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Chamber of Commerce
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Radio test report
20072023301 - rev 1.0

based on:
- 47 CFR Part 15C, section 15.247 (01-OCT-06 Edition);
- 47 CFR Part 15C, section 15.205 (01-OCT-06 Edition);
- 47 CFR Part 15C, section 15.209 (01-OCT-06 Edition);
- RSS-210, Issue 7 (June 2007 edition);
- RSS-Gen, Issue 2 (June 2007 edition).

Complete Class 2 Bluetooth Module
Taiyo Yuden
EYSMJCS

Contents

This report comprises of five modules. The total number of pages is 100.

Main module

1 Introduction

This report contains the result of tests performed by:

Telefication B.V.
Edisonstraat 12a
6902 PK Zevenaar
The Netherlands

Telefication complies with the accreditation criteria for test laboratories as laid down in ISO/IEC 17025:2005. The accreditation covers the quality system of the laboratory as well as the specific activities as described in the authorized annex bearing the accreditation number L021 and is granted on 30 November 1990 by the Dutch Council For Accreditation (RvA: Raad voor Accreditatie). The contents of this test report, if reproduced, shall be copied in full, unless special consent in writing for reproduction in part is granted by Telefication.

Ordering party:

Company name	:	Taiyo Yuden Co., Ltd., EMC Center
Address	:	5607-2 Nakamuroda-machi
Zipcode	:	370-3347
City/town	:	Takasaki-shi Gunma
Country	:	Japan
Date of order	:	22 August 2007

2 Product

A sample of the following product was submitted for testing:

Product description	:	Complete Class 2 Bluetooth Module
Manufacturer	:	Taiyo Yuden Co., Ltd.
Trade mark	:	Taiyo Yuden Co., Ltd.
Type designation	:	EYSMJCS
FCC ID	:	RYYEYSMJCS
IC ID	:	4389B-EYSMJCS
Hardware version	:	--
Serial number	:	--
Software release	:	--

3 Test schedule

Tests are carried out in accordance with the specification detailed in chapter 7 “Summary” of this report.

Tests are carried out at the following location:

- Telefication, Zevenaar and TNO EPS B.V., Niekerk

The samples of the product were received on:

- 22 August 2007

Tests are carried out from:

- 3 September 2007 to 11 October 2007

4 Product documentation

For production of this report the following product documentation has been used:

Description:	**Date:**	**Identification:**
Operating manual for testing	--	Taiyo Yuden Co., Ltd.

The above-mentioned documentation will be filed at Telefication for a period of 10 years following the issue of this test report.

5 Observations and comments

For the purpose of testing a software test tool named BlueSuite™ V1.21 for CSR's BlueCore™ Bluetooth® wireless technology chips has been used.

For all transmitter tests the RF power settings ("Power Int.") in the software test tool were set according to the following table:

GFSK	π/4-DQPSK	8DPSK
54	93	93

All tests are performed with the packet configuration according to the following table:

	GFSK		π/4-DQPSK		8DPSK	
	Packet type	Packet size	Packet type	Packet size	Packet type	Packet size
DH5	15	339	30	679	31	1021

The test sample used for the transmitter tests was provided with a temporary SMA antenna connector. The test sample used for the receiver tests was provided with the (original) integral antenna.

The test samples were tested while connected to a test-jig which enabled operation of the test samples as a stand-alone module.

Final measurements of unwanted emissions between 1 - 26 GHz were carried out at TNO EPS B.V. at the location in Niekerk, The Netherlands.

Final measurements of unwanted emissions between 30 - 1000 MHz are carried out on the open area test site of TNO EPS B.V., The Netherlands, at the following location:

TNO Electronic Products & Services (EPS) B.V
Smidshornerweg 18
9822 TL Niekerk
The Netherlands

FCC listed : 90828
Industry Canada : IC3501A-1

6 Modifications to the sample

No modifications were made to the sample(s).

7 Summary

The product is intended for use in the following application area(s):

INTENTIONAL RADIATOR OPERATING IN THE FREQUENCY BAND 2400 - 2483.5 MHz

The sample is tested according to the following specification(s):

47 CFR Part 15C, section 15.247 (01-OCT-06 Edition);
47 CFR Part 15C, section 15.205 (01-OCT-06 Edition);
47 CFR Part 15C, section 15.209 (01-OCT-06 Edition);
RSS-210, Issue 7 (June 2007 edition);
RSS-Gen, Issue 2 (June 2007 edition).

8 Conclusions

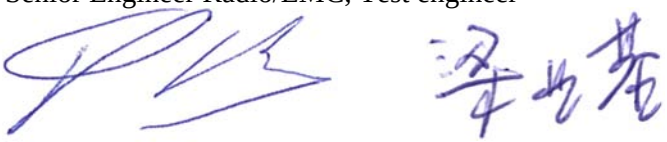
The samples of the product showed **NO NON-COMPLIANCES** to the specification stated in chapter 7 of this report.

The results of the tests as stated in this report, are exclusively applicable to the product items as identified in this test report. Telefication does not accept any responsibility for the results stated in this test report, with respect to the properties of product items not involved in these tests.

All tests are performed by:

name : ing. P.A.J.M. Robben and R. Liang

function : Senior Engineer Radio/EMC, Test engineer

signature : 

Review of test report by:

name : ing. S.J. van Spijker

function : Test Engineer

signature : 

The above conclusions have been verified by the following signatory:

Date : 12 October 2007

name : J.P. van de Poll

function : Co-ordinator Test Group

signature : 

Test results module

1 General information

1.1 Equipment information

Type of equipment	Class 2 Bluetooth module
Bluetooth specification	V2.0 + EDR
Rated conducted RF power	1.0 dBm
Operating frequency range	2402 - 2480 MHz
Modulation types	GFSK, π/4-DQPSK, 8DPSK
ITU designation	943K0F1D, 1M26G1D, 1M27G1D
Antenna type	Integral
Antenna gain	2 dBi (peak)

1.2 Tested channels

	Test channel 1	**Test channel 2**	**Test channel 3**
Frequency (MHz)	2402	2441	2480

2 Summary of test data

Description	Clause	Limit	Test result	Pass/Fail
20 dB bandwidth	15.247 (a)(1)	--	1267 kHz	Pass
Channel separation	15.247 (a)(1)	≥ 2/3*20 dB BW	1007 kHz	Pass
Number of channels	15.247 (a)(1)(iii)	≥ 15	79	Pass
Average time of occupancy	15.247 (a)(1)(iii)	0.400 sec.	0.314 sec.	Pass
Maximum peak power output	15.247 (b)(1) 15.247 (b)(4)	30 dBm	1.0 dBm	Pass
Spurious emissions Tx (conducted)	15.247 (d)	< -20 dBc	≤ -44.6 dBc	Pass
Field strength of spurious emissions (radiated, receive mode)	15.109	54 dBµV/m (av)	44.3 dBµV/m (pk)	Pass
Field strength of emissions outside of the frequency band of operation (radiated, transmit mode)	15.247 (d) 15.205 (a) 15.209	54 dBµV/m (av) 74 dBµV/m (pk)	44.0 dBµV/m (pk)	Pass

3 Emission tests

3.1 Carrier frequency separation

Compliance standard : FCC part 15, subpart C, section 15.247 (a)(1)
Method of test : Public Notice DA 00-705

Ambient temperature : 21 °C
Relative humidity : 50 %

3.1.1 Test method

The following is an excerpt from Public Notice DA 00-705 and describes the method for measuring the carrier frequency separation:

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

Span = wide enough to capture the peaks of two adjacent channels

Resolution (or IF) Bandwidth (RBW) ≥ 1% of the span

Video (or Average) Bandwidth (VBW) ≥ RBW

Sweep = auto

Detector function = peak

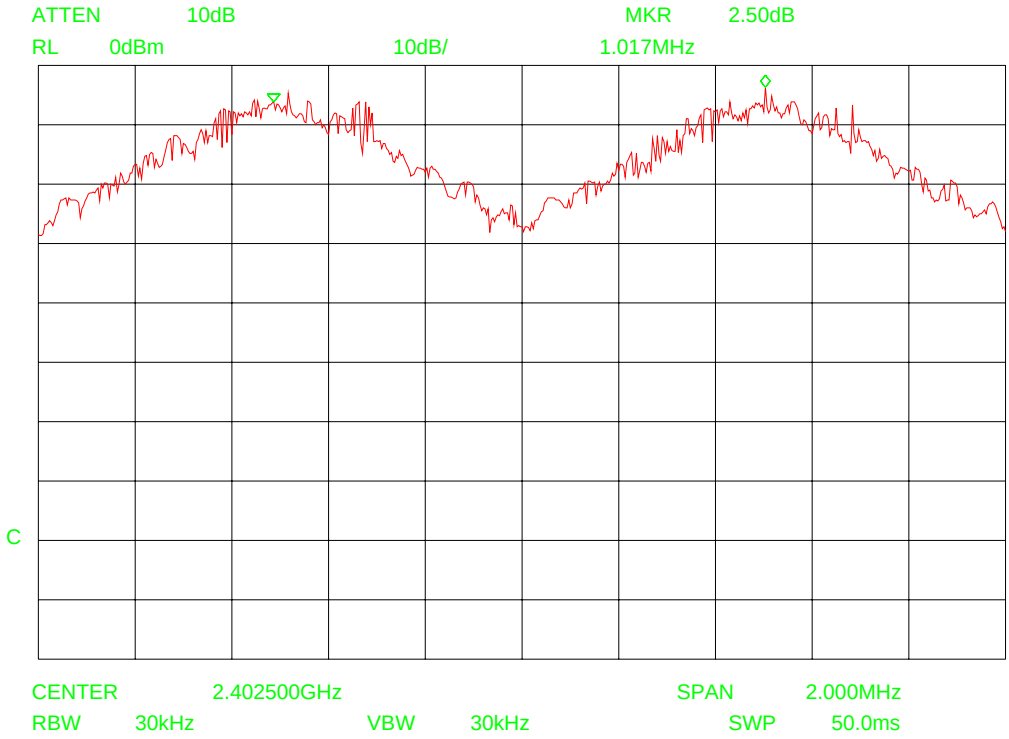
Trace = max hold

Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

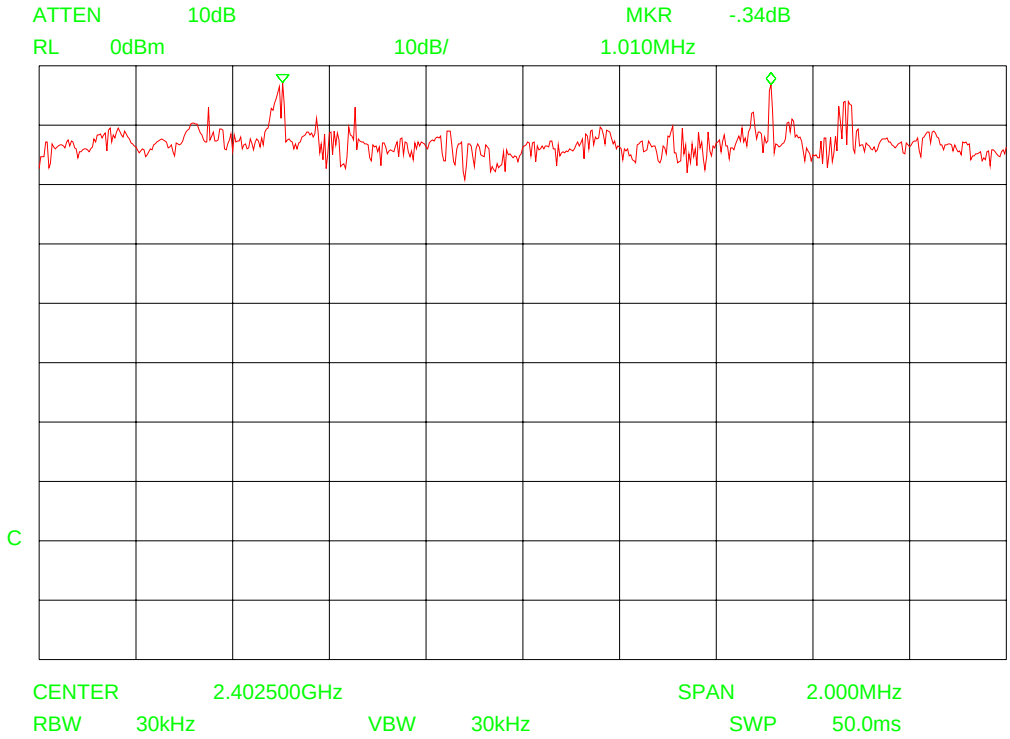
3.1.2 Test results

Modulation	Carrier frequency separation	Plot numbers (on next pages)
GFSK	1017 kHz	1
π/4-DQPSK	1010 kHz	2
8DPSK	1007 kHz	3

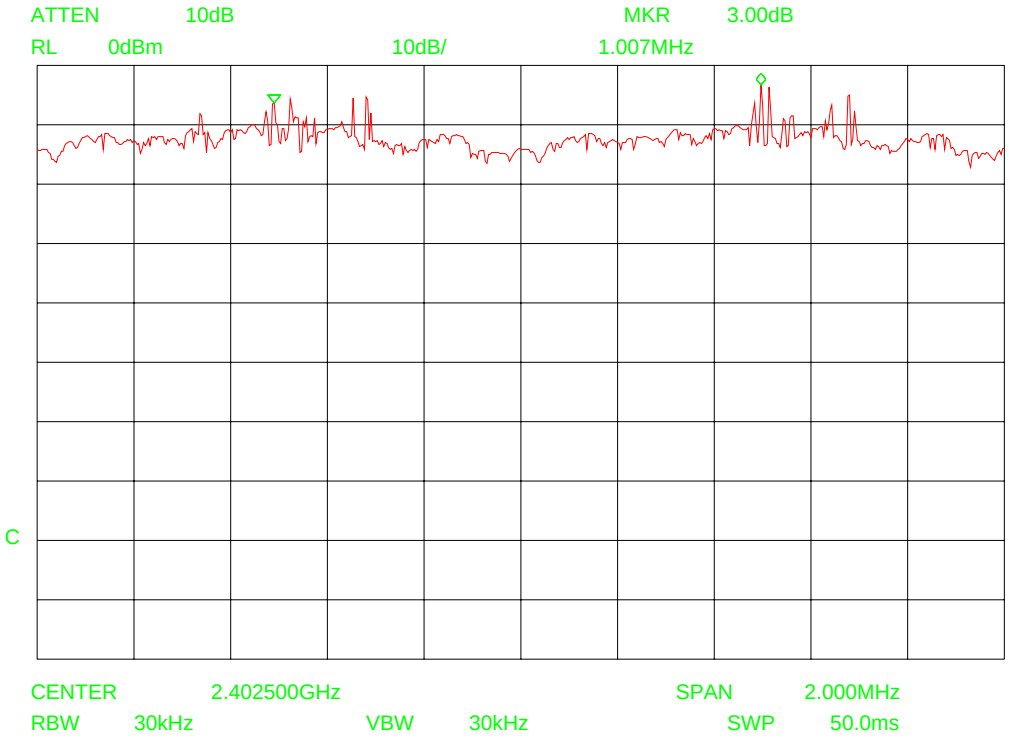
Measurement uncertainty: + 46/- 46 kHz



Plot 1 – Channel separation (GFSK mode)



Plot 2 – Channel separation (π/4-DQPSK mode)



Plot 3 – Channel separation (8DPSK mode)

3.2 Number of hopping frequencies

Compliance standard : FCC part 15, subpart C, section 15.247 (a)(1)(iii)
Method of test : Public Notice DA 00-705

Ambient temperature : 21 °C
Relative humidity : 50 %

3.2.1 Test method

The following is an excerpt from Public Notice DA 00-705 and describes the method for measuring the number of hopping frequencies:

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

Span = the frequency band of operation

RBW ≥ 1% of the span

VBW ≥ RBW

Sweep = auto

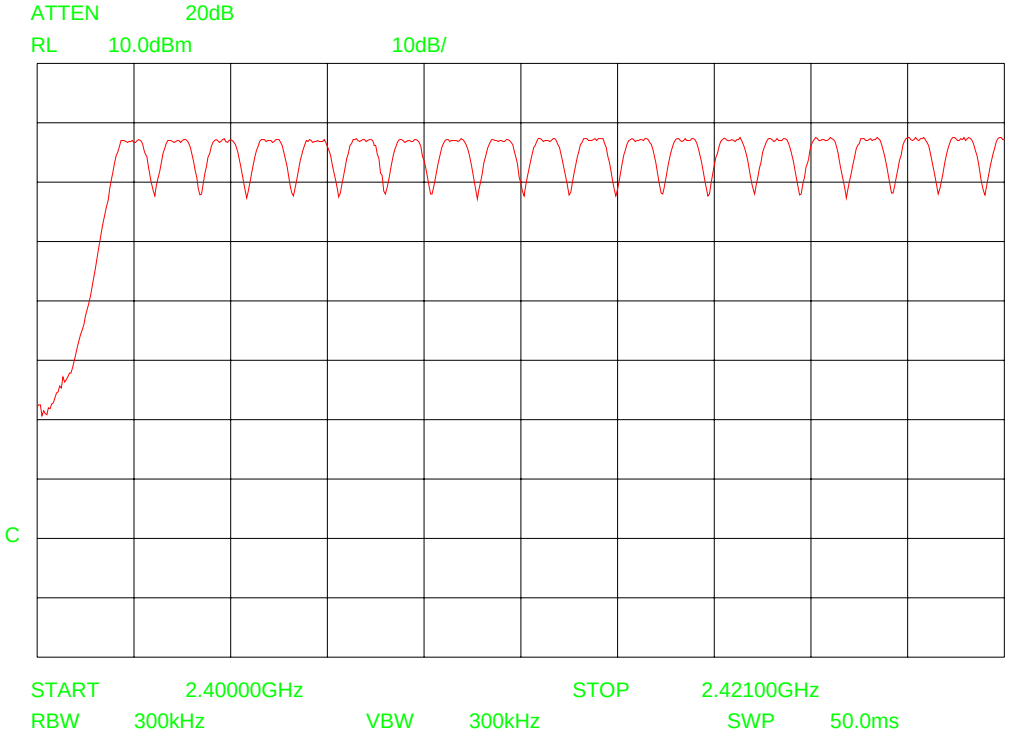
Detector function = peak

Trace = max hold

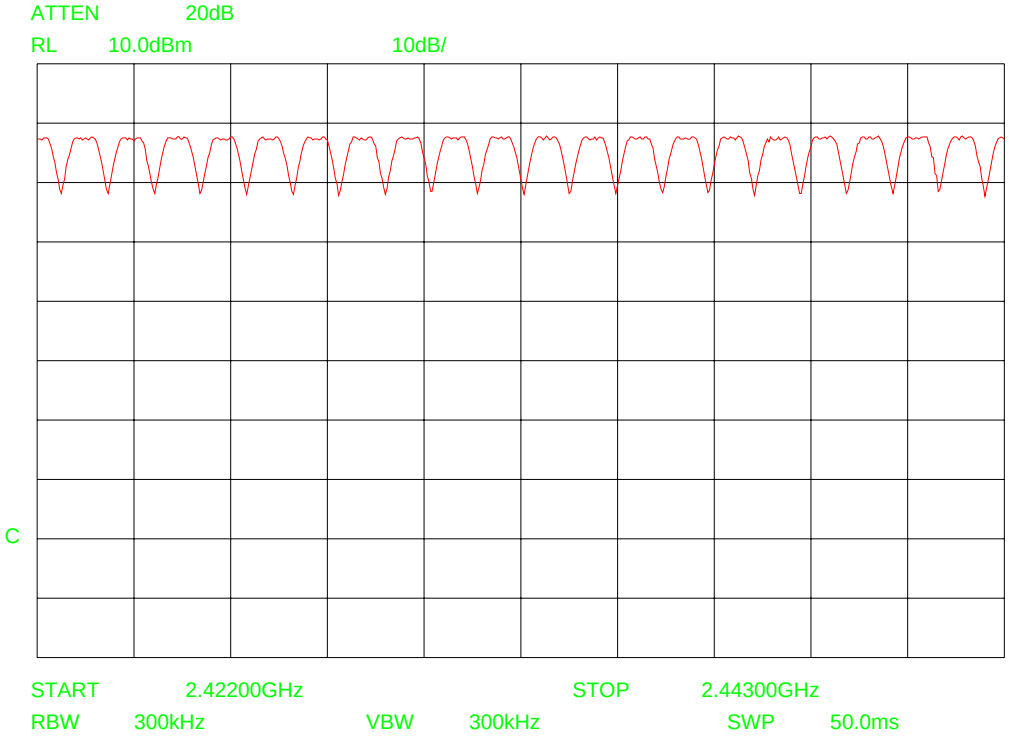
Allow the trace to stabilize. It may prove necessary to break the span up to sections, in order to clearly show all of the hopping frequencies.

3.2.2 Test results

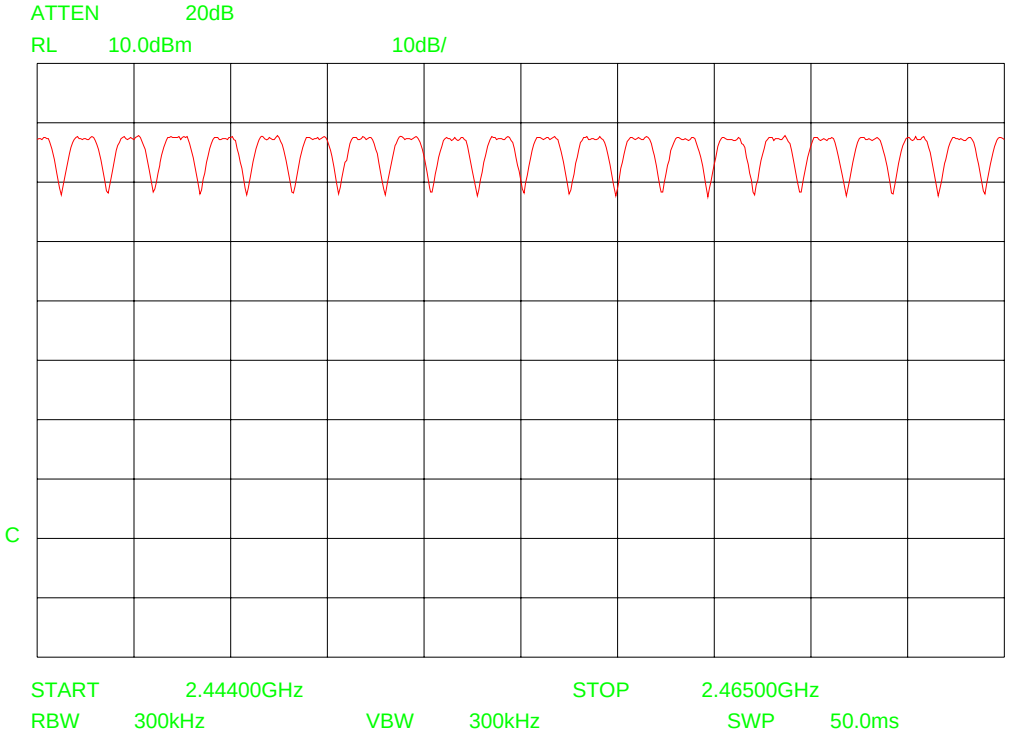
Modulation	Number of hopping frequencies	Plot numbers (on next pages)
GFSK	79	4 – 7
π/4-DQPSK	79	8 – 11
8DPSK	79	12 – 15



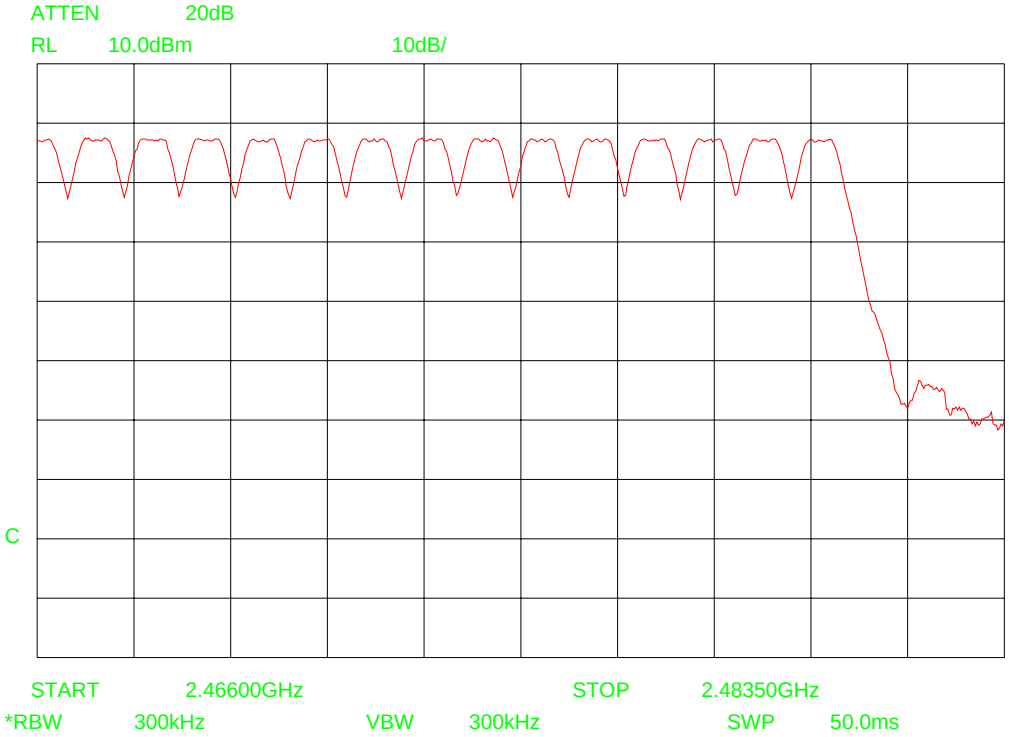
Plot 4 – Number of channels (channels 1-20, GFSK mode)



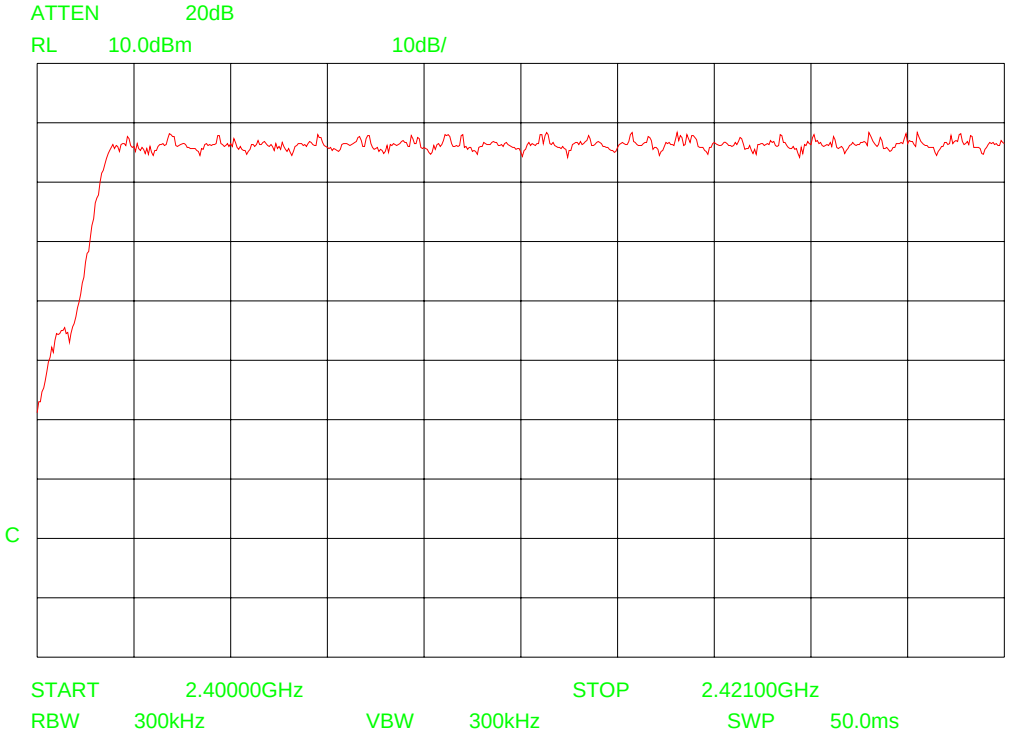
Plot 5 – Number of channels (channels 21-42, GFSK mode)



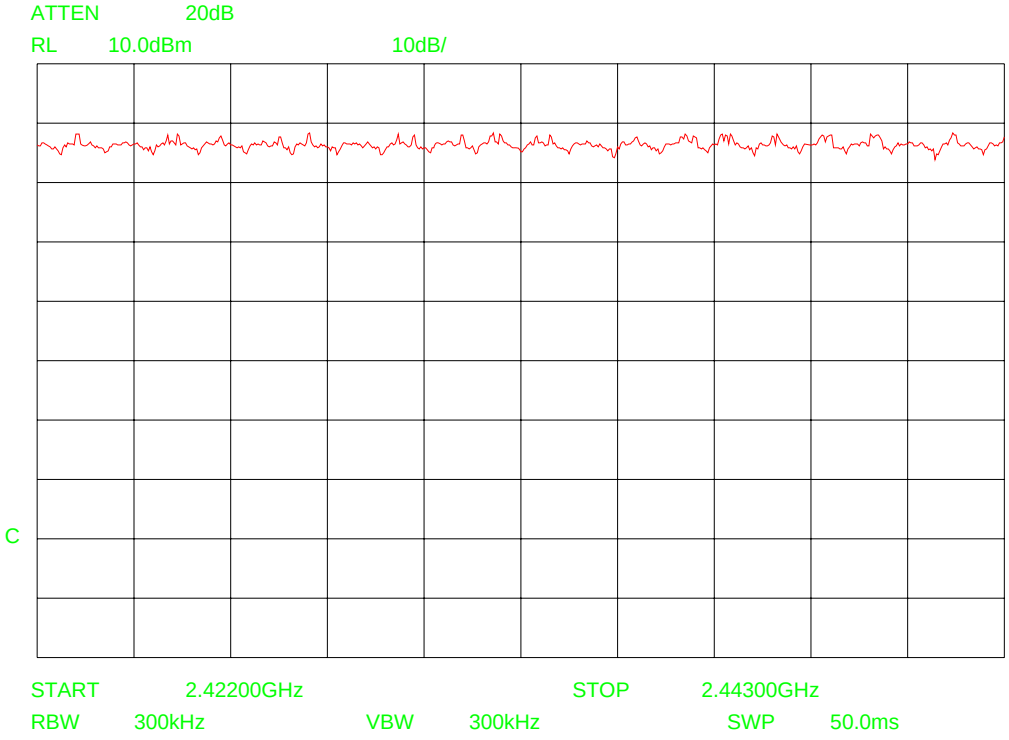
Plot 6 – Number of channels (channels 43-64, GFSK mode)



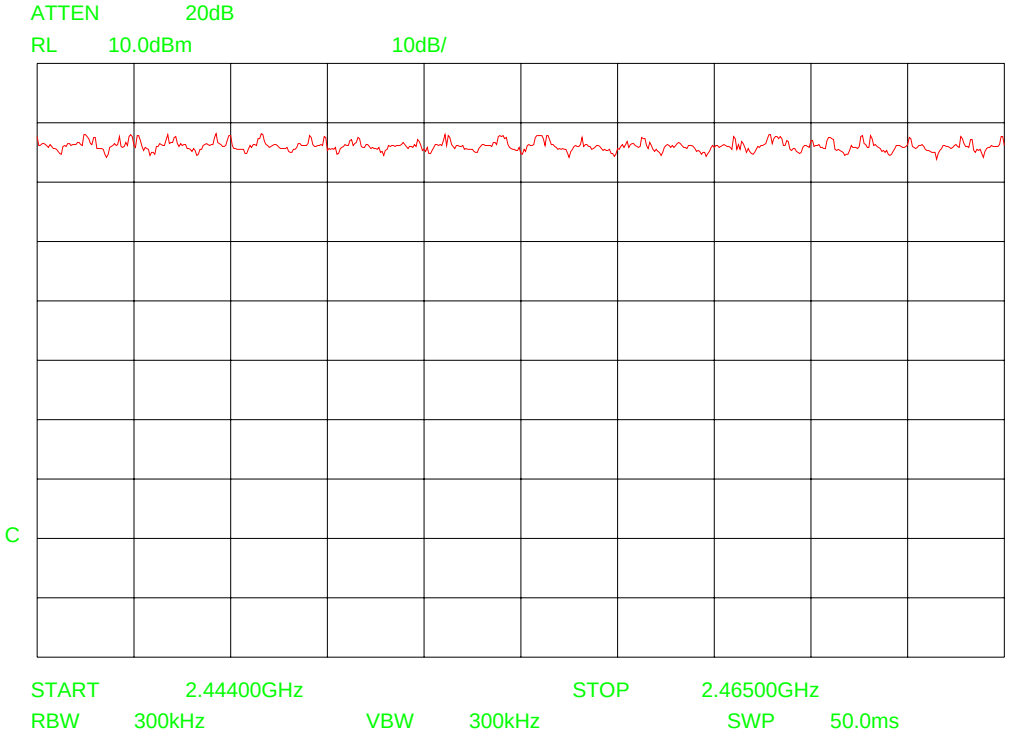
Plot 7 – Number of channels (channels 65-79, GFSK mode)



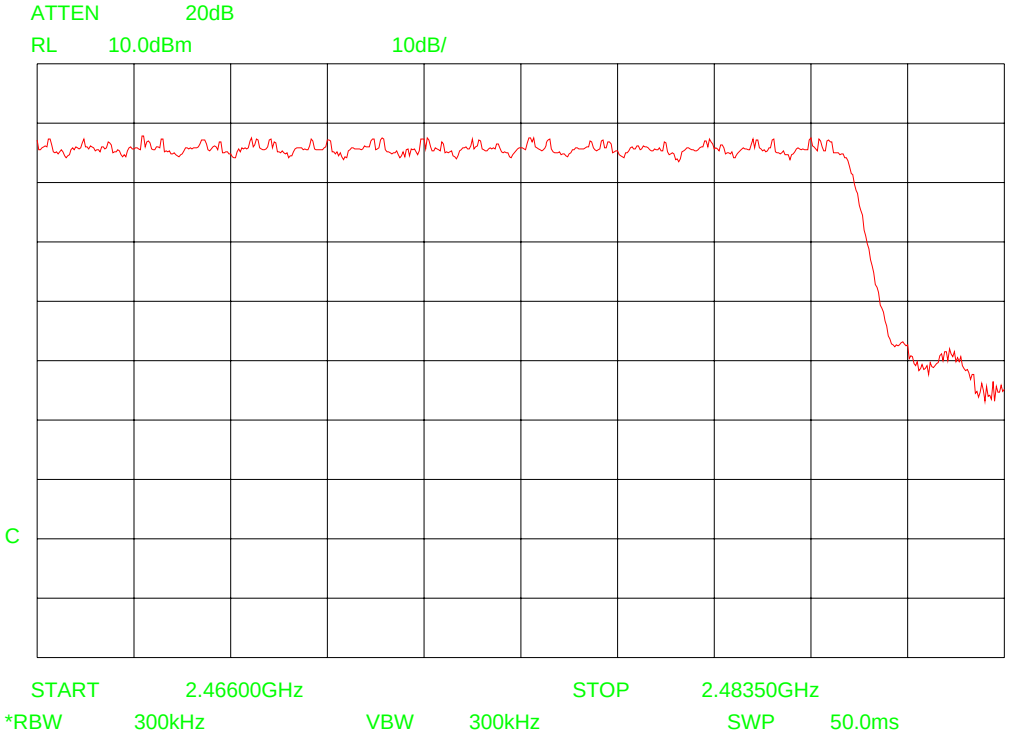
Plot 8 – Number of channels (channels 1-20, π/4-DQPSK mode)



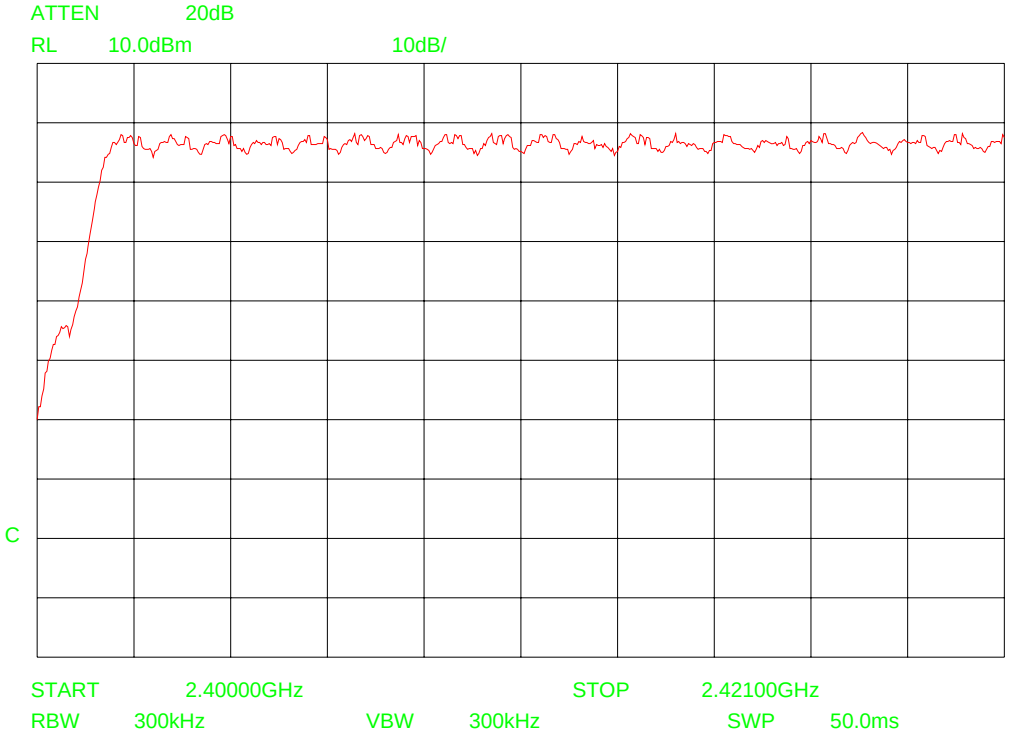
Plot 9 – Number of channels (channels 21-42, π/4-DQPSK mode)



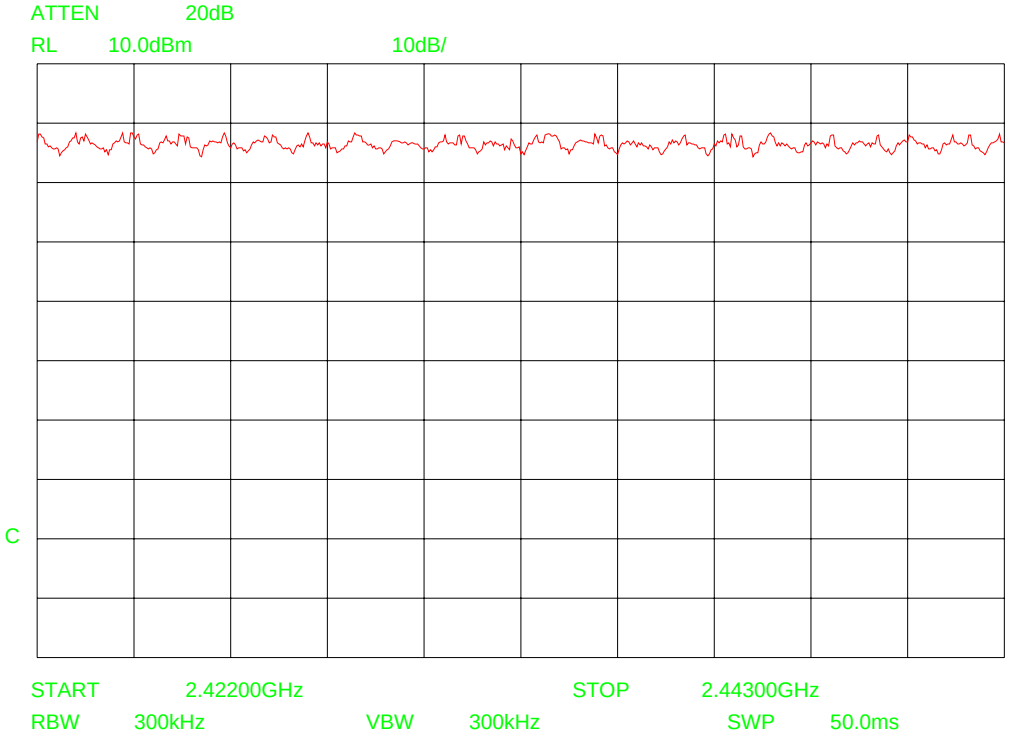
Plot 10 – Number of channels (channels 43-64, π/4-DQPSK mode)



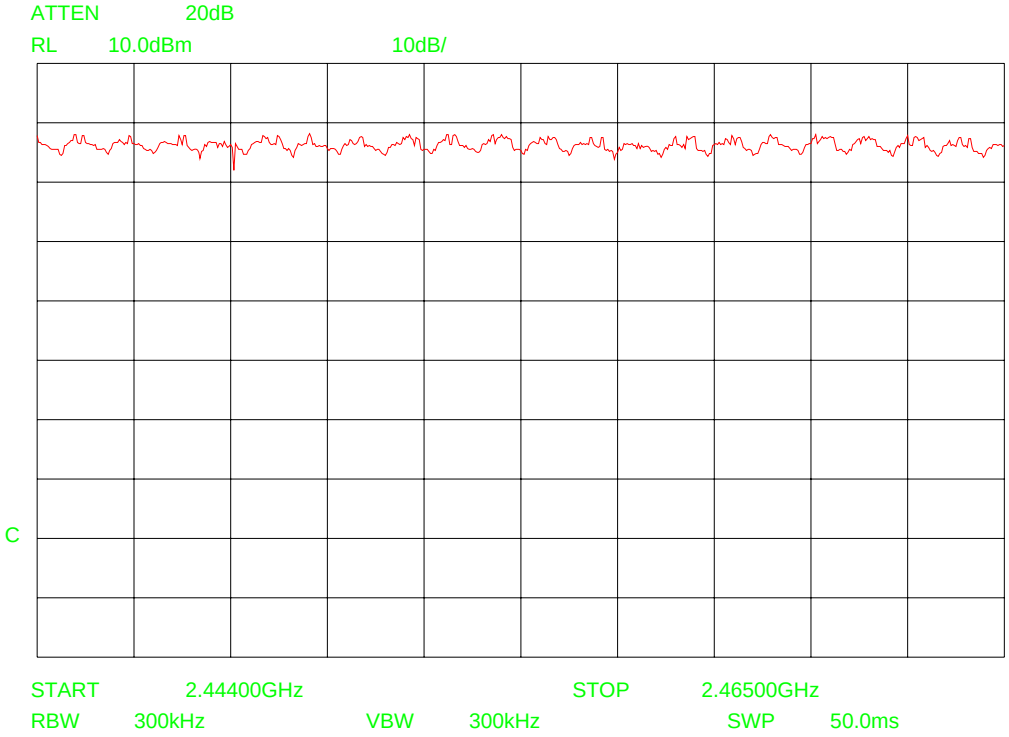
Plot 11 – Number of channels (channels 65-79, π/4-DQPSK mode)



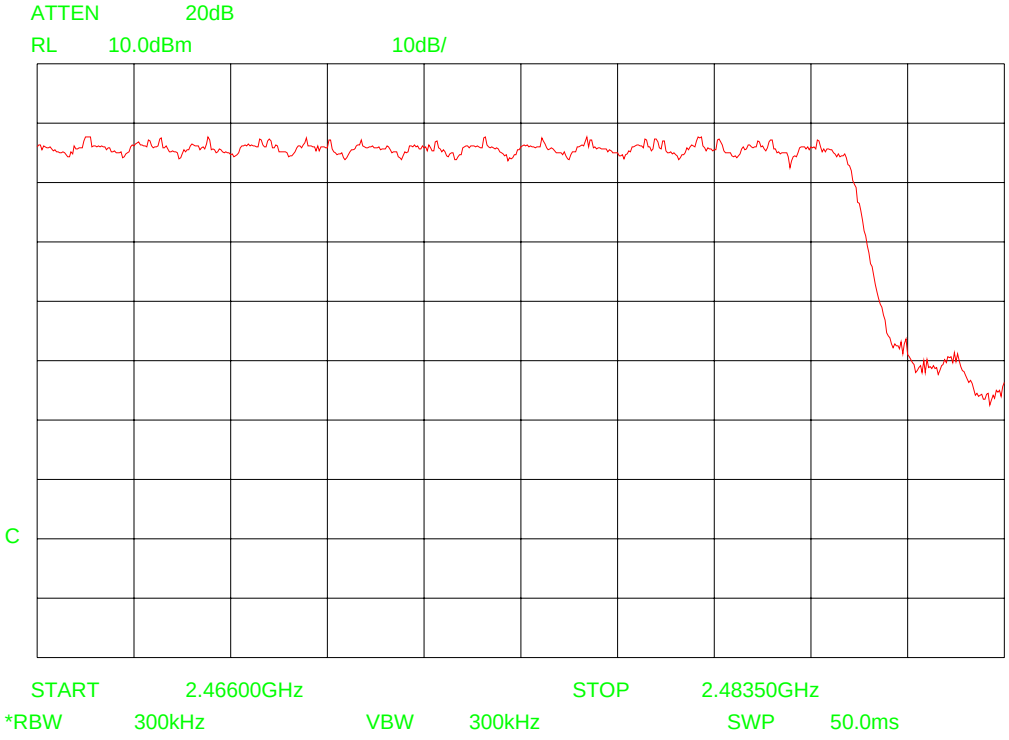
Plot 12 – Number of channels (channels 1-20, 8DPSK mode)



Plot 13 – Number of channels (channels 21-42, 8DPSK mode)



Plot 14 – Number of channels (channels 43-64, 8DPSK mode)



Plot 15 – Number of channels (channels 65-79, 8DPSK mode)

3.3 Average time of occupancy

Compliance standard : FCC part 15, subpart C, section 15.247 (a)(1)(iii)
Method of test : Public Notice DA 00-705

Ambient temperature : 21 °C
Relative humidity : 50 %

3.3.1 Test method

The following is an excerpt from Public Notice DA 00-705 and describes the method for measuring the time of occupancy:

The EUT must have its hopping function enabled. Use the following spectrum analyzer settings:

Span = zero span, centered on a hopping channel

RBW = 1 MHz
VBW ≥ RBW

Sweep = as necessary to capture the entire dwell time per hopping channel

Detector function = peak

Trace = max hold

If possible, use the marker-delta function to determine the dwell time. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation.

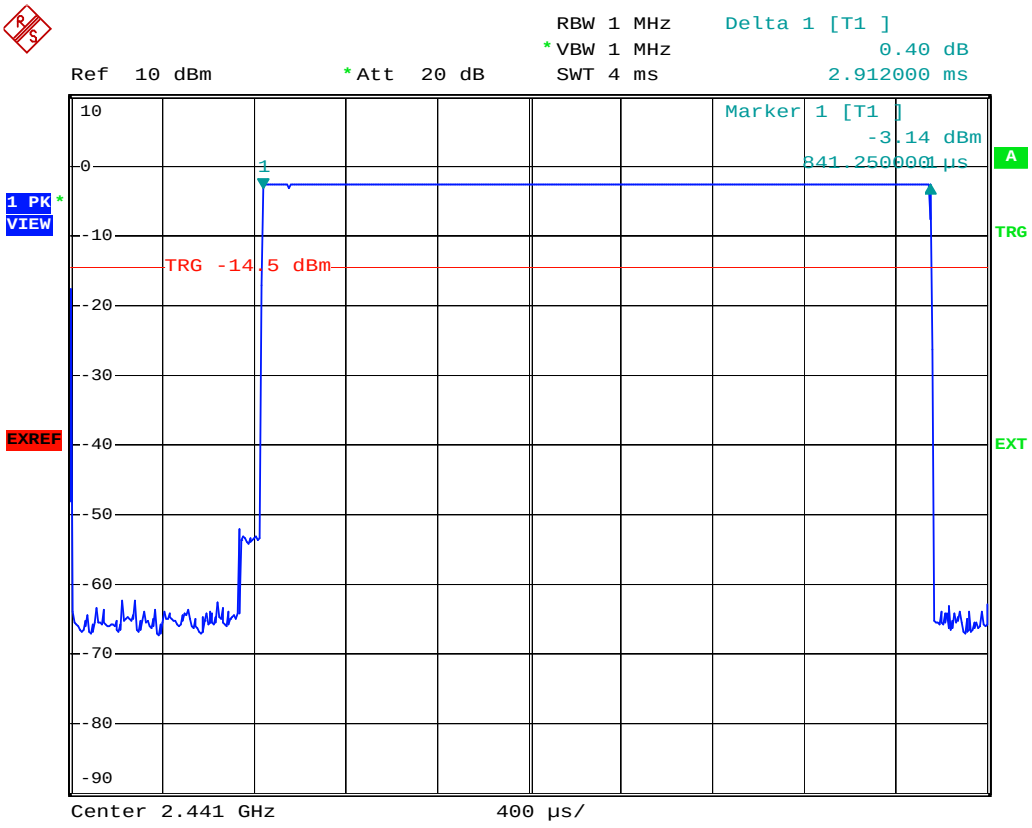
The EUT utilizes 75 hopping channels. Therefore the minimum sweeptime for determining the number of hops is 75 x 0.4 seconds = 31.6 seconds. A sweeptime of 32 seconds was chosen for the measurement of the number of hops.

3.3.2 Test results

Modulation	Pulse time (ms)	Plot numbers (on next pages)
GFSK	2.912	16a
π/4-DQPSK	2.904	17a
8DPSK	2.904	18a

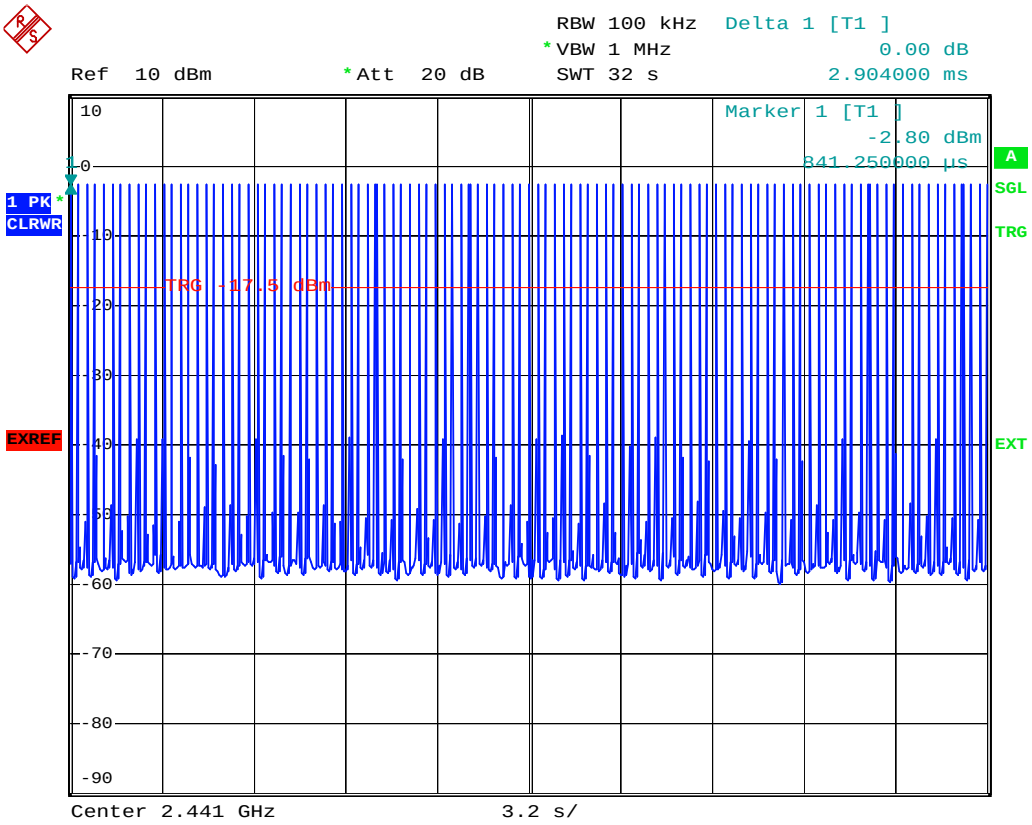
Modulation	Number of hops	Plot numbers (on next pages)
GFSK	108	16b
π/4-DQPSK	108	17b
8DPSK	108	18b

Modulation	Average time of occupancy (s) (pulse time x number of hops)	Plot numbers (on next pages)
GFSK	0.314	--
π/4-DQPSK	0.314	--
8DPSK	0.314	--



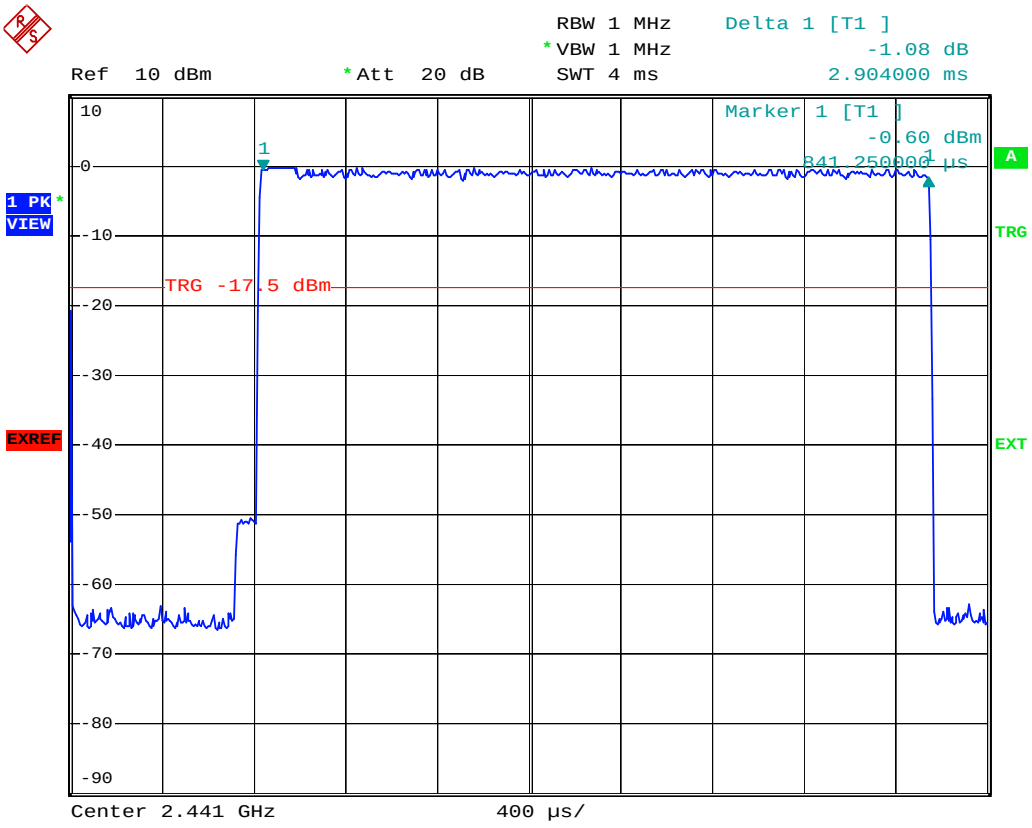
Date: 11.OCT.2007 15:38:39

Plot 16a – Pulse time (hopping transmit mode, GFSK mode)



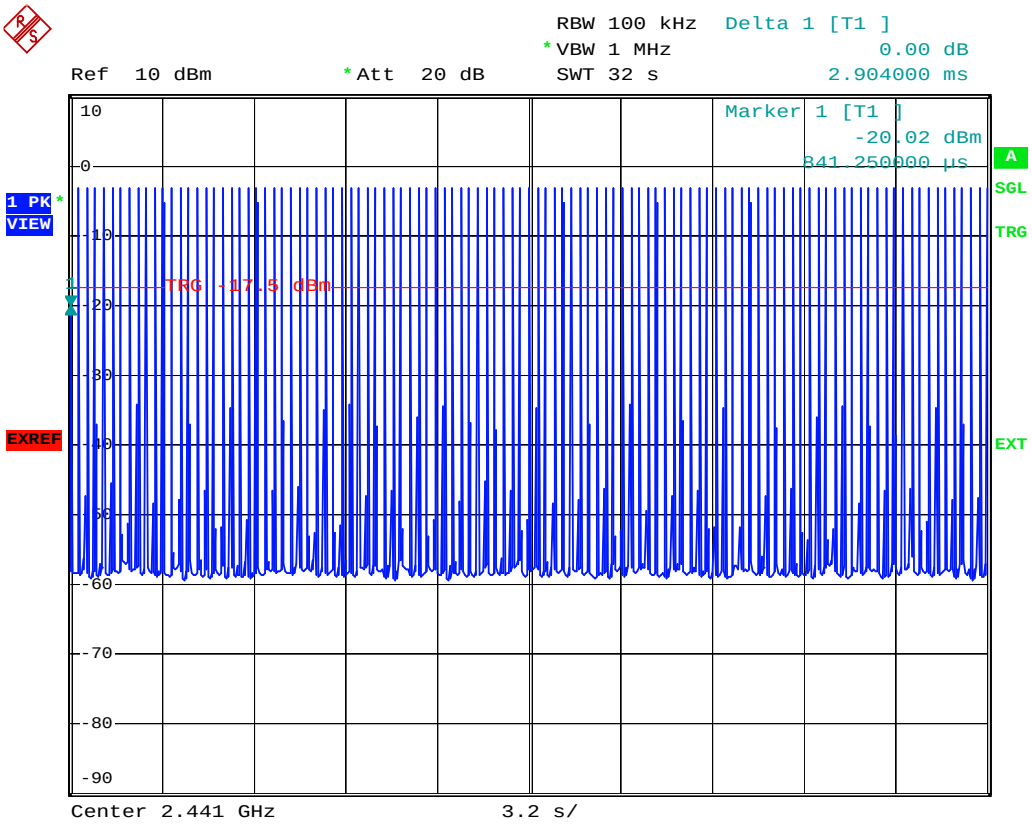
Date: 11.OCT.2007 15:49:34

Plot 16b – Number of hops (hopping transmit mode, GFSK mode)



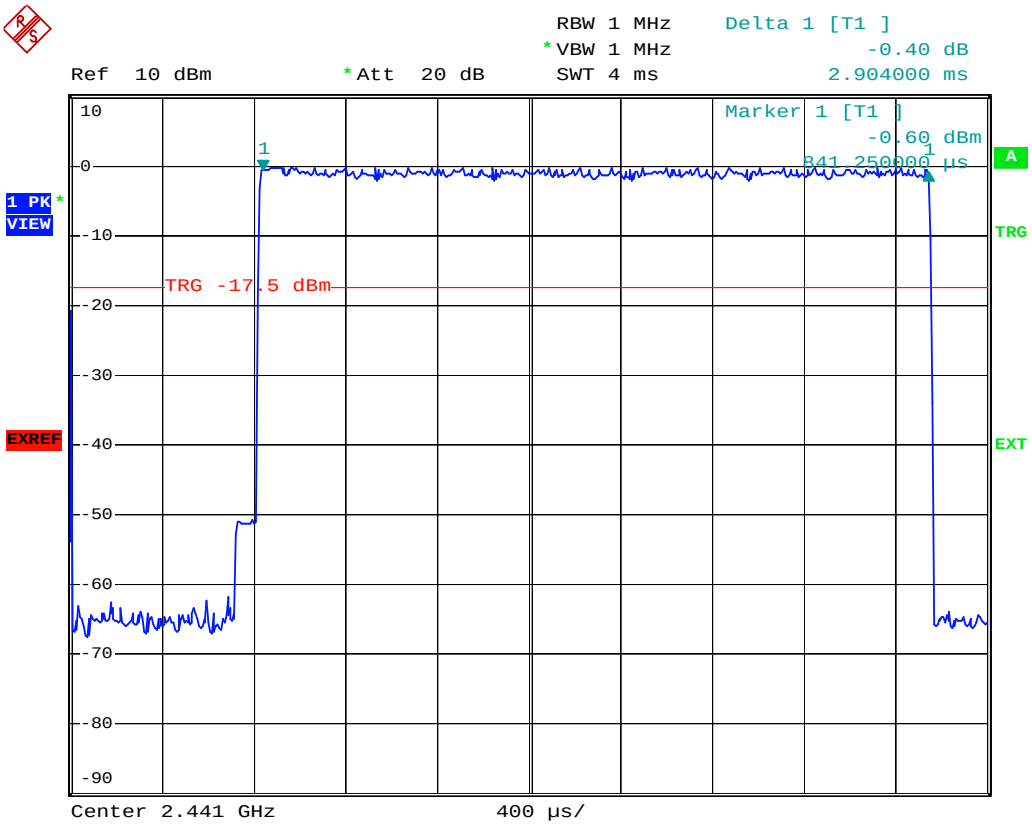
Date: 11.OCT.2007 15:42:21

Plot 17a – Pulse time (hopping transmit mode, π/4-DQPSK mode)



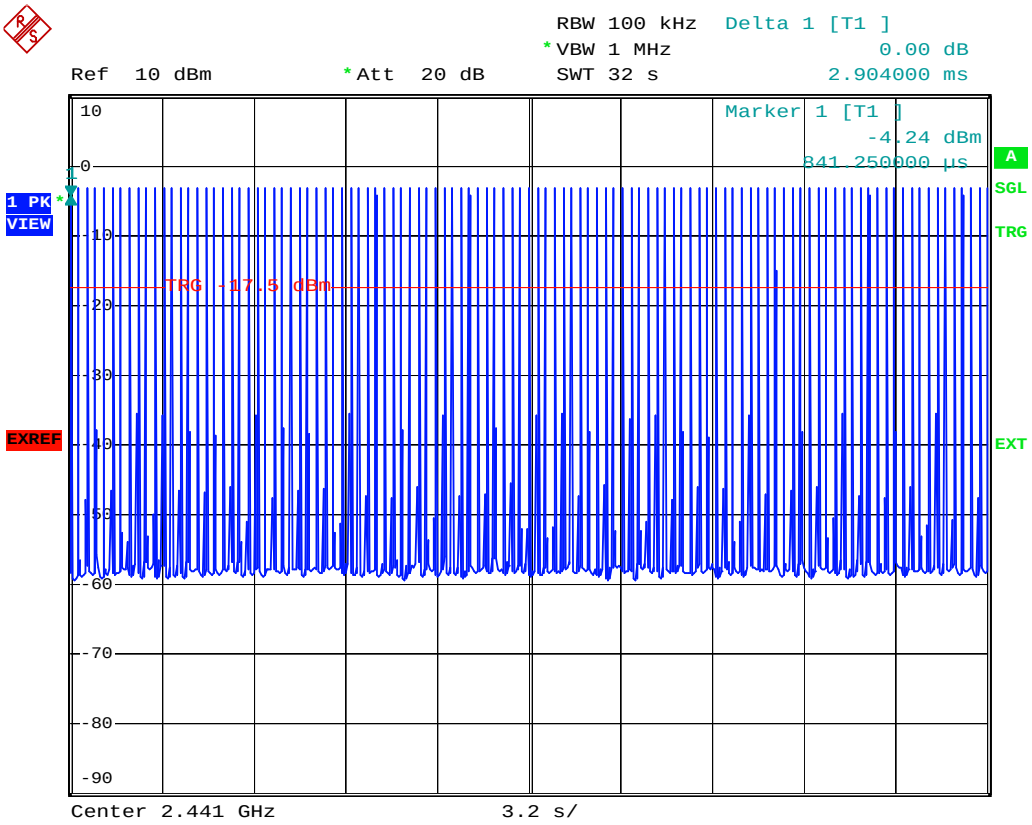
Date: 11.OCT.2007 15:48:13

Plot 17b – Pulse time (hopping transmit mode, π/4-DQPSK mode)



Date: 11.OCT.2007 15:43:07

Plot 18a – Pulse time (hopping transmit mode, 8DPSK mode)



Date: 11.OCT.2007 15:46:42

Plot 18b – Pulse time (hopping transmit mode, 8DPSK mode)

3.4 20 dB bandwidth

Compliance standard : 47 CFR Part 15, Subpart C, section 15.247 (a)(1)
Method of test : Public Notice DA 00-705

Ambient temperature : 21 °C
Relative humidity : 50 %

3.4.1 Test method

The following is an excerpt from Public Notice DA 00-705 and describes the method for measuring the 20 dB bandwidth:

Use the following spectrum analyzer settings:

Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel

RBW ≥ 1% of the 20 dB bandwidth

VBW ≥ RBW

Sweep = auto

Detector function = peak

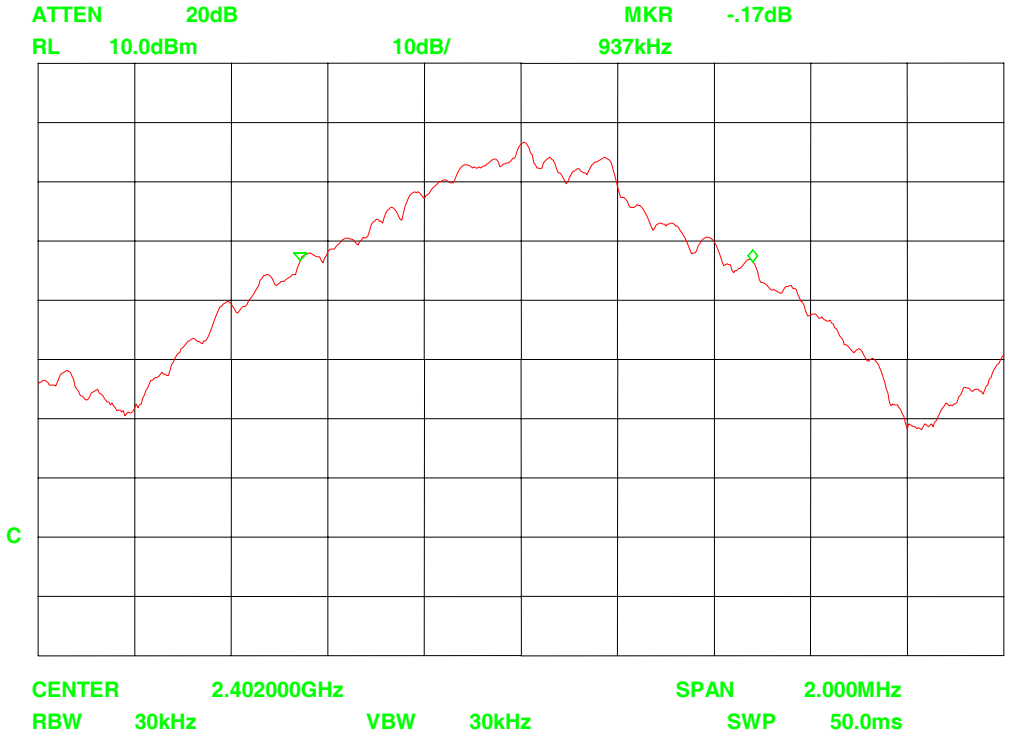
Trace = max hold

The EUT should be transmitting at its maximum data rate. Allow the trace to stabilize.Use the marker-to-peak function to set the marker to the peak of the emission.Use the marker-delta function to measure 20 dB down one side of the emission.Reset the marker-delta function, and move the marker to the other side of the emission, until it is (as close as possible to) even with the reference marker level.The marker-delta reading at this point is the 20 dB bandwidth of the emission. If this value varies with different modes of operation (e.g., data rate, modulation format, etc.), repeat this test for each variation.

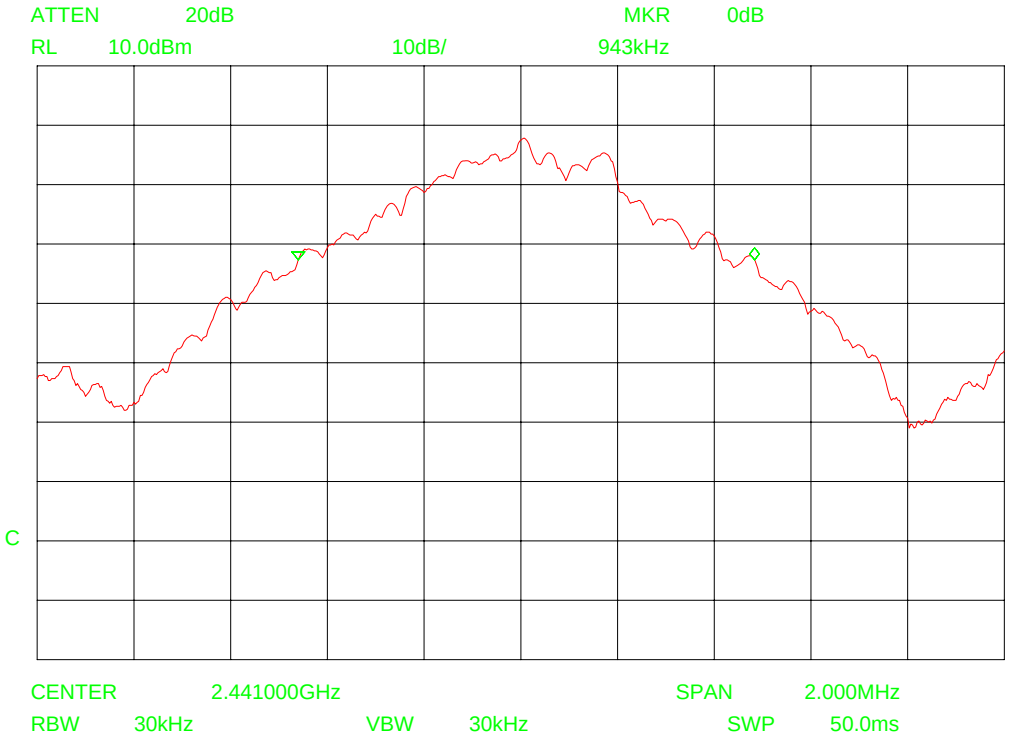
3.4.2 Test results

Modulation	Test channel 1	Test channel 2	Test channel 3	Plot numbers (on next pages)
GFSK	937 kHz	943 kHz	943 kHz	19 – 21
π/4-DQPSK	1250 kHz	1253 kHz	1257 kHz	22 – 24
8DPSK	1267 kHz	1267 kHz	1267 kHz	25 – 27

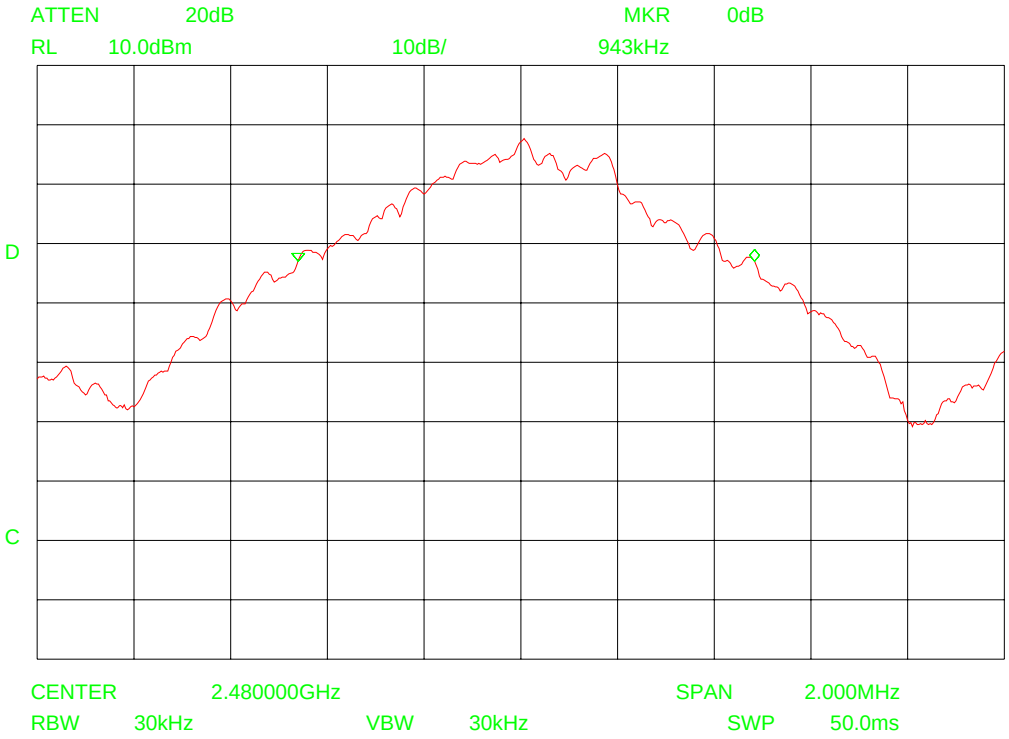
Measurement uncertainty: + 23/- 23 kHz



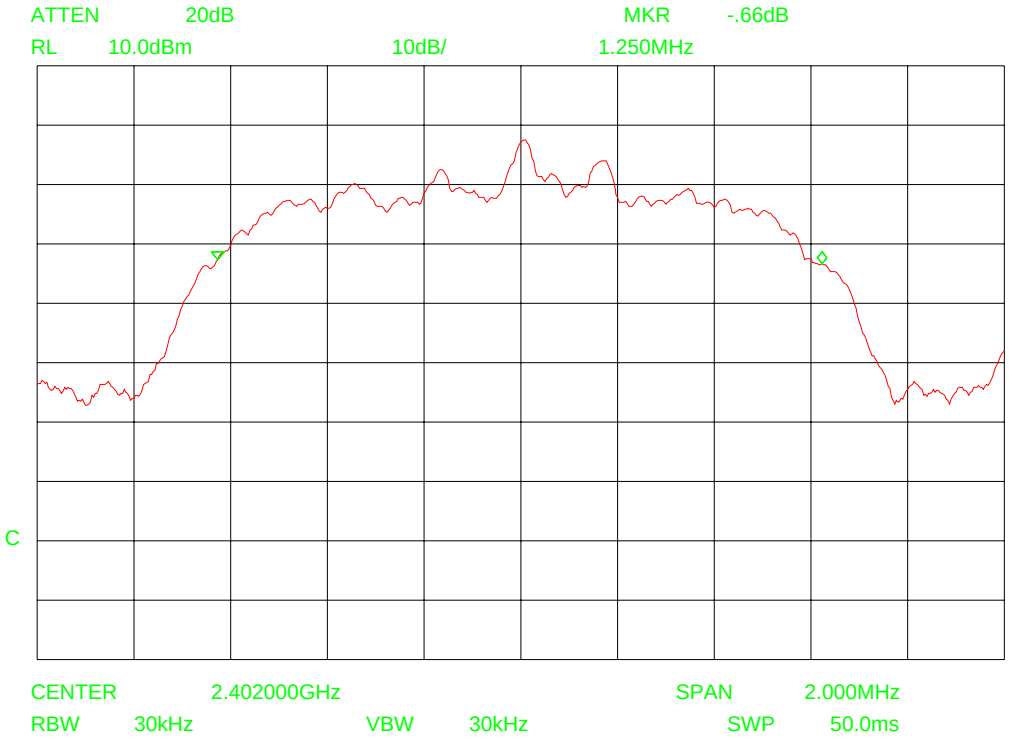
Plot 19 – 20 dB bandwidth on test channel 1 (2402 MHz, GFSK mode)



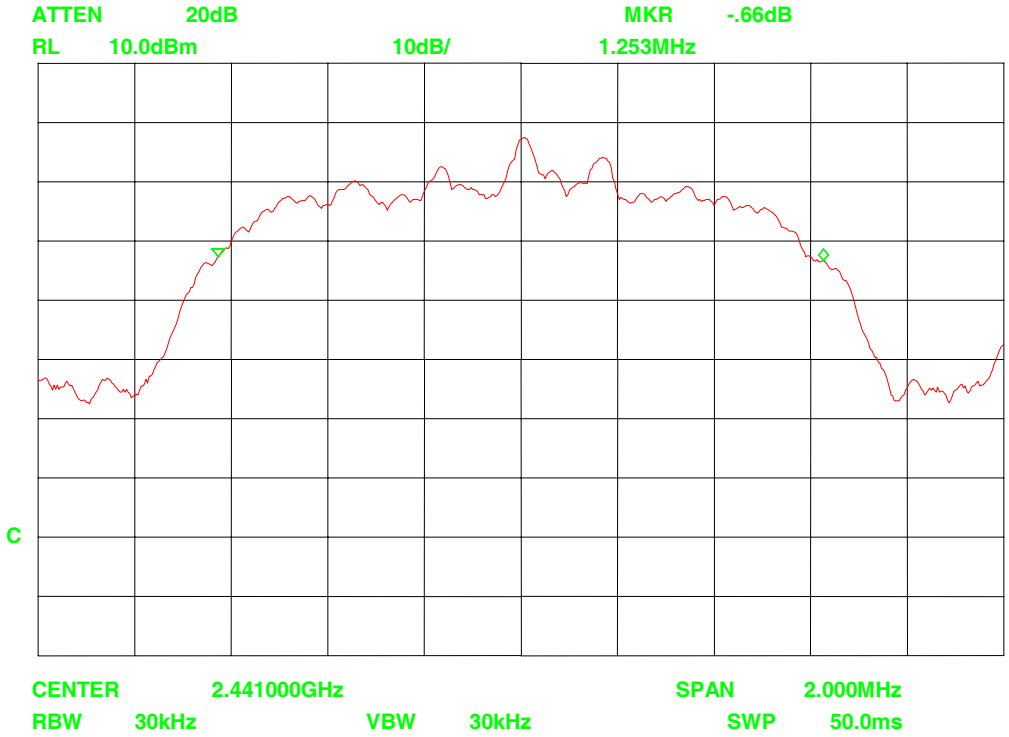
Plot 20 – 20 dB bandwidth on test channel 2 (2441 MHz, GFSK mode)



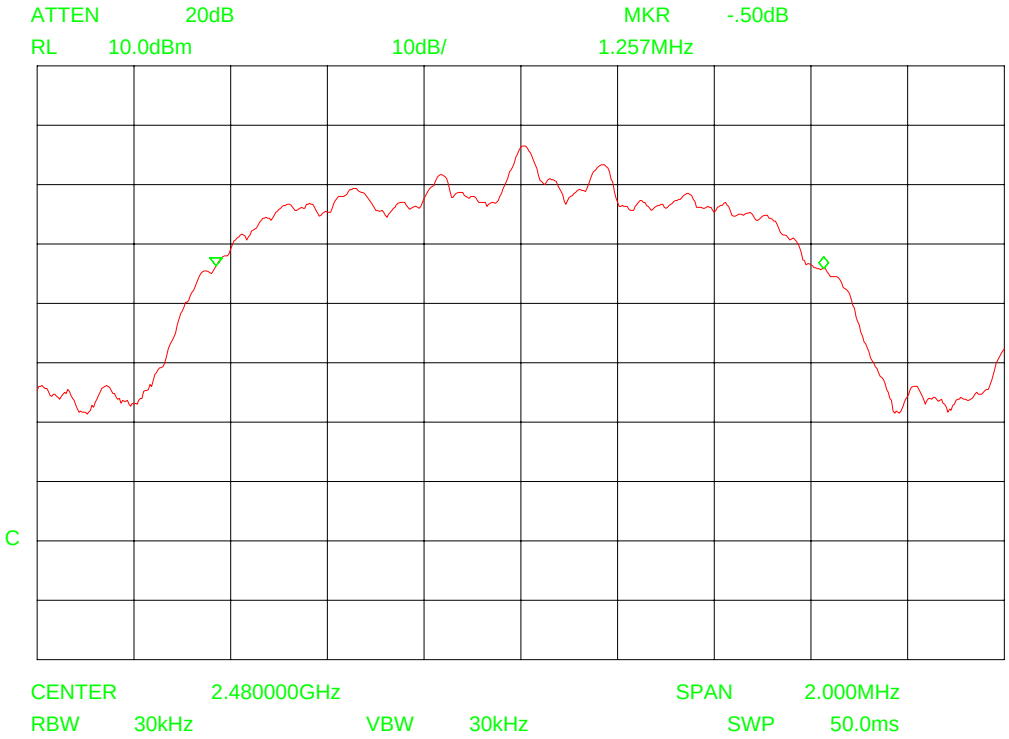
Plot 21 – 20 dB bandwidth on test channel 3 (2480 MHz, GFSK mode)



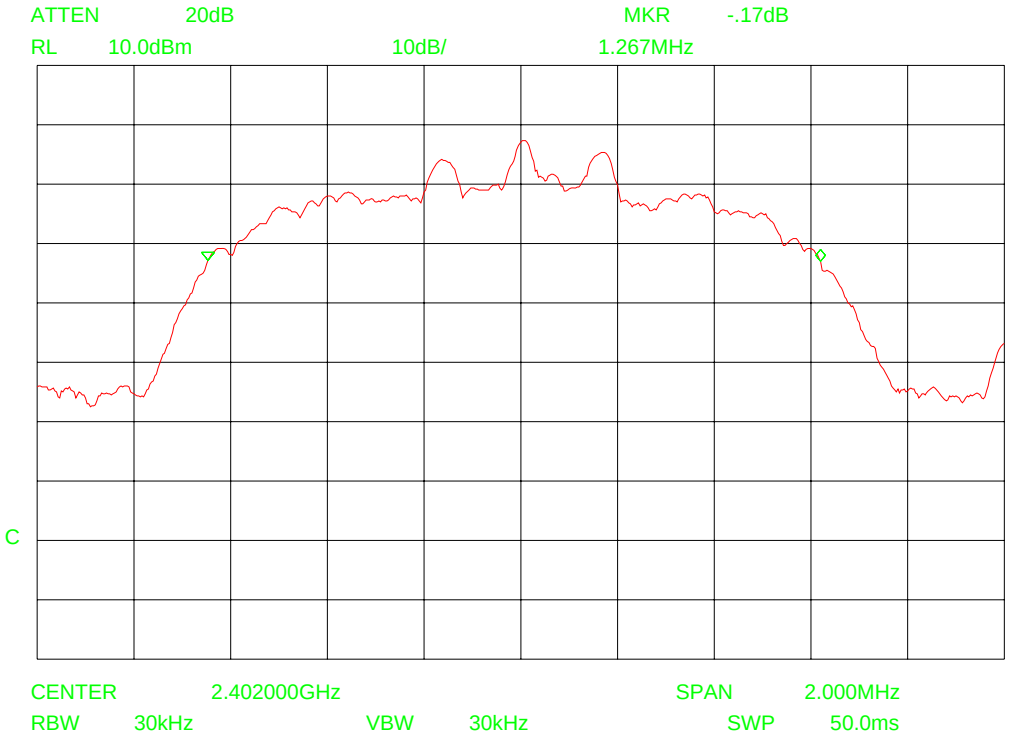
Plot 22 – 20 dB bandwidth on test channel 1 (2402 MHz, π/4-DQPSK mode)



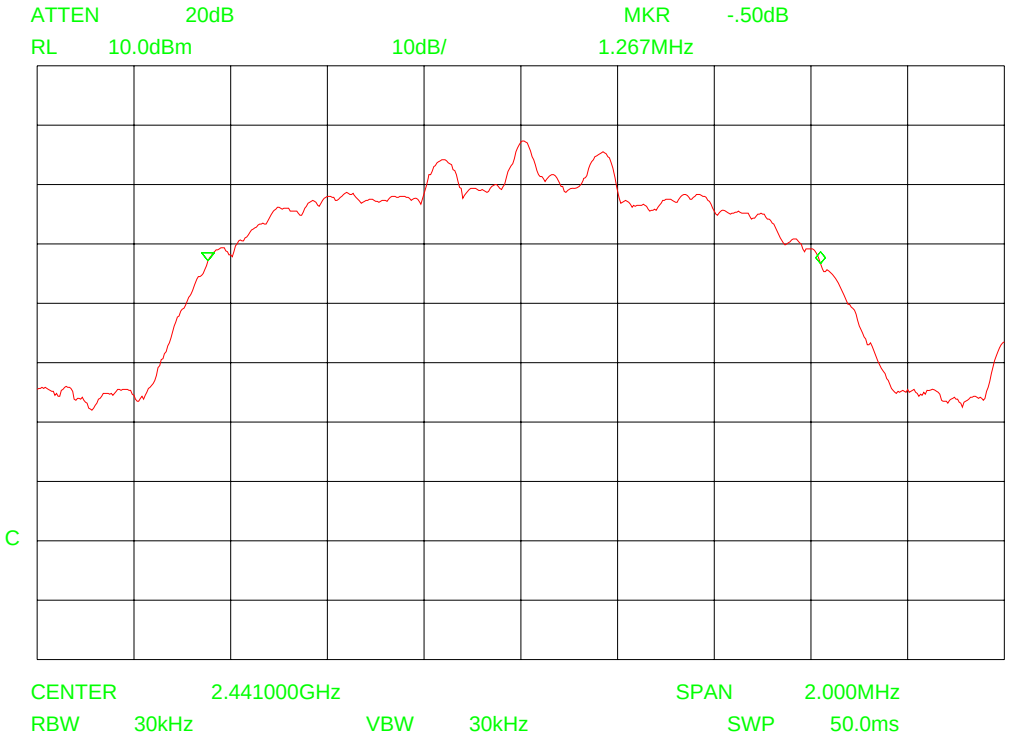
Plot 23 – 20 dB bandwidth on test channel 2 (2441 MHz, π/4-DQPSK mode)



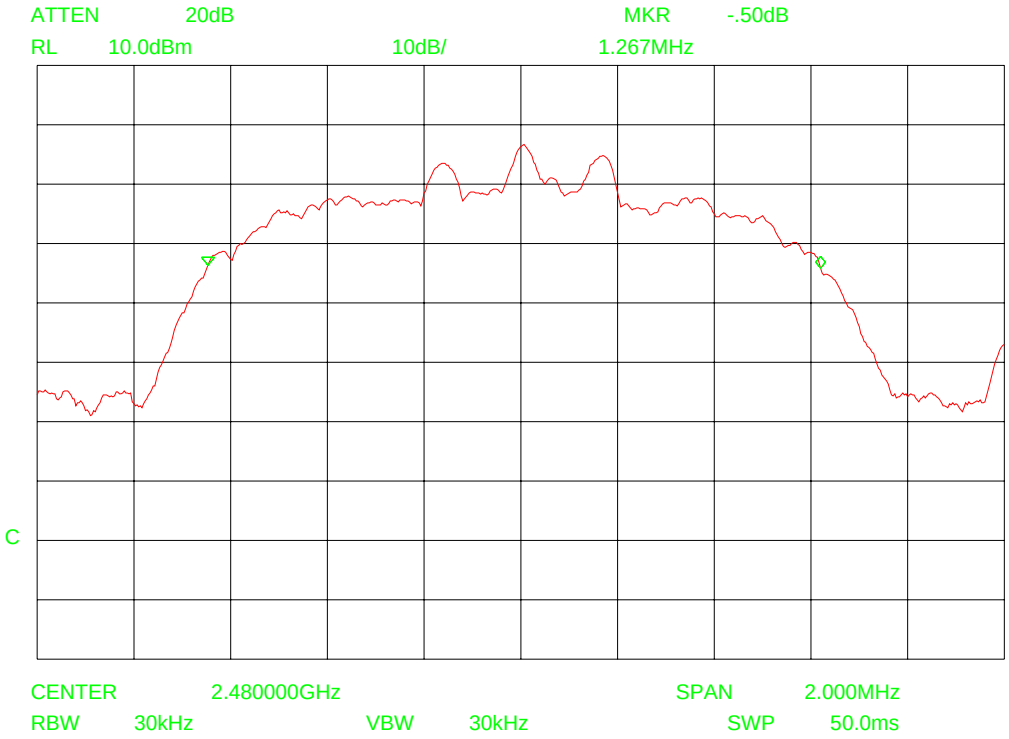
Plot 24 – 20 dB bandwidth on test channel 3 (2480 MHz, π/4-DQPSK mode)



Plot 25 – 20 dB bandwidth on test channel 1 (2402 MHz, 8DPSK mode)



Plot 26 – 20 dB bandwidth on test channel 2 (2441 MHz, 8DPSK mode)



Plot 27 – 20 dB bandwidth on test channel 3 (2480 MHz, 8DPSK mode)

3.5 Peak output power

Compliance standard : FCC part 15, subpart C, sections 15.247 (b)(1) and 15.247 (b)(4)
Method of test : Public Notice DA 00-705

Ambient temperature : 21 °C
Relative humidity : 50 %

3.5.1 Test method

The following is an excerpt from Public Notice DA 00-705 and describes the method for measuring the peak output power:

Use the following spectrum analyzer settings:

Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel

RBW > the 20 dB bandwidth of the emission being measured

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power (see the NOTE above regarding external attenuation and cable loss).

3.5.2 Test results

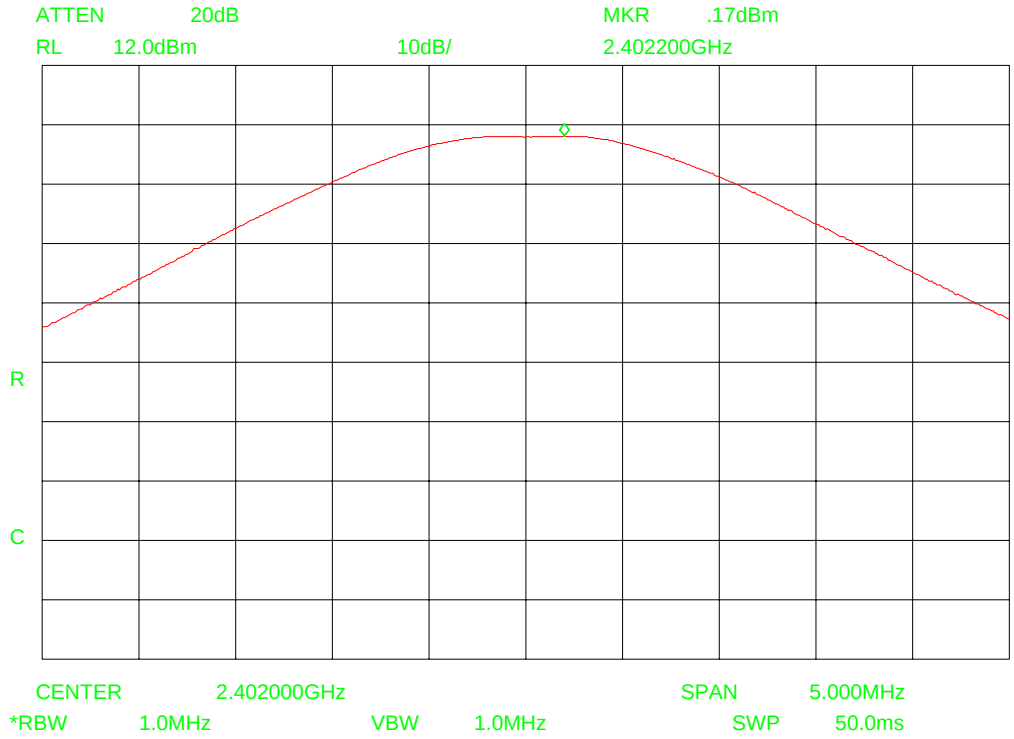
Conducted peak output power

Modulation	Test channel 1	Test channel 2	Test channel 3	Plot numbers (on next pages)
GFSK	0.17 dBm	0.20 dBm	0.33 dBm	28 – 30
π/4-DQPSK	1.00 dBm	0.53 dBm	0.17 dBm	31 – 33
8DPSK	1.00 dBm	0.70 dBm	0.33 dBm	34 – 36

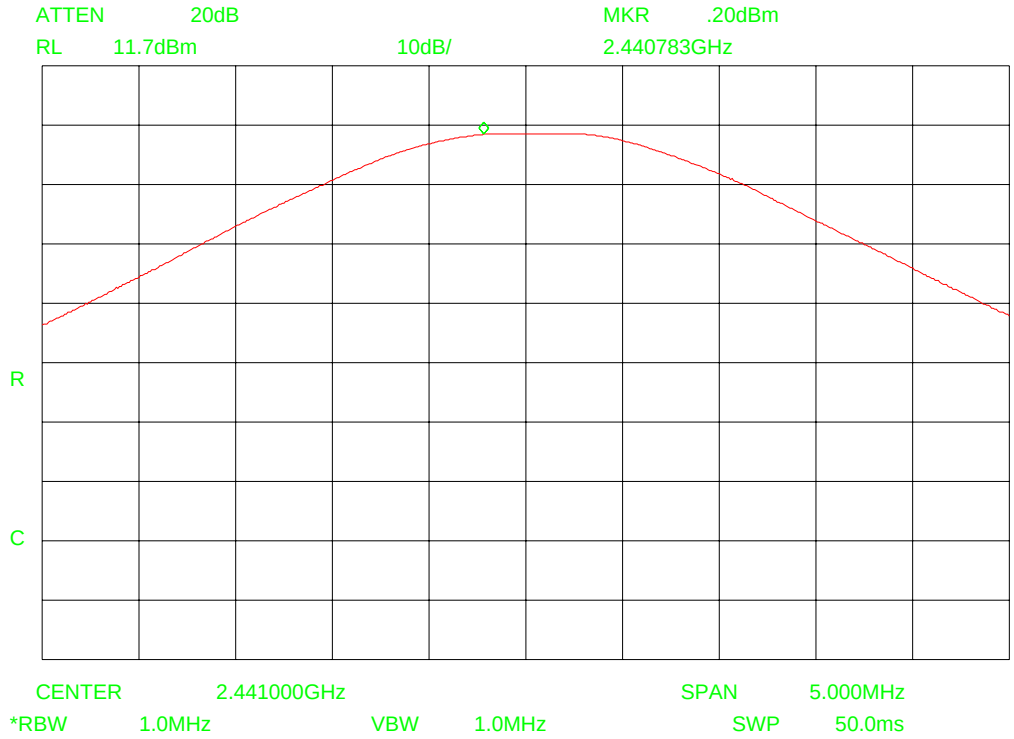
Radiated peak output power (EIRP, calculated, peak antenna gain of 2.0 dBi)

Modulation	Test channel 1	Test channel 2	Test channel 3
GFSK	2.17 dBm	2.20 dBm	2.33 dBm
π/4-DQPSK	3.00 dBm	2.53 dBm	2.17 dBm
8DPSK	3.00 dBm	2.70 dBm	2.33 dBm

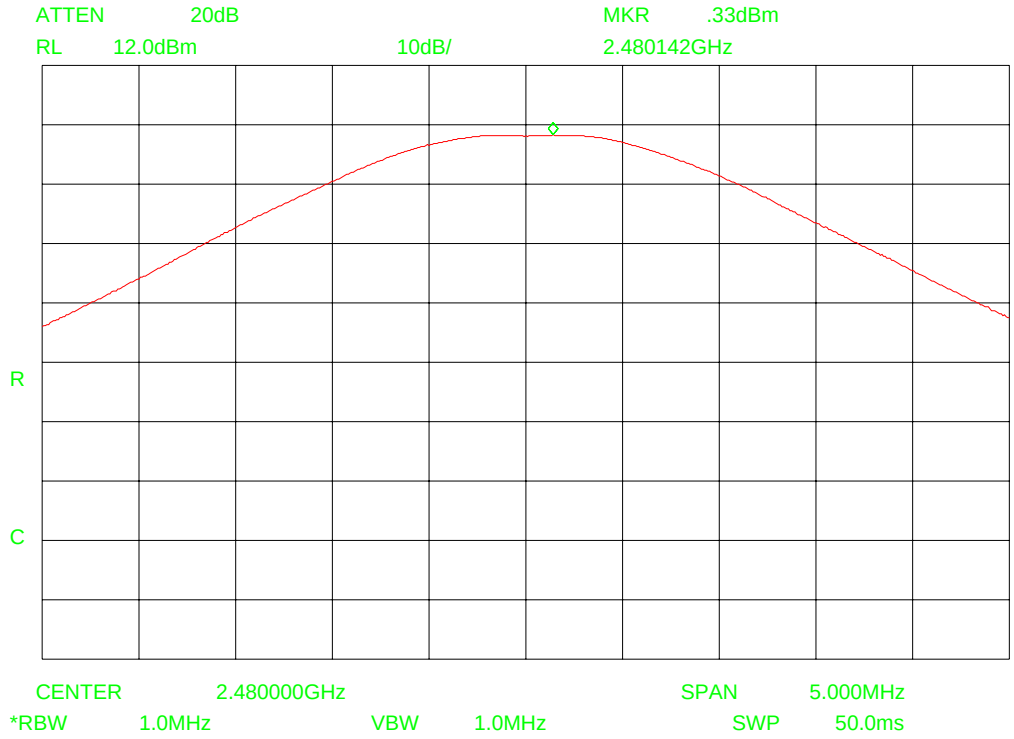
Measurement uncertainty: + 1.6/ -1.9 dB



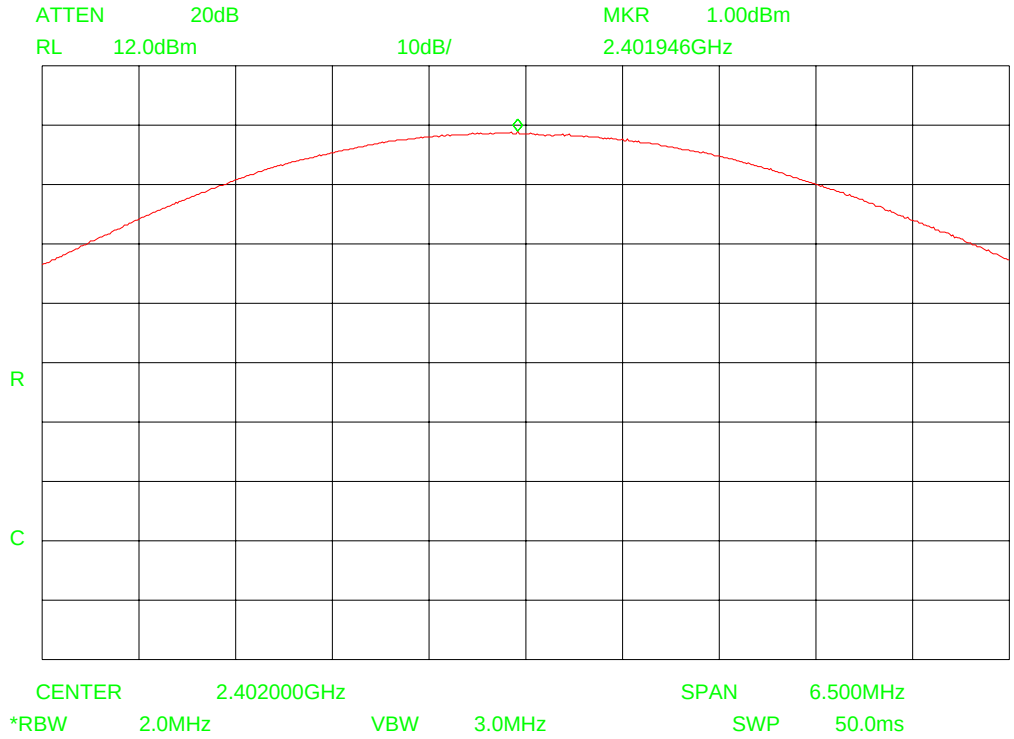
Plot 28 – Peak power output on 2402 MHz (GFSK mode, offset of 2 dB for cable losses)



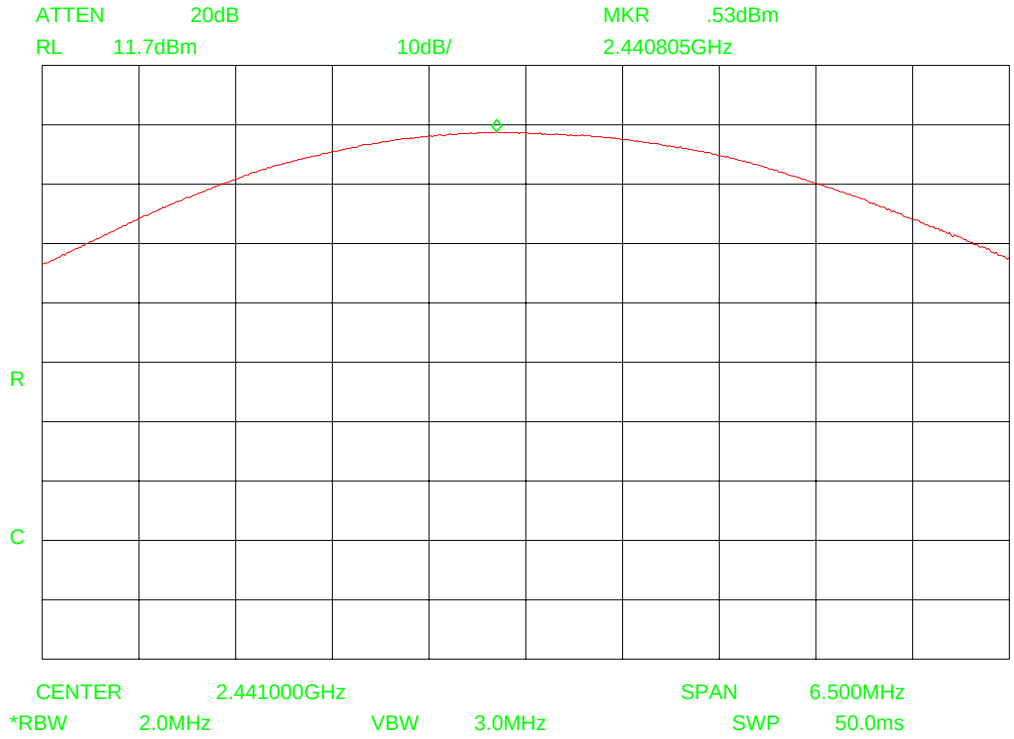
Plot 29 – Peak power output on 2441 MHz (GFSK mode, offset of 1.7 dB for cable losses)



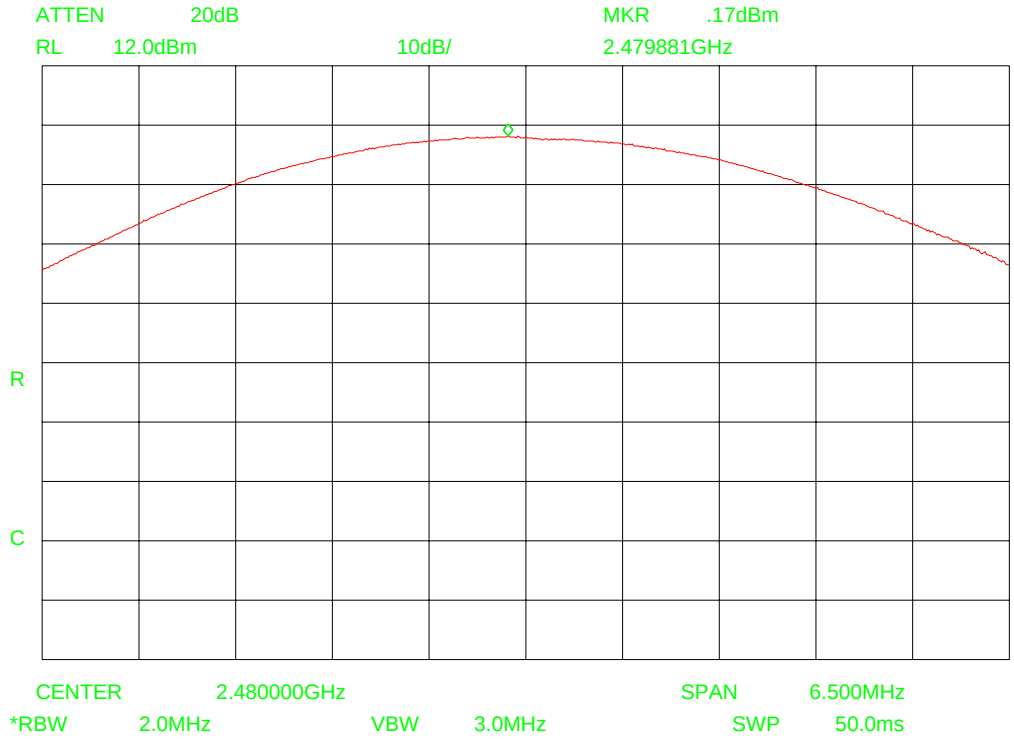
Plot 30 – Peak power output on 2480 MHz (GFSK mode, offset of 2 dB for cable losses)



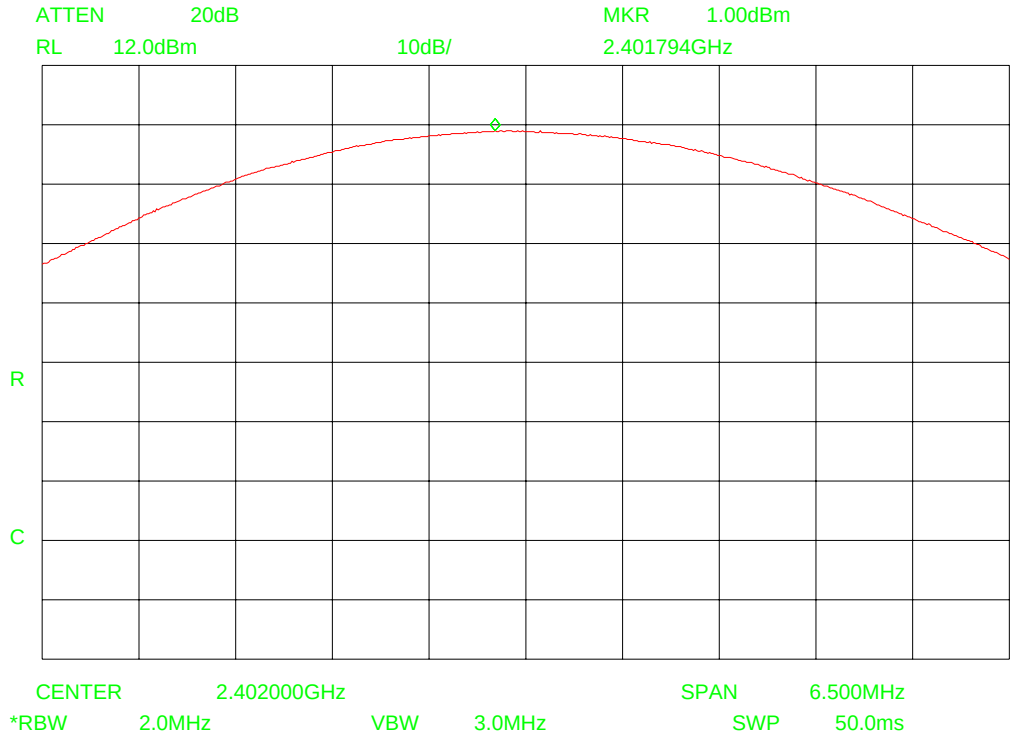
Plot 31 – Peak power output on 2402 MHz (π/4-DQPSK mode, offset of 2 dB for cable losses)



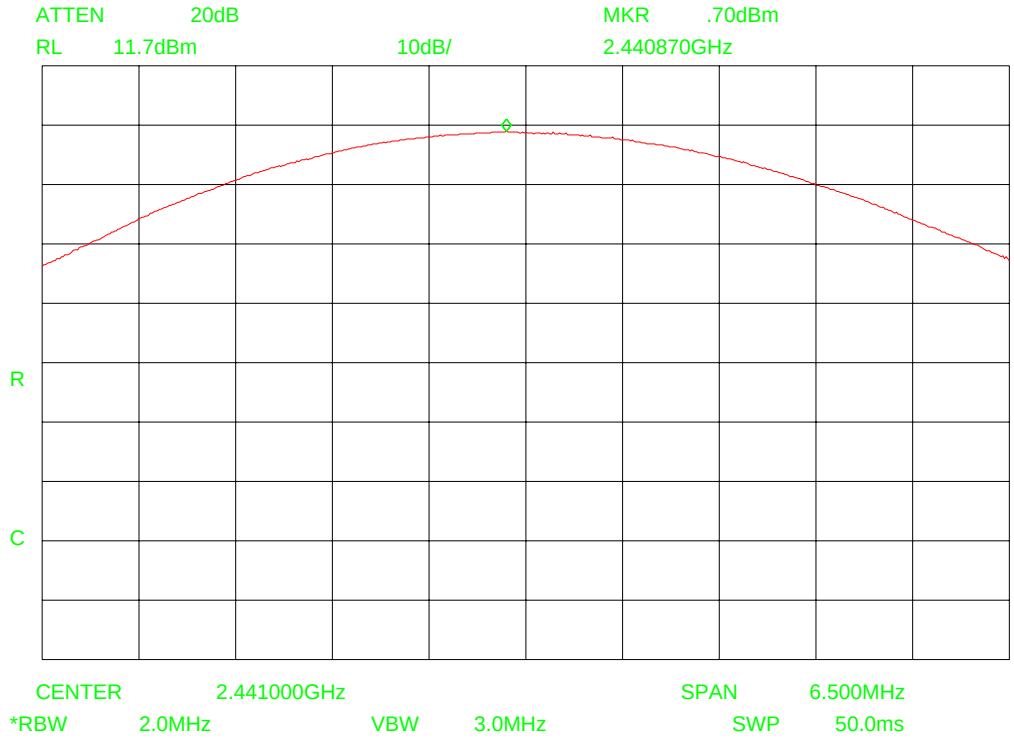
Plot 32 – Peak power output on 2441 MHz (π/4-DQPSK mode, offset of 1.7 dB for cable losses)



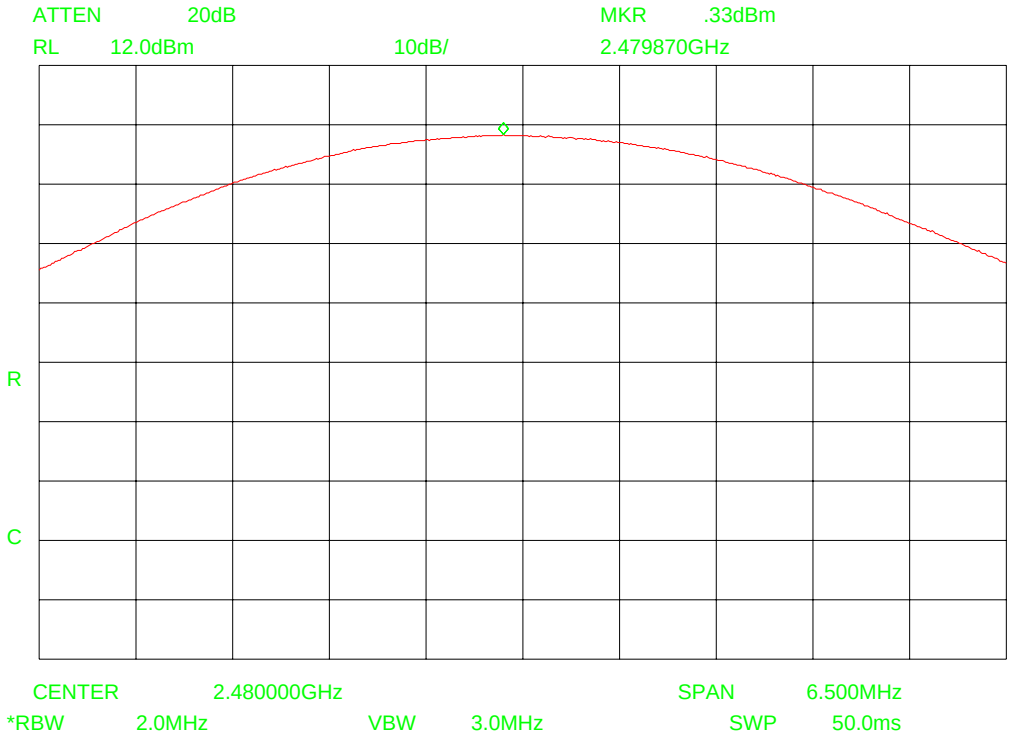
Plot 33 – Peak power output on 2480 MHz (π/4-DQPSK mode, offset of 2 dB for cable losses)



Plot 34 – Peak power output on 2402 MHz (8DPSK mode, offset of 2 dB for cable losses)



Plot 35 – Peak power output on 2441 MHz (8DPSK mode, offset of 1.7 dB for cable losses)



Plot 36 – Peak power output on 2480 MHz (8DPSK mode, offset of 2 dB for cable losses)

3.6 Band-edge compliance of RF conducted emissions

Compliance standard : FCC part 15, subpart C, section 15.247 (d)
Method of test : Public Notice DA 00-705

Ambient temperature : 21 °C
Relative humidity : 50 %

3.6.1 Test method

The following is an excerpt from Public Notice DA 00-705 and describes the method for measuring the band-edge compliance of RF conducted emissions:

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the emission operating on the channel closest to the bandedge, as well as any modulation products which fall outside of the authorized band of operation

RBW ≥ 1% of the span

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize. Set the marker on the emission at the bandedge, or on the highest modulation product outside of the band, if this level is greater than that at the bandedge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission.

Now, using the same instrument settings, enable the hopping function of the EUT. Allow the trace to stabilize. Follow the same procedure listed above to determine if any spurious emissions caused by the hopping function also comply with the specified limit.

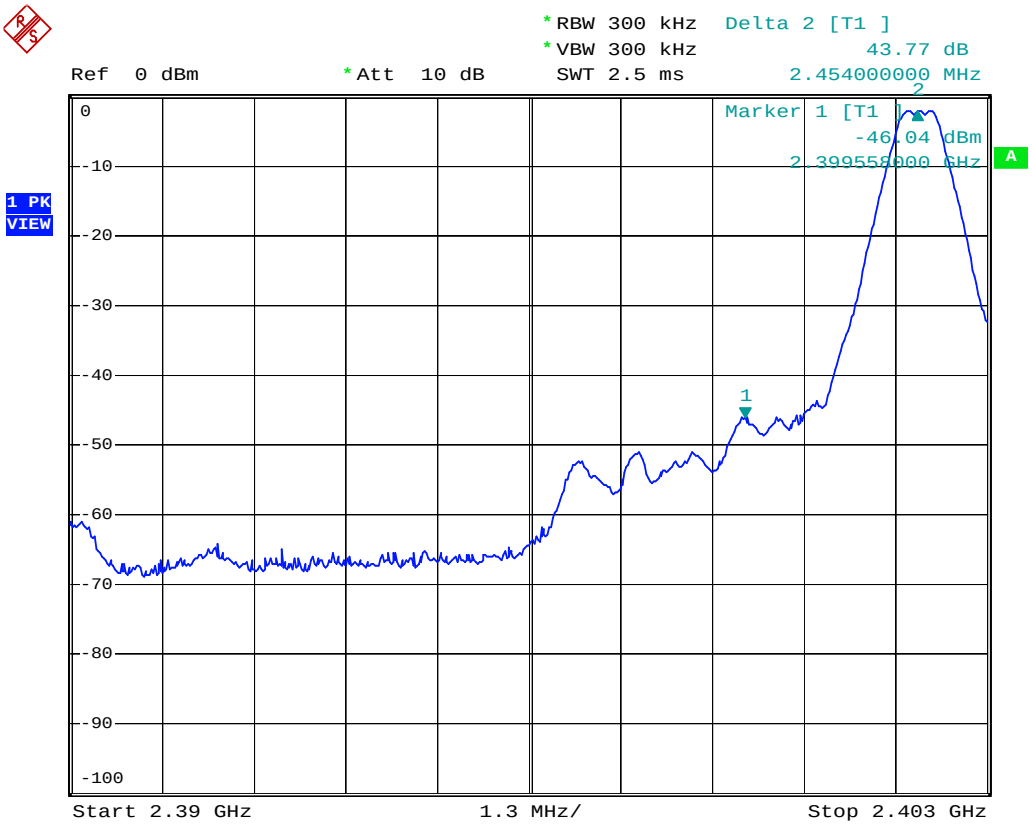
3.6.2 Test results

Continuous transmit mode

Modulation	Lower bandedge	Plot numbers (on next pages)
GFSK	-43.8 dBc	37
π/4-DQPSK	-45.7 dBc	38
8DPSK	-45.9 dBc	39

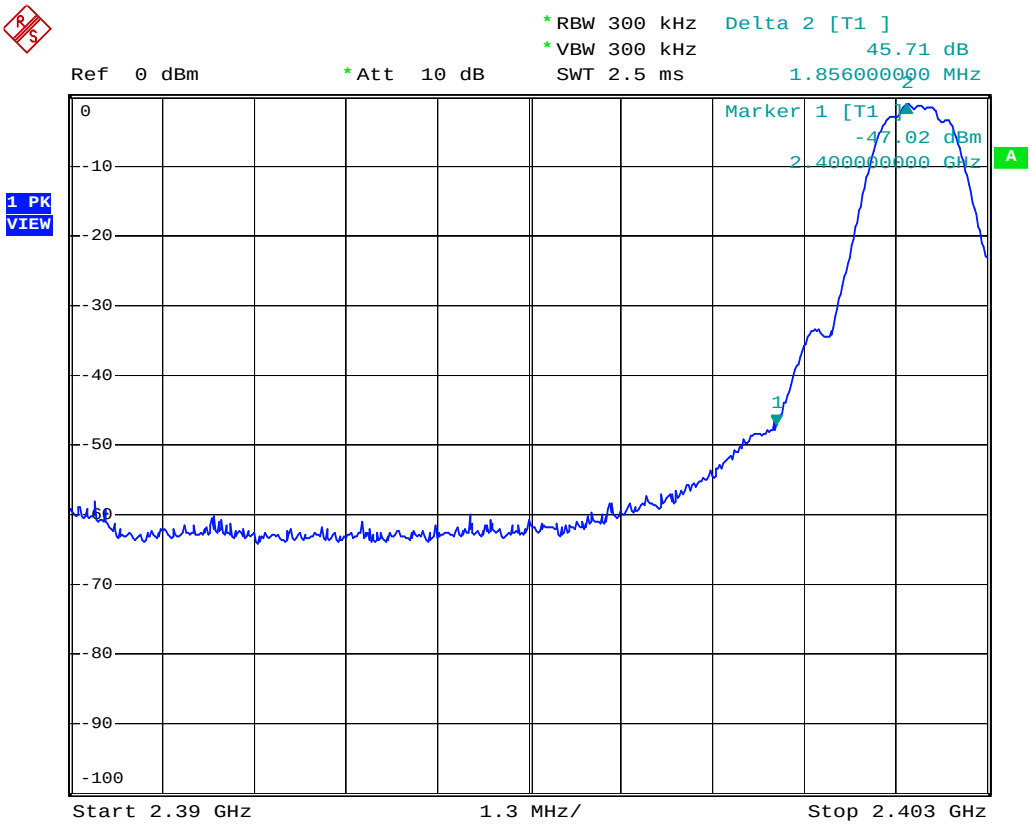
Hopping transmit mode

Modulation	Lower bandedge	Plot numbers (on next pages)
GFSK	-44.6 dBc	40
π/4-DQPSK	-45.9 dBc	41
8DPSK	-48.1 dBc	42



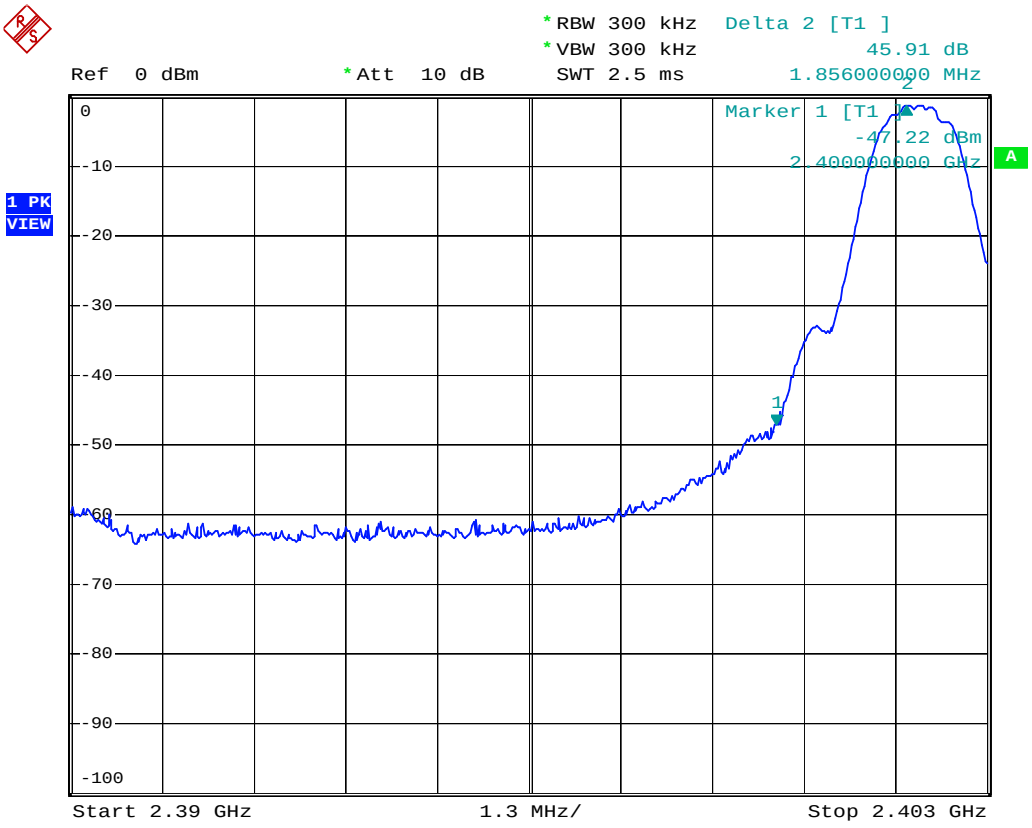
Date: 12.SEP.2007 17:01:25

Plot 37 – Emission at the lower bandedge of the frequency band 2.4 – 2.4835 MHz (continuous transmit mode, GFSK mode, measurement results in peak mode)



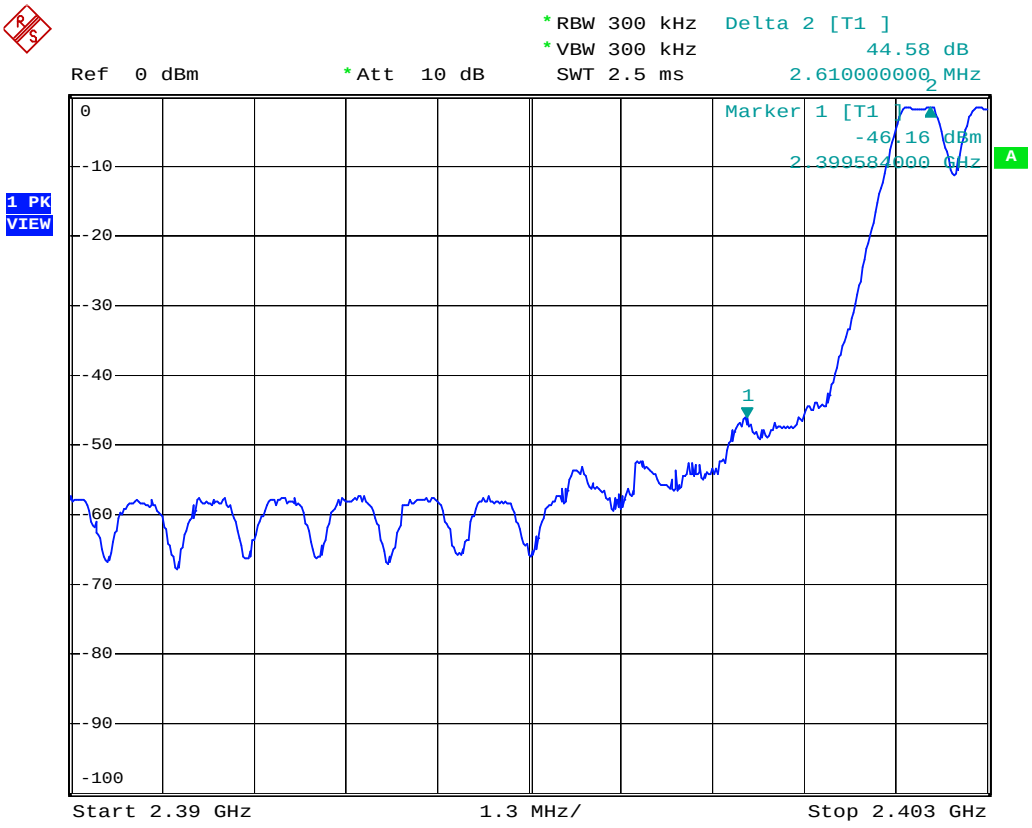
Date: 12.SEP.2007 16:56:49

Plot 38 – Emission at the lower bandedge of the frequency band 2.4 – 2.4835 MHz (continuous transmit mode, π/4-DQPSK mode, measurement results in peak mode)



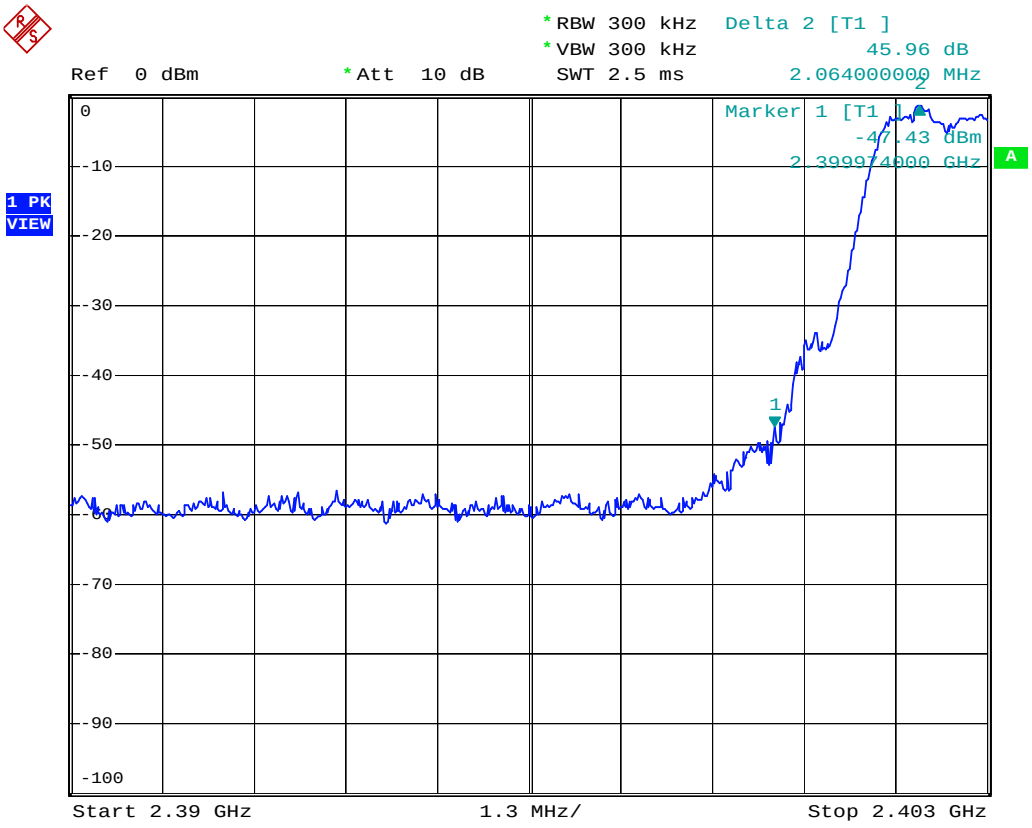
Date: 12.SEP.2007 16:54:50

Plot 39 – Emission at the lower bandedge of the frequency band 2.4 – 2.4835 MHz (continuous transmit mode, 8DPSK mode, measurement results in peak mode)



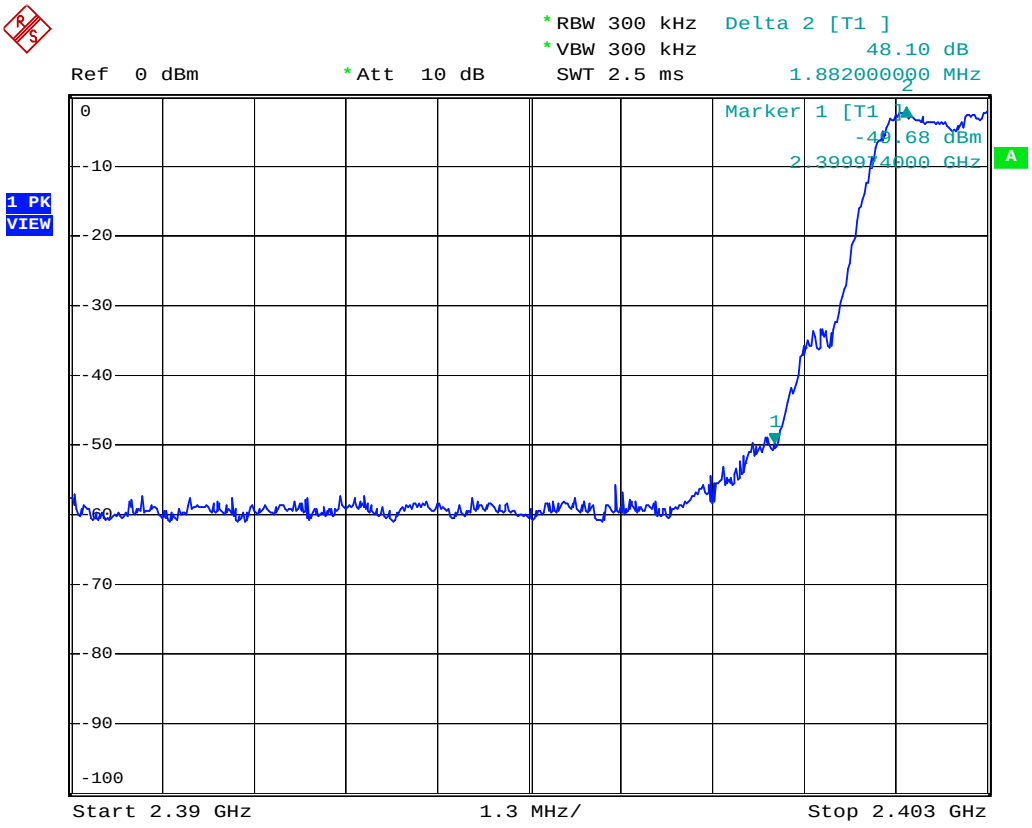
Date: 12.SEP.2007 17:04:47

Plot 40 – Emission at the lower bandedge of the frequency band 2.4 – 2.4835 MHz (hopping transmit mode, GFSK mode, measurement results in peak mode)



Date: 12.SEP.2007 17:07:37

Plot 41 – Emission at the lower bandedge of the frequency band 2.4 – 2.4835 MHz (hopping transmit mode, π/4-DQPSK mode, measurement results in peak mode)



Date: 12.SEP.2007 17:09:28

Plot 42 – Emission at the lower bandedge of the frequency band 2.4 – 2.4835 MHz (hopping transmit mode, 8DPSK mode, measurement results in peak mode)

3.7 Spurious RF conducted emissions

Compliance standard : FCC part 15, subpart C, section 15.247 (d)
Method of test : Public Notice DA 00-705

Ambient temperature : 21 °C
Relative humidity : 50 %

3.7.1 Test method

The following is an excerpt from Public Notice DA 00-705 and describes the method for measuring the spurious RF conducted emissions:

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.

RBW = 100 kHz

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded.

3.7.2 Test results

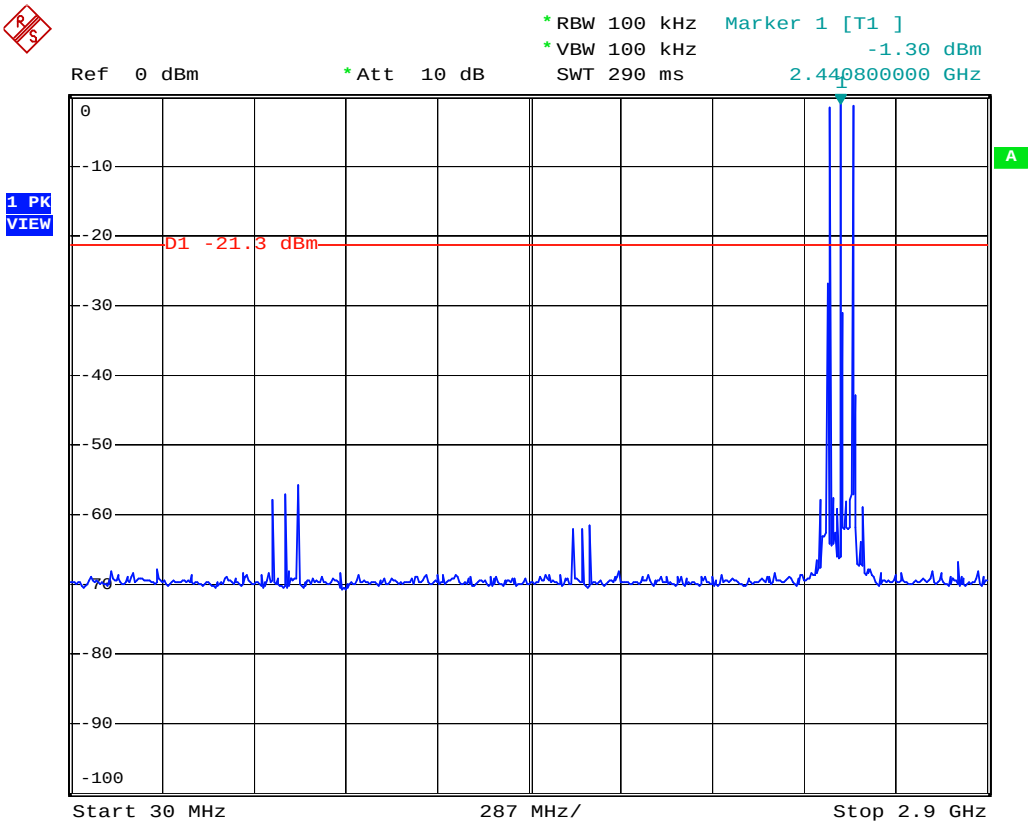
Continuous transmit mode

Modulation	Plot numbers (on next pages)
GFSK	43 – 45
π/4-DQPSK	46 – 48
8DPSK	49 – 51

Hopping transmit mode

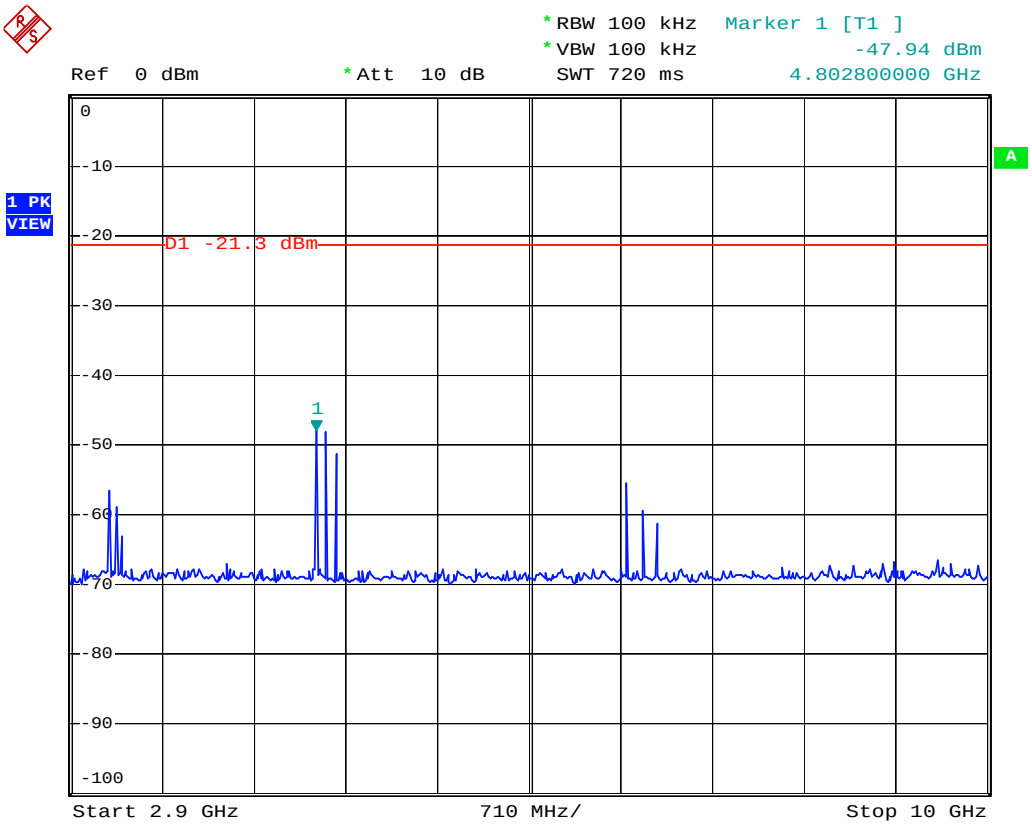
Modulation	Plot numbers (on next pages)
GFSK	52 – 54
π/4-DQPSK	55 – 57
8DPSK	58 – 60

Measurement uncertainty: 0.03 – 2 GHz: +1.7 / -1.9 dB, > 2 GHz: +2.4 /-2.7 dB



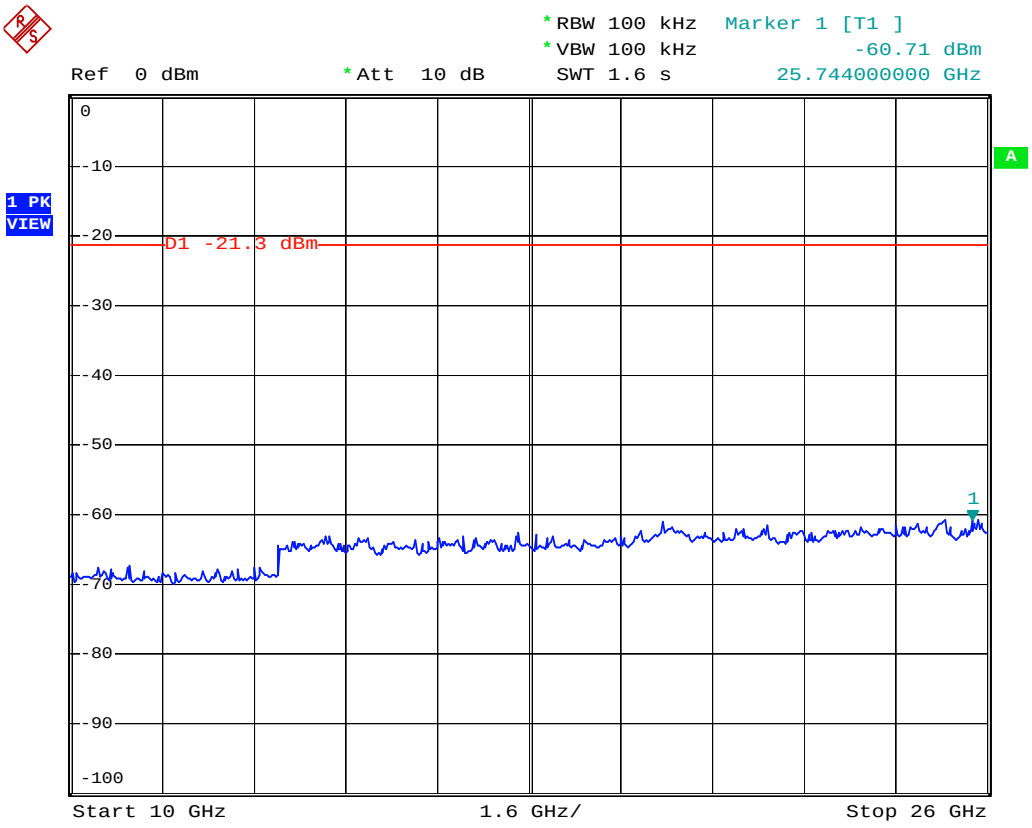
Date: 12.SEP.2007 14:47:41

Plot 43 – Spurious RF conducted emissions in the frequency range of 30 MHz – 2.9 GHz (continuous transmit mode on 2402 MHz, 2441 MHz and 2480 MHz, GFSK mode)



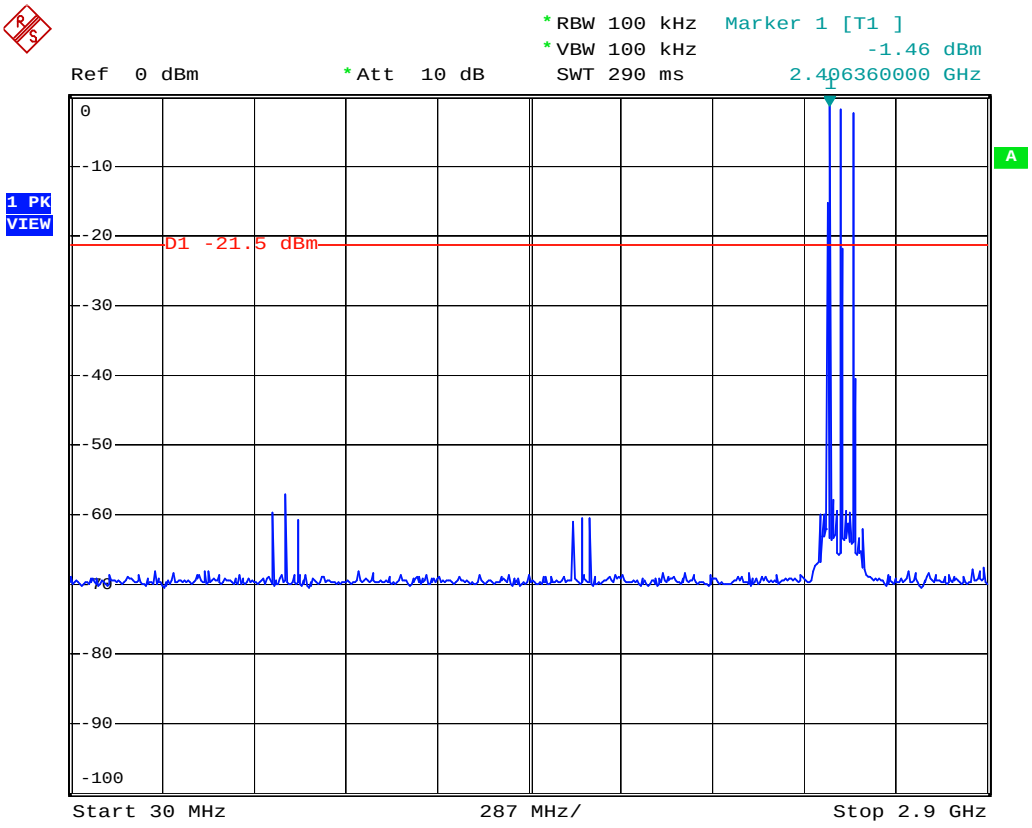
Date: 12.SEP.2007 14:51:13

Plot 44 – Spurious RF conducted emissions in the frequency range of 2.9 GHz – 10 GHz (continuous transmit mode on 2402 MHz, 2441 MHz and 2480 MHz, GFSK mode)



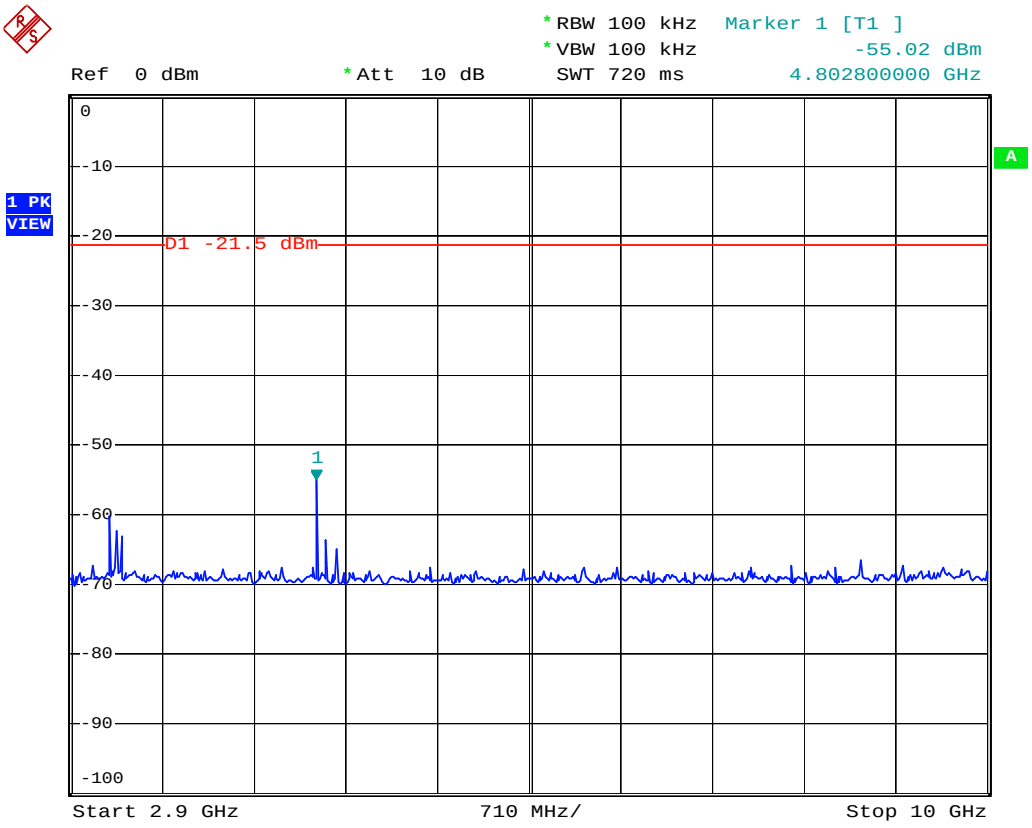
Date: 12.SEP.2007 14:53:43

Plot 45 – Spurious RF conducted emissions in the frequency range of 10 GHz – 26 GHz (continuous transmit mode on 2402 MHz, 2441 MHz and 2480 MHz, GFSK mode)



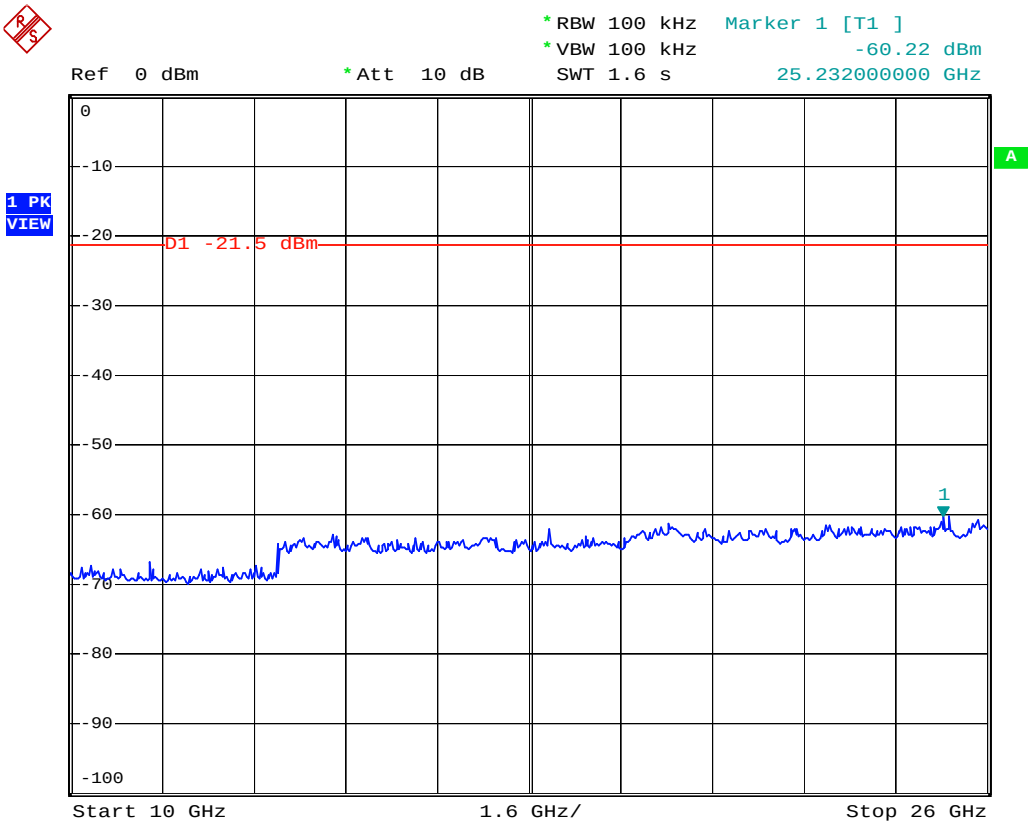
Date: 12.SEP.2007 14:59:53

Plot 46 – Spurious RF conducted emissions in the frequency range of 30 MHz – 2.9 GHz (continuous transmit mode on 2402 MHz, 2441 MHz and 2480 MHz, π/4-DQPSK mode)



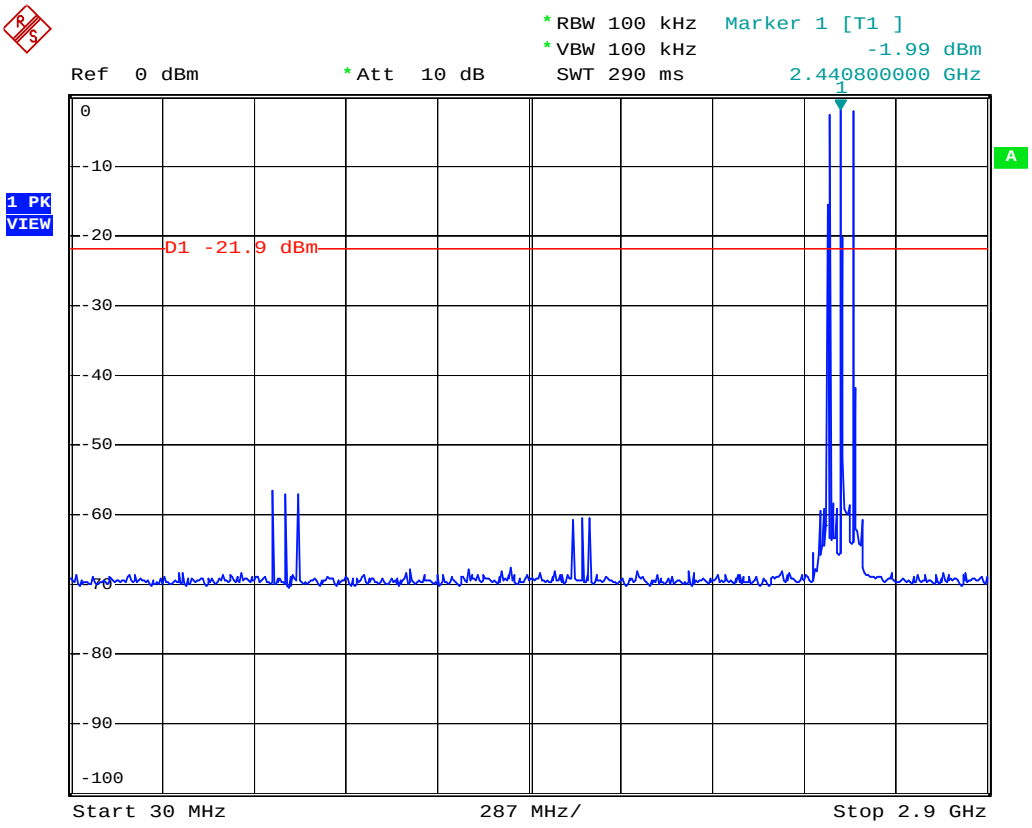
Date: 12.SEP.2007 15:02:10

Plot 47 – Spurious RF conducted emissions in the frequency range of 2.9 GHz – 10 GHz (continuous transmit mode on 2402 MHz, 2441 MHz and 2480 MHz, π/4-DQPSK mode)



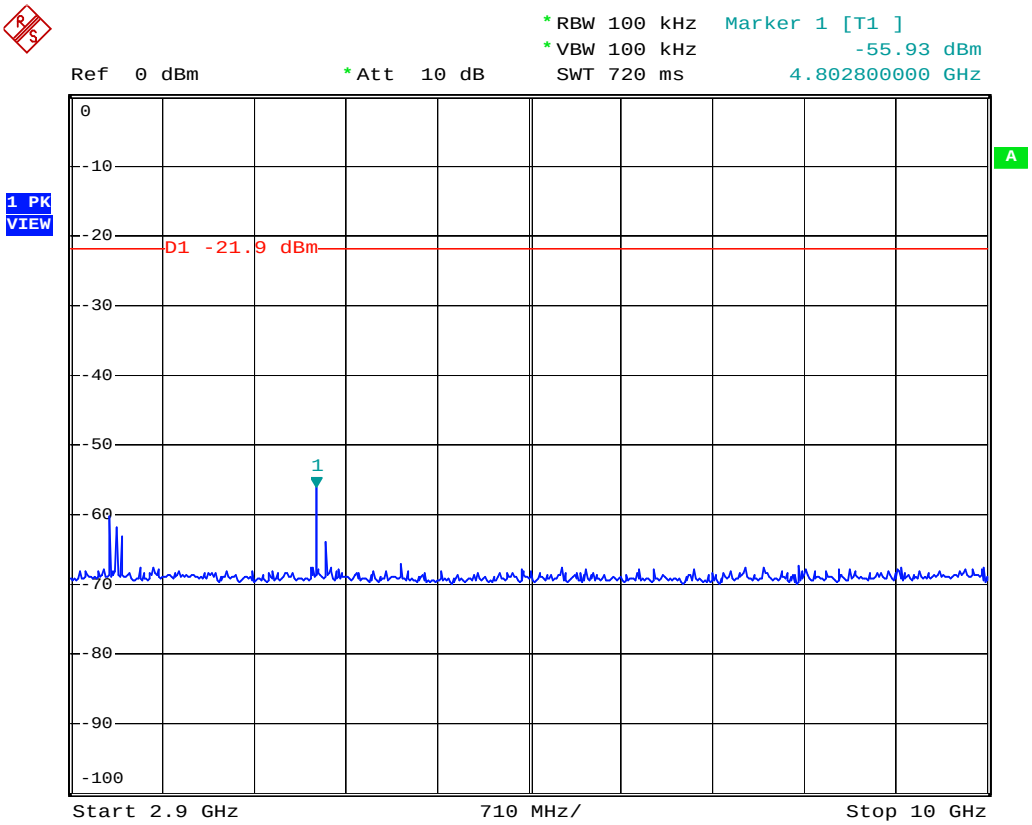
Date: 12.SEP.2007 15:04:29

Plot 48 – Spurious RF conducted emissions in the frequency range of 10 GHz – 26 GHz (continuous transmit mode on 2402 MHz, 2441 MHz and 2480 MHz, π/4-DQPSK mode)



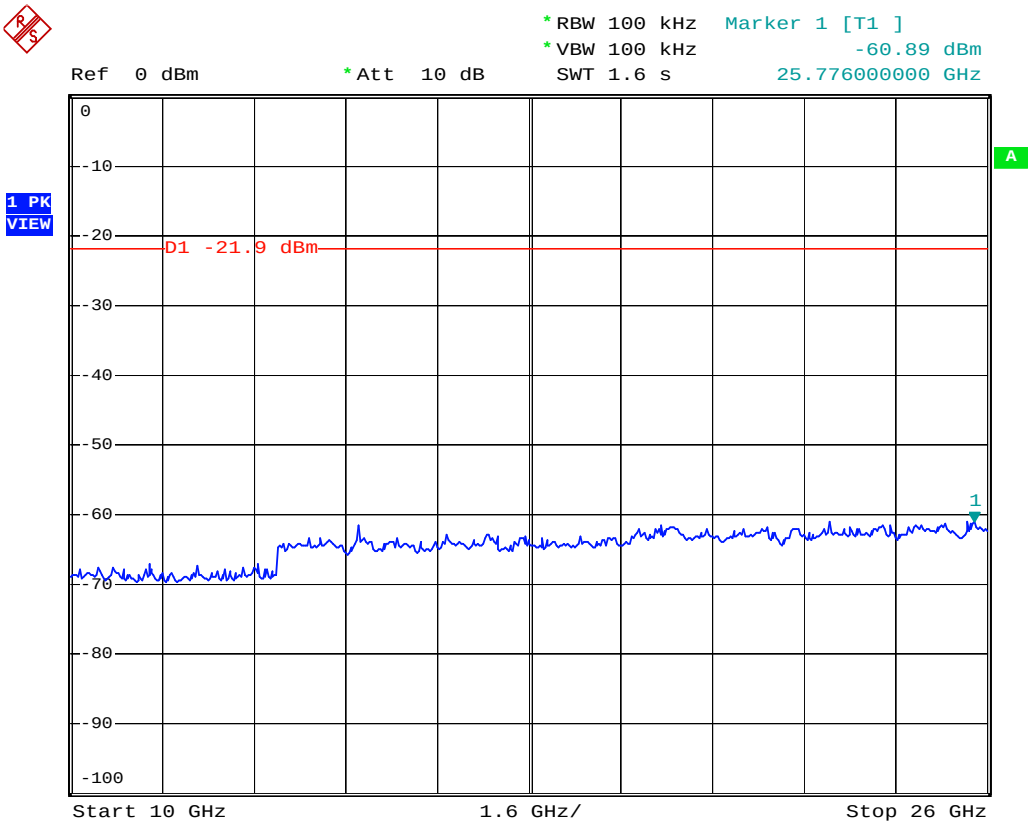
Date: 12.SEP.2007 15:08:11

Plot 49 – Spurious RF conducted emissions in the frequency range of 30 MHz – 2.9 GHz (continuous transmit mode on 2402 MHz, 2441 MHz and 2480 MHz, 8DPSK mode)



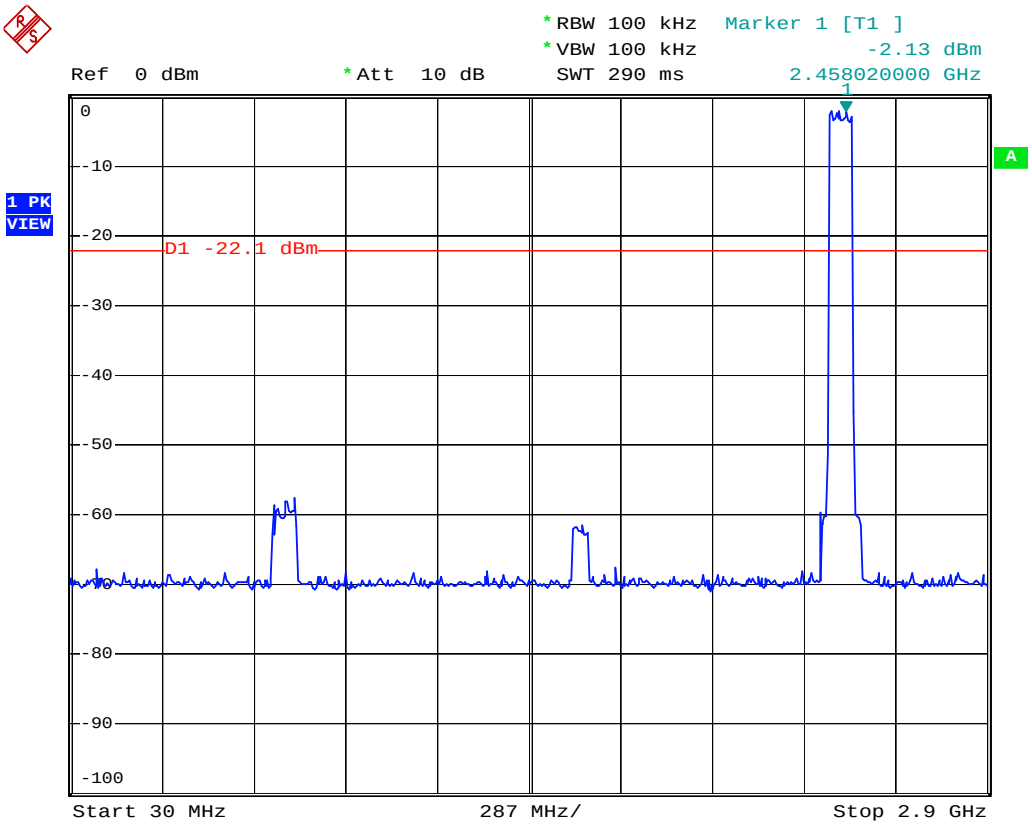
Date: 12.SEP.2007 15:10:55

Plot 50 – Spurious RF conducted emissions in the frequency range of 2.9 GHz – 10 GHz (continuous transmit mode on 2402 MHz, 2441 MHz and 2480 MHz, 8DPSK mode)



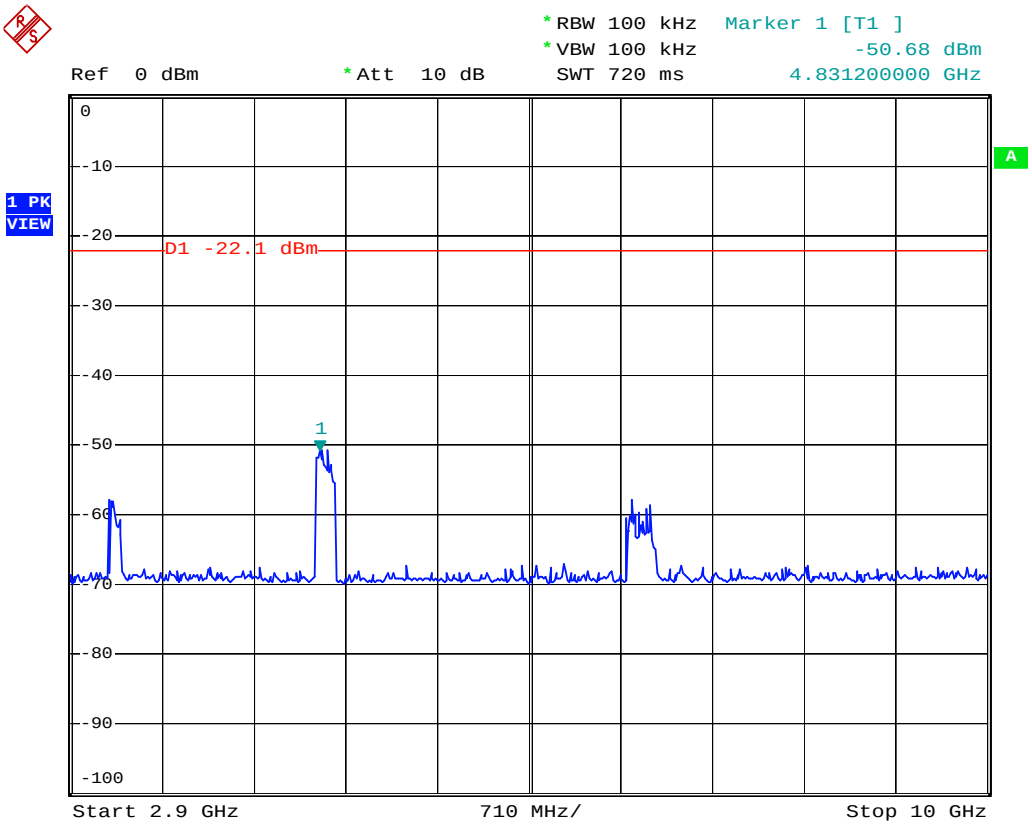
Date: 12.SEP.2007 15:13:39

Plot 51 – Spurious RF conducted emissions in the frequency range of 10 GHz – 26 GHz (continuous transmit mode on 2402 MHz, 2441 MHz and 2480 MHz, 8DPSK mode)



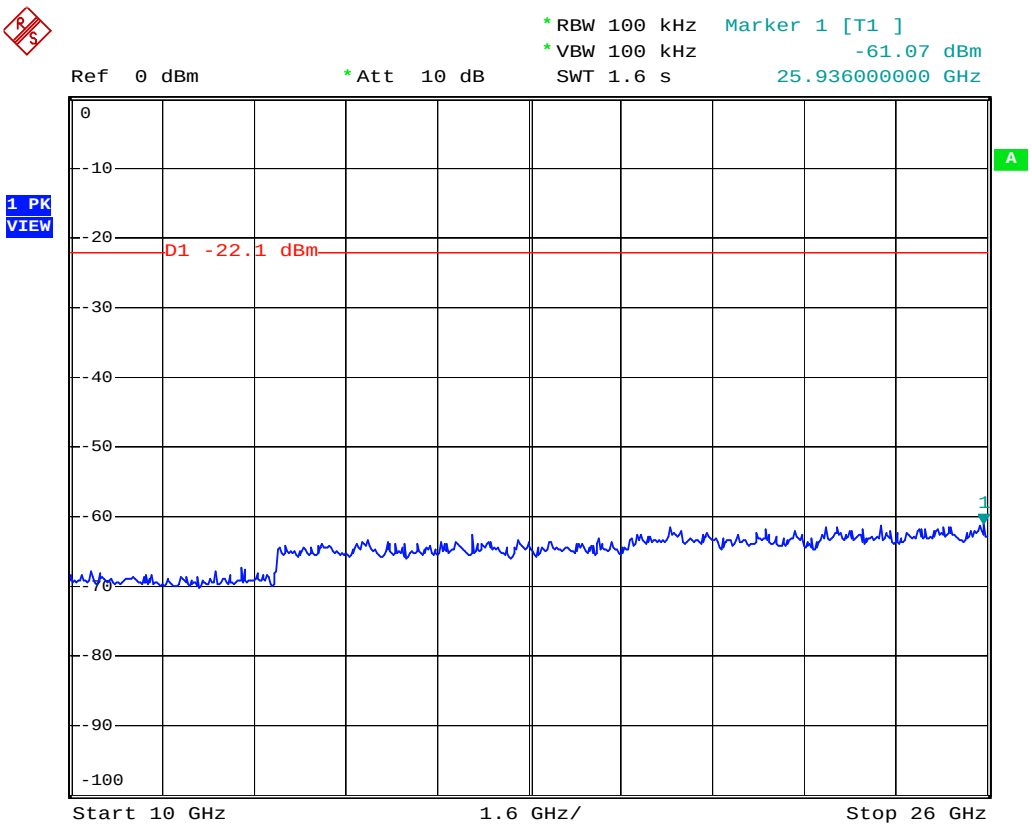
Date: 12.SEP.2007 15:31:24

Plot 52 – Spurious RF conducted emissions in the frequency range of 30 MHz – 2.9 GHz (hopping transmit mode, GFSK mode)



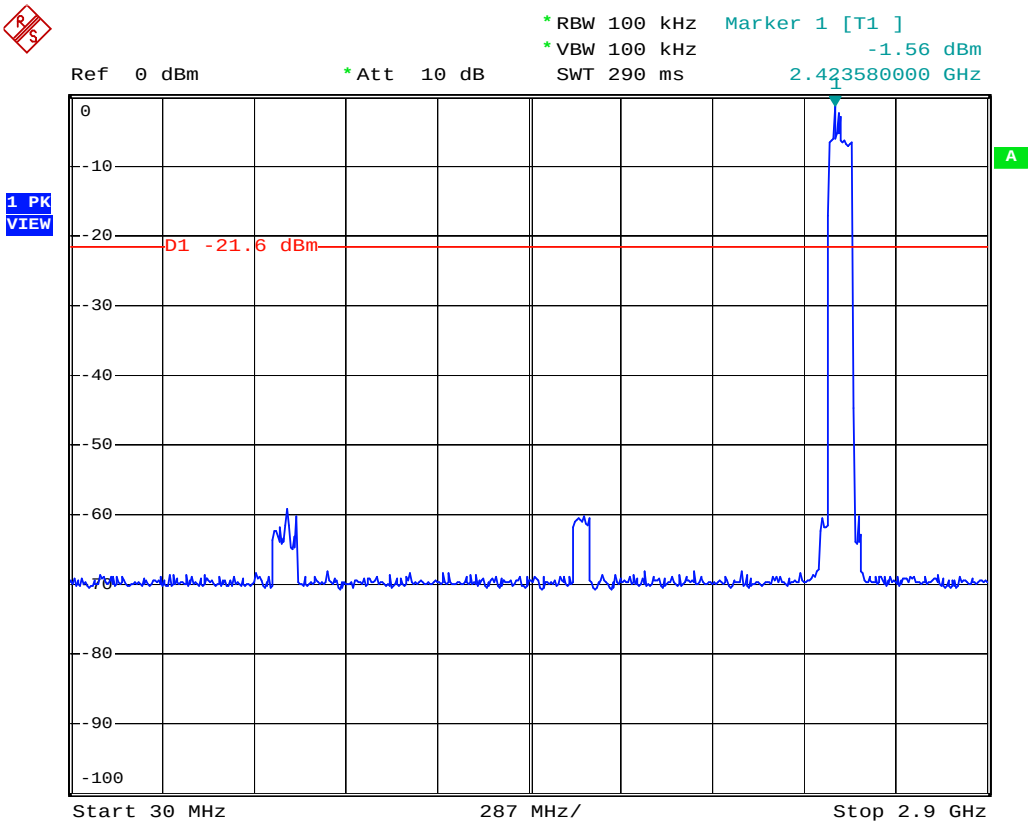
Date: 12.SEP.2007 15:33:45

Plot 53 – Spurious RF conducted emissions in the frequency range of 2.9 GHz – 10 GHz (hopping transmit mode, GFSK mode)



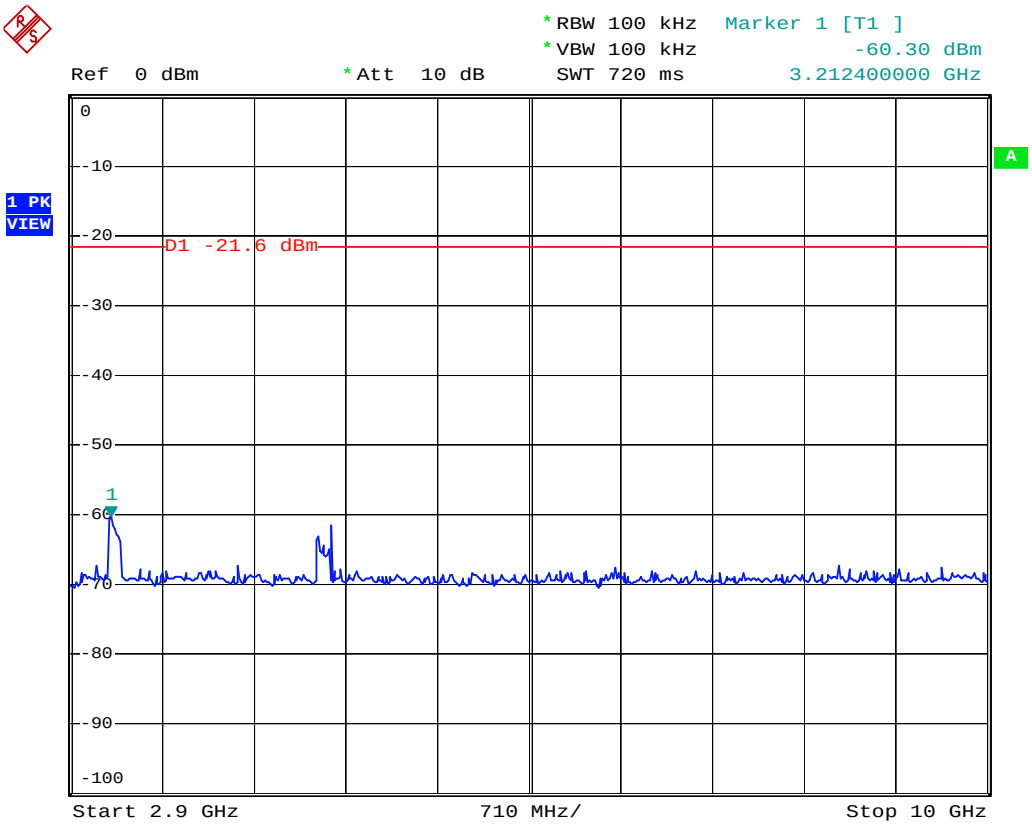
Date: 12.SEP.2007 15:35:05

Plot 54 – Spurious RF conducted emissions in the frequency range of 10 GHz – 26 GHz (hopping transmit mode, GFSK mode)



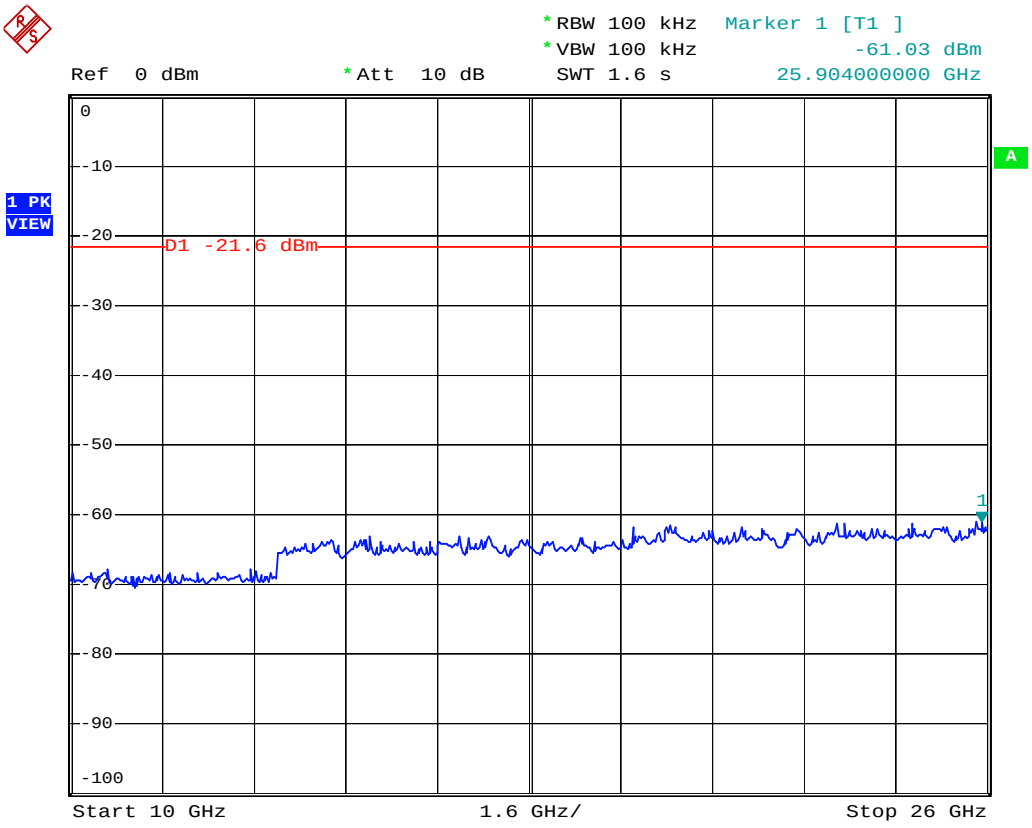
Date: 12.SEP.2007 15:25:27

Plot 55 – Spurious RF conducted emissions in the frequency range of 30 MHz – 2.9 GHz (hopping transmit mode, π/4-DQPSK mode)



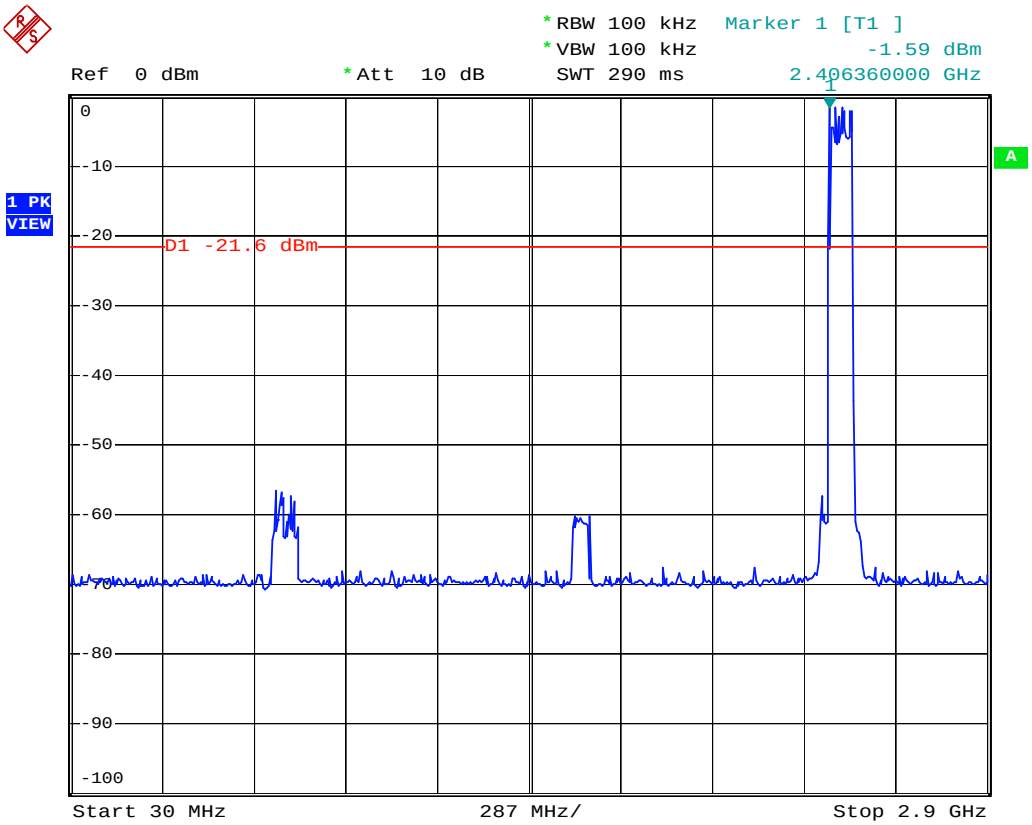
Date: 12.SEP.2007 15:27:12

Plot 56 – Spurious RF conducted emissions in the frequency range of 2.9 GHz – 10 GHz (hopping transmit mode, π/4-DQPSK mode)



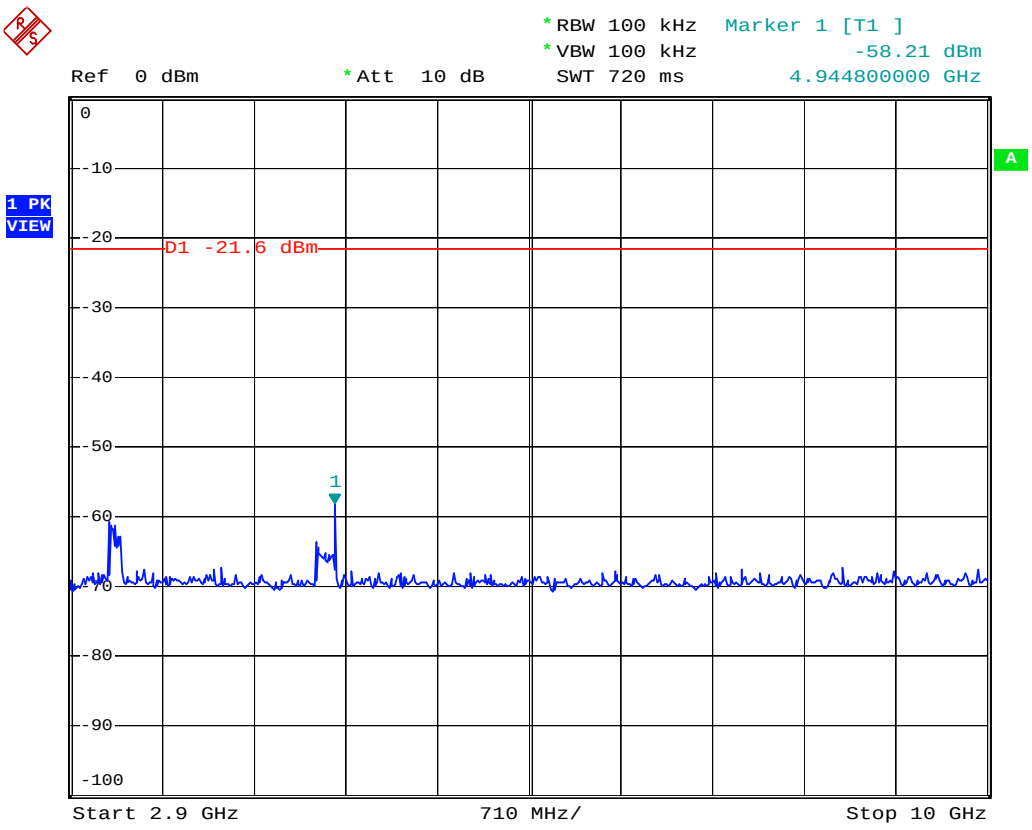
Date: 12.SEP.2007 15:28:32

Plot 57 – Spurious RF conducted emissions in the frequency range of 10 GHz – 26 GHz (hopping transmit mode, π/4-DQPSK mode)



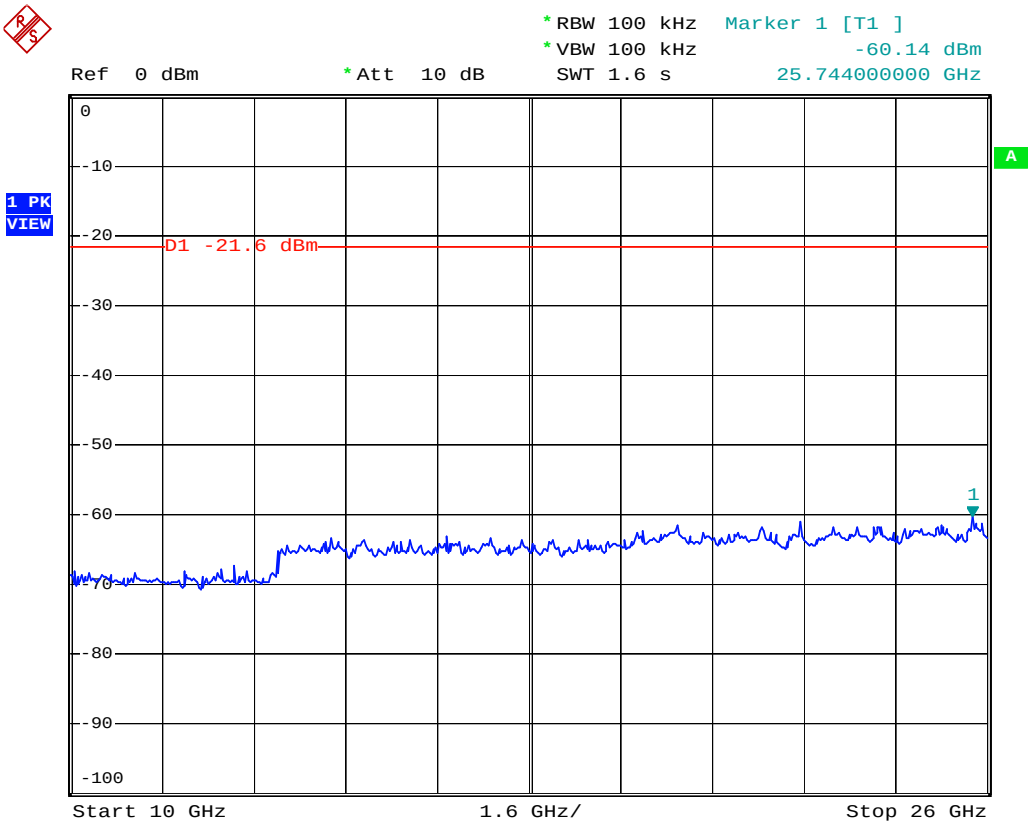
Date: 12.SEP.2007 15:16:09

Plot 58 – Spurious RF conducted emissions in the frequency range of 30 MHz – 2.9 GHz (hopping transmit mode, 8DPSK mode)



Date: 12.SEP.2007 15:17:45

Plot 59 – Spurious RF conducted emissions in the frequency range of 2.9 GHz – 10 GHz (hopping transmit mode, 8DPSK mode)



Date: 12.SEP.2007 15:18:56

Plot 60 – Spurious RF conducted emissions in the frequency range of 10 GHz – 26 GHz (hopping transmit mode, 8DPSK mode)

3.8 Emission in the restricted bands nearest to the frequency band 2400 – 2483.5 MHz

Compliance standard : FCC part 15, subpart C, section 15.247 (d)
Method of test : Public Notice DA 00-705 (modified)

Ambient temperature : 21 °C
Relative humidity : 50 %

3.8.1 Test method

Public Notice DA 00-705 prescribes a radiated emissions test method for measuring emissions in the restricted bands nearest to the frequency band 2400 – 2483.5 MHz. Performing reliable measurements close to the operating frequency does not yield reliable test results due to overloading of the preamplifier within the test setup.

The application of a 2.4 GHz bandpass filter may solve the overloading of the preamplifier but at the same time it will introduce substantial and not reproduceable errors in measurement values.

Therefore this measurement was carried out conducted, with an offset for cable loss and maximum peak antenna gain in order to enable a correlation of the conducted measurement values with field strength values.

During the measurements for measuring the emission levels in average mode, a (worst-case) factor of 10log(2.9ms/100ms) for peak/average ratio correction was included in the measurement results as an offset (where 2.9 ms is the dwell time per channel).

3.8.2 Test results

Continuous transmit mode

Modulation	Restricted band (GHz)	Peak / average	Plot numbers (on next pages)
GFSK	2.31 – 2.39	Peak	61
	2.31 – 2.39	Average	62
π/4-DQPSK	2.31 – 2.39	Peak	63
	2.31 – 2.39	Average	64
8DPSK	2.31 – 2.39	Peak	65
	2.31 – 2.39	Average	66

Continuous transmit mode

Modulation	Restricted band (GHz)	Peak / average	Plot numbers (on next pages)
GFSK	2.4835 – 2.50	Peak	67
	2.4835 – 2.50	Average	68
π/4-DQPSK	2.4835 – 2.50	Peak	69
	2.4835 – 2.50	Average	70
8DPSK	2.4835 – 2.50	Peak	71
	2.4835 – 2.50	Average	72

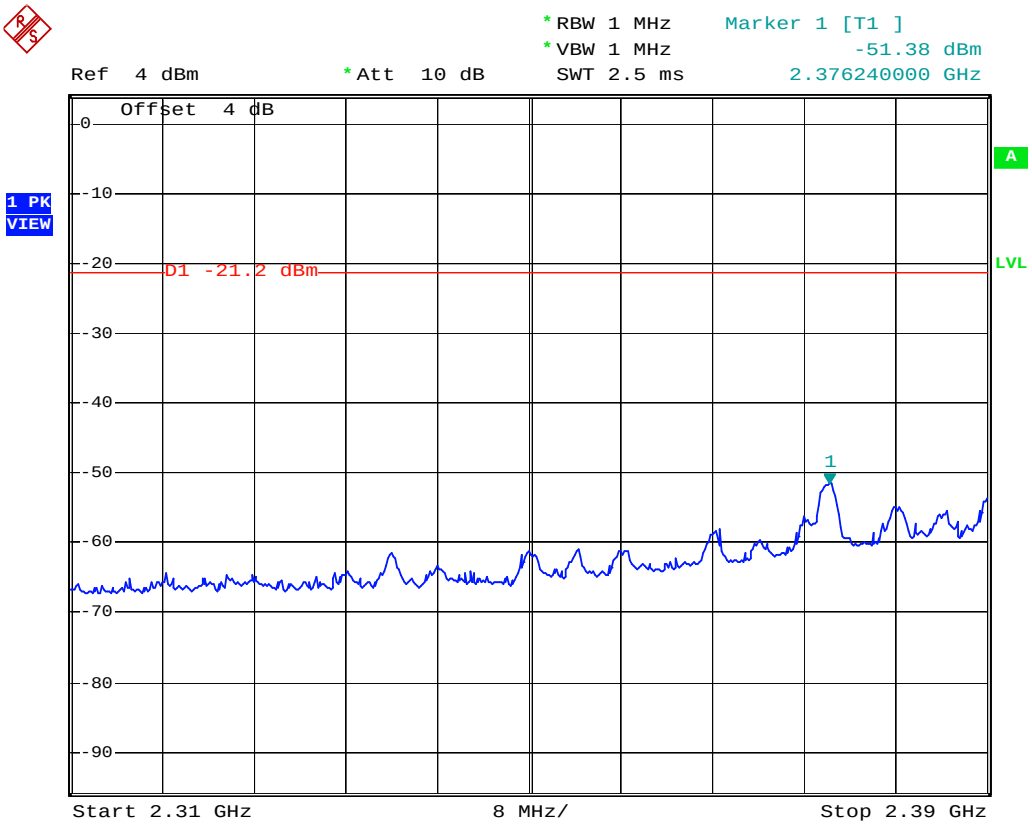
Hopping transmit mode

Modulation	Restricted band (GHz)	Peak / average	Plot numbers (on next pages)
GFSK	2.31 – 2.39	Peak	73
	2.31 – 2.39	Average	74
π/4-DQPSK	2.31 – 2.39	Peak	75
	2.31 – 2.39	Average	76
8DPSK	2.31 – 2.39	Peak	77
	2.31 – 2.39	Average	78

Hopping transmit mode

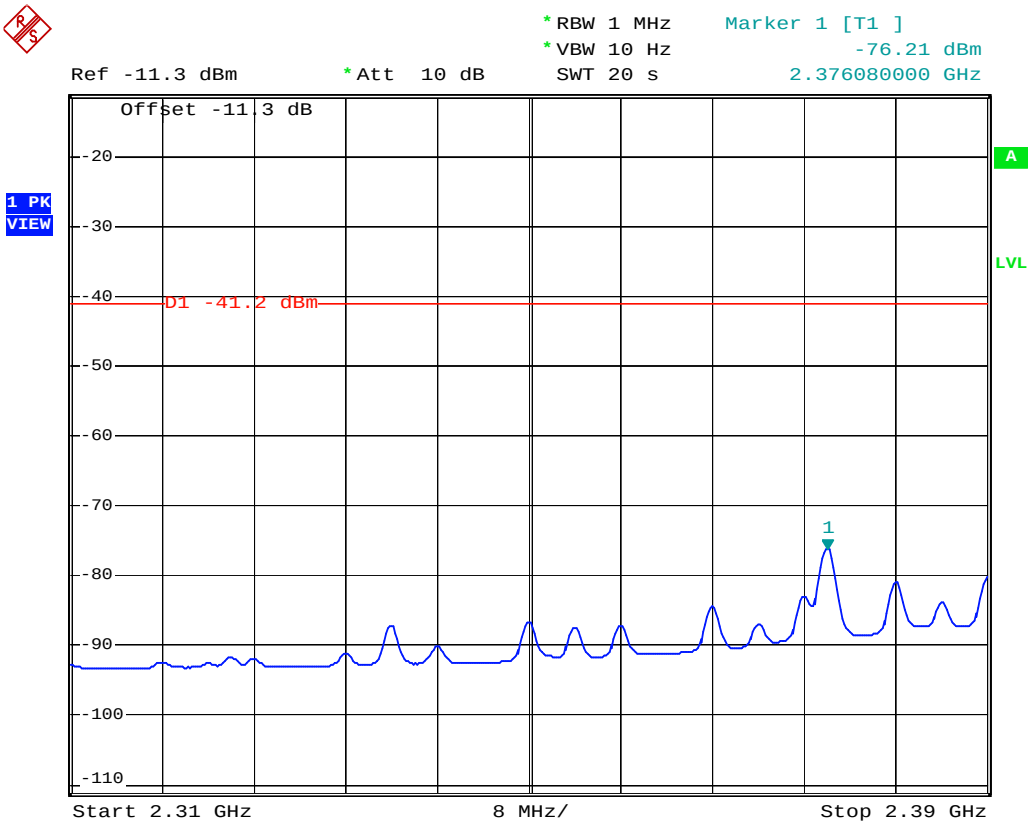
Modulation	Restricted band (GHz)	Peak / average	Plot numbers (on next pages)
GFSK	2.4835 – 2.50	Peak	79
	2.4835 – 2.50	Average	80
π/4-DQPSK	2.4835 – 2.50	Peak	81
	2.4835 – 2.50	Average	82
8DPSK	2.4835 – 2.50	Peak	83
	2.4835 – 2.50	Average	84

Measurement uncertainty: 0.03 – 2 GHz: +1.7 / -1.9 dB, > 2 GHz: +2.4 /-2.7 dB



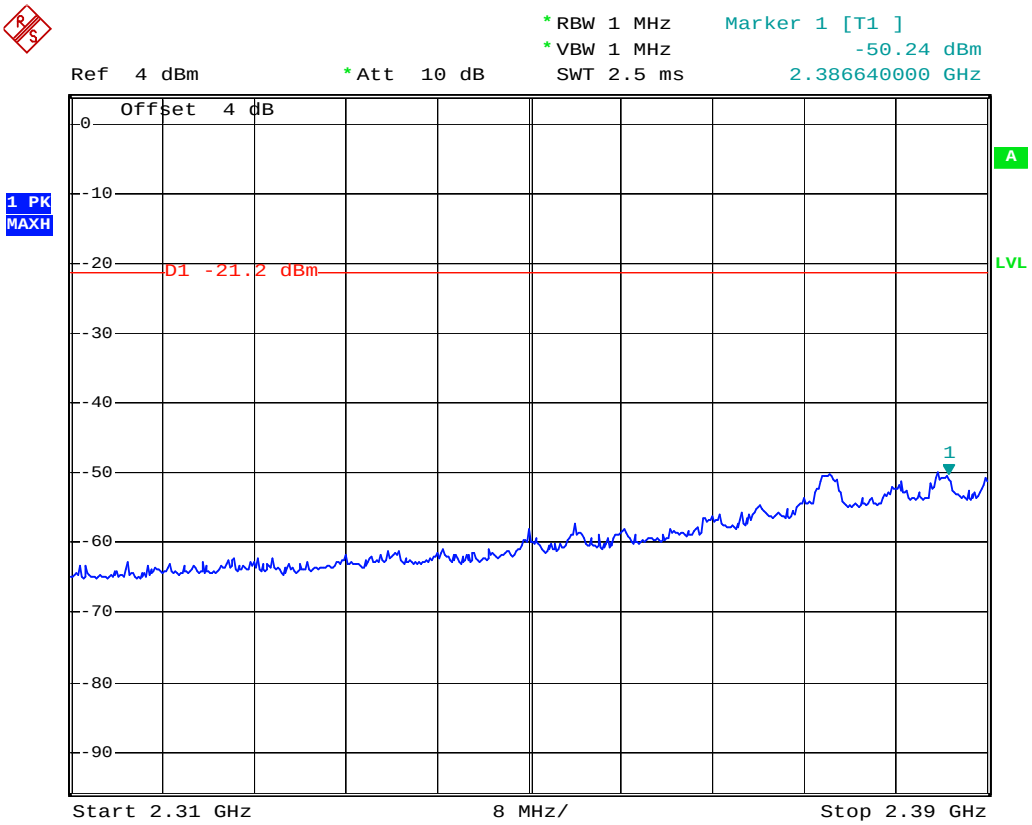
Date: 14.SEP.2007 16:27:14

Plot 61 – Emission in the restriced band 2.31 – 2.39 GHz, -21.2 dBm corresponds to 74 dBµV/m (continuous transmit mode on 2402 MHz, GFSK mode, offset of 2 dB for cable losses and 2 dB for peak antenna gain, measurement results in peak mode)



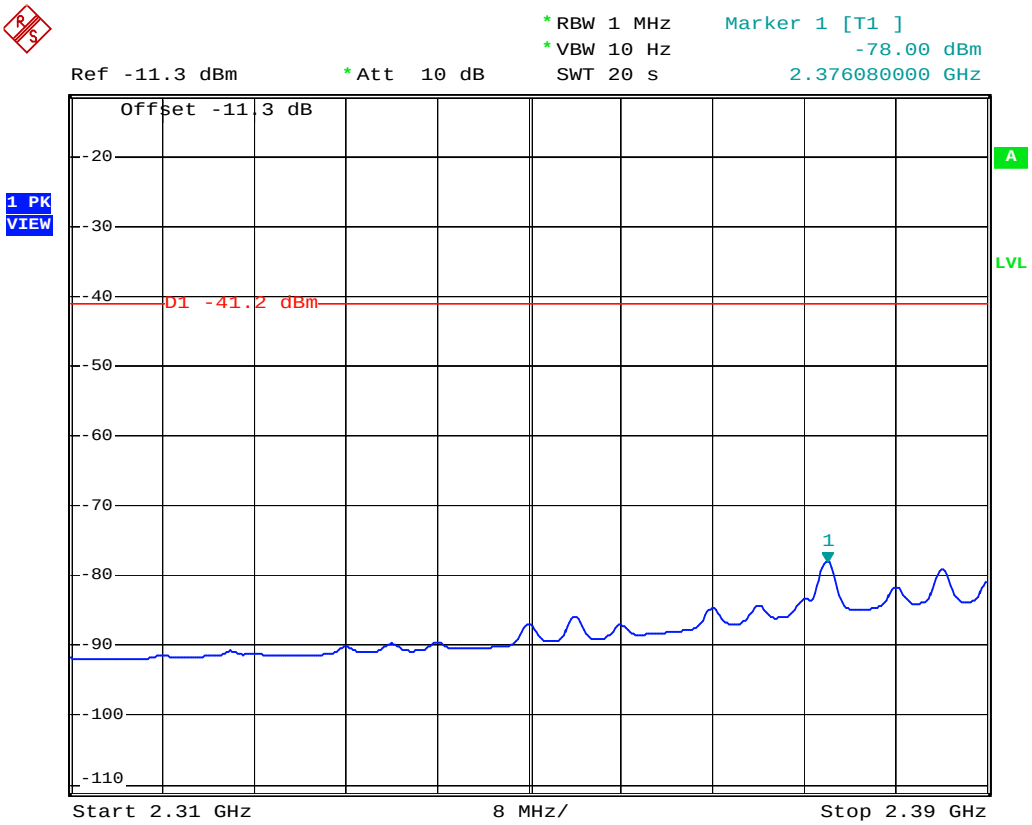
Date: 14.SEP.2007 16:52:30

Plot 62 – Emission in the restriced band 2.31 – 2.39 GHz, -41.2 dBm corresponds to 54 dBµV/m (continuous transmit mode on 2402 MHz, GFSK mode, offset of 2 dB for cable losses and 2 dB for antenna gain, offset of 10log(2.9ms/100ms) for peak/average ratio, measurement results in average mode)



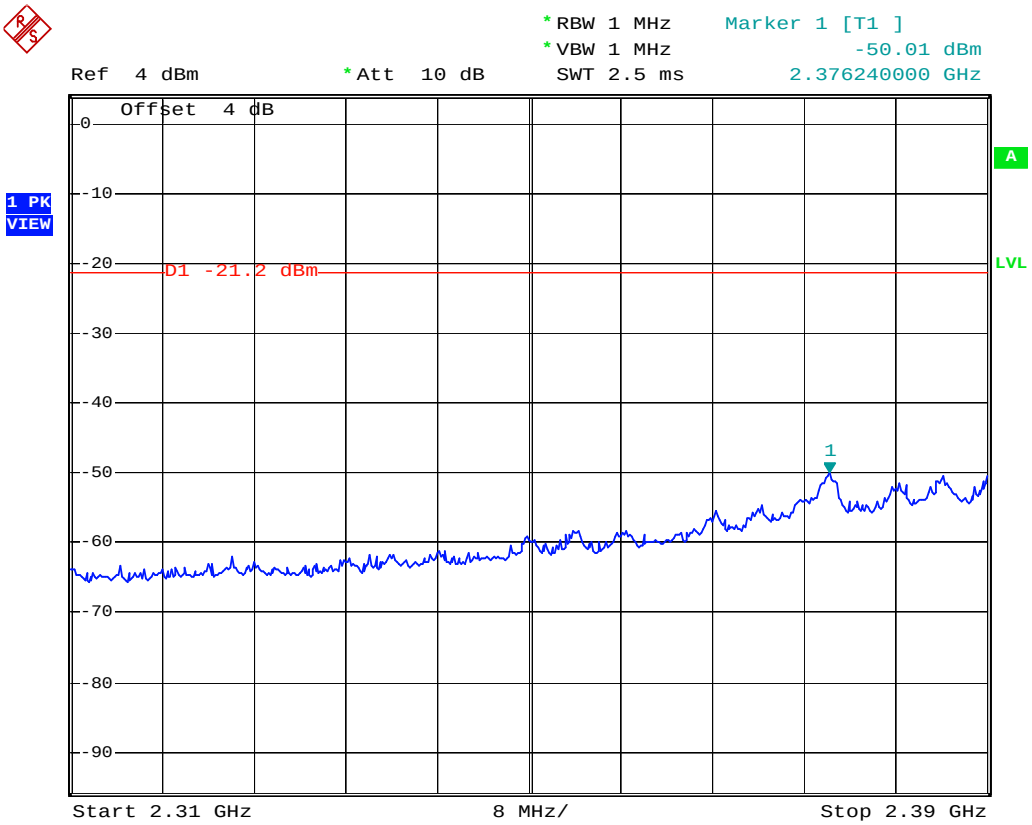
Date: 14.SEP.2007 16:29:47

Plot 63 – Emission in the restriced band 2.31 – 2.39 GHz, -21.2 dBm corresponds to 74 dBµV/m (continuous transmit mode on 2402 MHz, π/4-DQPSK mode, offset of 2 dB for cable losses and 2 dB for antenna gain, measurement results in peak mode)



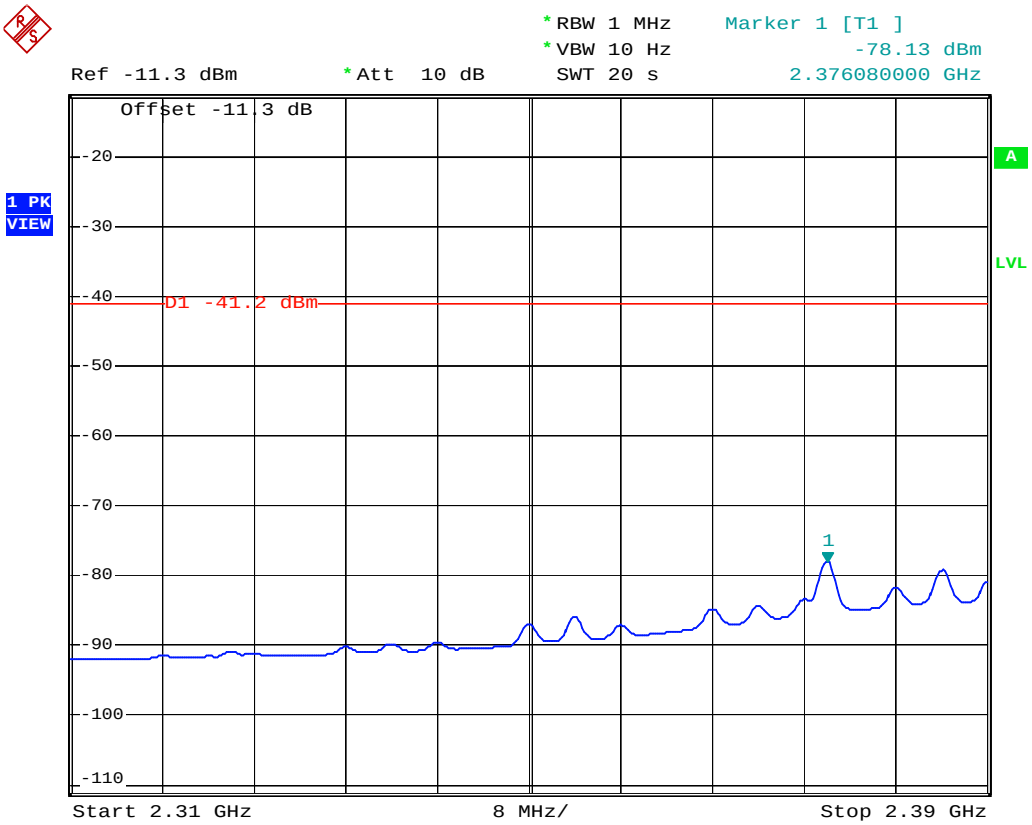
Date: 14.SEP.2007 16:55:00

Plot 64 – Emission in the restriced band 2.31 – 2.39 GHz, -41.2 dBm corresponds to 54 dBµV/m (continuous transmit mode on 2402 MHz, π/4-DQPSK mode, offset of 2 dB for cable losses and 2 dB for antenna gain, offset of 10log(2.9ms/100ms) for peak/average ratio, measurement results in average mode)



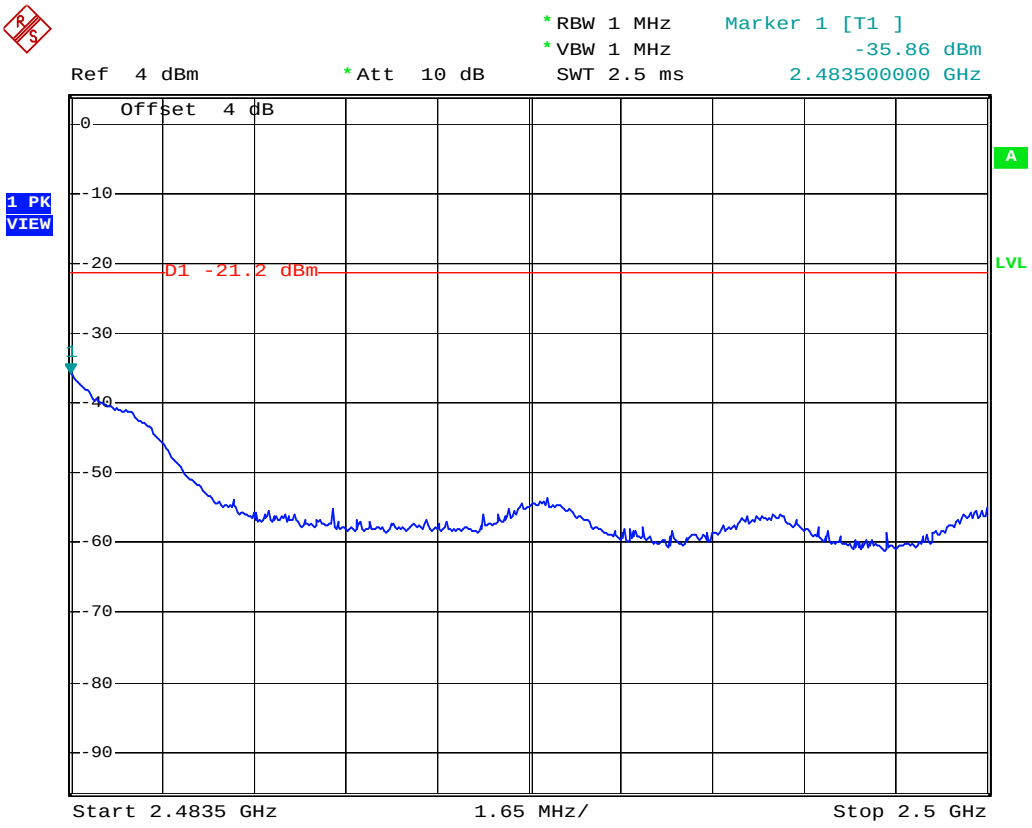
Date: 14.SEP.2007 16:31:32

Plot 65 – Emission in the restriced band 2.31 – 2.39 GHz, -21.2 dBm corresponds to 74 dBµV/m (continuous transmit mode on 2402 MHz, 8DPSK mode, offset of 2 dB for cable losses and 2 dB for antenna gain, measurement results in peak mode)



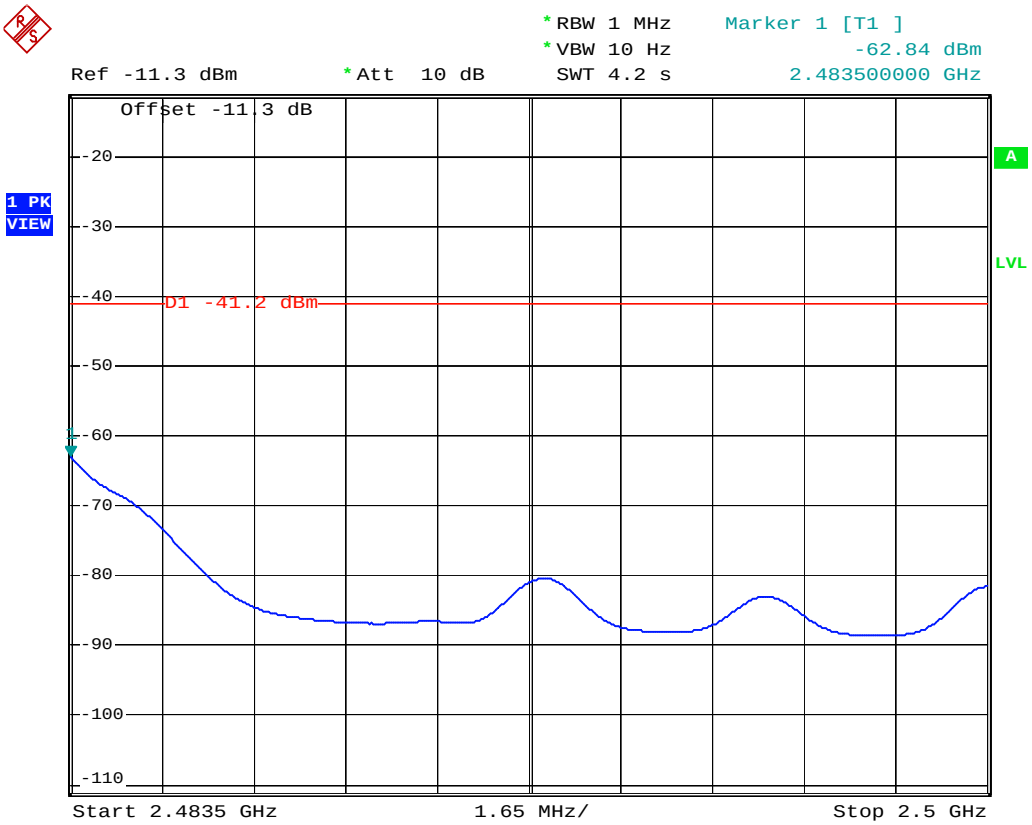
Date: 14.SEP.2007 16:56:46

Plot 66 – Emission in the restriced band 2.31 – 2.39 GHz, -41.2 dBm corresponds to 54 dBµV/m (continuous transmit mode on 2402 MHz, 8DPSK mode, offset of 2 dB for cable losses and 2 dB for antenna gain, offset of 10log(2.9ms/100ms) for peak/average ratio, measurement results in average mode)



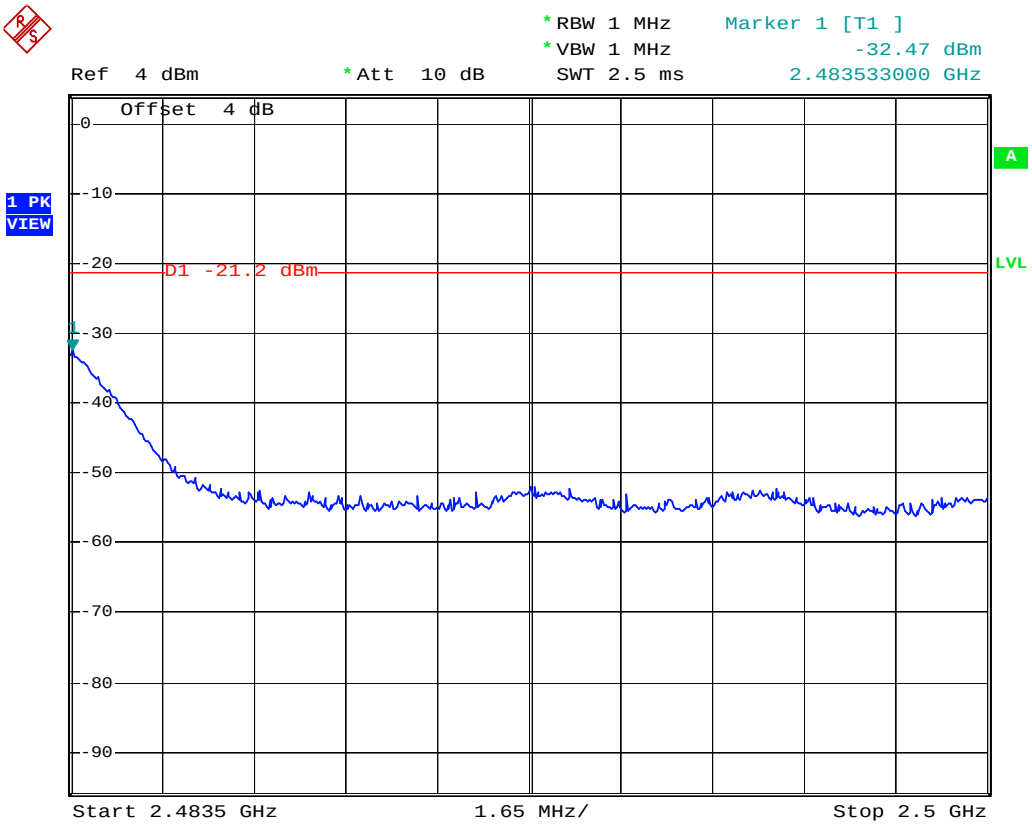
Date: 14.SEP.2007 17:11:55

Plot 67 – Emission in the restriced band 2.4835 – 2.5 GHz, -21.2 dBm corresponds to 74 dBµV/m (continuous transmit mode on 2480 MHz, GFSK mode, offset of 2 dB for cable losses and 2 dB for antenna gain, measurement results in peak mode)



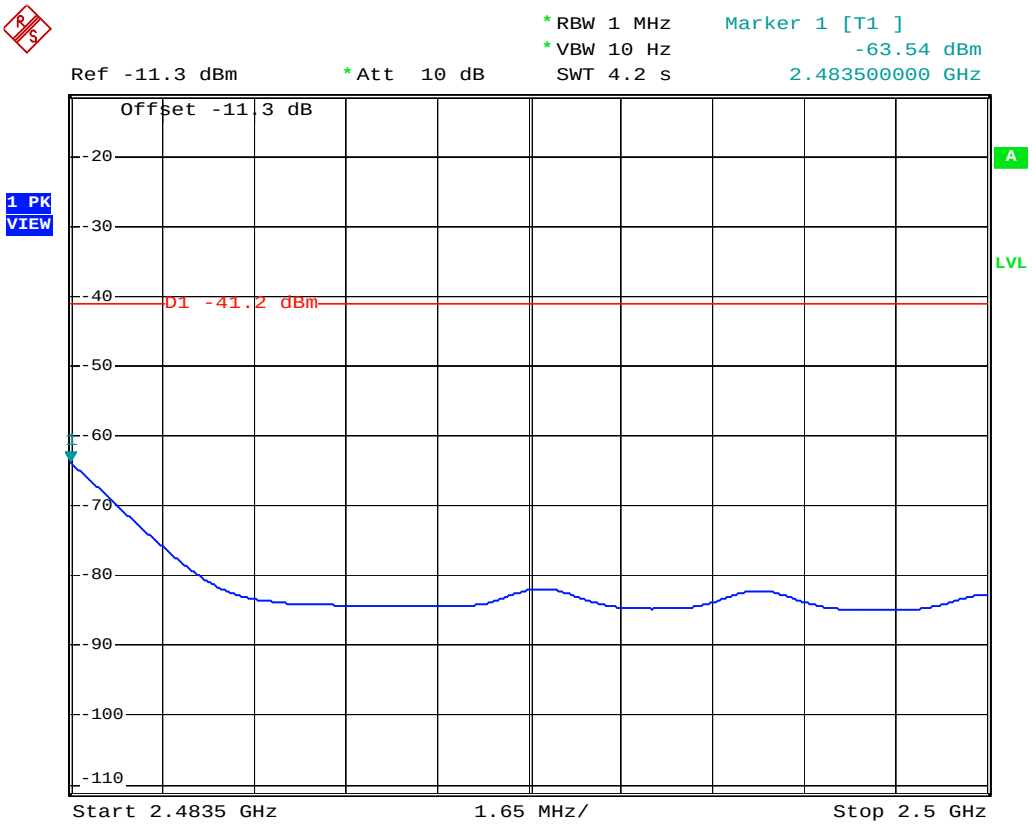
Date: 14.SEP.2007 17:10:14

Plot 68 – Emission in the restriced band 2.4835 – 2.5 GHz, -41.2 dBm corresponds to 54 dBµV/m (continuous transmit mode on 2480 MHz, GFSK mode, offset of 2 dB for cable losses and 2 dB for antenna gain, offset of 10log(2.9ms/100ms) for peak/average ratio, measurement results in average mode)



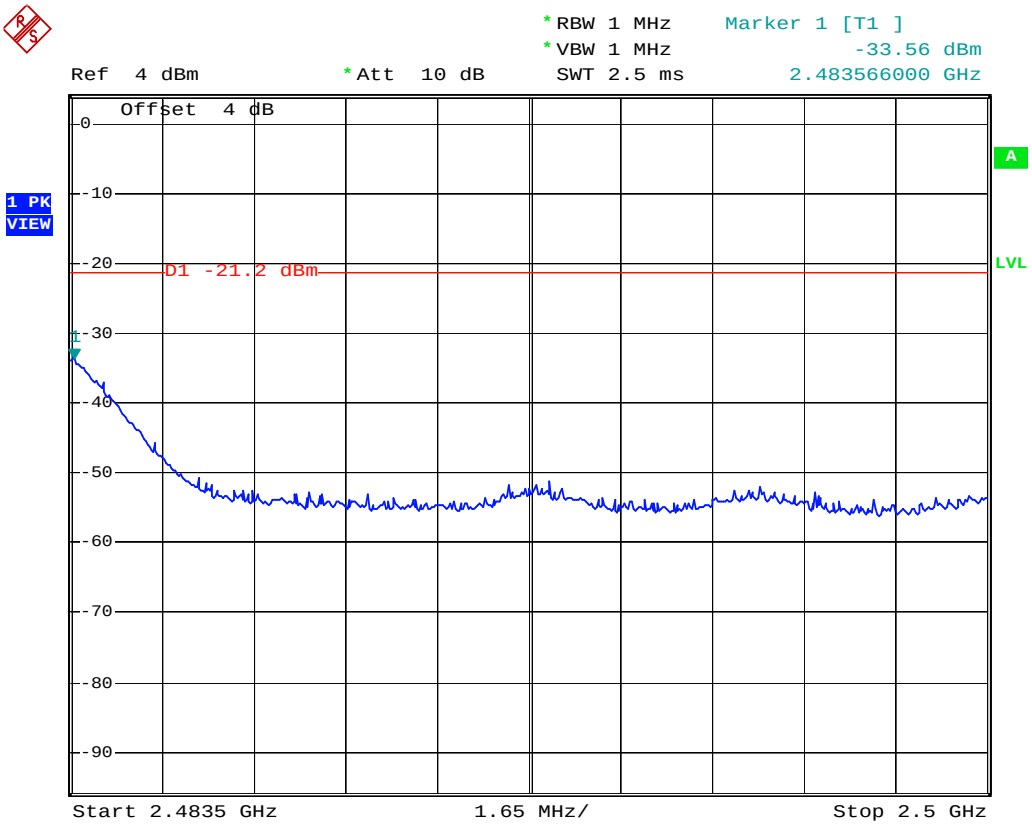
Date: 14.SEP.2007 17:14:05

Plot 69 – Emission in the restriced band 2.4835 – 2.5 GHz, -21.2 dBm corresponds to 74 dBµV/m (continuous transmit mode on 2480 MHz, π/4-DQPSK mode, offset of 2 dB for cable losses and 2 dB for antenna gain, measurement results in peak mode)



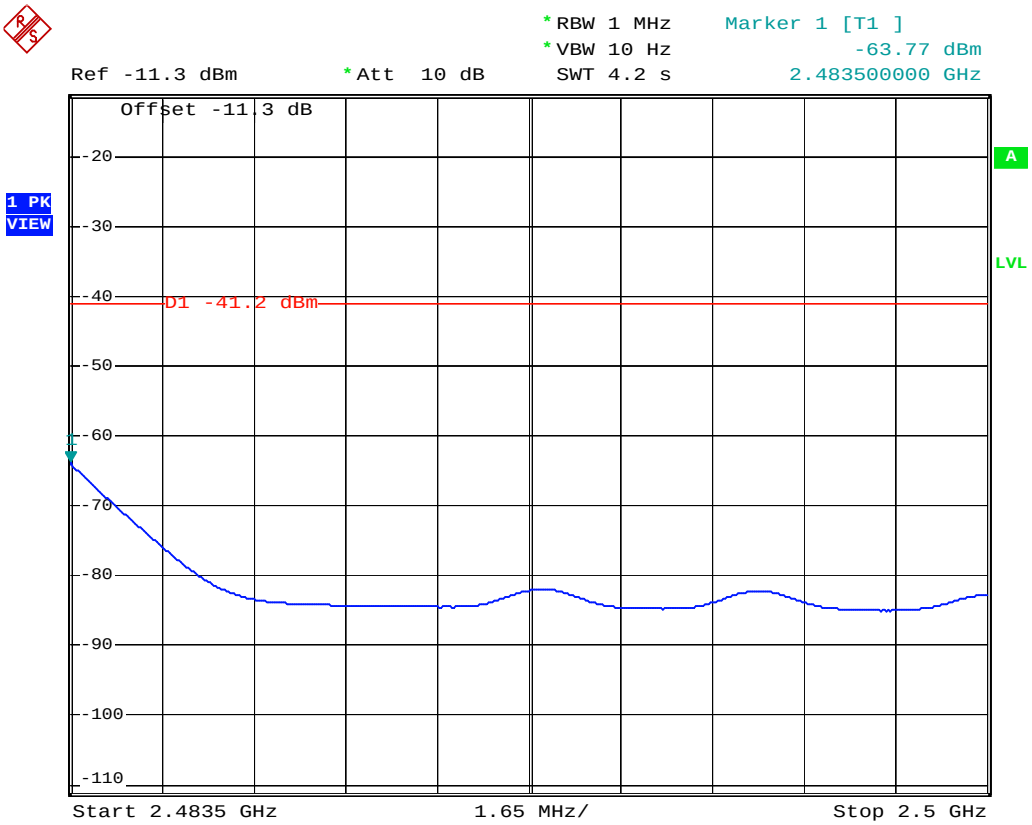
Date: 14.SEP.2007 17:05:03

Plot 70 – Emission in the restriced band 2.4835 – 2.5 GHz, -41.2 dBm corresponds to 54 dBµV/m (continuous transmit mode on 2480 MHz, π/4-DQPSK mode, offset of 2 dB for cable losses and 2 dB for antenna gain, offset of 10log(2.9ms/100ms) for peak/average ratio, measurement results in average mode)



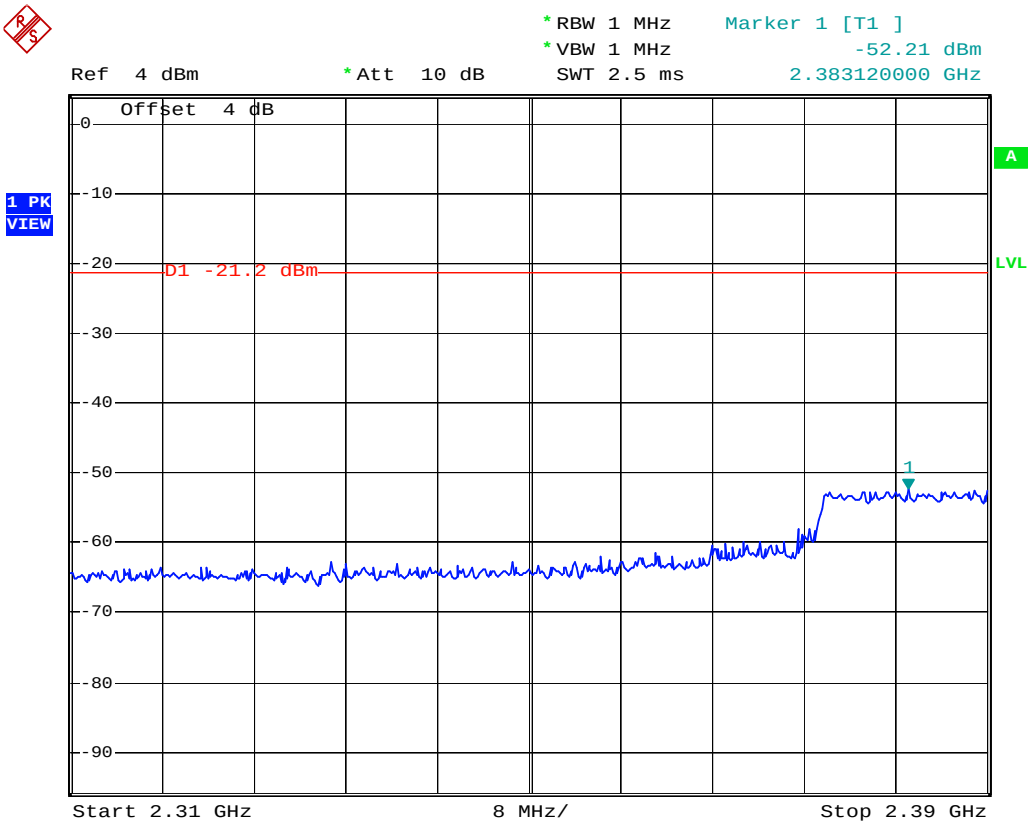
Date: 14.SEP.2007 17:15:10

Plot 71 – Emission in the restriced band 2.4835 – 2.5 GHz, -21.2 dBm corresponds to 74 dBµV/m (continuous transmit mode on 2480 MHz, 8DPSK mode, offset of 2 dB for cable losses and 2 dB for antenna gain, measurement results in peak mode)



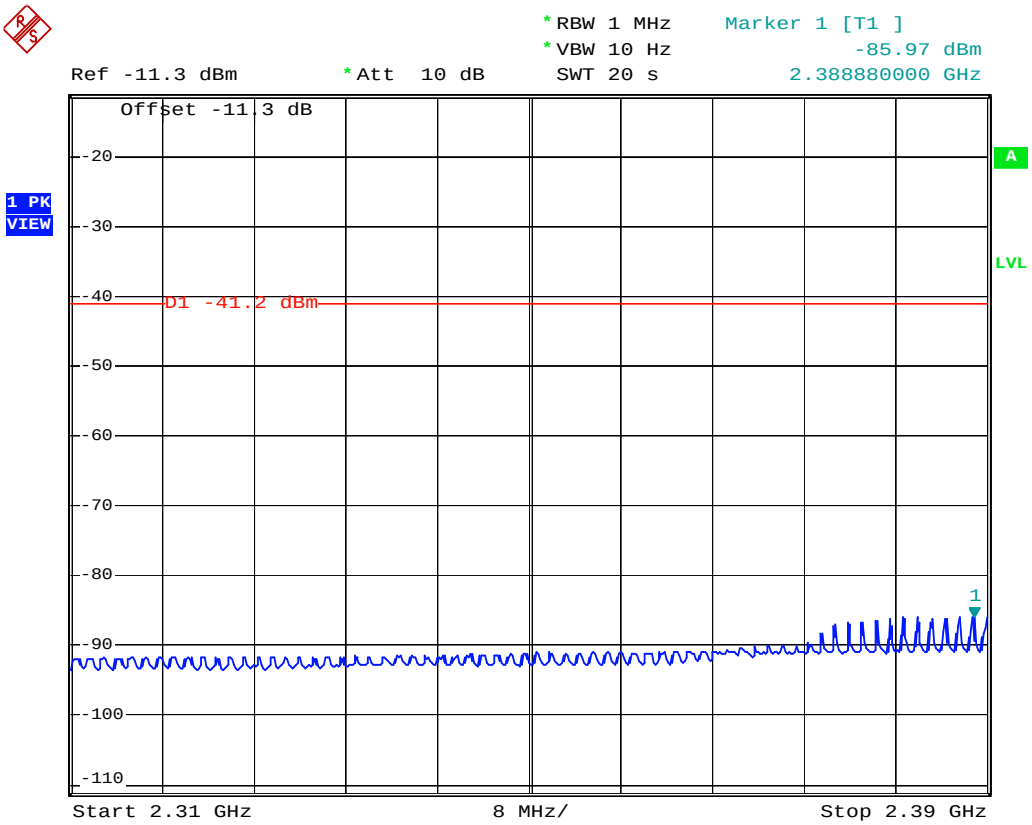
Date: 14.SEP.2007 17:02:46

Plot 72 – Emission in the restriced band 2.4835 – 2.5 GHz, -41.2 dBm corresponds to 54 dBµV/m (continuous transmit mode on 2480 MHz, 8DPSK mode, offset of 2 dB for cable losses and 2 dB for antenna gain, offset of 10log(2.9ms/100ms) for peak/average ratio, measurement results in average mode)



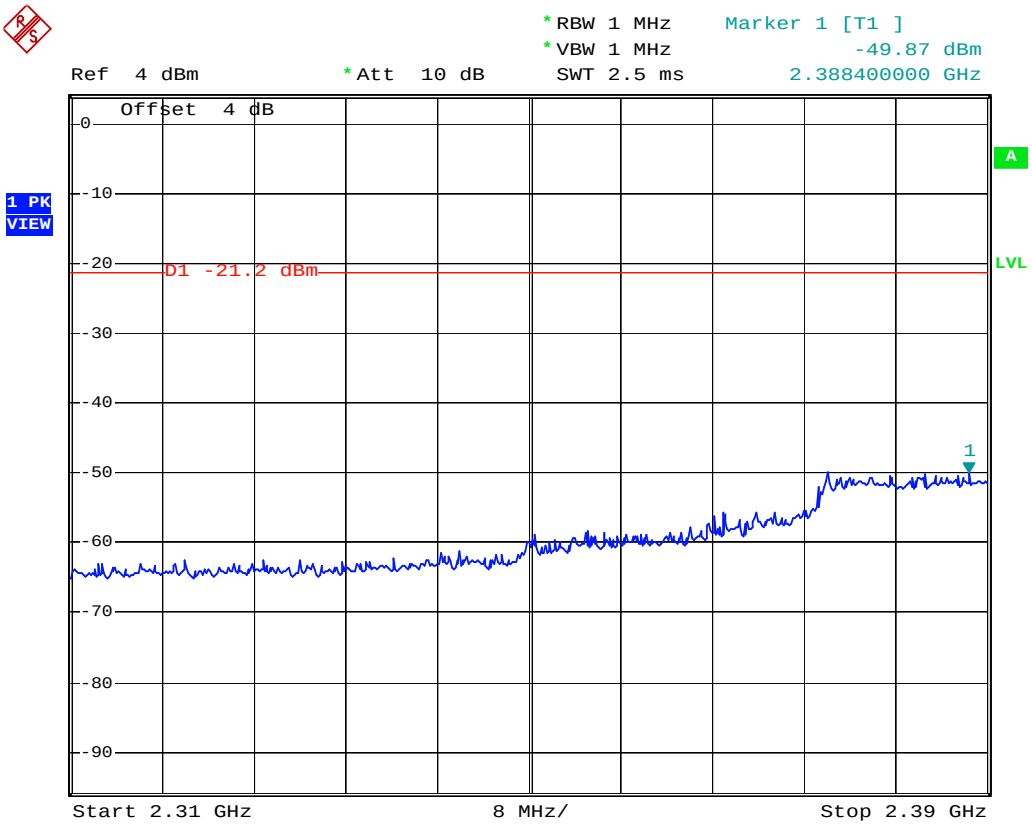
Date: 12.SEP.2007 14:34:30

Plot 73 – Emission in the restriced band 2.31 – 2.39 GHz, -21.2 dBm corresponds to 74 dBµV/m (hopping transmit mode, GFSK mode, offset of 2 dB for cable losses and 2 dB for antenna gain, measurement results in peak mode)



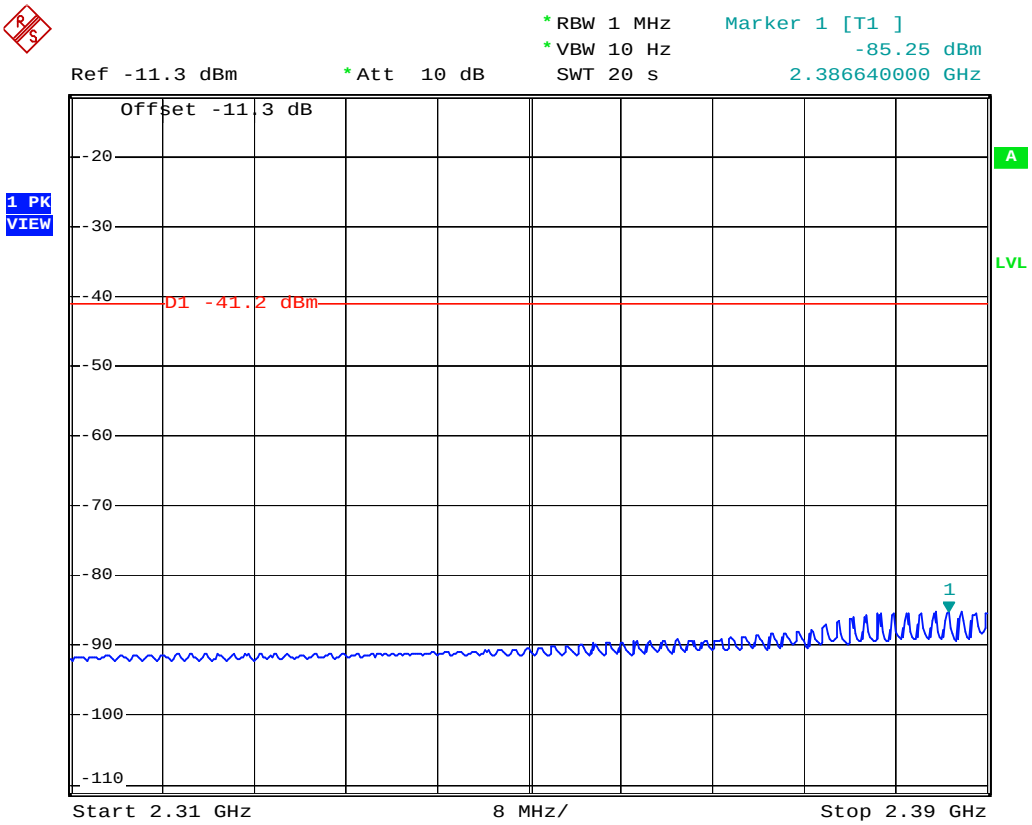
Date: 12.SEP.2007 14:12:37

Plot 74 – Emission in the restriced band 2.31 – 2.39 GHz, -41.2 dBm corresponds to 54 dBµV/m (hopping transmit mode, GFSK mode, offset of 2 dB for cable losses and 2 dB for antenna gain, offset of 10log(2.9ms/100ms) for peak/average ratio, measurement results in average mode)



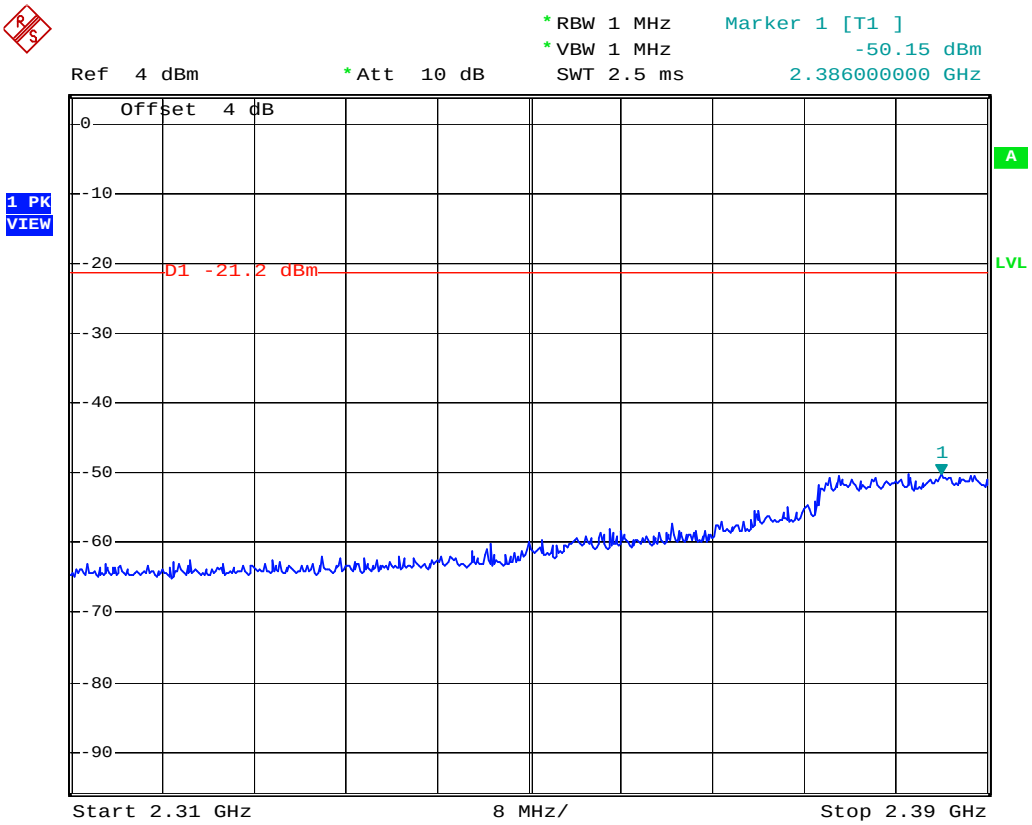
Date: 12.SEP.2007 14:31:58

Plot 75 – Emission in the restriced band 2.31 – 2.39 GHz, -21.2 dBm corresponds to 74 dBµV/m (hopping transmit mode, π/4-DQPSK mode, offset of 2 dB for cable losses and 2 dB for antenna gain, measurement results in peak mode)



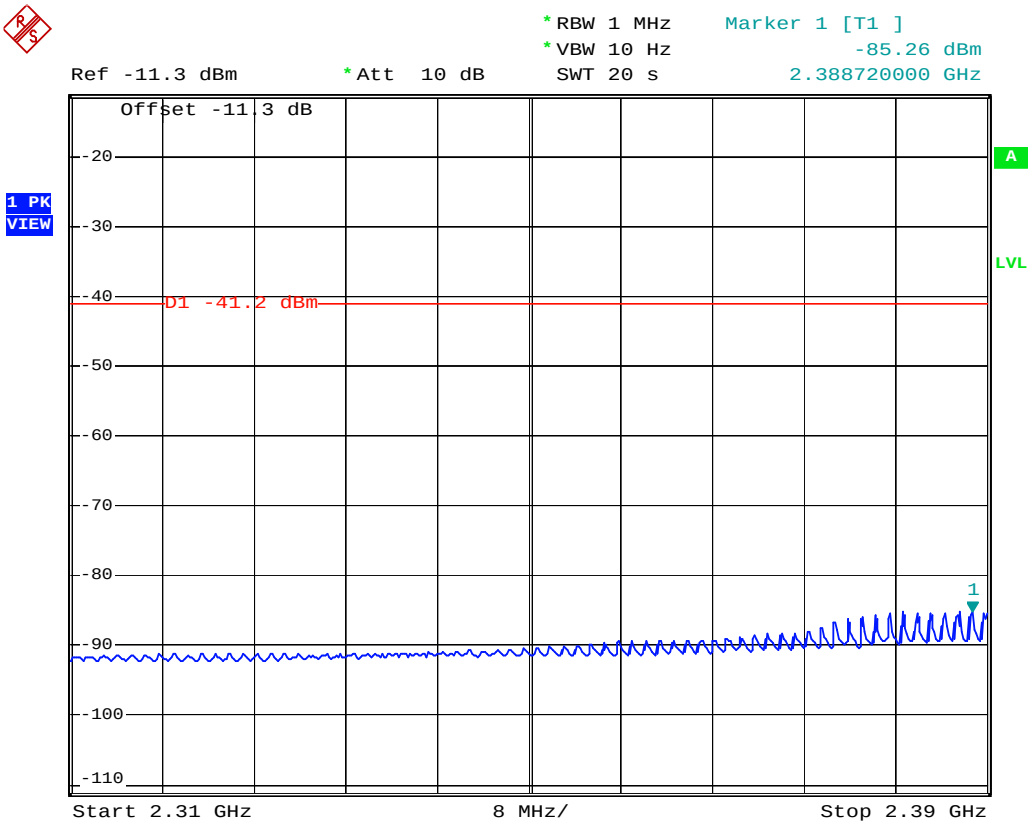
Date: 12.SEP.2007 14:09:03

Plot 76 – Emission in the restriced band 2.31 – 2.39 GHz, -41.2 dBm corresponds to 54 dBµV/m (hopping transmit mode, π/4-DQPSK mode, offset of 2 dB for cable losses and 2 dB for antenna gain, offset of 10log(2.9ms/100ms) for peak/average ratio, measurement results in average mode)



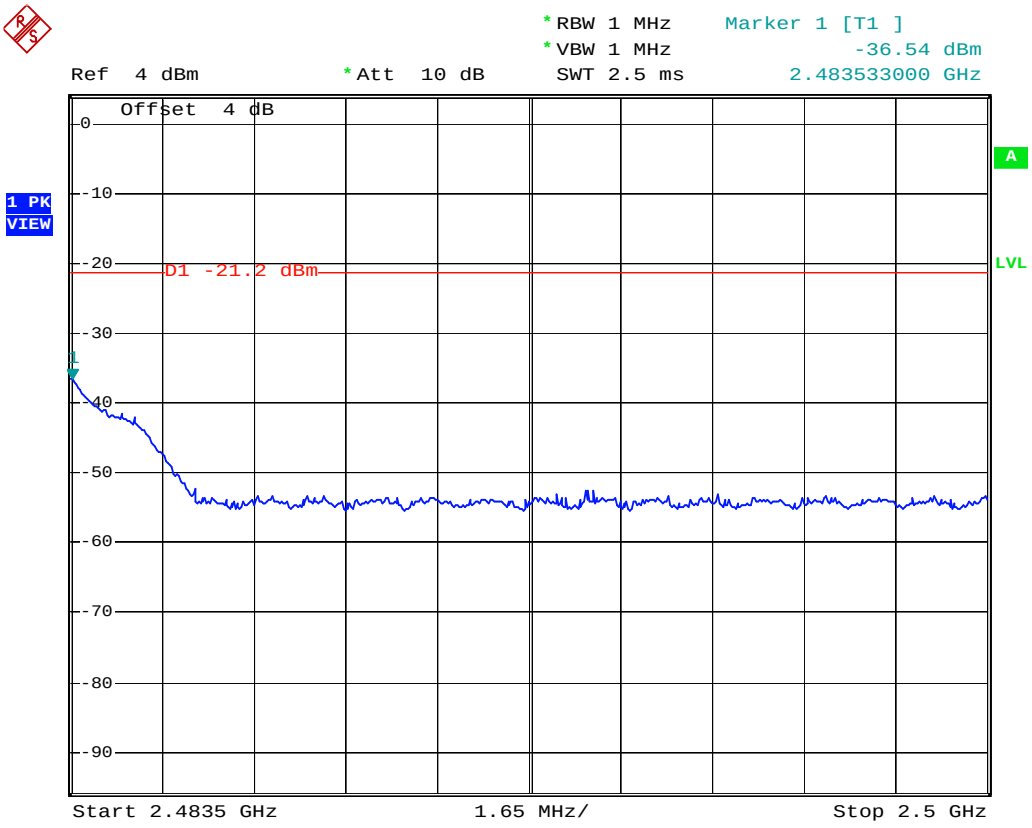
Date: 12.SEP.2007 14:29:46

Plot 77 – Emission in the restriced band 2.31 – 2.39 GHz, -21.2 dBm corresponds to 74 dBµV/m (hopping transmit mode, 8DPSK mode, offset of 2 dB for cable losses and 2 dB for antenna gain, measurement results in peak mode)



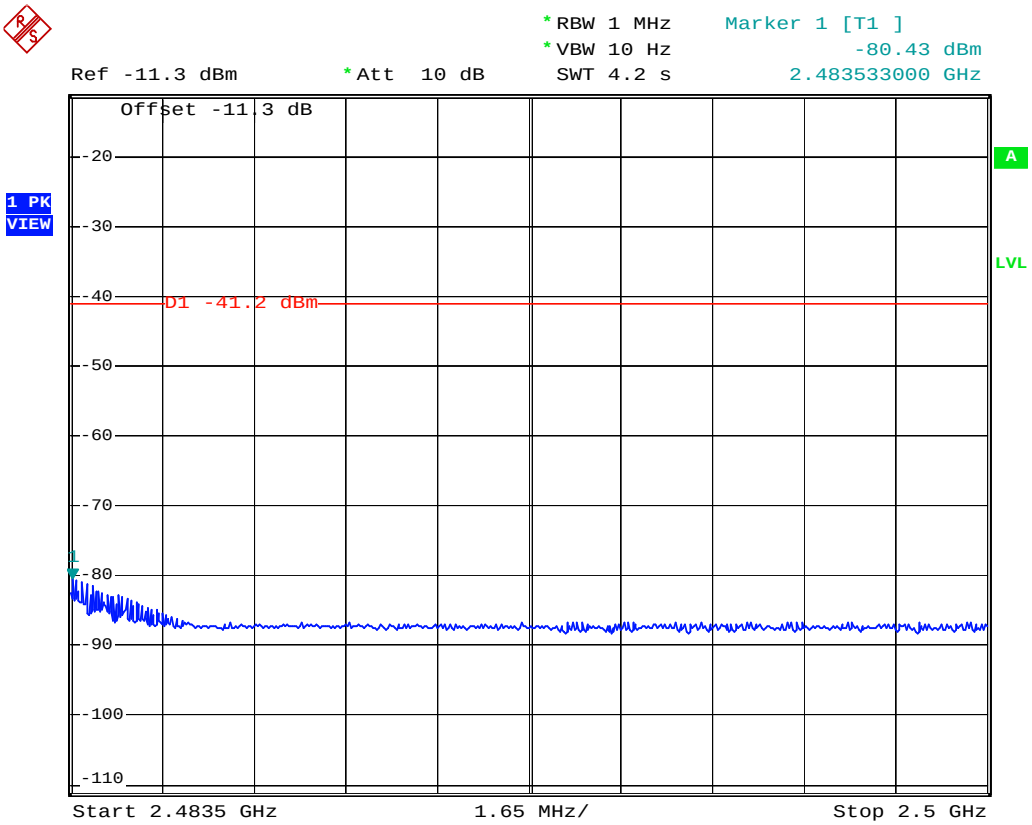
Date: 12.SEP.2007 14:10:47

Plot 78 – Emission in the restriced band 2.31 – 2.39 GHz, -41.2 dBm corresponds to 54 dBµV/m (hopping transmit mode, 8DPSK mode, offset of 2 dB for cable losses and 2 dB for antenna gain, offset of 10log(2.9ms/100ms) for peak/average ratio, measurement results in average mode)



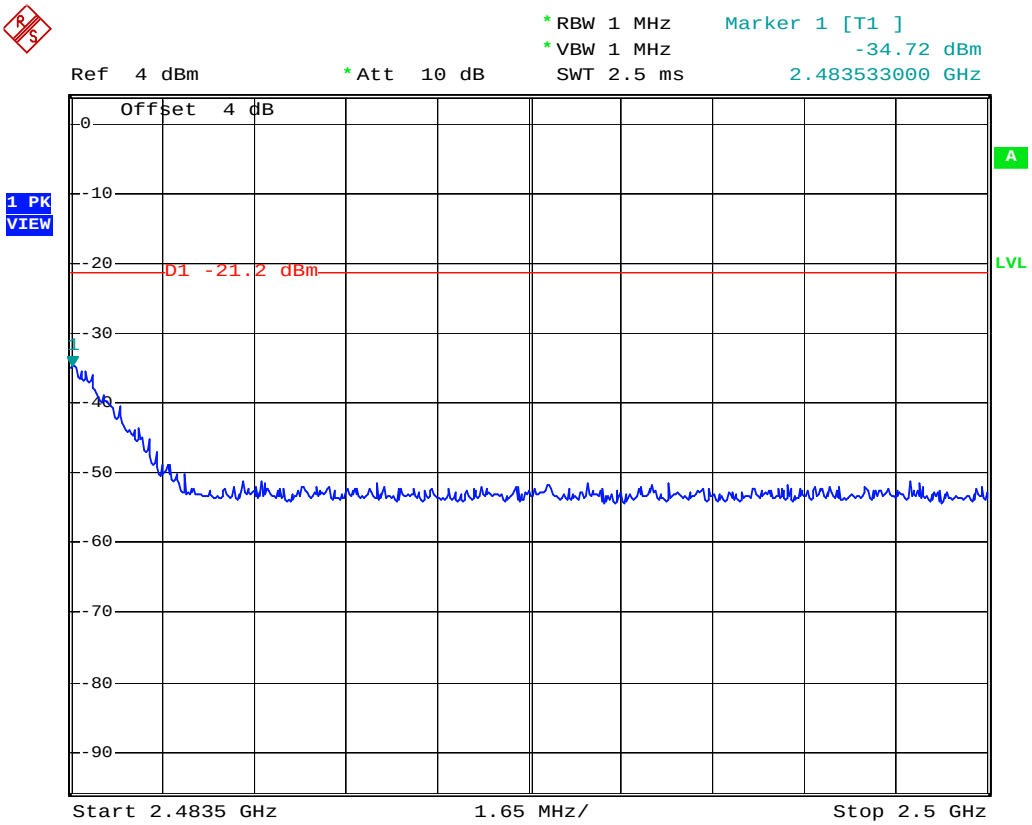
Date: 12.SEP.2007 14:23:52

Plot 79 – Emission in the restriced band 2.4835 – 2.5 GHz, -21.2 dBm corresponds to 74 dBµV/m (hopping transmit mode, GFSK mode, offset of 2 dB for cable losses and 2 dB for antenna gain, measurement results in peak mode)



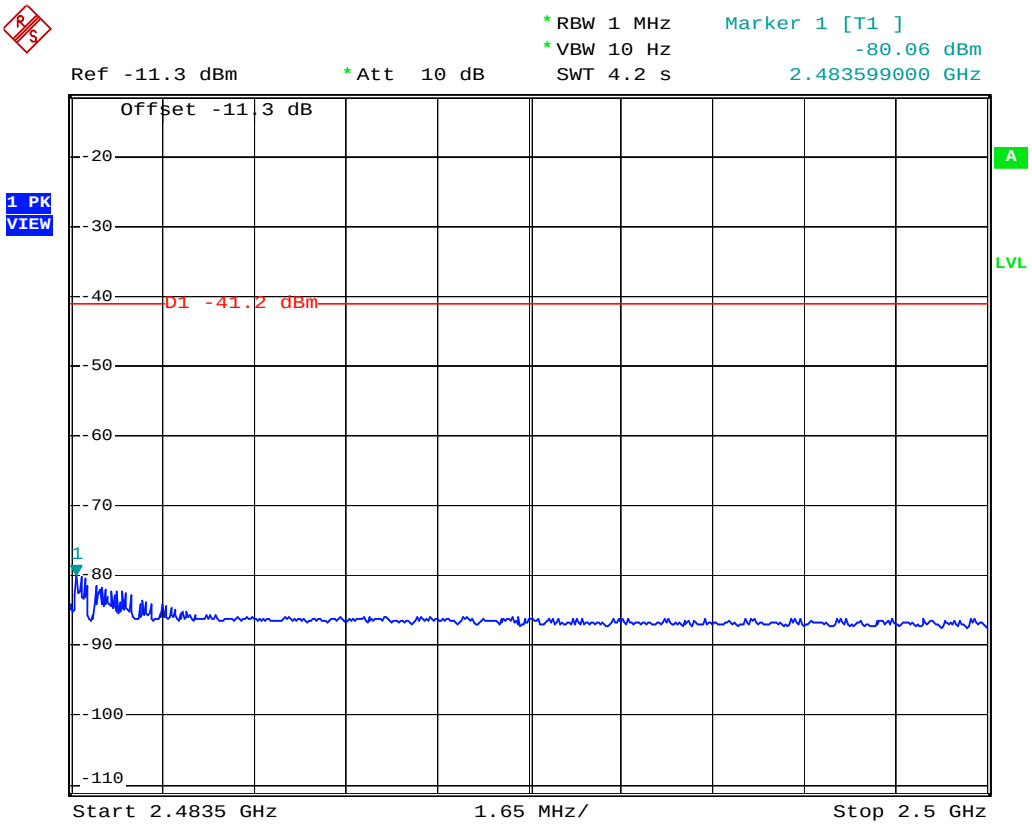
Date: 12.SEP.2007 14:21:29

Plot 80 – Emission in the restriced band 2.4835 – 2.5 GHz, -41.2 dBm corresponds to 54 dBµV/m (hopping transmit mode, GFSK mode, offset of 2 dB for cable losses and 2 dB for antenna gain, offset of 10log(2.9ms/100ms) for peak/average ratio, measurement results in average mode)



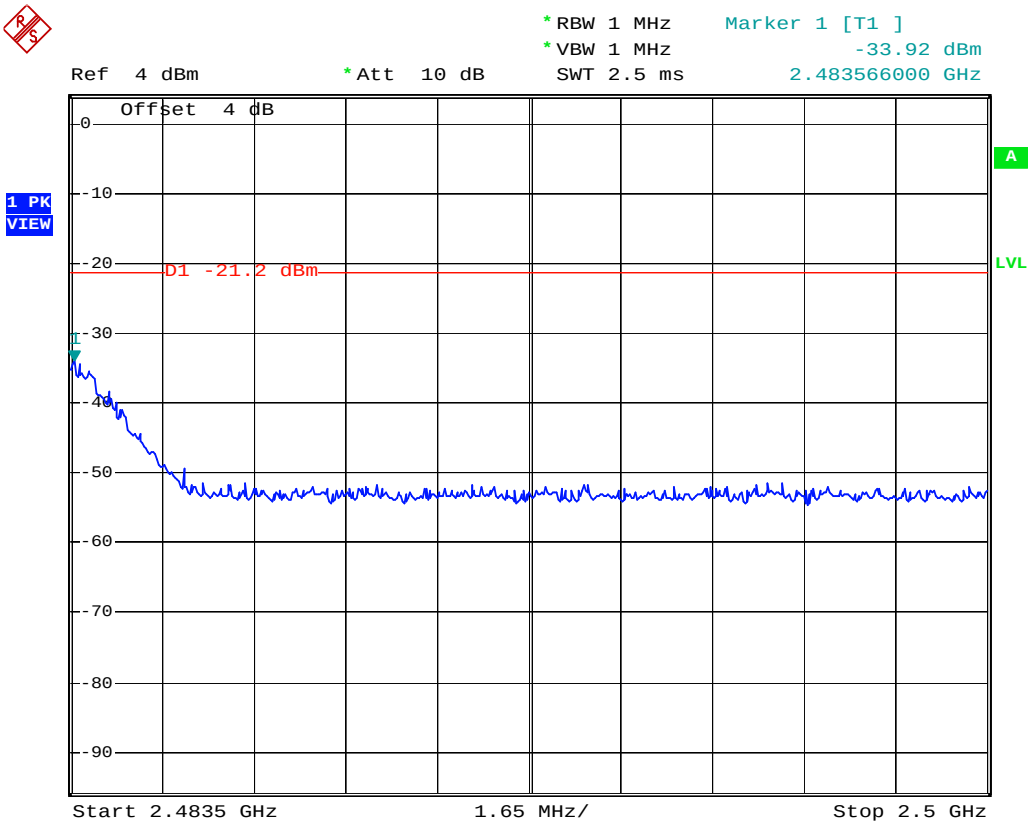
Date: 12.SEP.2007 14:25:35

Plot 81 – Emission in the restriced band 2.4835 – 2.5 GHz, -21.2 dBm corresponds to 74 dBµV/m (hopping transmit mode, π/4-DQPSK mode, offset of 2 dB for cable losses and 2 dB for antenna gain, measurement results in peak mode)



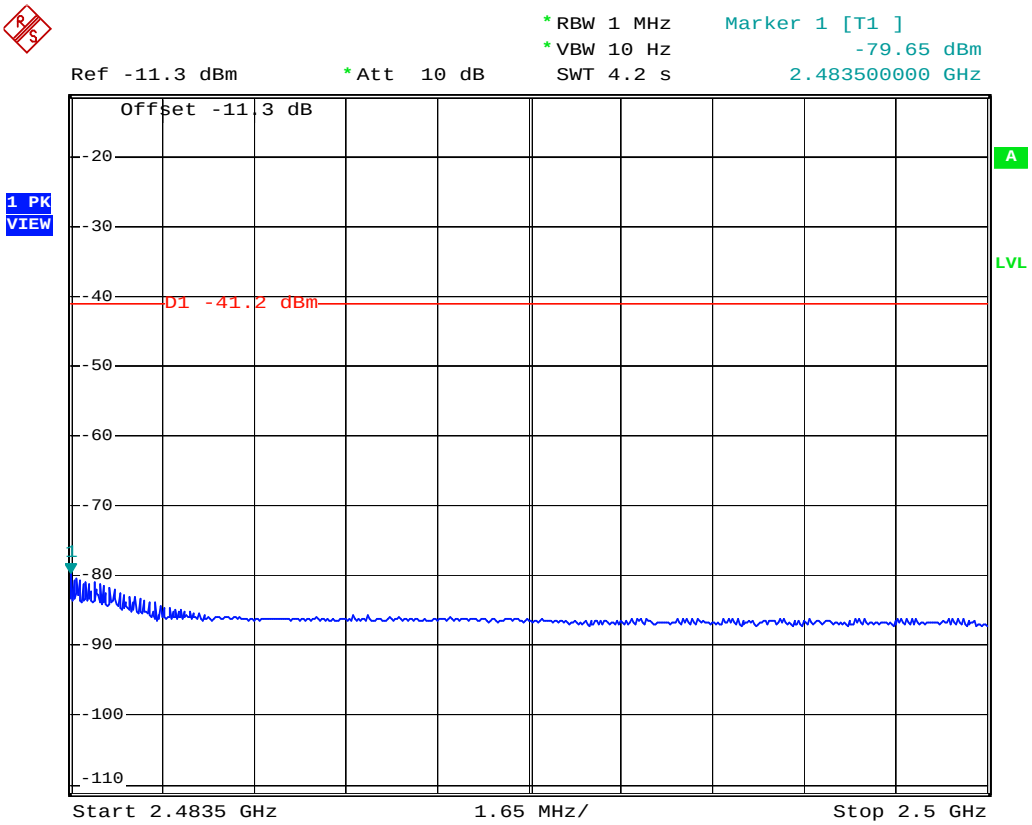
Date: 12.SEP.2007 14:16:03

Plot 82 – Emission in the restriced band 2.4835 – 2.5 GHz, -41.2 dBm corresponds to 54 dBµV/m (hopping transmit mode, π/4-DQPSK mode, offset of 2 dB for cable losses and 2 dB for antenna gain, offset of 10log(2.9ms/100ms) for peak/average ratio, measurement results in average mode)



Date: 12.SEP.2007 14:27:09

Plot 83 – Emission in the restriced band 2.4835 – 2.5 GHz, -21.2 dBm corresponds to 74 dBµV/m (hopping transmit mode, 8DPSK mode, offset of 2 dB for cable losses and 2 dB for antenna gain, measurement results in peak mode)



Date: 12.SEP.2007 14:18:11

Plot 84 – Emission in the restriced band 2.4835 – 2.5 GHz, -41.2 dBm corresponds to 54 dBµV/m (hopping transmit mode, 8DPSK mode, offset of 2 dB for cable losses and 2 dB for antenna gain, offset of 10log(2.9ms/100ms) for peak/average ratio, measurement results in average mode)

3.9 Field strength of spurious emissions outside of the frequency band of operation (transmit mode)

Compliance standard	:	FCC part 15, subpart C, sections 15.247 (d), 15.205 (a), 15.209
Method of test	:	FCC Public Notice DA 00-705
Ambient temperature	:	21 °C
Relative humidity	:	50 %

3.9.1 Test method

This test is required for any spurious emission or modulation product that falls in a restricted band, as defined in section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

Follow the guidelines in ANSI C63.4-2003 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization, etc.

A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit specified in Section 15.35 (b). Submit this data.

Now set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in section 15.209. If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a “duty cycle correction factor”, derived from 20log(dwell time/100 ms), in an effort to demonstrate compliance with the 15.209 limit. Submit this data.

Note: dwell time per channel is 2.9 ms.

3.9.2 Test results (test channel 1)

Frequency (MHz)	Test results quasi peak (dBµV/m)		Test results average (dBµV/m)		Test results peak (dBµV/m)		Resolution bandwidth (kHz)	Quasi peak limits (dBµV/m)	Average limits (dBµV/m)	Peak limits (dBµV/m)
	V	H	V	H	V	H				
30.0 - 88.0	< 20.0	< 20.0	-	-	-	-	100	40.0	-	-
88.0 - 216.0	< 23.5	< 23.5					100	43.5		
216.0 – 960.0	< 26.0	< 26.0	-	-	-	-	100	46.0	-	-
4804.00	-	-	n.t.	n.t.	42.1	44.0	1000	-	54.0	74.0
7206.00	-	-	n.t.	n.t.	39.4	40.9	1000	-	54.0	74.0

Note 1: values stated in the table above are worst case for all three types of modulation.

Note 2: Above 1 GHz, all measured values of the spurious emissions with the detector in peak mode, are below the applicable limits, which are valid when using an average detector. Therefore, all spurious emissions above 1 GHz have been measured with the peak detector only (n.t. = not tested), unless otherwise noted.

Note 3: Field strength values of radiated emissions at frequencies not listed in the table above are more than 20 dB below the applicable limit.

Measurement uncertainty: ≤ 1GHz: +2.6/-3.3 dB, > 1 GHz: +4.5/-6.1 dB

3.9.3 Test results (test channel 2)

Frequency (MHz)	Test results quasi peak (dBµV/m)		Test results average (dBµV/m)		Test results peak (dBµV/m)		Resolution bandwidth (kHz)	Quasi peak limits (dBµV/m)	Average limits (dBµV/m)	Peak limits (dBµV/m)
	V	H	V	H	V	H				
30.0 - 88.0	< 20.0	< 20.0	-	-	-	-	100	40.0	-	-
88.0 - 216.0	< 23.5	< 23.5					100	43.5		
216.0 – 960.0	< 26.0	< 26.0	-	-	-	-	100	46.0	-	-
4882.00	-	-	n.t.	n.t.	39.8	41.8	1000	-	54.0	74.0
7323.00	-	-	n.t.	n.t.	42.4	40.7	1000	-	54.0	74.0

Note 1: values stated in the table above are worst case for all three types of modulation.

Note 2: Above 1 GHz, all measured values of the spurious emissions with the detector in peak mode, are below the applicable limits, which are valid when using an average detector. Therefore, all spurious emissions above 1 GHz have been measured with the peak detector only (n.t. = not tested), unless otherwise noted.

Note 3: Field strength values of radiated emissions at frequencies not listed in the table above are more than 20 dB below the applicable limit.

Measurement uncertainty: ≤ 1GHz: +2.6/-3.3 dB, > 1 GHz: +4.5/-6.1 dB

3.9.4 Test results (test channel 3)

Frequency (MHz)	Test results quasi peak (dBµV/m)		Test results average (dBµV/m)		Test results peak (dBµV/m)		Resolution bandwidth (kHz)	Quasi peak limits (dBµV/m)	Average limits (dBµV/m)	Peak limits (dBµV/m)
	V	H	V	H	V	H				
30.0 - 88.0	< 20.0	< 20.0	-	-	-	-	100	40.0	-	-
88.0 - 216.0	< 23.5	< 23.5					100	43.5		
216.0 – 960.0	< 26.0	< 26.0	-	-	-	-	100	46.0	-	-
4960.00	-	-	n.t.	n.t.	39.9	41.0	1000	-	54.0	74.0
7440.00	-	-	n.t.	n.t.	43.0	42.1	1000	-	54.0	74.0
12400.00	-	-	n.t.	n.t.	36.7	36.2	1000	-	54.0	74.0

Note 1: values stated in the table above are worst case for all three types of modulation.

Note 2: Above 1 GHz, all measured values of the spurious emissions with the detector in peak mode, are below the applicable limits, which are valid when using an average detector. Therefore, all spurious emissions above 1 GHz have been measured with the peak detector only (n.t. = not tested), unless otherwise noted.

Note 3: Field strength values of radiated emissions at frequencies not listed in the table above are more than 20 dB below the applicable limit.

Measurement uncertainty: ≤ 1GHz: +2.6/-3.3 dB, > 1 GHz: +4.5/-6.1 dB

3.10 Field strength of spurious emissions (receive mode)

Compliance standard : FCC part 15, subpart B, section 15.109
Method of test : FCC part 15, subpart A, sections 15.31(f)(1), 15.31(m), 15.33, 15.35.

Ambient temperature : 21 °C
Relative humidity : 50 %

3.10.1 Test method

FCC part 15, subpart A, sections 15.31(f)(1), 15.31(m), 15.33, 15.35.

3.10.2 Test results (test channel 1)

Frequency (MHz)	Test results quasi peak (dBµV/m)		Test results average (dBµV/m)		Test results peak (dBµV/m)		Resolution bandwidth (kHz)	Quasi peak limits (dBµV/m)	Average limits (dBµV/m)	Peak limits (dBµV/m)
	V	H	V	H	V	H				
30.0 - 88.0	< 20.0	< 20.0	-	-	-	-	120	40.0	-	-
88.0 - 216.0	< 23.5	< 23.5					120	43.5		
216.0 – 960.0	< 26.0	< 26.0	-	-	-	-	120	46.0	-	-
1600.35	-	-	n.t.	n.t.	37.7	40.1	1000	-	54.0	74.0
2400.50	-	-	n.t.	n.t.	42.5	43.0	1000	-	54.0	74.0

Note 1: values stated in the table above are worst case.

Note 2: Above 1 GHz, all measured values of the spurious emissions with the detector in peak mode, are below the applicable limits, which are valid when using an average detector. Therefore, all spurious emissions above 1 GHz have been measured with the peak detector only (n.t. = not tested), unless otherwise noted.

Note 3: Field strength values of radiated emissions at frequencies not listed in the table above are more than 20 dB below the applicable limit.

Measurement uncertainty: ≤ 1GHz: +2.6/-3.3 dB, > 1 GHz: +4.5/-6.1 dB

3.10.3 Test results (test channel 2)

Frequency (MHz)	Test results quasi peak (dBµV/m)		Test results average (dBµV/m)		Test results peak (dBµV/m)		Resolution bandwidth (kHz)	Quasi peak limits (dBµV/m)	Average limits (dBµV/m)	Peak limits (dBµV/m)
	V	H	V	H	V	H				
30.0 - 88.0	< 20.0	< 20.0	-	-	-	-	120	40.0	-	-
88.0 - 216.0	< 23.5	< 23.5					120	43.5		
216.0 – 960.0	< 26.0	< 26.0	-	-	-	-	120	46.0	-	-
1626.35	-	-	n.t.	n.t.	38.1	41.4	1000	-	54.0	74.0
2439.50	-	-	n.t.	n.t.	44.0	42.5	1000	-	54.0	74.0

Note 1: values stated in the table above are worst case.

Note 2: Above 1 GHz, all measured values of the spurious emissions with the detector in peak mode, are below the applicable limits, which are valid when using an average detector. Therefore, all spurious emissions above 1 GHz have been measured with the peak detector only (n.t. = not tested), unless otherwise noted.

Note 3: Field strength values of radiated emissions at frequencies not listed in the table above are more than 20 dB below the applicable limit.

Measurement uncertainty: ≤ 1GHz: +2.6/-3.3 dB, > 1 GHz: +4.5/-6.1 dB

3.10.4 Test results (test channel 3)

Frequency (MHz)	Test results quasi peak (dBµV/m)		Test results average (dBµV/m)		Test results peak (dBµV/m)		Resolution bandwidth (kHz)	Quasi peak limits (dBµV/m)	Average limits (dBµV/m)	Peak limits (dBµV/m)
	V	H	V	H	V	H				
30.0 - 88.0	< 20.0	< 20.0	-	-	-	-	120	40.0	-	-
88.0 - 216.0	< 23.5	< 23.5					120	43.5		
216.0 – 960.0	< 26.0	< 26.0	-	-	-	-	120	46.0	-	-
1652.40	-	-	n.t.	n.t.	38.2	41.3	1000	-	54.0	74.0
2478.50	-	-	n.t.	n.t.	43.4	44.3	1000	-	54.0	74.0

Note 1: values stated in the table above are worst case.

Note 2: Above 1 GHz, all measured values of the spurious emissions with the detector in peak mode, are below the applicable limits, which are valid when using an average detector. Therefore, all spurious emissions above 1 GHz have been measured with the peak detector only (n.t. = not tested), unless otherwise noted.

Note 3: Field strength values of radiated emissions at frequencies not listed in the table above are more than 20 dB below the applicable limit.

Measurement uncertainty: ≤ 1GHz: +2.6/-3.3 dB, > 1 GHz: +4.5/-6.1 dB

Used test equipment module

Description	Telef. ID	Manufacturer	Model	Used at par.
Spectrum analyzer	TE 00099	Hewlett Packard	HP8562E	3.1, 3.2, 3.4, 3.5
Spectrum analyzer	TE 11125	Rohde & Schwarz	FSP40	3.3, 3.6, 3.7, 3.8
Multimeter	TE 00143	Hewlett Packard	HP34401A	3.1, 3.2, 3.4, 3.5, 3.3, 3.6, 3.7, 3.8
Power supply	TE 00616	Delta Elektronika	E0303	3.1, 3.2, 3.4, 3.5, 3.3, 3.6, 3.7, 3.8
Temperature chamber	TE 00741	CTS	C-40/350	3.1, 3.2, 3.4, 3.5, 3.3, 3.6, 3.7, 3.8
Coaxial cable	TE 01089	Huber + Suhner	Sucoflex 104	3.1, 3.2, 3.4, 3.5, 3.3, 3.6, 3.7, 3.8

The following measurement equipment is used at TNO Electronic Products & Services (EPS) B.V. and used at paragraphs 3.9 and 3.10:

Inventory number	Description	Brand	Model
12476	Antenna mast	EMCO	TR3
12477	Antenna mast 1-4 mtr	Poelstra	--
12482	Loop antenna	EMCO	6507
12483	Guidehorn	EMCO	3115
12484	Guidehorn	EMCO	3115
12488	Guidehorn 18 - 26.5 GHz	EMCO	RA42-K-F-4B-C
12533	Signalgenerator	MARCONI	2032
12561	DC Power Supply 20A/70V	DELTA	SM7020D
12605	calibrated dipole 28MHz-1GHz	Emco	3121c
12636	Polyester chamber	Polyforce	--
12640	Temperature chamber	Heraeus	VEM03/500
13664	Spectrum analyzer	HP	HP8593E
13078	Preamplifier 0.1 GHz - 12 GHz	Miteq	AMF-3D-001120-35-14p
13452	Digital multi meter	HP	34401A
13526	Signalgenerator 20 GHz	Hewlett & Packard	83620A
13594	Preamplifier 10 GHz - 25 GHz	Miteq	AMF-6D-100250-10p
13886	Open Area testsite	Comtest	--
14051	Anechoic room	Comtest	--
14450	2.4 GHz bandrejectfilter	BSC	XN-1783
15633	Biconilog Testantenna	Chase	CBL 6111B
15667	Measuring receiver	R&S	ESCS 30
99045	DC Power Supply 3A/30V	DELTA	E030/3
99055	Non-conducting support	NMi	--
99061	Non-conducting support 150cm	NMi	--
99068	Detector N-F/BNC-F	Radiall	R451576000
99069	Cable 5m RG214	NMi	--
99071	Cable 10m RG214	NMi	--
99076	Bandpassfilter 4 - 10 GHz	Reactel	7AS-7G-6G-511
99077	Regulating trafo	RFT	LTS006
99112	Tripod	Chase	--
99136	Bandpassfilter 10 - 26.5 GHz	Reactel	9HS-10G/26.5G-S11

Cross reference table

Transmitter	
IC RSS-210 Issue 7, Annex 8	**FCC 47 CFR Ch. 1 part 15, subpart C (01-OCT-06 Edition)**
A8.1 (a)	section 15.247 (a)(1)
A8.1 (b)	section 15.247 (a)(1)
A8.1 (d)	section 15.247 (a)(1) (iii)
A8.4 (2)	section 15.247 (b)(1)
A8.5	section 15.247 (d)
2.2	section 15.205
2.6	section 15.209
Receiver	
IC RSS-Gen Issue 2	**FCC 47 CFR Ch. 1 part 15, subpart B (01-OCT-06 Edition)**
Section 6, table 1	section 15.109
2.2	section 15.205 (see part 15, subpart C)

Revision history

REVISION	DATE	REMARKS
1	15 January 2008	ANSI C63.4-1992 changed to ANSI C63.4-2003.