





Report No: File reference No: FCC 1310115-01 2013-11-05

 Applicant:
 J&W TECHNOLOGY LIMITED

 Product:
 Media hub for Android

Model No: NEO X7 mini

Trademark: MINIX®

Test Standards: FCC Part 15 Subpart C, Paragraph 15.247

Test result: It is herewith confirmed and found to comply with the requirements set up by ANSI C63.4, FCC Part 15 Subpart C, Paragraph 15.247 regulations for the evaluation of electromagnetic compatibility

Approved By

Jack Chung

Jack Chung

Manager

Dated: November 05, 2013

Results appearing herein relate only to the sample tested The technical reports is issued errors and omissions exempt and is subject to withdrawal at

SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO., LTD

5/F,Block 4, Anhua Industrial Zone.,No.8 TaiRan Rd.CheGongMiao,FuTian District, Shenzhen,CHINA.

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# **Special Statement:**

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAL. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

# CNAL-LAB Code: L2292

The EMC Laboratory has been assessed and in compliance with CNAL/AC01:2002 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of testing Laboratories.

# FCC-Registration No.: 899988

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 899988.

# IC- Registration No.: IC5205A-02

The EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration IC No.: 5205A-02.

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adopt any other remedies which may be appropriate.

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#### 1.0 General Details

1 1						
1.1	Test Lab Detai					
	Name :	SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO., LTD				
	Address:	5/F,Block 4, Anhua Industrial Zone.,No.8 TaiRan Rd.CheGongMiao,FuTian District,				
	<b>T</b> 1 1	Shenzhen, CHINA.				
	Telephone:	(755) 83448688				
	Fax:	(755) 83442996				
		th the Federal Communications Commission – United Sates				
	•	umber: 899988				
	For 3m & 10 r					
	Site Listed wit	h Industry Canada of Ottawa, Canada				
	Registration N	umber: IC: 5205A-02				
	For 3m & 10 r	n OATS				
1.2	Applicant Deta	ails				
	Applicant:	J&W TECHNOLOGY LIMITED				
	Address:	13/F, Block B, Haisong Edifice, Tairan 9th Road, Futian District, Shenzhen, China.				
	Telephone:					
	Fax:					
1.3	Description of	EUT				
	Product:	Media hub for Android				
	Manufacturer:	J&W TECHNOLOGY LIMITED				
	Address:	13/F, Block B, Haisong Edifice, Tairan 9th Road, Futian District, Shenzhen,				
		China.				
	Brand Name:	MINIX®				
	Additional Bra	nd Name: NEO X7 mini				
	Model Numbe	r: N/A				
	Additional Mo	del Number: N/A				
	Type of Modu	lation IEEE 802.11b : DSSS (CCK, QPSK, DBPSK)				
		IEEE 802.11g/n (HT20) : OFDM(64QAM, 16QAM, QPSK, BPSK)				
	Frequency ran	ge IEEE 802.11b/g/n (HT20) : 2412-2462MHz;				
	Channel Spaci	ng IEEE 802.11b/g/n (HT20) : 5MHz				
	Air Data Rate	IEEE 802.11b : 11, 5.5, 2, 1 Mbps				
		IEEE 802.11g : 54, 48, 36, 24, 18, 12, 9, 6 Mbps				
		IEEE 802.11n HT20 : 150, 117, 104, 78, 65, 58.5, 52, 39, 26, 19.5, 13, 6 Mbps				
	Frequency Sel	ection By software				
	Channel Numl	Der IEEE 802.11b/g/n (HT20) : 11 Channels				
	Input Voltage:	DC5V, 2000mA				
	Power Supply	YS02-050200U Input: 100-240V, 50/60Hz, 0.32A MAX; Output: 5V, 2000mA				

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- 1.4 Submitted Sample: 2 Samples
- 1.5 Test Duration 2013-10-18 to 2013-11-05
- 1.6 Test Uncertainty Conducted Emissions Uncertainty =3.6dB Radiated Emissions Uncertainty =4.7dB
- 1.7 Test Engineer

Terry Tang

The sample tested by

Print Name: Terry Tang

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2.0	2.0 Test Equipments					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date	
ESPI Test Receiver	ROHDE&SCHWARZ	ESPI 3	100379	2013-08-23	2014-08-22	
TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100294	2013-08-23	2014-08-22	
TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100253	2013-08-23	2014-08-22	
Ultra Broadband ANT	ROHDE&SCHWARZ	HL562	100157	2013-08-25	2014-08-24	
ESDV Test Receiver	ROHDE&SCHWARZ	ESDV	100008	2013-08-23	2014-08-22	
Impuls-Begrenzer	ROHDE&SCHWARZ	ESH3-Z2	100281	2013-08-24	2014-08-23	
System Controller	СТ	SC100	-			
Computer	IBM	8434	1S8434KCE99BLXL O*	-	-	
Loop Antenna	EMCO	6502	00042960	2013-08-23	2014-08-22	
ESPI Test Receiver	ROHDE&SCHWARZ	ESI26	838786/013	2013-08-23	2014-08-22	
3m OATS			N/A	2013-08-22	2014-08-21	
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170265	2013-08-24	2014-08-23	
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-631	2013-08-24	2014-08-23	
Power meter	Anritsu	ML2487A	6K00003613	2013-08-24	2014-08-23	
Power sensor	Anritsu	MA2491A	32263	2013-08-24	2014-08-23	
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2013-08-24	2014-08-23	
LISN	AFJ	LS16C	10010947251	2013-08-23	2014-08-22	
LISN (Three Phase)	Schwarebeck	NSLK 8126	8126453	2013-08-23	2014-08-22	
9*6*6 Anechoic			N/A	2013-08-22	2014-08-21	
EMI Test Receiver	RS	ESCS30	100139	2013-08-23	2014-08-22	
LISN	AFJ	LS16C	10010947251	2013-08-23	2014-08-22	
LISN (Three Phase)	Schwarebeck	NSLK 8126	8126453	2013-08-23	2014-08-22	

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2.1 Auxiliary Equipment						
Name	Model No.	Serial No.	Manufacturer	Cable	FCC ID/DOC	
TF Card			Kingston			
LCD Monitor	PH2450		SAMSUNG		DOC	
IR			J&W Technology			
Remote Control			Limited		VOC	

### Auxiliary Equipment

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### **3. DESCRIPTION OF TEST MODES**

#### IEEE 802.11b, 802.11g, 802.11n (HT20) mode

The EUT had been tested under operating condition. There are three channels have been tested as following:

Channel	Frequency (MHz)
Low	2412
Middle	2437
High	2462

IEEE 802.11b mode: 11Mbps data rate (worst case) was chosen for full testing. IEEE 802.11g mode: 6Mbps data rate (worst case) was chosen for full testing. IEEE 802.11n (HT20) mode: 65Mbps data rate (worst case) were chosen for full testing

The worst-case data rates are determined according to the description above, based on the investigations by measuring the PSD and average power across all the data rates, bandwidths, modulations and spatial stream modes.

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#### 3.0 **Technical Details**

#### 3.1 **Summary of test results**

The EUT has been tested ac	ccording to the following speci	fications:	
Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.107	Conducted Emission Test	PASS	Complies
& 15.207 & RSS-210 Issue 8			
	Spectrum bandwidth of a		Complies
FCC Part 15 Subpart C	<b>Orthogonal Frequency</b>		
Paragraph 15.247(a)(2) Limit &	<b>Division Multiplex System</b>	PASS	
RSS-210 Issue 8	Limit: 6dB		
	bandwidth>500kHz		
ECC Port 15 Paragraph	Maximum peak output		
FCC Part 15, Paragraph	power	PASS	Complies
15.247(b) & RSS-210 Issue 8	Limit: max. 30dBm		
FCC Part 15, Paragraph	Transmitter Radiated	PASS	Complies
15.109,15.205 & 15.209 &	Emission		
RSS-210 Issue 8	Limit: Table 15.209		
FCC Part 15, Paragraph	<b>Power Spectral Density</b>	PASS	Complies
15.247(e) & RSS-210 Issue 8	Limit: max. 8dBm		
FCC Part 15, Paragraph	Out of Band Emission and	PASS	Complies
15.247(d) & RSS-210 Issue 8	<b>Restricted Band</b>		
	Radiation		
	Limit: 20dB less than		
	peak value of fundamental		
	frequency		
	Restricted band limit:		
	Table 15.209		

#### 3.2 **Test Standards**

FCC Part 15 Subpart & Subpart C, Paragraph 15.247 & RSS-210 Issue 8

#### **EUT Modification** 4.0

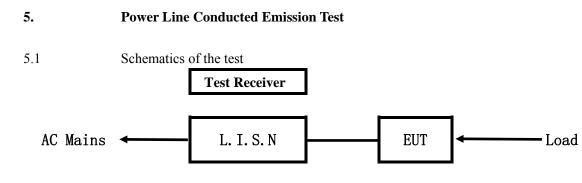
No modification by Shenzhen Timeway Technology Consulting Co., Ltd

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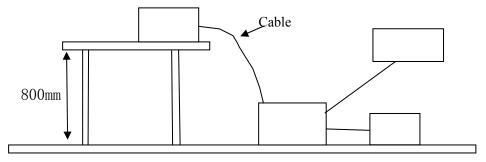


EUT: Equipment Under Test

5.2 Test Method and test Procedure
The EUT was tested according to ANSI C63.4-2003. The Frequency spectrum From
0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.4 –2003.

Test Voltage: 120V~, 60Hz

Block diagram of Test setup



5.3

Configuration of The EUT

The EUT was configured according to ANSI C63.4-2003. All interface ports were connected to the

appropriate peripherals. All peripherals and cables are listed below.

A. EUT					
Device	Manufacturer	Model	FCC		
Media hub for Android	J&W TECHNOLOGY LIMITED	NEO X7 mini	WMFNEOX7MINI		

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B. Internal Device

Device Manufacturer		Model	Rating

C. Peripherals

Device	Manufacturer	Model	Rating

5.4 EUT Operating Condition

Operating condition is according to ANSI C63.4 -2003.

A Setup the EUT and simulators as shown on follow

B Enable AF signal and confirm EUT active to normal condition

5.5 Power line conducted Emission Limit according to Paragraph 15.207 and 15.107 and RSS-210

Frequency		Class A Limits (dB µ V)		Class B Limits (dB µ V)	
	(MHz)	Quasi-peak Level	Average Level	Quasi-peak Level	Average Level
	$0.15~\sim~0.50$	79.0	66.0	66.0~56.0*	56.0~46.0*
	$0.50~\sim~5.00$	73.0	60.0	56.0	46.0
	$5.00 \sim 30.00$	73.0	60.0	60.0	50.0

Notes: 1. \*Decreasing linearly with logarithm of frequency.

2. The tighter limit shall apply at the transition frequencies

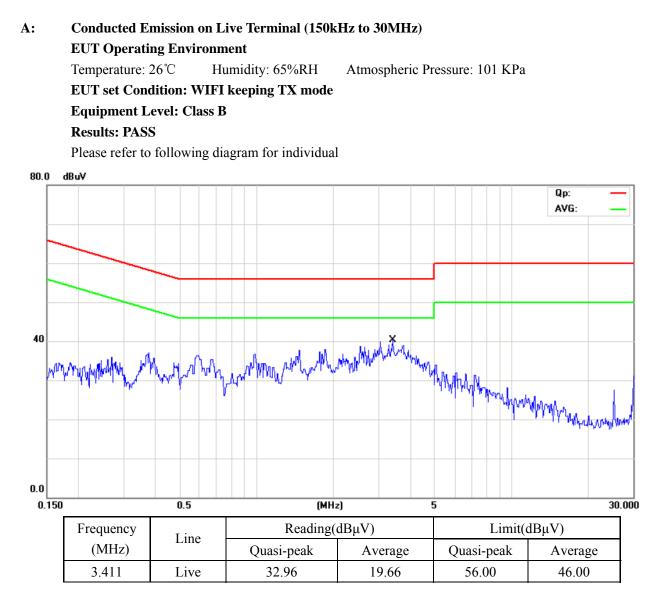
# 5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

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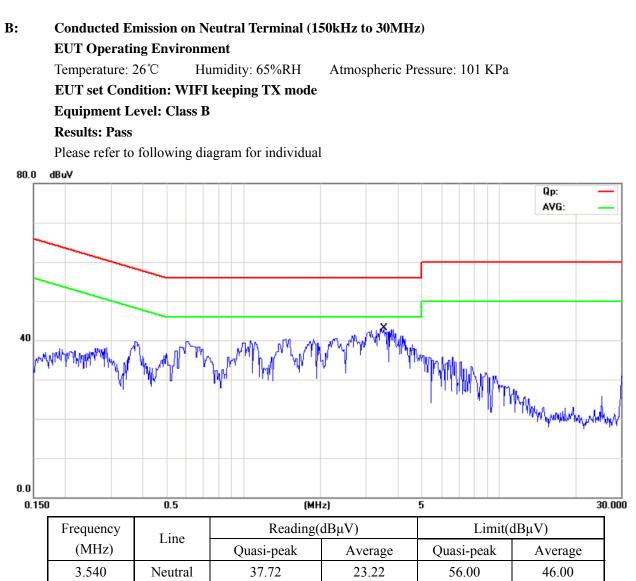




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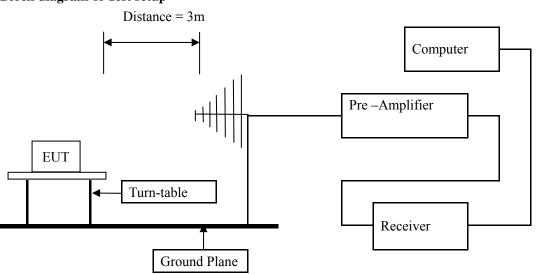
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#### 6 Radiated Emission Test

### 6.1 Test Method and test Procedure:

- The EUT was tested according to ANSI C63.4 –2003. The radiated test was performed at Timeway Laboratory. This site is on file with the FCC laboratory division, Registration No.899988
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.4-2003.
- (3) The frequency spectrum from 30 MHz to 25 GHz was investigated. All readings from 30 MHz to 1 GHz are Quasi-peak values with a resolution bandwidth of 120 kHz. For measurement above 1GHz, peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK detector. Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "**QP**" in the data table.
- (6) The antenna polarization : Vertical polarization and Horizontal polarization.



Block diagram of Test setup

- 6.2 Configuration of The EUT Same as section 5.3 of this report
- 6.3 EUT Operating Condition

Same as section 5.4 of this report.

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## 6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

### Frequencies in restricted band are complied to limit on Paragraph 15.209 and 15.109 and RSS-210

Frequency Range (MHz)	Distance (m)	Field strength (dB $\mu$ V/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note: 1. RF Voltage  $(dBuV) = 20 \log RF$  Voltage (uV)

2. In the Above Table, the higher limit applies at the band edges.

3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT

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# **Test result** General Radiated Emission Data and Harmonics Radiated Emission Data

#### Radiated Emission In Horizontal (30MHz----1000MHz)

**EUT set Condition:** WIFI keeping TX mode

**Results:** 

Pass

Frequency (MHz)	Level@3m (dB $\mu$ V/m)	Antenna Polarity	Limit@3m (dB µ V/m)
396.000	33.38	Н	46.00
46.560	27.27	Н	40.00
126.520	27.97	Н	43.50
396.080	36.15	V	46.00
71.520	30.39	V	40.00
134.440	30.11	V	43.50

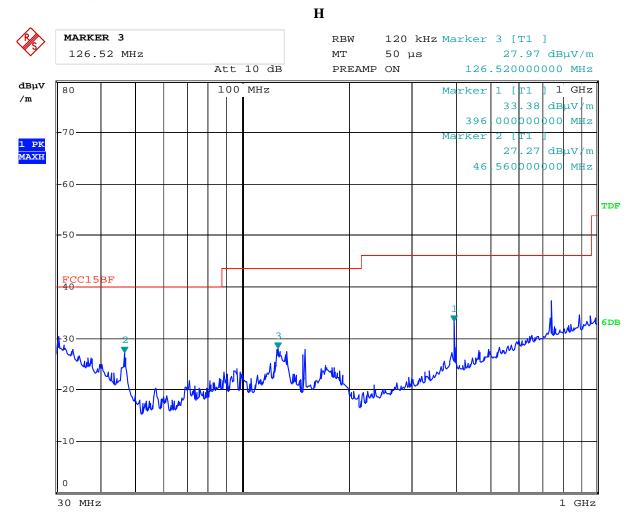
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Test Figure:



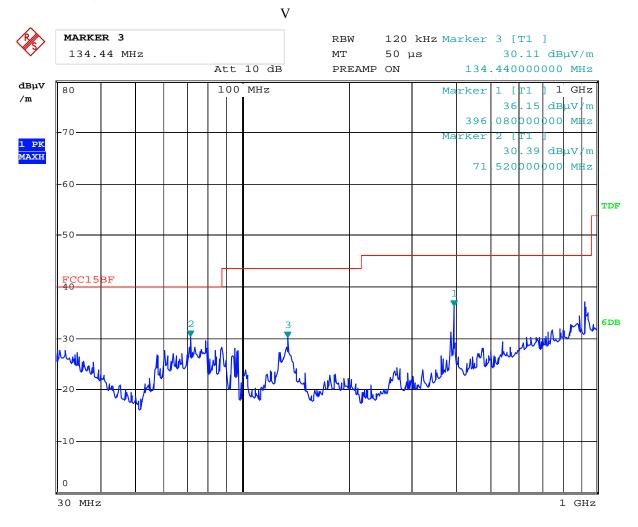
Date: 5.NOV.2013 14:24:13

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Test Figure:



Date: 5.NOV.2013 14:21:44

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Frequency (MHz)	Level@3m (dB $\mu$ V/m)	Antenna Polarity	Limit@3m (dB µ V/m)
2412.00	102.39 (PK)	Н	Fundamental Frequency
2412.00	102.19 (PK)	V	Fundamental Frequency
4824.00	50.28 (PK)	Н	74(Peak)/ 54(AV)
4824.00	49.32 (PK)	V	74(Peak)/ 54(AV)
7236.00		H/V	74(Peak)/ 54(AV)
9648.00		H/V	74(Peak)/ 54(AV)
12060		H/V	74(Peak)/ 54(AV)
14472		H/V	74(Peak)/ 54(AV)
16884		H/V	74(Peak)/ 54(AV)
19296		H/V	74(Peak)/ 54(AV)
21708		H/V	74(Peak)/ 54(AV)
24120		H/V	74(Peak)/ 54(AV)

#### **Operation Mode: Keeping Transmitting under CH01 for 11g at 6Mbps**

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

3. For 802.11g mode 6Mbps

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adopt any other remedies which may be appropriate.



Frequency (MHz)	Level@3m (dB $\mu$ V/m)	Antenna Polarity	Limit@3m (dB µ V/m)	
2437.00	103.47 (PK)	Н	Fundamental Frequency	
2437.00	103.44 (PK)	V	Fundamental Frequency	
4874.00	50.97 (PK)	Н	74(Peak)/ 54(AV)	
4874.00	50.32 (PK)	V	74(Peak)/ 54(AV)	
7311.00		H/V	74(Peak)/ 54(AV)	
9748.00		H/V	74(Peak)/ 54(AV)	
12185		H/V	74(Peak)/ 54(AV)	
14622		H/V	74(Peak)/ 54(AV)	
17059		H/V	74(Peak)/ 54(AV)	
19496	19496		74(Peak)/ 54(AV)	
21933		H/V	74(Peak)/ 54(AV)	
24370		H/V	74(Peak)/ 54(AV)	

#### Operation Mode: Keeping Transmitting under CH06 for 11g at 6Mbps

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

3. For 802.11g mode 6 Mbps

**Operation Mode: Transmitting under CH11 for 11g at 6Mbps** 

Frequency (MHz)	Level@3m (dB $\mu$ V/m)	vel@3m (dB µ V/m) Antenna Polarity	
2462.00	101.43 (PK)	Н	Fundamental Frequency
2462.00	101.75 (PK)	V	Fundamental Frequency
4924	50.08 (PK)	Н	74(Peak)/ 54(AV)
4924	49.64 (PK)	V	74(Peak)/ 54(AV)
7368		H/V	74(Peak)/ 54(AV)
9848		H/V	74(Peak)/ 54(AV)
12310		H/V	74(Peak)/ 54(AV)
14772		H/V	74(Peak)/ 54(AV)
17234		H/V	74(Peak)/ 54(AV)
19696		H/V	74(Peak)/ 54(AV)
22158		H/V	74(Peak)/ 54(AV)
24650		H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

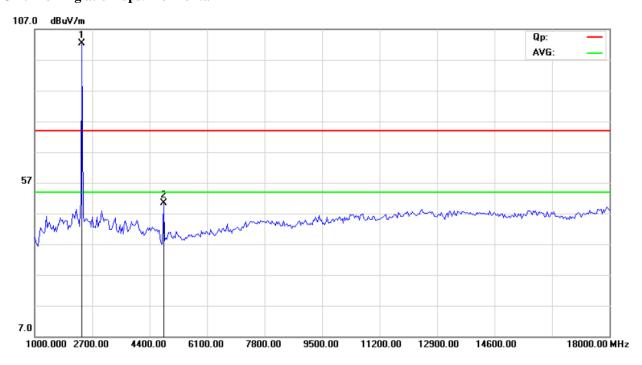
- 2. Remark "---" means that the emissions level is too low to be measured
- 3. For 802.11g mode at 6 Mbps

The report refers only to the sample tested and does not apply to the bulk.

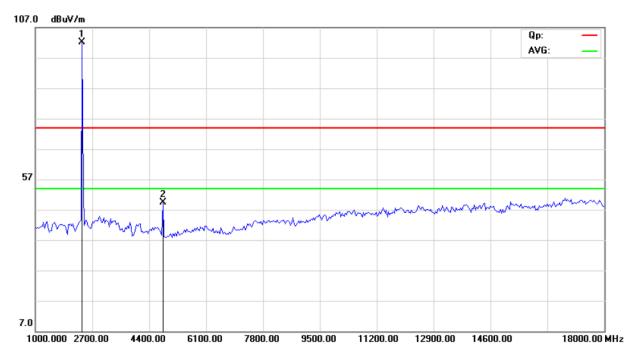
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Please refer to the following test plots for details: CH01 for 11g at 6Mbps: Horizontal



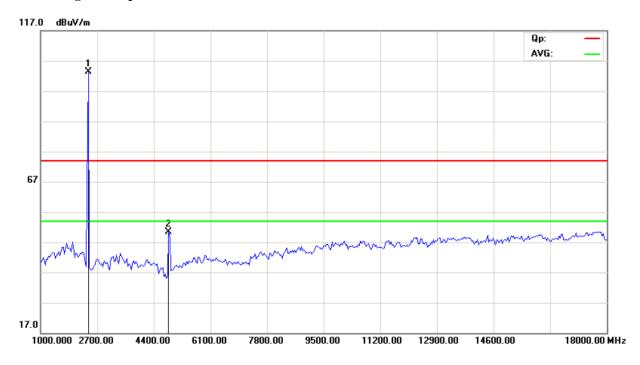
CH01 for 11g at 6Mbps: Vertical



The report refers only to the sample tested and does not apply to the bulk.

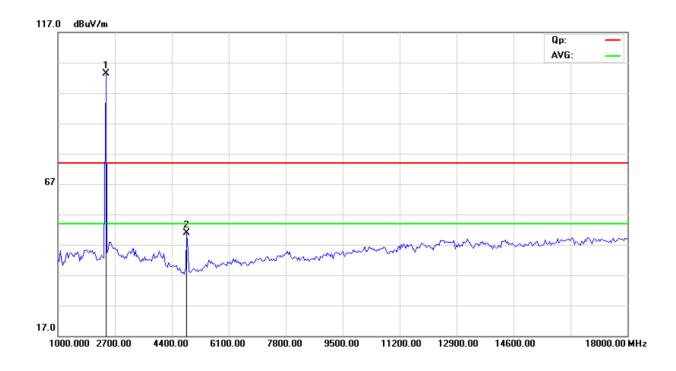
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#### CH06 for 11g at 6Mbps: Vertical

#### CH06 for 11g at 6Mbps: Horizontal

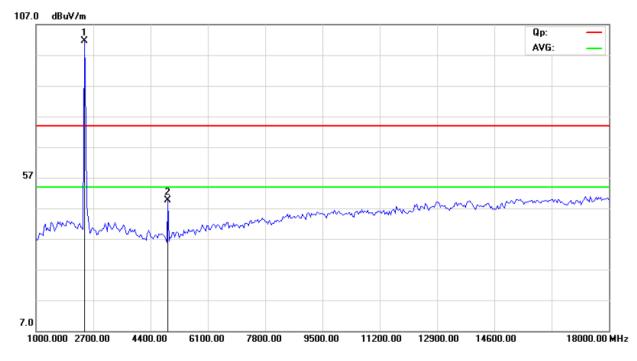


The report refers only to the sample tested and does not apply to the bulk.

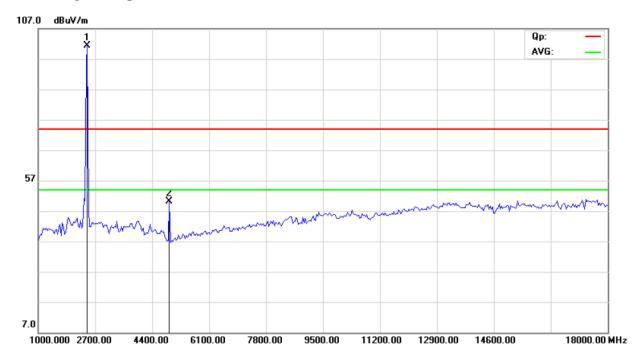
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#### CH11 for 11g at 6Mbps: Horizontal



Note: For radiated Emissions from 18-25GHz, it is only the floor noise.

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Frequency (MHz)	Level@3m (dB $\mu$ V/m)	Antenna Polarity	Limit@3m (dB µ V/m)	
2412.00	102.26 (PK)	V	Fundamental Frequency	
2412.00	102.26 (PK)	Н	Fundamental Frequency	
4824.00	49.82 (PK)	Н	74(Peak)/ 54(AV)	
4824.00	50.59 (PK)	V	74(Peak)/ 54(AV)	
7236.00		H/V	74(Peak)/ 54(AV)	
9648.00		H/V	74(Peak)/ 54(AV)	
12060		H/V	74(Peak)/ 54(AV)	
14472		H/V	74(Peak)/ 54(AV)	
16684		H/V	74(Peak)/ 54(AV)	
19296		H/V	74(Peak)/ 54(AV)	
21708		H/V	74(Peak)/ 54(AV)	
24120		H/V	74(Peak)/ 54(AV)	

#### **Operation Mode: Keeping Transmitting under CH01 for 11b at 11Mbps**

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

3. For 802.11b mode 11Mbps

Operation Mode. Reeping Transmitting under Child for The at Thirdps						
Frequency (MHz)	Level@3m (dB $\mu$ V/m)	Antenna Polarity	Limit@3m (dB µ V/m)			
2437.00	101.63 (PK)	Н	Fundamental Frequency			
2437.00	101.65 (PK)	V	Fundamental Frequency			
4874.00	51.12 (PK)	Н	74(Peak)/ 54(AV)			
4874.00	49.31 (PK)	V	74(Peak)/ 54(AV)			
7311.00		H/V	74(Peak)/ 54(AV)			
9748.00		H/V	74(Peak)/ 54(AV)			
12185		H/V	74(Peak)/ 54(AV)			
14622		H/V	74(Peak)/ 54(AV)			
17059		H/V	74(Peak)/ 54(AV)			
19496		H/V	74(Peak)/ 54(AV)			
21933		H/V	74(Peak)/ 54(AV)			
24370		H/V	74(Peak)/ 54(AV)			

**Operation Mode: Keeping Transmitting under CH06 for 11b at 11Mbps** 

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

3. For 802.11b mode 11Mbps

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Frequency (MHz)	Level@3m (dB $\mu$ V/m)	Antenna Polarity	Limit@3m (dB µ V/m)	
2462.00	102.72 (PK)	Н	Fundamental Frequency	
2462.00	103.45 (PK)	V	Fundamental Frequency	
4924	50.29 (PK)	Н	74(Peak)/ 54(AV)	
4924	51.13 (PK)	V	74(Peak)/ 54(AV)	
7368		H/V	74(Peak)/ 54(AV)	
9848		H/V	74(Peak)/ 54(AV)	
12310		H/V	74(Peak)/ 54(AV)	
14772		H/V	74(Peak)/ 54(AV)	
17234		H/V	74(Peak)/ 54(AV)	
19696		H/V	74(Peak)/ 54(AV)	
22158		H/V	74(Peak)/ 54(AV)	
24650		H/V	74(Peak)/ 54(AV)	

#### **Operation Mode: Keeping Transmitting under CH11 for 11b at 11Mbps**

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

3. For 802.11b mode at 11Mbps

The report refers only to the sample tested and does not apply to the bulk.

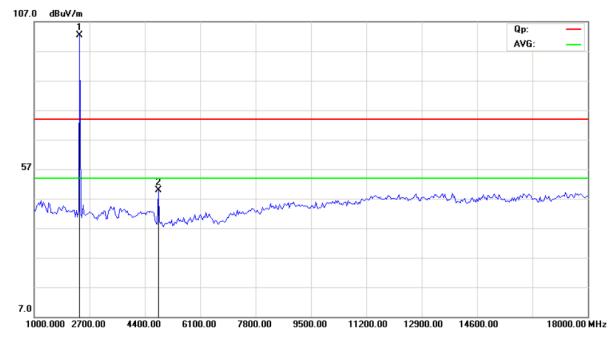
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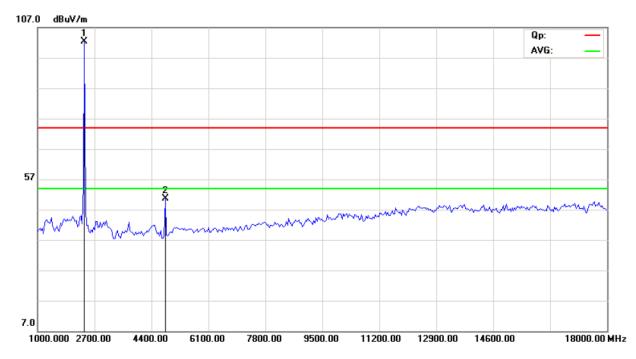


Please refer to the following test plots for details:

### CH01 for 11b at 11Mbps: Horizontal



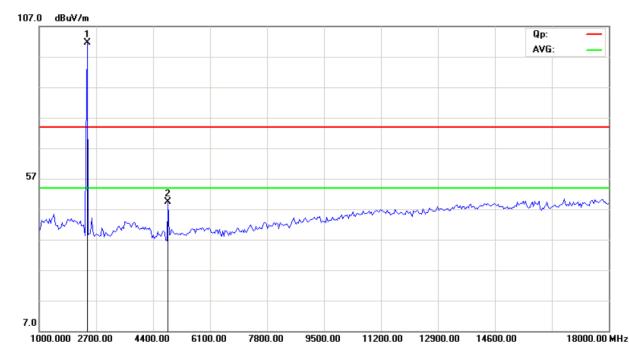
#### CH01 for 11b at 11Mbps: Vertical



The report refers only to the sample tested and does not apply to the bulk.

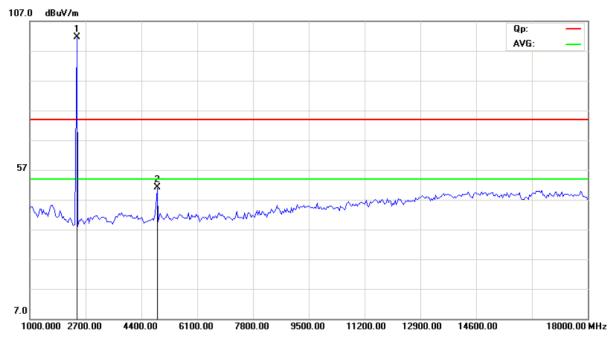
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### CH06 for 11b at 11Mbps: Vertical

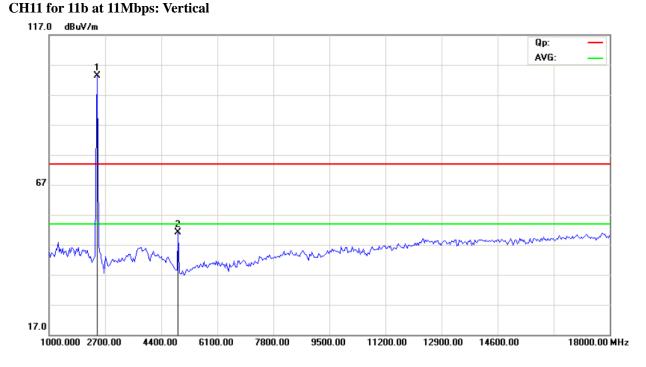
#### CH06 for 11b at 11Mbps: Horizontal

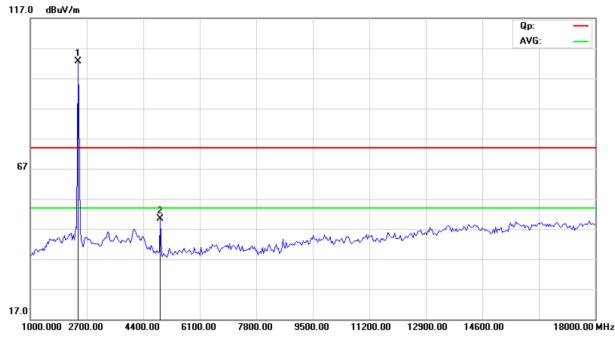


The report refers only to the sample tested and does not apply to the bulk.

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#### CH11 for 11b at 11Mbps: Horizontal

Note: For radiated Emissions from 18-25GHz, it is only the floor noise.

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Frequency (MHz)	Level@3m (dB $\mu$ V/m)	Antenna Polarity	Limit@3m (dB µ V/m)
2412.00	101.30 (PK)	Н	Fundamental Frequency
2412.00	101.42 (PK)	V	Fundamental Frequency
4824.00	49.35 (PK)	Н	74(Peak)/ 54(AV)
4824.00	50.59 (PK)	V	74(Peak)/ 54(AV)
7236.00		H/V	74(Peak)/ 54(AV)
9648.00		H/V	74(Peak)/ 54(AV)
12060		H/V	74(Peak)/ 54(AV)
14472		H/V	74(Peak)/ 54(AV)
16684		H/V	74(Peak)/ 54(AV)
19296		H/V	74(Peak)/ 54(AV)
21708		H/V	74(Peak)/ 54(AV)
24120	24120		74(Peak)/ 54(AV)

#### **Operation Mode: Keeping Transmitting under CH01 for 11n HT20 at 65Mbps**

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

3. For 802.11n (HT20) mode 65Mbps

Operation Mode: Keeping Transmitting under CH06 for 11n HT20 at 65Mbps

1	<b>.</b> 0 0		-
Frequency (MHz)	Level@3m (dB $\mu$ V/m)	Antenna Polarity	Limit@3m (dB µ V/m)
2437.00	102.01 (PK)	Н	Fundamental Frequency
2437.00	102.05 (PK)	V	Fundamental Frequency
4874.00	49.88 (PK)	Н	74(Peak)/ 54(AV)
4874.00	49.04 (PK)	V	74(Peak)/ 54(AV)
7311.00		H/V	74(Peak)/ 54(AV)
9748.00		H/V	74(Peak)/ 54(AV)
12185		H/V	74(Peak)/ 54(AV)
14622		H/V	74(Peak)/ 54(AV)
17059		H/V	74(Peak)/ 54(AV)
19496		H/V	74(Peak)/ 54(AV)
21933		H/V	74(Peak)/ 54(AV)
24370		H/V	74(Peak)/ 54(AV)

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

3. For 802.11n (HT20) mode 65Mbps

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Frequency (MHz)	Level@3m (dB $\mu$ V/m)	Antenna Polarity	Limit@3m (dB µ V/m)
2462.00	103.62 (PK)	Н	Fundamental Frequency
2462.00	103.31 (PK)	V	Fundamental Frequency
4924	49.69 (PK)	Н	74(Peak)/ 54(AV)
4924	51.14 (PK)	V	74(Peak)/ 54(AV)
7368		H/V	74(Peak)/ 54(AV)
9848		H/V	74(Peak)/ 54(AV)
12310		H/V	74(Peak)/ 54(AV)
14772		H/V	74(Peak)/ 54(AV)
17234		H/V	74(Peak)/ 54(AV)
19696		H/V	74(Peak)/ 54(AV)
22158		H/V	74(Peak)/ 54(AV)
24650		H/V	74(Peak)/ 54(AV)

#### Operation Mode: Keeping Transmitting under CH11 for 11n HT20 at 65Mbps

Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

2. Remark "---" means that the emissions level is too low to be measured

3. For 802.11n (HT20) mode 65Mbps

The report refers only to the sample tested and does not apply to the bulk.

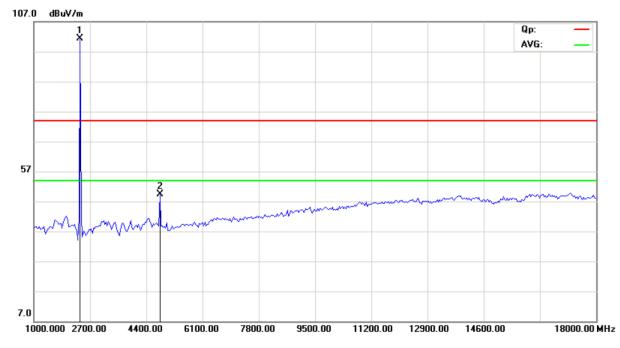
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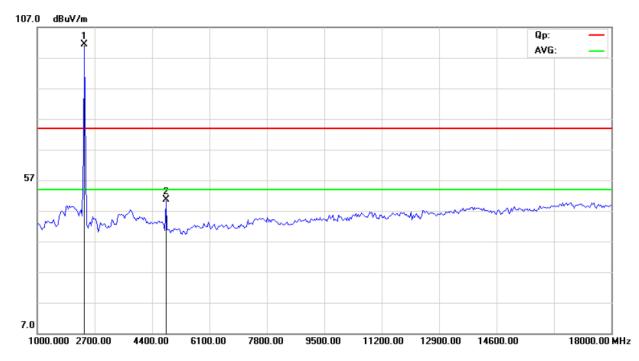


Please refer to the following test plots for details:

### CH01 for 11n HT20 at 65Mbps: Horizontal



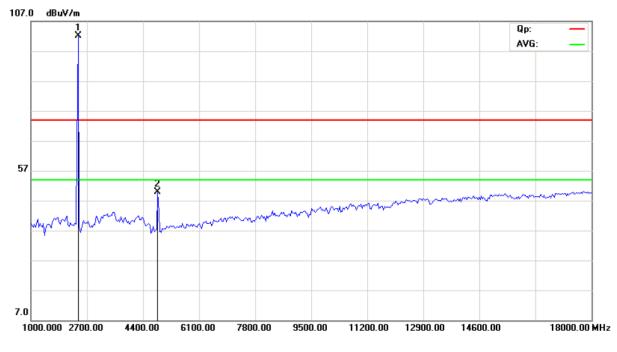
#### CH01 for 11n HT20 at 65Mbps: Vertical



The report refers only to the sample tested and does not apply to the bulk.

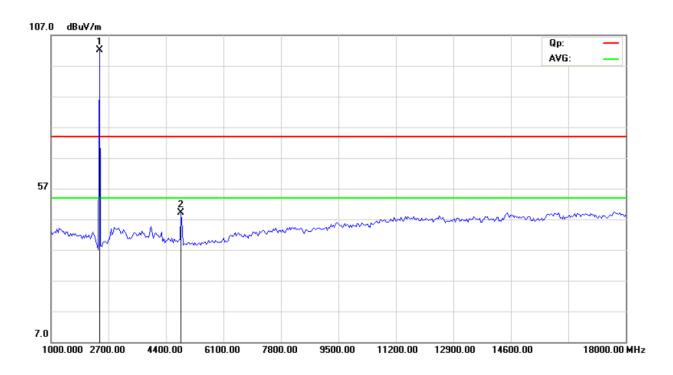
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#### CH06 for 11n HT20 at 65Mbps: Vertical

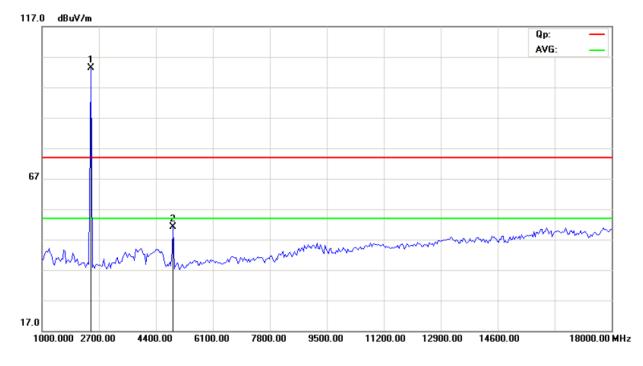
## CH06 for 11n HT20 at 65Mbps: Horizontal



The report refers only to the sample tested and does not apply to the bulk.

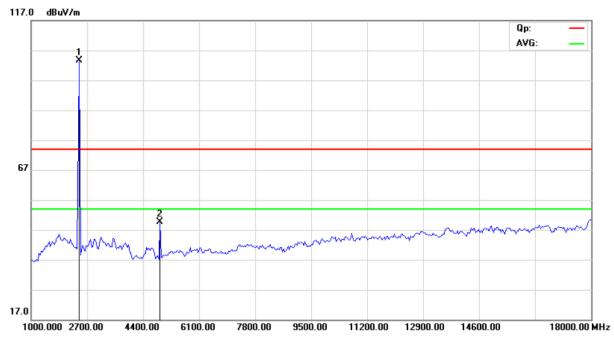
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#### CH11 for 11n HT20 at 65Mbps: Vertical

#### CH11 for 11n HT20 at 65Mbps: Horizontal



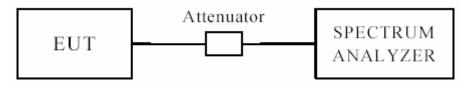
Note: For radiated Emissions from 18-25GHz, it is only the floor noise.

The report refers only to the sample tested and does not apply to the bulk.

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7.0 6dB Bandwidth Measurement7.1 Test Setup



# 7.2 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is >500 kHz

# 7.3 Test Procedure

- 1. Set resolution bandwidth (RBW) = 100 kHz
- 2. Set the video bandwidth (VBW)  $\ge$  3 x RBW.
- 3. Detector = Peak.
- 4. Trace mode = max hold.
- 5. Sweep = auto couple.
- 6. Allow the trace to stabilize.

7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

# 7.4 Test Result

The report refers only to the sample tested and does not apply to the bulk.

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#### 6dB Occupied Bandwidth

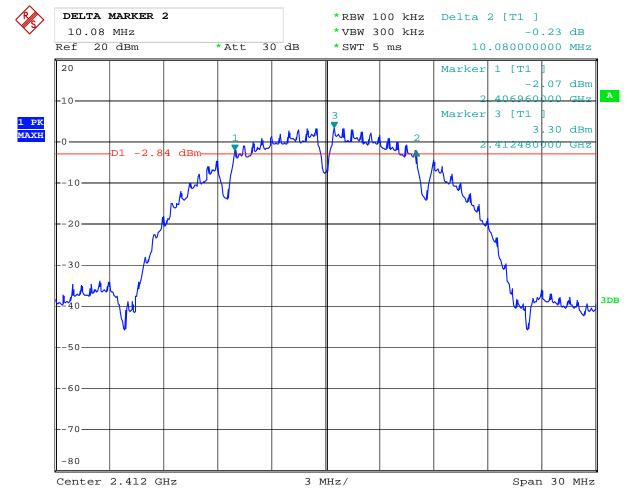
EUT		Media hub for Android Model			NEO X7 mini			
Mode		802.11b		Input Vol	ut Voltage		AC120V	
Temperat	ure	24	24 deg. C, Humidity		56% RH			
Channel		el Frequency (MHz)	Data Transfer Rate (Mbps)	er 6 dB Bandwidth (MHz)		Minimum Limit (MHz)		Pass/ Fail
1		2412	1	10.08			0.5	Pass
6		2437	1	10	.08		0.5	Pass
11		2462	1	10	.02		0.5	Pass
1		2412	11	9.	30		0.5	Pass
6		2437	11	9.	30		0.5	Pass
11		2462	11	9.	30		0.5	Pass

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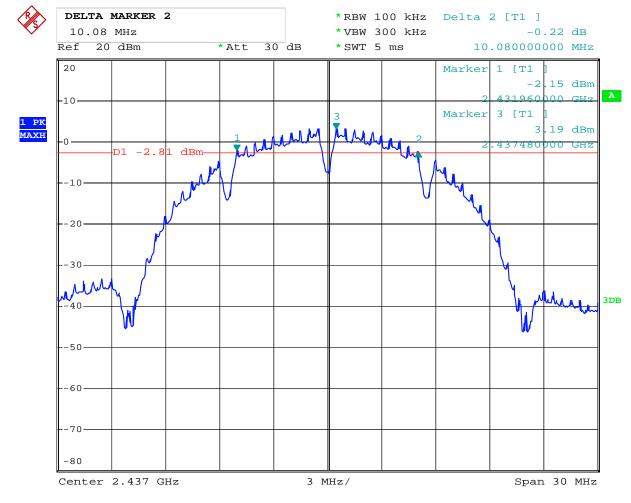
Date: 18.0CT.2013 15:05:12

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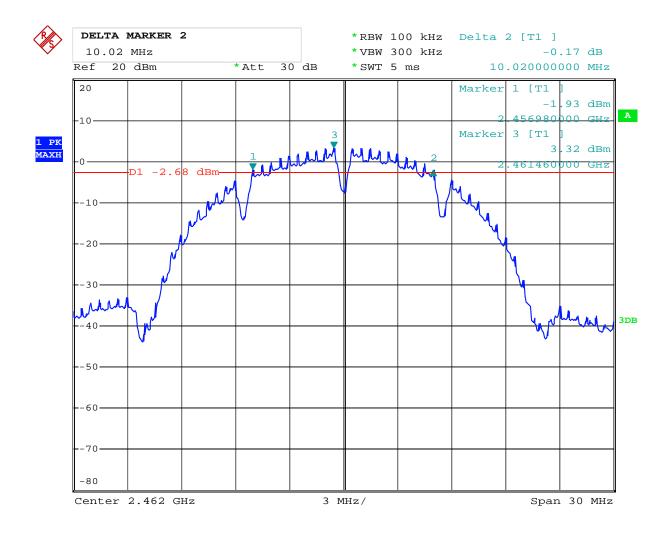
Date: 18.0CT.2013 15:14:52

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#### 3. 802.11b at 1Mbps of CH11



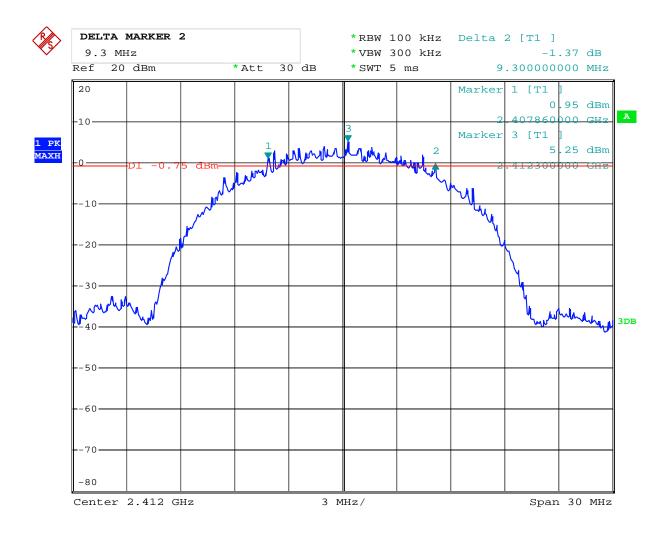
Date: 18.0CT.2013 15:17:03

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## 4. 802.11b at 11Mbps of CH01



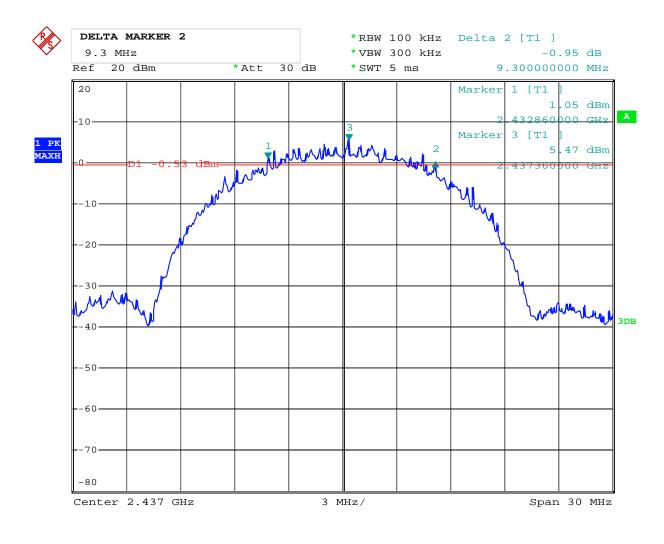
Date: 18.0CT.2013 15:09:04

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## 5. 802.11b at 11Mbps of CH06



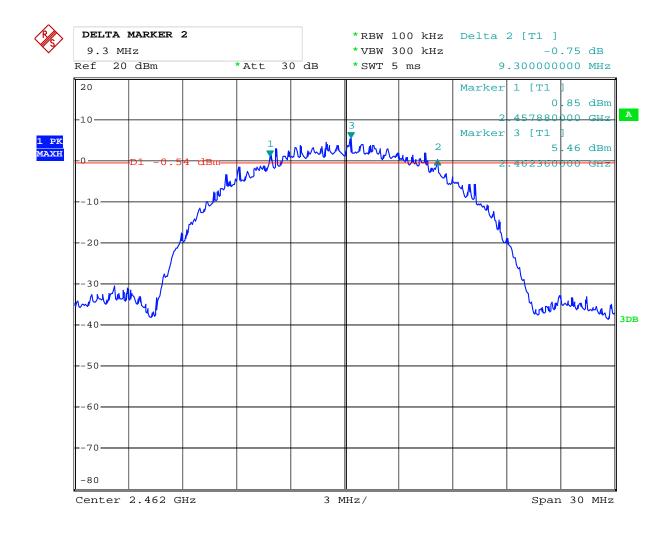
Date: 18.0CT.2013 15:10:54

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## 6. 802.11b at 11Mbps of CH11



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## 6dB Occupied Bandwidth

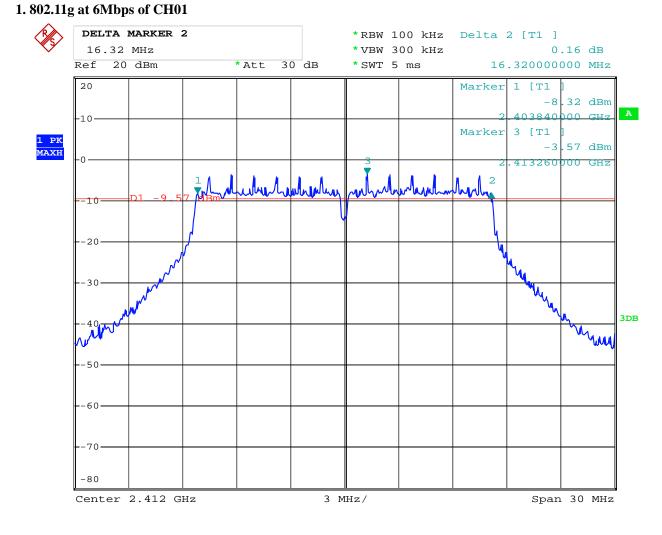
EUT		Media h	ub for And	roid	Model		N	EO X7 mini
Mode		8	302.11g		Input Voltage			AC120V
Temperat	ure	24	4 deg. C,		Humidity			56% RH
Channel		el Frequency (MHz)	Data Transfer Rate (Mbps)		ndwidth Hz)		num Limit MHz)	Pass/ Fail
1		2412	6	16.32			0.5	Pass
6		2437	6	16.32			0.5	Pass
11		2462	6	16	.32		0.5	Pass

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# Test Plots:



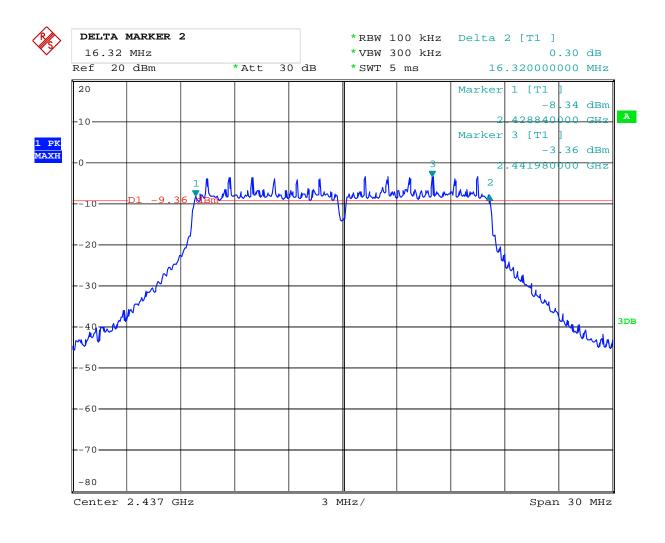
Date: 18.0CT.2013 15:07:08

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#### 2. 802.11g at 6Mbps of CH06



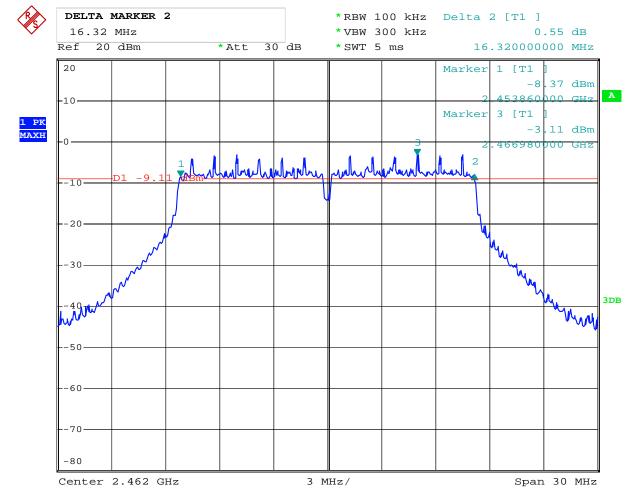
Date: 18.0CT.2013 15:13:48

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#### 6dB Occupied Bandwidth

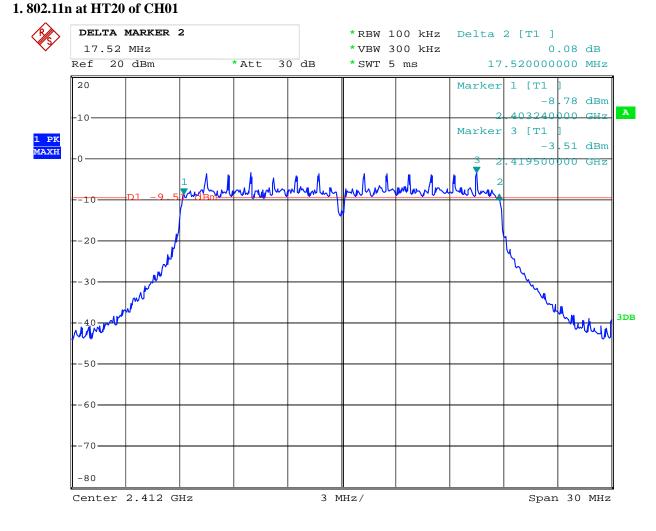
EUT		Media h	ub for And	roid	Model		N	EO X7 mini
Mode		802	.11n HT20		Input Voltage			AC120V
Temperat	ure	24	4 deg. C,		Humidity			56% RH
Channel		el Frequency (MHz)	Data Transfer Rate (Mbps)		ndwidth Hz)		num Limit MHz)	Pass/ Fail
1		2412	65	17.52			0.5	Pass
6		2437	65	17.52			0.5	Pass
11		2462	65	17	.58		0.5	Pass

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# Test Plots:



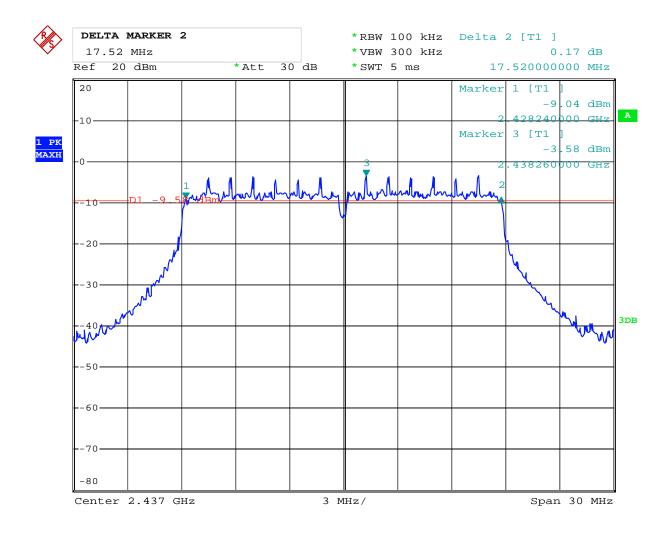
Date: 18.0CT.2013 15:26:09

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#### 2. 802.11n at HT20 of CH06



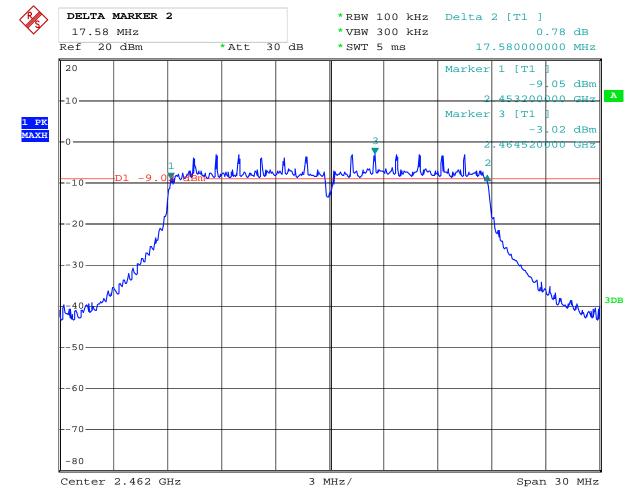
Date: 18.0CT.2013 15:23:39

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3. 802.11n at HT20 of CH11



Date: 18.0CT.2013 15:22:08

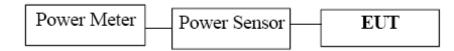
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8. Maximum Peak Output Power

8.1 Test Setup



# 8.2 Limits of Maximum Peak Output Power

The Maximum Peak Output Power Measurement is 30dBm.

# 8.3 Test Procedure

The RF power output was measured with a Power meter connected to the RF Antenna connector ( conducted measurement ) while EUT was operating in transmit mode at the appropriate centre frequency.

# Note: the peak power was measured

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## **8.4Test Results**

EUT	Media hub for A	Android	Model	NEO X7 mini		
Mode	802.11b		Input Voltage	AC120V		
Temperature	24 deg. C	C, Humidity		56% RH		
Channel	Channel Frequency (MHz)	Peak Power Output (dBm)		Peak Power Limit (dBm)	Pass/ Fail	
1	2412		19.28	30	Pass	
6	2437	19.47		30	Pass	
11	2462	19.62		30	Pass	

Note: 1. At finial test to get the worst-case emission at 11Mbps for CH01, CH06 and CH11

2. The result basic equation calculation as follow:

Peak Power Output = Peak Power Reading + Cable loss + Attenuator

3. The worse case was recorded

EUT		Media hub for Android Model			NEO X7 mini			
Mode		802.11g In		Input	nput Voltage		AC120V	
Temperate	ure	24 deg	g. C,	Humidity			56% RH	
Channel	Cha	annel Frequency (MHz)	Peak Power Outpu (dBm)		Peak Power Limit (dBm)		Pass/ Fail	
1		2412	16.14	16.14		)	Pass	
6		2437	16.31		30		Pass	
11		2462	16.47	30		)	Pass	

Note: 1. At finial test to get the worst-case emission at 6Mbps for CH01, CH06 and CH11

- 2. The result basic equation calculation as follow:
  - Peak Power Output = Peak Power Reading + Cable loss + Attenuator
- 3. The worse case was recorded

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EUT		Media hub for Android		Model		NEO X7 mini		
Mode		802.11n (HT20)		Input Voltage		AC120V		
Temperat	ure	24 deg	g. C,	Hur	Humidity		56% RH	
Channel	Cha	annel Frequency (MHz)	Peak Power ( (dBm)	•	Peak Power Limit (dBm)		Pass/ Fail	
1		2412	13.67		30	)	Pass	
6		2437	16.55	30		)	Pass	
11		2462	16.68	30		)	Pass	

Note: 1. At finial test to get the worst-case emission at 11n HT20 for CH01, CH06 and CH11

- 2. The result basic equation calculation as follow: Peak Power Output = Peak Power Reading + Cable loss + Attenuator
- 3. The worse case was recorded

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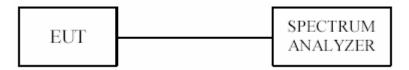
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# 9. Power Spectral Density Measurement

9.1 Test Setup



# 9.2 Limits of Power Spectral Density Measurement

The Maximum Power Spectral Density Measurement is 8dBm.

# 9.3 Test Procedure

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.

- 2. Set the RBW = 10 kHz.
- 3. Set the VBW  $\geq$  30 kHz.
- 4. Set the span to 1.5 times the DTS channel bandwidth.
- 5. Detector = peak.
- 6. Sweep time = auto couple.
- 7. Trace mode = max hold.
- 8. Allow trace to fully stabilize.
- 9. Use the peak marker function to determine the maximum amplitude level.
- 10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.
- 11. The resulting peak PSD level must be  $\leq 8$  dBm.

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# 9.4Test Result

EUT		Media hub fo	or Android	Model			NEO X7 mini	
Mode		802.11b 11Mbps		Input Voltage		AC120V		
Temperat	ure	24 deg	g. C,	Hur	midity		56% RH	
Channel	Ch	annel Frequency (MHz)		Density		n Limit m)	Pass/ Fail	
			11N	lbps				
1		2412	-3.55		8		Pass	
6		2437	-3.60		8		Pass	
11		2462	-5.81		8		Pass	

EUT		Media hub fe	or Android	Model			NEO X7 mini	
Mode		802.11b 1Mbps		Input Voltage		AC120V		
Temperat	ure	24 deg	24 deg. C, Hur		nidity		56% RH	
Channel	Ch	annel Frequency (MHz)	Density	Final Power Spectral Density (dBm)		n Limit Pass/ Fail n)		
			1M	ops				
1		2412	-6.00		8		Pass	
6		2437	-5.64		8		Pass	
11		2462	-5.93		8		Pass	

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EUT		Media hub fo	М	Iodel		NEO X7 mini		
Mode		802.11g 6Mbps		Input	put Voltage		AC120V	
Temperat	perature 24 deg. C,		Humidity			56% RH		
Channel	Ch	Channel Frequency (MHz) Final Power Spe Density (dBm)			Maximum Limit (dBm)		Pass/ Fail	
			6M	bps				
1		2412	-13.64		8		Pass	
6		2437	-12.96		8		Pass	
11		2462	-13.23		8		Pass	

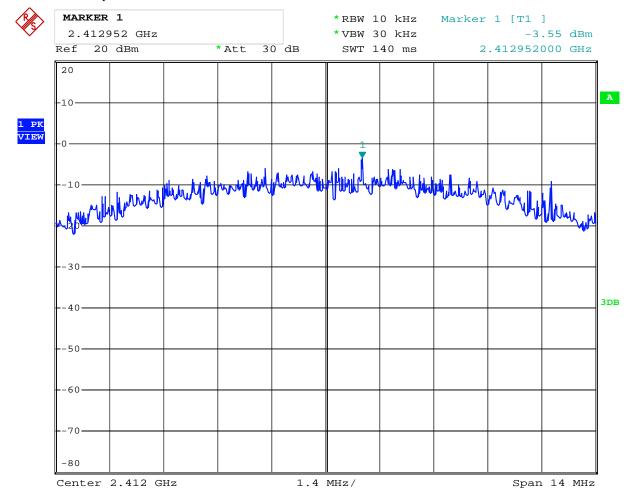
EUT		Media hub fo	or Android	М	Model		NEO X7 mini	
Mode		802.11n HT20 65Mbps		Input Voltage			AC120V	
Temperat	mperature 24 deg. C,		Hur	Humidity		56% RH		
Channel	Cha	annel Frequency (MHz)	ency Final Power Sp Density (dBm)		Maximum Limit (dBm)		Pass/ Fail	
			НТ	20				
1		2412	-12.56		8		Pass	
6		2437	-12.14	8			Pass	
11		2462	-12.21		8		Pass	

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### 9.5 Photo of Power Spectral Density Measurement

1.802.11b at 11Mbps of CH01



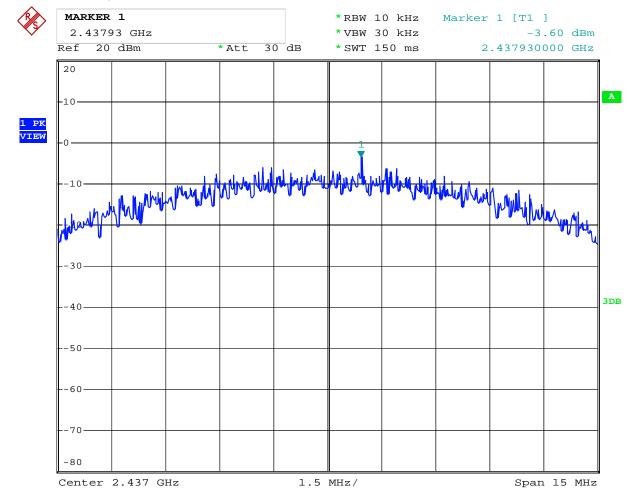
Date: 18.0CT.2013 17:37:56

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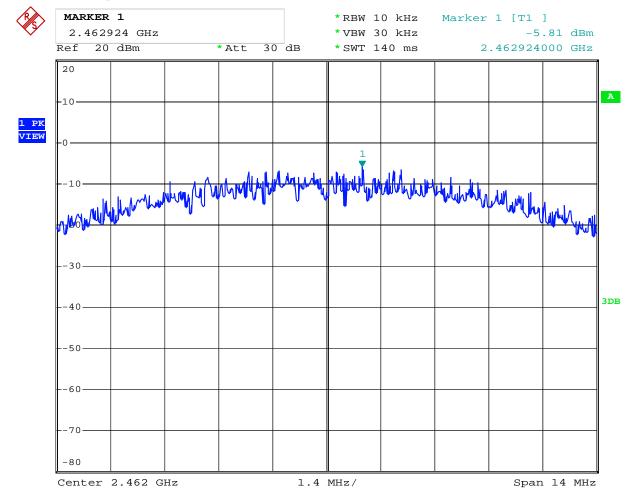
Date: 18.0CT.2013 17:39:37

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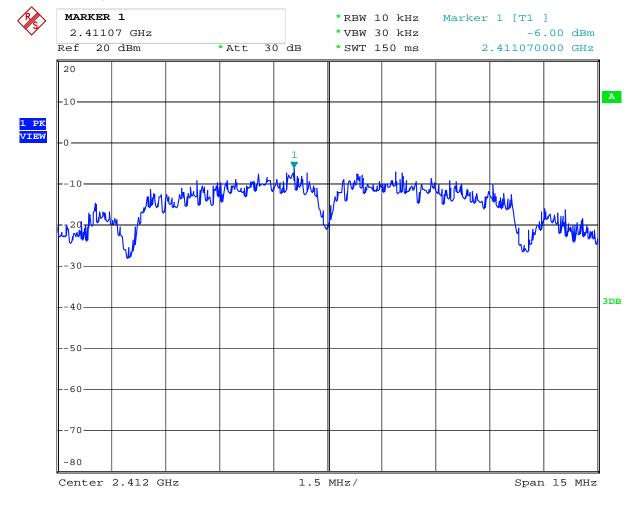
Date: 21.0CT.2013 10:38:13

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4. 802.11b at 1Mbps of CH1



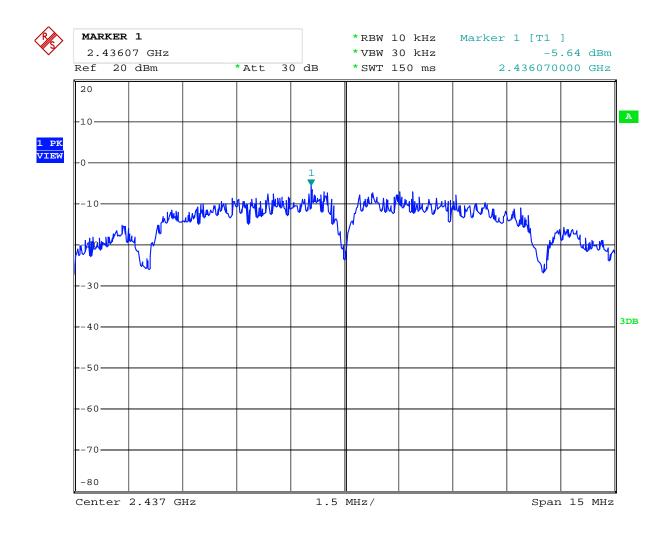
Date: 18.0CT.2013 16:16:49

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# 5. 802.11b at 1Mbps of CH6



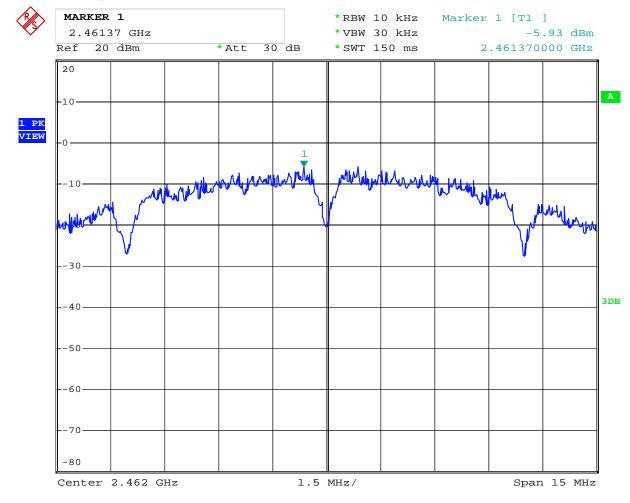
Date: 18.0CT.2013 17:41:38

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6. 802.11b at 1Mbps of CH11



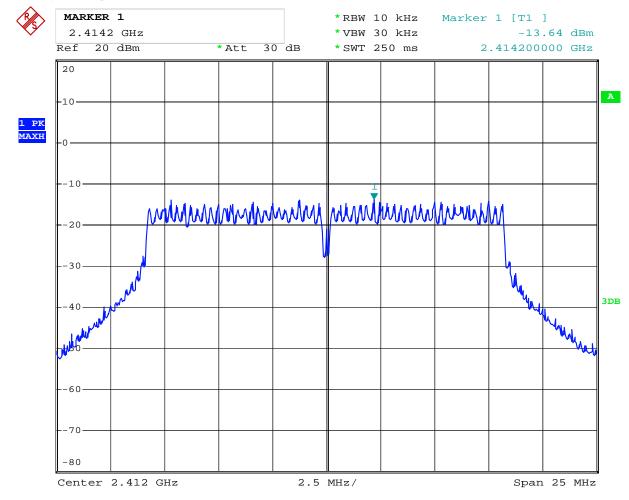
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7. 802.11g at 6Mbps of CH1



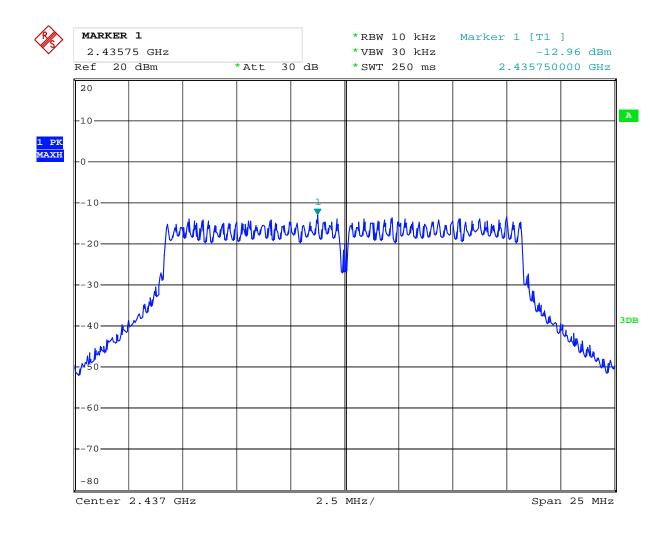
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# 8. 802.11g at 6 Mbps of CH6



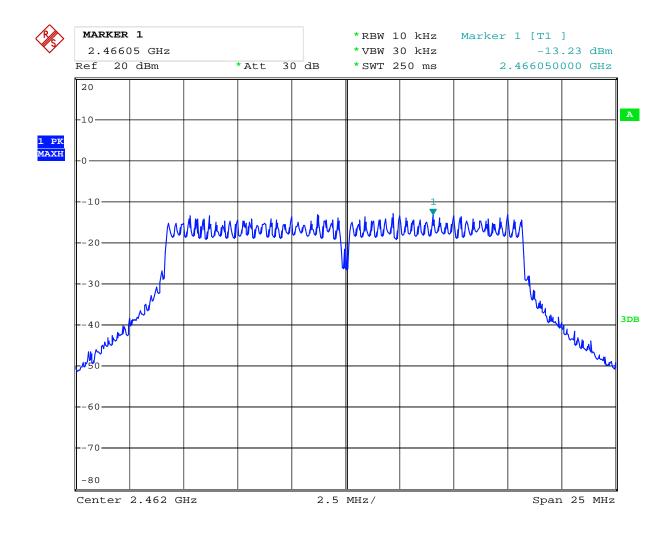
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# 9. 802.11g at 6 Mbps of CH11



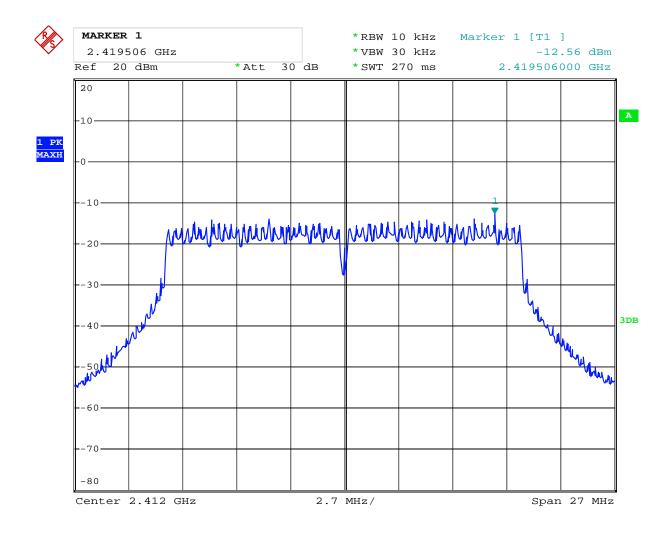
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#### 10. 802.11n at HT20 of CH01



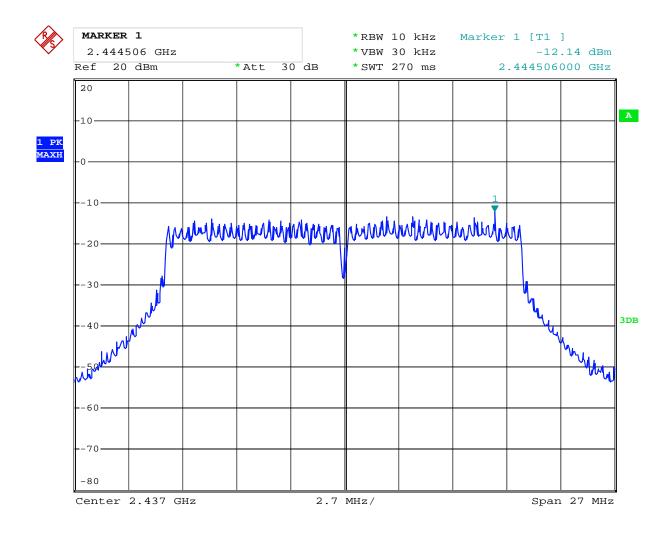
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#### 11. 802.11n at HT20 of CH06



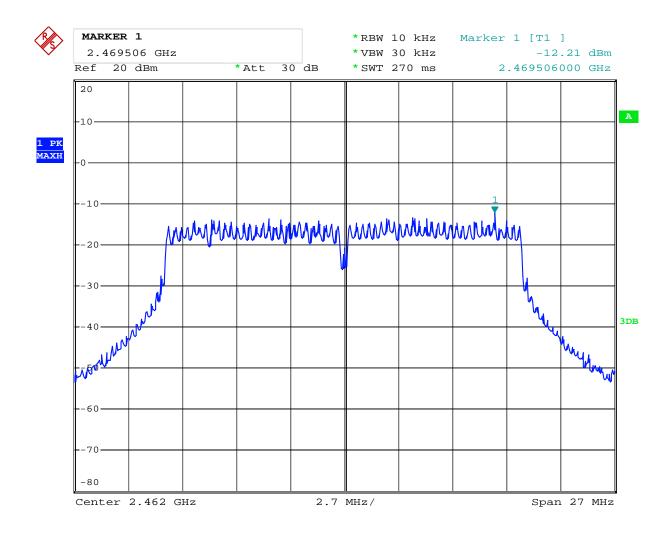
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#### 12. 802.11n at HT20 of CH11



Date: 21.0CT.2013 10:39:43

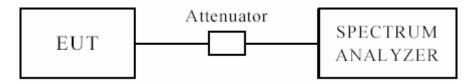
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# 10 Out of Band Measurement

**10.1 Test Setup for band edge** 



# The restricted band requirement based on radiated emission test; please see the clause 6 for the test setup

# 10.2 Limits of Out of Band Emissions Measurement

- 1. Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).
- 2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

# **10.3 Test Procedure**

For signals in the restricted bands above and below the 2.4-2.483GHz allocated band a measurement was made of radiated emission test.( Peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK detector)

For bandage test, the spectrum set as follows: RBW=VBW=100 kHz. A conducted measurement used

## **10.4 Test Result**

Please see next pages

Note: For band-edge measurement, the frequency from 30MHz-25GHz was tested. And It met the FCC rule.

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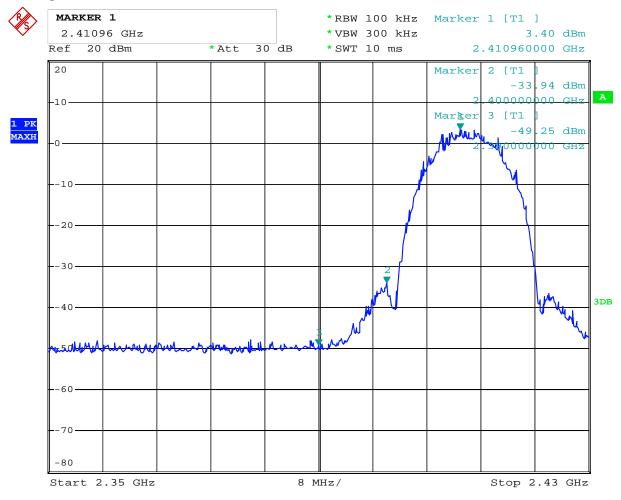
## For 802.11b mode

CH01 at 11Mbps

## 10.4 Band-edge and Restricted band Measurement

EUT	Media hub for Android		Model	NEO X7 mini
Mode	Keeping Transmitting		Input Voltage	AC120V
Temperature	24 deg	g. C,	Humidity	56% RH
Test Result:	Pas	S	Detector	РК
2400	PK (dBµV/m)	67.8	Limit	74(dBµV/m)
	AV ( $dB\mu V/m$ )	49.3	Limit	54(dBµV/m)
2390	PK (dBµV/m)	47.2	Limit	74(dBµV/m)
	AV ( $dB\mu V/m$ )			54(dBµV/m)

**Test Figure:** 



Date: 21.0CT.2013 10:50:32

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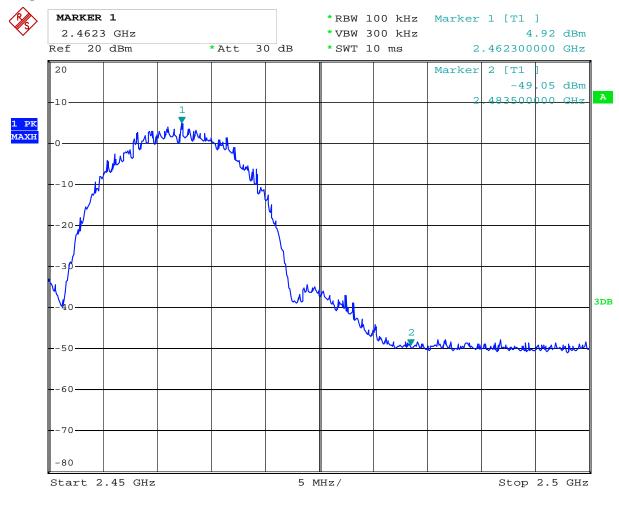


#### CH11 at 11Mbps

#### **10.4** Band-edge and Restricted band Measurement

	1			
EUT	Media h	ub for Android	Model	NEO X7 mini
Mode	Keepin	g Transmitting	Input Voltage	AC120V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:		Pass	Detector	РК
2483.5	PK (dBµV/m)	45.6	T :	74(dBµV/m)
	AV ( $dB\mu V/m$ )		Limit	54(dBµV/m)

#### **Test Figure:**



Date: 21.0CT.2013 10:58:48

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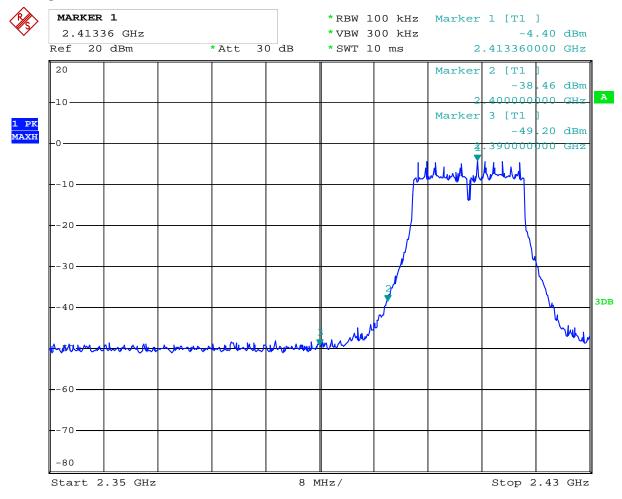
## For 802.11g mode

CH01 at 6Mbps

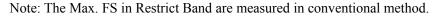
#### 10.4 Band-edge and Restricted band Measurement

EUT	Media hub for A	Android M		Iodel	NEO X7 mini
Mode	Keeping Trans	mitting	Input Voltage		AC120V
Temperature	24 deg. 0	2,	Humidity		56% RH
Test Result:	Pass	De		etector	РК
2400	PK (dBµV/m)	65.	1	Limit	74(dBµV/m)
	AV ( $dB\mu V/m$ )	46.	46.9		54(dBµV/m)
2390	PK (dBµV/m)	45.3		Limit	74(dBµV/m)
	AV (dBµV/m)				54(dBµV/m)

**Test Figure:** 



Date: 21.0CT.2013 10:49:27



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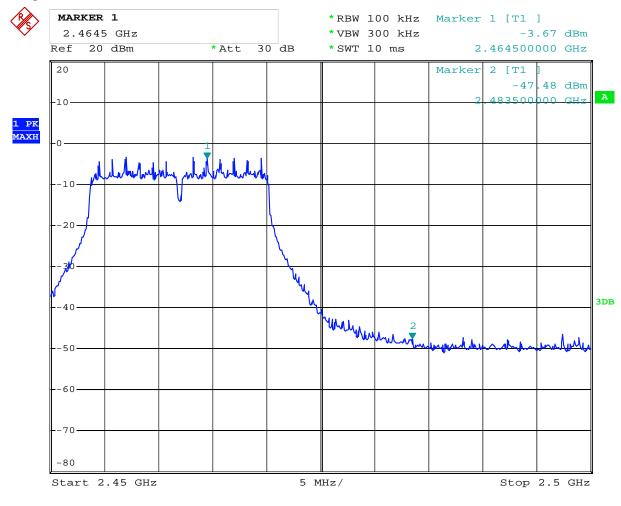


#### CH11 at 6Mbps

#### **10.4** Band-edge and Restricted band Measurement

0				
EUT	Media hub for Android		Model	NEO X7 mini
Mode	Keeping Transmitting		Input Voltage	AC120V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	РК
2483.5	PK (dBµV/m)	45.2	T in it	74(dBµV/m)
	AV ( $dB\mu V/m$ )		Limit	54(dBµV/m)

#### **Test Figure:**



Date: 21.0CT.2013 10:58:09

Note: The Max. FS in Restrict Band are measured in conventional method.

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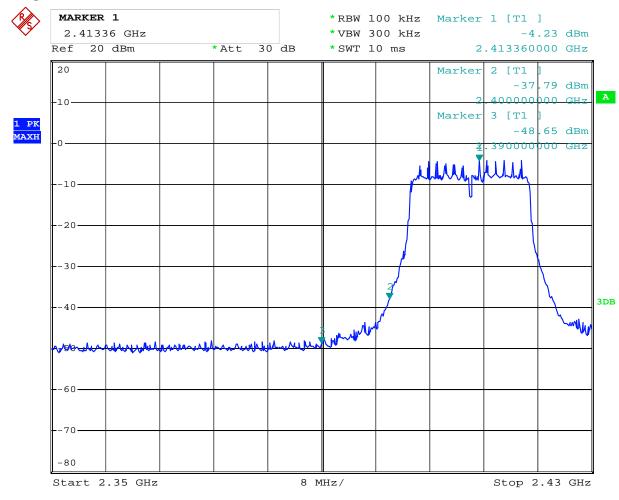
# For 802.11n (HT20) mode

## CH01 at 65Mbps

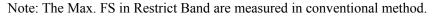
# 10.4 Band-edge and Restricted band Measurement

EUT	Media hub for Android		Model	NEO X7 mini	
Mode	Keeping Transmitting		Input Voltage	AC120V	
Temperature	24 deg. C,		Humidity	56% RH	
Test Result:	Pass		Detector	РК	
2400	PK (dBµV/m)	66.8	Limit		74(dBµV/m)
	AV ( $dB\mu V/m$ )	48.2			54(dBµV/m)
2390	PK (dBµV/m)	46.9	Limit		74(dBµV/m)
	AV ( $dB\mu V/m$ )				54(dBµV/m)

#### **Test Figure:**



Date: 21.0CT.2013 10:51:36



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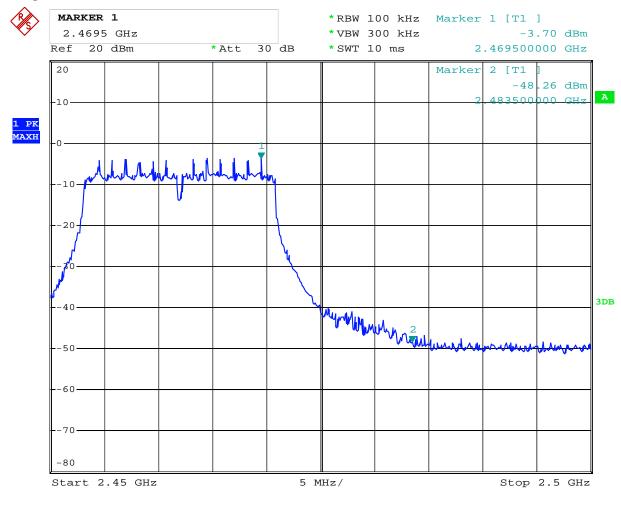


## CH11 at 65Mbps

## 10.4 Band-edge and Restricted band Measurement

EUT	Media hub for Android		Model	NEO X7 mini				
Mode	Keeping	g Transmitting	Input Voltage	AC120V				
Temperature	24 deg. C,		Humidity	56% RH				
Test Result:	Pass		Detector	РК				
2483.5	PK (dBµV/m)	46.7	Tinit	74(dBµV/m)				
	AV ( $dB\mu V/m$ )		Limit	54(dBµV/m)				

#### **Test Figure:**



Date: 21.0CT.2013 10:56:03

Note: The Max. FS in Restrict Band are measured in conventional method.

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# 11.0 Antenna Requirement

# **11.1 Standard Applicable**

For intentional device, according to FCC 47 CFR Section 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. And according to FCC 47 CFR Section 15.247 (b), if transmitter antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the mount in dB that the directional gain of the antenna exceeds 6 dBi.

# 11.2 Antenna Connected construction

Integral antenna used. The maximum Gain of the antennas is 2.0 dBi.

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## 12.0 FCC Label

# FCC ID: WMFNEOX7MINI

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

## Mark Location:



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#### 13.0 Photo of testing

Conducted Emission Test Setup:



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Radiated Emission Test Setup:



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Photo for the EUT



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**Photos of EUT** 



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### **Photos of EUT**

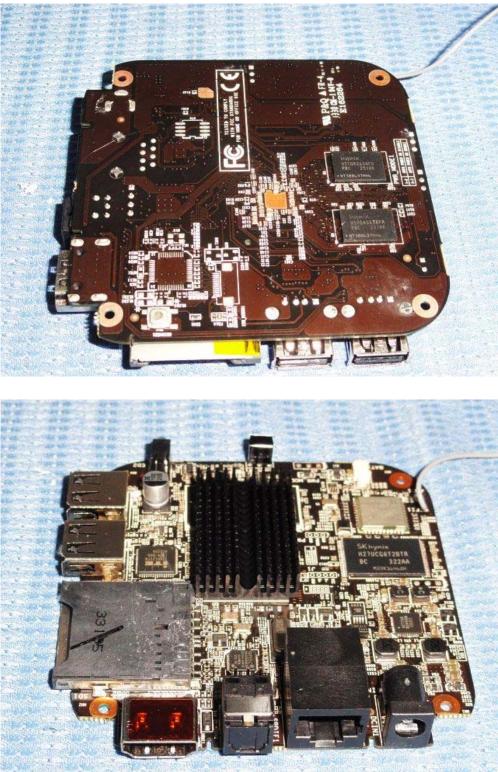


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