

TEST REPORT

Test Report Reference: R60039_B Edition 1

Equipment under Test: ProxSafe mini

FCC ID: IXLMINI

IC: 1893B-MINI

Serial Number: None

Applicant: deister electronic GmbH

Manufacturer: deister electronic 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

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1.2 MANUFACTURER

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Address:	Hermann-Bahlsen-Str. 11 30890 Barsinghausen
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Name for contact purposes:	Mr. Stefan EICHLER
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1.3 DATES

Date of receipt of test sample:	04 January 2008
Start of test:	09 January 2008
Finish of test:	15 January 2008

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2 TECHNICAL DATA OF EQUIPMENT

2.1 DEVICE UNDER TEST

Type of equipment:	RFID Transponder reader device for key management system
Type designation / model name:	ProxSafe mini
Serial No.:	None
FCC ID:	IXLMINI
IC:	1893B-MINI
Lowest internal frequency:	125 kHz
Highest internal frequency:	8 MHz
Antenna type:	Integral

Ports/Connectors

Identification	Connector		Length *
	EUT	Ancillary	
POWER IN	3 pole terminal block	-	1 m
TERMINAL	RJ 45	4 pole terminal block	2 to 10 m
Ethernet	RJ 45	-	*2
MUX OUT	-	-	*1
MUX IN	-	-	*1

*1: Not used during test, as stated by the applicant, this port is parallel to the TERMINAL line, additionally these lines will be shorter than 2 m in final applications.

*2: Not used during test, as stated by the applicant this line will be not used.

2.2 PERIPHERY DEVICES

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

- An AC / DC converter type DR-60-15 was used during all tests because the applicant stated this device as standard power supply unit, which will be used in combination with the EUT only.
- A SNG3 RS485 to USB converter was used during all tests for communication between the backplane and the PC.
- A laptop PC type LifeBook S Series was used

2.3 SPECIAL EMC MEASURES

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

To reach the documented results, a common mode choke type 744841414 from Würth Elektronik was used at the power supply line.

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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.

The frequency generating circuit of the EUT, distributes the 125 kHz signal to the antennas (multiplexer function, one at time) and collect the TAG information and transfers them via the RS 485 line to the final application.

During all measurements the EUT was supplied by either by 13.8 V DC or an external AC/DC converter type DR-60-15.

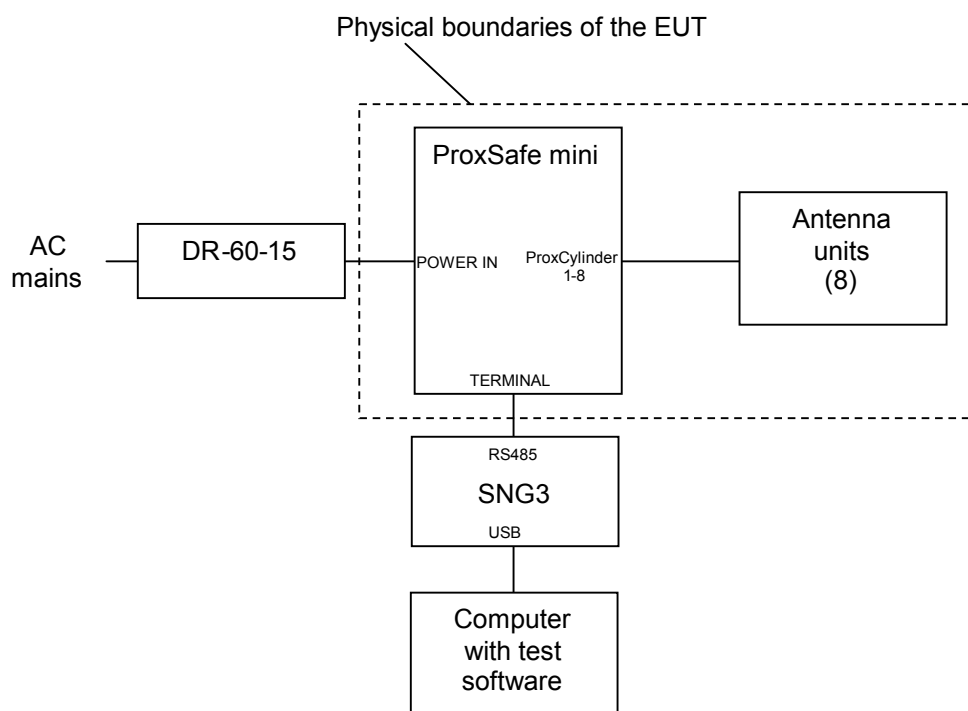
During all tests the TAG information was permanently checked with the help of the test-software. The TAG information was displayed on the PC display. The communication with the PC was realised with the help of the SNG3.

For the whole frequency range a preliminary measurement in a fully anechoic chamber with a measuring distance of 3 m was carried out to determine the frequencies, which were radiated by the EUT. The final measurements on the detected frequencies were carried out on an outdoor test site without ground plane (for the frequency range 9 kHz to 30 MHz) and on an open area test site with ground plane (for the frequency range 30 MHz to 1 GHz). No measurements were carried out above 1 GHz.

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	125 kHz	-	4.6.1 [4]	Passed	Annex D

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5 TEST RESULTS

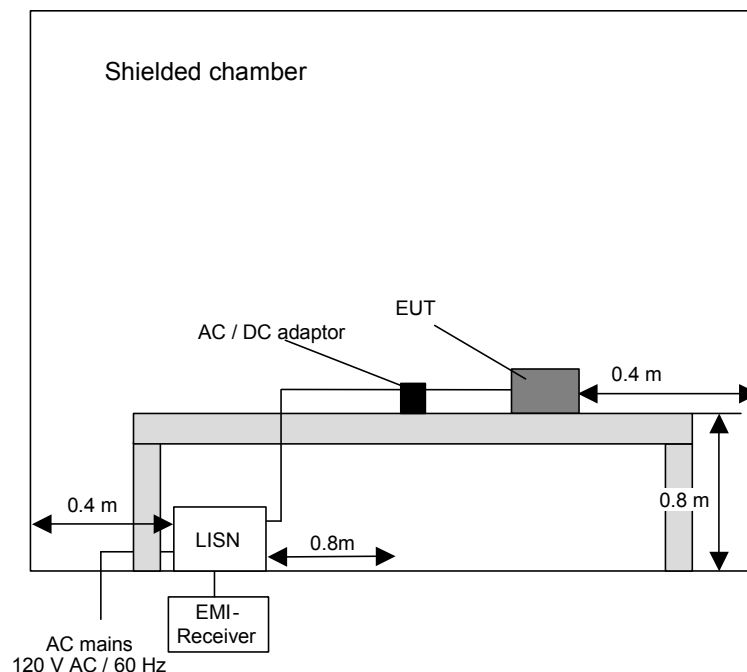
5.1 CONDUCTED EMISSION MEASUREMENT ON AC MAINS (150 kHz to 30 MHz)

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 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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5.1.2 TEST RESULTS (CONDUCTED EMISSION MEASUREMENT ON AC MAINS)

Ambient temperature:	20 °C	Relative humidity:	39 %
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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: All cables of the EUT were 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(with reading TAGs). All results are shown in the following.

Power supply: During this test the EUT was powered by an AC/DC adaptor type DR-60-15.

Manufacturer: deister electronic GmbH

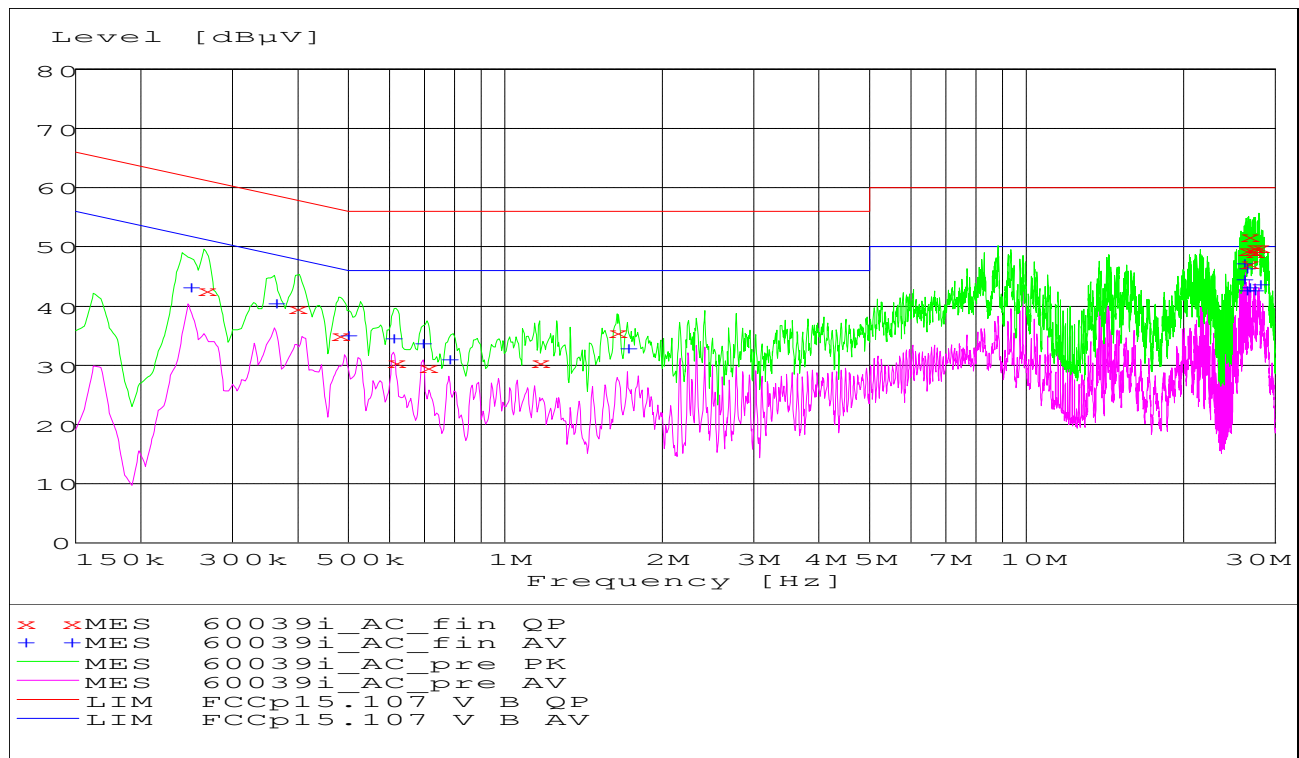
Operating Condition: Polling

Test site: PHOENIX TESTLAB Blomberg M4

Operator: Th. Kühn

Test Specification: With power supply DR-60-15 and a common mode choke type 744841414

Comment:



Data record name: 60039i_AC

TEST REPORT REFERENCE: R60039_B Edition 1

Result measured with the quasipeak detector:

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

Frequency MHz	Level dB μ V	Transducer dB	Limit dB μ V	Margin dB	Line	PE
0.267450	42.9	0.8	61.2	18.3	N	FLO
0.399480	39.7	0.8	57.9	18.2	N	FLO
0.478860	35.2	0.9	56.4	21.1	N	FLO
0.619800	30.6	0.8	56.0	25.4	L1	FLO
0.707280	29.9	0.8	56.0	26.1	N	FLO
1.166010	30.9	0.7	56.0	25.1	N	FLO
1.634190	35.6	0.7	56.0	20.4	N	FLO
26.401830	49.7	2.9	60.0	10.3	L1	FLO
26.683080	47.5	3.0	60.0	12.5	N	FLO
26.780640	51.9	3.0	60.0	8.1	L1	FLO
26.938230	49.8	3.0	60.0	10.2	L1	FLO
27.286080	50.1	3.0	60.0	9.9	N	FLO
27.448890	49.2	3.0	60.0	10.8	N	FLO
27.959820	50.0	3.1	60.0	10.0	L1	FLO

Data record name: 60039i_AC_fin QP

Result measured with the average detector:

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

Frequency MHz	Level dB μ V	Transducer dB	Limit dB μ V	Margin dB	Line	PE
0.247740	43.4	0.9	51.8	8.4	N	FLO
0.362760	40.6	0.8	48.7	8.1	N	FLO
0.496230	35.2	0.8	46.1	10.8	N	FLO
0.612150	34.6	0.8	46.0	11.4	N	FLO
0.695040	33.7	0.8	46.0	12.3	N	FLO
0.777570	31.4	0.8	46.0	14.6	N	FLO
1.718700	33.0	0.7	46.0	13.0	N	FLO
26.034360	44.8	2.9	50.0	5.2	N	FLO
26.157930	47.5	2.9	50.0	2.5	L1	FLO
26.284110	46.6	2.9	50.0	3.4	L1	FLO
26.413170	42.9	2.9	50.0	7.1	N	FLO
26.781270	43.4	3.0	50.0	6.6	N	FLO
27.429540	42.8	3.0	50.0	7.2	L1	FLO
27.938220	43.8	3.1	50.0	6.2	N	FLO

Data record name: 60039i_AC_fin AV

Test: Passed

TEST EQUIPMENT USED:

1 - 3, 5, 6

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 25 GHz.
- A final measurement carried out in a fully anechoic chamber with a fixed antenna height in the frequency range 1 GHz to 25 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.

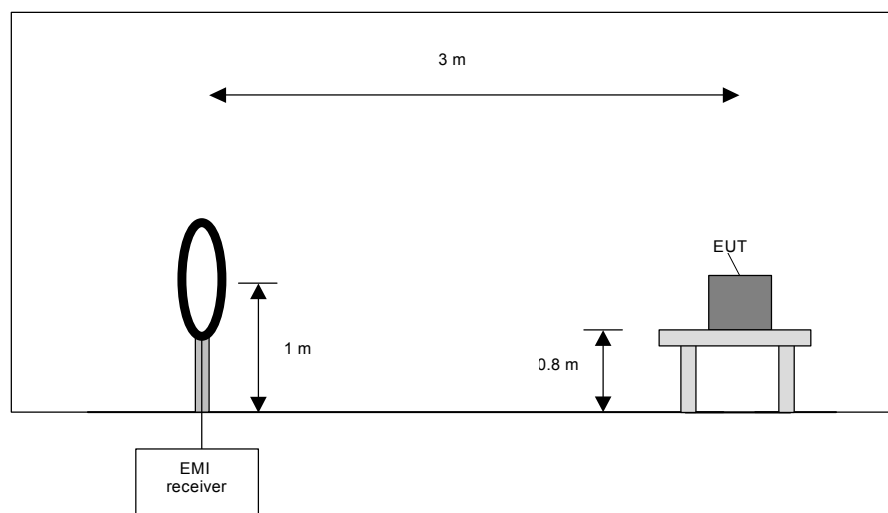
Preliminary measurement (9 kHz to 30 MHz):

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).

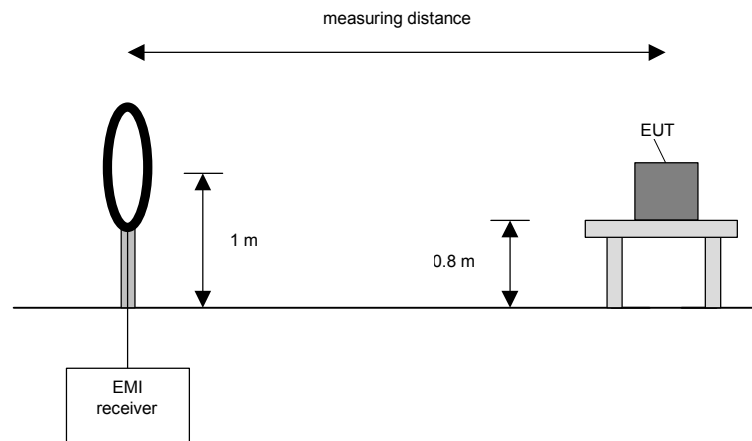
Final measurement (9 kHz to 30 MHz):

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).

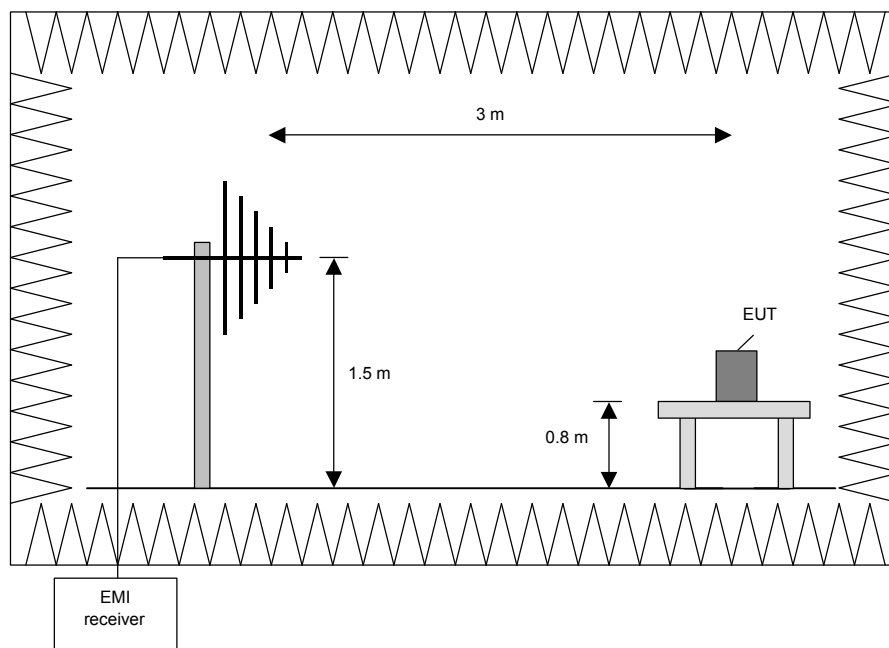
Preliminary measurement (30 MHz to 1 GHz)

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:

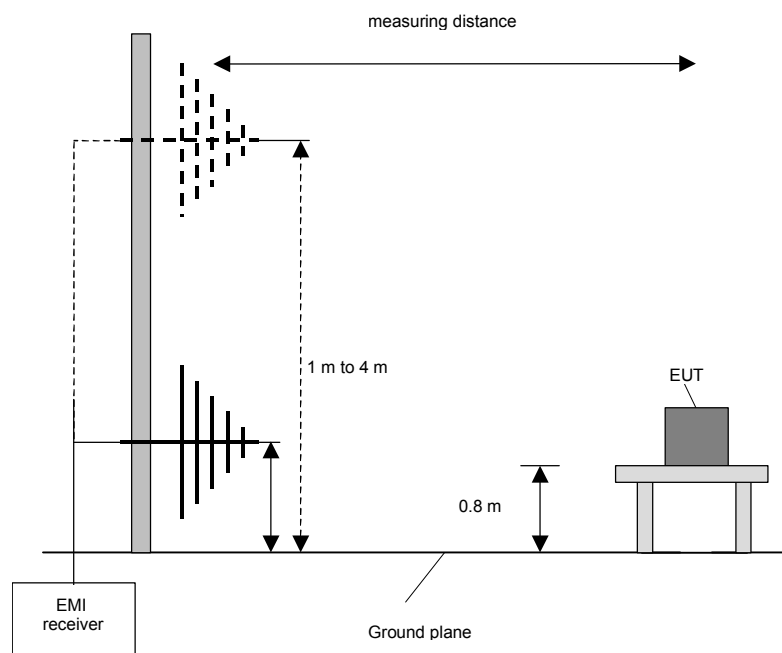
1. Monitor the frequency range at horizontal polarisation and a EUT azimuth of 0 °.
2. Manipulate the system cables within the range to produce the maximum level of emission.
3. Rotate the EUT by 360 ° to maximize the detected signals.
4. Make a hardcopy of the spectrum.
5. Measure the frequency of the 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].

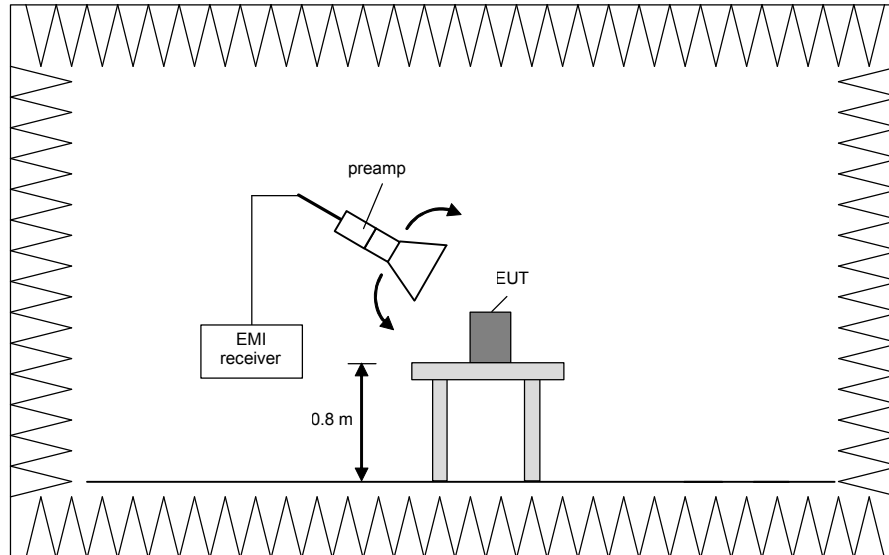
Preliminary measurement (1 GHz to 110 GHz)

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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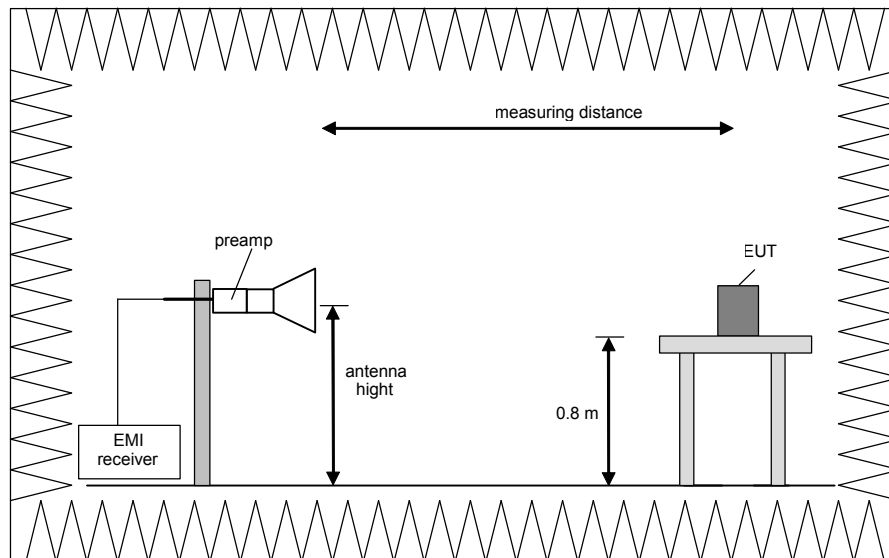
Final measurement (1 GHz to 110 GHz)

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.

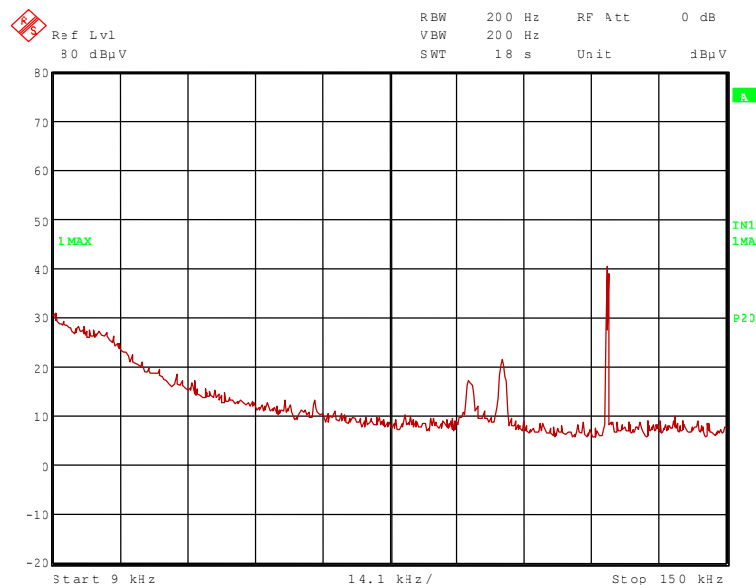
TEST REPORT REFERENCE: R60039_B Edition 1

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

Ambient temperature:	21 °C	Relative humidity:	35 %
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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 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.

60039_15: Spurious emissions from 9 kHz to 150 kHz:

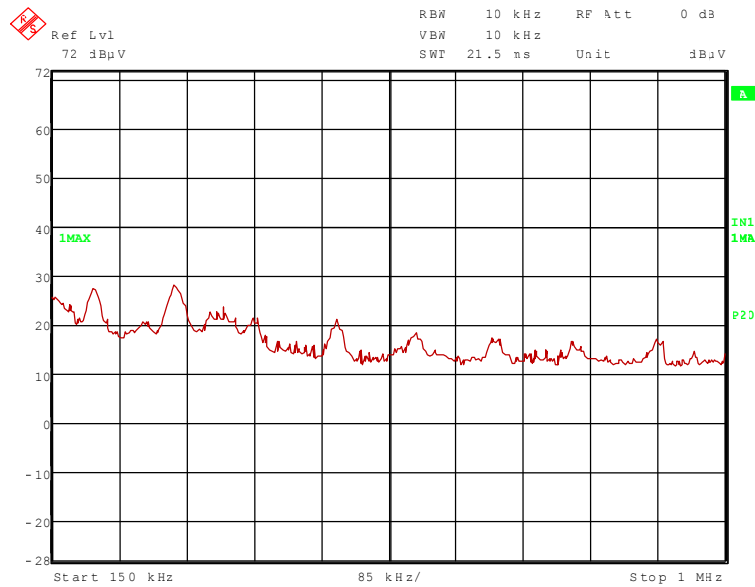


TEST EQUIPMENT USED THE TEST:

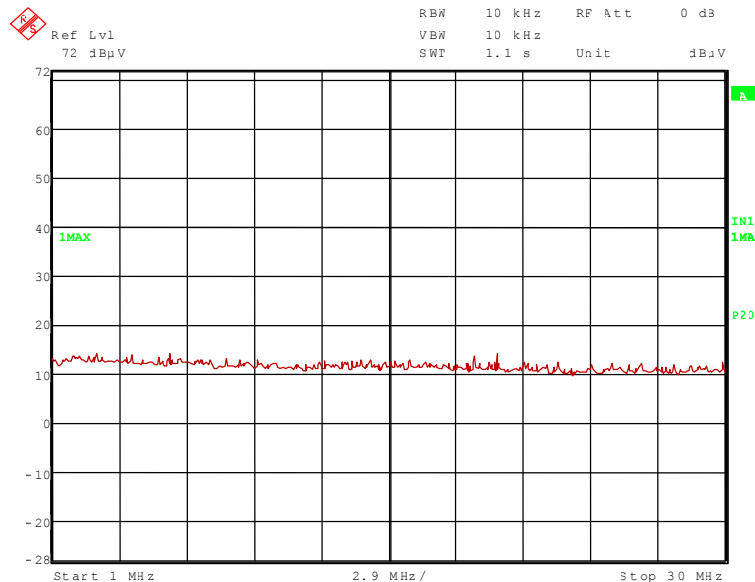
29, 31 – 33, 43, 54, 56

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60039_16: Spurious emissions from 150 kHz to 1 MHz:



60039_17: Spurious emissions from 1 MHz to 30 MHz:



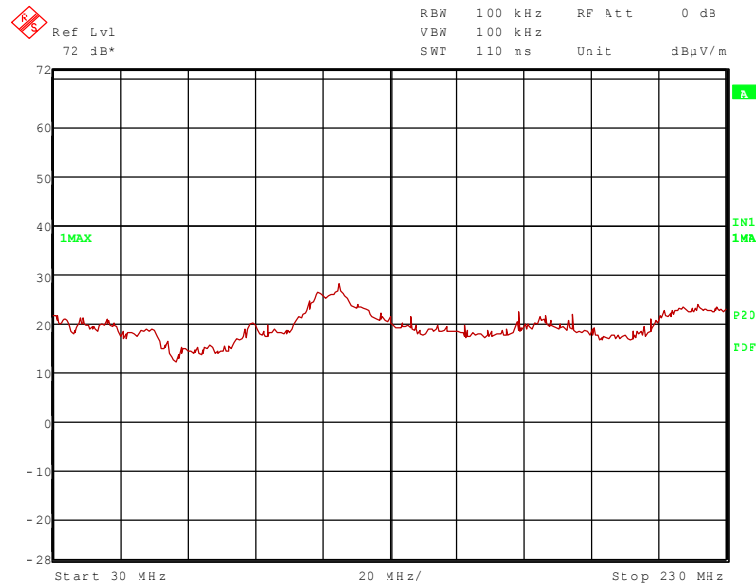
The following emissions were found according to FCC 47 CFR Part 15 section 15.209 (a).

99.770 kHz, 106.540 kHz, 125.650 kHz, 200.758 kHz, 300.188 kHz and 509.948 kHz.

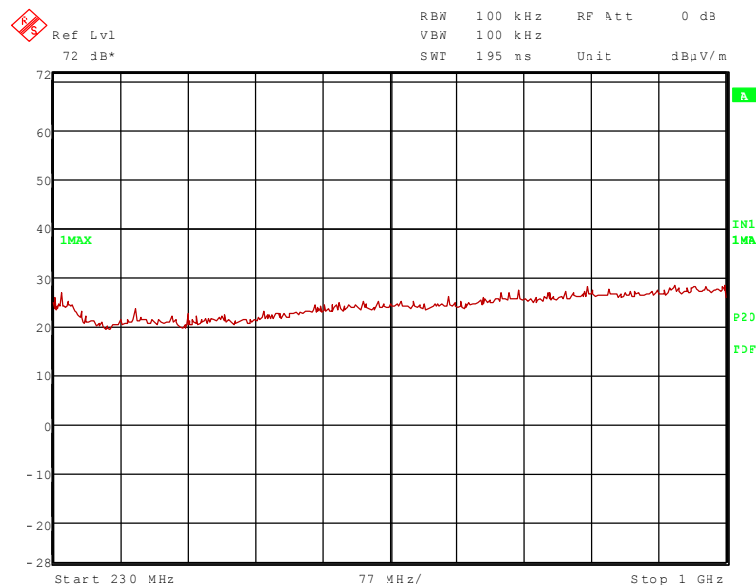
These frequencies have to be measured on the outdoor test site. The results were presented in the following

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60039_1.wmf: Spurious emissions from 30 MHz to 230 MHz:



60039_2.wmf: Spurious emissions from 230 MHz to 1 GHz:



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

222.198 MHz.

The following frequency was found inside the restricted bands:

111.662 MHz, 168.055 MHz, and 240.204 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:	10 °C	Relative humidity:	65 %
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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:

$$\text{Result [dB}\mu\text{V/m]} = \text{reading [dB}\mu\text{V]} + \text{antenna factor [dB/m]}$$

Results with measuring distance of 3 m						
Frequency	Result dB μ V/m	Limit dB μ V/m	Margin dB	Detector	Readings dB μ V	Antenna factor * dB/m
99.770	35.1	104.1	69.0	QP	15.1	20.0
106.540	18.2	102.5	84.3	QP	18.2	20.0
125.650	58.0	99.1	41.1	AV	38.0	20.0
200.758	40.4	92.0	51.6	AV	20.4	20.0
300.188	39.0	88.0	49.0	AV	19.0	20.0
509.948	36.9	84.7	47.8	QP	16.9	20.0
Results with measuring distance of 10 m						
Frequency MHz	Result dB μ V/m	Limit dB μ V/m	Margin dB	Detector	Readings dB μ V	Antenna factor * dB/m
99.770	Signal was below the noise floor of the system					
106.540	Signal was below the noise floor of the system					
125.650	Signal was below the noise floor of the system					
200.758	Signal was below the noise floor of the system					
300.188	Signal was below the noise floor of the system					
509.948	Signal was below the noise floor of the 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: R60039_B Edition 1

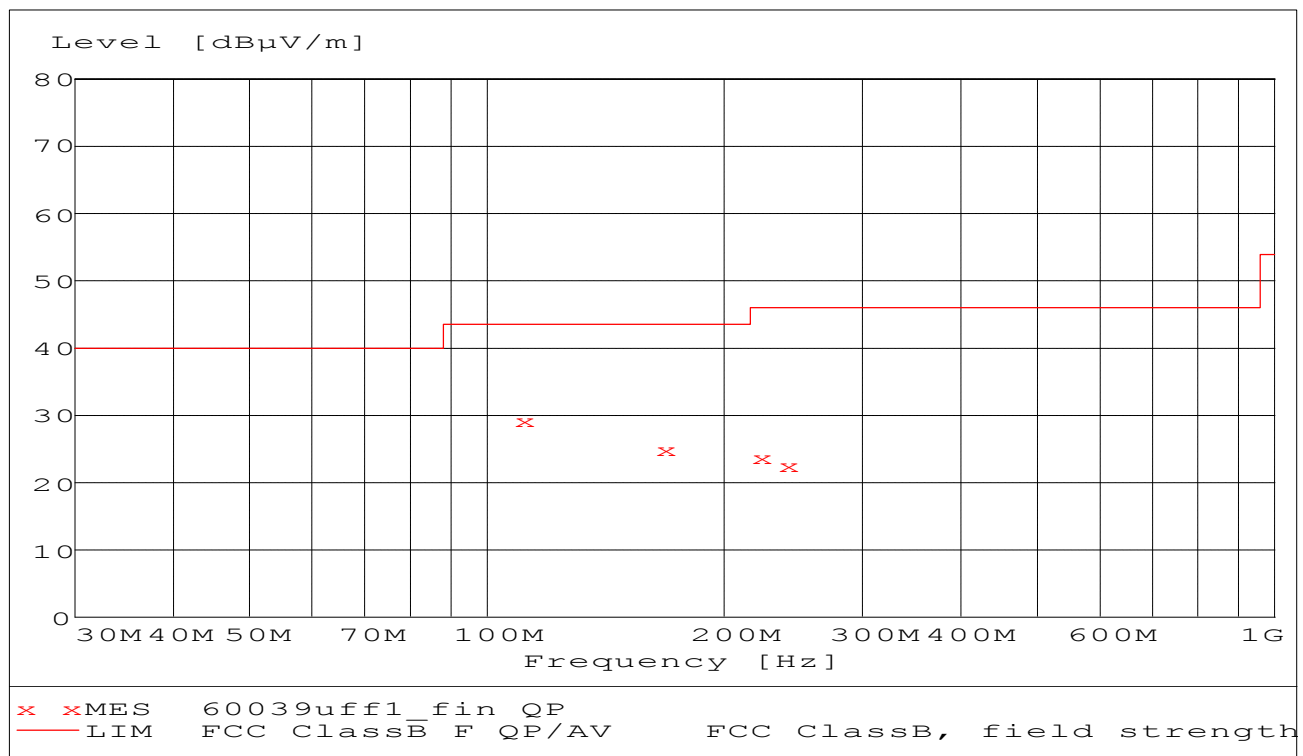
5.3 FINAL RADIATED EMISSION TEST (30 MHz to 1 GHz)

Ambient temperature:	18 °C	Relative humidity:	45 %
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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 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:

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

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: 60039uff1

TEST REPORT REFERENCE: R60039_B Edition 1

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 outside restricted bands									
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	
222.198	23.7	46.0	22.3	12.2	9.9	1.6	126.0	0.0	Hor.
Spurious emissions in restricted bands									
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	
111.662	29.3	43.5	14.2	16.4	11.8	1.1	265.0	207.0	Hor.
168.055	25.1	43.5	18.4	13.3	10.4	1.4	104.0	68.0	Vert.
240.204	22.5	46.0	23.5	9.6	11.2	1.7	107.0	202.0	Hor.
Measurement uncertainty				+2.2 dB / -3.6 dB					

The test results were calculated with the following formula:

Result [dB μ V/m] = reading [dB μ V] + cable loss [dB] + antenna factor [dB/m]

Test: Passed

TEST EQUIPMENT USED FOR THE TEST:

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TEST REPORT REFERENCE: R60039_B Edition 1

6 TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

TEST REPORT REFERENCE: R60039_B Edition 1

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	03/05/2007	02/2008
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	02/16/2006	02/2008
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	02/21/2006	02/2008
58	Loop Antenna ∅ = 225 mm	-	Phoenix Test-Lab	-	410085	Weekly verification	
59	RF-cable No. 10	RG223	Phoenix-Test-Lab	-	410102	Weekly verification	

TEST REPORT REFERENCE: R60039_B Edition 1

7 LIST OF ANNEXES

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	ProxSafe mini, test set-up fully anechoic chamber (preliminary test)	60039_41.jpg
	ProxSafe mini, test set-up fully anechoic chamber	60039_6.jpg
	ProxSafe mini, test set-up outdoor test site	60039_19.jpg
	ProxSafe mini, test set-up open area test site	60039_49.jpg
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	ProxSafe mini, Power supply	60039_i.jpg
ANNEX C	INTERNAL PHOTOGRAPHS OF THE TEST SAMPLE:	10 pages
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