D-PL-12111-01-01

CNAS L0447

Registration No.910917

TEST REPORT

Report No.: SRTC2011-H024-E0061

Product Name: CDMA 1X-EVDO Digital Mobile Phone with Bluetooth

Product Model: Sonim XP3400-A-R1

Type Number: C21F007AA

Applicant: Sonim Technologies Inc.

Manufacturer: BYD COMPANY LIMITED

Specification: 47CFR Part 15 July 10, 2008, Subpart C

FCC ID: WYPC21F007AA

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

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1.3 Applicant's details

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1.4 Manufacturer's details

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Fax: +86-021-61009668
Email: wang.luhong@byd.com

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1.5 Application details

Date of reception of test sample: 17th Jun 2011
Date of test: 17th Jun 2011 to 6th July 2011

1.6 Reference specification

47CFR Part 15, July 10, 2008, Subpart C

1.7 Information of EUT

1.7.1 General information

Name of EUT	CDMA 1X-EVDO Digital Mobile Phone with Bluetooth
FCC ID	WYPC21F007AA
Frequency range	2.4000~2.4835GHz
Number of channel	79
Modulation type	GFSK, π/4DQPSK,8DPSK
Duplex mode	TDD
Channel spacing	1MHz
Data rate	1Mbps,2 Mbps,3 Mbps
Antenna type	Integral
Power Supply	Battery or charger
Rated Power Supply Voltage	3.8V
HW Version	A
SW Version	E343B_1200B03

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1.7.2 EUT details

Name	Model	Type Number	MEID
CDMA 1X-EVDO Digital Mobile Phone with Bluetooth	Sonim XP3400-A-R1	C21F007AA	A100001210A047

1.7.3 Auxiliary equipment details

Equipment	Charger
Manufacturer	DEE VAN ENTERPRISE CO., LTD
Model Number	DSA-3PFC-05 FEU 050065

Equipment	Battery
Manufacturer	Sunwoda Electronic Co., Ltd
Model Number	XP3.20-0001100
Capacity	1750mAh
Rated Voltage	3.7V

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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(a) (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) (iii)	Pass
9	AC Powerline Conducted Emission	15.107, 15.207	Pass

This Test Report Is Issued by: Mr. Song Qizhu Director of the test lab	Checked by: Mr. Wang Junfeng Deputy director of the test lab
Tested by: Mr. Li Bin Test engineer	Issued date: **2011.07.13**

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2.2 Test result

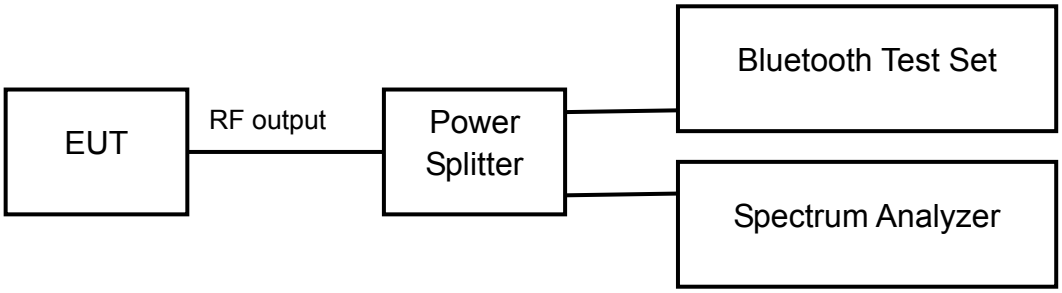
2.2.1 Occupied Bandwidth-§15.247(a) (1)

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 Public notice DA 00-705 and ANSI C63.4.
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 Part 15, Subpart C, §15.247 (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.

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2.2.1.4 Test result

Modulation type: GFSK

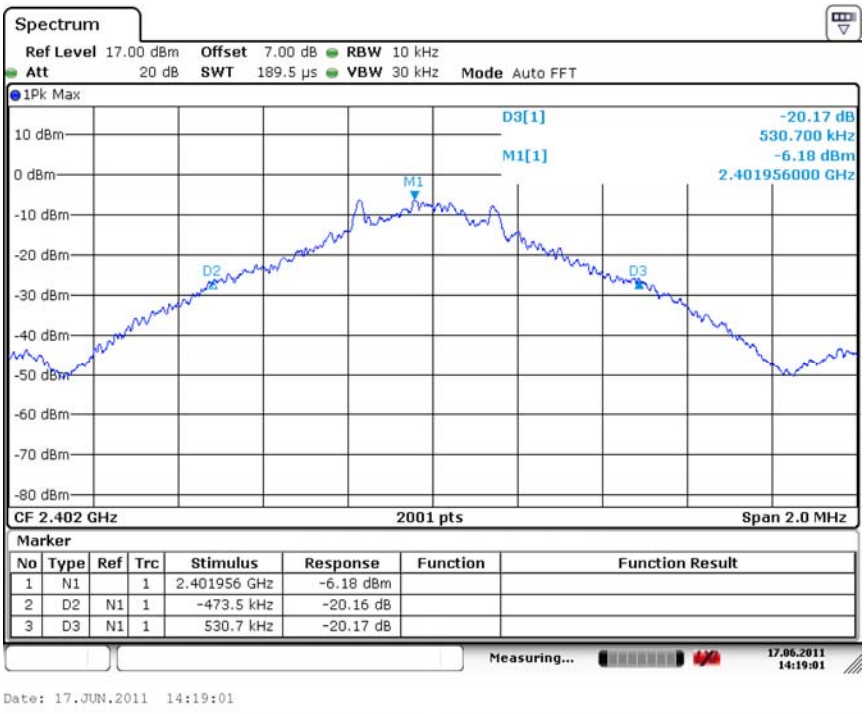
Carrier frequency (MHz)	Channel No.	20 dB bandwidth(KHz)
2402	0	1004.20
2441	39	1005.50
2480	79	1006.50

Modulation type: π/4DQPSK

Carrier frequency (MHz)	Channel No.	20 dB bandwidth(KHz)
2402	0	1275.40
2441	39	1276.40
2480	79	1275.40

Modulation type: 8DPSK

Carrier frequency (MHz)	Channel No.	20 dB bandwidth(KHz)
2402	0	1285.40
2441	39	1298.40
2480	79	1297.40



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

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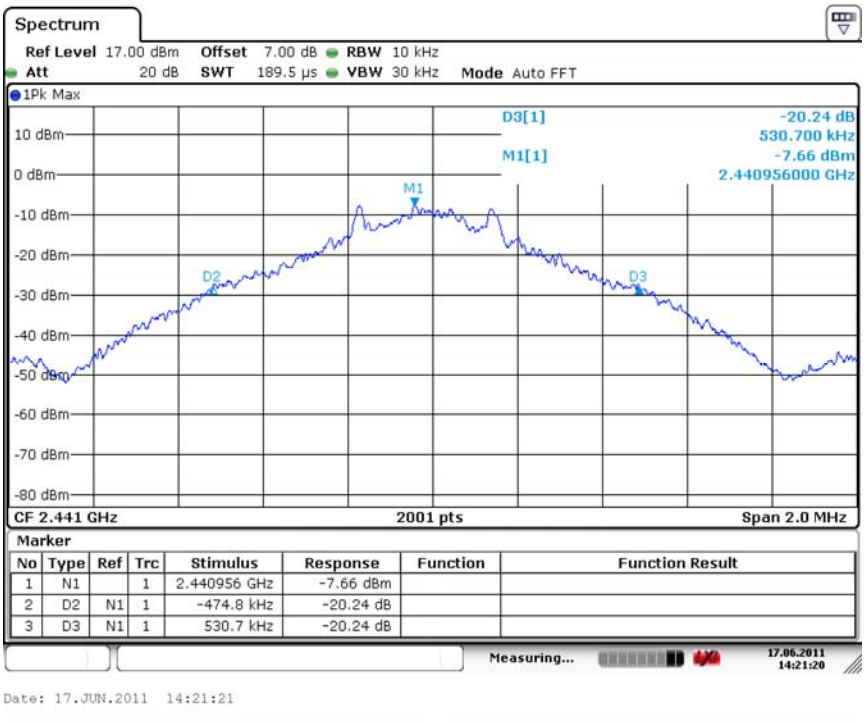
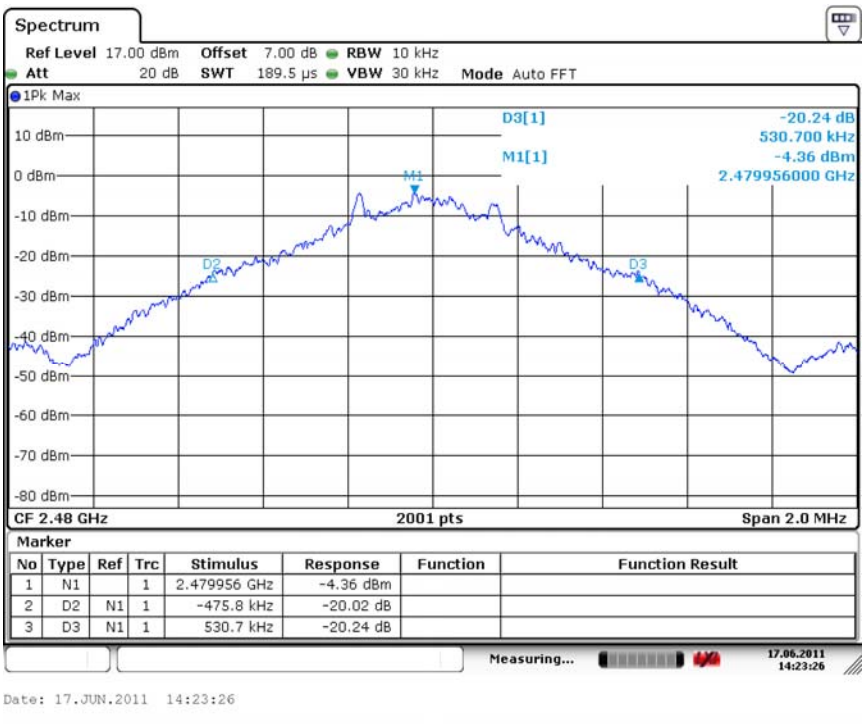


Carrier frequency (MHz): 2441
Channel No.:39
Modulation type: GFSK



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

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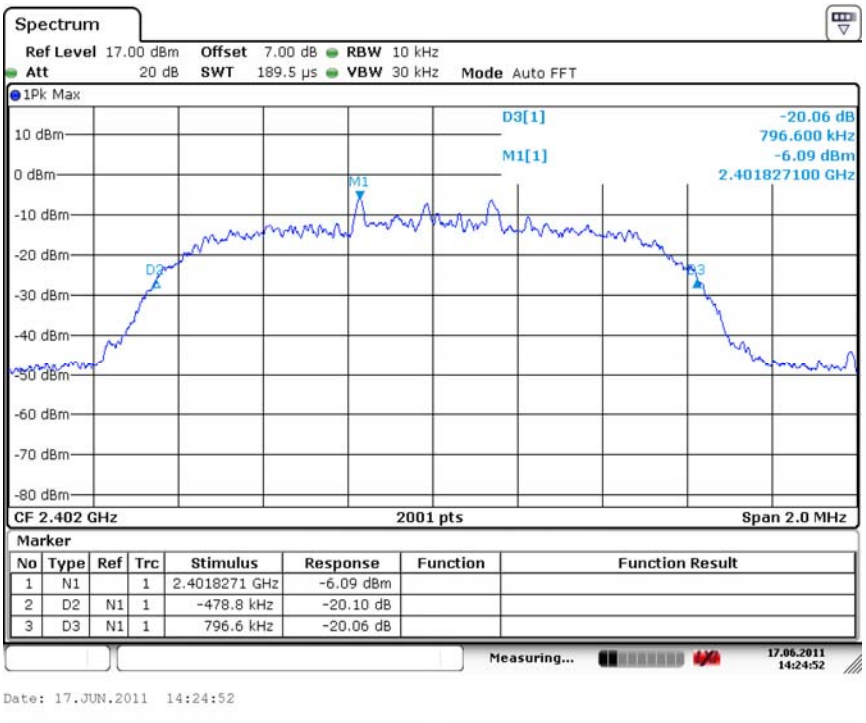

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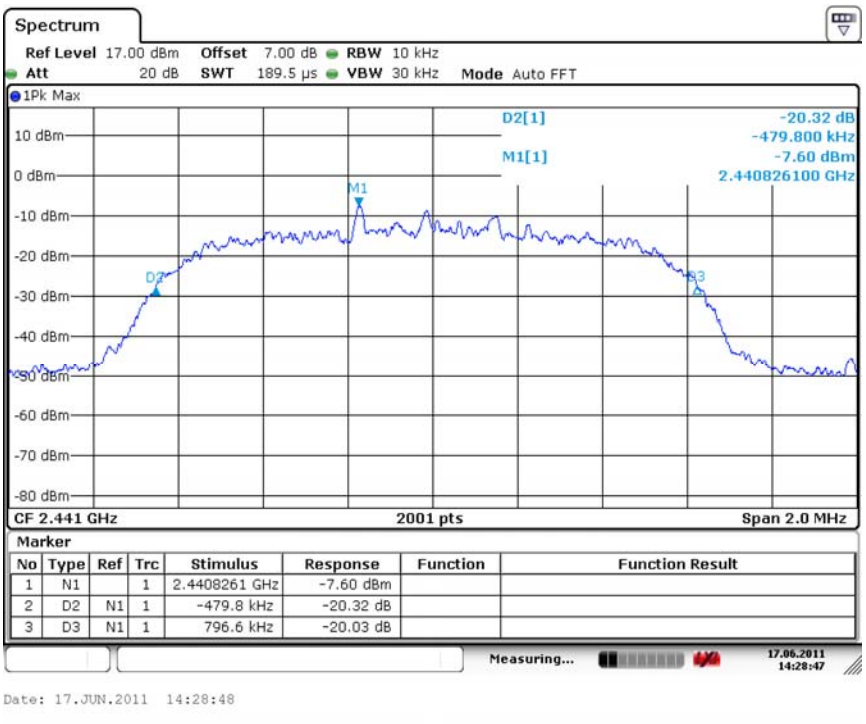
Channel No.:0
Modulation type: π/4DQPSK



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

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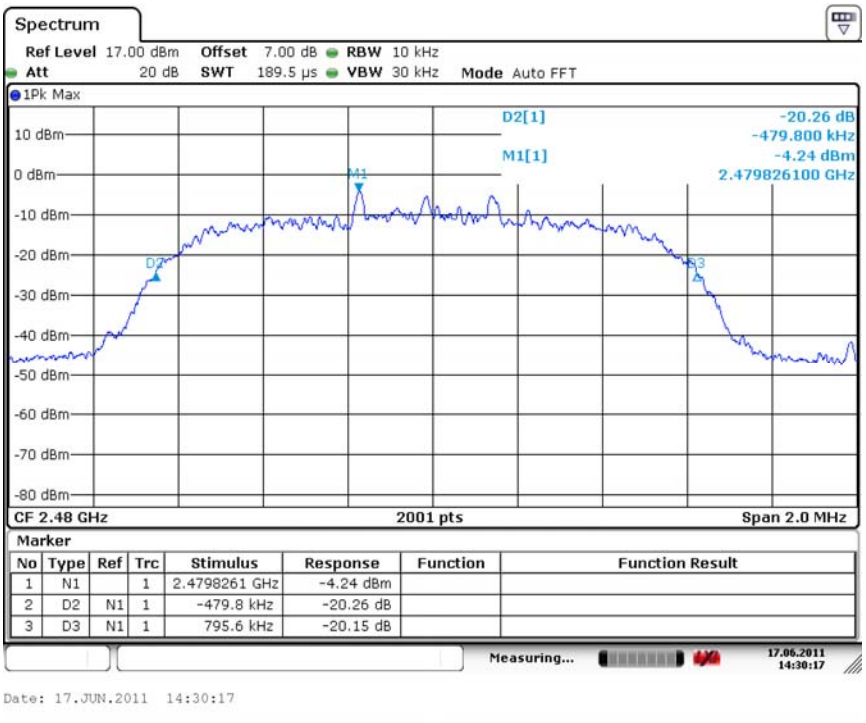
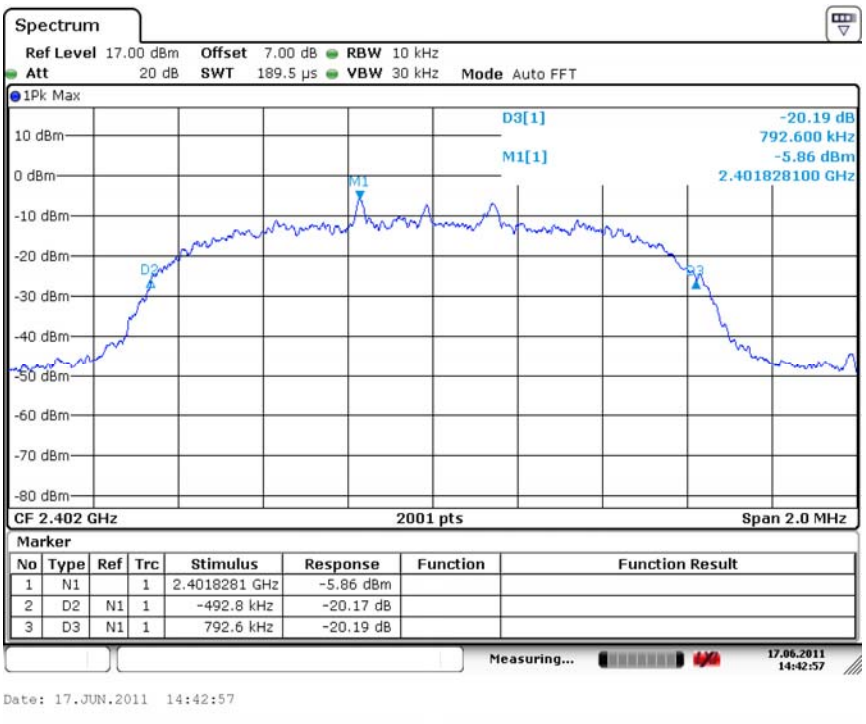


Carrier frequency (MHz): 2480
Channel No.:78
Modulation type: π/4DQPSK



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

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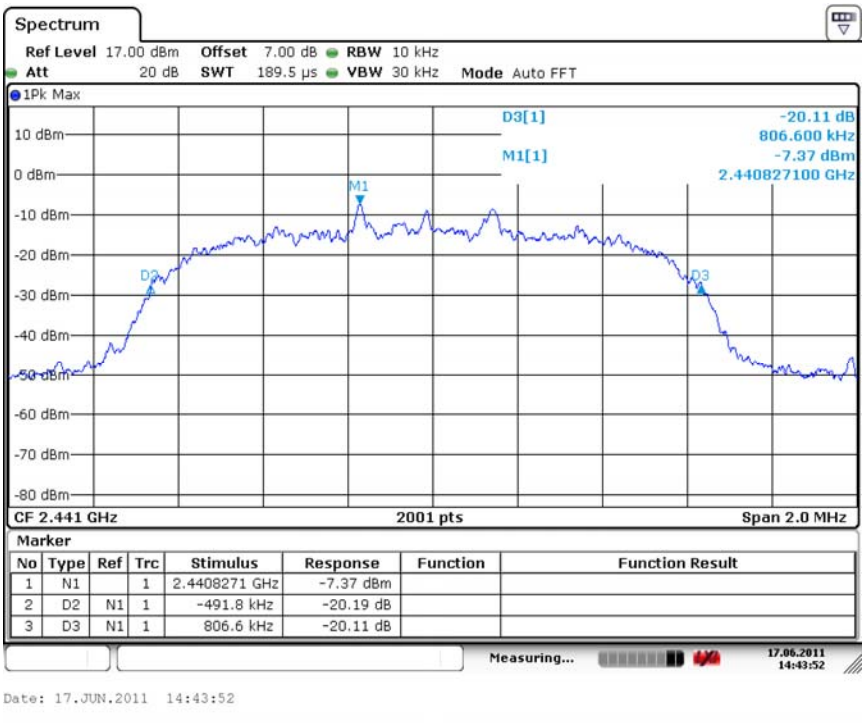
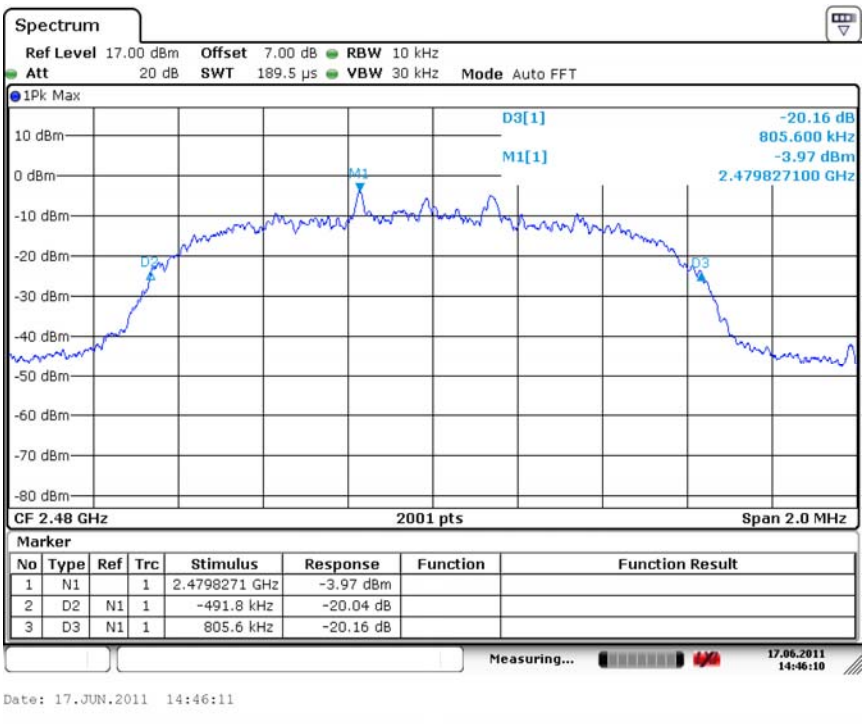


Carrier frequency (MHz): 2441
Channel No.:39
Modulation type: 8DPSK



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

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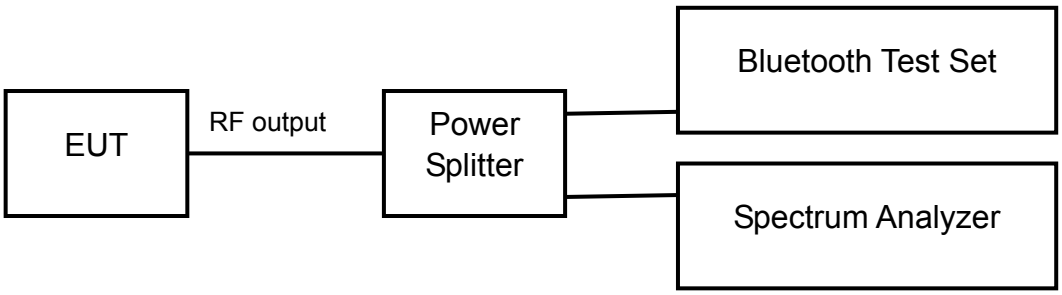
2.2.2 Peak power output-§15.247(a) (1)

2.2.2.1 Ambient condition:

Temperature	Relative humidity	Pressure
22°C	40%	101.1kPa

2.2.2.2 Test Description

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 Part 15, Subpart C, §15.247 (b) (1)
For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt.

Used conversion factor: Limit (dBm) = 10 log (Limit (W)/1mW)
==> Maximum Output Power: 30 dBm

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2.2.2.4 Test result:

Offset= the insertion loss of the power splitter+ cable loss
=6.50+0.50=7.00dB

Modulation type: GFSK

Carrier frequency (MHz)	Channel No.	Peak Conducted Output Power (dBm)
2402	0	-1.16
2441	39	-2.70
2480	78	0.65

Modulation type: π/4DQPSK

Carrier frequency (MHz)	Channel No.	Peak Conducted Output Power (dBm)
2402	0	0.92
2441	39	-0.59
2480	78	2.68

Modulation type: 8DPSK

Carrier frequency (MHz)	Channel No.	Peak Conducted Output Power (dBm)
2402	0	1.18
2441	39	-0.40
2480	78	2.82

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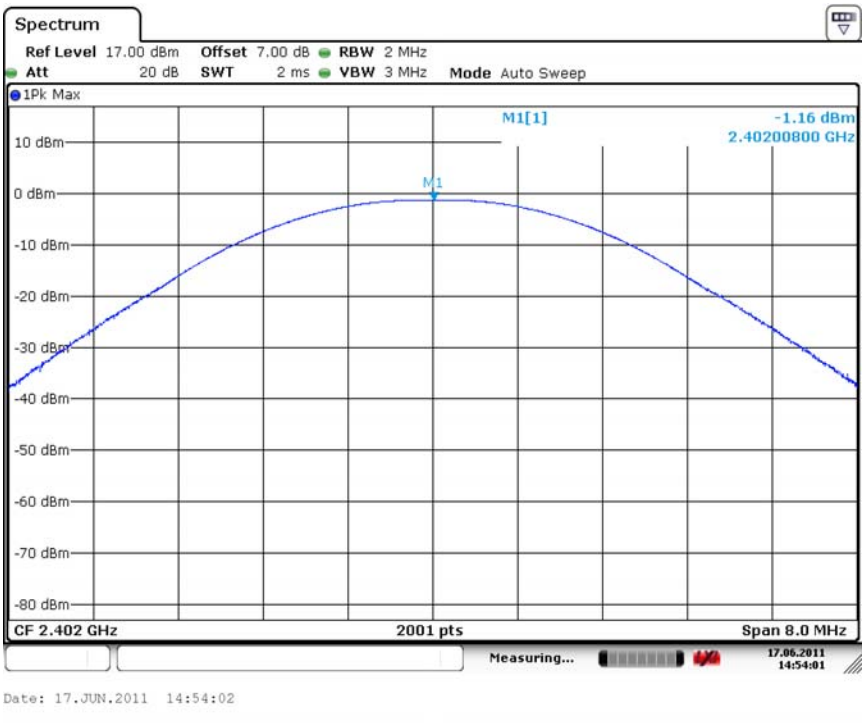
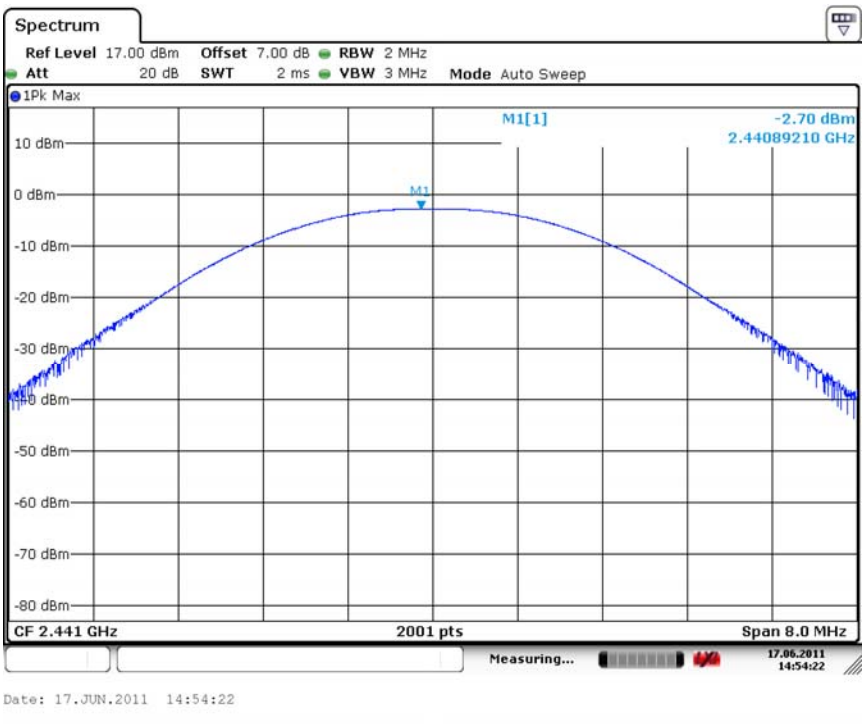


Carrier frequency (MHz): 2402
Channel No.:0
Modulation type: GFSK



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

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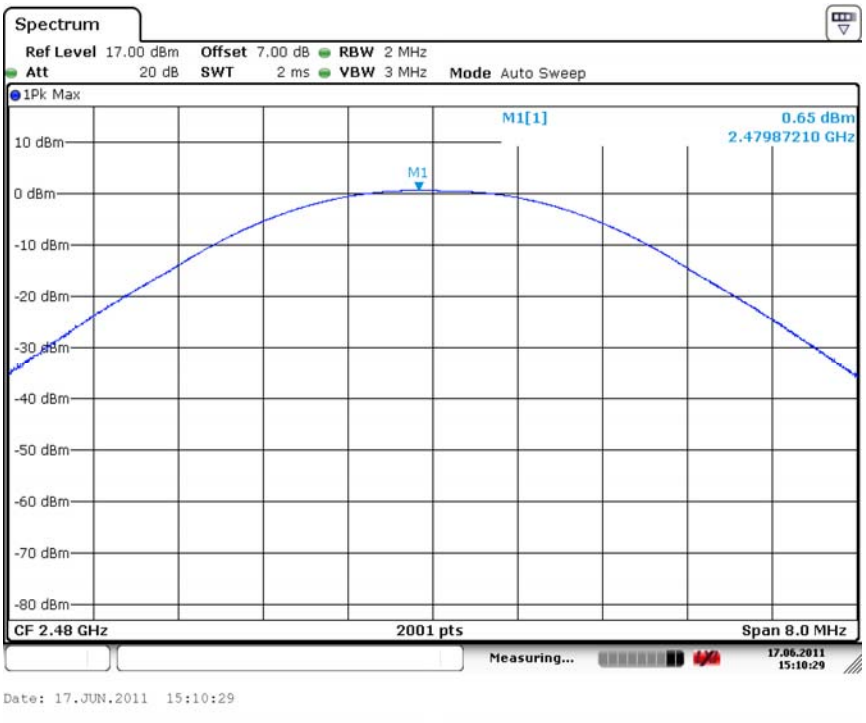
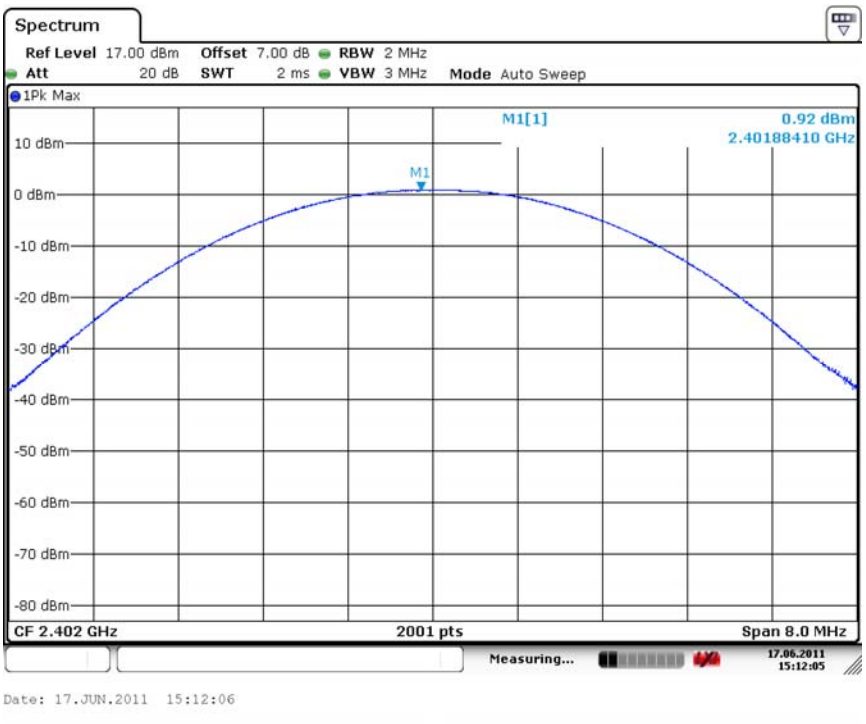


Carrier frequency (MHz): 2480
Channel No.:78
Modulation type: GFSK



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

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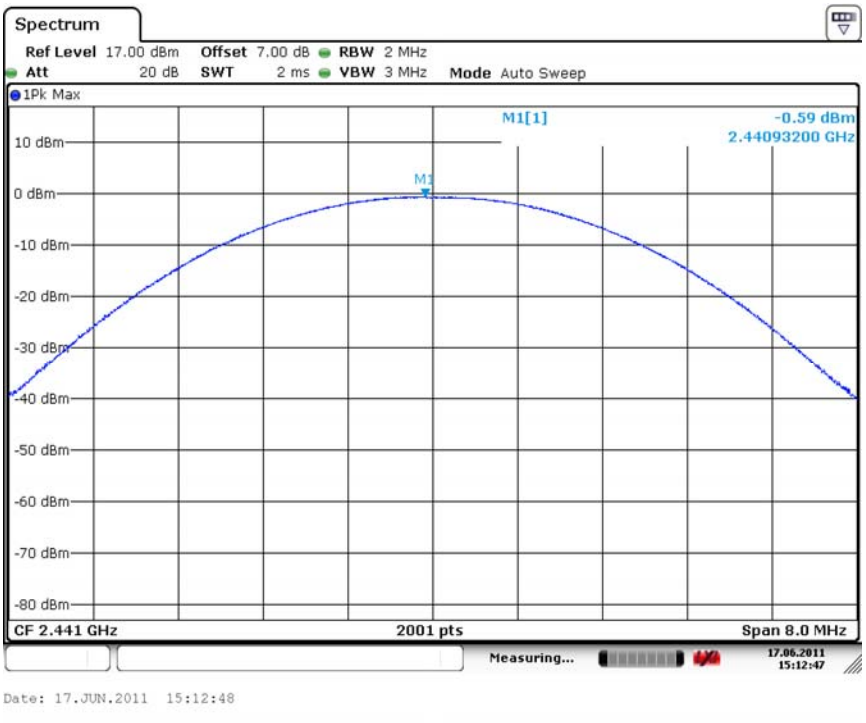
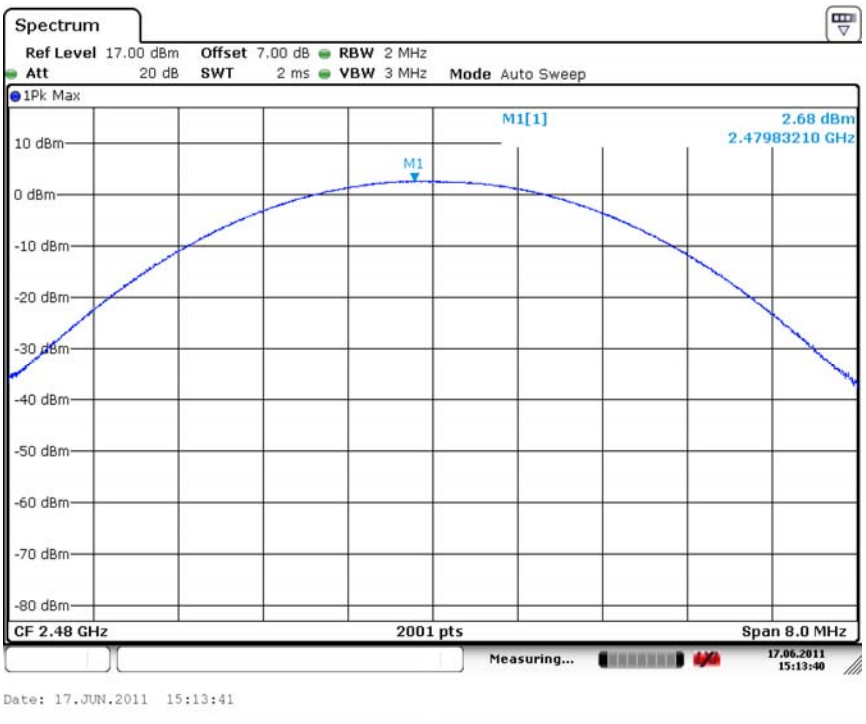


Carrier frequency (MHz): 2441
Channel No.:39
Modulation type: π/4DQPSK



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

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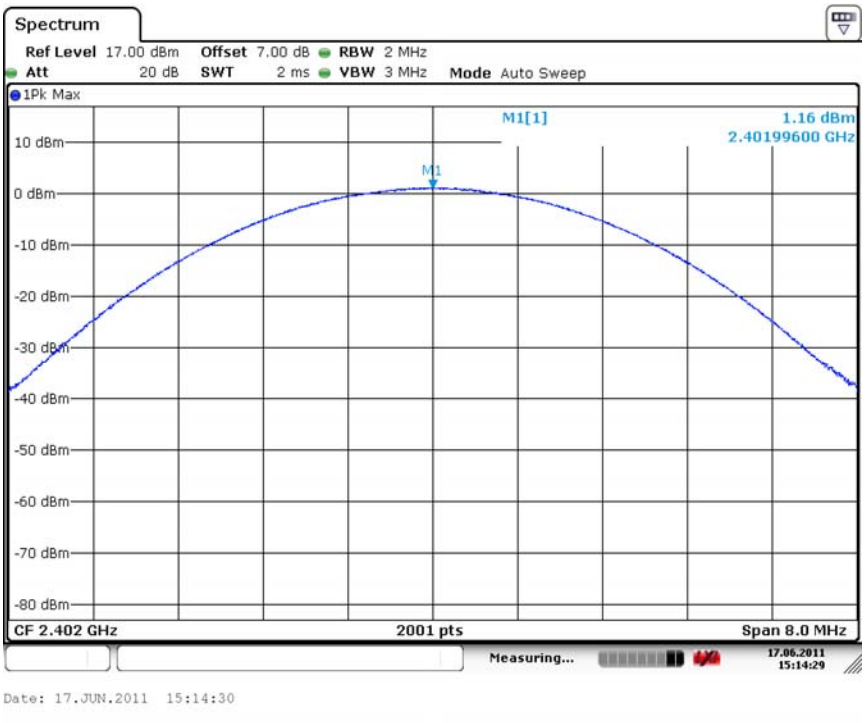
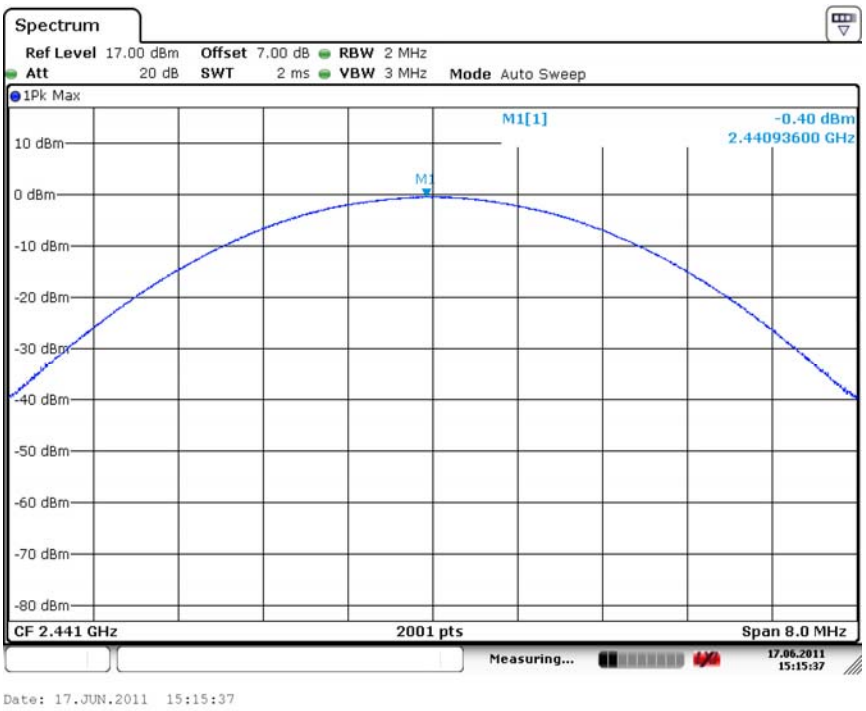


Carrier frequency (MHz): 2402
Channel No.:0
Modulation type: 8DPSK



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

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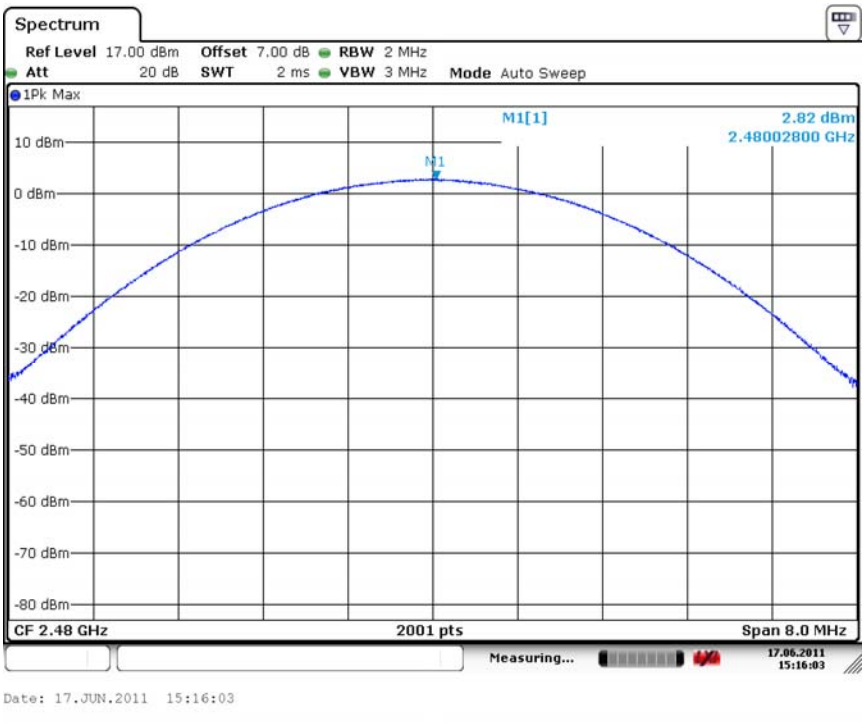

Carrier frequency (MHz): 2480
Channel No.:78
Modulation type: 8DPSK

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2.2.3 Spurious RF conducted emissions-§15.247(d)

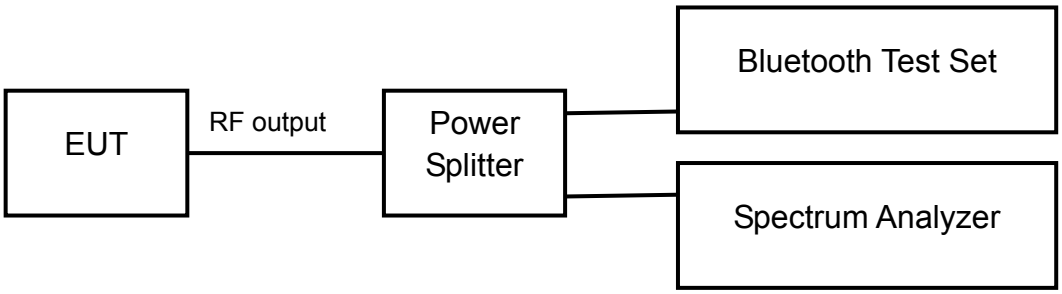
2.2.3.1 Ambient condition:

Temperature	Relative humidity	Pressure
22°C	40%	101.1kPa

2.2.3.2 Test Description

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): 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.



2.2.3.3 Test limit

FCC Part 15, Subpart C, §15.247 (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.

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2.2.3.4 Test result

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

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

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

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

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

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

Note: The Reference value see 2.2.5 Band edge compliance

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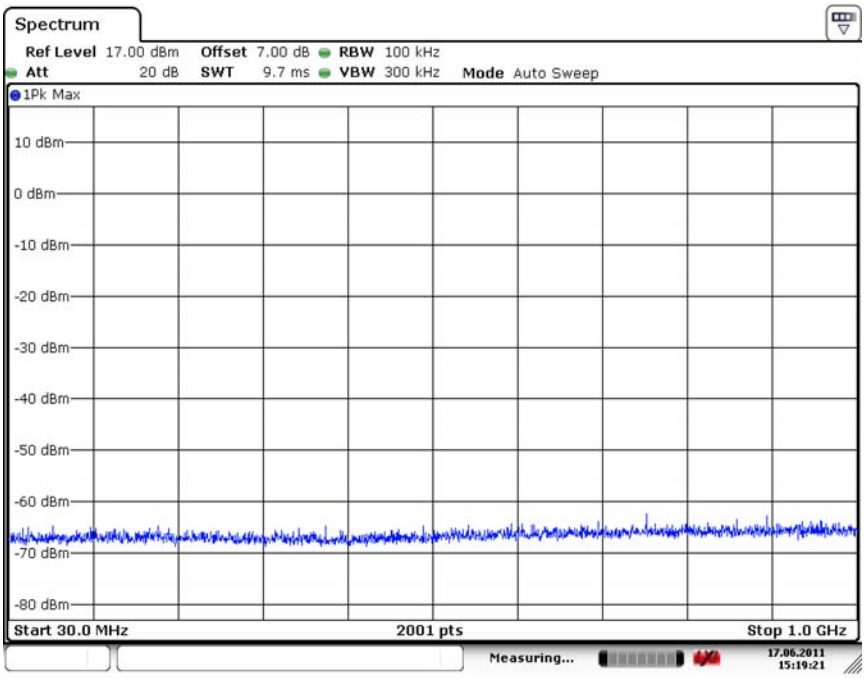

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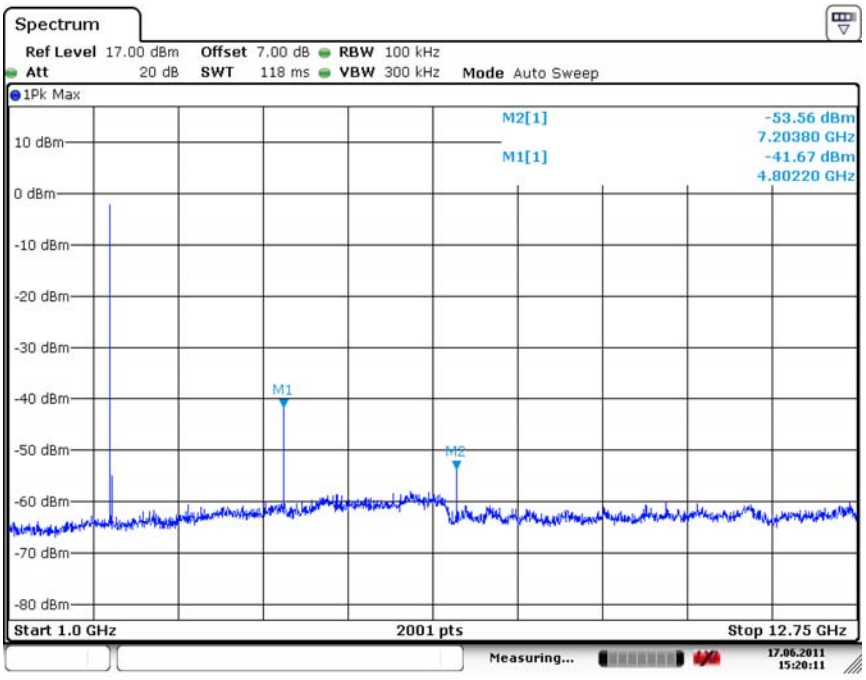

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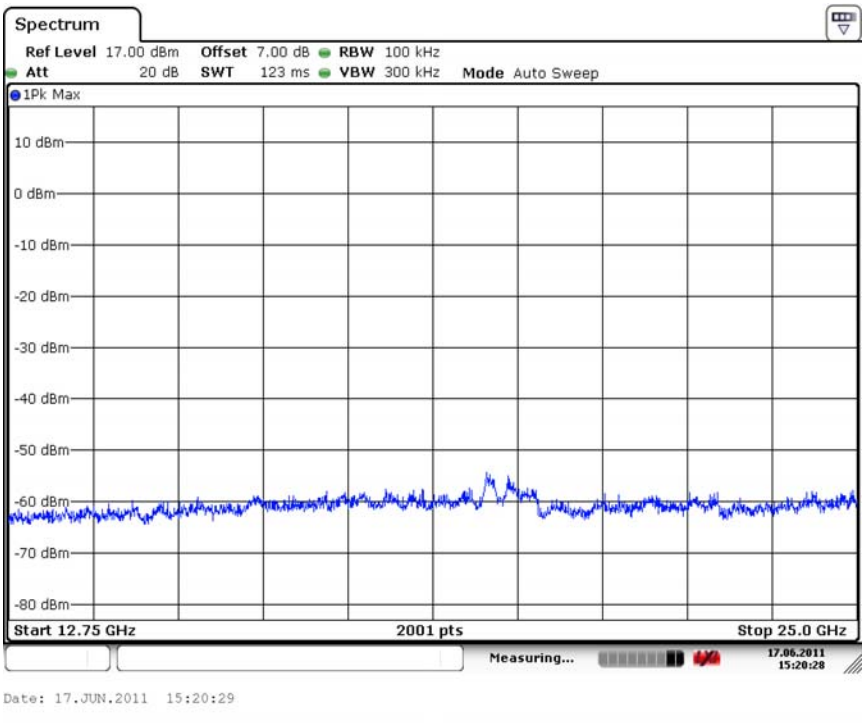
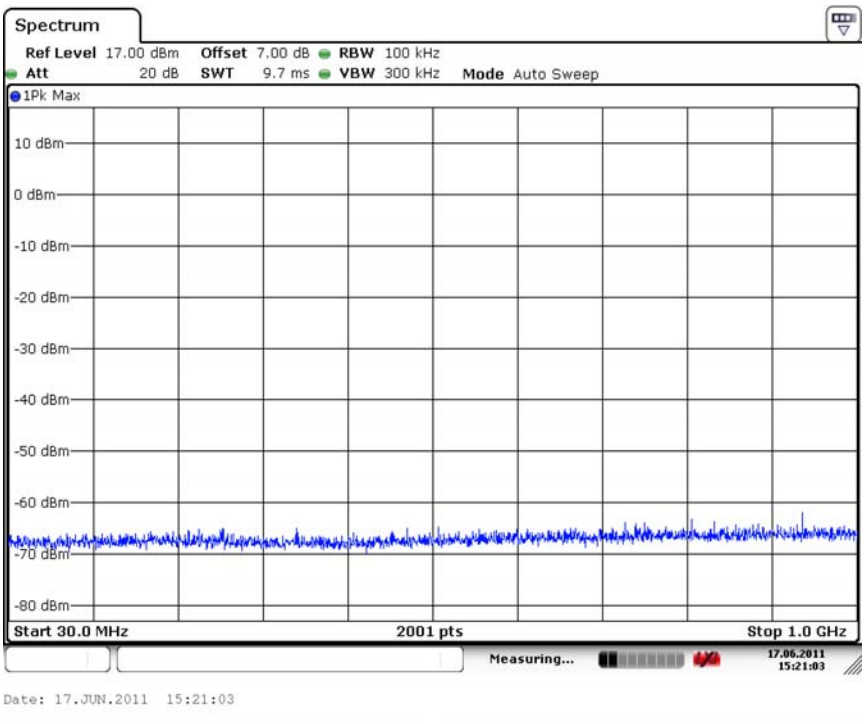


Carrier frequency (MHz): 2402
Channel No.:0
Modulation type: GFSK



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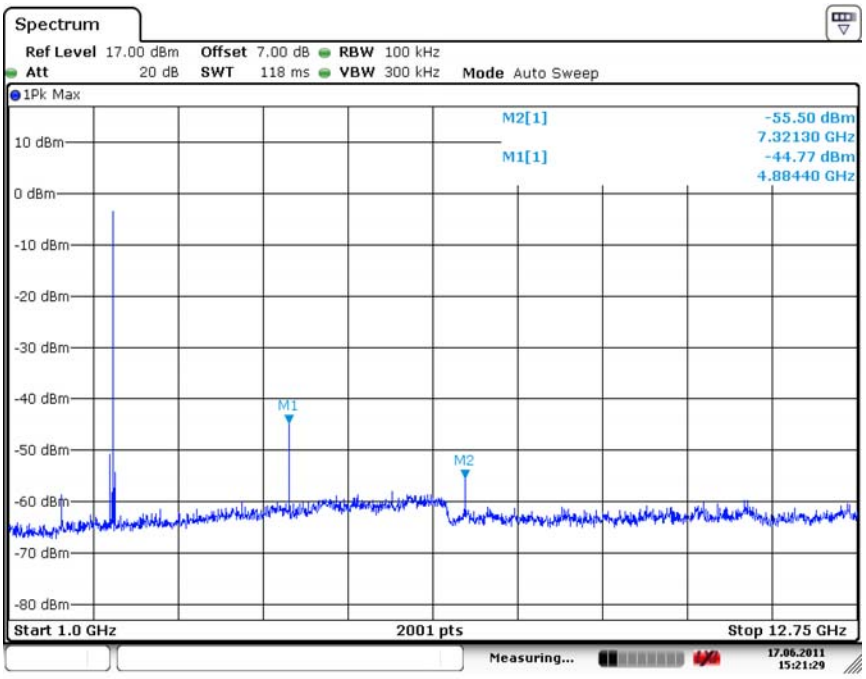

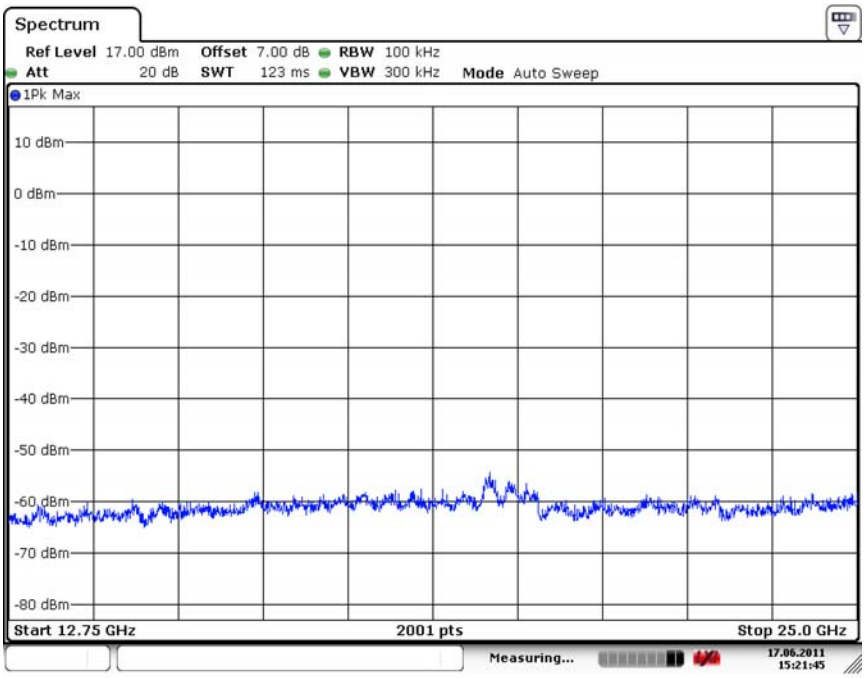

Carrier frequency (MHz): 2441
Channel No.:39
Modulation type: GFSK

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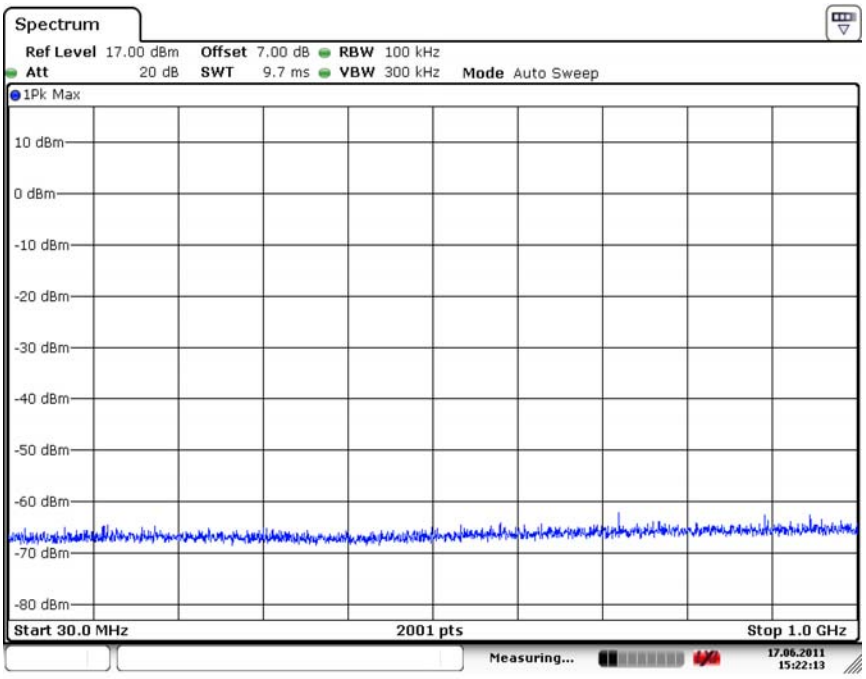

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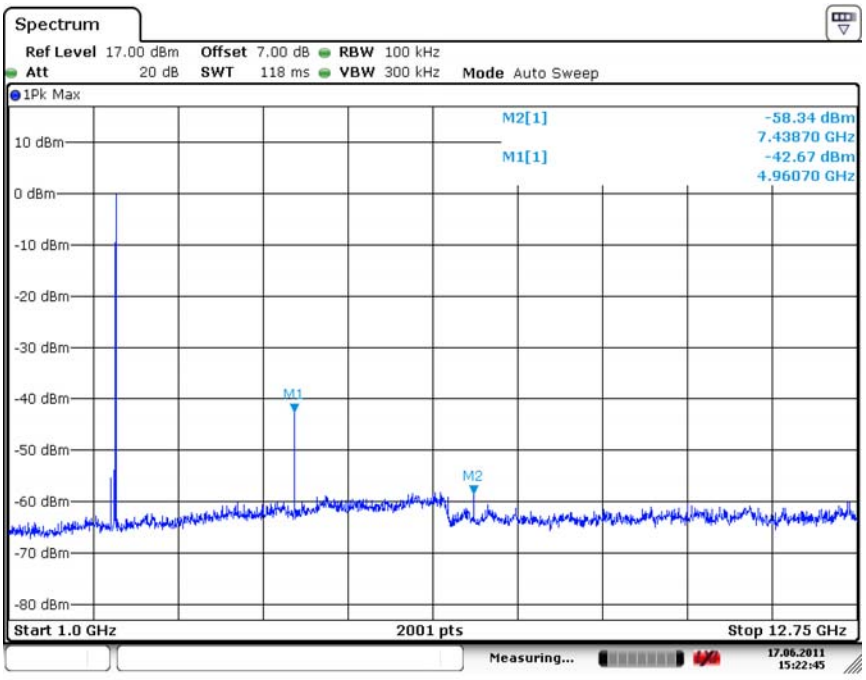

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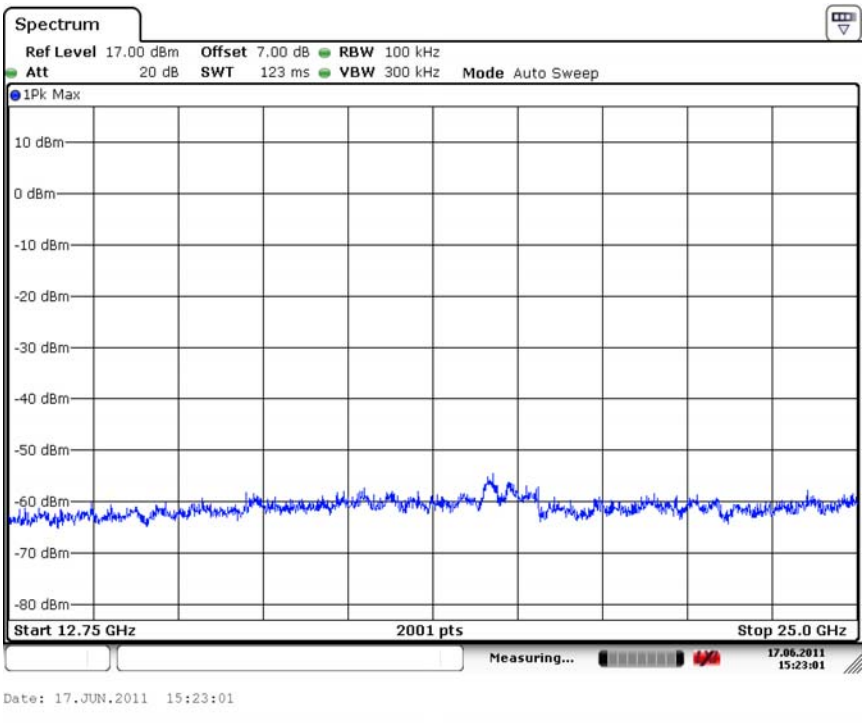

Carrier frequency (MHz): 2480
Channel No.:78
Modulation type: GFSK

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

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

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

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

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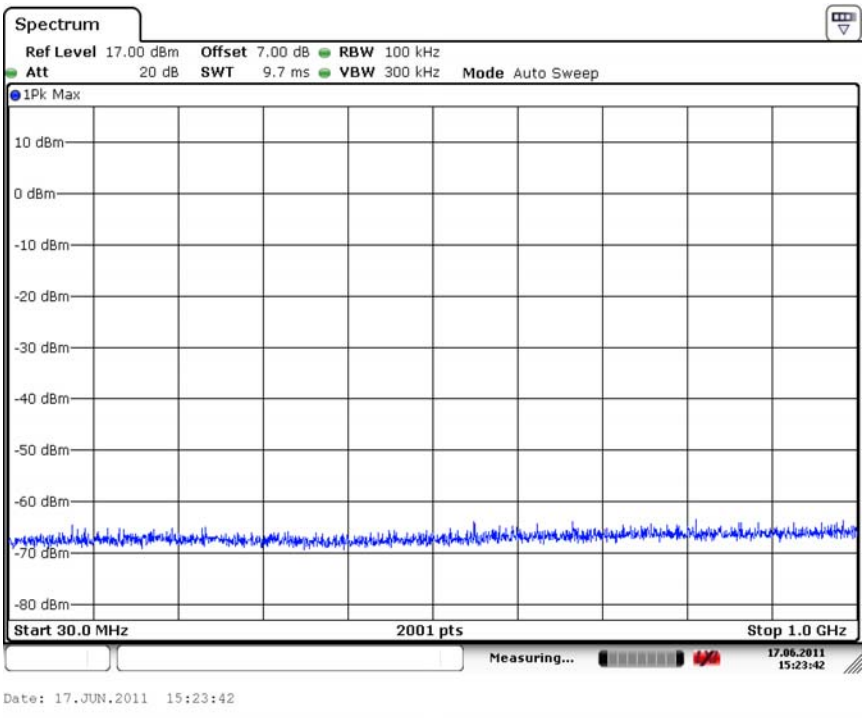
Carrier frequency (MHz): 2480
Channel No.:78
Modulation type: π/4DQPSK

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

Note: The Reference value see 2.2.5 Band edge compliance



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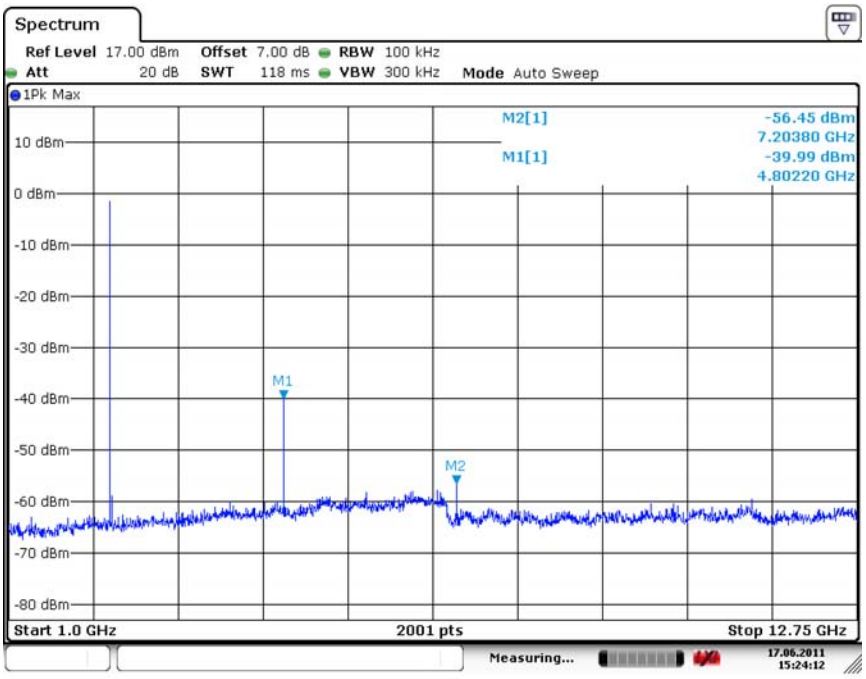

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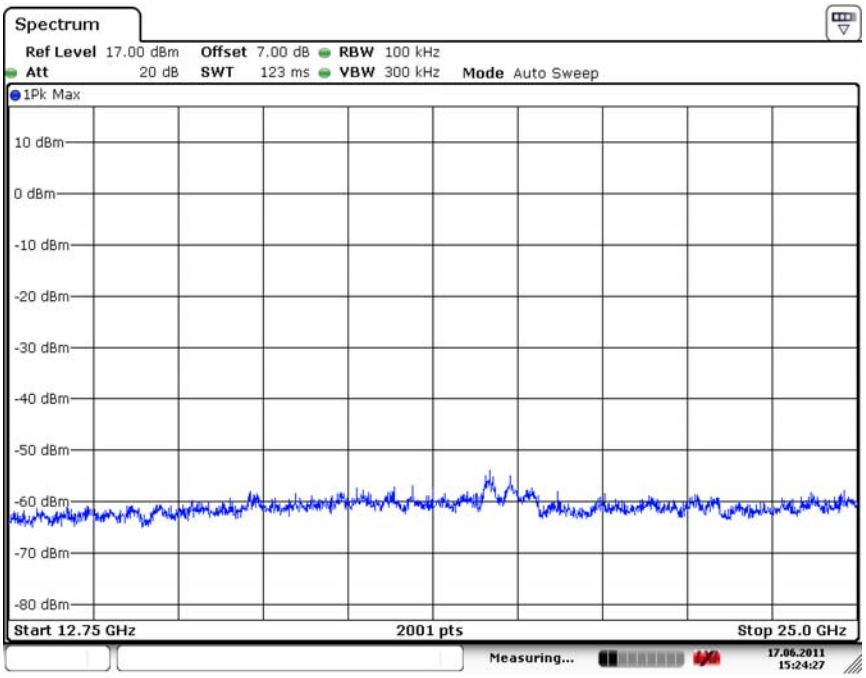

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Carrier frequency (MHz): 2402
Channel No.:0
Modulation type: π/4DQPSK

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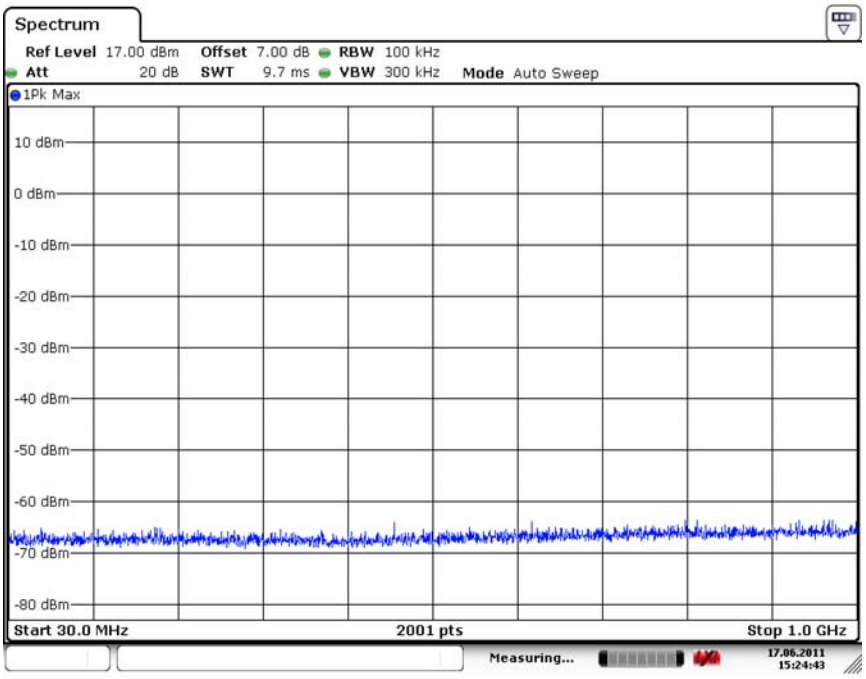
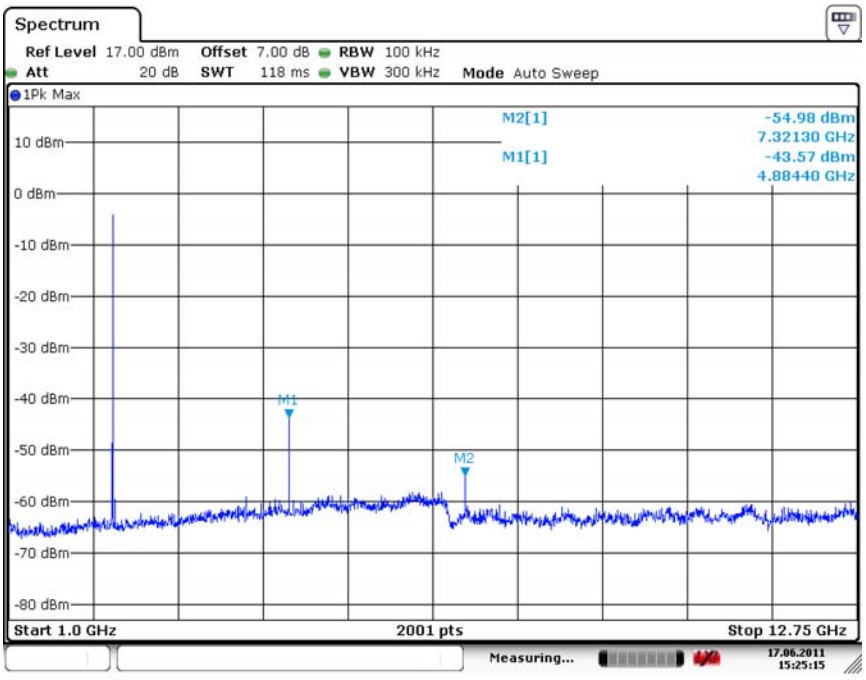


Date: 17.JUN.2011 15:24:44



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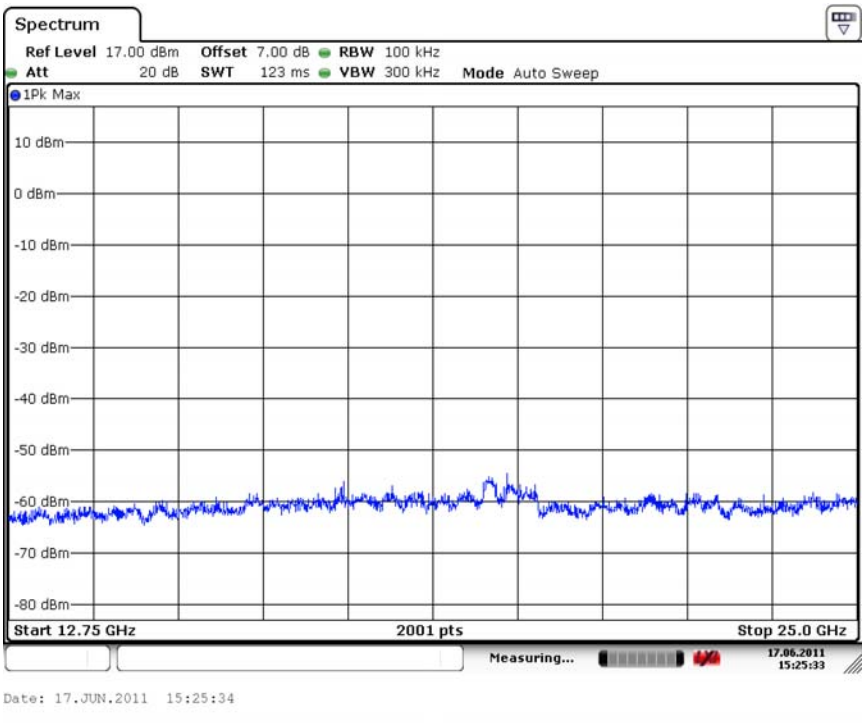
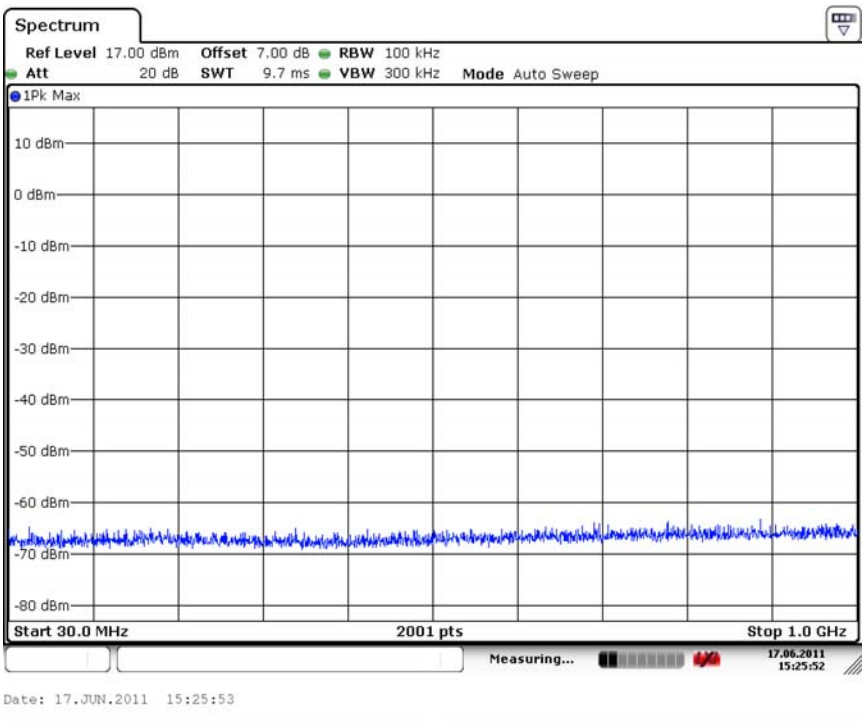


Carrier frequency (MHz): 2441
Channel No.:39
Modulation type: π/4DQPSK



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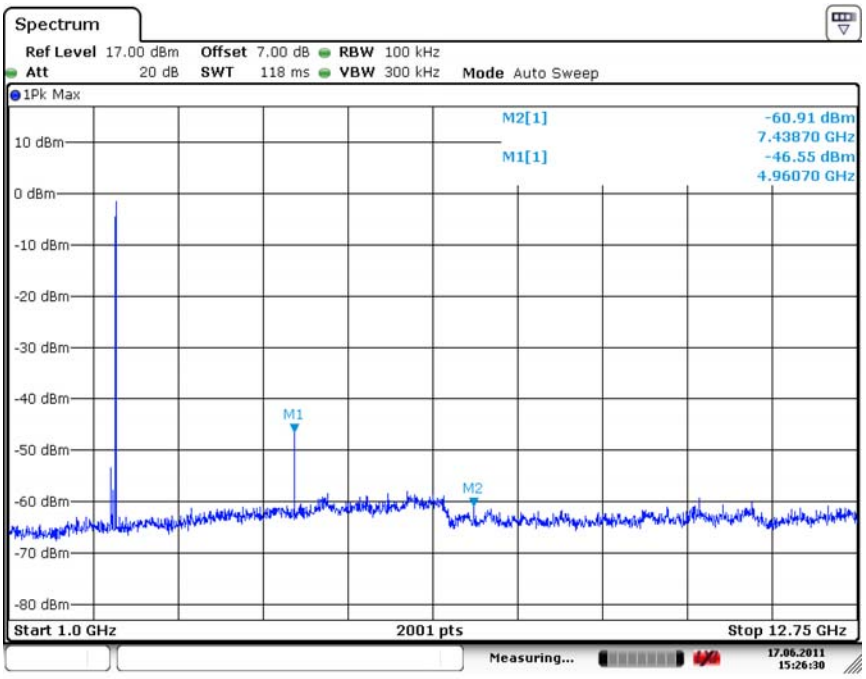

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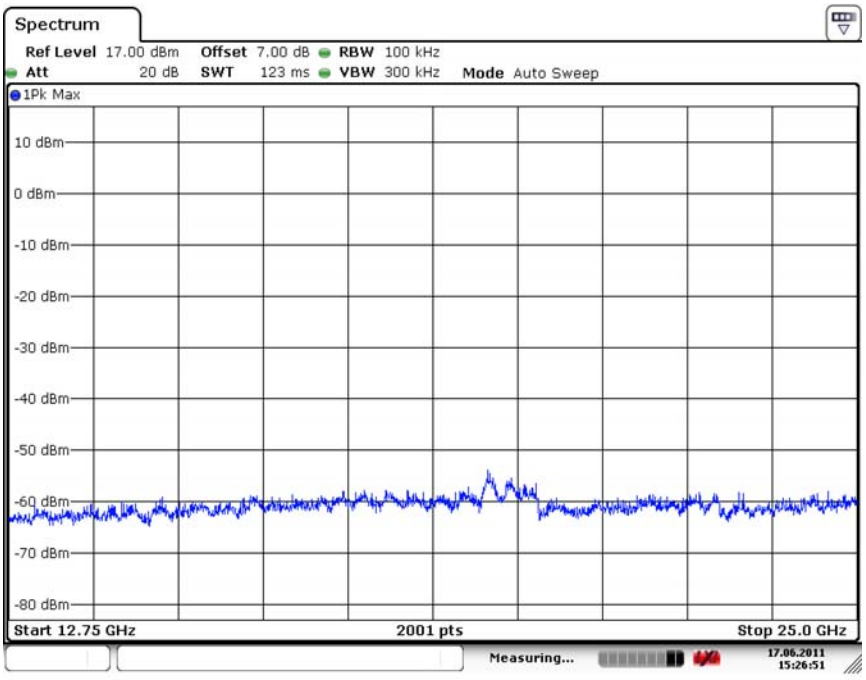

Date: 17.JUN.2011 15:26:51

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

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

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

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

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

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

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

Note: The Reference value see 2.2.5 Band edge compliance

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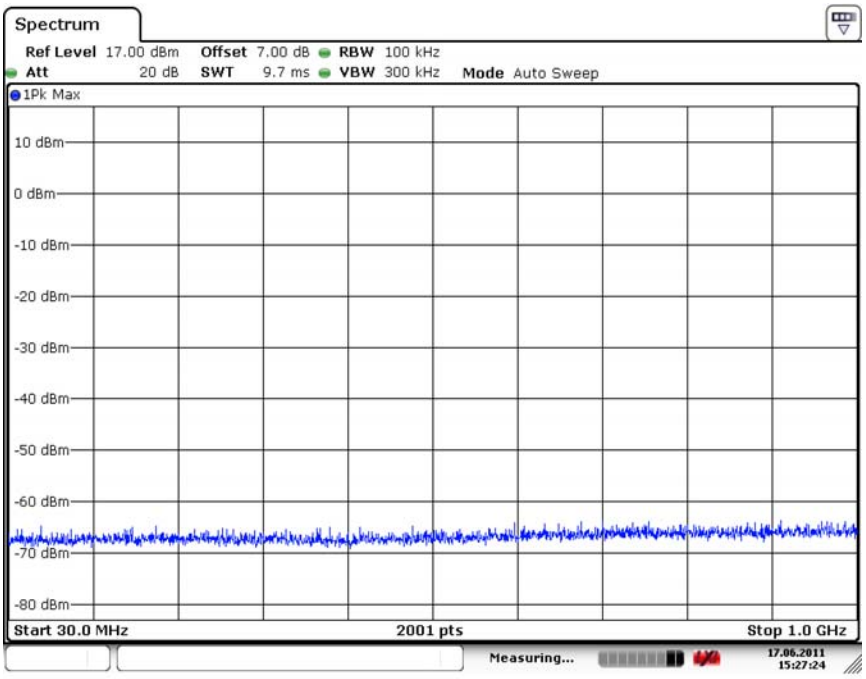

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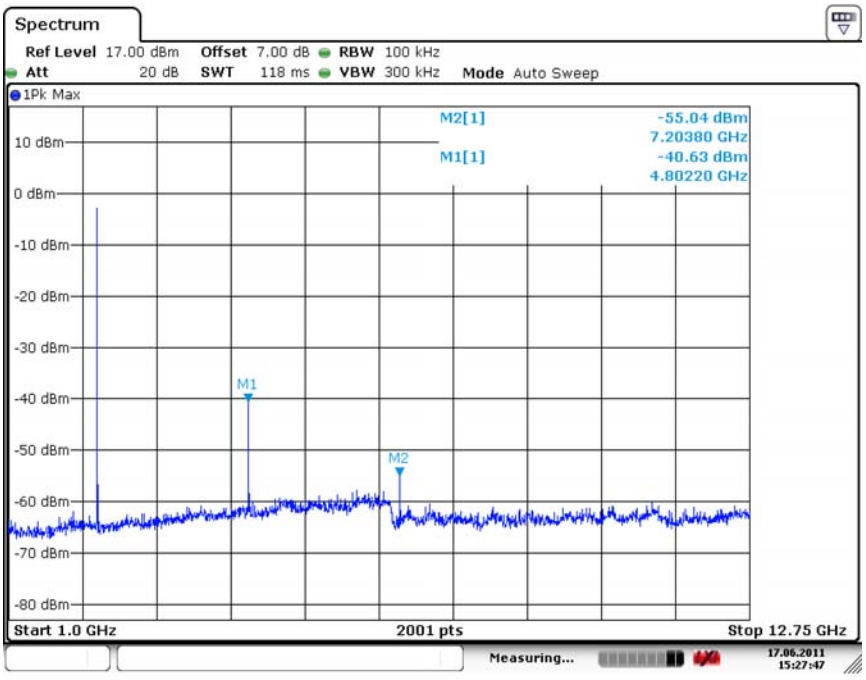

Date: 17.JUN.2011 15:27:47

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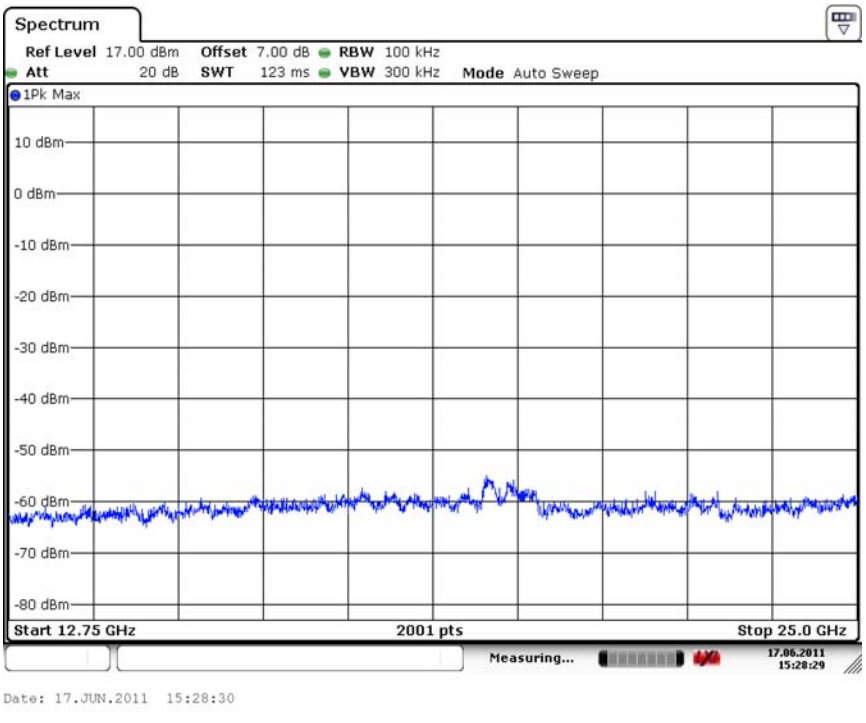
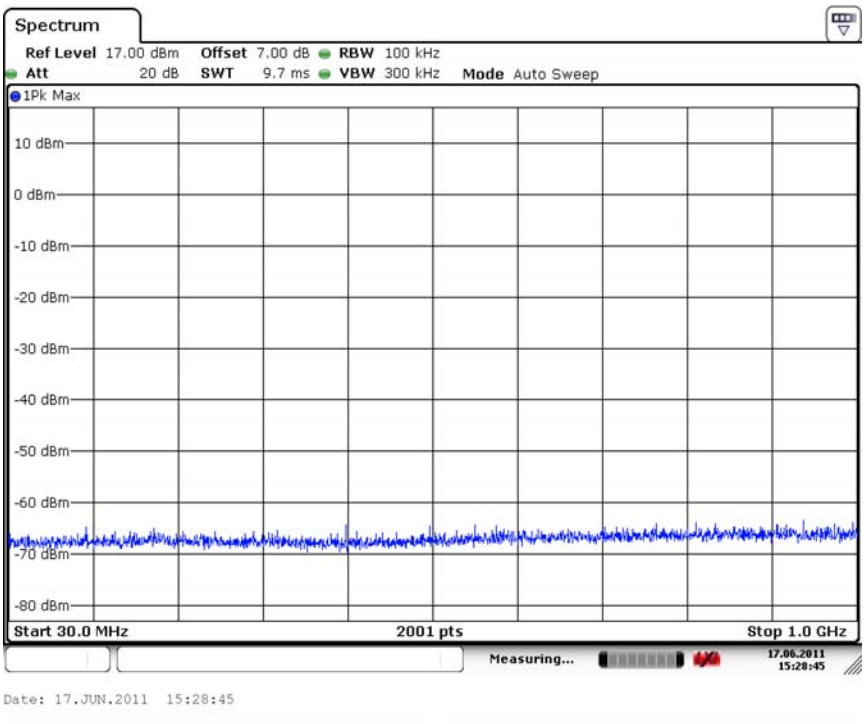


Carrier frequency (MHz): 2402
Channel No.:0
Modulation type: 8DPSK



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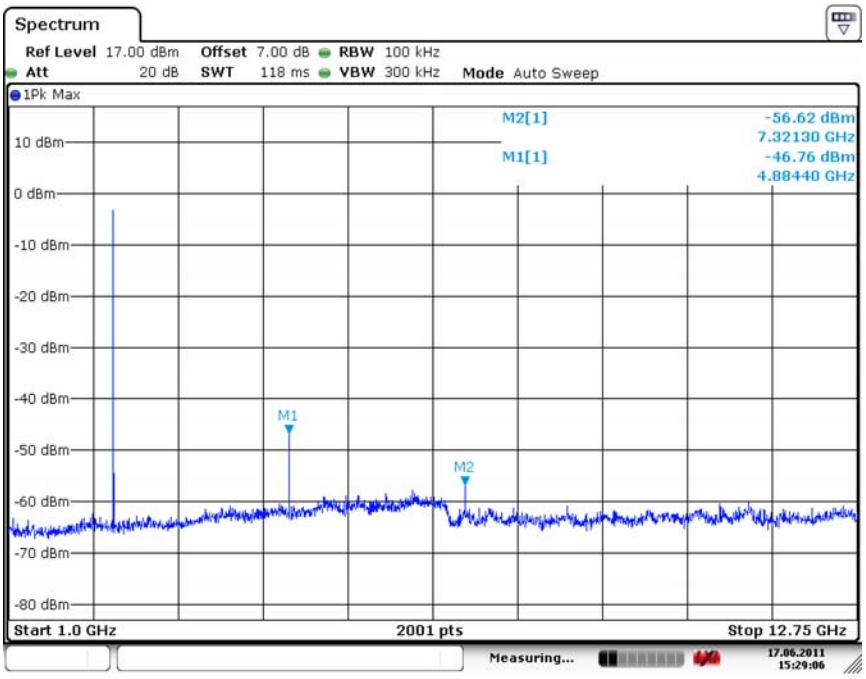

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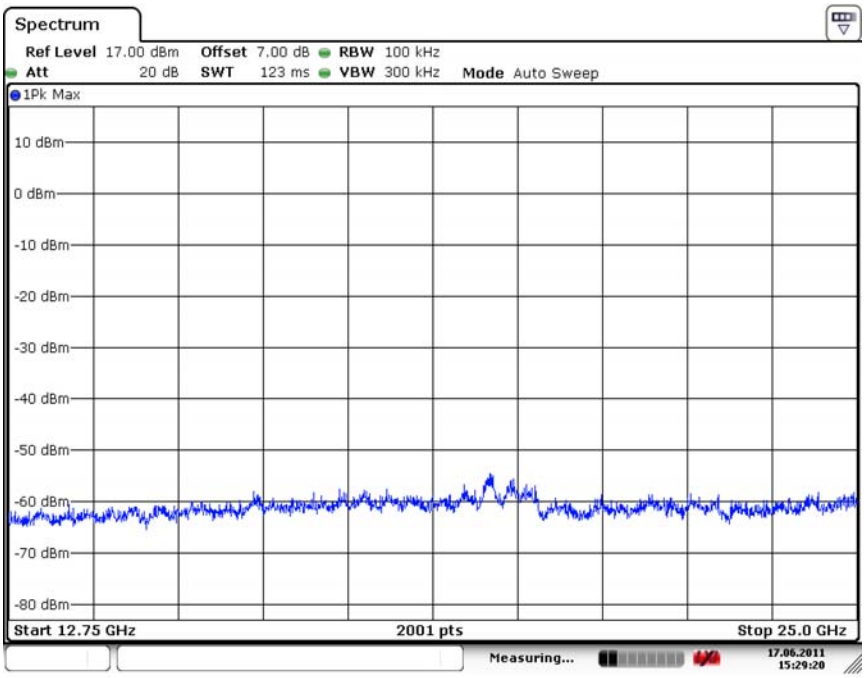

Date: 17.JUN.2011 15:29:21

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

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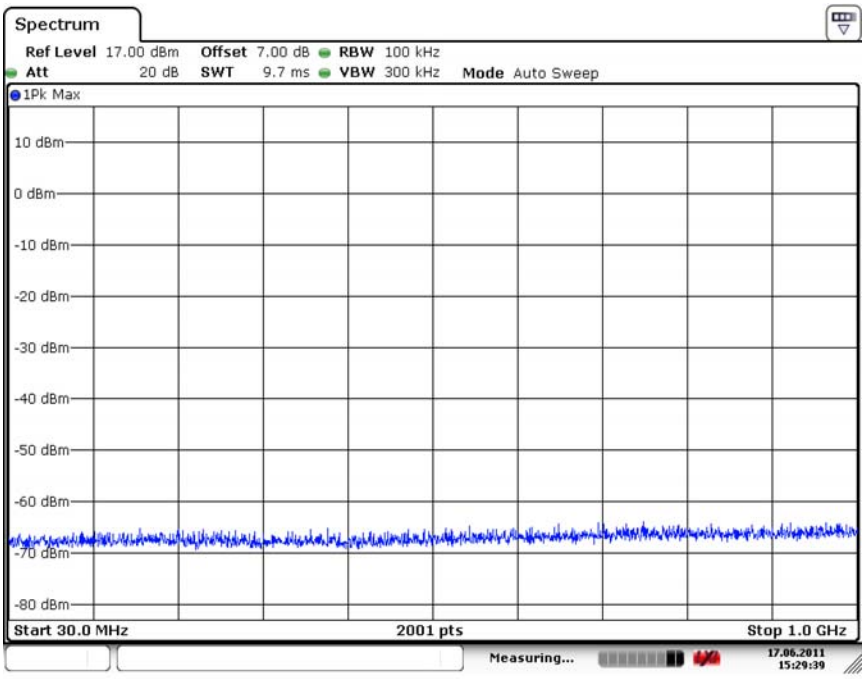
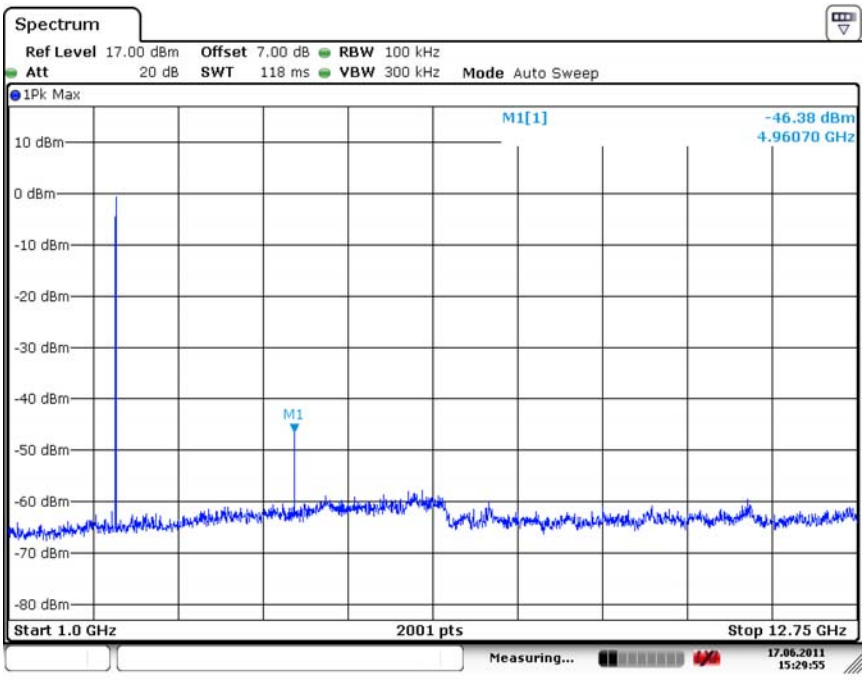


Date: 17.JUN.2011 15:29:39



Date: 17.JUN.2011 15:29:55

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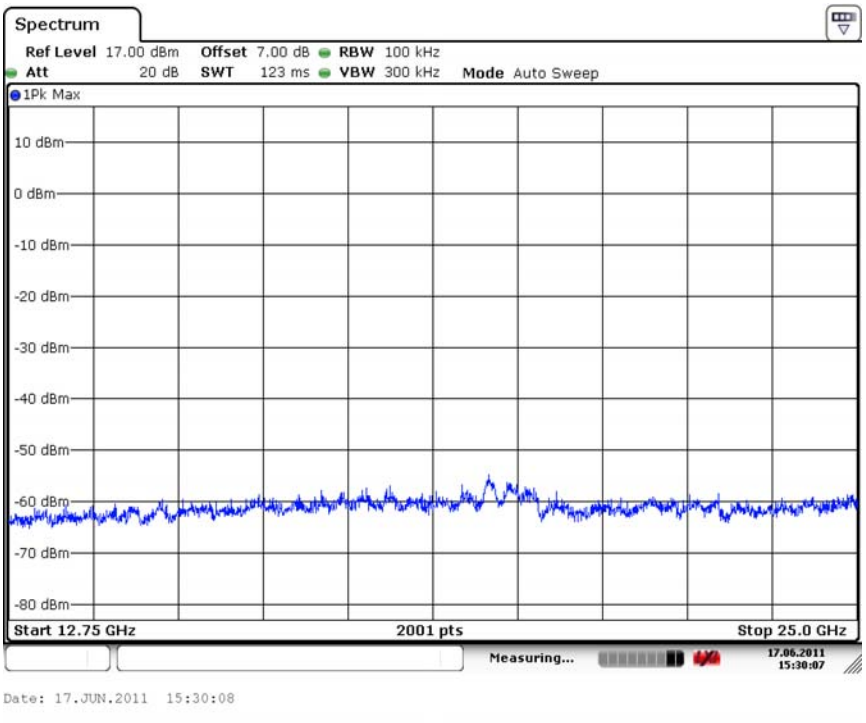

Carrier frequency (MHz): 2480
Channel No.:78
Modulation type: 8DPSK

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2.2.4 Spurious radiated emissions-§15.247(d),§15.35(b),§15.209

2.2.4.1 Ambient condition

Temperature	Relative humidity	Pressure
27.5°C	35.0%	99.8kPa

2.2.4.2 Test Description

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

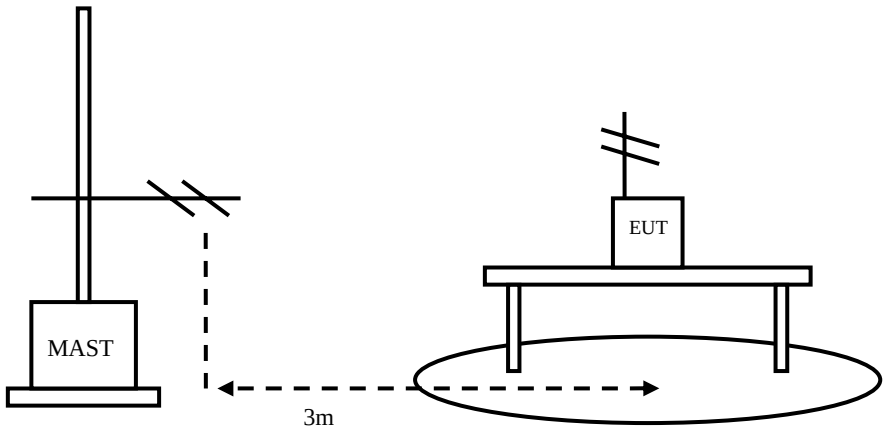
The Equipment Under Test (EUT) was set up on a non-conductive table in the semi-anechoic chamber. The test was performed at the distance of 3 m between the EUT and the receiving antenna.

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 to4 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 data of cable loss and antenna factor has been calibrated in full testing frequency range before the testing.



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2.2.4.3 Test limit

FCC Part 15, Subpart C, §15.247 (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 Part 15, Subpart C, §15.209, Radiated Emission Limits

Frequency Range (MHz)	Class B Limit (dBμV/m)
30 – 88	40.0
88 – 216	43.5
216 – 960	46.0
above 960	54.0

§15.35(b)

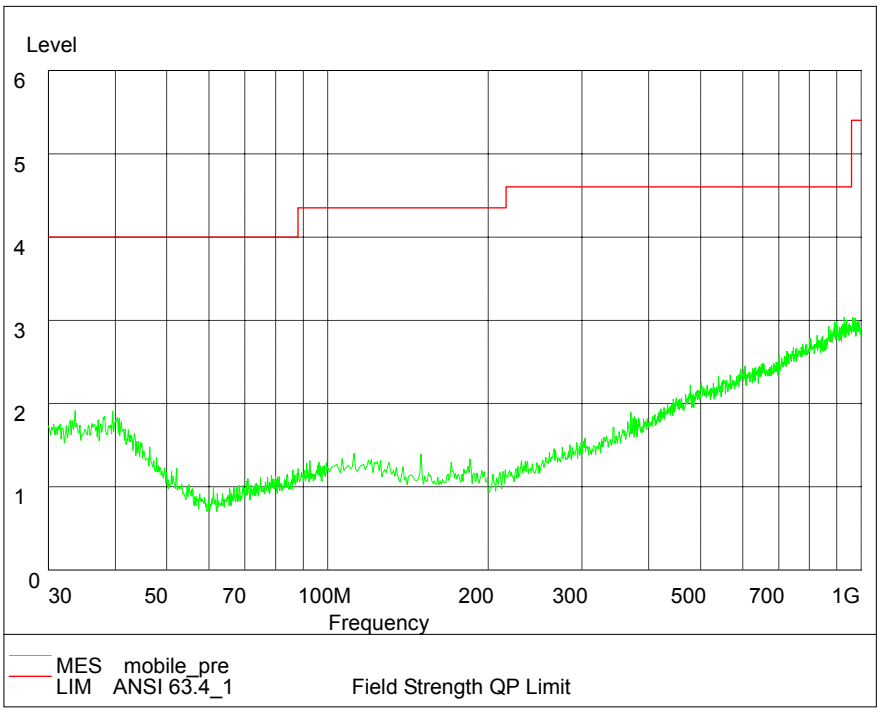
..., there is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit....

Used conversion factor: Limit (dBμV/m) = 20 log (Limit (μV/m)/1μV/m)

2.2.4.4 Test result

Carrier frequency (MHz): 2441

Channel No.:39



Frequency Range :30MHz -1000 MHz

Detector: PK mode

Modulation type: GFSK

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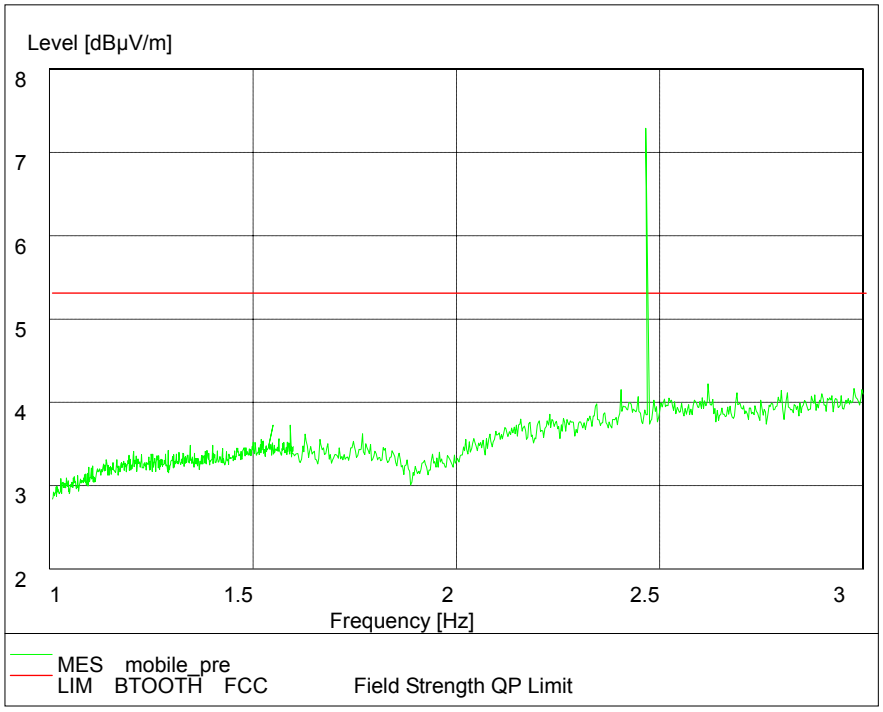
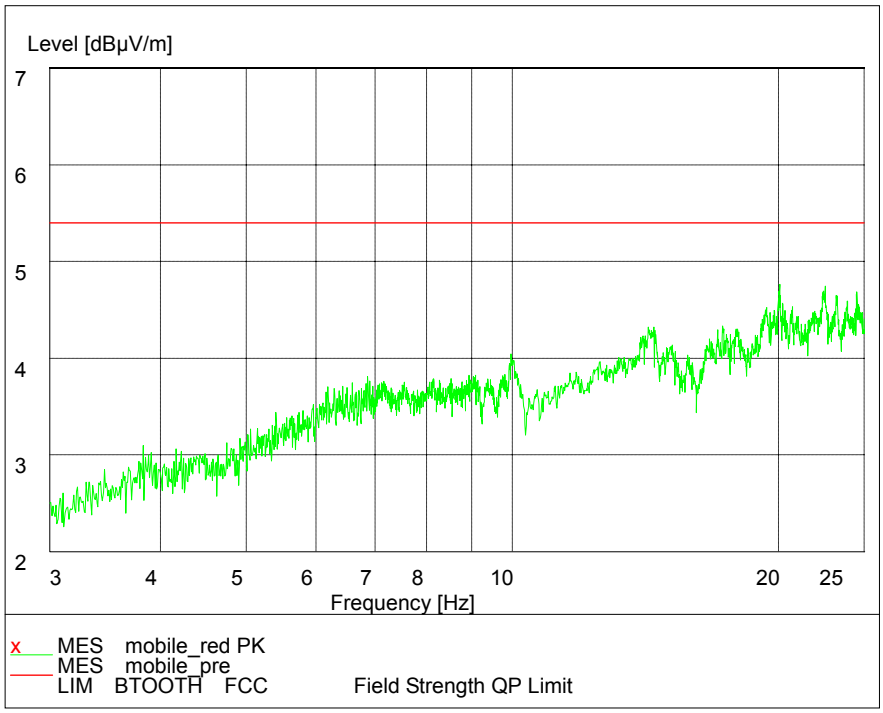


Frequency Range : 1GHz -3GHz
Detector: PK mode
Modulation type: GFSK



Frequency Range :3GHz-25GHz
Detector: PK mode
Modulation type: GFSK

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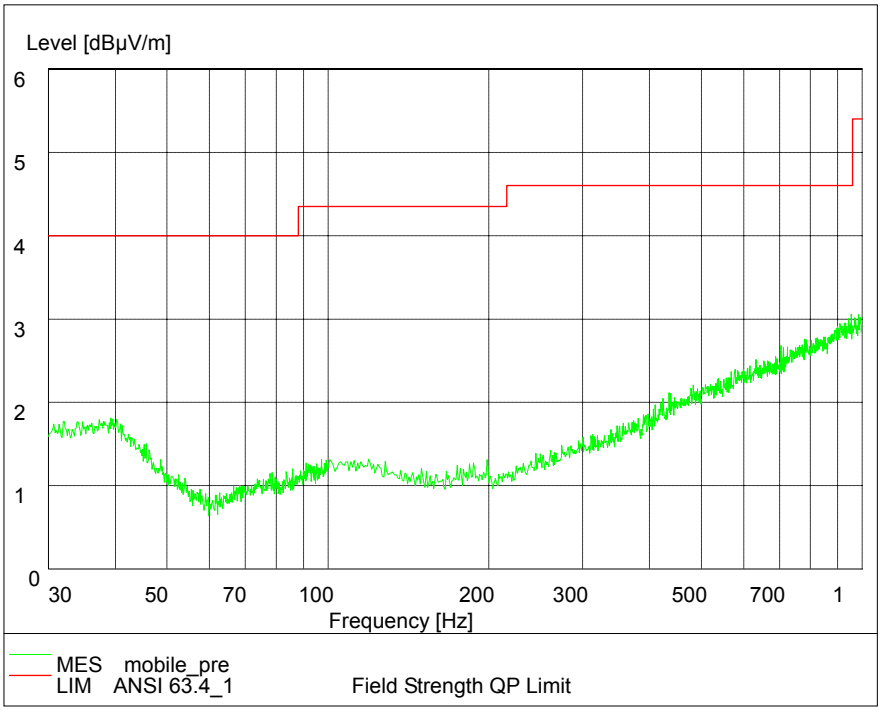
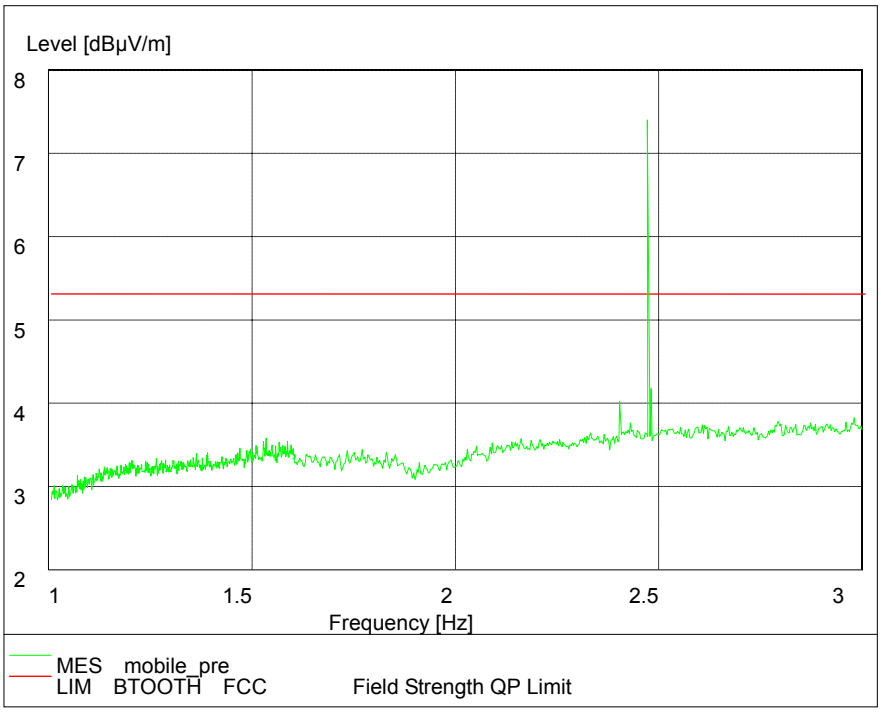


Frequency Range :30MHz -1000 MHz
Detector: PK mode
Modulation type: π/4DQPSK



Frequency Range : 1GHz -3GHz
Detector: PK mode
Modulation type: π/4DQPSK

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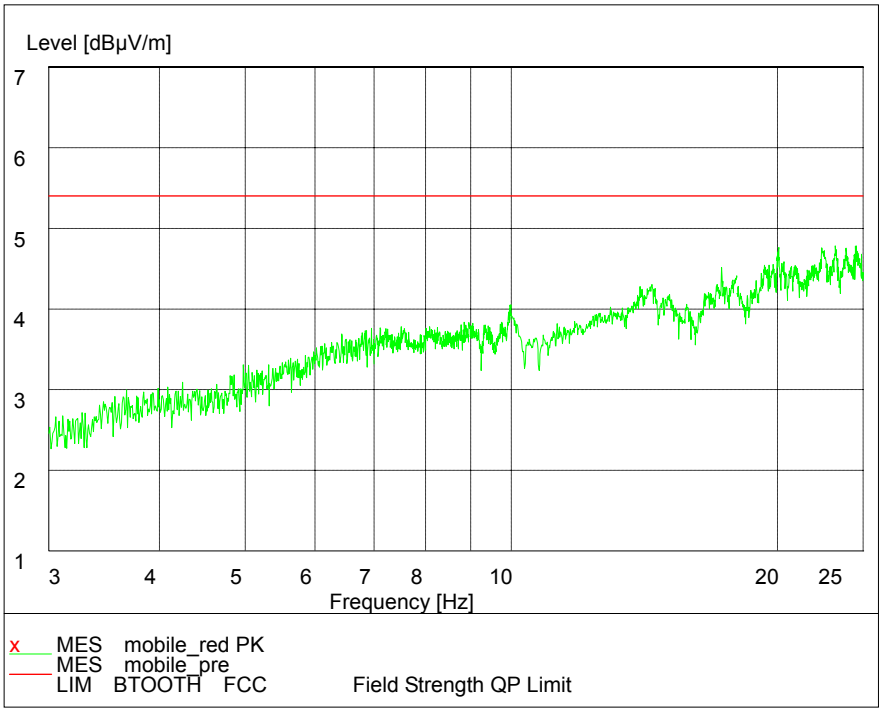
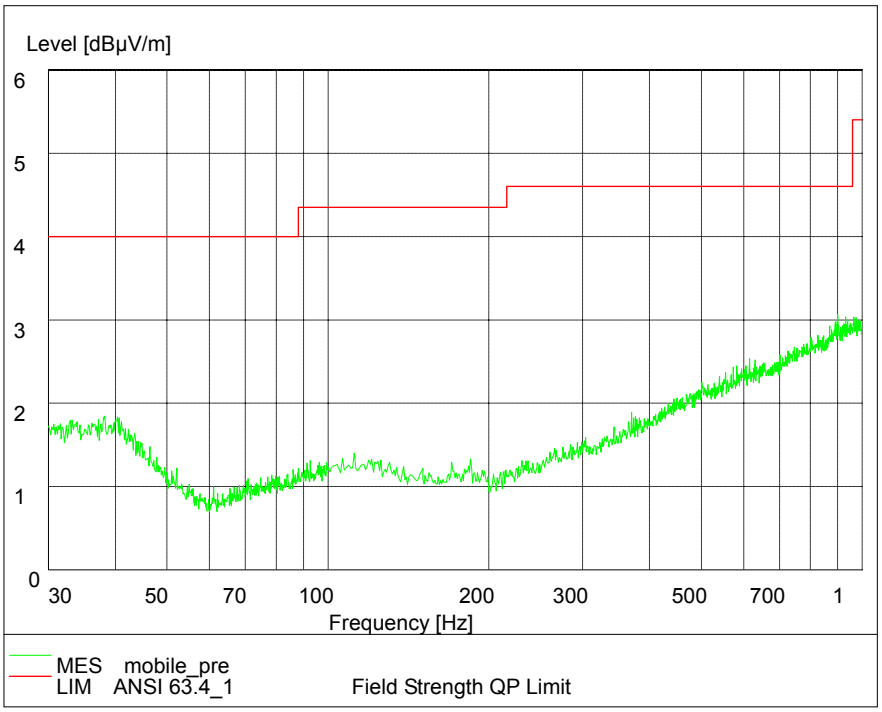


Frequency Range : 3GHz - 25GHz
Detector: PK mode
Modulation type: π/4DQPSK



Frequency Range :30MHz -1000 MHz
Detector: PK mode

Modulation type: 8DPSK

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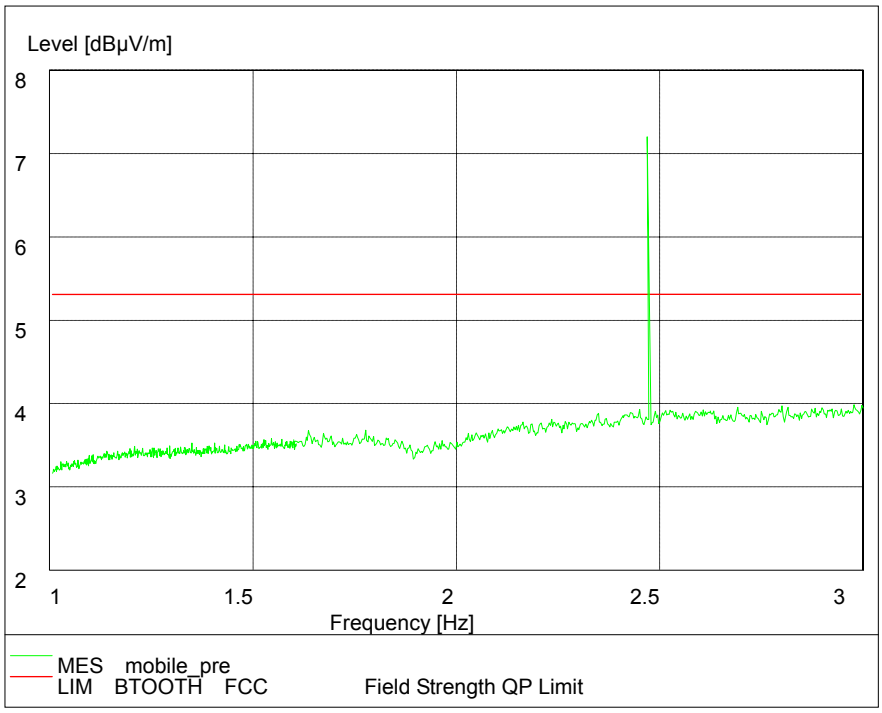
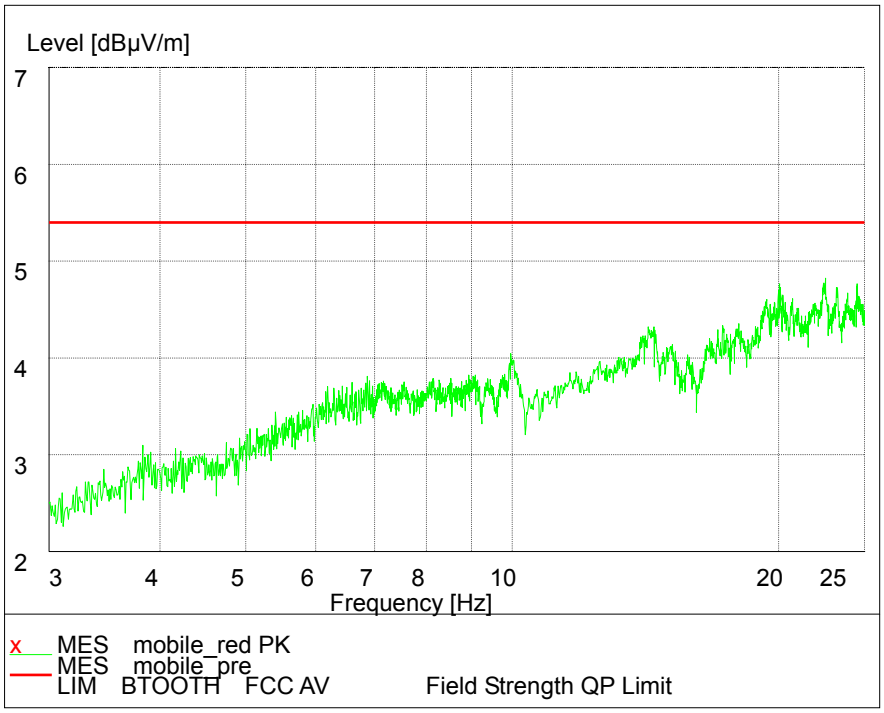


Frequency Range : 1GHz -3GHz
Detector: PK mode
Modulation type: 8DPSK



Frequency Range : 3GHz -25GHz
Detector: PK mode
Modulation type: 8DPSK

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2.2.5 Band edge compliance-§15.247(d)

2.2.5.1 Ambient condition

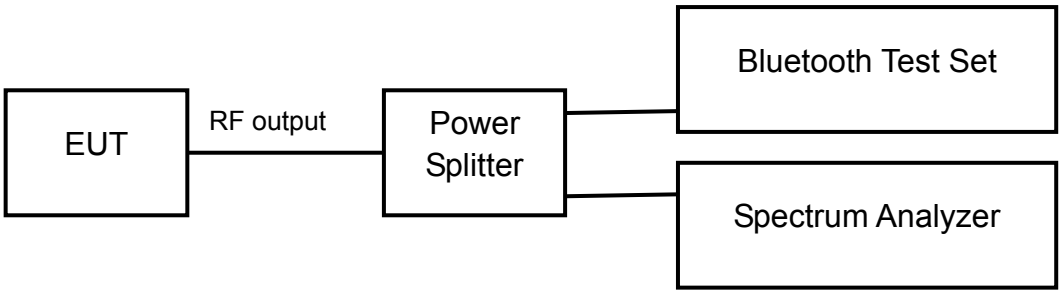
Temperature	Relative humidity	Pressure
22°C	40%	101.1kPa

2.2.5.2 Test Description

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 2400 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



2.2.5.3 Test limit

FCC Part 15.247 (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.

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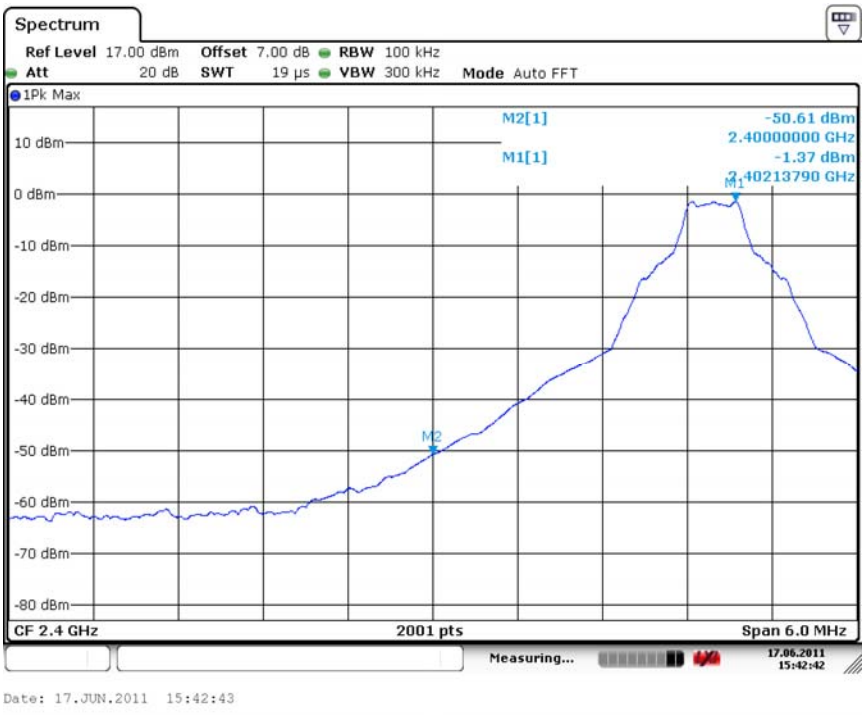
2.2.5.4 Test result

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

Frequency MHz	Measured value dBm	Reference value dBm	Limit dBm	Delta dB
2400	-50.61	-1.37	-21.37	29.24

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

Frequency MHz	Measured value dBm	Reference value dBm	Limit dBm	Delta dB
2483.5	-60.72	0.26	-19.74	40.98



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

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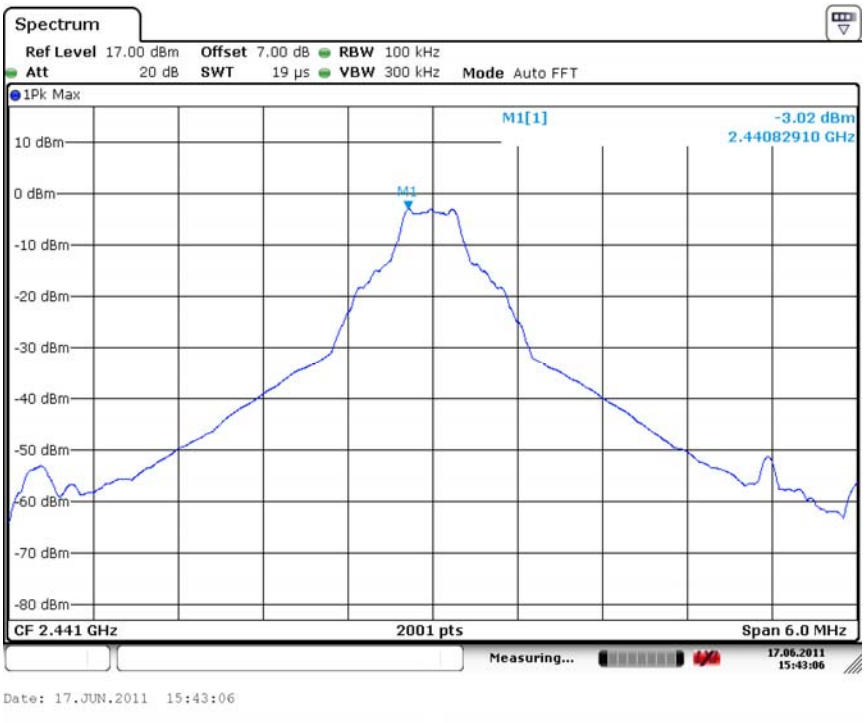
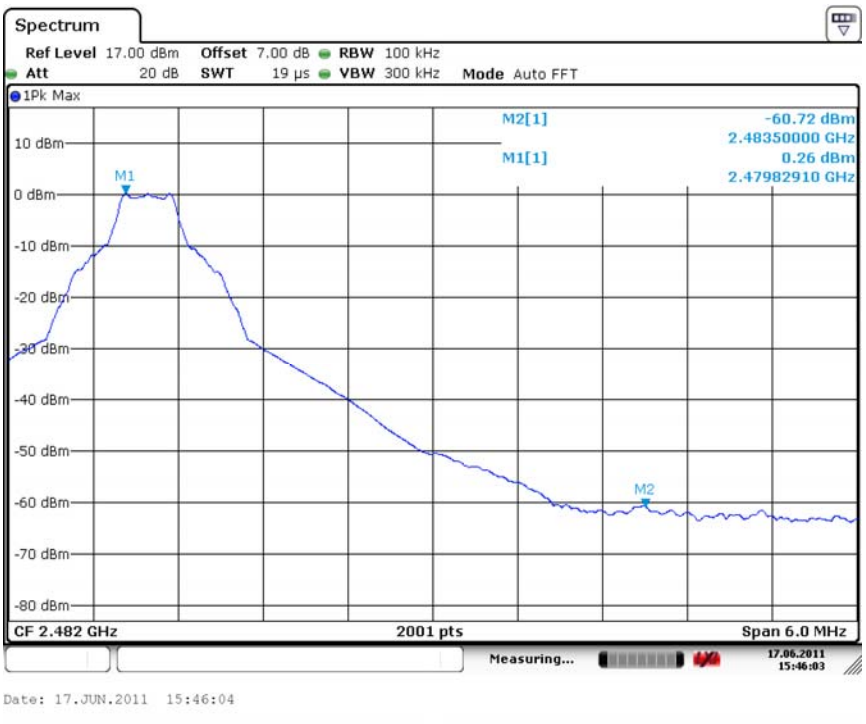


Carrier frequency (MHz): 2441
Channel No.:39
Modulation type: GFSK



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

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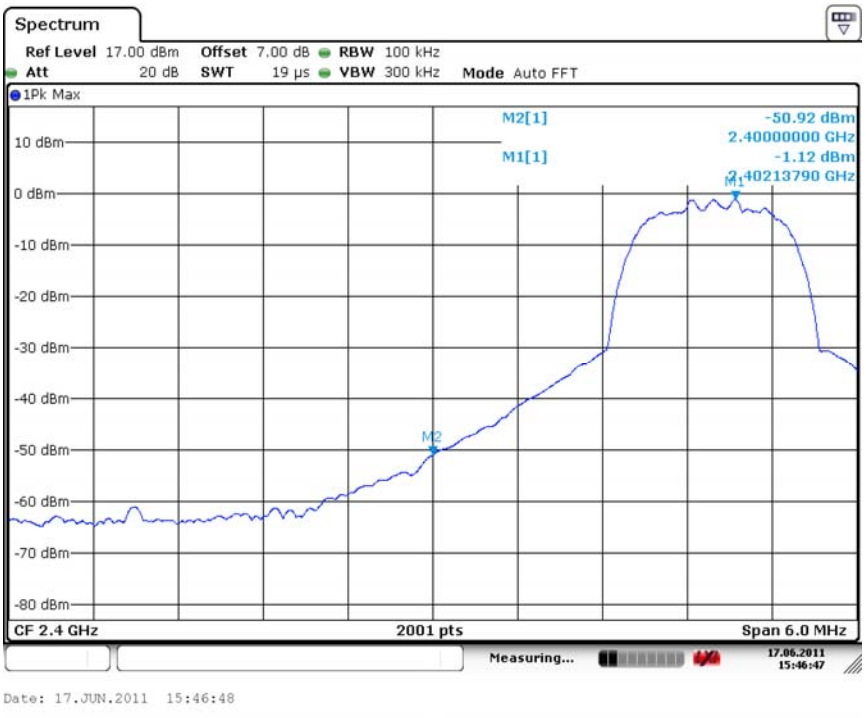
Carrier frequency (MHz): 2402
Channel No.:0
Modulation type: π/4DQPSK

Frequency MHz	Measured value dBm	Reference value dBm	Limit dBm	Delta to limit dB
2400	-50.92	-1.12	-21.12	29.80

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

Frequency MHz	Measured value dBm	Reference value dBm	Limit dBm	Delta to limit dB
2483.5	-50.85	-1.03	-21.03	29.82



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

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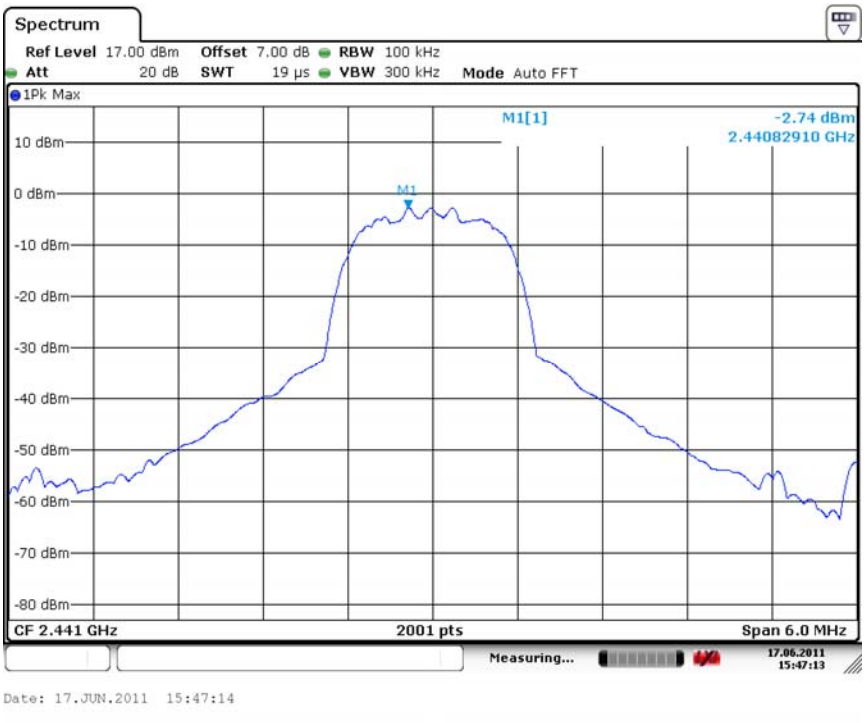
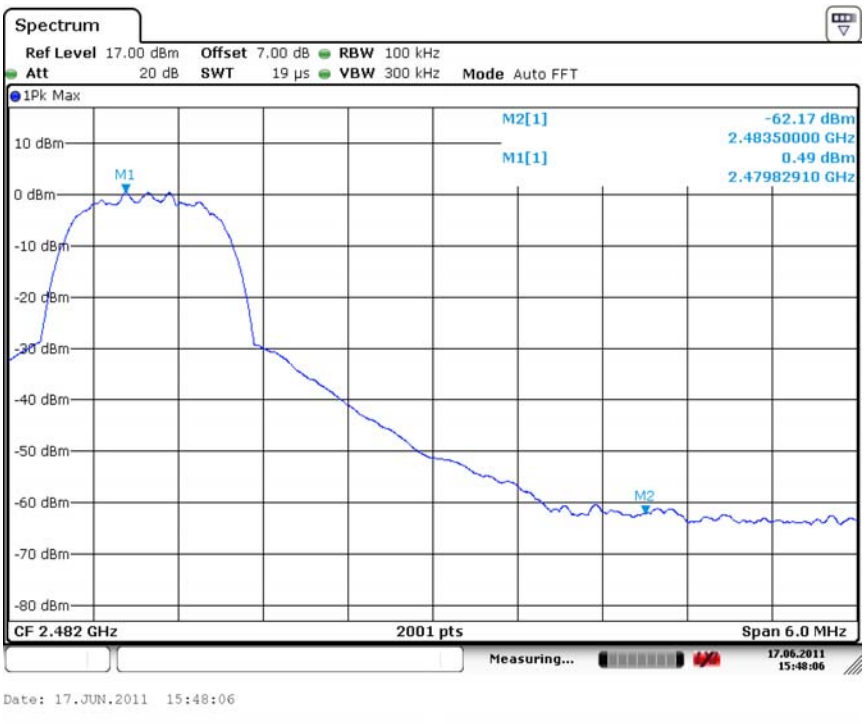


Carrier frequency (MHz): 2441
Channel No.:39
Modulation type: π/4DQPSK



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

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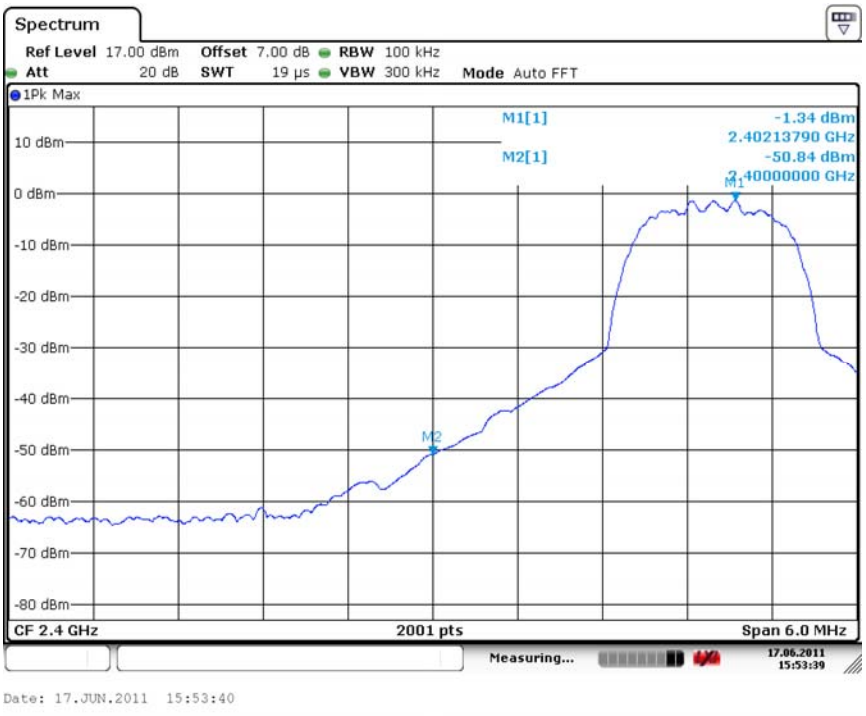
Carrier frequency (MHz): 2402
Channel No.:0
Modulation type: 8DPSK

Frequency MHz	Measured value dBm	Reference value dBm	Limit dBm	Delta to limit dB
2400	-50.74	-1.34	-21.34	29.40

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

Frequency MHz	Measured value dBm	Reference value dBm	Limit dBm	Delta to limit dB
2483.5	-61.54	0.22	-19.78	41.76



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

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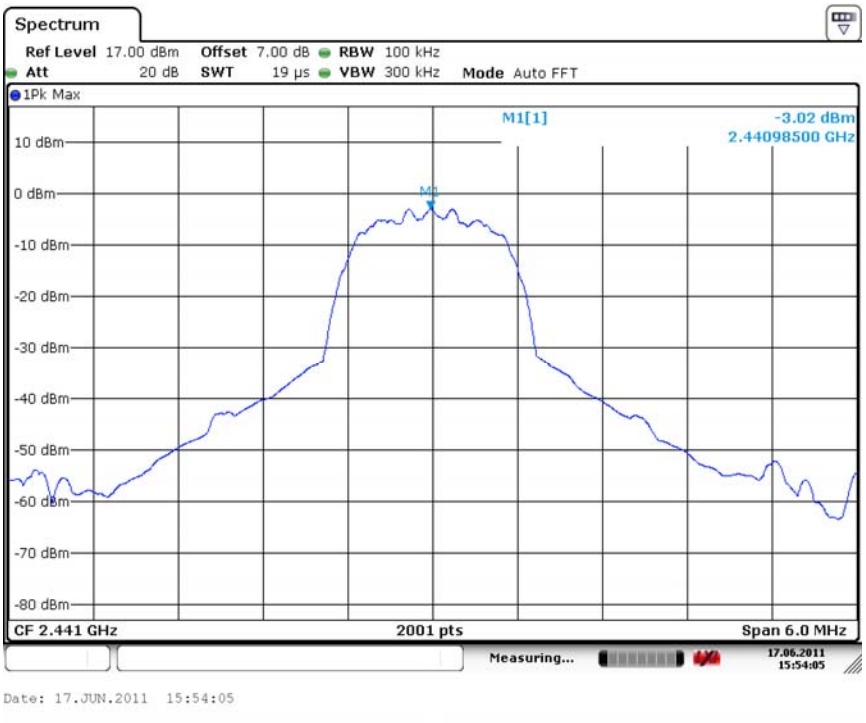
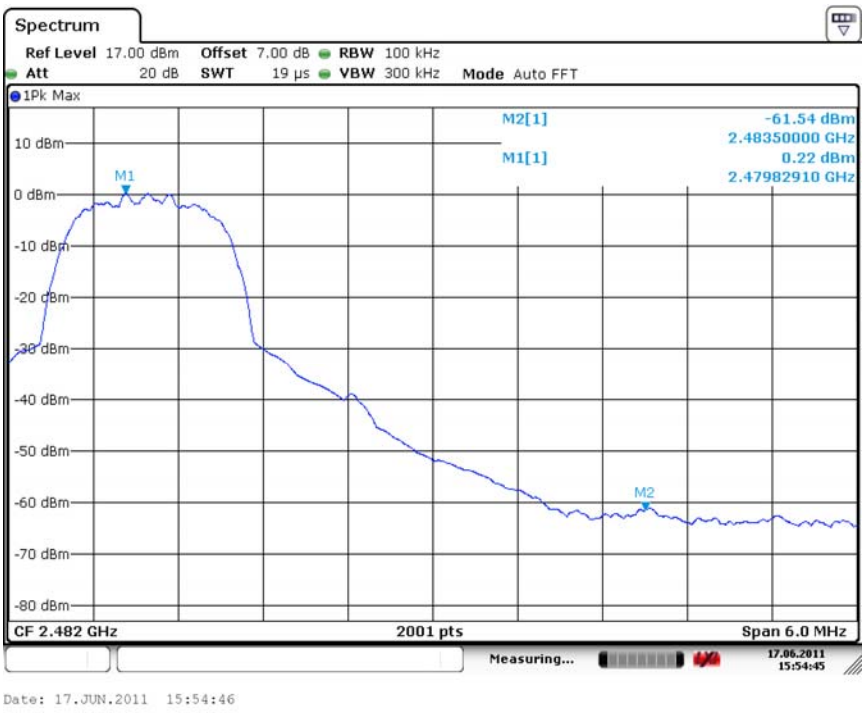


Carrier frequency (MHz): 2441
Channel No.:39
Modulation type: 8DPSK



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

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2.2.6 Dwell time-§15.247(a) (1)(iii)

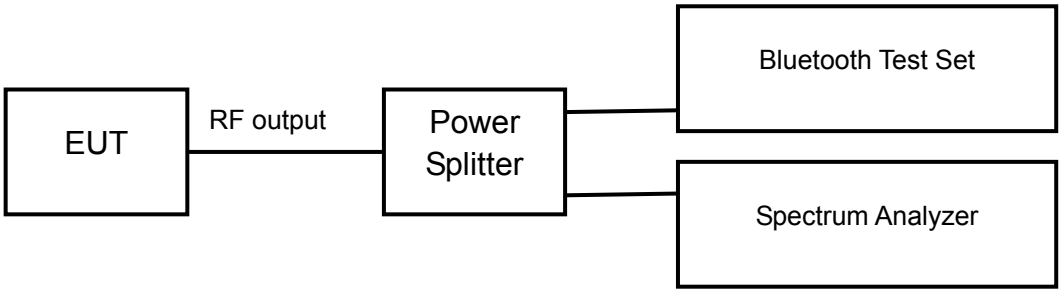
2.2.6.1 Ambient condition

Temperature	Relative humidity	Pressure
22°C	40%	101.1kPa

2.2.6.2 Test Description

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 * 1/s for DH1 packets =1600
- hop rate=1600/3 * 1/s for DH3 packets =533.33
- hop rate=1600/5 * 1/s for DH5 packets =320
- 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 Part 15, Subpart C, §15.247 (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.

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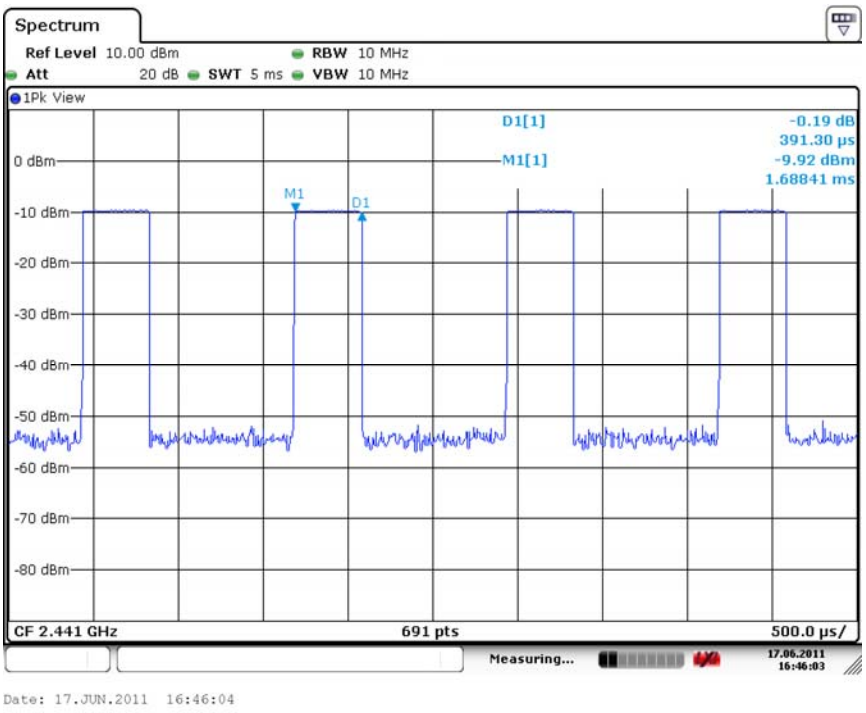
2.2.6.4 Test result

Modulation type: GFSK

Packet type	Time slot length ms	Dwell time	Dwell time ms
DH1	0.3913	time slot length * 1600* 31.6 /79	250.43
DH3	1.6377	time slot length * 31.6 *1600/3 /79	349.38
DH5	2.8986	time slot length * 31.6 *1600/5 /79	371.02



Carrier frequency (MHz): 2441
Packet type: DH1
Modulation type: GFSK

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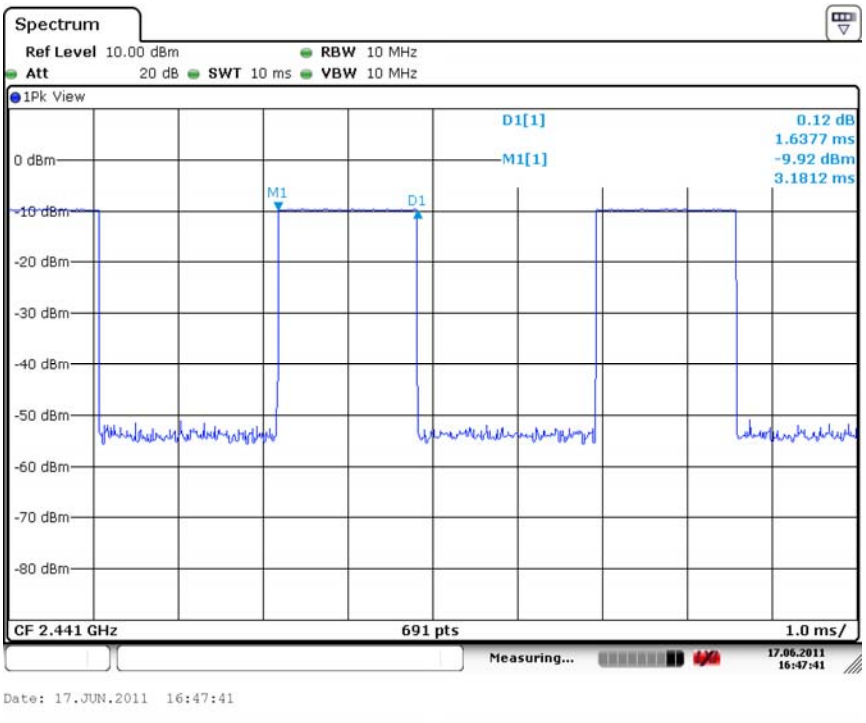
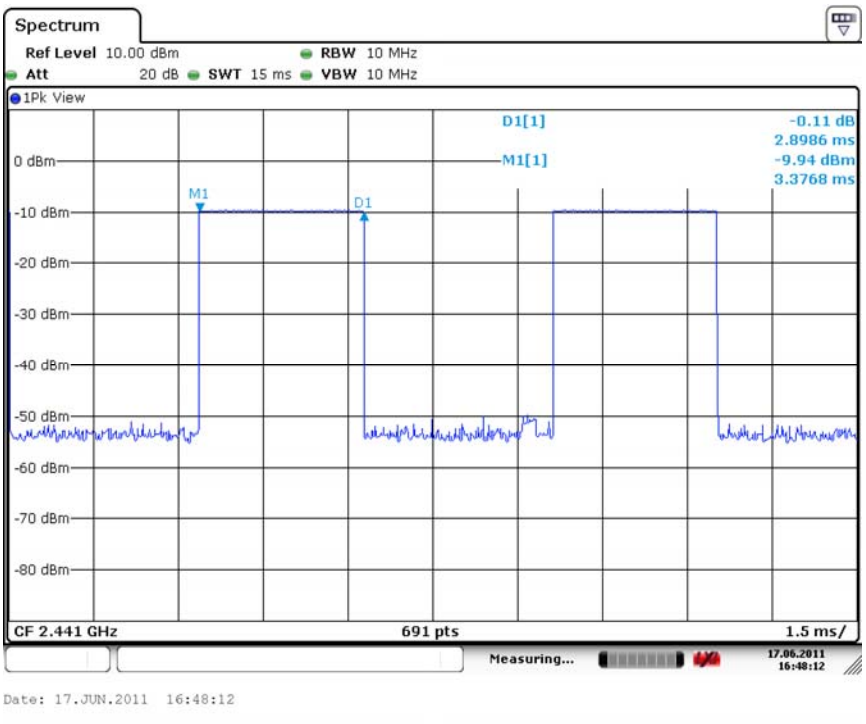


Carrier frequency (MHz): 2441
Packet type: DH3
Modulation type: GFSK



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

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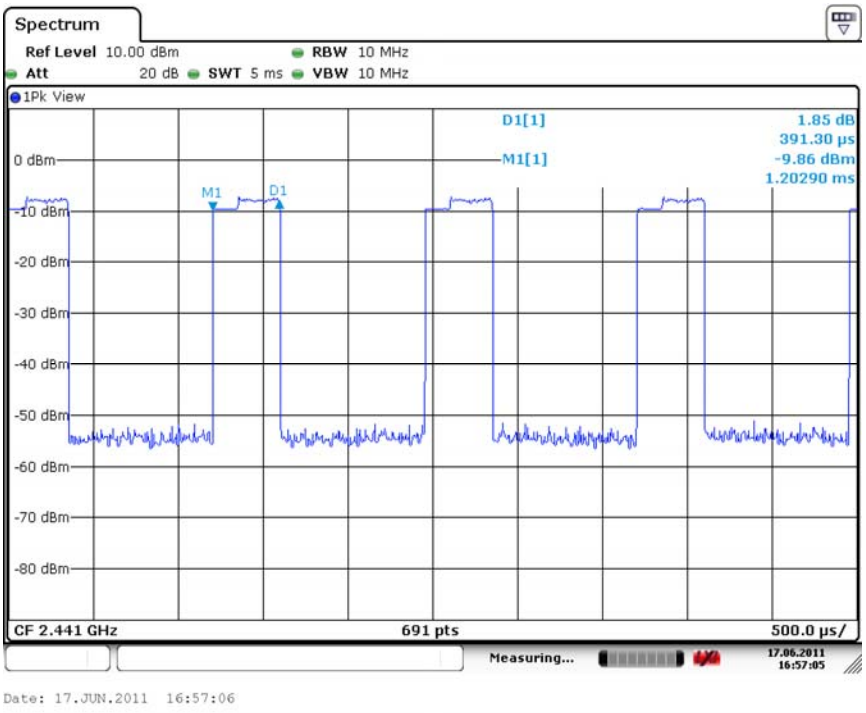
Modulation type: π/4DQPSK

Packet type	Time slot length ms	Dwell time	Dwell time ms
DH1	0.3913	time slot length * 1600* 31.6 /79	250.43
DH3	1.6377	time slot length * 31.6 *1600/3 /79	349.38
DH5	2.9203	time slot length * 31.6 *1600/5 /79	373.80



Carrier frequency (MHz): 2441
Packet type: DH1
Modulation type: π/4DQPSK

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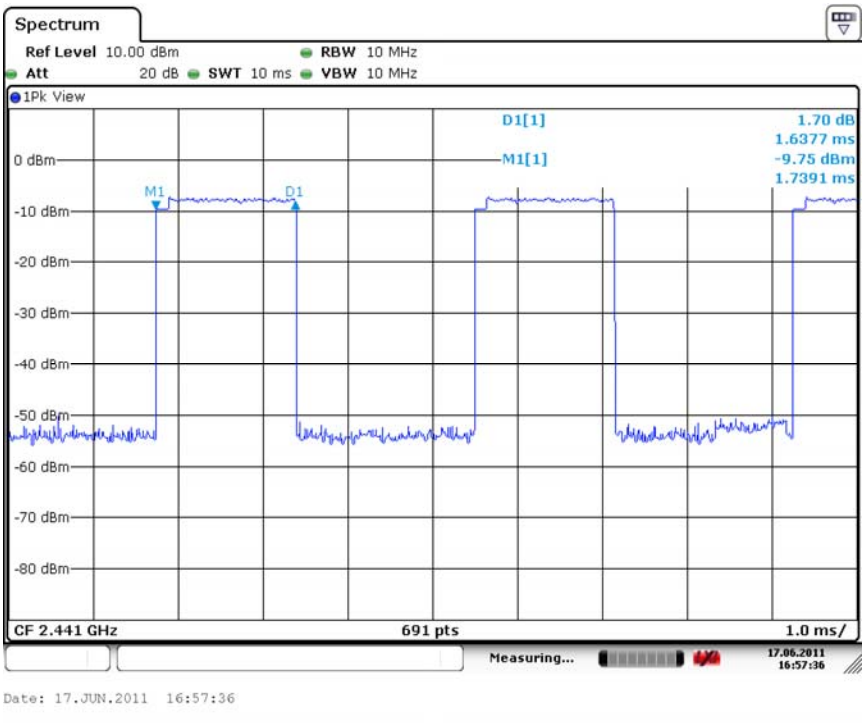
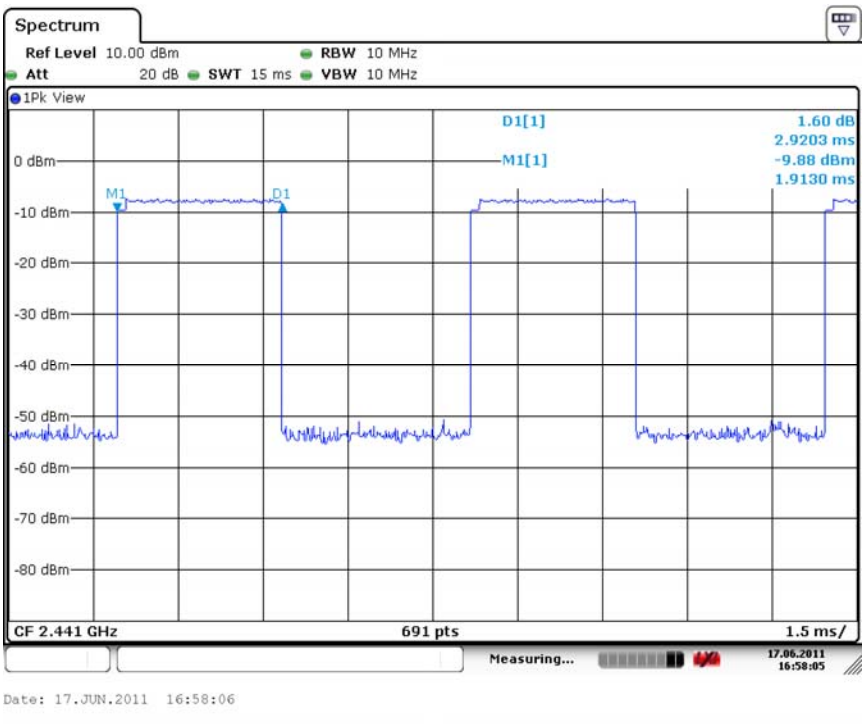


Carrier frequency (MHz): 2441
Packet type: DH3
Modulation type: π/4DQPSK



Carrier frequency (MHz): 2441
Packet type: DH5
Modulation type: π/4DQPSK

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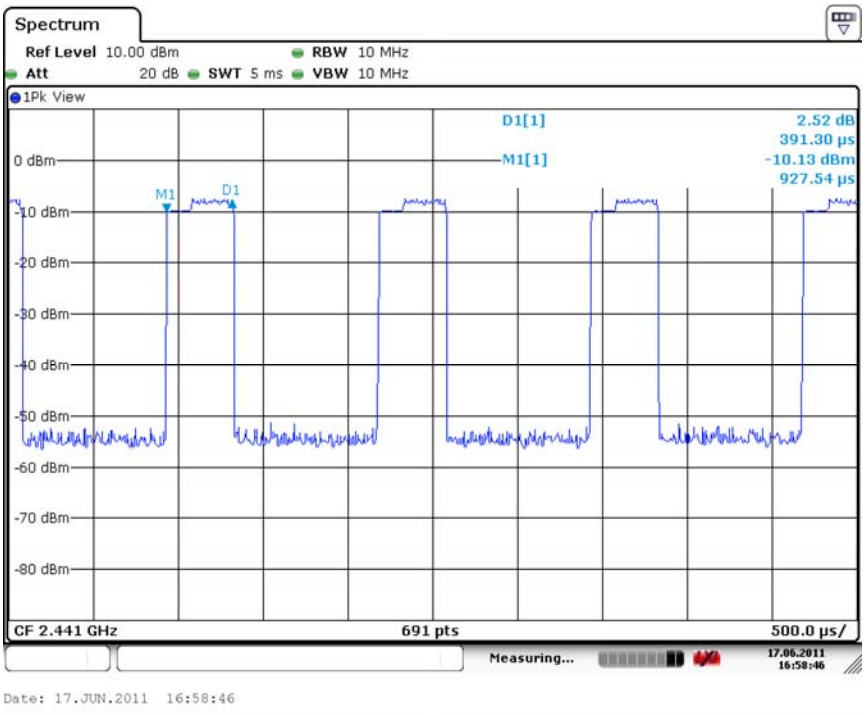
Modulation type: 8DPSK

Packet type	Time slot length ms	Dwell time	Dwell time ms
DH1	0.3913	time slot length * 1600* 31.6 /79	250.43
DH3	1.6377	time slot length * 31.6 *1600/3 /79	349.38
DH5	2.8986	time slot length * 31.6 *1600/5 /79	371.02



Carrier frequency (MHz): 2441
Packet type:DH1
Modulation type: 8DPSK

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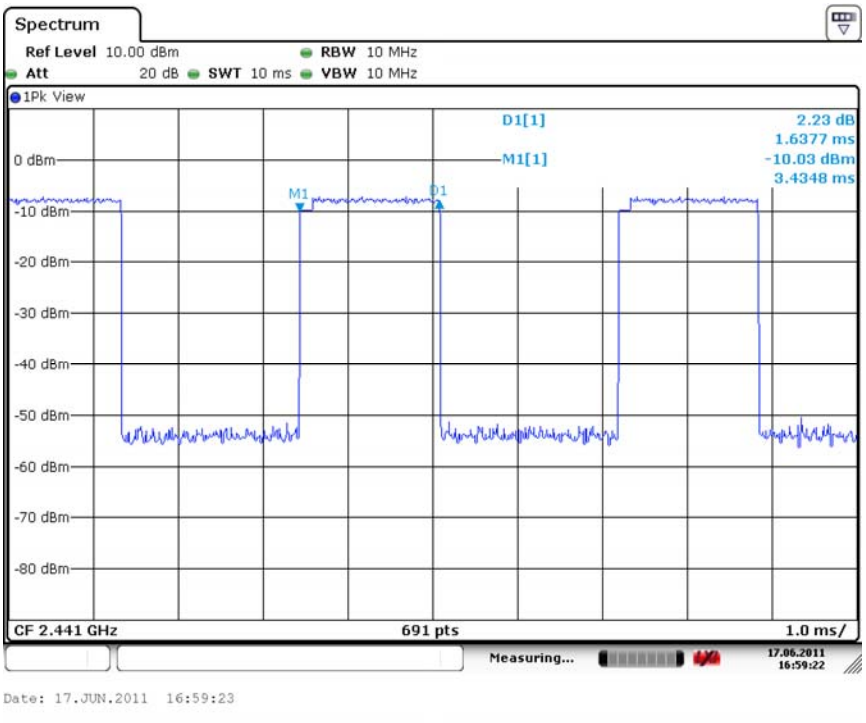
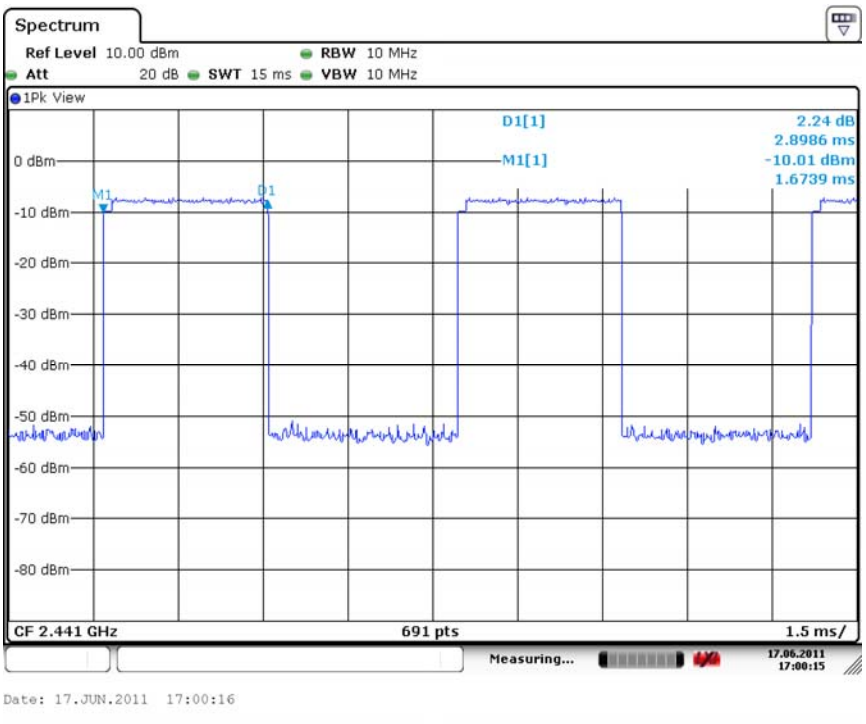


Carrier frequency (MHz): 2441
Packet type:DH3
Modulation type: 8DPSK



Carrier frequency (MHz): 2441
Packet type:DH5
Modulation type: 8DPSK

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2.2.7 Channel separation-§15.247(a) (1)

2.2.7.1 Ambient condition

Temperature	Relative humidity	Pressure
22°C	40%	101.1kPa

2.2.7.2 Test Description

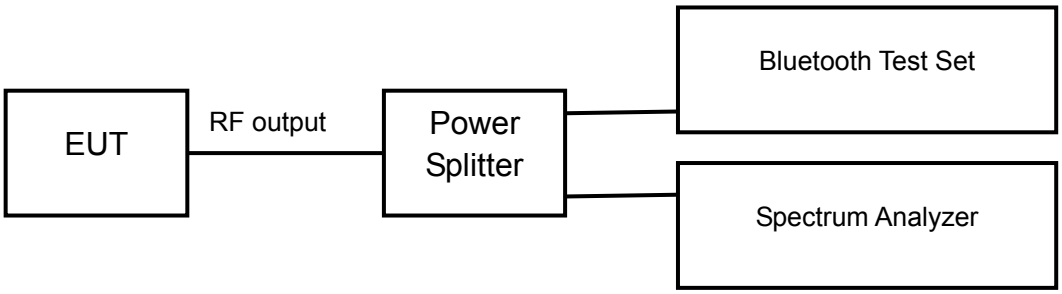
The measurement is made according to Public notice DA 00-705 and ANSI C63.4.

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-Maxhold
- Span: 3 MHz
- Centre Frequency: 2441 MHz
- Resolution Bandwidth (RBW): 30 kHz
- Video Bandwidth (VBW): 1 MHz
- Sweep Time: Coupled



2.2.7.3 Test limit

FCC Part 15, Subpart C, §15.247 (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 MHz
Hopping mode	1

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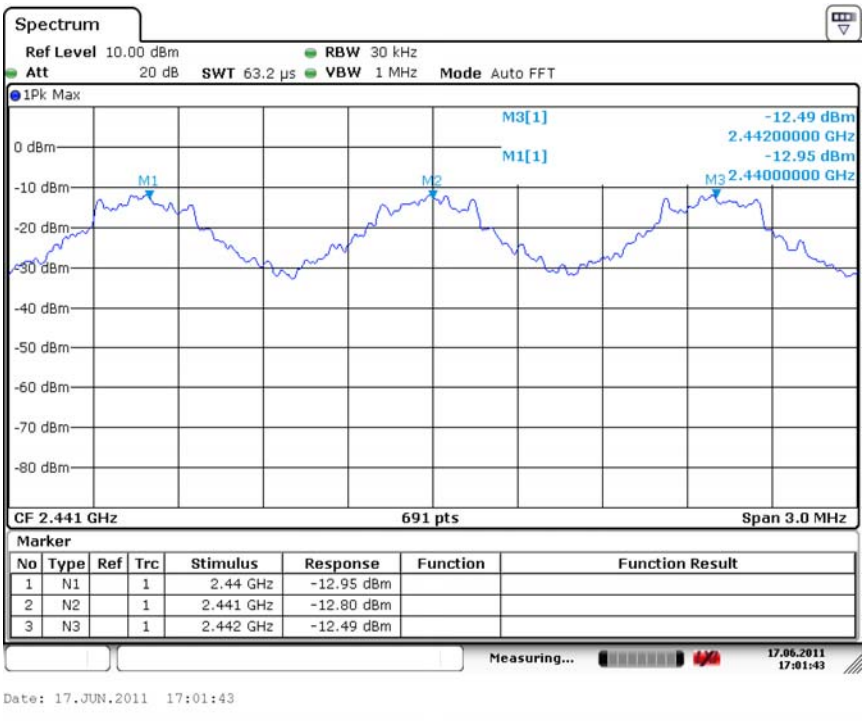

Op-mode: Hopping mode

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2.2.8 Number of hopping frequencies-§15.247(a) (iii)

2.2.8.1 Ambient condition

Temperature	Relative humidity	Pressure
22°C	40%	101.1kPa

2.2.8.2 Test Description

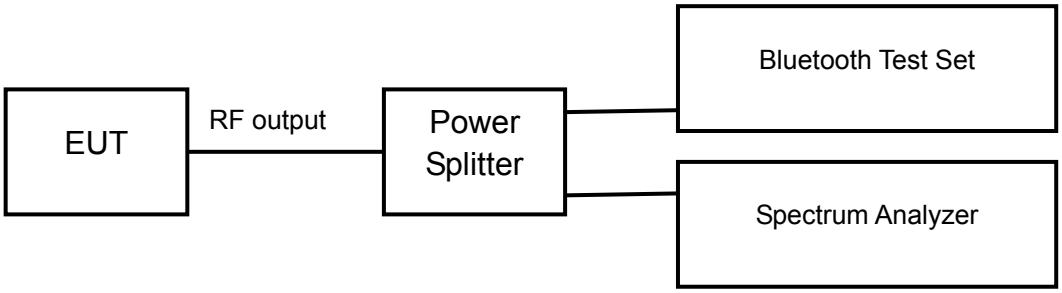
The measurement is made according to Public notice DA 00-705 and ANSI C63.4.

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): 30 kHz
- Video Bandwidth (VBW): 1 MHz
- Sweep Time: Coupled



2.2.8.3 Test limit

FCC Part 15, Subpart C, §15.247 (a) (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

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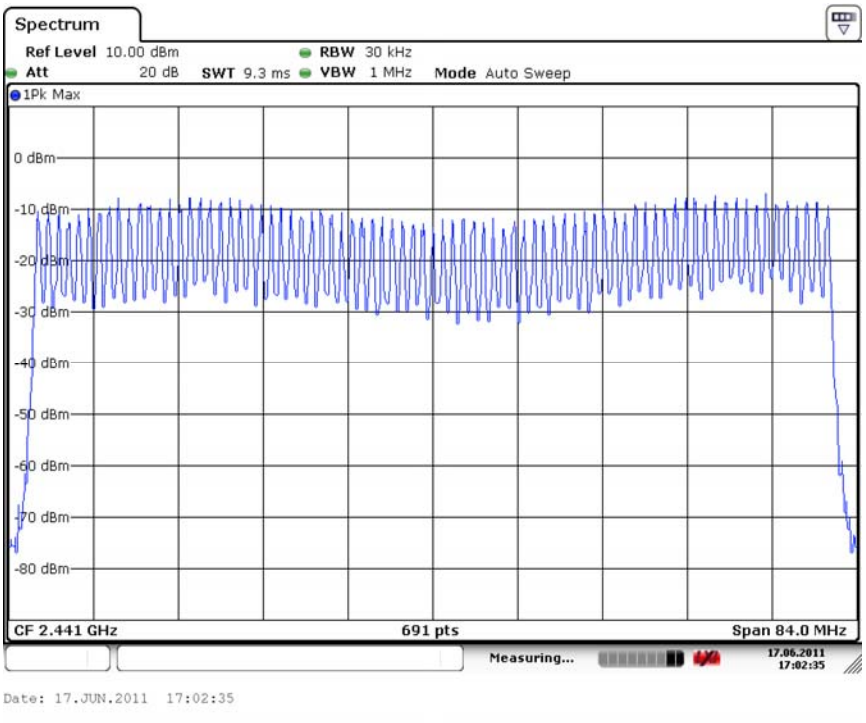

Op-mode: Hopping mode

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2.3. List of test equipment

No.	Name/Model	Manufacturer	S/N	Calibration Date
1	Bluetooth Test Set Anritsu MT8852B	Anritsu	6K 00005827	Aug. 2010
2	R&S FSV Spectrum Analyzer	R&S	100930	Mar. 2011
3	1506A Power Splitter	Weinschel	MN154	Aug. 2010
4	9.080m×5.255m×3.525m Shielding room	FRANKONIA	-----	Aug. 2010
5	ESI 40 EMI test receiver	R&S	100015	Aug. 2010
6	SMR 20 Signal generator	R&S	100086	Aug. 2010
7	CMU 200 Radio tester	R&S	100313	Aug. 2010
8	12.65m*8.03m*7.50m Fully-Anechoic Chamber	FRANKONIA	-----	Aug. 2010
9	HL562 Ultra log test antenna	R&S	100016	Aug. 2010
10	HF 906 Double-Ridged Waveguide Horn Antenna	R&S	100030	Aug. 2010
11	HF 906 Double-Ridged Waveguide Horn Antenna	R&S	100029	Aug. 2010
12	PS2000 Turn Table	FRANKONIA	-----	Aug. 2010
13	MA260 Antenna Master	FRANKONIA	-----	Aug. 2010
14	ES-K1EMI test software	R&S	-----	-----
15	HL562 Receive antenna	R&S	100167	Aug. 2010

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