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Test Report

Report Number:
F140269E2

Applicant:

Cognex Germany Aachen GmbH

Manufacturer:

Cognex Corporation

Equipment under Test (EUT):

DMCM-BTM-00

DAkkS
Deutsche
Akkreditierungsstelle
D-PL-17186-01-01
D-PL-17186-01-02
D-PL-17186-01-03

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		10 June 2014
	Name	Signature	Date
Authorized reviewer:	Bernd STEINER		10 June 2014
	Name	Signature	Date

RESERVATION

This test report is only valid in its original form.

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1 IDENTIFICATION

1.1 Applicant

Name:	Cognex Germany Aachen GmbH
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	52074 Aachen
Country:	Germany
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Phone:	+49 (0) 241-173014-26
Fax:	+49 (0) 241-173014-44
Mail address:	Guido.Schuetzeichel@cognex.com

1.2 Manufacturer

Name:	Cognex Corporation
Address:	One Vision Drive
	Natick, MA 01760-2059
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: *	Bluetooth slide in Contains BT module BlueMod+SR
Model name: *	DMCM-BTM-00
Brand name: *	Cognex
Article number: *	1AAJ
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

Fulfills Bluetooth specification: *	2.1		
Antenna type: *	Internal PCB antenna		
Antenna gain: *	2 dBi		
Rated output power: *	8 dBm		
Antenna connector: *	none		
Power supply: *	U_{nom} = 3.3 V_{DC}	U_{min} = -	U_{max} = -
Type of modulation: *	FHSS (GFSK, π/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 were used:

No cables are connectable to the EUT. Only for setup of the Bluetooth channels a USB cable was temporary connected between the EUT and laptop PC and not used during the tests.

1.6 Dates

Date of receipt of test sample:	20 March 2014
Start of test:	20 March 2014
End of test:	22 May 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.

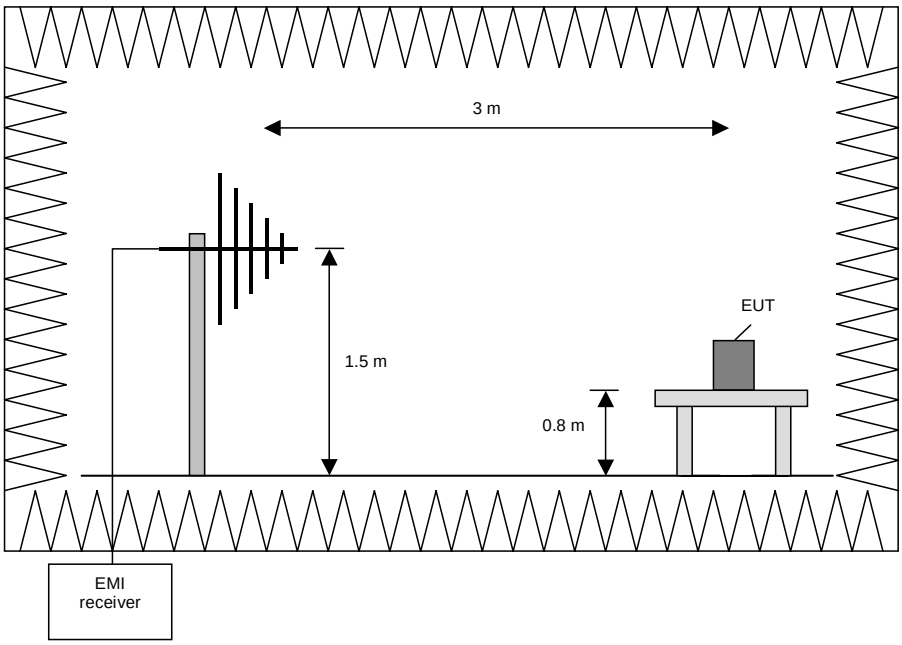
Preliminary measurement (30 MHz to 1 GHz)

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:

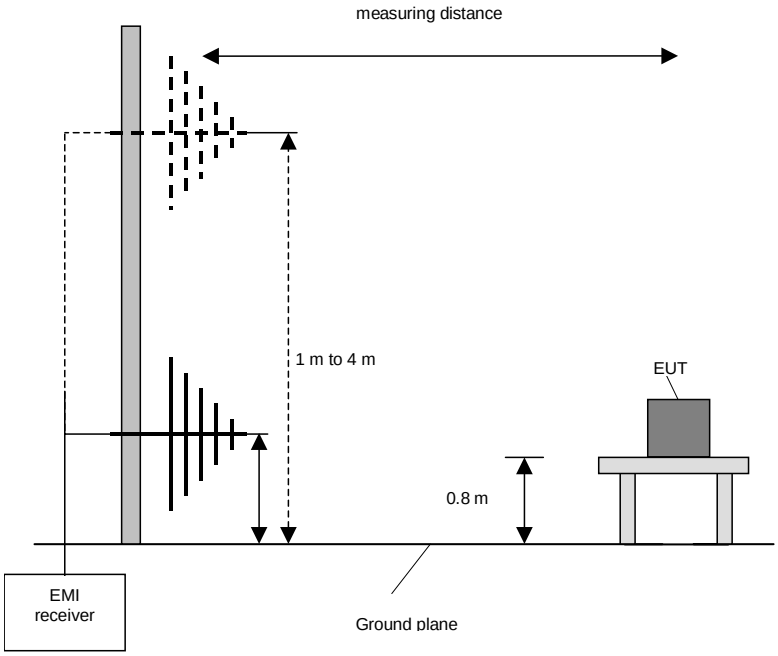
1. Monitor the frequency range at horizontal polarisation and a EUT azimuth of 0 °.
2. Manipulate the system cables within the range to produce the maximum level of emission.
3. Rotate the EUT by 360 ° to maximize the detected signals.
4. Make a hardcopy of the spectrum.
5. Measure the frequency of the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

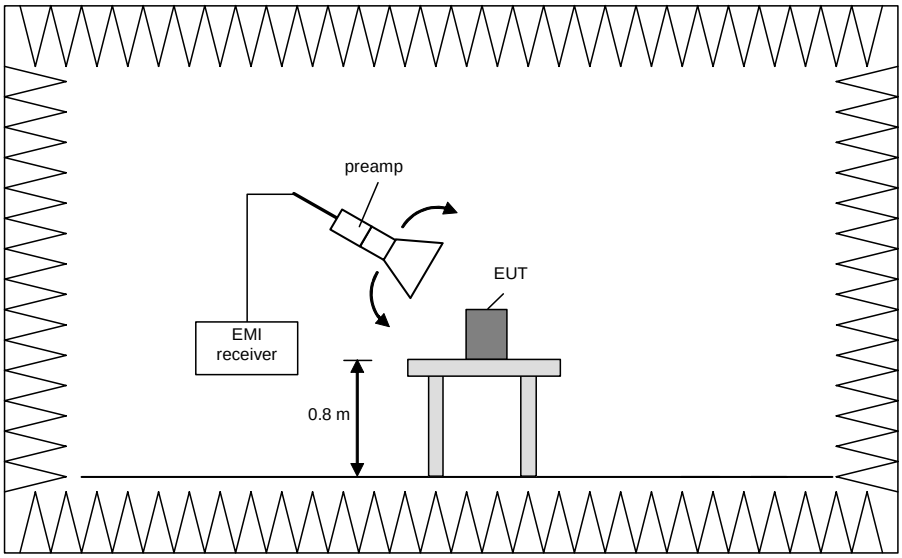
This measurement will be performed in a fully anechoic chamber. Tabletop devices will set up on a non-conducting support with a size of 1 m by 1.5 m and a height of 80 cm. Floor-standing devices will be placed directly on the turntable/ground plane. The setup of the Equipment under test will be in accordance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

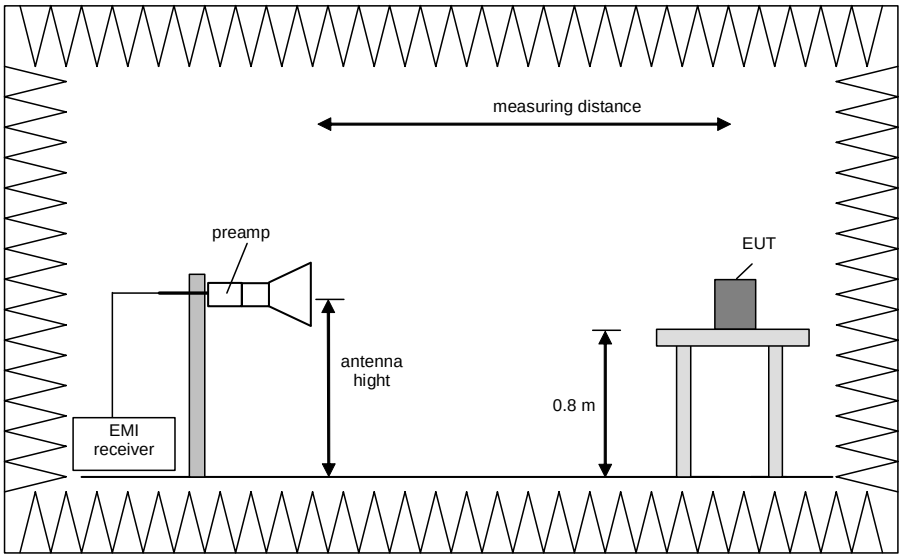


Final measurement (1 GHz to 110 GHz)

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.

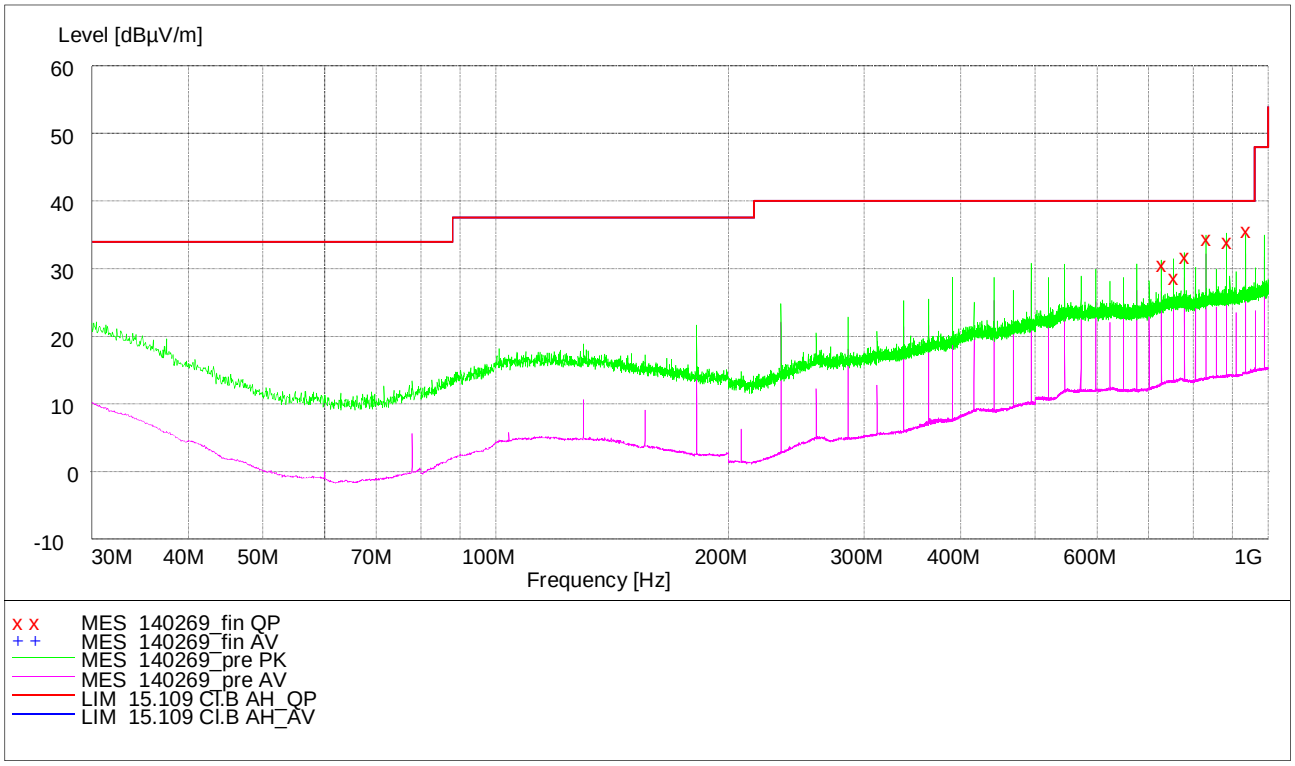
Step 1) to 6) are defined as preliminary measurement.

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 %

Title:	Preliminary emission measurement according CFR 47 Part 15.247
EUT:	Bluetooth slide in
Manufacturer:	Cognex Corporation
Operating Condition:	Continuous transmission @ 2441 MHz
Test site:	Fully anechoic chamber M20; PHOENIX TEST LAB GmbH
Operator:	M. Bastert
Test Specification:	Supplied with 3.7 V (Battery)



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 frequencies were found during the preliminary measurement and are marked by an x in the diagram above:

728.008 MHz, 753.988 MHz, 779.992 MHz, 832.0 MHz, 883.996 MHz and 935.992 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 %

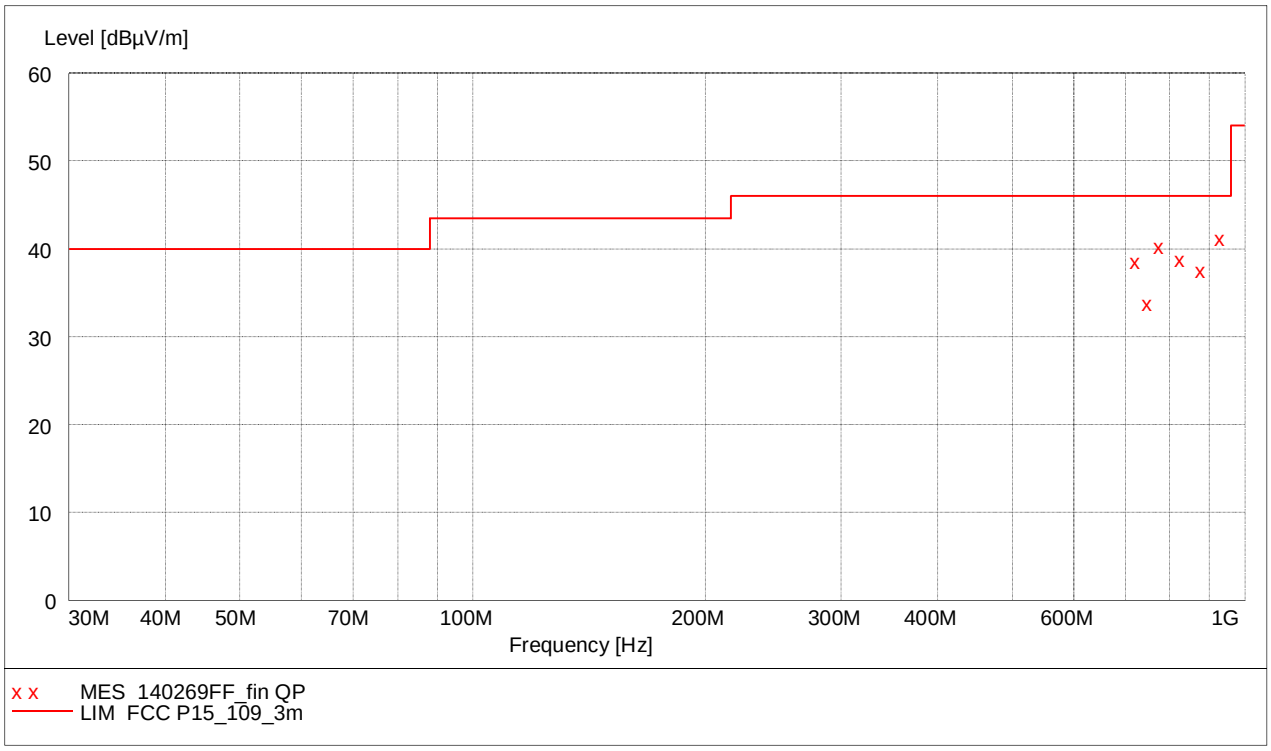
Position of EUT: The EUT was setup on a non-conducting table of a height of 0.8 m. The distance between EUT and antenna was 3 m.

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 [dBµV/m] = reading [dBµV] + 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 [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Readings [dBµV]	Antenna factor [1/m]	Cable loss [dB]	Height [cm]	Azim. [deg]	Pol.
728.008	38.8	46.0	7.2	14.3	21.4	3.1	112	359	Hor.
753.988	34.0	46.0	12.0	9.2	21.7	3.1	150	26	Vert.
779.992	40.4	46.0	5.6	15.7	21.5	3.2	107	0	Hor.
832.000	39.0	46.0	7.0	13.3	22.5	3.2	225	87	Hor.
883.996	37.7	46.0	8.3	12.2	22.0	3.5	196	85	Hor.
935.992	41.3	46.0	4.7	14.2	23.7	3.4	351	57	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 %

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.

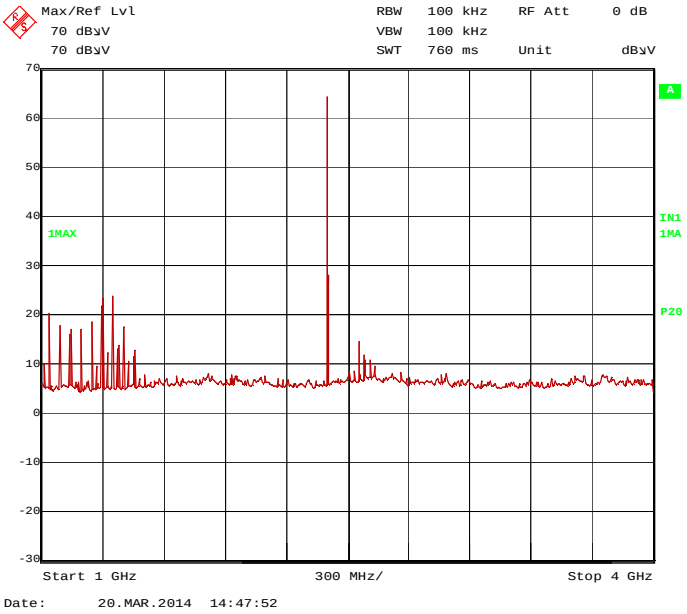
Cable guide: The cables of the EUTs are running vertically to the false floor. For detail information of test setup and the cable guide refer to the pictures in annex A of this test report.

Test record: All results are shown in the following.

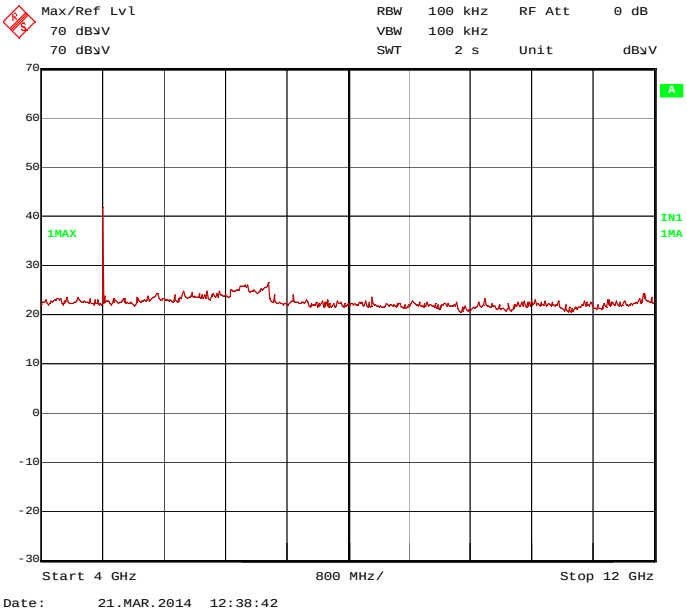
Supply voltage: During all measurements the Bluetooth module was supplied with 3.7 V_{DC} by battery.

Continuous transmission at 2402 MHz (DH5, hopping off)

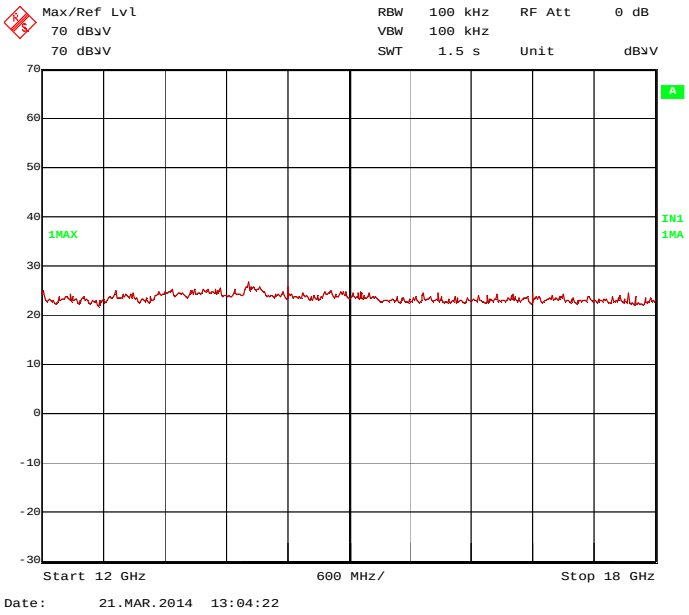
140269_1-4GHz_2402.wmf: Spurious emissions from 1 GHz to 4 GHz:



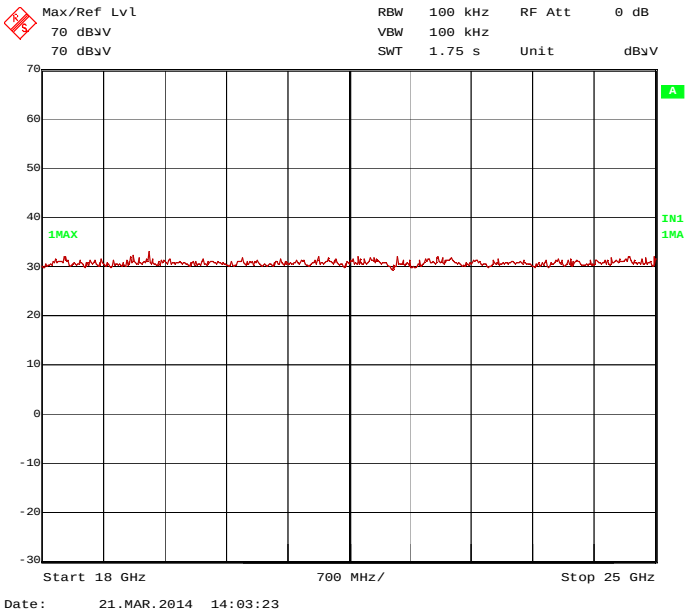
140269_4-12GHz_2402.wmf: Spurious emissions from 4 GHz to 12 GHz:



140269_12-18GHz_2402.wmf: Spurious emissions from 12 GHz to 18 GHz:

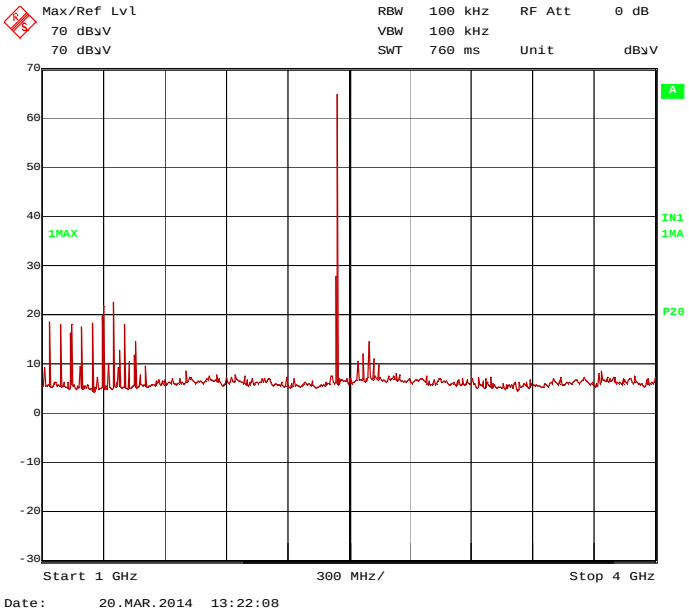


140269_18-25GHz_2402.wmf: Spurious emissions from 18 GHz to 25 GHz:

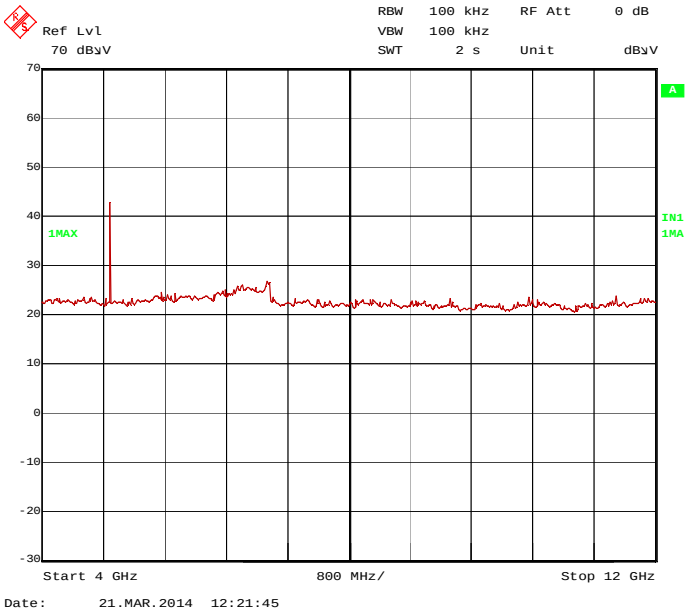


Continuous transmission at 2441 MHz (DH5, hopping off)

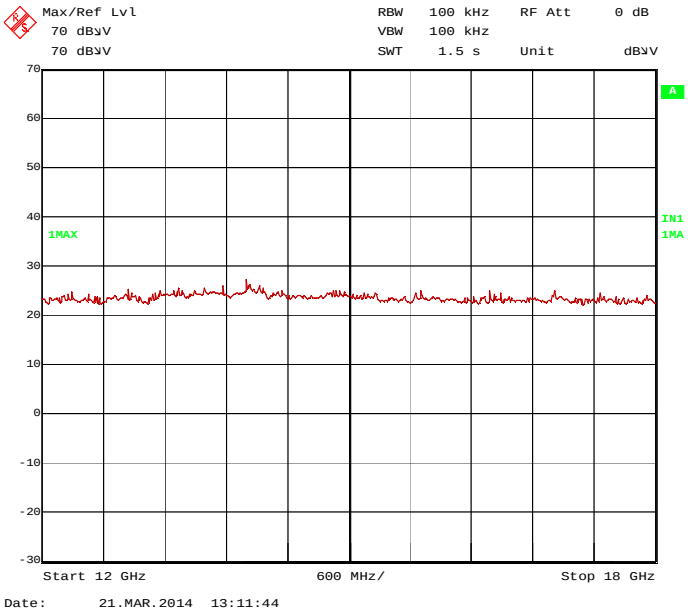
140269_1-4GHz_2441.wmf: Spurious emissions from 1 GHz to 4 GHz:



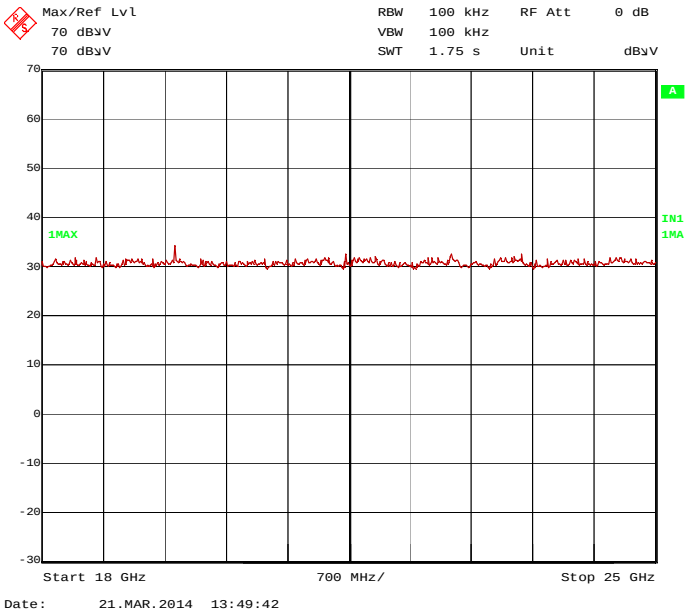
140269_4-12GHz_2441.wmf: Spurious emissions from 4 GHz to 12 GHz:



140269_12-18GHz_2441.wmf: Spurious emissions from 12 GHz to 18 GHz:

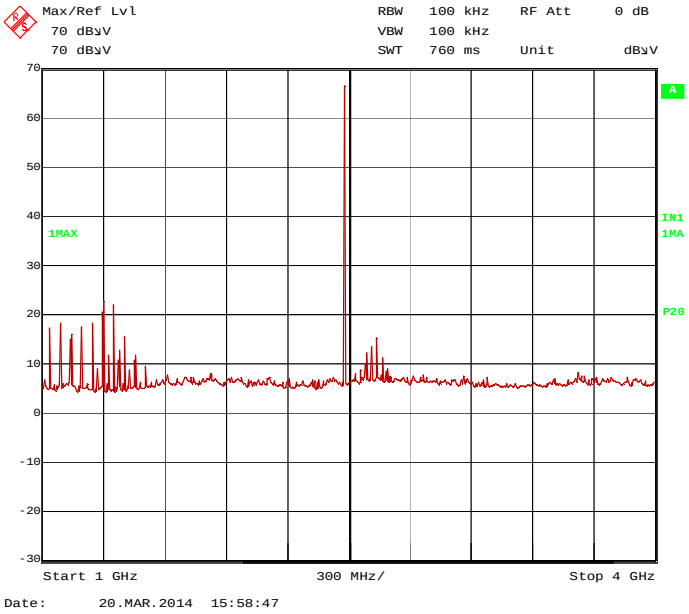


140269_18-25GHz_2441.wmf: Spurious emissions from 18 GHz to 25 GHz:

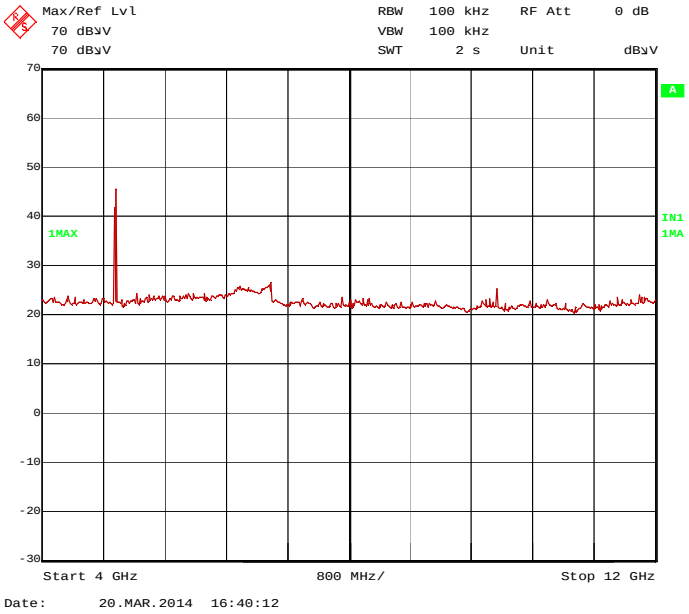


Continuous transmission at 2480 MHz (DH5, hopping off)

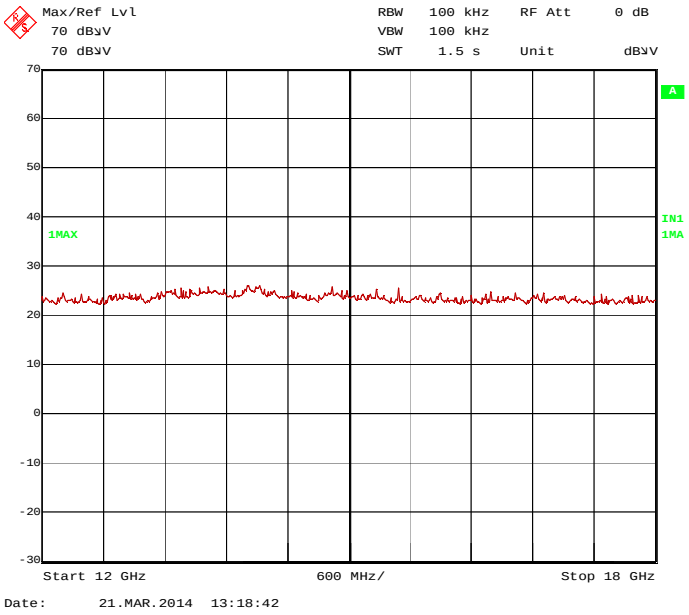
140269_1-4GHz_2480.wmf: Spurious emissions from 1 GHz to 4 GHz:



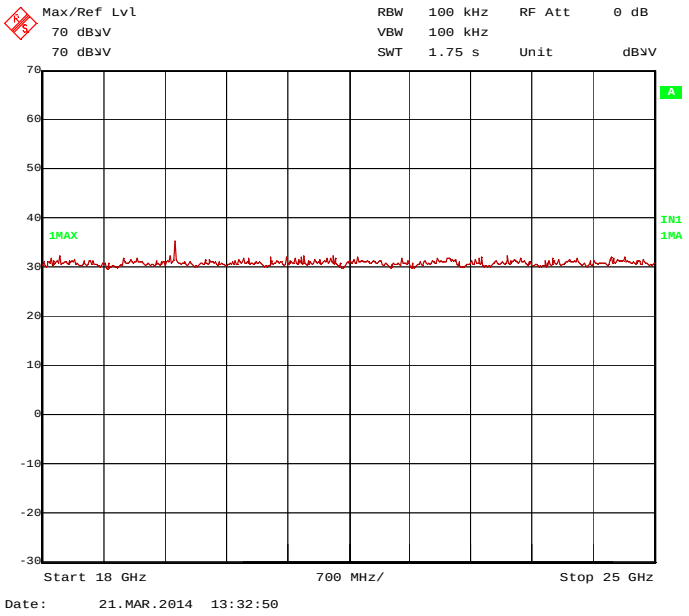
140269_4-12GHz_2480.wmf: Spurious emissions from 4 GHz to 12 GHz:



140269_12-18GHz_2480.wmf: Spurious emissions from 12 GHz to 18 GHz:



140269_18-25GHz_2480.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	20 °C	Relative humidity	32 %

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 dBµV/m	Limit dBµV/m	Margin dB	Readings dBµV	Antenna factor 1/m	Preamp dB	Cable loss dB	Height cm	Pol.	Restr. Band
2402	98.15	-	-	66.11	28.34	0	3.7	150	Vert.	-
1248	55.19	74	18.81	27.63	24.86	0	2.7	150	Hor.	No
1300	56.69	74	17.31	28.94	25.05	0	2.7	150	Hor.	Yes
1352	57.60	74	16.40	29.81	24.99	0	2.8	150	Hor.	Yes
2558	59.37	74	14.63	26.9	28.57	0	3.9	150	Vert.	No
4804	56.61	74	17.39	44.34	32.57	25.6	5.3	150	Vert.	Yes
Measurement uncertainty						+2.2 dB / -3.6 dB				

Result measured with the average detector:

Frequency MHz	Field strength dBµV/m	Limit dBµV/m	Margin dB	Readings dBµV	Antenna factor 1/m	Preamp dB	Cable loss dB	Height cm	Pol.	Restr. Band
2402	87.40	-	-	55.36	28.34	0	3.7	150	Vert.	-
1248	46.63	54	7.37	19.07	24.86	0	2.7	150	Hor.	No
1300	50.75	54	3.25	23.00	25.05	0	2.7	150	Hor.	Yes
1352	52.23	54	1.77	24.44	24.99	0	2.8	150	Hor.	Yes
2558	46.04	54	7.96	13.57	28.57	0	3.9	150	Vert.	No
4804	44.07	54	9.93	31.8	32.57	25.6	5.3	150	Vert.	Yes
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 dBµV/m	Limit dBµV/m	Margin dB	Readings dBµV	Antenna factor 1/m	Preamp dB	Cable loss dB	Height cm	Pol.	Restr. Band
2441	97.70	-	-	65.57	28.43	0	3.7	150	Vert.	-
1300	56.34	74	17.66	28.59	25.05	0	2.7	150	Hor.	Yes
1352	56.49	74	17.51	28.70	24.99	0	2.8	150	Hor.	Yes
1248	54.33	74	19.67	26.77	24.86	0	2.7	150	Hor.	No
2597	60.08	74	13.92	27.63	28.55	0	3.9	150	Vert.	No
4882	59.23	74	14.77	46.71	32.82	25.6	5.3	150	Vert.	Yes
19528	41.72	74	32.28	40.32	37.10	38.2	2.5	150	Hor.	Yes
Measurement uncertainty						+2.2 dB / -3.6 dB				

Result measured with the average detector:

Frequency MHz	Field strength dBµV/m	Limit dBµV/m	Margin dB	Readings dBµV	Antenna factor 1/m	Preamp dB	Cable loss dB	Height cm	Pol.	Restr. Band
2441	86.94	-	-	54.81	28.43	0	3.7	150	Vert.	-
1300	49.17	54	4.83	21.42	25.05	0	2.7	150	Hor.	Yes
1352	50.34	54	3.66	22.55	24.99	0	2.8	150	Hor.	Yes
1248	45.88	54	8.12	18.32	24.86	0	2.7	150	Hor.	No
2597	46.43	54	7.57	13.98	28.55	0	3.9	150	Vert.	No
4882	46.79	54	7.21	34.27	32.82	25.6	5.3	150	Vert.	Yes
19528	28.64	54	25.36	27.24	37.10	38.2	2.5	150	Vert.	Yes
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 dBµV/m	Limit dBµV/m	Margin dB	Readings dBµV	Antenna factor 1/m	Preamp dB	Cable loss dB	Height cm	Pol.	Restr. Band
2480	98.46	-	-	66.11	28.55	0	3.8	150	Vert.	-
1040	52.78	74	21.22	26.28	24.2	0	2.3	150	Hor.	Yes
1092	53.87	74	20.13	26.9	24.47	0	2.5	150	Hor.	Yes
1092	53.62	74	20.38	26.65	24.47	0	2.5	150	Vert.	Yes
1248	54.82	74	19.18	27.26	24.86	0	2.7	150	Hor.	No
1300	56.69	74	17.31	28.94	25.05	0	2.7	150	Hor.	Yes
1352	56.84	74	17.16	29.05	24.99	0	2.8	150	Hor.	Yes
2636	60.1	74	13.9	27.38	28.62	0	4.1	150	Vert.	No
4960	59.85	74	14.15	47.26	32.89	25.6	5.3	150	Vert.	Yes
9920	61.24	74	12.76	39.87	37.37	23.9	7.9	150	Vert.	No
Measurement uncertainty						+2.2 dB / -3.6 dB				

Result measured with the average detector:

Frequency MHz	Field strength dBµV/m	Limit dBµV/m	Margin dB	Readings dBµV	Antenna factor 1/m	Preamp dB	Cable loss dB	Height cm	Pol.	Restr. Band
2480	87.7	-	-	55.35	28.55	0	3.8	150	Vert.	-
1040	42.21	54	11.79	15.71	24.20	0	2.3	150	Vert.	Yes
1092	43.84	54	10.16	16.87	24.47	0	2.5	150	Hor.	Yes
1092	43.80	54	10.20	16.83	24.47	0	2.5	150	Hor.	Yes
1248	45.35	54	8.65	17.79	24.86	0	2.7	150	Hor.	No
1300	50.60	54	3.40	22.85	25.05	0	2.7	150	Hor.	Yes
1352	51.00	54	3.00	23.21	24.99	0	2.8	150	Hor.	Yes
2636	46.37	54	7.63	13.65	28.62	0	4.1	150	Vert.	No
4960	47.49	54	6.51	34.90	32.89	25.6	5.3	150	Vert.	Yes
9920	47.54	54	6.46	26.17	37.37	23.9	7.9	150	Hor.	No
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	WHKX4.0/18G-8SS	Wainwright Instruments	1	480587	Weekly verification (system cal.)	

7 REPORT HISTORY

Report Number	Date	Comment
F140269E2	10 June 2014	Document created

8 LIST OF ANNEXES

ANNEX A TEST SETUP PHOTOS 5 pages

140269_1.jpg	Test setup fully anechoic chamber
140269_2.jpg	Test setup fully anechoic chamber
140269_3.jpg	Test setup fully anechoic chamber
140269_4.jpg	Test setup fully anechoic chamber
140269_5.jpg	Test setup open area test site

ANNEX B EXTERNAL PHOTOS 3 pages

140269_6.jpg	Bluetooth Slide-in and battery, top view
140269_7.jpg	Bluetooth Slide-in, bottom view
140269_8.jpg	Bluetooth Slide-in connected with ancillary programming PCB

ANNEX C INTERNAL PHOTOS 4 pages

140269_9.jpg	Bluetooth module mounted on Slide-in PCB, top view
140269_10.jpg	Slide-in PCB, bottom view
140269_11.jpg	Bluetooth module, detail view with shielding and PCB antenna
140269_12.jpg	Bluetooth module, detail view, shielding removed