FCC/IC - TEST REPORT

Report Number	:	**68.910.15.003.01**	Date of Issue:	May 29, 2015

Model	:	**CALL-DEX**
Product Type	:	CALL-DEX
Applicant	:	Widex A/S
Address	:	Nymoellevej 6, DK-3540 Lynge, Denmark
Production Facility	:	Widex A/S
Address	:	Nymoellevej 6, DK-3540 Lynge, Denmark

Test Result	:	■ **Positive** ☐ **Negative**
Total pages including Appendices	:	19

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1 Table of Contents

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2 Details about the Test Laboratory

Details about the Test Laboratory
Test Site 1

Company name:	TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch Building 12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District, Shenzhen City, 518052, P. R. China
FCC Registration Number:	502708
IC Registration Number:	10320A
Telephone:	86 755 8828 6998
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3 Description of the Equipment Under Test

Product:	CALL-DEX
Model no.:	CALL-DEX
FCC ID:	TTY-CDEX
IC :	5676B-CDEX
Brand Name:	WIDEX
Options and accessories:	NIL
Rating:	DC 1.4V By battery
RF Transmission Frequency:	10.605MHz
Modulation:	FSK
Antenna Type:	Integrated coil antenna
Antenna Gain:	0dBi
Description of the EUT:	The EUT is the mobile phone hearing aid headset, which operate at 10.605MHz.

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4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2014 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators
RSS-Gen Issue 4 November 2014	General Requirements and Information for the Certification of Radio Apparatus
RSS-210 Issue 8 December 2010	RSS-210 — Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment

Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15 and and ANSI C63.4:2009 for FCC Verification.
Perform ElectroMagnetic Interference measurement in accordance with RSS-210 Issue 8, RSS-Gen Issue 4.

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5 Summary of Test Results

Technical Requirements					
FCC Part 15 Subpart C, RSS-Gen, RSS-210					
Test Condition			Pages	Test Site	Test Result
§15.207	RSS-Gen Issue 4	Conducted emission AC power port	---	---	N/A
§15.209	RSS-210 Issue 8	Field strength of fundamental	11	Site 1	Pass
§15.215	RSS-Gen Issue 4	20dB&99% bandwidth	13	Site 1	Pass
§15.209(a)	RSS-210 Issue 8	Filed strength of harmonics and spurious	17	Site 1	Pass
§15.203	RSS-Gen Issue 4	Antenna requirement	See note 2		Pass

Note 1: N/A=Not Applicable.
Note 2: The EUT uses a integrated coil antenna, which gain is 0dBi. In accordance to §15.203, It is considered sufficiently to comply with the provisions of this section.

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6 General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: TTY-CDEX, IC: 5676B-CDEX complies with Section 15.207, 15.209of the FCC Part 15, Subpart C Rules and RSS-Gen.

SUMMARY:

All tests according to the regulations cited on page 5 were

■ - Performed

☐ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements.

☐ - **Does not** fulfill the general approval requirements.

Sample Received Date: May 25, 2015

Testing Start Date: May 26, 2015

Testing End Date: May 29, 2015

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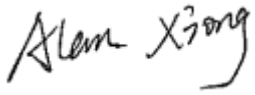
Reviewed by:

John Zhi
EMC Project Manager

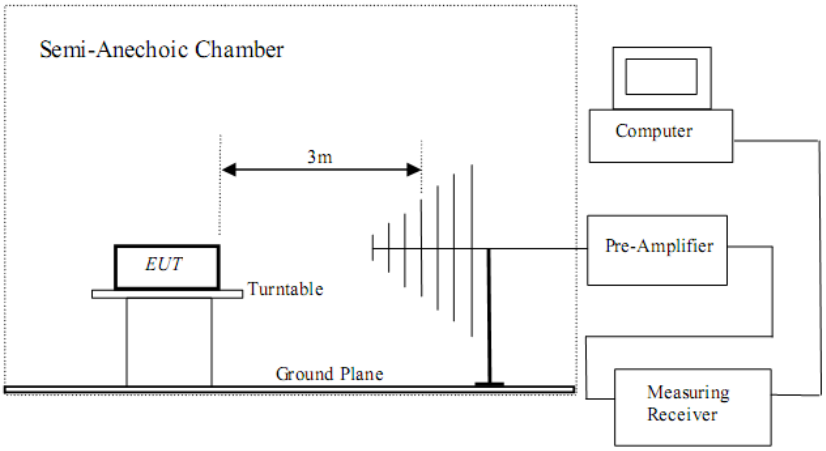
Prepared by:



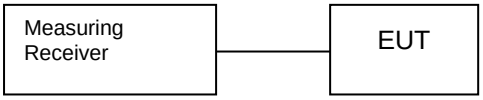
Alan Xiong
EMC Project Engineer

7 Test Setups

7.1 Radiated test setups



7.2 Conducted RF test setups



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8 Test Methodology

8.1 Radiated Emission

The sample was placed 0.8m above the ground plane on a standard emission test site *. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

*On a standard emission test site with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules.

8.2 Field Strength Calculation

The field strength at 3 m was established by adding the meter reading of the spectrum analyzer to the factors associated with antenna correction factor, cable loss, preamplifiers and filter attenuation.

The equation is expressed as follow:

FS = R + System Factor
System Factor = AF + CF + FA – PA

Where FS = Net Field Strength in dBuV/m at 3 meters.
R = Reading of Spectrum Analyzer / Test Receiver in dBuV.
AF = Antenna Factor in dB.
CF = Cable Attenuation Factor in dB.
FA = Filter Attenuation Factor in dB.
PA = Preamplifier Factor in dB.

FA and PA are only be used for the measuring frequency above 1 GHz.

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9 Systems test configuration

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.(SHIELD)	S/N(LENGTH)
Earphone	--	--	--
Telephone	HUAWEI	G610	--

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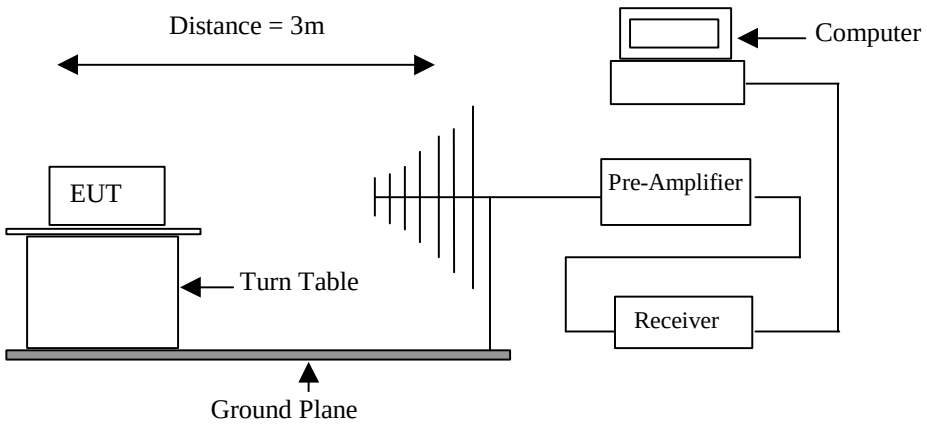
10 Technical Requirement

10.1 Radiated Emission of Fundamental Frequency

Test Requirement:	FCC part 15 section 15.209; RSS 210, Issue 8 chapter 2.5
Test Method:	ANSI C63.4:2009
Mode of Operation:	Transmitting mode.
Detector Function	Quasi Peak(CISPR)
Measurement BW	RBW 10KHz ; VBW 30KHz

Test Setup:



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Results: PASS

Test conditions		Maximum power (dBµV/m)	
Frequency		10.605MHz	10.605MHz
Mode		At 3 m distance	At 30 m distance
T_{nom}	V_{nom}	28.65	8.65
Measurement uncertainty		±4.54dB	

Limits for Fundamental Frequency: [Section 15.209(a)]:

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
1.705-30.0	30(29.5dBµV/m)	30
30-88	100(40dBµV/m)	3
88-216	150(43.5dBµV/m)	3
216-960	200(46dBµV/m)	3
Above 960	500(54dBµV/m)	3

Compliance with the limits in the above table may be based on the use of measurement instrumentation with a CISPR peak detector.

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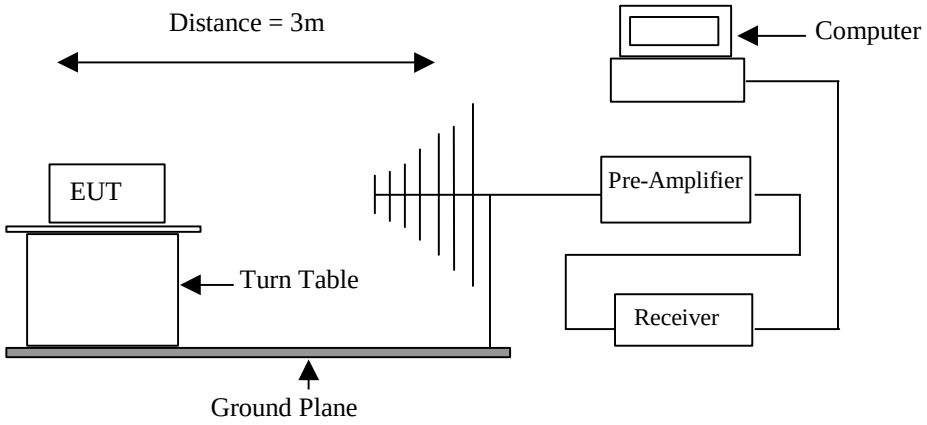
10.2 Spurious Radiated Emission

Test Requirement:	FCC part 15 section 15.231(a); RSS 210, Issue 8 chapter 2.5
Test Method:	ANSI C63.4:2009
Mode of Operation:	Transmitting mode.
Detector Function	9 kHz – 90 kHz: Average 110 kHz – 490 kHz: Average All other frequencies: Quasi Peak
Measurement BW	9 kHz – 150 kHz: RBW: 200 Hz 150 kHz– 30 MHz: RBW: 9 kHz 30 MHz– 1000 MHz: RBW:120 kHz

Test Setup:



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Limit for Field strength of the harmonics and spurious [Section 15.209]:

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
1.705-30.0	30(29.5dBμV/m)	30
30-88	100(40dBμV/m)	3
88-216	150(43.5dBμV/m)	3
216-960	200(46dBμV/m)	3
Above 960	500(54dBμV/m)	3

Radiated emissions, which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209.

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

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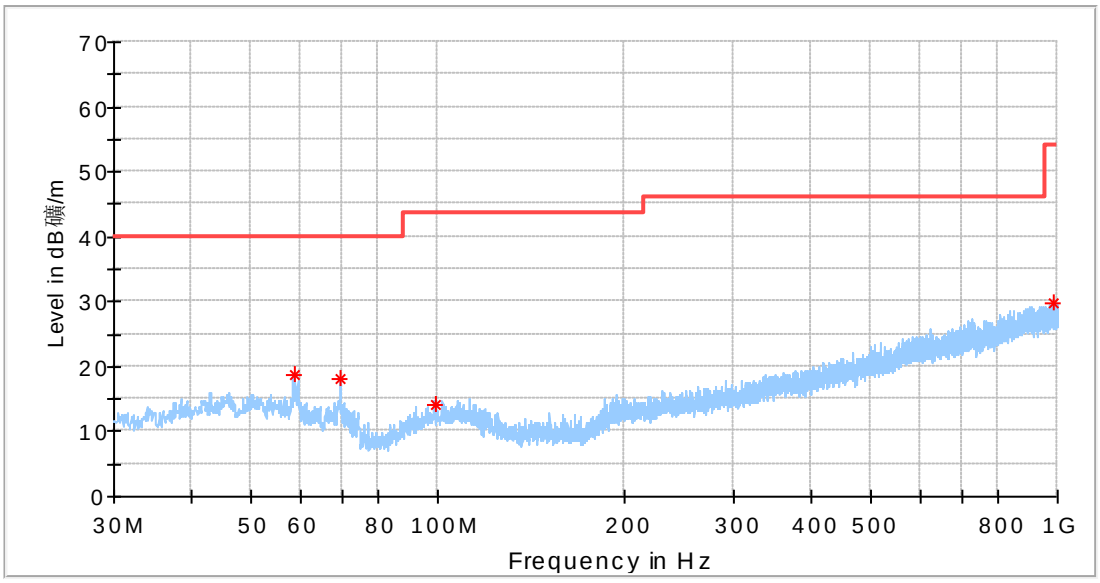
Result : PASS

Below 1GHz emissions
Horizontal Polarity



Frequency (MHz)	MaxPeak (dBµV/	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
58.7968	18.78	40.00	21.22	---	---	100.0	H	0.0	14.1
69.5881	18.14	40.00	21.86	---	---	100.0	H	43.0	11.4
99.1125	14.21	40.00	25.79	---	---	100.0	H	0.0	13.7
988.420	29.89	47.00	17.11	---	---	100.0	H	130.0	26.4

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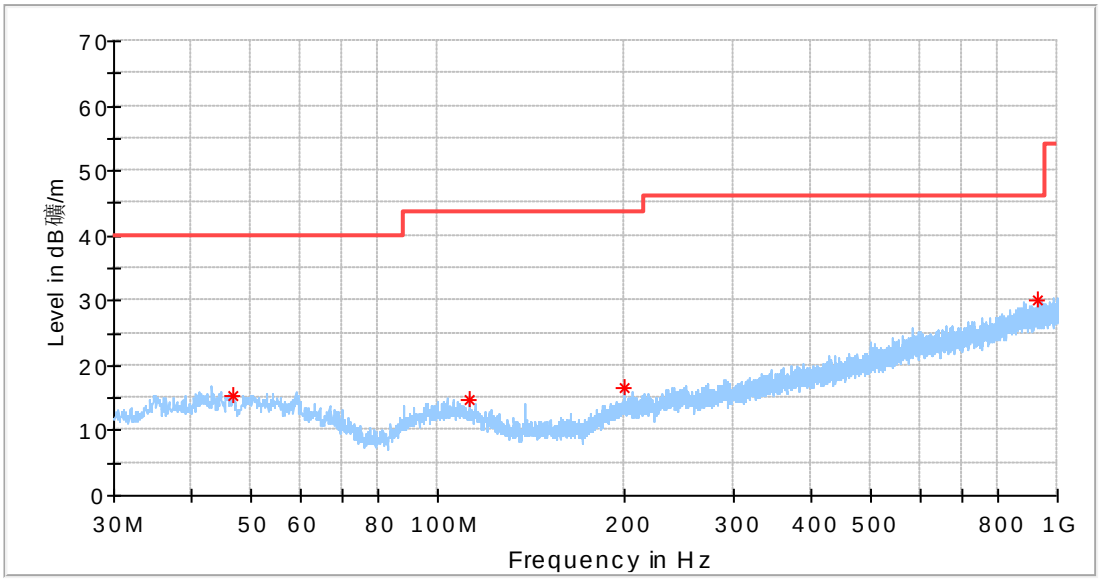
Result : PASS

Below 1GHz emissions
Vertical Polarity



Frequency (MHz)	MaxPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB)
46.8537	15.35	40.00	24.65	---	---	100.0	V	328.0	15.4
112.450	14.83	43.50	28.67	---	---	100.0	V	0.0	13.3
200.053	16.47	43.50	27.03	---	---	100.0	V	0.0	13.5
927.674	30.06	46.00	15.94	---	---	200.0	V	334.0	26.1

Result Summary:

1) Communication mode: All other emissions are more than 20dB below FCC part 15.209 limits.
2) No further spurious emissions found between 30 MHz and lowest internal used/generated frequency and from 30MHz to 1GHz.

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10.3 Bandwidth Measurement

Test Requirement:	FCC part 15 section 15.215; RSS-Gen Issue 3
Test Method:	ANSI C63.4:2009
Mode of Operation:	Transmitting mode.
Detector Function:	Peak

Results: PASS

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

	Occupied Bandwidth(KHz)
20dB	877.0
99%	953.6

Limit for Bandwidth [Section 15.215 (c)]

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in §§ 15.217 through 15.257 and in Sub-part E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

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11 Test Equipment List

List of Test Instruments

	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
C	Signal Analyzer	Rohde & Schwarz	FSV40	101031	2015-8-17
RE	EMI Test Receiver	Rohde & Schwarz	ESR 26	101269	2015-8-17
	Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	707	2017-8-17
	Horn Antenna	Rohde & Schwarz	HF907	102294	2017-8-17
	Pre-amplifier	Rohde & Schwarz	SCU 18	102230	2015-8-17
	3m Semi-anechoic chamber	TDK	9X6X6	----	2019-5-29

C - Conducted RF tests

- 6dB bandwidth and 99% bandwidth

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12 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty

Items	Extended Uncertainty
Radiated spurious emission	Horizontal: U=±4.54dB（9KHz-30MHz） Vertical: U=±4.54dB（9KHz-30MHz） Horizontal: U=±4.83dB（30MHz~1GHz） Vertical: U=±4.91dB（30MHz~1GHz）

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