

Test Report

Report Number:
F135190E2

Applicant:

Cognex Germany Aachen GmbH

Manufacturer:

Cognex Corporation

Equipment under Test (EUT):

DM8000 Base Station



Laboratory (CAB) accredited by
Deutsche Akkreditierungsstelle GmbH (DAkkS)
in compliance with DIN EN ISO/IEC 17025
under the Reg. No. D-PL-17186-01-02,
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 (June 2014)** 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

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

Name

Signature

12 June 2014



Authorized
reviewer:

Bernd STEINER

Name

Signature

12 June 2014



RESERVATION

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1 IDENTIFICATION

1.1 Applicant

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1.2 Manufacturer

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Country:	United States of America
Name for contact purposes:	Mr. Guido SCHÜTZEICHEL
Phone:	+49 (0) 241-173014-26
Fax:	+49 (0) 241-173014-44
Mail address:	Guido.Schuetzeichel@cognex.com

1.3 Test laboratory

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

Test Laboratory (CAB) accredited by Deutsche Akkreditierungsstelle GmbH (DAkkS) in compliance with DIN EN ISO/IEC 17025 under the Reg. No. D-PL-17186-01-02, recognized by Bundesnetzagentur under the Reg.-No. BNetzA-CAB-02/21-104.
CAB Designation Number DE0004, listed by FCC 31040/SIT1300F2, IC OATS Listing 3469A-1.

1.4 EUT (Equipment Under Test)

Equipment under test: *	Base Station Contains BT module BlueMod+SR
Model name: *	DM8000 Base Station
Brand name: *	Cognex
Article number: *	1AAG
FCC ID of used BT module:	TXH-1AAG
IC of used BT module:	6315A-1AAG
Serial number:	1A1404PB007134
Hardware version:	V3.1
Software version:	V1.02

1.5 Technical data of equipment

Fulfils Bluetooth specification: *	2.1		
Antenna type: *	Internal customized antenna (see annex C for detail view)		
Antenna gain: *	2 dBi		
Rated output power: *	8 dBm		
Antenna connector: *	none		
Power supply: *	$U_{\text{nom}} = 3.3 \text{ V}_{\text{DC}}$	$U_{\text{min}} = -$	$U_{\text{max}} = -$
Type of modulation: *	FHSS (GFSK, $\pi/4$ -DQPSK, 8DPSK)		
Operating frequency range: *	2402 MHz to 2480 MHz		
Number of channels: *	79		

*: Declared by the applicant.

The following external I/O cables are connectable to the EUT:

Power supply: 1.5 m
 Ethernet: 1.5 m (not connected during tests)
 USB: 1.5 m (not connected during tests)
 RS232: 1.5 m (not connected during tests)

1.6 Dates

Date of receipt of test sample:	12 December 2013
Start of test:	16 January 2014
End of test:	29 April 2014

2 OPERATIONAL STATES

The following operation modes are the worst case operation modes and used during the tests:

Operation mode	Description of the operation mode	Modulation	Data rate
1	TX on channel 0	GFSK	1 Mbps
2	TX on channel 39	GFSK	1 Mbps
3	TX on channel 78	GFSK	1 Mbps

3 ADDITIONAL INFORMATION

In this test report only the radiated emission measurement with a new antenna is described. The Bluetooth module is already tested and certified (FCC ID: RFRMSR / IC number: 4975A-MSR).
The output power was verified and complies with the power stated in the original certification.
The Bluetooth low energy function is disabled as declared by the applicant.

Ancillary equipment used to perform the measurements:

Laptop Fujitsu Siemens S7110

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	Refer page
Radiated emissions (transmitter)	0.009 - 25,000	15.205 (a) 15.209 (a)	A8.5 [4] 2.5 [4]	Passed	7 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.

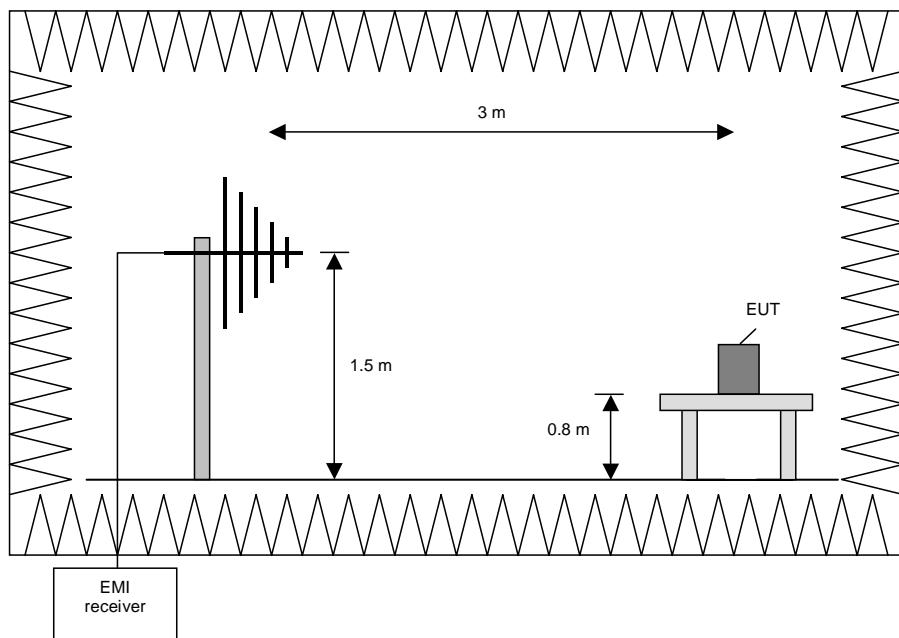
Preliminary measurement (30 MHz to 1 GHz)

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:

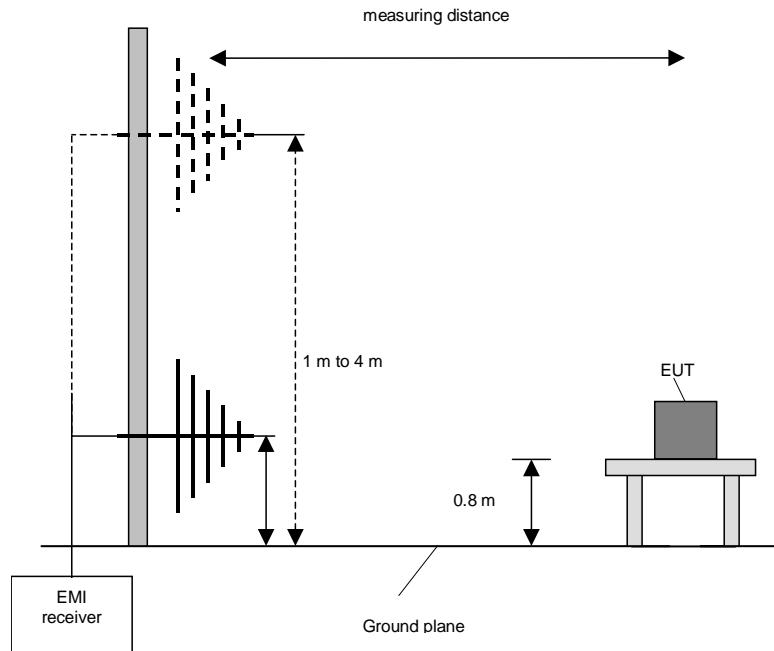
1. Monitor the frequency range at horizontal polarisation and a EUT azimuth of 0 °.
2. Manipulate the system cables within the range to produce the maximum level of emission.
3. Rotate the EUT by 360 ° to maximize the detected signals.
4. Make a hardcopy of the spectrum.
5. Measure the frequency of the 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)

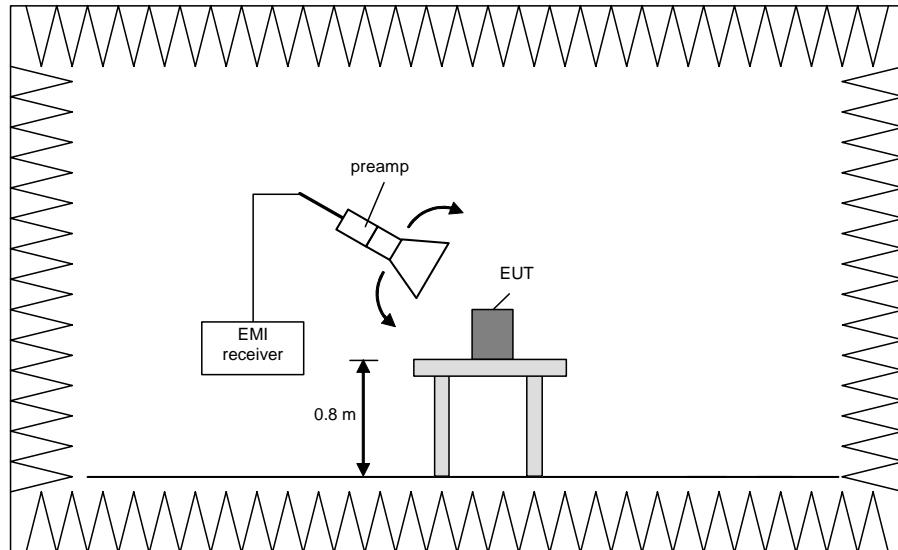
This measurement will be performed in a fully anechoic chamber. Tabletop devices will set up on a non-conducting support with a size of 1 m by 1.5 m and a height of 80 cm. Floor-standing devices will be placed directly on the turntable/ground plane. The setup of the Equipment under test will be in accordance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

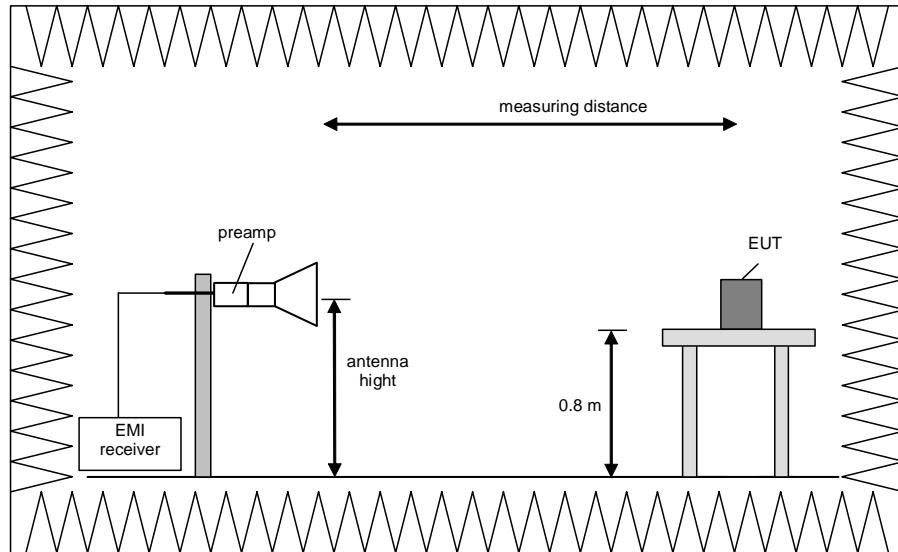


Final measurement (1 GHz to 110 GHz)

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)

5.1.2.1 Preliminary radiated emission measurement (30 MHz to 1 GHz)

Ambient temperature	21 °C	Relative humidity	40 %
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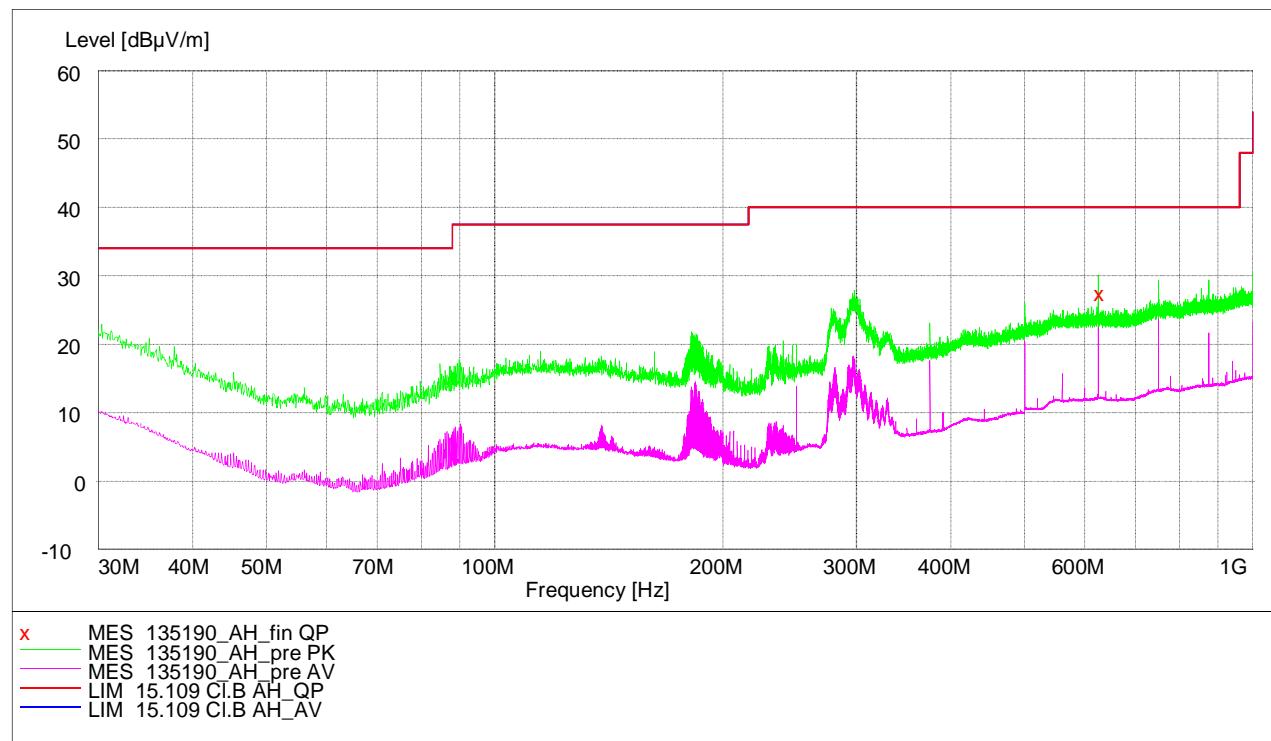
Title: Preliminary emission measurement according CFR 47 Part 15.247
 EUT: DM8000 Base Station
 Manufacturer: Cognex Germany Aachen GmbH
 Operating Condition: Cont. TX @ 2441 MHz
 Test site: Fully anechoic chamber M20; PHOENIX TEST LAB GmbH
 Operator: M. Bastert
 Test Specification: Supplied 120 V_{AC} / 60 Hz

The limit line and measurement curve shown in the diagram below refer to the preliminary measurements. Here, it must be noted that because of the reduced measuring distance and because of the floor absorbers, the measured values do not comply with the values of the above mentioned standard; they only serve as orientation in determining which frequencies must be measured on the open area test site.

The limit line is achieved with the applied standard by converting to a 3 m measurement distance (+ 10 dB) and the correction for the free space in which in the "worst case" the reflected floor wave is missing entirely (- 6 dB). Therefore 4 dB is added to the limit line of the standard concerned.

The curves in the diagram only represent the maximum measured value for each frequency point of all preliminary measurements, which were carried out with the EUT in various positions.

The top measured curve represents the peak measurement. The measured points marked with "x" are frequency points for which later measurements with a quasi-peak detector were carried out. These values are indicated in the following table. The bottom measured curve represents average values (marked with "+"), which are only required for control purposes.



The emissions in the frequency range from 30 MHz to 1 GHz are independent of the set channel. Therefore only measurements at 2441 MHz were carried out.

The following frequency was found during the preliminary measurement and is marked by an x in the diagram above:

625.048 MHz

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 (30 MHz to 1 GHz)

Ambient temperature	20 °C	Relative humidity	40 %
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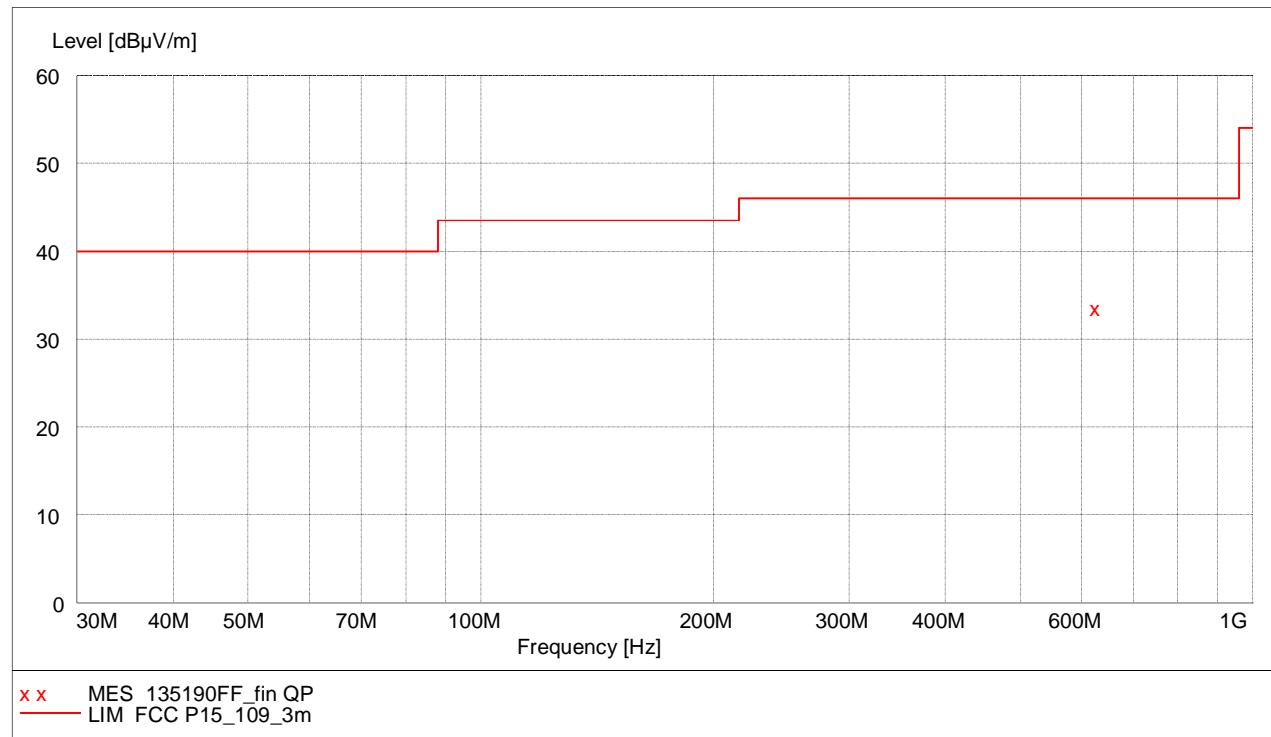
Position of EUT: The EUT was setup on a non-conducting table of a height of 0.8 m. The distance between EUT and antenna was 3 m.

Test record: All results are shown in the following.

Supply voltage: During all measurements the Bluetooth module was supplied with 3.7 V_{DC} by battery.

Test results: The test results were calculated with the following formula:

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



The results of the standard subsequent measurement on the open area test site are indicated in the table below. The limits as well as the measured results (levels) refer to the above mentioned standard while taking account of the specified requirements for a 3 m measuring distance.

Results measured with the quasipeak detector:

Frequency [MHz]	Result [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]	Readings [dB μ V]	Antenna factor [1/m]	Cable loss [dB]	Height [cm]	Azim. [deg]	Pol.
625.048	33.1	46.0	12.9	10.6	19.7	2.8	184	342	Hor.

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

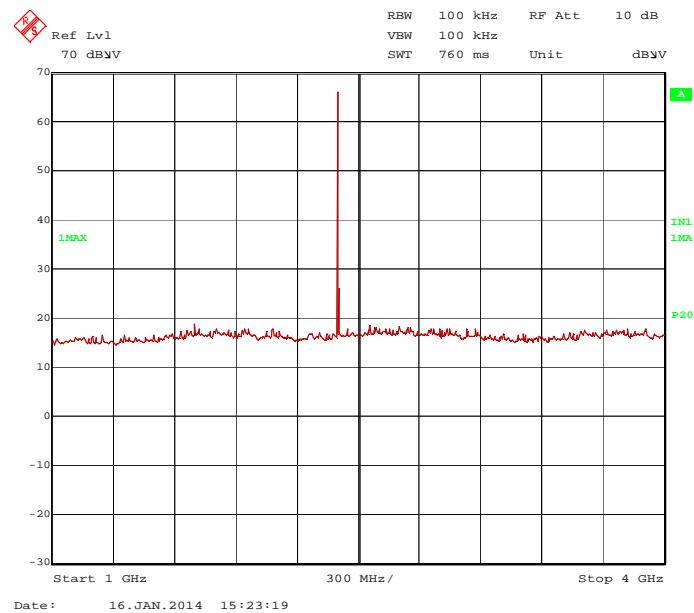
Cable guide: The cables of the EUTs are running vertically to the false floor. For detail information of test setup and the cable guide refer to the pictures in annex A of this test report.

Test record: All results are shown in the following.

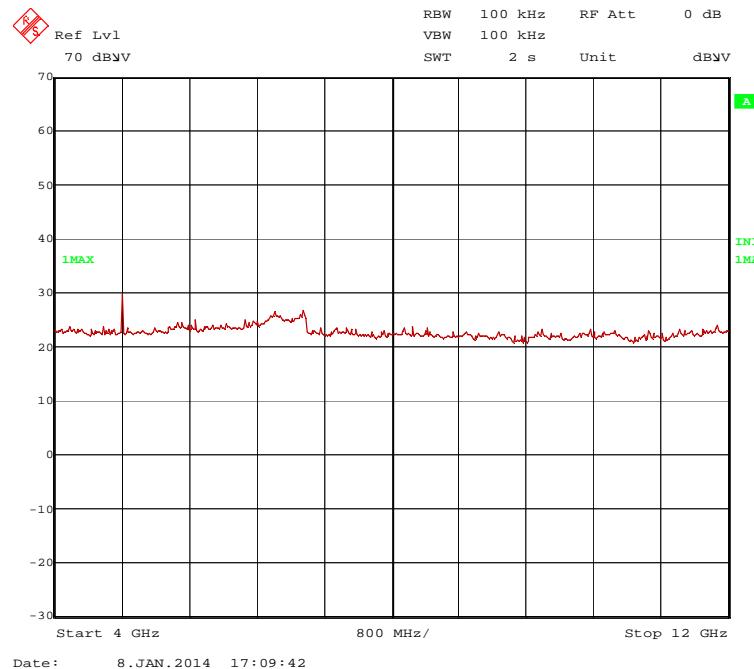
Supply voltage: During all measurements the Bluetooth module was supplied with 3.7 V_{DC} by battery.

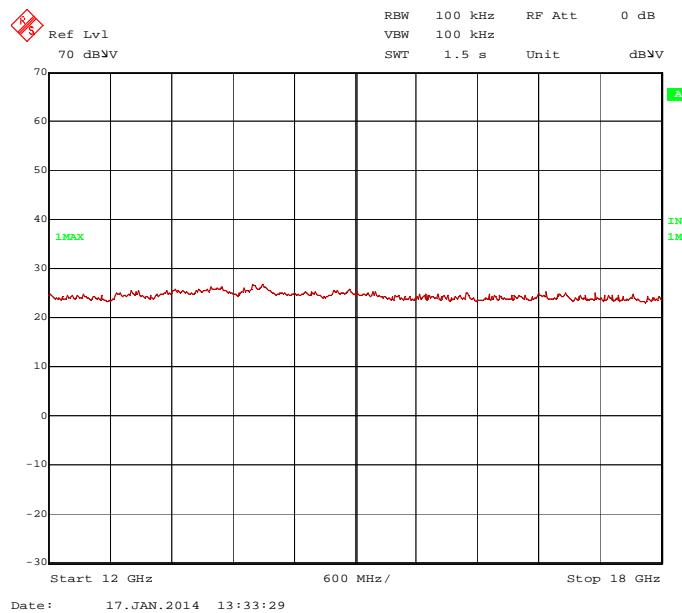
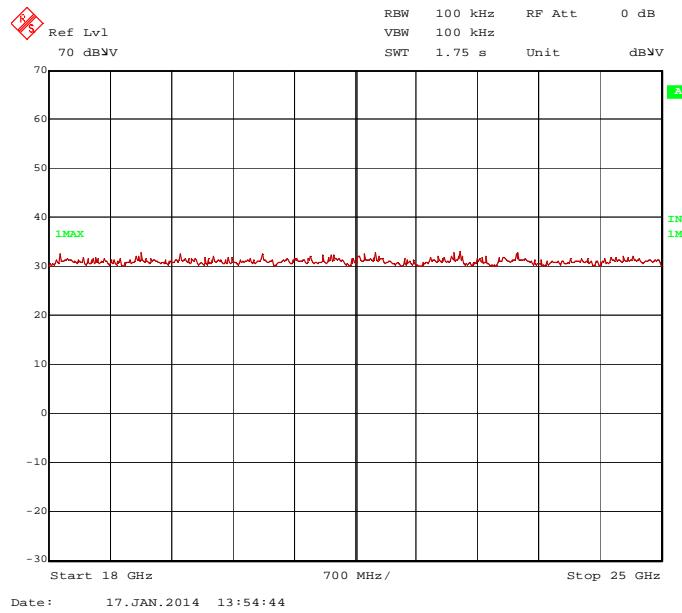
Continuous transmission at 2402 MHz (DH5, hopping off)

135190_1.wmf: Spurious emissions from 1 GHz to 4 GHz (operation mode 1):



135190_2.wmf: Spurious emissions from 4 GHz to 12 GHz (operation mode 1):



135190_10.wmf: Spurious emissions from 12 GHz to 18 GHz (operation mode 1):

135190_11.wmf: Spurious emissions from 18 GHz to 25 GHz (operation mode 1):


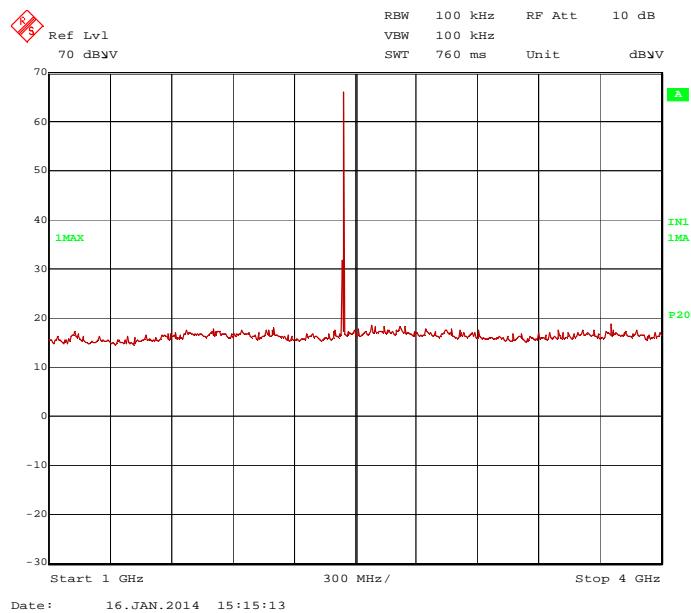
The following frequencies were found during the preliminary radiated emission test:

Inside restricted bands	4.804 GHz
Outside restricted bands	2.402 GHz

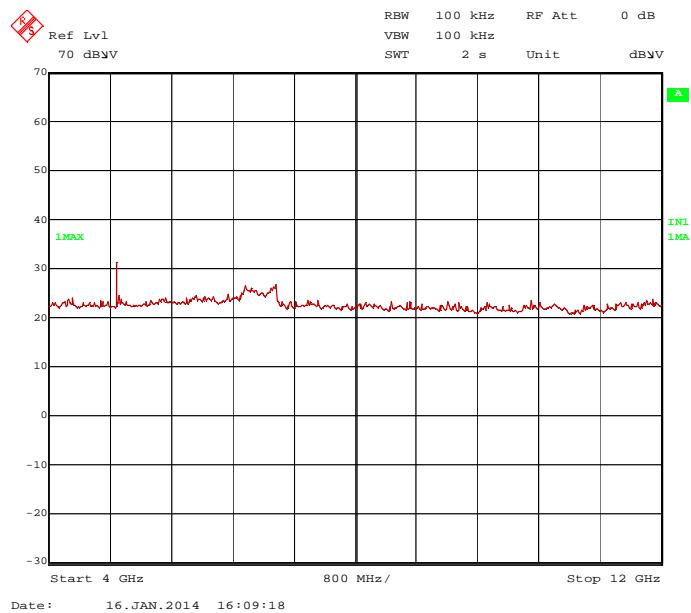
These frequencies have to be measured in a final measurement. The results are presented in the following.

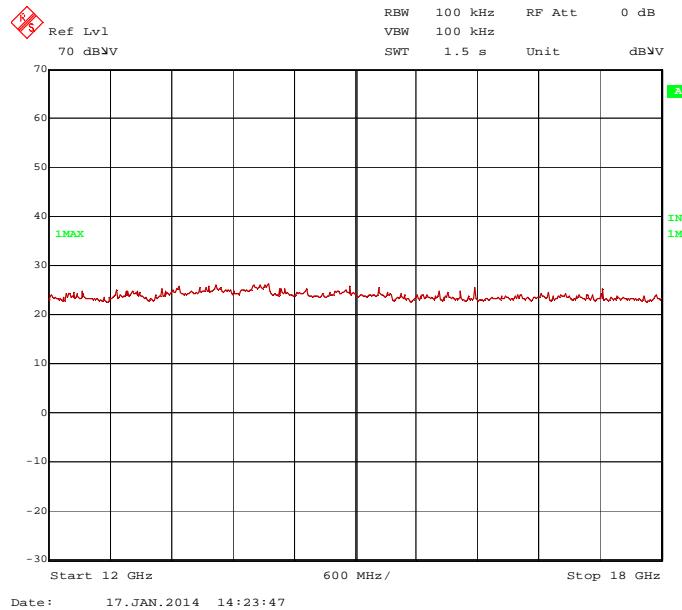
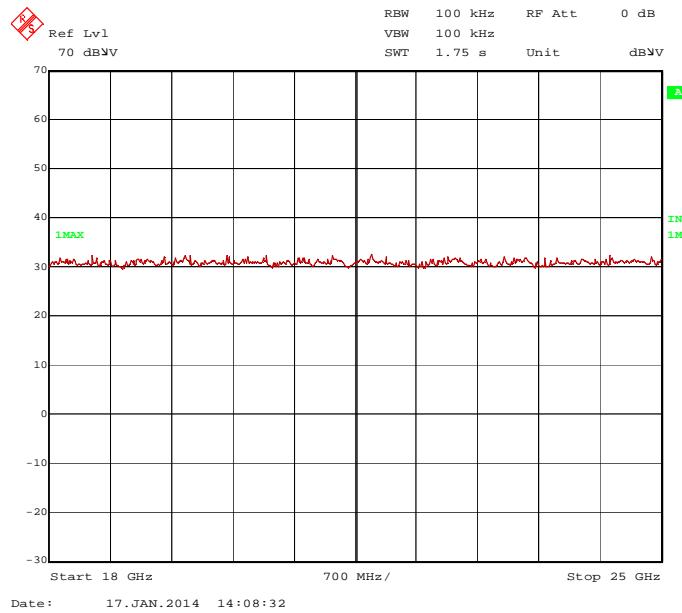
Continuous transmission at 2441 MHz (DH5, hopping off)

135190_3.wmf: Spurious emissions from 1 GHz to 4 GHz (operation mode 2):



135190_6.wmf: Spurious emissions from 4 GHz to 12 GHz (operation mode 2):



135190_13.wmf: Spurious emissions from 12 GHz to 18 GHz (operation mode 2):

135190_12.wmf: Spurious emissions from 18 GHz to 25 GHz (operation mode 2):


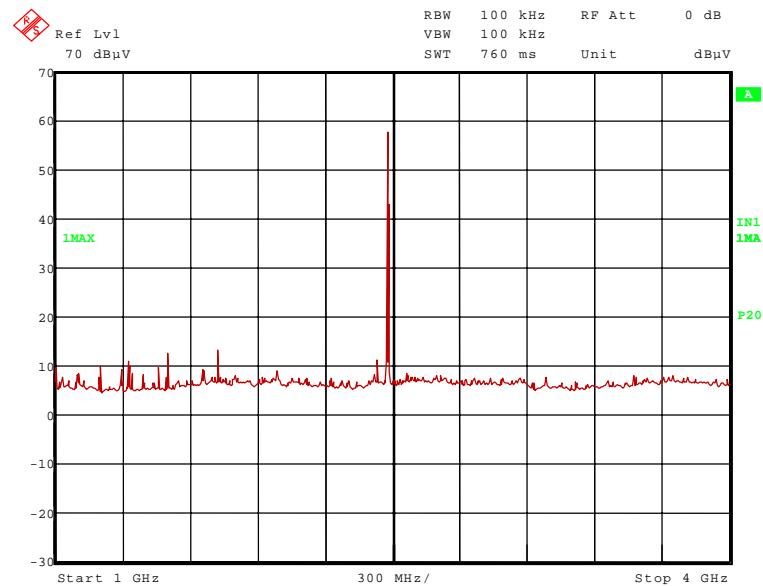
The following frequencies were found during the preliminary radiated emission test:

Inside restricted bands	4.882 GHz
Outside restricted bands	2.441 GHz

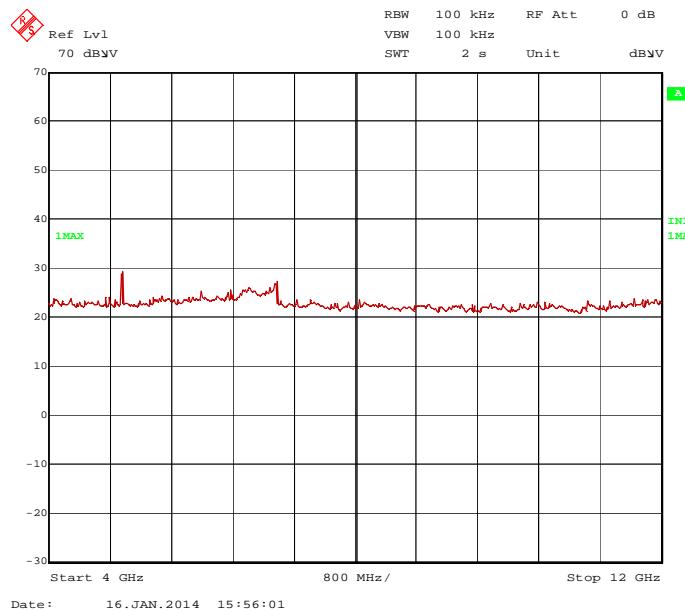
These frequencies have to be measured in a final measurement. The results are presented in the following.

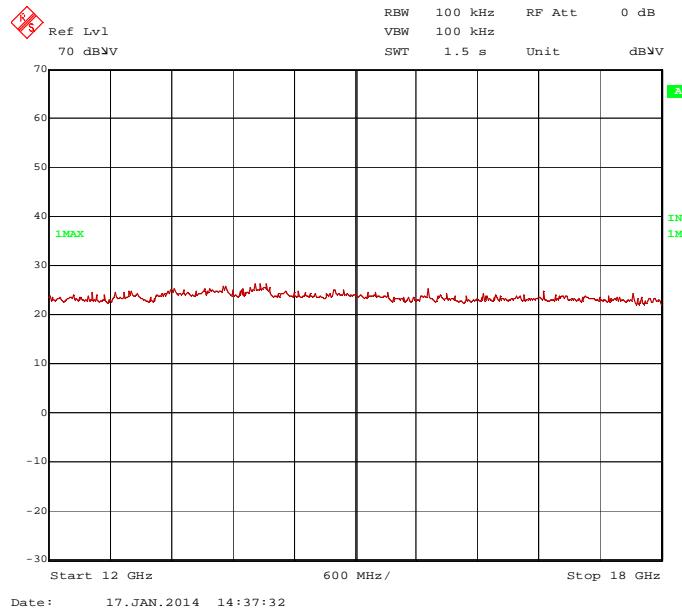
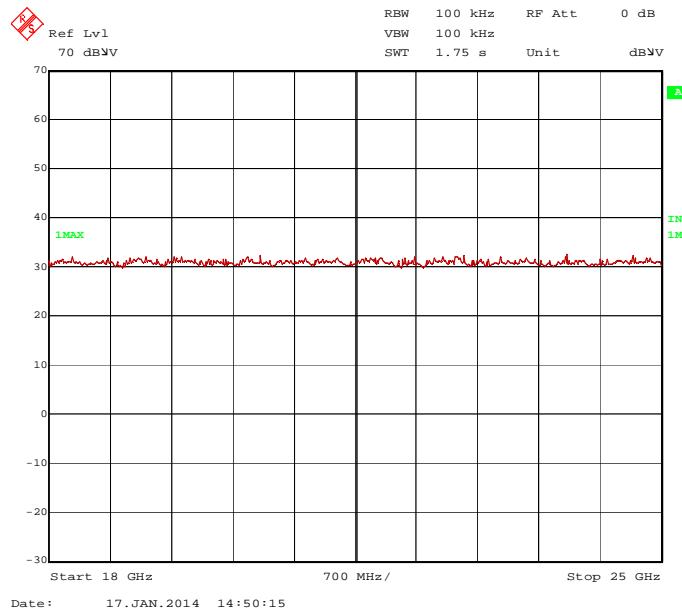
Continuous transmission at 2480 MHz (DH5, hopping off)

135190_4.wmf: Spurious emissions from 1 GHz to 4 GHz (operation mode 3):



135190_5.wmf: Spurious emissions from 4 GHz to 12 GHz (operation mode 3):



135190_14.wmf: Spurious emissions from 12 GHz to 18 GHz (operation mode 3):

135190_15.wmf: Spurious emissions from 18 GHz to 25 GHz (operation mode 3):


The following frequencies were found during the preliminary radiated emission test:

Inside restricted bands	4.960 GHz
Outside restricted bands	2.480 GHz

These frequencies have to be measured in a final measurement. The results are presented in the following.

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	20 °C	Relative humidity	32 %
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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: For detail information of test set-up 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 3.7 V_{DC} by battery.

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

Continuous transmission at 2402 MHz (DH5, hopping off)

Result measured with the peak detector:

Frequency MHz	Field strength dB μ V/m	Limit dB μ V/m	Margin dB	Readings dB μ V	Antenna factor 1/m	Preamp dB	Cable loss dB	Height cm	Pol.	Restr. Band	Pos.
2402	99.9	-	-	67.9	28.3	0.0	3.7	150	Vert.	carrier	1
4804	48.0	74.0	26.0	35.8	32.6	25.7	5.3	150	Hor.	Yes	1
Measurement uncertainty						+2.2 dB / -3.6 dB					

Result measured with the average detector:

Frequency MHz	Field strength dB μ V/m	Limit dB μ V/m	Margin dB	Readings dB μ V	Antenna factor 1/m	Preamp dB	Cable loss dB	Height cm	Pol.	Restr. Band	Pos.
2402	89.1			57.1	28.3	0.0	3.7	150	Vert.	carrier	1
4804	35.0	54.0	19.0	22.8	32.6	25.7	5.3	150	Hor.	Yes	1
Measurement uncertainty						+2.2 dB / -3.6 dB					

Continuous transmission at 2441 MHz (DH5, hopping off)

Result measured with the peak detector:

Frequency MHz	Field strength dB μ V/m	Limit dB μ V/m	Margin dB	Readings dB μ V	Antenna factor 1/m	Preamp dB	Cable loss dB	Height cm	Pol.	Restr. Band	Pos.
2441	99.1	-	-	67.0	28.4	0.0	3.7	150	Vert.	-	1
4882	49.9	74.0	24.1	37.5	32.8	25.7	5.3	150	Hor.	Yes	1
Measurement uncertainty						+2.2 dB / -3.6 dB					

Result measured with the average detector:

Frequency MHz	Field strength dB μ V/m	Limit dB μ V/m	Margin dB	Readings dB μ V	Antenna factor 1/m	Preamp dB	Cable loss dB	Height cm	Pol.	Restr. Band	Pos.
2441	88.4	-	-	56.3	28.4	0.0	3.7	150	Vert.	-	1
4882	35.6	54.0	18.4	23.2	32.8	25.7	5.3	150	Hor.	Yes	1
Measurement uncertainty						+2.2 dB / -3.6 dB					

Continuous transmission at 2480 MHz (DH5, hopping off)

Result measured with the peak detector:

Frequency MHz	Field strength dB μ V/m	Limit dB μ V/m	Margin dB	Readings dB μ V	Antenna factor 1/m	Preamp dB	Cable loss dB	Height cm	Pol.	Restr. Band	Pos.
2480	100.6	-	-	68.3	28.5	0.0	3.8	150	Vert.	-	1
4960	54.2	74.0	19.8	41.6	32.9	25.6	5.3	150	Hor.	Yes	1
Measurement uncertainty						+2.2 dB / -3.6 dB					

Result measured with the average detector:

Frequency MHz	Field strength dB μ V/m	Limit dB μ V/m	Margin dB	Readings dB μ V	Antenna factor 1/m	Preamp dB	Cable loss dB	Height cm	Pol.	Restr. Band	Pos.
2480	89.9	-	-	57.6	28.5	0.0	3.8	150	Vert.	-	1
4960	39.9	54.0	14.1	27.3	32.9	25.6	5.3	150	Hor.	Yes	1
Measurement uncertainty						+2.2 dB / -3.6 dB					

Test result: Passed

TEST EQUIPMENT USED FOR THE TEST:

29, 31 - 34, 36, 44, 46, 49 - 51, 58

6 Test equipment

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	02/06/2013	02/2015
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	02/24/2014	02/2016
31	Measuring receiver	ESI 40	Rohde & Schwarz	100064	480355	02/26/2014	02/2016
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	04/14/2014	04/2017
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	02/18/2014	02/2016
72	4 GHz High Pass Filter	WHKX4.0/18 G-8SS	Wainwright Instruments	1	480587	Weekly verification (system cal.)	

7 REPORT HISTORY

Report Number	Date	Comment
F135190E2	12 June 2014	Document created

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	135190_7.jpg	Bluetooth module, detail view with shielding
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