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FCC TEST REPORT

FCC 47 CFR Part 95I

Medical Device Radiocommunication Service (MedRadio)

Industry Canada RSS-243

Medical Devices Operating in the 401 – 406 MHz Frequency Band

Report Reference No. ..... :	G0M-1309-3225-TFC95IM-V01
Testing Laboratory ..... :	Eurofins Product Service GmbH
Address ..... :	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation ..... :	 A2LA Accredited Testing Laboratory, Certificate No.: 1983.01 FCC Filed Test Laboratory, Reg.-No.: 96970 IC OATS Filing assigned code: 3470A
Applicant's name ..... :	Biotronik SE & Co. KG
Address ..... :	Woermannkehre 1 12359 Berlin GERMANY
Test specification:	
Standard..... :	47 CFR Part 95E 47 CFR Part 95I 47 CFR Part 15C 47 CFR Part 2 RSS-243, Issue 3, 2010-02 RSS-Gen, Issue 3, 2010-12 ANSI C63.4:2009 EN 301 839-1 V1.3.1:2009-10
Equipment under test (EUT):	
Product description	Telemonitoring System
Model No.	CardioMessenger Smart 2G/3G
Hardware version	CardioMessenger Smart 3G mit LP, Best.LP1/TelexSmart3G, Rev. Dx
Firmware / Software version	SMARTAPP 1.x
	FCC-ID: QRICMSMART IC: 4708A-CMSMART
Test result	**Passed**

Possible test case verdicts:	
- neither assessed nor tested ..... :	N/N
- required by standard but not appl. to test object..... :	N/A
- required by standard but not tested..... :	N/T
- not required by standard for the test object ..... :	N/R
- test object does meet the requirement..... :	P (Pass)
- test object does not meet the requirement..... :	F (Fail)

Testing:

Date of receipt of test item ..... :	2013-11-18	
Date (s) of performance of tests ..... :	2013-11-18 - 2013-11-21	
Compiled by..... :	Wilfried Treffke	
Tested by (+ signature)..... : (Testing Manager)	Wilfried Treffke	W. Treffke
Approved by (+ signature) ..... : (Test Lab Manager)	Christian Weber	C. Weber
Date of issue..... :	2013-12-17	
Total number of pages..... :	94	

General remarks:

The test results presented in this report relate only to the object tested.

The results contained in this report reflect the results for this particular model and serial number. It is the responsibility of the manufacturer to ensure that all production models meet the intent of the requirements detailed within this report.

Additional comments:

Version History

Version	Issue Date	Remarks	Revised by
01	2013-12-17	Initial Release	

REPORT INDEX

1 Equipment (Test item) Description

Description	Telemonitoring System	
Model	CardioMessenger Smart 2G/3G	
Serial number	None	
Hardware version	CardioMessenger Smart 3G mit LP, Best.LP1/TelexSmart3G, Rev. Dx	
Software / Firmware version	SMARTAPP 1.x	
FCC-ID	QRICMSMART	
IC	4708A-CMSMART	
Equipment type	End product	
Radio type	Transceiver	
Number of Radios	1 Transceivers are built into the device	
Radio technology	MedRadio (MICS) programmer / control tranmitter	
Operating frequency range	402.45 - 404.85 MHz	
Assigned frequency band	402 - 405 MHz	
Main test frequencies	F_{LOW}	402.45 MHz
	F_{MID}	403.65 MHz
	F_{HIGH}	404.85 MHz
Modulations	FSK	
Emission designator	F1D	
Number of channels	9	
Channel spacing	300 kHz	
Spectrum access	Listen before transmit	
Number of antennas	1	
Antenna 1	Type	integrated
	Model	loop antenna
	Manufacturer	see Manufacturer
	Gain	-5 dBi (Determined by measurements)
Manufacturer	Biotronik SE & Co. KG Woermannkehre 1 12359 Berlin GERMANY	

Power supply	V_{NOM}	3.7 VDC
	V_{MIN}	3.1 VDC
	V_{MAX}	4.16 VDC
Temperature	T_{NOM}	20°C
	T_{MIN}	-10 °C
	T_{MAX}	40 °C
AC/DC-Adaptor	Model	N/A
	Vendor	N/A
	Input	N/A
	Output	N/A

1.1 Photos - Equipment external

EUT TOP

EUT BOTTOM

EUT LEFT

1.3 Photos – Test setup

Test setup – Radiated emissions

Test setup – Conducted emissions

1.4 Supporting Equipment Used During Testing

Product Type*	Device	Manufacturer	Model No.	Comments
SIM	Test board Implant Simulator	Biotronik SE & Co. KG	None	Companion device for monitoring test

***Note:** Use the following abbreviations:

AE : Auxiliary/Associated Equipment, or

SIM : Simulator (Not Subjected to Test)

CABL : Connecting cables

1.5 Test Modes

Mode #	Description	
Unmodulated	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Spreading = None Modulation = None Duty cycle = 100 % Power level = Maximum
Modulated	General conditions:	EUT powered by laboratory power supply.
	Radio conditions:	Mode = standalone transmit Modulation = FSK Duty cycle = 100 % Power level = Maximum
Monitoring A	General conditions:	EUT powered by laboratory power supply. EUT channels adjusted to monitoring conditions by administrative commands without companion device.
	Radio conditions:	Mode = standalone transmit Modulation = FSK Duty cycle = normal
Monitoring B	General conditions:	EUT powered by laboratory power supply. EUT with communication session to companion device.
	Radio conditions:	Mode = standalone transmit Modulation = FSK Duty cycle = normal
Receive	General conditions:	EUT powered by battery
	Radio conditions:	Mode = standalone receive Modulation = FSK
AC-Powerline	General conditions:	EUT connected to and powered by base unit via USB. Active data connection between EUT and base unit. AC connection to base unit.
	Radio conditions:	Mode = transmit Modulation = FSK Duty cycle = normal Power level = Maximum

1.6 Test Equipment Used During Testing

Occupied Bandwidth					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2013-01	2014-01

Emission Bandwidth					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2013-01	2014-01

Frequency Stability					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2013-01	2014-01

Effective radiated power					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Fully-anechoic chamber	Frankonia	AC 4	EF00200	---	---
Spectrum Analyzer	R&S	FSEK30	EF00168	2012-12	2013-12
LPD Antenna	R&S	HL 223	EF00212	2013-02	2016-02

Radiated spurious emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Semi-anechoic chamber	Frankonia	AC 5	EF00395	-	-
Spectrum Analyzer	R&S	FSP 30	EF00312	2013-01	2014-01
Biconical Antenna	R&S	HK 116	EF00012	2013-02	2016-02
LPD Antenna	R&S	HL 223	EF00187	2011-02	2014-02
LPD Antenna	R&S	HL 025	EF00327	2013-02	2016-02

AC powerline conducted emissions					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
AMN	R&S	ESH2-Z5	EF00182	2012-10	2014-10
AMN	R&S	ESH3-Z5	EF00036	2012-11	2014-11
EMI Test Receiver	R&S	ESCS 30	EF00295	2013-10	2014-10

Monitoring system scan cycle time					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2013-01	2014-01
Signal Generator	R&S	SMP 02	EF00165	2013-05	2015-05

Minimum channel monitoring period					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2013-01	2014-01
Signal Generator	R&S	SMP 02	EF00165	2013-05	2015-05

Channel access					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2013-01	2014-01
Signal Generator	R&S	SMP 02	EF00165	2013-05	2015-05

Discontinuation of MICS session					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSP 30	EF00312	2013-01	2014-01
Signal Generator	R&S	SMP 02	EF00165	2013-05	2015-05

1.7 Sample emission level calculation

The following is a description of terms and a sample calculation, as appears in the radiated emissions data table. The numbers used in the calculation are for example only. There is no direct correlation to the specific data taken for the product described in this document:

Reading:

This is the reading obtained on the spectrum analyzer in dBµV. Any external preamplifiers used are taken into account through internal analyzer settings.

A.F.:

This is the antenna factor for the receiving antenna. It is a conversion factor, which converts electric fields strengths to voltages, which can be measured directly on the spectrum analyzer. It is treated as a loss in dB. Cable losses have been included with the A.F. to simplify the calculations. The antenna factor is used in calculations as follows:

Reading on Analyzer (dBµV) + A.F. (dB) = Net field strength (dBµV/m)

Net:

This is the net field strength measurement (as shown above).

Limit:

This is the FCC Class B radiated emission limit (in units of dBµV/m). The FCC limits are given in units of µV/m. The following formula is used to convert the units of µV/m to dBµV/m:

Limit (dBµV/m) = 20*log (µV/m)

Margin:

This is the margin of compliance below the FCC limit. The units are given in dB. A negative margin indicates the emission was below the limit. A positive margin indicates that the emission exceeds the limit.

Example only:

Reading	+	AF	=	Net Reading	:	Net reading - FCC limit	= Margin
21.5 dBµV	+	26 dB	=	47.5 dBµV/m	:	47.5 dBµV/m - 57.0 dBµV/m	= -9.5 dB

2 Result Summary

FCC 47 CFR Part 95E, 95I, 15C, IC RSS-243, IC RSS-Gen				
Product Specific Standard Section	**Requirement – Test**	**Reference Method**	**Result**	**Remarks**
FCC § 2.1047 FCC § 2.1049 IC RSS-243 3.2 IC RSS-Gen 4.6	Occupied bandwidth	RSS-Gen 4.6.1	N/A	Informational only
FCC 95.628(d) FCC § 95.633(e) IC RSS-243 3.6, 5.1	Emission bandwidth	FCC § 95.628(a)(6)(i) FCC § 95.633(e)(3)	PASS	
FCC § 2.1055 FCC 95.628(e) IC RSS-243 3.3, 5.3 RSS-Gen 4.7	Frequency stability	EN 301 839-1 8.1	PASS	
FCC § 2.1046 FCC § 95.6369(f) IC RSS-243 § 5.4	Transmitter output power	EN 301 839-1 8.3	PASS	
FCC § 95.635(d) IC RSS-243 § 3.4, 5.5	Band edge compliance	FCC § 95.635(d) ANSI C63.4	PASS	
FCC § 2.1051 FCC § 2.1053 FCC § 2.1057 FCC § 95.635(d) IC RSS-243 § 3.4, 5.5 RSS-Gen 4.9	Transmitter unwanted emissions	FCC § 95.635(d) ANSI C63.4	PASS	
IC RSS-243 3.5, 5.6 IC RSS-Gen 4.10 6.1	Receiver spurious emissions	ANSI C63.4	PASS	
FCC § 15.207 IC RSS-Gen 7.2.4	AC power line conducted emissions	ANSI C63.4	PASS	
FCC § 95.628(a)(3) IC RSS-243 3.6, 5.7.1	System threshold power levels	EN 301 839-1 10.1	PASS	
FCC § 95.628(a)(1) IC RSS-243 3.6, 5.7.2	Monitoring system bandwidth	EN 301 839-1 10.2	PASS	
FCC § 95.628(a)(2) IC RSS-243 3.6, 5.7.3	Scan cycle time	EN 301 839-1 10.3	PASS	
FCC § 95.628(a)(2) IC RSS-243 3.6, 5.7.4	Minimum channel monitoring period	EN 301 839-1 10.3	PASS	
FCC § 95.628(a)(4) IC RSS-243 3.6, 5.7.5	Channel Access	EN 301 839-1 10.4	PASS	
FCC § 95.628(a)(4) IC RSS-243 3.6, 5.7.6	Discontinuation of MICS or MEDS session	EN 301 839-1 10.5	PASS	
FCC § 95.628(a)(5) IC RSS-243 3.6, 5.7.7	Use of the pre-scanned alternate channel	EN 301 839-1 10.6	N/A	No used by EUT
Remarks:				

3 Test Conditions and Results

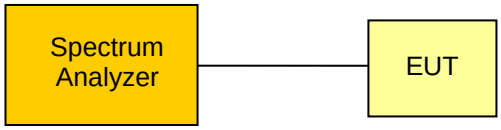
3.1 Test Conditions and Results – Occupied Bandwidth

Occupied Bandwidth acc. IC RSS-243, FCC § 2.1049, FCC § 2.1047	**Verdict: PASS**
Test according to measurement reference	Reference Method
	FCC § 2.1049 / FCC § 2.1047 / RSS-Gen 4.6.1
Test frequency range	Tested frequencies
	F_{LOW} / F_{MID} / F_{HIGH}
EUT test mode	Modulated

Limits

None (Informational only)

Test setup



Test procedure

1. EUT set to test mode (Communication tester is used if needed)
2. Span set to at least twice the emission spectrum
3. Resolution bandwidth set to 1 % of span
4. Occupied Bandwidth (99 %) measurement with spectrum analyzer built in measurement function

Test results

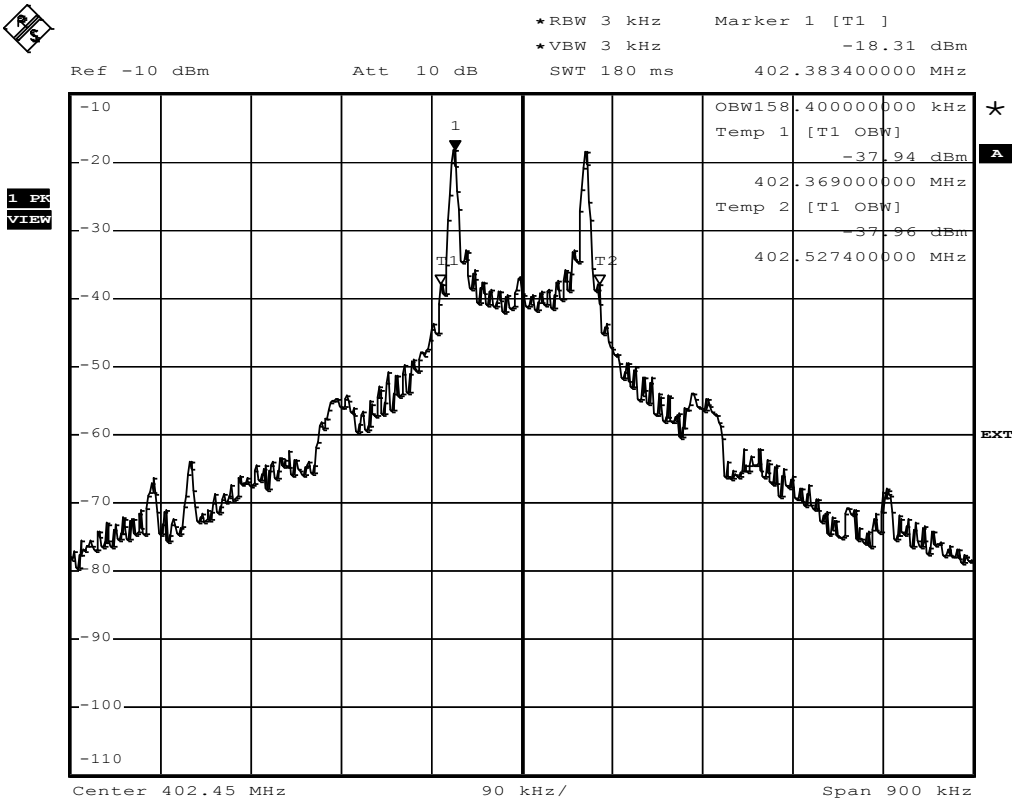
Channel	Frequency [MHz]	Occupied Bandwidth [kHz]
F_{LOW}	402.45	158.4
F_{MID}	403.65	158.4
F_{HIGH}	404.85	158.4

Comments:

Occupied Bandwidth – F_{LOW}

Acc. Ordinance Regulating Radio Equipment
Occupied frequency bandwidth

EUT	Telemonitoring System
Model	Cardio Messenger Smart2G / Cardio Messenger Smart3G / G0M-1309-3225
Approval Holder	Biotronik SE & Co. KG
Temperature / Voltage	20°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr Treffke
Test Specification	Occupied frequency bandwidth
Comment 1	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 2	Carrier channel: 8 / 402.45 MHz
Comment 3	PASS

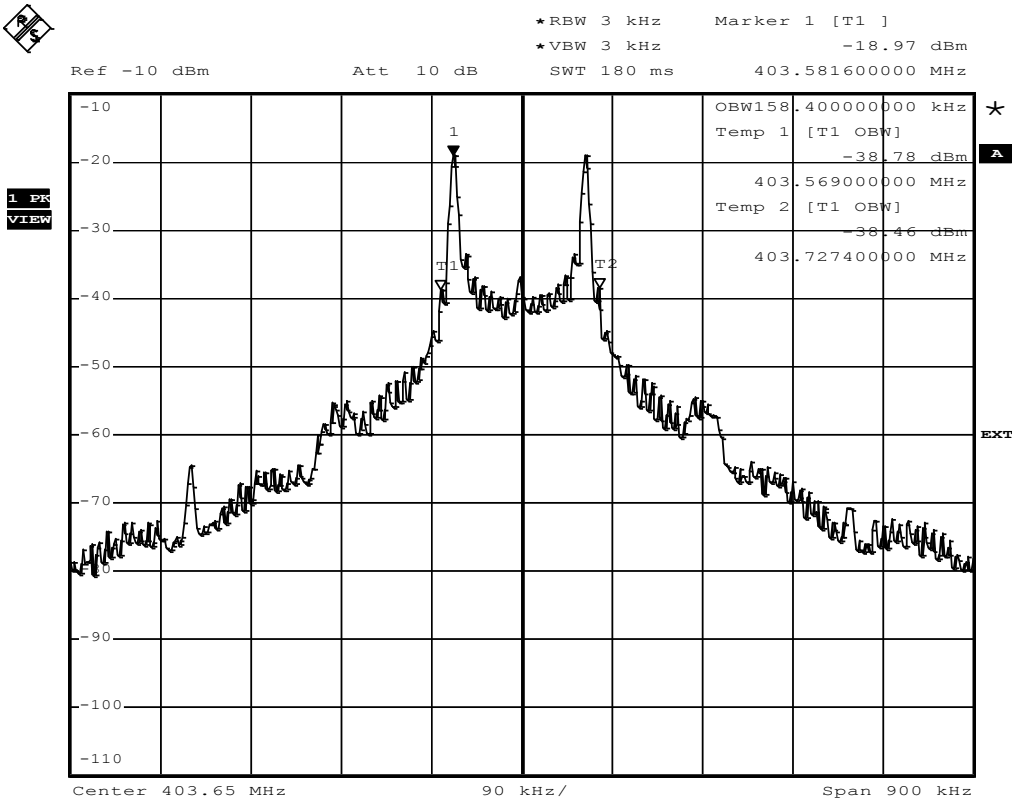


Comment: Occupied bandwidth: 158.4 KHz
Date: 19.NOV.2013 14:16:46

Occupied Bandwidth - Transmitter & Antenna F_{MID}

Acc. Ordinance Regulating Radio Equipment
Occupied frequency bandwidth

EUT	Telemonitoring System
Model	CardioMessenger Smart 3G / G0M-1309-3225
Approval Holder	Biotronik SE & Co. KG
Temperature / Voltage	20°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr Treffke
Test Specification	Occupied frequency bandwidth
Comment 1	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 2	Carrier channel: 0 / 403.65 MHz
Comment 3	PASS

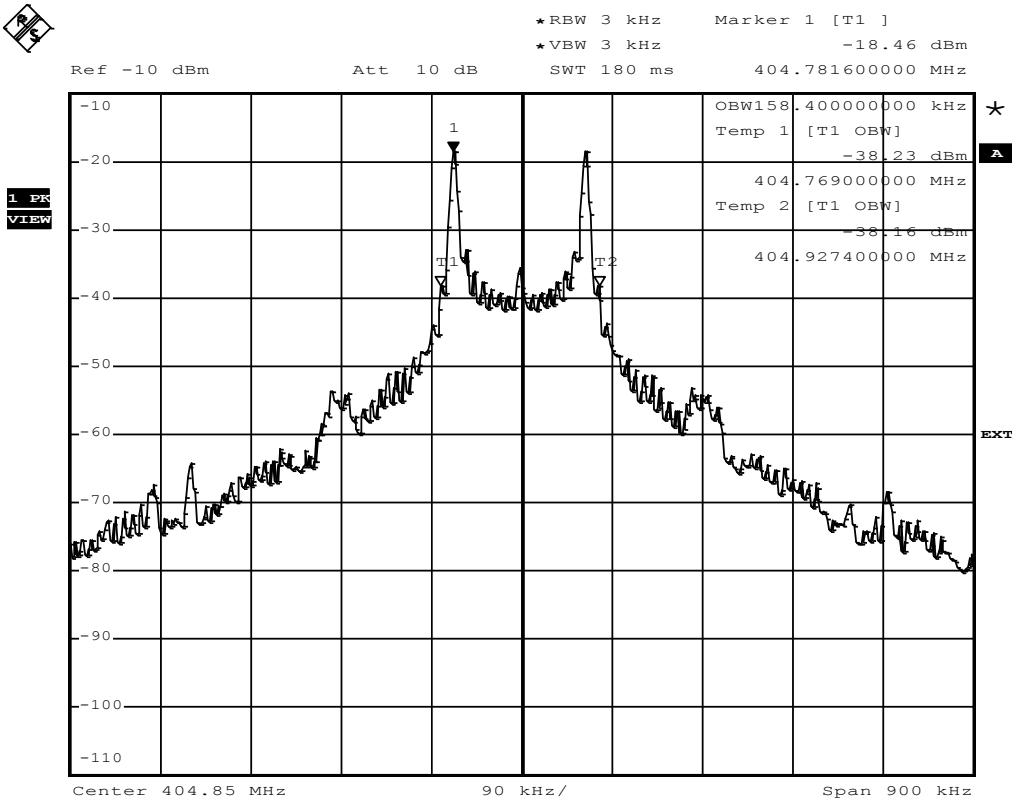


Comment: Occupied bandwidth: 158.4 KHz
Date: 19.NOV.2013 14:09:50

Occupied Bandwidth - Transmitter & Antenna F_{HIGH}

Acc. Ordinance Regulating Radio Equipment
Occupied frequency bandwidth

EUT	Telemonitoring System
Model	CardioMessenger Smart 3G / G0M-1309-3225
Approval Holder	Biotronik SE & Co. KG
Temperature / Voltage	20°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr Treffke
Test Specification	Occupied frequency bandwidth
Comment 1	A spectrum analyzer with an integrated 99% power bandwidth function is used
Comment 2	Carrier channel: 7 / 404.85 MHz
Comment 3	PASS



Comment: Occupied bandwidth: 158.4 KHz
Date: 19.NOV.2013 14:19:23

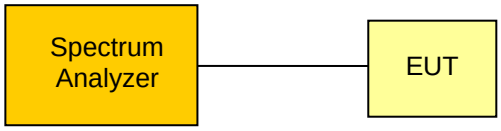
3.2 Test Conditions and Results – Emission Bandwidth

Emission Bandwidth acc. FCC Part 95 / IC RSS-243	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 95.628(d) / FCC 95.633(e) / IC RSS-243 3.3 5.1
Test according to measurement reference	Reference Method
	FCC 95.628(a)(6)(i) / FCC 95.633(e)(3)
Test frequency range	Tested frequencies
	F_{LOW} / F_{HIGH}
EUT test mode	Modulated

Limits

≤ 300 kHz

Test setup



Test procedure

1. EUT set to test mode
2. Span set to at least twice the emission spectrum
3. Detector set to peak and max hold
4. Envelope peak value of emission spectrum is selected
5. Marker on envelope of spectrum is set to level of -20 dB to the left of the peak
6. Marker on envelope of spectrum is set to level of -20 dB to the right of the peak
7. 20 dB Emission Bandwidth is determined by marker frequency separation

Test results

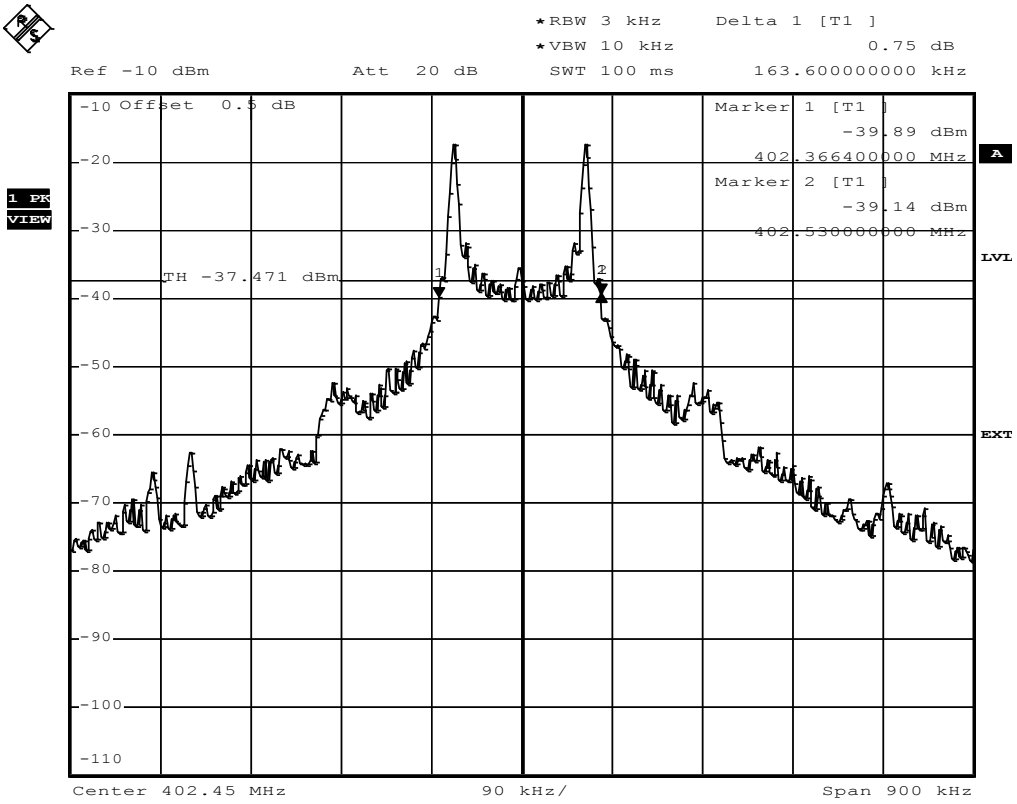
Channel	Frequency [MHz]	Emission Bandwidth [kHz]	Limit [kHz]	Result
F_{LOW}	402.45	163.6	≤ 300	PASS
F_{HIGH}	404.85	163.6	≤ 300	PASS

Comments:

Emission Bandwidth – F_{LOW}

FCC Part 95.633
Emission bandwidth

EUT	Telemonitoring System
Model	CardioMessenger Smart 3G / G0M-1309-3225
Approval Holder	Biotronik SE & Co. KG
Temperature / Voltage	20°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr Treffke
Test Specification	FCC Part 95.633
Comment 1	20 dB Emission bandwidth
Comment 2	Channel: 8 / 402.45 MHz
Comment 3	Pass

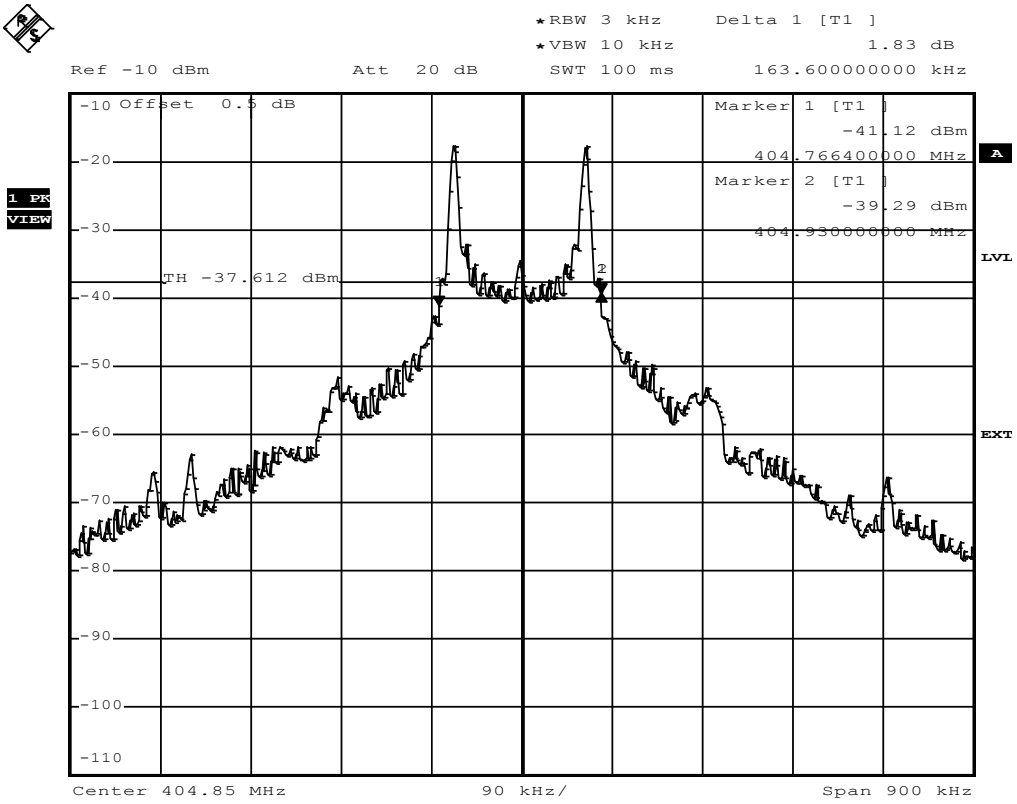


Comment: 20 dB bandwidth: 163.6 KHz
Date: 19.NOV.2013 14:28:29

Emission Bandwidth – F_{HIGH}

FCC Part 95.633
Emission bandwidth

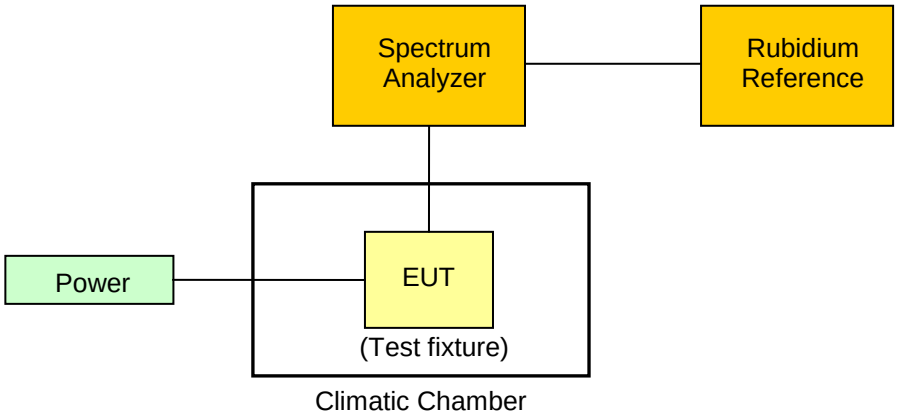
EUT	Telemonitoring System
Model	CardioMessenger Smart 3G / G0M-1309-3225
Approval Holder	Biotronik SE & Co. KG
Temperature / Voltage	20°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr Treffke
Test Specification	FCC Part 95.633
Comment 1	20 dB Emission bandwidth
Comment 2	Channel: 7 / 404.85 MHz
Comment 3	Pass



Comment: 20 dB bandwidth: 163.6 KHz
Date: 19.NOV.2013 14:30:53

3.3 Test Conditions and Results – Frequency stability

Frequency stability acc. FCC Part 95 / FCC Part 2 / IC RSS-243	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC § 95.627(e) / FCC § 2.1055 IC RSS-243 3.3 5.3 / RSS-Gen 4.7
Test according to measurement reference	Reference Method
	EN 301 839-1 8.1
Test frequency range	Tested frequencies
	F_{LOW} / F_{HIGH}
EUT test mode	Unmodulated
Limits	
≤ ±100 ppm	
Test setup	



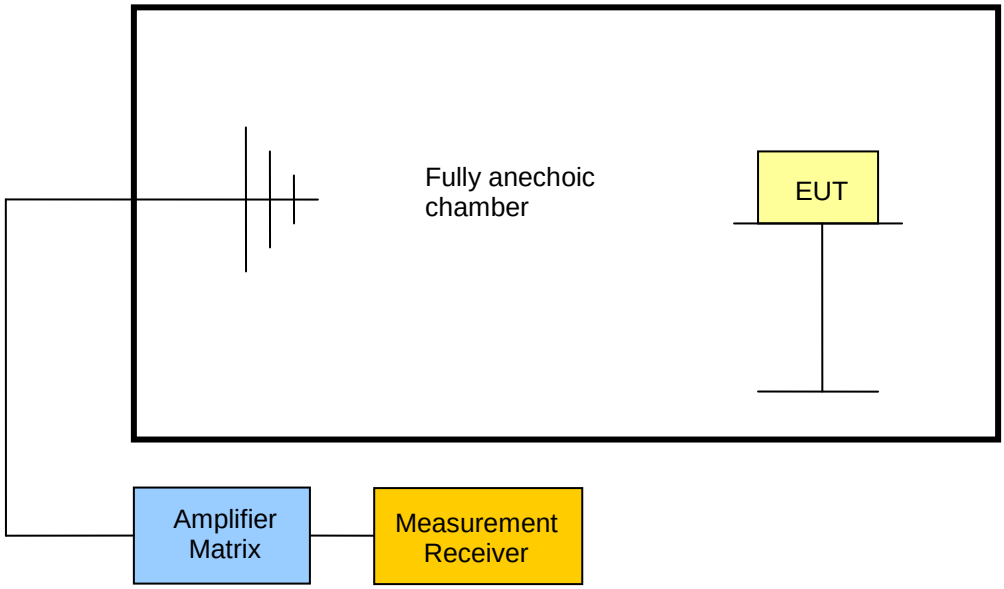
Test procedure

1. EUT set to test mode with supply voltage and temperature set to nominal conditions
2. EUT transmits without modulation
3. Detector set to peak and max hold
4. Peak of emission is measured using a frequency counter
5. The frequency error is determined as the deviation of the emission frequency from the nominal frequency stated by the customer.

Test results					
Channel	Nominal Frequency [MHz]	Temperature [°C]	Supply voltage	Frequency [MHz]	Drift [ppm]
F_{LOW}	402.45	-20	V_{MIN} = 3.1 VDC	402.449	-2.45
F_{HIGH}	404.85	-20	V_{MIN} = 3.1 VDC	404.849	-2.03
F_{LOW}	402.45	-10	V_{MIN} = 3.1 VDC	402.449	-0.25
F_{HIGH}	404.85	-10	V_{MIN} = 3.1 VDC	404.850	0.16
F_{LOW}	402.45	0	V_{MIN} = 3.1 VDC	402.449	-0.08
F_{HIGH}	404.85	0	V_{MIN} = 3.1 VDC	404.850	0.34
F_{LOW}	402.45	10	V_{MIN} = 3.1 VDC	402.449	-1.32
F_{HIGH}	404.85	10	V_{MIN} = 3.1 VDC	404.849	-0.92
F_{LOW}	402.45	20	V_{NOM} = 3.7 VDC	402.447	-5.12
F_{HIGH}	404.85	20	V_{NOM} = 3.7 VDC	404.848	-4.74
F_{LOW}	402.45	20	V_{MIN} = 3.1 VDC	402.447	-5.18
F_{HIGH}	404.85	20	V_{MIN} = 3.1 VDC	404.848	-4.77
F_{LOW}	402.45	20	V_{MAX} = 4.16 VDC	402.447	-5.12
F_{HIGH}	404.85	20	V_{MAX} = 4.16 VDC	404.848	-4.73
F_{LOW}	402.45	30	V_{MIN} = 3.1 VDC	402.447	-5.85
F_{HIGH}	404.85	30	V_{MIN} = 3.1 VDC	404.847	-5.23
F_{LOW}	402.45	40	V_{MIN} = 3.1 VDC	402.446	-9.24
F_{HIGH}	404.85	40	V_{MIN} = 3.1 VDC	404.846	8.87
Comments:					

3.4 Test Conditions and Results – Transmitter output power

Transmitter output power acc. FCC Part 2 / FCC Part 95 / IC RSS-243	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC § 2.1046 / FCC § 95.639(f) / IC RSS-243 5.4
Test according to measurement reference	Reference Method
	EN 301 839-1 8.3
Test frequency range	Tested frequencies
	F_{LOW} / F_{MID} / F_{HIGH}
EUT test mode	Modulated
Limits	
≤ 25 µW (-16 dBm) e.i.r.p.	
Test setup	



Test procedure

1. EUT set to test frequency with modulation
2. Measurement polarization is set to vertical
3. Span it set according to measurement range and detector is set to peak and max hold
4. Resolution bandwidth is set two be at least twice the emission bandwidth
5. During the sweep the EUT is rotated to obtain maximum emission level
6. Measurement is repeated with horizontal measurement polarization

Test results					
Channel	Frequency [MHz]	Emission Level [dbm e.i.r.p.]	Detector	Limit [dbm e.i.r.p.]	Margin [dB]
F_{LOW}	402.45	-17.2	pk	-16	-01.20
F_{MID}	403.65	-16.7	pk	-16	-00.70
F_{HIGH}	404.85	-16.4	pk	-16	-00.40
Comments: conducted measurements at the output terminal according to FCC § 2.1046 are not applicable. Specific radiated test procedure for implants according to FCC § 95.639(f) takes precedence.					

3.5 Test Conditions and Results – Band-edge compliance

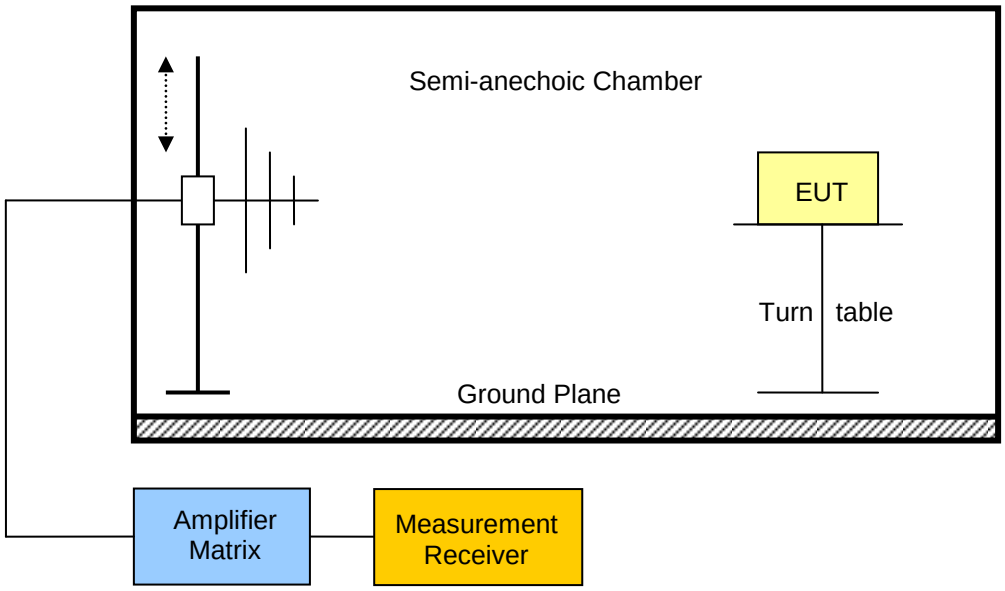
Band-edge compliance acc. FCC Part 95 / IC RSS-243	**Verdict: PASS**
EUT requirement rule parts and clause	Reference
	FCC 95.635(d) / IC RSS-243 3.5 5.5 / RSS-Gen 4.9
Test according to measurement reference	Reference Method
	FCC 95.635(d) / ANSI C 63.4
Test frequency range	Tested frequencies
	F_{LOW} / F_{HIGH}
EUT test mode	Modulated

Limits - FCC	
Frequency range	Limit
402 MHz – 250 kHz ≤ f ≤ 402 MHz	20 dB below maximum permitted output power
402 MHz < f < 150 kHz - f_C	20 dB below transmitter output power
150 kHz + f_C < f < 405 Mhz	20 dB below transmitter output power
405 MHz ≤ f ≤ 405 MHz + 250 kHz	20 dB below maximum permitted output power

Limits - IC	
Frequency range	Limit
402 MHz – 250 kHz < f < 150 kHz-f_C	20 dB below maximum permitted output power
150 kHz+f_C < f < 405 MHz + 250 kHz	20 dB below maximum permitted output power

Because the FCC limits are more stringent than the Industry Canada limits, the FCC limits are used to show compliance with the band-edge emission requirements.

Test setup



Test procedure
1. EUT set to test frequency with modulation 2. Measurement polarization is set to vertical 3. Span it set according to measurement range 4. Resolution bandwidth is set to 1% of the emission bandwidth and detector is set to peak 5. During the sweep the EUT is rotated to obtain maximum emission level 6. Measurement is repeated with horizontal measurement polarization

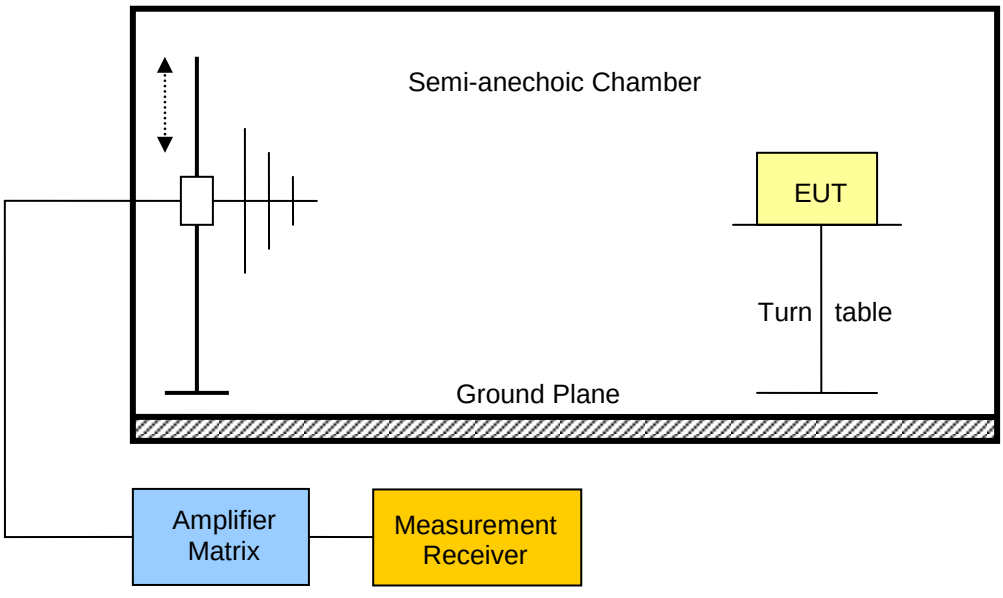
Test results

Channel	Frequency [MHz]	Mode	Emission [MHz]	Level [dbµV/m]	Det.	Pol.	Limit [dbµV/m]	Limit dist. [m]*	Margin [dB]
F_{LOW}	402.45	Modulated	401.988	23.52	pk	h	59.4	3	-35.88
F_{LOW}	402.45	Modulated	402.252	48.05	pk	h	54.6	3	-06.55
F_{LOW}	402.45	Modulated	402.299	48.53	pk	h	54.6	3	-06.07
F_{LOW}	402.45	Modulated	402.605	46.49	pk	h	54.6	3	-08.11
F_{LOW}	402.45	Modulated	402.643	46.99	pk	h	54.6	3	-07.61
F_{HIGH}	404.85	Modulated	405.045	34.87	pk	h	59.4	3	-24.53
F_{HIGH}	404.85	Modulated	404.387	36.15	pk	h	54.6	3	-18.45
F_{HIGH}	404.85	Modulated	404.522	45.19	pk	h	54.6	3	-09.41
F_{HIGH}	404.85	Modulated	404.651	47.46	pk	h	54.6	3	-07.14
F_{HIGH}	404.85	Modulated	404.689	48.61	pk	h	54.6	3	-05.99
F_{HIGH}	404.85	Modulated	404.999	47.95	pk	h	54.6	3	-06.65

Comments: * Physical distance between EUT and measurement antenna.

3.6 Test Conditions and Results – Transmitter unwanted emissions

Transmitter unwanted emissions acc. to FCC Part 2 / FCC Part 95 / IC RSS-243				**Verdict: PASS**
Test according referenced standards		Reference Method		
		FCC § 2.1051 / FCC § 2.1053 / FCC § 2.1057 / FCC § 95.635(d) / IC RSS-243 3.4 5.5 / IC RSS-Gen 4.9		
Test according to measurement reference		Reference Method		
		FCC 95.635(d) / ANSI C 63.4		
Test frequency range		Tested frequencies		
		30 MHz – 10th Harmonic		
Limits				
Frequency range [MHz]	Detector	Limit [µV/m]	Limit [dBµV/m]	Limit Distance [m]
30 – 88	Quasi-Peak	100	40	3
88 – 216	Quasi-Peak	150	43.5	3
216 – 960	Quasi-Peak	200	46	3
960 – 1000	Quasi-Peak	500	54	3
> 1000	Average	500	54	3
Test setup				



Test procedure
1. EUT set to test mode 2. Span it set according to measurement range 3. Resolution bandwidth below 1 GHz is set according to CISPR 16 with peak/quasi-peak detector and RBW of 1 MHz with peak/average detector is used above 1 GHz 4. Markers are set to peak emission levels within restricted bands

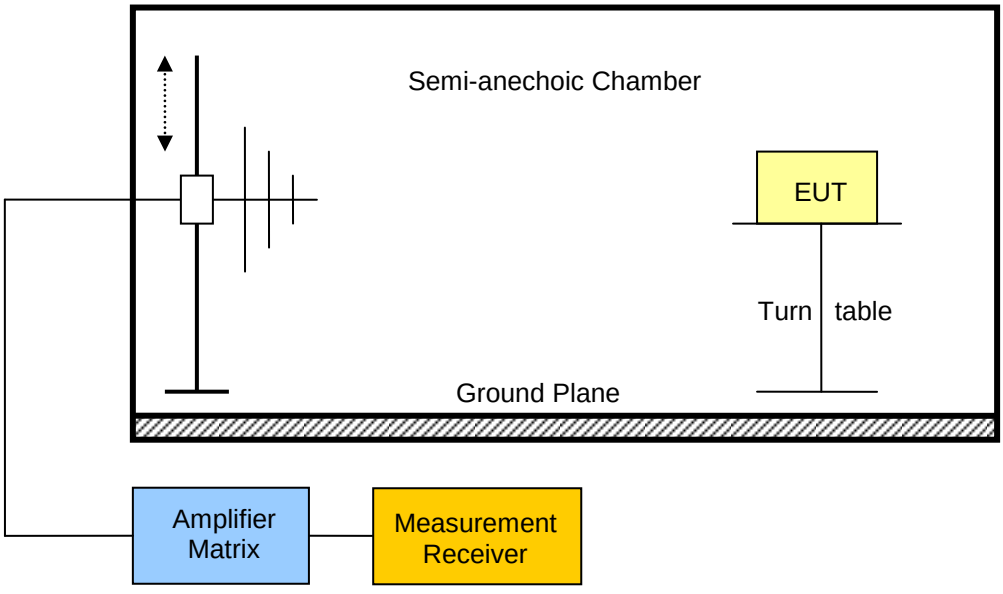
Test results

Channel	Frequency [MHz]	Mode	Emission [MHz]	Level [dbµV/m]	Det.	Pol.	Limit [dbµV/m]	Limit dist. [m]*	Margin [dB]
F_{LOW}	402.45	Modulated	401.347	29.22	pk	hor	46.00	3	-16.78
F_{LOW}	402.45	Modulated	803.732	32.15	pk	hor	46.00	3	-13.85
F_{HIGH}	404.85	Modulated	401.347	28.69	pk	hor	46.00	3	-17.31
F_{HIGH}	404.85	Modulated	404.387	36.15	pk	hor	54.60	3	-18.45
F_{HIGH}	404.85	Modulated	808.49	33.93	pk	hor	46.00	3	-12.07
F_{HIGH}	404.85	Modulated	890.566	31.27	pk	ver	46.00	3	-14.73

Comments: * Physical distance between EUT and measurement antenna.

3.7 Test Conditions and Results – Receiver spurious emissions

Receiver spurious emissions acc. IC RSS-243				**Verdict: PASS**
Test according referenced standards	Reference Method			
	IC RSS-243 3.5 5.6 / IC RSS-Gen 4.10 6.1			
Test according to measurement reference	Reference Method			
	ANSI C 63.4			
Test frequency range	Tested frequencies			
	30 MHz – 3th Harmonic			
EUT test mode	Receive			
Limits				
Frequency range [MHz]	Detector	Limit [µV/m]	Limit [dBµV/m]	Limit Distance [m]
30 – 88	Quasi-Peak	100	40	3
88 – 216	Quasi-Peak	150	43.5	3
216 – 960	Quasi-Peak	200	46	3
960 – 1000	Quasi-Peak	500	54	3
> 1000	Average	500	54	3
Test setup				



Test procedure
1. EUT set to receive mode (Communication tester is used if needed) 2. Span it set according to measurement range 3. Resolution bandwidth below 1 GHz is set according to CISPR 16 with peak/quasi-peak detector and RBW of 1 MHz with peak/average detector is used above 1 GHz 4. Markers are set to peak emission levels

Test results

Channel	Frequency [MHz]	Emission [MHz]	Emission Level [dbµV/m]	Det.	Pol.	Limit [dBµV/m]	Margin [µV/m]
F_{MID}	403.65	883.2	24.13	pk	ver	46	-21.87
Comments:							

3.8 Test Conditions and Results – AC power line conducted emissions

Power line conducted emissions acc. FCC 47 CFR 15.207 / IC RSS-Gen				**Verdict: PASS**
Test according referenced standards	Reference Method			
	ANSI C 63.4			
Fully configured sample scanned over the following frequency range	Frequency range			
	0.15 MHz to 30 MHz			
Points of Application	Application Interface			
AC Mains	LISN			
EUT test mode	AC-Powerline			
Limits and results				
Frequency [MHz]	Quasi-Peak [dBµV]	Result	Average [dBµV]	Result
0.15 to 5	66 to 56*	PASS	56 to 46*	PASS
0.5 to 5	56	PASS	46	PASS
5 to 30	60	PASS	50	PASS
Comments: * Limit decreases linearly with the logarithm of the frequency.				

Conducted Emissions

EMI voltage test in the ac-mains according to FCC 15B

Project number: G0M-1309-3226

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	CardioMessenger Smart 3G
Model:	399525001009
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pflug
Test Conditions:	Tnom: 23°C, Unom: 120VAC/60Hz (FW7520/05 AC/DC-adapter)
LISN:	ESH2-Z5 L
Mode:	UMTS link + charge mode
Test Date:	2013-11-19
Note:	

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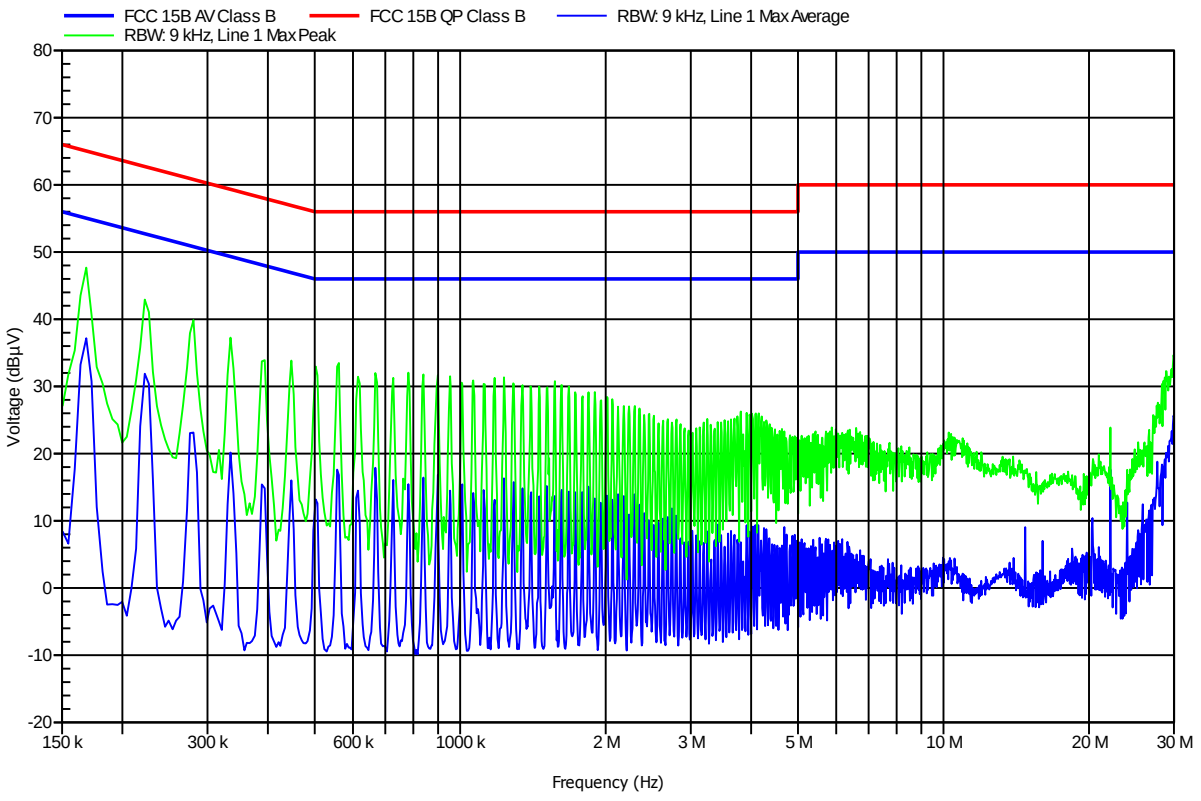


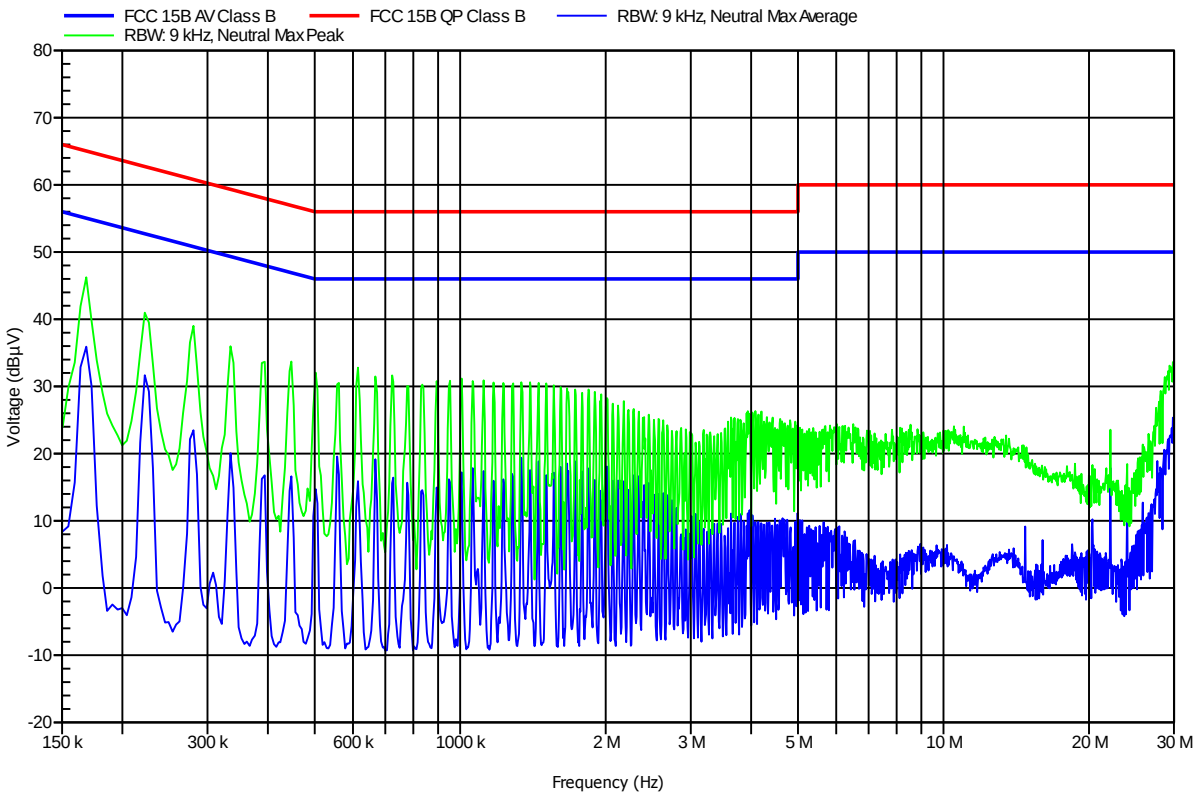
Conducted Emissions

EMI voltage test in the ac-mains according to FCC 15B

Project number: G0M-1309-3226

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	CardioMessenger Smart 3G
Model:	399525001009
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pflug
Test Conditions:	Tnom: 23°C, Unom: 120VAC/60Hz (FW7520/05 AC/DC-adapter)
LISN:	ESH2-Z5 N
Mode:	UMTS link + charge mode
Test Date:	2013-11-19
Note:	

Index 9

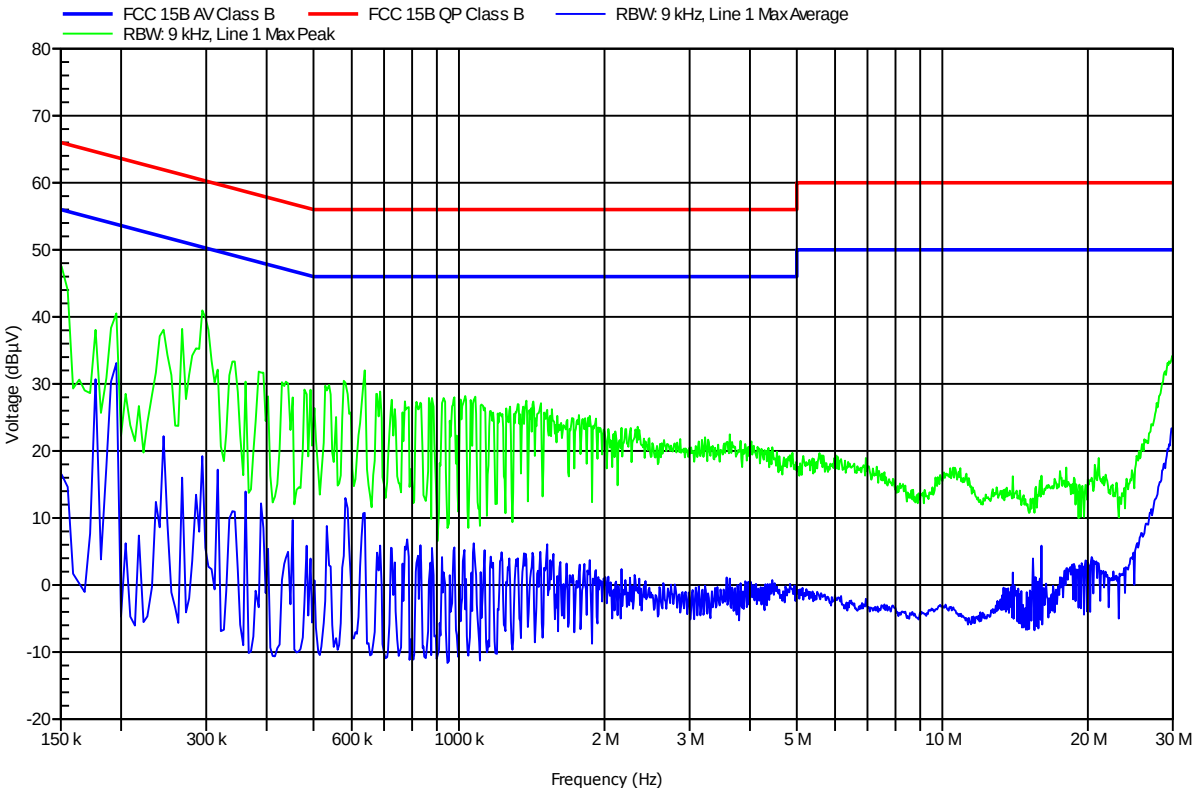


Conducted Emissions

EMI voltage test in the ac-mains according to FCC 15B

Project number: G0M-1309-3226

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	CardioMessenger Smart 3G
Model:	399525001009
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pflug
Test Conditions:	Tnom: 23°C, Unom: 120VAC/60Hz (FW7520/05 AC/DC-adapter)
LISN:	ESH2-Z5 L
Mode:	GSM link + charge mode
Test Date:	2013-11-19
Note:	

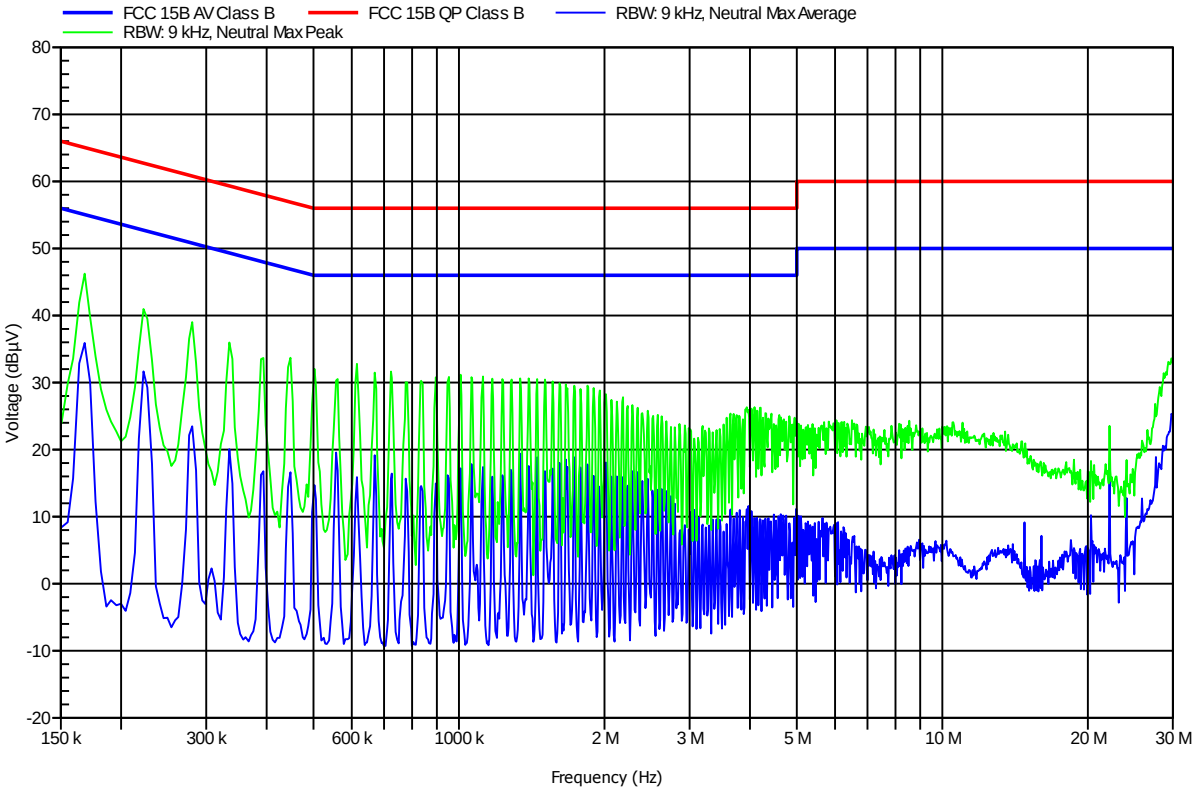


Conducted Emissions

EMI voltage test in the ac-mains according to FCC 15B

Project number: G0M-1309-3226

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	CardioMessenger Smart 3G
Model:	399525001009
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Pflug
Test Conditions:	Tnom: 23°C, Unom: 120VAC/60Hz (FW7520/05 AC/DC-adapter)
LISN:	ESH2-Z5 N
Mode:	GSM link + charge mode
Test Date:	2013-11-19
Note:	



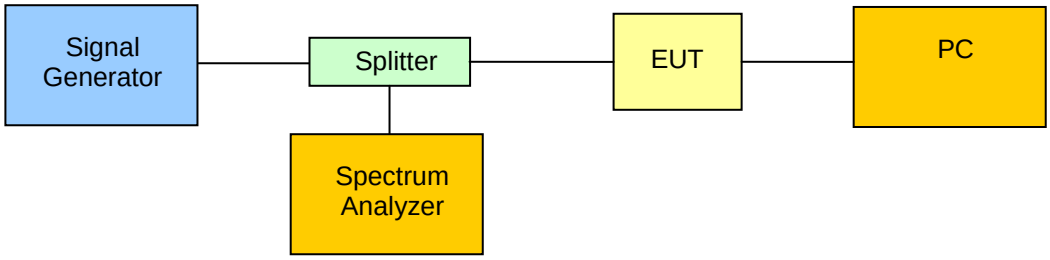
3.9 Test Conditions and Results – System threshold power levels

System threshold power levels acc. to FCC Part 95 / IC RSS-243	Verdict: PASS
Test according referenced standards	Reference Method
	FCC 95.628(a)(3) / IC RSS-243 3.6 5.7.1
Test according to measurement reference	Reference Method
	EN 301 839-1 10.1
Test frequency range	Tested frequencies
	F_{MID}
EUT test mode	Modulated 2

Limits

Measured threshold level ≤ Calculated threshold level

Test setup



Test procedure

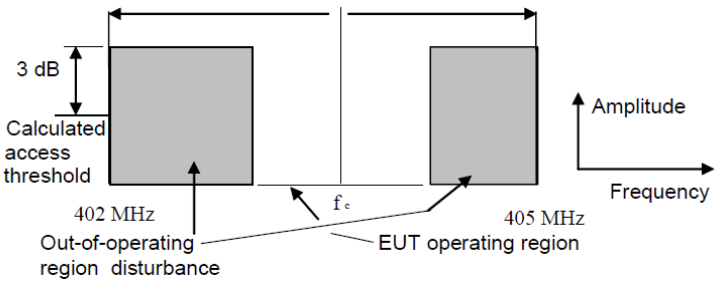
1. The threshold level is calculated according to the following equation

$$P_{TH}\ [dBm] = 10 \cdot Log_{10}(EB[Hz]) - 150 + G[dBi]$$

with

P_{TH} = LBT threshold level in dBm
EB = Emission bandwidth in Hz
G = Monitoring system antenna gain in dBi

2. By administration commands the following channel occupation is simulated to the device so that the EUT can only send on frequency f_c.



3. A CW signal is generated by the signal generator on frequency f_c with a level 6 dB below the calculated threshold and it is verified that the EUT transmits on f_c.
4. The power level of the CW source is increased in 1 dB steps and it is verified that the EUT still transmits on f_c.
5. The power level is increased until the EUT starts to transmit on a channel in the disturbance area and the power level is noted as threshold value

Test results

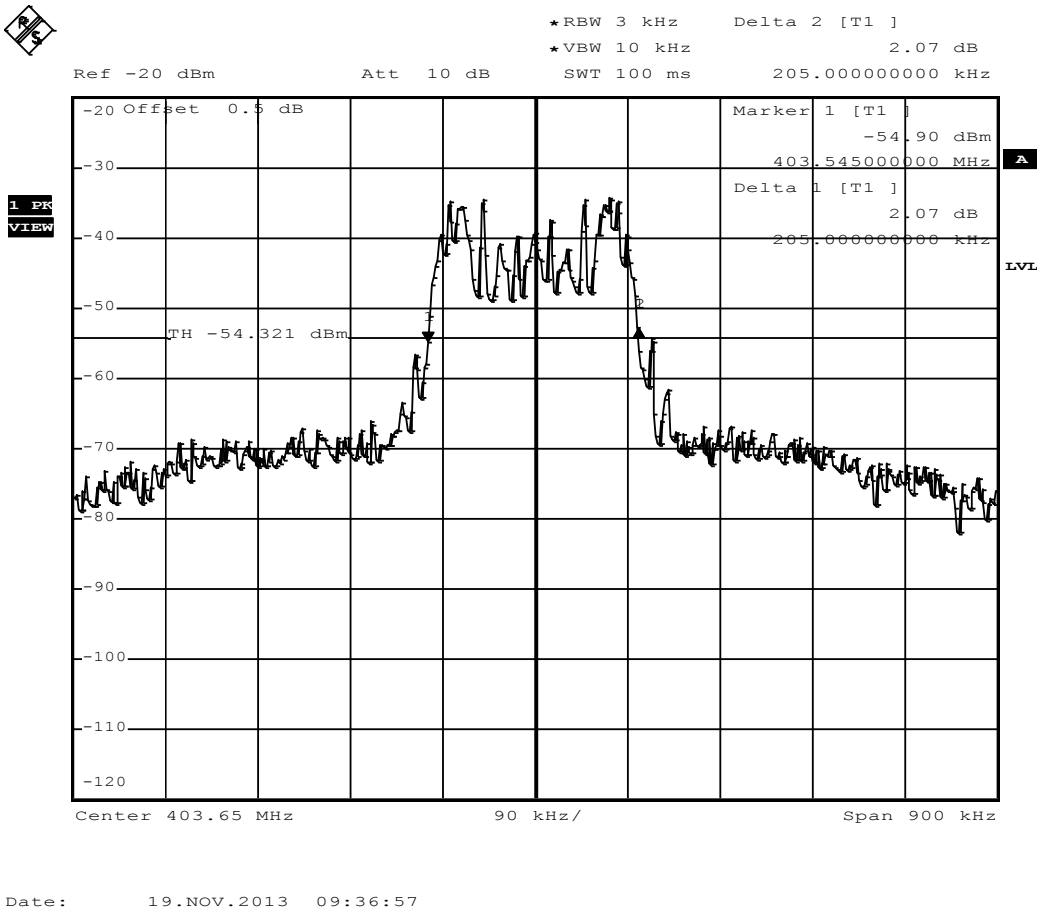
Transmitter Emission bandwidth [Hz]	Antenna gain [dBi]	Calculated threshold level [dBm]	Measured threshold level [dBm]
163 600	-5	-101.9	-102

Comments:

System threshold power levels

FCC Part 95.628
Emission bandwidth companion device

EUT	Telemonitoring System
Model	CardioMessenger Smart 3G / G0M-1309-3225
Approval Holder	Biotronik SE & Co. KG
Temperature / Voltage	25°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr Treffke
Test Specification	FCC Part 95.628 / EN 301 839-1
Comment 1	20 dB Emission bandwidth
Comment 2	Channel: 403.65 MHz
Comment 3	EBW= 205 kHz



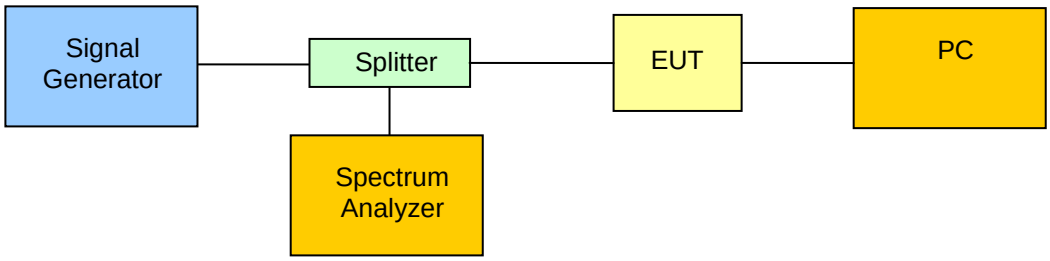
3.10 Test Conditions and Results – Monitoring system bandwidth

Monitoring system bandwidth acc. to FCC Part 95 / IC RSS-243	**Verdict: PASS**
Test according referenced standards	Reference Method
	FCC 95.628(a)(1) / IC RSS-243 3.6 5.7.2
Test according to measurement reference	Reference Method
	EN 301 839-1 10.2
Test frequency range	Tested frequencies
	F_{MID}
EUT test mode	Monitoring A

Limits

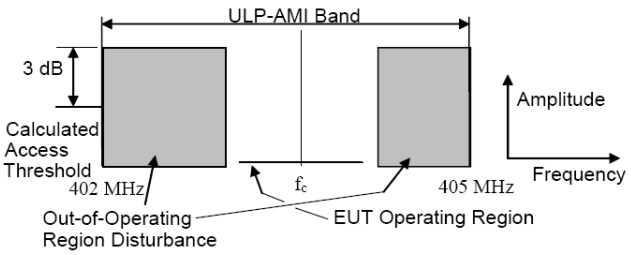
≥ Emission bandwidth (equals to measured power level differences ≤ 20 dB)

Test setup



Test procedure

1. By administration commands the following channel occupation is simulated to the device so that the EUT can only send on frequency f_c.



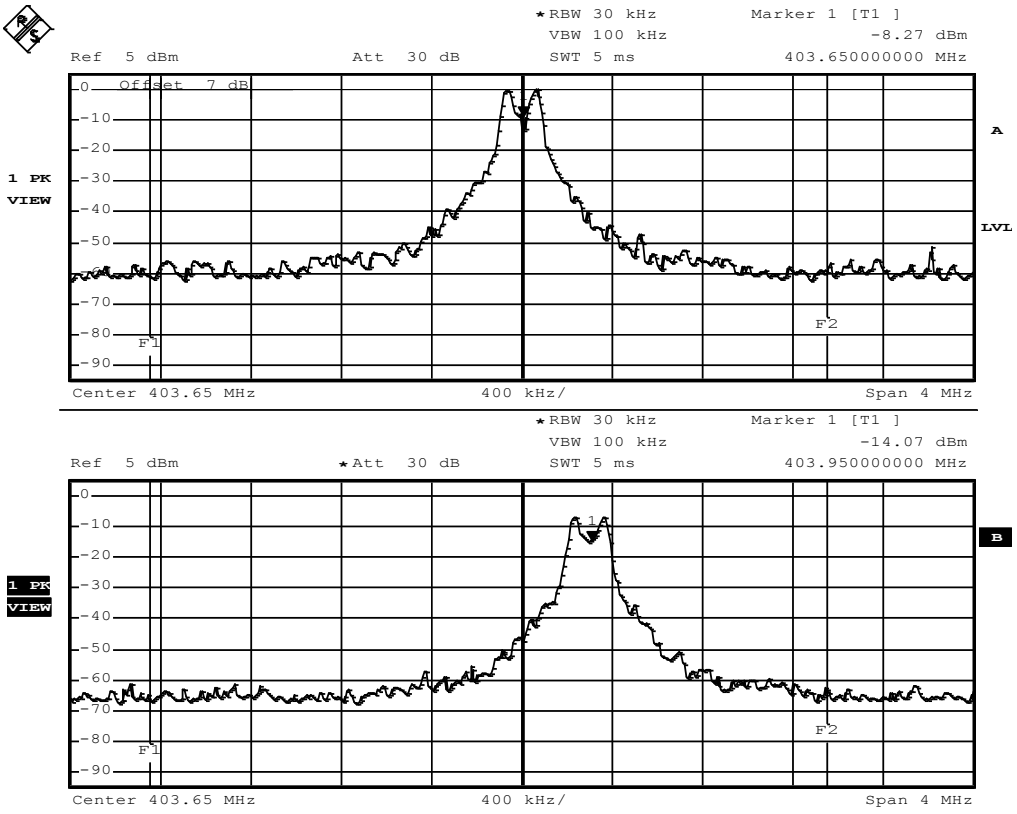
2. A CW signal is generated by the signal generator on frequency f_c with a level sufficient to block transmission of the EUT on channel f_c. It is verified that the EUT stops transmission.
3. A new communication session is established and the level of the signal generator is reduced until the EUT starts to transmit on channel f_c.
4. Then the frequency of the generator is set to the measured lower edge frequency of the emission bandwidth and the level of the signal generator is increased until the EUT starts to transmit in the out-of-band region again. The signal level is recorded.
5. The procedure is repeated at the upper edge frequency of the emission bandwidth measurement. The power level difference between the center and the edge frequency is recorded.

Test results						
Channel	Frequency [MHz]	Center Interferer Level [dBm]	Edge	Edge Interferer Level [dBm]	Level Difference [dB]	Limit [dB]
F_{MID}	403.65	-98	-EBW/2	-94	4	≤ 20
F_{MID}	403.65	-98	+EBW/2	-96	2	≤ 20
Comments:						

Monitoring system bandwidth channel 0 lower half EBW

FCC Part 95.628
Monitoring system bandwidth

EUT	Telemonitoring System
Model	CardioMessenger Smart 3G / G0M-1309-3225
Approval Holder	Biotronik SE & Co. KG
Temperature / Voltage	25°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr Treffke
Test Specification	FCC Part 95.628 / EN 301 839-1
Comment 1	Monitoring system bandwidth @ ch.0
Comment 2	screen A, communication @ channel 0
Comment 3	Interferer level: -94dBm @ channel 0 -half EBW communication changed to ch.1

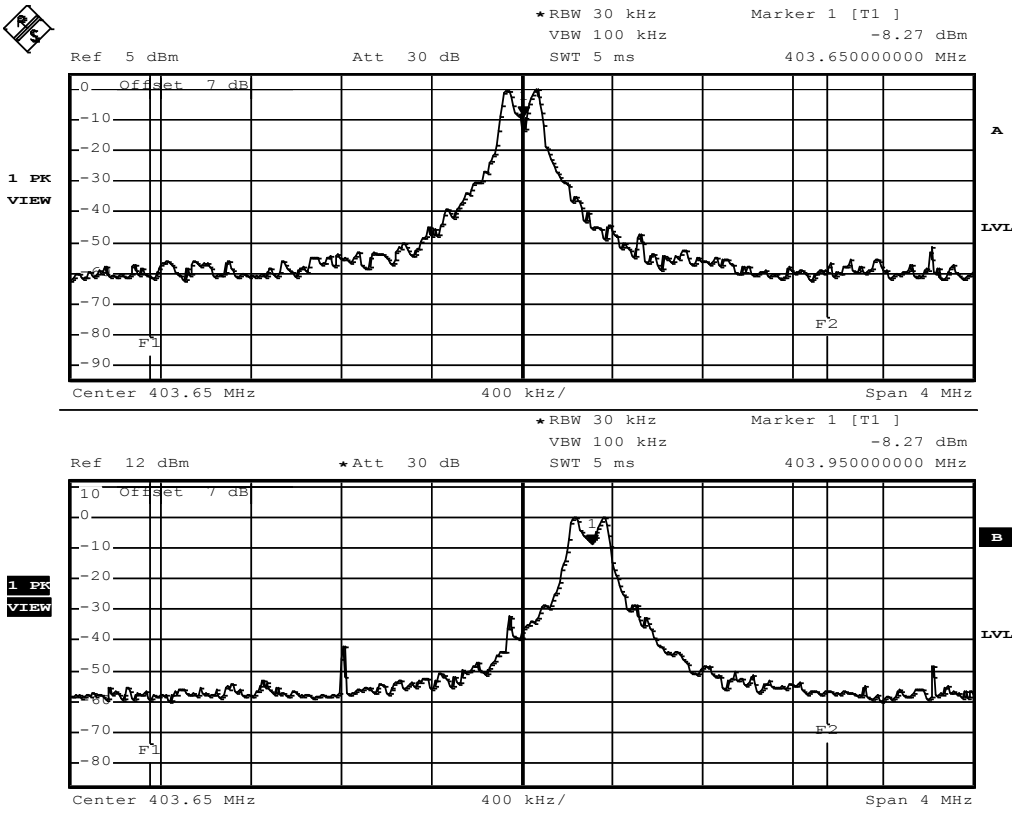


Comment: 20 dB bandwidth: -392 KHz
Date: 19.NOV.2013 10:33:16

Monitoring system bandwidth channel 0 upper half EBW

FCC Part 95.628
Monitoring system bandwidth

EUT	Telemonitoring System
Model	CardioMessenger Smart 3G / G0M-1309-3225
Approval Holder	Biotronik SE & Co. KG
Temperature / Voltage	25°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr Treffke
Test Specification	FCC Part 95.628 / EN 301 839-1
Comment 1	Monitoring system bandwidth @ ch.0
Comment 2	screen A, communication @ channel 0
Comment 3	Interf. level: -96dBm @ channel 0 +half EBW communication changed to ch.1

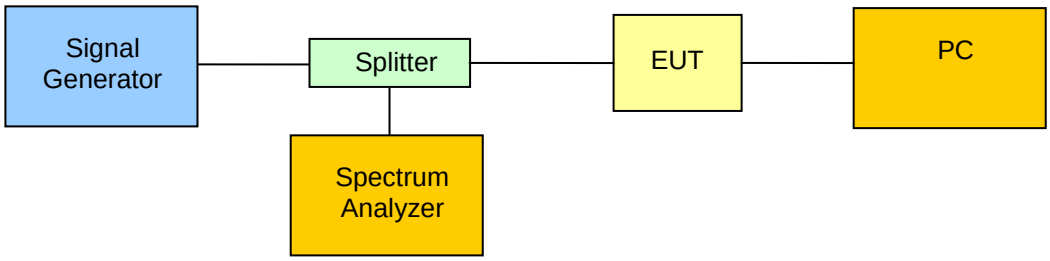


Comment: 20 dB bandwidth: -392 KHz
Date: 19.NOV.2013 10:37:39

3.11 Test Conditions and Results – Scan cycle time

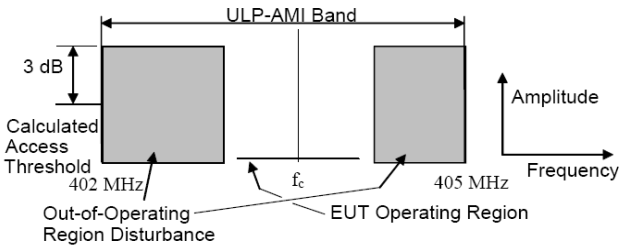
Scan cycle time acc. to FCC Part 95 / IC RSS-243	**Verdict: PASS**
Test according referenced standards	Reference Method
	FCC 95.628(a)(2) / IC RSS-243 3.6 5.7.3
Test according to measurement reference	Reference Method
	EN 301 839-1 10.3
Test frequency range	Tested frequencies
	F_{MID}
EUT test mode	Monitoring A
Limits	
≤ 5 s	

Test setup



Test procedure

1. By administration commands the following channel occupation is simulated to the device so that the EUT can only send on frequency f_c.



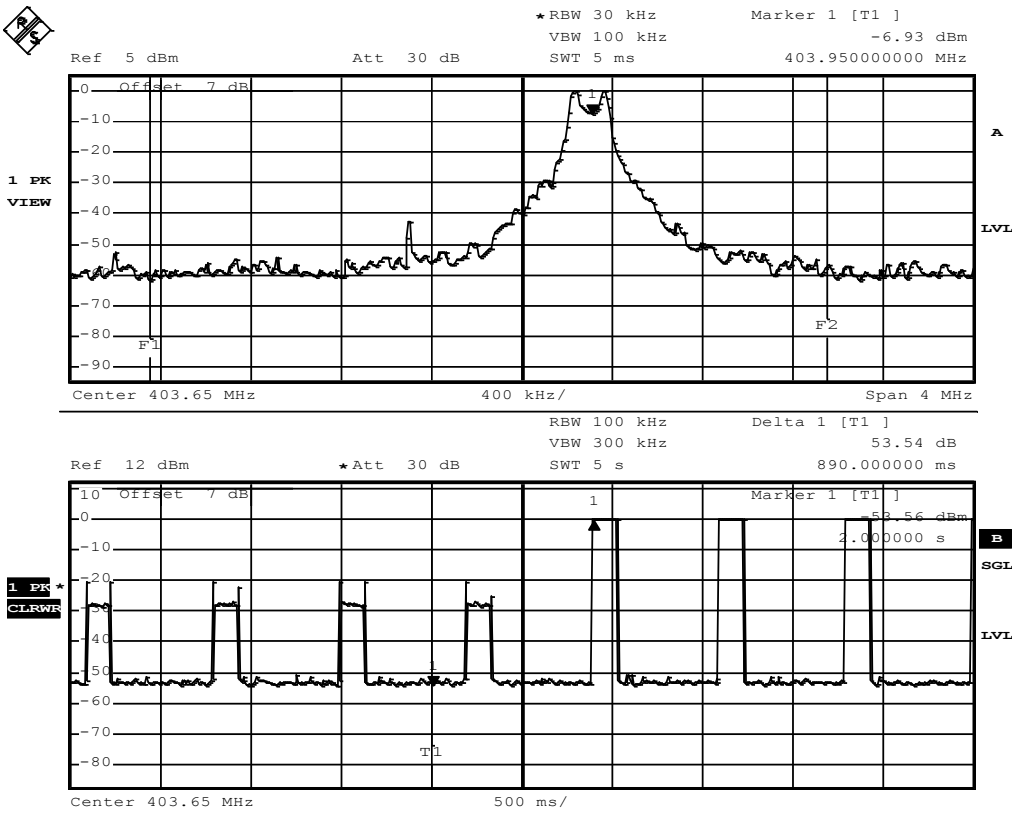
2. A CW signal is generated by the signal generator on frequency f_c with a level 3 dB above the out-of-band region level to block transmission of the EUT on channel f_c. It is verified that the EUT does not transmit on f_c.
3. The CW interferer is removed, a new communication session is established and the time until the EUT starts to transmit is measured.
4. If the EUT does not transmit on f_c a 1 second delay is added between the removal of the interferer and the establishment of the communication session. The addition of delay is repeated until the EUT always starts transmission on f_c. The delay time measurement is repeated several times. At the end 1 second is subtracted from all delays measured.

Test results			
Channel	Frequency [MHz]	Scan cycle time [s]	Limit [s]
F_{MID}	403.65	0.890	≤ 5
Comments:			

Monitoring system scan cycle time

FCC Part 95.633
Monitoring system scan cycle time

EUT	Telemonitoring System
Model	CardioMessenger Smart 3G / G0M-1309-3225
Approval Holder	Biotronik SE & Co. KG
Temperature / Voltage	25°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr Treffke
Test Specification	FCC Part 95.628 / EN 301 839-1
Comment 1	Monitoring system scan cycle time @ ch. 0
Comment 2	Communication channel = Ch1, changing to ch.0 after release of interferer @ ch0
Comment 3	Result 890 ms; Limit < 5 sec PASS



Comment: Spectrum_Analyzer_FSP
Date: 19.NOV.2013 11:07:46

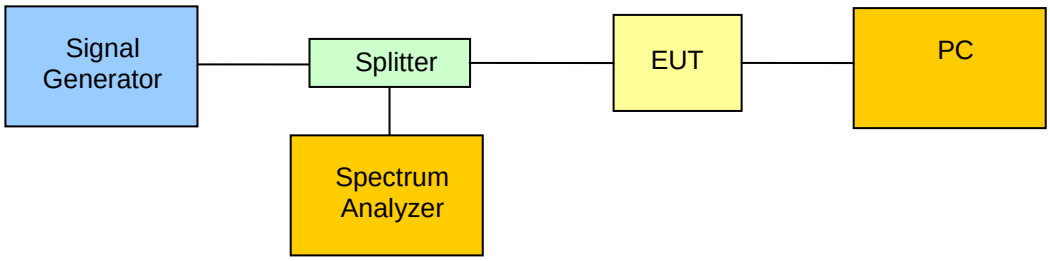
3.12 Test Conditions and Results – Minimum channel monitoring period

Minimum channel monitoring period acc. to FCC Part 95 / IC RSS-243	**Verdict: PASS**
Test according referenced standards	Reference Method
	FCC 95.628(a)(2) / IC RSS-243 3.6 5.7.4
Test according to measurement reference	Reference Method
	EN 301 839-1 10.3
Test frequency range	Tested frequencies
	F_{MID}
EUT test mode	Monitoring A

Limits

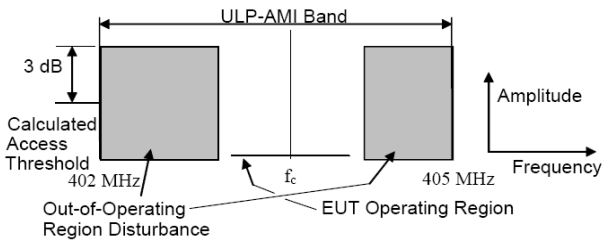
≥ 10 ms

Test setup



Test procedure

1. By administration commands the following channel occupation is simulated to the device so that the EUT can only send on frequency f_c.



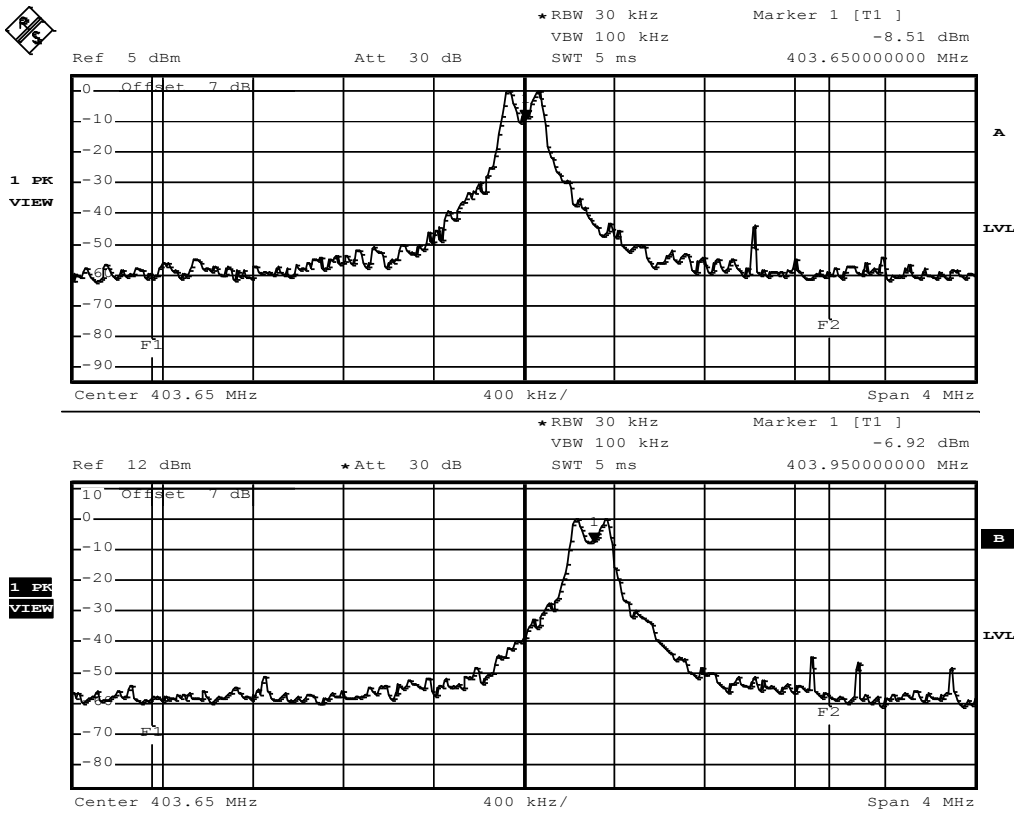
2. A CW signal is generated by the signal generator on frequency f_c with a level equal to the out-of-band region level to block transmission of the EUT on channel f_c and the out-of-band interference is removed. It is verified that the EUT does not transmit on f_c.
3. Then the out-of-band interference level is set to 3 dB higher and it is verified that the EUT transmits on f_c.
4. The out-of-band interferer are pulsed with a pulse width of 0.1 ms and a repetition frequency of 100Hz. The EUT is placed in a state where it is seeking to initiate a communication session with the ULP-AMI compainion device.
5. The EUT shall not initiate a communication session on a channel different from f_c.
   This condition is checked more than 10 times.

Test results		
Channel	Frequency [MHz]	Result
F_{MID}	403.65	No transmission on center frequency
Comments: For practical reasons the test has been performed with a fixed interferer level in the out-of-band region and a pulsed interferer level on center channel. To make sure that the monitoring period requirement was met it was verified that no communication on center channel had been initiated.		

Minimum channel monitoring period

FCC Part 95.628
Monitoring system scan cycle time and minimum channel monitoring period

EUT	Telemonitoring System
Model	CardioMessenger Smart 3G / G0M-1309-3225
Approval Holder	Biotronik SE & Co. KG
Temperature / Voltage	25°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr Treffke
Test Specification	FCC Part 95.628 / EN 301 839-1
Comment 1	Minimum channel monitoring period @ ch.0
Comment 2	screen A:communication @ ch.0, screen B:Interferer pulse ON, communication channel changed to ch.1
Comment 3	No communication @ ch. 0 / PASS



Comment: Spectrum_Analyzer_FSP
Date: 19.NOV.2013 11:29:32

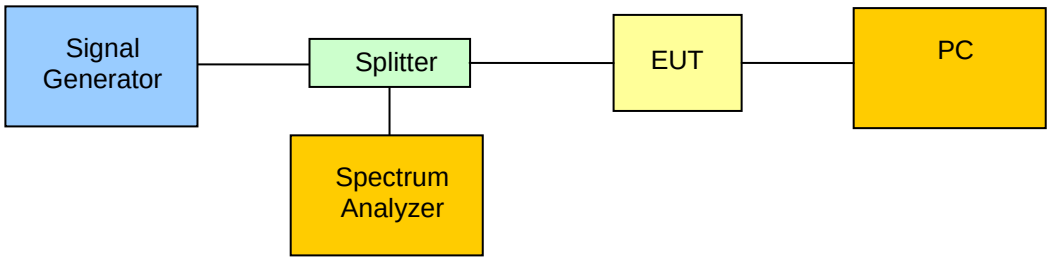
3.13 Test Conditions and Results – Channel access

Channel access acc. to FCC Part 95 / IC RSS-243	**Verdict: PASS**
Test according referenced standards	Reference Method
	FCC 95.628(a)(4) / IC RSS-243 3.6 5.7.1
Test according to measurement reference	Reference Method
	EN 301 839-1 10.4
Test frequency range	Tested frequencies
	F_{MID}
EUT test mode	Monitoring A

Limits

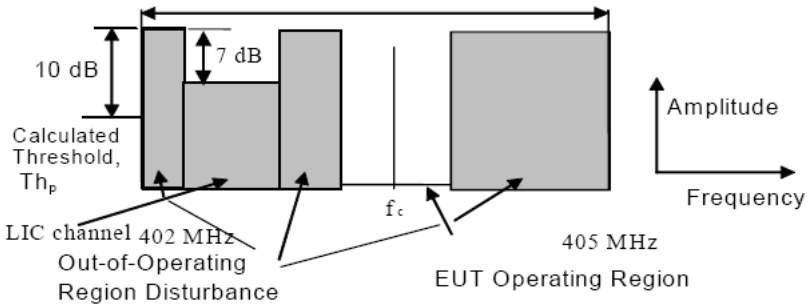
EUT has to select the east interfered channel (LIC) for transmission

Test setup



Test procedure

1. By administration commands the following channel occupation is simulated to the device so that the EUT can only send on frequency f_c.



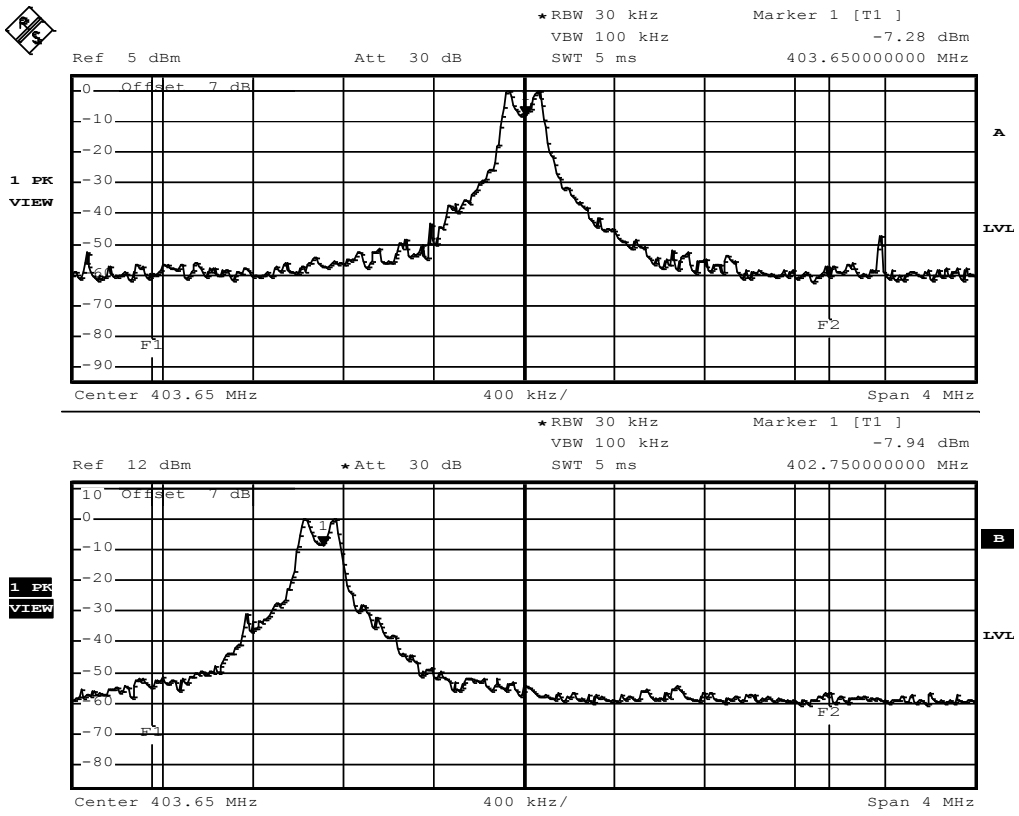
2. A CW signal is generated by the signal generator on frequency f_c with a level 3 dB lower than the calculated LBT threshold level. It is determined that the EUT communicates on f_c.
3. The CW interferer level is increased by 9dB and a new communication session is initiated. Now it is checked that the EUT communicates on the LIC center frequency.

Test results					
Channel	Frequency [MHz]	LIC Channel	Frequency [MHz]	Interferer Level channel 0 [dBm]	Communication channel
0	403.65	6	402.75	-105	6
0	403.65	5	404.54	-96	5
Comments:					

Channel access, LIC channel: Ch.6

FCC Part 95 .633
Channel access based on ambient levels relativeto the calculated access threshold level

EUT	Telemonitoring System
Model	CardioMessenger Smart 3G / G0M-1309-3225
Approval Holder	Biotronik SE & Co. KG
Temperature / Voltage	25°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr Treffke
Test Specification	FCC Part 95.628 / EN 301 839-1
Comment 1	Channel access based on ambient levels relativeto the calculated access threshold level
Comment 2	Interferer level: -96 dBm (threshold+6dB), LIC ch.=ch.6, -99 dBm
Comment 3	The communicstion channel changed to ch.6

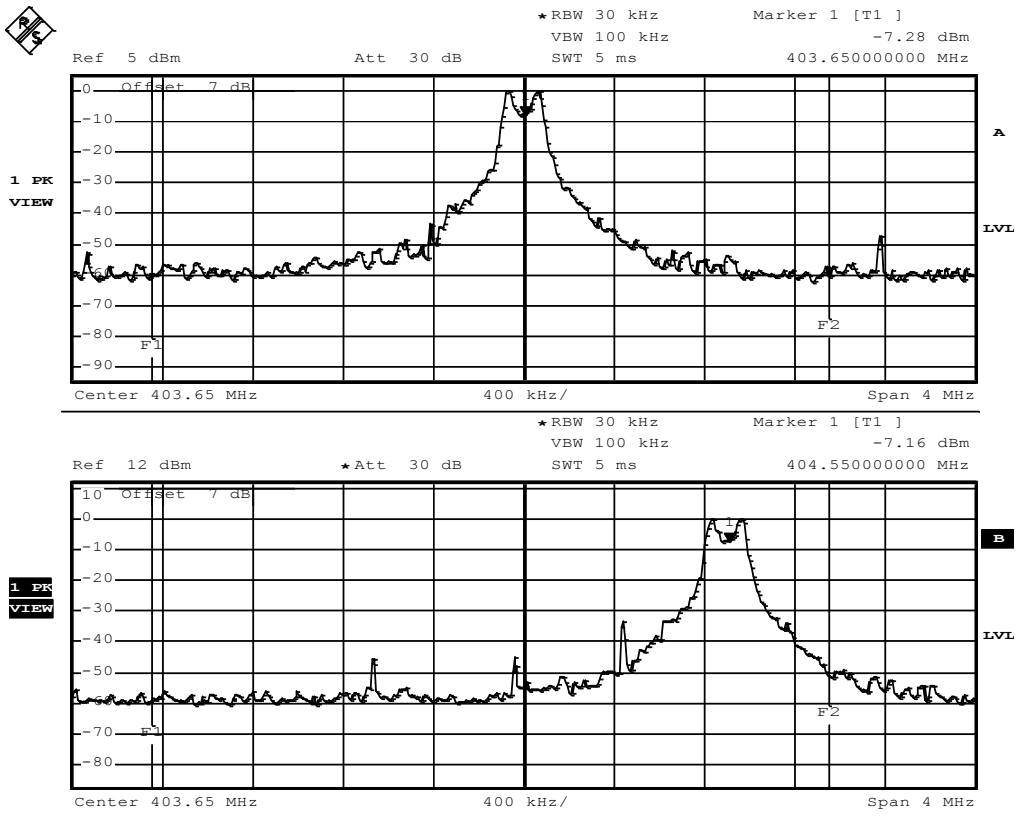


Comment: Spectrum_Analyzer_FSP
Date: 19.NOV.2013 11:54:16

Channel access, LIC channel: Ch.5

FCC Part 95 .633
Channel access based on ambient levels relativeto the calculated access threshold level

EUT	Telemonitoring System
Model	CardioMessenger Smart 3G / G0M-1309-3225
Approval Holder	Biotronik SE & Co. KG
Temperature / Voltage	25°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr Treffke
Test Specification	FCC Part 95.628 / EN 301 839-1
Comment 1	Channel access based on ambient levels relativeto the calculated access threshold level ch. 0
Comment 2	Interferer level: -96 dBm (threshold+6dB), LIC ch.=ch.5, -99 dBm
Comment 3	The communicstion channel changed to ch.5



Comment: Spectrum_Analyzer_FSP
Date: 19.NOV.2013 11:47:55

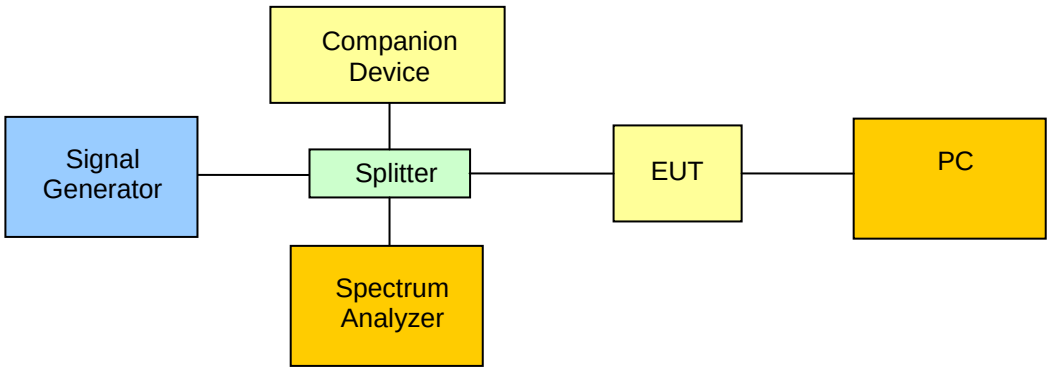
3.14 Test Conditions and Results – Discontinuation of MICS or MEDS session

Discontinuation of MICS or MEDS session acc. FCC Part 95 / IC RSS-243	**Verdict: PASS**
Test according referenced standards	Reference Method
	FCC 95.628(a)(4) / IC RSS-243 3.6 5.7.7
Test according to measurement reference	Reference Method
	EN 301 839-1 10.5
Test frequency range	Tested frequencies
	F_{MID}
EUT test mode	Monitoring B

Limits

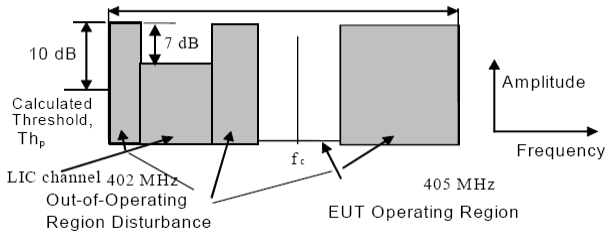
Cease transmission for silent period ≥ 5 s

Test setup



Test procedure

1. By administration commands the following channel occupation is simulated to the device so that the EUT can only send on frequency f_c.



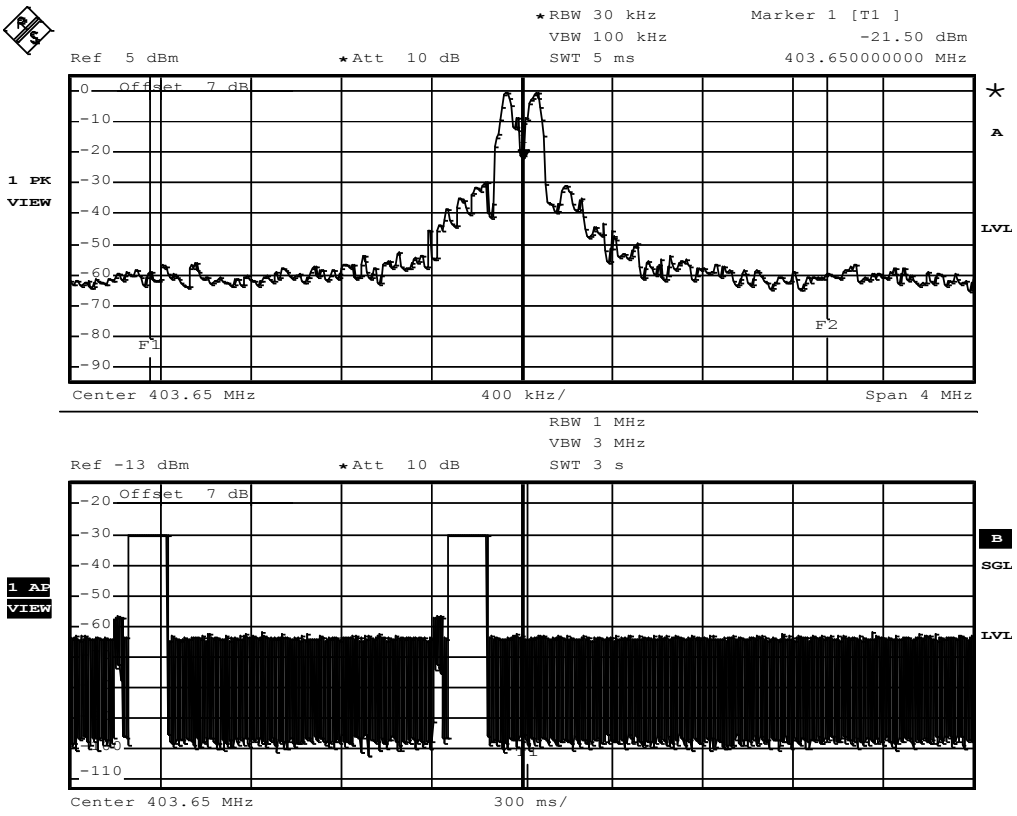
2. A CW signal is generated by the signal generator on frequency f_c with a level 9 dB higher than the calculated LBT threshold level. It is determined that the EUT communicates on LIC channel.
3. The CW interferer level is reduced to a level 3 dB below the threshold level and the ULP-AMI is switched off. The transmission of the EUT (ULP-AMI-P) is captured until the transmission is finished and the time is recorded.
4. The ULP-AMI is enabled again and the communication session should not restart on LIC channel.

Test results						
Channel	Frequency [MHz]	LIC Channel	Frequency [MHz]	Interferer channel	Interferer Level [dBm]	Transmission time [s]
4	403.05	0	403.65	4	-99	0
Comments:						

Heading

FCC Part 95 .633
Discontinuation of MICS session if a silent period greater than or equal 5s occurs

EUT	Telemonitoring System
Model	CardioMessenger Smart 3G / G0M-1309-3225
Approval Holder	Biotronik SE & Co. KG
Temperature / Voltage	25°C / Vnom
Test Site / Operator	Eurofins Product Service GmbH / Mr Treffke
Test Specification	FCC Part 95.628 / EN 301 839-1
Comment 1	Discontinuation of MICS session if a silent period greater than or equal 5s occurs
Comment 2	Turn off the ULP-AMI at T1 (1.5sec)
Comment 3	No communication after turn off the ULP-AMI @ communication channel



Comment: Spectrum_Analyzer_FSP
Date: 19.NOV.2013 13:02:57

ANNEX A Transmitter output power

Radiated power according to FCC part 95 MedRadio (402-405MHz)

Order number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	Tx; 402.45 MHz, CW
Test Date:	2013-11-18
Note:	Tx Power EIRP

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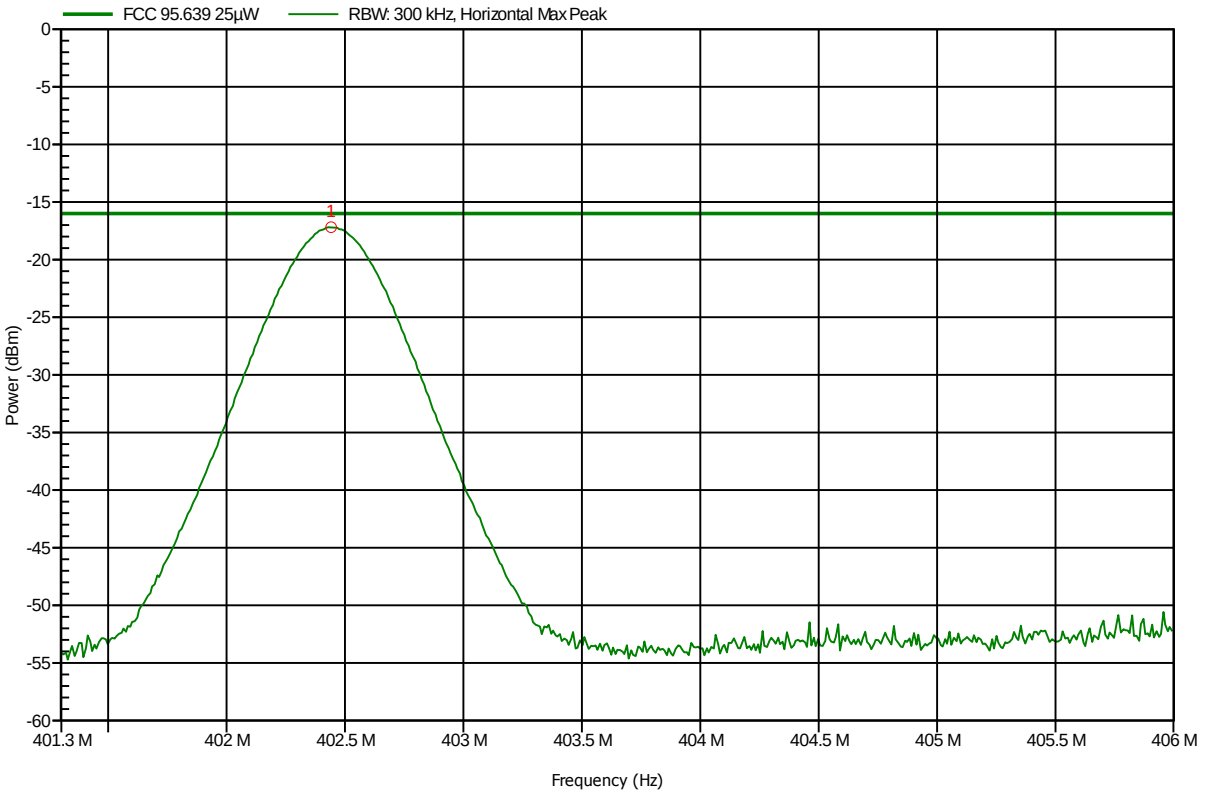

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
402.441 MHz	-17.2 dBm	-16 dBm	-1.19 dB	Pass

Radiated power according to FCC part 95 MedRadio (402-405MHz)

Order number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	Tx; 402.45 MHz, CW
Test Date:	2013-11-18
Note:	Tx Power EIRP

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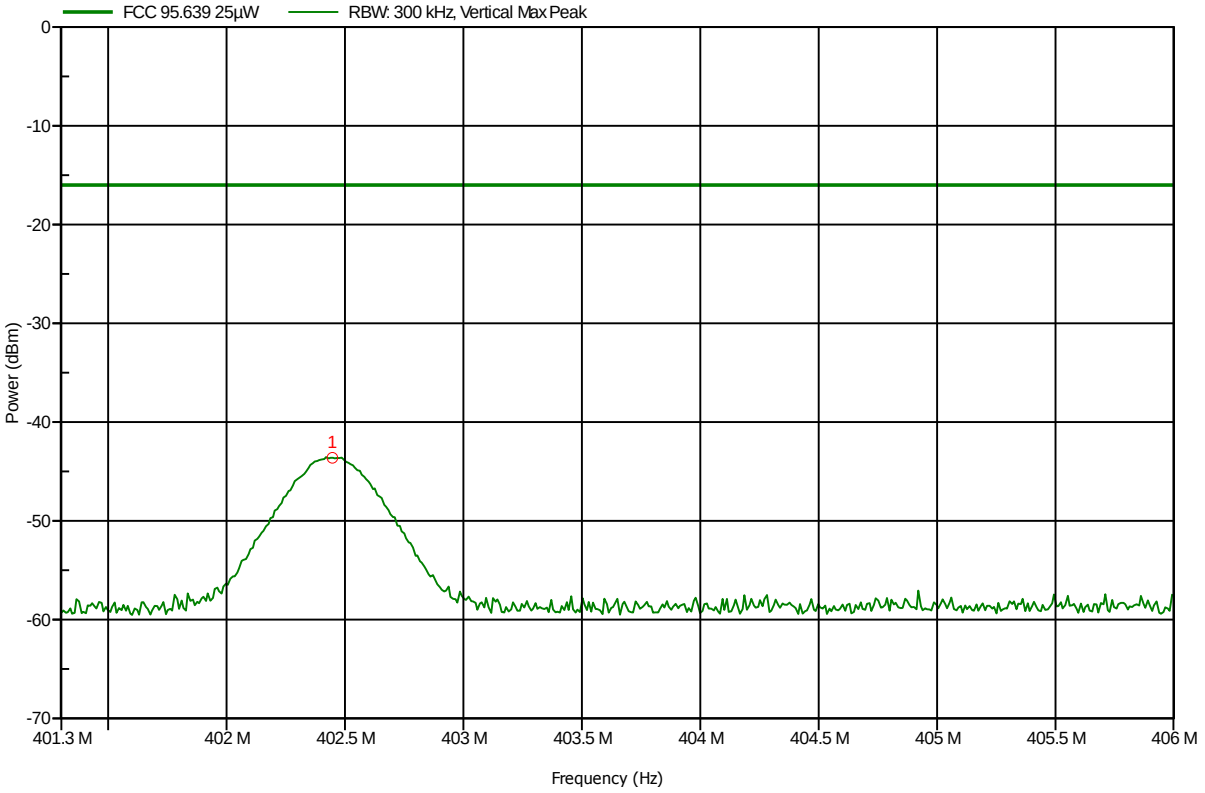

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
402.447 MHz	-43.6 dBm	-16 dBm	-27.62 dB	Pass

Radiated power according to FCC part 95 MedRadio (402-405MHz)

Order number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	Tx; 403.65 MHz, CW
Test Date:	2013-11-18
Note:	Tx Power EIRP

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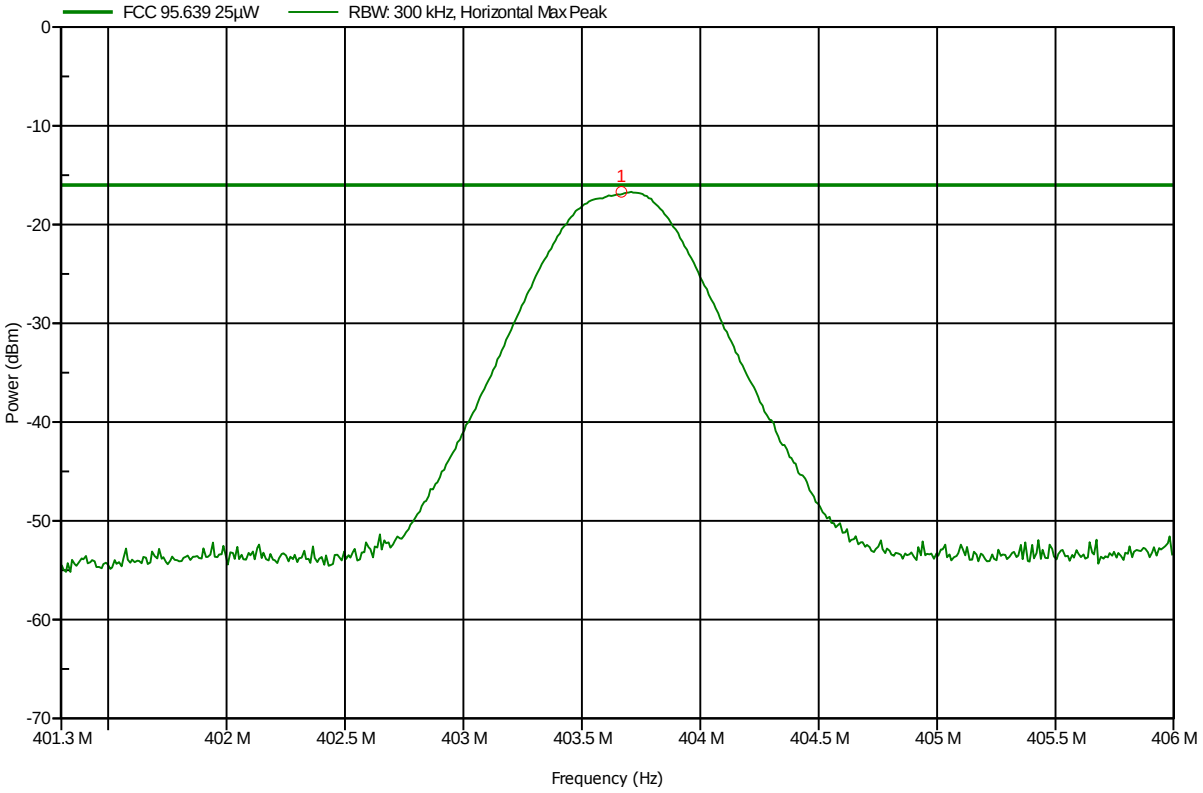

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
403.667 MHz	-16.7 dBm	-16 dBm	-0.69 dB	Pass

Radiated power according to FCC part 95 MedRadio (402-405MHz)

Order number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	Tx; 403.65 MHz, CW
Test Date:	2013-11-18
Note:	Tx Power EIRP

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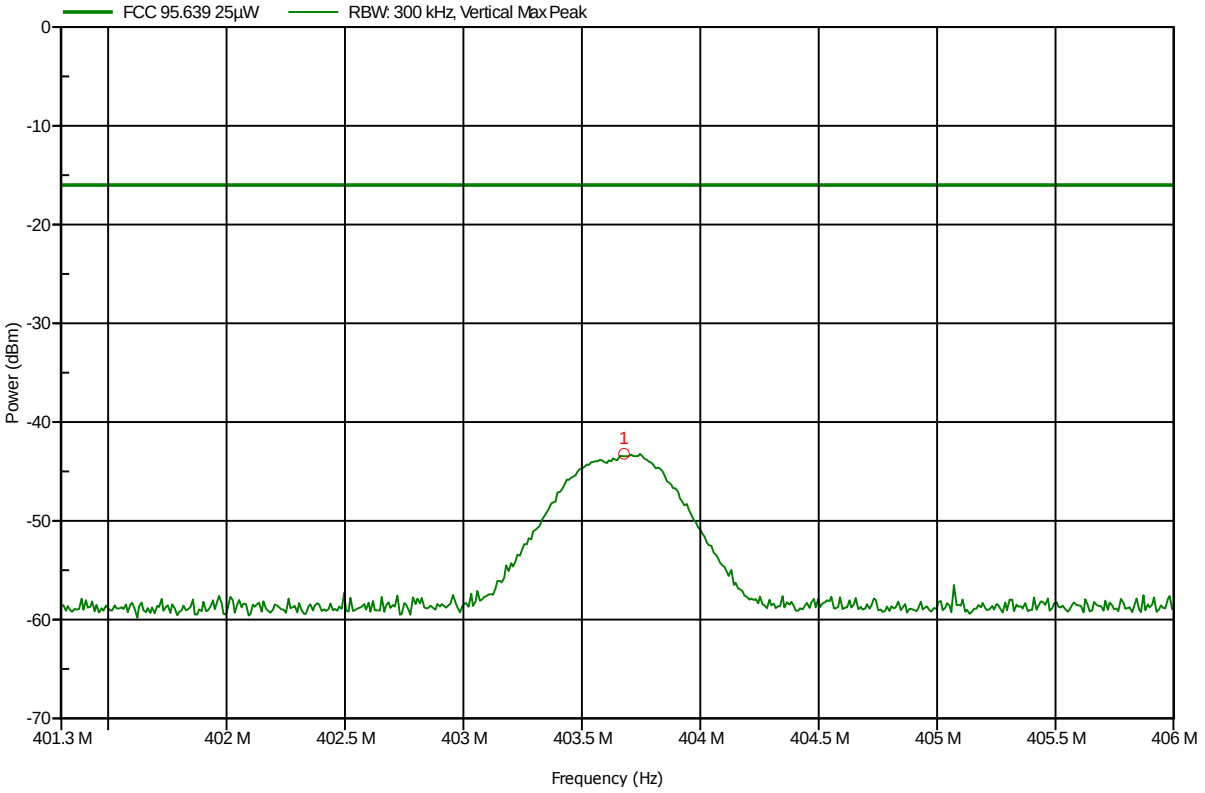
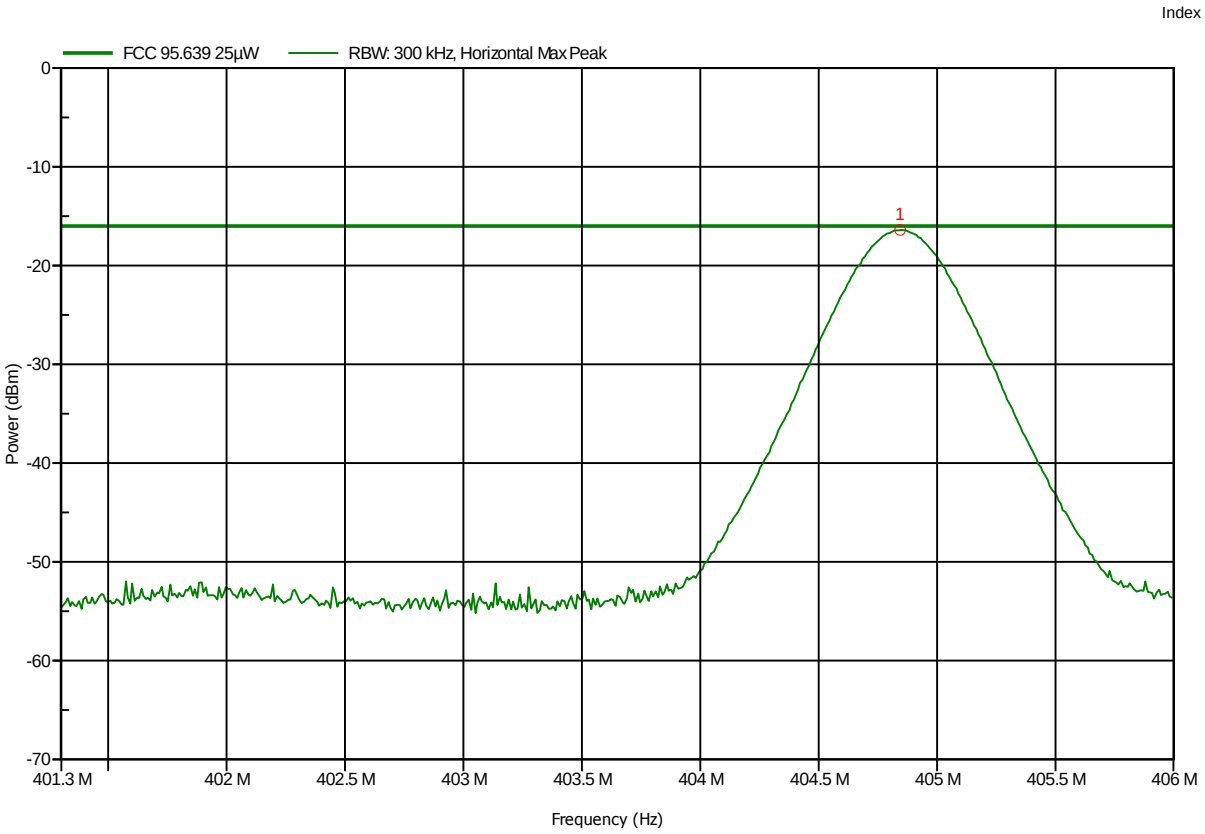


Frequency	Peak	Peak Limit	Peak Difference	Peak Status
403.678 MHz	-43.2 dBm	-16 dBm	-27.22 dB	Pass

Radiated power according to FCC part 95 MedRadio (402-405MHz)

Order number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	Tx; 404.85 MHz, CW
Test Date:	2013-11-18
Note:	Tx Power EIRP



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
404.844 MHz	-16.4 dBm	-16 dBm	-0.4 dB	Pass

Radiated power according to FCC part 95 MedRadio (402-405MHz)

Order number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	Tx; 404.85 MHz, CW
Test Date:	2013-11-18
Note:	Tx Power EIRP

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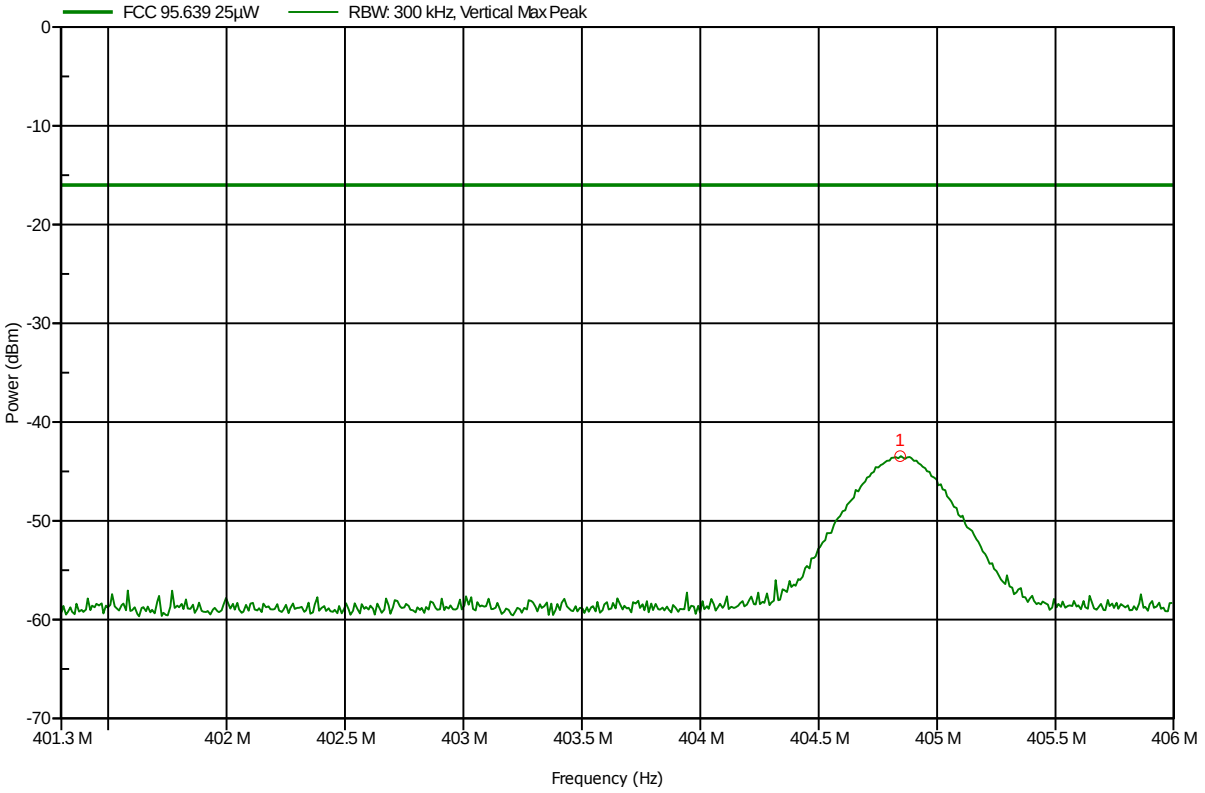

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
404.844 MHz	-43.4 dBm	-16 dBm	-27.45 dB	Pass

Radiated power according to FCC part 95 MedRadio (402-405MHz)

Order number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	Tx; 404.85 MHz, CW
Test Date:	2013-11-18
Note:	Power dBµV/m ERP

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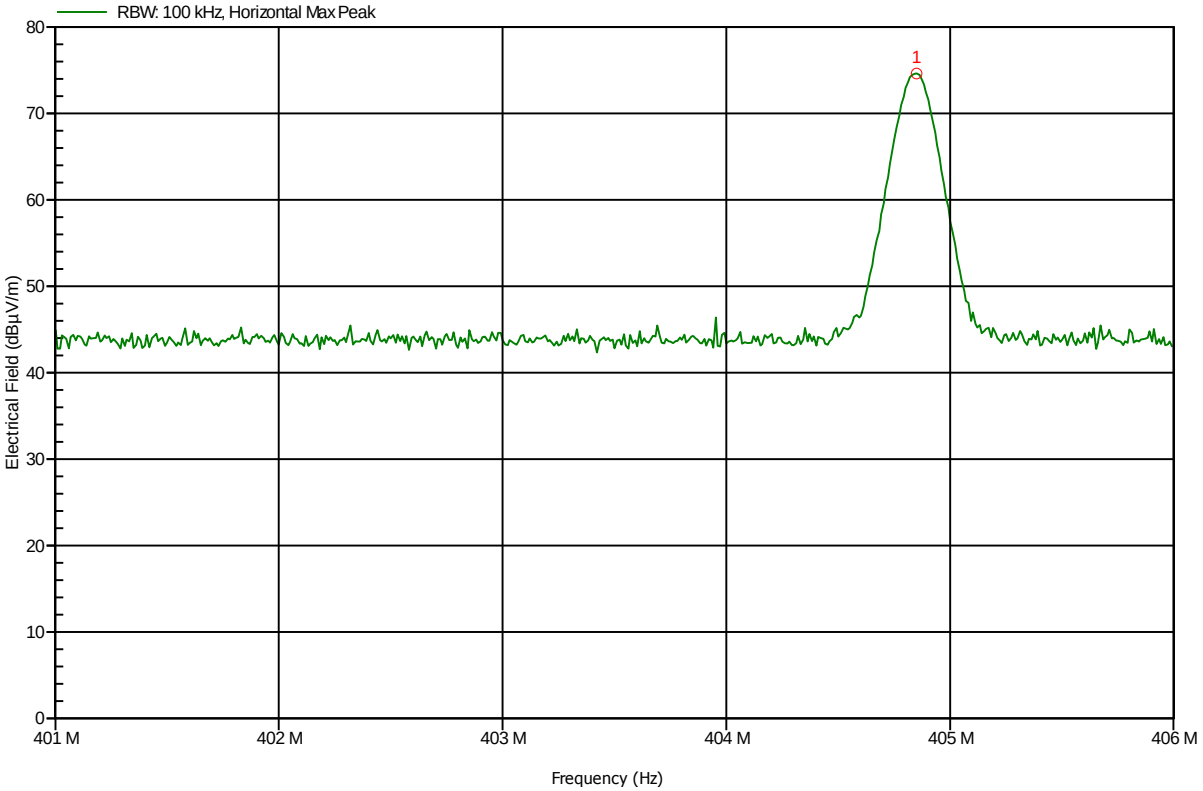

Frequency	Peak
404.85 MHz	74.62 dBµV/m

ANNEX B Transmitter radiated spurious emissions

Spurious emissions according to FCC part 95 MedRadio (402-405MHz)

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	TX; 402.45 MHz, FSK
Test Date:	2013-11-18
Note:	

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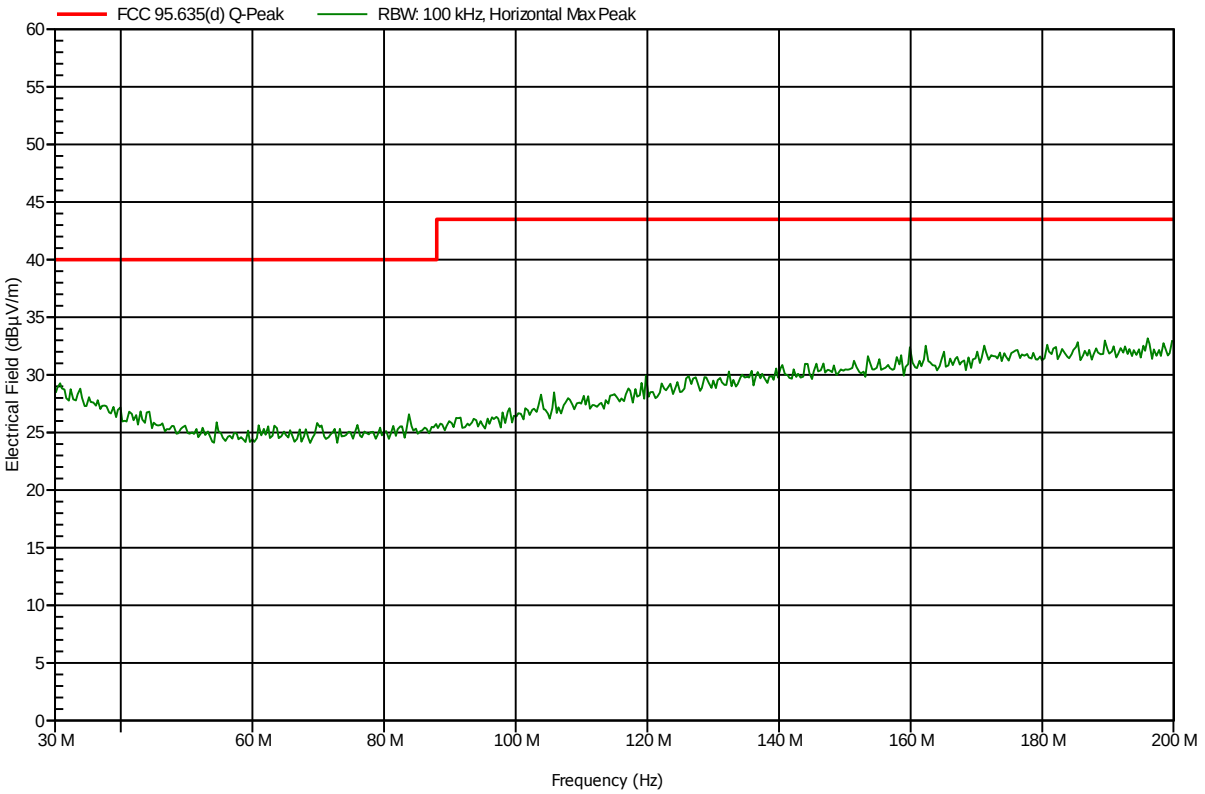

Spurious emissions according to FCC part 95 MedRadio (402-405MHz)

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	TX; 402.45 MHz, FSK
Test Date:	2013-11-18
Note:	

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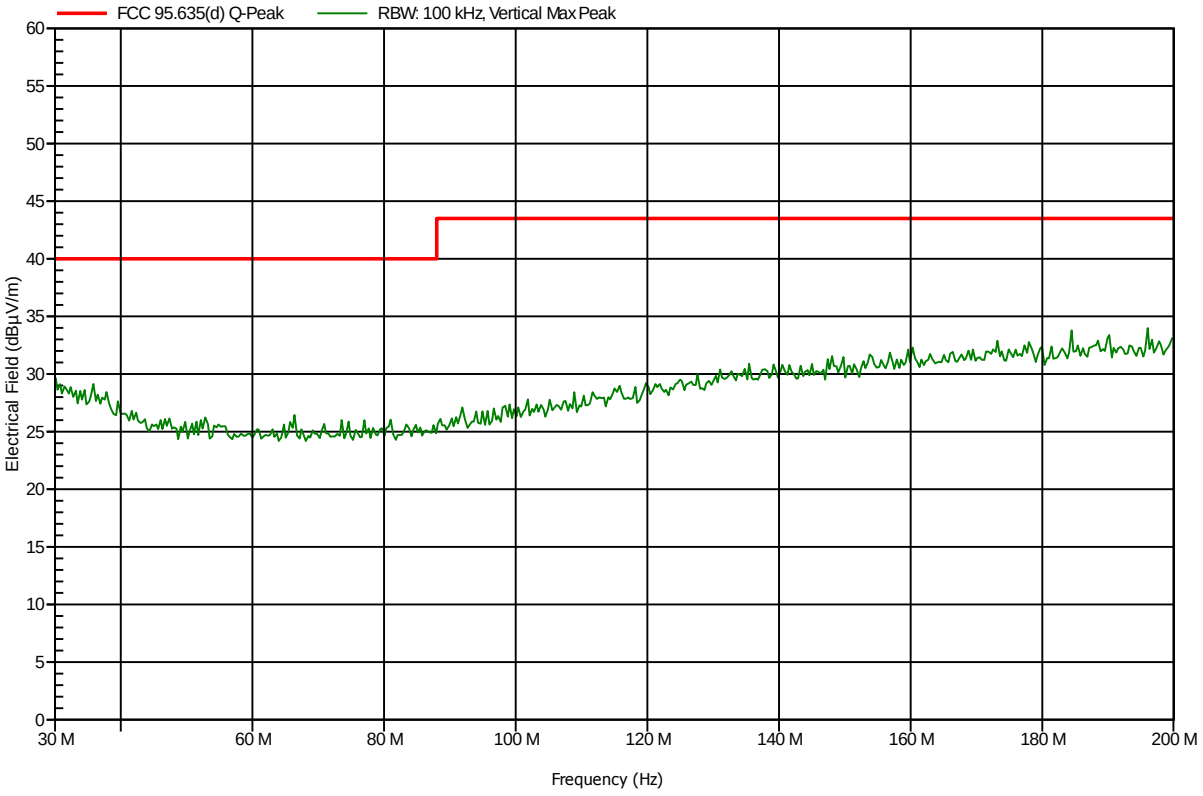

Spurious emissions according to FCC part 95 MedRadio (402-405MHz)

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; 402.45 MHz, FSK
Test Date:	2013-11-18
Note:	

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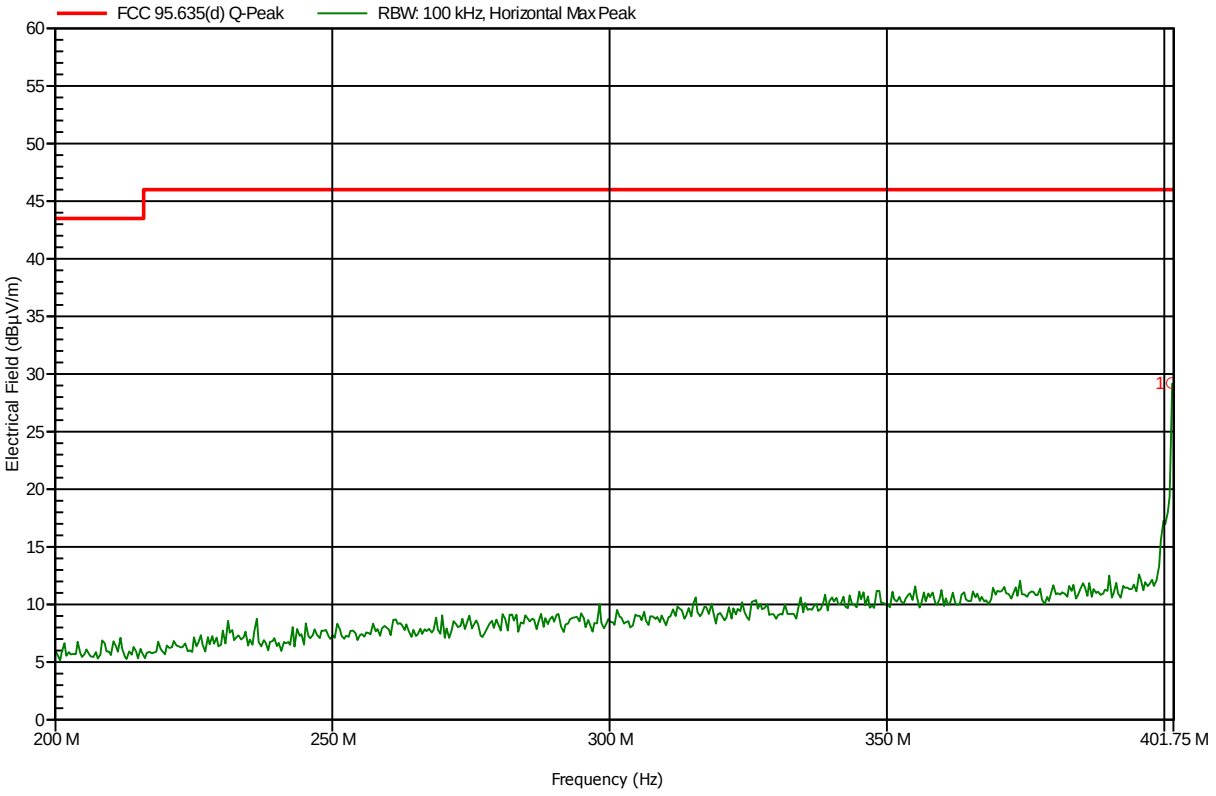

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
401.347 MHz	29.22 dBµV/m	46 dBµV/m	-16.78 dB	Pass

Spurious emissions according to FCC part 95 MedRadio (402-405MHz)

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; 402.45 MHz, FSK
Test Date:	2013-11-18
Note:	

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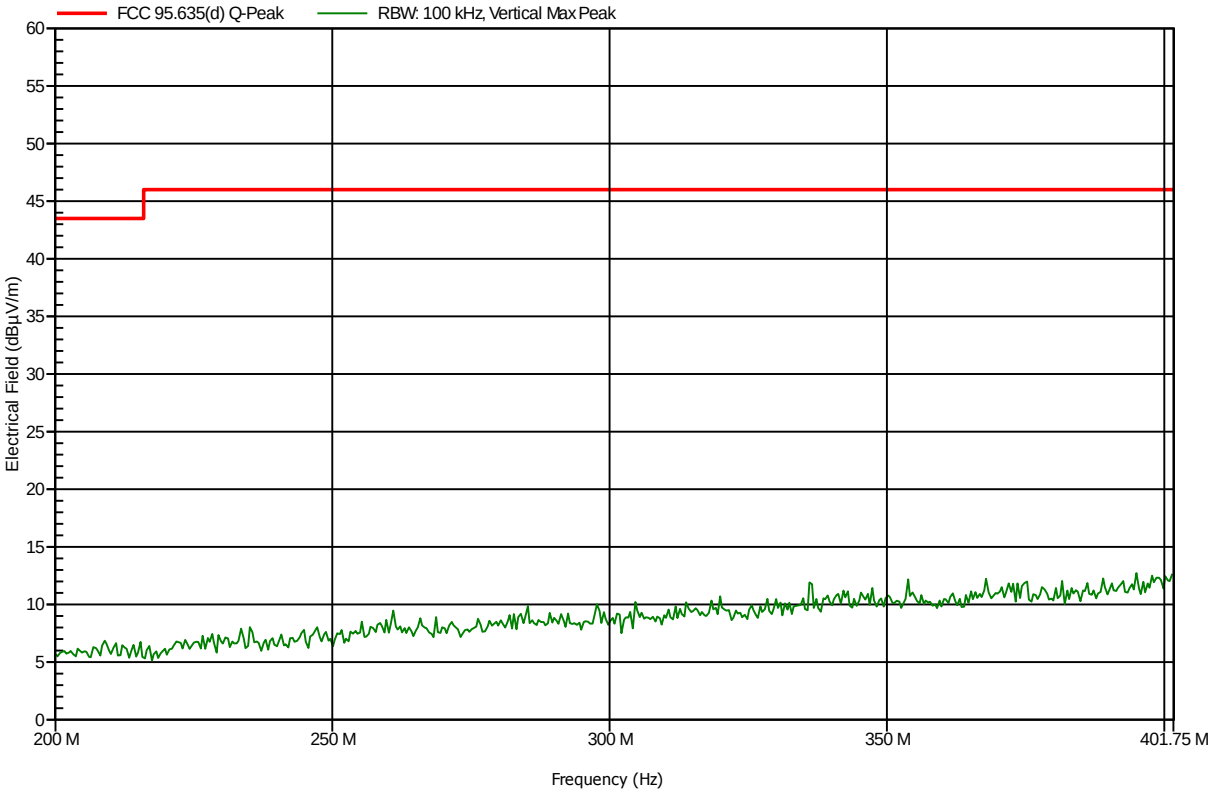

Spurious emissions according to FCC part 95 MedRadio (402-405MHz)

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; 402.45 MHz, FSK
Test Date:	2013-11-18
Note:	Band-edge

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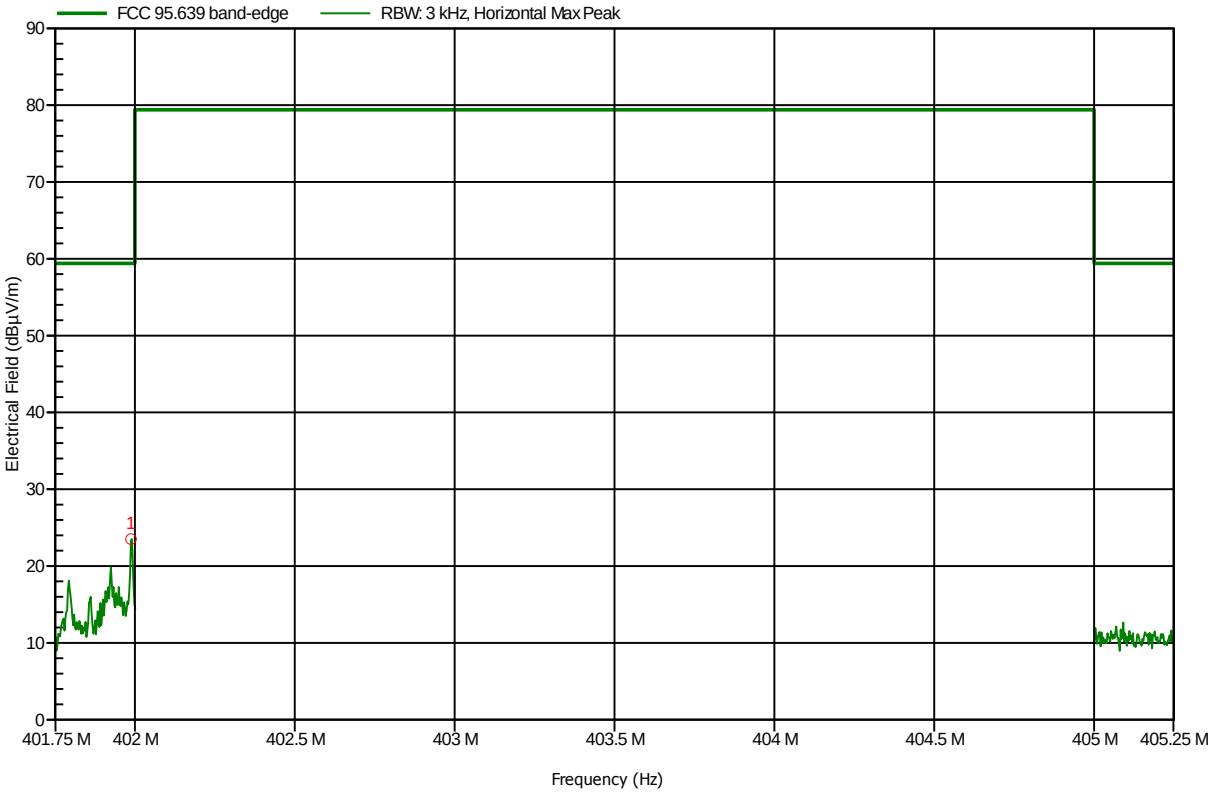

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
401.988 MHz	23.52 dBµV/m	59.4 dBµV/m	-35.88 dB	Pass

Spurious emissions according to FCC part 95 MedRadio (402-405MHz)

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; 402.45 MHz, FSK
Test Date:	2013-11-18
Note:	Band-edge

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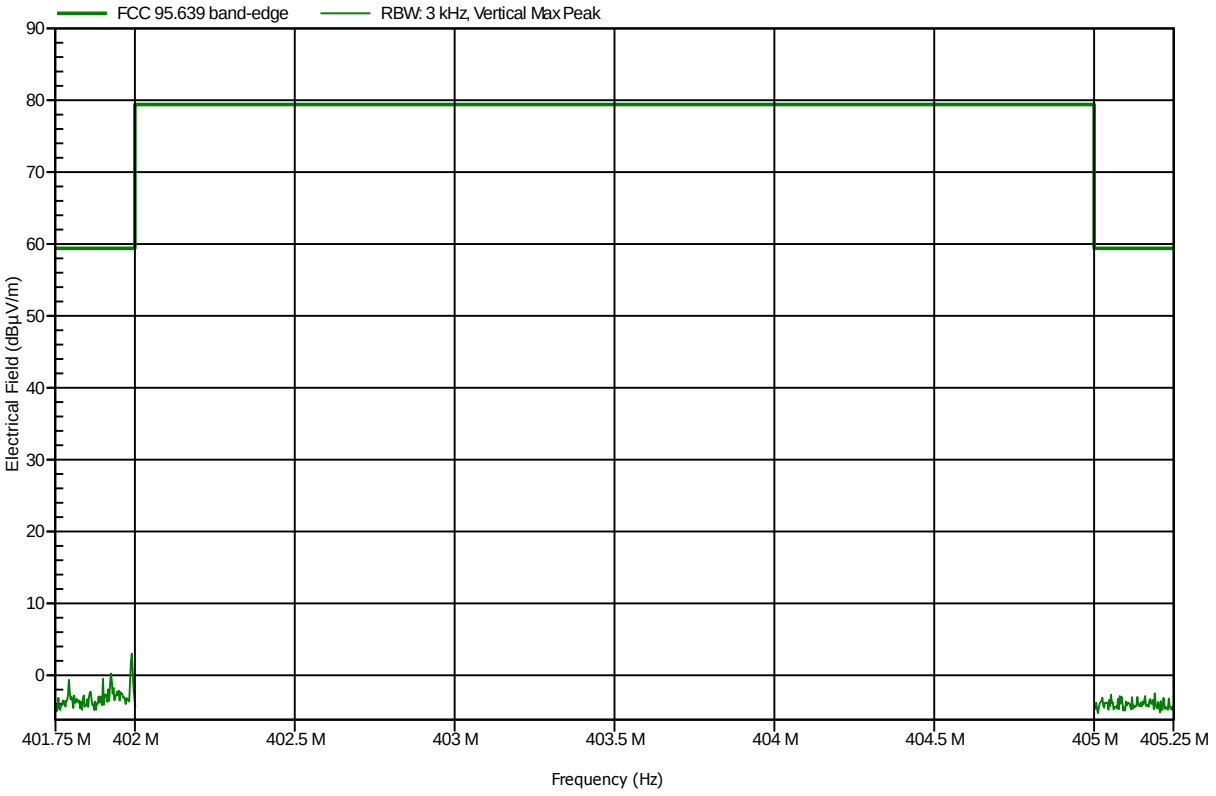

Spurious emissions according to FCC part 95 MedRadio (402-405MHz)

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; 402.45 MHz, FSK
Test Date:	2013-11-18
Note:	In-band emissions

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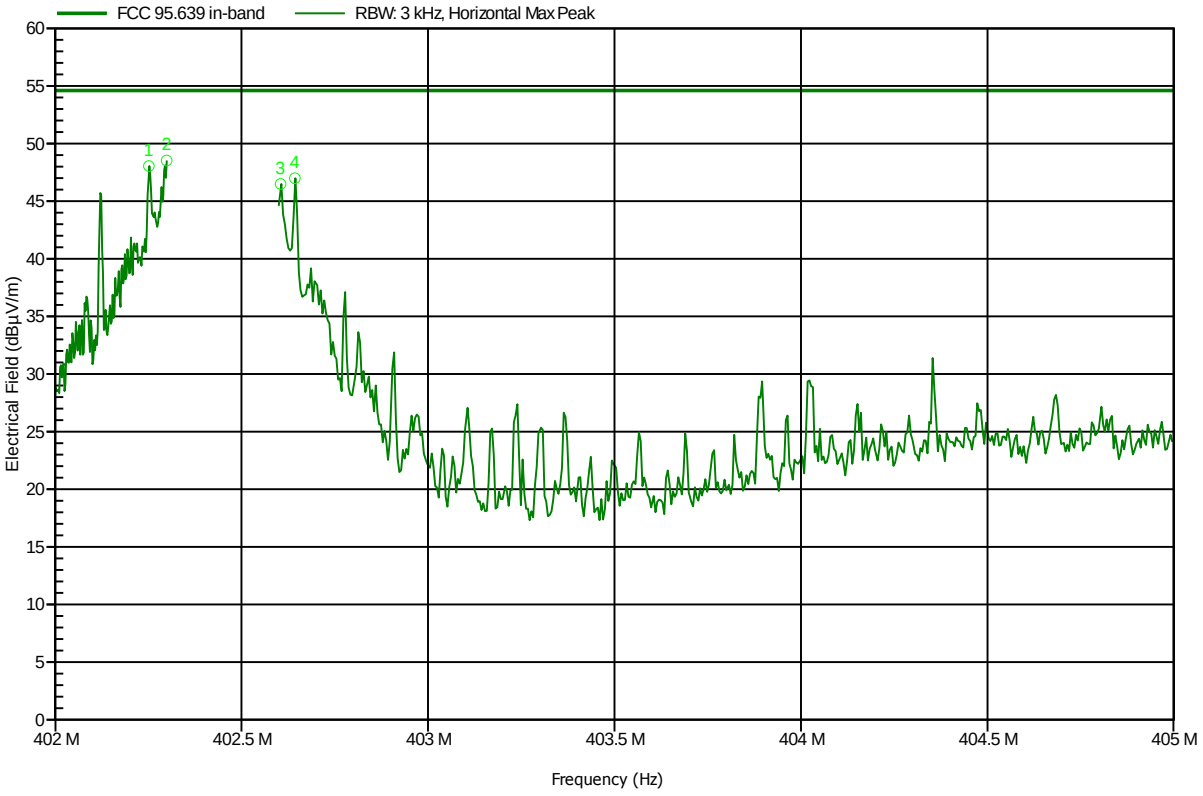

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
402.252 MHz	48.05 dBµV/m	54.6 dBµV/m	-6.55 dB	Pass
402.299 MHz	48.53 dBµV/m	54.6 dBµV/m	-6.07 dB	Pass
402.605 MHz	46.49 dBµV/m	54.6 dBµV/m	-8.11 dB	Pass
402.643 MHz	46.99 dBµV/m	54.6 dBµV/m	-7.61 dB	Pass

Spurious emissions according to FCC part 95 MedRadio (402-405MHz)

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; 402.45 MHz, FSK
Test Date:	2013-11-18
Note:	In-band emissions

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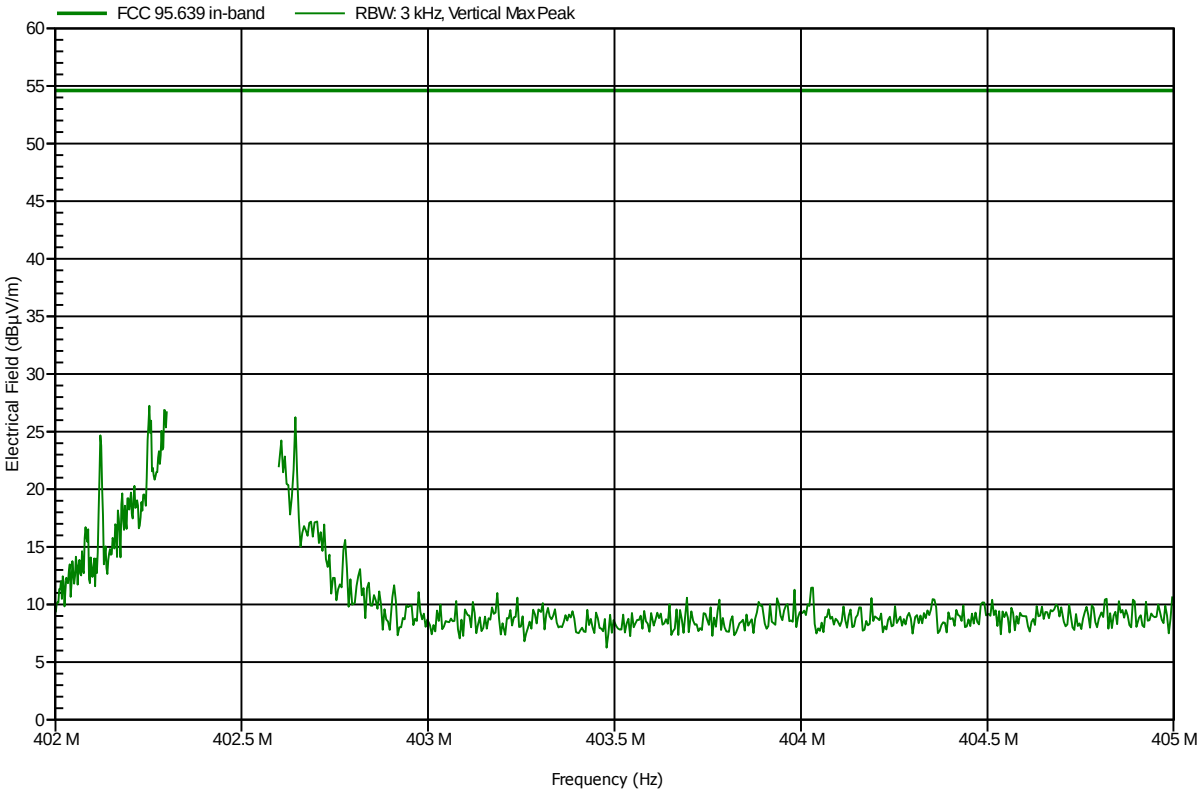

Spurious emissions according to FCC part 95 MedRadio (402-405MHz)

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; 402.45 MHz, FSK
Test Date:	2013-11-18
Note:	

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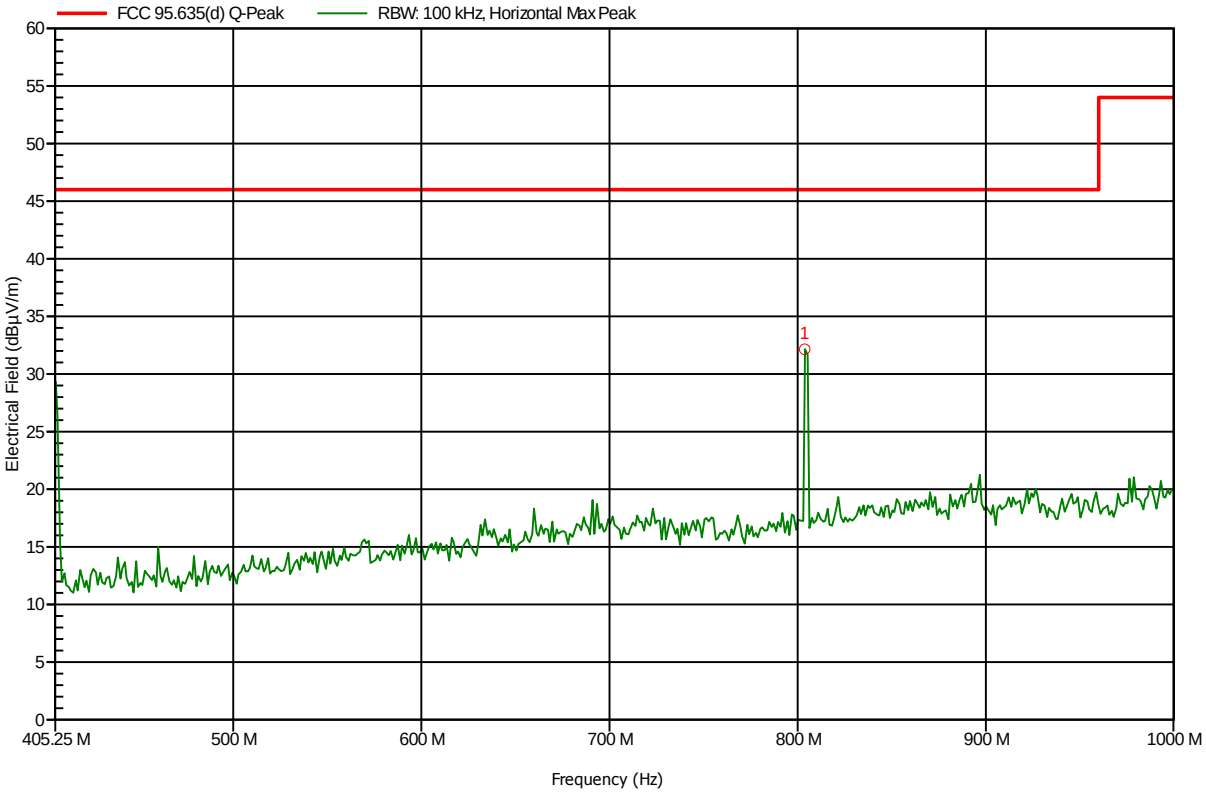

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
803.732 MHz	32.15 dBµV/m	46 dBµV/m	-13.85 dB	Pass

Spurious emissions according to FCC part 95 MedRadio (402-405MHz)

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; 402.45 MHz, FSK
Test Date:	2013-11-18
Note:	

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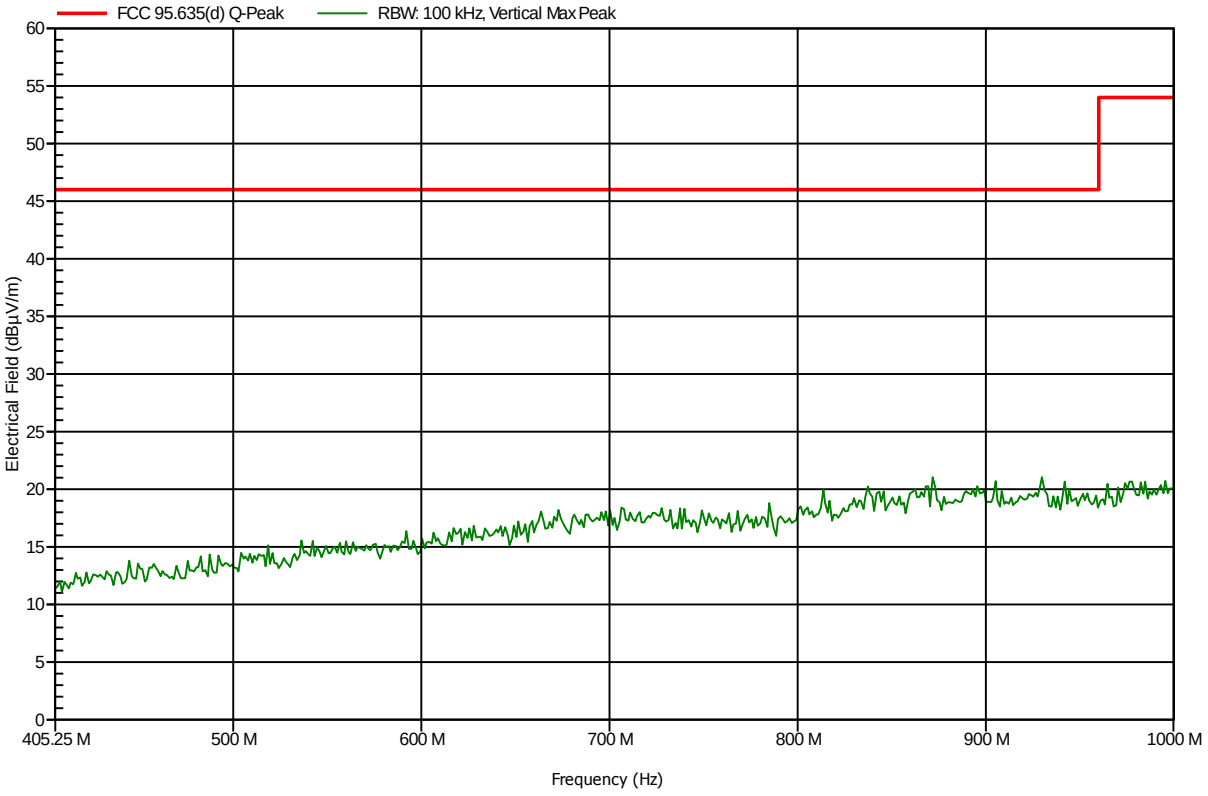

Spurious emissions according to FCC part 95 MedRadio (402-405MHz)

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; 402.45 MHz, FSK
Test Date:	2013-11-18
Note:	

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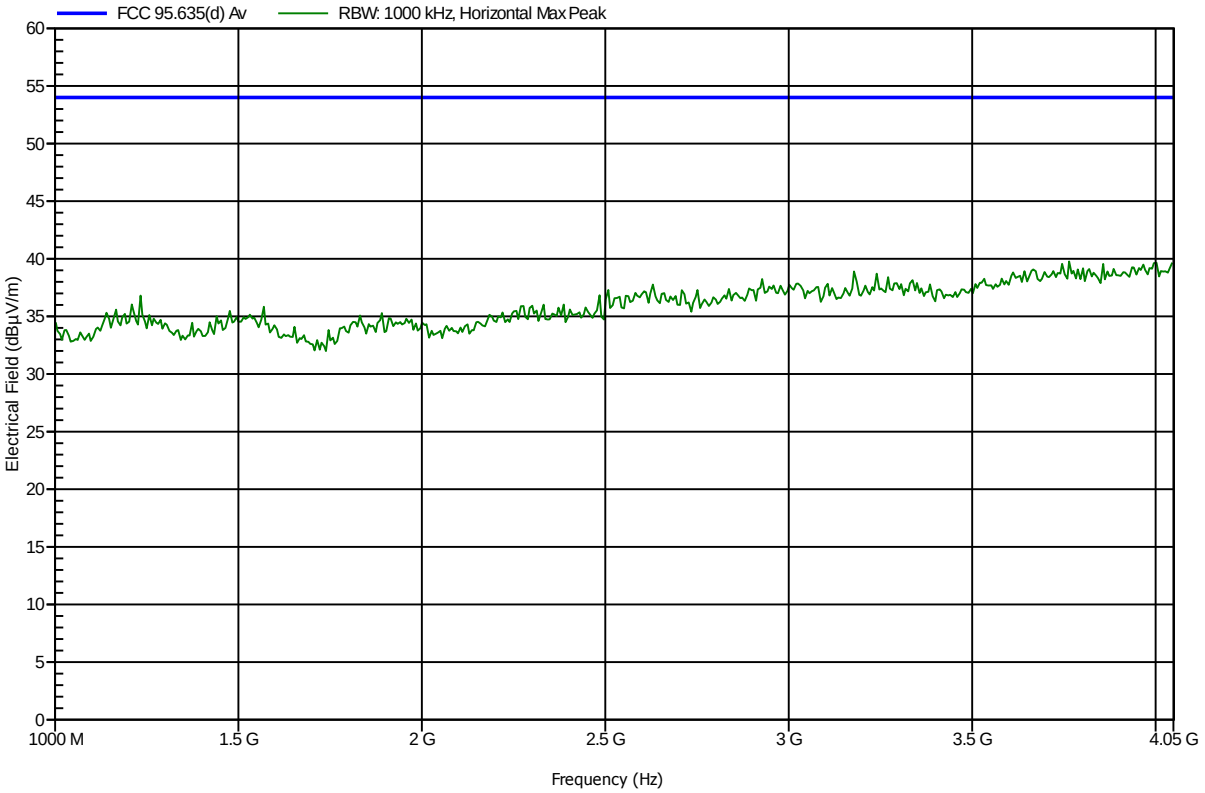

Spurious emissions according to FCC part 95 MedRadio (402-405MHz)

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; 402.45 MHz, FSK
Test Date:	2013-11-18
Note:	

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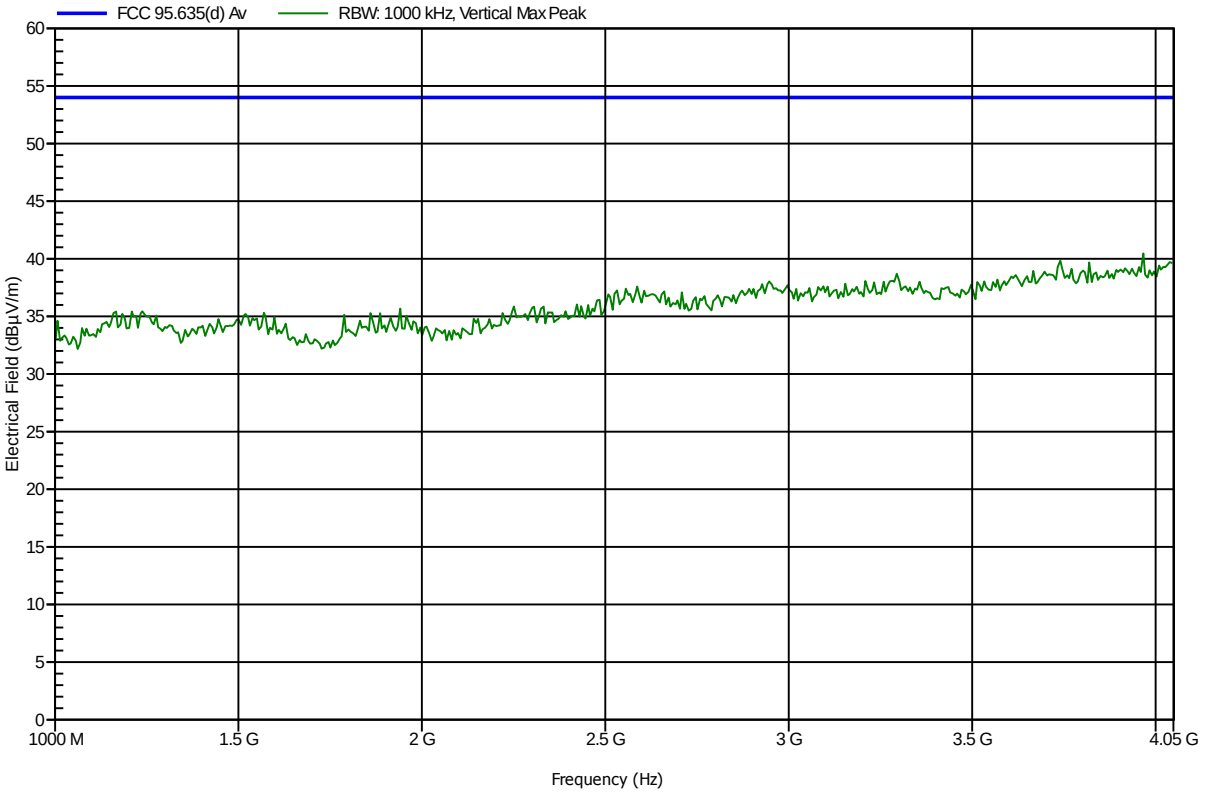

Spurious emissions according to FCC part 95 MedRadio (402-405MHz)

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	TX; 404.85 MHz, FSK
Test Date:	2013-11-18
Note:	

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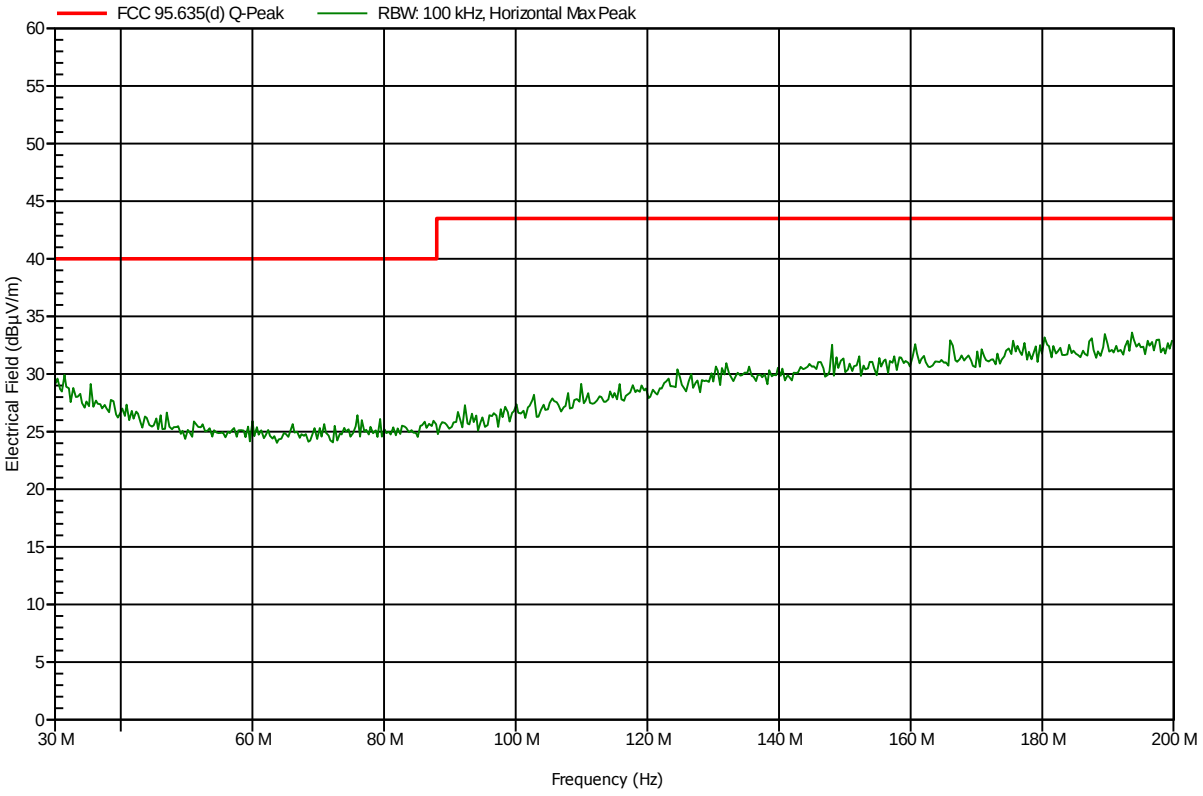

Spurious emissions according to FCC part 95 MedRadio (402-405MHz)

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	TX; 404.85 MHz, FSK
Test Date:	2013-11-18
Note:	

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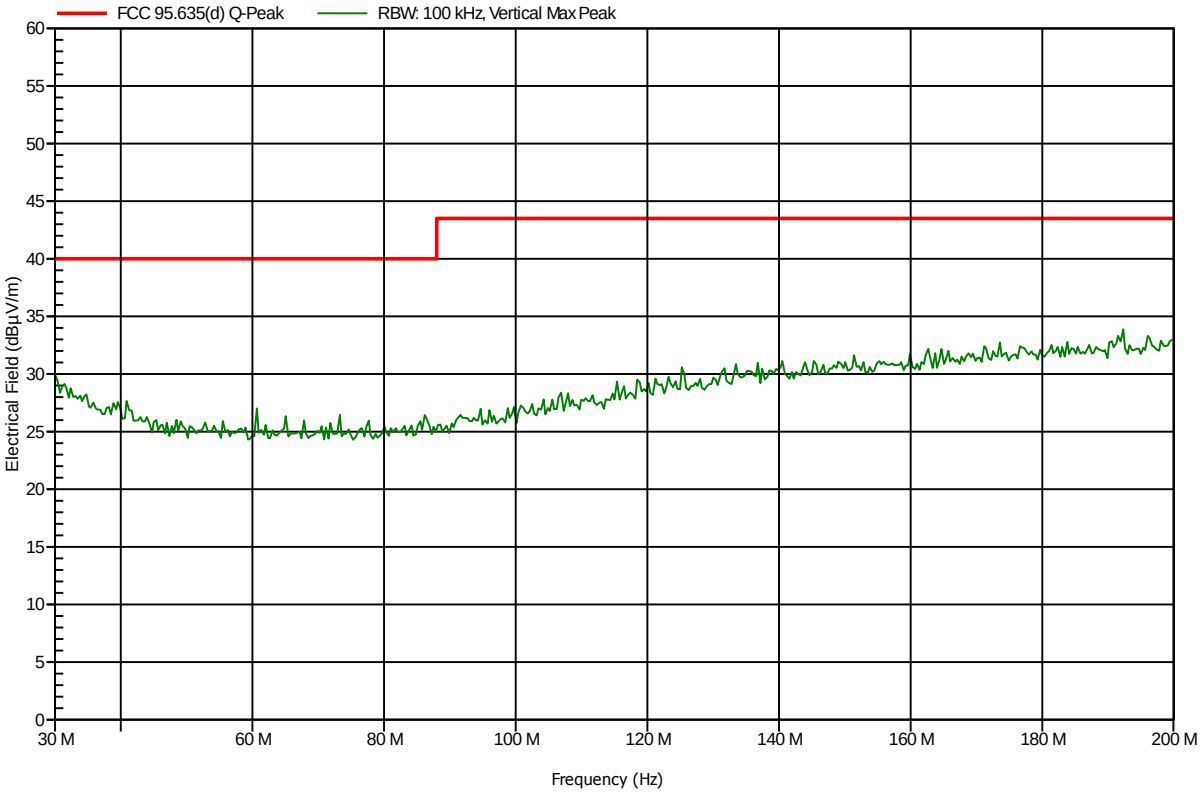

Spurious emissions according to FCC part 95 MedRadio (402-405MHz)

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; 404.85 MHz, FSK
Test Date:	2013-11-18
Note:	

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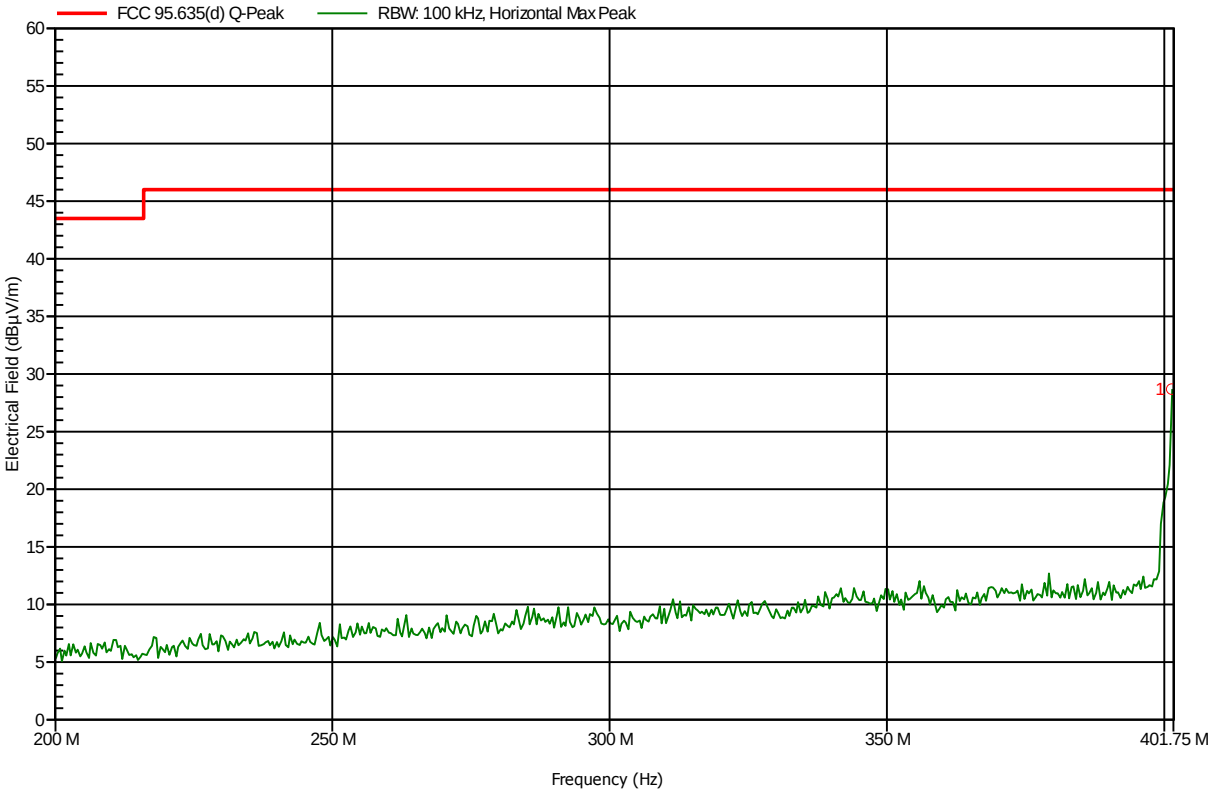

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
401.347 MHz	28.69 dBµV/m	46 dBµV/m	-17.31 dB	Pass

Spurious emissions according to FCC part 95 MedRadio (402-405MHz)

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; 404.85 MHz, FSK
Test Date:	2013-11-18
Note:	

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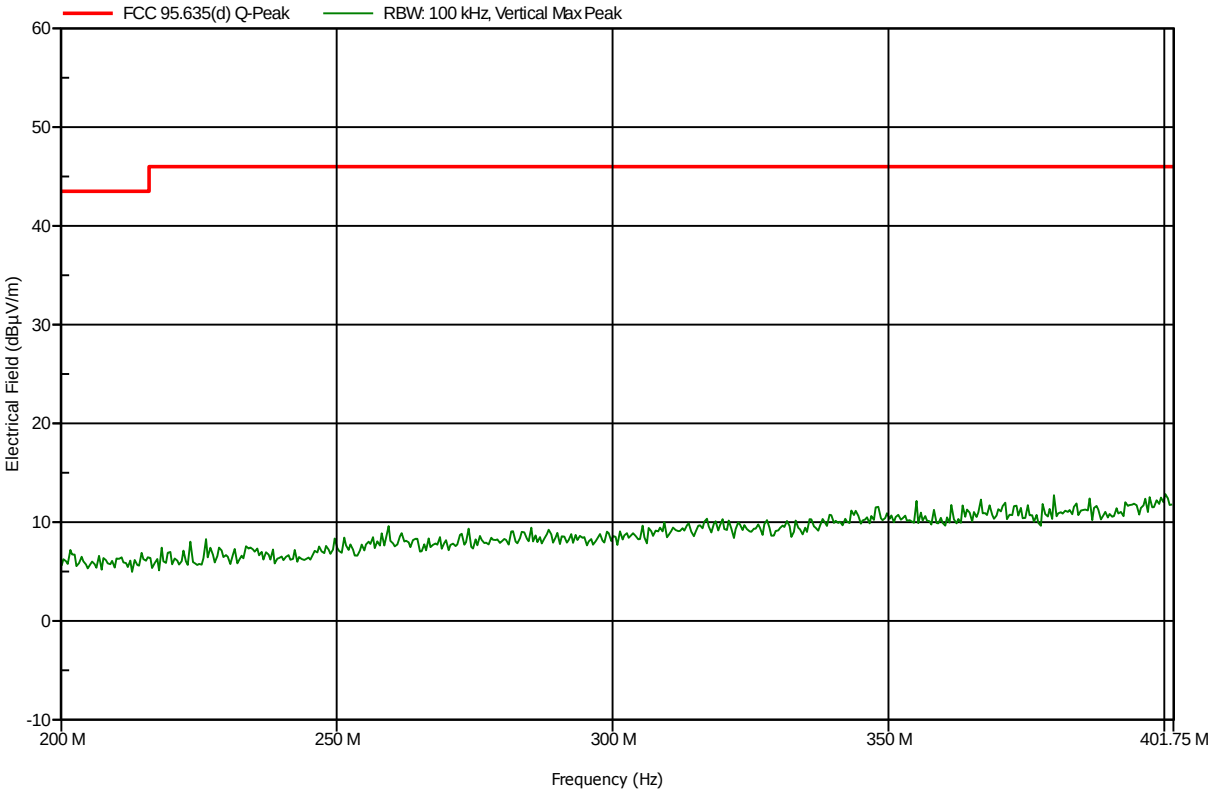

Spurious emissions according to FCC part 95 MedRadio (402-405MHz)

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; 404.85 MHz, FSK
Test Date:	2013-11-18
Note:	Band-edge

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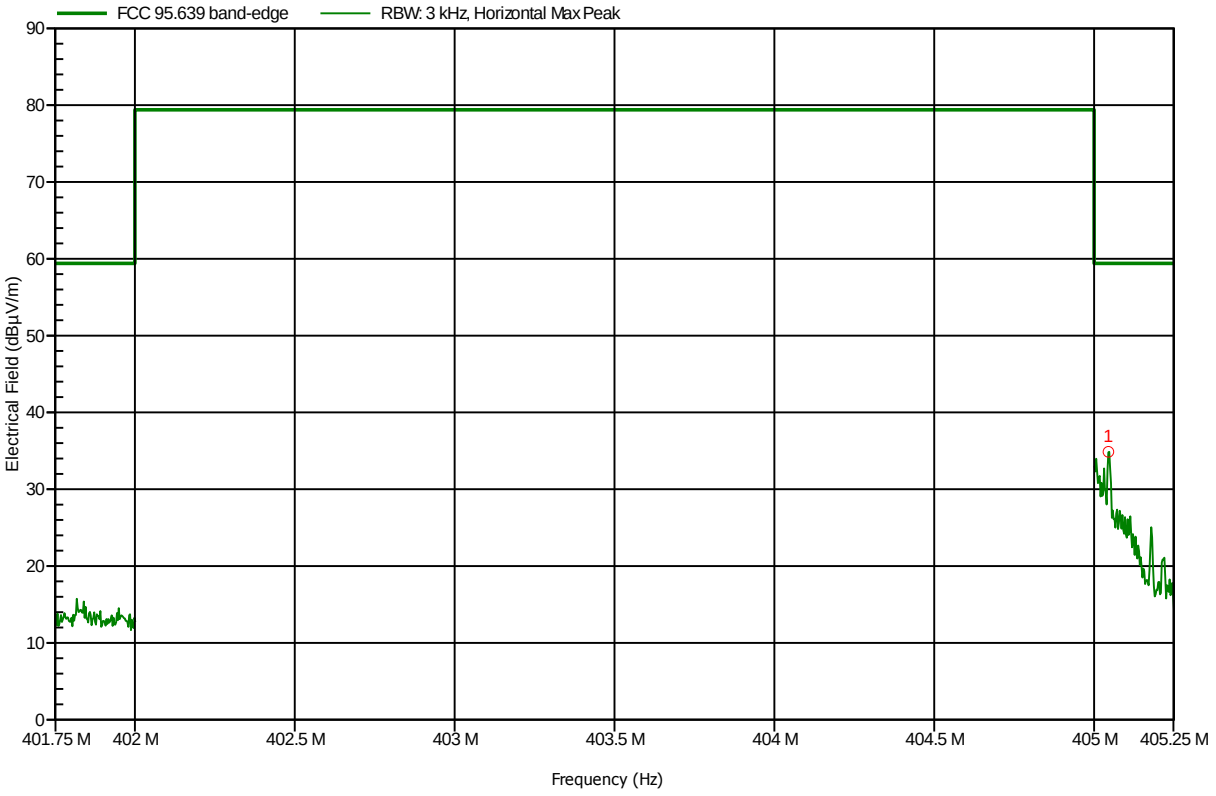

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
405.045 MHz	34.87 dBµV/m	59.4 dBµV/m	-24.53 dB	Pass

Spurious emissions according to FCC part 95 MedRadio (402-405MHz)

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; 404.85 MHz, FSK
Test Date:	2013-11-18
Note:	Band-edge

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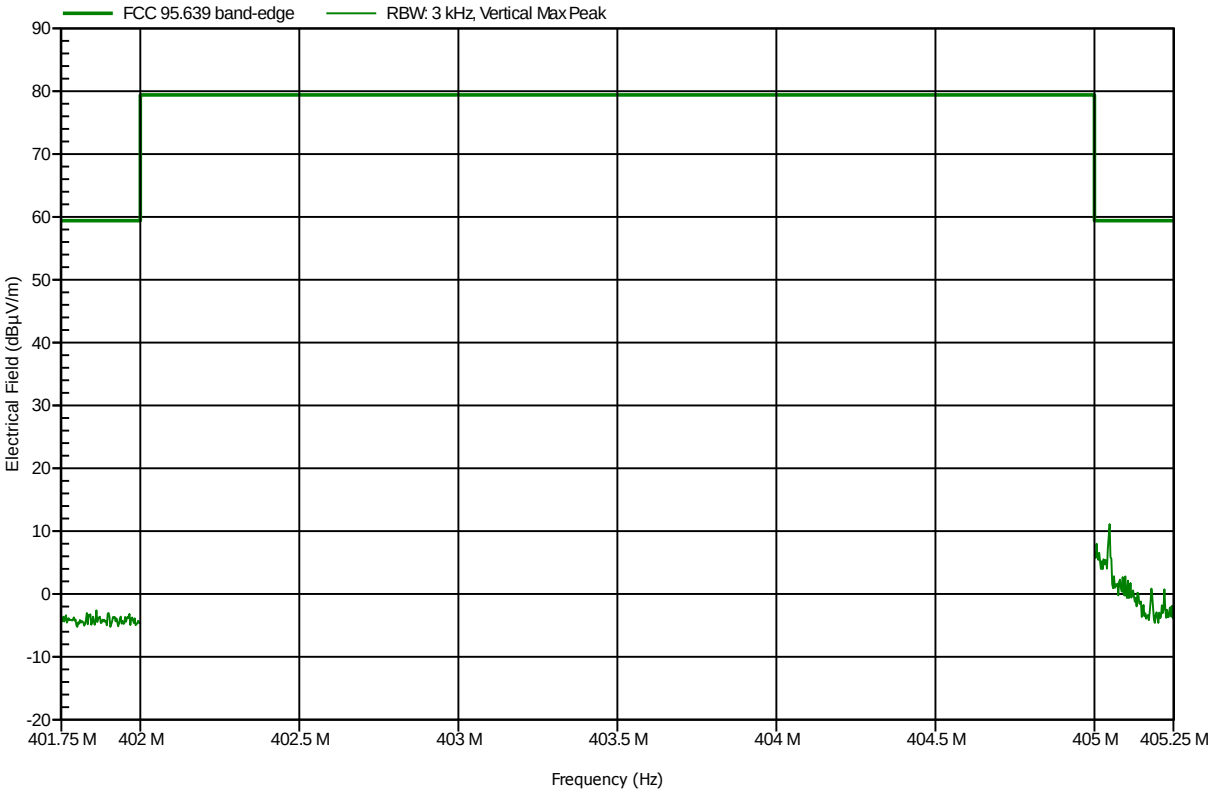

Spurious emissions according to FCC part 95 MedRadio (402-405MHz)

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; 404.85 MHz, FSK
Test Date:	2013-11-18
Note:	In-band emissions

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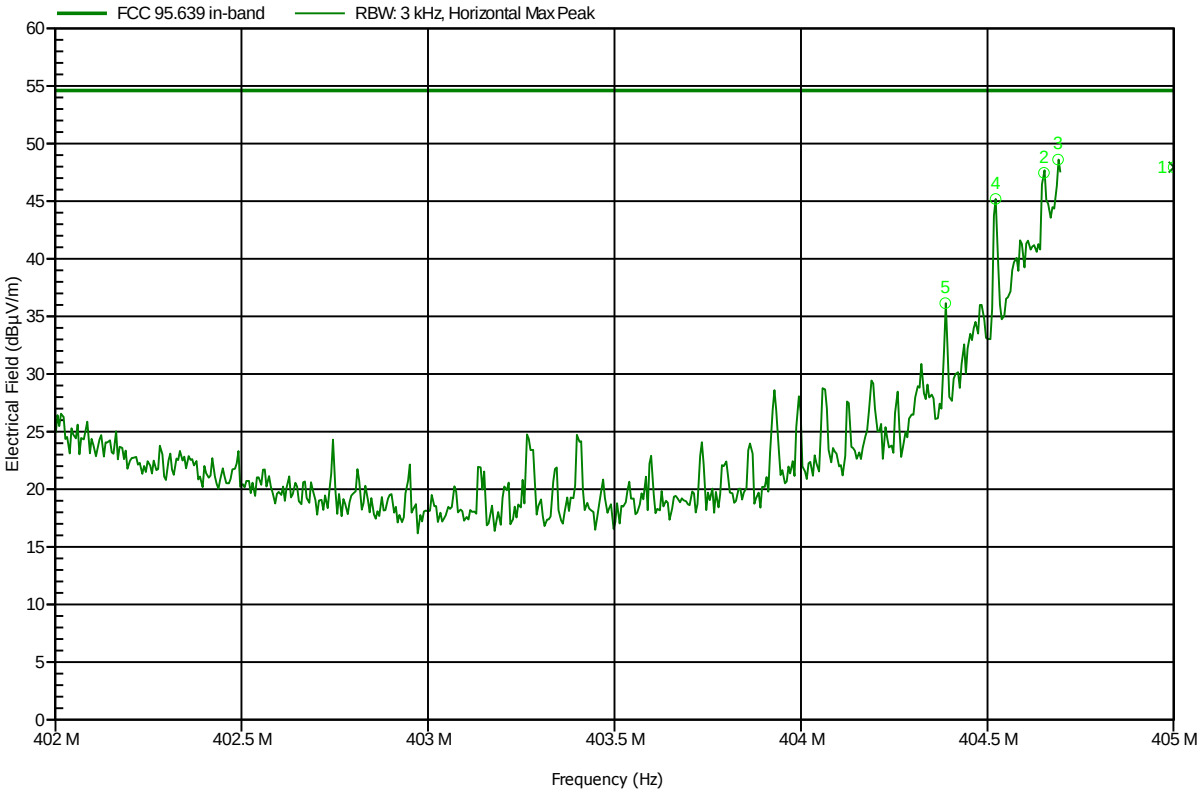

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
404.387 MHz	36.15 dBµV/m	54.6 dBµV/m	-18.45 dB	Pass
404.522 MHz	45.19 dBµV/m	54.6 dBµV/m	-9.41 dB	Pass
404.651 MHz	47.46 dBµV/m	54.6 dBµV/m	-7.14 dB	Pass
404.689 MHz	48.61 dBµV/m	54.6 dBµV/m	-5.99 dB	Pass
404.999 MHz	47.95 dBµV/m	54.6 dBµV/m	-6.65 dB	Pass

Spurious emissions according to FCC part 95 MedRadio (402-405MHz)

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; 404.85 MHz, FSK
Test Date:	2013-11-18
Note:	In-band emissions

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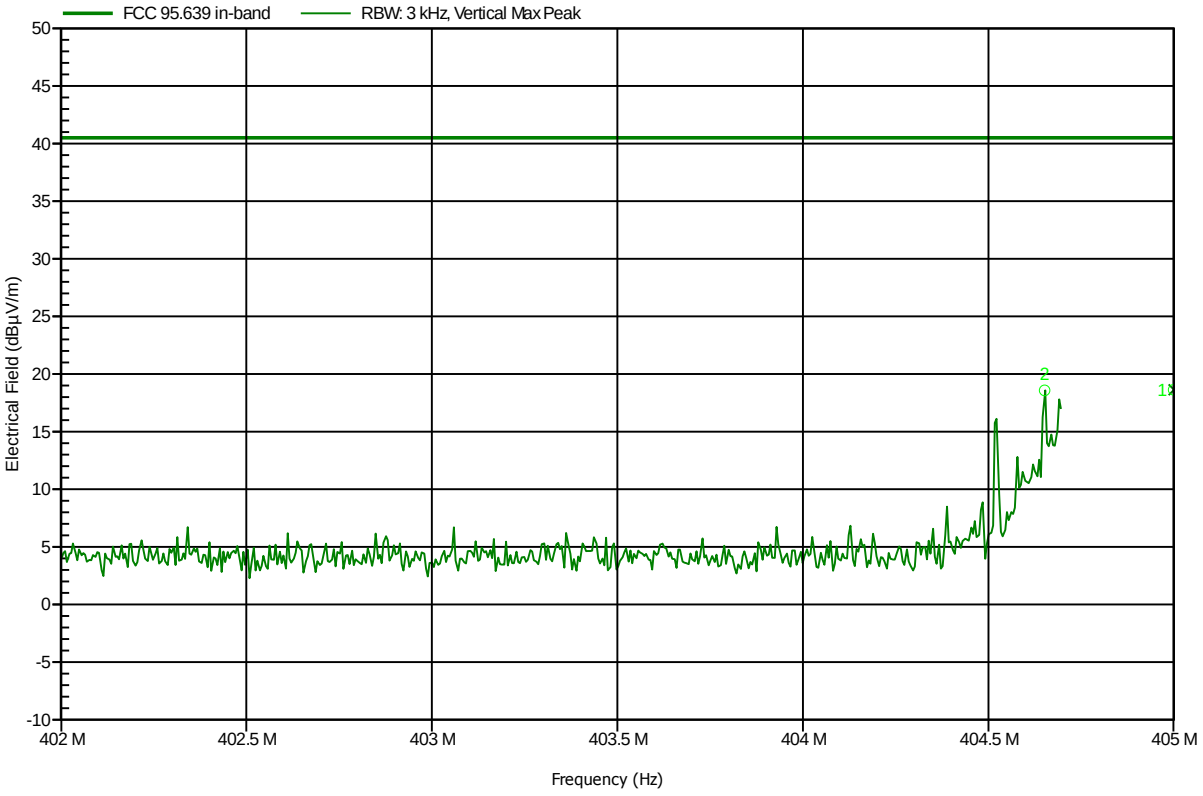

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
404.651 MHz	18.58 dBµV/m	40.5 dBµV/m	-21.92 dB	Pass
404.999 MHz	18.63 dBµV/m	40.5 dBµV/m	-21.87 dB	Pass

Spurious emissions according to FCC part 95 MedRadio (402-405MHz)

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	TX; 404.85 MHz, FSK
Test Date:	2013-11-18
Note:	

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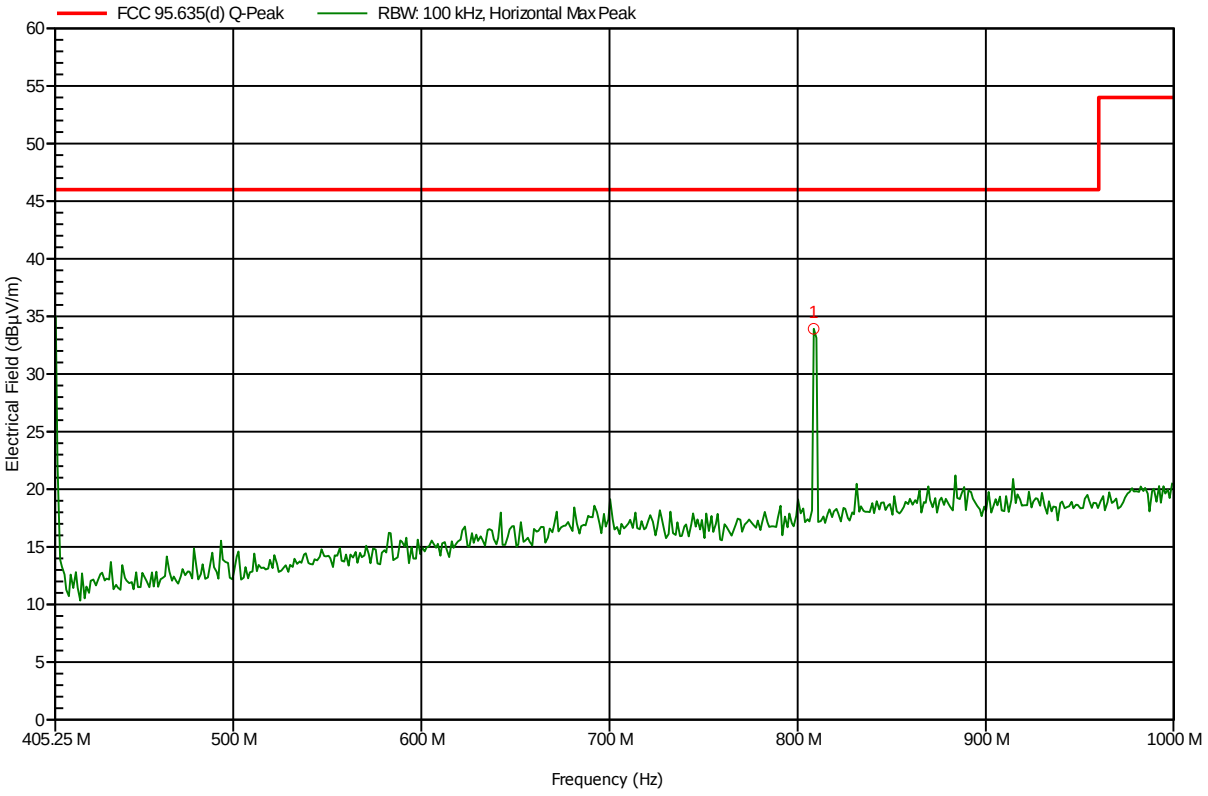

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
808.49 MHz	33.93 dBµV/m	46 dBµV/m	-12.07 dB	Pass

Spurious emissions according to FCC part 95 MedRadio (402-405MHz)

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	TX; 404.85 MHz, FSK
Test Date:	2013-11-18
Note:	

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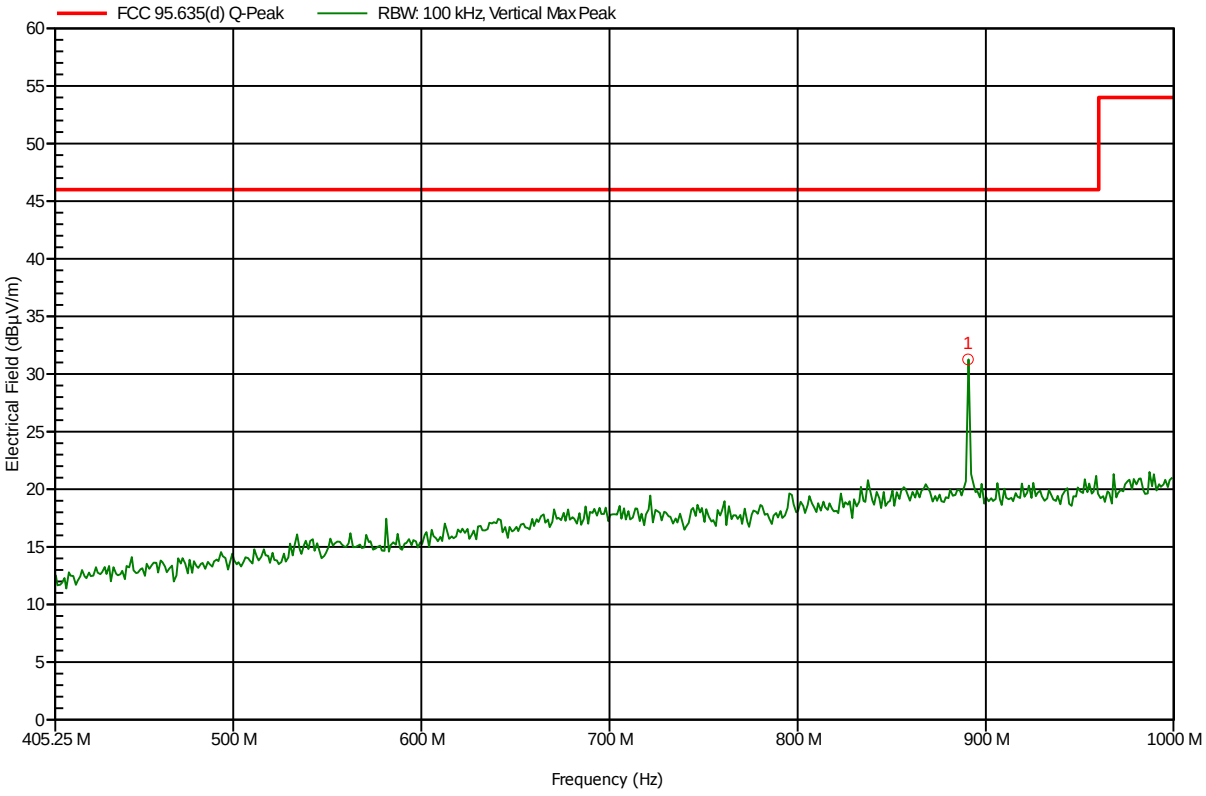

Frequency	Peak	Peak Limit	Peak Difference	Peak Status
890.566 MHz	31.27 dBµV/m	46 dBµV/m	-14.73 dB	Pass

Spurious emissions according to FCC part 95 MedRadio (402-405MHz)

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	TX; 404.85 MHz, FSK
Test Date:	2013-11-18
Note:	

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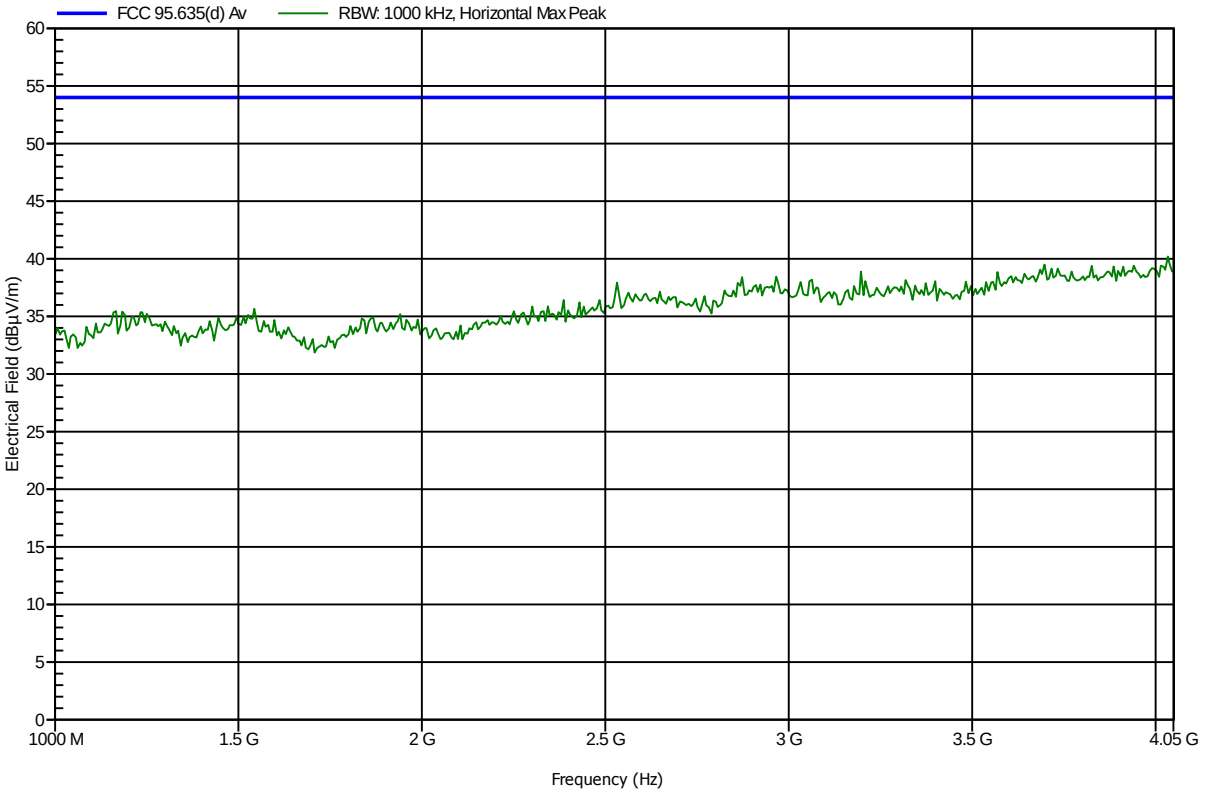

Spurious emissions according to FCC part 95 MedRadio (402-405MHz)

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	TX; 404.85 MHz, FSK
Test Date:	2013-11-18
Note:	

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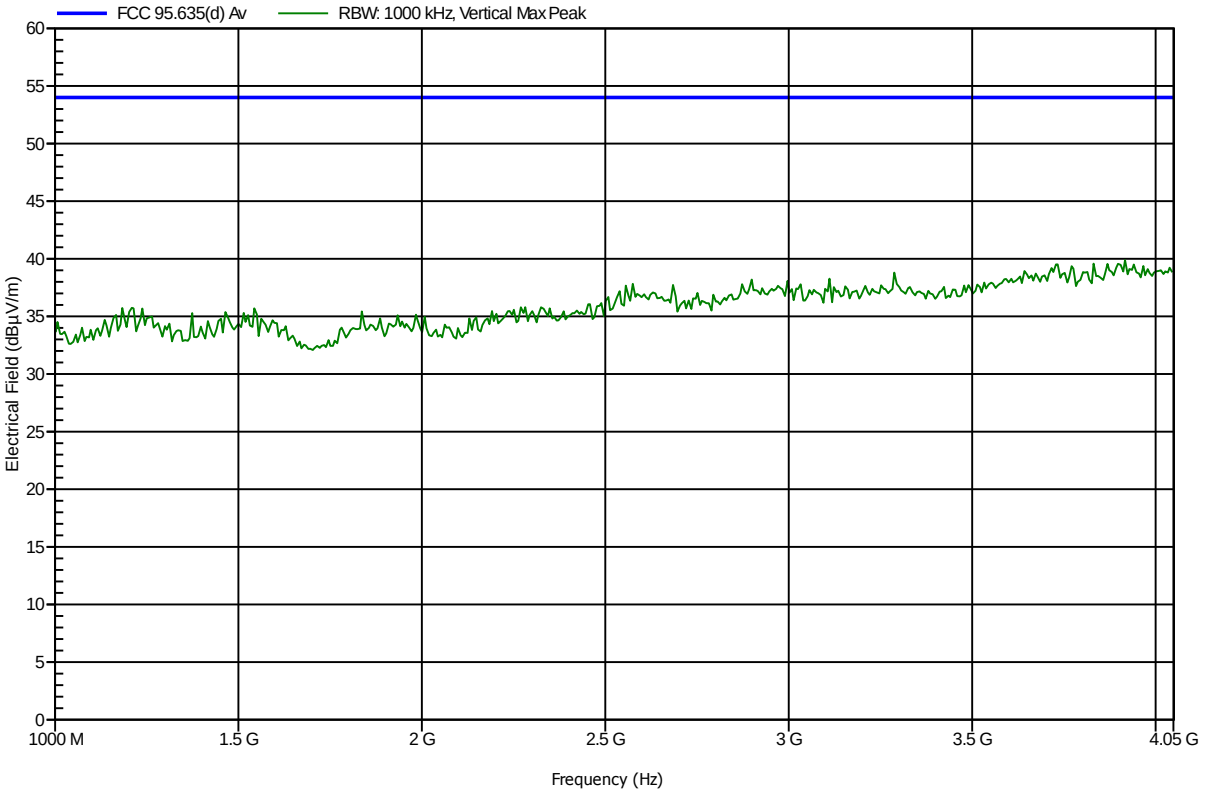

ANNEX C Receiver radiated spurious emissions

Spurious emissions according to RSS-GEN

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HK 116, Horizontal
Measurement distance:	3 m
Mode:	RX; 403.65 MHz
Test Date:	2013-11-18
Note:	

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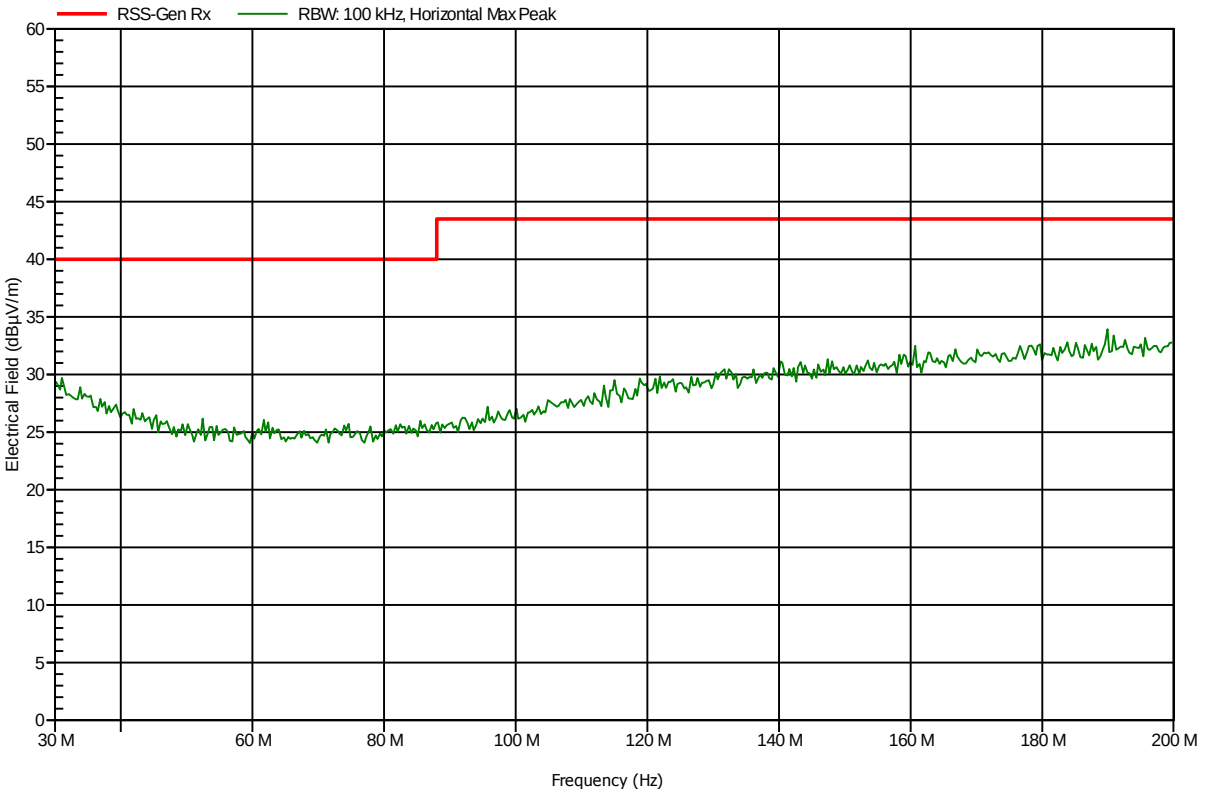

Spurious emissions according to RSS-GEN

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HK 116, Vertical
Measurement distance:	3 m
Mode:	RX; 403.65 MHz
Test Date:	2013-11-18
Note:	

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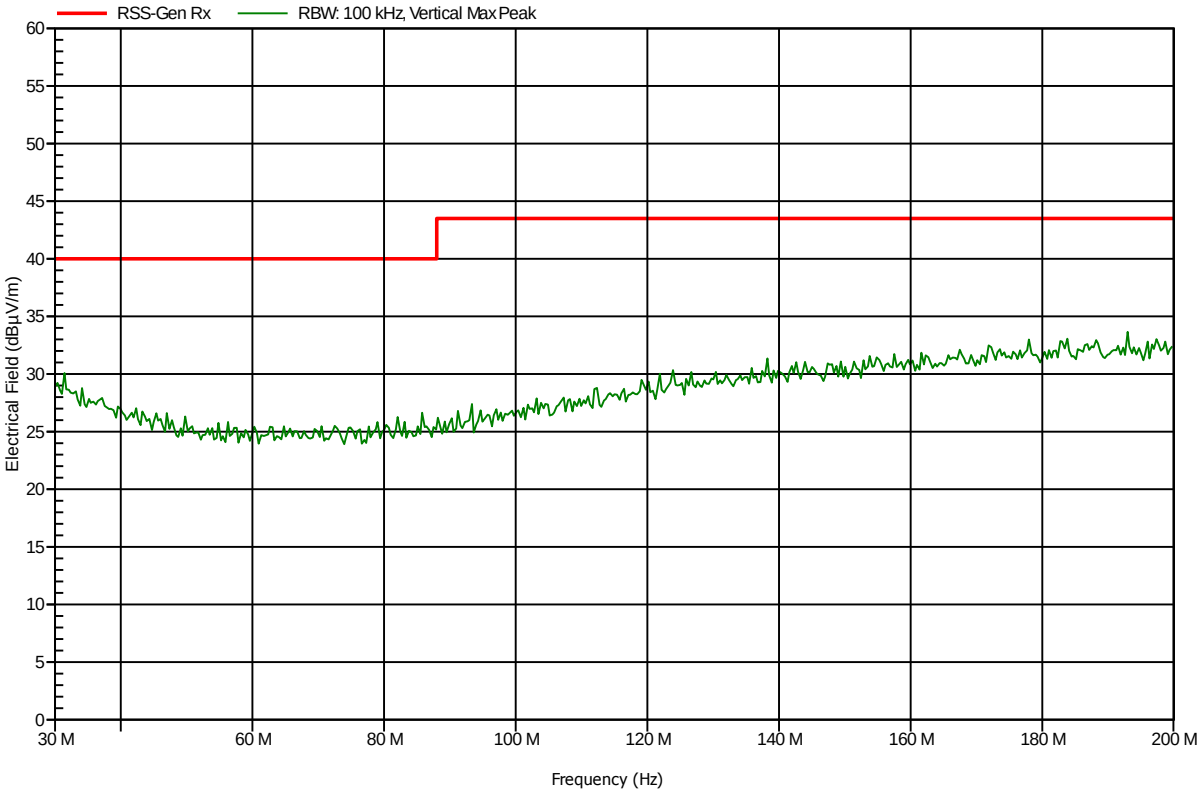

Spurious emissions according to RSS-GEN

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Horizontal
Measurement distance:	3 m
Mode:	RX; 403.65 MHz
Test Date:	2013-11-18
Note:	

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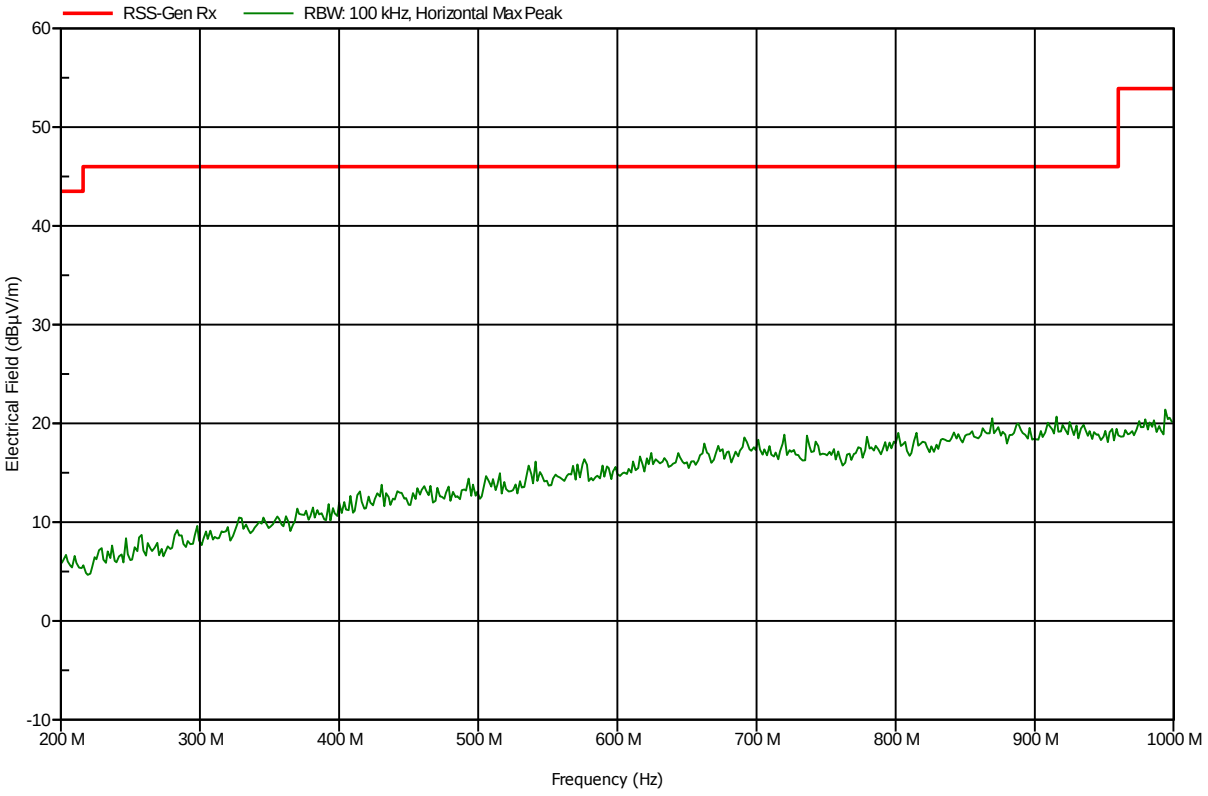

Spurious emissions according to RSS-GEN

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Rohde & Schwarz HL 223, Vertical
Measurement distance:	3 m
Mode:	RX; 403.65 MHz
Test Date:	2013-11-18
Note:	

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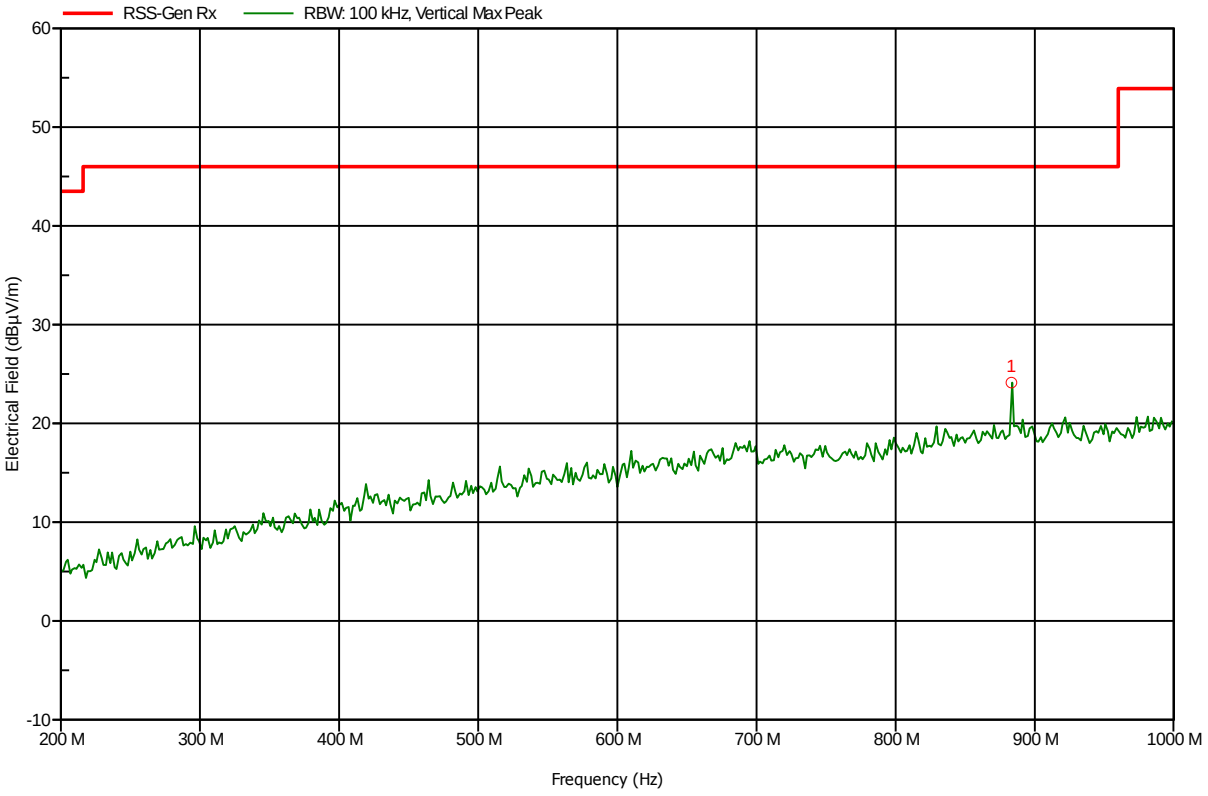

Frequency	Peak	Peak Limit	Peak Difference	Status
883.2 MHz	24.13 dBµV/m	46 dBµV/m	-21.87 dB	Pass

Spurious emissions according to RSS-GEN

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Horizontal
Measurement distance:	3 m
Mode:	RX; 403.65 MHz
Test Date:	2013-11-18
Note:	

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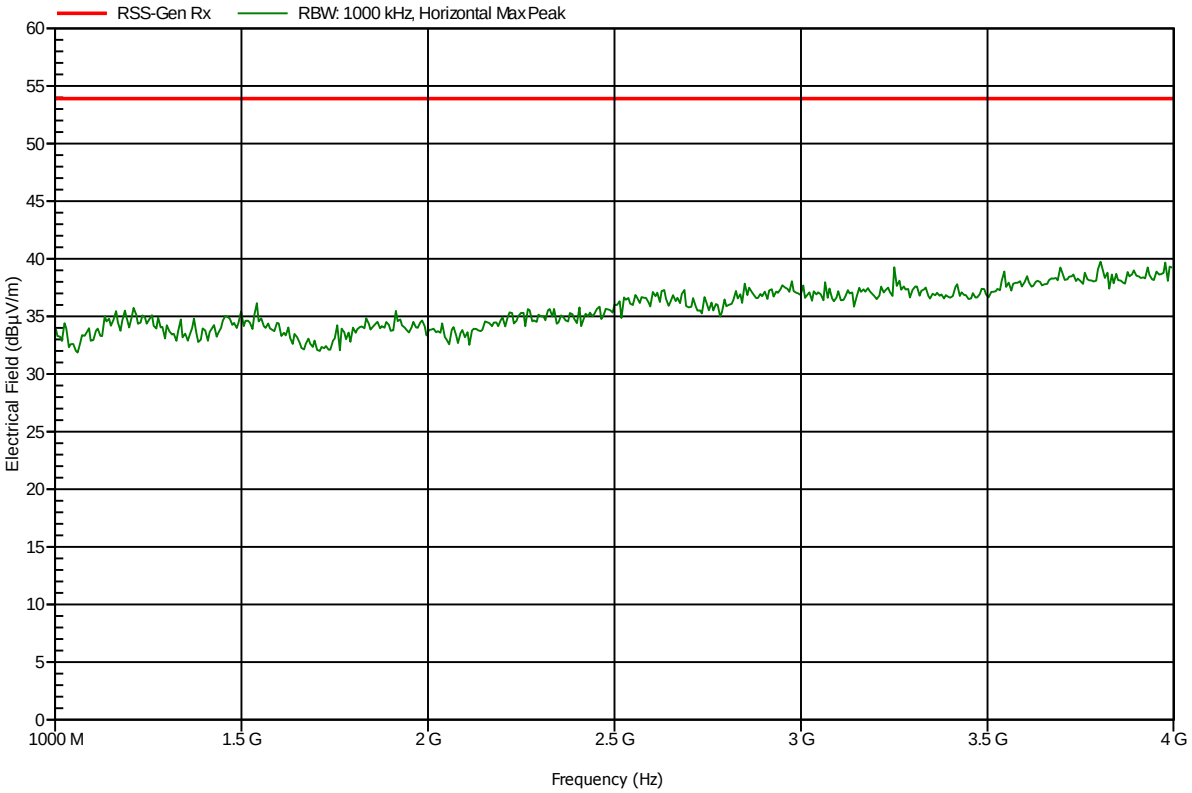

Spurious emissions according to RSS-GEN

Project number: GOM-1309-3225

Manufacturer:	Biotronik SE & Co. KG
EUT Name:	Telemonitoring System
Model:	Cardio Messenger Smart2G / Cardio Messenger Smart3G
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Treffke
Test Conditions:	Tnom: 25°C, Vnom: 3.7 V DC lithium battery
Antenna:	Schwarzbeck BBHA 9120D, Vertical
Measurement distance:	3 m
Mode:	RX; 403.65 MHz
Test Date:	2013-11-18
Note:	

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