



**TEST REPORT CONCERNING THE COMPLIANCE OF A
LOW POWER COMMUNICATION DEVICE TRANSMITTER
OPERATING ON 3.972 MHz,
BRAND MYLAPS
MODEL Flex Cradle
WITH 47 CFR PART 15 (10-1-09).**

11112102.fcc01
December 16, 2011

FCC listed : 90828
Industry Canada : 2932G-1
VCCI Registered : R-1518, C-1598
R&TTE, LVD, EMC Notified Body : 1856

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MEASUREMENT/TECHNICAL REPORT

AMB-it BV
Model : Flex Cradle

FCC ID: NXYCRADLE1

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

Equipment type: DXX Low Power Communication Device Transmitter

Report prepared by:	Name	: Richard van der Meer
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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: December 16, 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	:	Low Power Communication Device Transmitter
Manufacturer	:	AMB-it B.V.
Brand	:	MYLAPS
Model	:	Flex Cradle
Serial number	:	--
Revision	:	Not applicable

Applicant information

Applicant's representative	:	Mr. B. van Rens & Mr. J. Willemse
Company	:	AMB-it B.V.
Address	:	Zuiderhoutlaan 4
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City	:	Haarlem
Country	:	The Netherlands
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Email	:	Jeroen.Willemse@mylaps.com mailto:info@collis.nl
Internet	:	www.mylaps.com

Test(s) performed

Location	:	Niekerk
Test(s) started	:	December 01,2011
Test(s) completed	:	December 16,2011
Purpose of test(s)	:	Equipment Authorization (Original grant/certification)
Test specification(s)	:	47 CFR Part 15 (10-1-09 Edition)

Test engineer(s)	:	R. van der Meer
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Report written by	:	R. van der Meer
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Report date	:	December 16,2011
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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 product tested is part of an inductive laptiming system.

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: NXYCRADLE1**.

1.3 Test Summary

The EUT was tested in accordance with the specifications given in the table below.

Test Standard		Description	Page	Pass / Fail
47 CFR Part 15 (10-1-09 Edition)				
15.207(a)		Conducted emissions	14 - 16	Pass
15.209, 15.223		Radiated emissions	10 - 13	Pass
15.215(c)		Occupied bandwidth	17 - 18	Pass

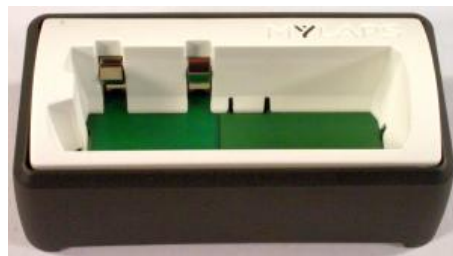
Table 1: testspecifications

Testmethods: ANSI C63:2009.

2 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	:	Low Power Communication Device Transmitter
Manufacturer	:	AMB-it B.V.
Brand	:	MYLAPS
Model	:	Flex Cradle
Serial number	:	--
Operating frequency	:	3.972 MHz
Modulation	:	AM
Voltage input rating	:	+5 Vdc
Voltage output rating	:	n.a.
Current input rating	:	--
Antenna	:	Internal
Remarks	:	N.a.
Interface cable(s)	:	USB
Operating configuration	:	Transponder is continually transmitting



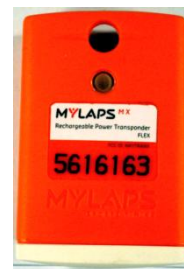
AUX1	:	Power Supply
Manufacturer	:	Phihong
Brand	:	Phihong
Model	:	PSB05R-050Q
Serial number	:	N.a.
Voltage input rating	:	100-240Vac 50-60Hz
Voltage output rating	:	5Vdc
Current input rating	:	200 mA
Remark	:	--



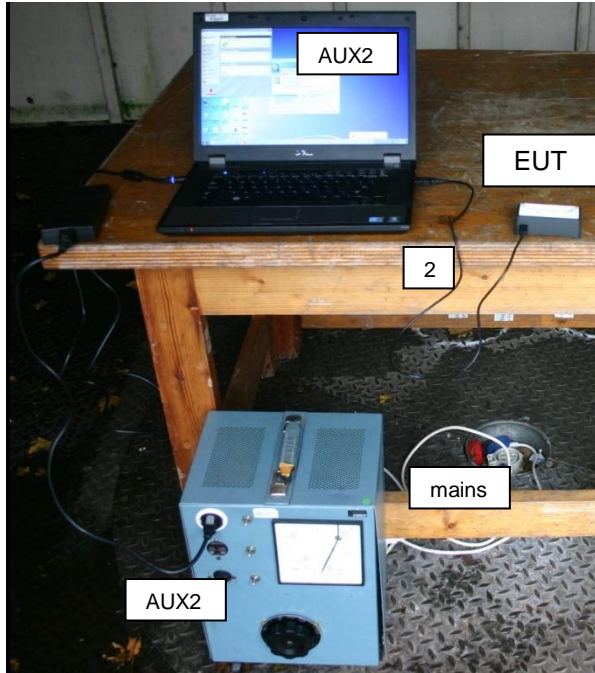
AUX2	:	Notebook computer
Manufacturer	:	Dell
Brand	:	Dell
Model	:	Latitude E5510
Serial number	:	N.a.
Voltage input rating	:	100-240Vac 50-60Hz
Remark	:	Property MYLAPS



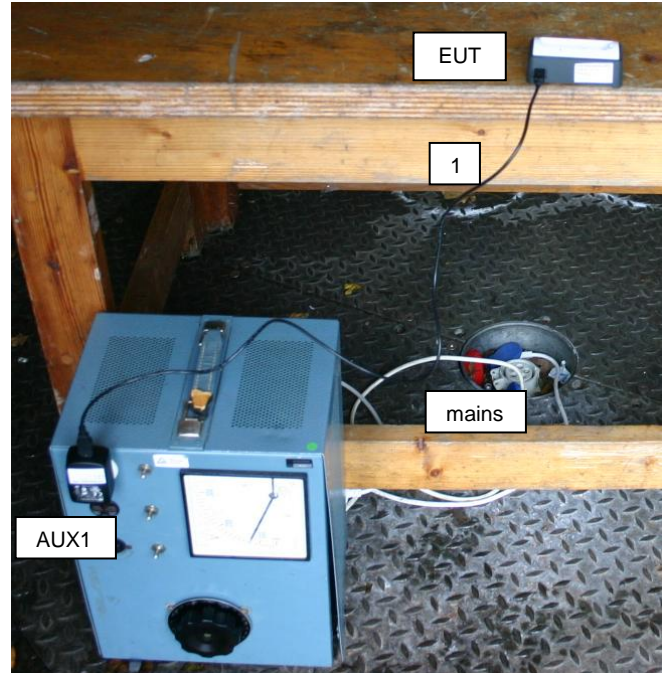
AUX3	:	Rechargeable Power Transponder
Manufacturer	:	AMB-it B.V.
Brand	:	MYLAPS
Model	:	Flex
Serial number	:	5616163
FCC ID:	:	NXYTRANX
Remark	:	--



N.a. means Not applicable



(a) System, EUT connected to a PC for power supply and communications



(b) System, EUT connected to a power supply

Photographs of the system

2.1.1 Description of input and output ports.

Number	Terminal	From	To	Remarks
1	Power supply	AUX1 or AUX2	EUT	5Vdc
2	Interconnect	AUX2	EUT	Usb connection

2.2 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.

2.3 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 Smidshornerweg 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.

2.4 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 (AUX1 or AUX2)
Air pressure	: 950 – 1050 hPa

*When is 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.

3 System test configuration.

3.1 Justification.

The system was configured for testing in a typical fashion (as a customer would normally use it).

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.

3.2 EUT mode of operation.

The EUT has been tested while continuously transmitting. The intentional radiator tests have been performed with a complete functioning EUT.

3.3 Special accessories.

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

3.4 Equipment modifications.

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

3.5 Product Labelling

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

3.6 Block diagram of the EUT.

The block diagram is available in the technical documentation package.

3.7 Schematics of the EUT.

The schematics are available in the technical documentation package.

3.8 Part list of the EUT.

The part list is available in the technical documentation package.

4 Radiated emission data.

4.1 Radiated field strength measurements (30 MHz – 1 GHz, E-field)

Frequency (MHz)	Measurement results @3m Vertical (dBuV/m)	Measurement results @3m Horizontal (dBuV/m)	Correction factor (dB)	Measurement results @3m Vertical After correction (dBuV/m)	Measurement results @3m Horizontal After correction (dBuV/m)	Limits @3m (dBuV/m)	Pass/Fail
67.86	11.4	9.6	7.3	18.7	16.9	40.0	Pass
71.00	8.8	6.6	7.7	16.5	14.3	40.0	Pass
75.00	10.3	6.5	8.4	18.7	14.9	40.0	Pass
88.84	9.7	6.6	10.7	20.4	17.3	43.5	Pass
94.86	8.2	6.2	11.6	19.8	17.8	43.5	Pass
98.86	8.2	6.2	12	20.2	18.2	43.5	Pass
102.86	8.4	6.2	12.5	20.9	18.7	43.5	Pass

Table 2 Radiated emissions of the EUT.

The results of the radiated emission tests, carried out in accordance with 47 CFR Part 15 section 15.209 with the EUT operating on 3.972 MHz are depicted in Table 2.

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 EUT was varied in three positions, the 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, except for frequencies above 960 MHz where an average detector was used.
- Tested with and without AUX3, maximum values noted.

Test equipment used (for reference see test equipment listing section 7).

99069	99070	99071	99107	99608	99609	99547	99699
15633							

Test engineer

Signature : 

Name : Richard van der Meer

Date : December 01, 2011

4.2 Radiated field strength measurements (frequency range of 0.009-30 MHz, H-field).

Frequency (MHz)	(a) Measurement results (@3m)	(b) Antenna factor	(c) Cable loss	(d) Distance extrapolation factor 3m to 30m	Detector	Measurement results (calculated = a+b+c-d) (@30m)	Limits Part 15.209 (@30m)
	dBµV	dB	dB	dB		dBµV/m	dBµV/m
3.59	7.2	19.5	1	40	Qp	-12.3	29.5
7.944	5.4	19.5	1	40	Qp	-14.1	29.5
11.916	7.1	19.6	1	40	Qp	-12.3	29.5
15.888	3.9	19.7	1	40	Qp	-15.4	29.5
19.860	3.3	20.0	1	40	Qp	-15.7	29.5
23.832	2.6	20.0	1	40	Qp	-16.4	29.5

Table 3a Radiated emissions of the EUT.

Fundamental Frequency (MHz)	(a) Measurement results	Detector	(b) Antenna factor	(c) Cable loss	(d) Distance extrapolation factor	Measurement results (calculated =a+b+c+d)	Limits Part 15.223(a)
	dBµV @3m		dB	dB	dB	dBµV/m @30m	dBµV/m @300m
3.972	38.5	Pk	19.5	1	n.a.	19.0	43.5

Table 3b Peak emissions of the fundamental of the EUT

Fundamental Frequency (MHz)	(a) Measurement results Peak	Detector	(b) Correction factor	Measurement results (calculated =a+b) Average	Limits Part 15.223(a)
	dBµV/m 30 m		dB	dBµV/m @30m	dBµV/m @30m
3.972	19.0	Av	0.0	19.0	23.5

Table 3c Average emissions of the fundamental of the EUT

The results of the radiated emission tests in the frequency range 0.009 – 30 MHz, carried out in accordance with 47 CFR Part 15 section 15.209 and 15.223 with the EUT operating in continuous transmit mode on 3.972 MHz, are depicted in Table 3a,3b and 3c.



Notes:

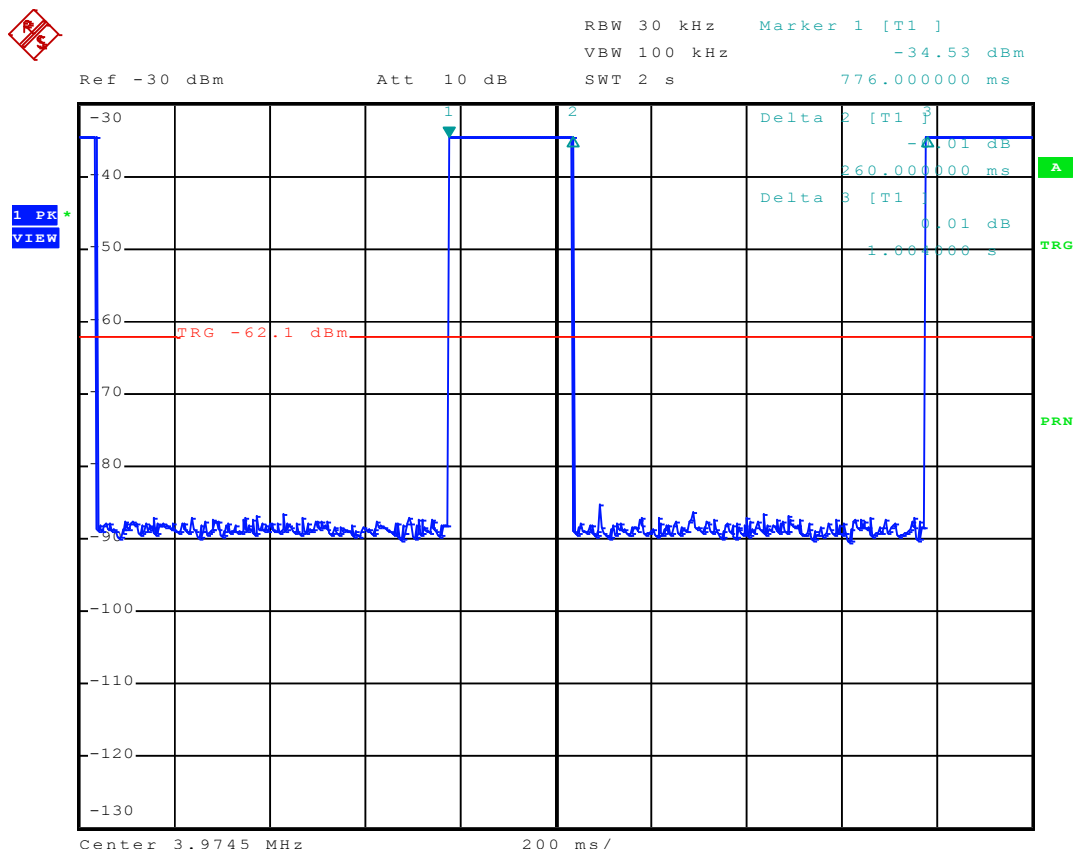
1. Calculated measurement results are obtained by using the 40 dB/decade extrapolation factor and the antenna factor and cable loss is included. For instance the corrected value for 3.972 MHz is calculated as:
Measurement result + Antenna Factor + Cable loss – Extrapolation Factor =>
38.5 dBμV + 19.5 dB + 1 dB – 40 dB = 19.0 dBμV/m.
2. A resolution bandwidth of 9kHz was used during testing
3. Field strength values of radiated emissions at frequencies in the frequency range 0.009 – 30 MHz not listed in Table 3a are more than 20 dB below the applicable limit.
4. The EUT was varied in three positions, 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. Measurement uncertainty is ±5.0dB
6. Correction factor for the Averag values of the fundamental is as follows: see next page

Correction factor (Cf) for Pulse operation: $Cf = 20 \log (TON / TPeriod)$.

Where TON is the On time of the pulse, TON = 260 msec.

Where TPeriod is the total time of one pulse period, TPeriod = 1004 msec

Period time exceeds 100msec, the Correction factor in that case: $Cf = 20 \log (100/100) = 0.0 \text{ dB}$



Date: 16.DEC.2011 10:41:09


Plot 1: Pulse timing.



Test equipment used (for reference see test equipment listing section 7).

99069	99070	99071	99107	15453	99609	99547	99699
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Test engineer

Signature : 

Name : R. van der Meer

Date : December 01, 2011

5 Conducted emission data.

5.1 Conducted emission data of the EUT

Frequency (MHz)	Measurement results dB μ V Neutral (L2)		Measurement results dB μ V Line 1 (L1)		Limits dB μ V		Result
	QP	AV	QP	AV	QP	AV	
0.16	43.3	*note3	44.1	*note3	65.5	55.5	PASS
0.18	39.3	--	41.2	--	64.5	54.5	PASS
0.21	36.2	--	37.1	--	63.2	53.2	PASS
0.23	34.9	--	36.2	--	62.4	52.4	PASS
0.29	30.3	--	30.3	--	60.5	50.5	PASS
0.61	30.3	--	30.0	--	56.0	46.0	PASS
3.59	34.6	--	33.2	--	56.0	46.0	PASS
7.96	32.2	--	32.2	--	60.0	50.0	PASS
24.37	3.6	--	4.6	--	60.0	50.0	PASS

Table 4 Conducted emission measurements

The results of the conducted emission tests, 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 the EUT, are depicted in Table 4.


Notes:

1. Measurement uncertainty is ± 3.5 dB
2. The resolution bandwidth used was 9 kHz.
3. Tested with both (AUX1 and AUX2), but values of AUX1 noted, since that gives a true representation of what the EUT is emitting. Values in combination with AUX2 are the emissions of the connected Notebook computer. Plots of these emissions are provided in section 5.2.
4. Qp values already within Av limits, therefor Av not measured.
5. Tested with and without AUX3, maximum values noted.

Test equipment used (for reference see test equipment listing section 7).

99548	99161	12512	15667	13313		

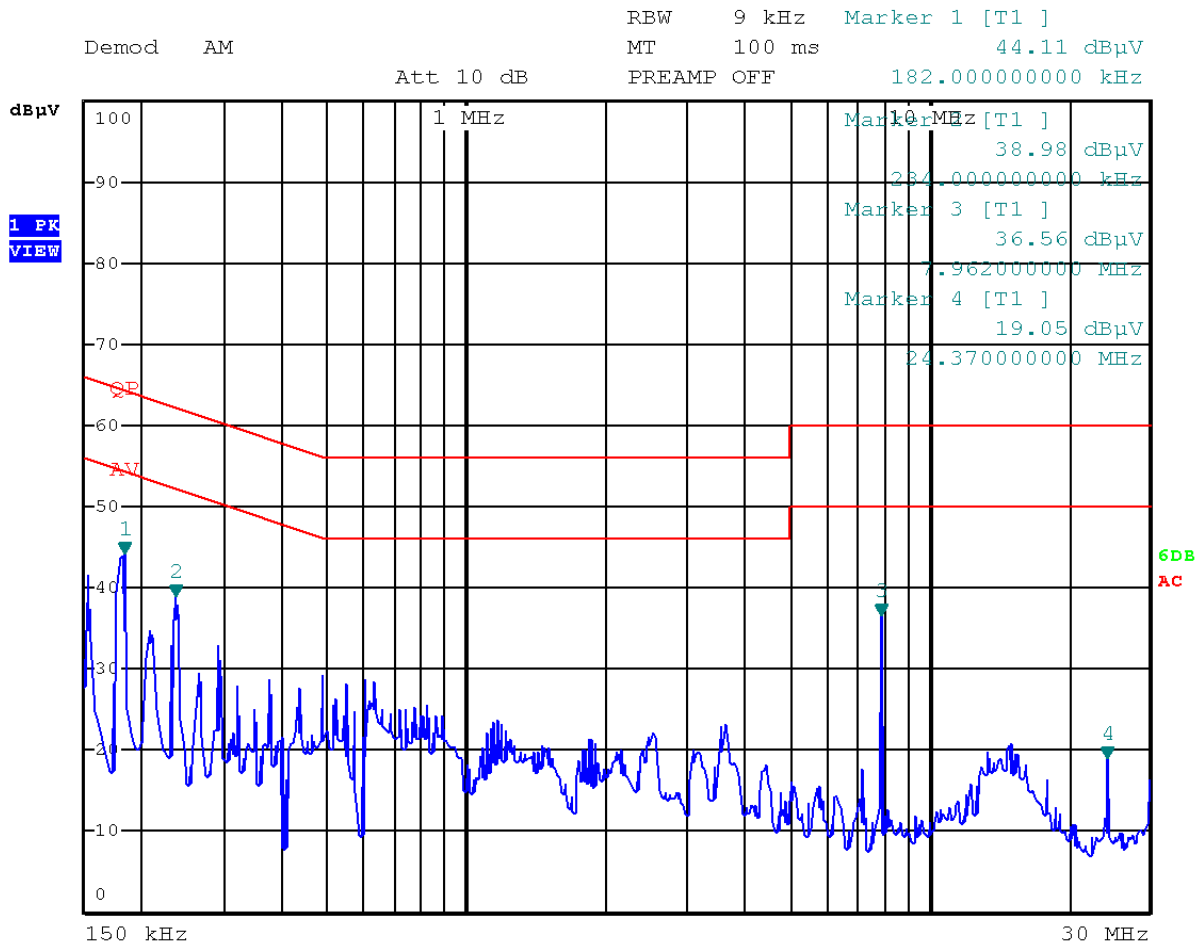
Test engineer

Signature : 

Name : R. van der Meer

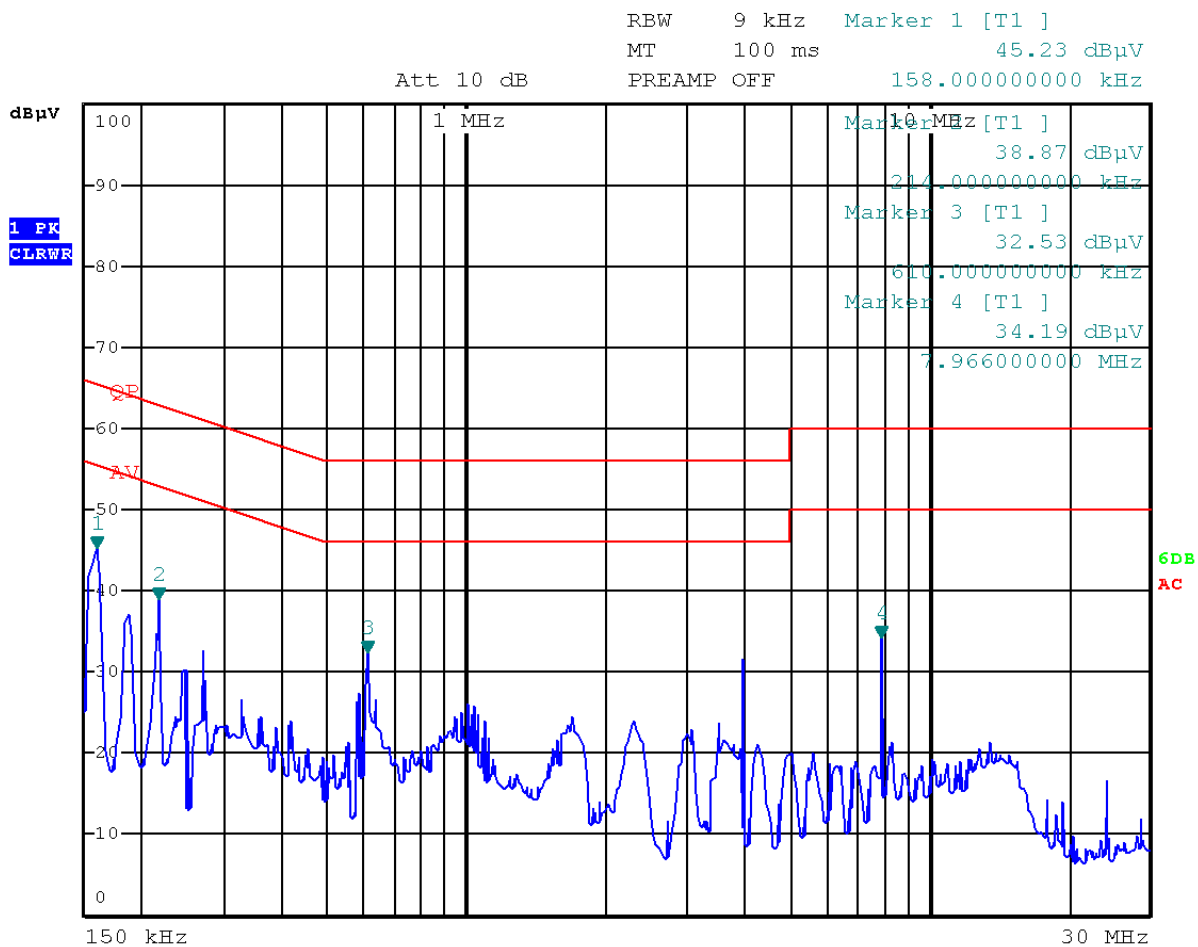
Date : December 01, 2011

5.2 Plots of the conducted emissions



Date: 1.DEC.2011 10:09:13

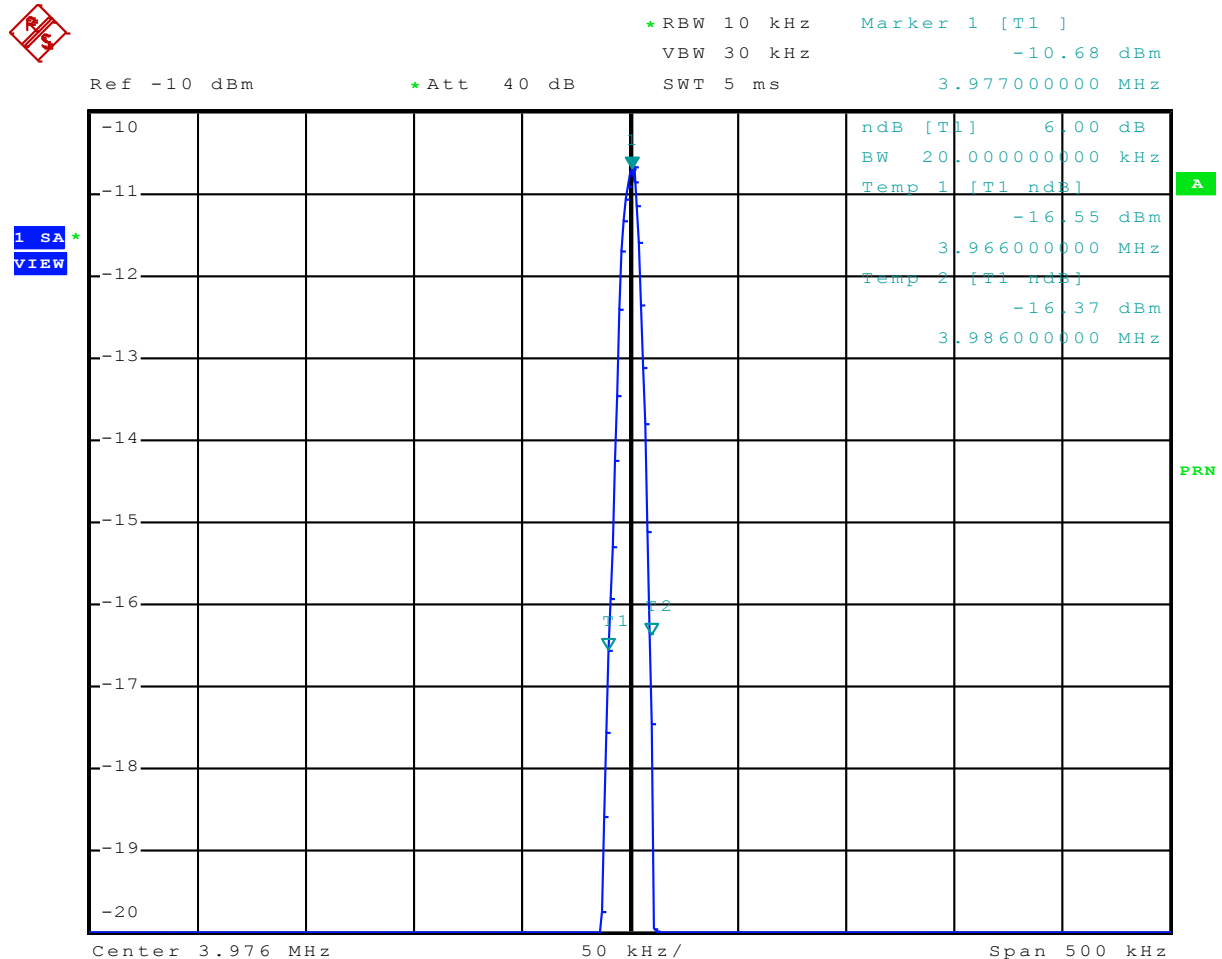
Plot 2: conducted emissions of the EUT on L1



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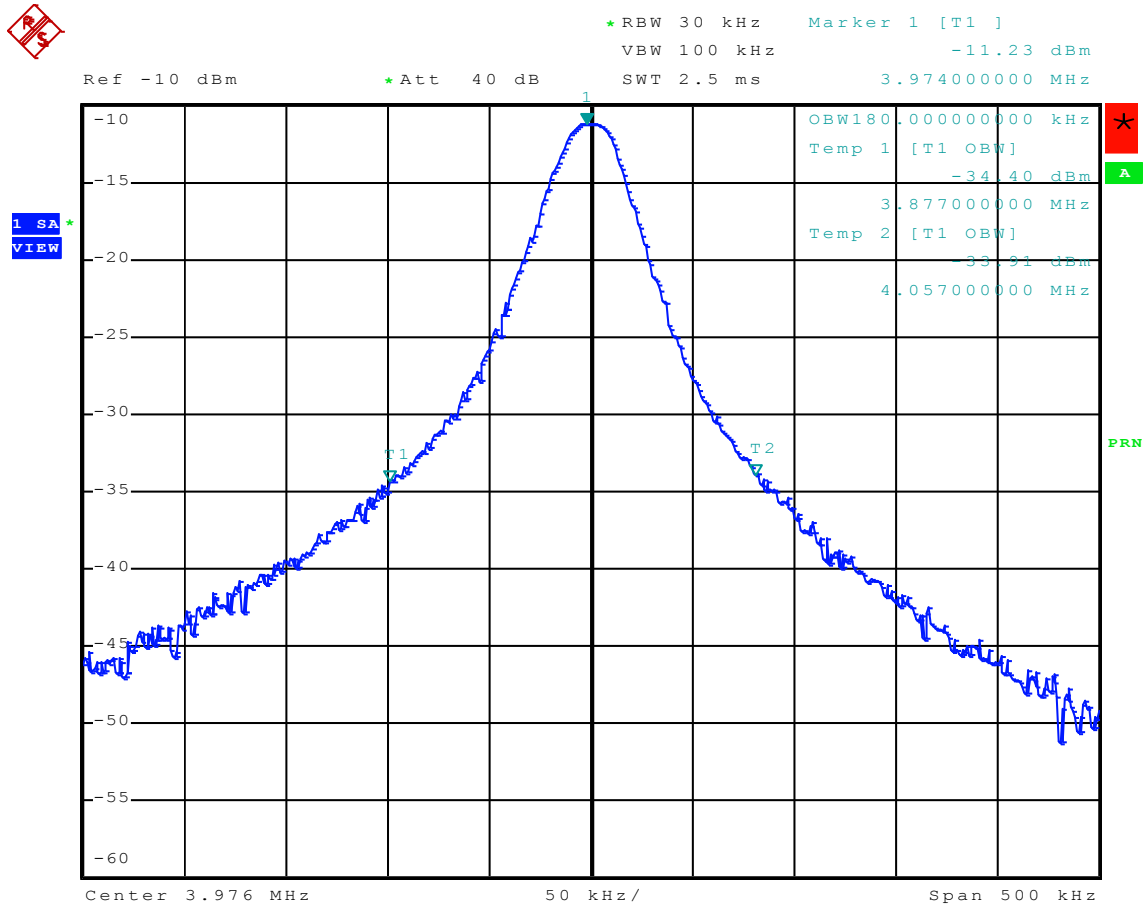
Plot 3: conducted emissions of the EUT on L2

6 Plot of the carrier bandwidth



Date: 15.DEC.2011 13:46:31

Plot 4: 6 dB bandwidth of the carrier, actual bandwidth is 20 kHz, which is less than 10% of the center frequency there for the 23.5 dBuV/m limit for radiated emissions is applicable according to 47 CFR Part 15. 223(a).



Date: 15.DEC.2011 14:01:00

Plot 5: 20 dB bandwidth of the carrier, actual bandwidth is 180 kHz, as measured with a spectrum analyzer.

The plot shows compliance with the 47 CFR Part 15 section 15.215(c), this section requires the 20 dB emission bandwidth is within the frequencyband designated.

Test equipment used (for reference see test equipment listing section 7).

99699	99683						
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Test engineer

Signature

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Name : R. van der Meer

Date : December 15, 2011

7 List of utilized test equipment.

Inventory number	Description	Brand	Model	Last cal.	Next cal.
12476	Antenna mast	EMCO	TR3	NA	NA
12477	Antenna mast 1-4 mtr	Poelstra	NA	NA	NA
12512	LISN	EMCO	3625/2	01/2010	01/2012
13313	Pulse Limiter	R&S	ESH3-Z2	02/2011	02/2012
15453	Active loopant. 60 cm	Chase	HLA6120	05/2011	05/2012
15633	Biconilog Testantenna	Chase	CBL 6111B	02/2011	02/2012
15667	Measuring receiver	R&S	ESCS30	06/2011	06/2012
99069	Coax 5m RG213 OATS	NMi Certin B.V.	KABEL 5M OATS	10/2011	10/2012
99070	Coax 15m RG213 OATS	NMi Certin B.V.	KABEL 15M OATS	10/2011	10/2012
99071	Coax OATS ground	NMi Certin B.V.	KABEL GROND OATS	10/2011	10/2012
99107	Controller OATS	Heinrich Deisel	4630-100	NA	NA
99161	Variac 250V 6A	RFT	LTS006	NA	NA
99547	Temperature-Humiditymeter	Europe supplies	WS-7082	10/2011	10/2012
99580	OATS	Comtest	FCC listed: 90828	08/2011	08/2013
99608	Controller (OATS)	EMCS	DOC202	NA	NA
99609	Antenna mast	EMCS	AP-4702C	NA	NA
99613	Temperature-Humiditymeter	Europe supplies	WS-7082	10/2011	10/2012
99651	Variac	NA	Vast Activa: 08-9510	NA	NA
99683	Loop antenna 6cm	--	7405-901	09/2011	09/2012
99699	Measuring receiver	R&S	ESCI	02/2011	02/2012

NA= Not Applicable