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# TEST REPORT

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Report No.: SRTC2012-H024-E0036

Product Name: GSM/GPRS/EDGE/UMTS

Digital Mobile Phone with Bluetooth and WiFi

Product Model: ONE TOUCH 902S

Applicant: TCT Mobile Limited

Manufacturer: TCT Mobile Limited

Specification: FCC Part 15, Subpart C (July 10, 2008 edition)

IC RSS-210 (Issue 8, December 2010)

IC RSS-Gen (Issue 3 December 2010)

FCC ID: RAD244

IC: 9238A-0010

The State Radio\_monitoring\_center Testing Center (SRTC)

No.80 Beilishi Road Xicheng District Beijing, China

Tel: 86-10-68009202 Fax: 86-10-68009205

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## 1. General information

### 1.1 Notes of the test report

The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written permission of The State Radio\_monitoring\_center Testing Center (SRTC).

The test results relate only to individual items of the samples which have been tested.

### 1.2 Information about the testing laboratory

Company: The State Radio\_monitoring\_center Testing Center (SRTC)  
Address: No.80 Beilishi Road, Xicheng District, Beijing China  
City: Beijing  
Country or Region: China  
Contacted person: Wang Junfeng  
Tel: +86 10 68009181 +86 10 68009202  
Fax: +86 10 68009195 +86 10 68009205  
Email: wangjf@srrc.org.cn / wangjunfeng@srtc.org.cn

### 1.3 Applicant's details

Company: TCT Mobile Limited  
Address: 5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area  
City: Shanghai  
Country or Region: P.R.China  
Grantee Code: RAD  
Contacted person: Gong Zhizhou  
Tel: +86-21-61460890  
Fax: +86-21-61460602  
Email: zhizhou.gong@jrdcom.com

### 1.4 Manufacturer's details

Company: TCT Mobile Limited  
Address: 5F, C building, No. 232, Liang Jing Road ZhangJiang High-Tech Park, Pudong Area  
City: Shanghai  
Country or Region: P.R.China  
Contacted person: Gong Zhizhou  
Tel: +86-21-61460890  
Fax: +86-21-61460602  
Email: zhizhou.gong@jrdcom.com

## 1.5 Application details

Date of reception of test sample: 12<sup>th</sup> March 2012

Date of test: 14<sup>th</sup> March 2012 to 28<sup>th</sup> April 2012

## 1.6 Reference specification

FCC Part 15, Subpart C (July 10, 2008 edition)

IC RSS-210 (Issue 8, December 2010)

IC RSS-Gen (Issue 3 December 2010)

## 1.7 Information of EUT

### 1.7.1 General information

Name of EUT	GSM/GPRS/EDGE/UMTS Digital Mobile Phone with Bluetooth and WiFi
FCC ID	RAD244
IC	9238A-0010
Frequency range	2.4GHz~2.4835GHz
Number of channel	11
Modulation type	DBPSK/DQPSK/CCK/BPSK/QPSK/16QAM/64QAM
Duplex mode	TDD
Channel spacing	5MHz
Data rate	1Mbps/2Mbps/5.5Mbps/11Mbps/6Mbps/9Mbps/12Mbps/ 18Mbps/24Mbps/36Mbps/48Mbps/54Mbps
Antenna type	Fixed Internal
Power Supply	Battery or charger
Rated Power Supply Voltage	3.7V
HW Version	PIO01
SW Version	SW134

### 1.7.2 EUT details

Product Name	Product Model	IMEI
GSM/GPRS/EDGE/UMTS Digital Mobile Phone with Bluetooth and WiFi	ONE TOUCH 902S	013023000020203

### 1.7.3 Auxiliary equipment details

Equipment	Charger
Manufacturer	HUIZHOU BYD ELECTRONIC CO., LTD.
Model Number	CBA3002AG0C1
Input Voltage	100V-240V a.c.
Output Voltage	5.0V d.c.
Frequency	50/60Hz

Equipment	Charger
Manufacturer	HUIZHOU BYD ELECTRONIC CO., LTD.
Model Number	CBA3001AG0C1
Input Voltage	100V-240V a.c.
Output Voltage	5.0V d.c.
Frequency	50/60Hz

Equipment	Charger
Manufacturer	HUIZHOU BYD ELECTRONIC CO., LTD.
Model Number	CBA3001AG0C2
Input Voltage	100V-240V a.c.
Output Voltage	5.0V d.c.
Frequency	50/60Hz

Equipment	Charger
Manufacturer	Ten Pao International Ltd.
Model Number	CBA3000AG0C1
Input Voltage	100V-240V a.c.
Output Voltage	5.0V d.c.
Frequency	50/60Hz

Equipment	Battery
Manufacturer	SHENZHEN BAK BATTERY CO., LTD
Model Number	CAB31L0000C2
Capacity	1000mAh
Rated Voltage	3.7V d.c.

Equipment	Data Cable
Manufacturer	Shen Zhen Ju Wei Electronic Co., LTD
Model Number	CDA3122002C1

Equipment	Data Cable
Manufacturer	Huizhou Shenghua Industry Co., Ltd
Model Number	CDA3122002C2

Equipment	Data Cable
Manufacturer	Shen Zhen Ju Wei Electronic Co., LTD
Model Number	CDA3122005C1

Equipment	Data Cable
Manufacturer	Huizhou Shenghua Industry Co., Ltd
Model Number	CDA3122005C2

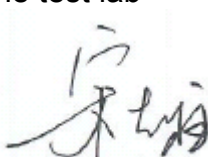
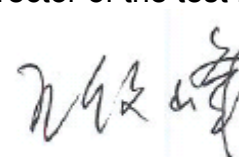

Note: As the information described above, there are four different models of charger manufactured by two different companies, and four different models of data cable manufactured by two different companies.

The relevant tests have been performed in order to verify in which combination case (EUT exercised by only one model of charger and one model of data cable) the EUT would have the worst features. So all the tests shown in this test report are performed when the EUT exercised by the charger CBA3000AG0C1 and the data cable CDA3122005C2.

## 2. Test information

### 2.1 Summary of the test results

No.	Test case	FCC and IC reference	Verdict
1	Peak Power Output	FCC Part15.247(b)(3) IC RSS-210 § A8.4(4)	Pass
2	Occupied Bandwidth	FCC Part15.247(a)(2) IC RSS-210 § A8.2(a)	Pass
3	Transmitter Power Spectral Density	FCC Part15.247(e) IC RSS-210 § A8.2(b)/ § A8.3(2)	Pass
4	Spurious RF Conducted Emissions	FCC Part15.247(d) IC RSS-210 § A8.5	Pass
5	Spurious Radiated Emissions	FCC Part15.247(d)/15.209(a) IC RSS-210 § A8.5	Pass
6	Band Edge Compliance	FCC Part15.247(d) IC RSS-210 § A8.5	Pass
7	AC Power line Conducted Emission	FCC Part15.107/15.207 IC RSS-Gen § 7.2.2	Pass

This Test Report Is Issued by: Mr. Song Qizhu Director of the test lab 	Checked by: Mr. Wang Junfeng Deputy director of the test lab 
Tested by: Mr. Li Bin Test engineer 	Issued date:  <b>2012.06.29</b>

## 2.2 Test result

### 2.2.1 Peak power output

#### 2.2.1.1 Ambient condition

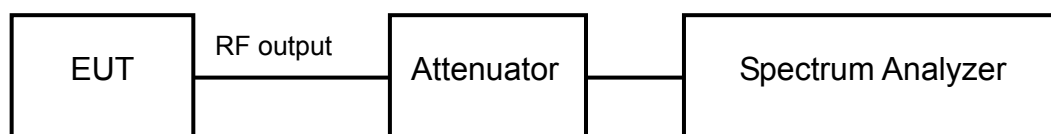
Temperature	Relative humidity	Pressure
22°C	40%	101.1kPa

#### 2.2.1.2 Test Description

The measurement is made according to ANSI C63.10-2009.

WIFI is operating in 100% Duty Factor mode.

The resolution bandwidth for measuring the output power was 20 MHz.



#### 2.2.1.3 Test limit

FCC Part 15, Subpart C, §15.247 (b) (3)

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt.

IC RSS-210 § A8.4(4)

For systems employing digital modulation techniques operating in the bands 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz, the maximum peak conducted output power shall not exceed 1 W. Except as provided in Section A8.4 (5), the e.i.r.p. shall not exceed 4 W.

Used conversion factor: Limit (dBm) = 10 log (Limit (W)/1mW)

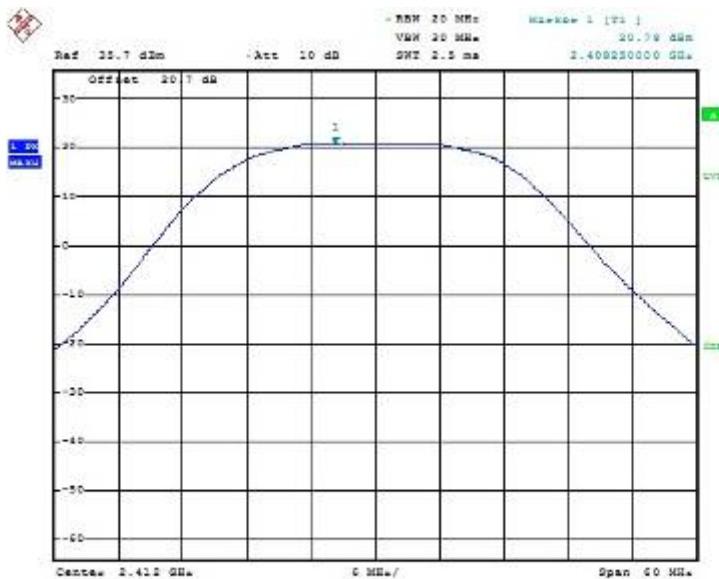
==> Maximum Output Power: 30 dBm



### 2.2.1.4 Test result:

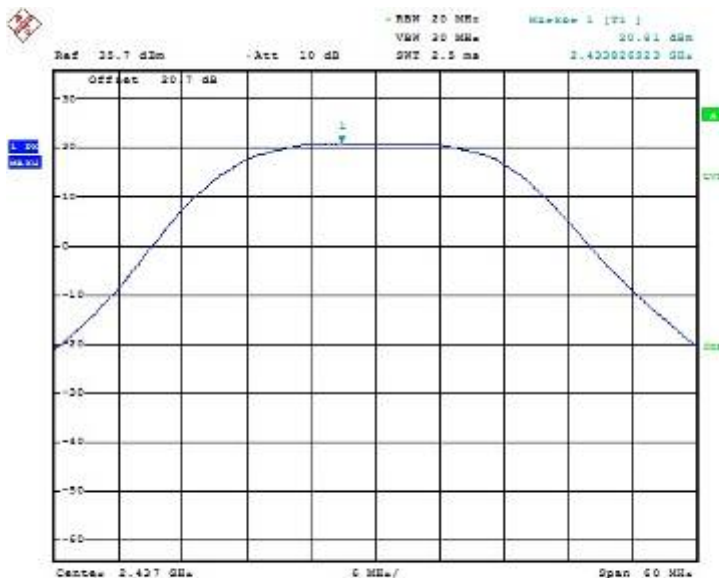
Test Mode	Data Rate (Mbps)	Detector Type	Test Result(dBm)		
			2412MHz (Ch1)	2437MHz (Ch6)	2462 MHz (Ch11)
802.11b	1	Avg	19.25	19.60	19.68
		Peak	20.66	20.70	20.87
	2	Avg	19.30	19.63	19.70
		Peak	20.86	20.78	20.92
	5.5	Avg	19.50	19.83	19.88
		Peak	20.71	20.66	20.80
	11	Avg	19.41	19.70	19.92
		Peak	20.78	20.81	20.97*
802.11g	6	Avg	16.37	16.72	16.84
		Peak	23.18	23.41	23.85*
	9	Avg	16.39	16.72	16.83
		Peak	23.16	23.39	23.84
	12	Avg	16.38	16.69	16.82
		Peak	23.06	23.47	23.78
	18	Avg	16.37	16.71	16.79
		Peak	23.11	23.48	23.71
	24	Avg	16.39	16.70	16.80
		Peak	23.14	23.36	23.78
	36	Avg	16.34	16.67	16.79
		Peak	23.03	23.58	23.52
	48	Avg	16.35	16.67	16.80
		Peak	23.09	23.57	23.82
	54	Avg	16.37	16.72	16.80
		Peak	23.07	23.62	23.76

\*The data rate 11 and 6 are selected as worse condition, and the following cases are performed with this condition.



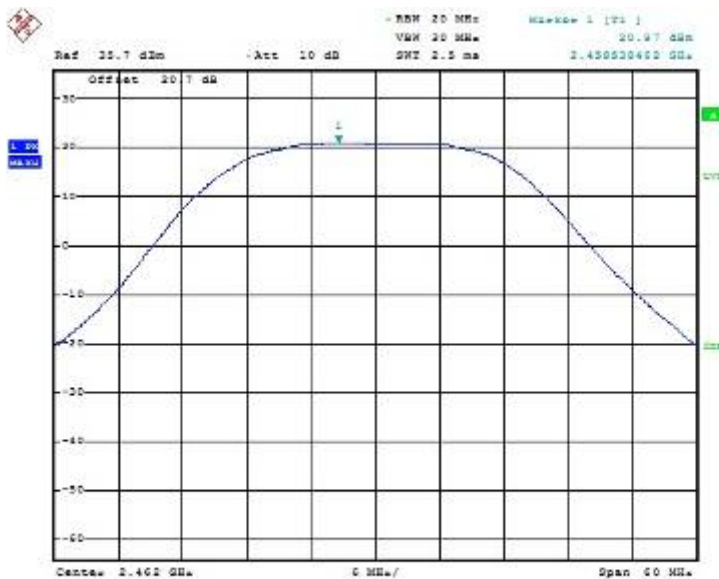
Date: 14.MAR.2012 09:38:37

Carrier frequency (MHz): 2412  
 Channel No.:1  
 Test Mode: 802.11b



Date: 14.MAR.2012 09:44:32

Carrier frequency (MHz): 2437  
 Channel No.:6  
 Test Mode: 802.11b



Date: 14.MAR.2012 10:55:16

Carrier frequency (MHz): 2462  
 Channel No.:11  
 Test Mode: 802.11b



Date: 14.MAR.2012 09:50:01

Carrier frequency (MHz): 2412  
 Channel No.:1  
 Test Mode: 802.11g



Date: 14.MAR.2012 09:59:16

Carrier frequency (MHz): 2437  
 Channel No.:6  
 Test Mode: 802.11g



Date: 14.MAR.2012 10:14:32

Carrier frequency (MHz): 2462  
 Channel No.:11  
 Test Mode: 802.11g

## 2.2.2 Occupied Bandwidth

### 2.2.2.1 Ambient condition

Temperature	Relative humidity	Pressure
22°C	40%	101.1kPa

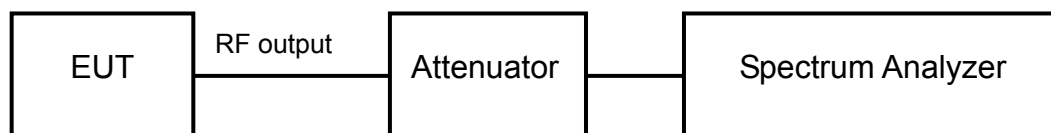
### 2.2.2.2 Test Description

The measurement is made according to ANSI C63.10-2009.

The Equipment Under Test (EUT) was setup in a shielded room to perform the occupied bandwidth measurements.

The reference level is the level of the highest amplitude signal observed from the transmitter at either the fundamental frequency or first-order modulation products in all typical modes of operation, including the unmodulated carrier, even if atypical.

The results recorded were measured with the modulation which produces the worst-case (widest) occupied bandwidth.



### 2.2.2.3 Test limit

FCC Part15.247(a)(2)

Systems using digital modulation techniques may operate in the 902 - 928 MHz, 2400 - 2483.5 MHz, and 5725 - 5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500kHz.

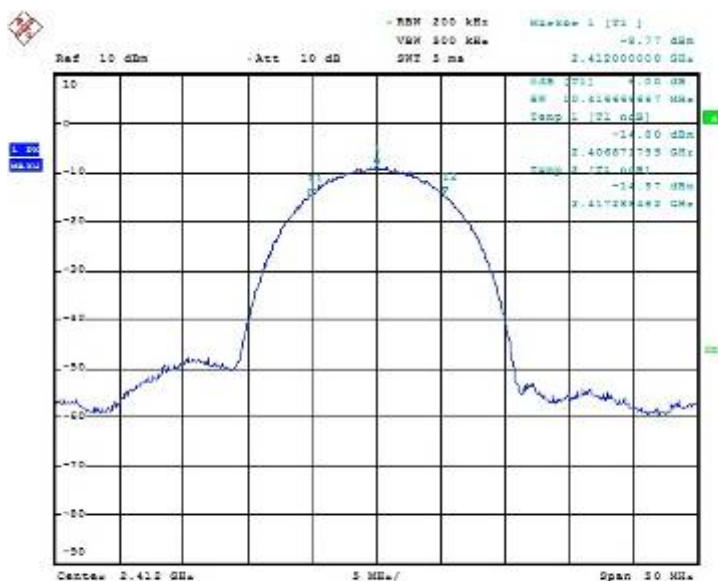
IC RSS-210 § A8.2(a)

The minimum -6 dB bandwidth shall be at least 500 kHz.

### 2.2.2.4 Test result

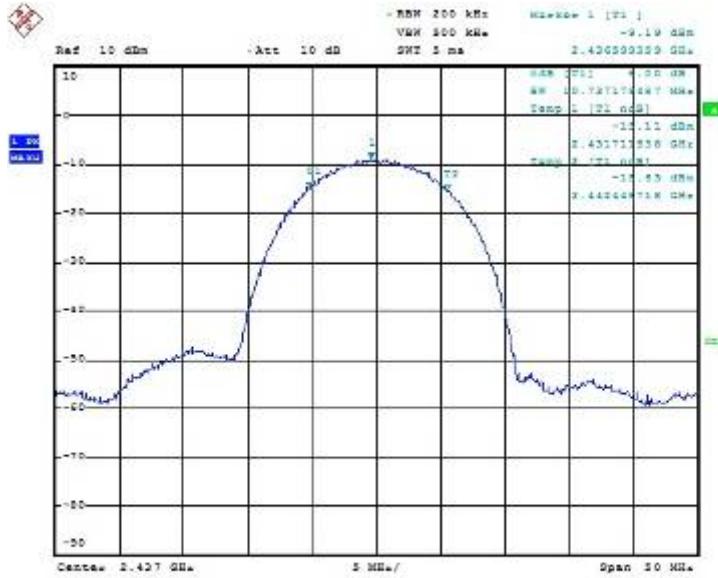
Test Mode: 802.11b

Carrier frequency (MHz)	Channel No.	6 dB bandwidth(MHz)
2412	1	10.42
2437	6	10.74
2462	11	10.66



Date: 14.MAR.2012 10:42:49

Carrier frequency (MHz): 2412  
Channel No.:1  
Test Mode: 802.11b



Date: 14.MAR.2012 10:47:39

Carrier frequency (MHz): 2437  
Channel No.:6  
Test Mode: 802.11b

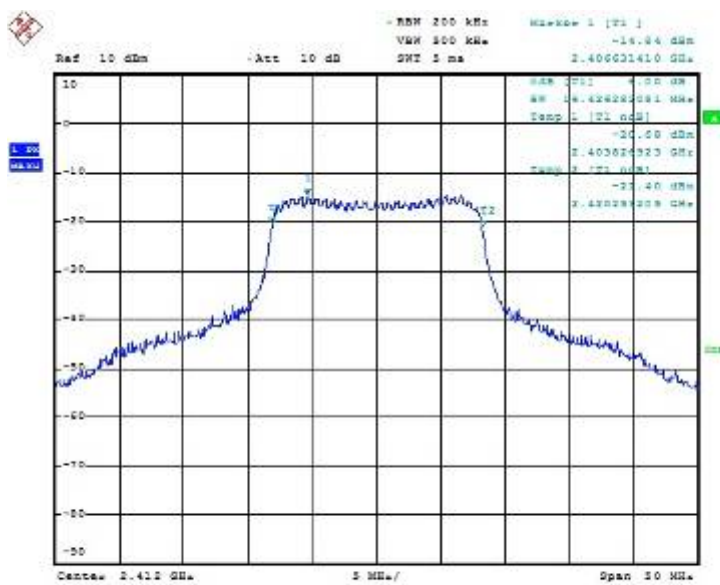


Date: 14.MAR.2012 11:04:44

Carrier frequency (MHz): 2462  
Channel No.:11  
Test Mode: 802.11b

Test Mode: 802.11g

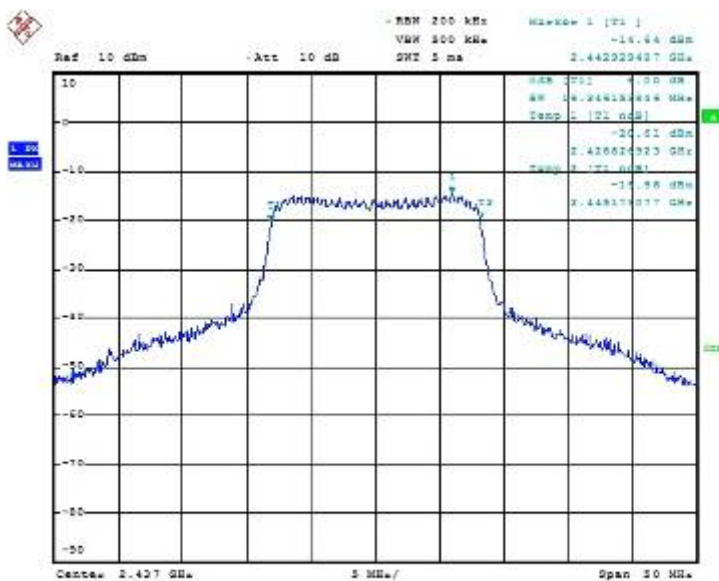
Carrier frequency (MHz)	Channel No.	6 dB bandwidth(MHz)
2412	1	16.43
2437	6	16.35
2462	11	16.43



Date: 14.MAR.2012 11:21:18

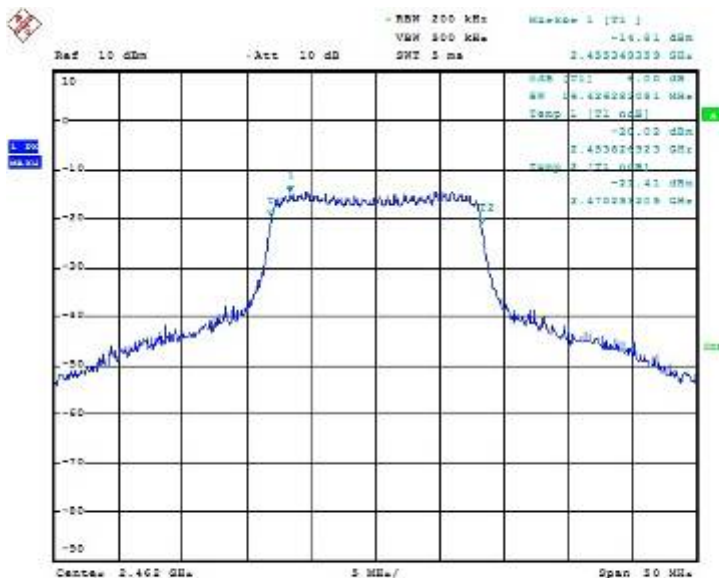
Carrier frequency (MHz): 2412  
Channel No.:1  
Test Mode: 802.11g





Date: 14.MAR.2012 11:16:22

Carrier frequency (MHz): 2437  
Channel No.:6  
Test Mode: 802.11g



Date: 14.MAR.2012 11:16:50

Carrier frequency (MHz): 2462  
Channel No.:11  
Test Mode: 802.11g

## 2.2.3 Transmitter Power Spectral Density

### 2.2.3.1 Ambient condition

Temperature	Relative humidity	Pressure
22°C	40%	101.1kPa

### 2.2.3.2 Test Description

The measurement is made according to ANSI C63.10-2009.

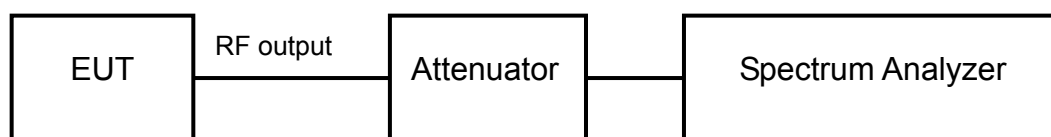
The Equipment Under Test (EUT) was set up in a shielded room to perform the Power Spectral Density measurements.

The resolution bandwidth for measuring the output power was 3kHz.

The trace set to max hold.

The span set to 1.5MHz.

The sweep time set to 500s.



### 2.2.3.3 Test limit

FCC Par15.247(e)

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

IC RSS-210 § A8.2(b)

The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

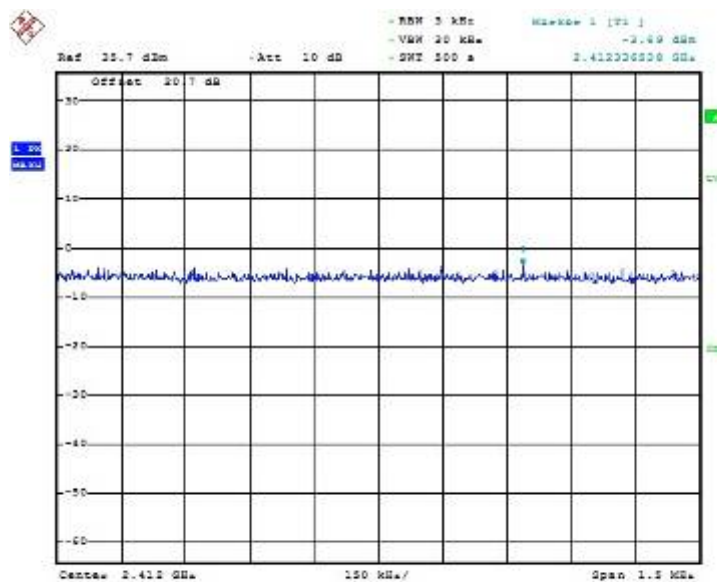
IC RSS-210 Issue 8 A8.3(2)

With the frequency hopping turned off, the digital modulation operation shall comply with the power spectral density requirements for digital modulation systems set out in of Section A8.2 (b) above.

**2.2.3.4 Test result:**

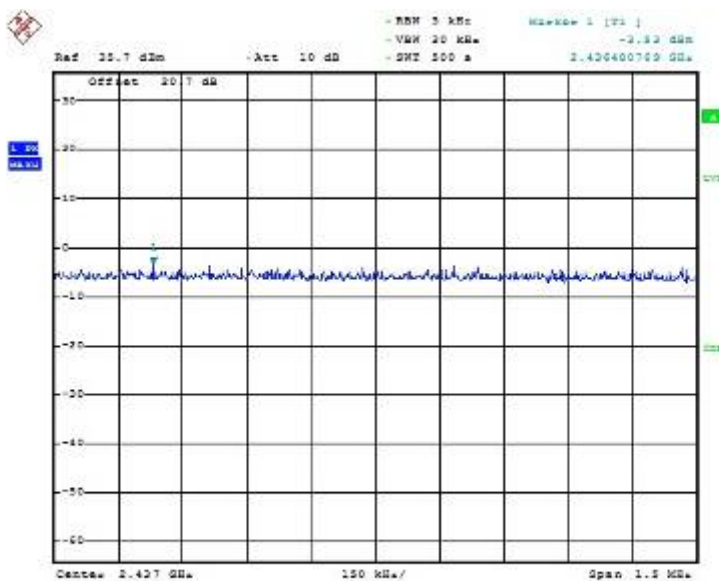
Test Mode: 802.11b

Carrier frequency (MHz)	Channel No	Power Density
2412	1	-3.69
2437	6	-3.53
2462	11	-3.33



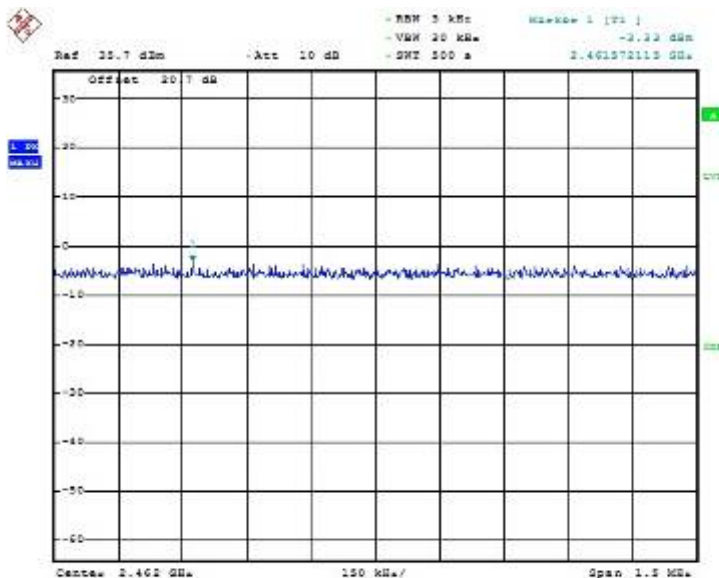
Date: 14.MAR.2012 11:52:09

Carrier frequency (MHz): 2412  
Channel No.1  
Test Mode: 802.11b



Date: 14.MAR.2012 11:48:49

Carrier frequency (MHz): 2437  
Channel No.6  
Test Mode: 802.11b



Date: 14.MAR.2012 18:41:57

Carrier frequency (MHz): 2462  
Channel No.11  
Test Mode: 802.11b

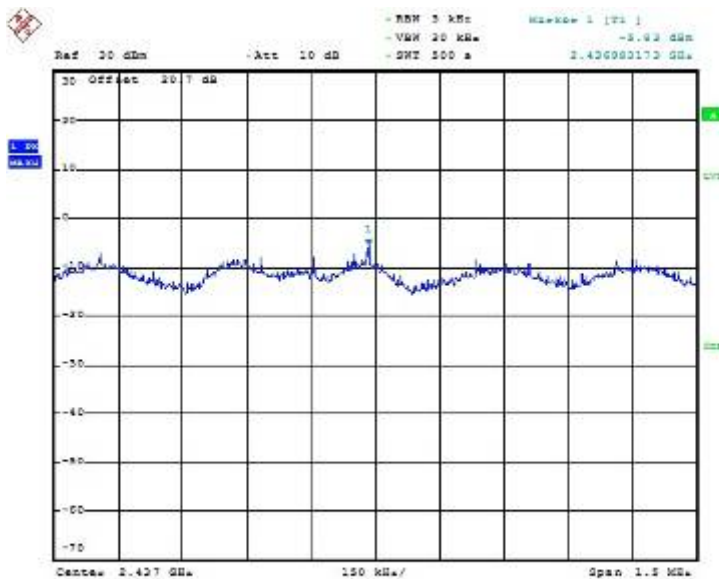
Test Mode: 802.11g

Carrier frequency (MHz)	Channel No	Power Density
2412	1	-5.70
2442	6	-5.83
2472	11	-5.63



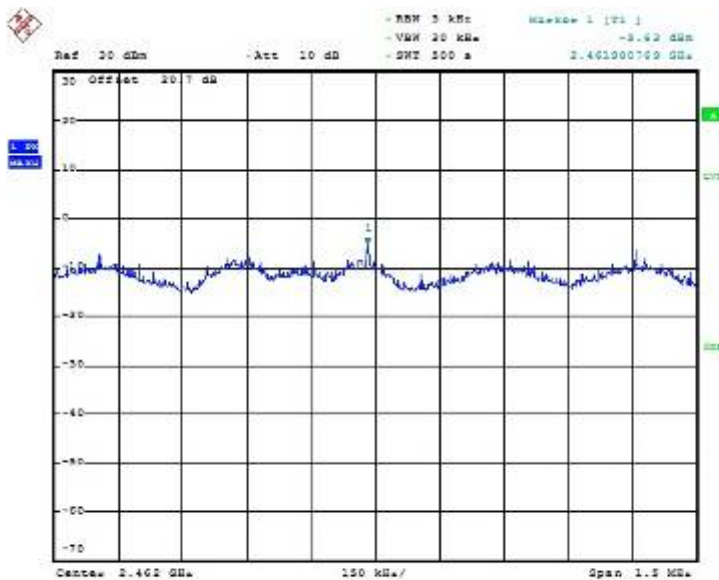
Date: 14.MAR.2012 16:16:04

Carrier frequency (MHz): 2412  
 Channel No.1  
 Test Mode: 802.11g



Date: 14.MAR.2012 14:38:41

Carrier frequency (MHz): 2437  
 Channel No.6  
 Test Mode: 802.11g



Date: 14.MAR.2012 14:42:32

Carrier frequency (MHz): 2462  
 Channel No.11  
 Test Mode: 802.11g

## 2.2.4 Spurious RF Conducted Emissions

### 2.2.4.1 Ambient condition

Temperature	Relative humidity	Pressure
22°C	40%	101.1kPa

### 2.2.4.2 Test Description

The measurement is made according to ANSI C63.10-2009.

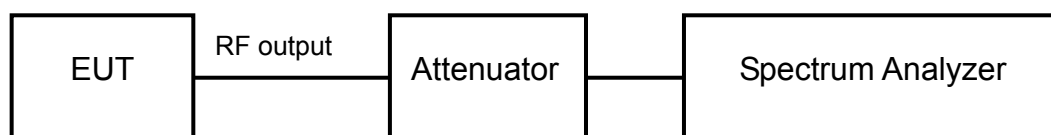
The Equipment Under Test (EUT) was set up in a shielded room to perform the spurious emissions measurements.

The EUT was connected to the spectrum analyzer and WiFi set via a power splitter with a known loss.

Analyzer settings:

- Detector: Peak-Maxhold
- Frequency range: 30 ~25000 MHz
- Resolution Bandwidth (RBW): 100 kHz
- Video Bandwidth (VBW): 300 kHz

The reference value for the measurement of the spurious RF conducted emissions is determined during the test “band edge compliance” (cf. chapter 4.5). This value is used to calculate the 20 dBc limit.



### 2.2.4.3 Test limit

FCC Part15.247(d)

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

### IC RSS-210 § A8.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section A8.4 (4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

#### 2.2.4.4 Test result

Carrier frequency (MHz): 2412

Channel No.:1

Test Mode: 802.11b

Frequency MHz	Corrected measurement value dBm	Reference value dBm	Limit dBm	Delta to limit dB
---	---	---	---	---
---	---	---	---	---

Carrier frequency (MHz): 2437

Channel No.:6

Test Mode: 802.11b

Frequency MHz	Corrected measurement value dBm	Reference value dBm	Limit dBm	Delta to limit dB
---	---	---	---	---
---	---	---	---	---

Carrier frequency (MHz): 2462

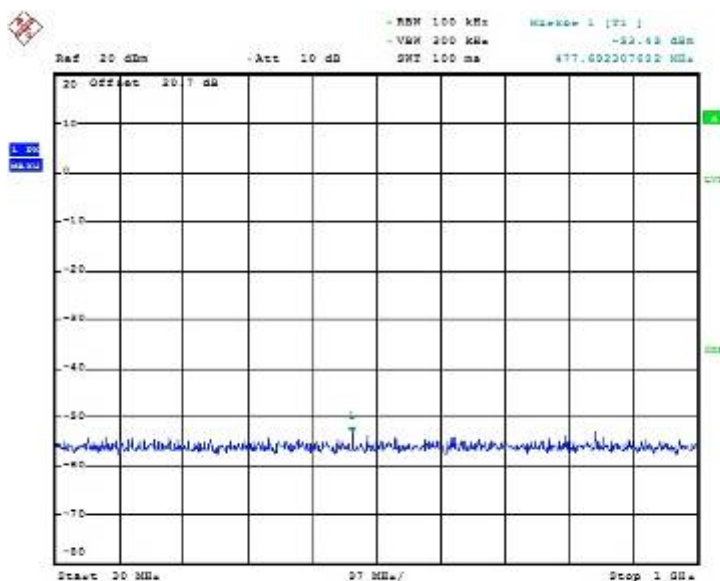
Channel No.:11

Test Mode: 802.11b

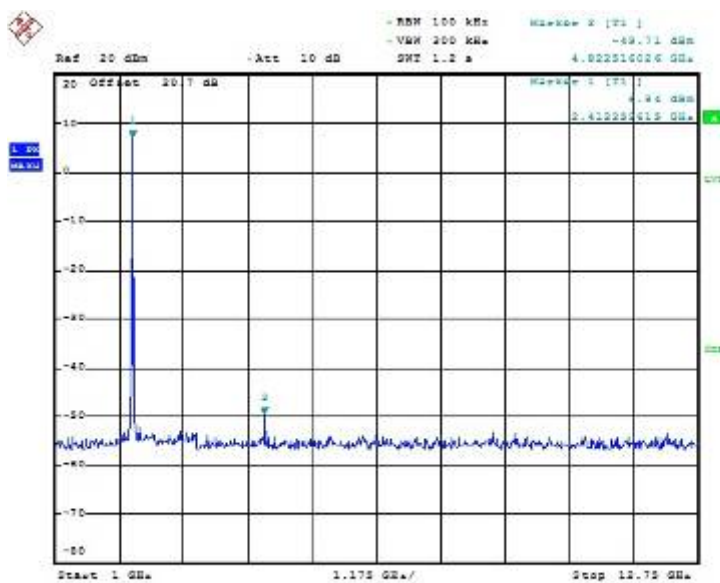
Frequency MHz	Corrected measurement value dBm	Reference value dBm	Limit dBm	Delta to limit dB
---	---	---	---	---
---	---	---	---	---

Note: The Reference value see 2.2.6 Band edge compliance

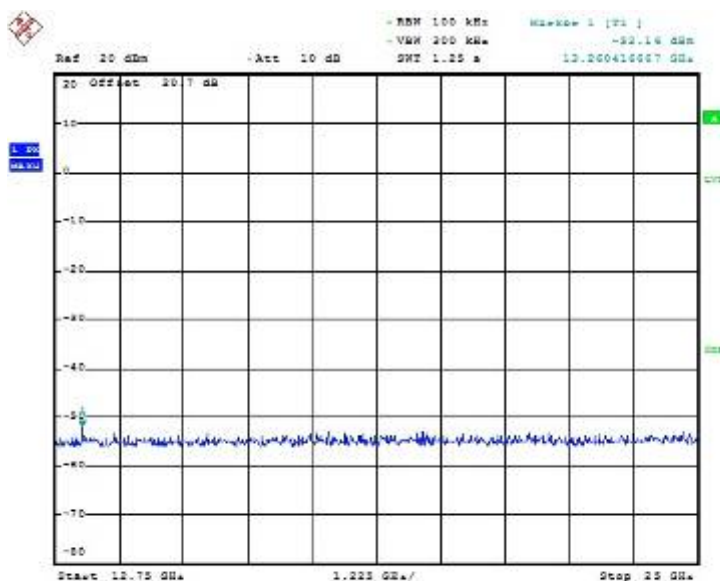




Date: 14.MAR.2012 15:28:08

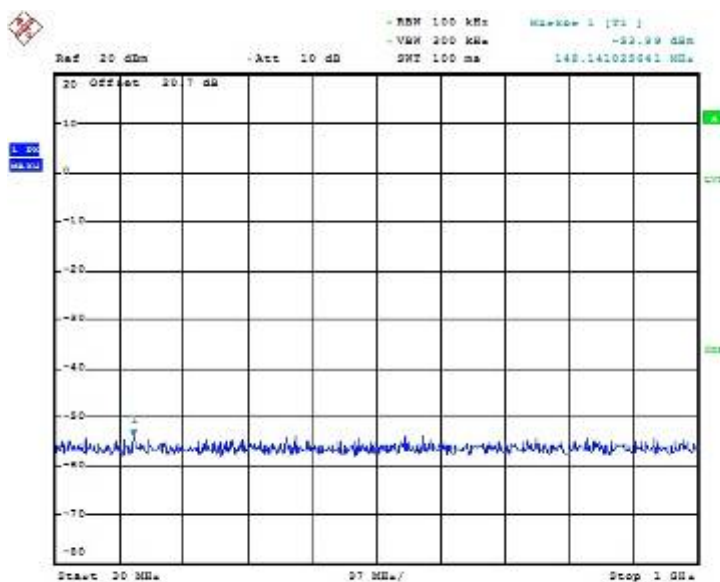


Date: 14.MAR.2012 15:29:11

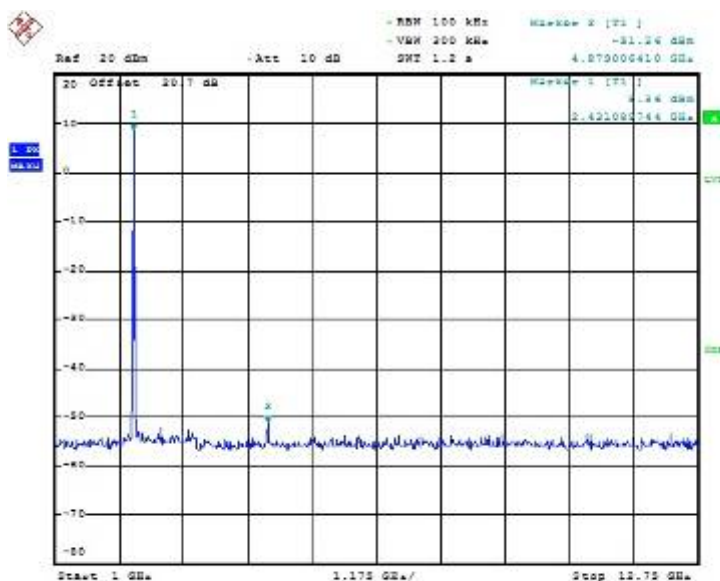


Date: 14.MAR.2012 15:26:00

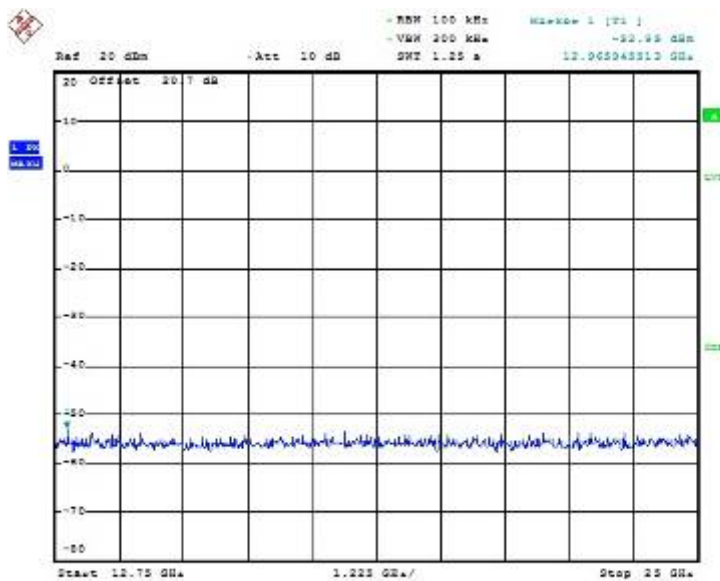
Carrier frequency (MHz): 2412  
 Channel No.:1  
 Test Mode: 802.11b



Date: 14.MAR.2012 15:28:18

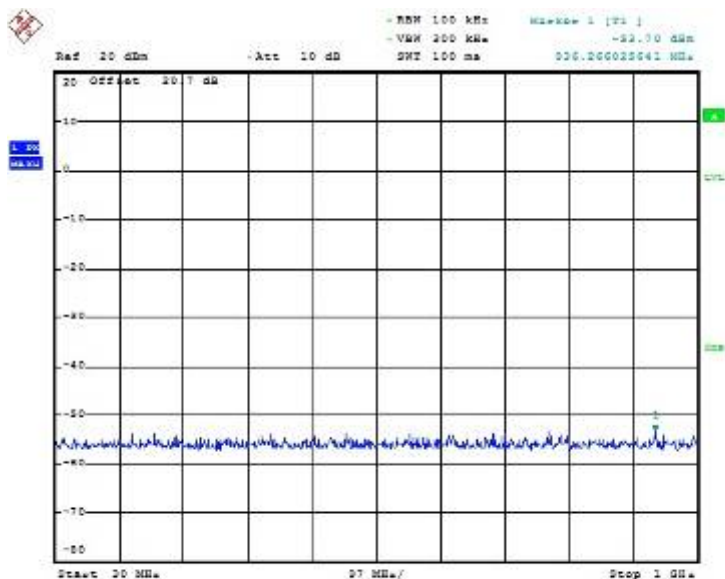


Date: 14.MAR.2012 15:28:05

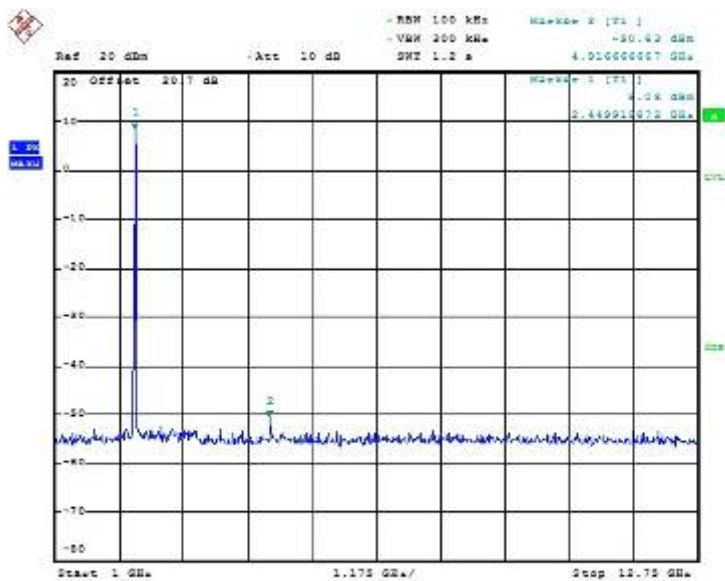


Date: 14.MAR.2012 15:28:50

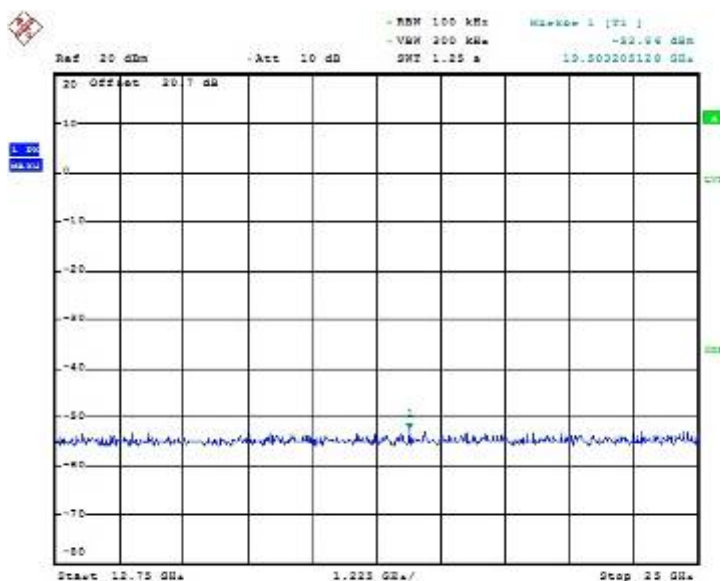
Carrier frequency (MHz): 2437  
 Channel No.:6  
 Test Mode: 802.11b



Date: 14.MAR.2012 15:29:44



Date: 14.MAR.2012 15:30:20



Date: 14.MAR.2012 15:51:09

Carrier frequency (MHz): 2462  
Channel No.:11  
Test Mode: 802.11b

Carrier frequency (MHz): 2412

Channel No.:1

Test Mode: 802.11g

Frequency MHz	Corrected measurement value dBm	Reference value dBm	Limit dBm	Delta to limit dB
---	---	---	---	---
---	---	---	---	---

Carrier frequency (MHz): 2437

Channel No.:6

Test Mode: 802.11g

Frequency MHz	Corrected measurement value dBm	Reference value dBm	Limit dBm	Delta to limit dB
---	---	---	---	---
---	---	---	---	---

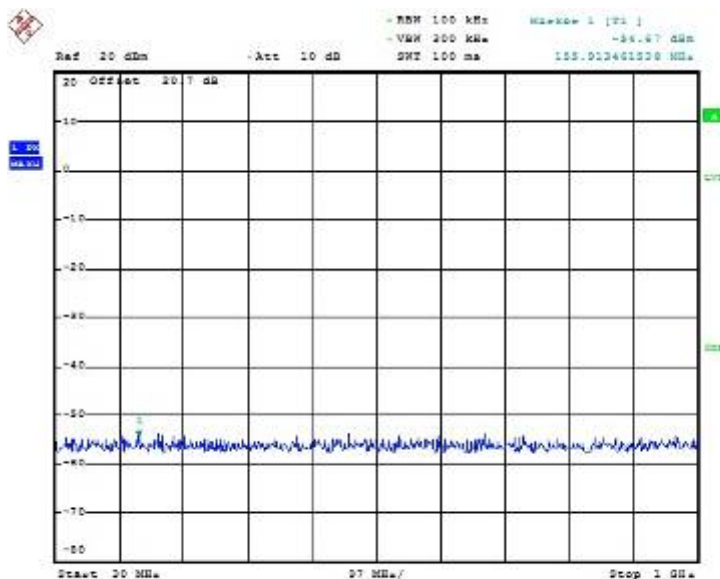
Carrier frequency (MHz): 2462

Channel No.:11

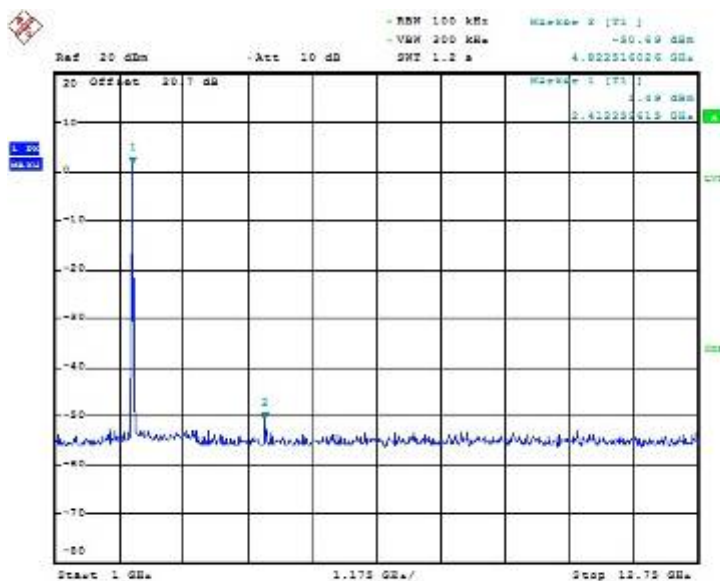
Test Mode: 802.11g

Frequency MHz	Corrected measurement value dBm	Reference value dBm	Limit dBm	Delta to limit dB
---	---	---	---	---
---	---	---	---	---

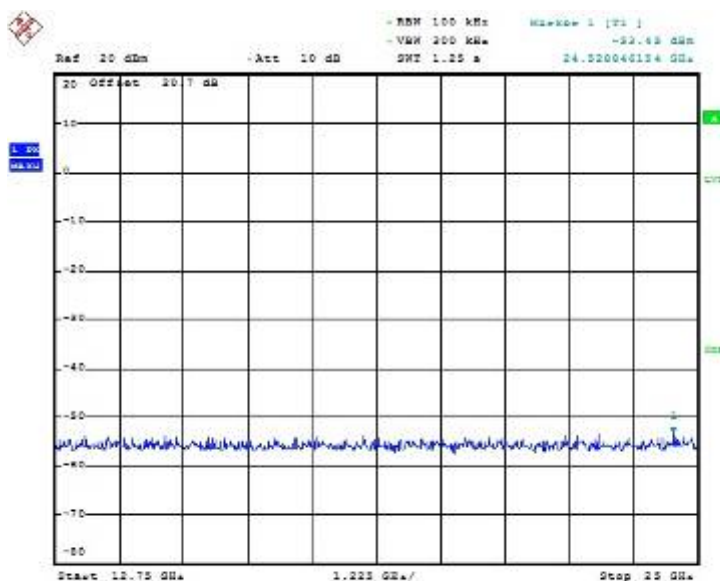
Note: The Reference value see 2.2.6 Band edge compliance



Date: 14.MAR.2012 15:51:44

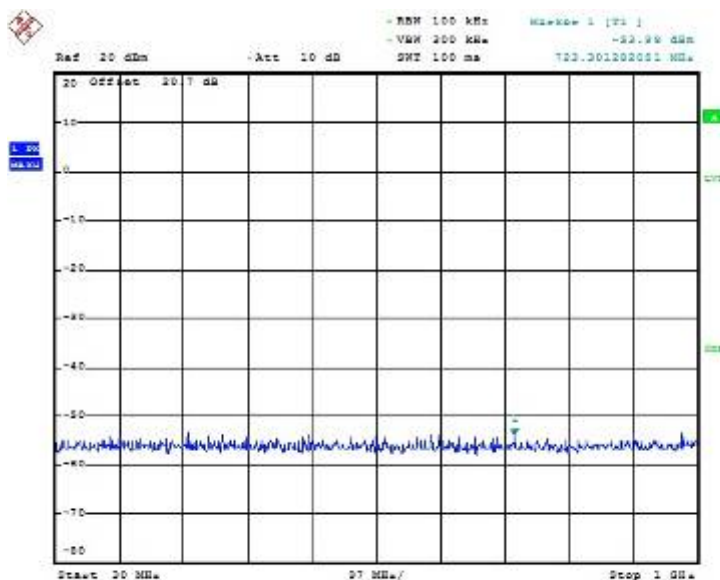


Date: 14.MAR.2012 15:52:21



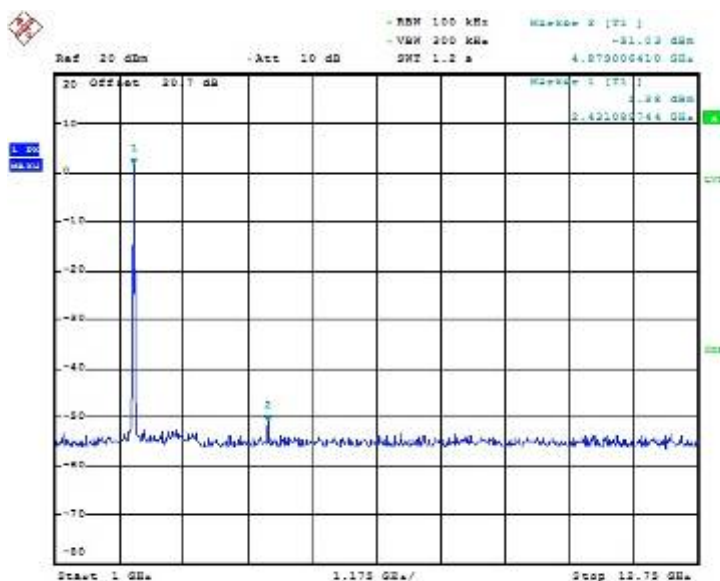
Date: 14.MAR.2012 15:32:32

Carrier frequency (MHz): 2412  
 Channel No.:1  
 Test Mode: 802.11g

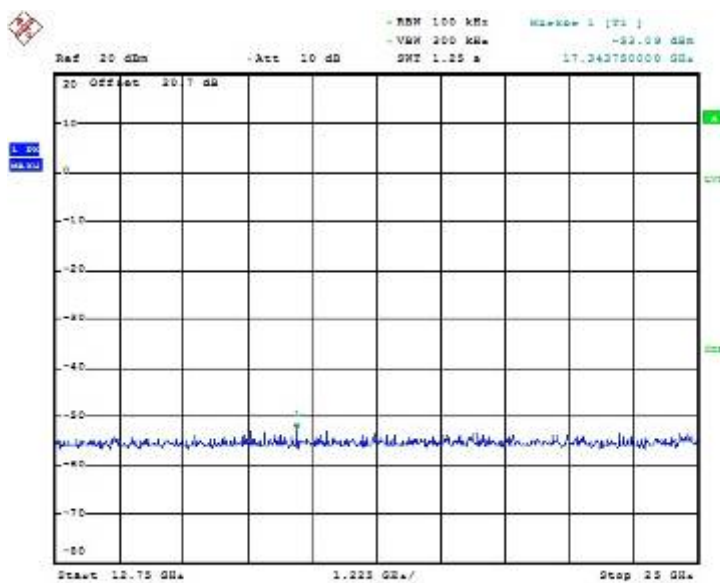


Date: 14.MAR.2012 15:33:44



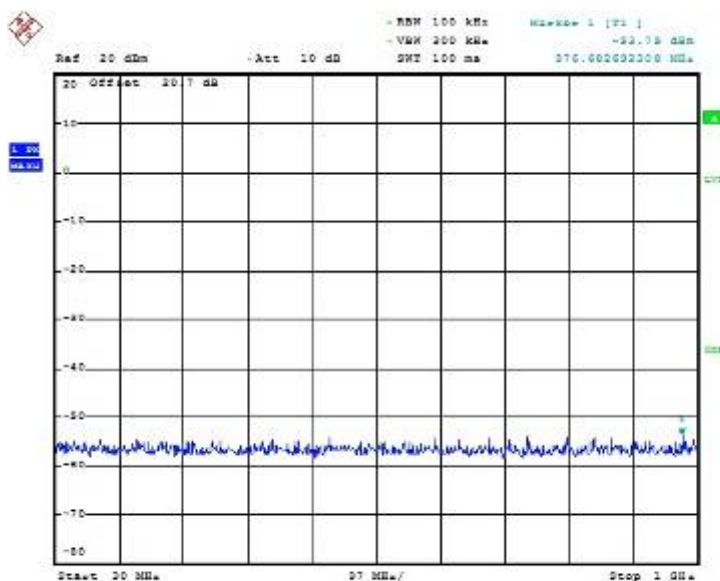


Date: 14.MAR.2012 15:34:14

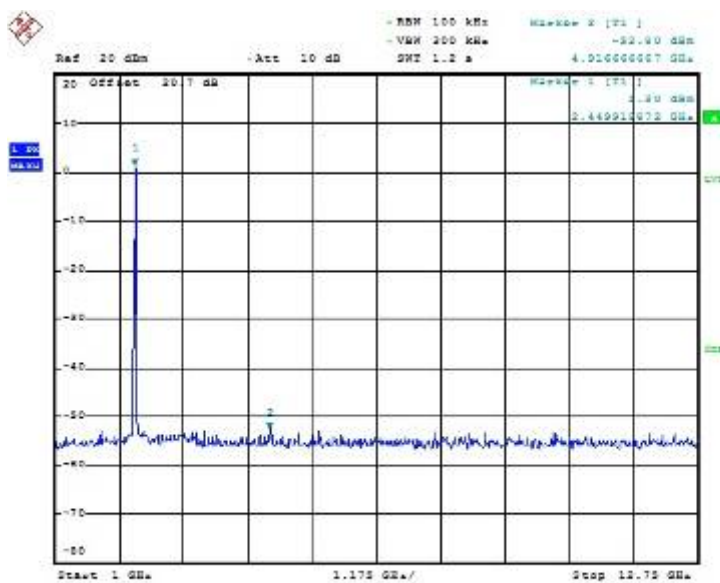


Date: 14.MAR.2012 15:34:35

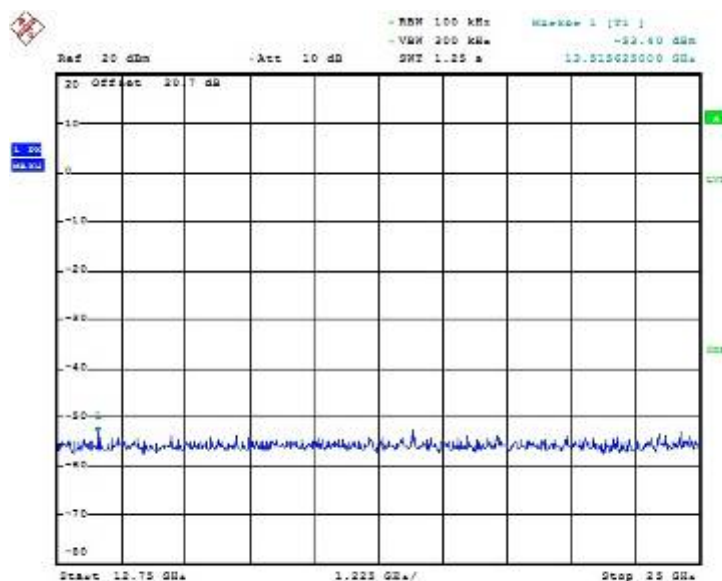
Carrier frequency (MHz): 2437  
Channel No.:6  
Test Mode: 802.11g



Date: 14.MAR.2012 15:35:09



Date: 14.MAR.2012 15:35:30



Date: 14.MAR.2012 15:55:42

Carrier frequency (MHz): 2462  
Channel No.:11  
Test Mode: 802.11g

## 2.2.5 Spurious Radiated Emissions

### 2.2.5.1 Ambient condition

Temperature	Relative humidity	Pressure
17.6°C	32.4%	100.2kPa

### 2.2.5.2 Test Description

The measurement is made according to ANSI C63.10-2009.

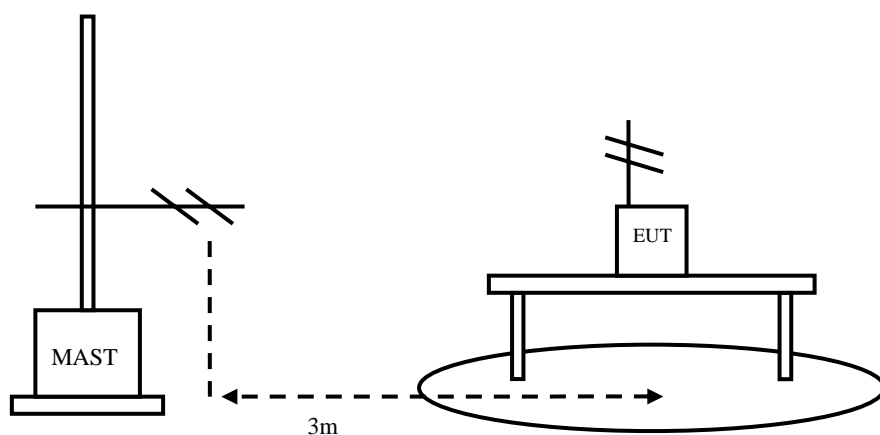
The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna.

The radiated emissions measurements were made in a typical installation configuration.

Then start the test software ES-K1. Sweep the whole frequency band through the range from 30MHz to 1GHz or above, using receive log period antenna HL562 or Ridge horn antenna HF906.

During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turn table shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The results (reference to 2.2.5.4) shall be showed the worst case of the three orthogonal axes.

The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing.



### 2.2.5.3 Test limit

FCC Part15.247(d)

... In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

FCC Part15.209(a), Radiated Emission Limits

Frequency Range (MHz)	Class B Limit (dB $\mu$ V/m)
30 – 88	40.0
88 – 216	43.5
216 – 960	46.0
above 960	54.0

IC RSS-210 § A8.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section A8.4 (4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

### 2.2.5.4 Test result

A “reference path loss” is established and the  $A_{Rpl}$  is the attenuation of “reference path loss”, and including the gain of receive antenna, the gain of the preamplifier, the cable loss.

The measurement results are obtained as described below:

$$\text{Result} = P_{\text{mea}} + A_{Rpl}$$

The worst case attitude: The mobile lay down.

For 802.11b

Frequency(MHz)	Result(dBuV/m)	$A_{Rpl}$ (dB)	$P_{\text{mea}}$ (dBuV/m)	Polarity
34.91	21.60	15.5	6.1	Vertical
40.80	28.69	15.2	13.49	Vertical
42.76	28.41	13.8	14.61	Vertical
69.27	20.16	6.7	13.46	Vertical
85.83	28.88	8.0	10.88	Vertical
837.67	28.42	22.9	5.52	Vertical
959.91	30.57	24.3	6.27	Vertical
2436.07	86.23	34.2	52.03	Vertical
6166.33	20.15	9.2	10.95	Horizontal
6983.89	23.43	9.2	14.23	Vertical
12601.46	28.92	7.4	21.52	Vertical

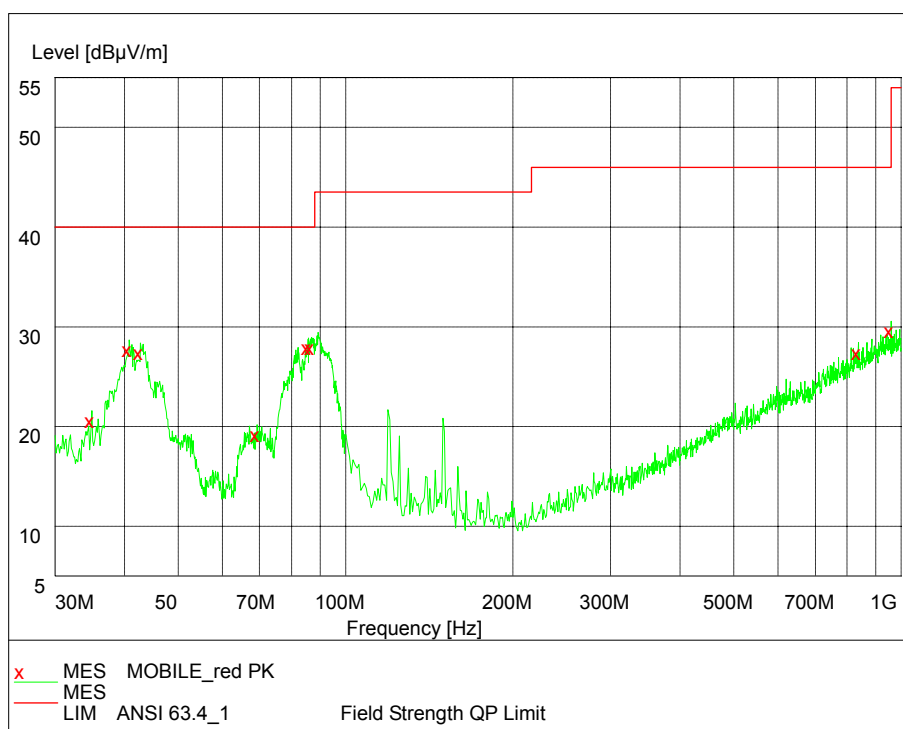
For 802.11g

Frequency(MHz)	Result(dBuV/m)	A <sub>Rpl</sub> (dB)	P <sub>mea</sub> (dBuV/m)	Polarity
35.61	21.38	15.5	5.88	Vertical
41.08	28.16	15.0	13.16	Vertical
43.60	28.23	13.2	15.03	Vertical
52.02	20.20	8.1	12.1	Vertical
85.55	28.94	8.0	20.94	Vertical
86.11	29.45	8.0	21.45	Vertical
776.55	27.73	22.0	5.73	Vertical
950.90	30.99	24.4	6.59	Vertical
2436.07	79.10	34.2	44.90	Vertical

Refer to figures

Carrier frequency (MHz): 2437

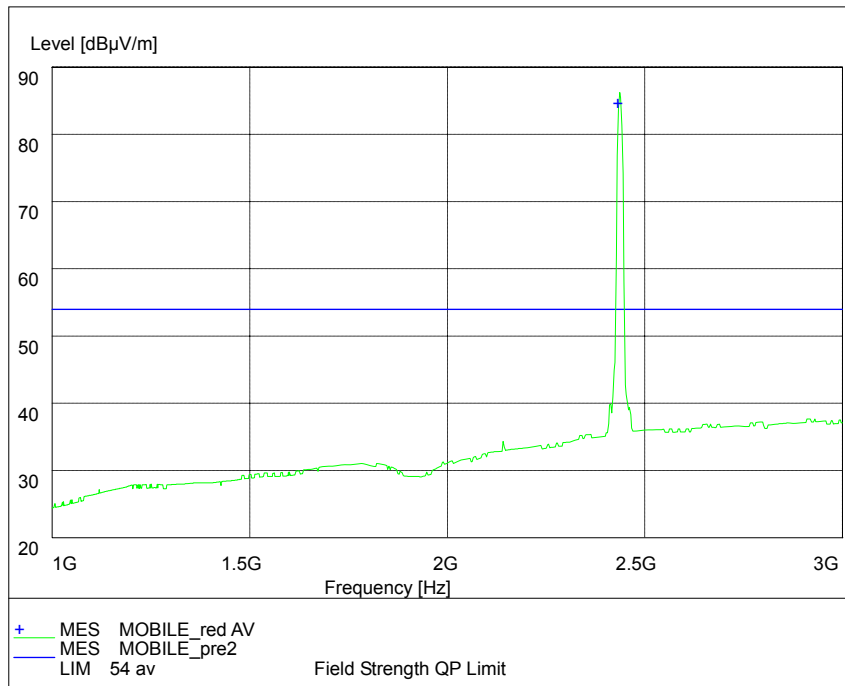
Channel No.:6



Frequency Range: 30MHz-1GHz

Detector: PK mode

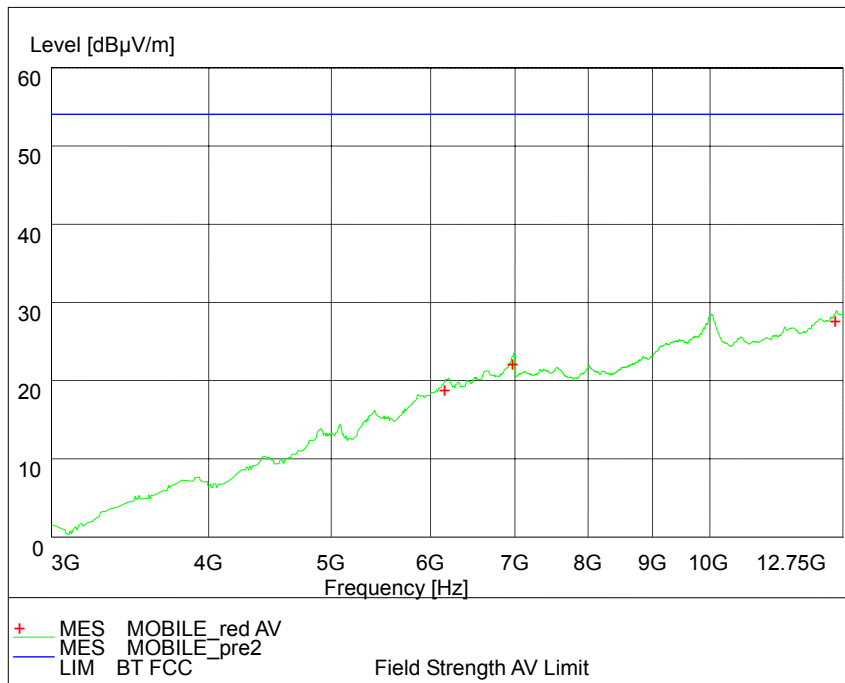
Test Mode: 802.11b



Frequency Range: 1GHz-3GHz

Detector: PK mode

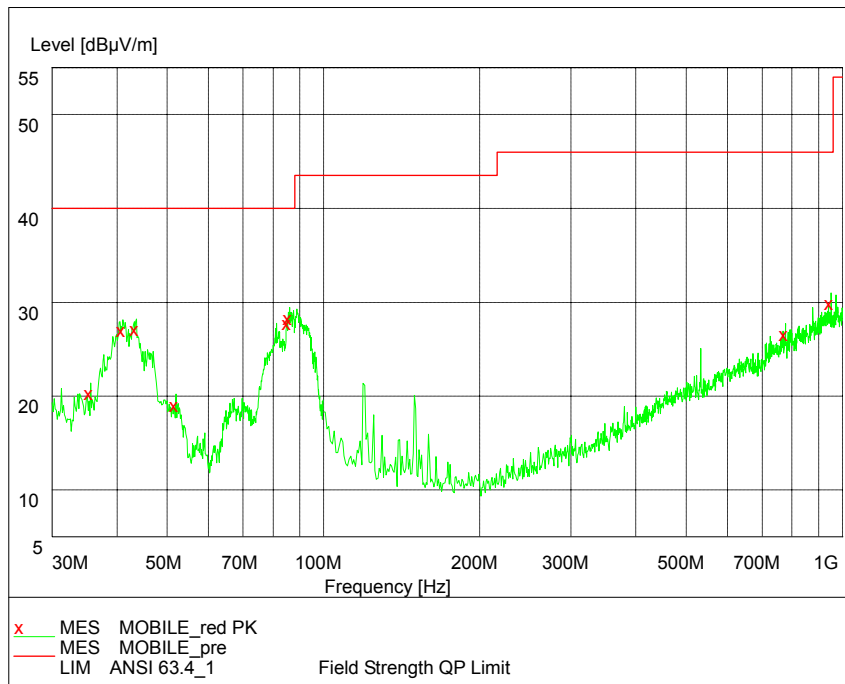
Modulation type: 802.11b



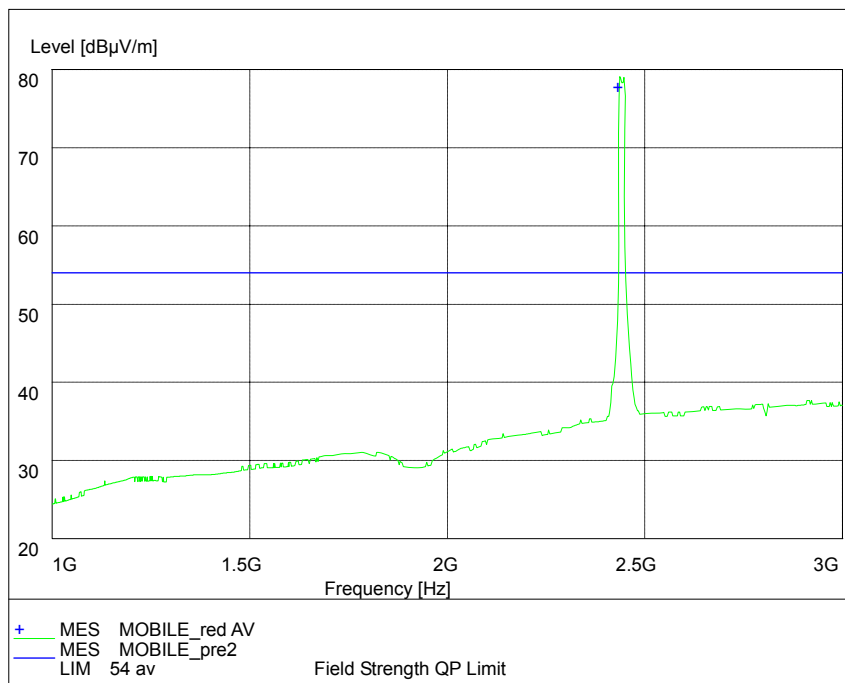
Frequency Range: 3GHz-12.75GHz

Detector: PK mode

Modulation type: 802.11b

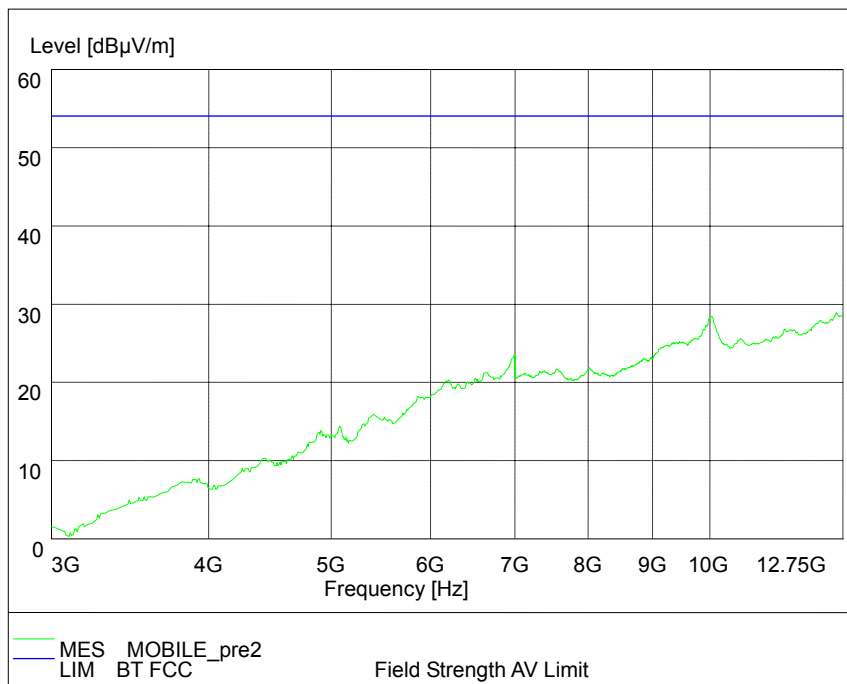


Frequency Range: 30MHz-1GHz  
Detector: PK mode  
Modulation type: 802.11g



Frequency Range: 1GHz-3GHz  
Detector: PK mode  
Modulation type: 802.11g





Frequency Range: 3GHz-12.75GHz

Detector: PK mode

Modulation type: 802.11g

## 2.2.6 Band Edge Compliance

### 2.2.6.1 Ambient condition

Temperature	Relative humidity	Pressure
22°C	40%	101.1kPa

### 2.2.6.2 Test Description

The measurement is made according to ANSI C63.10-2009.

#### 2.2.6.2.1 RF Conducted Measurement:

The Equipment Under Test (EUT) was set up in a shielded room to perform the spurious emissions measurements.

The EUT was connected to the spectrum analyzer and WiFi test set via a power splitter with a known loss.

For the first measurement the EUT is set to transmit on the lowest channel (2412 MHz). The lower band edge is 2390 MHz.

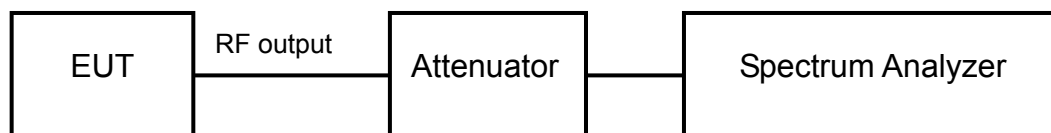
Analyzer settings:

- Detector: Peak
- RBW= 100 kHz
- VBW= 300 kHz

For the second measurement the EUT is set to transmit on the highest channel (2472MHz). The higher band edge is 2483.5 MHz.

Analyzer settings:

- Detector: Peak
- RBW= 100 kHz
- VBW= 300 kHz



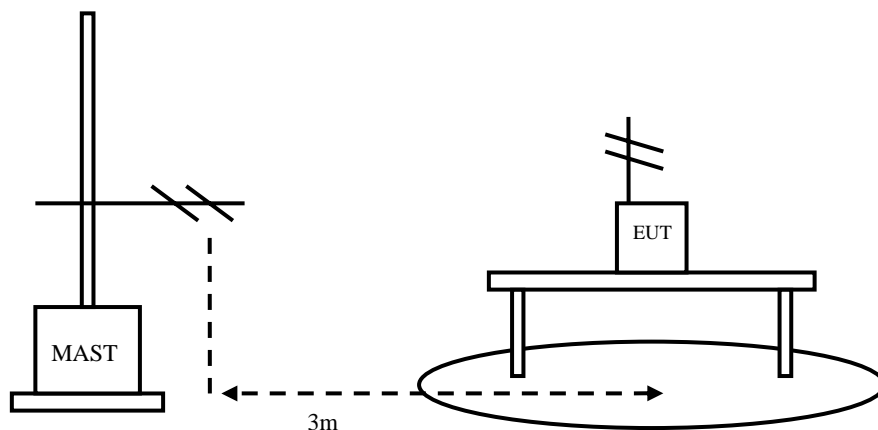
#### 2.2.6.2.2 Radiated Measurement

The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna.

The radiated emissions measurements were made in a typical installation configuration.

During the test, the height of receive antenna shall be moved from 1 to 4 meters, and the antenna shall be performed under horizontal and vertical polarization. The turn table shall be rotated from 0 to 360 degrees for detecting the maximum of radiated spurious signal level. The measurements shall be repeated with orthogonal polarization of the test antenna. The results (reference to 2.2.6.5) shall be showed the worst case of the three orthogonal axes.

The data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing.



### 2.2.6.3 Test limit

FCC Part15.247(d)

“In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

IC RSS-210 § A8.5

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the RF power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided that the transmitter demonstrates compliance with the peak conducted power limits. If the

transmitter complies with the conducted power limits based on the use of root-mean-square averaging over a time interval, as permitted under Section A8.4 (4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general field strength limits specified in RSS-Gen is not required.

## 2.2.6.4 Test result

### 2.2.6.4.1 RF Conducted Measurement

Carrier frequency (MHz): 2412

Channel No.:1

Test Mode: 802.11b

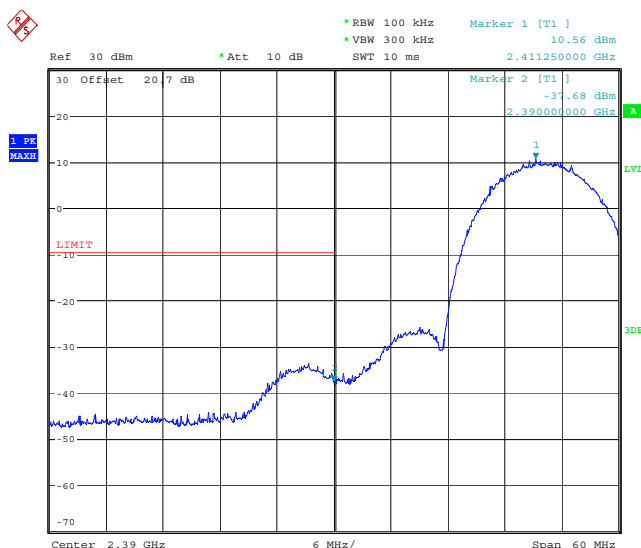
Frequency MHz	Measured value dBm	Reference value dBm	Limit dBm	Delta dB
2390	-37.68	10.56	-9.44	48.24

Carrier frequency (MHz): 2462

Channel No.:11

Test Mode: 802.11b

Frequency MHz	Measured value dBm	Reference value dBm	Limit dBm	Delta dB
2483.5	-37.86	10.47	-9.53	48.33

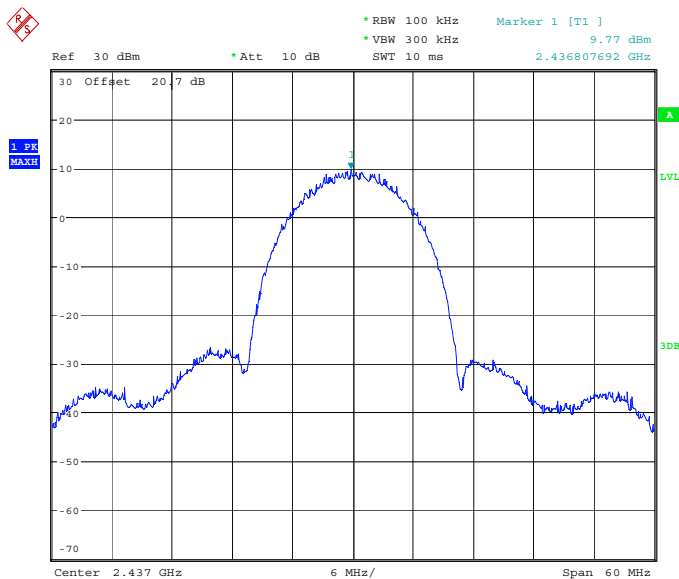


Date: 5.APR.2012 14:43:38

Carrier frequency (MHz): 2412

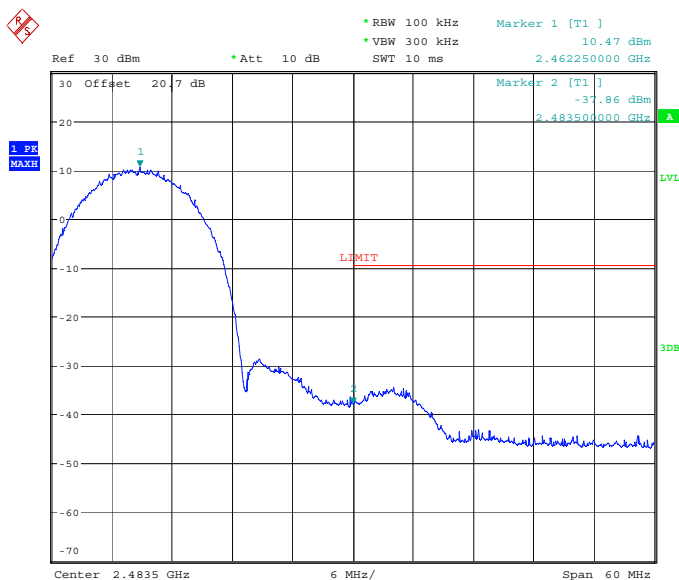
Channel No.:1

Test Mode: 802.11b



Date: 5.APR.2012 14:52:09

Carrier frequency (MHz): 2437  
Channel No.:6  
Test Mode: 802.11b



Date: 5.APR.2012 14:59:50

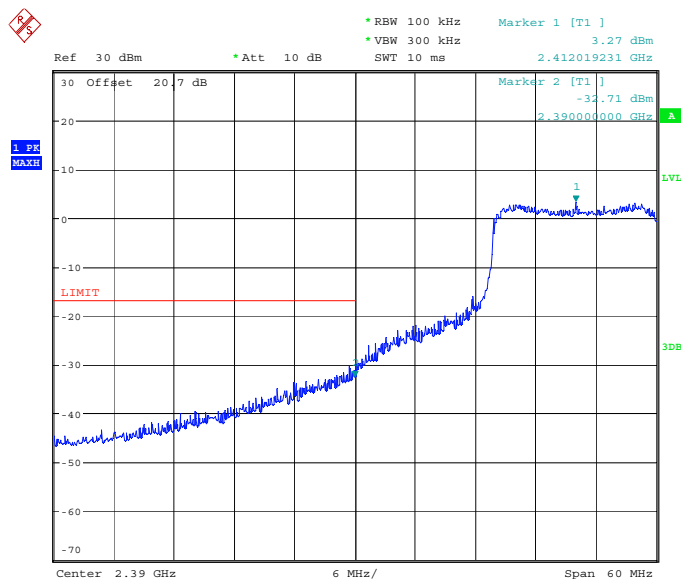
Carrier frequency (MHz): 2462  
Channel No.:11  
Test Mode: 802.11b

Carrier frequency (MHz): 2412  
Channel No.:1  
Test Mode: 802.11g

Frequency MHz	Measured value dBm	Reference value dBm	Limit dBm	Delta dB
2390	-32.71	3.27	-16.73	35.98

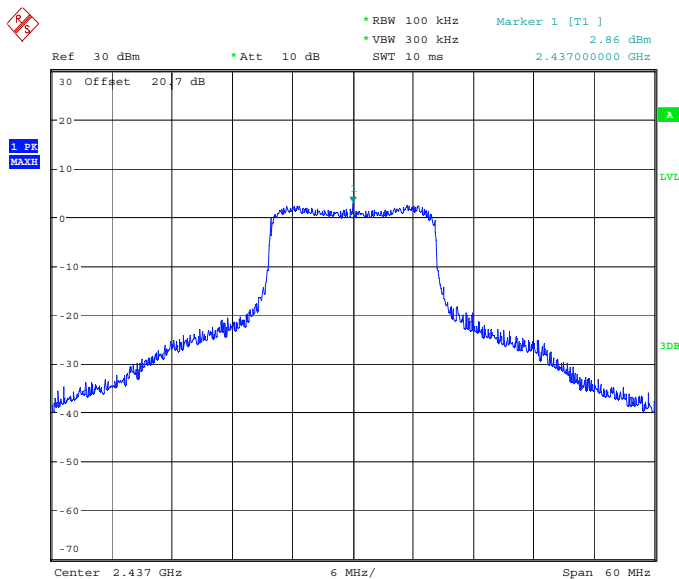
Carrier frequency (MHz): 2462  
Channel No.:13  
Test Mode: 802.11g

Frequency MHz	Measured value dBm	Reference value dBm	Limit dBm	Delta dB
2483.5	-30.69	2.94	-17.06	33.63



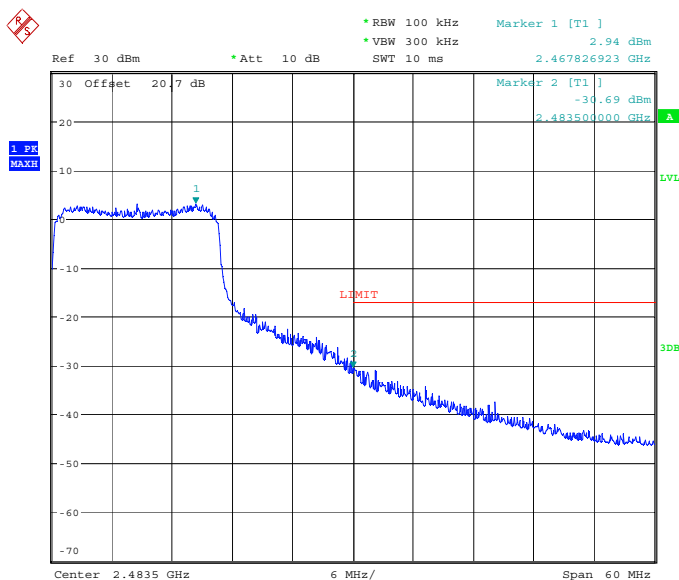
Date: 5.APR.2012 14:51:27

Carrier frequency (MHz): 2412  
Channel No.:1  
Test Mode: 802.11g



Date: 5.APR.2012 14:53:10

Carrier frequency (MHz): 2437  
Channel No.:6  
Test Mode: 802.11g



Date: 5.APR.2012 15:06:50

Carrier frequency (MHz): 2462  
Channel No.:11  
Test Mode: 802.11g

### 2.2.6.4.2 Radiated Emission Band Edge

The worst case attitude: The mobile lay down.

Peak detector: RBW=1MHz,VBW=3MHz,sweep time=200ms;

Average detector: RBW=1MHz,VBW=10Hz,sweep time=auto;

Carrier frequency (MHz): 2412

Channel No.:1

Test Mode: 802.11b

Polarity:Vertical

Detector: Peak

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	cable loss (dB)	antenna factor (dB)
1	2413.22	98.01	64.01	N/A	N/A	8.90	25.10
2	2390.00	48.71	14.71	-25.29	74.00	8.90	25.10

Carrier frequency (MHz): 2412

Channel No.:1

Test Mode: 802.11b

Polarity:Horizontal

Detector: Peak

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	cable loss (dB)	antenna factor (dB)
1	2411.23	93.07	59.07	N/A	N/A	8.90	25.10
2	2390.00	47.05	13.05	-26.95	74.00	8.90	25.10

Carrier frequency (MHz): 2412

Channel No.:1

Test Mode: 802.11b

Polarity:Vertical

Detector: Average

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	cable loss (dB)	antenna factor (dB)
1	2412.24	92.04	58.04	N/A	N/A	8.90	25.10
2	2390.00	43.11	9.11	-10.99	54.00	8.90	25.10



Carrier frequency (MHz): 2412  
Channel No.:1  
Test Mode: 802.11b  
Polarity:Horizontal  
Detector: Average

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	cable loss (dB)	antenna factor (dB)
1	2411.56	90.98	56.98	N/A	N/A	8.90	25.10
2	2390.00	41.22	7.22	-12.78	54.00	8.90	25.10

Carrier frequency (MHz): 2462  
Channel No.:11  
Test Mode: 802.11b  
Polarity:Vertical  
Detector: Peak

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	cable loss (dB)	antenna factor (dB)
1	2462.46	94.32	60.32	N/A	N/A	8.90	25.10
2	2483.50	51.34	17.34	-22.66	74.00	8.90	25.10

Carrier frequency (MHz): 2462  
Channel No.:11  
Test Mode: 802.11b  
Polarity:Horizontal  
Detector: Peak

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	cable loss (dB)	antenna factor (dB)
1	2461.02	93.66	59.66	N/A	N/A	8.90	25.10
2	2483.50	50.45	16.45	-23.55	74.00	8.90	25.10

Carrier frequency (MHz): 2462

Channel No.:11

Test Mode: 802.11b

Polarity:Vertical

Detector: Average

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuv/m)	cable loss (dB)	antenna factor (dB)
1	2461.28	91.99	57.99	N/A	N/A	8.90	25.10
2	2483.50	38.67	4.67	-15.33	54.00	8.90	25.10

Carrier frequency (MHz): 2462

Channel No.:11

Test Mode: 802.11b

Polarity:Horizontal

Detector: Average

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuv/m)	cable loss (dB)	antenna factor (dB)
1	2460.82	89.33	55.33	N/A	N/A	8.90	25.10
2	2483.50	40.44	6.44	-13.56	54.00	8.90	25.10

Carrier frequency (MHz): 2412

Channel No.:1

Test Mode: 802.11g

Polarity: Vertical

Detector: Peak

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuv/m)	cable loss (dB)	antenna factor (dB)
1	2416.24	96.42	62.42	N/A	N/A	8.90	25.10
2	2390.00	55.34	21.34	-18.66	74.00	8.90	25.10

Carrier frequency (MHz): 2412

Channel No.:1

Test Mode: 802.11g

Polarity:Horizontal

Detector: Peak

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuv/m)	cable loss (dB)	antenna factor (dB)
1	2418.81	95.48	61.48	N/A	N/A	8.90	25.10
2	2390.00	56.39	22.39	-17.61	74.00	8.90	25.10

Carrier frequency (MHz): 2412

Channel No.:1

Test Mode: 802.11g

Polarity: Vertical

Detector: Average

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuv/m)	cable loss (dB)	antenna factor (dB)
1	2417.25	84.38	50.38	N/A	N/A	8.90	25.10
2	2390.00	36.54	2.54	-17.46	54.00	8.90	25.10

Carrier frequency (MHz): 2412

Channel No.:1

Test Mode: 802.11g

Polarity:Horizontal

Detector: Average

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuv/m)	cable loss (dB)	antenna factor (dB)
1	2406.26	86.44	52.44	N/A	N/A	8.90	25.10
2	2390.00	40.51	6.41	-13.49	54.00	8.90	25.10

Carrier frequency (MHz): 2462

Channel No.:11

Test Mode: 802.11g

Polarity: Vertical

Detector: Peak

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuv/m)	cable loss (dB)	antenna factor (dB)
1	2468.28	93.51	59.51	N/A	N/A	8.90	25.10
2	2483.50	57.52	23.52	-16.48	74.00	8.90	25.10

Carrier frequency (MHz): 2462

Channel No.:11

Test Mode: 802.11g

Polarity:Horizontal

Detector: Peak

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuv/m)	cable loss (dB)	antenna factor (dB)
1	2457.64	96.58	62.58	N/A	N/A	8.90	25.10
2	2483.50	59.55	25.55	-14.45	74.00	8.90	25.10

Carrier frequency (MHz): 2462

Channel No.:11

Test Mode: 802.11g

Polarity: Vertical

Detector: Average

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuv/m)	cable loss (dB)	antenna factor (dB)
1	2468.68	83.46	49.46	N/A	N/A	8.90	25.10
2	2483.50	38.52	4.52	-15.48	54.00	8.90	25.10

Carrier frequency (MHz): 2462

Channel No.:11

Test Mode: 802.11g

Polarity:Horizontal

Detector: Average

No	Frequency (MHz)	Measure Level (dBuV/m)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV/m)	cable loss (dB)	antenna factor (dB)
1	2457.60	84.31	50.31	N/A	N/A	8.90	25.10
2	2483.50	41.11	7.11	-12.89	54.00	8.90	25.10

## 2.2.7 AC Power line Conducted Emission

### 2.2.7.1 Ambient condition

Temperature	Relative humidity	Pressure
20°C	35%	101.4kPa

### 2.2.7.2 Test limit

FCC Part15.107 and Part15.207

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

\* Decreases with the logarithm of the frequency.

#### IC RSS-Gen § 7.2.2

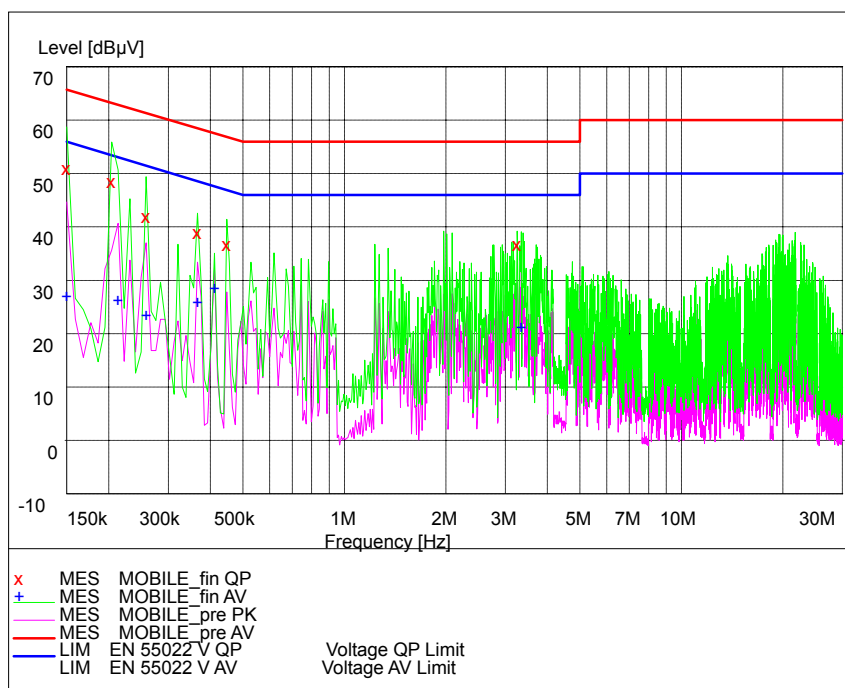
Restricted bands, identified in Table 3, are designated primarily for safety-of-life services (distress calling and certain aeronautical bands), certain satellite downlinks, radio astronomy and some government uses. Except where otherwise indicated, the following restrictions apply:

- (a) fundamental components of modulation of licence-exempt radio apparatus shall not fall within the restricted bands of Table 3;
- (b) unwanted emissions falling into restricted bands of Table 3 shall comply with the limits specified in RSS-Gen;
- (c) unwanted emissions not falling within restricted frequency bands shall either comply with the limits specified in the applicable RSS, or with those specified in RSS-Gen.

The measurement is made according to ANSI C63.10-2009

### 2.2.7.3 Test result

#### Noise Level of the Measuring Instrument



#### L and N Line

##### MEASUREMENT RESULT: "MOBILE\_fin AV"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.150000	29.20	20.1	56	26.8	L	GND
0.213000	28.40	20.2	53	24.7	L	GND
0.258000	25.60	20.2	52	25.9	L	GND
0.366000	28.00	20.2	49	20.6	N	GND
0.411000	30.70	20.3	48	16.9	L	GND
3.345000	23.40	20.3	46	22.6	L	GND

##### MEASUREMENT RESULT: "MOBILE\_fin QP"

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Line	PE
0.150000	53.10	20.1	66	12.6	L	GND
0.204000	50.70	20.2	63	12.6	L	GND
0.258000	44.20	20.2	61	17.1	L	GND
0.366000	41.20	20.2	59	17.3	N	GND
0.447000	38.80	20.3	57	18.1	L	GND
3.255000	38.90	20.3	56	17.1	L	GND

## 2.3. Measurement Uncertainty

Items	Uncertainty	
Occupied Bandwidth	3kHz	
Peak power output	0.67dB	
Band edge compliance	1.20dB	
Transmitter Power Spectral Density	0.75dB	
Spurious emissions	30MHz~1GHz	2.83dB
	1GHz~12.75GHz	2.50dB
	12.75GHz~25GHz	2.75dB



## 2.4. List of test equipment

No.	Name/ Model	Manufacturer	S/N	Cal Due date
1.	Spectrum Analyzer FSQ 40	R&S	200065	2013.3
2.	Signal Generator E8257D	Agilent	MY46520645	2012.8
3.	Attenuation 779	Narda	04702	2012.8
4.	Cable N-N	Spectrum	6-046	2012.8
5.	Cable N-N	Spectrum	6-050	2012.8
6.	12.65m×8.03m×7.50m Fully-Anechoic Chamber	FRANKONIA	----	----
7.	23.18m×16.88m×9.60m Semi-Anechoic Chamber	FRANKONIA	---	----
8.	Turn table Diameter:1m	HD	----	----
9.	Turn table Diameter:5m	HD	----	----
10.	Antenna master FAC(MA4.0)	MATURO	----	----
11.	Antenna master SAC(MA4.0)	MATURO	----	----
12.	9.080m×5.255m×3.525m Shielding room	FRANKONIA	----	----
13.	HF 906 Double-Ridged Waveguide Horn Antenna	R&S	100030	2012.8
14.	HF 906 Double-Ridged Waveguide Horn Antenna	R&S	100029	2012.8
15.	HL562 Ultra log antenna	R&S	100016	2012.8
16.	3160-09 Receive antenna	SCHWARZ-BECK	002058-002	2012.8
17.	ESI 40 EMI test receiver	R&S	100015	2012.8
18.	Radio tester	CMU 200	114667	2012.8
19.	ESCS30 EMI test receiver	R&S	100029	2012.8
20.	HL562 Receive antenna	R&S	100167	2012.8
21.	ESH3-Z5 LISN	R&S	100020	2012.8