



## **STC Test Report**

Date : 2013-01-09

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No. : MH187575

**Applicant (VII005):** Evergrand Global Limited  
Unit 920, 9/F., BLK B, Hi-Tech Industrial Center, 491-501  
Castle Peak Road, Tsuen Wan, N.T., Hong Kong

**Manufacturer:** Vina International Holdings LTD.  
3F, 6th, Building, North Area,  
Shangxue Industrial City, Bantian,  
Buji, Shenzhen, China

**Description of Sample(s):** Submitted sample(s) said to be  
Product: Toaster Nano  
Brand Name: eComtech  
Model Number: ECTCRTSN02WH  
FCC ID: RNQ0322012

**Date Sample(s) Received:** 2012-12-10

**Date Tested:** 2012-12-12 to 2012-12-22

**Investigation Requested:** Perform ElectroMagnetic Interference measurement in  
accordance with FCC 47CFR [Codes of Federal Regulations]  
Part 15: 2011 and ANSI C63.4:2009 for FCC Certification.

**Conclusion(s):** The submitted product COMPLIED with the requirements of  
Federal Communications Commission [FCC] Rules and  
Regulations Part 15. The tests were performed in accordance  
with the standards described above and on Section 2.2 in this  
Test Report.

**Remark(s):** For additional model(s) details, see page 4

  
LONG Yun Jian, Along  
Authorized Signatory  
ElectroMagnetic Compatibility Department  
For and on behalf of  
STC (Dongguan) Company Limited



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### **1.0 General Details**

#### **1.1 Test Laboratory**

STC (Dongguan) Company Limited  
EMC Laboratory  
68 Fumin Nan Road, Dalang, Dongguan, China

Telephone: (86 769) 81119888

Fax: (86 769) 81116222

#### **1.2 Equipment Under Test [EUT]**

##### **Description of Sample(s)**

Product:	Toaster Nano
Manufacturer:	Vina International Holdings LTD. 3F, 6th, Building, North Area, Shangxue Industrial City, Bantian, Buji, Shenzhen, China
Brand Name:	eComtech
Model Number:	ECTCRTSN02WH
Additional Model Number(s):	ECTCRTSN02BK
Rating:	5Vd.c. (Powered by PC USB port)

##### **1.2.1 Description of EUT Operation**

The Equipment Under Test (EUT) is a Evergrand Global Limited, Toaster Nano. the transmission signal is digital modulated with channel frequency range 2412-2462MHz..

#### **1.3 Date of Order**

2012-12-10

#### **1.4 Submitted Sample(s):**

1 Sample

#### **1.5 Test Duration**

2012-12-12 to 2012-12-22

#### **1.6 Country of Origin**

China

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### **2.0 Technical Details**

#### **2.1 Investigations Requested**

Perform Electromagnetic Interference measurements in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2011 Regulations and ANSI C63.4:2009 for FCC Certification.

#### **2.2 Test Standards and Results Summary Tables**

<b>EMISSION Results Summary</b>						
Test Condition	Test Requirement	Test Method	Class / Severity	Test Result		
				Pass	Fail	N/A
Output Power of Fundamental Emissions	FCC 47CFR 15.247(b)(3)	ANSI C63.4:2009	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Radiated Emissions	FCC 47CFR 15.209	ANSI C63.4:2009	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Conducted Emissions	FCC 47CFR 15.207	ANSI C63.4:2009	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Power Spectral Density	FCC 47CFR 15.247(e)	N/A	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6dB Bandwidth	FCC 47CFR 15.247(a)(2)	N/A	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Band Edge Emissions	FCC 47CFR 15.247(d)	N/A	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RF Exposure	FCC 47CFR 15.247(i)	N/A	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Antenna requirement	FCC 47CFR 15.203	N/A	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Note: N/A - Not Applicable

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### **3.0 Test Results**

#### **3.1 Emission**

##### **3.1.1 Maximum Peak Output Power**

Test Requirement: FCC 47CFR 15.247(b)(3)

Test Method: N/A

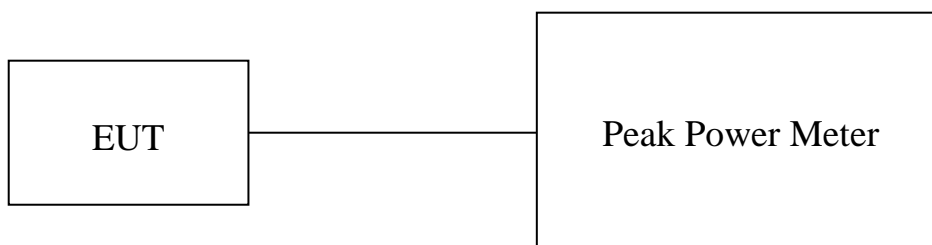
Test Date: 2012-12-20

Mode of Operation: WiFi mode

#### **Test Method:**

The RF output of the EUT was connected to the peak power meter. All the attenuation or cable loss will be added to the measured maximum output power. The results are recorded in mW.

#### **Test Setup:**



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### **Limits for Peak Output Power of Fundamental & Harmonics Emissions [FCC 47CFR 15.247]:**

For Digital Transmission systems in 2400-2483.5 MHz Band: 1 Watt (30dBm)

<b>Results of WiFi Tx Mode 802.11 b, (2412MHz to 2462MHz) : Pass (TX Unit)</b> <b>Maximum conducted output power</b>		
<b>Channel</b>	<b>Frequency(MHz)</b>	<b>Output Power(Watt)</b>
Low	2412	0.01001
Middle	2437	0.01000
High	2462	0.01002

<b>Results of WiFi Tx Mode 802.11 g, (2412MHz to 2462MHz) : Pass (TX Unit)</b> <b>Maximum conducted output power</b>		
<b>Channel</b>	<b>Frequency(MHz)</b>	<b>Output Power(Watt)</b>
Low	2412	0.00985
Middle	2437	0.00991
High	2462	0.00988

<b>Results of WiFi Tx Mode 802.11 n20, (2412MHz to 2462MHz) : Pass (TX Unit)</b> <b>Maximum conducted output power</b>		
<b>Channel</b>	<b>Frequency(MHz)</b>	<b>Output Power(Watt)</b>
Low	2412	0.00937
Middle	2437	0.00941
High	2462	0.00950

<b>Results of WiFi Tx Mode 802.11 n40, (2422MHz to 2452MHz) : Pass (TX Unit)</b> <b>Maximum conducted output power</b>		
<b>Channel</b>	<b>Frequency(MHz)</b>	<b>Output Power(Watt)</b>
Low	2412	0.00885
Middle	2437	0.00888
High	2462	0.00881

Calculated measurement uncertainty : 30MHz to 1GHz 1.7dB  
1GHz to 26GHz 1.7dB

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### **3.1.2 Radiated Emissions**

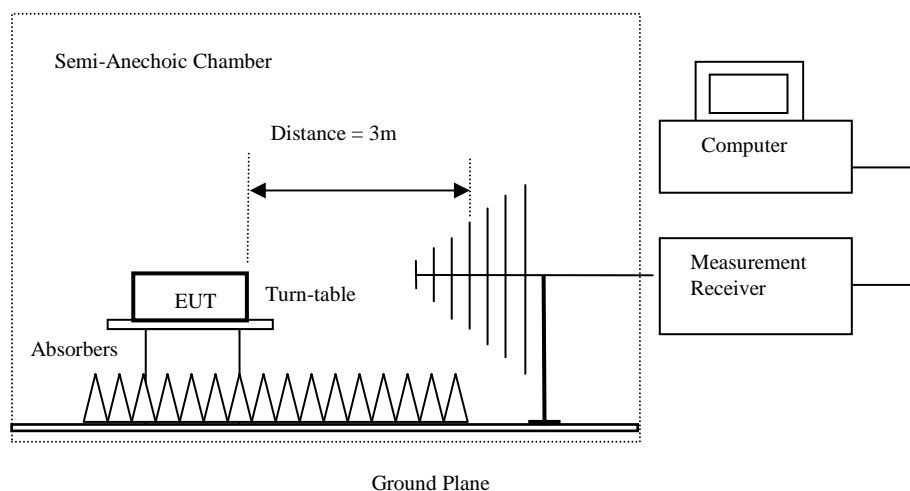
Test Requirement:	FCC 47CFR 15.209
Test Method:	ANSI C63.4:2009
Test Date:	2012-12-19
Mode of Operation:	Tx mode / WiFi mode / Connected to PC for Charging mode

#### **Test Method:**

The sample was placed 0.8m above the ground plane of semi-anechoic Chamber\*. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

\* Semi-anechoic chamber located on the G/F of "STC (Dongguan) Company Limited" with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 629686.

#### **Test Setup:**



Absorbers placed on top of the ground plane are for measurements above 1000MHz only.

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### **Limits for Radiated Emissions [FCC 47 CFR 15.247 Class B]:**

Frequency Range [MHz]	Quasi-Peak Limits [μV/m]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above 960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

### **Result of Tx mode (2412.0 MHz) (802.11b) (9kHz – 30MHz): Pass**

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

### **Results of Tx mode (2412.0 MHz) (802.11b) (30MHz – 1000MHz): PASS**

Field Strength of Spurious Emissions Quasi-Peak Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

### **Result of Tx mode (2412.0 MHz) (802.11b) (Above 1GHz): Pass**

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m μV/m	Margin μV/m	E-Field Polarity
2400.0	37.5	35.4	72.9	74.0	1.1	Vertical
4824.0	11.0	41.5	52.5	74.0	21.5	Horizontal
4824.0	11.2	41.5	52.7	74.0	21.3	Vertical
7236.0	6.5	48.8	55.3	74.0	18.7	Horizontal
7236.0	7.1	48.8	55.9	74.0	18.1	Vertical

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**Result of Tx mode (2412.0 MHz) (802.11b) (Above 1GHz): Pass**

<b>Field Strength of Spurious Emissions</b>						
<b>Average Value</b>						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m μV/m	Margin μV/m	E-Field Polarity
2400.0	16.3	35.4	51.7	54.0	2.3	Vertical
4824.0	-3.4	41.5	38.1	54.0	15.9	Horizontal
4824.0	-0.9	41.5	40.6	54.0	13.4	Vertical
7236.0	-10.1	48.8	38.7	54.0	15.3	Horizontal
7236.0	-8.1	48.8	40.7	54.0	13.3	Vertical

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**Result of Tx mode (2437.0 MHz) (802.11b) (9kHz – 30MHz): Pass**

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

**Results of Tx mode (2437.0 MHz) (802.11b) (30MHz – 1000MHz): PASS**

Field Strength of Spurious Emissions Quasi-Peak Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

**Result of Tx mode (2437.0 MHz) (802.11b) (Above 1GHz): Pass**

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m dBμV/m	Margin dBμV/m	E-Field Polarity
4874.0	13.3	41.4	54.7	74.0	19.3	Horizontal
4874.0	14.4	41.4	55.8	74.0	18.2	Vertical
7311.0	7.0	48.7	55.7	74.0	18.3	Horizontal
7311.0	4.4	48.7	53.1	74.0	20.9	Vertical

**Result of Tx mode (2437.0 MHz) (802.11b) (Above 1GHz): Pass**

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m dBμV/m	Margin dBμV/m	E-Field Polarity
4874.0	-3.0	41.4	38.4	54.0	15.6	Horizontal
4874.0	-1.9	41.4	39.5	54.0	14.5	Vertical
7311.0	-10.4	48.7	38.3	54.0	15.7	Horizontal
7311.0	-9.9	48.7	38.8	54.0	15.2	Vertical

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**Result of Tx mode (2462.0 MHz) (802.11b) (9kHz – 30MHz): Pass**

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

**Results of Tx mode (2462.0 MHz) (802.11b) (30MHz – 1000MHz): PASS**

Field Strength of Spurious Emissions Quasi-Peak Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

**Result of Tx mode (2462.0 MHz) (802.11b) (Above 1GHz): Pass**

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m μV/m	Margin μV/m	E-Field Polarity
2483.5	37.5	35.4	72.9	74.0	1.1	Vertical
4924.0	12.9	41.4	54.3	74.0	19.7	Horizontal
4924.0	12.4	41.4	53.8	74.0	20.2	Vertical
7386.0	6.8	48.7	55.5	74.0	18.5	Horizontal
7386.0	5.6	48.7	54.3	74.0	19.7	Vertical

**Result of Tx mode (2462.0 MHz) (802.11b) (Above 1GHz): Pass**

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m μV/m	Margin μV/m	E-Field Polarity
2483.5	16.3	35.4	51.7	54.0	2.3	Vertical
4924.0	-2.8	41.4	38.6	54.0	15.4	Horizontal
4924.0	-4.2	41.4	37.2	54.0	16.8	Vertical
7386.0	-10.1	48.7	38.6	54.0	15.4	Horizontal
7386.0	-9.1	48.7	39.6	54.0	14.4	Vertical

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**Result of Tx mode (2412.0 MHz) (802.11g) (9kHz – 30MHz): Pass**

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

**Results of Tx mode (2412.0 MHz) (802.11g) (30MHz – 1000MHz): PASS**

Field Strength of Spurious Emissions Quasi-Peak Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

**Result of Tx mode (2412.0 MHz) (802.11g) (Above 1GHz): Pass**

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m μV/m	Margin μV/m	E-Field Polarity
2400.0	37.0	35.4	72.4	74.0	1.6	Vertical
4824.0	12.0	41.5	53.5	74.0	20.5	Horizontal
4824.0	13.4	41.5	54.9	74.0	19.1	Vertical
7236.0	7.1	48.8	55.9	74.0	18.1	Horizontal
7236.0	8.0	48.8	56.8	74.0	17.2	Vertical

**Result of Tx mode (2412.0 MHz) (802.11g) (Above 1GHz): Pass**

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m μV/m	Margin μV/m	E-Field Polarity
2400.0	15.8	35.4	51.2	54.0	2.8	Vertical
4824.0	-1.2	41.5	40.3	54.0	13.7	Horizontal
4824.0	-0.8	41.5	40.7	54.0	13.3	Vertical
7236.0	-9.5	48.8	39.3	54.0	14.7	Horizontal
7236.0	-7.2	48.8	41.6	54.0	12.4	Vertical

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**Result of Tx mode (2437.0 MHz) (802.11g) (9kHz – 30MHz): Pass**

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

**Results of Tx mode (2437.0 MHz) (802.11g) (30MHz – 1000MHz): PASS**

Field Strength of Spurious Emissions Quasi-Peak Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

**Result of Tx mode (2437.0 MHz) (802.11g) (Above 1GHz): Pass**

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m μV/m	Margin μV/m	E-Field Polarity
4874.0	12.7	41.4	54.1	74.0	19.9	Horizontal
4874.0	12.3	41.4	53.7	74.0	20.3	Vertical
7311.0	7.9	48.7	56.6	74.0	17.4	Horizontal
7311.0	7.6	48.7	56.3	74.0	17.7	Vertical

**Result of Tx mode (2437.0 MHz) (802.11g) (Above 1GHz): Pass**

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m μV/m	Margin μV/m	E-Field Polarity
4874.0	-0.6	41.4	40.8	54.0	13.2	Horizontal
4874.0	-0.9	41.4	40.5	54.0	13.5	Vertical
7311.0	-9.2	48.7	39.5	54.0	14.5	Horizontal
7311.0	-8.6	48.7	40.1	54.0	13.9	Vertical

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**Result of Tx mode (2462.0 MHz) (802.11g) (9kHz – 30MHz): Pass**

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

**Results of Tx mode (2462.0 MHz) (802.11g) (30MHz – 1000MHz): PASS**

Field Strength of Spurious Emissions Quasi-Peak Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

**Result of Tx mode (2462.0 MHz) (802.11g) (Above 1GHz): Pass**

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m μV/m	Margin μV/m	E-Field Polarity
2483.5	34.8	35.4	70.2	74.0	3.8	Vertical
4924.0	13.1	41.4	54.5	74.0	19.5	Horizontal
4924.0	11.6	41.4	53.0	74.0	21.0	Vertical
7386.0	7.4	48.7	56.1	74.0	17.9	Horizontal
7386.0	6.9	48.7	55.6	74.0	18.4	Vertical

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### Result of Tx mode (2462.0 MHz) (802.11g) (Above 1GHz): Pass

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m μV/m	Margin μV/m	E-Field Polarity
2483.5	14.5	35.4	49.9	54.0	4.1	Vertical
4924.0	-1.7	41.4	39.7	54.0	14.3	Horizontal
4924.0	-2.8	41.4	38.6	54.0	15.4	Vertical
7386.0	-9.8	48.7	38.9	54.0	15.1	Horizontal
7386.0	-10.1	48.7	38.6	54.0	15.4	Vertical

### Result of Tx mode (2412.0 MHz) (802.11 n20) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

### Results of Tx mode (2412.0 MHz) (802.11 n20) (30MHz – 1000MHz): PASS

Field Strength of Spurious Emissions Quasi-Peak Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

### Result of Tx mode (2412.0 MHz) (802.11 n20) (Above 1GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m μV/m	Margin μV/m	E-Field Polarity
2400.0	35.9	35.4	71.3	74.0	2.7	Vertical
4824.0	11.6	41.5	53.1	74.0	20.9	Horizontal
4824.0	12.2	41.5	53.7	74.0	20.3	Vertical
7236.0	5.8	48.8	54.6	74.0	19.4	Horizontal
7236.0	7.3	48.8	56.1	74.0	17.9	Vertical

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**Result of Tx mode (2412.0 MHz) (802.11 n20) (Above 1GHz): Pass**

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m μV/m	Margin μV/m	E-Field Polarity
2400.0	15.4	35.4	50.8	54.0	3.2	Vertical
4824.0	-2.8	41.5	38.7	54.0	15.3	Horizontal
4824.0	-1.0	41.5	40.5	54.0	13.5	Vertical
7236.0	-8.0	48.8	40.8	54.0	13.2	Horizontal
7236.0	-6.9	48.8	41.9	54.0	12.1	Vertical

**Result of Tx mode (2437.0 MHz) (802.11 n20) (9kHz – 30MHz): Pass**

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

**Results of Tx mode (2437.0 MHz) (802.11 n20) (30MHz – 1000MHz): PASS**

Field Strength of Spurious Emissions Quasi-Peak Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

**Result of Tx mode (2437.0 MHz) (802.11 n20) (Above 1GHz): Pass**

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m μV/m	Margin μV/m	E-Field Polarity
4874.0	12.4	41.4	53.8	74.0	20.2	Horizontal
4874.0	11.8	41.4	53.2	74.0	20.8	Vertical
7311.0	4.8	48.7	53.5	74.0	20.5	Horizontal
7311.0	5.8	48.7	54.5	74.0	19.5	Vertical

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**Result of Tx mode (2437.0 MHz) (802.11 n20) (Above 1GHz): Pass**

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m μV/m	Margin μV/m	E-Field Polarity
4874.0	-1.4	41.4	40.0	54.0	14.0	Horizontal
4874.0	-1.9	41.4	39.5	54.0	14.5	Vertical
7311.0	-9.4	48.7	39.3	54.0	14.7	Horizontal
7311.0	-7	48.7	41.7	54.0	12.3	Vertical

**Result of Tx mode (2462.0 MHz) (802.11 n20) (9kHz – 30MHz): Pass**

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

**Results of Tx mode (2462.0 MHz) (802.11 n20) (30MHz – 1000MHz): PASS**

Field Strength of Spurious Emissions Quasi-Peak Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

**Result of Tx mode (2462.0 MHz) (802.11 n20) (Above 1GHz): Pass**

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m μV/m	Margin μV/m	E-Field Polarity
2483.5	35.9	35.4	71.3	74.0	2.7	Vertical
4924.0	11.8	41.4	53.2	74.0	20.8	Horizontal
4924.0	12.9	41.4	54.3	74.0	19.7	Vertical
7386.0	6.4	48.7	55.1	74.0	18.9	Horizontal
7386.0	7.4	48.7	56.1	74.0	17.9	Vertical

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### Result of Tx mode (2462.0 MHz) (802.11n20) (Above 1GHz): Pass

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m μV/m	Margin μV/m	E-Field Polarity
2483.5	15.5	35.4	50.9	54.0	3.1	Vertical
4924.0	-1.2	41.4	40.2	54.0	13.8	Horizontal
4924.0	-0.5	41.4	40.9	54.0	13.1	Vertical
7386.0	-8.5	48.7	40.2	54.0	13.8	Horizontal
7386.0	-9.8	48.7	38.9	54.0	15.1	Vertical

### Result of Tx mode (2422.0 MHz) (802.11 n40) (9kHz – 30MHz): Pass

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

### Results of Tx mode (2422.0 MHz) (802.11 n40) (30MHz – 1000MHz): PASS

Field Strength of Spurious Emissions Quasi-Peak Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

### Result of Tx mode (2422.0 MHz) (802.11 n40) (Above 1GHz): Pass

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m μV/m	Margin μV/m	E-Field Polarity
2400.0	38.4	35.4	73.8	74.0	0.2	Vertical
4844.0	10.0	41.5	51.5	74.0	22.5	Horizontal
4844.0	8.6	41.5	50.1	74.0	23.9	Vertical
7266.0	4.5	48.8	53.3	74.0	20.7	Horizontal
7266.0	4.1	48.8	52.9	74.0	21.1	Vertical

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**Result of Tx mode (2422.0 MHz) (802.11 n40) (Above 1GHz): Pass**

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m μV/m	Margin μV/m	E-Field Polarity
2400.0	12.9	35.4	48.3	54.0	5.7	Vertical
4844.0	-2.8	41.5	38.7	54.0	15.3	Horizontal
4844.0	-4.1	41.5	37.4	54.0	16.6	Vertical
7266.0	-9.3	48.8	39.5	54.0	14.5	Horizontal
7266.0	-9.1	48.8	39.7	54.0	14.3	Vertical

**Result of Tx mode (2437.0 MHz) (802.11 n40) (9kHz – 30MHz): Pass**

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

**Results of Tx mode (2437.0 MHz) (802.11 n40) (30MHz – 1000MHz): PASS**

Field Strength of Spurious Emissions Quasi-Peak Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

**Result of Tx mode (2437.0 MHz) (802.11 n40) (Above 1GHz): Pass**

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m dBμV/m	Margin dBμV/m	E-Field Polarity
4874.0	12.9	41.4	54.3	74.0	19.7	Horizontal
4874.0	12.5	41.4	53.9	74.0	20.1	Vertical
7311.0	5.7	48.7	54.4	74.0	19.6	Horizontal
7311.0	4.1	48.7	52.8	74.0	21.2	Vertical

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**Result of Tx mode (2437.0 MHz) (802.11 n40) (Above 1GHz): Pass**

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m dBμV/m	Margin dBμV/m	E-Field Polarity
4874.0	-1.2	41.4	40.2	54.0	13.8	Horizontal
4874.0	-2.9	41.4	38.5	54.0	15.5	Vertical
7311.0	-10.1	48.7	38.6	54.0	15.4	Horizontal
7311.0	-11.2	48.7	37.5	54.0	16.5	Vertical

**Result of Tx mode (2452.0 MHz) (802.11 n40) (9kHz – 30MHz): Pass**

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

**Results of Tx mode (2452.0 MHz) (802.11 n40) (30MHz – 1000MHz): PASS**

Field Strength of Spurious Emissions Quasi-Peak Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

**Result of Tx mode (2452.0 MHz) (802.11 n40) (Above 1GHz): Pass**

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level @3m dBμV	Correction Factor dB/m	Field Strength dBμV/m	Limit @3m μV/m	Margin μV/m	E-Field Polarity
2483.5	38.4	35.4	73.8	74.0	0.2	Vertical
4904.0	13.0	41.4	54.4	74.0	19.6	Horizontal
4904.0	12.1	41.4	53.5	74.0	20.5	Vertical
7356.0	6.7	48.7	55.4	74.0	18.6	Horizontal
7356.0	7.9	48.7	56.6	74.0	17.4	Vertical

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### **Result of Tx mode (2452.0 MHz) (802.11n40) (Above 1GHz): Pass**

Field Strength of Spurious Emissions Average Value						
Frequency MHz	Measured Level @3m dB $\mu$ V	Correction Factor dB/m	Field Strength dB $\mu$ V/m	Limit @3m $\mu$ V/m	Margin $\mu$ V/m	E-Field Polarity
2483.5	16.7	35.4	52.1	54.0	1.9	Vertical
4904.0	-3.8	41.4	37.6	54.0	16.4	Horizontal
4904.0	-4.2	41.4	37.2	54.0	16.8	Vertical
7356.0	-9.4	48.7	39.3	54.0	14.7	Horizontal
7356.0	-9.8	48.7	38.9	54.0	15.1	Vertical

#### Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz

\* Denotes restricted band of operation.

Measurements were made using a peak detector. Any emission less than 1000MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 and the limits of FCC Rules Part 15 Section 15.209 were applied.

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 9kHz-30MHz 3.3dB  
30MHz -1GHz 4.6dB  
1GHz -26GHz 4.4dB

Emissions in the vertical and horizontal polarizations have been investigated and the worst-case test results are recorded in this report.

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### **Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:**

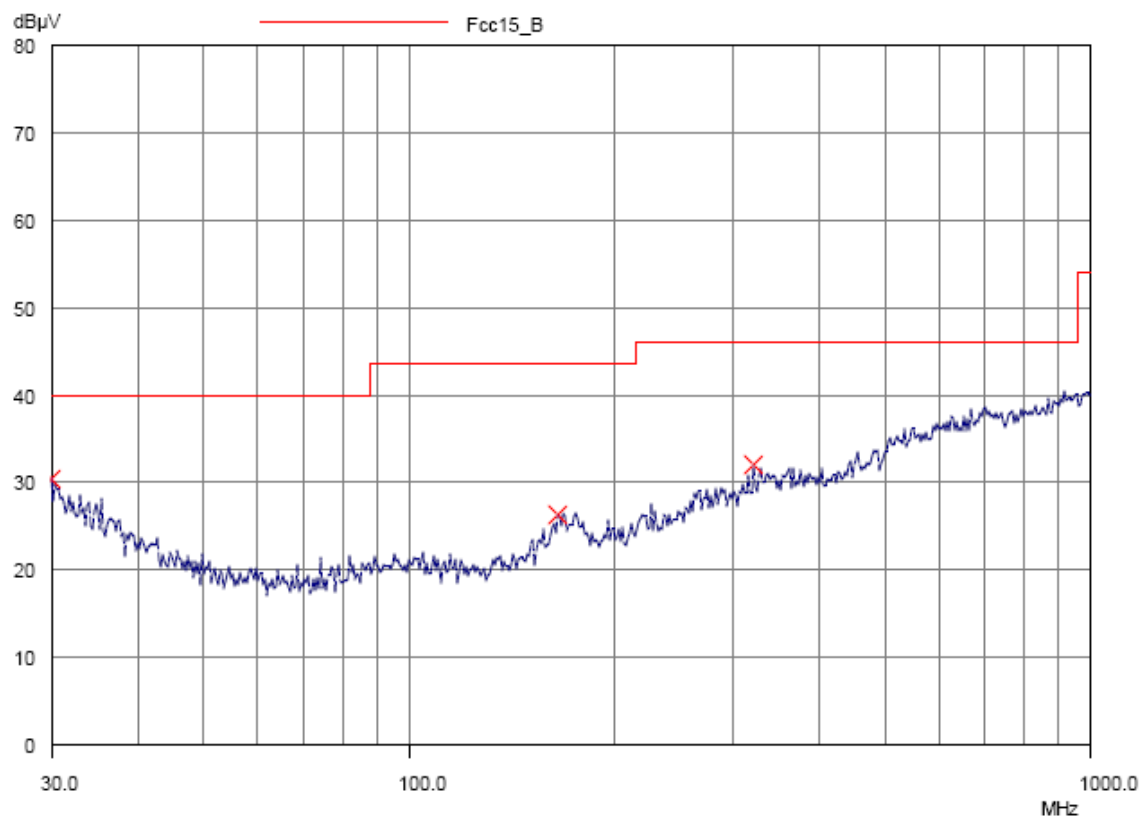
Frequency Range	Quasi-Peak Limits
[MHz]	[ $\mu\text{V/m}$ ]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

### **Result of WiFi mode (30MHz – 1GHz): Pass**

Please refer to the following table for result details

#### Horizontal



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### **Result of WiFi mode (30MHz – 1GHz): Pass**

<b>Radiated Emissions Quasi-Peak</b>					
Emission Frequency MHz	E-Field Polarity	Level @3m dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Level @3m $\mu$ V/m	Limit @3m $\mu$ V/m
30.0	Horizontal	30.4	40.0	33.1	100
165.6	Horizontal	26.3	43.5	20.7	150
319.9	Horizontal	32.1	46.0	40.3	200

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### **Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:**

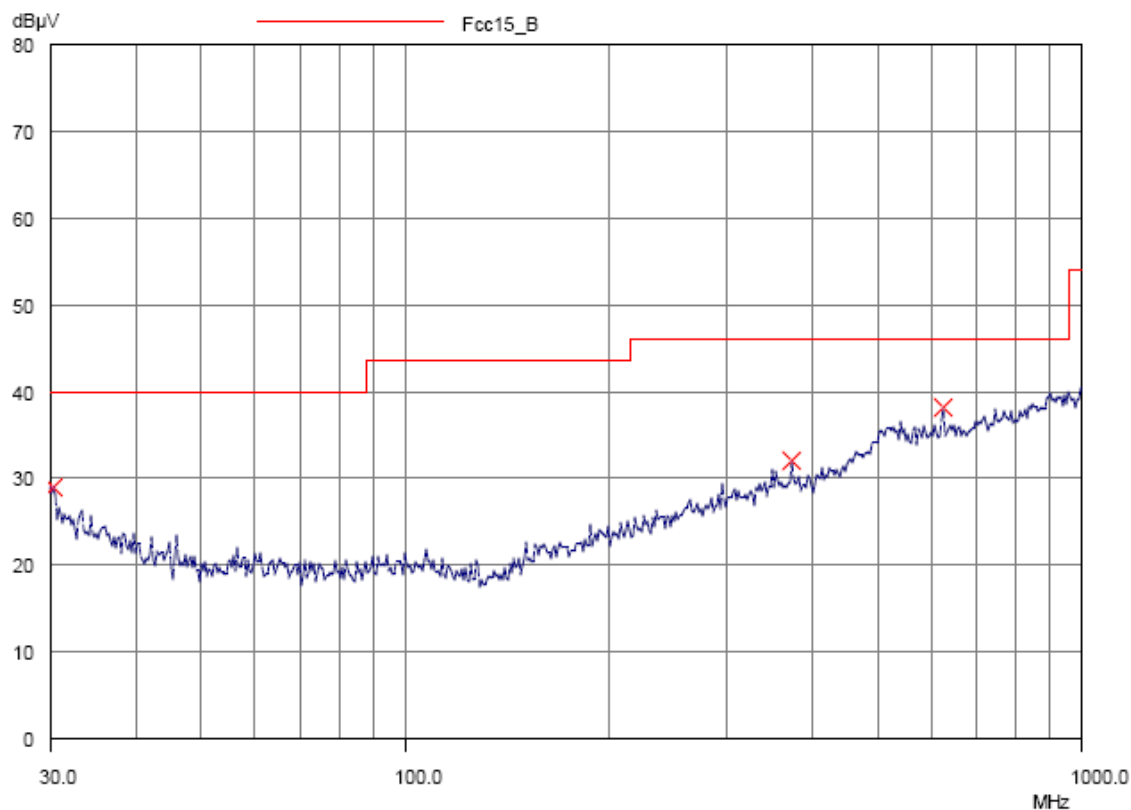
Frequency Range	Quasi-Peak Limits
[MHz]	[ $\mu\text{V/m}$ ]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

### **Result of WiFi mode (30MHz – 1GHz): Pass**

Please refer to the following table for result details

Vertical



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### **Result of WiFi mode (30MHz – 1GHz): Pass**

<b>Radiated Emissions Quasi-Peak</b>					
Emission Frequency MHz	E-Field Polarity	Level @3m dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Level @3m $\mu$ V/m	Limit @3m $\mu$ V/m
30.3	Vertical	29.1	40.0	28.5	100
371.8	Vertical	32.1	46.0	40.3	200
625.3	Vertical	38.3	46.0	82.2	200

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### **Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:**

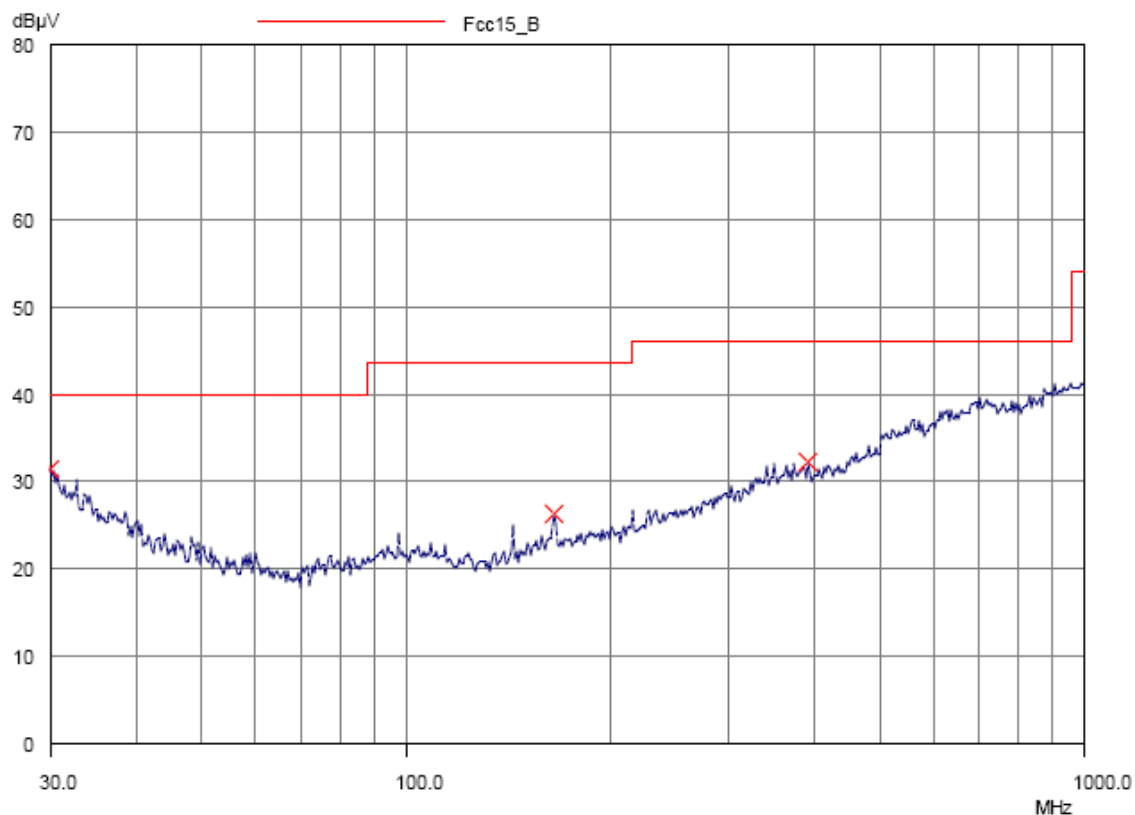
Frequency Range	Quasi-Peak Limits
[MHz]	[ $\mu\text{V/m}$ ]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

### **Result of Connected to PC for Charging mode (30MHz – 1GHz): Pass**

Please refer to the following table for result details

#### Horizontal



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### **Result of Connected to PC for Charging mode (30MHz – 1GHz): Pass**

<b>Radiated Emissions</b>					
<b>Quasi-Peak</b>					
Emission Frequency MHz	E-Field Polarity	Level @3m dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Level @3m $\mu$ V/m	Limit @3m $\mu$ V/m
30.0	Horizontal	31.6	40.0	38.0	100
165.8	Horizontal	26.4	43.5	20.9	150
391.6	Horizontal	32.3	46.0	41.2	200

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### **Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:**

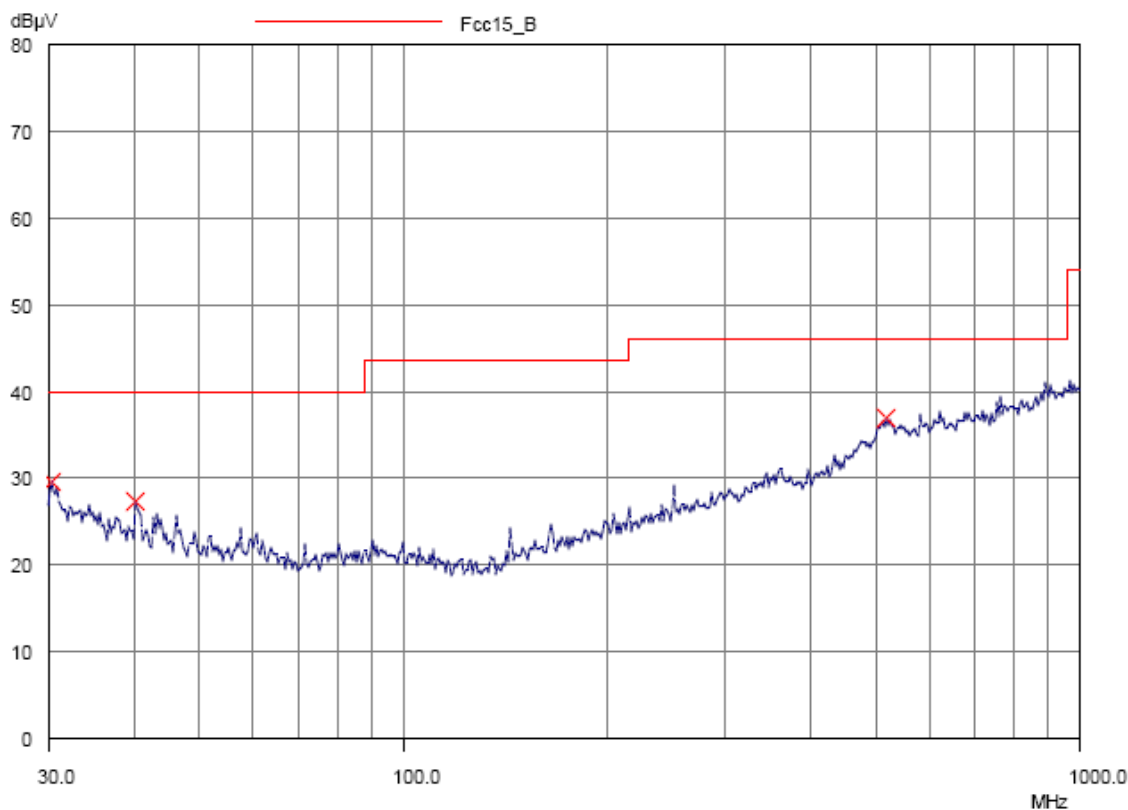
Frequency Range	Quasi-Peak Limits
[MHz]	[ $\mu$ V/m]
0.009-0.490	2400/F (kHz)
0.490-1.705	24000/F (kHz)
1.705-30	30
30-88	100
88-216	150
216-960	200
Above960	500

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

### **Result of Connected to PC for Charging mode (30MHz – 1GHz): Pass**

Please refer to the following table for result details

Vertical



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**Result of Connected to PC for Charging mode (30MHz – 1GHz): Pass**

<b>Radiated Emissions Quasi-Peak</b>					
Emission Frequency MHz	E-Field Polarity	Level @3m dB $\mu$ V/m	Limit @3m dB $\mu$ V/m	Level @3m $\mu$ V/m	Limit @3m $\mu$ V/m
30.2	Vertical	29.6	40.0	30.2	100
40.4	Vertical	27.4	40.0	23.4	100
517.7	Vertical	37.0	46.0	70.8	200

**Remarks:**

Calculated measurement uncertainty (30MHz – 1GHz): 4.6dB

Emissions in the vertical and horizontal polarizations have been investigated and the worst-case test results are recorded in this report.

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### **3.1.3 Power Spectral Density**

Test Requirement: FCC 47CFR 15.247(e)  
Test Method: ANSI C63.4:2009  
Test Date: 2012-12-21  
Mode of Operation: WiFi mode

#### **Test Method:**

The RF output of the EUT was connected to the spectrum analyzer. Set the fundamental frequency as the center frequency of the spectral analyzer. Use RBW=100kHz and sweep time = span/100kHz. Measure the Power Spectral Density (PSD) and record the results in dBm.

#### **Test Setup:**

As Test Setup of clause 3.1.1 in this test report.

#### **Test Limit:**

The maximum power spectral density (PSD) shall not exceeded 8dBm in any 3kHz band.

Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where  $BWCF = 10\log(3\text{ kHz}/100\text{ kHz}) = -15.2\text{dB}$

#### **Results of WiFi Mode 802.11 b (Tx:2412MHz to 2462MHz) : Pass (TX Unit)**

##### **Maximum power spectral density**

<b>Transmitter Frequency (MHz)</b>	<b>Maximum Power spectral density level / 100kHz band (dBm)</b>	<b>BWCF (dB)</b>	<b>Maximum Power spectral density level / 3kHz band (dBm)</b>	<b>Maximum Power spectral density / 3kHz band limit</b>
2412.0	4.54	-15.2	-10.66	<b>8dBm</b>
2437.0	4.62	-15.2	-10.58	<b>8dBm</b>
2462.0	5.49	-15.2	-9.71	<b>8dBm</b>

**Bandwidth correction factor (BWCF) =  $10\log(3\text{kHz}/100\text{kHz}) = -15.2\text{dB}$**

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### Results of WiFi Mode 802.11 g (Tx:2412MHz to 2462MHz) : Pass (TX Unit)

#### Maximum power spectral density

Transmitter Frequency (MHz)	Maximum Power spectral density level / 100kHz band (dBm)	BWCF (dB)	Maximum Power spectral density level / 3kHz band (dBm)	Maximum Power spectral density / 3kHz band limit
2412.0	1.47	-15.2	-13.73	8dBm
2437.0	2.67	-15.2	-12.53	8dBm
2462.0	2.68	-15.2	-12.52	8dBm

Bandwidth correction factor (BWCF) =  $10\log(3\text{kHz}/100\text{kHz}) = -15.2\text{dB}$

### Results of WiFi Mode 802.11 n20 (Tx:2412MHz to 2462MHz) : Pass (TX Unit)

#### Maximum power spectral density

Transmitter Frequency (MHz)	Maximum Power spectral density level / 100kHz band (dBm)	BWCF (dB)	Maximum Power spectral density level / 3kHz band (dBm)	Maximum Power spectral density / 3kHz band limit
2412.0	-0.07	-15.2	-15.27	8dBm
2437.0	1.37	-15.2	-13.83	8dBm
2462.0	1.86	-15.2	-13.34	8dBm

Bandwidth correction factor (BWCF) =  $10\log(3\text{kHz}/100\text{kHz}) = -15.2\text{dB}$

### Results of WiFi Mode 802.11 n40 (Tx:2422MHz to 2452MHz) : Pass (TX Unit)

#### Maximum power spectral density

Transmitter Frequency (MHz)	Maximum Power spectral density level / 100kHz band (dBm)	BWCF (dB)	Maximum Power spectral density level / 3kHz band (dBm)	Maximum Power spectral density / 3kHz band limit
2422.0	-4.40	-15.2	-19.6	8dBm
2437.0	-3.46	-15.2	-18.66	8dBm
2452.0	-2.83	-15.2	-18.03	8dBm

Bandwidth correction factor (BWCF) =  $10\log(3\text{kHz}/100\text{kHz}) = -15.2\text{dB}$

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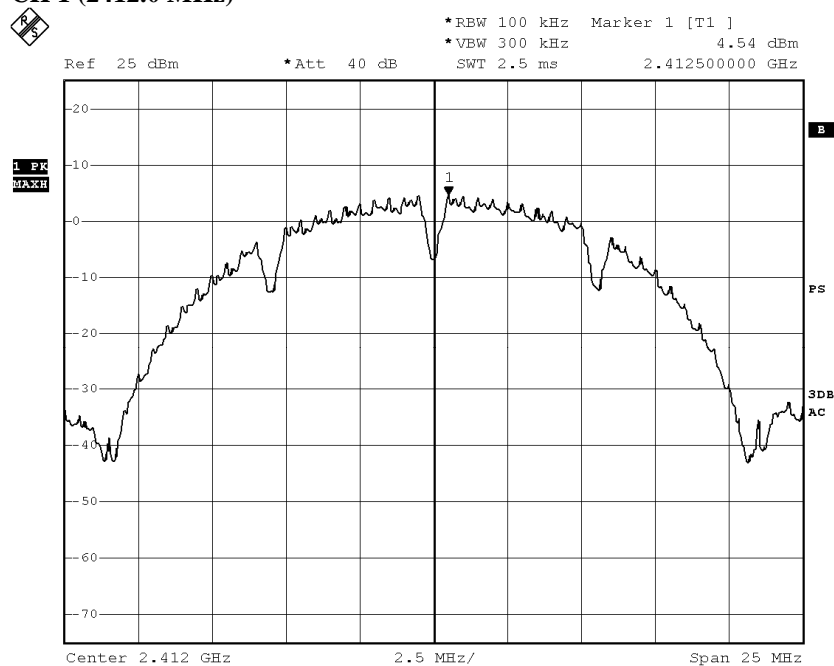
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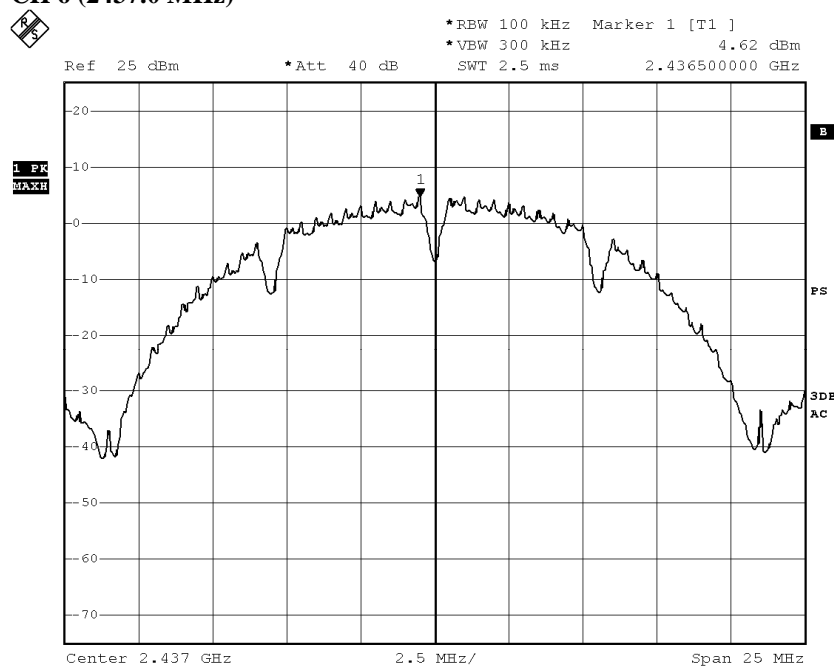
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WiFi mode 802.11 b 1Mbit, (Tx: 2412MHz to 2462MHz)

CH 1 (2412.0 MHz)



CH 6 (2437.0 MHz)



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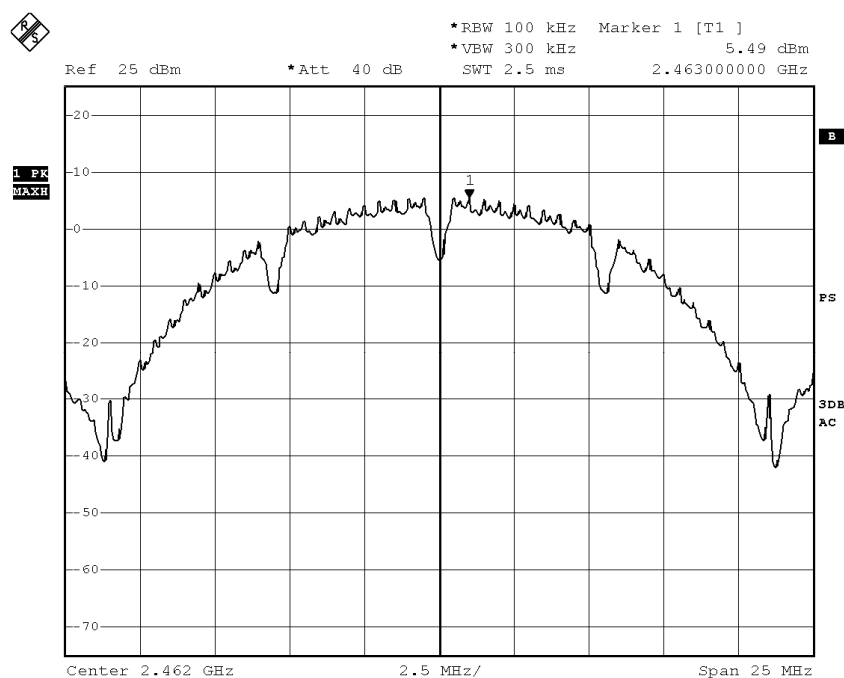
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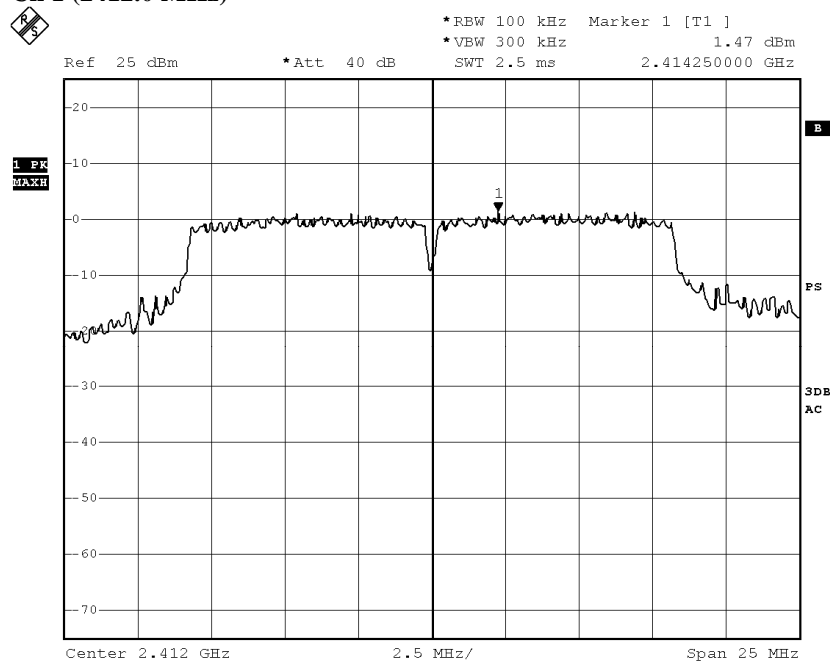
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### CH 11 (2462.0 MHz)



### WiFi mode 802.11 g 6Mbit, (Tx:2412MHz to 2462MHz)

#### Ch 1 (2412.0 MHz)



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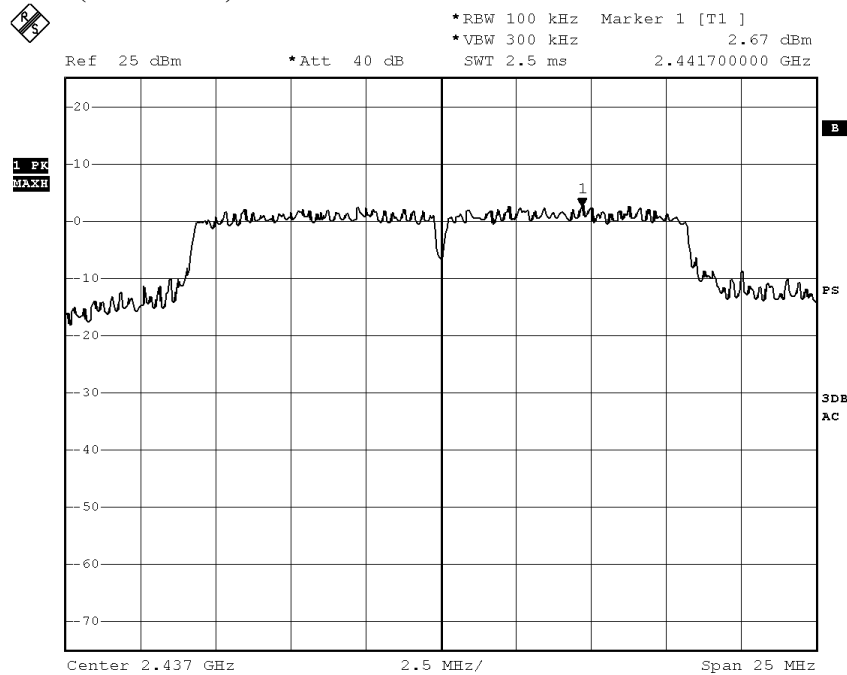
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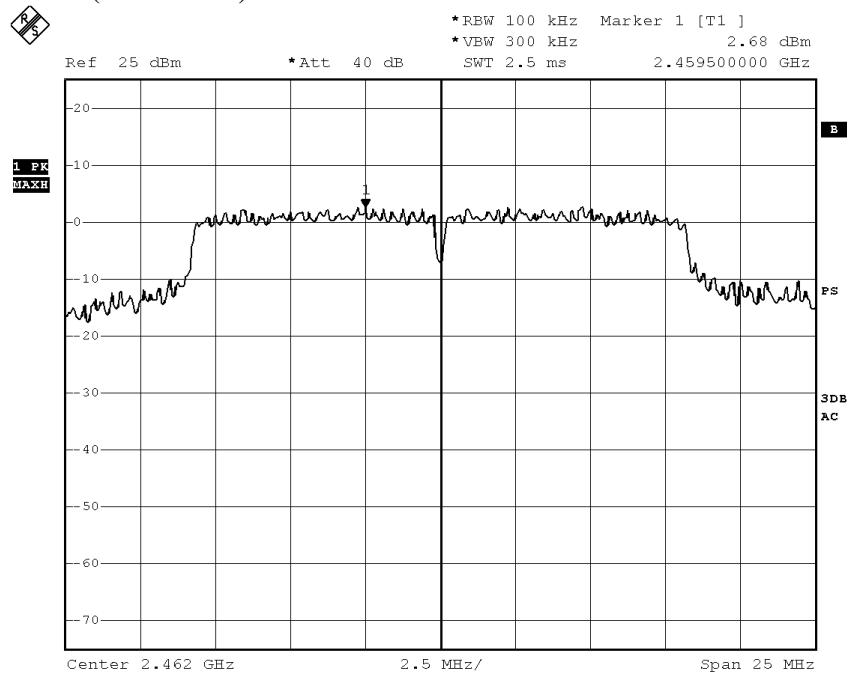
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### CH 6 (2437.0 MHz)



### CH 11 (2462.0 MHz)



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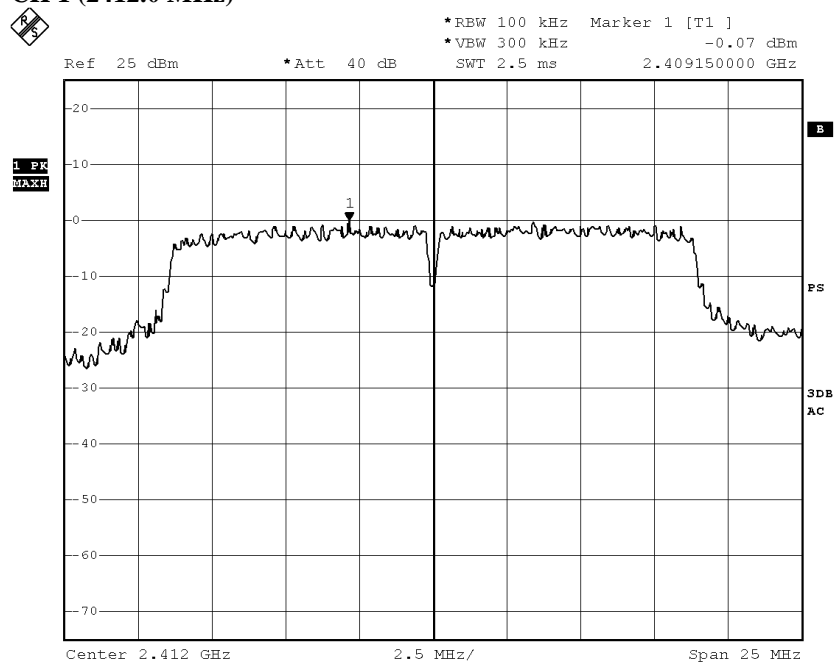
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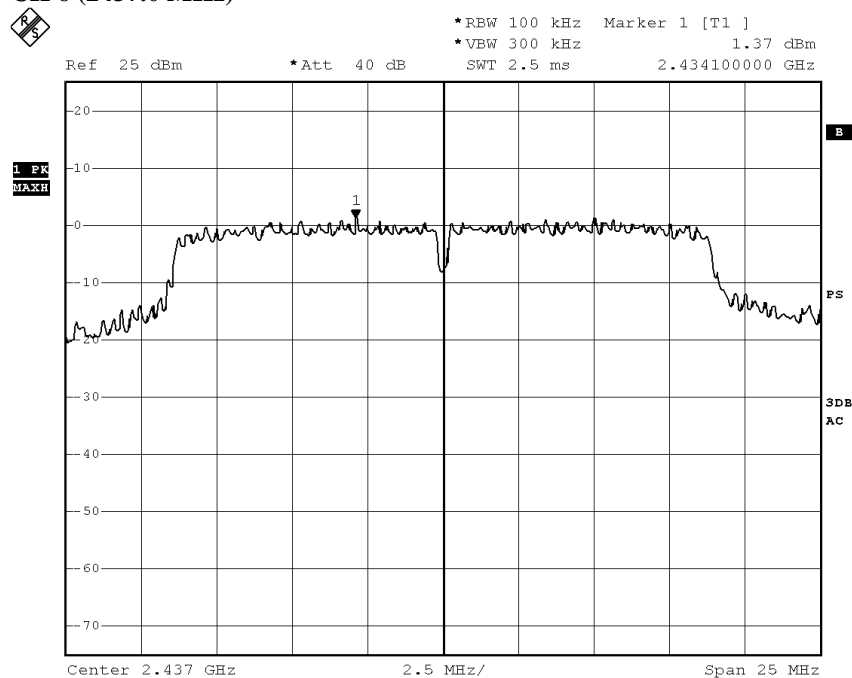
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WiFi mode 802.11 n20 54Mbit, (Tx: 2412MHz to 2462MHz)

CH 1 (2412.0 MHz)



CH 6 (2437.0 MHz)



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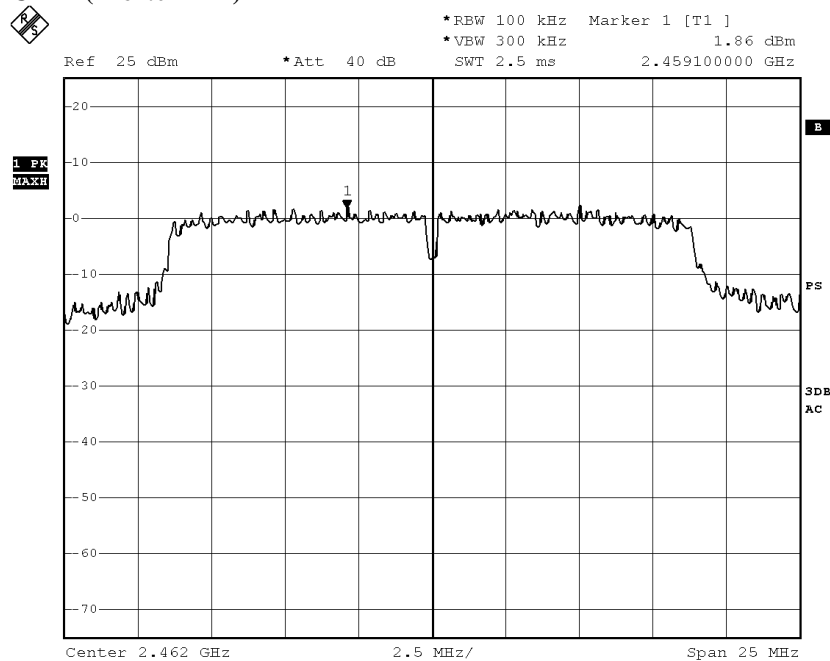
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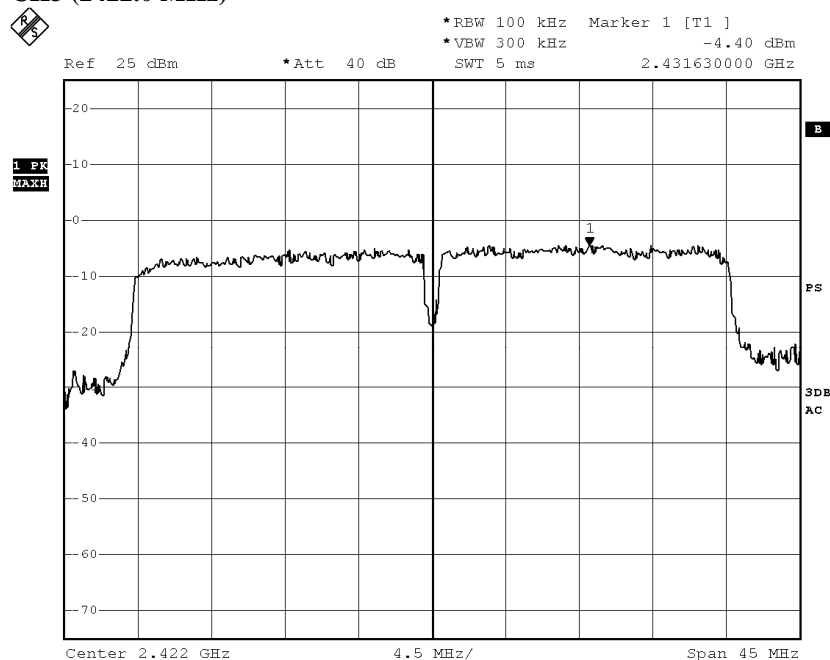
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### Ch 11 (2462.0 MHz)



### WiFi mode 802.11 n40 54Mbit, (Tx: 2422MHz to 2452MHz)

#### CH3 (2422.0 MHz)



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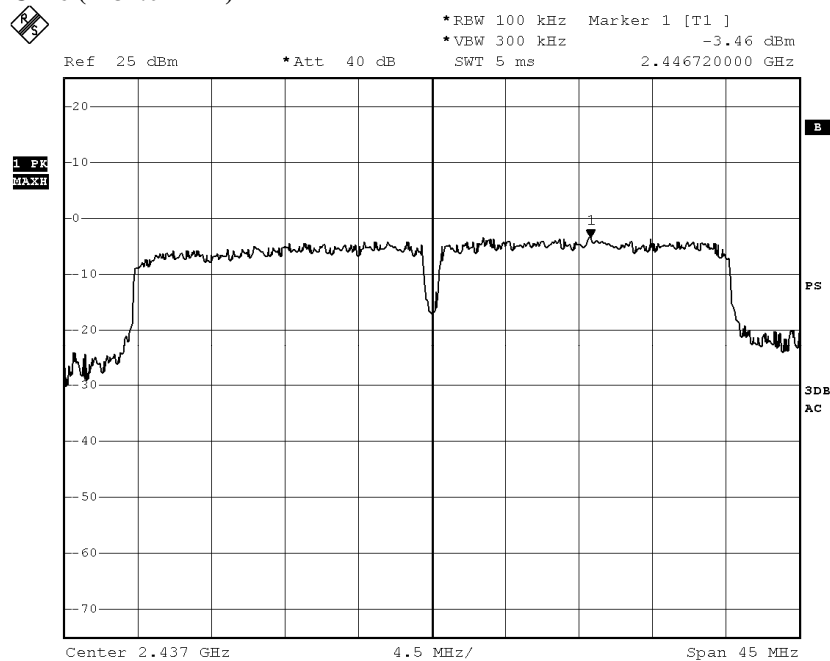
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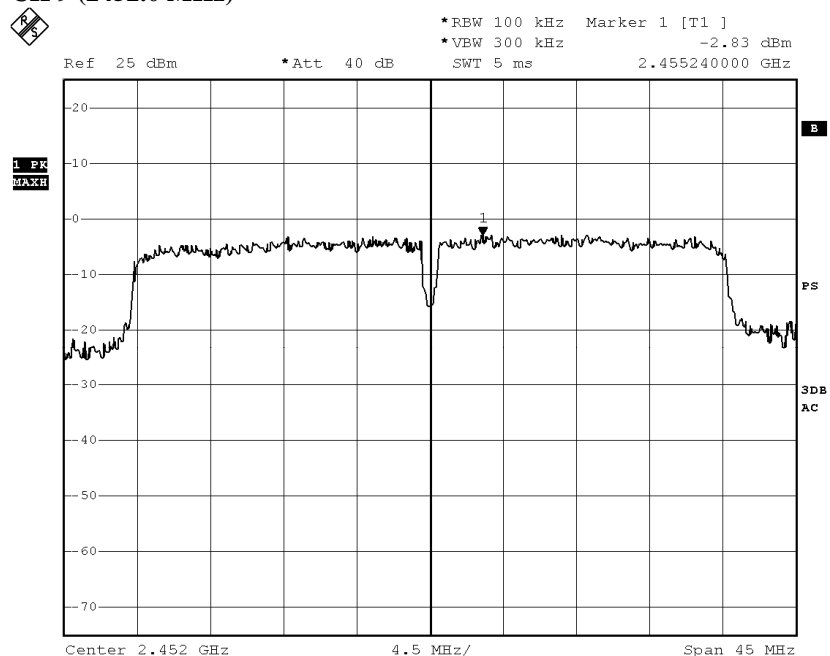
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### CH 6 (2437.0 MHz)



### CH 9 (2452.0 MHz)



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## **STC Test Report**

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### **3.1.4 6dB Spectrum Bandwidth Measurement**

Test Requirement:	FCC 47CFR 15.247(a)(2)
Test Method:	ANSI C63.4:2009
Test Date:	2012-12-22
Mode of Operation:	WiFi mode

#### **Test Method:**

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

#### **Test Setup:**

As Test Setup of clause 3.1.1 in this test report.

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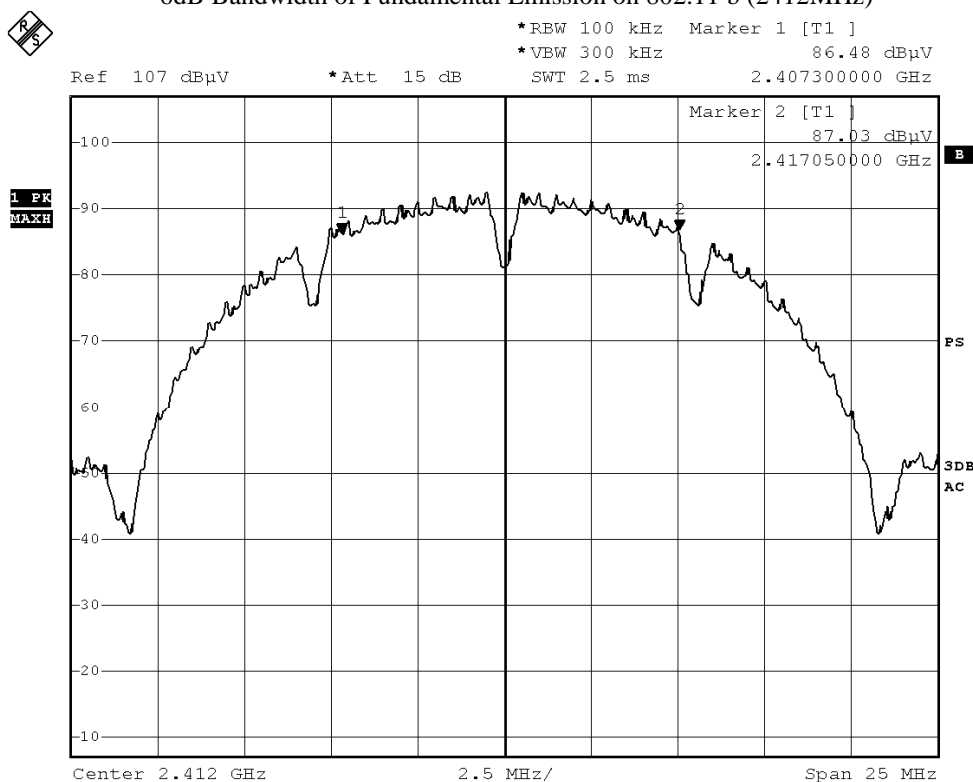
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### Limits for 6dB Spectrum Bandwidth Measurement:

Center Frequency [MHz]	6dB Bandwidth [MHz]	FCC Limits [kHz]
2412.0	9.75	> 500

### 6dB Bandwidth of Fundamental Emission on 802.11 b (2412MHz)



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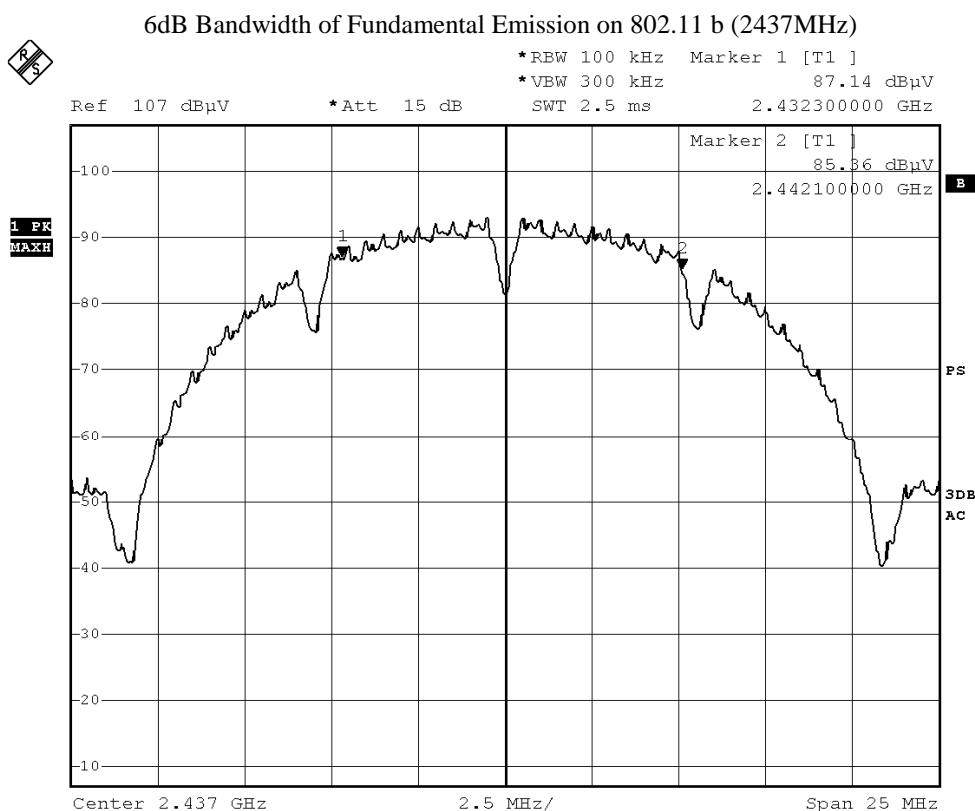
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### Limits for 6dB Spectrum Bandwidth Measurement:

Frequency Range [MHz]	6dB Bandwidth [MHz]	FCC Limits [kHz]
2437.0	9.80	> 500



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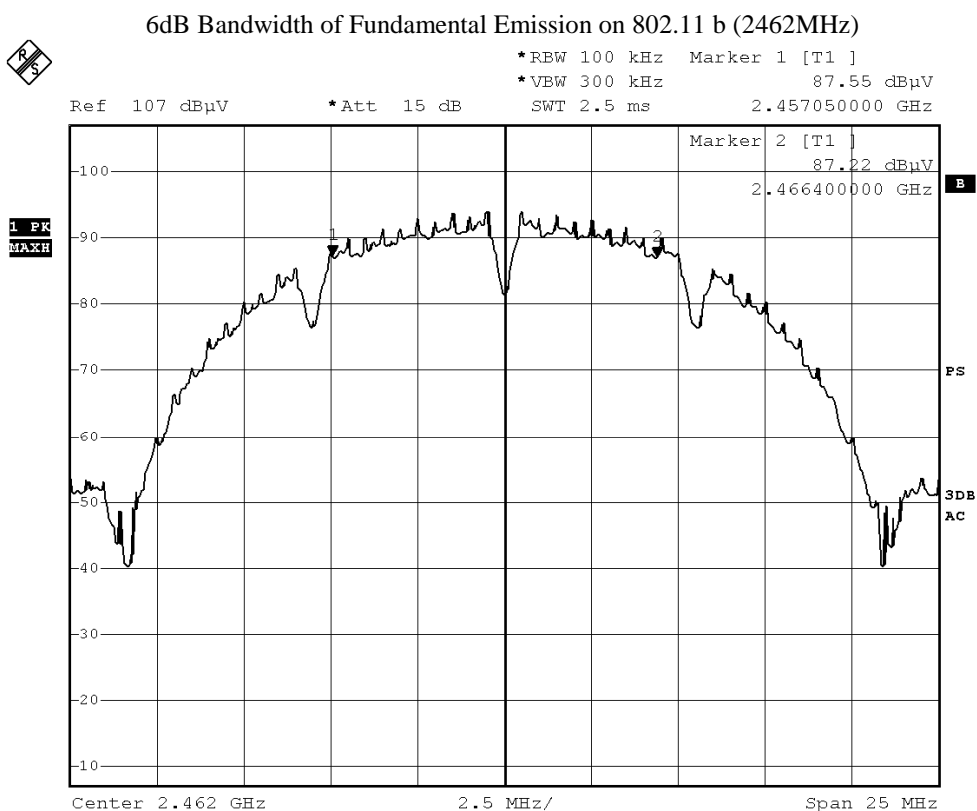
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### Limits for 6dB Spectrum Bandwidth Measurement:

Frequency Range [MHz]	6dB Bandwidth [MHz]	FCC Limits [kHz]
2462.0	9.35	> 500



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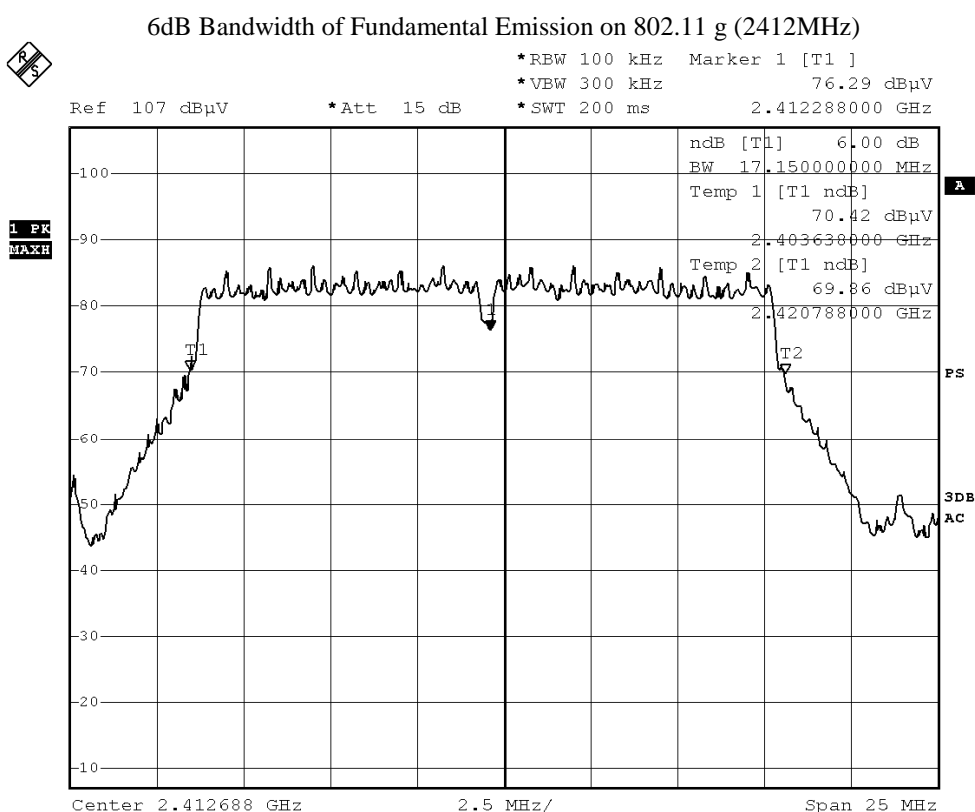
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### Limits for 6dB Spectrum Bandwidth Measurement:

Center Frequency [MHz]	6dB Bandwidth [MHz]	FCC Limits [kHz]
2412.0	17.15	> 500



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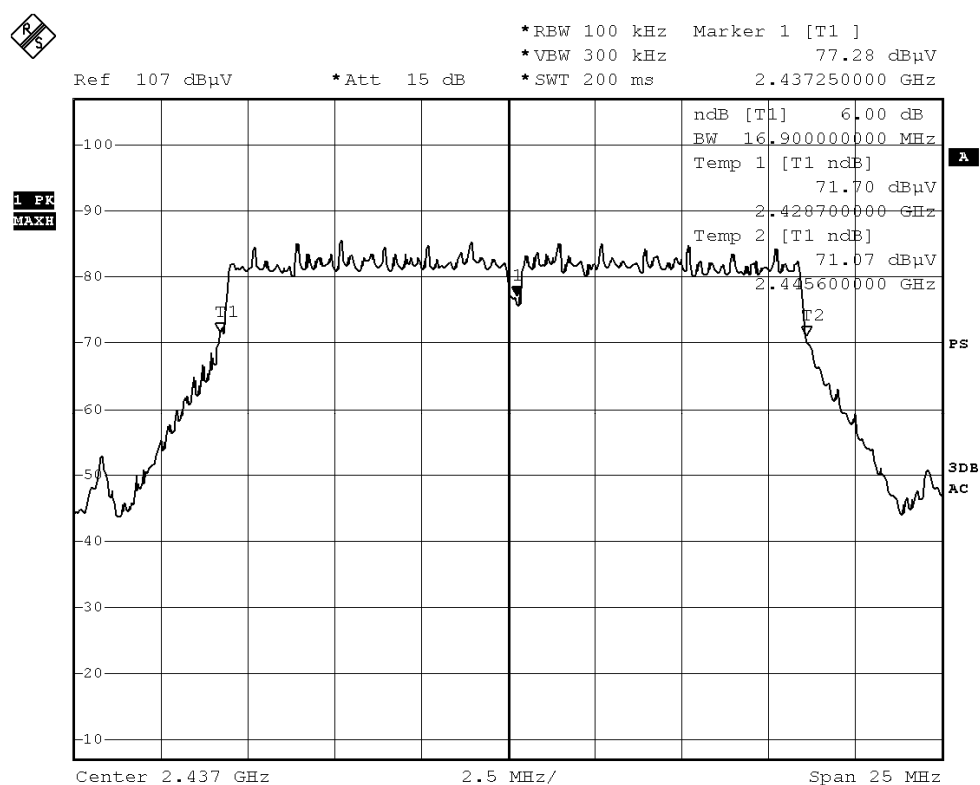
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### Limits for 6dB Spectrum Bandwidth Measurement:

Frequency Range [MHz]	6dB Bandwidth [MHz]	FCC Limits [kHz]
2437.0	16.90	> 500

### 6dB Bandwidth of Fundamental Emission on 802.11 g (2437MHz)



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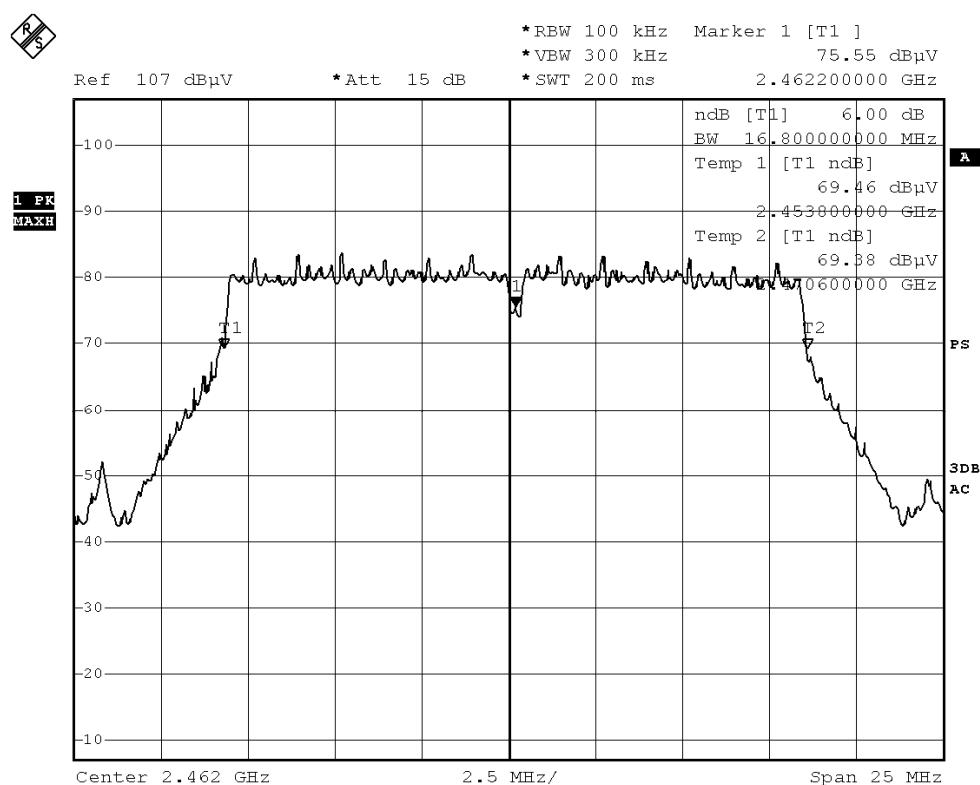
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### Limits for 6dB Spectrum Bandwidth Measurement:

Frequency Range [MHz]	6dB Bandwidth [MHz]	FCC Limits [kHz]
2462.0	16.80	> 500

### 6dB Bandwidth of Fundamental Emission on 802.11 g (2462MHz)



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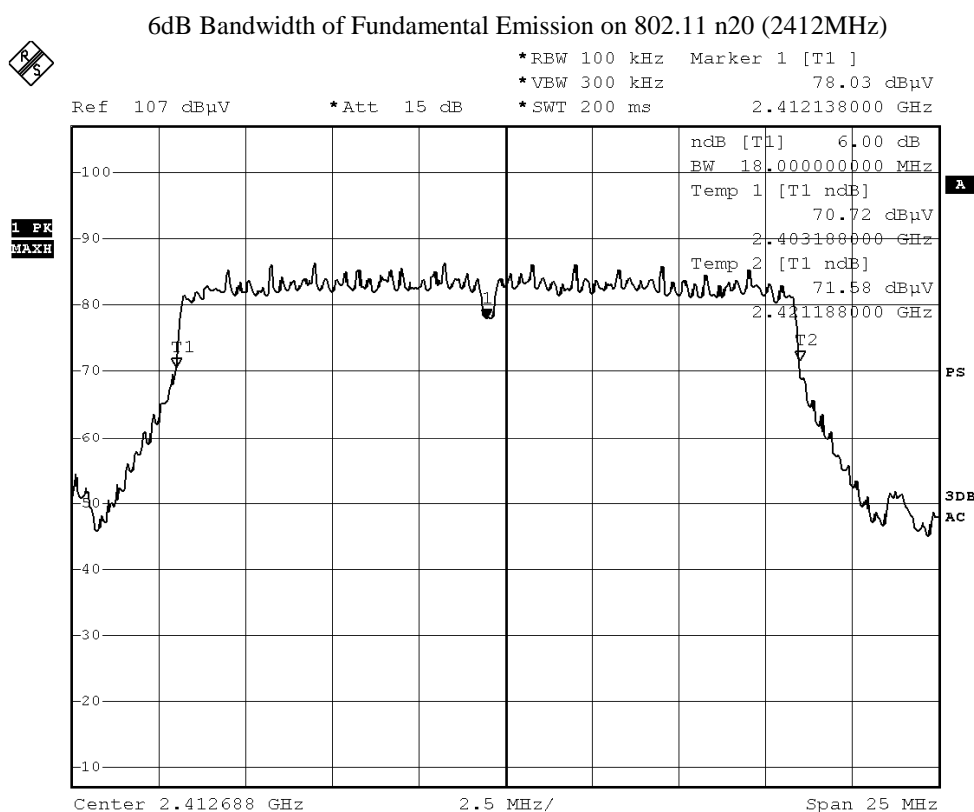
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### Limits for 6dB Spectrum Bandwidth Measurement:

Center Frequency [MHz]	6dB Bandwidth [MHz]	FCC Limits [kHz]
2412.0	18.00	> 500



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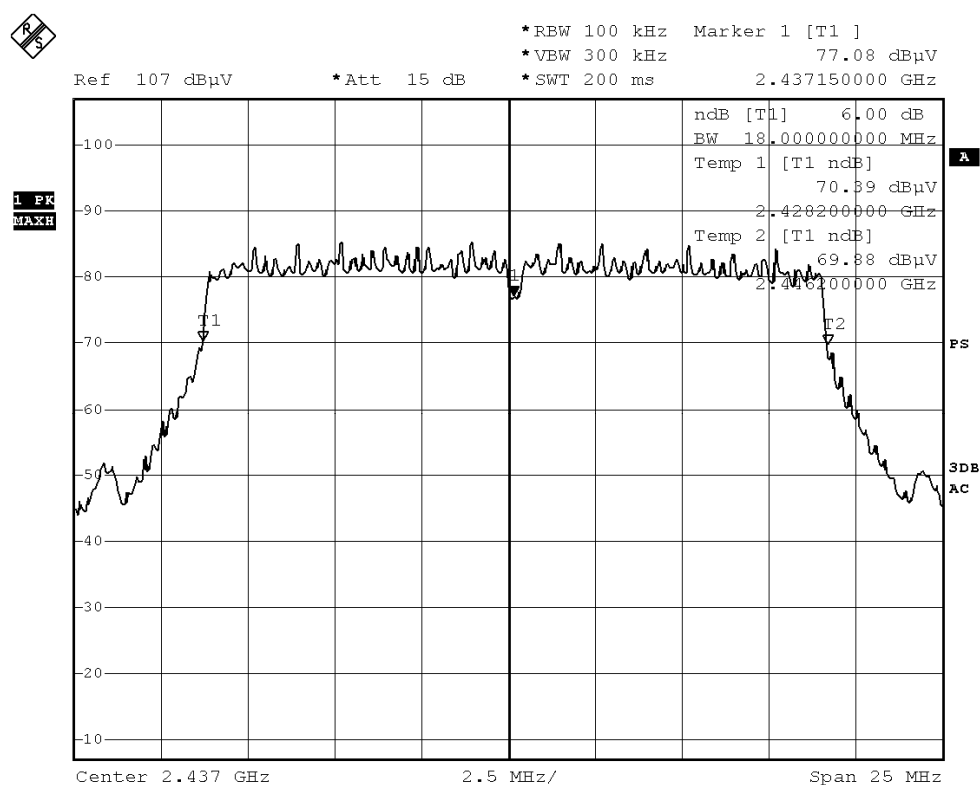
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### Limits for 6dB Spectrum Bandwidth Measurement:

Frequency Range [MHz]	6dB Bandwidth [MHz]	FCC Limits [kHz]
2437.0	18.00	> 500

### 6dB Bandwidth of Fundamental Emission on 802.11 n20 (2437MHz)



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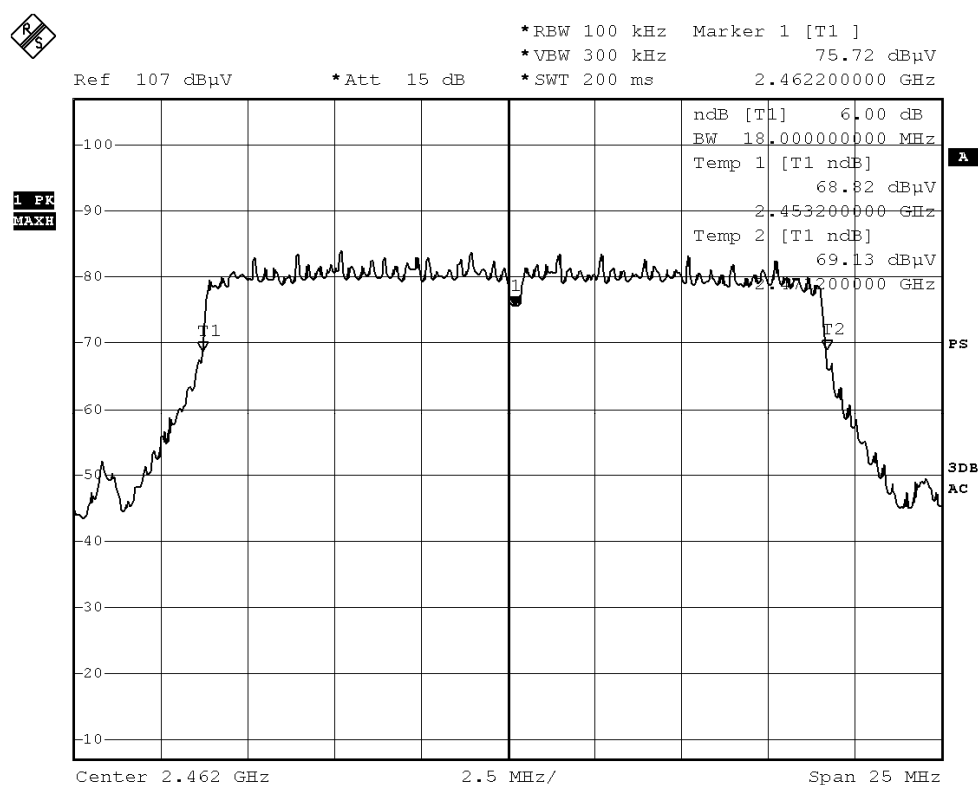
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### Limits for 6dB Spectrum Bandwidth Measurement:

Frequency Range [MHz]	6dB Bandwidth [MHz]	FCC Limits [kHz]
2462.0	18.00	> 500

### 6dB Bandwidth of Fundamental Emission on 802.11 n20 (2462MHz)



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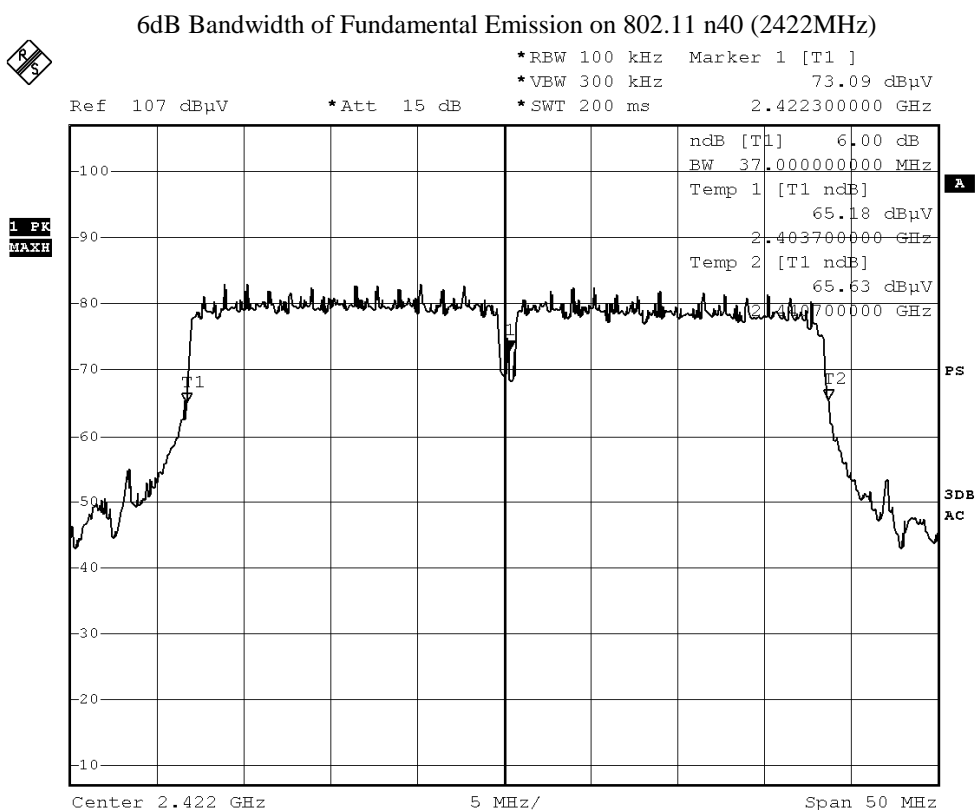
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### Limits for 6dB Spectrum Bandwidth Measurement:

Center Frequency [MHz]	6dB Bandwidth [MHz]	FCC Limits [kHz]
2422.0	37.00	> 500



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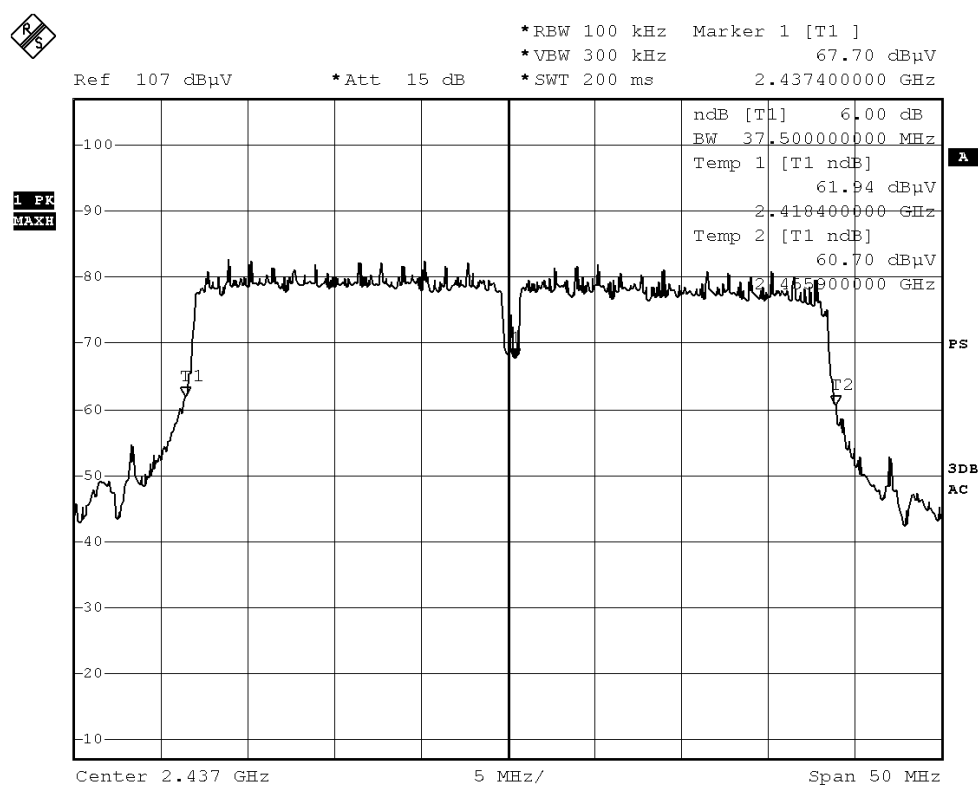
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### Limits for 6dB Spectrum Bandwidth Measurement:

Frequency Range [MHz]	6dB Bandwidth [MHz]	FCC Limits [kHz]
2437.0	37.50	> 500

### 6dB Bandwidth of Fundamental Emission on 802.11 n40 (2437MHz)



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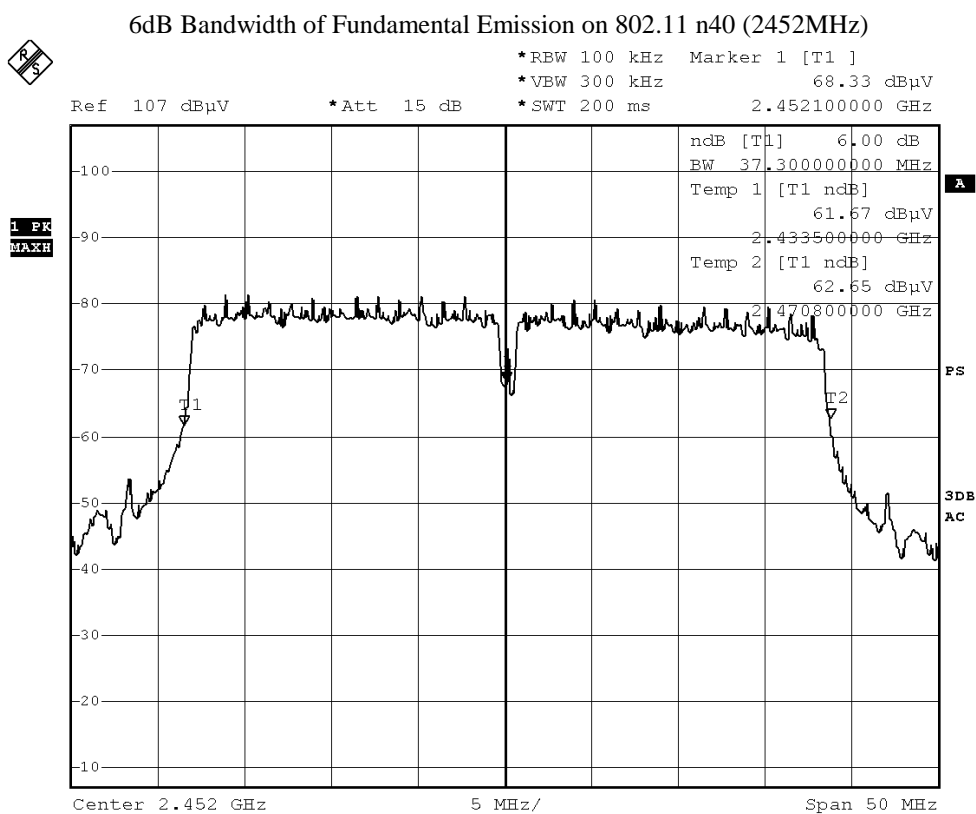
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### Limits for 6dB Spectrum Bandwidth Measurement:

Frequency Range [MHz]	6dB Bandwidth [MHz]	FCC Limits [kHz]
2452.0	37.30	> 500



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### **3.1.5 Band Edges Measurement**

Test Requirement:	FCC 47CFR 15.247
Test Method:	ANSI C63.4:2009
Test Date:	2012-12-22
Mode of Operation:	WiFi mode

#### **Test Method:**

The band edge is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. The RBW and VBW are set to 100kHz for this measurement.

#### **Test Setup:**

As Test Setup of clause 3.1.2 in this test report.

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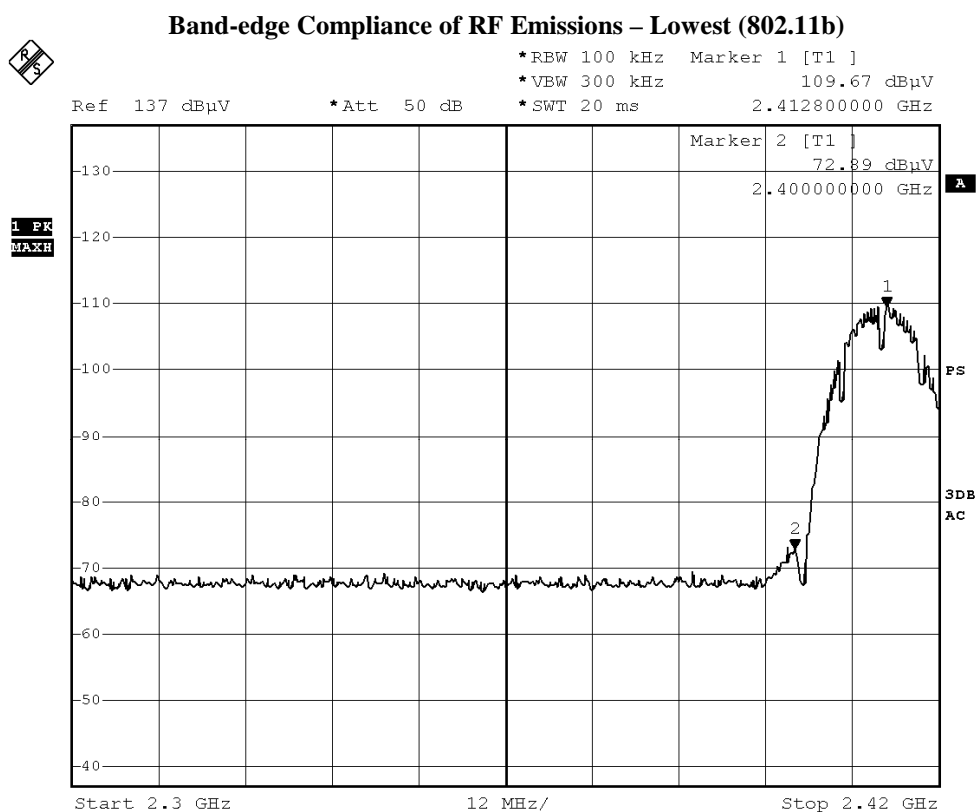


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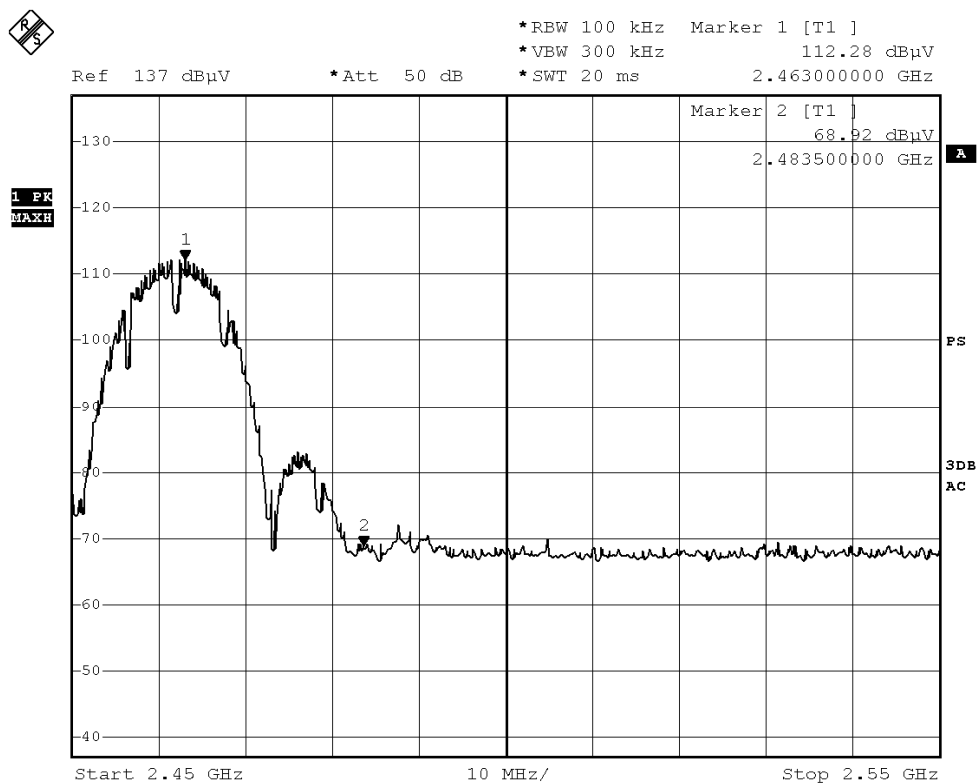
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### Band-edge Compliance of RF Emissions – Highest (802.11b)



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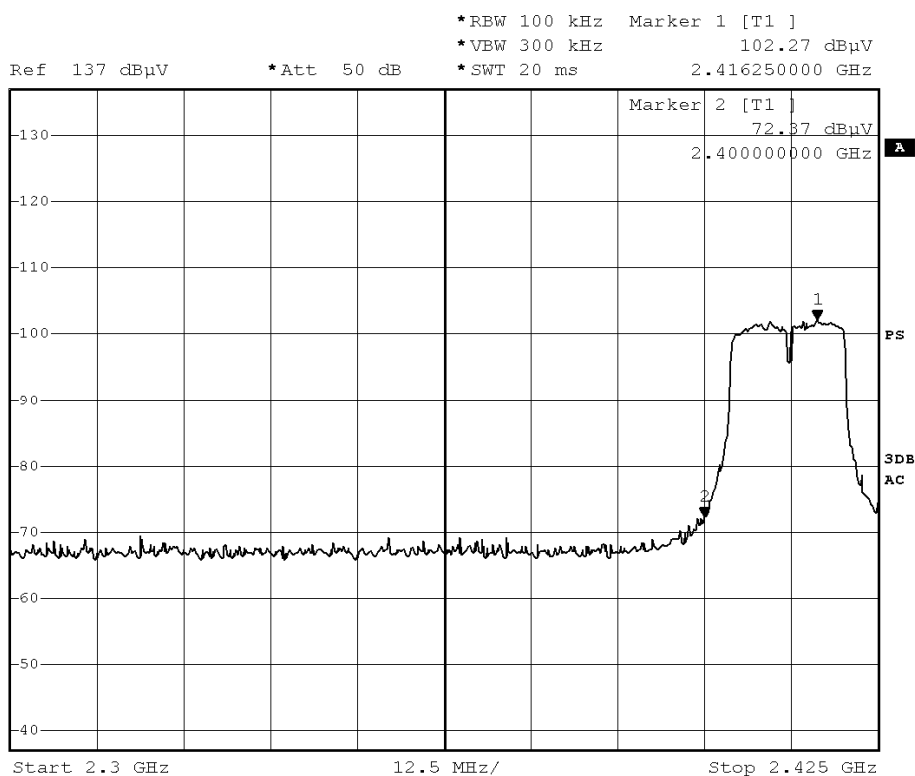
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### Band-edge Compliance of RF Emissions – Lowest (802.11g)



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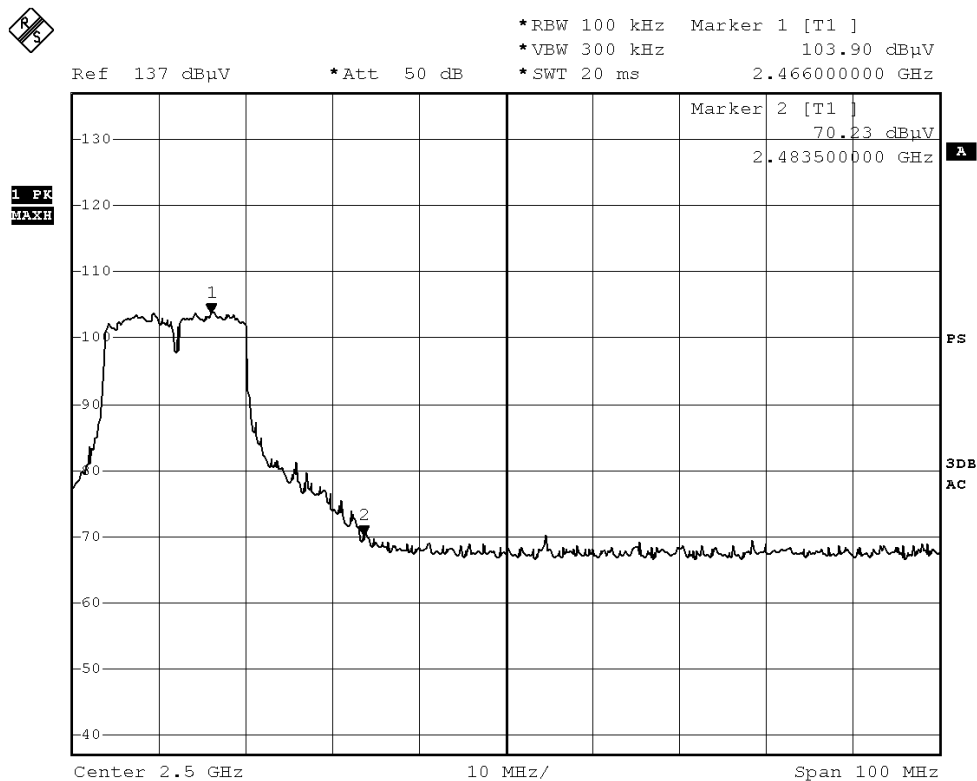
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### Band-edge Compliance of RF Emissions – Highest (802.11g)



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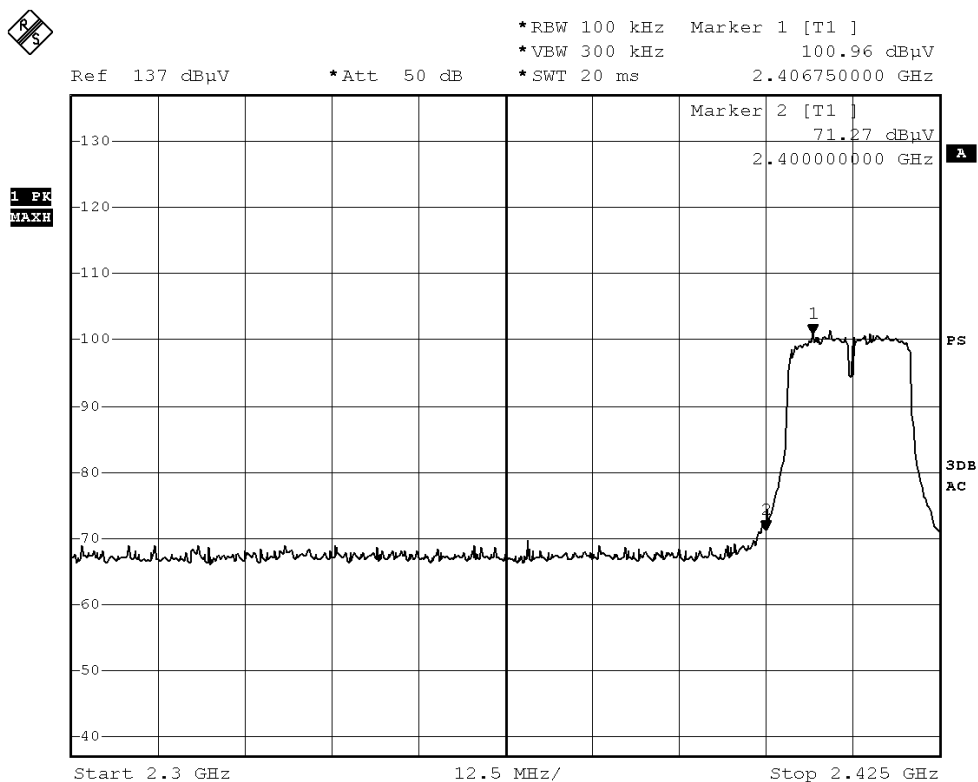
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### Band-edge Compliance of RF Emissions – Lowest (802.11n20)



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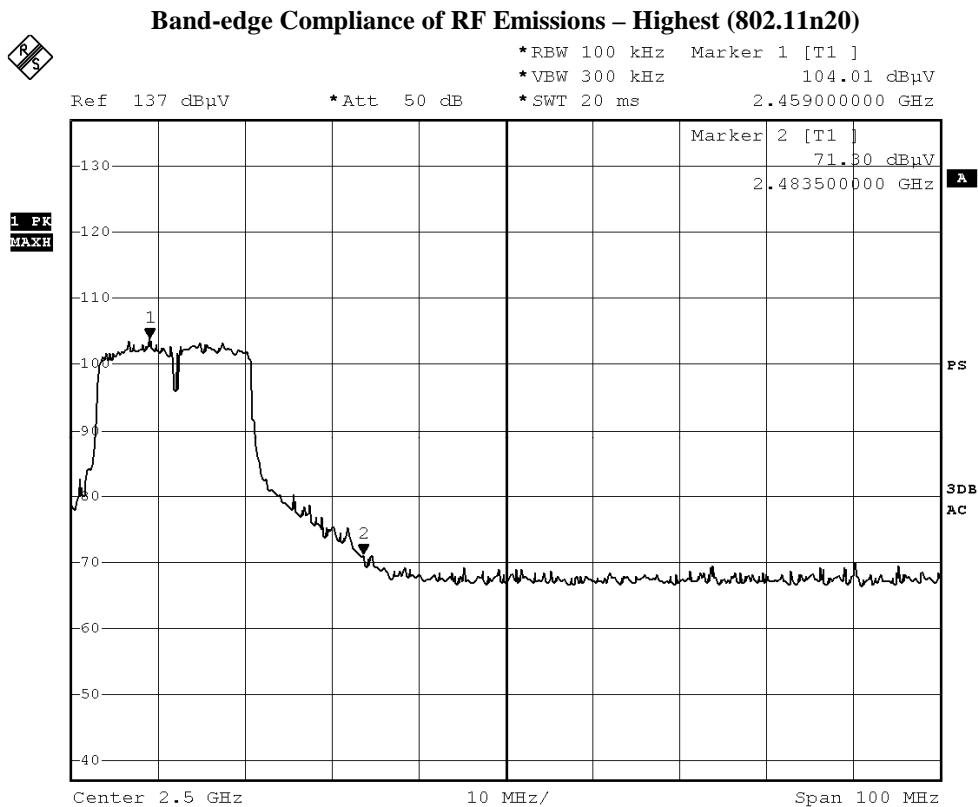


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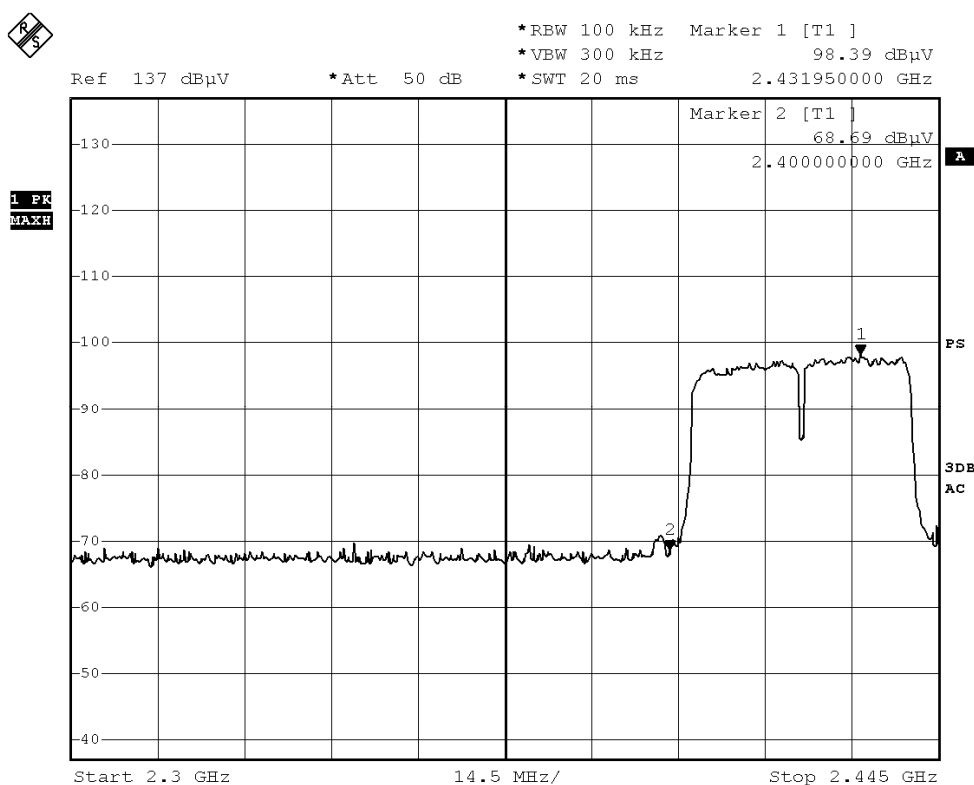
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### Band-edge Compliance of RF Emissions – Lowest (802.11n40)



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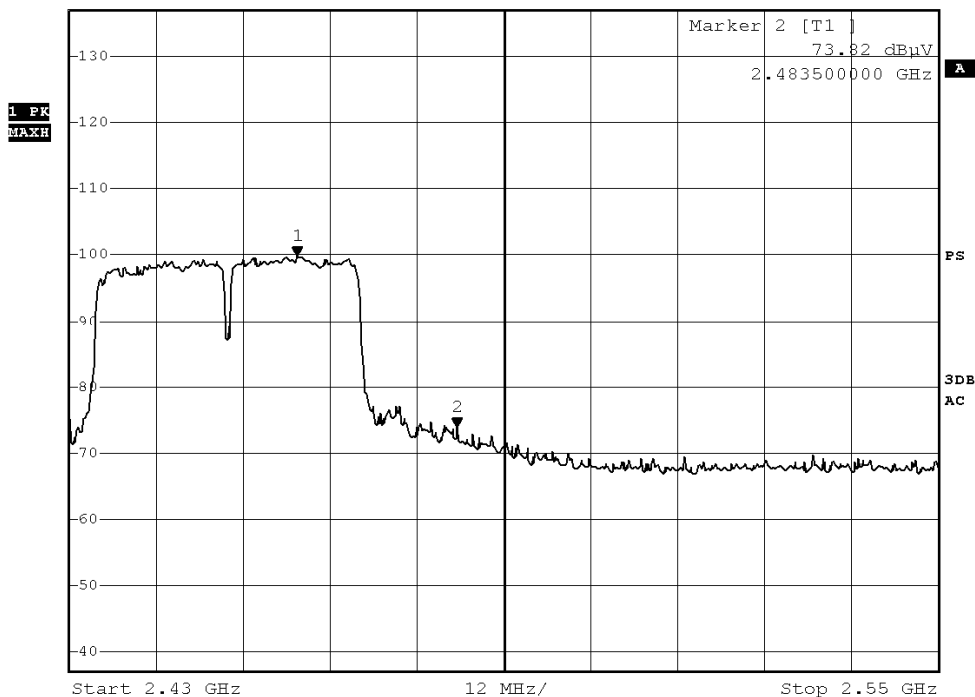
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### Band-edge Compliance of RF Emissions – Highest (802.11n40)



Ref 137 dBμV \*Att 50 dB \*RBW 100 kHz Marker 1 [T1 ]  
\*VBW 300 kHz 99.93 dBμV  
\*SWT 20 ms 2.461440000 GHz



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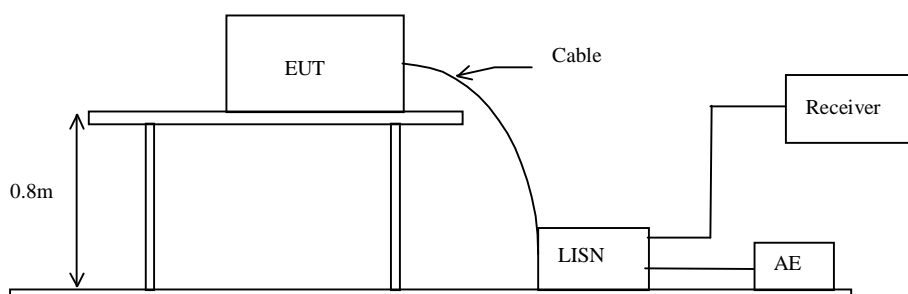
### **3.1.6 Conducted Emissions (0.15MHz to 30MHz)**

Test Requirement:	FCC 47CFR 15.207
Test Method:	ANSI C63.4:2009
Test Date:	2012-12-12
Mode of Operation:	WiFi mode

#### **Test Method:**

The test was performed in accordance with ANSI C63.4:2009, with the following: an initial measurement was performed in peak and average detection mode on the live line, any emissions recorded within 30dB of the relevant limit line were re-measured using quasi-peak and average detection on the live and neutral lines with the worst case recorded in the table of results.

#### **Test Setup:**



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### Limit for Conducted Emissions (FCC 47 CFR 15.207):

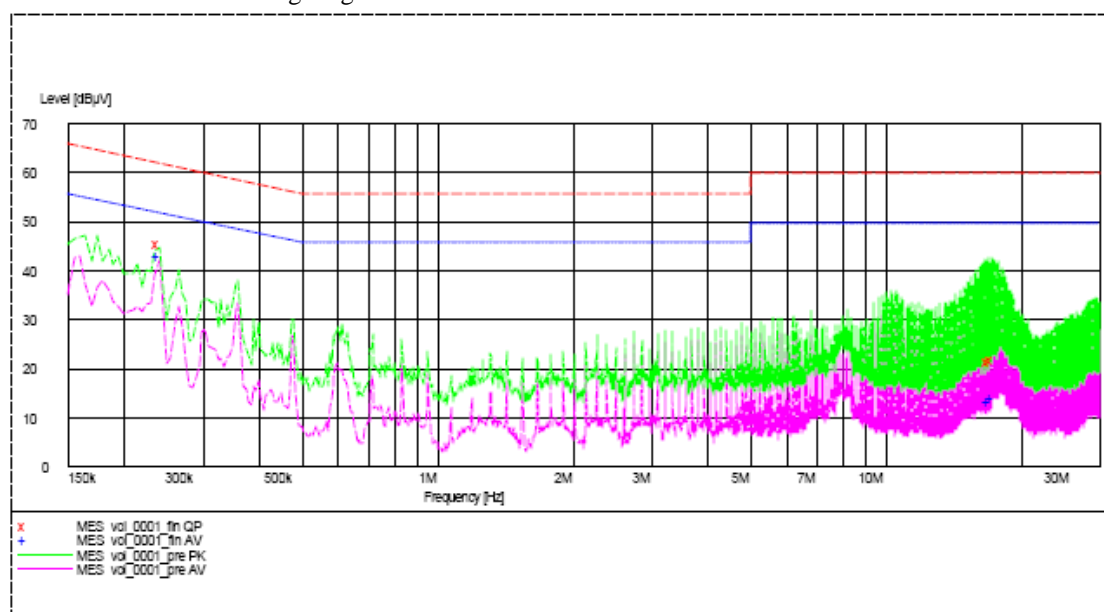
Frequency Range [MHz]	Quasi-Peak Limits [dBμV]	Average [dBμV]
0.15-0.5	66 to 56*	56 to 46*
0.5-5.0	56	46
5.0-30.0	60	50

\* Decreases with the logarithm of the frequency.

Limits for Conducted Emissions Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram.

### Results of WiFi and charge mode (Connected to PC, PC mains) (L): PASS

Please refer to the following diagram for individual results.



Conductor Live or Neutral	Frequency MHz	Quasi-peak		Average	
		Level dBμV	Limit dBμV	Level dBμV	Limit dBμV
Live	0.240	-*-	-*-	43.0	52.0
Live	16.965	-*-	-*-	13.5	50.0
Live	17.325	-*-	-*-	14.1	50.0
Live	0.240	45.7	62.0	-*-	-*-
Live	16.965	21.7	60.0	-*-	-*-
Live	17.205	21.9	60.0	-*-	-*-

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### Limit for Conducted Emissions (FCC 47 CFR 15.207):

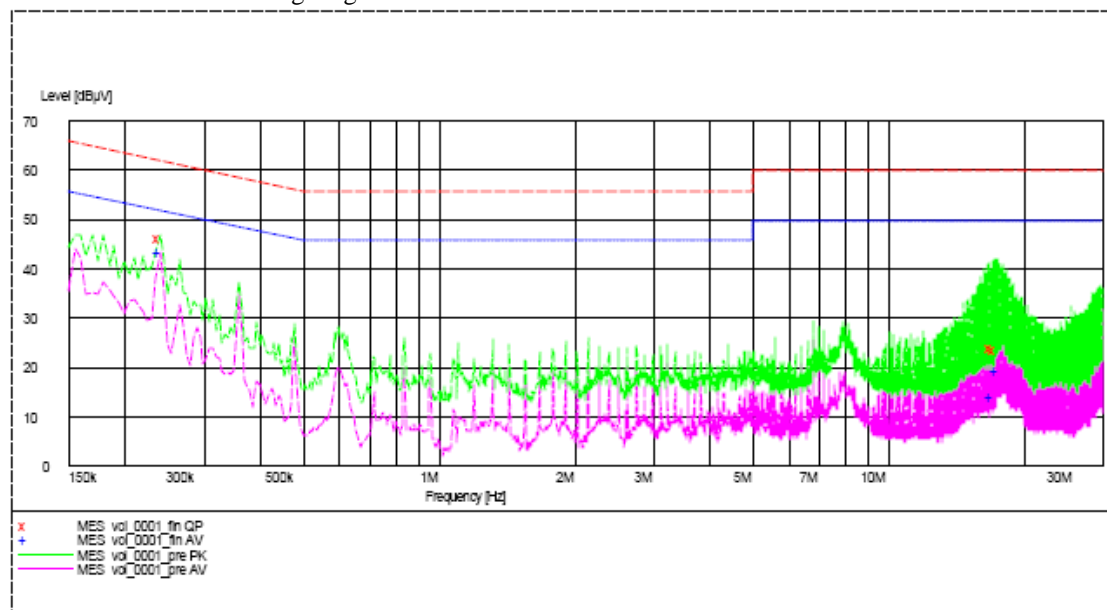
Frequency Range [MHz]	Quasi-Peak Limits [dB $\mu$ V]	Average [dB $\mu$ V]
0.15-0.5	66 to 56*	56 to 46*
0.5-5.0	56	46
5.0-30.0	60	50

\* Decreases with the logarithm of the frequency.

Limits for Conducted Emissions Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram.

### Results of WiFi and charge mode (Connected to PC, PC mains) (N): PASS

Please refer to the following diagram for individual results.



Conductor Live or Neutral	Frequency MHz	Quasi-peak		Average	
		Level dB $\mu$ V	Limit dB $\mu$ V	Level dB $\mu$ V	Limit dB $\mu$ V
Neutral	0.240	-*-	-*-	43.6	52.0
Neutral	17.020	-*-	-*-	41.0	50.0
Neutral	17.380	-*-	-*-	19.3	50.0
Neutral	0.240	46.1	62.0	-*-	-*-
Neutral	17.020	24.0	60.0	-*-	-*-
Neutral	17.260	23.5	60.0	-*-	-*-

Remarks:

Calculated measurement uncertainty (0.15MHz - 30MHz): 3.2dB

-\*- Emission(s) that is far below the corresponding limit line.

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## **STC Test Report**

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### **RF Exposure**

Test Requirement:	FCC 47CFR 15.247(i)
Test Date:	2012-12-22
Mode of Operation:	WiFi mode
Dimension of EUT:	75mm x 56mm x 16mm

### **Requirements:**

In 15.247(i), an equipment shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the limits in §§ 1.1310 and 2.1093 of this chapter.

Applications to the Commission for construction permits, licenses to transmit or renewals thereof, equipment authorizations or modifications in existing facilities must contain a statement confirming compliance with the limits unless the facility, operation, or transmitter is categorically excluded, as discussed below. Technical information showing the basis for this statement must be submitted to the Commission upon request.

According to KDB447498 D01 General RF Exposure Guidance v05, unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition.

### **Test Results:**

#### **RF Exposure Evaluation**

The Maximum conducted output power = 10.02 mW (at frequency = 2.462 GHz)

**It's Conducted source-based time-averaging output power = 9.9 mW (at frequency = 2.462 GHz)**

**Since the SAR test exclusion thresholds for 2450MHz at test separation distances  $\leq 5$  mm = 10mW and the Conducted source-based time-averaging output power is less than 10mW.**

**Therefore, the SAR evaluation can be exempted.**

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## **STC Test Report**

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### **Antenna Requirement**

**Test Requirements: § 15.203**

### **Test Specification:**

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.

### **Test Results:**

This is PCB layout internal antenna. There is no external antenna, the antenna gain = 1.5dBi. All component install on inside of EUT. User unable to remove or changed the Antenna.

### **Frequency List for 802.11 b/g, 802.11n20**

**For both 20MHz bandwidth systems, use Channel 1-Channel 11.**

Item	Frequency (MHz)	Item	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437	—	—

### **Frequency List for 802.11 n40**

**For both 40MHz bandwidth systems, use Channel 3-Channel 9.**

Item	Frequency (MHz)	Item	Frequency (MHz)
3	2422	9	2452
4	2427	—	—
5	2432	—	—
6	2437	—	—
7	2442	—	—
8	2447	—	—

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### **Appendix A**

#### **List of Measurement Equipment**

##### **Radiated Emission**

<b>EQP NO.</b>	<b>DESCRIPTION</b>	<b>MANUFACTURER</b>	<b>MODEL NO.</b>	<b>SERIAL NO.</b>	<b>LAST CAL</b>	<b>DUE CAL</b>
EMD015	Signal Generator	MARCONI INSTRUMENTS	2030	112191/012	2012.03.09	2013.03.09
EMD036	EMI Test Receiver	ROHDE & SCHWARZ	ESIB26	100388	2012.07.06	2013.07.06
EMD061	Biconilog Antenna	ETS.LINDGREN	3142C	00060439	2012.11.03	2014.11.03
EMD062	Double-Ridged Waveguide	ETS.LINDGREN	3117	00075933	2012.11.28	2014.11.28
EMD084	MULTI-DVICE CONTROLLER	ETS.LINDGREN	2090	00060107	N/A	N/A
EMD088	Video Contol Unit	ETS.LINDGREN	Y21953A	2601073	N/A	N/A
EMD093	Monitor	ViewSonic	VA9036	Q8X064201876	N/A	N/A
EMD102	Intelligent Frequency	Ainuo Instrument Co., Ltd	AN97005SS	79707454	N/A	N/A
EMD105	FACT-3 EMC Chamber	ETS.LINDGREN	FACT-3	3803	N/A	N/A
EMD124	Loop Antenna	ETS-Lindgren	6502	00104905	2012.03.26	2014.03.26
EMD131	18GHz – 26.5GHz Standard Gain Horn Antenna	Chengdu AINFO Inc.	JXTXLB-42-15-C-KF	J2021100721001	2011.01.25	2013.01.25

##### **Conducted Emission**

<b>EQP NO.</b>	<b>DESCRIPTION</b>	<b>MANUFACTURER</b>	<b>MODEL NO.</b>	<b>SERIAL NO.</b>	<b>LAST CAL</b>	<b>DUE CAL</b>
EMD003	IMPULSE GRENZER PULSE LIMITER	ROHDE & SCHWARZ	ESH3-Z2	100071	2012.03.09	2013.03.09
EMD004	ZWEILEITER-V-NETZNACHBILDUNG TWO-LINE V-NETWORK	ROHDE & SCHWARZ	ESH3-Z5	100102	2012.03.09	2013.03.09
EMD022	EMI Test Receiver	ROHDE & SCHWARZ	ESCS 30	100314	2012.03.09	2013.03.09
EMD103	Intelligent Frequency	Ainuo Instrument Co., Ltd	AN97005SS	79707455	N/A	N/A
EMD106	Shielding Room #1	ETS.LINDGREN	RFD-100	3802	N/A	N/A

Remarks:-

CM      Corrective Maintenance  
N/A      Not Applicable  
TBD      To Be Determined

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### **Appendix B**

#### **Ancillary Equipment**

ITEM NO.	DESCRIPTION	MODEL NO.	FCC ID	REMARK
1	DELL COMPUTER	DMC	N/A	N/A
2	DELL MONITOR	E551C	ARSCM356N	RESOLUTION:800x600(DURING TESTING) 1.0M UNSHIEDED POWER CORD CONNECTED TO THE COMPUTER 2.8M SHIELDED CABLE CONNECTED TO THE COMPUTER
3	DELL KEYBOARD	SK-8110	N/A	1.8M SHIELDED COILED CABLE CONNECTED TO THE COMPUTER
4	DELL MOUSE	N/A	N/A	2.4M UNSHIELDED CABLE CONNECTED TO THE COMPUTER
5	LASER PRINTER	HP LaserJet 1020 Plus	N/A	1.8M UNSHIELDED POWER CORD 2.8M SHIELDED CABLE (BUNDLED TO 1M) CONNECTED TO THE COMPUTER

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### **Appendix C**

#### **Photographs of EUT**

**Front View of the product**



**Rear View of the product**



**Inner Circuit Top View- All PCBs**



**Inner Circuit Bottom View- All PCBs**



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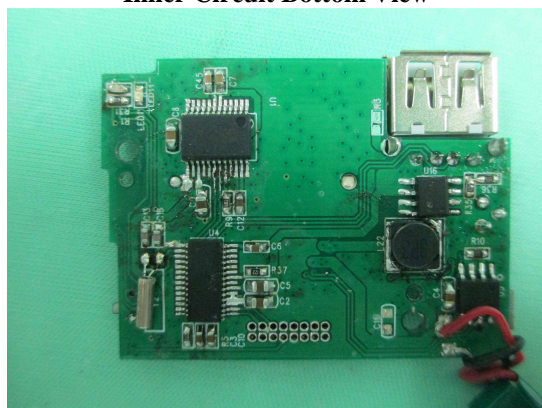
No. : MH187575

### **Photographs of EUT**

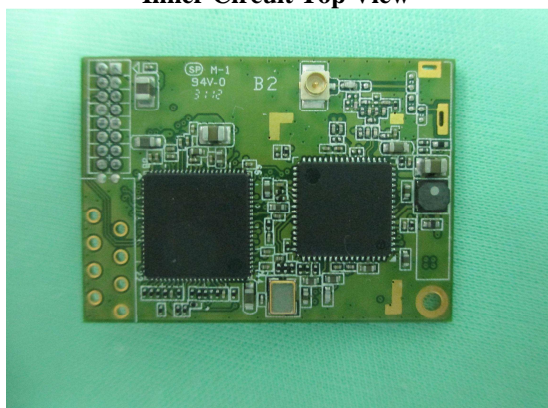
**Inner Circuit Top View**



**Inner Circuit Bottom View**



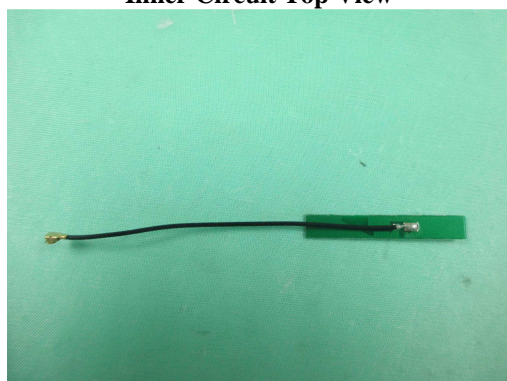
**Inner Circuit Top View**



**Inner Circuit Bottom View**



**Inner Circuit Top View**



**Inner Circuit Bottom View**



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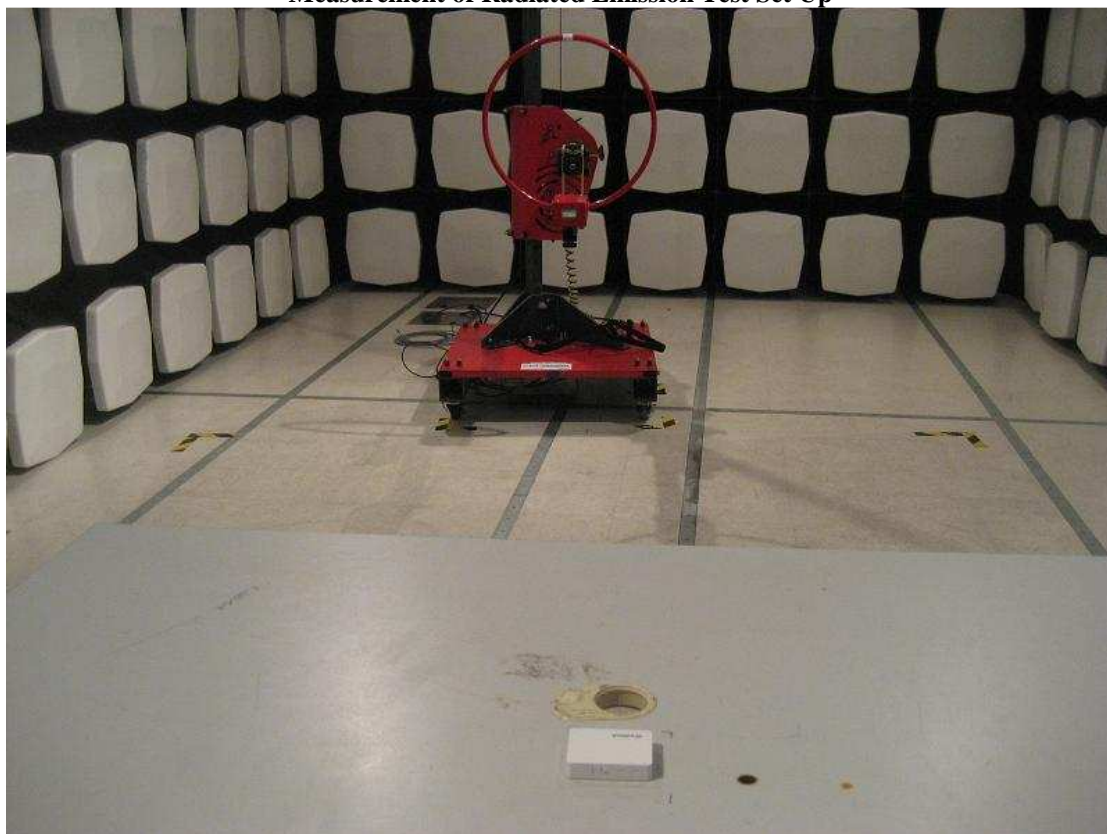
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### **Photographs of EUT**

**Measurement of Radiated Emission Test Set Up**



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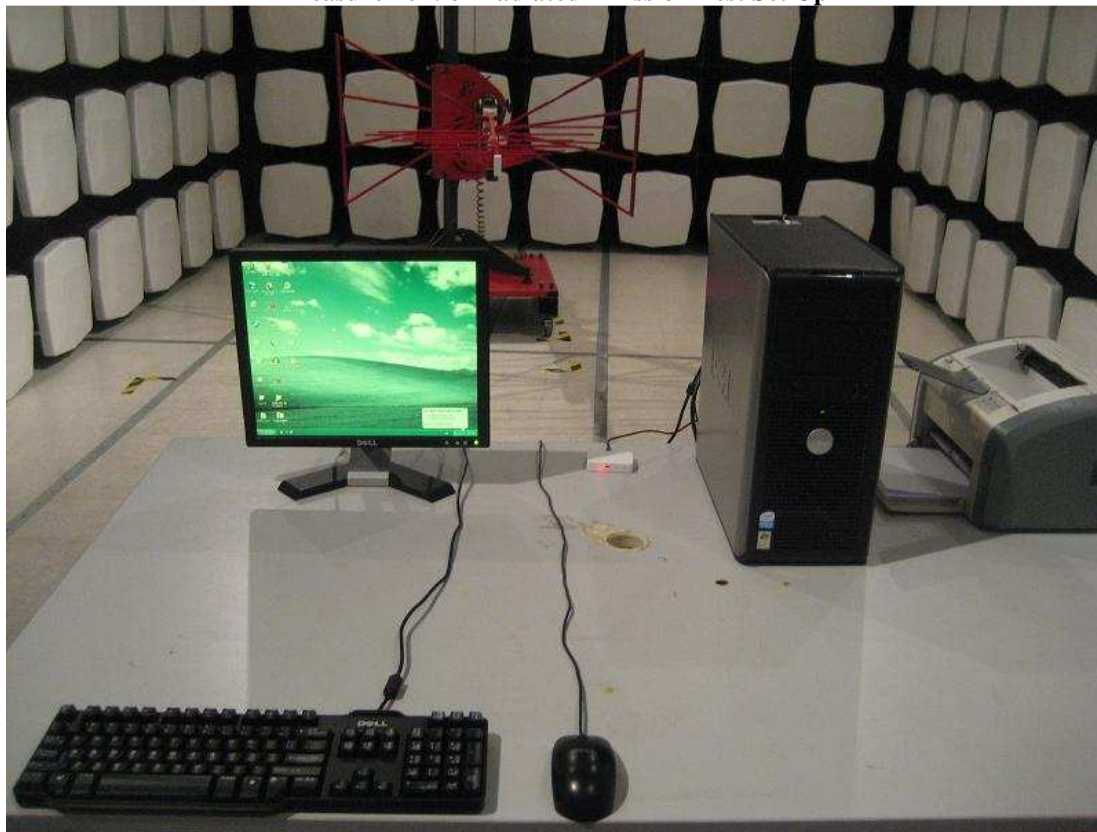
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**Measurement of Radiated Emission Test Set Up**



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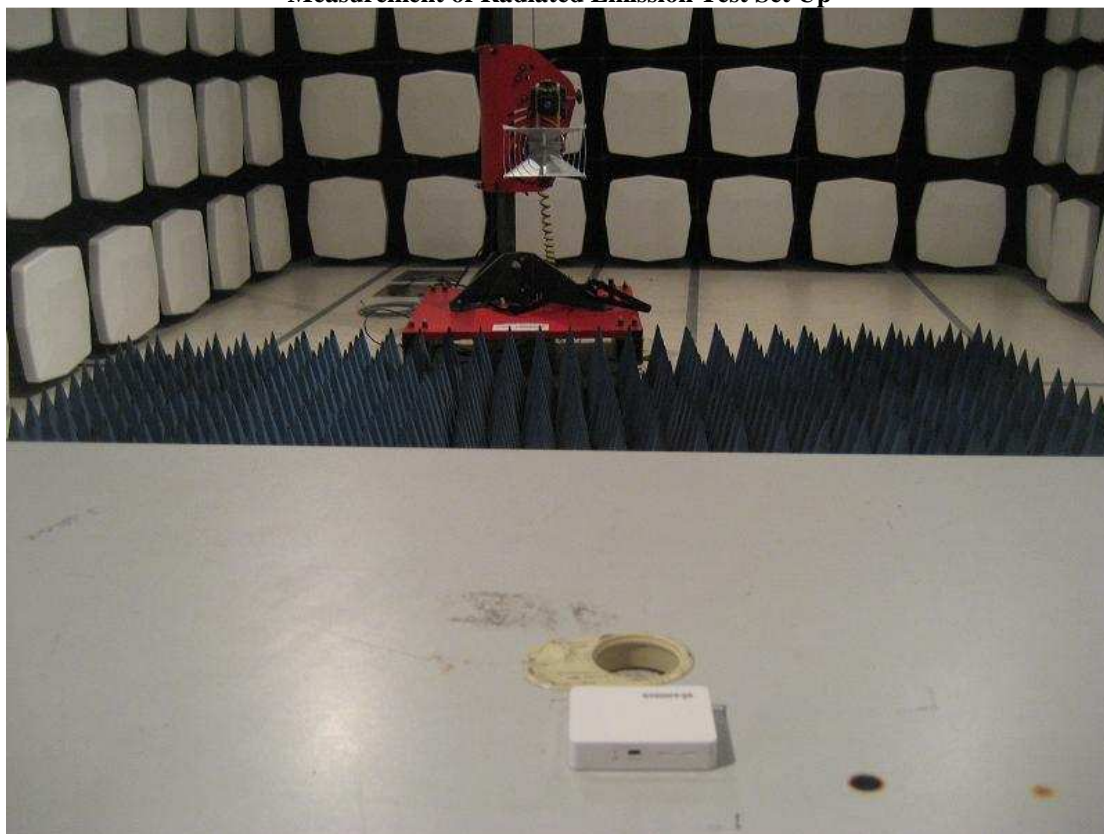
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### **Photographs of EUT**

**Measurement of Radiated Emission Test Set Up**



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## **STC Test Report**

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### **Photographs of EUT**

#### **Measurement of Conducted Emission Test Set Up**



**\*\*\*\*\* End of Test Report \*\*\*\*\***

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