

FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1

EMI - TEST REPORT

- FCC Part 15.249, RSS210 -



Test Report No. :	T36410-00-00KJ	26. March 2013 Date of issue
--------------------------	-----------------------	---------------------------------

Type / Model Name : US-1042

Product Description : pH Bolus – 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.

FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1

Contents

1	<u>TEST STANDARDS</u>	3
2	<u>SUMMARY</u>	4
2.1	Test result summary	4
2.2	GENERAL REMARKS:	5
2.3	FINAL ASSESSMENT:	5
3	<u>EQUIPMENT UNDER TEST</u>	6
3.1	Photo documentation of the EUT – Please see attachment A	6
3.2	Power supply system utilised	6
3.3	Short description of the equipment under test (EUT)	6
4	<u>TEST ENVIRONMENT</u>	7
4.1	Address of the test laboratory	7
4.2	Environmental conditions	7
4.3	Statement of the measurement uncertainty	7
4.4	Measurement protocol for FCC and IC	8
5	<u>TEST CONDITIONS AND RESULTS</u>	9
5.1	Conducted emissions	9
5.2	Radiated emission of the fundamental wave	10
5.3	Spurious emissions radiated	12
5.4	20 dB bandwidth	16
5.5	Correction for pulse operation (duty cycle)	18
5.6	Antenna application	23
5.7	Receiver radiated emissions	24
5.8	Occupied bandwidth	27
6	<u>USED TEST EQUIPMENT AND ACCESSORIES</u>	29
7	<u>Attachment A</u>	30
7.1	External photos of the EuT	30
7.2	Internal photos of the EuT	31

FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1

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.
------------------	---

ANSI C95.1:2005	IEEE Standard for Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
-----------------	--

CISPR 16-4-2: 2003	Uncertainty in EMC measurement
--------------------	--------------------------------

CISPR 22: 2005 EN 55022: 2006	Information technology equipment
----------------------------------	----------------------------------

FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1

2 SUMMARY

2.1 Test result summary

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	not applicable
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
15.35(c)	RSS-Gen, 4.5	Pulsed operation	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

FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1

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	pH Bolus – Wireless pH Monitoring System
MODEL NO.	US-1042
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 ABM11-32.000MHZ-B7G-T)
NUMBER OF CHANNEL	2
RATED RF OUTPUT POWER	31.6 mW (15 dBm)
CONDUCTED RF OUTPUT POWER	N/A
ANTENNA TYPE	Print antenna, Monopol
ANTENNA STRUCTURE GAIN	-10 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

FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1

3 EQUIPMENT UNDER TEST

3.1 Photo documentation of the EUT – Please see attachment A

3.2 Power supply system utilised

Power supply voltage : 3.6 V DC Battery powered

3.3 Short description of the equipment under test (EUT)

The EuT is positioned in the cow's reticulum and continually measures pH and temperature. The measurement data is stored in the pH Bolus and automatically transmitted to the readout equipment (Mobile Reader) via a radio system.

Number of tested samples: 1
Serial number: 20:12:12:17:00:00:aa:12

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 : _____

FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1

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.

FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1

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.

FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1

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: None

Remarks: Not applicable, because the EuT is battery powered.

FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1

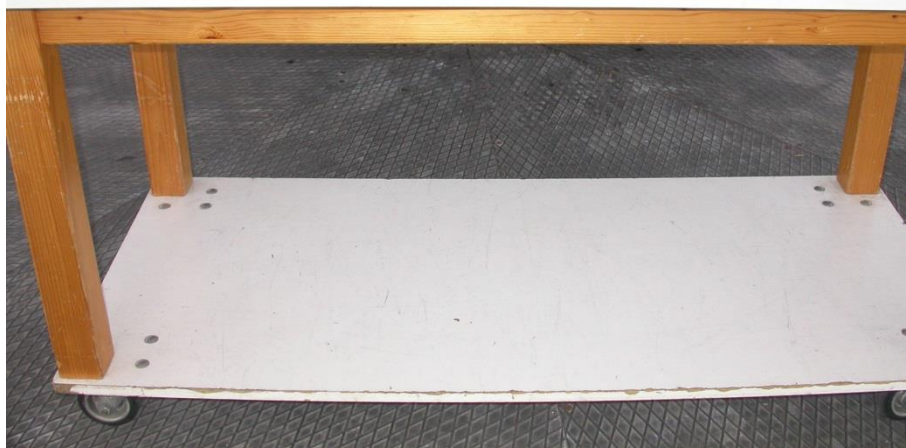
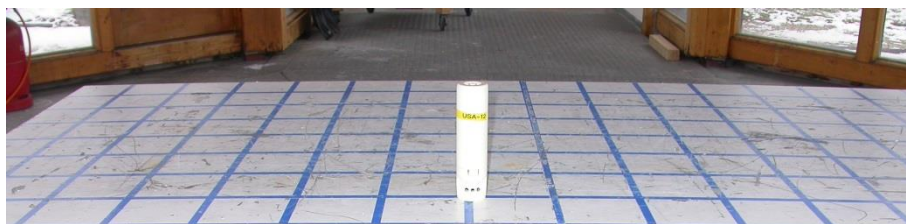
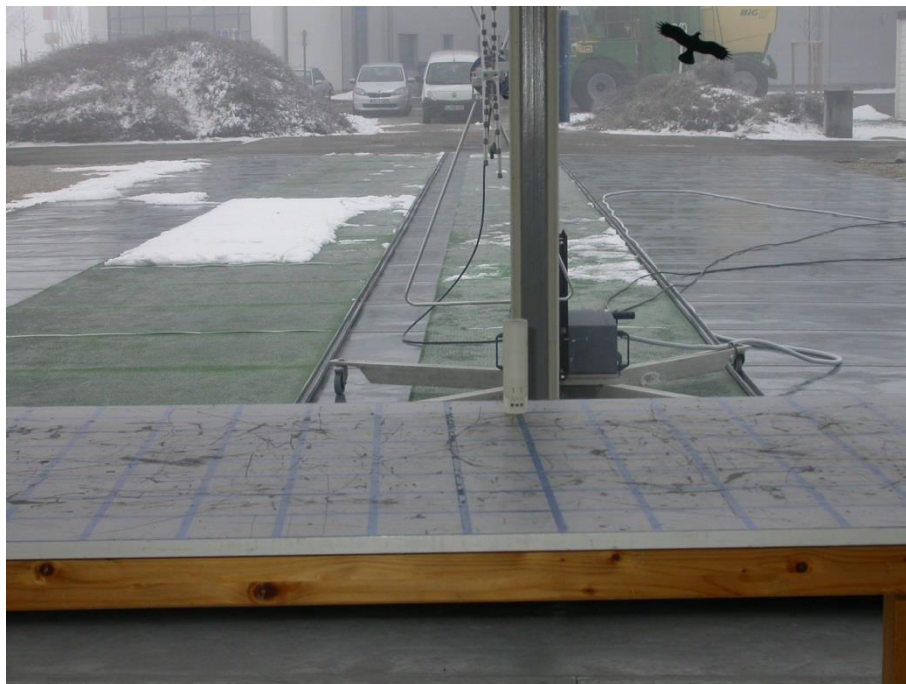
5.2 Radiated emission of the fundamental wave

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



FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1
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 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)
905.5	77.4	-14.9	62.5	29.3	106.7	91.8	114.0	94.0	-2.2

*) Average values were calculated from the subtraction of peak values minus correction duty cycle factor.

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: The alternative measurement method accd. to FCC Part 15.35(a) where used.

FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1

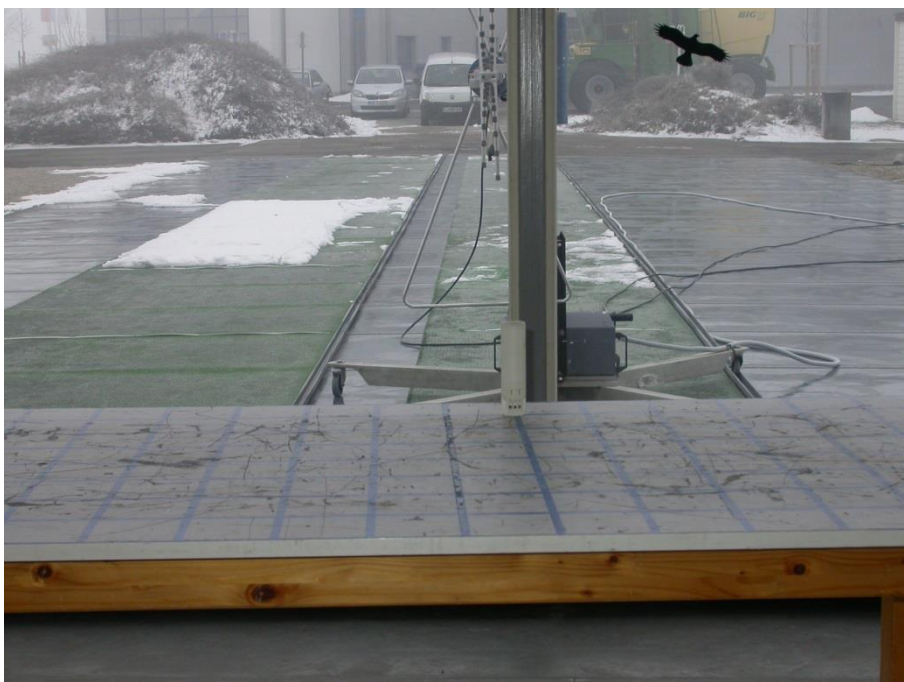
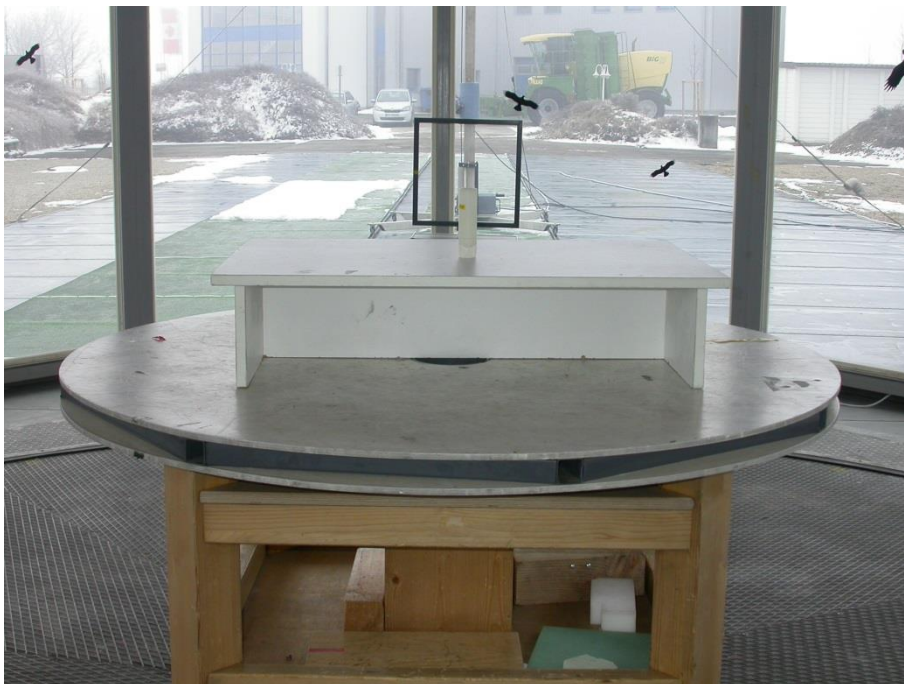
5.3 Spurious emissions radiated

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

5.3.1 Description of the test location

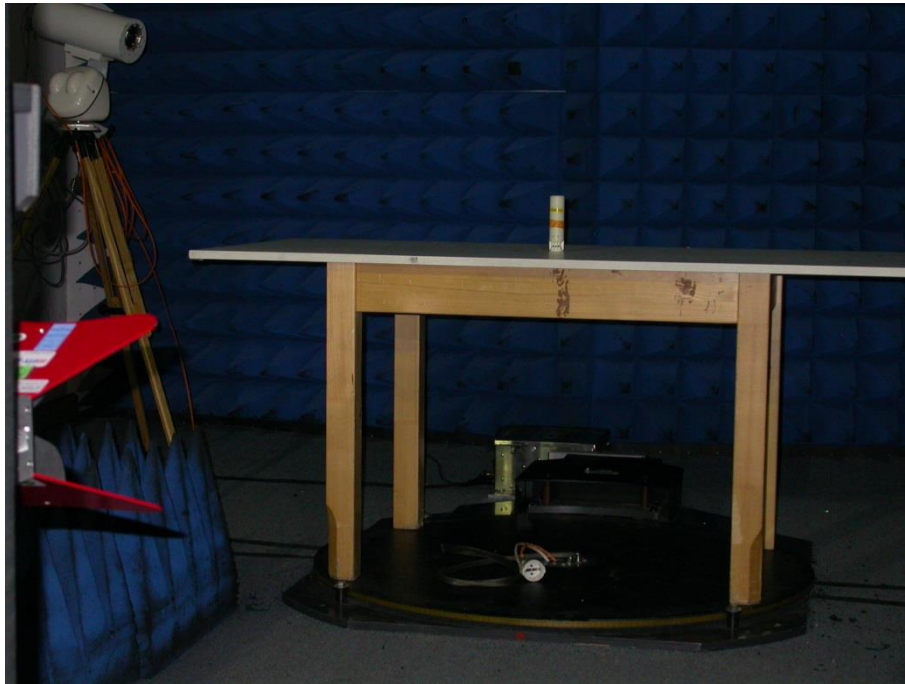
Test location: OATS 1
Test location: Anechoic chamber 2
Test distance: 3 m

5.3.2 Photo documentation of the test set-up



FCC ID: OHCMETDGS1

IC ID: 10671A-METDGS1



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.

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

FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1
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
563.0	11.4	-	120	23.3	34.7	-	46.0	-11.3
577.3	9.1	-	120	23.7	32.8	-	46.0	-13.2
617.5	6.0	-	120	24.5	30.5	-	46.0	15.5
841.5	5.4	-	120	28.5	33.9	-	46.0	-12.1
873.5	2.9	-	120	28.9	31.8	-	46.0	-14.2
883.0	2.8	-	120	29.0	31.8	-	46.0	-14.2
969.5	4.3	-	120	29.9	34.2	-	54.0	-19.8

*) 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)
1811.3	61.2	-14.9	46.3	3.5	64.7	49.8	74.0	54.0	-4.2
2716.0	55.9	-14.9	41.0	3.7	59.6	44.7	74.0	54.0	-9.3
3622.1	46.4	-14.9	31.5	2.5	48.9	34.0	74.0	54.0	-20.0
4526.9	51.3	-14.9	36.4	3.1	54.4	39.5	74.0	54.0	-14.5
5433.0	47.4	-14.9	32.5	4.0	48.6	36.5	74.0	54.0	-17.5

*) Average values were calculated from the subtraction of peak values minus correction duty cycle factor.

Limit according to FCC Part 15C, Section 15.209:

Frequency (MHz)	15.209 Limits dB(μ V/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

FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1

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

Fundamental frequency (MHz)	Field strength of harmonics	
	($\mu\text{V}/\text{m}$)	$\text{dB}(\mu\text{V}/\text{m})$
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).

FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1

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: OHCMETDGS1 IC ID: 10671A-METDGS1

5.4.5 Test result

Operating frequency band (MHz)	20 dB Bandwidth (MHz)
$f_{low} > 902$	$f_{low} = 905.47$
$f_{high} < 928$	$f_{high} = 905.52$

80% bandwidth of the permitted band:

20.8 MHz

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

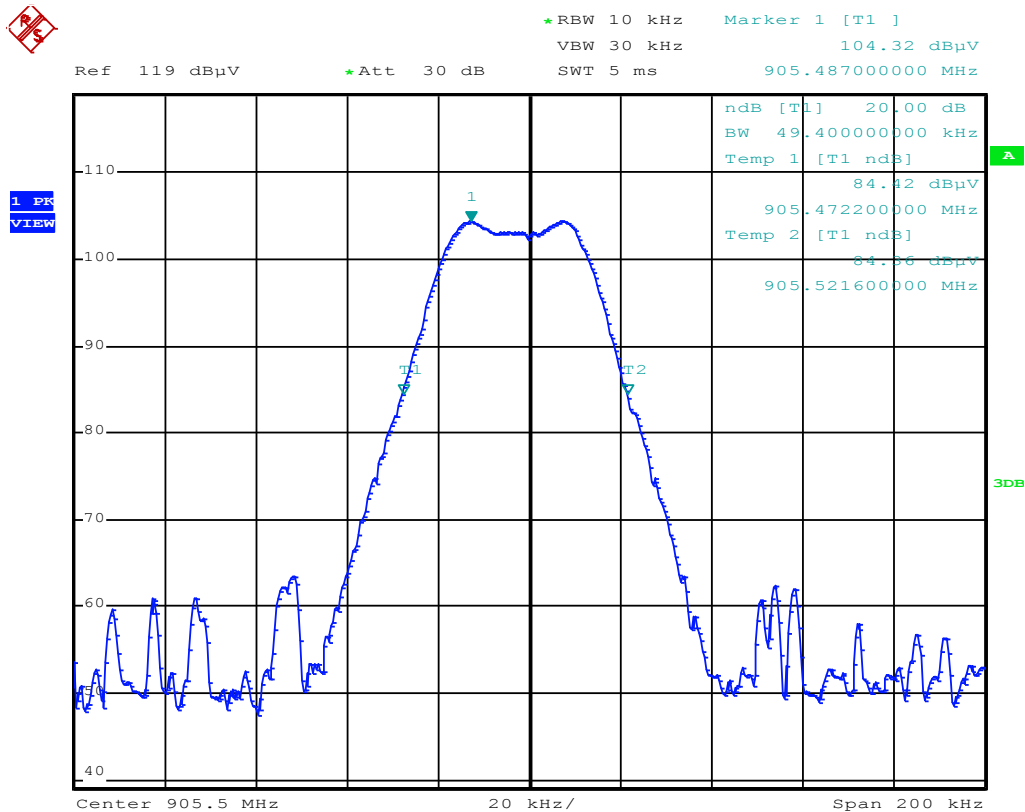
If frequency stability is not specified in the regulations, it is recommended that the fundamental emission be kept within the central 80% of the permitted band in order to minimize the possibility of out-of-band operation.

The requirements are **FULFILLED**.

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

5.4.6 Test protocols

20 dB bandwidth



FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1

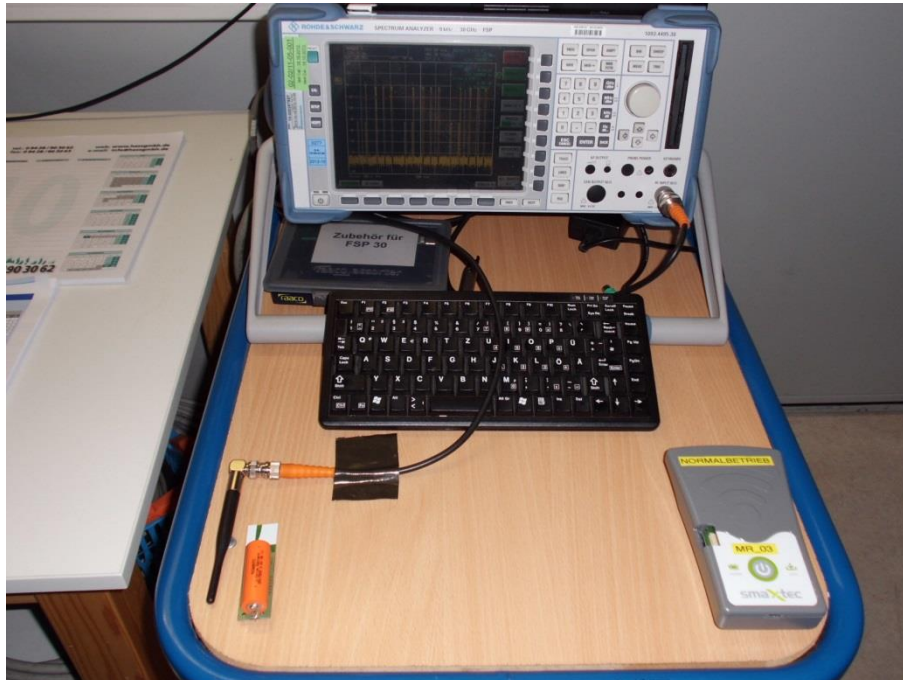
5.5 Correction for pulse operation (duty cycle)

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

5.5.1 Description of the test location

Test location: AREA4

5.5.2 Photo documentation of the test set-up



5.5.3 Applicable standard

According to FCC Part 15A, Section 15.35(c):

When the radiated emission limits are expressed in terms of average value and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete puls train, including blanking intervals, as long as the pulse train does not exceed 0.1s. In cases where the puls train exceeds 0.1s, the measured field strength shall be determined from the average absolute voltage during a 0.1s interval during which the field strength is at its maximum. The exact method of calculating the average field strength shall be submitted.

FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1
5.5.4 Description of Measurement

The duty cycle factor (dB) is calculated applying the following formula:

$$K_E = 20 \log \frac{T_{ON}}{T_{PT}}$$

$$-14.9dB = 20 \log \frac{18ms}{100ms}$$

K_E : pulse operation correction factor (dB)

T_{ON} : complete on time (ms)

T_{PT} : complete pulse train (ms)

Spectrum analyser settings:

RBW: 10 kHz

VBW: 30 kHz

Span: zero span

Sweep time: Auto

Detector: Max. peak

Trace Mode: single sweep

5.5.5 Test result

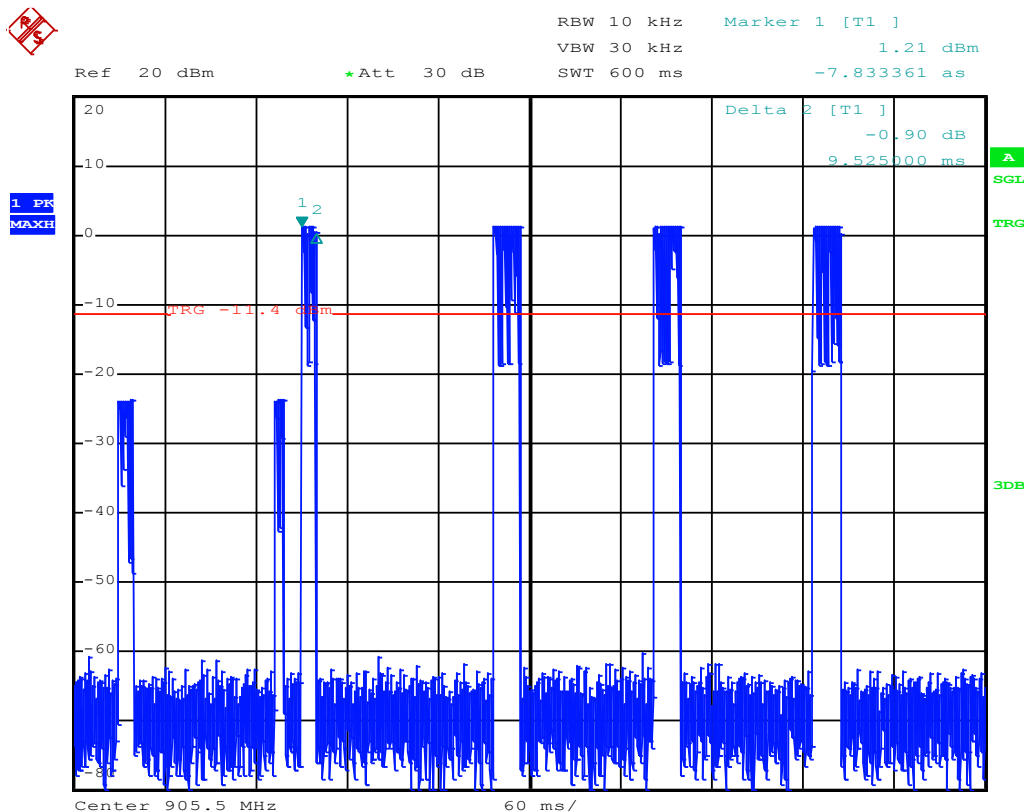
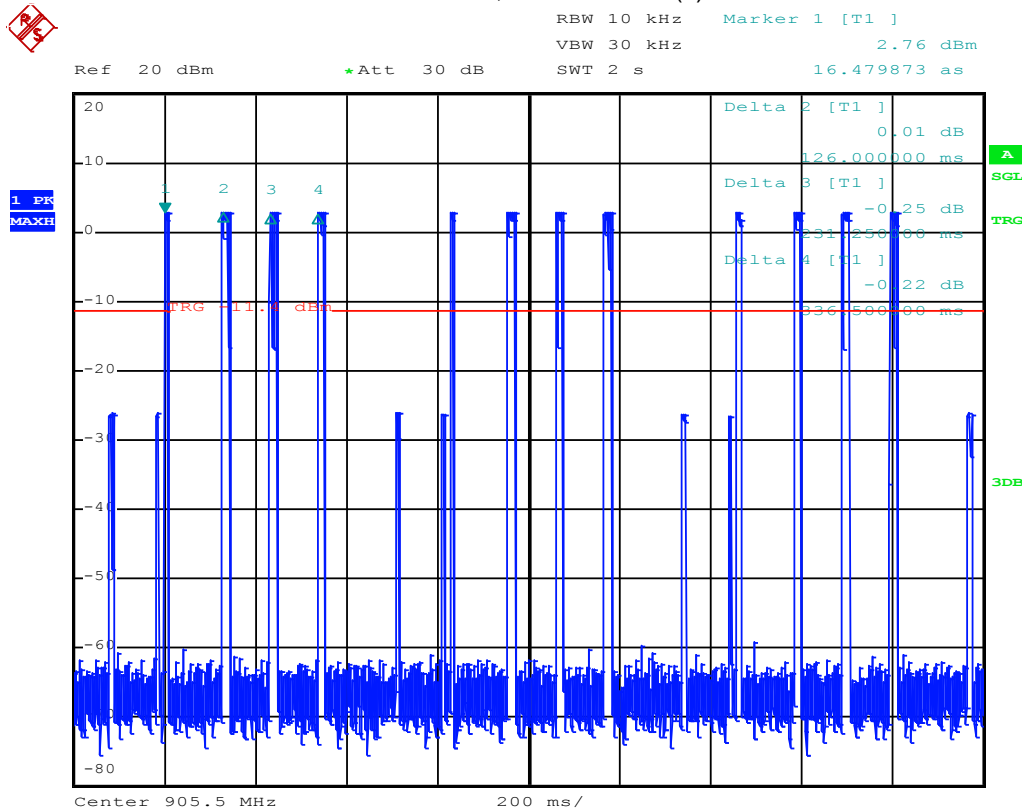
T_{ON} (ms)	T_{PT} (ms)	K_E (dB)
18	100	-14.9

Remarks: The pulse train (T_w) exceeds 100 ms, therefore the duty cycle have been calculated by averaging
the sum of the pulse widths over the 100 ms width with the highest average value.
For detailed results, please see the test protocol below.
The lower transmission packakes are from the remote station (mobile reader).

FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1

5.5.6 Test protocol

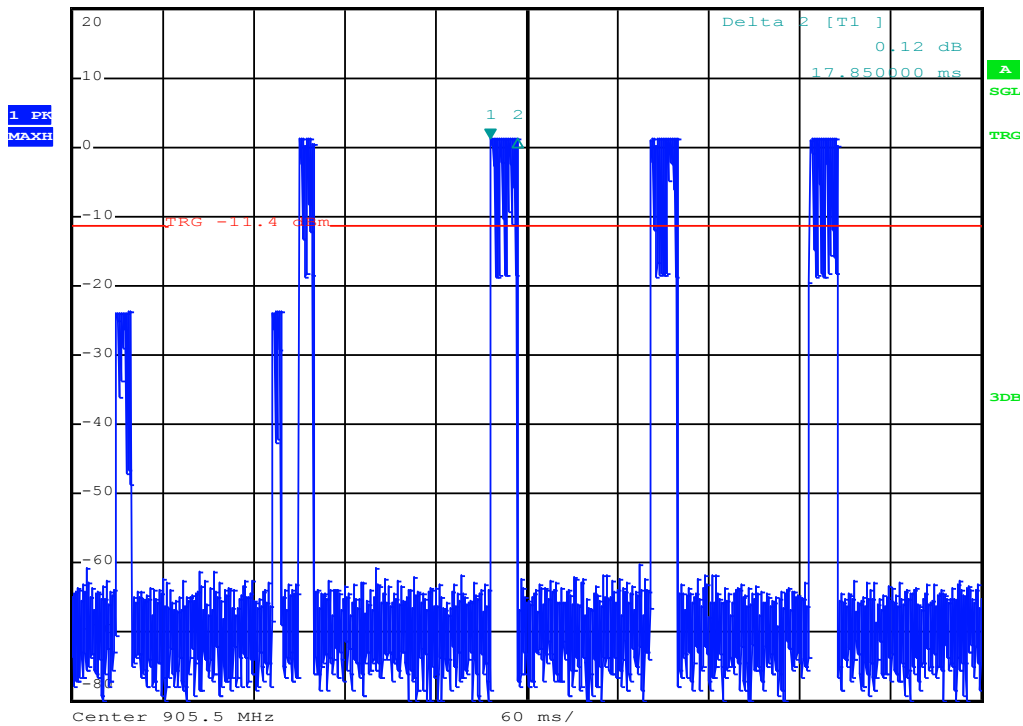
Correction for Pulse Operation (Duty Cycle) FCC Part 15A, Section 15.35(c)



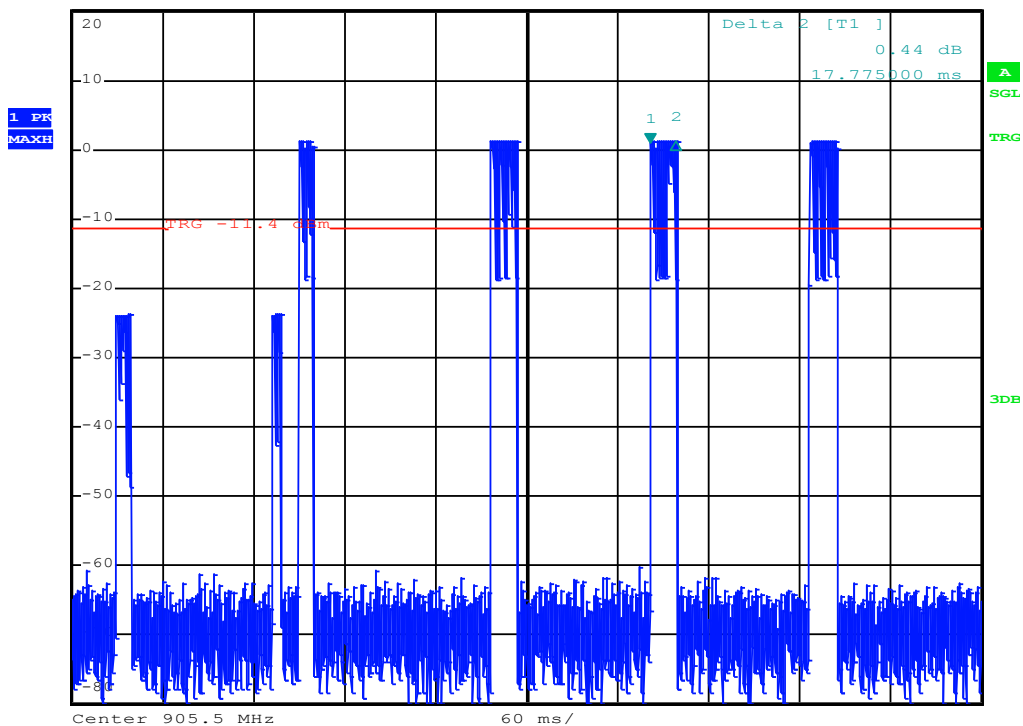
FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1



Ref 20 dBm *Att 30 dB RBW 10 kHz Marker 1 [T1]
VBW 30 kHz 1.22 dBm
SWT 600 ms 126.000000 ms



Ref 20 dBm *Att 30 dB RBW 10 kHz Marker 1 [T1]
VBW 30 kHz 0.89 dBm
SWT 600 ms 231.150000 ms



FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1

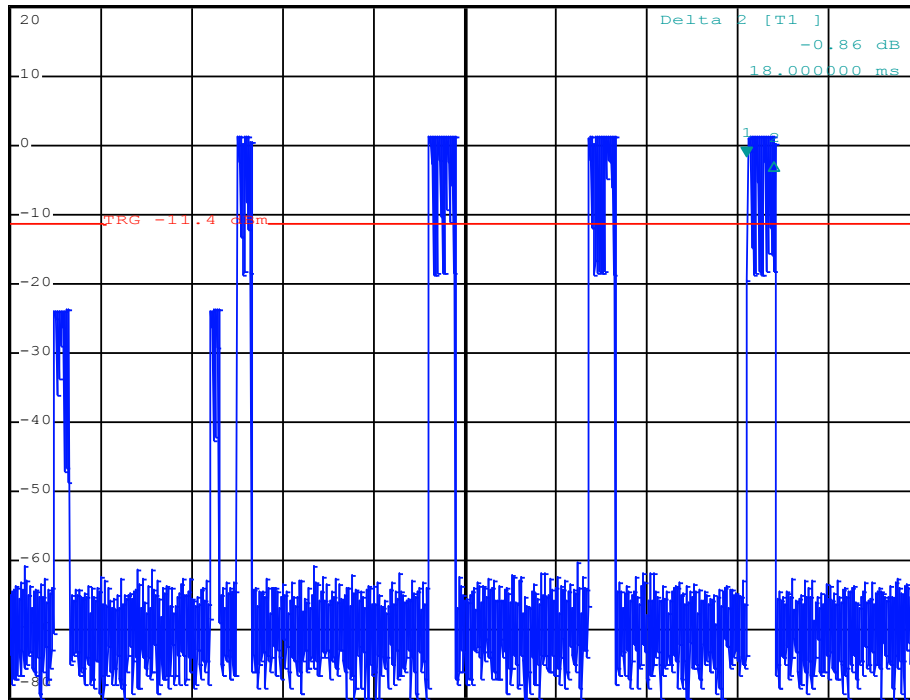


RBW 10 kHz Marker 1 [T1]
VBW 30 kHz -1.66 dBm
SWT 600 ms 336.375000 ms

Ref 20 dBm

★Att 30 dB

1 PK
MAXH



Center 905.5 MHz

60 ms/

FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1

5.6 Antenna application

5.6.1 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.

5.6.2 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: OHCMETDGS1 IC ID: 10671A-METDGS1

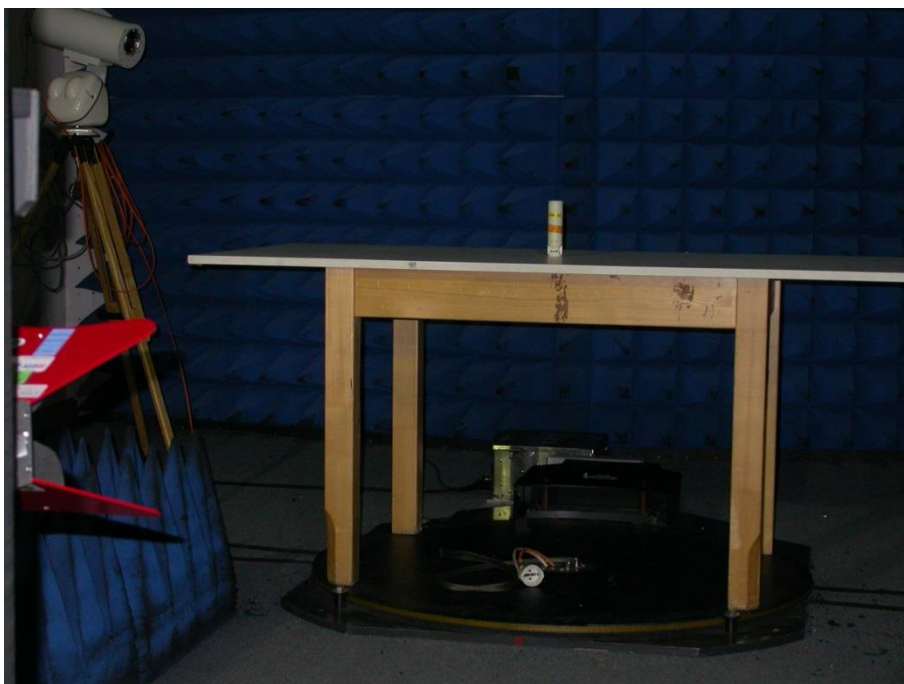
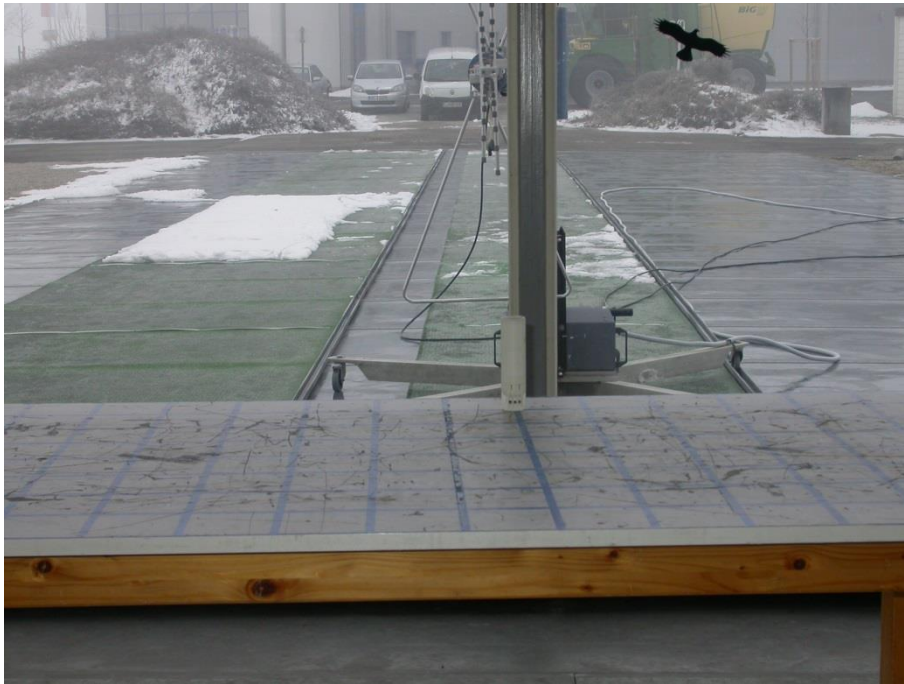
5.7 Receiver radiated emissions

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

5.7.1 Description of the test location

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

5.7.2 Photo documentation of the test set-up



FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1
5.7.3 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.

5.7.4 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

5.7.5 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.

5.7.6 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)
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

*) Average values were calculated from the subtraction of peak values minus correction duty cycle factor.

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

FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1

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: OHCMETDGS1 IC ID: 10671A-METDGS1

5.8 Occupied bandwidth

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

5.8.1 Description of the test location

Test location: AREA4

5.8.2 Photo documentation of the test set-up



5.8.3 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.

5.8.4 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: OHCMETDGS1 IC ID: 10671A-METDGS1

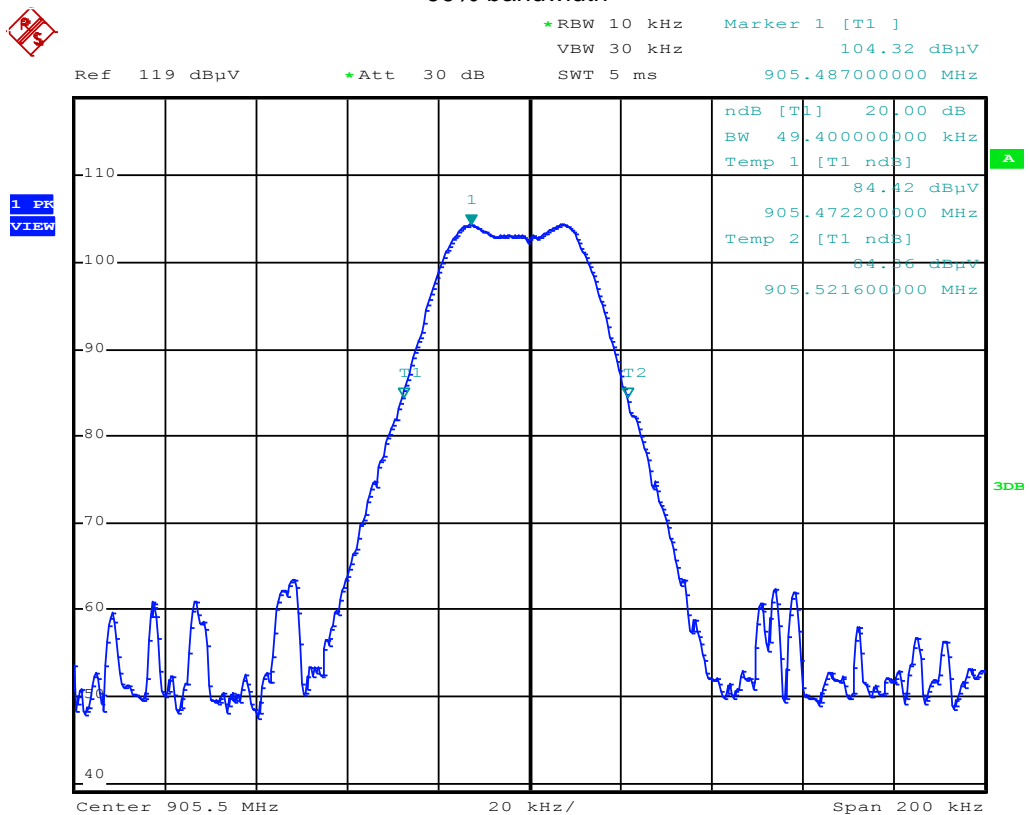
5.8.5 Test result

Fundamental frequency (MHz)	99 % Bandwidth (kHz)
905.5	49.4

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

5.8.6 Test protocols

99% bandwidth



FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1

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.
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				
DC	FSP 40	02-02/11-11-001	18/09/2013	18/09/2012		
	RF Antenna	02-02/24-05-032				
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				

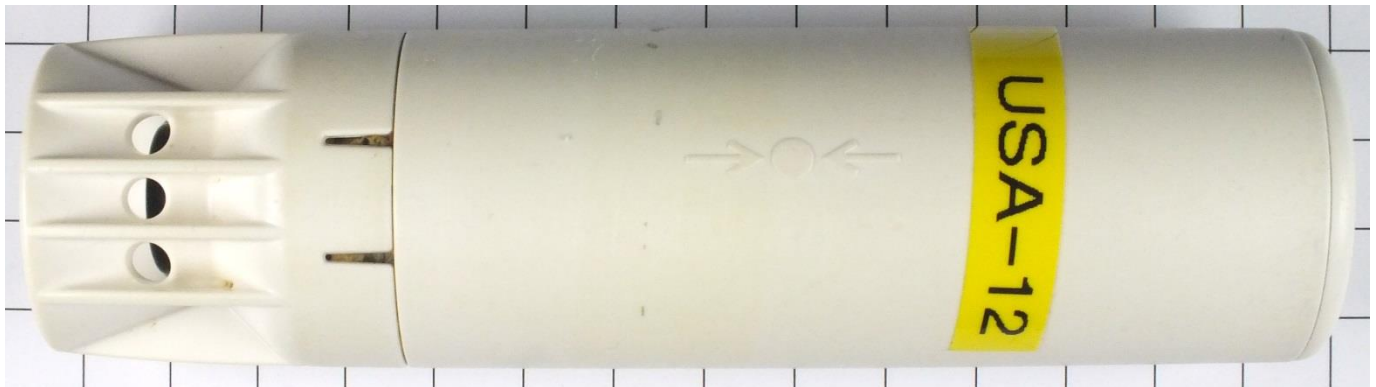
FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1

7 Attachment A

7.1 External photos of the EuT



35mm



FCC ID: OHCMETDGS1 IC ID: 10671A-METDGS1

7.2 Internal photos of the EuT

