EMI – TEST REPORT

- FCC Part 15.209 -

Type / Model Name	:	COMPACT MAX RW
Product Description	:	RFID handheld reader for animal identification
Applicant	:	Datamars S.A.
Address	:	Via ai Prati
		CH – 6930 BEDANO
Manufacturer	:	Datamars (THAILAND) Co. LTD
Address	:	Northern Region Industrial Estate, 76/4 Moo 4
		T. Banklang, A. Muang, Lamphun, 5100 THAILAND
Licence holder	:	Datamars S.A.
Address	:	Via ai Prati
		CH – 6930 BEDANO

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

Test Report No. : T40616-00-02HU	16. February 2016 Date of issue

Deutsche Akkreditierungsstelle D-PL-12030-01-00

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.

Contents

1 TEST STANDARDS

The tests were performed according to following standards:

FCC Rules and Regulations Part 15, Subpart A - General (October, 2015)

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 (October, 2015)

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 15.209	Radiated emission limits, general requirements
ANSI C63.10: 2010	Testing Unlicensed Wireless Devices
ANSI C95.1:1992	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

Mobile and portable devices RF exposure procedures and equipment authorisation policies
447498 D01 General RF exposure Guidance v05r01, 5/28/2013

2 SUMMARY

GENERAL REMARKS:

The EuT is working at frequency of 134.2 kHz.

It is possible to have a Data connection via USB to a PC.

The EUT consists of a RFID reader and a Bluetooth module, which is co-located to the RFID reader.
Following type of Bluetooth module can be built in into the RFID reader.

- The Bluetooth module WT12 is fully tested and approved under the FCC ID: QOQWT12

The EUT is a handheld device, so the test was performed in all three orientations; X, Y and Z-axis (flat, upright and side position of the EuT). The values in the table are show the maximum measured value in the worst case position of the EuT.

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 : 19. January 2016

Testing concluded on : 02. February 2016

Checked by:

K. Gegenfurtner

Klaus Gegenfurtner
I confirm the correctness and Integrity of this document
2016.02.16 09:30:50 +01'00'

Gegenfurtner Klaus
Teamleader Radio

Tested by:

M. Huber

Markus Huber
I'm the author of this document
2016.02.16 09:17:21 +01'00'

Huber Markus

3 EQUIPMENT UNDER TEST

3.1 Photo documentation of the EUT – Detailed photos see Attachment A

3.2 Power supply system utilised

Power supply voltage: : Tx 4.00 V / DC
Rx 3.00 V / DC

3.3 Short description of the Equipment under Test (EUT)

The EuT is a RFID handheld reader for animal identification.

Number of tested samples: 1
Serial number: Prototype

EUT operation mode:

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

- Tx mode at 134.2 kHz

- Accu charging mode

-

EUT configuration:

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

-	USB cable male type A to micro USB, 1.0 m	Model :	Supplied by Datamars SA
-	PHIHONG Power Supply	Model :	PSA10F-050Q, DD30004069A1
-	Fujitsu LapTop	Model :	Supplied by CSA
-		Model :	
-		Model :	
-		Model :	

- Customer specific cables

- Unscreened power cables

4 TEST ENVIRONMENT

4.1 Address of the test laboratory

CSA Group Bayern GmbH
Ohmstrasse 1-4
94342 STRASSKIRCHEN
GERMANY

4.2 Statement regarding the usage of logos in test reports

The accreditation and notification body logos displayed in this test report are only valid for standards listed in the accreditation or notification scope of CSA Group Bayern GmbH.

4.3 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

4.4 Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. It is noted that the expanded measurement uncertainty corresponds to the measurement results from the standard measurement uncertainty multiplied by the coverage factor k = 2. The true value is located in the corresponding interval with a probability of 95 % The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16-4-2 / 11.2003 „Uncertainties, statistics and limit modelling – Uncertainty in EMC measurements“ and is documented in the quality system acc. to DIN EN ISO/IEC 17025. For all measurements shown in this report, the measurement uncertainty of the test laboratory, CSA Group Bayern 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 and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

4.5 Measurement Protocol for FCC, VCCI and AUSTEL

4.5.1 GENERAL INFORMATION

4.5.1.1 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 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.

4.5.1.2 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.

5 TEST CONDITIONS AND RESULTS

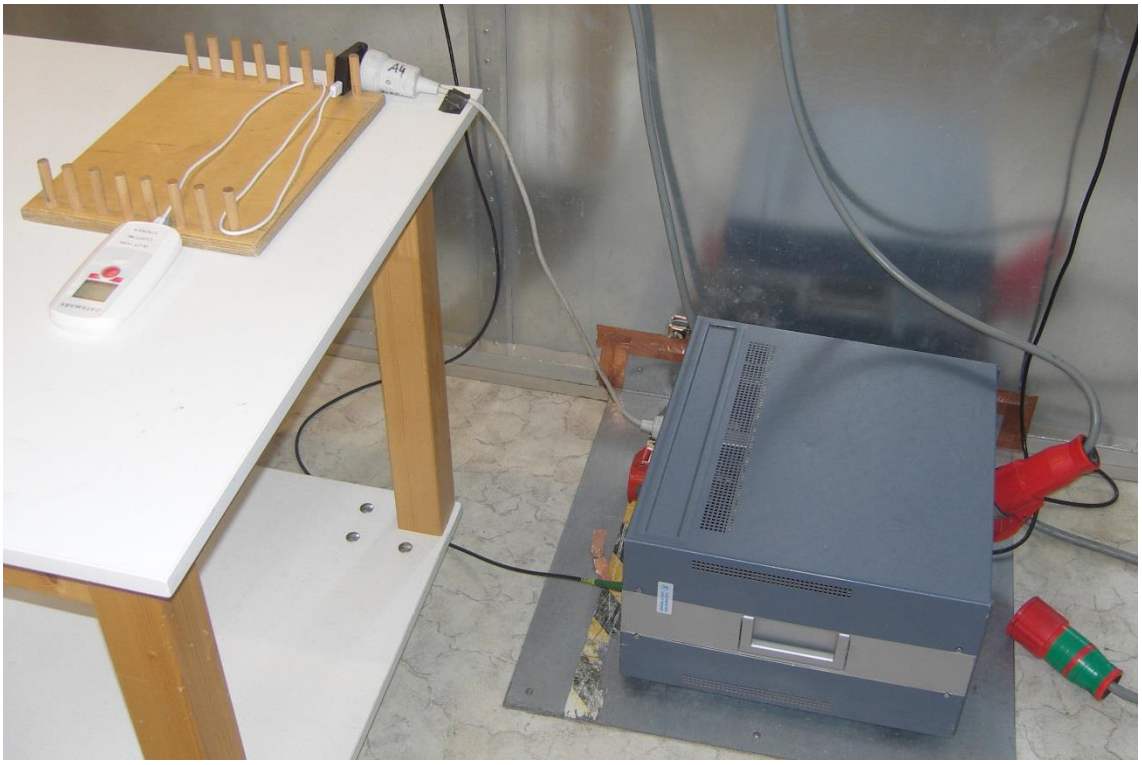
5.1 Conducted emissions

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



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 limits in the following table.

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

5.1.4 Test result

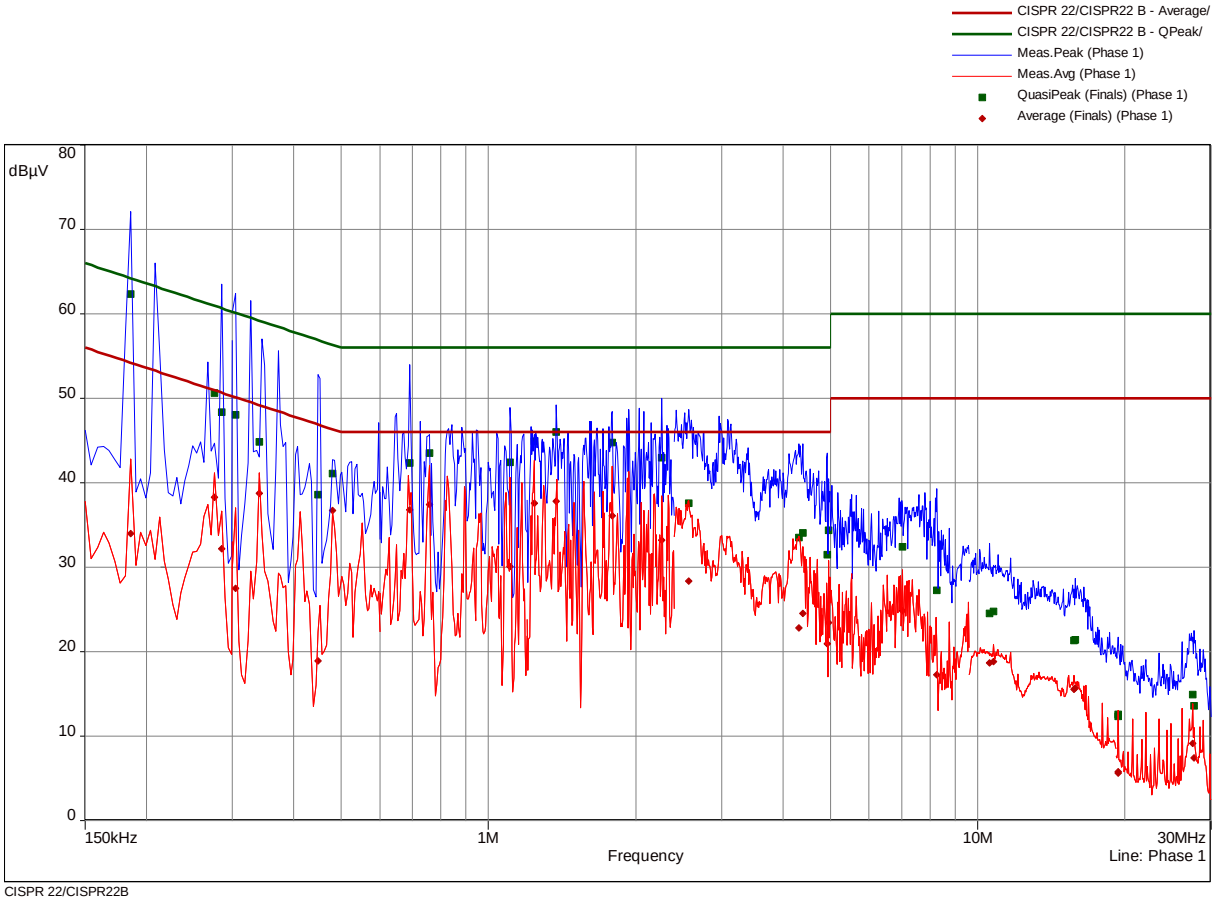
Frequency range: 0.15 MHz - 30 MHz

Min. limit margin 1.83 dB at 0.186 MHz

The requirements are **FULFILLED.**

Remarks: For detailed results, please see the following page(s).

Test point:	L1	Result: passed
Operation mode:	Accu charging mode	
Remarks:		
Date:		
Tested by:	Huber Markus	

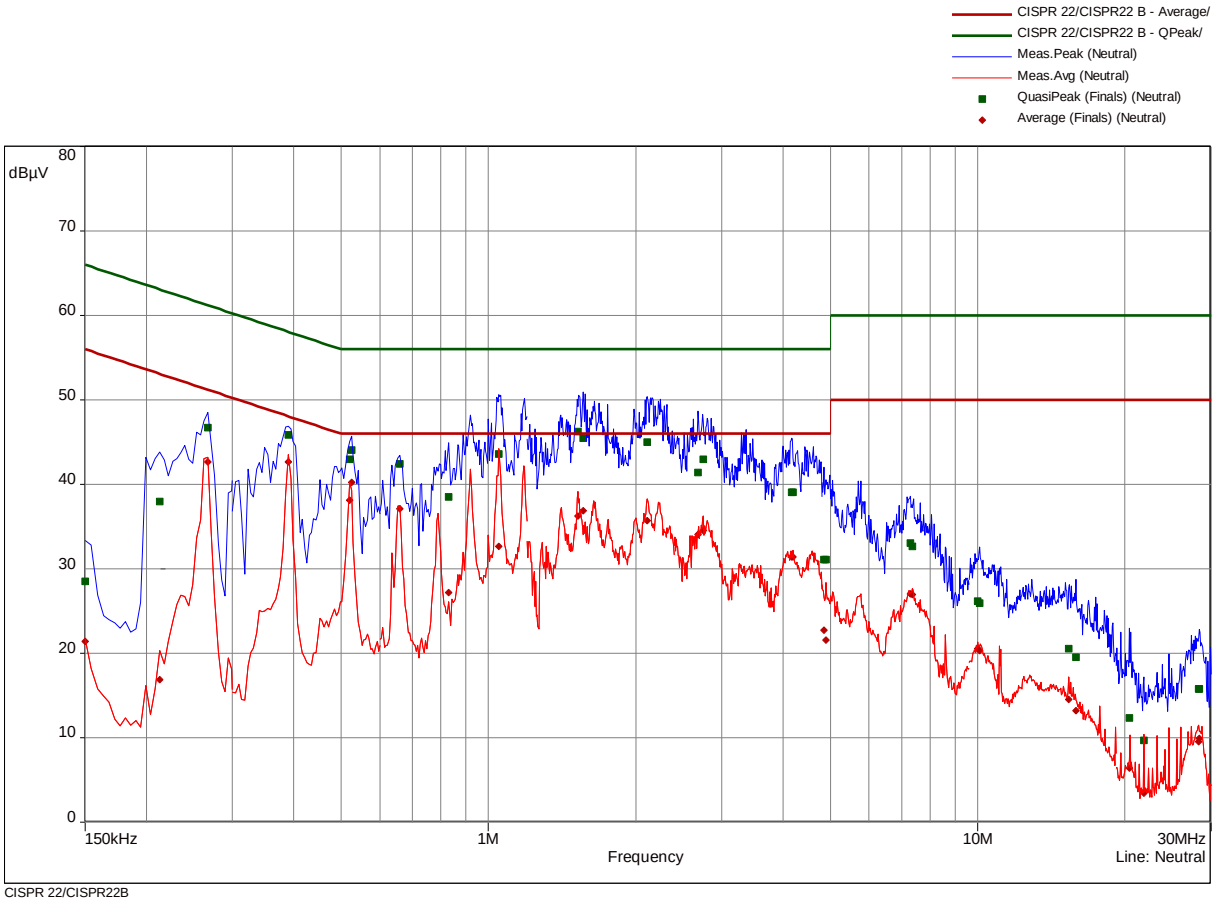


CISPR 22/CISPR22B

freq	SR	QP	margin	limit	AV	margin	limit	line	corr
MHz		dB(µV)	dB	dB	dB(µV)	dB	dB		dB
0.186	1	62.38	1.83	64.21	33.98	20.23	54.21	Phase 1	9.84
0.276	1	50.60	10.34	60.94	38.32	12.61	50.94	Phase 1	9.82
0.285	1	48.38	12.29	60.67	32.18	18.49	50.67	Phase 1	9.82
0.3045	2	48.05	12.06	60.12	27.54	22.58	50.12	Phase 1	9.82
0.3405	2	44.83	14.36	59.19	38.77	10.42	49.19	Phase 1	9.81
0.4485	2	38.60	18.30	56.90	18.88	28.02	46.90	Phase 1	9.82
0.48	2	41.07	15.27	56.34	36.75	9.59	46.34	Phase 1	9.82
0.69	3	42.37	13.63	56.00	36.83	9.17	46.00	Phase 1	9.81
0.7575	3	43.55	12.45	56.00	37.45	8.55	46.00	Phase 1	9.80
1.1085	3	42.40	13.60	56.00	30.06	15.94	46.00	Phase 1	9.81
1.2405	4	44.94	11.06	56.00	37.56	8.44	46.00	Phase 1	9.80
1.3755	4	46.04	9.96	56.00	37.78	8.22	46.00	Phase 1	9.79
1.7895	4	44.77	11.23	56.00	36.12	9.88	46.00	Phase 1	9.79
2.262	4	42.96	13.04	56.00	33.20	12.80	46.00	Phase 1	9.80
2.5665	5	37.60	18.40	56.00	28.37	17.63	46.00	Phase 1	9.79
4.3125	5	33.52	22.48	56.00	22.83	23.17	46.00	Phase 1	9.81
4.389	5	34.04	21.96	56.00	24.52	21.48	46.00	Phase 1	9.81
4.926	6	31.53	24.47	56.00	20.94	25.06	46.00	Phase 1	9.82
4.962	6	34.42	21.58	56.00	23.41	22.59	46.00	Phase 1	9.82
7.0185	6	32.41	27.59	60.00	24.86	25.14	50.00	Phase 1	9.84
8.247	6	27.24	32.76	60.00	17.26	32.74	50.00	Phase 1	9.86
10.5765	7	24.53	35.47	60.00	18.68	31.32	50.00	Phase 1	9.92
10.761	7	24.76	35.24	60.00	18.83	31.17	50.00	Phase 1	9.92
15.7245	7	21.37	38.63	60.00	15.54	34.46	50.00	Phase 1	10.14
15.846	7	21.44	38.56	60.00	15.71	34.29	50.00	Phase 1	10.14
19.362	8	12.32	47.68	60.00	5.60	44.40	50.00	Phase 1	10.30
19.3755	8	12.58	47.42	60.00	5.78	44.22	50.00	Phase 1	10.30
27.525	8	14.96	45.04	60.00	9.16	40.84	50.00	Phase 1	10.34
27.6735	8	13.62	46.38	60.00	7.40	42.60	50.00	Phase 1	10.34

Test point: N
Operation mode: Accu charging mode
Remarks:
Date:
Tested by: Huber Markus

Result: passed



CISPR 22/CISPR22B

freq	SR	QP	margin	limit	AV	margin	limit	line	corr
MHz		dB(µV)	dB	dB	dB(µV)	dB	dB		dB
0.15	9	28.56	37.44	66.00	21.41	34.59	56.00	Neutral	9.84
0.213	9	37.97	25.12	63.09	16.90	36.19	53.09	Neutral	9.85
0.267	9	46.76	14.45	61.21	42.67	8.54	51.21	Neutral	9.83
0.39	10	45.89	12.17	58.06	42.69	5.37	48.06	Neutral	9.81
0.5205	10	42.96	13.04	56.00	38.11	7.89	46.00	Neutral	9.82
0.525	10	44.09	11.91	56.00	40.23	5.77	46.00	Neutral	9.82
0.6585	11	42.40	13.60	56.00	37.12	8.88	46.00	Neutral	9.81
0.8295	11	38.56	17.44	56.00	27.17	18.83	46.00	Neutral	9.81
1.05	11	43.63	12.37	56.00	32.62	13.38	46.00	Neutral	9.81
1.524	12	46.24	9.76	56.00	36.24	9.76	46.00	Neutral	9.79
1.5645	12	45.47	10.53	56.00	36.86	9.14	46.00	Neutral	9.79
2.109	12	45.03	10.97	56.00	35.74	10.26	46.00	Neutral	9.80
2.6835	13	41.44	14.56	56.00	34.04	11.96	46.00	Neutral	9.79
2.7465	13	42.96	13.04	56.00	34.55	11.45	46.00	Neutral	9.79
4.1685	13	39.03	16.97	56.00	31.45	14.55	46.00	Neutral	9.80
4.191	13	39.05	16.95	56.00	31.39	14.61	46.00	Neutral	9.80
4.8585	14	31.06	24.94	56.00	22.78	23.22	46.00	Neutral	9.81
4.899	14	31.09	24.91	56.00	21.60	24.40	46.00	Neutral	9.81
7.2795	14	33.06	26.94	60.00	27.05	22.95	50.00	Neutral	9.82
7.365	14	32.64	27.36	60.00	26.93	23.07	50.00	Neutral	9.82
9.987	15	26.19	33.81	60.00	20.57	29.43	50.00	Neutral	9.83
10.0905	15	25.91	34.09	60.00	20.30	29.70	50.00	Neutral	9.83
15.3285	15	20.53	39.47	60.00	14.53	35.47	50.00	Neutral	9.95
15.9	15	19.52	40.48	60.00	13.18	36.82	50.00	Neutral	9.96
20.4015	16	12.34	47.66	60.00	6.39	43.61	50.00	Neutral	10.11
21.873	16	9.71	50.29	60.00	3.42	46.58	50.00	Neutral	10.05
28.2675	16	15.78	44.22	60.00	9.54	40.46	50.00	Neutral	9.78
28.4025	16	15.79	44.21	60.00	9.91	40.09	50.00	Neutral	9.77

5.2 Field strength of the fundamental wave

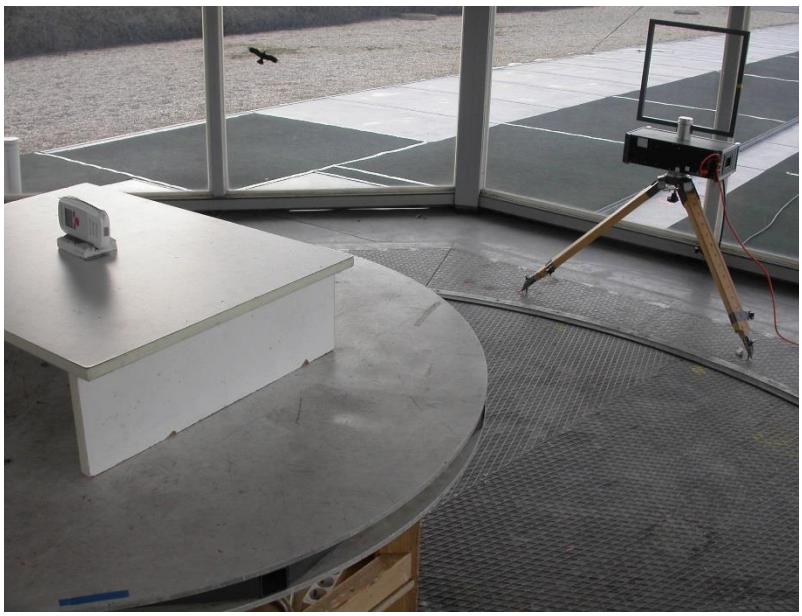
For test instruments and accessories used see section 6 Part **CPR 1**.

5.2.1 Description of the test location

Test location: OATS1

Test distance: 3 metres

5.2.2 Photo documentation of the test set-up



5.2.1 Applicable standard

According to FCC Part 15C, Section 15.209:
The emissions from intentional radiators shall not exceed the effective field strength limits.

5.2.2 Description of Measurement

The spurious emissions of the EUT have to be measured at an open area test site in the frequency range from 9 kHz to 1000 MHz using a tuned EMI receiver. The setup of the equipment under test will be in accordance with ANSI C63.4. The measurement has been performed at 3 m. The results have been compared to the limits defined at 30 m or 300 m distances according to FCC Part 15C, Section 15.31(f)(2) using an inverse linear distance extrapolation factor of 40 dB/decade. The final measurement has been performed with the EMI receiver using Quasi peak detector except for the frequency bands 9 kHz to 90 kHz and 110 to 490 kHz where an average detector will be used, according to Section 15.209(d).
The resolution bandwidth during the measurement is as follows:

9 kHz – 150 kHz:	RBW:	200 Hz
150 kHz – 30 MHz:	RBW:	9 kHz

Example:

Frequency (MHz)	Level (dBµV)	+	Factor (dB)	=	Level dB(µV/m)	-	Limit dB(µV/m)	=	Delta (dB)
1.705	5	+	20	=	25	-	30	=	-5

5.2.3 Test result

Measurement distance: 3 m

Frequency (kHz)	Level PK (dBµV)	Level AV (dBµV)	Level QP (dBµV)	Band-width (kHz)	Correct. factor (dB)	Corrected Level PK dB(µV/m)	Corrected Level AV dB(µV/m)	Corrected Level QP dB(µV/m)	Limit AV dB(µV/m)	Delta (dB)
134.2	82.1	79.7	81.5	0.2	20	102.1	99.7	101.5	105.1	-5.4

Calculated value at distance: 300 m

Frequency (kHz)	Level PK (dBµV)	Level AV (dBµV)	Level QP (dBµV)	Band-width (kHz)	Correct. factor (dB)	Corrected Level PK dB(µV/m)	Corrected Level AV dB(µV/m)	Corrected Level QP dB(µV/m)	Limit AV dB(µV/m)	Delta (dB)
134.2	2.1	-0.3	1.5	0.2	20	22.1	19.7	21.5	25.1	-5.4

Note: The EUT is a handheld device, so the test was performed in all three orientations; X, Y and Z-axis (flat, upright and side position of the EuT). The values in the table are show the maximum measured value in the worst-case position of the EuT.

Limit according to FCC Part 15C, Section 15.209(a):

Frequency	Field strength of fundamental wave		Measurement distance
(MHz)	(µV/m)	dB(µV/m)	(metres)
0.009-0.490	2400/F(kHz)	--	300
0.490-1.705	24000/F (kHz)	--	30
1.705-30.0	30	29.5	30

The requirements are **FULFILLED.**

Remarks: _____

5.3 Spurious emissions (magnetic field) 9 kHz – 30 MHz

For test instruments and accessories used see section 6 Part **SER 1**.

5.3.1 Description of the test location

Test location: OATS1

Test distance: 3 metres

5.3.2 Photo documentation of the test set-up

5.3.3 Applicable standard

According to FCC Part 15C, Section 15.209:
The emissions from intentional radiators shall not exceed the effective field strength limits.

5.3.4 Description of Measurement

The spurious emissions of the EUT have to be measured at an open area test site in the frequency range from 9 kHz to 1000 MHz using a tuned EMI receiver. The setup of the equipment under test will be in accordance with ANSI C63.4. The measurement has been performed at 3 m. The results have been compared to the limits defined at 30 m or 300 m distances according to FCC Part 15C, Section 15.31(f)(2) using an inverse linear distance extrapolation factor of 40 dB/decade. The final measurement has been performed with the EMI receiver using Quasi peak detector except for the frequency bands 9 kHz to 90 kHz and 110 to 490 kHz where an average detector will be used, according to Section 15.209(d).
The resolution bandwidth during the measurement is as follows:

9 kHz – 150 kHz:	RBW:	200 Hz
150 kHz – 30 MHz:	RBW:	9 kHz

Example:

Frequency (MHz)	Level (dBµV)	+	Factor (dB)	=	Level dB(µV/m)	-	Limit dB(µV/m)	=	Delta (dB)
1.705	5	+	20	=	25	-	30	=	-5

5.3.5 Test result

Measurement distance: 3 m

Frequency (MHz)	Level PK (dBµV)	Level AV (dBµV)	Level QP (dBµV)	Band-width (kHz)	Correct. factor (dB)	Corrected Level PK dB(µV/m)	Corrected Level AV dB(µV/m)	Corrected Level QP dB(µV/m)	Limit AV dB(µV/m)	Delta (dB)
0.268	48.3	42.5	45.8	9	20	68.3	62.5	65.8	99.0	-36.5
0.403	50.1	44.2	47.3	9	20	70.1	64.2	67.3	95.5	-31.3

Calculated value at distance: 300m

Frequency (MHz)	Level PK (dBµV)	Level AV (dBµV)	Level QP (dBµV)	Band-width (kHz)	Correct. factor (dB)	Corrected Level PK dB(µV/m)	Corrected Level AV dB(µV/m)	Corrected Level QP dB(µV/m)	Limit AV dB(µV/m)	Delta (dB)
0.268	-31.7	-37.5	-34.2	9	20	-10.3	-17.5	-14.2	19.0	-36.5
0.403	-29.9	-35.8	-32.7	9	20	-9.9	-15.8	-12.7	15.5	-31.3

Values at distance: 30m

Frequency (MHz)	Level PK (dBµV)	Level AV (dBµV)	Level QP (dBµV)	Band-width (kHz)	Correct. factor (dB)	Corrected Level PK dB(µV/m)	Corrected Level AV dB(µV/m)	Corrected Level QP dB(µV/m)	Limit dB(µV/m)	Delta (dB)
0.49 – 30.0				9	20				29.5	> 40

Note: The EUT is a handheld device, so the test was performed in all three orientations; X, Y and Z-axis (flat, upright and side position of the EuT). The values in the table are show the maximum measured value in the worst-case position of the EuT.

Limit according to FCC Part 15 Subpart 15.209(a):

Frequency	Field strength of spurious emissions		Measurement distance
(MHz)	(µV/m)	dB(µV/m)	(metres)
0.009-0.490	**2400/F(kHz)**	**--**	**300**
0.490-1.705	24000/F (kHz)	--	30
1.705-30.0	30	29.5	30

The requirements are **FULFILLED.**

Remarks: _____

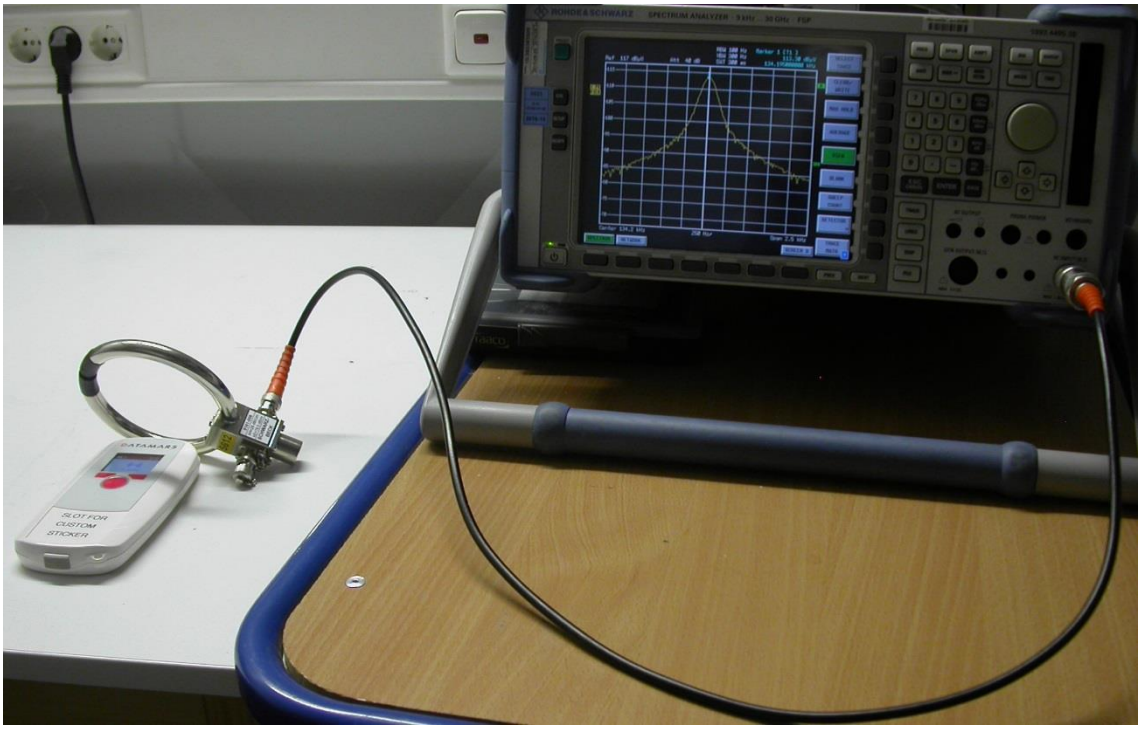
5.4 Emission Bandwidth

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

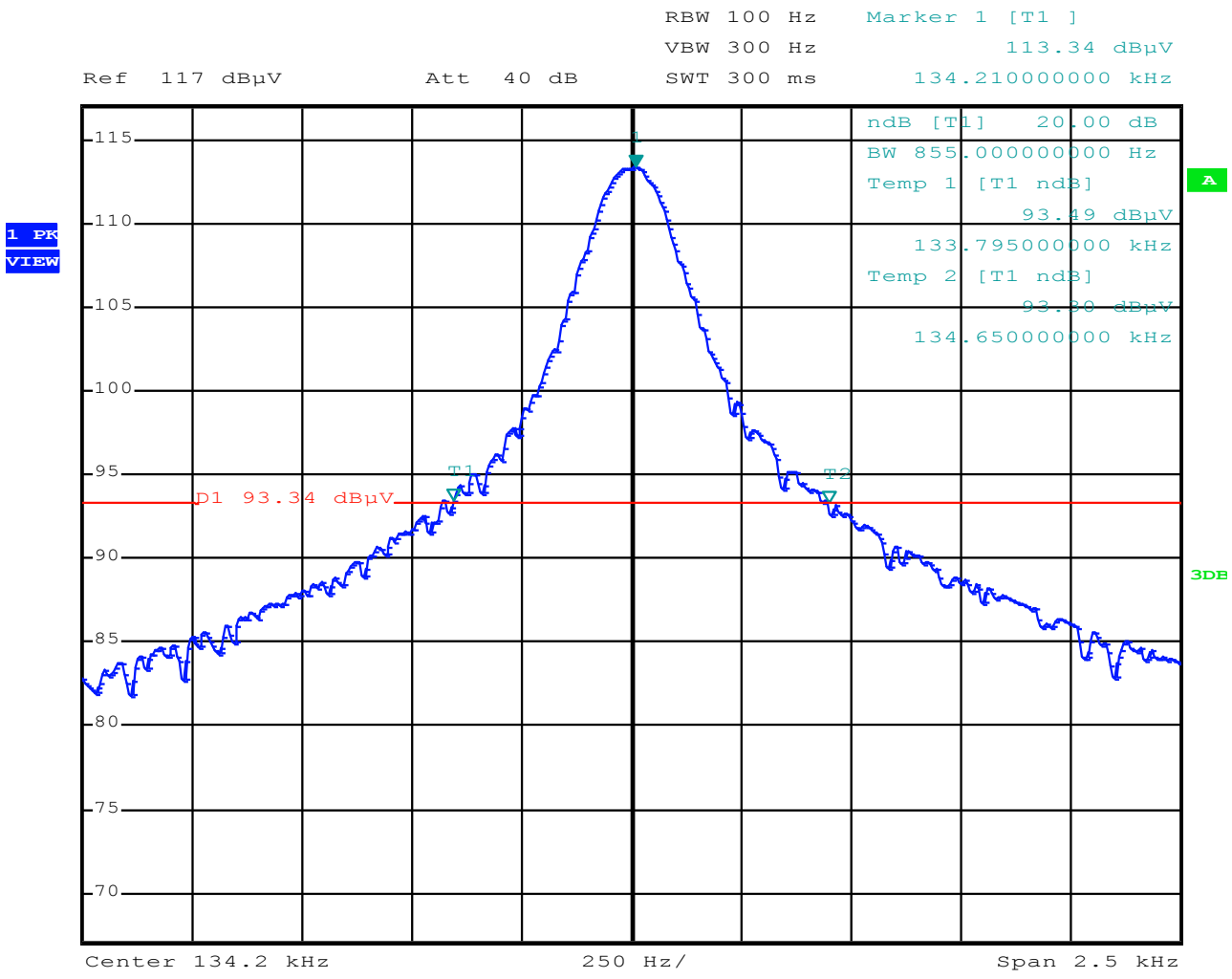


Fundamental [kHz] See Plot 1	20dB Bandwidth F1	20dB Bandwidth F2	Measured Bandwidth [kHz]
134.2	133.795	134.650	0.855

Remarks:

5.4.3 Test protocol

Emission Bandwidth plots



5.5 SAR test exclusion considerations

5.5.1 Applicable standard

According to RF exposure guidance:
Systems operating under the provisions of this section shall be operated in a manner that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines.

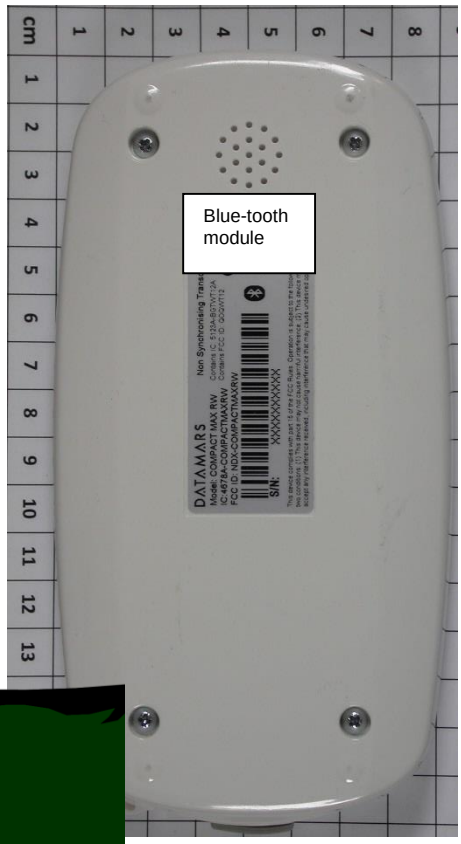
5.5.2 Determination of the standalone SAR test exclusion threshold

a) For Bluetooth devices:

The minimum separation distance results from the application of the RFID reader, which is handled by hand. This distance is assumed to > 120 mm from antenna to the hand of the user.
The hand of the user is the nearest extremity of a human being therefore the threshold for 10-g is determined.

Front side of the EuT

Rear side of the EuT



Distance between Bluetooth module and the human hand is more than 120mm.
Because the module will be mounted on, the rear side of the device and the field of the antenna will be radiated away from the human hand / body.

The formula under 4.3.1 1) for 100 MHz to 6 GHz for standalone equipment is used:

[(*max. power of channel, including tune-up tolerance, mW*)/ (*min. test separation distance, mm*)]*[√f (GHz)] ≤ 7.5;
The max power is according the equipment:

- Bluetooth module WT12 +3.0 dBm = 2.0 mW
  - 10-g Threshold level = (mW / 120 mm) * √2.48 = 0.03 * 1.57 = 0.04 ≤ 7.5

Conclusion: The Threshold level is much smaller than the limit, no SAR measurement is necessary.

b) For RFID devices:

The minimum separation distance results from the application of the RFID reader, which is handled by hand. This distance is assumed to ≤ 50 mm from antenna to the hand of the user.

For frequencies below 100 MHz, the Item 4.3.1 3) has to be considered:
The max power is according Item 5.2 of this test report 99.7 dBµV/m at 3 m at frequency 134.2 kHz. The max fieldstrength inclusive tune-up tolerance is assumed (+3 dB) to be 102.7 dBµV/m.

The fieldstrength is converted to power with the formula:

EIRP = E + 20 log (d) -104.8;

EIRP = 102.7 + 20 log3 – 104.8 = 7.4 dBm = 5.5 mW;

The formula under 4.3.1 1) a) is applied:
[Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm) ·(f (MHz)/150)] mW*[1 + log (100/f (MHz))] for test separation distances > 50 mm and < 200 mm.

10-g Threshold level = 5.5 mW + (120 mm – 50 mm) * (0.134 / 150) * (1 + log (100/0.134)) = 4.7 ≤ 7.5;

Conclusion: The Threshold level is much smaller than the limit, no SAR measurement is necessary.

5.5.3 Determination of the SAR test exclusion threshold for simultaneous transmission

When both devices are active the max threshold level has to be summed and the total threshold level is determined.

Level device 1 + level device 2 ≤ 18.75;

- Bluetooth module WT12
  - 0.04+ 5.5 = 5.54 ≤ 18.75

Conclusion: The Threshold level is much smaller than the limit, no SAR measurement is necessary.
Device 1 and device 2 can be co-located without exceeding SAR limits.

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	ESCI	02-02/03-05-004	17/09/2016	17/09/2015		
	ESH 2 - Z 5	02-02/20-05-004	26/10/2017	26/10/2015	21/01/2016	21/07/2015
	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	06/11/2016	06/11/2015	06/05/2016	06/11/2015
CPR 1	FMZB 1516	01-02/24-01-018			21/01/2017	21/01/2016
	ESCI	02-02/03-05-004	17/09/2016	17/09/2015		
	KK-EF393-21N-16	02-02/50-05-033				
	NW-2000-NB	02-02/50-05-113				
	KK-SD_7/8-2X21N-33,0M	02-02/50-15-028				
MB	FSP 30	02-02/11-05-001	01/10/2016	01/10/2015		
	HFRAE 5161 _ 50 kHz-120	02-02/24-11-004				
SER 1	FMZB 1516	01-02/24-01-018			21/01/2017	21/01/2016
	ESCI	02-02/03-05-004	17/09/2016	17/09/2015		
	KK-EF393-21N-16	02-02/50-05-033				
	NW-2000-NB	02-02/50-05-113				
	KK-SD_7/8-2X21N-33,0M	02-02/50-15-028				