







ISO/IEC17025Accredited Lab.

Report No: FCC/IC 1306064
File reference No: 2013-06-27

Applicant: J&W TECHNOLOGY LIMITED

Product: Media hub for Android

Trademark: MINIXTM

Model No: NEO X5 mini

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: June 27, 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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Test Report Conclusion

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1.0 General Details

1.1 Test Lab Details

Name: SHENZHEN TIMEWAY TECHNOLOGY CONSULTING CO., LTD

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

Shenzhen, CHINA.

Telephone: (755) 83448688 Fax: (755) 83442996

Site on File with the Federal Communications Commission – United Sates

Registration Number: 899988

For 3m & 10 m OATS

Site Listed with Industry Canada of Ottawa, Canada

Registration Number: IC: 5205A-01

For 3m & 10 m OATS

1.2 Applicant Details

Applicant: J&W TECHNOLOGY LIMITED

Address: 13/F, Block B, Haisong Edifice, Tairan 9th Road, Futian District, Shenzhen, China.

Telephone: 86-0755-23981882 Fax: 86-0755-23981919

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™

Model Number: NEO X5 mini

Additional Model Number: N/A

Power Adapter Model: YS02-050200E;

Input: 100-240V, 50/60Hz, 0.32A MAX; Output: 5V, 2000mA

Type of Modulation IEEE 802.11b : DSSS (CCK, QPSK, BPSK)

IEEE 802.11g/n (HT20): OFDM(64QAM, 16QAM, QPSK, BPSK)

Frequency range IEEE 802.11b/g/n (HT20) : 2412-2462MHz

Channel Spacing 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: 6.5, 13, 19.5, 26. 39, 52, 58.5, 65, 7.2, 14.4, 21.7, 28.9, 43.3,

57.8, 72.2Mbps

Frequency Selection By software

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Channel Number

IEEE 802.11b/g/n (HT20): 11 Channels

Antenna:

Integral Antenna with maximum gain 2.0dBi

1.4 Submitted Sample: 2 Sample

1.5 Test Duration

2013-06-17 to 2013-06-26

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



2.0		Test Equip	ments		
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	ROHDE&SCHWARZ	ESPI 3	100379	2012-08-21	2013-08-20
TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100294	2012-08-21	2013-08-20
TWO Line-V-NETW	ROHDE&SCHWARZ	EZH3-Z5	100253	2012-08-21	2013-08-20
Ultra Broadband ANT	ROHDE&SCHWARZ	HL562	100157	2012-08-21	2013-08-20
ESDV Test Receiver	ROHDE&SCHWARZ	ESDV	100008	2012-08-21	2013-08-20
Impuls-Begrenzer	ROHDE&SCHWARZ	ESH3-Z2	100281	2012-08-21	2013-08-20
System Controller	CT	SC100	-		
Printer	EPSON	РНОТО ЕХЗ	CFNH234850		
Computer	IBM	8434	1S8434KCE99BLXL O*	-	-
Loop Antenna	EMCO	6502	00042960	2012-08-21	2013-08-20
ESPI Test Receiver	ROHDE&SCHWARZ	ESI26	838786/013	2012-08-21	2013-08-20
3m OATS			N/A	2012-08-21	2013-08-20
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170265	2012-08-21	2013-08-20
Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-631	2012-08-21	2013-08-20
Power meter	Anritsu	ML2487A	6K00003613	2012-08-21	2013-08-20
Power sensor	Anritsu	MA2491A	32263	2012-08-21	2013-08-20
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2012-08-21	2013-08-20
LISN	AFJ	LS16C	10010947251	2012-08-21	2013-08-20
LISN (Three Phase)	Schwarebeck	NSLK 8126	8126453	2012-08-21	2013-08-20
9*6*6 Anechoic			N/A	2012-08-21	2013-08-20
EMI Test Receiver	RS	ESCS30	100139	2012-08-21	2013-08-20
LISN	AFJ	LS16C	10010947251	2012-08-21	2013-08-20
LISN (Three Phase)	Schwarebeck	NSLK 8126	8126453	2012-08-21	2013-08-20

2.1 **Auxiliary Equipment**

Name	Model No.	Serial No.	Manufacturer	Cable	FCC ID/DOC
USB Disk			Kinston	-	DOC
Mouse			Big Cow	1	DOC
Monitor	PH2450		SUMSAG		DOC

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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: 6.5Mbps 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.

The worst-case channel is determined as the channel with the highest output power. The highest measured output power was at 2462 MHz.



3.0 **Technical Details**

3.1 **Summary of test results**

Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.107	Conducted Emission Test	PASS	Complies
& 15.207			
	Spectrum bandwidth of a		Complies
FCC Part 15 Subpart C	Orthogonal Frequency		
Paragraph 15.247(a)(2) Limit	Division Multiplex System	PASS	
1 aragraph 13.247(a)(2) 13mm	Limit: 6dB		
	bandwidth>500kHz		
FCC Part 15, Paragraph	Maximum peak output		
15.247(b)	power	PASS	Complies
10.2 11 (%)	Limit: max. 30dBm		
FCC Part 15, Paragraph	Transmitter Radiated	PASS	Complies
15.109,15.205 & 15.209	Emission		
	Limit: Table 15.209		
FCC Part 15, Paragraph	Power Spectral Density	PASS	Complies
15.247(e)	Limit: max. 8dBm		
FCC Part 15, Paragraph	Out of Band Emission and	PASS	Complies
15.247(d)	Restricted Band		
	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

EUT Modification 4.0

No modification by Shenzhen Timeway Technology Consulting Co., Ltd

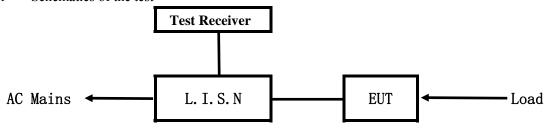
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5. Power Line Conducted Emission Test

5.1 Schematics of the test

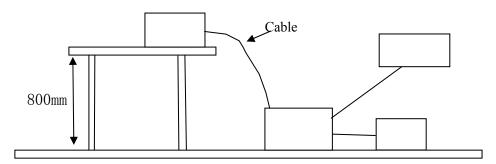


EUT: Equipment Under Test

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 ID/IC
Media hub for Android	J&W TECHNOLOGY LIMITED	NEO X5 mini	WMFNEOX5MINI

B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

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C. Peripherals

Device	Manufacturer	Model	FCC ID/DOC	Cable
N/A				

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

Frequency	Class A Lim	its (dB µ V)	Class B Lim	nits (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 ~ 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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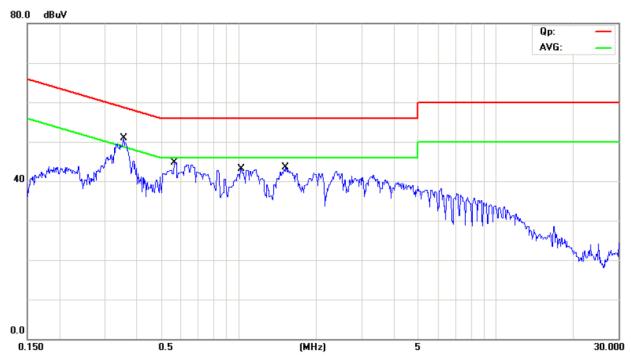


A Conducted Emission on Line Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Keep WIFI Transmitting

Results: Pass

Please refer to following diagram for individual



Eraguanay		Reading	Limi	t		
Frequency (MHz)	Line	;	Neutral		(dB µ V)	
(IVITIZ)	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.355	48.72	25.62			58.83	48.83
0.561	40.04	19.54			56.00	46.00
1.019	39.71	18.81			56.00	46.00
1.517	41.71	21.91			56.00	46.00

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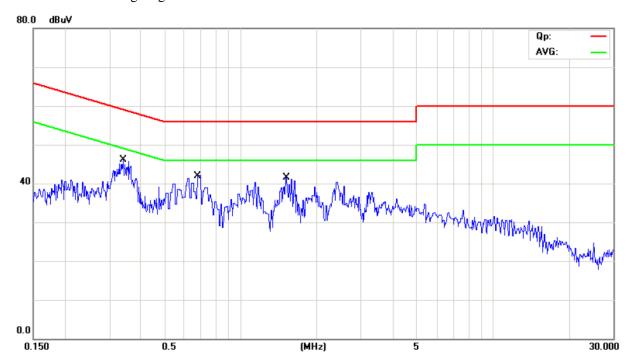


B Conducted Emission on Neutral Terminal of the power line (150kHz to 30MHz)

EUT set Condition: Keep WIFI Transmitting

Results: Pass

Please refer to following diagram for individual



Fraguanay		Reading	Limit			
Frequency (MHz)	Live		Neutral		(dB µ V)	
(WITIZ)	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
0.340			38.50	27.50	59.20	49.20
0.679			36.46	22.36	56.00	46.00
1.502			36.10	25.00	56.00	46.00

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6 Radiated Emission Test

- 6.1 Test Method and test Procedure:
- (1) 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 Distance = 3m Computer Pre -Amplifier EUT Turn-table Receiver

- 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

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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

	-	E 1
Frequency Range (MHz)	Distance (m)	Field strength (dB µ 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 $(dBuV) = 20 \log RF \text{ Voltage } (uV)$
- 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: Keep WIFI Transmitting

Results: Pass

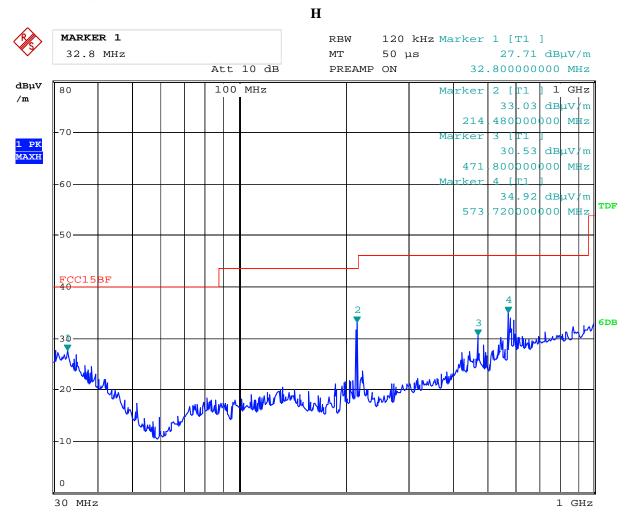
Frequency (MHz)	Level@3m (dB \u03bc V/m)	Antenna Polarity	Limit@3m (dB \u03b4 V/m)	
32.800	27.71 Н		40.00	
214.480	33.03	Н	43.50	
471.800	30.53	Н	46.00	
573.720	34.92	Н	46.00	
148.520	25.77	V	43.50	
214.560	214.560 23.19		43.50	
528.040	528.040 36.67		46.00	
713.360	713.360 31.65		46.00	

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Test Figure:



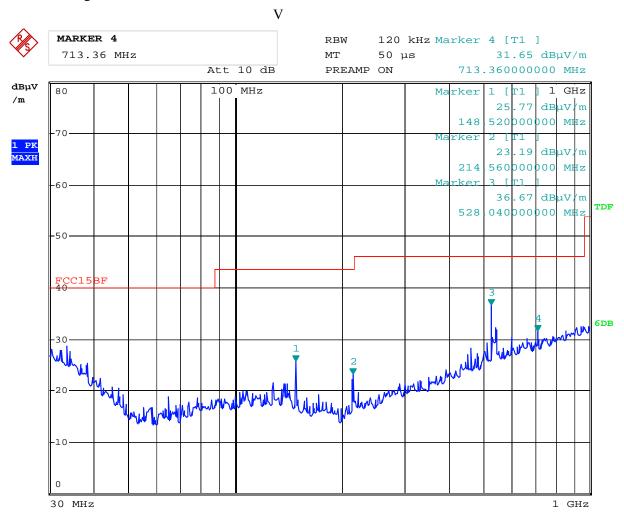
Date: 18.JUN.2013 17:43:22

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Test Figure:



Date: 18.JUN.2013 17:41:10

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Operation Mode: Keep Transmitting under CH01 at 6Mbps

Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB \u03b4 V/m)	
2412.00	97.89 (PK)	Н	Fundamental Frequency	
2412.00	97.69 (PK)	V	Fundamental Frequency	
4824.00	50.28 (PK)	Н	74(Peak)/ 54(AV)	
4824.00	49.82 (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	24120		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 6Mbps

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Operation Mode: Keep Transmitting under CH06 at 6Mbps

Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB \mu V/m)
2437.00	97.97 (PK)	Н	Fundamental Frequency
2437.00	97.94 (PK)	V	Fundamental Frequency
4874.00	50.65 (PK)	Н	74(Peak)/ 54(AV)
4874.00	49.82 (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 802.11g mode 6Mbps

Operation Mode: Keep Transmitting under CH11 at 6Mbps

F (2.011.)	T (100 (1D 11/)		I: ::02 (ID II/)	
Frequency (MHz)	Level@3m (dB \mu V/m)	Antenna Polarity	Limit@3m (dB \mu V/m)	
2462.00	98.34 (PK)	Н	Fundamental Frequency	
2462.00	98.36 (PK)	V	rundamentai riequency	
4924	49.08 (PK)	Н	74(Peak)/ 54(AV)	
4924	49.14 (PK)	V	74(Peak)/ 54(AV)	
7368		H/V	74(Peak)/ 54(AV)	
9848	1	H/V	74(Peak)/ 54(AV)	
12310	-	H/V	74(Peak)/ 54(AV)	
14772	-	H/V	74(Peak)/ 54(AV)	
17234	1	H/V	74(Peak)/ 54(AV)	
19696	19696		74(Peak)/ 54(AV)	
22158		H/V	74(Peak)/ 54(AV)	
24650	24650		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 6Mbps

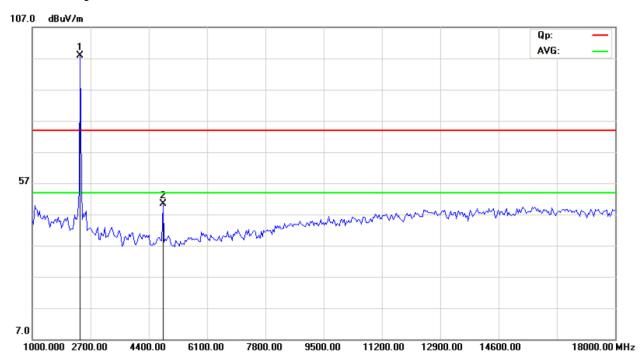
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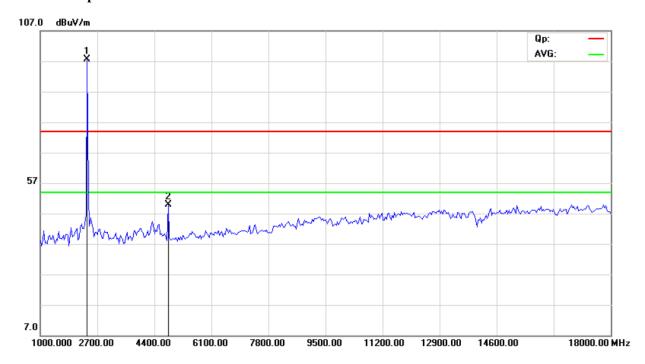


Please refer to the following test plots for details:

CH01 at 6Mbps: Horizontal



CH01 at 6Mbps: Vertical

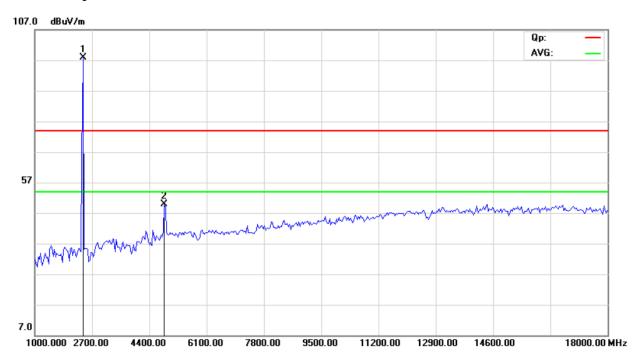


The report refers only to the sample tested and does not apply to the bulk.

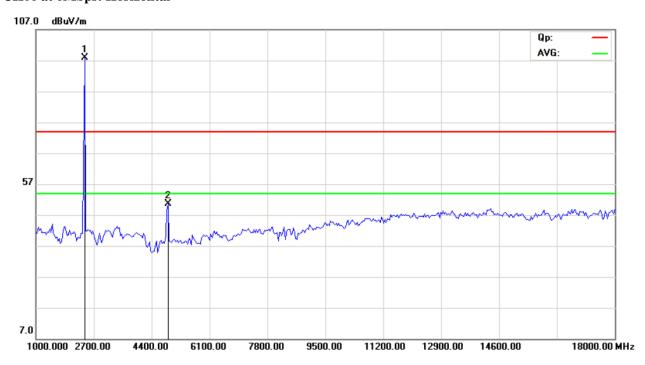
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CH06 at 6Mbps: Vertical



CH06 at 6Mbps: Horizontal

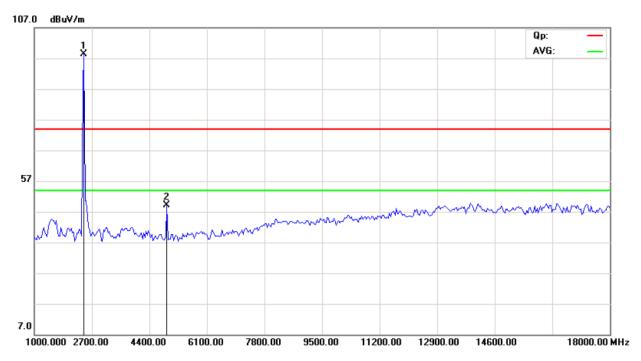


The report refers only to the sample tested and does not apply to the bulk.

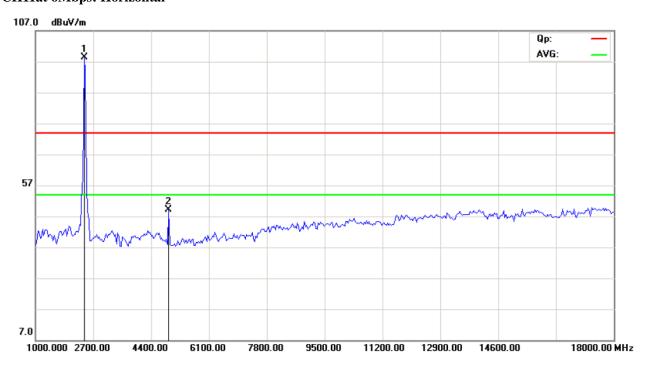
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CH11 at 6Mbps: Vertical



CH11at 6Mbps: Horizontal



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

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Operation Mode: Keep Transmitting under CH01 at 11Mbps

	1 0		
Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB \mu V/m)
2412.00	97.26 (PK)	V	Fundamental Frequency
2412.00	97.76 (PK)	Н	Fundamental Frequency
4824.00	49.32 (PK)	Н	74(Peak)/ 54(AV)
4824.00	49.59 (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)

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: Keep Transmitting under CH06 at 11Mbps

Frequency (MHz)	Level@3m (dB \u03bc V/m)	Antenna Polarity	Limit@3m (dB \(\mu \) V/m)	
2437.00	98.13 (PK)	Н	Fundamental Frequency	
2437.00	97.65 (PK)	V	Fundamental Frequency	
4874.00	50.12 (PK)	Н	74(Peak)/ 54(AV)	
4874.00	50.00 (PK)	V	74(Peak)/ 54(AV)	
7311.00	1	H/V	74(Peak)/ 54(AV)	
9748.00	1	H/V	74(Peak)/ 54(AV)	
12185	-	H/V	74(Peak)/ 54(AV)	
14622	1	H/V	74(Peak)/ 54(AV)	
17059	1	H/V	74(Peak)/ 54(AV)	
19496	19496		74(Peak)/ 54(AV)	
21933		H/V	74(Peak)/ 54(AV)	
24370	24370		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 802.11b mode 11Mbps

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Operation Mode: Keep Transmitting under CH11 at 11Mbps

Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB μ V/m)	
2462.00	97.38 (PK)	Н	Fundamental Frequency	
2462.00	97.45 (PK)	V	Fundamental Frequency	
4924	49.79 (PK)	Н	74(Peak)/ 54(AV)	
4924	49.63 (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	24650		74(Peak)/ 54(AV)	

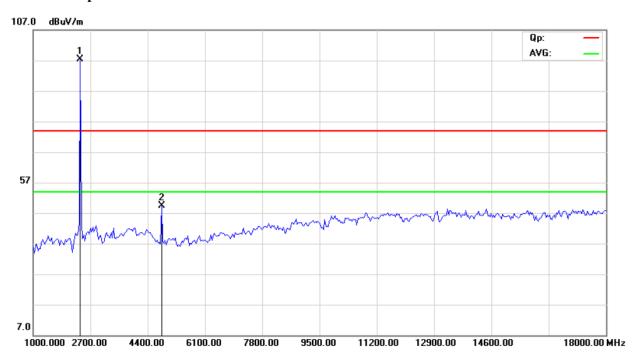
Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

- 2. Remark "---" means that the emissions level is too low to be measured
- 3. For 802.11b mode at 11Mbps

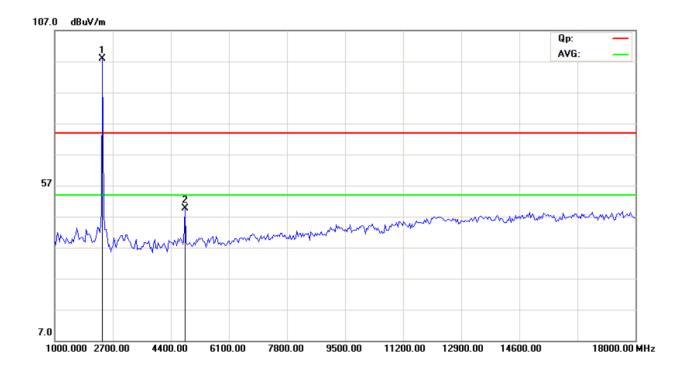


Please refer to the following test plots for details:

CH01 at 11Mbps: Horizontal



CH01 at 11Mbps: Vertical



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

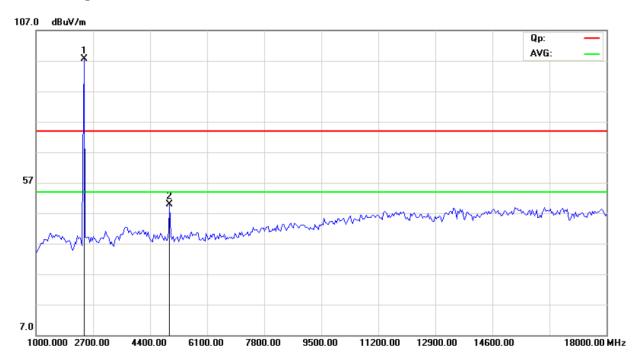
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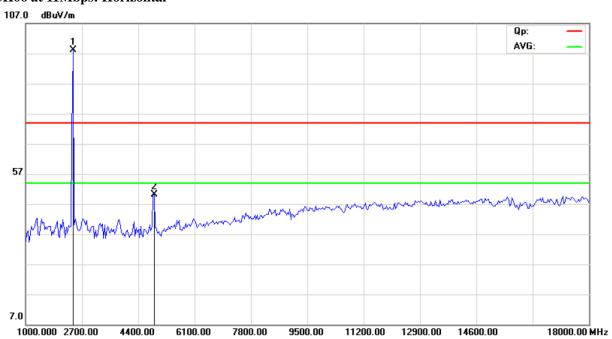
Report No: 1306064 Date: 2013-06-27



CH06 at 11Mbps: Vertical

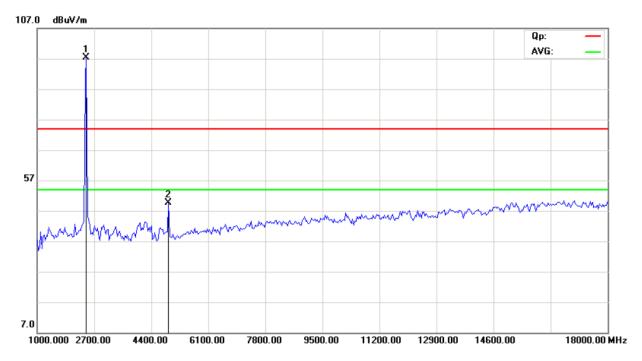


CH06 at 11Mbps: Horizontal

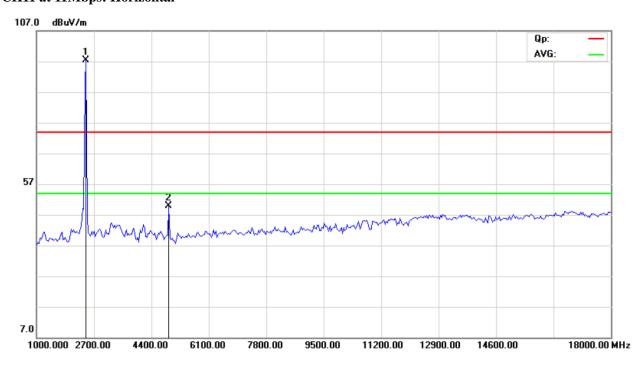




CH11 at 11Mbps: Vertical



CH11 at 11Mbps: Horizontal



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

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Operation Mode: Keep Transmitting under CH01 at 6.5Mbps

Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB μ V/m)	
2412.00	97.36 (PK)	Н	Fundamental Frequency	
2412.00	97.42 (PK)	V	Fundamental Frequency	
4824.00	48.65 (PK)	Н	74(Peak)/ 54(AV)	
4824.00	49.59 (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)	

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 6.5Mbps

Operation Mode: Keep Transmitting under CH06 at 6.5Mbps

Frequency (MHz)	Level@3m (dB \u03b4 V/m)	Antenna Polarity	Limit@3m (dB \(\mu \)V/m)
2437.00	98.05 (PK)	Н	Fundamental Frequency
2437.00	98.01 (PK)	V	Fundamental Frequency
4874.00	50.04 (PK)	Н	74(Peak)/ 54(AV)
4874.00	49.69 (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 6.5Mbps

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Operation Mode: Keep Transmitting under CH11 at 6.5Mbps

Frequency (MHz)	Level@3m (dB μ V/m)	Antenna Polarity	Limit@3m (dB \mu V/m)
2462.00	97.62 (PK)	Н	Eundamental Eraguenay
2462.00	97.31 (PK)	V	Fundamental Frequency
4924	49.19 (PK)	Н	74(Peak)/ 54(AV)
4924	47.64 (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)

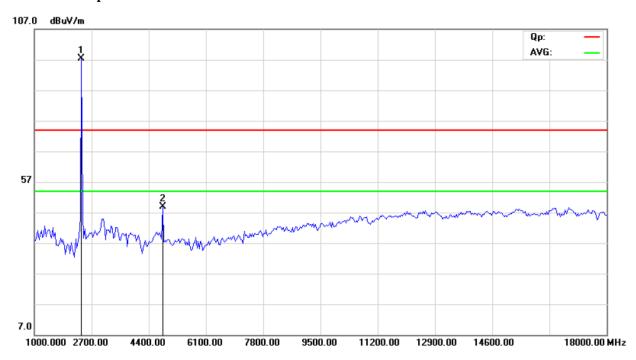
Note: 1. Level = Reading + AF + Cable - Preamp + Filter - Dist, Margin = Level - Limit

- 2. Remark "---" means that the emissions level is too low to be measured
- 3. For 802.11n (HT20) mode 6.5Mbps

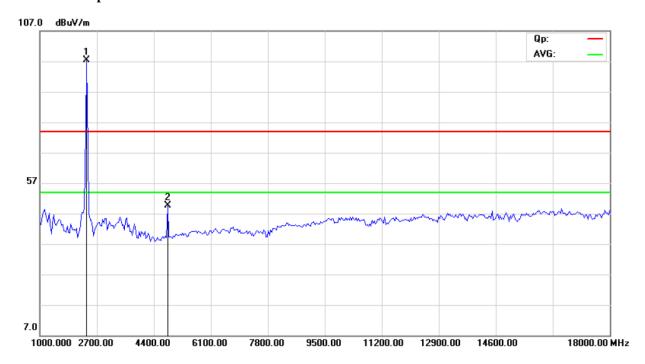


Please refer to the following test plots for details:

CH01 at 6.5Mbps: Horizontal



CH01 at 6.5Mbps: Vertical

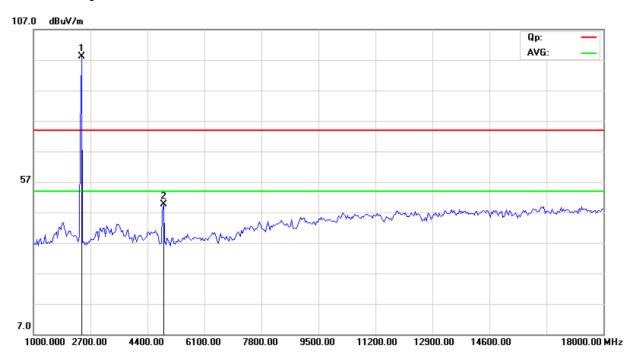


The report refers only to the sample tested and does not apply to the bulk.

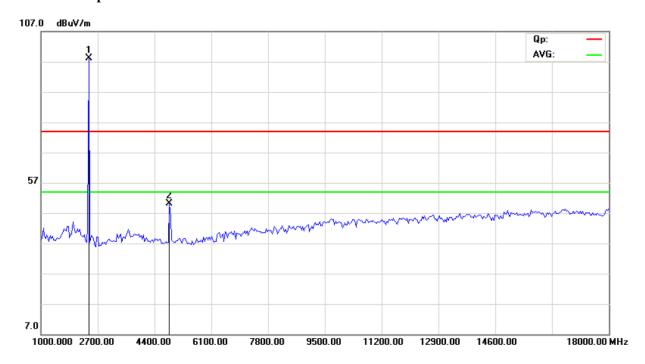
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CH06 at 6.5Mbps: Vertical



CH06 at 6.5Mbps: Horizontal

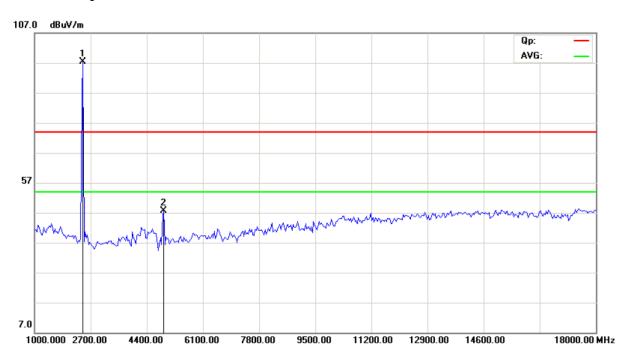


The report refers only to the sample tested and does not apply to the bulk.

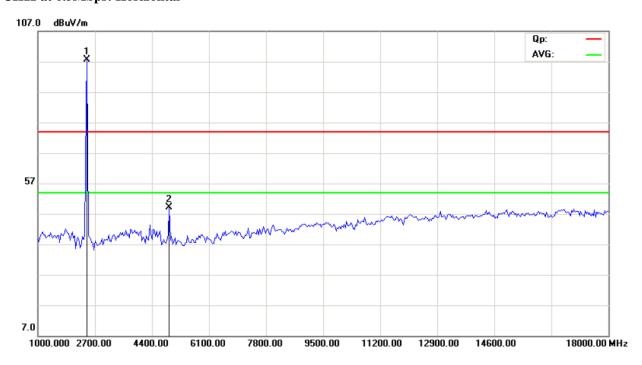
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CH11 at 6.5Mbps: Vertical



CH11 at 6.5Mbps: Horizontal



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

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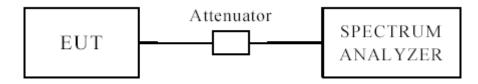
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7.0 6dB Bandwidth Measurement

7.1 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) \geq 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

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6dB Occupied Bandwidth

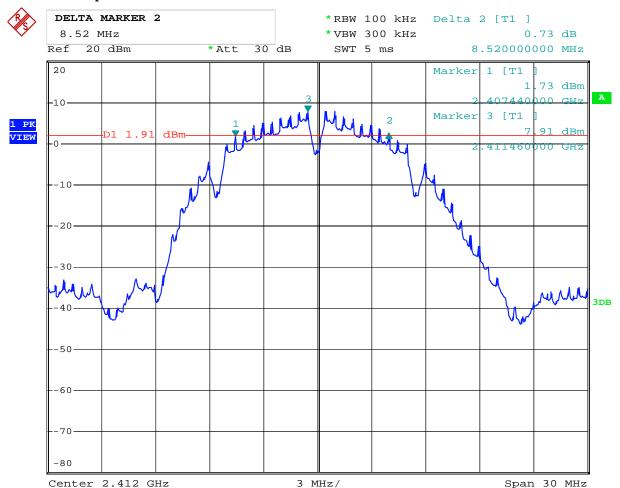
EUT		Media hub for Android		Model		NEO X5 mini			
Mode		802.11b		Input Voltage		AC 120V			
Temperat	ure	24	4 deg. C,		Humidity		56%]	56% RH	
Channel		el Frequency (MHz)	Data Transfer Rate (Mbps)		andwidth Hz)		num Limit MHz)	Pass/ Fail	
1		2412	1	8.52		0.5		Pass	
6		2437	1	8.	52		0.5	Pass	
11		2462	1	7.	98		0.5	Pass	
1		2412	11	7.80			0.5	Pass	
6		2437	11	8.	04		0.5	Pass	
11		2462	11	8.	04		0.5	Pass	

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1. 802.11b at 1Mbps of CH01



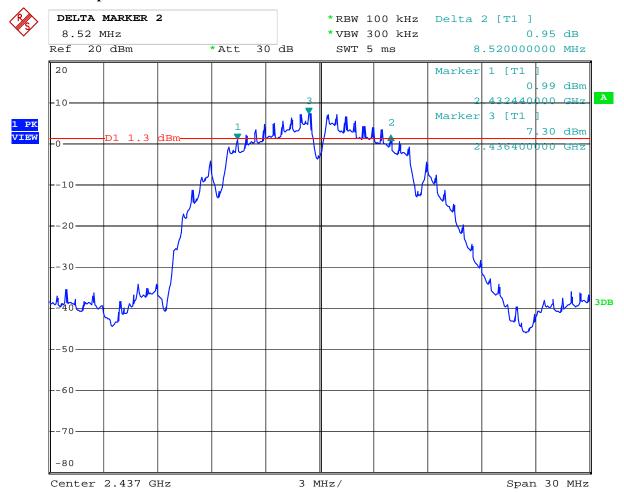
Date: 20.JUN.2013 10:26:22

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2. 802.11b at 1Mbps of CH06



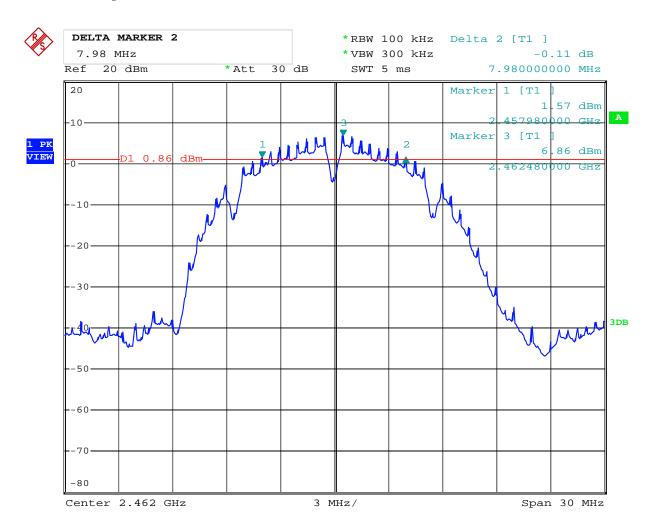
Date: 20.JUN.2013 10:28:36

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3. 802.11b at 1Mbps of CH11



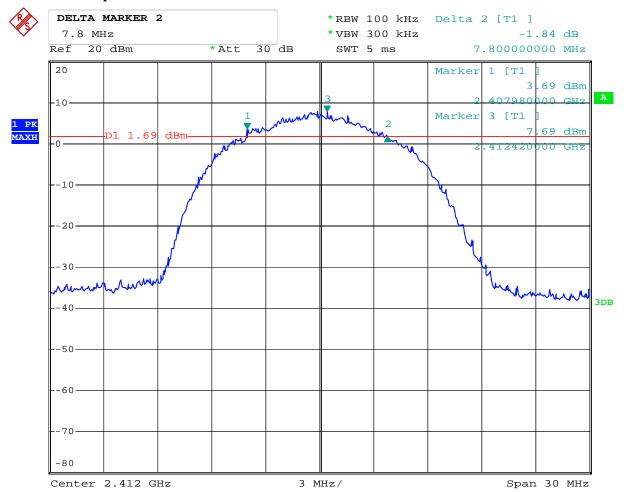
Date: 20.JUN.2013 10:30:20

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4. 802.11b at 11Mbps of CH01



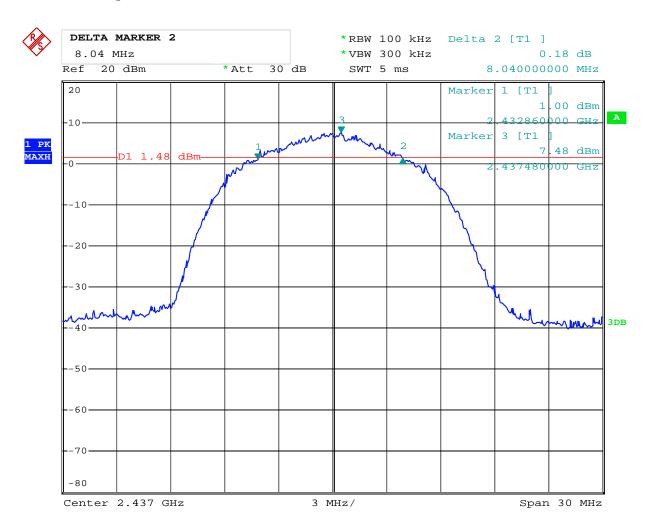
Date: 20.JUN.2013 10:40:25

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5. 802.11b at 11Mbps of CH06



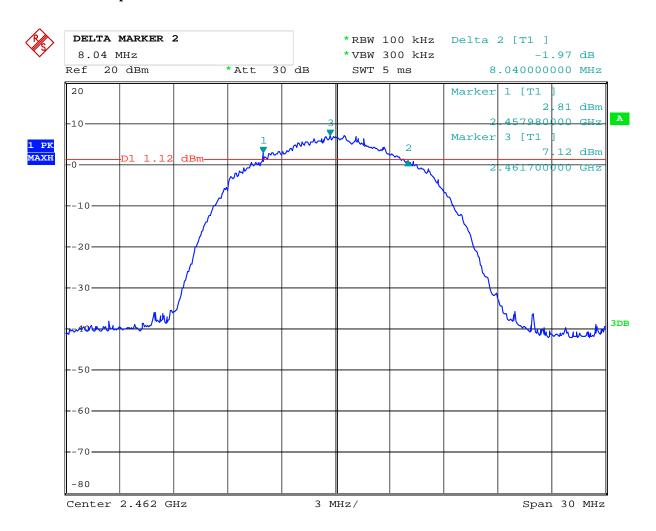
Date: 20.JUN.2013 10:38:06

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6. 802.11b at 11Mbps of CH11



Date: 20.JUN.2013 10:33:28

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6dB Occupied Bandwidth

EUT		Media h	ub for And	roid	Model		NEO X5	mini
Mode		8	302.11g		Input Voltage		AC 12	0V
Temperat	ure	24	4 deg. C,		Humidity		56% 1	RH
Channel		el Frequency (MHz)	Data Transfer Rate (Mbps)		ındwidth Hz)		num Limit MHz)	Pass/ Fail
1		2412	6	15	.12		0.5	Pass
6		2437	6	15	.12		0.5	Pass
11		2462	6	15	.12		0.5	Pass

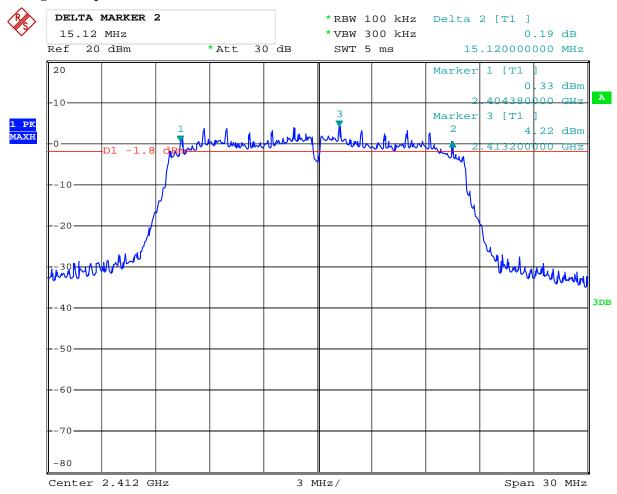
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Test Plots:

1. 802.11g at 6Mbps of CH01



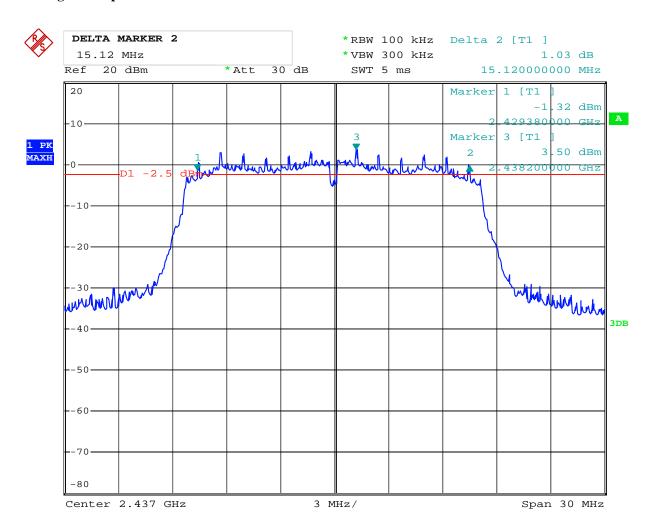
Date: 20.JUN.2013 10:47:36

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2. 802.11g at 6Mbps of CH06



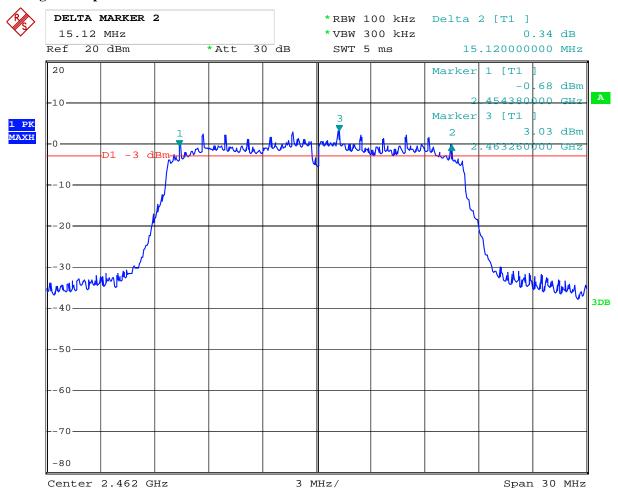
Date: 20.JUN.2013 10:48:49

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3. 802.11g at 6Mbps of CH11



Date: 20.JUN.2013 10:50:13

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6dB Occupied Bandwidth

EUT		Media h	ub for And	roid	Model		NEO X5 n	
Mode		802.	11n (HT20))	Input Voltage		AC 12	0V
Temperat	ure	24	4 deg. C,		Humidity		56%]	RH
Channel		el Frequency (MHz)	Data Transfer Rate (Mbps)		ındwidth Hz)		num Limit MHz)	Pass/ Fail
1		2412	6.5	15	.12		0.5	Pass
6		2437	6.5	15	.96		0.5	Pass
11		2462	6.5	15	.12		0.5	Pass

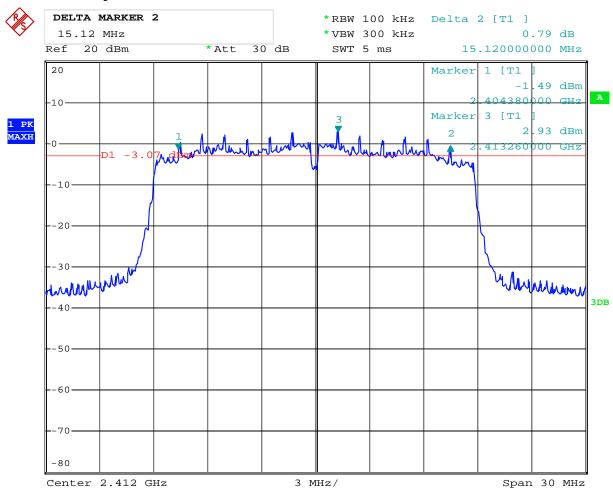
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Test Plots:

1. 802.11n at 6.5Mbps of CH01



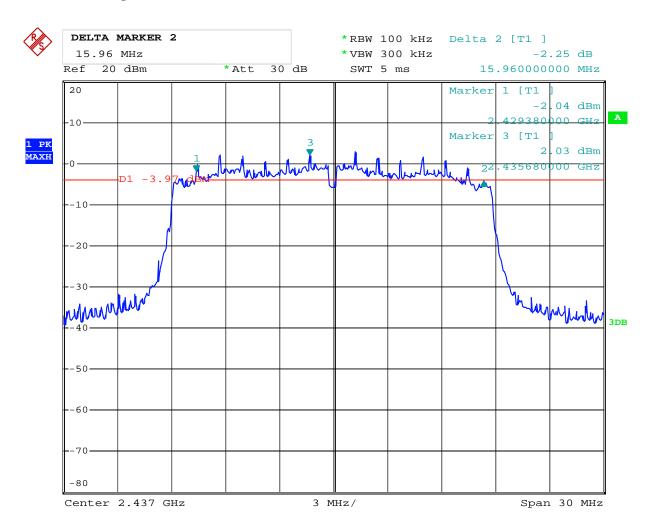
Date: 20.JUN.2013 10:51:31

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2. 802.11n at 6.5Mbps of CH06



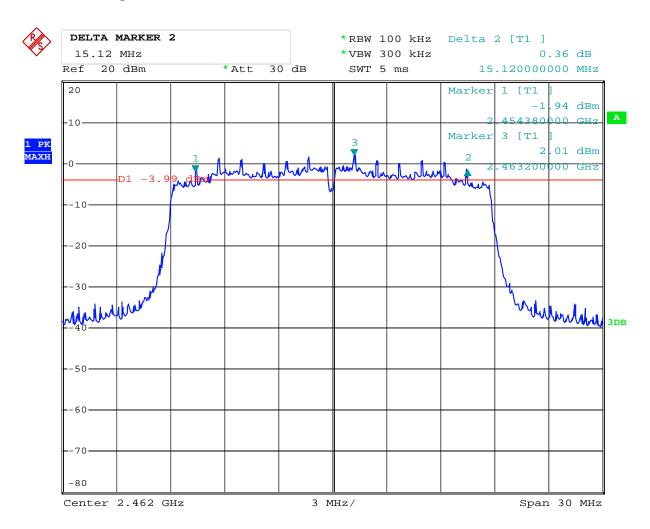
Date: 20.JUN.2013 10:52:54

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3. 802.11n at 6.5Mbps of CH11



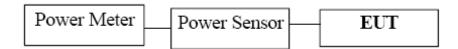
Date: 20.JUN.2013 10:55:16

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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		or Android	Model		NEO X5 mini	
Mode	Mode 802.11b Input		Input	Input Voltage		20V~	
Temperati	ure	24 deg	g. C,	Humidity		56% RH	
Channel	Cha	annel Frequency (MHz)	1		Peak Power Limit (dBm)		Pass/ Fail
1		2412 20.82			30		Pass
6		2437	20.78		30		Pass
11		2462	20.76	•	30)	Pass

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

The result basic equation calculation as follow:
 Peak Power Output = Peak Power Reading + Cable loss + Attenuator

3. The worse case was recorded

EUT	EUT Media hub for Android Mode		odel	NEC	X5 mini		
Mode	Mode 802.11g		Input Voltage		1	20V~	
Temperat	ure	24 deg	g. C,	Hur	Humidity		5% RH
Channel	Ch	annel Frequency Peak Power Output (MHz) (dBm)		Peak Power Limit (dBm)		Pass/ Fail	
1		2412	22.43		30		Pass
6		2437	22.27		30)	Pass
11		2462	22.48		30)	Pass

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

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 fo		or Android Mo		odel	NEC	NEO X5 mini	
Mode	Mode 802.11n (1		(HT20) Input		Voltage	1	20V~	
Temperat	ure	24 deg. C, Hum		nidity	50	6% RH		
Channel	Cha	annel Frequency (MHz)	Peak Power Output (dBm)		Peak Power Limit (dBm)		Pass/ Fail	
1		2412	21.13		30		Pass	
6		2437	21.08		30		Pass	
11		2462	20.95		30		Pass	

Note: 1. At finial test to get the worst-case emission at 6.5Mbps 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

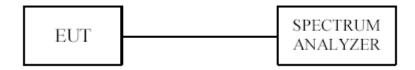
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9. Power Spectral Density Measurement

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 ≤ 8 dBm.

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9.4Test Result

EUT		Media hub fo	or Android	M	odel	NEC	X5 mini
Mode	Mode 802.1		1b	Input Voltage		120V~	
Temperati	ure	24 deg	g. C,	Humidity		56% RH	
Channel	Cha	annel Frequency (MHz)	Density	Density (dBm)		m Limit m)	Pass/ Fail
			11Mbps				
1		2412	-1.98		8		Pass
6		2437	-1.97	•	8		Pass
11		2462	-2.35		8		Pass

Note: 11Mbps was the worse case

EUT		Media hub fo	or Android	r Android Mo		NEC	O X5 mini	
Mode		802.1	1b	Input	Voltage	1	20V~	
Temperati	ure	e 24 deg. C, Humidit		nidity 56%		5% RH		
Channel	Cha	annel Frequency (MHz)	Density	Final Power Spectral Density (dBm)		m Limit m)	Pass/ Fail	
			1Mbps					
1		2412	0.25		8		Pass	
6		2437	-1.25		8		Pass	
11		2462	-1.08		8		Pass	

Note: 1Mbps was the worse case

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EUT		Media hub fo	or Android	or Android Mo		NEC	O X5 mini	
Mode		802.1	1g	Input	Voltage		120V~	
Temperati	ure	24 deg	g. C,	Humidity		56	5% RH	
Channel	Cha	annel Frequency (MHz)	Density			Pass/ Fail		
			6Mbps					
1		2412	-4.71		8		Pass	
6		2437	-4.83		8		Pass	
11	·	2462	-5.27		8		Pass	

Note: 6Mbps was the worse case

EUT		Media hub fo	or Android Mo		odel NEC		X5 mini	
Mode		802.11n ((HT20) Input		Voltage	A	C 120V	
Temperati	ure	24 deg	g. C,	Humidity		50	6% RH	
Channel	Cha	Density			Maximum Limit (dBm)			
			6.5Mbps					
1		2412	-5.75		8		Pass	
6		2437	-6.48		8		Pass	
11		2462	-6.62		8		Pass	

Note: 6.5Mbps was the worse case

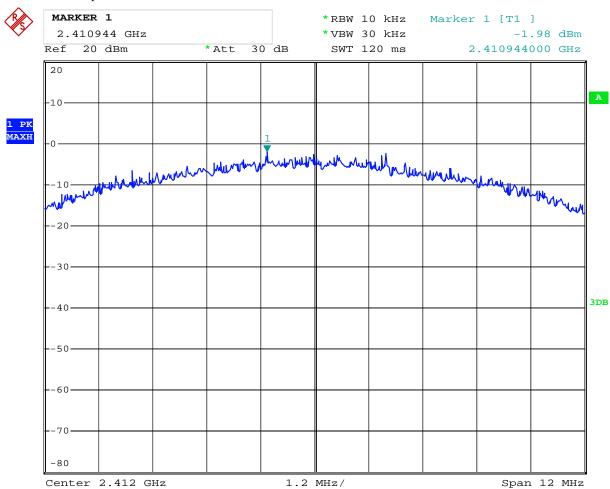
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9.5 Photo of Power Spectral Density Measurement

1.802.11b at 11Mbps of CH01



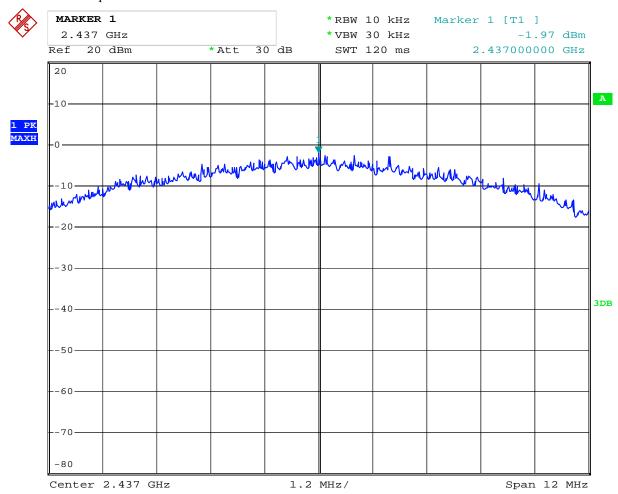
Date: 20.JUN.2013 11:09:52

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2. 802.11b at 11Mbps at CH06



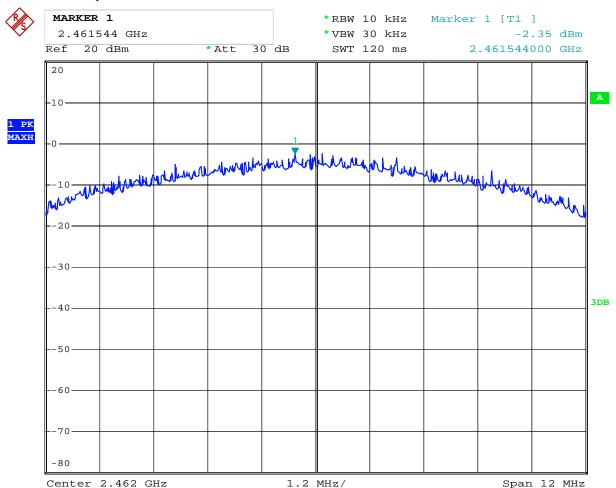
Date: 20.JUN.2013 11:09:25

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3. 802.11b at 11Mbps of CH11



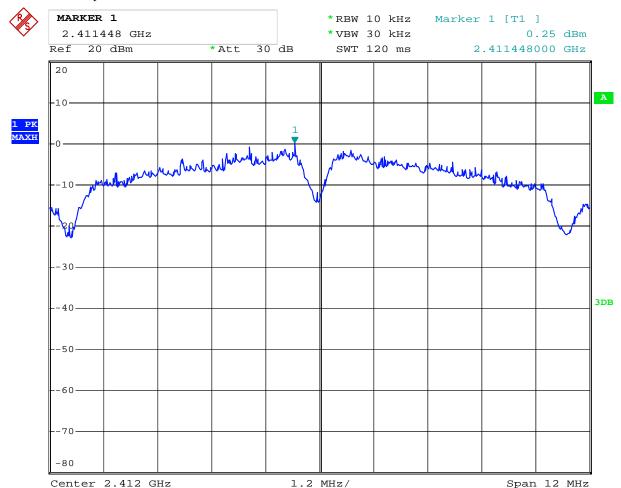
Date: 20.JUN.2013 11:08:59

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4. 802.11b at 1Mbps of CH01



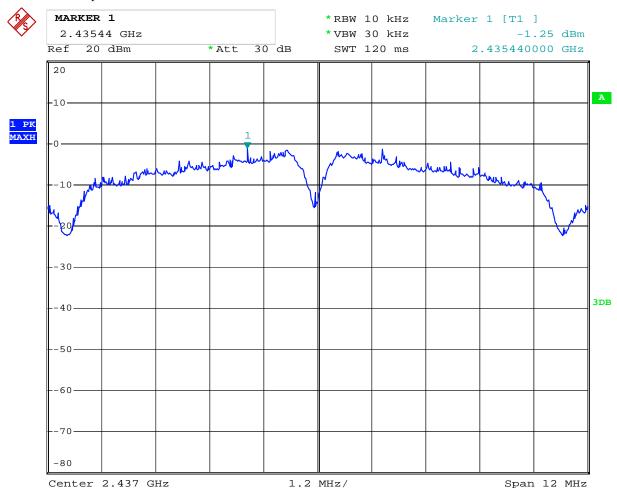
Date: 20.JUN.2013 11:06:07

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5. 802.11b at 1Mbps at CH06



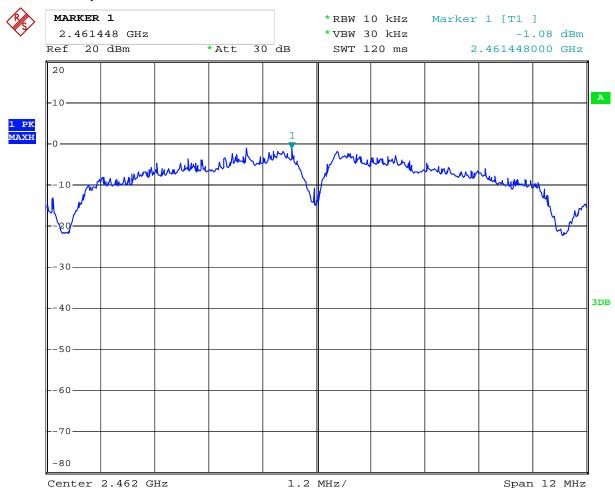
Date: 20.JUN.2013 11:07:27

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6. 802.11b at 1Mbps of CH11



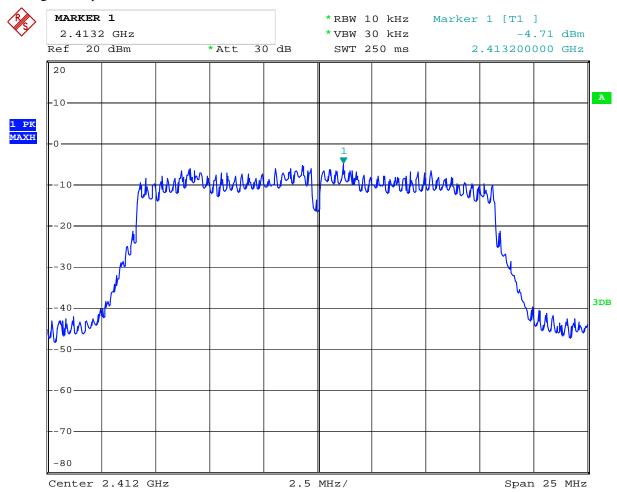
Date: 20.JUN.2013 11:08:34

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7. 802.11g at 6Mbps of CH1



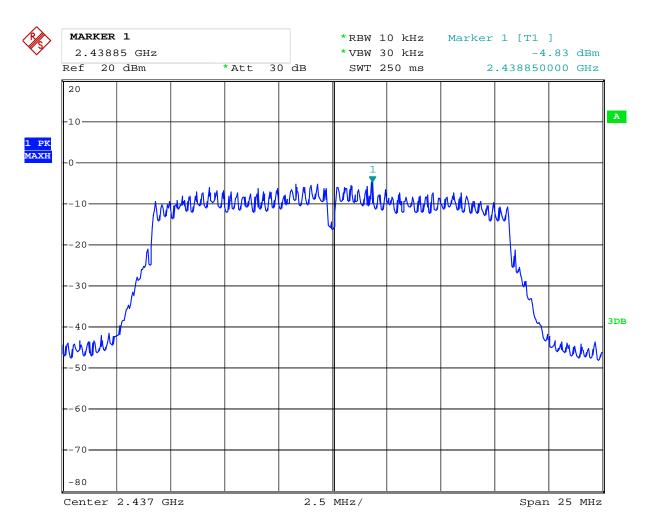
Date: 20.JUN.2013 11:22:44

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8. 802.11g at 6Mbps of CH6



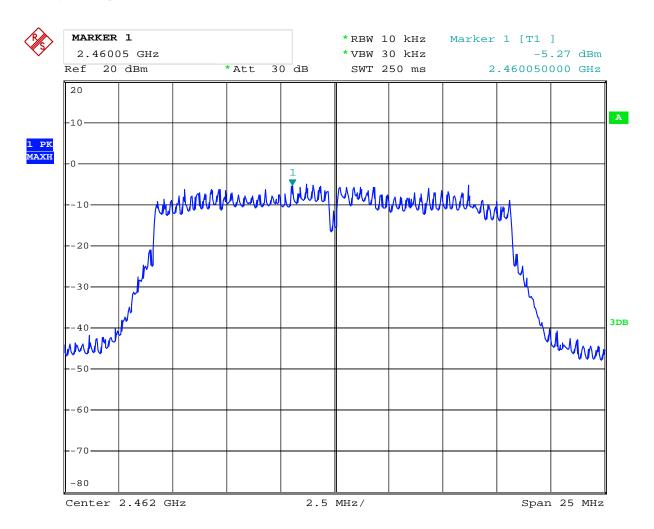
Date: 20.JUN.2013 11:24:29

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9. 802.11g at 6Mbps of CH11



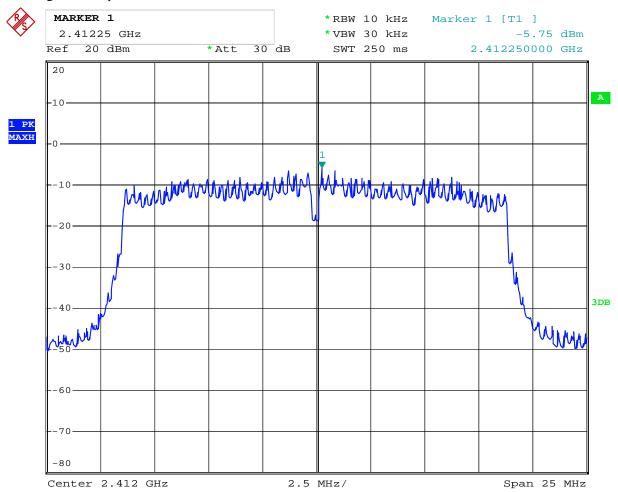
Date: 20.JUN.2013 11:25:16

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10. 802.11g at 6.5Mbps of CH1



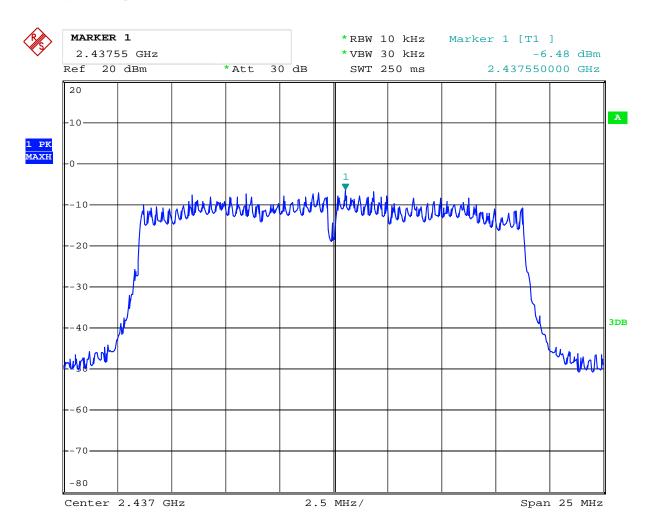
Date: 20.JUN.2013 11:25:44

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11. 802.11g at 6.5Mbps of CH6



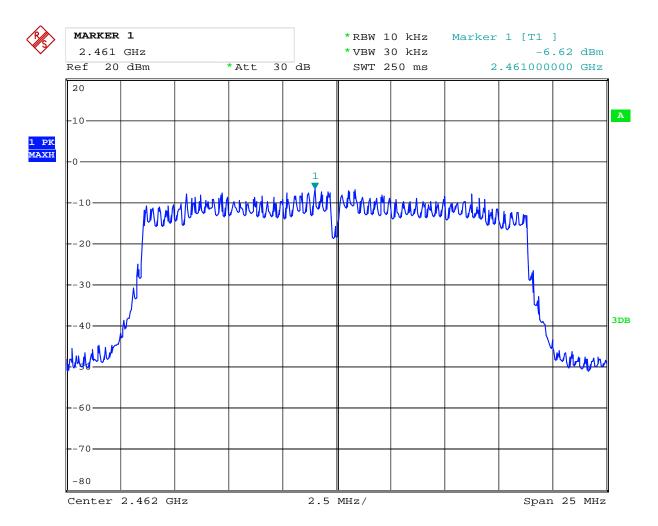
Date: 20.JUN.2013 11:26:13

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12. 802.11g at 6.5Mbps of CH11



Date: 20.JUN.2013 11:26:38

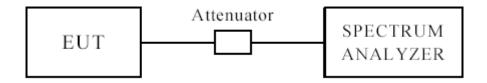
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10 Out of Band Measurement

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=100, VBW=300 kHz. A conducted measurement used

10.4 Test Result

Please see next pages

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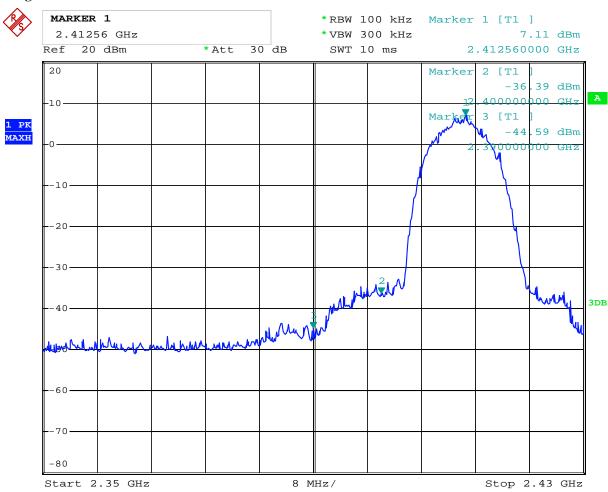
For 802.11b mode

CH01 at 11Mbps

10.4 Band-edge and Restricted band Measurement

EUT	Media h	ub for Android	Model	NEO X5 mini			
Mode	Keeping Transmitting		Input Voltage	AC 120V			
Temperature	24 deg. C,		Humidity	56% RH			
Test Result:	Pass		Detector	PK			
2400	PK (dBµV/m)	60.8	T ::4	$74(dB\mu V/m)$			
	AV (dBμV/m)	42.3	Limit	54(dBμV/m)			
2390	PK (dBμV/m)	46.1	Limit	74(dBμV/m)			
	AV (dBμV/m)		Limit	54(dBμV/m)			

Test Figure:



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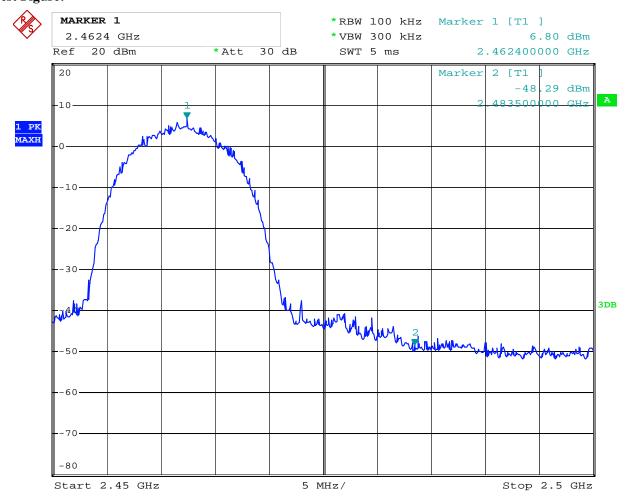


CH11 at 11Mbps

10.4 Band-edge and Restricted band Measurement

EUT	Media h	ub for Android	Model	NEO X5 mini	
Mode	Keepin	g Transmitting	Input Voltage	AC 120V	
Temperature	24	4 deg. C,	Humidity	56% RH	
Test Result:		Pass	Detector	PK	
2483.5	PK (dBµV/m)	43.9	T ::4	$74(dB\mu V/m)$	
	AV (dBμV/m)		Limit	54(dBμV/m)	

Test Figure:



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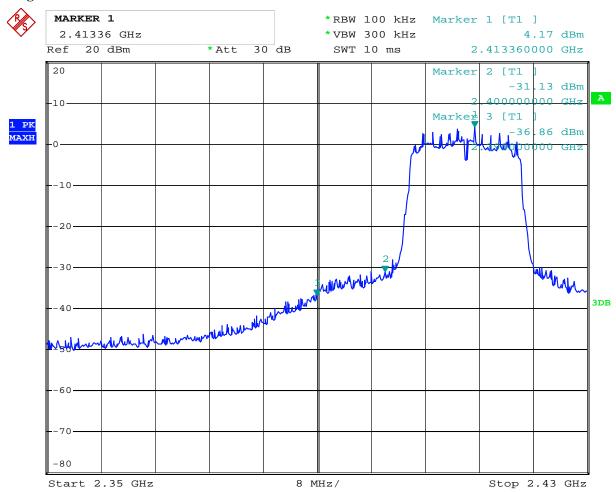
For 802.11g mode

CH01 at 6Mbps

10.4 Band-edge and Restricted band Measurement

2001 Band Cage and Resolution Canal Production								
EUT	Media h	ub for Android	Model	NEO X5 mini				
Mode	Keeping Transmitting		Input Voltage	AC 120V				
Temperature	24 deg. C,		Humidity	56% RH				
Test Result:	Pass		Detector	PK				
2400	PK (dBµV/m)	62.5	T imit	$74(dB\mu V/m)$				
	AV (dBμV/m)	45.1	Limit	54(dBµV/m)				
2390	PK (dBμV/m)	48.7	Limit	74(dBμV/m)				
	AV (dBμV/m)		Limit	54(dBμV/m)				

Test Figure:



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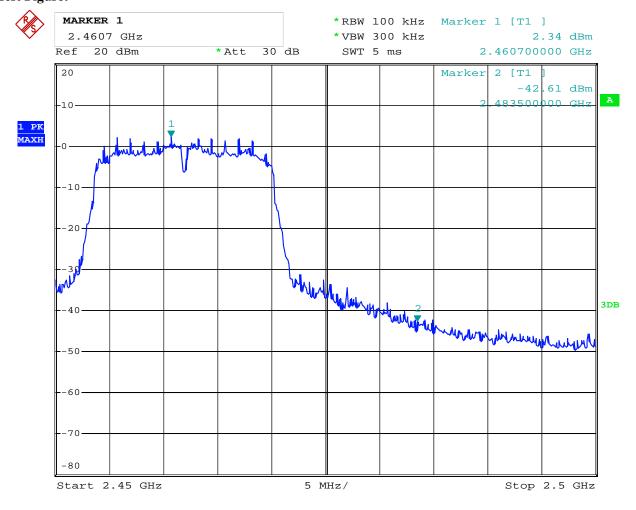


CH11 at 6Mbps

10.4 Band-edge and Restricted band Measurement

EUT	Media hub for Android		Model	NEO X5 mini
Mode	Keeping	g Transmitting	Input Voltage	AC 120V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
2483.5	PK (dBµV/m)	52.3	Limit	$74(dB\mu V/m)$
	$AV (dB\mu V/m)$	34.9		$54(dB\mu V/m)$

Test Figure:



Date: 20.JUN.2013 11:03:43

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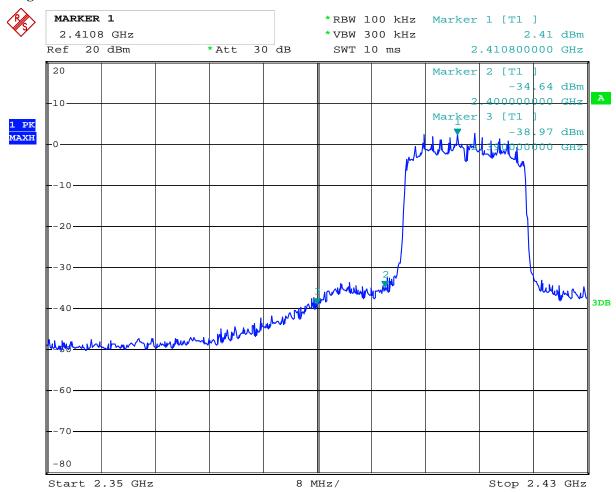
For 802.11n (HT20) mode

CH01 at 6.5Mbps

10.4 Band-edge and Restricted band Measurement

10.1 Build edge und Resurreded stand Produstrement							
EUT	Media hub for Android		Model	NEO X5 mini			
Mode	Keeping Transmitting		Input Voltage	AC 120V			
Temperature	24 deg. C,		Humidity	56% RH			
Test Result:	Pass		Detector	PK			
2400	PK (dBμV/m)	63.2	Limit	74(dBμV/m)			
	AV (dBμV/m)	46.6		$54(dB\mu V/m)$			
2390	PK (dBµV/m)	49.3	Limit	$74(dB\mu V/m)$			
	AV (dBμV/m)			$54(dB\mu V/m)$			

Test Figure:



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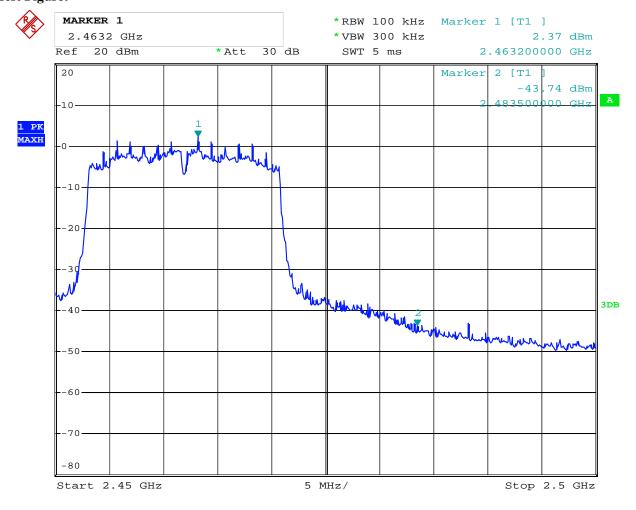


CH11 at 6.5Mbps

10.4 Band-edge and Restricted band Measurement

EUT	Media hub for Android		Model	NEO X5 mini
Mode	Keeping Transmitting		Input Voltage	AC 120V
Temperature	24 deg. C,		Humidity	56% RH
Test Result:	Pass		Detector	PK
2483.5	PK (dBµV/m)	48.7	T ::4	$74(dB\mu V/m)$
	AV ($dB\mu V/m$)		Limit	$54(dB\mu V/m)$

Test Figure:



Date: 20.JUN.2013 11:03:06

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 2.0dBi.

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12.0 Maximum Permissible Exposure

Applicable Standard

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2m normally can be maintained between the user and the device.

(a) Limits for Occupational / Controlled Exposure

(w) Zimilo for everpusionary constants Exposure					
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times $ E ^{2}, H ^{2}$ or S (minutes)	
0.3-3.0	614	1.63	(100)*	6	
3.0-30	1842/f	4.89/f	(900/f)*	6	
30-300	61.4	0.163	1.0	6	
300-1500			F/300	6	
1500-100000			5	6	

(b) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E 2 , H 2 or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100000			1.0	30

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

MPE Calculation Method

 $E(V/m) = (30*P*G)^{0.5}/d$ Power Density: Pd $(W/m^2) = E^2/377$

 $\mathbf{E} = \text{Electric Field (V/m)}$

P = Peak RF output Power (W)

G = EUT Antenna numeric gain (numeric)

 \mathbf{d} = Separation distance between radiator and human body (m)

The formula can be changed to

 $Pd = (30*P*G) / (377*d^2)$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained.

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

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Calculated Result and Limit

Antenna Gain (Numeric)	Peak Output Power (dBm)	Peak Output Power (mW)	Power Density (S) (mW/cm²)	Limit of Power Density (S) (mW/cm²)	Test Result
1.585	22.48	177.011	0.0558	1	Compiles

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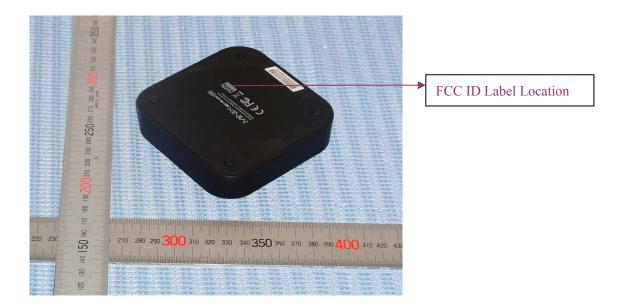
13.0 FCC ID Label

FCC ID: WMFNEOX5MINI

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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14.0 **Photo of testing**

Conducted Emission Test Setup:



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Radiated Emission Test Setup:





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Photographs - EUT

External Photos





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External Photos





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External Photos



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Power Supply





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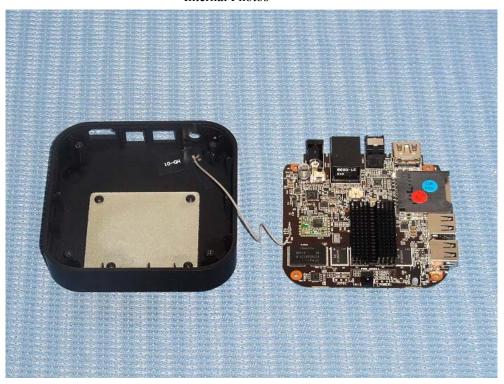
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Internal Photos





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Internal Photos





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