



We help ideas meet the real world

DELTA Test Report



Radio parameter test of BTB-1

Performed for GN Hearing A/S

DANAK-1910912

Project no.: A506915-1

Page 1 of 151

3 June 2010

DELTA
Venlighedsvej 4
2970 Hørsholm
Denmark

Tel. +45 72 19 40 00
Fax +45 72 19 40 01
www.delta.dk
VAT No. 12275110

Title Radio parameter test of BTB-1

Test object BTB-1

Report no. DANAK-1910912

Project no. A506915-1

Test period 19 - 28 May 2010

Client
GN Hearing A/S
Lautrupbjerg 7
2750 Ballerup
Denmark
Tel.: +45 45 75 11 11

Contact person
Vinnie Nørager
E-mail: vnoerager@gnresound.dk

Manufacturer GN Hearing A/S

Specifications
FCC CFR 47 Part 15, Subpart C
IC standard RSS-210, Issue 7:2007
IC standard RSS-Gen, Issue 2:2007

Results
The test object was found to be in compliance with the specifications, as listed in Section 1.

Test personnel
Claus Momme Thomsen
Jan Askov
Henrik Egeberg Nielsen



Date 3 June 2010

Project Manager



Jan Askov
Senior Specialist, Wireless
DELTA

Responsible



Claus Rømer Andersen
Team Manager, Wireless
DELTA

	Table of contents	Page
1.	Summary of tests	5
2.	Test objects and auxiliary equipment	7
2.1	Test objects	7
2.2	Auxiliary equipment	8
3.	General test conditions	9
3.1	Test setup during test	9
3.2	Radio specifications, receiver and transmitter for WT32	11
3.3	Radio specifications, receiver and transmitter for GN radio	12
3.4	Test sequence	13
4.	Test results	14
4.1	Antenna requirement	14
4.2	Measurement of radio frequency voltage on mains	16
4.3	Measurement of radiated emission, receiver, 30 MHz to 1000 MHz	21
4.4	Measurement of radiated emission, receiver, 1 GHz to 25 GHz	24
4.5	Measurement of radiated emission, 0.009 MHz to 30 MHz	26
4.6	Measurement of radiated emission, 30 MHz to 1000 MHz	43
4.7	Measurement of radiated emission, 1 GHz to 25 GHz	80
4.8	Measurement of 20 dB bandwidth and 6 dB bandwidth	105
4.9	Measurement of number of hopping channels	113
4.10	Measurement of carrier frequency separation	117
4.11	Measurement of time of occupancy (Dwell Time)	121
4.12	Measurement of peak output power, conducted	124
4.13	Measurement of spurious RF conducted emissions	132
4.14	Measurement of band-edge compliance of RF conducted emissions	140
4.15	Measurement of power spectral density	146
5.	National registrations and accreditations	149
5.1	DANAK Accreditation	149
5.2	FCC Registrations	149
5.3	VCCI Registrations	149
5.4	IC Registrations	150
6.	List of instruments	151

1. Summary of tests

Tests SRD	Test methods	Rule Section	Results
Antenna requirement	Visual inspection	15.203	Passed
Radio frequency voltage on mains	ANSI C63.4:2003	15.207	Passed
Radiated emission	ANSI C63.4:2003	15.209	Passed
20 dB bandwidth	DA 00-705 DTS guide:2005	15.247(a)(1) RSS-A8.1(b)	Passed
Number of hopping channels	DA 00-705 DTS guide:2005	15.247(a)(1) RSS-A8.1	Passed
Carrier frequency separation	DA 00-705 DTS guide:2005	15.247(a)(1) RSS-A8.1	Passed
Time of occupancy (Dwell Time)	DA 00-705 DTS guide:2005	15.247(a)(1) RSS-A8.1	Passed
6 dB bandwidth	DA 00-705 DTS guide:2005	15.247(a)(2) RSS-A8.2(a)	Passed
Peak output power, conducted	DA 00-705 DTS guide:2005	15.247(b)(1) RSS-A8.4	Passed
Spurious RF conducted emissions	DA 00-705 DTS guide:2005	15.247(d) RSS-A8.5	Passed
Band-edge compliance of RF conducted emissions	DA 00-705 DTS guide:2005	15.247(d) RSS-A8.5	Passed
Power spectral density	DTS guide:2005	15.247(e) RSS-A8.2(b)	Passed

Test Method: DTS guide: 2005. Full name is “Measurement of Digital Transmission System operating under section 15.247, March 23, 2005”.

Test Method: DA 00-705, Filing and Measurement Guidelines for Frequency Hopping Spread Spectrum System, Released March 30, 2000.

The given result is based on a shared risk principle with respect to the measurement uncertainty.



Conclusion

The test objects mentioned in this report meet the requirements of the standards stated below.

- FCC CFR 47 Part 15, Subpart C
Specific rule part 15.247
- IC Standards: RSS-210 Isusue 7:2007
- IC standars RSS-Gen, Issue 2:2007.

The test results relate only to the objects tested.



2. Test objects and auxiliary equipment

2.1 Test objects

Test object 2.1.1

Name of test object	BTB-1
Model / type	BTB-1
Part no.	BTB-1
Serial no.	B4-13
FCC ID	X26BTB-1
Manufacturer	GN Hearing A/S
Supply voltage	3.3 VDC internal rechargeable battery or external power supply
Software version	Spurious emission firmware Deltatest: 050510 CSR Bluesuite 3 – Bluetest 3
Cycle time	Duty Cycle app. 0.5 ms / 1.0 ms for GN radio

Test object 2.1.2

Name of test object	BTB-1
Model / type	BTB-1
Part no.	BTB-1
Serial no.	B4-14
FCC ID	X26BTB-1
Manufacturer	GN Hearing A/S
Supply voltage	3.3 VDC internal rechargeable battery or external power supply
Software version	Spurious emission firmware Deltatest: 050510 CSR Bluesuite 3 – Bluetest 3
Cycle time	Duty Cycle app. 0.5 ms / 1.0 ms fro GN radio

Test object 2.1.3

Name of test object	BTB-1
Model / type	BTB-1
Part no.	BTB-1
Serial no.	B4-12
FCC ID	-
Manufacturer	GN Hearing A/S
Supply voltage	3.3 VDC internal rechargeable battery or external power supply
Software version	Spurious emission firmware Deltatest: 050510 CSR Bluesuite 3 – Bluetest 3
Cycle time	Duty Cycle app. 0.5 ms / 1.0 ms for GN radio

2.2 Auxiliary equipment

Auxiliary equipment 2.2.1

Name of auxiliary equipment	Power supply for BTB
Model / type	FW7600/05
Part no.	PS-0001
Serial no.	0001
FCC ID	-
Manufacturer	FWHK
Supply voltage	100-240 VAC 50-60 Hz

3. General test conditions

3.1 Test setup during test

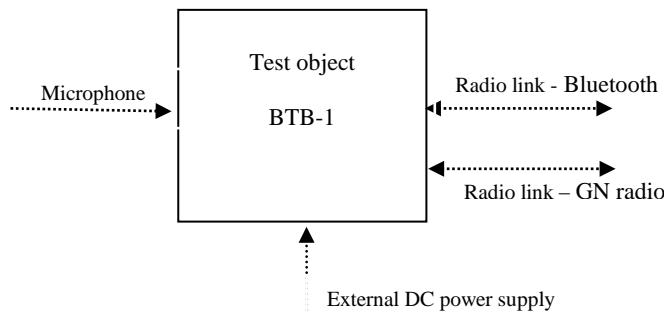


Figure 3.1.1 Block diagram of test object(s) with cables and auxiliary equipment.

All test objects were running special test software.

During test, the test objects were in continuous Tx mode (normal modulation, normal data packets with optimised repetition rate).

Tests were performed at three frequencies for the WT32 module:

- Low frequency: 2402 MHz
- Middle frequency: 2441 MHz
- High frequency: 2480 MHz.

Relevant test are repeated with the additional modulation using the pay load. Related packed types are e.g. 2DH5 ($\pi/4$ -DQPSK) and 3DH5 (8DPSK). Modulation scheme 8DPSK is preferred to test, because it is considered as the worst case.

Tests were performed at three frequencies for the GN radio:

- Low frequency: 2404 MHz
- Middle frequency: 2440 MHz
- High frequency: 2478 MHz.

During relevant tests the external DC power supply was used.

Intended use

Bluetooth Bridge (BTB-1) is used to stream audio from an audio source (Mobile phone or other Bluetooth device) to hearing aids.

Size of the test object:

60 x 35 x 20 mm.



3.2 Radio specifications, receiver and transmitter for WT32

The WT32 module is a Bluetooth 2.0 + EDR module.

The radio of the test object has the following specified RF parameters:

Antenna	:	PCB antenna, gain: -0.1 dBi
Operating frequency range	:	2402 MHZ to 2480 MHz
Transmit power	:	0 dBm
Power level	:	Yes – Bluetooth power table
No of channels	:	79
Bandwidth	:	1 MHz
Channel separation	:	1 MHz
Modulation	:	GFSK / $\pi/4$ -DQPSK / 8DPSK
Data rate	:	1 or 2 or 3 Mbit/s
Test data mode	:	Bluetooth - DH5 / 2DH5 / 3DH5
Max duty cycle	:	Bluetooth
Transmit mode	:	Yes
Receive mode	:	Yes
Standby mode	:	Yes
Power supply	:	Li-Ion battery, 3.7 VDC Charged from external power supply Specified max voltage: 5.5 VDC Specified min voltage: 4.4 VDC
Temperature category	:	-20 °C to +55 °C

During test, the test objects were running special test software.

The test sample is a Bluetooth device. It's pseudorandom hopping scheme, authentication, receiver parameter, synchronisation procedure and other parameter are determined by Bluetooth Core specification.

Relevant test are repeated with the additional modulation using the pay load. Related packed types are e.g. 2DH5 ($\pi/4$ -DQPSK) and 3DH5 (8DPSK). Modulation scheme 8DPSK is preferred to test, because it is considered as the worst case.

3.3 Radio specifications, receiver and transmitter for GN radio

The radio of the test object has the following specified RF parameters:

Antenna	:	PCB antenna, gain: +0.9 dBi
Operating frequency range	:	2404 MHZ to 2478 MHz
Transmit power	:	0 dBm
Power level	:	No
No of channels	:	20
Bandwidth	:	2 MHz
Channel separation	:	2 MHz
Modulation	:	GFSK
Data rate	:	2 Mbit/s
Max duty cycle	:	10 % during normal mode
Transmit mode	:	Yes
Receive mode	:	Yes
Standby mode	:	Yes
Power supply	:	Li-Ion battery, 3.7 VDC Charged from external power supply Specified max voltage: 5.5 VDC Specified min voltage: 4.4 VDC
Temperature category	:	-20 °C to +55 °C

During test, the test objects were running special test software.

3.4 Test sequence

The tests described in this test report were performed in the following sequence:

1. Measurement of radiated emission, 30 MHz to 1000 MHz
2. Measurement of radiated emission, 1 GHz to 25 GHz
3. Measurement of radiated emission, 0.009 MHz to 30MHz
4. Measurement of radio frequency voltage on mains
5. Measurement of radiated emission, receiver, 30 MHz to 1000 MHz
6. Measurement of radiated emission, receiver, 1 GHz to 25 GHz
7. Measurement of 20 dB bandwidth and 6 dB bandwidth
8. Measurement of peak output power, conducted
9. Measurement of spurious RF conducted emissions
10. Measurement of band-edge compliance of RF conducted emissions
11. Measurement of power spectral density
12. Measurement of number of hopping channels
13. Measurement of carrier frequency separation
14. Measurement of time of occupancy (Dwell Time)
15. Antenna requirement.

4. Test results

4.1 Antenna requirement

Test object	BTB-1	Sheet	ANT-1
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	28 May 2010
Client	GN Hearing A/S	Initials	JAS
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.203 RSS-Gen, Section 7.1.4		

Test method	Visual inspection
-------------	-------------------

Evaluation criteria

Section 15.203 of the FCC rules and 7.1.4 of RSS-Gen state that the subject device must meet at least one of the following criteria:

- (a) Antenna must be permanently attached to the unit.
- (b) Antenna must use a unique type of connector to attach to the unit.
- (c) Unit must be professionally installed. Installer shall be responsible for verifying that the correct antenna is employed with the unit.

Evaluation result

The BTB-1 has two permanently attached antenna:

- The WT32 has a Chip antenna
- The GN radio has a PCB antenna – Planar Inverted F antenna.

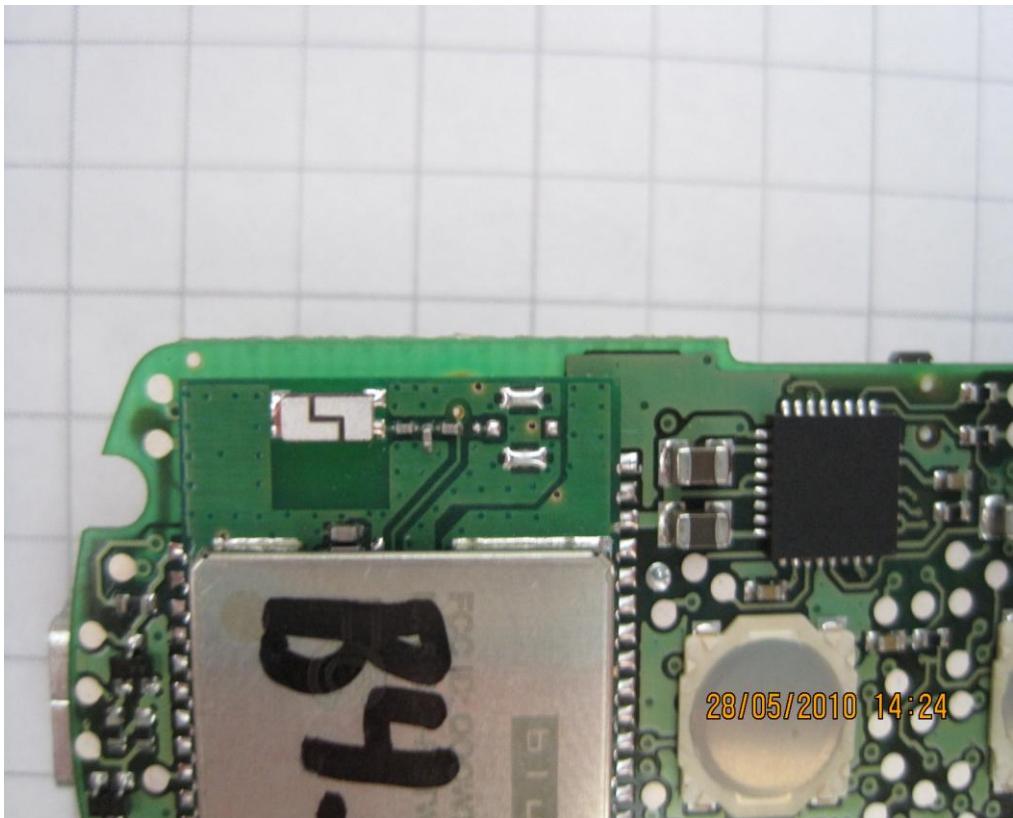


Photo 4.1.1 Test setup regarding Antenna requirement – Chip antenna.

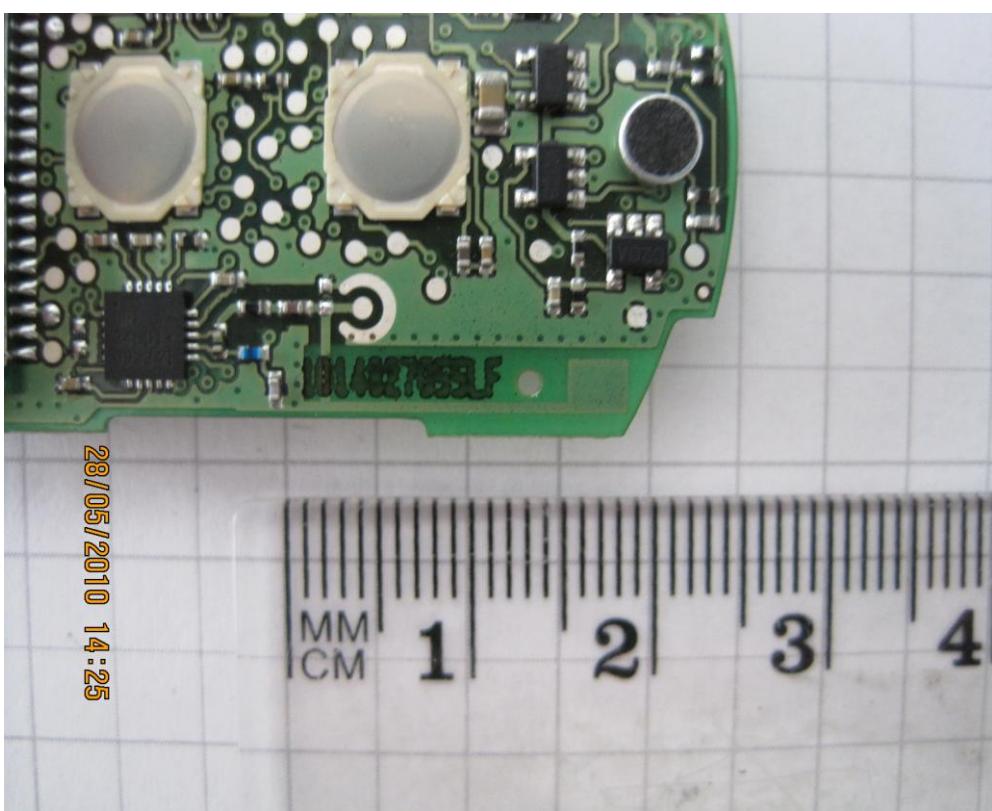
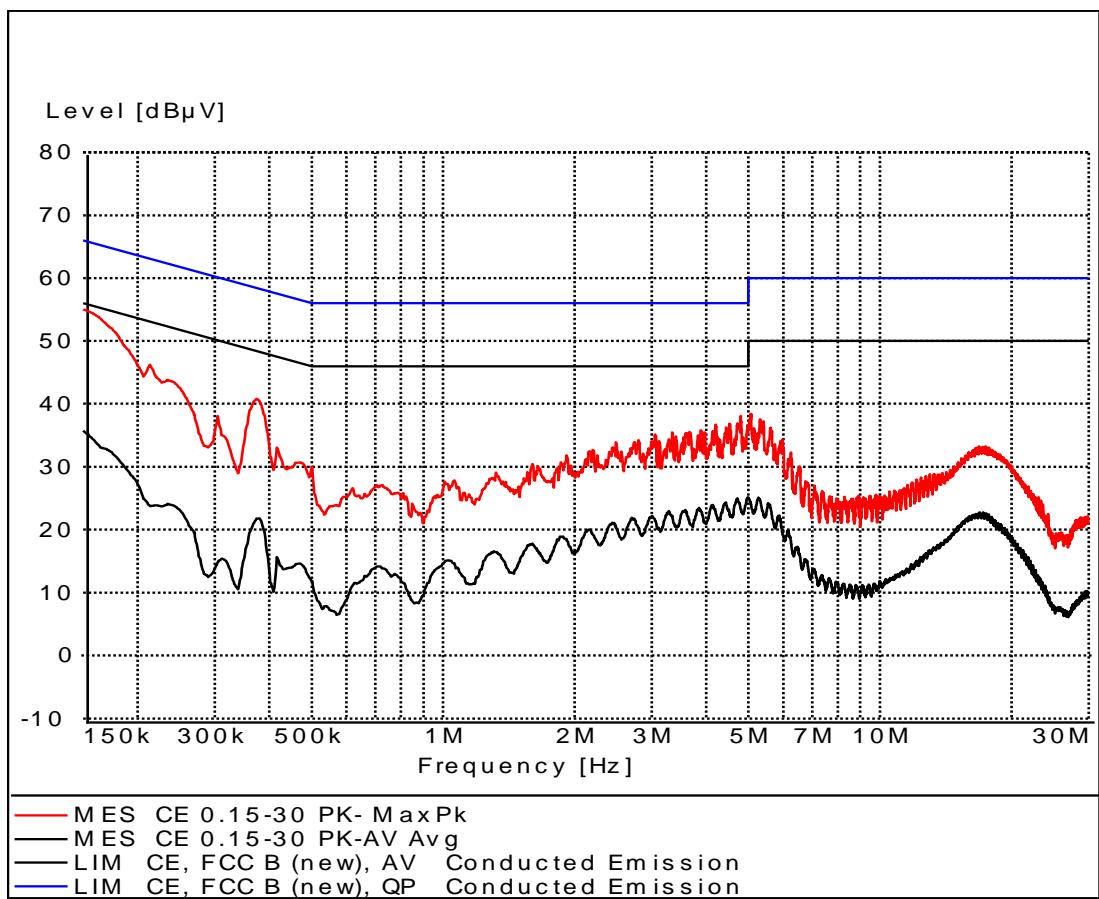


Photo 4.1.2 Test setup regarding Antenna requirement – PCB antenna

4.2 Measurement of radio frequency voltage on mains

Test object	BTB-1	Sheet	CE-1
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-13	Date	19 May 2010
Client	GN Hearing A/S	Initials	HEN
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.207 and IC RSS-Gen 7.2.2	Frequency	0.15-30 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Artificial mains network: 50 Ω, 50 µH	Humidity	55 % RH
Detector	Peak and average	Bandwidth	10 kHz
Test equipm.	EMI room Hørsholm 29301 29680 49600 29861	Uncertainty	4.9 dB

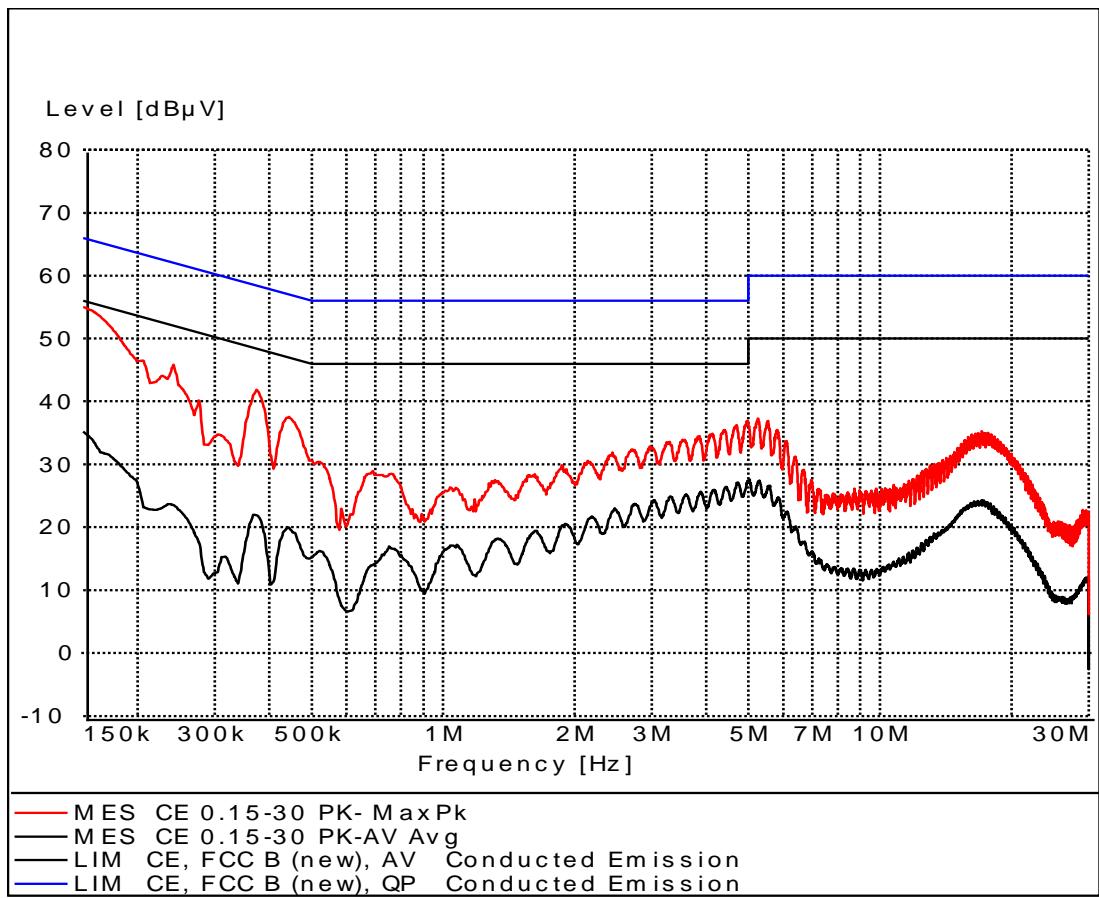


Line under test	Neutral
Test result	The measured voltages were below the limit
Comments	Mains voltage: 120 VAC During test an artificial hand was not applied to the test object.
	WT32: Modulation: GFSK Tx: Hop Mid
	GN: Modulation GFSK Tx: Hop Low High



Test object	BTB-1	Sheet	CE-2
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-13	Date	19 May 2010
Client	GN Hearing A/S	Initials	HEN
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.207 and IC RSS-Gen 7.2.2	Frequency	0.15-30 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Artificial mains network: 50 Ω, 50 µH	Humidity	55 % RH
Detector	Peak and average	Bandwidth	10 kHz
Test equipm.	EMI room Hørsholm 29301 29680 49600 29861	Uncertainty	4.9 dB



Line under test	Line
Test result	The measured voltages were below the limit
Compliant	Yes
Comments	Mains voltage: 120 VAC During test an artificial hand was not applied to the test object. WT32: Modulation: GFSK Tx: Hop Mid GN: Modulation GFSK Tx: Hop Low High

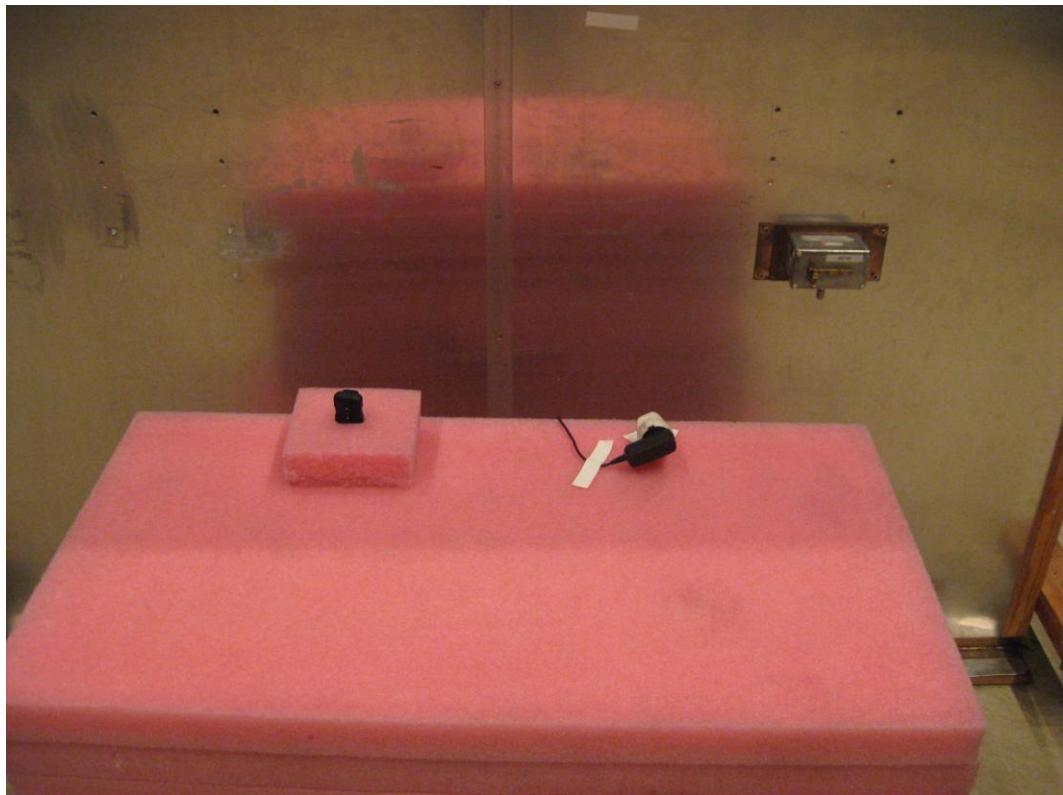


Photo 4.2.1 Test setup regarding measurement of radio frequency voltage on mains.

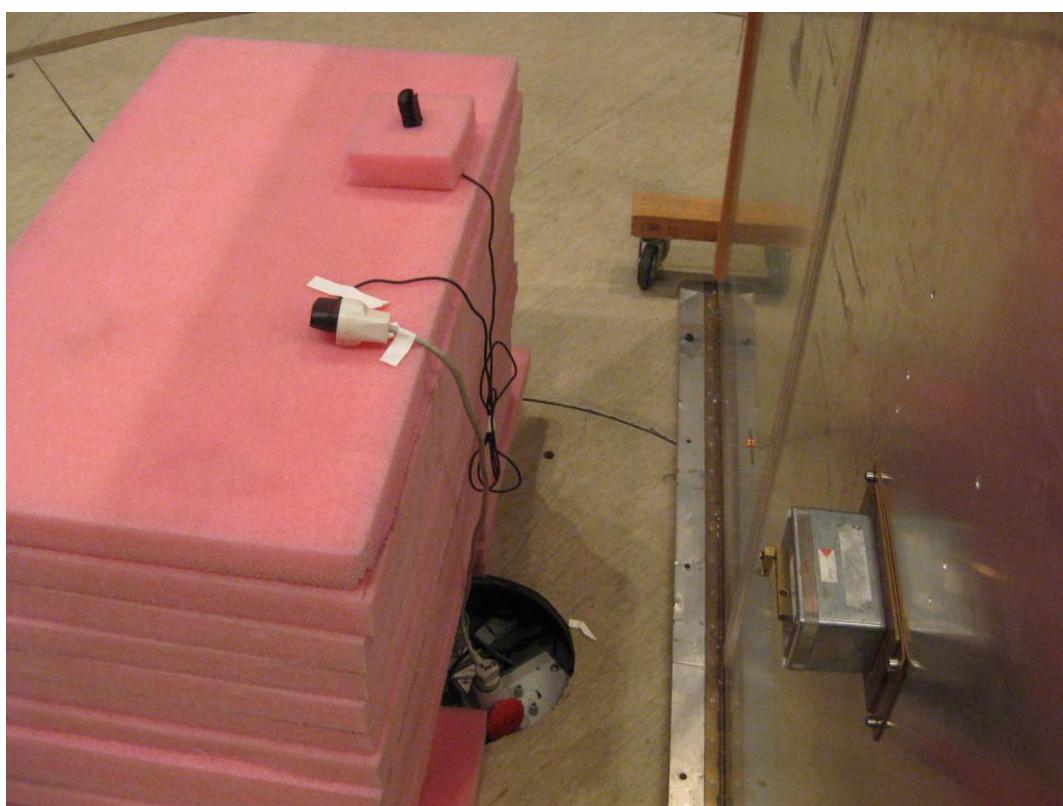
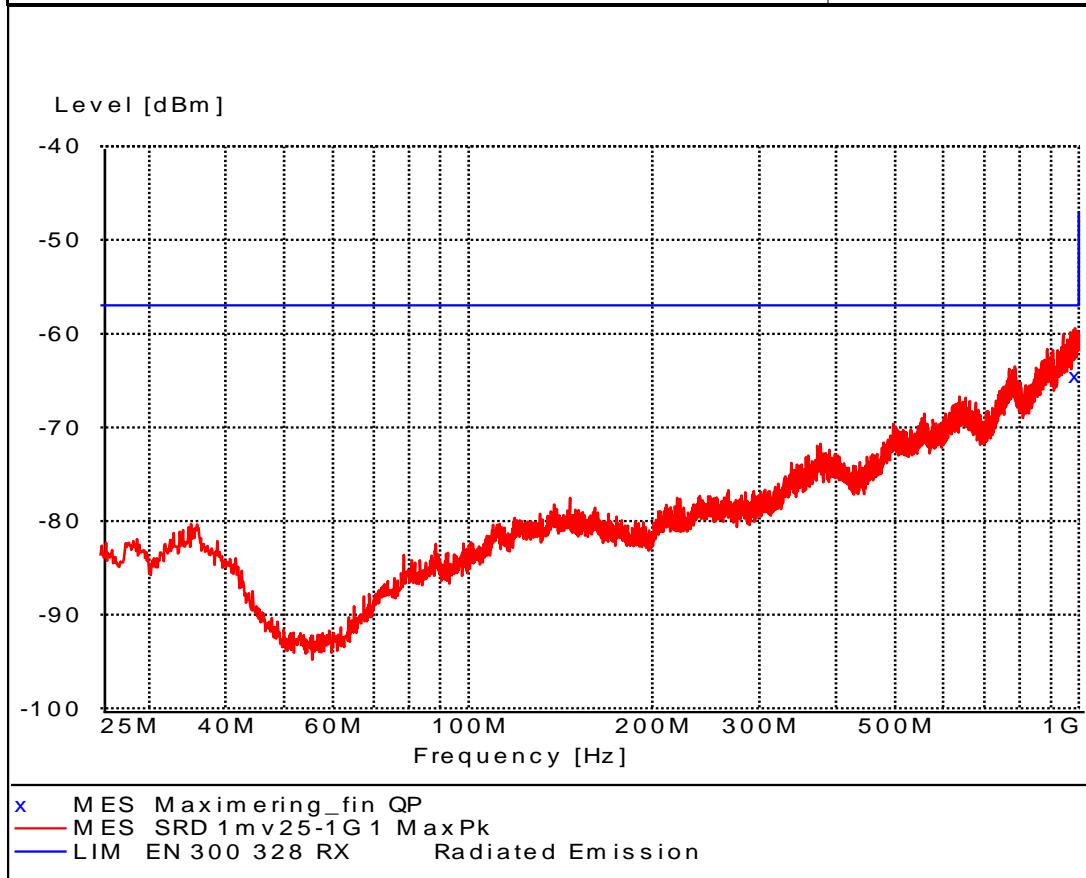


Photo 4.2.2 Test setup regarding measurement of radio frequency voltage on mains.

4.3 Measurement of radiated emission, receiver, 30 MHz to 1000 MHz

Test object	BTB-1	Sheet	RE_Spur-2
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	20 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	IC standard RSS-Gen 7.2.3	Frequency	30-1000 MHz

Test method	EN 300 328	Temperature	24 °C
Characteristics	Pre-scan, Antenna at 10 m, 1 m height, vert. pol.	Humidity	56 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB

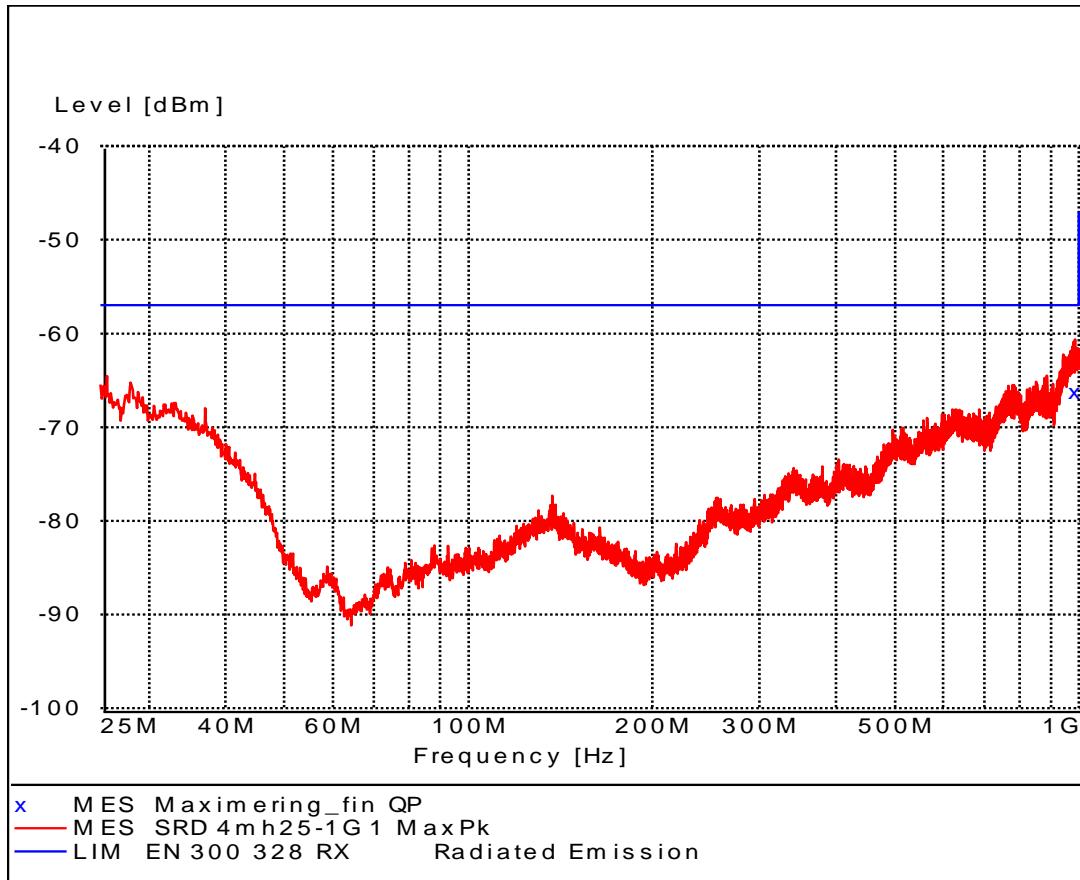


Comments

Continuous Rx - normal modulation -
 Hopping between lowest and highest operating freq.

Test object	BTB-1	Sheet	RE_Spur-3
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	20 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	IC standard RSS-Gen 7.2.3	Frequency	30-1000 MHz

Test method	EN 300 328	Temperature	24 °C
Characteristics	Pre-scan, Antenna at 10 m, 4 m height, hor. pol.	Humidity	56 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

Continuous Rx - normal modulation -
Hopping between lowest and highest operating freq.



Test object	BTB-1	Sheet	RE_Spur-4
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	20 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	IC standard RSS-Gen 7.2.3	Frequency	30-1000 MHz

Test method	EN 300 328	Temperature	24 °C
Characteristics	Peak search ant. at 10 m, height: 1-4 m, v/h pol.	Humidity	56 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB

Frequency MHz	Level dBm	Transd dB	Limit dBm	Margin dB	Height cm	Azimuth deg	Polarisation
986.700000	-66.20	-78.8	-57.0	9.2	340.0	253.00	HOR
985.800000	-64.50	-77.2	-57.0	7.5	309.0	230.00	VER

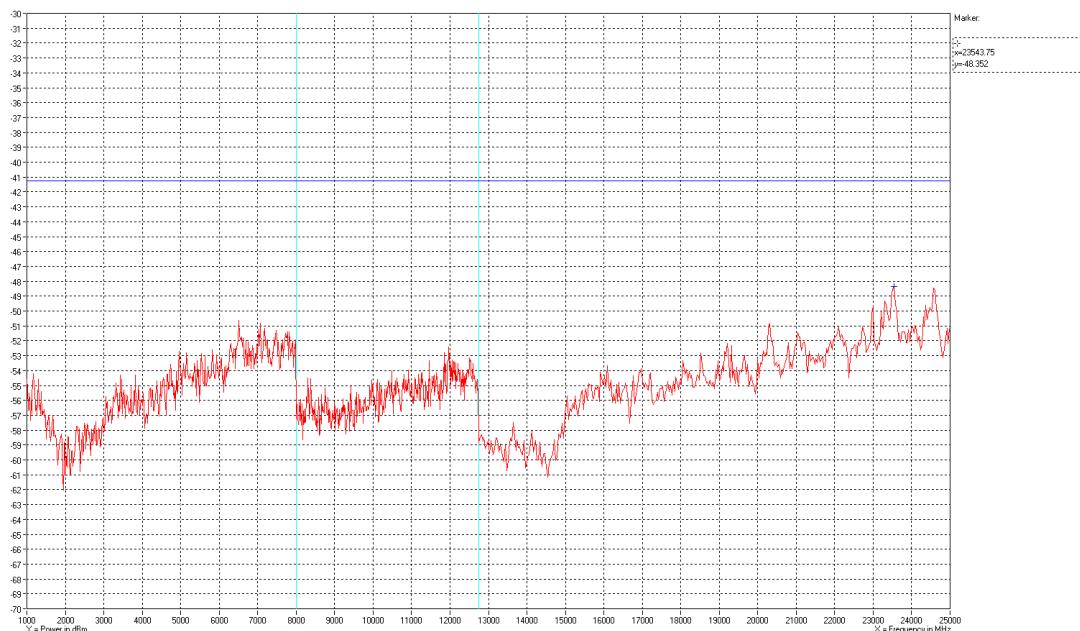
Test result	The measured field strengths are below the limit
Polarization	Horizontal and Vertical
Test Port	Enclosure
Test frequency	2402 MHz / 2480 MHz: WT32 module 2404 MHz / 2478 MHz: GN radio
Test mode	Continuous Rx - normal modulation - Hopping between lowest and highest operating freq.
Condition	Normal
Compliant	Yes
Comments	Final maximal measurements by variation of turntable azimuth, antenna height, and antenna polarisation.
	The radiated substitution test method of EN 300 328 was used to demonstrate compliance with the limits for RSS-Gen, Section 7.2.3.



4.4 Measurement of radiated emission, receiver, 1 GHz to 25 GHz

Test object	BTB-1	Sheet	RE_Spur-5
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	20 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	IC standard RSS-Gen 7.2.3	Frequency	1 GHz–25GHz

Test method	En 300 328	Temperature	24 °C
Characteristics	Complete search, Antenna distance 3 m.	Humidity	56 % RH
Detector	Peak for 1GHz to 12.75 GHz	Bandwidth	1 MHz
Detector	Peak for 12.75GHz to 18 GHz	Bandwidth	300 kHz
Detector	Peak for 18GHz to 25 GHz	Bandwidth	100 kHz
Test equipm.	EMI room Hørsholm 49183 49299 29678 49600 49624 49625	Uncertainty	4.9 dB



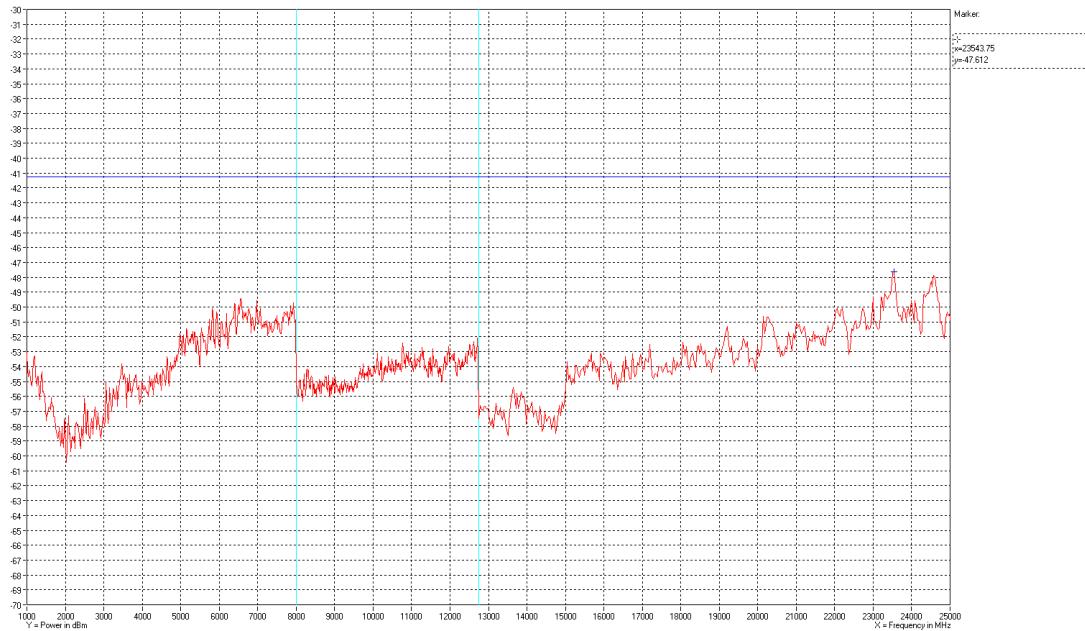
Polarization

Vertical peak measurements

Comments

None





Polarization

Horizontal peak measurements

Comments

None

Test result

The measured field strengths are below the limit

Test Port

Enclosure

Test frequency

2402 MHz / 2480 MHz: WT32 module
2404 MHz / 2478 MHz: GN radio

Test mode

Continuous Rx - normal modulation -
Hopping between lowest and highest operating freq.

Condition

Normal

Compliant

Yes

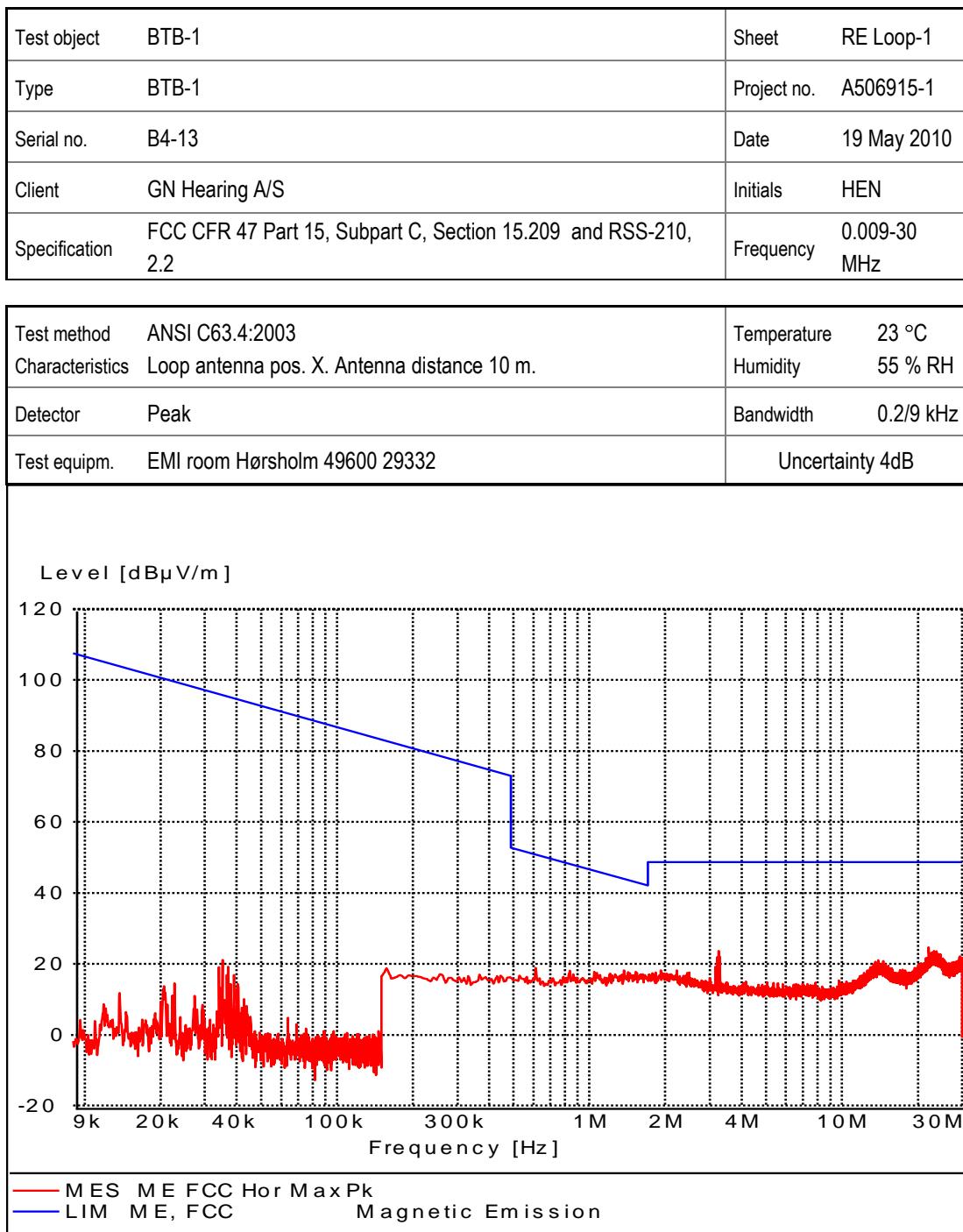
Comments

Final maximal measurements by variation of turntable azimuth, antenna height, and antenna polarisation.

The radiated substitution test method of EN 300 328 was used to demonstrate compliance with the limits for RSS-Gen, Section 7.2.3.



4.5 Measurement of radiated emission, 0.009 MHz to 30 MHz

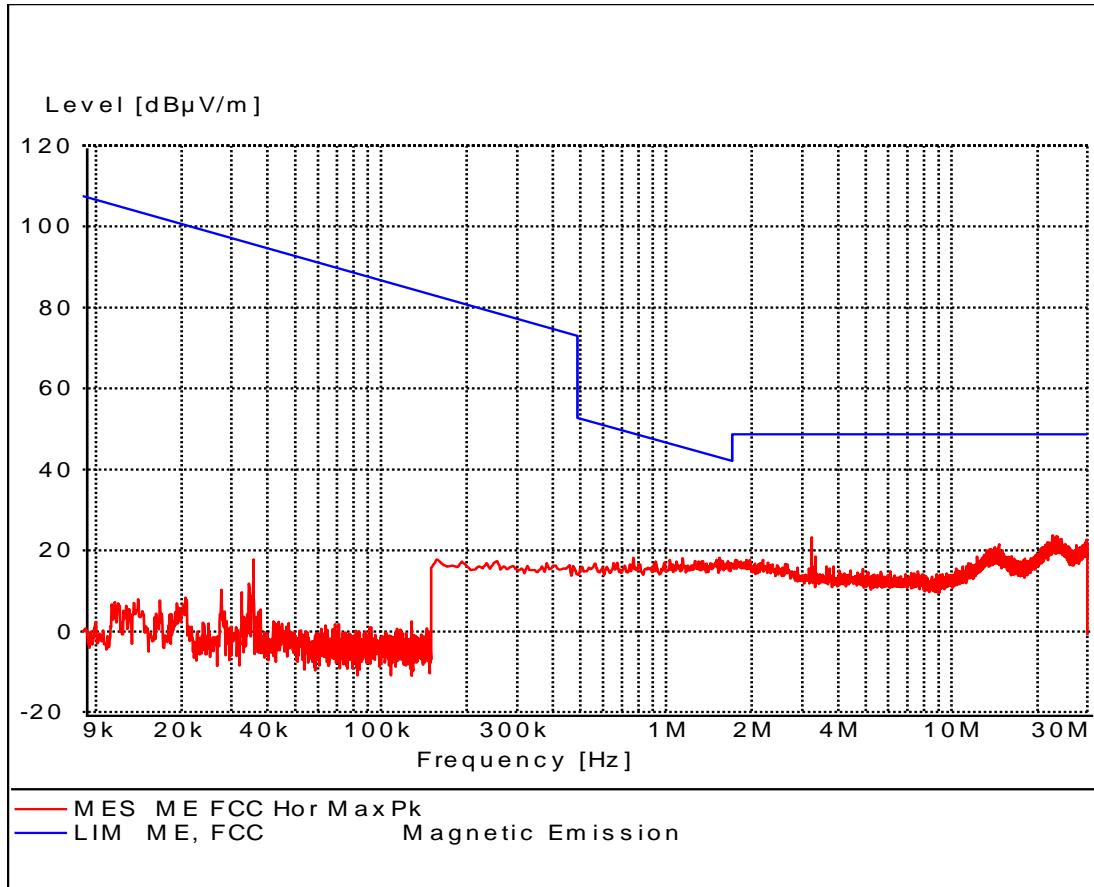


Comments Modulation: GFSK
 Tx: Mid
 The limit has been extra polated to 10 m using an extra
 polation factor of 40 dB/decade as specified in §
 15.31(f)(2). $L_2 = L_1 + 40 \log_{10} (D_1/D_2)$.



Test object	BTB-1	Sheet	RE Loop-2
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-13	Date	19 May 2010
Client	GN Hearing A/S	Initials	HEN
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	0.009-30 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Loop antenna pos. Y. Antenna distance 10 m.	Humidity	55 % RH
Detector	Peak	Bandwidth	0.2/9 kHz
Test equipm.	EMI room Hørsholm 49600 29332	Uncertainty	4dB

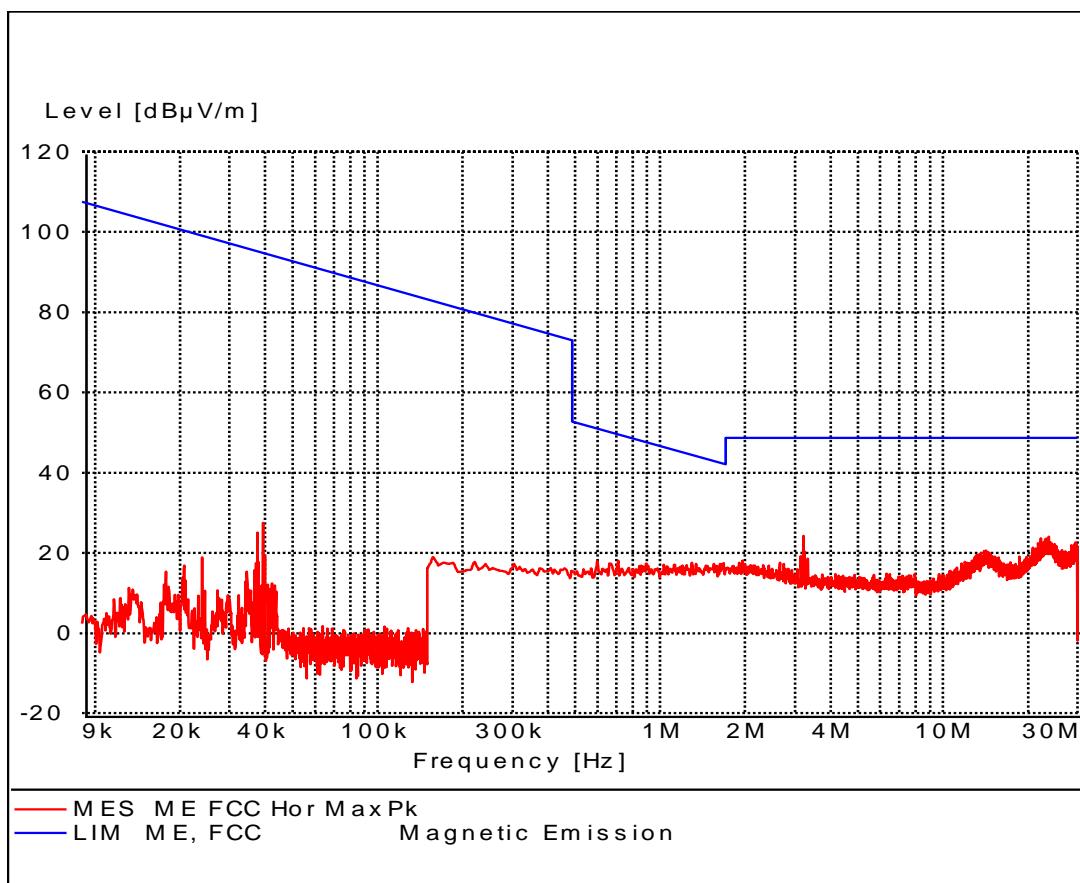


Comments Modulation: GFSK
 Tx: Mid
 The limit has been extrapolated to 10 m using an extrapolation factor of 40 dB/decade as specified in § 15.31(f)(2). $L_2 = L_1 + 40 \log_{10} (D_1/D_2)$.



Test object	BTB-1	Sheet	RE Loop-3
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-13	Date	19 May 2010
Client	GN Hearing A/S	Initials	HEN
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	0.009-30 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Loop antenna pos. Z. Antenna distance 10 m.	Humidity	55 % RH
Detector	Peak	Bandwidth	0.2/9 kHz
Test equipm.	EMI room Hørsholm 49600 29332	Uncertainty	4dB



Comments

Modulation: GFSK

Tx: Mid

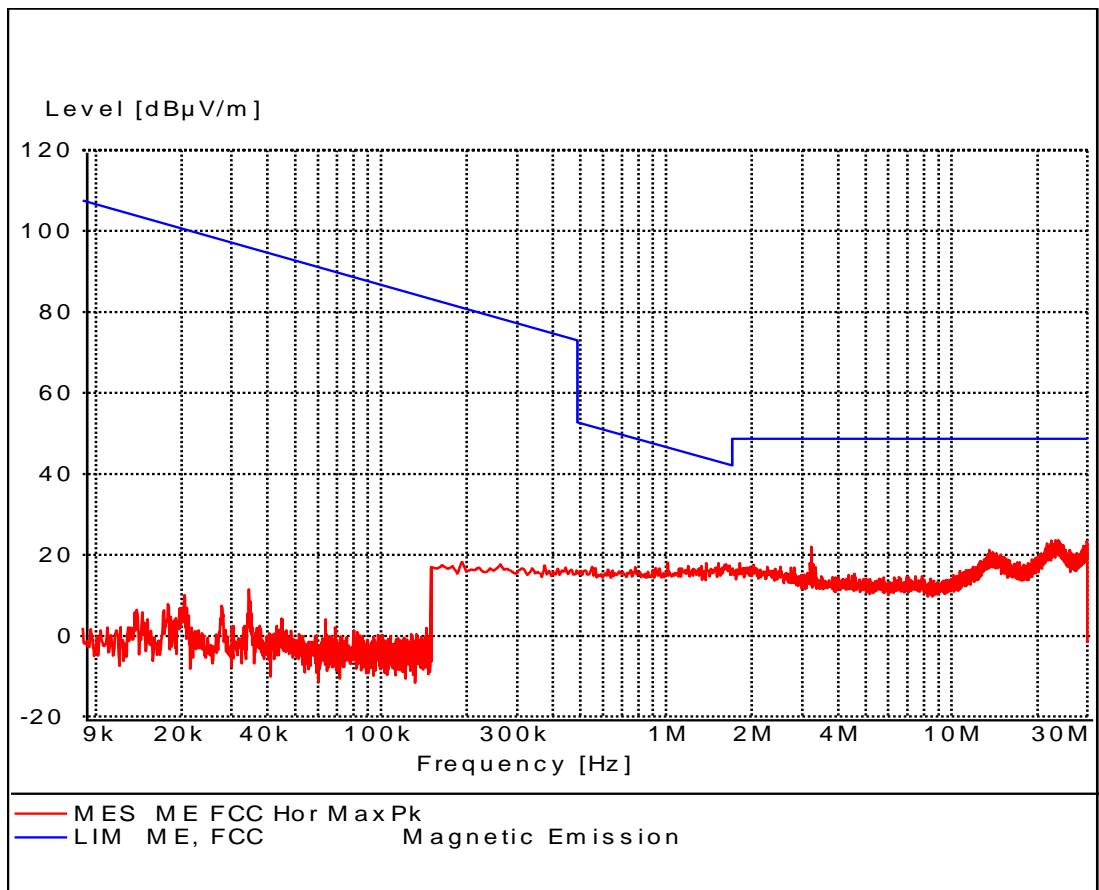
The limit has been extra polated to 10 m using an extra polation factor of 40 dB/decade as specified in § 15.31(f)(2). $L_2 = L_1 + 40 \log_{10} (D_1/D_2)$.



Test result	The measured field strengths are more than 20 dB below the limit
Compliant	Yes
Comments	Modulation: GFSK Pre-measurement performed in a semi anechoic room

Test object	BTB-1	Sheet	RE Loop-4
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	19 May 2010
Client	GN Hearing A/S	Initials	HEN
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	0.009-30 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Loop antenna pos. X. Antenna distance 10 m.	Humidity	55 % RH
Detector	Peak	Bandwidth	02./9 kHz
Test equipm.	EMI room Hørsholm 49600 29332	Uncertainty	4dB



Comments

Modulation: Pi/4

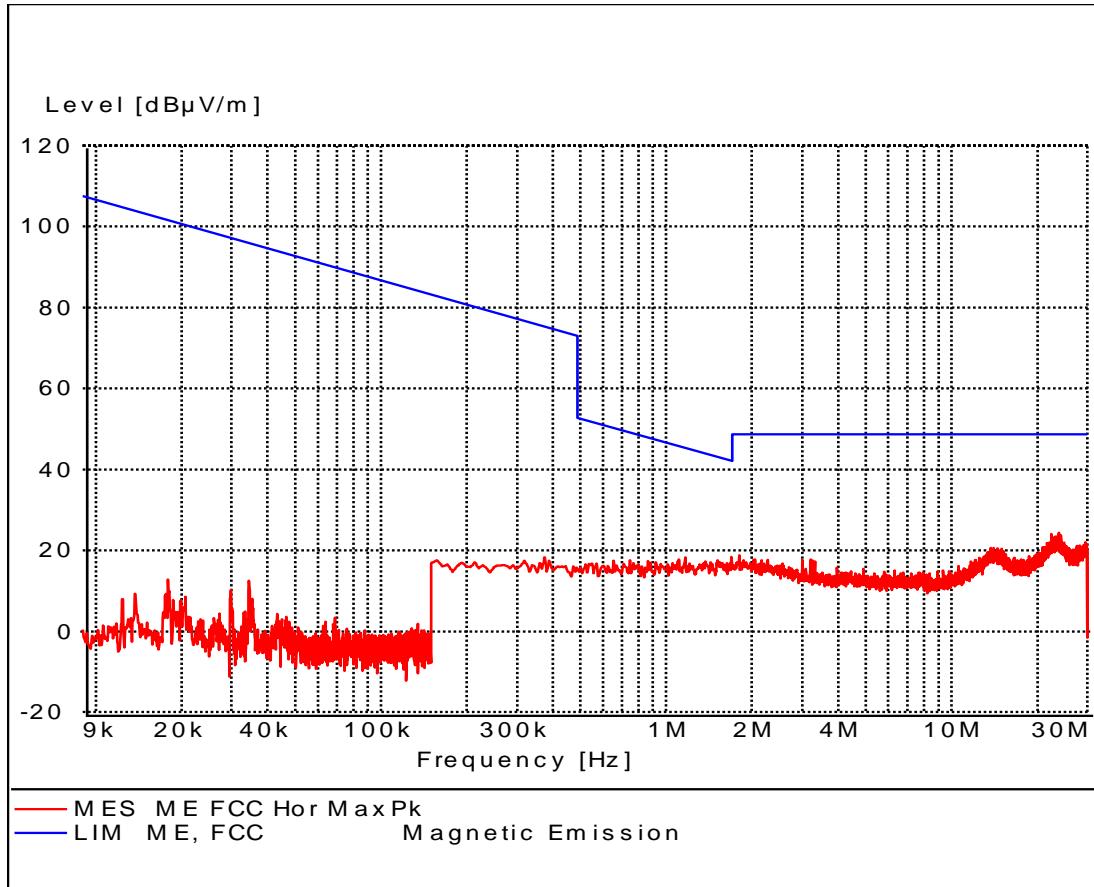
Tx: Mid

The limit has been extra polated to 10 m using an extra polation factor of 40 dB/decade as specified in § 15.31(f)(2). $L_2 = L_1 + 40 \log_{10} (D_1/D_2)$.



Test object	BTB-1	Sheet	RE Loop-5
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	19 May 2010
Client	GN Hearing A/S	Initials	HEN
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	0.009-30 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Loop antenna pos. Y. Antenna distance 10 m.	Humidity	55 % RH
Detector	Peak	Bandwidth	0.2/9 kHz
Test equipm.	EMI room Hørsholm 49600 29332	Uncertainty	4dB

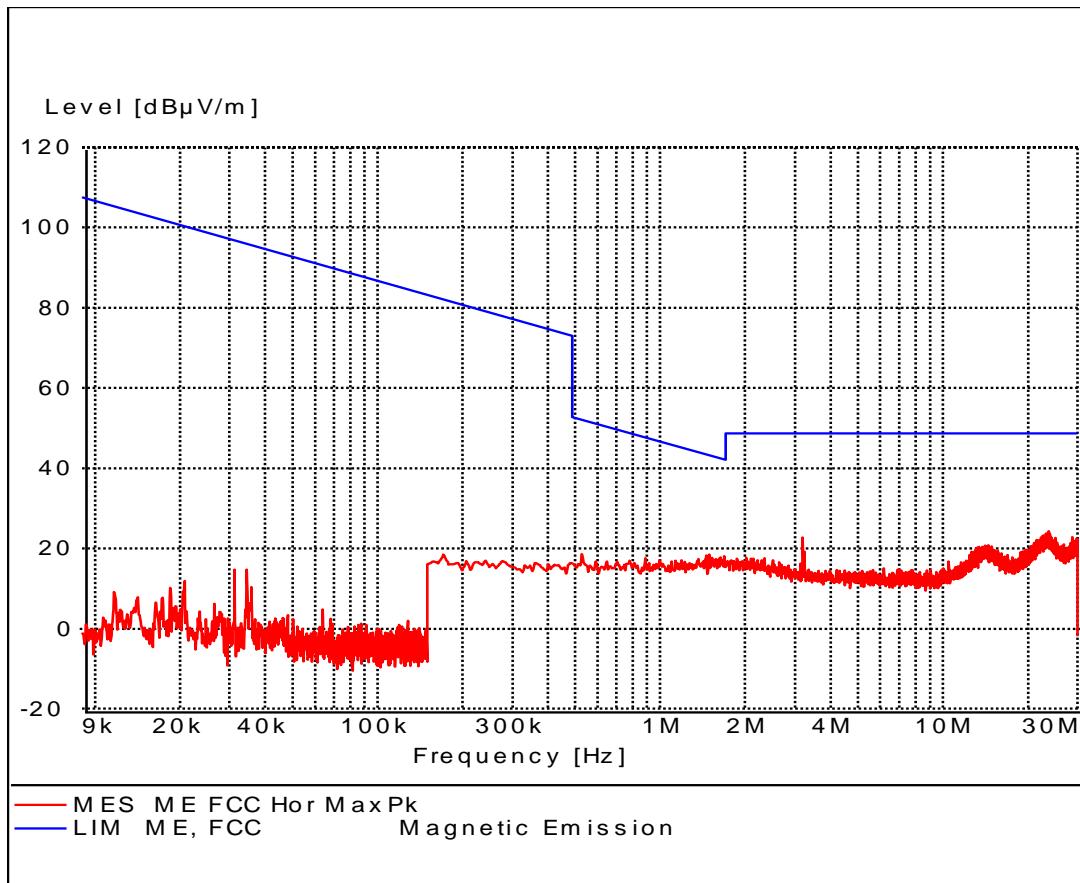


Comments Modulation: Pi/4
 Tx: Mid
 The limit has been extrapolated to 10 m using an extrapolation factor of 40 dB/decade as specified in § 15.31(f)(2). $L_2 = L_1 + 40 \log_{10} (D_1/D_2)$.



Test object	BTB-1	Sheet	RE Loop-6
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	19 May 2010
Client	GN Hearing A/S	Initials	HEN
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	0.009-30 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Loop antenna pos.Z. Antenna distance 10 m.	Humidity	55 % RH
Detector	Peak	Bandwidth	0.2/9 kHz
Test equipm.	EMI room Hørsholm 49600 29332	Uncertainty	4dB



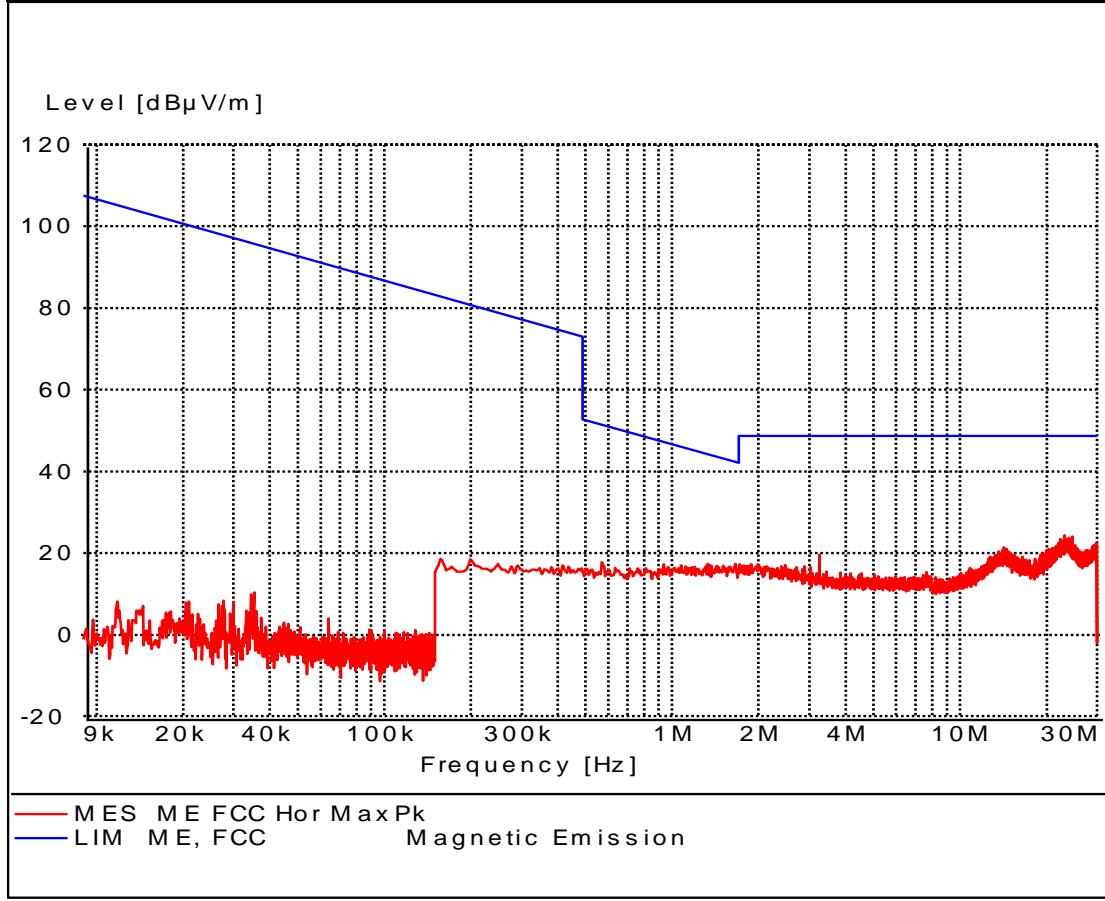
Comments Modulation: Pi/4
 Tx: Mid
 The limit has been extrapolated to 10 m using an extrapolation factor of 40 dB/decade as specified in § 15.31(f)(2). $L_2 = L_1 + 40 \log_{10} (D_1/D_2)$.



Test result	The measured field strengths are more than 20 dB below the limit
Compliant	Yes
Comments	Modulation: Pi/4 Pre-measurement performed in a semi anechoic room.

Test object	BTB-1	Sheet	RE Loop-7
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-13	Date	19 May 2010
Client	GN Hearing A/S	Initials	HEN
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	0.009-30 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Loop antenna pos. X. Antenna distance 10 m.	Humidity	55 % RH
Detector	Peak	Bandwidth	0.2/9 kHz
Test equipm.	EMI room Hørsholm 49600 29332	Uncertainty	4dB

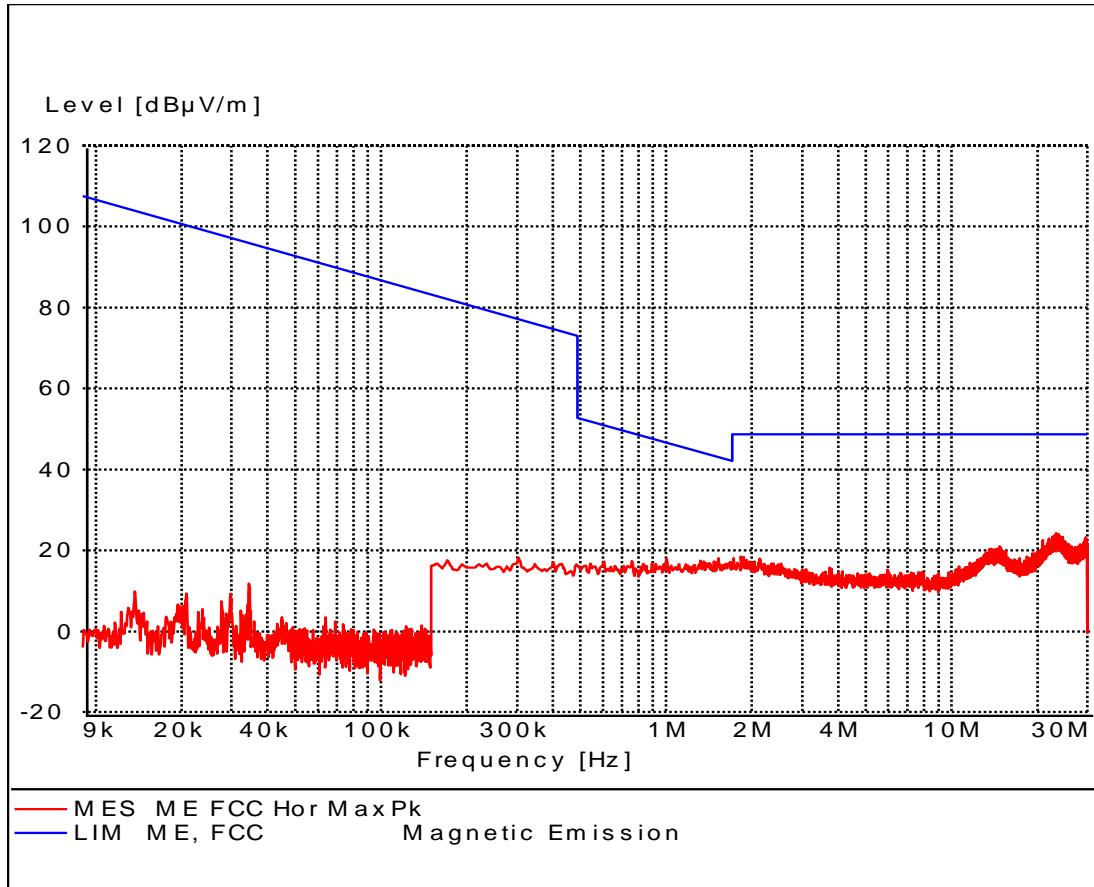


Comments Modulation: 8QPSK
 Tx: Mid
 The limit has been extrapolated to 10 m using an extrapolation factor of 40 dB/decade as specified in § 15.31(f)(2). $L_2 = L_1 + 40 \log_{10} (D_1/D_2)$.



Test object	BTB-1	Sheet	RE Loop-8
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-13	Date	19 May 2010
Client	GN Hearing A/S	Initials	HEN
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	0.009-30 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Loop antenna pos. Y. Antenna distance 10 m.	Humidity	55 % RH
Detector	Peak	Bandwidth	0.2/9 kHz
Test equipm.	EMI room Hørsholm 49600 29332	Uncertainty	4dB

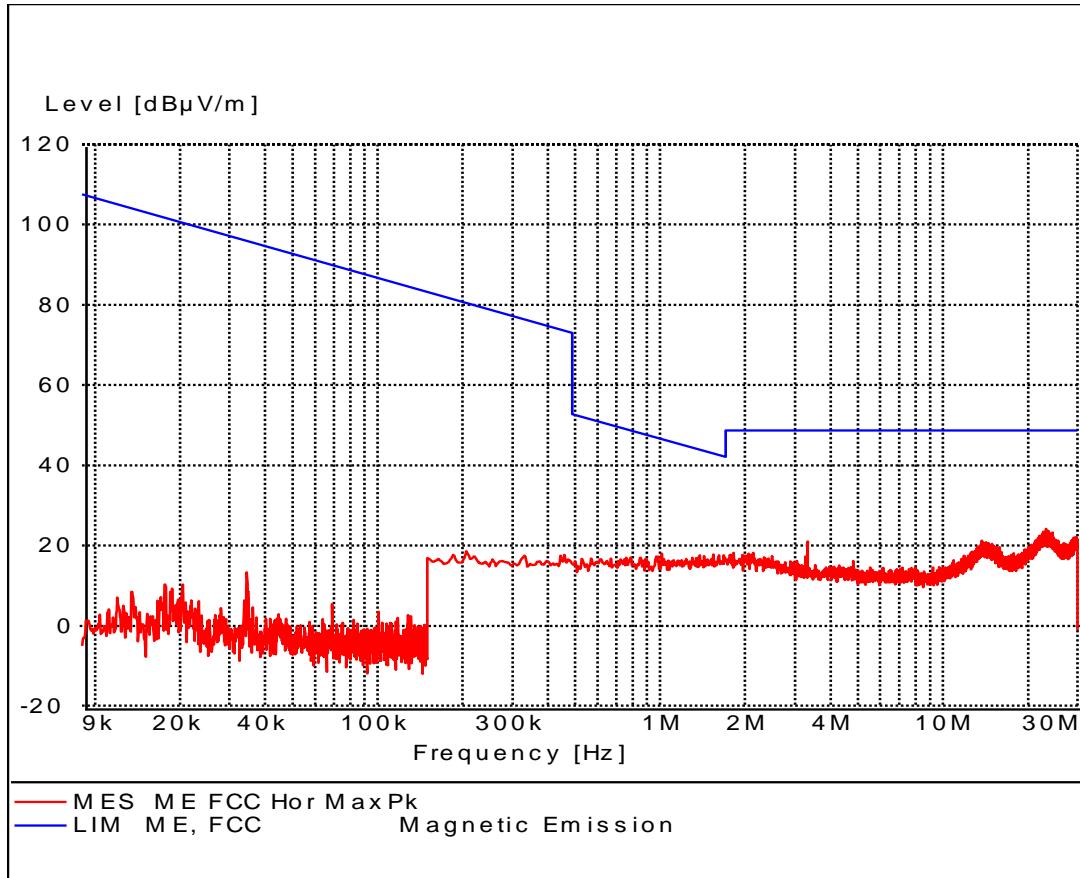


Comments Modulation: 8QPSK
 Tx: Mid
 The limit has been extrapolated to 10 m using an extrapolation factor of 40 dB/decade as specified in § 15.31(f)(2). $L_2 = L_1 + 40 \log_{10} (D_1/D_2)$.



Test object	BTB-1	Sheet	RE Loop-9
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-13	Date	19 May 2010
Client	GN Hearing A/S	Initials	HEN
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	0.009-30 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Loop antenna pos.Z. Antenna distance 10 m.	Humidity	55 % RH
Detector	Peak	Bandwidth	0.2/9 kHz
Test equipm.	EMI room Hørsholm 49600 29332	Uncertainty	4dB



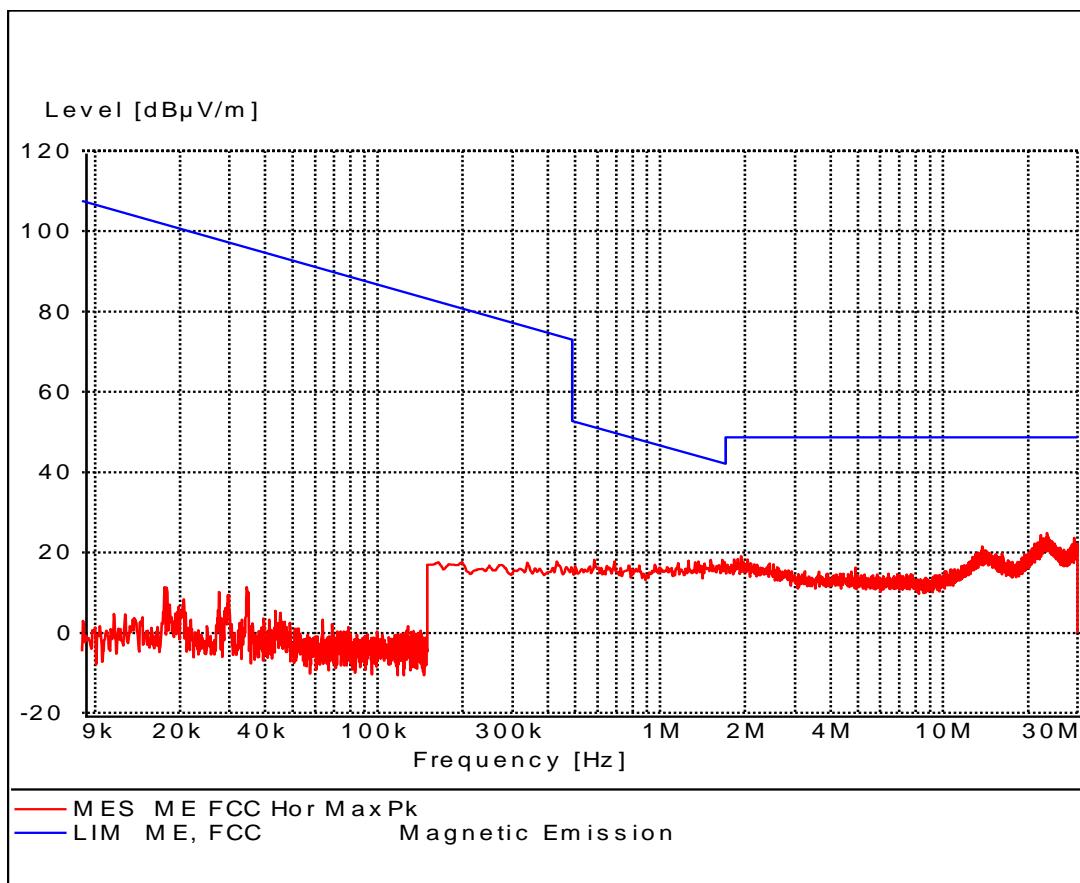
Comments Modulation: 8QPSK
 Tx: Mid
 The limit has been extra polated to 10 m using an extra
 polation factor of 40 dB/decade as specified in §
 15.31(f)(2). $L_2 = L_1 + 40 \log_{10} (D_1/D_2)$.



Test result	The measured field strengths are more than 20 dB below the limit
Compliant	Yes
Comments	Modulation: Pi/4 Pre-measurement performed in a semi anechoic room.

Test object	BTB-1	Sheet	RE Loop-10
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	19 May 2010
Client	GN Hearing A/S	Initials	HEN
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	0.009-30 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Loop antenna pos. X. Antenna distance 10 m.	Humidity	55 % RH
Detector	Peak	Bandwidth	0.2/9 kHz
Test equipm.	EMI room Hørsholm 49600 29332	Uncertainty	4dB



Comments

Modulation: GN Radio

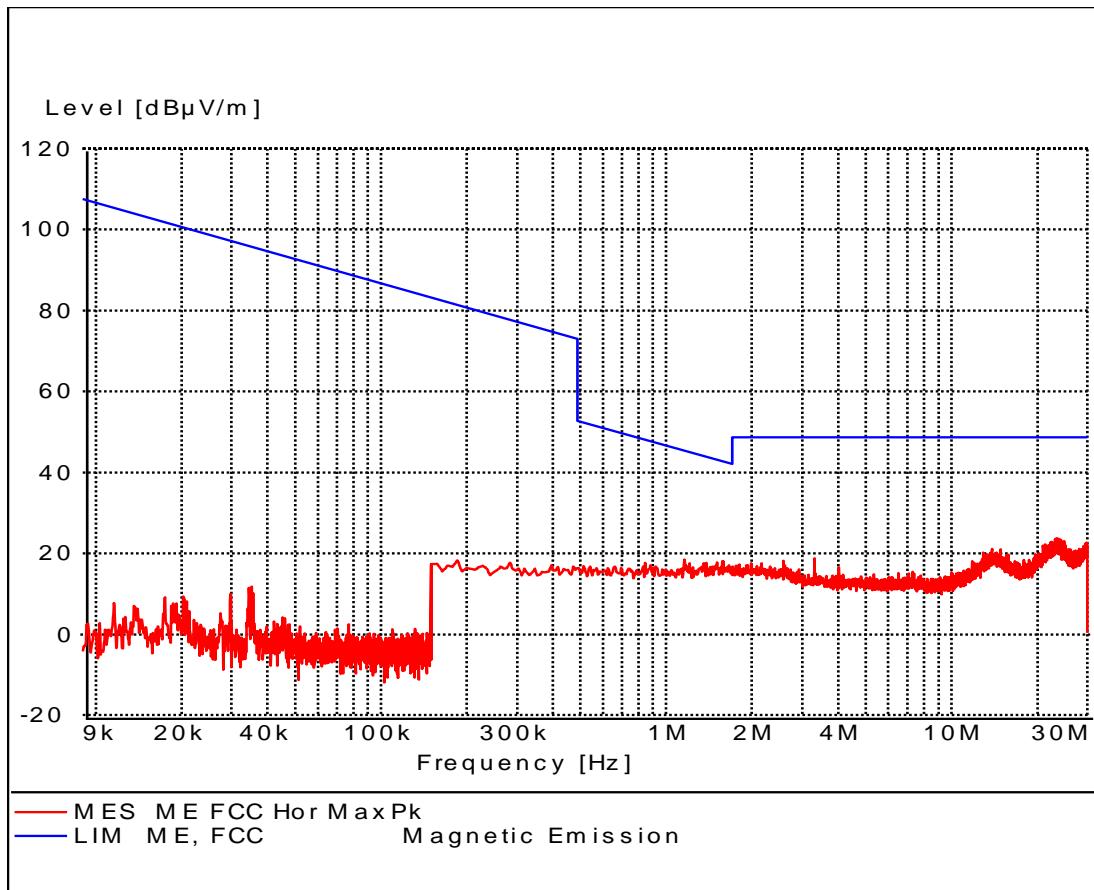
Tx: Mid

The limit has been extra polated to 10 m using an extra polation factor of 40 dB/decade as specified in § 15.31(f)(2). $L_2 = L_1 + 40 \log_{10} (D_1/D_2)$.



Test object	BTB-1	Sheet	RE Loop-11
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	19 May 2010
Client	GN Hearing A/S	Initials	HEN
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	0.009-30 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Loop antenna pos. Y. Antenna distance 10 m.	Humidity	55 % RH
Detector	Peak	Bandwidth	0.2/9 kHz
Test equipm.	EMI room Hørsholm 49600 29332	Uncertainty	4dB

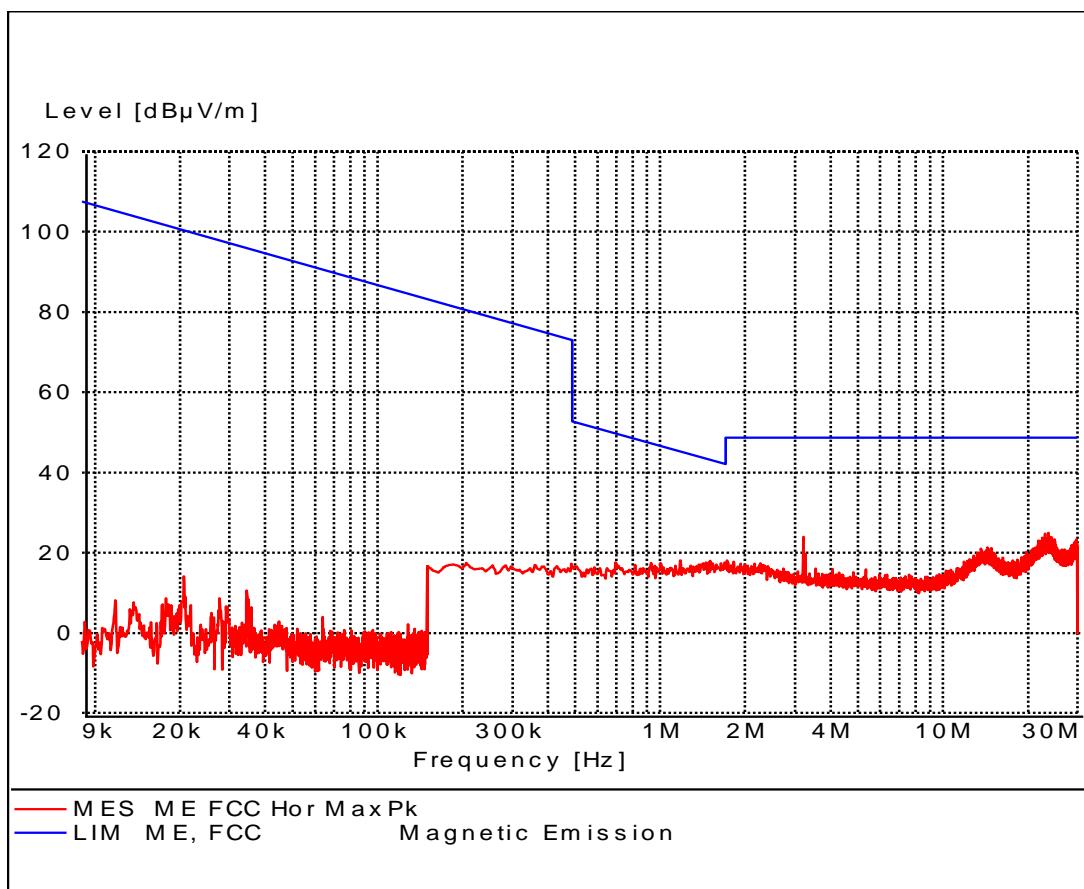


Comments Modulation: GN Radio
 Tx: Mid
 The limit has been extrapolated to 10 m using an extrapolation factor of 40 dB/decade as specified in § 15.31(f)(2). $L_2 = L_1 + 40 \log_{10} (D_1/D_2)$.



Test object	BTB-1	Sheet	RE Loop-12
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	19 May 2010
Client	GN Hearing A/S	Initials	HEN
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	0.009-30 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Loop antenna pos.Z. Antenna distance 10 m.	Humidity	55 % RH
Detector	Peak	Bandwidth	0.2/9 kHz
Test equipm.	EMI room Hørsholm 49600 29332	Uncertainty	4dB



Comments Modulation: GN Radio
 Tx: Mid
 The limit has been extra polated to 10 m using an extra
 polation factor of 40 dB/decade as specified in §
 15.31(f)(2). $L_2 = L_1 + 40 \log_{10} (D_1/D_2)$.



Test result	The measured field strengths are more than 20 dB below the limit
Compliant	Yes
Comments	Modulation: GN Radio. Pre-measurement performed in a semi anechoic room.



Photo 4.5.1 Test setup regarding measurement of radiated emission, 0.009 MHz to 30 MHz.

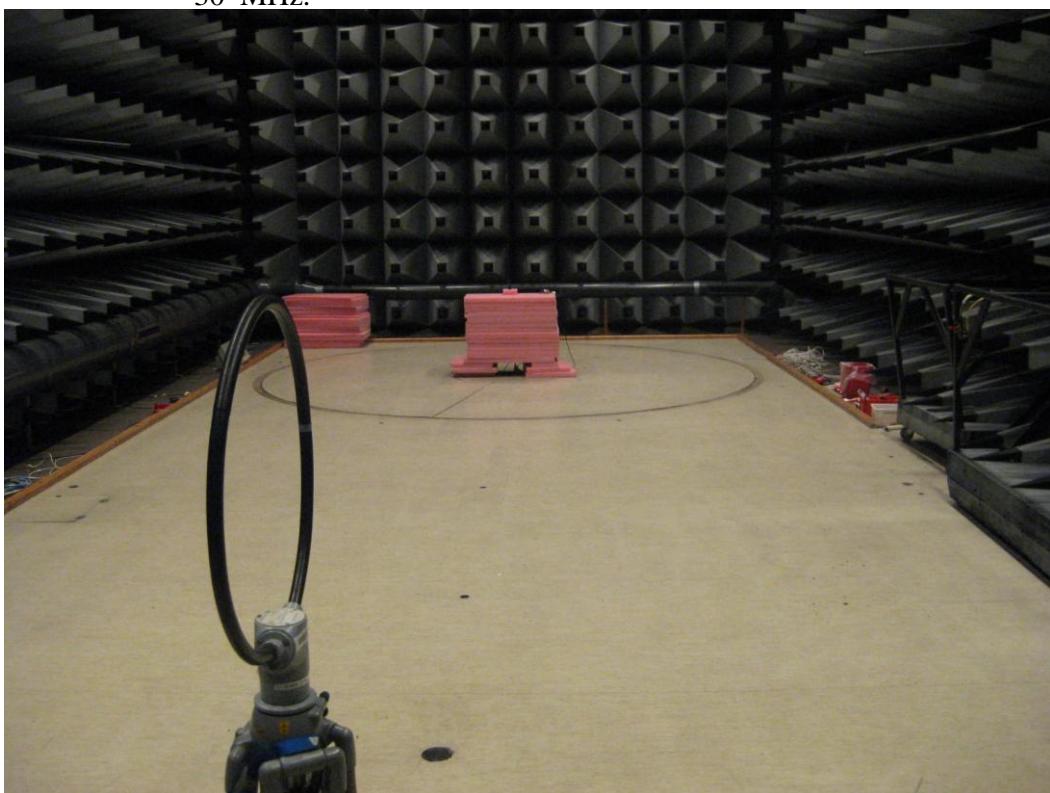
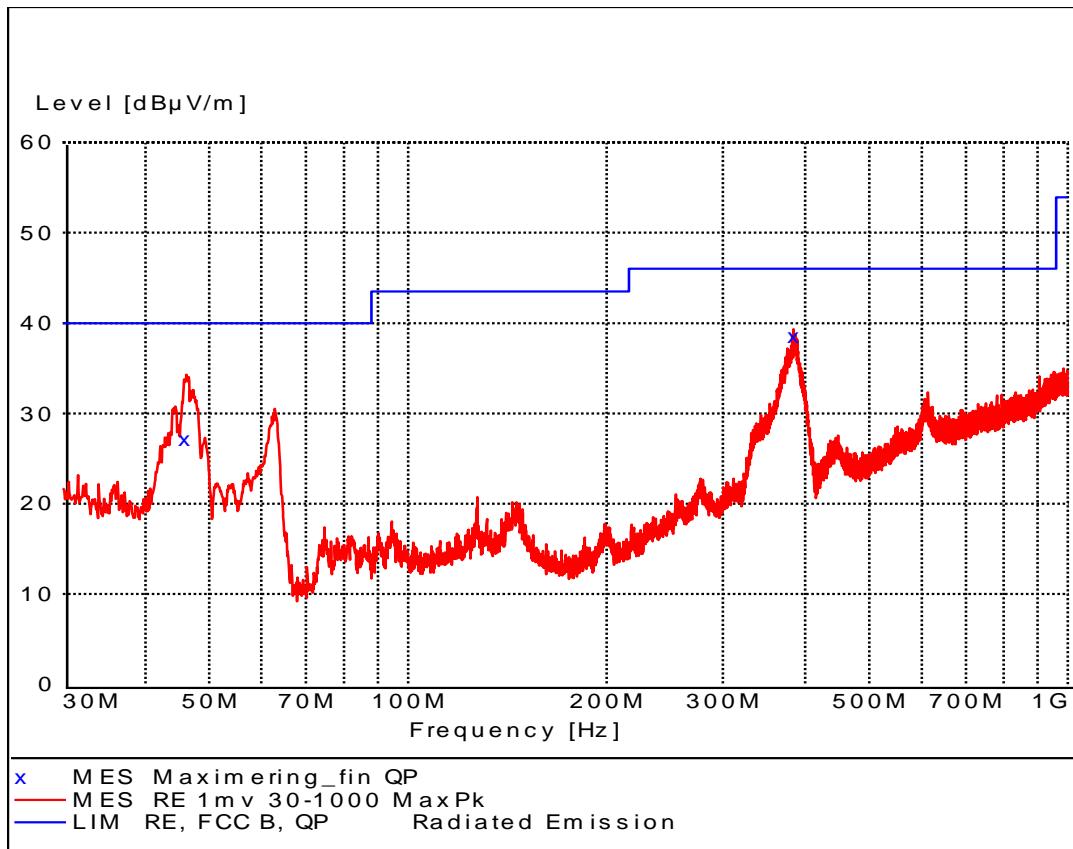


Photo 4.5.2 Test setup regarding measurement of radiated emission, 0.009 MHz to 30 MHz.

4.6 Measurement of radiated emission, 30 MHz to 1000 MHz

Test object	BTB-1	Sheet	RE_Spur-6
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-13	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Pre-scan, Antenna at 3 m, 1 m height, vert. pol.	Humidity	35 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

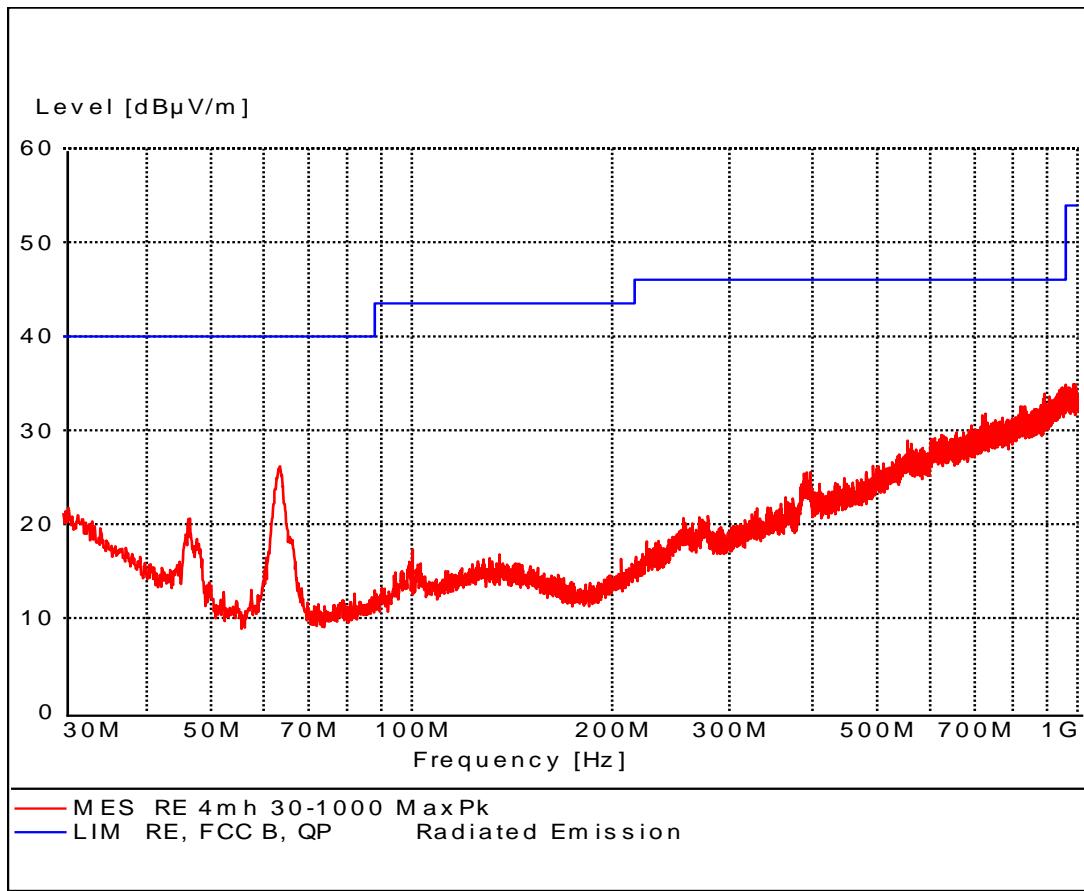
Radio: WT32

Modulation: GFSK

Frequency: 2402 MHz

Test object	BTB-1	Sheet	RE_Spur-7
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-13	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Pre-scan, Antenna at 3 m, 4 m height, hor. pol.	Humidity	35 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

Radio: WT32

Modulation: GFSK

Frequency: 2402 MHz



Test object	BTB-1	Sheet	RE_Spur-8
Type	BTB	Project no.	A506915-1
Serial no.	B4-13	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Peak search ant. at 3 m, height: 1-4 m, v/h pol.	Humidity	35 % RH
Detector	Quasi peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB

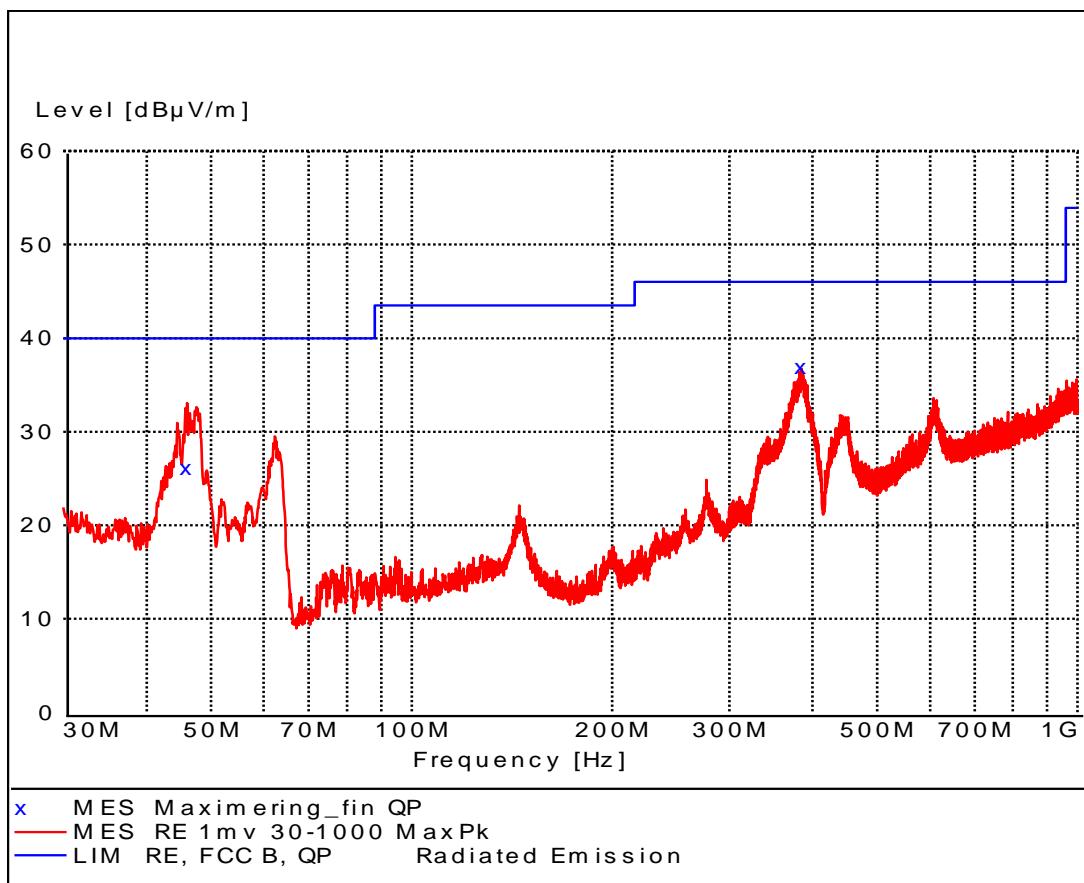
Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarisation
45.900000	27.10	11.2	40.0	12.9	104.0	158.00	VERTICAL
384.700000	38.50	18.6	46.0	7.5	101.0	303.00	HORIZONTAL

Test result	The measured field strengths are below the limit
Polarization	Horizontal and Vertical
Test Port	Enclosure
Test frequency	2402 MHz
Test mode	Continuous Tx - normal modulation - hopping on
Condition	Normal
Compliant	Yes
Comments	Final maximal measurements by variation of turntable azimuth, antenna height, and antenna polarisation
	Modulation: GFSK for WT32 radio



Test object	BTB-1	Sheet	RE_Spur-9
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C 63.4:2003	Temperature	23 °C
Characteristics	Pre-scan, Antenna at 3 m, 1 m height, vert. pol.	Humidity	35 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

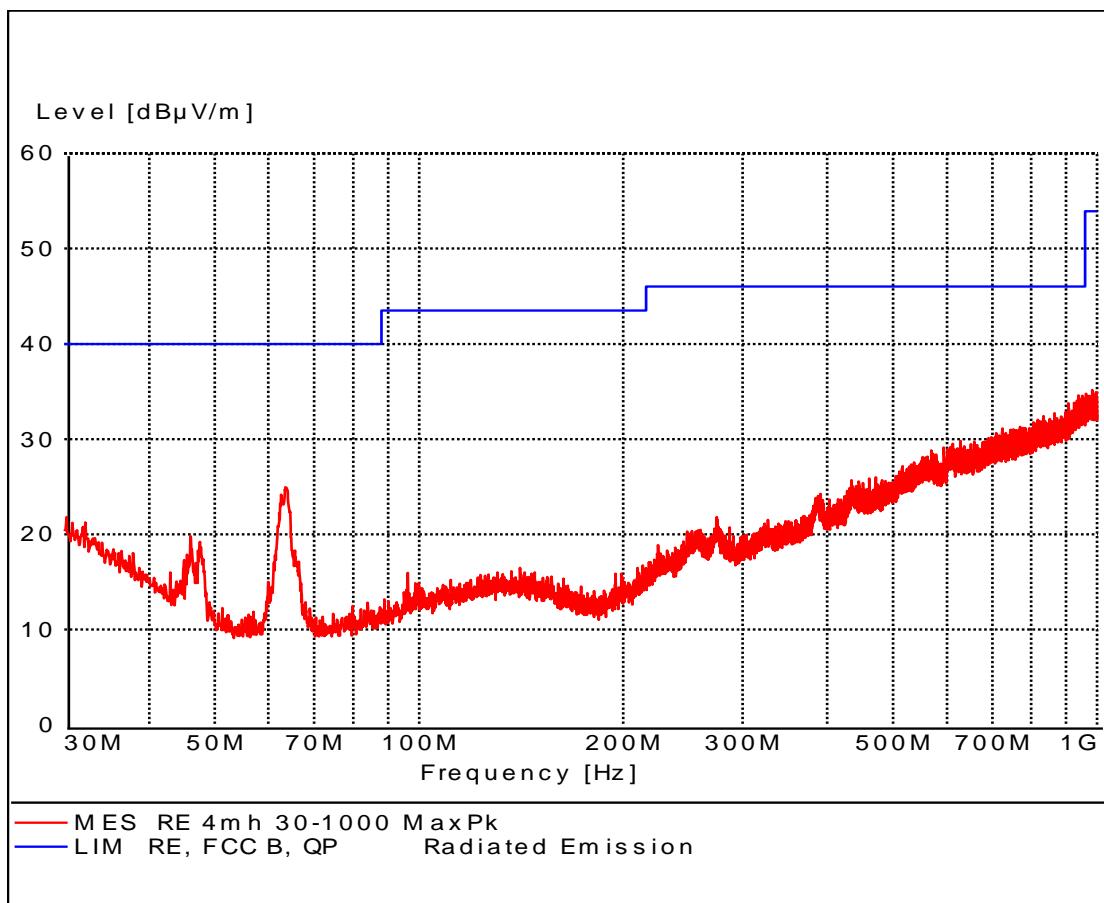
Radio: WT32

Modulation: GFSK

Frequency: 2441 MHz

Test object	BTB-1	Sheet	RE_Spur-10
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C 63.4:2003	Temperature	23 °C
Characteristics	Pre-scan, Antenna at 3 m, 4 m height, hor. pol.	Humidity	35 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

Radio: WT32

Modulation: GFSK

Frequency: 2441 MHz



Test object	BTB-1	Sheet	RE_Spur-11
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Peak search ant. at 3 m, height: 1-4 m, v/h pol.	Humidity	35 % RH
Detector	Quasi peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB

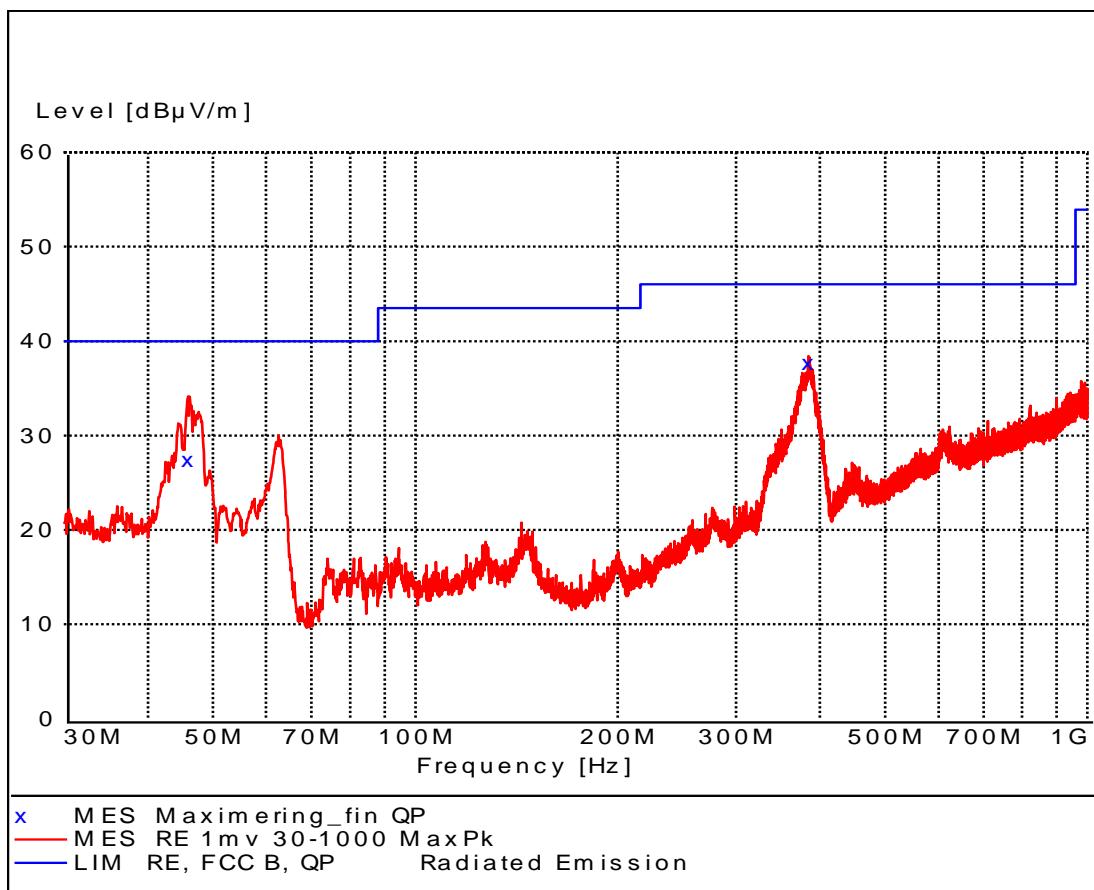
Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarisation
45.900000	26.10	11.2	40.0	13.9	107.0	183.00	VERTICAL
384.700000	36.90	18.6	46.0	9.1	101.0	296.00	HORIZONTAL

Test result	The measured field strengths are below the limit
Polarization	Horizontal and Vertical
Test Port	Enclosure
Test frequency	2441 MHz
Test mode	Continuous Tx - normal modulation - hopping on
Condition	Normal
Compliant	Yes
Comments	Final maximal measurements by variation of turntable azimuth, antenna height, and antenna polarisation. Modulation: GFSK for WT32 radio



Test object	BTB-1	Sheet	RE_Spur-12
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-13	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Pre-scan, Antenna at 3 m, 1 m height, vert. pol.	Humidity	35 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

Radio: WT32

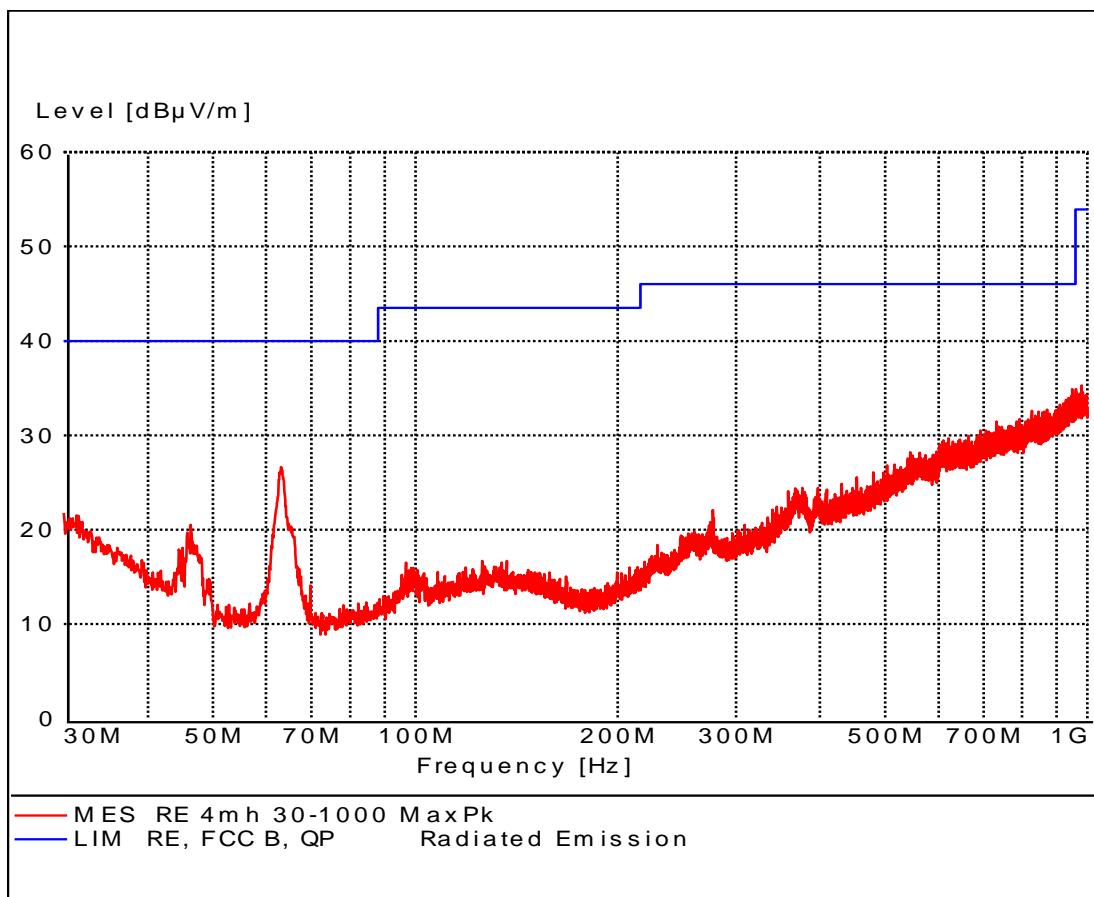
Modulation: GFSK

Frequency: 2480 MHz



Test object	BTB-1	Sheet	RE_Spur-13
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-13	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C 63.4:2003	Temperature	23 °C
Characteristics	Pre-scan, Antenna at 3 m, 4 m height, hor. pol.	Humidity	35 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

Radio: WT32

Modulation: GFSK

Frequency: 2480 MHz



Test object	BTB-1	Sheet	RE_Spur-14
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-13	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Peak search ant. at 3 m, height: 1-4 m, v/h pol.	Humidity	35 % RH
Detector	Quasi peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB

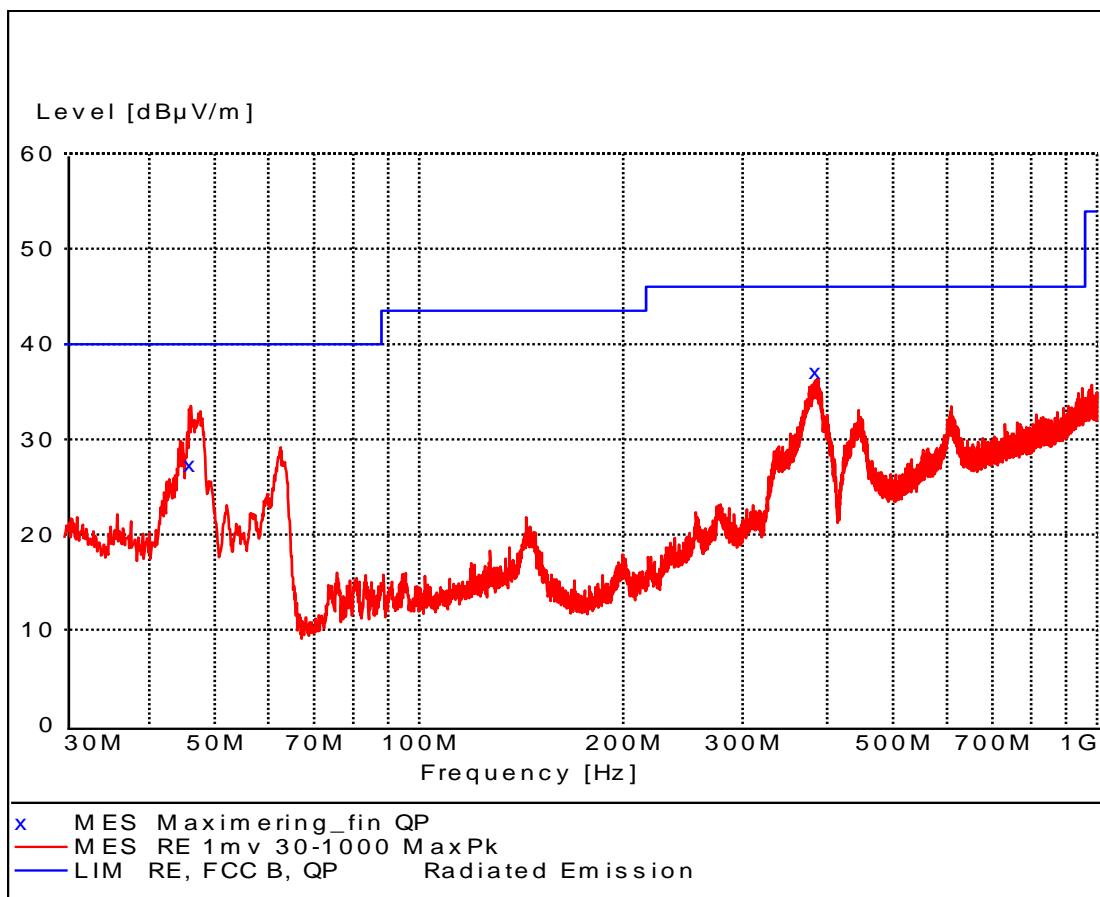
Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarisation
45.900000	27.40	11.2	40.0	12.6	105.0	182.00	VERTICAL
384.700000	37.70	18.6	46.0	8.3	101.0	298.00	HORIZONTAL

Test result	The measured field strengths are below the limit
Polarization	Horizontal and Vertical
Test Port	Enclosure
Test frequency	2480 MHz
Test mode	Continuous Tx - normal modulation - hopping on
Condition	Normal
Compliant	Yes
Comments	Final maximal measurements by variation of turntable azimuth, antenna height, and antenna polarisation.
	Modulation: GFSK for WT32 radio



Test object	BTB-1	Sheet	RE_Spur-15
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Pre-scan, Antenna at 3 m, 1 m height, vert. pol.	Humidity	35 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

Radio: WT32

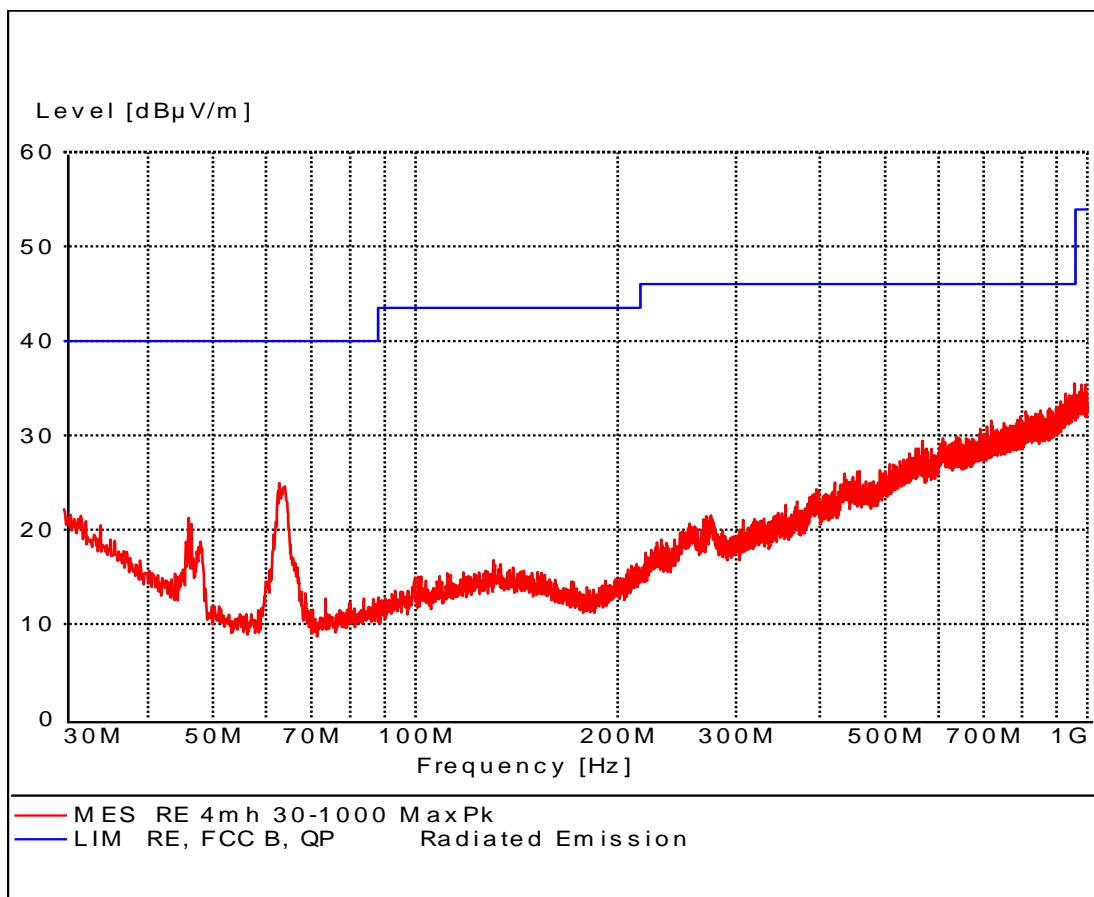
Modulation: Pi/4

Frequency: 2402 MHz



Test object	BTB-1	Sheet	RE_Spur-16
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Pre-scan, Antenna at 3 m, 4 m height, hor. pol.	Humidity	35 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

Radio: WT32
Modulation: Pi/4
Frequency: 2402 MHz

Test object	BTB-1	Sheet	RE_Spur-17
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

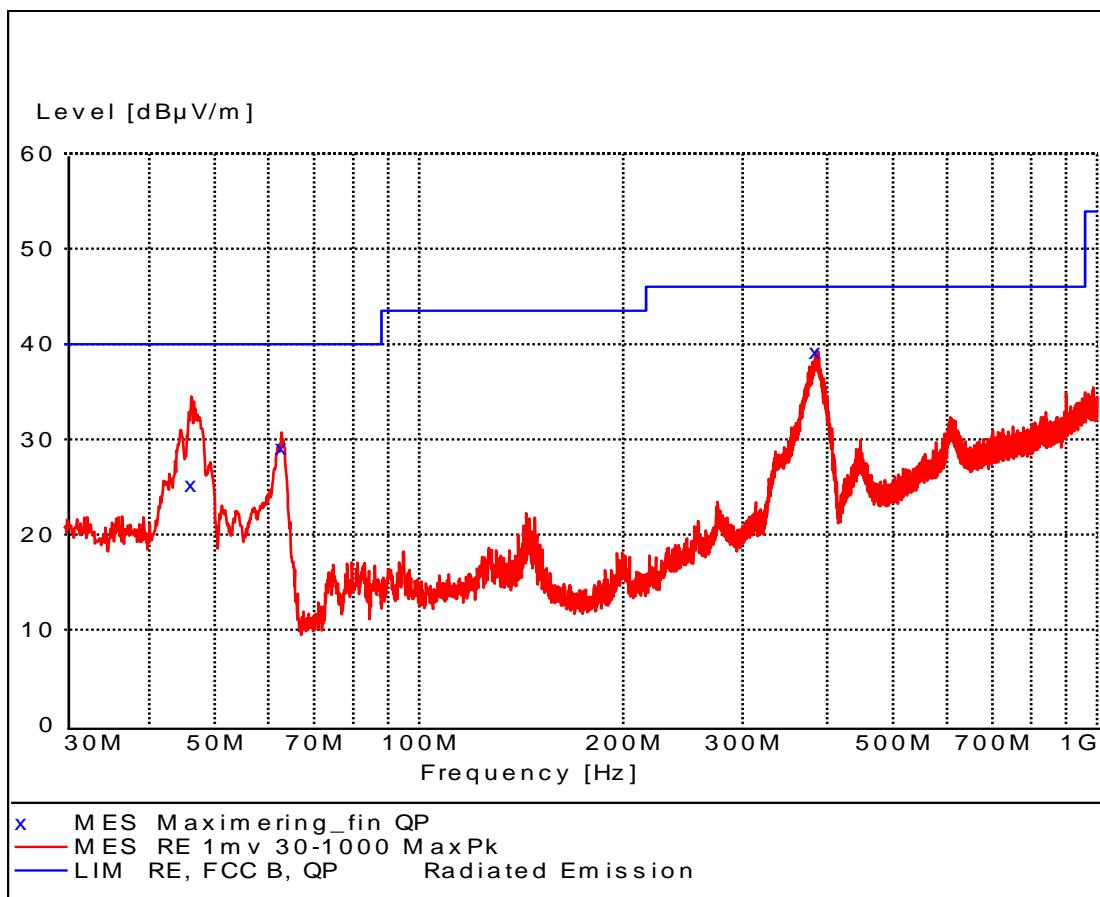
Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Peak search ant. at 3 m, height: 1-4 m, v/h pol.	Humidity	35 % RH
Detector	Quasi peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB

Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarisation
45.900000	27.30	11.2	40.0	12.7	104.0	176.00	VERTICAL
384.700000	37.10	18.6	46.0	8.9	101.0	307.00	HORIZONTAL

Test result	The measured field strengths are below the limit
Polarization	Horizontal and Vertical
Test Port	Enclosure
Test frequency	2402 MHz
Test mode	Continuous Tx - normal modulation - hopping on
Condition	Normal
Compliant	Yes
Comments	Final maximal measurements by variation of turntable azimuth, antenna height, and antenna polarisation. Modulation: Pi/4 for WT32 radio

Test object	BTB-1	Sheet	RE_Spur-18
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-13	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Pre-scan, Antenna at 3 m, 1 m height, vert. pol.	Humidity	35 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

Radio: WT32

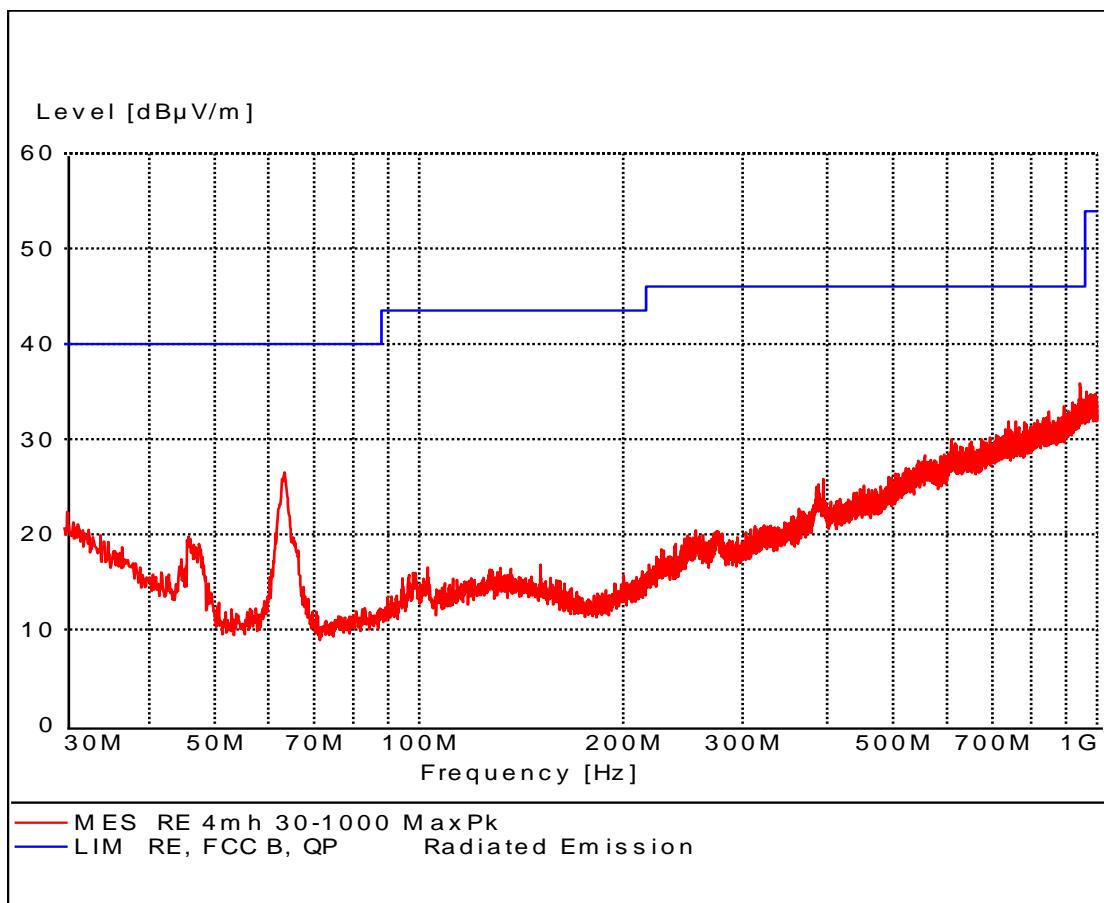
Modulation: Pi/4

Frequency: 2441 MHz



Test object	BTB-1	Sheet	RE_Spur-19
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-13	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Pre-scan, Antenna at 3 m, 4 m height, hor. pol.	Humidity	35 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

Radio: WT32

Modulation: Pi/4

Frequency: 2441 MHz



Test object	BTB-1	Sheet	RE_Spur-20
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-13	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Peak search ant. at 3 m, height: 1-4 m, v/h pol.	Humidity	35 % RH
Detector	Quasi peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB

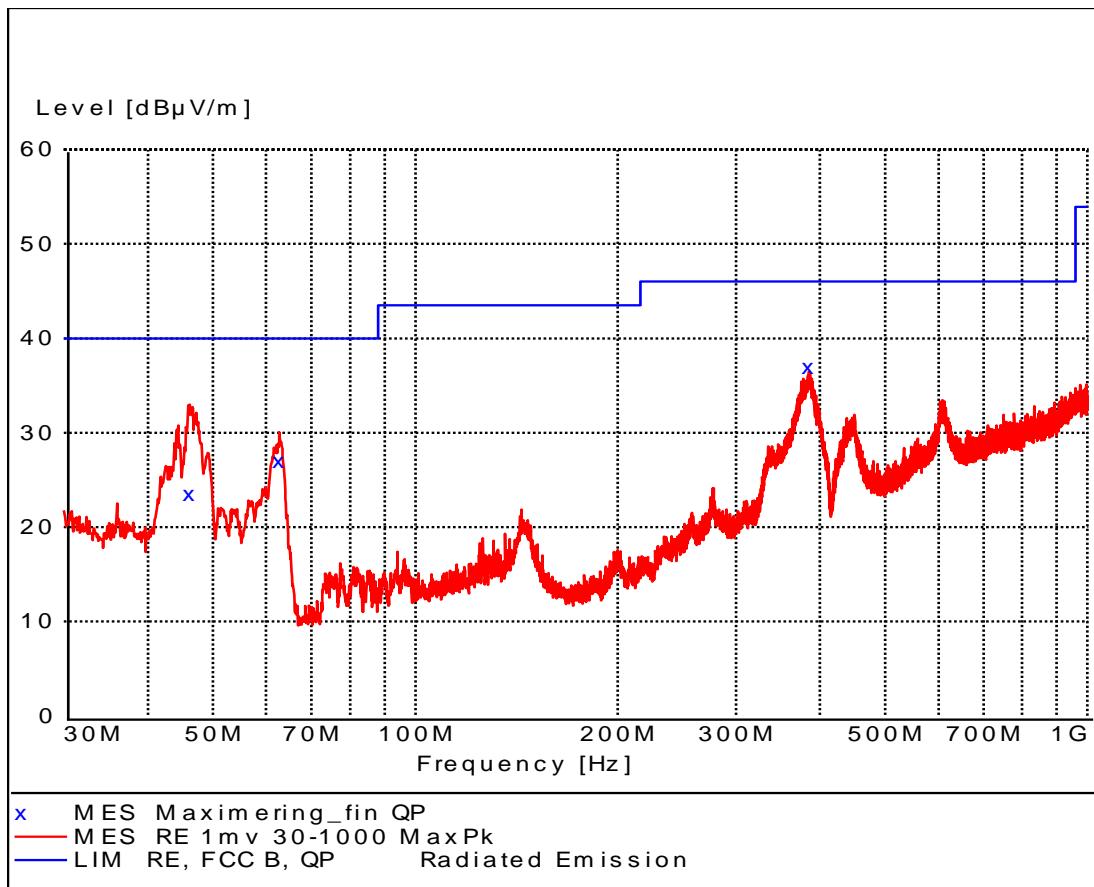
Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarisation
46.200000	25.20	11.1	40.0	14.8	101.0	6.00	VERTICAL
62.800000	29.10	8.2	40.0	10.9	104.0	92.00	VERTICAL
384.700000	39.20	18.6	46.0	6.8	100.0	301.00	HORIZONTAL

Test result	The measured field strengths are below the limit
Polarization	Horizontal and Vertical
Test Port	Enclosure
Test frequency	2441 MHz
Test mode	Continuous Tx - normal modulation - hopping on
Condition	Normal
Compliant	Yes
Comments	Final maximal measurements by variation of turntable azimuth, antenna height, and antenna polarisation. Modulation: Pi/4 for WT32 radio



Test object	BTB-1	Sheet	RE_Spur-21
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Pre-scan, Antenna at 3 m, 1 m height, vert. pol.	Humidity	35 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

Radio: WT32

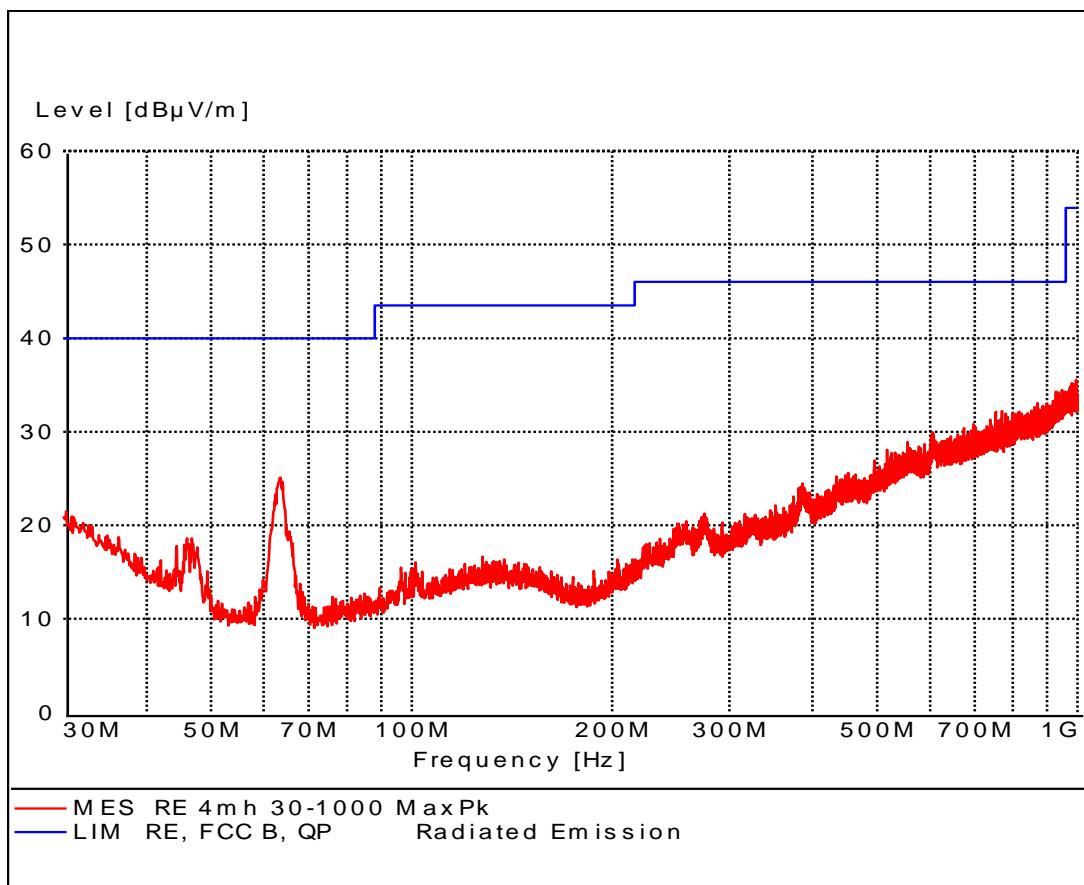
Modulation: Pi/4

Frequency: 2480 MHz



Test object	BTB-1	Sheet	RE_Spur-22
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Pre-scan, Antenna at 3 m, 4 m height, hor. pol.	Humidity	35 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

Radio: WT32

Modulation: Pi/4

Frequency: 2480 MHz

Test object	BTB-1	Sheet	RE_Spur-23
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

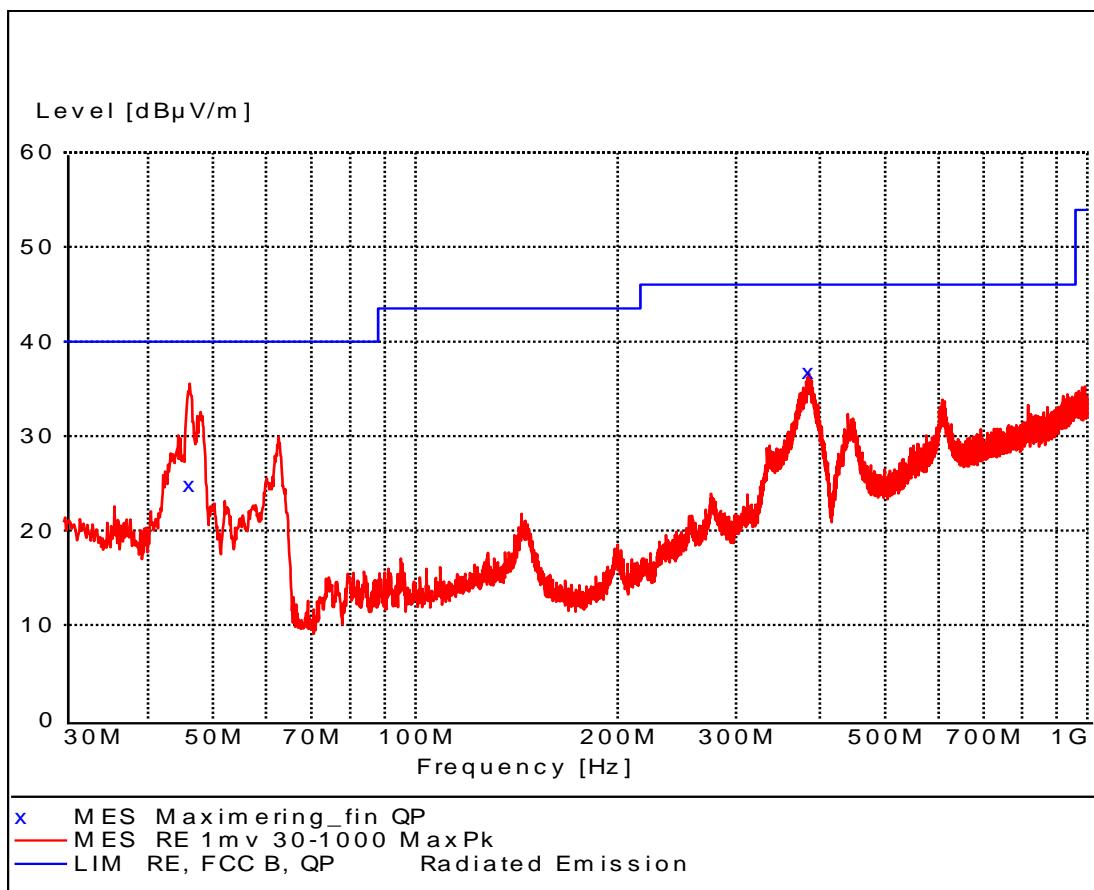
Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Peak search ant. at 3 m, height: 1-4 m, v/h pol.	Humidity	35 % RH
Detector	Quasi peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB

Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarisation
46.200000	23.50	11.1	40.0	16.5	104.0	1.00	VERTICAL
62.800000	27.00	8.2	40.0	13.0	101.0	115.00	VERTICAL
384.700000	37.00	18.6	46.0	9.0	101.0	308.00	HORIZONTAL

Test result	The measured field strengths are below the limit
Polarization	Horizontal and Vertical
Test Port	Enclosure
Test frequency	2480 MHz
Test mode	Continuous Tx - normal modulation - hopping on
Condition	Normal
Compliant	Yes
Comments	Final maximal measurements by variation of turntable azimuth, antenna height, and antenna polarisation Modulation: Pi/4 for WT32 radio

Test object	BTB-1	Sheet	RE_Spur-24
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Pre-scan, Antenna at 3 m, 1 m height, vert. pol.	Humidity	35 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

Radio WT32

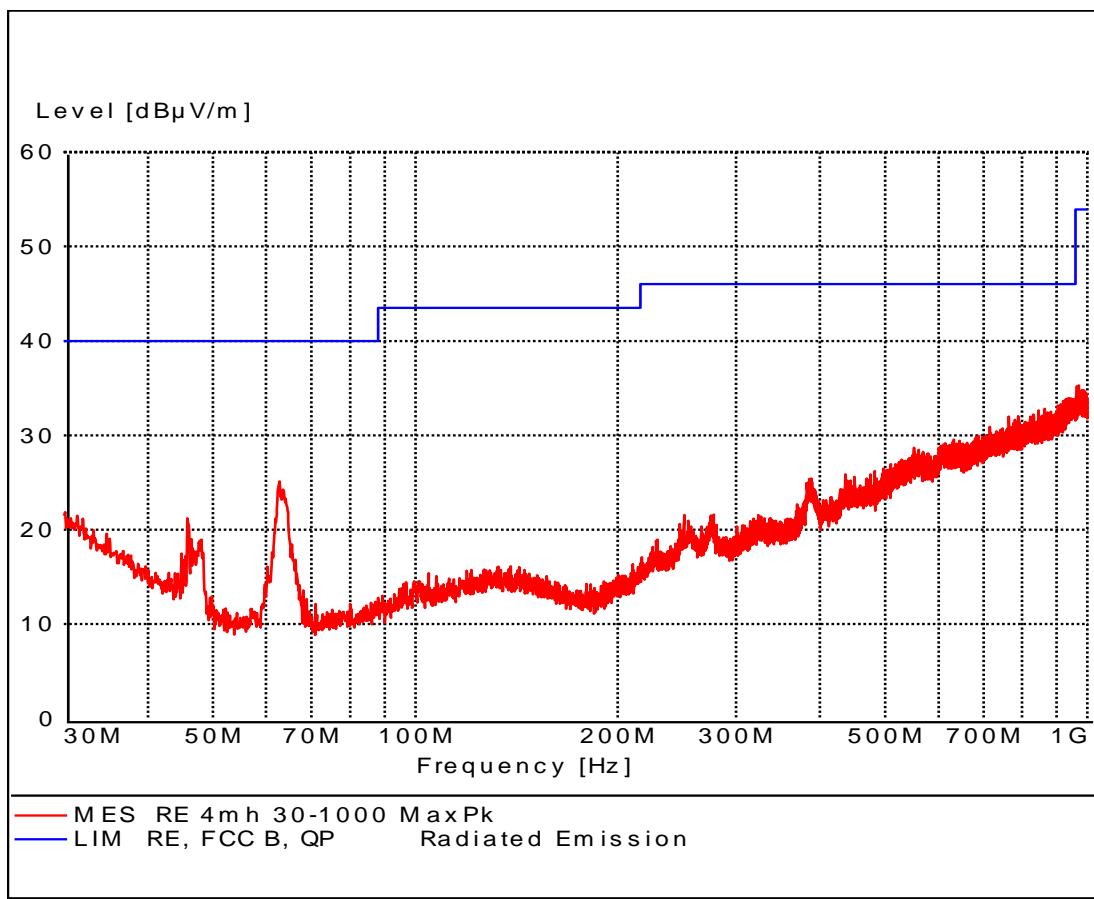
Modulation: 8QPSK

Frequency: 2402 MHz



Test object	BTB-1	Sheet	RE_Spur-25
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Pre-scan, Antenna at 3 m, 4 m height, hor. pol.	Humidity	35 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

Radio WT32
Modulation: 8QPSK
Frequency: 2402 MHz

Test object	BTB-1	Sheet	RE_Spur-26
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Peak search ant. at 3 m, height: 1-4 m, v/h pol.	Humidity	35 % RH
Detector	Quasi peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB

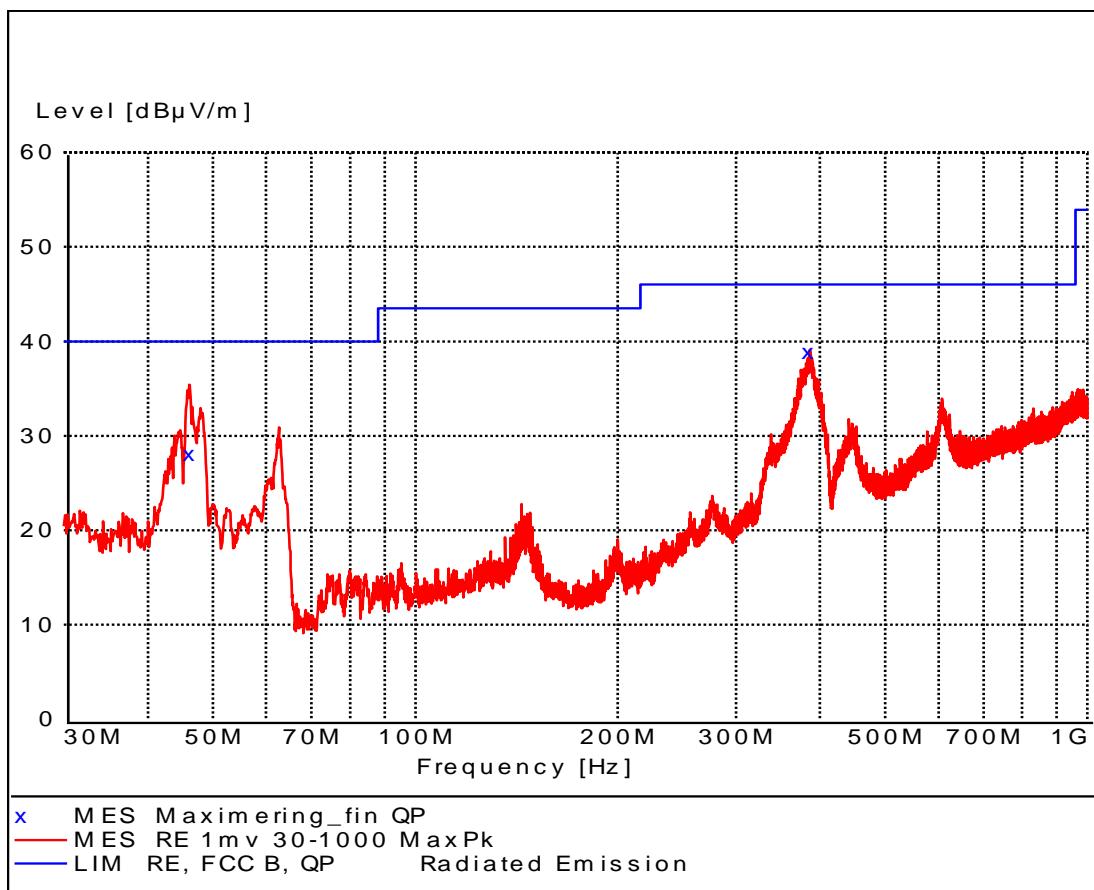
Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarisation
46.200000	24.80	11.1	40.0	15.2	101.0	1.00	VERTICAL
384.700000	36.80	18.6	46.0	9.2	101.0	304.00	HORIZONTAL

Test result	The measured field strengths are below the limit
Polarization	Horizontal and Vertical
Test Port	Enclosure
Test frequency	2402 MHz
Test mode	Continuous Tx - normal modulation - hopping on
Condition	Normal
Compliant	Yes
Comments	Final maximal measurements by variation of turntable azimuth, antenna height, and antenna polarisation. Modulation: 8QPSK for WT32 radio



Test object	BTB-1	Sheet	RE_Spur-27
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-13	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Pre-scan, Antenna at 3 m, 1 m height, vert. pol.	Humidity	35 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

Radio WT32

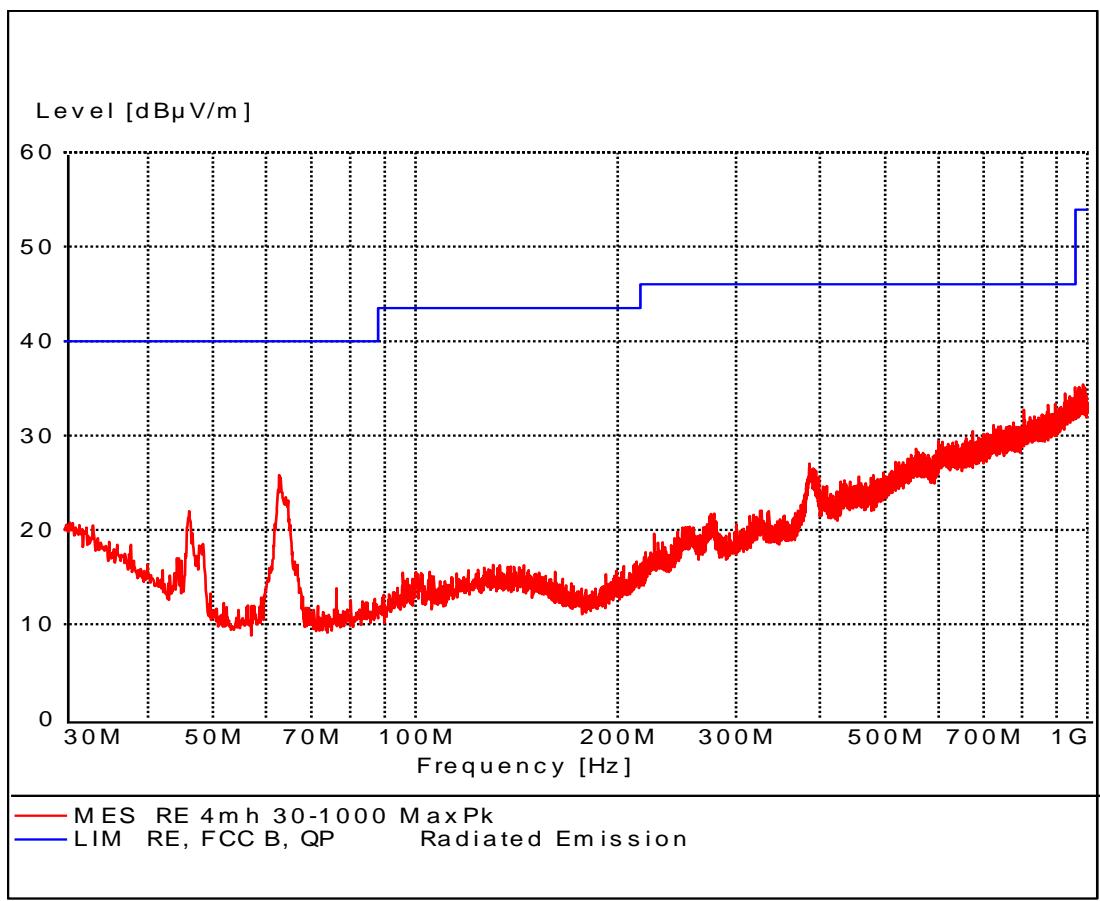
Modulation: 8QPSK

Frequency: 2441 MHz



Test object	BTB-1	Sheet	RE_Spur-2
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-13	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	25 °C
Characteristics	Pre-scan, Antenna at 3 m, 4 m height, hor. pol.	Humidity	35 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

Radio WT32

Modulation: 8QPSK

Frequency: 2441 MHz



Test object	BTB-1	Sheet	RE_Spur-29
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-13	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Peak search ant. at 3 m, height: 1-4 m, v/h pol.	Humidity	35 % RH
Detector	Quasi peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB

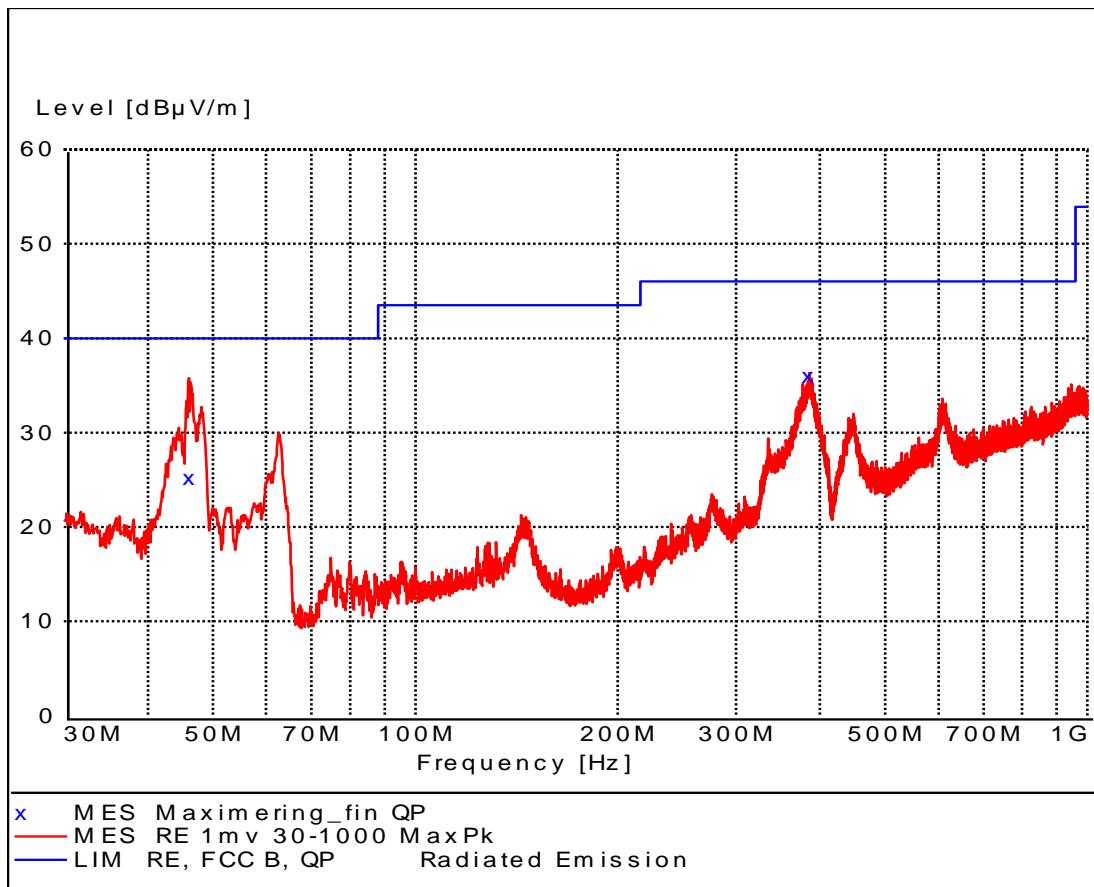
Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarisation
46.200000	28.10	11.1	40.0	11.9	101.0	178.00	VERTICAL
384.700000	38.90	18.6	46.0	7.1	101.0	308.00	HORIZONTAL

Test result	The measured field strengths are below the limit
Polarization	Horizontal and Vertical
Test Port	Enclosure
Test frequency	2441 MHz
Test mode	Continuous Tx - normal modulation - hopping on
Condition	Normal
Compliant	Yes
Comments	Final maximal measurements by variation of turntable azimuth, antenna height, and antenna polarisation. Modulation: 8QPSK for WT32 radio



Test object	BTB-1	Sheet	RE_Spur-30
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Pre-scan, Antenna at 3 m, 1 m height, vert. pol.	Humidity	35 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

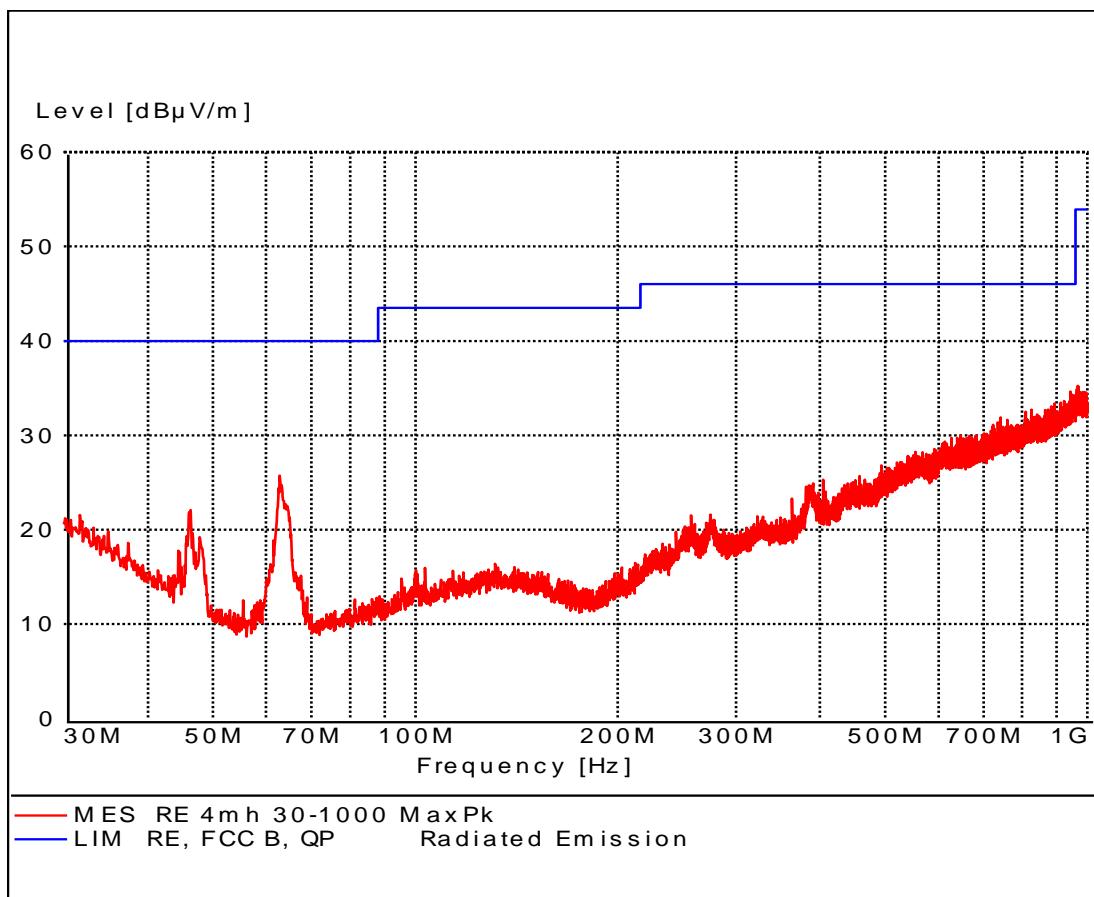
Radio WT32

Modulation: 8QPSK

Frequency: 2402 MHz

Test object	BTB-1	Sheet	RE_Spur-31
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C 63.4:2003	Temperature	23 °C
Characteristics	Pre-scan, Antenna at 3 m, 4 m height, hor. pol.	Humidity	35 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

Radio WT32
Modulation: 8QPSK
Frequency: 2402 MHz

Test object	BTB-1	Sheet	RE_Spur-32
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Peak search ant. at 3 m, height: 1-4 m, v/h pol.	Humidity	35 % RH
Detector	Quasi peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB

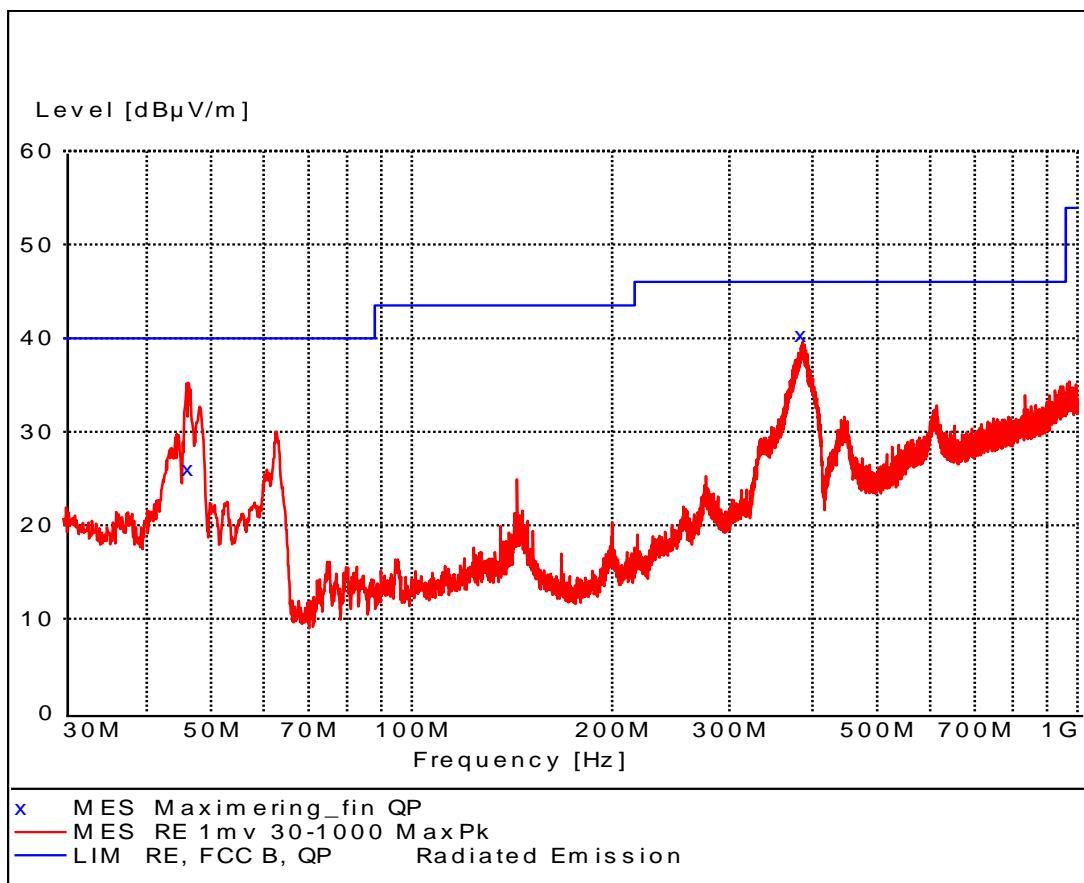
Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarisation
46.200000	25.20	11.1	40.0	14.8	105.0	1.00	VERTICAL
384.700000	36.00	18.6	46.0	10.0	101.0	306.00	HORIZONTAL

Test result	The measured field strengths are below the limit
Polarization	Horizontal and Vertical
Test Port	Enclosure
Test frequency	2480 MHz
Test mode	Continuous Tx - normal modulation - hopping on
Condition	Normal
Compliant	Yes
Comments	Final maximal measurements by variation of turntable azimuth, antenna height, and antenna polarisation Modulation: 8QPSK for WT32 radio



Test object	BTB-1	Sheet	RE_Spur-33
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-13	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Pre-scan, Antenna at 3 m, 1 m height, vert. pol.	Humidity	35 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

Radio: GN

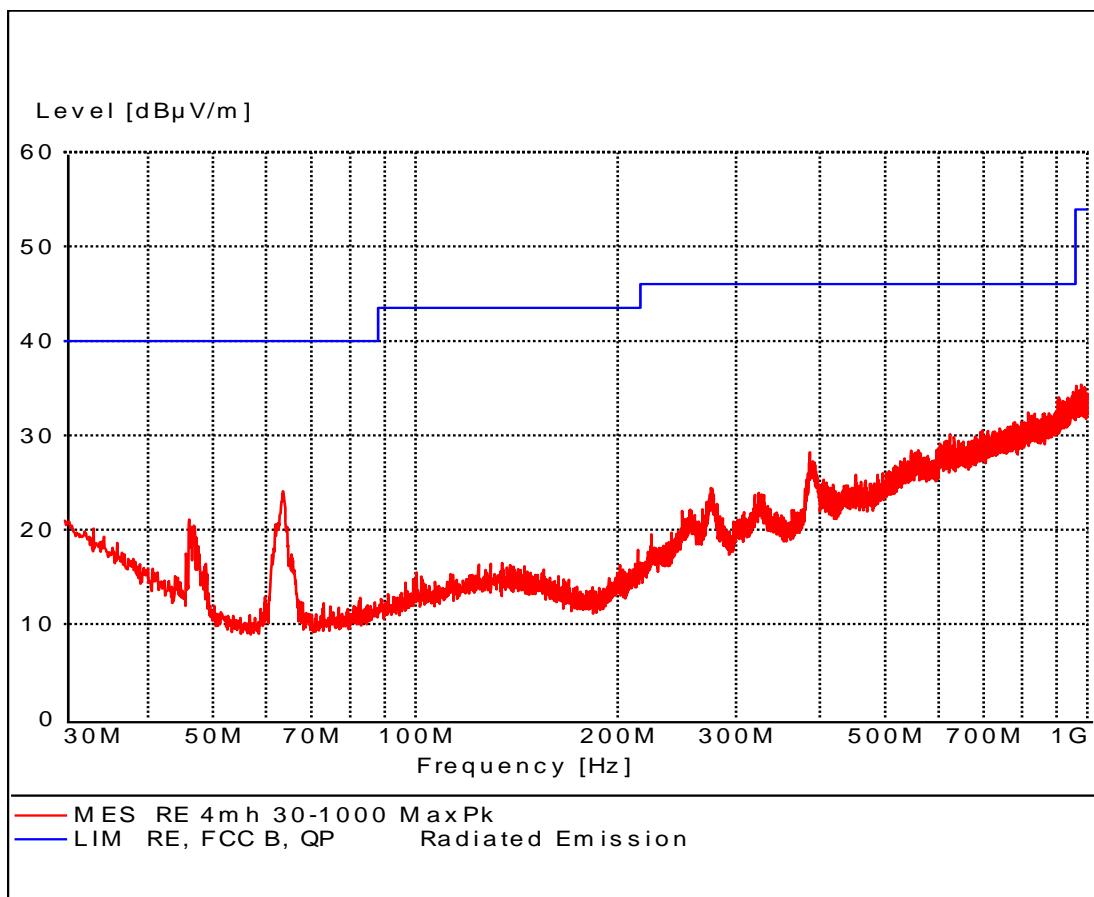
Modulation: GFSK

Frequency: 2404 MHz



Test object	BTB-1	Sheet	RE_Spur-34
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-13	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Pre-scan, Antenna at 3 m, 4 m height, hor. pol.	Humidity	35 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

Radio: GN
Modulation: GFSK
Frequency: 2404 MHz

Test object	BTB-1	Sheet	RE_Spur-35
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-13	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	25MHz–1GHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Peak search ant. at 3 m, height: 1-4 m, v/h pol.	Humidity	35 % RH
Detector	Quasi peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB

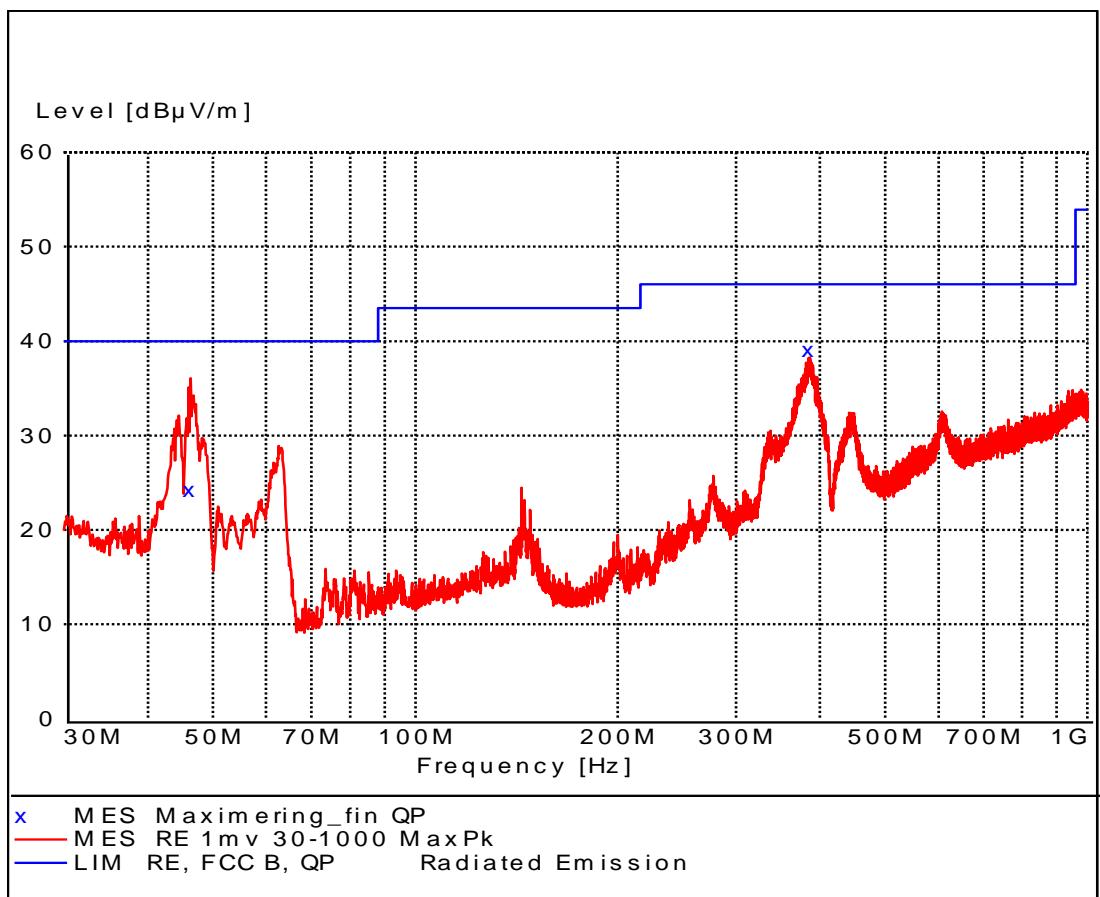
Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarisation
46.200000	26.00	11.1	40.0	14.0	105.0	159.00	VERTICAL
384.700000	40.30	18.6	46.0	5.7	101.0	320.00	HORIZONTAL

Test result	The measured field strengths are below the limit
Polarization	Horizontal and Vertical
Test Port	Enclosure
Test frequency	2404 MHz
Test mode	Continuous Tx - normal modulation - hopping on
Condition	Normal
Compliant	Yes
Comments	Final maximal measurements by variation of turntable azimuth, antenna height, and antenna polarisation
	Modulation: GFSK for GN radio



Test object	BTB-1	Sheet	RE_Spur-36
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Pre-scan, Antenna at 3 m, 1 m height, vert. pol.	Humidity	35 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

Radio: GN

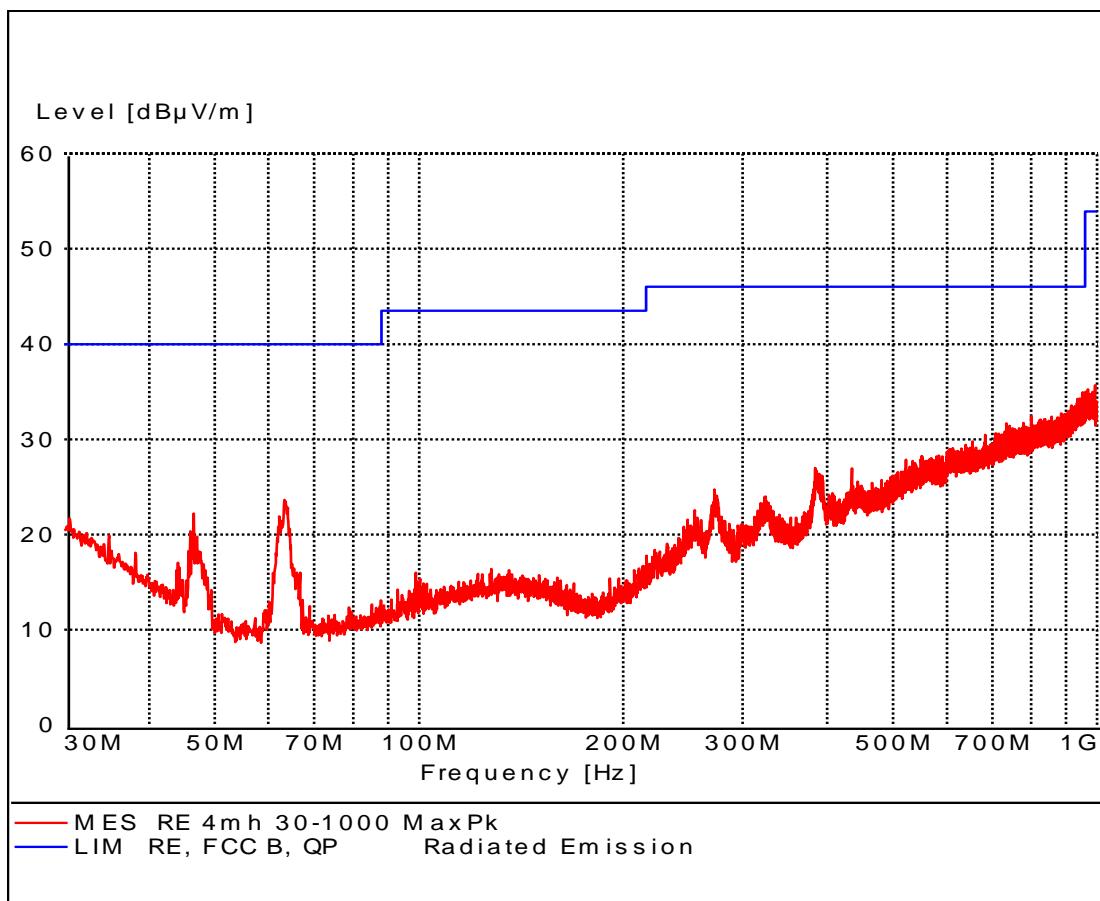
Modulation: GFSK

Frequency: 2440 MHz



Test object	BTB-1	Sheet	RE_Spur-37
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Pre-scan, Antenna at 3 m, 4 m height, hor. pol.	Humidity	35 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

Radio: GN

Modulation: GFSK

Frequency: 2441 MHz



Test object	BTB-1	Sheet	RE_Spur-38
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Peak search ant. at 3 m, height: 1-4 m, v/h pol.	Humidity	35 % RH
Detector	Quasi peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB

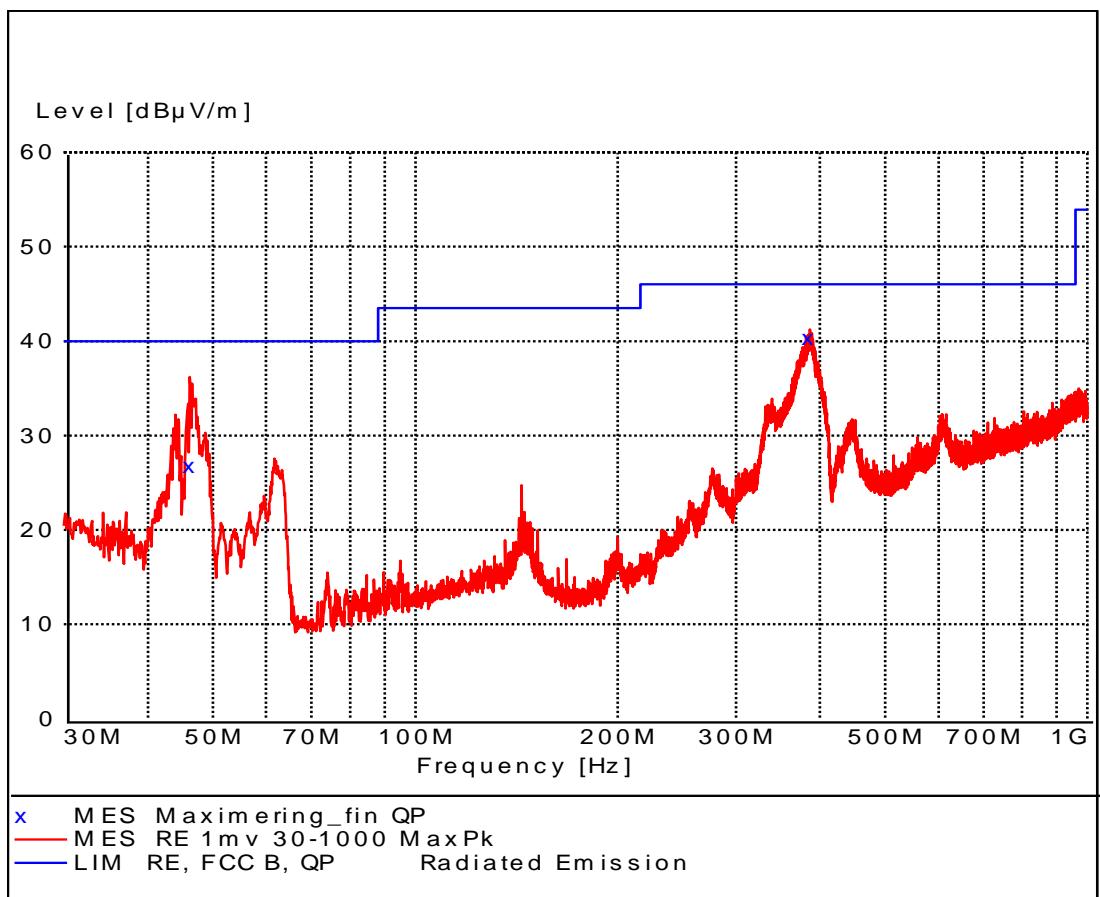
Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarisation
46.200000	24.30	11.1	40.0	15.7	101.0	247.00	VERTICAL
384.700000	39.10	18.6	46.0	6.9	101.0	315.00	HORIZONTAL

Test result	The measured field strengths are below the limit
Polarization	Horizontal and Vertical
Test Port	Enclosure
Test frequency	2440 MHz
Test mode	Continuous Tx - normal modulation - hopping on
Condition	Normal
Compliant	Yes
Comments	Final maximal measurements by variation of turntable azimuth, antenna height, and antenna polarisation
	Modulation: GFSK for GN radio



Test object	BTB-1	Sheet	RE_Spur-39
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-13	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Pre-scan, Antenna at 3 m, 1 m height, vert. pol.	Humidity	35 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

Radio: GN

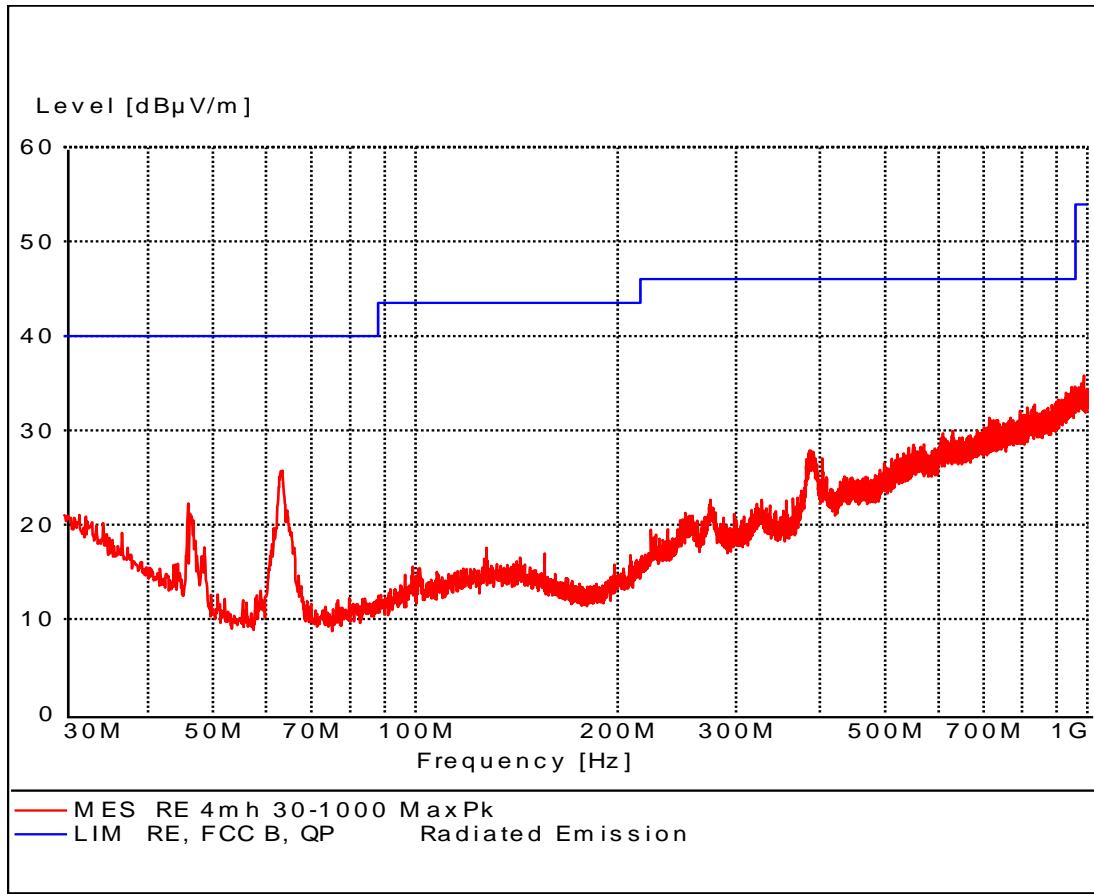
Modulation: GFSK

Frequency: 2478 MHz



Test object	BTB-1	Sheet	RE_Spur-40
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-13	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Pre-scan, Antenna at 3 m, 4 m height, hor. pol.	Humidity	35 % RH
Detector	Peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB



Comments

Radio: GN

Modulation: GFSK

Frequency: 2478 MHz



Test object	BTB-1	Sheet	RE_Spur-41
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-13	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	30-1000 MHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Peak search ant. at 3 m, height: 1-4 m, v/h pol.	Humidity	35 % RH
Detector	Quasi peak	Bandwidth	120 kHz
Test equipm.	EMI room Hørsholm 29301 49183 49299 29678 29861 49600 29797	Uncertainty	4.9 dB

Frequency MHz	Level dB μ V/m	Transd dB	Limit dB μ V/m	Margin dB	Height cm	Azimuth deg	Polarisation
46.200000	26.80	11.1	40.0	13.2	118.0	177.00	VERTICAL
384.700000	40.40	18.6	46.0	5.6	101.0	320.00	HORIZONTAL

Test result	The measured field strengths are below the limit
Polarization	Horizontal and Vertical
Test Port	Enclosure
Test frequency	2478 MHz
Test mode	Continuous Tx - normal modulation - hopping on
Condition	Normal
Compliant	Yes
Comments	Final maximal measurements by variation of turntable azimuth, antenna height, and antenna polarisation
	Modulation: GFSK for the GN radio



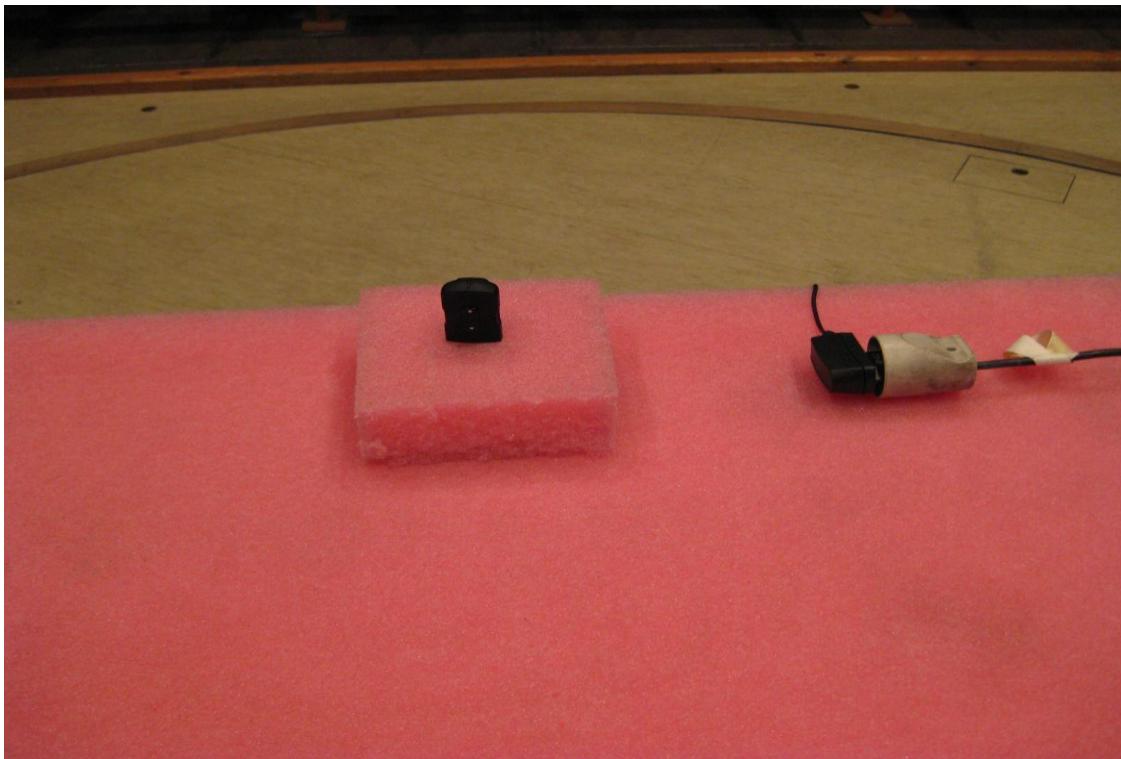


Photo 4.6.1 Test setup regarding radiated emission, 30 MHz to 1000 MHz.

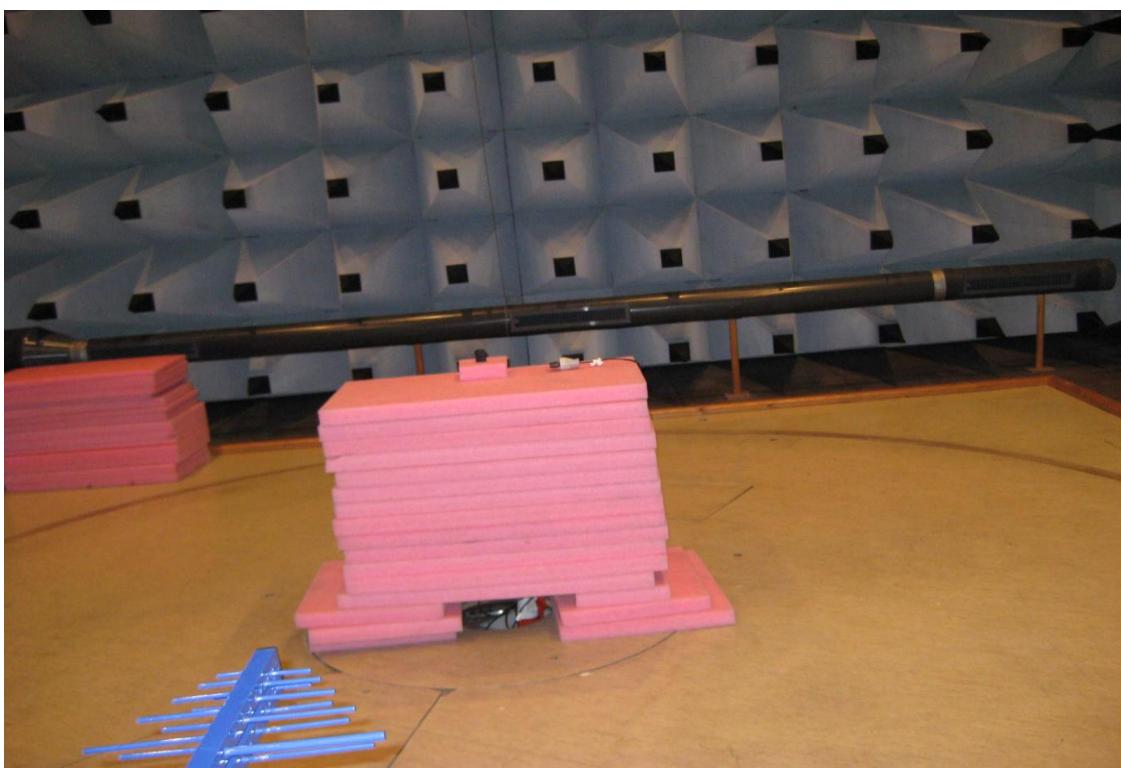
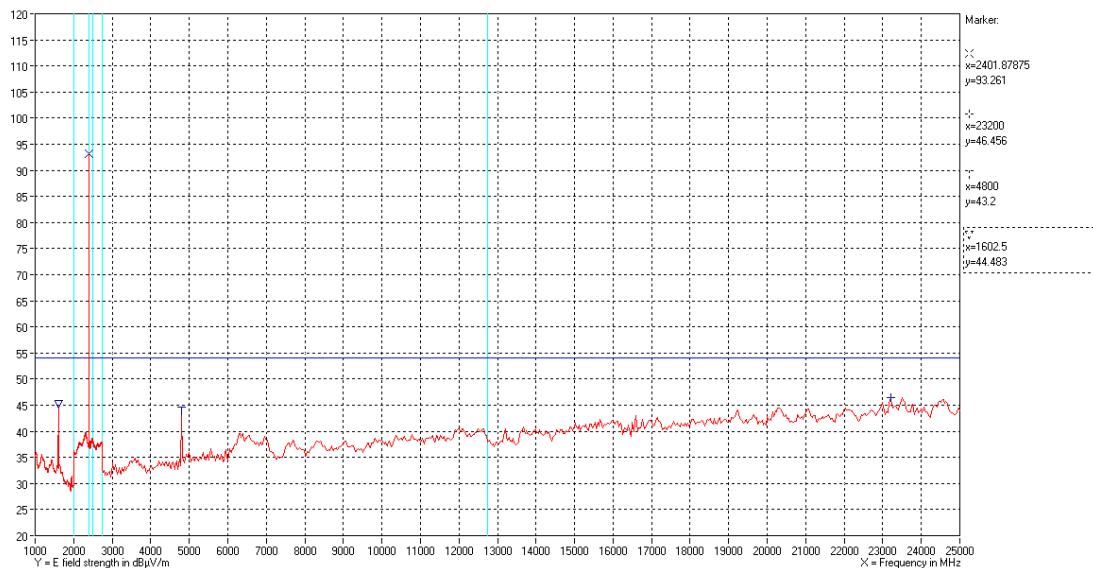


Photo 4.6.2 Test setup regarding radiated emission, 30 MHz to 1000 MHz.

4.7 Measurement of radiated emission, 1 GHz to 25 GHz

Test object	BTB-1	Sheet	RE_Spur-42
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	1 GHz – 25 GHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Complete search, Antenna distance 3 m.	Humidity	35 % RH
Detector	Peak and average for 1 GHz to 25 GHz	Bandwidth	1 MHz
Test equipm.	EMI room Hørsholm 49183 49299 29678 49600 49624 49625	Uncertainty	4.9 dB



Polarization

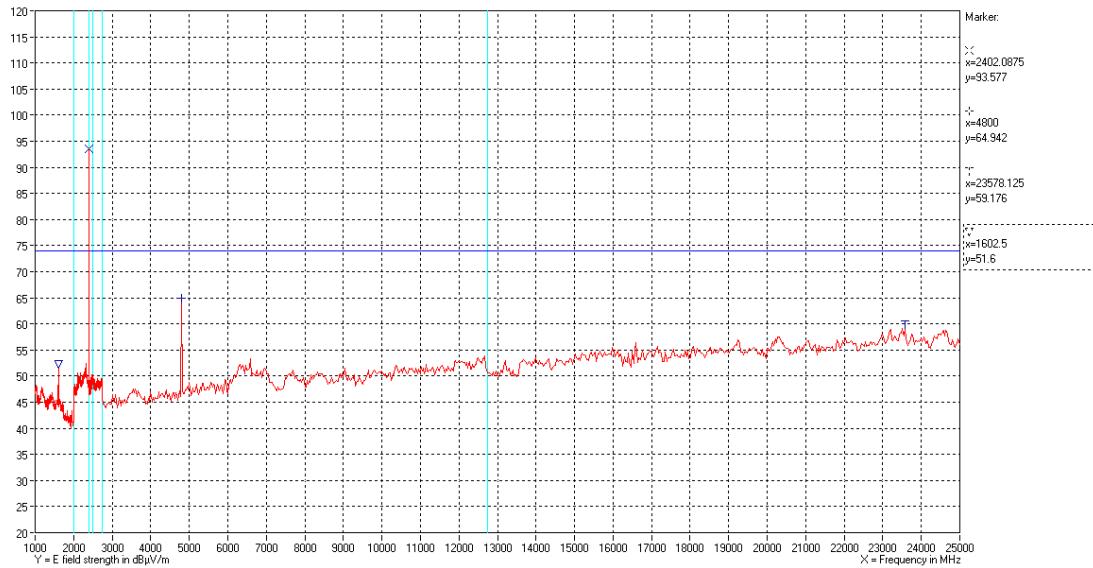
Vertical and horizontal average measurements

Comments

Radio: WT32

Modulation: GFSK

Frequency: 2402 MHz



Polarization

Vertical and horizontal peak measurements

Comments

Radio: WT32
Modulation: GFSK
Frequency: 2402 MHz

Test result

The measured field strengths are below the limit

Test Port

Enclosure

Test frequency

2402 MHz

Test mode

Continuous Tx - normal modulation - hopping on

Condition

Normal

Compliant

Yes

Comments

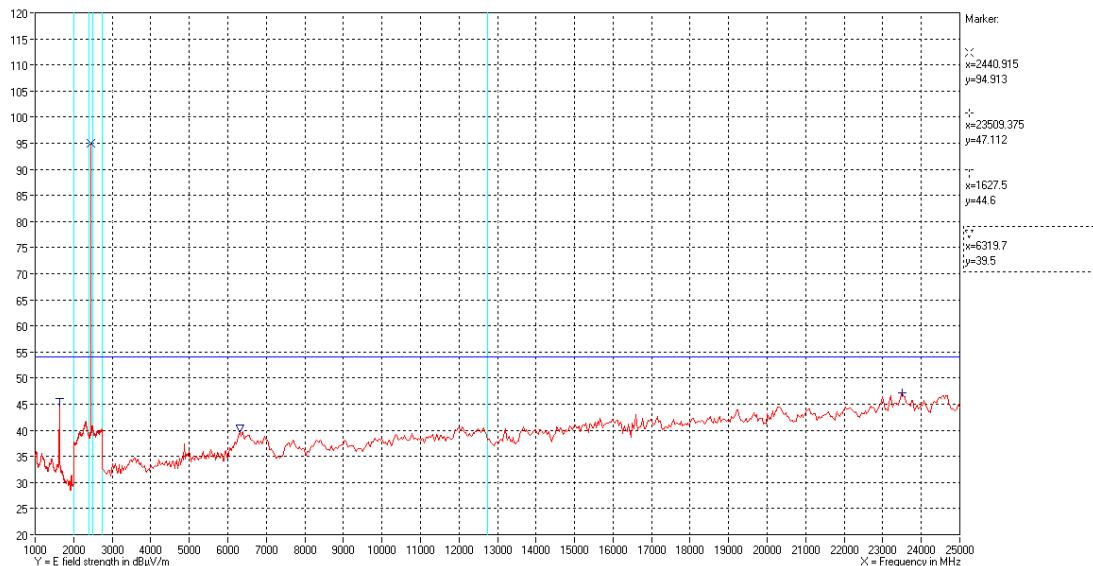
Final maximal measurements by variation of turntable azimuth, antenna height and antenna polarization.

Modulation: GFSK for the WT32 radio



Test object	BTB-1	Sheet	RE_Spur-43
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	13 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	1 GHz – 25 GHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Complete search, Antenna distance 3 m.	Humidity	35 % RH
Detector	Peak and average for 1 GHz to 25 GHz	Bandwidth	1 MHz
Test equipm.	EMI room Hørsholm 49183 49299 29678 49600 49624 49625	Uncertainty	4.9 dB



Polarization

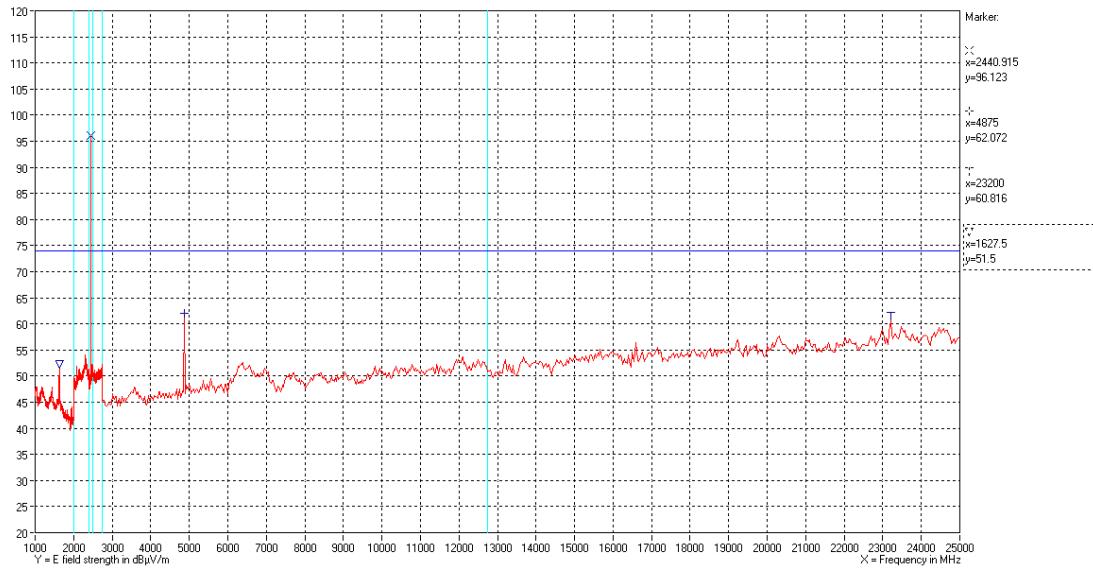
Vertical and horizontal average measurements

Comments

Radio: WT32

Modulation: GFSK

Frequency: 2441 MHz



Polarization

Vertical and horizontal peak measurements

Comments

Radio: WT32
Modulation: GFSK
Frequency: 2441 MHz

Test result

The measured field strengths are below the limit

Test Port

Enclosure

Test frequency

2441 MHz

Test mode

Continuous Tx - normal modulation - hopping on

Condition

Normal

Compliant

Yes

Comments

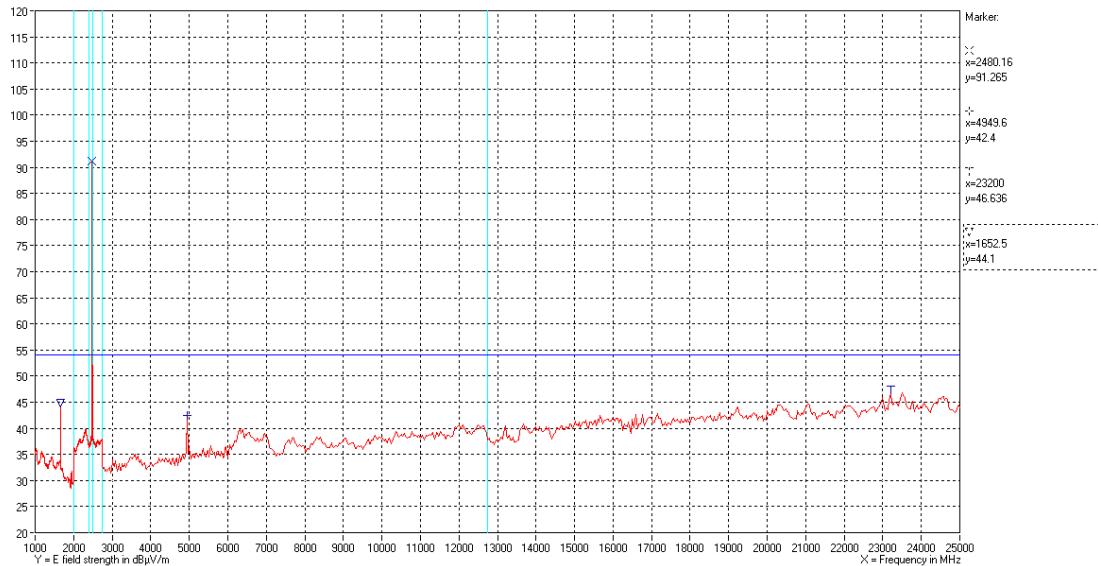
Final maximal measurements by variation of turntable azimuth, antenna height and antenna polarization.

Modulation: GFSK for the WT32 radio



Test object	BTB-1	Sheet	RE_Spur-44
Type	BTB-1	Project no.	A506915-1
Serial no.	B4-14	Date	13 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	1 GHz – 25 GHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Complete search, Antenna distance 3 m.	Humidity	35 % RH
Detector	Peak and average for 1 GHz to 25 GHz	Bandwidth	1 MHz
Test equipm.	EMI room Hørsholm 49183 49299 29678 49600 49624 49625	Uncertainty	4.9 dB



Polarization

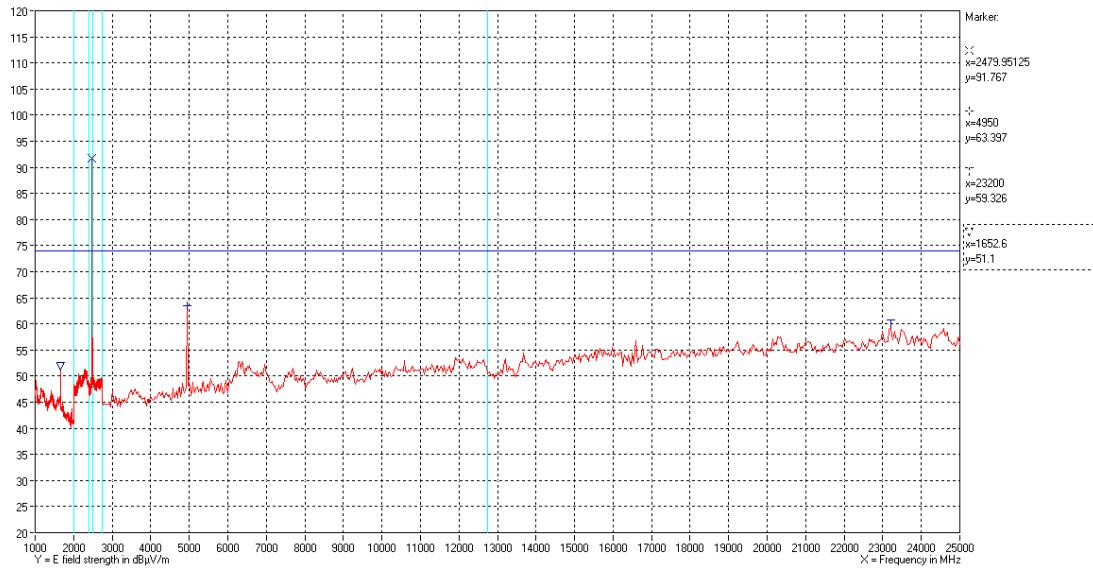
Vertical and horizontal average measurements

Comments

Radio: WT32

Modulation: GFSK

Frequency: 2480 MHz



Polarization

Vertical and horizontal peak measurements

Comments

Radio: WT32
Modulation: GFSK
Frequency: 2480 MHz

Test result

The measured field strengths are below the limit

Test Port

Enclosure

Test frequency

2480 MHz

Test mode

Continuous Tx - normal modulation - hopping on

Condition

Normal

Compliant

Yes

Comments

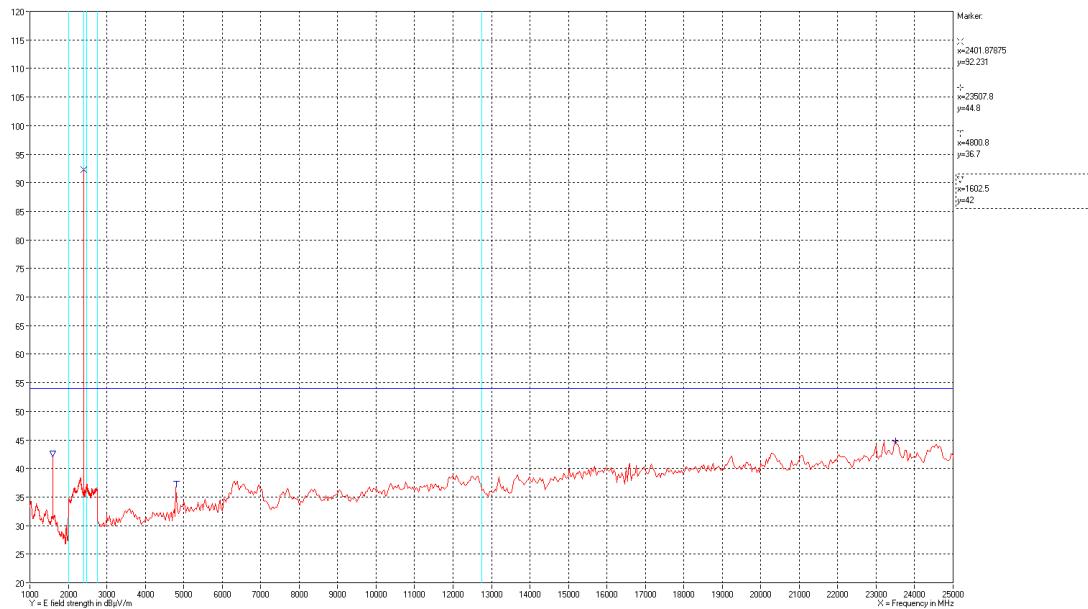
Final maximal measurements by variation of turntable azimuth, antenna height and antenna polarization.

Modulation: GFSK for the WT32 radio



Test object	BTB-1	Sheet	RE_Spur-3
Type	BTB	Project no.	A506915-1
Serial no.	B4-14	Date	18 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	1 GHz – 25 GHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Complete search, Antenna distance 3 m.	Humidity	35 % RH
Detector	Peak for 1GHz to 25 GHz	Bandwidth	1 MHz
Test equipm.	EMI room Hørsholm 49183 49299 29678 49600 49624 49625	Uncertainty	4.9 dB



Polarization

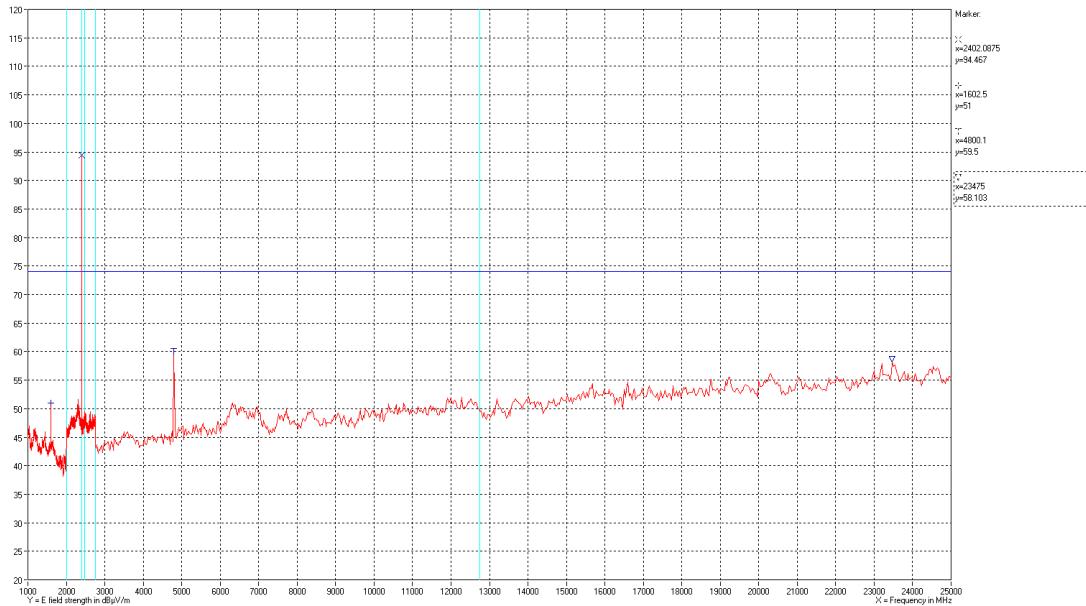
Vertical and horizontal average measurements

Comments

Radio: WT32

Modulation: Pi/4

Frequency: 2402 MHz



Polarization

Vertical and horizontal peak measurements

Comments

Radio: WT32

Modulation: Pi/4

Frequency: 2402 MHz

Test result

The measured field strengths are below the limit

Test Port

Enclosure

Test frequency

2402 MHz

Test mode

Continuous Tx - normal modulation - hopping on

Condition

Normal

Compliant

Yes

Comments

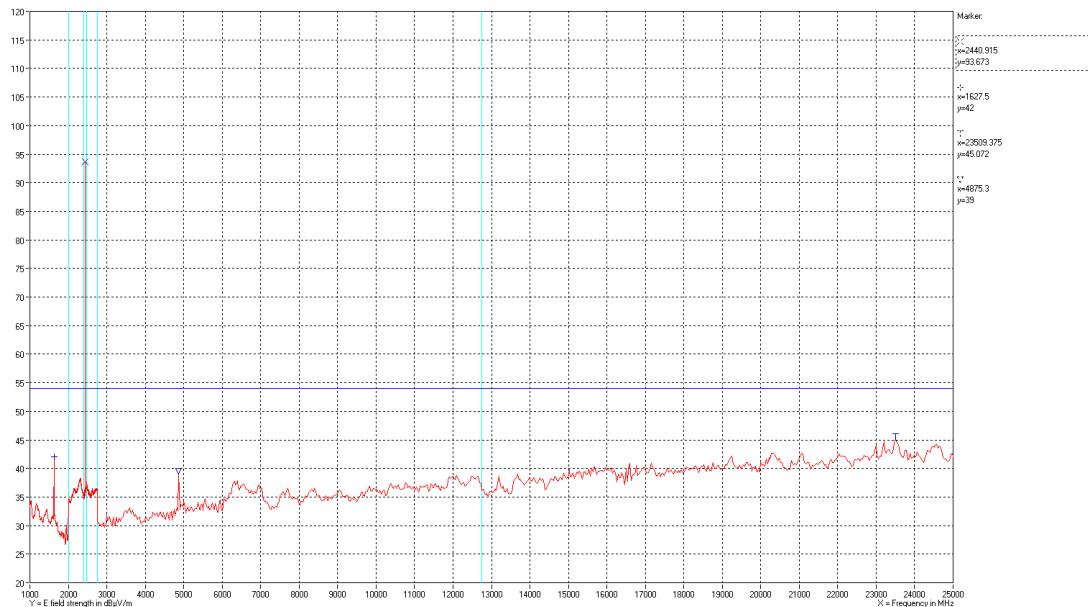
Final maximal measurements by variation of turntable azimuth, antenna height and antenna polarization.

Modulation: Pi/4 for the WT32 radio



Test object	BTB-1	Sheet	RE_Spur-4
Type	BTB	Project no.	A506915-1
Serial no.	B4-13	Date	18 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	1 GHz – 25 GHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Complete search, Antenna distance 3 m.	Humidity	35 % RH
Detector	Peak for 1GHz to 25 GHz	Bandwidth	1 MHz
Test equipm.	EMI room Hørsholm 49183 49299 29678 49600 49624 49625	Uncertainty	4.9 dB



Polarization

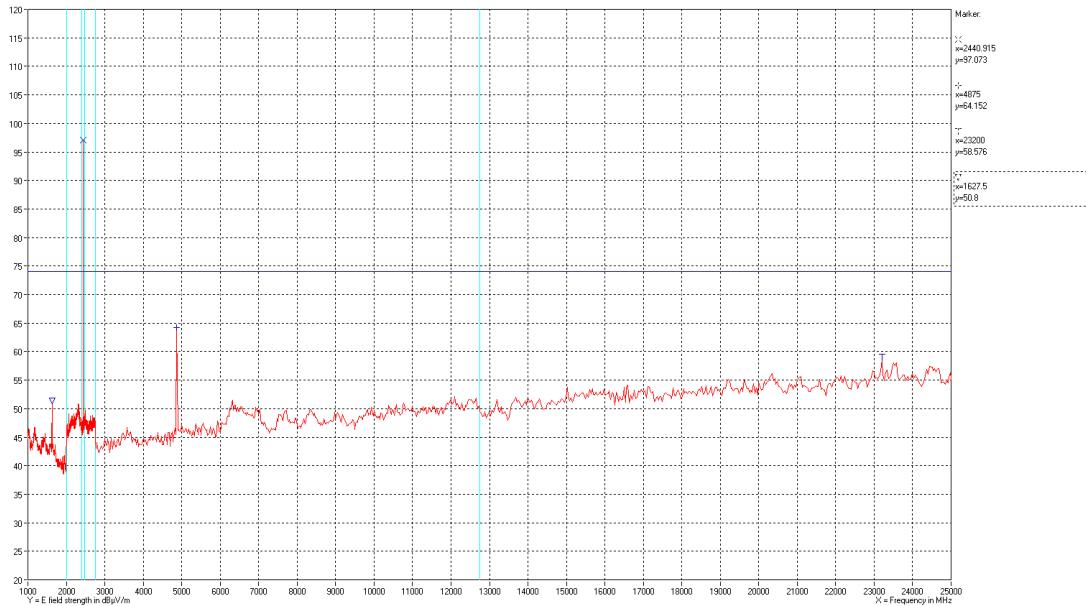
Vertical and horizontal average measurements

Comments

Radio: WT32

Modulation: Pi/4

Frequency: 2441 MHz



Polarization

Vertical and horizontal peak measurements

Comments

Radio: WT32

Modulation: Pi/4

Frequency: 2441 MHz

Test result

The measured field strengths are below the limit

Test Port

Enclosure

Test frequency

2441 MHz

Test mode

Continuous Tx - normal modulation - hopping on

Condition

Normal

Compliant

Yes

Comments

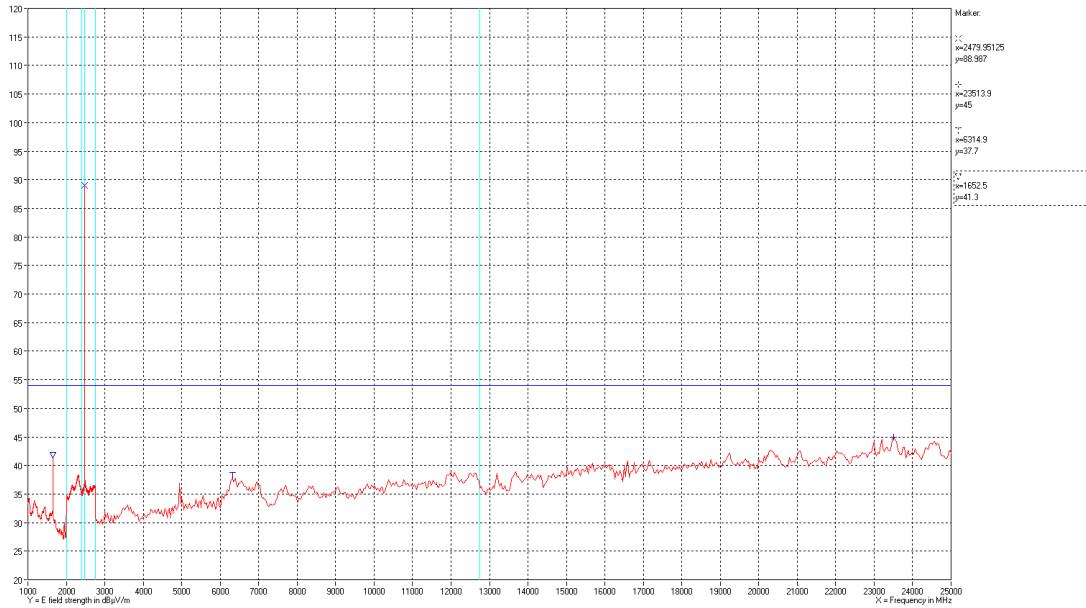
Final maximal measurements by variation of turntable azimuth, antenna height and antenna polarization.

Modulation: Pi/4 for the WT32 radio



Test object	BTB-1	Sheet	RE_Spur-5
Type	BTB	Project no.	A506915-1
Serial no.	B4-14	Date	18 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	1 GHz – 25 GHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Complete search, Antenna distance 3 m.	Humidity	35 % RH
Detector	Peak for 1GHz to 25 GHz	Bandwidth	1 MHz
Test equipm.	EMI room Hørsholm 49183 49299 29678 49600 49624 49625	Uncertainty	4.9 dB



Polarization

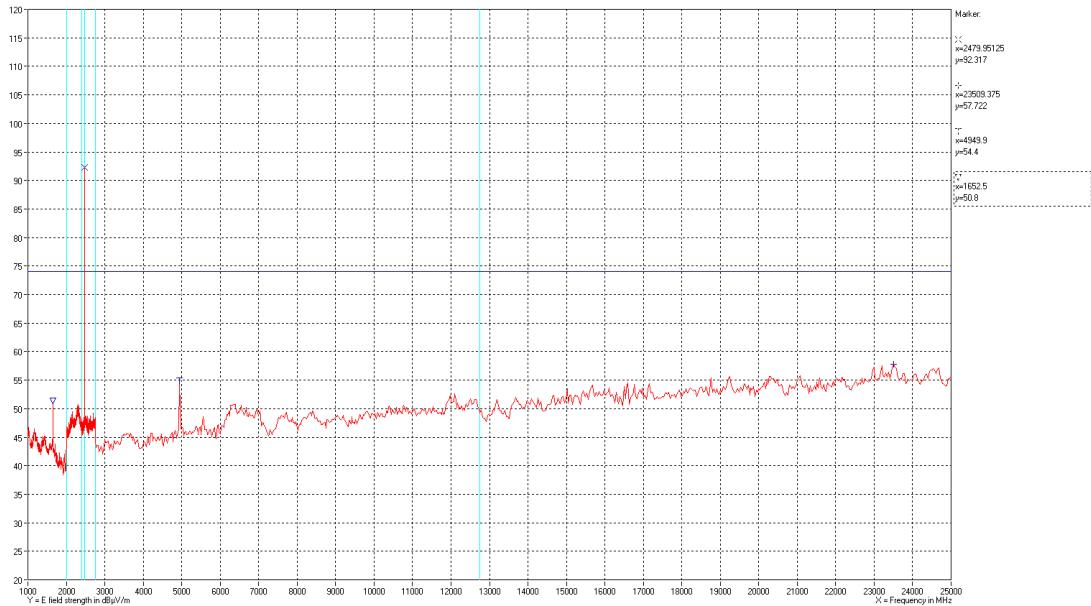
Vertical and horizontal average measurements

Comments

Radio: WT32

Modulation: Pi/4

Frequency: 2480 MHz



Polarization

Vertical and horizontal peak measurements

Comments

Radio: WT32

Modulation: Pi/4

Frequency: 2480 MHz

Test result

The measured field strengths are below the limit

Test Port

Enclosure

Test frequency

2480 MHz

Test mode

Continuous Tx - normal modulation - hopping on

Condition

Normal

Compliant

Yes

Comments

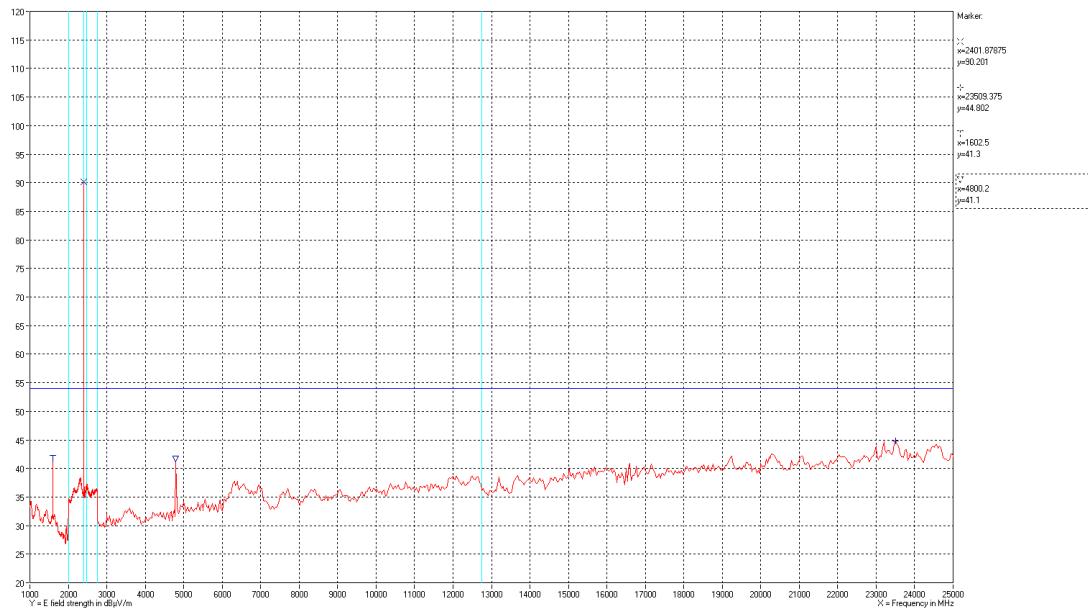
Final maximal measurements by variation of turntable azimuth, antenna height and antenna polarization.

Modulation: Pi/4 for the WT32 radio



Test object	BTB-1	Sheet	RE_Spur-6
Type	BTB	Project no.	A506915-1
Serial no.	B4-13	Date	18 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	1 GHz – 25 GHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Complete search, Antenna distance 3 m.	Humidity	35 % RH
Detector	Peak for 1GHz to 25 GHz	Bandwidth	1 MHz
Test equipm.	EMI room Hørsholm 49183 49299 29678 49600 49624 49625	Uncertainty	4.9 dB

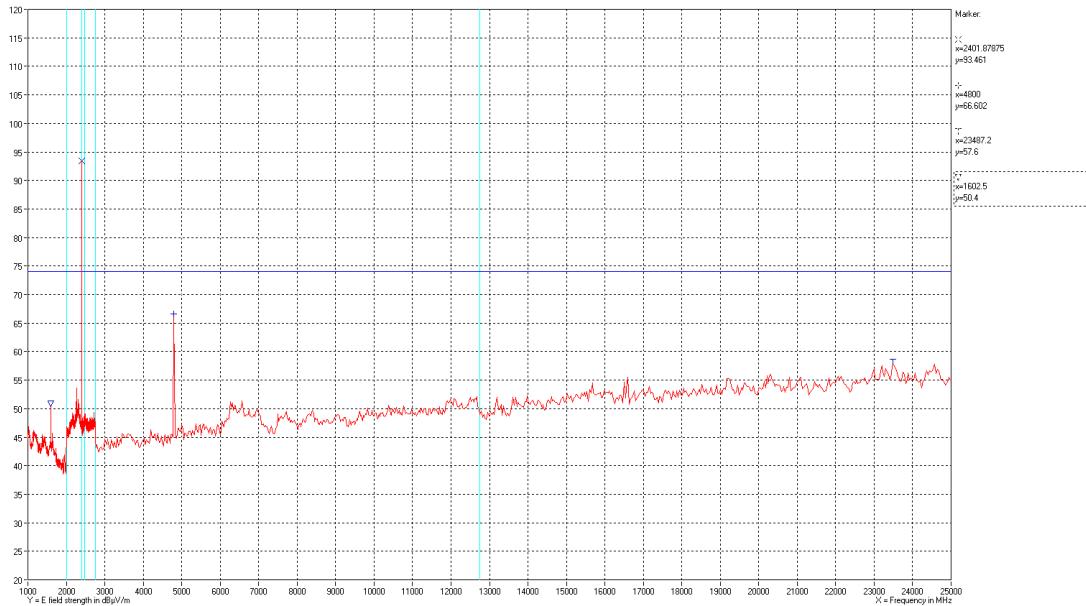


Polarization

Vertical and horizontal average measurements

Comments

Radio: WT32
 Modulation: 8QPSK
 Frequency: 2402 MHz



Polarization

Vertical and horizontal peak measurements

Comments

Radio: WT32

Modulation: 8QPSK

Frequency: 2402 MHz

Test result

The measured field strengths are below the limit

Test Port

Enclosure

Test frequency

2402 MHz

Test mode

Continuous Tx - normal modulation - hopping on

Condition

Normal

Compliant

Yes

Comments

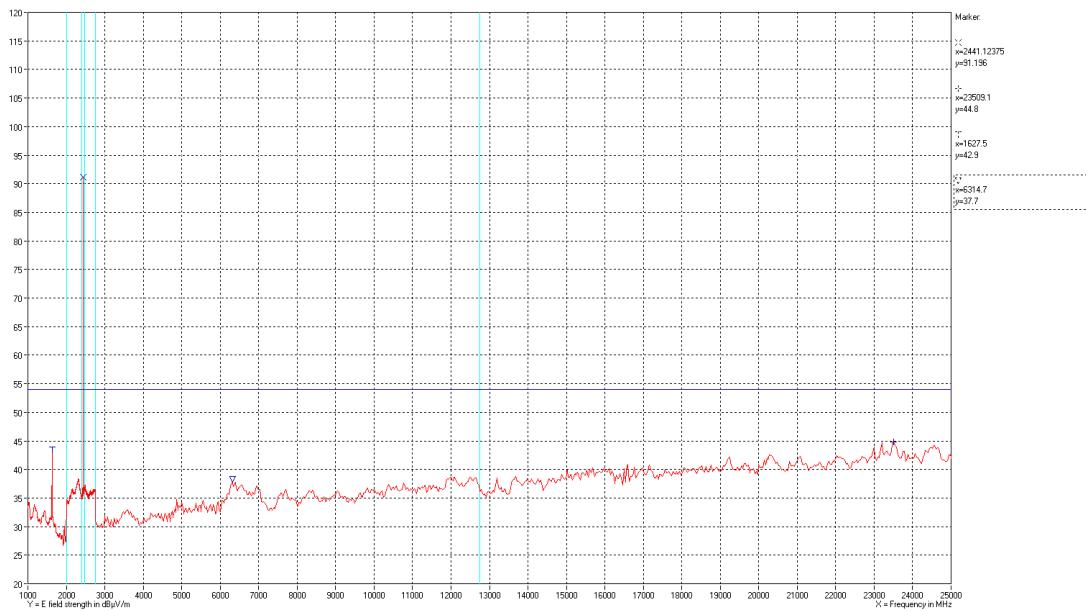
Final maximal measurements by variation of turntable azimuth, antenna height and antenna polarization.

Modulation: 8QPSK for the WT32 radio



Test object	BTB-1	Sheet	RE_Spur-7
Type	BTB	Project no.	A506915-1
Serial no.	B4-14	Date	18 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	1 GHz – 25 GHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Complete search, Antenna distance 3 m.	Humidity	35 % RH
Detector	Peak for 1GHz to 25 GHz	Bandwidth	1 MHz
Test equipm.	EMI room Hørsholm 49183 49299 29678 49600 49624 49625	Uncertainty	4.9 dB

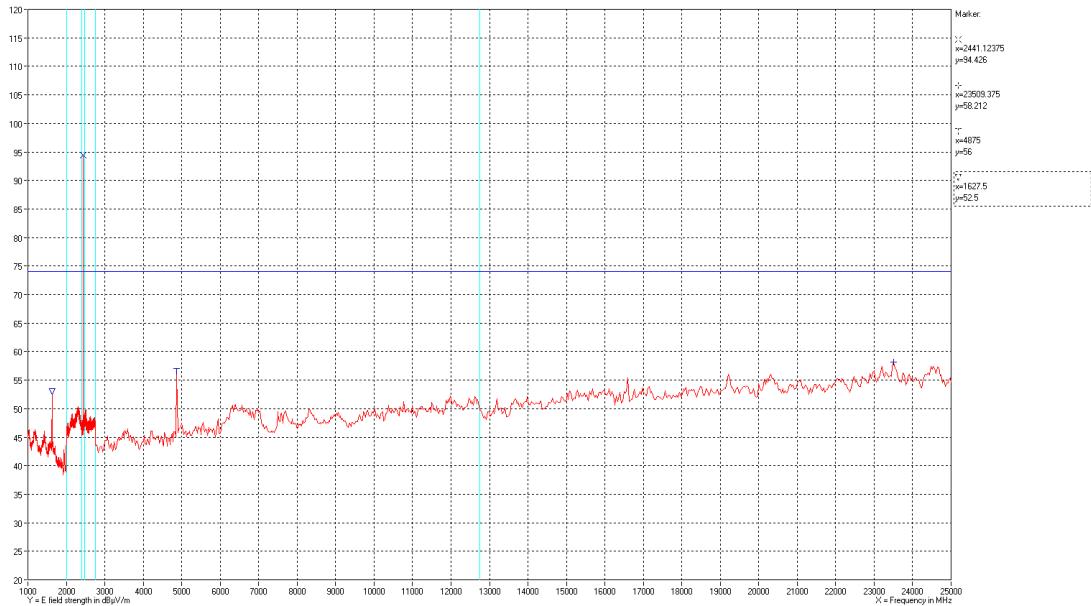


Polarization

Vertical and horizontal average measurements

Comments

Radio: WT32
 Modulation: 8QPSK
 Frequency: 2441 MHz



Polarization

Vertical and horizontal peak measurements

Comments

Radio: WT32

Modulation: 8QPSK

Frequency: 2441 MHz

Test result

The measured field strengths are below the limit

Test Port

Enclosure

Test frequency

2441 MHz

Test mode

Continuous Tx - normal modulation - hopping on

Condition

Normal

Compliant

Yes

Comments

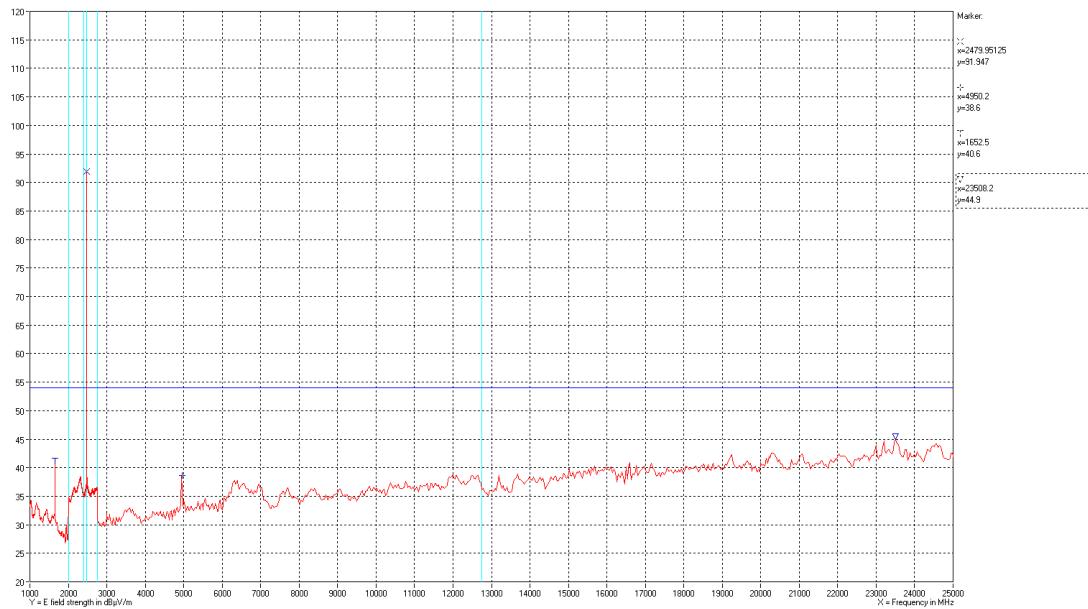
Final maximal measurements by variation of turntable azimuth, antenna height and antenna polarization.

Modulation: 8QPSK for the WT32 radio



Test object	BTB-1	Sheet	RE_Spur-8
Type	BTB	Project no.	A506915-1
Serial no.	B4-13	Date	18 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	1 GHz – 25 GHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Complete search, Antenna distance 3 m.	Humidity	35 % RH
Detector	Peak for 1GHz to 25 GHz	Bandwidth	1 MHz
Test equipm.	EMI room Hørsholm 49183 49299 29678 49600 49624 49625	Uncertainty	4.9 dB

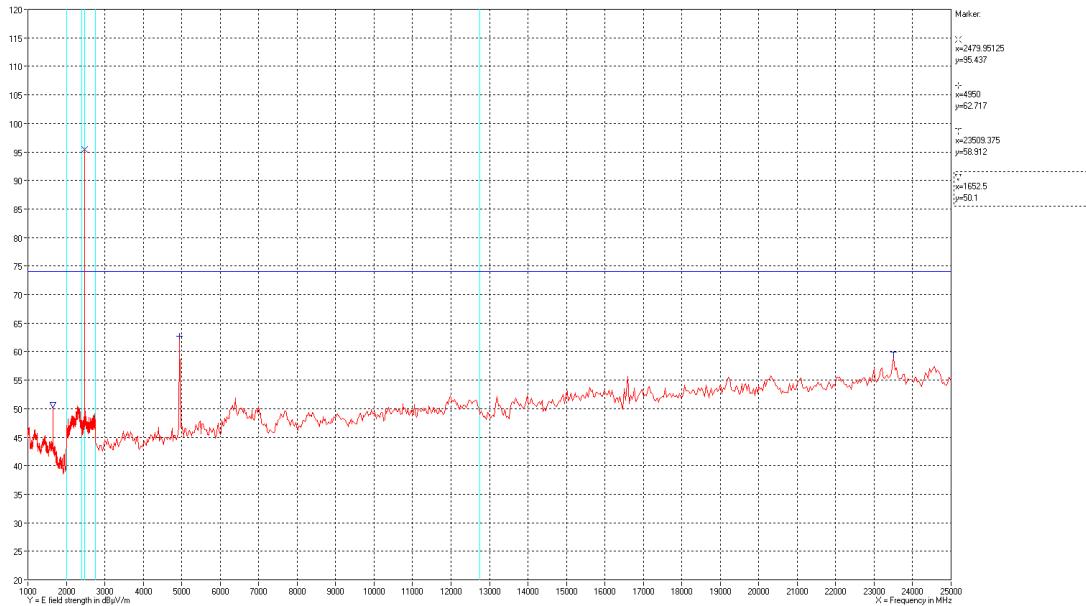


Polarization

Vertical and horizontal average measurements

Comments

Radio: WT32
 Modulation: 8QPSK
 Frequency: 2480 MHz



Polarization

Vertical and horizontal peak measurements

Comments

Radio: WT32

Modulation: 8QPSK

Frequency: 2480 MHz

Test result

The measured field strengths are below the limit

Test Port

Enclosure

Test frequency

2480 MHz

Test mode

Continuous Tx - normal modulation - hopping on

Condition

Normal

Compliant

Yes

Comments

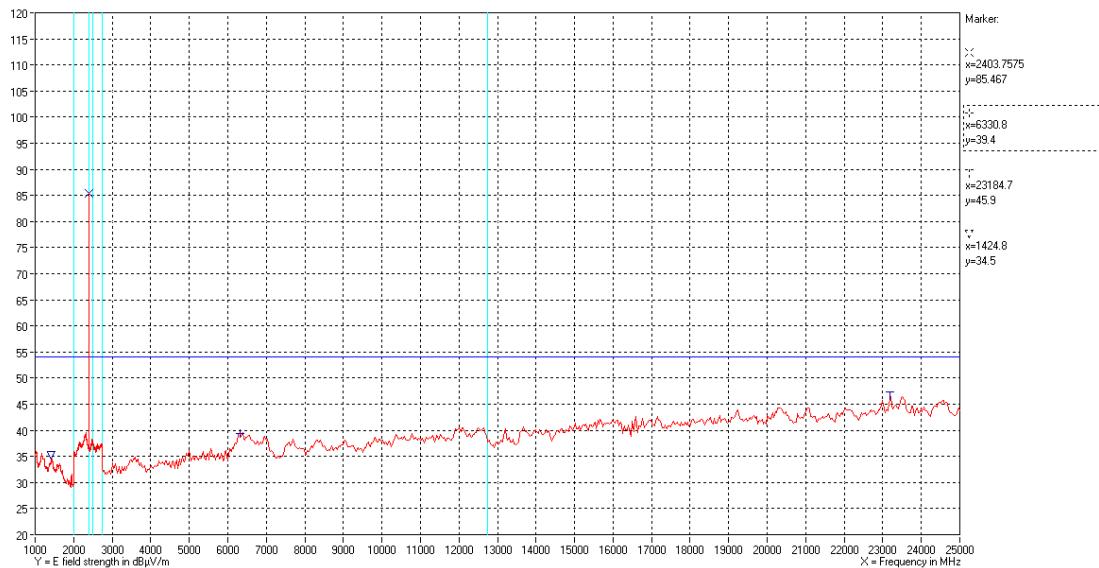
Final maximal measurements by variation of turntable azimuth, antenna height and antenna polarization.

Modulation: 8QPSK for the WT32 radio



Test object	BTB-1	Sheet	RE_Spur-9
Type	BTB	Project no.	A506915-1
Serial no.	B4-13	Date	18 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	1 GHz – 25 GHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Complete search, Antenna distance 3 m.	Humidity	35 % RH
Detector	Peak for 1GHz to 25 GHz	Bandwidth	1 MHz
Test equipm.	EMI room Hørsholm 49183 49299 29678 49600 49624 49625	Uncertainty	4.9 dB



Polarization

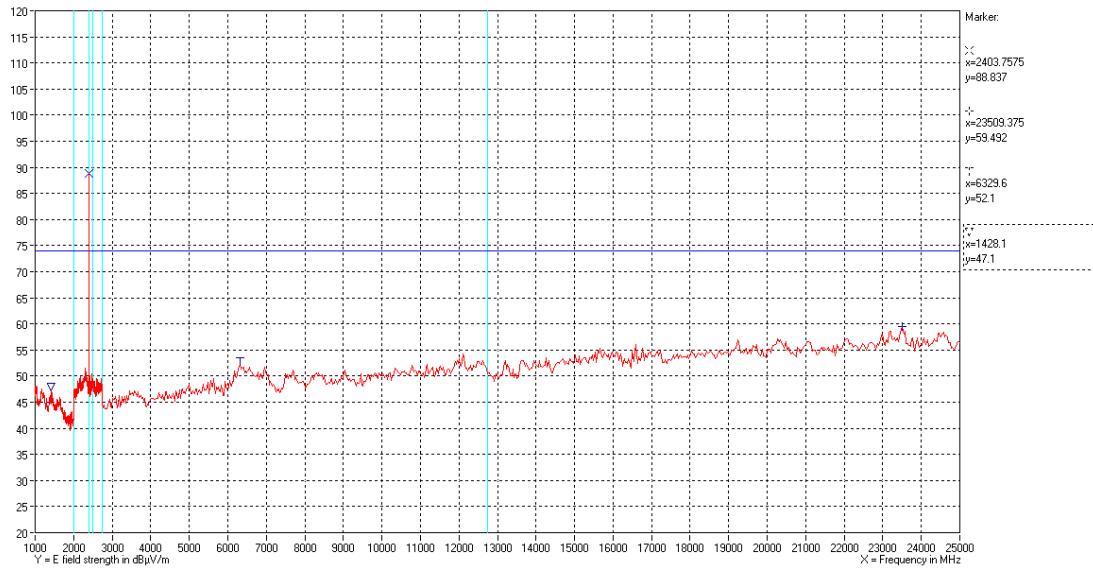
Vertical and horizontal average measurements

Comments

Radio: GN Radio

Modulation: GFSK

Frequency: 2404 MHz



Polarization

Vertical and horizontal peak measurements

Comments

Radio: GN Radio

Modulation: GFSK

Frequency: 2404 MHz

Test result

The measured field strengths are below the limit

Test Port

Enclosure

Test frequency

2404 MHz

Test mode

Continuous Tx - normal modulation - hopping on

Condition

Normal

Compliant

Yes

Comments

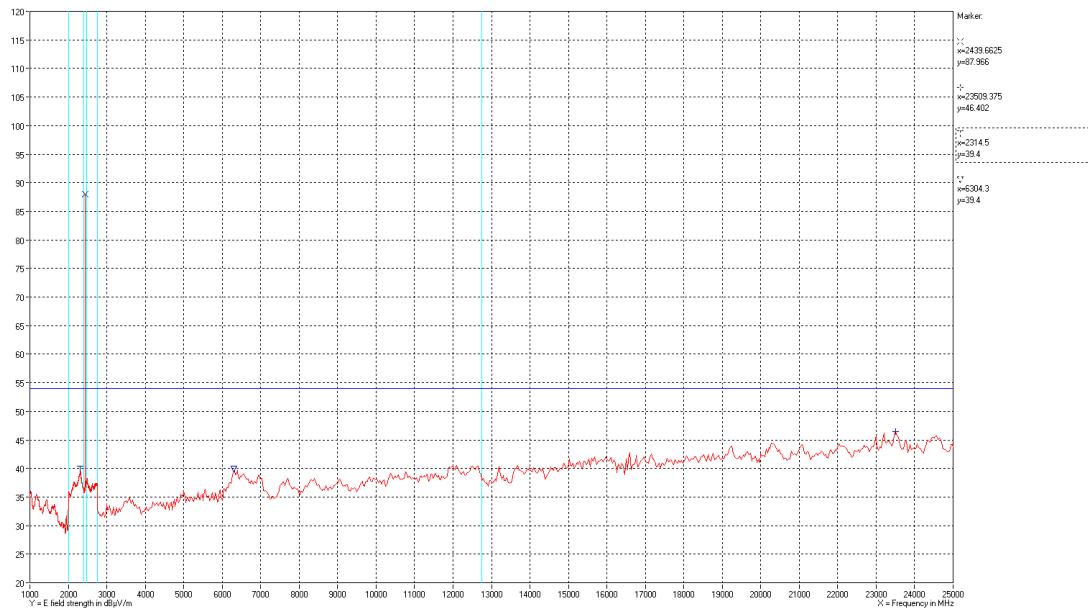
Final maximal measurements by variation of turntable azimuth, antenna height and antenna polarization.

Modulation: GFSK for the GN radio.



Test object	BTB-1	Sheet	RE_Spur-10
Type	BTB	Project no.	A506915-1
Serial no.	B4-14	Date	18 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	1 GHz – 25 GHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Complete search, Antenna distance 3 m.	Humidity	35 % RH
Detector	Peak for 1GHz to 25 GHz	Bandwidth	1 MHz
Test equipm.	EMI room Hørsholm 49183 49299 29678 49600 49624 49625	Uncertainty	4.9 dB

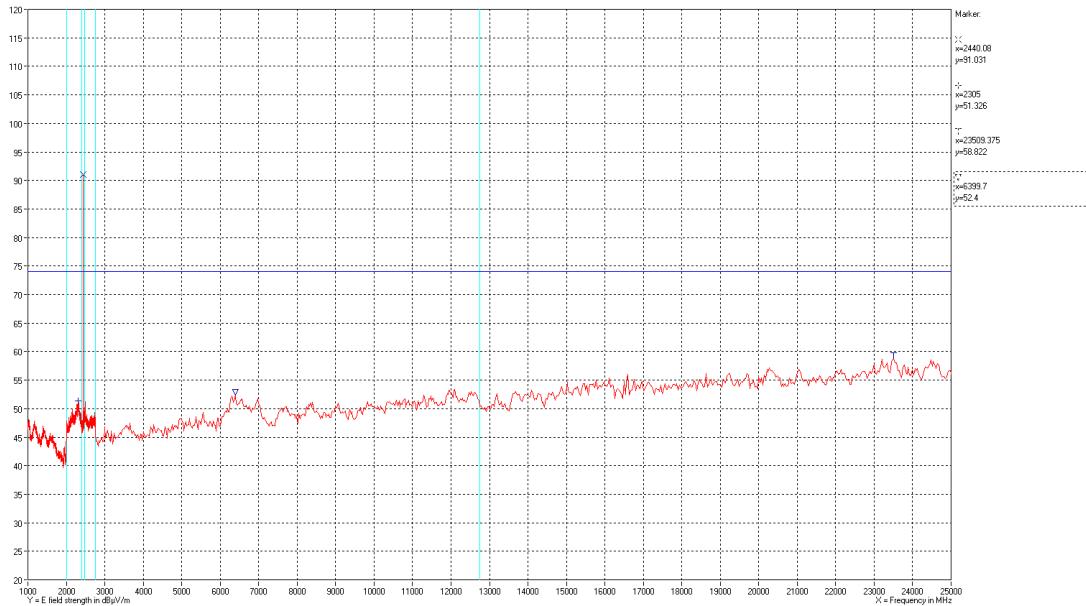


Polarization

Vertical and horizontal average measurements

Comments

Radio: GN Radio
 Modulation: GFSK
 Frequency: 2440 MHz



Polarization

Vertical and horizontal peak measurements

Comments

Radio: GN Radio

Modulation: GFSK

Frequency: 2440 MHz

Test result

The measured field strengths are below the limit

Test Port

Enclosure

Test frequency

2440 MHz

Test mode

Continuous Tx - normal modulation - hopping on

Condition

Normal

Compliant

Yes

Comments

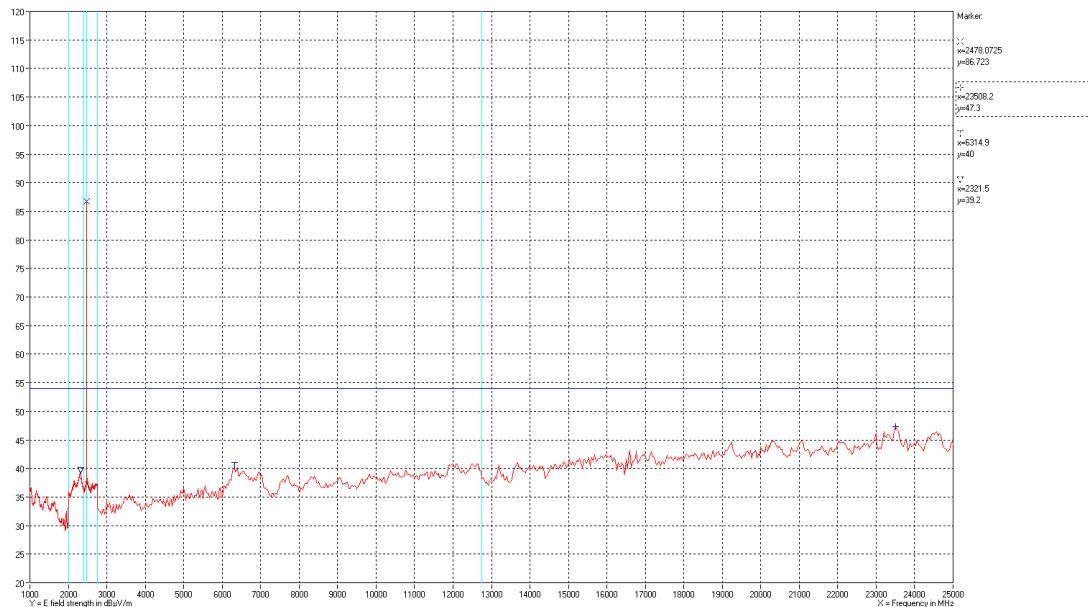
Final maximal measurements by variation of turntable azimuth, antenna height and antenna polarization.

Modulation: GFSK for the GN radio.



Test object	BTB-1	Sheet	RE_Spur-11
Type	BTB	Project no.	A506915-1
Serial no.	B4-13	Date	17 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.209 and RSS-210, 2.2	Frequency	1 GHz – 25 GHz

Test method	ANSI C63.4:2003	Temperature	23 °C
Characteristics	Complete search, Antenna distance 3 m.	Humidity	35 % RH
Detector	Peak for 1GHz to 12.75 GHz	Bandwidth	1 MHz
Test equipm.	EMI room Hørsholm 49183 49299 29678 49600 49624 49625	Uncertainty	4.9 dB

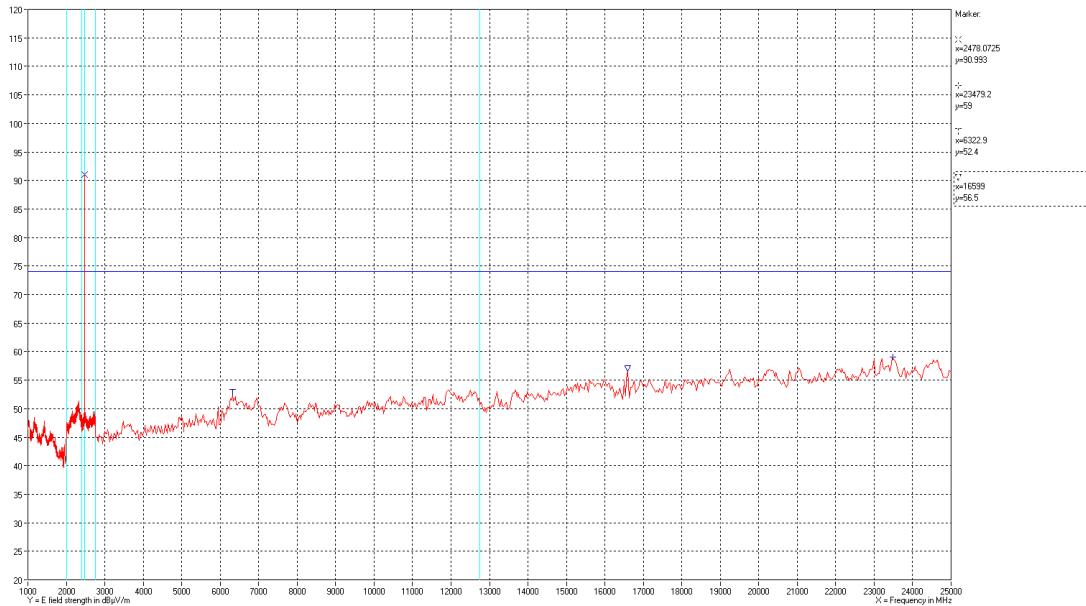


Polarization

Vertical and horizontal average measurements

Comments

Radio: GN Radio
 Modulation: GFSK
 Frequency: 2478 MHz



Polarization

Vertical and horizontal peak measurements

Comments

Radio: GN Radio

Modulation: GFSK

Frequency: 2478 MHz

Test result

The measured field strengths are below the limit

Test Port

Enclosure

Test frequency

2478 MHz

Test mode

Continuous Tx - normal modulation - hopping on

Condition

Normal

Compliant

Yes

Comments

Final maximal measurements by variation of turntable azimuth, antenna height and antenna polarization.

Modulation: GFSK for the GN radio.



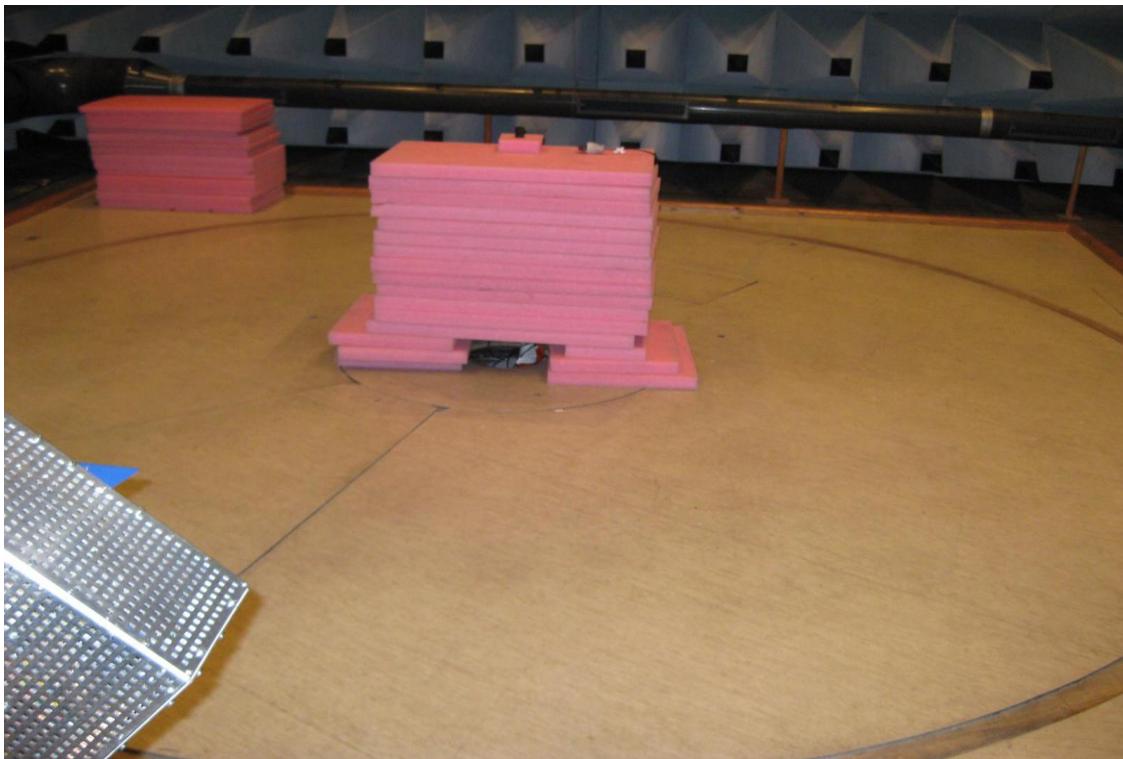


Photo 4.7.1 Test setup regarding measurement of radiated emission, 1 GHz to 25 GHz.

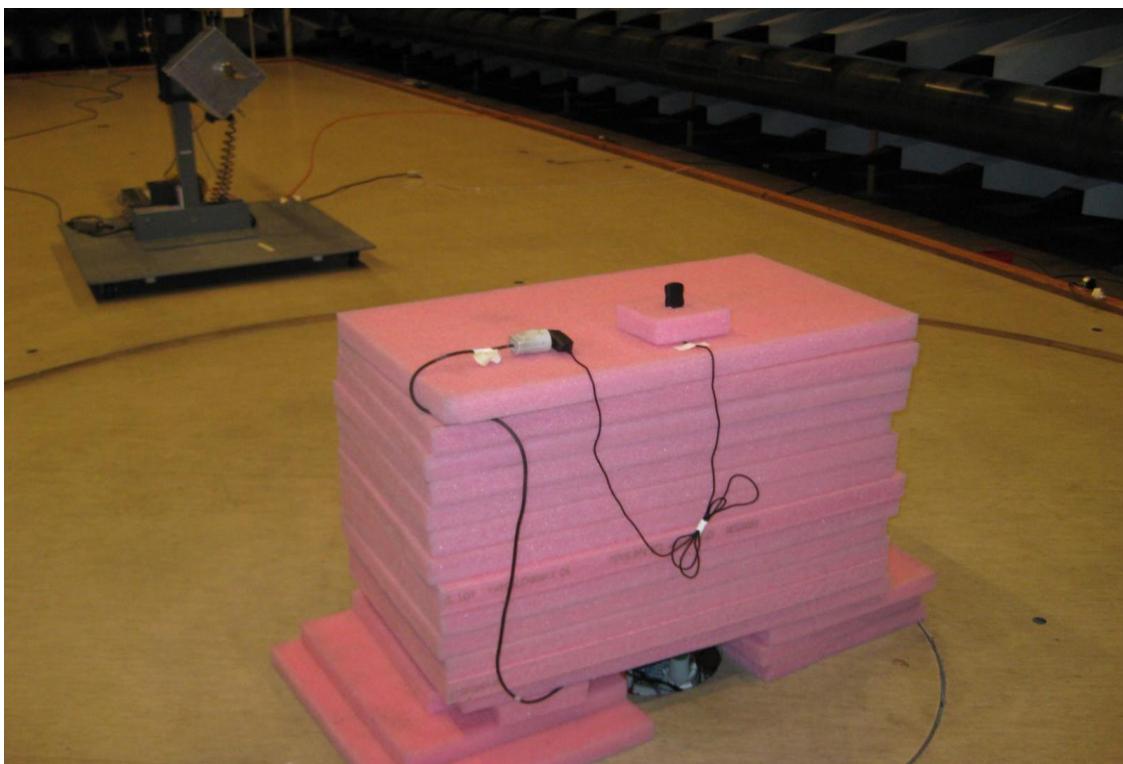


Photo 4.7.2 Test setup regarding measurement of radiated emission, 1 GHz to 25 GHz.

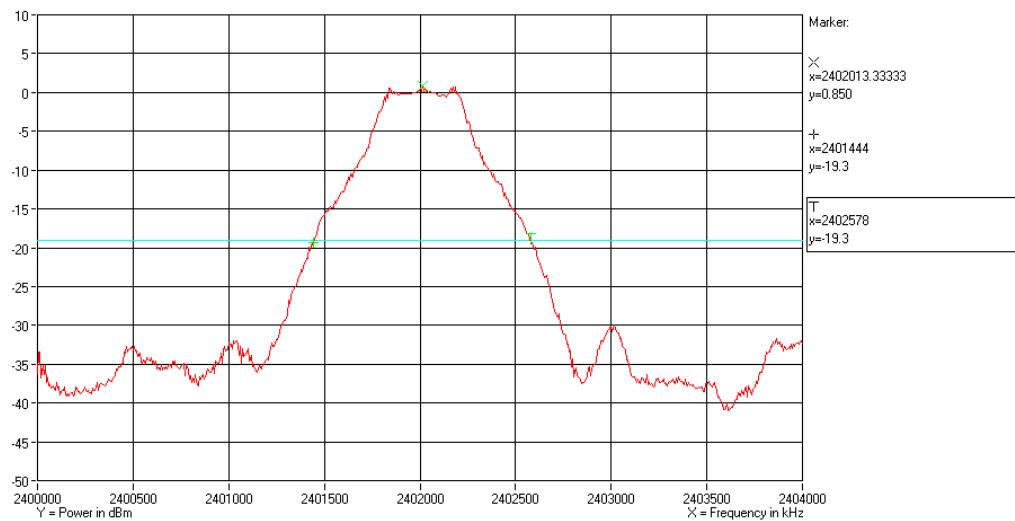


4.8 Measurement of 20 dB bandwidth and 6 dB bandwidth

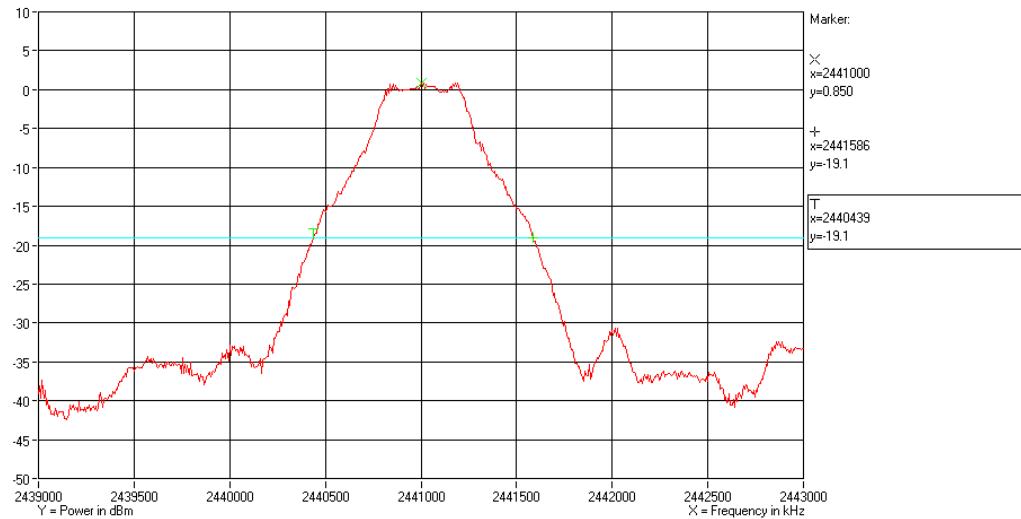
Test object	BTB-1	Sheet	PROF-1
Type	BTB	Project no.	A506915-1
Serial no.	B4-12	Date	26 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.247(a)(1) & (2) IC RSS-210 A8.1(b) & A8.2(a)		

Test method	DA 00-705 Released March 30, 2000 for WT32 module and Measurement of Digital Transmission Systems Operating under section 15.247, March 23, 2005 for GN radio				
Characteristics	Temperature: 23°C. Test voltage: External power supply				
Test equipm.	49321 49183 49299 Uncertainty: 10 kHz				
SA Settings	RBW: 100 KHz VBW: 300 KHz SPAN: 4 MHz DET: Peak CF: 2402 MHz, 2441 MHz, 2480 MHz and 2404 MHz, 2440 MHz, 2478 MHz Trace: Max Hold				
Test results					
Operation frequency	Measured Low frequency	Measured High frequency	Measured 20 dB bandwidth	Limit	Comment
WT-32 module					
2402 MHz – GFSK-DH5	2401.444 MHz	2402.578 MHz	1.134 MHz	> 25 kHz	Passed
2441 MHz - GFSK-DH5	2440.439 MHz	2441.586 MHz	1.147 MHz	> 25 kHz	Passed
2480 MHz - GFSK-DH5	2479.446 MHz	2480.595 MHz	1.149 MHz	> 25 kHz	Passed
2402 MHz - π/4-DQPSK-2DH5	2401.291 MHz	2402.727 MHz	1.436 MHz	> 25 kHz	Passed
2441 MHz - π/4-DQPSK-2DH5	2440.296 MHz	2441.721 MHz	1.425 MHz	> 25 kHz	Passed
2480 MHz - π/4-DQPSK-2DH5	2479.310 MHz	2480.741 MHz	1.431 MHz	> 25 kHz	Passed
2402 MHz – 8DQPSK-3DH5	2401.286 MHz	2402.720 MHz	1.434 MHz	> 25 kHz	Passed
2441 MHz - 8DQPSK-3DH5	2440.305 MHz	2441.741 MHz	1.436 MHz	> 25 kHz	Passed
2480 MHz - 8DQPSK-3DH5	2479.312 MHz	2480.735 MHz	1.423 MHz	> 25 kHz	Passed
GN Radio - 15.247(a)(2) & IC RSS-210 A8.2(a)					
2404 MHz – GFSK	2403.513 MHz	2404.409 MHz	896 kHz	> 500 kHz	Passed
2440 MHz - GFSK	2439.522 MHz	2440.335 MHz	813 kHz	> 500 kHz	Passed
2478 MHz – GFSK	2477.526 MHz	2478.401 MHz	875 kHz	> 500 kHz	Passed
Note 1: System receiver input bandwidth: The manufacturer(WT32) declares that the input bandwidth matches the bandwidth of the transmitter.					

Band edge criteria	20 dB bandwidth for WT32 radio. 6 dB bandwidth for GN radio.
Test Port	Conducted
Test mode	Continuous Tx - normal modulation - hopping on
Compliant	Yes
Comments	The measured 20 dB bandwidth was within limit designated in 15.247(a)(1) and measured 6 dB bandwidth was within limit designated in 15.247(a)(2)

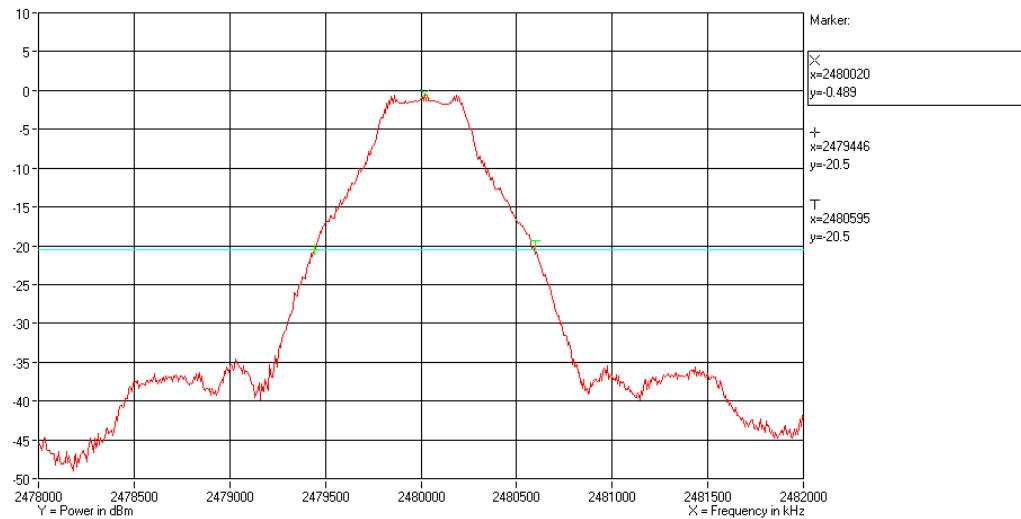


Comments 2402 MHz – GFSK-DH5



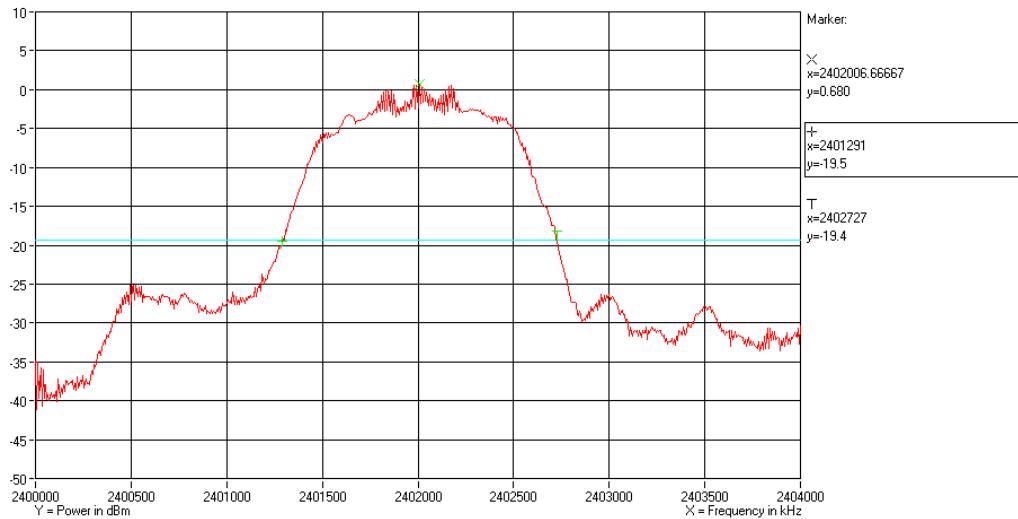
Comments

2441 MHz – GFSK-DH5



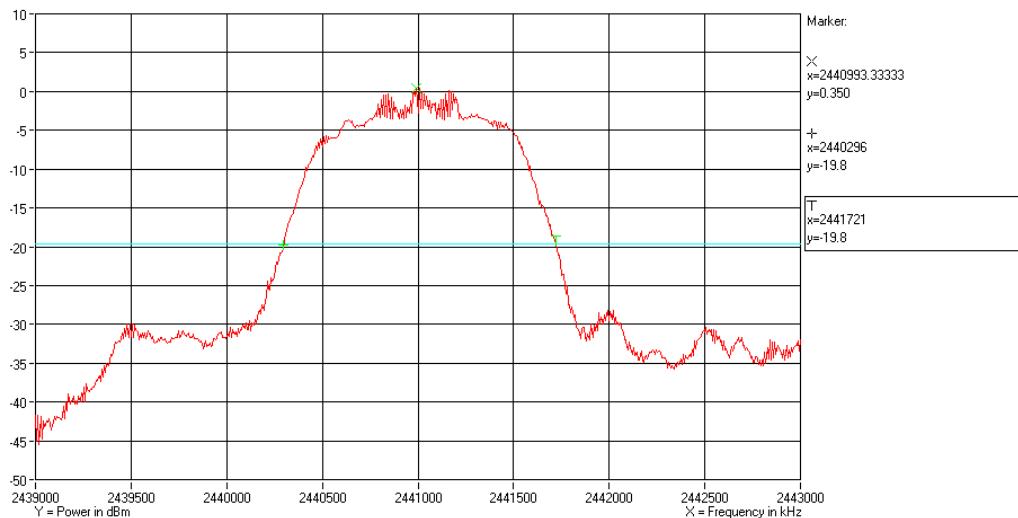
Comments

2480 MHz – GFSK-DH5



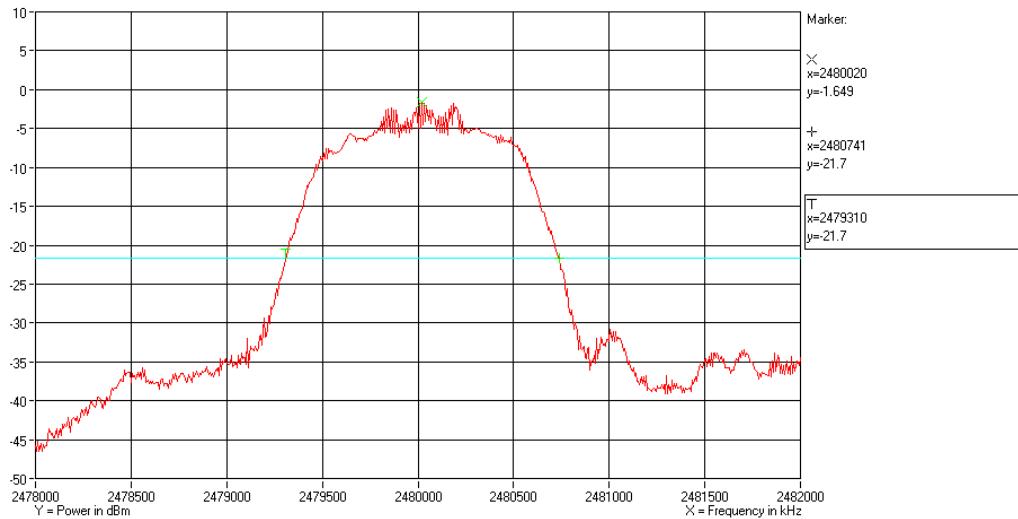
Comments

2402 MHz – $\pi/4$ -DQPSK-2DH5



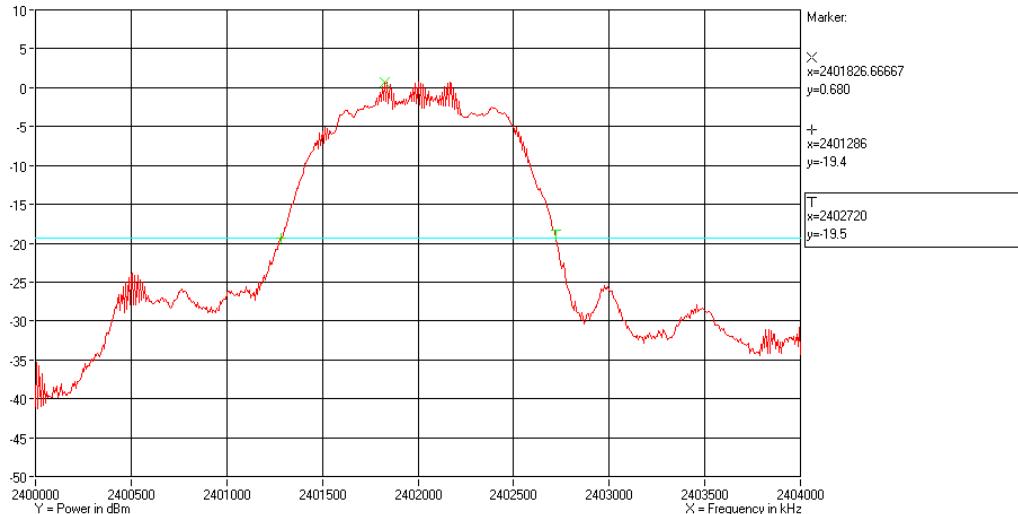
Comments

2441 MHz – $\pi/4$ -DQPSK-2DH5



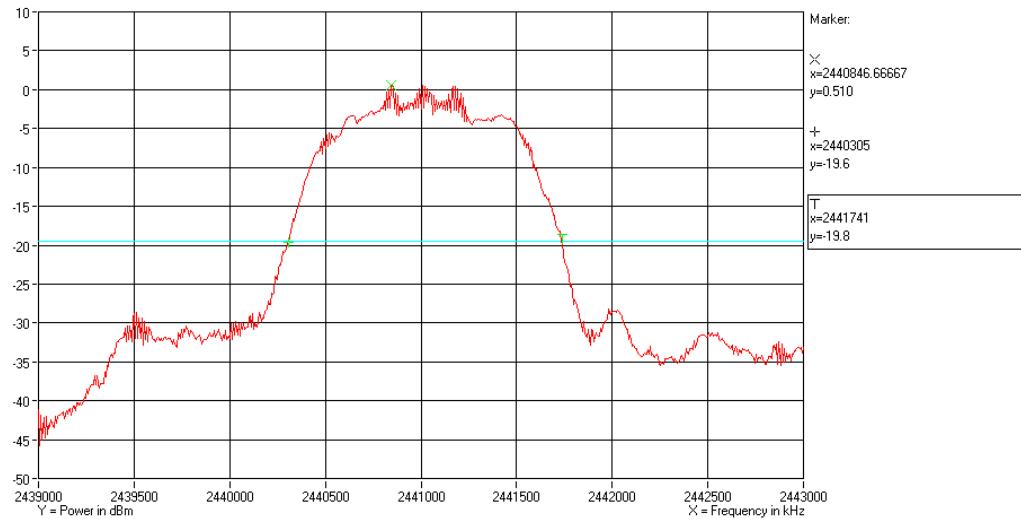
Comments

2480 MHz – $\pi/4$ -DQPSK-2DH5



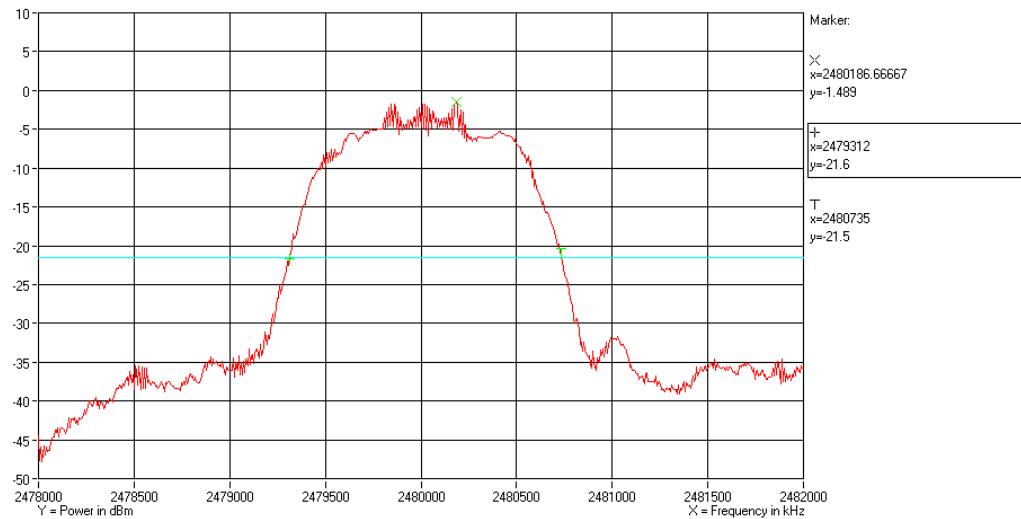
Comments

2402 MHz – 8DPSK-3DH5



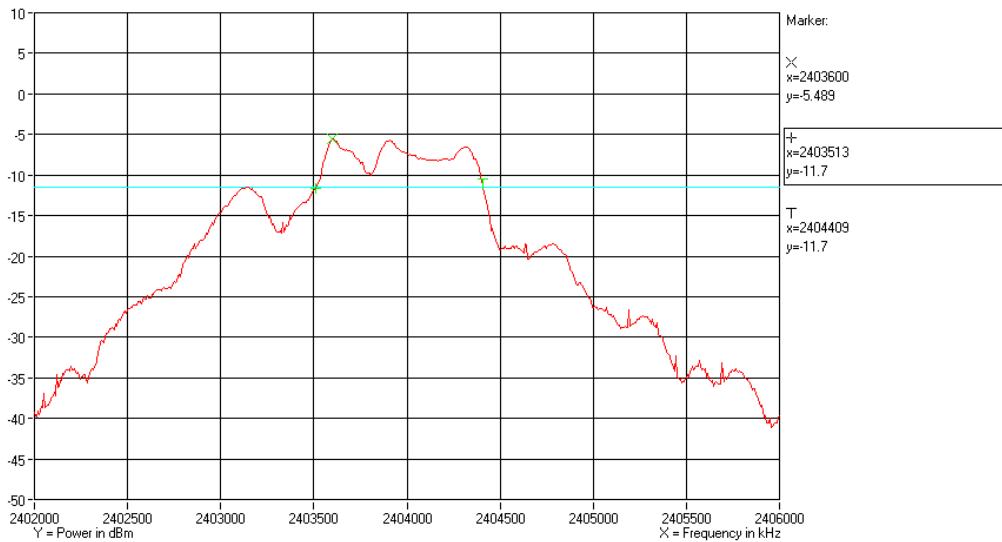
Comments

2441 MHz – 8DPSK-3DH5



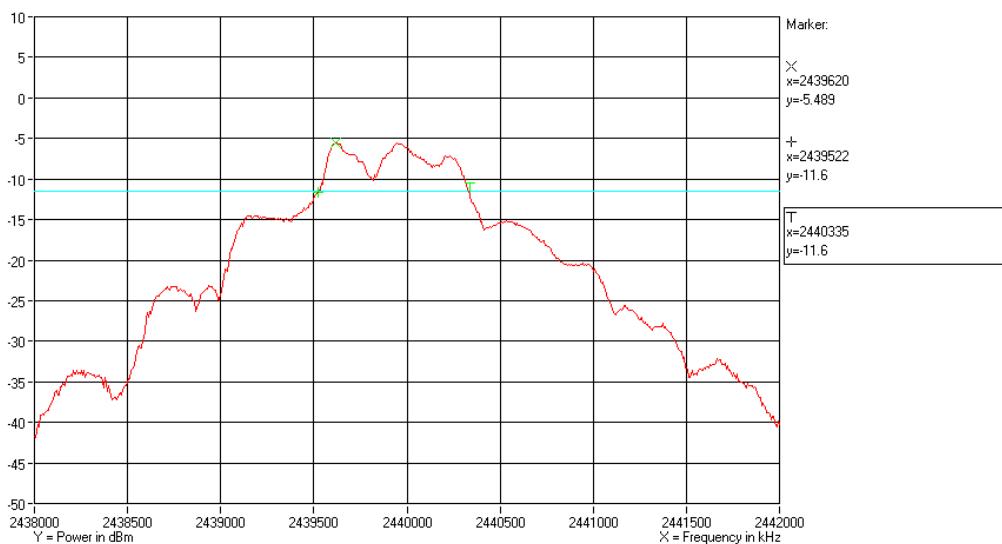
Comments

2480 MHz – 8DPSK-3DH5



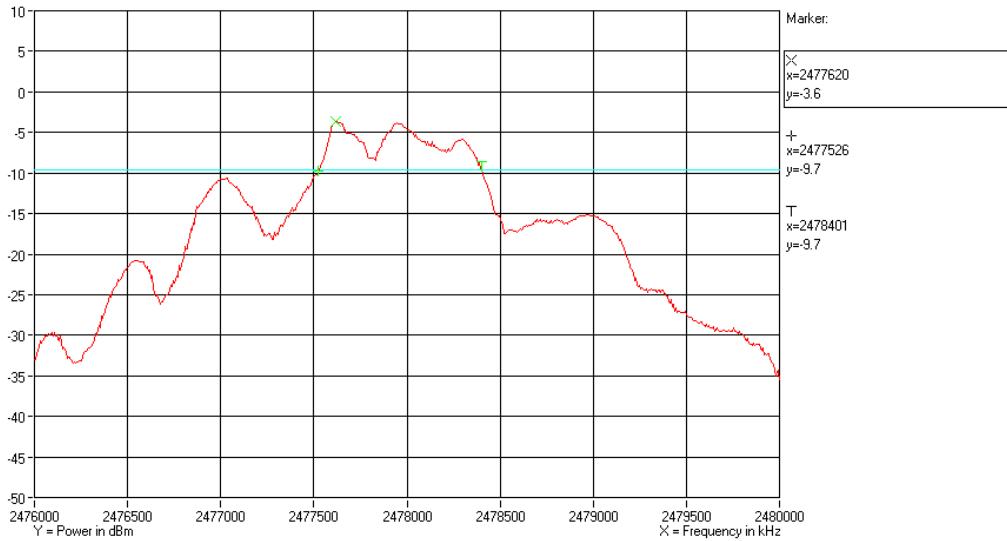
Comments

2404 MHz – GFSK – GN Radio



Comments

2440 MHz – GFSK – GN Radio



Comments

2478 MHz – GFSK – GN Radio



Photo 4.8.1 Test setup regarding measurement of 20 dB bandwidth and 6 dB bandwidth



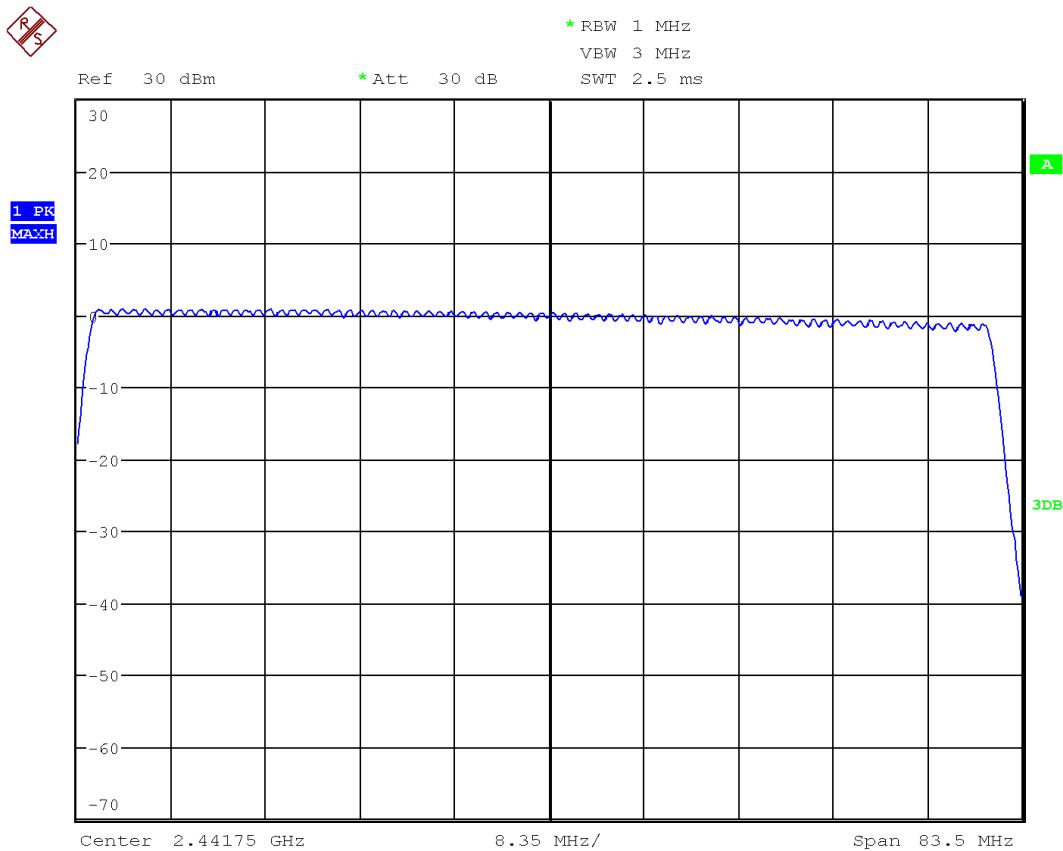
4.9 Measurement of number of hopping channels

Test object	BTB-1	Sheet	PROF-2
Type	BTB	Project no.	A506915-1
Serial no.	B4-12	Date	28 May 2010
Client	GN Hearing A/S	Initials	JAS
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.247(a)(1) IC RSS-210 A8.1		

Test method	DA 00-705 Released March 30, 2000 for WT32 module		
Characteristics	Temperature: 23°C. Test voltage: External power supply		
Test equipm.	49550		
SA Settings	RBW: 500 KHz VBW: 2 MHz SPAN: 41 & 42.5 MHz DET: Peak CF: 2420.5 MHz, 2462.25 MHz Trace: Max Hold		
Test results			
Operating mode	Number of channels	Limit	Comment
GFSK-DH5	79	75	Passed
$\pi/4$ -DQPSK-2DH5	79	75	Passed
8DQPSK-3DH5	79	75	Passed
Note 1:			

Test Port	Conducted
Radio	WT32
Test mode	Continuous Tx - normal modulation - hopping between all operating frequencies.
Compliant	Yes
Comments	None

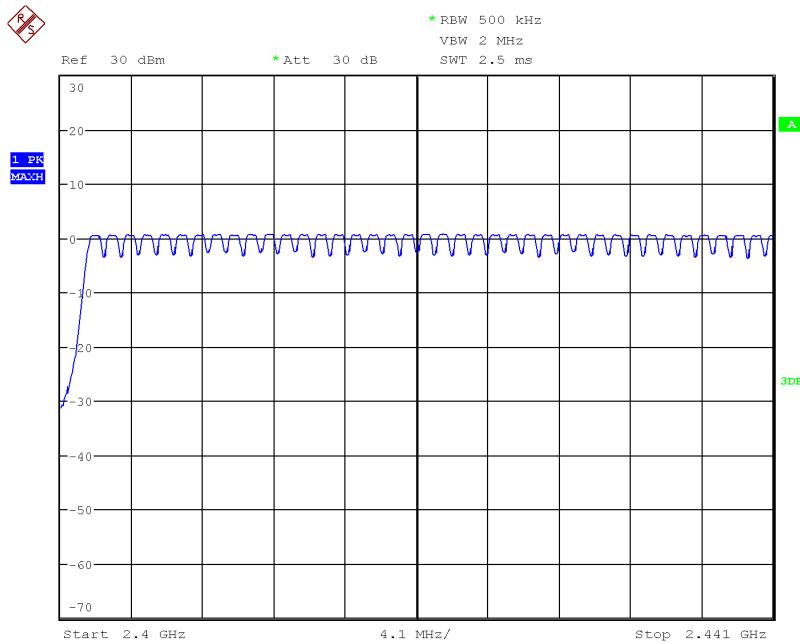




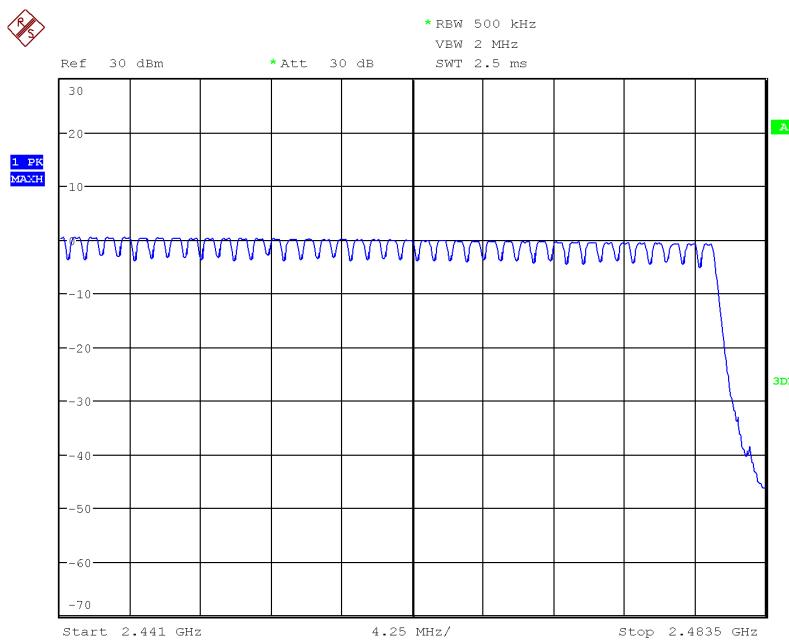
Date: 27.MAY.2010 12:18:08

Comments

Modulation: GFSK-DH5



Date: 27.MAY.2010 12:40:47



Date: 27.MAY.2010 12:41:43

Comments

Modulation: GFSK-DH5



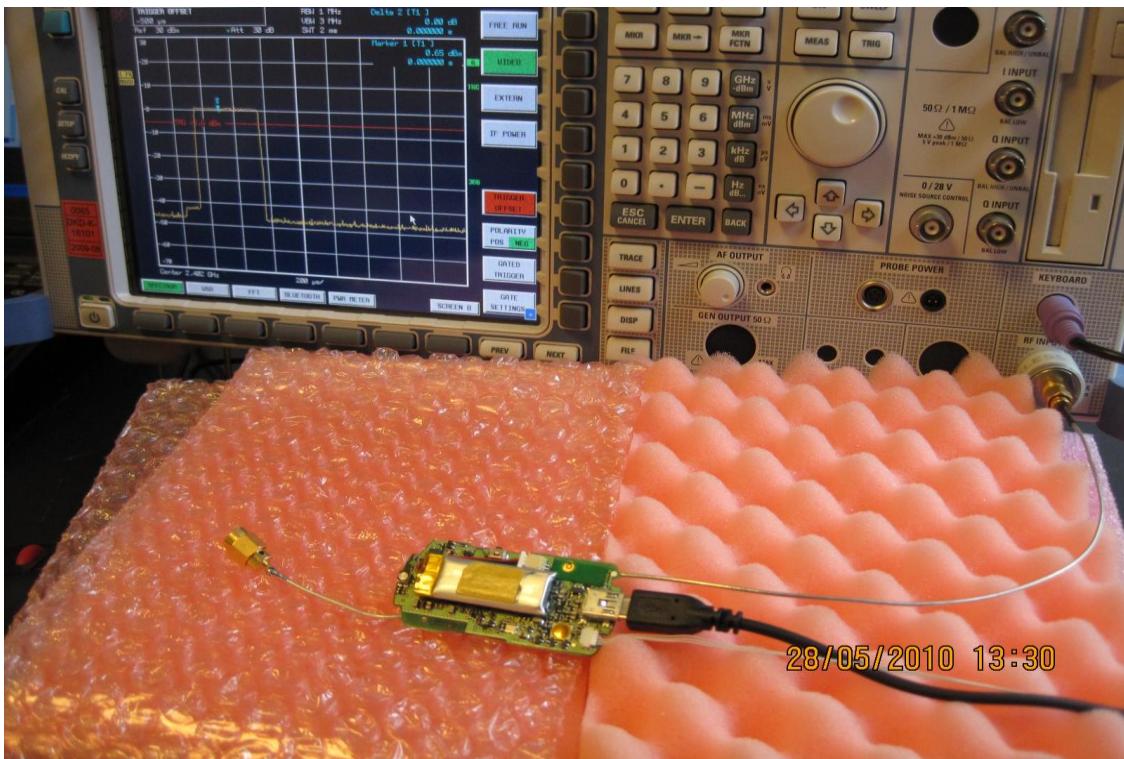


Photo 4.9.1 Test setup regarding measurement of number of hopping channels



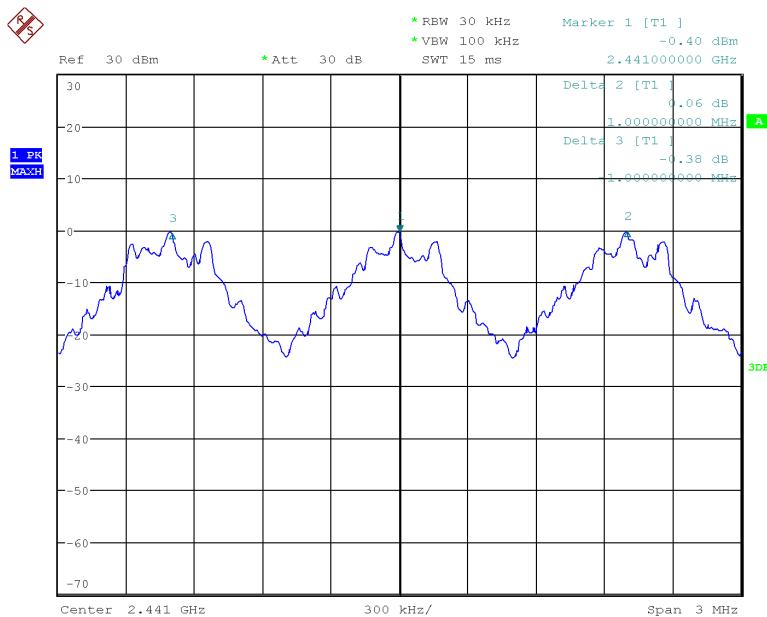
4.10 Measurement of carrier frequency separation

Test object	BTB-1	Sheet	PROF-3
Type	BTB	Project no.	A506915-1
Serial no.	B4-12	Date	28 May 2010
Client	GN Hearing A/S	Initials	JAS
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.247(a)(1) IC RSS-210 A8.1		

Test method	DA 00-705 Released March 30, 2000 for WT32 module Temperature: 23°C. Test voltage: External power supply		
Characteristics			
Test equipm.	49550		
SA Settings	RBW: 30 KHz VBW: 100 kHz SPAN: 3 MHz DET: Peak CF: 2441 MHz Trace: Max Hold		
Test results			
Frequency	Operating Mode	Channel Separation	Comment
2441 MHz	GFSK-DH5	1.00 MHz	None
2441 MHz	π/4-DQPSK-2DH5	1.00 MHz	None
2441 MHz	8DPSK-3DH5	1.00 MHz	None
Note 1: Channel: 38/39/40 - 2440 MHz/2441 MHz/2442 MHz			

Test Port	Conducted
Test mode	Continuous Tx - normal modulation - hopping between all operating frequencies.
Limit	The measured channel separation shall be greater than two thirds of the 20 dB bandwidth. Worst case (from section 4.8): $2 * 1.436 \text{ MHz} / 3 = 967.3 \text{ kHz}$
Compliant	Yes
Comments	None

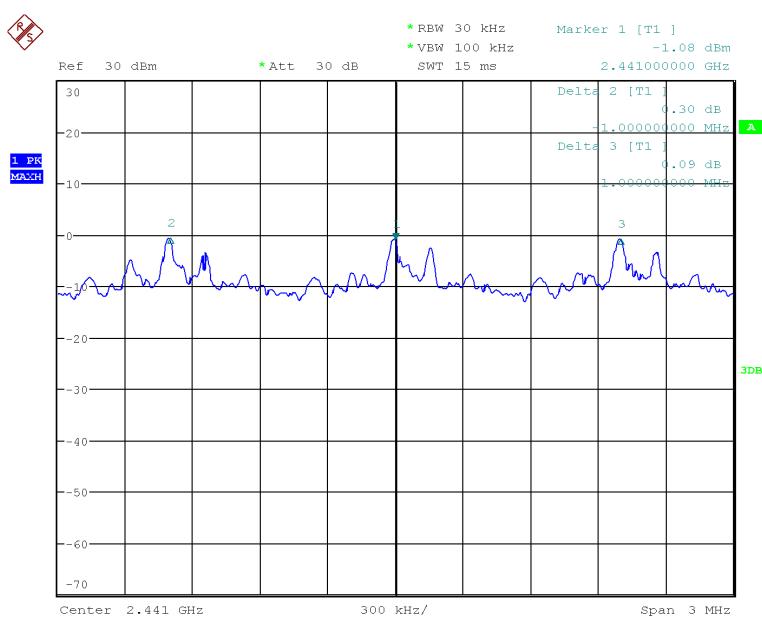




Date: 27.MAY.2010 11:07:07

Comments

2441 MHz – GFSK-DH5

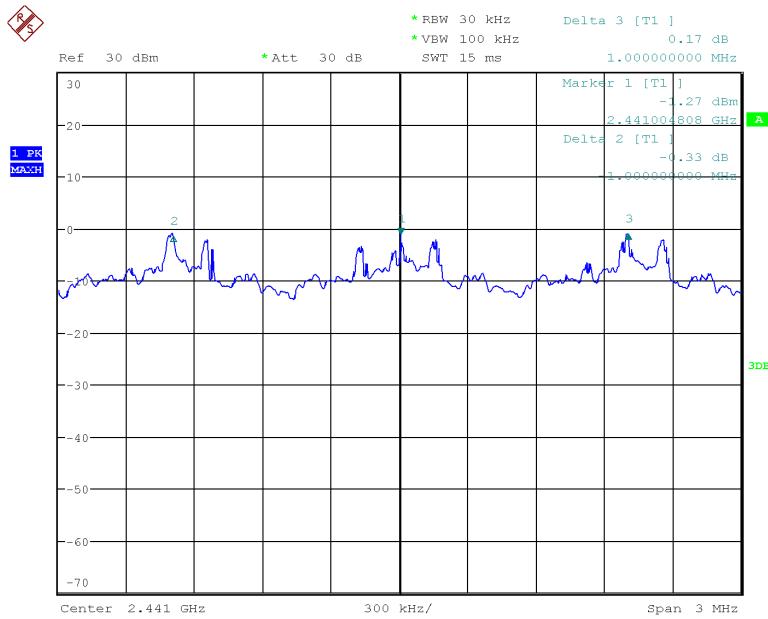


Date: 27.MAY.2010 11:36:54

Comments

2441 MHz – $\pi/4$ -DQPSK-2DH5





Date: 27.MAY.2010 11:50:57

Comments

2441 MHz – 8DPSK-3DH5



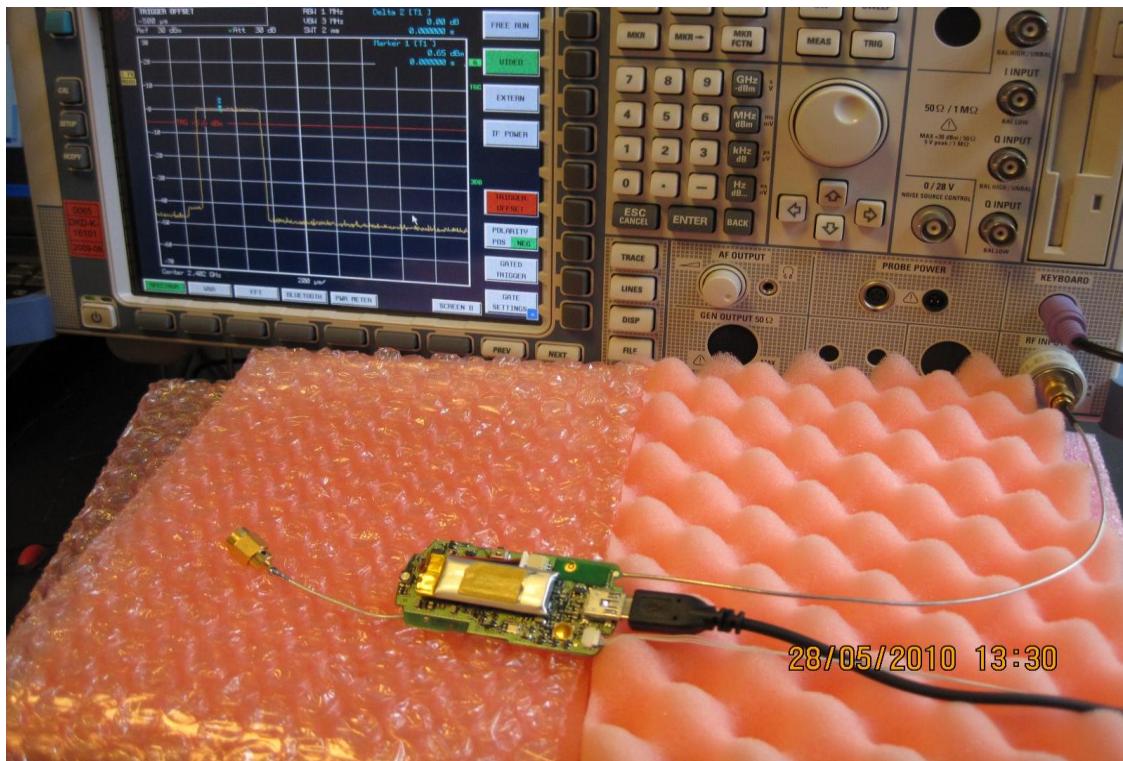


Photo 4.10.1 Test setup regarding measurement of carrier frequency separation



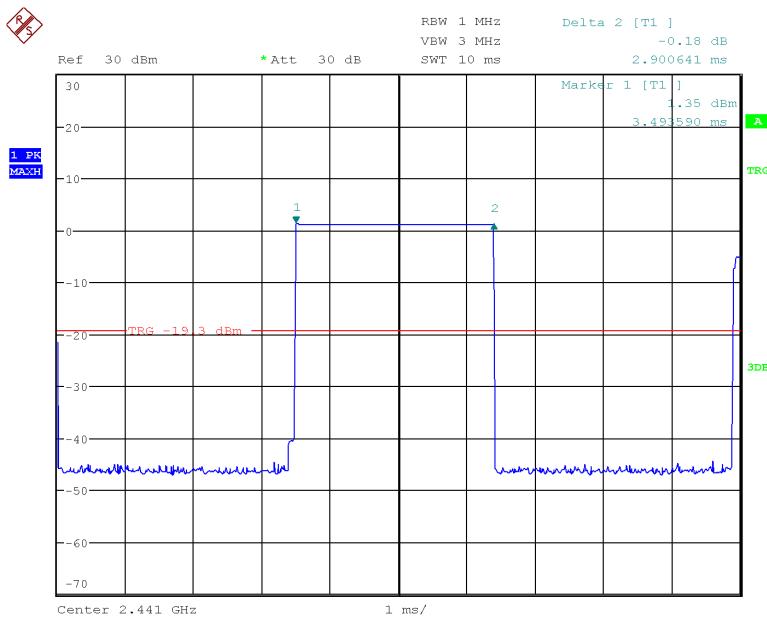
4.11 Measurement of time of occupancy (Dwell Time)

Test object	BTB-1	Sheet	PROF-4
Type	BTB	Project no.	A506915-1
Serial no.	B4-12	Date	28 May 2010
Client	GN Hearing A/S	Initials	JAS
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.247(a)(1)(iii) IC RSS-210 A8.1		

Test method	DA 00-705 Released March 30, 2000 for WT32 module Temperature: 23°C. Test voltage: External power supply									
<u>Characteristics</u>										
Test equipm.	49550					Uncertainty: < 10µs				
SA Settings	RBW: 100 KHz VBW: 300 KHz SPAN: Zero DET: Peak CF: 2441 MHz Trace: Max Hold									
<u>Test results</u>										
Frequency	Operating Mode	Measurement period	Measured Tx on-time	Time of occupancy	Limit	Comments				
2441 MHz	GFSK-DH5	31.6 sec	2.9006 ms	183 ms	400 ms	Passed				
2441 MHz	8DPSK-3DH5	31.6 sec	2.9167 ms	312 ms	400 ms	Passed				

Test Port	Conducted
Test mode	Continuous Tx - normal modulation - hopping between all operating frequencies.
Limit	The time of occupancy shall be below 400 ms over the measurement period.
Compliant	Yes
Comments	Measurement period = 0.4 sec * 79 channels Measured: Tx on-time per transmission Time of occupancy = No of events * Measured Tx on-time

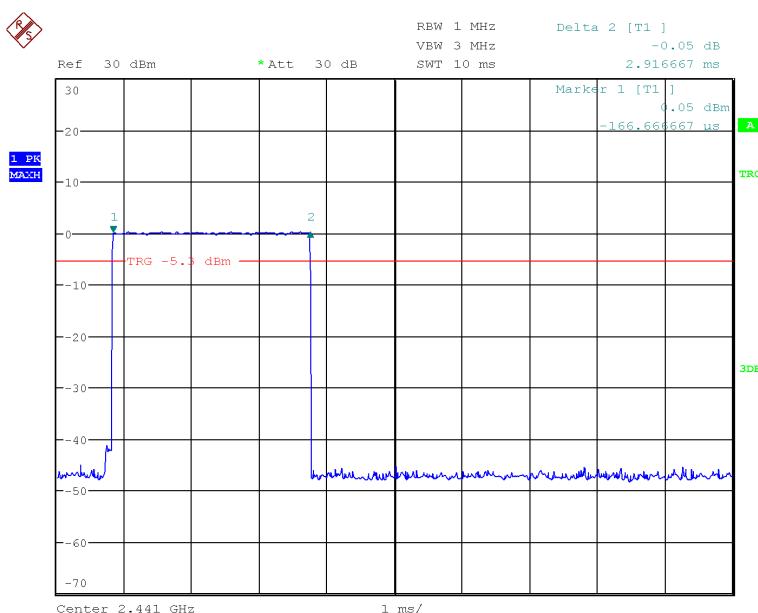




Date: 28.MAY.2010 10:21:02

Comments

2441 MHz – 8DPSK-3DH5



Date: 28.MAY.2010 11:53:48

Comments

2441 MHz – GFSK-DH5



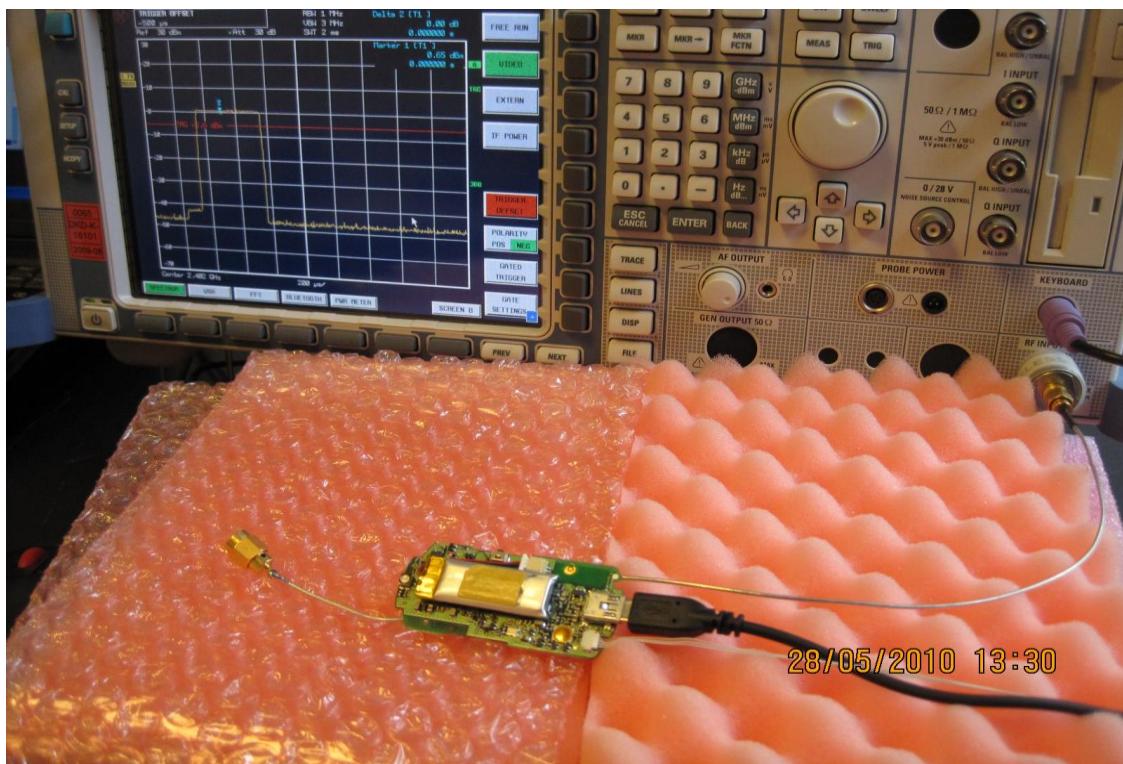


Photo 4.11.1 Test setup regarding measurement of time of occupancy (Dwell Time)

4.12 Measurement of peak output power, conducted

Test object	BTB-1	Sheet	PROF-5
Type	BTB	Project no.	A506915-1
Serial no.	B4-12	Date	26 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.247(b)(1) IC RSS-210 A8.4		

Test method	DA 00-705 Released March 30, 2000 for WT32 module and Measurement of Digital Transmission Systems Operating under section 15.247, March 23, 2005 for GN radio		
Characteristics	Temperature: 23°C. Test voltage: External power supply		
Test equipm.	49321 49183 49299	Uncertainty	1.1 dB
SA Settings	RBW: 1 MHz VBW: 3 MHz SPAN: 4 MHz DET: Peak CF: 2402 MHz, 2441 MHz, 2480 MHz and 2404 MHz, 2440 MHz, 2478 MHz Trace: Max Hold		
Test results			
Operation frequency	Measured	Limit	Comment
WT-32 module			
2402 MHz – GFSK-DH5	+0.9 dBm	< +20.97 dBm	Passed
2441 MHz - GFSK-DH5	+1.0 dBm	< +20.97 dBm	Passed
2480 MHz - GFSK-DH5	-0.5 dBm	< +20.97 dBm	Passed
2402 MHz - π/4-DQPSK-2DH5	+0.9 dBm	< +20.97 dBm	Passed
2441 MHz - π/4-DQPSK-2DH5	+0.7 dBm	< +20.97 dBm	Passed
2480 MHz - π/4-DQPSK-2DH5	-1.0 dBm	< +20.97 dBm	Passed
2402 MHz – 8DPSK-3DH5	+1.0 dBm	< +20.97 dBm	Passed
2441 MHz - 8DPSK-3DH5	+0.9 dBm	< +20.97 dBm	Passed
2480 MHz - 8DPSK-3DH5	-1.0 dBm	< +20.97 dBm	Passed
GN Radio			
2404 MHz – GFSK	-5.3 dBm	< +30 dBm	Passed
2440 MHz – GFSK	-5.1 dBm	< +30 dBm	Passed
2478 MHz – GFSK	-1,5 dBm	< +30 dBm	Passed
Note 1:			

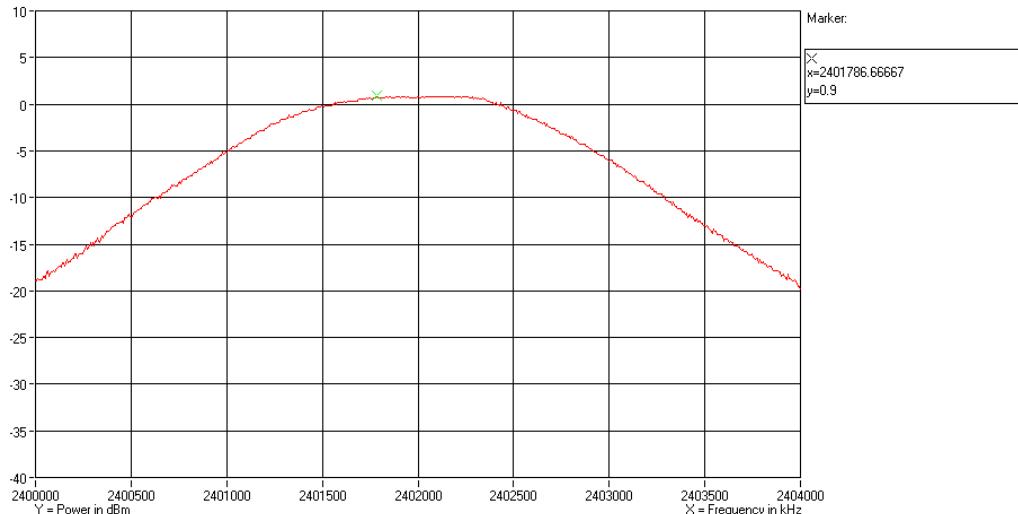
Test Port Conducted

Test mode Continuous Tx - normal modulation - hopping on

Compliant Yes

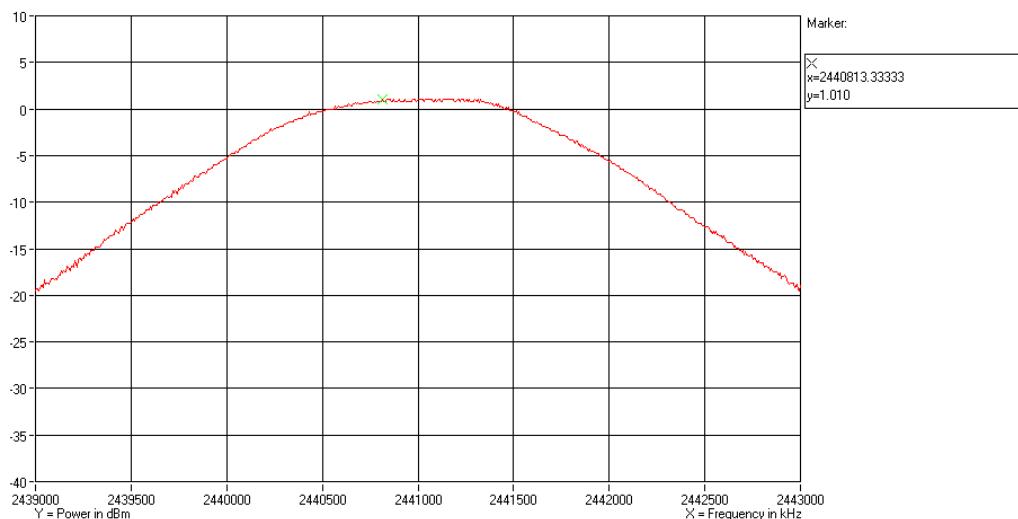
Comments None





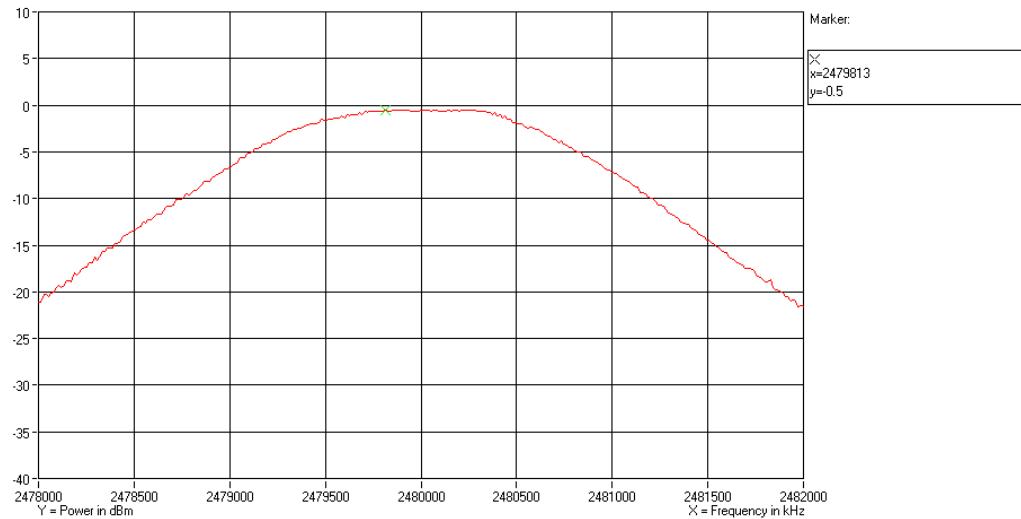
Comments

2402 MHz – GFSK-DH5



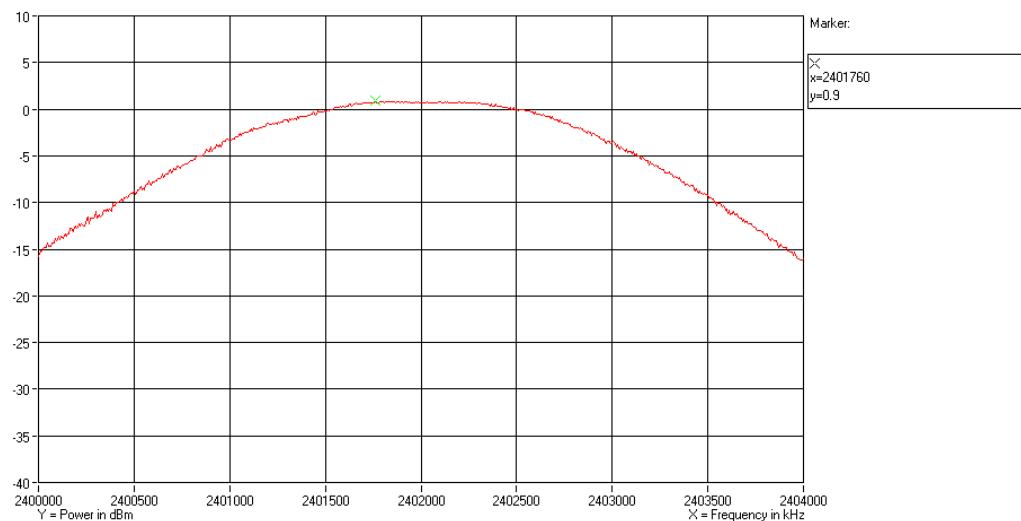
Comments

2441 MHz – GFSK-DH5



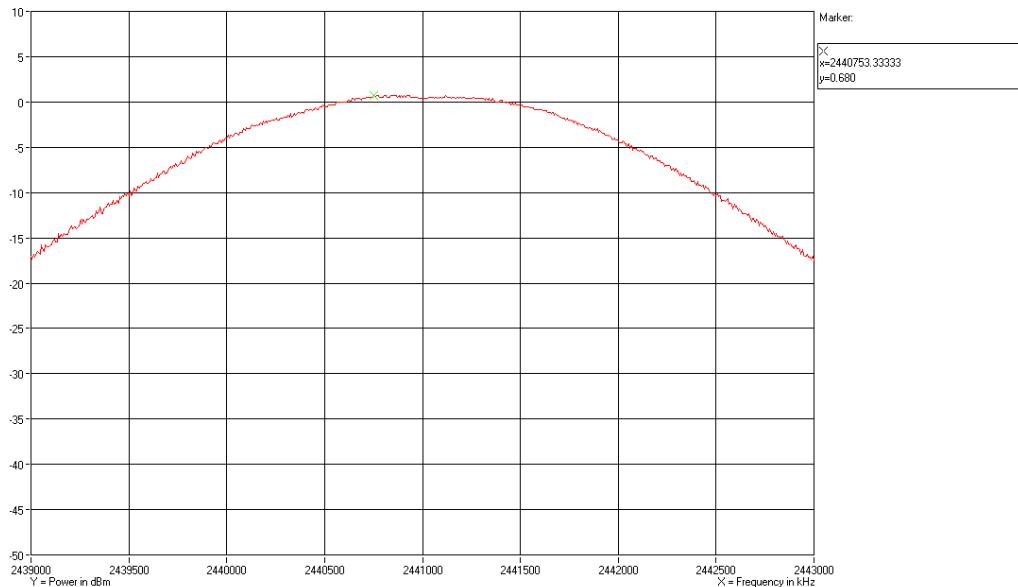
Comments

2480 MHz – GFSK-DH5



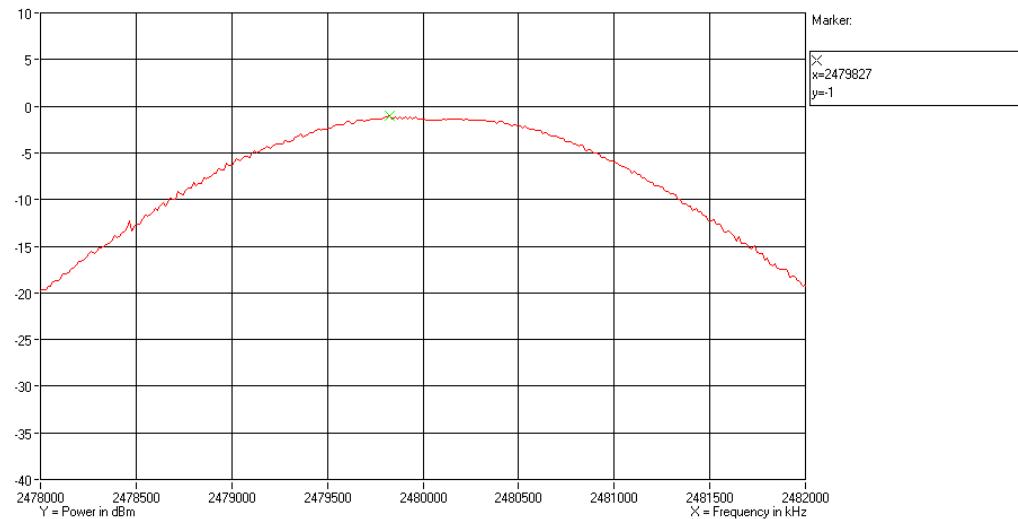
Comments

2402 MHz - $\pi/4$ -DQPSK-2DH5



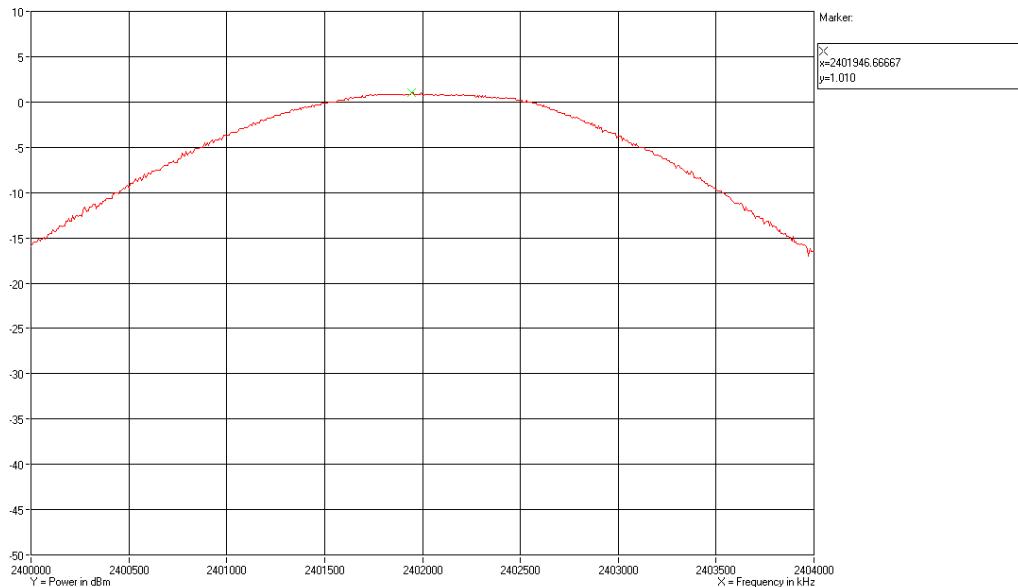
Comments

2441 MHz - $\pi/4$ -DQPSK-2DH5



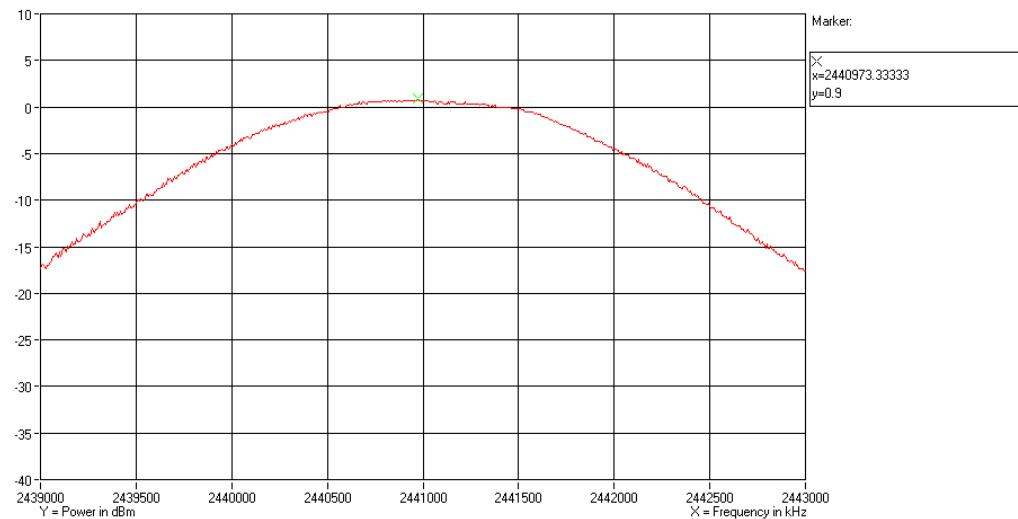
Comments

2480 MHz - $\pi/4$ -DQPSK-2DH5



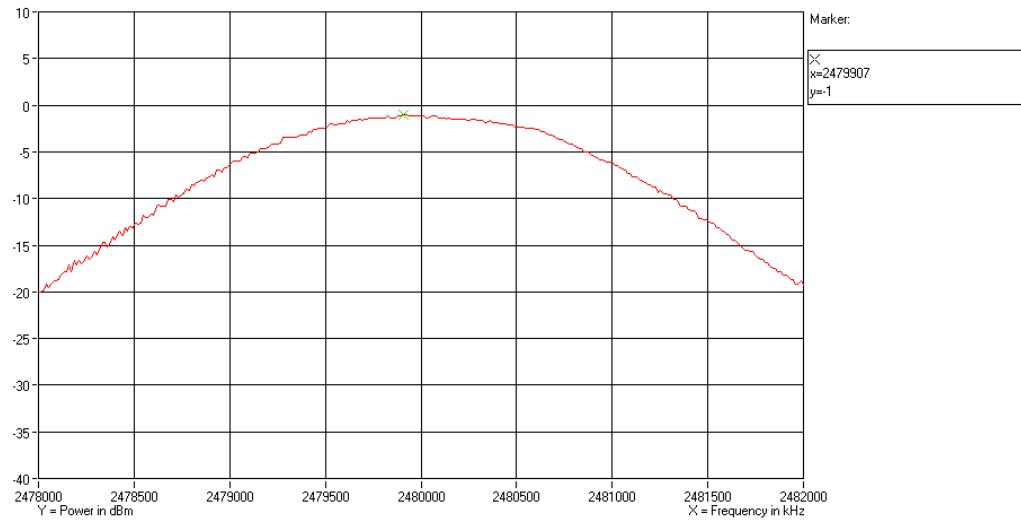
Comments

2402 MHz - 8DPSK-3DH5



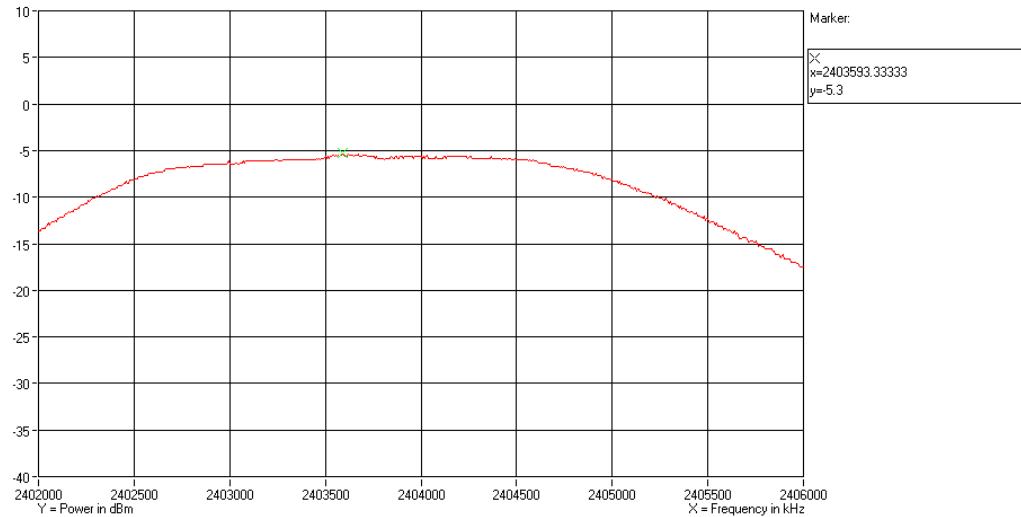
Comments

2441 MHz - 8DPSK-3DH5



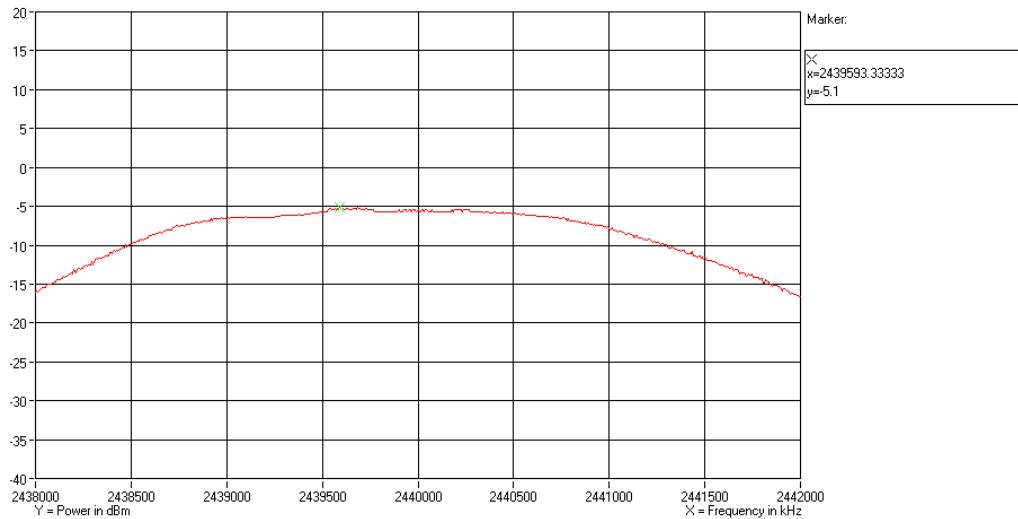
Comments

2480 MHz - 8DPSK-3DH5



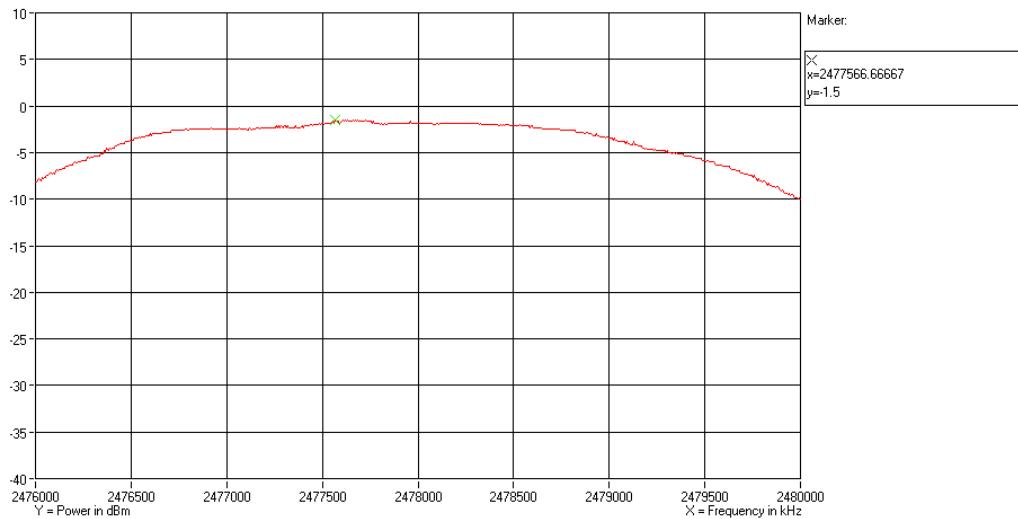
Comments

2404 MHz – GFSK



Comments

2440 MHz – GFSK



Comments

2478 MHz – GFSK



Photo 4.12.1 Test setup regarding measurement of peak output power, conducted

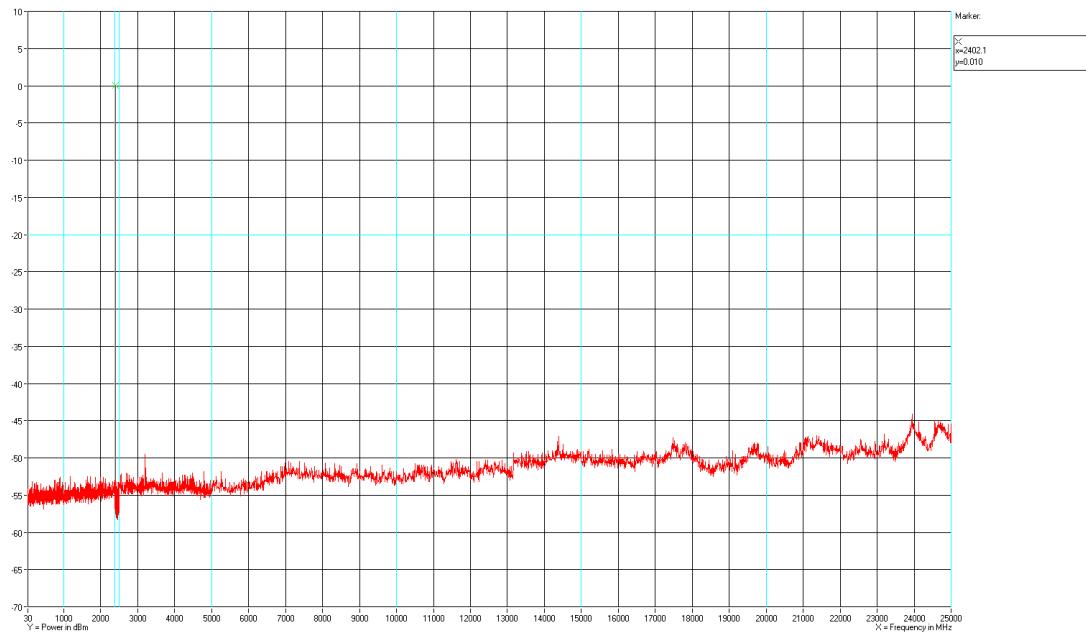
4.13 Measurement of spurious RF conducted emissions

Test object	BTB-1	Sheet	PROF-6
Type	BTB	Project no.	A506915-1
Serial no.	B4-12	Date	26 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.247(d) IC RSS-210 A8.5		

Test method	DA 00-705 Released March 30, 2000 for WT32 module and Measurement of Digital Transmission Systems Operating under section 15.247, March 23, 2005 for GN radio
Characteristics	Temperature: 23°C. Test voltage: External power supply
Test equipm.	49321 49183 49299
SA Settings	RBW: 100 KHz VBW: 300 KHz Frequency Start: 30 MHz Frequency Stop: 25 GHz DET: Peak Trace: Max Hold
Note 1:	

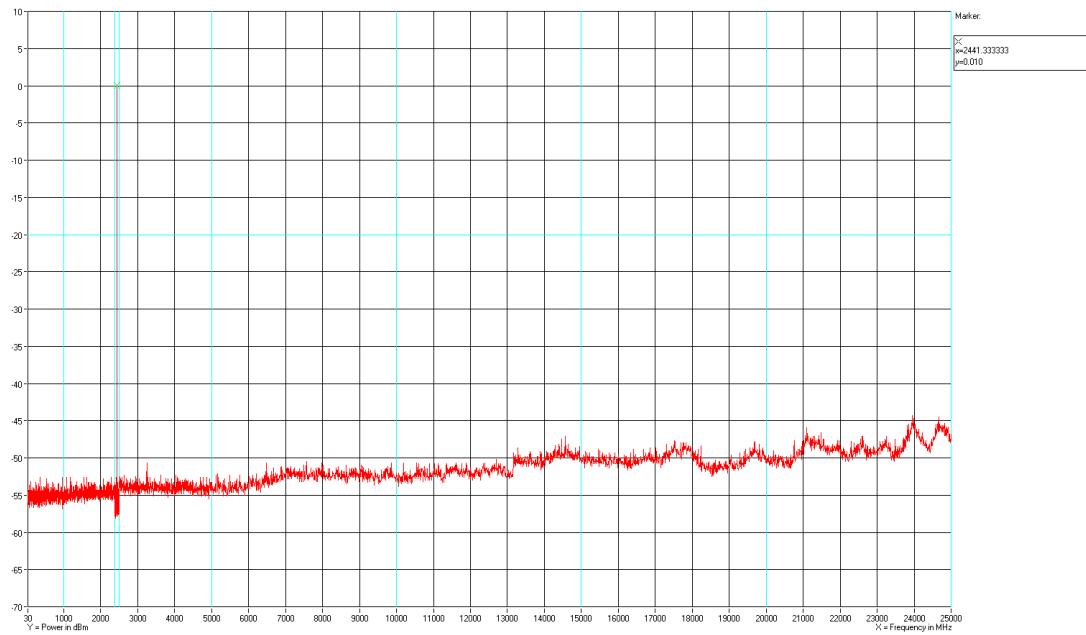
Test result	The measured conducted spurious emissions were at least 20 dB below the highest level as described in 15.247(d) and IC RSS-210 A8.5
Test mode	Continuous Tx - normal modulation - hopping on
Compliant	Yes
Comments	None





Comments

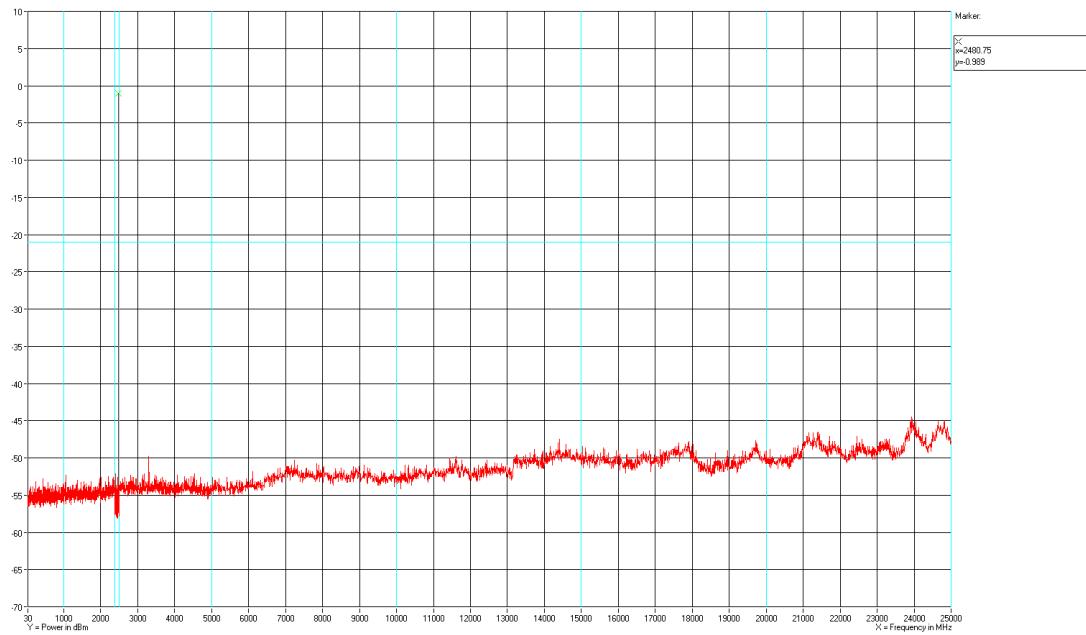
2402 MHz – GFSK-DH5



Comments

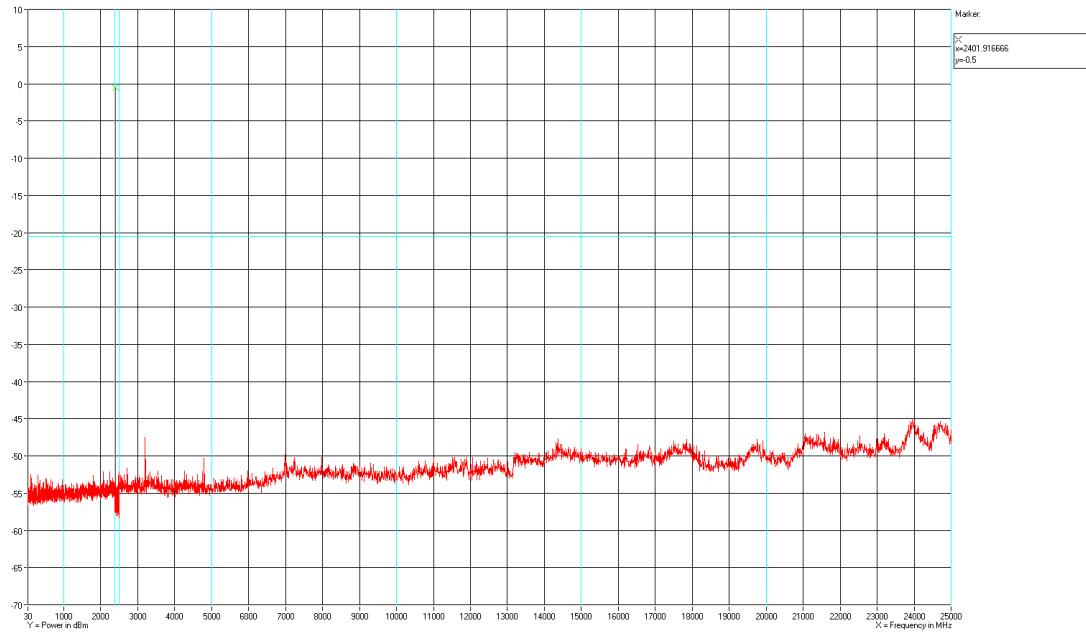
2441 MHz – GFSK-DH5





Comments

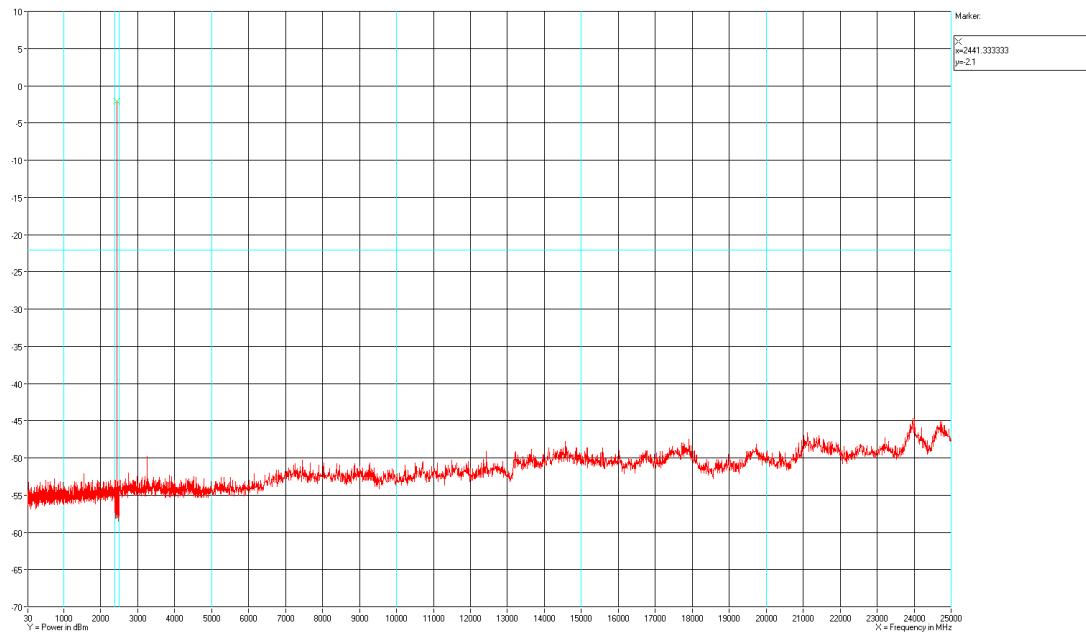
2480 MHz – GFSK-DH5



Comments

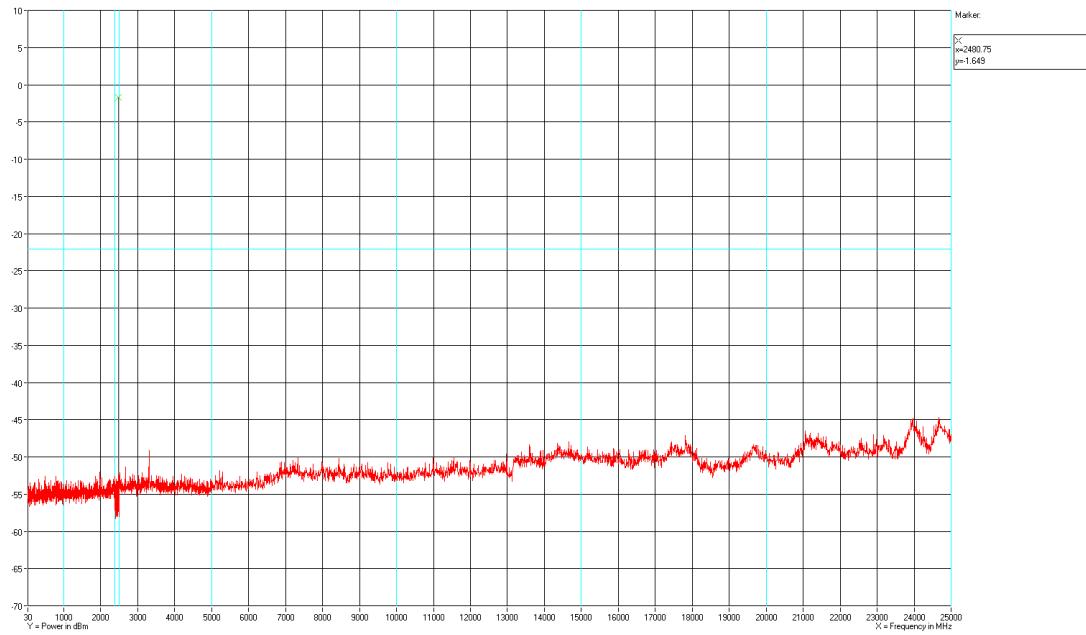
2402 MHz – $\pi/4$ -DQPSK-2DH5





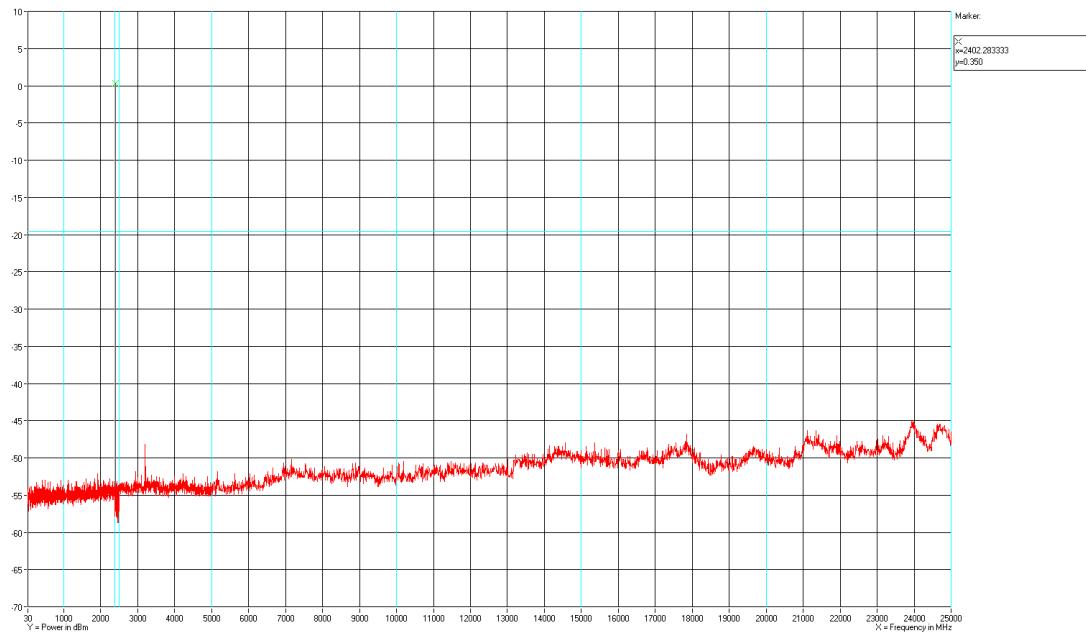
Comments

2441 MHz – $\pi/4$ -DQPSK-2DH5



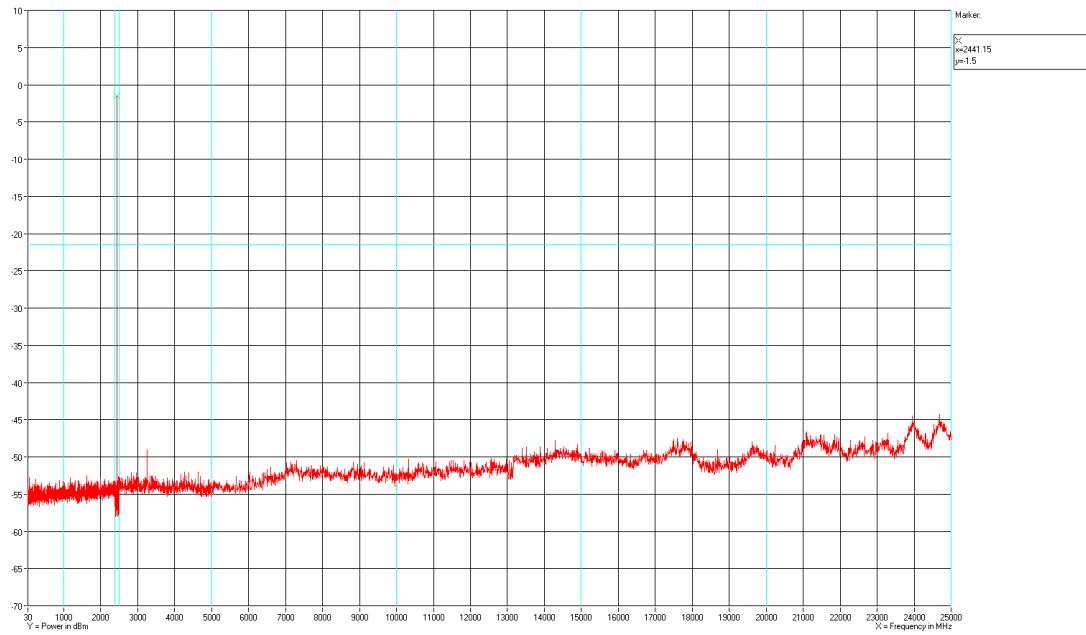
Comments

2480 MHz – $\pi/4$ -DQPSK-2DH5



Comments

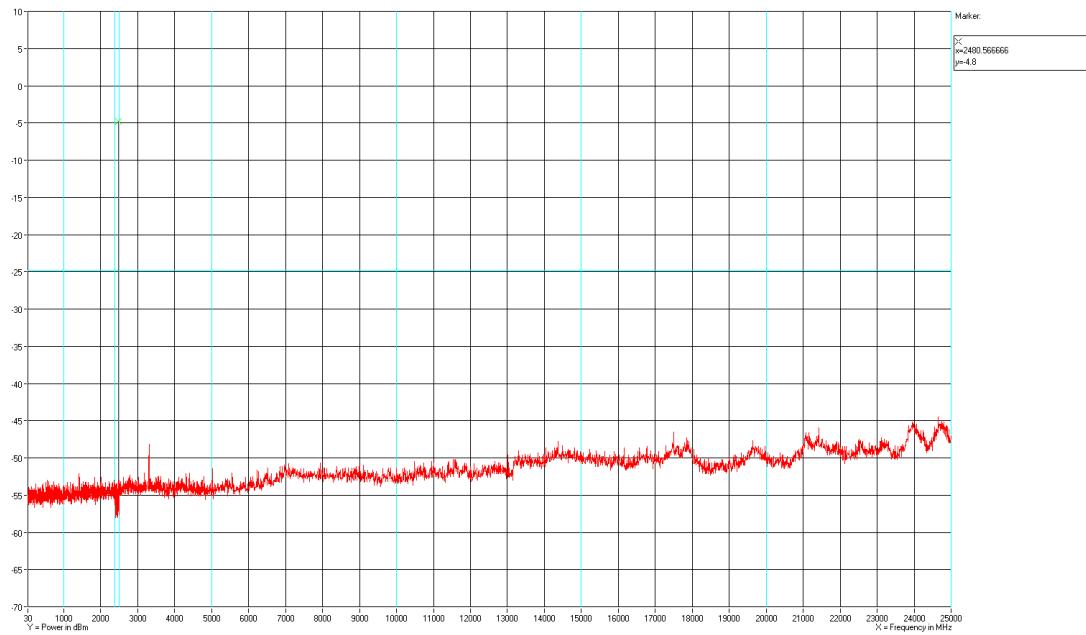
2402 MHz – 8DPSK-3DH5



Comments

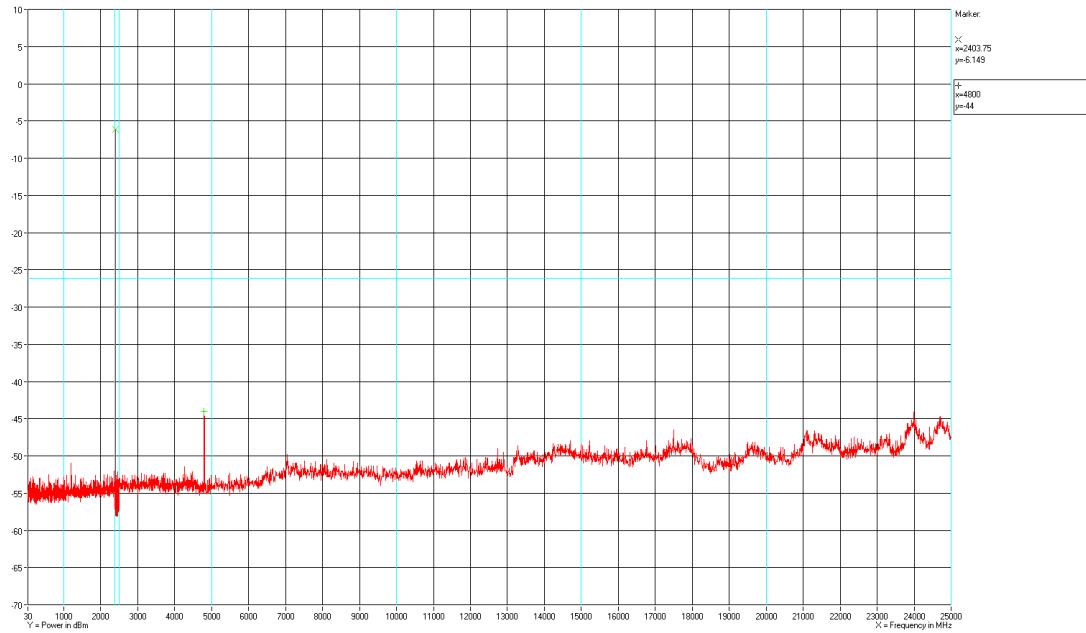
2441 MHz – 8DPSK-3DH5





Comments

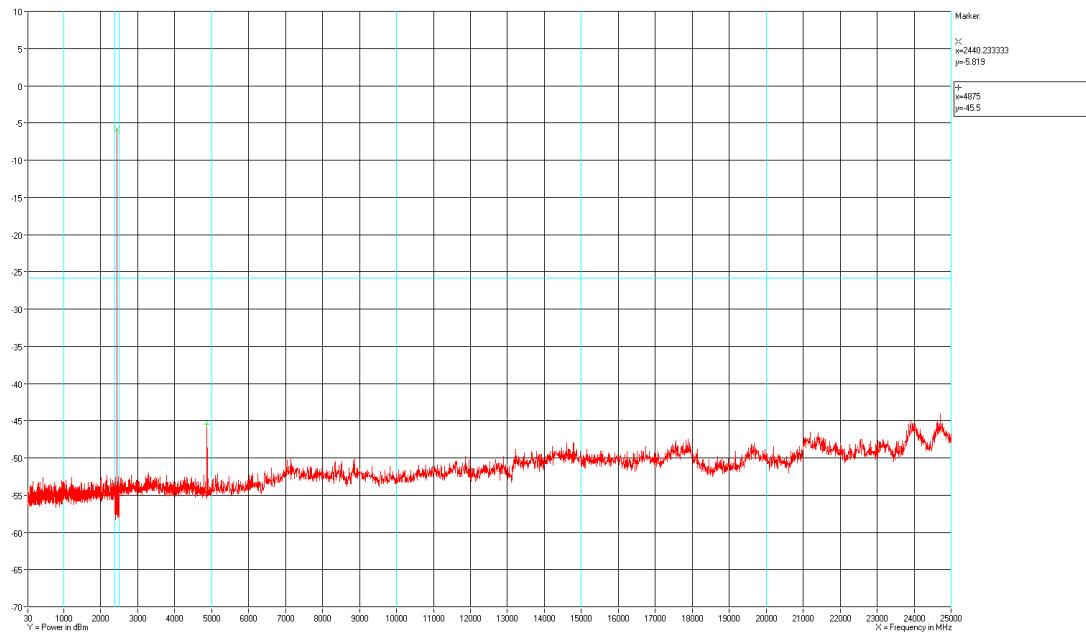
2480 MHz – 8DPSK-3DH5



Comments

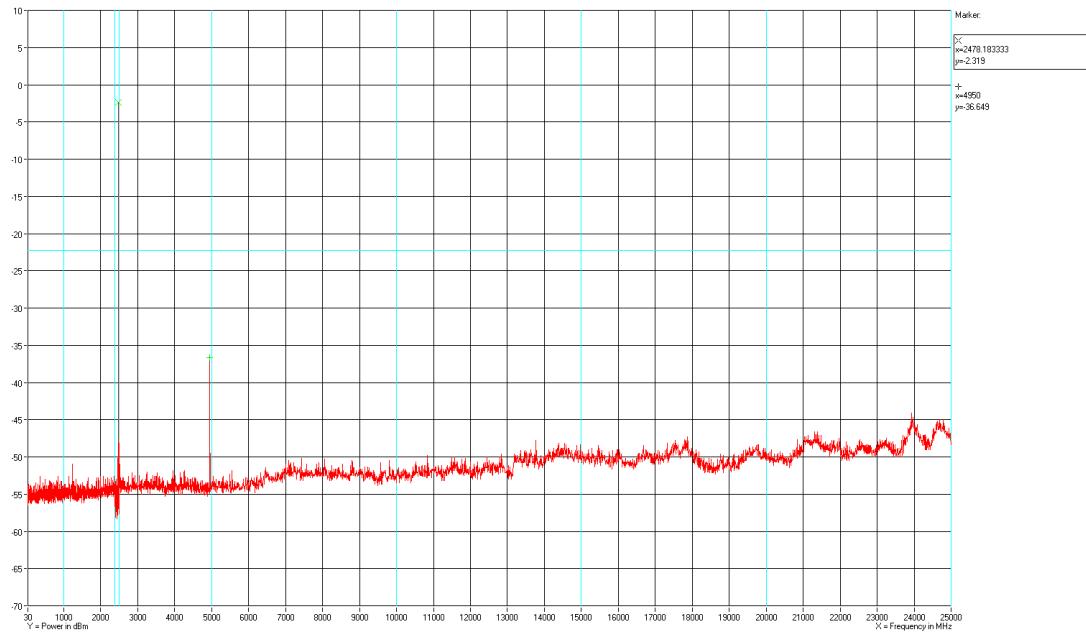
2404 MHz – GFSK





Comments

2440 MHz – GFSK



Comments

2478 MHz – GFSK





Photo 4.13.1 Test setup regarding measurement of Spurious RF Conducted Emissions

4.14 Measurement of band-edge compliance of RF conducted emissions

Test object	BTB-1	Sheet	PROF-7
Type	BTB	Project no.	A506915-1
Serial no.	B4-12	Date	26 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.247(d) IC RSS-210 A8.5		

Test method	DA 00-705 Released March 30, 2000 for WT32 module and Measurement of Digital Transmission Systems Operating under section 15.247, March 23, 2005 for GN radio			
Characteristics	Temperature: 23°C. Test voltage: External power supply			
Test equipm.	49321 49183 49299 Uncertainty: 1.1 dB			
SA Settings	RBW: 100 KHz VBW: 300 KHz SPAN: 4 MHZ and 6 MHz DET: Peak CF: 2402 MHz, 2481.5 MHz and 2403 MHz, 2480.5 MHz Trace: Max Hold			
Operation frequency	Measured Lower band-edge at 2400 MHz	Measured Lower band-edge at 2483.5 MHz	Limit: 20 dB below peak output power	Comment
WT-32 module				
2402 MHz – GFSK-DH5	37.0 dBc	-	> 20 dBc	Passed
2480 MHz - GFSK-DH5	-	52.3 dBc	> 20 dBc	Passed
2402 MHz - π/4-DQPSK-2DH5	35.5 dBc	-	> 20 dBc	Passed
2480 MHz - π/4-DQPSK-2DH5	-	48.3 dBc	> 20 dBc	Passed
2402 MHz – 8DPSK-3DH5	41.7 dBc	-	> 20 dBc	Passed
2480 MHz - 8DPSK-3DH5	-	45.0 dBc	> 20 dBc	Passed
GN Radio -15.247(d) & IC RSS-210 A8.5	-	-	-	
2402 MHz – GFSK	47.0 dBc	-	> 20 dBc	Passed
2478 MHz – GFSK	-	47.5 dBc	> 20 dBc	Passed

Band edge criteria > at least 20 dB below peak output power

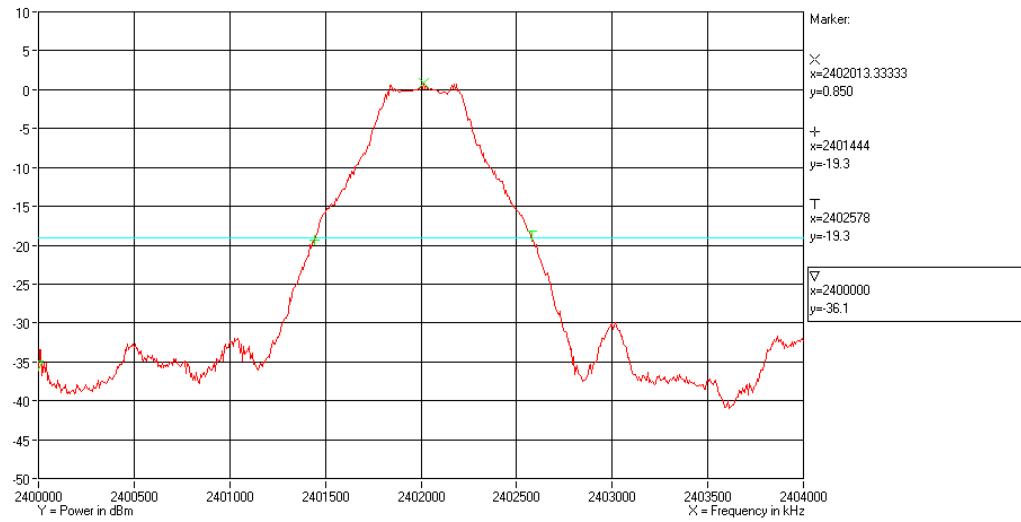
Test Port Conducted

Test mode Continuous Tx - normal modulation - hopping on

Compliant Yes

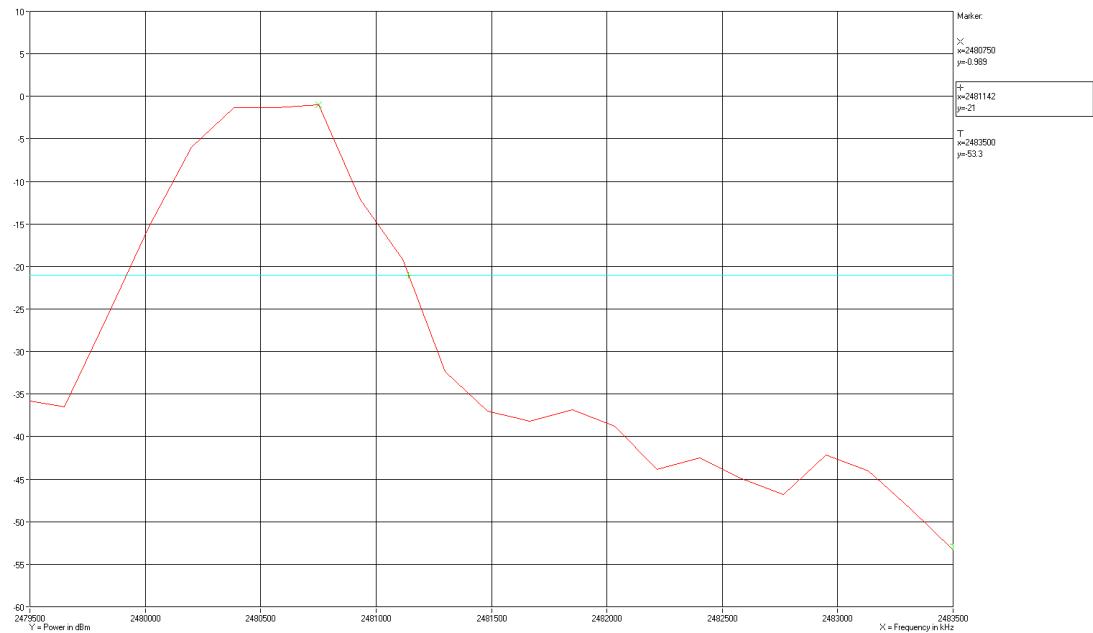
Comments None





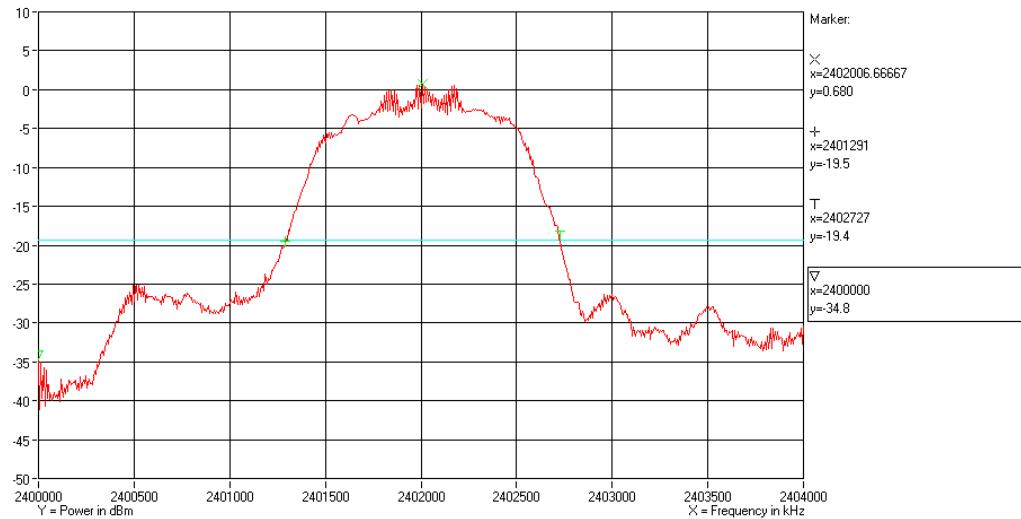
Comments

2402 MHz – GFSK-DH5



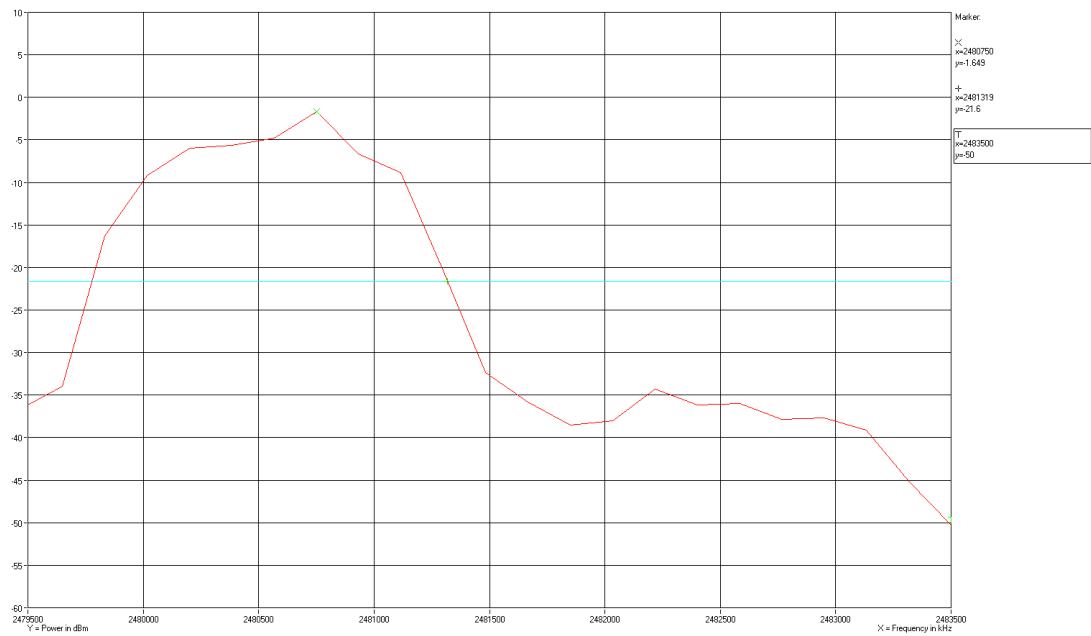
Comments

2480 MHz – GFSK-DH5



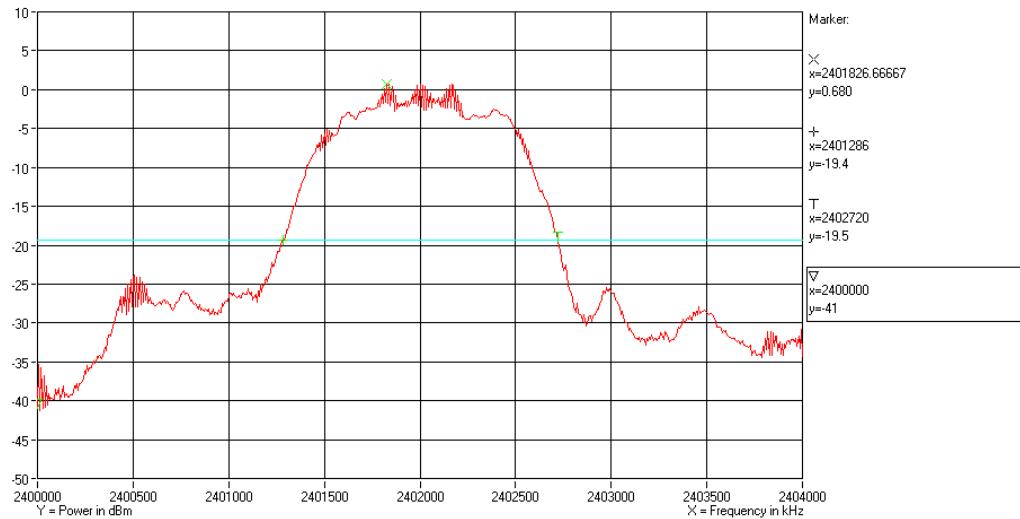
Comments

2402 MHz – $\pi/4$ -DQPSK-2DH5



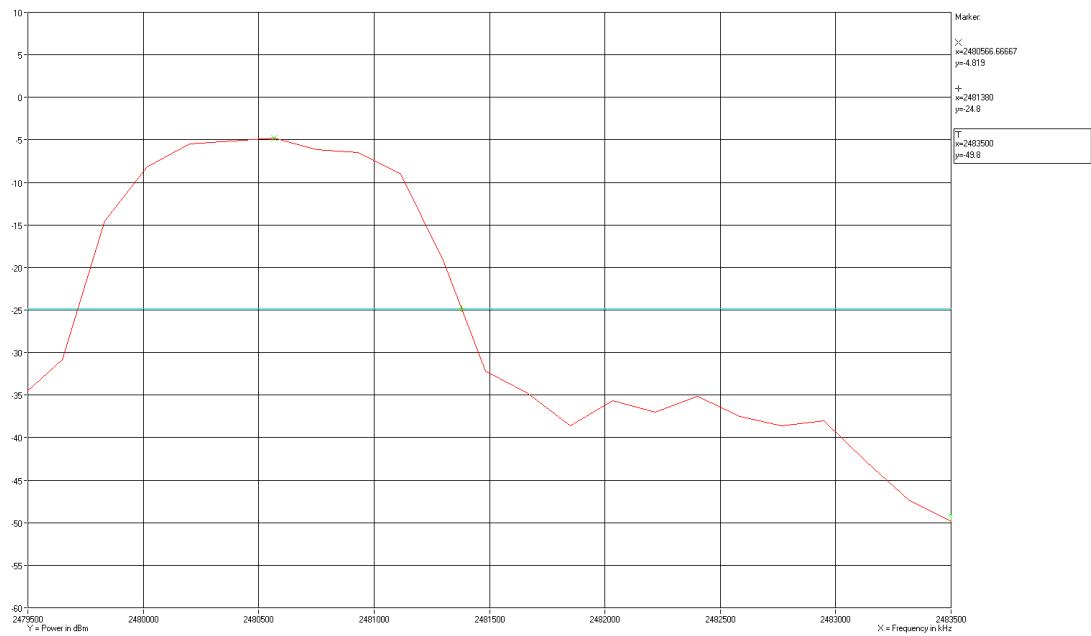
Comments

2480 MHz – $\pi/4$ -DQPSK-2DH5



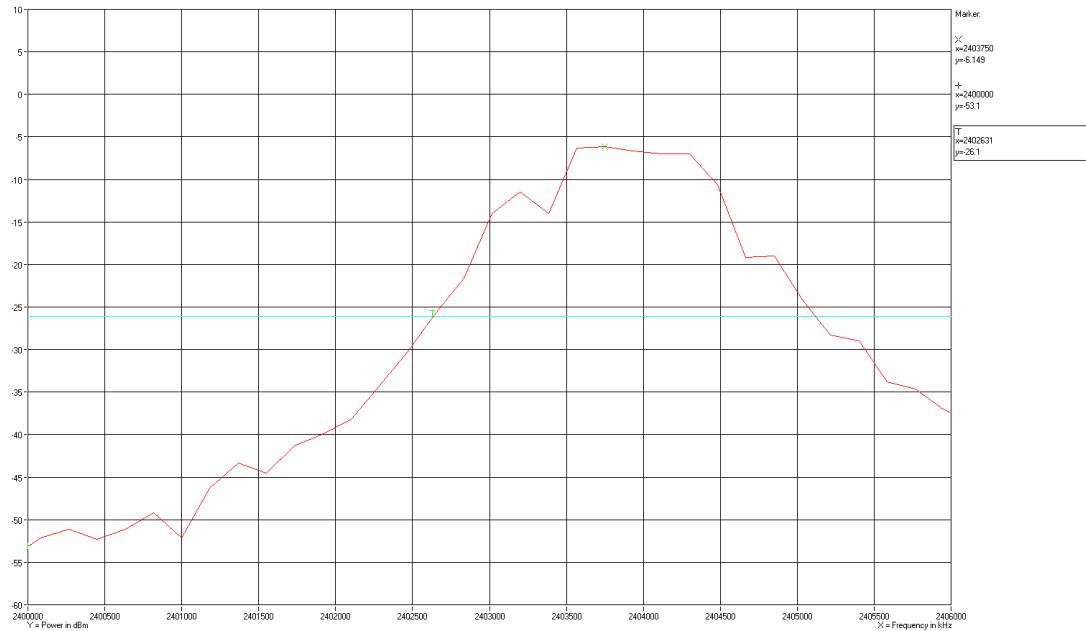
Comments

2402 MHz – 8DPSK-3DH5



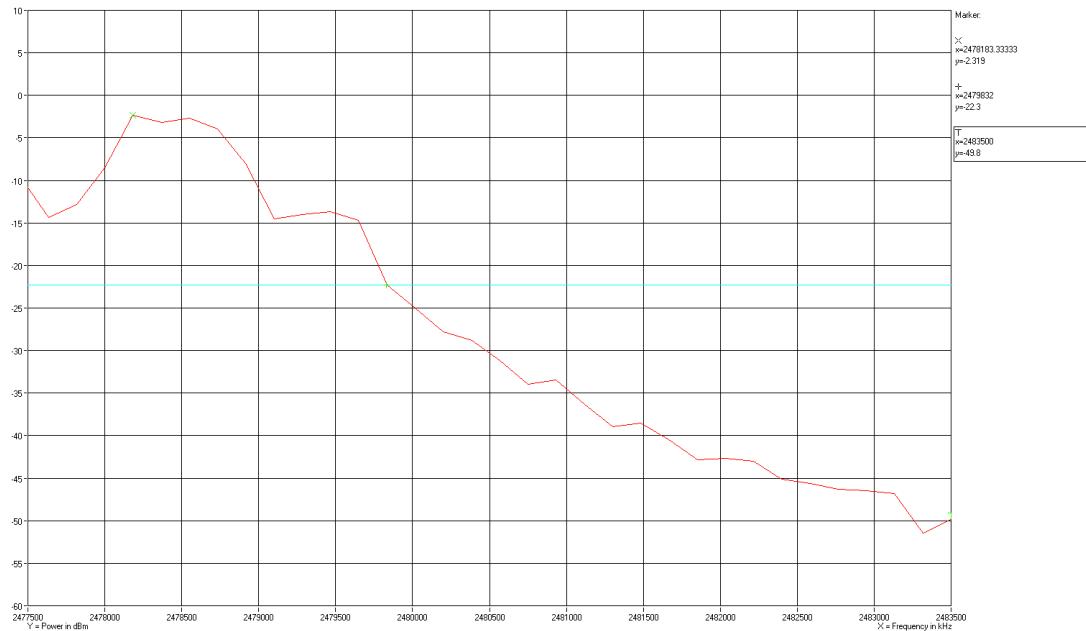
Comments

2480 MHz – 8DPSK-3DH5



Comments

2404 MHz – GFSK



Comments

2478 MHz – GFSK



Photo 4.14.1 Test setup regarding measurement of band-edge compliance of RF conducted emissions

4.15 Measurement of power spectral density

Test object	BTB-1	Sheet	PROF-8
Type	BTB	Project no.	A506915-1
Serial no.	B4-12	Date	27 May 2010
Client	GN Hearing A/S	Initials	CMT
Specification	FCC CFR 47 Part 15, Subpart C, Section 15.247(e) IC RSS-210 A8.2(b)		

Test method	Measurement of Digital Transmission Systems Operating under section 15.247, March 23, 2005		
Characteristics	Temperature: 23°C. Test voltage: External power supply		
Test equipm.	49321 49183 49299		
SA Settings	RBW: 3 KHz VBW: 10 KHz SPAN: 4 MHz DET: Peak CF: 2404 MHz, 2440 MHz, 2478 MHz Trace: Max Hold		
Test results			
Operation frequency	Measured	Limit	Comment
2404 MHz	-13.8 dBm	< +8 dBm	Passed
2440 MHz	-13.6 dBm	< +8 dBm	Passed
2478 MHz	-9.8 dBm	< +8 dBm	Passed
Note 1: GN radio - GFSK			

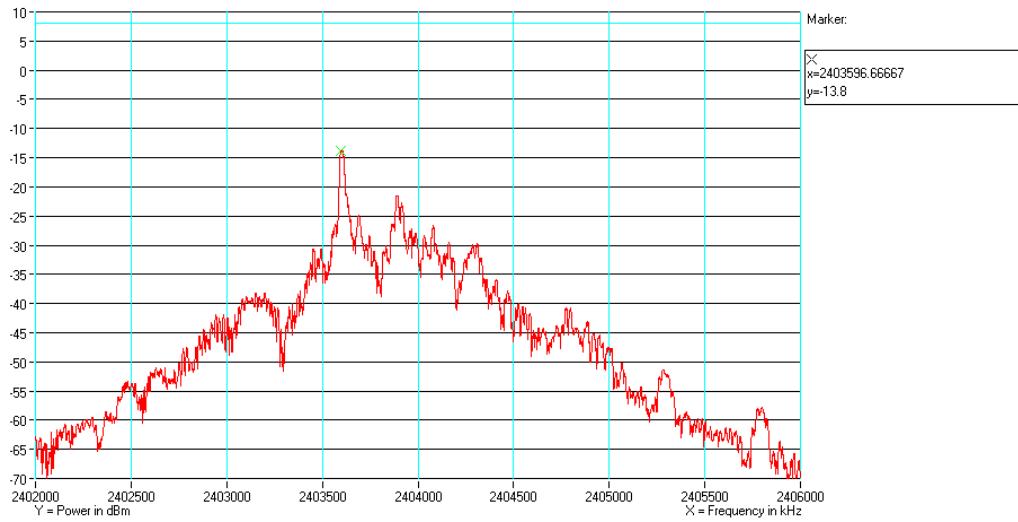
Test Port Conducted

Test mode Continuous Tx - normal modulation - hopping on

Compliant Yes

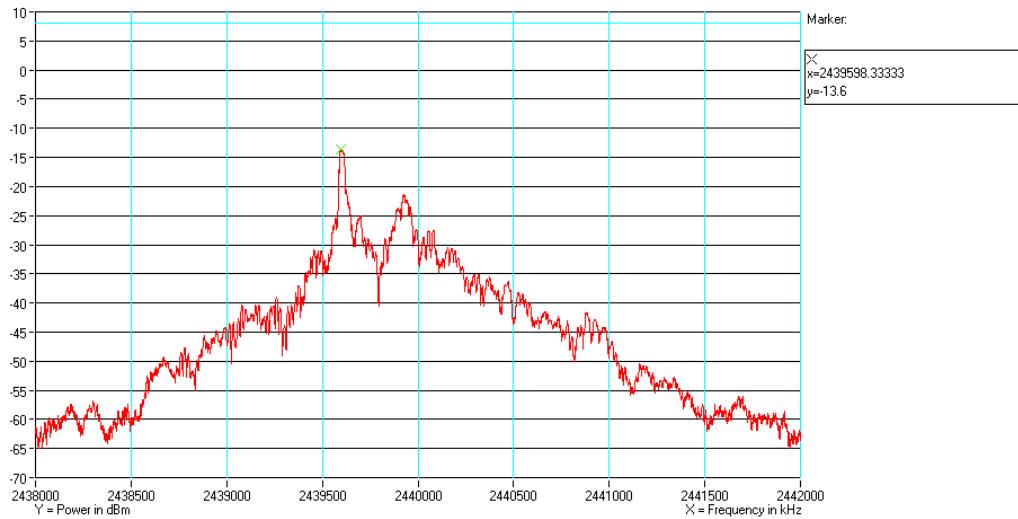
Comments None





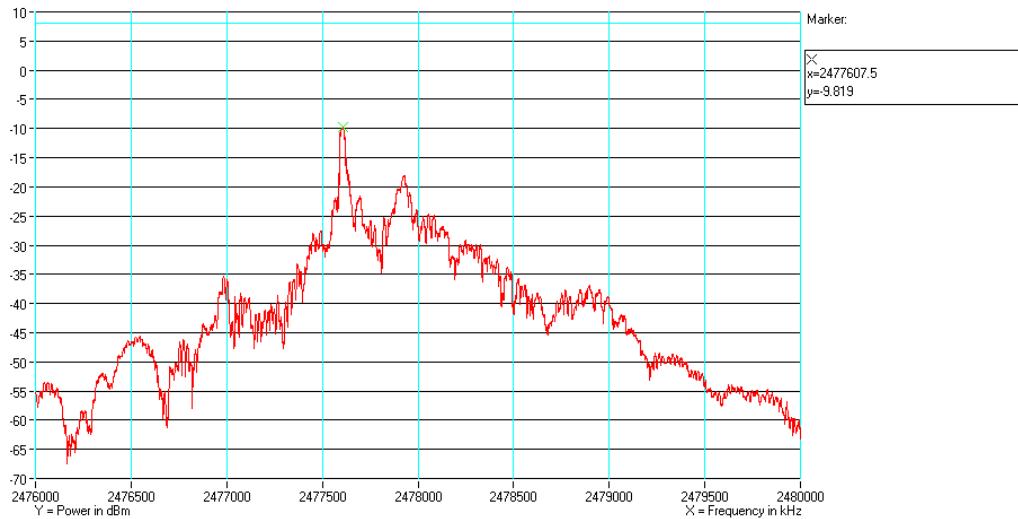
Comments

2404 MHz – GFSK



Comments

2440 MHz – GFSK



Comments

2478 MHz – GFSK



Photo 4.15.1 Test setup regarding measurement of power spectral density

5. National registrations and accreditations

5.1 DANAK Accreditation

Organization: Danish Accreditation and Metrology Fund - DANAK, see www.danak.dk and www.ilac.org

Registration Number: 19

Area Number: C

DANAK is part of ILAC (International Laboratory Accreditation Cooperation) including its MRA (Mutual Recognition Arrangement). The MRA includes the Australian NATA and Canadian SCC.

CISPR 22 is equivalent to AS/NZS CISPR 22, and therefore this report can be used for applying the **Australian C-Tick mark** for IT equipment, when this test has been passed.

CISPR 22:2002 is equivalent to ICES-003:2004, and therefore this report can be used for approval in Canada for IT equipment, when this test has been passed.

5.2 FCC Registrations

Organization: Federal Communications Commission, USA

Registration Number: 90529

Facilities:
OATS Hørsholm (EMC-0)
EMC room 2 Hørsholm (EMC-2)
EMC room 3 Hørsholm (EMC-3)
EMC room 4 Hørsholm (EMC-4)
EMI room Hørsholm (EMC-5)

5.3 VCCI Registrations

Organization: Voluntary Control Council for Interference by Information Technology, Japan

Member Number: 910

Facilities:
OATS Hørsholm (EMC-0): R-691
EMC room 2 Hørsholm (EMC-2): C-707, T-246 and T-1547
EMC room 3 Hørsholm (EMC-3): C-2532, T-247 and T-1548
EMC room 4 Hørsholm (EMC-4): C-2533, T-248 and T1549



EMI room Hørsholm (EMC-5): R-1180, C-706, T-249 and
T-1550

5.4 IC Registrations

Organization: Industry Canada, Certification and Engineering Bureau

Registration Number: IC4187A-5

Facilities: EMI room Hørsholm (EMC-5)



6. List of instruments

No.	Description	Manufacturer	Type No.	Cal. date	Cal. interval
29301	ARTIFICIAL MAINS NETWORK	ROHDE & SCHWARZ	ESH2-Z5	05-01-2010	1 year
29332	ACTIVE LOOP ANTENNA	ROHDE & SCHWARZ	HFH-Z2	08-06-2008	2 years
29678	DC PWR. SUPPLY, 0 - 30VDC./ 2 Amp.	YFE	YP - 1820	Cal. Before use	-
29680	IMPULSE VOLT-AGE LIMITER	ROHDE & SCHWARZ	ESH3/Z2	05-03-2010	1 year
29797	BILOG ANTENNA, 30-2000 MHz	CHASE ELEC-TRICS LTD	CBL 6111A	16-07-2008	2 years
29861	EMI-SOFTWARE VER. 1.60	ROHDE & SCHWARZ	ES-K1, PART: 1026.6790 .02	-	-
49183	POWER SUPPLY	TTI	PL 320	Cal. Before use	-
49299	MULTIMETER	FLUKE	87-4	03-03-2010	1 year
49321	SPECTRUM ANALYZER, 50 GHz WITH OPTION 006	HEWLETT-PACKARD	8565E	13-10-2009	1 year
49550	SIGNAL ANALYZER	ROHDE & SCHWARZ	FSQ8	07-08-2009	1 year
49600	SPECTRUM ANALYZER / MEASUREMENT RECEIVER	ROHDE & SCHWARZ	ESU40	18-03-2010	1 year
49622	CABLE 3.25 M PC3.5 MALE-FEMALE SU-COFLEX 104	HUBER+SUHNER		07-02-2010	1 year
49623	CABLE 16 M PC3.5 MALE-MALE SUCOFLEX 104PB	HUBER+SUHNER		07-02-2010	1 year
49624	DUAL RIDGE HORN ANTENNA – 1GHz – 26 GHz (2 GHz – 32 GHz)	SATIMO	SH2000	08-11-2009	2 years
49625	SRD COAX SWITCH MATRIX USED IN 1GHz – 26 GHz SRD ANTENNASYSTEM	DELTA	COAX SWITCH MATRIX	07-02-2010	1 year