

TEST REPORT

Test report no.: 1-4229/11-01-02



Testing laboratory

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Accredited Testing Laboratory:

The testing laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025 (2005) by the Deutsche Akkreditierungsstelle GmbH (DAkkS)
 The accreditation is valid for the scope of testing procedures as stated in the accreditation certificate with the registration number: D-PL-12076-01-01
 Area of Testing: Radio/Satellite Communications

Applicant

Oticon A/S
 Kongebakken 9
 2765 Smørum / DENMARK
 Phone: +45 39 17 71 00
 Fax: -/
 Contact: Jørgen Peter Hanuscheck
 e-mail: jnp@oticon.dk
 Phone: +45 39 13 85 38

Manufacturer

Oticon A/S
 Kongebakken 9
 2765 Smørum / DENMARK

Test standard/s

47 CFR Part 15	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices
RSS - 210 Issue 8	Spectrum Management and Telecommunications - Radio Standards Specification Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment
RSS - Gen Issue 3	General Requirements and Information for the Certification of Radiocommunication Equipment

For further applied test standards please refer to section 3 of this test report.

Test Item

Kind of test item:	Hearing aid
Model name:	mini BTE-EB
FCC ID:	U28EBBTE01
IC:	1350B-EBBTE01
Frequency [MHz]:	3.8 MHz
Technology tested:	Magnetic coupling
Antenna:	Integrated coil antenna
Power Supply:	1.40 V DC by zinc - air battery / power supply
Temperature Range:	0°C to +35 °C

This test report is electronically signed and valid without handwriting signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

Test report authorised:



Stefan Bös
 Senior Testing Manager

Test performed:



Marco Bertolino
 Testing Manager

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2 General information

2.1 Notes and disclaimer

The test results of this test report relate exclusively to the test item specified in this test report. CETECOM ICT Services GmbH does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item.

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In no case this test report can be considered as a Letter of Approval.

This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

2.2 Application details

Date of receipt of order:	2012-01-05
Date of receipt of test item:	2012-01-11
Start of test:	2012-01-12
End of test:	2012-01-13
Person(s) present during the test:	-/-

3 Test standard/s

Test standard	Date	Test standard description
47 CFR Part 15	2010-10	Title 47 of the Code of Federal Regulations; Chapter I Part 15 - Radio frequency devices
RSS - 210 Issue 8	2010-12	Spectrum Management and Telecommunications - Radio Standards Specification Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment
RSS - Gen Issue 3	2010-12	General Requirements and Information for the Certification of Radiocommunication Equipment

4 Test environment

Temperature:	T_{nom}	+22 °C during room temperature tests
	T_{max}	+35 °C during high temperature tests
	T_{min}	0 °C during low temperature tests
Relative humidity content:		41 %
Barometric pressure:		not relevant for this kind of testing
Power supply:	V_{nom}	1.40 V DC by zinc - air battery / power supply
	V_{max}	1.40 V
	V_{min}	1.26 V

5 Test item

Kind of test item	:	Hearing aid
Type identification	:	mini BTE-EB
S/N serial number	:	TX units: EUT No. 1: 19221762 EUT No. 2: 19221859 EUT No. 3: 19221777 EUT No. 4: 19222308 RX units: EUT No. 5: 19221858 EUT No. 6: 19222316
HW hardware status	:	Engine Block: rev. 01 Motherboard: rev. 02
SW software status	:	09-1.0.0 v.1.18
Frequency band [MHz]	:	EUT No. 1: 3.823 MHz EUT No. 2: 3.849 MHz EUT No. 3: 3.839 MHz EUT No. 4: 3.813 MHz
Type of radio transmission	:	Modulated carrier
Use of frequency spectrum	:	
Channel access method	:	-/-
Type of modulation	:	A1D
Number of channels	:	1
Antenna	:	Integrated coil antenna
Power supply	:	1.40 V DC by zinc - air battery / power supply
Temperature range	:	0 °C to +35 °C

6 Test laboratories sub-contracted

None

7 Summary of measurement results

- No deviations from the technical specifications were ascertained
- There were deviations from the technical specifications ascertained

TC Identifier	Description	Verdict	Date	Remark
RF-Testing	CFR Part 15 RSS 210, Issue 8	Passed	2012-03-05	-/-

Test Specification Clause	Test Case	Temperature Conditions	Power Source Voltages	Pass	Fail	NA	NP	Results
§ 15.35 (c) / RSS-GEN Issue 3 Section 4.5	Timing of the transmitter (Duty cycle correction factor)	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 15.223 / RSS-210 Issue 8	Bandwidth of the modulated carrier	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 15.223 / RSS-210 Issue 8	Fieldstrength of fundamental	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 15.209 (a) / RSS-210 Issue 8	Fieldstrength of harmonics and spurious	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 15.109 / RSS-210 Issue 8	Receiver spurious emissions	Nominal	Nominal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	complies
§ 15.107 / § 15.207	Conducted limits	Nominal	Nominal	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	-/-

Note: NA = Not Applicable; NP = Not Performed

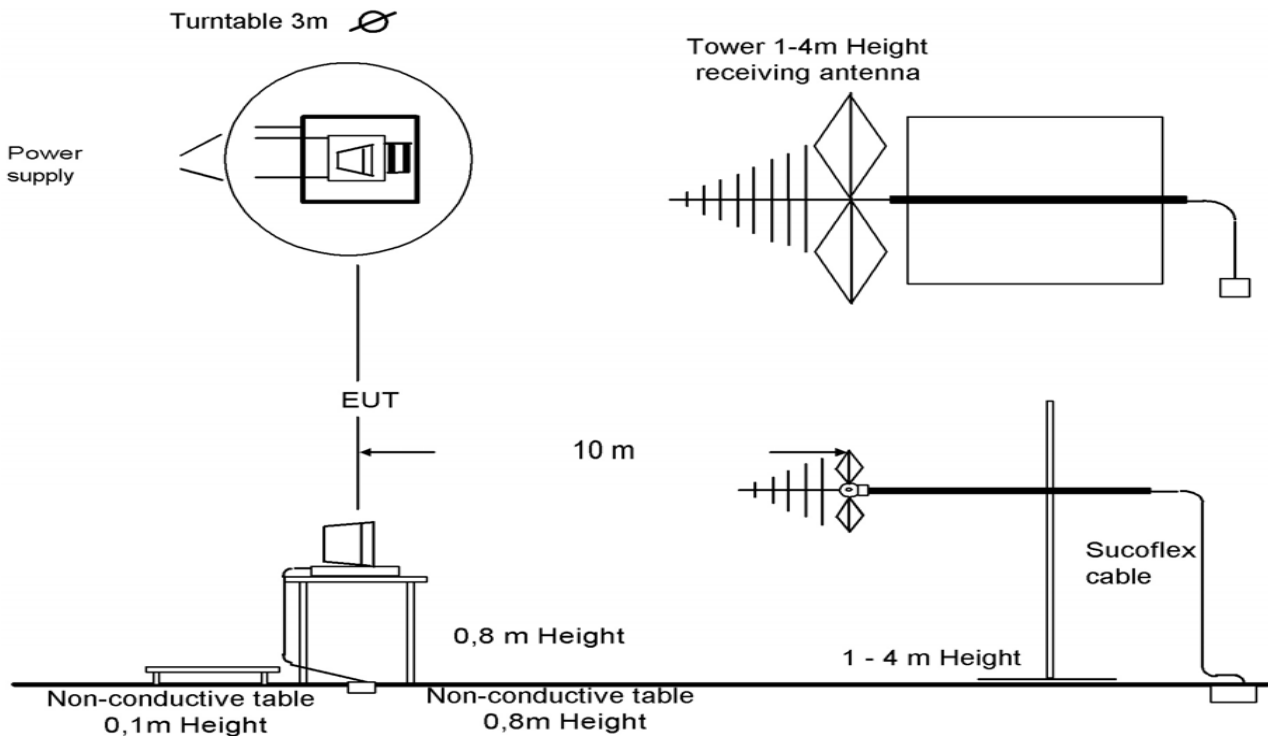
8 RF measurements

8.1 Description of test setup

8.1.1 Radiated measurements

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 25 GHz in semi-anechoic chambers. The EUT is positioned on a non-conductive support with a height of 0.80 m above a conductive ground plane that covers the whole chamber. The receiving antennas are confirmed with specifications ANSI C63.2-1996 and ANSI C63.4-2009. These antennas can be moved over the height range between 1.0 m and 4.0 m in order to search for maximum field strength emitted from EUT. The measurement distances between EUT and receiving antennas are indicated in the test setups for the various frequency ranges. For each measurement, the EUT is rotated in all three axes until the maximum field strength is received. The wanted and unwanted emissions are received by spectrum analysers where the detector modes and resolution bandwidths over various frequency ranges are set according to requirement ANSI C63-4-2009. Antennas are confirmed with ANSI C63.2-1996 item 15.

Semi anechoic chamber



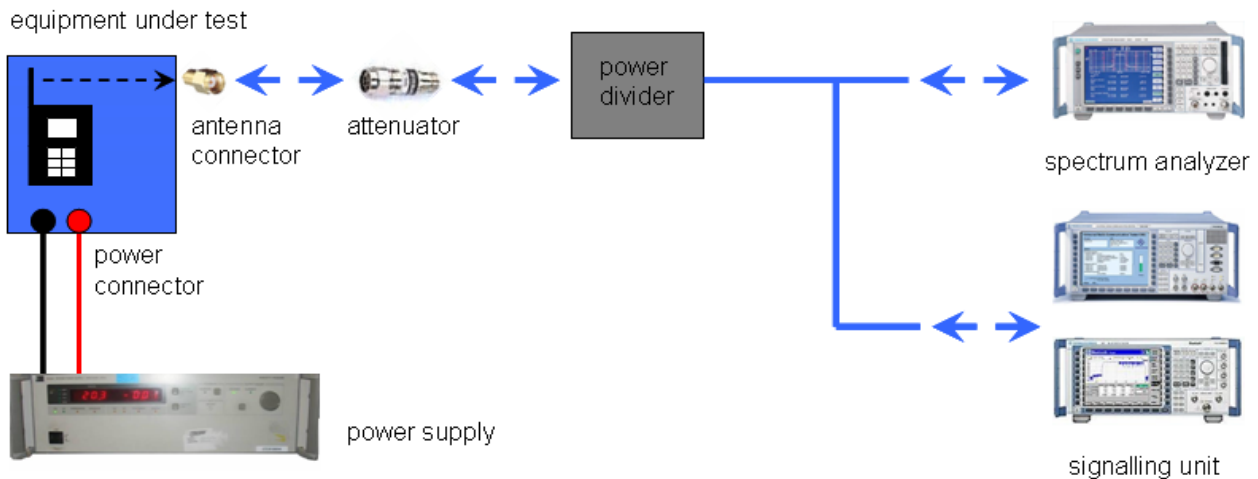
Picture 1: Diagram radiated measurements

9 kHz - 30 MHz:	active loop antenna
30 MHz – 1 GHz:	tri-log antenna
> 1 GHz:	horn antenna

The EUT is powered by an external power supply with nominal voltage. The signalling (if needed) is performed from outside the chamber with a signalling unit by air link using signalling antenna.

8.1.2 Conducted measurements

The EUT's RF signal is coupled out by the antenna connector which is supplied by the manufacturer. The signal is first 10dB attenuated before it is power divided (~6dB loss per branch). The measurement readings on the signalling unit/spectrum analyzer are corrected by the specific test set-up loss. The attenuator, power divider, and the spectrum analyzer are impedance matched on 50 Ohm.



Picture 2: Diagram conducted measurements

8.2 Additional comments

Reference documents: Oticon Wireless Hearing Aids – RF Test Setup 2010.

Manufacturer statement:

The RF-carrier frequency in Oticons wireless hearing aids, targeted for 3.84 MHz, is in the current Fusion platform generated by an RC-oscillator in turn feeding an LC-tank circuit in the transceiver. In other words, there is NO stable crystal oscillator and NO closed phase lock loop keeping the oscillator frequency in place. Furthermore, due to tolerances of the self induction of the antenna coil, which is part of the RF-tank circuit, and tolerances of the parallel capacitors, the initial carrier frequency tolerance of the RF-carrier is about plus and minus 2.5%. Finally due to the configuration of the RF-carrier frequency generating parts as described above an uncorrelated temperature drift of about plus and minus 2.5% can be added to the initial tolerance, resulting in an overall frequency accuracy of about plus minus 5.0% worst case!

Note: The EUT with the maximum field strength was used to perform the radiated spurious emissions tests!

Manufacturer declaration:

The provided test sample for radiated measurements had a transmitter duty cycle of 22% for ease of test, while the transmitter duty cycle in normal use is approximately 2.5%.

Special test descriptions: None

Configuration descriptions: None

8.3 RSP100 test report cover sheet / performance test data

Test Report Number	:	1-4229/11-01-02
Equipment Model Number	:	mini BTE-EB
Certification Number	:	1350B-EBBTE01
Manufacturer (complete Address)	:	Oticon A/S Kongebakken 9 2765 Smørum / DENMARK
Tested to radio standards specification no.	:	RSS 210, Issue 8
Open Area Test Site IC No.	:	IC 3462C-1
Frequency Range or fixed frequency	:	EUT No. 1: 3.823 MHz EUT No. 2: 3.849 MHz EUT No. 3: 3.839 MHz EUT No. 4: 3.813 MHz
Field Strength [dB μ V/m] (at which distance)	:	EUT No. 1: 54.5 dB μ V/m @ 1m EUT No. 2: 56.0 dB μ V/m @ 1m EUT No. 3: 55.5 dB μ V/m @ 1m EUT No. 4: 56.0 dB μ V/m @ 1m
Occupied bandwidth (99%-BW) [kHz]	:	333 kHz
Type of modulation	:	A1D
Emission Designator (TRC-43)	:	333KA1D
Antenna Information	:	Integrated coil antenna
Transmitter Spurious (worst case) [dB μ V/m @ 3m]:		30.1 @ 980 MHz (noise floor)
Receiver Spurious (worst case) [dB μ V/m @ 3m]:		29.9 @ 1 GHz (noise floor)

ATTESTATION:

DECLARATION OF COMPLIANCE:

I attest that the testing was performed or supervised by me; that the test measurements were made in accordance with the above-mentioned Industry Canada standard(s); and that the equipment identified in this application has been subjected to all the applicable test conditions specified in the Industry Canada standards and all of the requirements of the standard have been met.

Laboratory Manager:

2012-01-12
Date

Marco Bertolino
Name

Signature

9 Measurement results

9.1 Timing of the transmitter

Measurement:

Measurement parameter	
Detector:	-/-
Sweep time:	-/-
Resolution bandwidth:	-/-
Video bandwidth:	-/-
Span:	-/-
Trace-Mode:	-/-

Limits:

FCC	IC
CFR Part SUBCLAUSE § 15.35 (c)	RSS-GEN Issue 3 Section 4.5
Timing of the transmitter	
<p>(c) Unless otherwise specified, e.g. Section 15.255(b), when the radiated emission limits are expressed in terms of the average value of the emission, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum value. The exact method of calculating the average field strength shall be submitted with any application for certification or shall be retained in the measurement data file for equipment subject to notification or verification.</p>	

Duty cycle of the sample with test mode: 22 %

In normal use the duty cycle is approximately 2.5 % (declared by the manufacturer).

Result: [The result of the measurement is passed.](#)

9.2 Bandwidth of the modulated carrier

Limits:

FCC	IC
CFR Part SUBCLAUSE § 15.223	RSS-210 Issue 8
Bandwidth of the modulated carrier	

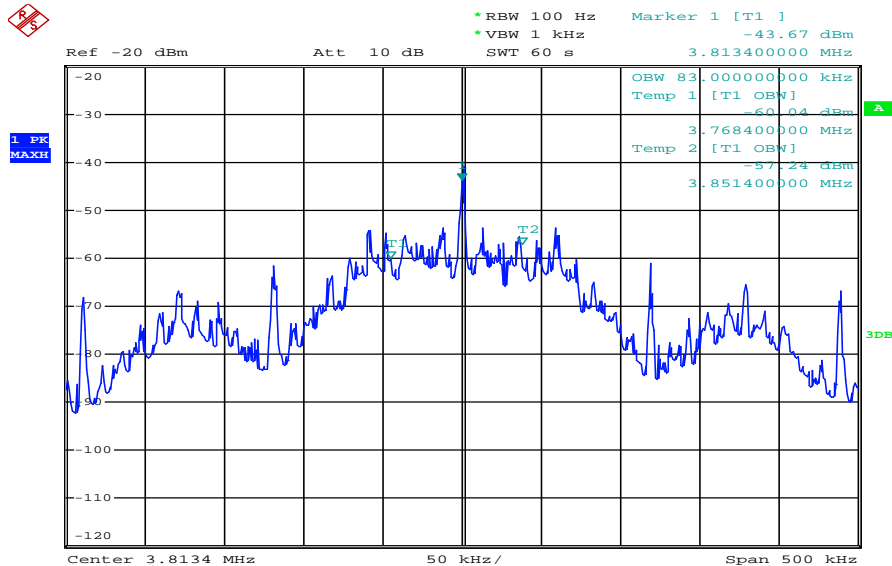
Measured with the integrated OBW-function of the spectrum analyser Rohde &Schwarz FSP (measurement criteria is the integrated power in %)

Results:

	Occupied Bandwidth (kHz)
6 dB (75%)	83.0
20 dB (99%)	333.0

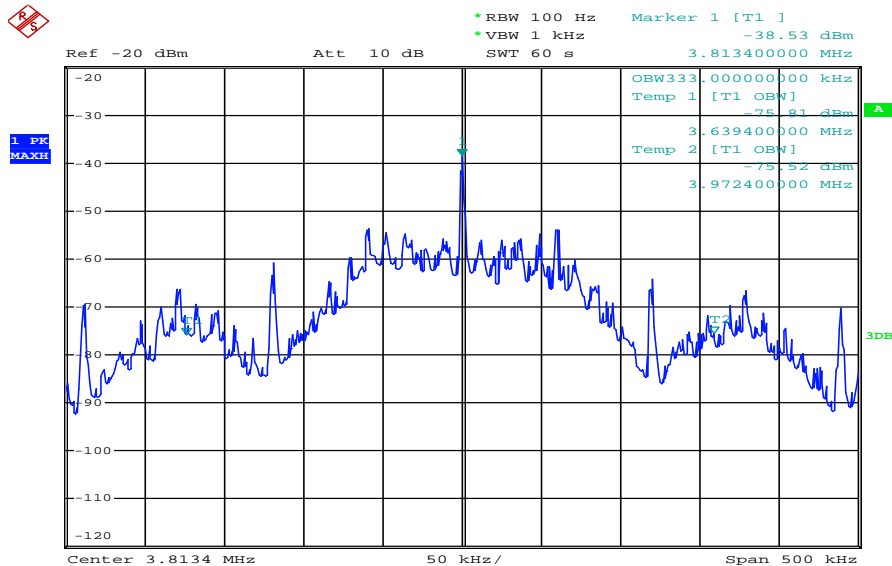
Plots of the measurement:

Plot 1: 6dB (75%) – bandwidth



Date: 13.JAN.2012 09:02:15

Plot 2: 20dB (99%) - bandwidth



Date: 13.JAN.2012 09:00:51

9.3 Field strength of the fundamental

Measurement:

Measurement parameter	
Detector:	Quasi Peak (CISPR)
Resolution bandwidth:	10 kHz
Trace-Mode:	Max Hold

Limits:

FCC		IC	
CFR Part SUBCLAUSE § 15.223		RSS-210 Issue 8	
Fundamental Frequency (MHz)	Field strength of Fundamental ($\mu\text{V}/\text{m}$)	Measurement distance (m)	
1.705 – 10.0	[15] or [6dB-BW(kHz) / F(MHz)] Whichever is higher	30	

Results:

TEST CONDITIONS		MAXIMUM POWER ($\text{dB}\mu\text{V}/\text{m}$)	
Frequency		3.8 MHz	3.8 MHz
EUT No. 1: 19221762		at 1 m distance	at 30 m distance
T_{nom}	V_{nom}	54.5	-5.5*
EUT No. 2: 19221859		at 1 m distance	at 30 m distance
T_{nom}	V_{nom}	56.0	-4.0*
EUT No. 3: 19221777		at 1 m distance	at 30 m distance
T_{nom}	V_{nom}	55.5	-4.5*
EUT No. 4: 19222308		at 1 m distance	at 30 m distance
T_{nom}	V_{nom}	56.0	-4.0*
Measurement uncertainty		$\pm 3\text{dB}$	

Recalculation to a measurement distance of 30m with a correction of 40 dB/decade.

Result: The result of the measurement is passed.

Noise floor: 26.5 dB μ V/m

***Note:**

- Calculation: Measured maximum field strength @ 1 m distance: 56.0 dB μ V/m

Correction factor from 1 m to 10 m: -40 dB (40 dB / decade)

56.0 dB μ V/m @ 1 meter - 40 dB = 16.0 dB μ V/m @ 10 meter

Correction factor from 1 m to 30 m: -60 dB (40 dB / decade)

56.0 dB μ V/m @ 1 meter - 60 dB = -4.0 dB μ V/m @ 30 meter

9.4 Field strength of the harmonics and spurious

Measurement:

Measurement parameter	
Detector:	Average / Quasi Peak
Sweep time:	Auto
Resolution bandwidth:	3 kHz – 120 kHz
Video bandwidth:	Comparable to RBW
Trace-Mode:	Max hold

Limits:

FCC	IC	
SUBCLAUSE § 15.209 (a)	RSS-210 Issue 8	
Field strength of the harmonics and spurious.		
Frequency (MHz)	Field strength ($\mu\text{V}/\text{m}$)	Measurement distance (m)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30	30 (29.5 dB $\mu\text{V}/\text{m}$)	30
30 – 88	100 (40 dB $\mu\text{V}/\text{m}$)	3
88 – 216	150 (43.5 dB $\mu\text{V}/\text{m}$)	3
216 – 960	200 (46 dB $\mu\text{V}/\text{m}$)	3

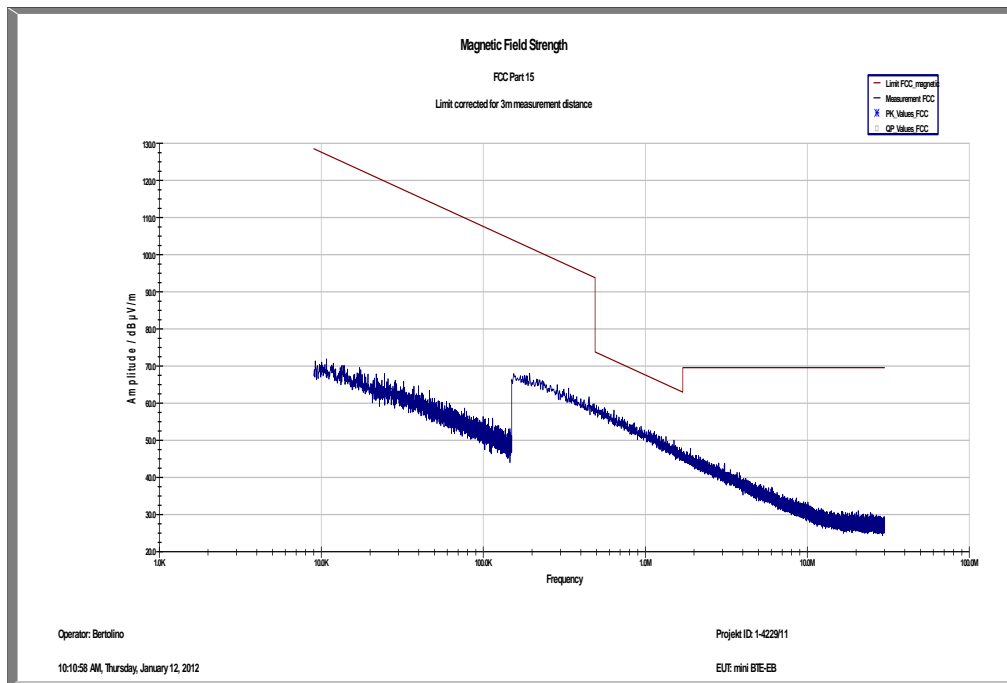
Result:

EMISSION LIMITATIONS				
f [MHz]	Detector	Limit max. allowed [dB $\mu\text{V}/\text{m}$]	Amplitude of emission [dB $\mu\text{V}/\text{m}$]	Results
No critical peaks detected. All detected emissions are below the limit!				

Result: The result of the measurement is passed.

Plots of the measurements: Radiated unit No. 4 19222308 (TX-mode)

Plot 1: 9 kHz – 30 MHz, magnetic emissions



Plot 2: 30 MHz – 1000 MHz, vertical & horizontal polarization

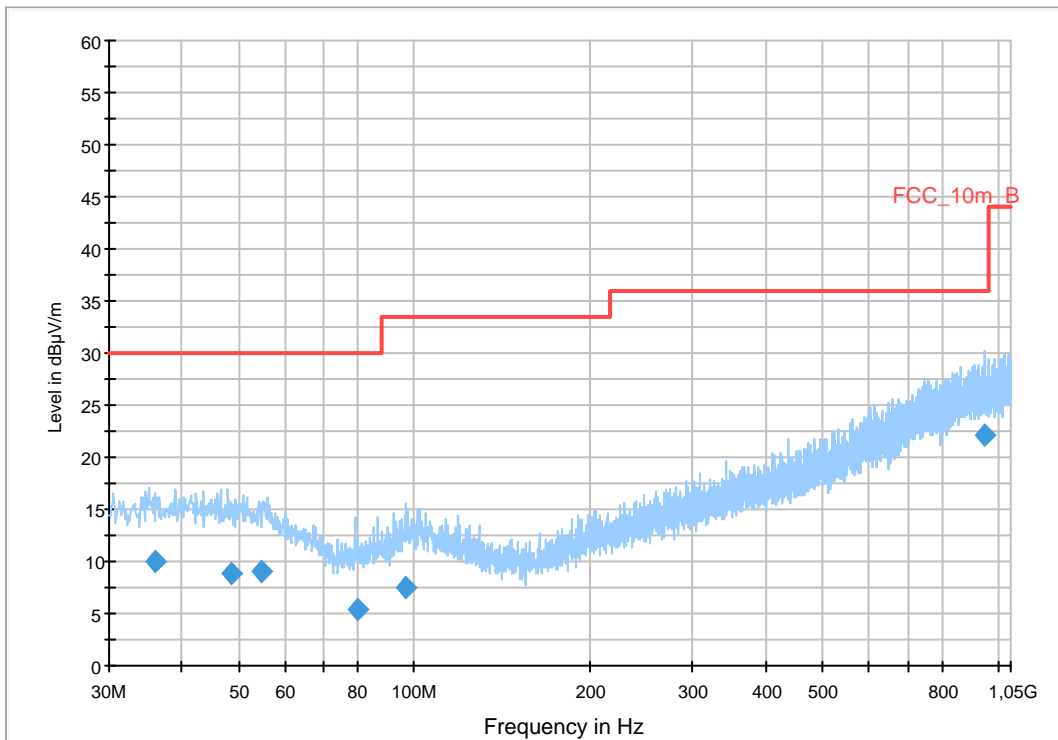
Common Information

EUT: MINI BTE CBE
 Serial Number: 19222308
 Test Description: FCC part 15 class B @ 10 m
 Operating Conditions: cont. TX
 Operator Name: Hennemann
 Comment: battery powered 1,4 V type 312

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Receiver: [ESCI 3]
 Level Unit: dB μ V/m
Subrange **Step Size** **Detectors** **IF BW** **Meas. Time** **Preamp**
 30 MHz - 2 GHz 60 kHz QPK 120 kHz 1 s 20 dB

FCC_10m(B)_3



Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
35.854050	10.1	1000.0	120.000	170.0	V	196.0	13.1	19.9	30.0	
48.405150	8.9	1000.0	120.000	170.0	V	82.0	13.3	21.1	30.0	
54.682200	9.0	1000.0	120.000	135.0	V	-6.0	12.9	21.0	30.0	
79.627050	5.3	1000.0	120.000	124.0	H	97.0	9.1	24.7	30.0	
96.830700	7.5	1000.0	120.000	98.0	H	172.0	11.5	26.0	33.5	
945.138900	22.0	1000.0	120.000	170.0	V	260.0	25.3	14.0	36.0	

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESC1 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.42
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table (vertical): Cable_EN_1GHz (1005) Correction Table (horizontal): Cable_EN_1GHz (1005)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

EMC 32 Version 8.10.00

9.5 Receiver spurious emissions

Measurement:

Measurement parameter	
Detector:	Average / Quasi peak
Sweep time:	Auto
Resolution bandwidth:	3 kHz – 120 kHz
Video bandwidth:	Comparable to RBW
Trace-Mode:	Max hold

Limits:

FCC		IC	
SUBCLAUSE § 15.109		RSS-210 Issue 8	
Field strength of the harmonics and spurious.			
Frequency (MHz)	Field strength (µV/m)	Measurement distance (m)	
0.009 – 0.490	2400/F(kHz)	300	
0.490 – 1.705	24000/F(kHz)	30	
1.705 – 30	30 (29.5 dBµV/m)	30	
30 – 88	100 (40 dBµV/m)	3	
88 – 216	150 (43.5 dBµV/m)	3	
216 – 960	200 (46 dBµV/m)	3	

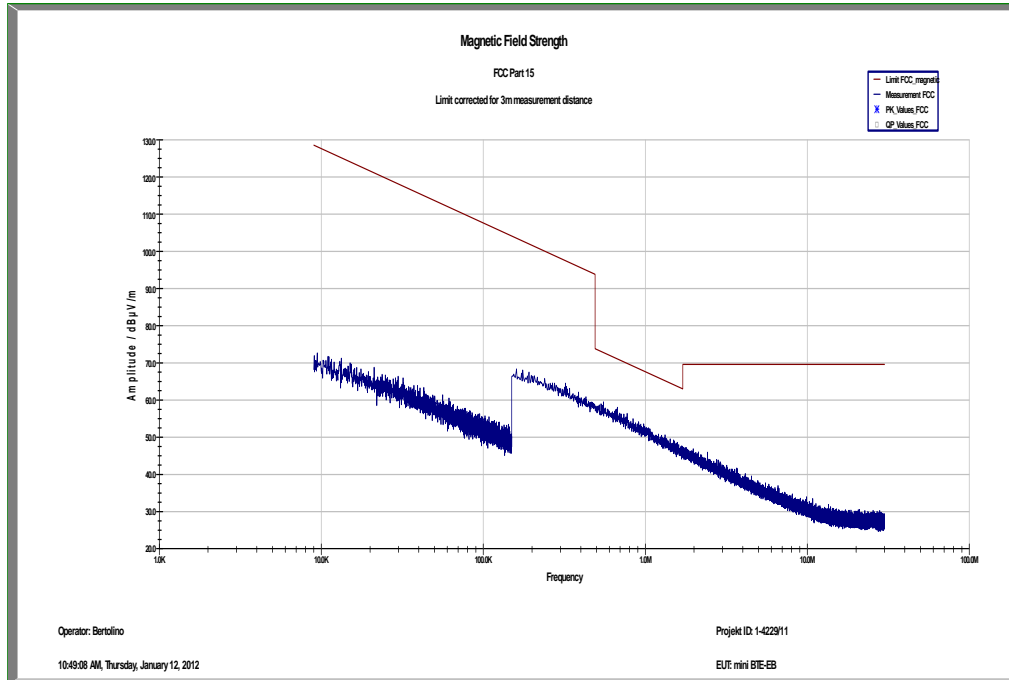
Result:

EMISSION LIMITATIONS				
f [MHz]	Detector	Limit max. allowed [dBµV/m]	Amplitude of emission [dBµV/m]	Results
No critical peaks detected. All detected emissions are below the limit!				

Result: The result of the measurement is passed.

Plots of the measurements: Radiated unit No. 5 19221858 (RX – mode)

Plot 1: 9 kHz – 30 MHz, magnetic emissions



Plot 2: 30 MHz – 1000 MHz, vertical & horizontal polarization

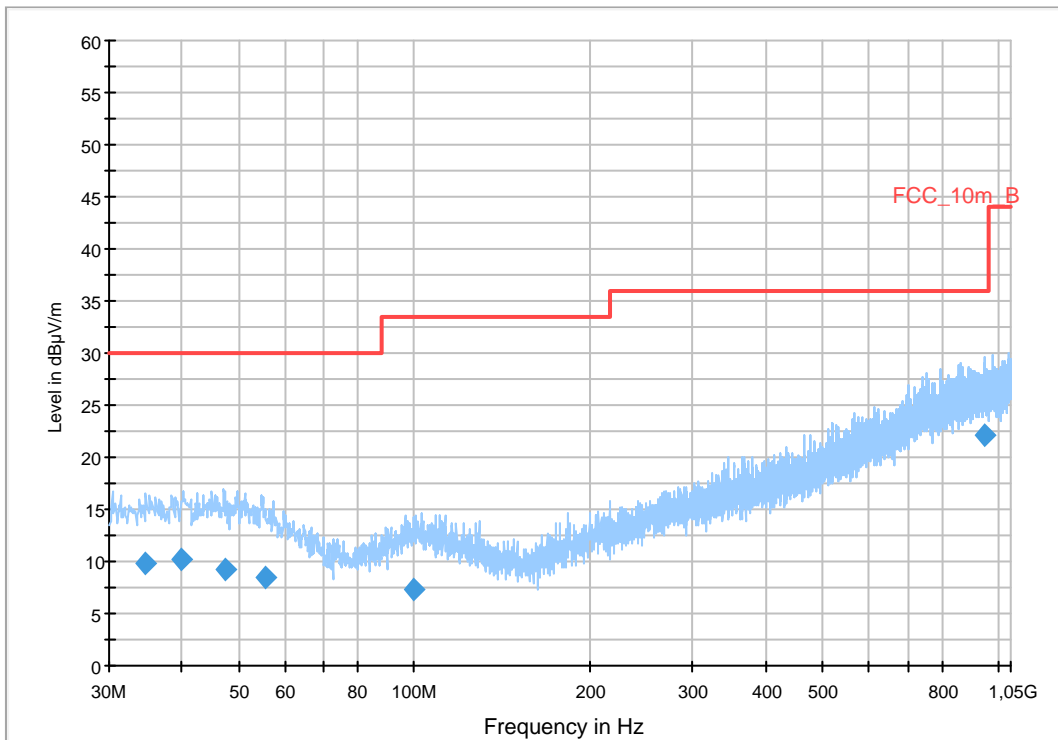
Common Information

EUT: MINI BTE CBE
 Serial Number: 19222316
 Test Description: FCC part 15 class B @ 10 m
 Operating Conditions: cont. RX
 Operator Name: Hennemann
 Comment: battery powered 1,4 V type 312

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Receiver: [ESCI 3]
 Level Unit: dBµV/m
Subrange **Step Size** **Detectors** **IF BW** **Meas. Time** **Preamp**
 30 MHz - 2 GHz 60 kHz QPK 120 kHz 1 s 20 dB

FCC_10m(B)_3



Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBµV/m)	Comment
34.651200	9.8	1000.0	120.000	170.0	V	284.0	13.0	20.2	30.0	
39.956250	10.2	1000.0	120.000	170.0	H	8.0	13.4	19.8	30.0	
47.318400	9.1	1000.0	120.000	156.0	V	284.0	13.3	20.9	30.0	
55.696650	8.4	1000.0	120.000	170.0	H	283.0	12.7	21.6	30.0	
99.558450	7.3	1000.0	120.000	106.0	H	106.0	11.8	26.2	33.5	
948.602100	22.1	1000.0	120.000	170.0	V	273.0	25.3	13.9	36.0	

Hardware Setup: EMI radiated\Electric Field (NOS) - [EMI radiated]

Subrange 1	
Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESC1 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.42
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table (vertical): Cable_EN_1GHz (1005) Correction Table (horizontal): Cable_EN_1GHz (1005)
Antenna Tower:	Tower [EMCO 2090 Antenna Tower] @ GPIB0 (ADR 8), FW REV 3.12
Turntable:	Turntable [EMCO Turntable] @ GPIB0 (ADR 9), FW REV 3.12

EMC 32 Version 8.10.00

9.6 Conducted limits

Not applicable!

The EUT is battery powered only!

No possibility to connect the mains power supply!

10 Test equipment and ancillaries used for tests

Typically, the calibrations of the test apparatus are commissioned to and performed by an accredited calibration laboratory. The calibration intervals are determined in accordance with the DIN EN ISO/IEC 17025. In addition to the external calibrations, the laboratory executes comparison measurements with other calibrated test systems or effective verifications. Weekly chamber inspections and range calibrations are performed. Where possible, rf-generating and signalling equipment as well as measuring receivers and analyzers are connected to an external high-precision 10 MHz reference (GPS-based or rubidium frequency standard).

In order to simplify the identification of the equipment used at some special tests, some items of test equipment and ancillaries can be provided with an identifier or number in the equipment list below (Labor/Item).

No.	Lab / Item	Equipment	Type	Manufact.	Serial No.	INV. No Cetecom	Kind of Calibration	Last Calibration	Next Calibration
1	n. a.	Double-Ridged Waveguide Horn Antenna 1-18.0GHz	3115	EMCO	8812-3088	300001032	viKI!	11.05.2011	11.05.2013
2	n. a.	Active Loop Antenna	6502	EMCO	2210	300001015	ne		
3	n. a.	Anechoic chamber	FAC 3/5m	MWB / TDK	87400/02	300000996		23.03.2009	
4	9	Artificial Mains 9 kHz to 30 MHz	ESH3-Z5	R&S	828576/020	300001210	Ve	06.01.2010	06.01.2012
5	n. a.	Relais Matrix	3488A	HP Meßtechnik	2719A15013	300001156	ne		
6	n. a.	Three-Way Power Splitter, 50 Ohm	11850C	HP Meßtechnik		300000997	ne		
7	n. a.	Switch / Control Unit	3488A	HP	2605e08770	300001443	ne		
8	n. a.	Amplifier	js42-00502650-28-5a	Parzich GMBH	928979	300003143	ne		
9	n. a.	TILE-Software Emission	Quantum Change, Modell TILE-ICS/FULL	EMCO	none	300003451	ne		
10	n. a.	PSA Spectrum Analyzer 3 Hz - 26.5 GHz	E4440A	Agilent Technologies	MY48250080	300003812	k	08.09.2010	08.09.2012
11	n. a.	RF Filter Section 9kHz - 1GHz	N9039A	Agilent Technologies	MY48260003	300003825	viKI!	08.09.2010	08.09.2012
12	n. a.	TRILOG Broadband Test-Antenna 30 MHz - 3 GHz	VULB9163	Schwarzbeck	371	300003854	viKI!	14.10.2011	14.10.2014
13	45	Switch-Unit	3488A	HP Meßtechnik	2719A14505	300000368	g		
14	50	DC power supply, 60Vdc, 50A, 1200 W	6032A	HP Meßtechnik	2920A04466	300000580	ne		
15	n. a.	software	SPS_PHE 1.4f	Spitzberger & Spieß	B5981; 5D1081;B5979	300000210	ne		
16	n. a.	EMI Test Receiver	ESCI 1166.5950.03	R&S	100083	300003312	k	05.01.2011	05.01.2013
17	n. a.	Analyzer-Reference-System (Harmonics and Flicker)	ARS 16/1	SPS	A3509 07/0 0205	300003314	k	14.07.2011	14.07.2013
18	n. a.	Amplifier	JS42-00502650-28-5A	MITEQ	1084532	300003379	ev		
19	n. a.	Antenna Tower	Model 2175	ETS-LINDGREN	64762	300003745	izw		
20	n. a.	Positioning Controller	Model 2090	ETS-LINDGREN	64672	300003746	izw		
21	n. a.	Turntable Interface-Box	Model 105637	ETS-LINDGREN	44583	300003747	izw		
22	n. a.	TRILOG Broadband	VULB9163	Schwarzbeck	295	300003787	k	01.04.2010	01.04.2012

		Test-Antenna 30 MHz - 3 GHz							
23	n. a.	Spectrum- Analyzer	FSU26	R&S	200809	300003874	k	10.01.2011	10.01.2013
24	n. a.	Spectrum Analyzer 9kHz to 30GHz - 140...+30dBm	FSP30	R&S	100886	300003575	k	07.09.2010	07.09.2012
25	n. a.	Loop Antenna 9 KHz - 30 MHz	HFH2-Z2	R&S	891847-35	300001169	ne		

Agenda: Kind of Calibration

k	calibration / calibrated	EK	limited calibration
ne	not required (k, ev, izw, zw not required)	zw	cyclical maintenance (external cyclical maintenance)
ev	periodic self verification	izw	internal cyclical maintenance
Ve	long-term stability recognized	g	blocked for accredited testing
vlk!	Attention: extended calibration interval	*)	next calibration ordered / currently in progress
NK!	Attention: not calibrated		

11 Observations

No observations exceeding those reported with the single test cases have been made.