PHOENIX TESTLAB
Königswinkel 10
32825 Blomberg
Germany
Phone: +49 (0) 52 35 95 00-0
Fax: +49 (0) 52 35 95 00-10

Test Report

Report Number: F123800E1 2nd version

Applicant:

Audifon GmbH & Co KG

Manufacturer:

Audifon GmbH & Co KG

Equipment under Test (EUT):

multistreamer

Laboratory (CAB) accreditedby
Deutsche Gesellschaft für Akkreditierung mbH
in compliance with DIN EN ISO/IEC 17025
under the Reg. No. DGA-PL-105/99-22,
FCC Test site registration number 90877 and
Industry Canada Test site registration IC3469A-1

REFERENCES

[1] **ANSI C63.4-2009** American National Standard for Methods of Measuring of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.

[2] **FCC CFR 47 Part 15 (August 2011)** Radio Frequency Devices

[3] **FCC Public Notice DA 00-705 (March 2000)**

[4] **RSS-210 Issue 8 (December 2010)** Licence-exempt Radio Apparatus (All Frequency Bands): Category I Equipment

[5] **RSS-Gen Issue 3 (December 2010)** General Requirements and Information for the Certification of Radio Apparatus

[6] **Publication Number 913591 (March 2007)** Measurement of radiated emissions at the edge of the band for a Part 15 RF Device

TEST RESULT

The requirements of the tests performed as shown in the overview (clause 4) were fulfilled by the equipment under test.
The complete test results are presented in the following.

Test engineer:	Manuel BASTERT		19 December 2012
	Name	Signature	Date
Authorized reviewer:	Michael DINTER		19 December 2012
	Name	Signature	Date

RESERVATION

This test report is only valid in its original form.

Contents: Page

1 IDENTIFICATION

1.1 Applicant

Name:	Audifon GmbH & Co. KG
Address:	Am Dännekamp 15
	51469 Bergisch-Gladbach
Country:	Germany
Name for contact purposes:	Mr. Stephan TEDERS
Phone:	+49 (0) 2202-92638-14
Fax:	+49 (0) 2202-92638-29
Mail address:	stephan.teders@audifon.com

1.2 Manufacturer

Name:	Audifon GmbH & Co. KG
Address:	Am Dännekamp 15
	51469 Bergisch-Gladbach
Country:	Germany
Name for contact purposes:	Mr. Stephan TEDERS
Phone:	+49 (0) 2202-92638-14
Fax:	+49 (0) 2202-92638-29
Mail address:	stephan.teders@audifon.com

1.3 Test laboratory

The tests were carried out at: **PHOENIX TESTLAB GmbH**
Königswinkel 10
32825 Blomberg
Germany

Accredited by DGA Deutsche Gesellschaft für Akkreditierung mbH in compliance with DIN EN ISO/IEC 17025 under Reg. No. DGA-PL-105/99-22, FCC Test site registration number 90877 and Industry Canada Test site registration IC3469A-1.

1.4 EUT (Equipment Under Test)

Equipment under test: *	Bluetooth / Hearing aid audio streamer
Model name: *	multistreamer
Brand name: *	Audifon GmbH & Co KG
Article number: *	none
FCC ID:	YU2-MS1
IC:	9284A-MS1
Serial number:	Engineering sample
Hardware version:	0096G011
Software version:	SW 03.08

1.5 Technical data of equipment

Bluetooth part

Fulfills Bluetooth specification: *	V. 2.1 with EDR		
Antenna type: *	SMD antenna		
Antenna gain: *	0 dBi		
Rated output power: *	0.0 dBm (50 Ω)		
Antenna connector: *	None (SMA connector temporary installed for conducted tests)		
Power supply: *	U_{nom} = 3.0 V_{DC}	U_{min} = -	U_{max} = -
	Two type AAA batteries		
Type of modulation: *	FHSS (GFSK, π/4-DQPSK, 8DPSK)		
Operating frequency range:*	2402 MHz to 2480 MHz		
Number of channels: *	79		

10.57 MHz transceiver part

Antenna type: *	Integral H-field antenna and external loop antenna (1 m)		
Duty cycle class: *	Up to 100%		
Rated transmitter field strength: *	≤ -13.5 dBµA/m @ 3 m distance		
Channel spacing: *	-		
Alignment range: *	10.57 MHz		
Switching range: *	10.57MHz		
Modulation: *	FSK		
Bit rate of transmitter: *	298 kBit/s		
Power supply: *	U_{nom} = 3.0 V_{DC}	U_{min} = -	U_{max}= -
	Two type AAA batteries		

*: Declared by the applicant.

The following external I/O cables were used:

None.

1.6 Dates

Date of receipt of test sample:	22 August 2012
Start of test:	22 August 2012
End of test:	18 October 2012

2 OPERATIONAL STATES

The EUT is a transceiver allowing connecting a hearing aid via a 10.57 MHz link with a Bluetooth device supporting Advanced Audio Distribution Profile (A2DP) or Hands Free Profile (HFP). For simultaneous transmission tests the unmodified sample was used in combination with a hearing aid eox S and an A2DP capable cell phone Blackberry 8800.

The spurious emission measurement was carried out as radiated spurious emissions with the integrated Bluetooth antenna and external loop antenna. During the tests the test sample was battery powered with 3 V_{DC} using two type AAA batteries.

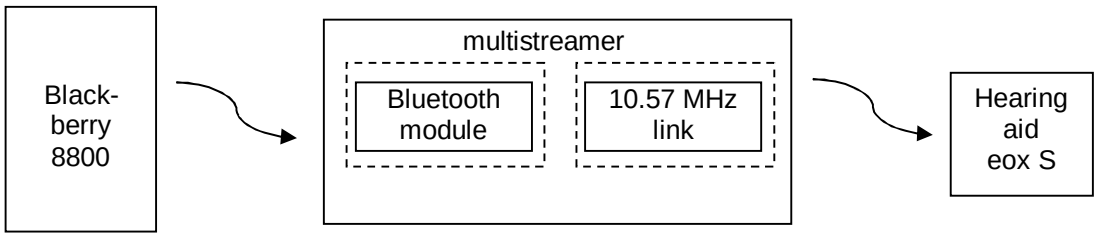
For the simultaneous transmission tests the EUT was set up to its usually function with enabled Bluetooth and 10.57 MHz link. A mobile phone was connected via Bluetooth to the EUT and a 1 kHz sine audio file was played. The tone was observed by a connected hearing aid via the 10.57 MHz link.

To generate a nearly realistic test environment according to clause 6.3 in [1] the measurements were carried out with the EUT mounted at a simulated man in 1.5 m height. The dimensions of the simulated man are described in the European Harmonized Standard ETSI EN 300 330-1 V1.7.1 (2010-02), clause A.4 - Standard test position. It was adopted to generate the most representative EUT arrangement for the measurements documented in the following.

The following operation mode was used during the tests:

Operation mode	Description of the operation mode	Modulation	Data rate (Bluetooth / 10.57 MHz)
1	Normal hopping in coexistence with 10.57 MHz link	8DPSK (Bluetooth) FSK (10.57 MHz link)	3 Mbps / 298 kbps

Set up (Simultaneous transmission test mode)



3 ADDITIONAL INFORMATION

The applicant has ordered a class 2 permissive change to avoid a ferrite core mounted on the external loop antenna. For this reason only limited measurements as listed in clause 4 were performed.

In this test report only the simultaneous transmission measurement is described. The Bluetooth part of the system is already tested; the results can be found in test report F113324E3.

The EUT was not labelled with an IC number or FCC ID during the tests.

Ancillary equipment used to perform the measurements:

- Mobile Phone RIM Blackberry 8800
- Hearing aid Audifon eox S

4 OVERVIEW

Application	Frequency range [MHz]	FCC 47 CFR Part 15 section [2]	RSS 210, Issue 8 [4] or RSS-Gen, Issue 3 [5]	Status	Referpage
Radiated emissions (transmitter)	0.009 - 25,000	15.205 (a) 15.209 (a)	A8.5 [4] 2.5 [4]	Passed	9 et seq.

5 TEST RESULTS

5.1 Radiated emissions

5.1.1 Method of measurement (radiated emissions)

The radiated emission measurement is subdivided into four stages.

- A preliminary measurement carried out in a fully anechoic chamber with a fixed antenna height in the frequency range 30 MHz to 1 GHz.
- A final measurement carried out on an open area test side with reflecting ground plane and various antenna height in the frequency range 30 MHz to 1 GHz.
- A preliminary measurement carried out in a fully anechoic chamber with a variable antenna distance and height in the frequency range 1 GHz to 110 GHz.
- A final measurement carried out in a fully anechoic chamber with a fixed antenna height in the frequency range 1 GHz to 110 GHz.

All measurements will be carried out with the EUT working on the middle of the assigned frequency band.

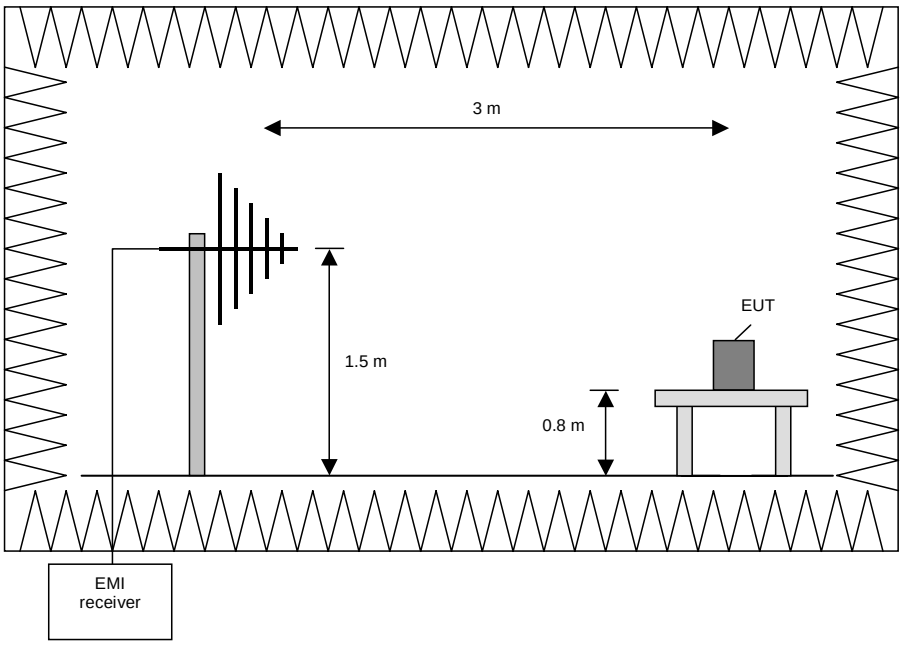
Preliminary measurement (30 MHz to 1 GHz)

In the first stage a preliminary measurement will be performed in a fully anechoic chamber with a measuring distance of 3 meter. Tabletop devices will set up on a non-conducting support with a size of 1 m by 1.5 m and a height of 80 cm. Floor-standing devices will be placed directly on the turntable/ground plane. The setup of the Equipment under test will be in accordance to ANSI C63.4-2009 [1].

The frequency range 30 MHz to 1 GHz will be measured with an EMI Receiver set to MAX Hold mode and a resolution bandwidth of 100 kHz. The measurement will be performed in horizontal and vertical polarisation of the measuring antenna and while rotating the EUT in its vertical axis in the range of 0 ° to 360 °.

The resolution bandwidth of the EMI Receiver will be set to the following values:

Frequency range	Resolution bandwidth
30 MHz to 230 MHz	100 kHz
230 MHz to 1 GHz	100 kHz



Procedure preliminary measurement:

Prescans were performed in the frequency range 30 MHz to 230 MHz and 230 MHz to 1 GHz.
The following procedure will be used:

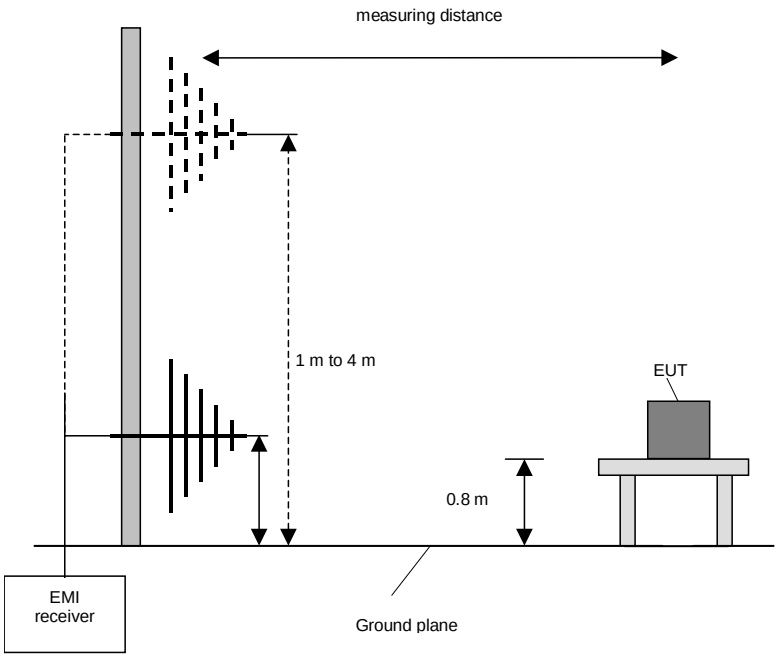
1. Monitor the frequency range at horizontal polarisation and a EUT azimuth of 0 °.
2. Manipulate the system cables within the range to produce the maximum level of emission.
3. Rotate the EUT by 360 ° to maximize the detected signals.
4. Make a hardcopy of the spectrum.
5. Measure the frequency of the detected emissions with a lower span and resolution bandwidth to increase the accuracy and note the frequency value.
6. Repeat 1) to 4) with the other orthogonal axes of the EUT (because of EUT is a module and might be used in a handheld equipment application).
7. Repeat 1) to 5) with the vertical polarisation of the measuring antenna.

Final measurement (30 MHz to 1 GHz)

A final measurement on an open area test site will be performed on selected frequencies found in the preliminary measurement. During this test the EUT will be rotated in the range of 0 ° to 360 °, the measuring antenna will be set to horizontal and vertical polarisation and raised and lowered in the range from 1 m to 4 m to find the maximum level of emissions.

The resolution bandwidth of the EMI Receiver will be set to the following values:

Frequency range	Resolution bandwidth
30 MHz to 1 GHz	120 kHz



Procedure final measurement:

The following procedure will be used:

1) Measure on the selected frequencies at an antenna height of 1 m and a EUT azimuth of 23 °.
2) Move the antenna from 1 m to 4 m and note the maximum value at each frequency.
3) Rotate the EUT by 45 ° and repeat 2) until an azimuth of 337 ° is reached.
4) Repeat 1) to 3) for the other orthogonal antenna polarization.
5) Move the antenna and the turntable to the position where the maximum value is detected.
6) Measure while moving the antenna slowly +/- 1 m.
7) Set the antenna to the position where the maximum value is found.
8) Measure while moving the turntable +/- 45 °.
9) Set the turntable to the azimuth where the maximum value is found.
10) Measure with Final detector (QP and AV) and note the value.
11) Repeat 5) to 10) for each frequency.
12) Repeat 1) to 11) for each orthogonal axes of the EUT (because of EUT is a module and might be used in a handheld equipment application).

Preliminary and final measurement (1 GHz to 110 GHz)

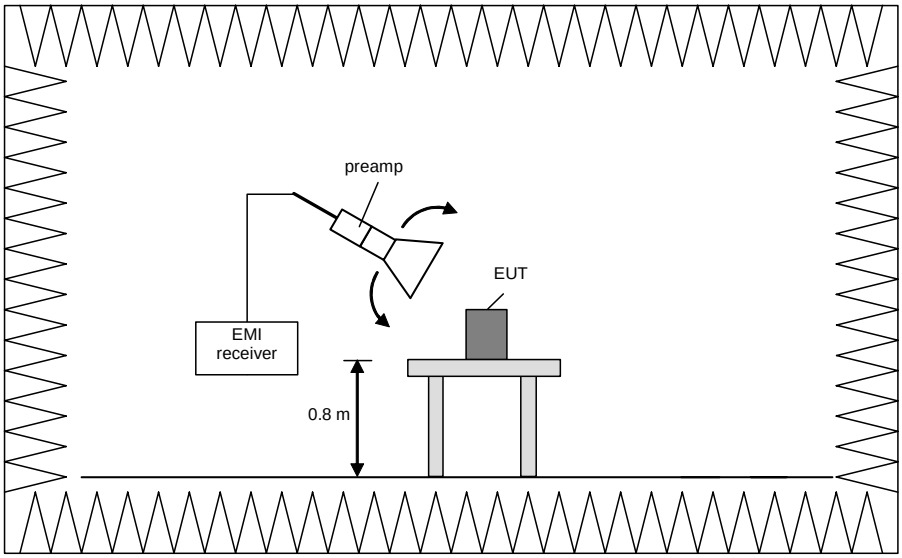
This measurement will be performed in a fully anechoic chamber. Tabletop devices will set up on a non-conducting support with a size of 1 m by 1.5 m and a height of 80 cm. Floor-standing devices will be placed directly on the turntable/ground plane. The setup of the Equipment under test will be in accordance to ANSI C63.4-2009 [1].

Preliminary measurement (1 GHz to 110 GHz)

The frequency range will be divided into different sub ranges depending of the frequency range of the used horn antenna. The spectrum analyser set to MAX Hold mode and a resolution bandwidth of 100 kHz. The measurement will be performed in horizontal and vertical polarisation of the measuring antenna, the antenna close to the EUT and while moving the antenna over all sides of the EUT. With the spectrum analyser in CLEAR / WRITE mode the cone of the emission should be found and then the measuring distance will be set to 3 m with the receiving antenna moving in this cone of emission. At this position the final measurement will be carried out.

The resolution bandwidth of the EMI Receiver will be set to the following values:

Frequency range	Resolution bandwidth
1 GHz to 4 GHz	100 kHz
4 GHz to 12 GHz	100 kHz
12 GHz to 18 GHz	100 kHz
18 GHz to 26.5 GHz	100 kHz
26.5 GHz to 40 GHz	100 kHz
40 GHz to 60 GHz	100 kHz
50 GHz to 75 GHz	100 kHz
75 GHz to 110 GHz	100 kHz

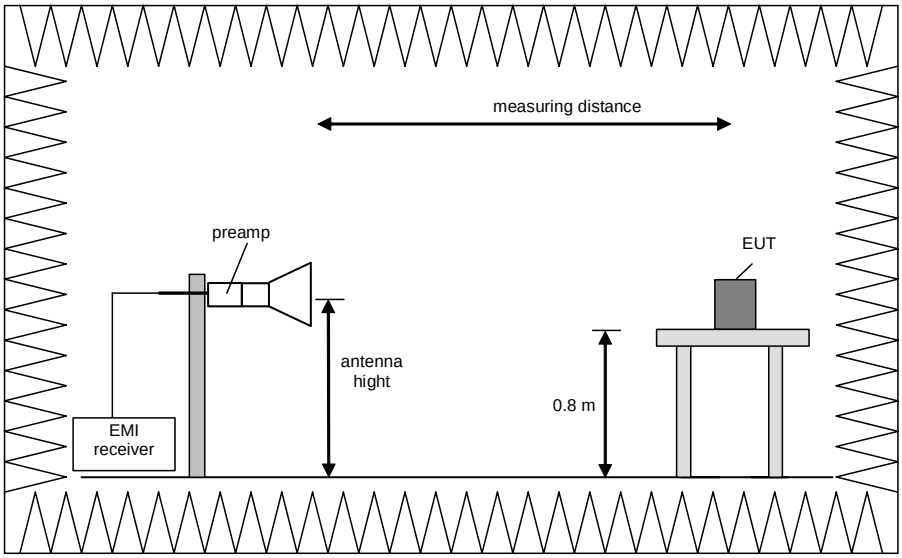


Final measurement (1 GHz to 110 GHz)

The frequency range will be divided into different sub ranges depending of the frequency range of the used horn antenna. The EMI Receiver set to peak and average mode and a resolution bandwidth of 1 MHz. The measurement will be performed in horizontal and vertical polarisation of the measuring antenna and while rotating the EUT in its vertical axis in the range of 0 ° to 360 ° in order to have the antenna inside the cone of radiation.

The resolution bandwidth of the EMI Receiver will be set to the following values:

Frequency range	Resolution bandwidth
1 GHz to 4 GHz	1 MHz
4 GHz to 12 GHz	1 MHz
12 GHz to 18 GHz	1 MHz
18 GHz to 26.5 GHz	1 MHz
26.5 GHz to 40 GHz	1 MHz
40 GHz to 60 GHz	1 MHz
50 GHz to 75 GHz	1 MHz
75 GHz to 110 GHz	1 MHz



Procedure of measurement:

The measurements were performed in the frequency range 1 GHz to 4 GHz, 4 GHz to 12 GHz, 12 GHz to 18 GHz, 18 GHz to 26.5 GHz, 26.5 GHz to 40 GHz, 40 GHz to 60 GHz, 60 GHz to 75 GHz and 75 GHz to 110 GHz.
The following procedure will be used:

1) Monitor the frequency range at horizontal polarisation and move the antenna over all sides of the EUT (if necessary move the EUT to another orthogonal axis).
2) Change the antenna polarisation and repeat 1) with vertical polarisation.
3) Make a hardcopy of the spectrum.
4) Measure the frequency of the detected emissions with a lower span and resolution bandwidth to increase the accuracy and note the frequency value.
5) Change the analyser mode to Clear / Write and found the cone of emission.
6) Rotate and move the EUT, so that the measuring distance can be enlarged to 3 m and the antenna will be still inside the cone of emission.
7) Measure the level of the detected frequency with the correct resolution bandwidth, with the antenna polarisation and azimuth and the peak and average detector, which causes the maximum emission.
8) Repeat steps 1) to 7) for the next antenna spot if the EUT is larger than the antenna beamwidth.

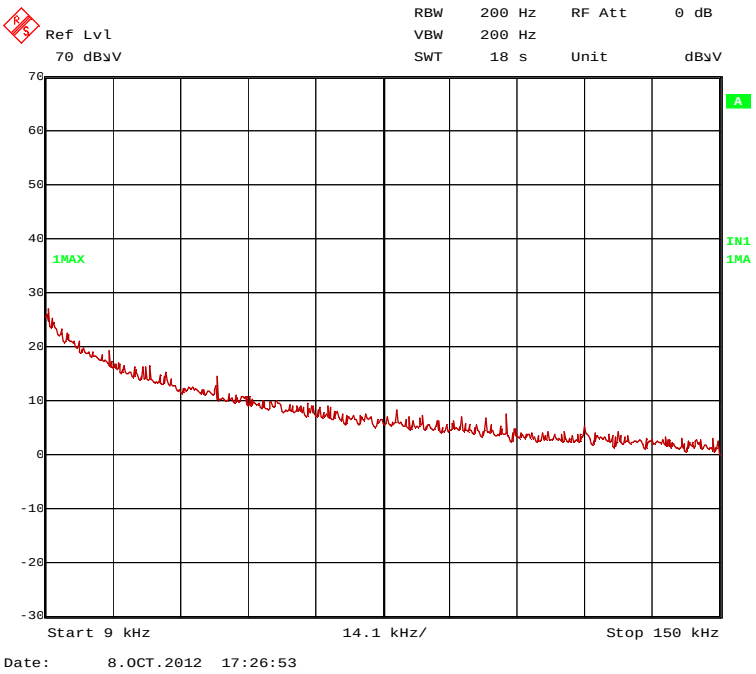
Step 1) to 6) are defined as preliminary measurement.

5.1.2 Test results (radiated emissions of simultaneous transmission of Bluetooth and 10.57 MHz link)

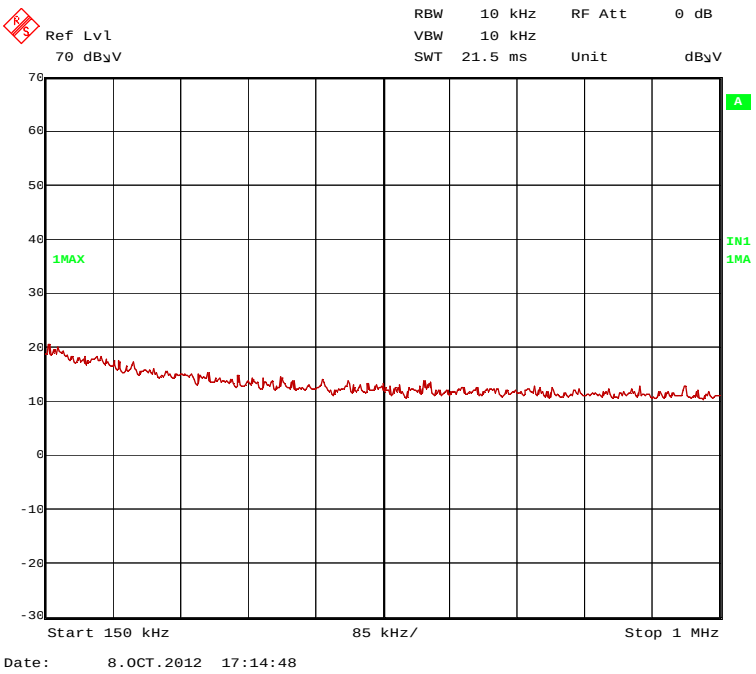
5.1.2.1 Preliminary radiated emission measurement (9 kHz to 1 GHz)

Ambient temperature	21 °C	Relative humidity	40 %

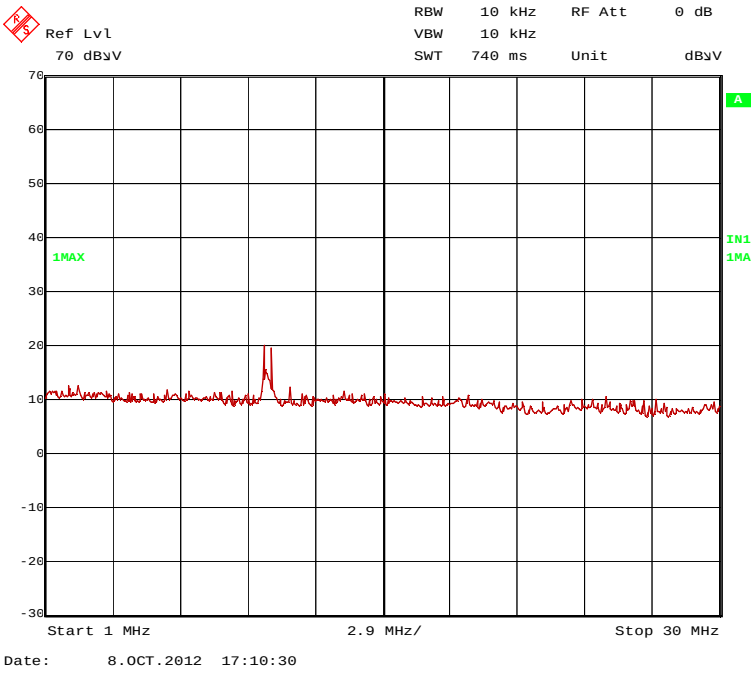
123800_8.wmf: Spurious emissions from 9 kHz to 150 kHz:



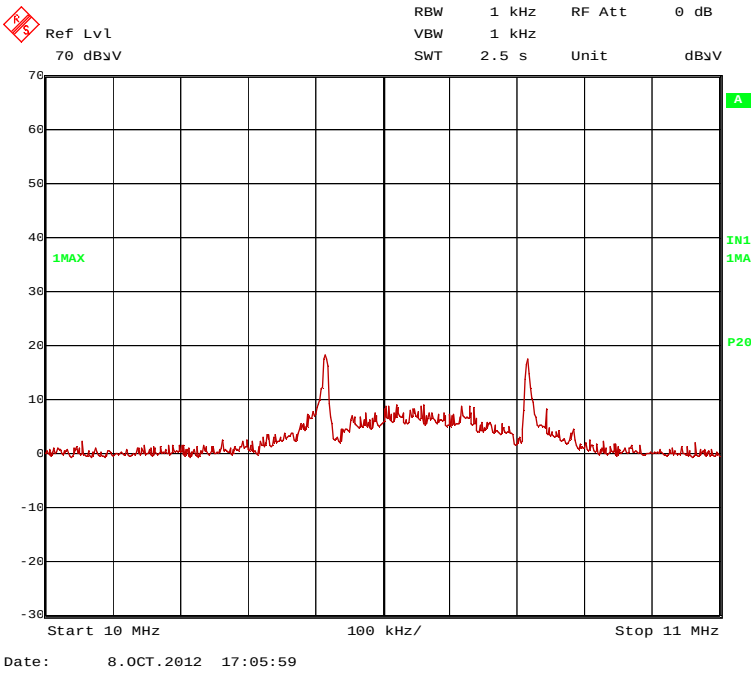
123800_7.wmf: Spurious emissions from 150 kHz to 1 MHz



123800_6.wmf: Spurious emissions from 1 MHz to 30 MHz



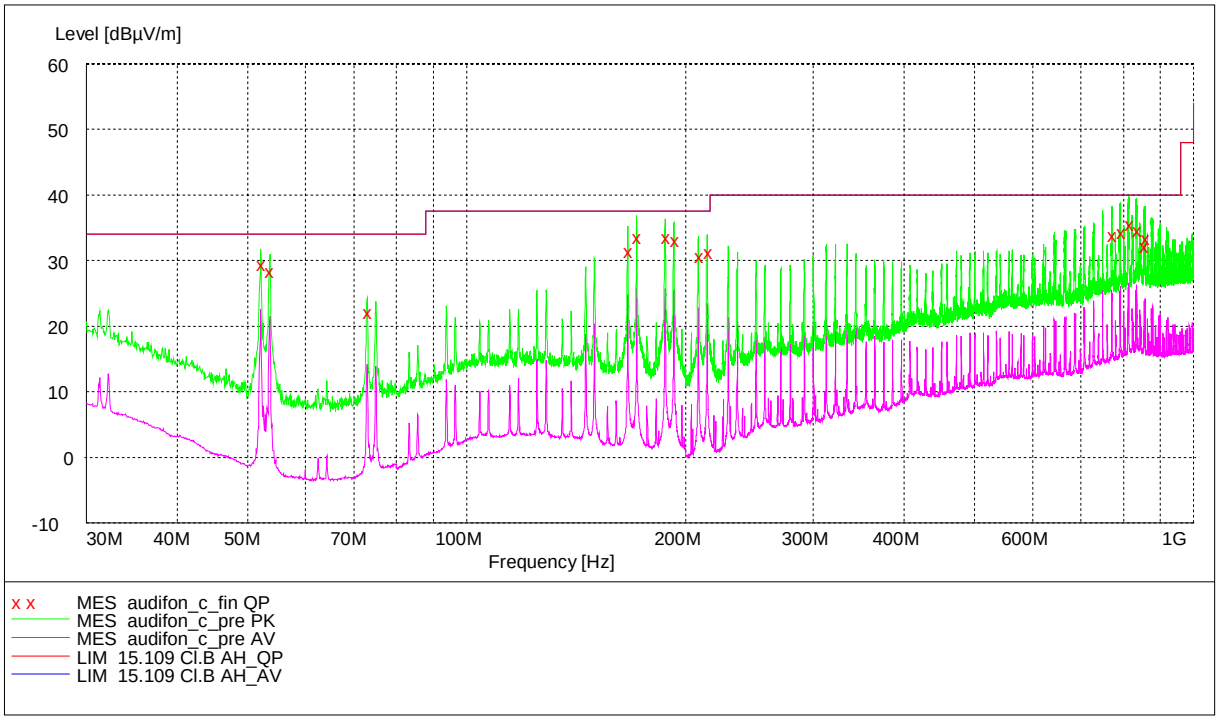
123800_5.wmf: Spurious emissions from 10 MHz to 11 MHz



The centre frequency of the transmitter was found at 10.57 MHz. It had to be measured on the outdoor test site. The results are shown in clause 5.1.2.2.

TEST EQUIPMENT USED FOR THE TEST:
29, 31 – 34, 45, 55

Spurious emissions from 30 MHz to 1000 MHz



Result measured with the quasipeak detector (marked by an x):

Frequency MHz	Level dBµV/m	Transducer dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
52.092000	29.70	7.6	34.0	4.3	150.0	147.00	HORIZONTAL
53.568000	28.50	7.0	34.0	5.5	150.0	142.00	HORIZONTAL
72.900000	22.30	6.4	34.0	11.7	150.0	135.00	HORIZONTAL
166.596000	31.60	10.0	37.5	5.9	150.0	92.00	HORIZONTAL
171.432000	33.80	9.9	37.5	3.7	150.0	91.00	HORIZONTAL
187.512000	33.80	9.8	37.5	3.7	150.0	80.00	HORIZONTAL
192.876000	33.30	9.7	37.5	4.2	150.0	90.00	HORIZONTAL
208.380000	30.90	9.4	37.5	6.6	150.0	114.00	HORIZONTAL
214.308000	31.50	9.7	37.5	6.0	150.0	98.00	HORIZONTAL
771.564000	34.10	21.9	40.0	5.9	150.0	1.00	VERTICAL
792.804000	34.50	22.0	40.0	5.5	150.0	11.00	VERTICAL
814.380000	35.70	22.4	40.0	4.3	150.0	1.00	VERTICAL
835.596000	34.80	22.6	40.0	5.2	150.0	12.00	VERTICAL
854.100000	32.30	22.7	40.0	7.7	150.0	1.00	VERTICAL
857.256000	33.60	22.7	40.0	6.4	150.0	9.00	VERTICAL

In this case it was necessary to carry out subsequent measurements on the open area test site. The results are shown in the following clause 5.1.2.2.

TEST EQUIPMENT USED FOR THE TEST:
20, 29, 31 – 35, 45

5.1.2.2 Final radiated emission test (9 kHz to 1 GHz)

Ambient temperature	20 °C	Relative humidity	40 %

Position of EUT: The EUT was set-up on a non-conducting table of a height of 0.8 m. The distance between EUT and antenna was 3 m.

Cable guide: The cable of the EUT is running vertically to the false floor. For detail information of test set-up and the cable guide refer to the pictures in annex A of this test report.

Test record: All results are shown in the following.

Supply voltage: During all measurements the EUT was battery supplied with 3.0 V_{DC}.

Frequency	Measured transmitter field strength at 3 m	Extrapolated field strength to 30 m
10.57 MHz	36 dBµV/m (63.1 µV/m)	-4 dBµV/m (0.63 µV/m)
Measurement uncertainty	+2.2 dB / -3.6 dB	

Limit:
30 µV/m @ 30 m extrapolated with 40 dB/Dec. according to 15.31 (f)(2)

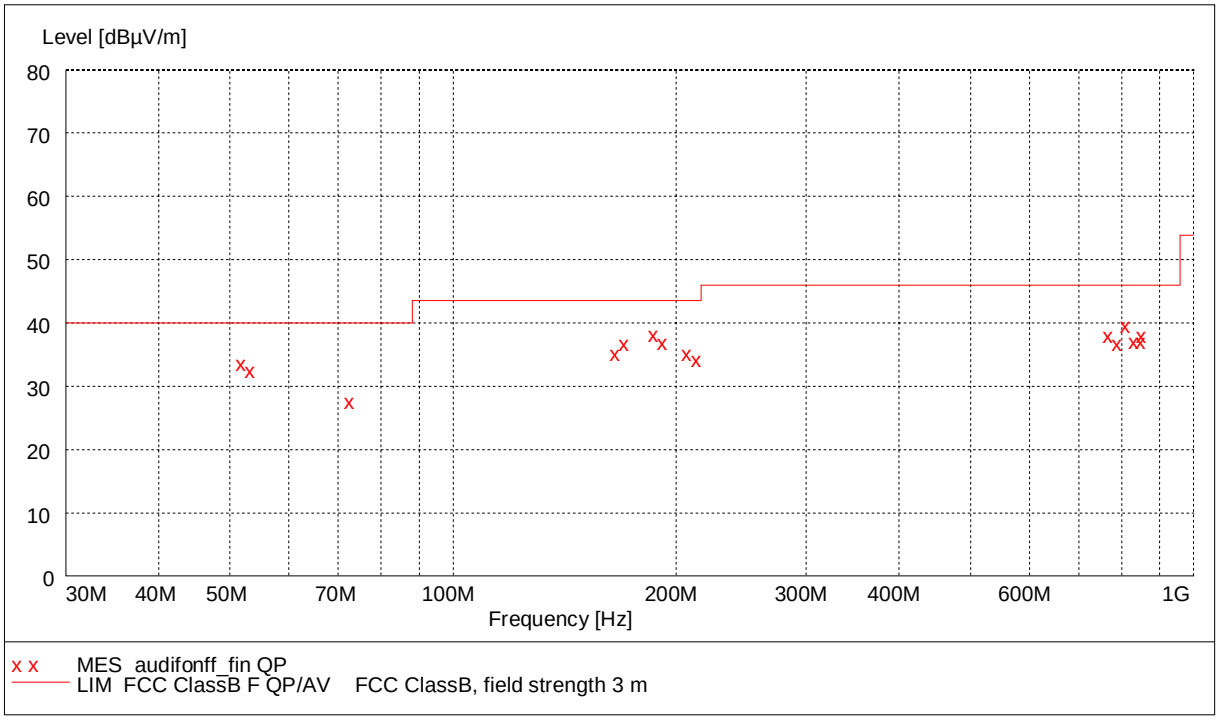
Test result: Passed.

TEST EQUIPMENT USED FOR THE TEST:
55, 73

Position of EUT:	The EUT was set-up on a non-conducting table of a height of 0.8 m. The distance between EUT and antenna was 3 m.
Cable guide:	The cable of the EUT is running vertically to the false floor. For detail information of test set-up and the cable guide refer to the pictures in annex A of this test report.
Test record:	All results are shown in the following.
Supply voltage:	During all measurements the EUT was battery supplied with 3.0 V_{DC}.
Test results:	The test results were calculated with the following formula:

Result [dBµV/m] = reading [dBµV] + cable loss [dB] + antenna factor [dB/m]

The measured points and the limit line in the following diagram refer to the standard measurement of the emitted interference in compliance with the above-mentioned standard. The measured points marked with an x are the measured results of the standard final measurement on the open area test site.



Result measured with the quasipeak detector (marked by an x):

Frequency MHz	Level dBµV/m	Transducer dB	Limit dBµV/m	Margin dB	Height cm	Azimuth deg	Polarisation
52.092000	33.90	9.2	40.0	6.1	314.0	217.00	HORIZONTAL
53.568000	32.80	8.5	40.0	7.2	275.0	216.00	HORIZONTAL
72.900000	27.90	8.3	40.0	12.1	242.0	250.00	HORIZONTAL
166.596000	35.50	12.6	43.5	8.0	100.0	271.00	HORIZONTAL
171.432000	37.20	12.1	43.5	6.3	109.0	270.00	HORIZONTAL
187.512000	38.60	11.1	43.5	4.9	100.0	255.00	HORIZONTAL
192.876000	37.30	11.0	43.5	6.2	100.0	252.00	HORIZONTAL
208.380000	35.60	11.2	43.5	7.9	100.0	253.00	HORIZONTAL
214.308000	34.60	11.4	43.5	8.9	100.0	253.00	HORIZONTAL
771.564000	38.40	25.8	46.0	7.6	143.0	1.00	VERTICAL
792.804000	37.10	25.9	46.0	8.9	144.0	24.00	VERTICAL
814.380000	39.90	26.1	46.0	6.1	133.0	331.00	VERTICAL
835.596000	37.50	27.0	46.0	8.5	199.0	61.00	HORIZONTAL
854.100000	37.40	27.0	46.0	8.6	100.0	282.00	HORIZONTAL
857.256000	38.30	26.9	46.0	7.7	100.0	293.00	HORIZONTAL

Test result: Passed.

TEST EQUIPMENT USED FOR THE TEST:
14 - 20

5.1.2.3 Preliminary radiated emission measurement (1 GHz to 25 GHz)

Ambient temperature	21 °C	Relative humidity	38 %

Position of EUT: The EUT was set-up on a non-conducting table of a height of 0.8 m. The distance between EUT and antenna was 3 m.

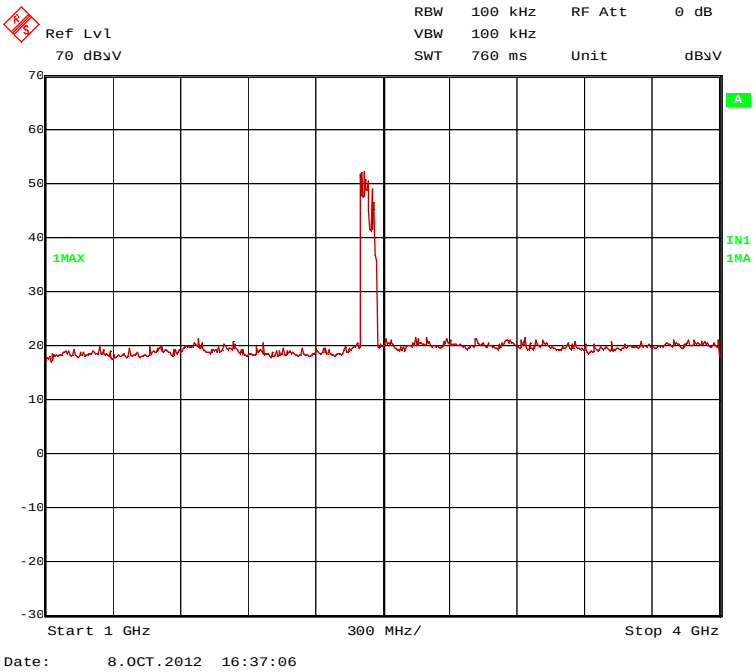
Cable guide: The cable of the EUT is running vertically to the false floor. For detail information of test set-up and the cable guide refer to the pictures in annex A of this test report.

Test record: All results are shown in the following.

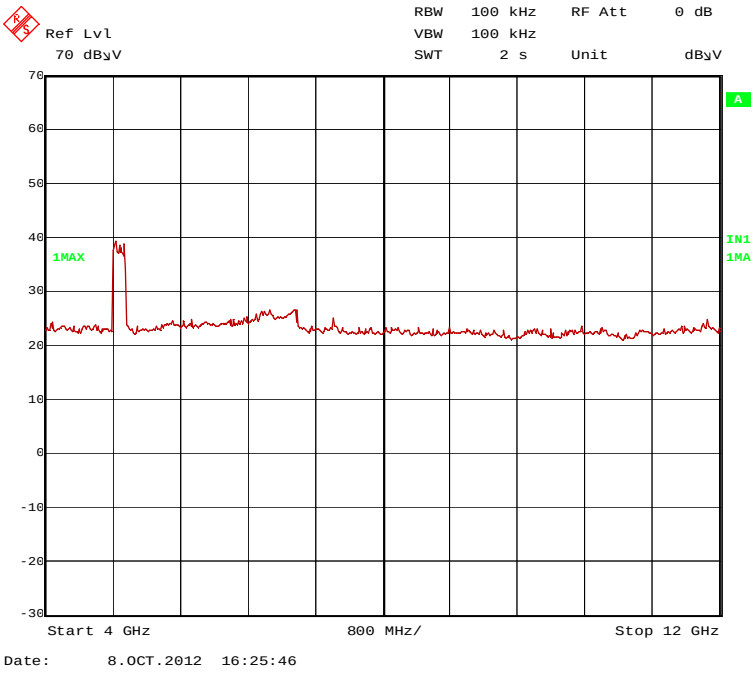
Supply voltage: During all measurements the EUT was supplied with 3.0 V_{DC}.

Continuous audio streaming via Bluetooth and 10.57 MHz link to hearing aid

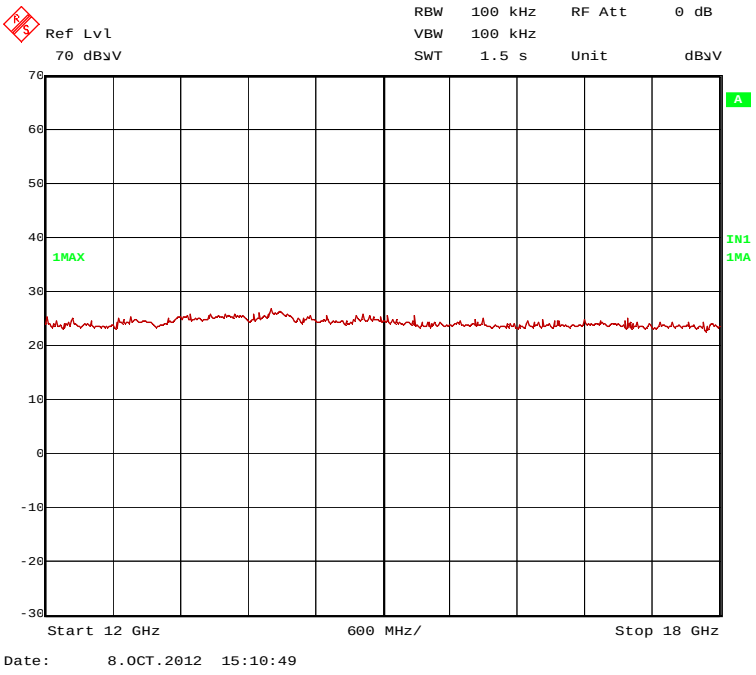
123800_4.wmf: Spurious emissions from 1 GHz to 4 GHz



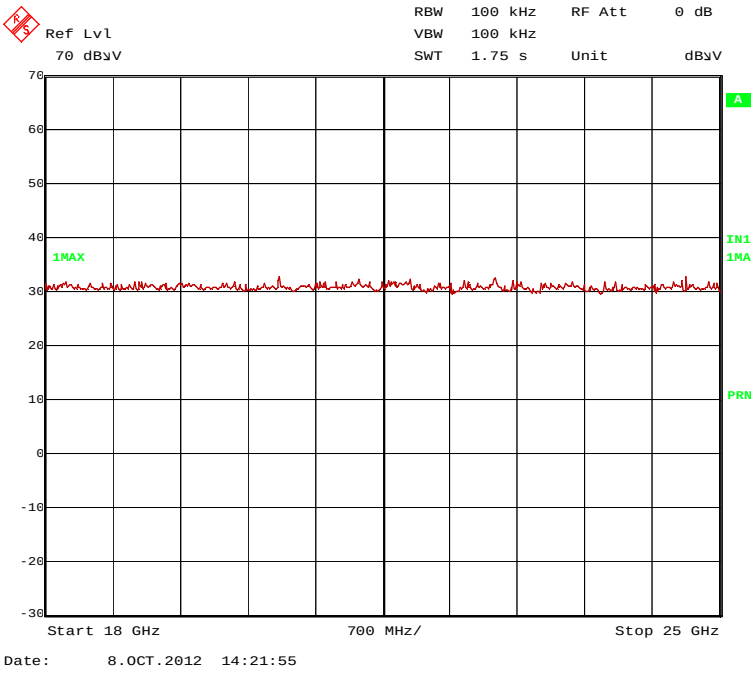
123800_3.wmf: Spurious emissions from 4 GHz to 12 GHz:



123800_2.wmf: Spurious emissions from 12 GHz to 18 GHz:



123800_1.wmf: Spurious emissions from 18 GHz to 25 GHz:



TEST EQUIPMENT USED FOR THE TEST:
29, 31 – 34, 36, 37, 39, 43, 44, 46, 49 - 51, 72

5.1.2.4 Final radiated emission measurement (1 GHz to 25 GHz)

Ambient temperature	21 °C	Relative humidity	38 %

Position of EUT: The EUT was set-up on a non-conducting table of a height of 0.8 m. The distance between EUT and antenna was 3 m.

Cable guide: The cable of the EUT is running vertically to the false floor. For detail information of test set-up and the cable guide refer to the pictures in annex A of this test report.

Test record: All results are shown in the following.

Supply voltage: During all measurements the EUT was supplied with 3.0 V_{DC}.

Resolution bandwidth: For all measurements a resolution bandwidth of 1 MHz was used.

Simultaneous transmission of Bluetooth and 10.57 MHz link

Result measured with the peak detector:

Frequency MHz	Corr. value dBµV/m	Limit dBµV/m	Margin dB	Readings dBµV	Antenna factor 1/m	Preamp dB	Cable loss dB	Height cm	Pol.	Restr. Band
2416*	85.4	-	-	53.3	28.4	0.0	3.7	150	Vert.	-
4870	39.9	74.0	34.1	27.6	32.8	25.7	5.2	150	Hor.	Yes
Measurement uncertainty						+2.2 dB / -3.6 dB				

* Fundamental of Bluetooth (in hopping mode)

Result measured with the average detector:

Frequency MHz	Corr. value dBµV/m	Limit dBµV/m	Margin dB	Readings dBµV	Antenna factor 1/m	Preamp dB	Cable loss dB	Height cm	Pol.	Restr. Band
2416*	46.8	-	-	14.7	28.4	0.0	3.7	150	Vert.	-
4870	26.1	54.0	28.0	13.8	32.8	25.7	5.2	150	Hor.	Yes
Measurement uncertainty						+2.2 dB / -3.6 dB				

* Fundamental of Bluetooth (in hopping mode)

Test result: Passed

TEST EQUIPMENT USED FOR THE TEST:
29, 31 – 34, 36, 37, 39, 43, 44, 46, 49 - 51, 72

6 TEST EQUIPMENT AND ANCILLARIES USED FOR TESTS

No.	Test equipment	Type	Manufacturer	Serial No.	PM. No.	Cal. Date	Cal. due
14	Open area test site	-	Phoenix Test-Lab	-	480085	Weekly verification (system cal.)	
15	Measuring receiver	ESIB7	Rohde & Schwarz	100304	480521	02/15/2010	02/2014
16	Controller	HD100	Deisel	100/670	480139	-	-
17	Turntable	DS420HE	Deisel	420/620/80	480087	-	-
18	Antenna support	AS615P	Deisel	615/310	480086	-	-
19	Antenna	CBL6111 D	Chase	25761	480894	28/09/2011	09/2014
20	EMI Software	ES-K1	Rohde & Schwarz	-	480111	-	-
29	Fully anechoic chamber M20	-	Albatross Projects	B83107-E2439-T232	480303	Weekly verification (system cal.)	
30	Spectrum analyser	FSU	Rohde & Schwarz	200125	480956	02/15/2012	02/2014
31	Measuring receiver	ESI 40	Rohde & Schwarz	100064	480355	02/13/2012	02/2014
32	Controller	MCU	Maturo	MCU/043/971107	480832	-	-
33	Turntable	DS420HE	Deisel	420/620/80	480315	-	-
34	Antenna support	AS615P	Deisel	615/310	480187	-	-
35	Antenna	CBL6112 B	Chase	2688	480328	04/21/2011	04/2014
36	Antenna	3115	EMCO	9609-4918	480183	11/09/2011	11/2014
37	Standard Gain Horn 11.9 GHz – 18 GHz	18240-20	Flann Microwave	483	480294	Six month verification (system cal.)	
39	Standard Gain Horn 17.9 GHz – 26.7 GHz	20240-20	Flann Microwave	411	480297	Six month verification (system cal.)	
43	RF-cable No. 3	RTK 081	Rosenberger	-	481330	Weekly verification (system cal.)	
44	RF-cable No. 40	RTK 081	Rosenberger	-	480670	Weekly verification (system cal.)	
45	RF-cable No. 36	RTK 081	Rosenberger	-	410571	Weekly verification (system cal.)	
46	RF-cable 1 m	KPS-1533-400-KPS	Insulated Wire	-	480301	Six month verification (system cal.)	
49	Preamplifier	JS3-00101200-23-5A	Miteq	681851	480337	Six month verification (system cal.)	
50	Preamplifier	JS3-12001800-16-5A	Miteq	571667	480343	Six month verification (system cal.)	
51	Preamplifier	JS3-18002600-20-5A	Miteq	658697	480342	Six month verification (system cal.)	
55	Antenna	HFH2-Z2	Rohde & Schwarz	832609/014	480059	02/16/2012	02/2014
72	4 GHz High Pass Filter	WHKX4.0/18 G-8SS	Wainwright Instruments	1	480587	Weekly verification (system cal.)	
73	Measuring receiver	ESPC	Rohde & Schwarz	843756/006	480150	02/09/2012	02/2014

7 REPORT HISTORY

Report Number	Date	Comment
F123800E1	24 October 2012	Document created
F123800E1 2nd version	19 December 2012	Editorial changes

8 LIST OF ANNEXES

ANNEX A TEST SETUP PHOTOS 7 pages

123800_13.jpg	Test set-up fully anechoic chamber
123800_05.jpg	Test set-up fully anechoic chamber
123800_12.jpg	Test set-up fully anechoic chamber
123800_10.jpg	Test set-up fully anechoic chamber
123800_11.jpg	Test set-up fully anechoic chamber
123800_01.jpg	Test set-up open area test site
123800_14.jpg	Test set-up outdoor test site

ANNEX B EXTERNAL PHOTOS 3 pages

123800_20.jpg	multistreamer with external loop antenna, top view
123800_18.jpg	multistreamer, 3D view 1
123800_19.jpg	multistreamer, 3D view 2

ANNEX C INTERNAL PHOTOS 2 pages

123800_23.jpg	multistreamer, PCB top view
123800_22.jpg	multistreamer, PCB bottom view