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## TEST REPORT

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Report No.: SRTC2014-H024-E0014

Product Name: GSM/GPRS/EDGE/UMTS

Digital Mobile Phone with Bluetooth and WiFi

Marketing Name: ONE TOUCH 7040F

Product Model: Yaris-5

Applicant: TCT Mobile Limited

Manufacturer: TCT Mobile Limited

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

FCC ID: RAD474

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

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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: 9<sup>th</sup> September 2013

Date of test: 9<sup>th</sup> September 2013 to 18<sup>th</sup> March 2014

## 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                     | RAD474                                                          |
| Frequency Range            | 2.4GHz~2.4835GHz                                                |
| Number of Channel          | 79                                                              |
| Modulation Type            | GFSK, $\pi/4$ DQPSK, 8DPSK                                      |
| Duplex Mode                | TDD                                                             |
| Channel Spacing            | 1MHz                                                            |
| Data Rate                  | 1Mbps, 2 Mbps, 3 Mbps                                           |
| Antenna Type               | Fixed Internal                                                  |
| Power Supply               | Battery or Charger                                              |
| Rated Power Supply Voltage | 3.8V                                                            |
| HW Version                 | PIO07                                                           |
| SW Version                 | AGJ                                                             |

## 1.7.2 EUT details

| Product Name                                                          | Marketing Name  | Product Model | IMEI            |
|-----------------------------------------------------------------------|-----------------|---------------|-----------------|
| GSM/GPRS/EDGE/UMTS<br>Digital Mobile Phone with<br>Bluetooth and WiFi | ONE TOUCH 7040F | Yaris-5       | 014039005202405 |

## 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                         |

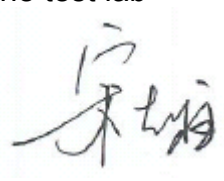
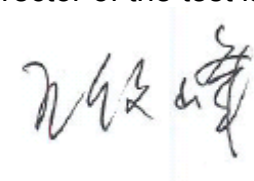
|              |                                     |
|--------------|-------------------------------------|
| Equipment    | Data Cable                          |
| Manufacturer | Huizhou Shenghua Industry Co., Ltd. |
| Model Number | CDA3122002C2                        |

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 two 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 TLi019B2 and the data cable CDA3122002C1.

## 2. Test information

### 2.1 Summary of the test results

| No. | Test case                       | FCC reference             | Verdict |
|-----|---------------------------------|---------------------------|---------|
| 1   | Occupied Bandwidth              | 15.247(a)(1)              | Pass    |
| 2   | Peak Power Output               | 15.247(b)(1)              | Pass    |
| 3   | Spurious RF Conducted Emissions | 15.247(d)                 | Pass    |
| 4   | Spurious Radiated Emissions     | 15.247(d)/15.35(b)/15.209 | Pass    |
| 5   | Band Edge Compliance            | 15.247(d)                 | Pass    |
| 6   | Dwell Time                      | 15.247(a)(1)(iii)         | Pass    |
| 7   | Channel Separation              | 15.247(a)(1)              | Pass    |
| 8   | Number of Hopping Frequencies   | 15.247(a)(1)(iii)         | Pass    |

|                                                                                                                                                                           |                                                                                                                                                                  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>This Test Report Is Issued by:<br/>Mr. Song Qizhu<br/>Director of the test lab</p>  | <p>Checked by:<br/>Mr. Wang Junfeng<br/>Deputy director of the test lab</p>  |
| <p>Tested by:<br/>Mr. Jiang Shuo<br/>Test engineer</p>                                 | <p>Issued date:</p> <p><b>2014.03.18</b></p>                                                                                                                     |

## 2.2 Test result

### 2.2.1 Occupied Bandwidth

#### 2.2.1.1 Ambient condition

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

#### 2.2.1.2 Test Description

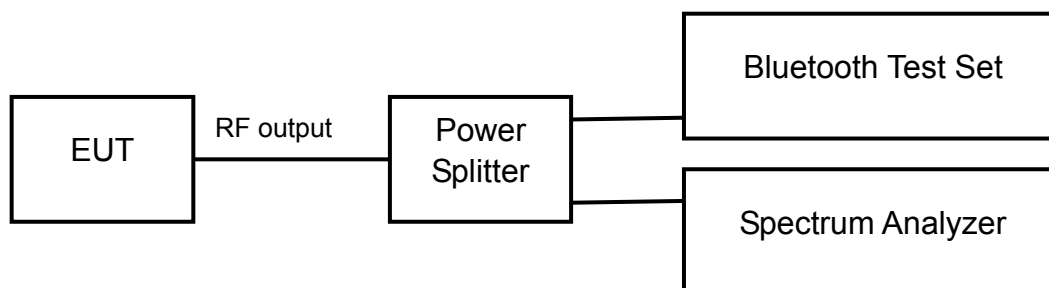
The measurement is made according to ANSI C63.10-2009 Section 6.9.1 and Public notice DA 00-705.

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. The resolution bandwidth for measuring the reference level and the occupied bandwidth was 10 kHz.

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



#### 2.2.1.3 Test limit

FCC Part15.247(a)(1):

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

## 2.2.1.4 Test result

Modulation type: GFSK

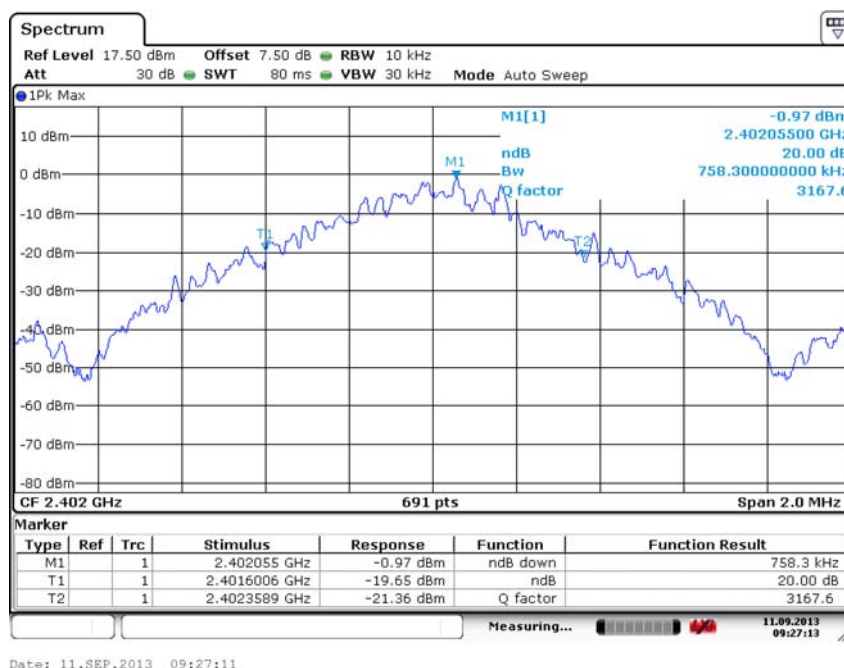
| Carrier frequency (MHz) | Channel No. | 20 dB bandwidth(kHz) |
|-------------------------|-------------|----------------------|
| 2402                    | 0           | 758.3                |
| 2441                    | 39          | 758.3                |
| 2480                    | 78          | 758.3                |

Modulation type:  $\pi/4$ DQPSK

| Carrier frequency (MHz) | Channel No. | 20 dB bandwidth(kHz) |
|-------------------------|-------------|----------------------|
| 2402                    | 0           | 1189.6               |
| 2441                    | 39          | 1189.6               |
| 2480                    | 78          | 1206.9               |

Modulation type: 8DPSK

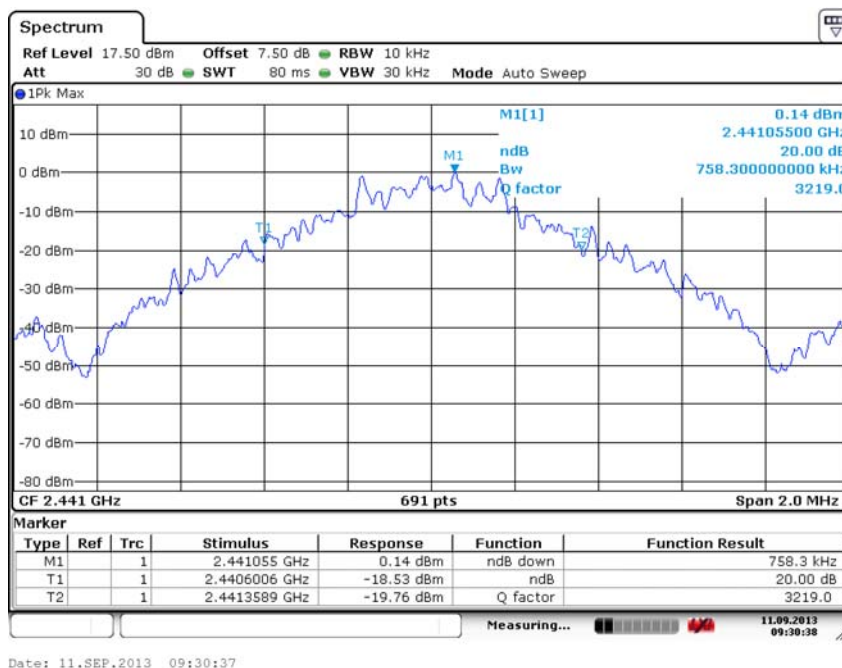
| Carrier frequency (MHz) | Channel No. | 20 dB bandwidth(kHz) |
|-------------------------|-------------|----------------------|
| 2402                    | 0           | 1267.7               |
| 2441                    | 39          | 1264.8               |
| 2480                    | 78          | 1264.8               |



Carrier frequency (MHz): 2402

Channel No.:0

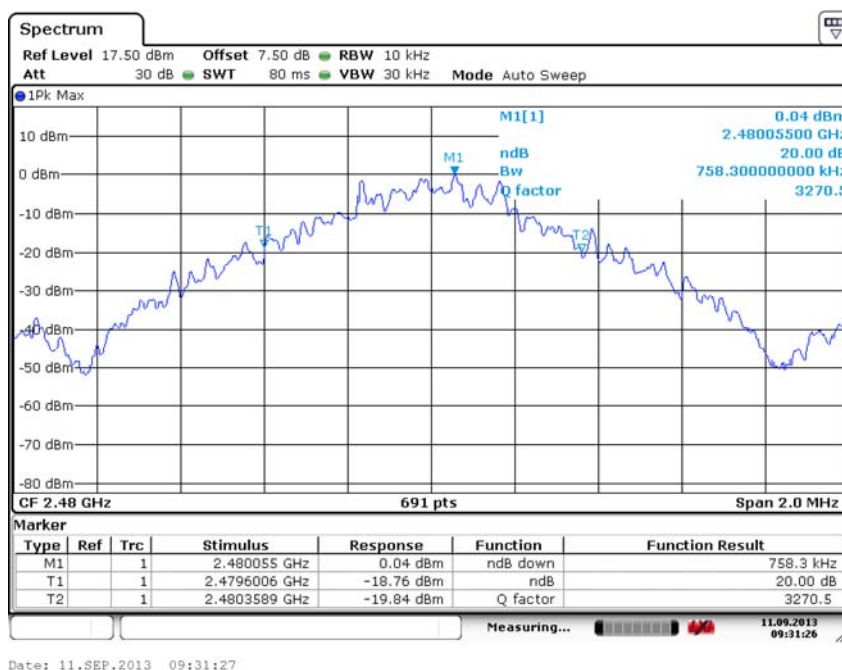
Modulation type: GFSK



Carrier frequency (MHz): 2441

Channel No.:39

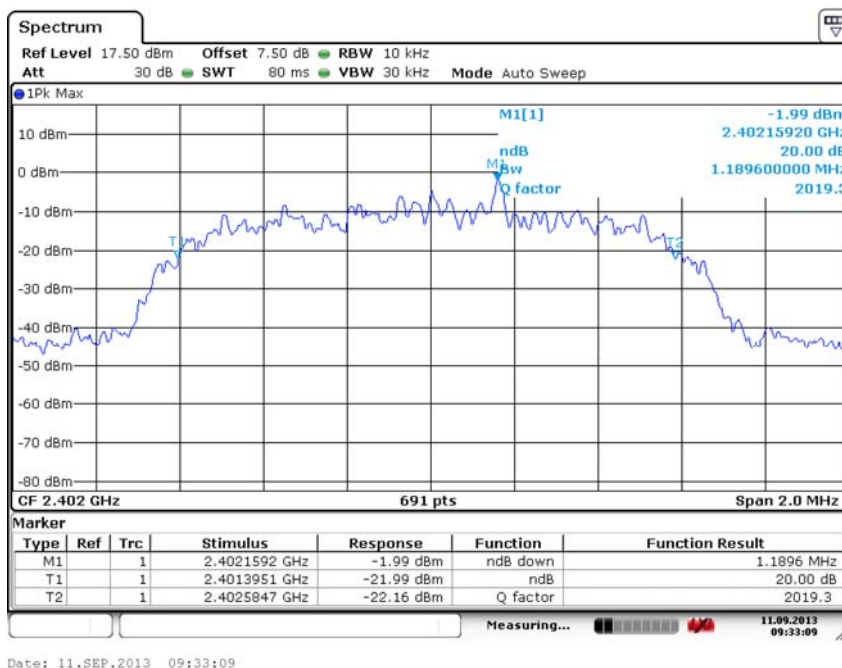
Modulation type: GFSK



Carrier frequency (MHz): 2480

Channel No.:78

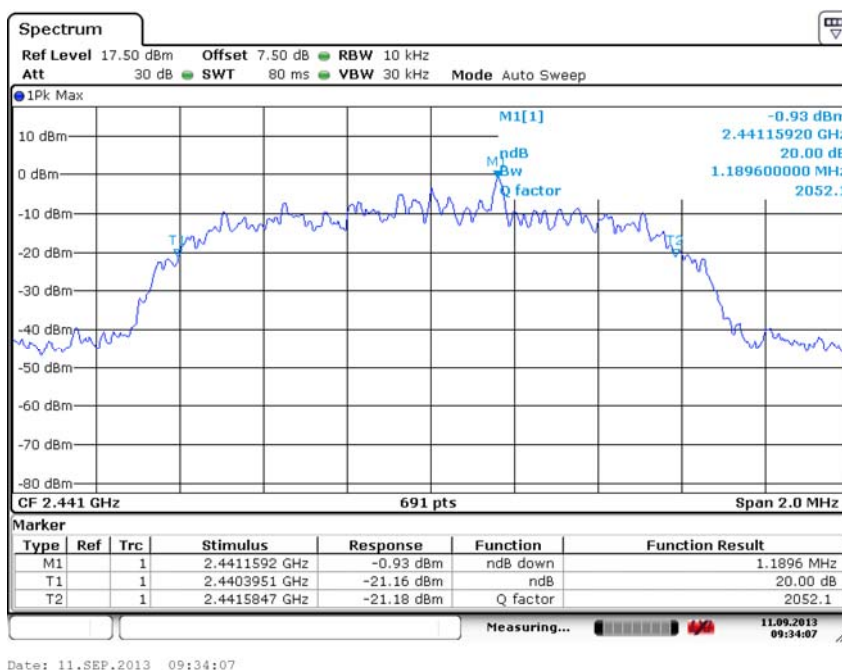
Modulation type: GFSK



Carrier frequency (MHz): 2402

Channel No.:0

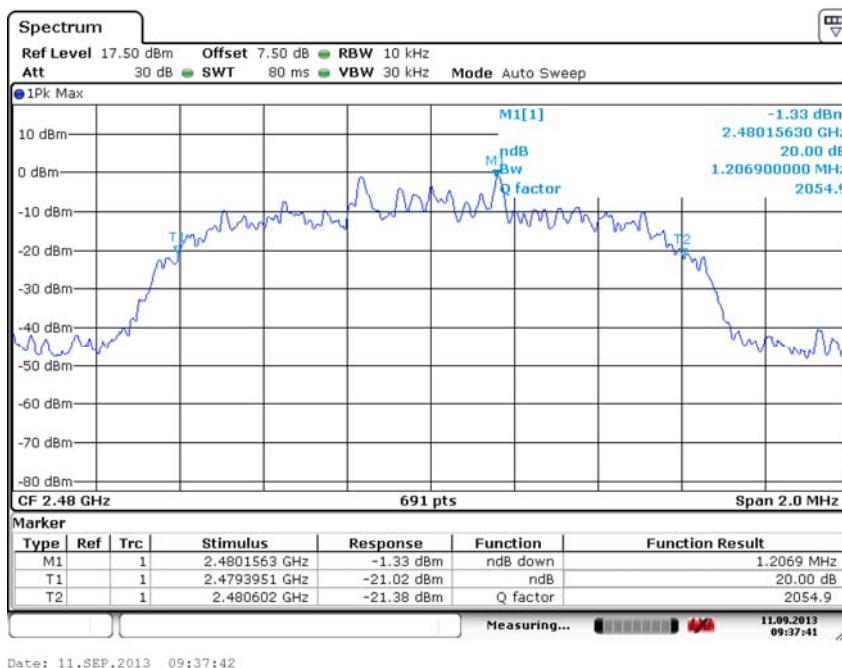
Modulation type:  $\pi/4$ DQPSK



Carrier frequency (MHz): 2441

Channel No.:39

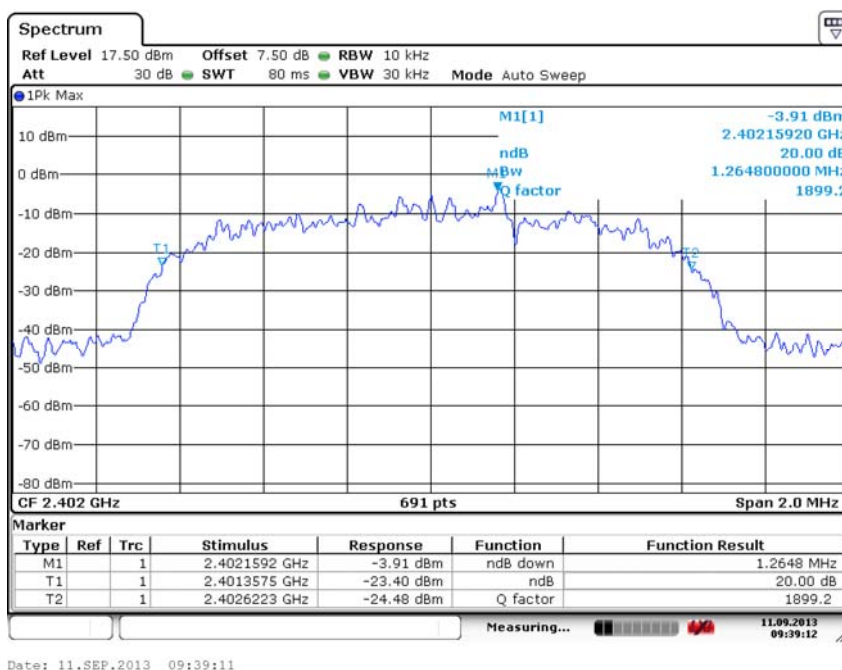
Modulation type:  $\pi/4$ DQPSK



Carrier frequency (MHz): 2480

Channel No.:78

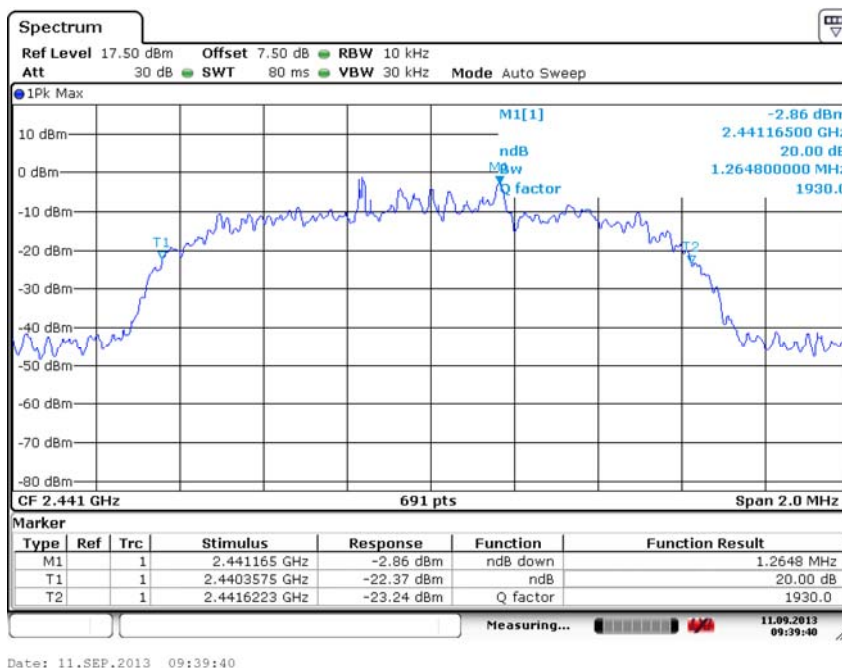
Modulation type:  $\pi/4$ DQPSK



Carrier frequency (MHz): 2402

Channel No.:0

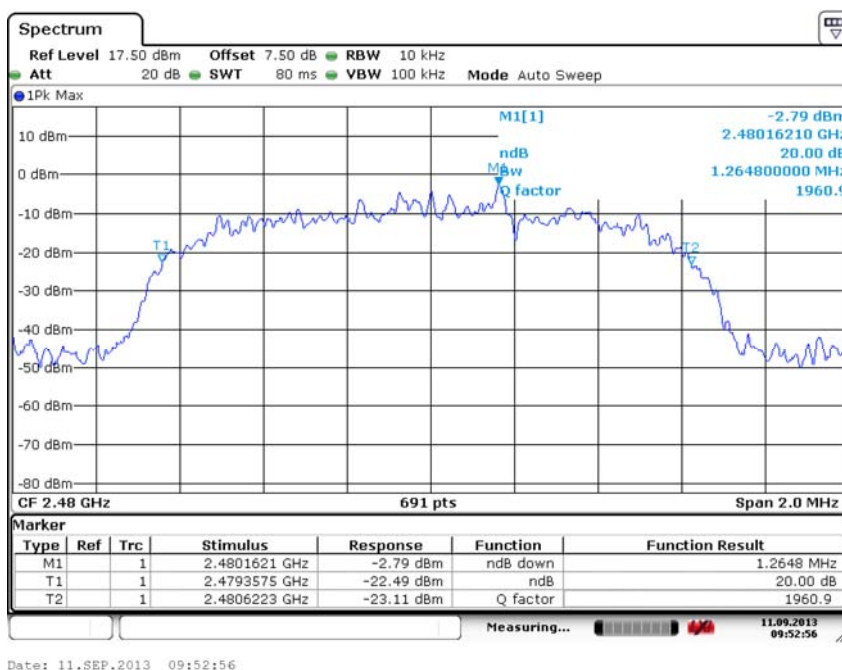
Modulation type: 8DPSK



Carrier frequency (MHz): 2441

Channel No.:39

Modulation type: 8DPSK



Carrier frequency (MHz): 2480

Channel No.:78

Modulation type: 8DPSK

## 2.2.2 Peak Power Output

### 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 Section 6.10.1 and Public notice DA 00-705.

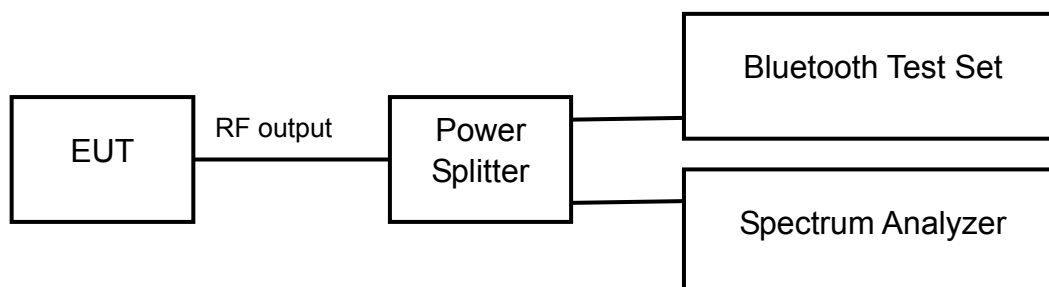
The Equipment Under Test (EUT) was set up in a shielded room to perform the output power measurements.

The results recorded were measured with the modulation which produces the worst-case (highest) output power.

The resolution bandwidth for measuring the output power was 2 MHz.

The reference level of the spectrum analyzer was set higher than the output power of the EUT.

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



### 2.2.2.3 Test limit

FCC Part15.247(b)(1):

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt.

For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

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

| Modulation type      | GFSK  | $\pi/4$ DQPSK | 8DPSK |
|----------------------|-------|---------------|-------|
| Maximum Output Power | 30dBm | 30dBm         | 30dBm |

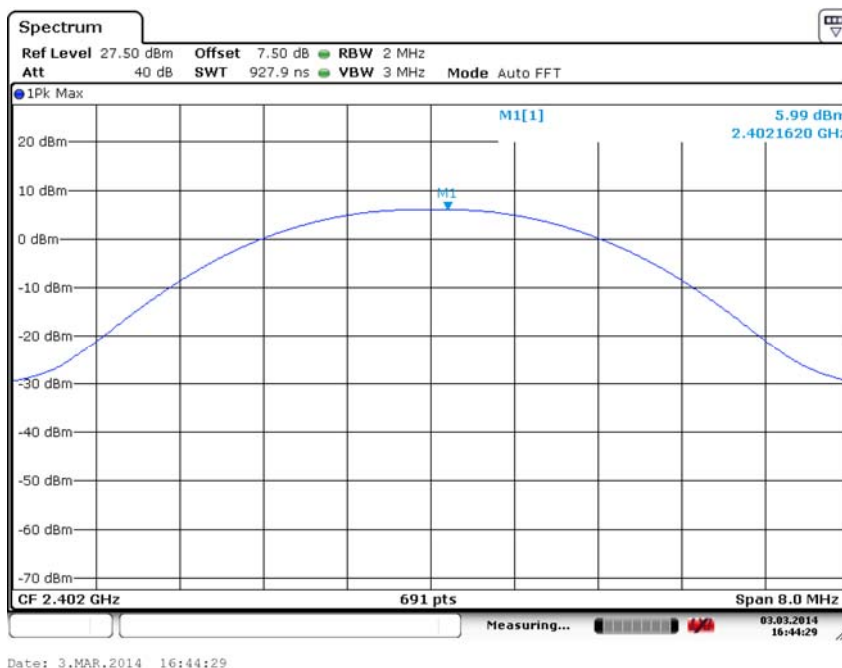
#### 2.2.2.4 Test Condition

| Hopping Mode | Modulation type | RBW  | VBW  | Span | Sweep time |
|--------------|-----------------|------|------|------|------------|
| Hopping OFF  | GFSK            | 2MHz | 3MHz | 8MHz | 1ms        |
| Hopping OFF  | $\pi/4$ DQPSK   | 2MHz | 3MHz | 8MHz | 1ms        |
| Hopping OFF  | 8DPSK           | 2MHz | 3MHz | 8MHz | 1ms        |

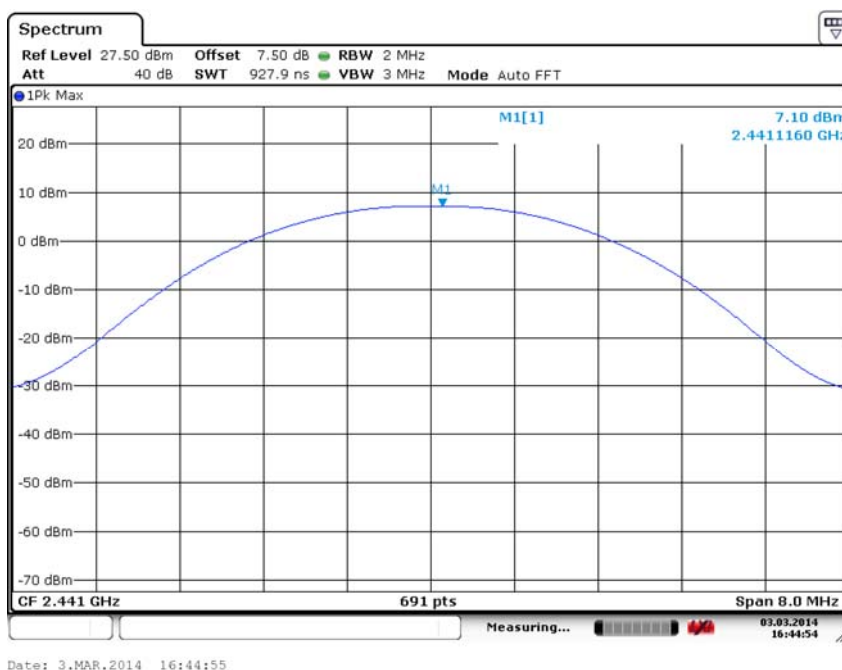
#### 2.2.2.5 Test result

| Modulation type | Average Power Output (dBm) |                |                |
|-----------------|----------------------------|----------------|----------------|
|                 | 2402MHz (Ch0)              | 2441MHz (Ch39) | 2480MHz (Ch78) |
| GFSK            | 5.29                       | 6.29           | 6.59           |
| $\pi/4$ DQPSK   | 5.01                       | 5.92           | 6.24           |
| 8DPSK           | 5.08                       | 6.17           | 6.43           |

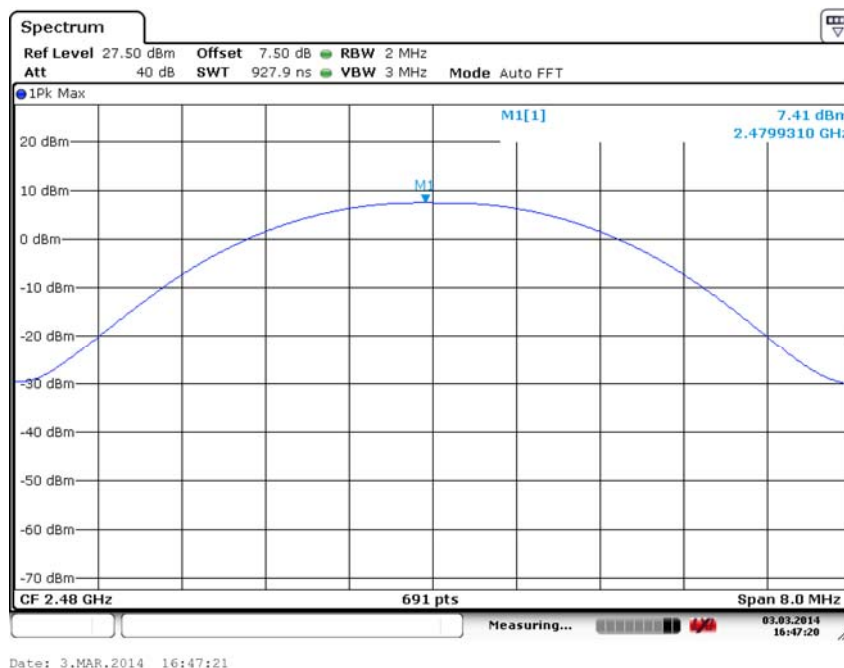
| Modulation type | Peak Power Output (dBm) |                |                |
|-----------------|-------------------------|----------------|----------------|
|                 | 2402MHz (Ch0)           | 2441MHz (Ch39) | 2480MHz (Ch78) |
| GFSK            | 5.99                    | 7.10           | 7.41           |
| $\pi/4$ DQPSK   | 5.75                    | 6.80           | 7.13           |
| 8DPSK           | 5.86                    | 7.09           | 7.33           |



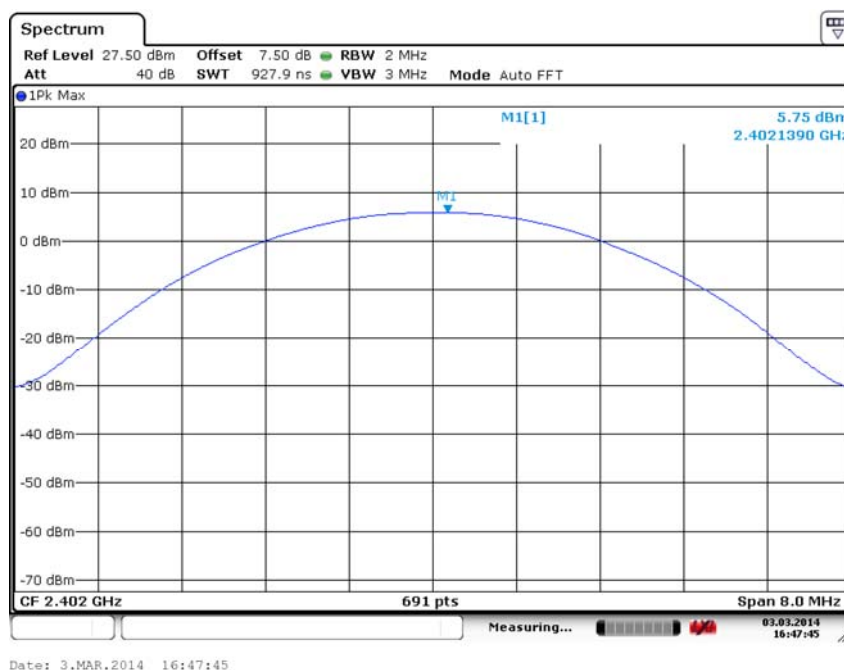
Carrier frequency (MHz): 2402  
Channel No.:0  
Modulation type: GFSK



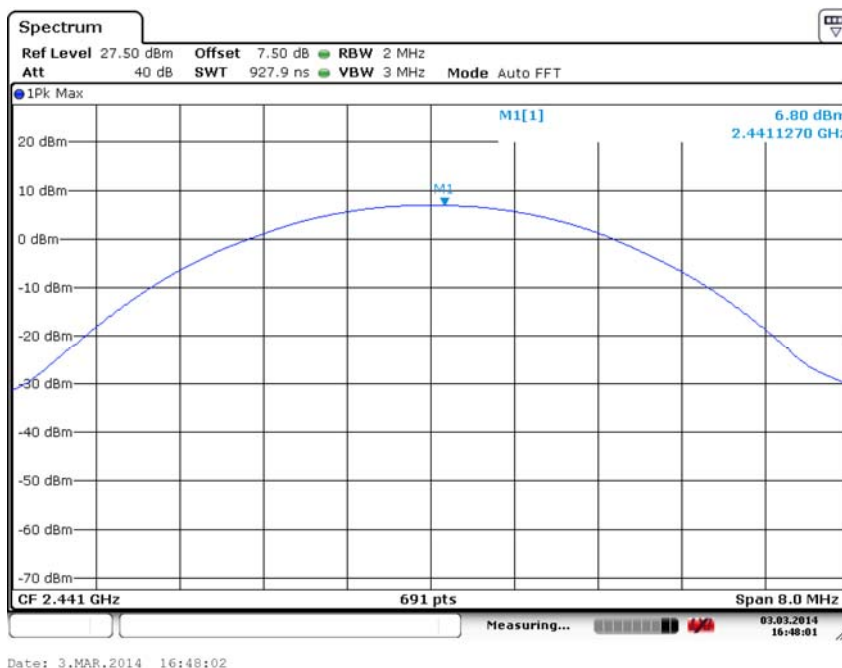
Carrier frequency (MHz): 2441  
Channel No.:39  
Modulation type: GFSK



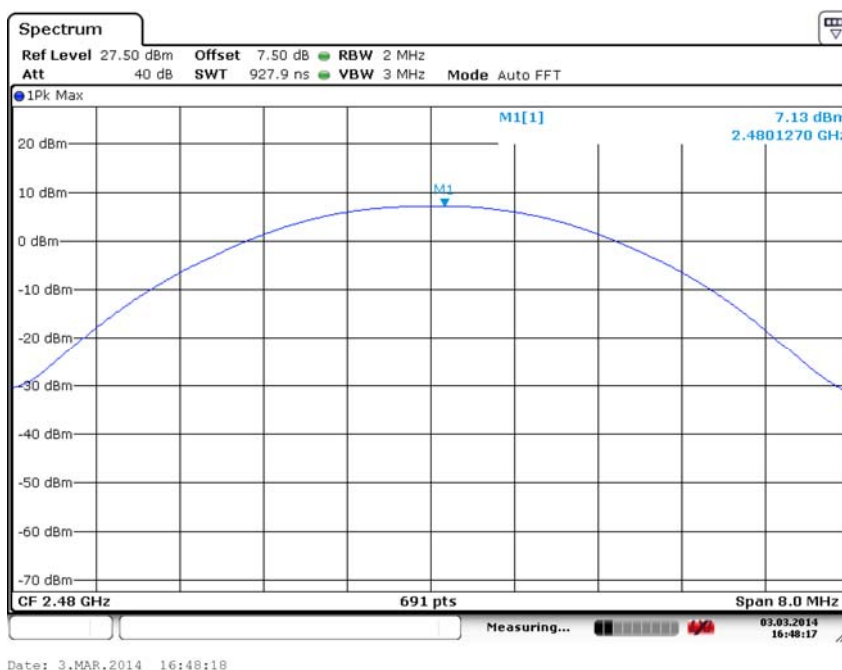
Carrier frequency (MHz): 2480  
Channel No.:78  
Modulation type: GFSK



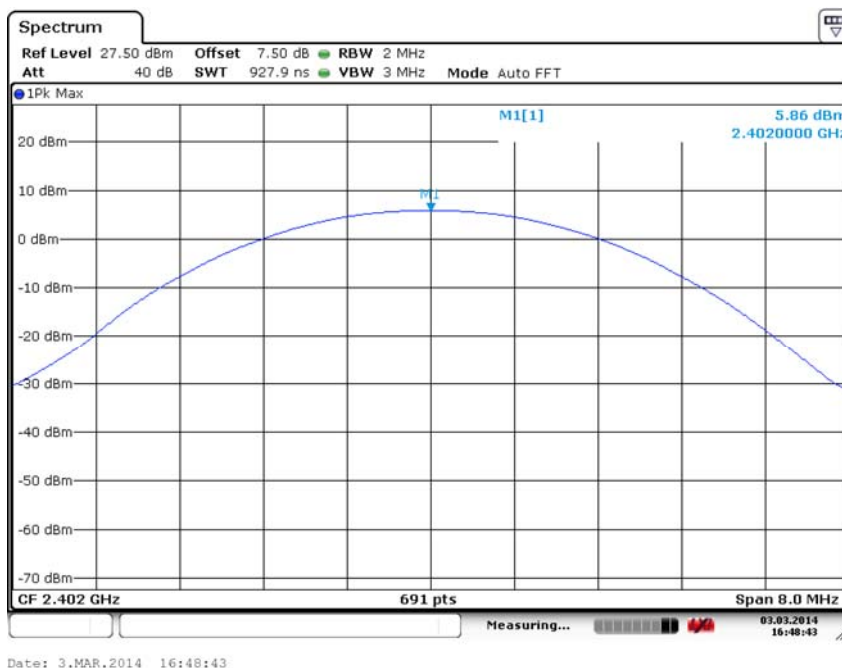
Carrier frequency (MHz): 2402  
Channel No.:0  
Modulation type:  $\pi/4$ DQPSK



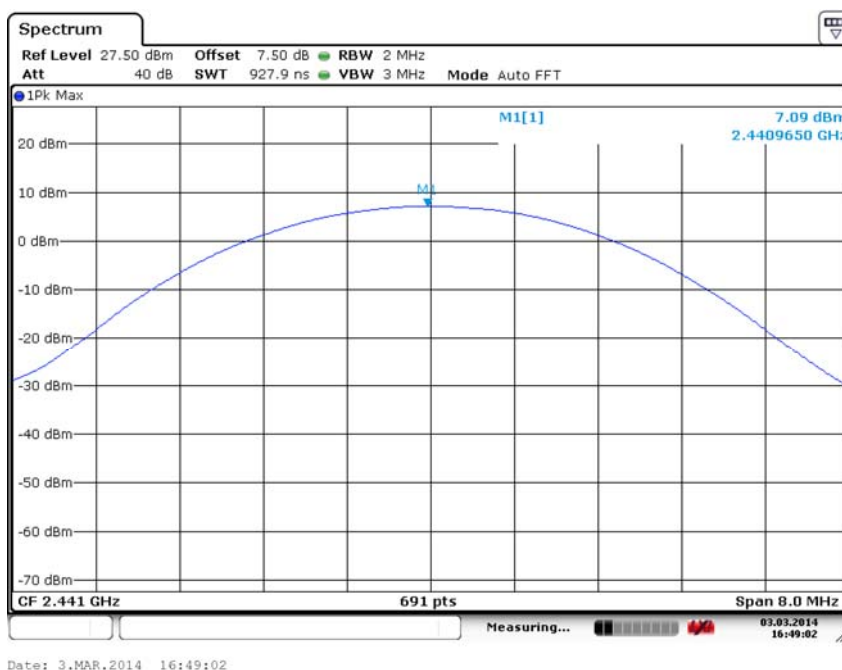
Carrier frequency (MHz): 2441  
Channel No.:39  
Modulation type:  $\pi/4$ DQPSK



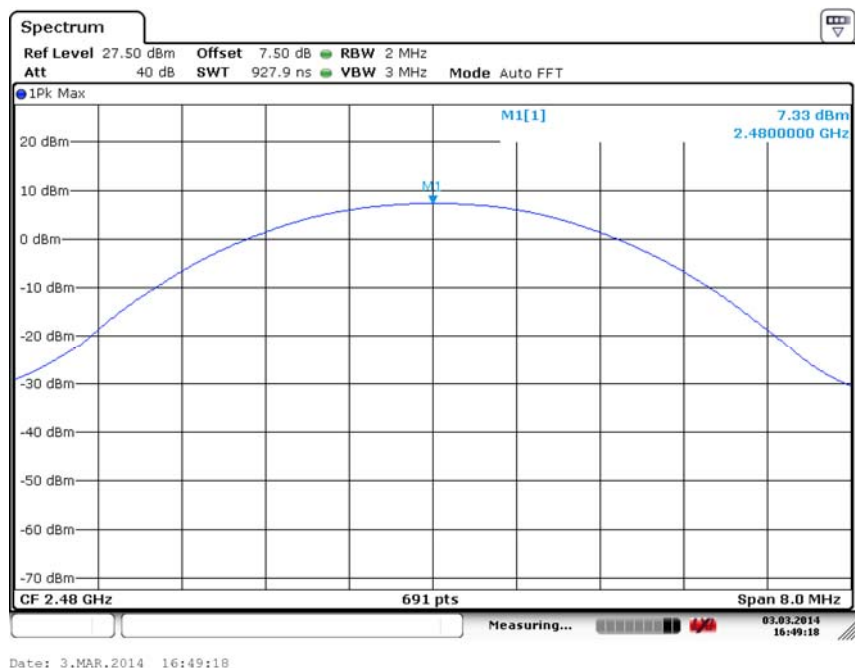
Carrier frequency (MHz): 2480  
Channel No.:78  
Modulation type:  $\pi/4$ DQPSK



Carrier frequency (MHz): 2402  
Channel No.:0  
Modulation type: 8DPSK



Carrier frequency (MHz): 2441  
Channel No.:39  
Modulation type: 8DPSK



Carrier frequency (MHz): 2480  
Channel No.:78  
Modulation type: 8DPSK

## 2.2.3 Spurious RF Conducted Emissions

### 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 Section 6.7 and Public notice DA 00-705.

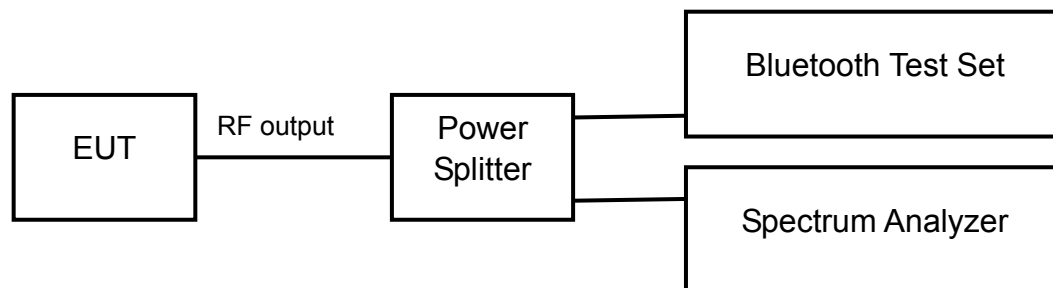
The Equipment Under Test (EUT) was set up in a shielded room to perform the spurious emissions measurements.

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

Analyzer settings:

- Detector: Peak-Maxhold
- Frequency range: 30 ~25000 MHz
- Resolution Bandwidth (RBW): 1 MHz
- Video Bandwidth (VBW): 3 MHz

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.



### 2.2.3.3 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.

#### 2.2.3.4 Test result

Carrier frequency (MHz): 2402

Channel No.:0

Modulation type: GFSK

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

Carrier frequency (MHz): 2441

Channel No.:39

Modulation type: GFSK

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

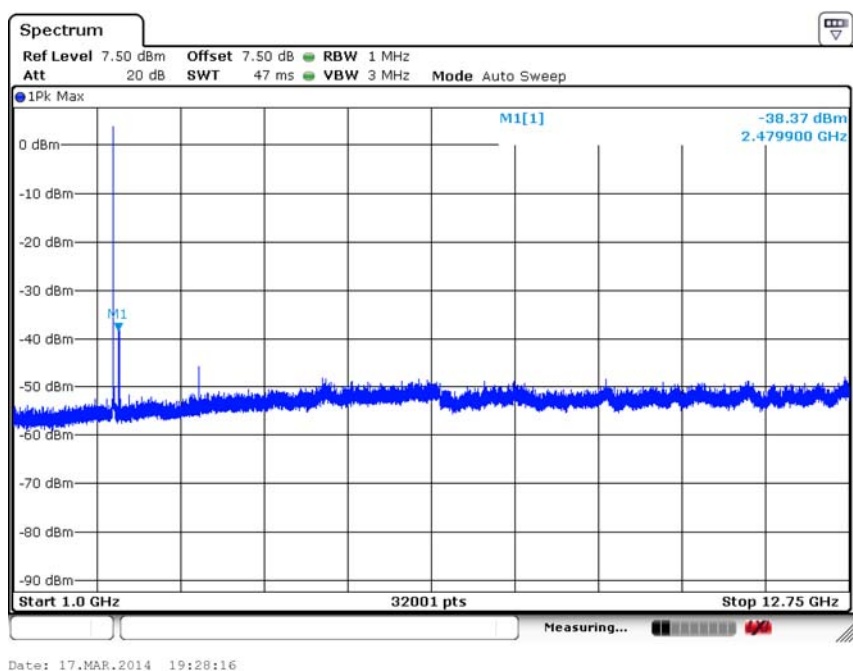
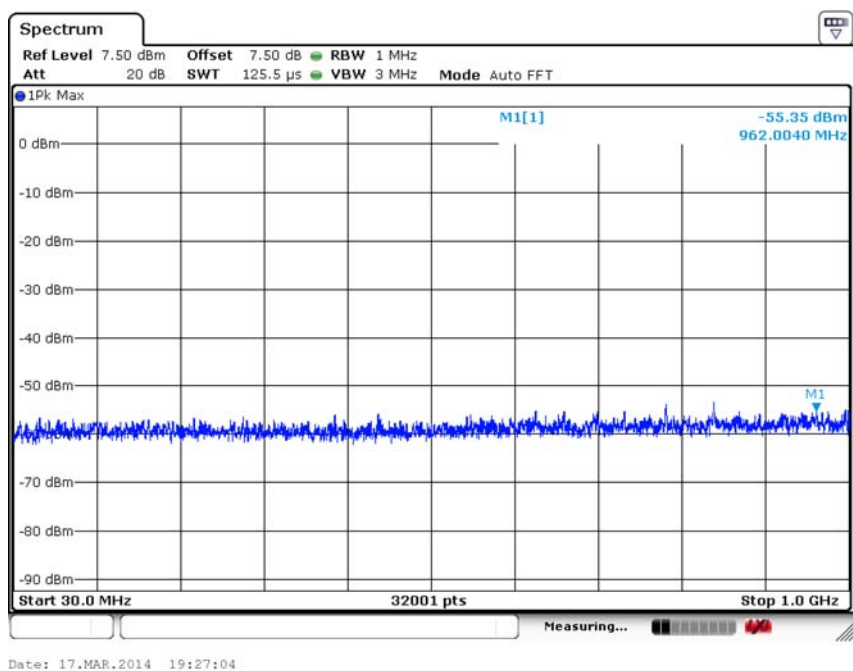
Carrier frequency (MHz): 2480

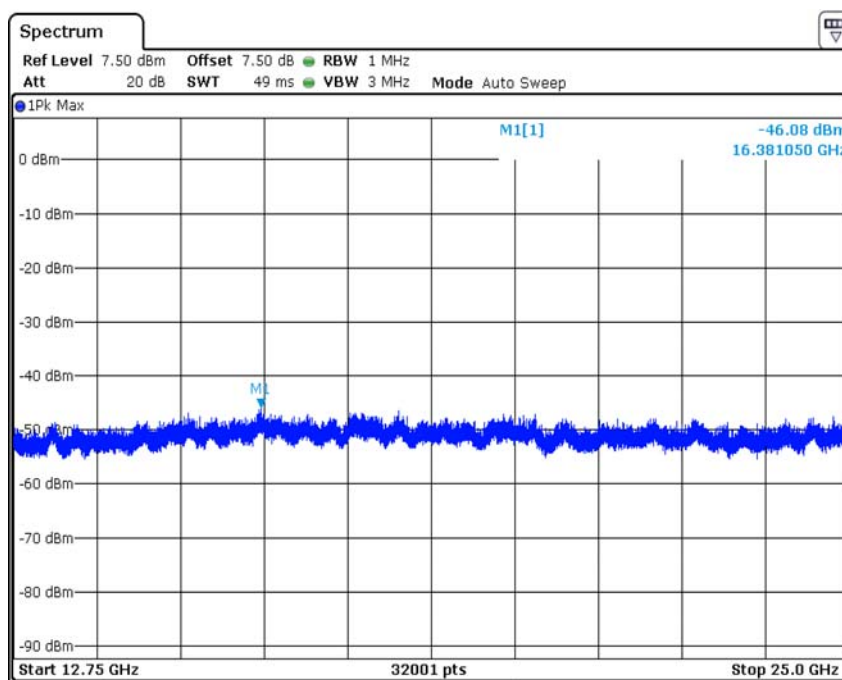
Channel No.:78

Modulation type: GFSK

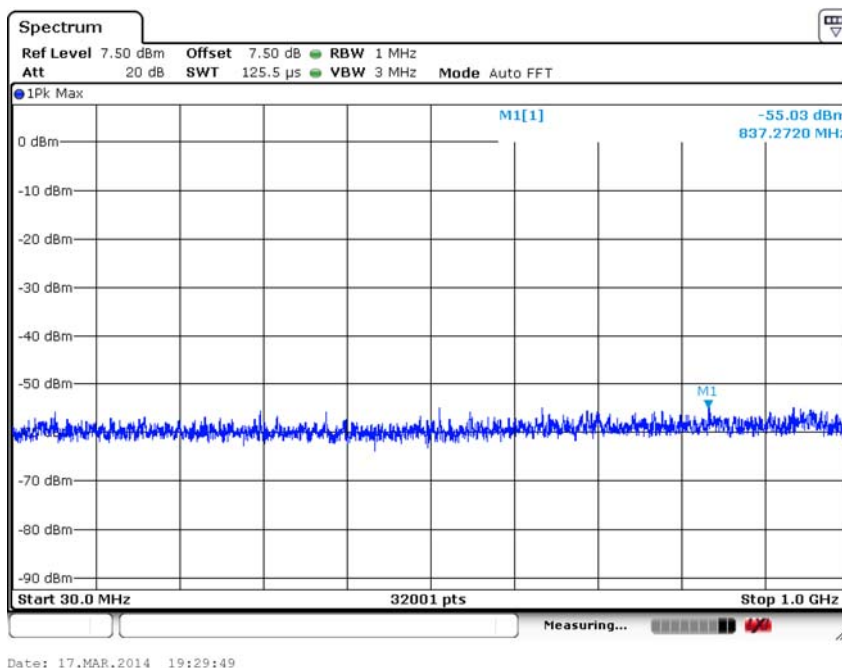
| Frequency<br>MHz | Corrected<br>measurement value<br>dBm | Reference value<br>dBm | Limit<br>dBm | Delta<br>dB |
|------------------|---------------------------------------|------------------------|--------------|-------------|
| ---              | ---                                   | ---      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

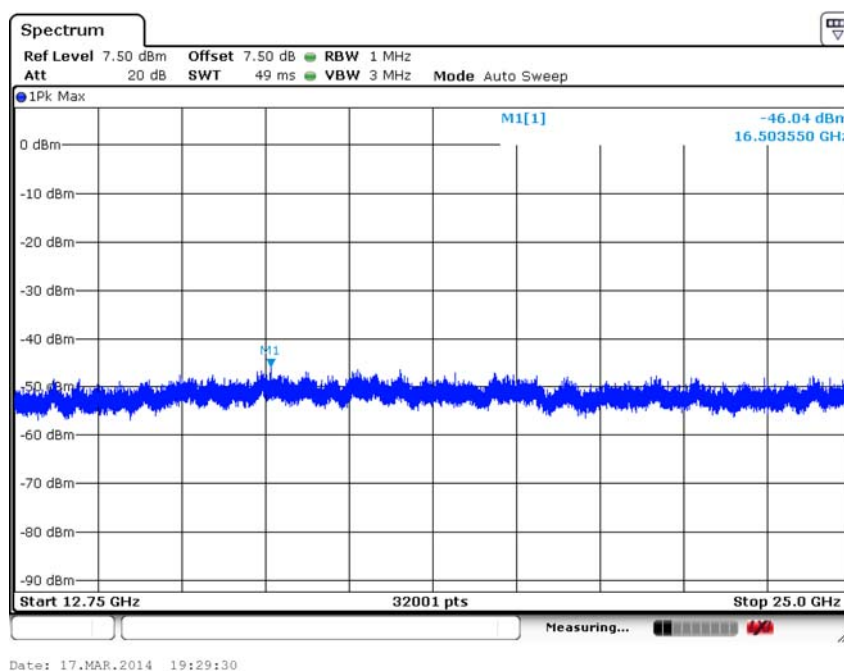
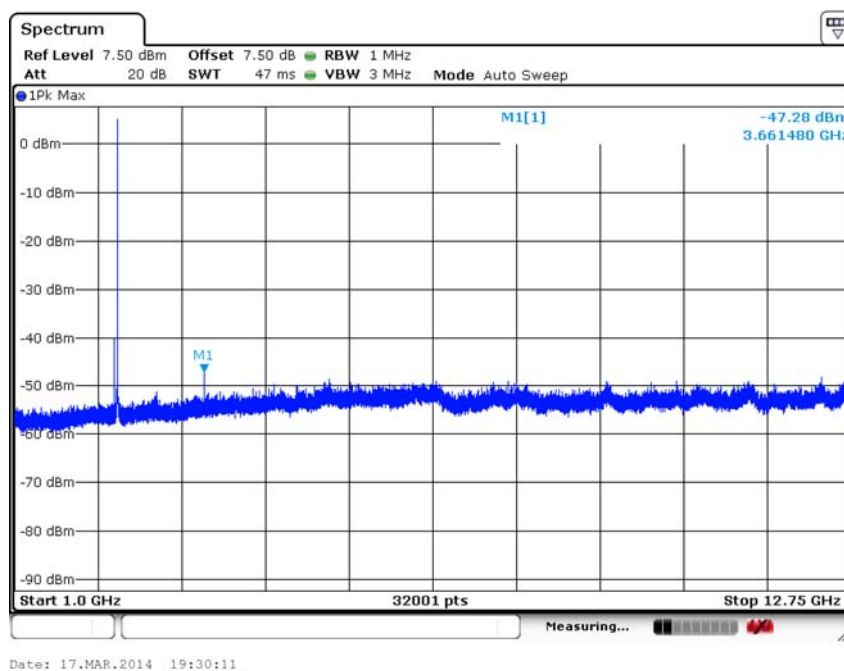
Note: The Reference value see 2.2.5 Band Edge Compliance



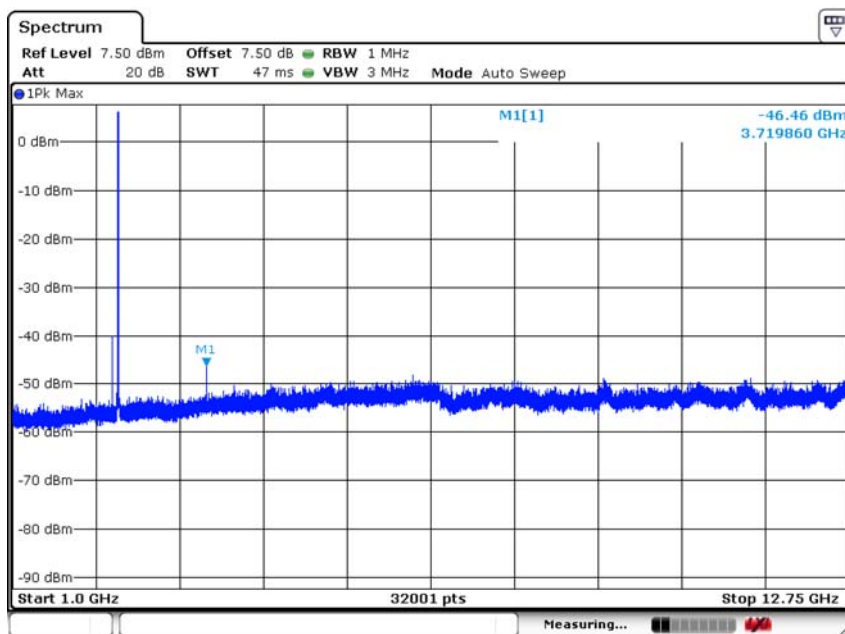
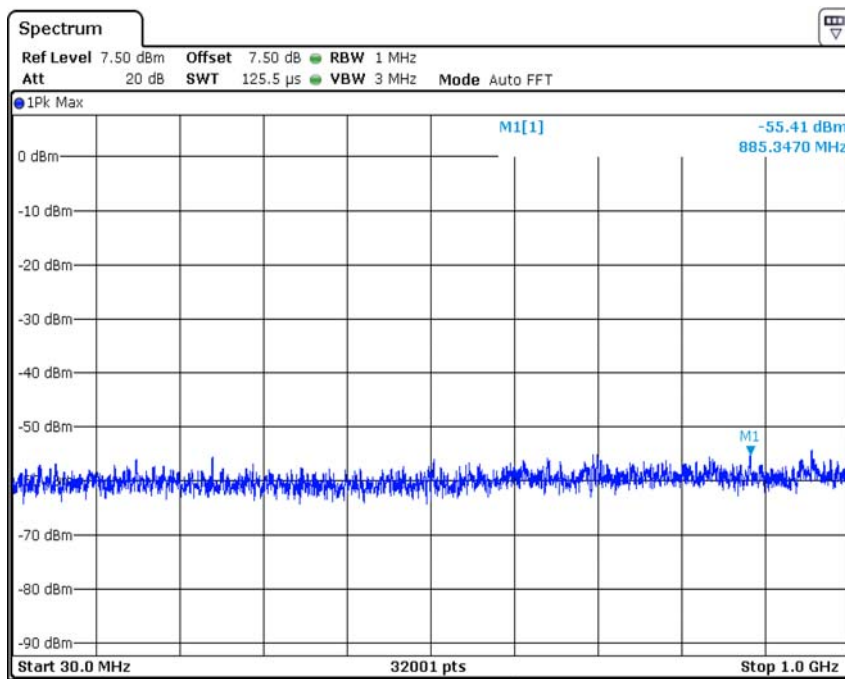


Carrier frequency (MHz): 2402  
Channel No.:0  
Modulation type: GFSK

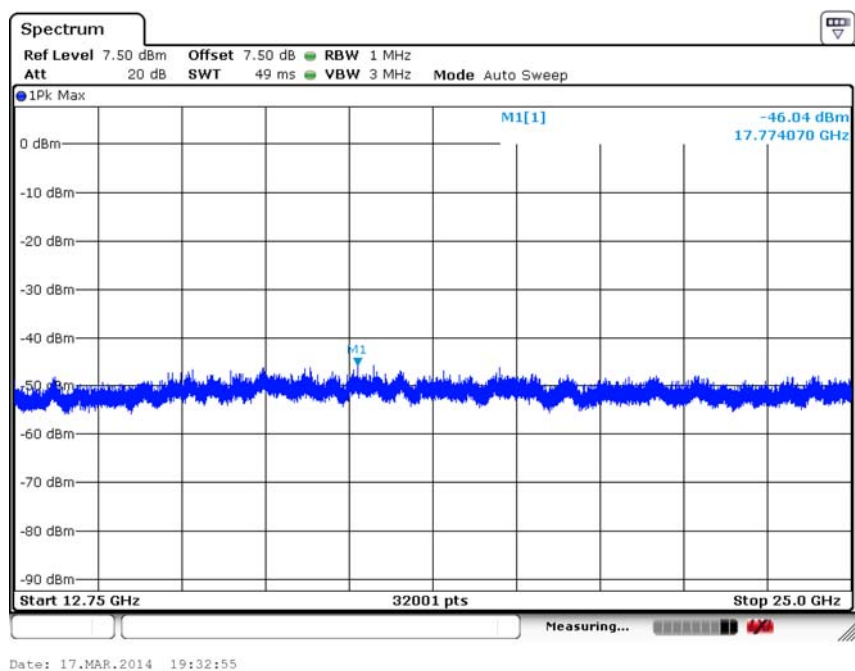




Carrier frequency (MHz): 2441  
Channel No.:39  
Modulation type: GFSK



Date: 17.MAR.2014 19:31:54



Carrier frequency (MHz): 2480  
Channel No.:78  
Modulation type: GFSK

Carrier frequency (MHz): 2402

Channel No.:0

Modulation type:  $\pi/4$ DQPSK

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

Carrier frequency (MHz): 2441

Channel No.:39

Modulation type:  $\pi/4$ DQPSK

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

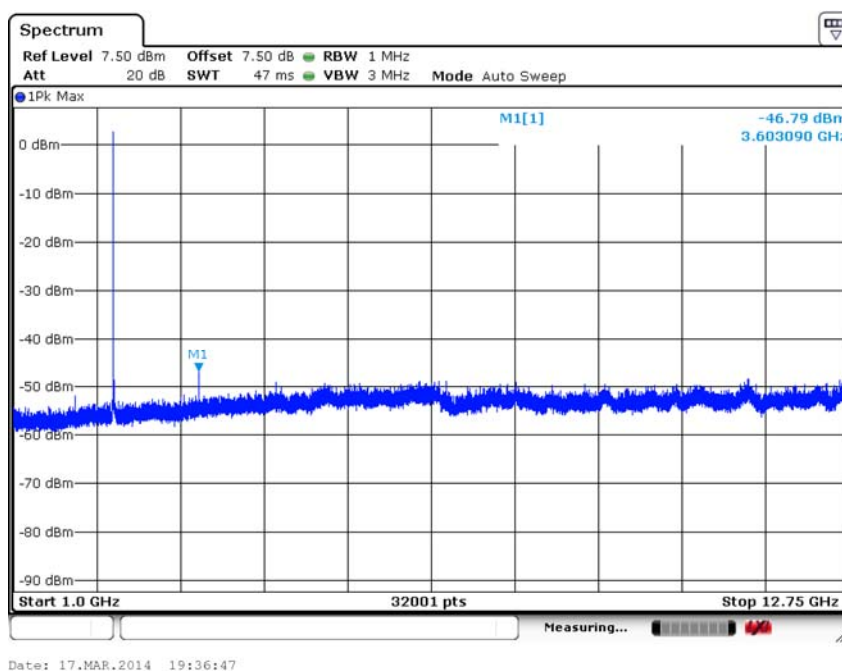
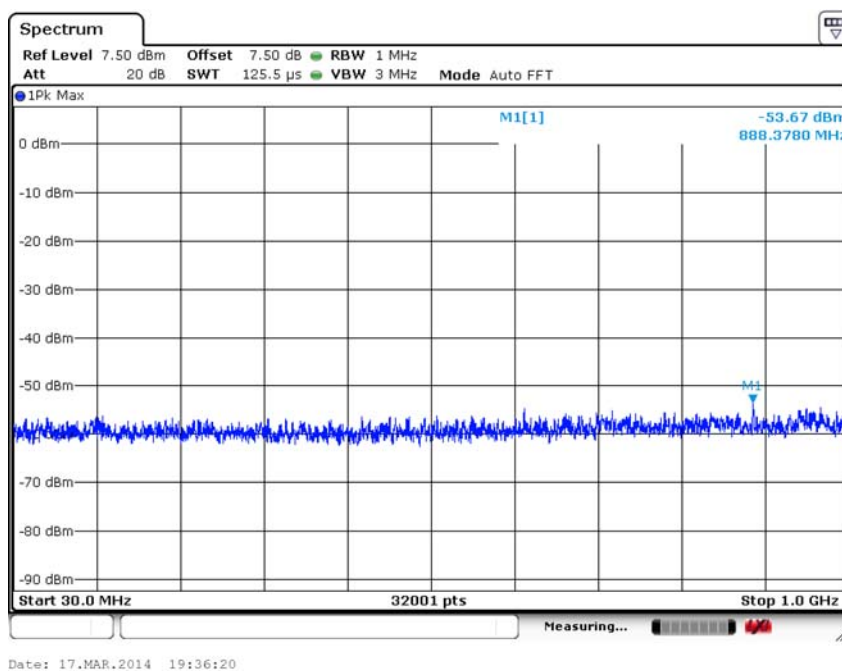
Carrier frequency (MHz): 2480

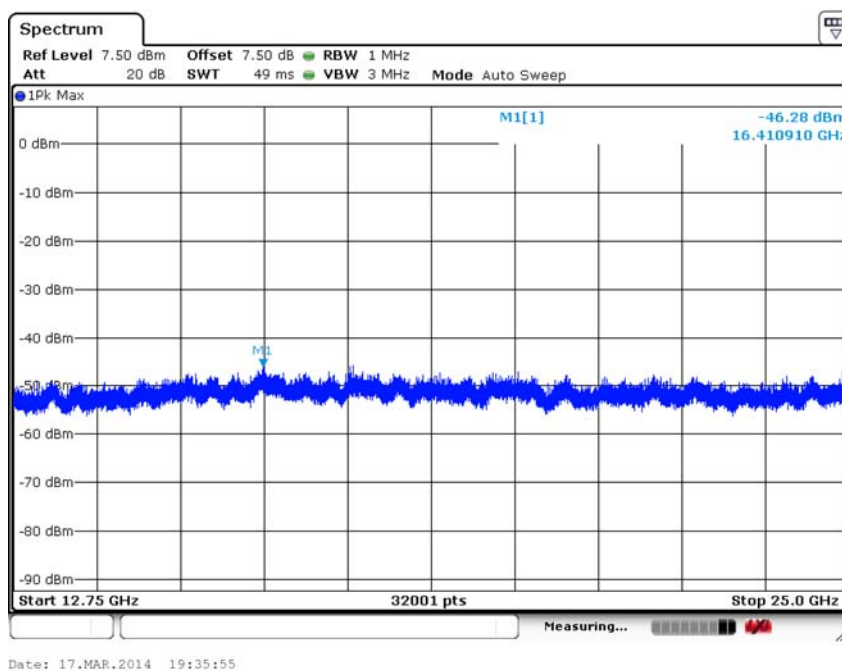
Channel No.:78

Modulation type:  $\pi/4$ DQPSK

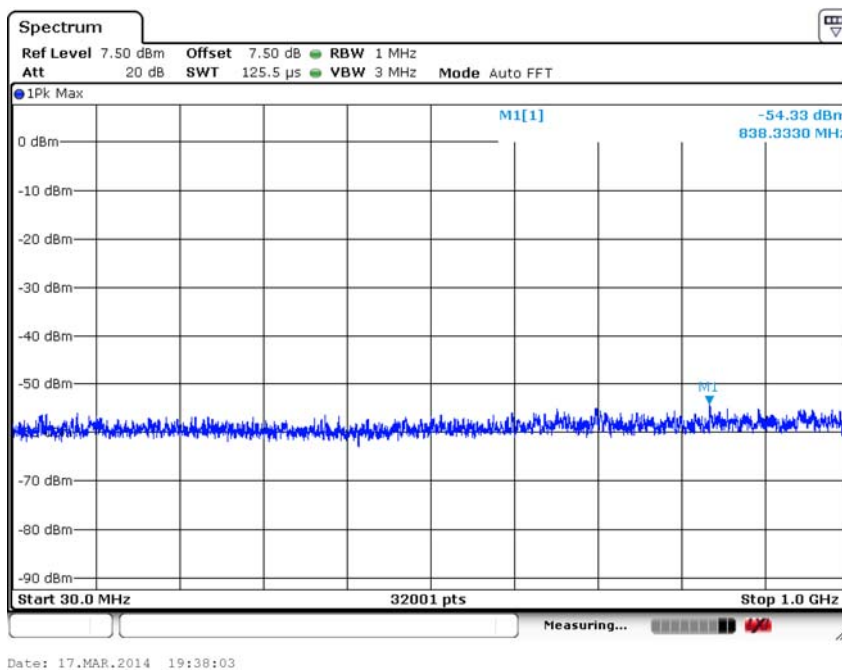
| Frequency<br>MHz | Corrected<br>measurement value<br>dBm | Reference value<br>dBm | Limit<br>dBm | Delta<br>dB |
|------------------|---------------------------------------|------------------------|--------------|-------------|
| ---              | ---                                   | ---      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

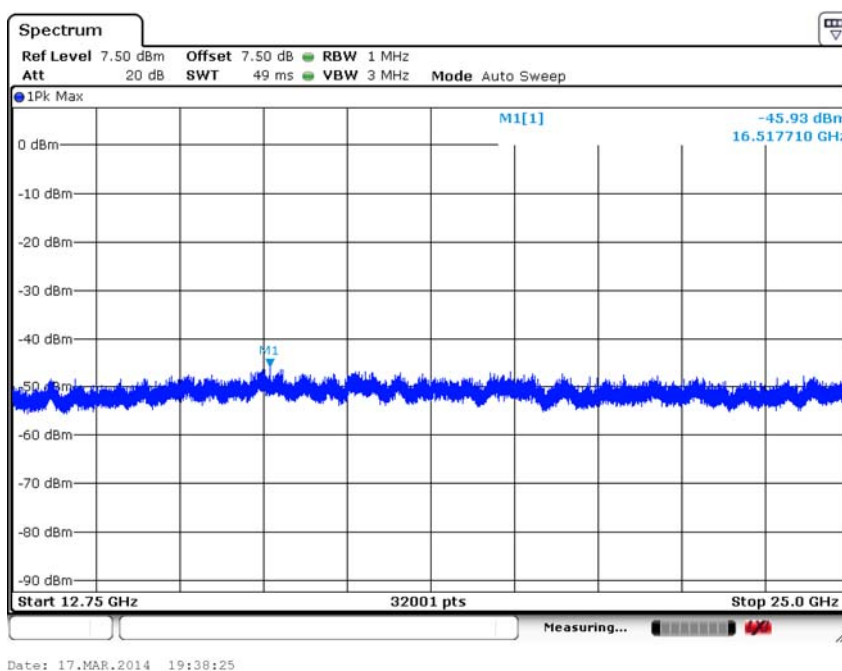
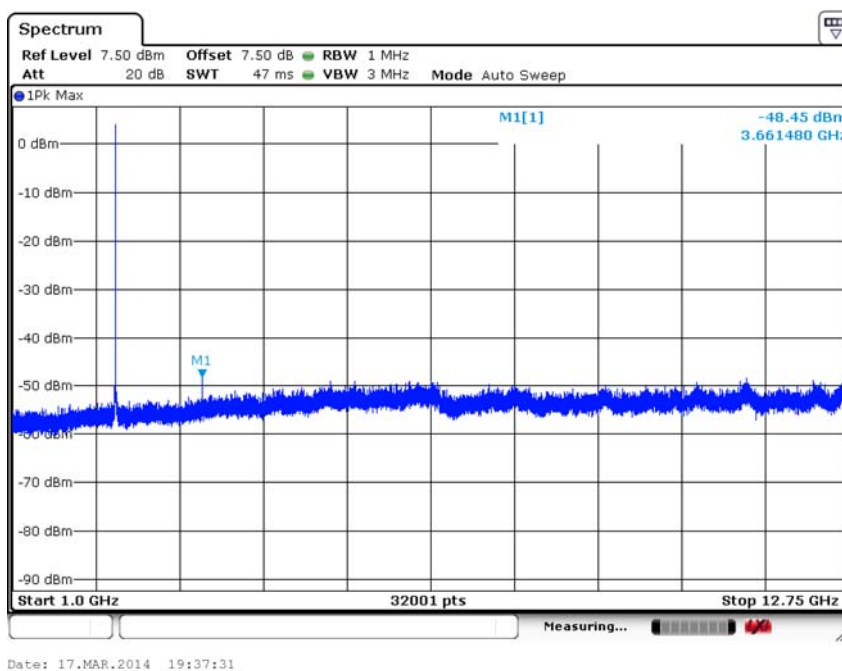
Note: The Reference value see 2.2.5 Band edge compliance



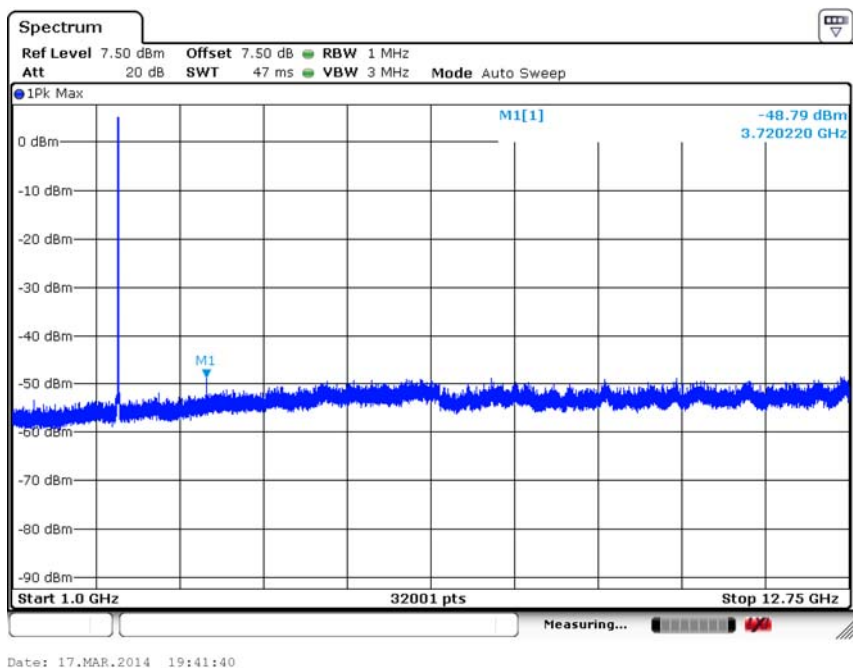
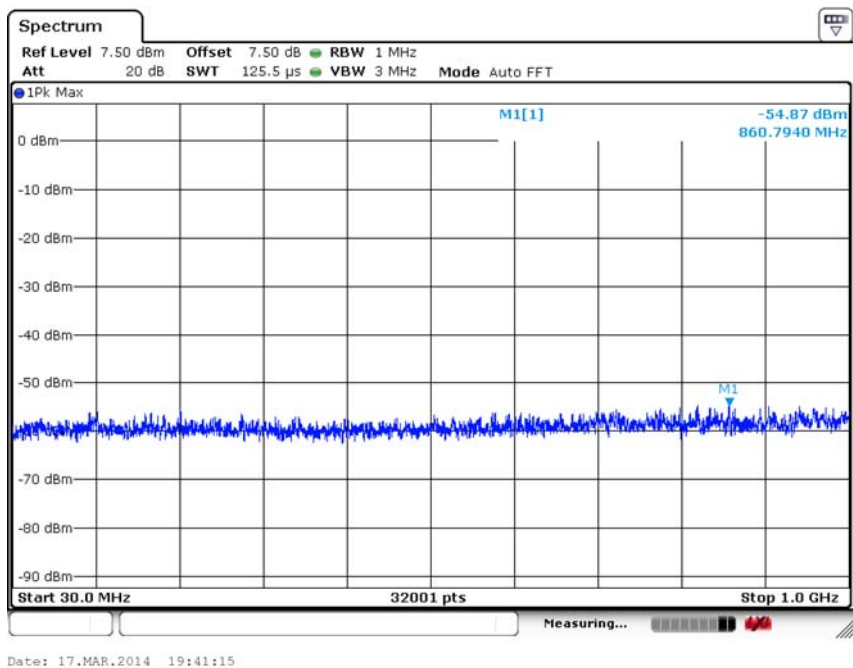


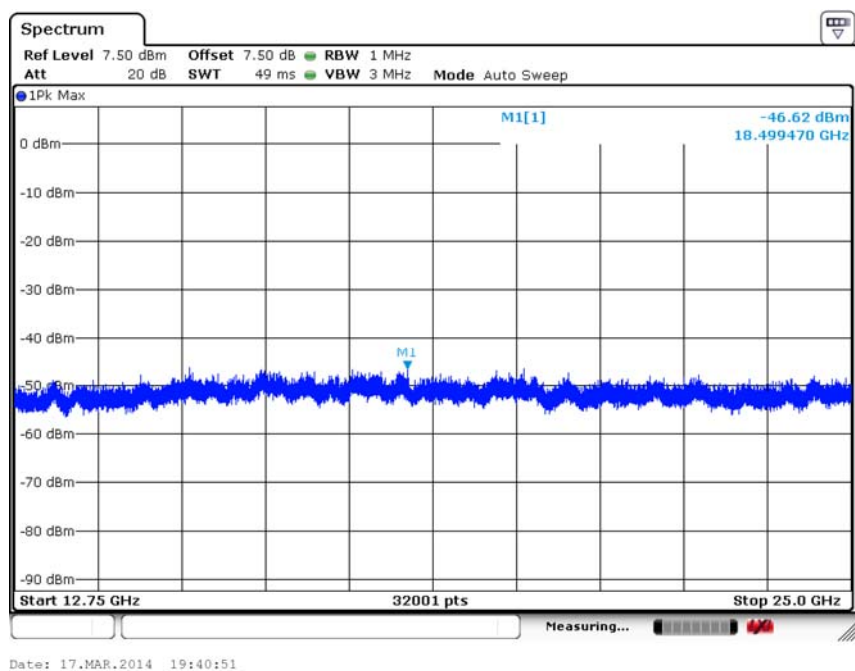
Carrier frequency (MHz): 2402  
Channel No.:0  
Modulation type:  $\pi/4$ DQPSK





Carrier frequency (MHz): 2441  
Channel No.:39  
Modulation type:  $\pi/4$ DQPSK





Carrier frequency (MHz): 2480  
Channel No.:78  
Modulation type:  $\pi/4$ DQPSK

Carrier frequency (MHz): 2402

Channel No.:0

Modulation type: 8DPSK

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

Carrier frequency (MHz): 2441

Channel No.:39

Modulation type: 8DPSK

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

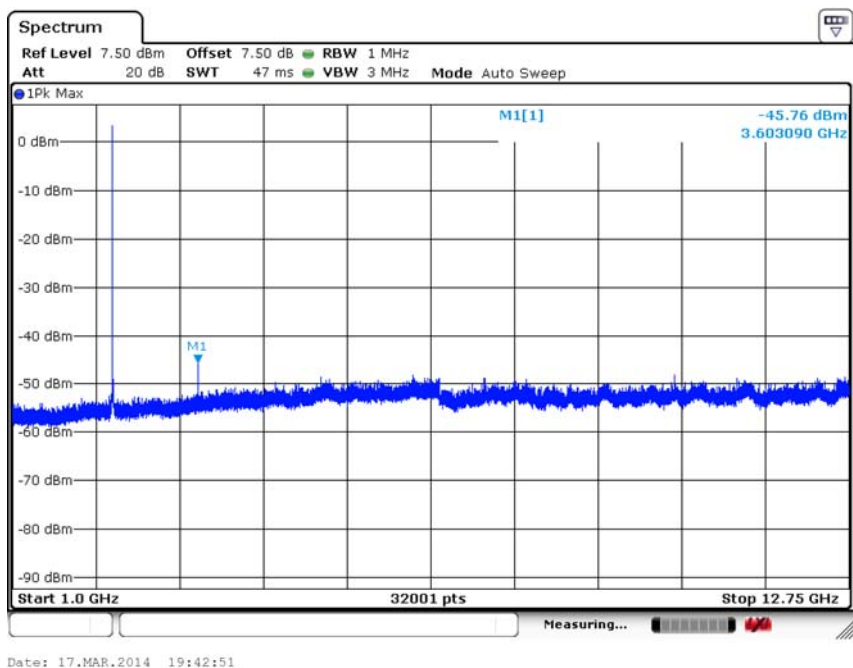
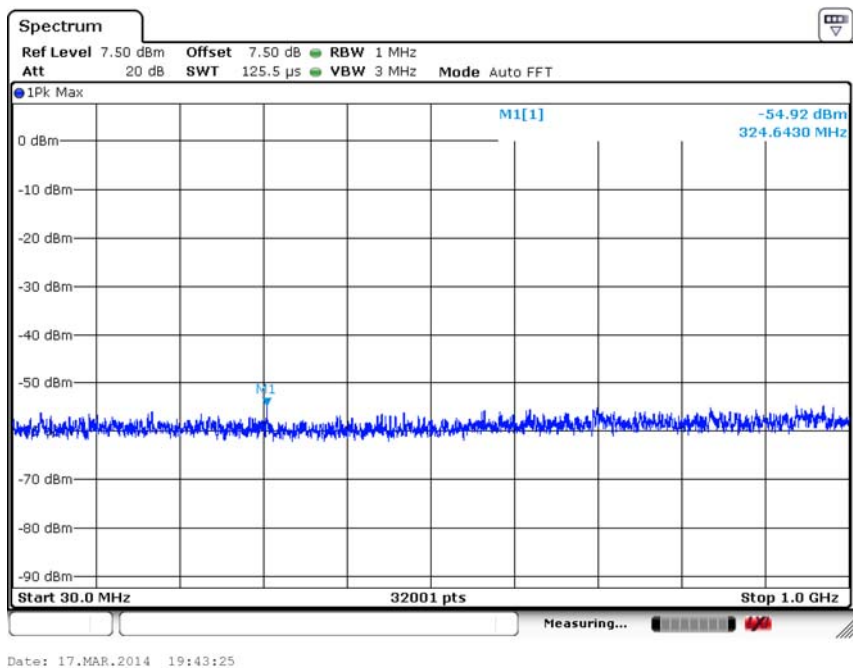
Carrier frequency (MHz): 2480

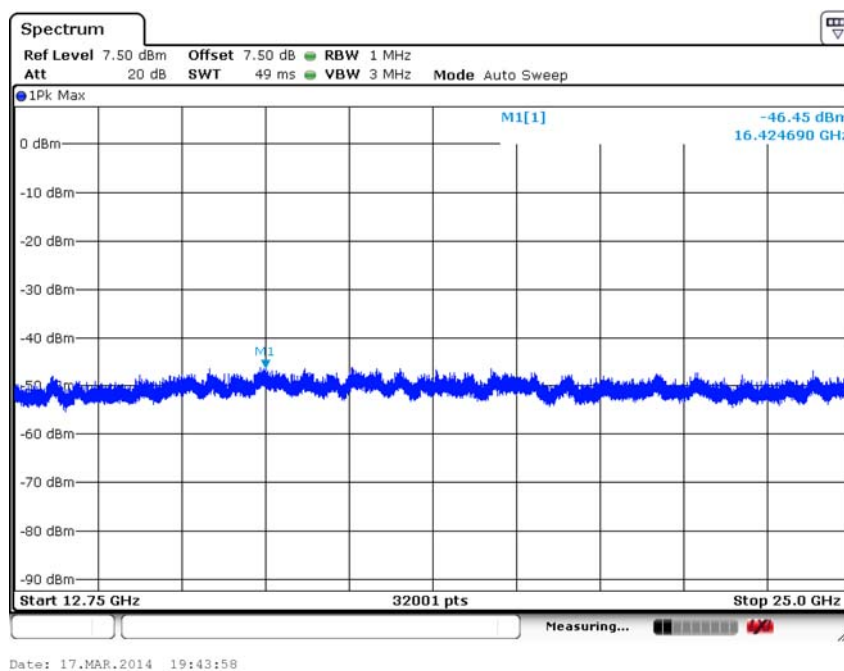
Channel No.:78

Modulation type: 8DPSK

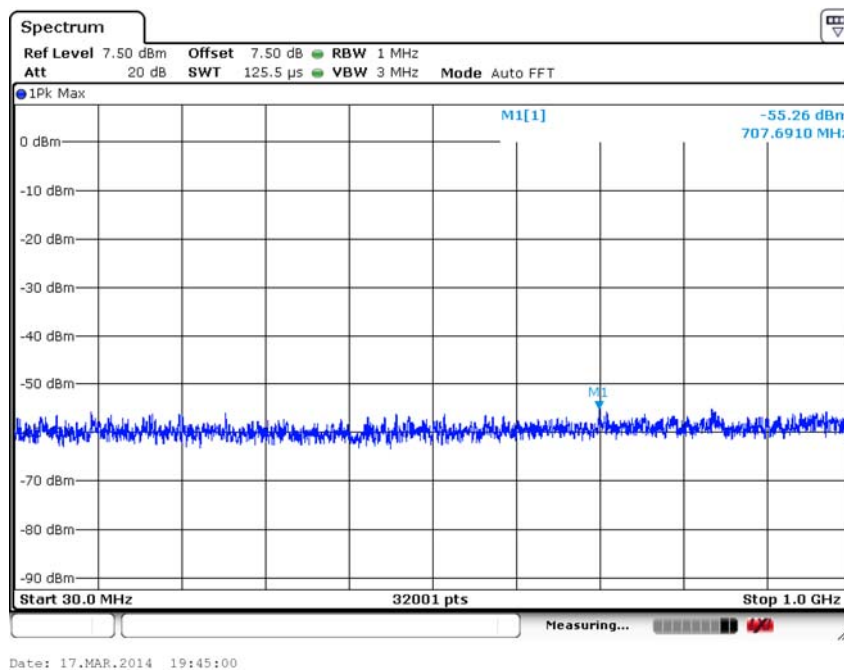
| Frequency<br>MHz | Corrected<br>measurement value<br>dBm | Reference value<br>dBm | Limit<br>dBm | Delta<br>dB |
|------------------|---------------------------------------|------------------------|--------------|-------------|
| ---              | ---                                   | ---      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

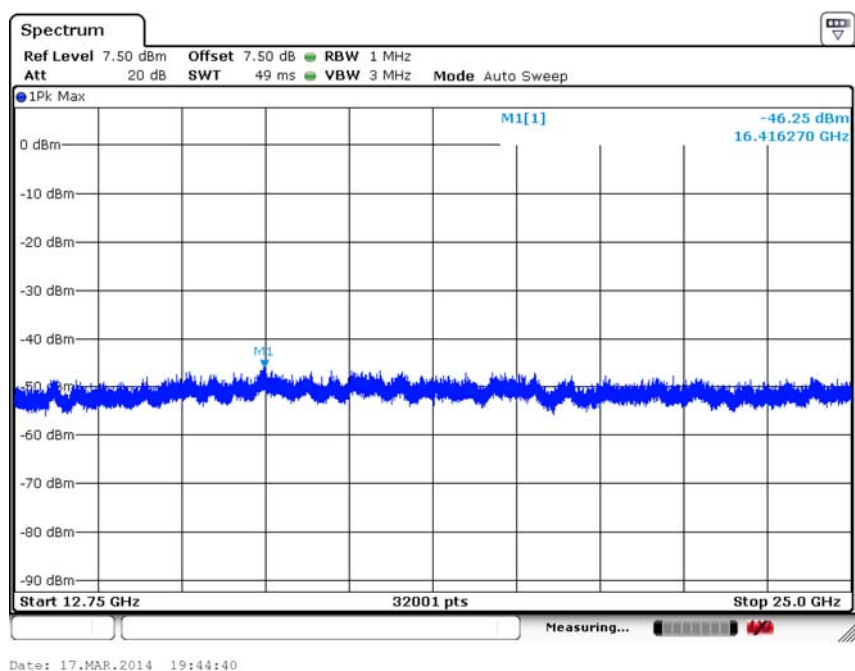
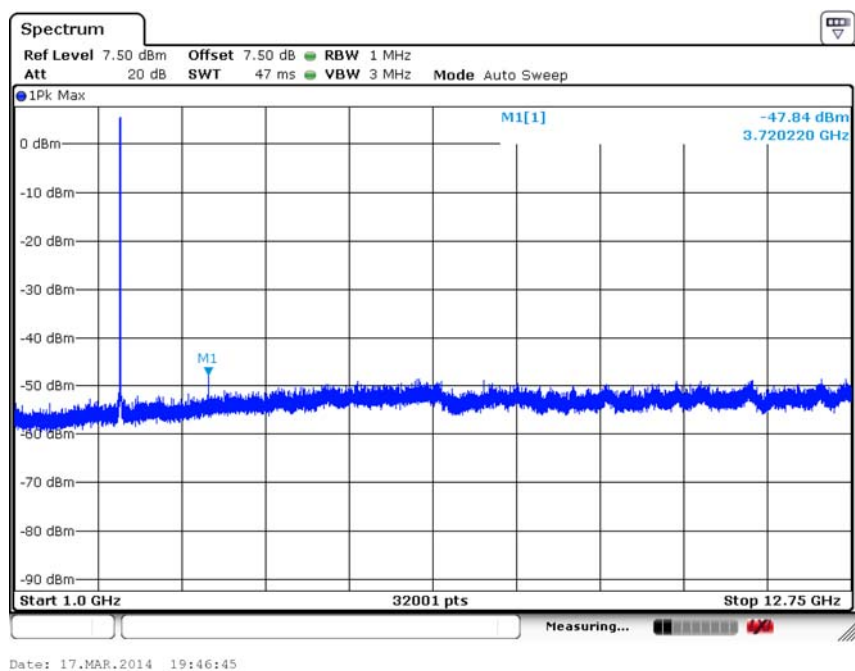
Note: The Reference value see 2.2.5 Band edge compliance



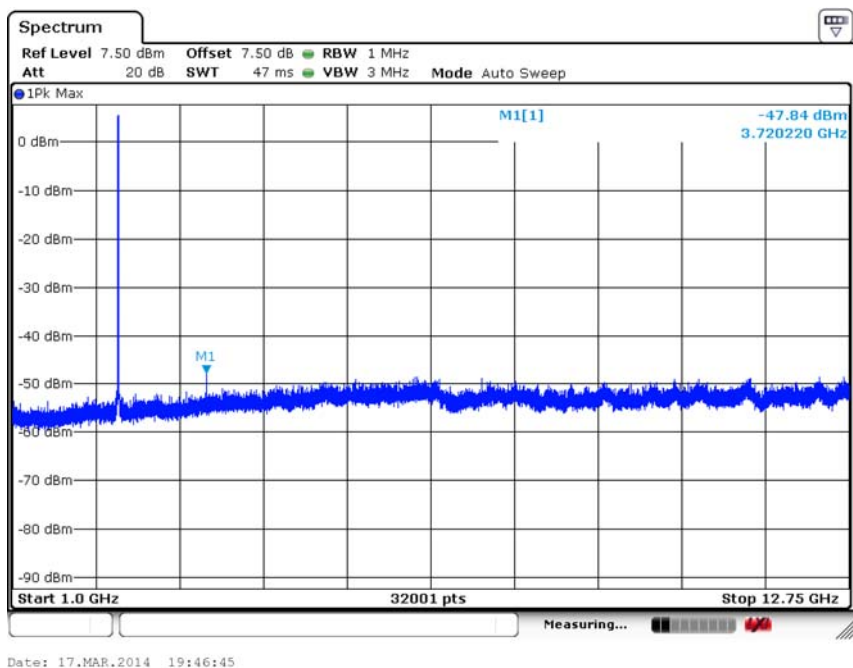
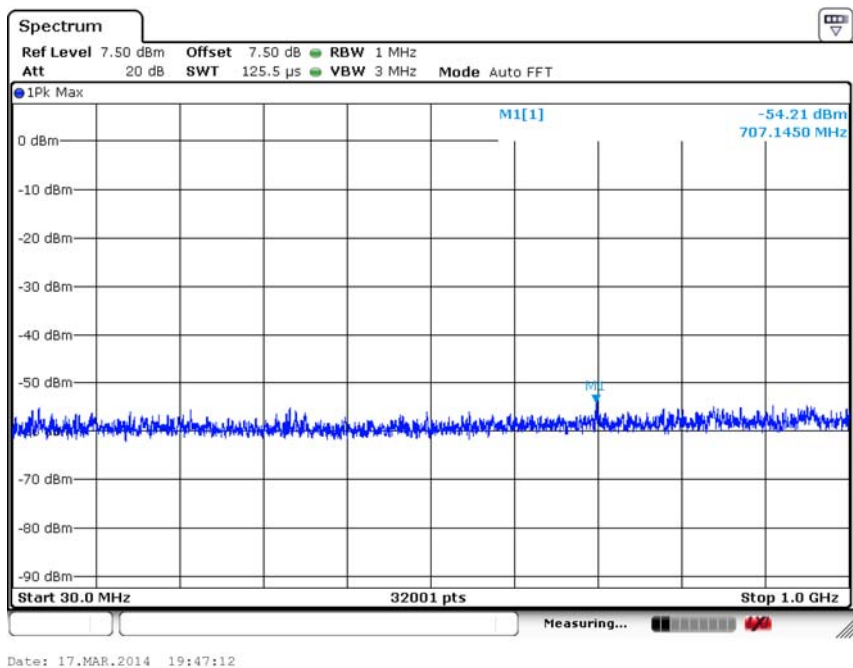


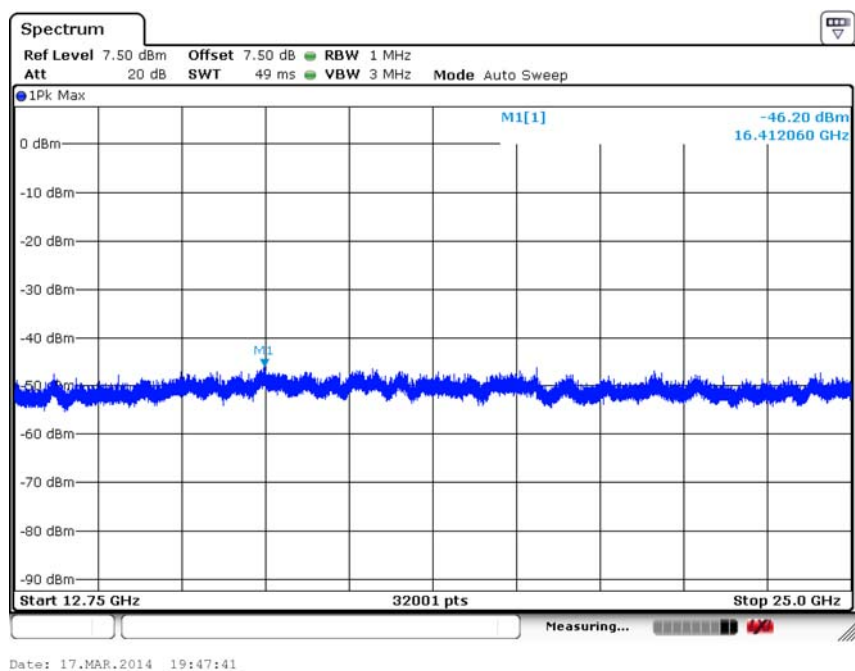
Carrier frequency (MHz): 2402  
Channel No.:0  
Modulation type: 8DPSK





Carrier frequency (MHz): 2441  
Channel No.:39  
Modulation type: 8DPSK





Carrier frequency (MHz): 2480  
Channel No.:78  
Modulation type: 8DPSK

## 2.2.4 Spurious Radiated Emissions

### 2.2.4.1 Ambient condition

| Temperature | Relative humidity | Pressure |
|-------------|-------------------|----------|
| 24.3°C      | 36.2%             | 100.2kPa |

### 2.2.4.2 Test Description

The measurement is made according to ANSI C63.10-2009 Section 6.3 - 6.6 and Public notice DA 00-705.

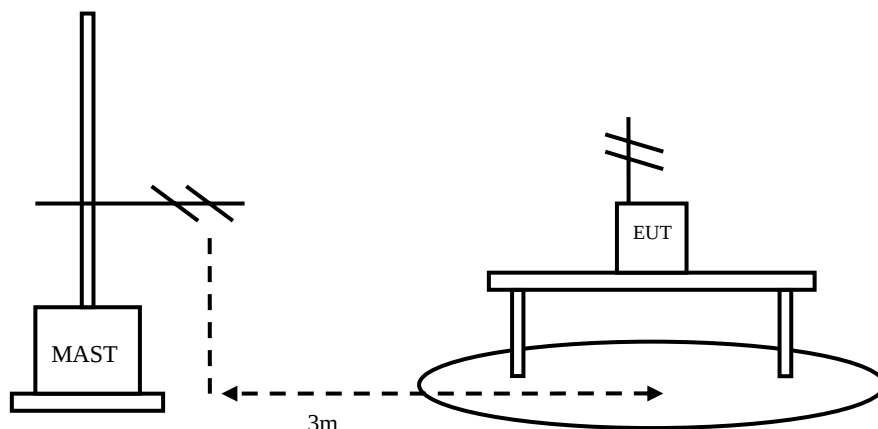
The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna.

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 antenna height and EUT azimuth were varied in order to identify the maximum level of emission from the EUT. 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. The measurements shall be repeated with orthogonal polarization of the test antenna. The results (reference to 2.2.4.4) 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.



### 2.2.4.3 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 (dBμV/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:  $\text{Limit (dB}\mu\text{V/m)} = 20 \log (\text{Limit } (\mu\text{V/m})/1\mu\text{V/m})$

### 2.2.4.4 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=  $P_{\text{mea}} + A_{Rpl}$

The worst case attitude: The mobile lay down.

For GFSK

Channel No.:39

| Frequency(MHz) | Result(dBuV/m) | A <sub>Rpl</sub> (dB) | P <sub>mea</sub> (dBuV/m) | Polarity |
|----------------|----------------|-----------------------|---------------------------|----------|
| 35.82          | 11.70          | 15.60                 | -3.90                     | Vertical |
| 42.05          | 12.80          | 16.20                 | -3.40                     | Vertical |
| 702.24         | 20.90          | 22.2                  | -1.30                     | Vertical |
| 814.56         | 23.10          | 24.10                 | -1.00                     | Vertical |
| 855.34         | 23.20          | 24.10                 | -0.90                     | Vertical |
| 941.08         | 30.10          | 25.70                 | 4.40                      | Vertical |

For  $\pi/4$ DQPSK

Channel No.:39

| Frequency(MHz) | Result(dBuV/m) | A <sub>Rpl</sub> (dB) | P <sub>mea</sub> (dBuV/m) | Polarity   |
|----------------|----------------|-----------------------|---------------------------|------------|
| 40.22          | 12.80          | 16.20                 | -3.40                     | Vertical   |
| 78.12          | 8.40           | 7.80                  | 0.60                      | Vertical   |
| 483.30         | 16.70          | 18.10                 | -1.40                     | Vertical   |
| 566.62         | 17.30          | 19.50                 | -2.10                     | Horizontal |
| 648.43         | 19.60          | 21.00                 | -1.40                     | Vertical   |
| 942.56         | 31.20          | 25.70                 | 5.50                      | Vertical   |

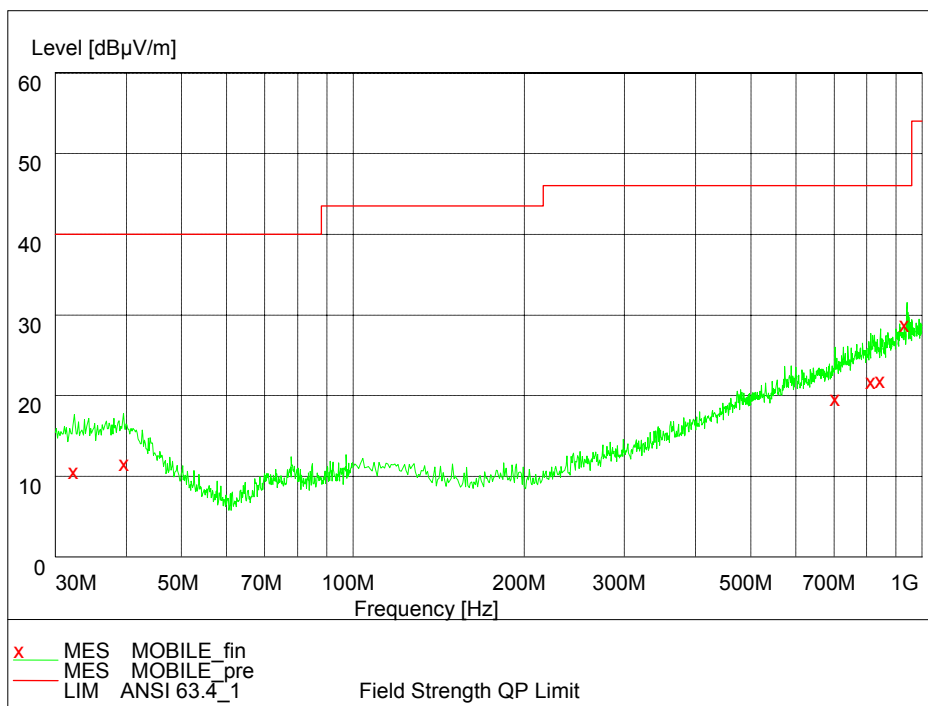
For 8DPSK

Channel No.:39

| Frequency(MHz) | Result(dBuV/m) | A <sub>Rpl</sub> (dB) | P <sub>mea</sub> (dBuV/m) | Polarity   |
|----------------|----------------|-----------------------|---------------------------|------------|
| 43.03          | 12.90          | 16.20                 | -3.3                      | Vertical   |
| 77.44          | 7.80           | 7.80                  | 0.00                      | Vertical   |
| 484.56         | 16.40          | 18.10                 | -1.70                     | Vertical   |
| 553.76         | 17.90          | 19.50                 | -1.60                     | Vertical   |
| 646.45         | 19.50          | 21.00                 | -1.50                     | Horizontal |
| 944.23         | 31.10          | 25.70                 | 5.40                      | Vertical   |

Carrier frequency (MHz): 2441

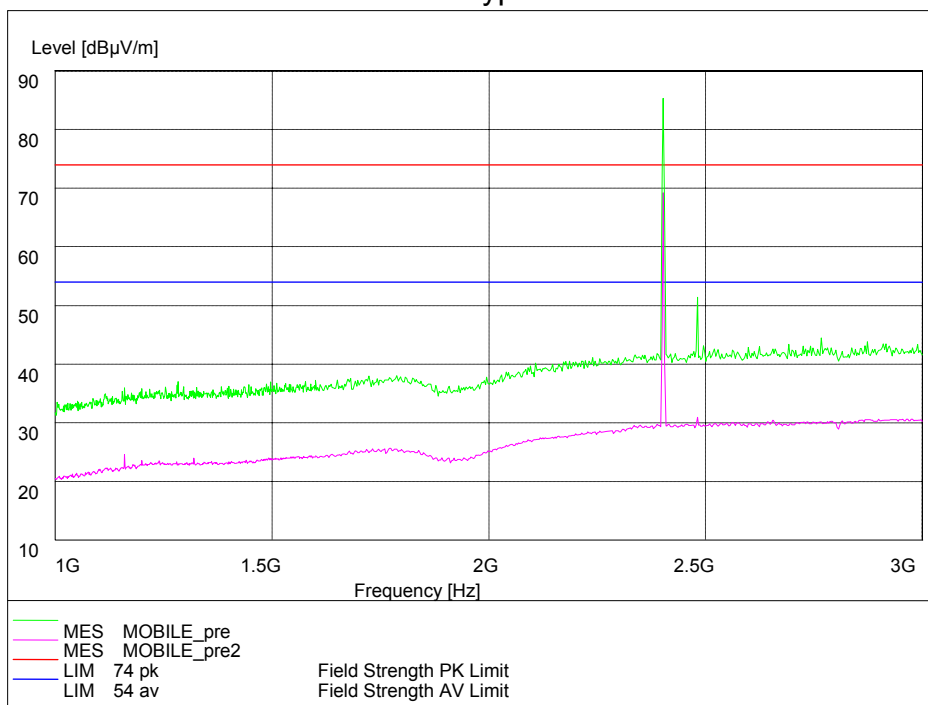
Channel No.:39



Frequency Range: 30MHz-1000MHz

Detector: QP mode

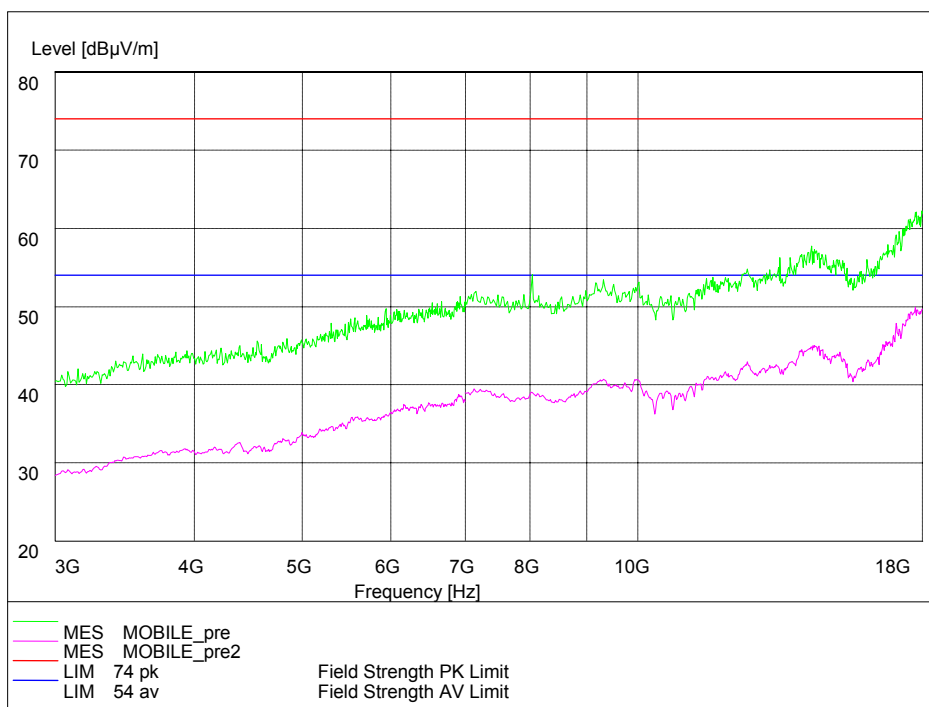
Modulation type: GFSK



Frequency Range: 1GHz-3GHz

Detector: Av mode and PK mode

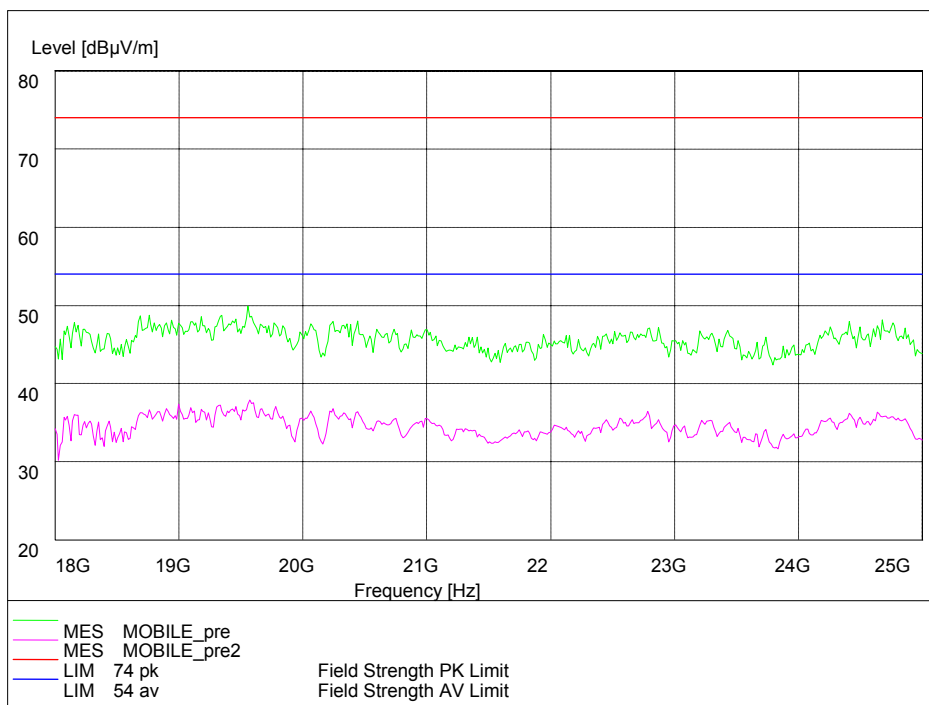
Modulation type: GFSK



Frequency Range: 3GHz-18GHz

Detector: Av mode and PK mode

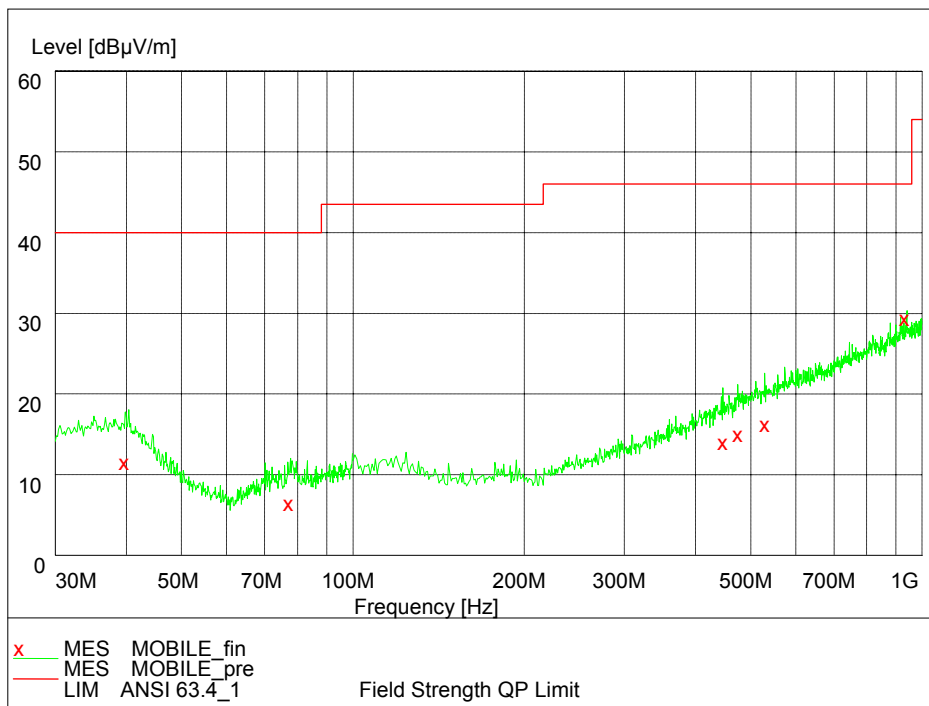
Modulation type: GFSK



Frequency Range: 18GHz-25GHz

Detector: Av mode and PK mode

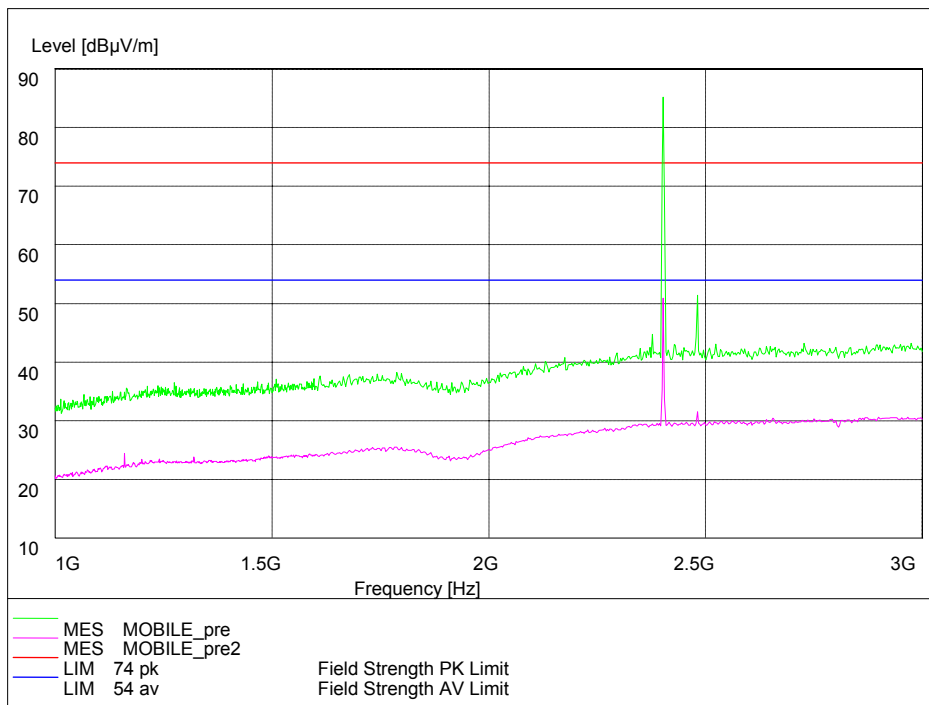
Modulation type: GFSK



Frequency Range: 30MHz-1000 MHz

Detector: QP mode

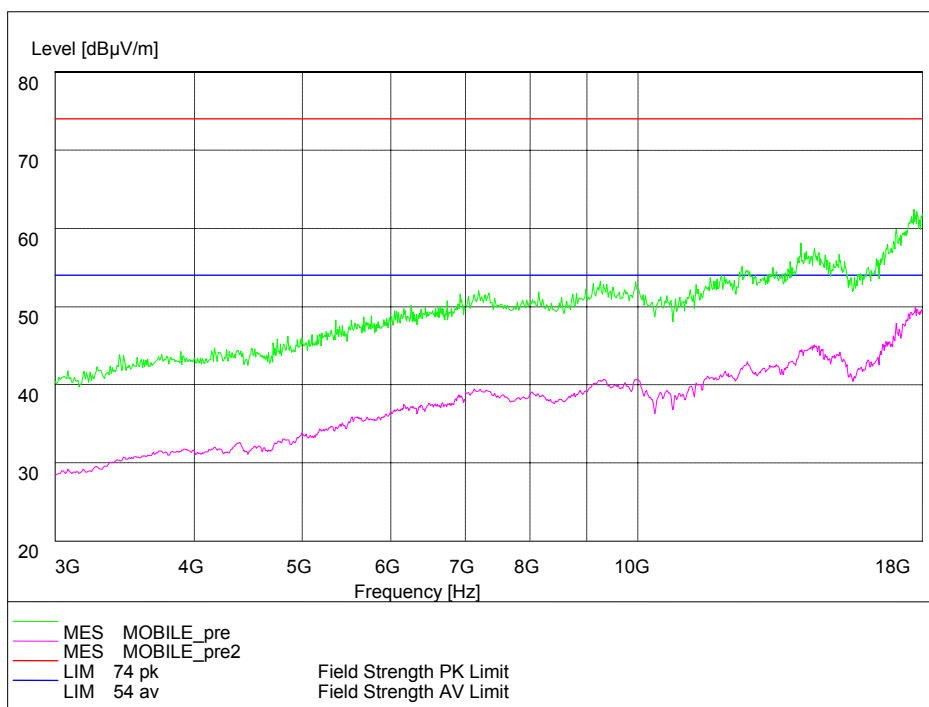
Modulation type:  $\pi/4$ DQPSK



Frequency Range: 1GHz-3GHz

Detector: Av mode and PK mode

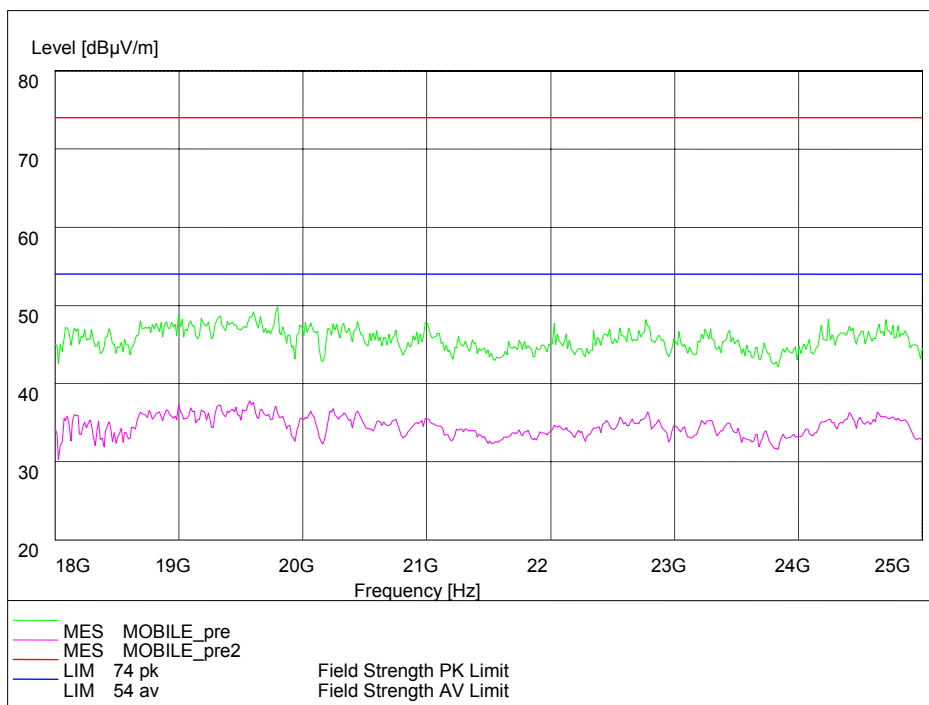
Modulation type:  $\pi/4$ DQPSK



Frequency Range: 3GHz-18GHz

Detector: Av mode and PK mode

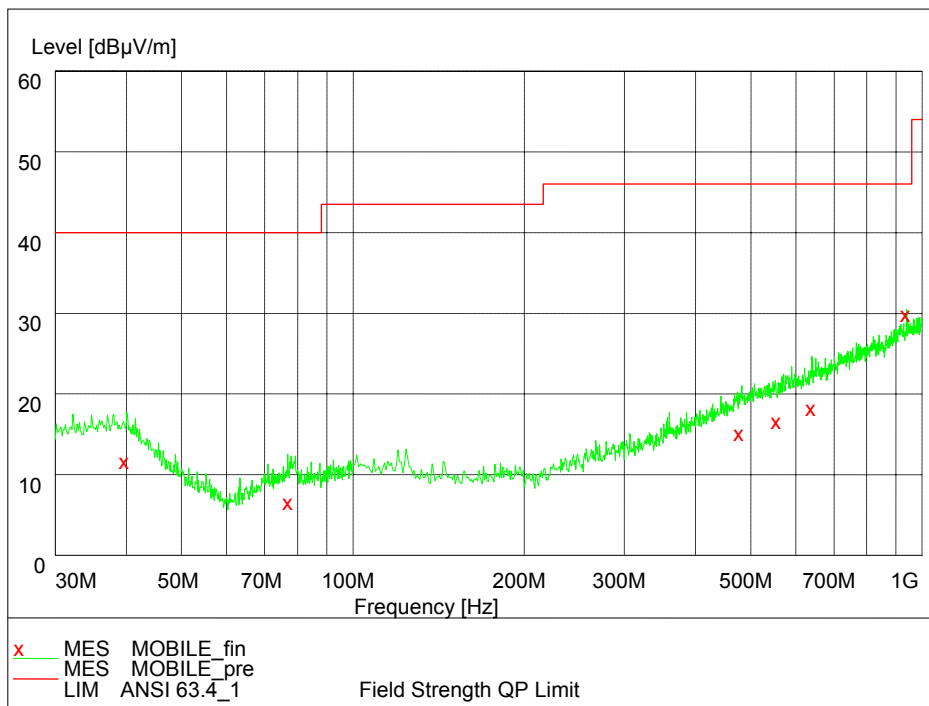
Modulation type:  $\pi/4$ DQPSK



Frequency Range: 18GHz-25GHz

Detector: Av mode and PK mode

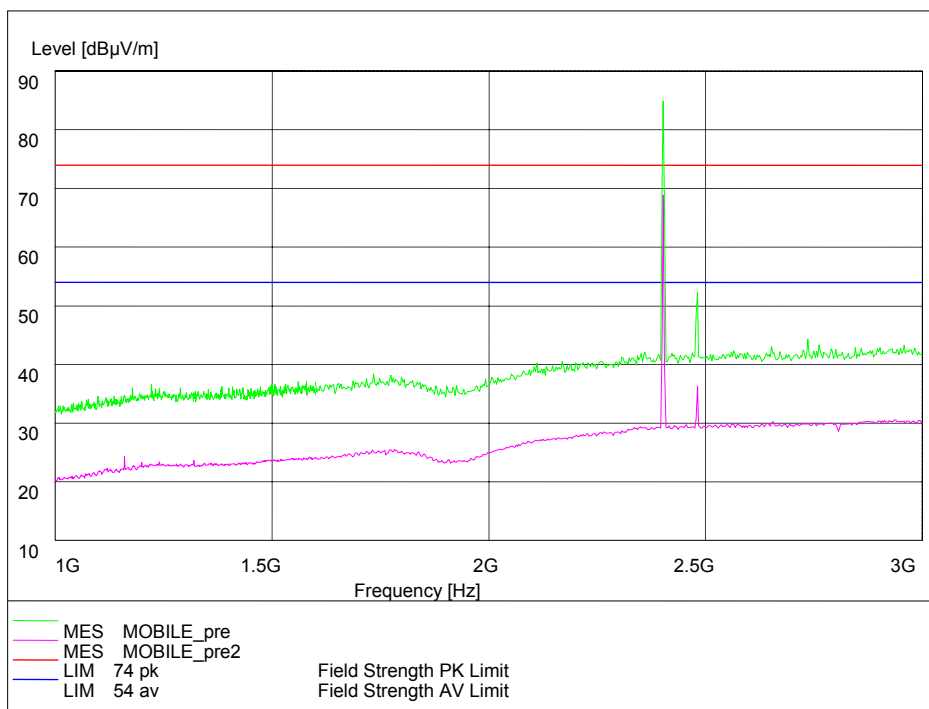
Modulation type:  $\pi/4$ DQPSK



Frequency Range: 30MHz-1000 MHz

Detector: QP mode

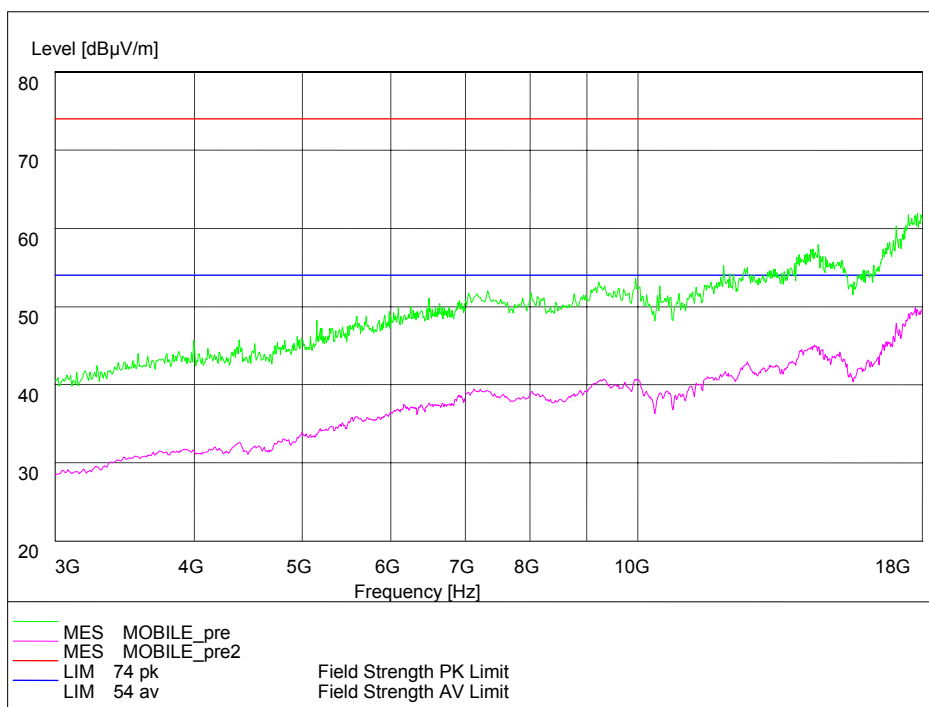
Modulation type: 8DPSK



Frequency Range: 1GHz-3GHz

Detector: Av mode and PK mode

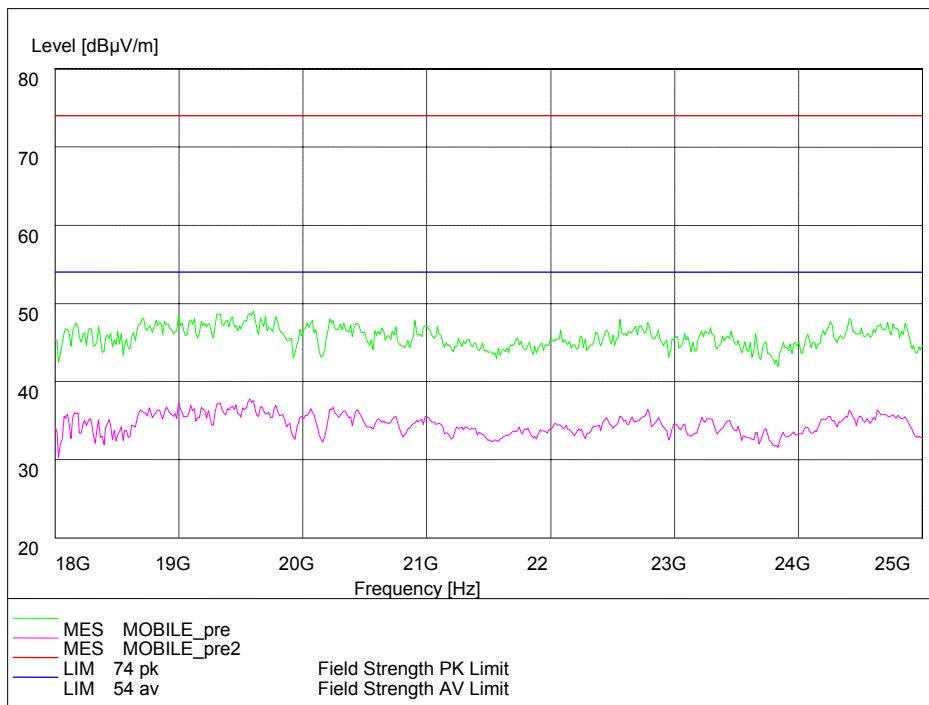
Modulation type: 8DPSK



Frequency Range: 3GHz-18GHz

Detector: Av mode and PK mode

Modulation type: 8DPSK



Frequency Range: 18GHz-25GHz

Detector: Av mode and PK mode

Modulation type: 8DPSK

## 2.2.5 Band Edge Compliance

### 2.2.5.1 Ambient condition

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

### 2.2.5.2 Test Description

The measurement is made according to ANSI C63.10-2009 Section 6.9.2 and Public notice DA 00-705.

#### 2.2.5.2.1 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 Bluetooth test set via a power splitter with a known loss.

For the first measurement the EUT is set to transmit on the lowest channel (2402 MHz). The lower band edge is 2390 MHz.

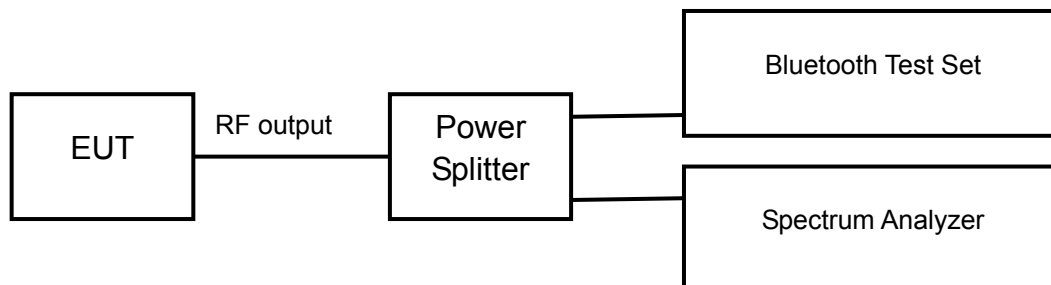
Analyzer settings:

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

For the second measurement the EUT is set to transmit on the highest channel (2480MHz). The higher band edge is 2483.5 MHz.

Analyzer settings:

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



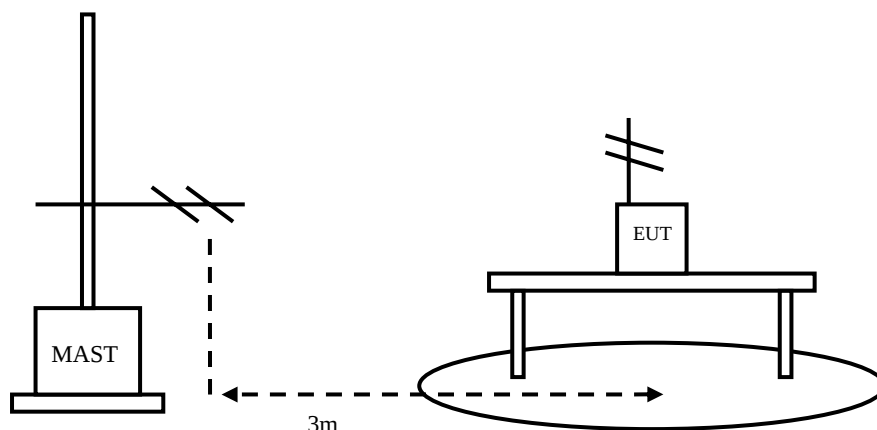
#### 2.2.5.2.2 RF Radiated Measurement

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 antenna height and EUT azimuth were varied in order to identify the maximum level of emission from the EUT. 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.

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 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.

## 2.2.5.4 Test result

### RF Conducted Measurement

Carrier frequency (MHz): 2402

Channel No.:0

Modulation type: GFSK

| Frequency MHz | Hopping Mode | Measured value dBm | Reference value dBm | Limit dBm | Delta dB |
|---------------|--------------|--------------------|---------------------|-----------|----------|
| 2390          | Hopping OFF  | -60.74             | 4.79                | -15.21    | 65.53    |
| 2390          | Hopping ON   | -60.14             | 4.79                | -15.21    | 64.93    |

Carrier frequency (MHz): 2480

Channel No.:78

Modulation type: GFSK

| Frequency MHz | Hopping Mode | Measured value dBm | Reference value dBm | Limit dBm | Delta dB |
|---------------|--------------|--------------------|---------------------|-----------|----------|
| 2483.5        | Hopping OFF  | -55.84             | 5.80                | -14.20    | 61.64    |
| 2483.5        | Hopping ON   | -58.32             | 4.60                | -15.40    | 62.92    |

### RF Radiated Measurement

Carrier frequency (MHz): 2402

Channel No.:0

Modulation type: GFSK

| Frequency MHz | Hopping Mode | Correction Factor dB/m | Reading Level dBuV | Emission Level dBuV/m | Detector |
|---------------|--------------|------------------------|--------------------|-----------------------|----------|
| 2402          | Hopping OFF  | 2.70                   | 82.86              | 85.56                 | Peak     |
| 2402          | Hopping ON   | 2.70                   | 81.79              | 84.49                 | Peak     |

Carrier frequency (MHz): 2480

Channel No.:78

Modulation type: GFSK

| Frequency MHz | Hopping Mode | Correction Factor dB/m | Reading Level dBuV | Emission Level dBuV/m | Detector |
|---------------|--------------|------------------------|--------------------|-----------------------|----------|
| 2480          | Hopping OFF  | 2.50                   | 84.25              | 86.75                 | Peak     |
| 2480          | Hopping ON   | 2.50                   | 82.93              | 85.43                 | Peak     |

## Band Edge Test Data

Carrier frequency (MHz): 2402

Channel No.:0

Modulation type: GFSK

| Frequency MHz | Hopping Mode | Fundamental (dBuV/m) | Delta dB | Band Edge Field Strength (dBuV/m) | Detector |
|---------------|--------------|----------------------|----------|-----------------------------------|----------|
| 2390          | Hopping OFF  | 85.56                | 65.53    | 20.03                             | Peak     |
| 2390          | Hopping ON   | 84.49                | 64.93    | 19.56                             | Peak     |

Carrier frequency (MHz): 2480

Channel No.:78

Modulation type: GFSK

| Frequency MHz | Hopping Mode | Fundamental (dBuV/m) | Delta dB | Band Edge Field Strength (dBuV/m) | Detector |
|---------------|--------------|----------------------|----------|-----------------------------------|----------|
| 2483.5        | Hopping OFF  | 86.75                | 61.64    | 25.11                             | Peak     |
| 2483.5        | Hopping ON   | 85.43                | 62.92    | 22.51                             | Peak     |

Note:

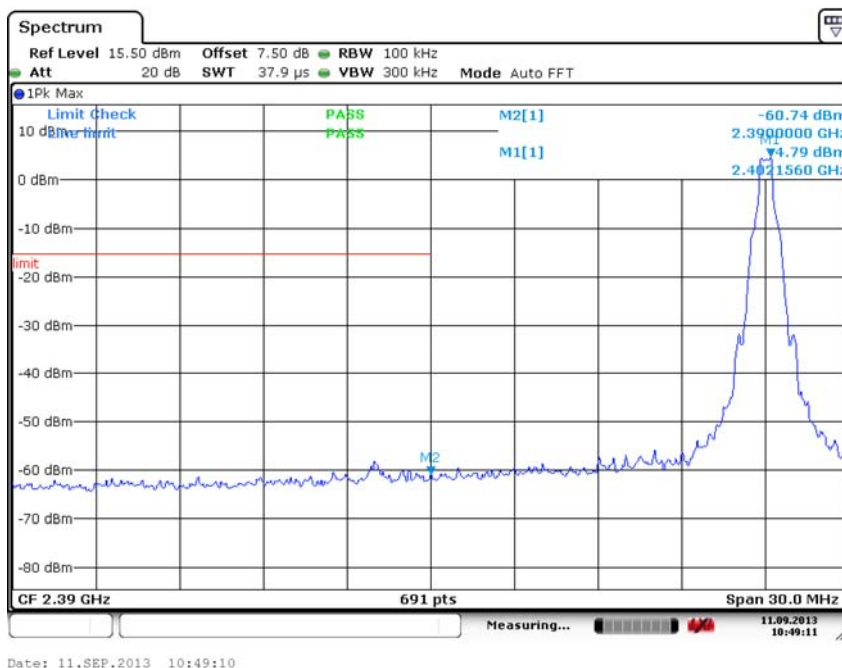
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge

measurements per the Marker-Delta Method with the following formula:

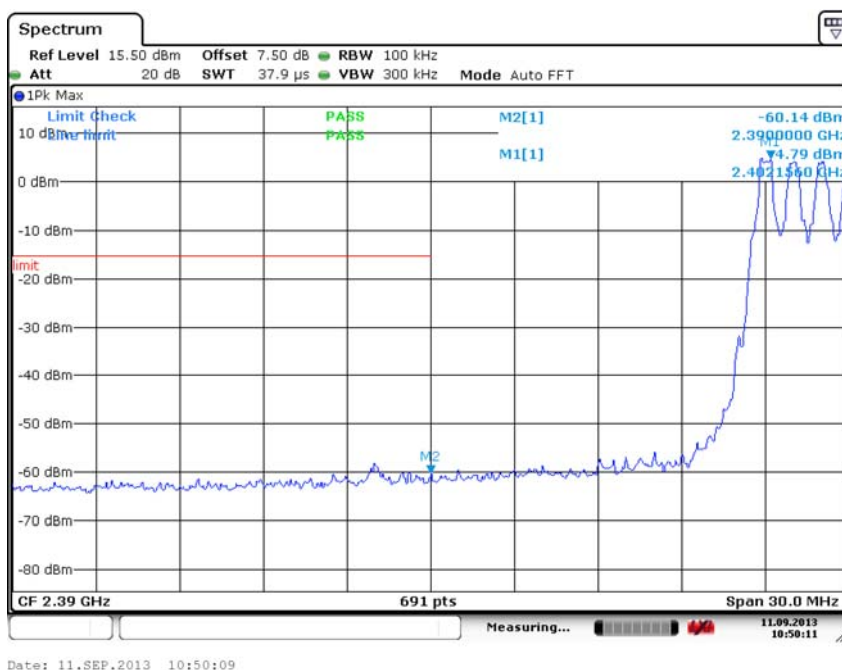
Band Edge field Strength = F - Delta

F = Fundamental field Strength (Peak or Average)

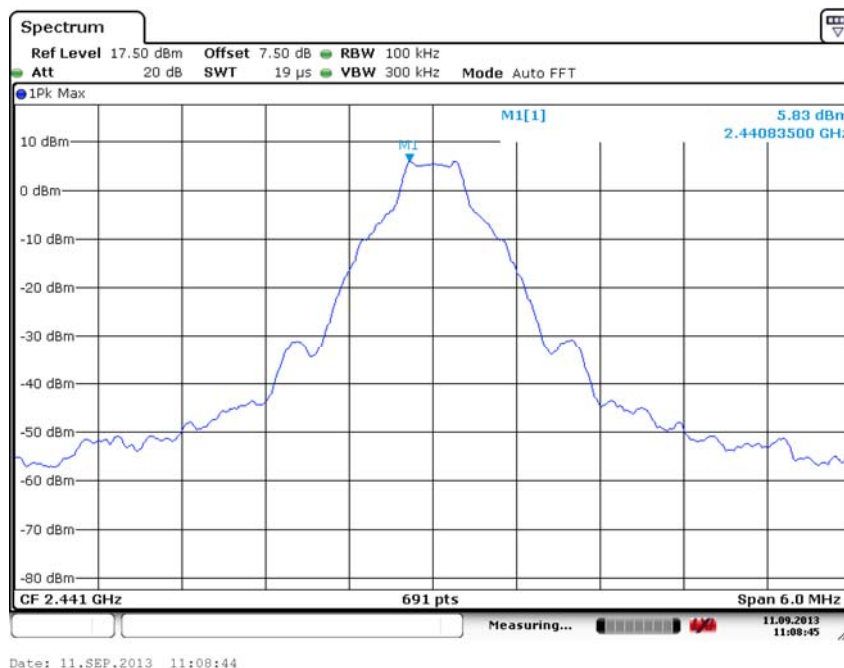
Delta= Conducted Band Edge Delta (Peak or Average)



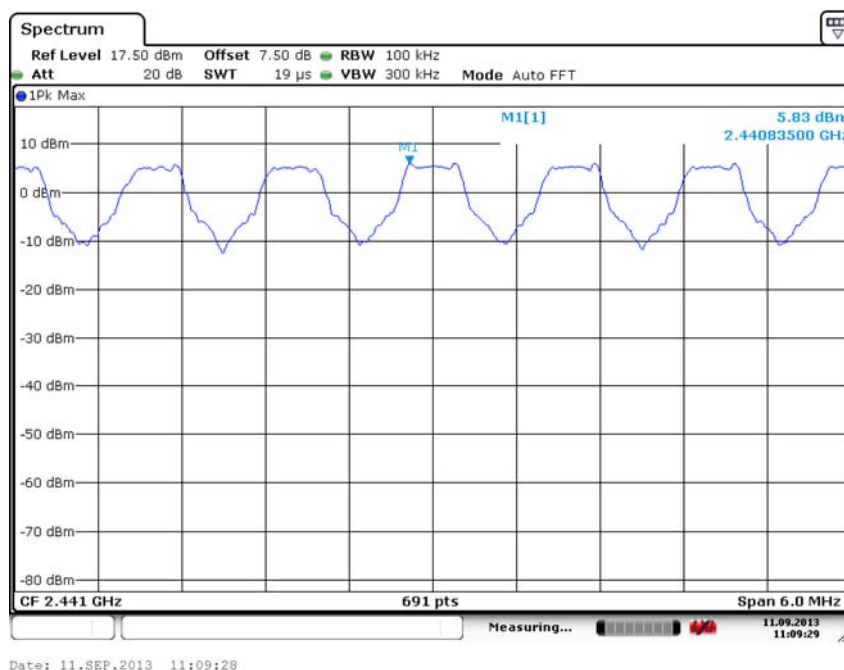
Carrier frequency (MHz): 2402  
Channel No.:0, Hopping OFF  
Modulation type: GFSK



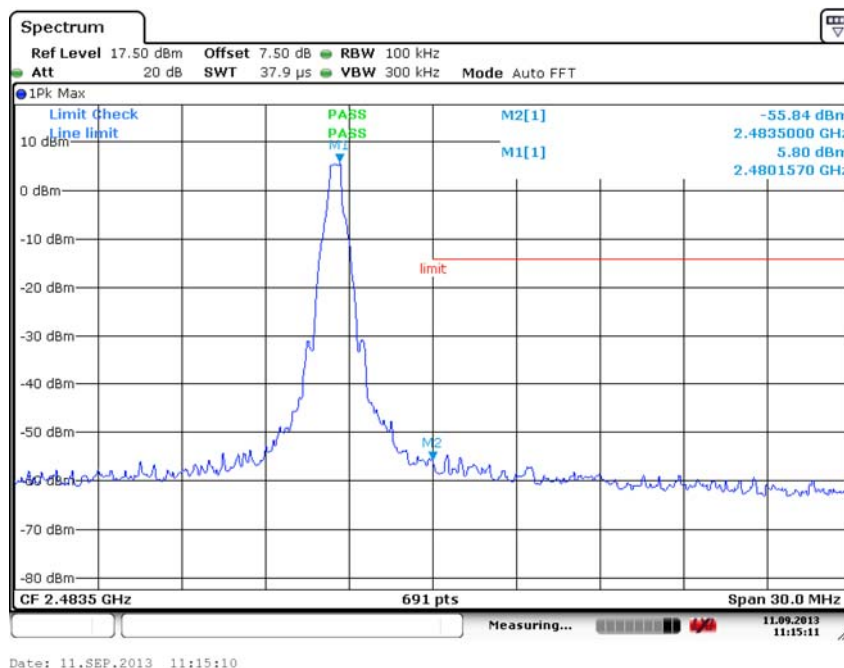
Carrier frequency (MHz): 2402  
Channel No.:0, Hopping ON  
Modulation type: GFSK



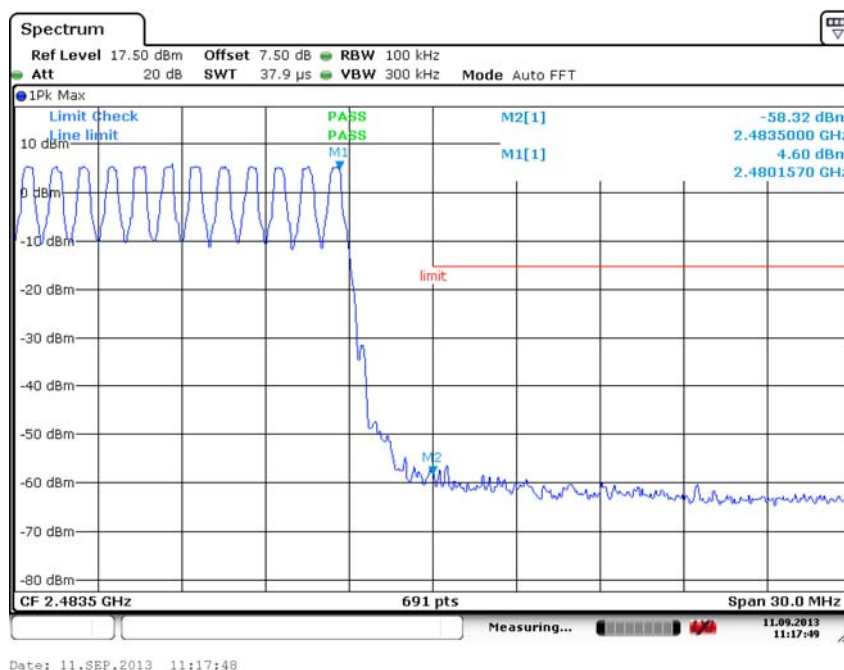
Carrier frequency (MHz): 2441  
Channel No.:39, Hopping OFF  
Modulation type: GFSK



Carrier frequency (MHz): 2441  
Channel No.:39, Hopping ON  
Modulation type: GFSK



Carrier frequency (MHz): 2480  
Channel No.:78, Hopping OFF  
Modulation type: GFSK



Carrier frequency (MHz): 2480  
Channel No.:78, Hopping ON  
Modulation type: GFSK

### RF Conducted Measurement

Carrier frequency (MHz): 2402

Channel No.:0

Modulation type:  $\pi/4$ DQPSK

| Frequency MHz | Hopping Mode | Measured value dBm | Reference value dBm | Limit dBm | Delta dB |
|---------------|--------------|--------------------|---------------------|-----------|----------|
| 2390          | Hopping OFF  | -61.91             | 3.93                | -16.07    | 65.84    |
| 2390          | Hopping ON   | -62.38             | 2.77                | -17.23    | 65.15    |

Carrier frequency (MHz): 2480

Channel No.:78

Modulation type:  $\pi/4$ DQPSK

| Frequency MHz | Hopping Mode | Measured value dBm | Reference value dBm | Limit dBm | Delta dB |
|---------------|--------------|--------------------|---------------------|-----------|----------|
| 2483.5        | Hopping OFF  | -56.25             | 4.90                | -15.10    | 61.15    |
| 2483.5        | Hopping ON   | -56.58             | 4.91                | -15.09    | 61.49    |

### RF Radiated Measurement

Carrier frequency (MHz): 2402

Channel No.:0

Modulation type:  $\pi/4$ DQPSK

| Frequency MHz | Hopping Mode | Correction Factor dB/m | Reading Level dBuV | Emission Level dBuV/m | Detector |
|---------------|--------------|------------------------|--------------------|-----------------------|----------|
| 2402          | Hopping OFF  | 2.70                   | 82.04              | 84.74                 | Peak     |
| 2402          | Hopping ON   | 2.70                   | 82.95              | 85.65                 | Peak     |

Carrier frequency (MHz): 2480

Channel No.:78

Modulation type:  $\pi/4$ DQPSK

| Frequency MHz | Hopping Mode | Correction Factor dB/m | Reading Level dBuV | Emission Level dBuV/m | Detector |
|---------------|--------------|------------------------|--------------------|-----------------------|----------|
| 2480          | Hopping OFF  | 2.50                   | 82.77              | 85.27                 | Peak     |
| 2480          | Hopping ON   | 2.50                   | 83.98              | 86.48                 | Peak     |

## Band Edge Test Data

Carrier frequency (MHz): 2402

Channel No.:0

Modulation type:  $\pi/4$ DQPSK

| Frequency MHz | Hopping Mode | Fundamental (dBuV/m) | Delta dB | Band Edge Field Strength (dBuV/m) | Detector |
|---------------|--------------|----------------------|----------|-----------------------------------|----------|
| 2390          | Hopping OFF  | 84.74                | 65.84    | 18.90                             | Peak     |
| 2390          | Hopping ON   | 85.65                | 65.15    | 21.50                             | Peak     |

Carrier frequency (MHz): 2480

Channel No.:78

Modulation type:  $\pi/4$ DQPSK

| Frequency MHz | Hopping Mode | Fundamental (dBuV/m) | Delta dB | Band Edge Field Strength (dBuV/m) | Detector |
|---------------|--------------|----------------------|----------|-----------------------------------|----------|
| 2483.5        | Hopping OFF  | 85.27                | 61.15    | 24.12                             | Peak     |
| 2483.5        | Hopping ON   | 86.48                | 61.49    | 24.99                             | Peak     |

Note:

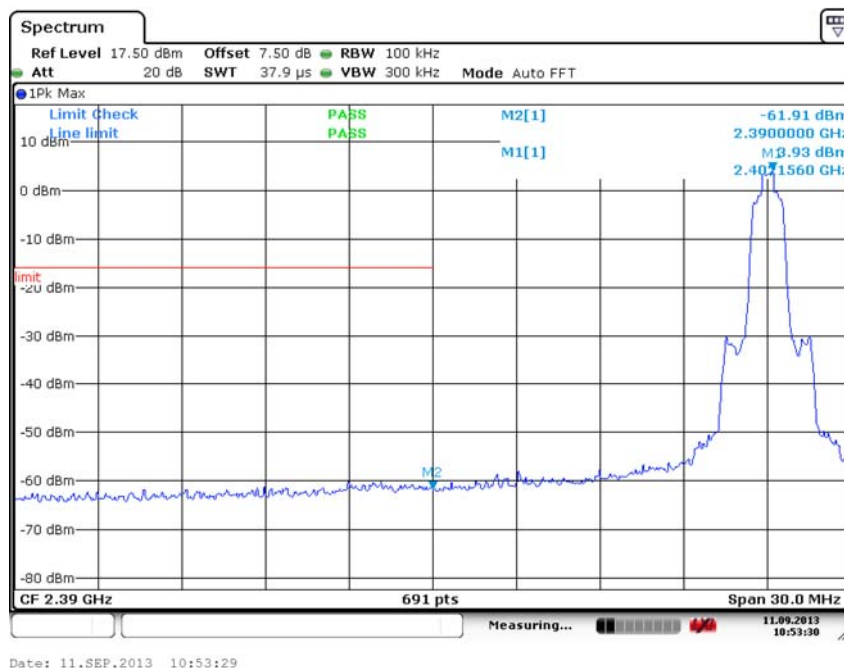
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge

measurements per the Marker-Delta Method with the following formula:

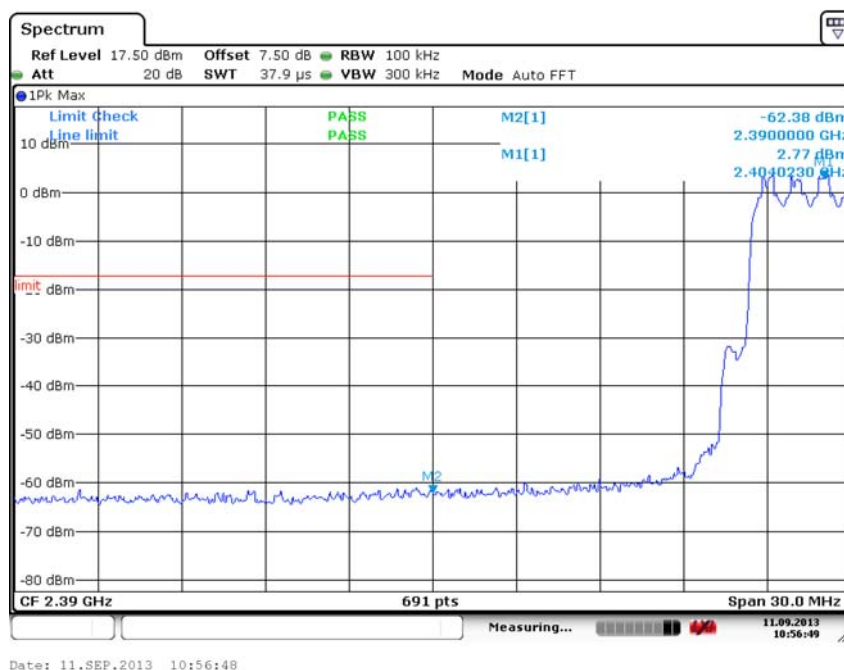
Band Edge field Strength = F - Delta

F = Fundamental field Strength (Peak or Average)

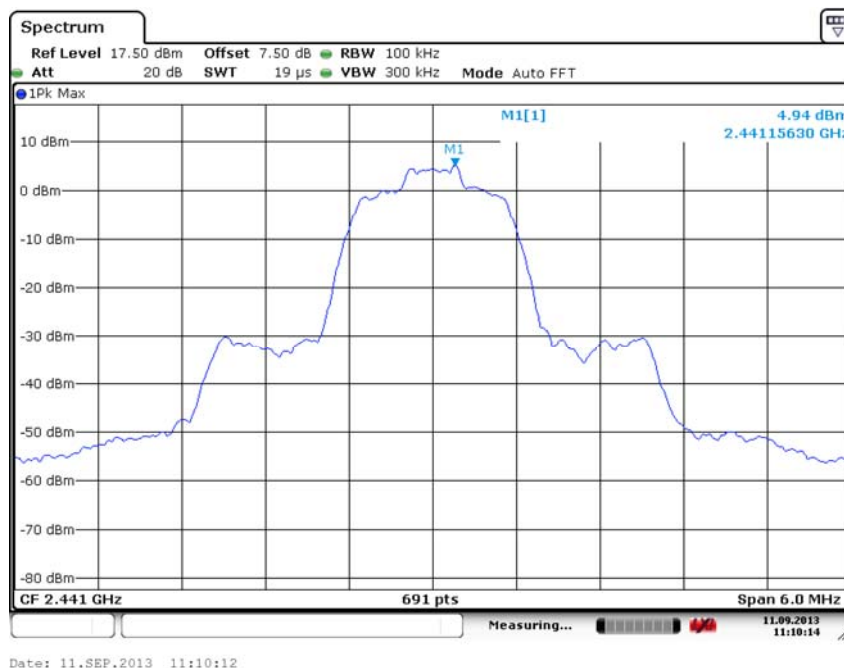
Delta= Conducted Band Edge Delta (Peak or Average)



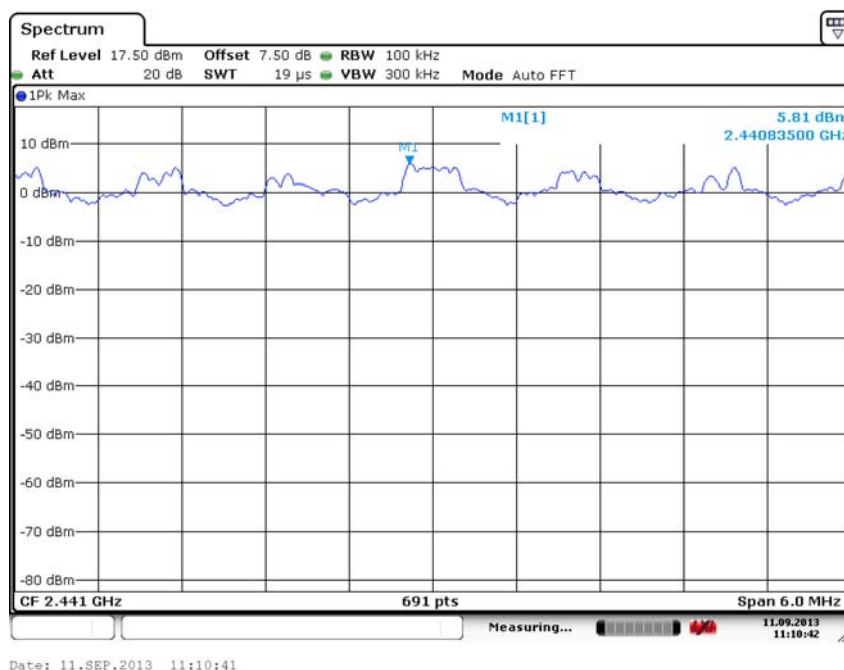
Carrier frequency (MHz): 2402  
Channel No.:0, Hopping OFF  
Modulation type:  $\pi/4$ DQPSK



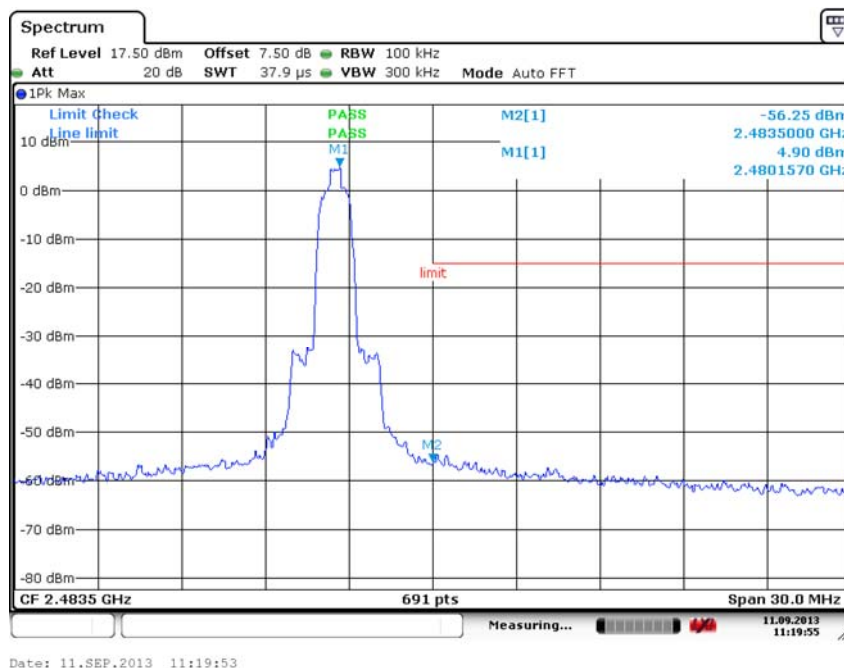
Carrier frequency (MHz): 2402  
Channel No.:0, Hopping ON  
Modulation type:  $\pi/4$ DQPSK



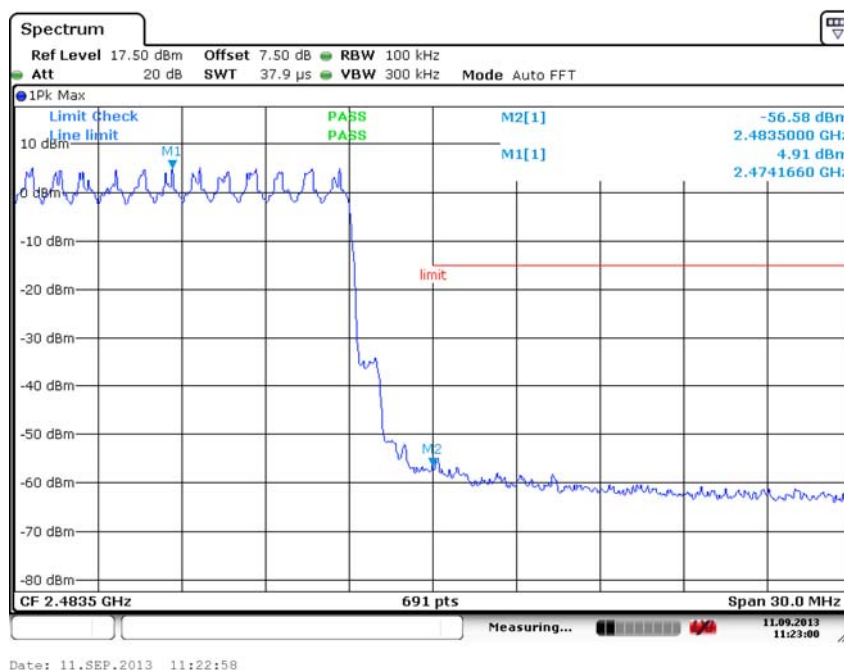
Carrier frequency (MHz): 2441  
Channel No.:39, Hopping OFF  
Modulation type:  $\pi/4$ DQPSK



Carrier frequency (MHz): 2441  
Channel No.:39, Hopping ON  
Modulation type:  $\pi/4$ DQPSK



Carrier frequency (MHz): 2480  
Channel No.:78, Hopping OFF  
Modulation type:  $\pi/4$ DQPSK



Carrier frequency (MHz): 2480  
Channel No.:78, Hopping ON  
Modulation type:  $\pi/4$ DQPSK

### RF Conducted Measurement

Carrier frequency (MHz): 2402

Channel No.:0

Modulation type: 8DPSK

| Frequency MHz | Hopping Mode | Measured value dBm | Reference value dBm | Limit dBm | Delta dB |
|---------------|--------------|--------------------|---------------------|-----------|----------|
| 2390          | Hopping OFF  | -62.06             | 3.93                | -16.07    | 65.99    |
| 2390          | Hopping ON   | -62.06             | 3.93                | -16.07    | 65.99    |

Carrier frequency (MHz): 2480

Channel No.:78

Modulation type: 8DPSK

| Frequency MHz | Hopping Mode | Measured value dBm | Reference value dBm | Limit dBm | Delta dB |
|---------------|--------------|--------------------|---------------------|-----------|----------|
| 2483.5        | Hopping OFF  | -54.93             | 4.92                | -15.08    | 59.85    |
| 2483.5        | Hopping ON   | -54.93             | 5.84                | -14.16    | 60.77    |

### RF Radiated Measurement

Carrier frequency (MHz): 2402

Channel No.:0

Modulation type: 8DPSK

| Frequency MHz | Hopping Mode | Correction Factor dB/m | Reading Level dBuV | Emission Level dBuV/m | Detector |
|---------------|--------------|------------------------|--------------------|-----------------------|----------|
| 2402          | Hopping OFF  | 2.70                   | 82.55              | 85.25                 | Peak     |
| 2402          | Hopping ON   | 2.70                   | 81.66              | 84.36                 | Peak     |

Carrier frequency (MHz): 2480

Channel No.:78

Modulation type: 8DPSK

| Frequency MHz | Hopping Mode | Correction Factor dB/m | Reading Level dBuV | Emission Level dBuV/m | Detector |
|---------------|--------------|------------------------|--------------------|-----------------------|----------|
| 2480          | Hopping OFF  | 2.50                   | 83.04              | 85.54                 | Peak     |
| 2480          | Hopping ON   | 2.50                   | 83.85              | 86.35                 | Peak     |

## Band Edge Test Data

Carrier frequency (MHz): 2402

Channel No.:0

Modulation type: 8DPSK

| Frequency MHz | Hopping Mode | Fundamental (dBuV/m) | Delta dB | Band Edge Field Strength (dBuV/m) | Detector |
|---------------|--------------|----------------------|----------|-----------------------------------|----------|
| 2390          | Hopping OFF  | 85.25                | 65.99    | 19.26                             | Peak     |
| 2390          | Hopping ON   | 84.36                | 65.99    | 18.37                             | Peak     |

Carrier frequency (MHz): 2480

Channel No.:78

Modulation type: 8DPSK

| Frequency MHz | Hopping Mode | Fundamental (dBuV/m) | Delta dB | Band Edge Field Strength (dBuV/m) | Detector |
|---------------|--------------|----------------------|----------|-----------------------------------|----------|
| 2483.5        | Hopping OFF  | 85.54                | 59.85    | 25.69                             | Peak     |
| 2483.5        | Hopping ON   | 86.35                | 60.77    | 25.58                             | Peak     |

Note:

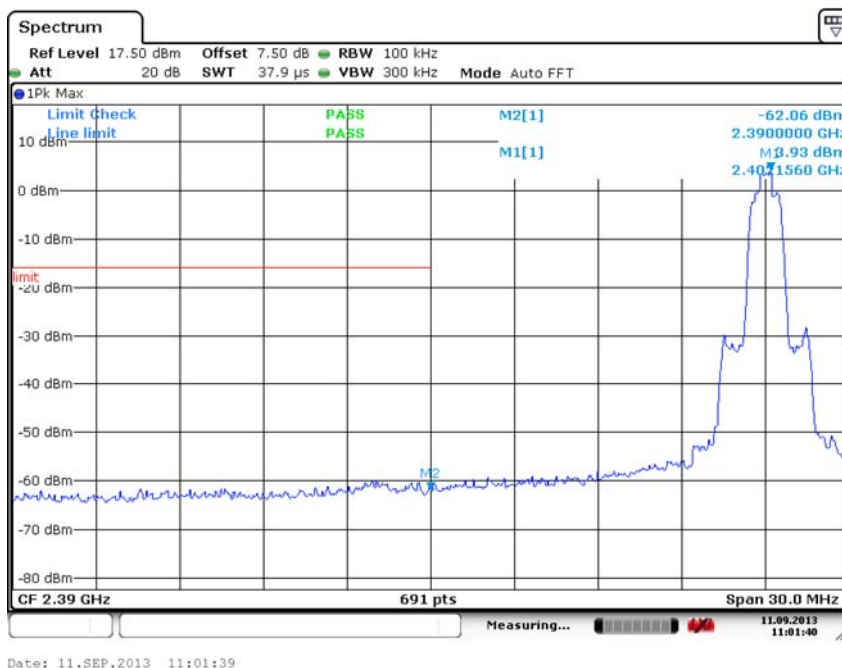
The Band Edge Field Strength was calculated using the Fundamental and Conducted Band Edge

measurements per the Marker-Delta Method with the following formula:

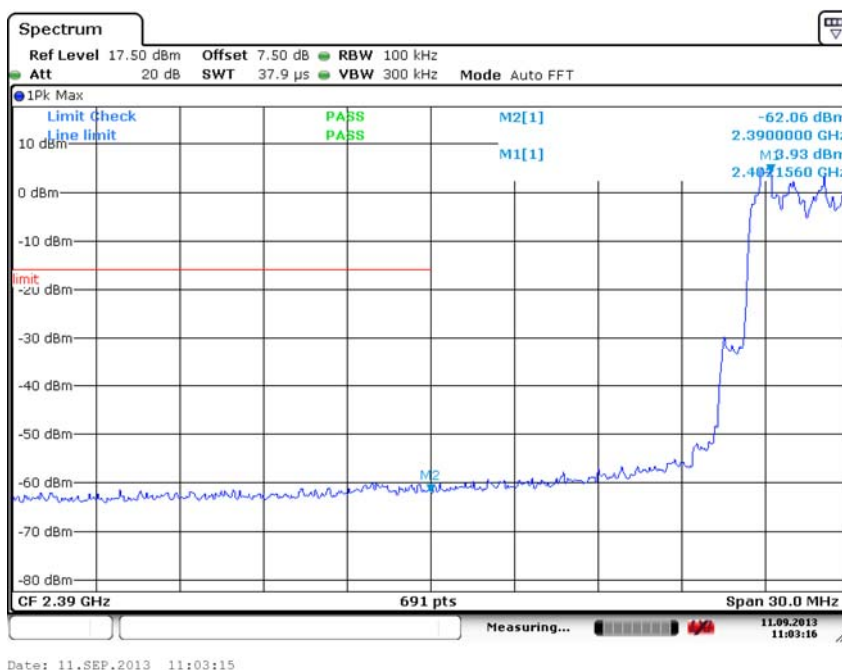
Band Edge field Strength = F - Delta

F = Fundamental field Strength (Peak or Average)

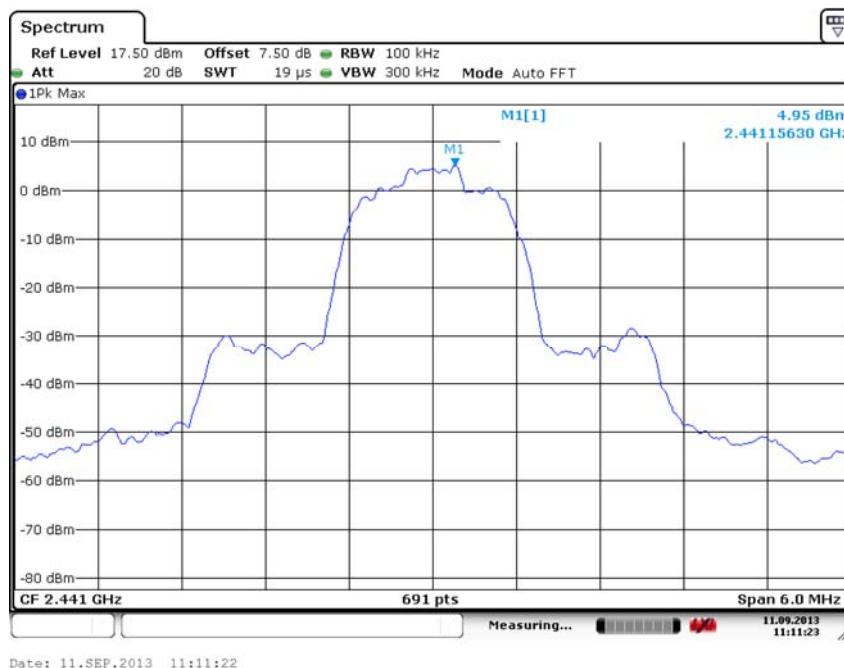
Delta= Conducted Band Edge Delta (Peak or Average)



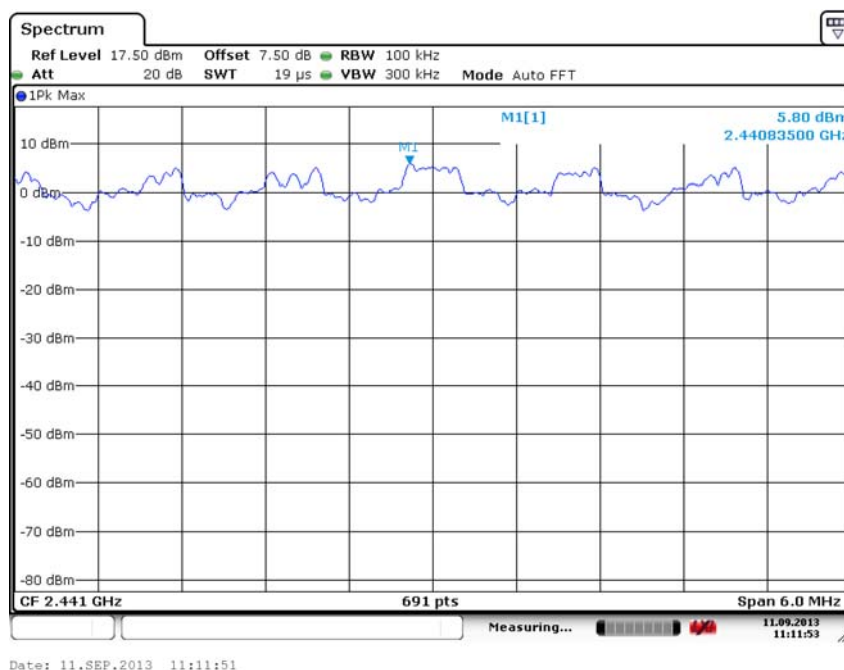
Carrier frequency (MHz): 2402  
Channel No.:0, Hopping OFF  
Modulation type: 8DPSK



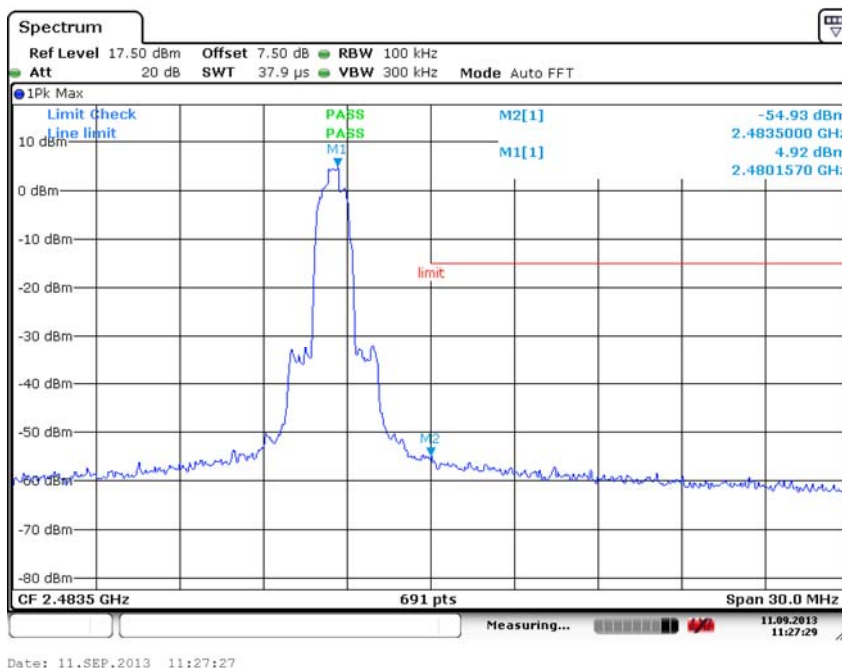
Carrier frequency (MHz): 2402  
Channel No.:0, Hopping ON  
Modulation type: 8DPSK



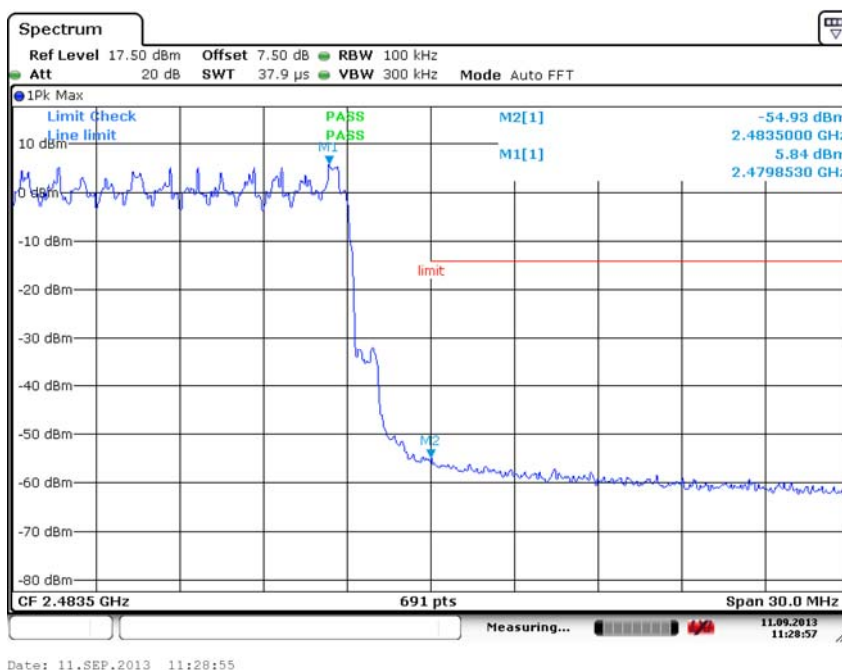
Carrier frequency (MHz): 2441  
Channel No.:39, Hopping OFF  
Modulation type: 8DPSK



Carrier frequency (MHz): 2441  
Channel No.:39, Hopping ON  
Modulation type: 8DPSK



Carrier frequency (MHz): 2480  
Channel No.:78, Hopping OFF  
Modulation type: 8DPSK



Carrier frequency (MHz): 2480  
Channel No.:78, Hopping ON  
Modulation type: 8DPSK

## 2.2.6 Dwell Time

### 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 Public notice DA 00-705 and ANSI C63.4-2009.

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

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

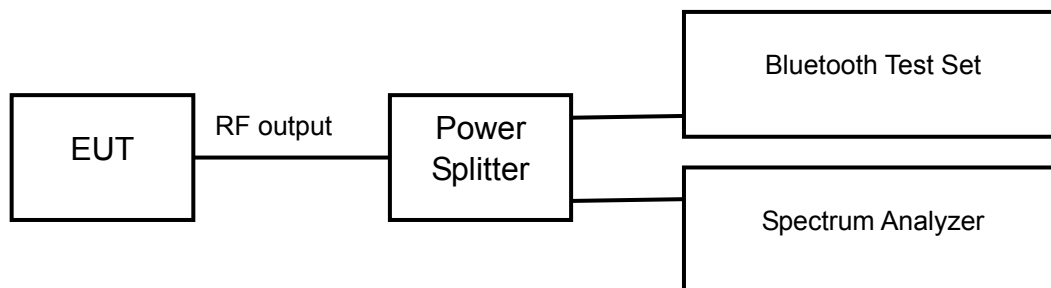
The time slot length is measured of three different packet types which are available in the Bluetooth technology. Those are DH1, DH3 and DH5 packets.

The dwell time is calculated by:

Dwell time = time slot length \* hop rate \* 31.6/ number of hopping channels

with:

- hop rate=1600/2 \* 1/s for DH1 packets =800
- hop rate=1600/4 \* 1/s for DH3 packets =400
- hop rate=1600/6 \* 1/s for DH5 packets =266.67
- number of hopping channels=79
- 31.6 s=0.4 seconds multiplied by the number of hopping channels=0.4s \* 79



### 2.2.6.3 Test limit

FCC Part15.247(a)(1)(iii)

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

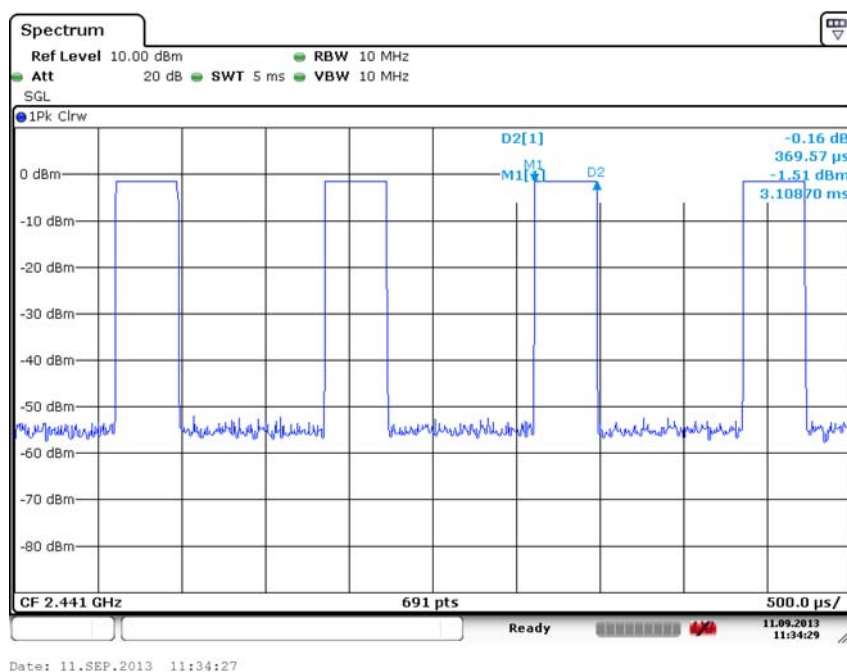
The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

Since the Bluetooth technology uses 79 channels this period is calculated to be 31.6 seconds.

## 2.2.6.4 Test result

Modulation type: GFSK

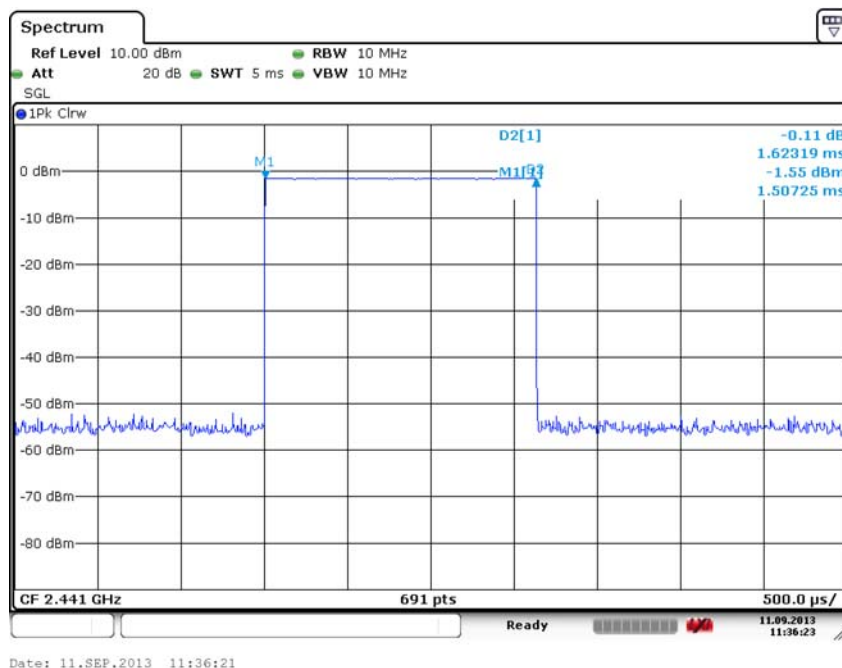
| Packet type | Time slot length ms | Dwell time                             | Dwell time ms |
|-------------|---------------------|----------------------------------------|---------------|
| DH1         | 0.3696              | time slot length *31.6<br>*1600/2 /79  | 118.272       |
| DH3         | 1.6232              | time slot length * 31.6<br>*1600/4 /79 | 259.712       |
| DH5         | 2.8696              | time slot length * 31.6<br>*1600/6 /79 | 306.091       |



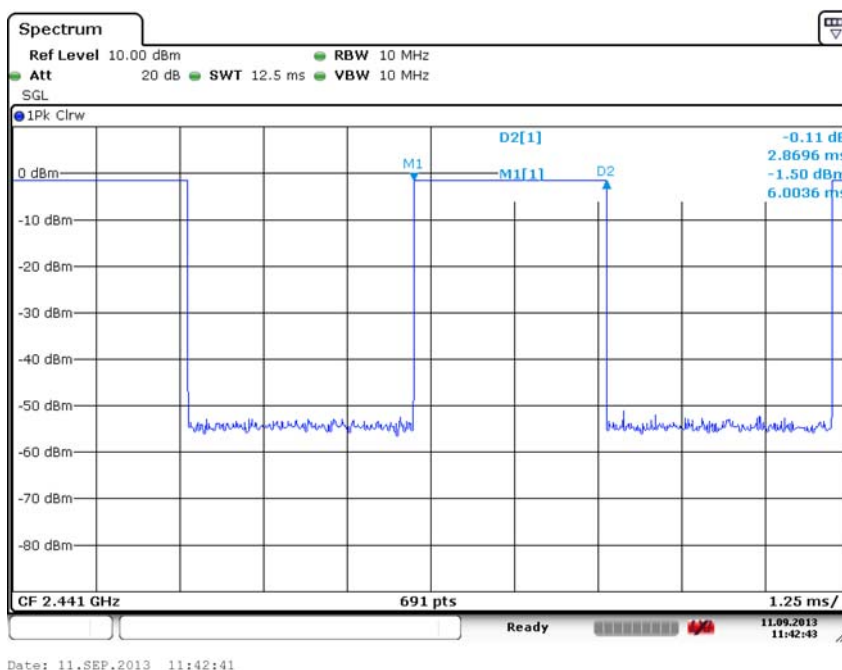
Carrier frequency (MHz): 2441

Packet type: DH1

Modulation type: GFSK



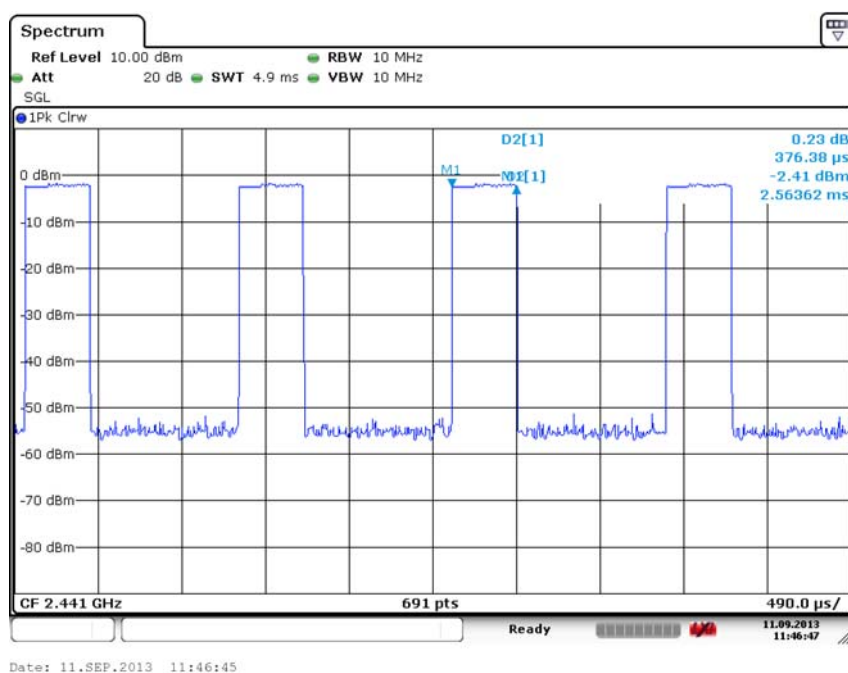
Carrier frequency (MHz): 2441  
Packet type: DH3  
Modulation type: GFSK



Carrier frequency (MHz): 2441  
Packet type: DH5  
Modulation type: GFSK

Modulation type:  $\pi/4$ DQPSK

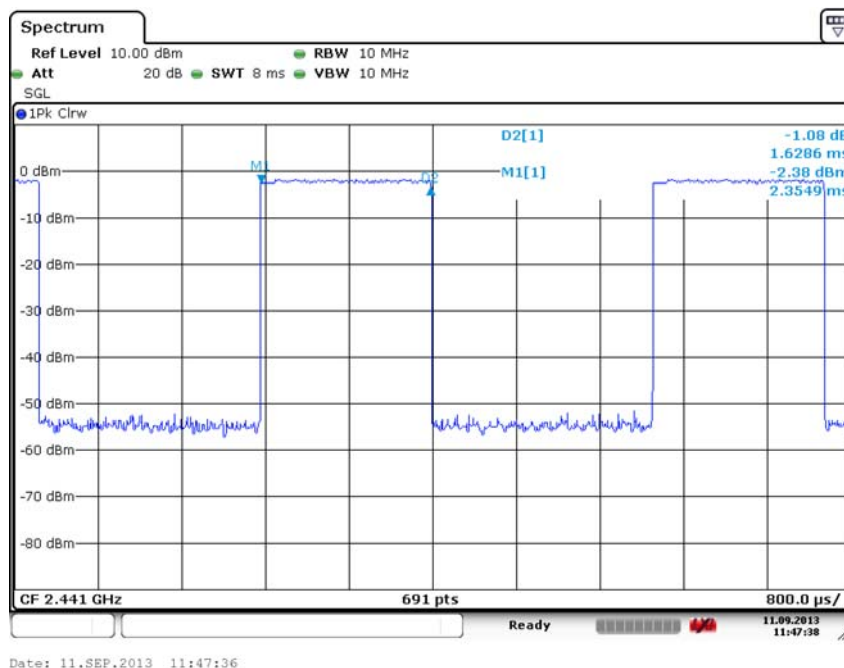
| Packet type | Time slot length ms | Dwell time                             | Dwell time ms |
|-------------|---------------------|----------------------------------------|---------------|
| DH1         | 0.3764              | time slot length *31.6<br>*1600/2 /79  | 120.448       |
| DH3         | 1.6286              | time slot length * 31.6<br>*1600/4 /79 | 260.576       |
| DH5         | 2.8764              | time slot length * 31.6<br>*1600/6 /79 | 306.816       |



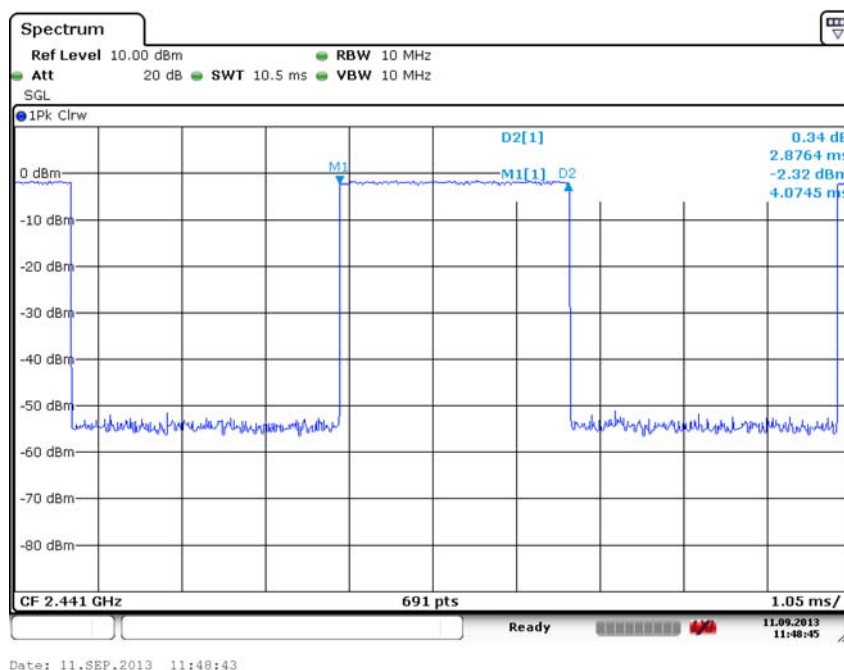
Carrier frequency (MHz): 2441

Packet type: DH1

Modulation type:  $\pi/4$ DQPSK



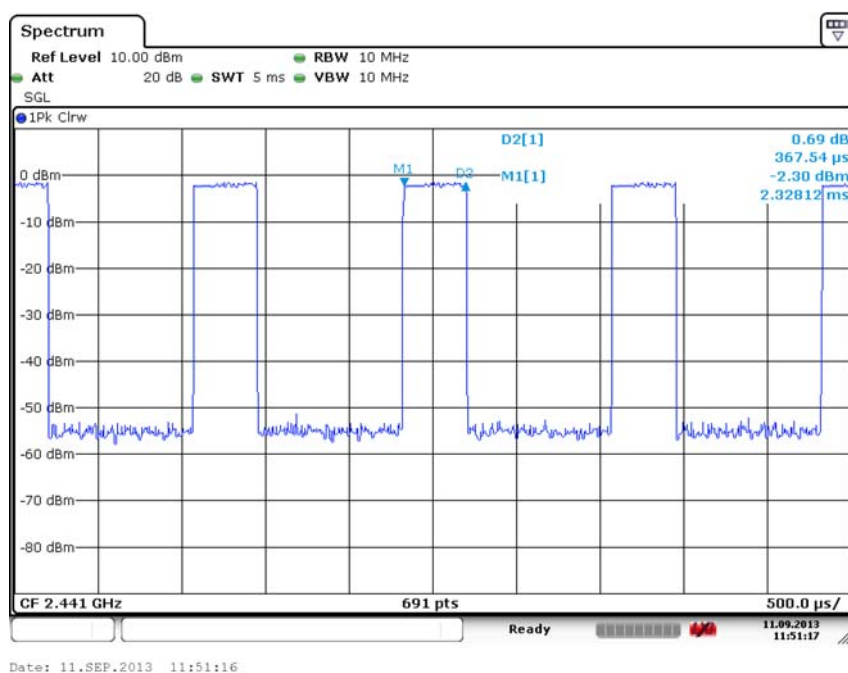
Carrier frequency (MHz): 2441  
Packet type: DH3  
Modulation type:  $\pi/4$ DQPSK



Carrier frequency (MHz): 2441  
Packet type: DH5  
Modulation type:  $\pi/4$ DQPSK

Modulation type: 8DPSK

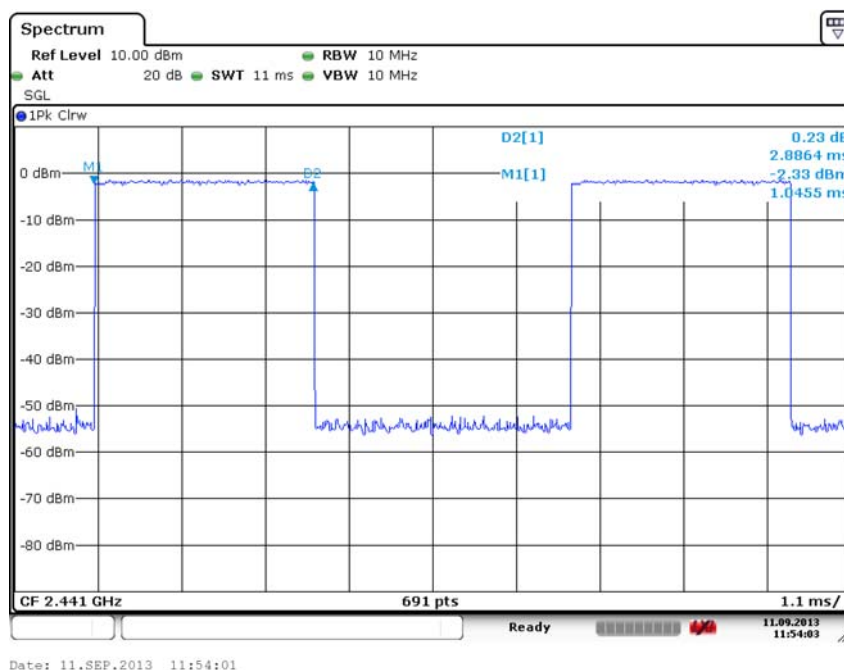
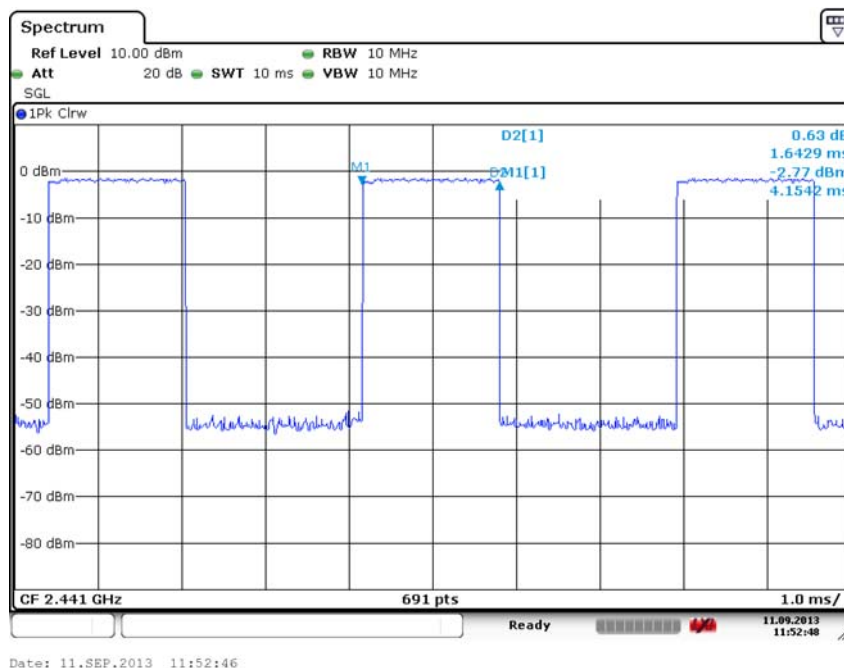
| Packet type | Time slot length ms | Dwell time                             | Dwell time ms |
|-------------|---------------------|----------------------------------------|---------------|
| DH1         | 0.3675              | time slot length *31.6<br>*1600/2 /79  | 117.600       |
| DH3         | 1.6429              | time slot length * 31.6<br>*1600/4 /79 | 262.864       |
| DH5         | 2.8864              | time slot length * 31.6<br>*1600/6 /79 | 307.883       |



Carrier frequency (MHz): 2441

Packet type:DH1

Modulation type: 8DPSK



## 2.2.7 Channel Separation

### 2.2.7.1 Ambient condition

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

### 2.2.7.2 Test Description

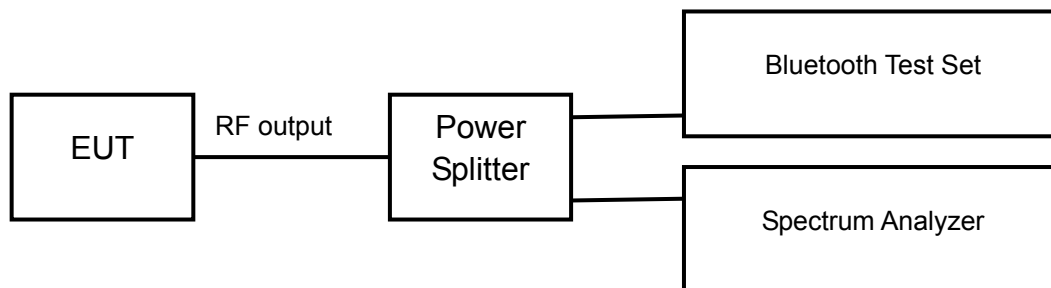
The measurement is made according to Public notice DA 00-705 and ANSI C63.4-2009.

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

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

Analyzer settings:

- Detector: Peak-Max hold
- Span: 3 MHz
- Centre Frequency: 2441 MHz
- Resolution Bandwidth (RBW): 30 kHz
- Video Bandwidth (VBW): 100 kHz
- Sweep Time: Coupled



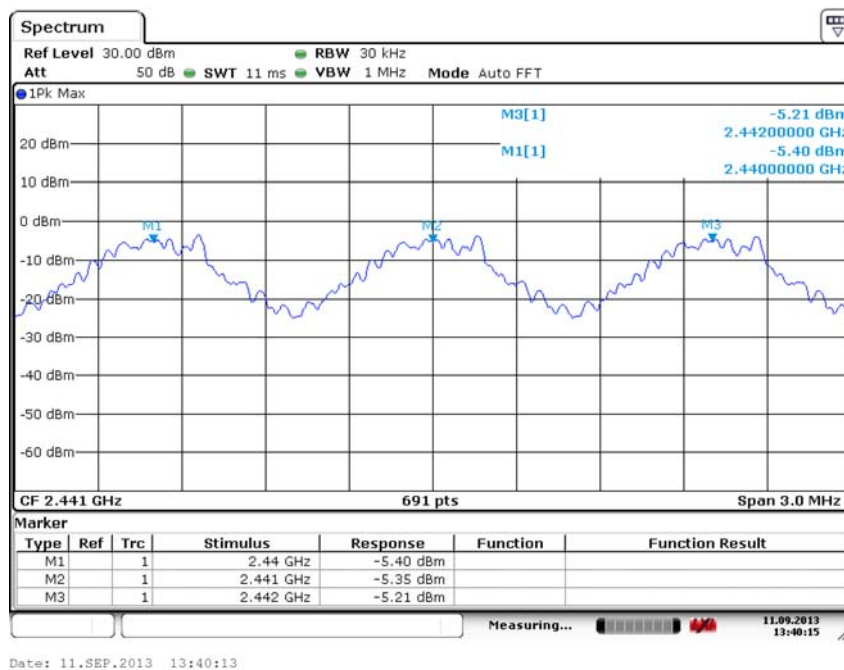
### 2.2.7.3 Test limit

FCC Part15.247(a)(1)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

## 2.2.7.4 Test result

|              |                           |
|--------------|---------------------------|
| Op-mode      | Channel separation<br>MHz |
| Hopping mode | 1                         |



Op-mode: Hopping mode

## 2.2.8 Number of Hopping Frequencies

### 2.2.8.1 Ambient condition

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

### 2.2.8.2 Test Description

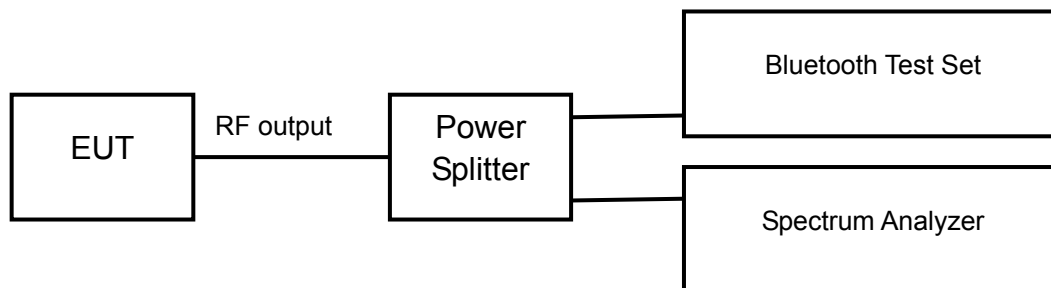
The measurement is made according to Public notice DA 00-705 and ANSI C63.4-2009.

The Equipment Under Test (EUT) was set up in a shielded room to perform the number of hopping frequencies measurement.

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

Analyzer settings:

- Detector: Peak-Maxhold
- Start frequency: 2400 MHz
- Stop frequency: 2483.5 MHz
- Resolution Bandwidth (RBW): 100 kHz
- Video Bandwidth (VBW): 300 kHz
- Sweep Time: Coupled



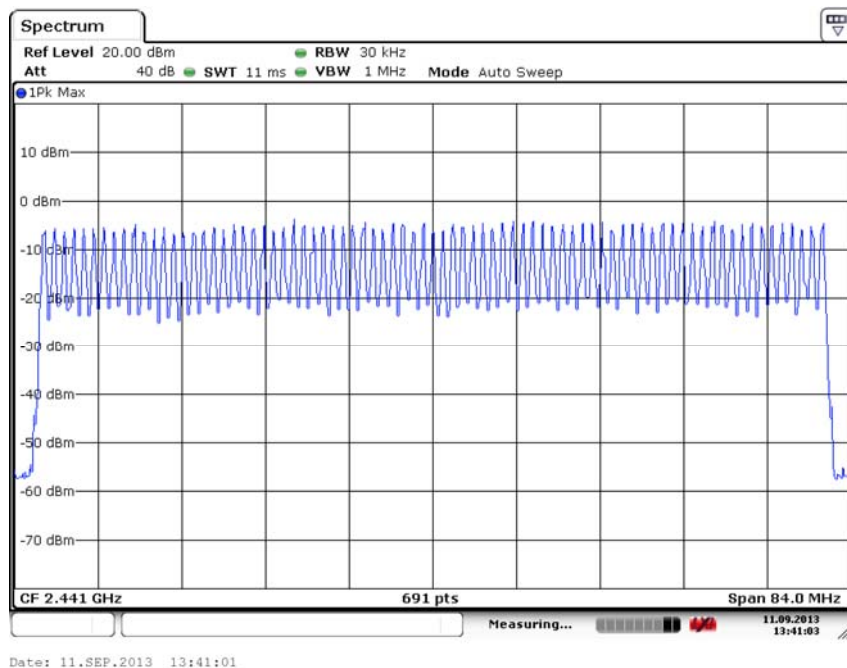
### 2.2.8.3 Test limit

FCC Part15.247(a)(1)(iii)

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

## 2.2.8.4 Test result

| Op-mode      | Result |
|--------------|--------|
| Hopping mode | 79     |



Op-mode: Hopping mode

## 2.3. Measurement Uncertainty

| Items                | Uncertainty    |        |
|----------------------|----------------|--------|
| Occupied Bandwidth   | 3kHz           |        |
| Peak power output    | 0.67dB         |        |
| Band edge compliance | 1.20dB         |        |
| 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.  | Bluetooth Test Set MT8852B                     | Anritsu       | 1142010    | 2015.2       |
| 4.  | Cable 104EA                                    | SUCOFLEX      | 9272/4EA   | 2014.8       |
| 5.  | Cable 104EA                                    | SUCOFLEX      | 9266/4EA   | 2014.8       |
| 6.  | Power Splitter 11850C                          | Agilent       | 026057     | 2014.8       |
| 7.  | 12.65m×8.03m×7.50m<br>Fully-Anechoic Chamber   | FRANKONIA     | -----      | -----        |
| 8.  | 23.18m×16.88m×9.60m<br>Semi-Anechoic Chamber   | FRANKONIA     | ---        | -----        |
| 9.  | Turn table Diameter:1m                         | HD            | -----      | -----        |
| 10. | Turn table Diameter:5m                         | HD            | -----      | -----        |
| 11. | Antenna master FAC(MA4.0)                      | MATURO        | -----      | -----        |
| 12. | Antenna master SAC(MA4.0)                      | MATURO        | -----      | -----        |
| 13. | 9.080m×5.255m×3.525m<br>Shielding room         | FRANKONIA     | -----      | -----        |
| 14. | HF 906 Double-Ridged<br>Waveguide Horn Antenna | R&S           | 100030     | 2014.8       |
| 15. | HF 906 Double-Ridged<br>Waveguide Horn Antenna | R&S           | 100029     | 2014.8       |
| 16. | HL562 Ultra log antenna                        | R&S           | 100016     | 2014.8       |
| 17. | 3160-09 Receive antenna                        | SCHWARZ-BECK  | 002058-002 | 2014.8       |
| 18. | ESI 40 EMI test receiver                       | R&S           | 100015     | 2014.8       |
| 19. | Radio tester                                   | CMU 200       | 114667     | 2014.8       |
| 20. | ESCS30 EMI test receiver                       | R&S           | 100029     | 2014.8       |
| 21. | HL562 Receive antenna                          | R&S           | 100167     | 2014.8       |
| 22. | ESH3-Z5 LISN                                   | R&S           | 100020     | 2014.8       |

## Appendix

### Appendix1 Test Setup