

RADIO REPORT FCC 47 CFR Part 15C ISED Canada RSS-247 Frequency hopping systems operating within the 2400 – 2483.5 MHz band	
Report Reference No	G0M-1905-8256-TFC247BT-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)	Porto_BT: 15.68.7.p167
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	2019-12-17	
Total number of pages	146	
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	2019-12-17	Initial Release	

ABBREVIATIONS AND ACRONYMS

Acronyms	
Acronym	Description
BR	Bluetooth Basic Rate mode
EDR	Bluetooth Enhanced Data Rate mode
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

REPORT INDEX

1	Equipment (Test Item) Under Test.....	6
1.1	Photos – Equipment External	7
1.2	Photos – Equipment Internal	14
1.3	Photos – Test Setup.....	24
1.4	Support Equipment.....	25
1.5	Test Modes	26
1.6	Test Frequencies.....	27
1.7	Sample emission level calculation.....	28
2	Result Summary.....	29
3	Test Conditions and Results.....	30
3.1	Test Conditions and Results - Occupied bandwidth.....	30
3.2	Test Conditions and Results - 20 dB bandwidth.....	41
3.3	Test Conditions and Results - Number of hopping frequencies	52
3.4	Test Conditions and Results - Frequency hopping channel separation.....	54
3.5	Test Conditions and Results - Time of occupancy (Dwell time)	56
3.6	Test Conditions and Results - Maximum peak conducted output power	59
3.7	Test Conditions and Results - AC powerline conducted emissions.....	61
3.8	Test Conditions and Results - Band-edge compliance.....	64
3.9	Test Conditions and Results - Conducted spurious emissions.....	78
3.10	Test Conditions and Results - Transmitter radiated emissions	89
3.11	Test Conditions and Results - Receiver radiated emissions	92
ANNEX A	Transmitter spurious emissions	95
ANNEX B	Receiver spurious emissions	135

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)	80001072 (Test sample 24167) 80001091 (Test sample 24164)	
Hardware Version(s)	A.x	
Software Version(s)	Porto_BT: 15.68.7.p167	
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	
Modulation	GFSK, PI/4-DQPSK, 8-DPSK	
Number of antenna ports	1	
Antenna	Type	Integrated antenna
	Model	Not specified
	Manufacturer	BIOTRONIK SE & Co. KG
	Gain	4.0 dBi (declared by applicant)
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
SIM	Communication Tester	R&S	CMW270	Signalling.
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
CBL	Connecting Cable			
SFT	Software			
Comment: None.				

1.5 Test Modes

Mode	Description
DH5 Single	Mode = Transmit Modulation = GFSK Spreading = None Packet type = DH5 Duty cycle = 78%
2-DH5 Single	Mode = Transmit Modulation = PI/4-DQPSK Spreading = None Packet type = 2-DH5 Duty cycle = 78%
3-DH5 Single	Mode = Transmit Modulation = 8-DPSK Spreading = None Packet type = 3-DH5 Duty cycle = 78%
DH5 Hopping	Mode = Transmit Modulation = GFSK Spreading = FHSS Packet type = DH5 Duty cycle = 78%
2-DH5 Hopping	Mode = Transmit Modulation = PI/4-DQPSK Spreading = FHSS Packet type = 2-DH5 Duty cycle = 78%
3-DH5 Hopping	Mode = Transmit Modulation = 8-DPSK Spreading = FHSS Packet type = 3-DH5 Duty cycle = 78%
Receive	Mode = Receive
Comment: None.	

1.6 Test Frequencies

Designator	Mode	Channel	Frequency [MHz]
F1	Tx / Rx	0	2402
F2	Tx / Rx	39	2441
F3	Tx / Rx	40	2442
F4	Tx / Rx	78	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)(1) ISED RSS-247 § 5.1 Issue 2	20 dB Bandwidth	ANSI C63.10-2013	PASS	
FCC § 15.247(a)(1)(iii) ISED RSS-247, Issue 2 (section 5.1)	Number of hopping frequencies	ANSI C63.10-2013	PASS	
FCC § 15.247(a)(1) ISED RSS-247, Issue 2 (section 5.1)	Frequency hopping channel separation	ANSI C63.10-2013	PASS	
FCC § 15.247(a)(1)(iii) ISED RSS-247, Issue 2 (section 5.1)	Time of occupancy (Dwell time)	ANSI C63.10-2013	PASS	
FCC § 15.247(b)(1) ISED RSS-247, Issue 2 (section 5.4)	Maximum peak conducted power	ANSI C63.10-2013	PASS	
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	PASS	
FCC § 15.247(d) ISED RSS-247, Issue 2 (section 5.5)	Conducted spurious emissions	ANSI C63.10-2013	PASS	
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

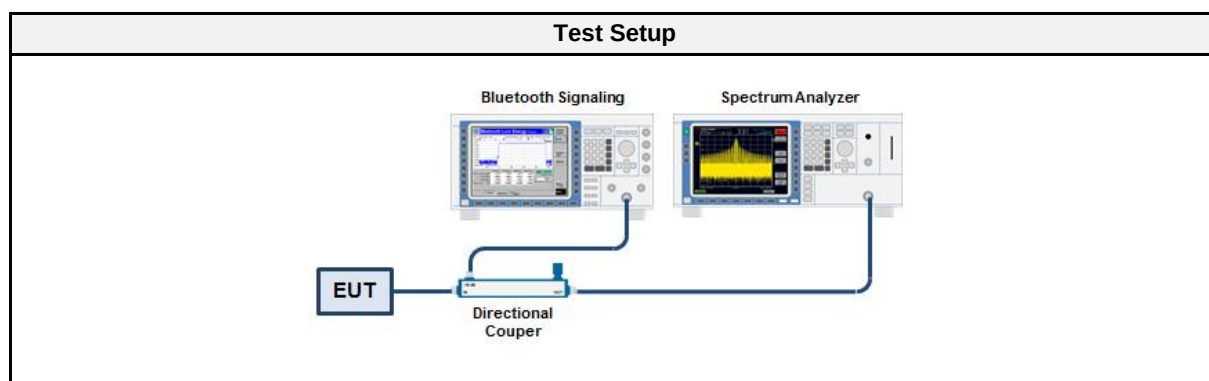
3.1.1 Information

Test Information	
Reference	ISED RSS-Gen, Issue 5 (section 6.6)
Measurement Method	ANSI C63.10 6.9.3
Operator	Abdullah Al Jamal
Date	2019-06-06

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	FSW 43	EF00896	2018-07	2019-07

3.1.5 Procedure

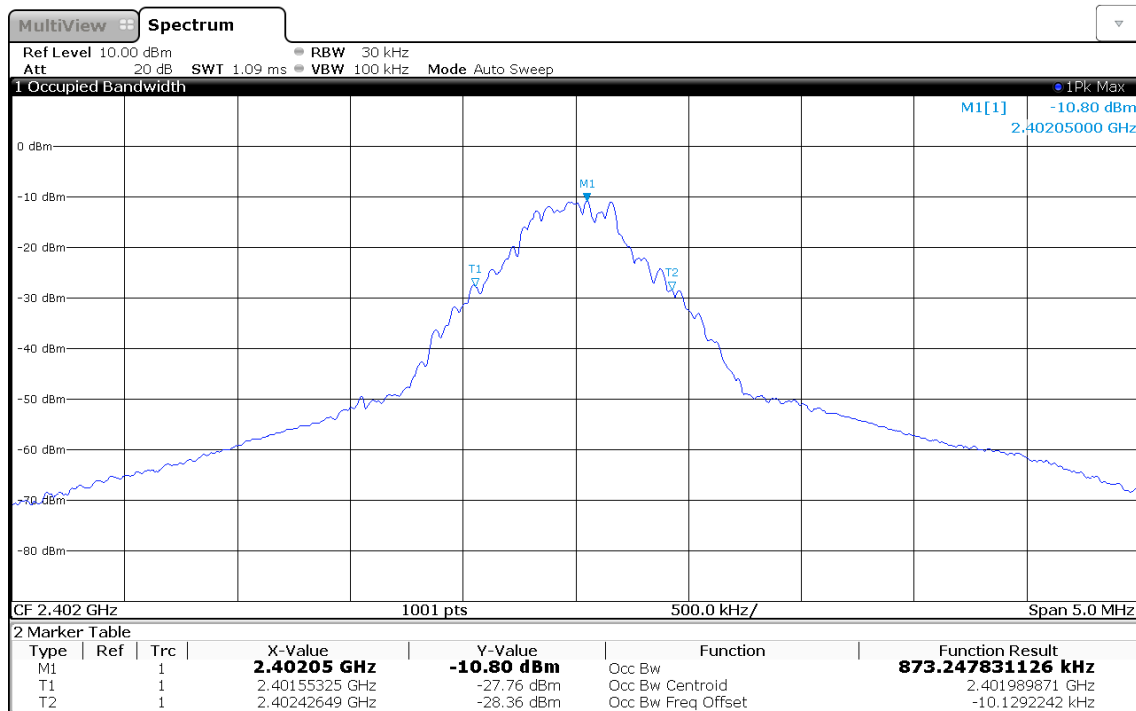
Test Procedure
1. EUT transmitter is activated in test mode under normal conditions 2. The spectrum analyzer is set to peak detection and maximum hold with a span twice the emission spectrum 3. The resolution bandwidth is set to the range of 1 % to 5 % of the occupied bandwidth 4. The occupied bandwidth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

3.1.6 Results

Test Results		
Mode	Frequency [MHz]	Bandwidth [MHz]
DH5	2402	0.873
DH5	2441	0.878
DH5	2480	0.874
2-DH5	2402	1.174
2-DH5	2441	1.175
2-DH5	2480	1.173
3-DH5	2402	1.175
3-DH5	2441	1.175
3-DH5	2480	1.174

Occupied Bandwidth

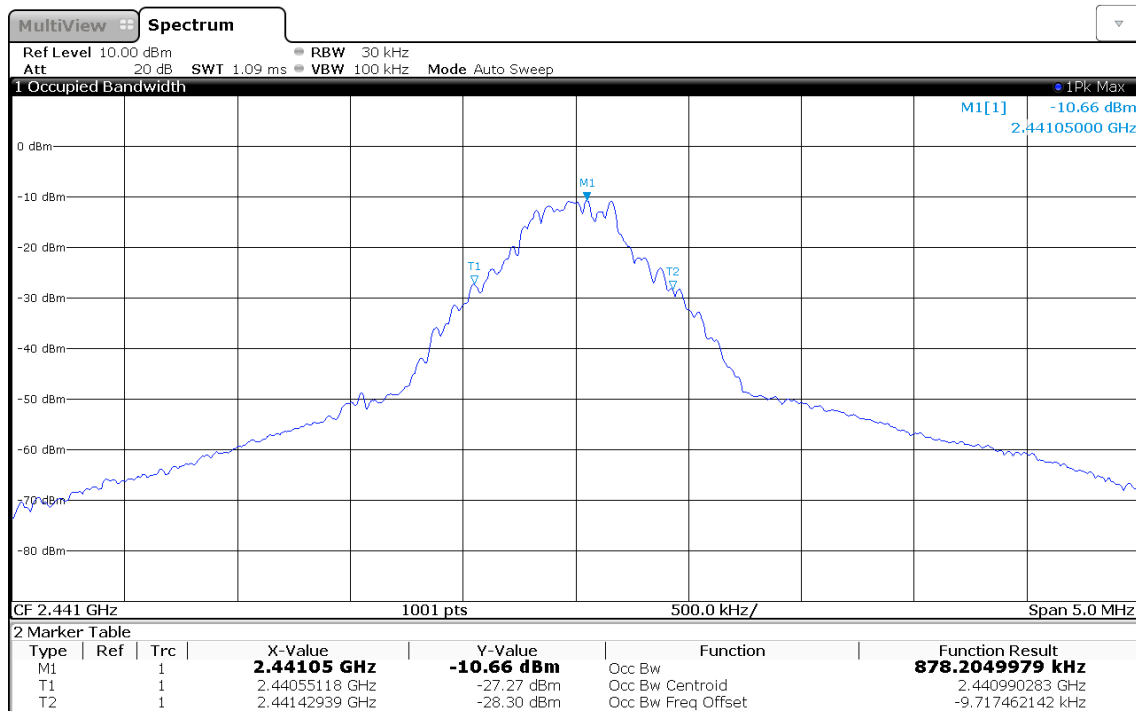
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: DH5, Channel: 0, 2402 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Occupied Bandwidth [MHz]: 0.873



11:55:46 06.06.2019

Occupied Bandwidth

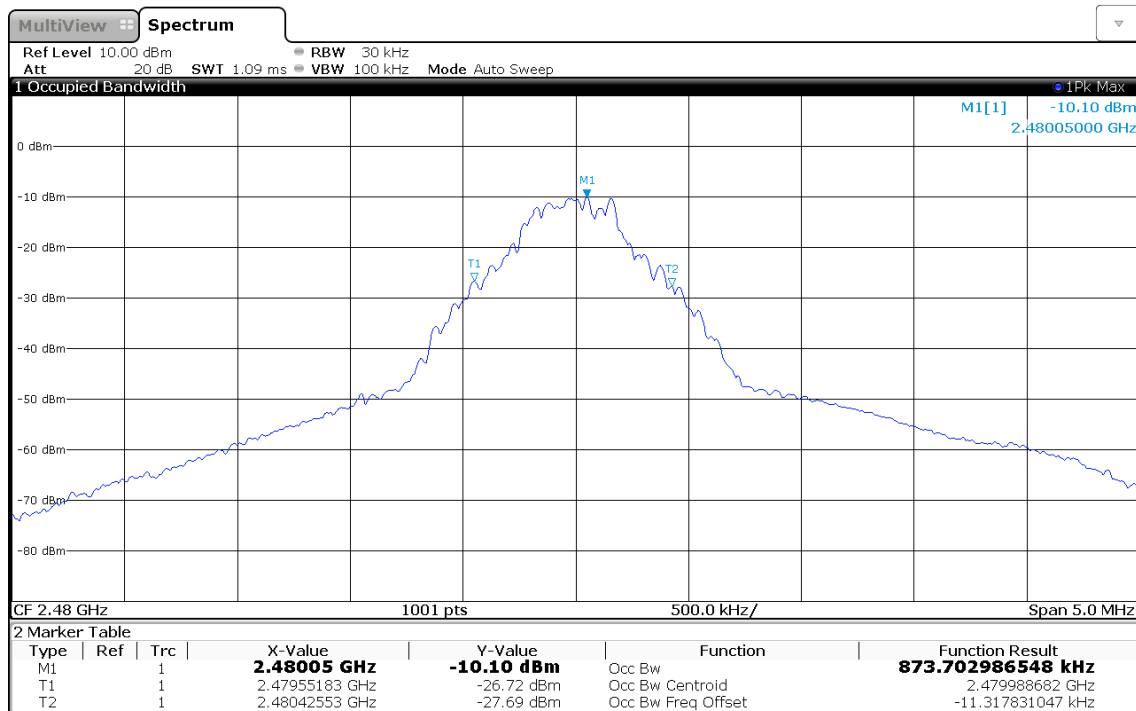
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: DH5, Channel: 39, 2441 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Occupied Bandwidth [MHz]: 0.878



11:56:54 06.06.2019

Occupied Bandwidth

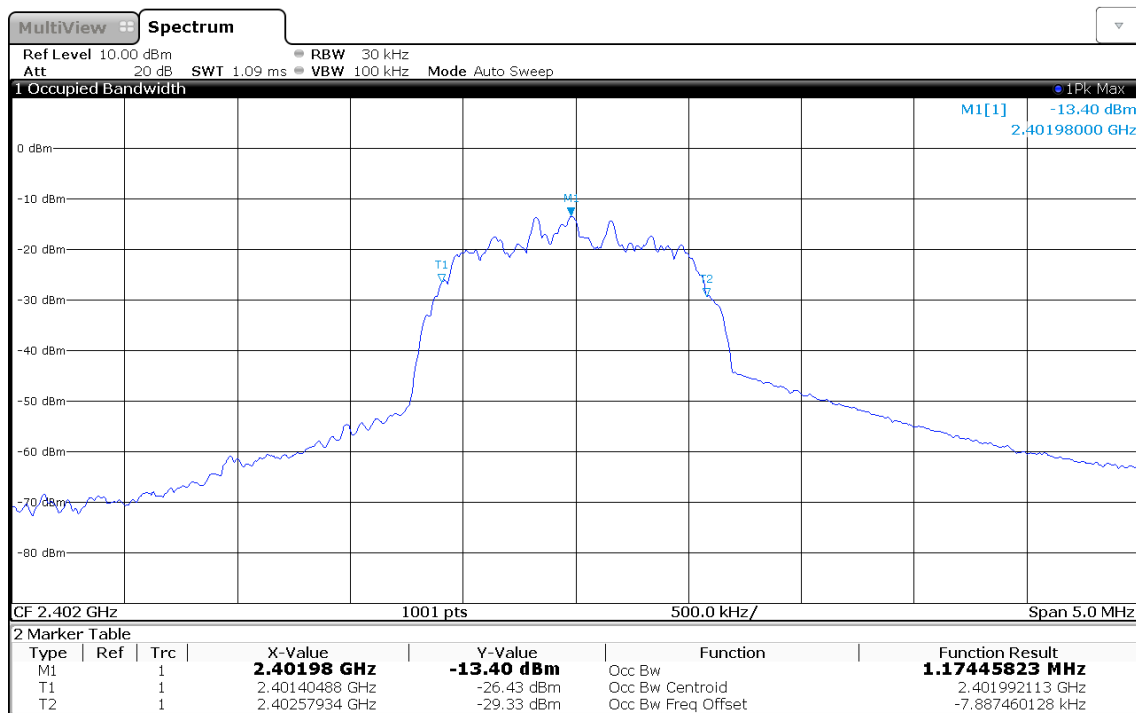
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: DH5, Channel: 78, 2480 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Occupied Bandwidth [MHz]: 0.874



11:57:33 06.06.2019

Occupied Bandwidth

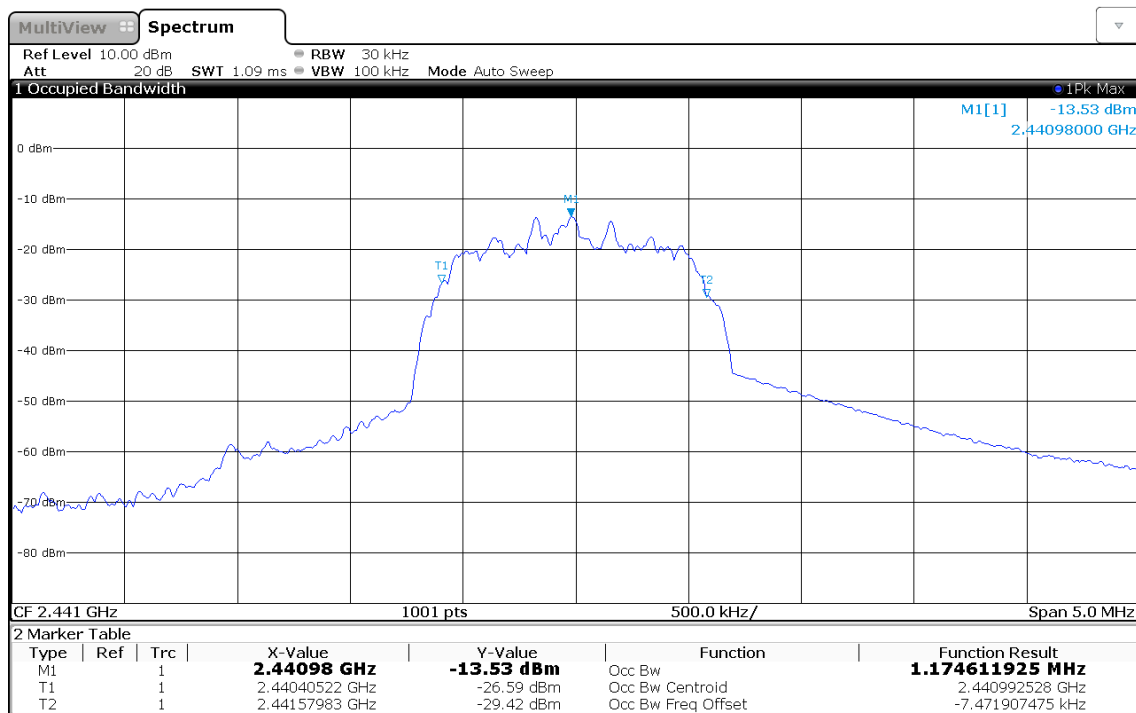
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: 2-DH5, Channel: 0, 2402 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Occupied Bandwidth [MHz]: 1.174



11:59:48 06.06.2019

Occupied Bandwidth

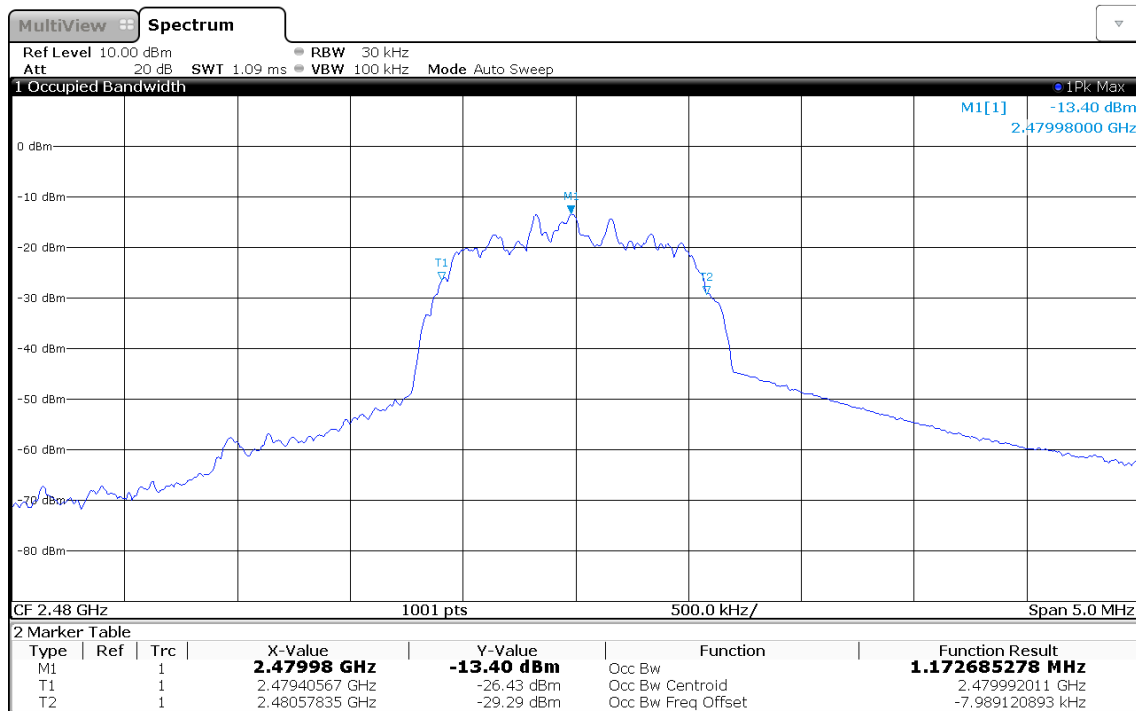
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: 2-DH5, Channel: 39, 2441 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Occupied Bandwidth [MHz]: 1.175



12:00:30 06.06.2019

Occupied Bandwidth

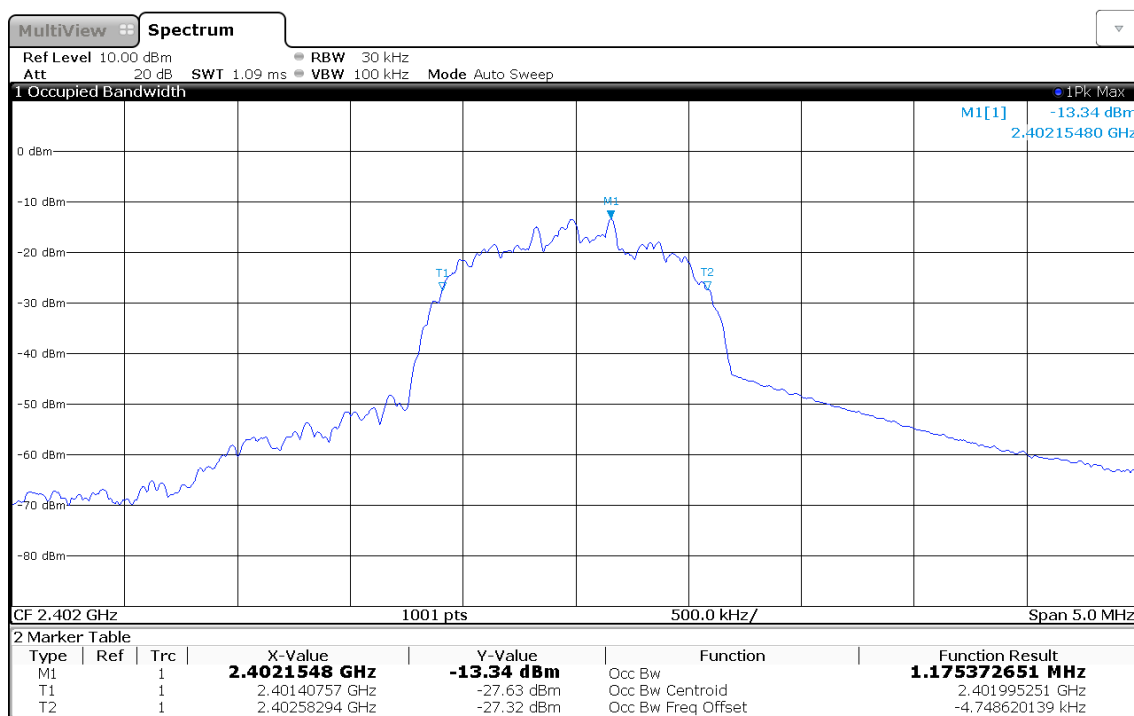
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: 2-DH5, Channel: 78, 2480 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Occupied Bandwidth [MHz]: 1.173



12:01:10 06.06.2019

Occupied Bandwidth

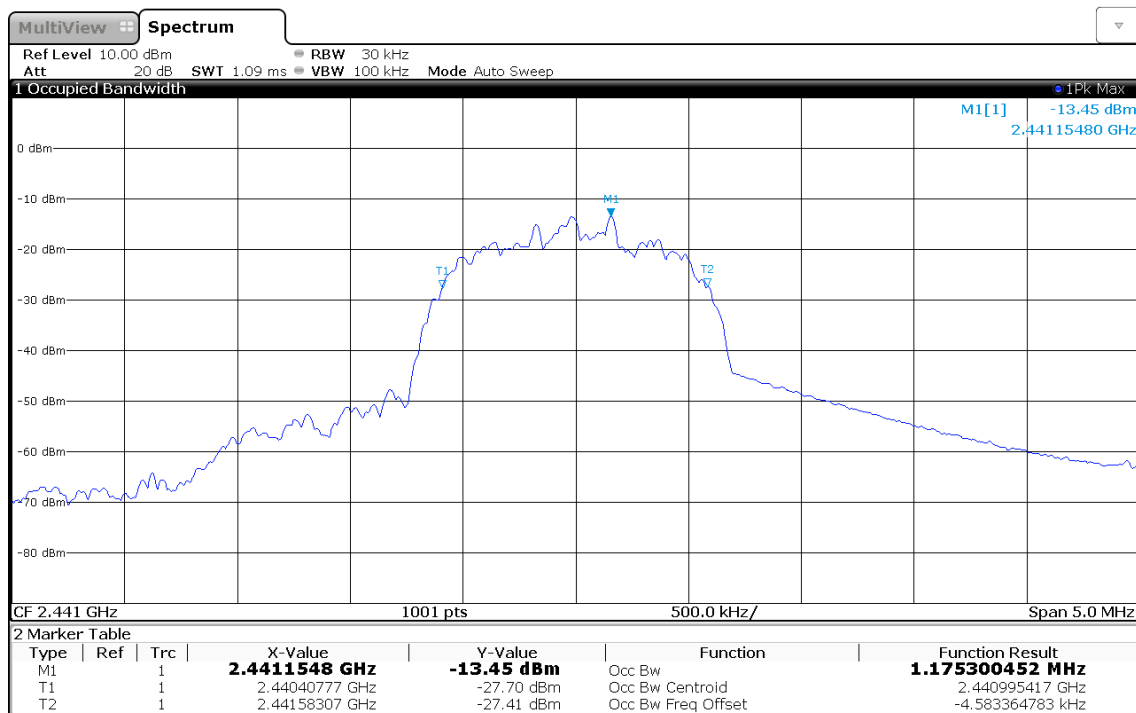
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: 3-DH5, Channel: 0, 2402 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Occupied Bandwidth [MHz]: 1.175



12:02:03 06.06.2019

Occupied Bandwidth

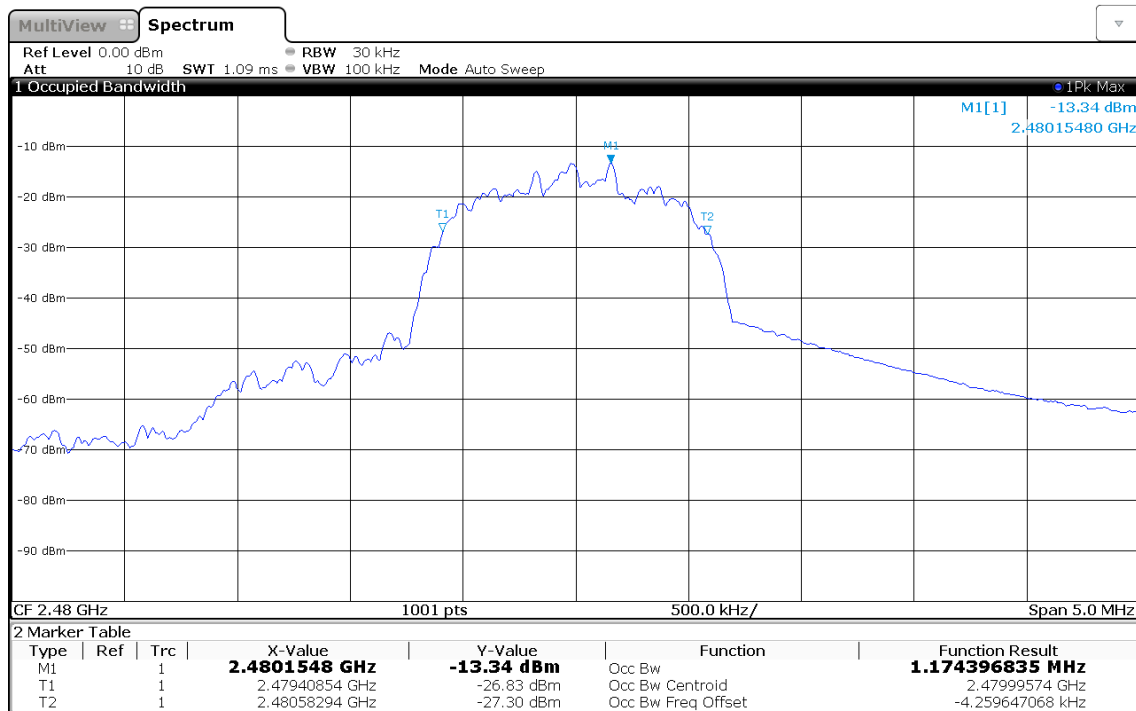
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 6.9.3
 Operational Mode: 3-DH5, Channel: 39, 2441 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Occupied Bandwidth [MHz]: 1.175



12:03:03 06.06.2019

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: 3-DH5, Channel: 78, 2480 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Occupied Bandwidth [MHz]: 1.174



12:03:51 06.06.2019

3.2 Test Conditions and Results - 20 dB bandwidth

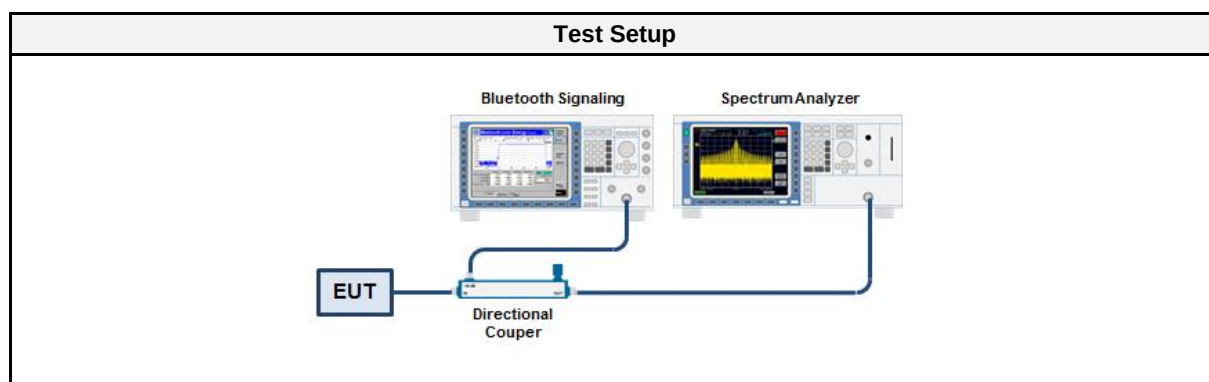
3.2.1 Information

Test Information	
Reference	FCC 15.247(a)(1) / ISED RSS-247 5.1
Measurement Method	ANSI C63.10 6.9.2
Operator	Abdullah Al Jamal
Date	2019-06-06

3.2.2 Limits

Limits
None (Informational only)

3.2.3 Setup



3.2.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSW 43	EF00896	2018-07	2019-07

3.2.5 Procedure

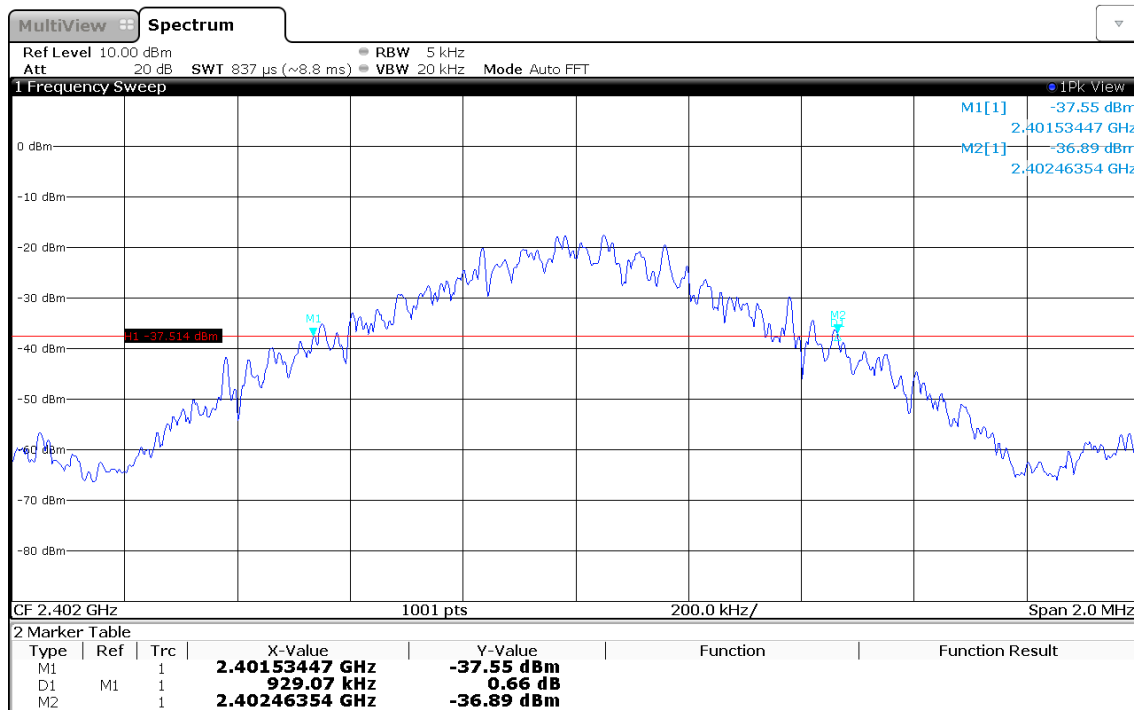
Test Procedure
1. EUT set to test mode (Communication tester is used if needed) 2. Span set to at least twice the emission spectrum 3. Detector set to peak and max hold 4. Envelope peak value of emission spectrum is selected 5. Marker on envelope of spectrum is set to level of -20 dB to the left of the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

3.2.6 Results

Test Results		
Mode	Frequency [MHz]	Bandwidth [MHz]
DH5	2402	0.929
DH5	2441	0.929
DH5	2480	0.931
2-DH5	2402	1.309
2-DH5	2441	1.309
2-DH5	2480	1.309
3-DH5	2402	1.261
3-DH5	2441	1.261
3-DH5	2480	1.275

20 dB Bandwidth

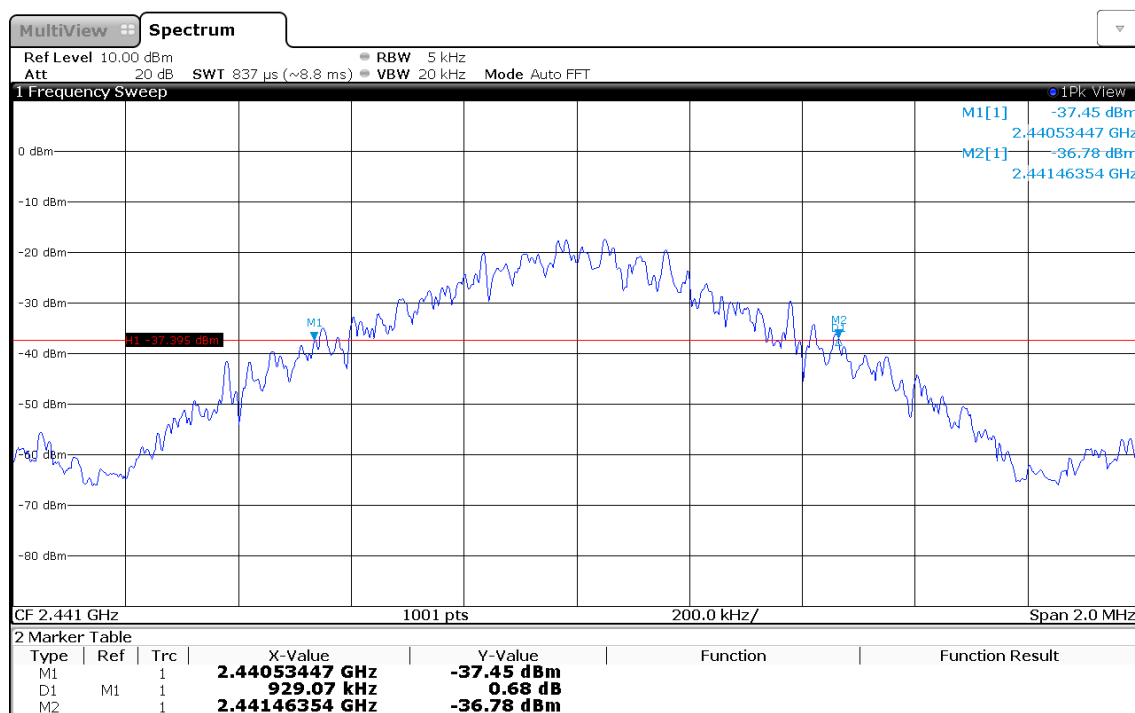
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 6.9.2
 Operational Mode: DH5, Channel: 0, 2402 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Lower Frequency [MHz]: 2401.534
 Upper Frequency [MHz]: 2402.464
 20 dB Bandwidth [MHz]: 0.929



12:10:20 06.06.2019

20 dB Bandwidth

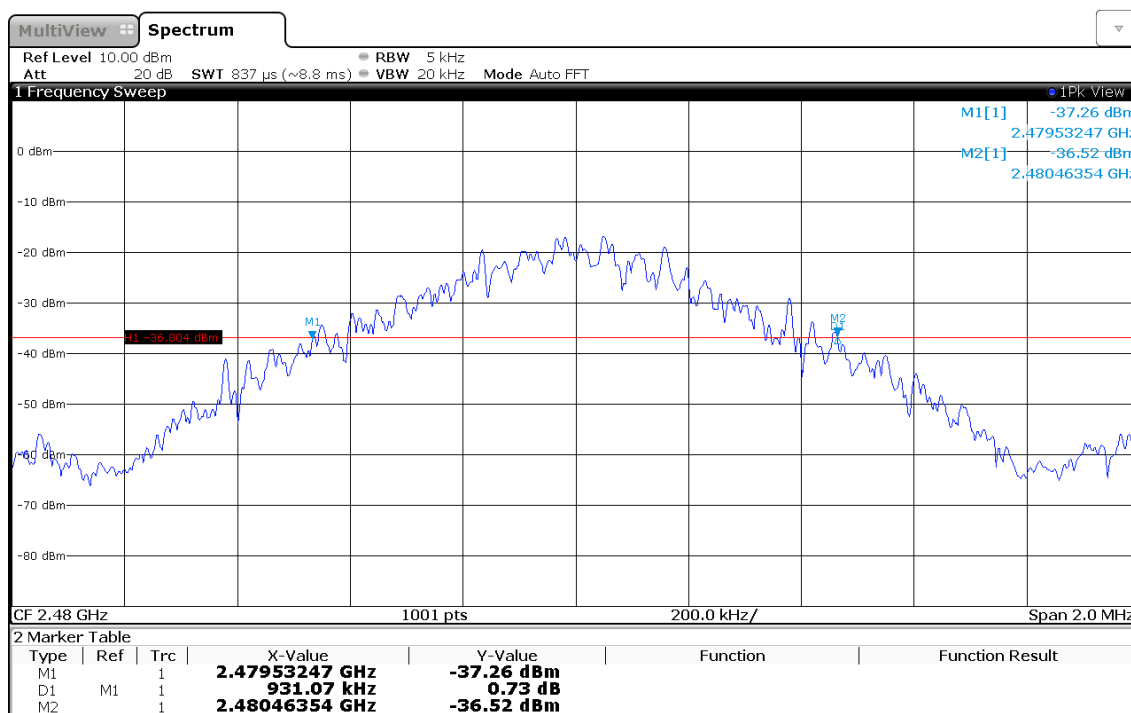
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 6.9.2
 Operational Mode: DH5, Channel: 39, 2441 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Lower Frequency [MHz]: 2440.534
 Upper Frequency [MHz]: 2441.464
 20 dB Bandwidth [MHz]: 0.929



12:16:08 06.06.2019

20 dB Bandwidth

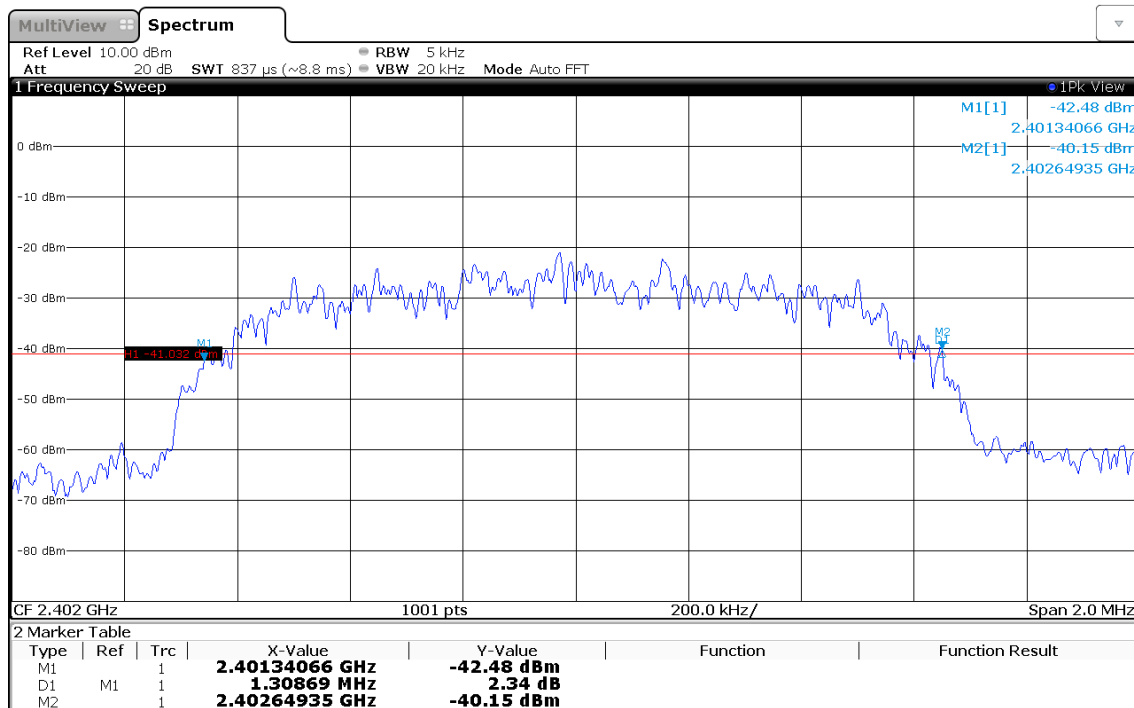
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 6.9.2
 Operational Mode: DH5, Channel: 78, 2480 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Lower Frequency [MHz]: 2479.532
 Upper Frequency [MHz]: 2480.464
 20 dB Bandwidth [MHz]: 0.931



12:16:57 06.06.2019

20 dB Bandwidth

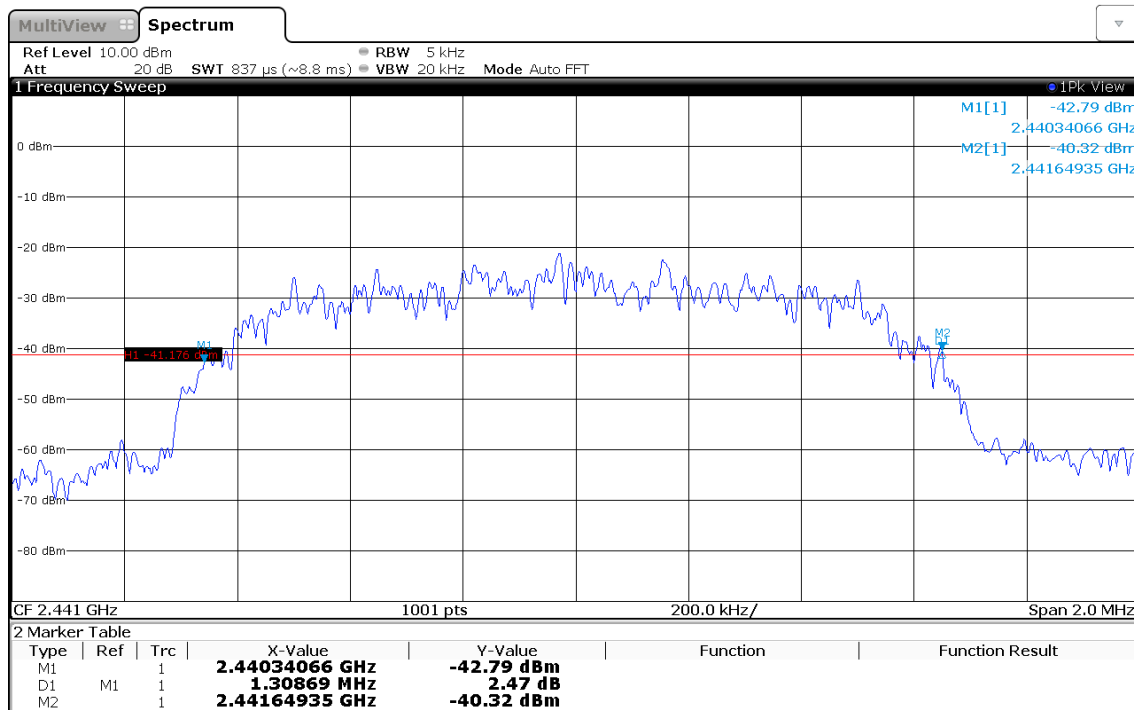
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 6.9.2
 Operational Mode: 2-DH5, Channel: 0, 2402 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Lower Frequency [MHz]: 2401.341
 Upper Frequency [MHz]: 2402.649
 20 dB Bandwidth [MHz]: 1.309



12:19:04 06.06.2019

20 dB Bandwidth

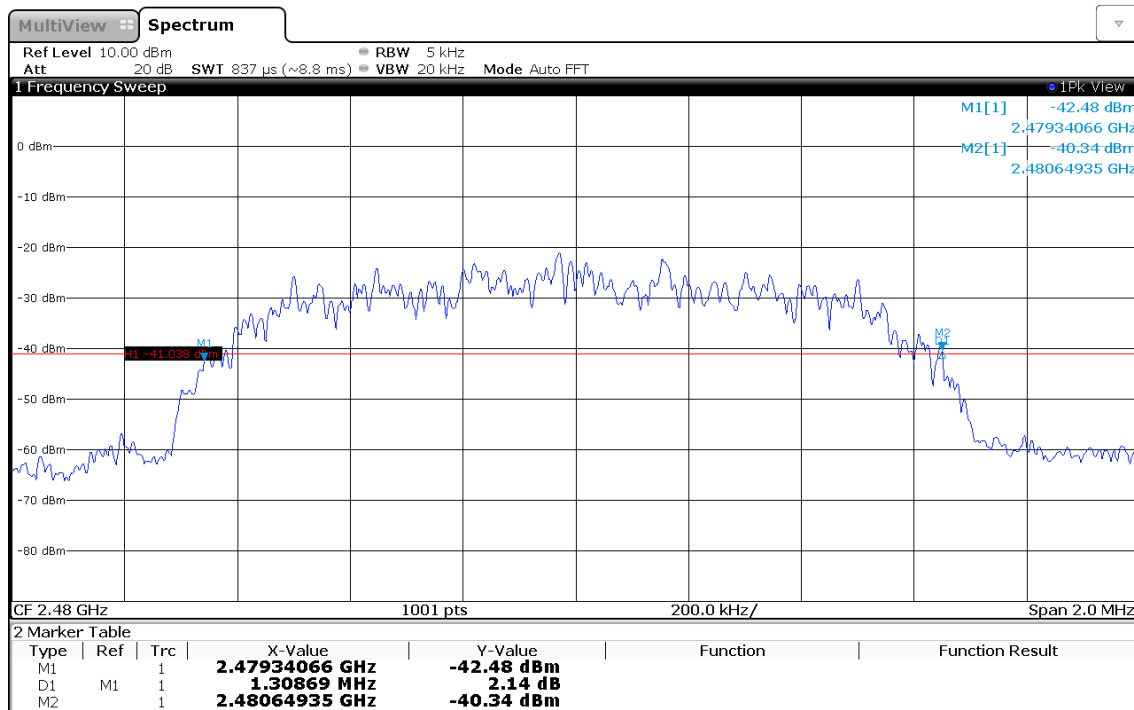
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 6.9.2
 Operational Mode: 2-DH5, Channel: 39, 2441 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Lower Frequency [MHz]: 2440.341
 Upper Frequency [MHz]: 2441.649
 20 dB Bandwidth [MHz]: 1.309



12:19:41 06.06.2019

20 dB Bandwidth

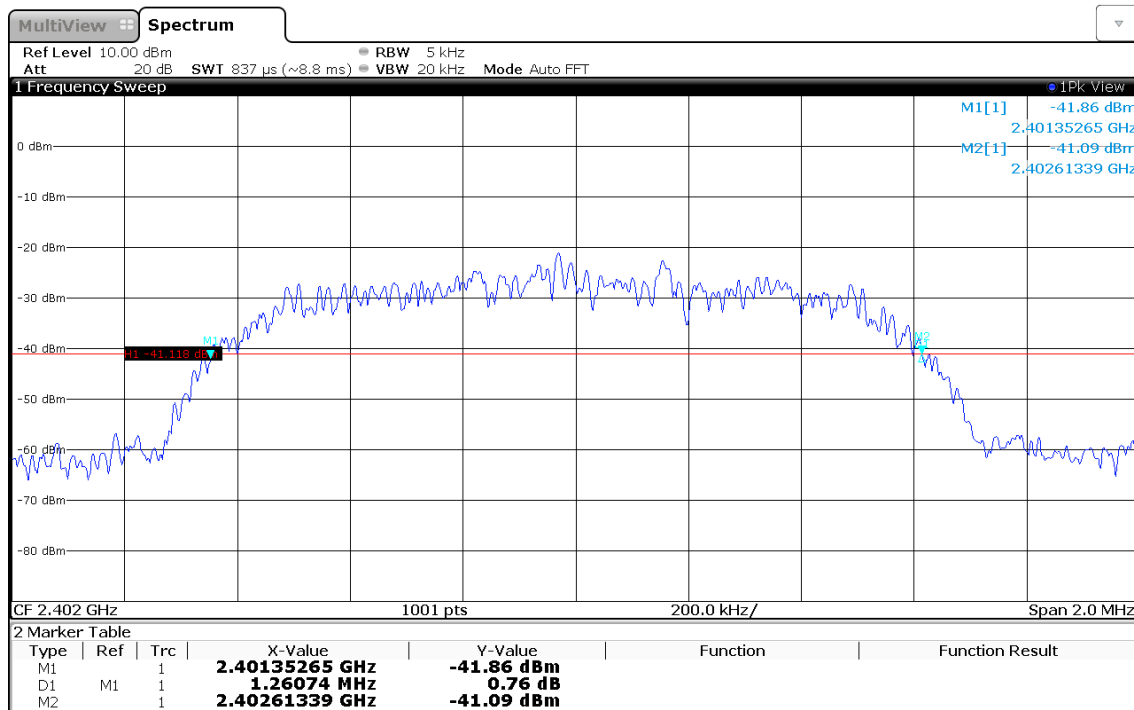
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 6.9.2
 Operational Mode: 2-DH5, Channel: 78, 2480 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Lower Frequency [MHz]: 2479.341
 Upper Frequency [MHz]: 2480.649
 20 dB Bandwidth [MHz]: 1.309



12:21:06 06.06.2019

20 dB Bandwidth

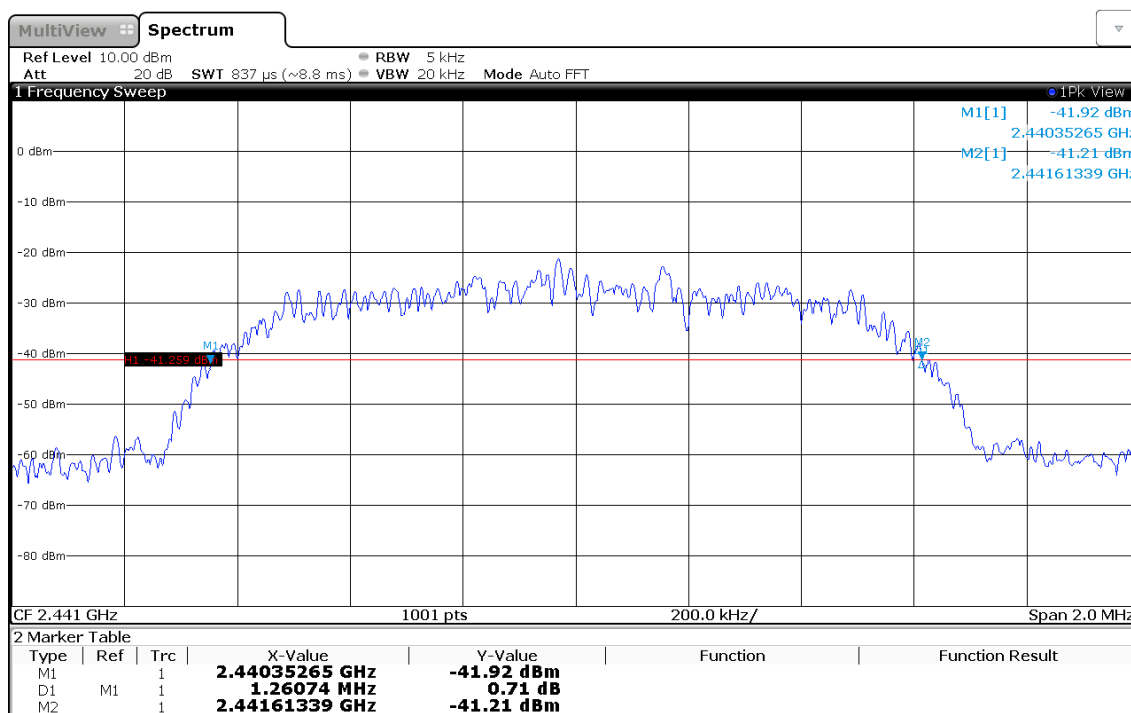
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 6.9.2
 Operational Mode: 3-DH5, Channel: 0, 2402 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Lower Frequency [MHz]: 2401.353
 Upper Frequency [MHz]: 2402.613
 20 dB Bandwidth [MHz]: 1.261



12:23:29 06.06.2019

20 dB Bandwidth

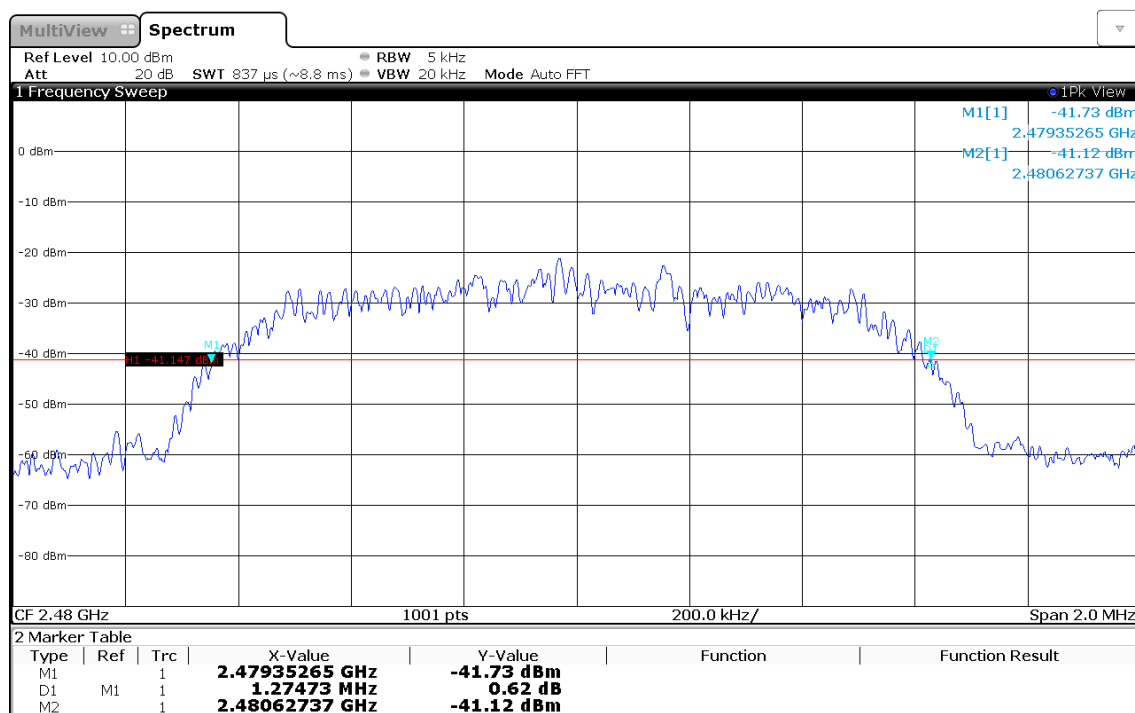
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 6.9.2
 Operational Mode: 3-DH5, Channel: 39, 2441 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Lower Frequency [MHz]: 2440.353
 Upper Frequency [MHz]: 2441.613
 20 dB Bandwidth [MHz]: 1.261



12:43:01 06.06.2019

20 dB 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 6.9.2
 Operational Mode: 3-DH5, Channel: 78, 2480 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Lower Frequency [MHz]: 2479.353
 Upper Frequency [MHz]: 2480.627
 20 dB Bandwidth [MHz]: 1.275



12:43:38 06.06.2019

3.3 Test Conditions and Results - Number of hopping frequencies

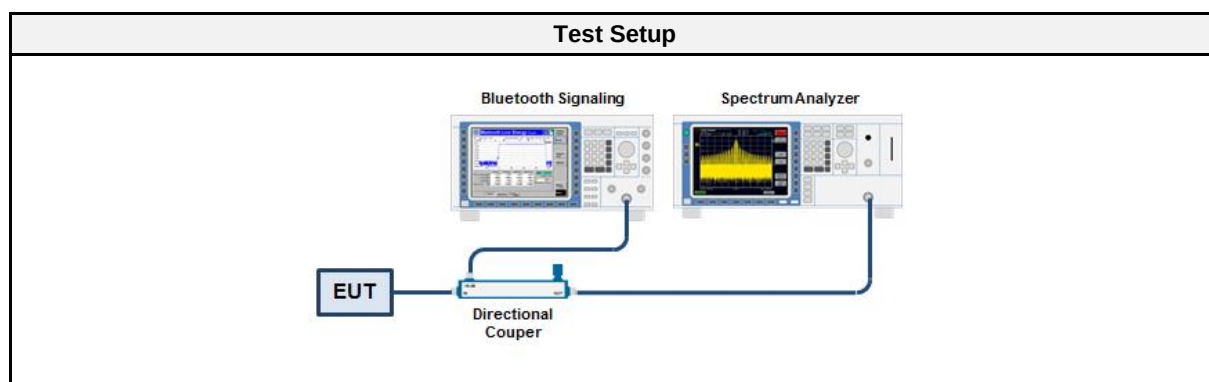
3.3.1 Information

Test Information	
Reference	FCC § 15.247(a)(1)(iii); ISED RSS-247, Issue 2 (section 5.1)
Measurement Method	ANSI C63.10 7.8.3
Operator	Abdullah Al Jamal
Date	2019-06-06

3.3.2 Limits

Limits
≥ 15

3.3.3 Setup



3.3.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSW 43	EF00896	2018-07	2019-07

3.3.5 Procedure

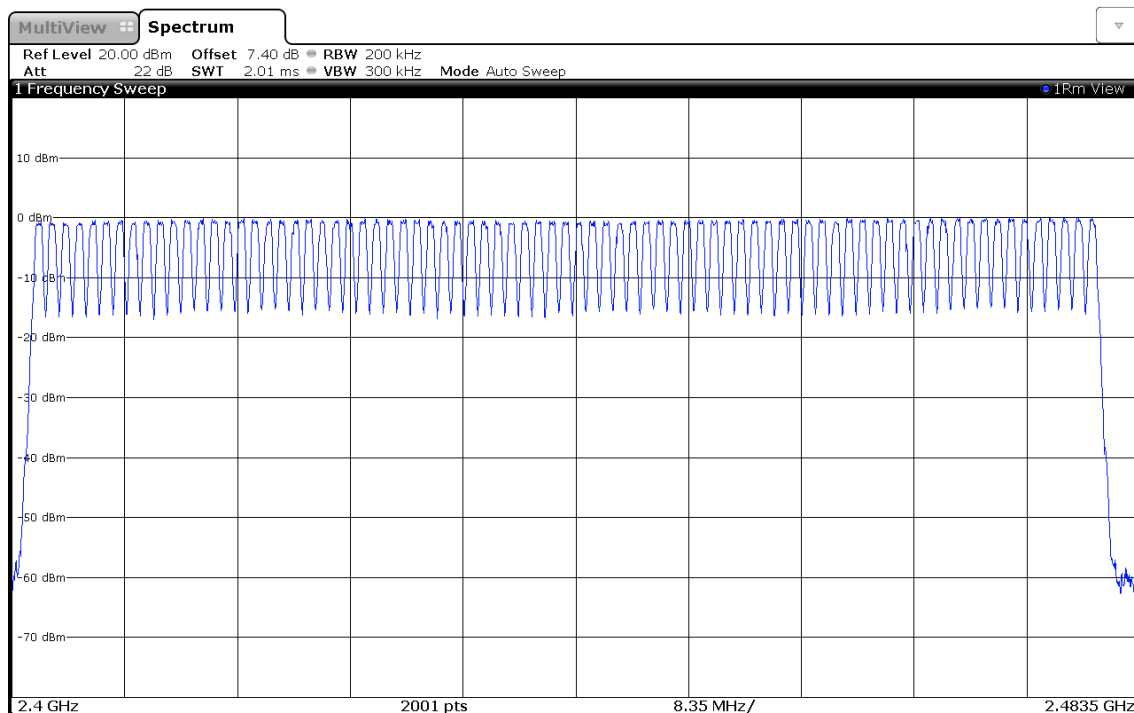
Test Procedure
1. EUT set to test mode (Communication tester is used if needed) 2. Span set to measurement frequency range 3. Detector set to peak and max hold 4. Resolution bandwidth is set small enough to resolve hopping channel emission spectra 5. The number of peaks is counted to determine number of hopping frequencies

3.3.6 Results

Test Results		
Number of hopping frequencies	Limit	Verdict
79	15	PASS

Number of hopping frequencies

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 15.27 (a)(1)(iii)
Reference Method:	ANSI C63.10:2013 7.8.3
Operational Mode:	Bluetooth, DH5, Hopping Mode
Operating Conditions:	Tnom/Vnom
Operator:	Abdullah Al Jamal
Test Site:	Eurofins Product Service GmbH
Test Date:	2019-06-06
Number of Hopping Channels:	79



12:47:18 06.06.2019

3.4 Test Conditions and Results - Frequency hopping channel separation

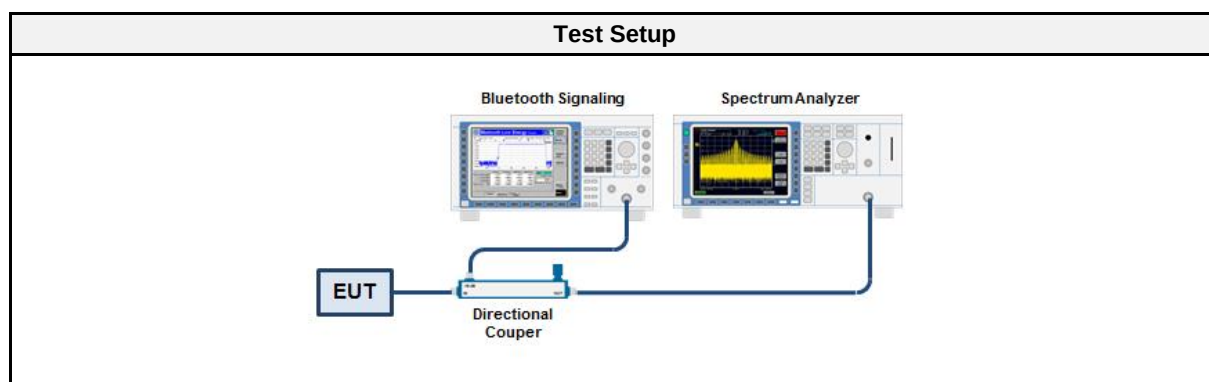
3.4.1 Information

Test Information	
Reference	FCC § 15.247(a)(1); ISSED RSS-247, Issue 2 (section 5.1)
Measurement Method	ANSI C63.10 7.8.4
Operator	Abdullah Al Jamal
Date	2019-06-06

3.4.2 Limits

Limit
≥ 25 kHz or $\frac{2}{3}$ of 20 dB bandwidth

3.4.3 Setup



3.4.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSW 43	EF00896	2018-07	2019-07

3.4.5 Procedure

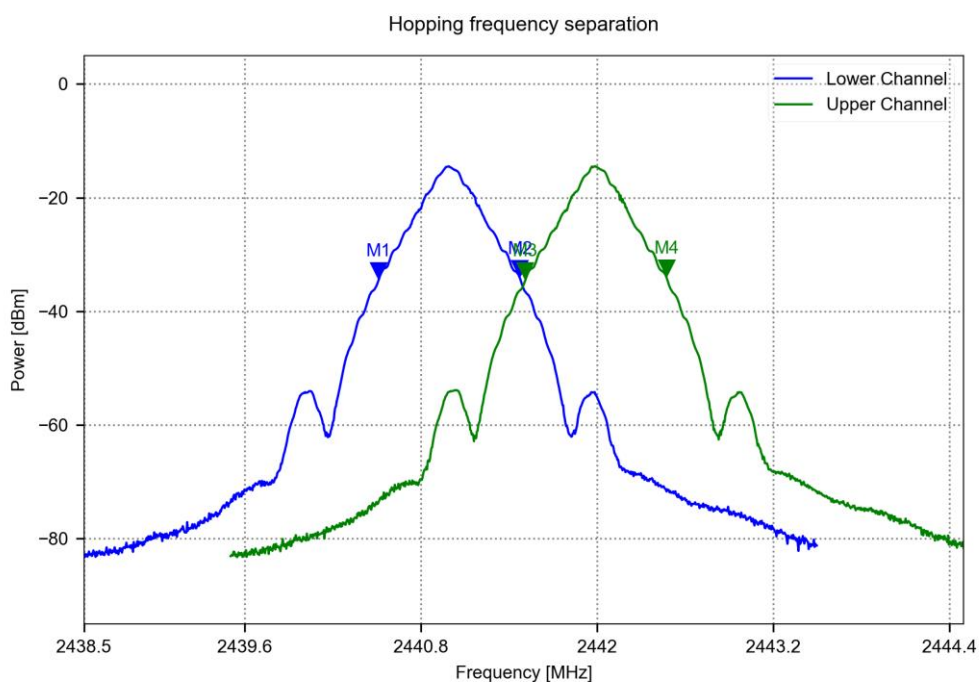
Test Procedure
1. EUT set to test mode (Communication tester is used if needed) 2. Span set to measurement frequency range 3. Detector set to peak and max hold 4. Resolution bandwidth is set small enough to resolve hopping channel emission spectra 5. The two adjacent channel peaks are marked 6. Channel separation is determined from frequency separation of markers

3.4.6 Results

Test Results		
Channel separation [kHz]	Limit [kHz]	Verdict
1000	$\geq \frac{2}{3} \cdot 929 = 619.33$	PASS

Hopping frequency separation

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(a)(1)
Reference Method:	ANSI C63.10:2013 7.8.2
Operational Mode:	Bluetooth, DH5, Channels: 2441 + 2442 MHz
Operating Conditions:	Tnom/Vnom
Operator:	Abdullah Al Jamal
Test Site:	Eurofins Product Service GmbH
Test Date:	2019-06-06
Lower Frequency (M1) [MHz]:	2440.510
Upper Frequency (M2) [MHz]:	2441.475
Lower Frequency (M3) [MHz]:	2441.510
Upper Frequency (M4) [MHz]:	2442.475
Lower center Frequency [MHz]:	2440.993
Upper center Frequency [MHz]:	2441.993
Hopping Frequency Separation [MHz]:	1.000



3.5 Test Conditions and Results - Time of occupancy (Dwell time)

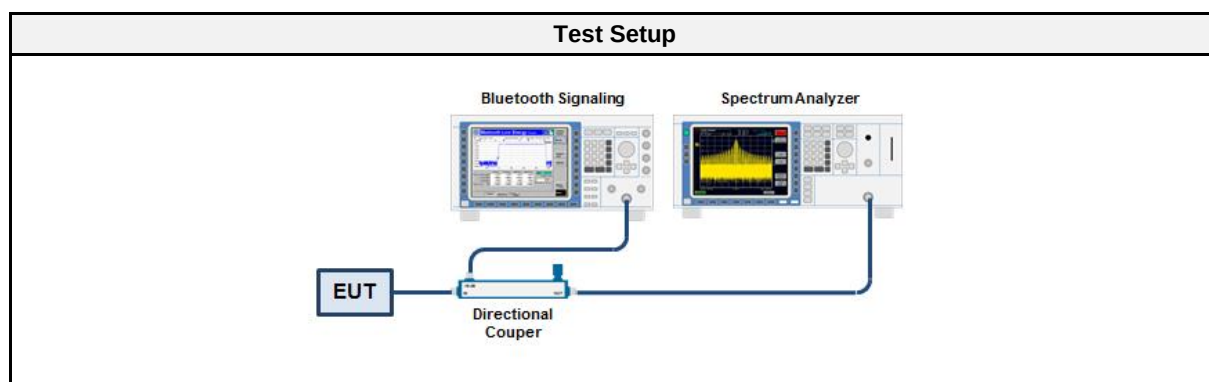
3.5.1 Information

Test Information	
Reference	FCC § 15.247(a)(1)(iii); ISED RSS-247, Issue 2 (section 5.1)
Measurement Method	ANSI C63.10 7.8.2
Operator	Abdullah Al Jamal
Date	2019-06-06

3.5.2 Limits

Limits
$\leq 0.4 \text{ s within } 0.4 \text{ s} \cdot \text{Number of hopping channels}$

3.5.3 Setup



3.5.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSW 43	EF00896	2018-07	2019-07

3.5.5 Procedure

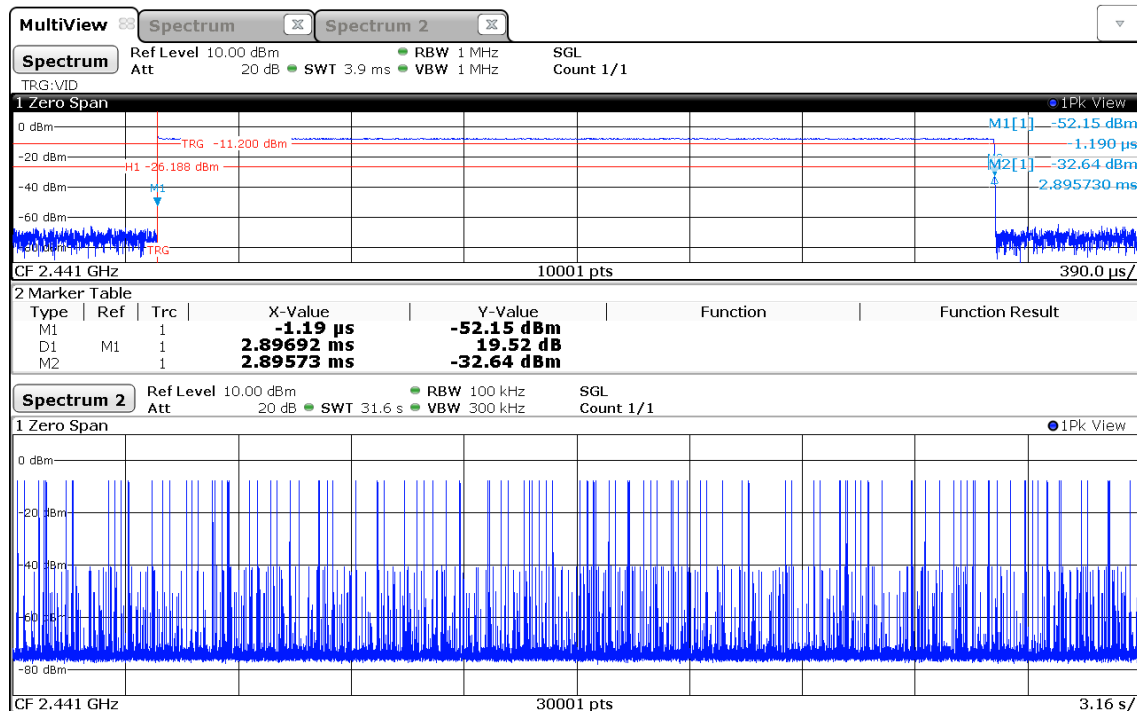
Test Procedure
1. EUT set to test hopping mode (Communication tester is used if needed) 2. Analyzer span is set to zero span 3. Detector set to peak and max hold 4. RBW is set to 100 kHz and VBW to 300 kHz 5. The sweep time is set to capture one single dwell time 6. Trigger is set to video trigger 7. A marker is set to the start and end positions of the burst 8. The dwell time is determined from the marker difference 9. Another sweep is initiated without trigger and sweep time set to the observation time 10. The number of hops is counted 11. The total time of occupancy is calculated from the dwell time per hop multiplied by the number of hops

3.5.6 Results

Test Results					
Observation Period [s]	Number of Hops	Dwell time per Hop [s]	Time of occupancy [s]	Limit [s]	Margin [s]
31.6	109	2.897	0.316	0.4	-00.08

Time of occupancy

Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Method: ANSI C63.10:2013 7.8.4
 Operational Mode: DH5, Hopping mode
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Dwell Time per Hop [ms]: 2.897
 Number of Hops: 109
 Time of occupancy [s]: 0.316



12:57:29 06.06.2019

3.6 Test Conditions and Results - Maximum peak conducted output power

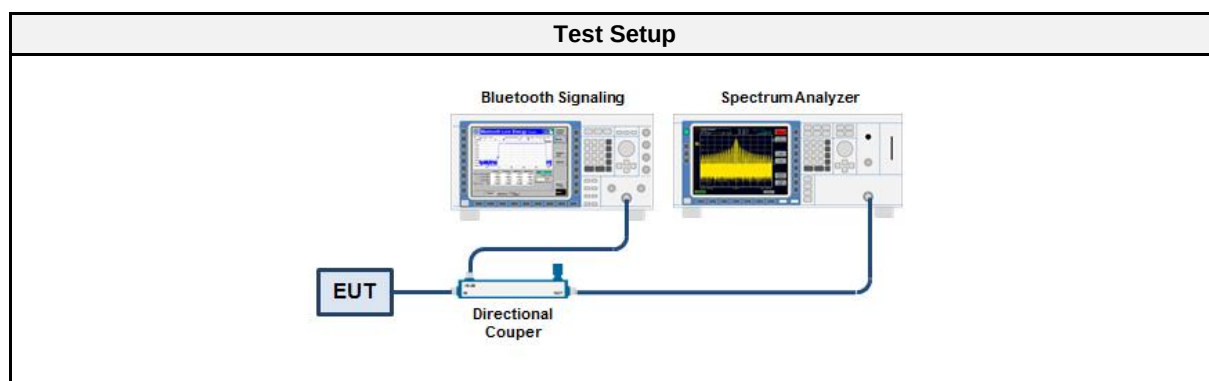
3.6.1 Information

Test Information	
Reference	FCC § 15.247(b)(1); ISED RSS-247, Issue 2 (section 5.4)
Measurement Method	ANSI C63.10 7.8.5
Operator	Abdullah Al Jamal
Date	2019-06-06

3.6.2 Limits

Limits	
Condition	Power
Number of hopping channels ≥ 75	1 W (30 dBm)
$75 > \text{Number of hopping channels} \geq 15$	0.125 W (21 dBm)
The conducted output power limit specified above is based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in the table, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.	

3.6.3 Setup



3.6.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSW 43	EF00896	2018-07	2019-07

3.6.5 Procedure

Test Procedure
1. EUT set to test mode (Communication tester is used if needed) 2. Analyzer resolution bandwidth is set $\geq$ DTS bandwidth 3. Detector set to peak and max hold 4. Sweep time is set to auto 5. After the trace has stabilized a marker is set to peak of envelope

3.6.6 Results

Test Results - DH5				
Channel [MHz]	Power [dBm]	Power [W]	Limit [W]	Verdict
2402	1.003	0.0013	1.0	PASS
2441	1.372	0.0014	1.0	PASS
2480	2.488	0.0018	1.0	PASS

Test Results - 2-DH5				
Channel [MHz]	Power [dBm]	Power [W]	Limit [W]	Verdict
2402	0.068	0.0010	1.0	PASS
2441	0.088	0.0010	1.0	PASS
2480	0.342	0.0011	1.0	PASS

Test Results - 3-DH5				
Channel [MHz]	Power [dBm]	Power [W]	Limit [W]	Verdict
2402	0.083	0.0010	1.0	PASS
2441	0.096	0.0010	1.0	PASS
2480	0.344	0.0011	1.0	PASS

3.7 Test Conditions and Results - AC powerline conducted emissions

3.7.1 Information

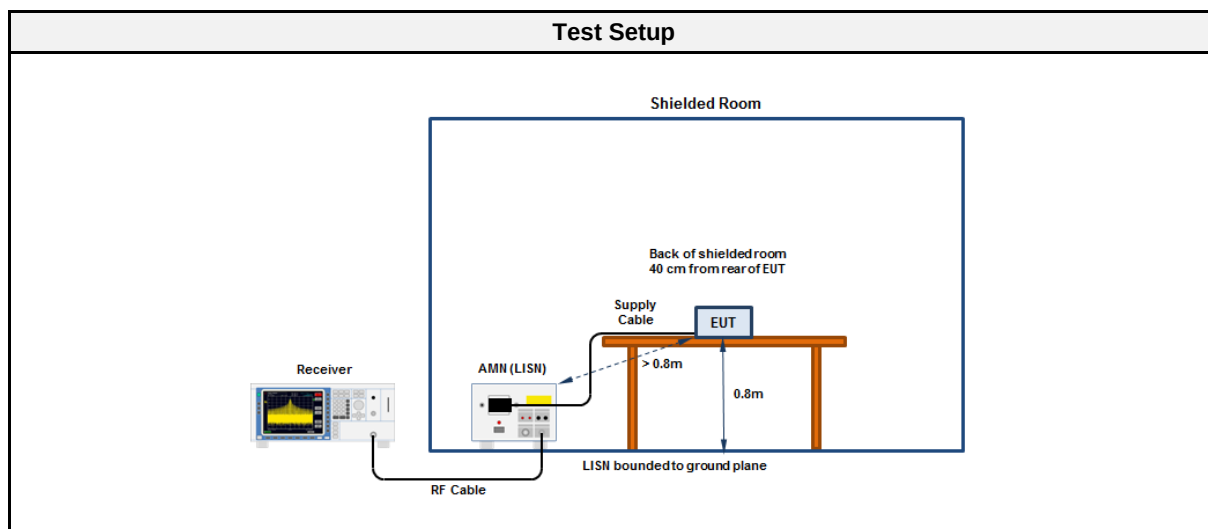
Test Information	
Reference	FCC § 15.207; ISED RSS-247, Issue 2 (section 3.1)
Measurement Method	ANSI C63.10 6.2
Operator	Abdullah Al Jamal
Date	2019-06-24

3.7.2 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

3.7.3 Setup



3.7.4 Equipment

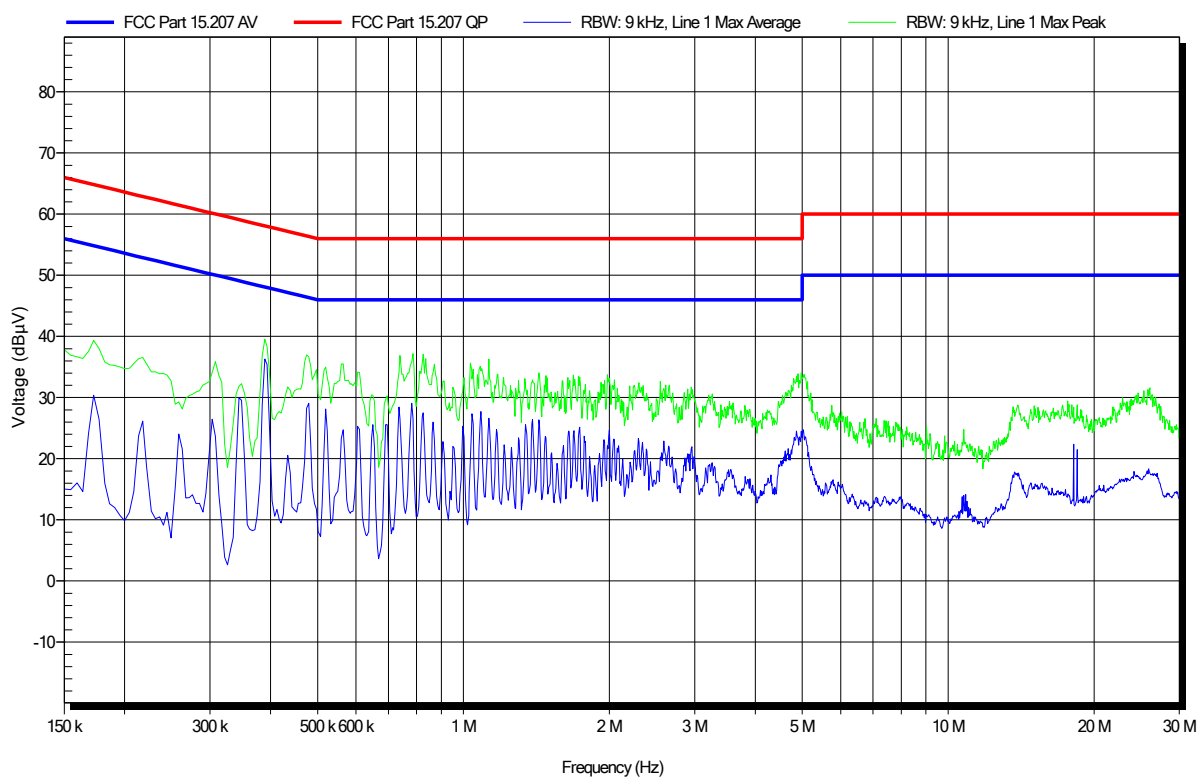
Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2016.1.10

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: 2441 MHz
 Test Date: 2019-06-24
 Note:

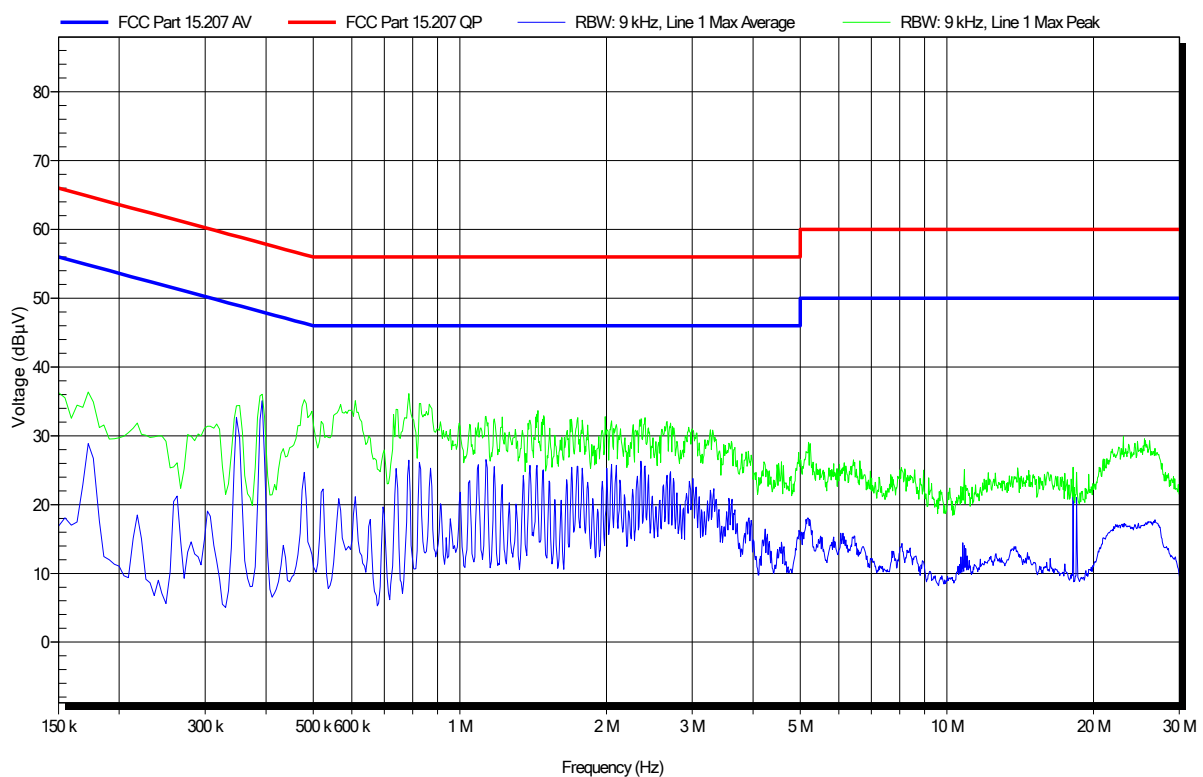
Index 44



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: 2441 MHz
 Test Date: 2019-06-24
 Note:

Index 45



3.8 Test Conditions and Results - Band-edge compliance

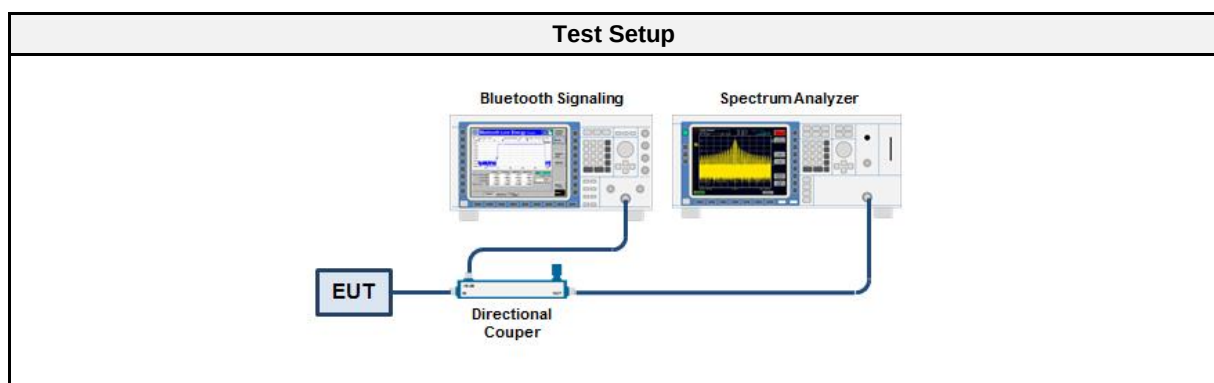
3.8.1 Information

Test Information	
Reference	FCC § 15.247(d); ISED RSS-247, Issue 2 (section 5.5)
Measurement Method	ANSI C63.10 6.10
Operator	Abdullah Al Jamal
Date	2019-06-06

3.8.2 Limits

Limits	
Power Measurement	Out-of-band attenuation [dB]
Peak	20
RMS	30

3.8.3 Setup



3.8.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSW 43	EF00896	2018-07	2019-07

3.8.5 Procedure

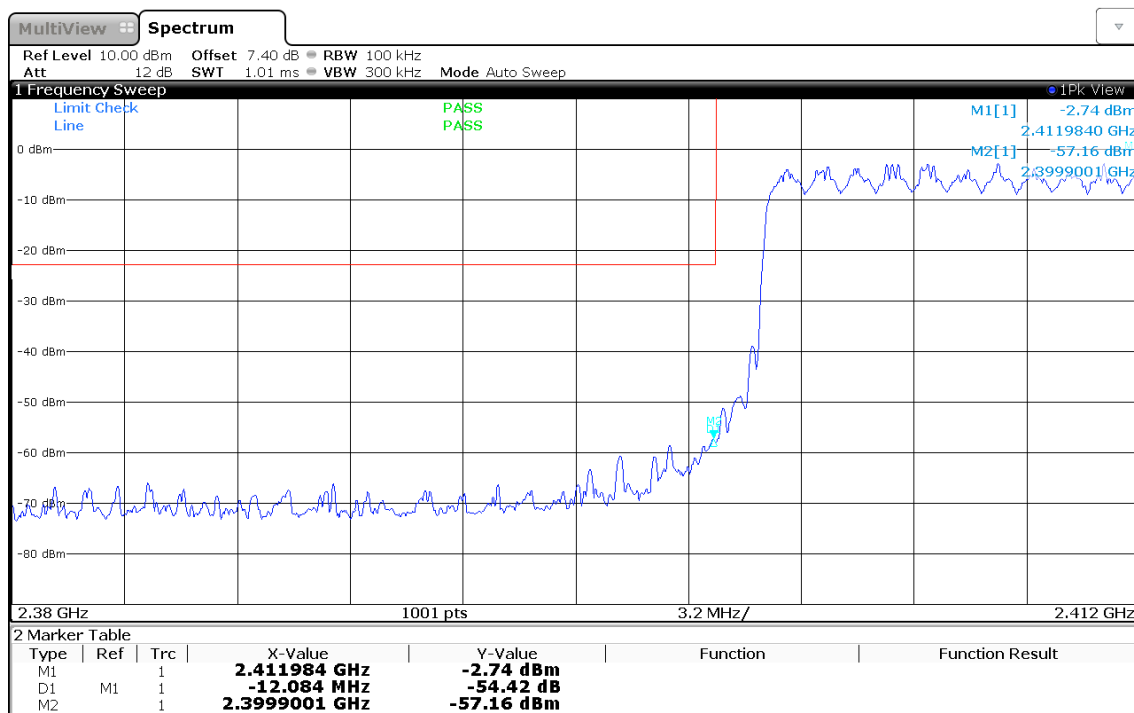
Test Procedure
1. EUT set to test mode (Communication tester is used if needed) 2. Span set around lower band edge and detector is set to peak and max hold 3. Resolution bandwidth is set to 100 kHz 4. Markers are set to peak emission levels within frequency band and outside frequency band 5. Band edge attenuation is determined from level difference

3.8.6 Results

Test Results				
Mode	Channel [MHz]	Out-of-band Attenuation [dB]	Limit [dB]	Verdict
DH5 single	2402	-47.45	-20	PASS
DH5 single	2480	-60.03	-20	PASS
DH5 hopping	2402	-56.25	-20	PASS
DH5 hopping	2480	-55.90	-20	PASS
2-DH5 single	2402	-51.15	-20	PASS
2-DH5 single	2480	-45.96	-20	PASS
2-DH5 hopping	2402	-54.42	-20	PASS
2-DH5 hopping	2480	-49.12	-20	PASS
3-DH5 single	2402	-48.79	-20	PASS
3-DH5 single	2480	-45.74	-20	PASS
3-DH5 hopping	2402	-50.22	-20	PASS
3-DH5 hopping	2480	-47.76	-20	PASS

Emissions in non-restricted frequency bands at the Band-edge

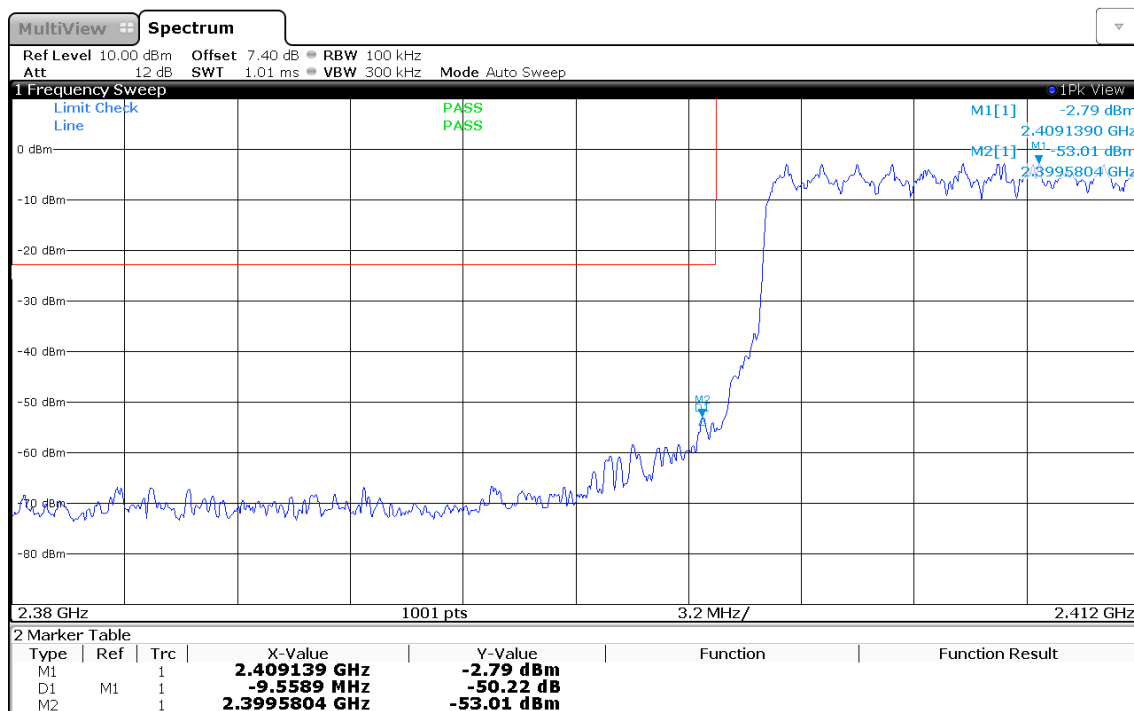
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 7.8.6, 6.10.4
 Operational Mode: 2-DH5, Hopping
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Band-edge: Lower
 In-band Frequency [MHz]: 2411.984
 Max. in-band Level [dBm/100 kHz]: -2.736
 Out-of-band Frequency [MHz]: 2399.9
 Max. out-of-band Level [dBm/100 kHz]: -57.16
 Attenuation [dB]: -54.42



13:30:11 06.06.2019

Emissions in non-restricted frequency bands at the Band-edge

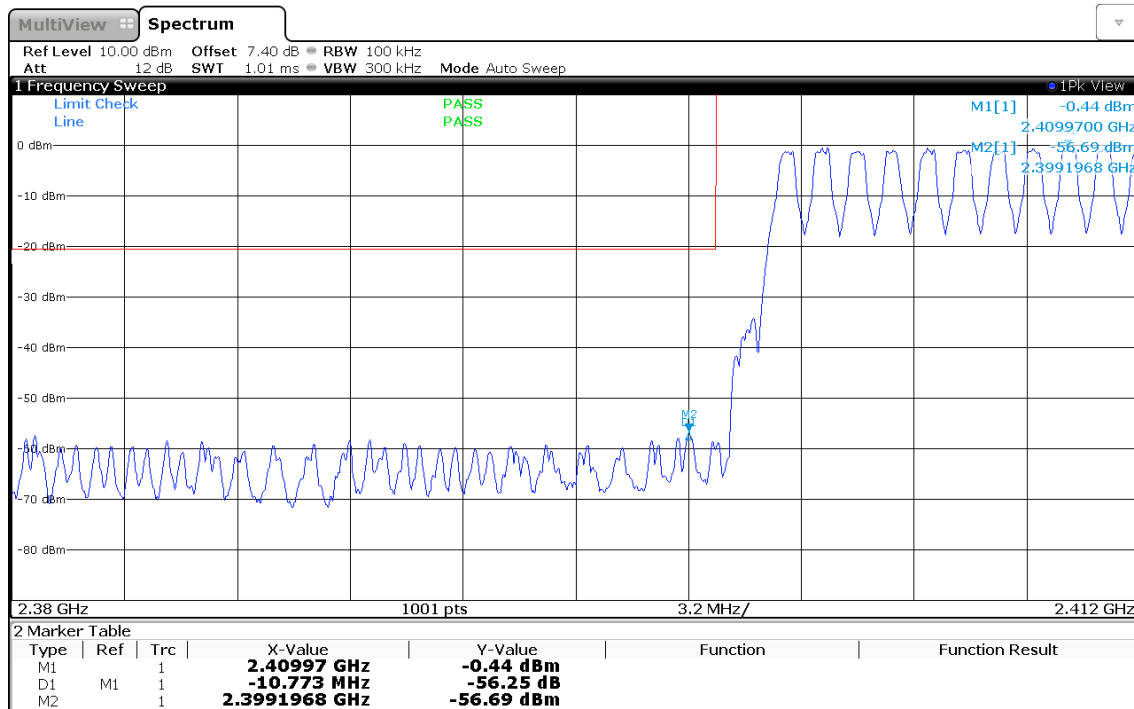
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 7.8.6, 6.10.4
 Operational Mode: 3-DH5, Hopping
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Band-edge: Lower
 In-band Frequency [MHz]: 2409.139
 Max. in-band Level [dBm/100 kHz]: -2.792
 Out-of-band Frequency [MHz]: 2399.58
 Max. out-of-band Level [dBm/100 kHz]: -53.013
 Attenuation [dB]: -50.22



13:31:12 06.06.2019

Emissions in non-restricted frequency bands at the Band-edge

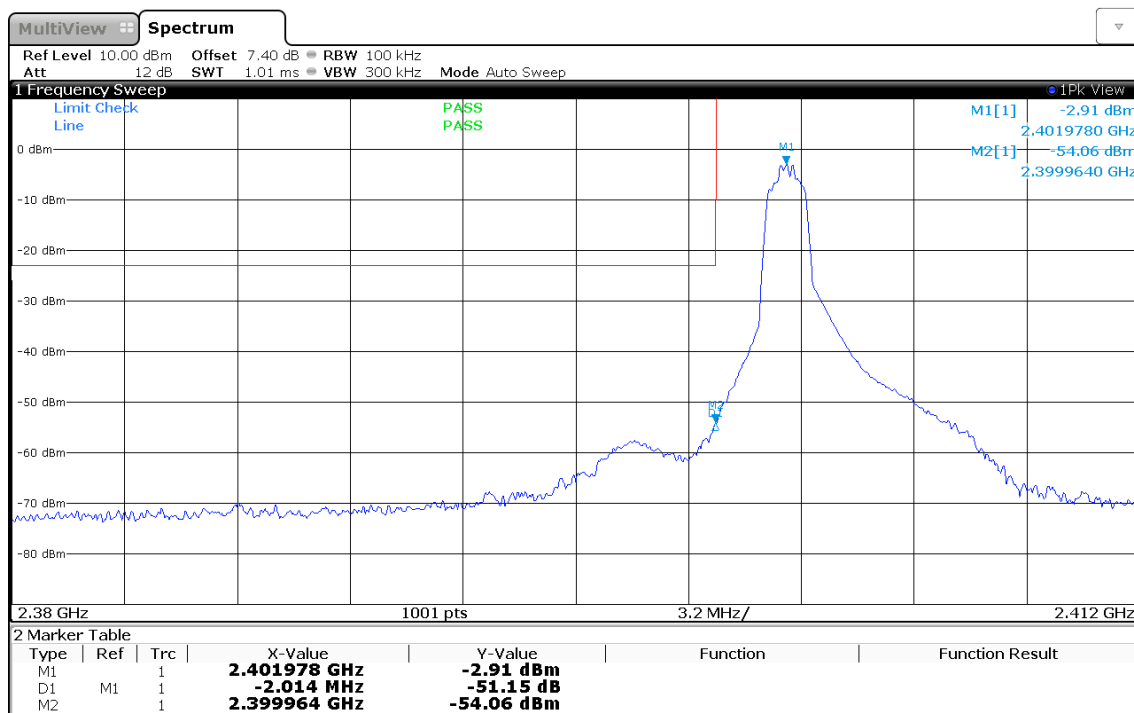
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 7.8.6, 6.10.4
 Operational Mode: DH5, Hopping
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Band-edge: Lower
 In-band Frequency [MHz]: 2409.97
 Max. in-band Level [dBm/100 kHz]: -0.443
 Out-of-band Frequency [MHz]: 2399.197
 Max. out-of-band Level [dBm/100 kHz]: -56.691
 Attenuation [dB]: -56.25



13:29:03 06.06.2019

Emissions in non-restricted frequency bands at the Band-edge

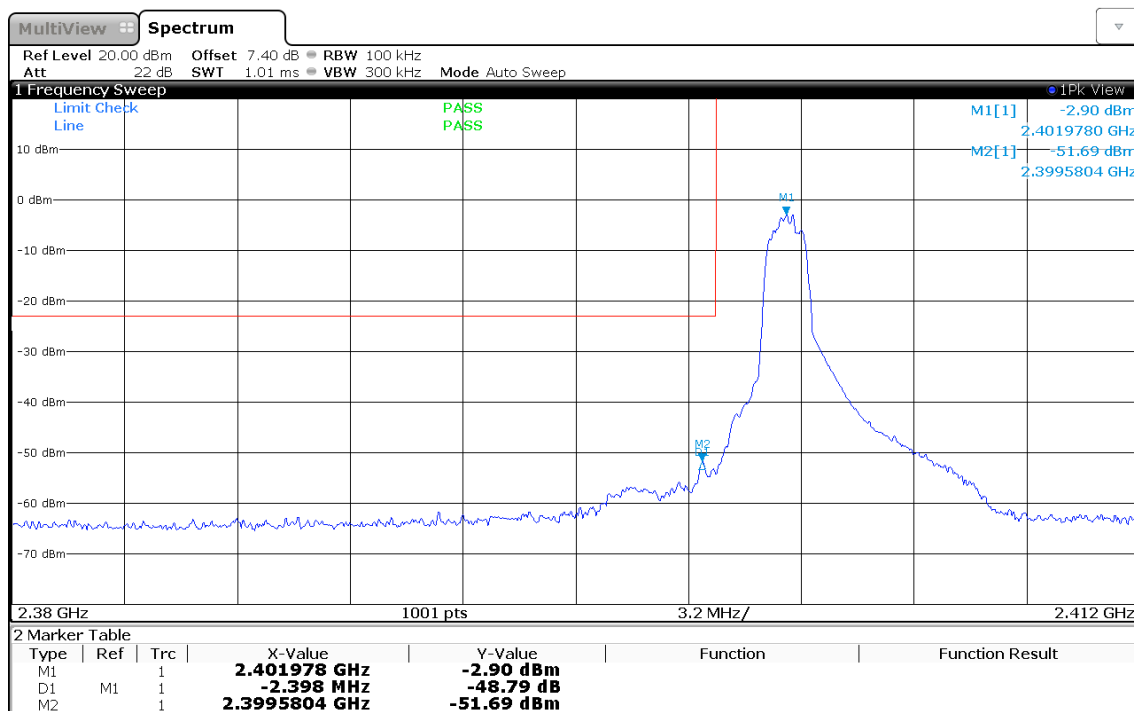
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 7.8.6, 6.10.4
 Operational Mode: 2-DH5, Channel: 0, 2402 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Band-edge: Lower
 In-band Frequency [MHz]: 2401.978
 Max. in-band Level [dBm/100 kHz]: -2.906
 Out-of-band Frequency [MHz]: 2399.964
 Max. out-of-band Level [dBm/100 kHz]: -54.06
 Attenuation [dB]: -51.15



13:25:13 06.06.2019

Emissions in non-restricted frequency bands at the Band-edge

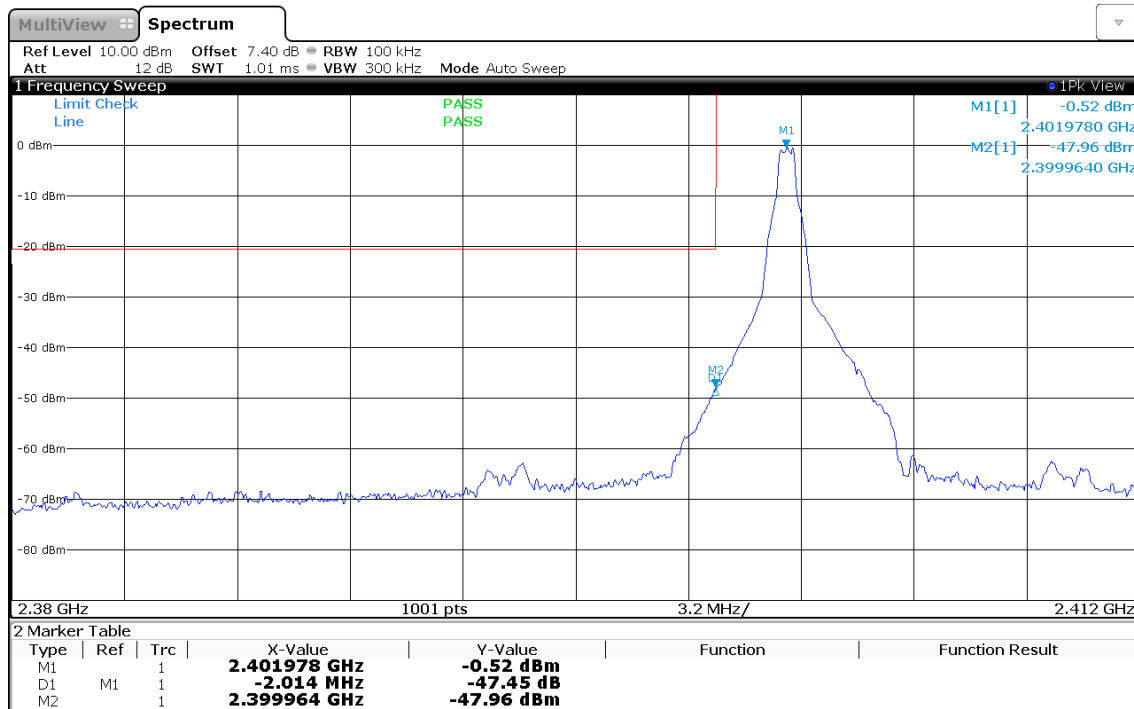
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 7.8.6, 6.10.4
 Operational Mode: 3-DH5, Channel: 0, 2402 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Band-edge: Lower
 In-band Frequency [MHz]: 2401.978
 Max. in-band Level [dBm/100 kHz]: -2.898
 Out-of-band Frequency [MHz]: 2399.58
 Max. out-of-band Level [dBm/100 kHz]: -51.687
 Attenuation [dB]: -48.79



13:26:18 06.06.2019

Emissions in non-restricted frequency bands at the Band-edge

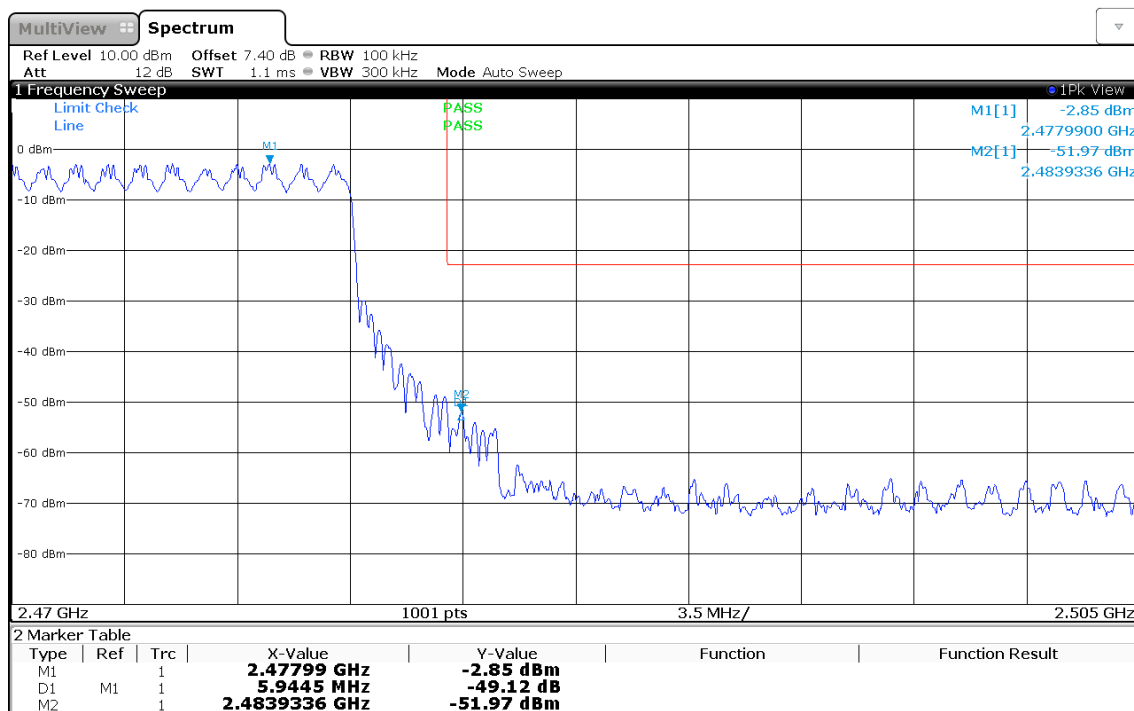
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 7.8.6, 6.10.4
 Operational Mode: DH5, Channel: 0, 2402 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Band-edge: Lower
 In-band Frequency [MHz]: 2401.978
 Max. in-band Level [dBm/100 kHz]: -0.517
 Out-of-band Frequency [MHz]: 2399.964
 Max. out-of-band Level [dBm/100 kHz]: -47.965
 Attenuation [dB]: -47.45



13:24:00 06.06.2019

Emissions in non-restricted frequency bands at the Band-edge

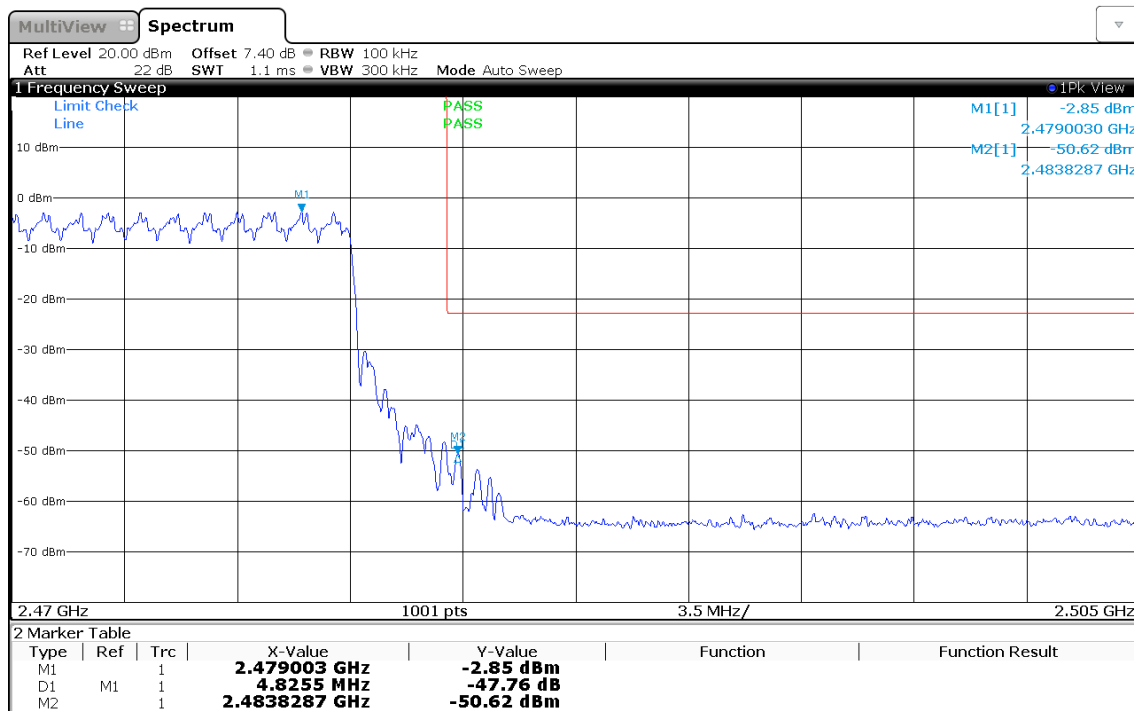
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 7.8.6, 6.10.4
 Operational Mode: 2-DH5, Hopping
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Band-edge: Upper
 In-band Frequency [MHz]: 2477.99
 Max. in-band Level [dBm/100 kHz]: -2.85
 Out-of-band Frequency [MHz]: 2483.934
 Max. out-of-band Level [dBm/100 kHz]: -51.97
 Attenuation [dB]: -49.12



13:36:56 06.06.2019

Emissions in non-restricted frequency bands at the Band-edge

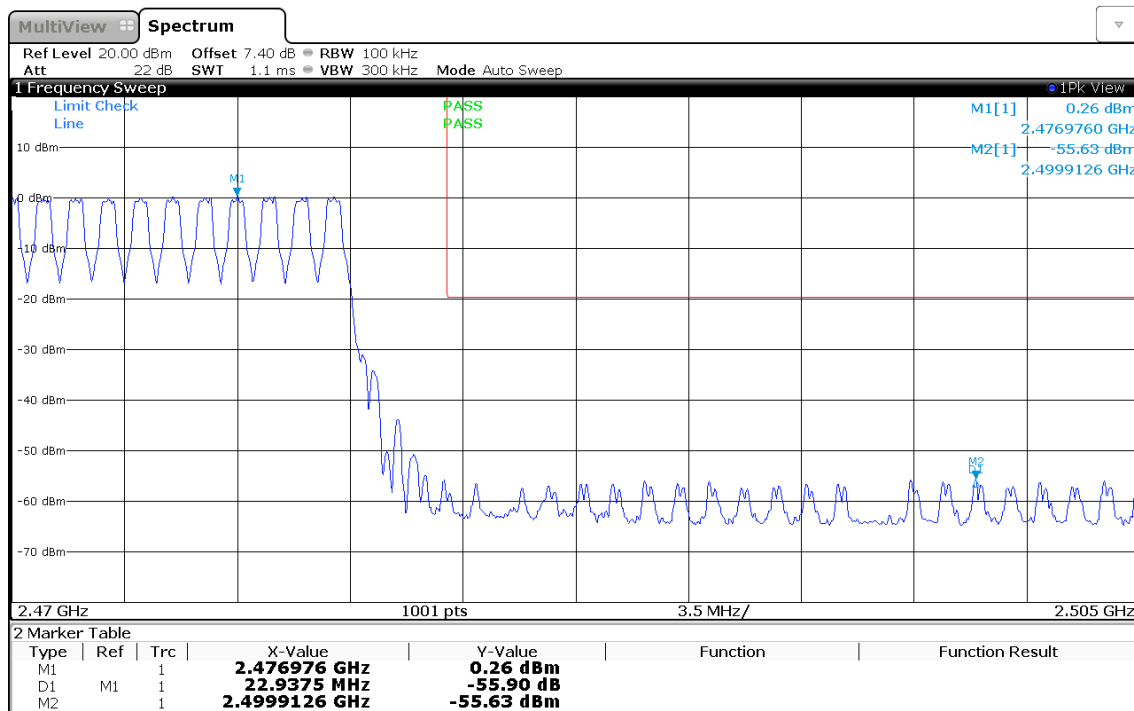
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 7.8.6, 6.10.4
 Operational Mode: 3-DH5, Hopping
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Band-edge: Upper
 In-band Frequency [MHz]: 2479.003
 Max. in-band Level [dBm/100 kHz]: -2.854
 Out-of-band Frequency [MHz]: 2483.829
 Max. out-of-band Level [dBm/100 kHz]: -50.616
 Attenuation [dB]: -47.76



13:34:25 06.06.2019

Emissions in non-restricted frequency bands at the Band-edge

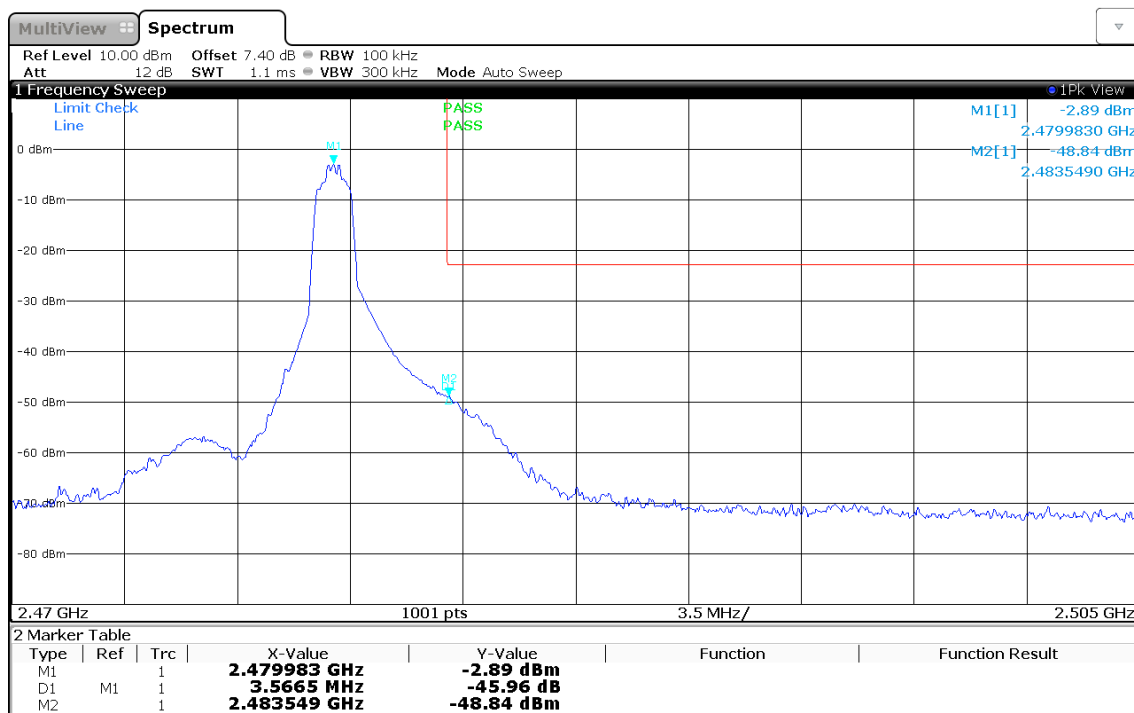
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 7.8.6, 6.10.4
 Operational Mode: DH5, Hopping
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Band-edge: Upper
 In-band Frequency [MHz]: 2476.976
 Max. in-band Level [dBm/100 kHz]: 0.264
 Out-of-band Frequency [MHz]: 2499.913
 Max. out-of-band Level [dBm/100 kHz]: -55.632
 Attenuation [dB]: -55.9



13:39:44 06.06.2019

Emissions in non-restricted frequency bands at the Band-edge

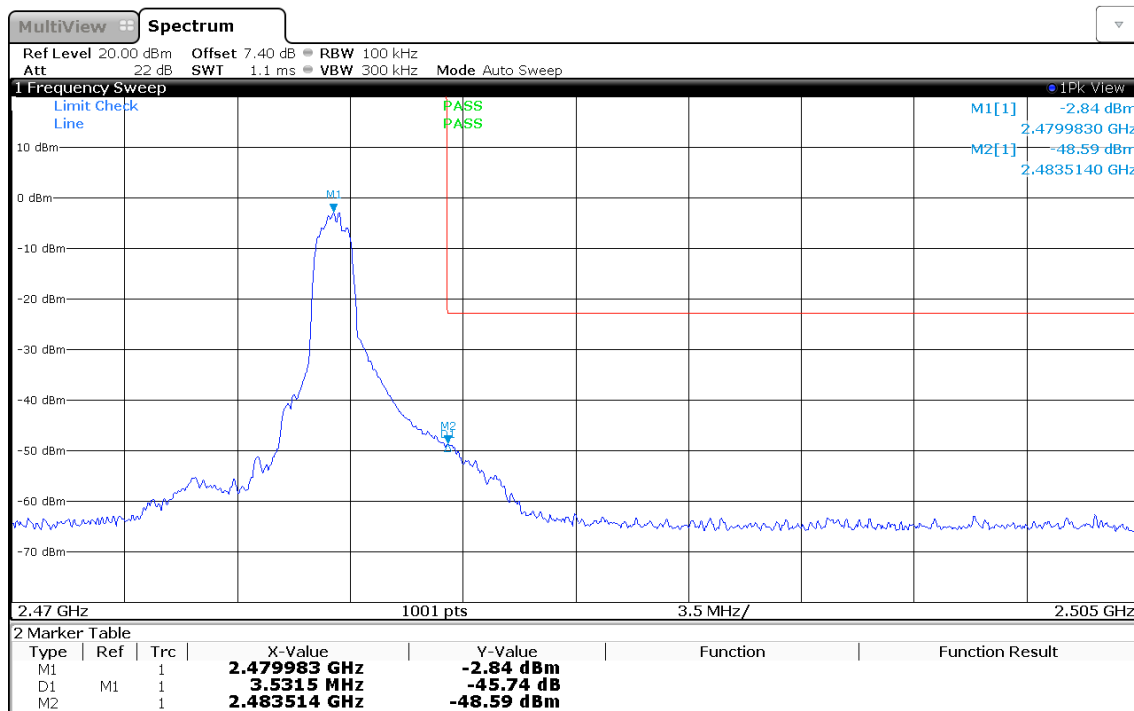
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 7.8.6, 6.10.4
 Operational Mode: 2-DH5, Channel: 78, 2480 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Band-edge: Upper
 In-band Frequency [MHz]: 2479.983
 Max. in-band Level [dBm/100 kHz]: -2.887
 Out-of-band Frequency [MHz]: 2483.549
 Max. out-of-band Level [dBm/100 kHz]: -48.844
 Attenuation [dB]: -45.96



13:42:41 06.06.2019

Emissions in nonrestricted frequency bands at the Band-edge

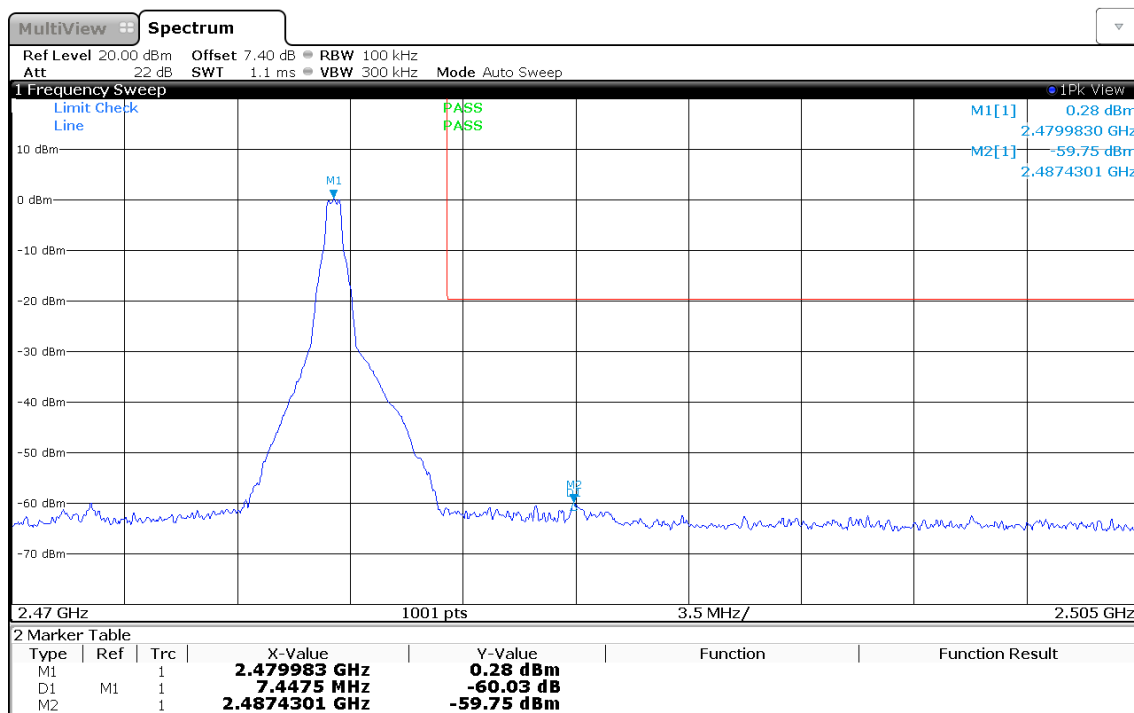
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 7.8.6, 6.10.4
 Operational Mode: 3-DH5, Channel: 78, 2480 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Band-edge: Upper
 In-band Frequency [MHz]: 2479.983
 Max. in-band Level [dBm/100 kHz]: -2.843
 Out-of-band Frequency [MHz]: 2483.514
 Max. out-of-band Level [dBm/100 kHz]: -48.585
 Attenuation [dB]: -45.74



14:15:36 06.06.2019

Emissions in non-restricted frequency bands at the Band-edge

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 7.8.6, 6.10.4
 Operational Mode: DH5, Channel: 78, 2480 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Band-edge: Upper
 In-band Frequency [MHz]: 2479.983
 Max. in-band Level [dBm/100 kHz]: 0.277
 Out-of-band Frequency [MHz]: 2487.43
 Max. out-of-band Level [dBm/100 kHz]: -59.753
 Attenuation [dB]: -60.03



13:41:18 06.06.2019

3.9 Test Conditions and Results - Conducted spurious emissions

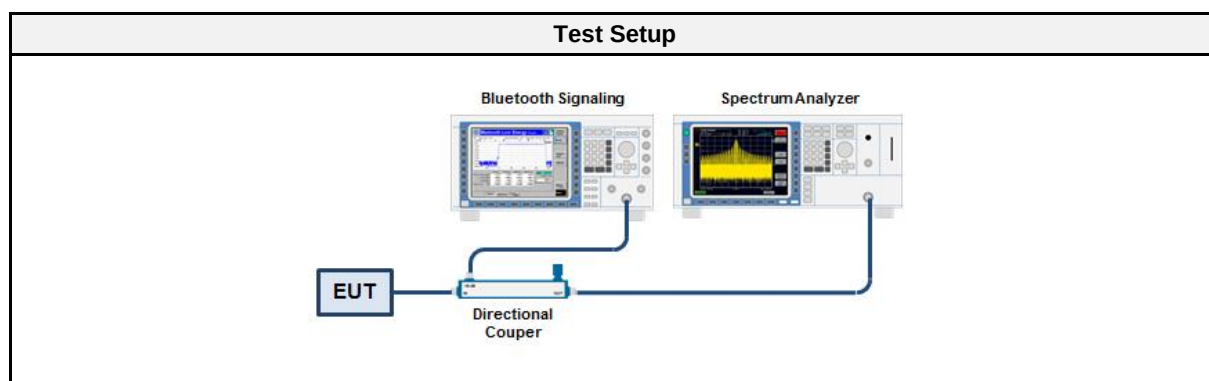
3.9.1 Information

Test Information	
Reference	FCC § 15.247(d); ISED RSS-247, Issue 2 (section 5.5)
Measurement Method	ANSI C63.10 6.10
Operator	Abdullah Al Jamal
Date	2019-06-06

3.9.2 Limits

Limits	
Power Measurement	Out-of-band attenuation [dB]
Peak	20
RMS	30

3.9.3 Setup



3.9.4 Equipment

Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Spectrum Analyzer	R&S	FSW 43	EF00896	2018-07	2019-07

3.9.5 Procedure

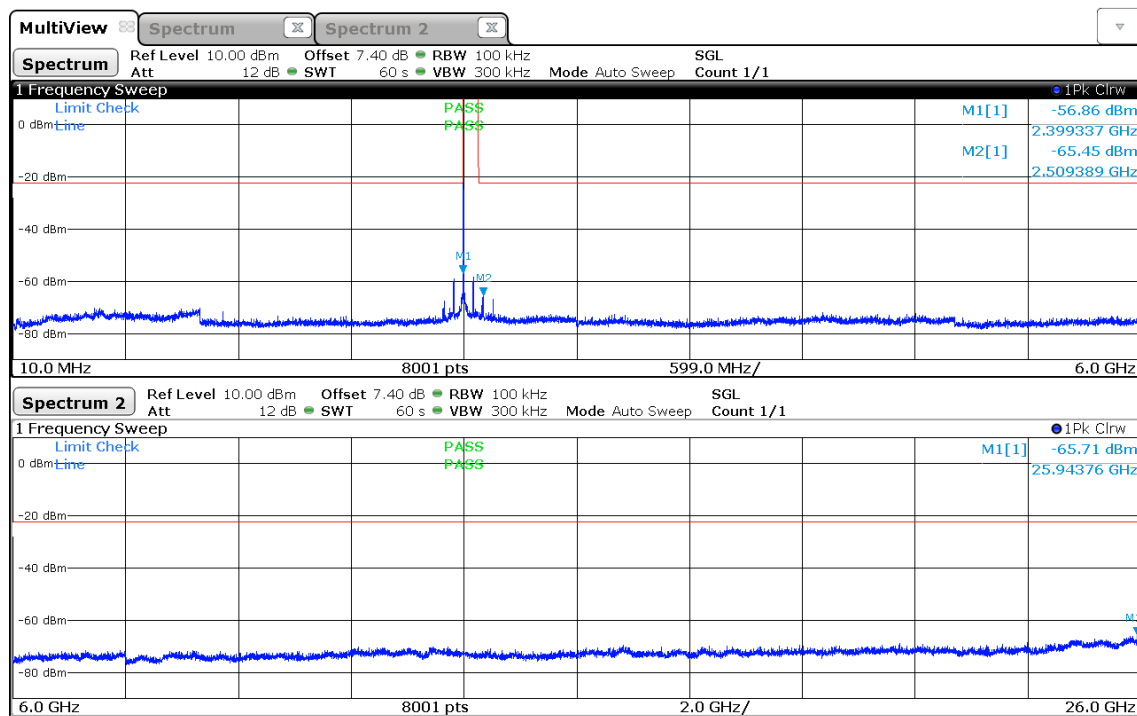
Test Procedure
1. EUT set to test mode (Communication tester is used if needed) 2. Span set around lower band edge and detector is set to peak and max hold 3. Resolution bandwidth is set to 100 kHz 4. Markers are set to peak emission levels within frequency band and outside frequency band 5. Band edge attenuation is determined from level difference

3.9.6 Results

Test Results		
Mode	Channel [MHz]	Verdict
DH5	2402	PASS
DH5	2441	PASS
DH5	2480	PASS
2-DH5	2402	PASS
2-DH5	2441	PASS
2-DH5	2480	PASS
3-DH5	2402	PASS
3-DH5	2441	PASS
3-DH5	2480	PASS

Conducted Spurious Emissions

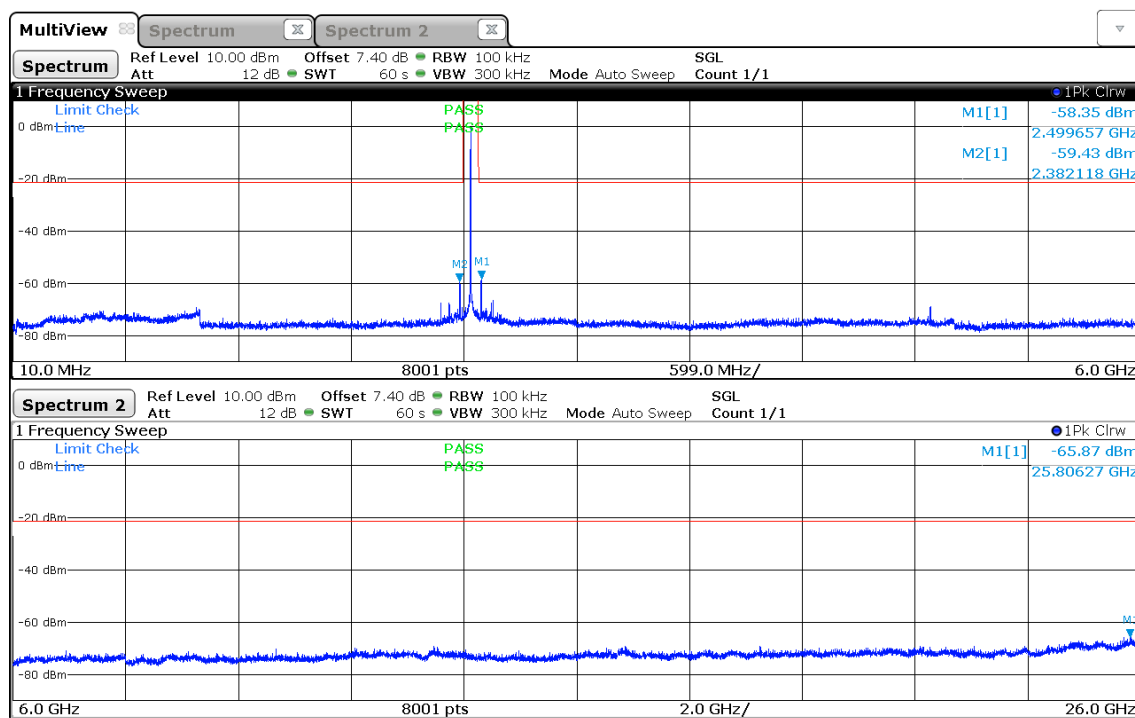
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 7.8.8
 Operational Mode: DH5, Channel: 0, 2402 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Max. in-band Frequency [MHz]: 2401.9
 Max. in-band Level [dBm/100 kHz]: -2.3
 Out-of-band Limit [dBm/100 kHz]: -22.3



14:27:35 06.06.2019

Conducted Spurious Emissions

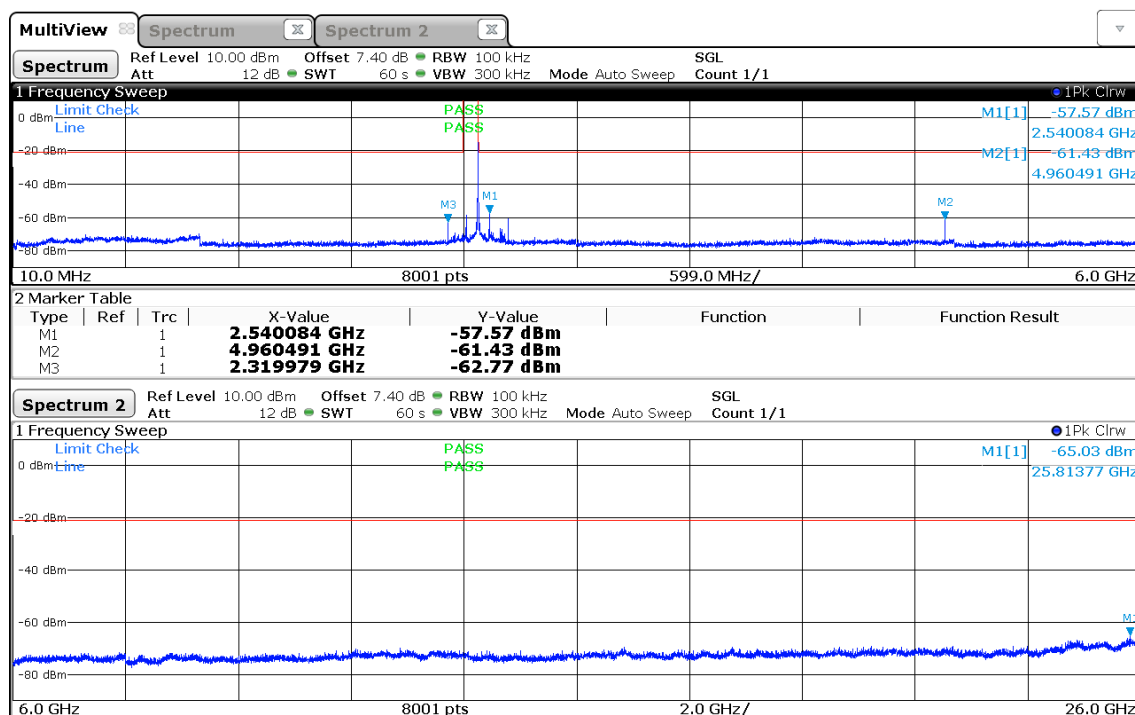
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 7.8.8
 Operational Mode: DH5, Channel: 39, 2441 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Max. in-band Frequency [MHz]: 2441.0
 Max. in-band Level [dBm/100 kHz]: -1.4
 Out-of-band Limit [dBm/100 kHz]: -21.4



14:31:53 06.06.2019

Conducted Spurious Emissions

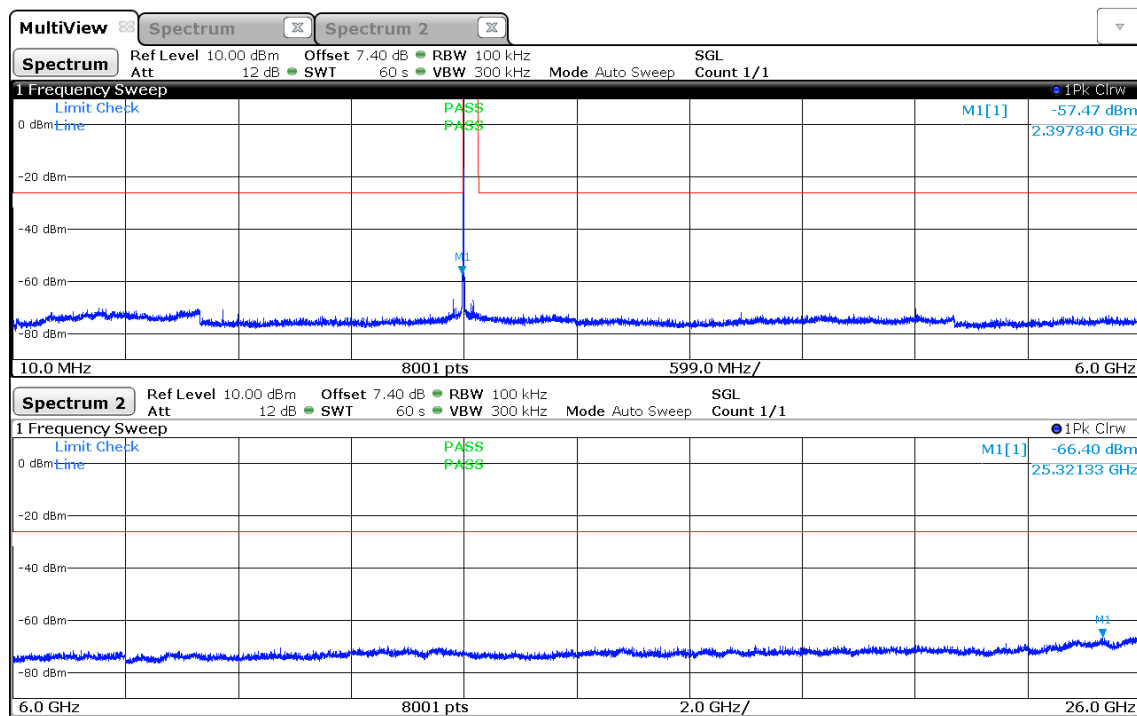
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 7.8.8
 Operational Mode: DH5, Channel: 78, 2480 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Max. in-band Frequency [MHz]: 2480.0
 Max. in-band Level [dBm/100 kHz]: -0.9
 Out-of-band Limit [dBm/100 kHz]: -20.9



14:34:30 06.06.2019

Conducted Spurious Emissions

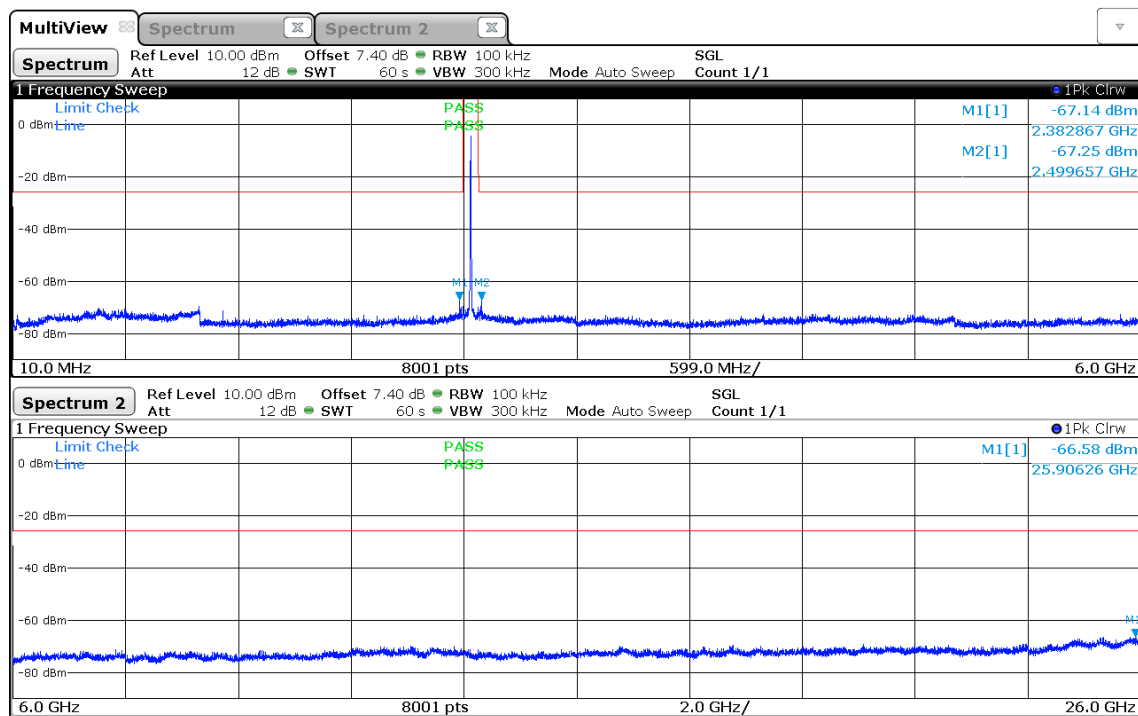
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 7.8.8
 Operational Mode: 2-DH5, Channel: 0, 2402 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Max. in-band Frequency [MHz]: 2401.8
 Max. in-band Level [dBm/100 kHz]: -5.9
 Out-of-band Limit [dBm/100 kHz]: -25.9



14:39:31 06.06.2019

Conducted Spurious Emissions

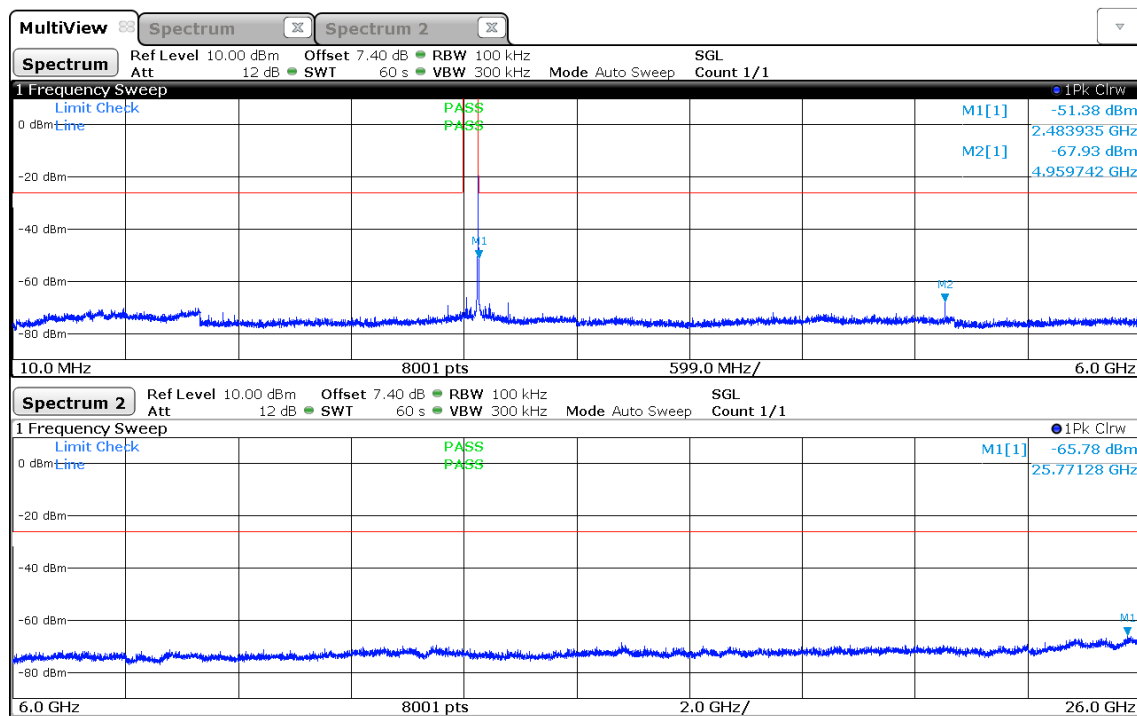
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 7.8.8
 Operational Mode: 2-DH5, Channel: 39, 2441 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Max. in-band Frequency [MHz]: 2441.0
 Max. in-band Level [dBm/100 kHz]: -5.8
 Out-of-band Limit [dBm/100 kHz]: -25.8



14:42:34 06.06.2019

Conducted Spurious Emissions

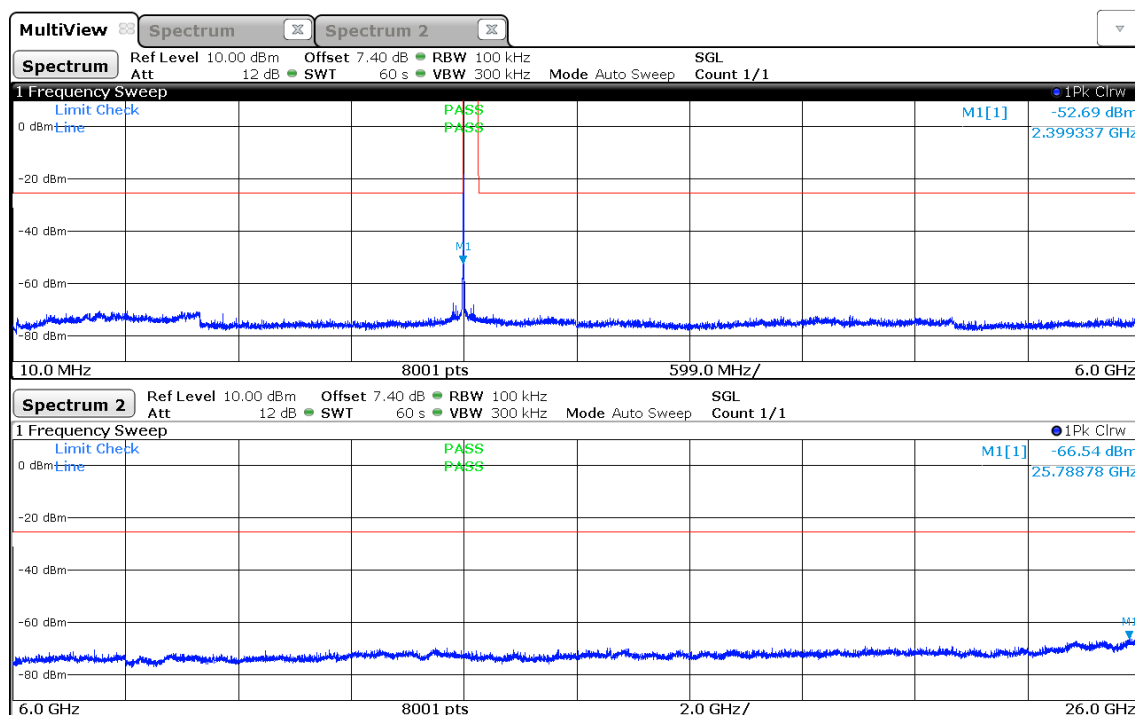
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 7.8.8
 Operational Mode: 2-DH5, Channel: 78, 2480 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Max. in-band Frequency [MHz]: 2480.0
 Max. in-band Level [dBm/100 kHz]: -5.9
 Out-of-band Limit [dBm/100 kHz]: -25.9



14:46:14 06.06.2019

Conducted Spurious Emissions

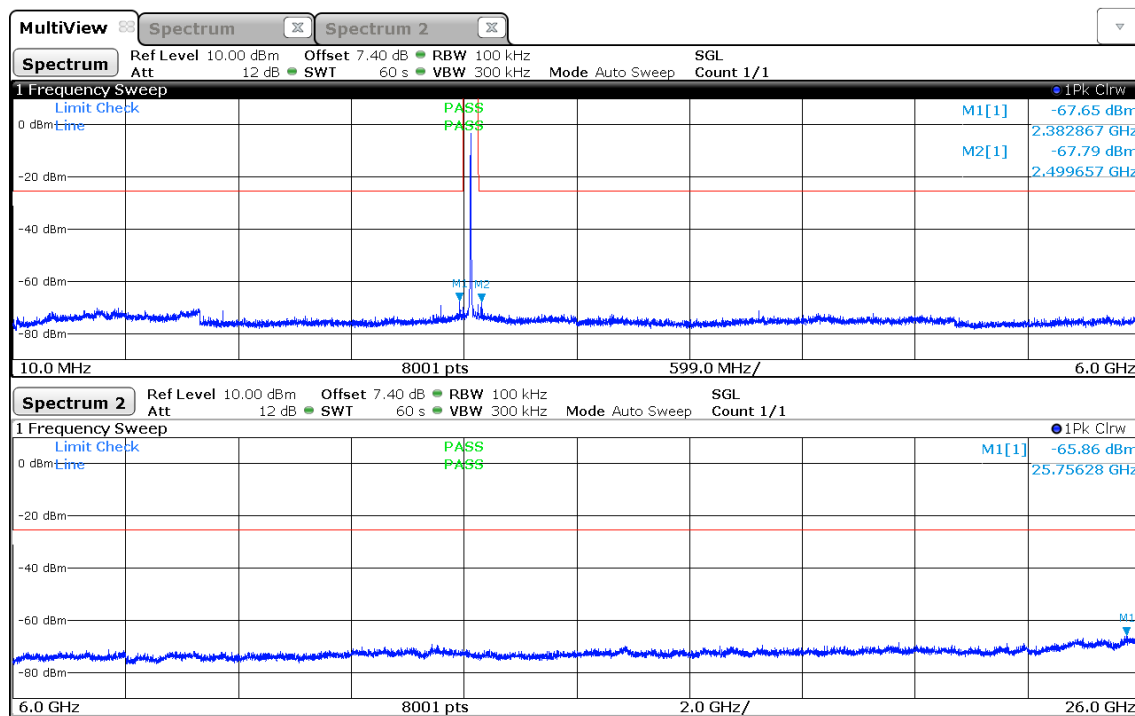
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 7.8.8
 Operational Mode: 3-DH5, Channel: 0, 2402 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Max. in-band Frequency [MHz]: 2402.1
 Max. in-band Level [dBm/100 kHz]: -5.3
 Out-of-band Limit [dBm/100 kHz]: -25.3



14:49:35 06.06.2019

Conducted Spurious Emissions

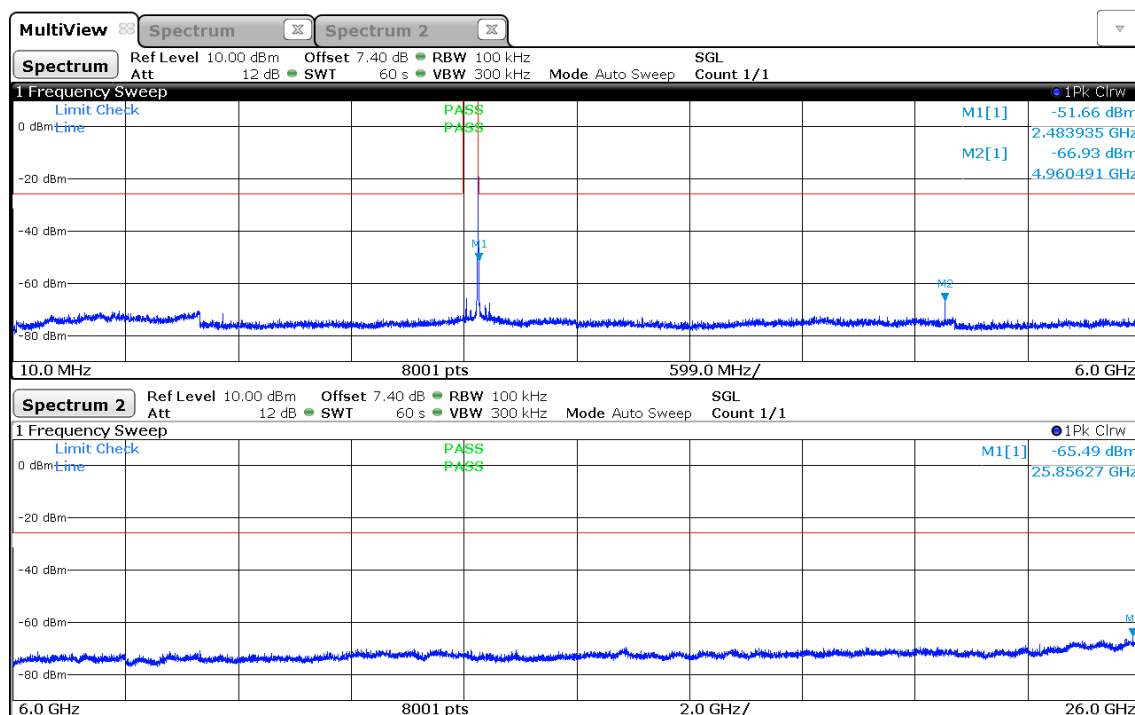
Project Number: G0M-1905-8256
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Renamic Neo Programming Device
 Model: Renamic Neo
 Test Sample ID: 24167
 Reference Standards: FCC 15.247, RSS-247
 Reference Method: ANSI C63.10:2013, Section 7.8.8
 Operational Mode: 3-DH5, Channel: 39, 2441 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Max. in-band Frequency [MHz]: 2441.1
 Max. in-band Level [dBm/100 kHz]: -5.5
 Out-of-band Limit [dBm/100 kHz]: -25.5



14:52:05 06.06.2019

Conducted Spurious Emissions

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 7.8.8
 Operational Mode: 3-DH5, Channel: 78, 2480 MHz
 Operating Conditions: Tnom/Vnom
 Operator: Abdullah Al Jamal
 Test Site: Eurofins Product Service GmbH
 Test Date: 2019-06-06
 Max. in-band Frequency [MHz]: 2479.7
 Max. in-band Level [dBm/100 kHz]: -5.6
 Out-of-band Limit [dBm/100 kHz]: -25.6



14:56:14 06.06.2019

3.10 Test Conditions and Results - Transmitter radiated emissions

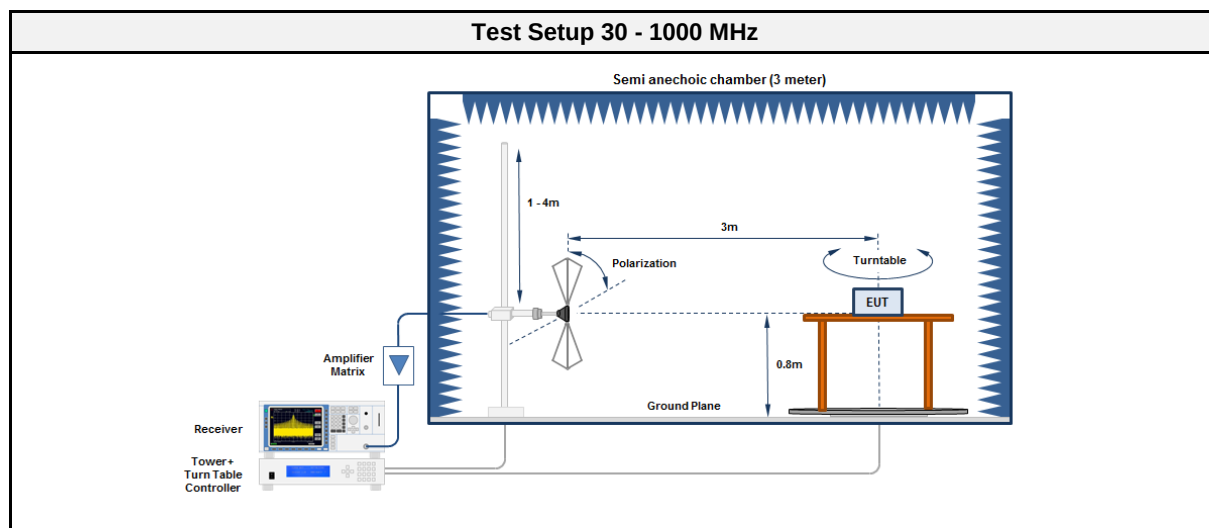
3.10.1 Information

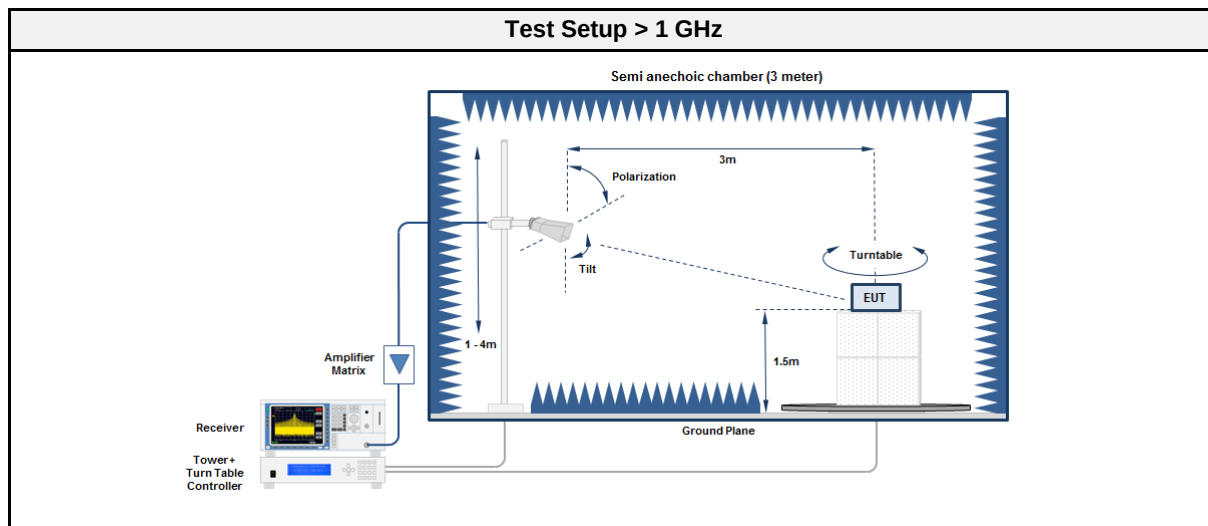
Test Information	
Reference	FCC § 15.247(d); FCC § 15.209; ISSED RSS-Gen, Issue 5 (section 6.13)
Measurement Method	ANSI C63.10 6.4, 6.5, 6.6
Operator	Abdullah Al Jamal
Date	2019-06-25

3.10.2 Limits

Limits			
Frequency [MHz]	Detector	Field strength [$\mu\text{V/m}$]	Measurement distance [m]
0.009 - 0.09	Average	2400/F[kHz]	300
0.09 - 0.110	Quasi-Peak	2400/F[kHz]	300
0.110 - 0.490	Average	2400/F[kHz]	300
0.490 - 1.705	Quasi-Peak	24000/F[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

3.10.3 Setup





3.10.4 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

3.10.5 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

3.10.6 Results

Test Results - DH5						
Channel [MHz]	Emission [MHz]	Level [dBμV/m]	Det.	Pol.	Limit [dBμV/m]	Margin [dB]
2402	No significant emissions detected.					
2441						
2441						
2441						
2480	2485.1	61.94	pk	hor	74.00	-12.06
2480	2485.1	39.40	RMS	hor	54.00	-14.60
2480	2488	60.26	pk	hor	74.00	-13.74
2480	2488	40.42	RMS	hor	54.00	-13.58
2480	2488.2	59.90	pk	hor	74.00	-14.10
2480	2488.2	40.17	RMS	hor	54.00	-13.83
2480	2490.4	57.11	pk	hor	74.00	-16.89
2480	2490.4	39.85	RMS	hor	54.00	-14.15

3.11 Test Conditions and Results - Receiver radiated emissions

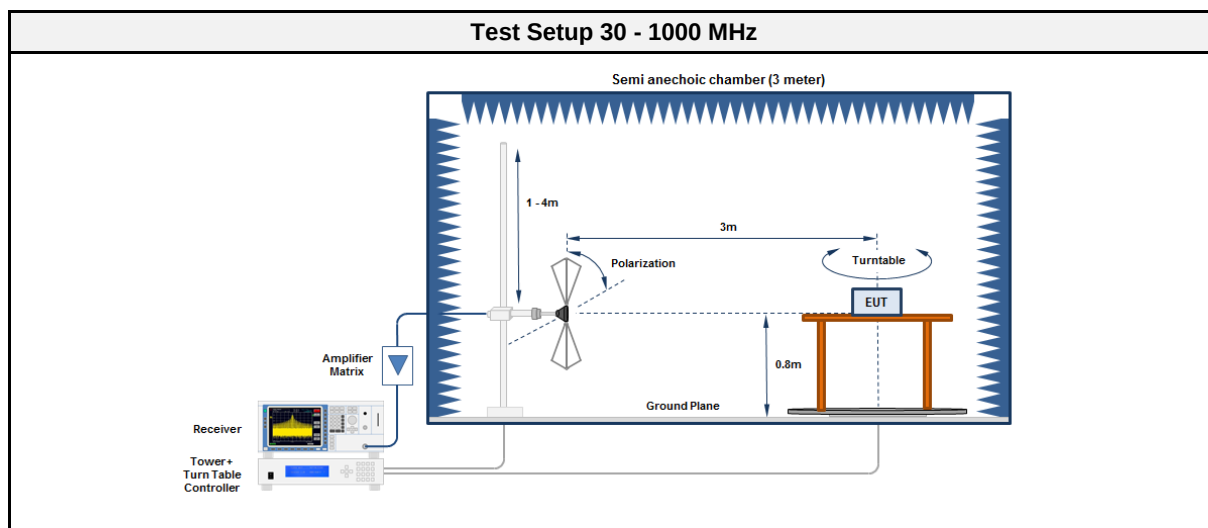
3.11.1 Information

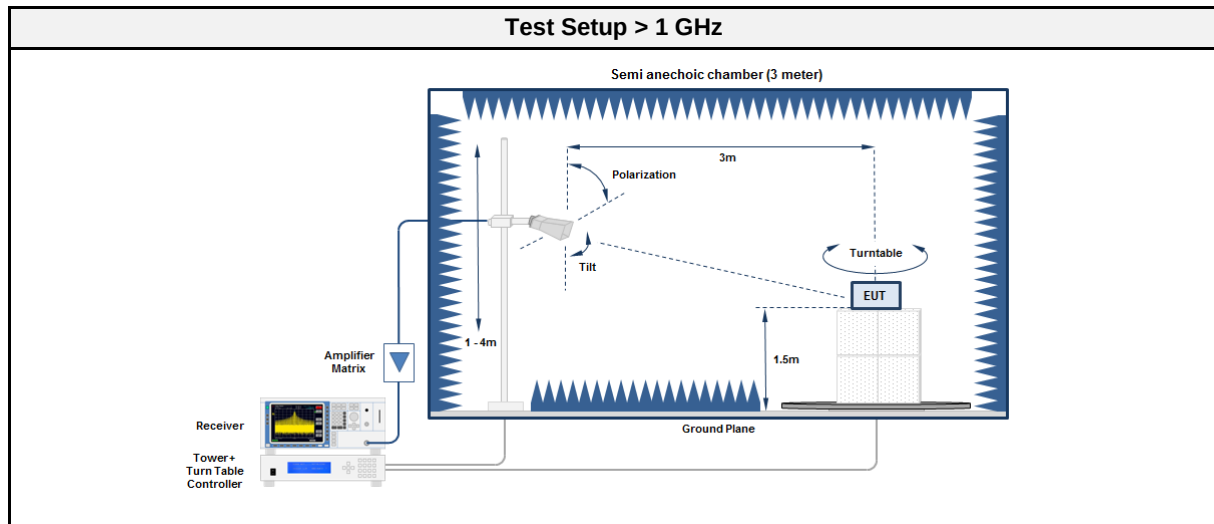
Test Information	
Reference	ISED RSS-247, Issue 2 (section 3.1)
Measurement Method	ANSI C63.10 6.5, 6.6
Operator	Abdullah Al Jamal
Date	2019-06-18

3.11.2 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

3.11.3 Setup





3.11.4 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

3.11.5 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

3.11.6 Results

Test Results						
Channel [MHz]	Emission [MHz]	Level [dBμV/m]	Det.	Pol.	Limit [dBμV/m]	Margin [dB]
Scan mode	194.016	35.49	pk	hor	43.50	-08.01
Scan mode	283.2	33.16	pk	hor	46.00	-12.84
Scan mode	319.04	33.39	pk	ver	46.00	-12.61
Scan mode	637.76	34.68	pk	ver	46.00	-11.32
Scan mode	639.04	39.06	pk	hor	46.00	-06.94
Scan mode	1331	44.34	pk	hor	53.98	-09.64
Scan mode	1629	40.19	pk	ver	53.98	-13.79
Scan mode	14610	46.98	pk	hor	53.98	-07.00

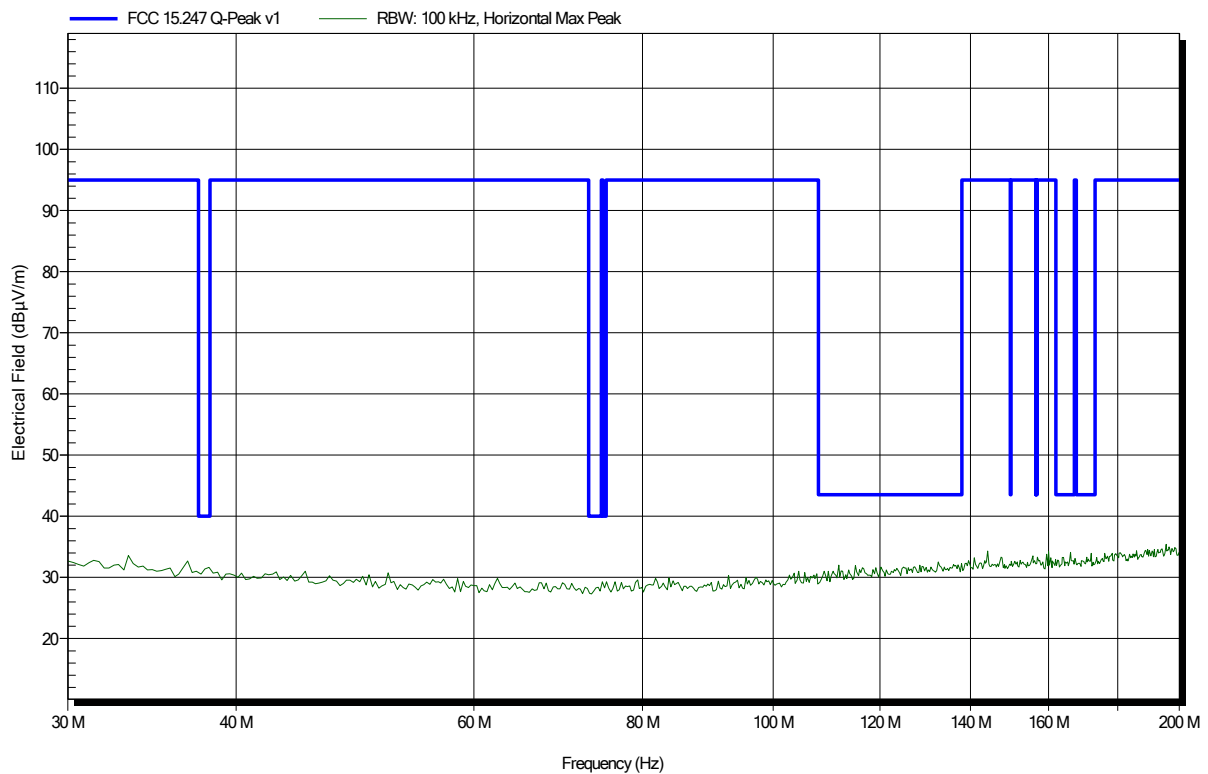
ANNEX A Transmitter spurious emissions

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 (external power supply)
Antenna: Rohde & Schwarz HK 116, Horizontal
Measurement distance: 3 m
Mode: TX; DH5 -- 2402 MHz
Test Date: 2019-06-25
Note:

Index 9

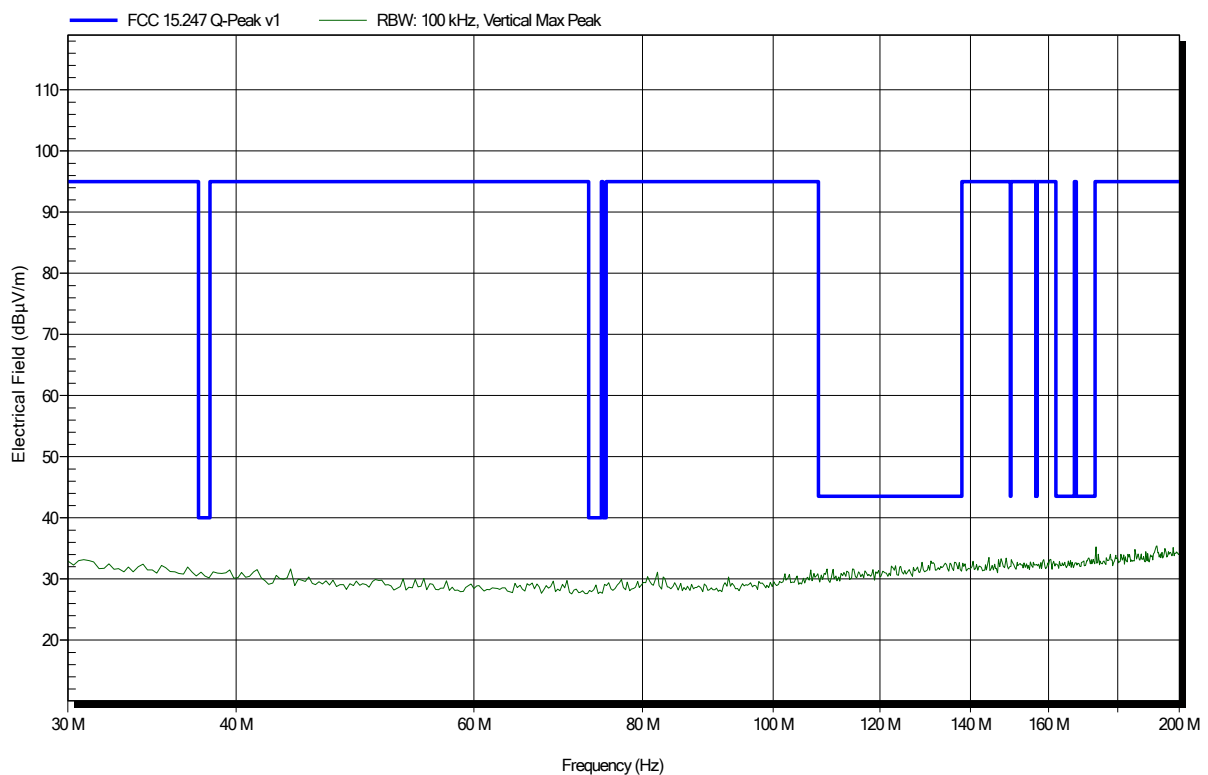


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
Antenna: Rohde & Schwarz HK 116, Vertical
Measurement distance: 3 m
Mode: TX; DH5 -- 2402 MHz
Test Date: 2019-06-25
Note:

Index 10

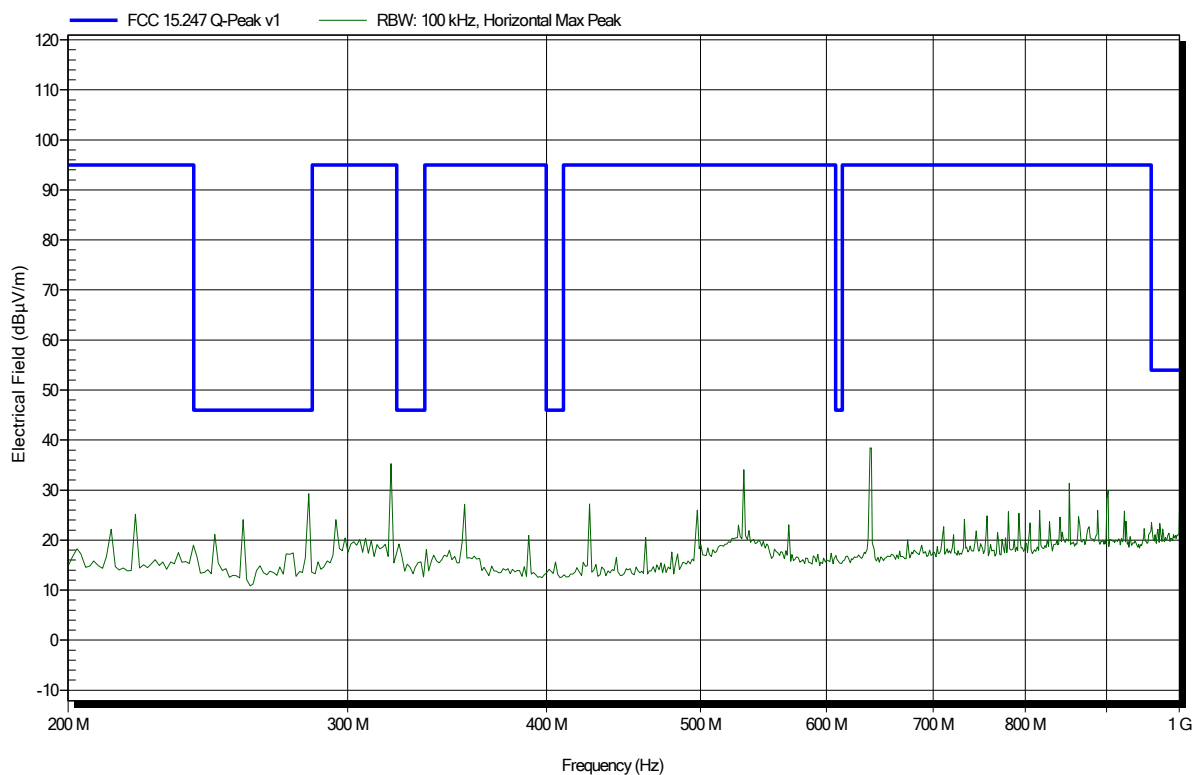


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
Antenna: Rohde & Schwarz HL 223, Horizontal
Measurement distance: 3 m
Mode: TX; DH5 -- 2402 MHz
Test Date: 2019-06-25
Note:

Index 3

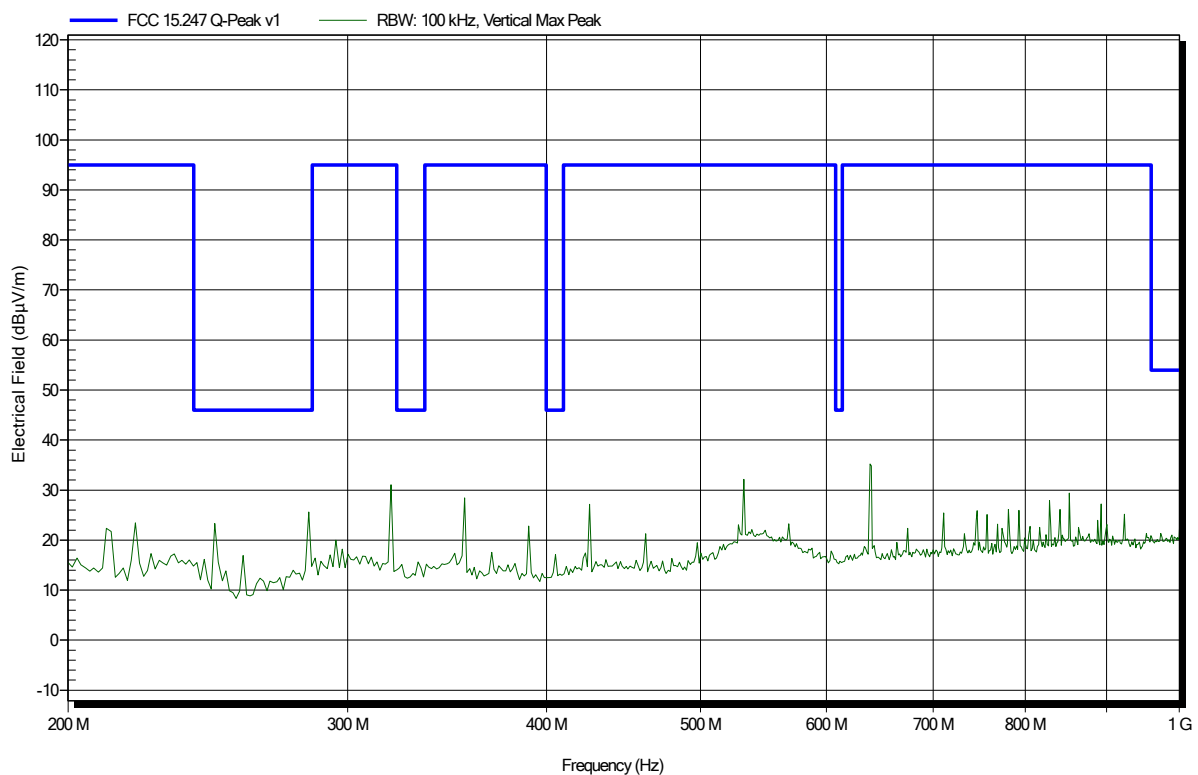


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
Antenna: Rohde & Schwarz HL 223, Vertical
Measurement distance: 3 m
Mode: TX; DH5 -- 2402 MHz
Test Date: 2019-06-25
Note:

Index 4



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 (external power supply)

Antenna: Schwarzbeck BBHA 9120D, Horizontal

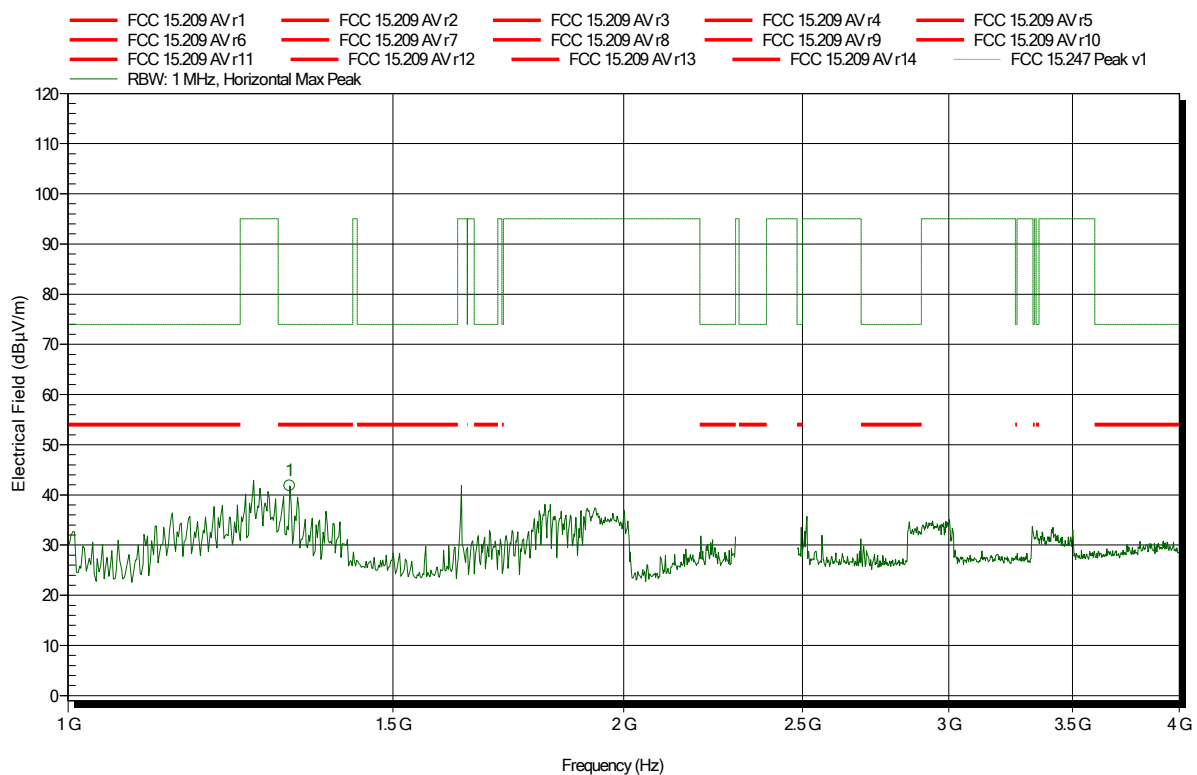
Measurement distance: 1 m converted to 3m

Mode: TX; DH5 -- 2402 MHz

Test Date: 2019-06-25

Note:

Index 19



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.3188 GHz	41.8 dBμV/m	74 dBμV/m	-32.2 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 (external power supply)

Antenna: Schwarzbeck BBHA 9120D, Vertical

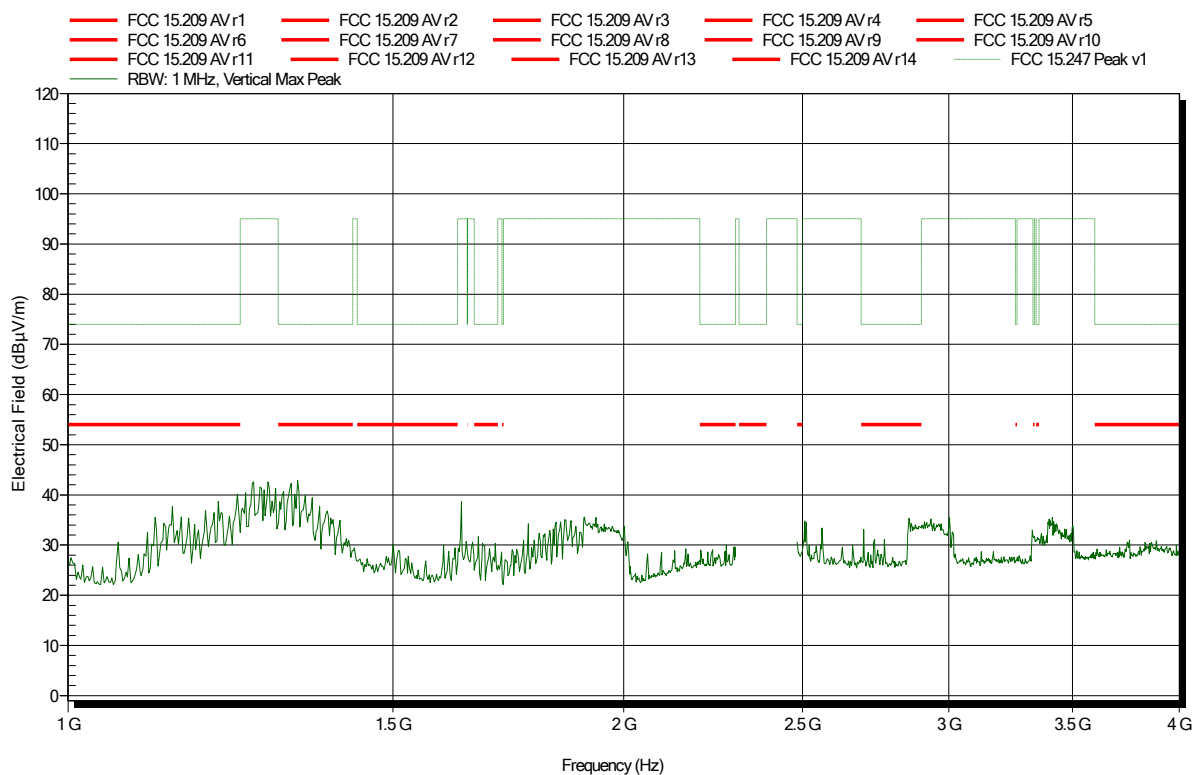
Measurement distance: 1 m converted to 3m

Mode: TX; DH5 -- 2402 MHz

Test Date: 2019-06-25

Note:

Index 34

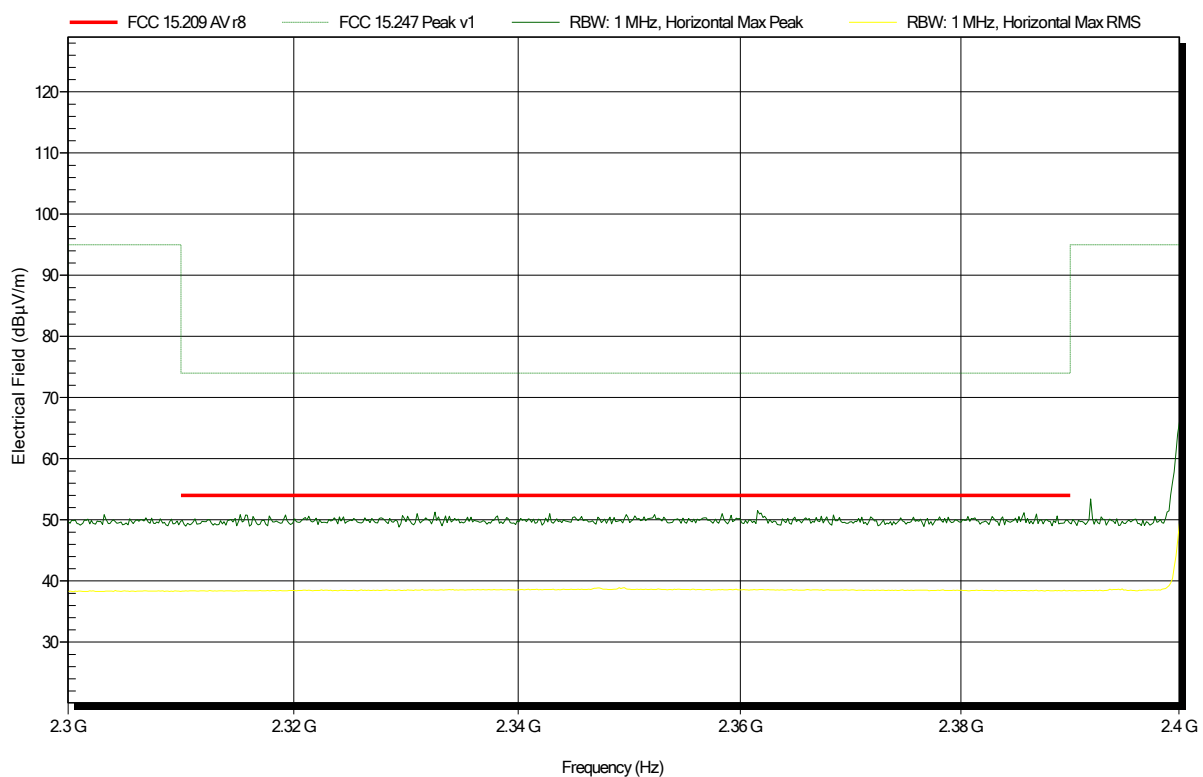


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; DH5 -- 2402 MHz
 Test Date: 2019-06-25
 Note: lower bandedge

Index 20

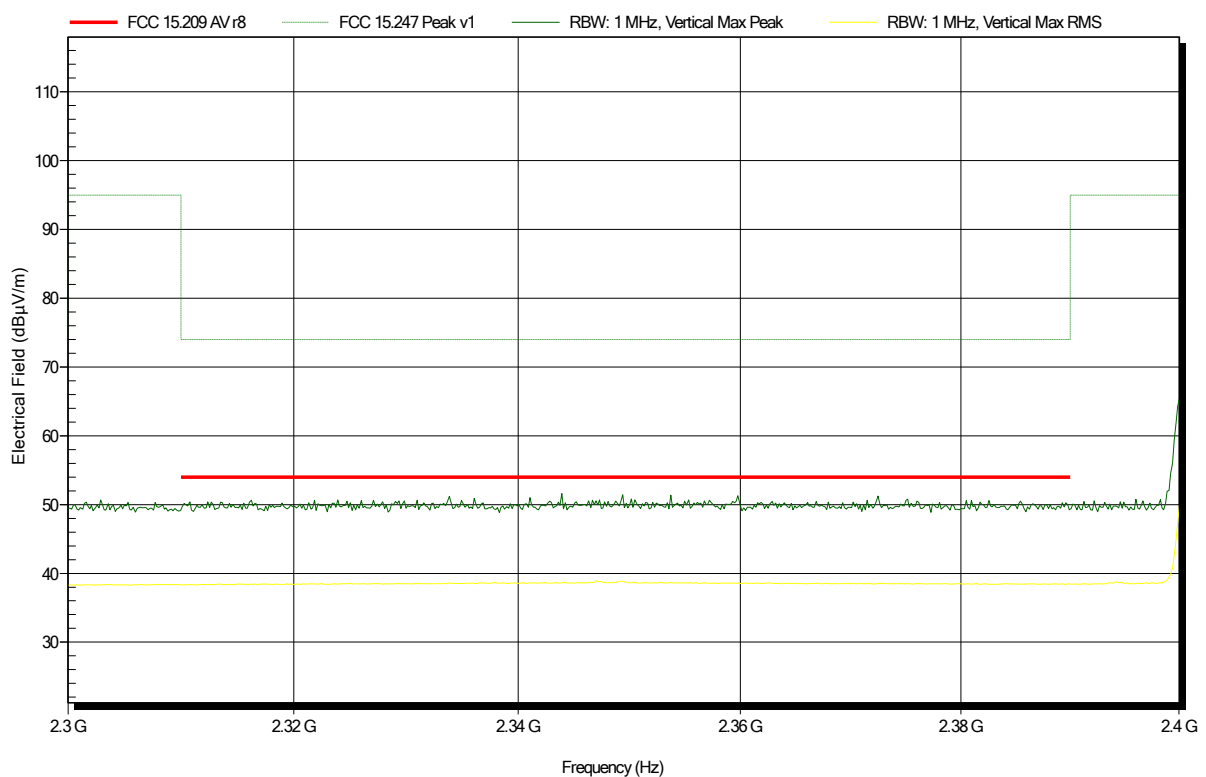


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; DH5 -- 2402 MHz
Test Date: 2019-06-25
Note: lower bandedge

Index 33

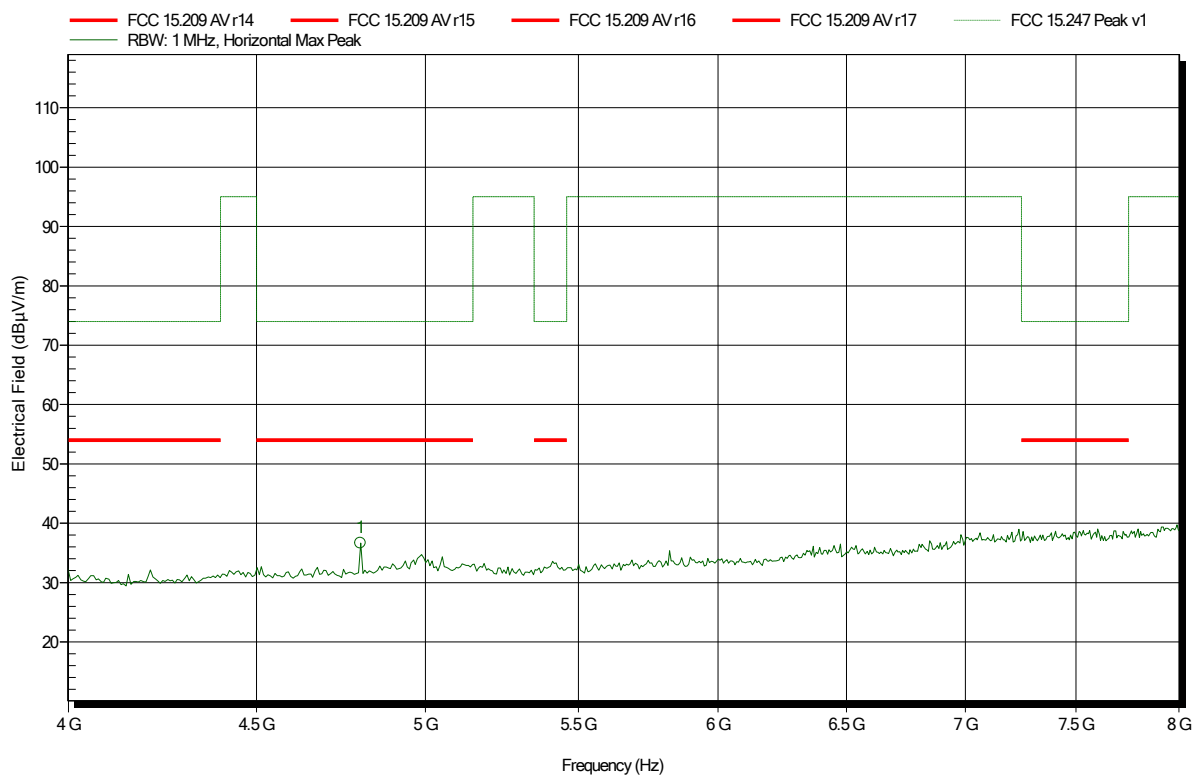


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; DH5 -- 2402 MHz
 Test Date: 2019-06-25
 Note:

Index 18



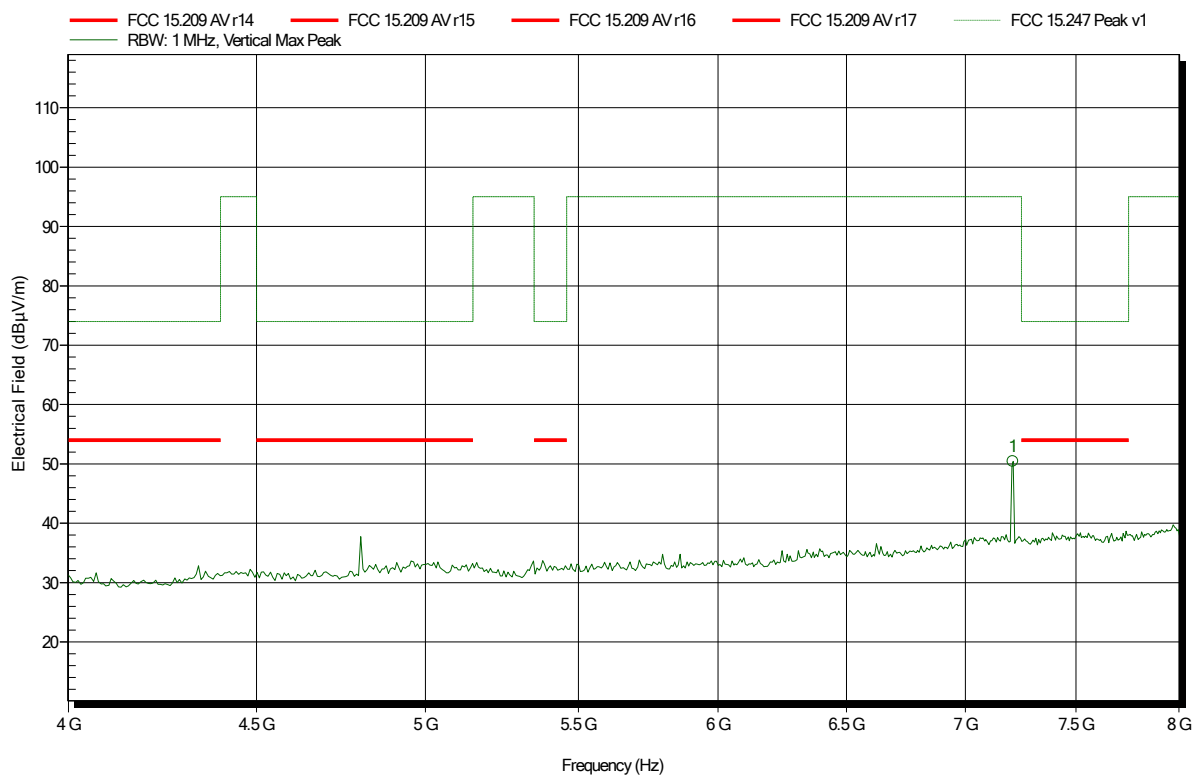
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.801 GHz	36.66 dBµV/m	74 dBµV/m	-37.34 dB	Pass

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 (external power supply)
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; DH5 -- 2402 MHz
Test Date: 2019-06-25
Note:

Index 32



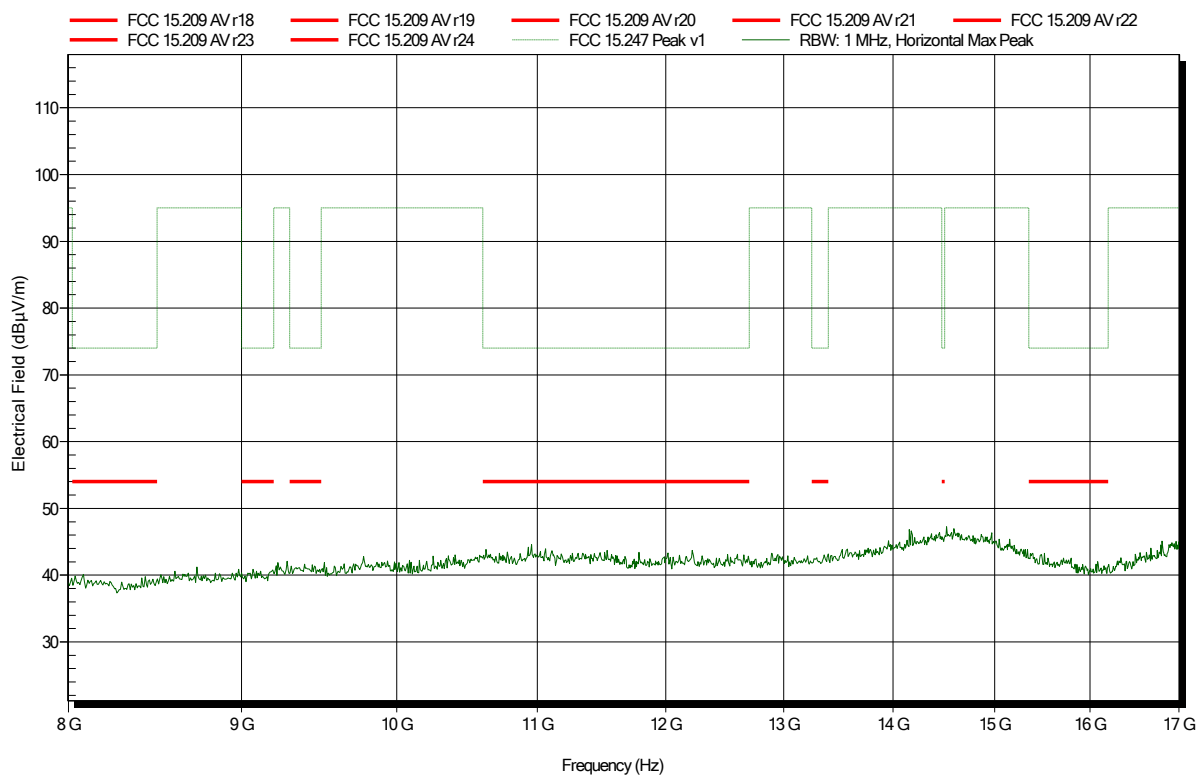
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
7.212 GHz	50.42 dBµV/m	95 dBµV/m	-44.58 dB	Pass

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 (external power supply)
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; DH5 -- 2402 MHz
Test Date: 2019-06-25
Note:

Index 17

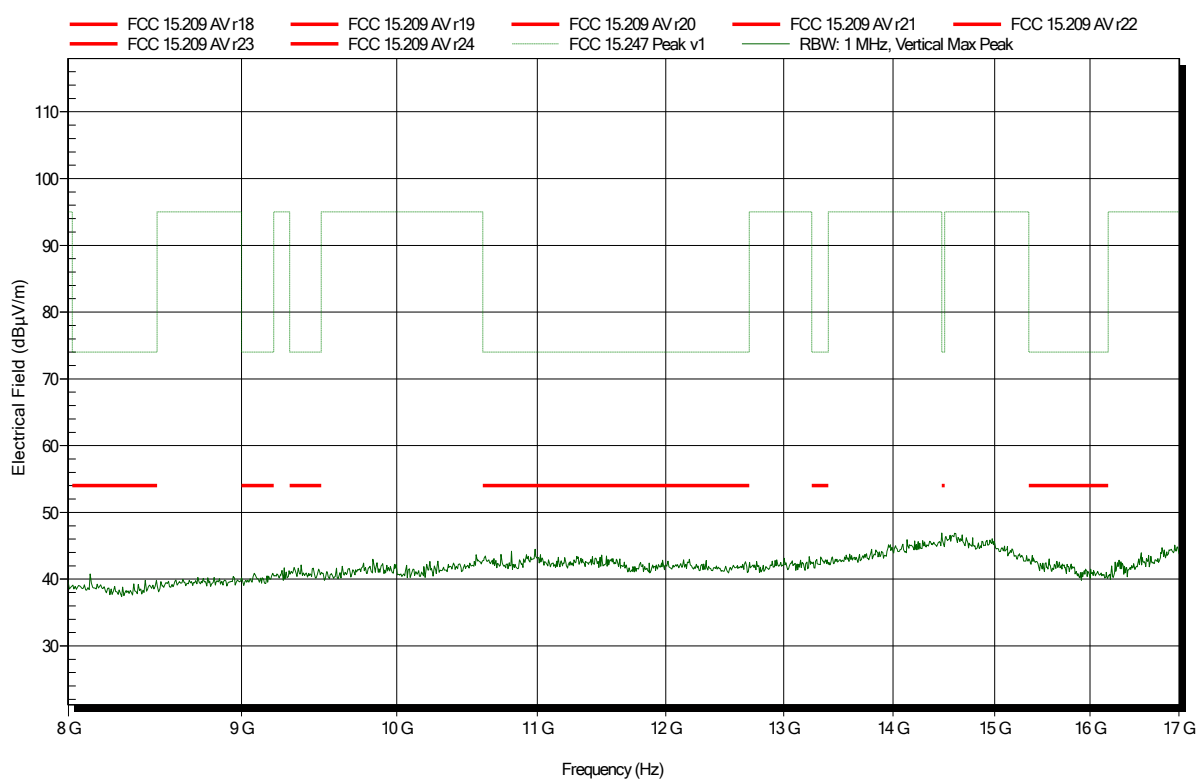


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; DH5 -- 2402 MHz
 Test Date: 2019-06-25
 Note:

Index 31

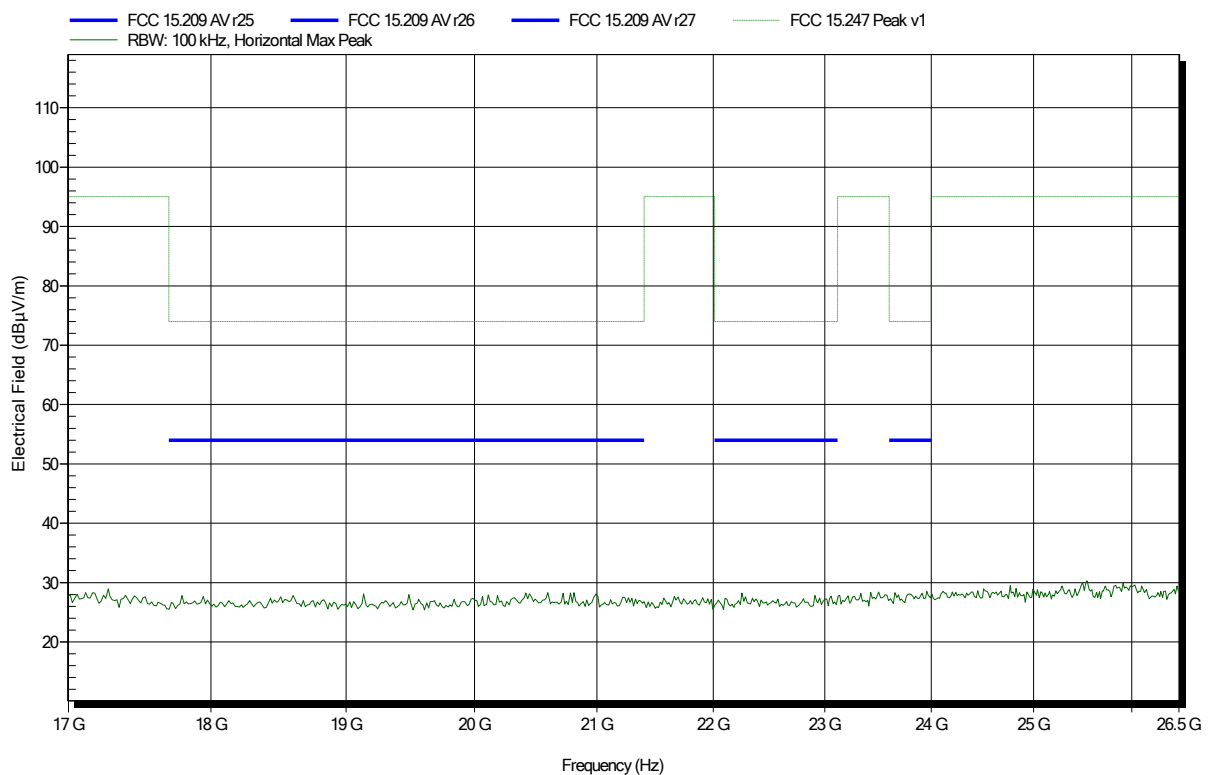


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
Antenna: Amplifier Research AT4560, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; DH5 -- 2402 MHz
Test Date: 2019-06-25
Note:

Index 35

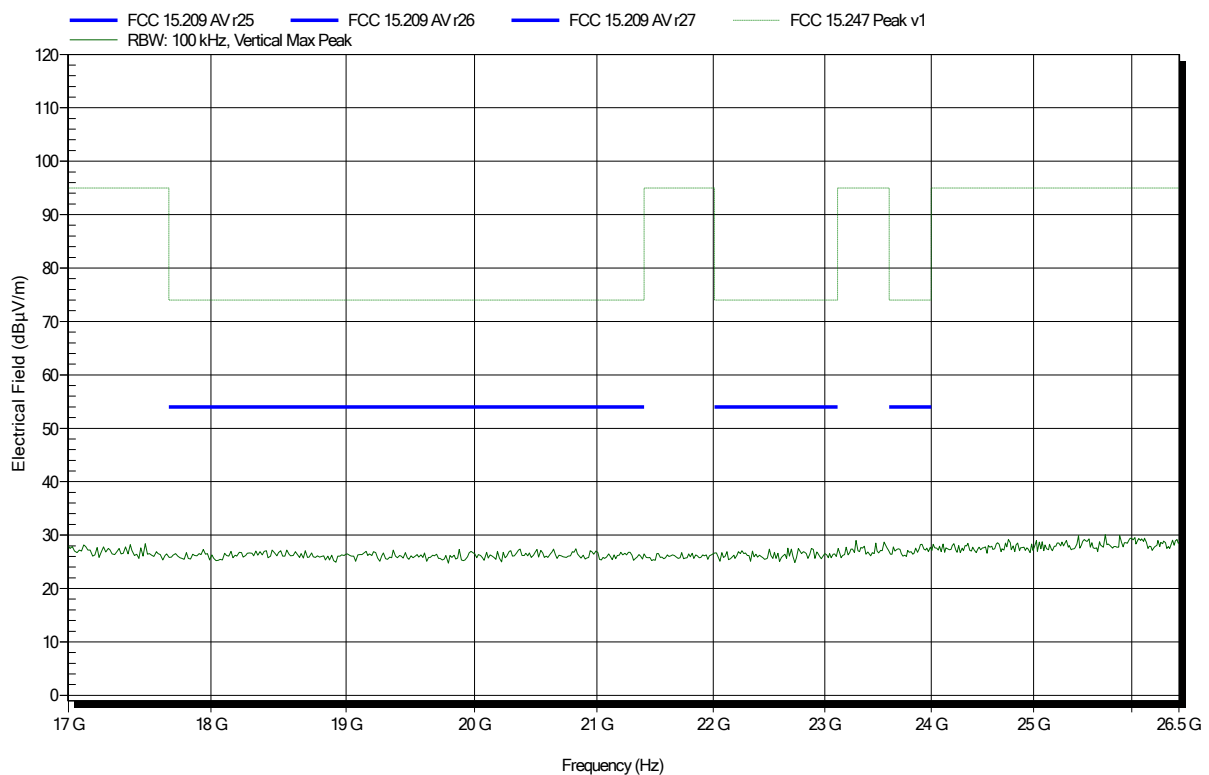


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
Antenna: Amplifier Research AT4560, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; DH5 -- 2402 MHz
Test Date: 2019-06-25
Note:

Index 40

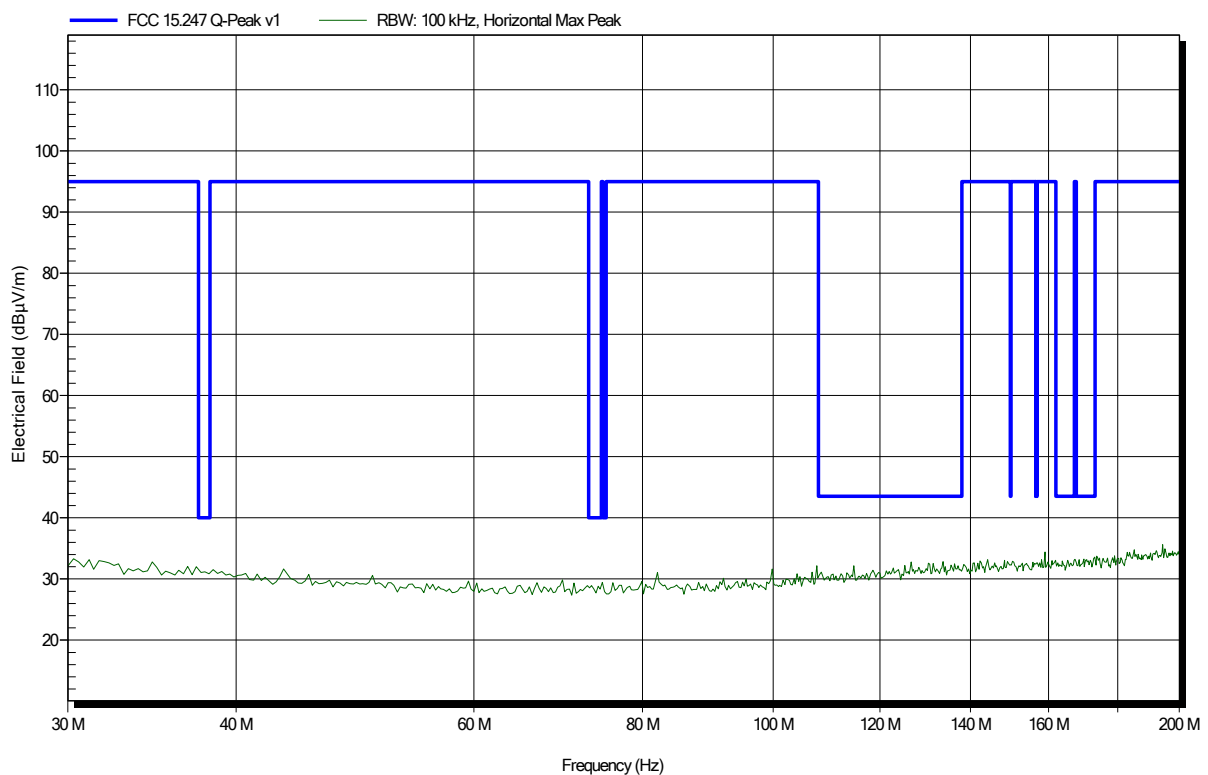


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
Antenna: Rohde & Schwarz HK 116, Horizontal
Measurement distance: 3 m
Mode: TX; DH5 -- 2441 MHz
Test Date: 2019-06-25
Note:

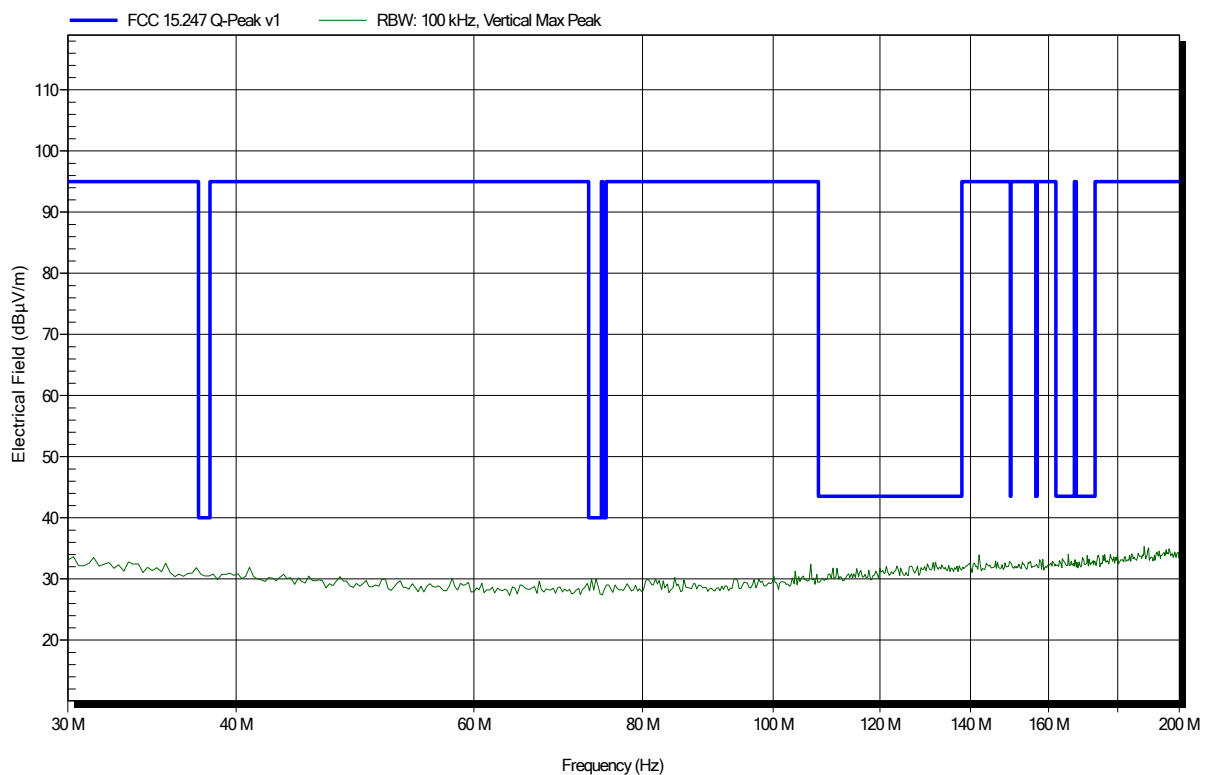
Index 8



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 (external power supply)
 Antenna: Rohde & Schwarz HK 116, Vertical
 Measurement distance: 3 m
 Mode: TX; DH5 -- 2441 MHz
 Test Date: 2019-06-25
 Note:

Index 11

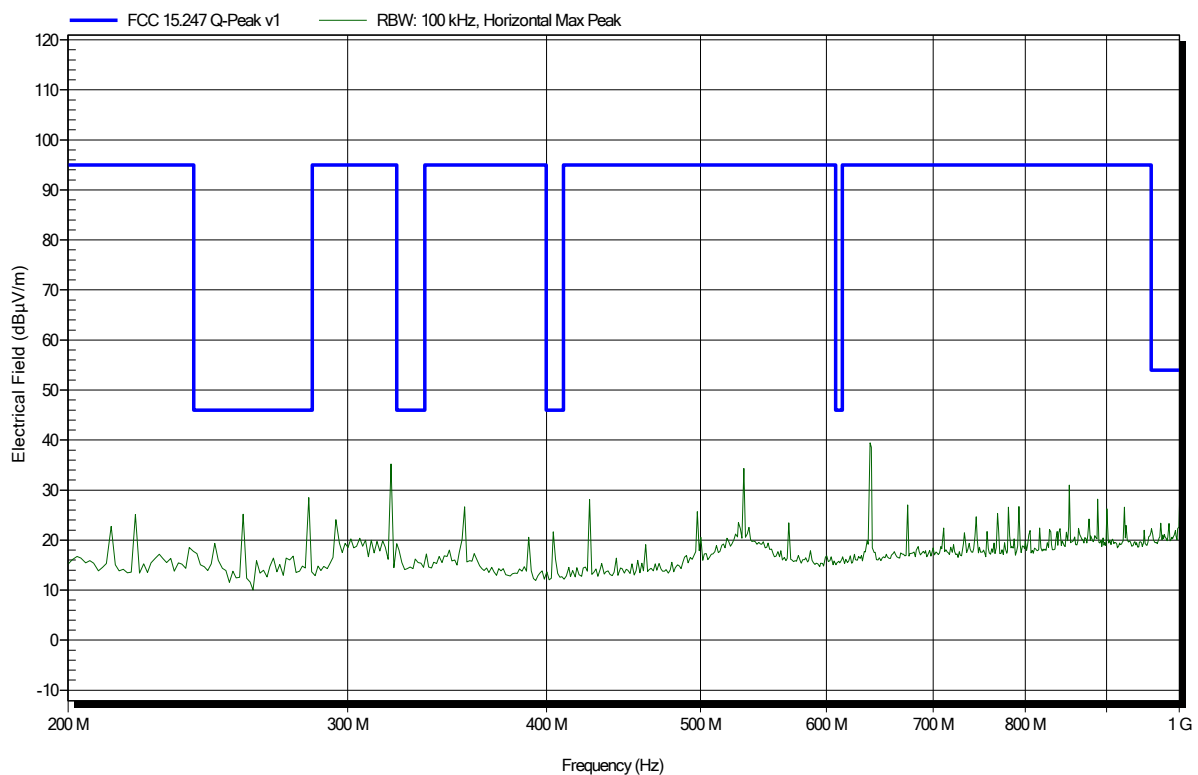


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
Antenna: Rohde & Schwarz HL 223, Horizontal
Measurement distance: 3 m
Mode: TX; DH5 -- 2441 MHz
Test Date: 2019-06-25
Note:

Index 2

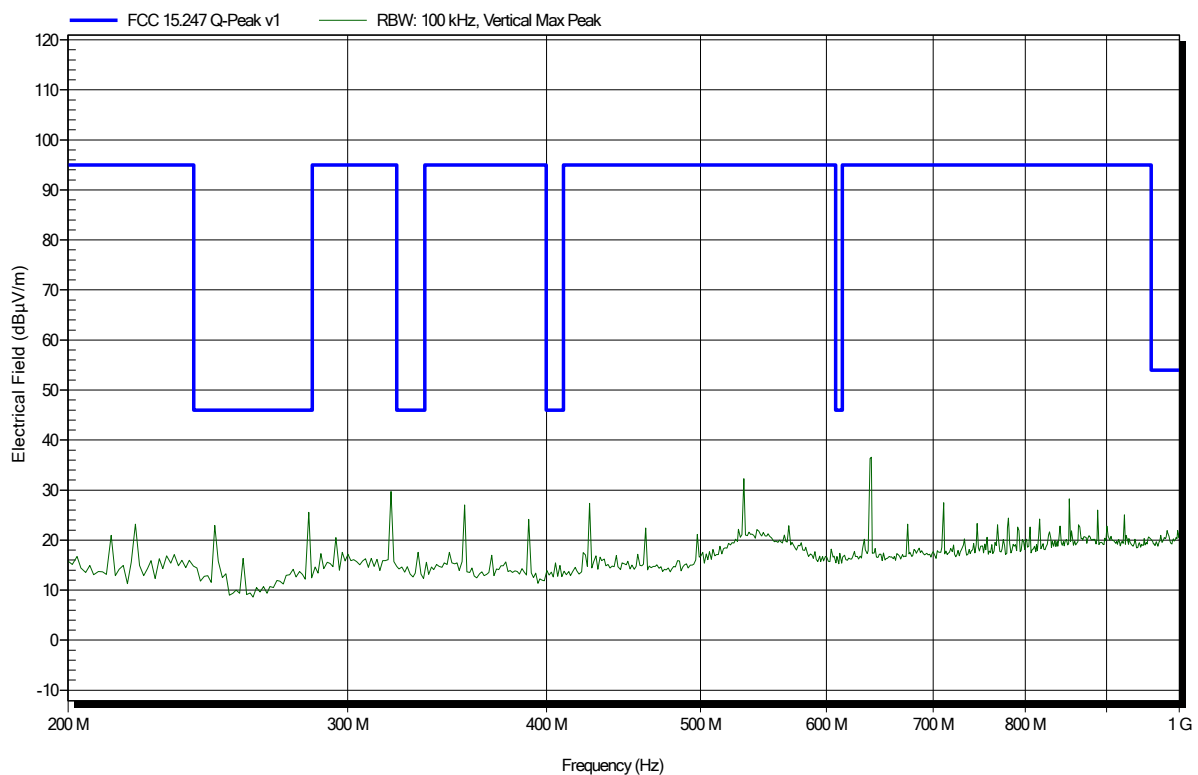


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3 m
 Mode: TX; DH5 -- 2441 MHz
 Test Date: 2019-06-25
 Note:

Index 5



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 (external power supply)

Antenna: Schwarzbeck BBHA 9120D, Horizontal

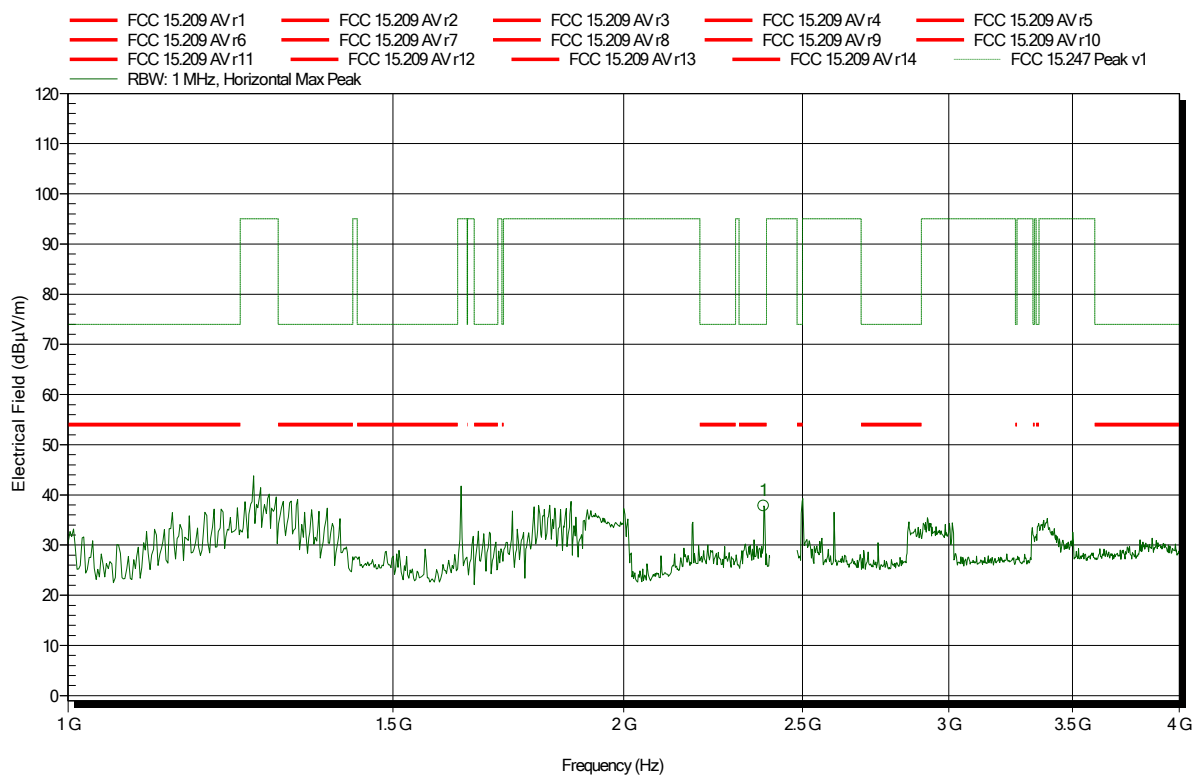
Measurement distance: 1 m converted to 3m

Mode: TX; DH5 -- 2441 MHz

Test Date: 2019-06-25

Note:

Index 21



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.3821 GHz	37.84 dBµV/m	74 dBµV/m	-36.16 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 (external power supply)

Antenna: Schwarzbeck BBHA 9120D, Vertical

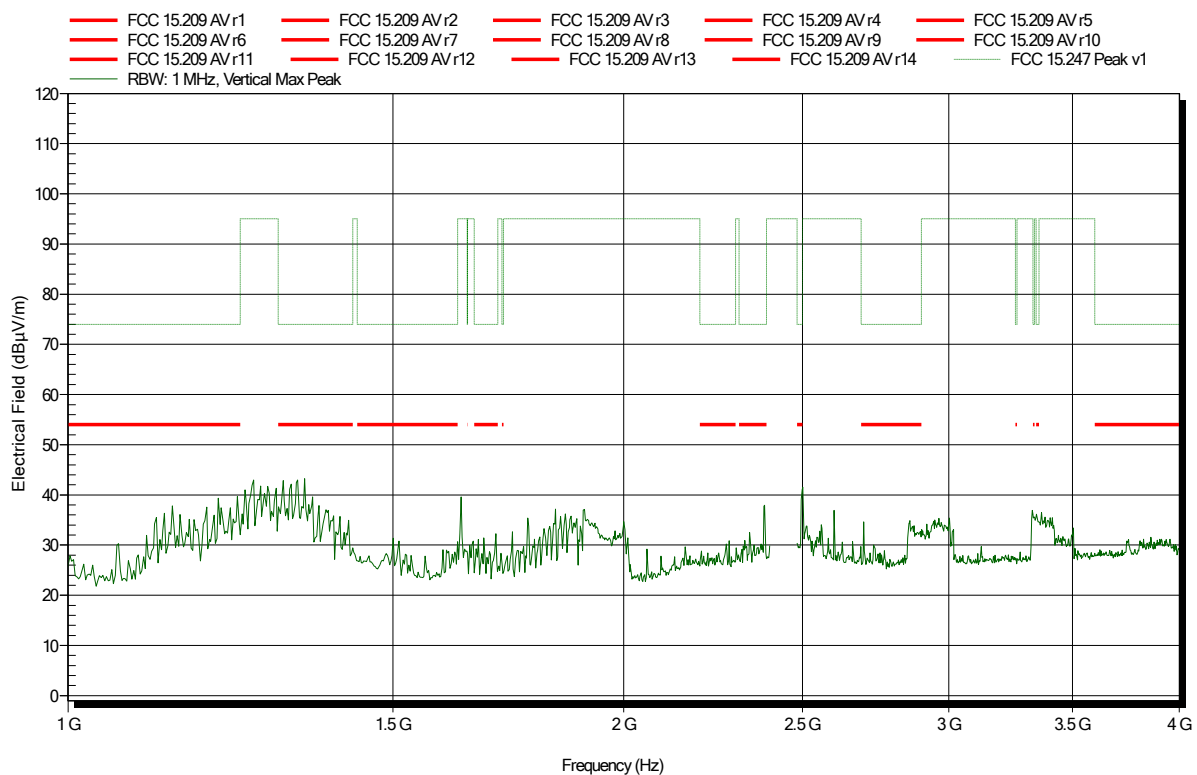
Measurement distance: 1 m converted to 3m

Mode: TX; DH5 -- 2441 MHz

Test Date: 2019-06-25

Note:

Index 26

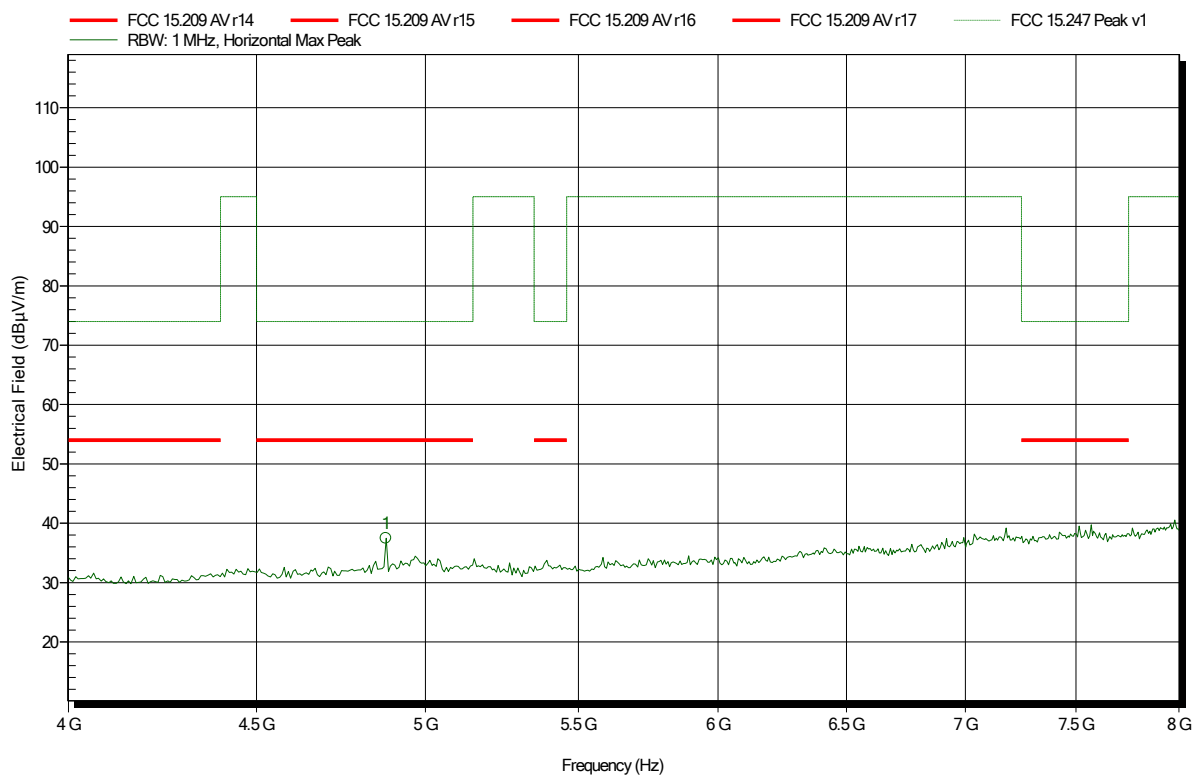


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; DH5 -- 2441 MHz
Test Date: 2019-06-25
Note:

Index 22



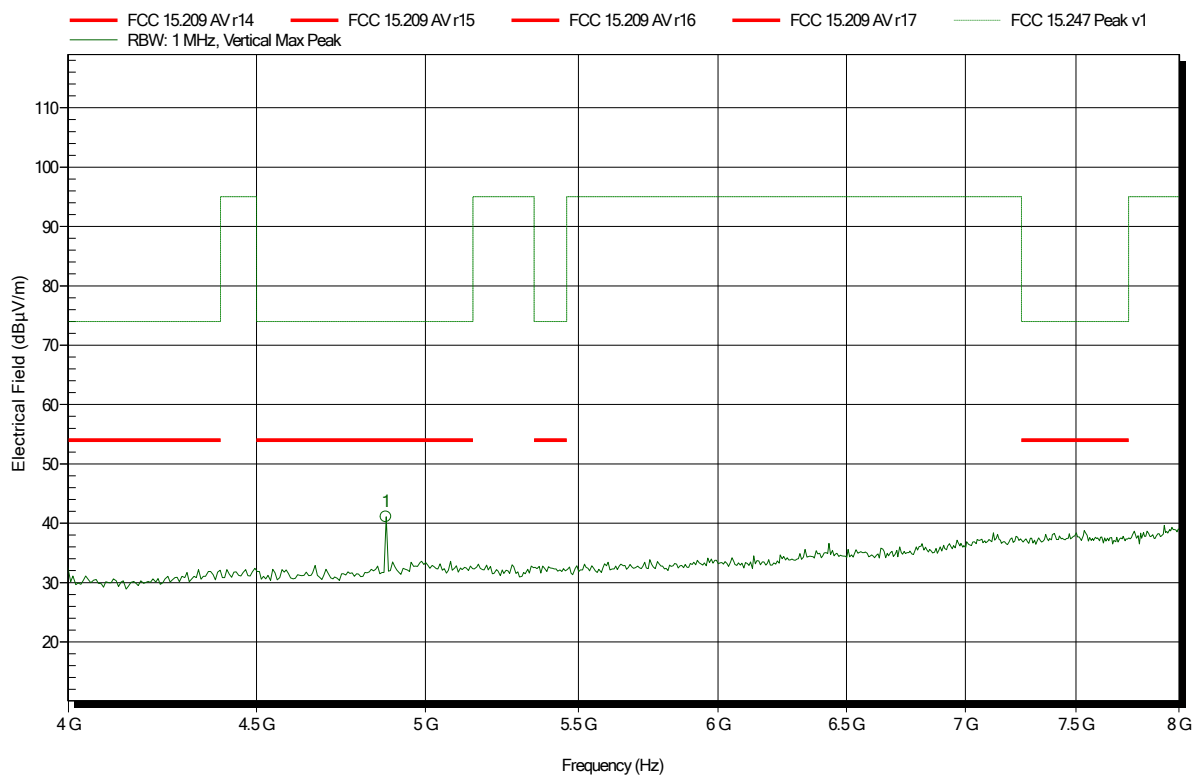
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.878 GHz	37.49 dBμV/m	74 dBμV/m	-36.51 dB	Pass

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 (external power supply)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; DH5 -- 2441 MHz
 Test Date: 2019-06-25
 Note:

Index 25



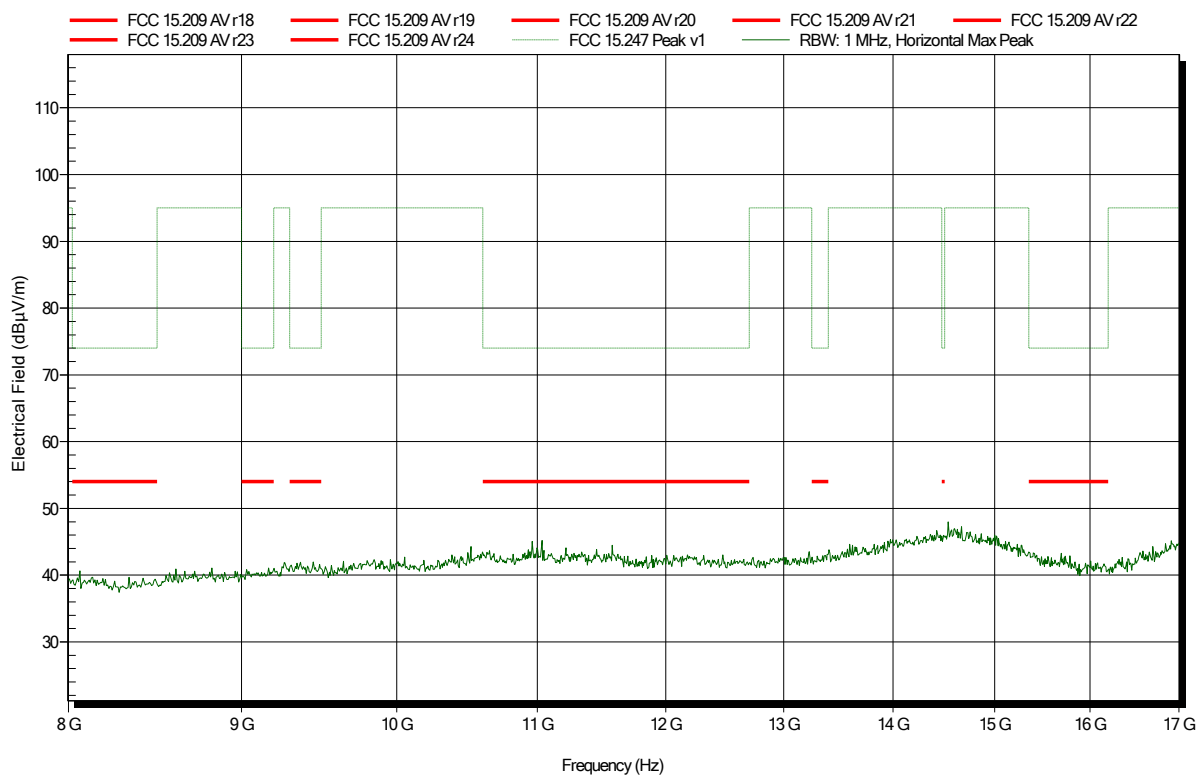
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.878 GHz	41.07 dBμV/m	74 dBμV/m	-32.93 dB	Pass

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 (external power supply)
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; DH5 -- 2441 MHz
Test Date: 2019-06-25
Note:

Index 23

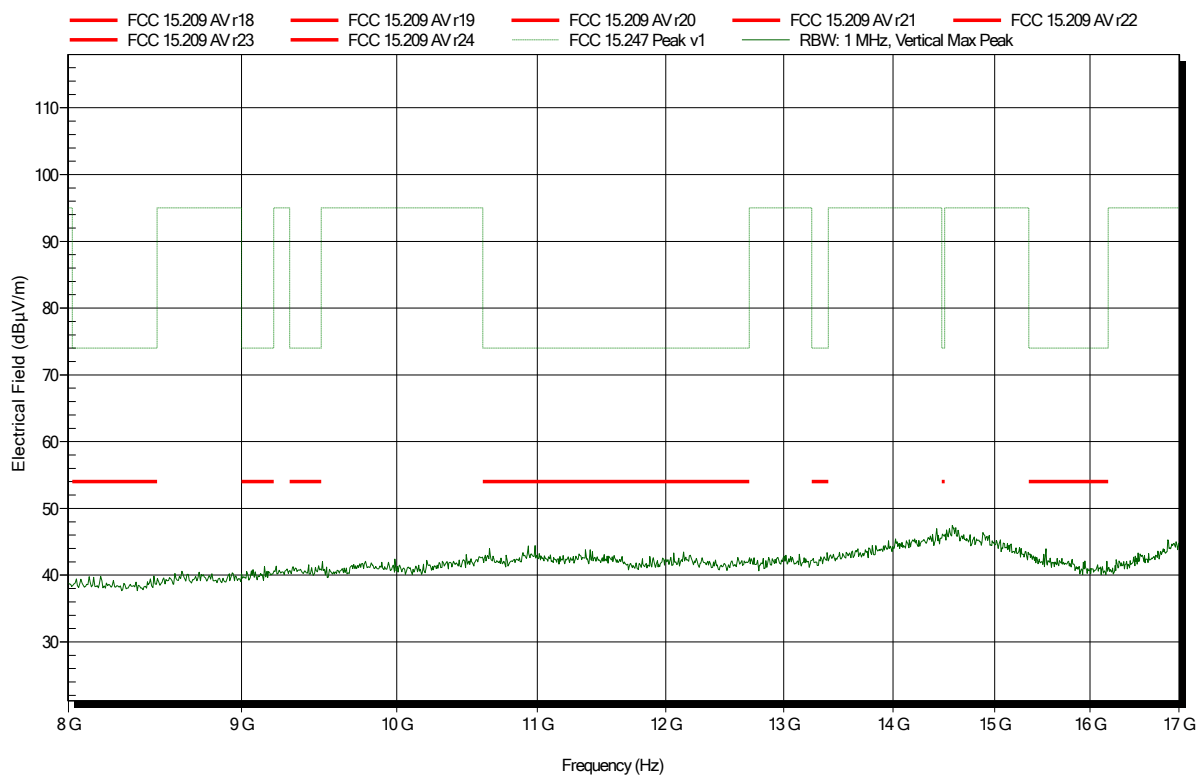


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; DH5 -- 2441 MHz
 Test Date: 2019-06-25
 Note:

Index 24

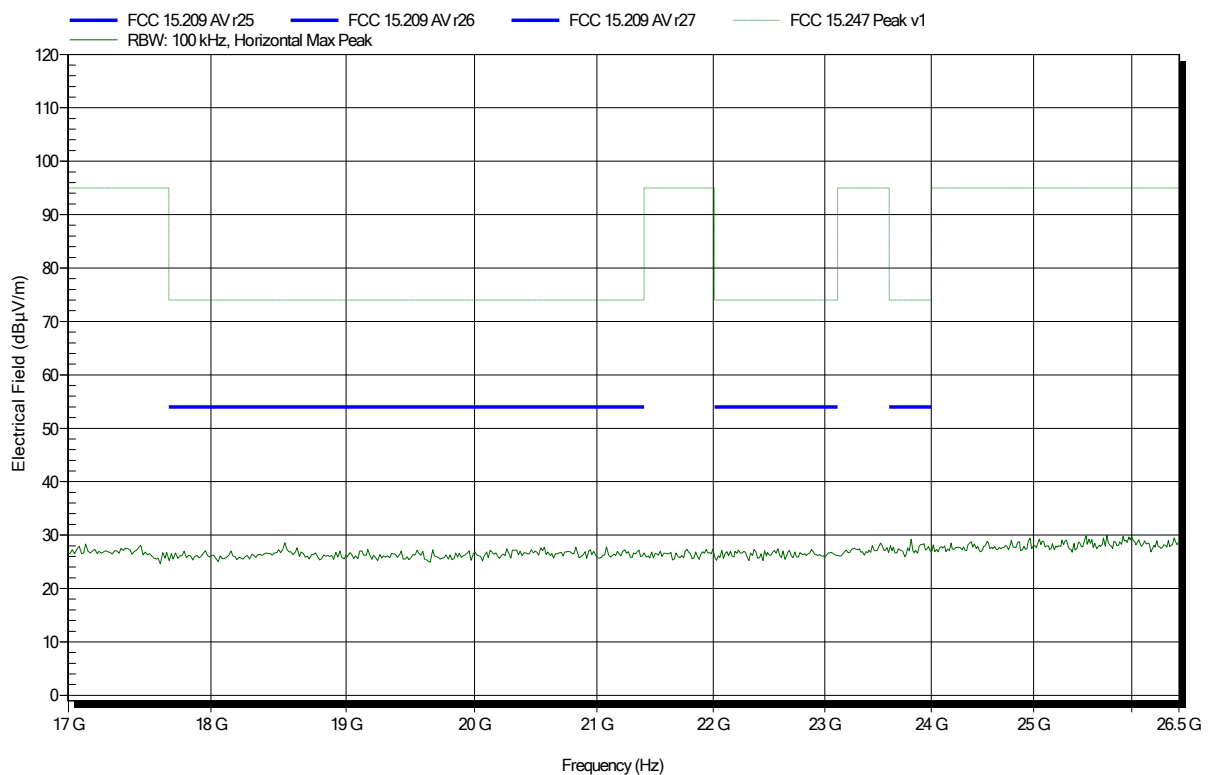


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
Antenna: Amplifier Research AT4560, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; DH5 -- 2441 MHz
Test Date: 2019-06-25
Note:

Index 36

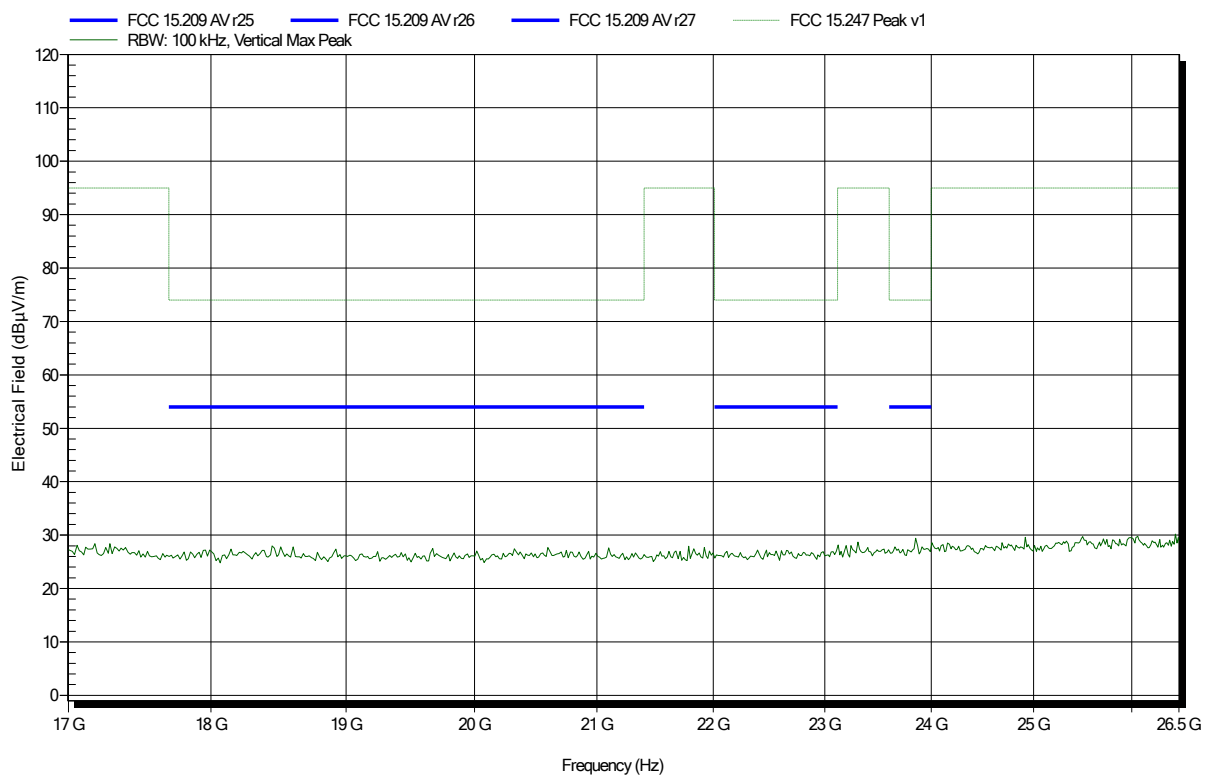


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
Antenna: Amplifier Research AT4560, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; DH5 -- 2441 MHz
Test Date: 2019-06-25
Note:

Index 39

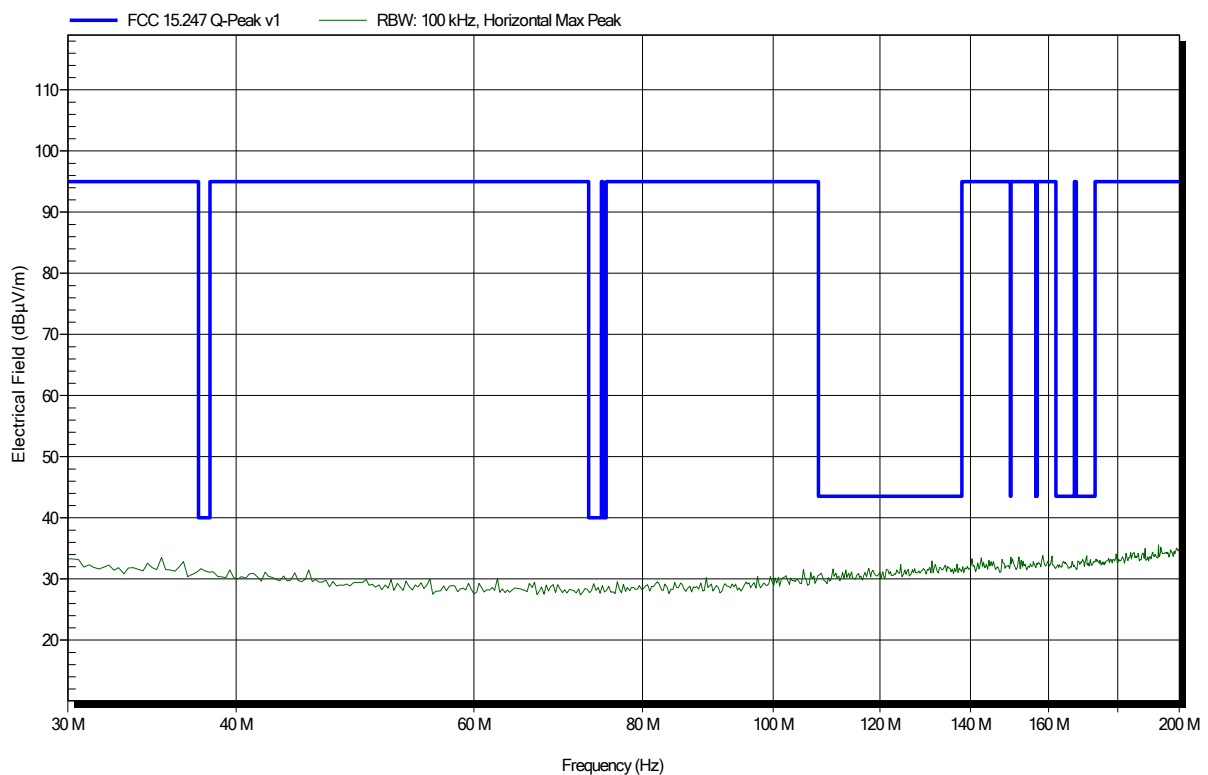


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
Antenna: Rohde & Schwarz HK 116, Horizontal
Measurement distance: 3 m
Mode: TX; DH5 -- 2480 MHz
Test Date: 2019-06-25
Note:

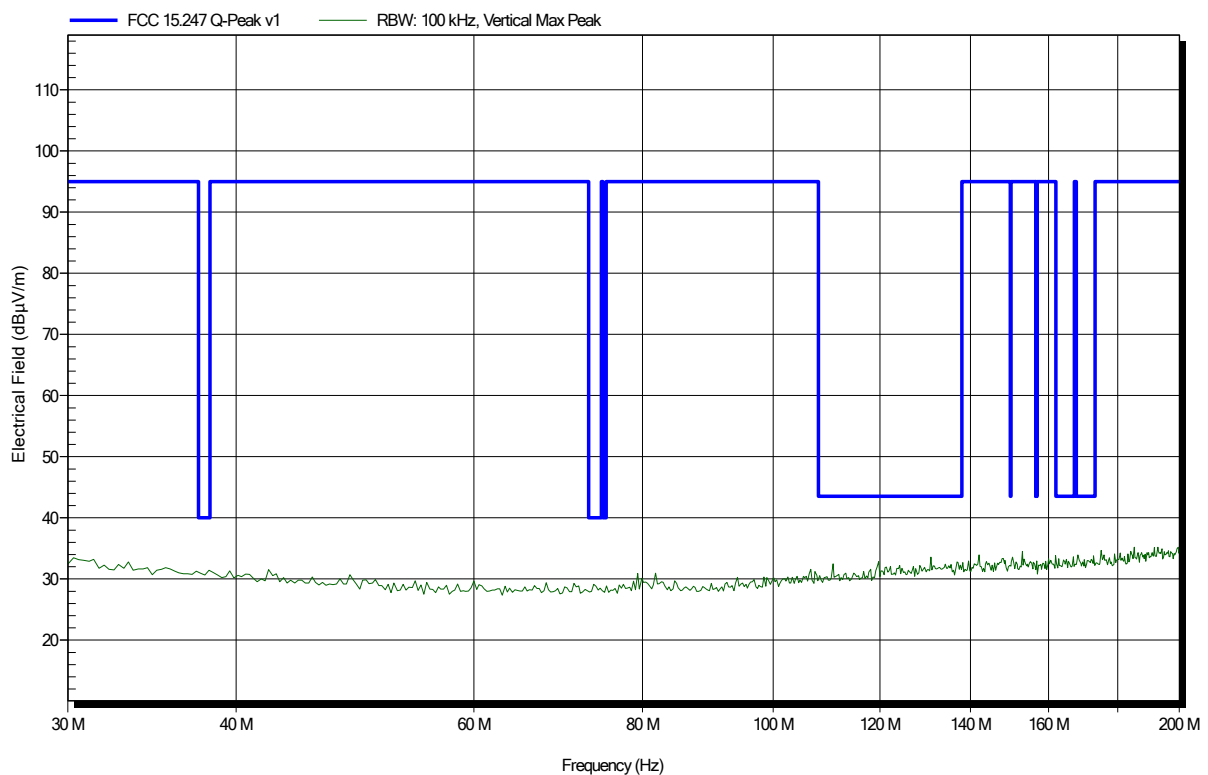
Index 7



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 (external power supply)
 Antenna: Rohde & Schwarz HK 116, Vertical
 Measurement distance: 3 m
 Mode: TX; DH5 -- 2480 MHz
 Test Date: 2019-06-25
 Note:

Index 12

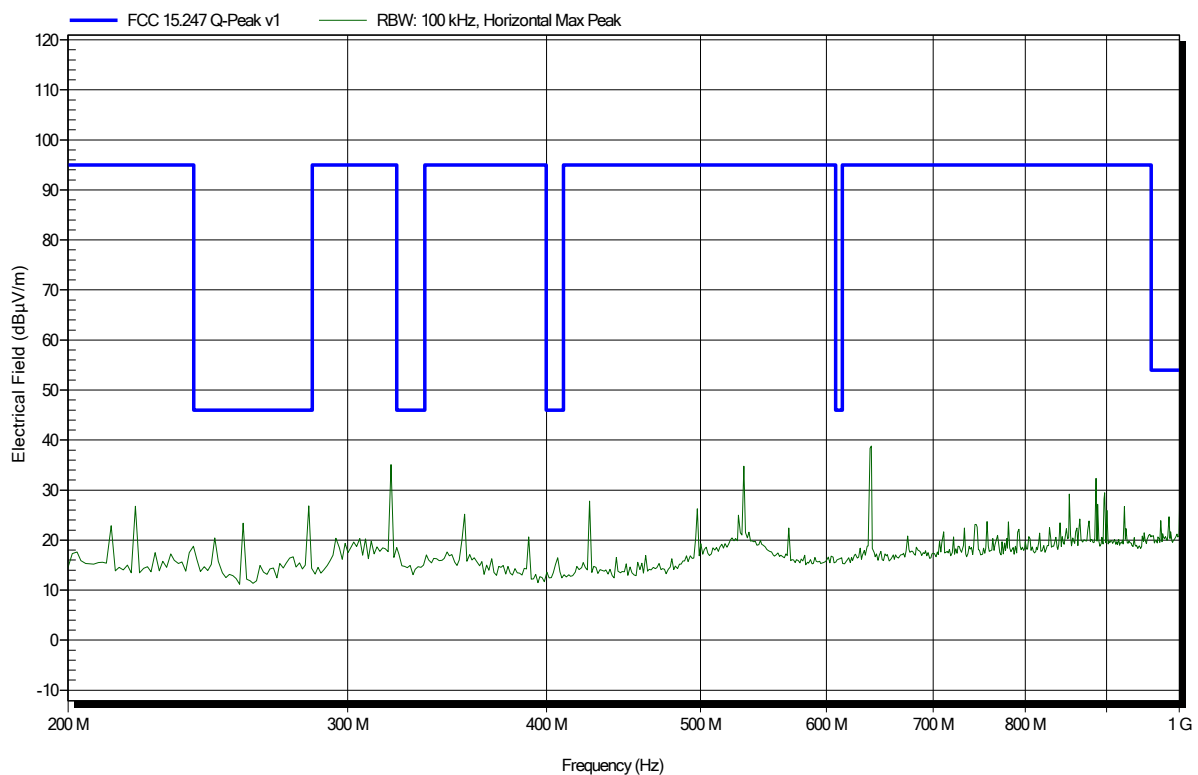


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
Antenna: Rohde & Schwarz HL 223, Horizontal
Measurement distance: 3 m
Mode: TX; DH5 -- 2480 MHz
Test Date: 2019-06-25
Note:

Index 1

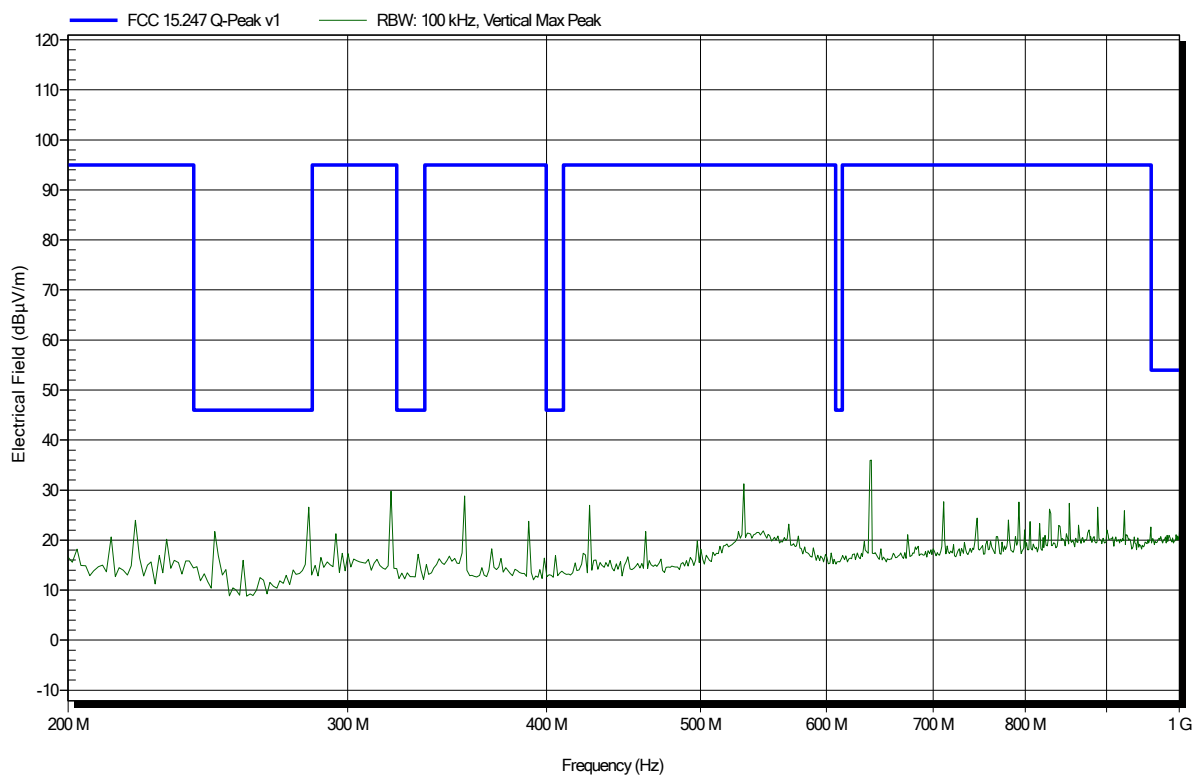


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
Antenna: Rohde & Schwarz HL 223, Vertical
Measurement distance: 3 m
Mode: TX; DH5 -- 2480 MHz
Test Date: 2019-06-25
Note:

Index 6



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 (external power supply)

Antenna: Schwarzbeck BBHA 9120D, Horizontal

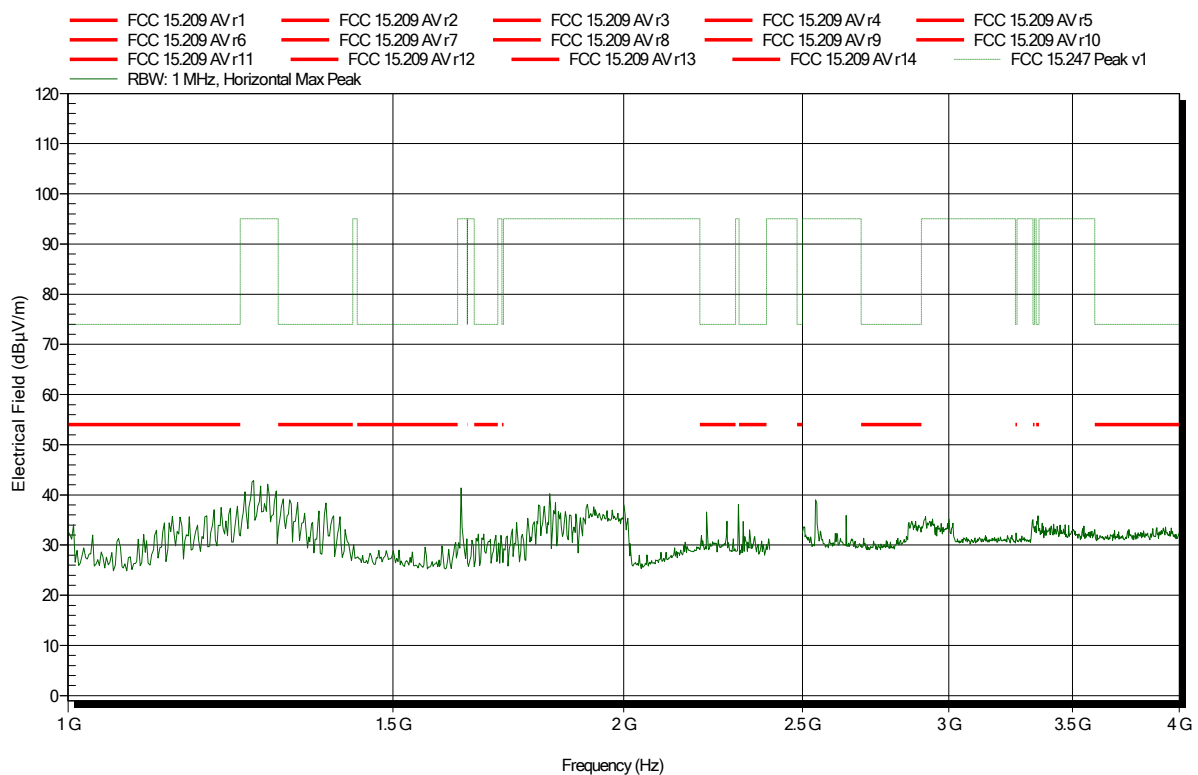
Measurement distance: 1 m converted to 3m

Mode: TX; DH5 -- 2480 MHz

Test Date: 2019-06-25

Note:

Index 13



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 (external power supply)

Antenna: Schwarzbeck BBHA 9120D, Vertical

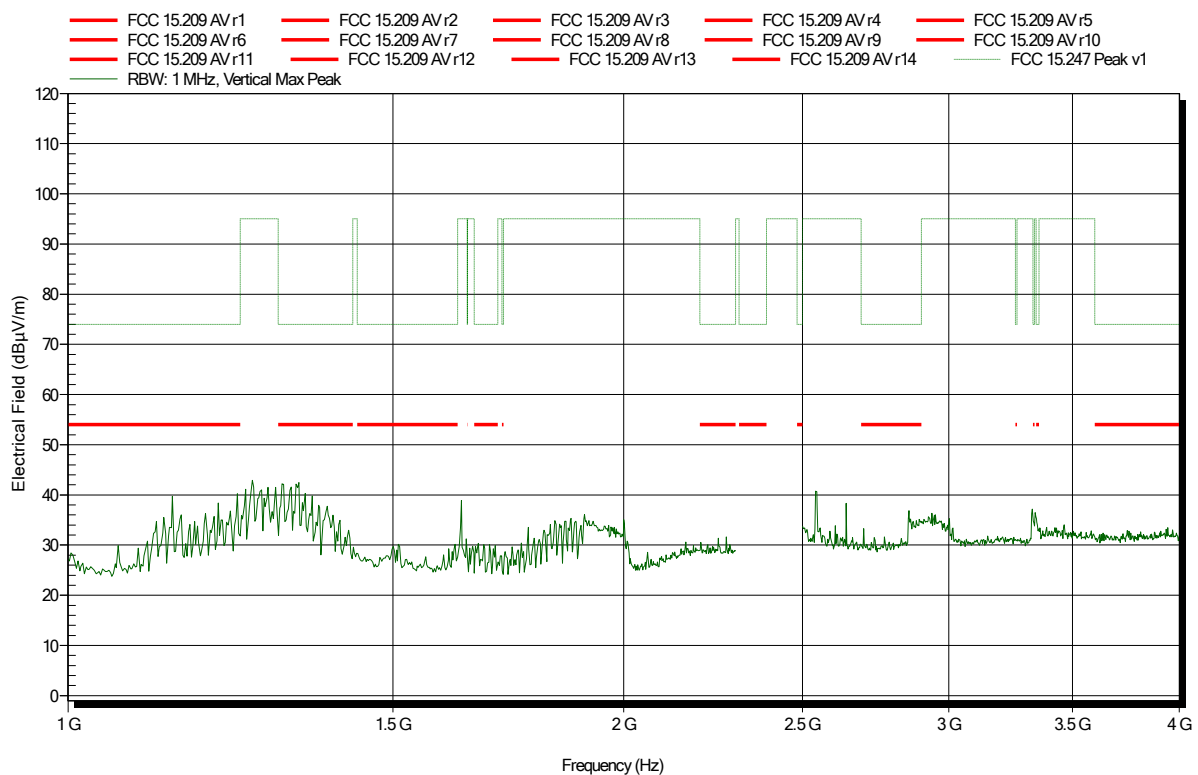
Measurement distance: 1 m converted to 3m

Mode: TX; DH5 -- 2480 MHz

Test Date: 2019-06-25

Note:

Index 28

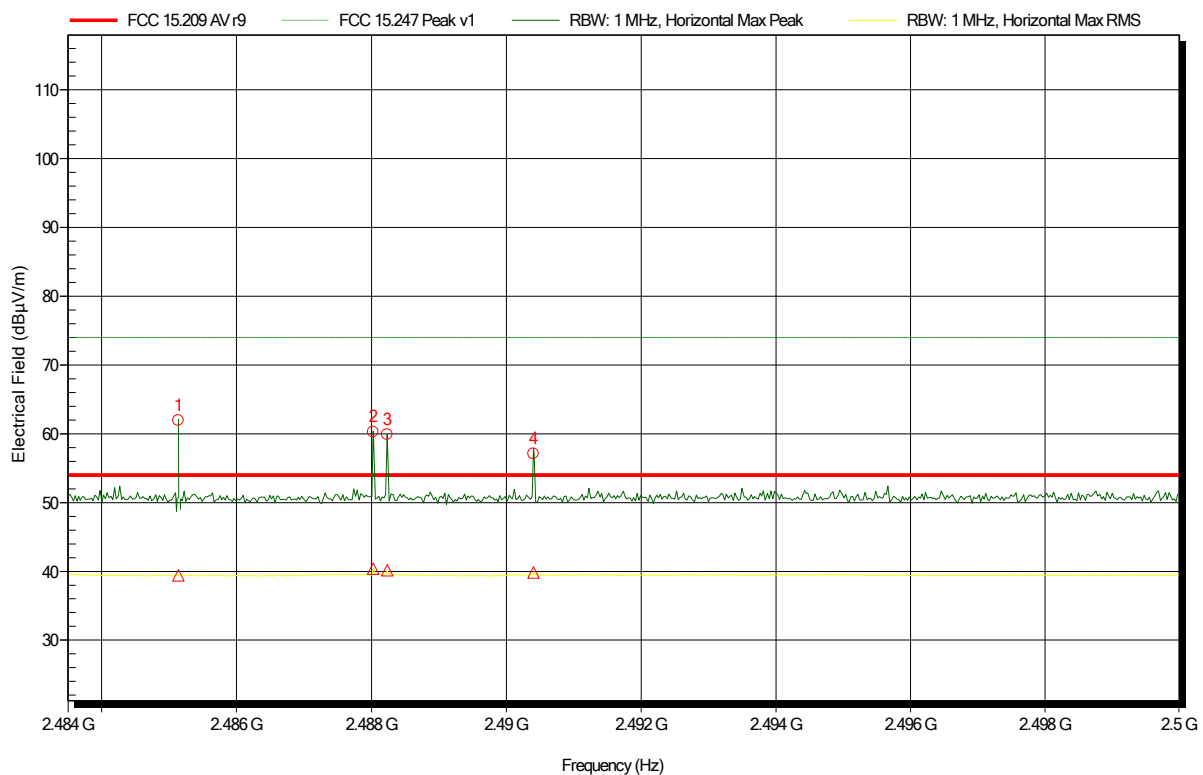


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
Antenna: Schwarzbeck BBHA 9120D, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; DH5 -- 2480 MHz
Test Date: 2019-06-25
Note: upper bandedge

Index 14



Frequency	Peak	Peak Limit	Peak Difference	Peak Status
2.4851 GHz	61.94 dBµV/m	74 dBµV/m	-12.06 dB	Pass
2.488 GHz	60.26 dBµV/m	74 dBµV/m	-13.74 dB	Pass
2.4882 GHz	59.9 dBµV/m	74 dBµV/m	-14.1 dB	Pass
2.4904 GHz	57.11 dBµV/m	74 dBµV/m	-16.89 dB	Pass

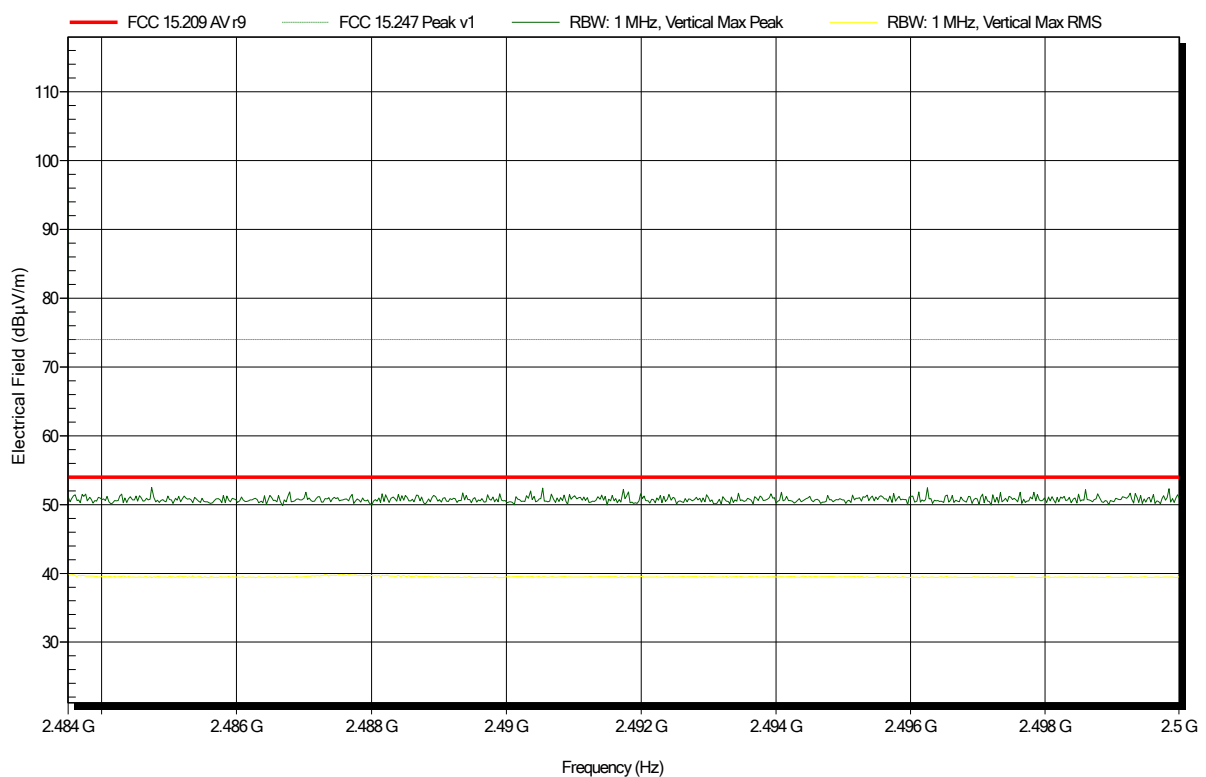
Frequency	RMS	RMS Limit	RMS Difference	RMS Status
2.4851 GHz	39.4 dBµV/m	54 dBµV/m	-14.6 dB	Pass
2.488 GHz	40.42 dBµV/m	54 dBµV/m	-13.58 dB	Pass
2.4882 GHz	40.17 dBµV/m	54 dBµV/m	-13.83 dB	Pass
2.4904 GHz	39.85 dBµV/m	54 dBµV/m	-14.15 dB	Pass

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 (external power supply)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; DH5 -- 2480 MHz
 Test Date: 2019-06-25
 Note: upper bandedge

Index 27

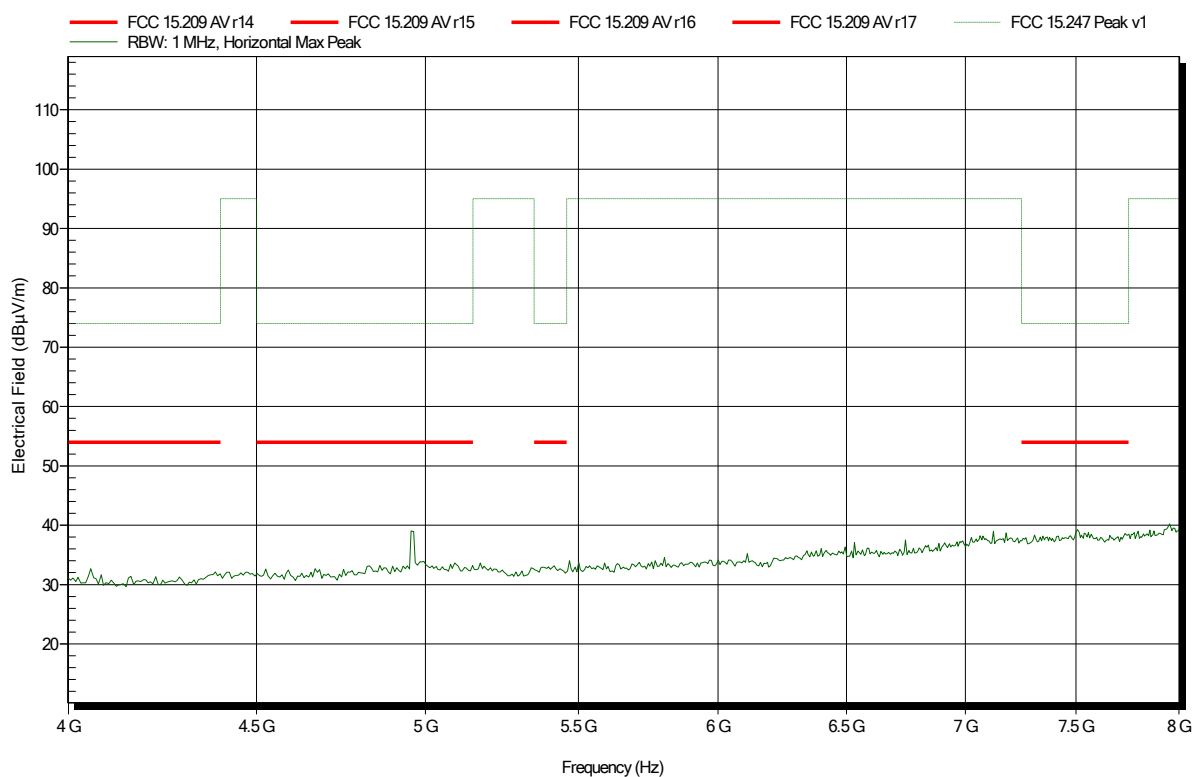


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; DH5 -- 2480 MHz
 Test Date: 2019-06-25
 Note:

Index 15

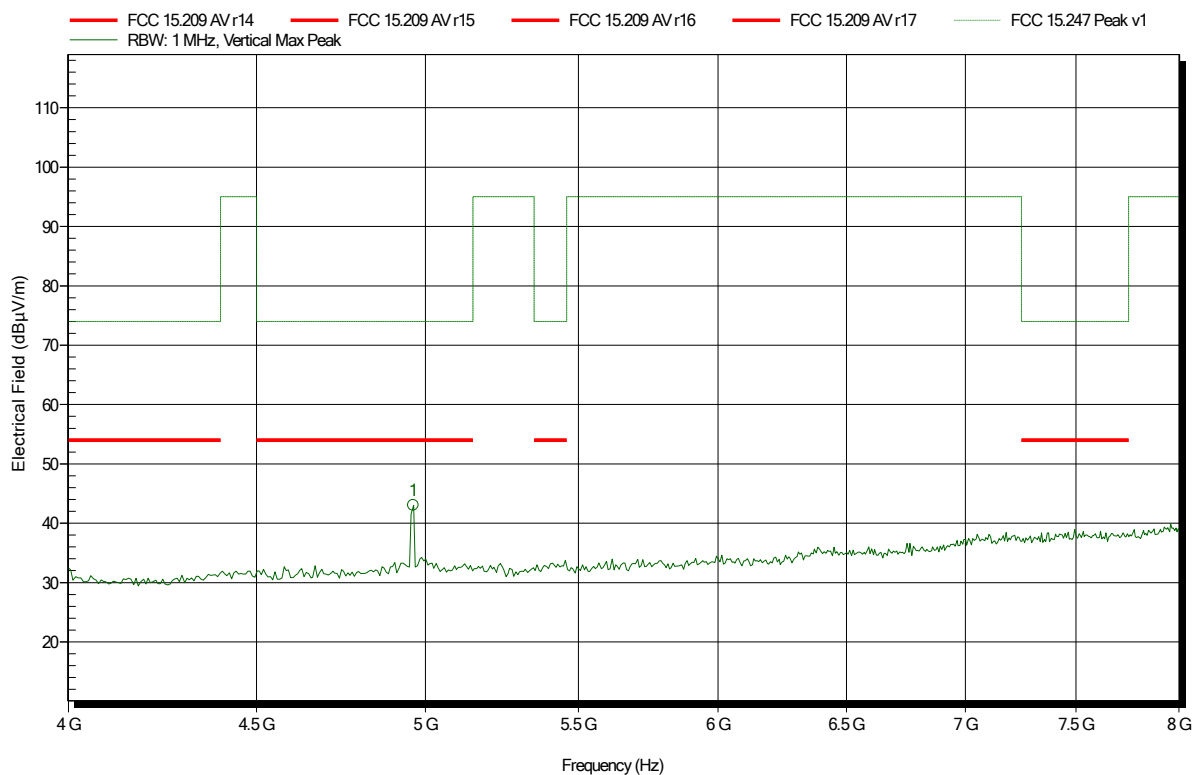


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; DH5 -- 2480 MHz
Test Date: 2019-06-25
Note:

Index 29



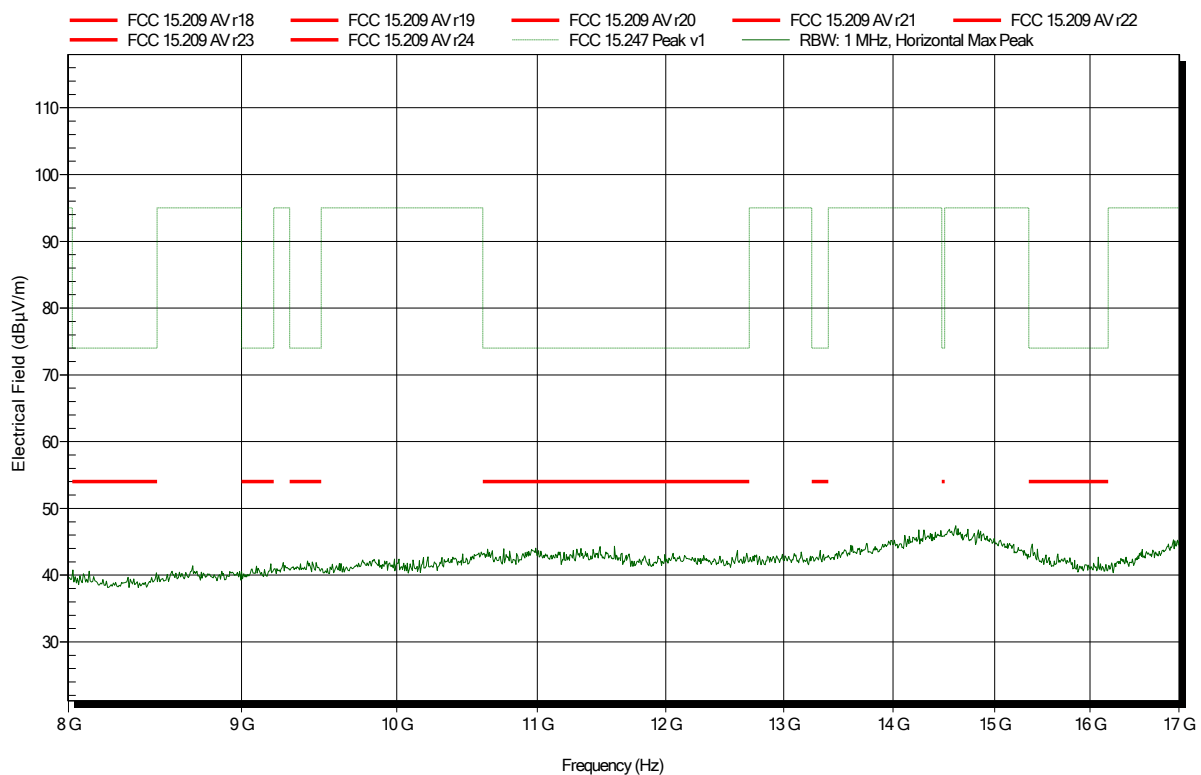
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
4.962 GHz	43.05 dBμV/m	74 dBμV/m	-30.95 dB	Pass

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 (external power supply)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: TX; DH5 -- 2480 MHz
 Test Date: 2019-06-25
 Note:

Index 16

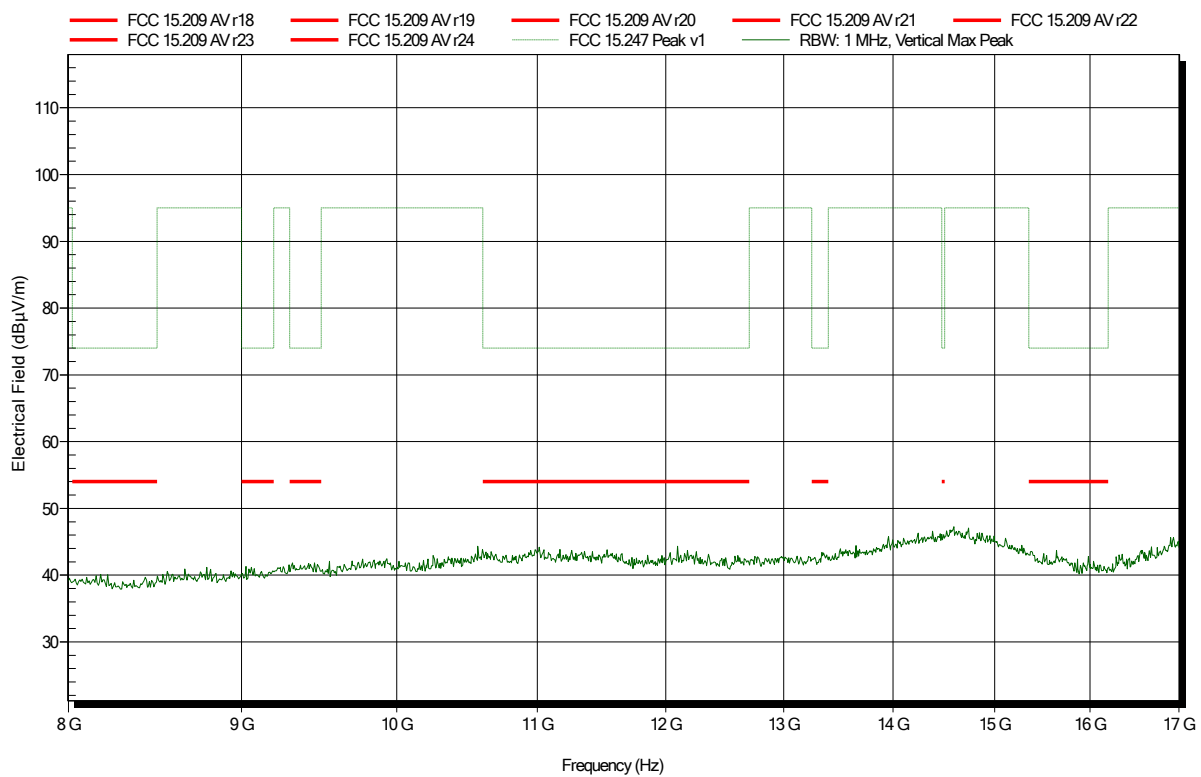


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: TX; DH5 -- 2480 MHz
 Test Date: 2019-06-25
 Note:

Index 30

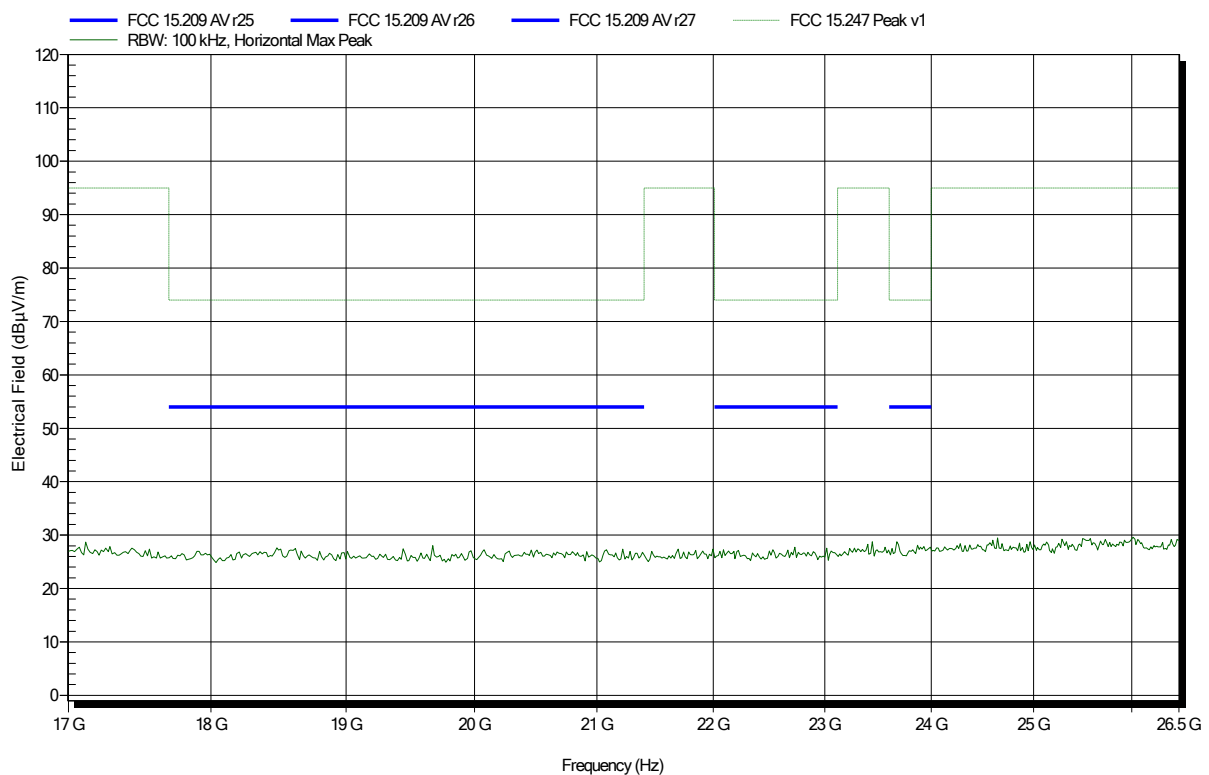


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
Antenna: Amplifier Research AT4560, Horizontal
Measurement distance: 1 m converted to 3m
Mode: TX; DH5 -- 2480 MHz
Test Date: 2019-06-25
Note:

Index 37

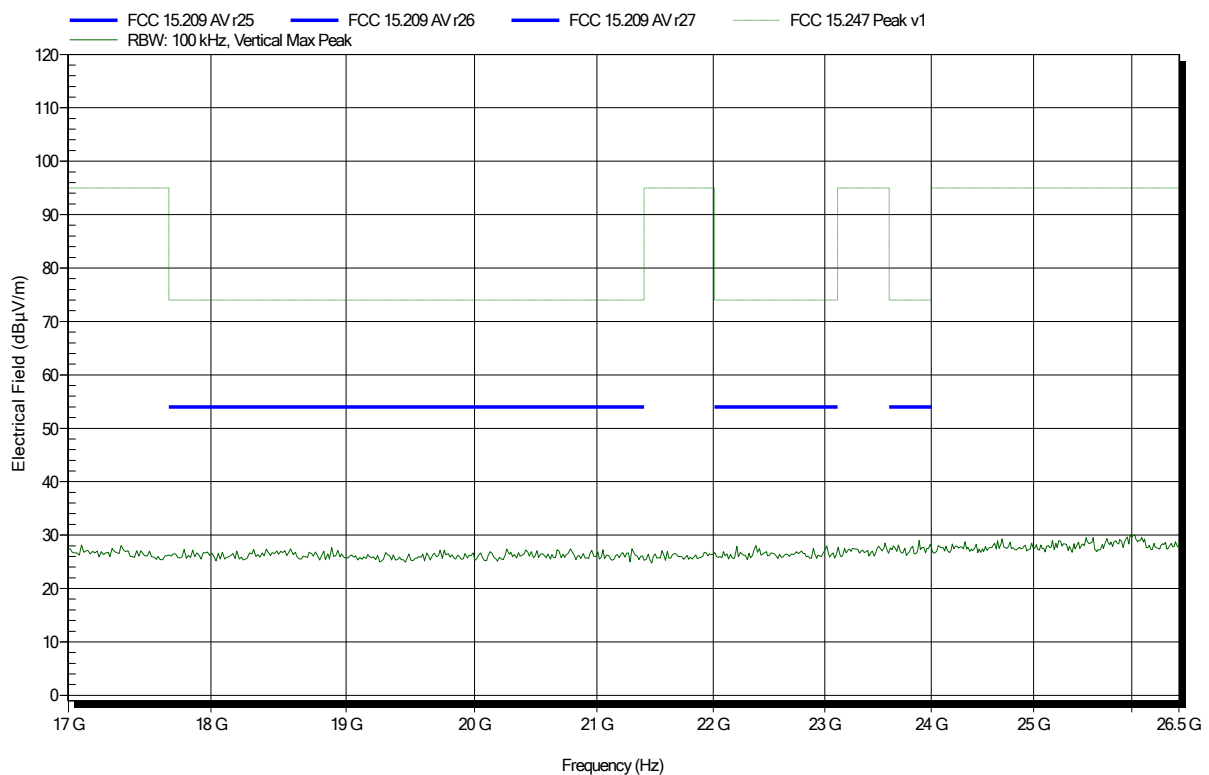


Spurious emissions according to FCC 47 CFR §15.247

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 (external power supply)
Antenna: Amplifier Research AT4560, Vertical
Measurement distance: 1 m converted to 3m
Mode: TX; DH5 -- 2480 MHz
Test Date: 2019-06-25
Note:

Index 38



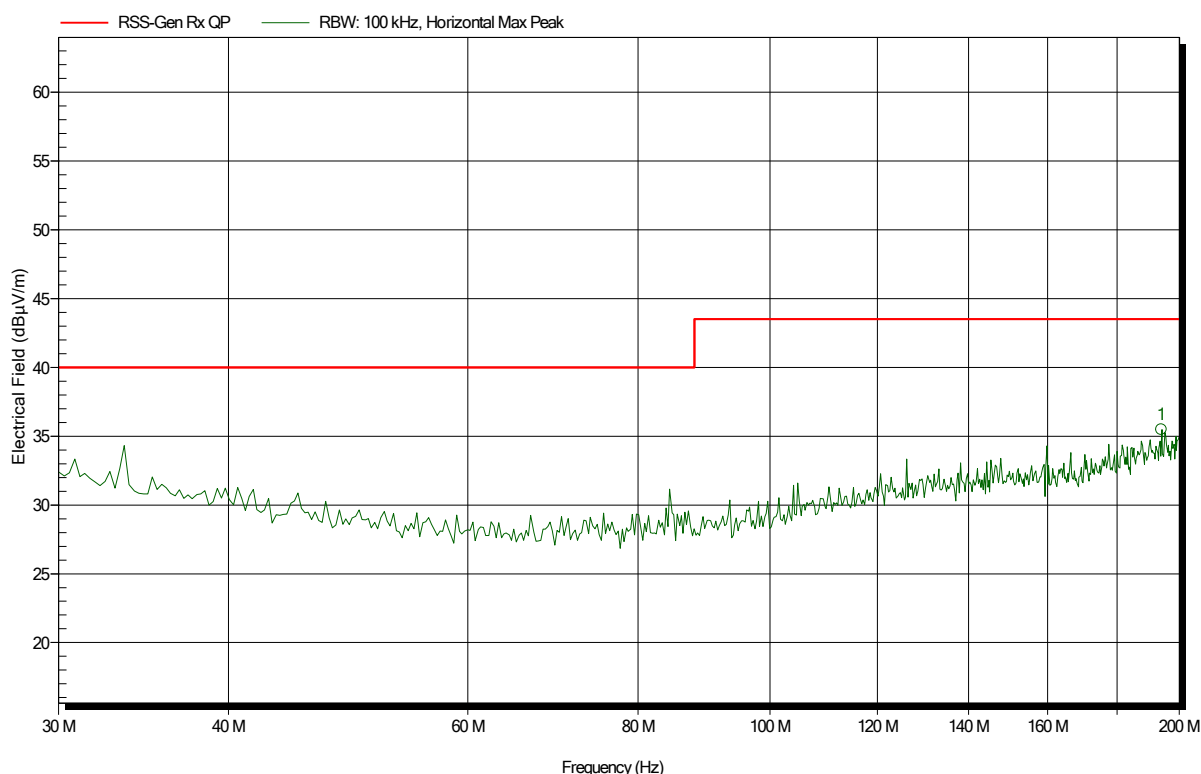
ANNEX B Receiver spurious emissions

Spurious emissions according to ISED RSS-247 Issue 2 (February 2017)

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: 26.6°C, Vnom: 120 VAC (external power supply)
 Antenna: Rohde & Schwarz HK 116, Horizontal
 Measurement distance: 3 m
 Mode: RX; Scan mode
 Test Date: 2019-06-18
 Note:

Index 13



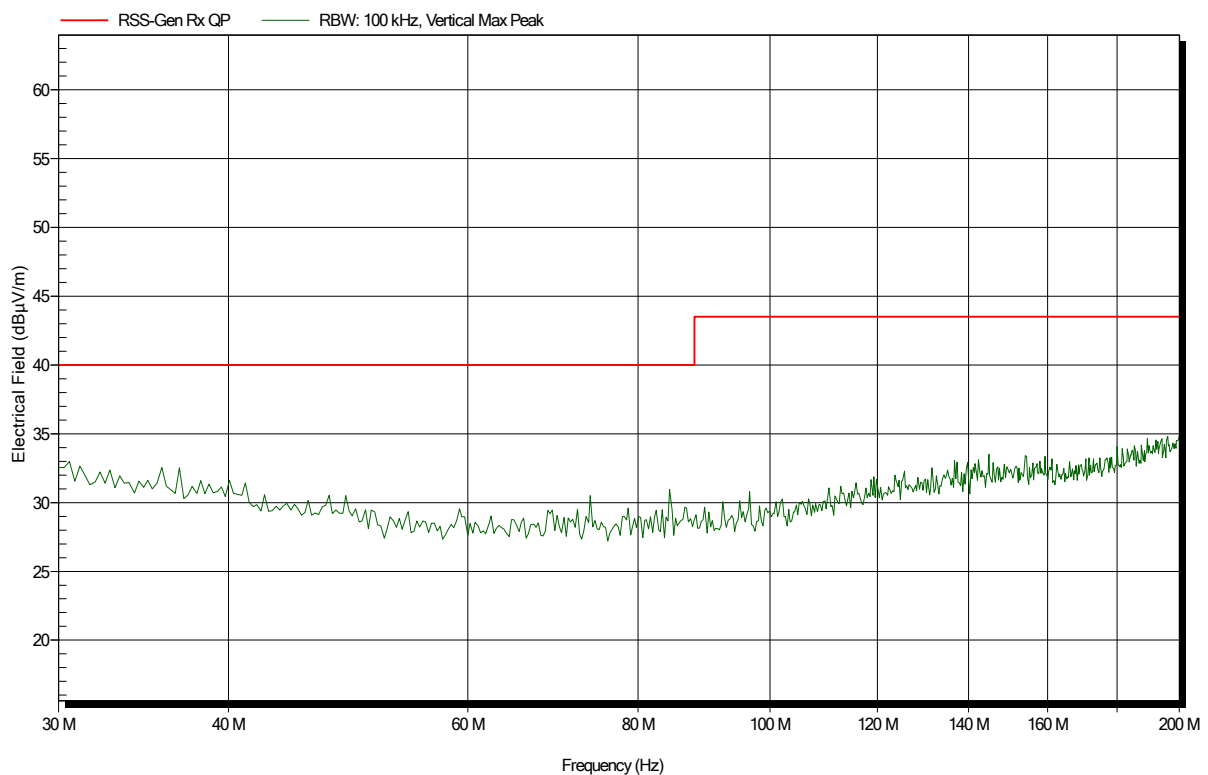
Frequency	Peak	Peak Limit	Peak Difference	Status	Angle	Height
194.016 MHz	35.49 dBµV/m	43.5 dBµV/m	-8.01 dB	Pass	315 Degree	1.2 m

Spurious emissions according to ISED RSS-247 Issue 2 (February 2017)

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: 26.6°C, Vnom: 120 VAC (external power supply)
Antenna: Rohde & Schwarz HK 116, Vertical
Measurement distance: 3 m
Mode: RX; Scan mode
Test Date: 2019-06-18
Note:

Index 14

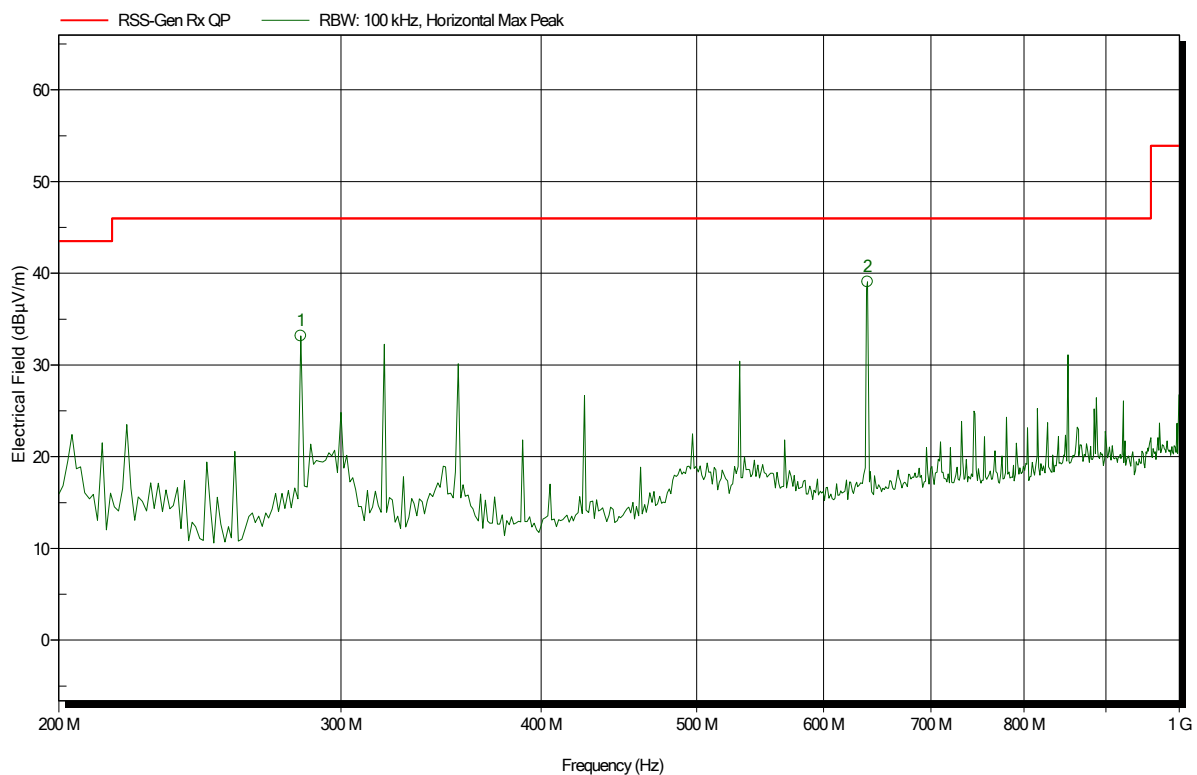


Spurious emissions according to ISED RSS-247 Issue 2 (February 2017)

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: 26.6°C, Vnom: 120 VAC (external power supply)
Antenna: Rohde & Schwarz HL 223, Horizontal
Measurement distance: 3 m
Mode: RX; Scan mode
Test Date: 2019-06-18
Note:

Index 15



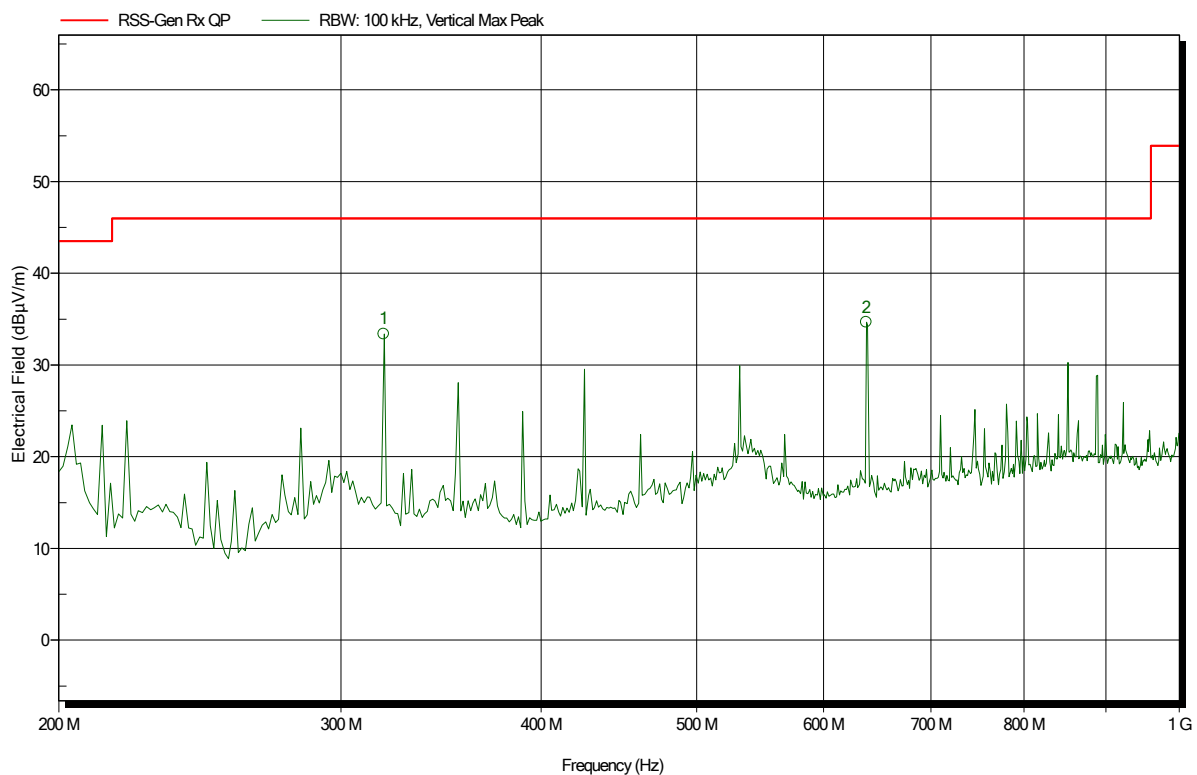
Frequency	Peak	Peak Limit	Peak Difference	Status	Angle	Height
283.2 MHz	33.16 dBµV/m	46 dBµV/m	-12.84 dB	Pass	135 Degree	1.2 m
639.04 MHz	39.06 dBµV/m	46 dBµV/m	-6.94 dB	Pass	247 Degree	1.2 m

Spurious emissions according to ISED RSS-247 Issue 2 (February 2017)

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: 26.6°C, Vnom: 120 VAC (external power supply)
Antenna: Rohde & Schwarz HL 223, Vertical
Measurement distance: 3 m
Mode: RX; Scan mode
Test Date: 2019-06-18
Note:

Index 16



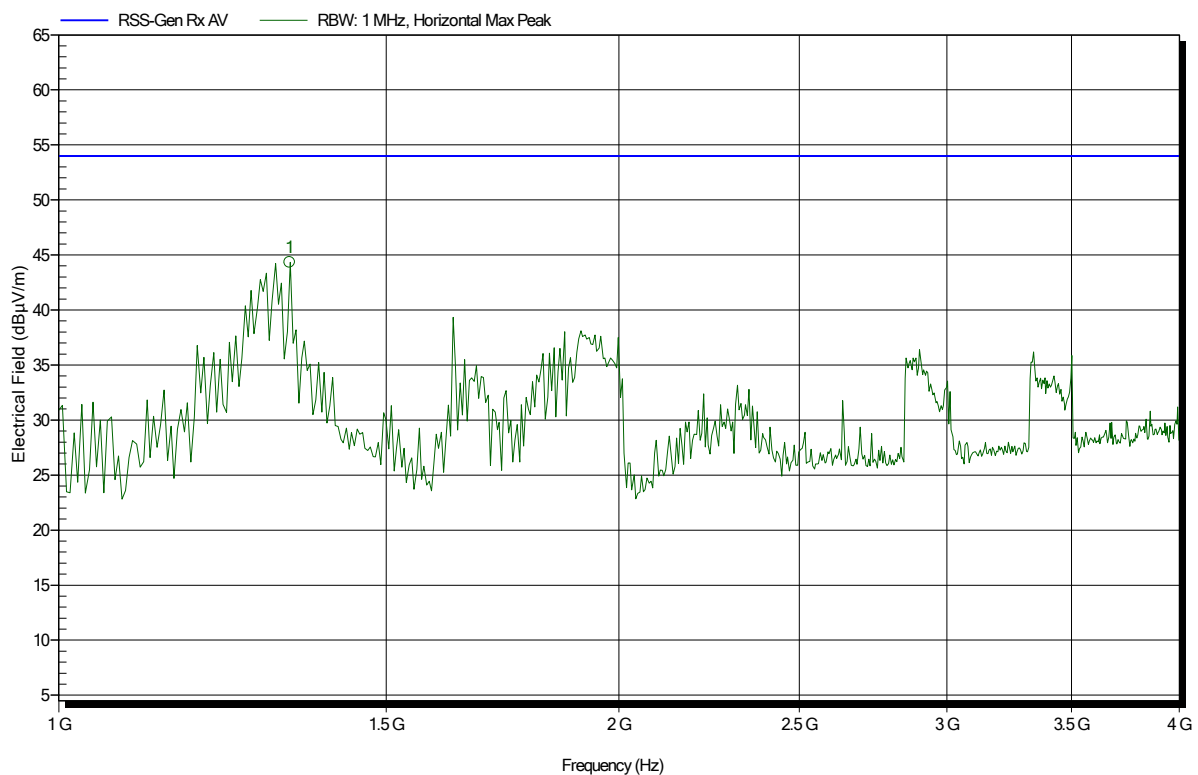
Frequency	Peak	Peak Limit	Peak Difference	Status	Angle	Height
319.04 MHz	33.39 dBμV/m	46 dBμV/m	-12.61 dB	Pass	112 Degree	1.2 m
637.76 MHz	34.68 dBμV/m	46 dBμV/m	-11.32 dB	Pass	315 Degree	1.2 m

Spurious emissions according to ISED RSS-247 Issue 2 (February 2017)

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: 26.6°C, Vnom: 120 VAC (external power supply)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m
 Mode: RX; Scan mode
 Test Date: 2019-06-18
 Note:

Index 17



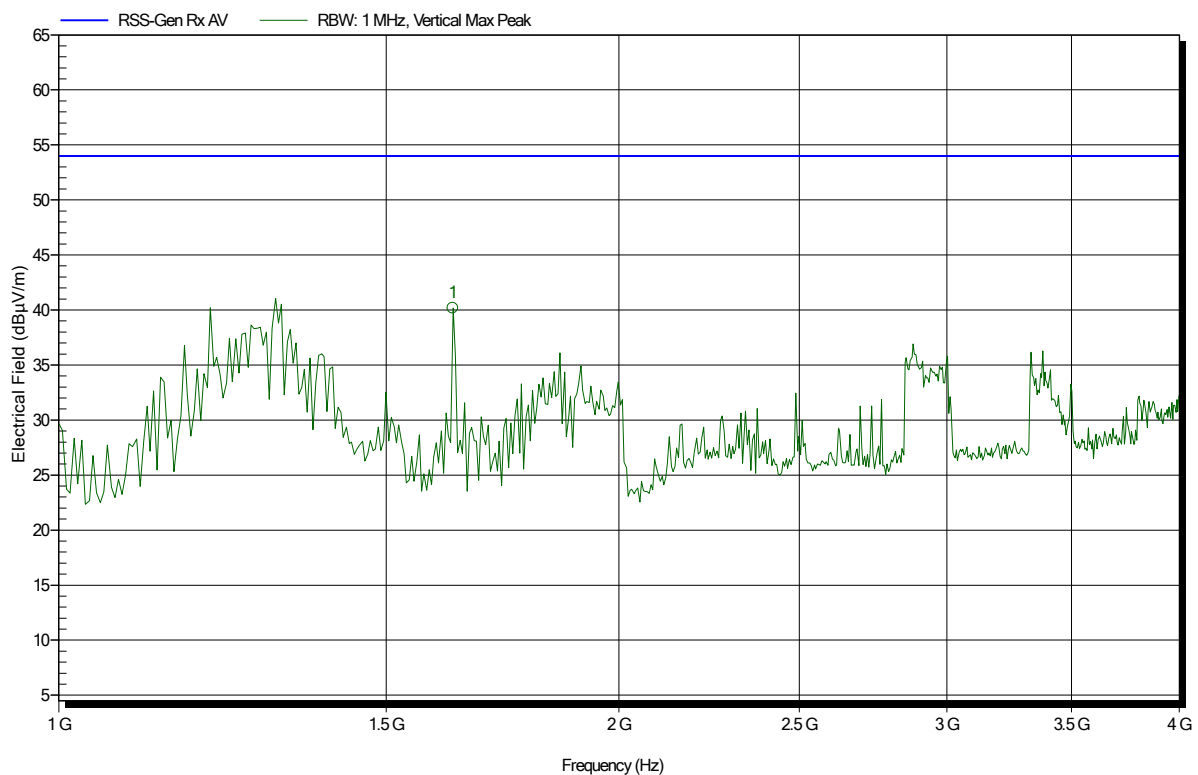
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.331 GHz	44.34 dBµV/m	53.98 dBµV/m	-9.64 dB	Pass

Spurious emissions according to ISED RSS-247 Issue 2 (February 2017)

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: 26.6°C, Vnom: 120 VAC (external power supply)
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 1 m
Mode: RX; Scan mode
Test Date: 2019-06-18
Note:

Index 24



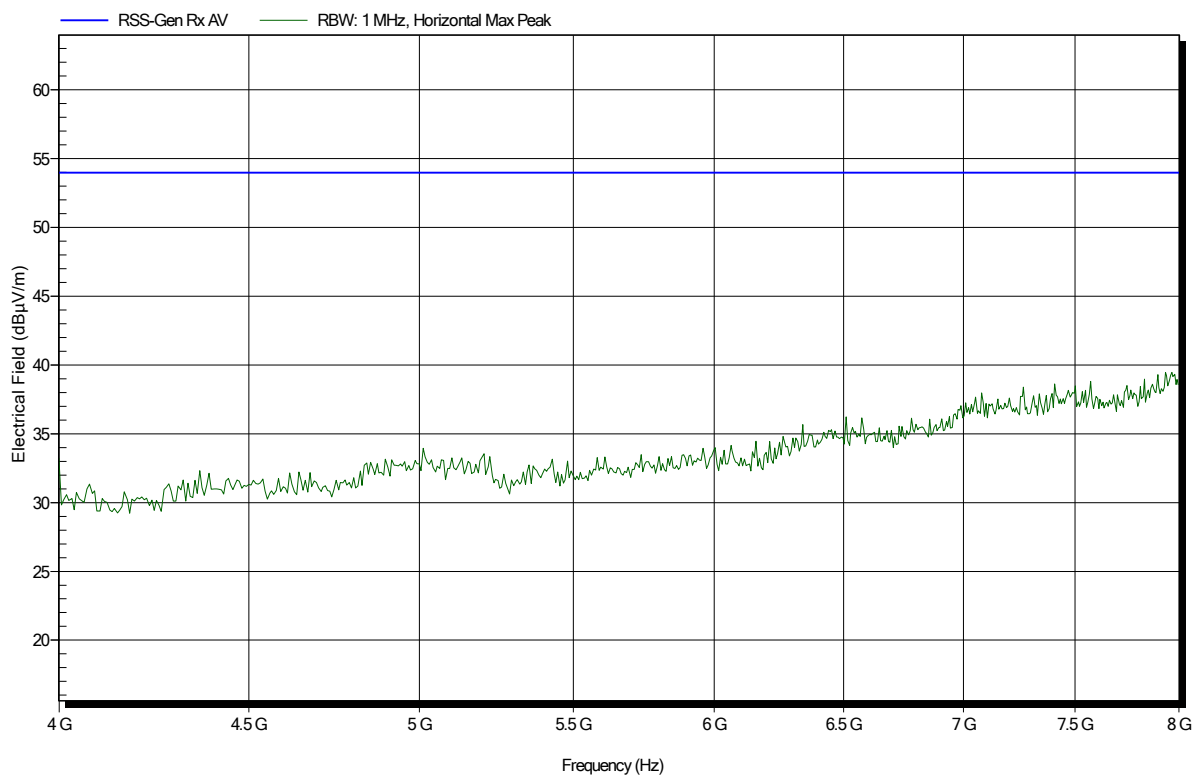
Frequency	Peak	Peak Limit	Peak Difference	Peak Status
1.629 GHz	40.19 dBµV/m	53.98 dBµV/m	-13.79 dB	Pass

Spurious emissions according to ISED RSS-247 Issue 2 (February 2017)

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: 26.6°C, Vnom: 120 VAC (external power supply)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m
 Mode: RX; Scan mode
 Test Date: 2019-06-18
 Note:

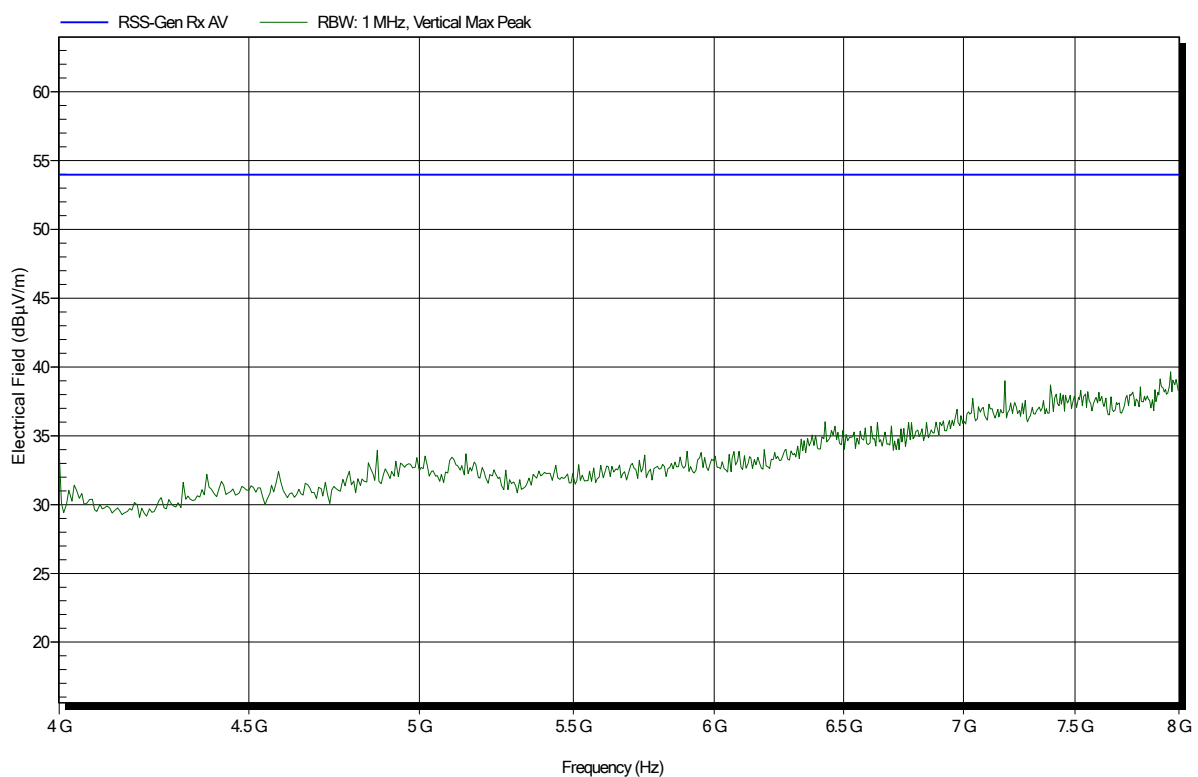
Index 18



Spurious emissions according to ISED RSS-247 Issue 2 (February 2017)

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: 26.6°C, Vnom: 120 VAC (external power supply)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m
 Mode: RX; Scan mode
 Test Date: 2019-06-18
 Note:

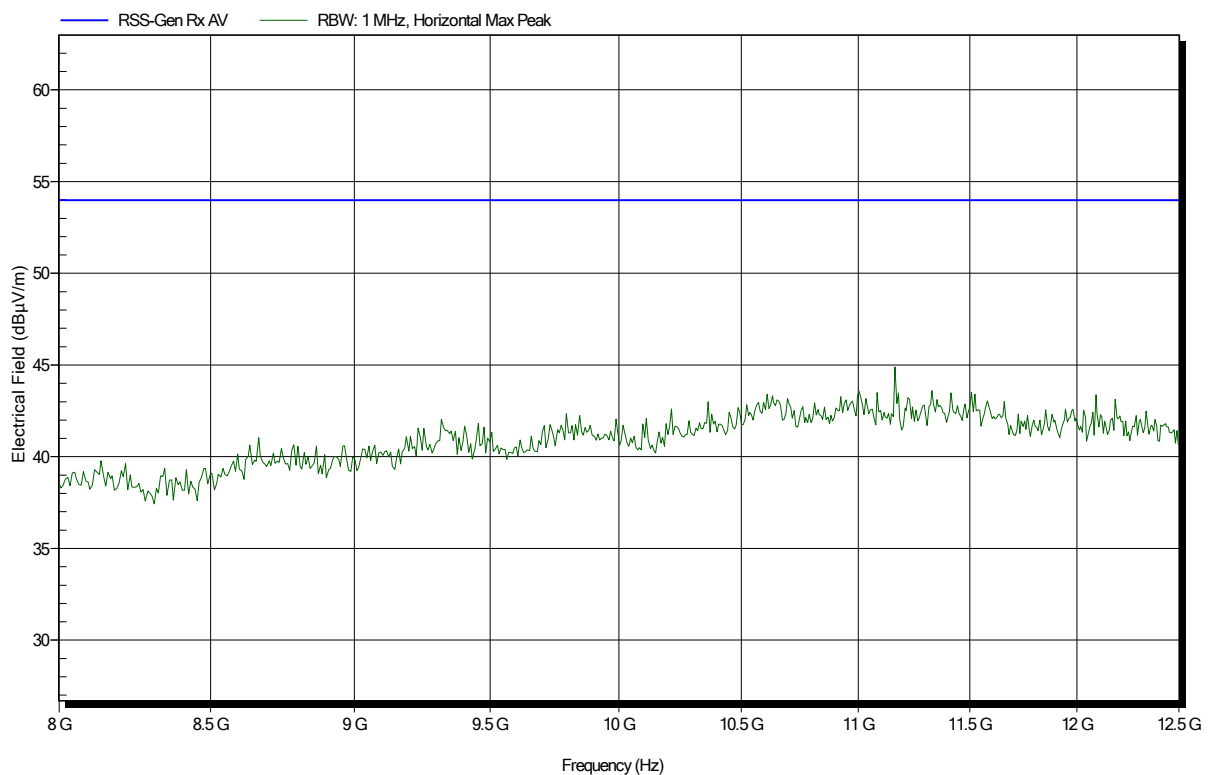
Index 23



Spurious emissions according to ISED RSS-247 Issue 2 (February 2017)

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: 26.6°C, Vnom: 120 VAC (external power supply)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: RX; Scan mode
 Test Date: 2019-06-18
 Note:

Index 19

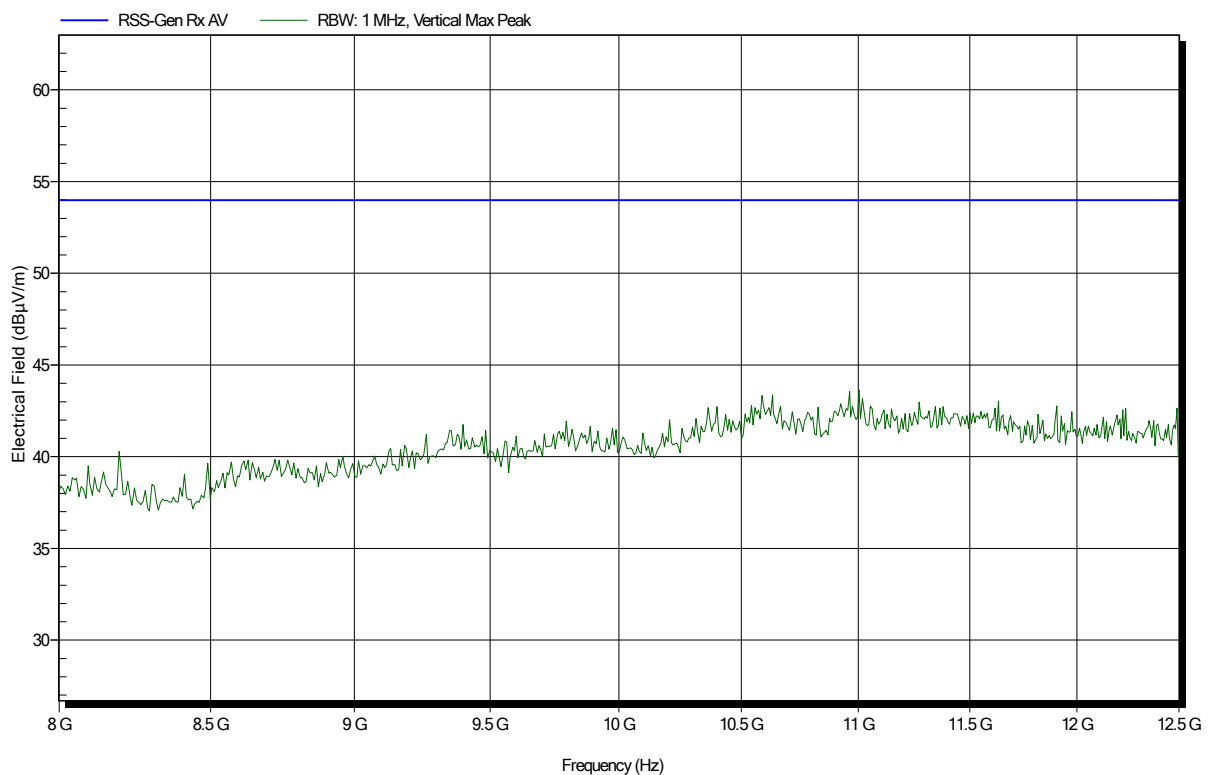


Spurious emissions according to ISED RSS-247 Issue 2 (February 2017)

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: 26.6°C, Vnom: 120 VAC (external power supply)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: RX; Scan mode
 Test Date: 2019-06-18
 Note:

Index 22

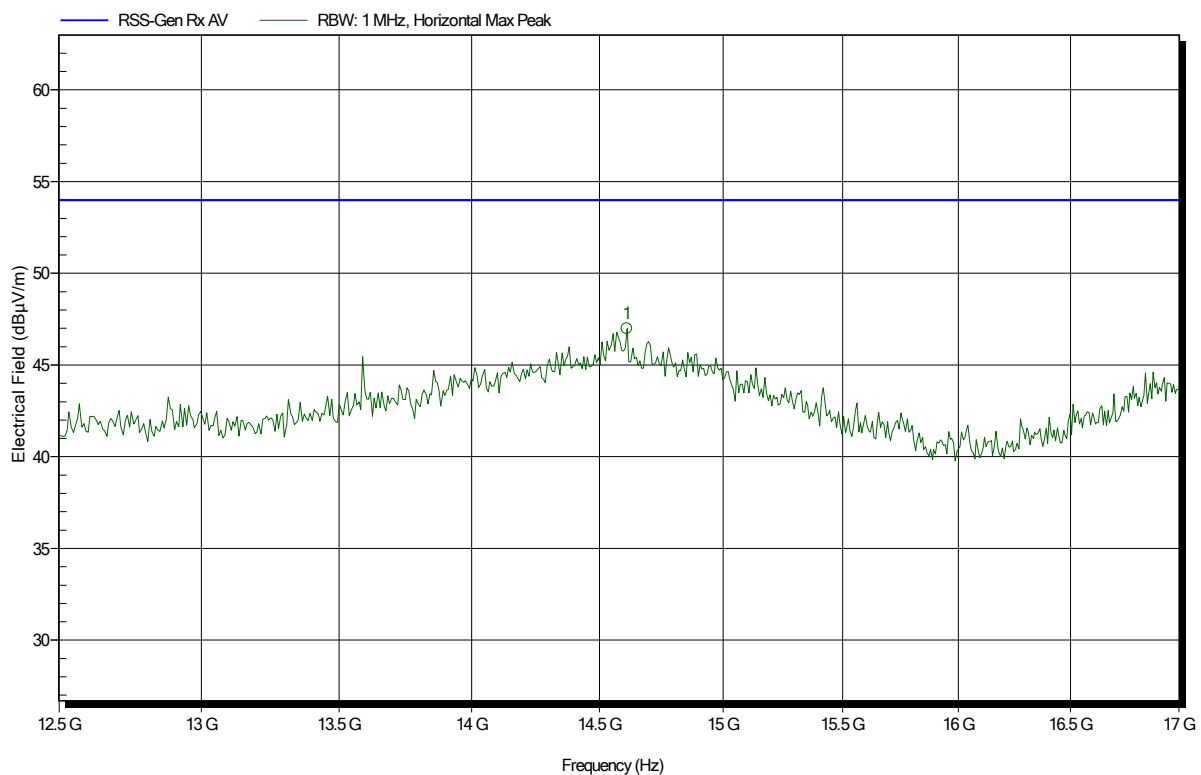


Spurious emissions according to ISED RSS-247 Issue 2 (February 2017)

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: 26.6°C, Vnom: 120 VAC (external power supply)
 Antenna: Schwarzbeck BBHA 9120D, Horizontal
 Measurement distance: 1 m converted to 3m
 Mode: RX; Scan mode
 Test Date: 2019-06-18
 Note:

Index 20



Frequency	Peak	Peak Limit	Peak Difference	Status
14.61 GHz	46.98 dBµV/m	53.98 dBµV/m	-7 dB	Pass

Spurious emissions according to ISCED RSS-247 Issue 2 (February 2017)

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: 26.6°C, Vnom: 120 VAC (external power supply)
 Antenna: Schwarzbeck BBHA 9120D, Vertical
 Measurement distance: 1 m converted to 3m
 Mode: RX; Scan mode
 Test Date: 2019-06-18
 Note:

Index 21

