

TEST REPORT

Test Report Reference: F102069E2 2nd version

Equipment under Test:

microMind (USB to Ethernet Bridge)

Serial Number: 100024

FCC ID: WG7-MICROMIND1

Applicant: NTware Systemprogrammierung GmbH

Manufacturer: NTware Systemprogrammierung GmbH

**Test Laboratory
(CAB)**

**accredited by Deutsche Gesellschaft für Akkreditierung mbH (DGA)
in compliance with DIN EN ISO/IEC 17025 under Reg. No. DGA-PL-105/99-22,**

**listed by
FCC 31040/SIT1300F2
FCC Test site registration number 90877**

Industry Canada Test site registration 3469A-1

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1 IDENTIFICATION

1.1 APPLICANT

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Country:	Germany
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Tel:	+49-(0)-5403-7243-220
Fax:	+49-(0)-5403-780103
e-mail address:	hbauszus@nt-ware.com

1.2 MANUFACTURER

Name:	NTware Systemprogrammierung GmbH
Address:	Niedersachsenstraße 6 49186 Bad Iburg
Country:	Germany
Name for contact purposes:	Mr. H. Bauszus
Tel:	+49-(0)-5403-7243-220
Fax:	+49-(0)-5403-780103
e-mail address:	hbauszus@nt-ware.com

1.3 DATES

Date of receipt of test sample:	14 July 2010
Start of test:	27 July 2010
End of test:	10 August 2010

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1.4 TEST LABORATORY

The tests were carried out at:

PHOENIX TESTLAB GmbH
Königswinkel 10
D-32825 Blomberg
Germany

Phone: +49 (0) 52 35 / 95 00-0
Fax: +49 (0) 52 35 / 95 00-10

accredited by Deutsche Gesellschaft für Akkreditierung mbH (DGA) in compliance with DIN EN ISO/IEC 17025 under Reg. No. DGA-PL-105/99-22, FCC Test site registration number 90877 and Industry Canada Test site registration 3469A-1.

Test engineer:

Manuel
BASTERT

Name



10 September 2010

Date

Test report checked by:

Thomas
KÜHN

Name



10 September 2010

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.

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1.6 RESERVATION

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1.7 NORMATIVE REFERENCES

- [1] **ANSI C63.4:2009** 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 47 CFR Part 2** General Rules and Regulations
- [3] **FCC 47 CFR Part 15** Radio Frequency Devices (Subpart B)
- [4] **ICES-003 Issue 4** Spectrum Management and Telecommunications Policy. Interference-Causing Equipment Standard. Digital Apparatus

1.8 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:	USB to Ethernet Bridge
Type designation: *	Variant 1: microMind Variant 2: microMind PoE
Serial number: *	100024
FCC ID: *	WG7-MICROMIND1
Power supply: *	120 V _{AC} / 60 Hz 48 V _{DC} (PoE)
Highest internal Frequency: *	480 MHz (USB 2.0)

* declared by the applicant

The following external I/O cables were used:

Identification	Connector		Length during test
	EUT	Ancillary	
Ethernet Port with Power over Ethernet (PoE)	RJ45	RJ45	2 m
Ethernet Port	RJ45	RJ45	2 m
USB port	USB A	USB B	1.8 m
AC-Adapters	DC-Plug	AC-plug	2.9 m

2.2 PERIPHERY DEVICES

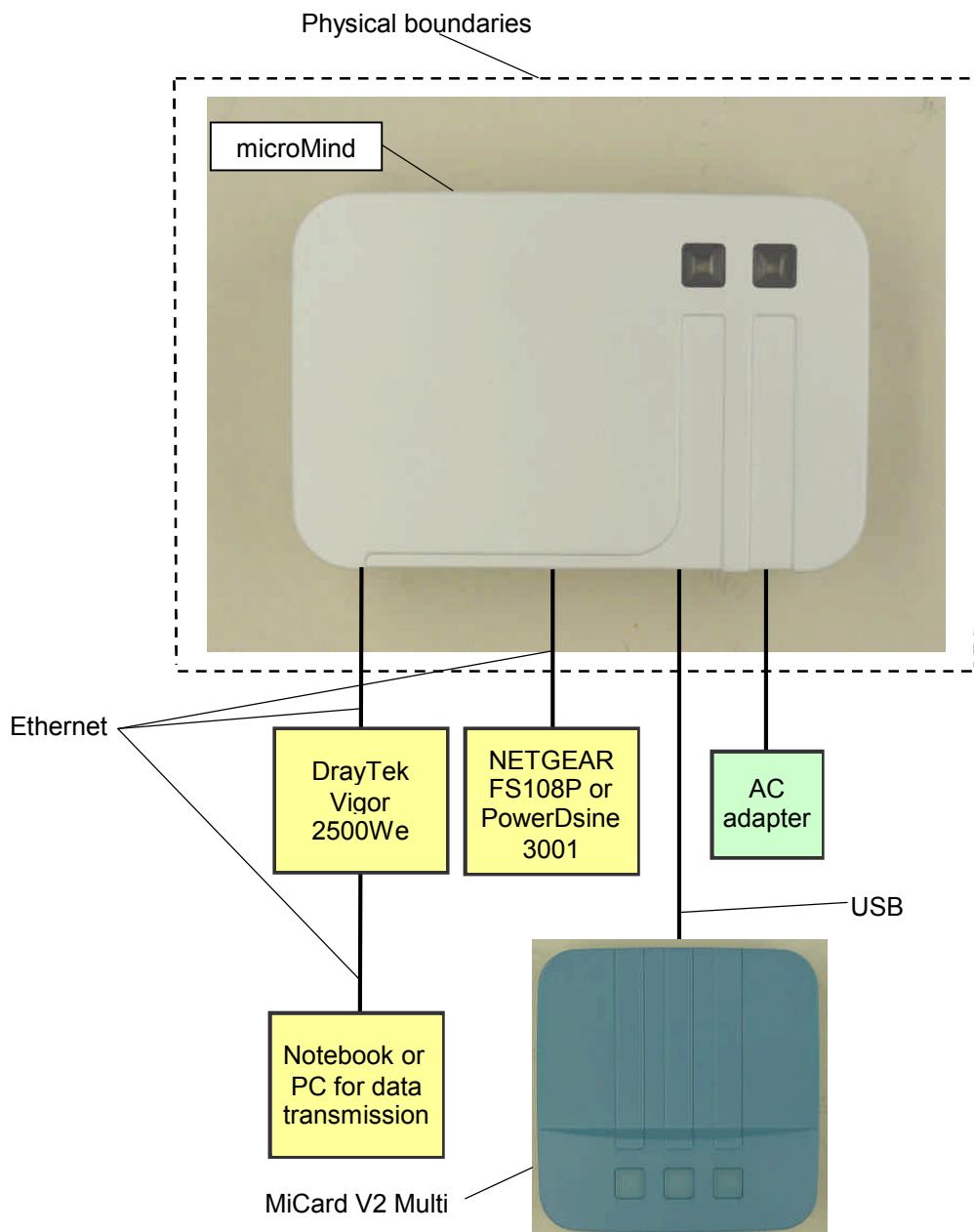
- GlobTek, Inc. Power supply
Model: GT-441052-1512
Input: 100-240 V_{AC}; 50/60 Hz; 0.6 A
Output: 12V_{DC}; 1.25 A
- Netgear ProSafe 8 Port 10/100 Switch with 4 Port PoE (FS108P)
- DrayTek Vigor 2500We Router
- NTware MiCard V2 Multi (USB RF Card Reader)
- Power Dsine 3001 (PD-3001/AC)
- Laptop MSI MS-6837D

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3 OPERATIONAL STATES AND PHYSICAL BOUNDARIES

During the tests the EUT was connected with an USB RF Card Reader MiCard V2 Multi. Furthermore the EUT was connected via a Router (DrayTek Vigor2500We) to a notebook. This connection was controlled by monitoring a continuous "data ping" via the EUT to the connected card reader. The router was necessary for the addressing by DHCP. The EUT was always supplied by an AC power adapter except during the conducted emission test at the PoE port. For this measurement an AC-to-PoE-Adapter Power Dsine 3001 was used. The set up is shown in the following diagram.

The physical boundaries of the Equipment Under Test are shown below.



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4 REQUIREMENT OVERVIEW

Conducted emissions FCC 47 CFR Part 15 section 15.107 (b) [3] / ICES-003 Issue 4 section 7.1 [4]					
Application	Frequency range	Limits	Reference standard	Remark	Status
AC supply line	0.15 to 0.5 MHz 0.5 to 5 MHz 5 to 30 MHz	66 to 56 dB μ V (QP) * 56 to 46 dB μ V (AV) * 56 dB μ V (QP) 46 dB μ V (AV) 60 dB μ V (QP) 50 dB μ V (AV)	ANSI C63.4 (2009) CISPR 22	class B	Passed
Power over Ethernet (With PowerDsine 3001)	0.15 to 0.5 MHz 0.5 to 5 MHz 5 to 30 MHz	66 to 56 dB μ V (QP) * 56 to 46 dB μ V (AV) * 56 dB μ V (QP) 46 dB μ V (AV) 60 dB μ V (QP) 50 dB μ V (AV)	ANSI C63.4 (2009) CISPR 22	class B	Passed

*: Decreases with the logarithm of the frequency

Radiated emissions FCC 47 CFR Part 15 section 15.109 (b) [3] / ICES-003 Issue 4 section 7.1 [4]					
Application	Frequency range	Limits	Reference standard	Remark	Status
Radiated Emission	30 to 88 MHz 88 to 216 MHz 216 to 960 MHz 960 to 1000 MHz above 1000 MHz	40.0 dB μ V/m at 3 m 43.5 dB μ V/m at 3 m 46.0 dB μ V/m at 3 m 54.0 dB μ V/m at 3 m 53.5 dB μ V/m at 3 m only average	ANSI C63.4 (2009);	class B	Passed
Radiated Emission	30 to 230 MHz 230 to 1000 MHz	30 dB μ V/m at 10 m 37 dB μ V/m at 10 m	CISPR 22	class B	Passed

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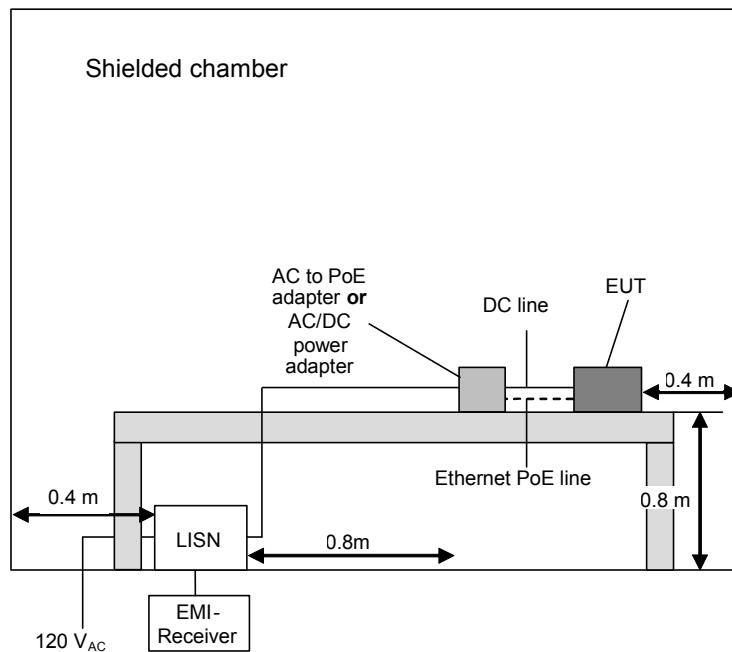
5 METHOD OF MEASUREMENT

5.1 CONDUCTED EMISSIONS ON POWER SUPPLY LINES 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 C63.4-2009 [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 appropriate 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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5.2 RADIATED EMISSIONS 30 MHz to 12.75 GHz

The radiated emission measurement is subdivided into four stages.

- A preliminary measurement carried out in a fully anechoic chamber with a fixed antenna height in the frequency range 30 MHz to 1 GHz.
- A final measurement carried out on an open area test side with reflecting ground plane and various antenna heights in the frequency range 30 MHz to 1 GHz.
- A preliminary measurement carried out in a fully anechoic chamber with a fixed antenna height in the frequency range 1 GHz to 12.75 GHz.
- A final measurement carried out in a fully anechoic chamber with a fixed antenna height in the frequency range 1 GHz to 12.75 GHz.

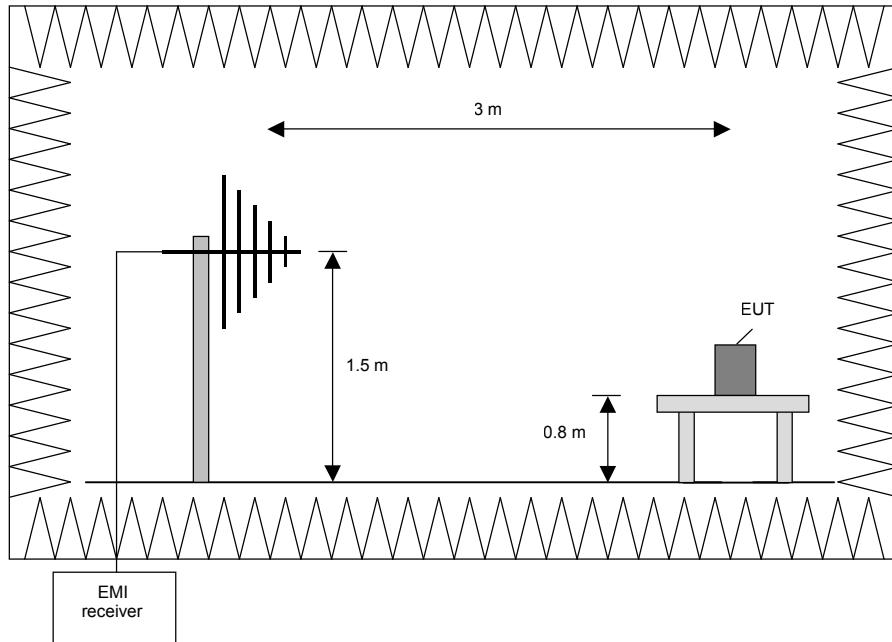
Preliminary measurement (30 MHz to 1 GHz)

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 C63.4-2009 [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 120 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 1 GHz	120 kHz



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Procedure preliminary measurement:

Prescans were performed in the frequency range 30 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 if handheld equipment.
7. Repeat 1) to 5) with the vertical polarisation of the measuring antenna.

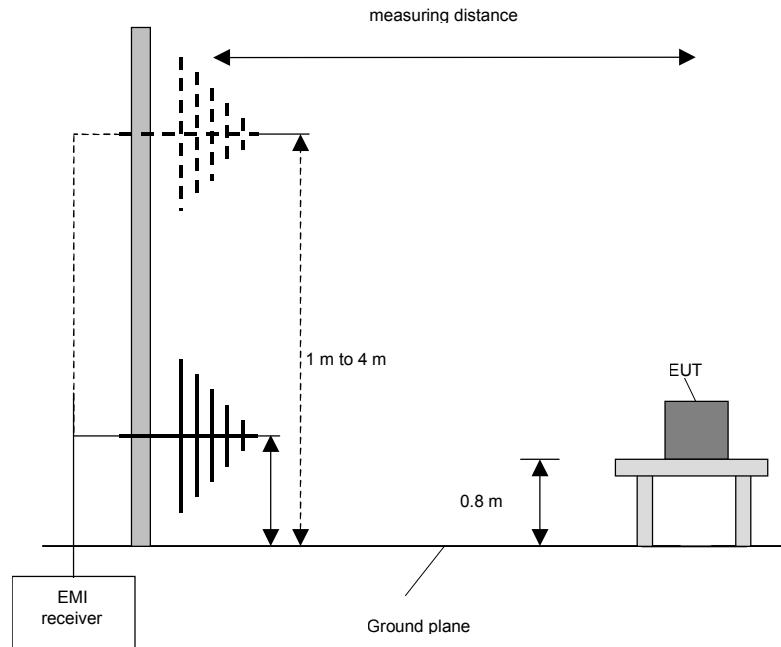
Final measurement (30 MHz to 1 GHz)

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 if handheld equipment.

Preliminary and final measurement (1 GHz to 12.75 GHz)

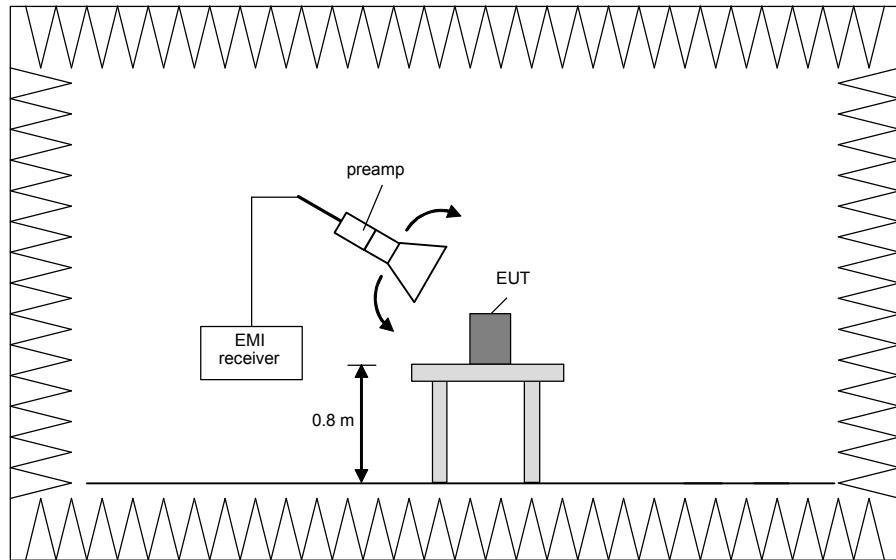
This measurement will be performed in a fully anechoic chamber. Floor-standing devices will be placed directly on the turntable/ground plane. The set up of the Equipment under test will be in accordance to ANSI C63.4-2009 [1]. The resolution bandwidth of the EMI Receiver will be set to the following values:

Frequency range	Resolution bandwidth (preliminary)	Resolution bandwidth (final)
1 GHz to 12.75 GHz	100 kHz	1 MHz

Preliminary measurement (1 GHz to 12.75 GHz)

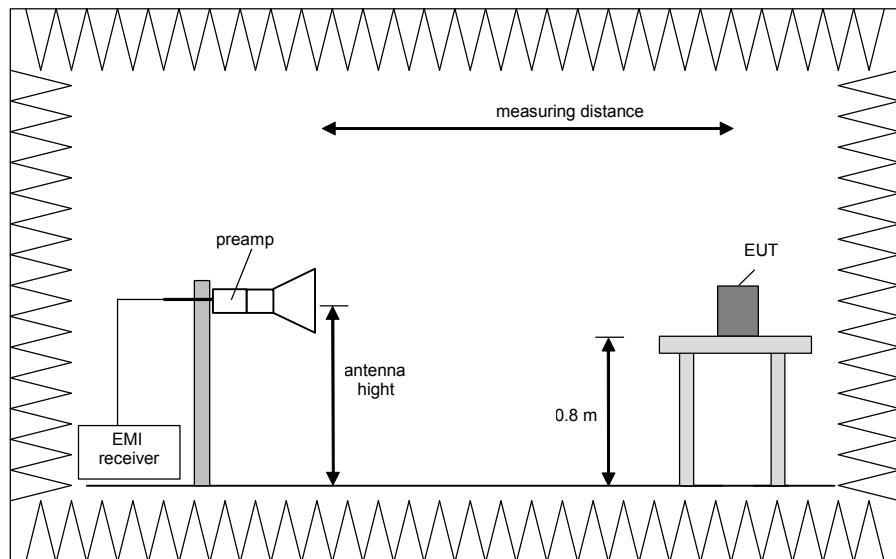
The frequency range will be divided into different sub ranges depending of the frequency range of the used horn antenna. The spectrum analyser set to MAX Hold mode and a resolution bandwidth of 100 kHz. The measurement will be performed in horizontal and vertical polarisation of the measuring antenna, 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.

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Final measurement (1 GHz to 12.75 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.



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Procedure of measurement:

The measurements were performed in the frequency range 1 to 12.75 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 beam width.

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

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6 TEST RESULTS

6.1 CONDUCTED EMISSION MEASUREMENT ON AC MAINS 150 kHz to 30 MHz

Ambient temperature:	21 °C	Relative humidity:	56 %
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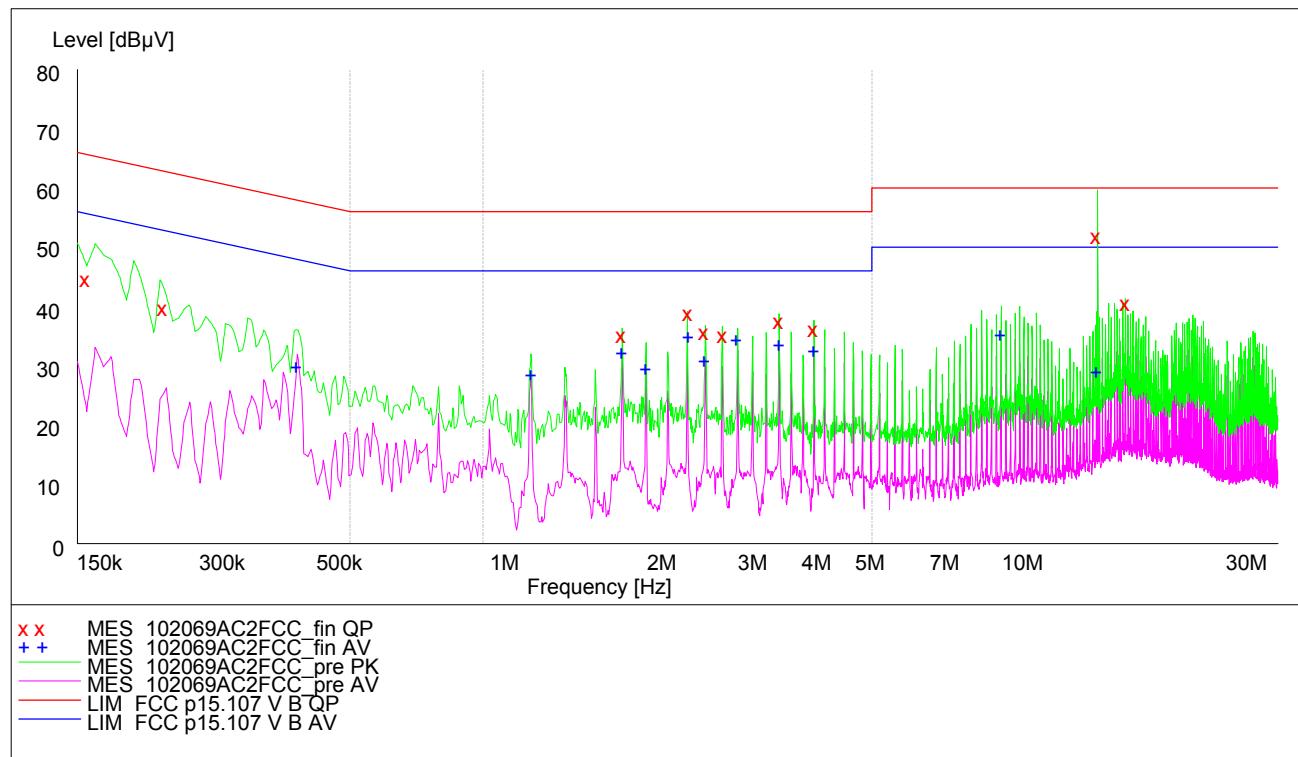
Position of EUT: The EUT was set-up on a wooden table of a height of 0.8 m.

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

Test record: As described in chapter 5.1.

Power supply: During all measurements the EUT was supplied with 120 V_{AC} / 60 Hz. The AC adapter GT-441052-1512 was used for the test.

The curves in the diagram only represent for each frequency point the maximum measured value of all preliminary measurements which were made for each power supply line. The top measured curve represents the peak measurement and the bottom measured curve the average measurement. The quasi-peak measured points are marked by an x and the average measured points by an +.



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Result measured with the quasipeak detector:

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

Frequency MHz	Level dB μ V	Transducer dB	Limit dB μ V	Margin dB	Line	PE
0.156300	45.30	1.6	65.7	20.4	L1	FLO
0.219300	40.40	1.0	62.8	22.4	L1	FLO
1.662900	35.70	0.7	56.0	20.3	N	FLO
2.215500	39.40	0.8	56.0	16.6	N	FLO
2.399100	36.30	0.7	56.0	19.7	N	FLO
2.584500	36.00	0.7	56.0	20.0	N	FLO
3.322500	38.10	0.7	56.0	17.9	N	FLO
3.876900	36.90	0.7	56.0	19.1	L1	FLO
13.560000	52.50	1.8	60.0	7.5	N	FLO
15.323100	41.10	2.0	60.0	18.9	L1	FLO

Measurement uncertainty: +3.5 dB / -4.5 dB

Result measured with the average detector:

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

Frequency MHz	Level dB μ V	Transducer dB	Limit dB μ V	Margin dB	Line	PE
0.392100	30.40	0.9	48.0	17.6	L1	FLO
1.107600	29.10	0.7	46.0	16.9	N	FLO
1.661100	32.90	0.7	46.0	13.1	L1	FLO
1.845600	30.00	0.7	46.0	16.0	L1	FLO
2.215500	35.50	0.8	46.0	10.5	N	FLO
2.400000	31.30	0.7	46.0	14.7	N	FLO
2.769000	35.00	0.7	46.0	11.0	N	FLO
3.322500	33.90	0.7	46.0	12.1	L1	FLO
3.876900	33.10	0.7	46.0	12.9	L1	FLO
8.861100	35.80	1.3	50.0	14.2	L1	FLO
13.559100	29.50	1.8	50.0	20.5	L1	FLO

Measurement uncertainty: +3.5 dB / -4.5 dB

Test: Passed

TEST EQUIPMENT USED:

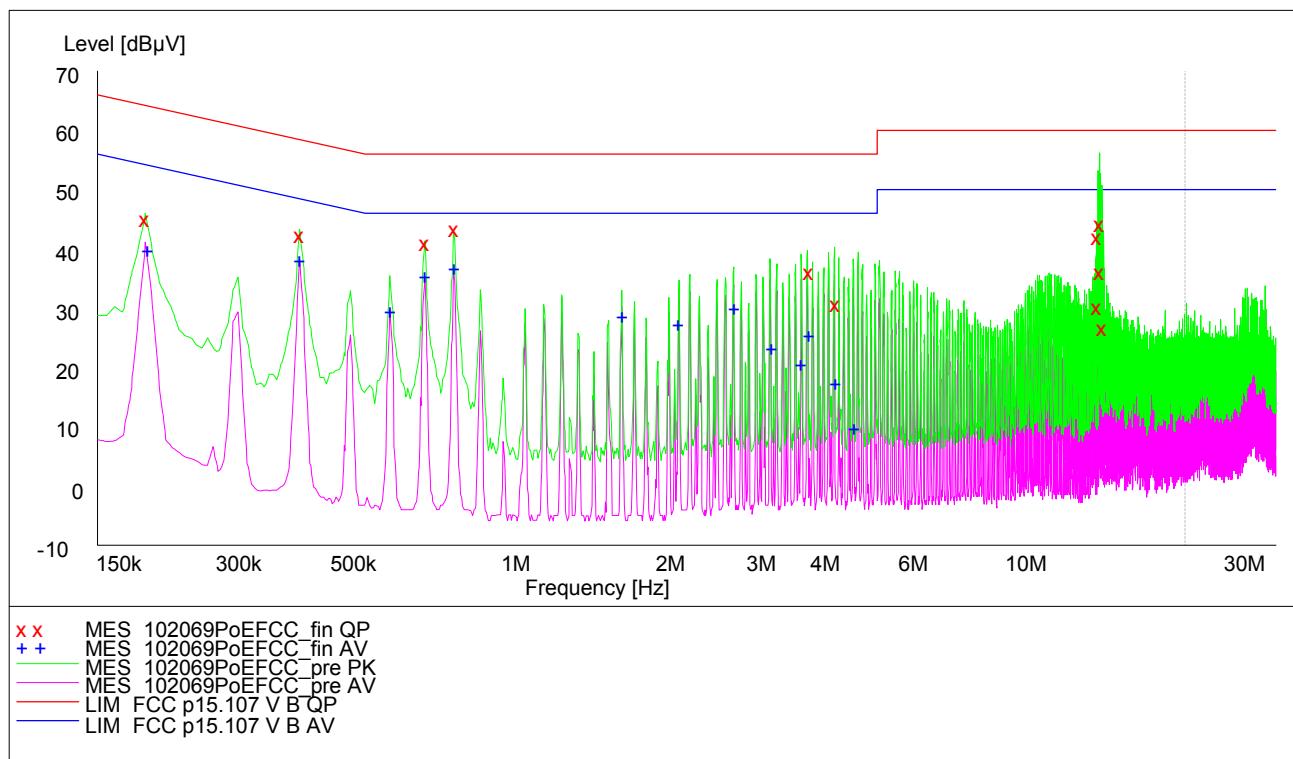
1-3, 5, 6

TEST REPORT REFERENCE: F102069E2 2nd version

Power supply:

During all measurements the EUT was supplied with 120 V_{AC} / 60 Hz. The AC-to-PoE-adapter PowerDsine 3001 was used for the test.

The curves in the diagram only represent for each frequency point the maximum measured value of all preliminary measurements which were made for each power supply line. The top measured curve represents the peak measurement and the bottom measured curve the average measurement. The quasi-peak measured points are marked by an x and the average measured points by an +.



TEST REPORT REFERENCE: F102069E2 2nd version

Result measured with the quasipeak detector:
 (These values are marked in the diagram by an x)

Frequency MHz	Level dB μ V	Transducer dB	Limit dB μ V	Margin dB	Line	PE
0.186000	45.70	1.2	64.2	18.6	L1	FLO
0.373200	43.20	0.9	58.4	15.2	N	FLO
0.653100	41.50	0.8	56.0	14.5	N	FLO
0.746700	43.80	0.8	56.0	12.2	N	FLO
3.660000	36.90	0.7	56.0	19.1	L1	FLO
4.128900	31.10	0.8	56.0	24.9	N	FLO
13.454700	30.90	1.8	60.0	29.1	N	FLO
13.506900	42.80	1.8	60.0	17.2	L1	FLO
13.586100	45.00	1.9	60.0	15.0	N	FLO
13.637400	36.90	1.9	60.0	23.1	L1	FLO
13.773300	27.30	1.9	60.0	32.7	L1	FLO

Measurement uncertainty: +3.5 dB / -4.5 dB

Result measured with the average detector:
 (These values are marked in the diagram by an +)

Frequency MHz	Level dB μ V	Transducer dB	Limit dB μ V	Margin dB	Line	PE
0.186900	40.40	1.2	54.2	13.8	L1	FLO
0.373200	38.40	0.9	48.4	10.0	N	FLO
0.559500	30.00	0.9	46.0	16.0	N	FLO
0.653100	36.00	0.8	46.0	10.0	N	FLO
0.745800	37.20	0.8	46.0	8.8	N	FLO
1.586400	29.20	0.7	46.0	16.8	N	FLO
2.051700	27.80	0.7	46.0	18.2	N	FLO
2.628600	30.20	0.7	46.0	15.8	L1	FLO
3.096600	23.50	0.7	46.0	22.5	N	FLO
3.564600	20.70	0.7	46.0	25.3	L1	FLO
3.660900	26.00	0.7	46.0	20.0	L1	FLO
4.128900	17.80	0.8	46.0	28.2	N	FLO
4.596900	10.10	0.9	46.0	35.9	N	FLO

Measurement uncertainty: +3.5 dB / -4.5 dB

Test: Passed

TEST EQUIPMENT USED:

1-3, 5, 6

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6.2 RADIATED EMISSIONS 30 MHz to 6 GHz

6.2.1 PRELIMINARY MEASUREMENT 30 MHz to 6 GHz

Ambient temperature	20 °C	Relative humidity	42 %
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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.

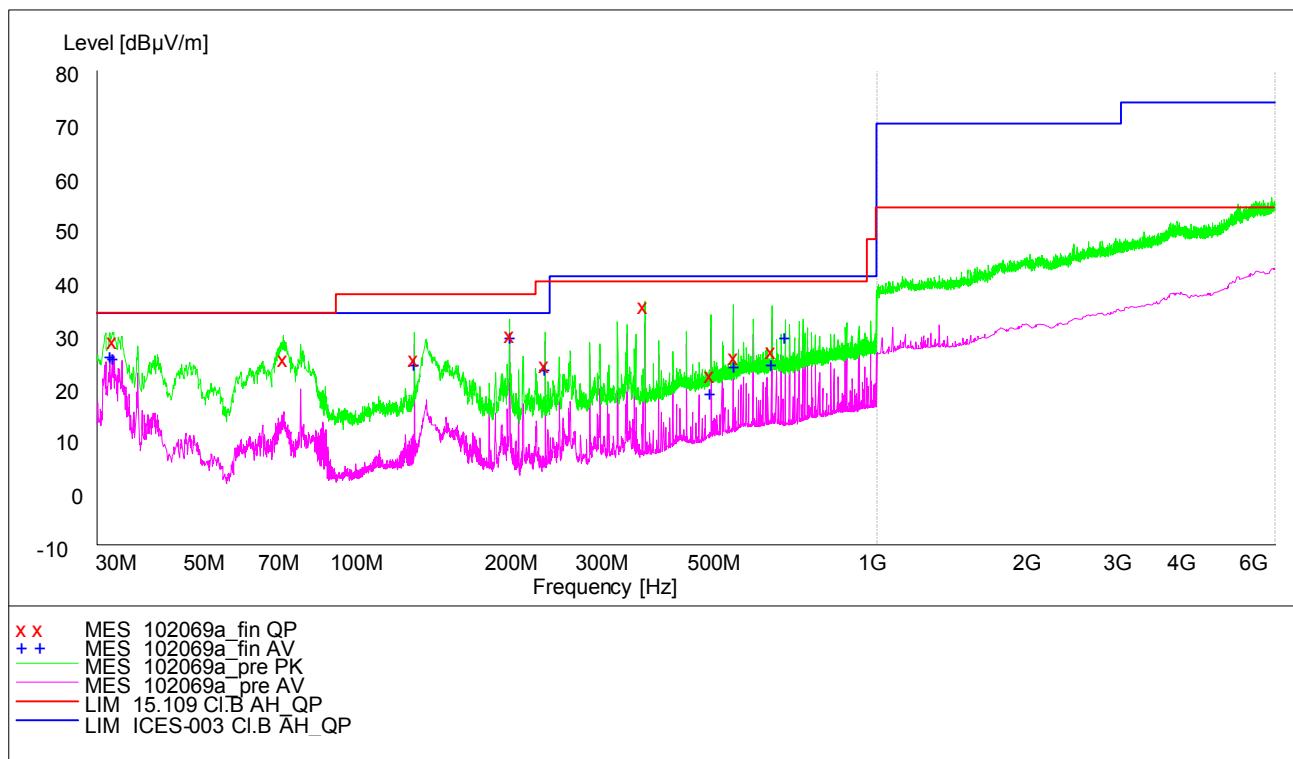
Cable guide: The cables of the EUT were fixed on the non-conducting table. For further information of the cable guide refer to the pictures in annex C of this test report.

Test record: As described in chapter 5.2.

Power supply: During the measurement the EUT was supplied with 120 V_{AC} / 60 Hz. The AC adapter GT-441052-1512 was used for the test.

The curves in the diagram only represent the maximum measured value for each frequency point of all preliminary measurements, which were carried out with the EUT in various positions.

The top measured curve represents the peak measurement. The measured points marked by an x are frequency points for which later measurements with a quasi-peak detector were carried out. These values are indicated in the following table. The bottom measured curve represents average values, which are only required for control purposes.



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The following frequencies were found during the preliminary emission test:

Frequency MHz
32.304
69.192
125.004
191.998
225.000
352.552
474.988
525.004
625.000
664.444

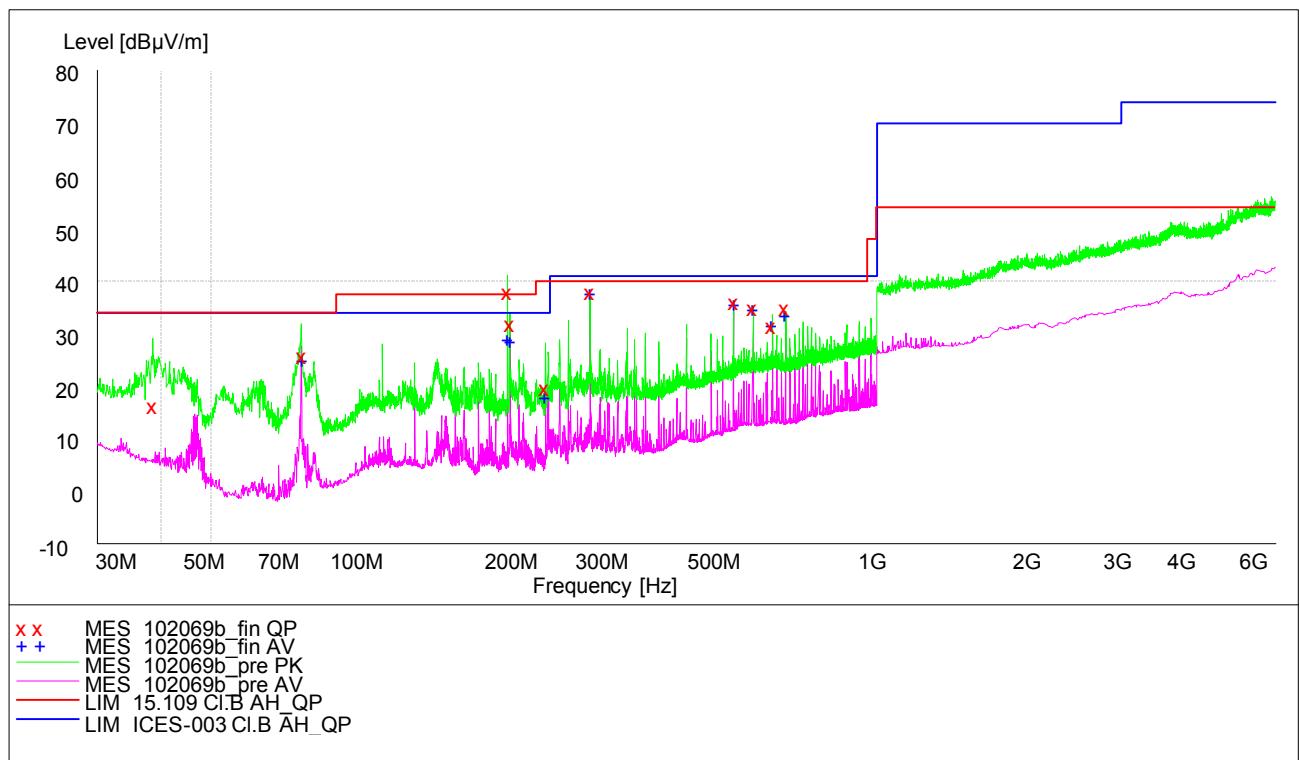
These frequencies had to be measured on the open area test site. The results are presented in the following.

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Power supply: During all measurements the EUT was supplied with 120 V_{AC} / 60 Hz. The AC-to-PoE adapter PowerDsine3001 was used for the test.

The curves in the diagram only represent the maximum measured value for each frequency point of all preliminary measurements, which were carried out with the EUT in various positions.

The top measured curve represents the peak measurement. The measured points marked by an x are frequency points for which later measurements with a quasi-peak detector were carried out. These values are indicated in the following table. The bottom measured curve represents average values, which are only required for control purposes.



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The following frequencies were found during the preliminary emission test:

Frequency MHz
38.424
74.988
125.004
189.850
192.014
225.000
274.996
525.004
574.996
625.000
664.456

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

TEST EQUIPMENT USED FOR THE TEST:

6, 29, 31-35

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6.2.2 FINAL MEASUREMENT 30 MHz to 1 GHz

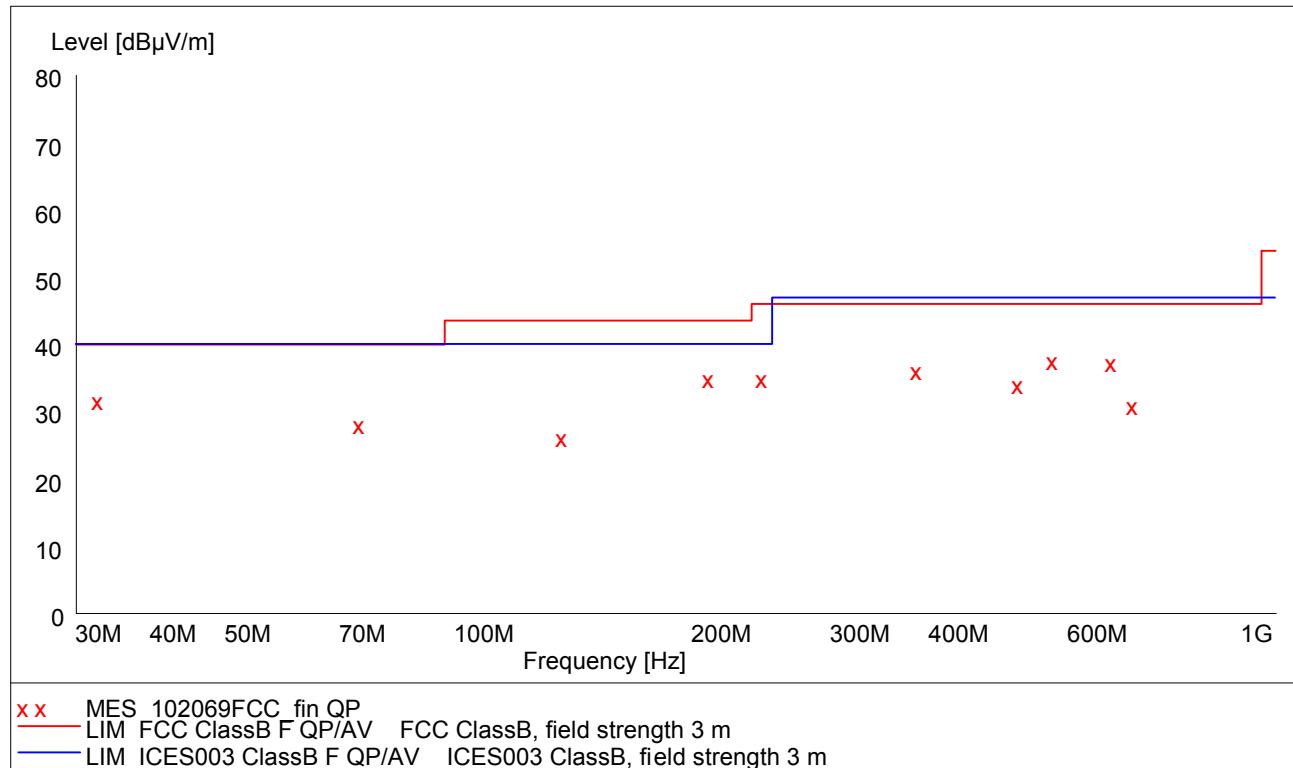
Ambient temperature:	21 °C	Relative humidity:	57 %
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Position of EUT: The EUT was set-up on a non-conducting table of a height of 0.8 m. The distance between EUT and antenna was 3 m.

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

Test record: The test was carried out in customer defined operation mode as described in chapter 3 of this report.

Supply voltage: The EUT was supplied with 120 V_{AC} / 60 Hz. The AC adapter GT-441052-1512 was used for the test.



TEST REPORT REFERENCE: F102069E2 2nd version

Result measured with the quasipeak detector according to FCC:
(These values are marked in the diagram by an x)

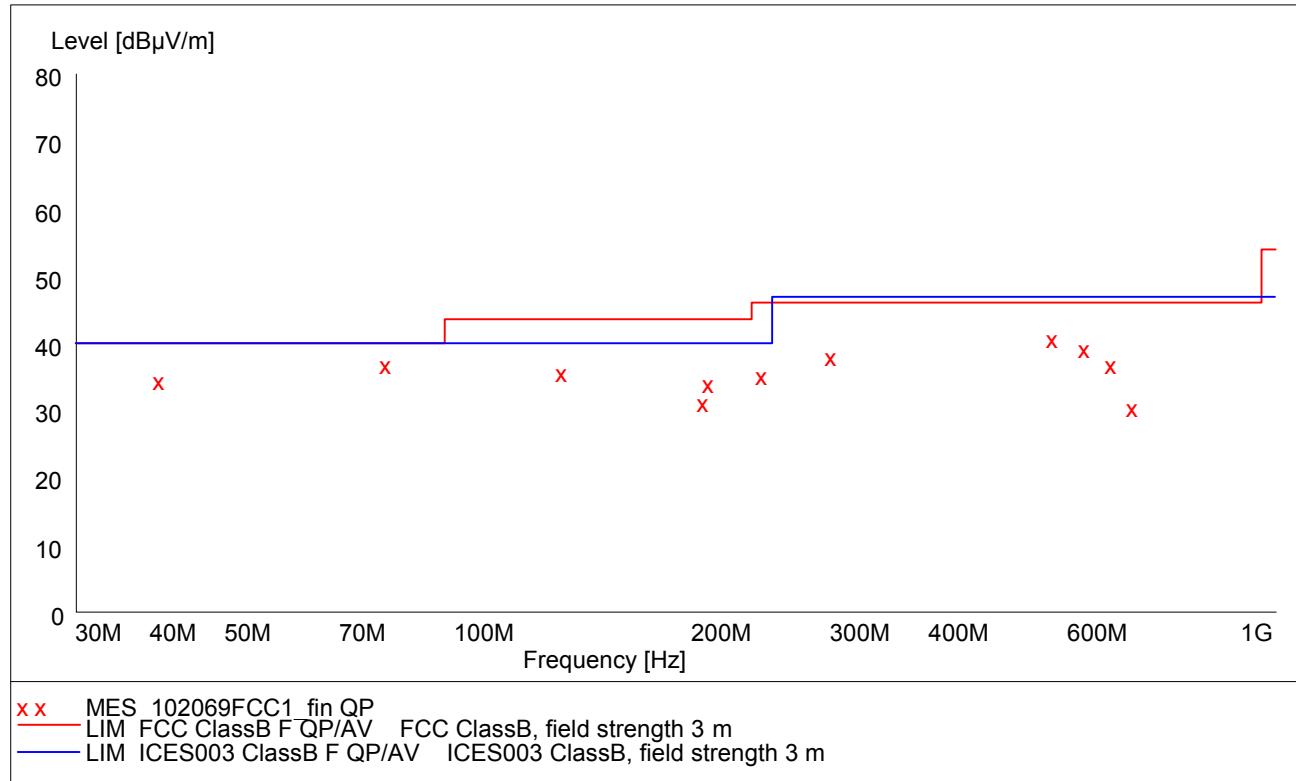
Spurious emissions									
Frequency	Result	Limit	Margin	Readings	Antenna factor	Cable loss	Height	Azimuth	Pol.
MHz	dB μ V/m	dB μ V/m	dB	dB μ V	dB/m	dB	cm	deg	
32.304	32.1	40.0	7.9	12.9	18.6	0.6	100	68	Vert.
69.192	28.7	40.0	11.3	21.4	6.4	0.9	150	23	Vert.
125.004	26.4	43.5	17.1	12.8	12.4	1.2	250	293	Vert.
191.988	35.3	43.5	8.2	24.8	9.0	1.5	100	112	Hor.
225.000	35.5	46.0	10.5	23.8	10.1	1.6	100	247	Hor.
352.552	36.5	46.0	9.5	20.3	14.2	2.0	100	157	Hor.
474.988	34.4	46.0	11.6	15.2	16.8	2.4	100	337	Hor.
525.004	38	46.0	8.0	17.6	17.8	2.6	150	337	Hor.
625.000	37.7	46.0	8.3	15.2	19.7	2.8	100	113	Vert.
664.444	31.3	46.0	14.7	8.7	19.7	2.9	100	203	Vert.
Measurement uncertainty					+2.2 dB / -3.6 dB				

Result measured with the quasipeak detector according to IC:
(These values are marked in the diagram by an x)

Spurious emissions									
Frequency	Result	Limit	Margin	Readings	Antenna factor	Cable loss	Height	Azimuth	Pol.
MHz	dB μ V/m	dB μ V/m	dB	dB μ V	dB/m	dB	cm	deg	
32.304	32.1	40	7.9	12.9	18.6	0.6	100	68	Vert.
69.192	28.7	40	11.3	21.4	6.4	0.9	150	23	Vert.
125.004	26.4	40	13.6	12.8	12.4	1.2	250	293	Vert.
191.988	35.3	40	4.7	24.8	9.0	1.5	100	112	Hor.
225.000	35.5	40	4.5	23.8	10.1	1.6	100	247	Hor.
352.552	36.5	47	10.5	20.3	14.2	2.0	100	157	Hor.
474.988	34.4	47	12.6	15.2	16.8	2.4	100	337	Hor.
525.004	38	47	9	17.6	17.8	2.6	150	337	Hor.
625.000	37.7	47	9.3	15.2	19.7	2.8	100	113	Vert.
664.444	31.3	47	15.7	8.7	19.7	2.9	100	203	Vert.
Measurement uncertainty					+2.2 dB / -3.6 dB				

TEST REPORT REFERENCE: F102069E2 2nd version

Supply voltage: The EUT was supplied with 120 V_{AC} / 60 Hz. The AC-to-PoE adapter PowerDsine3001 was used for the test.



TEST REPORT REFERENCE: F102069E2 2nd version

Result measured with the quasipeak detector according to FCC:
 (These values are marked in the diagram by an x)

Spurious emissions									
Frequency	Result	Limit	Margin	Readings	Antenna factor	Cable loss	Height	Azimuth	Pol.
MHz	dB μ V/m	dB μ V/m	dB	dB μ V	dB/m	dB	cm	deg	
38.424	34.9	40.0	5.1	18.7	15.6	0.6	100	248	Vert.
74.988	37.1	40.0	2.9	28.8	7.4	0.9	150	68	Vert.
125.004	35.9	43.5	7.6	22.3	12.4	1.2	150	247	Vert.
189.850	31.5	43.5	12.0	21.0	9.0	1.5	150	112	Hor.
192.014	34.5	43.5	9.0	24.0	9.0	1.5	100	112	Hor.
225.000	35.8	46.0	10.2	24.1	10.1	1.6	100	67	Hor.
274.996	38.5	46.0	7.5	24.2	12.4	1.9	100	112	Hor.
525.004	41.2	46.0	4.8	20.8	17.8	2.6	150	337	Hor.
574.996	39.7	46.0	6.3	17.7	19.2	2.8	150	292	Hor.
625.000	37	46.0	9.0	14.5	19.7	2.8	150	202	Hor.
664.456	30.9	46.0	15.1	8.3	19.7	2.9	100	203	Vert.
Measurement uncertainty				+2.2 dB / -3.6 dB					

Result measured with the quasipeak detector according to IC:
 (These values are marked in the diagram by an x)

Spurious emissions									
Frequency	Result	Limit	Margin	Readings	Antenna factor	Cable loss	Height	Azimuth	Pol.
MHz	dB μ V/m	dB μ V/m	dB	dB μ V	dB/m	dB	cm	deg	
38.424	34.9	40	5.1	18.7	15.6	0.6	100	248	Vert.
74.988	37.1	40	2.9	28.8	7.4	0.9	150	68	Vert.
125.004	35.9	40	4.1	22.3	12.4	1.2	150	247	Vert.
189.850	31.5	40	8.5	21.0	9.0	1.5	150	112	Hor.
192.014	34.5	40	5.5	24.0	9.0	1.5	100	112	Hor.
225.000	35.8	47	11.2	24.1	10.1	1.6	100	67	Hor.
274.996	38.5	47	8.5	24.2	12.4	1.9	100	112	Hor.
525.004	41.2	47	5.8	20.8	17.8	2.6	150	337	Hor.
574.996	39.7	47	7.3	17.7	19.2	2.8	150	292	Hor.
625.000	37	47	10	14.5	19.7	2.8	150	202	Hor.
664.456	30.9	47	16.1	8.3	19.7	2.9	100	203	Vert.
Measurement uncertainty				+2.2 dB / -3.6 dB					

Test: Passed

TEST EQUIPMENT USED FOR THE TEST:

6, 14 – 19

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7 TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

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	ESI 26	Rohde & Schwarz	1088.7490	481182	02/08/2010	02/2012
3	LISN	NSLK8128	Schwarzbeck	8128155	480058	08/07/2009	08/2010
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	03/16/2010	03/2012
16	Controller	MCU	Maturo	MCU/043/971107	480832	-	-
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
29	Fully anechoic chamber M20	-	Albatross Projects	B83107-E2439-T232	480303	Weekly verification (system cal.)	
31	Measuring receiver	ESI 40	Rohde & Schwarz	100064	480355	03/17/2010	03/2012
32	Controller	MCU	Maturo	MCU/043/971107	480832	-	
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

8 REPORT HISTORY

Report Number	Date	Comment
F102069E2	19 August 2010	Document created
F102069E2 2nd version	10 September 2010	Result of second AC Adapter deleted and editorial changes

TEST REPORT REFERENCE: F102069E2 2nd version

9 LIST OF ANNEXES

Annex A	Photographs of the EUT (outside):	4 pages
	102069_1.jpg	microMind and microMind PoE, 3D view 1
	102069_2.jpg	microMind, 3D view 2
	102069_13.jpg	microMind PoE, 3D view 2
	102069_4.jpg	Ac adapter
Annex B	Photographs of the EUT (inside):	5 pages
	102069_5.jpg	Main PCB, top view (PoE-PCB inserted)
	102069_6.jpg	Main PCB, top view (No PoE-PCB inserted)
	102069_7.jpg	Main PCB, bottom view
	102069_8.jpg	PoE-PCB, top view
	102069_9.jpg	PoE-PCB, bottom view
Annex C	Photographs of the test set-ups:	3 pages
	102069_10.jpg	Test set-up conducted emission
	102069_11.jpg	Test set-up fully anechoic chamber
	102069_12.jpg	Test set-up open area test-site