

RADIO REPORT FCC 47 CFR Part 15C ISED Canada RSS-247 Digital transmission systems operating within the 2400 – 2483.5 MHz band	
Report Reference No	G0M-1905-8256-TFC247BL-P14-V01
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	    DAkkS - Registration number : D-PL-12092-01-03 (ISED) ISED Testing Laboratory site: 3470A-2 DAkkS - Registration number : D-PL-12092-01-04 (FCC) FCC Filed Test Laboratory, Reg.-No.: 96970
Applicant	BIOTRONIK SE & Co. KG
Address	Woermannkehe 1 12359 Berlin GERMANY
Test Specification	According to FCC/ISED rules
Standard	47 CFR Part 15C RSS-247, Issue 2, 2017-02 RSS-Gen, Issue 5, Amendment 1, 2019-03
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	programming device for BIOTRONIK pacemakers, ICDs, CRT-devices and ICMs
Model(s)	Renamic Neo
Additional Model(s)	None
Brand Name(s)	BIOTRONIK
Hardware Version(s)	A.x
Software Version(s)	WW_BT: V5_1_0006
FCC-ID	QRI-RENAMICNEO
IC	4708A-RENAMICNEO
Test Result	PASSED

Possible test case verdicts:		
required by standard but not tested	N/T	
not required by standard	N/R	
not applicable to EUT	N/A	
test object does meet the requirement	P(PASS)	
test object does not meet the requirement	F(FAIL)	
Testing:		
Test Lab Temperature	20 - 23 °C	
Test Lab Humidity	32 – 38 %	
Date of receipt of test item	2019-05-22	
Report:		
Compiled by	Abdullah Al Jamal	
Tested by (+ signature) (Responsible for Test)	Abdullah Al Jamal	
Approved by (+ signature) (Head of Lab)	Christian Weber	
Date of Issue	2020-01-23	
Total number of pages	92	
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. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.		
Additional Comments:		
Internal equipment photos provided by applicant.		

VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2020-01-23	Initial Release	Abdullah Al Jamal

ABBREVIATIONS AND ACRONYMS

Acronyms	
Acronym	Description
EUT	Equipment Under Test
FCC	Federal Communications Commission
ISED	Innovation, Science and Economic Development Canada
RBW	Resolution bandwidth
RMS	Root mean square
VBW	Video bandwidth
V _{NOM}	Nominal supply voltage

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1 Equipment (Test Item) Under Test

Description	programming device for BIOTRONIK pacemakers, ICDs, CRT-devices and ICMs	
Model	Renamic Neo	
Additional Model(s)	None	
Brand Name(s)	BIOTRONIK	
Serial Number(s)	80001091 (Test sample 24164)	
Hardware Version(s)	A.x	
Software Version(s)	WW_BT: V5_1_0006	
PMN	Renamic Neo	
HVIN	Renamic Neo	
FVIN	N/A	
HMN	N/A	
FCC-ID	QRI-RENAMICNEO	
IC	4708A-RENAMICNEO	
Equipment type	End Product	
Radio type	Transceiver	
Assigned frequency bands	2400 - 2483.5 MHz	
Radio technology	Bluetooth LE	
Modulation	GFSK	
Number of antenna ports	1	
Radio Module	Type	Bluetooth radio module
	Model	BlueMod+S50/AP
	Manufacturer	Telit
	HW Version	Not specified
	SW Version	Nordic SD S132 V5
Antenna	Type	Integrated antenna
	Model	Not specified
	Manufacturer	Not specified
	Gain	4.38 dBi
Supply Voltage	V _{NOM}	120 VAC
Operating Temperature	T _{NOM}	23 °C
AC/DC-Adaptor	Model	ATM090T-P190
	Vendor	Adapter Tech
	Input	100 VAC – 240 VDC
	Output	19 VDC
Manufacturer	BIOTRONIK SE & Co. KG Woermannkehre 1 12359 Berlin GERMANY	

1.4 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
None.				
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
CBL	Connecting Cable			
SFT	Software			
Comment: None.				

1.5 Test Modes

Mode	Description
GFSK	Mode = Transmit Modulation = GFSK – 1 MBit/s, Payload 255 Spreading = None Duty cycle = 85.5 %
Receive	Mode = Receive
Comment: None.	

1.6 Test Frequencies

Designator	Mode	Channel	Frequency [MHz]
F1	Tx / Rx	0	2402
F2	Tx / Rx	19	2440
F3	Tx / Rx	39	2480

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:

$$\text{Reading on Analyzer (dB}\mu\text{V)} + \text{A.F. (dB/m)} = \text{Net field strength (dB}\mu\text{V/m)}$$

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:

$$\text{Limit (dB}\mu\text{V/m)} = 20 \cdot \log(\mu\text{V/m})$$

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/m	= 47.5 dBμV/m	:	47.5 dBμV/m - 57.0 dBμV/m	= -9.5 dB

2 Result Summary

FCC 47 CFR Part 15C, ISED RSS-247				
Product Standard Reference	Requirement	Reference Method	Result	Remarks
ISED RSS-Gen, Issue 5 (section 6.6)	Occupied Bandwidth	ANSI C63.10-2013	N/R	Informational only
FCC § 15.247(a)(2) ISED RSS-247, Issue 2 (section 5.2)	6 dB Bandwidth	ANSI C63.10-2013	N/T	
FCC § 15.247(b)(1) ISED RSS-247, Issue 2 (section 5.4)	Maximum peak conducted power	ANSI C63.10-2013	N/T	
FCC § 15.247(e) ISED RSS-247, Issue 2 (section 5.2)	Power spectral density	ANSI C63.10-2013	N/T	
FCC § 15.207 ISED RSS-247, Issue 2 (section 3.1)	AC power line conducted emissions	ANSI C63.10-2013	PASS	
FCC § 15.247(d) ISED RSS-247, Issue 2 (section 5.5)	Band edge compliance	ANSI C63.10-2013	N/T	
FCC § 15.247(d) ISED RSS-247, Issue 2 (section 5.5)	Conducted spurious emissions	ANSI C63.10-2013	N/T	
FCC § 15.247(d) FCC § 15.209 ISED RSS-Gen, Issue 5 (section 6.13)	Transmitter radiated spurious emissions	ANSI C63.10-2013	PASS	
ISED RSS-247, Issue 2 (section 3.1)	Receiver radiated spurious emissions	ANSI C63.10-2013	PASS	
Comment: None.				

Possible Test Case Verdicts	
PASS	Test object does meet the requirements
FAIL	Test object does not meet the requirements
N/T	Required by standard but not tested
N/R	Not required by standard for the test object

3 Test Conditions and Results

3.1 Test Conditions and Results - Occupied bandwidth

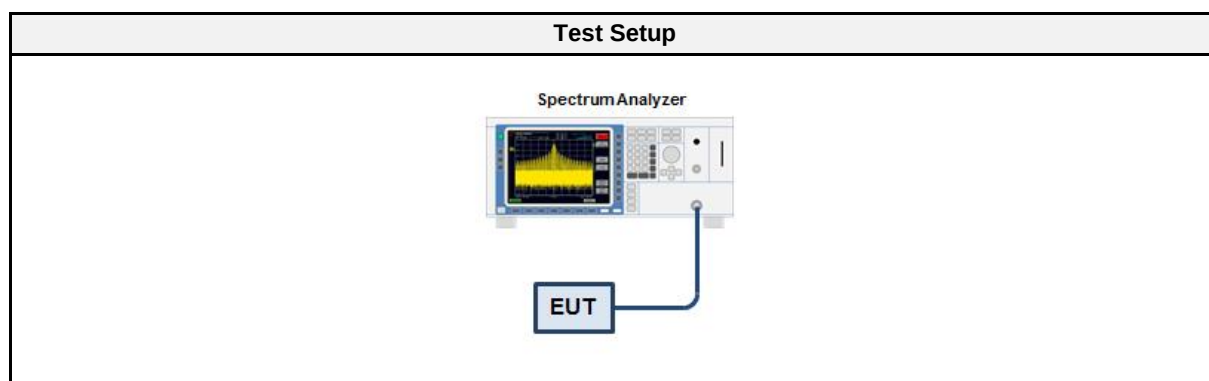
3.1.1 Information

Test Information	
Reference	ISED RSS-Gen, Issue 5 (section 6.6)
Measurement Method	ANSI C63.10 6.9.3
Operator	Abdullah Al Jamal
Date	2019-07-24

3.1.2 Limits

Limits
None (Informational only)

3.1.3 Setup



3.1.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSU 26	EF01003	2018-07	2019-07

3.1.5 Procedure

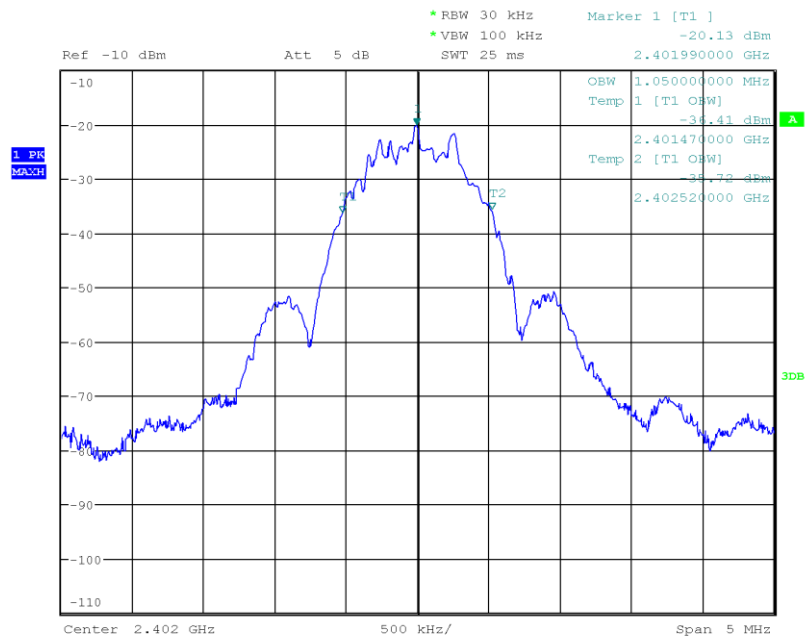
Test Procedure
1. EUT transmitter is activated in test mode under normal conditions 2. The spectrum analyzer is set to peak detection and maximum hold with a span twice the emission spectrum 3. The resolution bandwidth is set to the range of 1 % to 5 % of the occupied bandwidth 4. The occupied bandwidth is measured with the build-in analyzer function

3.1.6 Results

Test Results		
Mode	Frequency [MHz]	Bandwidth [MHz]
GFSK	2402	1.050
GFSK	2440	1.050
GFSK	2480	1.055

Occupied Bandwidth

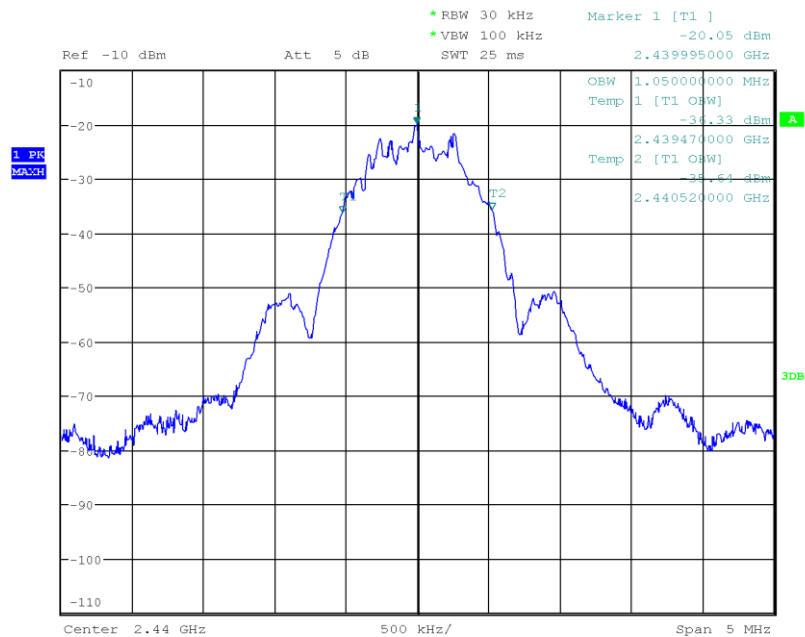
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: GFSK, Channel: 0, 2402 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-07-24
 Note: GFSK – 1 MBit/s, Payload 255
 Occupied Bandwidth [MHz]: 1.050



Date: 24.JUL.2019 12:56:24

Occupied Bandwidth

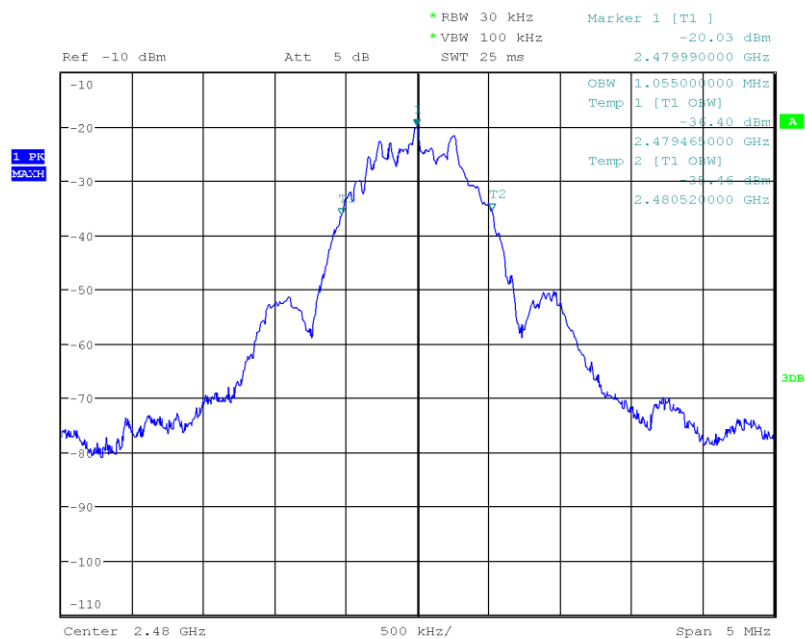
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: GFSK, Channel: 19, 2440 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-07-24
 Note: GFSK – 1 MBit/s, Payload 255
 Occupied Bandwidth [MHz]: 1.050



Date: 24.JUL.2019 12:57:37

Occupied Bandwidth

Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: GFSK, Channel: 39, 2480 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-07-24
 Note: GFSK – 1 MBit/s, Payload 255
 Occupied Bandwidth [MHz]: 1.055



Date: 24.JUL.2019 12:59:35

3.2 Test Conditions and Results - AC powerline conducted emissions

3.2.1 Information

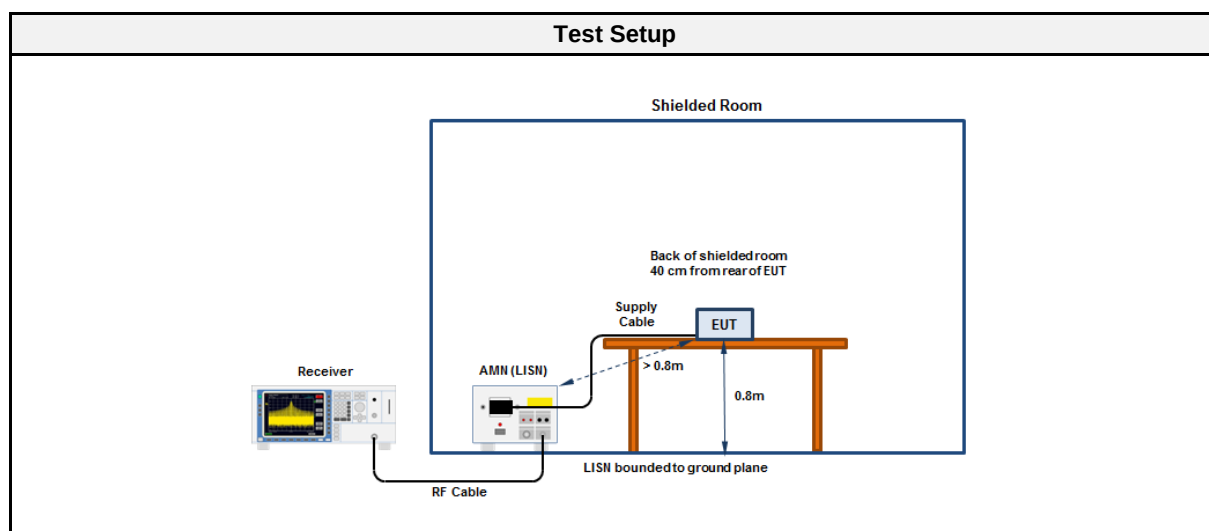
Test Information	
Reference	FCC § 15.207; ISED RSS-247, Issue 2 (section 3.1)
Measurement Method	ANSI C63.10 6.2
Operator	Abdullah Al Jamal
Date	2019-06-24

3.2.2 Limits

Limits		
Frequency [MHz]	Quasi-Peak [dBμV]	Average [dBμV]
0.15 - 0.5	66 - 56*	56 - 46*
0.5 - 5	56	46
5 - 30	60	50

* Limit decreases linearly with the logarithm of the frequency

3.2.3 Setup



3.2.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2016.1.10

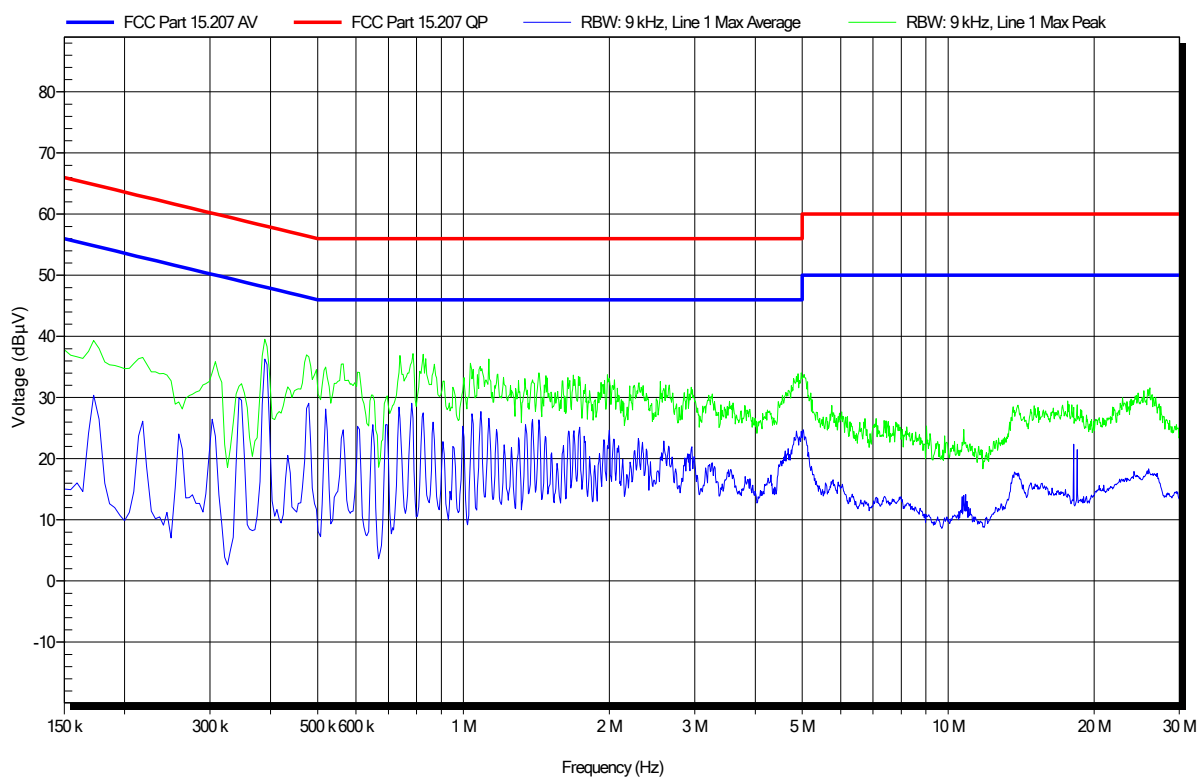
Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI Receiver	R&S	ESU 26	EF00241	2017-07	2019-07
LISN	R&S	ESH3-Z5	EF00036	2017-01	2019-07

EMI voltage test in the ac-mains according to FCC 47 CFR §15.207

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 25.6°C, Unom: 120 VAC (external power supply)
LISN: ESH3-Z5 (L)
Mode: 2440 MHz
Test Date: 2019-06-24
Note:

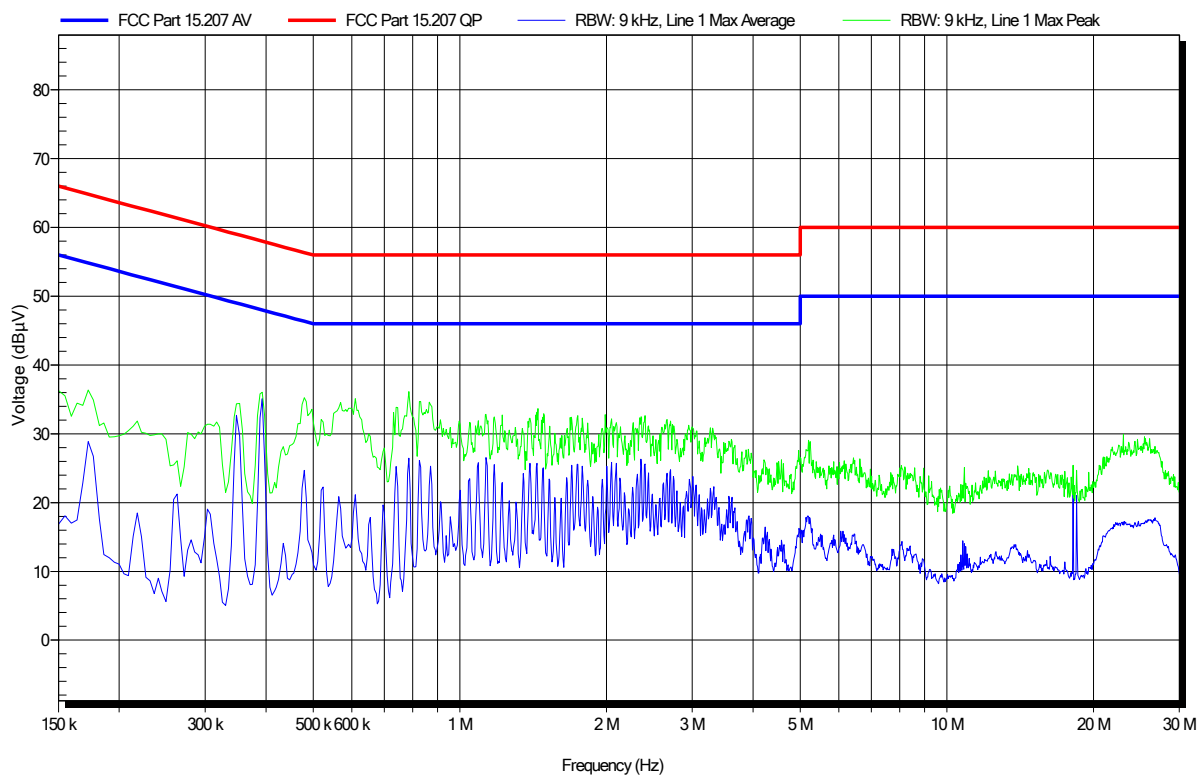
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EMI voltage test in the ac-mains according to FCC 47 CFR §15.207

Project number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 EUT Name: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 25.6°C, Unom: 120 VAC (external power supply)
 LISN: ESH3-Z5 (N)
 Mode: 2440 MHz
 Test Date: 2019-06-24
 Note:

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3.3 Test Conditions and Results - Transmitter radiated emissions

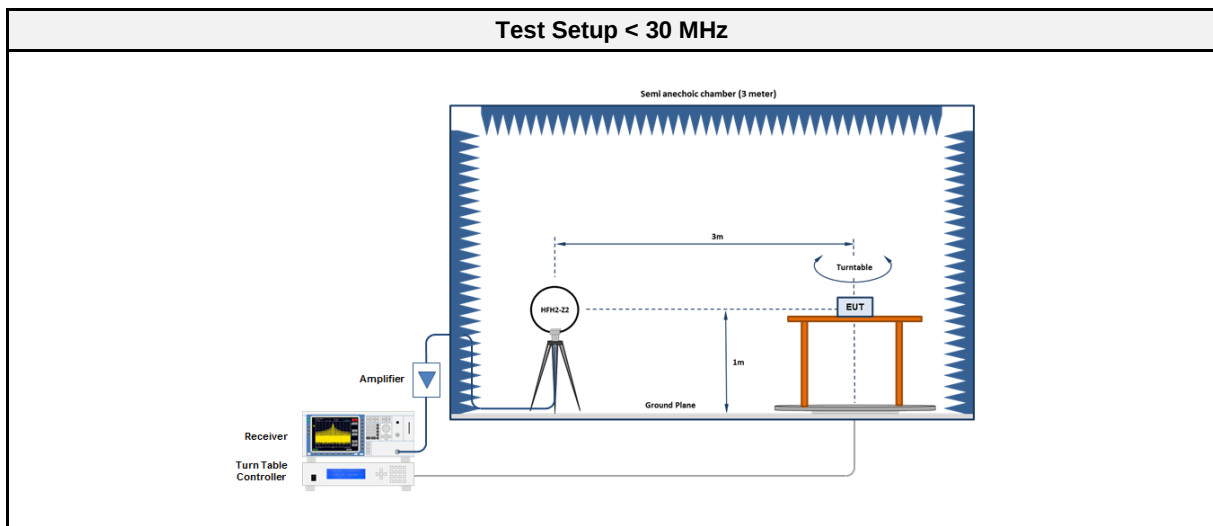
3.3.1 Information

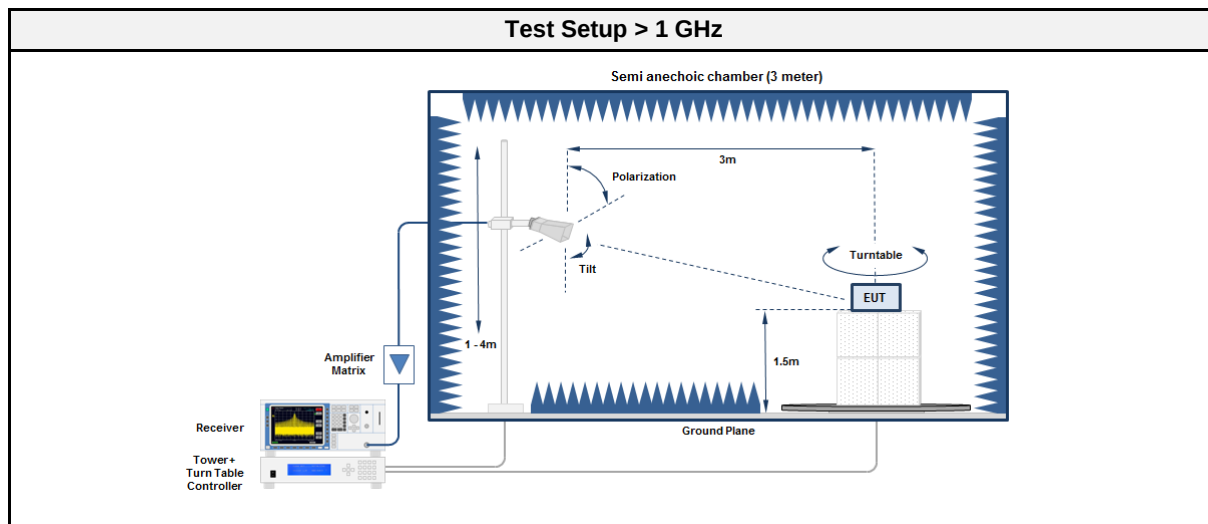
Test Information	
Reference	FCC § 15.247(d); FCC § 15.209; ISSED RSS-Gen, Issue 5 (section 6.13)
Measurement Method	ANSI C63.10 6.4, 6.5, 6.6, 11.12
Operator	Abdullah Al Jamal
Date	2019-07-24

3.3.2 Limits

Limits			
Frequency [MHz]	Detector	Field strength [$\mu\text{V/m}$]	Measurement distance [m]
0.009 - 0.09	Average	$2400/F[\text{kHz}]$	300
0.09 - 0.110	Quasi-Peak	$2400/F[\text{kHz}]$	300
0.110 - 0.490	Average	$2400/F[\text{kHz}]$	300
0.490 - 1.705	Quasi-Peak	$24000/F[\text{kHz}]$	30
1.705 - 30.0	Quasi-Peak	30	30
30 - 88	Quasi-Peak	100	3
88 - 216	Quasi-Peak	150	3
216 - 960	Quasi-Peak	200	3
960 - 1000	Quasi-Peak	500	3
>1000	Average	500	3

3.3.3 Setup





3.3.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2015.2.4

Test Equipment 30 - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2018-07	2021-07
Measurement Receiver	R&S	ESU 26	EF00887	2018-08	2019-08
Antenna	R&S	VULB 9162	EF00978	2016-11	2019-11

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2018-07	2021-07
Measurement Receiver	R&S	ESU 26	EF00887	2018-08	2019-08
Antenna	Schwarzbeck	BBHA 9120D	EF00018	2016-09	2019-09
Antenna	Amplifier Research	AT4560	EF01152	2018-10	2019-10

3.3.5 Procedure

Test Procedure 30 - 1000 MHz	
1. EUT is placed on a non conducting support at the center of a turn table 0.8 m above the ground 2. EUT set to test mode 3. The receiver is set to peak detection with max hold 4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m 5. All significant emissions are measured again using the corresponding final detector	

Test Procedure > 1 GHz	
1. EUT is placed on a non conducting support at the center of a turn table 1.5 m above the ground 2. EUT set to test mode 3. The receiver is set to peak detection with max hold 4. The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m 5. All significant emissions are measured again using the corresponding final detector	

3.3.6 Results

Test Results						
Channel [MHz]	Emission [MHz]	Level [dBμV/m]	Det.	Pol.	Limit [dBμV/m]	Margin [dB]
2402	2321.9	43.86	RMS	ver	54.00	-10.14
2440	7321	56.33	pk	ver	74.00	-17.67
2440	7321	51.38	RMS	ver	54.00	-02.62
2480	2488.1	61.60	pk	ver	74.00	-12.40
2480	2488.1	49.46	RMS	ver	54.00	-04.54
2480	7441	57.67	pk	hor	74.00	-16.33
2480	7441	52.68	RMS	hor	54.00	-01.32
2480	7441	58.52	pk	ver	74.00	-15.48
2480	7441	53.41	RMS	ver	54.00	-00.59

3.4 Test Conditions and Results - Receiver radiated emissions

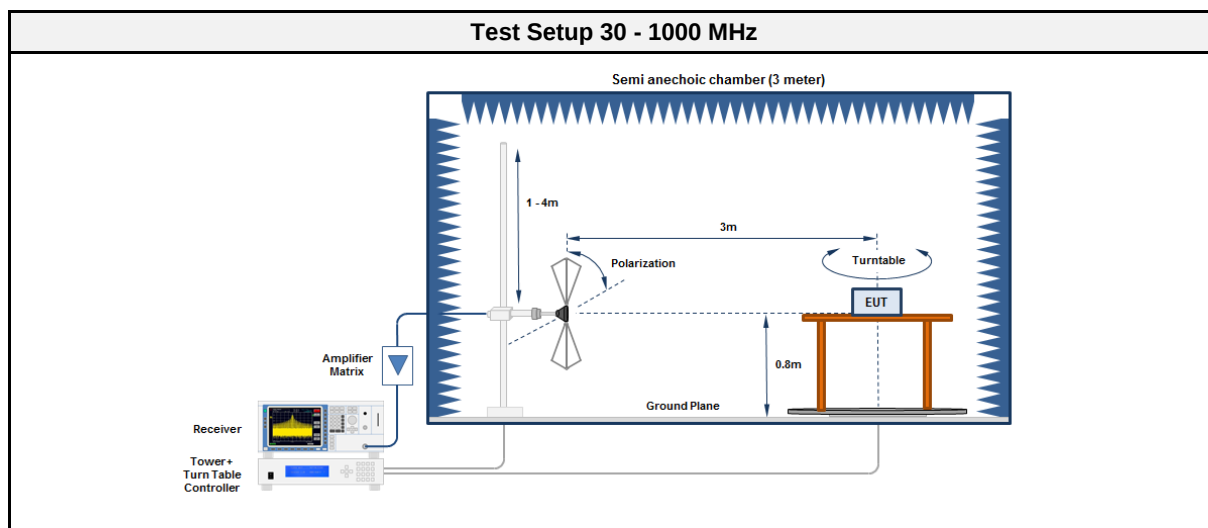
3.4.1 Information

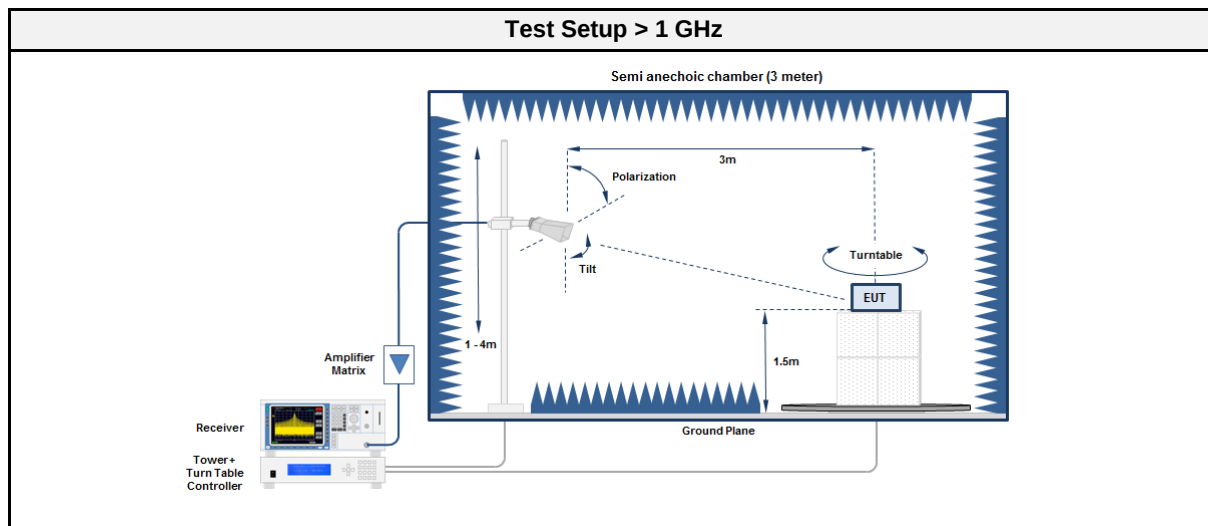
Test Information	
Reference	ISED RSS-247, Issue 2 (section 3.1)
Measurement Method	ANSI C63.10 6.5, 6.6, 11.12
Operator	Abdullah Al Jamal
Date	2019-07-24

3.4.2 Limits

Limits			
Frequency [MHz]	Detector	Field strength [dB μ V/m]	Measurement distance [m]
30 - 88	Quasi-Peak	100	3
88 - 216	Quasi-Peak	150	3
216 - 960	Quasi-Peak	200	3
960 - 1000	Quasi-Peak	500	3
>1000	Average	500	3

3.4.3 Setup





3.4.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2015.2.4

Test Equipment 30 - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2018-07	2021-07
Measurement Receiver	R&S	ESU 26	EF00887	2018-08	2019-08
Antenna	R&S	VULB 9162	EF00978	2016-11	2019-11

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF00062	2018-07	2021-07
Measurement Receiver	R&S	ESU 26	EF00887	2018-08	2019-08
Antenna	Schwarzbeck	BBHA 9120D	EF00018	2016-09	2019-09
Antenna	Amplifier Research	AT4560	EF01152	2018-10	2019-10

3.4.5 Procedure

Test Procedure 30 - 1000 MHz	
1.	EUT is placed on a non conducting support at the center of a turn table 0.8 m above the ground
2.	EUT set to test mode
3.	The receiver is set to peak detection with max hold
4.	The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m
5.	All significant emissions are measured again using the corresponding final detector

Test Procedure > 1 GHz	
1.	EUT is placed on a non conducting support at the center of a turn table 1.5 m above the ground
2.	EUT set to test mode
3.	The receiver is set to peak detection with max hold
4.	The EUT is rotated through 360° and the height of the antenna is varied from 1 m to 4 m
5.	All significant emissions are measured again using the corresponding final detector

3.4.6 Results

Test Results						
Channel [MHz]	Emission [MHz]	Level [dBμV/m]	Det.	Pol.	Limit [dBμV/m]	Margin [dB]
2440	106.432	33.85	pk	hor	43.50	-09.65
2440	319.04	36.40	pk	hor	46.00	-09.60
2440	319.04	34.60	pk	ver	46.00	-11.40
2440	531.52	35.46	pk	hor	46.00	-10.54
2440	639.005	42.09	pk	ver	46.00	-03.91
2440	639.005	38.35	qpk	ver	46.00	-07.65
2440	1211	39.70	pk	hor	53.98	-14.28
2440	3371	37.89	pk	hor	53.98	-16.09
2440	14502	47.09	pk	hor	53.98	-06.89
2440	14602	46.97	pk	ver	53.98	-07.01

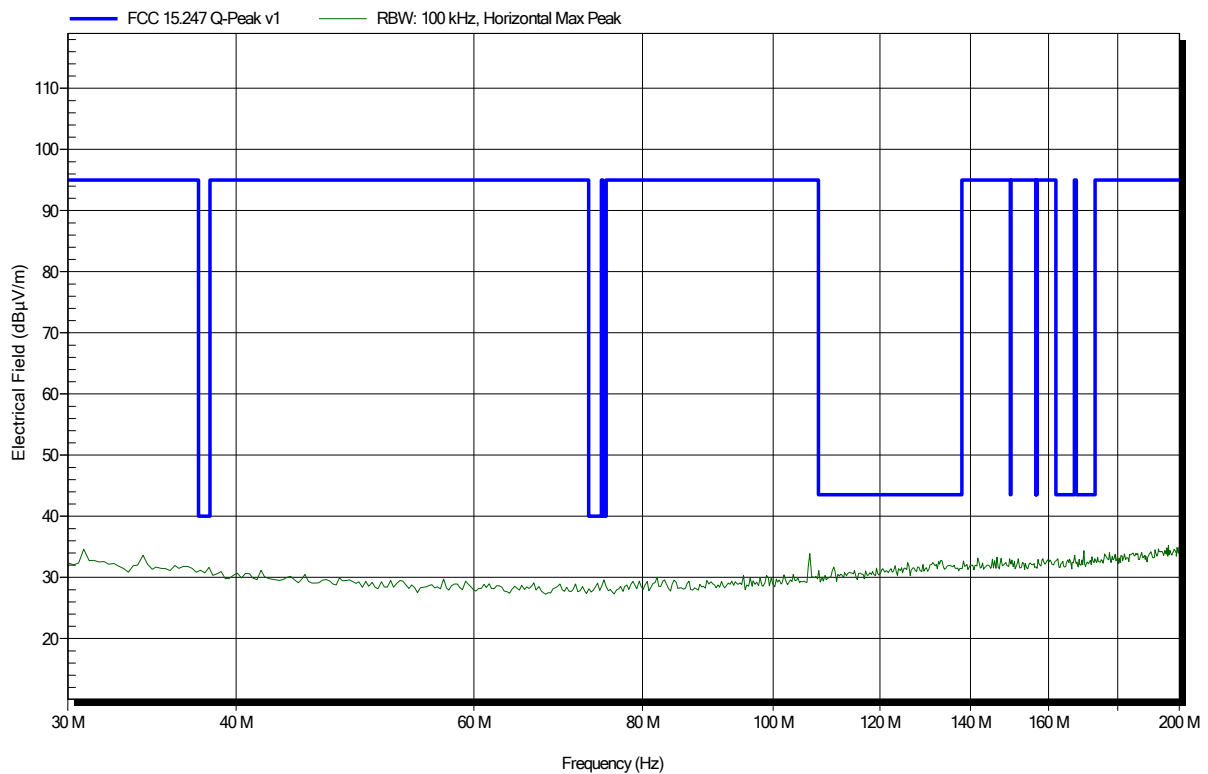
ANNEX A Transmitter spurious emissions

Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Rohde & Schwarz HK 116, Horizontal
Measurement distance: 3 m
Mode: TX; 2402 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note:

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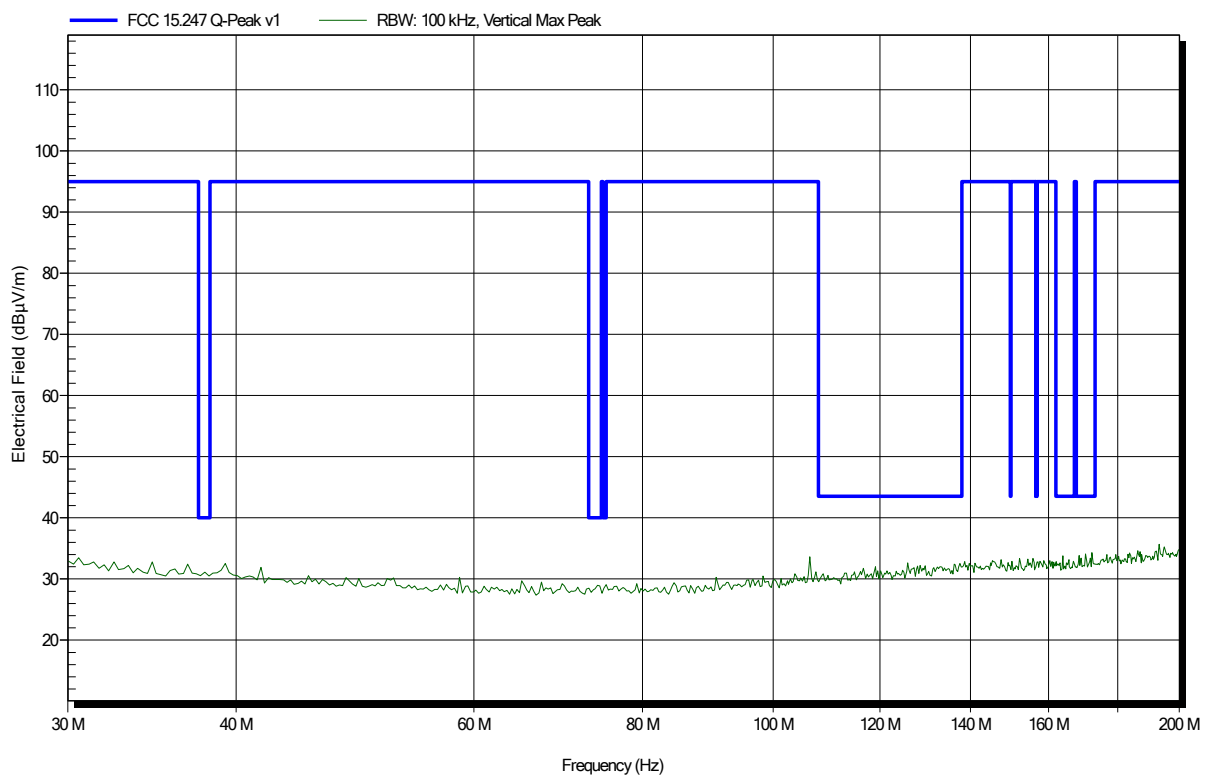


Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Rohde & Schwarz HK 116, Vertical
Measurement distance: 3 m
Mode: TX; 2402 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note:

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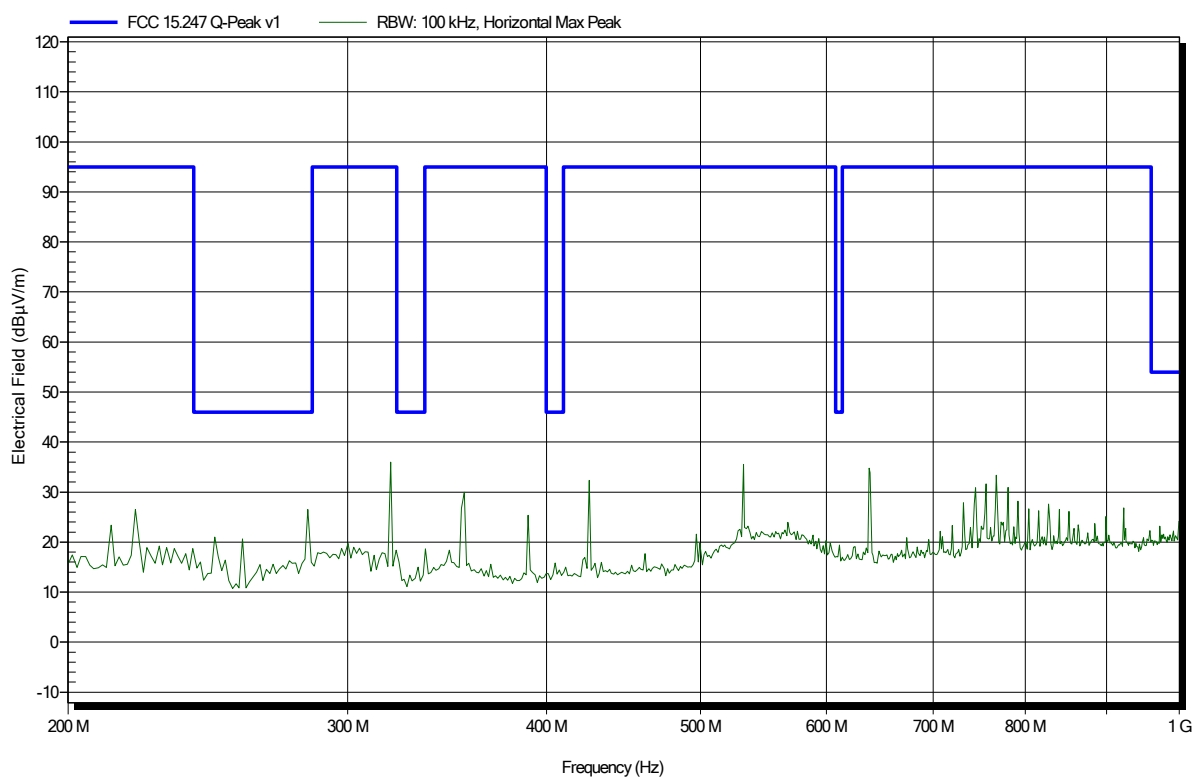


Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Rohde & Schwarz HL 223, Horizontal
Measurement distance: 3 m
Mode: TX; 2402 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note:

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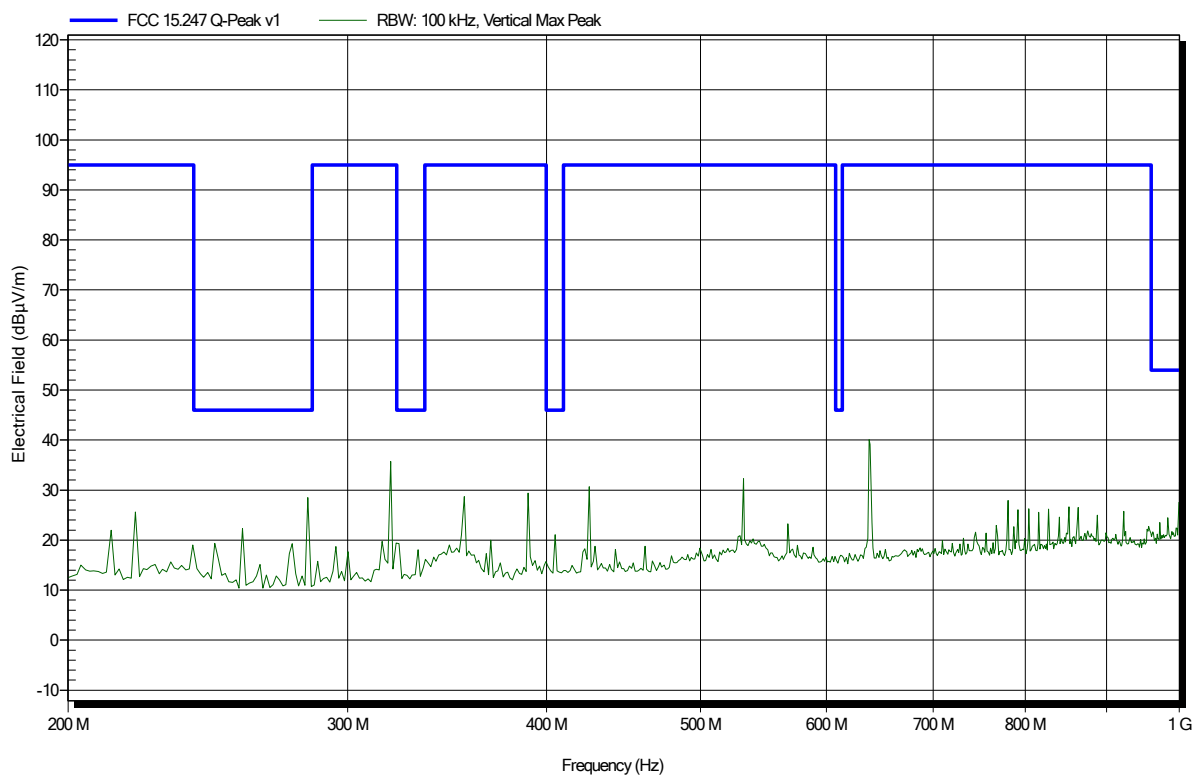


Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
 EUT Name: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: TX; 2402 MHz – 1 MBit/s, Payload 255
 Test Date: 2019-07-24
 Note:

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Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG

EUT Name: Renamic Neo Programming Device

Model: Renamic Neo

Test Site: Eurofins Product Service GmbH

Operator: Abdullah Al Jamal

Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)

Antenna: Schwarzbeck BBHA 9120D, Horizontal

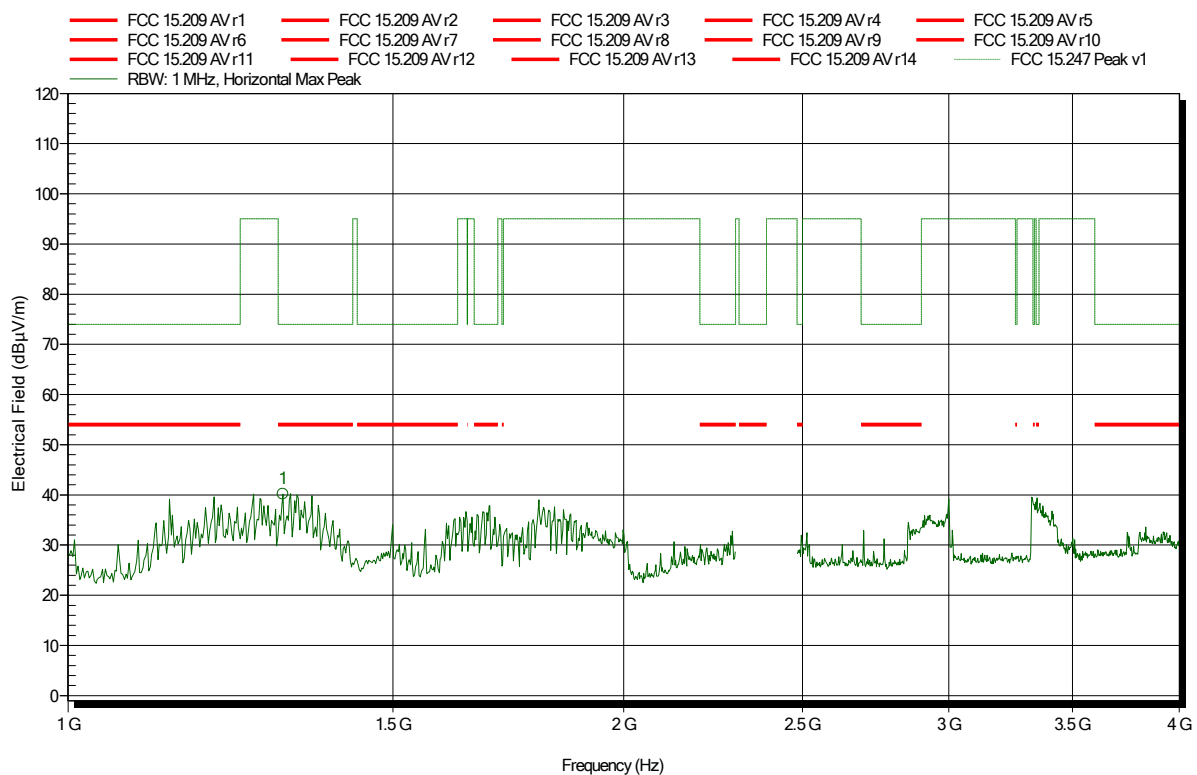
Measurement distance: 1 m converted to 3m

Mode: TX; 2402 MHz – 1 MBit/s, Payload 255

Test Date: 2019-07-24

Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.3078 GHz	40.17 dBµV/m	74 dBµV/m	-33.83 dB	Pass

Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG

EUT Name: Renamic Neo Programming Device

Model: Renamic Neo

Test Site: Eurofins Product Service GmbH

Operator: Abdullah Al Jamal

Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)

Antenna: Schwarzbeck BBHA 9120D, Vertical

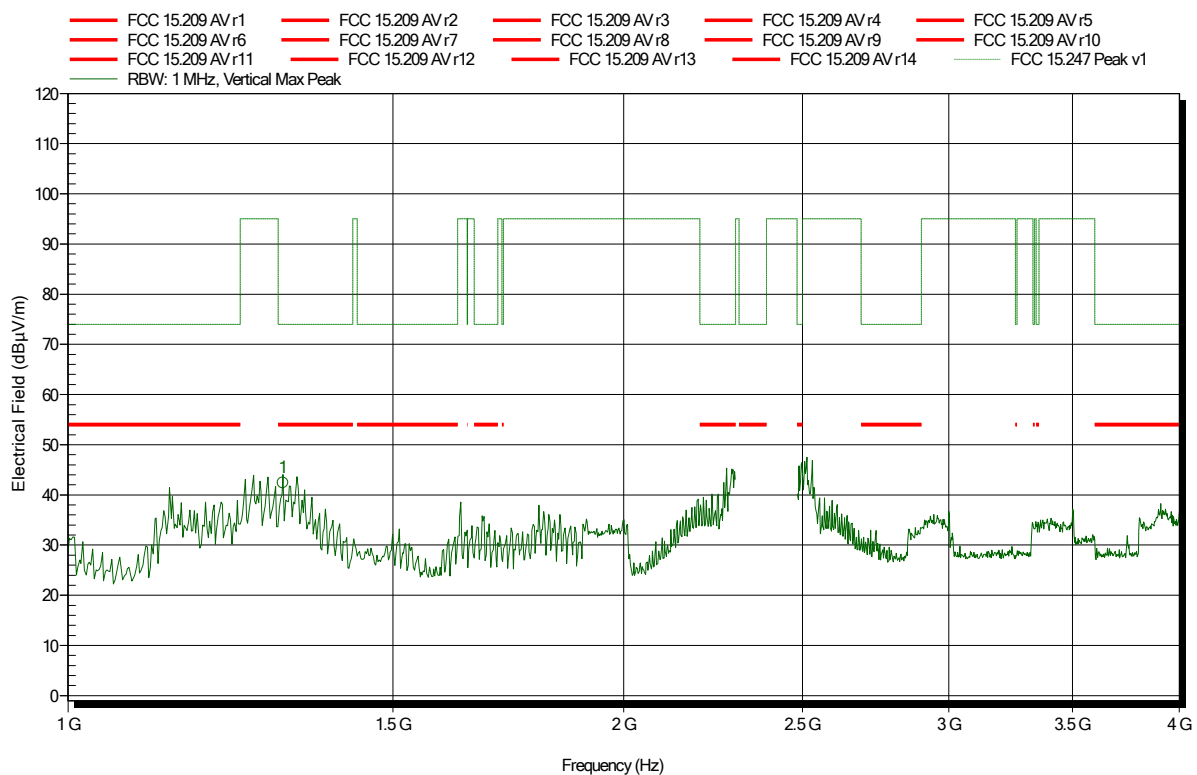
Measurement distance: 1 m converted to 3m

Mode: TX; 2402 MHz – 1 MBit/s, Payload 255

Test Date: 2019-07-24

Note:

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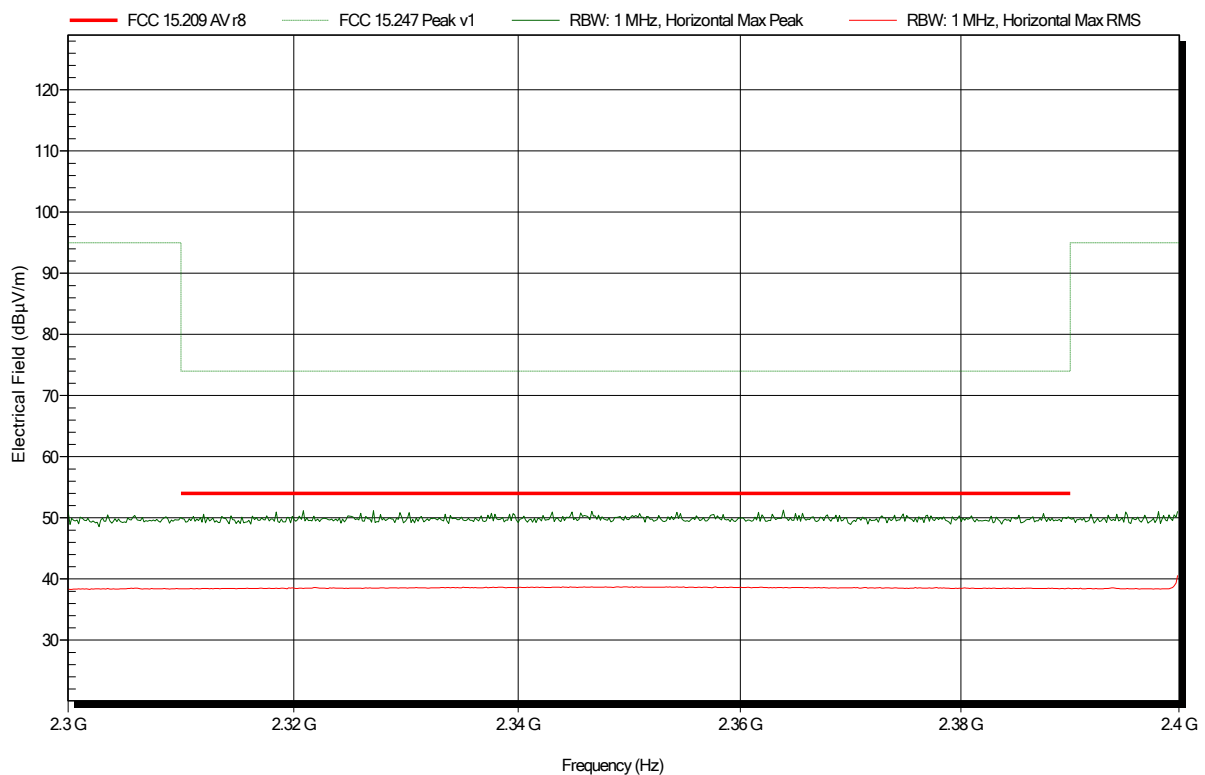
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.3078 GHz	42.43 dBµV/m	74 dBµV/m	-31.57 dB	Pass

Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; 2402 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note: lower bandedge

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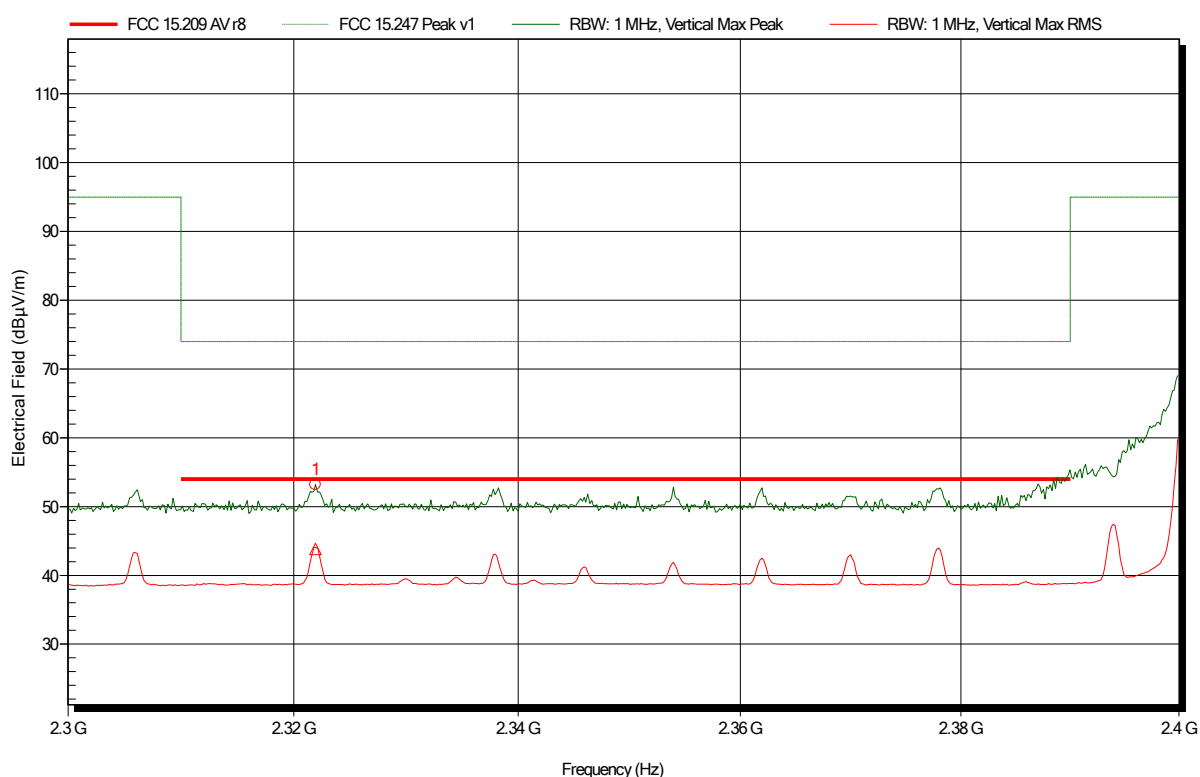


Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; 2402 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note: lower bandedge

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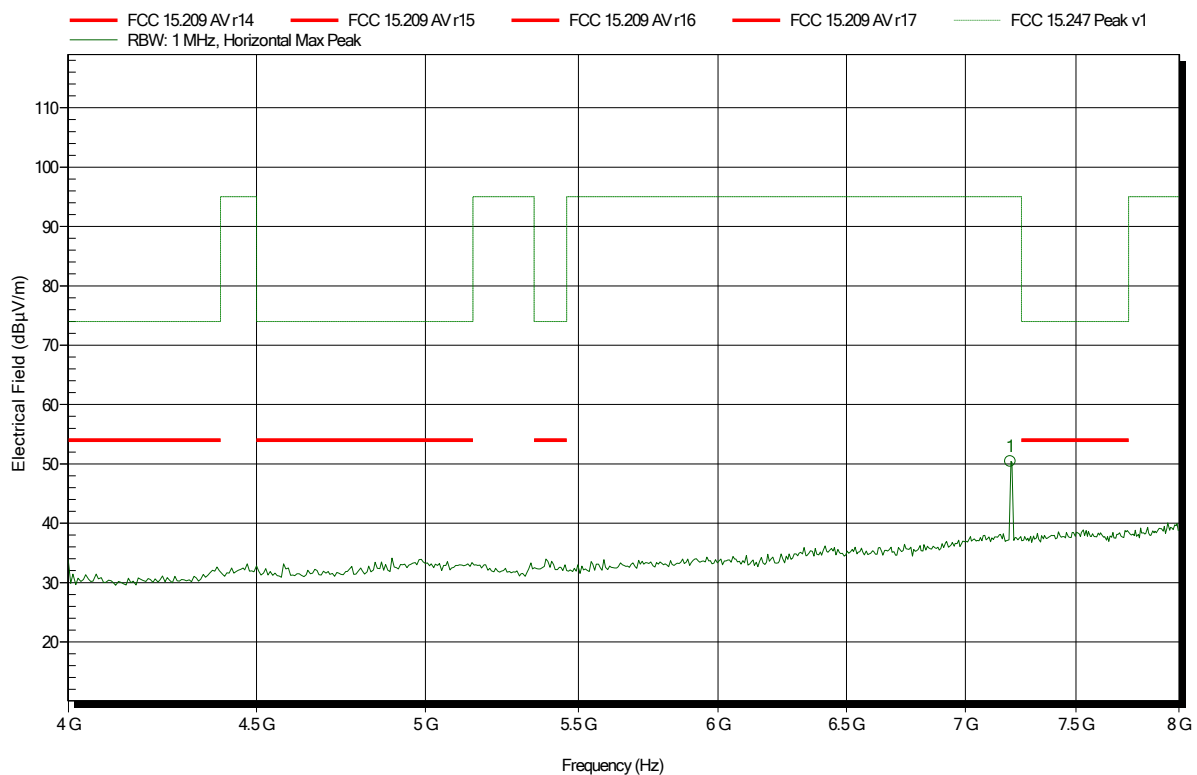
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.3219 GHz	53.21 dBµV/m	74 dBµV/m	-20.79 dB	Pass
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
2.3219 GHz	43.86 dBµV/m	54 dBµV/m	-10.14 dB	Pass

Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; 2402 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note:

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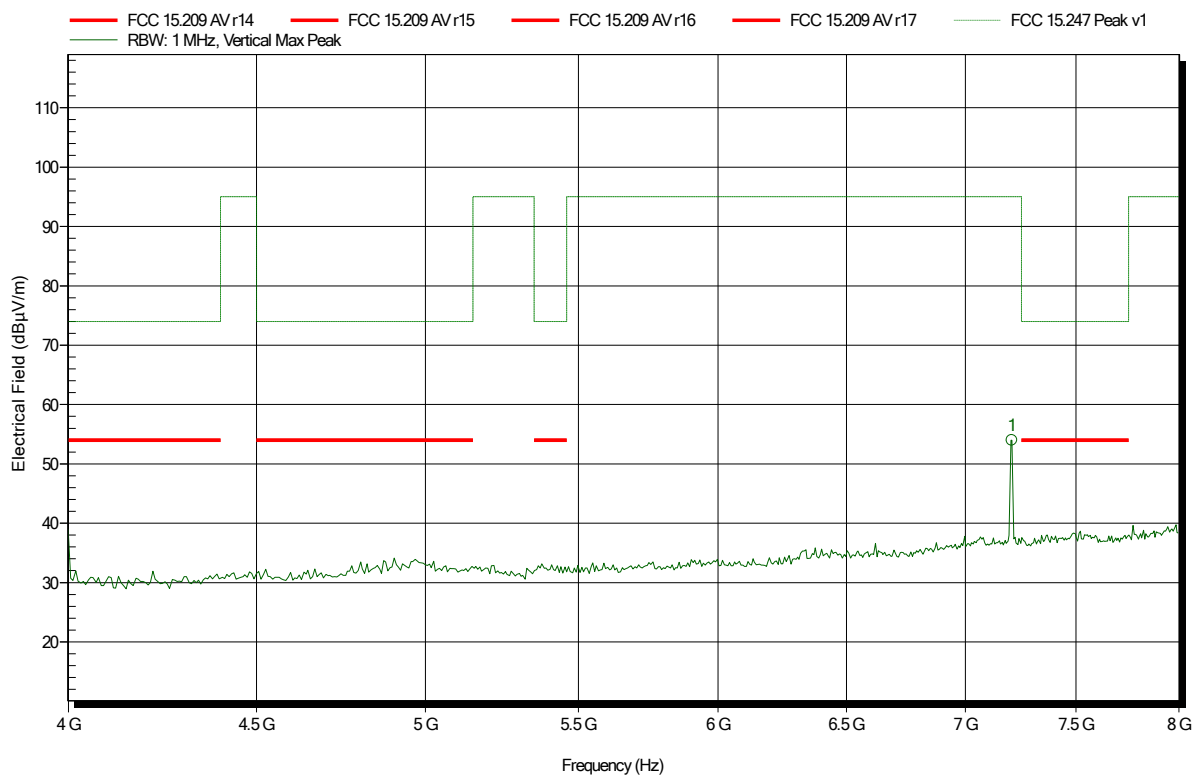
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
7.2 GHz	50.4 dBµV/m	95 dBµV/m	-44.6 dB	Pass

Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; 2402 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note:

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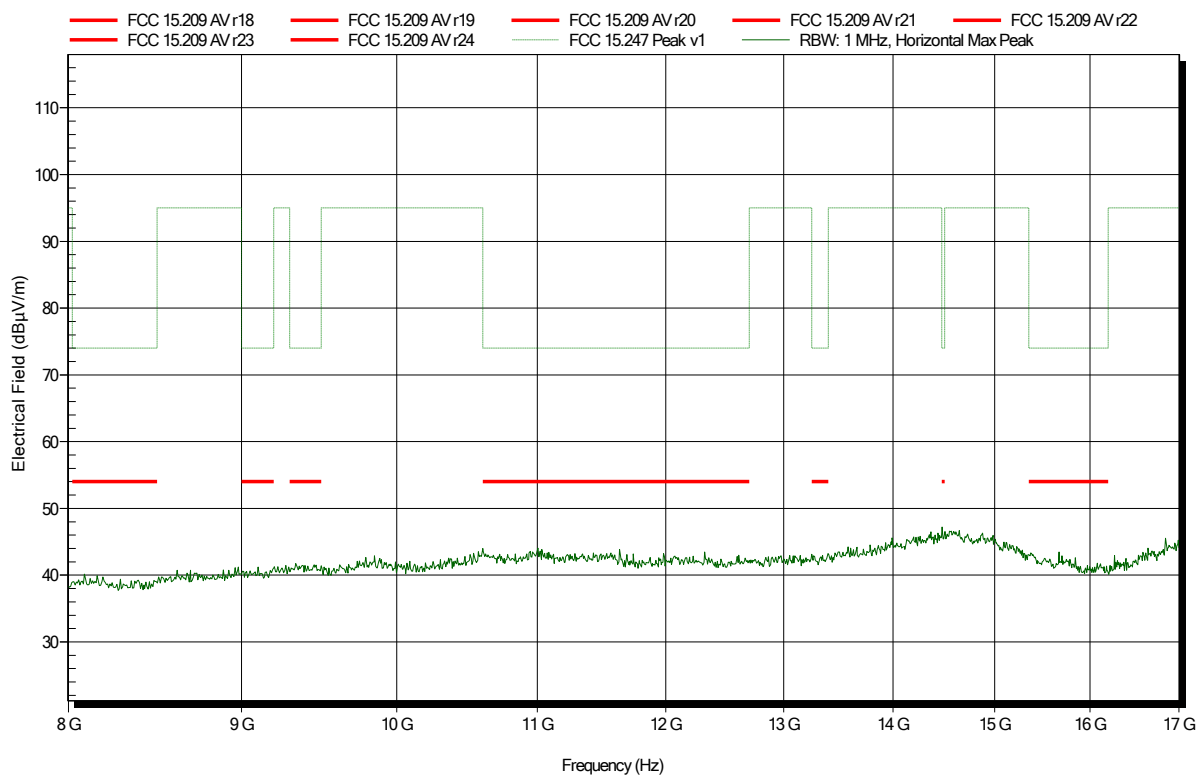
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
7.206 GHz	53.96 dBµV/m	95 dBµV/m	-41.04 dB	Pass

Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; 2402 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note:

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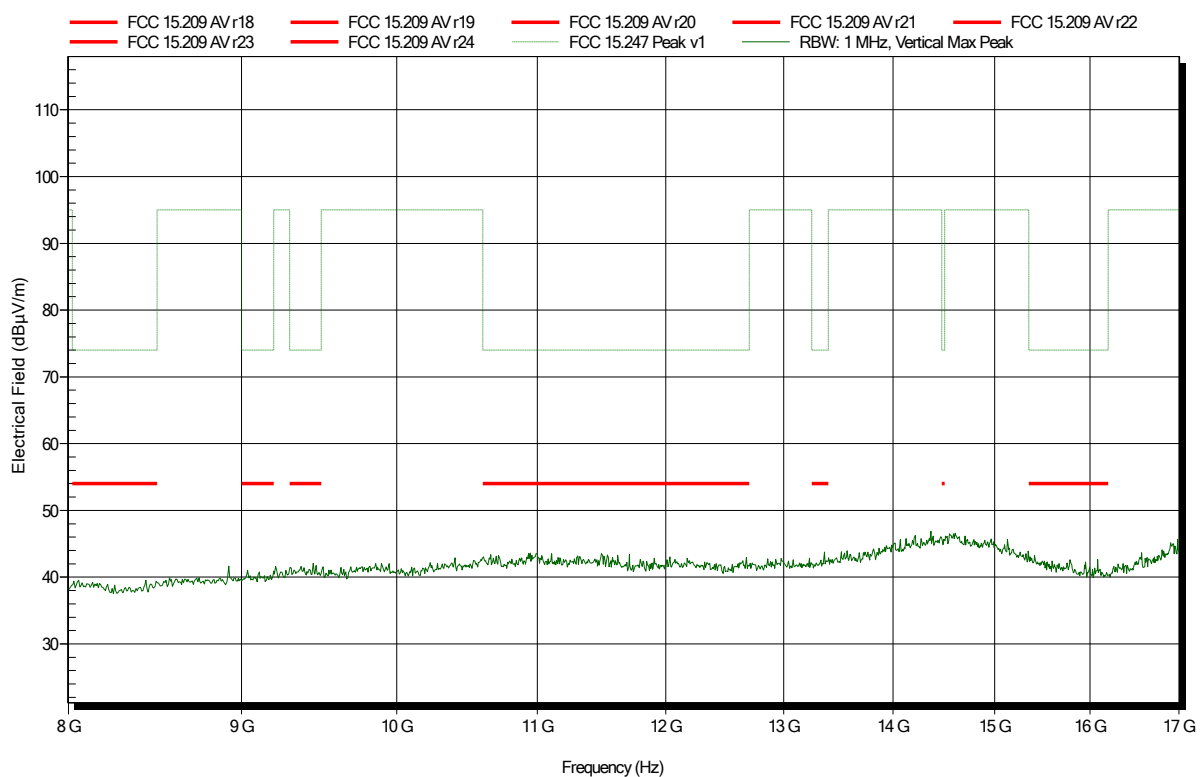


Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; 2402 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note:

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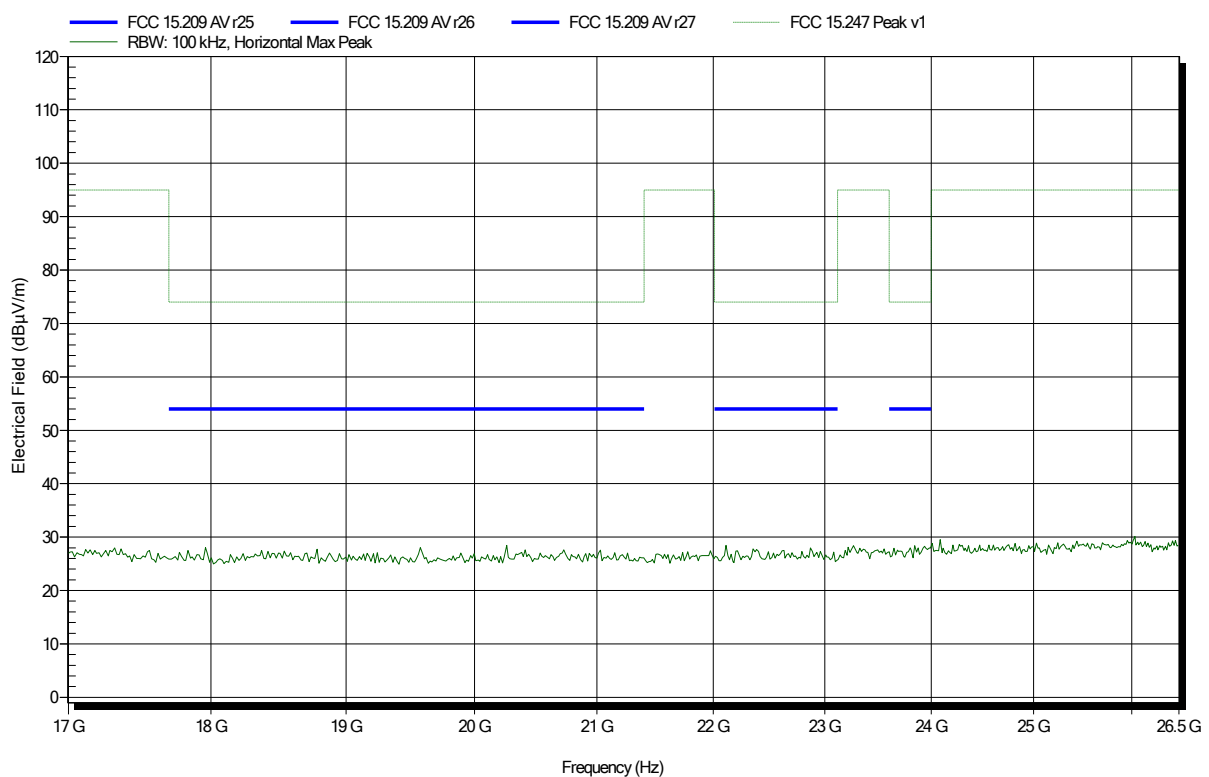


Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Amplifier Research AT4560, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; 2402 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note:

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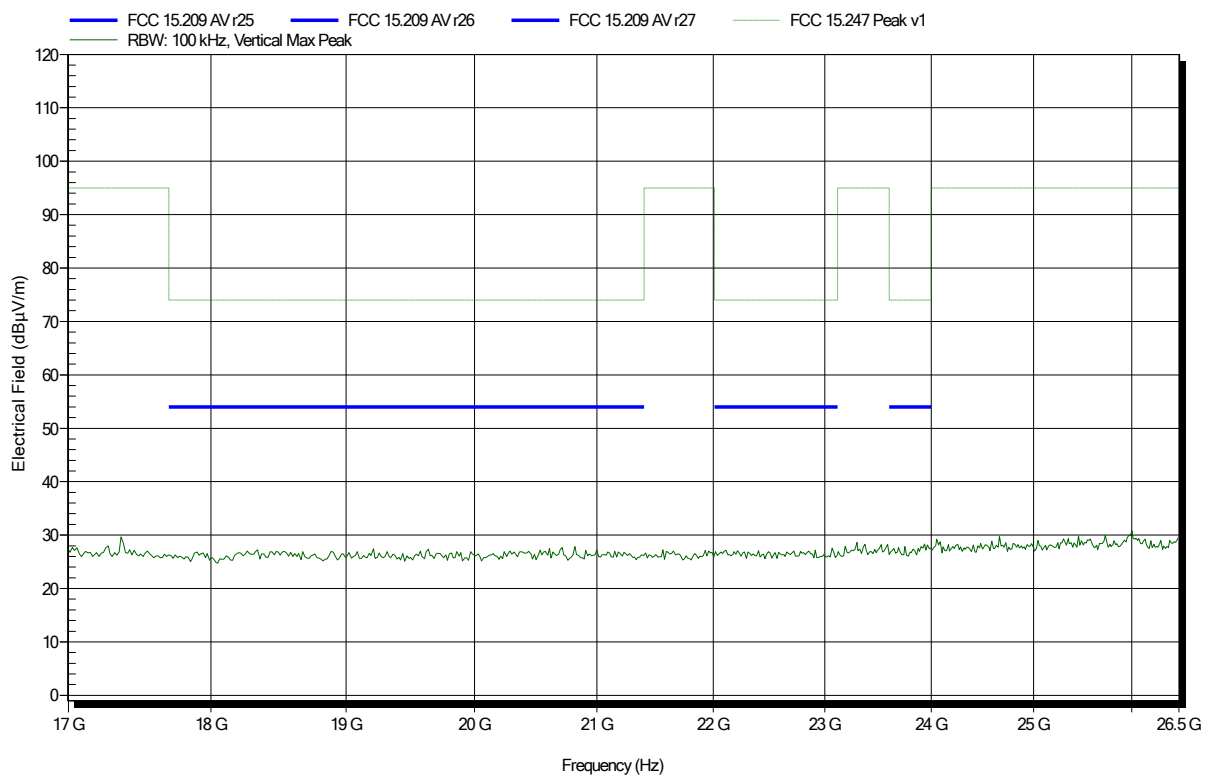


Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Amplifier Research AT4560, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; 2402 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note:

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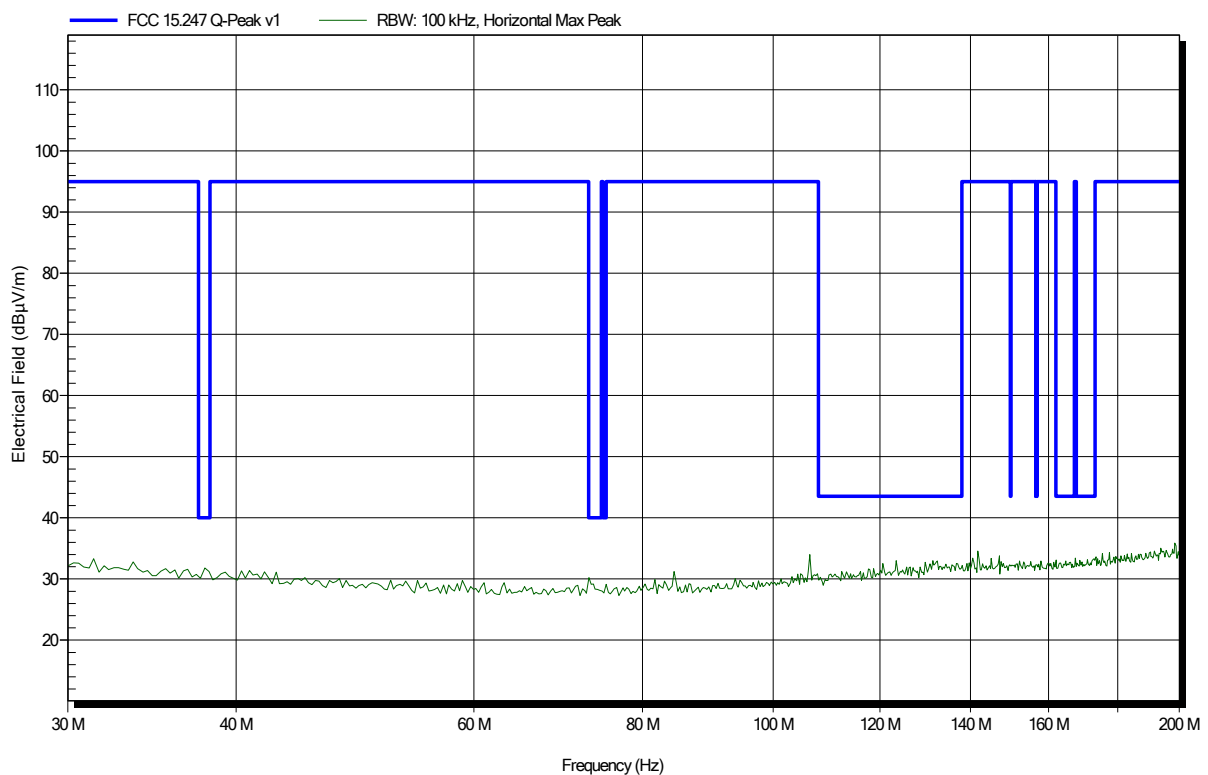


Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Rohde & Schwarz HK 116, Horizontal
Measurement distance: 3 m
Mode: TX; 2440 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note:

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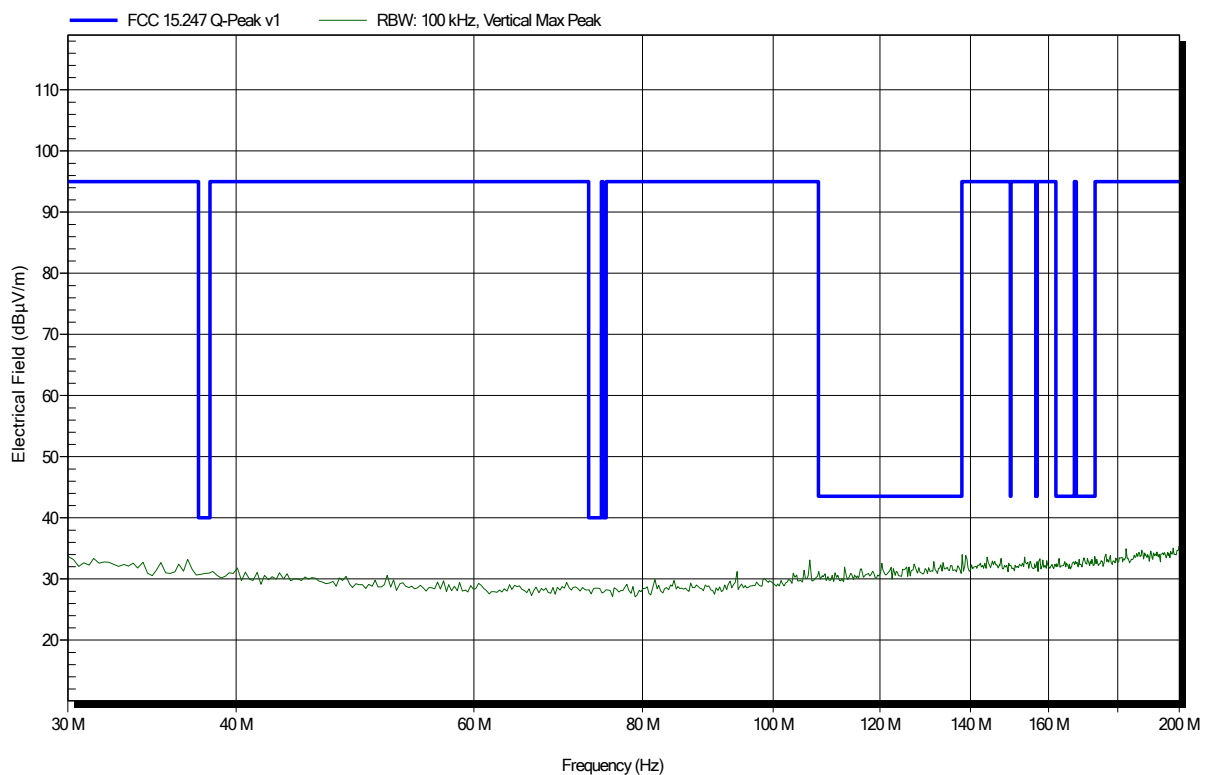


Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Rohde & Schwarz HK 116, Vertical
Measurement distance: 3 m
Mode: TX; 2440 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note:

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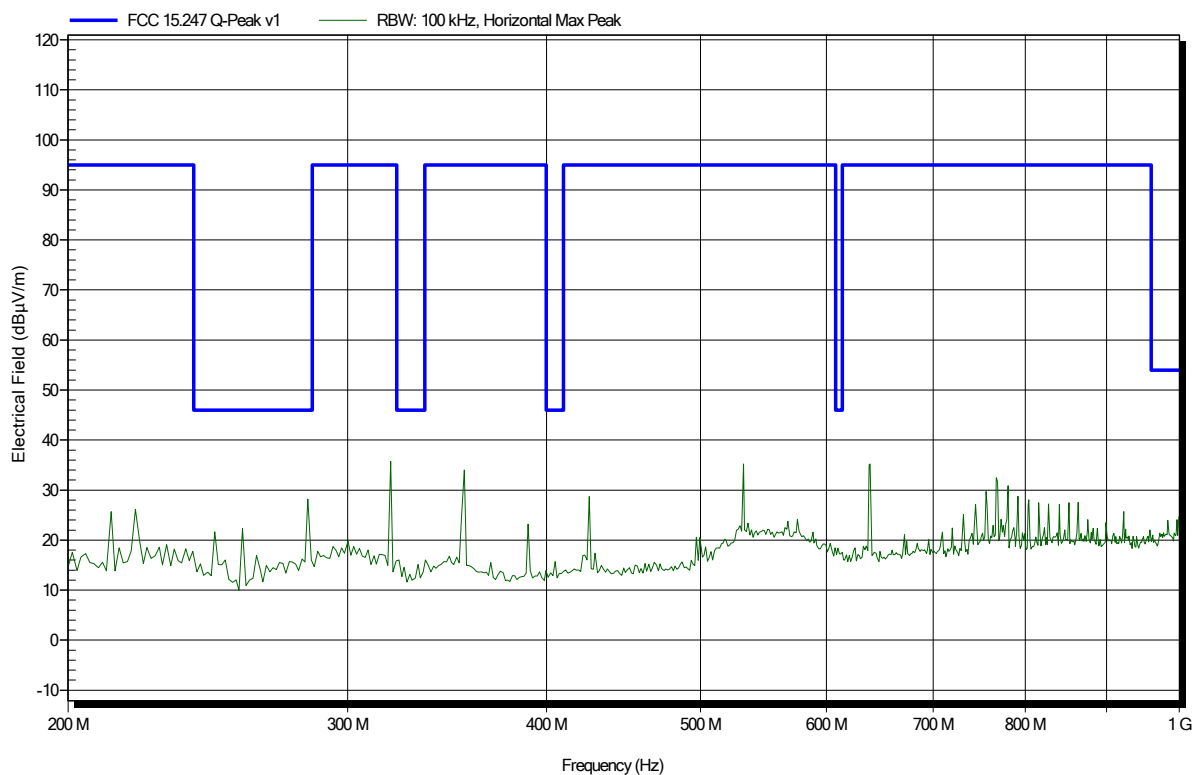


Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Rohde & Schwarz HL 223, Horizontal
Measurement distance: 3 m
Mode: TX; 2440 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note:

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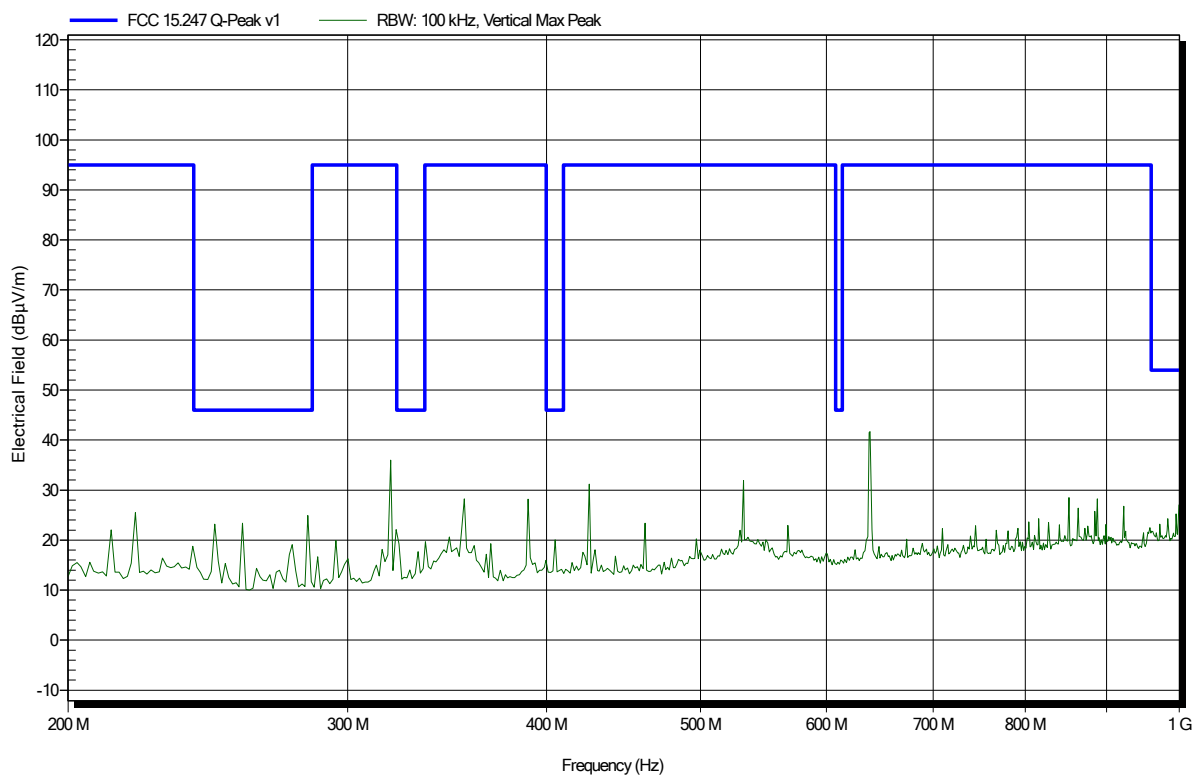


Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
 EUT Name: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: TX; 2440 MHz – 1 MBit/s, Payload 255
 Test Date: 2019-07-24
 Note:

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Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG

EUT Name: Renamic Neo Programming Device

Model: Renamic Neo

Test Site: Eurofins Product Service GmbH

Operator: Abdullah Al Jamal

Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)

Antenna: Schwarzbeck BBHA 9120D, Horizontal

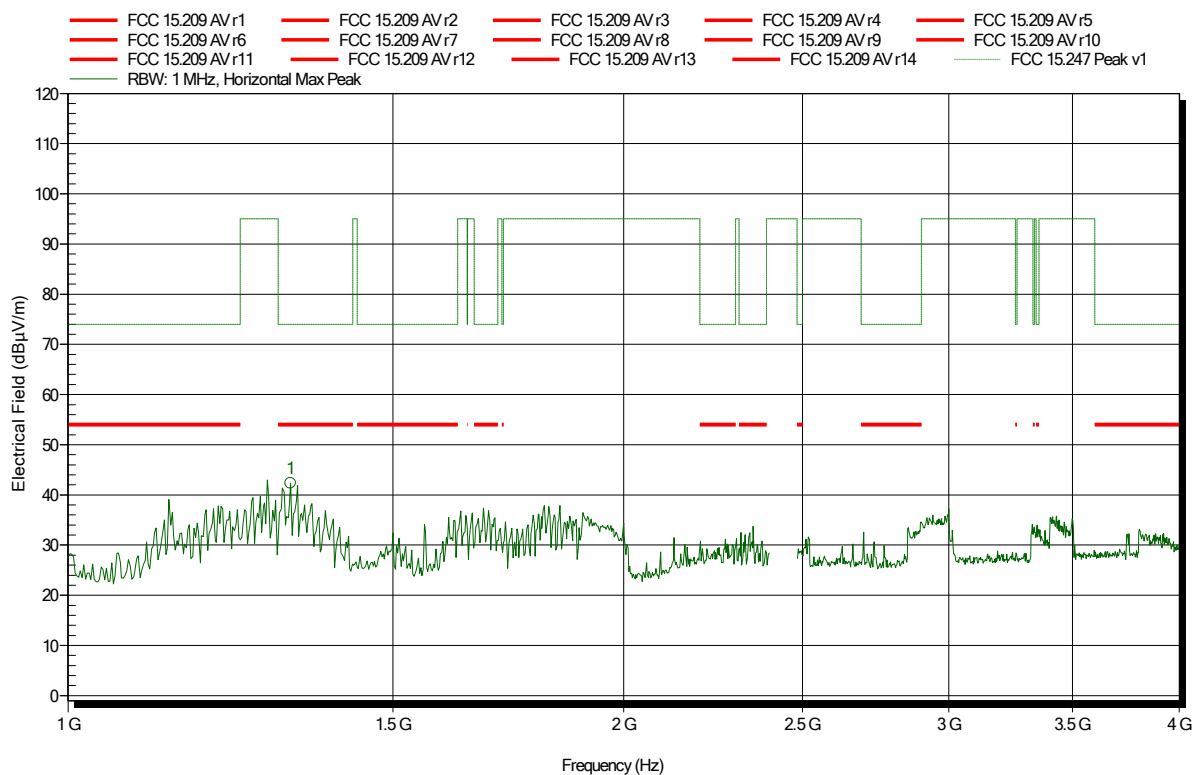
Measurement distance: 1 m converted to 3m

Mode: TX; 2440 MHz – 1 MBit/s, Payload 255

Test Date: 2019-07-24

Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.3203 GHz	42.34 dBμV/m	74 dBμV/m	-31.66 dB	Pass

Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG

EUT Name: Renamic Neo Programming Device

Model: Renamic Neo

Test Site: Eurofins Product Service GmbH

Operator: Abdullah Al Jamal

Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)

Antenna: Schwarzbeck BBHA 9120D, Vertical

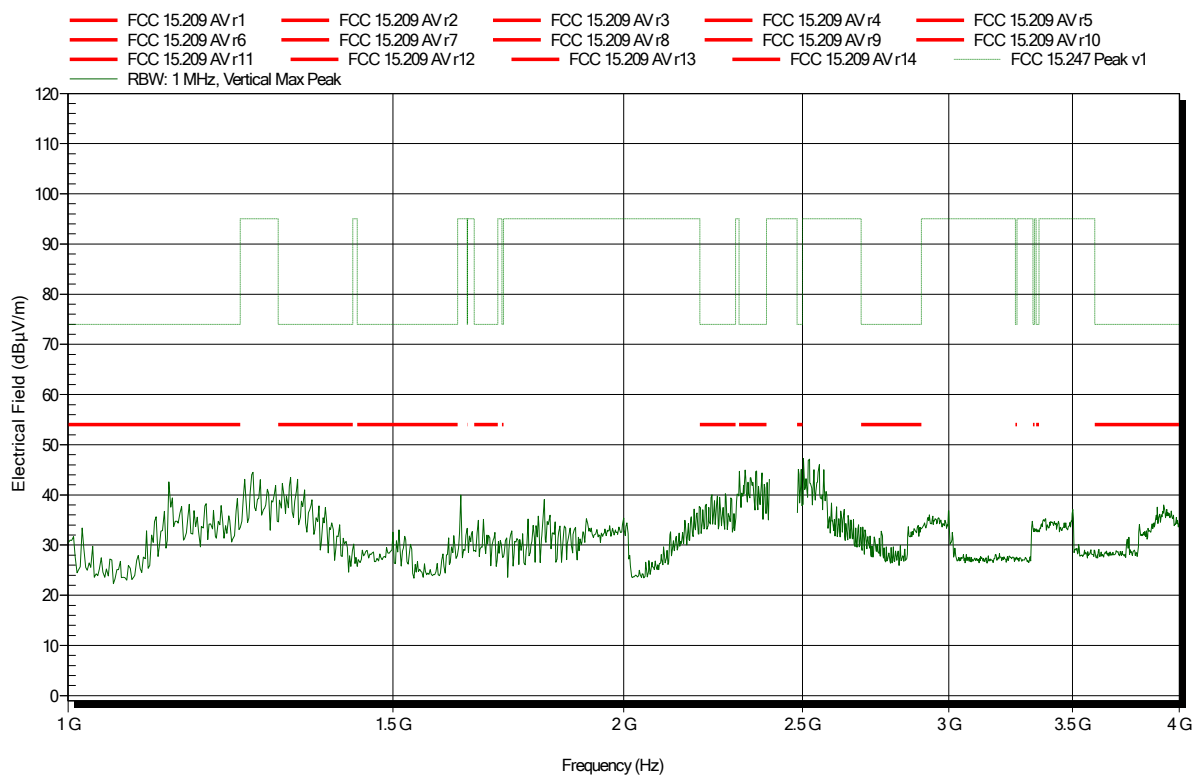
Measurement distance: 1 m converted to 3m

Mode: TX; 2440 MHz – 1 MBit/s, Payload 255

Test Date: 2019-07-24

Note:

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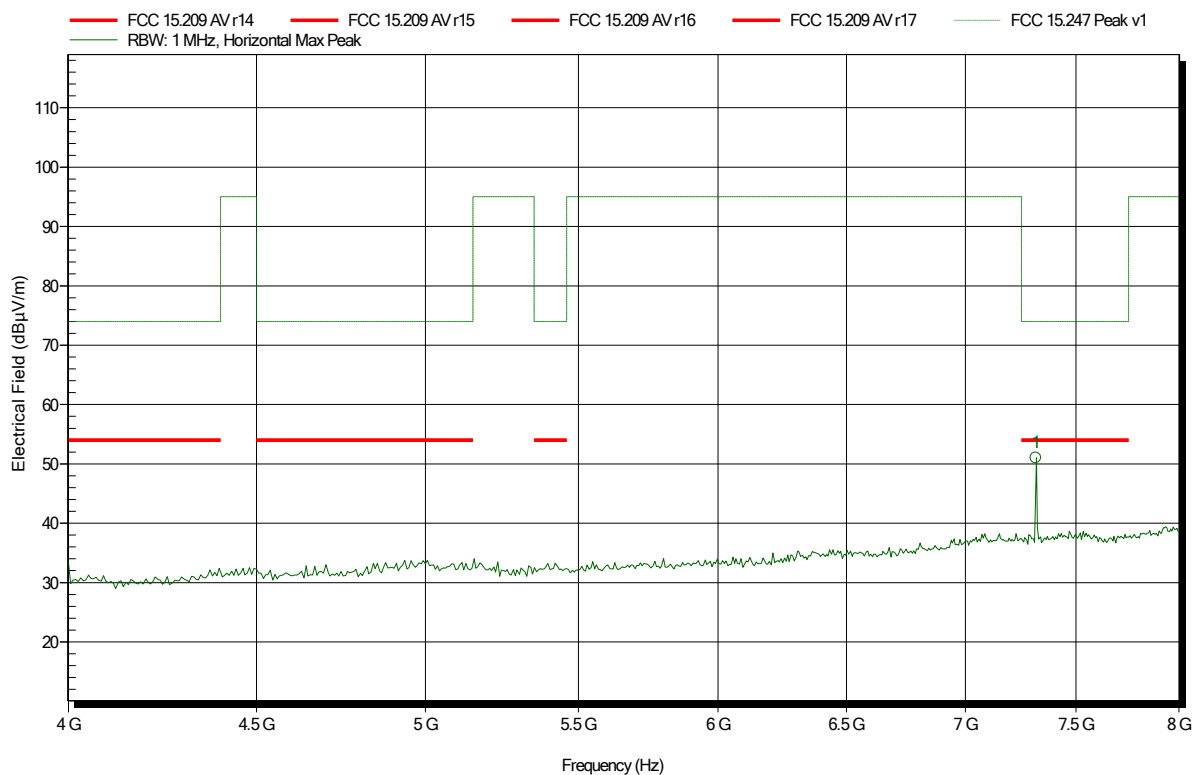


Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
 EUT Name: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; 2440 MHz – 1 MBit/s, Payload 255
 Test Date: 2019-07-24
 Note:

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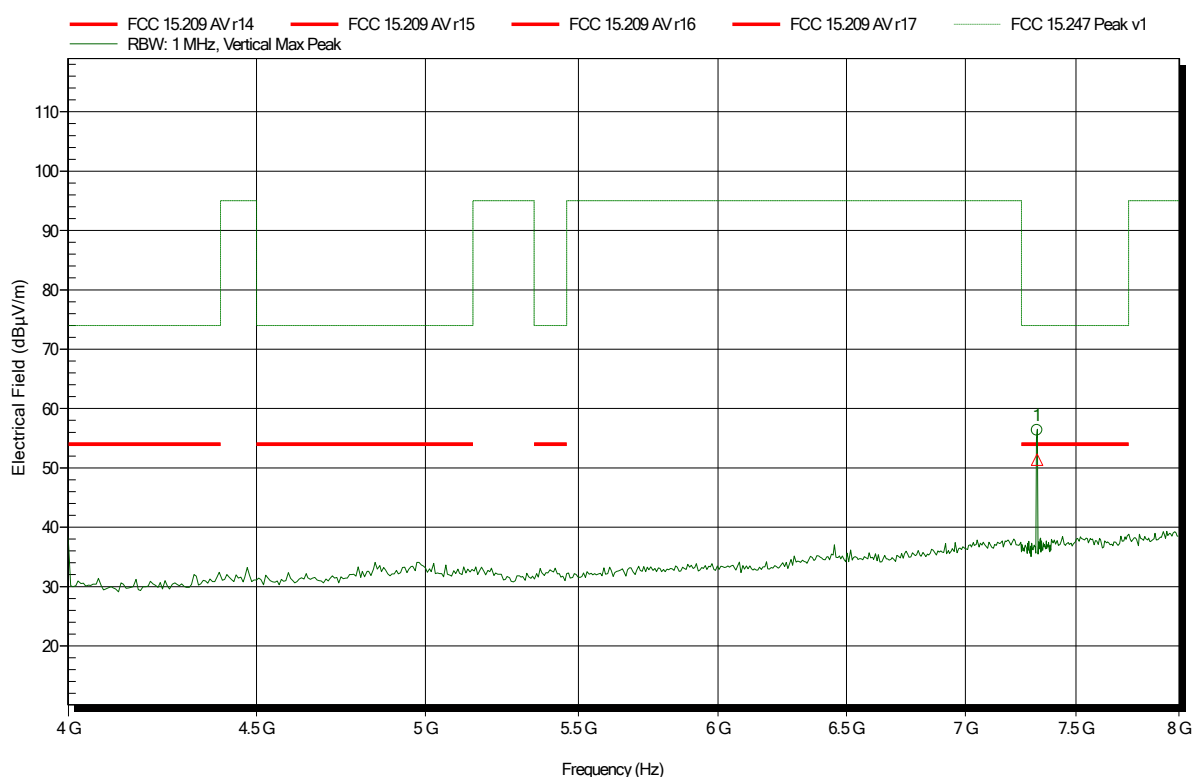


Frequency	Peak	Peak Limit	Peak Difference	Peak Status
7.315 GHz	51.02 dBµV/m	74 dBµV/m	-22.98 dB	Pass

Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 EUT Name: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; 2440 MHz – 1 MBit/s, Payload 255
 Test Date: 2019-07-24
 Note:

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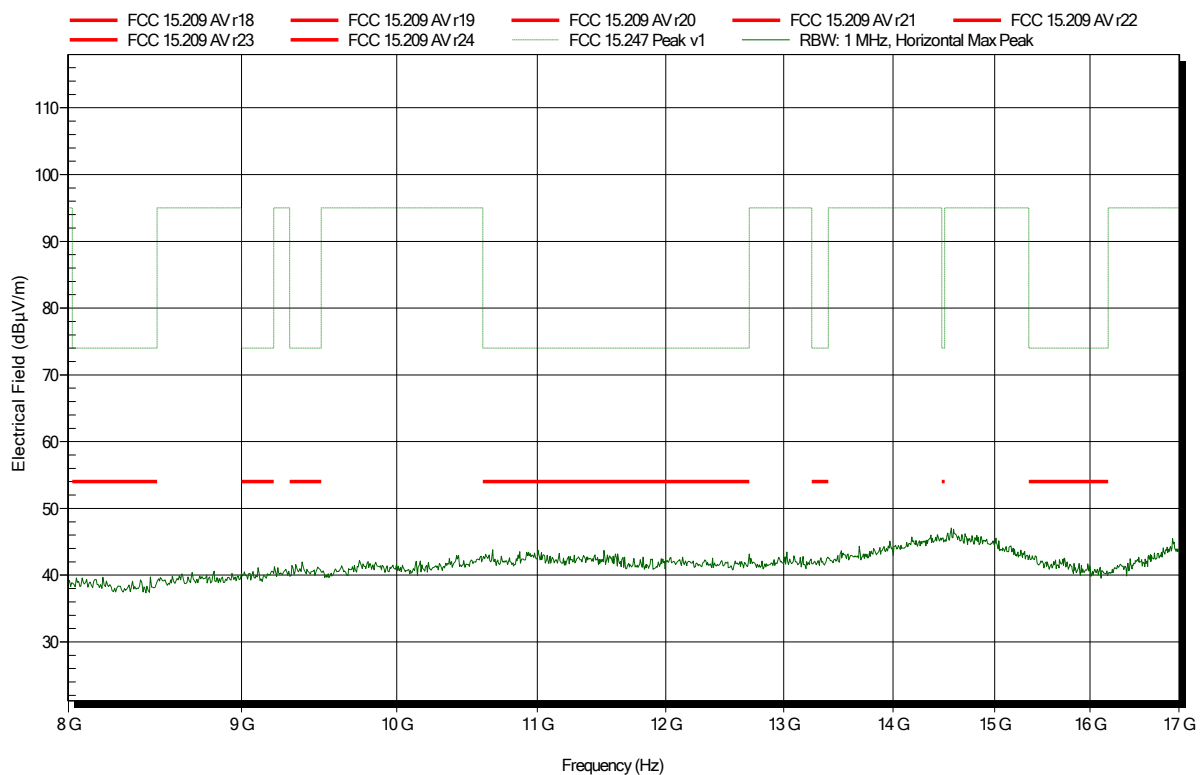
Frequency 7.321 GHz	Peak 56.33 dBµV/m	Peak Limit 74 dBµV/m	Peak Difference -17.67 dB	Peak Status Pass
Frequency 7.321 GHz	RMS 51.38 dBµV/m	RMS Limit 54 dBµV/m	RMS Difference -2.62 dB	RMS Status Pass

Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
 EUT Name: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; 2440 MHz – 1 MBit/s, Payload 255
 Test Date: 2019-07-24
 Note:

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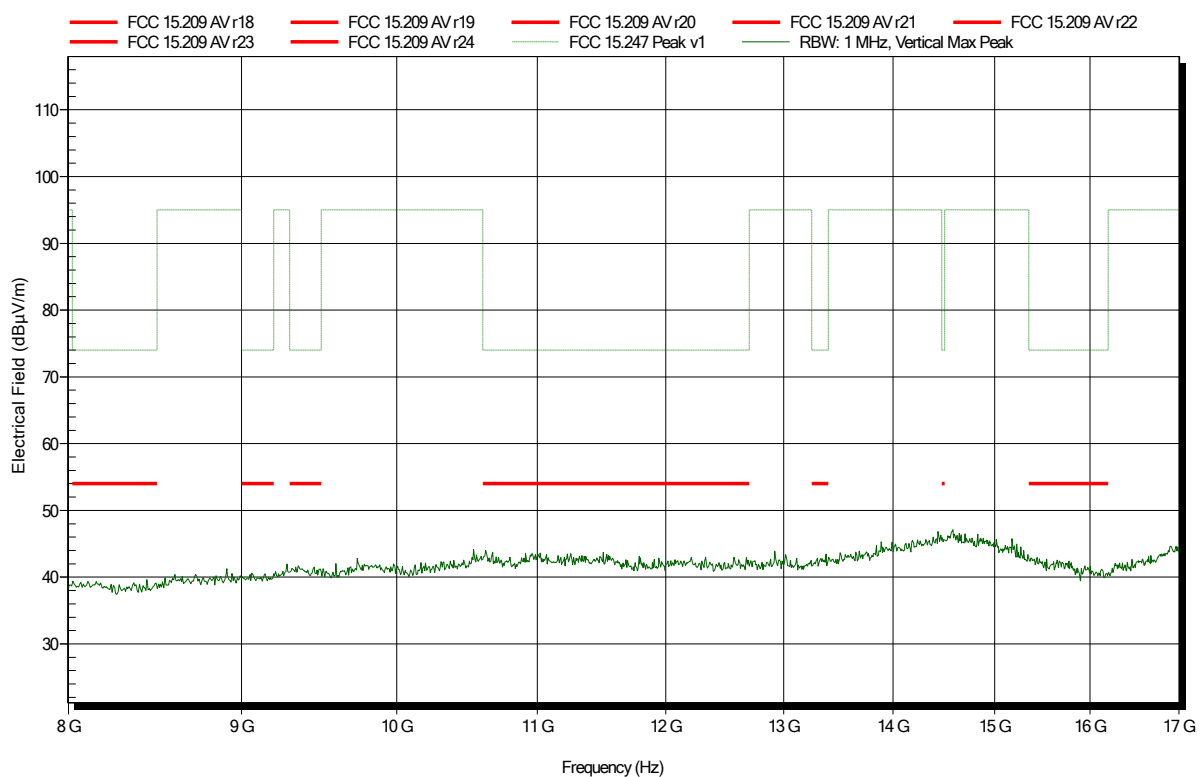


Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; 2440 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note:

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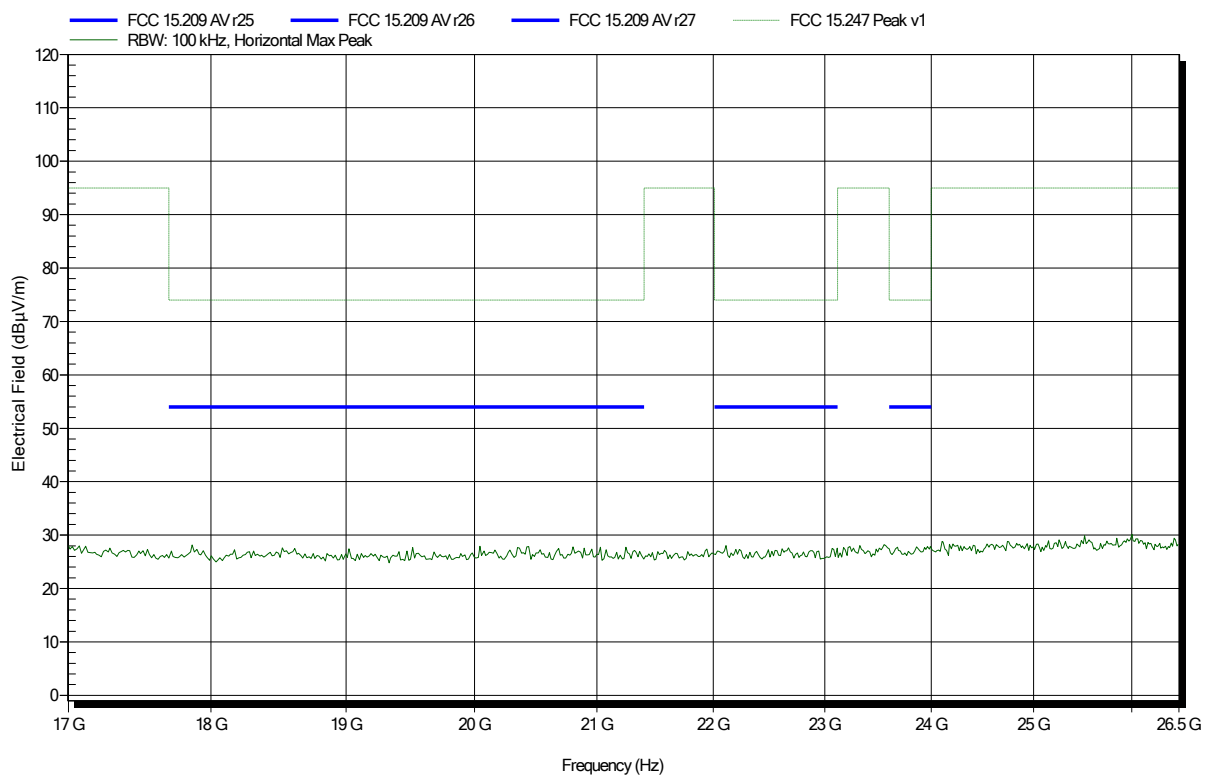


Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Amplifier Research AT4560, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; 2440 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note:

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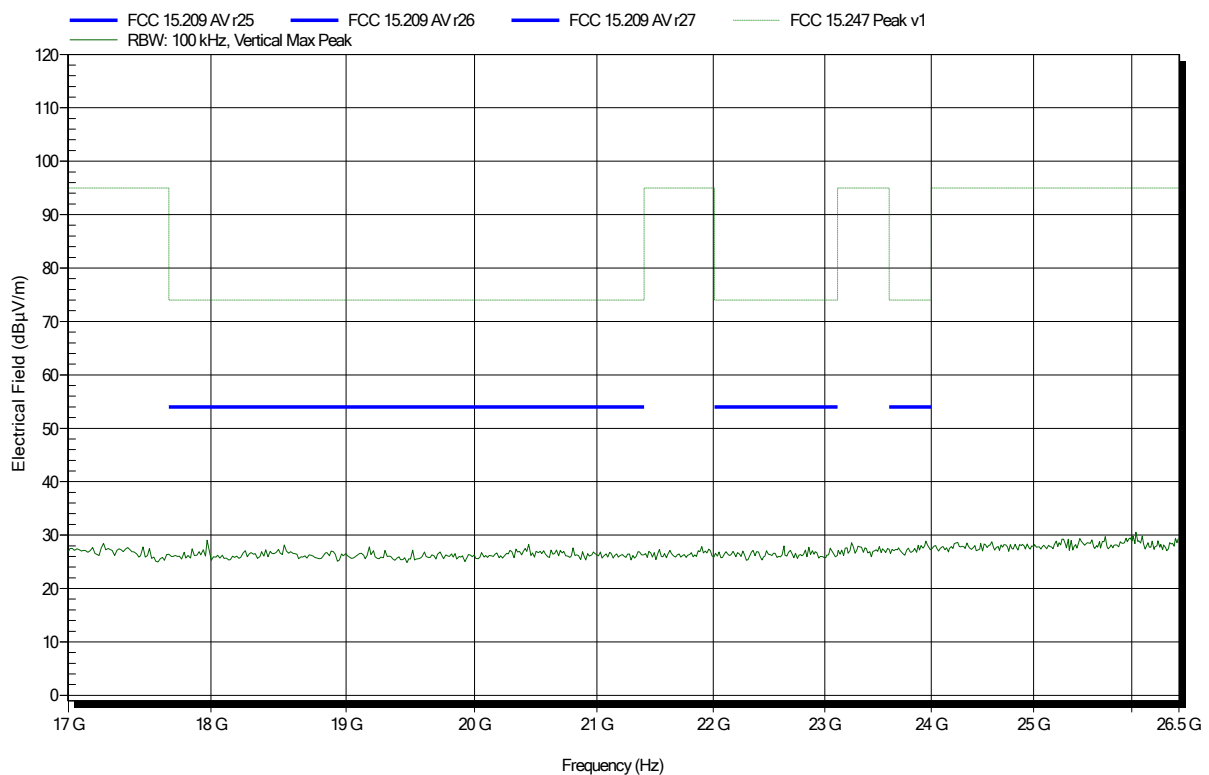


Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Amplifier Research AT4560, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; 2440 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note:

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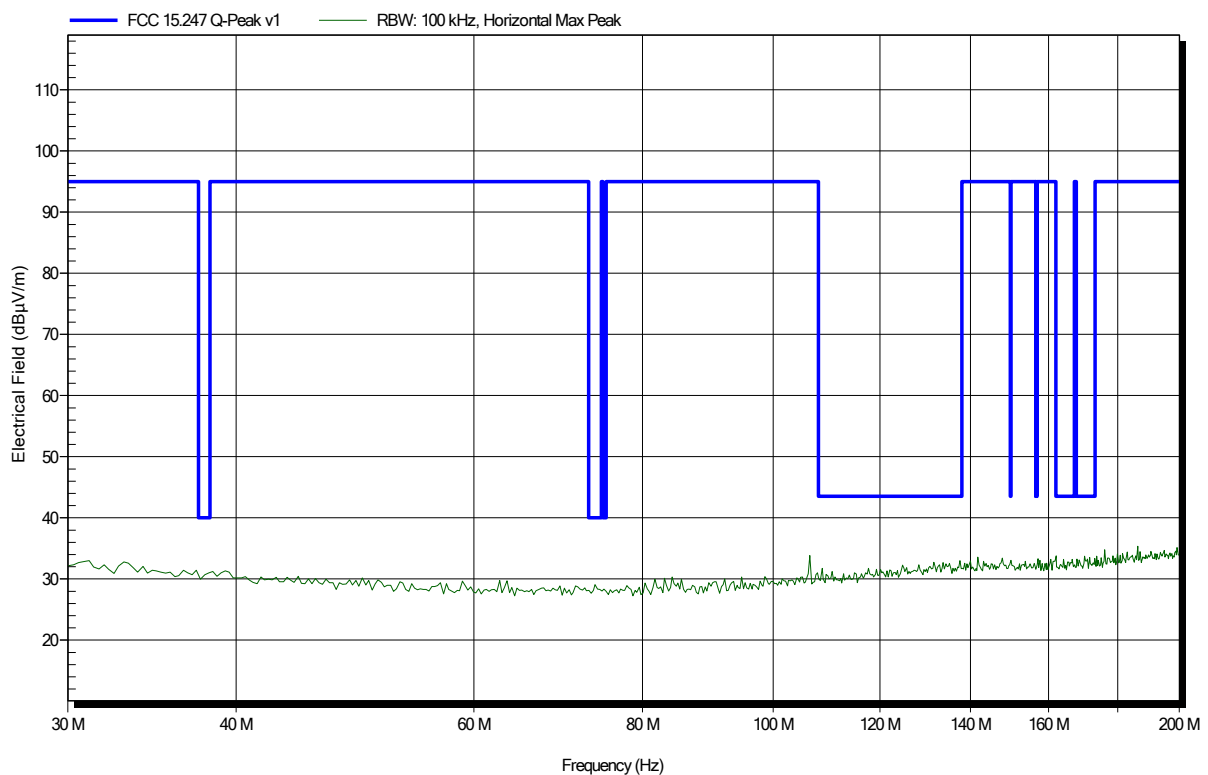


Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
 EUT Name: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
 Antenna: Rohde & Schwarz HK 116, Horizontal
 Measurement distance: 3 m
 Mode: TX; 2480 MHz – 1 MBit/s, Payload 255
 Test Date: 2019-07-24
 Note:

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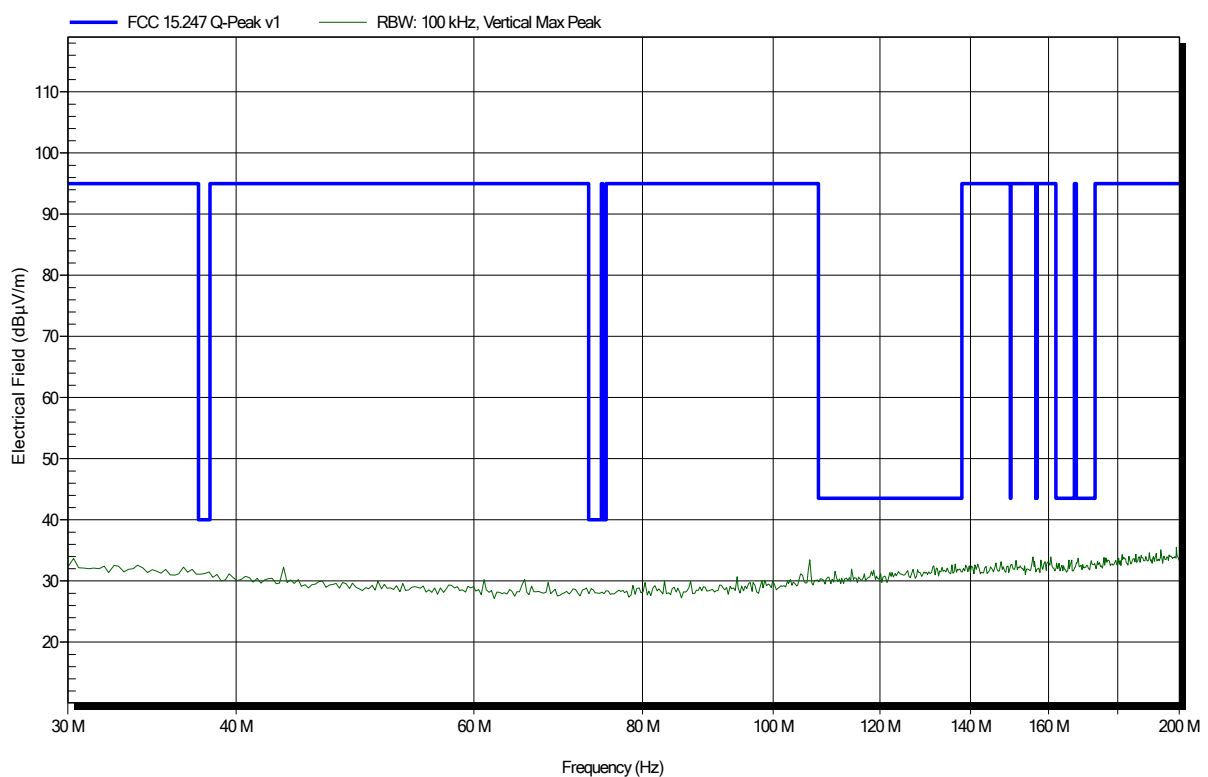


Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Rohde & Schwarz HK 116, Vertical
Measurement distance: 3 m
Mode: TX; 2480 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note:

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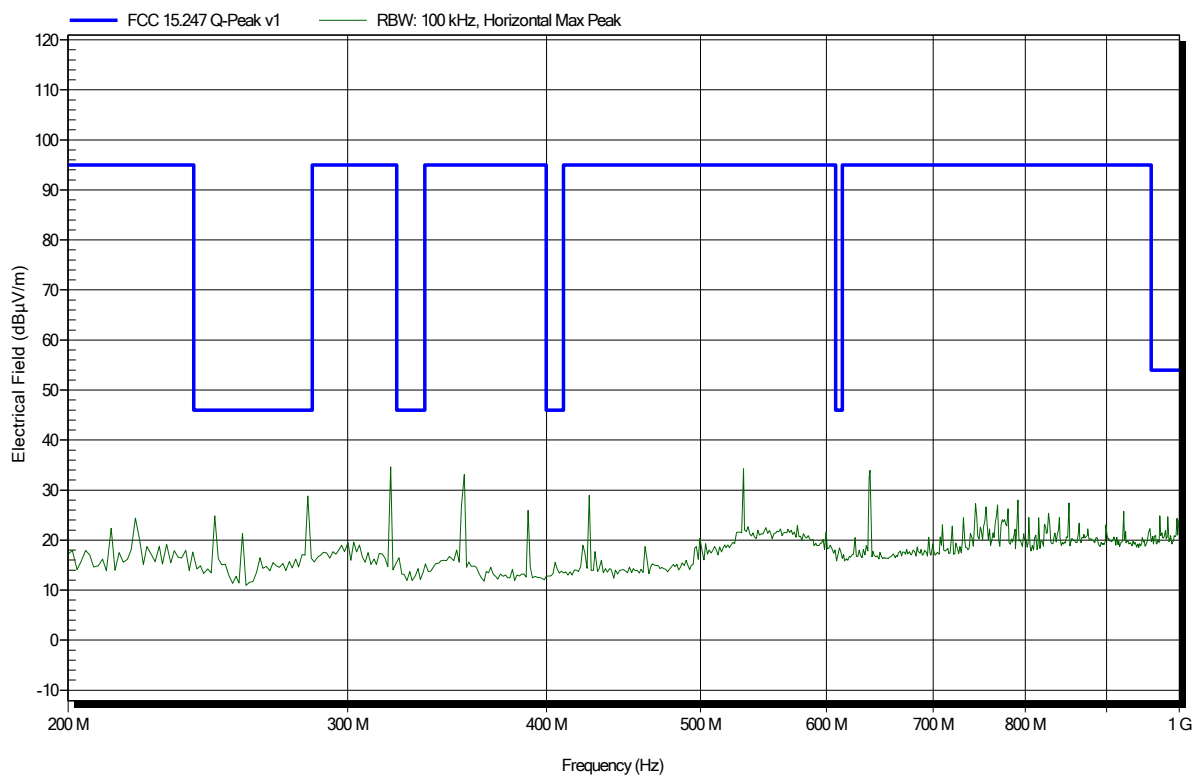


Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Rohde & Schwarz HL 223, Horizontal
Measurement distance: 3 m
Mode: TX; 2480 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note:

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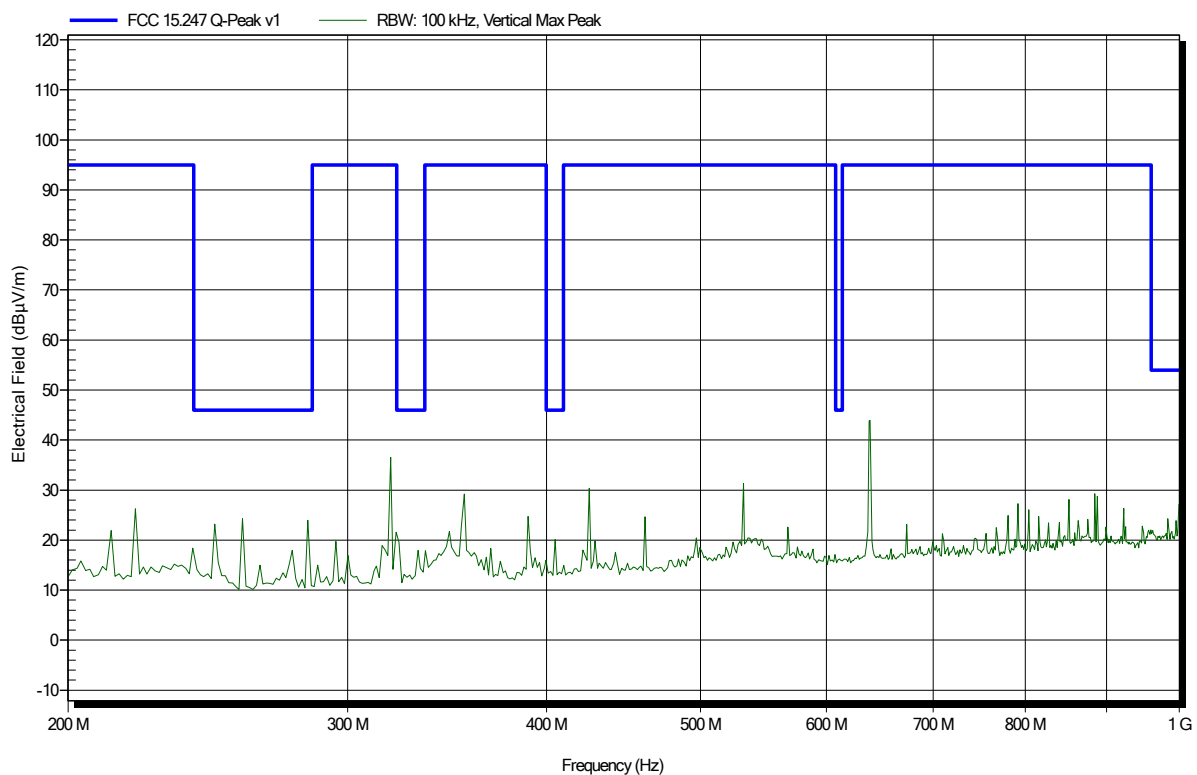


Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Rohde & Schwarz HL 223, Vertical
Measurement distance: 3 m
Mode: TX; 2480 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note:

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Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG

EUT Name: Renamic Neo Programming Device

Model: Renamic Neo

Test Site: Eurofins Product Service GmbH

Operator: Abdullah Al Jamal

Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)

Antenna: Schwarzbeck BBHA 9120D, Horizontal

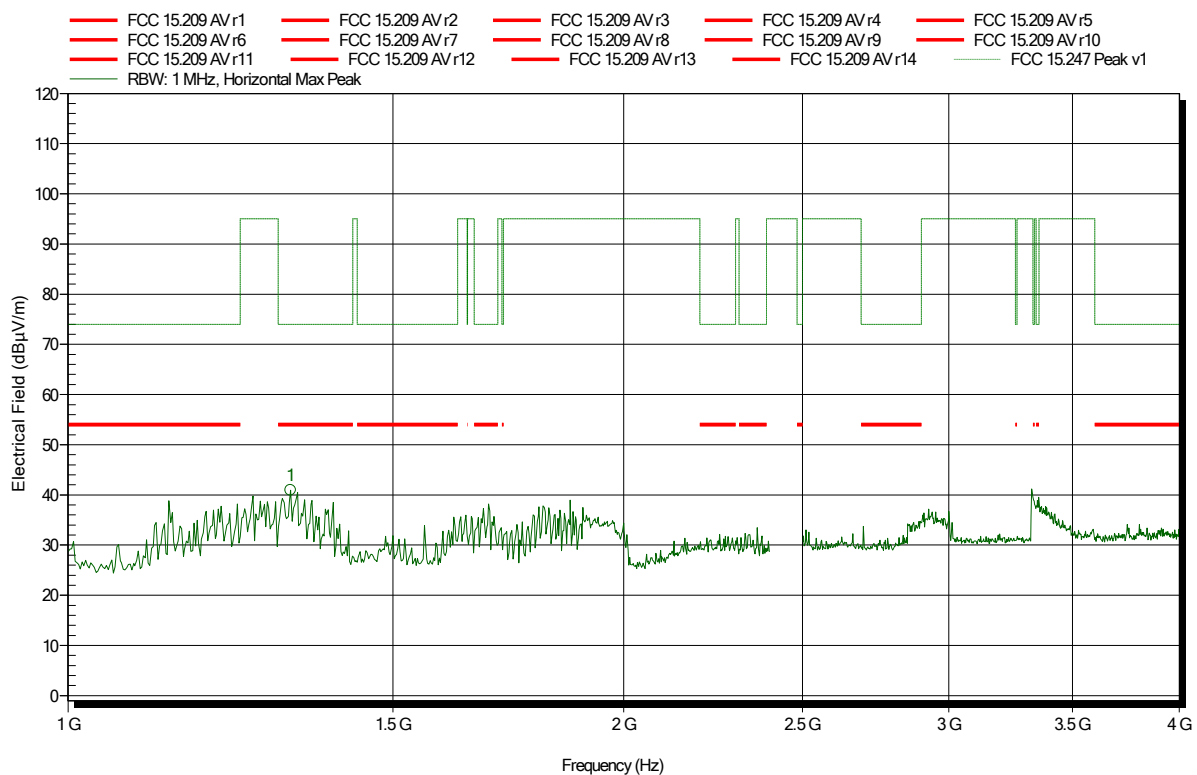
Measurement distance: 1 m converted to 3m

Mode: TX; 2480 MHz – 1 MBit/s, Payload 255

Test Date: 2019-07-24

Note:

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Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.32 GHz	40.92 dBµV/m	74 dBµV/m	-33.08 dB	Pass

Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG

EUT Name: Renamic Neo Programming Device

Model: Renamic Neo

Test Site: Eurofins Product Service GmbH

Operator: Abdullah Al Jamal

Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)

Antenna: Schwarzbeck BBHA 9120D, Vertical

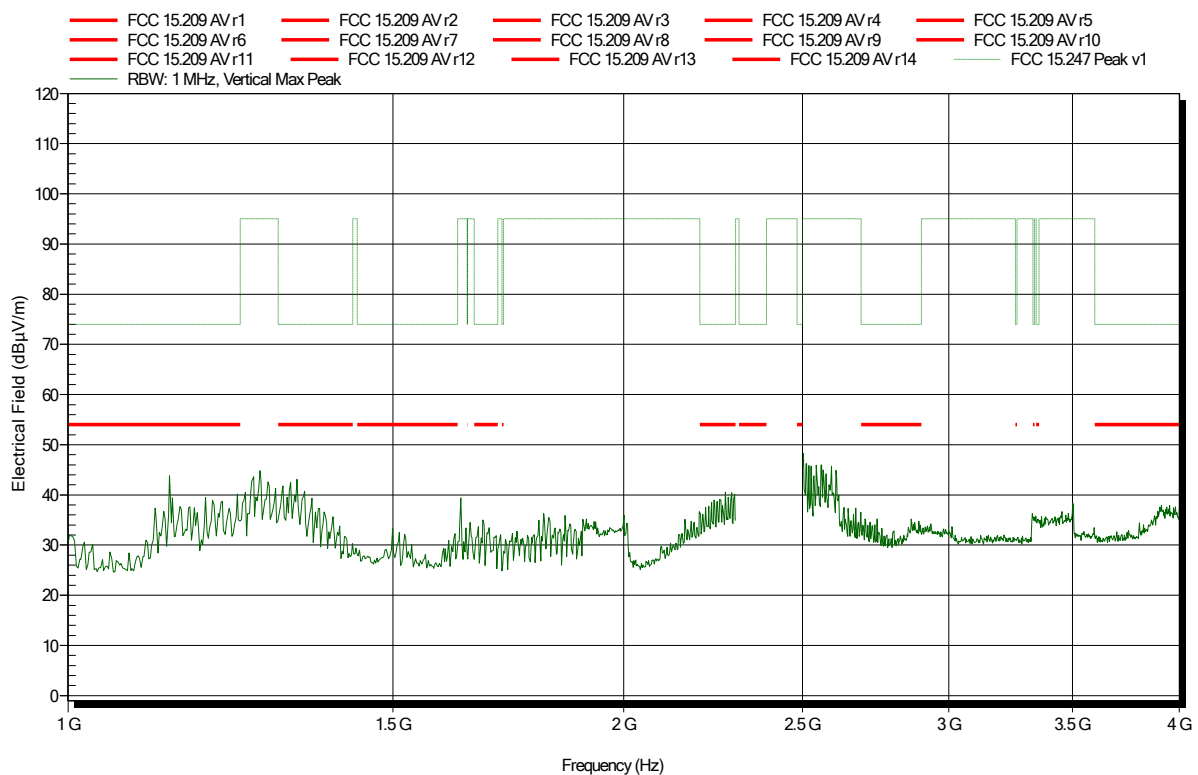
Measurement distance: 1 m converted to 3m

Mode: TX; 2480 MHz – 1 MBit/s, Payload 255

Test Date: 2019-07-24

Note:

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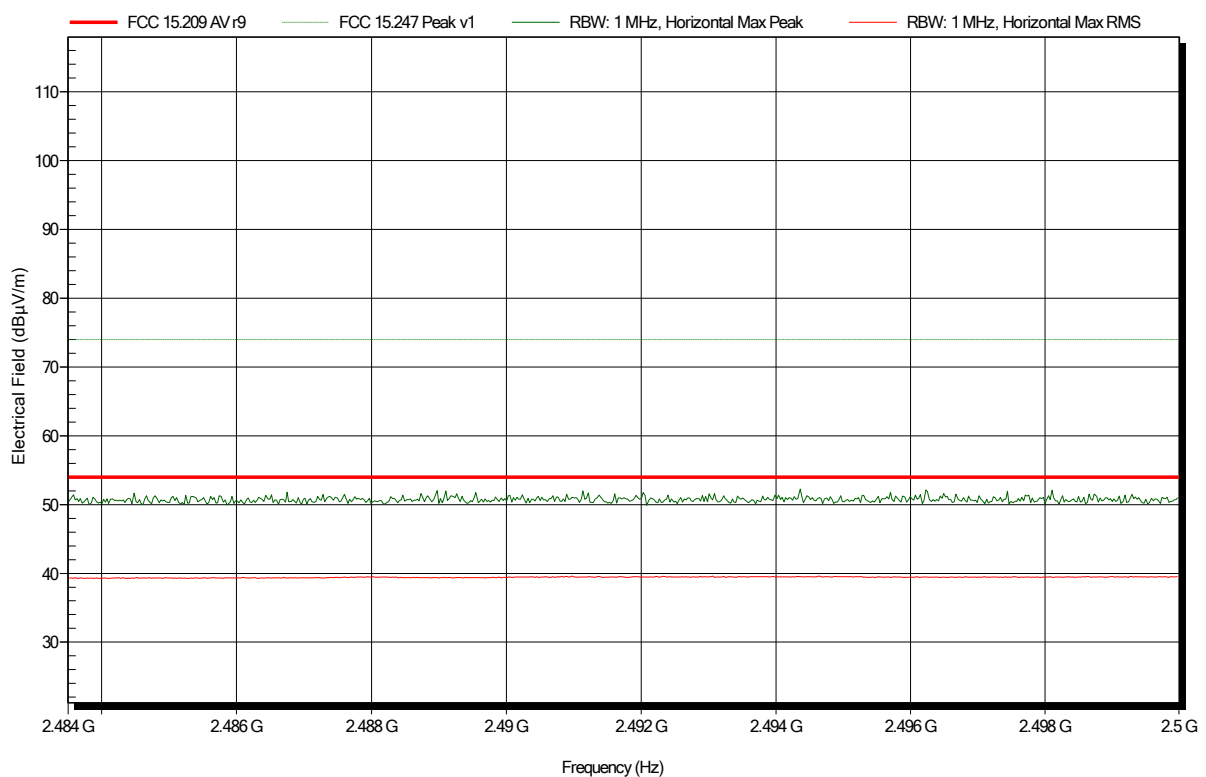


Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; 2480 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note: upper bandedge

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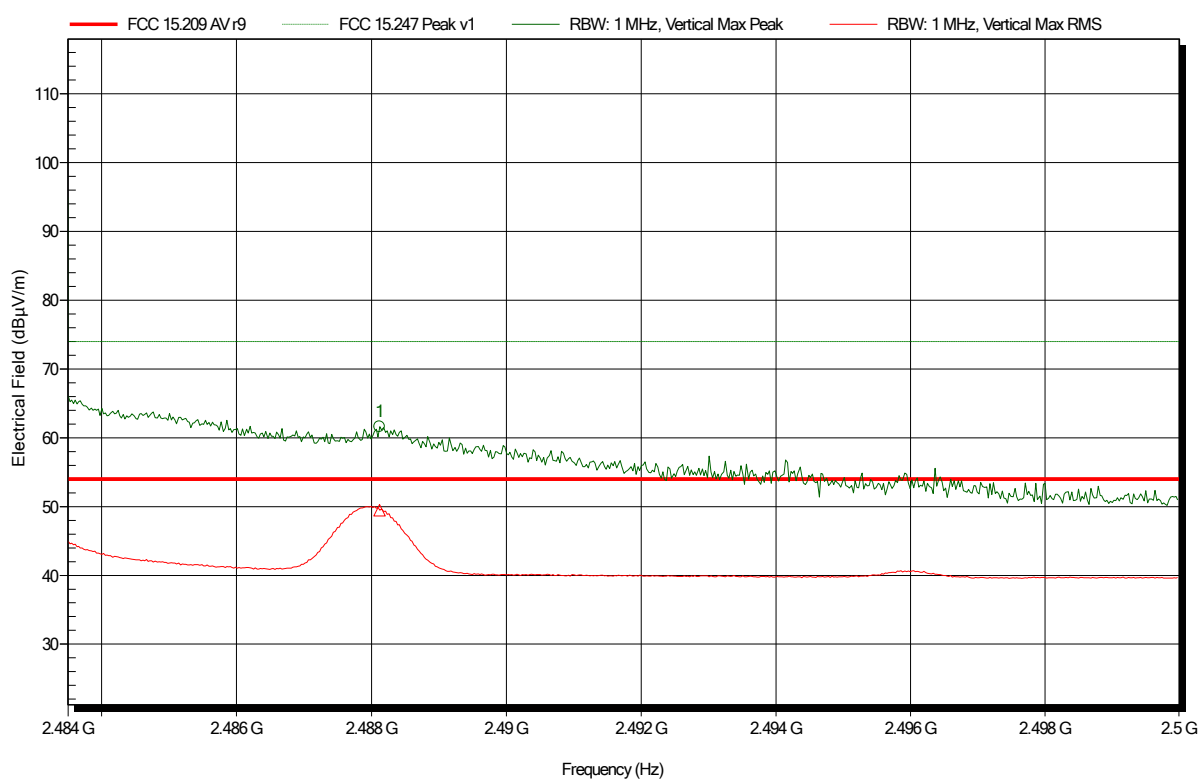


Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
 EUT Name: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; 2480 MHz – 1 MBit/s, Payload 255
 Test Date: 2019-07-24
 Note: upper bandedge

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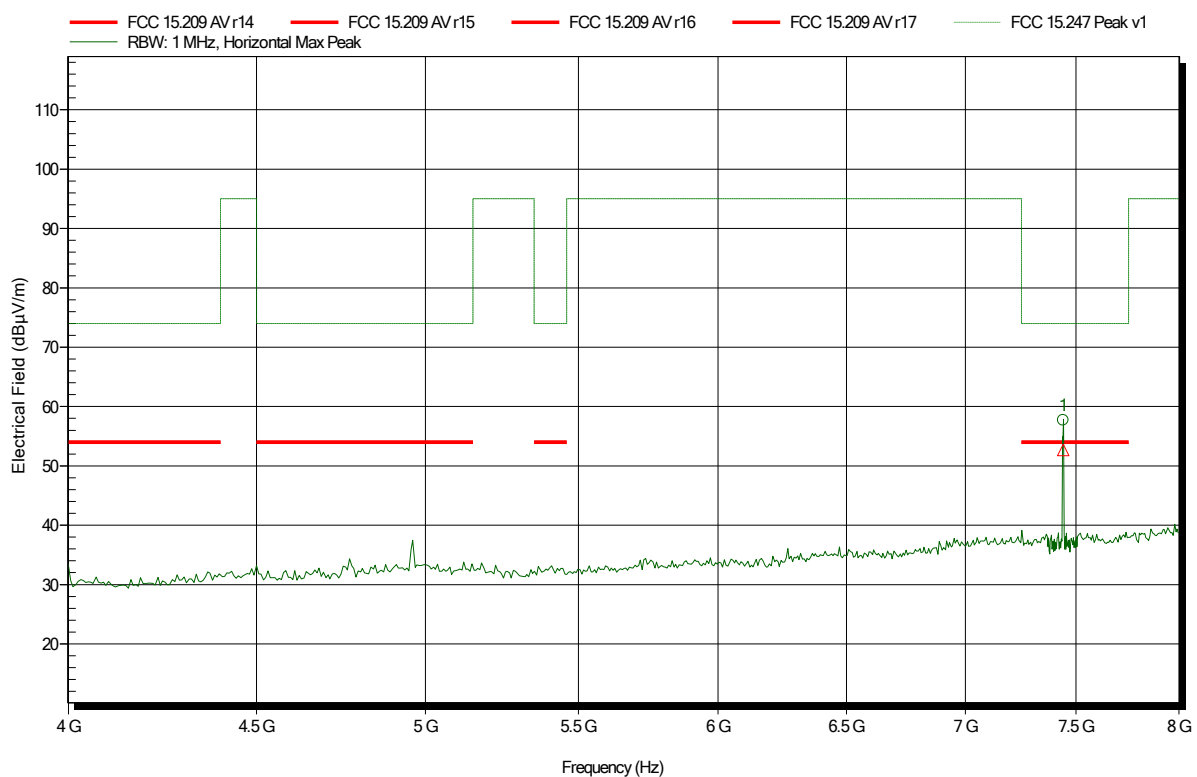
Frequency 2.4881 GHz	Peak 61.6 dBµV/m	Peak Limit 74 dBµV/m	Peak Difference -12.4 dB	Peak Status Pass
Frequency 2.4881 GHz	RMS 49.46 dBµV/m	RMS Limit 54 dBµV/m	RMS Difference -4.54 dB	RMS Status Pass

Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; 2480 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note:

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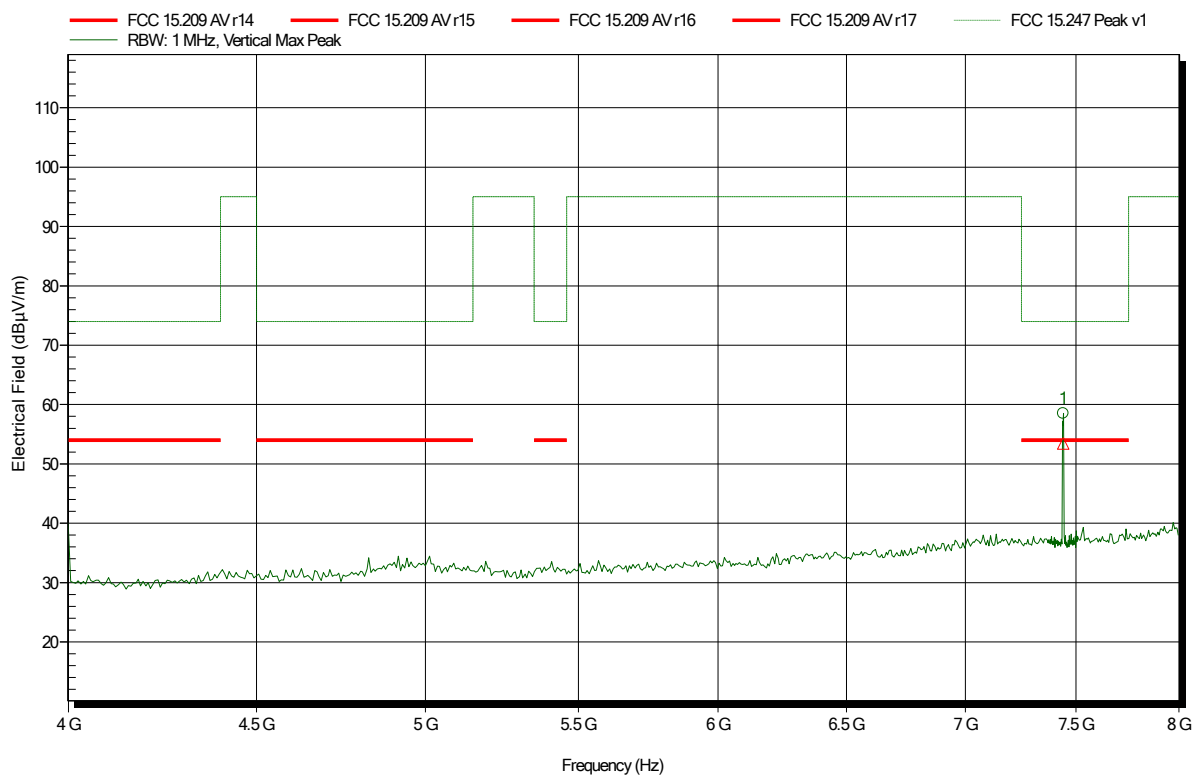
Frequency 7.441 GHz	Peak 57.67 dBµV/m	Peak Limit 74 dBµV/m	Peak Difference -16.33 dB	Peak Status Pass
Frequency 7.441 GHz	RMS 52.68 dBµV/m	RMS Limit 54 dBµV/m	RMS Difference -1.32 dB	RMS Status Pass

Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
 EUT Name: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; 2480 MHz – 1 MBit/s, Payload 255
 Test Date: 2019-07-24
 Note:

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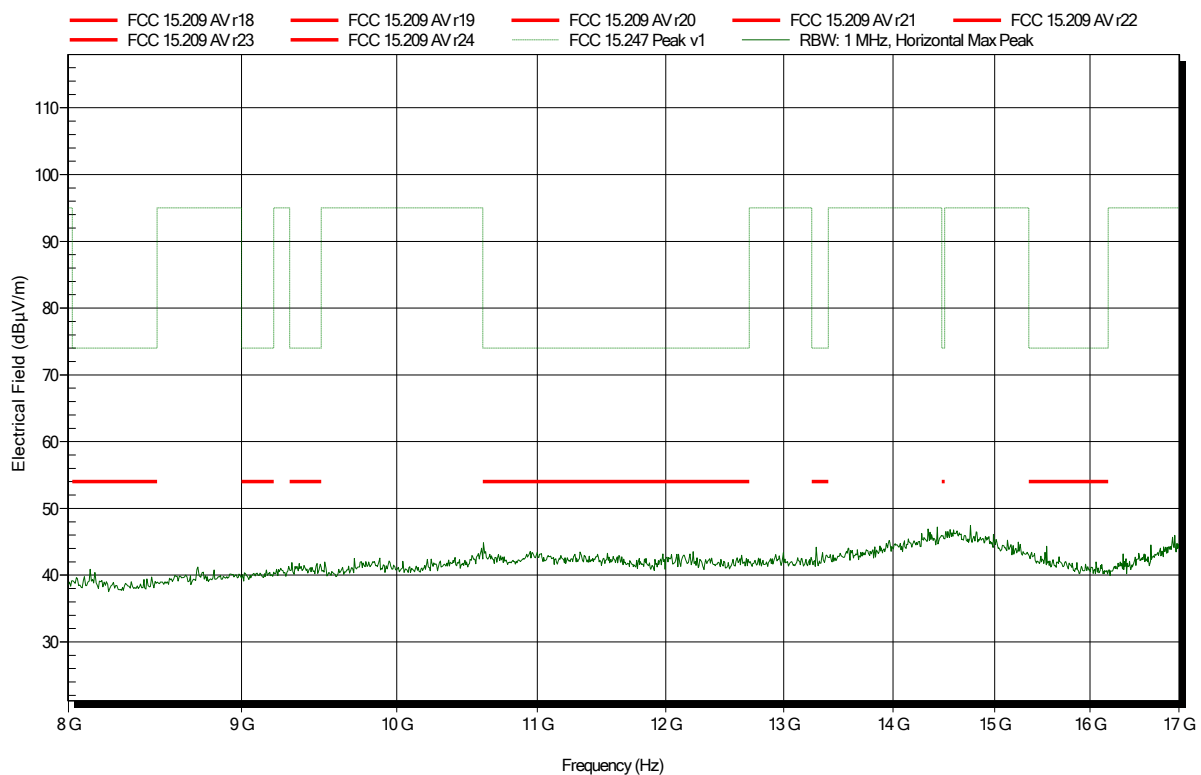
Frequency 7.441 GHz	Peak 58.52 dBµV/m	Peak Limit 74 dBµV/m	Peak Difference -15.48 dB	Peak Status Pass
Frequency 7.441 GHz	RMS 53.41 dBµV/m	RMS Limit 54 dBµV/m	RMS Difference -0.59 dB	RMS Status Pass

Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; 2480 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note:

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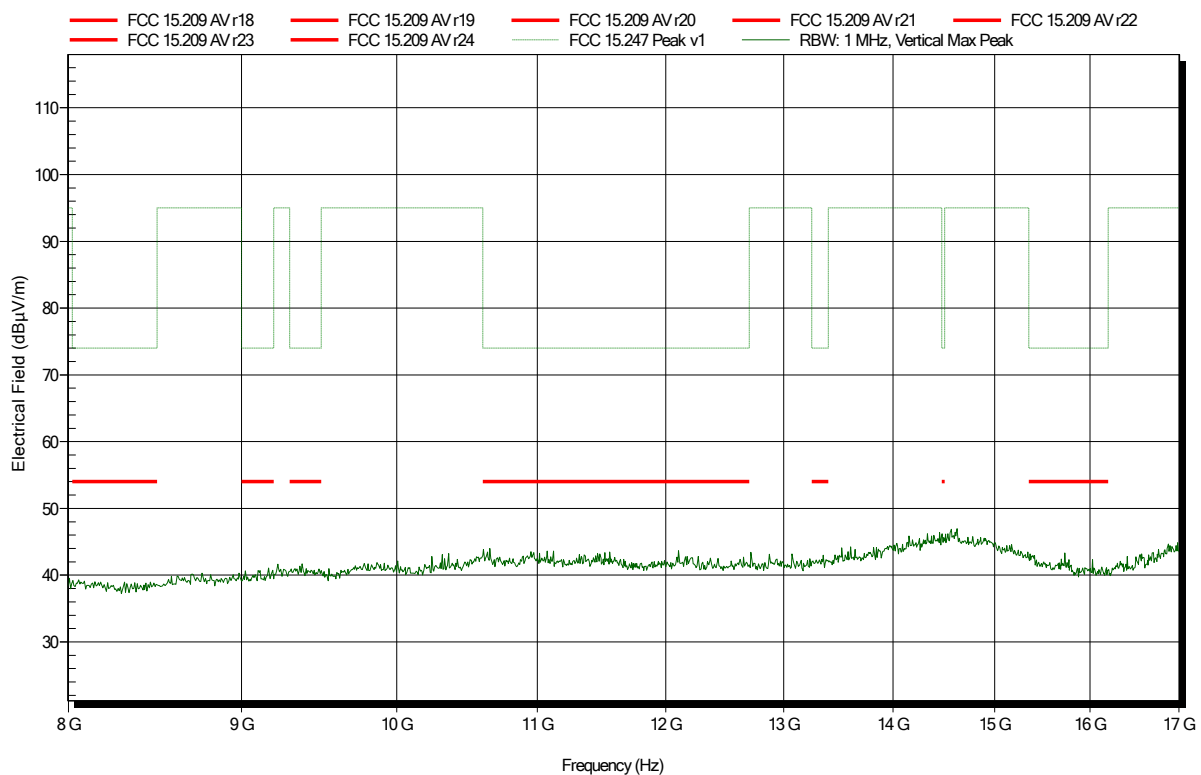


Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; 2480 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note:

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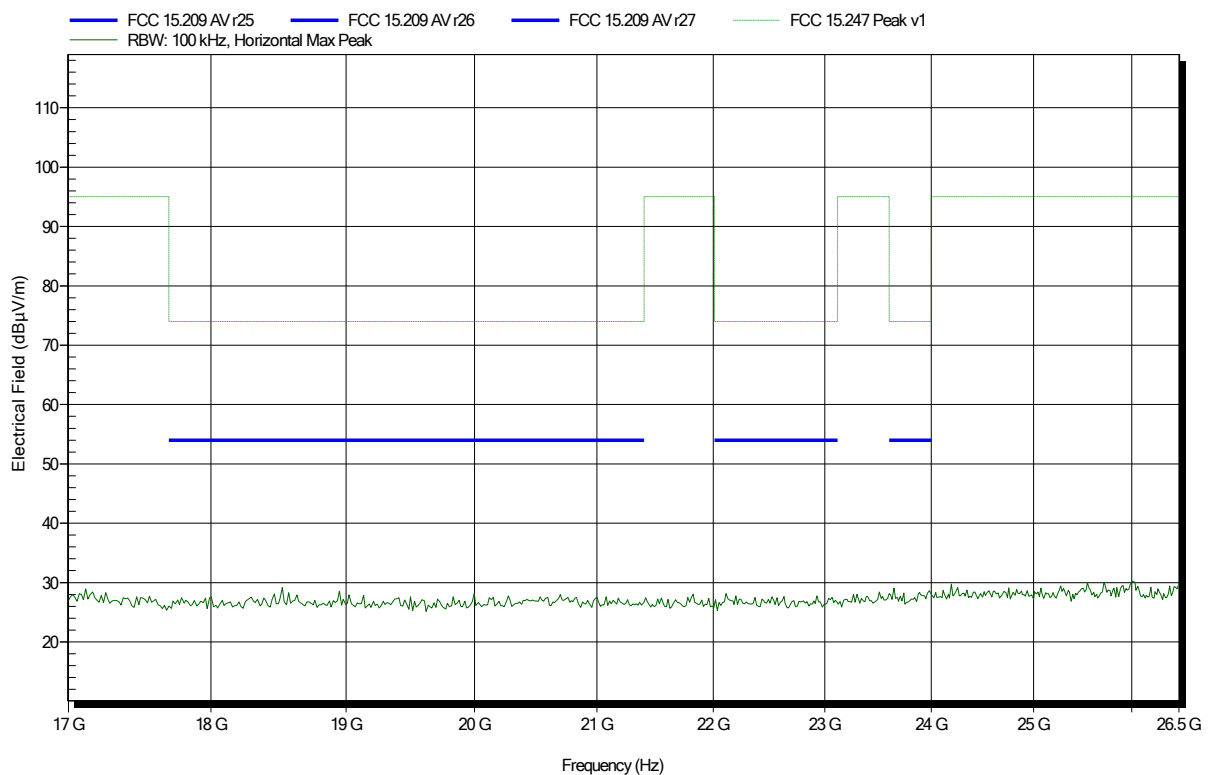


Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
 EUT Name: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
 Antenna: Amplifier Research AT4560, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; 2480 MHz – 1 MBit/s, Payload 255
 Test Date: 2019-07-24
 Note:

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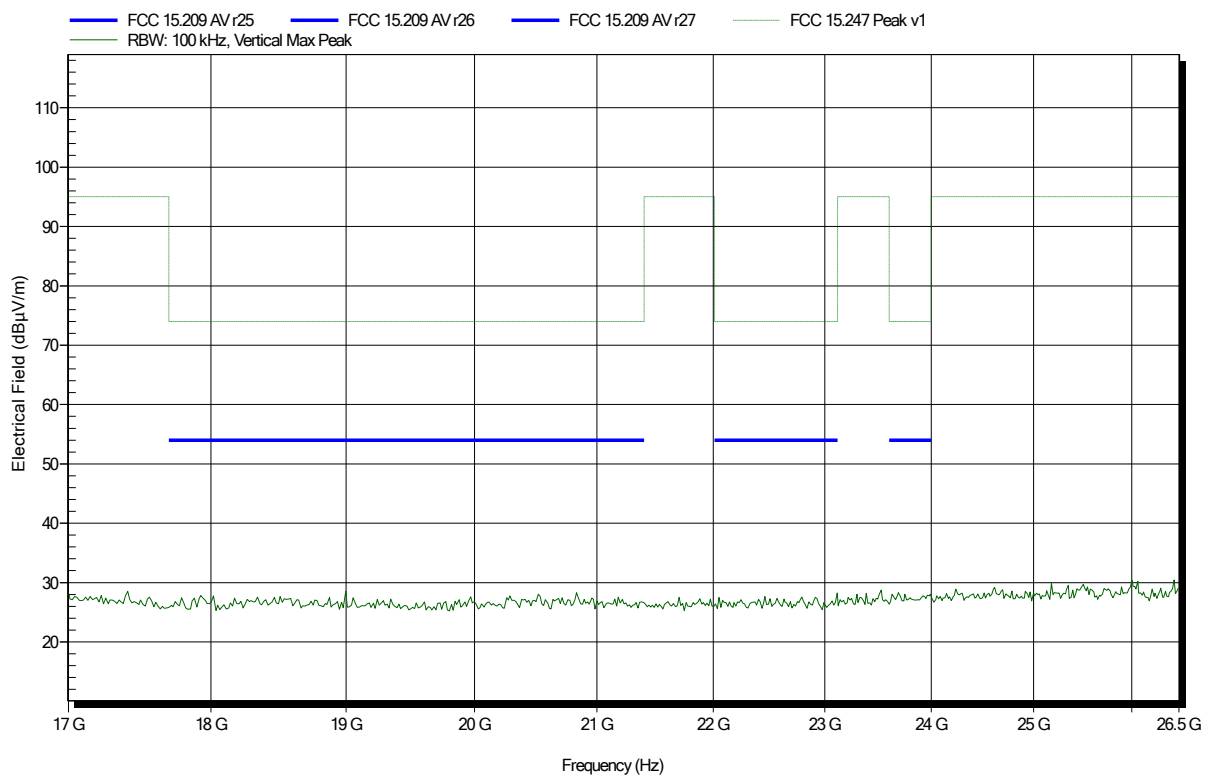


Spurious emissions according to FCC 47 CFR §15.247

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 120 VAC (inclusive 19.0 VDC internal battery)
Antenna: Amplifier Research AT4560, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; 2480 MHz – 1 MBit/s, Payload 255
Test Date: 2019-07-24
Note:

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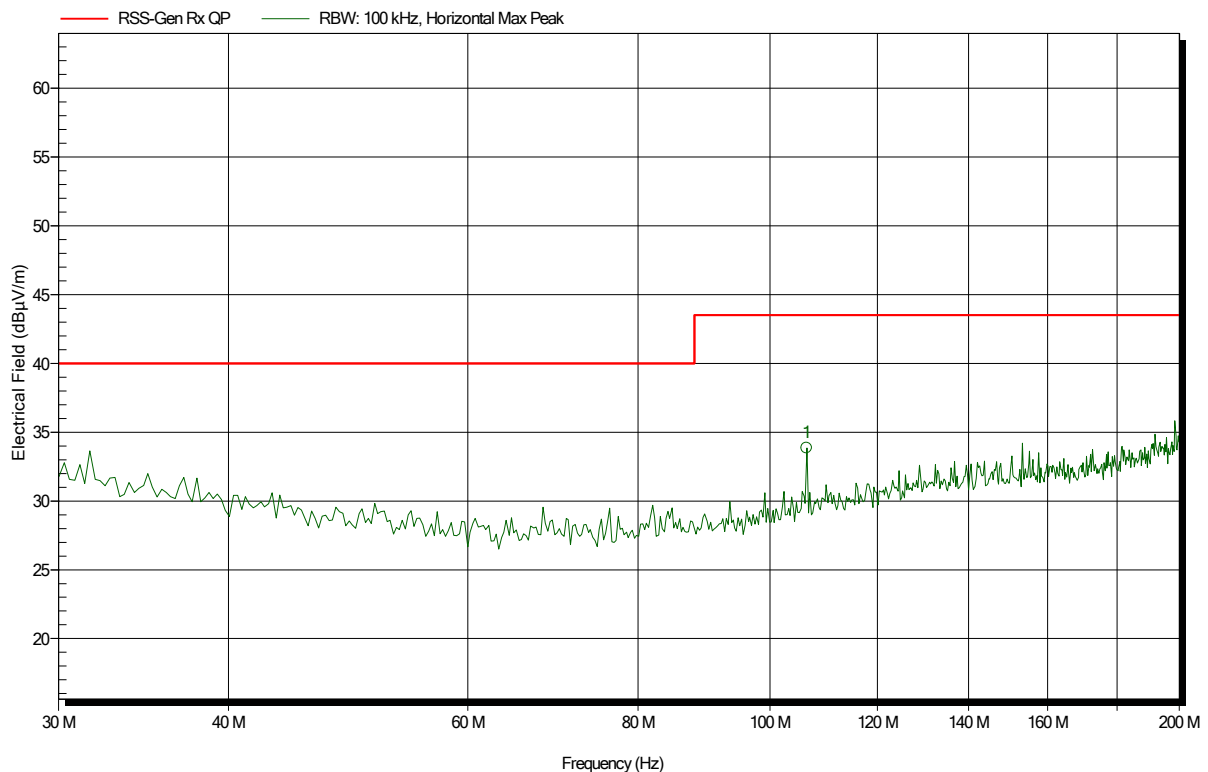
ANNEX B Receiver spurious emissions

Spurious emissions according to ISED RSS-Gen Issue 5 (April 2018)

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 230 VAC (inclusive 19.0 VDC internal battery)
Antenna: Rohde & Schwarz HK 116, Horizontal
Measurement distance: 3 m
Mode: RX; 2440 MHz
Test Date: 2019-07-24
Note:

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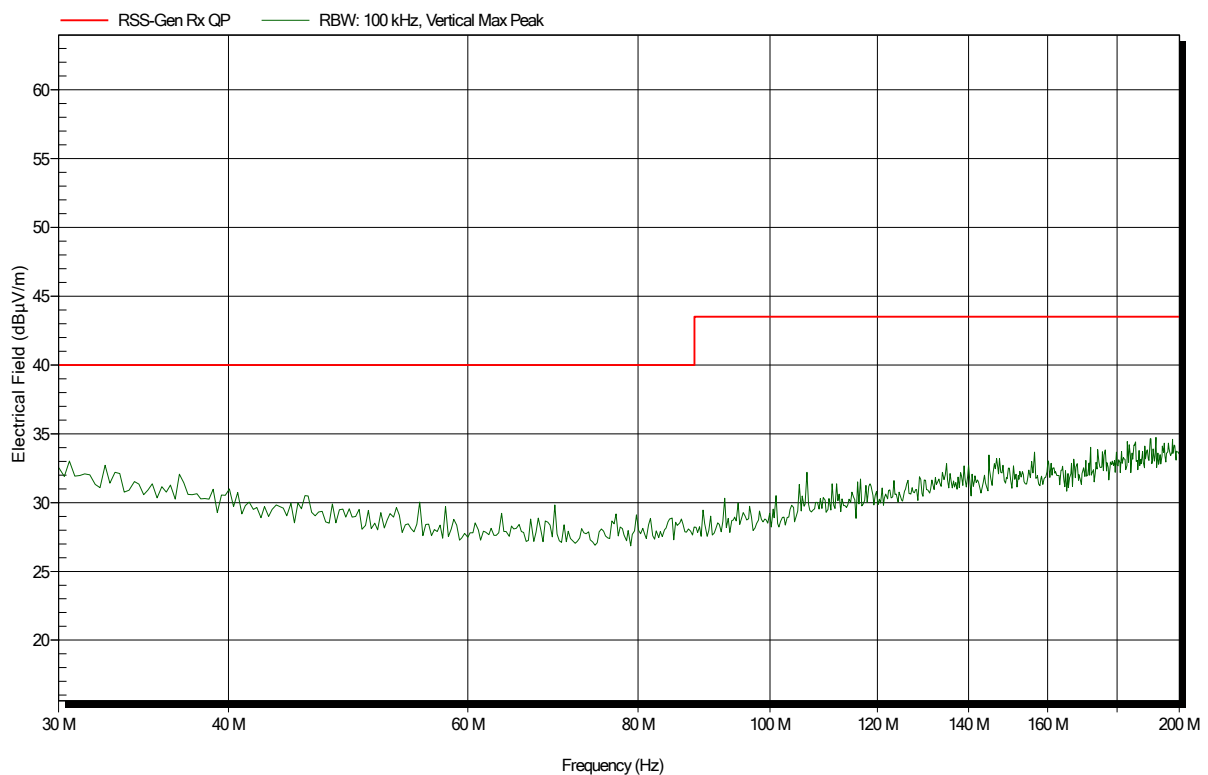
Frequency	Peak	Peak Limit	Peak Difference	Status	Angle	Height
106.432 MHz	33.85 dBµV/m	43.5 dBµV/m	-9.65 dB	Pass	135 Degree	1.2 m

Spurious emissions according to ISED RSS-Gen Issue 5 (April 2018)

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
 EUT Name: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.8°C, Vnom: 230 VAC (inclusive 19.0 VDC internal battery)
 Antenna: Rohde & Schwarz HK 116, Vertical
 Measurement distance: 3 m
 Mode: RX; 2440 MHz
 Test Date: 2019-07-24
 Note:

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Spurious emissions according to ISED RSS-Gen Issue 5 (April 2018)

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG

EUT Name: Renamic Neo Programming Device

Model: Renamic Neo

Test Site: Eurofins Product Service GmbH

Operator: Abdullah Al Jamal

Test Conditions: Tnom: 24.8°C, Vnom: 230 VAC (inclusive 19.0 VDC internal battery)

Antenna: Rohde & Schwarz HL 223, Horizontal

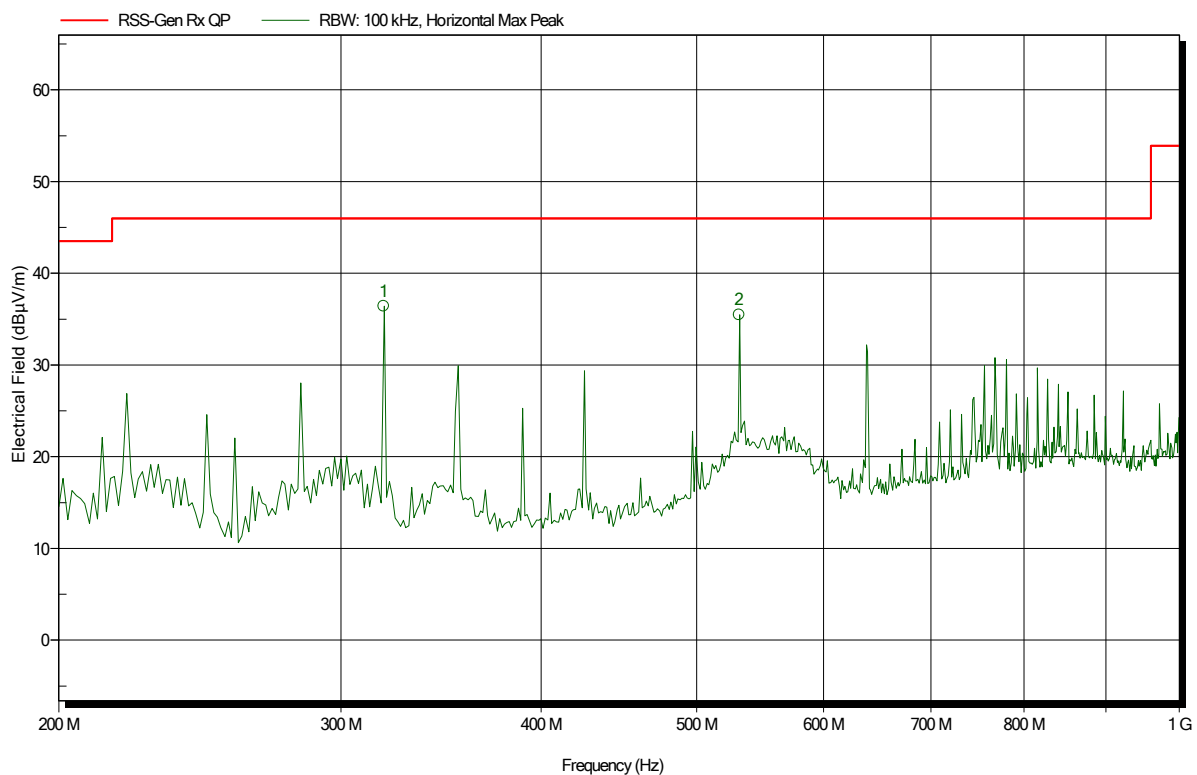
Measurement distance: 3 m

Mode: RX; 2440 MHz

Test Date: 2019-07-24

Note:

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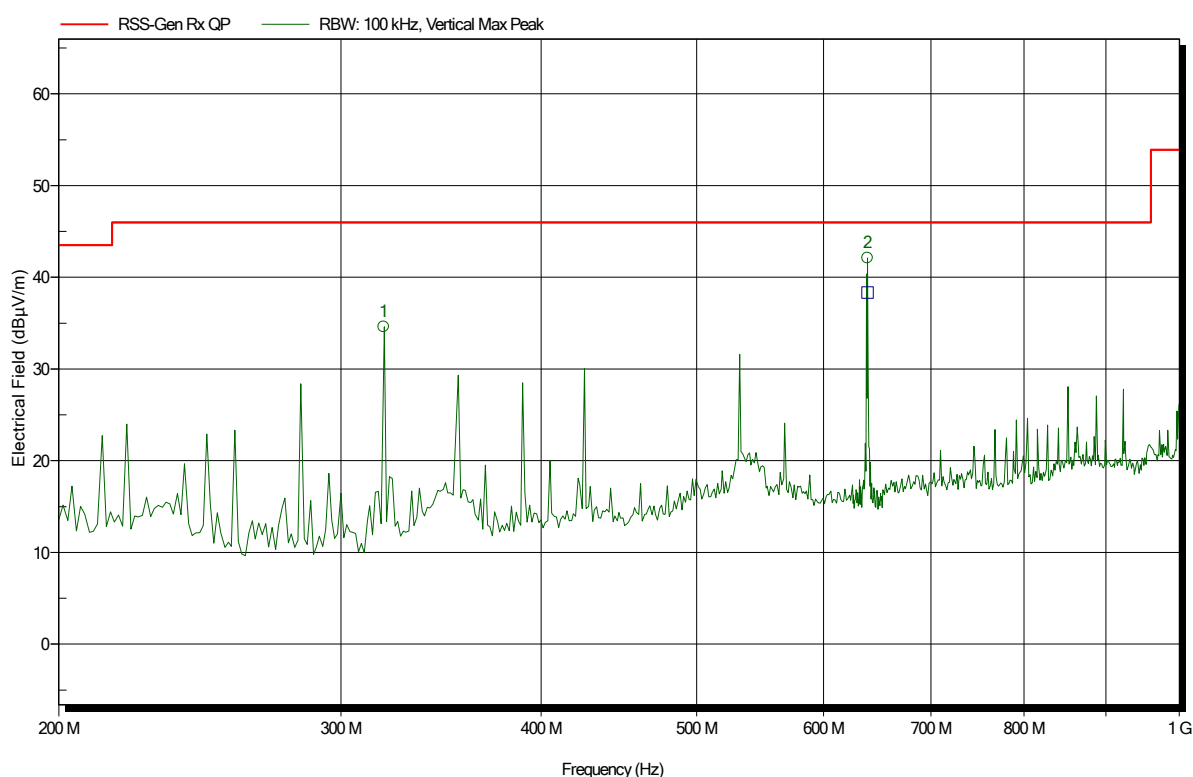
Frequency	Peak	Peak Limit	Peak Difference	Status	Angle	Height
319.04 MHz	36.4 dBµV/m	46 dBµV/m	-9.6 dB	Pass	90 Degree	1.2 m
531.52 MHz	35.46 dBµV/m	46 dBµV/m	-10.54 dB	Pass	90 Degree	1.2 m

Spurious emissions according to ISED RSS-Gen Issue 5 (April 2018)

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 230 VAC (inclusive 19.0 VDC internal battery)
Antenna: Rohde & Schwarz HL 223, Vertical
Measurement distance: 3 m
Mode: RX; 2440 MHz
Test Date: 2019-07-24
Note:

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Frequency	Peak	Peak Limit	Peak Difference	Status	Angle	Height
319.04 MHz	34.6 dBμV/m	46 dBμV/m	-11.4 dB	Pass	135 Degree	1.2 m
639.005 MHz	42.09 dBμV/m	46 dBμV/m	-3.91 dB	Pass	303 Degree	1.2 m

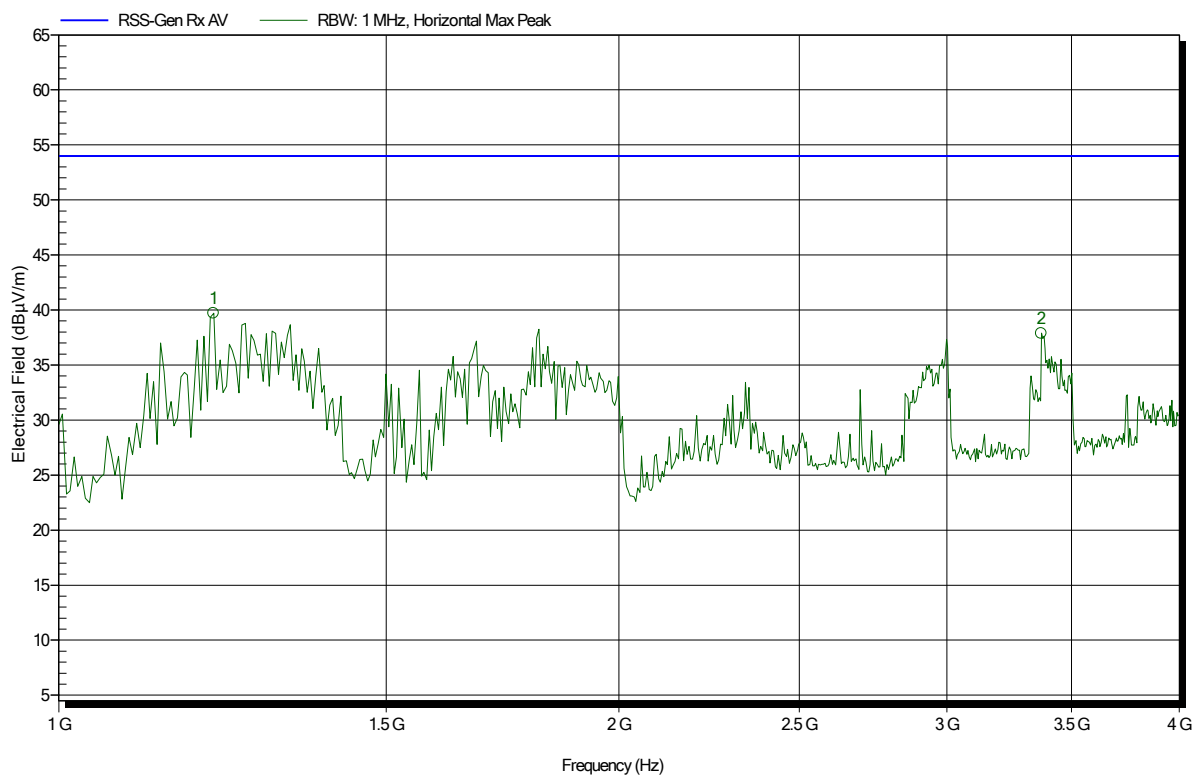
Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Angle	Height
639.005 MHz	38.35 dBμV/m	46 dBμV/m	-7.65 dB	Pass	303 Degree	1.2 m

Spurious emissions according to ISCED RSS-Gen Issue 5 (April 2018)

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
 EUT Name: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.8°C, Vnom: 230 VAC (inclusive 19.0 VDC internal battery)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m
 Mode: RX; 2440 MHz
 Test Date: 2019-07-24
 Note:

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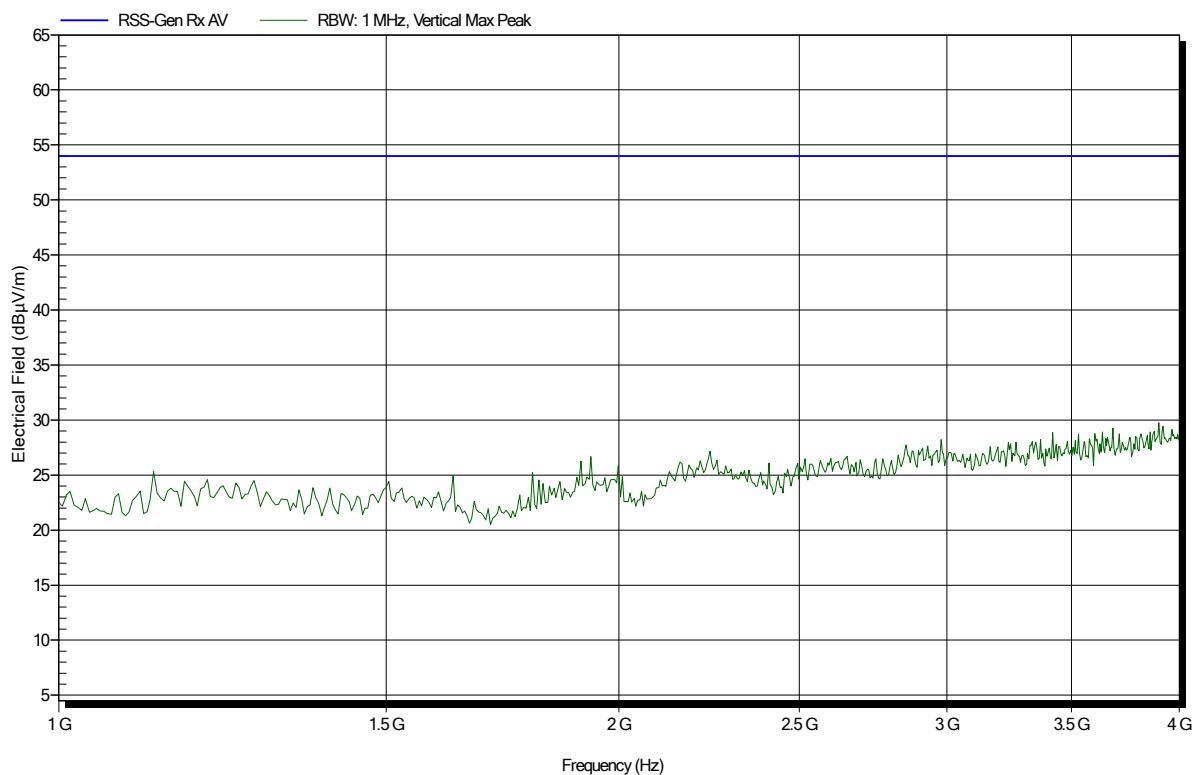
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.211 GHz	39.7 dBμV/m	53.98 dBμV/m	-14.28 dB	Pass
3.371 GHz	37.89 dBμV/m	53.98 dBμV/m	-16.09 dB	Pass

Spurious emissions according to ISED RSS-Gen Issue 5 (April 2018)

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
 EUT Name: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.8°C, Vnom: 230 VAC (inclusive 19.0 VDC internal battery)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m
 Mode: RX; 2440 MHz
 Test Date: 2019-07-24
 Note:

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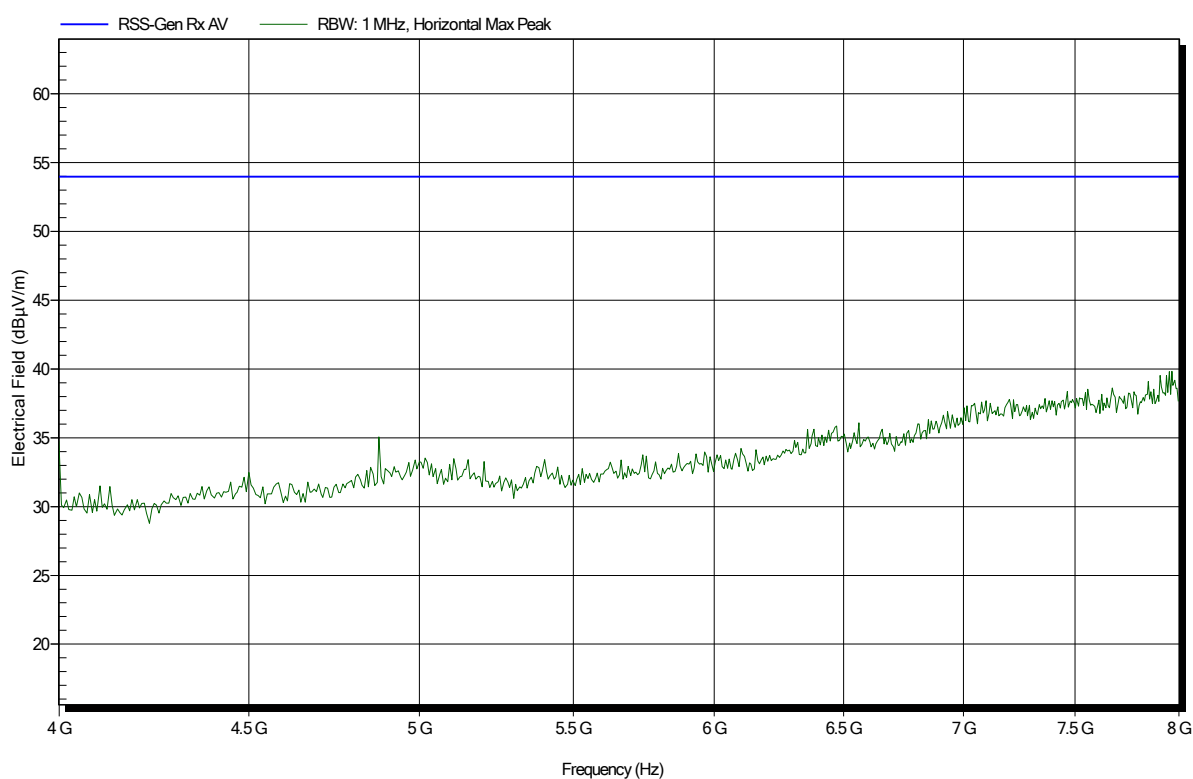


Spurious emissions according to ISED RSS-Gen Issue 5 (April 2018)

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 230 VAC (inclusive 19.0 VDC internal battery)
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m
Mode: RX; 2440 MHz
Test Date: 2019-07-24
Note:

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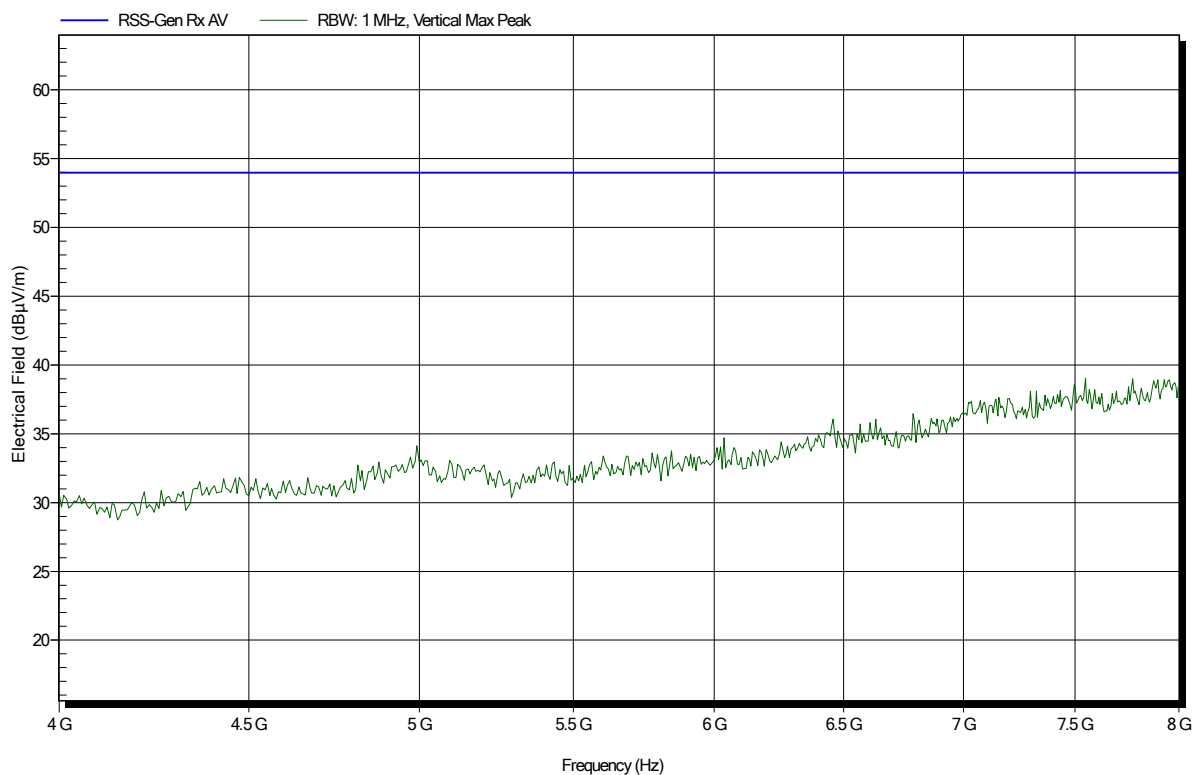


Spurious emissions according to ISED RSS-Gen Issue 5 (April 2018)

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
EUT Name: Renamic Neo Programming Device
Model: Renamic Neo
Test Site: Eurofins Product Service GmbH
Operator: Abdullah Al Jamal
Test Conditions: Tnom: 24.8°C, Vnom: 230 VAC (inclusive 19.0 VDC internal battery)
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m
Mode: RX; 2440 MHz
Test Date: 2019-07-24
Note:

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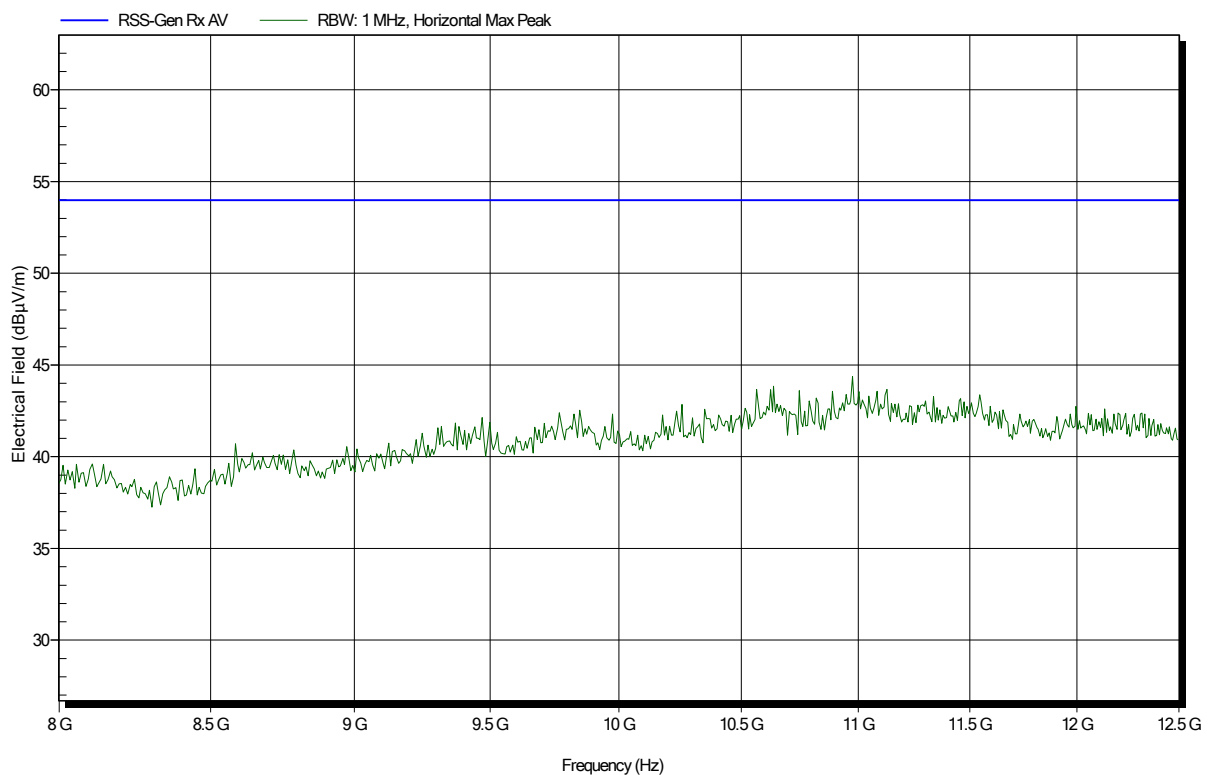


Spurious emissions according to ISSED RSS-Gen Issue 5 (April 2018)

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
 EUT Name: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.8°C, Vnom: 230 VAC (inclusive 19.0 VDC internal battery)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: RX; 2440 MHz
 Test Date: 2019-07-24
 Note:

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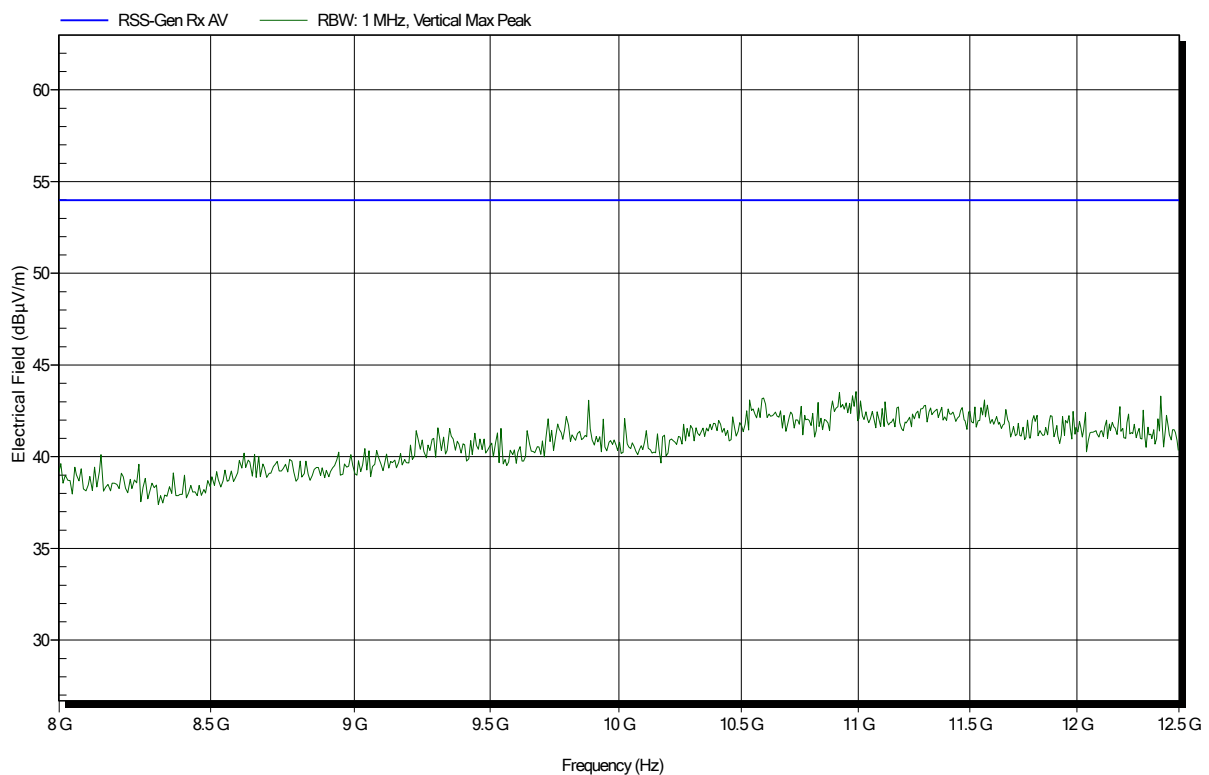


Spurious emissions according to ISED RSS-Gen Issue 5 (April 2018)

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
 EUT Name: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.8°C, Vnom: 230 VAC (inclusive 19.0 VDC internal battery)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: RX; 2440 MHz
 Test Date: 2019-07-24
 Note:

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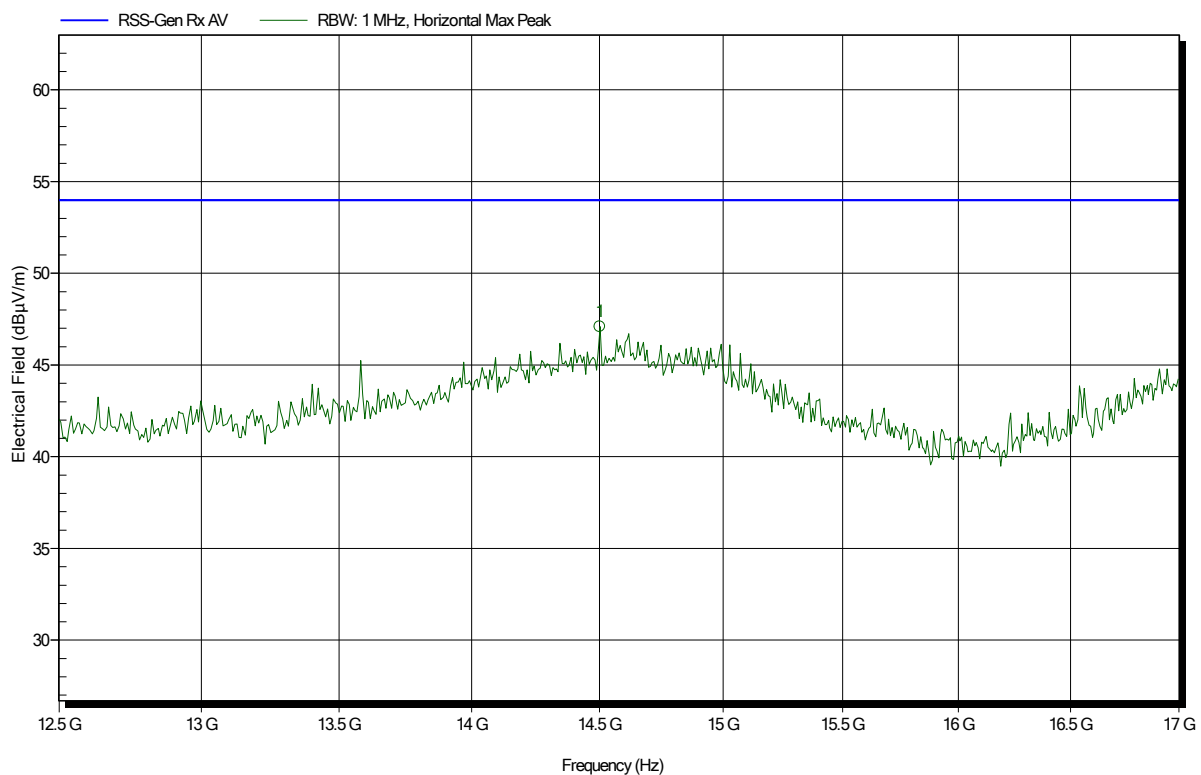


Spurious emissions according to ISED RSS-Gen Issue 5 (April 2018)

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
 EUT Name: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.8°C, Vnom: 230 VAC (inclusive 19.0 VDC internal battery)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: RX; 2440 MHz
 Test Date: 2019-07-24
 Note:

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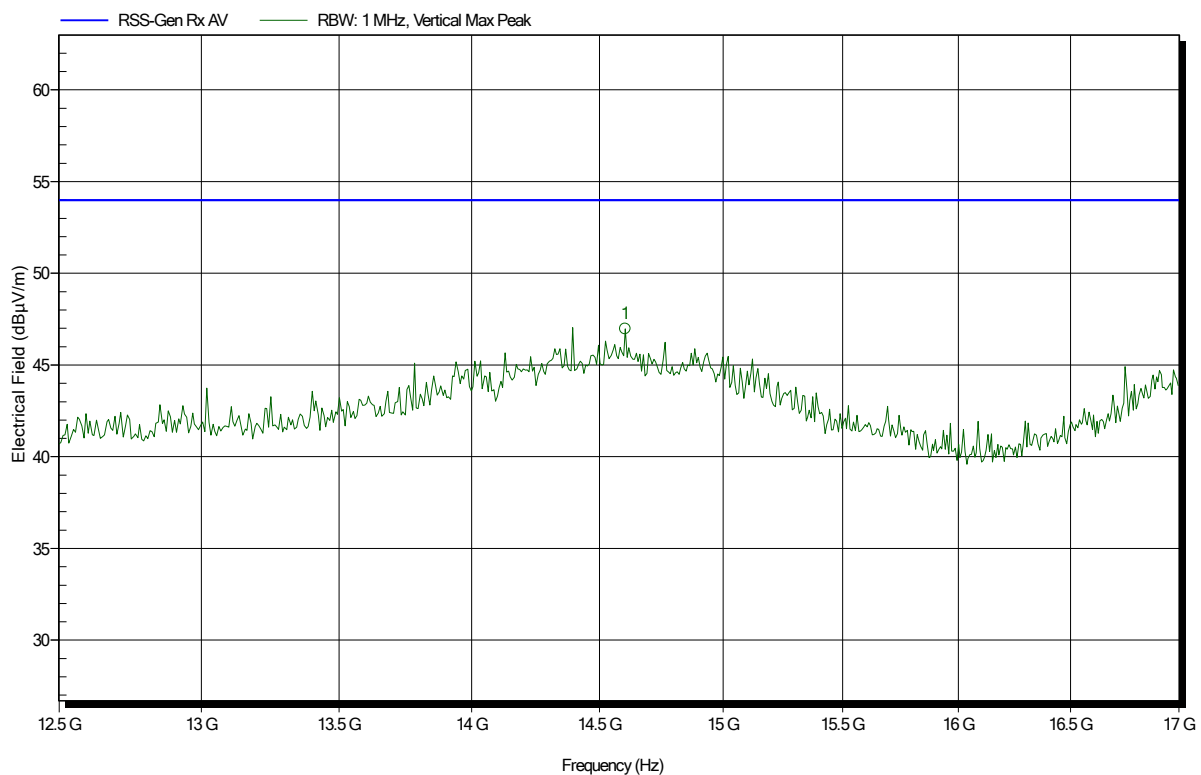
Frequency	Peak	Peak Limit	Peak Difference	Status
14.502 GHz	47.09 dBµV/m	53.98 dBµV/m	-6.89 dB	Pass

Spurious emissions according to ISED RSS-Gen Issue 5 (April 2018)

Project number: G0M-1905-8256

Applicant: BIOTRONIK SE & Co. KG
 EUT Name: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Site: Eurofins Product Service GmbH
 Operator: Abdullah Al Jamal
 Test Conditions: Tnom: 24.8°C, Vnom: 230 VAC (inclusive 19.0 VDC internal battery)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: RX; 2440 MHz
 Test Date: 2019-07-24
 Note:

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Frequency	Peak	Peak Limit	Peak Difference	Status
14.602 GHz	46.97 dBµV/m	53.98 dBµV/m	-7.01 dB	Pass