

TEST REPORT

Test Report Reference: F080540E3

Equipment under Test: MiCard HID Prox

FCC ID: None

IC: None

Serial Number: A7FE5D3D224C4550

Applicant: NT-ware Systemprogrammierung GmbH

Manufacturer: NT-ware Systemprogrammierung GmbH

**Test Laboratory
(CAB)
accredited by
DATech in der TGA GmbH
in compliance with DIN EN ISO/IEC 17025
under the
Reg. No. DAT-P-105/99-21,
FCC Test site registration number 90877 and
Industry Canada Test site registration IC3469A-1**

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1 IDENTIFICATION

1.1 APPLICANT

Name:	NT-ware Systemprogrammierung GmbH
Address:	Arkaden Strasse 5 D- 49186 Bad Iburg
Country:	Germany
Name for contact purposes:	Mr. Holger Bauszus
Phone:	+49 54 03 – 79 42 220
Fax:	+49 54 03 – 78 01 03
Mail address:	hbauszus@nt-ware.com

1.2 MANUFACTURER

Name:	NT-ware Systemprogrammierung GmbH
Address:	Arkaden Strasse 5 D- 49186 Bad Iburg
Country:	Germany
Name for contact purposes:	Mr. Holger Bauszus
Phone:	+49 54 03 – 79 42 220
Fax:	+49 54 03 – 78 01 03
Mail address:	hbauszus@nt-ware.com

1.3 DATES

Date of receipt of test sample:	28 February 2008
Start of test:	27 March 2008
Finish of test:	28 March 2008

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1.4 TEST LABORATORY

The tests were carried out at: **PHOENIX TESTLAB GmbH**
Königswinkel 10
D-32825 Blomberg **Phone: +49 (0) 52 35 / 95 00-0**
Germany **Fax: +49 (0) 52 35 / 95 00-10**

accredited by DATech in der TGA GmbH in compliance with DIN EN ISO/IEC 17025 under Reg. No.
DAT-P-105/99-21, FCC Test site registration number 90877 and Industry Canada Test site registration IC3469A-1

Test engineer: Thomas KÜHN
Name


Signature

07 May 2008
Date

Test report checked: Raimund BLASK
Name


Signature

07 May 2008
Date

PHOENIX TESTLAB GmbH
Königswinkel 10
32825 Blomberg
Tel. 0 52 35 / 95 00-0
Fax 0 52 35 / 95 00-10

Stamp

1.5 RESERVATION

This test report is only valid in its original form.

Any reproduction of its contents without written permission of the accredited test laboratory
PHOENIX TESTLAB GmbH is prohibited.

The test results herein refer only to the tested sample. PHOENIX TESTLAB GmbH is not responsible for any generalisations or conclusions drawn from these test results concerning further samples. Any modification of the tested samples is prohibited and leads to the invalidity of this test report. Each page necessarily contains the PHOENIX TESTLAB Logo and the TEST REPORT REFERENCE.

1.6 NORMATIVE REFERENCES

- [1] **ANSI C63.4-2003** American National Standard for Methods of Measuring of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
- [2] **FCC CFR 47 Part 15 (October 2007)** Radio Frequency Devices
- [3] **RSS-210 Issue 7 (June 2007)** Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment
- [4] **RSS-Gen Issue 2 (June 2007)** General Requirements and Information for the Certification of Radiocommunication Equipment

1.7 TEST RESULTS

The requirements of this test document are fulfilled by the equipment under test. The complete test results are presented in the following.

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2 TECHNICAL DATA OF EQUIPMENT

2.1 DEVICE UNDER TEST

Type of equipment:	RFID Transponder reader device for copy systems
Type designation / model name:	MiCard HID Prox
Serial No.:	A7FE5D3D224C4550
FCC ID:	None
IC:	None
Lowest internal frequency:	125 kHz
Highest internal frequency:	12 MHz
Antenna type:	Integral

Ports/Connectors

Ports/Connectors

Cable	Length	Shielding	Connector
DC / USB shielded cable	1.50 m	Yes	USB Type A
-	-	-	-
-	-	-	-

2.2 PERIPHERY DEVICES

The following equipment was used as control unit and ancillary equipment:

- A Laptop PC type Fujitsu Siemens Lifebook S Series with a test software was used.

2.3 SPECIAL EMC MEASURES

The following EMC measures were necessary to reach the documented results:

None

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3 OPERATIONAL STATES AND PHYSICAL BOUNDARIES

All tests were carried out with an unmodified test sample, which operates with a test-software. This software sets the EUT in continuous reading transponder mode and displays the transponder data on the computers display.

During all measurements except the conducted emission measurement on the power supply line the EUT was supplied with 5.0 V DC via the laptop PC.

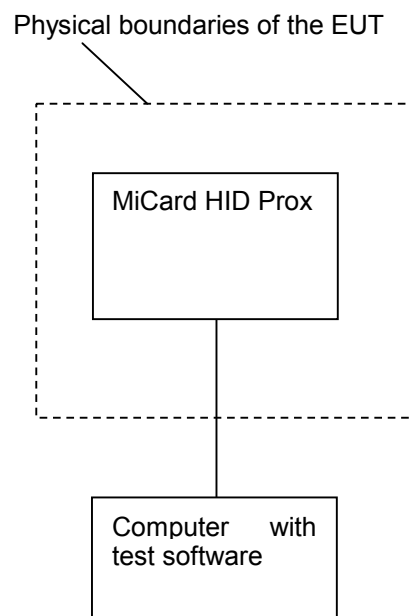
The conducted emission measurement on the power supply line was carried out on the AC/DC adapter of the used laptop PC, because the EUT will be supplied always via a PC or an USB hub. The AC/DC adapter was powered by an AC-mains network with 120 V AC / 60 Hz.

During all tests the TAG information was permanently checked with the help of the test-software. The TAG information was displayed on the PC display and were checked manually by the test engineer.

No spurious emission measurement of the receiver was carried out, because the co located transmitter transmits continuously.

During the tests, the EUT was not labelled with a FCC / IC-label.

The physical boundaries of the EUT are shown below.



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4 LIST MEASUREMENTS

Application	Frequency range [MHz]	FCC 47 CFR Part 15 section [2]	RSS 210, Issue 7 [3] or RSS-Gen, Issue 2 [4]	Status	Refer page
Radiated emissions	0.009 - 1,000	15.205 (a) 15.209 (a)	2.6 [3]	Passed	11 et seq.
Conducted emissions on supply line	0.15 - 30	15.207 (a)	7.2.2 [4]	Passed	8 et seq.
99 % bandwidth	126 kHz	-	4.6.1 [4]	Passed	Annex D

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5 TEST RESULTS

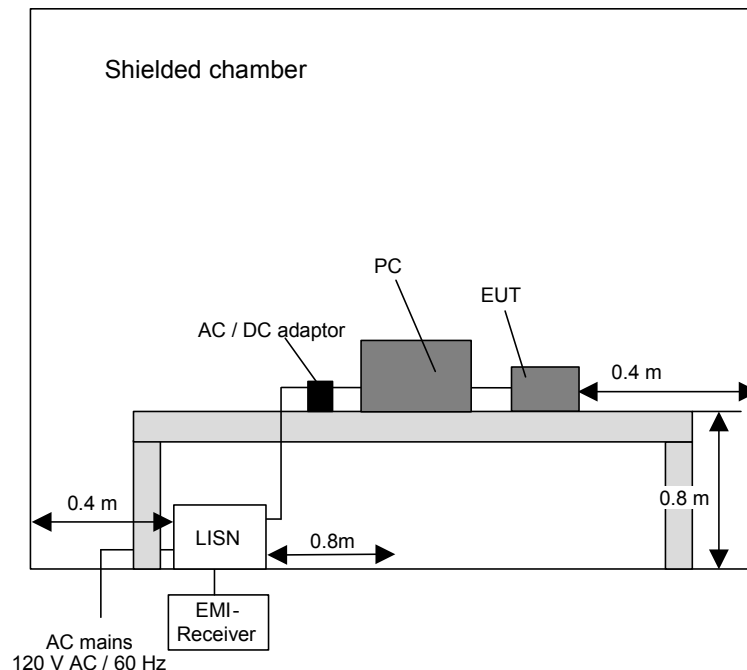
5.1 CONDUCTED EMISSION MEASUREMENT ON AC MAINS (150 kHz to 30 MHz)

5.1.1 METHOD OF MEASUREMENT (CONDUCTED EMISSION MEASUREMENT ON AC MAINS (150 kHz to 30 MHz))

This test will be carried out in a shielded chamber. Tabletop devices will set up on a non-conducting support with a size of 1 m by 1.5 m and a height of 80 cm above the ground plane. Floor-standing devices will be placed directly on the ground plane. The set up of the Equipment under test will be in accordance to ANSI C63.4-2003 [1].

The frequency range 150 kHz to 30 MHz will be measured with an EMI Receiver set to MAX Hold mode with peak and average detector and a resolution bandwidth of 9 kHz. A scan will be carried out on the phase (or plus pole in case of DC powered devices) of the AC mains network. If levels detected 10 dB below the appropriable limit, this emission will be measured with the average and quasi-peak detector on all lines.

Frequency range	Resolution bandwidth
150 kHz to 30 MHz	9 kHz



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5.1.2 TEST RESULTS (CONDUCTED EMISSION MEASUREMENT ON AC MAINS)

Ambient temperature:	20 °C	Relative humidity:	35 %
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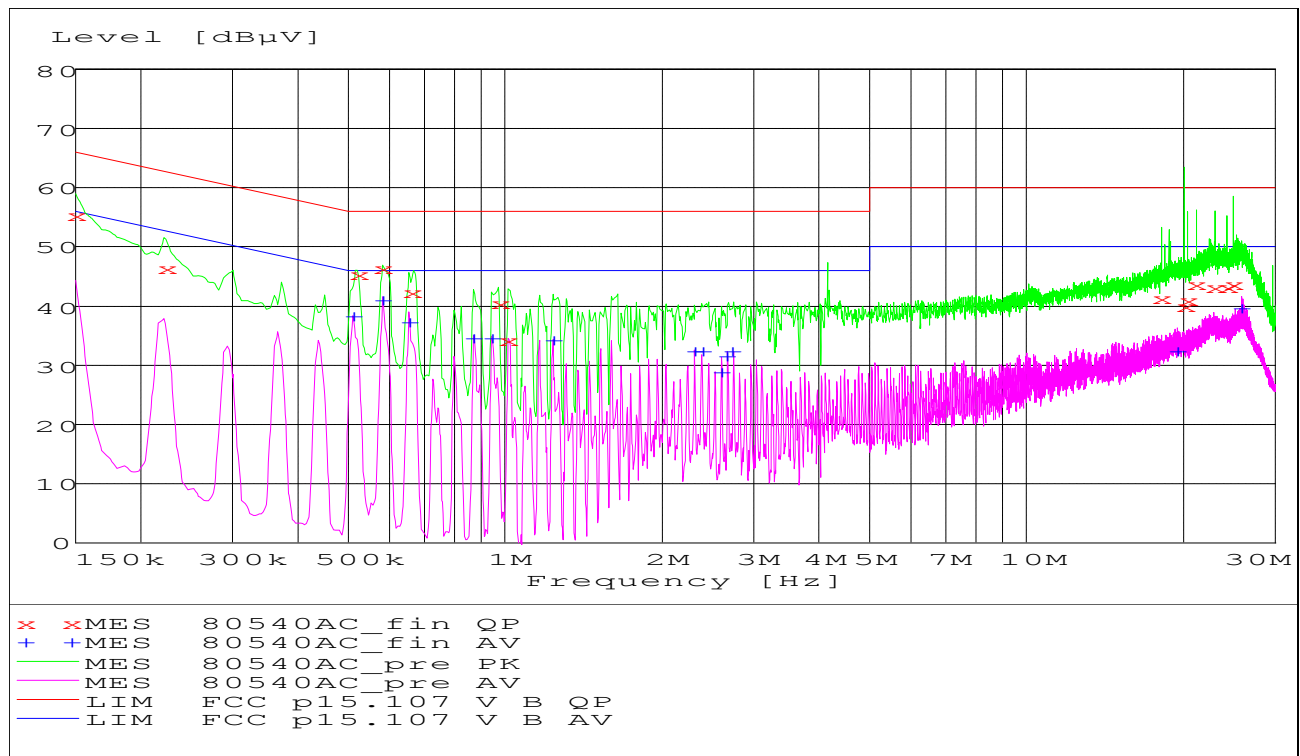
Position of EUT: The EUT was set-up on a wooden table of a height of 0.8 m.

Cable guide: The cable of the EUT was fixed on the wooden table. For further information of the cable guide refer to the pictures in annex A of this test report.

Test record: The test was carried out in normal operation mode of the EUT(awaiting a TAG). All results are shown in the following.

Power supply: During this test the EUT was powered by the laptop PC.

EUT: MiCard HID Prox
 Manufacturer: NT-ware Systemprogrammierung GmbH
 Operating Condition: 120 V / 60 Hz at PC power supply
 Test site: PHOENIX TESTLAB Blomberg M4
 Operator: Th. KÜHN
 Test Specification: Awaiting TAG
 Comment:



Data record name: 80540AC

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Result measured with the quasipeak detector:

(These values are marked in the above diagram by x)

Frequency MHz	Level dBμV	Transducer dB	Limit dBμV	Margin dB	Line	PE
0.150540	55.4	2.1	66.0	10.6	N	FLO
0.223530	46.6	1.0	62.7	16.1	N	FLO
0.520350	45.7	0.8	56.0	10.3	N	FLO
0.581730	46.7	0.8	56.0	9.3	N	FLO
0.663720	42.3	0.8	56.0	13.7	L1	FLO
0.970710	40.5	0.8	56.0	15.5	N	FLO
1.015260	34.4	0.7	56.0	21.6	N	FLO
18.169710	41.5	2.2	60.0	18.5	N	FLO
20.060970	40.4	2.4	60.0	19.6	L1	FLO
20.367150	41.2	2.3	60.0	18.8	N	FLO
21.187500	43.9	2.5	60.0	16.1	N	FLO
23.032140	43.1	2.7	60.0	16.9	N	FLO
24.247500	43.5	2.8	60.0	16.5	L1	FLO
24.905490	43.6	2.8	60.0	16.4	N	FLO

Data record name: 80540AC_fin QP

Result measured with the average detector:

(These values are marked in the above diagram by +)

Frequency MHz	Level dBμV	Transducer dB	Limit dBμV	Margin dB	Line	PE
0.509280	38.3	0.8	46.0	7.7	N	FLO
0.581100	41.3	0.8	46.0	4.7	N	FLO
0.652290	37.3	0.8	46.0	8.7	L1	FLO
0.870090	34.6	0.8	46.0	11.4	N	FLO
0.942450	34.7	0.7	46.0	11.3	N	FLO
1.231530	34.5	0.7	46.0	11.5	N	FLO
2.307120	32.3	0.7	46.0	13.8	L1	FLO
2.378490	32.4	0.7	46.0	13.6	L1	FLO
2.597190	28.7	0.7	46.0	17.3	L1	FLO
2.667480	31.7	0.8	46.0	14.3	L1	FLO
2.739210	32.4	0.7	46.0	13.6	L1	FLO
19.492350	32.4	2.4	50.0	17.6	N	FLO
25.907280	39.6	2.9	50.0	10.4	N	FLO

Data record name: 80540AC_fin AV

Test: Passed

TEST EQUIPMENT USED:

1 - 3, 5, 6

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5.2 RADIATED EMISSIONS

5.2.1 METHOD OF MEASUREMENT (RADIATED EMISSIONS)

The radiated emission measurement is subdivided into five stages.

- A preliminary measurement carried out in a fully anechoic chamber with a fixed antenna height in the frequency range 9 kHz to 1 GHz.
- A final measurement carried out on an outdoor test side without reflecting ground plane and a fixed antenna height in the frequency range 9 kHz to 30 MHz.
- A final measurement carried out on an open area test side with reflecting ground plane and various antenna height in the frequency range 30 MHz to 1 GHz.
- A preliminary measurement carried out in a fully anechoic chamber with a variable antenna distance and height in the frequency range 1 GHz to 110 GHz.
- A final measurement carried out in a fully anechoic chamber with a fixed antenna height in the frequency range 1 GHz to 110 GHz.

All measurements will be carried out with the EUT working on the middle and upper and lower edge of the assigned frequency band. For this reason the hopping function of the EUT has to be disabled.

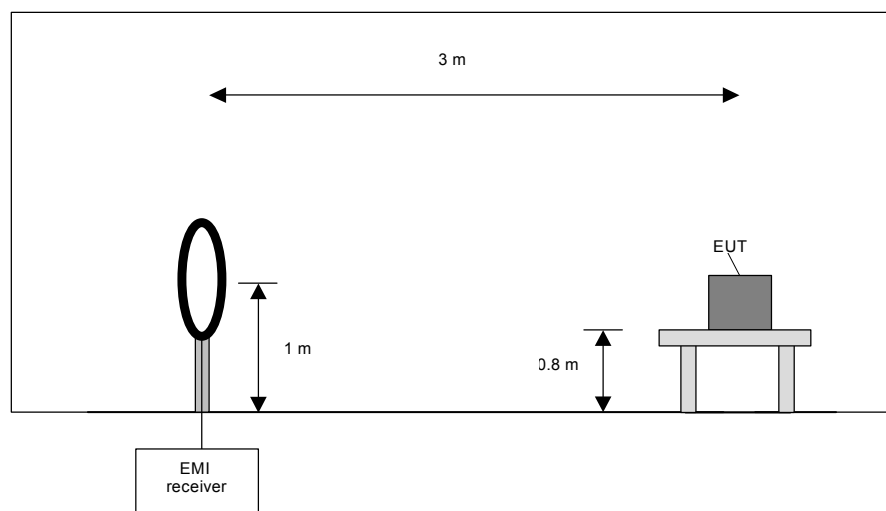
Preliminary measurement (9 kHz to 30 MHz):

In the first stage a preliminary measurement will be performed in a shielded room with a measuring distance of 3 meters. Tabletop devices will set up on a non-conducting support with a size of 1 m by 1.5 m and a height of 80 cm. Floor-standing devices will be placed directly on the turntable/ground plane. The set up of the Equipment under test will be in accordance to ANSI C63.4-2003 [1].

The frequency range 9 kHz to 30 MHz will be monitored with a spectrum analyser while the system and its cables will be manipulated to find out the configuration with the maximum emission levels if applicable. The EMI Receiver will be set to MAX Hold mode. The EUT and the measuring antenna will be rotated around their vertical axis to found the maximum emissions.

The resolution bandwidth of the spectrum analyser will be set to the following values:

Frequency range	Resolution bandwidth
9 kHz to 150 kHz	200 Hz
150 kHz to 30 MHz	10 kHz



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Preliminary measurement procedure:

Prescans were performed in the frequency range 9 kHz to 150 kHz and 150 kHz to 30 MHz.

The following procedure will be used:

- 1) Monitor the frequency range at horizontal polarisation and a EUT azimuth of 0 °.
- 2) Manipulate the system cables within the range to produce the maximum level of emission.
- 3) Rotate the EUT by 360 ° to maximize the detected signals.
- 4) Make a hardcopy of the spectrum.
- 5) Measure the frequencies of highest detected emission with a lower span and resolution bandwidth to increase the accuracy and note the frequency value.
- 6) Repeat steps 1) to 5) with the other orthogonal axes of the EUT (because of EUT is a module and might be used in a handheld equipment application).
- 7) Rotate the measuring antenna and repeat steps 1) to 5).

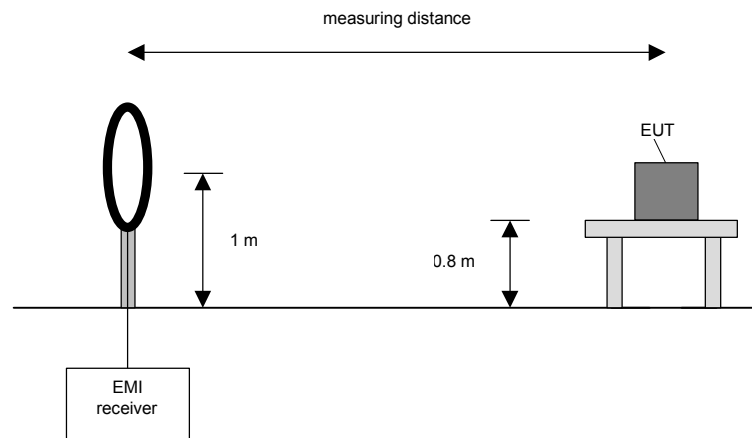
Final measurement (9 kHz to 30 MHz):

In the second stage a final measurement will be performed on an open area test site with no conducting ground plane in a measuring distances of 3 m, 10 m and 30 m. In the case where larger measuring distances are required the results will be extrapolated based on the values measured on the closer distances according to Section 15.31 (f) (2) [2]. The final measurement will be performed with a EMI Receiver set to Quasi Peak detector except for the frequency bands 9 kHz to 90 kHz and 110 kHz to 490 kHz where an average detector will be used according Section 15.209 (d) [2].

On the during the preliminary measurement detected frequencies the final measurement will be performed while rotating the EUT and the measuring antenna in the range of 0 ° to 360 ° around their vertical axis until the maximum value is found.

The resolution bandwidth of the EMI Receiver will be set to the following values:

Frequency range	Resolution bandwidth
9 kHz to 150 kHz	200 Hz
150 kHz to 30 MHz	9 kHz



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Final measurement procedure:

The following procedure will be used:

- 1) Monitor the frequency range with the measuring antenna at vertical orientation parallel to the EUT at an azimuth of 0 °.
- 2) Rotate the EUT by 360 ° to maximize the detected signals and note the azimuth and orientation.
- 3) Rotate the measuring antenna to find the maximum and note the value.
- 4) Rotate the measuring antenna and repeat steps 1) to 3) until the maximum value is found.
- 5) Repeat steps 1) to 4) with the other orthogonal axes of the EUT (because of EUT is a module and might be used in a handheld equipment application).

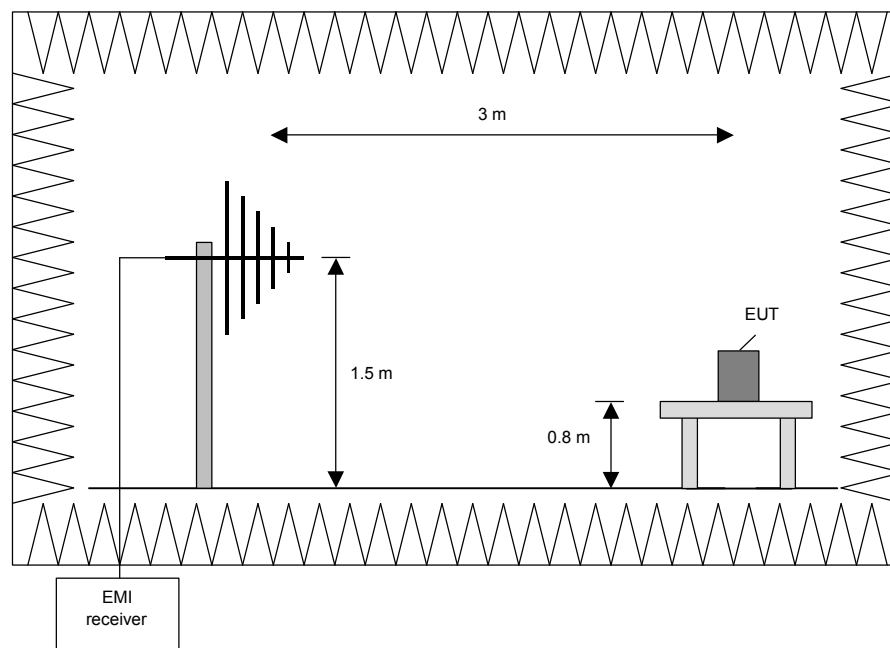
Preliminary measurement (30 MHz to 1 GHz)

In the first stage a preliminary measurement will be performed in a fully anechoic chamber with a measuring distance of 3 meter. Tabletop devices will set up on a non-conducting support with a size of 1 m by 1.5 m and a height of 80 cm. Floor-standing devices will be placed directly on the turntable/ground plane. The set up of the Equipment under test will be in accordance to ANSI C63.4-2003 [1].

The frequency range 30 MHz to 1 GHz will be measured with an EMI Receiver set to MAX Hold mode and a resolution bandwidth of 100 kHz. The measurement will be performed in horizontal and vertical polarisation of the measuring antenna and while rotating the EUT in its vertical axis in the range of 0 ° to 360 °.

The resolution bandwidth of the EMI Receiver will be set to the following values:

Frequency range	Resolution bandwidth
30 MHz to 230 MHz	100 kHz
230 MHz to 1 GHz	100 kHz



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Procedure preliminary measurement:

Prescans were performed in the frequency range 30 MHz to 230 MHz and 230 MHz to 1 GHz.

The following procedure will be used:

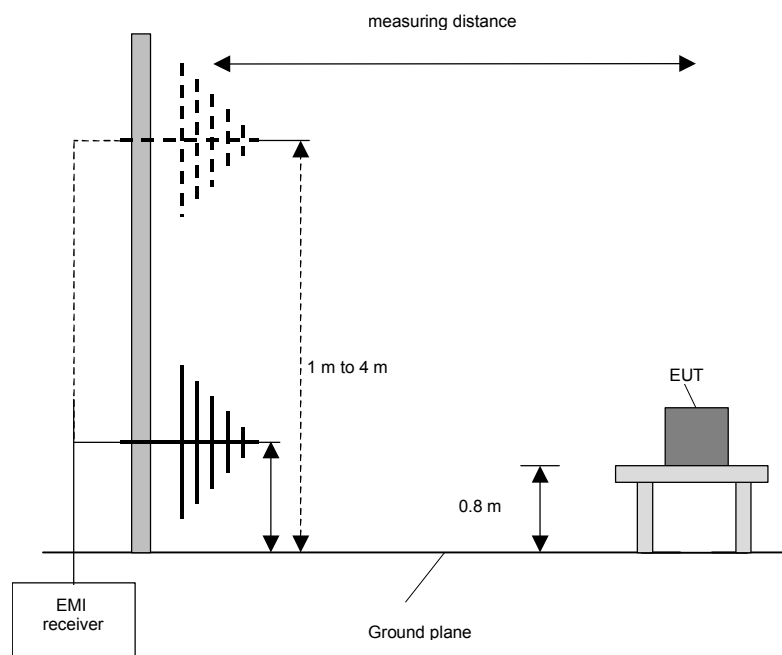
1. Monitor the frequency range at horizontal polarisation and a EUT azimuth of 0 °.
2. Manipulate the system cables within the range to produce the maximum level of emission.
3. Rotate the EUT by 360 ° to maximize the detected signals.
4. Make a hardcopy of the spectrum.
5. Measure the frequency of the detected emissions with a lower span and resolution bandwidth to increase the accuracy and note the frequency value.
6. Repeat 1) to 4) with the other orthogonal axes of the EUT (because of EUT is a module and might be used in a handheld equipment application).
7. Repeat 1) to 5) with the vertical polarisation of the measuring antenna.

Final measurement (30 MHz to 1 GHz)

A final measurement on an open area test site will be performed on selected frequencies found in the preliminary measurement. During this test the EUT will be rotated in the range of 0 ° to 360 °, the measuring antenna will be set to horizontal and vertical polarisation and raised and lowered in the range from 1 m to 4 m to find the maximum level of emissions.

The resolution bandwidth of the EMI Receiver will be set to the following values:

Frequency range	Resolution bandwidth
30 MHz to 1 GHz	120 kHz



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Procedure final measurement:

The following procedure will be used:

- 1) Measure on the selected frequencies at an antenna height of 1 m and a EUT azimuth of 23 °.
- 2) Move the antenna from 1 m to 4 m and note the maximum value at each frequency.
- 3) Rotate the EUT by 45 ° and repeat 2) until an azimuth of 337 ° is reached.
- 4) Repeat 1) to 3) for the other orthogonal antenna polarization.
- 5) Move the antenna and the turntable to the position where the maximum value is detected.
- 6) Measure while moving the antenna slowly +/- 1 m.
- 7) Set the antenna to the position where the maximum value is found.
- 8) Measure while moving the turntable +/- 45 °.
- 9) Set the turntable to the azimuth where the maximum value is found.
- 10) Measure with Final detector (QP and AV) and note the value.
- 11) Repeat 5) to 10) for each frequency.
- 12) Repeat 1) to 11) for each orthogonal axes of the EUT (because of EUT is a module and might be used in a handheld equipment application).

Preliminary and final measurement (1 GHz to 110 GHz)

This measurement will be performed in a fully anechoic chamber. Tabletop devices will set up on a non-conducting support with a size of 1 m by 1.5 m and a height of 80 cm. Floor-standing devices will be placed directly on the turntable/ground plane. The set up of the Equipment under test will be in accordance to ANSI C63.4-2003 [1].

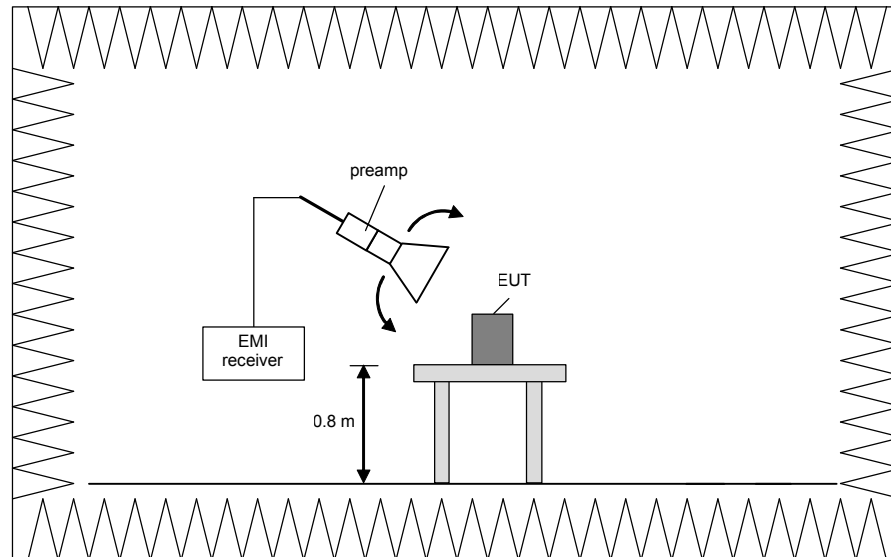
Preliminary measurement (1 GHz to 110 GHz)

The frequency range will be divided into different sub ranges depending of the frequency range of the used horn antenna. The spectrum analyser set to MAX Hold mode and a resolution bandwidth of 100 kHz. The measurement will be performed in horizontal and vertical polarisation of the measuring antenna, the antenna close to the EUT and while moving the antenna over all sides of the EUT. With the spectrum analyser in CLEAR / WRITE mode the cone of the emission should be found and than the measuring distance will be set to 3 m with the receiving antenna moving in this cone of emission. At this position the final measurement will be carried out.

The resolution bandwidth of the EMI Receiver will be set to the following values:

Frequency range	Resolution bandwidth
1 GHz to 4 GHz	100 kHz
4 GHz to 12 GHz	100 kHz
12 GHz to 18 GHz	100 kHz
18 GHz to 26.5 GHz	100 kHz
26.5 GHz to 40 GHz	100 kHz
40 GHz to 60 GHz	100 kHz
50 GHz to 75 GHz	100 kHz
75 GHz to 110 GHz	100 kHz

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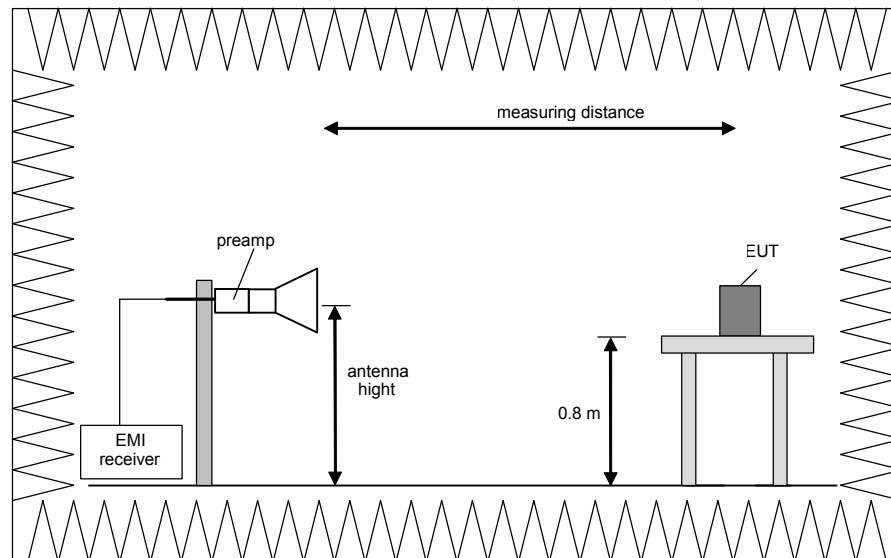
Final measurement (1 GHz to 110 GHz)

The frequency range will be divided into different sub ranges depending of the frequency range of the used horn antenna. The EMI Receiver set to peak and average mode and a resolution bandwidth of 1 MHz. The measurement will be performed in horizontal and vertical polarisation of the measuring antenna and while rotating the EUT in its vertical axis in the range of 0 ° to 360 ° in order to have the antenna inside the cone of radiation.

The resolution bandwidth of the EMI Receiver will be set to the following values:

Frequency range	Resolution bandwidth
1 GHz to 4 GHz	1 MHz
4 GHz to 12 GHz	1 MHz
12 GHz to 18 GHz	1 MHz
18 GHz to 26.5 GHz	1 MHz
26.5 GHz to 40 GHz	1 MHz
40 GHz to 60 GHz	1 MHz
50 GHz to 75 GHz	1 MHz
75 GHz to 110 GHz	1 MHz

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Procedure of measurement:

The measurements were performed in the frequency range 1 GHz to 4 GHz, 4 GHz to 12 GHz, 12 GHz to 18 GHz, 18 GHz to 26.5 GHz, 26.5 GHz to 40 GHz, 40 GHz to 60 GHz, 60 GHz to 75 GHz and 75 GHz to 110 GHz.

The following procedure will be used:

- 1) Monitor the frequency range at horizontal polarisation and move the antenna over all sides of the EUT (if necessary move the EUT to another orthogonal axis).
- 2) Change the antenna polarisation and repeat 1) with vertical polarisation.
- 3) Make a hardcopy of the spectrum.
- 4) Measure the frequency of the detected emissions with a lower span and resolution bandwidth to increase the accuracy and note the frequency value.
- 5) Change the analyser mode to Clear / Write and found the cone of emission.
- 6) Rotate and move the EUT, so that the measuring distance can be enlarged to 3 m and the antenna will be still inside the cone of emission.
- 7) Measure the level of the detected frequency with the correct resolution bandwidth, with the antenna polarisation and azimuth and the peak and average detector, which causes the maximum emission.
- 8) Repeat steps 1) to 7) for the next antenna spot if the EUT is larger than the antenna beamwidth.

Step 1) to 6) are defined as preliminary measurement.

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5.2.2 PRELIMINARY RADIATED EMISSION TEST (9 kHz to 1 GHz)

Ambient temperature:	20 °C	Relative humidity:	30 %
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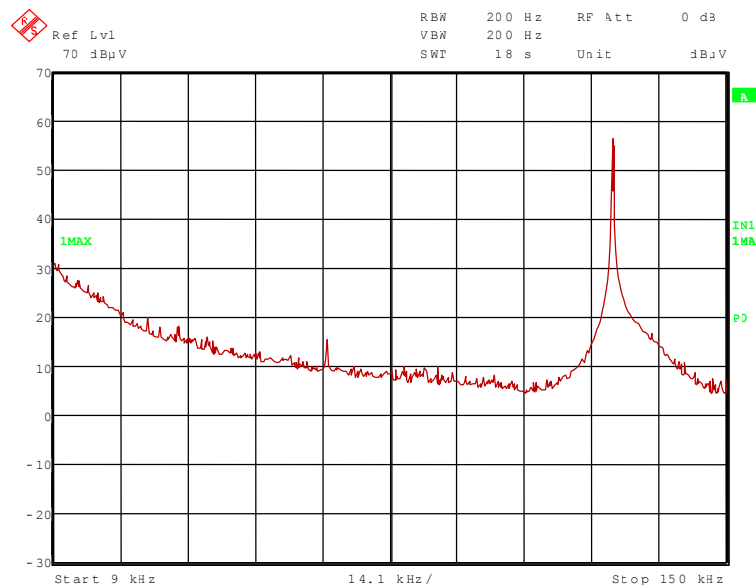
Position of EUT: The EUT was set-up on a wooden table of a height of 0.8 m.

Cable guide: The cable of the EUT was fixed on the wooden table. For further information of the cable guide refer to the pictures in annex A of this test report.

Test record: The test was carried out in normal operation mode of the EUT (awaiting a TAG). All results are shown in the following.

Power supply: During this test the EUT was powered by the laptop PC from an AC-mains network with 120 V AC / 60 Hz.

80540_1.wmf: Spurious emissions from 9 kHz to 150 kHz:

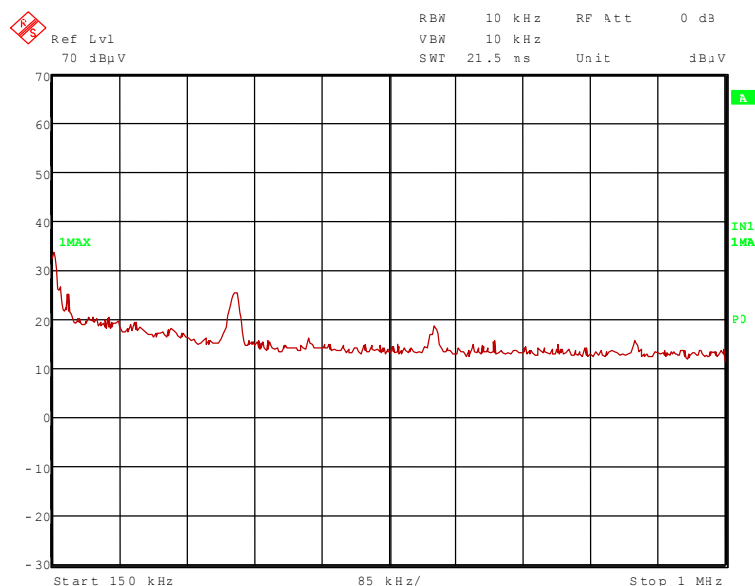


TEST EQUIPMENT USED THE TEST:

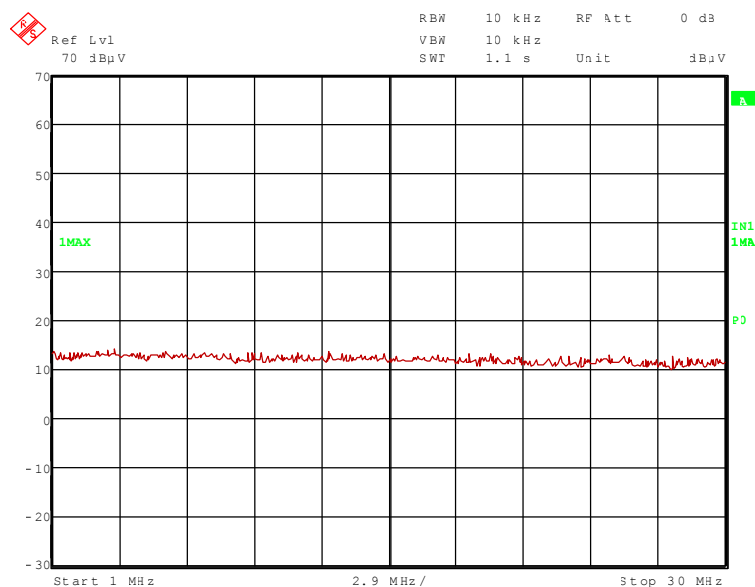
29, 31 – 33, 43, 54, 56

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80540_2.wmf: Spurious emissions from 150 kHz to 1 MHz:



80540_3.wmf: Spurious emissions from 1 MHz to 30 MHz:



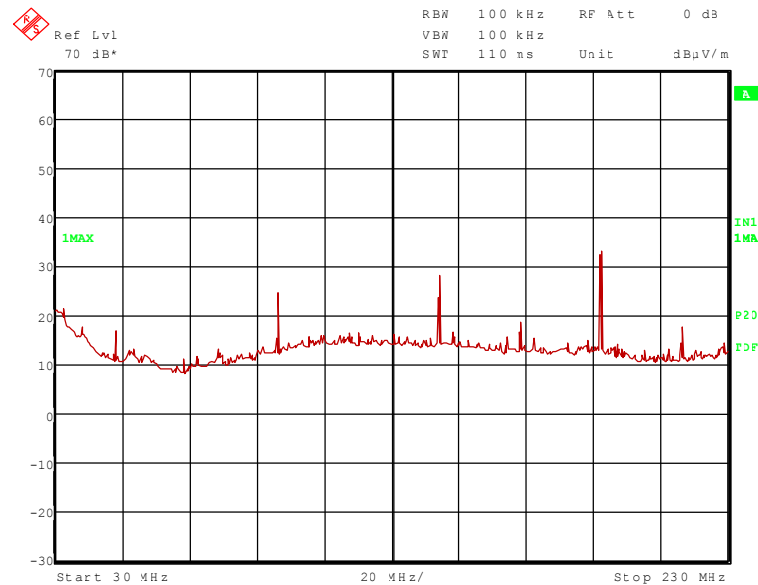
The following emissions were found according to FCC 47 CFR Part 15 section 15.209 (a).

126.224 kHz and 378.672 kHz.

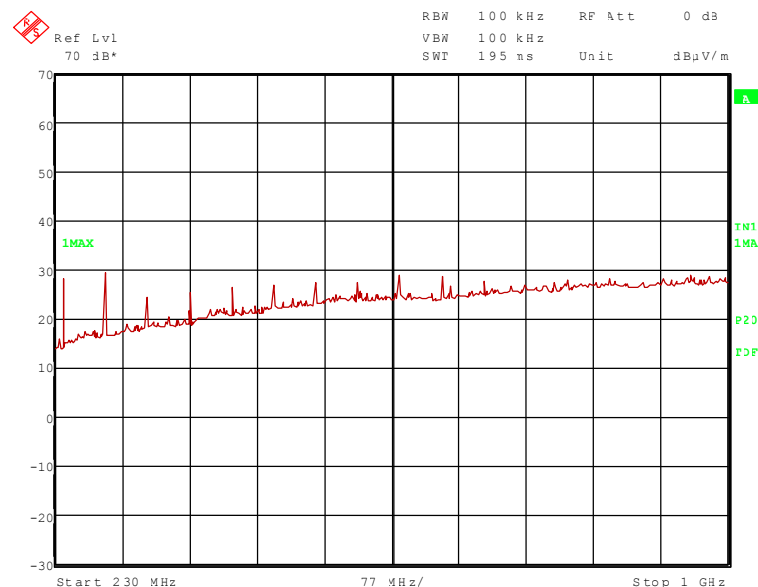
These frequencies have to be measured on the outdoor test site. The results were presented in the following.

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80540_6.wmf: Spurious emissions from 30 MHz to 230 MHz:



80540_7.wmf: Spurious emissions from 230 MHz to 1 GHz:



The following frequency was found during the preliminary radiated emission test:

96.005 MHz, 144.0075 MHz, 192.010 MHz, 288.015 MHz and 384.020 MHz.

The following frequency was found inside the restricted bands:

240.013 MHz

These frequencies have to be measured on the open area test site. The results were presented in the following.

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5.2.3 FINAL RADIATED EMISSION TEST (9 kHz to 30 MHz)

Ambient temperature:	15 °C	Relative humidity:	56 %
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Position of EUT: The EUT was set-up on a non-conducting table of a height of 0.8 m. The distance between EUT and antenna was 3 m, 10 m and 30 m.

Cable guide: The cable of the EUT was fixed on the non-conducting table. For further information of the cable guide refer to the pictures in annex A of this test report.

Test record: The test was carried out in normal operation mode of the EUT (without reading a TAG). All results are shown in the following.

Supply voltage: The EUT was supplied with 120 V AC, because no difference was noticeable with supply voltages from 115 V AC to 125 V AC.

Test results: The test results were calculated with the following formula:

Result [dBµV/m] = reading [dBµV] + antenna factor [dB/m]

Results with measuring distance of 3 m						
Frequency	Result dBµV/m	Limit dBµV/m	Margin dB	Detector	Readings dBµV	Antenna factor * dB/m
126.224	83.3	105.6	22.3	AV	63.3	20.0
378.672	70.6	96.0	25.4	AV	50.6	20.0
Results with measuring distance of 10 m						
Frequency MHz	Result dBµV/m	Limit dBµV/m	Margin dB	Detector	Readings dBµV	Antenna factor * dB/m
126.224	60.4	85.6	25.2	AV	40.4	20.0
378.672	Signal was below the noise floor of the measuring system					
Measurement uncertainty			+2.2 dB / -3.6 dB			

*: Cable loss included

Test: Passed

TEST EQUIPMENT USED FOR THE TEST:

54 – 57

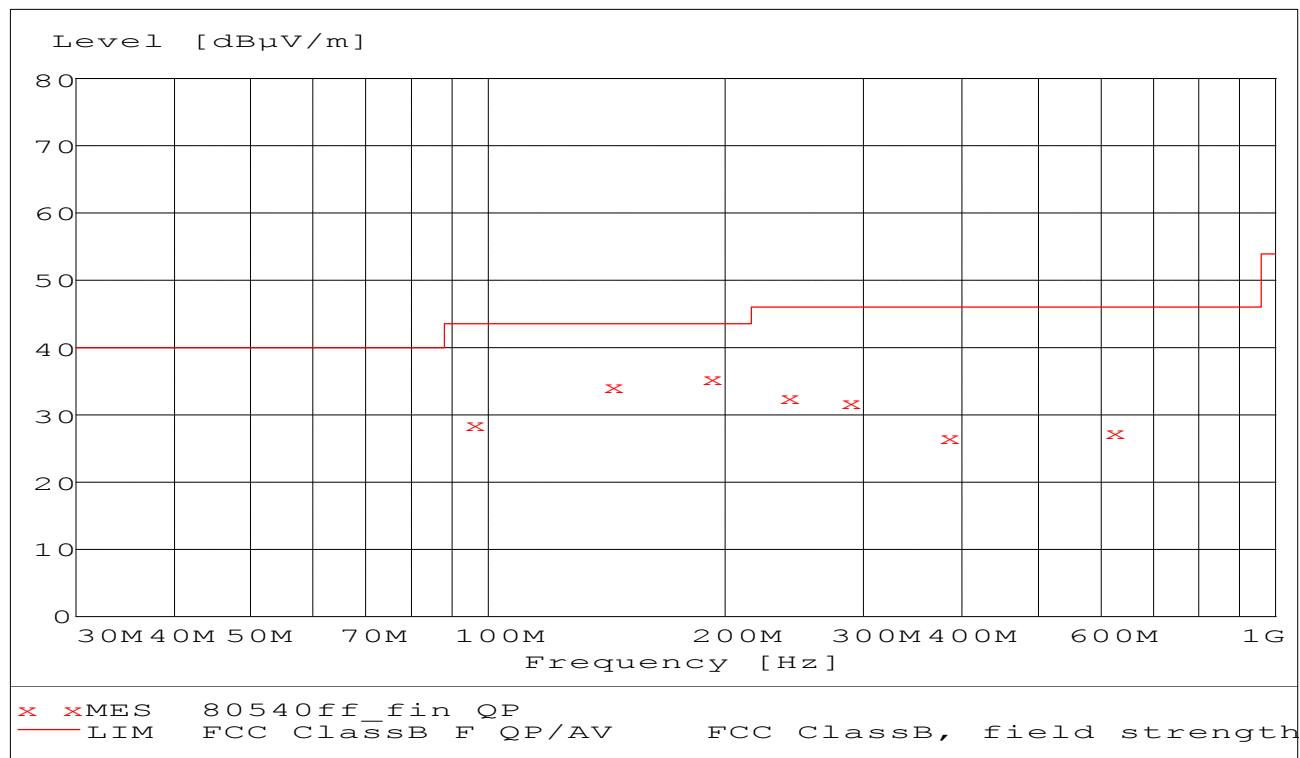
TEST REPORT REFERENCE: F080540E3

5.3 FINAL RADIATED EMISSION TEST (30 MHz to 1 GHz)

Ambient temperature:	20 °C	Relative humidity:	37 %
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- Position of EUT: The EUT was set-up on a wooden table of a height of 0.8 m.
- Cable guide: The cable of the EUT was fixed on the wooden table. For further information of the cable guide refer to the pictures in annex A of this test report.
- Test record: The test was carried out in normal operation mode of the EUT(awaiting a TAG). All results are shown in the following.
- Power supply: During this test the EUT was powered by the laptop PC from an AC-mains network with 120 V AC / 60 Hz.
- Test results: The test results were calculated with the following formula:
- $$\text{Result [dB}\mu\text{V/m]} = \text{reading [dB}\mu\text{V]} + \text{cable loss [dB]} + \text{antenna factor [dB/m]}$$

The measured points and the limit line in the following diagram refer to the standard measurement of the emitted interference in compliance with the above-mentioned standard. The measured points marked with x are the measured results of the standard final measurement on the open area test site.



Data record name: 80540ff

TEST REPORT REFERENCE: F080540E3

The results of the standard final measurement on the open area test site are indicated in the table below. The limits as well as the measured results (levels) refer to the above-mentioned standard while taking account of the specified requirements for a 3 m measuring distance.

The measurement time with the quasi-peak measuring detector is 1 second.

Result measured with the quasipeak detector:

(These values are marked in the above diagram by x)

Spurious emissions in restricted bands									
Frequency	Result	Limit	Margin	Readings	Antenna factor	Cable loss	Height	Azimuth	Pol.
MHz	dBµV/m	dBµV/m	dB	dBµV	dB/m	dB	cm	deg	
240.013	32.6	46.0	13.4	19.7	11.2	1.7	137.0	254.0	Hor.
Spurious emissions outside restricted bands									
Frequency	Result	Limit	Margin	Readings	Antenna factor	Cable loss	Height	Azimuth	Pol.
MHz	dBµV/m	dBµV/m	dB	dBµV	dB/m	dB	cm	deg	
96.005	28.9	43.5	14.6	17.2	10.6	1.1	125.0	13.0	Vert.
144.008	34.4	43.5	9.1	21.3	11.8	1.3	100.0	76.0	Vert.
192.010	35.3	43.5	8.2	24.8	9.0	1.5	100.0	10.0	Vert.
288.015	31.7	46.0	14.3	16.9	12.9	1.9	112.0	105.0	Hor.
384.020	26.9	46.0	19.1	9.5	15.2	2.2	100.0	241.0	Hor.
624.033	27.5	46.0	18.5	5.0	19.7	2.8	112.0	253.0	Vert.
Measurement uncertainty					+2.2 dB / -3.6 dB				

The test results were calculated with the following formula:

$$\text{Result [dBµV/m]} = \text{reading [dBµV]} + \text{cable loss [dB]} + \text{antenna factor [dB/m]}$$

Test: Passed

TEST EQUIPMENT USED FOR THE TEST:

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TEST REPORT REFERENCE: F080540E3

6 TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

TEST REPORT REFERENCE: F080540E3

No.	Test equipment	Type	Manufacturer	Serial No.	PM. No.	Cal. Date	Cal. due
1	Shielded chamber M4	-	Siemens	B83117S1-X158	480088	Weekly verification (system cal.)	
2	Measuring receiver	ESAI	Rohde & Schwarz	831953/001 833181/018	480025 480026	02/26/2008	02/20 10
3	LISN	NSLK8128	Schwarzbeck	8128155	480058	01/09/2008	01/2009
5	AC-filter	B84299-D87-E3	Siemens	930262292	480097	Weekly verification (system cal.)	
6	EMI-Software	ES-K1	Rohde & Schwarz	-	480111	-	-
14	Open area test site	-	Phoenix Test-Lab	-	480085	Weekly verification (system cal.)	
15	Measuring receiver	ESCS30	Rohde & Schwarz	828985/014	480270	02/27/2008	02/2010
16	Controller	HD100	Deisel	100/670	480139	-	-
17	Turntable	DS420HE	Deisel	420/620/80	480087	-	-
18	Antenna support	AS615P	Deisel	615/310	480086	-	-
19	Antenna	CBL6111 A	Chase	1643	480147	08/01/2007	08/2012
20	EMI Software	ES-K1	Rohde & Schwarz	-	480111	-	-
29	Fully anechoic chamber M20	-	Albatross Projects	B83107-E2439-T232	480303	Weekly verification (system cal.)	
31	Measuring receiver	ESI 40	Rohde & Schwarz	100064	480355	02/25/2008	02/20 10
32	Controller	HD100	Deisel	100/670	480326	-	-
33	Turntable	DS420HE	Deisel	420/620/80	480315	-	-
34	Antenna support	AS615P	Deisel	615/310	480187	-	-
35	Antenna	CBL6112 B	Chase	2688	480328	10/11/2005	10/2010
43	RF-cable No. 30	RTK 081	Rosenberger	-	410141	Weekly verification (system cal.)	
54	Power supply	TOE 8852	Toellner	51712	480233	11/27/2006	11/2008
56	Loop antenna	HFH2-Z2	Rohde & Schwarz	832609/014	480059	03/15/2006	03/2011
57	EMI test receiver	ESPC	Rohde & Schwarz	843756/006	480150	02/28/2008	02/20 10
58	Loop Antenna Ø = 225 mm	-	Phoenix Test-Lab	-	410085	Weekly verification	
59	RF-cable No. 10	RG223	Phoenix-Test-Lab	-	410102	Weekly verification	

TEST REPORT REFERENCE: F080540E3

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	MiCard HID Prox, test set-up shielded chamber	80540_18.jpg
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