

FCC ID: OHCMETDGS3 IC ID: 10671A-METDGS3

EMI - TEST REPORT

- FCC Part 15.249, RSS210 -



Test Report No. : T36410-00-02KJ

26. March 2013

Date of issue

Type / Model Name : US-1048

Product Description : USB Antenna – Wireless pH Monitoring System

Applicant : smaXtec animal care sales GmbH

Address : Wastiangasse 4

8010 GRAZ; AUSTRIA

Manufacturer : smaXtec animal care sales GmbH

Address : Wastiangasse 4

8010 GRAZ; AUSTRIA

Licence holder : smaXtec animal care sales GmbH

Address : Wastiangasse 4

8010 GRAZ; AUSTRIA

Test Result according to the standards listed in clause 1 test standards:

POSITIVE



The test report merely corresponds to the test sample. It is not permitted to copy extracts of these test results without the written permission of the test laboratory.

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1 TEST STANDARDS

The tests were performed according to following standards:

FCC Rules and Regulations Part 15, Subpart A - General (September, 2012)

Part 15, Subpart A, Section 15.31	Measurement standards
Part 15, Subpart A, Section 15.33	Frequency range of radiated measurements
Part 15, Subpart A, Section 15.35	Measurement detector functions and bandwidths

FCC Rules and Regulations Part 15, Subpart C - Intentional Radiators (September, 2012)

Part 15, Subpart C, Section 15.109	Radiated emission
Part 15, Subpart C, Section 15.203	Antenna requirement
Part 15, Subpart C, Section 15.204	External radio frequency power amplifiers and antenna modifications
Part 15, Subpart C, Section 15.205	Restricted bands of operation
Part 15, Subpart C, Section 15.207	Conducted limits
Part 15, Subpart C, Section 15.209	Radiated emission limits, general requirements
Part 15, Subpart C, Section 15.249	Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, 5725 - 5875 MHz, and 24.0 - 24.25 GHz

ANSI C63.4: 2009	Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
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ANSI C95.1:2005	IEEE Standard for Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
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CISPR 16-4-2: 2003	Uncertainty in EMC measurement
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CISPR 22: 2005 EN 55022: 2006	Information technology equipment
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2 SUMMARY

2.1 Test result summery

The device using digital modulation:

Operating in the 902 MHz – 928 MHz band:

FCC Rule Part	RSS Rule Part	Description	Result
15.207(a)	RSS Gen, 7.2.4	AC power line conducted emissions	passed
15.215(c)	RSS Gen, 4.6.3	-20 dBc EBW	passed
15.249(a)	RSS-210, A8.4(4)	Field strength of fundamental	passed
15.249(d)	RSS-210, A8.5	Out-of-band emission, radiated	passed
15.205(a)	RSS-Gen, 7.2.2	Emissions in restricted bands	passed
	RSS-Gen, 4.6.1	99 % Bandwidth	passed
15.109(a)	RSS-Gen, 4.10	Radiated emission	passed

The mentioned RSS Rule Parts in the above table are related to:

RSS Gen, Issue 3, December 2010

RSS 210, Issue 8, December 2010

RSS 102, Issue 4, March 2010

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2.2 GENERAL REMARKS:

The EUT provides only full power setting and the test mode TX continuous mode, modulated.
The EUT was set with test modulation to transmit data during the tests with a duty cycle (X) of assumed X = 1.
According to FCC Part 15.31(m), full test are only performed at 905.5 MHz.

PRODUCT	USB Antenna – Wireless pH Monitoring System
MODEL NO.	US-1048
TYPE OF EQUIPMENT	Low power communication transceiver
MODULATION TYPE	Digital
MODULATION TECHNOLOGY	2-GFSK
TRANSFER RATE	19200 bps
FREQUENCY RANGE	905.5 MHz to 906.0 MHz
FREQUENCY TOLERANZ	±15 ppm (Crystal NX2520SA)
NUMBER OF CHANNEL	2
RATED RF OUTPUT POWER	0.25 mW (-6 dBm)
CONDUCTED RF OUTPUT POWER	N/A
ANTENNA TYPE	Ceramic Antenna (Johanson 0915AT43A0026E)
ANTENNA STRUCTURE GAIN	-3.5 dBi

2.3 FINAL ASSESSMENT:

The equipment under test **fulfills** the EMI requirements cited in clause 1 test standards.

Date of receipt of test sample : acc. to storage records

Testing commenced on : 08. October 2012

Testing concluded on : 05. March 2013

Checked by:

Tested by:

Thomas Weise
Dipl.-Ing.(FH)
Laboratory Manager

Josef Knab
Radio Senior Expert

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3 EQUIPMENT UNDER TEST

3.1 Photo documentation of the EUT – Please see attachment A

3.2 Power supply system utilised

Power supply voltage : 5.0 V DC (powered over USB port)

3.3 Short description of the equipment under test (EUT)

The EuT is a USB antenna and is plugged directly on the PC. It is used for communication with the pH Bolus during the Bolus intialistation process. The bolus initialization process is needed, before the costumer fits the bolus to the cow, to calibrate the pH bolus. The USB antenna has an internal ceramic antenna.

Number of tested samples: 1
Serial number: Prototype

EUT operation mode:

The equipment under test was operated during the measurement under the following conditions:

- cont. TX mode at 905.5 MHz (modulated)

- cont. RX mode

-

EUT configuration:

(The CDF filled by the applicant can be viewed at the test laboratory.)

The following peripheral devices and interface cables were connected during the measurements:

- _____ Model : _____

- _____ Model : _____

- _____ Model : _____

- _____ Model : _____

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4 TEST ENVIRONMENT

4.1 Address of the test laboratory

mikes-testingpartners gmbh
Ohmstrasse 2-4
94342 STRASSKIRCHEN
GERMANY

4.2 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature: 15-35 ° C

Humidity: 30-60 %

Atmospheric pressure: 86-106 kPa

4.3 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader may notice that tolerances within the calibration of the equipment and facilities may cause additional uncertainty. The measurement uncertainty is calculated for all measurements listed in this test report acc. to CISPR 16-4-2 „Uncertainties, statistics and limit modelling – Uncertainty in EMC measurement“ and documented in the mikes-testingpartners gmbh quality system acc. to DIN EN ISO/IEC 17025. For all measurements shown in this report, the measurement uncertainty of the test laboratory, mikes-testingpartners gmbh, is below the measurement uncertainty as defined by CISPR. Therefore, no special measures must be taken into consideration with regard to the limits according to CISPR. Furthermore, component diversity and modifications in production processes may result in additional deviation. If necessary, refer to the test lab for the actual measurement uncertainty for specific tests. The manufacturer has the sole responsibility of continued compliance of the EUT.

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4.4 Measurement protocol for FCC and IC

4.4.1 General information

4.4.1.1 Test methodology

Conducted and radiated disturbance testing is performed according to the procedures set out by the International Special Committee on Radio Interference (CISPR) Publication 22, European Standard EN 55022 as shown under section 1 of this report.

The Open Area test site is a listed Open Site under the Canadian Test-Sites File-No:

IC 3009A

In compliance with RSS 210 testing for RSS compliance may be achieved by following the procedures set out in ANSI C63.4 and applying the CISPR 22 limits.

4.4.1.2 Justification

The equipment under test (EUT) is configured in a typical user arrangement in accordance with the manufacturer's instructions. A cable is connected to each available port and either terminated with a peripheral using the appropriate impedance characteristic or left unterminated. Where appropriate, cables are manually manipulated with respect to each other thus obtaining maximum disturbances from the unit.

4.4.1.3 Details of test procedures

The test methods used comply with CISPR Publication 22, EN 55022 - "Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement" and with ANSI C63.4 - "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". In compliance with 47 CFR Part 15 Subpart A, Section 15.38 testing for FCC compliance may be achieved by following the procedures set out in ANSI C63.4 and applying the CISPR 22 limits.

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5 TEST CONDITIONS AND RESULTS

5.1 Conducted emissions

For test instruments and accessories used see section 6 Part A 4.

5.1.1 Description of the test location

Test location: Shielded Room S2

5.1.2 Photo documentation of the test set-up



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5.1.3 Applicable standard

According to FCC Part 15, Section 15.207(a):

Except as shown in paragraphs (b) and (c) of this Section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the given limits.

5.1.4 Description of Measurement

The measurements are performed following the procedures set out in ANSI C63.4 described under item 4.4.3. If the minimum limit margin appears to be less than 20 dB with a peak mode measurement, the emissions are remeasured using a tuned receiver with quasi-peak and average detection and recorded on the data sheets.

5.1.5 Test result

Frequency range: 0.15 MHz - 30 MHz

Min. limit margin > 10 dB

Limit according to FCC Part 15, Section 15.207(a):

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency

The requirements are **FULFILLED**.

Remarks: For detailed test result please refer to following test protocols

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5.1.6 Test protocol

Test point	L1
Operation mode:	cont. TX mode at 905.5 MHz (modulated)
Remarks:	-

Result: passed

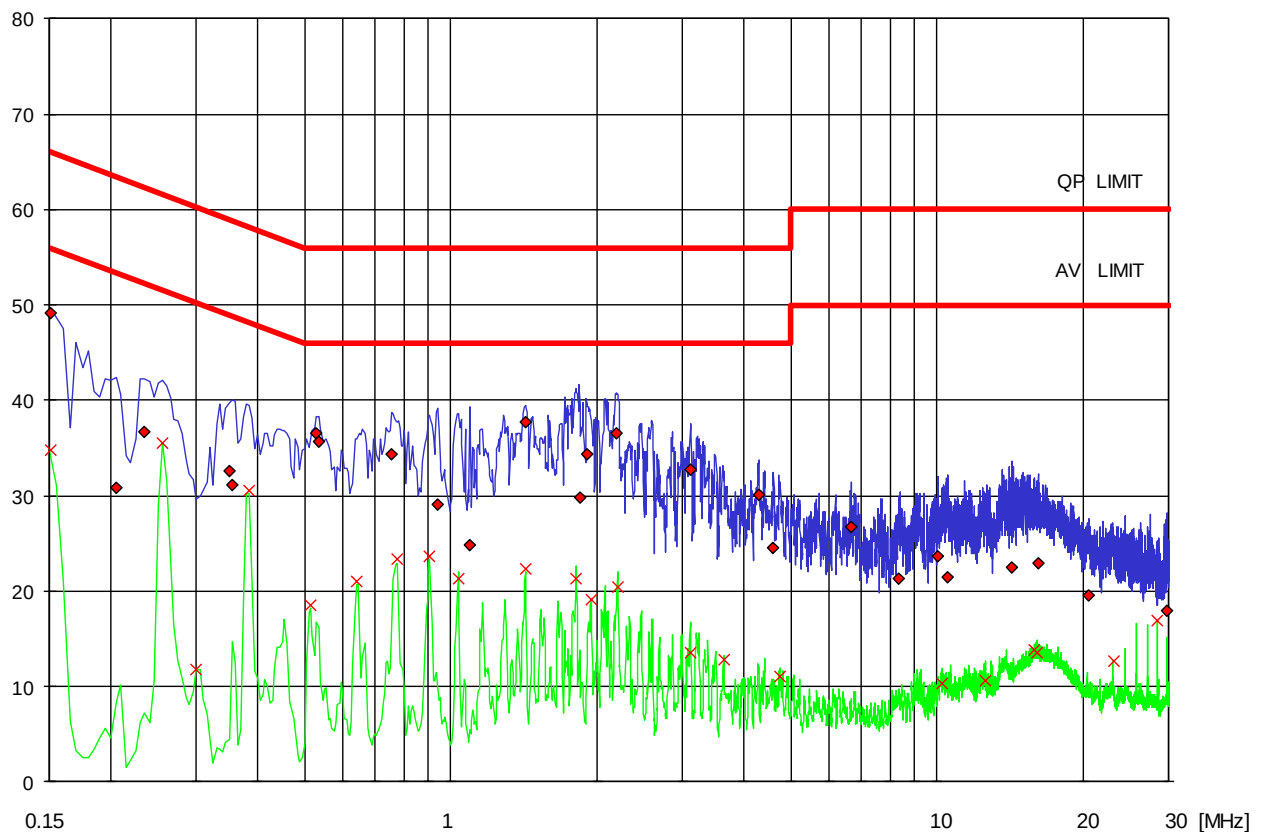
Freq kHz	QP- L dB[μV]	D -Limit QP [dB]	Freq kHz	AV-L dB[μV]	D -Limit AV [dB]
150	49,1	-16,9	150	34,8	-21,2
205	30,9	-32,5	255	35,6	-16,0
235	36,7	-25,6	300	11,8	-38,4
350	32,6	-26,4	385	30,5	-17,7
355	31,1	-27,7	515	18,6	-27,4
530	36,5	-19,5	640	21	-25,0
535	35,7	-20,3	775	23,4	-22,6
755	34,3	-21,7	905	23,7	-22,3
940	29,1	-26,9	1035	21,3	-24,7
1095	24,9	-31,1	1425	22,3	-23,7
1425	37,8	-18,2	1810	21,3	-24,7
1840	29,8	-26,2	1945	19,1	-26,9
1910	34,4	-21,6	2200	20,5	-25,5
2190	36,6	-19,4	3105	13,5	-32,5
3115	32,7	-23,3	3640	12,8	-33,2

[illegible]dB [μ V]

Legend

PK: █ AV: █

Detector: QP: ◆ AV: ✗



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Test point:	N
Operation mode:	cont. TX mode at 905.5 MHz (modulated)
Remarks:	-

Result: passed

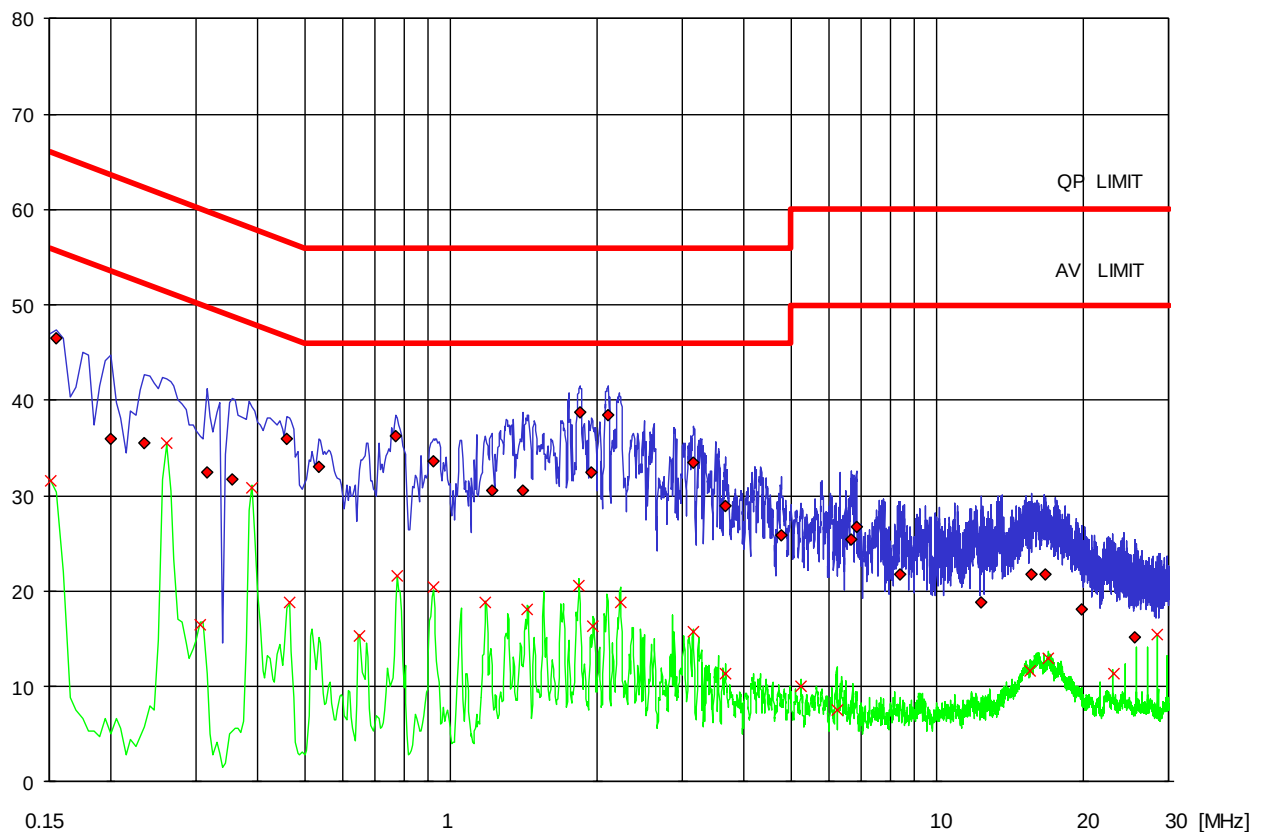
Freq kHz	QP- L dB[μV]	D -Limit QP [dB]	Freq kHz	AV-L dB[μV]	D -Limit AV [dB]
155	46,5	-19,2	150	31,6	-24,4
200	36	-27,6	260	35,5	-15,9
235	35,6	-26,7	305	16,5	-33,6
315	32,5	-27,3	390	30,8	-17,3
355	31,8	-27,0	465	18,8	-27,8
460	36	-20,7	650	15,3	-30,7
535	33,1	-22,9	775	21,6	-24,4
770	36,2	-19,8	920	20,4	-25,6
920	33,7	-22,3	1180	18,9	-27,1
1215	30,5	-25,5	1440	18,1	-27,9
1405	30,5	-25,5	1835	20,6	-25,4
1845	38,7	-17,3	1965	16,3	-29,7
1950	32,4	-23,6	2230	18,8	-27,2
2110	38,4	-17,6	3145	15,8	-30,2
3150	33,5	-22,5	3675	11,3	-34,7

[illegible]dB [μ V]

Legend

PK: AV:

Detector: QP: ◆ AV: ✗



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Test point L1
Operation mode: cont. RX mode
Remarks: -

Result: passed

Freq kHz	QP- L dB[μV]	D -Limit QP [dB]	Freq kHz	AV-L dB[μV]	D -Limit AV [dB]
150	46,9	-19,1	150	33,9	-22,1
200	30,8	-32,8	200	14,5	-39,1
240	35,8	-26,3	260	34,2	-17,2
330	33,9	-25,6	285	14,7	-36,0
355	29,1	-29,7	390	28,5	-19,6
490	22,1	-34,1	460	17,6	-29,1
540	36,9	-19,1	660	17,9	-28,1
765	35,3	-20,7	795	22,1	-23,9
920	36,8	-19,2	925	24,2	-21,8
1050	35,5	-20,5	1060	21,2	-24,8
1455	37,3	-18,7	1455	19,5	-26,5
1860	41,6	-14,4	1850	21,9	-24,1
1910	29,8	-26,2	1995	18,4	-27,6
2110	38,7	-17,3	2115	20,7	-25,3
2920	32,9	-23,1	2925	16,2	-29,8

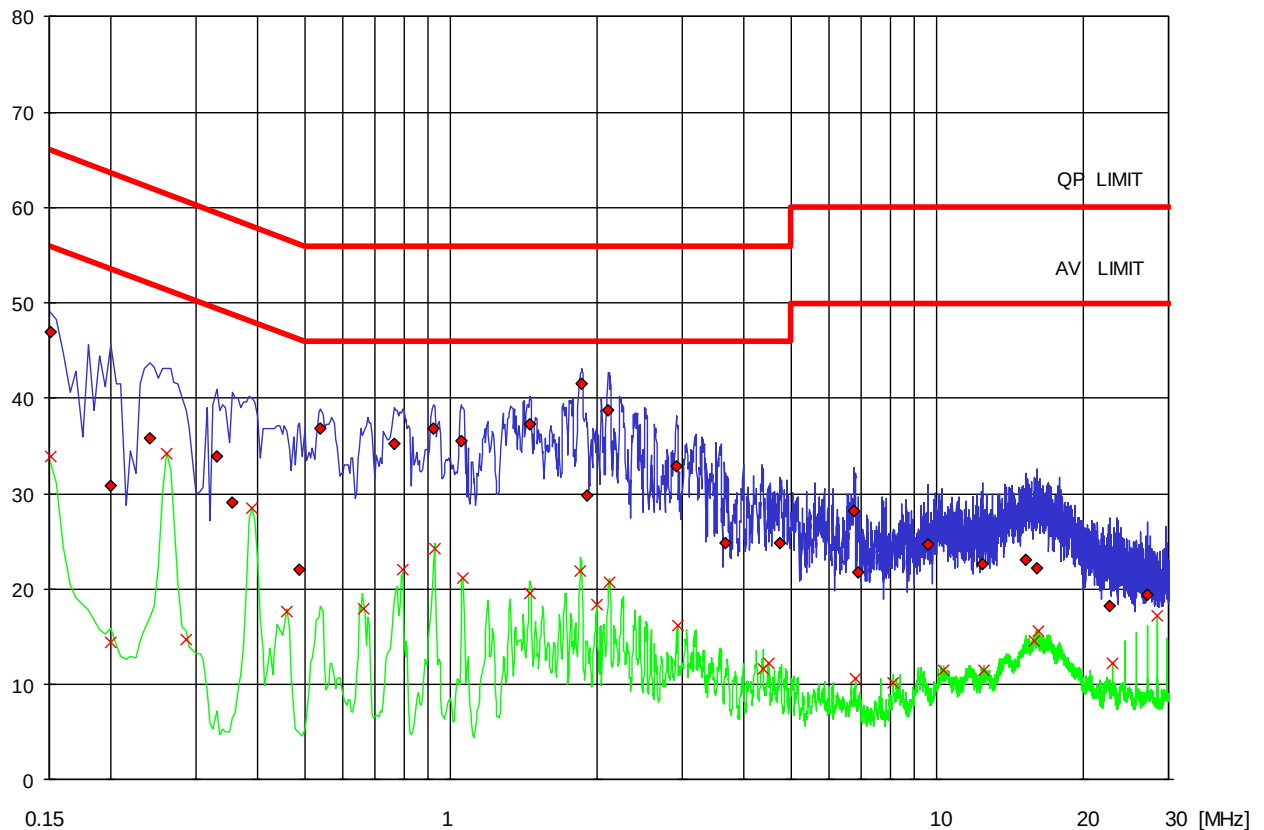
Freq kHz	QP- L dB[μV]	D -Limit QP [dB]	Freq kHz	AV-L dB[μV]	D -Limit AV [dB]
3660	24,9	-31,1	4395	11,6	-34,4
4755	24,9	-31,1	4495	12,3	-33,7
6750	28,2	-31,8	6790	10,6	-39,4
6885	21,8	-38,2	8120	10,2	-39,8
9585	24,7	-35,3	10315	11,5	-38,5
12380	22,7	-37,3	12495	11,5	-38,5
15225	23,1	-36,9	15830	14,6	-35,4
16050	22,2	-37,8	16115	15,6	-34,4
22640	18,2	-41,8	23010	12,3	-37,7
27075	19,4	-40,6	28425	17,2	-32,8

dB [μV]

Legend

PK: — AV: —

Detector: QP: ♦ AV: ×



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Test point N
Operation mode: cont. RX mode
Remarks: -

Result: passed

Freq kHz	QP- L dB[μV]	D -Limit QP [dB]	Freq kHz	AV-L dB[μV]	D -Limit AV [dB]
155	45,6	-20,1	150	32,1	-23,9
200	33	-30,6	260	34,9	-16,5
235	34	-28,3	305	17,6	-32,5
350	29,2	-29,8	390	29,4	-18,7
355	30,3	-28,5	460	18,3	-28,4
460	35,5	-21,2	540	15,9	-30,1
540	33,7	-22,3	760	15,9	-30,1
770	35,9	-20,1	925	16	-30,0
925	34,2	-21,8	1190	19,2	-26,8
1175	30,9	-25,1	1445	17,6	-28,4
1260	28,9	-27,1	1845	20,9	-25,1
1855	39,7	-16,3	1975	16,8	-29,2
1980	33,3	-22,7	2110	18,7	-27,3
2120	39,7	-16,3	3180	14,7	-31,3
3185	34,3	-21,7	3685	11,9	-34,1

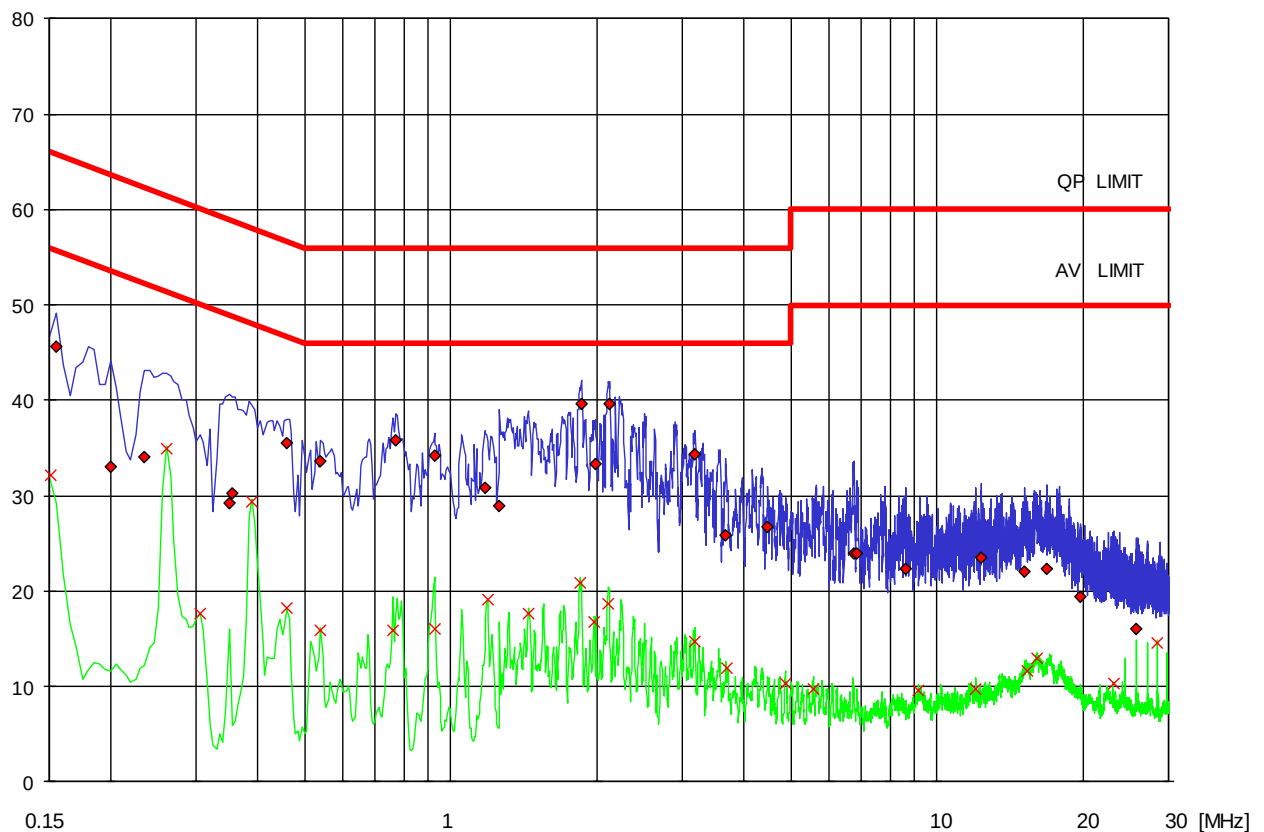
Freq kHz	QP- L dB[μV]	D -Limit QP [dB]	Freq kHz	AV-L dB[μV]	D -Limit AV [dB]
3675	25,9	-30,1	4870	10,3	-35,7
4490	26,8	-29,2	5560	9,8	-40,2
6735	23,9	-36,1	9160	9,6	-40,4
6850	23,9	-36,1	12005	9,8	-40,2
8610	22,4	-37,6	15275	11,7	-38,3
12340	23,5	-36,5	16045	13	-37,0
15135	22,1	-37,9	23015	10,4	-39,6
16855	22,4	-37,6	28425	14,6	-35,4
19660	19,4	-40,6			
25625	16	-44,0			

dB [μV]

Legend

PK: — AV: —

Detector: QP: ♦ AV: ×



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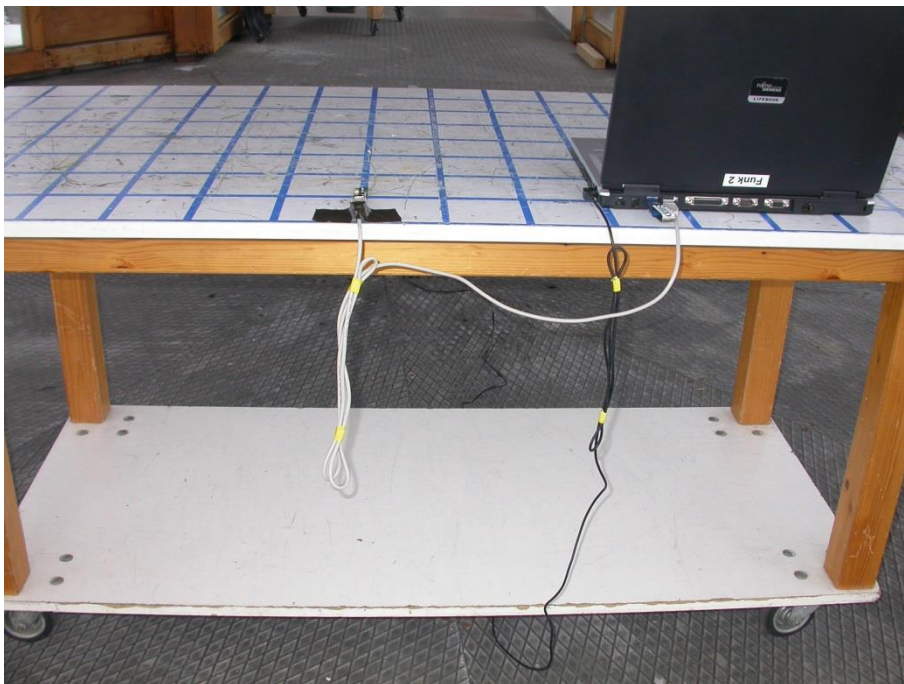
5.2 Radiated emission of the fundamental wave

For test instruments and accessories used see section 6 Part CPR 3.

5.2.1 Description of the test location

Test location: OATS 1
Test distance: 3 m

5.2.2 Photo documentation of the test set-up



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5.2.1 Applicable standard

According to FCC Part 15C, Section 15.249(a):

The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the effective limits.

5.2.2 Description of Measurement

The radiated field strength of the fundamental wave from the EUT is measured using a tuned EMI-receiver. The set up of the EUT and the measurement procedure is in accordance to ANSI C63.4, Item 8.3. The EUT is measured in TX continuous mode modulated under normal conditions.

EMI test receiver settings:

30 MHz – 1000 MHz: RBW: 120 kHz

5.2.3 Test result

Frequency (MHz)	Level QP (dBμV)	Duty Cycle Correction (dB)	Correction factor (dB/m)	Corrected level QP dB(μV/m)	Limit QP dB(μV/m)	Delta (dB)
905.5	58.8	-	29.3	88.1	94.0	-5.9

Note: The correction factor includes cable loss and antenna factor.

Average-Limit according to FCC Part 15C, Section 15.249(a):

Frequency (MHz)	Field strength of fundamental	
	(mV/m)	dB(μV/m)
902 – 928	50	94
2400 – 2483.5	50	94
5725-5875	50	94
24000 – 24250	250	108

Peak-Limit according to FCC Part 15C, Section 15.249(e):

However the peak fieldstrength shall not exceed the maximum permitted average limit by more than 20 dB.

The requirements are **FULFILLED**.

Remarks:

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5.3 Spurious emissions radiated

For test instruments and accessories used see section 6 Part SER1, SER 2, SER 3.

5.3.1 Description of the test location

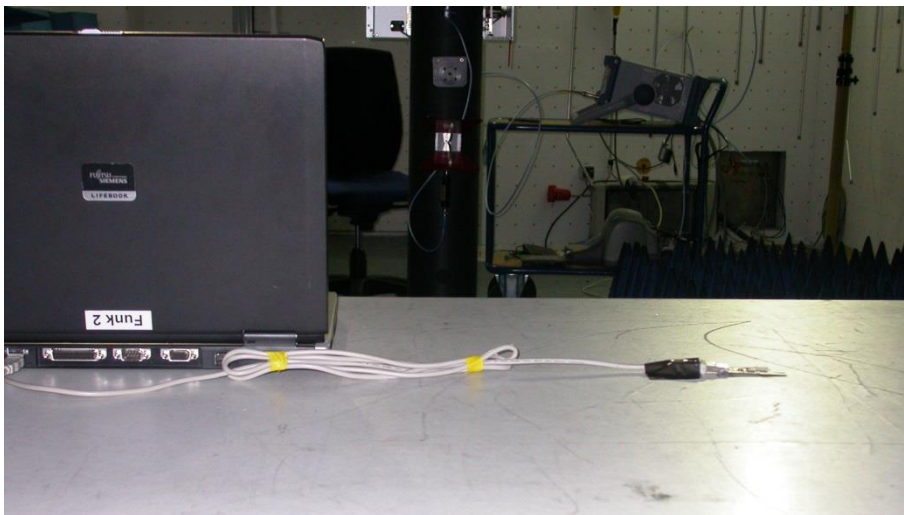
Test location: OATS 1
Test location: Anechoic chamber 2
Test distance: 3 m

5.3.2 Photo documentation of the test set-up



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5.3.3 Applicable standard

According to FCC Part 15C, Section 15.249 (d):

Emission radiated outside of the specified frequency bands, except harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated limit in FCC Part 15C, Section 15.209, whichever is the lesser attenuation.

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5.3.4 Description of Measurement

The magnetic field strength of spurious emission from the EUT is measured in an open area test site in the frequency range of 9 kHz to 30 MHz using a tuned receiver and a shielded loop antenna. The set up of the EUT and the measurement procedure is in accordance to ANSI C63.4, Item 8.3.

The radiated power of the spurious emission from the EUT is measured in a test setup following the procedures set out in ANSI C63.4, Item 8.3.

The EUT is measured in TX continuous mode modulated under normal conditions.

EMI test receiver settings:

9 kHz – 150 kHz: RBW: 200 Hz

150 kHz – 30 MHz: RBW: 9 kHz

Spectrum analyser settings:

1000 MHz – 40 GHz RBW: 1 MHz

5.3.5 Test result $f < 1$ GHz

Frequency (MHz)	Reading level QP (dB μ V)	Reading level AV (dB μ V)	Bandwidth (kHz)	Correction factor (dB/m)	Corrected level QP dB(μ V/m)	Corrected level AV dB(μ V/m)	Limit dB(μ V/m)	Delta (dB)
2*	33.0	-	9	20.0	53.0	-	69.5	-16.5
30*	11.1	-	120	12.6	23.7	-	40.0	-16.3
150*	-0.5	-	120	14.0	13.5	-	43.5	-30.0
300*	2.3	-	120	16.3	18.6	-	46.0	-27.4
450*	1.1	-	120	20.3	21.4	-	46.0	-24.6
750*	-1.0	-	120	26.4	25.4	-	46.0	-20.6
957.5	8.0	-	120	29.8	37.8	-	46.0	-8.2
1000*	-0.4	-	120	30.2	29.8	-	54.0	-24.2

*) Ambient noise

Note: The correction factor includes cable loss and antenna factor.

5.3.6 Test result $f > 1$ GHz

Frequency (MHz)	Level PK (dB μ V)	Duty Cycle Correction (dB)	Level AV (dB μ V)*	Correction factor (dB/m)	Corrected level PK dB(μ V/m)	Corrected level AV dB(μ V/m)	Limit PK dB(μ V/m)	Limit AV dB(μ V/m)	Delta (dB)
1184.3	41.7	-	-	3.3	45.0	-	74.0	54.0	-9
5433.0	47.7	-	-	4.0	51.8	-	74.0	54.0	-2.2

Note: The correction factor includes cable loss and antenna factor.

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Limit according to FCC Part 15C, Section 15.209:

Frequency (MHz)	15.209 Limits dB(μV/m)	Measurement distance (m)
0.009 - -0.49	2400/f(kHz)	300
0.49 – 1.705	24000/f(kHz)	30
1.705 – 30.0	30	30
30-88	40	3
88-216	43.5	3
216-960	46	3
Above 960	54	3

Average limit according to FCC Part 15C, Section 15.249(a):

Fundamental frequency (MHz)	Field strength of harmonics	
	(μV/m)	dB(μV/m)
902 - 928	500	54
2400 - 2483.5	500	54
5725-5875	500	54
24000 - 24250	2500	68

Peak-Limit according to FCC Part 15C, Section 15.249(e):

However the peak fieldstrength shall not exceed the maximum permitted average limit by more than 20 dB.

The requirements are **FULFILLED**.

Remarks: The measurement was performed up to the 10th harmonic (10000 MHz).

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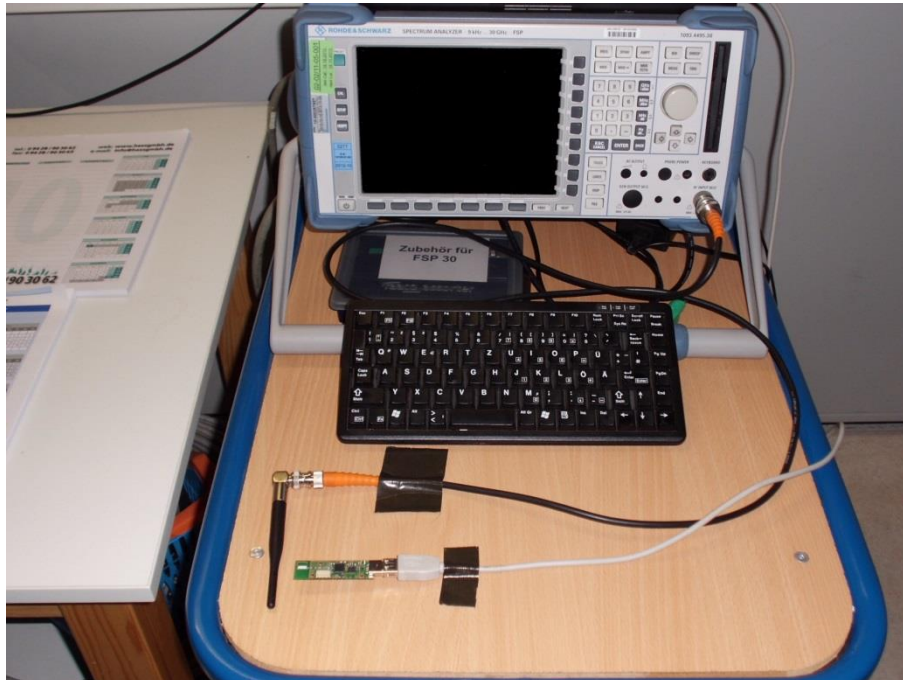
5.4 20 dB bandwidth

For test instruments and accessories used see section 6 Part MB.

5.4.1 Description of the test location

Test location: AREA4

5.4.2 Photo documentation of the test set-up



5.4.3 Applicable standard

According to FCC Part 15, Section 15.215(c):

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in Section 15.217 through Section 15.257, must be designed to ensure that the 20 dB bandwidth of the emission is contained within the frequency band designated in the rule section under which the equipment is operated.

5.4.4 Description of Measurement

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio of -20 dB. The reference level is the level of the highest signal amplitude observed from the transmitter at the fundamental frequency. Alternative is the x-dB-down function of the analyser used. The EBW is then directly shown in the marker display. The measurement is performed radiated with normal modulation and a transfer rate means the worst case.

Spectrum analyser settings:

RBW: 10 kHz

VBW: 30 kHz

Span: 200 kHz

Sweep time: Auto

Detector: Max. peak

Trace Mode: Max hold

FCC ID: OHCMETDGS3 IC ID: 10671A-METDGS3

5.4.5 Test result

Operating frequency band (MHz)	20 dB Bandwidth (MHz)
$f_{low} > 902$	$f_{low} = 905.47$
$f_{high} < 928$	$f_{high} = 905.53$

80% bandwidth of the permitted band:

20.8 MHz

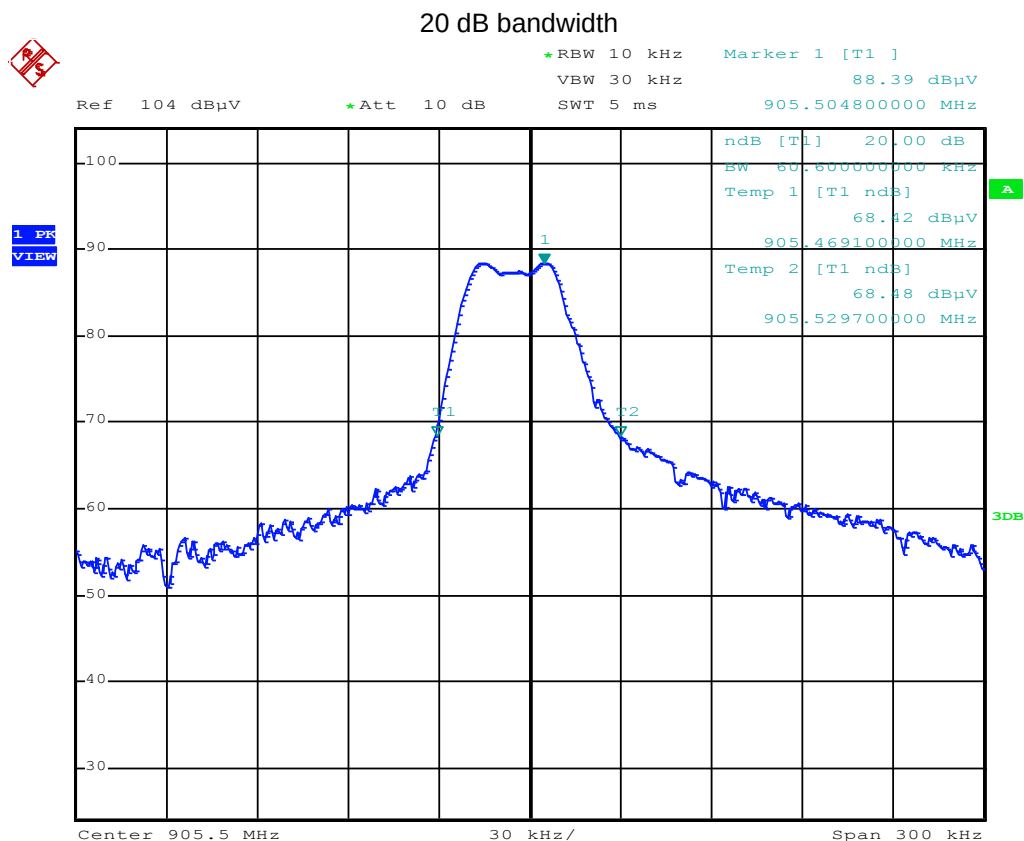
Limit according to FCC Part 15C, Section 15.215(c):

If frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

The requirements are **FULFILLED**.

Remarks: For detailed test result please refer to following test protocols.

5.4.6 Test protocols



FCC ID: OHCMETDGS3 IC ID: 10671A-METDGS3

5.5 Antenna application

5.5.1 Applicable standard

According to FCC Part 15C, Section 15.203(a):

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section.

5.5.2 Result

The EUT use an integrated PCB antenna. No other antenna than that furnished by the responsible party or external power amplifier can be applied by a customer.

The antenna of the EUT meets the requirement of FCC Part 15C, Section 15.203 and 15.204.

FCC ID: OHCMETDGS3 IC ID: 10671A-METDGS3

5.6 Receiver radiated emissions

For test instruments and accessories used see section 6 Part SER2 and SER3.

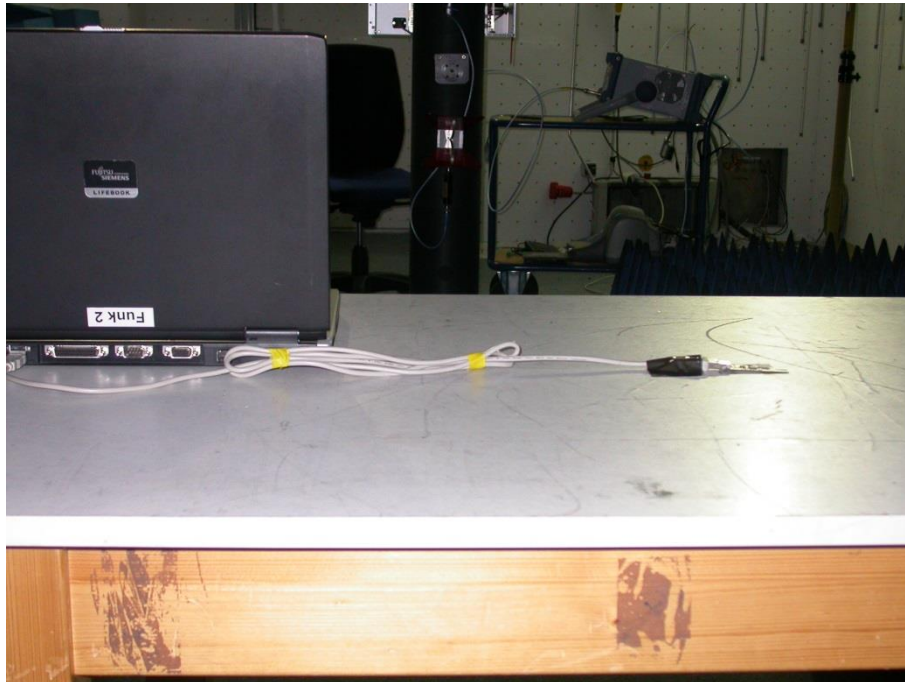
5.6.1 Description of the test location

Test location: OATS 1
Test location: Anechoic chamber 2
Test distance: 3 m

5.6.2 Photo documentation of the test set-up



FCC ID: OHCMETDGS3 IC ID: 10671A-METDGS3



5.6.3 Applicable standard

According to FCC Part 15C, Section 15.109(a):

Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 m shall not exceed the given limit.

5.6.4 Description of Measurement

The field strength of radiated emissions from the EUT is measured in a test setup following the procedures set out in ANSI C63.4, Item 8.3.

The EUT is measured in RX continuous mode under normal conditions.

EMI test receiver settings:

150 kHz – 30 MHz: RBW: 9 kHz

Spectrum analyser settings:

1000 MHz – 40 GHz RBW: 1 MHz

5.6.5 Test result $f < 1$ GHz

Frequency (MHz)	Reading level QP (dB μ V)	Reading level AV (dB μ V)	Bandwidth (kHz)	Correction factor (dB/m)	Corrected level QP dB(μ V/m)	Corrected level AV dB(μ V/m)	Limit dB(μ V/m)	Delta (dB)
30*	11.1	-	120	12.6	23.7	-	40.0	-16.3
150*	-0.5	-	120	14.0	13.5	-	43.5	-30.0
300*	2.3	-	120	16.3	18.6	-	46.0	-27.4
450*	1.1	-	120	20.3	21.4	-	46.0	-24.6
750*	-1.0	-	120	26.4	25.4	-	46.0	-20.6
1000*	-0.4	-	120	30.2	29.8	-	54.0	-24.2

*) Ambient noise

Note: The correction factor includes cable loss and antenna factor.

FCC ID: OHCMETDGS3 IC ID: 10671A-METDGS3
5.6.6 Test result f > 1 GHz

Frequency (MHz)	Level PK (dBμV)	Duty Cycle Correction (dB)	Level AV (dBμV)*	Correction factor (dB/m)	Corrected level PK dB(μV/m)	Corrected level AV dB(μV/m)	Limit PK dB(μV/m)	Limit AV dB(μV/m)	Delta (dB)
1500*	47.8	-	-	-15.1	32.7	-	74.0	54.0	-21.3
2500*	47.6	-	-	-9.8	37.8	-	74.0	54.0	-16.2
3500*	47.4	-	-	-9.2	38.2	-	74.0	54.0	-15.8
4500*	37.9	-	-	3.5	41.4	-	74.0	54.0	-12.6

*) Ambient noise

Note: The correction factor includes cable loss and antenna factor.

Limit according to FCC Part 15C, Section 15.109:

Frequency (MHz)	15.109 Limits dB(μV/m)	Measurement distance (m)
30-88	40	3
88-216	43.5	3
216-960	46	3
Above 960	54	3

Peak-Limit according to FCC Part 15C, Section 15.35(b):

However the peak fieldstrength shall not exceed the maximum permitted average limit by more than 20 dB.

The requirements are **FULFILLED**.

Remarks: The measurement was performed up to the 5th harmonic (5000 MHz).

FCC ID: OHCMETDGS3 IC ID: 10671A-METDGS3

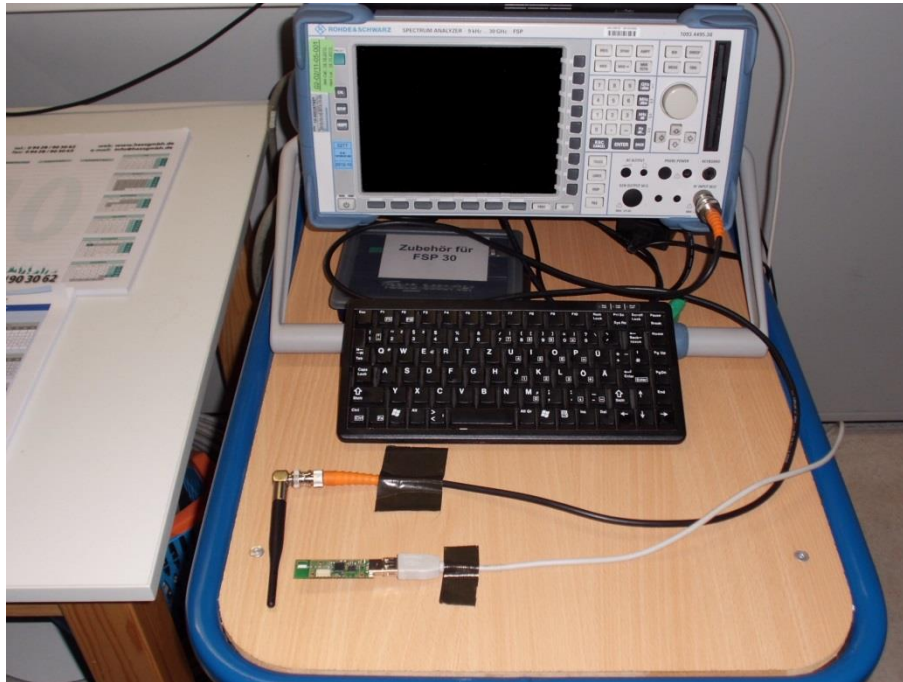
5.7 Occupied bandwidth

For test instruments and accessories used see section 6 Part MB.

5.7.1 Description of the test location

Test location: AREA4

5.7.2 Photo documentation of the test set-up



5.7.3 Applicable standard

According to RSS-Gen, 4.6.1:

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99 % emission bandwidth, as calculated or measured.

5.7.4 Description of Measurement

The bandwidth was measured with the function “bandwidth measurement” of the spectrum analyser. The measurement is performed radiated with normal modulation and a transfer rate means the worst case.

Spectrum analyser settings:

RBW: 10 kHz

VBW: 30 kHz

Span: 200 kHz

Sweep time: Auto

Detector: Max. peak

Trace Mode: Max hold

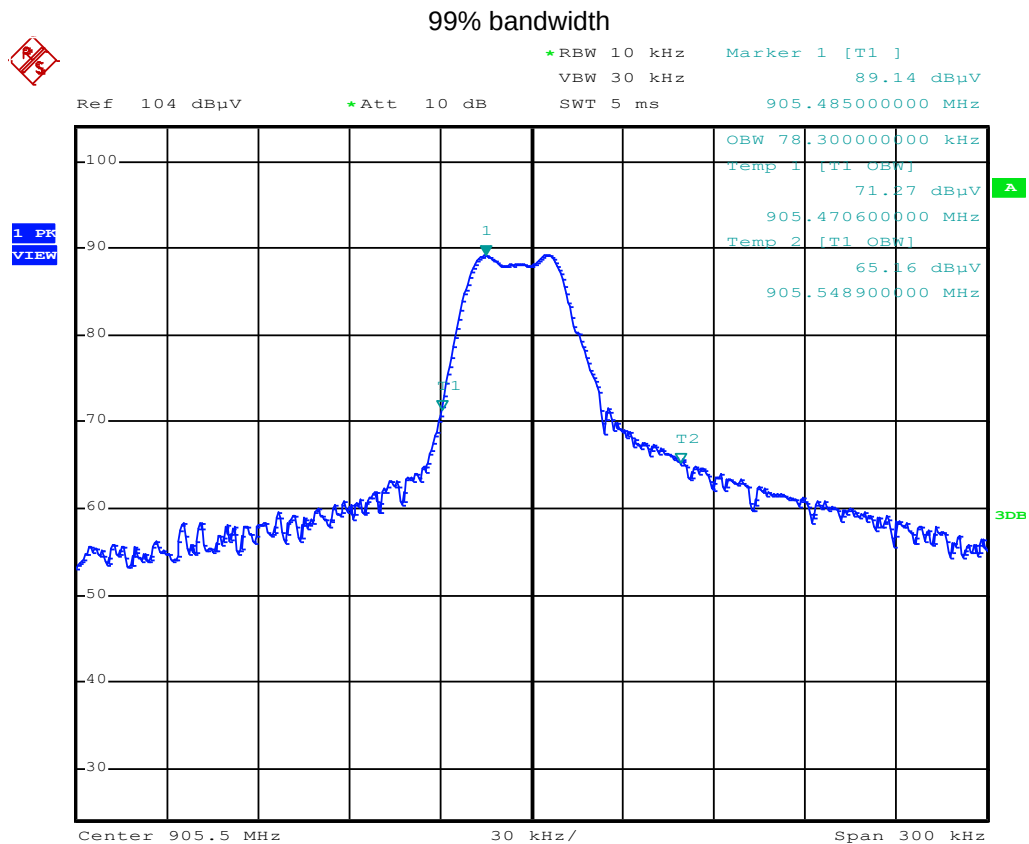
FCC ID: OHCMETDGS3 IC ID: 10671A-METDGS3

5.7.5 Test result

Fundamental frequency (MHz)	99 % Bandwidth (kHz)
905.5	78.3

Remarks: For detailed test result please refer to following test protocols. The RSS Gen defines no limit for the occupied bandwidth!

5.7.6 Test protocols



FCC ID: OHCMETDGS3 IC ID: 10671A-METDGS3

6 USED TEST EQUIPMENT AND ACCESSORIES

All test instruments used are calibrated and verified regularly. The calibration history is available on request.

Test ID	Model Type	Equipment No.	Next Calib.	Last Calib.	Next Verif.	Last Verif.
A 4	ESHS 30	02-02/03-05-002	11/07/2013	11/07/2012		
	ESH 2 - Z 5	02-02/20-05-004	12/05/2013	12/05/2012	23/07/2013	23/01/2013
	N-4000-BNC	02-02/50-05-138				
	N-1500-N	02-02/50-05-140				
	ESH 3 - Z 2	02-02/50-05-155			02/04/2013	02/10/2012
CPR 2	ESVS 30	02-02/03-05-006	26/06/2013	26/06/2012		
	VULB 9168	02-02/24-05-005	16/03/2013	16/03/2012	08/04/2013	08/10/2012
	S10162-B	02-02/50-05-031				
	NW-2000-NB	02-02/50-05-113				
	KK-EF393/U-16N-21N20 m	02-02/50-12-018				
MB	FSP 40	02-02/11-11-001	18/09/2013	18/09/2012		
	RF Antenna	02-02/24-05-032				
SER 1	FMZB 1516	01-02/24-01-018			14/02/2014	14/02/2013
	ESCI	02-02/03-05-005	03/12/2013	03/12/2012		
	S10162-B	02-02/50-05-031				
	KK-EF393-21N-16	02-02/50-05-033				
	NW-2000-NB	02-02/50-05-113				
SER 2	ESVS 30	02-02/03-05-006	26/06/2013	26/06/2012		
	VULB 9168	02-02/24-05-005	16/03/2013	16/03/2012	08/04/2013	08/10/2012
	S10162-B	02-02/50-05-031				
	NW-2000-NB	02-02/50-05-113				
	KK-EF393/U-16N-21N20 m	02-02/50-12-018				
SER 3	FSP 40	02-02/11-11-001	18/09/2013	18/09/2012		
	AFS4-01000400-10-10P-4	02-02/17-05-003				
	AMF-4F-04001200-15-10P	02-02/17-05-004				
	AFS5-12001800-18-10P-6	02-02/17-06-002				
	3117	02-02/24-05-009	18/12/2013	18/12/2012		
	Sucoflex N-1600-SMA	02-02/50-05-073				
	Sucoflex N-2000-SMA	02-02/50-05-075				

FCC ID: OHCMETDGS3 IC ID: 10671A-METDGS3

7 Attachment A

7.1 External photos of the EuT



FCC ID: OHCMETDGS3 IC ID: 10671A-METDGS3

7.2 Internal photos of the EuT

