34.6	9.000	L1	10.1	11.8	46.4	Compliance
0.838622	30.8	9.000	L1	10.4	15.2	46.0	Compliance
1.396499	32.5	9.000	L1	10.4	13.5	46.0	Compliance
1.717965	32.3	9.000	L1	10.4	13.7	46.0	Compliance

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

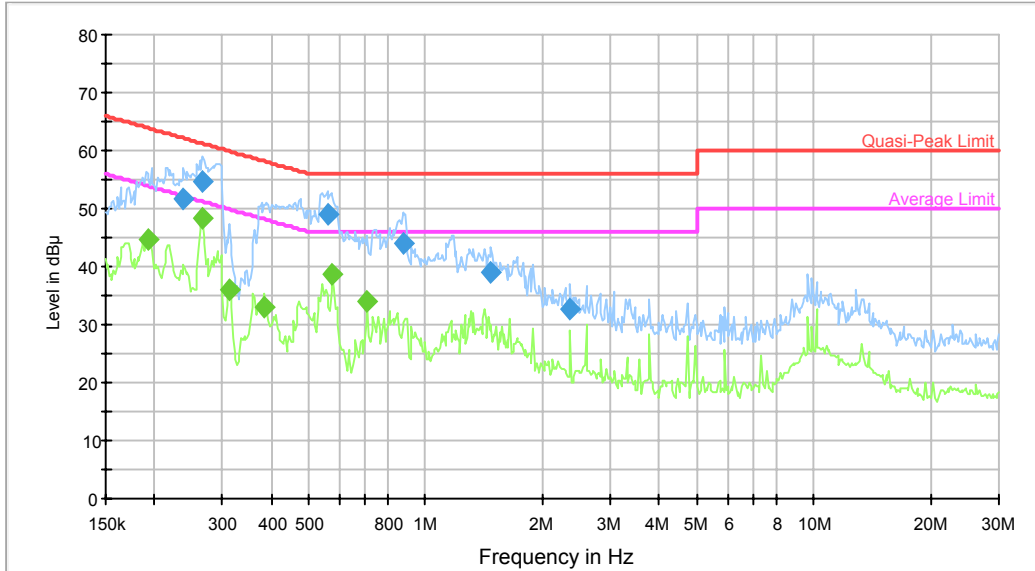


frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.161152	46.6	9.000	N	10.2	18.8	65.4	Compliance
0.288307	44.8	9.000	N	10.3	15.8	60.6	Compliance
0.409372	48.8	9.000	N	10.2	8.9	57.7	Compliance
0.436318	41.4	9.000	N	10.2	15.7	57.1	Compliance
0.872708	36.7	9.000	N	10.4	19.3	56.0	Compliance
2.749070	32.6	9.000	N	10.5	23.4	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.264113	38.9	9.000	N	10.2	12.4	51.3	Compliance
0.415949	40.2	9.000	N	10.2	7.3	47.5	Compliance
0.503608	32.8	9.000	N	10.1	13.2	46.0	Compliance
1.117238	31.0	9.000	N	10.4	15.0	46.0	Compliance
1.385415	31.2	9.000	N	10.4	14.8	46.0	Compliance
1.704331	30.8	9.000	N	10.4	15.2	46.0	Compliance

Test Mode: Powered by POE

AC120 V, 60 Hz, Line:

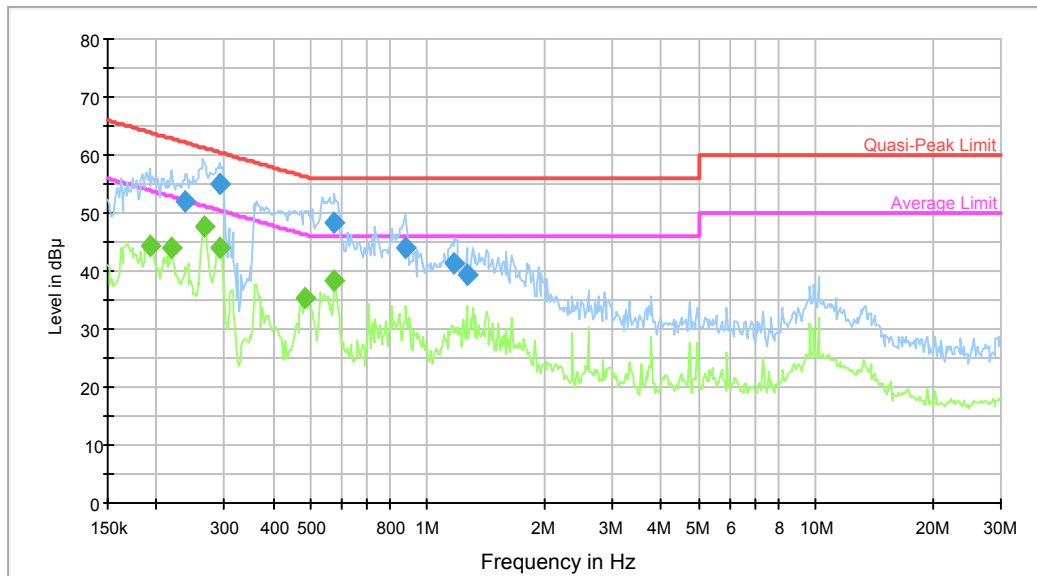


Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.238124	51.7	9.000	L1	10.2	10.5	62.2	Compliance
0.266226	54.7	9.000	L1	10.2	6.5	61.2	Compliance
0.558572	48.9	9.000	L1	10.1	7.1	56.0	Compliance
0.872708	44.0	9.000	L1	10.4	12.0	56.0	Compliance
1.476605	38.8	9.000	L1	10.4	17.2	56.0	Compliance
2.362847	32.8	9.000	L1	10.4	23.2	56.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.192030	44.7	9.000	L1	10.2	9.2	53.9	Compliance
0.266226	48.4	9.000	L1	10.2	2.8*	51.2	Compliance
0.312220	36.0	9.000	L1	10.3	13.9	49.9	Compliance
0.384091	33.2	9.000	L1	10.3	15.0	48.2	Compliance
0.576662	38.8	9.000	L1	10.2	7.2	46.0	Compliance
0.709407	34.1	9.000	L1	10.5	11.9	46.0	Compliance

\*Within measurement uncertainty!

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



requeency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.238124	52.1	9.000	N	10.2	10.1	62.2	Compliance
0.290613	55.1	9.000	N	10.3	5.4	60.5	Compliance
0.576662	48.4	9.000	N	10.2	7.6	56.0	Compliance
0.872708	44.1	9.000	N	10.4	11.9	56.0	Compliance
1.171949	41.2	9.000	N	10.4	14.8	56.0	Compliance
1.259081	39.2	9.000	N	10.4	16.8	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.193566	44.3	9.000	N	10.2	9.6	53.9	Compliance
0.218141	44.0	9.000	N	10.2	8.9	52.9	Compliance
0.266226	47.7	9.000	N	10.2	3.5*	51.2	Compliance
0.292938	43.9	9.000	N	10.3	6.5	50.4	Compliance
0.483938	35.4	9.000	N	10.1	10.9	46.3	Compliance
0.576662	38.4	9.000	N	10.2	7.6	46.0	Compliance

*\*Within measurement uncertainty!*

## **FCC §15.209, §15.205 & §15.407(b) (1) (6) (7) –UNWANTED EMISSION**

### **Applicable Standard**

FCC §15.407; §15.209; §15.205;

(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of  $-27$  dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of  $-27$  dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of  $-27$  dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of  $-17$  dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of  $-27$  dBm/MHz.

(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.

(7) The provisions of §15.205 apply to intentional radiators operating under this section.

### **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 radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:

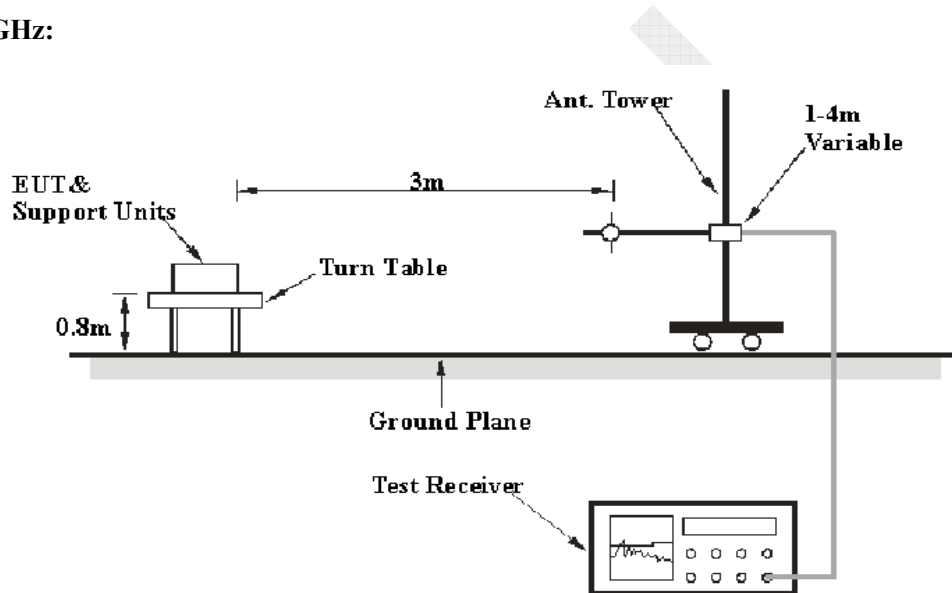
- 30M~200MHz: 5.0 dB
- 200M~1GHz: 6.2 dB
- 1G~6GHz: 4.45 dB
- 6G~18GHz: 5.23 dB

Table 1 – Values of  $U_{cispr}$

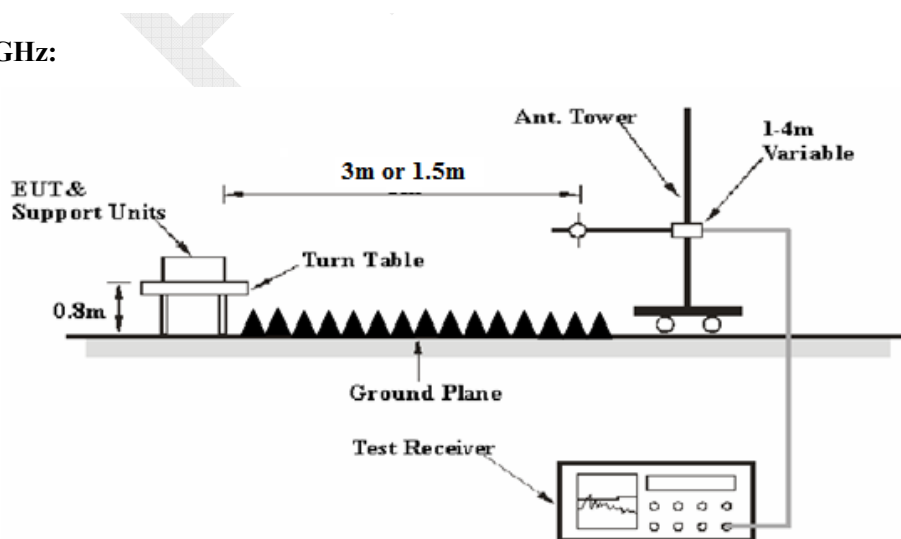
Measurement	$U_{cispr}$
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

### EUT Setup

**Below 1 GHz:**



**Above 1 GHz:**





The radiated emission tests were performed in the 3 meters chamber, using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC 15.209, and FCC 15.407 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 40 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-1GHz, peak and Average detection modes for frequencies above 1GHz.

According to KDB 789033 D02 General UNII Test Procedures New Rules v01, emission shall be computed as:  $E [dB\mu V/m] = EIRP[dBm] + 95.2$ , for  $d = 3$  meters.

According to C63.4, the above 1G test result shall be extrapolated to the specified distance using an extrapolation factor of 20dB/decade from 3m to 1.5m

Distance extrapolation factor =  $20 \log(\text{specific distance [3m]}/\text{test distance [1.5m]})$  dB

Extrapolation result = Corrected Amplitude (dB $\mu$ V/m) - distance extrapolation factor (6dB)

### 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:

$$\text{Margin} = \text{Limit} - \text{Extrapolation result}$$

### 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, Subpart C, Section 15.205, 15.209 and 15.407, with the worst margin reading of:

**2.53 dB at 5725 MHz in the Vertical polarization for 802.11a mode**

### Test Data

#### Environmental Conditions

<b>Temperature:</b>	24.2 °C-23.9°C
<b>Relative Humidity:</b>	68 %-65%
<b>ATM Pressure:</b>	101 kPa

*The testing was performed by Allen Qiao on 2015-04-12 and 2015-04-15.*

*Test Mode: Transmitting-worst case (Powered by adapter)*

Note: For above 1GHz, the test distance is 1.5m.

5150MHz-5250MHz: 802.11a mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Extrapolation result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5180 MHz										
5180	85.09	PK	H	31.46	5.40	0.00	121.95	115.95	N/A	N/A
5180	76.09	AV	H	31.46	5.40	0.00	112.95	106.95	N/A	N/A
5180	81.73	PK	V	31.46	5.40	0.00	118.59	112.59	N/A	N/A
5180	72.99	AV	V	31.46	5.40	0.00	109.85	103.85	N/A	N/A
5150	34.69	PK	H	31.40	5.26	0.00	71.35	65.35	74.00	8.65
5150	20.03	AV	H	31.40	5.26	0.00	56.69	50.69	54.00	3.31*
10360	32.91	PK	H	36.97	8.36	25.52	52.72	46.72	74.00	27.28
10360	21.37	AV	H	36.97	8.36	25.52	41.18	35.18	54.00	18.82
15540	31.16	PK	H	37.43	14.94	24.98	58.55	52.55	74.00	21.45
15540	18.58	AV	H	37.43	14.94	24.98	45.97	39.97	54.00	14.03
4234	35.51	PK	H	29.85	5.08	27.04	43.40	37.40	74.00	36.60
4234	22.35	AV	H	29.85	5.08	27.04	30.24	24.24	54.00	29.76
3217	34.77	PK	H	27.89	6.16	27.36	41.46	35.46	74.00	38.54
3217	22.37	AV	H	27.89	6.16	27.36	29.06	23.06	54.00	30.94
250.19	36.05	QP	H	12.17	1.92	21.49	28.65	28.65	46.00	17.35
Middle Channel:5200 MHz										
5200	84.67	PK	H	31.50	5.49	0.00	121.66	115.66	N/A	N/A
5200	75.53	AV	H	31.50	5.49	0.00	112.52	106.52	N/A	N/A
5200	81.29	PK	V	31.50	5.49	0.00	118.28	112.28	N/A	N/A
5200	72.57	AV	V	31.50	5.49	0.00	109.56	103.56	N/A	N/A
10400	33.00	PK	H	36.98	8.32	25.50	52.80	46.80	74.00	27.20
10400	21.29	AV	H	36.98	8.32	25.50	41.09	35.09	54.00	18.91
15600	31.14	PK	H	37.32	14.69	24.69	58.46	52.46	74.00	21.54
15600	18.30	AV	H	37.32	14.69	24.69	45.62	39.62	54.00	14.38
4234	35.08	PK	H	29.85	5.08	27.04	42.97	36.97	74.00	37.03
4234	22.08	AV	H	29.85	5.08	27.04	29.97	23.97	54.00	30.03
3217	34.68	PK	H	27.89	6.16	27.36	41.37	35.37	74.00	38.63
3217	21.99	AV	H	27.89	6.16	27.36	28.68	22.68	54.00	31.32
250.19	35.83	QP	H	12.17	1.92	21.49	28.43	28.43	46.00	17.57
875.84	33.25	QP	H	22.48	3.6	22.22	37.11	37.11	46.00	8.89
High Channel:5240 MHz										
5240	84.57	PK	H	31.58	5.28	0.00	121.43	115.43	N/A	N/A
5240	74.68	AV	H	31.58	5.28	0.00	111.54	105.54	N/A	N/A
5240	80.62	PK	V	31.58	5.28	0.00	117.48	111.48	N/A	N/A
5240	71.91	AV	V	31.58	5.28	0.00	108.77	102.77	N/A	N/A
5350	29.34	PK	H	31.80	5.61	0.00	66.75	60.75	74.00	13.25
5350	17.22	AV	H	31.80	5.61	0.00	54.63	48.63	54.00	5.37
10480	33.05	PK	H	37.00	8.23	26.01	52.27	46.27	74.00	27.73
10480	20.92	AV	H	37.00	8.23	26.01	40.14	34.14	54.00	19.86
15720	31.06	PK	H	37.10	14.20	24.92	57.44	51.44	74.00	22.56
15720	18.17	AV	H	37.10	14.20	24.92	44.55	38.55	54.00	15.45
4234	34.91	PK	H	29.85	5.08	27.04	42.80	36.80	74.00	37.20
4234	21.88	AV	H	29.85	5.08	27.04	29.77	23.77	54.00	30.23
3217	34.39	PK	H	27.89	6.16	27.36	41.08	35.08	74.00	38.92
3217	21.86	AV	H	27.89	6.16	27.36	28.55	22.55	54.00	31.45
250.19	36.11	QP	H	12.17	1.92	21.49	28.71	28.71	46.00	17.29

\*Within measurement uncertainty!

802.11n ht20 mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Extrapolation result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5180 MHz										
5180	85.33	PK	H	31.46	5.40	0.00	122.19	116.19	N/A	N/A
5180	75.73	AV	H	31.46	5.40	0.00	112.59	106.59	N/A	N/A
5180	81.36	PK	V	31.46	5.40	0.00	118.22	112.22	N/A	N/A
5180	71.28	AV	V	31.46	5.40	0.00	108.14	102.14	N/A	N/A
5150	33.44	PK	H	31.40	5.26	0.00	70.10	64.10	74.00	9.90
5150	19.36	AV	H	31.40	5.26	0.00	56.02	50.02	54.00	3.98 *
10360	32.46	PK	H	36.97	8.36	25.52	52.27	46.27	74.00	27.73
10360	20.81	AV	H	36.97	8.36	25.52	40.62	34.62	54.00	19.38
15540	30.67	PK	H	37.43	14.94	24.98	58.06	52.06	74.00	21.94
15540	17.95	AV	H	37.43	14.94	24.98	45.34	39.34	54.00	14.66
7513	34.82	PK	H	34.81	6.95	26.17	50.41	44.41	74.00	29.59
7513	21.73	AV	H	34.81	6.95	26.17	37.32	31.32	54.00	22.68
2786	34.32	PK	H	26.64	4.45	27.55	37.86	31.86	74.00	42.14
2786	21.70	AV	H	26.64	4.45	27.55	25.24	19.24	54.00	34.76
250.19	35.47	QP	H	12.17	1.92	21.49	28.07	28.07	46.00	17.93
Middle Channel:5200 MHz										
5200	84.66	PK	H	31.50	5.49	0.00	121.65	115.65	N/A	N/A
5200	75.31	AV	H	31.50	5.49	0.00	112.30	106.30	N/A	N/A
5200	80.85	PK	V	31.50	5.49	0.00	117.84	111.84	N/A	N/A
5200	70.66	AV	V	31.50	5.49	0.00	107.65	101.65	N/A	N/A
10400	32.40	PK	H	36.98	8.32	25.50	52.20	46.20	74.00	27.80
10400	20.60	AV	H	36.98	8.32	25.50	40.40	34.40	54.00	19.60
15600	30.44	PK	H	37.32	14.69	24.69	57.76	51.76	74.00	22.24
15600	17.83	AV	H	37.32	14.69	24.69	45.15	39.15	54.00	14.85
7513	34.53	PK	H	34.81	6.95	26.17	50.12	44.12	74.00	29.88
7513	21.49	AV	H	34.81	6.95	26.17	37.08	31.08	54.00	22.92
2786	34.03	PK	H	26.64	4.45	27.55	37.57	31.57	74.00	42.43
2786	21.51	AV	H	26.64	4.45	27.55	25.05	19.05	54.00	34.95
250.19	35.62	QP	H	12.17	1.92	21.49	28.22	28.22	46.00	17.78
875.84	33.05	QP	H	22.48	3.60	22.22	36.91	36.91	46.00	9.09
High Channel:5240 MHz										
5240	83.69	PK	H	31.58	5.28	0.00	120.55	114.55	N/A	N/A
5240	73.38	AV	H	31.58	5.28	0.00	110.24	104.24	N/A	N/A
5240	80.32	PK	V	31.58	5.28	0.00	117.18	111.18	N/A	N/A
5240	70.25	AV	V	31.58	5.28	0.00	107.11	101.11	N/A	N/A
5350	28.36	PK	H	31.80	5.61	0.00	65.77	59.77	74.00	14.23
5350	16.32	AV	H	31.80	5.61	0.00	53.73	47.73	54.00	6.27
10480	32.35	PK	H	37.00	8.23	26.01	51.57	45.57	74.00	28.43
10480	20.37	AV	H	37.00	8.23	26.01	39.59	33.59	54.00	20.41
15720	30.40	PK	H	37.10	14.20	24.92	56.78	50.78	74.00	23.22
15720	17.68	AV	H	37.10	14.20	24.92	44.06	38.06	54.00	15.94
7513	34.34	PK	H	34.81	6.95	26.17	49.93	43.93	74.00	30.07
7513	21.39	AV	H	34.81	6.95	26.17	36.98	30.98	54.00	23.02
2786	33.99	PK	H	26.64	4.45	27.55	37.53	31.53	74.00	42.47
2786	21.29	AV	H	26.64	4.45	27.55	24.83	18.83	54.00	35.17
250.19	35.43	QP	H	12.17	1.92	21.49	28.03	28.03	46.00	17.97

\*Within measurement uncertainty!

802.11n ht40 mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Extrapolation result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5190 MHz										
5190	78.36	PK	H	31.48	5.44	0.00	115.28	109.28	N/A	N/A
5190	67.68	AV	H	31.48	5.44	0.00	104.60	98.60	N/A	N/A
5190	74.36	PK	V	31.48	5.44	0.00	111.28	105.28	N/A	N/A
5190	63.75	AV	V	31.48	5.44	0.00	100.67	94.67	N/A	N/A
5150	33.32	PK	H	31.40	5.26	0.00	69.98	63.98	74.00	10.02
5150	19.54	AV	H	31.40	5.26	0.00	56.20	50.20	54.00	3.80 *
10380	32.25	PK	H	36.98	8.34	25.51	52.06	46.06	74.00	27.94
10380	20.14	AV	H	36.98	8.34	25.51	39.95	33.95	54.00	20.05
15570	30.17	PK	H	37.37	14.81	24.83	57.52	51.52	74.00	22.48
15570	17.68	AV	H	37.37	14.81	24.83	45.03	39.03	54.00	14.97
3080	34.25	PK	H	27.46	6.76	27.47	41.00	35.00	74.00	39.00
3080	21.26	AV	H	27.46	6.76	27.47	28.01	22.01	54.00	31.99
4494	33.75	PK	H	29.80	5.14	27.10	41.59	35.59	74.00	38.41
4494	21.12	AV	H	29.80	5.14	27.10	28.96	22.96	54.00	31.04
250.19	35.17	QP	H	12.17	1.92	21.49	27.77	27.77	46.00	18.23
High Channel:5230 MHz										
5230	75.74	PK	H	31.56	5.33	0.00	112.63	106.63	N/A	N/A
5230	65.12	AV	H	31.56	5.33	0.00	102.01	96.01	N/A	N/A
5230	72.54	PK	V	31.56	5.33	0.00	109.43	103.43	N/A	N/A
5230	62.13	AV	V	31.56	5.33	0.00	99.02	93.02	N/A	N/A
5350	28.25	PK	V	31.80	5.61	0.00	65.66	59.66	74.00	14.34
5350	16.36	AV	V	31.80	5.61	0.00	53.77	47.77	54.00	6.23
10460	31.64	PK	V	36.99	8.25	25.88	51.00	45.00	74.00	29.00
10460	19.73	AV	V	36.99	8.25	25.88	39.09	33.09	54.00	20.91
15690	29.60	PK	V	37.16	14.32	24.87	56.21	50.21	74.00	23.79
15690	17.05	AV	V	37.16	14.32	24.87	43.66	37.66	54.00	16.34
3080	33.83	PK	V	27.46	6.76	27.47	40.58	34.58	74.00	39.42
3080	20.76	AV	V	27.46	6.76	27.47	27.51	21.51	54.00	32.49
4494	33.15	PK	V	29.80	5.14	27.10	40.99	34.99	74.00	39.01
4494	20.48	AV	V	29.80	5.14	27.10	28.32	22.32	54.00	31.68
250.19	35.02	QP	H	12.17	1.92	21.49	27.62	27.62	46.00	18.38

\*Within measurement uncertainty!

5725MHz-5850MHz:  
802.11a mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Extrapolation result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5745 MHz										
5745	77.39	PK	H	32.15	5.53	0.00	115.07	109.07	N/A	N/A
5745	68.12	AV	H	32.15	5.53	0.00	105.80	99.80	N/A	N/A
5745	76.34	PK	V	32.15	5.53	0.00	114.02	108.02	N/A	N/A
5745	67.14	AV	V	32.15	5.53	0.00	104.82	98.82	N/A	N/A
5725	34.35	PK	V	32.15	5.60	0.00	72.10	66.10	74.00	7.90
5725	19.72	AV	V	32.15	5.60	0.00	57.47	51.47	54.00	2.53*
11490	33.25	PK	H	37.89	8.94	26.14	53.94	47.94	74.00	26.06
11490	20.44	AV	H	37.89	8.94	26.14	41.13	35.13	54.00	18.87
17235	30.28	PK	H	40.91	13.69	25.63	59.25	53.25	74.00	20.75
17235	18.64	AV	H	40.91	13.69	25.63	47.61	41.61	54.00	12.39
3070	34.17	PK	H	27.42	6.72	27.47	40.84	34.84	74.00	39.16
3070	21.29	AV	H	27.42	6.72	27.47	27.96	21.96	54.00	32.04
2290	36.43	PK	H	25.35	3.40	27.30	37.88	31.88	74.00	42.12
2290	22.18	AV	H	25.35	3.40	27.30	23.63	17.63	54.00	36.37
250.19	36.14	QP	H	12.17	1.92	21.49	28.74	28.74	46.00	17.26
Middle Channel:5785 MHz										
5785	77.94	PK	H	32.16	5.47	0.00	115.57	109.57	N/A	N/A
5785	68.82	AV	H	32.16	5.47	0.00	106.45	100.45	N/A	N/A
5785	76.87	PK	V	32.16	5.47	0.00	114.50	108.50	N/A	N/A
5785	67.83	AV	V	32.16	5.47	0.00	105.46	99.46	N/A	N/A
11570	34.04	PK	H	37.90	8.92	26.07	54.79	48.79	74.00	25.21
11570	20.95	AV	H	37.90	8.92	26.07	41.70	35.70	54.00	18.30
17355	30.97	PK	H	41.63	12.99	25.63	59.96	53.96	74.00	20.04
17355	19.31	AV	H	41.63	12.99	25.63	48.30	42.30	54.00	11.70
3070	34.82	PK	H	27.42	6.72	27.47	41.49	35.49	74.00	38.51
3070	21.88	AV	H	27.42	6.72	27.47	28.55	22.55	54.00	31.45
2290	35.04	PK	H	25.35	3.40	27.30	36.49	30.49	74.00	43.51
2290	22.86	AV	H	25.35	3.40	27.30	24.31	18.31	54.00	35.69
250.19	36.07	QP	H	12.17	1.92	21.49	28.67	28.67	46.00	17.33
875.84	33.16	QP	H	22.48	3.60	22.22	37.02	37.02	46.00	8.98
High Channel:5825 MHz										
5825	79.36	PK	H	32.17	5.75	0.00	117.28	111.28	N/A	N/A
5825	69.32	AV	H	32.17	5.75	0.00	107.24	101.24	N/A	N/A
5825	77.47	PK	V	32.17	5.75	0.00	115.39	109.39	N/A	N/A
5825	68.36	AV	V	32.17	5.75	0.00	106.28	100.28	N/A	N/A
5850	30.11	PK	H	32.17	6.05	0.00	68.33	62.33	74.00	11.67
5850	17.23	AV	H	32.17	6.05	0.00	55.45	49.45	54.00	4.55
11650	34.80	PK	H	37.90	8.90	25.75	55.85	49.85	74.00	24.15
11650	21.48	AV	H	37.90	8.90	25.75	42.53	36.53	54.00	17.47
17475	31.73	PK	H	42.35	12.30	25.39	60.99	54.99	74.00	19.01
17475	20.09	AV	H	42.35	12.30	25.39	49.35	43.35	54.00	10.65
3070	34.36	PK	H	27.42	6.72	27.47	41.03	35.03	74.00	38.97
3070	21.55	AV	H	27.42	6.72	27.47	28.22	22.22	54.00	31.78
2290	36.81	PK	H	25.35	3.40	27.30	38.26	32.26	74.00	41.74
2290	22.42	AV	H	25.35	3.40	27.30	23.87	17.87	54.00	36.13
250.19	35.78	QP	H	12.17	1.92	21.49	28.38	28.38	46.00	17.62

802.11n ht20 mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBμV/m)	Extrapolation result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5745 MHz										
5745	76.94	PK	H	32.15	5.53	0.00	114.62	108.62	N/A	N/A
5745	67.05	AV	H	32.15	5.53	0.00	104.73	98.73	N/A	N/A
5745	75.71	PK	V	32.15	5.53	0.00	113.39	107.39	N/A	N/A
5745	66.53	AV	V	32.15	5.53	0.00	104.21	98.21	N/A	N/A
5725	34.88	PK	H	32.15	5.60	0.00	72.63	66.63	74.00	7.37
5725	19.23	AV	H	32.15	5.60	0.00	56.98	50.98	54.00	3.02*
11490	32.76	PK	H	37.89	8.94	26.14	53.45	47.45	74.00	26.55
11490	19.84	AV	H	37.89	8.94	26.14	40.53	34.53	54.00	19.47
17235	29.78	PK	H	40.91	13.69	25.63	58.75	52.75	74.00	21.25
17235	18.18	AV	H	40.91	13.69	25.63	47.15	41.15	54.00	12.85
3070	33.59	PK	H	27.42	6.72	27.47	40.26	34.26	74.00	39.74
3070	20.72	AV	H	27.42	6.72	27.47	27.39	21.39	54.00	32.61
2290	35.86	PK	H	25.35	3.40	27.30	37.31	31.31	74.00	42.69
2290	21.69	AV	H	25.35	3.40	27.30	23.14	17.14	54.00	36.86
250.19	36.11	QP	H	12.17	1.92	21.49	28.71	28.71	46.00	17.29
Middle Channel:5785 MHz										
5785	77.65	PK	H	32.16	5.47	0.00	115.28	109.28	N/A	N/A
5785	67.62	AV	H	32.16	5.47	0.00	105.25	99.25	N/A	N/A
5785	76.40	PK	V	32.16	5.47	0.00	114.03	108.03	N/A	N/A
5785	67.07	AV	V	32.16	5.47	0.00	104.70	98.70	N/A	N/A
11570	33.53	PK	V	37.90	8.92	26.07	54.28	48.28	74.00	25.72
11570	20.48	AV	V	37.90	8.92	26.07	41.23	35.23	54.00	18.77
17355	30.61	PK	V	41.63	12.99	25.63	59.60	53.60	74.00	20.40
17355	18.83	AV	V	41.63	12.99	25.63	47.82	41.82	54.00	12.18
3070	34.34	PK	V	27.42	6.72	27.47	41.01	35.01	74.00	38.99
3070	21.29	AV	V	27.42	6.72	27.47	27.96	21.96	54.00	32.04
2290	36.66	PK	V	25.35	3.40	27.30	38.11	32.11	74.00	41.89
2290	22.54	AV	V	25.35	3.40	27.30	23.99	17.99	54.00	36.01
250.19	36.24	QP	H	12.17	1.92	21.49	28.84	28.84	46.00	17.16
875.84	33.04	QP	H	22.48	3.60	22.22	36.90	36.90	46.00	9.10
High Channel:5825 MHz										
5825	78.30	PK	H	32.17	5.75	0.00	116.22	110.22	N/A	N/A
5825	69.12	AV	H	32.17	5.75	0.00	107.04	101.04	N/A	N/A
5825	77.03	PK	V	32.17	5.75	0.00	114.95	108.95	N/A	N/A
5825	67.62	AV	V	32.17	5.75	0.00	105.54	99.54	N/A	N/A
5850	29.68	PK	H	32.17	6.05	0.00	67.90	61.90	74.00	12.10
5850	16.65	AV	H	32.17	6.05	0.00	54.87	48.87	54.00	5.13
11650	34.24	PK	H	37.90	8.90	25.75	55.29	49.29	74.00	24.71
11650	21.11	AV	H	37.90	8.90	25.75	42.16	36.16	54.00	17.84
17475	31.35	PK	H	42.35	12.30	25.39	60.61	54.61	74.00	19.39
17475	19.69	AV	H	42.35	12.30	25.39	48.95	42.95	54.00	11.05
3070	34.86	PK	H	27.42	6.72	27.47	41.53	35.53	74.00	38.47
3070	22.20	AV	H	27.42	6.72	27.47	28.87	22.87	54.00	31.13
2290	35.44	PK	H	25.35	3.40	27.30	36.89	30.89	74.00	43.11
2290	22.09	AV	H	25.35	3.40	27.30	23.54	17.54	54.00	36.46
250.19	35.86	QP	H	12.17	1.92	21.49	28.46	28.46	46.00	17.54

\*Within measurement uncertainty!



802.11n ht40 mode:

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Extrapolation result (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)						
Low Channel:5755 MHz										
5755	74.28	PK	H	32.15	5.50	0.00	111.93	105.93	N/A	N/A
5755	64.37	AV	H	32.15	5.50	0.00	102.02	96.02	N/A	N/A
5755	73.25	PK	V	32.15	5.50	0.00	110.90	104.90	N/A	N/A
5755	62.14	AV	V	32.15	5.50	0.00	99.79	93.79	N/A	N/A
5725	34.76	PK	H	32.15	5.60	0.00	72.51	66.51	74.00	7.49
5725	19.27	AV	H	32.15	5.60	0.00	57.02	51.02	54.00	2.98 *
11510	32.17	PK	H	37.90	8.95	26.12	52.90	46.90	74.00	27.10
11510	19.27	AV	H	37.90	8.95	26.12	40.00	34.00	54.00	20.00
17265	29.34	PK	H	41.09	13.51	25.63	58.31	52.31	74.00	21.69
17265	17.88	AV	H	41.09	13.51	25.63	46.85	40.85	54.00	13.15
3070	33.23	PK	H	27.42	6.72	27.47	39.90	33.90	74.00	40.10
3070	20.17	AV	H	27.42	6.72	27.47	26.84	20.84	54.00	33.16
2290	35.41	PK	H	25.35	3.40	27.30	36.86	30.86	74.00	43.14
2290	21.18	AV	H	25.35	3.40	27.30	22.63	16.63	54.00	37.37
250.19	36.12	QP	H	12.17	1.92	21.49	28.72	28.72	46.00	17.28
High Channel:5795 MHz										
5795	75.80	PK	H	32.16	5.46	0.00	113.42	107.42	N/A	N/A
5795	65.25	AV	H	32.16	5.46	0.00	102.87	96.87	N/A	N/A
5795	73.83	PK	V	32.16	5.46	0.00	111.45	105.45	N/A	N/A
5795	62.85	AV	V	32.16	5.46	0.00	100.47	94.47	N/A	N/A
5850	28.55	PK	H	32.17	6.05	0.00	66.77	60.77	74.00	13.23
5850	16.33	AV	H	32.17	6.05	0.00	54.55	48.55	54.00	5.45
11590	33.82	PK	H	37.90	8.92	26.06	54.58	48.58	74.00	25.42
11590	20.77	AV	H	37.90	8.92	26.06	41.53	35.53	54.00	18.47
17385	31.04	PK	H	41.81	12.82	25.63	60.04	54.04	74.00	19.96
17385	19.32	AV	H	41.81	12.82	25.63	48.32	42.32	54.00	11.68
3070	34.40	PK	H	27.42	6.72	27.47	41.07	35.07	74.00	38.93
3070	21.61	AV	H	27.42	6.72	27.47	28.28	22.28	54.00	31.72
2290	36.91	PK	H	25.35	3.40	27.30	38.36	32.36	74.00	41.64
2290	22.14	AV	H	25.35	3.40	27.30	23.59	17.59	54.00	36.41
250.19	36.53	QP	H	12.17	1.92	21.49	29.13	29.13	46.00	16.87

\*Within measurement uncertainty!



**Co-location Radiated Emission (The test distance is 3m.)**

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)					
2912.5	36.71	PK	H	26.97	6.09	27.54	42.23	74.00	31.77
2912.5	23.93	AV	H	26.97	6.09	27.54	29.45	54.00	24.55
5427.5	35.24	PK	H	31.96	5.51	26.96	45.75	74.00	28.25
5427.5	22.46	AV	H	31.96	5.51	26.96	32.97	54.00	21.03
5590	34.58	PK	H	32.12	5.65	26.78	45.57	74.00	28.43
5590	22.23	AV	H	32.12	5.65	26.78	33.22	54.00	20.78
5090	39.25	PK	V	31.28	5.54	27.28	48.79	74.00	25.21
5090	26.94	AV	V	31.28	5.54	27.28	36.48	54.00	17.52
5585	38.91	PK	V	32.12	5.62	26.79	49.86	74.00	24.14
5585	26.85	AV	V	32.12	5.62	26.79	37.80	54.00	16.20
5870	34.28	PK	V	32.17	5.98	26.73	45.70	74.00	28.30
5870	22.06	AV	V	32.17	5.98	26.73	33.48	54.00	20.52
250.19	45.16	QP	H	12.17	1.92	21.49	37.76	46.00	8.24

**Conducted Spurious Emission at Antenna Port**

**5150-5250 MHz band**

Mode	Channel	Frequency	Conducted Spurious Emissions (dBm)				Result
		MHz	Chain 0	Chain 1	Total	Limits	
802.11a	Low	5180	-34.20	-32.58	-30.30	-27	PASS
	Middle	5200	-34.77	-32.58	-30.53	-27	PASS
	High	5240	-34.33	-33.08	-30.65	-27	PASS
802.11n20	Low	5180	-34.20	-32.84	-30.46	-27	PASS
	Middle	5200	-33.64	-32.46	-30.00	-27	PASS
	High	5240	-34.61	-32.83	-30.62	-27	PASS
802.11n40	Low	5190	-34.11	-32.75	-30.37	-27	PASS
	High	5230	-34.10	-32.36	-30.13	-27	PASS

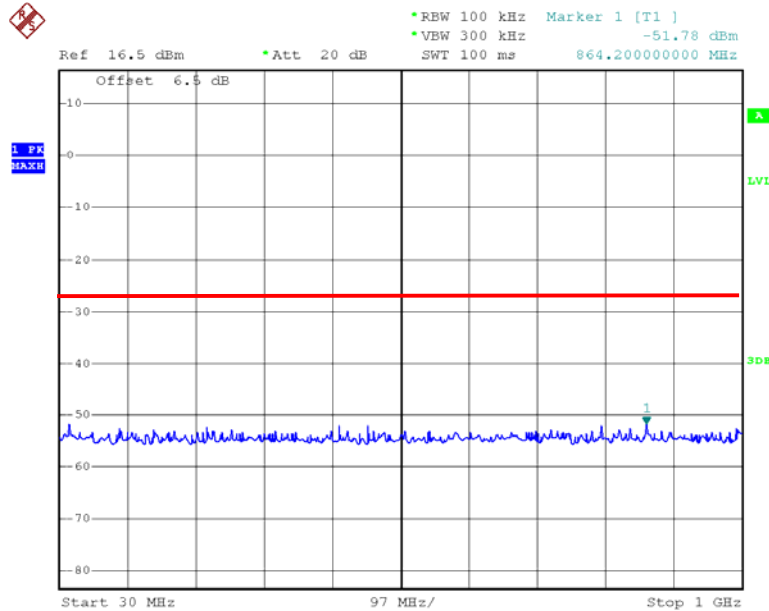
**5725-5850 MHz band**

Mode	Channel	Frequency	Conducted Spurious Emissions (dBm)				Result
		MHz	Chain 0	Chain 1	Total	Limits	
802.11a	Low	5745	-32.49	-32.90	-29.68	-27	PASS
	Middle	5785	-33.42	-32.93	-30.16	-27	PASS
	High	5825	-32.99	-32.83	-29.90	-27	PASS
802.11n20	Low	5745	-33.33	-33.23	-30.27	-27	PASS
	Middle	5785	-32.41	-32.79	-29.59	-27	PASS
	High	5825	-32.68	-32.66	-29.66	-27	PASS
802.11n40	Low	5755	-32.54	-31.63	-29.05	-27	PASS
	High	5795	-33.15	-32.34	-29.72	-27	PASS

**Note: Offset= Antenna Gain(dBi)+Cable loss(dB)**

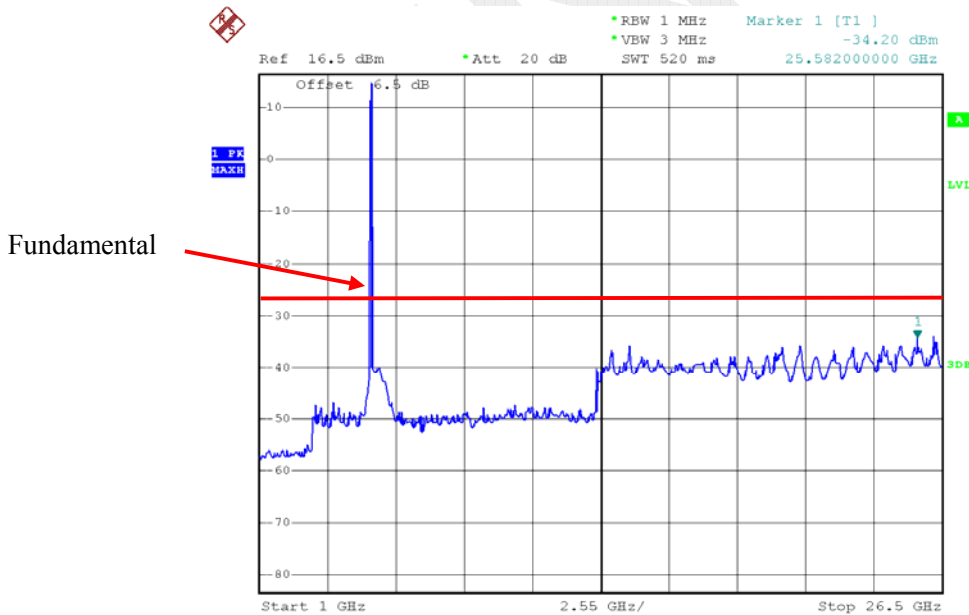
Please refer to the following plots:  
5150MHz-5250MHz:

### 802.11a Low Channel 30MHz-1GHz – Chain0



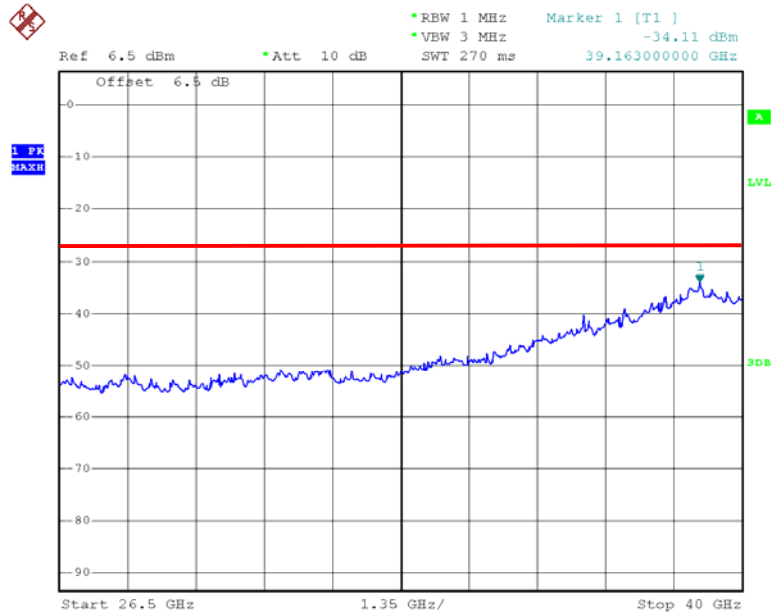
Date: 12.APR.2015 11:37:27

### 802.11a Low Channel 1GHz-26.5GHz – Chain0



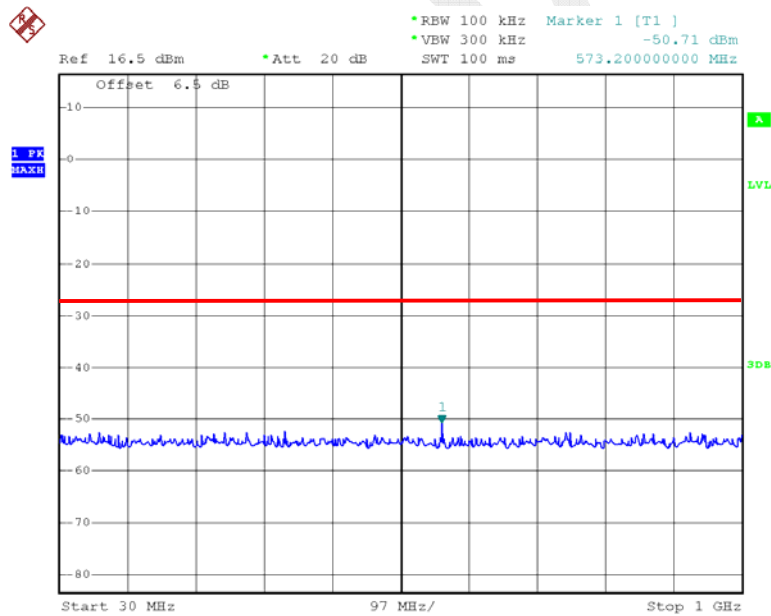
Date: 12.APR.2015 11:35:01

### 802.11a Low Channel 26.5GHz-40GHz – Chain0



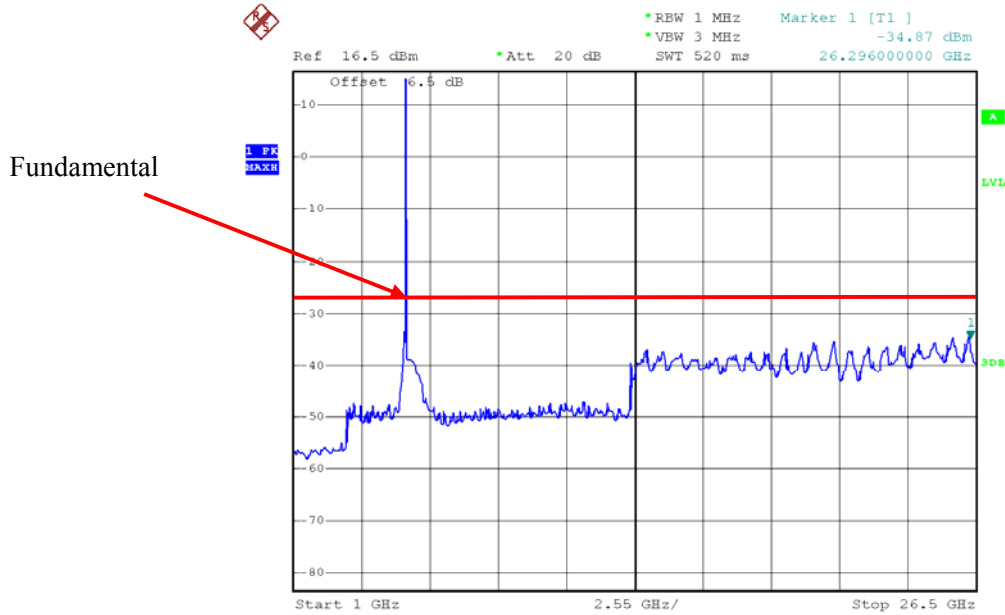
Date: 12.APR.2015 13:40:38

### 802.11a Middle Channel 30MHz-1GHz – Chain0



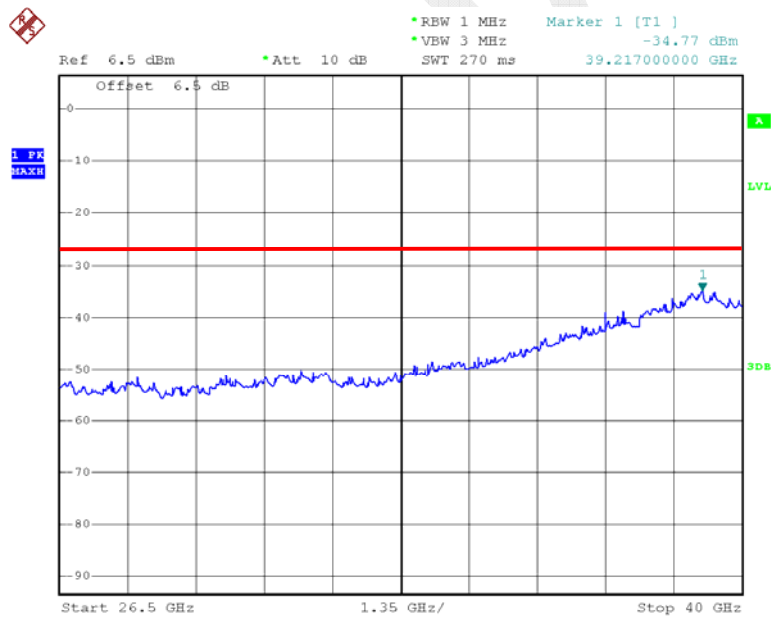
Date: 12.APR.2015 11:37:36

### 802.11a Middle Channel 1GHz -26.5GHz – Chain0



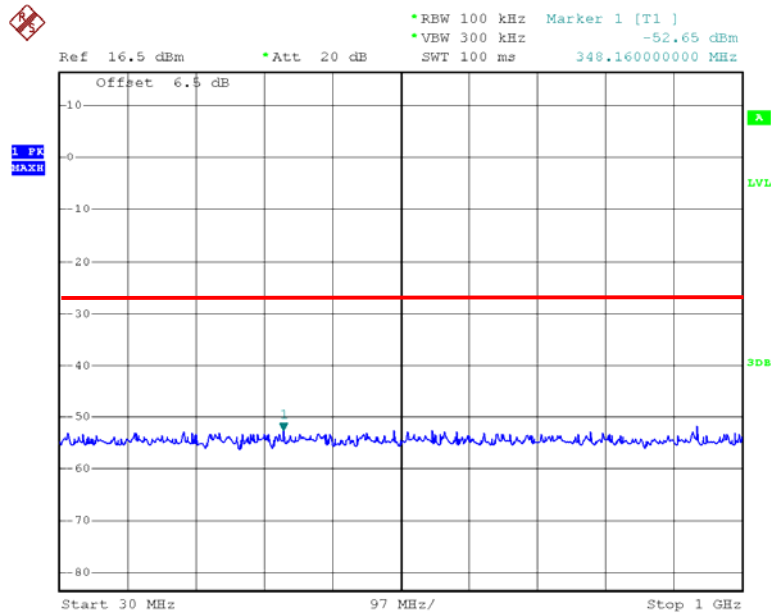
Date: 12.APR.2015 11:36:50

### 802.11a Middle Channel 26.5GHz-40GHz – Chain0



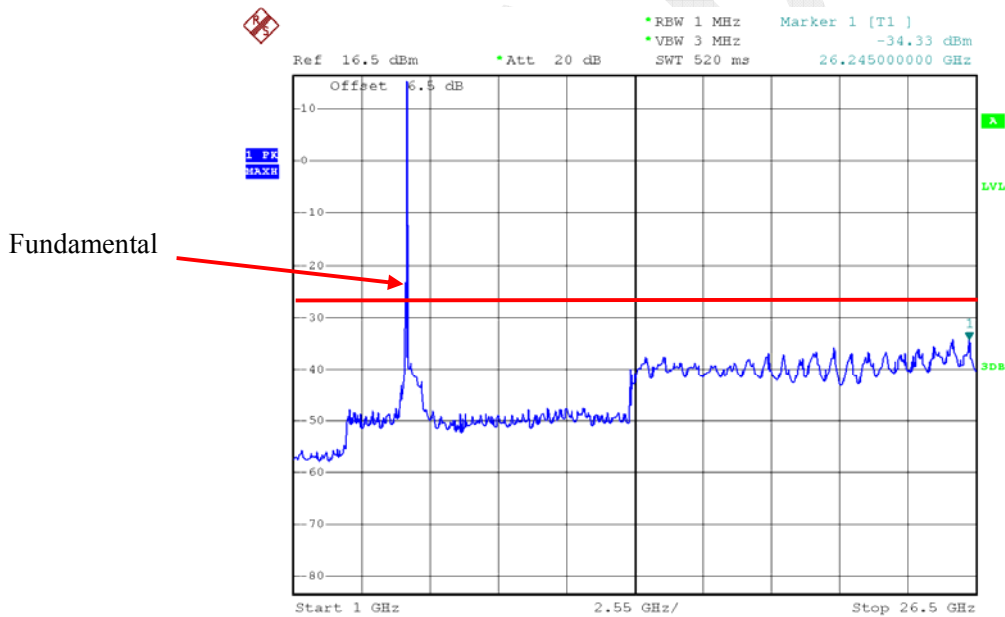
Date: 12.APR.2015 13:40:44

### 802.11a High Channel 30MHz-1GHz – Chain0



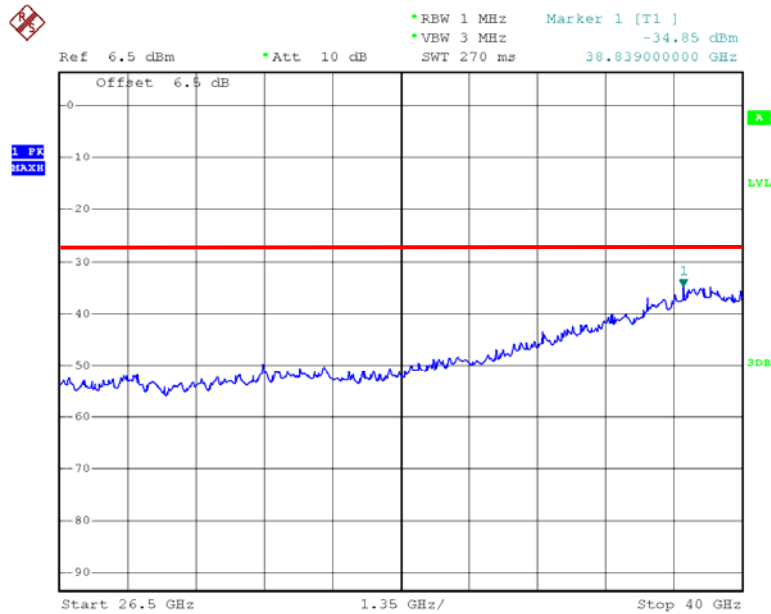
Date: 12.APR.2015 11:37:45

### 802.11a High Channel 1GHz-26.5GHz – Chain0



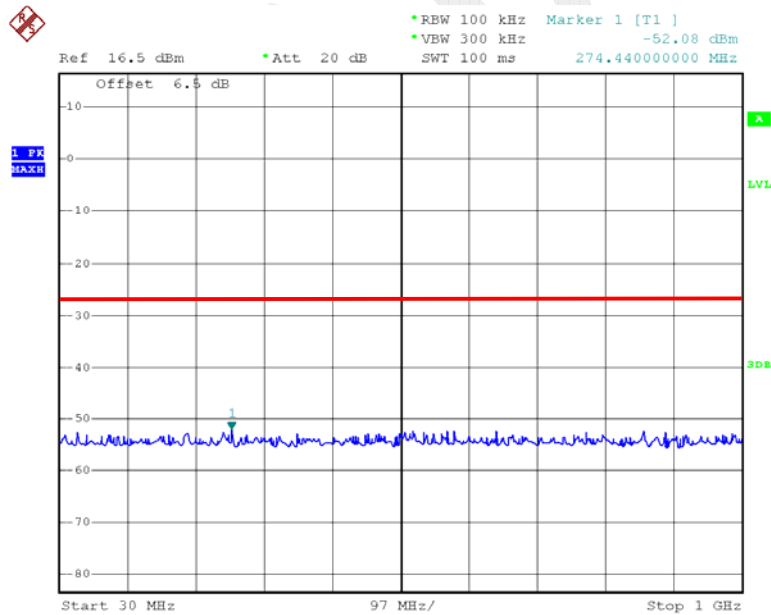
Date: 12.APR.2015 11:37:06

### 802.11a High Channel 26.5GHz-40GHz – Chain0



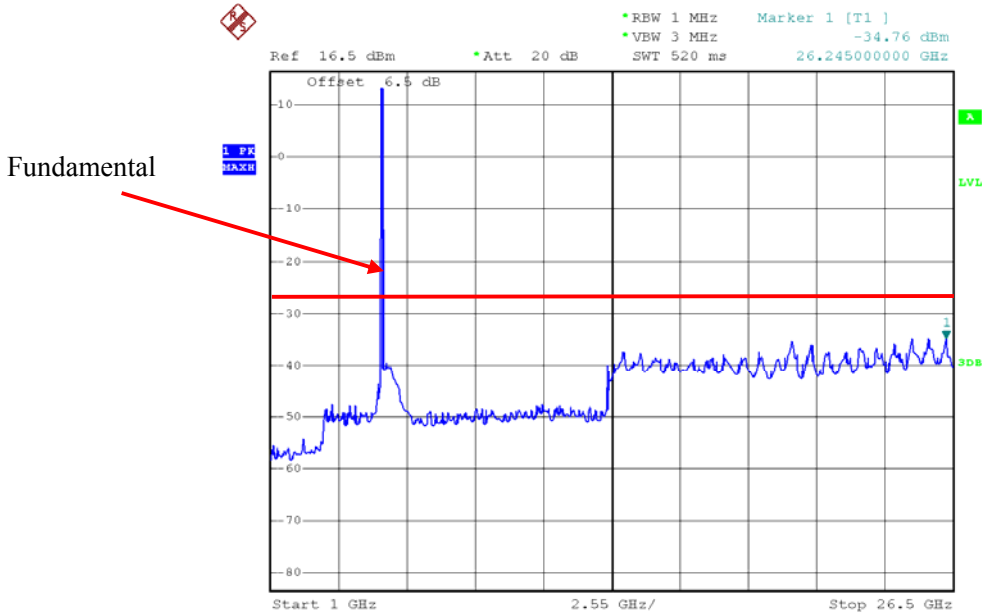
Date: 12.APR.2015 13:40:51

### 802.11n ht20 Low Channel 30MHz-1GHz – Chain0



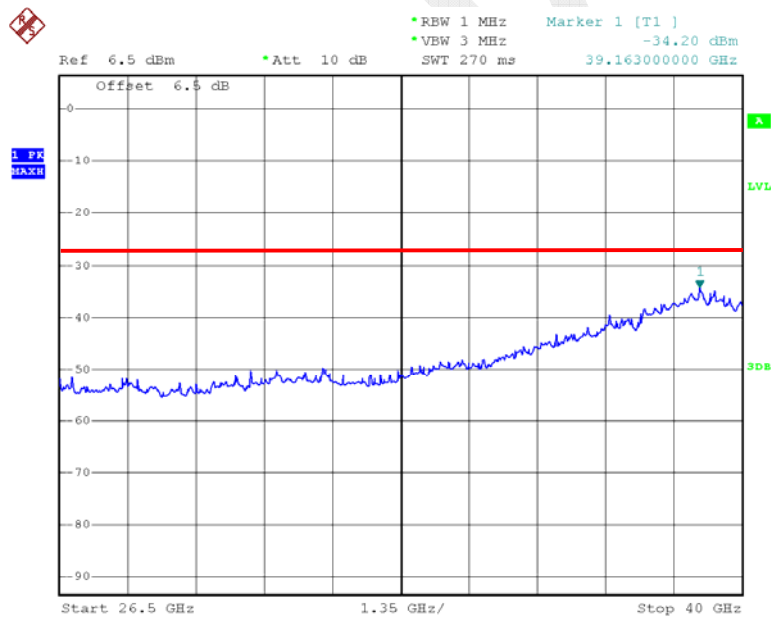
Date: 12.APR.2015 11:38:15

### 802.11n ht20 Low Channel 1GHz-26.5GHz – Chain0



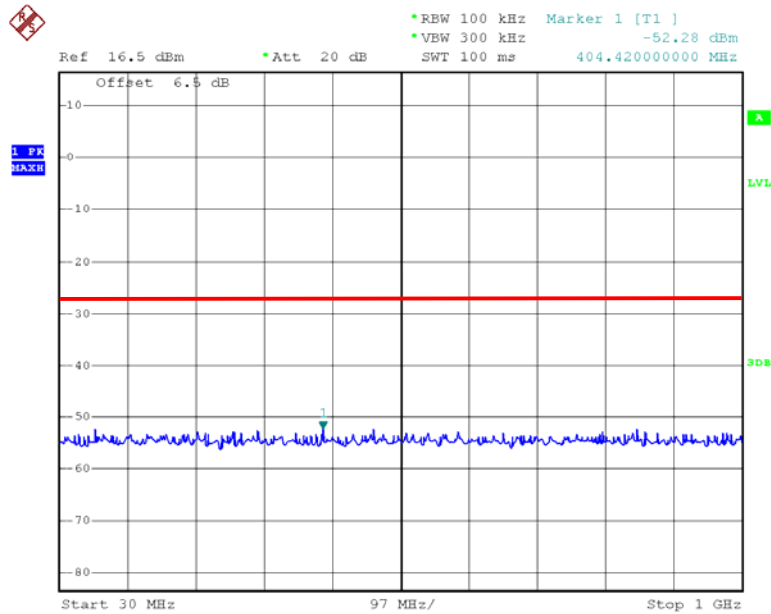
Date: 12.APR.2015 11:33:47

### 802.11n ht20 Low Channel 26.5GHz-40GHz – Chain0



Date: 12.APR.2015 13:40:58

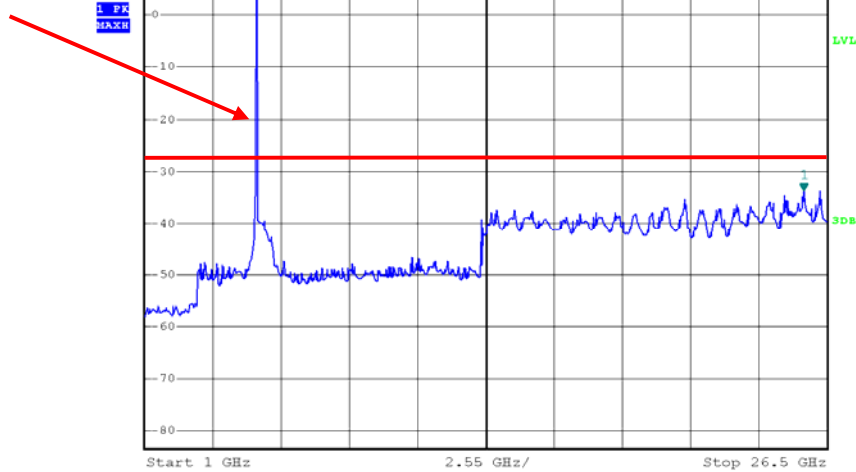
### 802.11n ht20 Middle Channel 30MHz-1GHz – Chain0



Date: 12.APR.2015 11:38:04

### 802.11n ht20 Middle Channel 1GHz -26.5GHz – Chain0

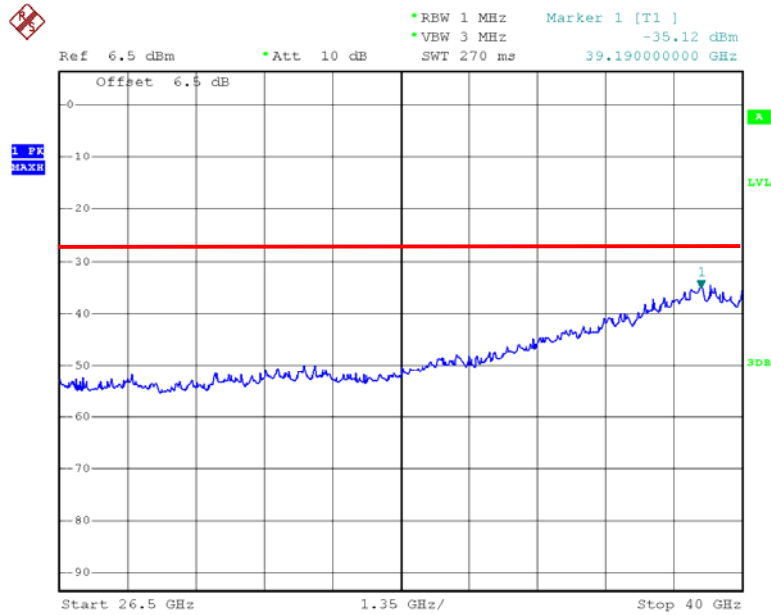
Fundamental



Date: 12.APR.2015 11:34:06

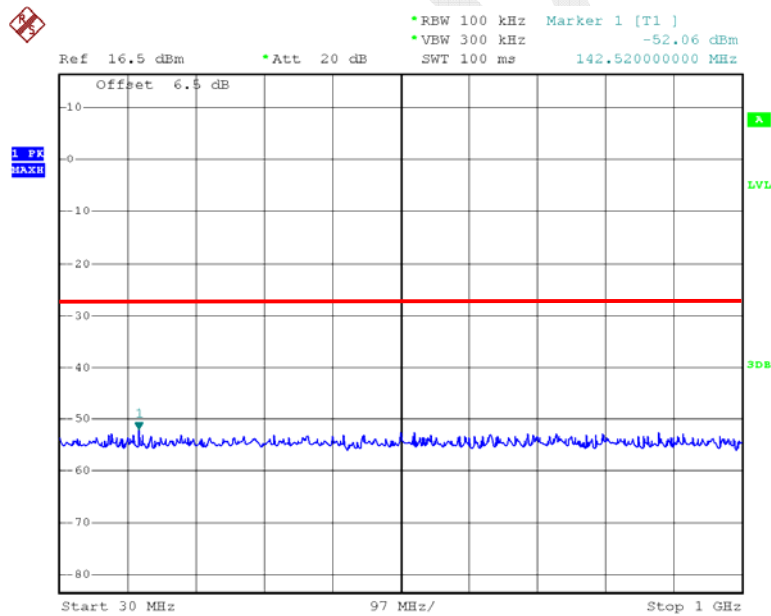


### 802.11n ht20 Middle Channel 26.5GHz-40GHz – Chain0



Date: 12.APR.2015 13:41:03

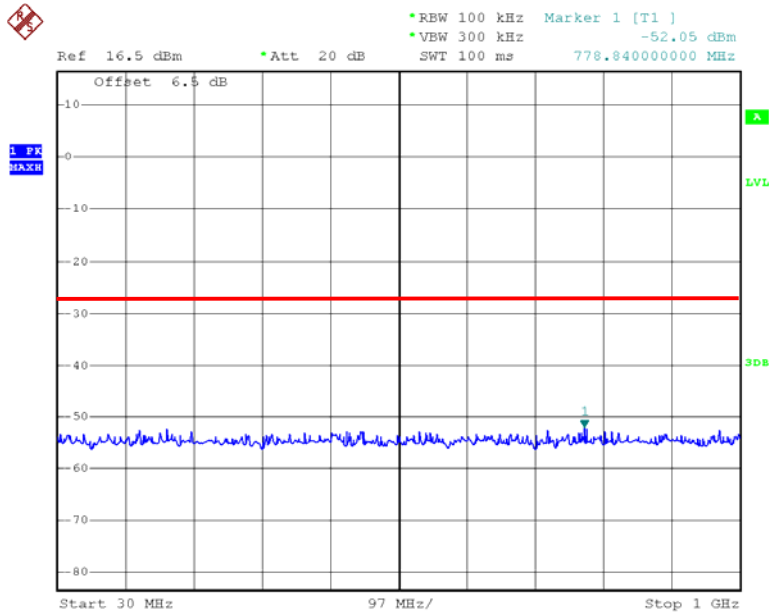
### 802.11n ht20 High Channel 30MHz-1GHz – Chain0



Date: 12.APR.2015 11:37:55

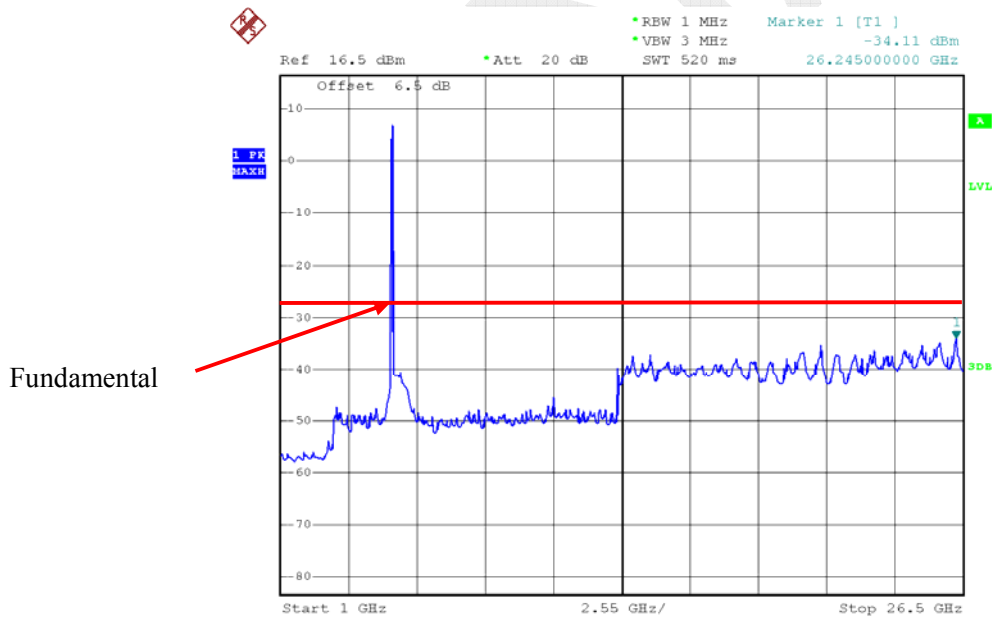


### 802.11n ht40 Low Channel 30MHz-1GHz – Chain0



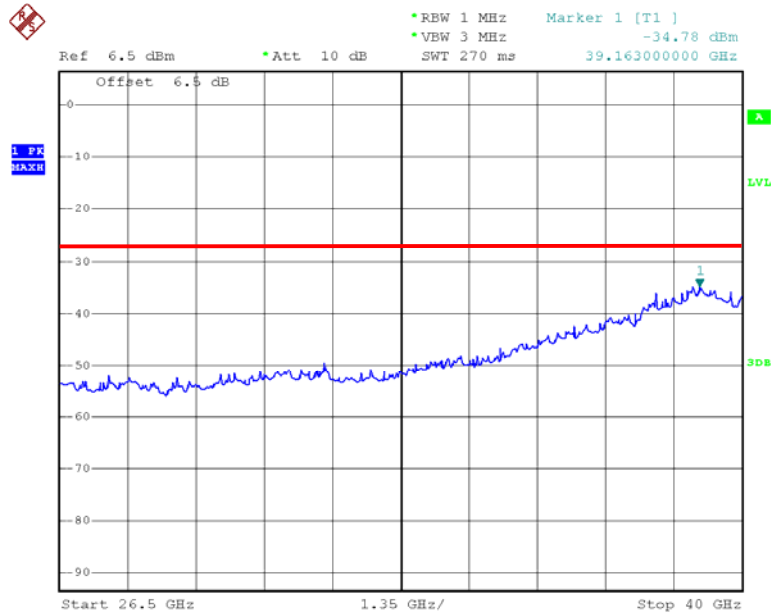
Date: 12.APR.2015 11:38:23

### 802.11n ht40 Low Channel 1GHz-26.5GHz – Chain0



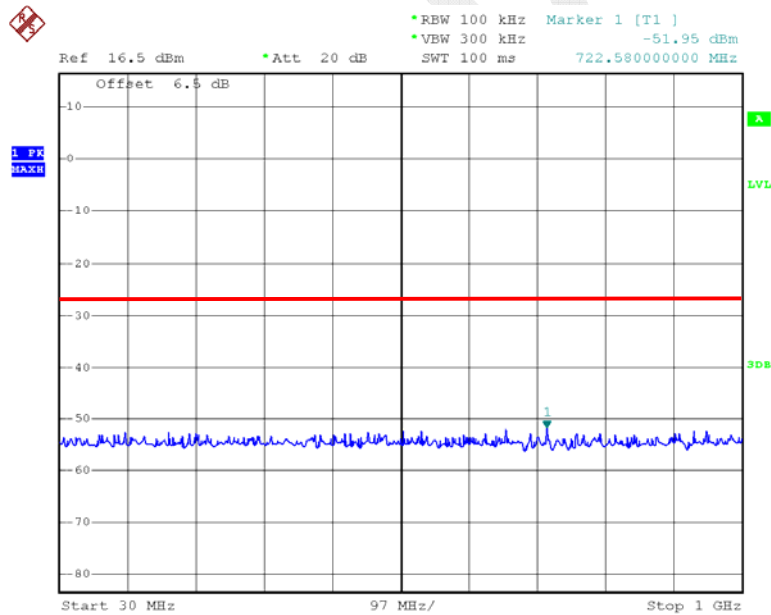
Date: 12.APR.2015 11:33:14

### 802.11n ht40 Low Channel 26.5GHz-40GHz – Chain0



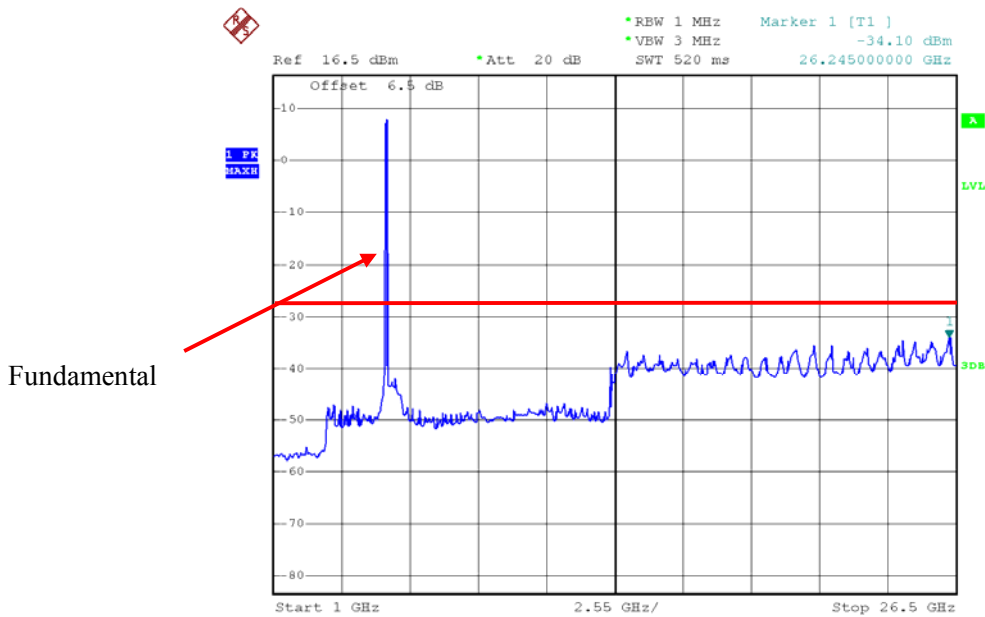
Date: 12.APR.2015 13:41:15

### 802.11n ht40 High Channel 30MHz-1GHz – Chain0



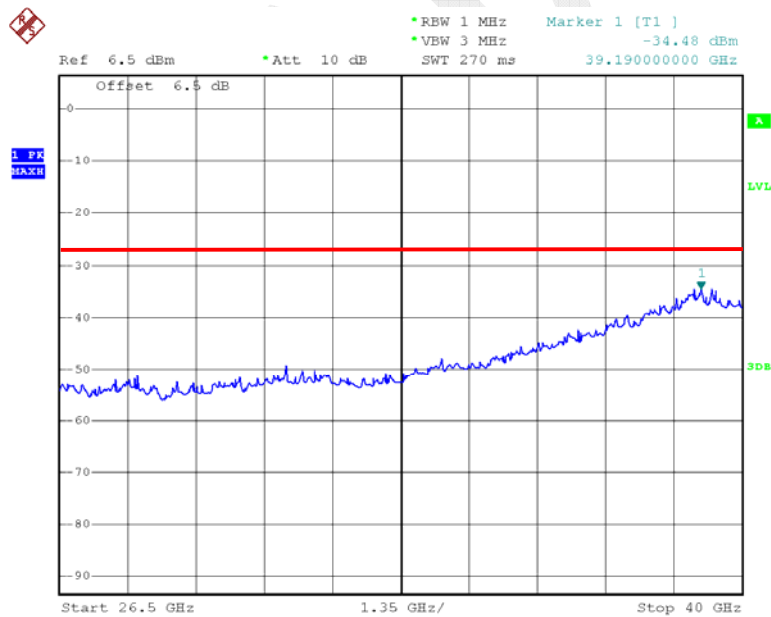
Date: 12.APR.2015 11:38:33

### 802.11n ht40 High Channel 1GHz-26.5GHz – Chain0



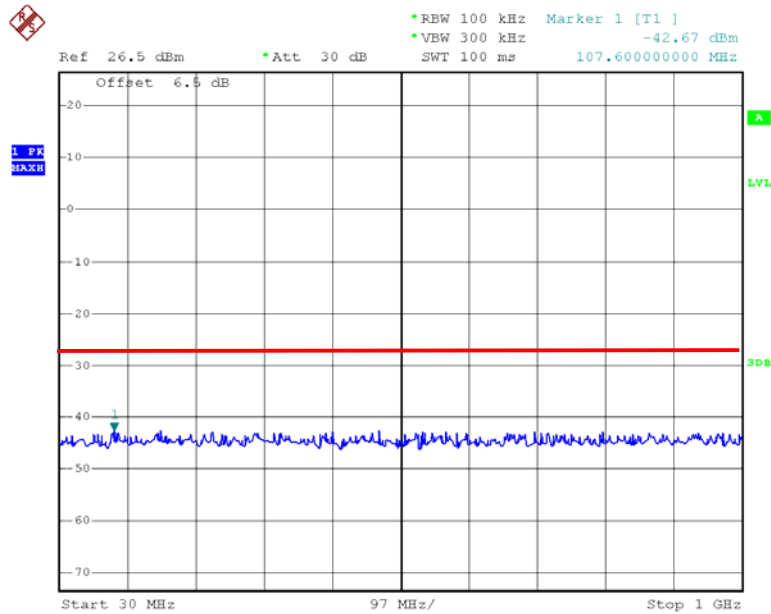
Date: 12.APR.2015 11:32:42

### 802.11n ht40 High Channel 26.5GHz-40GHz – Chain0



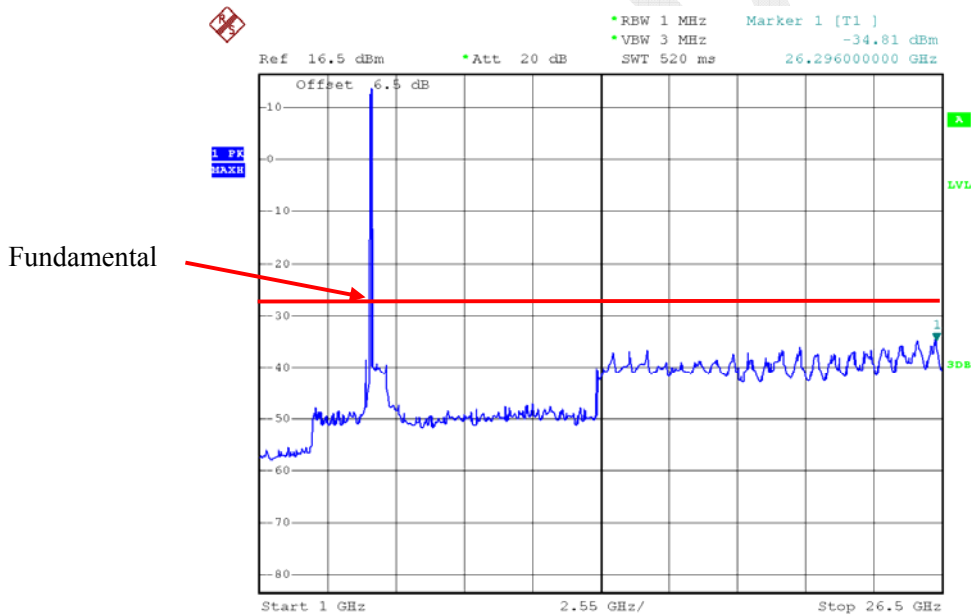
Date: 12.APR.2015 13:41:21

### 802.11a Low Channel 30MHz-1GHz – Chain1



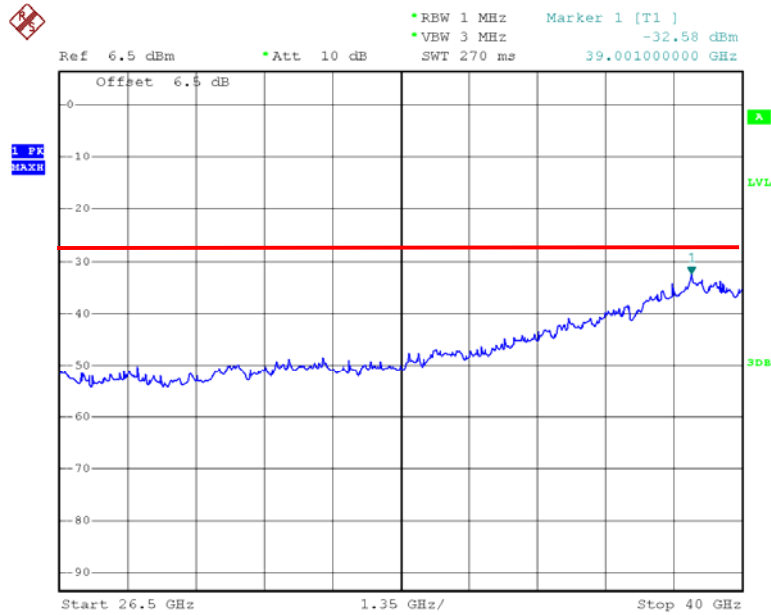
Date: 12.APR.2015 12:18:51

### 802.11a Low Channel 1GHz-26.5GHz – Chain1



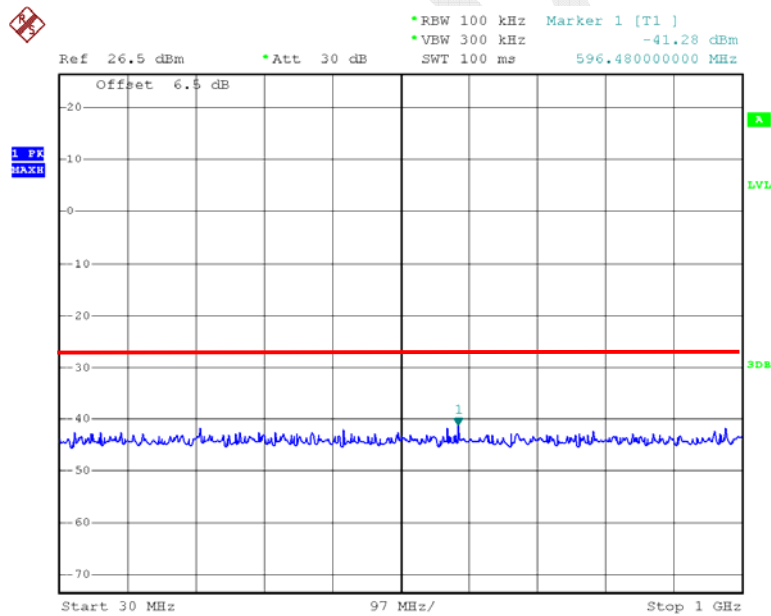
Date: 12.APR.2015 12:12:23

### 802.11a Low Channel 26.5GHz-40GHz – Chain1



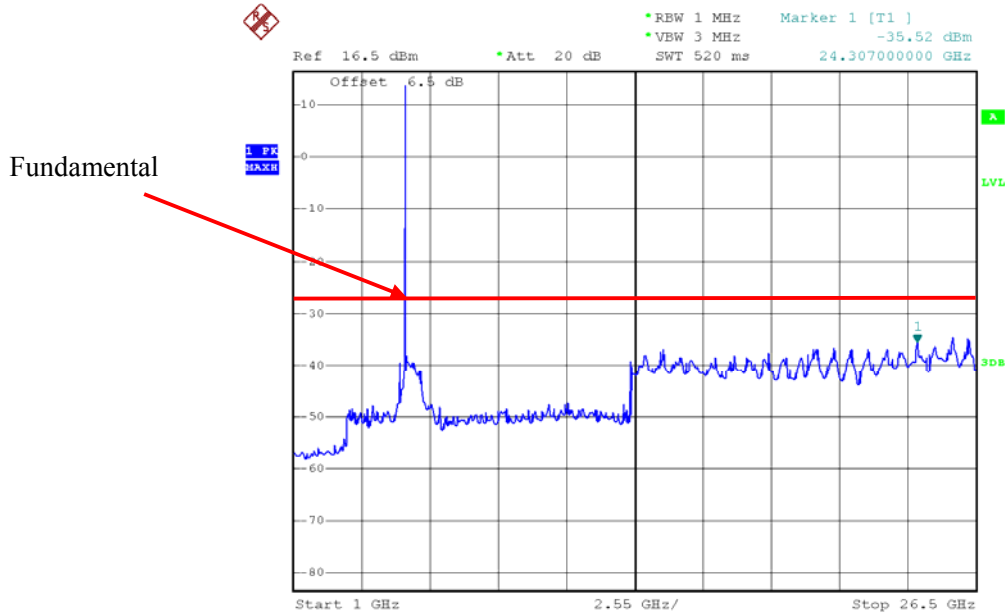
Date: 15.APR.2015 01:17:34

### 802.11a Middle Channel 30MHz-1GHz – Chain1



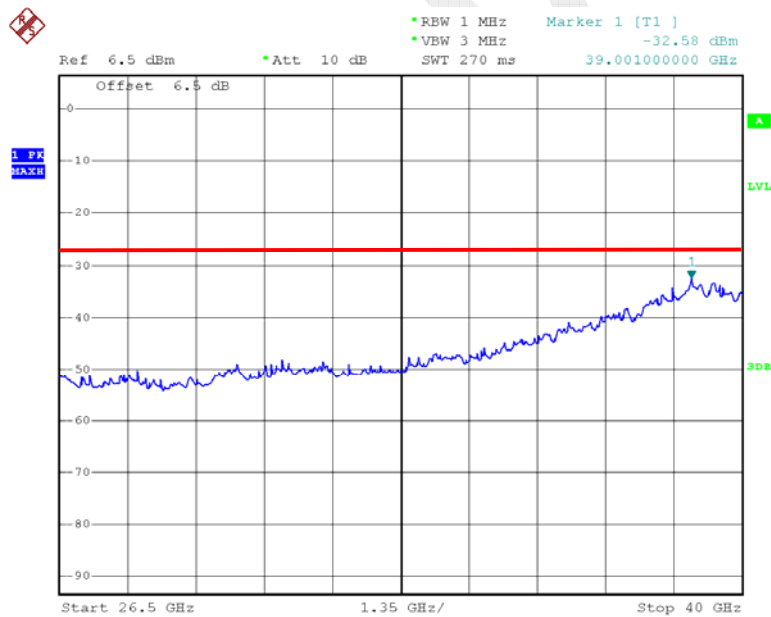
Date: 12.APR.2015 12:19:09

### 802.11a Middle Channel 1GHz -26.5GHz – Chain1



Date: 12.APR.2015 12:12:37

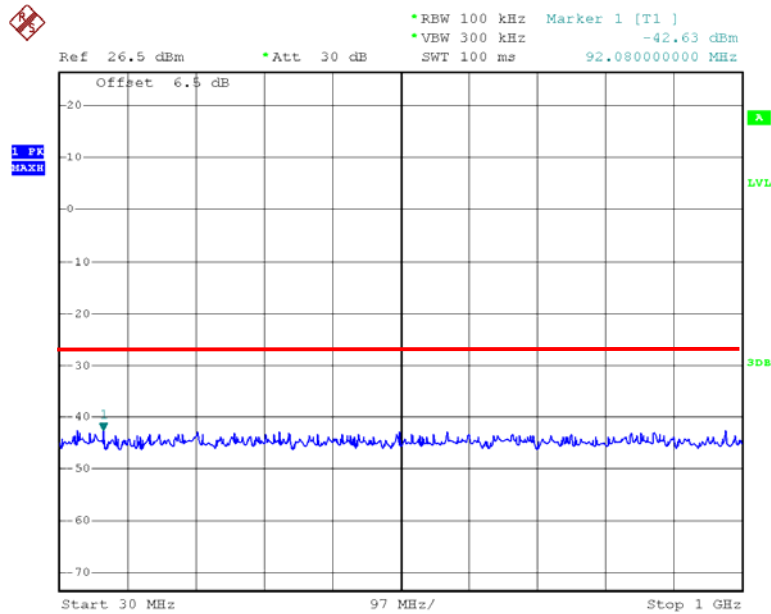
### 802.11a Middle Channel 26.5GHz-40GHz – Chain1



Date: 15.APR.2015 01:17:37

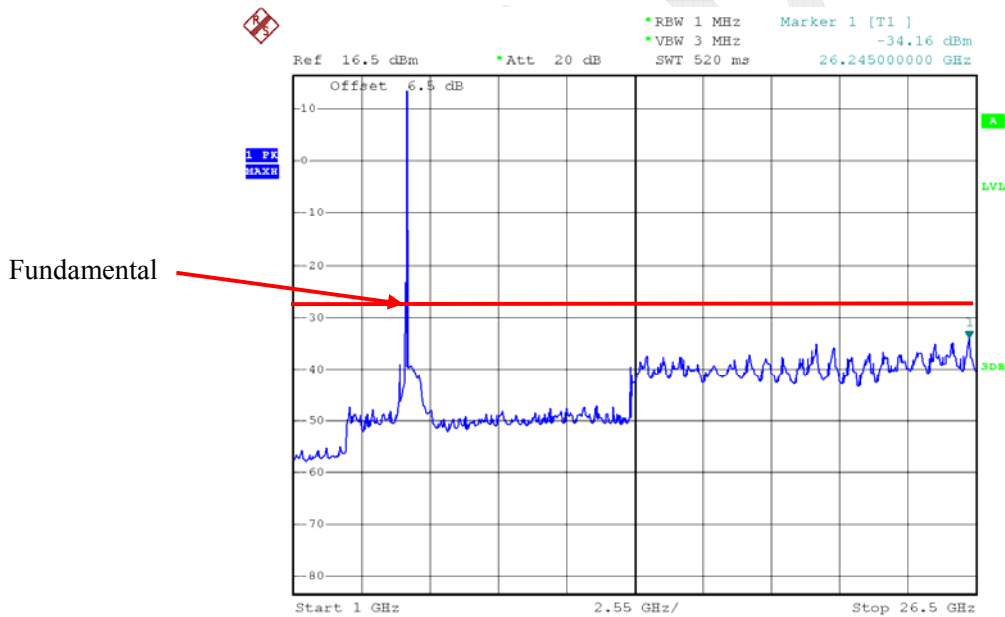


### 802.11a High Channel 30MHz-1GHz – Chain1



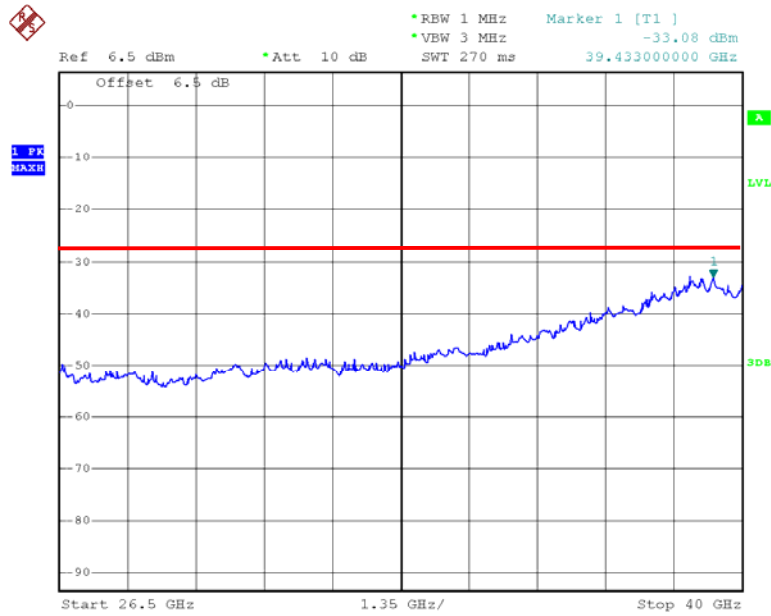
Date: 12.APR.2015 12:19:16

### 802.11a High Channel 1GHz-26.5GHz – Chain1



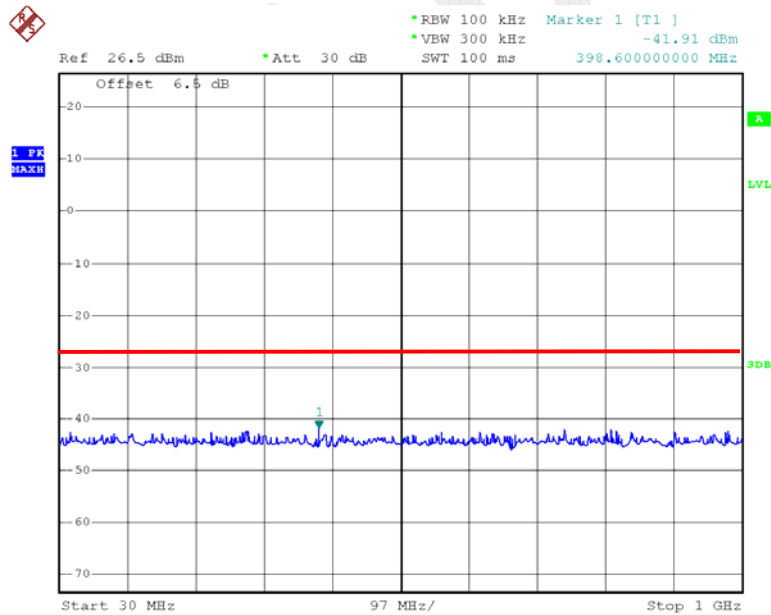
Date: 12.APR.2015 12:12:53

### 802.11a High Channel 26.5GHz-40GHz – Chain1



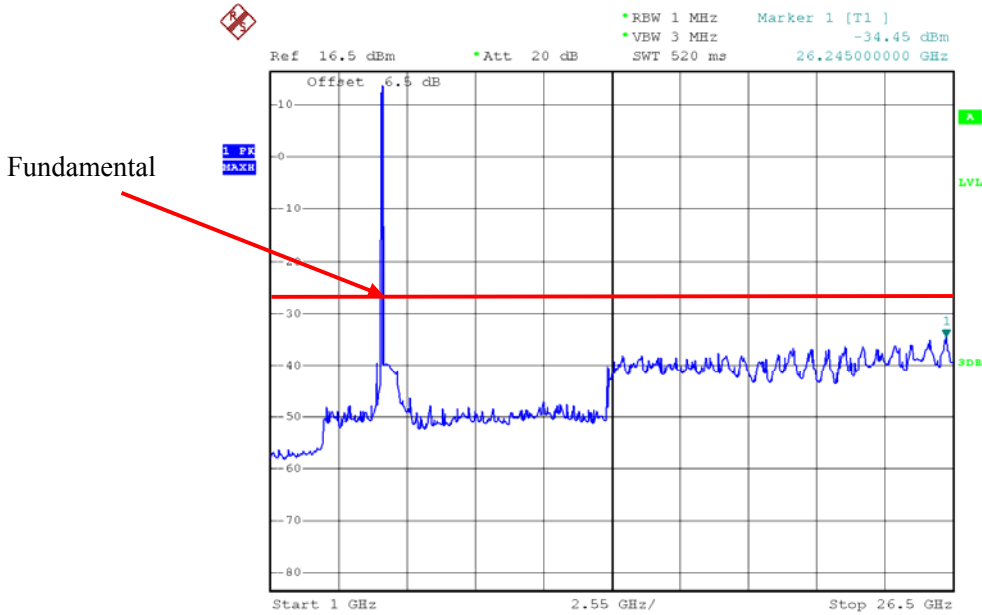
Date: 15.APR.2015 01:17:46

### 802.11n ht20 Low Channel 30MHz-1GHz – Chain1



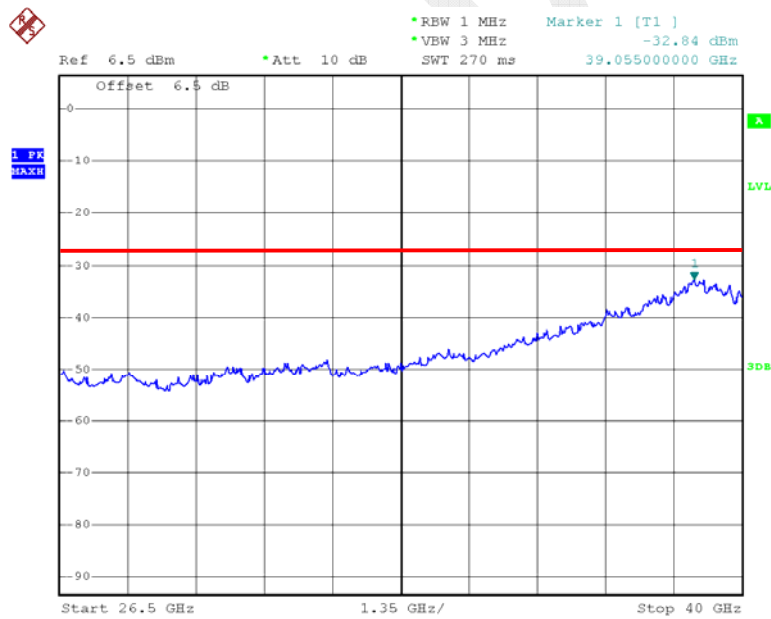
Date: 12.APR.2015 12:18:28

### 802.11n ht20 Low Channel 1GHz-26.5GHz – Chain1



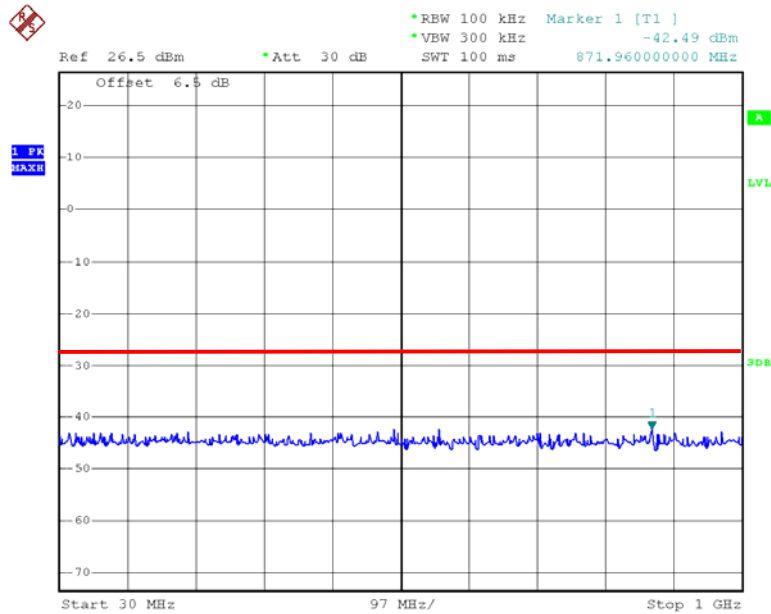
Date: 12.APR.2015 12:13:23

### 802.11n ht20 Low Channel 26.5GHz-40GHz – Chain1



Date: 15.APR.2015 01:17:55

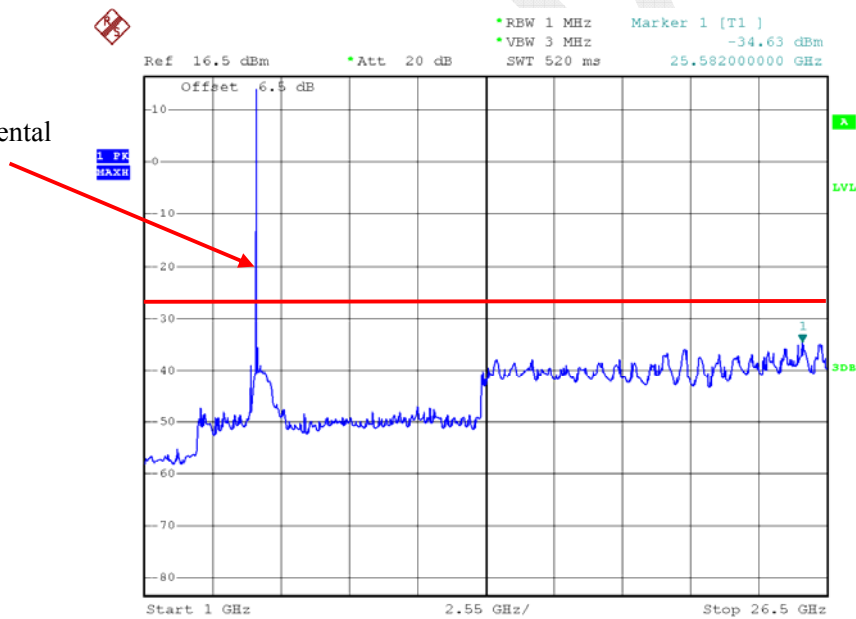
### 802.11n ht20 Middle Channel 30MHz-1GHz – Chain1



Date: 12.APR.2015 12:18:35

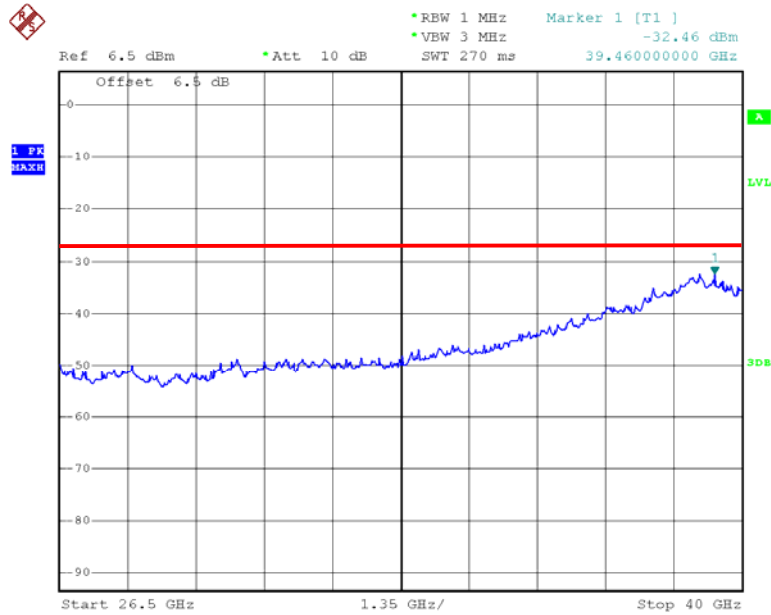
### 802.11n ht20 Middle Channel 1GHz -26.5GHz – Chain1

Fundamental



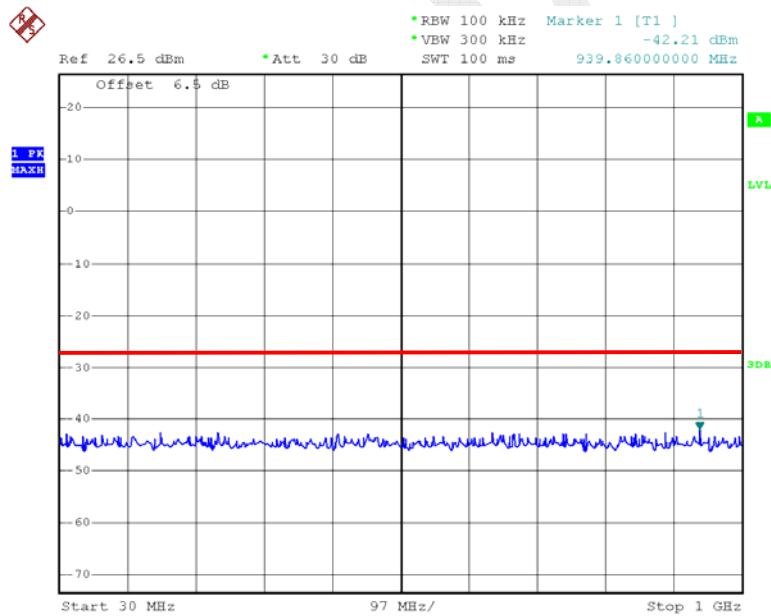
Date: 12.APR.2015 12:13:36

### 802.11n ht20 Middle Channel 26.5GHz-40GHz – Chain1



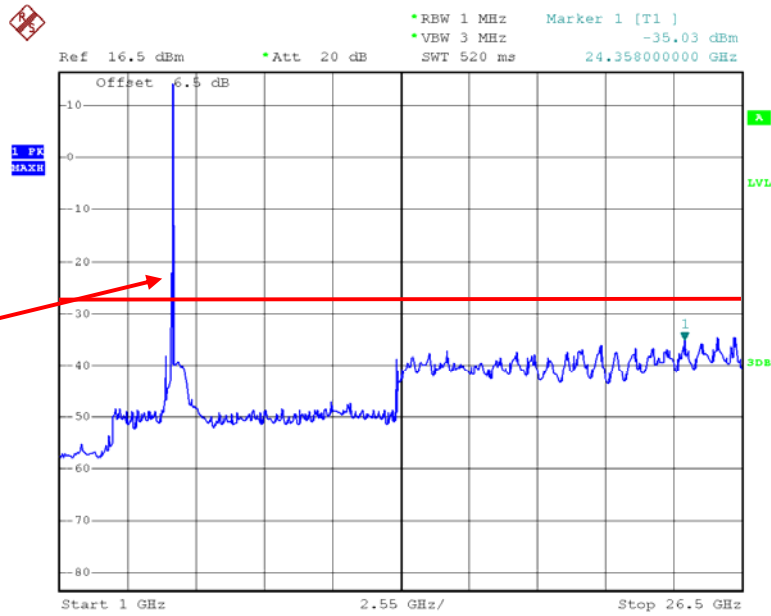
Date: 15.APR.2015 01:18:07

### 802.11n ht20 High Channel 30MHz-1GHz – Chain1



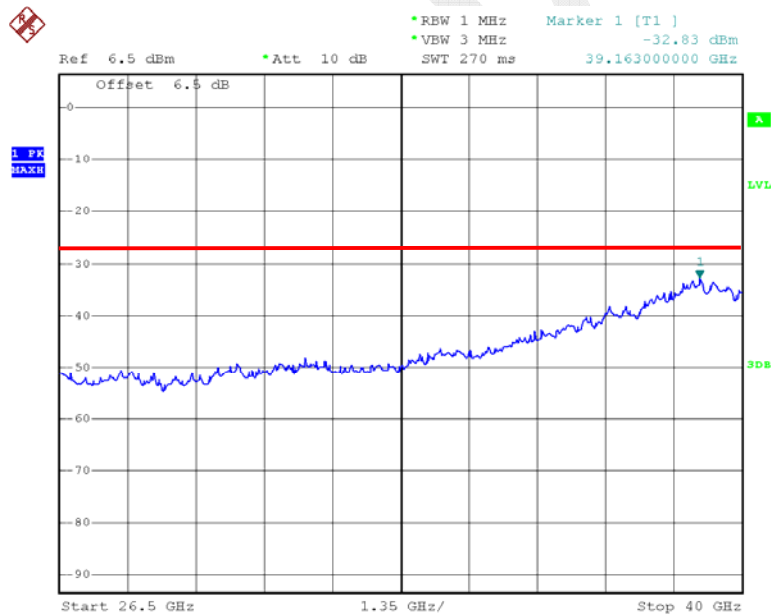
Date: 12.APR.2015 12:18:43

### 802.11n ht20 High Channel 1GHz-26.5GHz – Chain1



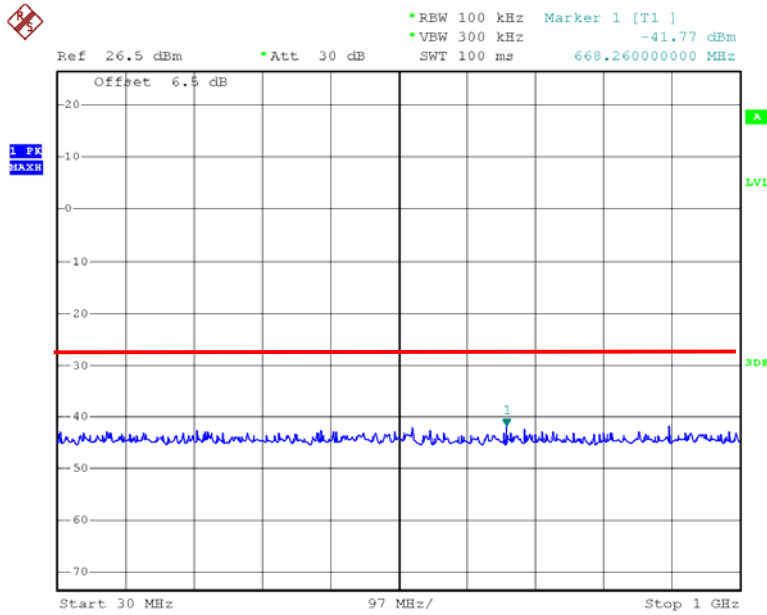
Date: 12.APR.2015 12:13:49

### 802.11n ht20 High Channel 26.5GHz-40GHz – Chain1



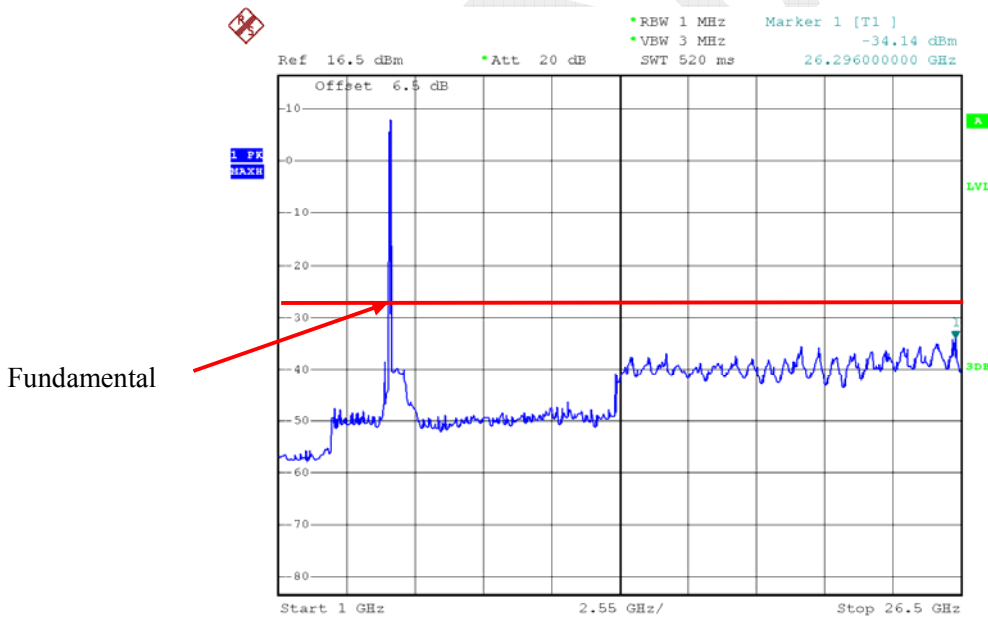
Date: 15.APR.2015 01:18:15

### 802.11n ht40 Low Channel 30MHz-1GHz – Chain1



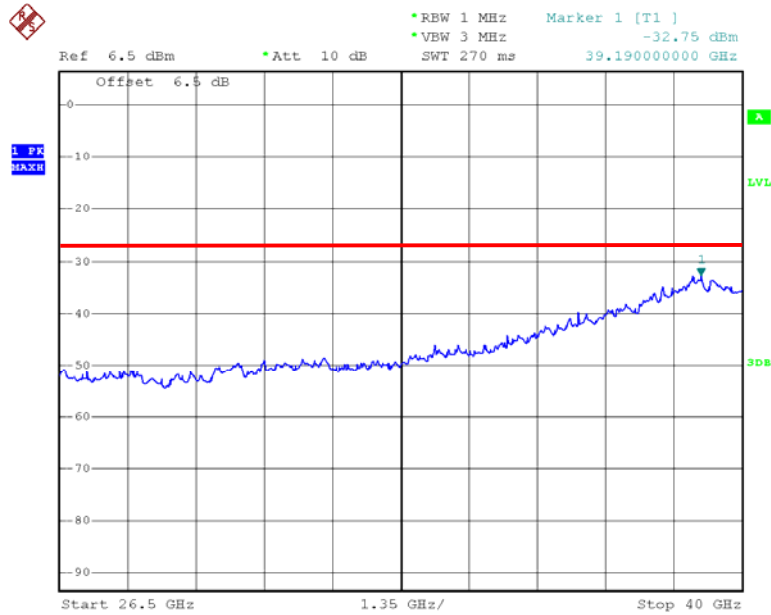
Date: 12.APR.2015 12:18:09

### 802.11n ht40 Low Channel 1GHz-26.5GHz – Chain1



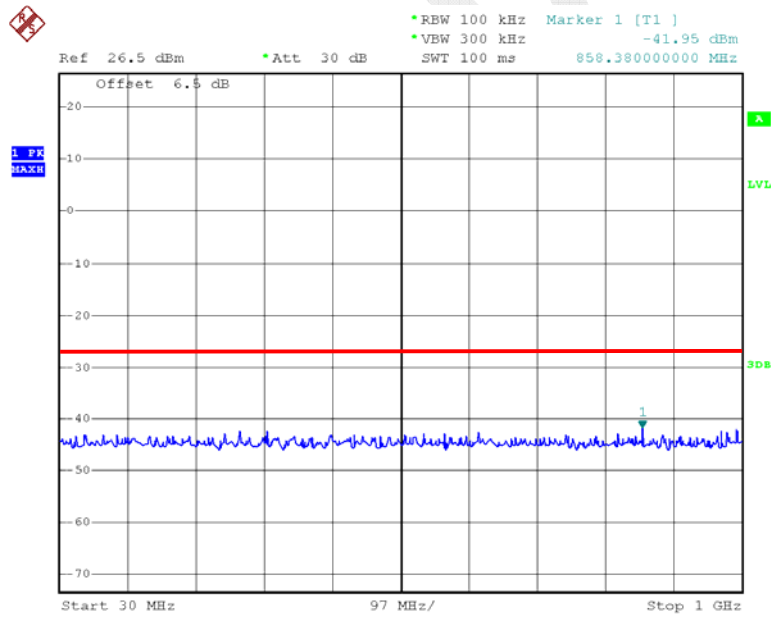
Date: 12.APR.2015 12:14:20

### 802.11n ht40 Low Channel 26.5GHz-40GHz – Chain1



Date: 15.APR.2015 01:18:36

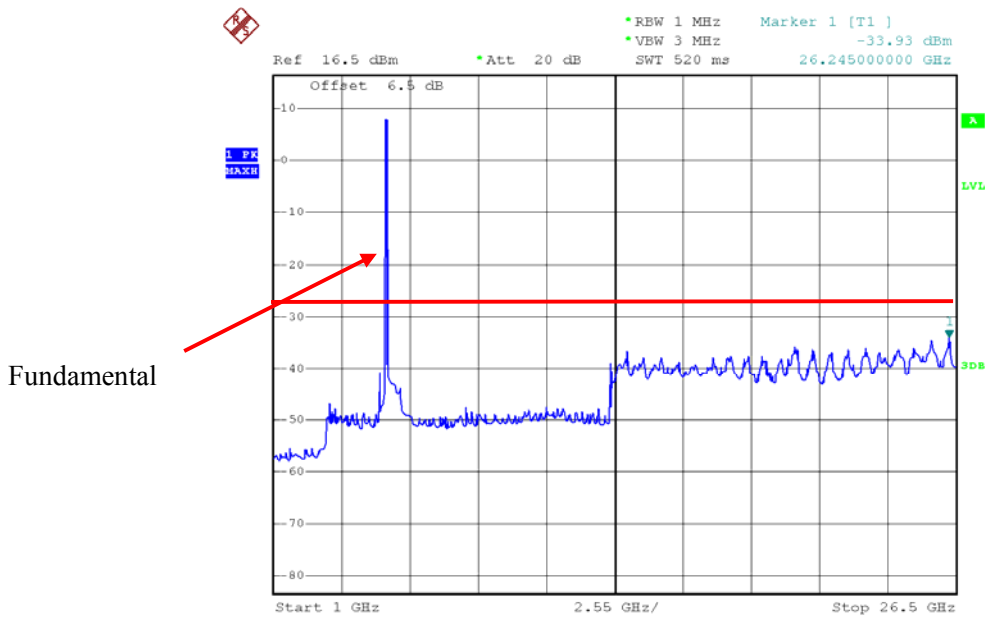
### 802.11n ht40 High Channel 30MHz-1GHz – Chain1



Date: 12.APR.2015 12:18:17

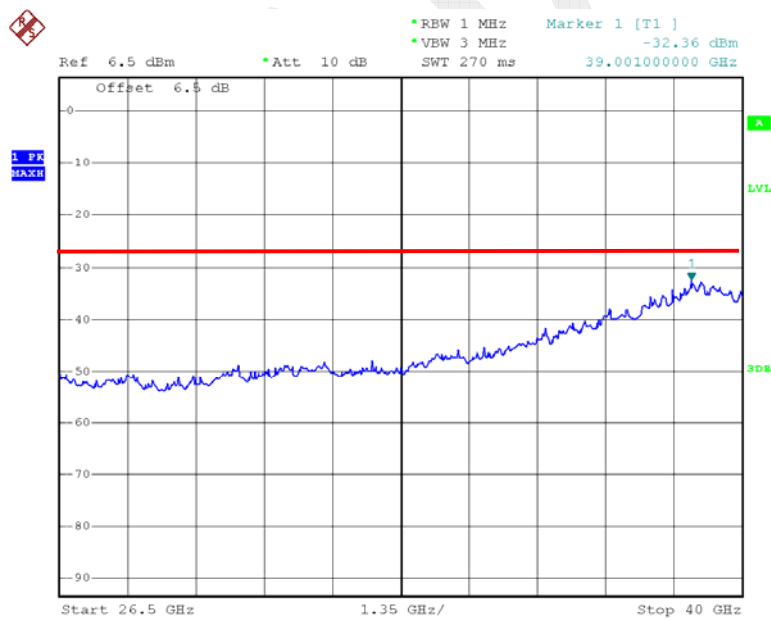


### 802.11n ht40 High Channel 1GHz-26.5GHz – Chain1



Date: 12.APR.2015 12:14:36

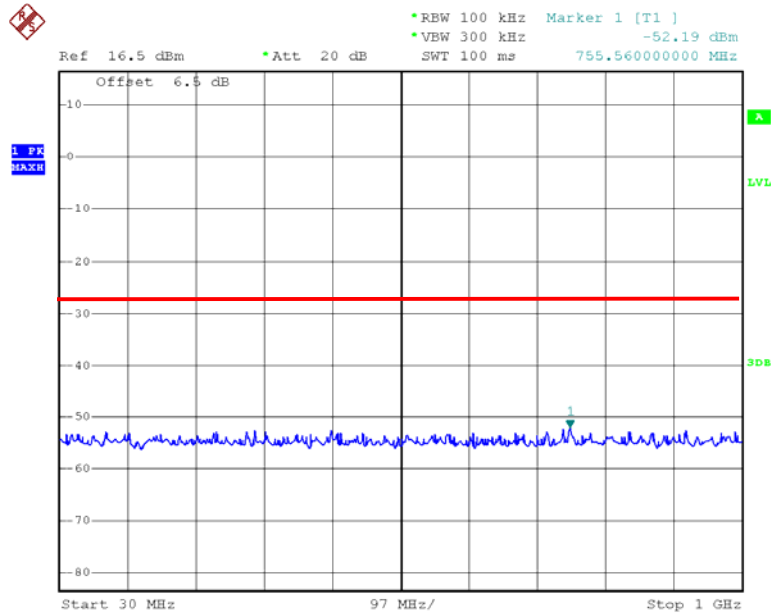
### 802.11n ht40 High Channel 26.5GHz-40GHz – Chain1



Date: 15.APR.2015 01:18:27

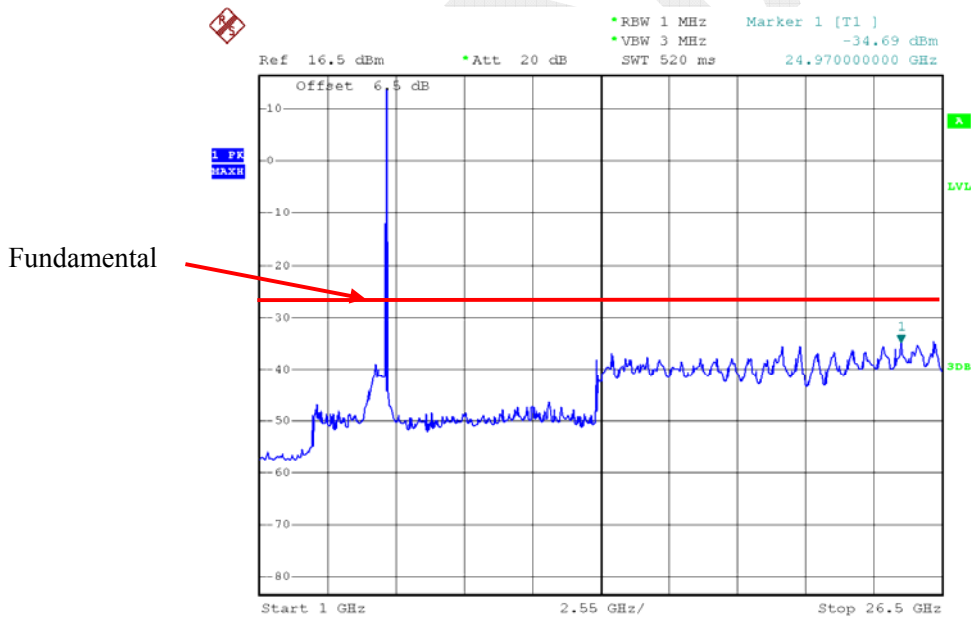
5725MHz-5850MHz:

### 802.11a Low Channel 30MHz-1GHz – Chain0



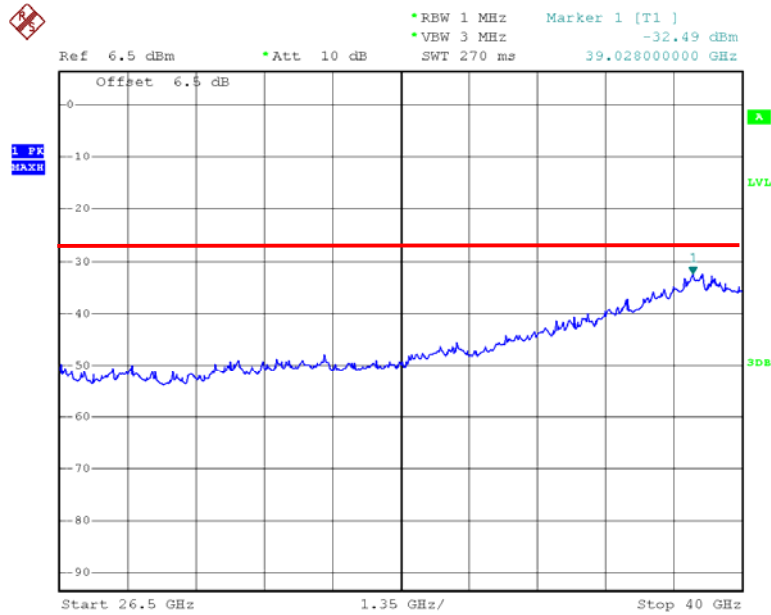
Date: 12.APR.2015 12:52:44

### 802.11a Low Channel 1GHz-26.5GHz – Chain0



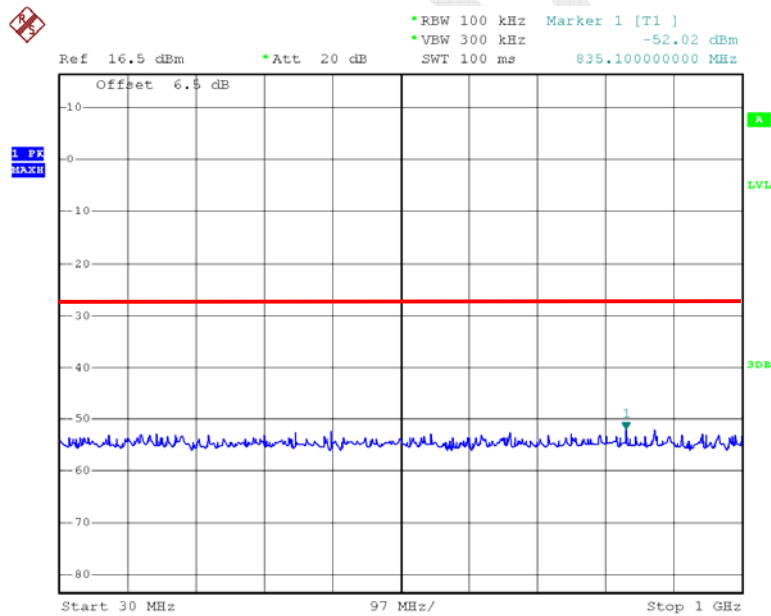
Date: 12.APR.2015 12:49:23

### 802.11a Low Channel 26.5GHz-40GHz – Chain0



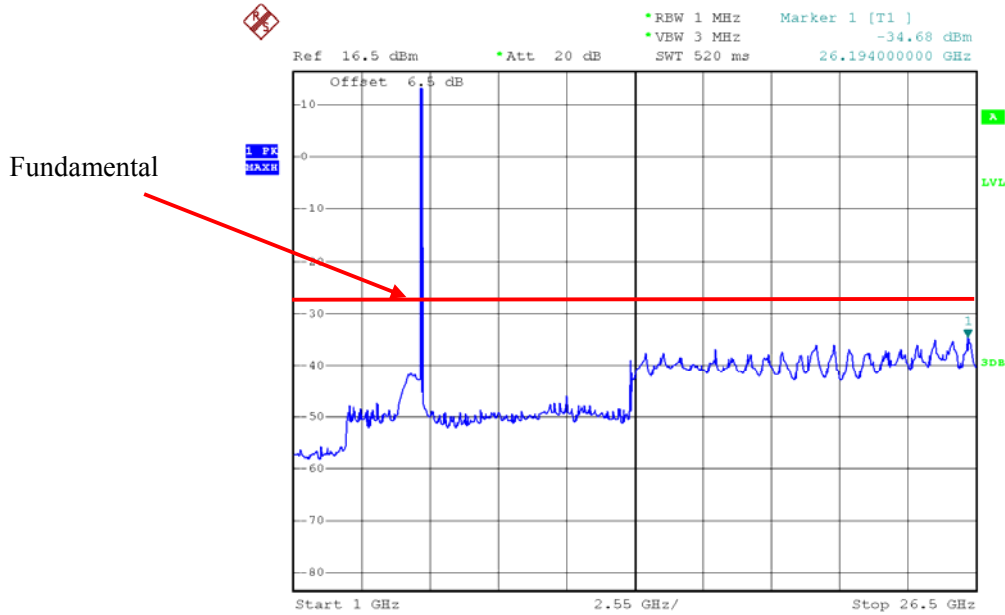
Date: 15.APR.2015 01:19:07

### 802.11a Middle Channel 30MHz-1GHz – Chain0



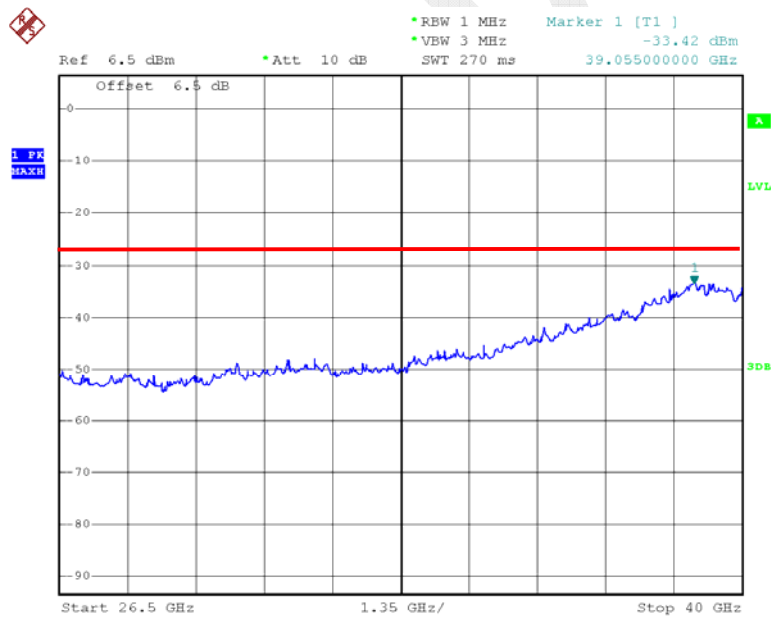
Date: 12.APR.2015 12:52:51

### 802.11a Middle Channel 1GHz -26.5GHz – Chain0



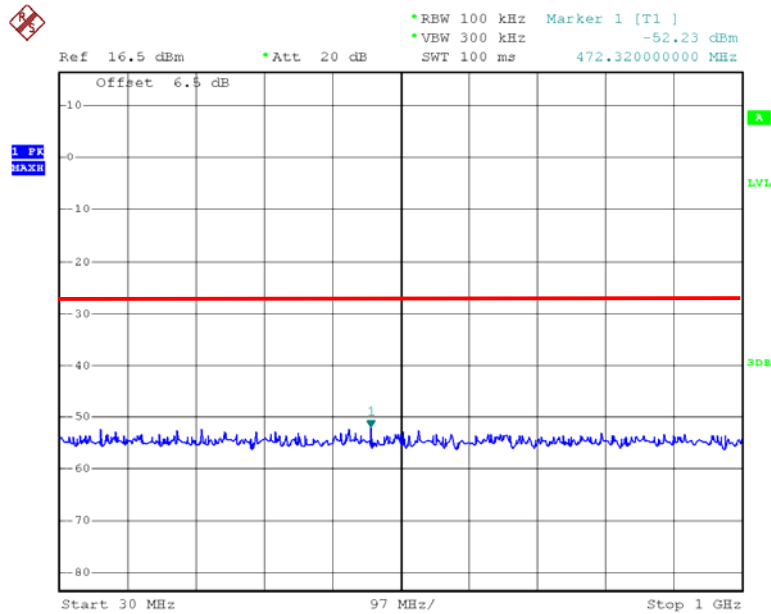
Date: 12.APR.2015 12:49:04

### 802.11a Middle Channel 26.5GHz-40GHz – Chain0



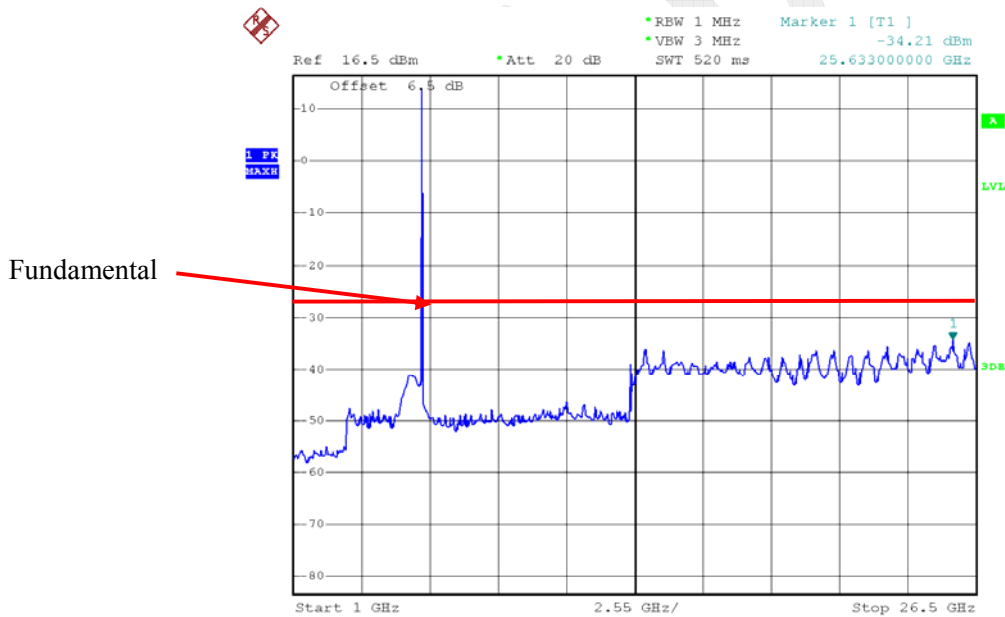
Date: 15.APR.2015 01:18:54

### 802.11a High Channel 30MHz-1GHz – Chain0



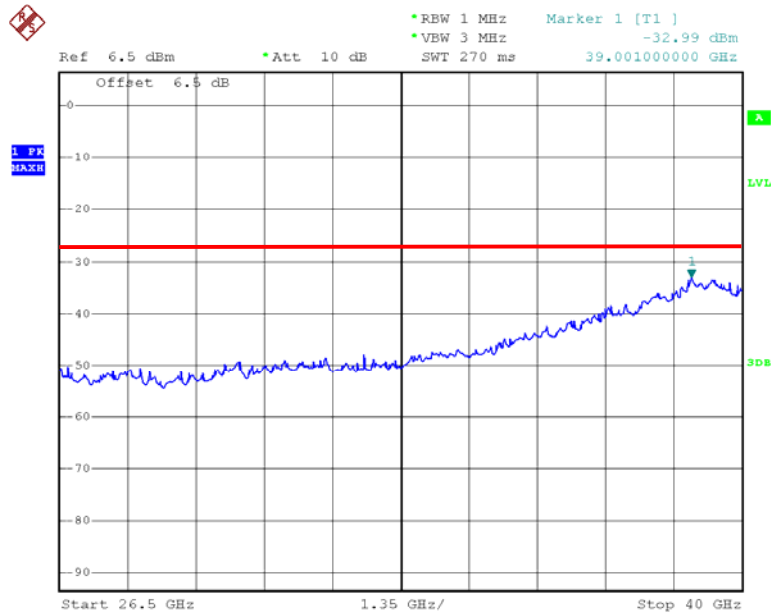
Date: 12.APR.2015 12:52:59

### 802.11a High Channel 1GHz-26.5GHz – Chain0



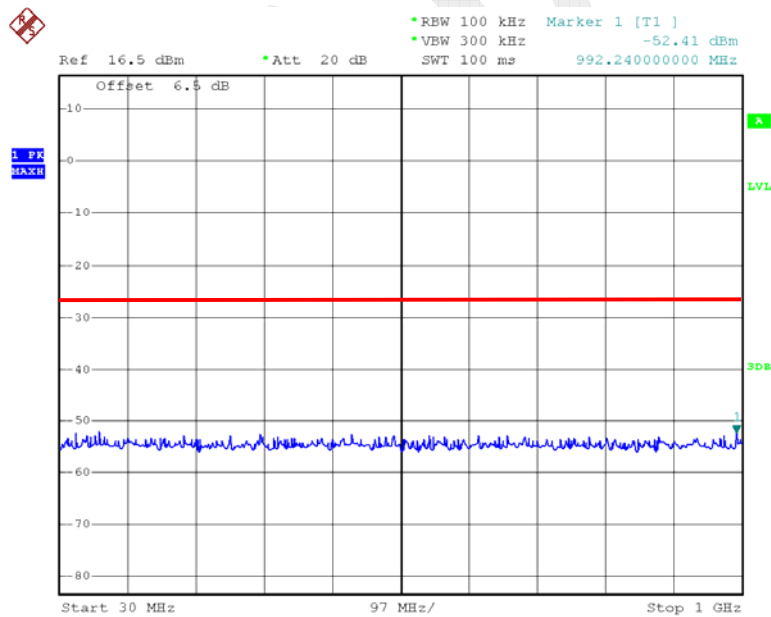
Date: 12.APR.2015 12:48:40

### 802.11a High Channel 26.5GHz-40GHz – Chain0



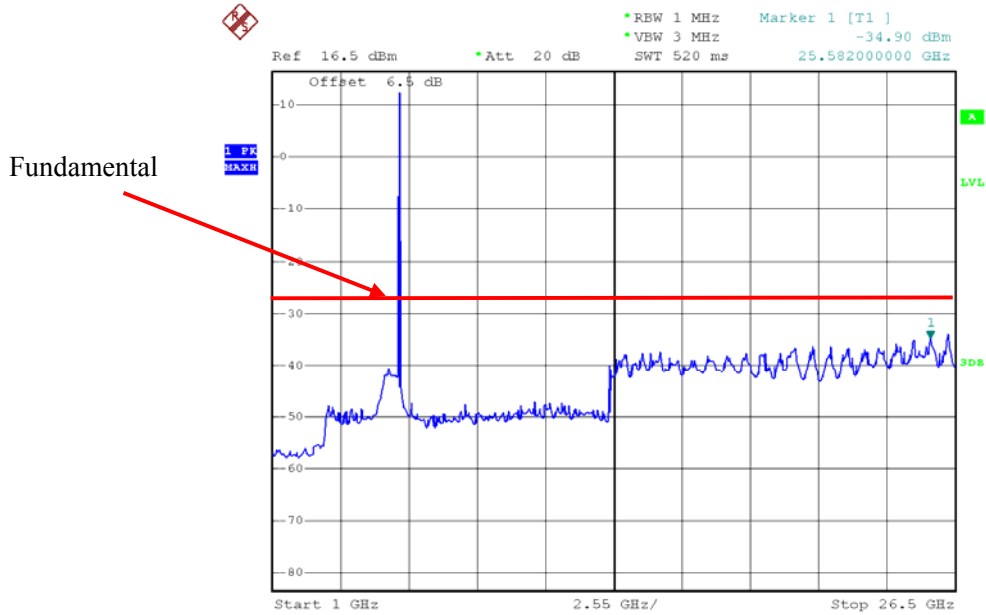
Date: 15.APR.2015 01:18:44

### 802.11n ht20 Low Channel 30MHz-1GHz – Chain0



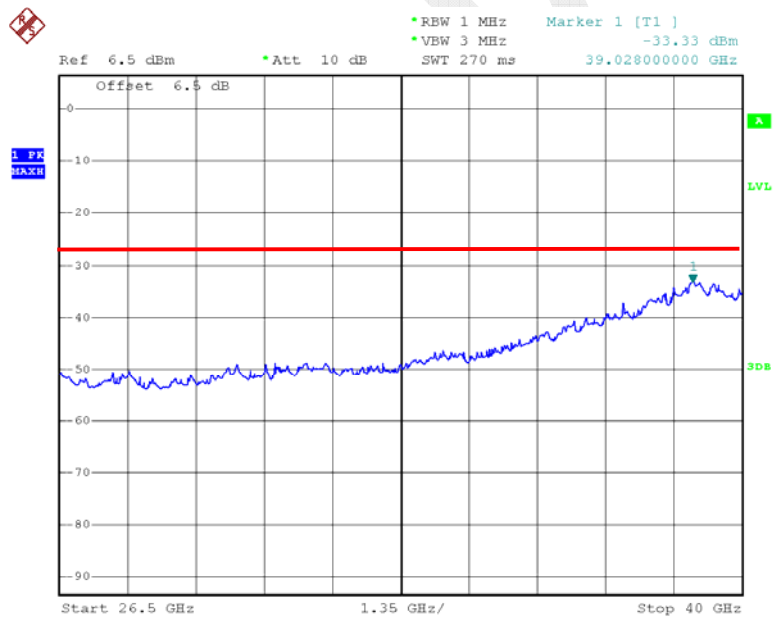
Date: 12.APR.2015 12:52:21

### 802.11n ht20 Low Channel 1GHz-26.5GHz – Chain0



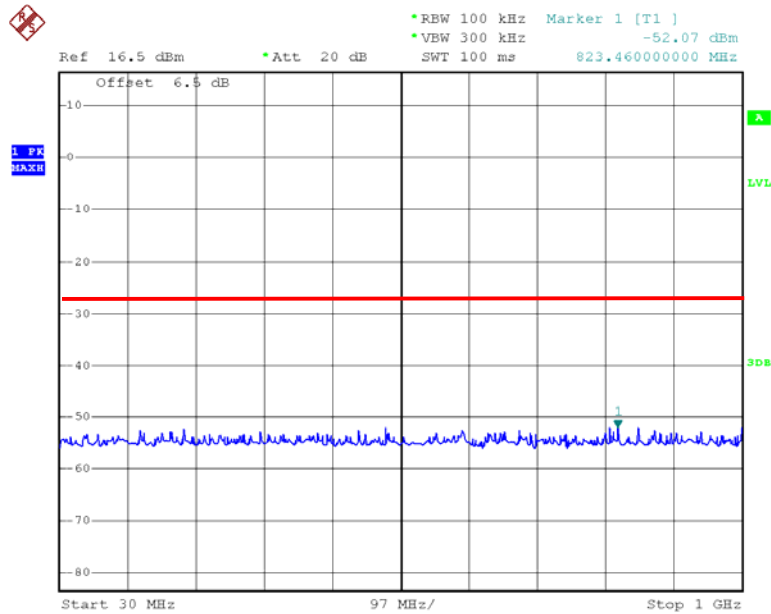
Date: 12.APR.2015 12:49:49

### 802.11n ht20 Low Channel 26.5GHz-40GHz – Chain0



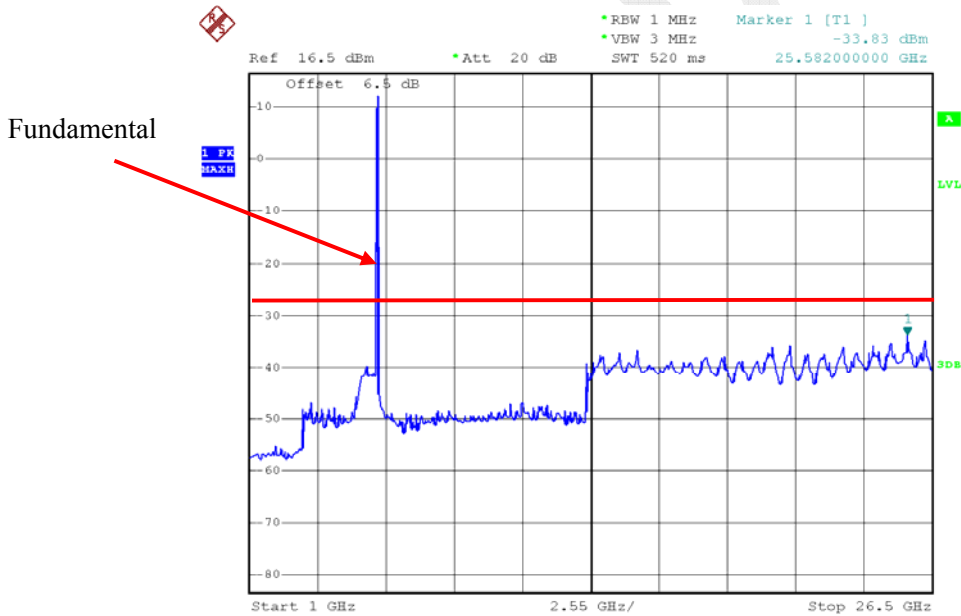
Date: 15.APR.2015 01:19:39

### 802.11n ht20 Middle Channel 30MHz-1GHz – Chain0



Date: 12.APR.2015 12:52:28

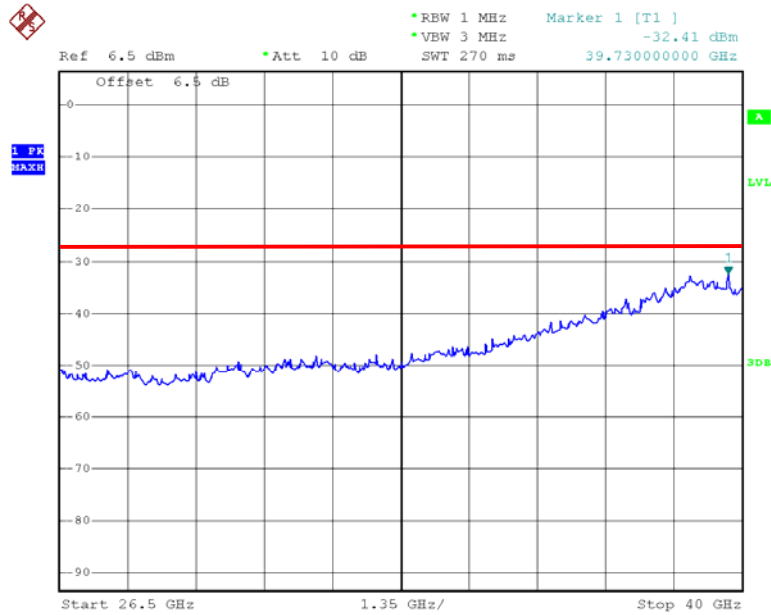
### 802.11n ht20 Middle Channel 1GHz -26.5GHz – Chain0



Date: 12.APR.2015 12:50:08

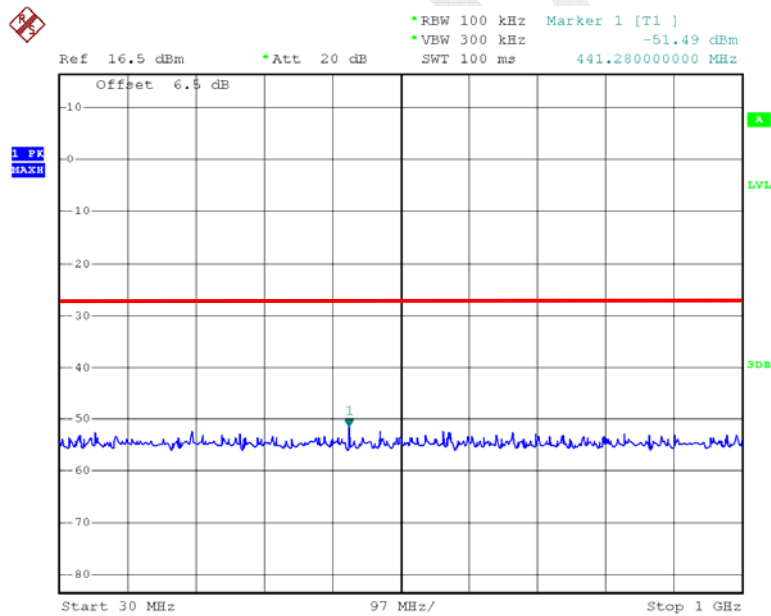


### 802.11n ht20 Middle Channel 26.5GHz-40GHz – Chain0



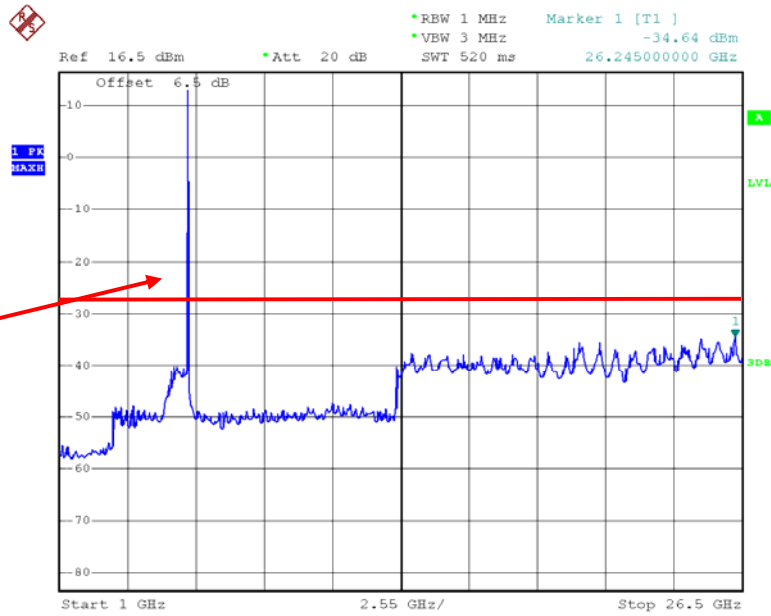
Date: 15.APR.2015 01:19:27

### 802.11n ht20 High Channel 30MHz-1GHz – Chain0



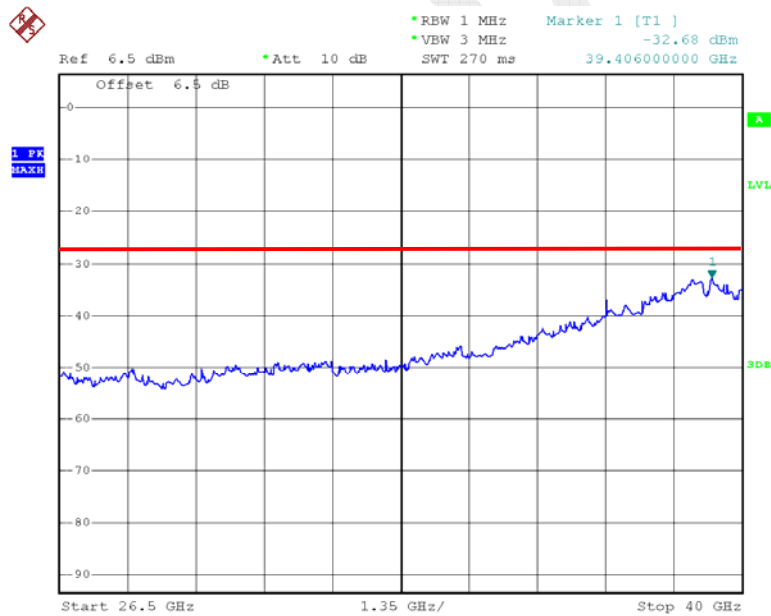
Date: 12.APR.2015 12:52:36

### 802.11n ht20 High Channel 1GHz-26.5GHz – Chain0



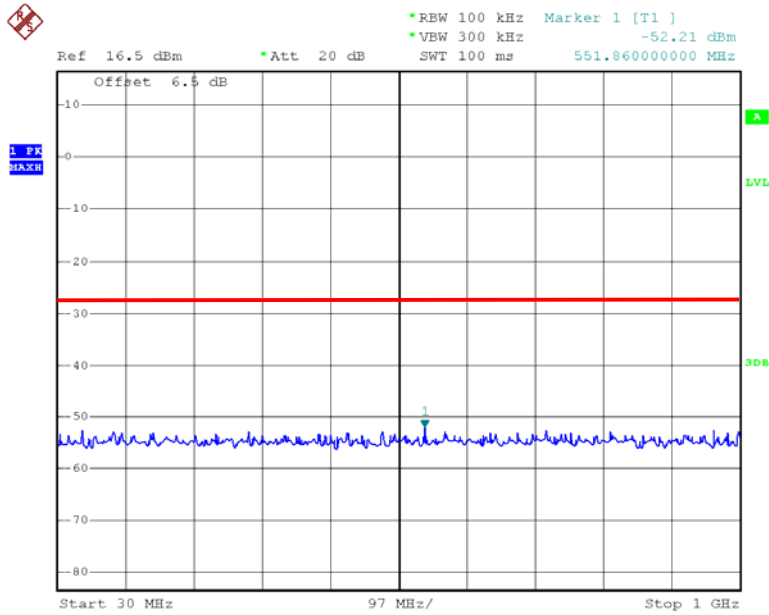
Date: 12.APR.2015 12:50:25

### 802.11n ht20 High Channel 26.5GHz-40GHz – Chain0



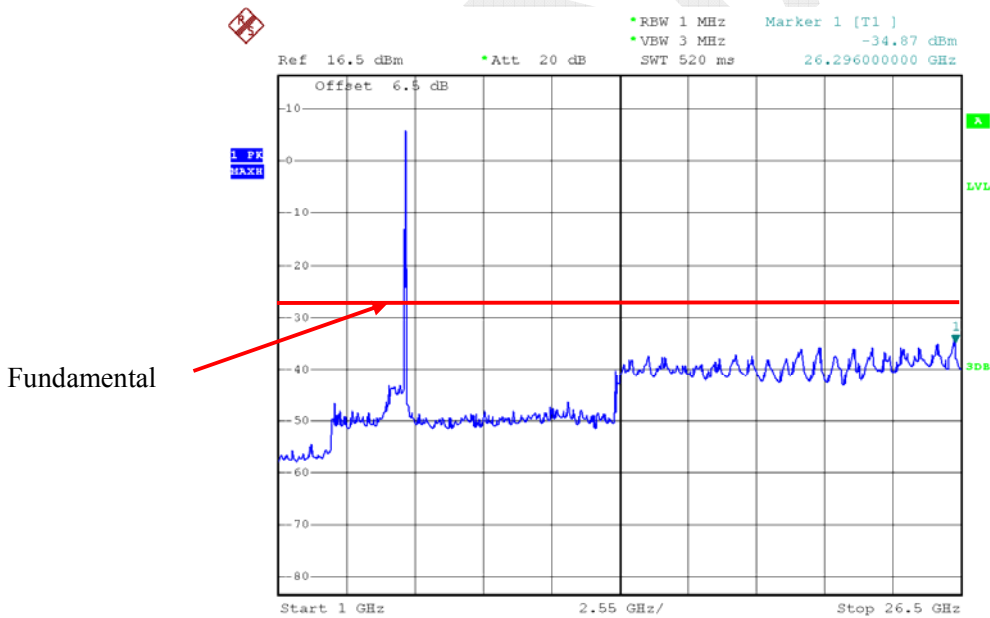
Date: 15.APR.2015 01:19:17

### 802.11n ht40 Low Channel 30MHz-1GHz – Chain0



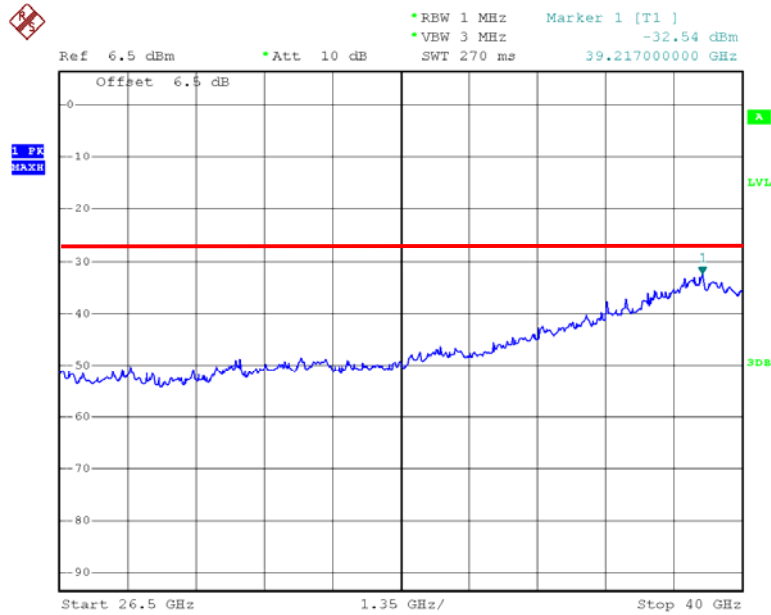
Date: 12.APR.2015 12:52:13

### 802.11n ht40 Low Channel 1GHz-26.5GHz – Chain0



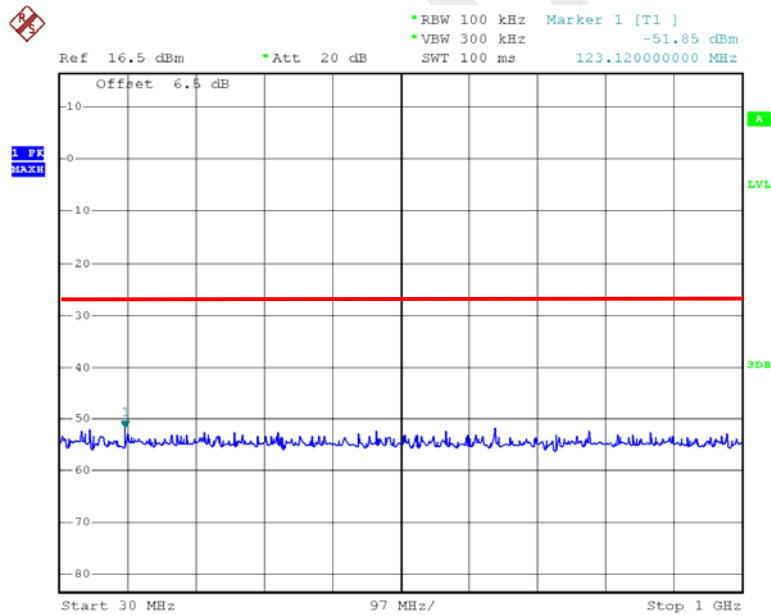
Date: 12.APR.2015 12:51:27

### 802.11n ht40 Low Channel 26.5GHz-40GHz – Chain0



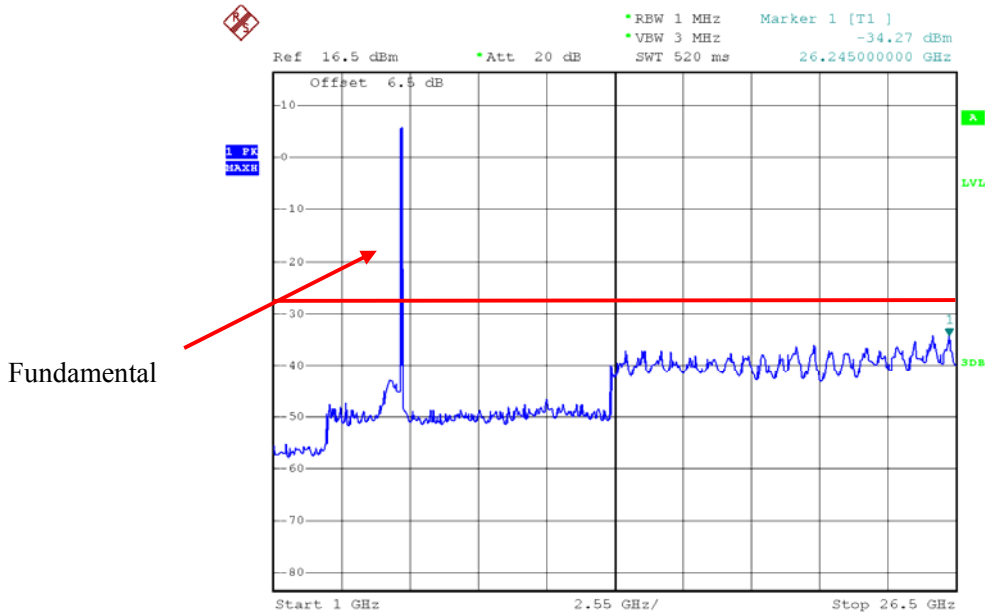
Date: 15.APR.2015 01:19:48

### 802.11n ht40 High Channel 30MHz-1GHz – Chain0



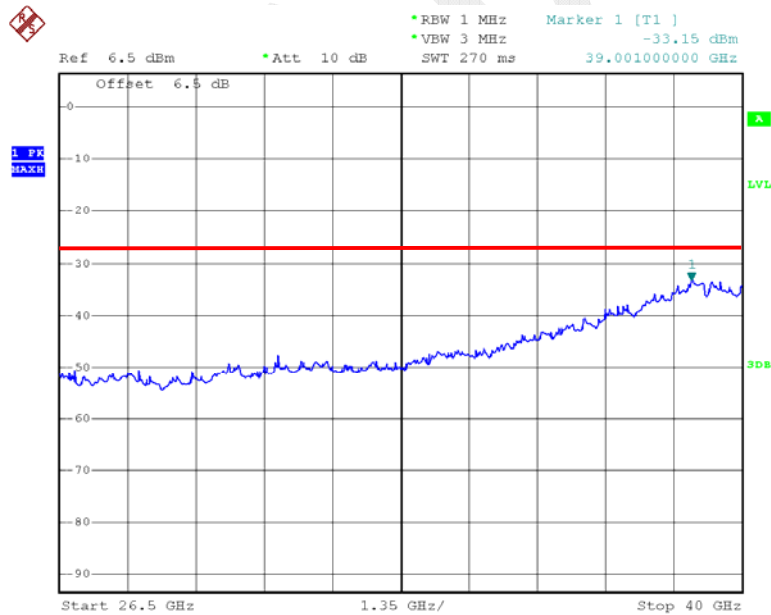
Date: 12.APR.2015 12:52:06

### 802.11n ht40 High Channel 1GHz-26.5GHz – Chain0



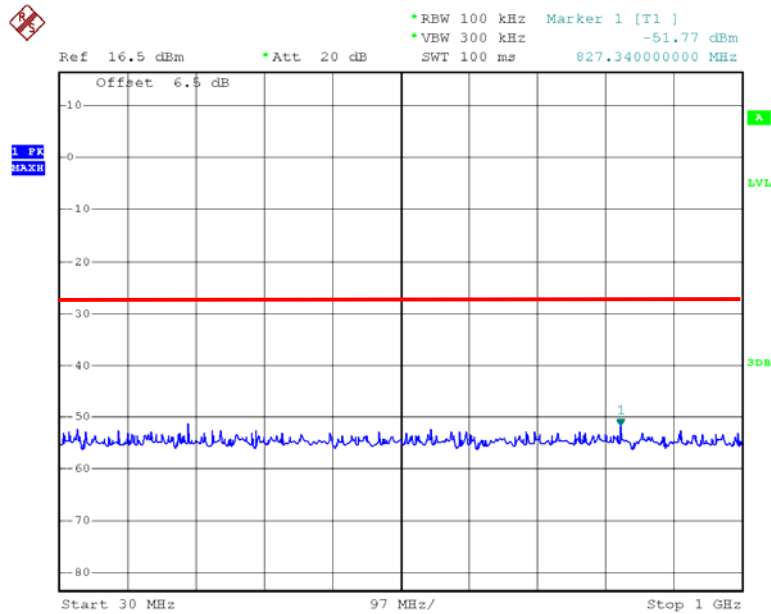
Date: 12.APR.2015 12:51:46

### 802.11n ht40 High Channel 26.5GHz-40GHz – Chain0



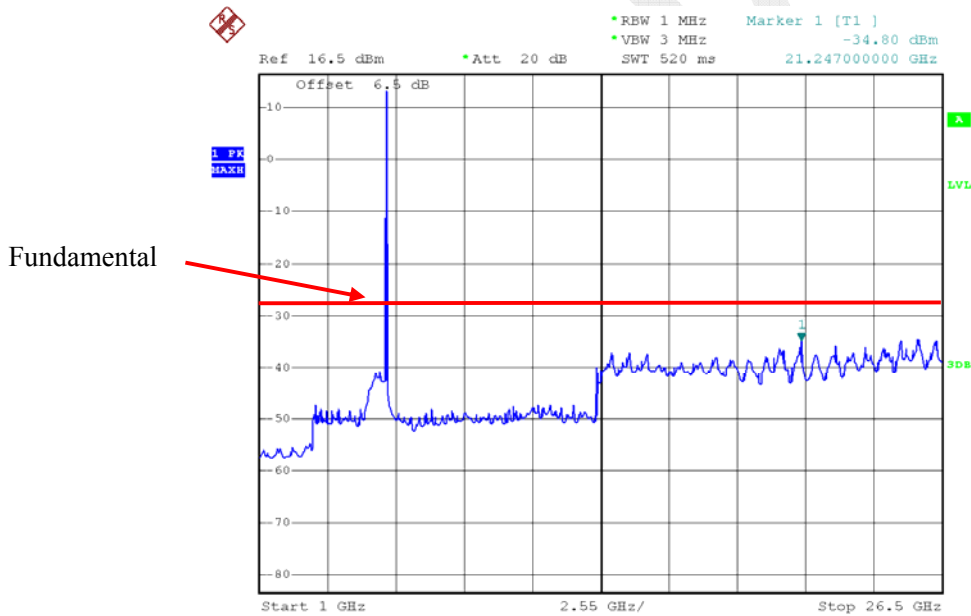
Date: 15.APR.2015 01:19:58

### 802.11a Low Channel 30MHz-1GHz – Chain1



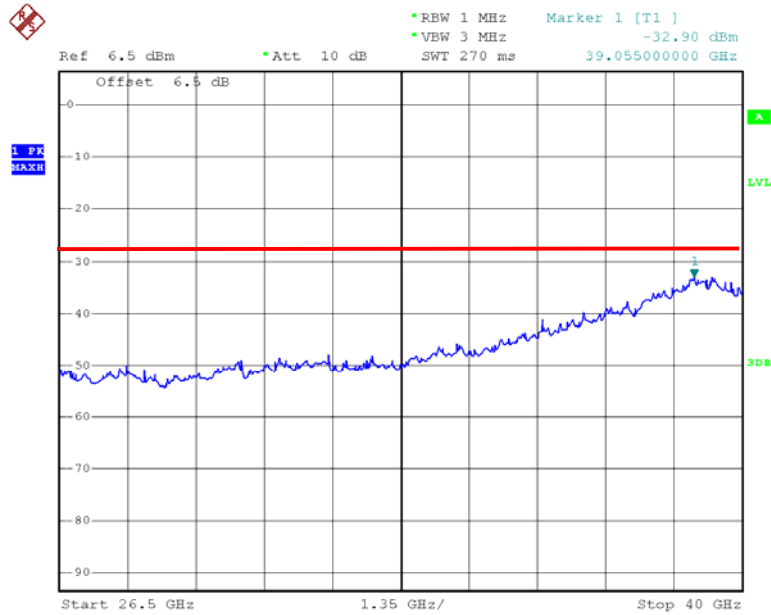
Date: 12.APR.2015 13:34:37

### 802.11a Low Channel 1GHz-26.5GHz – Chain1



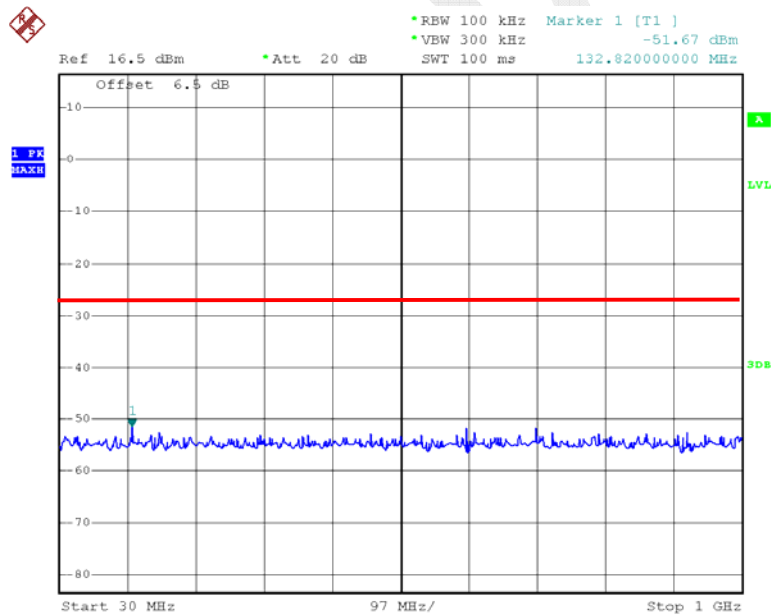
Date: 12.APR.2015 13:27:56

### 802.11a Low Channel 26.5GHz-40GHz – Chain1



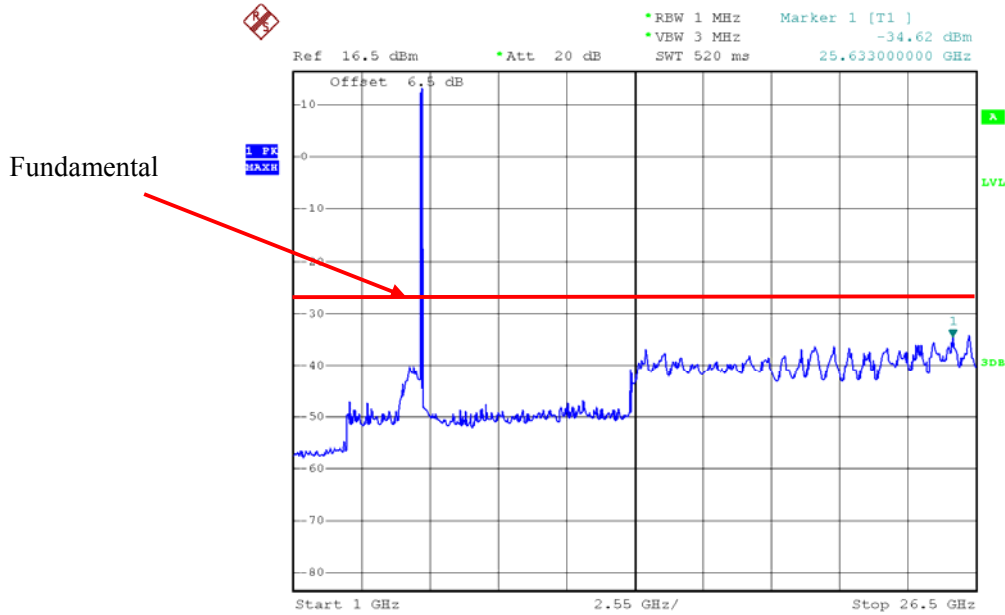
Date: 15.APR.2015 01:20:30

### 802.11a Middle Channel 30MHz-1GHz – Chain1



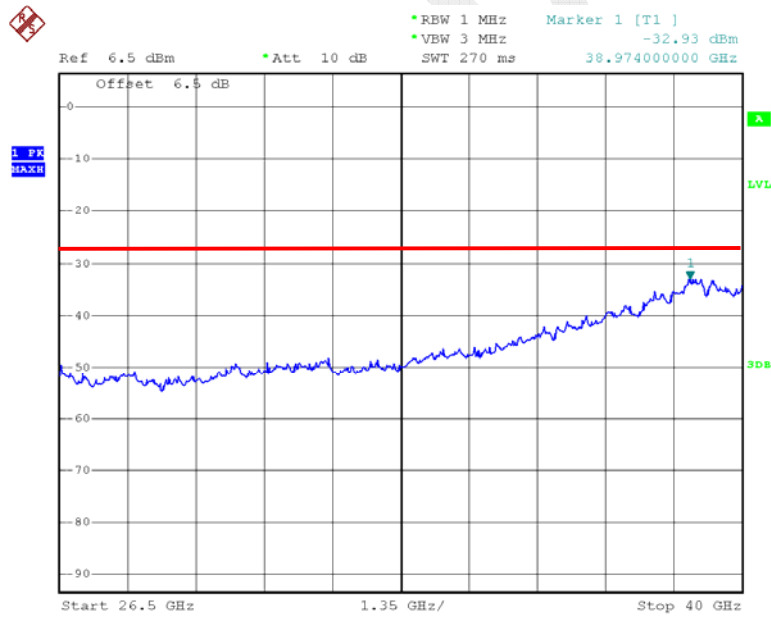
Date: 12.APR.2015 13:34:44

### 802.11a Middle Channel 1GHz -26.5GHz – Chain1



Date: 12.APR.2015 13:28:16

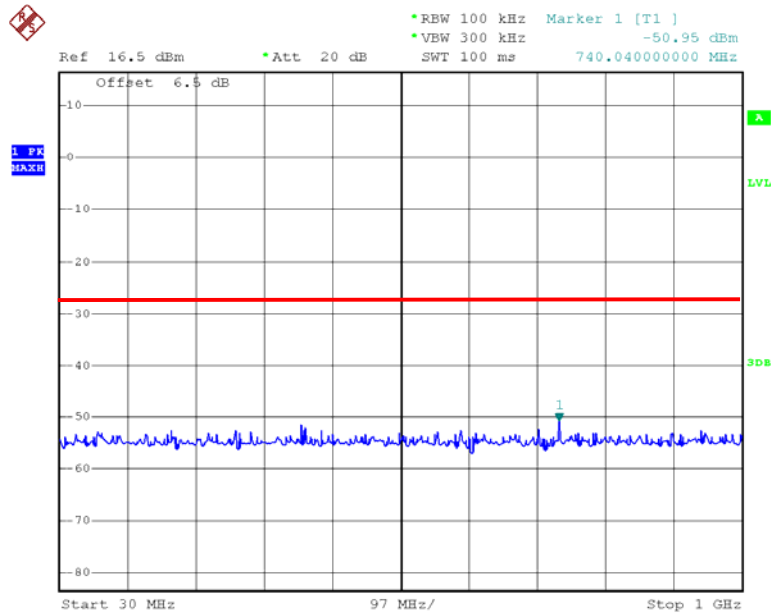
### 802.11a Middle Channel 26.5GHz-40GHz – Chain1



Date: 15.APR.2015 01:20:18

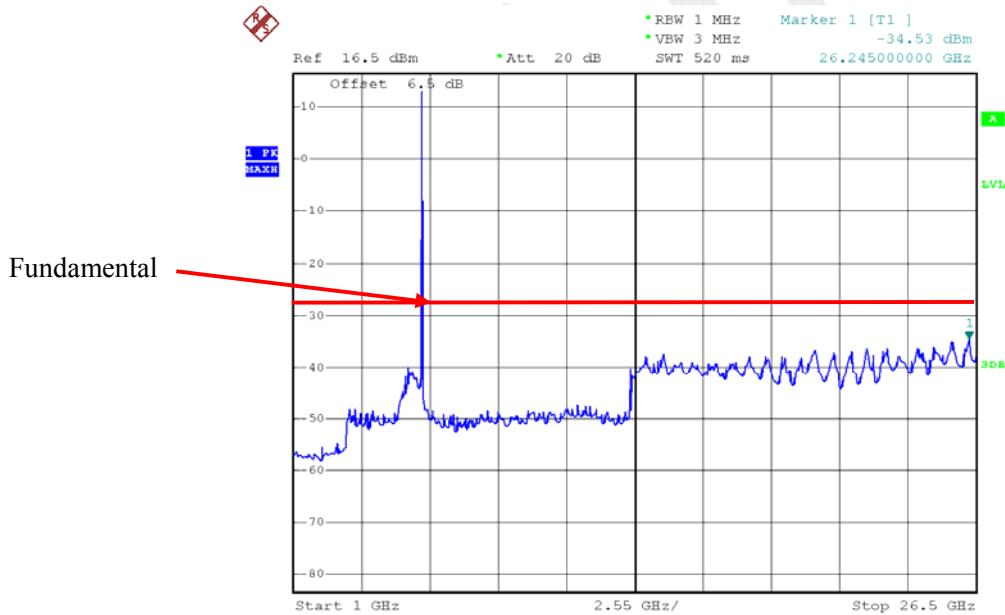


### 802.11a High Channel 30MHz-1GHz – Chain1



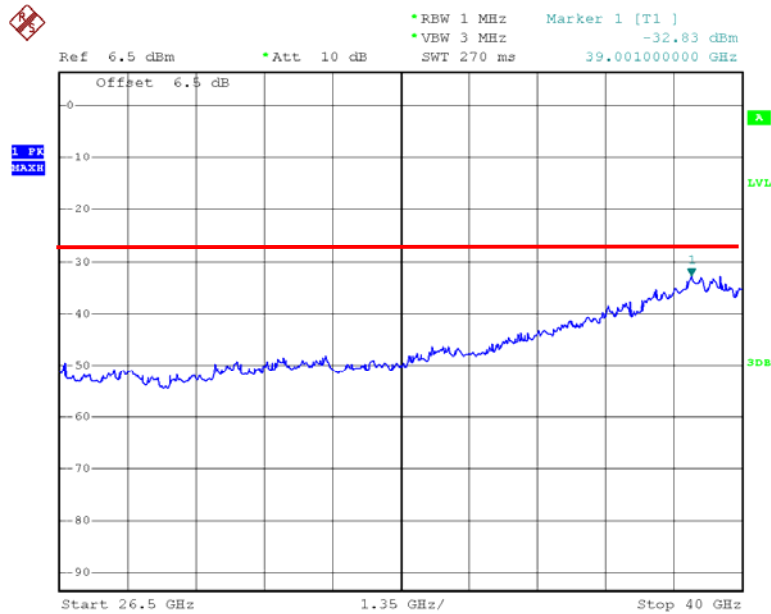
Date: 12.APR.2015 13:34:52

### 802.11a High Channel 1GHz-26.5GHz – Chain1



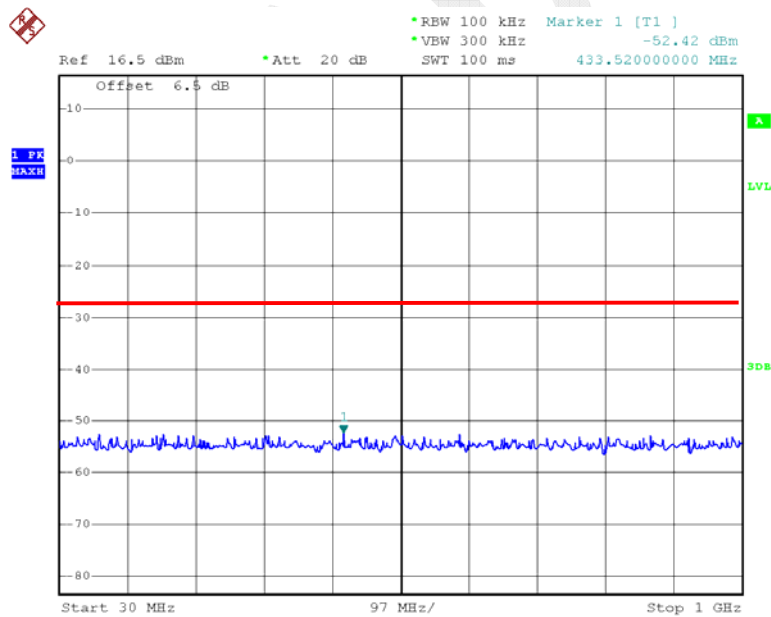
Date: 12.APR.2015 13:28:34

### 802.11a High Channel 26.5GHz-40GHz – Chain1



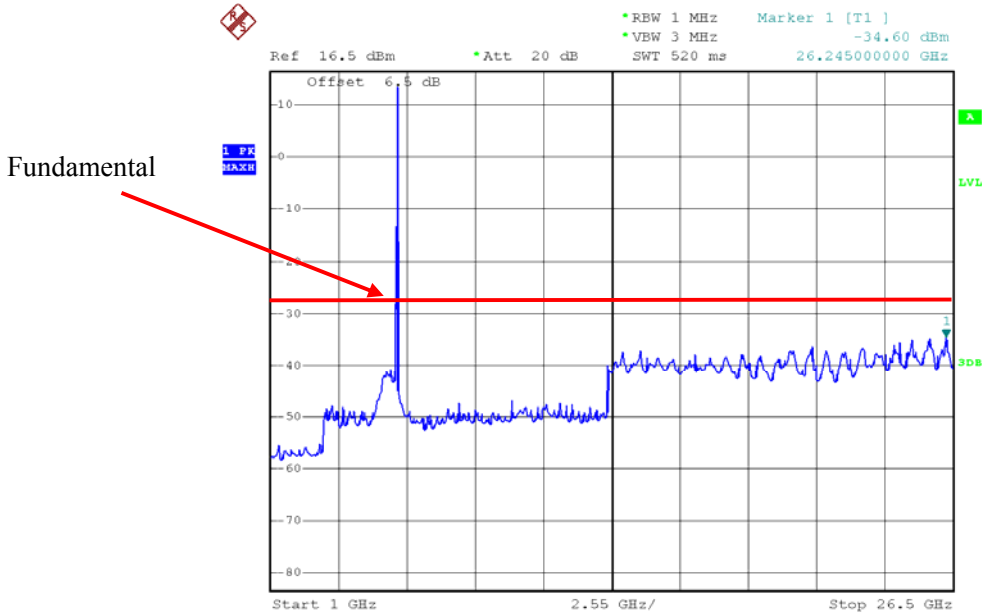
Date: 15.APR.2015 01:20:08

### 802.11n ht20 Low Channel 30MHz-1GHz – Chain1



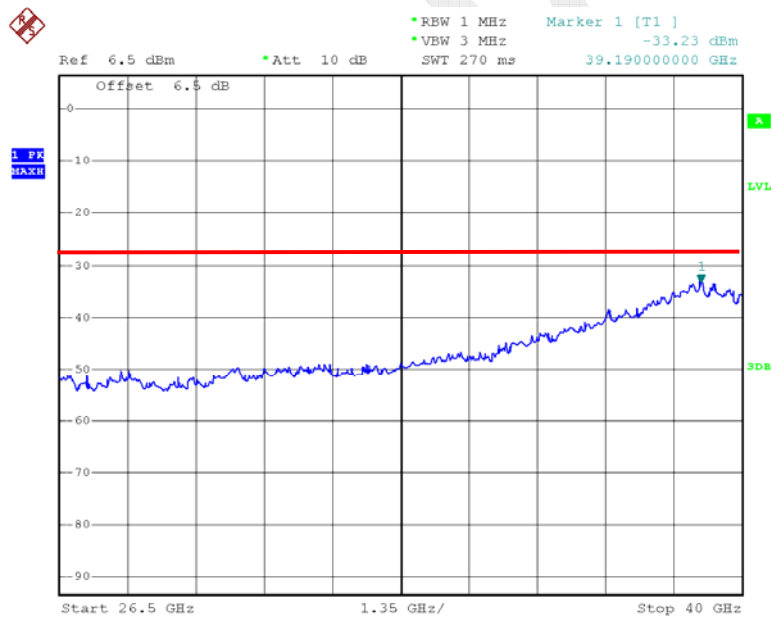
Date: 12.APR.2015 13:35:00

### 802.11n ht20 Low Channel 1GHz-26.5GHz – Chain1



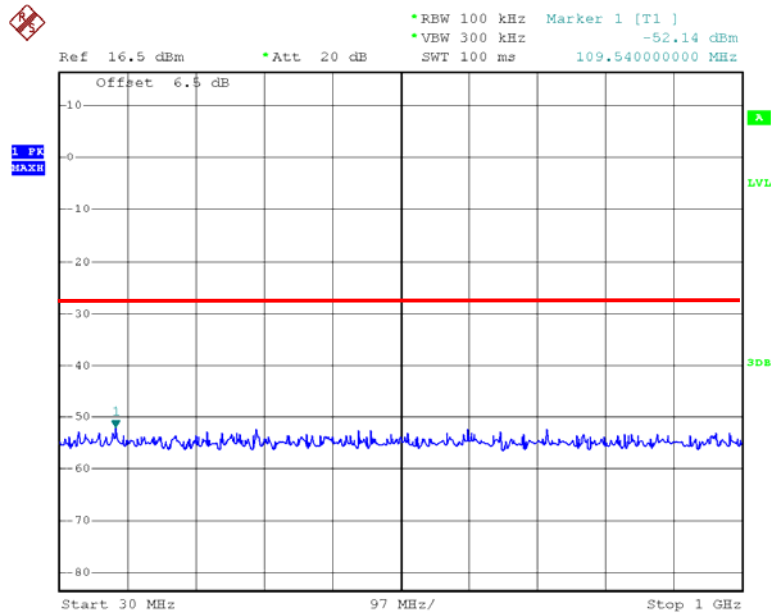
Date: 12.APR.2015 13:28:59

### 802.11n ht20 Low Channel 26.5GHz-40GHz – Chain1



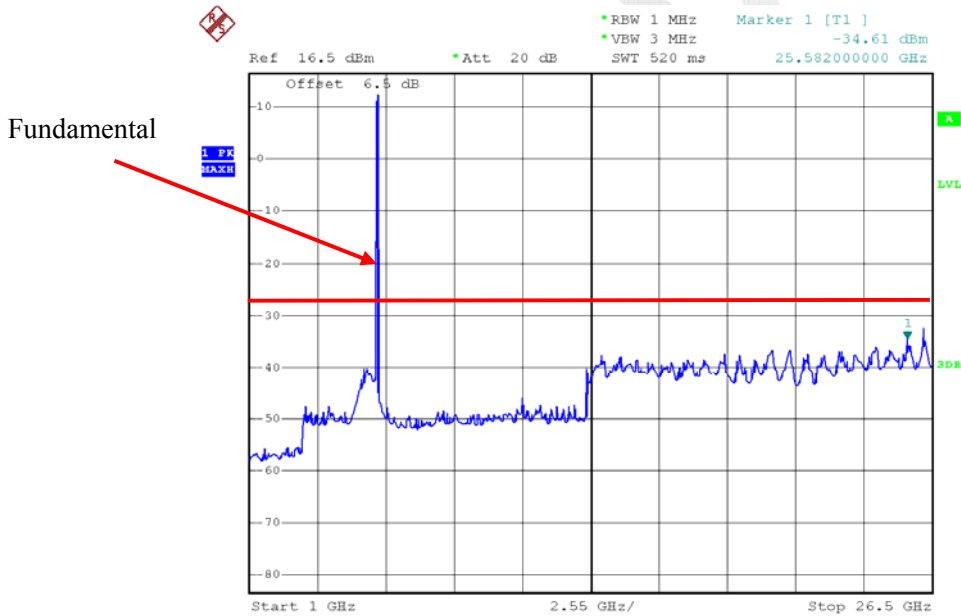
Date: 15.APR.2015 01:20:58

### 802.11n ht20 Middle Channel 30MHz-1GHz – Chain1



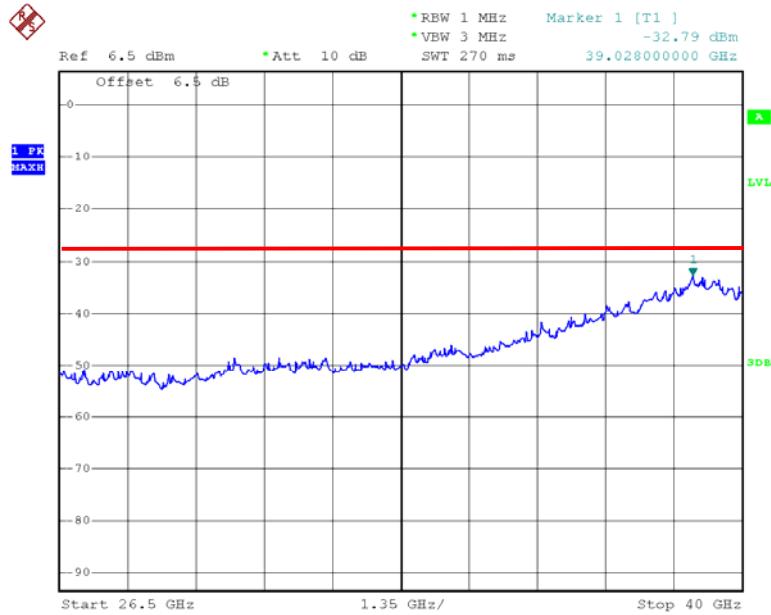
Date: 12.APR.2015 13:35:06

### 802.11n ht20 Middle Channel 1GHz -26.5GHz – Chain1



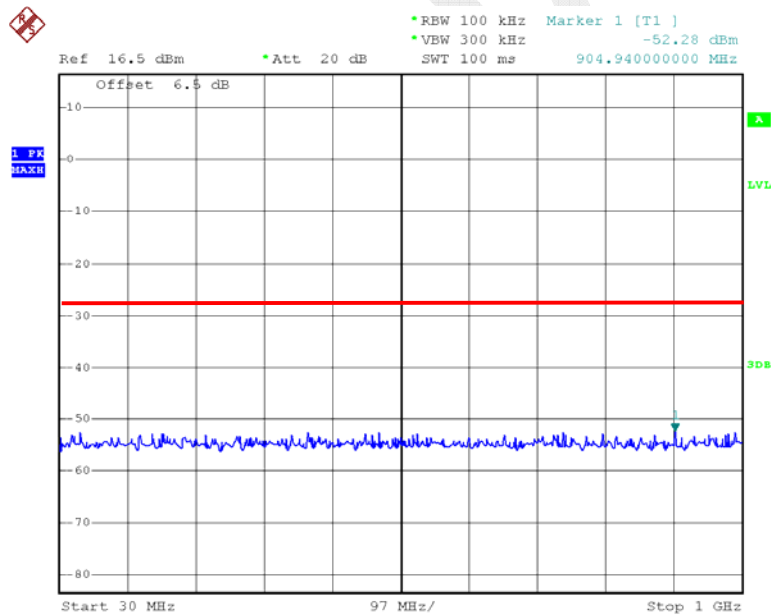
Date: 12.APR.2015 13:29:18

### 802.11n ht20 Middle Channel 26.5GHz-40GHz – Chain1



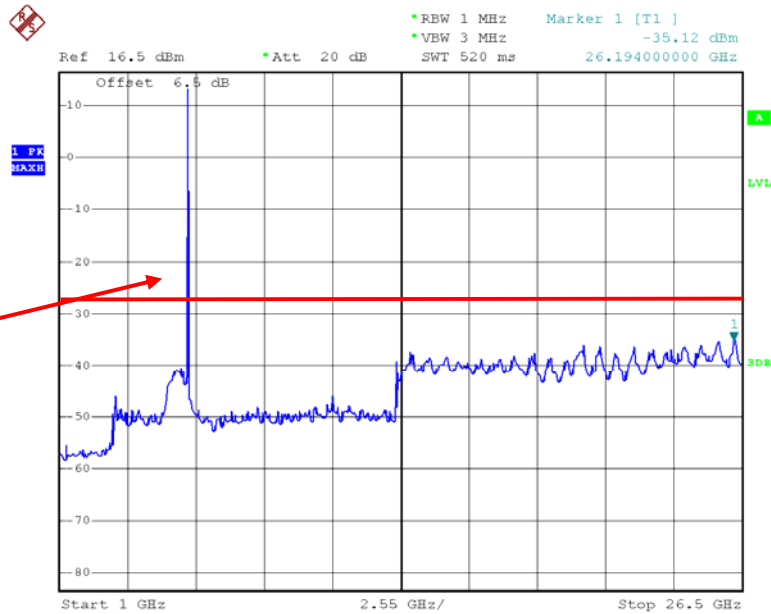
Date: 15.APR.2015 01:20:50

### 802.11n ht20 High Channel 30MHz-1GHz – Chain1



Date: 12.APR.2015 13:35:13

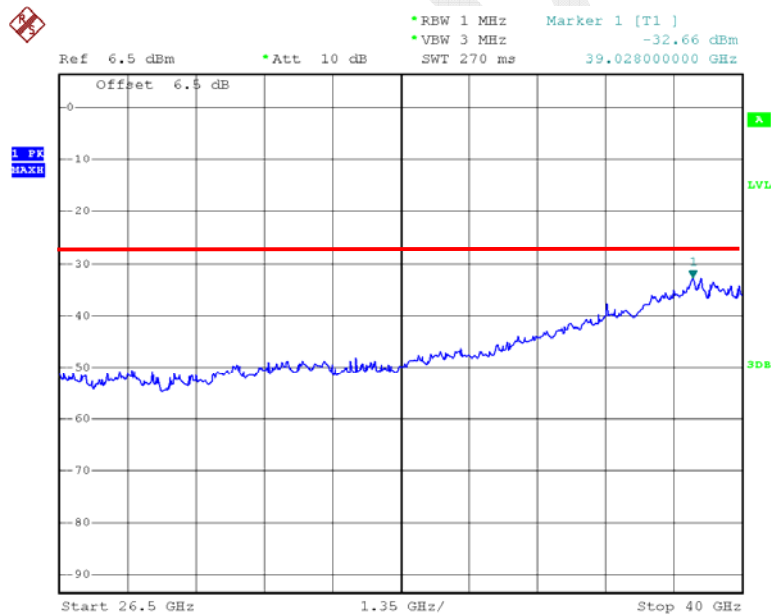
### 802.11n ht20 High Channel 1GHz-26.5GHz – Chain1



Fundamental

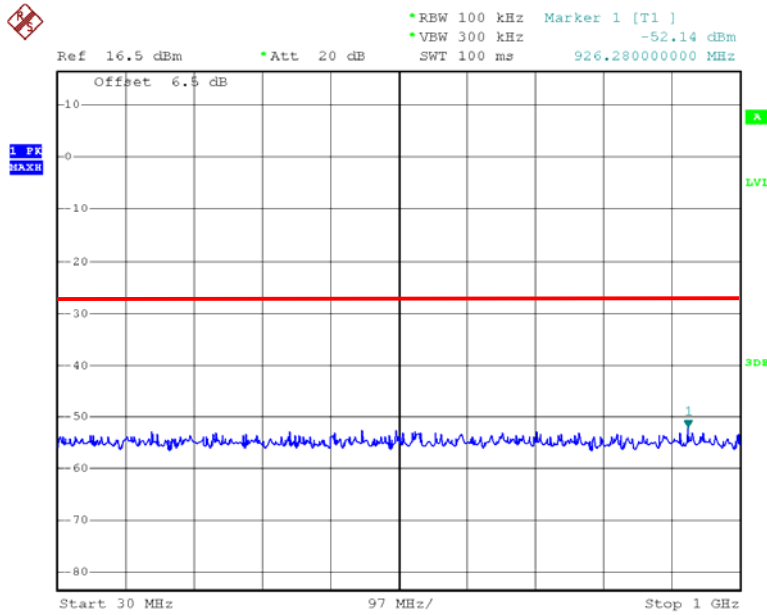
Date: 12.APR.2015 13:29:39

### 802.11n ht20 High Channel 26.5GHz-40GHz – Chain1



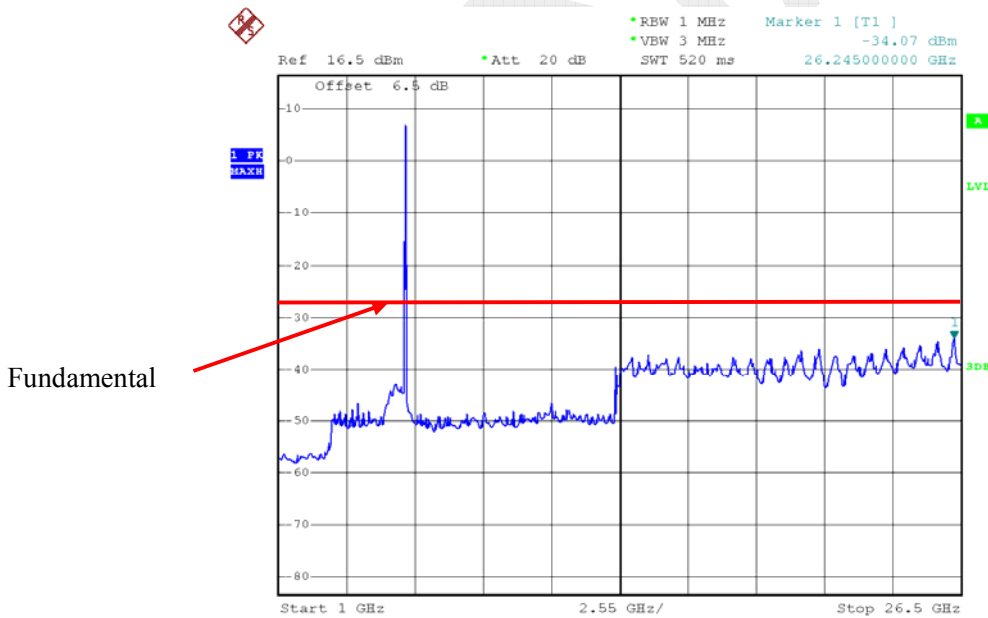
Date: 15.APR.2015 01:20:41

### 802.11n ht40 Low Channel 30MHz-1GHz – Chain1



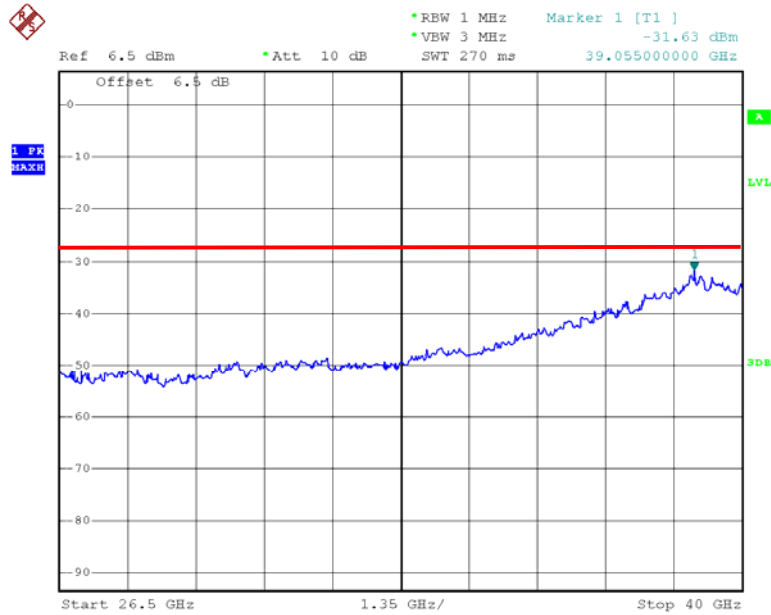
Date: 12.APR.2015 13:35:19

### 802.11n ht40 Low Channel 1GHz-26.5GHz – Chain1



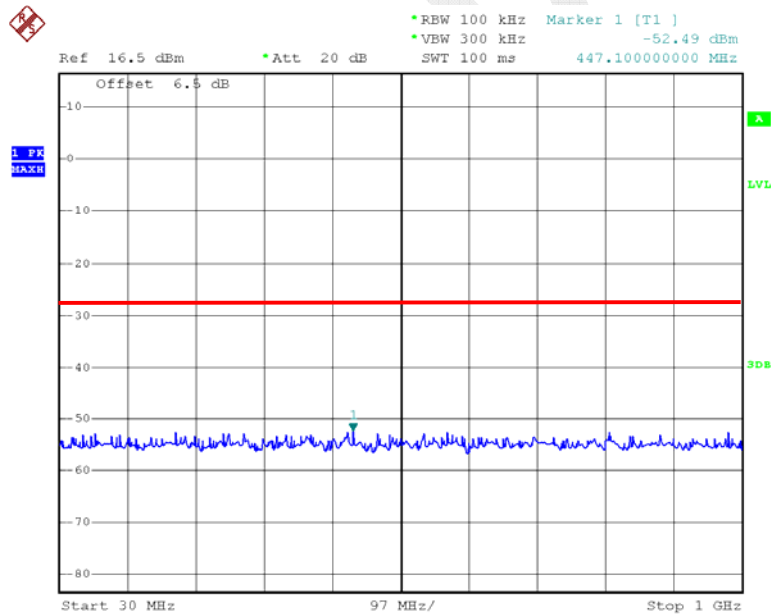
Date: 12.APR.2015 13:30:05

### 802.11n ht40 Low Channel 26.5GHz-40GHz – Chain1



Date: 15.APR.2015 01:21:22

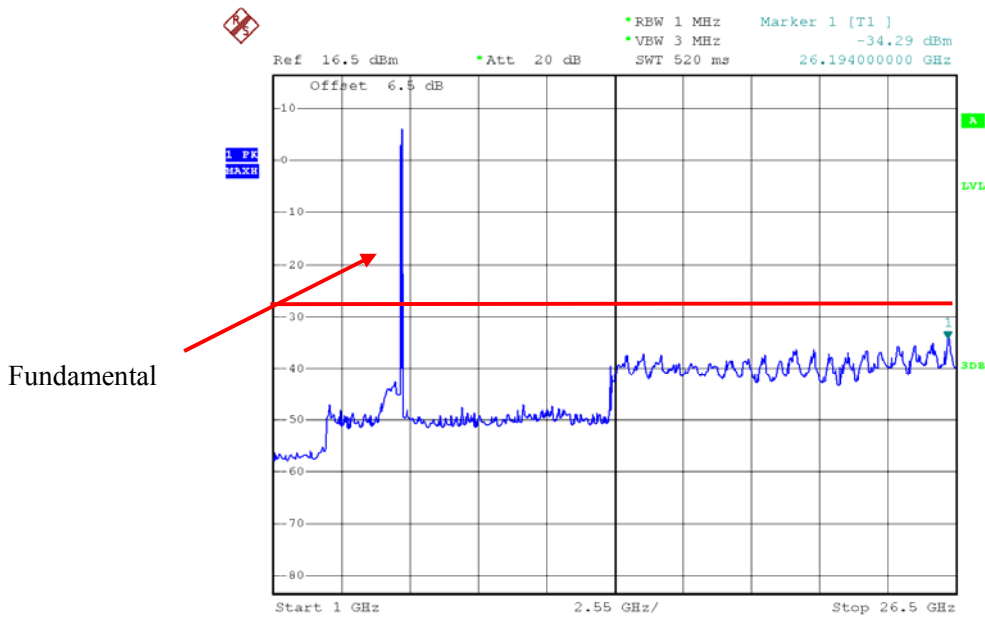
### 802.11n ht40 High Channel 30MHz-1GHz – Chain1



Date: 12.APR.2015 13:35:25

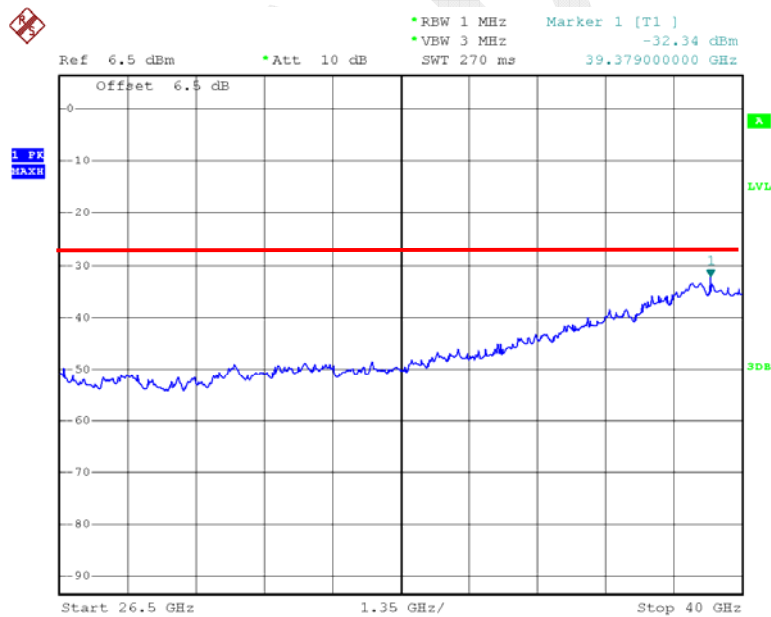


### 802.11n ht40 High Channel 1GHz-26.5GHz – Chain1



Date: 12.APR.2015 13:30:23

### 802.11n ht40 High Channel 26.5GHz-40GHz – Chain1



Date: 15.APR.2015 01:21:08

## **FCC §15.407(b) (1) –BAND EDGE**

### **Applicable Standard**

FCC §15.407 (b) (1), (2), (3), (4);

(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of  $-27$  dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of  $-27$  dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of  $-27$  dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of  $-17$  dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of  $-27$  dBm/MHz.

(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

### **Test Procedure**

According to KDB 789033 D02 General UNII Test Procedures New Rules v01.

### **Test Equipment List and Details**

<b>Manufacturer</b>	<b>Description</b>	<b>Model</b>	<b>Serial Number</b>	<b>Calibration Date</b>	<b>Calibration Due Date</b>
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**

<b>Temperature:</b>	22.9 °C
<b>Relative Humidity:</b>	54 %
<b>ATM Pressure:</b>	101 kPa

The testing was performed by Allen Qiao on 2015-04-12.

Please refer to the following table and plots:

**5150-5250 MHz band**

Mode	Channel	Frequency	Band edge Emissions (dBm)				Result
		MHz	Chain 0	Chain 1	Total	Limits	
802.11a	Low	5180	-32.91	-34.89	-30.78	-27	PASS
	High	5240	-36.61	-35.62	-33.08	-27	PASS
802.11n20	Low	5180	-36.12	-37.14	-33.59	-27	PASS
	High	5240	-35.66	-35.62	-32.63	-27	PASS
802.11n40	Low	5190	-36.97	-34.65	-32.65	-27	PASS
	High	5230	-35.13	-35.7	-32.40	-27	PASS

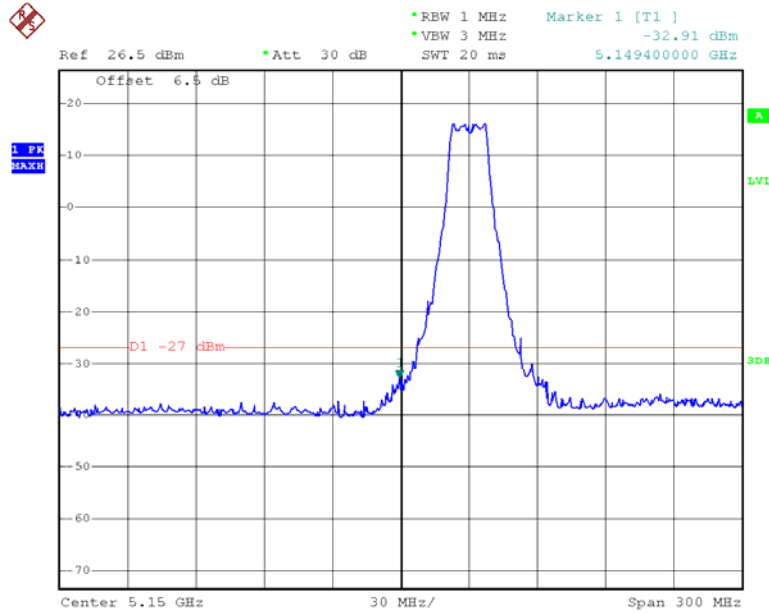
**5725-5850 MHz band**

Mode	Channel	Frequency	Band edge Emissions (dBm)				Result
		MHz	Chain 0	Chain 1	Total	Limits	
802.11a	Low	5745	-27.87	-31.32	-26.25	-17	PASS
	High	5825	-35.11	-36.02	-32.53	-17	PASS
802.11n20	Low	5745	-29.36	-29.71	-26.52	-17	PASS
	High	5785	-36.10	-36.07	-33.07	-17	PASS
802.11n40	Low	5755	-26.15	-26.34	-23.23	-17	PASS
	High	5795	-45.39	-44.50	-41.91	-17	PASS

Note: Offset= Antenna Gain(dBi)+Cable loss(dB)

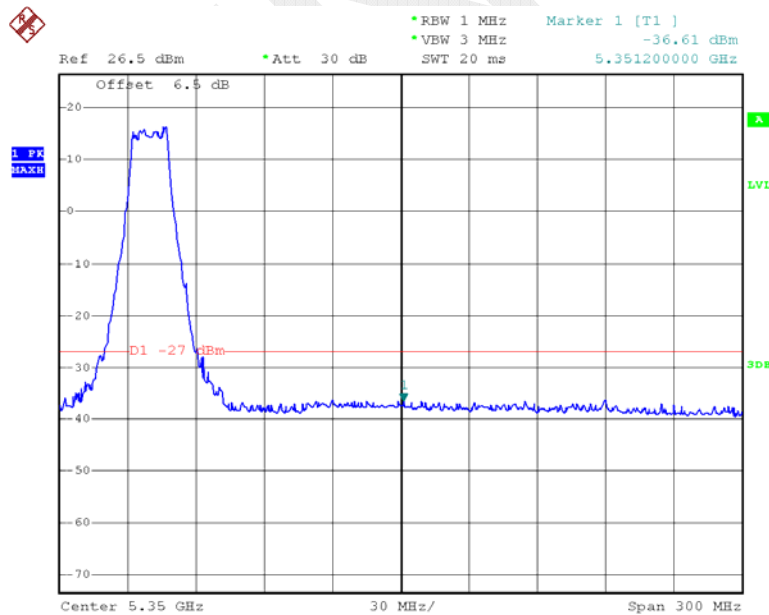
5150MHz-5250MHz:

### 802.11a Band Edge, Left Side – Chain0



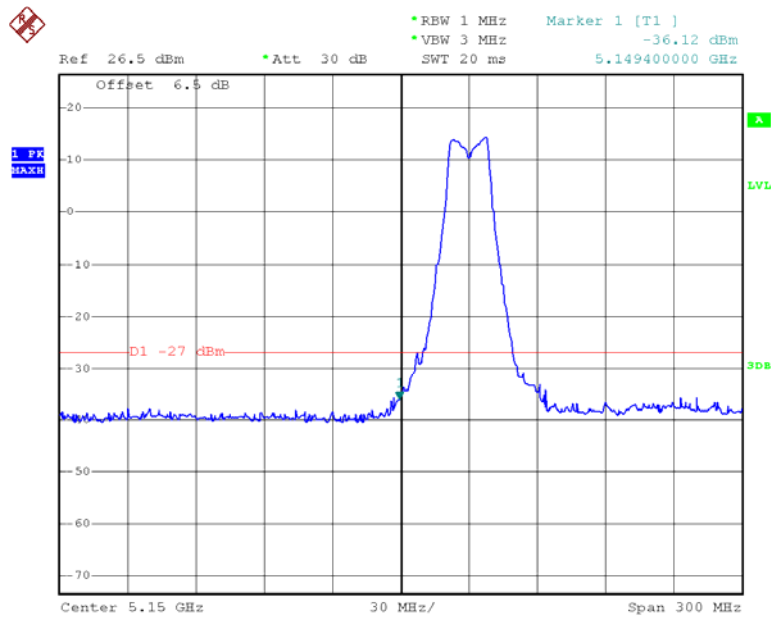
Date: 12.APR.2015 11:40:23

### 802.11a Band Edge, Right Side – Chain0



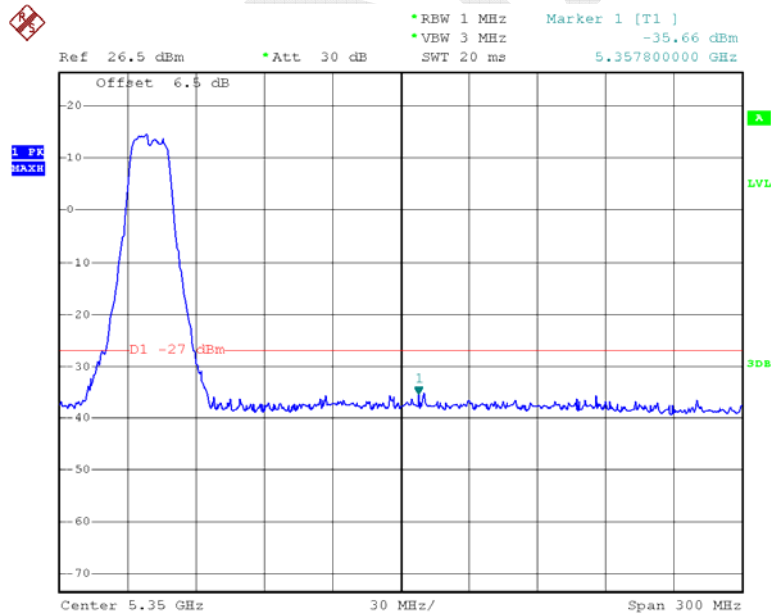
Date: 12.APR.2015 11:39:59

### 802.11n ht20 Band Edge, Left Side- Chain0



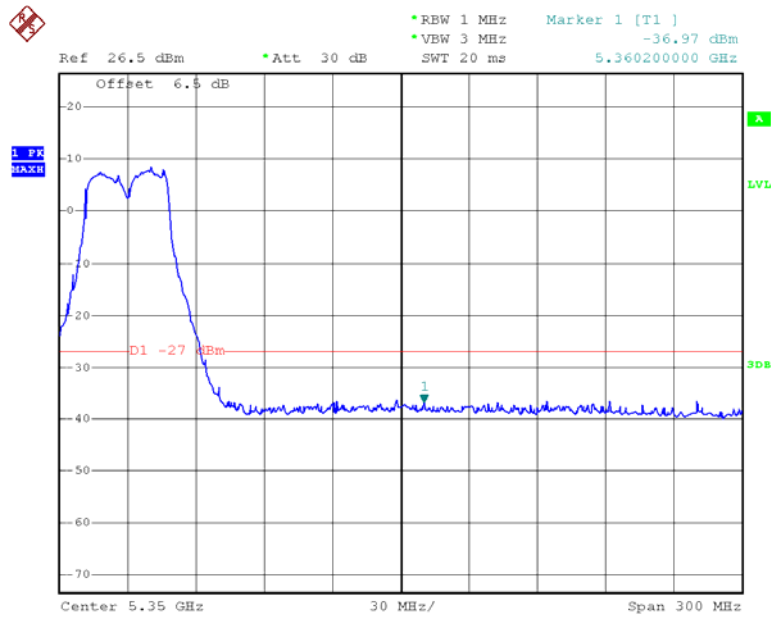
Date: 12.APR.2015 11:40:51

### 802.11n ht20 Band Edge, Right Side- Chain0



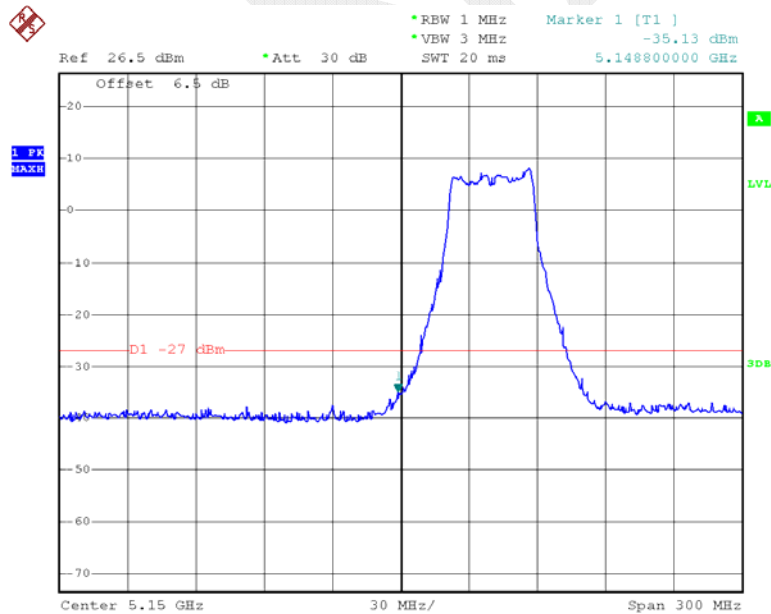
Date: 12.APR.2015 11:41:20

### 802.11n ht40 Band Edge, Left Side- Chain0



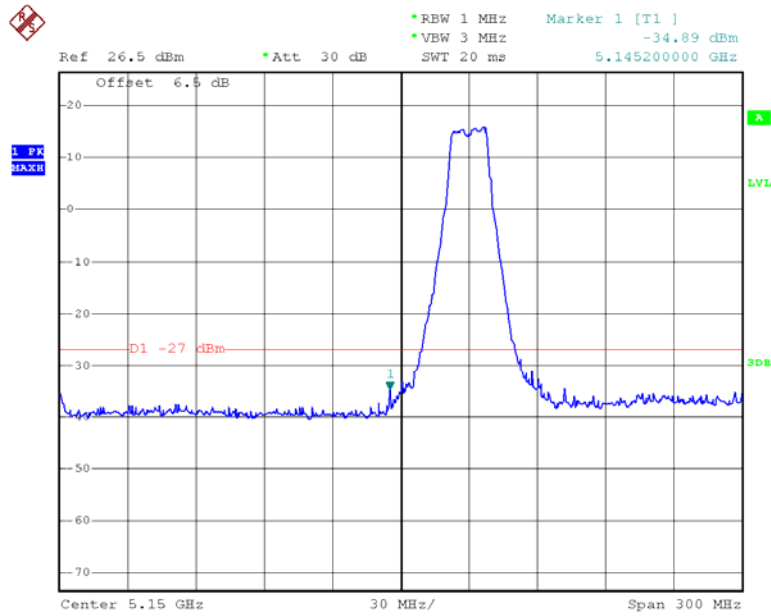
Date: 12.APR.2015 11:43:53

### 802.11n ht40 Band Edge, Right Side- Chain0



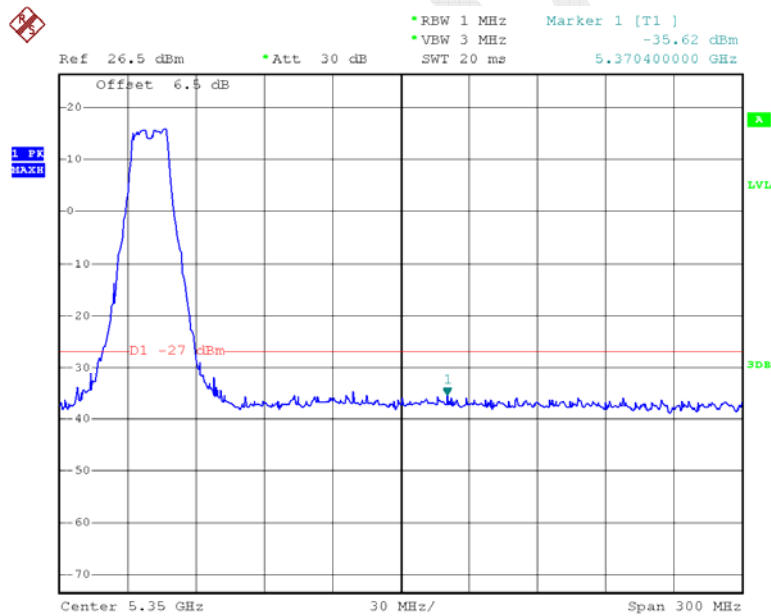
Date: 12.APR.2015 11:43:27

### 802.11a Band Edge, Left Side – Chain1



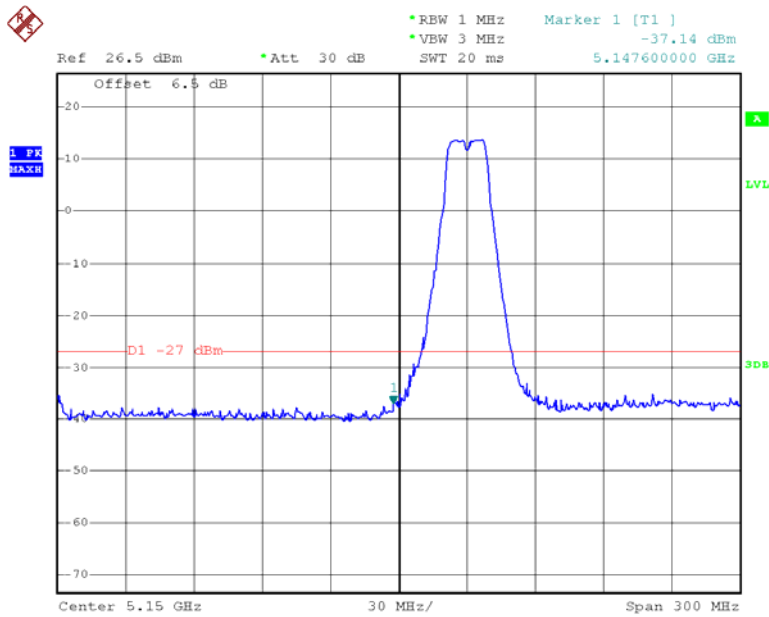
Date: 12.APR.2015 12:17:48

### 802.11a Band Edge, Right Side – Chain1



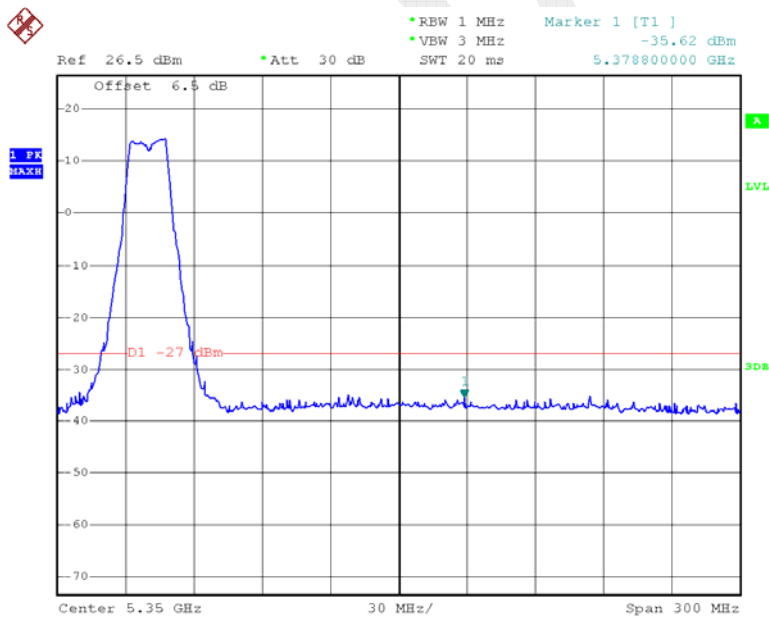
Date: 12.APR.2015 12:17:24

### 802.11n ht20 Band Edge, Left Side- Chain1



Date: 12.APR.2015 12:16:22

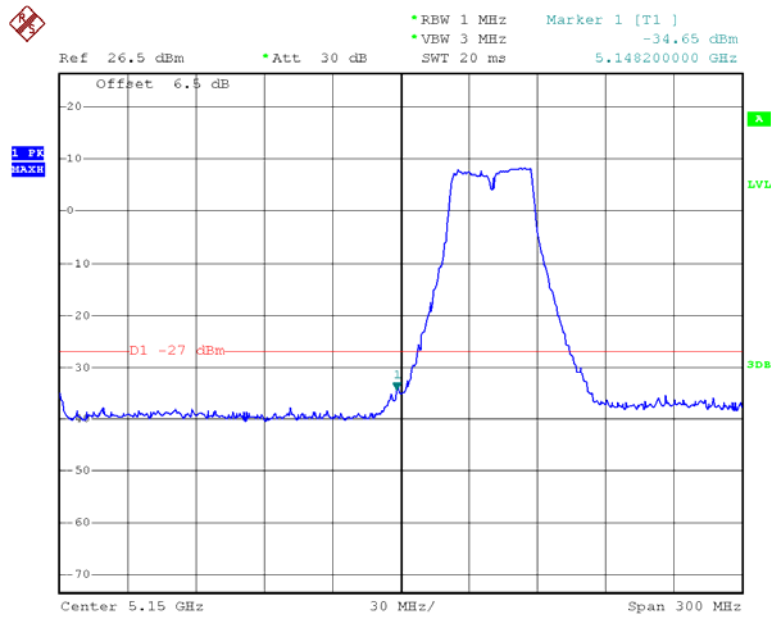
### 802.11n ht20 Band Edge, Right Side- Chain1



Date: 12.APR.2015 12:16:45

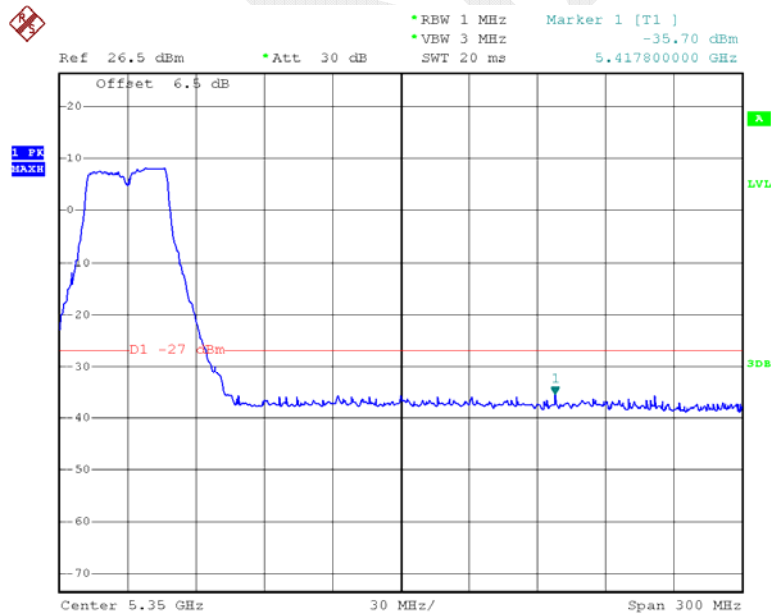


### 802.11n ht40 Band Edge, Left Side- Chain1



Date: 12.APR.2015 12:15:54

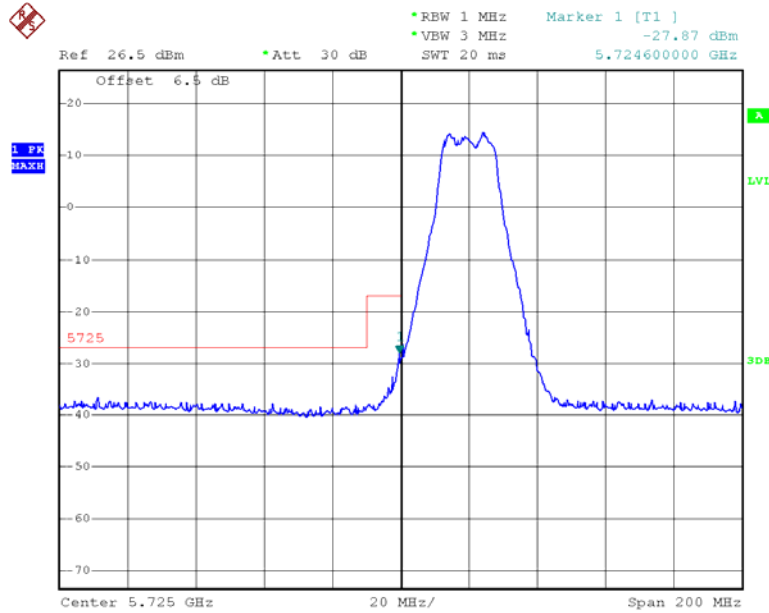
### 802.11n ht40 Band Edge, Right Side- Chain1



Date: 12.APR.2015 12:15:29

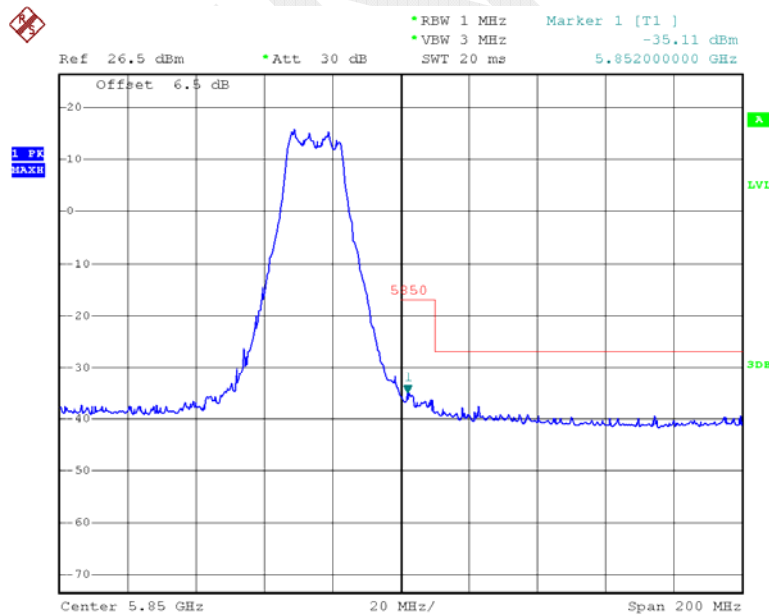
5725MHz-5850MHz:

### 802.11a Band Edge, Left Side – Chain0



Date: 12.APR.2015 12:58:04

### 802.11a Band Edge, Right Side – Chain0



Date: 12.APR.2015 12:57:28