

**TEST REPORT CONCERNING THE COMPLIANCE OF A
SPREAD SPECTRUM TRANSMITTER,
BRAND Nedap, MODEL SENSIT RELAY NODE 2G US
WITH 47 CFR PART 15 (10-1-13 Edition),
RSS-Gen (issue 3, December 2010) and
RSS-210 (Issue 8, December 2010).**

**14013102.fcc01_Rev01
March 25, 2014**

FCC listed : 90828
Industry Canada : 2932G-2
R&TTE, LVD, EMC Notified Body : 1856

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MEASUREMENT/TECHNICAL REPORT

N.V. Nederlandsche Apparatenfabriek "Nedap"
Model: SENSIT RELAY NODE 2G US

FCC ID: CGDRELAY
IC: 1444A-RELAY

This report concerns: Original grant/certification ~~Class 1 permissive change~~ ~~Verification~~

Equipment type: Spread Spectrum Transmitter (DSS)

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The data taken for this test and report herein was done in accordance with 47 CFR Part 15 (10-1-13 Edition) and the measurement procedures of FCC Public Notice DA 00-705. TÜV Rheinland Nederland B.V. at Leek, The Netherlands, certifies that the data is accurate and contains a true representation of the emission profile of the Equipment Under Test (EUT) on the date of the test as noted in the test report. I have reviewed the test report and find it to be an accurate description of the test(s) performed and the EUT so tested.

Date: March 25, 2014

Signature:



O. Hoekstra
Senior Engineer Telecom TÜV Rheinland Nederland B.V.

Description of test item

Test item : Spread Spectrum Transmitter (DSS)
Manufacturer : N.V. Nederlandsche Apparatenfabriek "Nedap"
Brand : Nedap
Model : SENSIT RELAY NODE 2G US
Serial number : --
Receipt date : February 27,2014

Applicant information

Applicant's representative : Mr. J. Hulshof
Company : N.V. Nederlandsche Apparatenfabriek "Nedap"
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Country : The Netherlands
Telephone number : +31 544 471 162
Telefax number : +31 544 463 475

Test(s) performed

Location : Leek
Test(s) started : February 27, 2014
Test(s) completed : March 20, 2014
Purpose of test(s) : Equipment Authorization (Original grant/certification)
Test specification(s) : FCC 47 CFR Part 15, Subpart C, Section 15.247 (10-1-13 Edition)
RSS-Gen (Issue 3, December 2010) an RSS-210 (Issue 8, December 2010)
FCC Public Notice DA 00-705 march 30, 2000

Test engineer(s) : R. van der Meer 

Report written by : R. van der Meer 

Report date : March 25, 2014

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The test results relate only to the item(s) tested.

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1 General information.

1.1 Product description.

1.1.1 Introduction.

The brand Nedap model SENSIT RELAY NODE 2G US, hereafter referred to as EUT, is a Spread Spectrum Transmitter (DSS) and is part of the SENSIT system. The SENSIT vehicle detection system facilitates accurate measurement on occupancy of individual parking spaces in car parks, and on-street parking spaces. This information can be used to guide traffic to free parking spaces but can also be used for on-street parking enforcement and overstay detection. The EUT is factory configured for the 902-928 MHz band. The device is battery operated only.

The content of this report and measurement results have not been changed other than the way of presenting the data.

1.2 Related submittal(s) and/or Grant(s).

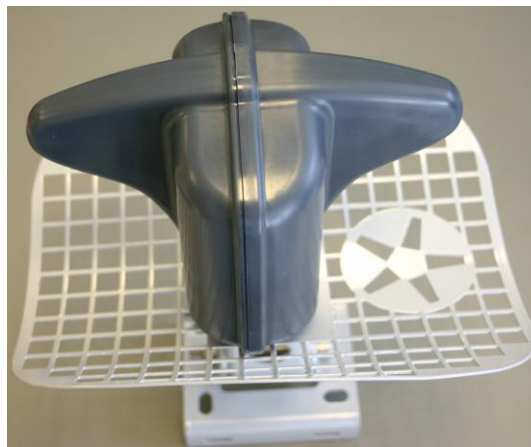
1.2.1 General.

This test report supports the original certification in equipment authorization files under **FCC ID: CGDRELAY and IC: 1444A-RELAY.**

1.3 Tested system details.

Details and an overview of the system and all of its components, as it has been tested, may be found below.

EUT	:	Spread Spectrum Transmitter (DSS)
Manufacturer	:	N.V. Nederlandsche Apparatenfabriek "Nedap"
Brand	:	Nedap
Model	:	SENSIT RELAY NODE 2G US
Serial number	:	n.a.
Voltage input rating	:	n.a.
Voltage output rating	:	n.a.
Current input rating	:	not provided
Antenna	:	Integrated, Gain = 8 dBi
Operation frequency	:	902 – 928 MHz
Modulation	:	GFSK
Spreading technique	:	FHSS
Clock frequency	:	16.000 MHz
Remarks	:	battery operated



Photograph of the EUT.

AUX1 : SENSIT DATACOLLECTOR
 Manufacturer : N.V. Nederlandsche Apparatenfabriek "Nedap"
 Brand : Nedap
 Model : SENSIT DATACOLLECTOR
 Serial number : n.a.
 Voltage input rating : 5Vdc
 Voltage output rating : n.a.
 Current input rating : 1A
 Antenna : External
 Remarks : collects data wireless
 FCC ID : CGDSENSDATA
 IC : 1444A-SENSDATA

AUX2 : Mains Power Supply Adapter
 Brand : Power-Win Technology Corp.
 Model : PW-015A-1Y050K1
 Serial number : --
 Voltage input rating : 100-240V-1A, 50-60Hz
 Voltage output rating : 5Vdc 3A, 15W max.
 Remark : power supply for AUX1

AUX3 : Laptop Computer
 Brand : HP
 Model : Compaq 610
 Serial number : --
 Remark : Contains software to control EUT

AUX4 : Mains Power Supply Adapter
 Brand : HP
 Model : Series PPP009L
 Serial number : 7301591201
 Remark : Rev:A02, power supply for AUX3

1.3.1 Description of input and output ports.

Number	Terminal	From	To	Remarks
1	Mains	AUX2	AUX1	--
2	Mains	AUX4	AUX3	--
3	RS 232 port	AUX1	AUX3	shielded cable RS232 to USB

Table 1: Interconnection between EUT and auxiliary equipment

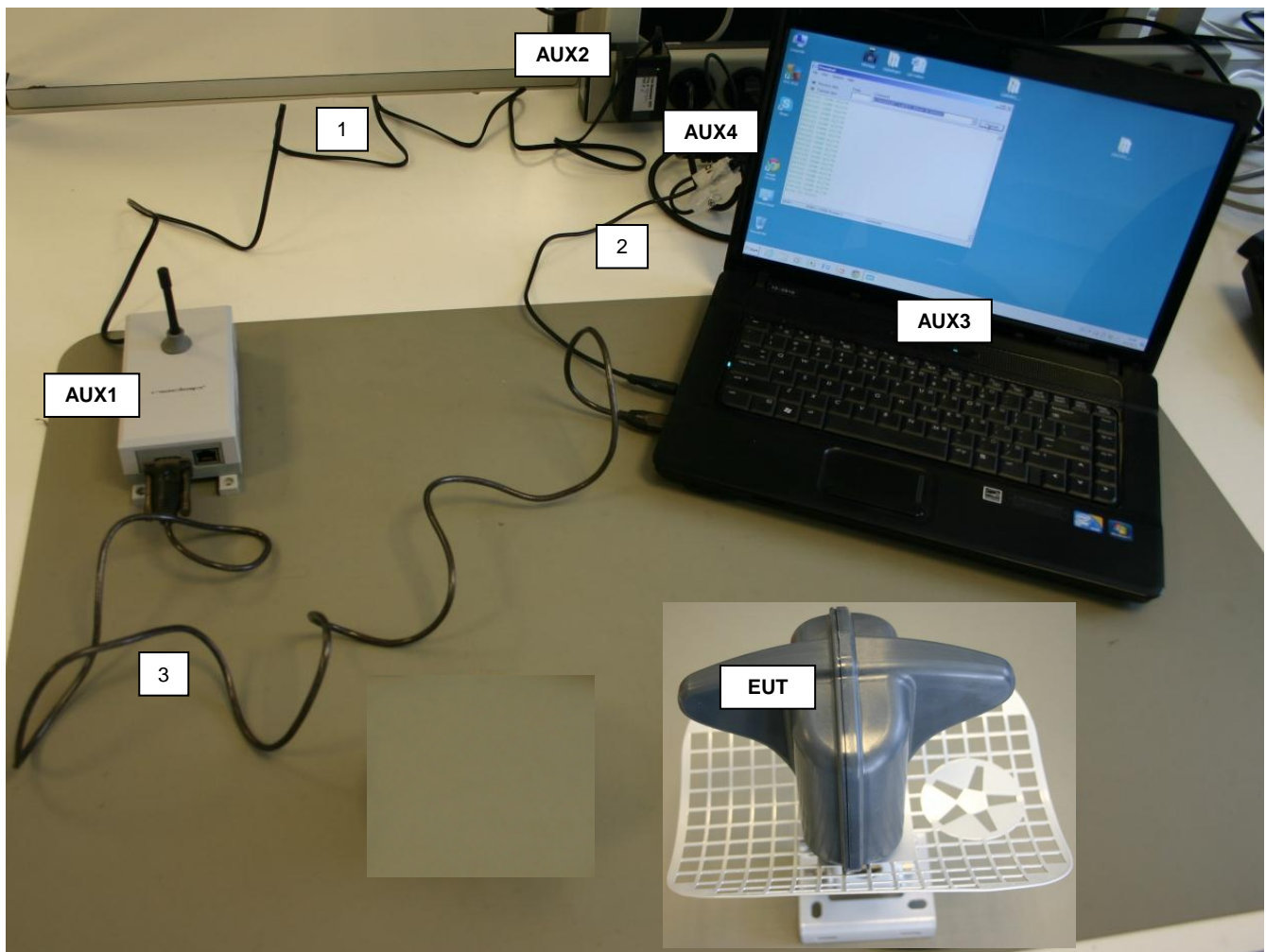


Photo 1: Basic test setup and connections

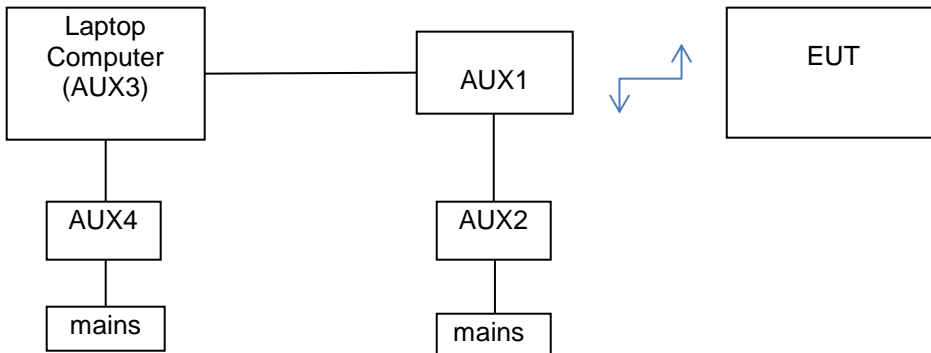


Figure 1. Blockdiagram of the basic test setup and connections

1.4 Test methodology.

The test methodology used is based on the requirements of 47 CFR Part 15 (10-1-13 Edition), sections 15.31, 15.209 and 15.247 and RSS-Gen (issue 3, December 2010) an RSS-210 (Issue 8, December 2010).

The test methods, which have been used, are based on FCC Public Notice DA 00-705.

Radiated emission tests were performed at a measurement distance of 3 meters.

The receivers are switching automatically to the right bandwidth in accordance with CISPR 16. This is implemented in the receiver. The antenna factors are programmed in the test receiver. The receiver automatically calculates the appropriate correction factor for the utilized antenna and also the appropriate antenna factor for the cable loss. The total correction is automatically added to the measured value.

1.5 Test facility.

The Federal Communications Commission and Industry Canada has reviewed the technical characteristics of the test facilities at TÜV Rheinland Nederland B.V., located in Leek, 9351VT Eiberkamp 10, The Netherlands, and has found these test facilities to be in compliance with the requirements of 47 CFR Part 15, section 2.948.

The description of the test facilities has been filed at the Office of the Federal Communications Commission under registration number 90828. The facility has been added to the list of laboratories performing these test services for the public on a fee basis.

The description of the test facilities has been filed to Industry Canada under registration number 2932G-2. The facility has been added to the list of laboratories performing these test services for the public on a fee basis.

1.6 Test conditions.

Normal test conditions:

Temperature (*)	: +15°C to +35°C
Relative humidity(*)	: 20 % to 75 %
Supply voltage	: EUT is battery powered and new batteries were used for testing
Air pressure	: 950 – 1050 hPa

*When it was impracticable to carry out the tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests are stated separately.

2 System test configuration.

2.1 Justification.

The system was configured for testing in a typical fashion (as a customer would normally use it). Software was provided by the applicant to enable continuous transmit mode or normal mode.

The justification and manipulation of cables and equipment in order to simulate a worst-case behavior of the test setup has been carried out as prescribed in FCC Public Notice DA 00-705.

2.2 EUT mode of operation.

The EUT has been tested in continuous transmit mode and in receive mode. Testing was performed at the lowest operating frequency (902.4), at the operating frequency in the middle of the specified frequency band (915.0MHz) and at the highest operating frequency (927.6 MHz).

2.3 Special accessories.

No special accessories are used and/or needed to achieve compliance.

2.4 Test software.

The EUT was provided by the manufacturer with suitable software to allow operation in all the required modes. Software used for testing: Nedap AVI Terminal.

This software was running on a laptop computer (AUX3). It was used to enable the test operation modes listed in section 2.2 as appropriate.

2.5 Equipment modifications.

No modifications have been made to the equipment in order to achieve compliance.

2.6 Product Labeling

The product labeling information is available at N.V. Nederlandsche Apparatenfabriek "Nedap".

2.7 Schematics of the EUT.

The schematics are available at N.V. Nederlandsche Apparatenfabriek "Nedap".

2.8 Part list of the EUT.

The part list is available at N.V. Nederlandsche Apparatenfabriek "Nedap".

3 Peak output power

Results: Pass

Date of testing: 2014-03-07

Requirements:

FCC 15.247(b)(2) and RSS-210 Section A8.4 (1)

For systems using frequency hopping in the 902-928 MHz band, the maximum peak output power is 1W (+30dBm) for systems employing at least 50 hopping channels.

Test procedure:

FCC Public notice DA 00-705 March 30, 2000 Alternative Test Procedure.

The testresults are obtained by conducted measurements using a spectrum analyzer.

Frequency (MHz)	Measured Peak Output Power (dBμV)	Calculated Peak Output Power (dBm)	Limit (dBm) <small>*note3</small>
902.4	117.31	10.31	28
915.0	117.13	10.13	28
927.6	116.34	9.34	28

Table 2 Peak output power

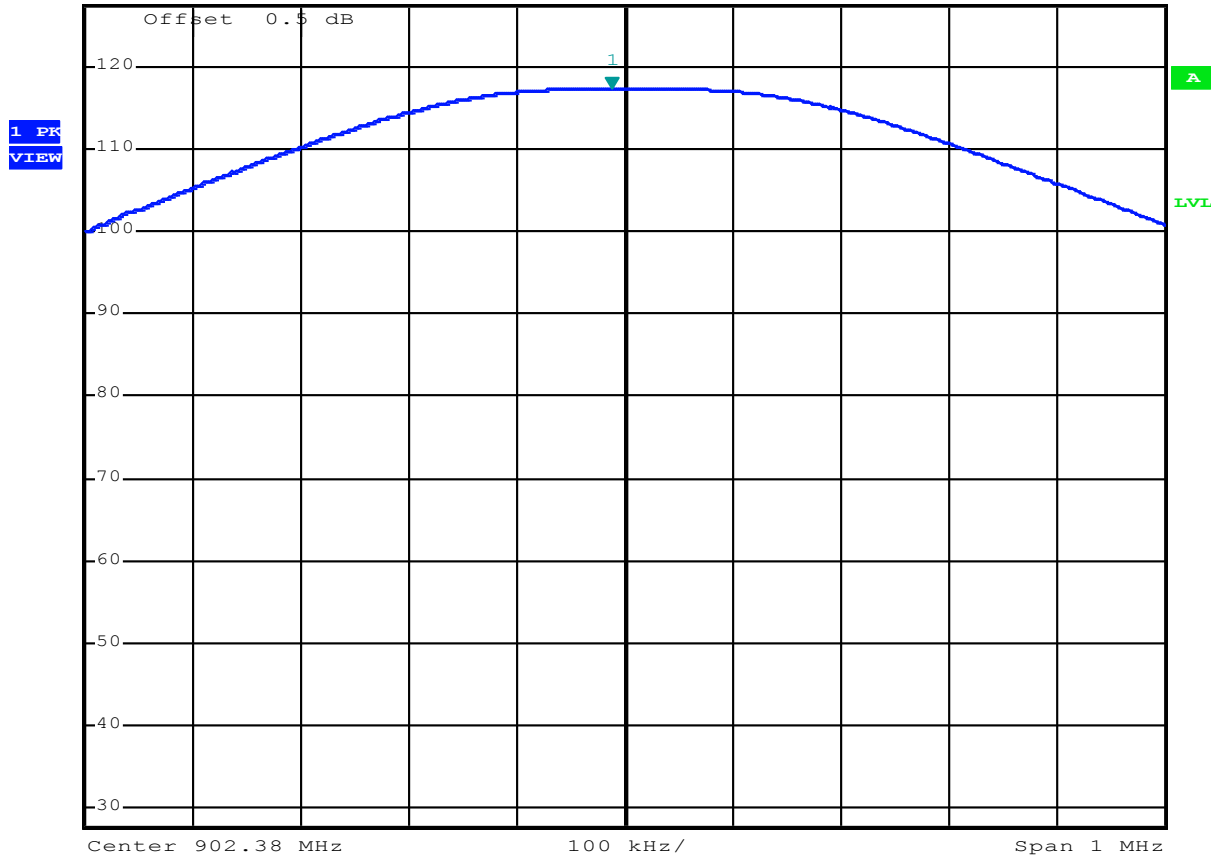
The results of the peak output power measurements on the EUT, carried out in accordance with 47 CFR Part 15 section 15.247(b) and FCC Public Notice DA 00-705.

Notes:

1. Measured value includes correction factor for cable loss.
2. See plots on the next pages.
3. Antenna gain is 8 dBi. The antenna gain is allowed to be 6 dBi. According to 15.247 the conducted limit of 30 dBm (1 W) can be compensated by 2 dB there for resulting is 28 dBm (equals 630 mW).



Ref 127.5 dBµV *Att 40 dB *RBW 300 kHz Marker 1 [T1]
 *VBW 1 MHz 117.31 dBµV
 SWT 2.5 ms 902.368000000 MHz



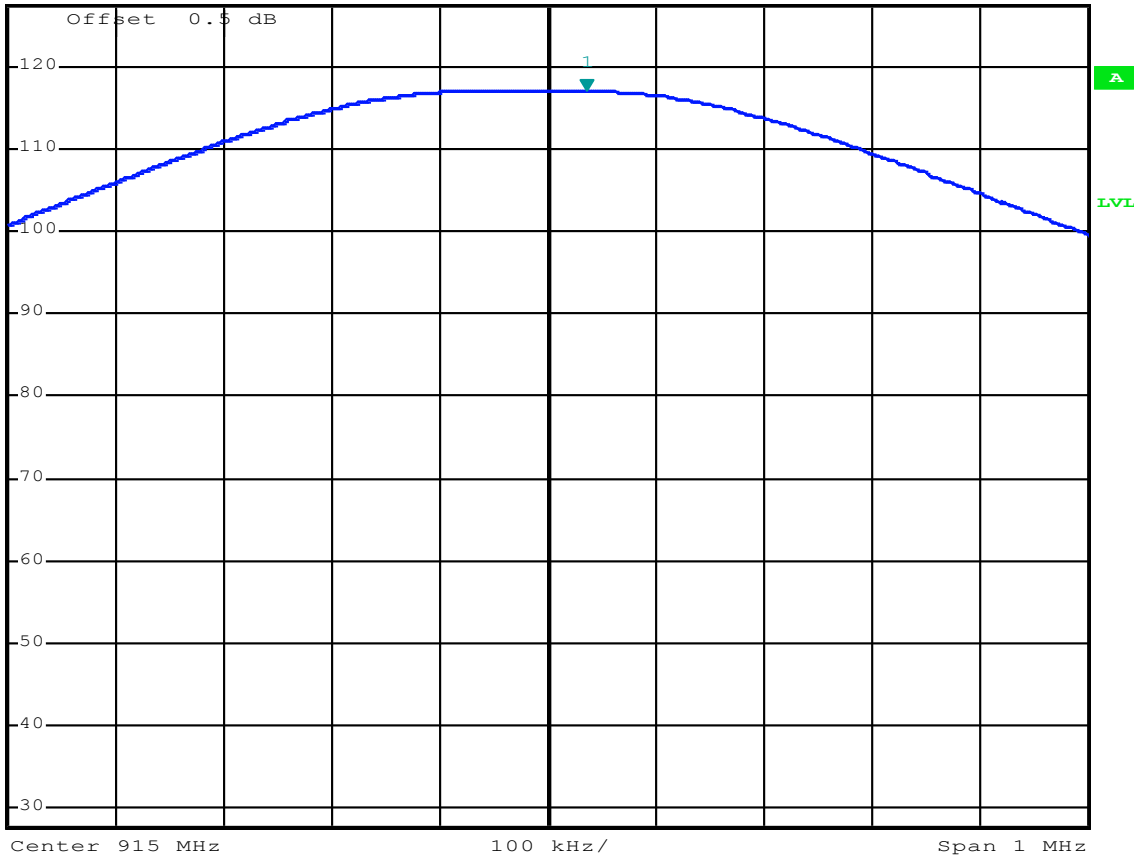
Date: 7.MAR.2014 13:47:38

Plot 1: Peak Output Power (902.4 MHz)



Ref 127.5 dBµV *Att 40 dB *RBW 300 kHz Marker 1 [T1]
 *VBW 1 MHz 117.13 dBµV
 SWT 2.5 ms 915.036000000 MHz

1 PK
VIEW

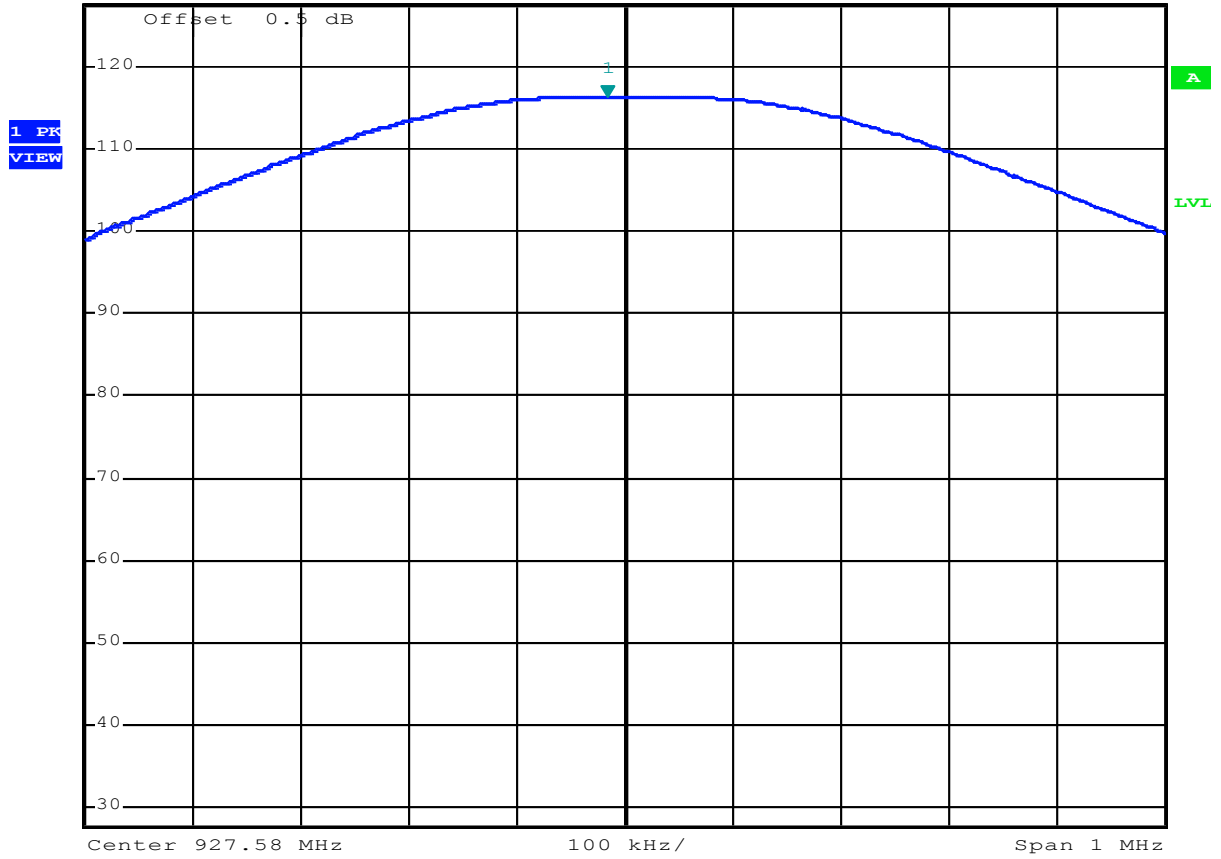


Date: 7.MAR.2014 13:52:01

Plot 2: Peak Output Power (915.0 MHz)



Ref 127.5 dBμV *Att 40 dB SWT 2.5 ms 927.564000000 MHz
 *RBW 300 kHz Marker 1 [T1] 116.34 dBμV
 *VBW 1 MHz



Date: 7.MAR.2014 14:03:07

Plot 3: Peak Output Power (927.6 MHz)

4 Occupied bandwidth and 99% bandwidth

Results: Pass

Date of testing: 2014-03-07

Requirements:

FCC 15.247(a)(1)(i) and RSS-210 Section A8.1(c).

For frequency hopping systems operating in the 902–928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall have at least have 50 hopping channels and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

Test procedure:

Public notice DA 00-705 March 30, 2000

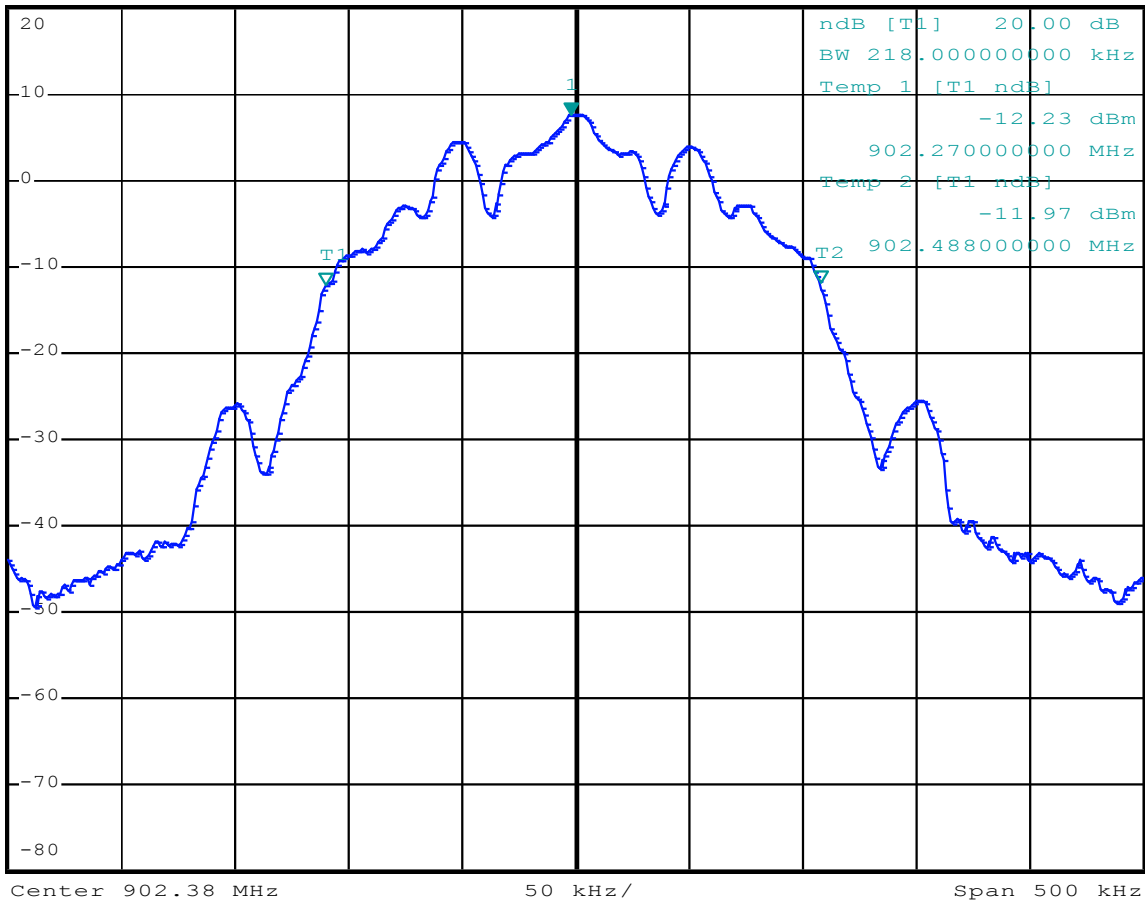
The Occupied bandwidth was measured with the conducted test setup. The spectrum analyzer resolution bandwidth was set to 10kHz and the span between 2 – 5 times the emission bandwidth.

The EUT's 20 dB bandwidth was less than 250 kHz. See plots on the next pages.



Ref 20 dBm *Att 40 dB SWT 5 ms 902.378000000 MHz
 *RBW 10 kHz Marker 1 [T1] 7.66 dBm
 *VBW 30 kHz

1 PK
VIEW



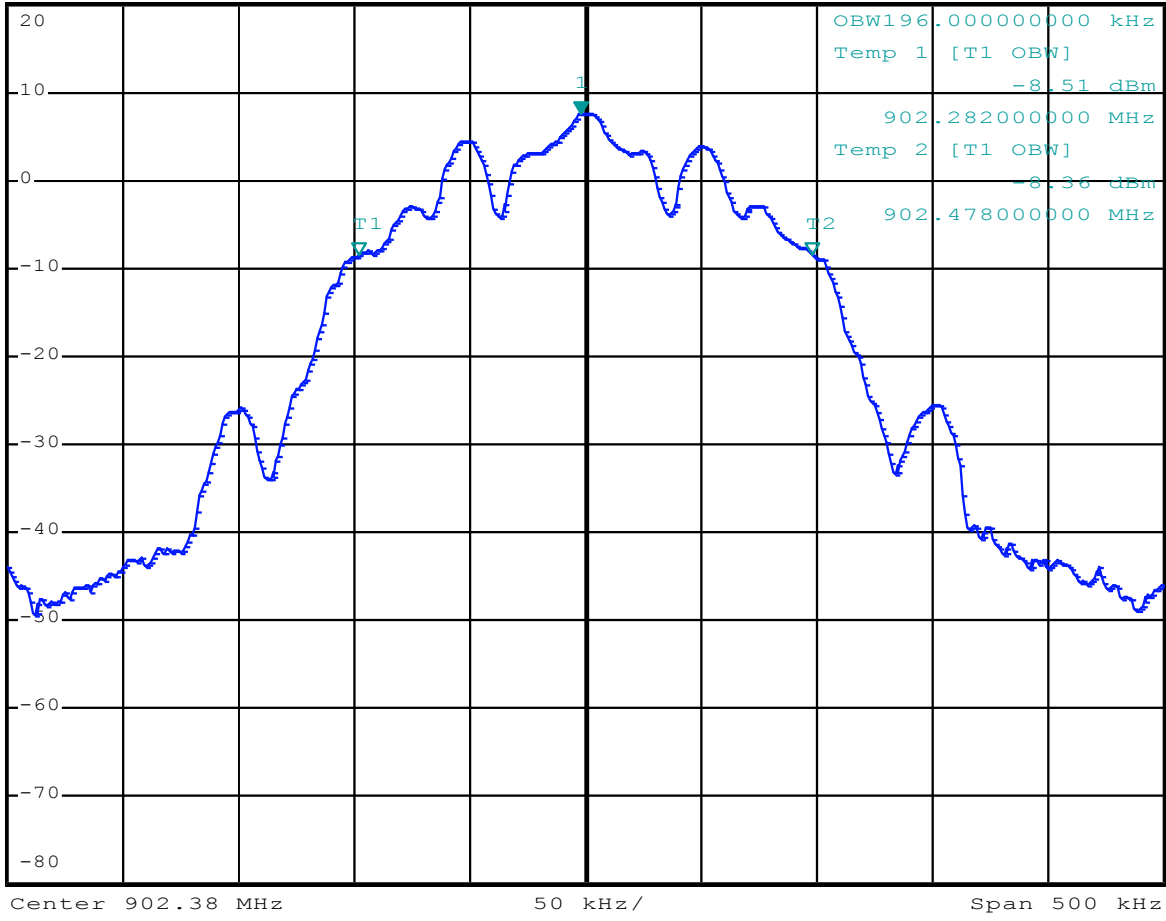
Date: 7.MAR.2014 13:42:51

Plot 4a: Occupied 20dB Bandwidth (= 218 kHz) of the EUT transmitting at 902.4 MHz



*RBW 10 kHz Marker 1 [T1] 7.66 dBm
 *VBW 30 kHz
 Ref 20 dBm *Att 40 dB SWT 5 ms 902.37800000 MHz

1 PK
VIEW



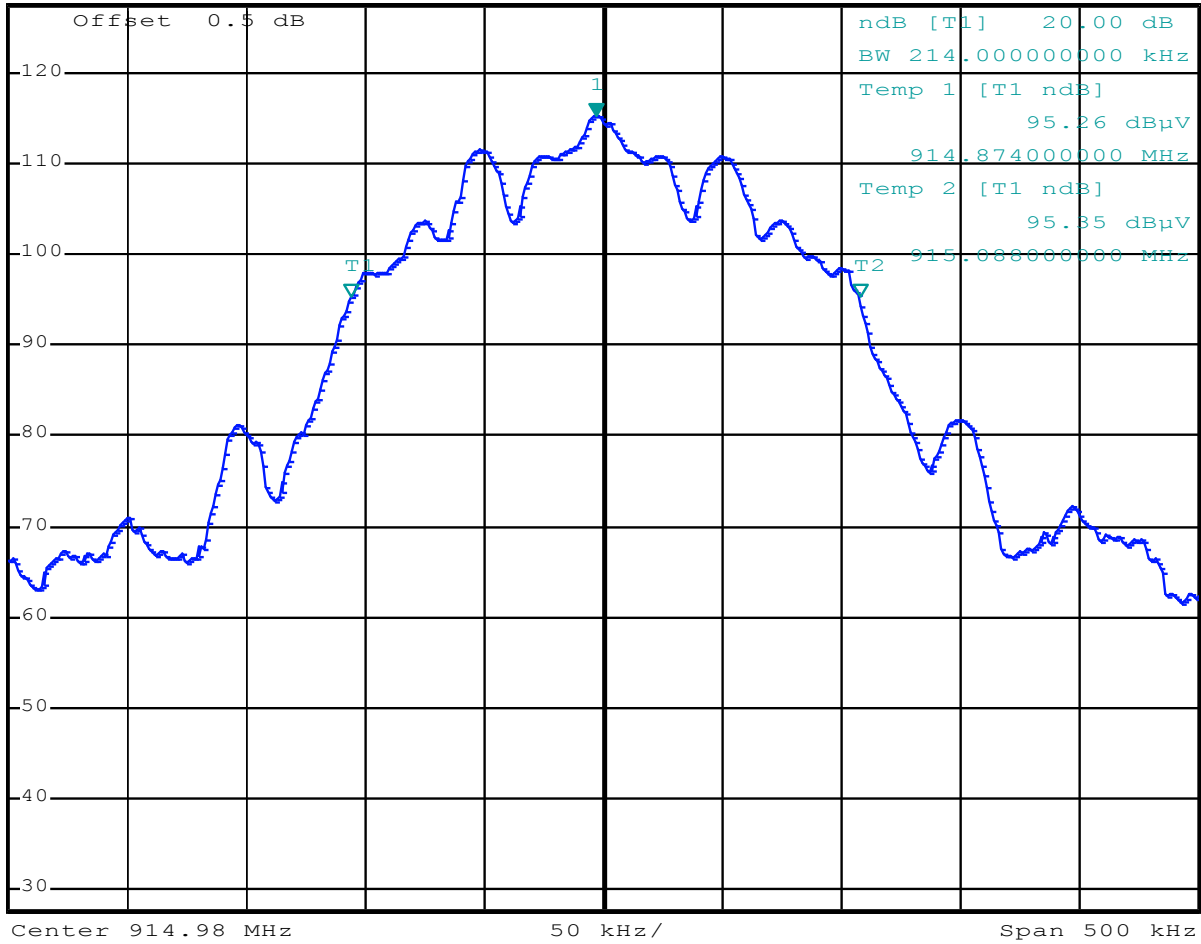
Date: 7.MAR.2014 13:43:27

Plot 4b: 99% Bandwidth (= 196 kHz) of the EUT transmitting at 902.4 MHz



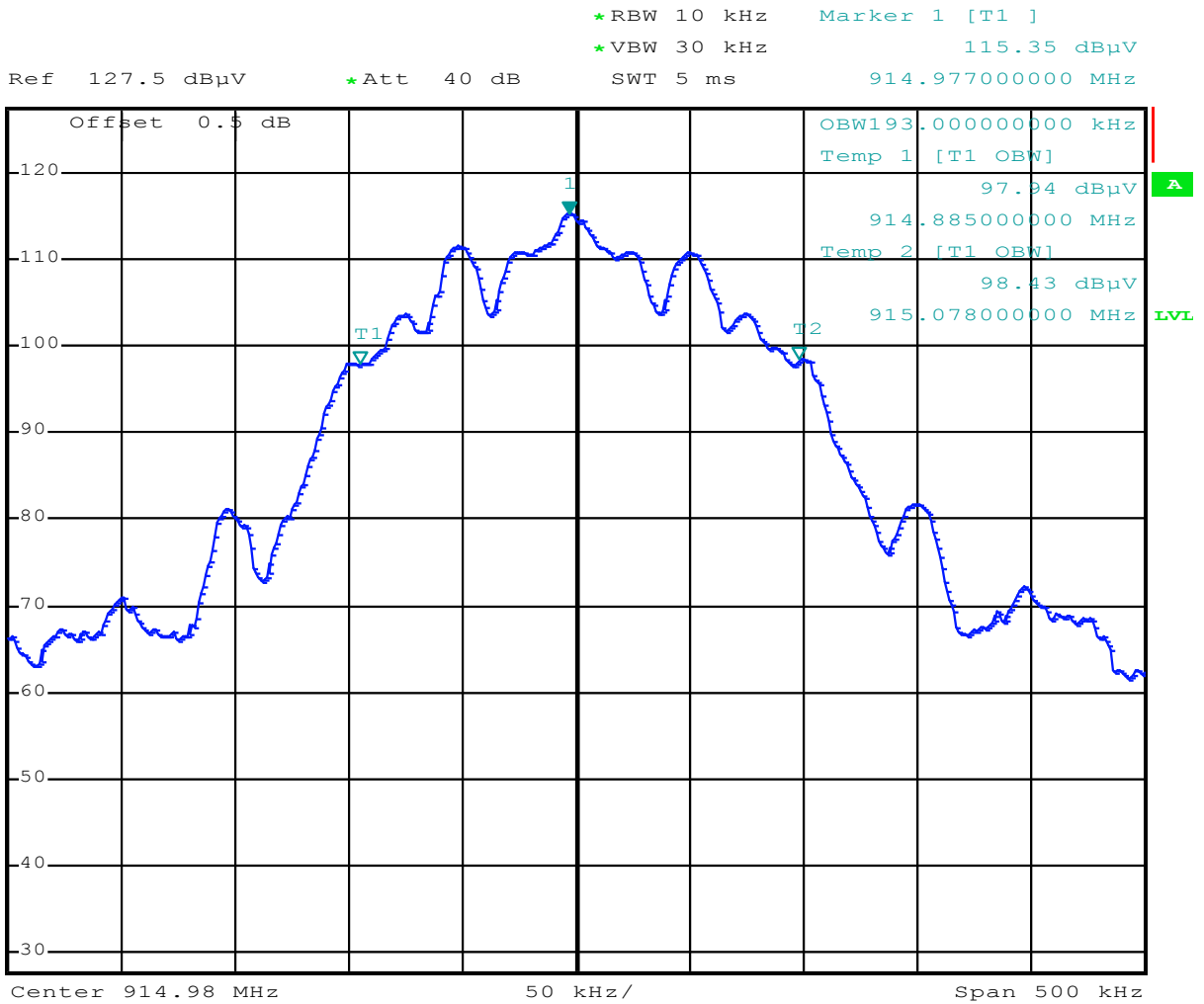
Ref 127.5 dBμV *Att 40 dB SWT 5 ms Marker 1 [T1] 115.35 dBμV
 914.977000000 MHz

1 PK
VIEW



Date: 7.MAR.2014 13:54:08

Plot 5a: Occupied 20dB Bandwidth (= 214 kHz) of the EUT transmitting at 915.0 MHz

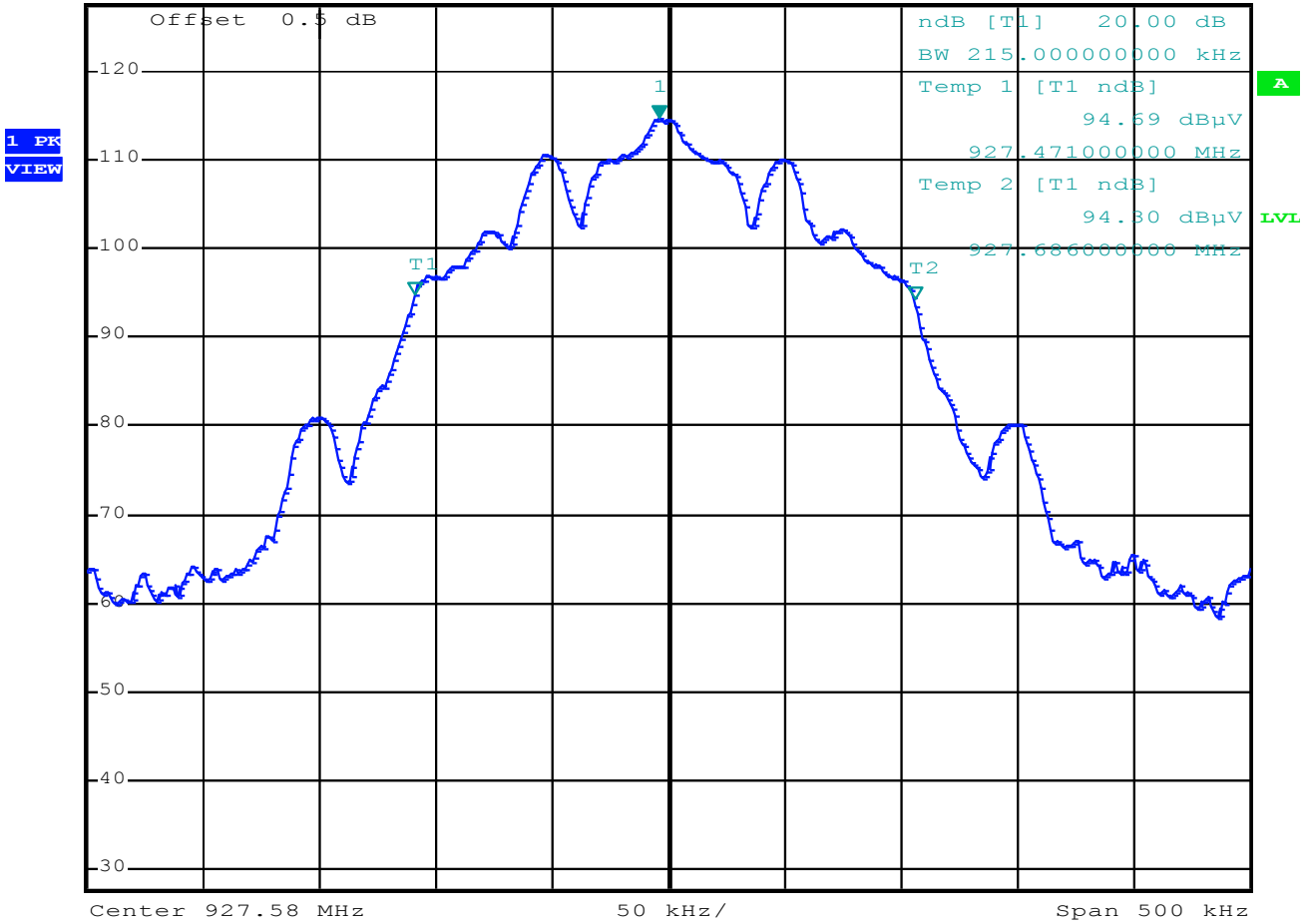


Date: 7.MAR.2014 13:54:34

Plot 5b: 99% Bandwidth (= 193 kHz) of the EUT transmitting at 915.0 MHz



Ref 127.5 dBµV *Att 40 dB SWT 5 ms Marker 1 [T1] 114.65 dBµV
 927.576000000 MHz



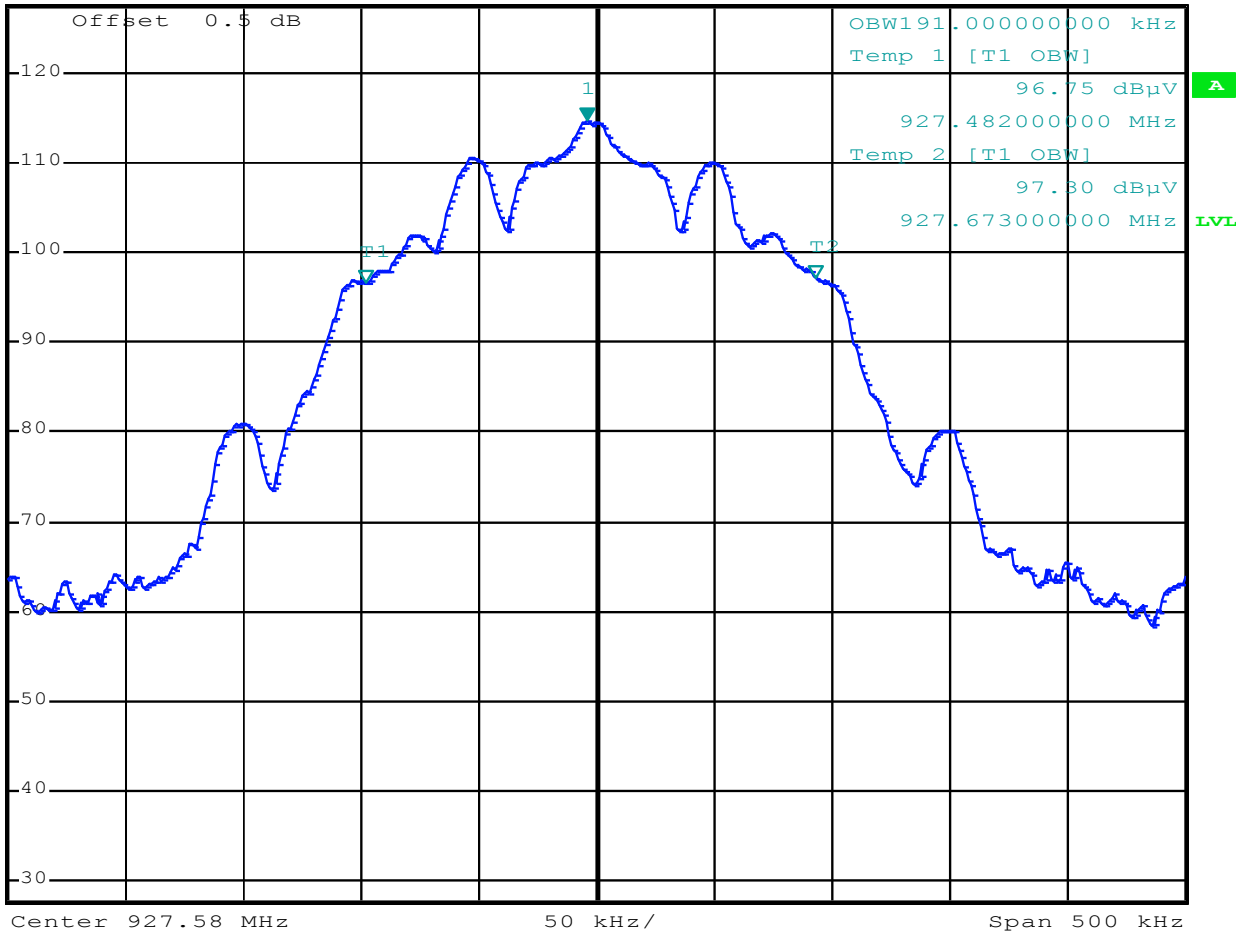
Date: 7.MAR.2014 14:01:41

Plot 6a: Occupied 20dB Bandwidth (= 215 kHz) of the EUT transmitting at 927.6 MHz



Ref 127.5 dBμV *Att 40 dB SWT 5 ms Marker 1 [T1] 114.65 dBμV
 *RBW 10 kHz *VBW 30 kHz 927.576000000 MHz

1 PK
VIEW



Date: 7.MAR.2014 14:02:05

Plot 6b: Occupied 99% Bandwidth (= 191 kHz) of the EUT transmitting at 927.6 MHz

5 Hopping frequencies, Average time of occupancy and Channel spacing.

RESULT: PASS

Date of testing: 2014-03-06 and 07

Requirements:

FCC 15.247(a)(1)(i) and RSS-210 A8.1(c).

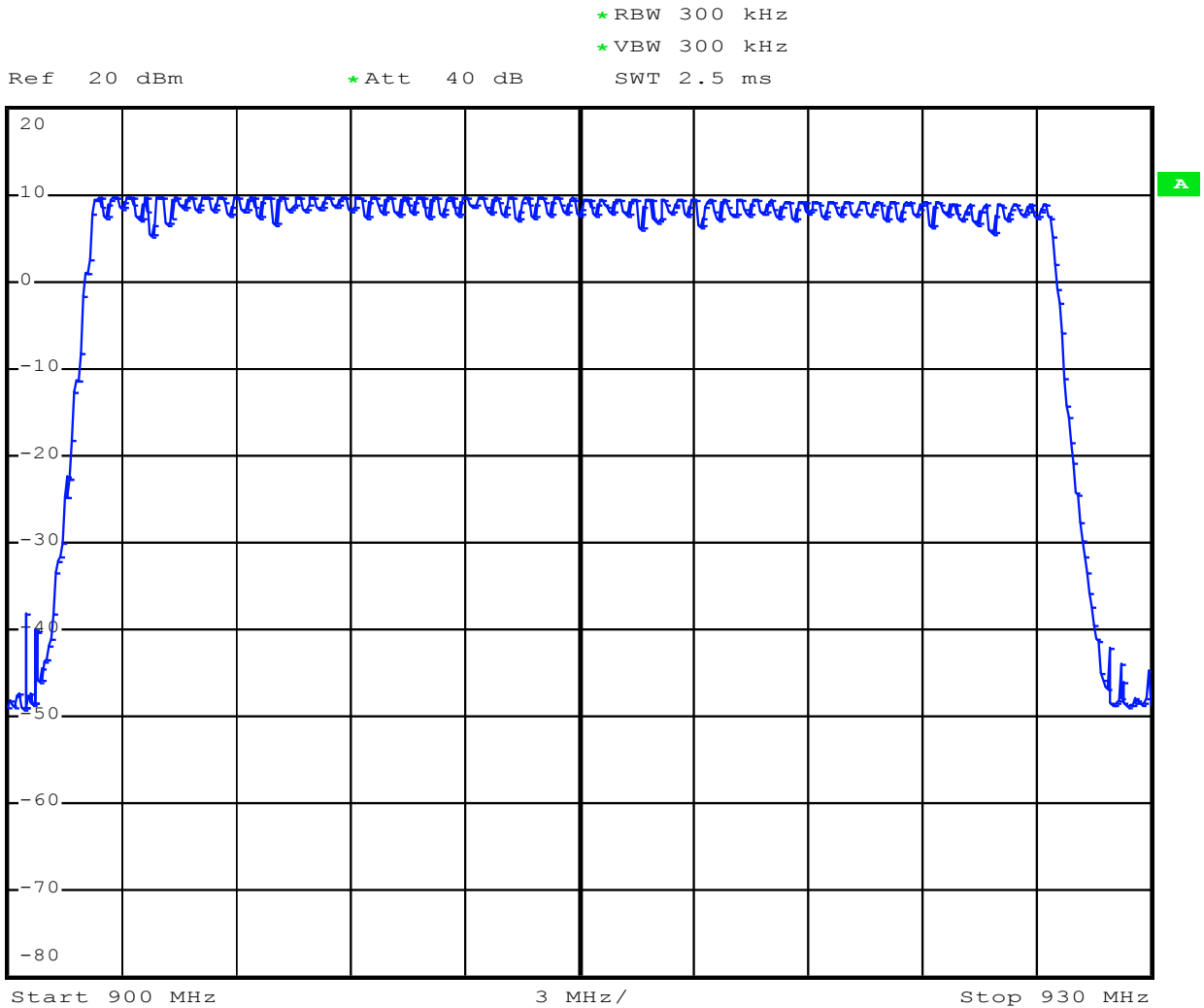
For frequency hopping systems operating in the 902–928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

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

Test procedure:

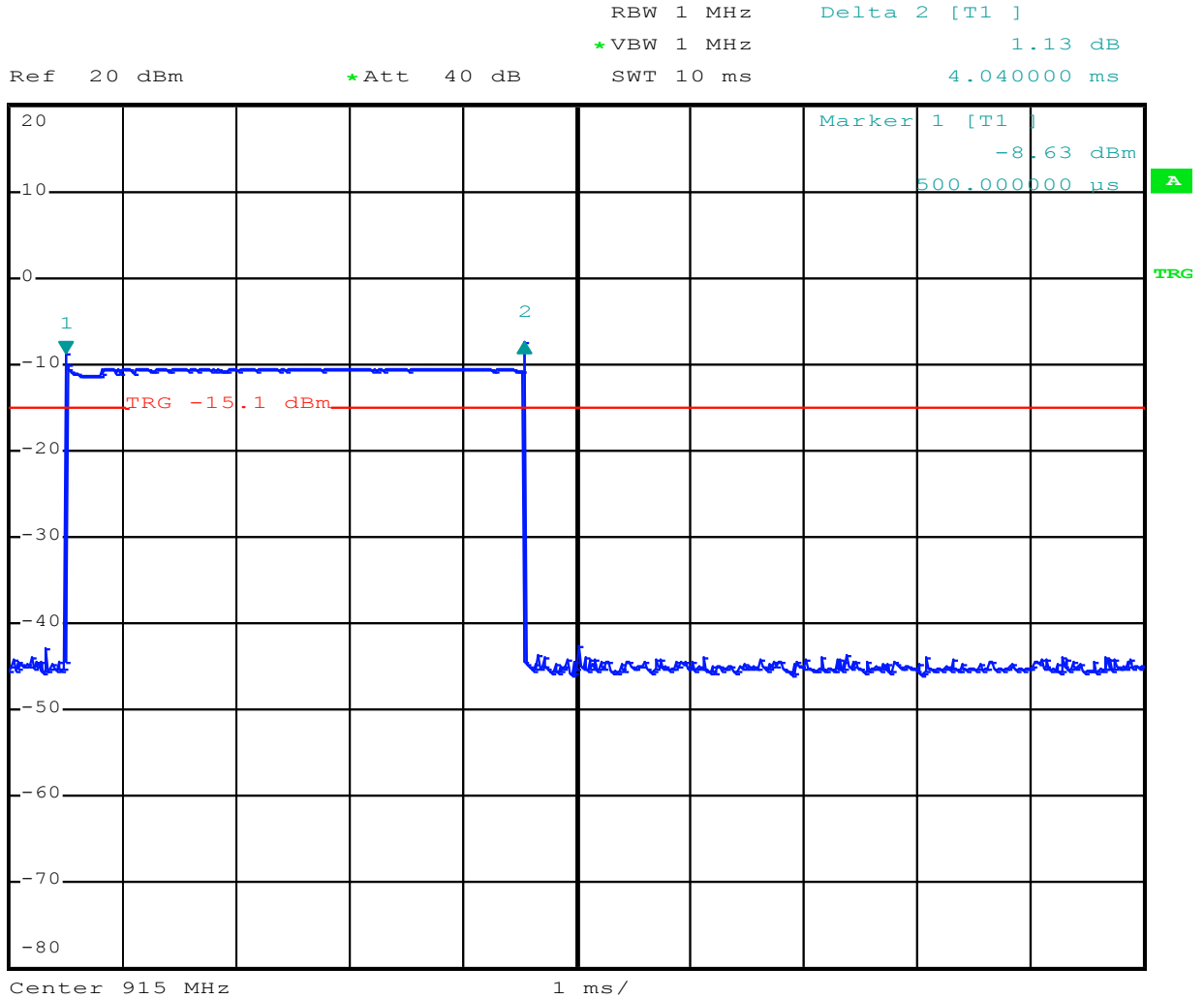
FCC Public notice DA 00-705 March 30, 2000.

The tests were done with the conducted test setup. See plots on the next pages.



Date: 6.MAR.2014 15:45:18

Plot 7: more than 50 (actual = 63) hopping frequencies as required by section 15.247 (1)i , as measured on a spectrum analyzer



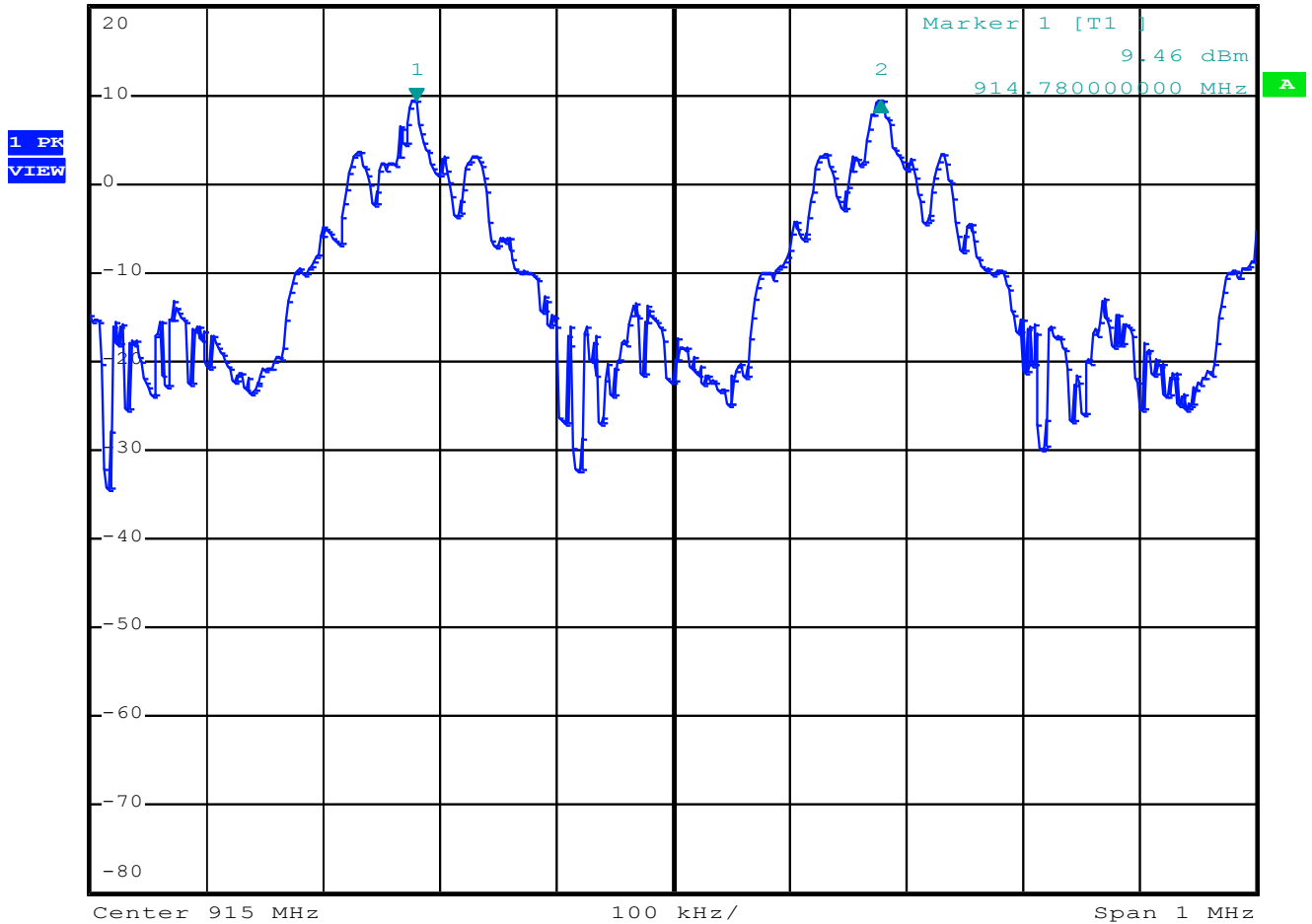
Date: 7.MAR.2014 09:07:09

Plot 8: showing Average time of occupancy <0.4 s within a 20 sec period as required by section 15.247 (1) i

Average time of occupancy (Dwell time) as measure on a spectrum analyzer. Plot 5 shows a hoplength of 4.04 ms for 1 channel. The EUT has 63 channels for which each channel can transmit once per 254.52 ms period (63 * 4.04 ms). During an observation of 20 seconds, the channel may there for transmit 78.58 times. The average time of occupancy would therefore be 78.58 * 4.04ms = 317.46 ms, which is below the 400 ms limit.



*RBW 10 kHz Delta 2 [T1]
 *VBW 10 kHz 0.02 dB
 Ref 20 dBm *Att 40 dB SWT 20 ms 398.000000000 kHz



Date: 7.MAR.2014 09:02:19

Plot 9: showing approximately 400 kHz spacing between channels as measured on a spectrum analyzer, 400kHz is stated in the technical documentation.

6 Band edge compliance

RESULT: Pass

Date of testing: 2014-03-07 and 10

Requirements:

FCC 15.205, FCC 15.209, FCC 15.247(d) and RSS-210 section A8.5.

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

Test procedure:

FCC Public notice DA 00-705 March 30, 2000.

Measurements were performed with the conducted test setup using a spectrum analyzer with a suitable span to encompass the peak of the fundamental and using the following settings:

RBW = 100kHz, VBW = 100kHz.

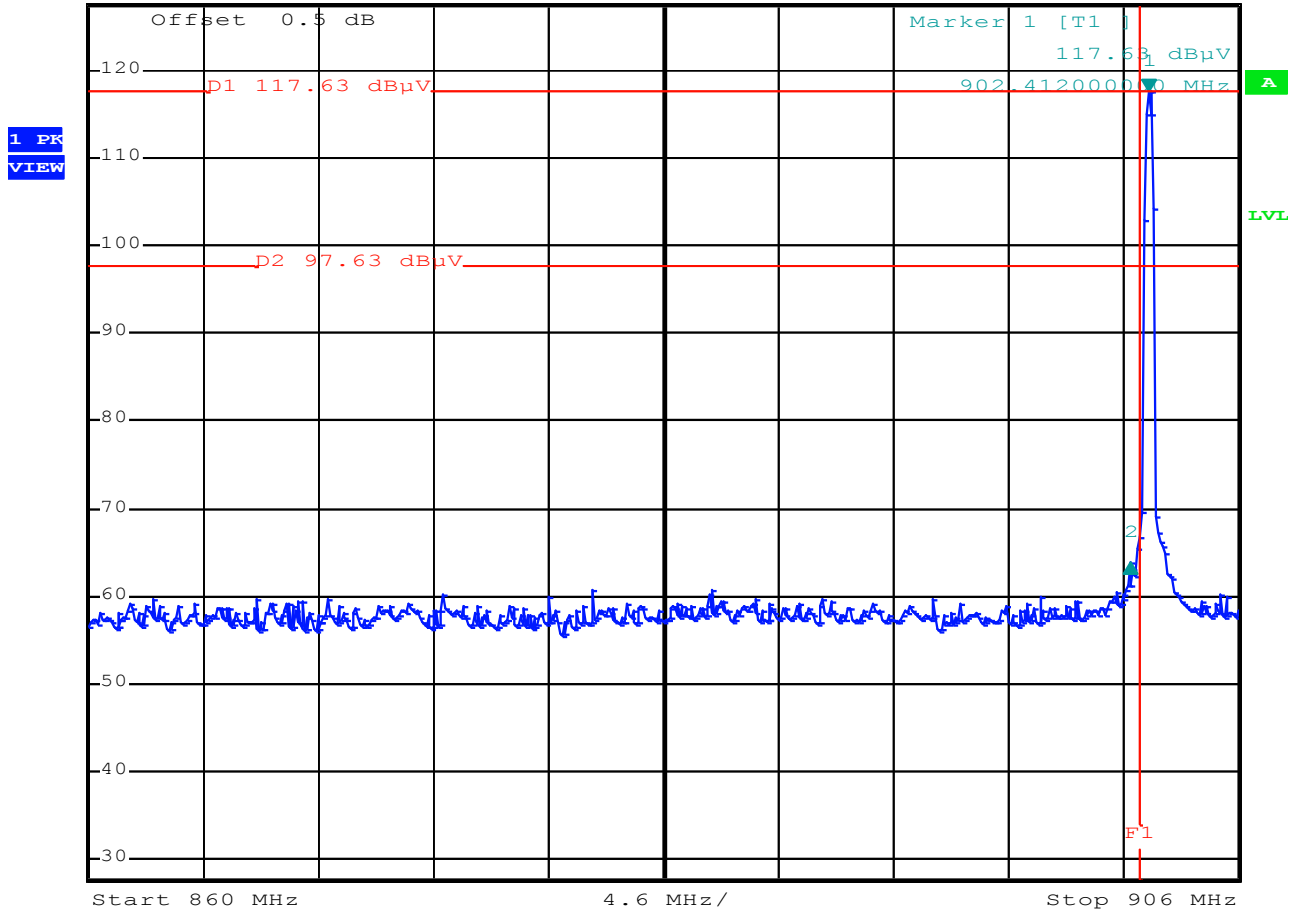
The highest emission amplitudes relative to the appropriate limit were measured and recorded in this report.

Results: All out of band spurious emissions are more than 20 dB below the fundamental.

See plots on the following pages.



*RBW 100 kHz Delta 2 [T1]
 *VBW 300 kHz -53.70 dB
 Ref 127.5 dBµV *Att 40 dB SWT 5 ms -736.000000000 kHz

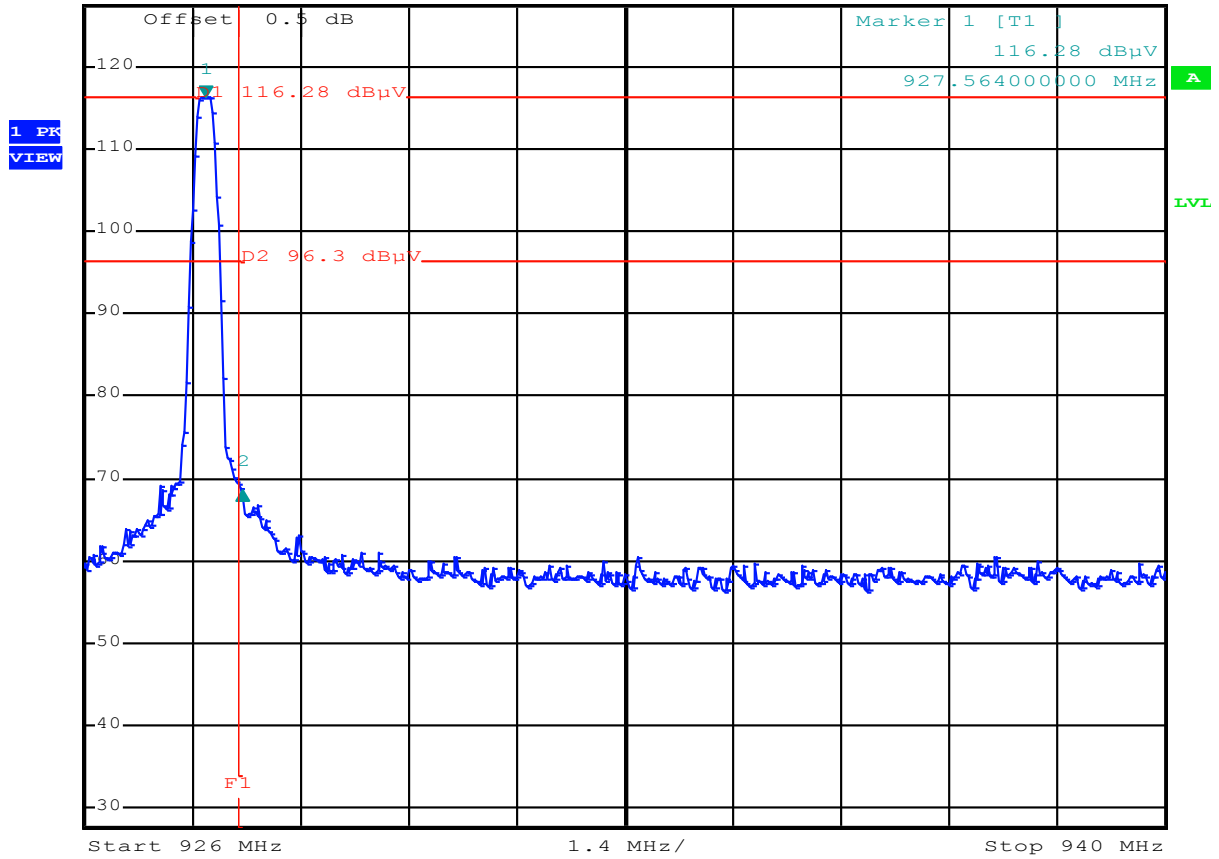


Date: 10.MAR.2014 11:44:26

Plot 10. showing more than 20 dB band edge attenuation, EUT continues modulated carrier at 902.4 MHz
 F1 shows the band edge frequency of 902 MHz.

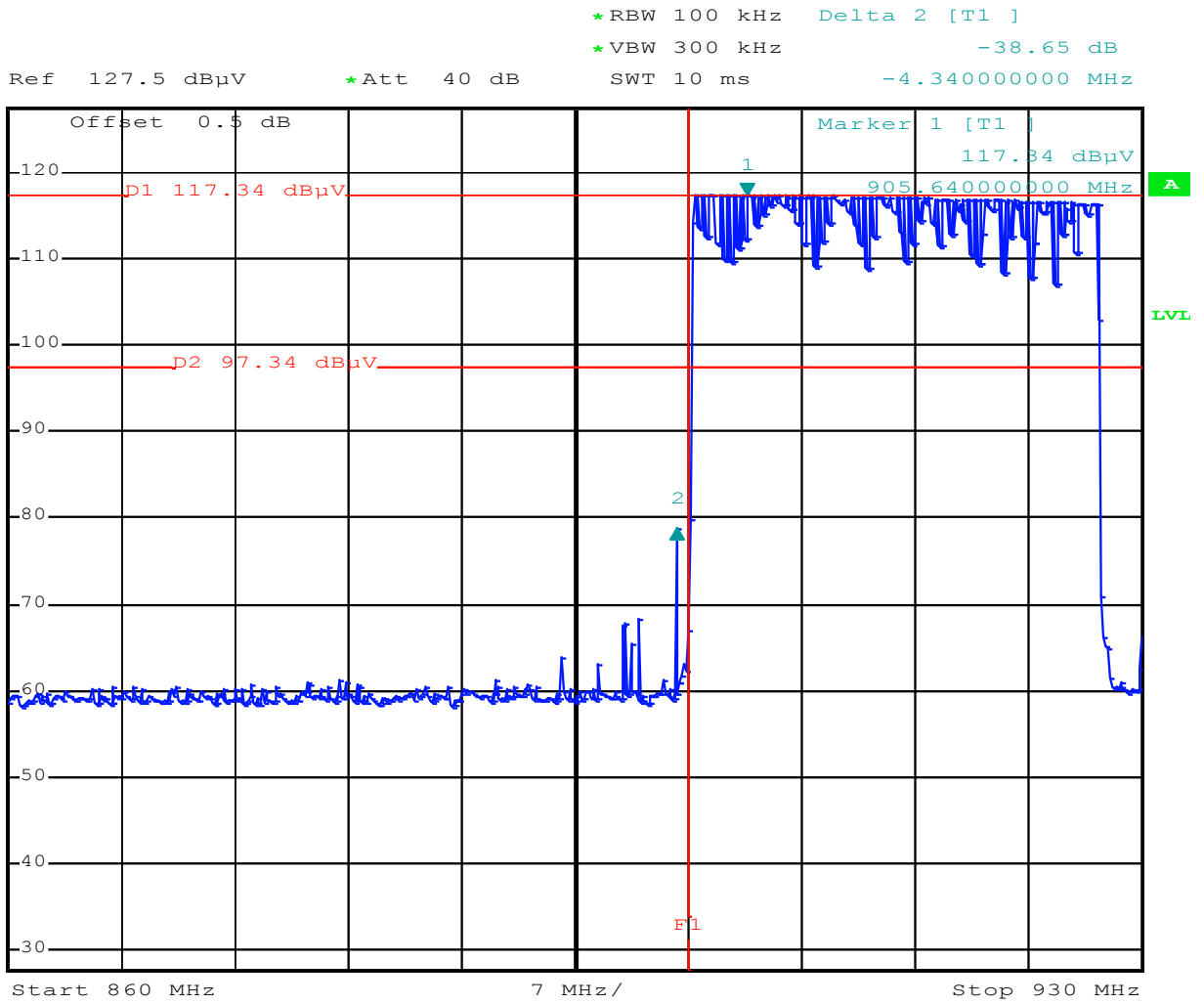


Ref 127.5 dBμV *Att 40 dB *RBW 100 kHz Delta 2 [T1]
 *VBW 300 kHz -47.64 dB
 SWT 2.5 ms 480.000000000 kHz



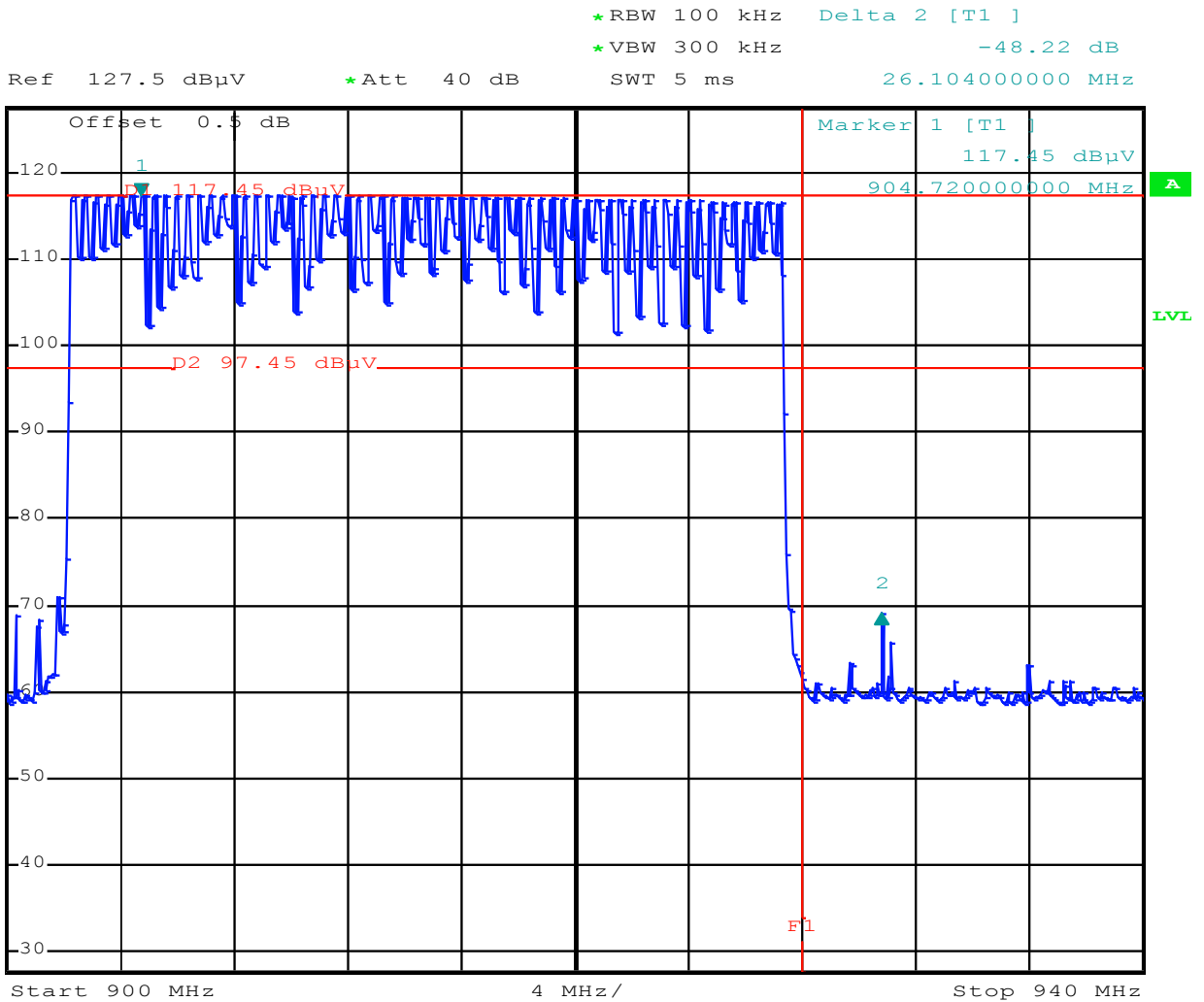
Date: 7.MAR.2014 14:35:06

Plot 11. showing more than 20 dB band edge attenuation, EUT continues modulated carrier at 927.6 MHz
 F1 shows the band edge frequency of 928 MHz.



Date: 7.MAR.2014 14:46:04

Plot 12. showing more than 20 dB band edge attenuation, EUT in Hopping mode
 F1 shows the band edge frequency of 902 MHz.



Date: 7.MAR.2014 14:43:21

Plot 13. showing more than 20 dB band edge attenuation, EUT in Hopping mode
 F1 shows the band edge frequency of 928 MHz.

7 Conducted Spurious Emissions of the Transmitter.

RESULT: PASS

Date of testing: 2014-03-10

Requirements:

FCC 15.247(d) and RSS-210 Section A8.5.

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

Test procedure:

Public Notice DA 00-705 March 30, 2000 Alternative test procedures.

The tests were performed by RF conducted measurement by connecting a spectrum analyzer to the temporary SMA RF Output connector.

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

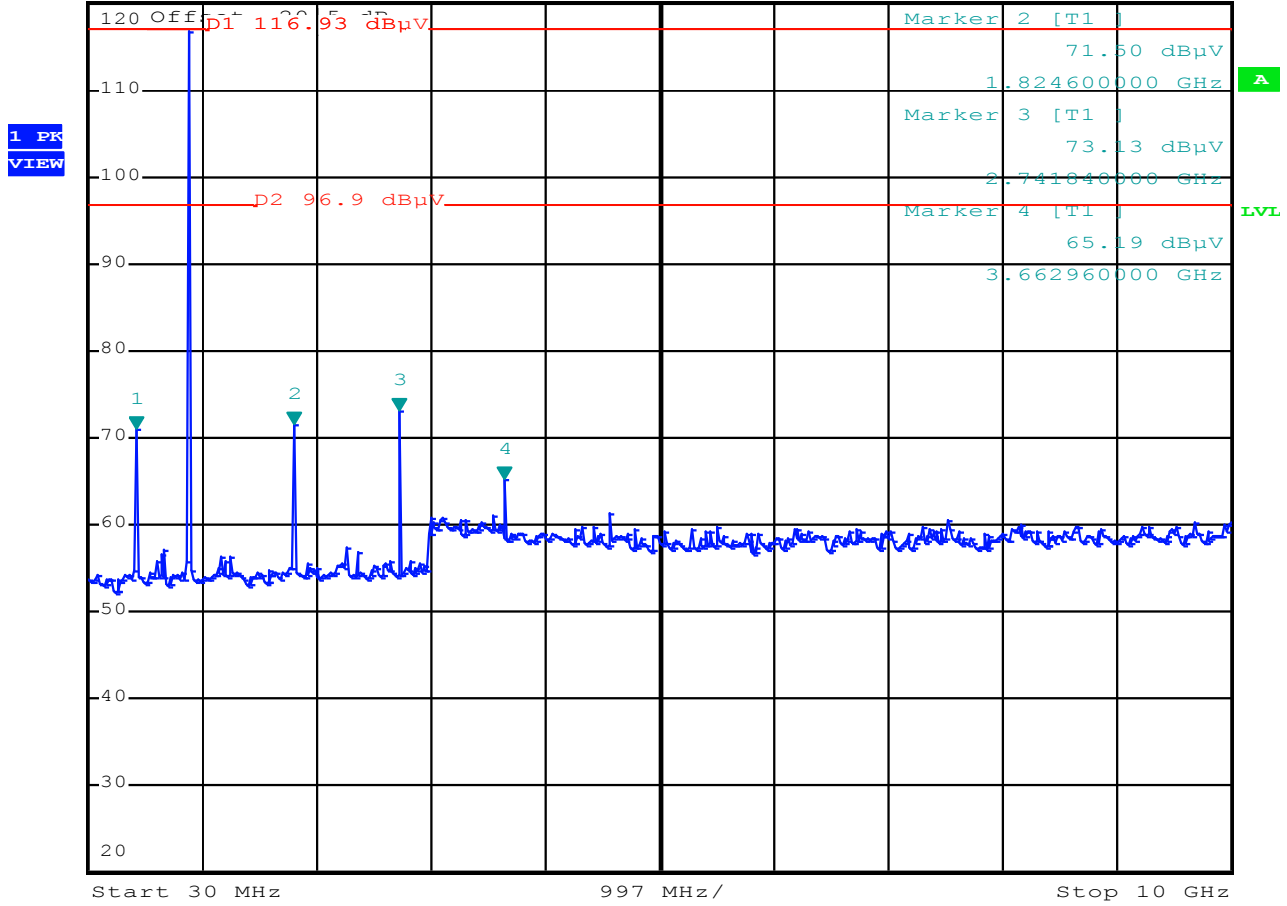
Detector function = peak

Trace = max hold

Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded. The level displayed must comply with the limit specified in this Section. See the plots on the next pages.

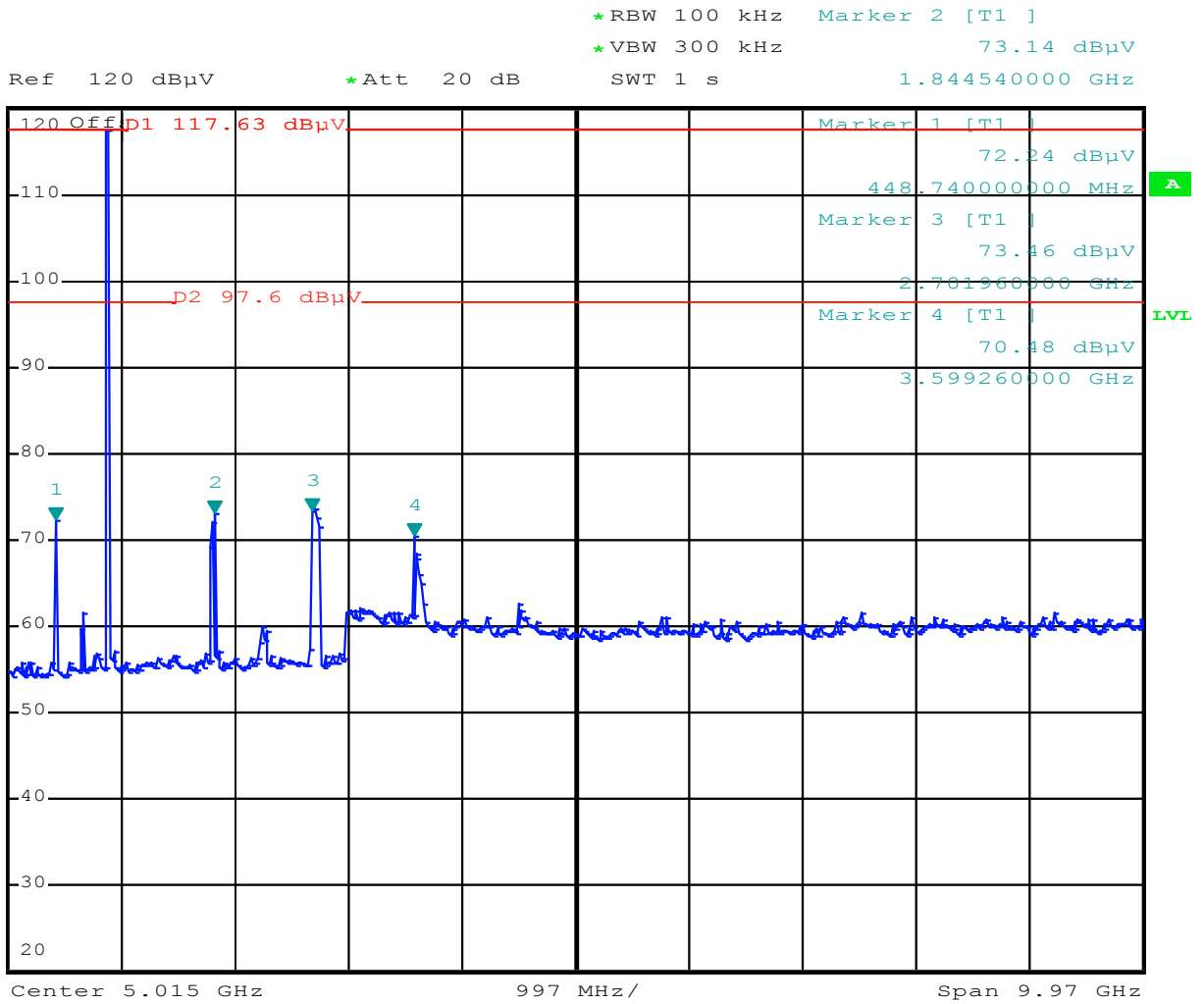


Ref 120 dBμV *Att 20 dB SWT 1 s 456.680000000 MHz
 *RBW 100 kHz Marker 1 [T1] 71.07 dBμV
 *VBW 300 kHz



Date: 10.MAR.2014 13:34:33

Plot 15 of the conducted spurious emission, EUT frequency 915.0 MHz Constant modulated carrier.



Date: 10.MAR.2014 13:27:42

Plot 17 of the conducted spurious emission, EUT in Hopping mode.

8 Radiated Spurious Emissions of the Transmitter in restricted bands.

RESULT: PASS

Date of testing: 2014-03-20

Requirements:

Radiated emissions which fall in the restricted bands, as defined in FCC 15.205(a) and RSS-Gen Table 3, must comply with the radiated emission limits specified in FCC 15.209(a) and RSS-Gen Table 5.

Test procedure:

Public Notice DA 00-705 March 30, 2000 Alternative test procedures.

The EUT was tested against the limit specified in FCC 15.209(a)/ RSS Gen Table 5.

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 $f \geq 1$ GHz, 100 kHz for $f < 1$ GHz
VBW \geq RBW
Sweep = auto
Detector function = peak
Trace = max hold

The EUT was placed on a nonconductive turntable 0.8m above the ground plane. Before final measurements of radiated emissions were performed, the EUT was scanned to determine its emission spectrum profile. The physical arrangement of the test system, the associated cabling and the EUT orientation (X, Y, Z) were varied in order to ensure that maximum emission amplitudes were attained.

The spectrum was examined from 30MHz to the 10th harmonic of the highest fundamental transmitter frequency (10GHz). Final radiated emission measurements were made at 3m distance.

At each frequency where a spurious emission was found, the EUT was rotated 360° and the antenna was raised and lowered from 1 to 4m in order to determine the emission's maximum level. Measurements were taken using both horizontal and vertical antenna polarizations.

The highest emission amplitudes relative to the appropriate limit were recorded in this report. Field strength values of radiated emissions at frequencies not listed in the tables are more than 20 dB below the applicable limit. The final measurement takes into account the loss generated by all the involved cables and filters.

The Dwell Time of the EUT, see plot 8 page 26, is less than 100 ms and the measured value with Average detector may be adjusted with a "duty cycle correction factor", derived from $20 \log(\text{dwell time}/100\text{ms})$. In this case: Duty Cycle Correction factor = $20 \log(4.04\text{ms}/100\text{ms}) = -27.9$ dB.

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Duty Cycle correction factor [dB]	Level after correction [dBµV/m]	Limit [dBµV/m]
334.28	Horizontal	Qp	28.8	0	28.8	46.0
404.76	Vertical	Qp	31.2	0	31.2	46.0
609.32	Vertical	Qp	36.1	0	36.1	46.0
2256.0	Vertical	Pk	41.7	0	41.7	74.0
2256.0	Vertical	Av	41.7	-27.9	13.8	54.0
2701.9	Vertical	Pk	50.8	0	50.8	74.0
2701.9	Vertical	Av	50.8	-27.9	22.9	54.0
3609.6 ^{*h}	Vertical	Pk	54.1	0	54.1	74.0
3609.6 ^{*h}	Vertical	Av	54.1	-27.9	26.2	54.0
4512.0 ^{*h}	Vertical	Pk	52.3	0	52.3	74.0
4512.0 ^{*h}	Vertical	Av	52.3	-27.9	24.4	54.0

Table 1a Radiated spurious emissions of the EUT at 902.4 MHz

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Duty Cycle correction factor [dB]	Level after correction [dBµV/m]	Limit [dBµV/m]
324.60	Vertical	Qp	30.0	0	30.0	46.0
405.60	Vertical	Qp	31.2	0	31.2	46.0
613.88	Horizontal	Qp	36.2	0	36.2	46.0
2288.0	Vertical	Pk	46.2	0	46.2	74.0
2288.0	Vertical	Av	46.2	-27.9	18.3	54.0
2745.0 ^{*h}	Vertical	Pk	51.0	0	51.0	74.0
2745.0 ^{*h}	Vertical	Av	51.0	-27.9	23.1	54.0
3660.0 ^{*h}	Vertical	Pk	47.2	0	47.2	74.0
3660.0 ^{*h}	Vertical	Av	47.2	-27.9	19.3	54.0
4566.0 ^{*h}	Vertical	Pk	51.5	0	51.5	74.0
4566.0 ^{*h}	Vertical	Av	51.5	-27.9	23.6	54.0

Table 1b Radiated spurious emissions of the EUT at 915.0 MHz

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Duty Cycle correction factor [dB]	Level after correction [dBµV/m]	Limit [dBµV/m]
330.56	Vertical	Qp	28.8	0	28.8	46.0
409.52	Horizontal	Qp	31.2	0	31.2	46.0
610.36	Vertical	Qp	36.1	0	36.1	46.0
2320.0	Vertical	Pk	49.4	0	49.4	74.0
2320.0	Vertical	Av	49.4	-27.9	21.5	54.0
3710.4 ^{*h}	Vertical	Pk	48.0	0	48.0	74.0
3710.4 ^{*h}	Vertical	Av	48.0	-27.9	20.1	54.0
4638.0 ^{*h}	Vertical	Pk	50.7	0	50.7	74.0
4638.0 ^{*h}	Vertical	Av	50.7	-27.9	22.8	54.0

Table 1c Radiated spurious emissions of the EUT at 927.6 MHz

Freq. [MHz]	Antenna Orientation	Detector	Level [dBµV/m]	Duty Cycle correction factor [dB]	Level after correction [dBµV/m]	Limit [dBµV/m]
332.04	Horizontal	Qp	28.8	0	28.8	46.0
406.72	Vertical	Qp	31.1	0	31.1	46.0
612.32	Vertical	Qp	36.2	0	36.2	46.0
2316.0	Vertical	Pk	49.0	0	49.0	74.0
2316.0	Vertical	Av	49.0	-27.9	21.1	54.0
2701.96 ^{*h}	Vertical	Pk	51.3	0	51.3	74.0
2701.96 ^{*h}	Vertical	Av	51.3	-27.9	23.4	54.0
3659.2 ^{*h}	Vertical	Pk	53.6	0	53.6	74.0
3659.2 ^{*h}	Vertical	Av	53.6	-27.9	25.7	54.0
4566.0 ^{*h}	Vertical	Pk	51.7	0	51.7	74.0
4566.0 ^{*h}	Vertical	Av	51.7	-27.9	23.8	54.0

Table 1d Radiated spurious emissions of the EUT in normal mode (hopping)

The results of the radiated emission tests in the range 30 MHz – 10 GHz, carried out in accordance with 47 CFR Part 15 section 15.209 and 15.205 with the system operating in transmit mode are depicted in Table 1a through 1d.

Notes:

1. Field strength values of radiated emissions at frequencies in the range 30 MHz – 10 GHz not listed in the table above are more than 20 dB below the applicable limit.
2. Measurement uncertainty is ±5.0dB
3. The reported field strength values are the worst case values at the indicated frequency. The receiving antenna was varied in horizontal and vertical orientations and also in height (between 1m and 4m).
4. ^{*h} = harmonic of the fundamental frequency.

9 List of utilized test equipment.

Kind of Equipment	Manufacturer	Model Name	Inventory number	Calibration date (mm/yyyy)	Calibration due date (mm/yyyy)
For Antenna Port Conducted Emission					
Spectrum Analyzer	Rohde & Schwarz	FSP	99538	11/2013	11/2014
Temperature-Humiditymeter	Extech	SD500	99857	02/2014	02/2015
RF Cable	H&S	--	99744	04/2013	04/2014
For Radiated Emission					
Measurement Receiver	Rohde & Schwarz	ESCI	99699	03-25/2013	03-25/2014
RF Cable S-AR	Gigalink	APG0500	99858	02/2014	02/2015
Controller	Heinrich Deisel	4630-100	99107	N/A	N/A
Test facility	Comtest	FCC listed: 90828 IC: 2932G-2	99580	02/2012	02/2015
Spectrum Analyzer	Rohde & Schwarz	FSP	99538	11/2013	11/2014
Controller	EMCS	DOC202	99608	N/A	N/A
Antenna mast	EMCS	AP-4702C	99609	N/A	N/A
Temperature-Humiditymeter	Extech	SD500	99855	02/2014	02/2015
Guidehorn 1-18 GHz	EMCO	3115	12484	04/2013	04/2014
Filter section	Reactel	--	99606	10/2013	10/2014
Biconilog Testantenna	Teseq	CBL 6111D	99877	06/2013	06/2014
Filter 2-3 GHz BP	BSC Filters	MH1630	13578	NA	NA
For AC Power Line Conducted Emission					
Not Applicable	EUT is battery operated only				

NA= Not Applicable

Conformance of the used measurement and test equipment with the requirements of ISO/IEC 17025:2005 has been confirmed before testing.