



**TEST REPORT CONCERNING THE COMPLIANCE OF
AN ARTICLE SURVEILLANCE (EAS) SYSTEM AND
METAL DETECTION SYSTEM, BRAND NEDAP,
MODEL XQMK2 IN COMBINATION WITH
PG27, PG39, FL30 AND FL45 ANTENNA SYSTEMS
WITH:**

47 CFR PART 15 (10-1-09 EDITION).

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July 22, 2011**

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R&TTE, LVD, EMC Notified Body : 1856

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MEASUREMENT/TECHNICAL REPORT

N.V. Nederlandsche Apparatenfabriek "Nedap"
Model : XQMK2
With antennas: PG27, PG39, FL30 and FL45

FCC ID: CGDXQMK2

This report concerns: Original grant/certification ~~Class 2 change~~ ~~Verification~~

Equipment type: Anti-Pilferage Device, operating on 8.2 MHz and 125 kHz

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The data taken for this test and report herein was done in accordance with 47 CFR Part 15 (10-1-09 edition) and the measurement procedures of ANSI C63.4-2009. TÜV Rheinland EPS B.V. at Niekerk, 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: July 22, 2011

Signature:



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

Summary

The device under test does:

- fulfill the general approval requirements as identified in this test report
- not fulfill the general approval requirements as identified in this test report

Description of test item

Test item : Article Surveillance System (EAS) and Metal Detection System.
Manufacturer : N.V. Nederlandsche Apparatenfabriek "Nedap"
Brand : Nedap
Model : XQMK2
Serial number(s) : --
Revision : n.a.

Applicant information


Applicant's representative : Mr. J. Hulshof
Company : N.V. Nederlandsche Apparatenfabriek "Nedap"
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Test(s) performed

Location : Niekerk
Test(s) started : November 8, 2010
Test(s) completed : February 28, 2011
Purpose of test(s) : Original certification FCC

Test specification(s) : 47 CFR Part 15 (10-1-09 Edition)

Test engineer(s) : R. van der Meer 

Report written by : R. van der Meer 

Report date : July 22, 2011

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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 system is an EAS (Electronic Article Surveillance) system for detection of 8.2MHz EAS labels, hard tags or disposable paper tags, used at the entry of shops, libraries etc. Up to 4 antennas (ports) can be used, allowing for max 3 entries. It is tested in combination with 4 different antennas, knowing: PG27, PG39, FL30 and FL45. The system operates in the frequency range: 7.4 MHz up to 8.8 MHz with a sweep of 600Hz. It is also provided with a metal detection system operating in the frequency range 120kHz to 130 kHz.

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 grant/certification in equipment authorization files under FCC ID: **CGDXQMK2**

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.

EUT1	:	Transmitter
Manufacturer	:	N.V. Nederlandsche Apparatenfabriek "Nedap"
Brand	:	Nedap
Model (Type)	:	XQMK2
Article number	:	8018464
Serial number	:	--
Voltage input rating	:	From NCC MK2 set
Voltage output rating	:	n.a.
Current input rating	:	n.a.
Remarks	:	Internal module inside antenna

EUT2	:	Receiver
Manufacturer	:	N.V. Nederlandsche Apparatenfabriek "Nedap"
Brand	:	Nedap
Model (Type)	:	XQMK2
Part no.	:	8018472
Serial number	:	B513B034
Voltage input rating	:	From NCC MK2 set
Voltage output rating	:	n.a.
Current input rating	:	n.a.
Remarks	:	Internal module inside antenna

AUX1	:	NCC MK2
Manufacturer	:	N.V. Nederlandsche Apparatenfabriek "Nedap"
Brand	:	Nedap
Model (Type)	:	XQMK2
Part no.	:	--
Serial number	:	--
Voltage input rating	:	100 – 240Vac
Voltage output rating	:	n.a.
Current input rating	:	2A
Remarks	:	This NCC MK2 consist of the following items:

AUX 1.1 : Mains Power Supply Adapter
 Brand : Power-win Technology Corp.
 Model (Type) : PWY-065A-1Y30F1(G) 10M
 Serial number : --
 Voltage input rating : 100 – 240Vac~2A, 50/60Hz
 Voltage output rating : 30Vdc / 1.5A/45W
 Remarks : FCC approved

AUX 1.2a : LAN (option)
 Brand : Lantronix
 Model (Type) : XPORT-03
 Nedap model no. : 9914021
 Serial number : --
 Remark : fitted option, Internal module inside the NCC MK2

AUX 1.2b : GSM (option)
 Brand : Multi-Tech Systems Inc.
 Model (Type) : MTSMC-G-F4 (9922636= nedap article number)
 Nedap model no. : 9914013
 Serial number : 5074452S
 FCC ID : AU79U07A31817
 Remark : fitted option, Internal module inside the NCC MK2

AUX 1.2c : Wifi (option)
 Brand : LANTRONIX
 Model (Type) : WiPort
 Nedap model no. : 9914030
 Serial number : --
 Voltage input rating : From NCC MK2 set
 Current input rating : n.a.
 FCC ID : R68WIPORTG
 Remark : fitted option, Internal module inside the NCC MK2

AUX 1.2d : Analogue telephone modem (option)
 Brand : Multi-Tech Systems Inc.
 Model (Type) : MT5600SMI
 Nedap model no. : 9914005
 Serial number : 14547122
 Remark : fitted option, FCC approved, Internal module inside the NCC MK2

Either one of AUX 1.2 a, b, c or d can be fitted at a time.

Test item (AUX 2)	:	Antenna
Manufacturer	:	N.V. Nederlandsche Apparatenfabriek Nedap
Brand	:	Nedap
Model	:	PG27
Type (Art. Nr.)	:	9937323
Serial number	:	--
Voltage input rating	:	From NCC MK2 set
Current input rating	:	n.a.
Remark	:	--
Test item (AUX 3)	:	Antenna
Manufacturer	:	N.V. Nederlandsche Apparatenfabriek Nedap
Brand	:	Nedap
Model	:	PG39
Type (Art. Nr.)	:	9940588
Serial number	:	--
Voltage input rating	:	From NCC MK2 set
Current input rating	:	n.a.
Remark	:	--
Test item (AUX 4)	:	Antenna
Manufacturer	:	N.V. Nederlandsche Apparatenfabriek Nedap
Brand	:	Nedap
Model	:	FL30
Type (Art. Nr.)	:	9202340
Serial number	:	--
Voltage input rating	:	From NCC MK2 set
Current input rating	:	n.a.
Remark	:	--
Test item (AUX 5)	:	Antenna
Manufacturer	:	N.V. Nederlandsche Apparatenfabriek Nedap
Brand	:	Nedap
Model	:	FL45
Type (Art. Nr.)	:	9202447
Serial number	:	--
Voltage input rating	:	From NCC MK2 set
Current input rating	:	n.a.
Remark	:	--

1.3.1 Description of input and output ports.

Number	Terminal	From	To	Remarks
1	Mains	Mains	NCC MK2 Set	--
2	Antenna coax cable	EUT 1	AUX 2 - 5 transmitter	Shielded cable
3	Antenna coax cable	AUX (2,3,4 & 5) transmitter	AUX 2 - 5 receiver	Shielded cable
4	Analog telephone line	EUT 1.2d	Telecommunications network	Shielded cable
5	LAN	EUT 1.2a	LAN network	Shielded cable

Operation mode 1: System "Passive", not detecting a label and metal.

Operation mode 2: System "Active", detecting a label and metal

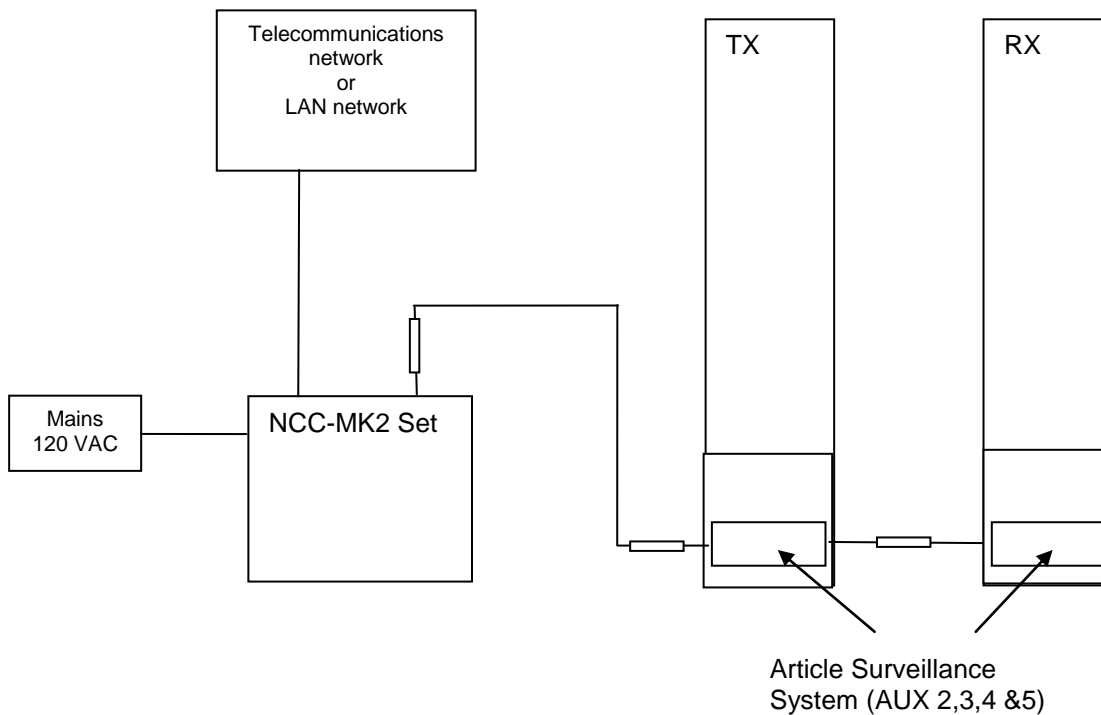


Figure 1: Basic testsetup and connections

1.4 Test methodology.

The test methodology used is based on the requirements of 47 CFR Part 15 (10-1-09 Edition), sections 15.31, 15.207, 15.209 and 15.223. The test methods, which have been used, are based on ANSI C63.4: 2009.

Radiated emission tests above 30 MHz were performed at a measurement distance of 3 meters.

Radiated emission tests below 30 MHz were performed at a measurement distance of 3 meters.

To calculate the field strength level from these results to the appropriate distance at which the limit is specified, the appropriate extrapolation factor is used.

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 EPS B.V., located in Niekerk, 9822 TL Smidshomerweg 18, The Netherlands, and has found these test facilities to be in compliance with the requirements of 47 CFR Part 15, section 2.948 (10-1-06 edition).

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-1. 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	: 120VAC/60Hz to the AC/DC Power Supply
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 situation as a customer would normally use it.
The Installation Manual shows that the NCC has to be separated from the transmitting antenna by 4 meter or more.

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 ANSI C63.4: 2009.

2.2 EUT mode of operation.

The EUT has been tested in both passive, i.e. the EUT is ready to detect a tag and active mode i.e. the EUT is reading a tag. To assess the behavior of the EUT while reading the tag, the EUT is tested with a tag presented such that it continuously reads the tag. The intentional radiator tests (47 CFR Part 15 sections, 15.207, 15.209 and 15.223) have been performed with a complete functioning EUT and interconnections.

2.3 Special accessories.

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

2.4 Equipment modifications.

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

2.5 Product Labelling

The product labeling information is available in the technical documentation package.

2.6 Block diagram of the EUT.

The block diagram is available in the technical documentation package.

2.7 Schematics of the EUT.

The schematics are available in the technical documentation package.

2.8 Part list of the EUT.

The part list is available in the technical documentation package.

3 Radiated emission data.

3.1 Radiated field strength measurements (30 MHz – 1 GHz, E-field), EUT with AUX2 (PG27)

Frequency (MHz)	Measurement results @3m Vertical (dBµV)	Measurement results @3m Horizontal (dBµV)	Correction factor (dB)	Results after correction Vertical (dBµV/m)	Results after correction Horizontal (dBµV/m)	Limits @3m (dBµV/m)	Pass/Fail
40.68	10	10	14.0	24.0	24.0	40	Pass
54.24	10	10	8.3	18.3	18.3	40	Pass
67.80	10	10	7.3	17.3	17.3	40	Pass
81.36	10	10	9.4	19.4	19.4	40	Pass
94.92	10	10	11.6	21.6	21.6	43.5	Pass
108.48	9	9	13.1	22.1	22.1	43.5	Pass
122.04	9	9	13.8	22.8	22.8	43.5	Pass
135.60	9	9	14.1	23.1	23.1	43.5	Pass
231.775	16.2	15.2	14.0	30.2	29.2	46	Pass
842.375	9.7	9.0	32.3	42.0	41.3	46	Pass

Table 1a Radiated emissions of the EUT in combination with AUX2

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15 section 15.209 with the EUT in combination with AUX2 are depicted in Table 1a. The system is tested as in whole, being the worst case situation. So with all equipment as shown in Figure1 in place and functioning.


Notes:

- 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 is ± 5.0 dB
- 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).
- A Quasi-peak detector was used with a resolution bandwidth of 120 kHz.
- The EUT was tested in both passive mode (i.e. without a tag in its proximity) and in activated mode (i.e. with a tag in its proximity). Maximum values have been noted.
- The EUT was tested successively with the LAN, GSM, WiFi and PSTN installed. Maximum values have been noted

Used test equipment and ancillaries:

99069	99070	99071	99107	99608	99609	99699	99547	15453
99580								

Test engineer

Signature : 

Name : Richard van der Meer

Date : November 30, 2010

3.2 Radiated field strength measurements (30 MHz – 1 GHz, E-field), EUT with AUX3 (PG39)

Frequency (MHz)	Measurement results @3m Vertical (dB μ V)	Measurement results @3m Horizontal (dB μ V)	Correction factor (dB)	Results after correction Vertical (dB μ V/m)	Results after correction Horizontal (dB μ V/m)	Limits @3m (dB μ V/m)	Pass/Fail
40.68	10	10	14.0	24.0	24.0	40	Pass
56.675	18.1	16.2	7.5	25.6	23.7	40	Pass
233.700	14.9	14.0	14.4	29.3	28.4	46	Pass
294.325	17.6	17.0	15.3	35.1	34.5	46	Pass
798.725	7.0	6.0	17.5	37.6	36.6	46	Pass
825.400	6.3	5.0	30.6	38.0	36.7	46	Pass

Table 1b Radiated emissions of the EUT in combination with AUX3

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15 section 15.209 with the EUT in combination with AUX3 are depicted in Table 1b. The system is tested as in whole, being the worst case situation. So with all equipment as shown in Figure1 in place and functioning.


Notes:

1. Field strength values of radiated emissions at frequencies not listed in the table above are more than 20 dB below the applicable limit.
2. Measurement uncertainty is ± 5.0 dB
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. A Quasi-peak detector was used with a resolution bandwidth of 120 kHz.
5. The EUT was tested in both passive mode (i.e. without a tag in its proximity) and in activated mode (i.e. with a tag in its proximity). Maximum values have been noted.
6. The EUT was tested successively with the LAN,GSM,WiFi and PSTN installed. Maximum values have been noted.

Used test equipment and ancillaries:

99069	99070	99071	99107	99608	99609	99699	99547	15453
99580								

Test engineer

Signature : 

Name : Richard van der Meer

Date : November 30, 2010

3.3 Radiated field strength measurements (30 MHz – 1 GHz, E-field), EUT with AUX4 (FL30)

Frequency (MHz)	Measurement results @3m Vertical (dB μ V)	Measurement results @3m Horizontal (dB μ V)	Correction factor (dB)	Results after correction Vertical (dB μ V/m)	Results after correction Horizontal (dB μ V/m)	Limits @3m (dB μ V/m)	Pass/Fail
40.68	10	10	14.0	24.0	24.0	40	Pass
54.24	10	10	8.3	18.3	18.3	40	Pass
67.80	10	10	7.3	17.3	17.3	40	Pass
81.36	10	10	9.4	19.4	19.4	40	Pass
94.92	10	10	11.6	21.6	21.6	43.5	Pass
108.48	9	9	13.1	22.1	22.1	43.5	Pass
122.04	9	9	13.8	22.8	22.8	43.5	Pass
135.60	10	10	14.1	24.1	24.1	43.5	Pass
219.15	15.2	14.1	13.0	28.2	27.1	46	Pass
240.975	19.0	18.0	15.3	34.3	33.3	46	Pass

Table 1c Radiated emissions of the EUT in combination with AUX4

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15 section 15.209 with the EUT in combination with AUX4 are depicted in Table 1c. The system is tested as in whole, being the worst case situation. So with all equipment as shown in Figure1 in place and functioning.

Notes:

1. Field strength values of radiated emissions at frequencies not listed in the table above are more than 20 dB below the applicable limit.
2. Measurement uncertainty is ± 5.0 dB
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. A Quasi-peak detector was used with a resolution bandwidth of 120 kHz.
5. The EUT was tested in both passive mode (i.e. without a tag in its proximity) and in activated mode (i.e. with a tag in its proximity). Maximum values have been noted.
6. The EUT was tested successively with the LAN,GSM,WiFi and PSTN installed. Maximum values have been noted.

Used test equipment and ancillaries:

99069	99070	99071	99107	99608	99609	99699	99547	15453
99580								

Test engineer

Signature :



Name : Richard van der Meer

Date : November 30, 2010

3.4 Radiated field strength measurements (30 MHz – 1 GHz, E-field), EUT with AUX5 (FL45)

Frequency (MHz)	Measurement results @3m Vertical (dB μ V)	Measurement results @3m Horizontal (dB μ V)	Correction factor (dB)	Results after correction Vertical (dB μ V/m)	Results after correction Horizontal (dB μ V/m)	Limits @3m (dB μ V/m)	Pass/Fail
40.68	10	10	14.0	24.0	24.0	40	Pass
54.24	10	10	8.3	18.3	18.3	40	Pass
67.80	10	10	7.3	17.3	17.3	40	Pass
81.36	10	10	9.4	19.4	19.4	40	Pass
94.92	10	10	11.6	21.6	21.6	43.5	Pass
108.48	9	9	13.1	22.1	22.1	43.5	Pass
122.04	9	9	13.8	22.8	22.8	43.5	Pass
135.60	10	10	14.1	24.1	24.1	43.5	Pass
228.85	16.0	15.0	13.7	29.7	28.7	46	Pass

Table 1d Radiated emissions of the EUT in combination with AUX5

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15 section 15.209 with the EUT in combination with AUX5 are depicted in Table 1d. The system is tested as in whole, being the worst case situation. So with all equipment as shown in Figure1 in place and functioning.

Notes:

1. Field strength values of radiated emissions at frequencies not listed in the table above are more than 20 dB below the applicable limit.
2. Measurement uncertainty is ± 5.0 dB
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. A Quasi-peak detector was used with a resolution bandwidth of 120 kHz.
5. The EUT was tested in both passive mode (i.e. without a tag in its proximity) and in activated mode (i.e. with a tag in its proximity). Maximum values have been noted.
6. The EUT was tested successively with the LAN, GSM, WiFi and PSTN installed. Maximum values have been noted.

Used test equipment and ancillaries:

99069	99070	99071	99107	99608	99609	99699	99547	15453
99580								

Test engineer

Signature :



Name : Richard van der Meer

Date : November 30, 2010

3.5 Radiated field strength measurements (frequency range of 0.009-30 MHz, H-field) Average values, EUT with AUX2 (PG27)

Frequency (MHz)	Measurement results	Detector	Antenna factor	Cable loss	Extrapolation factor	Measurement results (calculated)	Limits
	dB μ V @3m					dB μ V/m@30m (unless otherwise stated)	dB μ V/m@30m (unless otherwise stated)
0.125	67.3	Av	20.1	1	80	8.4 @300m	25.67 @300m
0.250	30.0	Av	20.1	1	80	-28.9 @300m	19.65 @300m
0.375	11.0	Av	20.0	1	80	-48.0 @300m	16.12 @300m
0.500	9.1	Qp	20.0	1	40	-9.9	33.62
0.625	10.0	Qp	20.0	1	40	-9.0	31.69
0.750	10.0	Qp	20.0	1	40	-9.0	30.10
0.875	10.0	Qp	20.0	1	40	-9.0	28.76
0.900	12.2	Qp	20.0	1	40	-6.8	28.52
1.250	15.0	Qp	20.0	1	40	-4.0	25.67
7.40	26.1	Av	19.5	1	40	6.6	40
7.50	29.5	Av	19.5	1	40	10.0	40
7.60	29.3	Av	19.5	1	40	9.8	40
7.70	29.5	Av	19.5	1	40	10	40
7.80	29.4	Av	19.5	1	40	9.9	40
7.90	29.5	Av	19.5	1	40	10.0	40
8.00	29.6	Av	19.5	1	40	10.1	40
8.10	29.6	Av	19.5	1	40	10.1	40
8.20	29.8	Av	19.5	1	40	10.3	40
8.30	29.4	Av	19.5	1	40	9.9	40
8.40	29.3	Av	19.5	1	40	9.8	40
8.50	29.5	Av	19.5	1	40	10.0	40
8.60	29.7	Av	19.5	1	40	10.2	40
8.70	29.9	Av	19.5	1	40	10.4	40
8.80	11.0	Av	19.5	1	40	-8.5	40
8.90	1.9	Av	19.5	1	40	-17.6	40
14	5.0	Qp	19.7	1	40	-14.3	40
15	5.0	Qp	19.7	1	40	-14.3	29.5
16	5.0	Qp	19.7	1	40	-14.3	29.5
17	5.0	Qp	19.7	1	40	-14.3	29.5
21	5.0	Qp	20.0	1	40	-14.0	29.5
22	5.0	Qp	20.0	1	40	-14.0	29.5
23	5.0	Qp	20.0	1	40	-14.0	29.5
24	5.0	Qp	20.0	1	40	-14.0	29.5
28	4.0	Qp	19.4	1	40	-15.6	29.5
29	4.0	Qp	19.4	1	40	-15.6	29.5
30	4.0	Qp	19.4	1	40	-15.6	29.5

Table 2a Radiated emissions of the EUT in combination with AUX2.

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15 section 15.209 and 15.223 with the EUT in combination with AUX2 operating in continuous transmit mode, are depicted in Table 2a.

Notes:

1. Calculated measurement results are obtained by using the 40dB/decade factor (antenna factor and cable loss is included). i.e at 8.70 MHz: 29.9 dBuV + 19.5dB + 1dB - 40dB= 10.4 dBuV/m.
2. For frequencies below 0.490 MHz a resolution bandwidth of 200 Hz was used, for frequencies above 0.490 MHz a resolution bandwidth of 9kHz was used during testing.
3. Field strength values of radiated emissions at frequencies not listed in Table 2a are more than 20 dB below the applicable limit
4. The loop antenna was varied in horizontal and vertical orientations and also around it's axis. The reported value is the worst case found at the reported frequency.
5. The EUT was tested in both passive mode (i.e. without a tag in its proximity) and in activated mode (i.e. with a tag in its proximity). Maximum values have been noted.
6. The EUT was tested successively with the LAN,GSM,WiFi and PSTN installed. Maximum values have been noted.
7. Measurement uncertainty is ± 5.0 dB

Used test equipment and ancillaries:

99069	99070	99107	99120	15453	99608	99609	99699	99547
99580								

Test engineer

Signature :



Name : R. van der Meer

Date : July 21, 2011

3.6 Radiated field strength measurements (frequency range of 0.009-30 MHz, H-field) Average values, EUT with AUX3 (PG39)

Frequency (MHz)	Measurement results	Detector	Antenna factor	Cable loss	Extrapolation factor	Measurement results (calculated)	Limits
	dBµV @3m					dB	dB
0.125	72.6	Av	20.1	1	80	13.7 @300m	25.67 @300m
0.250	31.0	Av	20.1	1	80	-27.9 @300m	19.65 @300m
0.375	15.2	Av	20.0	1	80	-43.8 @300m	16.12 @300m
0.500	14.0	Qp	20.0	1	40	-5.0	33.62
0.625	24.1	Qp	20.0	1	40	5.1	31.69
0.750	20.0	Qp	20.0	1	40	1.0	30.10
0.875	13.0	Qp	20.0	1	40	-6.0	28.76
0.900	13.0	Qp	20.0	1	40	-6.0	28.52
1.250	11.2	Qp	20.0	1	40	-8.1	25.67
7.40	18.9	Av	19.5	1	40	-0.6	40
7.50	39.3	Av	19.5	1	40	19.8	40
7.60	39.8	Av	19.5	1	40	20.3	40
7.70	40.0	Av	19.5	1	40	20.5	40
7.80	40.2	Av	19.5	1	40	20.7	40
7.90	40.4	Av	19.5	1	40	20.9	40
8.00	40.6	Av	19.5	1	40	21.1	40
8.10	40.8	Av	19.5	1	40	21.3	40
8.20	40.9	Av	19.5	1	40	21.4	40
8.30	41.0	Av	19.5	1	40	21.5	40
8.40	41.1	Av	19.5	1	40	21.6	40
8.50	41.5	Av	19.5	1	40	22.0	40
8.60	41.7	Av	19.5	1	40	22.2	40
8.70	42.0	Av	19.5	1	40	22.5	40
8.80	22.8	Av	19.5	1	40	3.3	40
8.90	10.2	Av	19.5	1	40	-9.3	40
14	15.0	Qp	19.7	1	40	-4.3	40
15	15.0	Qp	19.7	1	40	-4.3	29.5
16	15.0	Qp	19.7	1	40	-4.3	29.5
17	15.0	Qp	19.7	1	40	-4.3	29.5
21	10.0	Qp	20.0	1	40	-9.0	29.5
22	10.0	Qp	20.0	1	40	-9.0	29.5
23	10.0	Qp	20.0	1	40	-9.0	29.5
24	10.0	Qp	20.0	1	40	-9.0	29.5
28	10.0	Qp	19.4	1	40	-9.6	29.5
29	10.0	Qp	19.4	1	40	-9.6	29.5
30	10.0	Qp	19.4	1	40	-9.6	29.5

Table 2b Radiated emissions of the EUT in combination with AUX3.

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15 section 15.209 and 15.223 with the EUT in combination with AUX3 operating in continuous transmit mode, are depicted in Table 2b.

Notes:

1. Calculated measurement results are obtained by using the 40dB/decade factor (antenna factor and cable loss is included). i.e at 8.70 MHz: 42.0 dBuV + 19.5dB + 1dB - 40dB= 22.5 dBuV/m.
2. For frequencies below 0.490 MHz a resolution bandwidth of 200 Hz was used, for frequencies above 0.490 MHz a resolution bandwidth of 9kHz was used during testing.
3. Field strength values of radiated emissions at frequencies not listed in Table 2b are more than 20 dB below the applicable limit
4. The loop antenna was varied in horizontal and vertical orientations and also around it's axis. The reported value is the worst case found at the reported frequency.
5. The EUT was tested in both passive mode (i.e. without a tag in its proximity) and in activated mode (i.e. with a tag in its proximity). Maximum values have been noted.
6. The EUT was tested successively with the LAN,GSM,WiFi and PSTN installed. Maximum values have been noted
7. Measurement uncertainty is ± 5.0 dB.

Used test equipment and ancillaries:

99069	99070	99107	99120	15453	99608	99609	99699	99547
99580								

Test engineer

Signature : 

Name : R. van der Meer
 Date : November 23, 2010

3.7 Radiated field strength measurements (frequency range of 0.009-30 MHz, H-field) Average values, EUT with AUX4 (FL30)

Frequency (MHz)	Measurement results	Detector	Antenna factor	Cable loss	Extrapolation factor	Measurement results (calculated)	Limits
	dB μ V @3m					dB μ V/m@30m (unless otherwise stated)	dB μ V/m@30m (unless otherwise stated)
0.125	36.4	Av	20.1	1	80	-22.5 @300m	25.67 @300m
0.250	20.0	Av	20.1	1	80	-38.9 @300m	19.65 @300m
0.375	12.1	Av	20.0	1	80	-46.9 @300m	16.12 @300m
0.500	11.1	Qp	20.0	1	40	-7.9	33.62
0.625	26.1	Qp	20.0	1	40	7.1	31.69
0.750	20.0	Qp	20.0	1	40	1.0	30.10
0.875	28.1	Qp	20.0	1	40	9.1	28.76
0.900	12.4	Qp	20.0	1	40	-6.6	28.52
1.125	17.8	Qp	19.7	1	40	-1.5	26.58
1.250	18.5	Qp	19.7	1	40	-0.8	25.67
7.40	13.4	Av	19.5	1	40	7.6	40
7.50	21.9	Av	19.5	1	40	25.2	40
7.60	22.6	Av	19.5	1	40	25.7	40
7.70	22.5	Av	19.5	1	40	25.9	40
7.80	22.6	Av	19.5	1	40	26.0	40
7.90	23.5	Av	19.5	1	40	26.3	40
8.00	22.9	Av	19.5	1	40	26.3	40
8.10	22.9	Av	19.5	1	40	26.4	40
8.20	23.0	Av	19.5	1	40	26.6	40
8.30	24.8	Av	19.5	1	40	27.1	40
8.40	23.5	Av	19.5	1	40	27.0	40
8.50	23.8	Av	19.5	1	40	27.3	40
8.60	24.1	Av	19.5	1	40	27.6	40
8.70	24.1	Av	19.5	1	40	27.8	40
8.80	11.4	Av	19.5	1	40	11.4	40
8.90	7.7	Av	19.5	1	40	2.7	40
14	18.0	Qp	19.7	1	40	-1.3	40
15	18.0	Qp	19.7	1	40	-1.3	29.5
16	18.0	Qp	19.7	1	40	-1.3	29.5
17	18.0	Qp	19.7	1	40	-1.3	29.5
21	10.0	Qp	20.0	1	40	-9.0	29.5
22	10.0	Qp	20.0	1	40	-9.0	29.5
23	10.0	Qp	20.0	1	40	-9.0	29.5
24	10.0	Qp	20.0	1	40	-9.0	29.5
28	10.0	Qp	19.4	1	40	-9.6	29.5
29	10.0	Qp	19.4	1	40	-9.6	29.5
30	10.0	Qp	19.4	1	40	-9.6	29.5

Table 2c Radiated emissions of the EUT in combination with AUX4.

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15 section 15.209 and 15.223 with the EUT in combination with AUX4 operating in continuous transmit mode on 8.2 MHz, are depicted in Table 2c.

Notes:

1. Calculated measurement results are obtained by using the 40dB/decade factor (antenna factor and cable loss is included). i.e at 8.70 MHz: 24.1 dBuV + 19.5dB + 1dB - 40dB= 27.8 dBuV/m.
2. For frequencies below 0.490 MHz a resolution bandwidth of 200 Hz was used, for frequencies above 0.490 MHz a resolution bandwidth of 9kHz was used during testing.
3. Field strength values of radiated emissions at frequencies not listed in Table 2c are more than 20 dB below the applicable limit
4. The loop antenna was varied in horizontal and vertical orientations and also around it's axis. The reported value is the worst case found at the reported frequency.
5. The EUT was tested in both passive mode (i.e. without a tag in its proximity) and in activated mode (i.e. with a tag in its proximity). Maximum values have been noted.
6. The EUT was tested successively with the LAN,GSM,WiFi and PSTN installed. Maximum values have been noted
7. Measurement uncertainty is ± 5.0 dB.

Used test equipment and ancillaries:

99069	99070	99107	99120	15453	99608	99609	99699	99547
99580								

Test engineer

Signature :



Name : R. van der Meer
 Date : November 23, 2010

3.8 Radiated field strength measurements (frequency range of 0.009-30 MHz, H-field) Average values, EUT with AUX5 (FL45)

Frequency (MHz)	Measurement results	Detector	Antenna factor	Cable loss	Extrapolation factor	Measurement results (calculated)	Limits
	dB μ V @3m					dB μ V/m@30m (unless otherwise stated)	dB μ V/m@30m (unless otherwise stated)
0.125	81.7	Av	20.1	1	80	22.8 @300m	25.67 @300m
0.250	30.0	Av	20.1	1	80	-28.9 @300m	19.65 @300m
0.375	14.4	Av	20.0	1	80	-44.6 @300m	16.12 @300m
0.500	12.1	Qp	20.0	1	40	-6.9	33.62
0.625	25.4	Qp	20.0	1	40	6.4	31.69
0.750	20.0	Qp	20.0	1	40	1.0	30.10
0.875	19.3	Qp	20.0	1	40	0.3	28.76
0.900	13.5	Qp	20.0	1	40	-5.5	28.52
1.250	11.6	Qp	20.0	1	40	-7.7	25.67
7.40	18.2	Av	19.5	1	40	-1.3	40
7.50	37.6	Av	19.5	1	40	18.1	40
7.60	37.7	Av	19.5	1	40	18.2	40
7.70	37.5	Av	19.5	1	40	18.0	40
7.80	37.3	Av	19.5	1	40	17.8	40
7.90	37.3	Av	19.5	1	40	17.8	40
8.00	37.0	Av	19.5	1	40	17.5	40
8.10	36.9	Av	19.5	1	40	17.4	40
8.20	36.7	Av	19.5	1	40	17.2	40
8.30	36.8	Av	19.5	1	40	17.3	40
8.40	36.5	Av	19.5	1	40	17.0	40
8.50	36.6	Av	19.5	1	40	17.1	40
8.60	36.6	Av	19.5	1	40	17.1	40
8.70	36.7	Av	19.5	1	40	17.2	40
8.80	18.1	Av	19.5	1	40	-1.4	40
8.90	7.9	Av	19.5	1	40	-11.6	40
14	15.0	Qp	19.7	1	40	-4.3	40
15	15.0	Qp	19.7	1	40	-4.3	29.5
16	15.0	Qp	19.7	1	40	-4.3	29.5
17	15.0	Qp	19.7	1	40	-4.3	29.5
21	10.0	Qp	20.0	1	40	-9.0	29.5
22	10.0	Qp	20.0	1	40	-9.0	29.5
23	10.0	Qp	20.0	1	40	-9.0	29.5
24	10.0	Qp	20.0	1	40	-9.0	29.5
28	10.0	Qp	19.4	1	40	-9.6	29.5
29	10.0	Qp	19.4	1	40	-9.6	29.5
30	10.0	Qp	19.4	1	40	-9.6	29.5

Table 2d Radiated emissions of the EUT in combination with AUX5.

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15 section 15.209 and 15.223 with the EUT in combination with AUX5 operating in continuous transmit mode, are depicted in Table 2d.


Notes:

1. Calculated measurement results are obtained by using the 40dB/decade factor (antenna factor and cable loss is included). i.e at 7.60 MHz: 37.7dBuV + 19.5dB + 1dB - 40dB= 18.2 dBuV/m.
2. For frequencies below 0.490 MHz a resolution bandwidth of 200 Hz was used, for frequencies above 0.490 MHz a resolution bandwidth of 9kHz was used during testing.
3. Field strength values of radiated emissions at frequencies not listed in Table 2d are more than 20 dB below the applicable limit
4. The loop antenna was varied in horizontal and vertical orientations and also around it's axis. The reported value is the worst case found at the reported frequency.
5. The EUT was tested in both passive mode (i.e. without a tag in its proximity) and in activated mode (i.e. with a tag in its proximity). Maximum values have been noted.
6. The EUT was tested successively with the LAN,GSM,WiFi and PSTN installed. Maximum values have been note.
7. Measurement uncertainty is ± 5.0 dB.

Used test equipment and ancillaries:

99069	99070	99107	99120	15453	99608	99609	99699	99547
99580								

Test engineer

Signature : 

Name : R. van der Meer
 Date : November 23, 2010

3.9 Radiated field strength measurements (frequency range of 0.009-30 MHz, H-field) Peak values, EUT with AUX2 (PG27).

Frequency (MHz)	Measurement results	Detector	Antenna factor	Cable loss	Extrapolation factor	Measurement results (calculated)	Limits
	dBµV @3m						
			dB	dB	dB	dBµV/m@30m (unless otherwise stated)	dBµV/m@30m (unless otherwise stated)
0.125	67.5	Pk	20.1	1	80	8.6 @300m	45.67 @300m
0.250	32.0	Pk	20.1	1	80	-26.9 @300m	39.65 @300m
0.375	20.0	Pk	20.0	1	80	-39.0 @300m	36.12 @300m
7.40	35.0	Pk	19.5	1	40	15.5	60
7.50	53.2	Pk	19.5	1	40	33.7	60
7.60	53.3	Pk	19.5	1	40	33.8	60
7.70	53.0	Pk	19.5	1	40	33.5	60
7.80	53.1	Pk	19.5	1	40	33.6	60
7.90	53.2	Pk	19.5	1	40	33.7	60
8.00	53.4	Pk	19.5	1	40	33.9	60
8.10	53.4	Pk	19.5	1	40	33.9	60
8.20	53.3	Pk	19.5	1	40	33.8	60
8.30	53.3	Pk	19.5	1	40	33.8	60
8.40	53.4	Pk	19.5	1	40	33.9	60
8.50	53.2	Pk	19.5	1	40	33.7	60
8.60	53.2	Pk	19.5	1	40	33.7	60
8.70	53.4	Pk	19.5	1	40	33.9	60
8.80	30.5	Pk	19.5	1	40	11.0	60
8.90	15.8	Pk	19.5	1	40	-3.7	60

Table 3a Radiated emissions of the EUT in combination with AUX2

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15 section 15.223 and 15.35 with the EUT operating in continuous transmit mode, are depicted in Table 3a.

Notes:

1. Calculated measurement results are obtained by using the 40dB(or 80dB)/decade extrapolation factor, antenna factor and cable loss. i.e at 8.70 MHz: 53.4 dBuV + 19.5dB + 1dB - 40dB= 33.9 dBuV/m.
2. A Peak detector was used during testing.
3. A resolution bandwidth of 9kHz was used during testing
4. Field strength values of radiated emissions at frequencies not listed in Table 3a are more than 20 dB below the applicable limit
5. The loop antenna was varied in horizontal and vertical orientations and also around it's axis. The reported value is the worst case found at the reported frequency.
6. The EUT was tested in both passive mode (i.e. without a tag in its proximity) and in activated mode (i.e. with a tag in its proximity). Maximum values have been noted.
7. The EUT was tested successively with the LAN,GSM,WiFi and PSTN installed. Maximum values have been note.
8. Measurement uncertainty is ±5.0dB

Used test equipment and ancillaries:

99069	99070	99107	99120	15453	99608	99609	99699	99547
99580								

Test engineer

Signature : 

Name : R. van der Meer
Date : July 21, 2011.

3.10 Radiated field strength measurements (frequency range of 0.009-30 MHz, H-field) Peak values, EUT with AUX3 (PG39).

Frequency (MHz)	Measurement results	Detector	Antenna factor	Cable loss	Extrapolation factor	Measurement results (calculated)	Limits
	dBµV @3m					dBµV/m@30m (unless otherwise stated)	dBµV/m@30m
0.125	72.9	Pk	20.1	1	80	14.0 @300m	45.67 @300m
0.250	34.0	Pk	20.1	1	80	-24.9 @300m	39.65 @300m
0.375	19.3	Pk	20.0	1	80	-39.7 @300m	36.12 @300m
7.40	41.3	Pk	19.5	1	40	21.8	60
7.50	63.2	Pk	19.5	1	40	43.7	60
7.60	63.5	Pk	19.5	1	40	44.0	60
7.70	63.8	Pk	19.5	1	40	44.3	60
7.80	64.1	Pk	19.5	1	40	44.6	60
7.90	64.3	Pk	19.5	1	40	44.8	60
8.00	64.5	Pk	19.5	1	40	45.0	60
8.10	64.6	Pk	19.5	1	40	45.1	60
8.20	64.7	Pk	19.5	1	40	45.2	60
8.30	64.9	Pk	19.5	1	40	45.4	60
8.40	65.1	Pk	19.5	1	40	45.6	60
8.50	65.3	Pk	19.5	1	40	45.8	60
8.60	65.5	Pk	19.5	1	40	46.0	60
8.70	65.8	Pk	19.5	1	40	46.3	60
8.80	46.3	Pk	19.5	1	40	26.8	60
8.90	28.9	Pk	19.5	1	40	9.4	60

Table 3b Radiated emissions of the EUT in combination with AUX3

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15 section 15.223 and 15.35 with the EUT operating in continuous transmit mode, are depicted in Table 3b.

Notes:

1. Calculated measurement results are obtained by using the 40dB(or 80dB)/decade extrapolation factor, antenna factor and cable loss.
i.e at 8.70 MHz: 65.8 dBuV + 19.5dB + 1dB - 40dB= 46.3dBuV/m.
2. A Peak detector was used during testing.
3. A resolution bandwidth of 9kHz was used during testing
4. Field strength values of radiated emissions at frequencies not listed in Table 3b are more than 20 dB below the applicable limit
5. The loop antenna was varied in horizontal and vertical orientations and also around it's axis. The reported value is the worst case found at the reported frequency.
6. The EUT was tested in both passive mode (i.e. without a tag in its proximity) and in activated mode (i.e. with a tag in its proximity). Maximum values have been noted.
7. The EUT was tested successively with the LAN,GSM,WiFi and PSTN installed. Maximum values have been noted
8. Measurement uncertainty is ±5.0dB

Used test equipment and ancillaries:

99069	99070	99107	99120	15453	99608	99609	99699	99547
99580								

Test engineer

Signature : 

Name : R. van der Meer
Date : November 23, 2010.

3.11 Radiated field strength measurements (frequency range of 0.009-30 MHz, H-field) Peak values, EUT with AUX4 (FL30)

Frequency (MHz)	Measurement results	Detector	Antenna factor	Cable loss	Extrapolation factor	Measurement results (calculated)	Limits
	dB μ V @3m					dB μ V/m@30m (unless otherwise stated)	dB μ V/m@30m
0.125	36.7	Pk	20.1	1	80	-22.2 @300m	45.67 @300m
0.250	20.0	Pk	20.1	1	80	-38.9 @300m	39.65 @300m
0.375	22.1	Pk	20.0	1	80	-36.9 @300m	36.12 @300m
7.40	27.1	Pk	19.5	1	40	7.6	60
7.50	44.7	Pk	19.5	1	40	25.2	60
7.60	45.2	Pk	19.5	1	40	25.7	60
7.70	45.4	Pk	19.5	1	40	25.9	60
7.80	45.5	Pk	19.5	1	40	26.0	60
7.90	45.8	Pk	19.5	1	40	26.3	60
8.00	45.8	Pk	19.5	1	40	26.3	60
8.10	45.9	Pk	19.5	1	40	26.4	60
8.20	46.1	Pk	19.5	1	40	26.6	60
8.30	46.6	Pk	19.5	1	40	27.1	60
8.40	46.5	Pk	19.5	1	40	27.0	60
8.50	46.8	Pk	19.5	1	40	27.3	60
8.60	47.1	Pk	19.5	1	40	27.6	60
8.70	47.3	Pk	19.5	1	40	27.8	60
8.80	30.9	Pk	19.5	1	40	11.4	60
8.90	22.2	Pk	19.5	1	40	2.7	60

Table 3c Radiated emissions of the EUT in combination with AUX4.

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15 section 15.223 and 15.35 with the EUT in combination with AUX4 operating in continuous transmit mode, are depicted in Table 3c.

Notes:

1. Calculated measurement results are obtained by using the 40dB/decade factor (antenna factor and cable loss is included). i.e at 8.70 MHz: 47.3 dBuV + 19.5dB + 1dB - 40dB= 27.8 dBuV/m.
2. For frequencies below 0.490 MHz a resolution bandwidth of 200 Hz was used, for frequencies above 0.490 MHz a resolution bandwidth of 9kHz was used during testing.
3. Field strength values of radiated emissions at frequencies not listed in Table 3c are more than 20 dB below the applicable limit
4. The loop antenna was varied in horizontal and vertical orientations and also around it's axis. The reported value is the worst case found at the reported frequency.
5. The EUT was tested in both passive mode (i.e. without a tag in its proximity) and in activated mode (i.e. with a tag in its proximity). Maximum values have been noted.
6. The EUT was tested successively with the LAN,GSM,WiFi and PSTN installed. Maximum values have been noted
7. Measurement uncertainty is ± 5.0 dB.

Used test equipment and ancillaries:

99069	99070	99107	99120	15453	99608	99609	99699	99547
99580								

Test engineer

Signature :



Name

: R. van der Meer

Date

: November 23, 2010

3.12 Radiated field strength measurements (frequency range of 0.009-30 MHz, H-field) Peak values, EUT with AUX5 (FL45)

Frequency (MHz)	Measurement results	Detector	Antenna factor	Cable loss	Extrapolation factor	Measurement results (calculated)	Limits
	dB μ V @3m					dB μ V/m@30m (unless otherwise stated)	dB μ V/m@30m (unless otherwise stated)
0.125	81.7	Pk	20.1	1	80	22.8 @300m	45.67 @300m
0.250	41.0	Pk	20.1	1	80	-17.9 @300m	39.65 @300m
0.375	23.1	Pk	20.0	1	80	-35.9 @300m	36.12 @300m
7.40	40.1	Pk	19.5	1	40	20.6	60
7.50	61.4	Pk	19.5	1	40	41.9	60
7.60	61.3	Pk	19.5	1	40	41.8	60
7.70	61.3	Pk	19.5	1	40	41.8	60
7.80	61.1	Pk	19.5	1	40	41.6	60
7.90	60.9	Pk	19.5	1	40	41.4	60
8.00	60.8	Pk	19.5	1	40	41.3	60
8.10	60.6	Pk	19.5	1	40	41.1	60
8.20	60.5	Pk	19.5	1	40	41.0	60
8.30	60.4	Pk	19.5	1	40	40.9	60
8.40	60.3	Pk	19.5	1	40	40.8	60
8.50	60.3	Pk	19.5	1	40	40.8	60
8.60	60.2	Pk	19.5	1	40	40.7	60
8.70	60.4	Pk	19.5	1	40	40.9	60
8.80	40.7	Pk	19.5	1	40	21.2	60
8.90	24.1	Pk	19.5	1	40	4.6	60

Table 3d Radiated emissions of the EUT in combination with AUX5.

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15 section 15.223 and 15.35 with the EUT in combination with AUX5 operating in continuous transmit mode, are depicted in Table 3d.

Notes:

1. Calculated measurement results are obtained by using the 40dB/decade factor (antenna factor and cable loss is included). i.e at 7.50 MHz: 61.4 dB μ V + 19.5dB + 1dB - 40dB= 41.9 dB μ V/m.
2. For frequencies below 0.490 MHz a resolution bandwidth of 200 Hz was used, for frequencies above 0.490 MHz a resolution bandwidth of 9kHz was used during testing.
3. Field strength values of radiated emissions at frequencies not listed in Table 3d are more than 20 dB below the applicable limit
4. The loop antenna was varied in horizontal and vertical orientations and also around it's axis. The reported value is the worst case found at the reported frequency.
5. The EUT was tested in both passive mode (i.e. without a tag in its proximity) and in activated mode (i.e. with a tag in its proximity). Maximum values have been noted.
6. The EUT was tested successively with the LAN,GSM,WiFi and PSTN installed. Maximum values have been noted
7. Measurement uncertainty is \pm 5.0dB.



Used test equipment and ancillaries:

99069	99070	99107	99120	15453	99608	99609	99699	99547
99580								

Test engineer

Signature :

Name

: R. van der Meer

Date

: November 23, 2010

4 Conducted emission data.

4.1 Conducted emission data of the EUT in combination with AUX2 (PG27)

Frequency (MHz)	Measurement results Neutral dB(uV) Qp	Measurement results Neutral dB(uV) Av	Measurement results L1 dB(uV) Qp	Measurement results L1 dB(uV) Av	Limits dB(uV) Qp	Limits dB(uV) Av	Pass/Fail
	Plot 02	Plot 02	Plot 01	Plot 01			
0.190	51.1	29.2	52.9	31.3	64.0	54.0	Pass
0.194	52.9	30.4	52.2	30.9	64.0	54.0	Pass
0.198	52.5	30.3	51.4	30.7	63.6	53.6	Pass
0.214	48.9	25.8	46.7	24.4	63.2	53.2	Pass
0.226	47.5	22.9	48.5	24.2	62.4	52.4	Pass
0.242	48.6	22.7	47.6	23.2	62.1	52.1	Pass
0.254	47.2	20.1	47.1	21.2	61.8	51.8	Pass
0.262	46.2	25.6	47.3	27.2	61.4	51.4	Pass
0.674	39.5	16.7	37.2	14.7	56.0	46.0	Pass
0.694	37.9	18.8	35.9	17.2	56.0	46.0	Pass
0.698	39.1	17.9	36.6	17.9	56.0	46.0	Pass
0.730	37.8	15.2	33.8	13.9	56.0	46.0	Pass
1.182	26.2	11.2	21.5	10.6	56.0	46.0	Pass
1.726	21.6	13.4	23.5	14.4	56.0	46.0	Pass
2.266	26.8	15.1	29.1	15.8	56.0	46.0	Pass
2.768	29.6	16.2	30.7	18.1	56.0	46.0	Pass
3.022	31.2	17.7	33.3	18.7	56.0	46.0	Pass
3.414	31.8	15.5	34.2	16.9	56.0	46.0	Pass
3.814	32.9	15.7	34.4	18.1	56.0	46.0	Pass
4.206	33.7	19.2	34.4	20.7	56.0	46.0	Pass
4.594	34.2	13.3	35.3	21.8	56.0	46.0	Pass
4.986	34.7	18.7	36.7	20.9	56.0	46.0	Pass
5.402	35.3	19.4	36.9	21.2	60.0	50.0	Pass
5.814	36.8	20.3	37.2	21.9	60.0	50.0	Pass
6.206	36.5	20.8	37.7	22.1	60.0	50.0	Pass
6.594	37.2	21.8	37.7	22.2	60.0	50.0	Pass
6.998	36.9	21.6	38.2	22.1	60.0	50.0	Pass
7.430	37.8	23.3	38.8	20.9	60.0	50.0	Pass
7.802	38.6	25.5	38.5	25.6	60.0	50.0	Pass
8.158	38.5	25.4	39.3	25.6	60.0	50.0	Pass
8.598	38.7	24.5	39.2	21.5	60.0	50.0	Pass
9.062	39.1	24.6	40.1	24.6	60.0	50.0	Pass
9.586	39.6	24.1	40.1	24.8	60.0	50.0	Pass
10.014	40.6	24.9	40.6	25.1	60.0	50.0	Pass
10.506	40.4	24.8	40.2	21.1	60.0	50.0	Pass
10.950	40.9	26.6	40.5	21.2	60.0	50.0	Pass
11.442	41.7	26.9	40.8	21.2	60.0	50.0	Pass
11.874	41.8	27.8	41.5	22.6	60.0	50.0	Pass
12.338	42.5	23.7	41.4	26.7	60.0	50.0	Pass

Frequency (MHz)	Measurement results Neutral dB(uV) Qp	Measurement results Neutral dB(uV) Av	Measurement results L1 dB(uV) Qp	Measurement results L1 dB(uV) Av	Limits dB(uV) Qp	Limits dB(uV) Av	Pass/Fail
12.794	42.8	28.2	41.5	24.4	60.0	50.0	Pass
13.278	42.6	27.4	42.5	27.1	60.0	50.0	Pass
13.774	42.8	27.7	42.3	26.2	60.0	50.0	Pass
14.242	41.4	27.6	43.2	27.1	60.0	50.0	Pass
14.726	42.9	27.4	43.1	26.3	60.0	50.0	Pass
15.166	43.2	27.1	43.8	27.2	60.0	50.0	Pass
15.622	43.7	27.4	43.6	27.1	60.0	50.0	Pass
16.118	43.8	25.4	43.5	27.2	60.0	50.0	Pass
16.582	43.9	27.4	43.3	27.4	60.0	50.0	Pass
17.038	42.7	27.2	43.3	28.2	60.0	50.0	Pass
17.538	43.4	27.2	43.2	27.7	60.0	50.0	Pass
17.990	43.5	28.2	43.1	27.7	60.0	50.0	Pass
18.510	42.9	28.4	43.3	27.1	60.0	50.0	Pass
18.954	43.1	28.2	42.3	27.1	60.0	50.0	Pass
19.478	43.4	28.1	43.1	27.1	60.0	50.0	Pass
19.998	43.2	27.7	42.7	26.7	60.0	50.0	Pass
20.466	42.7	25.4	42.4	27.4	60.0	50.0	Pass
20.922	42.8	27.2	42.5	26.6	60.0	50.0	Pass
21.418	43.1	28.2	42.3	26.9	60.0	50.0	Pass
21.882	43.4	24.6	42.7	27.1	60.0	50.0	Pass
22.378	42.6	27.6	42.9	27.1	60.0	50.0	Pass
22.814	42.7	25.5	42.3	26.8	60.0	50.0	Pass
23.258	42.3	27.9	42.2	26.9	60.0	50.0	Pass
24.302	42.3	28.1	42.2	27.1	60.0	50.0	Pass
25.014	42.4	27.7	42.1	27.6	60.0	50.0	Pass
26.442	43.4	28.8	42.8	27.7	60.0	50.0	Pass
26.894	43.6	28.2	42.7	27.9	60.0	50.0	Pass
28.518	44.7	29.2	43.8	28.7	60.0	50.0	Pass
29.498	45.2	29.4	44.9	28.5	60.0	50.0	Pass
29.990	45.2	29.8	45.5	29.2	60.0	50.0	Pass

Table 4a Conducted emission measurements.

The results of the conducted emission tests in the range of 150 kHz up to 30 MHz, carried out in accordance with 47 CFR Part 15 section 15.207, at the 120 Volts AC mains connection terminals of the AC/DC power supply which was connected to EUT3, are depicted in Table 4a. Maximum values recorded. The system is tested as in whole, so with all equipment as shown in Figure1 in place and functioning. Being the worst case situation.

Notes:

1. Measurement uncertainty is ± 3.5 dB
2. The resolution bandwidth used was 9 kHz.
3. Values of conducted emissions at frequencies not listed in Table 4a are more than 20 dB below the applicable limit.
4. The EUT was tested with the options LAN,GSM,WiFi and PSTN installed. Maximum values have been noted.

5. The EUT was tested successively in both normal mode (i.e. without a tag in its proximity) and in activated mode (i.e. with a tag in its proximity).
6. The antenna was replaced by a 50 Ohm load as per KDB

Used test equipment and ancillaries:

99548	99161	12512	15667	13313		

Test engineer

Signature : 

Name : R. van der Meer

Date : February 28, 2011

4.2 Conducted emission data of the EUT in combination with AUX3 (PG39)

Frequency (MHz)	Measurement results dB(μ V) Neutral		Measurement results dB(μ V) Line 1		Limits dB(μ V)		Result
	QP	AV	QP	AV	QP	AV	
0.158	<40	<40	57.0	<40	65.5	55.5	PASS
0.174	<40	<40	56.0	<40	65.0	55.0	PASS
0.184	58.0	<40	32.7	43.2	64.5	54.5	PASS
0.192	<45	<45	58.1	37.4	64.0	54.0	PASS
0.236	58.7	<40	48.2	29.8	62.1	52.1	PASS
0.255	54.1	<40	55.5	33.5	61.4	51.4	PASS
0.264	51.8	47.4	<40	<40	61.4	51.4	PASS
0.4433	52.7	43.6	53.1	39.7	57.1	47.1	PASS
6.928	43.2	<40	41.9	36.3	60.0	50.0	PASS
8.729896	55.5	39.8	54.6	39.4	60.0	50.0	PASS
10.824	48.5	36.5	48.3	37.2	60.0	50.0	PASS
12.0056	47.2	38.9	47.3	<40	60.0	50.0	PASS
13.747	47.3	42.5	47.1	<40	60.0	50.0	PASS
14.420	47.8	43.8	50.8	41.3	60.0	50.0	PASS
15.994	49.3	42.7	<40	<40	60.0	50.0	PASS
16.911	50.5	43.6	48.0	<40	60.0	50.0	PASS
21.478	47.2	42.2	50.1	<40	60.0	50.0	PASS
22.530	48.3	43.1	50.8	<40	60.0	50.0	PASS
28.614	48.8	42.2	52.0	45.0	60.0	50.0	PASS

Table 4b Conducted emission measurements.

The results of the conducted emission tests in the range of 150 kHz up to 30 MHz, carried out in accordance with 47 CFR Part 15 section 15.207, at the 120 Volts AC mains connection terminals of the AC/DC power supply which was connected to EUT3, are depicted in Table 4b. Maximum values recorded. The system is tested as in whole, so with all equipment as shown in Figure1 in place and functioning. Being the worst case situation.

Notes:

1. Measurement uncertainty is ± 3.5 dB
2. The resolution bandwidth used was 9 kHz.
3. Values of conducted emissions at frequencies not listed in Table 4b are more than 20 dB below the applicable limit.
4. The EUT was tested successively with the option LAN,GSM,WiFi and PSTN installed. Maximum values have been noted.
5. The EUT was tested in both normal mode (i.e. without a tag in its proximity) and in activated mode (i.e. with a tag in its proximity).
6. The antennas, AUX3, were placed at least 4m away from the NCC (AUX1) as instructed in the installation manual

Used test equipment and ancillaries:

99548	99161	12512	15667	13313		

Test engineer

Signature : 

Name : R. van der Meer

Date : February 28, 2011

4.3 Conducted emission data of the EUT in combination with AUX4 (FL30)

Frequency (MHz)	Measurement results dB(μV) Neutral		Measurement results dB(μV) Line 1		Limits dB(μV)		Result
	QP	AV	QP	AV	QP	AV	
0.181	57.1	46.4	<40	<35	64.5	54.5	PASS
0.186	<40	<40	57.4	<35	64.0	54.0	PASS
0.2096	58.0	<40	47.0	<35	63.6	53.6	PASS
0.259	<40	<40	<40	46.9	61.4	51.4	PASS
0.264	56.3	<40	55.1	<35	61.4	51.4	PASS
0.443	53.1	<40	48.7	32.0	57.1	47.1	PASS
0.624	47.3	35.5	42.8	25.7	56.0	46.0	PASS
4.542	43.6	<40	43.4	30.0	60.0	50.0	PASS
5.368	45.8	<40	39.0	31.9	60.0	50.0	PASS
8.5909	47.5	<40	46.4	34.6	60.0	50.0	PASS
10.3189	48.0	38.8	46.7	38.1	60.0	50.0	PASS
13.968	<35	39.5	52.0	41.9	60.0	50.0	PASS
16.251	49.6	42.2	<40	41.3	60.0	50.0	PASS
18.169	49.0	41.9	53.0	<40	60.0	50.0	PASS
19.211	51.1	42.0	49.3	<40	60.0	50.0	PASS
23.823	49.1	42.4	53.0	42.8	60.0	50.0	PASS
25.594	<40	39.6	43.5	43.7	60.0	50.0	PASS
27.062	50.2	<40	<40	<40	60.0	50.0	PASS
29.777	<40	43.8	28.3	44.3	60.0	50.0	PASS

Table 4c Conducted emission measurements.

The results of the conducted emission tests in the range of 150 kHz up to 30 MHz, carried out in accordance with 47 CFR Part 15 section 15.207, at the 120 Volts AC mains connection terminals of the AC/DC power supply which was connected to EUT3, are depicted in Table 4c. Maximum values recorded. The system is tested as in whole, so with all equipment as shown in Figure1 in place and functioning. Being the worst case situation.

Notes:

1. Measurement uncertainty is ± 3.5 dB
2. The resolution bandwidth used was 9 kHz.
3. Values of conducted emissions at frequencies not listed in Table 4c are more than 20 dB below the applicable limit.
4. The EUT was tested successively with the option LAN,GSM,WiFi and PSTN installed. Maximum values have been noted.
5. The EUT was tested in both normal mode (i.e. without a tag in its proximity) and in activated mode (i.e. with a tag in its proximity).
6. The antennas, AUX4, where placed at least 4m away from the NCC (AUX1) as instructed in the installation manual

Used test equipment and ancillaries:

99548	99161	12512	15667	13313		

Test engineer

Signature : 

Name : R. van der Meer

Date : February 25, 2011

4.4 Conducted emission data of the EUT in combination with AUX5 (FL45)

Frequency (MHz)	Measurement results dB μ V Neutral		Measurement results dB μ V Line 1		Limits dB μ V		Result
	QP	AV	QP	AV	QP	AV	
0.1745	<35	43.3	55.3	45.5	65.0	55.0	PASS
0.185	58.2	33.4	<30	43.2	64.5	54.5	PASS
0.1967	31.2	43.4	57.9	44.2	63.6	53.6	PASS
0.2705	55.6	23.1	54.7	39.3	61.1	51.1	PASS
0.286	54.5	<40	58.9	<30	60.5	50.5	PASS
0.35467	54.3	35.6	51.5	44.6	59.0	49.0	PASS
0.393	<40	<40	49.9	<30	58.1	48.1	PASS
0.4688	51.7	40.2	39.8	36.0	56.5	46.5	PASS
6.196	<40	30.4	46.5	<30	60.0	50.0	PASS
7.267	40.1	28.5	42.3	36.3	60.0	50.0	PASS
8.729	55.0	36.7	54.5	39.1	60.0	50.0	PASS
9.837	42.5	36.4	43.9	36.4	60.0	50.0	PASS
13.105	46.2	<40	42.2	38.4	60.0	50.0	PASS
13.524	<35	<35	52.0	39.5	60.0	50.0	PASS
14.306	49.7	42.0	46.3	42.1	60.0	50.0	PASS
15.1265	<35	<35	<36	40.8	60.0	50.0	PASS
15.867	50.8	40.5	<36	40.0	60.0	50.0	PASS
17.599	<35	<35	46.5	42.0	60.0	50.0	PASS
18.608	<40	<35	49.9	40.8	60.0	50.0	PASS
20.4757	<40	43.0	48.9	39.4	60.0	50.0	PASS
24.399	52.7	<35	47.4	43.9	60.0	50.0	PASS
26.847	<40	37.0	50.7	43.2	60.0	50.0	PASS
28.387	51.9	42.3	47.2	43.2	60.0	50.0	PASS

Table 4d Conducted emission measurements.

The results of the conducted emission tests in the range of 150 kHz up to 30 MHz, carried out in accordance with 47 CFR Part 15 section 15.207, at the 120 Volts AC mains connection terminals of the AC/DC power supply which was connected to EUT3, are depicted in Table 4d. Maximum values recorded. The system is tested as in whole, so with all equipment as shown in Figure1 in place and functioning. Being the worst case situation.

Notes:

1. Measurement uncertainty is ± 3.5 dB
2. The resolution bandwidth used was 9 kHz.
3. Values of conducted emissions at frequencies not listed in Table 4d are more than 20 dB below the applicable limit.
4. The EUT was tested successively with the option LAN,GSM,WiFi and PSTN installed. Maximum values have been noted.
5. The EUT was tested in both normal mode (i.e. without a tag in its proximity) and in activated mode (i.e. with a tag in its proximity).
6. The antennas, AUX2, where placed at least 4m away from the NCC (AUX1) as instructed in the installation manual.

Used test equipment and ancillaries:

99548	99161	12512	15667	13313		

Test engineer

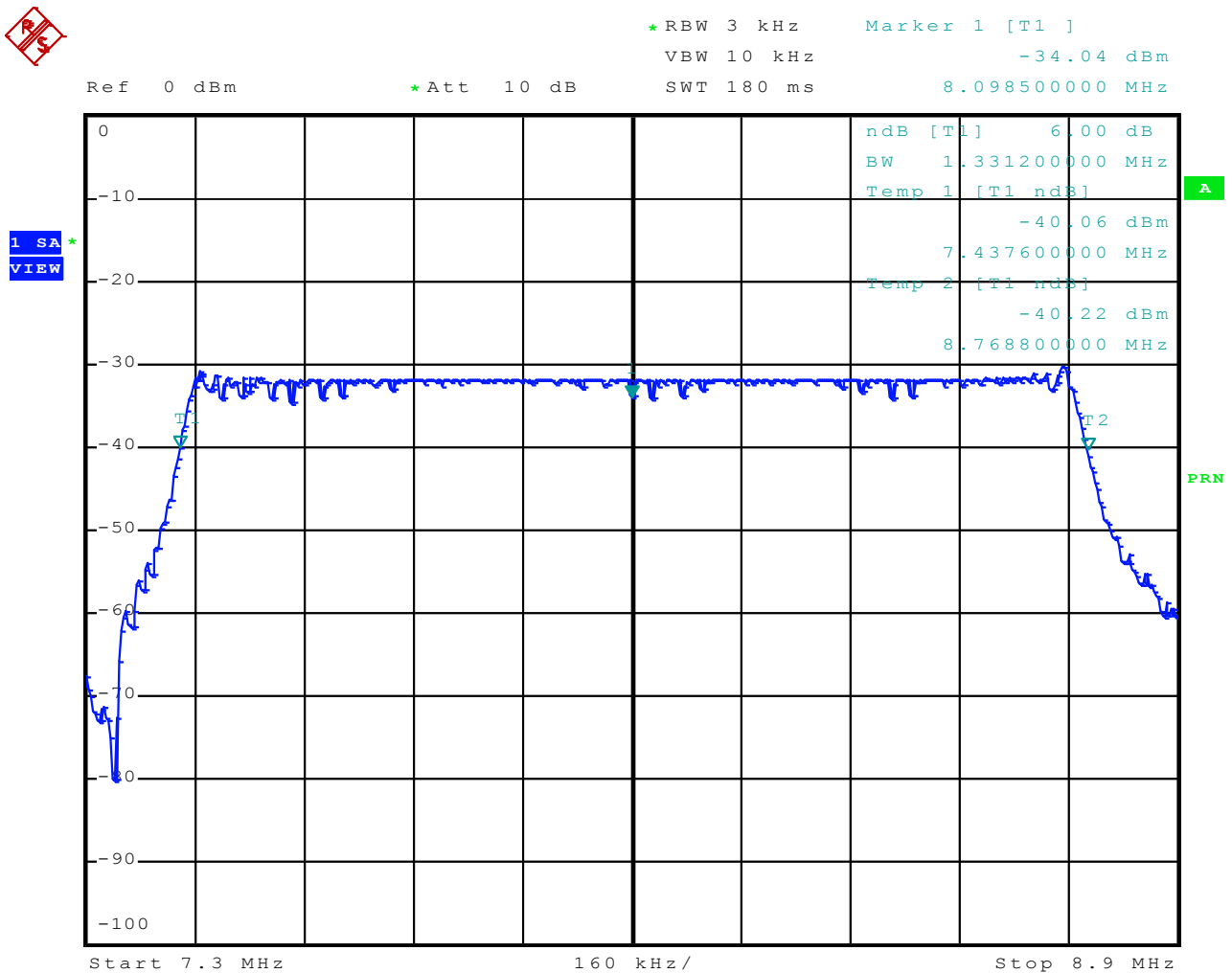
Signature : 

Name : R. van der Meer

Date : February 25, 2011

5 Bandwidth of the emission

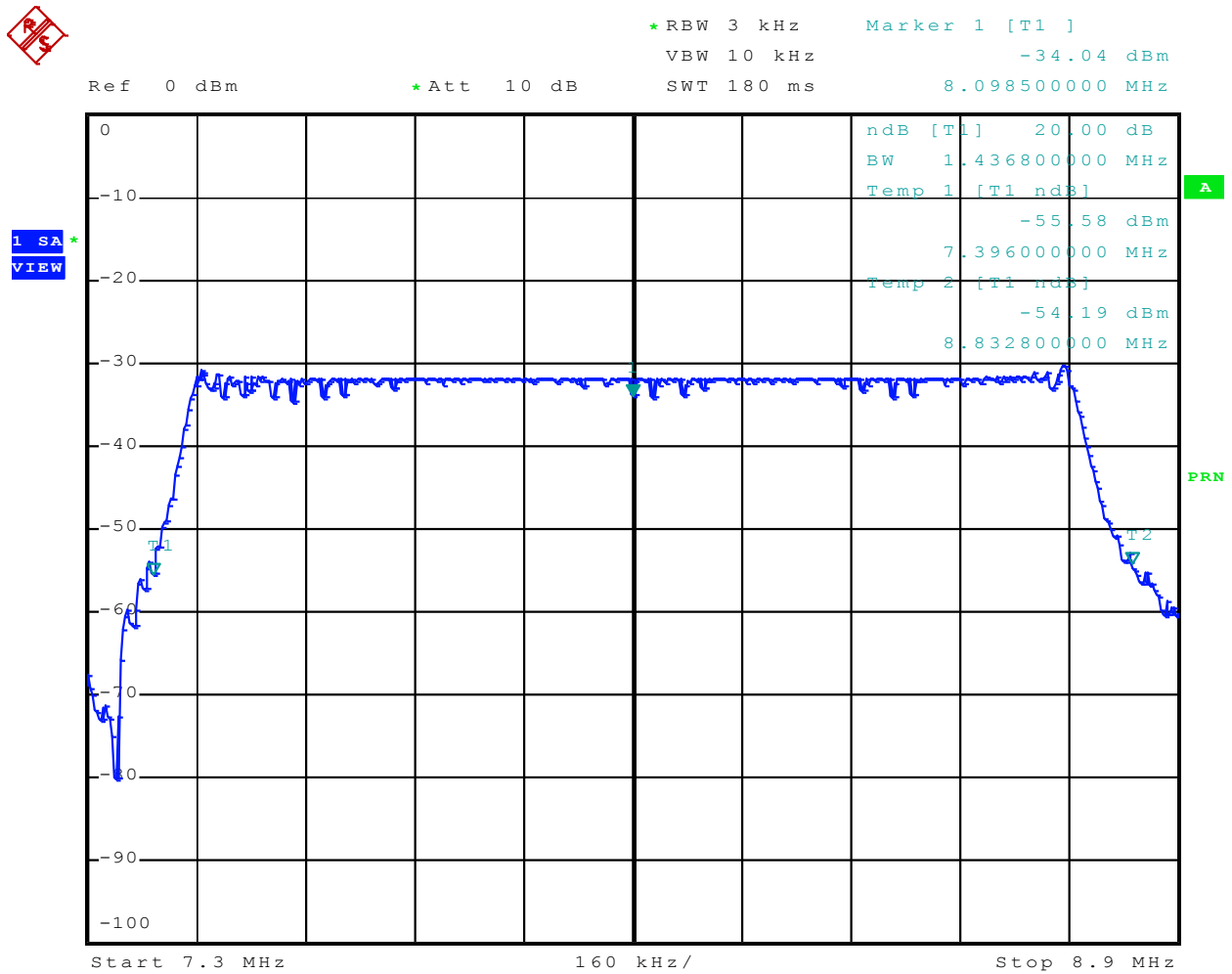
The plot below shows compliance with the 47 CFR Part 15 section 15.223(a), this section requires the 6 dB emission bandwidth is more than 10% of the center frequency in order to allow a field strength of emissions of maximum 40 dB μ V/m (equal to 100 μ V/m). The center frequency of the EUT is stated at 8.2 MHz, therefore the 6dB bandwidth must be larger than 820 kHz. Plot 1 below, shows a 6dB bandwidth of: 1331.2 kHz.



Date: 9.DEC.2010 10:13:08

Plot 1: 6 dB bandwidth is 1331.2 kHz

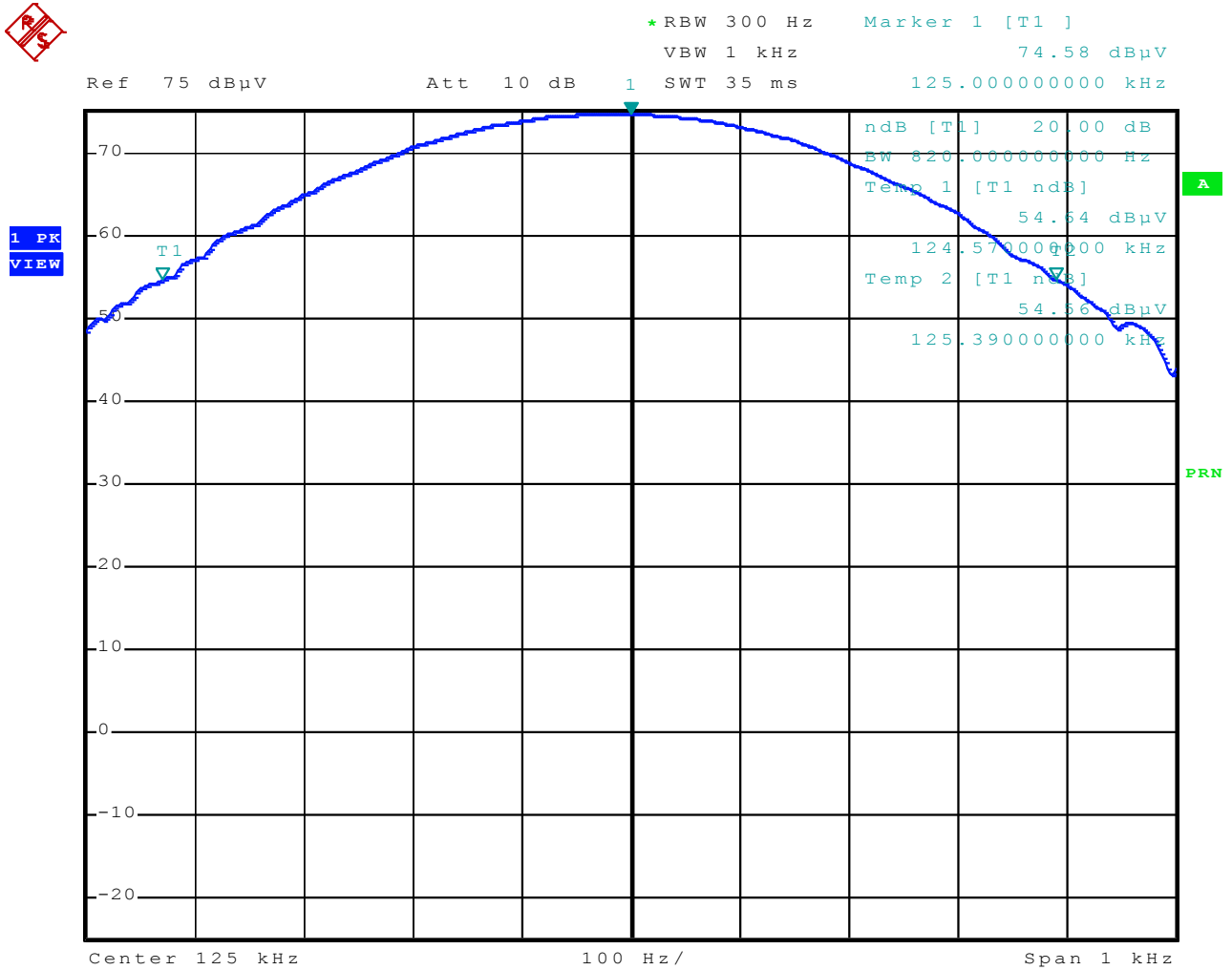
The plot below shows compliance with the 47 CFR Part 15 section 15.215(c), this section requires the 20 dB emission bandwidth of the 8,2 MHz signal is within the frequencyband designated in section 15.223



Date: 9.DEC.2010 10:12:06

Plot 2: Occupied bandwidth is 1436.8 kHz

The plot below shows the 20 dB emission bandwidth of the 125 kHz signal.



Date: 28.MAR.2011 15:15:19

Plot 2: Occupied bandwidth is 820 Hz

6 List of utilized test equipment.

Inventory number	Description	Brand	Model	Last cal.	Next cal.
12512	LISN	EMCO	3625/2	01/2010	01/2012
13313	Pulse Limiter	R&S	ESH3-Z2	02/2010	02/2011
15453	Active loopant. 60 cm	Chase	HLA6120	05/2010	05/2012
15633	Biconilog Testantenna	Chase	CBL 6111B	02/2010	02/2011
15667	Measuring receiver	R&S	ESCS30	06/2010	06/2012
99069	Coax 5m RG213 OATS	NMi Certin B.V.	KABEL 5M OATS	10/2010	10/2011
99070	Coax 15m RG213 OATS	NMi Certin B.V.	KABEL 15M OATS	10/2010	10/2011
99071	Coax OATS ground	NMi Certin B.V.	KABEL GROND OATS	10/2010	10/2011
99107	Controller OATS	Heinrich Deisel	4630-100	NA	NA
99161	Variac 250V 6A	RFT	LTS006	NA	NA
99547	Temperature-Humiditymeter	Europe supplies	WS-7082	10/2010	10/2011
99580	OATS	Comtest	FCC listed: 90828	08/2008	08/2011
99608	Controller (OATS)	EMCS	DOC202	NA	NA
99609	Antenna mast	EMCS	AP-4702C	NA	NA
99613	Temperature-Humiditymeter	Europe supplies	WS-7082	10/2010	10/2011
99699	Measuring receiver	R&S	ESCI	02/2010	02/2012
99721	GSM Basestation emulator	Willtek	2201 ProLock	NA	NA
12476	Antenna mast	EMCO	TR3	NA	NA
12477	Antenna mast 1-4 mtr	Poelstra	NA	NA	NA
99608	Controller (OATS)	EMCS	DOC202	NA	NA
99609	Antenna mast	EMCS	AP-4702C	NA	NA
99651	Variac	NA	Vast Activa: 08-9510	NA	NA

NA= Not Applicable