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Radio test report
20072231302 - rev 2.0

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 15.207 (01-OCT-06 Edition);
- 47 CFR Part 15C, section 15.209 (01-OCT-06 Edition);
- 47 CFR Part 15B, section 15.109 (01-OCT-06 Edition).

Last mile Endpoint for Metering
EnergyICT
RF RTU+V6

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REVISION HISTORY **54**

This report comprises of four modules. The total number of pages is: 54

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. Copyright of this test report is reserved to Telefication.

Ordering party:

Company name	:	EnergyICT N.V., EMC Center
Address	:	Theodoor Sevenslaan 104A
Zipcode	:	8500
City/town	:	Kortrijk
Country	:	Belgium
Date of order	:	17 October 2007

2 Product

A sample of the following product was submitted for testing:

Product description	:	Last mile Endpoint for Metering
Manufacturer	:	EnergyICT N.V.
Trade mark	:	EnergyICT Co., Ltd.
Type designation	:	RF RTU+V6
FCC ID	:	VS7 RF-RTUV6
Hardware version	:	Rev 01
Software release	:	V 1.3
Serial number	:	--

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:

- 7 November 2007

Tests are carried out between:

- 7 November 2007 and 13 December 2007

4 Product documentation

For production of this report no documentation was used.

5 Observations and comments

The RF RTU+V6 is a Last mile Endpoint for metering. The unit is a host for the radio module. The results in this report are applicable to this radio module only.
The module contains a frequency hopping transceiver in the 902-928 MHz band.

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

6 Modifications to the sample

None.

7 Summary

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

INTENTIONAL RADIATOR OPERATING IN THE FREQUENCY BAND 902 – 928 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 15.207 (01-OCT-06 Edition);
47 CFR Part 15C, section 15.209 (01-OCT-06 Edition);
47 CFR Part 15B, section 15.109 (01-OCT-06 Edition)

8 Conclusions

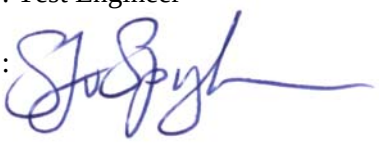
The samples of the product showed **NO NON-COMPLIANCES** to the specification stated in chapter 7 of this report.

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 : S. J. van Spijker

function : Test Engineer

signature : 

Review of test report by:

name : ing. P. A. Suringa

function : Senior Engineer Radio/EMC

signature : 

The above conclusions have been verified by the following signatory:

Date : 1 February 2008

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	Frequency hopping transmitter in the 902-928 MHz band
Rated conducted RF power	10 dBm
Operating frequency range	904 - 926 MHz
Modulation types	FSK
ITU designation	300KF1D
Antenna type	External omnidirectional
Antenna gain	1.5 dBi (peak)

1.2 Tested channels

	Test channel 1	**Test channel 2**	**Test channel 3**
Frequency (MHz)	904.3	915.2	926.06

2 Summary of test data

Description	Clause	Limit	Test result	Pass/Fail
20 dB bandwidth	15.247 (a)(1)	--	298 kHz	Pass
Channel separation	15.247 (a)(1)	≥ 2/3*20 dB BW	960 kHz	Pass
Number of channels	15.247 (a)(1)(i)	≥ 25	25	Pass
Average time of occupancy	15.247 (a)(1)(i)	0.400 sec.	0.0868 sec.	Pass
Maximum peak power output	15.247 (b)(1) 15.247 (b)(4)	30 dBm	8.4 dBm	Pass
Spurious emissions Tx (conducted)	15.247 (d)	< -20 dBc	≤ -34.8 dBc	Pass
Field strength of spurious emissions (radiated, receive mode)	15.109	40 dBµV/m (av)	33.2 dBµV/m (PK) @ 220 MHz	Pass
Field strength of emissions outside of the frequency band of operation (radiated, transmit mode) F ≤ 1 GHz	15.247 (d) 15.205 (a) 15.209	40/43.5/46/54 dBµV/m (QP)	33.3 dBµV/m (QP) @ 220 MHz	Pass
Field strength of emissions outside of the frequency band of operation (radiated, transmit mode) F > 1 GHz	15.247 (d) 15.205 (a) 15.209	54 dBµV/m (av) 74 dBµV/m (pk)	56.0 dBµV/m (PK) 41.6 dBµV/m (AV) @ 2.74 GHz	Pass
Power line conducted emissions	15.207	See 15.207	30.9 dBµV (QP) 30.3 dBµV (AV)	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 : 47 %

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

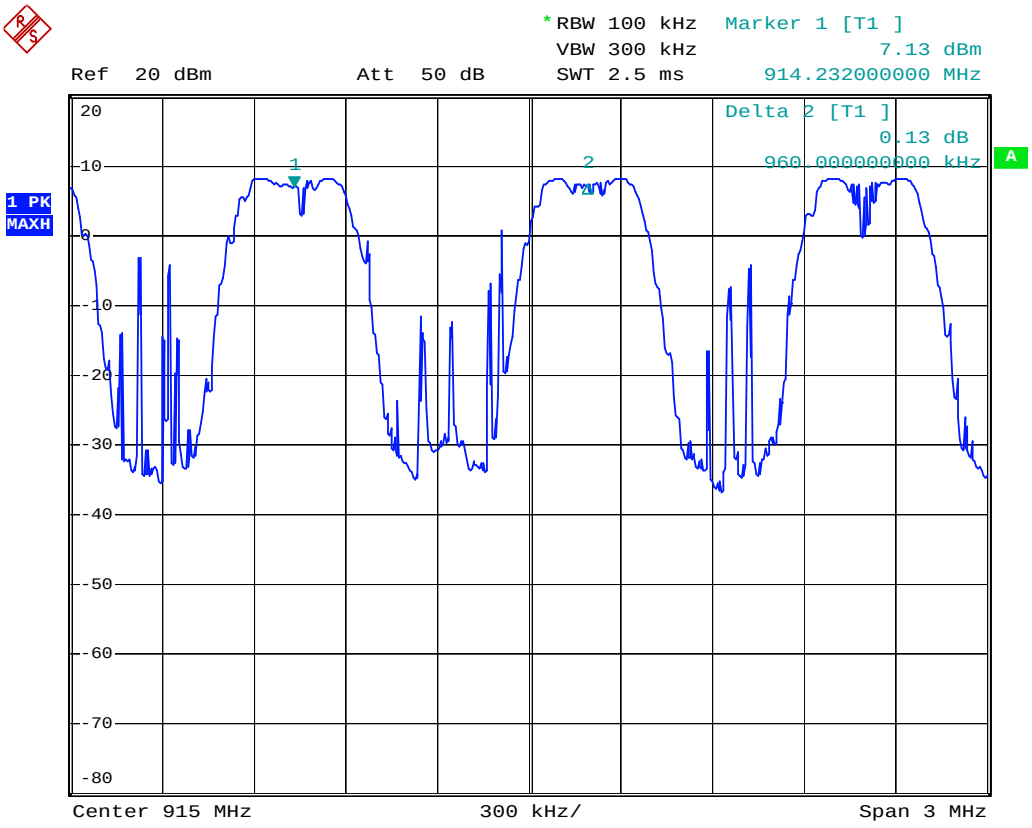
Trace = max hold

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

Carrier frequency separation	Plot numbers (on next pages)
960 kHz	1

Measurement uncertainty: + 46/- 46 kHz



Date: 8.NOV.2007 14:27:46

Plot 1 – Channel separation

3.2 Number of hopping frequencies

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

Ambient temperature : 21 °C
Relative humidity : 47 %

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

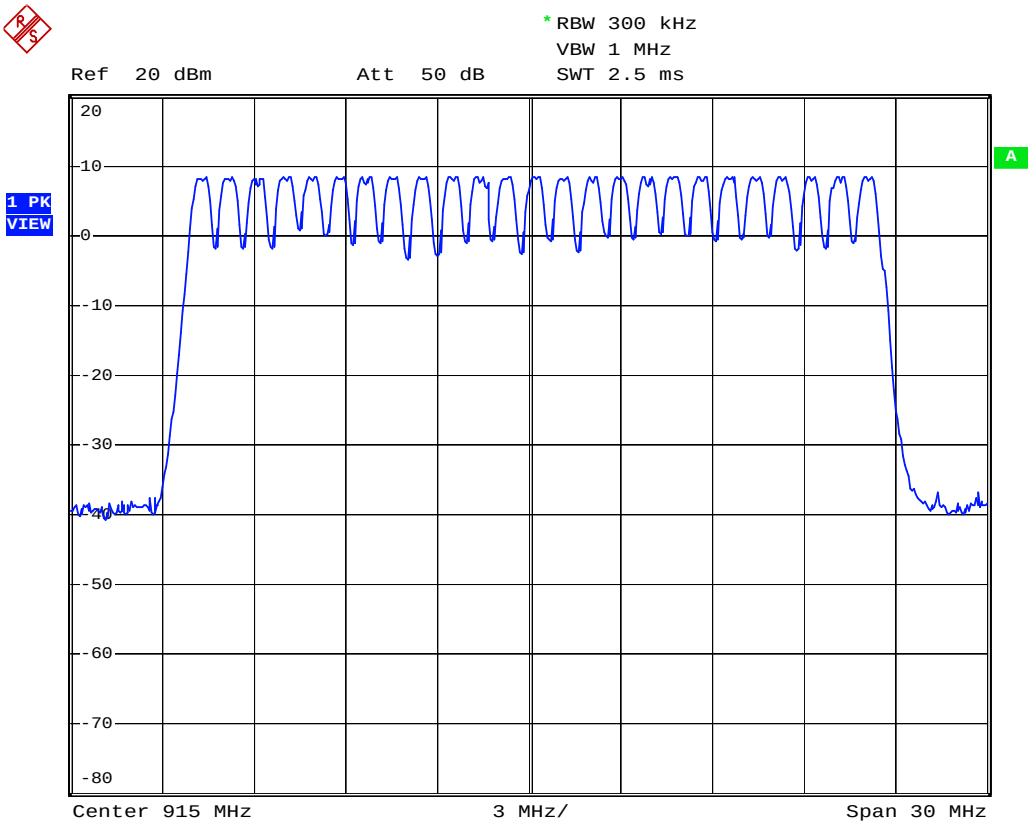
Detector function = peak

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

Number of hopping frequencies	Plot numbers (on next pages)
25	2



Plot 2 – Number of channels

3.3 Average time of occupancy

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

Ambient temperature : 21 °C
Relative humidity : 47 %

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 25 hopping channels. Therefore the minimum sweeptime for determining the number of hops is 10 seconds.

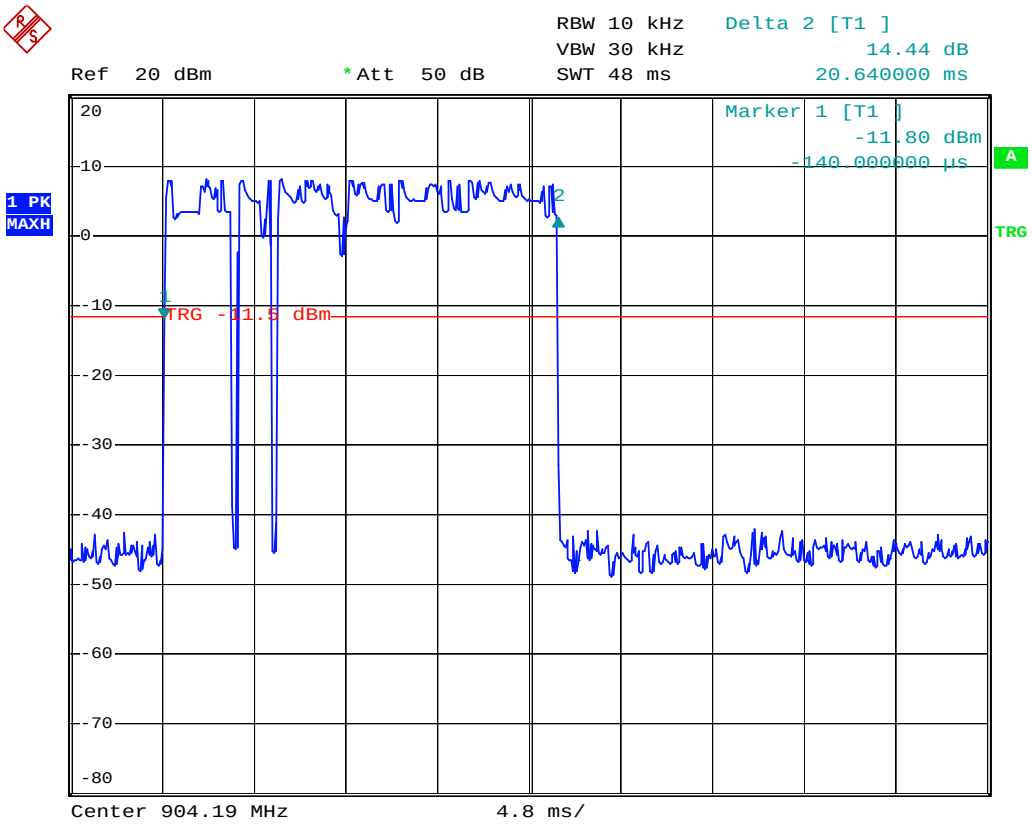
The testmode generates a modulated FSK signal for approximately 21 ms, which repeats each 100 ms. The remainder of the 100 ms it is unmodulated, but a carrier is still present.
Because of this implementation of the testmode, the RBW was decreased to 10 kHz.

3.3.2 Test results

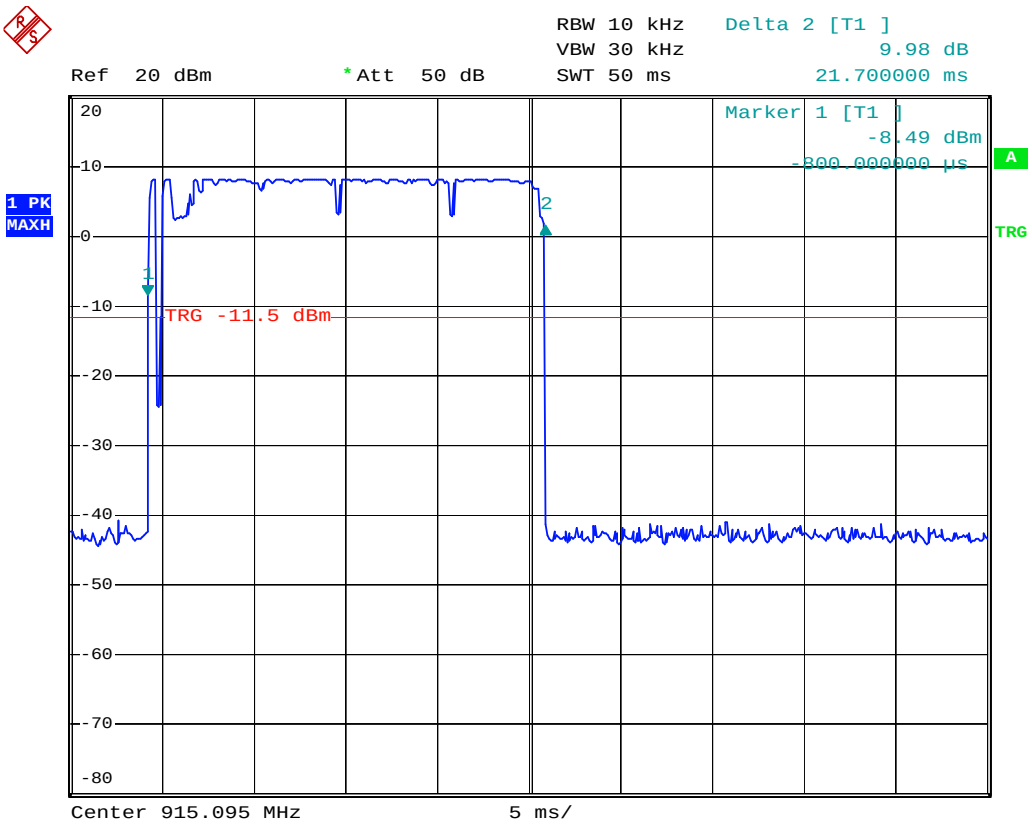
Channel	Pulse time (ms)	Plot numbers (on next pages)
1	20.6	3a
2	21.7	3b
3	21.0	3c

Channel	Number of hops	Plot numbers (on next pages)
1	4	4a
2	4	4b
3	4	4c

Channel	Average time of occupancy (s) (pulse time x number of hops)	Plot numbers (on next pages)
1	0.0824	--
2	0.0868	--
3	0.0840	--

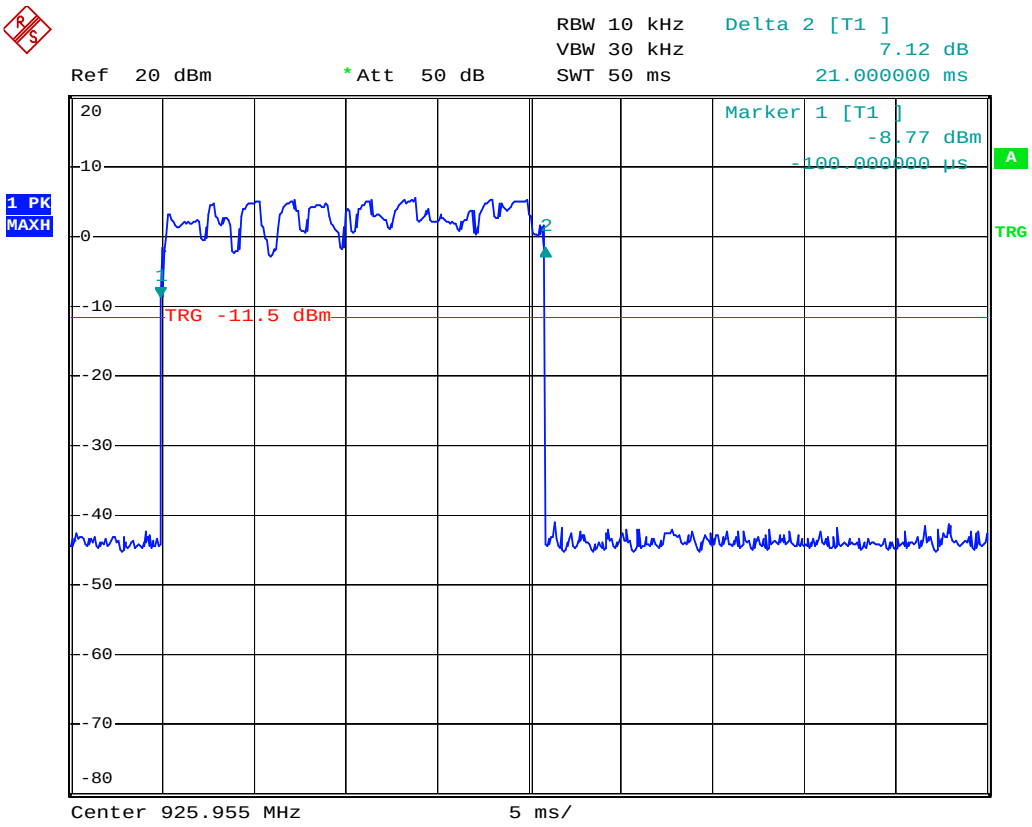


Plot 16a – Pulse time (hopping transmit mode, observing channel 1)



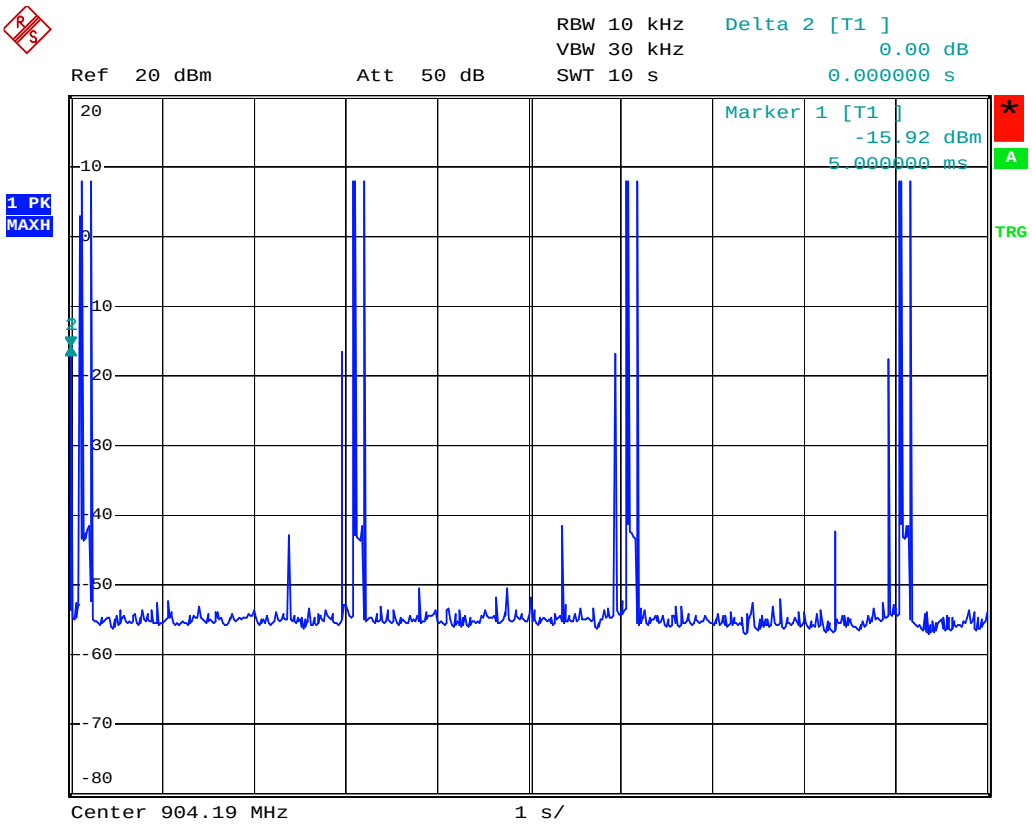
Date: 8.NOV.2007 14:45:23

Plot 3b – Pulse time (hopping transmit mode, observing channel 2)



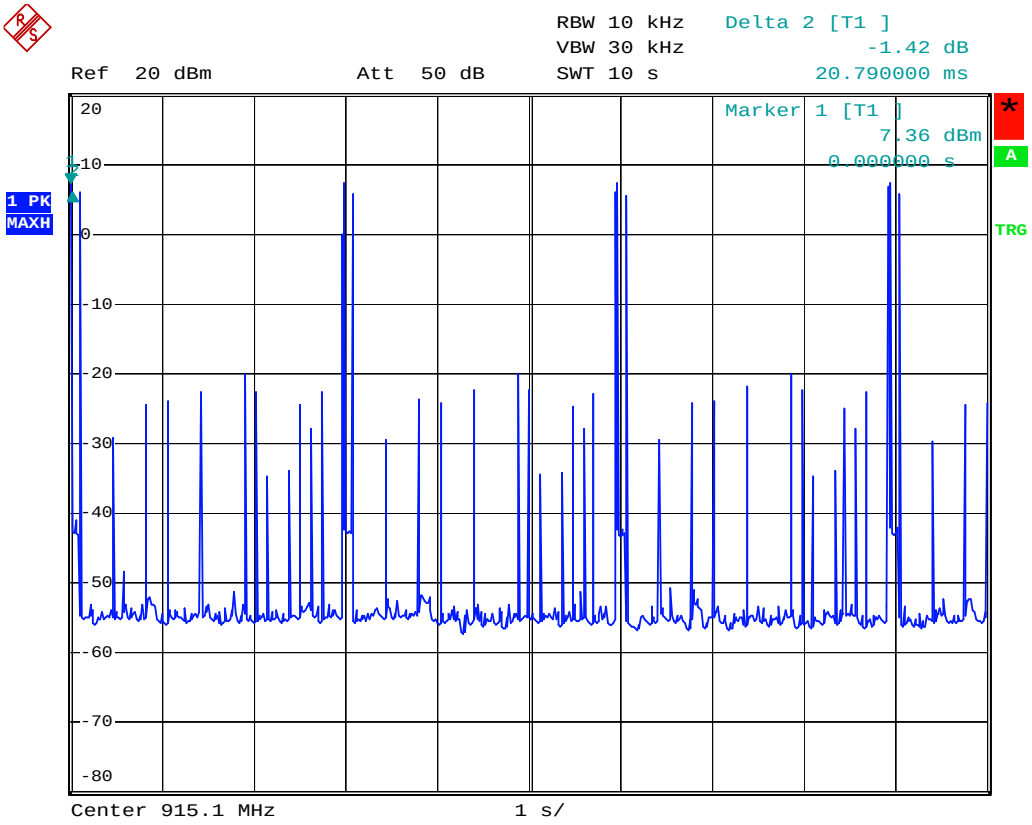
Date: 8.NOV.2007 14:46:25

Plot 3c – Pulse time (hopping transmit mode, observing channel 3)



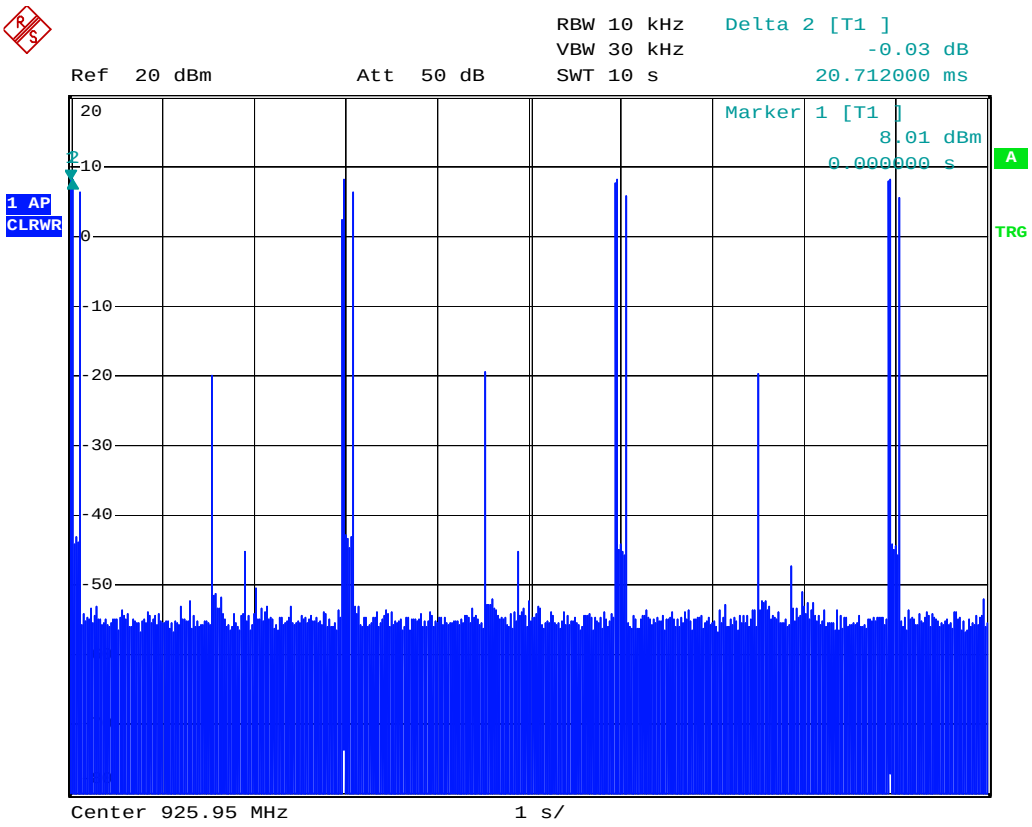
Date: 8.NOV.2007 14:40:10

Plot 4a – Number of hops (hopping transmit mode, observing channel 1)



Date: 8.NOV.2007 14:38:57

Plot 4b – Number of hops (hopping transmit mode, observing channel 2)



Date: 8.NOV.2007 14:34:11

Plot 4c – Number of hops (hopping transmit mode, observing channel 3)

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 : 47 %

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

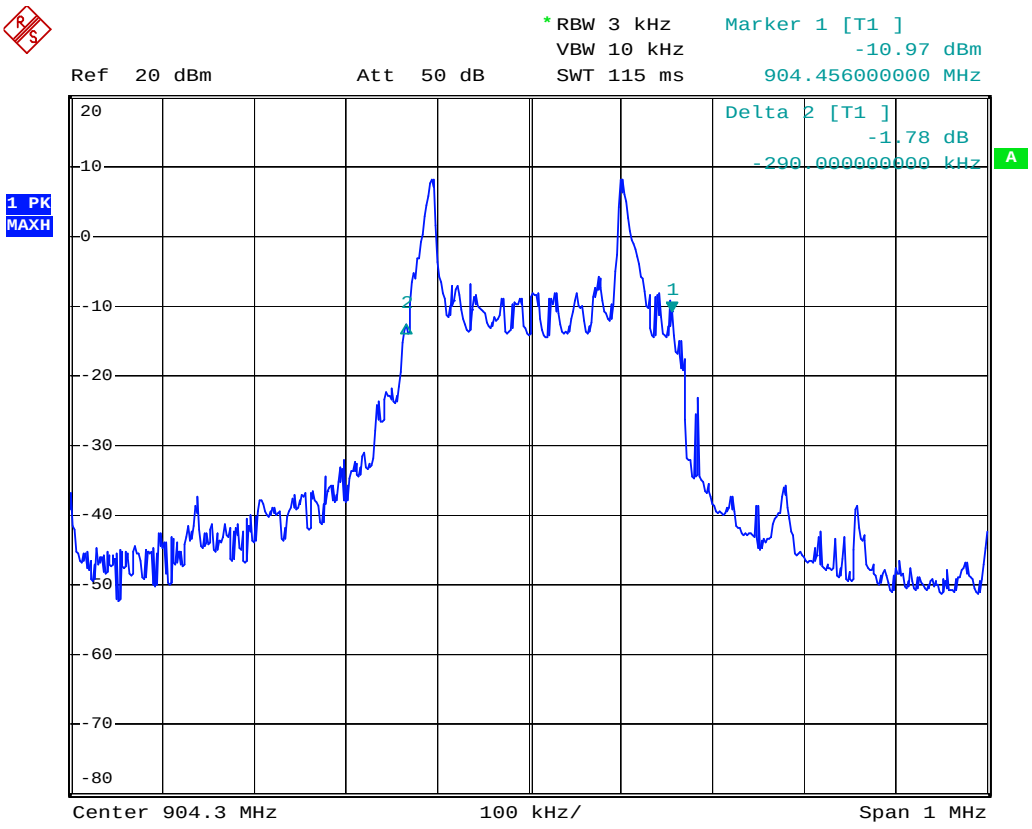
Trace = max hold

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

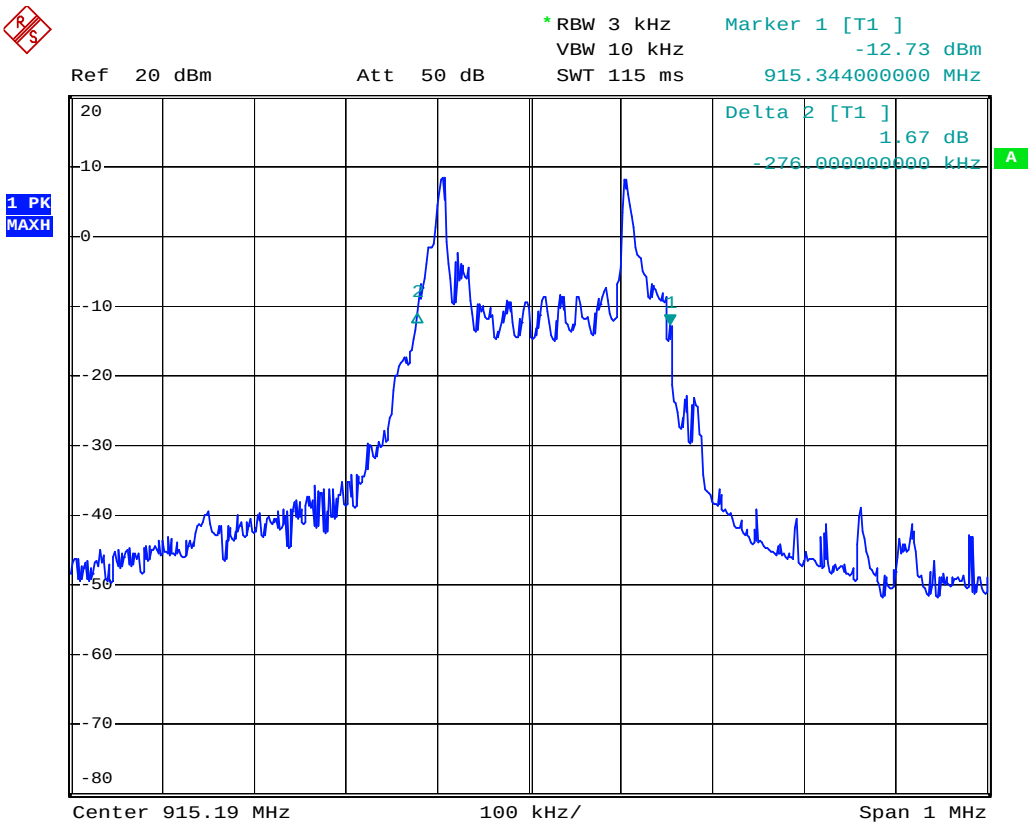
Channel	20 dB Bandwidth (kHz)	Plot numbers (on next pages)
1	290	5
2	276	6
3	298	7

Measurement uncertainty: + 23/- 23 kHz



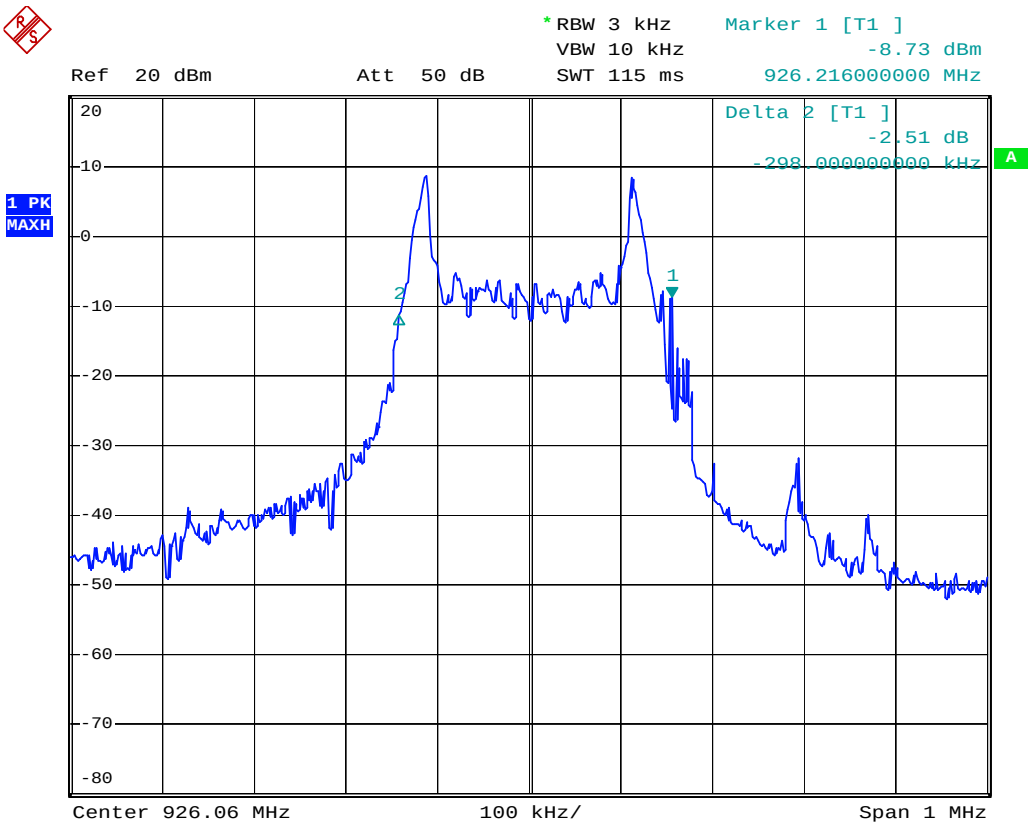
Date: 8.NOV.2007 14:21:51

Plot 5 – 20 dB bandwidth on test channel 1



Date: 8.NOV.2007 14:23:43

Plot 6 – 20 dB bandwidth on test channel 2



Plot 7 – 20 dB bandwidth on test channel 3

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).

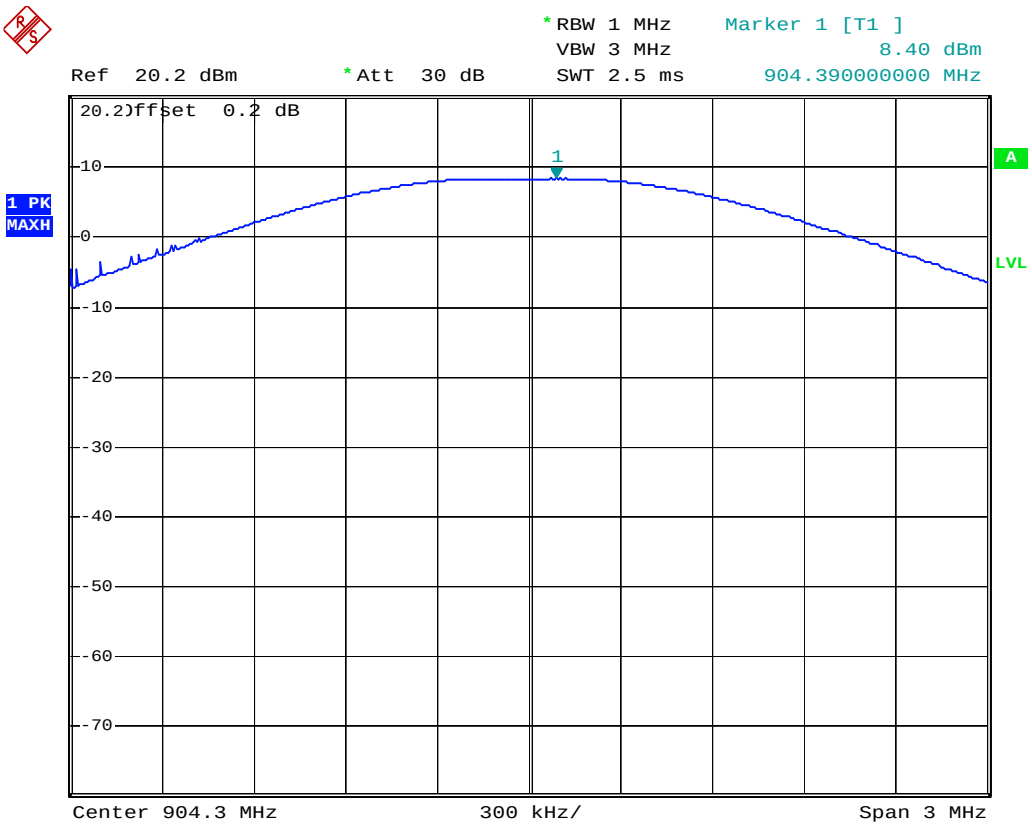
3.5.2 Test results

Channel	Conducted peak output power (dBm)	Plot numbers (on next pages)
1	8.40	8
2	8.38	9
3	8.36	10

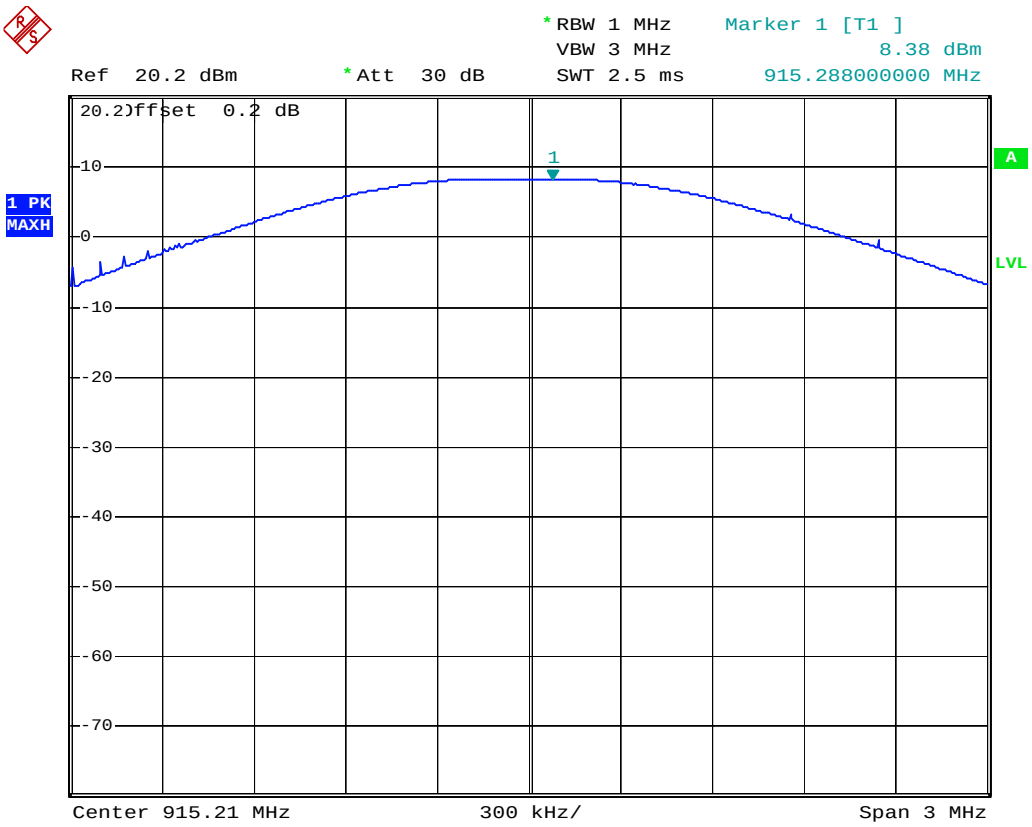
Radiated peak output power (EIRP, calculated, peak antenna gain of 1.5 dBi)

Channel	Radiated peak output power (E.I.R.P.)
1	9.9
2	9.88
3	9.86

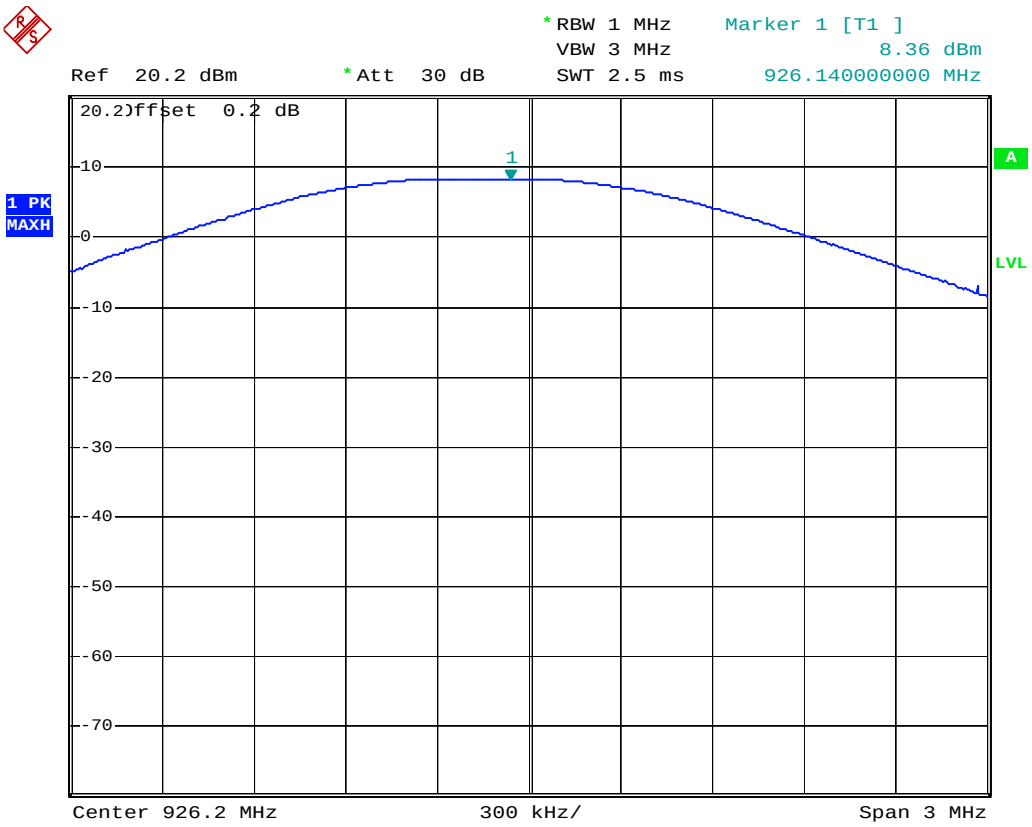
Measurement uncertainty: + 1.6/ -1.9 dB



Plot 8 – Peak power output on channel 1 (offset of 0.2 dB for cable losses)



Plot 9 – Peak power output on channel 2 (offset of 0.2 dB for cable losses)



Plot 10 – Peak power output on channel 3 (offset of 0.2 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 : 47 %

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.

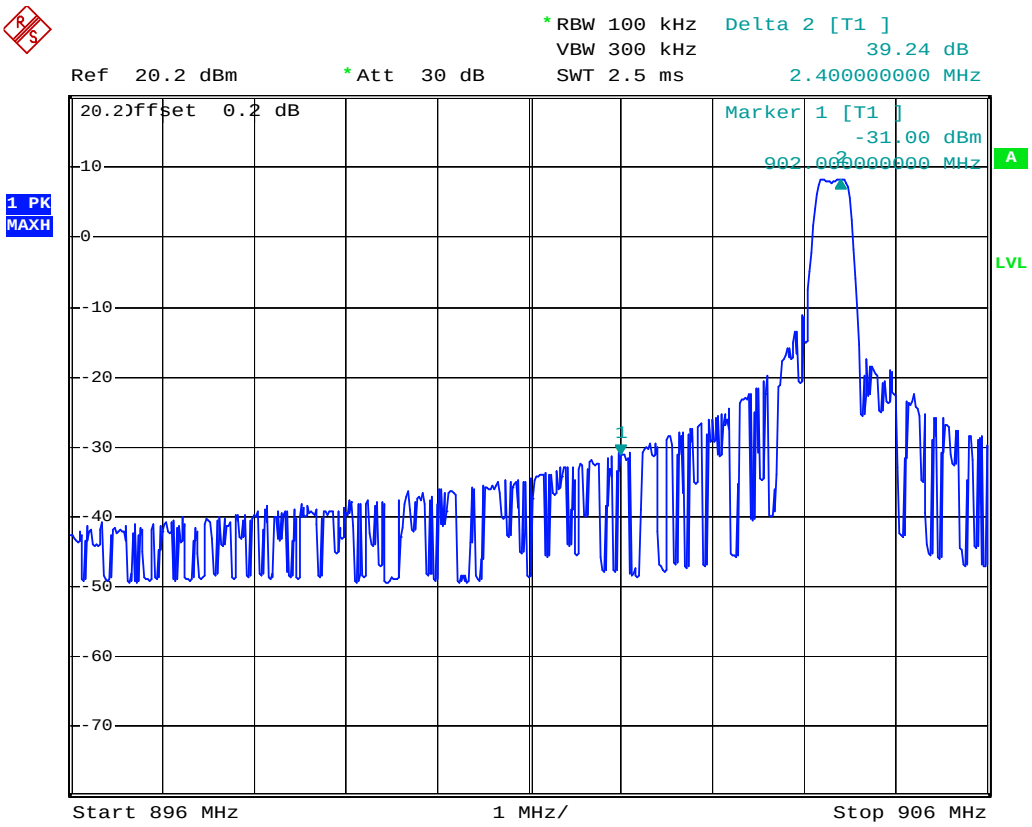
3.6.2 Test results

Continuous transmit mode

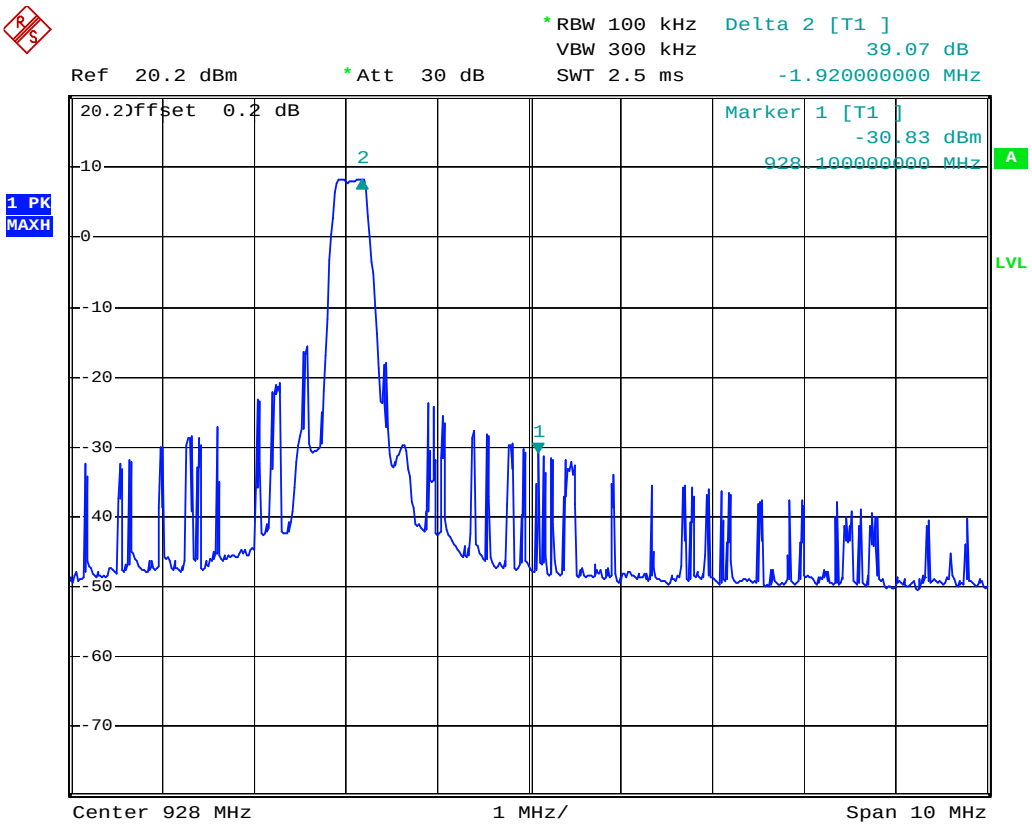
Channel	Lower bandedge	Upper bandedge	Plot numbers (on next pages)
1	-39.24 dBc	--	11
3	--	-39.07 dBc	12

Hopping transmit mode

Channel	Lower bandedge	Upper bandedge	Plot numbers (on next pages)
1	-39.24 dBc	--	13
3	--	-53.86 dBc	14

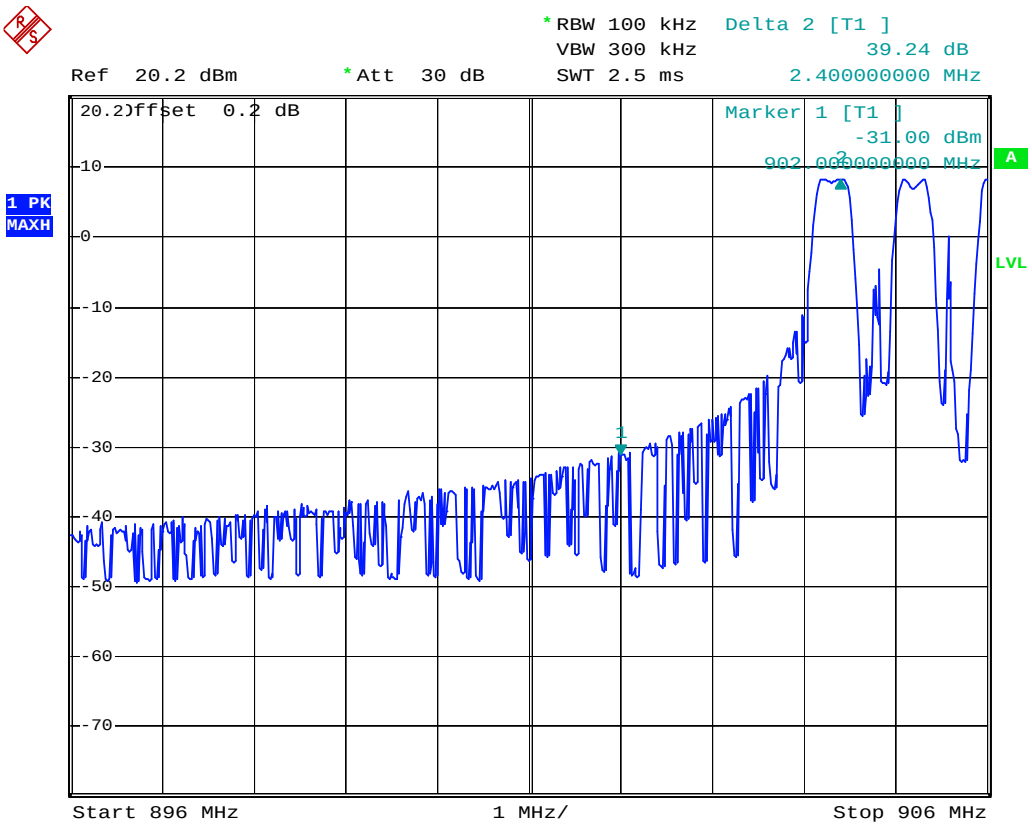


Plot 11 – Emission at the lower bandedge of the frequency band 902 - 928 MHz
(Continuous transmit mode, measurement results in peak mode)



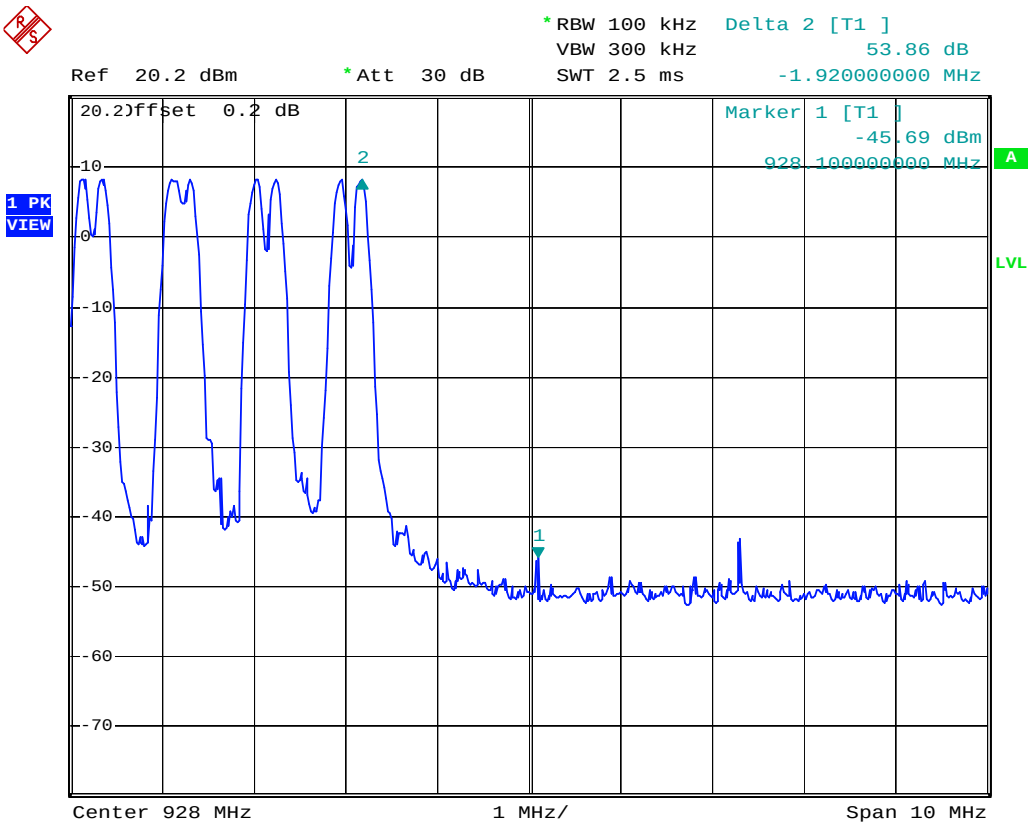
Date: 8.NOV.2007 15:44:14

Plot 12 – Emission at the upper bandedge of the frequency band 902 - 928 MHz
(Continuous transmit mode, measurement results in peak mode)



Date: 8.NOV.2007 15:35:12

Plot 13 – Emission at the lower bandedge of the frequency band 902 - 928 MHz
(Hopping transmit mode, measurement results in peak mode)



Plot 14 – Emission at the upper bandedge of the frequency band 902 - 928 MHz
(Hopping transmit 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 : 48 %

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

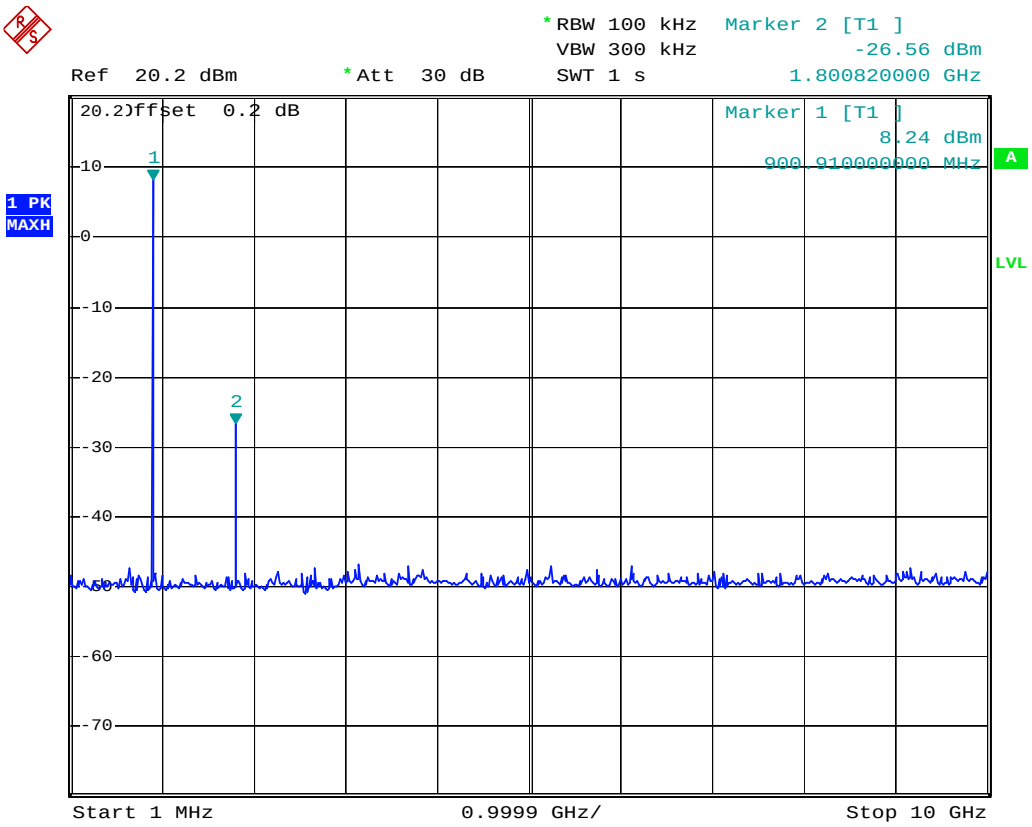
Continuous transmit mode

Channel	Conducted spurious emissions	Plot numbers (on next pages)
1	-34.8 dBc	15
2	-35.0 dBc	16
3	-35.4 dBc	17

Hopping transmit mode

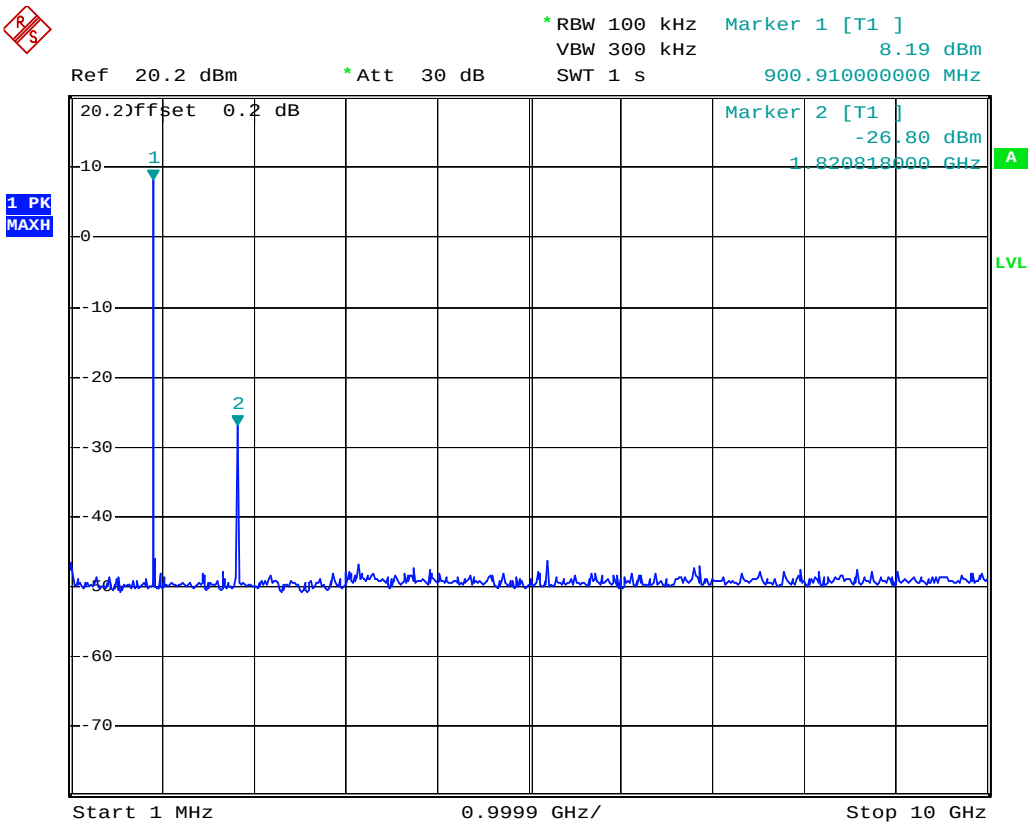
Channel	Conducted spurious emissions	Plot numbers (on next pages)
--	-35.0dBc	18

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



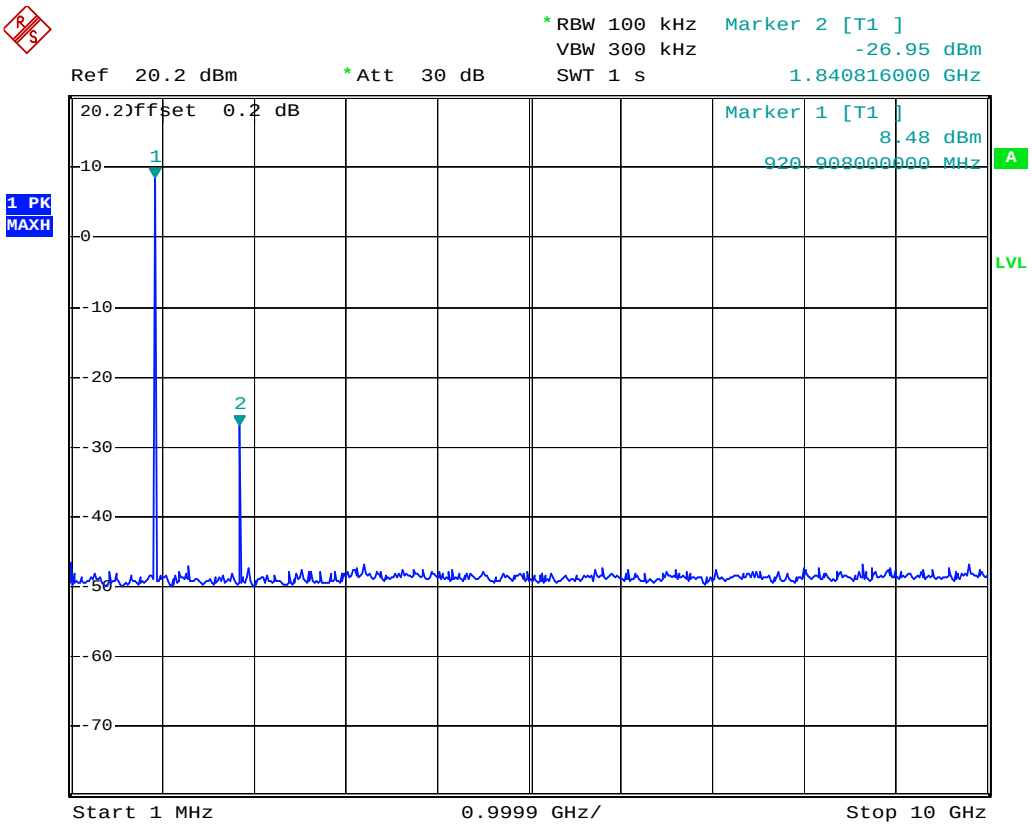
Date: 8.NOV.2007 15:48:16

Plot 15 – Spurious RF conducted emissions in the frequency range of 1 MHz – 10 GHz
(Continuous transmit mode on channel 1)



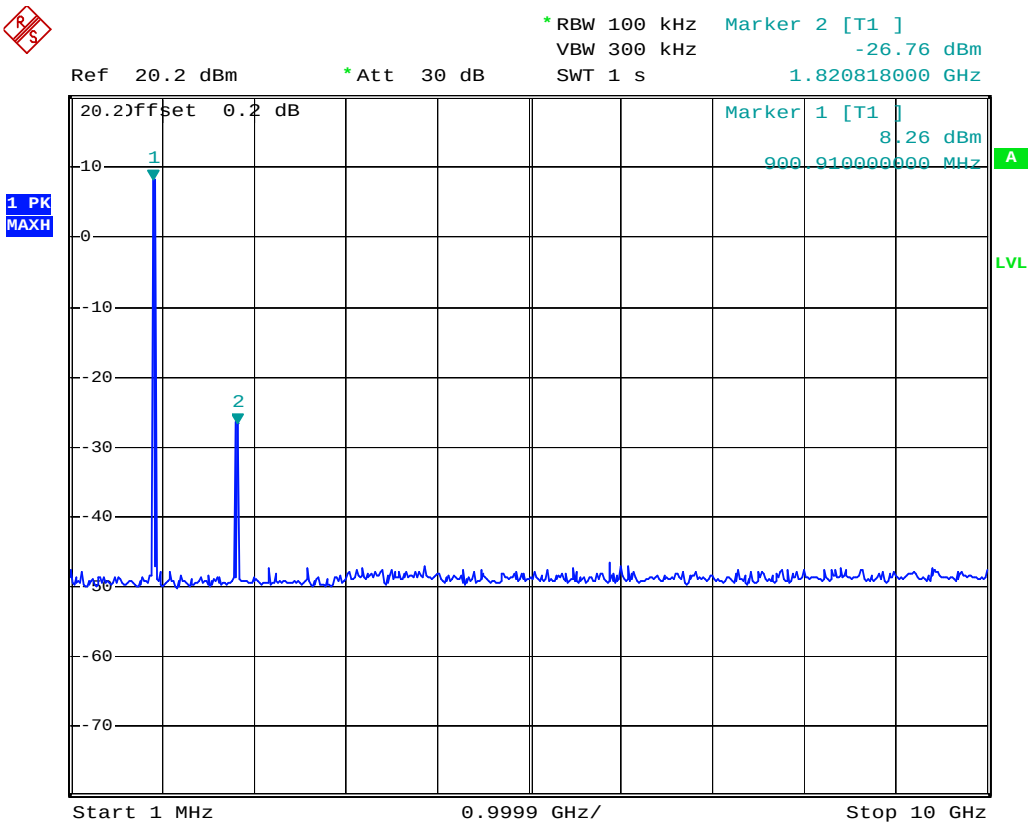
Date: 8.NOV.2007 15:47:36

Plot 16 – Spurious RF conducted emissions in the frequency range of 1 MHz – 10 GHz
(Continuous transmit mode on channel 2)



Date: 8.NOV.2007 15:46:53

Plot 17 – Spurious RF conducted emissions in the frequency range of 1 MHz – 10 GHz
(Continuous transmit mode on channel 3)



Date: 8.NOV.2007 15:49:55

Plot 18 – Spurious RF conducted emissions in the frequency range of 1 MHz – 10 GHz (Hopping transmit mode)

3.8 Emission in the restricted bands

Compliance standard : FCC part 15, subpart C, sections 15.247 (d), 15.205 (a), 15.209
Method of test : Public Notice DA 00-705 (modified)

Ambient temperature : 21 °C
Relative humidity : 48 %

3.8.1 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.

Public Notice DA 00-705 prescribes a radiated emissions test method for measuring emissions in the restricted bands. During each measurement it was assured that the preamplifier within the test setup was not overloaded.

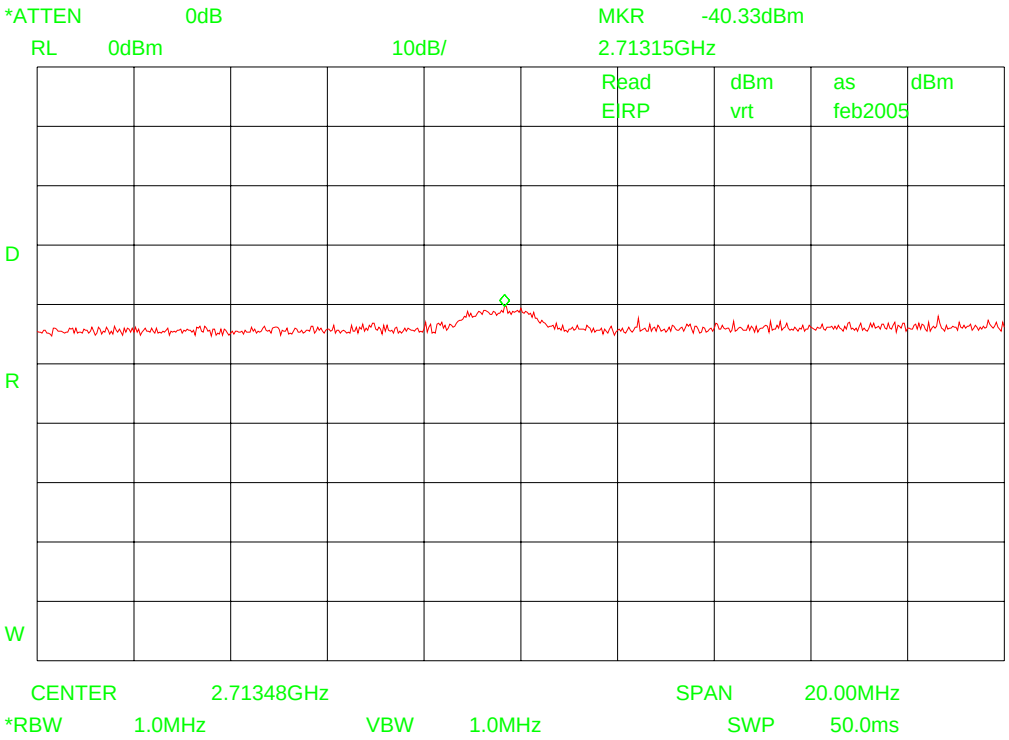
During the measurements for measuring the emission levels in average mode, a (worst-case) factor of 10log(21ms/100ms) for peak/average ratio correction was included in the measurement results as an offset (where 21 ms is the dwell time per channel).

3.8.2 Test results

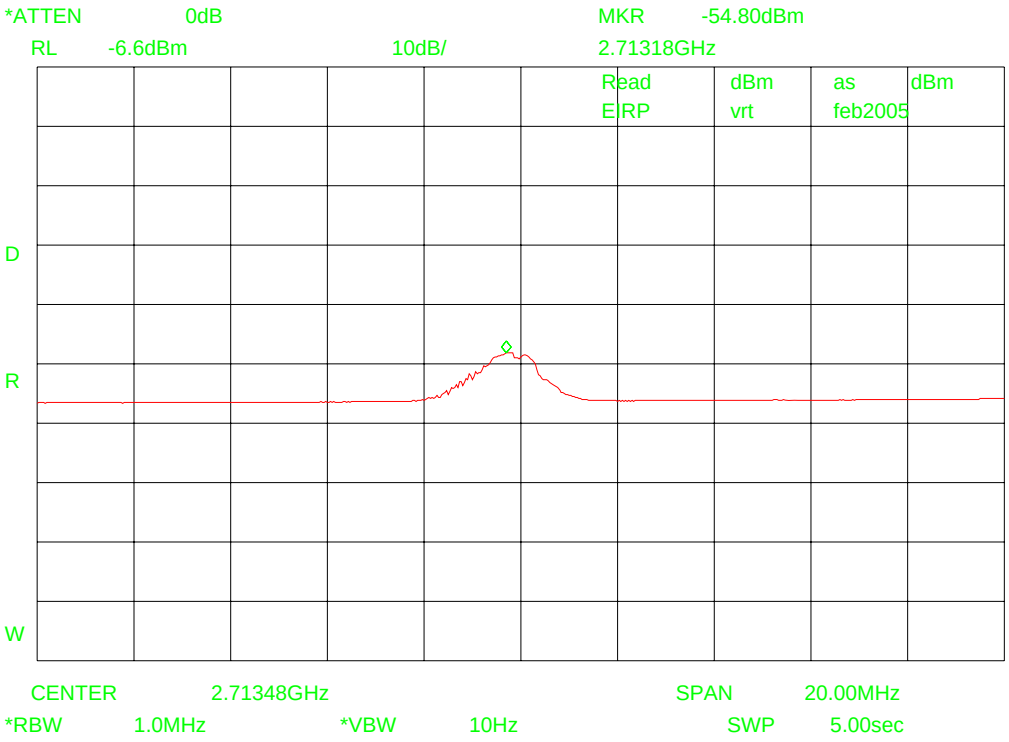
Continuous transmit mode

Channel	Restricted band (GHz)	Measured power (dBm E.I.R.P.)	Peak / average	Plot numbers (on next pages)
1	2.69 – 2.90	-40.3	Peak	19
1	2.69 – 2.90	-54.8	Average	20
2	2.69 – 2.90	-39.2	Peak	21
2	2.69 – 2.90	-53.6	Average	22
3	2.69 – 2.90	-40.2	Peak	23
3	2.69 – 2.90	-54.6	Average	24

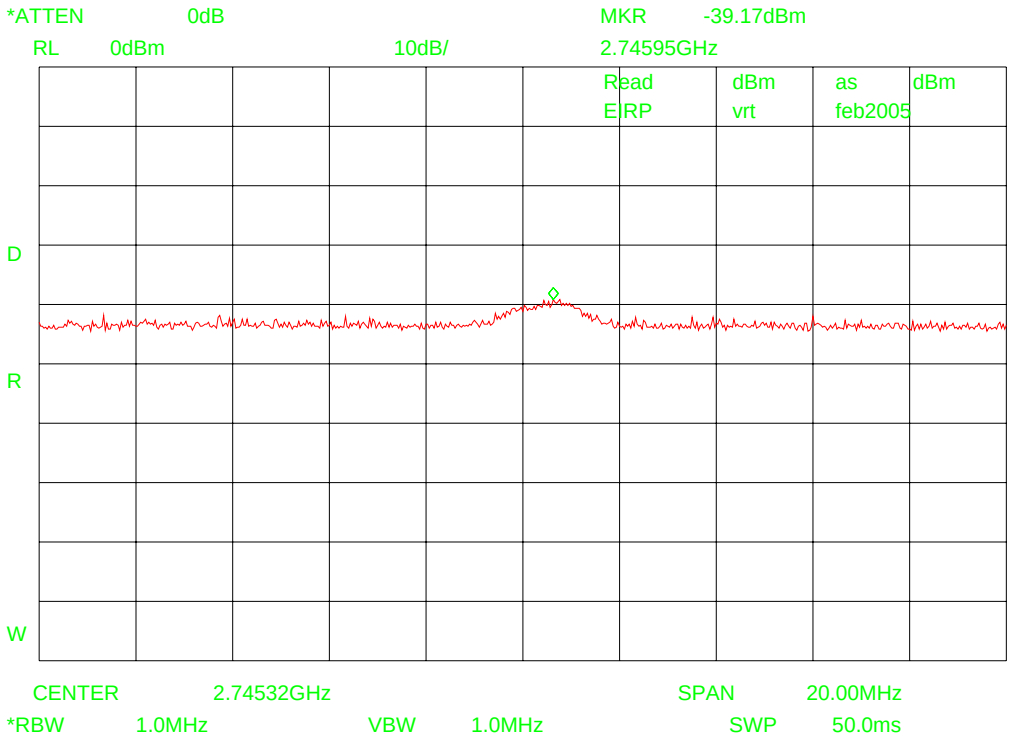
Measurement uncertainty: +2.6 / -3.3 dB (f ≤ 1 GHz); 4.5 / -6.0 dB (f > 1 GHz)



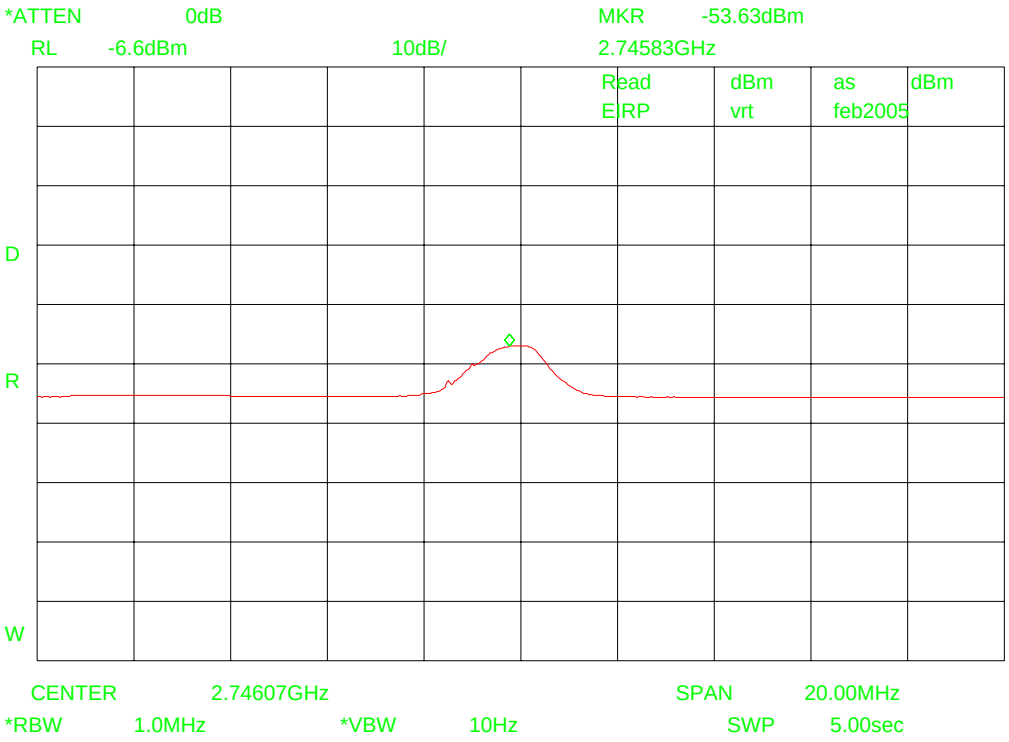
Plot 19 – Emission in the restriced band 2.69 – 2.90 GHz, -21.2 dBm corresponds to 74 dBµV/m
(Continuous transmit mode on channel 1, measurement results in peak mode)



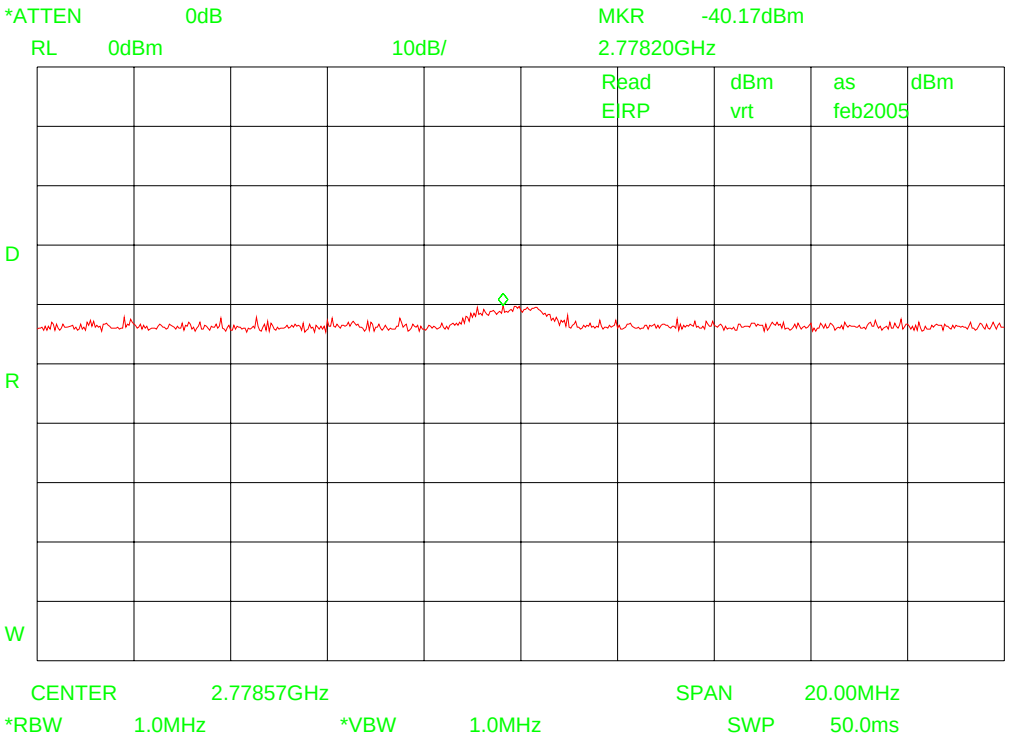
Plot 20 – Emission in the restriced band 2.69 – 2.90 GHz, -41.2 dBm corresponds to 54 dBµV/m (Continuous transmit mode on channel 1, offset of 10log(21ms/100ms) for peak/average ratio, measurement results in average mode)



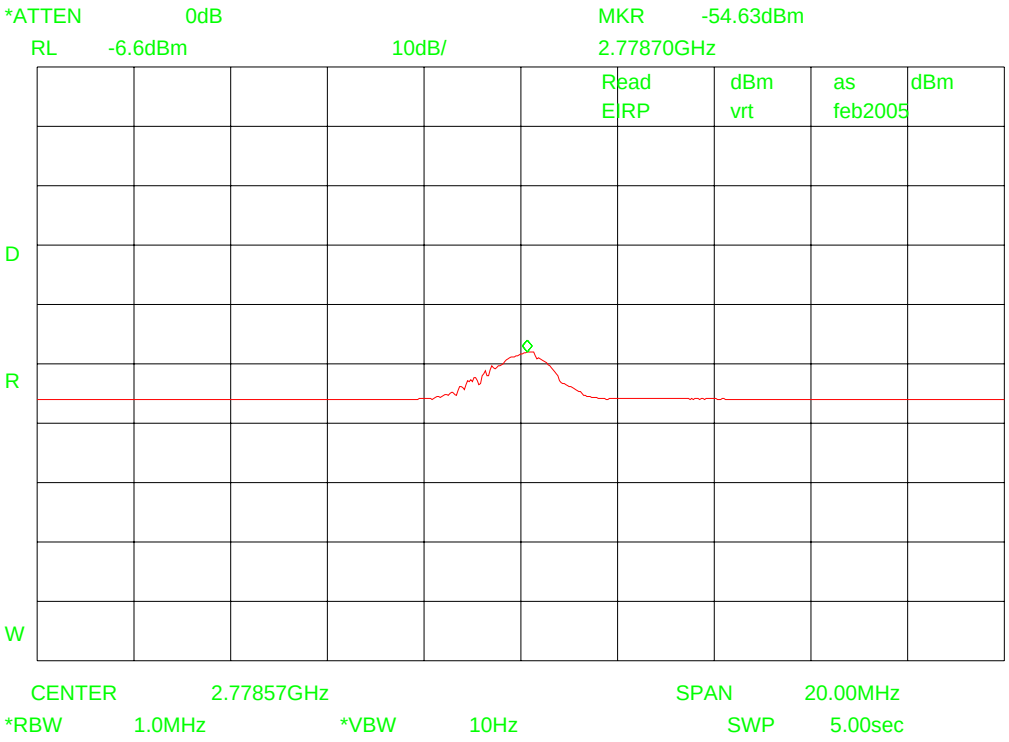
Plot 21 – Emission in the restriced band 2.69 – 2.90 GHz, -21.2 dBm corresponds to 74 dBµV/m
(Continuous transmit mode on channel 2, measurement results in peak mode)



Plot 22 – Emission in the restriced band 2.69 – 2.90 GHz, -41.2 dBm corresponds to 54 dBµV/m (Continuous transmit mode on channel 2, offset of 10log(21ms/100ms) for peak/average ratio, measurement results in average mode)



Plot 23 – Emission in the restriced band 2.69 – 2.90 GHz, -21.2 dBm corresponds to 74 dBµV/m
(Continuous transmit mode on channel 3, measurement results in peak mode)



Plot 24 – Emission in the restriced band 2.69 – 2.90 GHz, -41.2 dBm corresponds to 54 dBµV/m (Continuous transmit mode on channel 3, offset of 10log(21ms/100ms) for peak/average ratio, measurement results in average mode)

3.9 Field strength of spurious emissions outside 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 : 49 %

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 20.9 ms.

3.9.2 Test results

Frequency (MHz)	**Polarization** (H/V)	**Measurement BW and detector**	**Field strength at Channel** (dBµV/m)			**Limit** (dBµV/m)
			1	**2**	**3**	
220	H	120 kHz QP	33.3			46
224	v	120 kHz QP	24.5			46
400	H	120 kHz QP	31.4			46

Note: The measurements presented above are performed on an open area test site. There were no spurious emissions found above 1 GHz except those that are reported in paragraph 3.8 in this report.

Measurement uncertainty: +/- 4.4 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 : 49 %

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

Frequency (MHz)	**Polarization** (H/V)	**Measurement BW and detector**	**Field strength at Channel** (dBµV/m)			**Limit** (dBµV/m)
			1	**2**	**3**	
220	H	120 kHz QP	33.2			46

Note: The measurements presented above are performed on an open area test site. There were no spurious emissions found above 1 GHz.

Measurement uncertainty: +/- 4.4 dB.

3.11 Power line conducted emissions

Compliance standard : FCC part 15, subpart C, section 15.107, 207
Method of test : FCC part 15, subpart A, sections 15.31(k) & (l), 15.35.

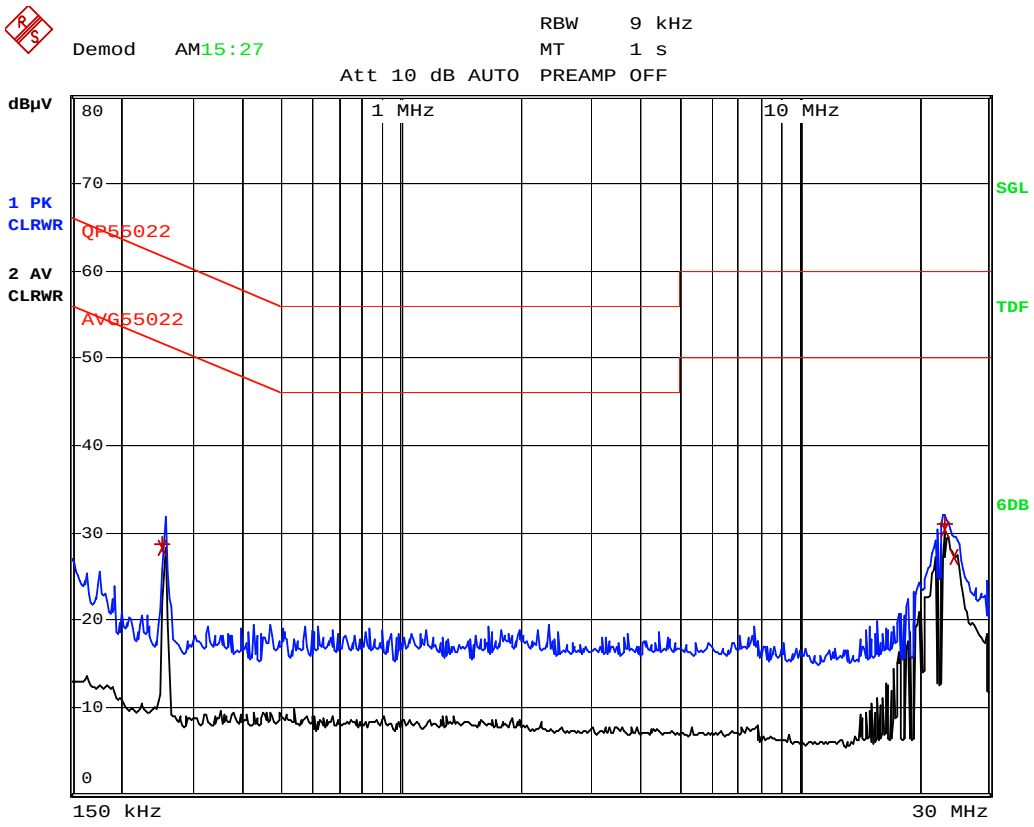
Ambient temperature : 21 °C
Relative humidity : 49 %

3.11.1 Test method

FCC part 15, subpart A, sections 15.31(k), (l), 15.35.

3.11.2 Test results

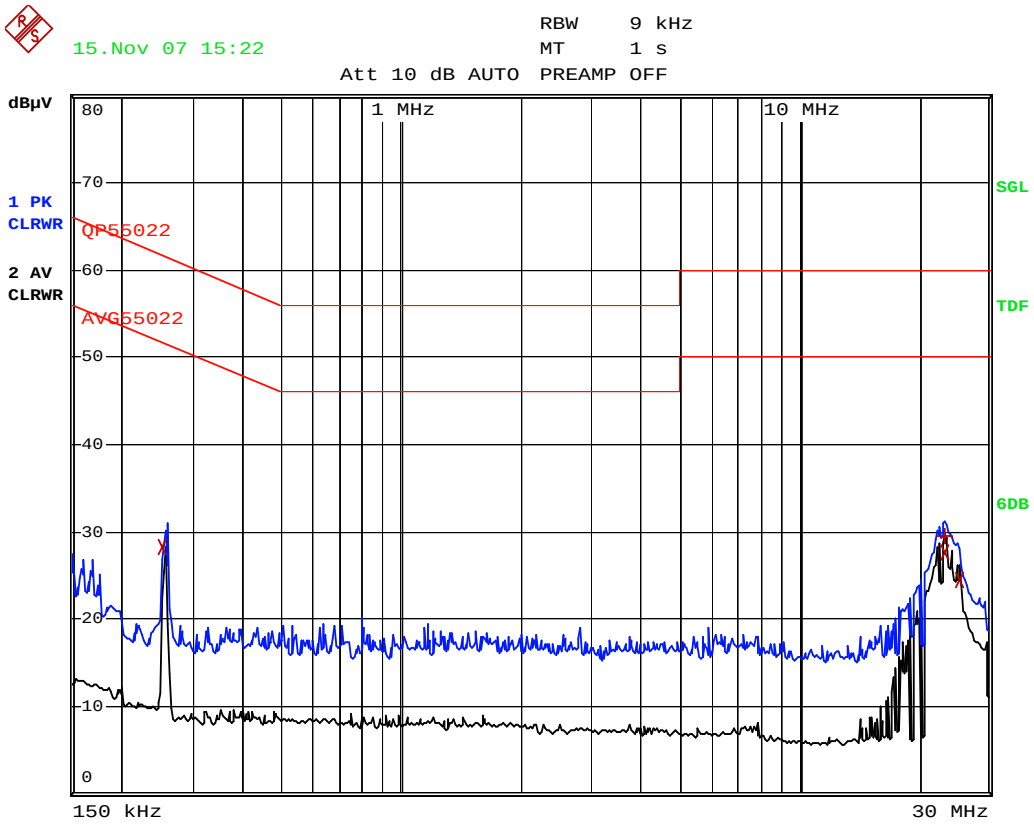
Test results measured with average detector and quasi peak detector at “neutral” conductor at mains port:



+12 Vdc

Date: 15.NOV.2007 15:27:31

Test results measured with average detector and quasi peak detector at “line” conductor at mains port:



+12 Vdc

Date: 15.NOV.2007 15:22:00

Measurement uncertainty: +/- 3.1 dB

Used test equipment module

Description	Telef. ID	Manufacturer	Model	Used at par.
Spectrum analyzer	TE 00359	Hewlett Packard	HP8563E	3.8
Spectrum analyzer	TE 11125	Rohde & Schwarz	FSP40	3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7
RF preamplifier	TE 00344	Rohde & Schwarz	ESV-Z3	3.8
RF preamplifier	TE 00092	Hewlett Packard	HP 8449B	3.8
Anechoic chamber	TE 01064	Comtest	RFD-F-100	3.8
Biconilog antenna	TE 00700	EMCO	3143	3.8
DRW horn antenna	TE 00531	EMCO	3115	3.8
LISN	TE 00208	Rohde & Schwarz	ESH3-Z5	3.11
Measurement receiver	TE 11128	Rohde & Schwarz	ESCI	3.11
Variable transformer	TE 00820	--	--	3.8
Variable transformer	TE 00586	--	--	3.11
Coaxial cable	TE 01089	Huber + Suhner	Sucoflex 104	3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7

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
12477	Antenna mast 1-4 mtr	Poelstra	--
12636	Polyester chamber	Polyforce	--
13886	Open Area testsite	Comtest	--
15633	Biconilog Testantenna Chase		CBL 6111B
15667	Measuring receiver	R&S	ESCS 30
99055	Non-conducting support	NMi	--
99069	Cable 5m RG214	NMi	--
99071	Cable 10m RG214	NMi	--
99077	Regulating trafo	RFT	LTS006

Revision history

REVISION	DATE	REMARKS
1.0	28-1-2008	Corrected product description and type designation
2.0	28-1-2008	Corrected date in reference from ANSI C63.4-1992 to ANSI C63.4-2003