

CETECOM ICT Services GmbH

Untertürkheimer Str. 6-10, 66117 Saarbruecken
RSC-Laboratory

Phone: +49 (0) 681 598-0
Phone: +49 (0) 681 598-8412

Fax: -9075
Fax: -8484

Test report no.: 1-1732-01-13/09

Date: 2010-02-24

Page 1 of 31

Recognized by the
Federal Communications Commission
Anechoic chamber registration no.: 90462 (FCC)
Anechoic chamber registration no.: IC 3462C-1
TCB ID: DE 0001



Accredited by the
German Accreditation Council
DAR-Registration Number
DGA-PL-176/94-D1



Accredited Bluetooth® Test Facility (BQTF)

Test report no. : 1-1732-01-13/09
Applicant : Oticon A/S
Type : ITE 3M84
Test Standard : 47 CFR Part15
RSS-210 Issue 7
FCC ID : U28FUIITE03
Certification No. IC : 1350B-FUIITE03

The Bluetooth word mark and logos are owned by the Bluetooth SIG, Inc. and any use of such marks by Cetecom ICT is under license

Table of contents

1. ADMINISTRATIVE DATA	3
1.1. ADMINISTRATIVE DATA OF THE TEST FACILITY	3
1.1.1 Identification of the testing laboratory	3
1.1.2 Organizational items.....	3
1.1.3 Applicant´s details	4
1.2 ADMINISTRATIVE DATA OF MANUFACTURER / MEMBER	4
1.3 DESCRIPTION OF THE EQUIPMENT UNDER TEST (EUT)	5
1.3.1 EUT: Type, S/N etc.	5
1.3.2 RF Technical Brief Cover Sheet acc. To RSS-102	6
1.4 TEST SETUP	7
1.5 TEST SPECIFICATIONS.....	7
1.6 ADDITIONAL COMMENTS	7
2 STATEMENT OF COMPLIANCE	8
2.1 SUMMARY OF MEASUREMENT RESULTS.....	8
2.1.1 CFR 47 Part 15 Radio frequency devices.....	8
3 MEASUREMENTS AND RESULTS	9
4 FCC PART 15 SUBPART C.....	10
4.1 TIMING OF THE TRANSMITTER	10
4.2 FIELD STRENGTH OF THE FUNDAMENTAL / BANDWIDTH § 15.209 (A)	11
4.3 MAXIMUM OUTPUT POWER (QUASI PEAK) – (RADIATED)	13
4.4 FIELD STRENGTH OF THE HARMONICS AND THE SPURIOUS	14
4.4.1 Plots of measurements	15
4.5 RECEIVER SPURIOUS EMISSION (RADIATED)	18
4.5.1 Plots of measurements	19
4.6 CONDUCTED LIMITS	22
5 USED TEST EQUIPMENT	23
6 ANNEX A: PHOTOGRAPHS OF TEST SITE	25
7 ANNEX B: PHOTOGRAPHS OF THE EQUIPMENT.....	27

CETECOM ICT Services GmbH

Untertürkheimer Str. 6-10, 66117 Saarbruecken
RSC-Laboratory

Phone: +49 (0) 681 598-0
Phone: +49 (0) 681 598-8412

Fax: -9075
Fax: -8484

Test report no.: 1-1732-01-13/09

Date: 2010-02-24


Page 3 of 31

1. Administrative data

1.1. Administrative data of the test facility

1.1.1 Identification of the testing laboratory

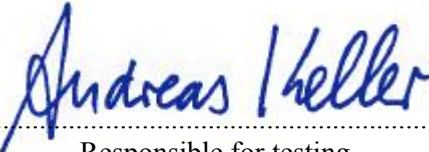
Company name:	Cetecom ICT Services GmbH
Address:	Untertürkheimerstr. 6-10 D-66117 Saarbruecken Germany
Laboratory accreditation:	DAR-Registration No. DGA-PL-176/94-D1 Bluetooth Qualification Test Facility (BQTF)
Responsible for testing laboratory:	Dipl.-Ing. (FH) Stefan Bös Phone: +49 681 598 0 Fax: +49 681 598 9075 email: info@ict.cetecom.de


.....
Responsible for testing laboratory
Dipl.-Ing. (FH) Stefan Bös

1.1.2 Organizational items

Reference No.:	1-1732-01-13/09
Order No.:	-/-
Receipt of EUT:	2010-01-06
Date(s) of test:	2010-01-11/2010-01-12
Date of report:	2010-02-24
Number of report pages:	25
Number of pages (annex):	6

Version of template:	1.8


.....
Responsible for testing
Andreas Keller

CETECOM ICT Services GmbH

Untertürkheimer Str. 6-10, 66117 Saarbruecken
RSC-Laboratory

Phone: +49 (0) 681 598-0
Phone: +49 (0) 681 598-8412

Fax: -9075
Fax: -8484

Test report no.: 1-1732-01-13/09

Date: 2010-02-24

Page 4 of 31

Note:

The test results of this test report relate exclusively to the item tested as specified in this report. The 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.

The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the CETECOM ICT Services GmbH.

During the test no hardware and software changes are allowed to be performed at the EUT.

1.1.3 Applicant's details

Applicant's name:	Oticon A/S
Address:	Kongebakken 9 2765 Smørum Denmark Tel: +45 39 17 71 00 Fax: +45 39 27 79 00 Email: http://www.oticon.com
Contact person:	Mr. Jørgen Peter Hanuscheck Tel: +45 39 13 85 38 Fax: -/- Email: jnp@oticon.dk

1.2 Administrative data of manufacturer / member

Manufacturer's name:	Oticon A/S
Address:	Kongebakken 9 2765 Smørum Denmark Tel: +45 39 17 71 00 Fax: +45 39 27 79 00 Email: http://www.oticon.com
Contact person:	Mr. Jørgen Peter Hanuscheck Tel: +45 39 13 85 38 Fax: -/- Email: jnp@oticon.dk

CETECOM ICT Services GmbH

Untertürkheimer Str. 6-10, 66117 Saarbruecken
RSC-Laboratory

Phone: +49 (0) 681 598-0
Phone: +49 (0) 681 598-8412

Fax: -9075
Fax: -8484

Test report no.: 1-1732-01-13/09

Date: 2010-02-24

Page 5 of 31

1.3 Description of the Equipment under test (EUT)

1.3.1 EUT: Type, S/N etc.

Type of equipment	:	Hearing Aid ITE 3M84
Model name	:	S/N: 15207478 (273952) TX with duty cycle 22% 273959 RX
Manufacturer	:	Oticon A/S
Address	:	Kongebakken 9
City	:	2765 Smørum
Country	:	Denmark
Tested to Radio Standards Specification(RSS) No.	:	210 Issue 7
Open Area Test Site Industry Canada Number	:	IC 3462C
Frequency Range (or fixed frequency)	:	TX: 3.7 MHz
Field Strength	:	-8dB μ V/m @ 30m
Occupied Bandwidth (99% BW)	:	385kHz
Type of Modulation	:	A1D
Antenna Information	:	Integrated coil antenna
Emission Designator	:	385KA1D
Transmitter Spurious (worst case)	:	23dB μ V/m @ 10m (noise floor)
Receiver Spurious (worst case)	:	23dB μ V/m @ 10m (noise floor)
IC no.	:	U28FUIITE03
FCC ID	:	1350B-FUIITE03

ATTESTATION:

DECLARATION OF COMPLIANCE:

I declare 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:

2010-02-24

Date

Andreas Keller

Name



Signature

CETECOM ICT Services GmbH

Untertürkheimer Str. 6-10, 66117 Saarbruecken
RSC-Laboratory

Phone: +49 (0) 681 598-0
Phone: +49 (0) 681 598-8412

Fax: -9075
Fax: -8484

Test report no.: 1-1732-01-13/09

Date: 2010-02-24

Page 6 of 31

1.3.2 RF Technical Brief Cover Sheet acc. To RSS-102

All Fields must be completed with the requested information or the following codes: N/A for Not Applicable, N/P for Not Performed or N/V for Not Available. Where applicable, check appropriate box.

1. COMPANY NUMBER: 1350B
2. MODEL NUMBER: ITE 3M84
3. MANUFACTURER: Oticon A/S
4. TYPE OF EVALUATION: N/A

(c) RF Evaluation

- Evaluated against exposure limits: General Public Use Controlled Use
- Duty cycle used in evaluation: %
- Standard used for evaluation: RSS-102 Issue 2 (2005-11)
- Measurement distance: 0.20 m
- RF value: _____ V/m A/m W/m²
- Measured Computed Calculated

Declaration of RF Exposure Compliance

ATTESTATION: I attest that the information provided in this test report is correct; that a Technical Brief was prepared and the information it contains is correct; that the device evaluation was performed or supervised by me; that applicable measurement methods and evaluation methodologies have been followed and that the device meets the SAR and/or RF exposure limits of RSS-102.

Name:



Company: Cetecom ICT Services GmbH
2010-02-24

1.4 Test Setup

Hardware	:	Rev 10
Software	:	Rev 14

1.5 Test Specifications

FCC:	CFR Part 15.209, CFR Part 15.223
IC:	RSS 210, Issue 7

1.6 Additional comments

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% can be added to the initial tolerance, resulting in an overall frequency accuracy of about plus minus 4.5% worst case!

2 Statement of Compliance

No deviations from the technical specification(s) were ascertained in the course of the tests performed.

2.1 Summary of Measurement Results

2.1.1 CFR 47 Part 15 Radio frequency devices

Section in this Report	Test Name / Section FCC Part 15	Test Name / Section RSS 210 Issue 7	applicable	Verdict
4.1	§ 15.35 (c) Timing of the transmitter	-/-	YES	Passed
4.2	§ 15.209 (a) FIELDSTRENGTH OF FUNDAMENTAL	2.6	YES	Passed
4.3	§ 15.209 (a) FIELDSTRENGTH OF HARMONICS and SPURIOUS	2.6	YES	Passed
4.4	§ 15.109 Receiver spurious emissions (radiated)	2.6	YES	Passed
4.5	§ 15.107 / 15.207 Conducted Limits	-/-	NO	-/-

3 Measurements and results

The radiated measurements are performed in vertical and horizontal plane in the frequency range from 9 kHz to 20 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 conform with specifications ANSI C63.2-1996 clause 15 and ANSI C63.4-2003 clause 4.1.5. 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 set-ups 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 C63.4-2003 clause 4.2.

Antennas conform with ANSI C63.2-1996 item 15.

9 kHz - 30 MHz: Quasi Peak measurement, 9kHz Bandwidth, active loop antenna.

30 MHz - 200 MHz: Quasi Peak measurement, 120kHz Bandwidth, trilob antenna

200MHz - 1GHz: Quasi Peak measurement, 120kHz Bandwidth, trilob antenna

>1GHz: Average, RBW 1MHz, VBW 10 Hz, wave guide horn

All measurement settings are according to FCC 15.209 and 15.207

4 FCC Part 15 Subpart C

4.1 Timing of the transmitter

Reference

FCC:	CFR Part SUBCLAUSE § 15.35 (c)
IC:	-/-

Duty cycle of the samples with test mode: 22% (declared by the manufacturer).

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

Limits: § 15.35 (c)

(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.

4.2 Field strength of the fundamental / bandwidth

§ 15.209 (a)

Reference

FCC:	CFR Part SUBCLAUSE § 15.223
IC:	RSS 210, Issue 7, A2.3

Sample 273952

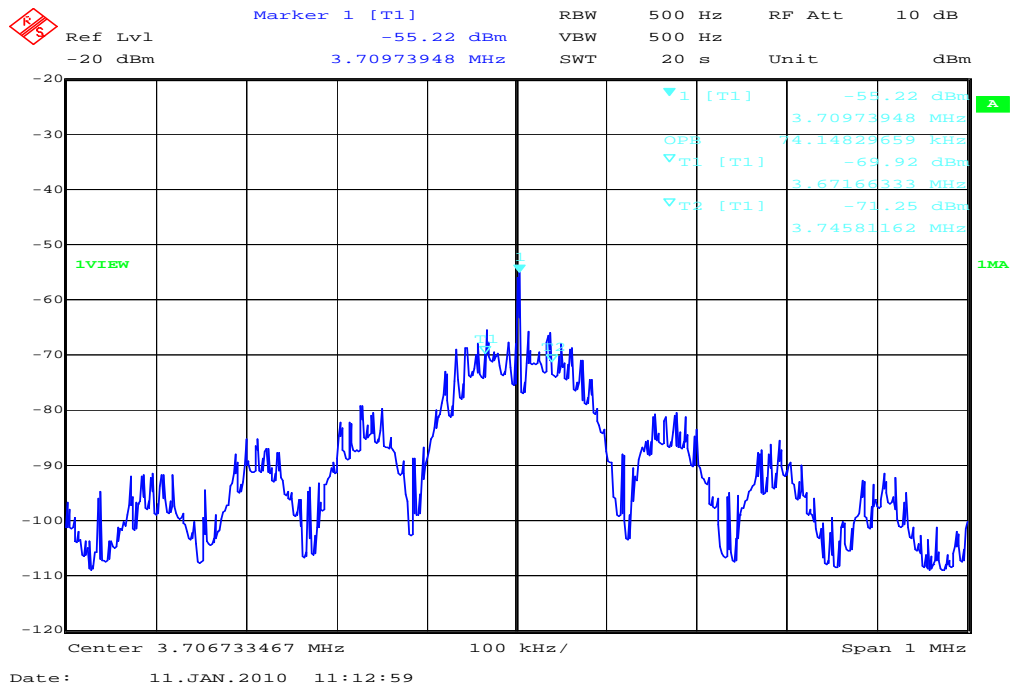
Results:

	Occupied Bandwidth (kHz)
6 dB (75%)	74
20 dB (99%)	385

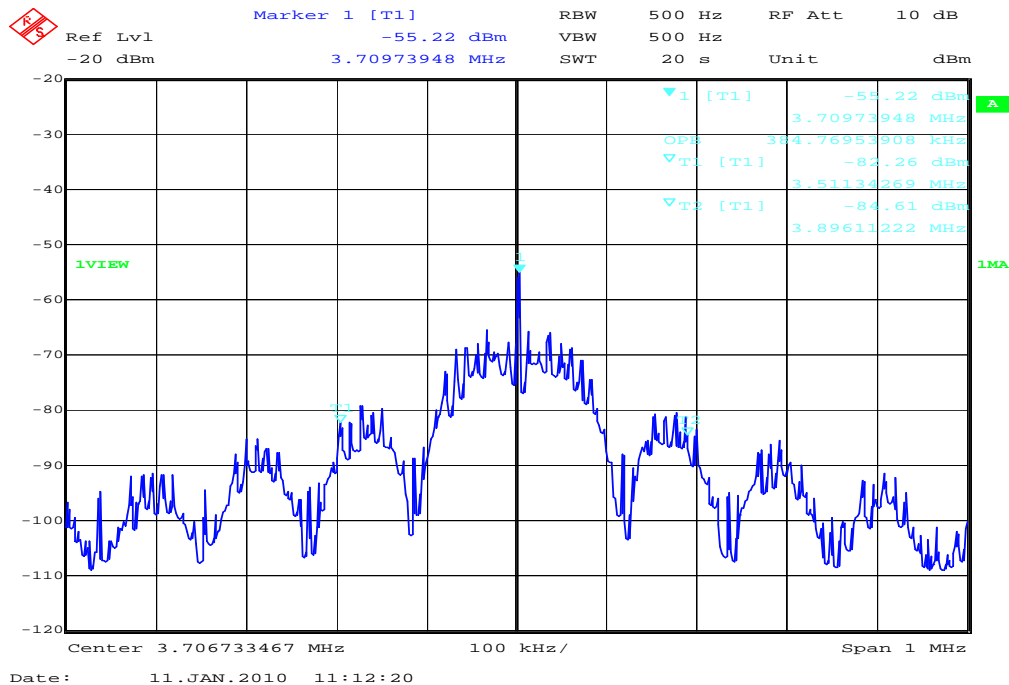
Measured with the integrated OBW-function of the spectrum analyser Rohde&Schwarz FSIQ26 (measurement criteria is the integrated power in %).

Ambient temperature in the test chamber: 22°C

Plot 1: 6 dB (75%) – bandwidth



Plot 2: 20 dB (99%) – bandwidth



4.3 Maximum output power (quasi peak) – (radiated)

Reference

FCC:	CFR Part SUBCLAUSE § 15.223
IC:	RSS 210, Issue 7, A2.3

Sample 273952

Power measured

TEST CONDITIONS	Maximum field strength (dB μ V/m)	
Frequency	3.7 MHz	
Distance	1 m	30 m*
T _{nom}	V _{nom}	-8
Measurement uncertainty		± 3 dB

Noise floor: 27dB μ V/m

Ambient temperature in the test chamber: 19°C

*Calculation:

Measured maximum field strength @ 1 m: 52dB μ V/m

Correction factor from 1m to 10m: -40 dB (40 dB/decade)
52dB μ V/m @ 1 meters - 40 dB = 12dB μ V/m @ 10 meters

Correction factor from 1m to 30m: -60 dB (40 dB/decade)
52dB μ V/m @ 1 meters - 60 dB = -8dB μ V/m @ 30 meters

Limits

SUBCLAUSE § 15.223

Fundamental Frequency (MHz)	Field strength of Fundamental (μ V/m)	Measurement Distance (meters)
1.705 – 10.0	[15] or [6dB-BW(kHz)/F(MHz)] whichever is higher	30

For measuring equipment calibrated in dB μ V/m, the reading should be reduced by 51,5dB to be converted to dB μ A/m.

4.4 Field strength of the harmonics and the spurious

Reference

FCC:	CFR Part SUBCLAUSE § 15.209 (a)
IC:	RSS Gen 4.9, RSS 210, Issue 7, 2.2

EMISSION LIMITATIONS					
f (MHz)		amplitude of emission (dBμV/m) Average/QP	limit max. allowed emission power <u>at 30m</u>	actual attenuation below frequency of operation (dB)	results
No peaks detected.					
Measurement uncertainty			± 3dB		

RBW/VBW: 200 Hz up to 150 kHz, 9 kHz up to 30 MHz, 120 kHz up to 1 GHz

Limits

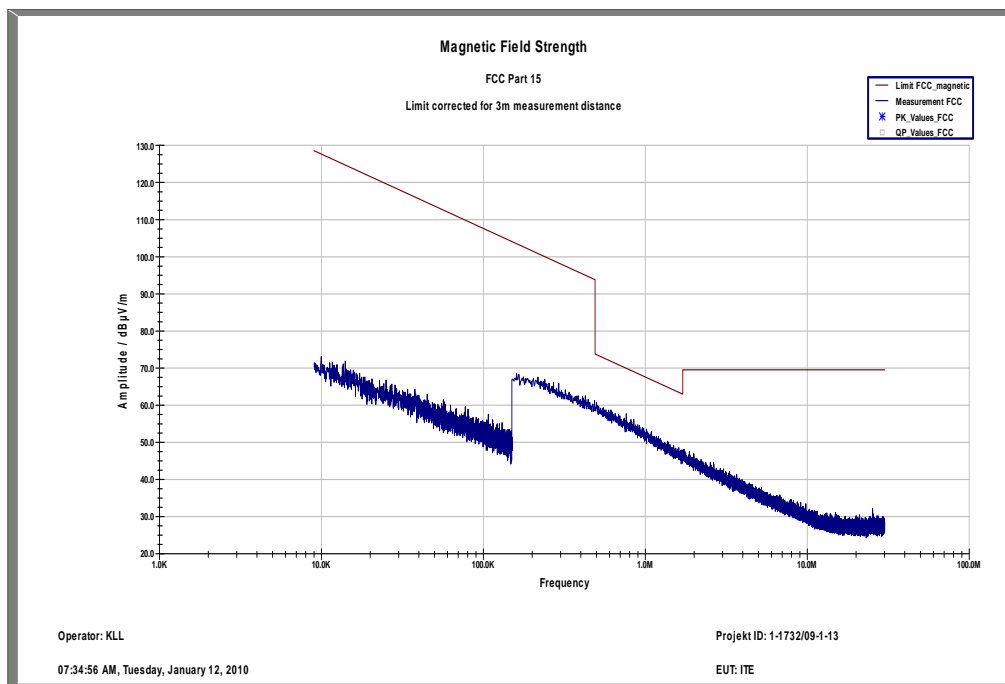
SUBCLAUSE § 15.209 (a)

Fundamental Frequency (MHz)	Field strength of Fundamental (μV/m)	Measurement Distance (meters)
0.009 – 0.490	2400 / F (kHz)	300
0.490 – 1.705	24000 / F (kHz)	30
1.705 – 30.0	30	30
30.0 – 88.0	100	3
88 – 216	150	3
216 – 960	200	3
Above 960	500	3

4.4.1 Plots of measurements

Sample 273952

Plot 1: TX 9kHz – 30MHz



(To convert the measuring distance from 10m to 30m and 30 to 300m a correction factor from 40 dB/decade was used. Here we use 80 dB to recalculate from 3m to 300m)

Measurement distance 3 m

This measurement was done in 3 planes; the plot shows the worst case.

The values may have some errors because of the small distance between measuring antenna and sample. Therefore we re-measured all found peaks at 10m.

CETECOM ICT Services GmbH

Untertürkheimer Str. 6-10, 66117 Saarbruecken
RSC-Laboratory

Phone: +49 (0) 681 598-0
Phone: +49 (0) 681 598-0

Fax: -9075
Fax: -9075

Test report no.: 1-1732-01-13/09

Date: 2010-02-24

Page 16 of 31

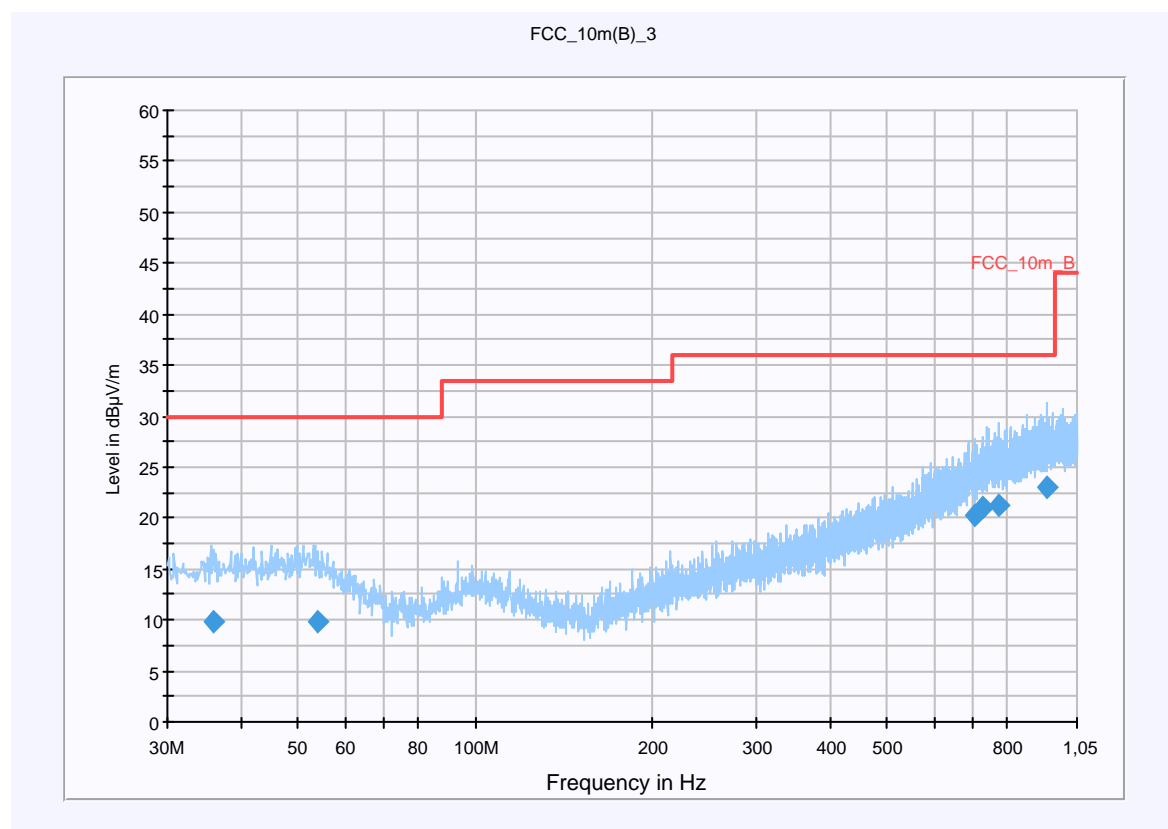
Plot 2: TX (30 MHz to 1 GHz)

EUT: Oticon ITE
 Serial Number: (15)273952
 Test Description: FCC Part 15@10m
 Operating Conditions: TX (DC 22%)
 Operator Name: Kraus
 Comment: battery powered 1,4V

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup: Electric Field (NOS)
 Level Unit: dB μ V/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1,05 GHz	QuasiPeak	120 kHz	15 s	Receiver



Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
35.834550	9.9	15000.000	120.000	152.0	H	323.0	13.2	20.1	30.0	
53.899350	9.8	15000.000	120.000	117.0	V	258.0	13.2	20.2	30.0	
702.204600	20.3	15000.000	120.000	220.0	V	132.0	23.1	15.7	36.0	
727.711200	21.0	15000.000	120.000	98.0	V	121.0	23.6	15.0	36.0	
771.643650	21.3	15000.000	120.000	191.0	H	208.0	24.2	14.7	36.0	
930.620250	23.0	15000.000	120.000	220.0	V	71.0	25.8	13.0	36.0	

CETECOM ICT Services GmbH

Untertürkheimer Str. 6-10, 66117 Saarbruecken
RSC-Laboratory

Phone: +49 (0) 681 598-0
Phone: +49 (0) 681 598-0

Fax: -9075
Fax: -9075

Test report no.: 1-1732-01-13/09

Date: 2010-02-24

Page 17 of 31

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

Subrange 1

Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0909)
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

4.5 Receiver spurious emission (radiated)

Reference

FCC:	CFR Part SUBCLAUSE § 15.109
IC:	RSS Gen 4.10/6, RSS 210, Issue 7, Section 2.6

SPURIOUS EMISSIONS LEVEL ($\mu\text{V/m}$)								
Receiver mode								
F [MHz]	Detector	Level [$\mu\text{V/m}$]	F [MHz]	Detector	Level [$\mu\text{V/m}$]	F [MHz]	Detector	Level [$\mu\text{V/m}$]
No critical peaks detected.								
Measurement uncertainty			± 3 dB					

$f < 1$ GHz : RBW/VBW: 100 kHz

$f \geq 1$ GHz : RBW/VBW: 1 MHz

Limits

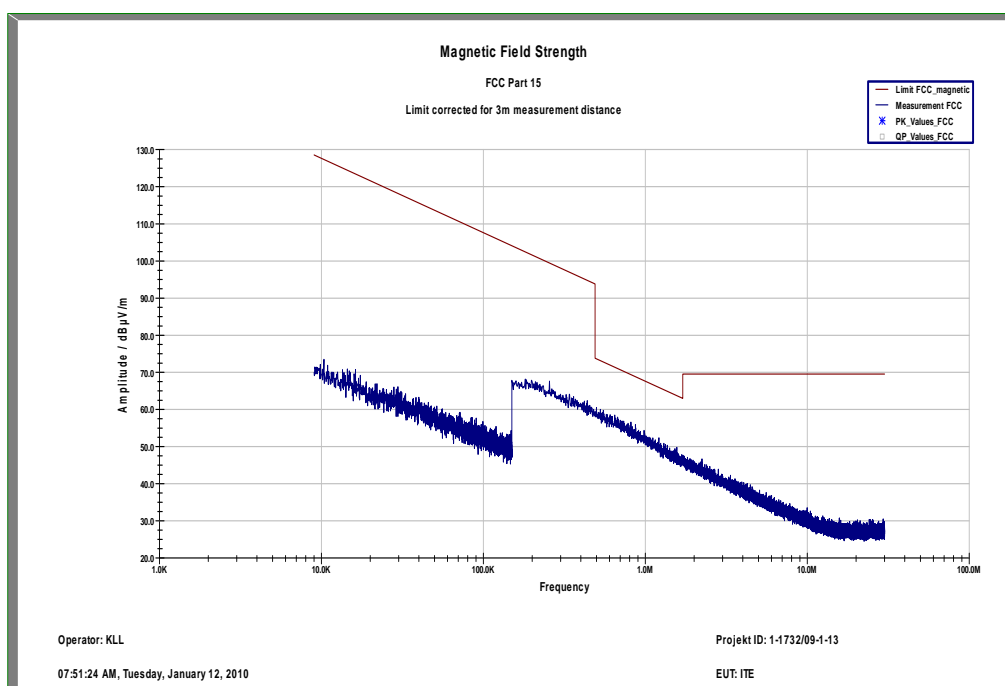
SUBCLAUSE § 15.109

Frequency (MHz)	Field strength ($\mu\text{V/m}$)	Measurement distance (m)
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
above 960	500	3

4.5.1 Plots of measurements

Sample 273959

Plot 1: RX 9kHz – 30MHz



(To convert the measuring distance from 10m to 30m and 30 to 300m a correction factor from 40 dB/decade was used. Here we use 80 dB to recalculate from 3m to 300m)

Measurement distance 3 m

This measurement was done in 3 planes; the plot shows the worst case.

The values may have some errors because of the small distance between measuring antenna and sample. Therefore we re-measured all found peaks at 10m.

CETECOM ICT Services GmbH

Untertürkheimer Str. 6-10, 66117 Saarbruecken
RSC-Laboratory

Phone: +49 (0) 681 598-0
Phone: +49 (0) 681 598-0

Fax: -9075
Fax: -9075

Test report no.: 1-1732-01-13/09

Date: 2010-02-24

Page 20 of 31

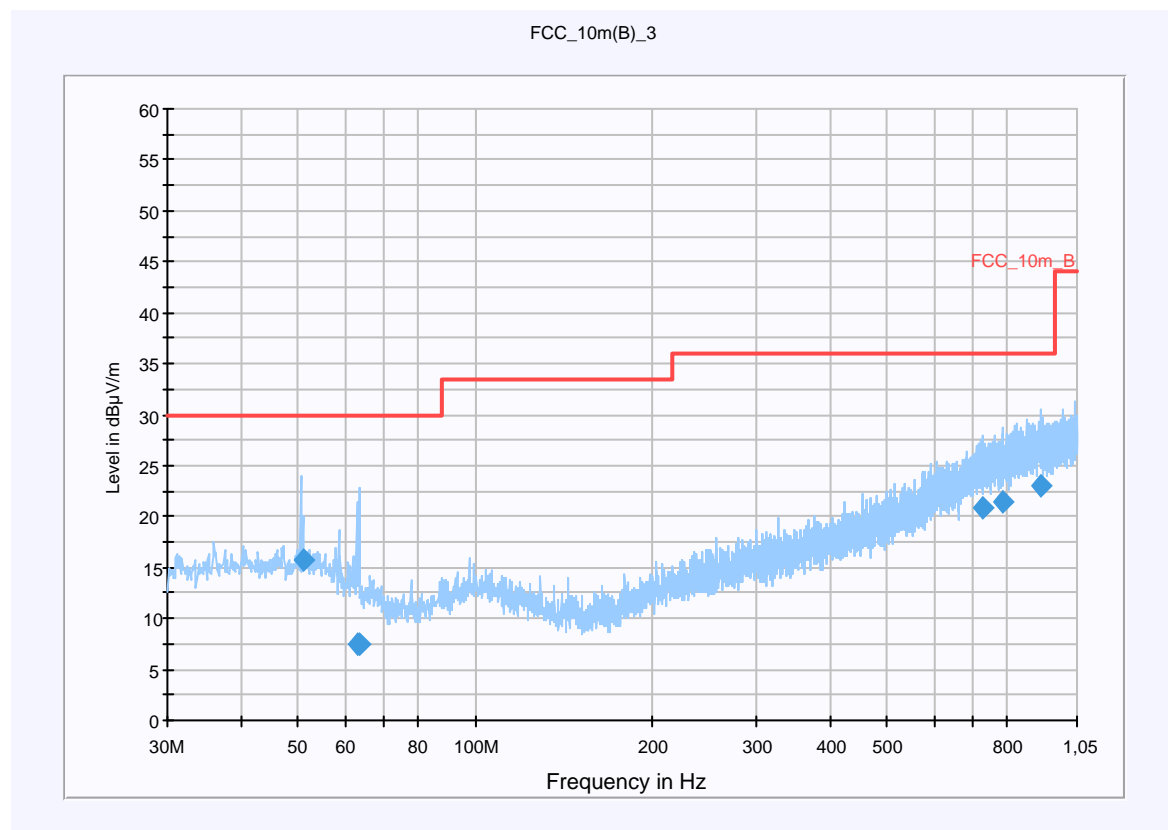
Plot 2: RX (30 MHz to 1 GHz)

EUT:	Oticon ITE
Serial Number:	(15)273959
Test Description:	FCC Part 15@10m
Operating Conditions:	RX
Operator Name:	Kraus
Comment:	battery powered 1,4V

Scan Setup: STAN_Fin [EMI radiated]

Hardware Setup:	Electric Field (NOS)
Level Unit:	dB μ V/m

Subrange	Detectors	IF Bandwidth	Meas. Time	Receiver
30 MHz - 1,05 GHz	QuasiPeak	120 kHz	15 s	Receiver



Final Result 1

Frequency (MHz)	QuasiPeak (dB μ V/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)	Limit (dB μ V/m)	Comment
51.006750	15.7	15000.000	120.000	98.0	V	5.0	13.4	14.3	30.0	
63.235500	7.6	15000.000	120.000	183.0	V	156.0	11.0	22.4	30.0	
63.501150	7.5	15000.000	120.000	214.0	V	177.0	11.0	22.5	30.0	
725.230800	20.9	15000.000	120.000	164.0	V	152.0	23.6	15.1	36.0	
788.290200	21.4	15000.000	120.000	220.0	V	51.0	24.3	14.6	36.0	
914.486100	23.0	15000.000	120.000	220.0	H	221.0	25.7	13.0	36.0	

CETECOM ICT Services GmbH

Untertürkheimer Str. 6-10, 66117 Saarbruecken
RSC-Laboratory

Phone: +49 (0) 681 598-0
Phone: +49 (0) 681 598-0

Fax: -9075
Fax: -9075

Test report no.: 1-1732-01-13/09

Date: 2010-02-24

Page 21 of 31

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

Subrange 1

Frequency Range:	30 MHz - 2 GHz
Receiver:	Receiver [ESCI 3] @ GPIB0 (ADR 20), SN 100083/003, FW 4.32
Signal Path:	without Notch FW 1.0
Antenna:	VULB 9163 SN 9163-295, FW --- Correction Table (vertical): VULP6113 Correction Table (horizontal): VULP6113 Correction Table: Cable_EN_1GHz (0909)
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

4.6 Conducted Limits

Reference

FCC:	CFR Part 15.207, 15.107
IC:	-/-

Not applicable!

Limits: § 15.107 / 15.207

Frequency of Emission (MHz)	Conducted Limit (dB μ V)	
	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 Used Test equipment

To simplify the identification on each page of the test equipment used, on each page of the test report, each item of test equipment and ancillaries such as cables are identified (numbered) by the Test Laboratory, below.

All reported calibration intervals are calibrations according to the EN/ISO/IEC 17025 standard. These calibrations were performed from an accredited external calibration laboratory.

Additional to these calibrations the laboratory performed comparison measurements with other calibrated systems and performed a weekly chamber inspection.

All used devices are connected with a 10 MHz external reference.

According to the manufacturers' instruction is it possible to establish a calibration interval for the FSP unit of 24 month, if the device has an external 10 MHz reference.

Anechoic chamber F:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	Control Computer	F+W	FW0502032	300003303	-/-	-/-	-/-
2	Trilog Antenna VULB 9163	Schwarzbeck	295	300003787	01.04.2008	24	01.04.2010
3	Amplifier - 0518C-138	Veritech Micro-wave Inc.	-/-	-/-	-/-	-/-	-/-
4	Switch - 3488A	HP		300000368	-/-	-/-	-/-
5	EMI Test receiver - ESCI	R&S	100083	300003312	01.06.2009	24	01.06.2011
6	Turntable Controller - 1061 3M	EMCO	1218	300000661	-/-	-/-	-/-
7	Tower Controller 1051 Controller	EMCO	1262	300000625	-/-	-/-	-/-
8	Tower - 1051	EMCO	1262	300000625	-/-	-/-	-/-
10	Ultra Notch-Filter Rejected band Ch. 62	WRCD	9	-/-	-/-	-/-	-/-

SRD Laboratory Room 002:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	System Controller PSM 12	R&S	835259/007	300002681-00xx	n.a.		
2	Memory Extension PSM-K10	R&S	To 1	300002681	n.a.		
3	Operating Software PSM-B2	R&S	To 1	300002681	n.a.		
4	19" Monitor		22759020-ED	300002681	n.a.		
5	Mouse		LZE 0095/6639	300002681	n.a.		
6	Keyboard		G00013834L461	300002681	n.a.		
7	Spectrum Analyser FSIQ 26	R&S	835540/018	300002681-0005	10.01.2008	24	10.01.2010
8	Tracking Generator FSIQ-B10	R&S	835107/015	300002681	s.No.7		
10	RF-Generator SMIQ03 (B1 Signal)	R&S	835541/056	300002681-0002	26.08.2008	36	26.08.2011
11	Modulation Coder SMIQ-B20	R&S	To 10	300002681	s.No.10		
12	Data Generator SMIQ-B11	R&S	To 10	300002681	s.No.10		
13	RF Rear Connection SMIQ-B19	R&S	To 10	300002681	s.No.10		
14	Broadband horn antenna (1-18 GHz)	EMCO	9107-3696	300001604	16.04.2008	24	16.04.2010
15	Broadband horn antenna (1-18 GHz)	EMCO	9107-3697	300001605	21.08.2008	24	21.08.2010
16	Std gain horn antenna (18-26.5 GHz)	Narda	Model no. 638	300000486	n.a.		
17	Std gain horn antenna (18-26.5 GHz)	Narda	Model no. 638	300000487	n.a.		
18	Sleeve dipole antenna Model 3126-880	ETS-Lindgren	00040887	3000000	n.a.		
19	Fast CPU SM-B50	R&S	To 10	300002681	s.No.10		
20	FM Modulator SM-B5	R&S	835676/033	300002681	s.No.10		

CETECOM ICT Services GmbH

Untertürkheimer Str. 6-10, 66117 Saarbruecken
RSC-Laboratory

Phone: +49 (0) 681 598-0
Phone: +49 (0) 681 598-0

Fax: -9075
Fax: -9075

Test report no.: 1-1732-01-13/09

Date: 2010-02-24

Page 24 of 31

21	RF-Generator SMIQ03 (B2 Signal)	R&S	835541/055	300002681-0001	25.08.2008	36	25.08.2011
22	Modulation Coder SMIQ-B20	R&S	To 21	300002681	s.No.21		
23	Data Generator SMIQ-B11	R&S	To 21	300002681	s.No.21		
24	RF Rear Connection SMIQ-B19	R&S	To 21	300002681	s.No.21		
25	Fast CPU SM-B50	R&S	To 21	300002681	s.No.21		
26	FM Modulator SM-B5	R&S	836061/022	300002681	s.No.21		
27	RF-Generator SMP03 (B3 Signal)	R&S	835133/011	300002681-0003	26.08.2008	36	26.08.2011
28	Attenuator SMP-B15	R&S	835136/014	300002681	S.No.27		
29	RF Rear Connection SMP-B19	R&S	834745/007	300002681	S.No.27		
30	Power Meter NRVD	R&S	835430/044	300002681-0004	26.08.2008	24	26.08.2010
31	Power Sensor NRVD-Z1	R&S	833894/012	300002681-0013	26.08.2008	24	26.08.2010
32	Power Sensor NRVD-Z1	R&S	833894/011	300002681-0010	26.08.2008	24	26.08.2010
33	Rubidium Standard RUB	R&S		300002681-0009	27.08.2008	24	27.08.2010
34	Switching and Signal Conditioning Unit SSCU	R&S	338864/003	300002681-0006	Verified with path compensation		
35	Laser Printer HP Deskjet 2100	HP	N/A	300002681-0011	n.a.		
36	19" Rack	R&S	11138363000004	300002681	n.a.		
37	RF-cable set	R&S	N/A	300002681	n.a.		
39	IEEE-cables	R&S	N/A	300002681	n.a.		
40	Sampling System FSIQ-B70	R&S	835355/009	300002681	s.No.7		
41	RSP programmable attenuator	R&S	834500/010	300002681-0007	26.08.2008	24	26.08.2010
42	Signalling Unit	R&S	838312/011	300002681	n.a.		
43	NGPE programmable Power Supply for EUT	R&S	192.033.41	300002681			
44	Power Splitter 6005-3	Inmet Corp.	none	300002841	n.a.		
45	SMA Cables SPS-1151-985-SPS	Insulated Wire	different	different	n.a.		
46	CBT32 with EDR Signaling Unit	R&S					
47	Coupling unit	Narda	N/A	--	n.a.		
48	2xSwitch Matrix PSU	R&S	872584/021	300001329	n.a.		
49	RF-cable set	R&S	N/A	different	n.a.		
50	IEEE-cables	R&S	N/A	--	n.a.		

Note: 300002681-00xx inventoried as a system

SRD Laboratory Room 005:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	Spektrum Analyzer 8566B	HP	2747A05275	300000219	18.01.2008	24	18.01.2010
2	Spektrum Analyzer Display 85662A	HP	2816A16497	300001690	23.01.2008	24	23.01.2010
3	Quasi-Peak-Adapter 85650A	HP	2811A01135	300000216	23.01.2008	24	23.01.2010
4	Power Supply	Heiden	003202	300001187	12.05.2007	36	12.05.2010
5	Power Supply	Heiden	1701	300001392	12.05.2007	36	12.05.2010

Field strength measurement equipment:

No	Equipment/Type	Manuf.	Serial Nr.	Inv. No. Cetecom	Last Calibration	Frequency (months)	Next Calibration
1	Test Receiver ESH2	R&S	871921/095	300002505	23.05.2007	36	23.05.2010
2	Test Receiver ESH3	R&S	890174/002	300000296	08.01.2010	24	08.01.2012
3	Loop Antenna HFH2-Z2	R&S	872096/61	300001824	18.11.2009	24	18.11.2011