



TEST REPORT

Report No.: SRTC2013-H024-E0013

Product Name: GSM/GPRS/EDGE/UMTS

Digital Mobile Phone with Bluetooth and WiFi

Marketing Name: ONE TOUCH 7040A

Product Model: Yaris-5

Applicant: TCT Mobile Limited

Manufacturer: TCT Mobile Limited

Specification: FCC Part 15, Subpart C (October 9, 2012 edition)

FCC ID: RAD416

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@tcl.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@tcl.com

1.5 Application details

Date of reception of test sample: 9th September 2013

Date of test: 9th September 2013 to 22nd October 2013

1.6 Reference specification

FCC Part 15, Subpart C (October 9, 2012 edition)

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 | RAD416 |
| 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/6.5Mbps /13.0Mbps/13.5Mbps/19.5Mbps/26.0Mbps/27.0Mbps /39.0Mbps/40.5Mbps/52.0Mbps/58.5Mbps/65Mbps /81.0Mbps/108.0Mbps/121.5Mbps/135.0Mbps |
| Antenna Type | Fixed Internal |
| Power Supply | Battery or Charger |
| Rated Power Supply Voltage | 3.8V |
| HW Version | PIO |
| SW Version | AAE |

1.7.2 EUT details

| Product Name | Marketing Name | Product Model | IMEI |
|---|-----------------|---------------|-----------------|
| GSM/GPRS/EDGE/UMTS Digital Mobile Phone with Bluetooth and WiFi | ONE TOUCH 7040A | Yaris-5 | 013826001100067 |

1.7.3 Auxiliary equipment details

| Equipment | Charger |
|----------------|------------------------------|
| Manufacturer | Ten Pao Industrial Co., Ltd. |
| Model Number | S005UU0500100 |
| 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 | TUUS050100-A00 |
| Input Voltage | 100V-240V a.c. |
| Output Voltage | 5.0V d.c. |
| Frequency | 50/60Hz |

| Equipment | Battery |
|---------------|---------------------|
| Manufacturer | BYD COMPANY LIMITED |
| Model Number | TLi020F1 |
| Capacity | 2000mAh |
| Rated Voltage | 4.35V d.c. |

| Equipment | Battery |
|---------------|---------------------|
| Manufacturer | BYD COMPANY LIMITED |
| Model Number | TLi019B1 |
| Capacity | 1900mAh |
| Rated Voltage | 4.35V d.c. |

| Equipment | Battery |
|---------------|-------------------------------------|
| Manufacturer | SCUD (FUJIAN) Electronics Co., Ltd. |
| Model Number | TLi019B2 |
| Capacity | 1900mAh |
| Rated Voltage | 4.35V d.c. |

| Equipment | Data Cable |
|--------------|--------------------------------------|
| Manufacturer | Shenzhen Juwei Electronics Co., Ltd. |
| Model Number | CDA3122002C1 |

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

| Equipment | Data Cable |
|--------------|--------------------------------------|
| Manufacturer | Shenzhen Juwei Electronics Co., Ltd. |
| Model Number | CDA3122005C1 |


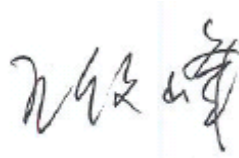

| Equipment | Data Cable |
|--------------|-------------------------------------|
| Manufacturer | Huizhou Shenghua Industry Co., Ltd. |
| Model Number | CDA3122005C2 |

Note: As the information described above, there are two different models of charger manufactured by two different companies, three different models of battery 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, one model of battery 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 S005UU0500100, the battery TLi020F1 and the data cable CDA3122002C1.

2. Test information

2.1 Summary of the test results

| No. | Test case | FCC reference | Verdict |
|-----|------------------------------------|---------------------------|---------|
| 1 | Peak Power Output | 15.247(b)(3) | Pass |
| 2 | Occupied Bandwidth | 15.247(a)(2) | Pass |
| 3 | Transmitter Power Spectral Density | 15.247(e) | Pass |
| 4 | Spurious RF Conducted Emissions | 15.247(d) | Pass |
| 5 | Spurious Radiated Emissions | 15.247(d)/15.35(b)/15.209 | Pass |
| 6 | Band Edge Compliance | 15.247(d) | Pass |

| | |
|---|---|
| <p>This Test Report Is Issued by: Mr. Song Qizhu Director of the test lab</p>  | <p>Checked by: Mr. Wang Junfeng Deputy director of the test lab</p>  |
| <p>Tested by: Mr. Jiang Shuo Test engineer</p>  | <p>Issued date:</p> <p>2014.01.27</p> |

2.2 Test result

2.2.1 Peak Power Output

2.2.1.1 Ambient condition

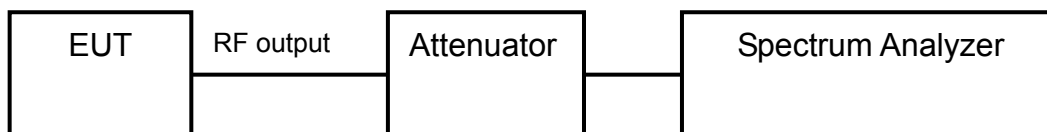
| Temperature | Relative humidity | Pressure |
|-------------|-------------------|----------|
| 22°C | 40% | 101.1kPa |

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 used resolution bandwidth in output power measuring is 20MHz for 802.11b/802.11g/802.11n(HT20) and 40MHz for 802.11n(HT40).



2.2.1.3 Test limit

FCC Part15.247(b)(3):

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

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

==> Maximum Output Power: 30 dBm

2.2.1.4 Test result

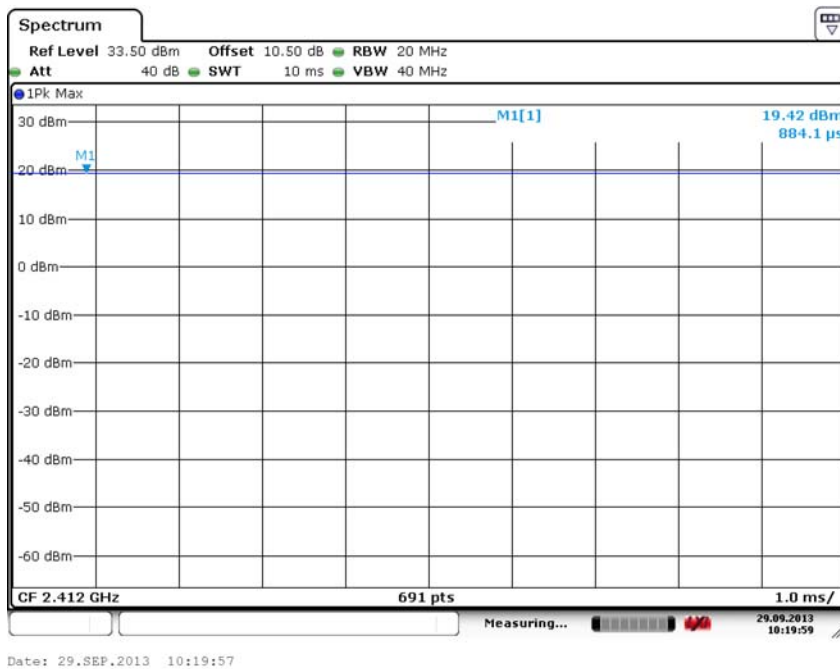
| Modulation type | | Average power output (dBm) | | |
|-----------------|-----------|----------------------------|------------------|-------------------|
| | | 2412MHz (Ch1) | 2437MHz (Ch6) | 2462MHz (Ch11) |
| 11b | 1 Mbps | 15.74 | 15.74 | 15.92 |
| | 2 Mbps | 15.72 | 15.73 | 15.79 |
| | 5.5 Mbps | 16.51 | 16.57 | 16.68 |
| | 11 Mbps | 16.13 | 16.25 | 16.17 |
| 11g | 6 Mbps | 12.91 | 13.82 | 12.80 |
| | 9 Mbps | 12.95 | 13.86 | 12.93 |
| | 12 Mbps | 12.79 | 13.78 | 12.96 |
| | 18 Mbps | 12.89 | 13.78 | 13.02 |
| | 24 Mbps | 12.91 | 13.96 | 12.84 |
| | 36 Mbps | 12.71 | 14.12 | 12.97 |
| | 48 Mbps | 12.76 | 14.19 | 12.99 |
| 11n HT20 | 54 Mbps | 12.70 | 13.79 | 13.18 |
| | 6.5 Mbps | 12.75 | 14.18 | 13.17 |
| | 13 Mbps | 12.80 | 13.92 | 12.96 |
| | 19.5 Mbps | 12.83 | 13.96 | 13.19 |
| | 26 Mbps | 12.90 | 14.03 | 13.02 |
| | 39 Mbps | 12.68 | 13.90 | 13.03 |
| | 52 Mbps | 12.79 | 13.95 | 13.13 |
| | 58.5 Mbps | 12.75 | 13.92 | 13.10 |
| 65 Mbps | 12.89 | 14.05 | 13.19 | |

| Modulation type | | Average power output (dBm) | | |
|-----------------|------------|----------------------------|------------------|-------------------|
| | | 2422MHz (Ch3) | 2437MHz (Ch6) | 2462MHz (Ch11) |
| 11n HT40 | 13.5 Mbps | 10.66 | 13.72 | 13.75 |
| | 27 Mbps | 10.67 | 13.79 | 13.82 |
| | 40.5 Mbps | 10.57 | 13.72 | 13.67 |
| | 54 Mbps | 10.79 | 13.79 | 14.23 |
| | 81 Mbps | 10.43 | 13.57 | 13.87 |
| | 108 Mbps | 10.39 | 13.67 | 13.56 |
| | 121.5 Mbps | 10.58 | 13.89 | 13.91 |
| | 135 Mbps | 10.77 | 14.01 | 13.94 |

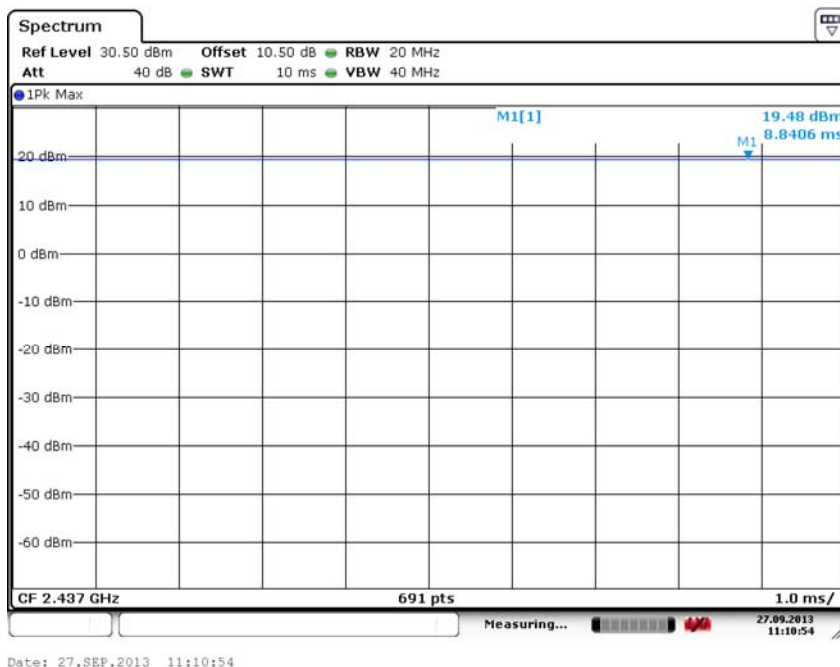
| Modulation type | | Peak power output (dBm) | | |
|-----------------|-----------|-------------------------|------------------|-------------------|
| | | 2412MHz (Ch1) | 2437MHz (Ch6) | 2462MHz (Ch11) |
| 11b | 1 Mbps | 19.42 | 19.48 | 19.60 |
| | 2 Mbps | 19.39 | 19.40 | 19.55 |
| | 5.5 Mbps | 19.31 | 19.30 | 19.47 |
| | 11 Mbps | 19.24 | 19.36 | 19.51 |
| 11g | 6 Mbps | 22.69 | 23.08 | 23.08 |
| | 9 Mbps | 22.84 | 23.10 | 23.12 |
| | 12 Mbps | 22.71 | 23.10 | 23.15 |
| | 18 Mbps | 22.79 | 23.16 | 23.14 |
| | 24 Mbps | 22.69 | 23.19 | 23.08 |
| | 36 Mbps | 22.69 | 23.11 | 23.22 |
| | 48 Mbps | 22.65 | 23.18 | 23.10 |
| | 54 Mbps | 22.71 | 23.21 | 23.04 |
| 11n HT20 | 6.5 Mbps | 22.87 | 23.39 | 23.41 |
| | 13 Mbps | 22.92 | 23.32 | 23.35 |
| | 19.5 Mbps | 22.81 | 23.33 | 23.30 |
| | 26 Mbps | 22.91 | 23.32 | 23.27 |
| | 39 Mbps | 22.67 | 23.34 | 23.26 |
| | 52 Mbps | 22.71 | 23.35 | 23.34 |
| | 58.5 Mbps | 22.76 | 23.24 | 23.22 |
| | 65 Mbps | 22.85 | 23.34 | 23.37 |

| Modulation type | | Peak power output (dBm) | | |
|-----------------|------------|-------------------------|------------------|-------------------|
| | | 2422MHz (Ch3) | 2437MHz (Ch6) | 2462MHz (Ch11) |
| 11n HT40 | 13.5 Mbps | 23.01 | 24.20 | 24.38 |
| | 27 Mbps | 22.87 | 23.98 | 23.89 |
| | 40.5 Mbps | 22.67 | 23.78 | 23.67 |
| | 54 Mbps | 22.84 | 23.66 | 23.76 |
| | 81 Mbps | 22.34 | 23.98 | 23.89 |
| | 108 Mbps | 22.67 | 23.88 | 24.01 |
| | 121.5 Mbps | 22.28 | 23.74 | 23.91 |
| | 135 Mbps | 22.19 | 23.64 | 23.95 |

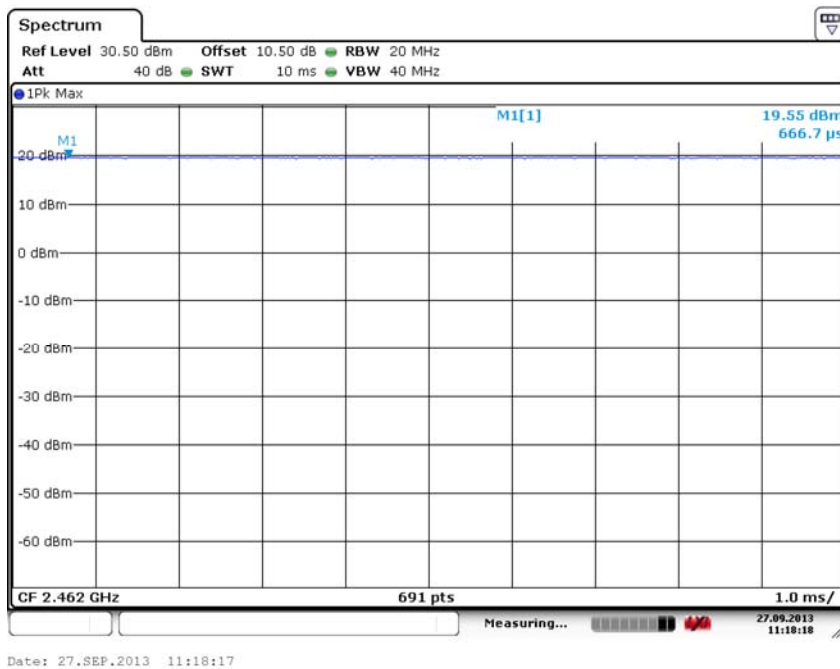
* The data rate 1Mbps, 36Mbps, 6.5Mbps, 27Mbps are selected as worse condition, and the following cases are performed with this condition.



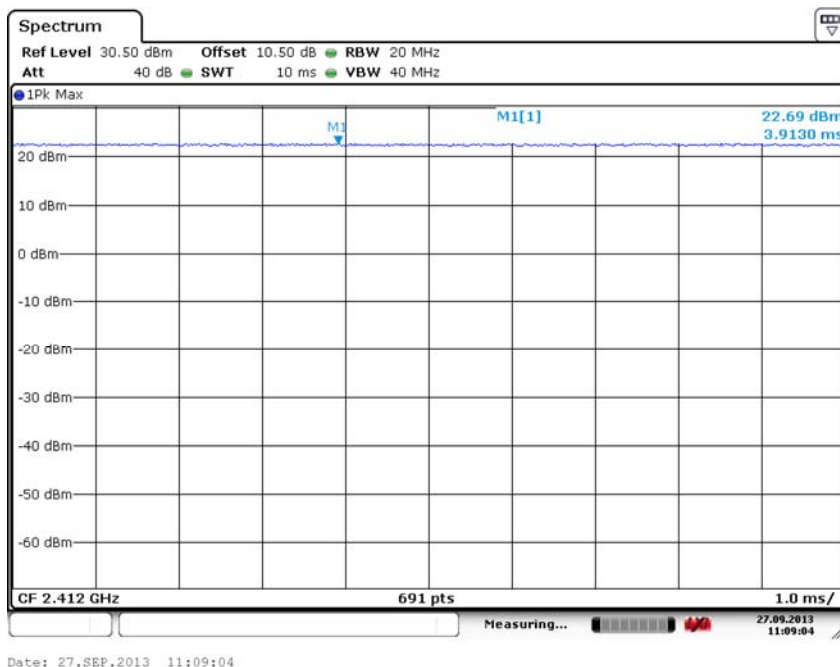
Carrier frequency (MHz): 2412
Channel No.:1
Test Mode: 802.11b



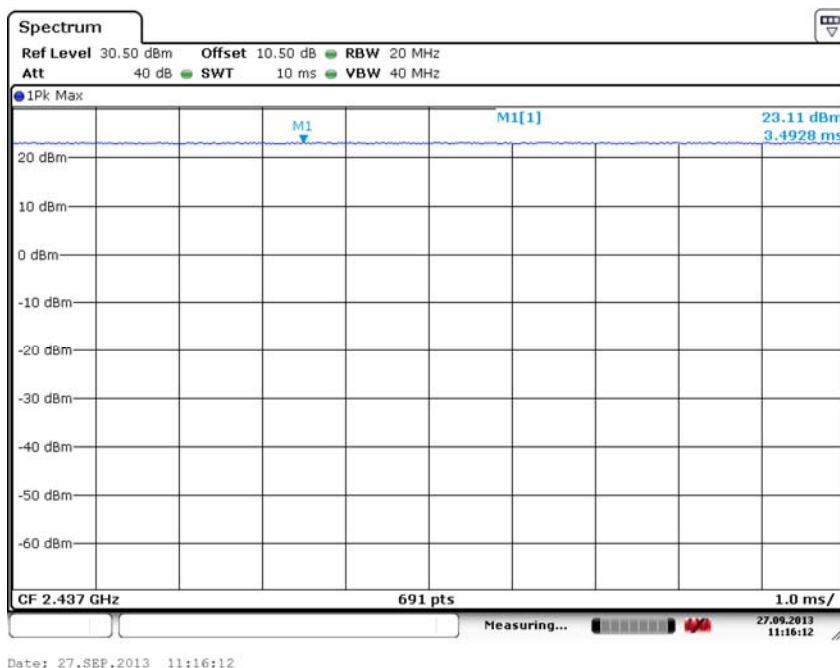
Carrier frequency (MHz): 2437
Channel No.:6
Test Mode: 802.11b



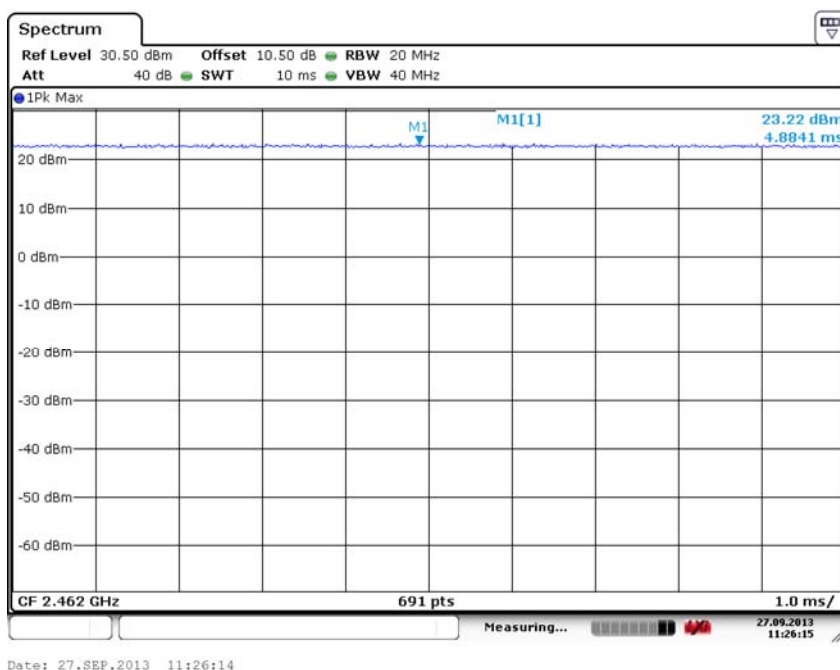
Carrier frequency (MHz): 2462
 Channel No.:11
 Test Mode: 802.11b



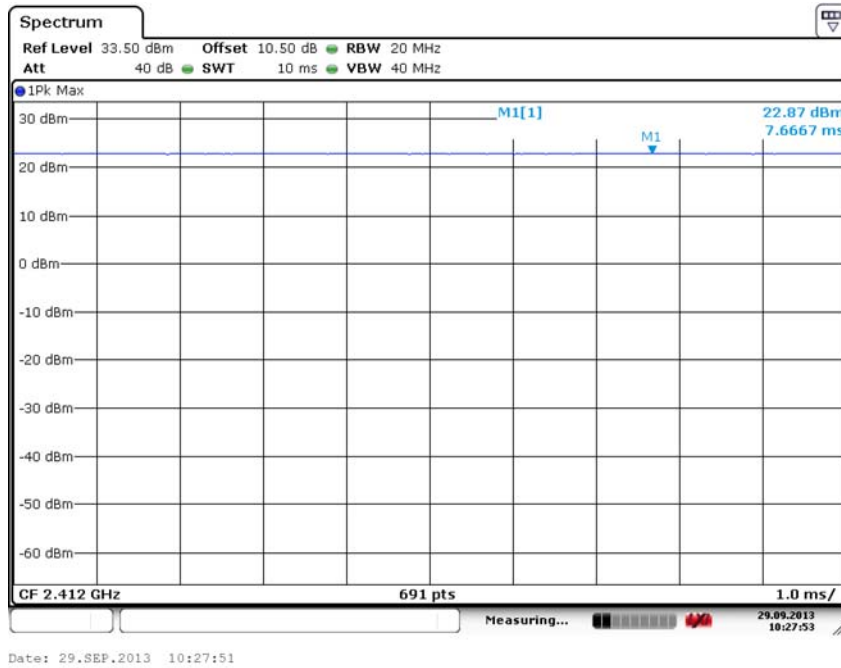
Carrier frequency (MHz): 2412
 Channel No.:1
 Test Mode: 802.11g



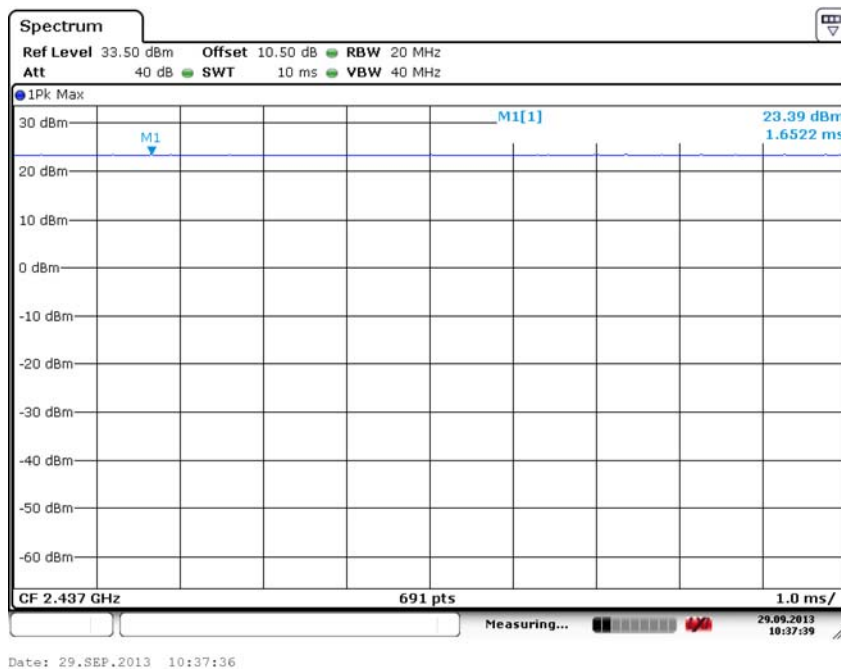
Carrier frequency (MHz): 2437
Channel No.:6
Test Mode: 802.11g



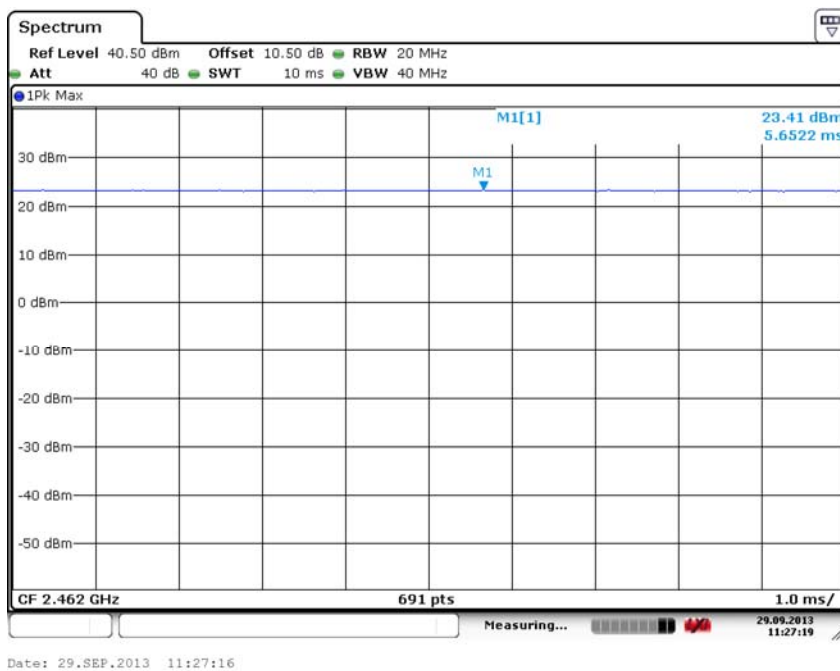
Carrier frequency (MHz): 2462
Channel No.:11
Test Mode: 802.11g



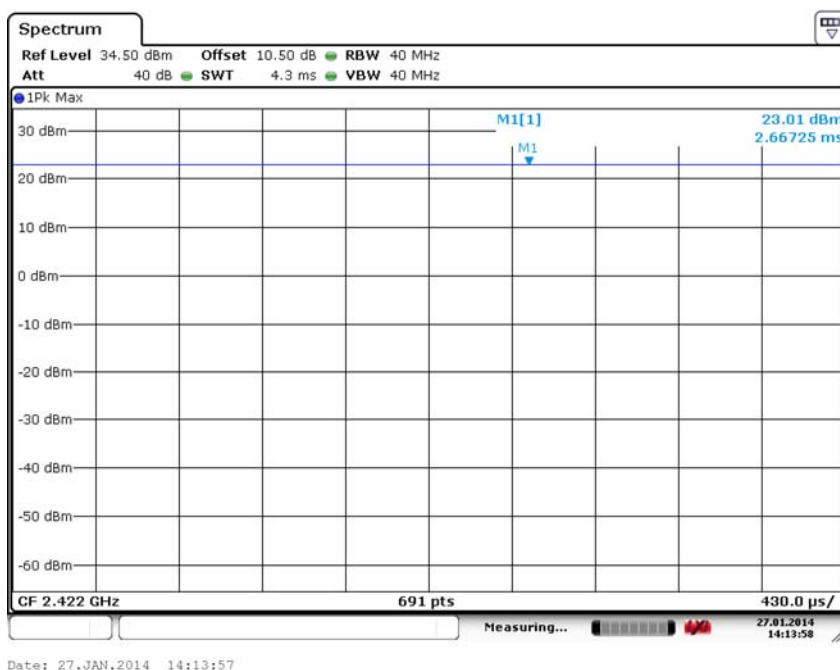
Carrier frequency (MHz): 2412
Channel No.:1
Test Mode: 802.11n(HT20)



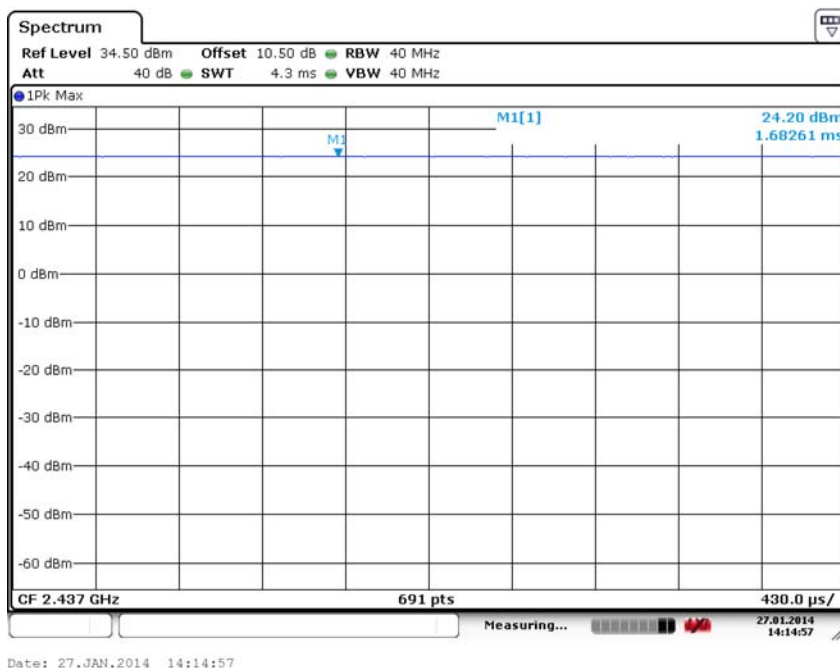
Carrier frequency (MHz): 2437
Channel No.:6
Test Mode: 802.11n(HT20)



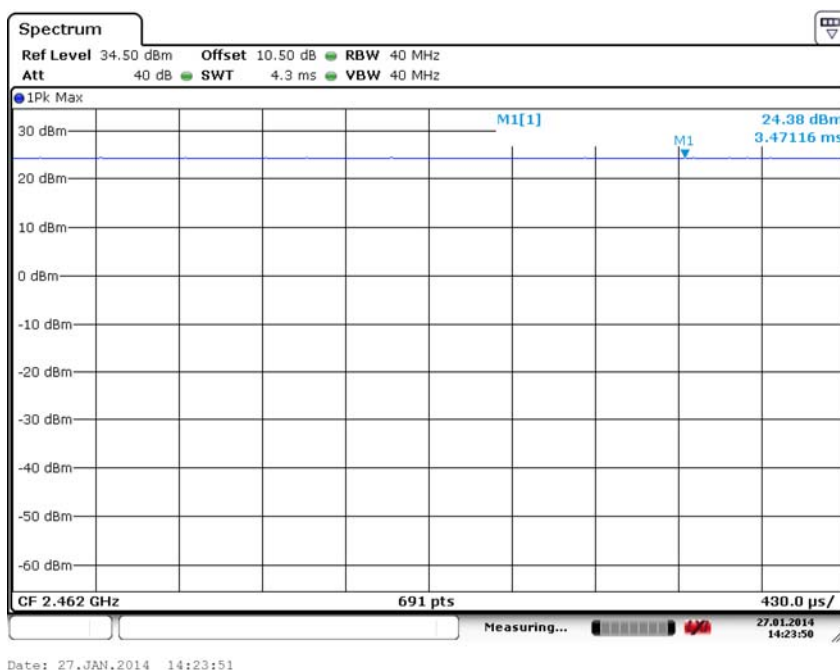
Carrier frequency (MHz): 2462
Channel No.:11
Test Mode: 802.11n(HT20)



Carrier frequency (MHz): 2412
Channel No.:3
Test Mode: 802.11n(HT40)



Carrier frequency (MHz): 2437
Channel No.:6
Test Mode: 802.11n(HT40)



Carrier frequency (MHz): 2462
Channel No.:11
Test Mode: 802.11n(HT40)

2.2.2 Occupied Bandwidth

2.2.2.1 Ambient condition

| Temperature | Relative humidity | Pressure |
|-------------|-------------------|----------|
| 22°C | 40% | 101.1kPa |

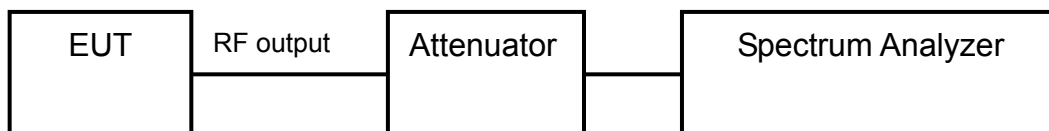
2.2.2.2 Test Description

The measurement is made according to ANSI C63.10-2009 and KDB 558074 D01 DTS Meas Guidance v03r01.

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

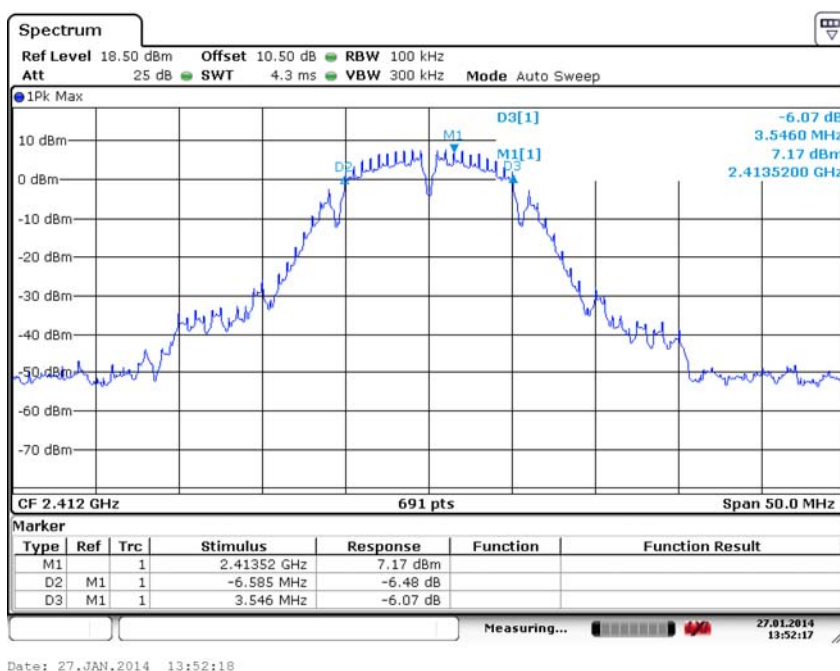
FCC Part15.247(a)(2)

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.

2.2.2.4 Test result

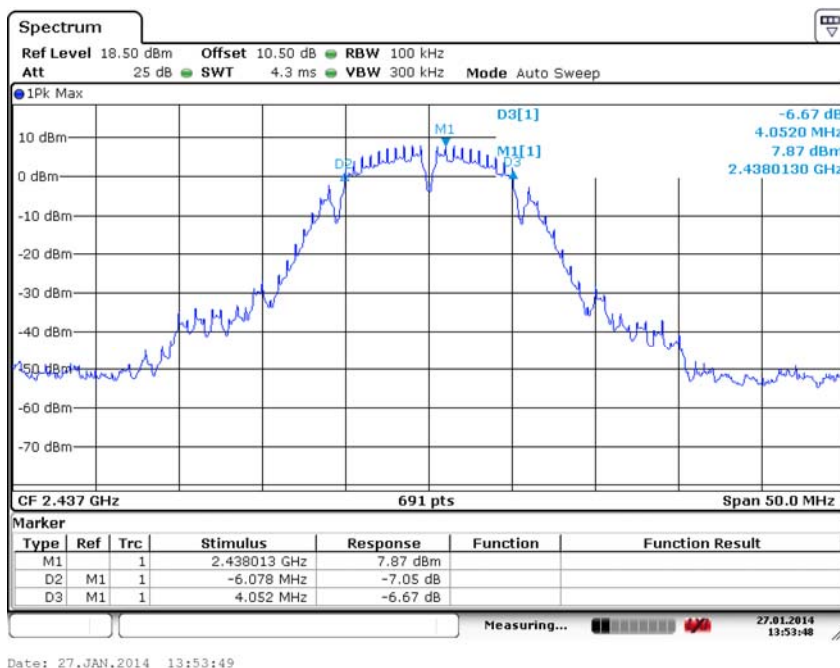
Test Mode: 802.11b

| Carrier frequency (MHz) | Channel No. | 6 dB bandwidth(MHz) |
|-------------------------|-------------|---------------------|
| 2412 | 1 | 10.13 |
| 2437 | 6 | 10.13 |
| 2462 | 11 | 10.13 |



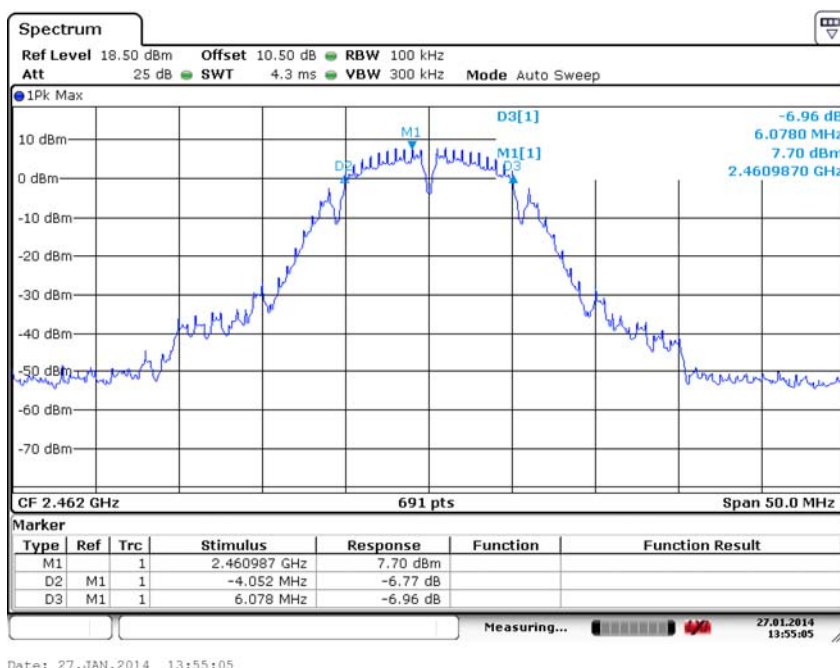
Date: 27.JAN.2014 13:52:18

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



Date: 27.JAN.2014 13:53:49

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

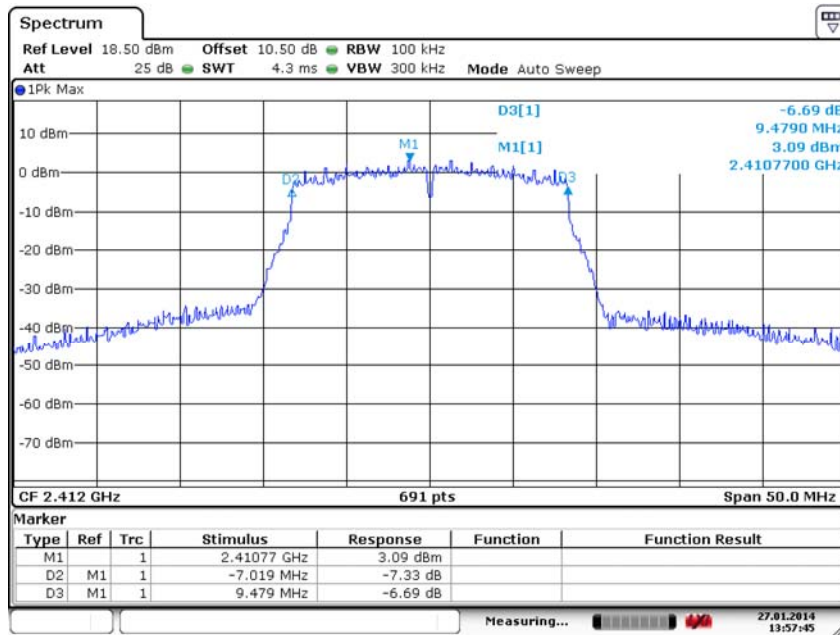


Date: 27.JAN.2014 13:55:05

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

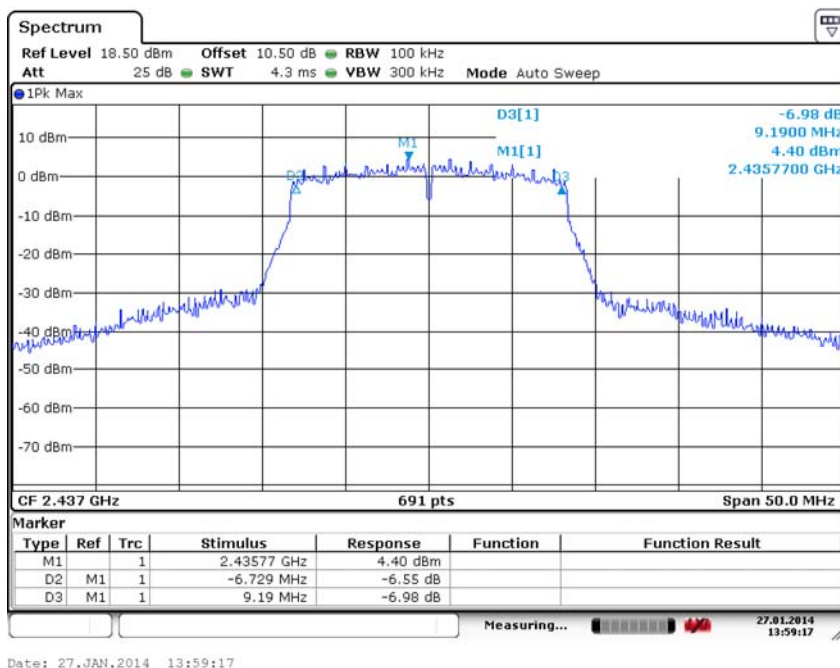
Test Mode: 802.11g

| Carrier frequency (MHz) | Channel No. | 6 dB bandwidth(MHz) |
|-------------------------|-------------|---------------------|
| 2412 | 1 | 16.50 |
| 2437 | 6 | 15.92 |
| 2462 | 11 | 16.43 |

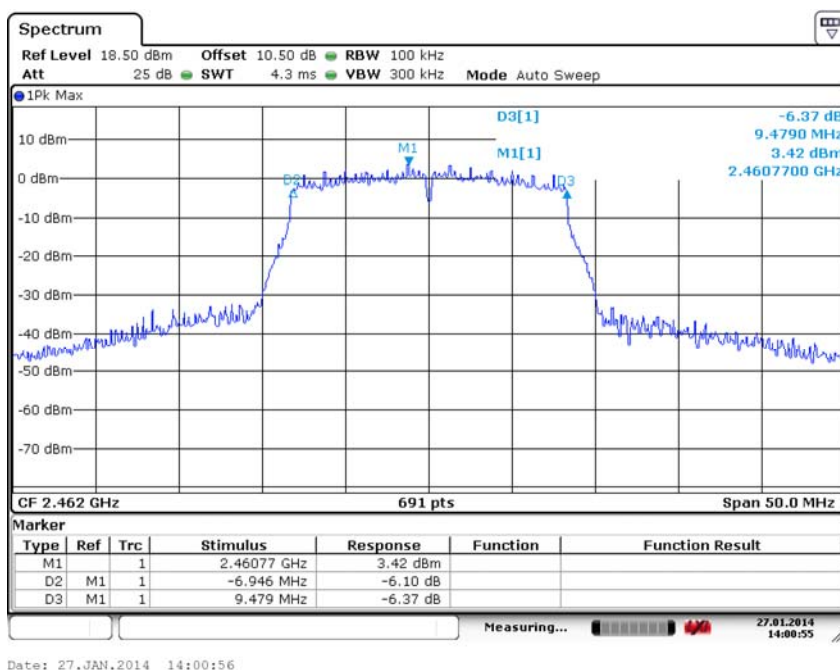


Date: 27.JAN.2014 13:57:45

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



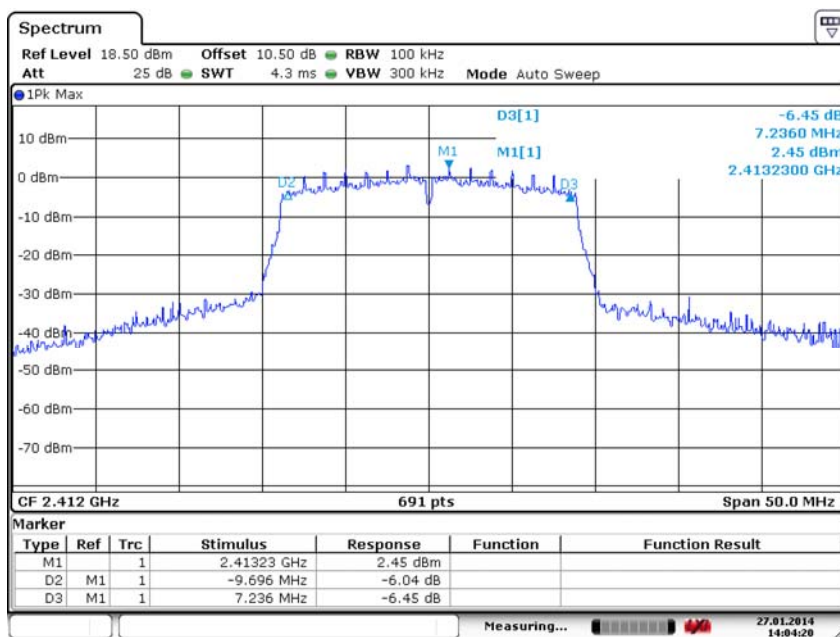
Carrier frequency (MHz): 2437
Channel No.:6
Test Mode: 802.11g



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

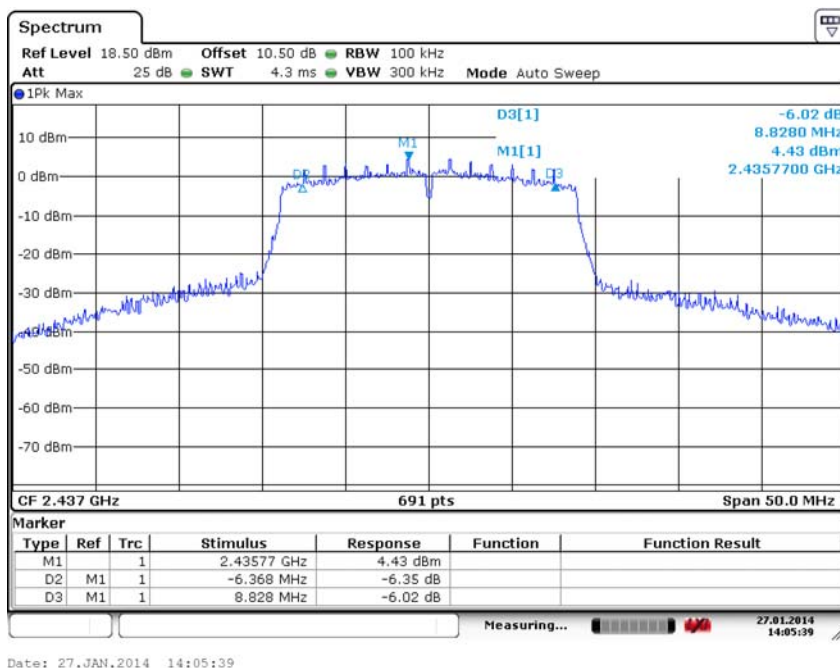
Test Mode: 802.11n(HT20)

| Carrier frequency (MHz) | Channel No. | 6 dB bandwidth(MHz) |
|-------------------------|-------------|---------------------|
| 2412 | 1 | 16.93 |
| 2437 | 6 | 15.20 |
| 2462 | 11 | 16.43 |



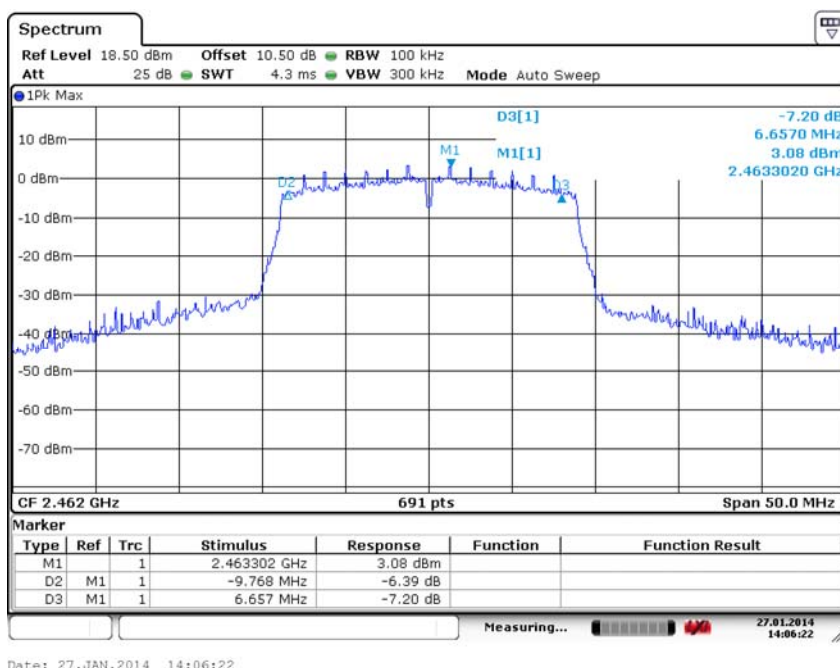
Date: 27.JAN.2014 14:04:21

Carrier frequency (MHz): 2412
Channel No.:1
Test Mode: 802.11n(HT20)



Date: 27, JAN, 2014 14:05:39

Carrier frequency (MHz): 2437
Channel No.:6
Test Mode: 802.11n(HT20)

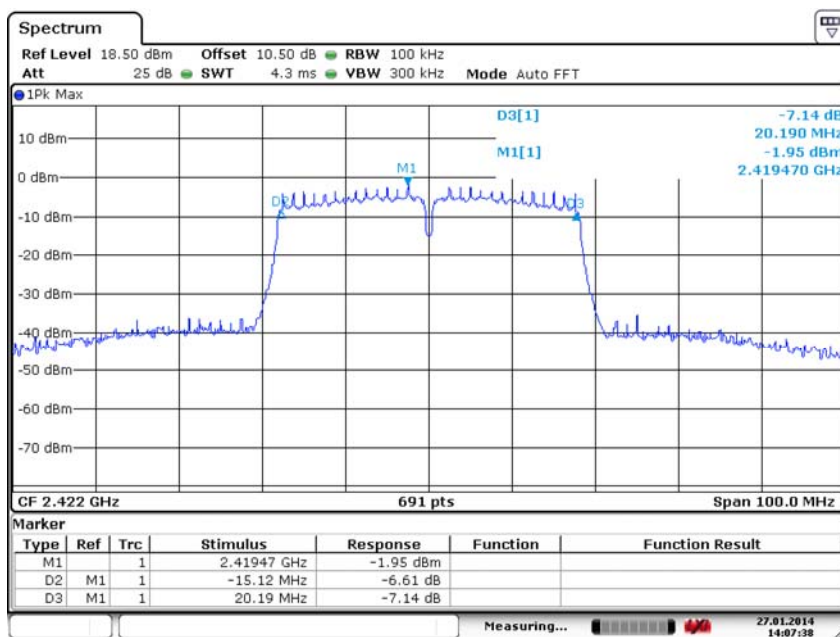


Date: 27, JAN, 2014 14:06:22

Carrier frequency (MHz): 2462
Channel No.:11
Test Mode: 802.11n(HT20)

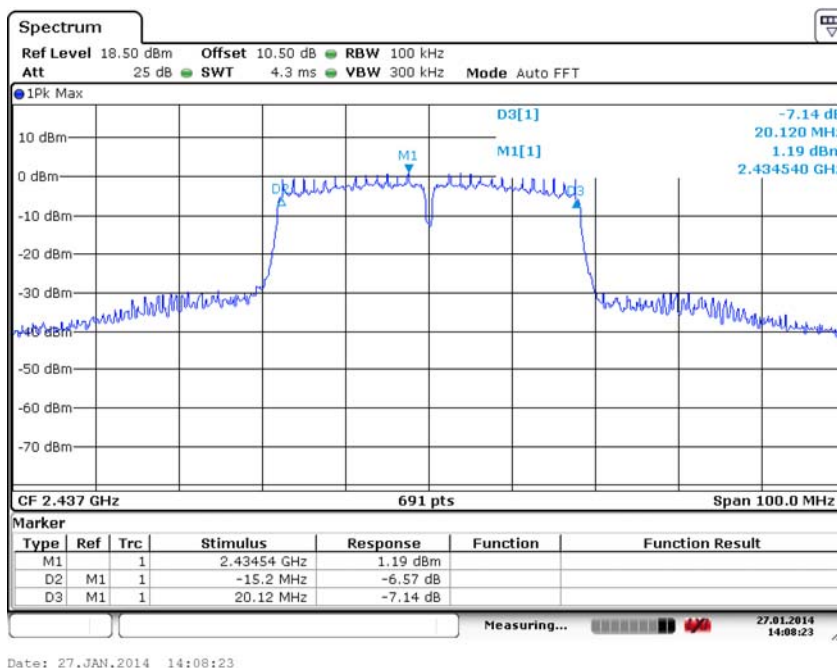
Test Mode: 802.11n(HT40)

| Carrier frequency (MHz) | Channel No. | 6 dB bandwidth(MHz) |
|-------------------------|-------------|---------------------|
| 2422 | 3 | 35.31 |
| 2437 | 6 | 35.32 |
| 2462 | 11 | 35.32 |



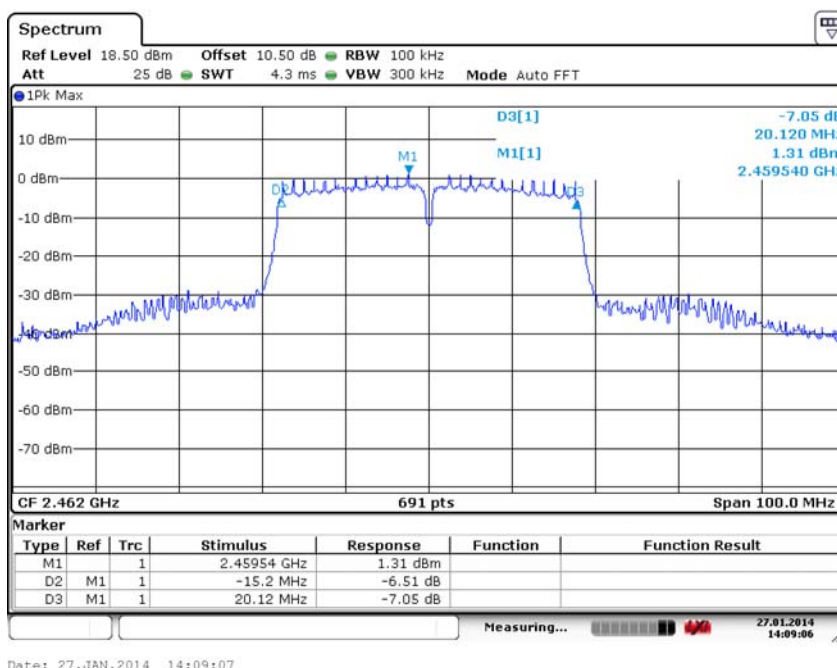
Date: 27.JAN.2014 14:07:38

Carrier frequency (MHz): 2422
Channel No.:3
Test Mode: 802.11n(HT40)



Date: 27.JAN.2014 14:08:23

Carrier frequency (MHz): 2437
Channel No.:6
Test Mode: 802.11n(HT40)



Date: 27.JAN.2014 14:09:07

Carrier frequency (MHz): 2462
Channel No.:11
Test Mode: 802.11n(HT40)

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.

Connect the antenna port to be measured through the 20 dB pad to the spectrum analyzer input. Configure the spectrum analyzer as described below. All losses between the EUT output and the spectrum analyzer, such as attenuator value, cable losses and other offsets shall be recorded.

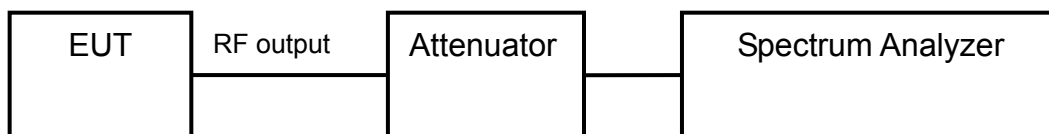
- a) Set CENTER FREQUENCY = Frequency from Power Spectral Density Test Matrix
- b) Set SPAN = 20 MHz (For devices with a nominal 40 MHz BW, 50 MHz span will be needed)
- c) Set REFERENCE LEVEL = 20 dBm
- d) Set ATTENUATION = 0 dB (add internal attenuation, if necessary)
- e) Set SWEEP TIME = Coupled
- f) Set RBW = 3 kHz
- g) Set VBW = 10 kHz
- h) Set DETECTOR = Peak
- i) Set MKR = Center Frequency
- j) Set TRACE = CLEAR WRITE

Place the radio in continuous transmit mode. Set the TRACE to MAX HOLD, and after the trace stabilizes, the TRACE to VIEW. Set the marker on the peak of the signal and then adjust the center frequency of the spectrum analyzer to the marker frequency.

After viewing the EUT waveform on the spectrum analyzer, perform the following spectrum analyzer functions to capture the trace:

- Set SPAN = 300 kHz
- Set SWEEP TIME = 100 s
- Set TRACE = MAX HOLD
- Set MKR = PEAK SEARCH

Record the marker level for the particular mode. Repeat these steps for other device modes.



2.2.3.3 Test limit

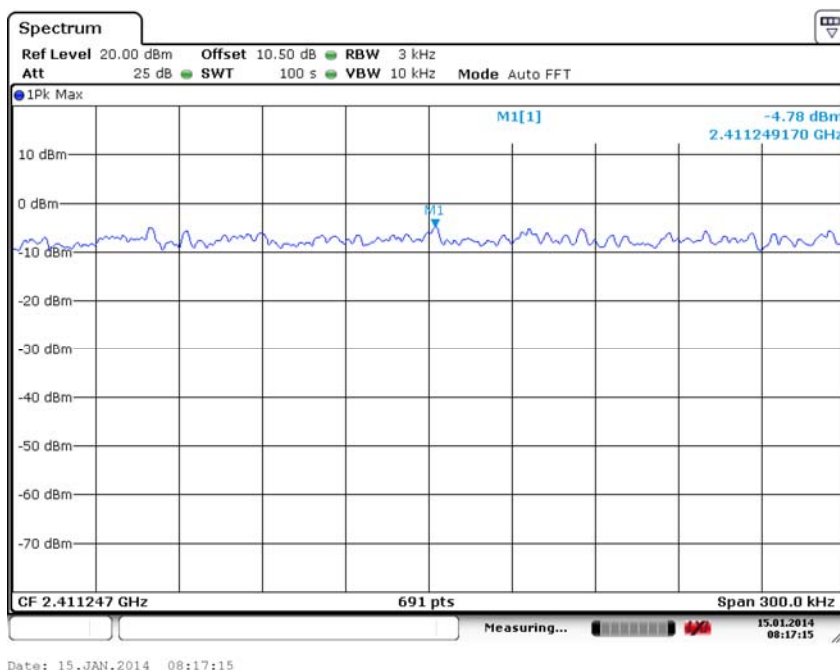
FCC Par15.247(e)

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.

2.2.3.4 Test result

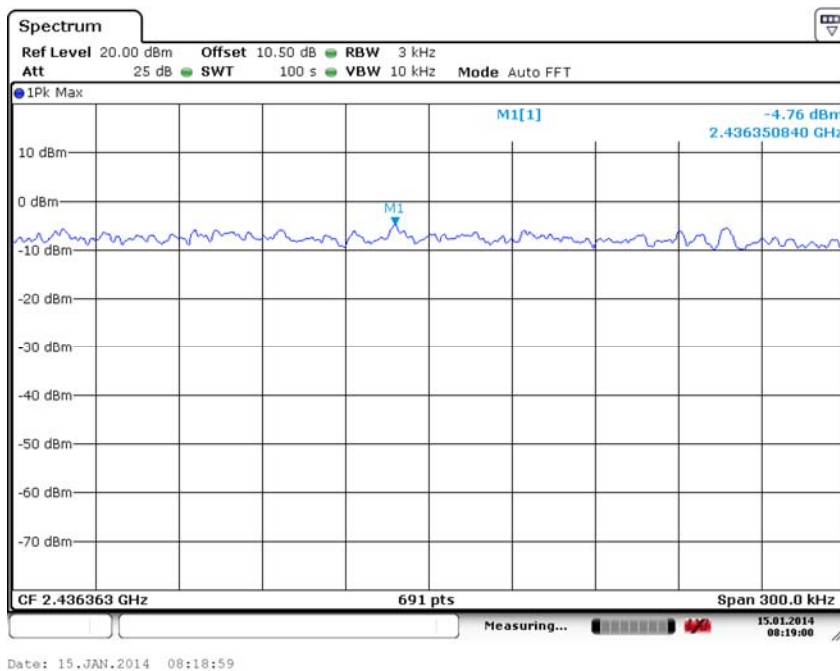
Test Mode: 802.11b

| Carrier frequency (MHz) | Channel No | Power Density |
|-------------------------|------------|---------------|
| 2412 | 1 | -4.78 |
| 2437 | 6 | -4.76 |
| 2462 | 11 | -4.83 |

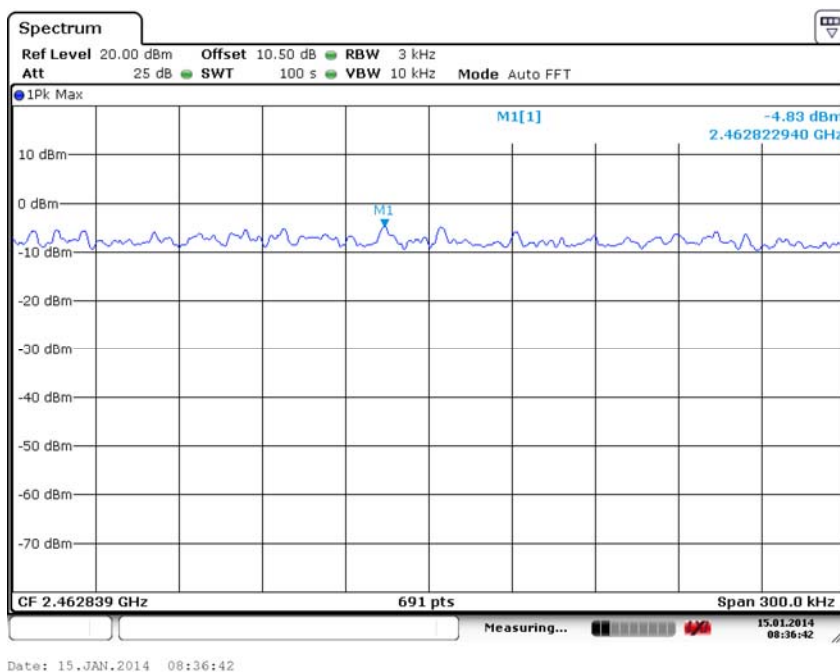


Date: 15.JAN.2014 08:17:15

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



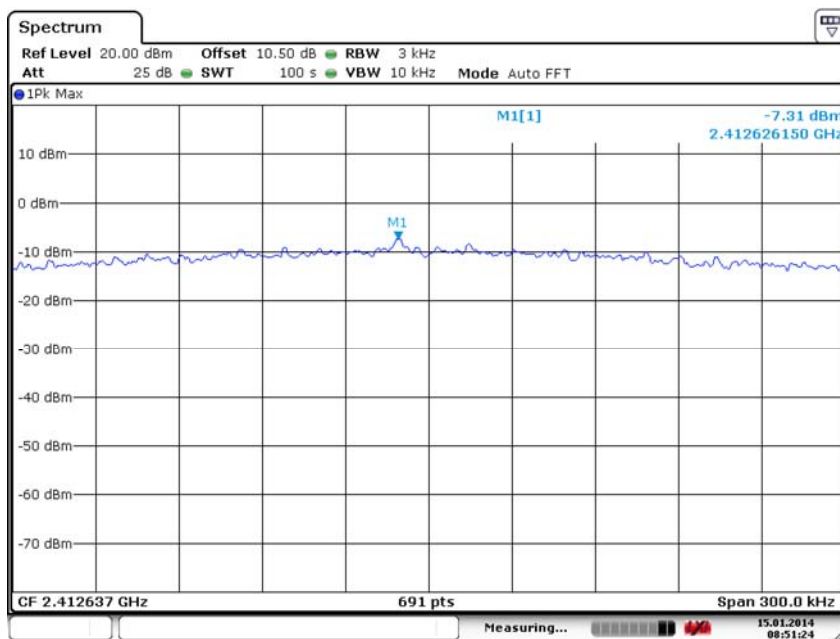
Carrier frequency (MHz): 2437
Channel No.6
Test Mode: 802.11b



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

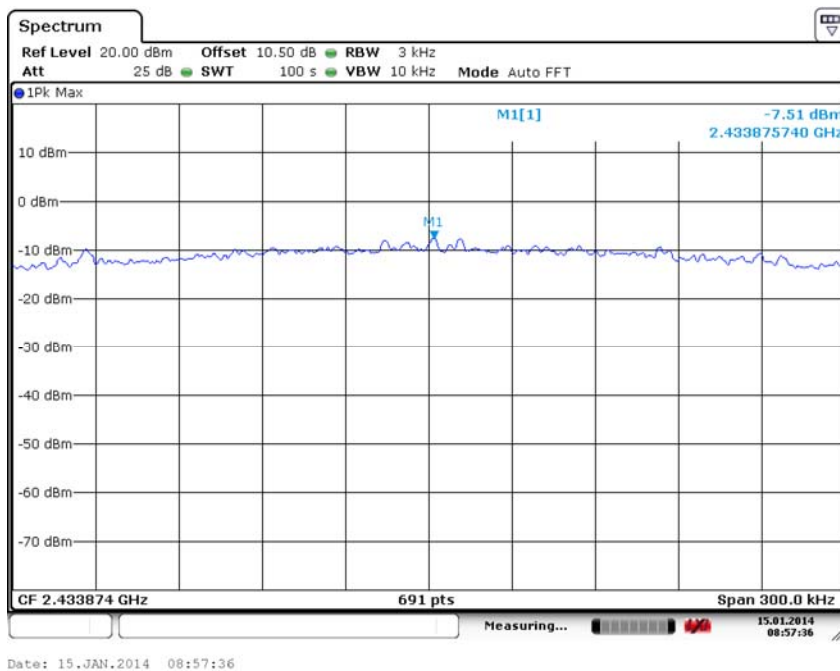
Test Mode: 802.11g

| Carrier frequency (MHz) | Channel No | Power Density |
|-------------------------|------------|---------------|
| 2412 | 1 | -7.31 |
| 2442 | 6 | -7.51 |
| 2472 | 11 | -8.05 |

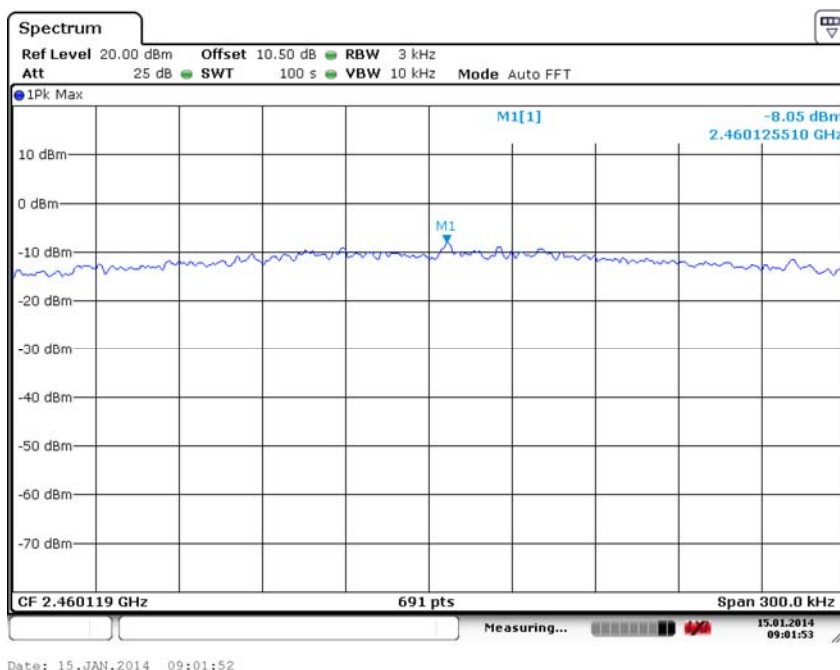


Date: 15.JAN.2014 08:51:24

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



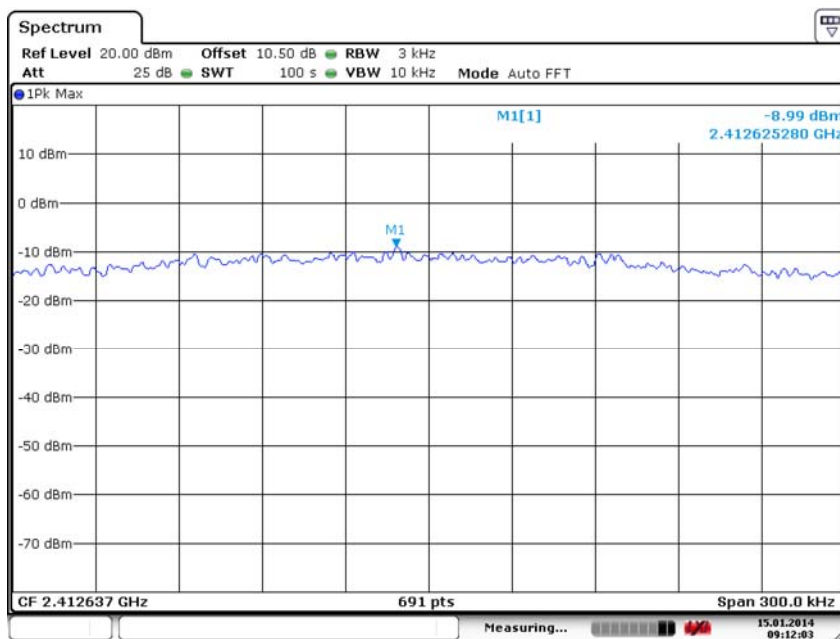
Carrier frequency (MHz): 2437
 Channel No.6
 Test Mode: 802.11g



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

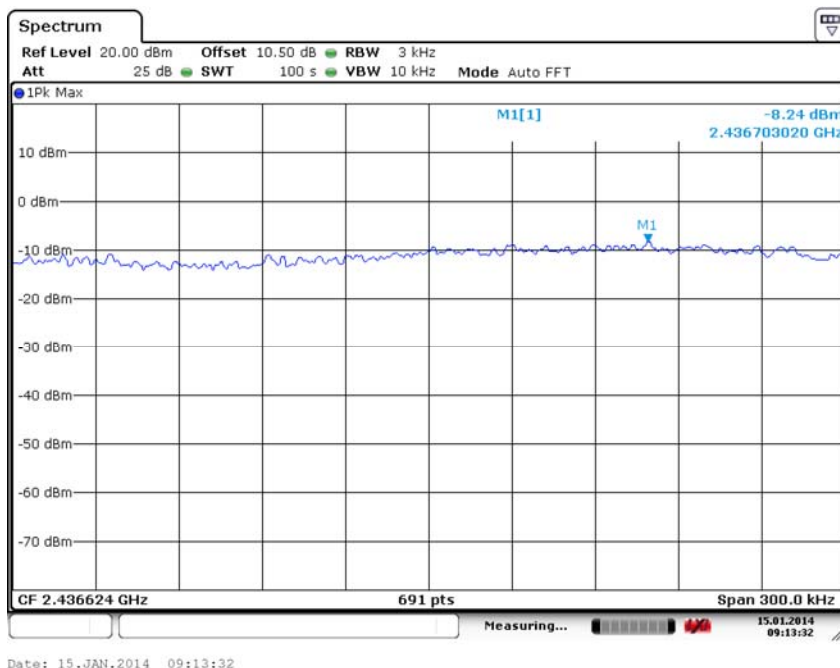
Test Mode: 802.11n(HT20)

| Carrier frequency (MHz) | Channel No | Power Density |
|-------------------------|------------|---------------|
| 2412 | 1 | -8.99 |
| 2437 | 6 | -8.24 |
| 2462 | 11 | -8.22 |

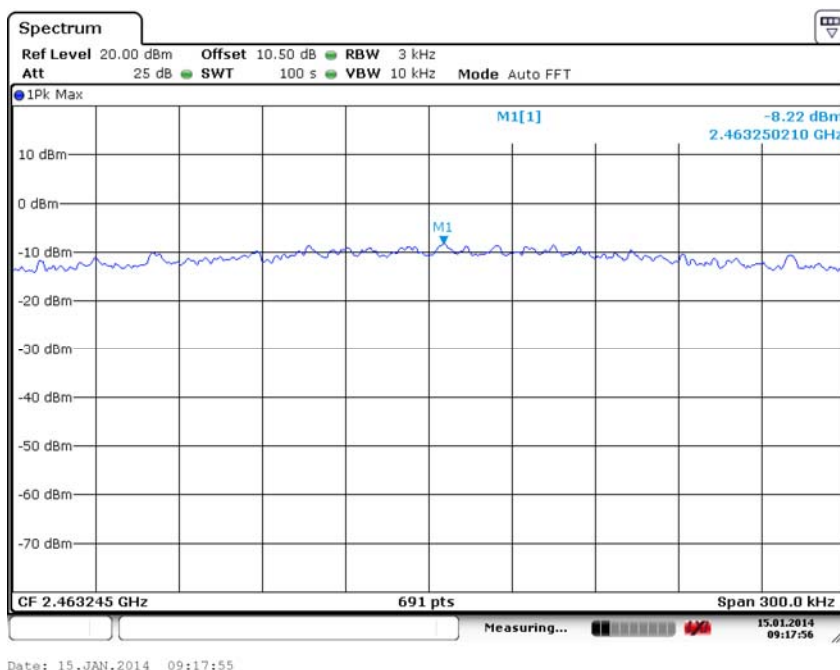


Date: 15.JAN.2014 09:12:03

Carrier frequency (MHz): 2412
Channel No.1
Test Mode: 802.11n(HT20)



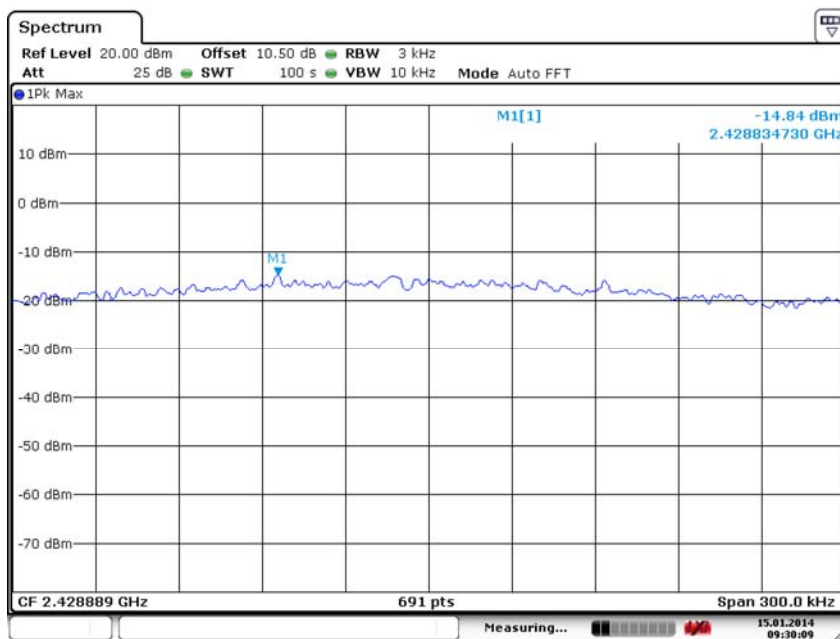
Carrier frequency (MHz): 2437
Channel No.6
Test Mode: 802.11n(HT20)



Carrier frequency (MHz): 2462
Channel No.11
Test Mode: 802.11n(HT20)

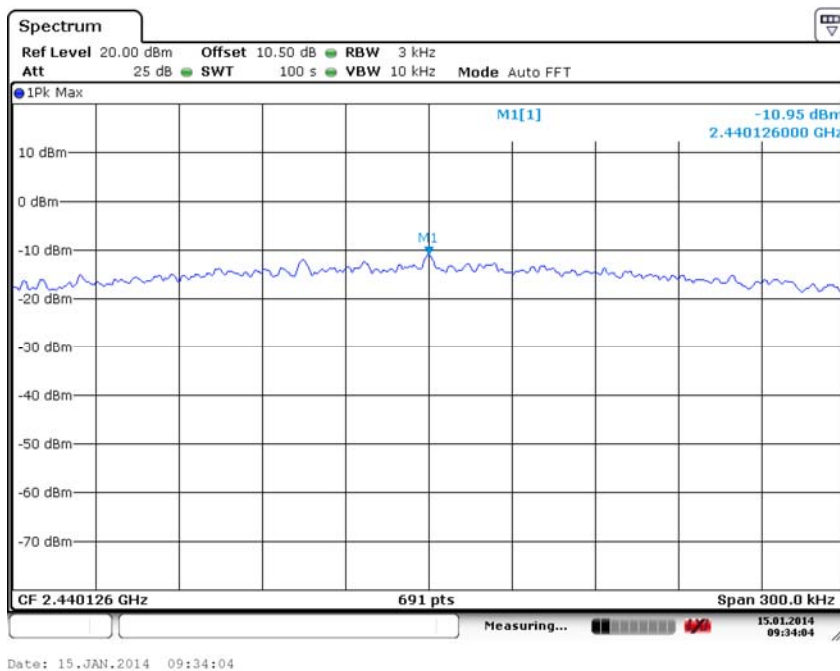
Test Mode: 802.11n(HT40)

| Carrier frequency (MHz) | Channel No | Power Density |
|-------------------------|------------|---------------|
| 2422 | 3 | -14.84 |
| 2437 | 6 | -10.95 |
| 2462 | 11 | -10.75 |

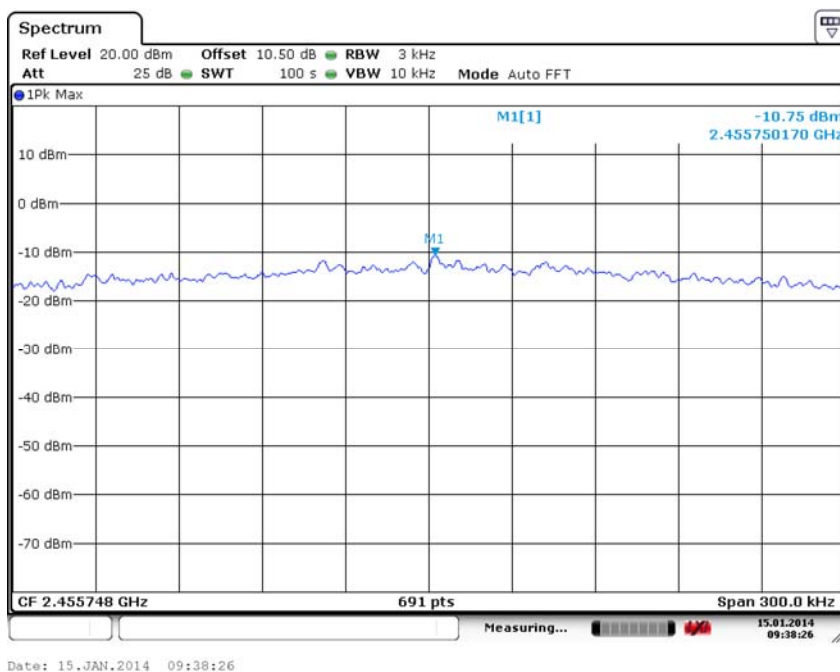


Date: 15.JAN.2014 09:30:09

Carrier frequency (MHz): 2422
Channel No.3
Test Mode: 802.11n(HT40)



Carrier frequency (MHz): 2437
Channel No.6
Test Mode: 802.11n(HT40)



Carrier frequency (MHz): 2462
Channel No.11
Test Mode: 802.11n(HT40)

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.

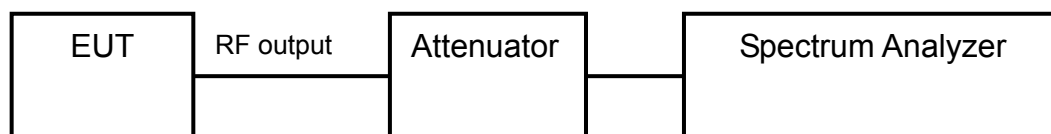
The Equipment Under Test (EUT) was set up in a shielded room to perform the spurious emissions measurements.

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.

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 dB |
|---------------|---------------------------------|---------------------|-----------|----------|
| --- | --- | --- | --- | --- |
| --- | --- | --- | --- | --- |

Carrier frequency (MHz): 2437

Channel No.:6

Test Mode: 802.11b

| Frequency MHz | Corrected measurement value dBm | Reference value dBm | Limit dBm | Delta dB |
|---------------|---------------------------------|---------------------|-----------|----------|
| --- | --- | --- | --- | --- |
| --- | --- | --- | --- | --- |

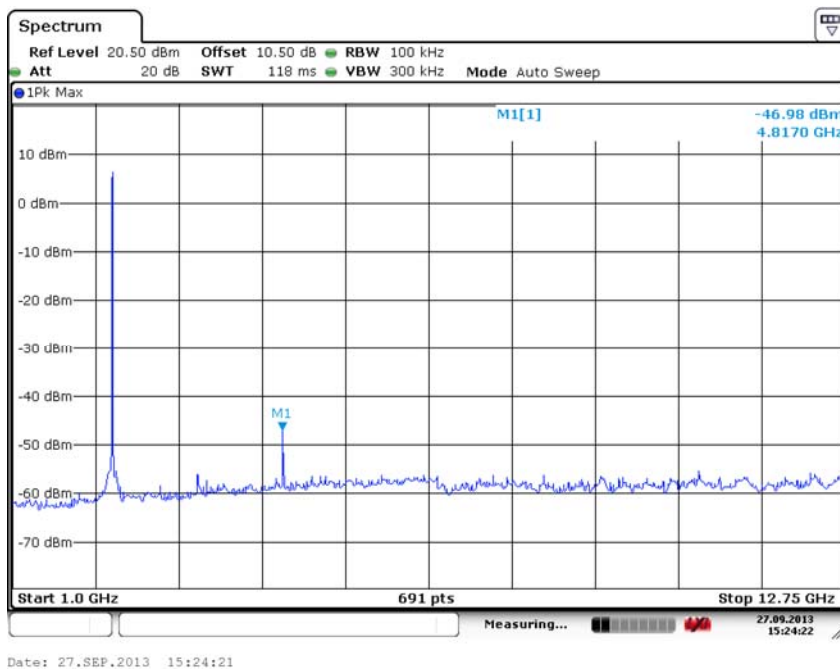
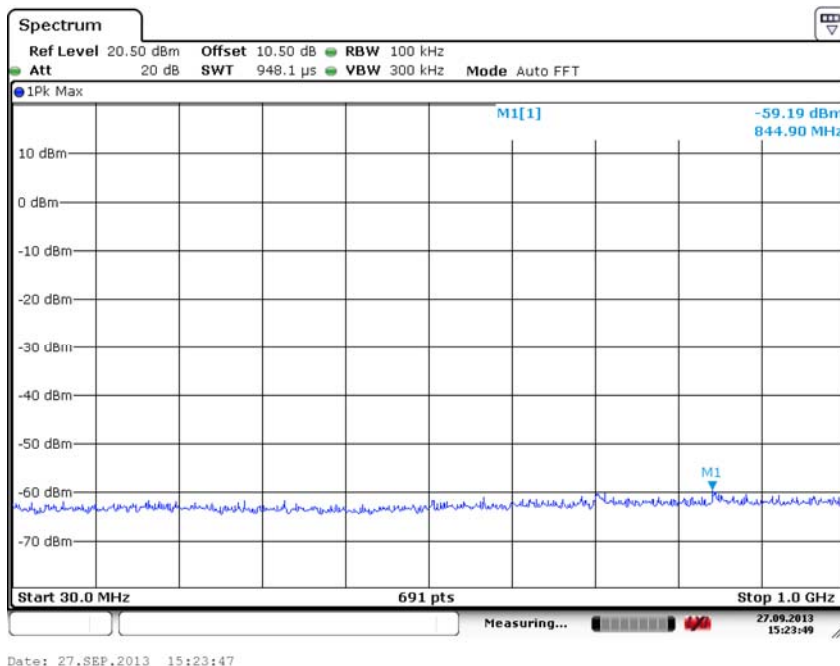
Carrier frequency (MHz): 2462

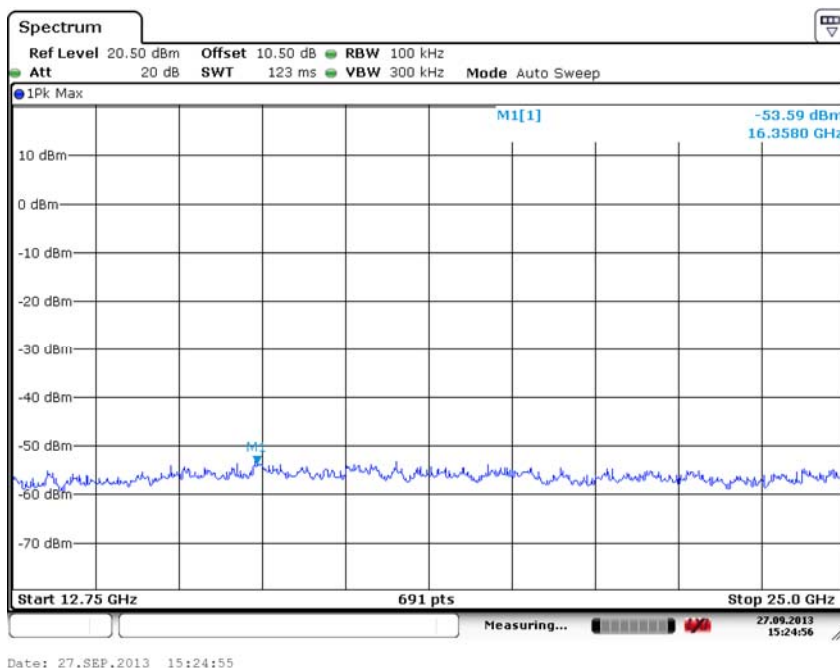
Channel No.:11

Test Mode: 802.11b

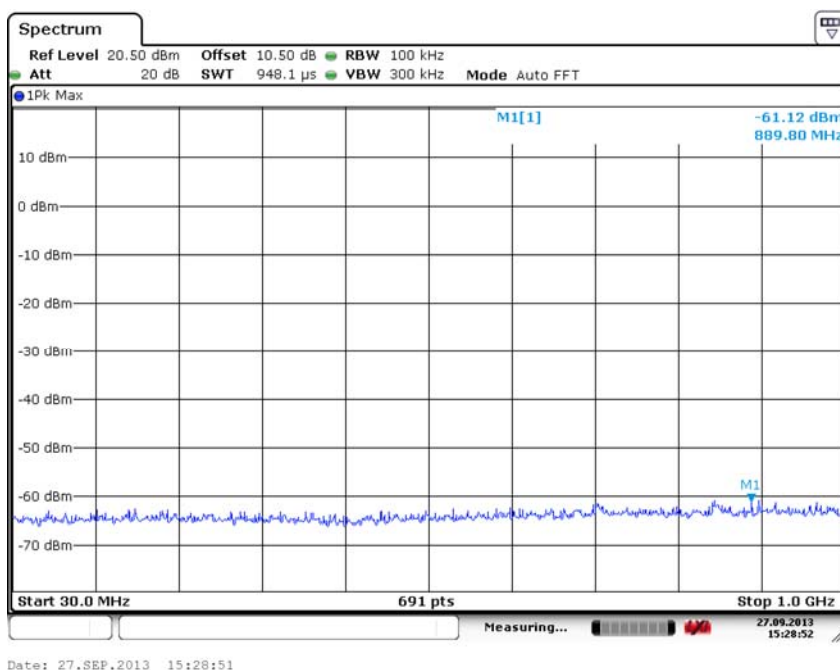
| Frequency MHz | Corrected measurement value dBm | Reference value dBm | Limit dBm | Delta dB |
|---------------|---------------------------------|---------------------|-----------|----------|
| --- | --- | --- | --- | --- |
| --- | --- | --- | --- | --- |

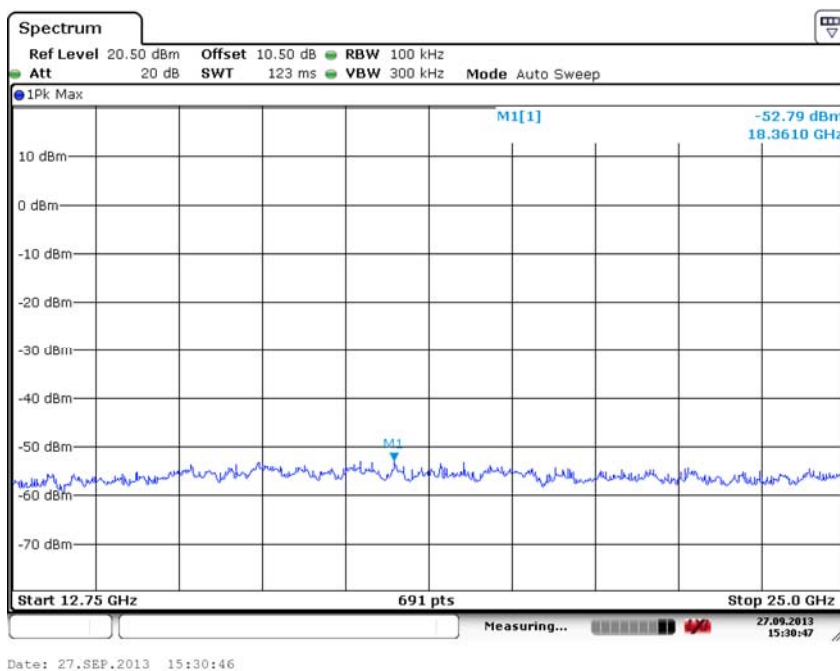
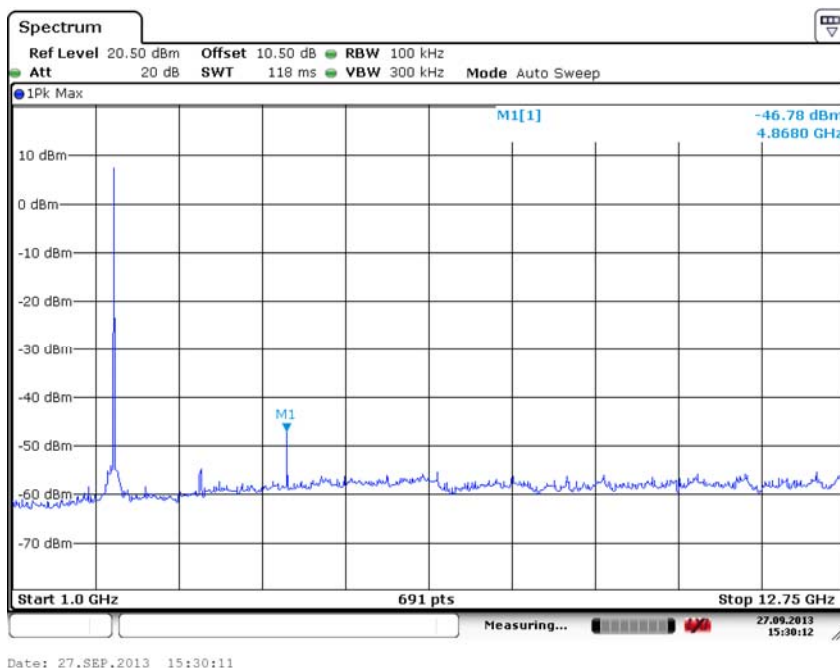
Note: The Reference value see 2.2.6 Band edge compliance



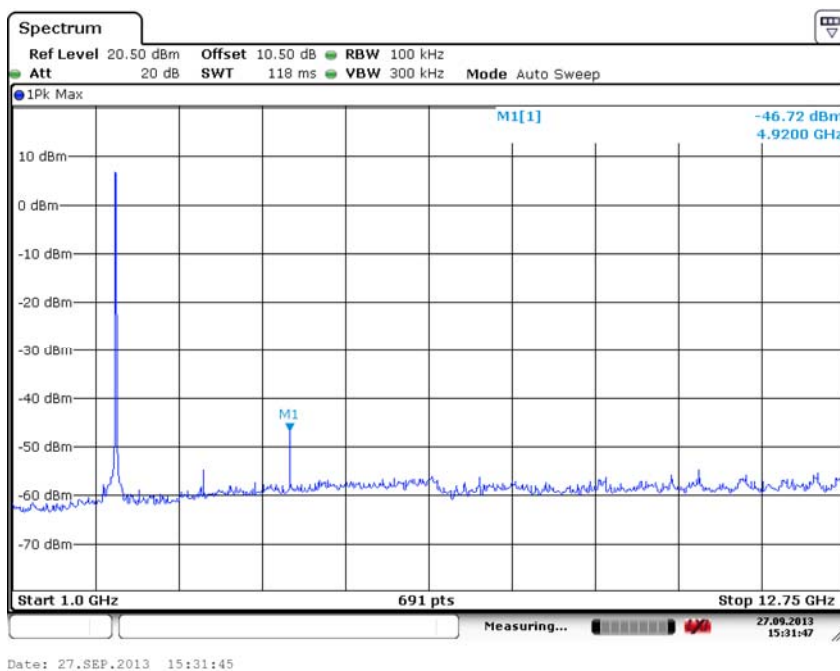
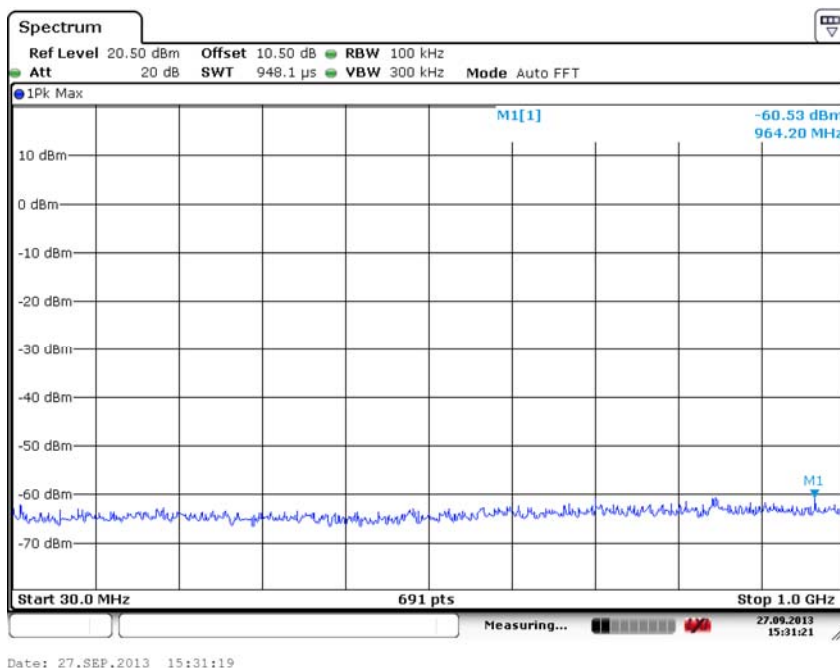


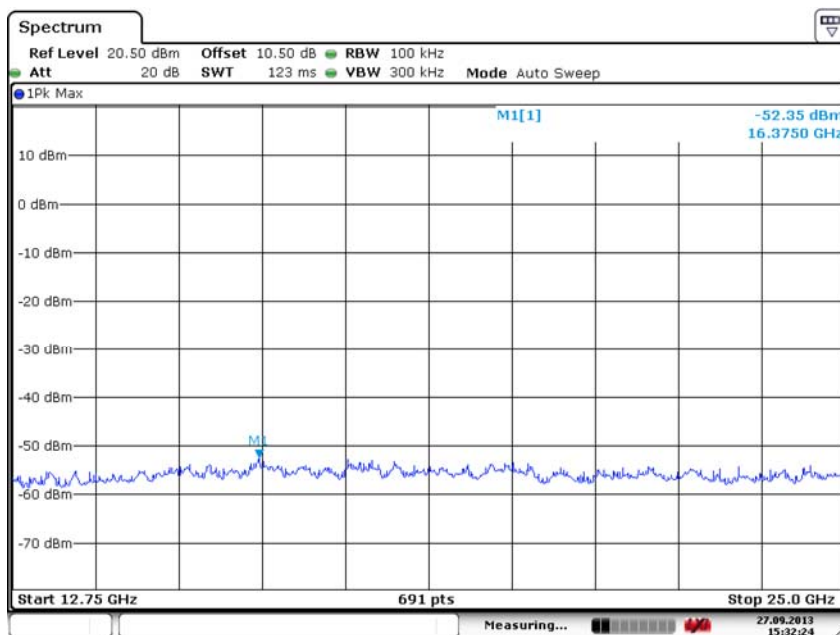
Carrier frequency (MHz): 2412
Channel No.:1
Test Mode: 802.11b





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





Date: 27.SEP.2013 15:32:23

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 dB |
|---------------|---------------------------------|---------------------|-----------|----------|
| --- | --- | --- | --- | --- |
| --- | --- | --- | --- | --- |

Carrier frequency (MHz): 2437

Channel No.:6

Test Mode: 802.11g

| Frequency MHz | Corrected measurement value dBm | Reference value dBm | Limit dBm | Delta dB |
|---------------|---------------------------------|---------------------|-----------|----------|
| --- | --- | --- | --- | --- |
| --- | --- | --- | --- | --- |

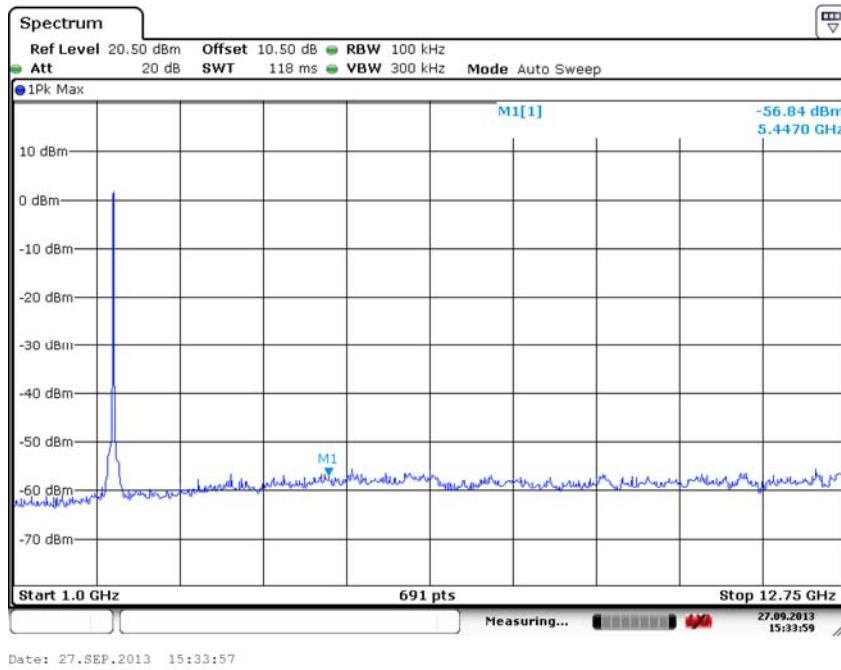
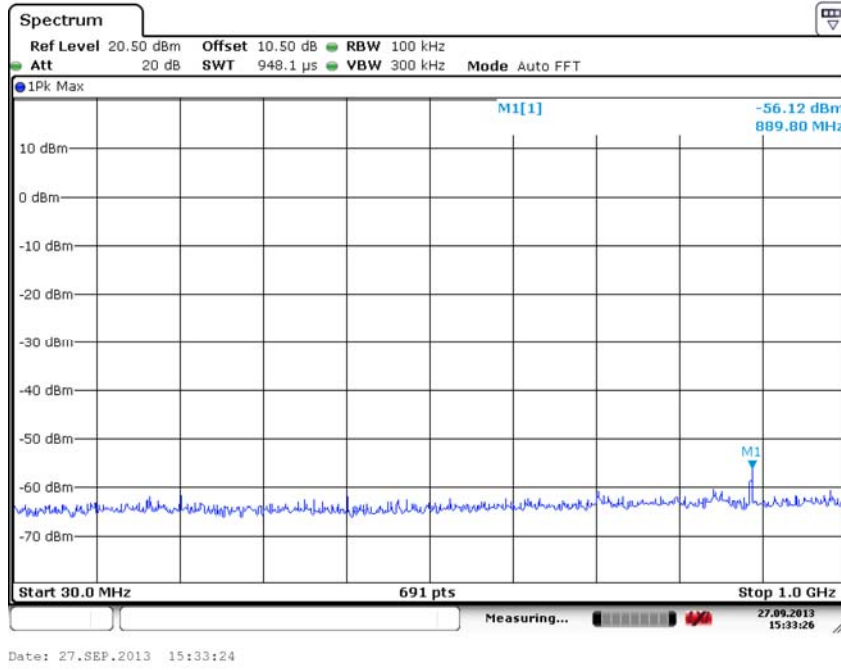
Carrier frequency (MHz): 2462

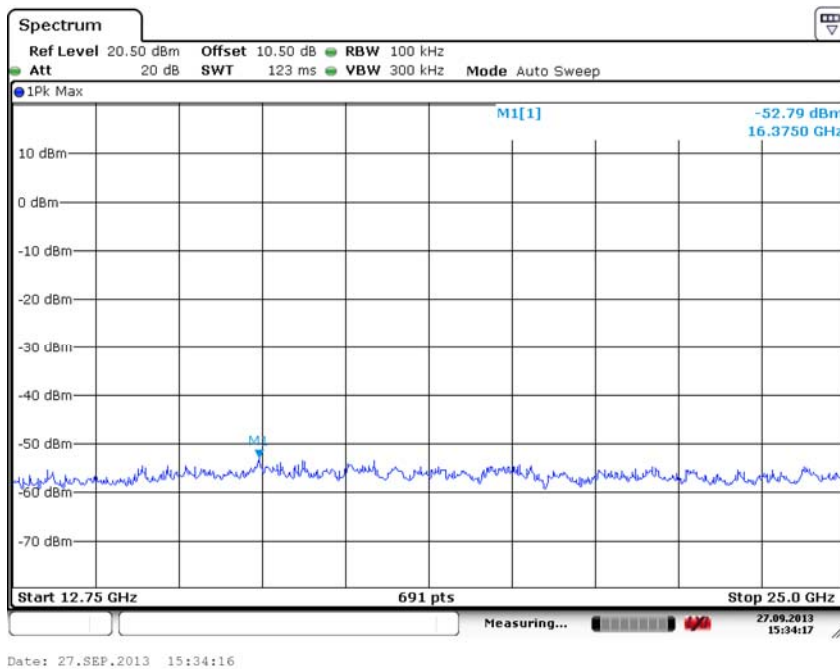
Channel No.:11

Test Mode: 802.11g

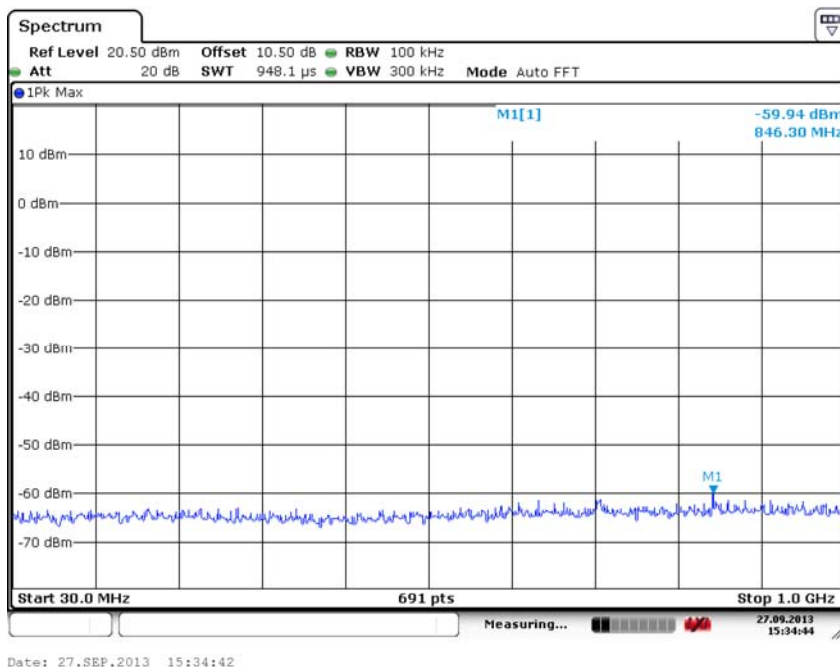
| Frequency MHz | Corrected measurement value dBm | Reference value dBm | Limit dBm | Delta dB |
|---------------|---------------------------------|---------------------|-----------|----------|
| --- | --- | --- | --- | --- |
| --- | --- | --- | --- | --- |

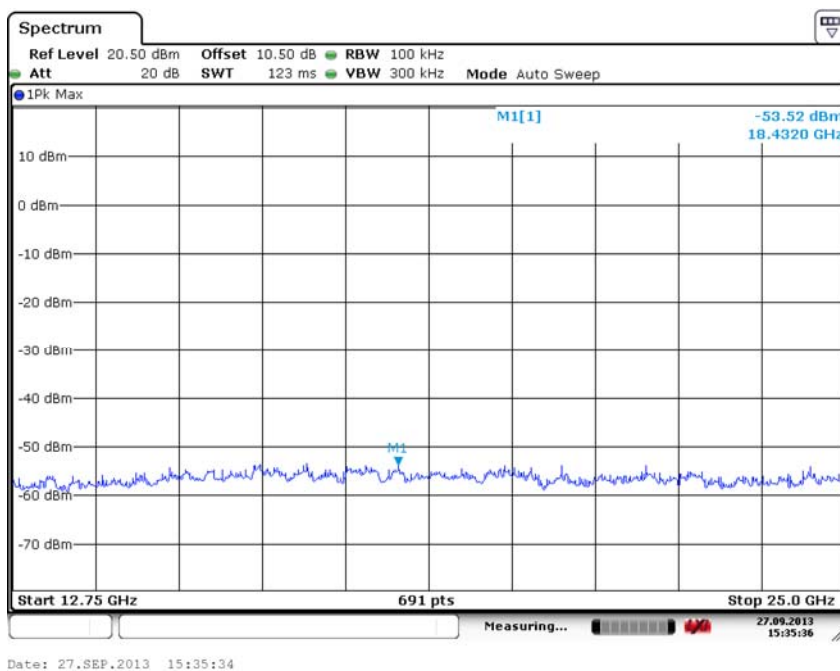
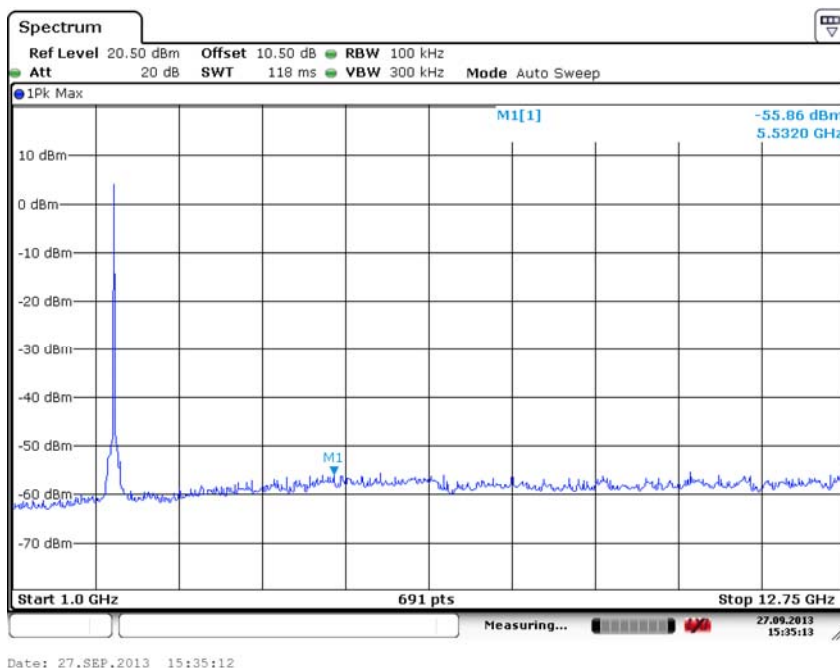
Note: The Reference value see 2.2.6 Band edge compliance



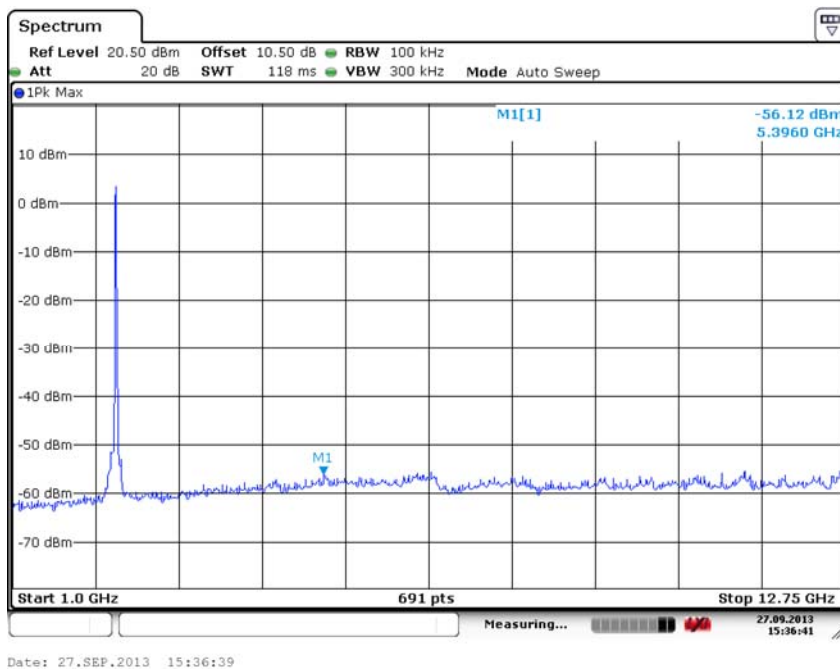
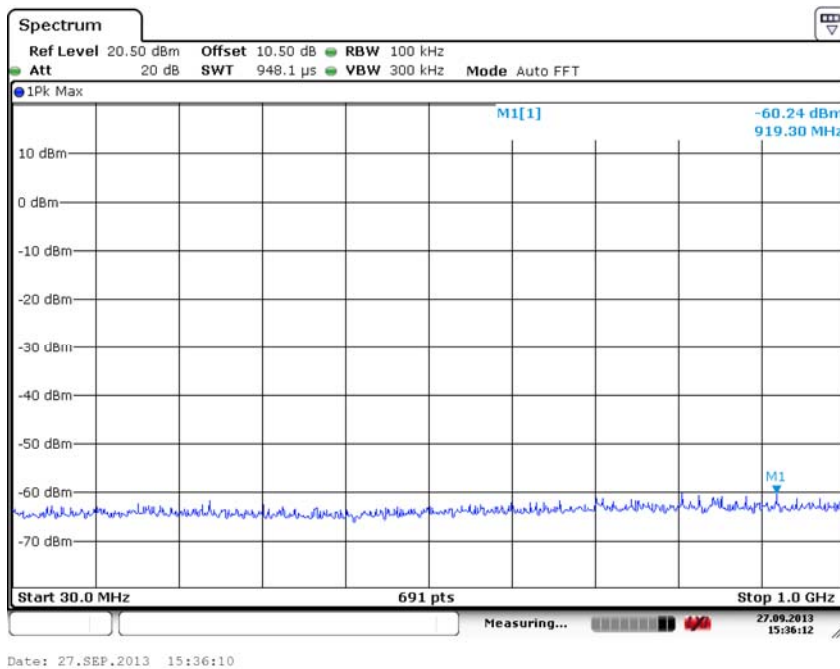


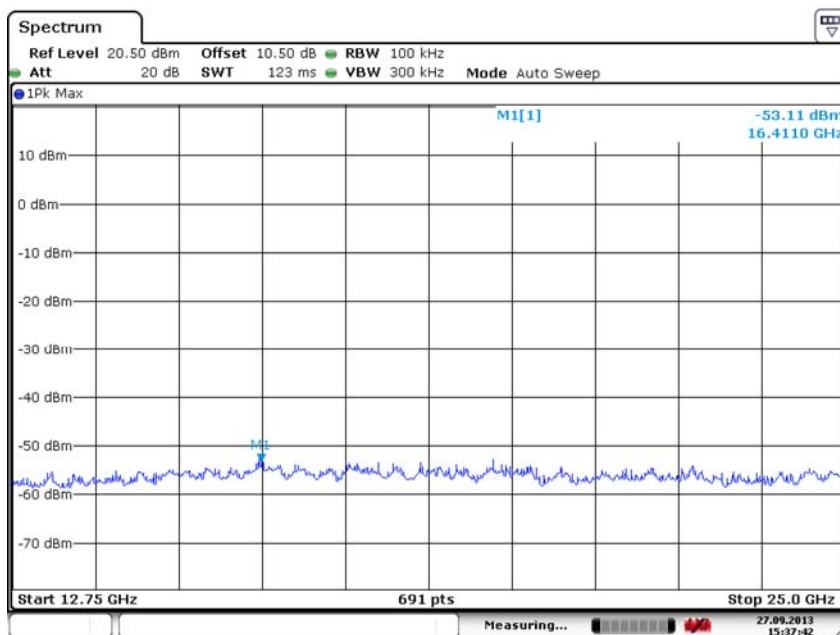
Carrier frequency (MHz): 2412
Channel No.:1
Test Mode: 802.11g





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





Date: 27.SEP.2013 15:37:40

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

Carrier frequency (MHz): 2412

Channel No.:1

Test Mode: 802.11n(HT20)

| Frequency MHz | Corrected measurement value dBm | Reference value dBm | Limit dBm | Delta dB |
|---------------|---------------------------------|---------------------|-----------|----------|
| --- | --- | --- | --- | --- |
| --- | --- | --- | --- | --- |

Carrier frequency (MHz): 2437

Channel No.:6

Test Mode: 802.11n(HT20)

| Frequency MHz | Corrected measurement value dBm | Reference value dBm | Limit dBm | Delta dB |
|---------------|---------------------------------|---------------------|-----------|----------|
| --- | --- | --- | --- | --- |
| --- | --- | --- | --- | --- |

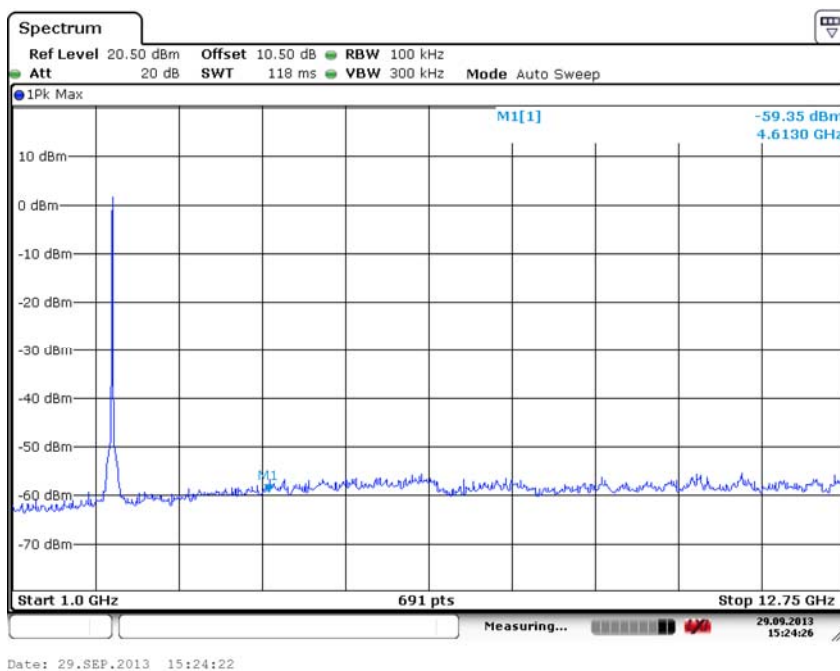
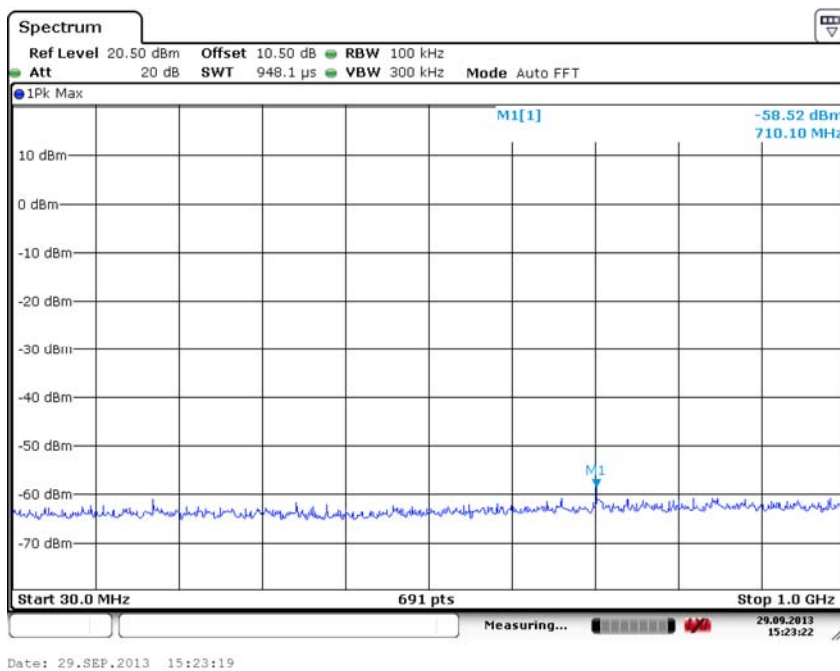
Carrier frequency (MHz): 2462

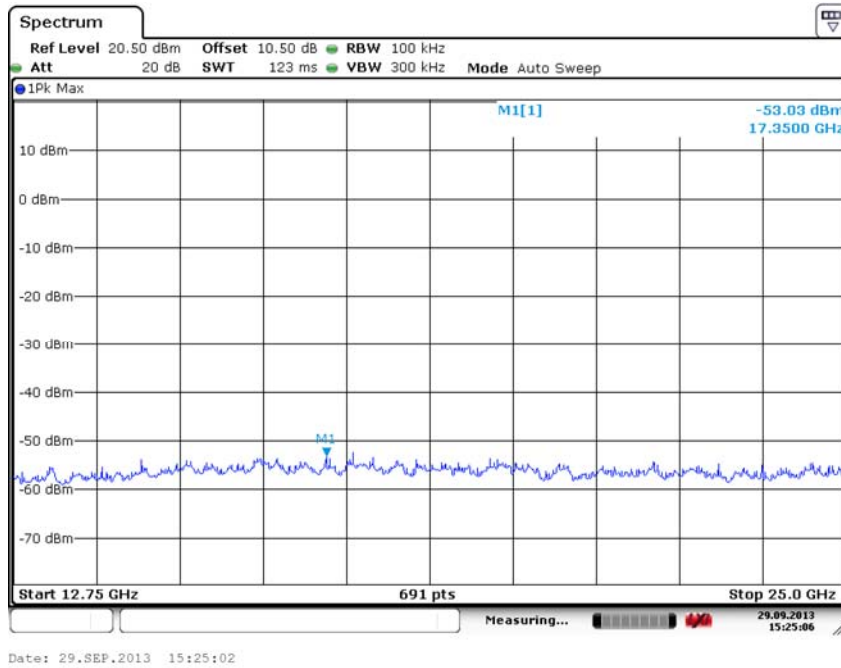
Channel No.:11

Test Mode: 802.11n(HT20)

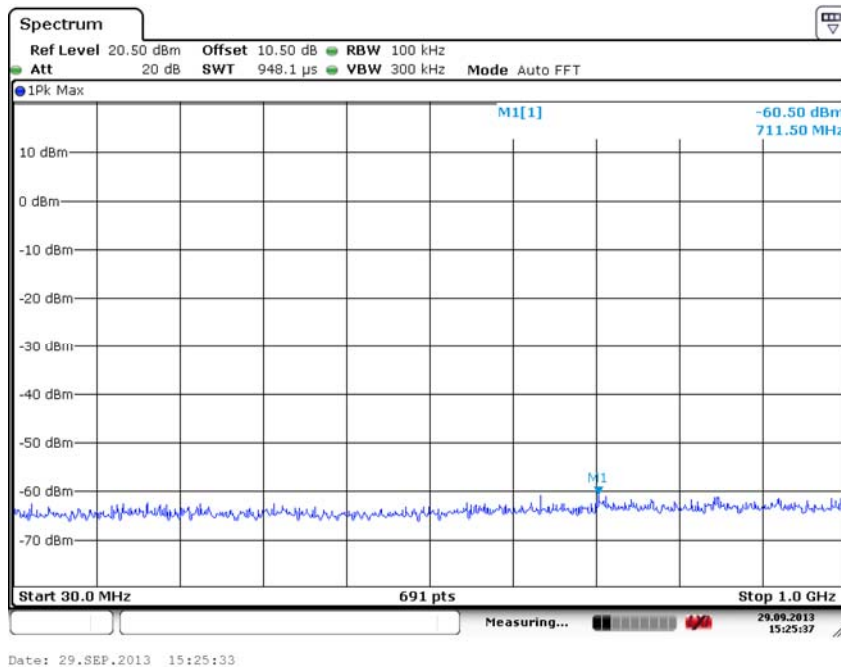
| Frequency MHz | Corrected measurement value dBm | Reference value dBm | Limit dBm | Delta dB |
|---------------|---------------------------------|---------------------|-----------|----------|
| --- | --- | --- | --- | --- |
| --- | --- | --- | --- | --- |

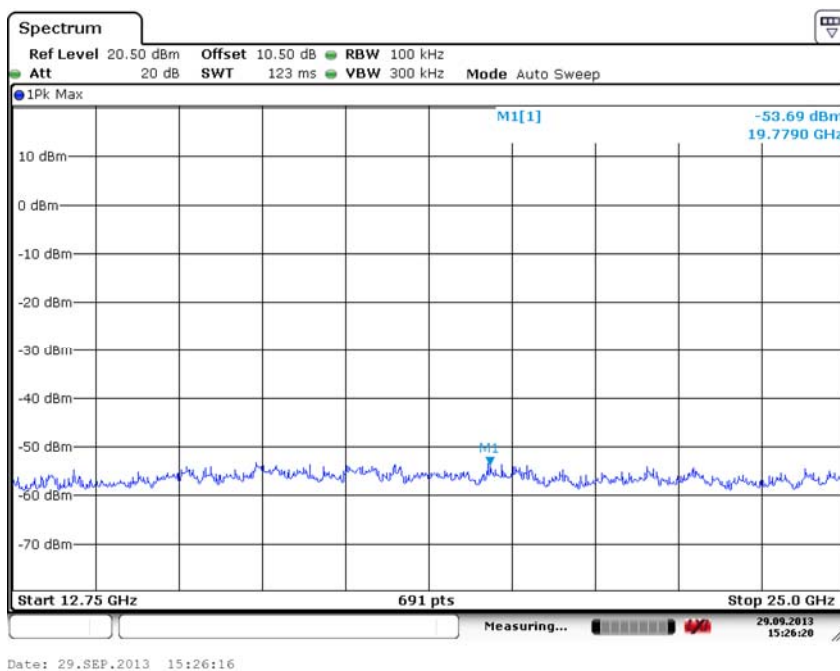
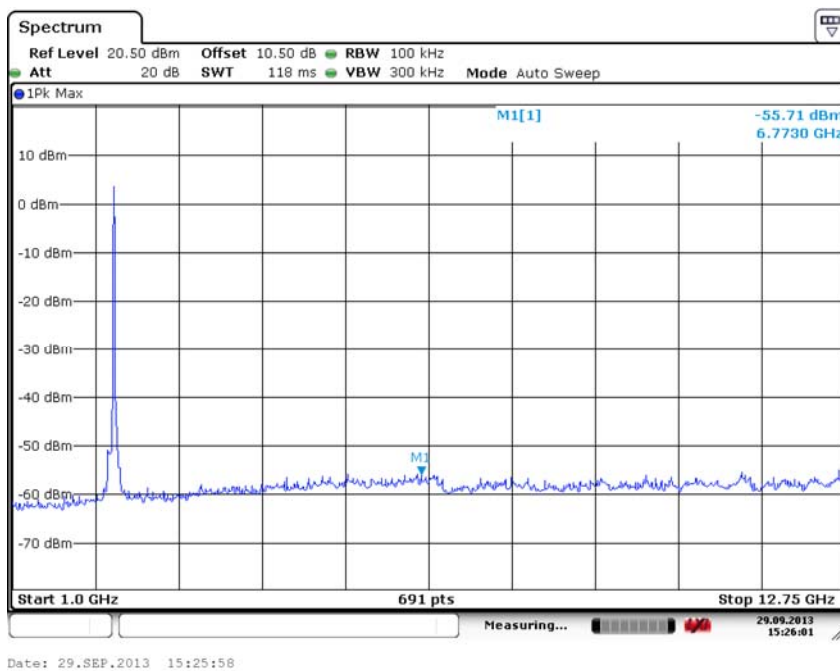
Note: The Reference value see 2.2.6 Band edge compliance



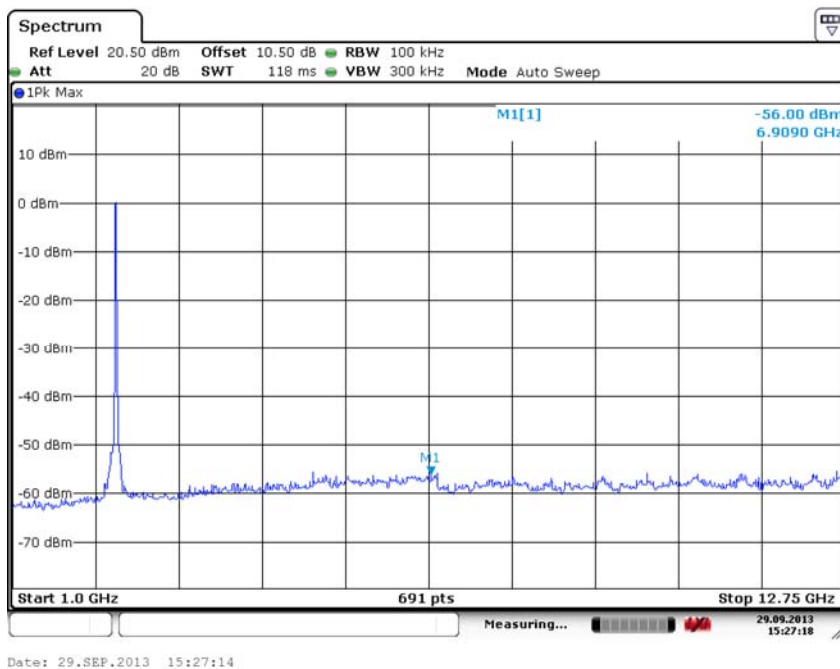
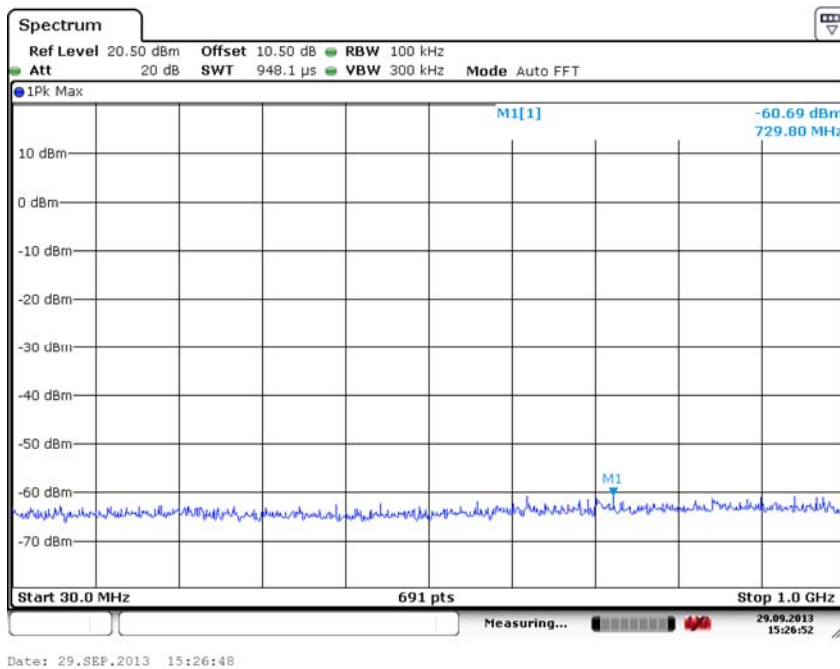


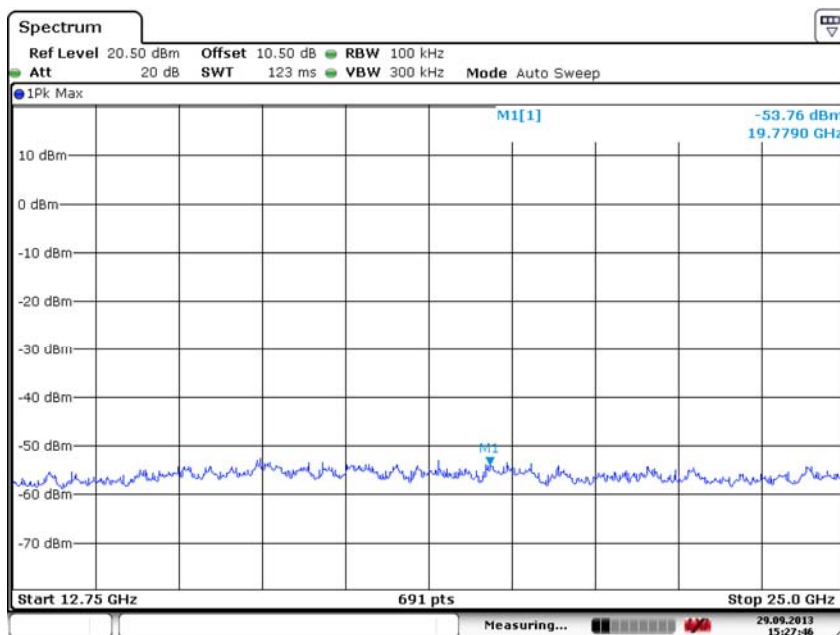
Carrier frequency (MHz): 2412
Channel No.:1
Test Mode: 802.11n(HT20)





Carrier frequency (MHz): 2437
Channel No.:6
Test Mode: 802.11n(HT20)





Date: 29.SEP.2013 15:27:42

Carrier frequency (MHz): 2462
Channel No.:11
Test Mode: 802.11n(HT20)

Carrier frequency (MHz): 2422

Channel No.:3

Test Mode: 802.11n(HT40)

| Frequency MHz | Corrected measurement value dBm | Reference value dBm | Limit dBm | Delta dB |
|---------------|---------------------------------|---------------------|-----------|----------|
| --- | --- | --- | --- | --- |
| --- | --- | --- | --- | --- |

Carrier frequency (MHz): 2437

Channel No.:6

Test Mode: 802.11n(HT40)

| Frequency MHz | Corrected measurement value dBm | Reference value dBm | Limit dBm | Delta dB |
|---------------|---------------------------------|---------------------|-----------|----------|
| --- | --- | --- | --- | --- |
| --- | --- | --- | --- | --- |

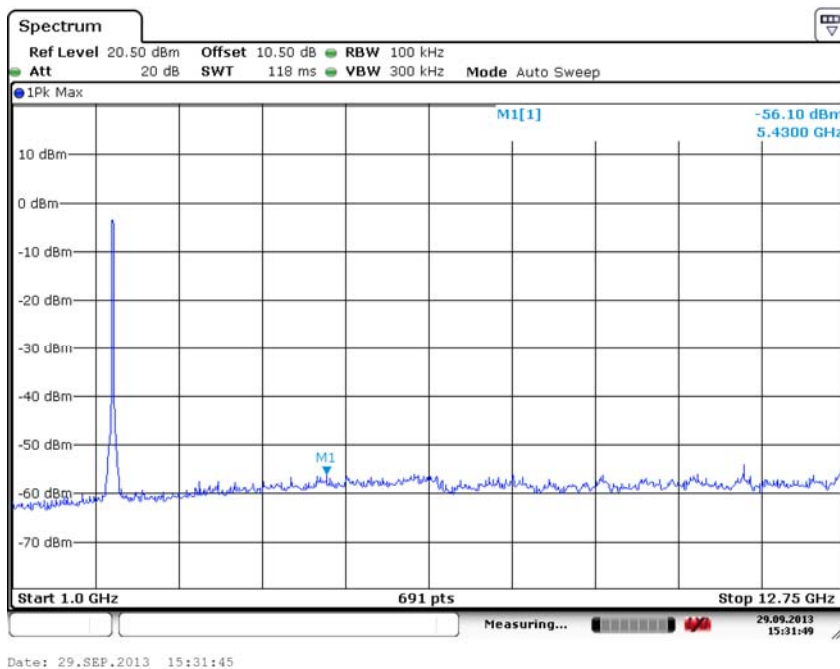
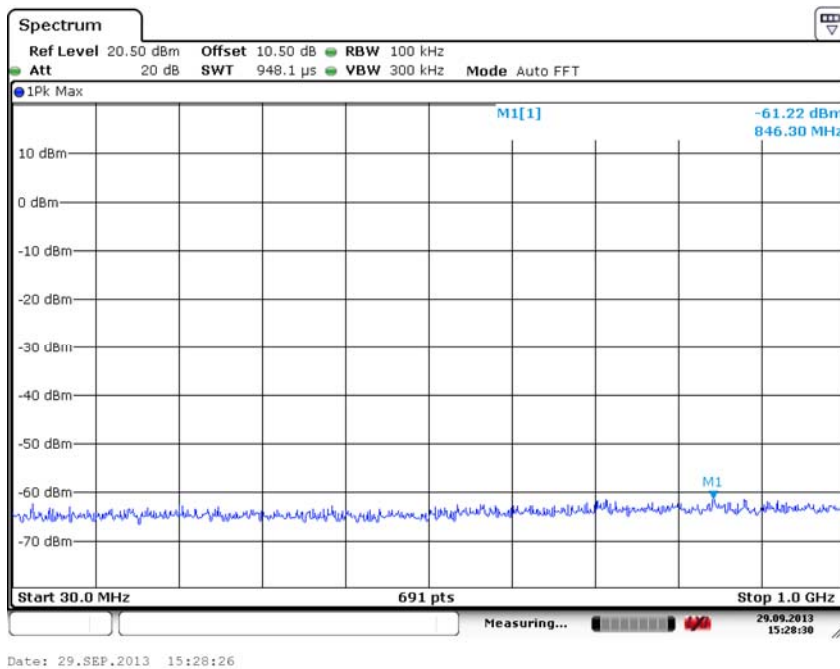
Carrier frequency (MHz): 2462

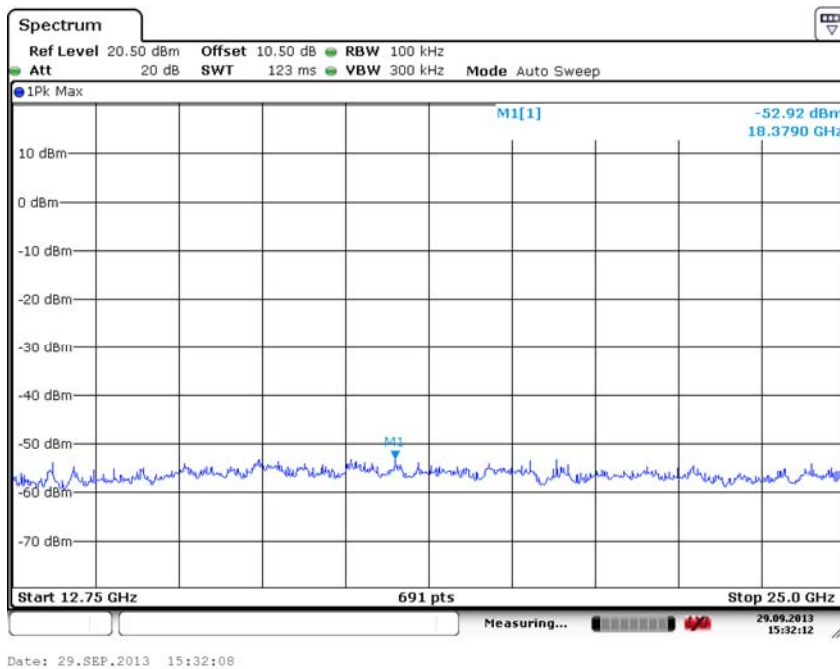
Channel No.:11

Test Mode: 802.11n(HT40)

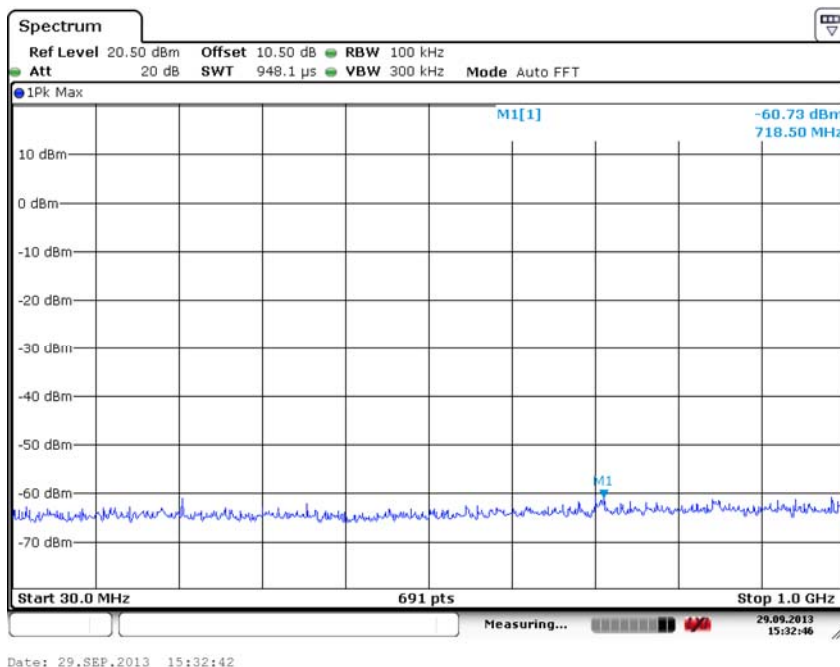
| Frequency MHz | Corrected measurement value dBm | Reference value dBm | Limit dBm | Delta dB |
|---------------|---------------------------------|---------------------|-----------|----------|
| --- | --- | --- | --- | --- |
| --- | --- | --- | --- | --- |

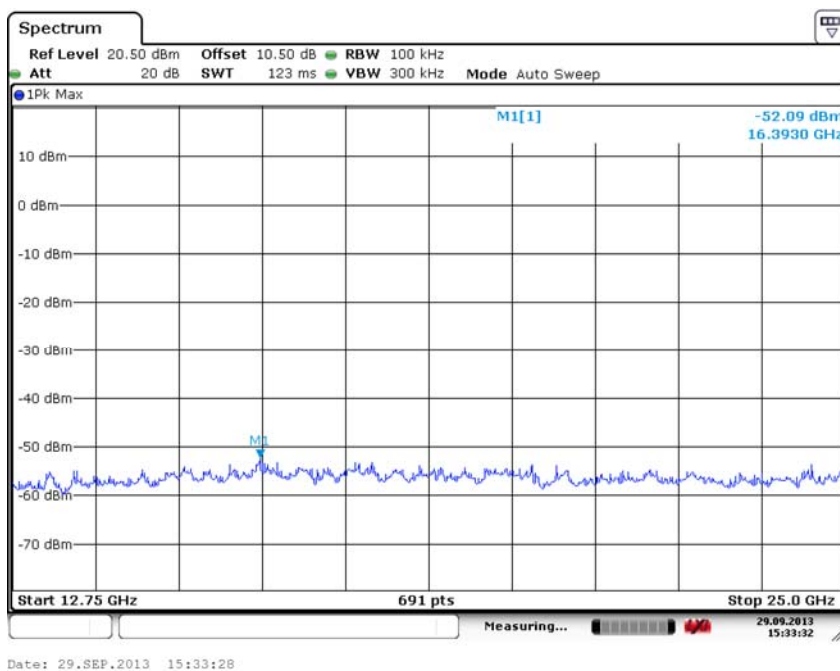
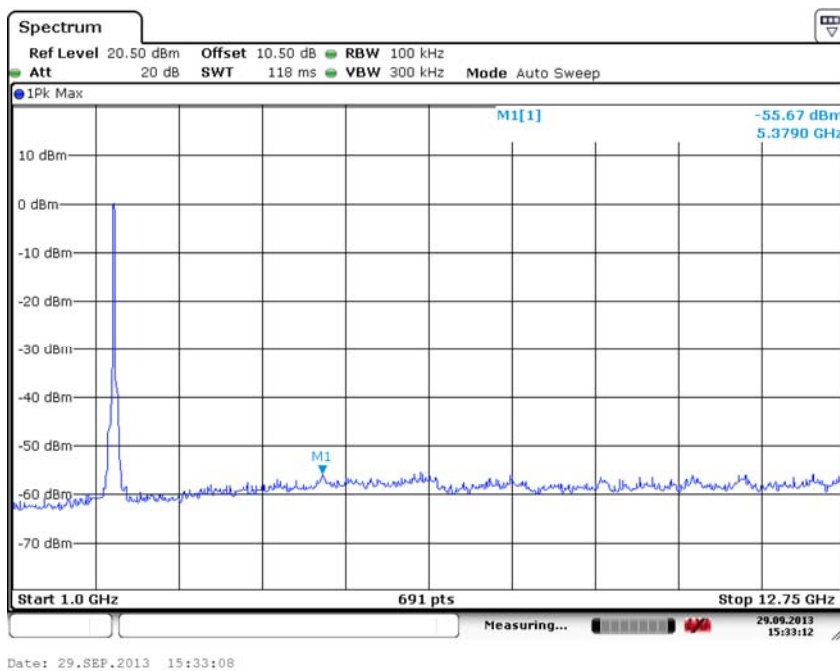
Note: The Reference value see 2.2.6 Band edge compliance



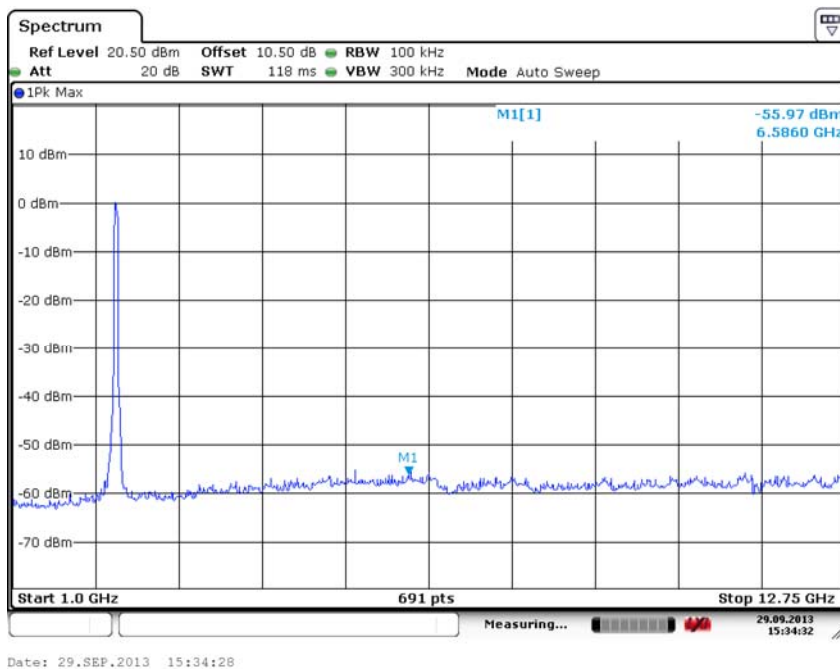
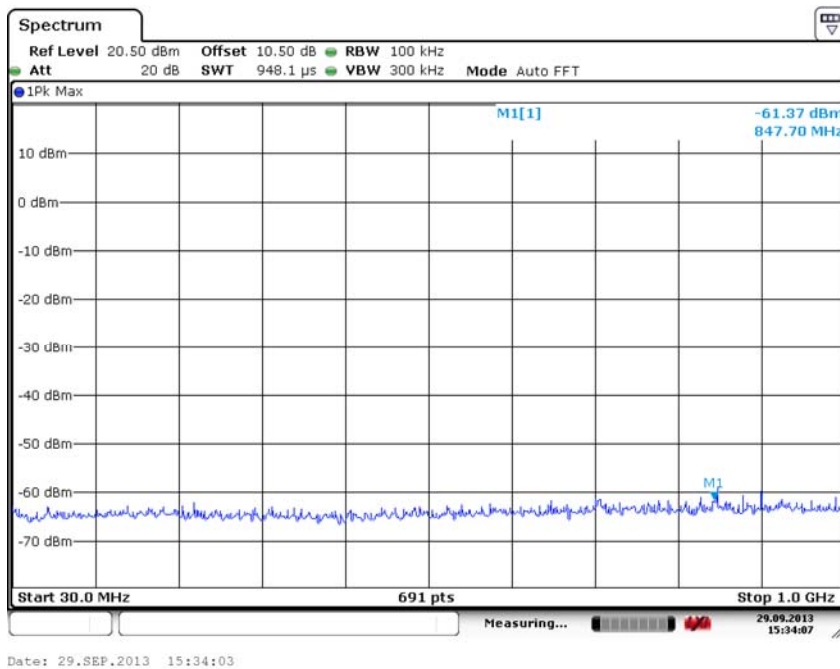


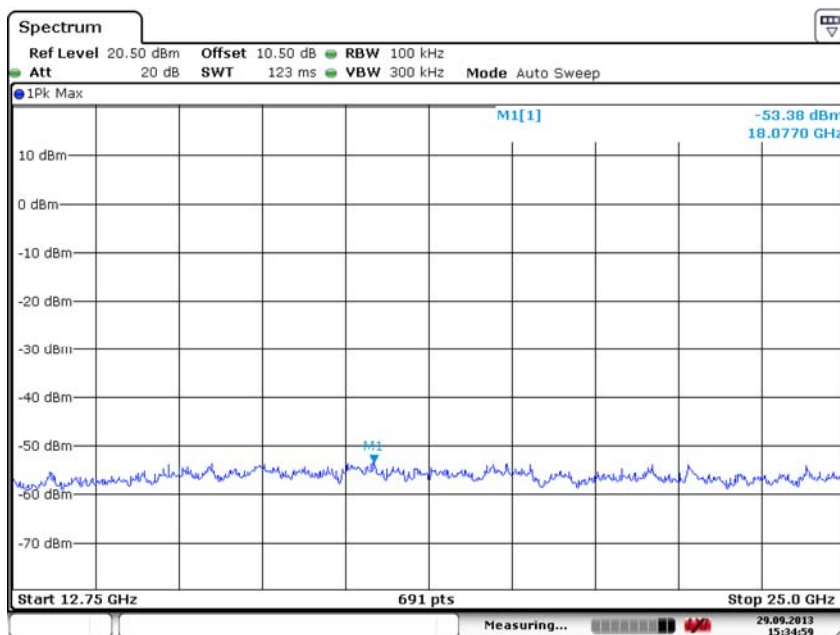
Carrier frequency (MHz): 2422
Channel No.:3
Test Mode: 802.11n(HT40)





Carrier frequency (MHz): 2437
Channel No.:6
Test Mode: 802.11n(HT40)





Date: 29.SEP.2013 15:34:55

Carrier frequency (MHz): 2462
Channel No.:11
Test Mode: 802.11n(HT40)

2.2.5 Spurious Radiated Emissions

2.2.5.1 Ambient condition

| Temperature | Relative humidity | Pressure |
|-------------|-------------------|----------|
| 20°C | 35% | 101.4kPa |

2.2.5.2 Test Description

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

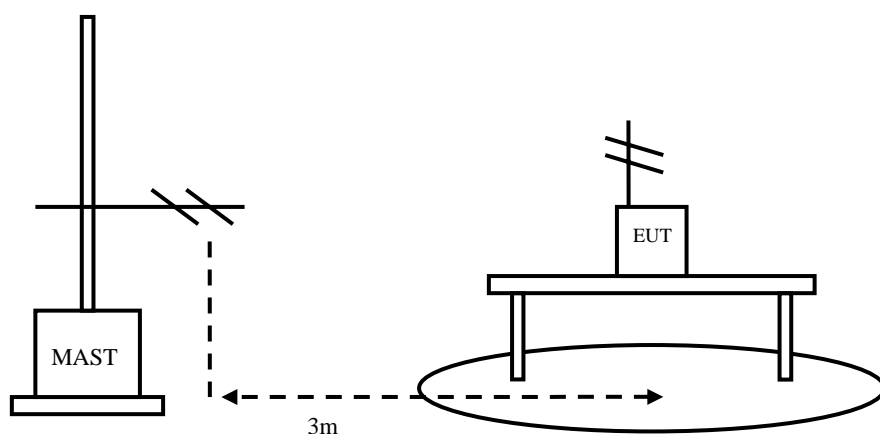
The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna.

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 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:

Radiated Emission Limits

| Frequency of Emission(MHz) | Limits | |
|---|------------|---------------------|
| | Detector | Unit (dB μ V/m) |
| 30~88 | Quasi-peak | 40.0 |
| 88~216 | Quasi-peak | 43.5 |
| 216~960 | Quasi-peak | 46.0 |
| 960~1000 | Quasi-peak | 54.0 |
| 1000~5th harmonic of the highest frequency or 40GHz, whichever is lower | Average | 54.0 |
| | Peak | 74.0 |

FCC Part15.35(b):

..., there is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit....

Used conversion factor: Limit (dB μ V/m) = 20 log (Limit (μ V/m)/1 μ V/m)

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:

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

The worst case attitude: The mobile lay down.

For 802.11b

| Frequency(MHz) | Result(dBuV/m) | A _{Rpl} (dB) | P _{mea} (dBuV/m) | Polarity |
|----------------|----------------|-----------------------|---------------------------|------------|
| 41.08 | 25.06 | 15.00 | 10.06 | Vertical |
| 71.94 | 19.72 | 7.00 | 12.72 | Vertical |
| 84.15 | 24.60 | 7.90 | 16.70 | Horizontal |
| 177.76 | 20.18 | 7.90 | 12.28 | Horizontal |
| 458.32 | 22.79 | 16.50 | 6.29 | Vertical |
| 581.16 | 24.56 | 19.20 | 5.36 | Vertical |
| 820.64 | 27.43 | 22.90 | 4.53 | Vertical |
| 877.76 | 33.52 | 23.60 | 9.92 | Vertical |

For 802.11g

| Frequency(MHz) | Result(dBuV/m) | A _{Rpl} (dB) | P _{mea} (dBuV/m) | Polarity |
|----------------|----------------|-----------------------|---------------------------|------------|
| 41.36 | 24.97 | 14.80 | 10.17 | Vertical |
| 48.80 | 20.07 | 9.70 | 10.37 | Vertical |
| 84.15 | 24.32 | 7.90 | 16.42 | Vertical |
| 301.20 | 23.25 | 11.80 | 11.45 | Vertical |
| 434.27 | 24.08 | 15.90 | 8.18 | Vertical |
| 607.21 | 24.49 | 19.30 | 5.19 | Horizontal |
| 820.64 | 27.65 | 22.90 | 4.75 | Vertical |
| 877.76 | 30.95 | 23.60 | 7.35 | Horizontal |

For 802.11n(HT20)

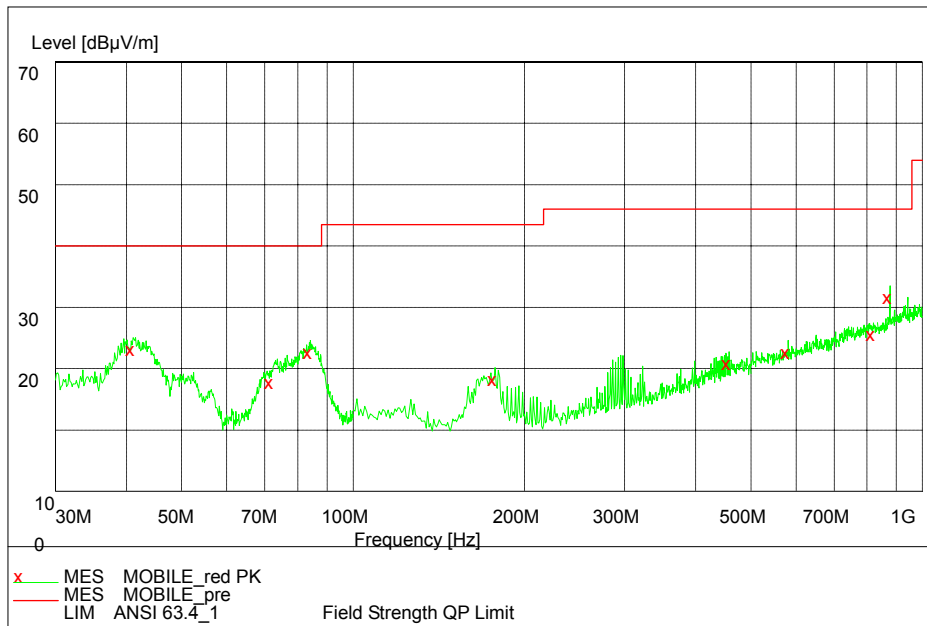
| Frequency(MHz) | Result(dBuV/m) | A _{Rpl} (dB) | P _{mea} (dBuV/m) | Polarity |
|----------------|----------------|-----------------------|---------------------------|------------|
| 30.18 | 28.40 | 11.60 | 16.80 | Vertical |
| 59.94 | 29.50 | 10.50 | 19.00 | Vertical |
| 85.38 | 24.50 | 15.50 | 9.00 | Vertical |
| 85.74 | 27.20 | 12.80 | 14.40 | Vertical |
| 100.12 | 31.50 | 12.00 | 19.50 | Vertical |
| 184.24 | 26.10 | 17.40 | 8.70 | Horizontal |
| 697.64 | 26.80 | 19.20 | 7.60 | Vertical |
| 907.16 | 26.90 | 23.10 | 3.80 | Horizontal |

For 802.11n(HT40)

| Frequency(MHz) | Result(dBuV/m) | A _{Rpl} (dB) | P _{mea} (dBuV/m) | Polarity |
|----------------|----------------|-----------------------|---------------------------|------------|
| 40.80 | 28.40 | 11.60 | 16.80 | Vertical |
| 85.26 | 26.00 | 14.00 | 12.00 | Vertical |
| 99.42 | 36.30 | 7.20 | 29.10 | Vertical |
| 184.24 | 26.20 | 17.30 | 8.90 | Vertical |
| 560.24 | 29.10 | 16.90 | 12.20 | Vertical |
| 940.04 | 29.40 | 24.60 | 4.80 | Horizontal |

Carrier frequency (MHz): 2437

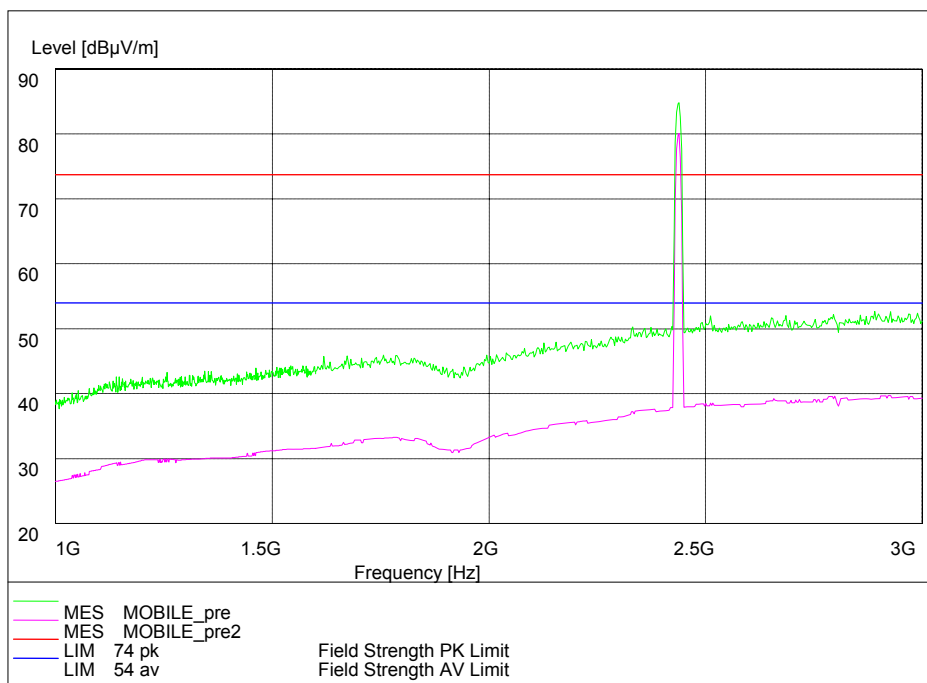
Channel No.:6



Frequency Range: 30MHz -1GHz

Detector: QP mode

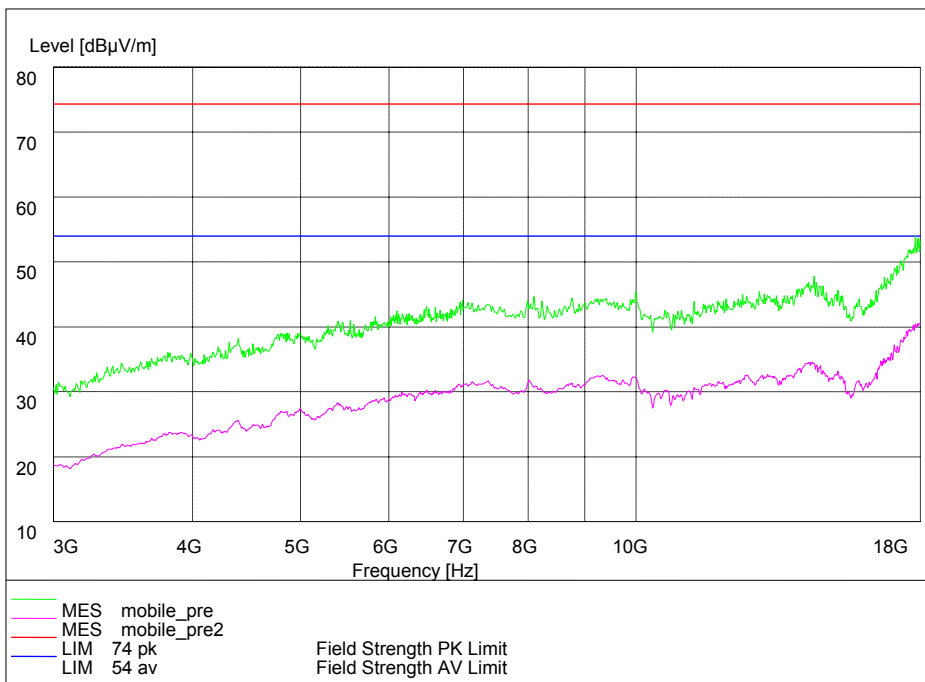
Test Mode: 802.11b



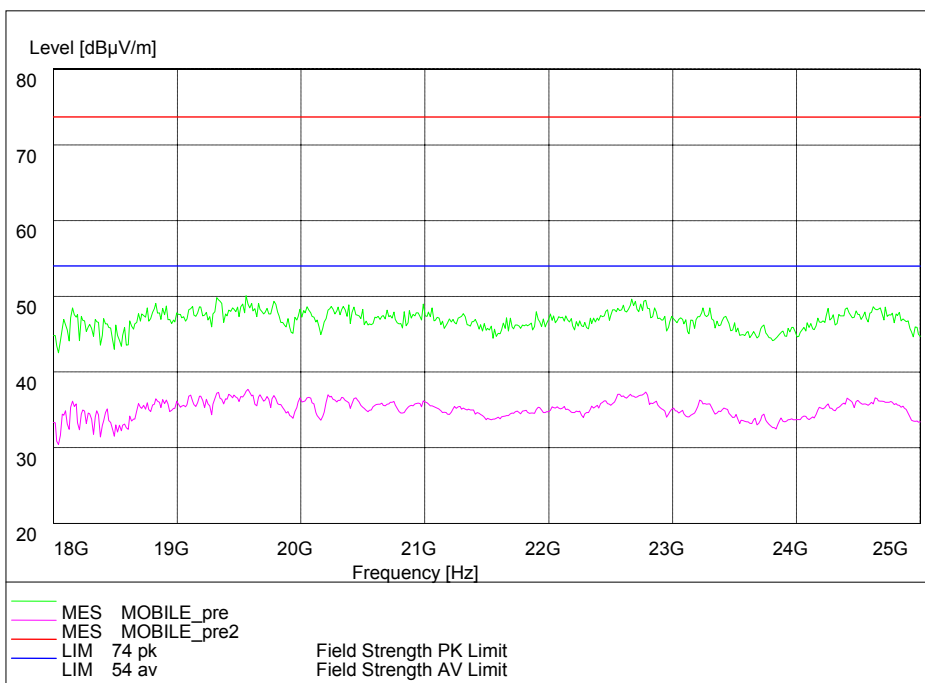
Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

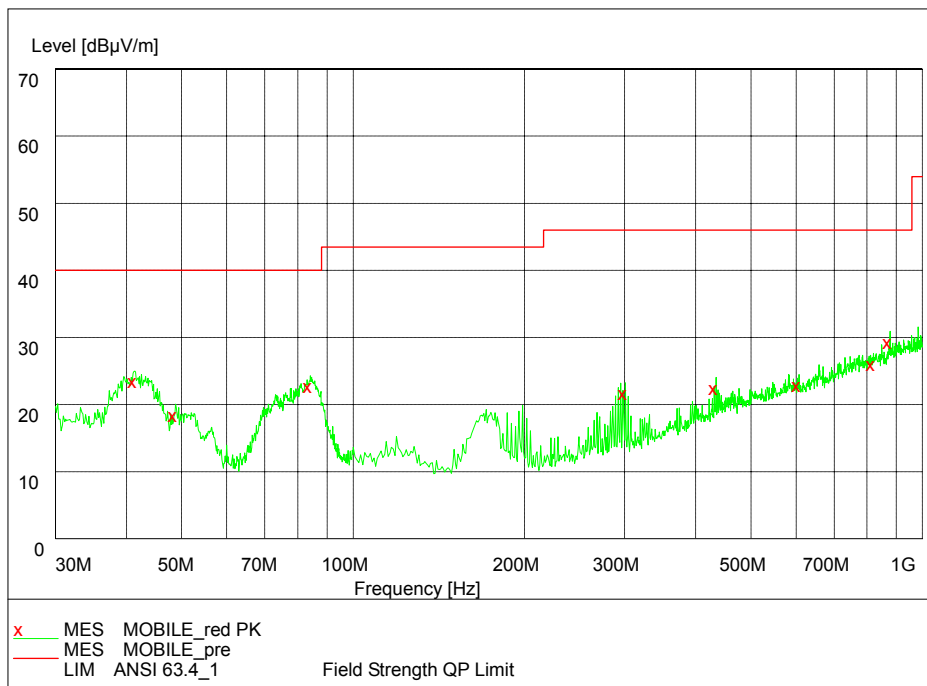
Modulation type: 802.11b



Frequency Range: 3GHz -18GHz
Detector: Av mode and PK mode
Modulation type: 802.11b



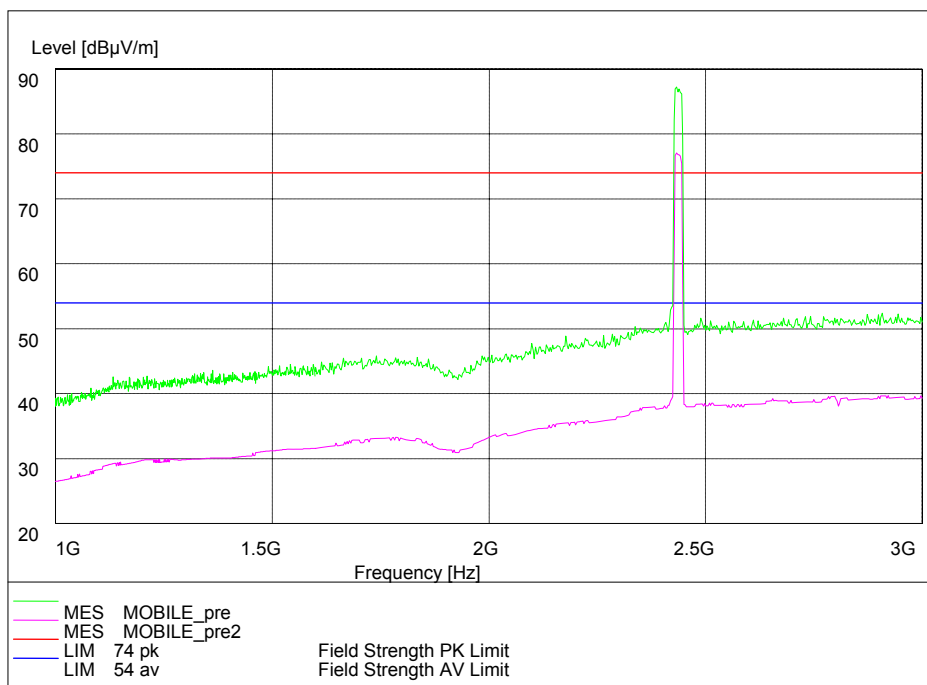
Frequency Range: 18GHz -25GHz
Detector: Av mode and PK mode
Modulation type: 802.11b



Frequency Range: 30MHz -1GHz

Detector: QP mode

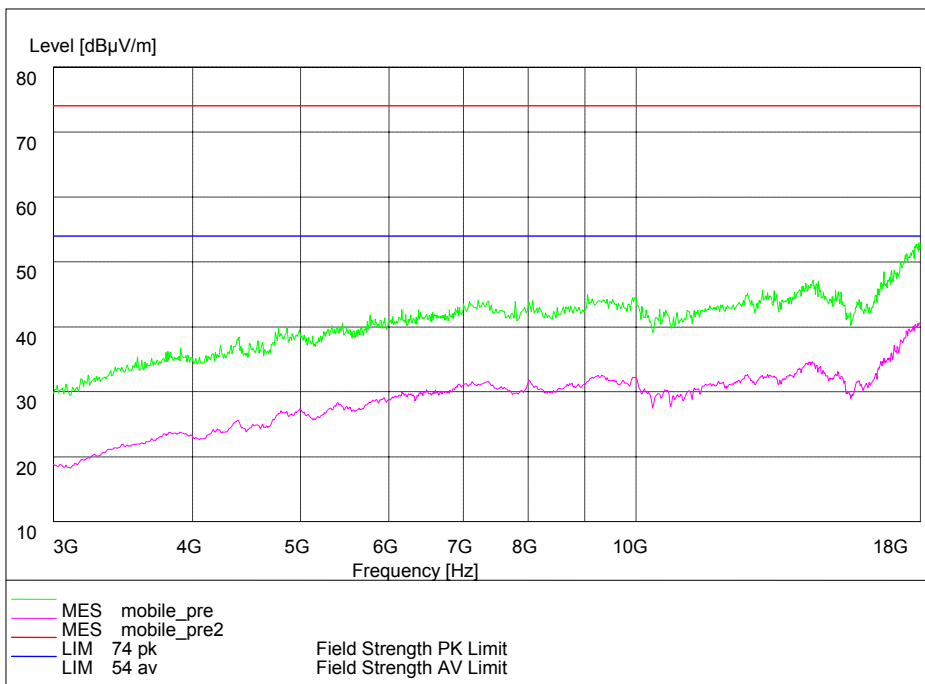
Modulation type: 802.11g



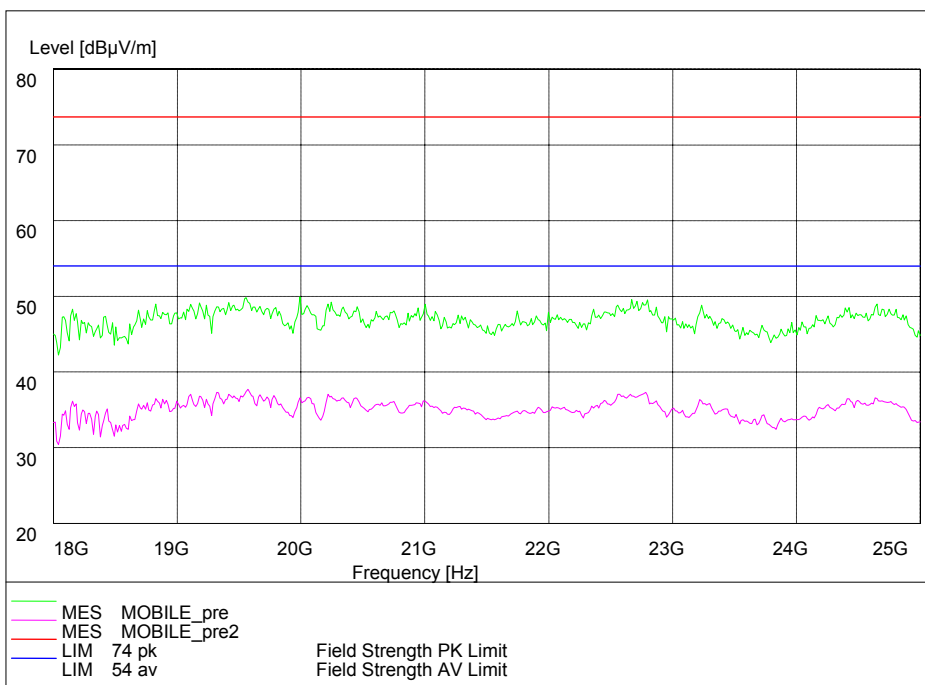
Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

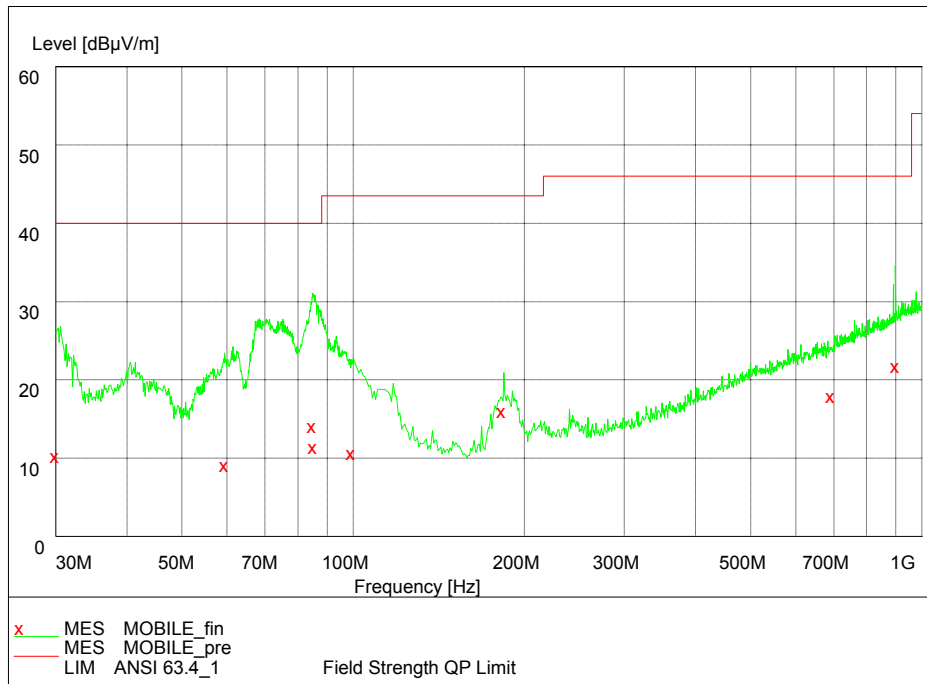
Modulation type: 802.11g



Frequency Range: 3GHz -18GHz
 Detector: Av mode and PK mode
 Modulation type: 802.11g



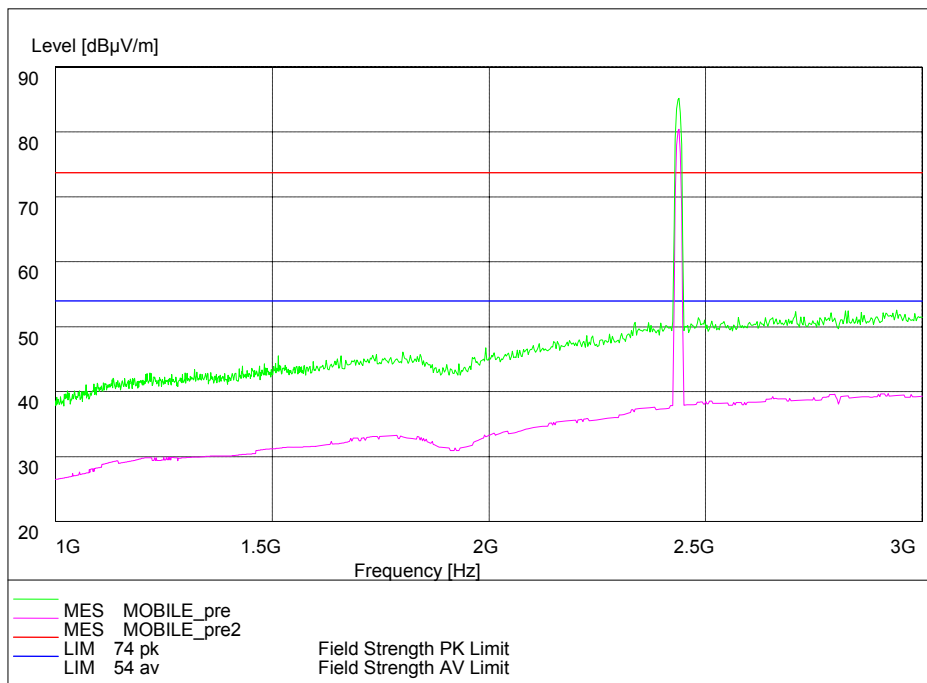
Frequency Range: 18GHz -25GHz
 Detector: Av mode and PK mode
 Modulation type: 802.11g



Frequency Range: 30MHz -1GHz

Detector: QP mode

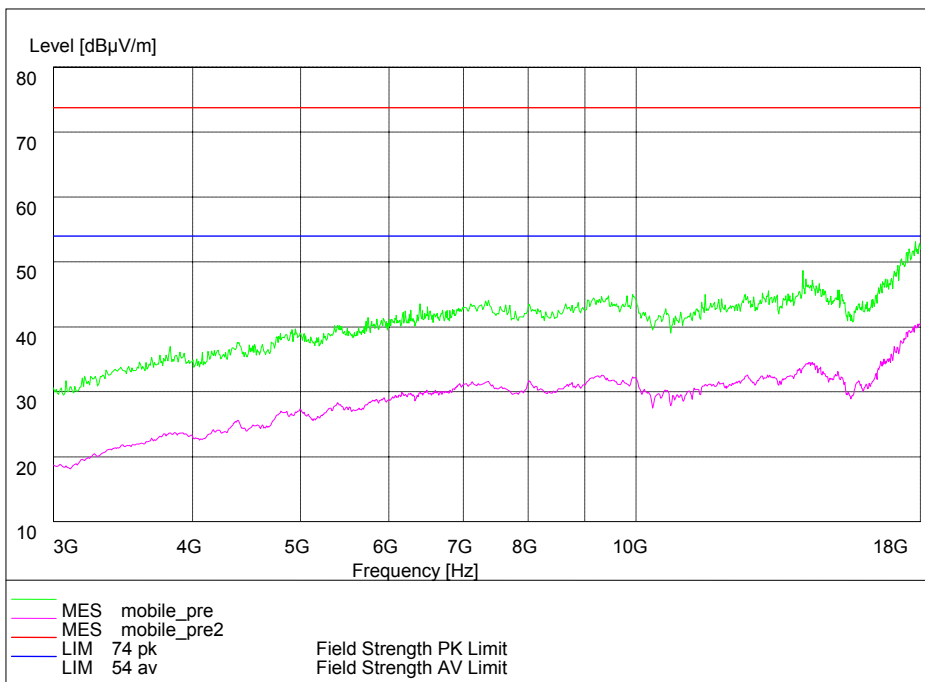
Test Mode: 802.11n(HT20)



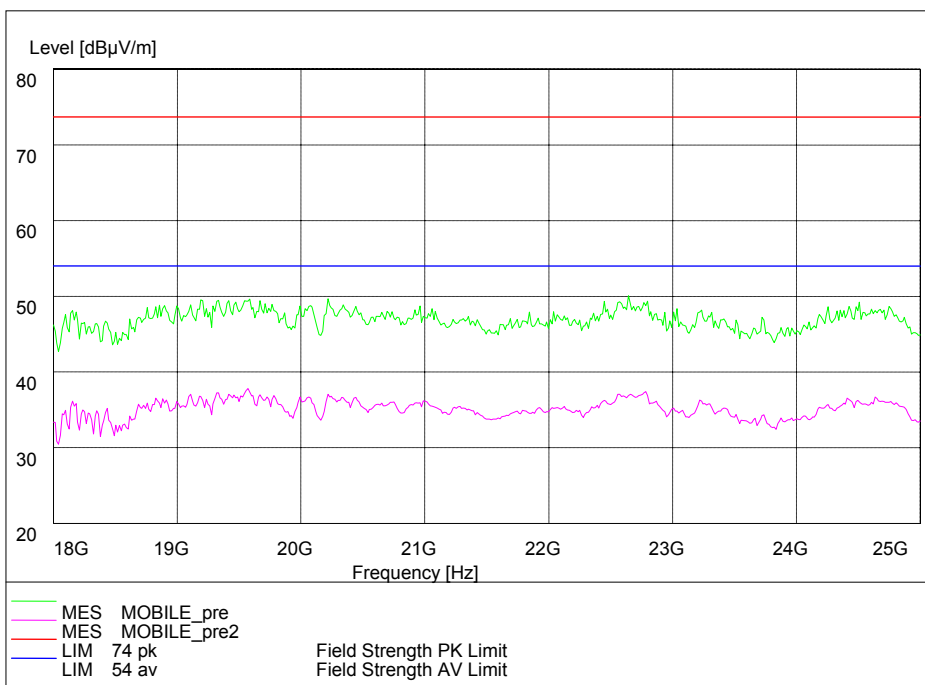
Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

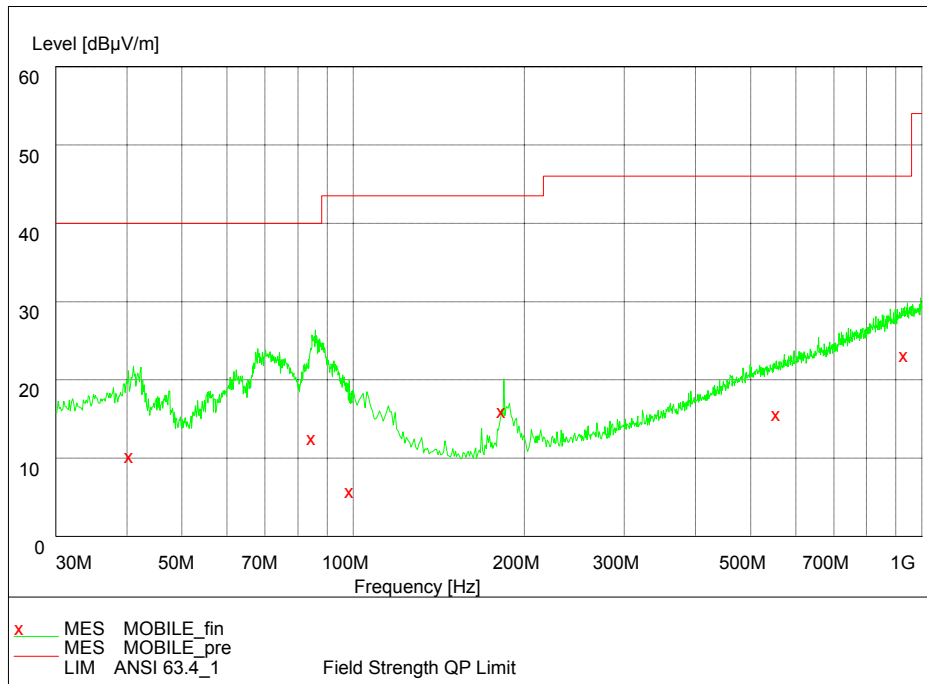
Modulation type: 802.11n(HT20)



Frequency Range: 3GHz -18GHz
Detector: Av mode and PK mode
Modulation type: 802.11n(HT20)



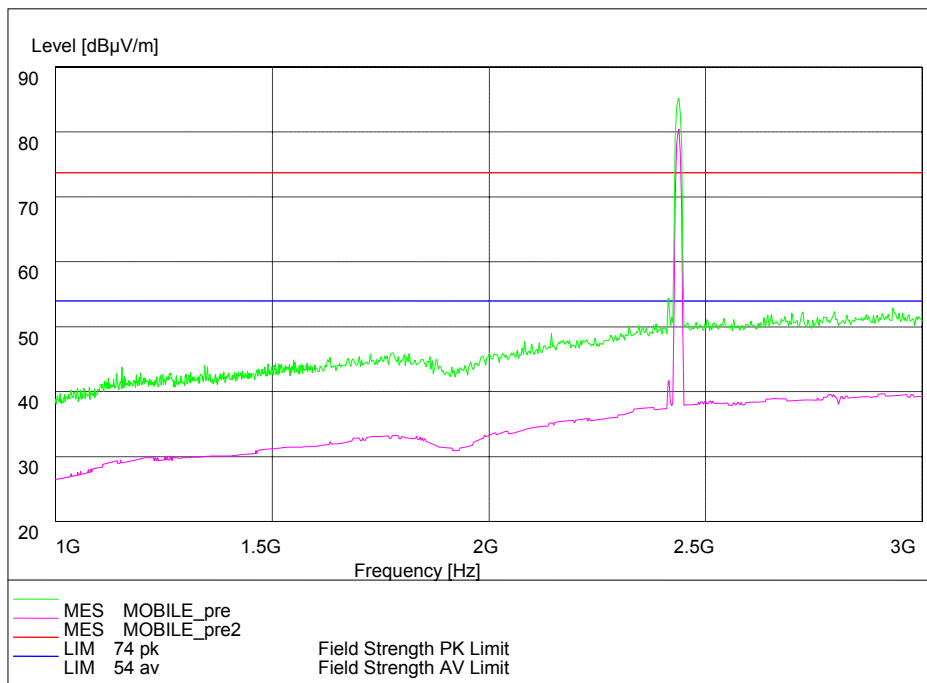
Frequency Range: 18GHz -25GHz
Detector: Av mode and PK mode
Modulation type: 802.11n(HT20)



Frequency Range: 30MHz -1GHz

Detector: QP mode

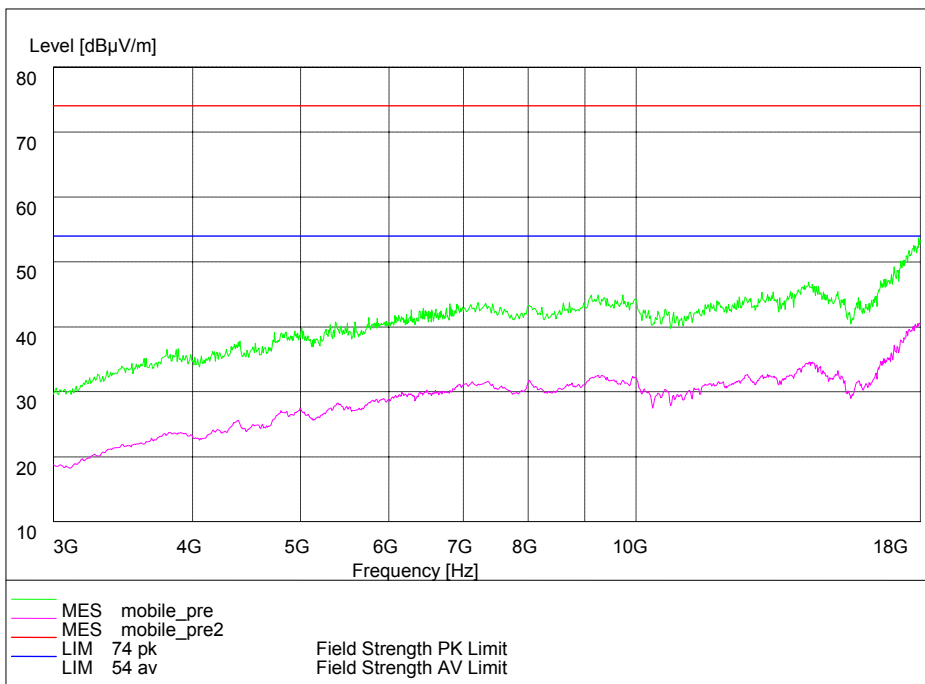
Modulation type: 802.11n(HT40)



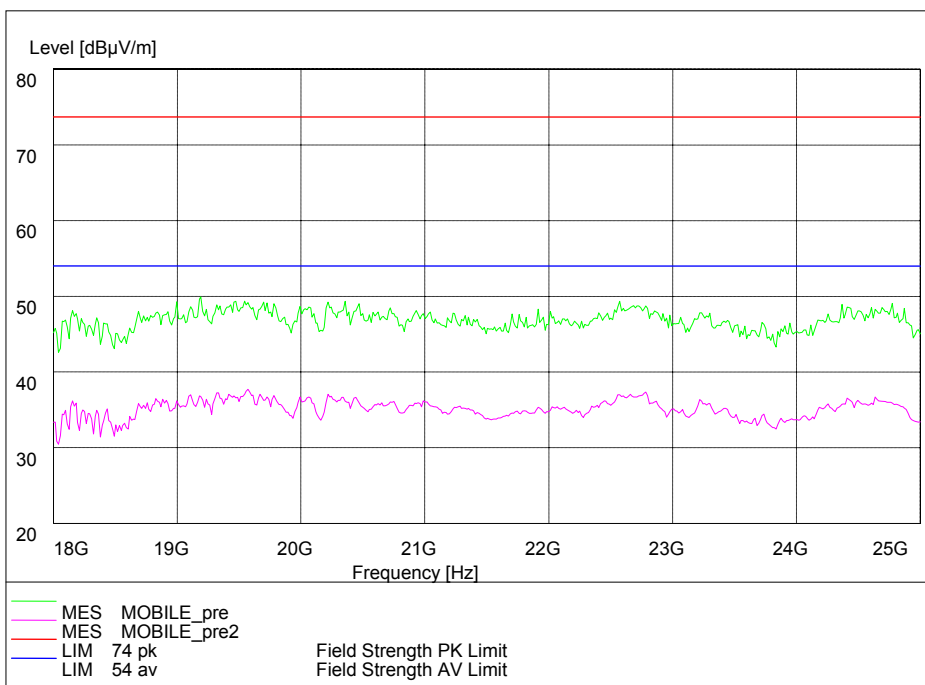
Frequency Range: 1GHz -3GHz

Detector: Av mode and PK mode

Modulation type: 802.11n(HT40)



Frequency Range: 3GHz -18GHz
 Detector: Av mode and PK mode
 Modulation type: 802.11n(HT40)



Frequency Range: 18GHz -25GHz
 Detector: Av mode and PK mode
 Modulation type: 802.11n(HT40)

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.

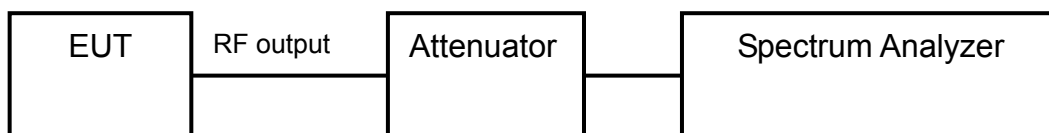
Analyzer settings:

- 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



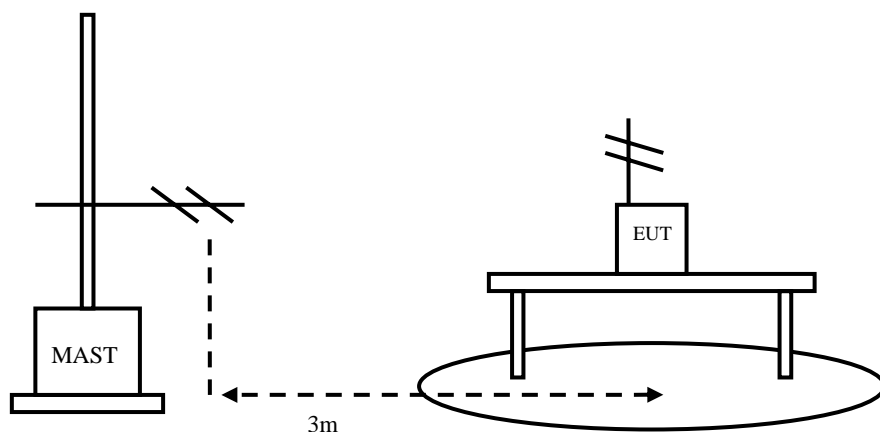
2.2.6.2.2 Radiated Measurement

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.

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

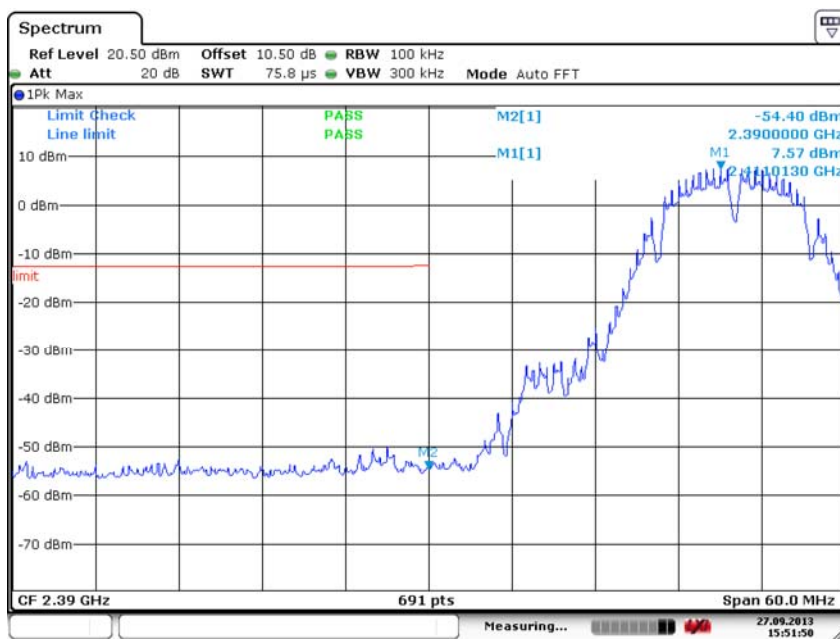
| Frequency MHz | Measured value dBm | Reference value dBm | Limit dBm | Delta dB |
|---------------|--------------------|---------------------|-----------|----------|
| 2390 | -54.40 | 7.57 | -12.43 | 61.97 |

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 | -54.64 | 7.94 | -12.06 | 62.58 |

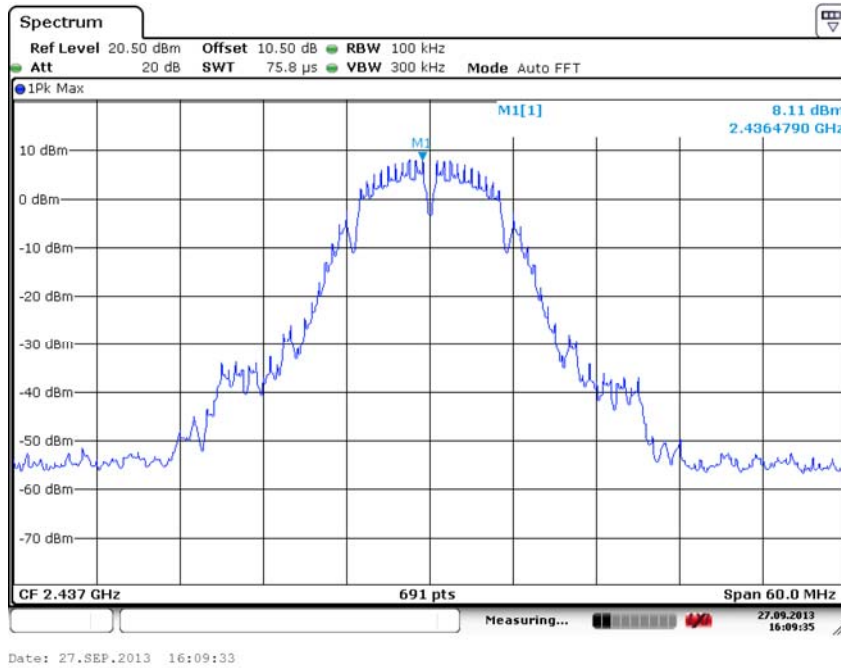


Date: 27.SEP.2013 15:51:48

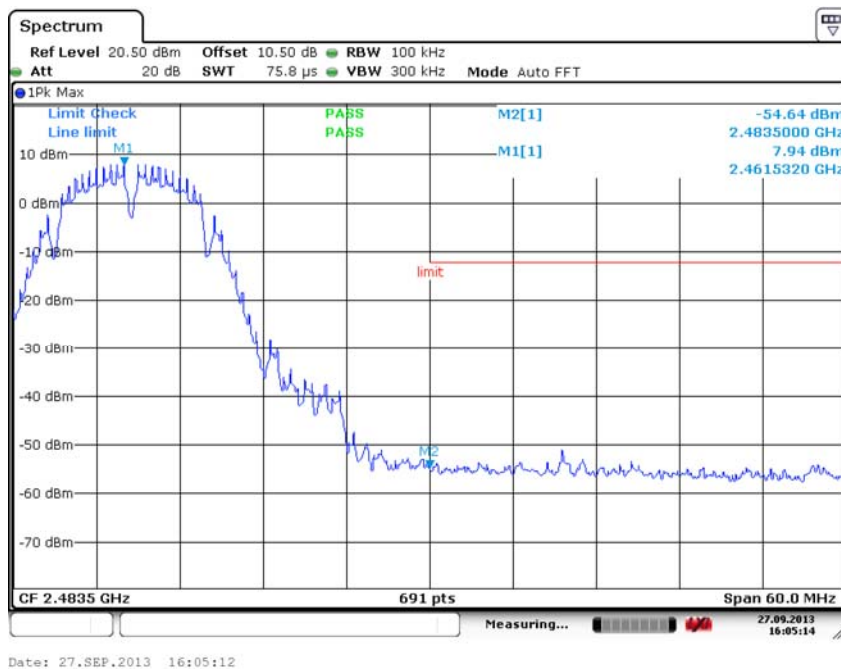
Carrier frequency (MHz): 2412

Channel No.:1

Test Mode: 802.11b



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



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

Carrier frequency (MHz): 2412

Channel No.:1

Test Mode: 802.11g

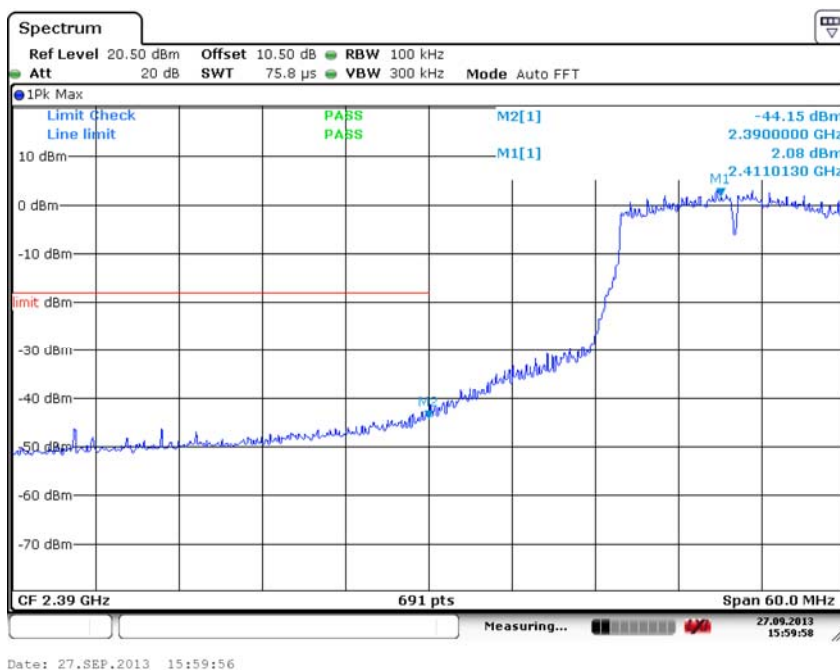
| Frequency MHz | Measured value dBm | Reference value dBm | Limit dBm | Delta dB |
|---------------|--------------------|---------------------|-----------|----------|
| 2390 | -44.15 | 2.02 | -17.98 | 46.17 |

Carrier frequency (MHz): 2462

Channel No.:13

Test Mode: 802.11g

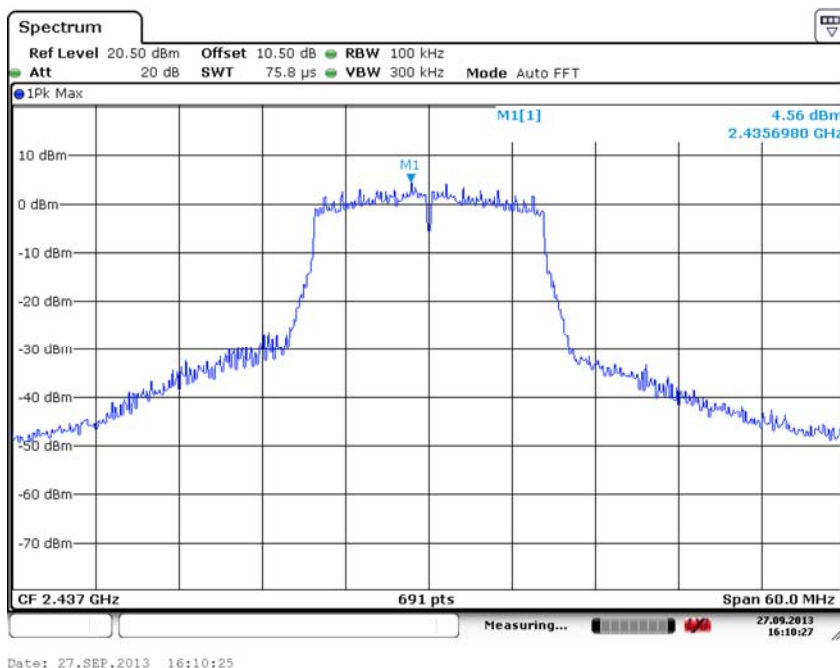
| Frequency MHz | Measured value dBm | Reference value dBm | Limit dBm | Delta dB |
|---------------|--------------------|---------------------|-----------|----------|
| 2483.5 | -45.15 | 7.94 | -12.06 | 53.09 |



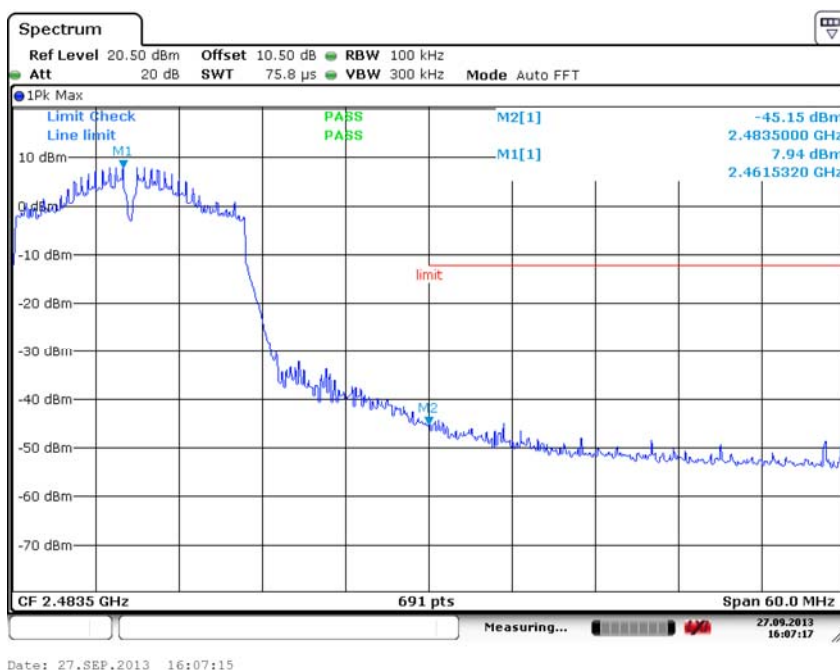
Carrier frequency (MHz): 2412

Channel No.:1

Test Mode: 802.11g



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



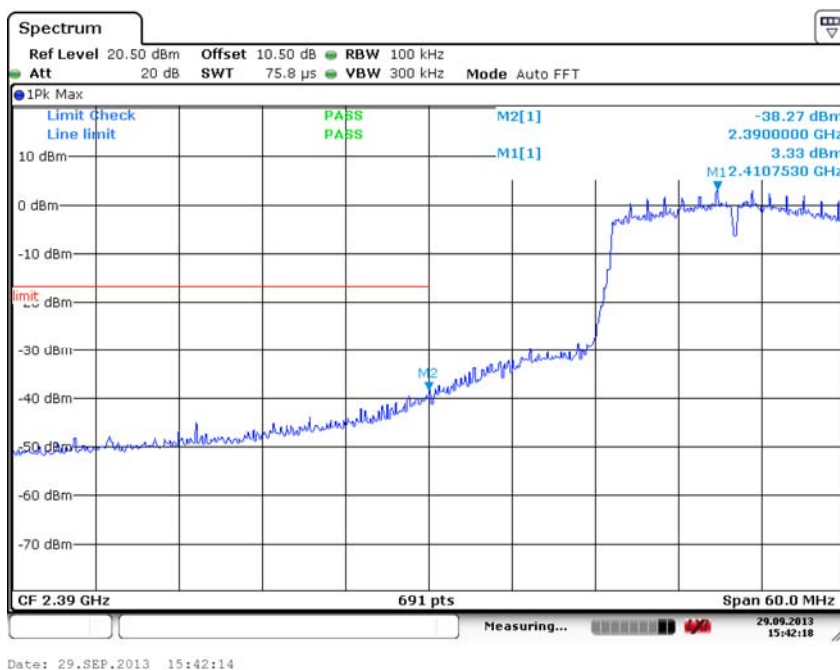
Carrier frequency (MHz): 2462
Channel No.:11
Test Mode: 802.11g

Carrier frequency (MHz): 2412
Channel No.:1
Test Mode: 802.11n(HT20)

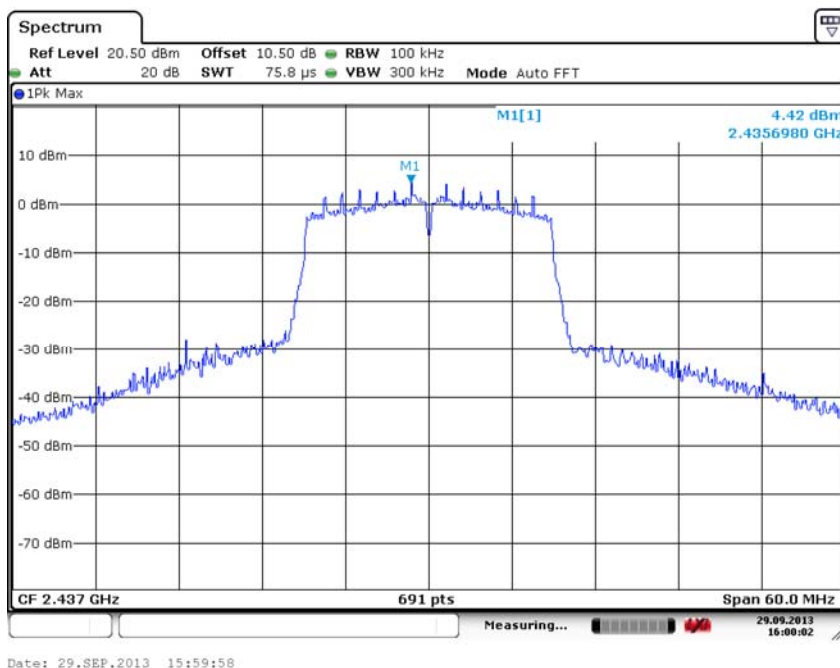
| Frequency MHz | Measured value dBm | Reference value dBm | Limit dBm | Delta dB |
|---------------|--------------------|---------------------|-----------|----------|
| 2390 | -38.27 | 3.33 | -16.67 | 41.60 |

Carrier frequency (MHz): 2462
Channel No.:11
Test Mode: 802.11n(HT20)

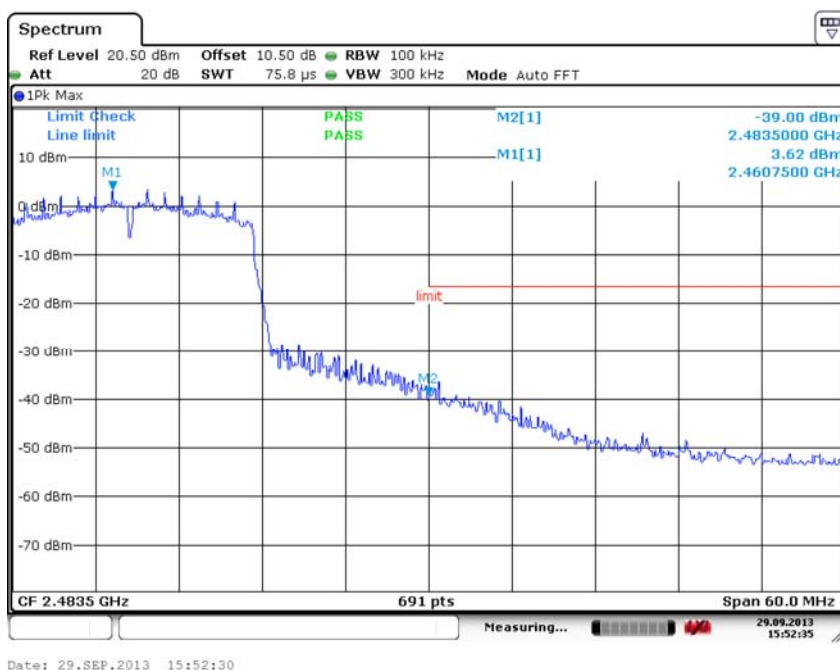
| Frequency MHz | Measured value dBm | Reference value dBm | Limit dBm | Delta dB |
|---------------|--------------------|---------------------|-----------|----------|
| 2483.5 | -39.00 | 3.62 | -16.38 | 42.62 |



Carrier frequency (MHz): 2412
Channel No.:1
Test Mode: 802.11n(HT20)



Carrier frequency (MHz): 2437
Channel No.:6
Test Mode: 802.11n(HT20)



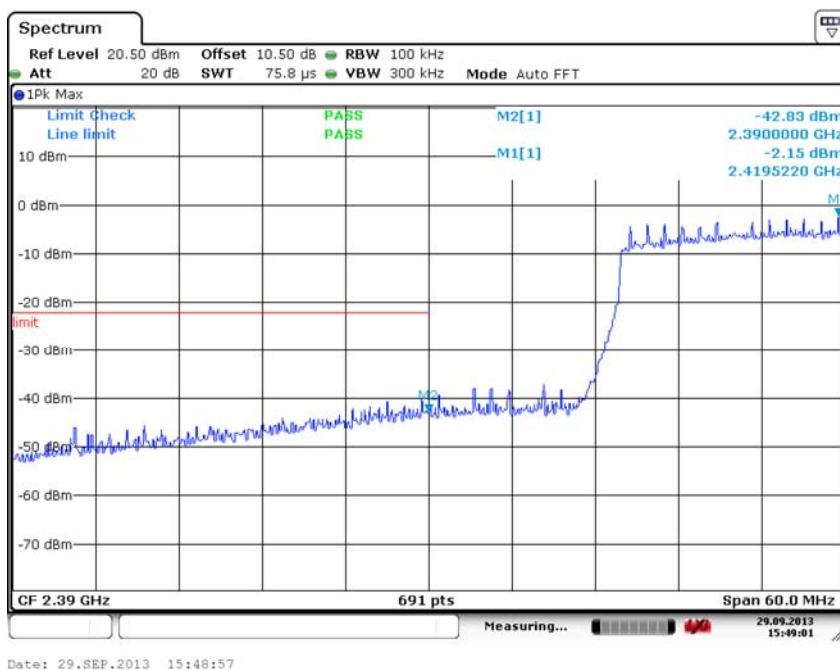
Carrier frequency (MHz): 2462
Channel No.:11
Test Mode: 802.11n(HT20)

Carrier frequency (MHz): 2422
Channel No.:3
Test Mode: 802.11n(HT40)

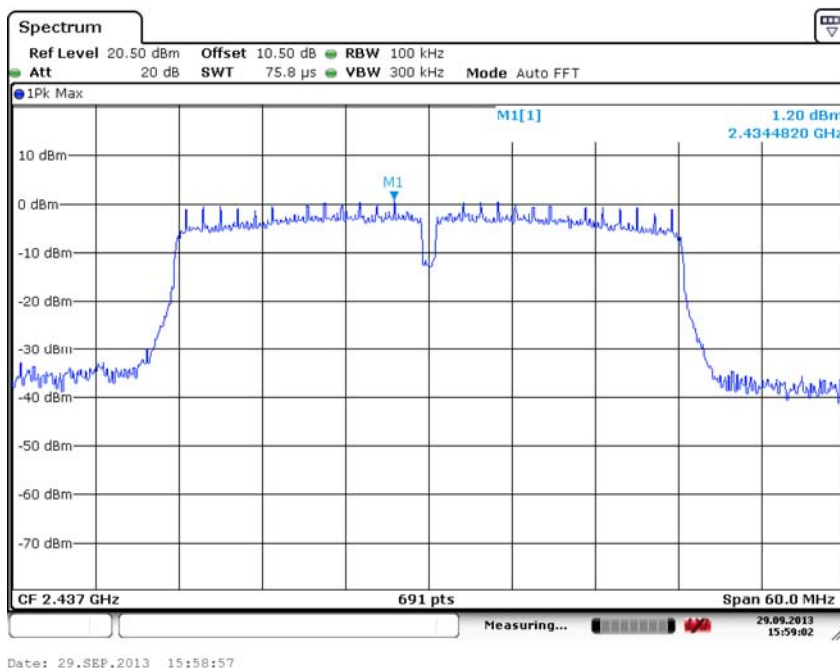
| Frequency MHz | Measured value dBm | Reference value dBm | Limit dBm | Delta dB |
|---------------|--------------------|---------------------|-----------|----------|
| 2390 | -42.83 | -2.15 | -22.15 | 40.68 |

Carrier frequency (MHz): 2462
Channel No.:11
Test Mode: 802.11n(HT40)

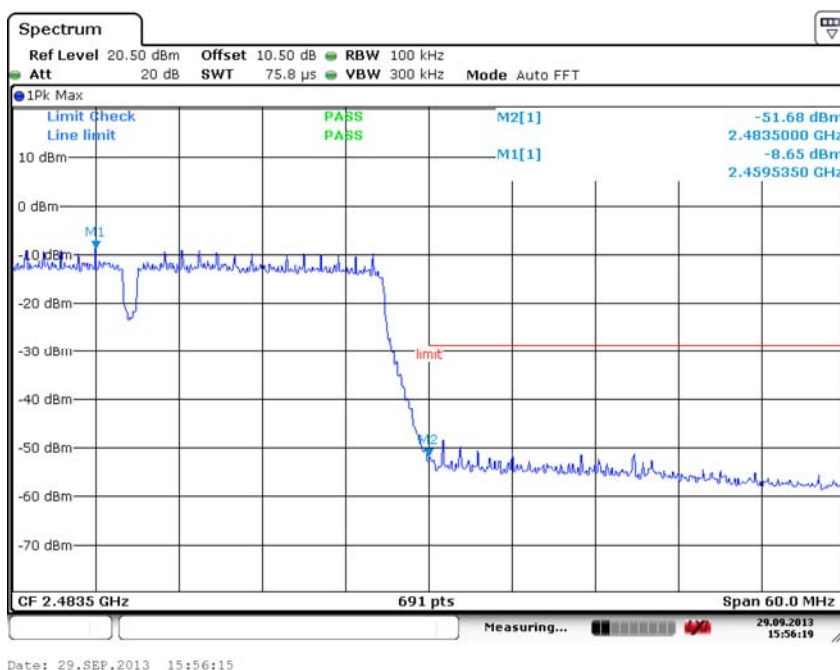
| Frequency MHz | Measured value dBm | Reference value dBm | Limit dBm | Delta dB |
|---------------|--------------------|---------------------|-----------|----------|
| 2483.5 | -51.68 | -8.65 | -28.65 | 43.03 |



Carrier frequency (MHz): 2422
Channel No.:3
Test Mode: 802.11n(HT40)



Carrier frequency (MHz): 2437
Channel No.:6
Test Mode: 802.11n(HT40)



Carrier frequency (MHz): 2462
Channel No.:11
Test Mode: 802.11n(HT40)

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 | 2413.32 | 97.28 | 63.28 | N/A | N/A | 8.90 | 25.10 |
| 2 | 2390.00 | 53.66 | 19.66 | -20.34 | 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 | 2411.13 | 97.28 | 63.28 | N/A | N/A | 8.90 | 25.10 |
| 2 | 2390.00 | 53.66 | 19.66 | -20.34 | 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 | 89.78 | 55.78 | N/A | N/A | 8.90 | 25.10 |
| 2 | 2390.00 | 43.83 | 9.83 | -10.48 | 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 | 89.91 | 55.91 | N/A | N/A | 8.90 | 25.10 |
| 2 | 2390.00 | 42.95 | 8.95 | -11.05 | 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 | 97.71 | 63.71 | N/A | N/A | 8.90 | 25.10 |
| 2 | 2483.50 | 53.64 | 19.64 | -20.36 | 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 | 98.03 | 64.03 | N/A | N/A | 8.90 | 25.10 |
| 2 | 2483.50 | 53.97 | 19.97 | -20.03 | 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 | 90.01 | 56.01 | N/A | N/A | 8.90 | 25.10 |
| 2 | 2483.50 | 42.90 | 8.90 | -11.10 | 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 | 90.69 | 56.69 | N/A | N/A | 8.90 | 25.10 |
| 2 | 2483.50 | 44.21 | 10.21 | -9.79 | 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 | 98.65 | 64.65 | N/A | N/A | 8.90 | 25.10 |
| 2 | 2390.00 | 54.79 | 20.79 | -19.21 | 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 | 98.54 | 64.54 | N/A | N/A | 8.90 | 25.10 |
| 2 | 2390.00 | 52.93 | 18.93 | -21.07 | 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 | 90.18 | 56.18 | N/A | N/A | 8.90 | 25.10 |
| 2 | 2390.00 | 44.20 | 10.20 | -9.80 | 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 | 90.73 | 56.73 | N/A | N/A | 8.90 | 25.10 |
| 2 | 2390.00 | 44.28 | 10.28 | -9.72 | 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 | 97.12 | 63.12 | N/A | N/A | 8.90 | 25.10 |
| 2 | 2483.50 | 53.16 | 19.16 | -20.84 | 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 | 98.58 | 64.58 | N/A | N/A | 8.90 | 25.10 |
| 2 | 2483.50 | 53.17 | 19.17 | -20.83 | 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 | 90.06 | 56.06 | N/A | N/A | 8.90 | 25.10 |
| 2 | 2483.50 | 43.89 | 9.89 | -10.11 | 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 | 89.74 | 55.74 | N/A | N/A | 8.90 | 25.10 |
| 2 | 2483.50 | 44.53 | 10.53 | -9.47 | 54.00 | 8.90 | 25.10 |

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 FSV | ROHDE&SCHWARZ | 101065 | 2014.8 |
| 2. | Signal Generator MG3700A | Anritsu | 6200677084 | 2014.8 |
| 3. | Attenuation 6810.17.B | HUBER+SUHNER | 768710 | 2014.8 |
| 4. | Cable 104EA | SUCOFLEX | 9272/4EA | 2014.8 |
| 5. | Cable 104EA | SUCOFLEX | 9266/4EA | 2014.8 |
| 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 | 2014.8 |
| 14. | HF 906 Double-Ridged Waveguide Horn Antenna | R&S | 100029 | 2014.8 |
| 15. | HL562 Ultra log antenna | R&S | 100016 | 2014.8 |
| 16. | 3160-09 Receive antenna | SCHWARZ-BECK | 002058-002 | 2014.8 |
| 17. | ESI 40 EMI test receiver | R&S | 100015 | 2014.8 |
| 18. | Radio tester | CMU 200 | 114667 | 2014.8 |
| 19. | ESCS30 EMI test receiver | R&S | 100029 | 2014.8 |
| 20. | HL562 Receive antenna | R&S | 100167 | 2014.8 |
| 21. | ESH3-Z5 LISN | R&S | 100020 | 2014.8 |

Appendix

Appendix1 Test Setup