

RADIO REPORT FCC 47 CFR Part 15C ISED Canada RSS-247 Digital transmission systems operating within the 2400.0 MHz - 2483.5 MHz band	
Report Reference No	G0M-2206-1512-TFC247WF-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 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	47 CFR Part 15C RSS-247, Issue 2, 2017-02 RSS-Gen, Issue 5, Amendment 2, 2021-02
Non-Standard Test Method	None
Equipment under Test (EUT):	
Product Description	Data Gateway for Electrophysiology Lab
Model(s)	Qubic Connect
Additional Model(s)	None
Brand Name(s)	BIOTRONIK
Hardware Version(s)	A.A
Software Version(s)	Wi-Fi Driver Version: 22.70.0.6
FCC ID	QRI-QCONNECT
IC	4708A-QCONNECT
Contains FCC ID	N/A
Contains IC	N/A
Test Result	PASSED

Test Report No.: G0M-2206-1512-TFC247WF-V01

Eurofins Product Service GmbH
Storkower Str. 38c, D-15526 Reichenwalde, Germany

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 °C - 30 °C	
Test Lab Humidity	25 % - 55 %	
Date of receipt of test item	2022-06-15	
Report:		
Compiled by	Burkhard Pudell	
Tested by (+ signature) (Responsible for Test)	Burkhard Pudell	
Approved by (+ signature) (Test Lab Engineer)	Radwan Jaafar	
Date of Issue	2022-11-30	
Total number of pages	46	
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:		

VERSION HISTORY

Version History			
Version	Issue Date	Remarks	Revised By
01	2022-11-30	Initial Release	

ABBREVIATIONS AND ACRONYMS

Acronyms	
Acronym	Description
BPSK	Binary Phase Shift Keying
DSSS	Direct Sequence Spread Spectrum
EUT	Equipment Under Test
FCC	Federal Communications Commission
HT	High Throughput
IEEE 802.11	MAC and PHY Layer for WiFi
ISED	Innovation, Science and Economic Development Canada
OFDM	Orthogonal Frequency Division Multiplexing
QAM	Quadrature Amplitude Modulation
QPSK	Quadrature Phase Shift Keying
RBW	Resolution bandwidth
RMS	Root mean square
VBW	Video bandwidth
V _{NOM}	Nominal supply voltage

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1 Equipment (Test Item) Under Test

Description	Data Gateway for Electrophysiology Lab	
Model	Qubic Connect	
Additional Model(s)	None	
Brand Name(s)	BIOTRONIK	
Serial Number(s)	(44) 00298859 (SID: 40181)	
Hardware Version(s)	A.A	
Software Version(s)	Wi-Fi Driver Version: 22.70.0.6	
PMN	Qubic Connect	
HVIN	Qubic Connect	
FVIN	n/a	
HMN	n/a	
FCC ID	QRI-QCONNECT	
IC	4708A-QCONNECT	
Equipment type	End Product	
Radio type	Transceiver	
Assigned frequency bands	2400.0 MHz - 2483.5 MHz	
Radio technology	IEEE 802.11 b/g/n (HT20, HT40)	
Modulation	BPSK, QPSK, 16-QAM, 64-QAM	
Number of antenna ports	2	
Radio Module	Type	IEEE 802.11 radio module
	Model	AX210NGW
	Manufacturer	Intel
	HW Version	Cfg25.2 (TF01g)
	SW Version	Intel® PROSet/Wireless WiFi version 22 and following versions
	FCC-ID	PD9AX210NG
	IC	1000M-AX210NG
Antenna 1	Type	Integrated
	Model	001-0021
	Manufacturer	Laird
	Gain	2.5 dBi (manufacturer declaration)
Antenna 2	Type	Integrated
	Model	FXP830.24.0100B
	Manufacturer	Taoglas
	Gain	1.8 dBi (manufacturer declaration)
Supply Voltage	V _{NOM}	12 VDC
Operating Temperature	T _{NOM}	25 °C
AC/DC-Adaptor	Model	AKM65US12
	Vendor	XP Power
	Input	110 - 240 V AC
	Output	12.0 V DC
Manufacturer	BIOTRONIK SE & Co. KG Woermannkehre 1 12359 Berlin GERMANY	

1.3 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
SFT	Remote control	Laptop	none	Control Unit
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
CBL	Connecting Cable			
SFT	Software			
Comment:				

1.4 Test Modes

Mode	Description
DSSS (IEEE 802.11b)	Mode = Transmit Modulation = DBPSK Spreading = DSSS Bandwidth = 20 MHz Data rate = 1 Mbps Duty cycle = 100% Power setting = default
Receive	Mode = Receive
Comment: The above settings were found as worst case during pre-tests. / The above settings are found as worst case during evaluation of the original modular test report [200611-03.TR04 Rev.01], issued on [2020.10.14] by [Intel Corporation S.A.S. – WRF Lab]. Conducted peak/average output power was evaluated to determine the worst case settings.	

1.5 Test Frequencies

Designator	Mode	Channel	Frequency [MHz]
F2	Tx / Rx	7	2442

1.6 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 A2 (section 6.7)	Occupied Bandwidth	ANSI C63.10-2013	N/R	Informational only
FCC § 15.247(a)(2) ISED RSS-247, Issue 2 (section 5.2)	6 dB Bandwidth	ANSI C63.10-2013	N/R	
FCC § 15.247(b) ISED RSS-247, Issue 2 (section 5.4)	Maximum peak conducted power	ANSI C63.10-2013	N/R	
FCC § 15.247(e) ISED RSS-247, Issue 2 (section 5.2)	Power spectral density	ANSI C63.10-2013	N/R	
FCC § 15.207 ISED RSS-247, Issue 2 (section 3.1)	AC power line conducted emissions	ANSI C63.10-2013	PASS	
FCC § 15.247(d) ISED RSS-247, Issue 2 (section 5.5)	Band edge compliance	ANSI C63.10-2013	N/R	
FCC § 15.247(d) ISED RSS-247, Issue 2 (section 5.5)	Conducted spurious emissions	ANSI C63.10-2013	N/R	
FCC § 15.247(d) FCC § 15.209 ISED RSS-Gen, Issue 5 A2 (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 C63.4-2014	PASS	
Comment: The Decision Rule is applied on the basis of ETSI TR 102 273 and ETSI TR 100 028. These standards provide guidance on how to calculate and apply measurement uncertainty whilst providing maximum uncertainties allowance. In all cases due consideration will be given to ILAC-G8:09/2019. Where a result is considered conditional in respect of its proximity to the limit line, the customer would be made aware of situation so that they can make an informed decision on how to proceed.				

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 - AC powerline conducted emissions

3.1.1 Information

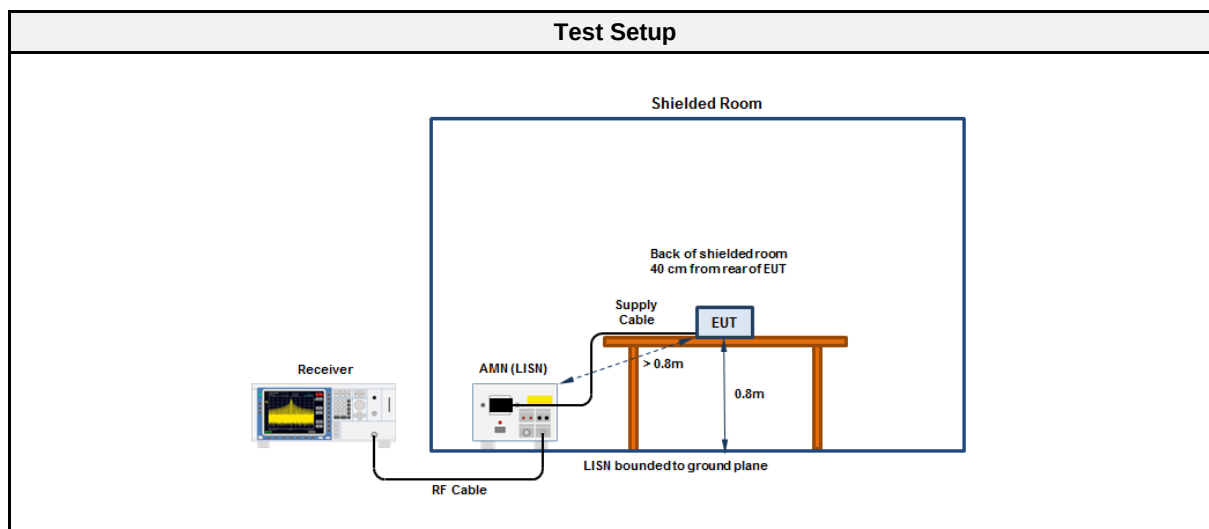
Test Information	
Reference	FCC § 15.207; ISED RSS-247, Issue 2 (section 3.1)
Measurement Method	ANSI C63.10 6.2
Measurement Uncertainty	± 3.82 dB
Operator	Odai Qawasmeh
Date	2022-09-16

3.1.2 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

3.1.3 Setup



3.1.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2020.1.8

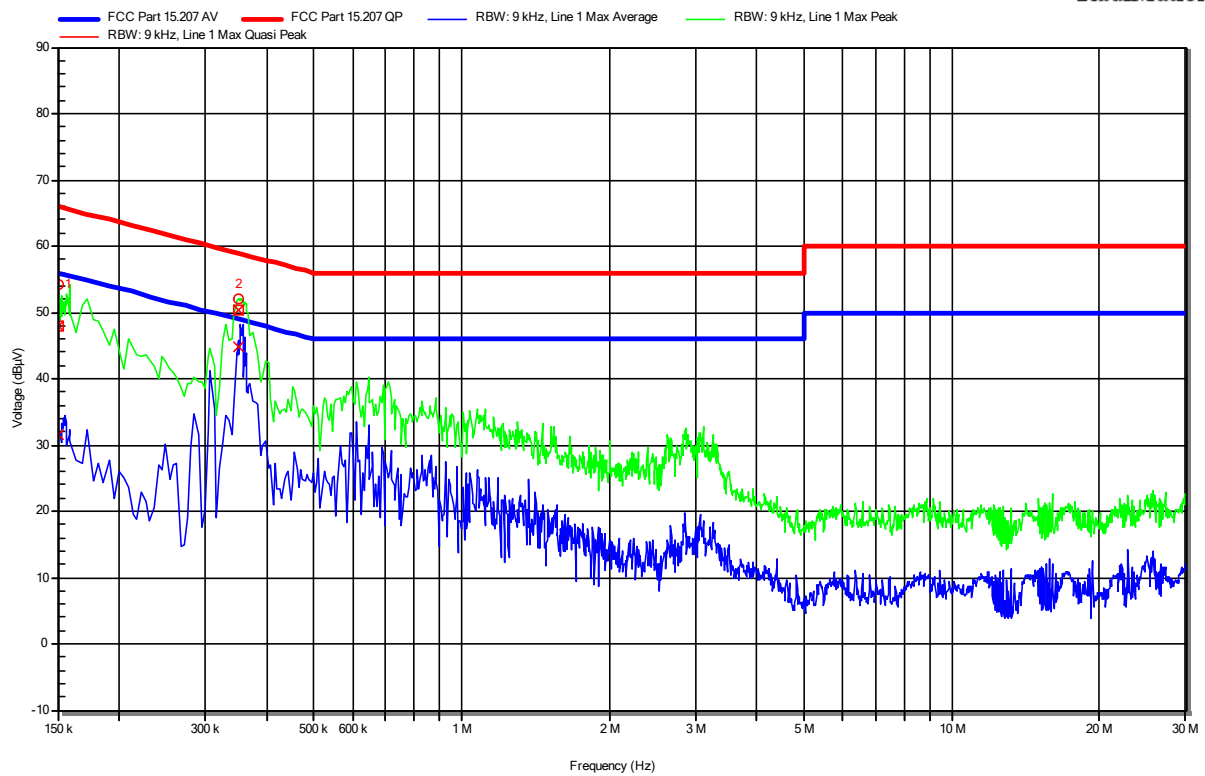
Test Equipment					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
EMI Test Receiver	R&S	ESR7	EF00943	2022-07	2023-07
Pulse Limiter	R&S	ESH3-Z2	EF01222	2021-07	2023-07
LISN	Schwarzbeck	NSLK 8127 RC	EF01592	2021-07	2023-07

Conducted emissions at the mains power port according to FCC Part 15.207

Project Number: G0M-2206-1512
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Data Gateway for Electrophysiology Lab
 Model: Qubic Connect
 Test Sample ID: 40191
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Qawasmeh
 Test Date: 2022-09-16
 Operating Conditions: ambient temperature: 22 °Celsius
 power input: 120VAC/60Hz
 LISN: Schwarzbeck NSLK 8127 RC L1
 Operational Mode: IEEE 802.11b Tx (channel 7 - 2442 MHz)
 EUT Configuration: DBPSK_BW20_1 Mbps_ANT 1
 Applied to Port: L1
 Note 1:

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RadiMation



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	LISN
1	150 kHz	48.04 dBµV	66 dBµV	-17.96 dB	Pass	Line 1
2	350.7 kHz	50.43 dBµV	58.95 dBµV	-8.52 dB	Pass	Line 1

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	LISN
1	150 kHz	31.55 dBµV	56 dBµV	-24.45 dB	Pass	Line 1
2	350.7 kHz	44.81 dBµV	48.95 dBµV	-4.14 dB	Pass	Line 1

Test Report No.: G0M-2206-1512-TFC247WF-V01

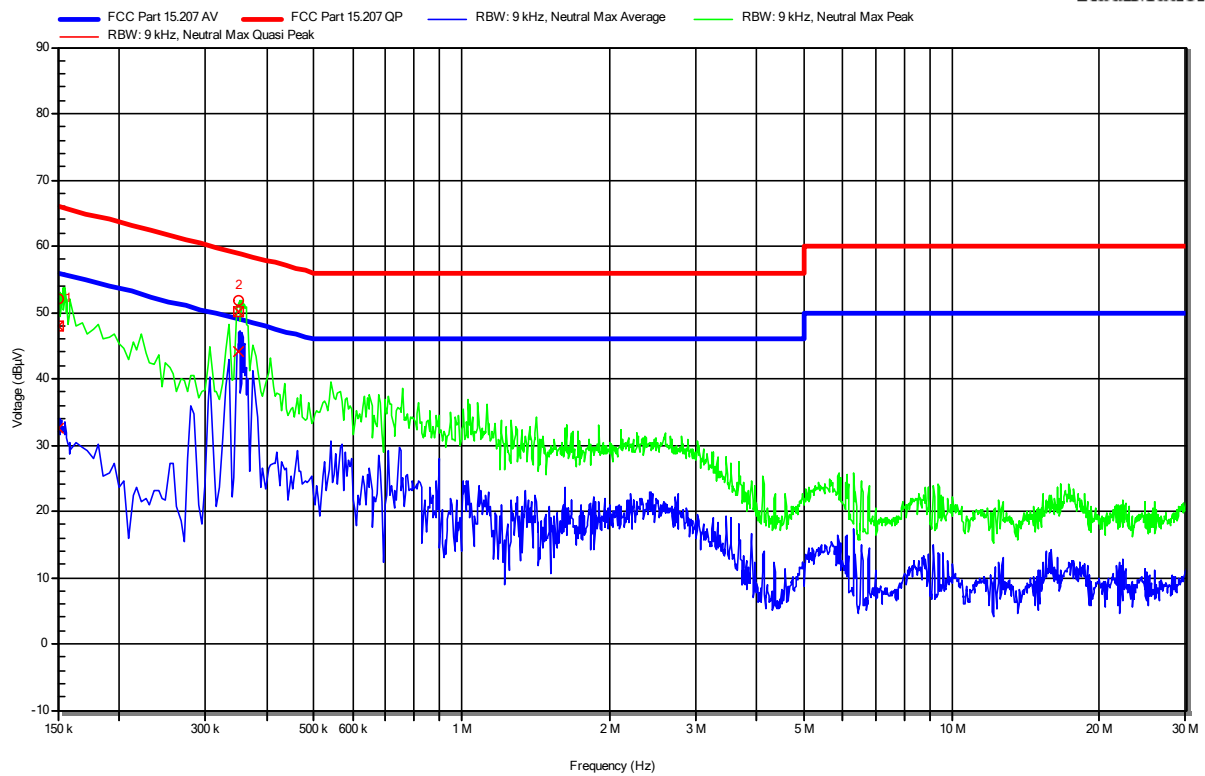
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Conducted emissions at the mains power port according to FCC Part 15.207

Project Number: G0M-2206-1512
 Applicant: BIOTRONIK SE & Co. KG
 Model Description: Data Gateway for Electrophysiology Lab
 Model: Qubic Connect
 Test Sample ID: 40191
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Qawasmeh
 Test Date: 2022-09-16
 Operating Conditions: ambient temperature: 22 °Celsius
 power input: 120VAC/60Hz
 LISN: Schwarzbeck NSLK 8127
 Operational Mode: IEEE 802.11b Tx (channel 7 - 2442 MHz)
 EUT Configuration: DBPSK_BW20_1 Mbps_ANT 1
 Applied to Port: N
 Note 1:

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RadiMation



Peak Number	Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	LISN
1	150.9 kHz	48.01 dBµV	65.95 dBµV	-17.94 dB	Pass	Neutral
2	351.15 kHz	50.03 dBµV	58.94 dBµV	-8.91 dB	Pass	Neutral

Peak Number	Frequency	Average	Average Limit	Average Difference	Average Status	LISN
1	150.9 kHz	32.62 dBµV	55.95 dBµV	-23.33 dB	Pass	Neutral
2	351.15 kHz	44.15 dBµV	48.94 dBµV	-4.78 dB	Pass	Neutral

Test Report No.: G0M-2206-1512-TFC247WF-V01

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

3.2 Test Conditions and Results - Transmitter radiated emissions

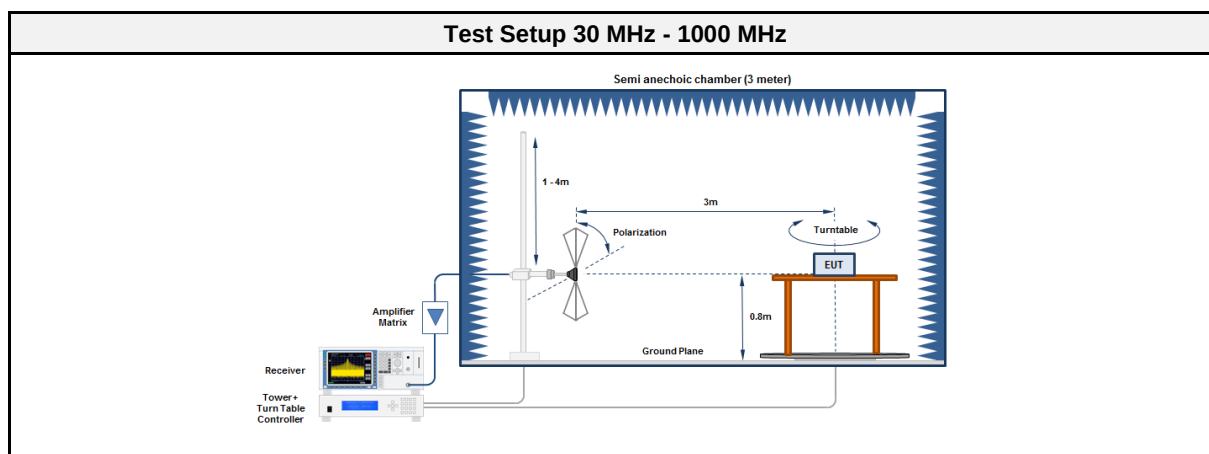
3.2.1 Information

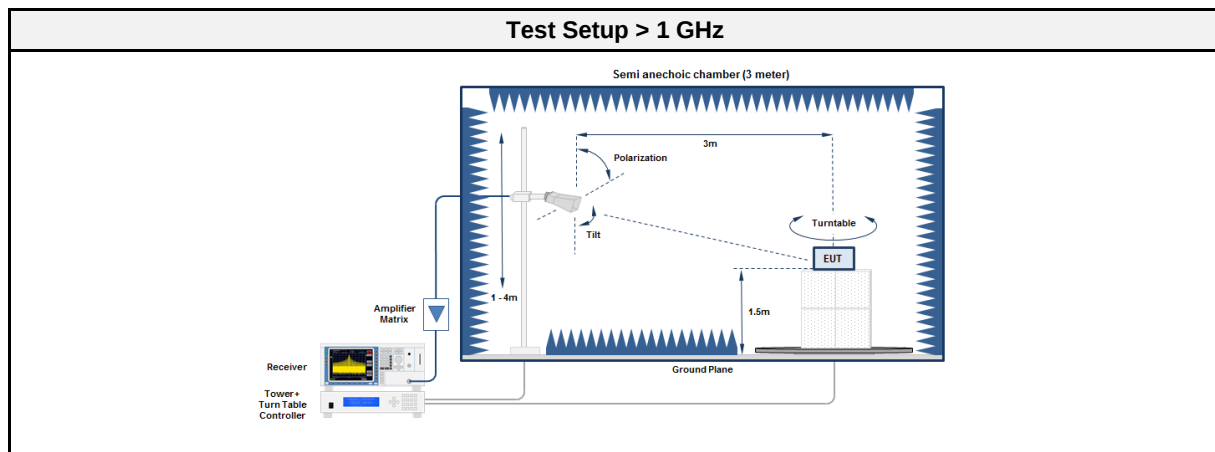
Test Information	
Reference	FCC § 15.247(d); FCC § 15.209; ISSED RSS-Gen, Issue 5 A2 (section 6.13)
Measurement Uncertainty	± 5.95 dB
Measurement Method	ANSI C63.10 6.4, 6.5, 6.6, 11.12
Operator	Burkhard Pudell
Date	2022-07-20

3.2.2 Limits

Limits			
Frequency range [MHz]	Detector	Field strength [µV/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

3.2.3 Setup





3.2.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2020.1.8

Test Equipment 30 MHz - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF01011	functional test	functional test
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2021-07	2023-01
Antenna	R&S	HK 116	EF00030	2021-05	2024-05
Antenna	R&S	HL 223	EF00212	2022-08	2025-08

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC2	EF01616	functional test	functional test
Spectrum Analyzer	R&S	FSU 43	EF01631	2021-07	2022-07
Horn antenna	Schwarzbeck	BBHA 9120B	EF01678	2021-03	2024-03
Horn Antenna	Schwarzbeck	HWRD 650	EF01679	2021-03	2024-03
Horn Antenna	Amplifier Research	AT4560	EF00302	2021-06	2023-06
Horn Antenna	Flann Microwave Ltd	22240-25	EF00301	2019-12	2022-12

3.2.5 Procedure

Test Procedure 30 MHz - 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

3.2.6 Results

Test Results - DSSS						
Channel [MHz]	Emission [MHz]	Level [dBμV/m]	Det.	Pol.	Limit [dBμV/m]	Margin [dB]
7 (2442 MHz) ANT 1	37.82	25.70	qpk	ver	40.00	-14.33
7 (2442 MHz) ANT 1	250	30.40	qpk	ver	46.00	-15.58
7 (2442 MHz) ANT 1	2483.7	57.21	pk	ver	74.00	-16.79
7 (2442 MHz) ANT 1	2483.7	42.90	avg	ver	54.00	-11.10
7 (2442 MHz) ANT 1	2484	39.60	avg	hor	54.00	-14.40
7 (2442 MHz) ANT 1	3812.4	36.78	avg	ver	54.00	-17.22
7 (2442 MHz) ANT 1	4999.7	38.82	avg	ver	54.00	-15.18
7 (2442 MHz) ANT 2	2486	40.77	avg	hor	54.00	-13.23
7 (2442 MHz) ANT 2	2487.1	54.57	pk	hor	74.00	-19.43
7 (2442 MHz) ANT 2	2487.1	38.40	avg	hor	54.00	-15.60

3.3 Test Conditions and Results - Receiver radiated emissions

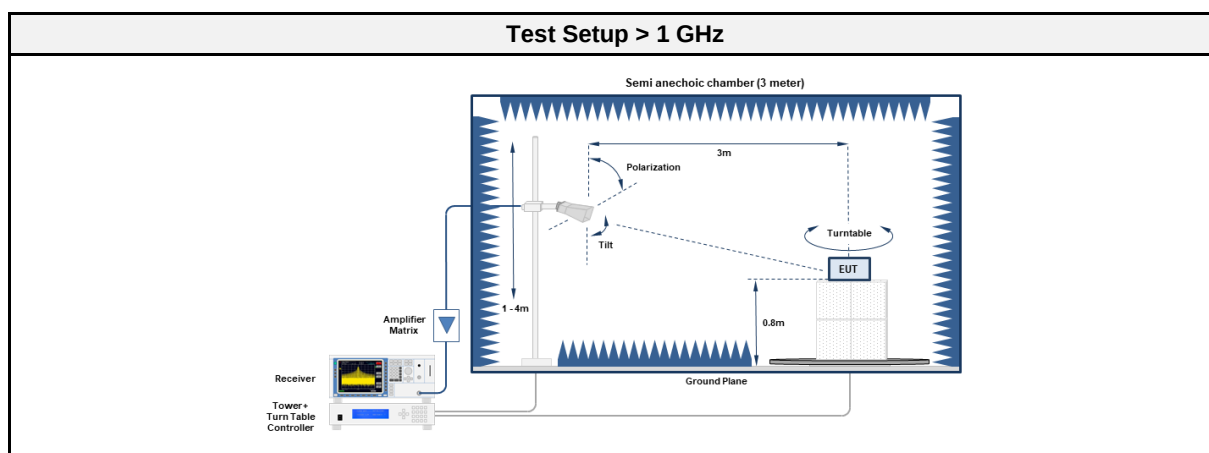
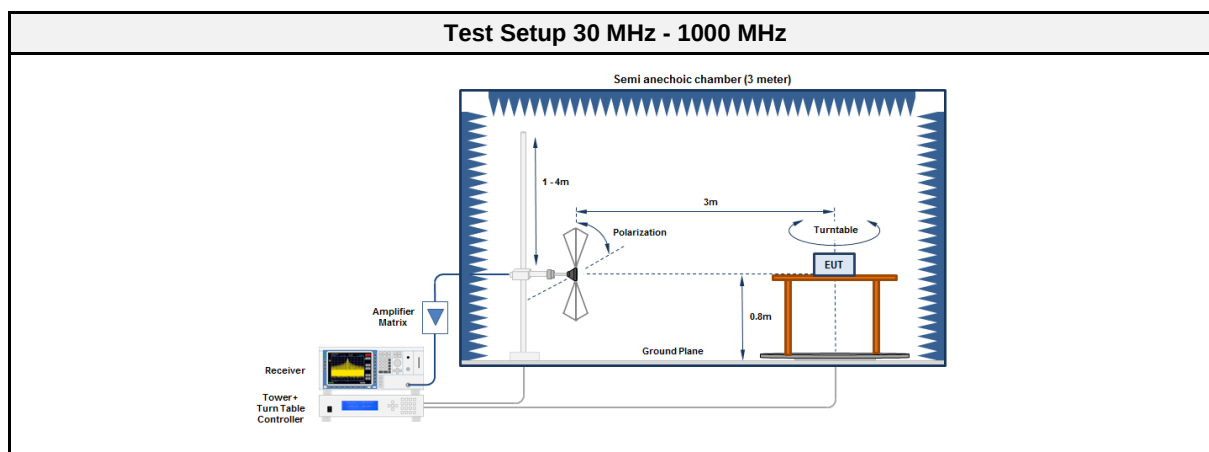
3.3.1 Information

Test Information	
Reference	ISED RSS-247, Issue 2 (section 3.1)
Measurement Uncertainty	± 5.95 dB
Measurement Method	ANSI C63.4-2014 8.1-8.3
Operator	Burkhard Pudell
Date	2022-07-01

3.3.2 Limits

Limits			
Frequency range [MHz]	Detector	Field strength [$\mu\text{V/m}$]	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

3.3.3 Setup



3.3.4 Equipment

Test Software			
Description	Manufacturer	Name	Version
EMC Software	DARE Instruments	RadiMation	2020.1.8

Test Equipment 30 MHz - 1000 MHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF01011	functional test	functional test
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2021-07	2023-01
Antenna	R&S	HK 116	EF00030	2021-05	2024-05
Antenna	R&S	HL 223	EF00212	2022-08	2025-08

Test Equipment > 1 GHz					
Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
Anechoic Chamber	Frankonia	AC1	EF01011	functional test	functional test
Measurement Receiver	Agilent	N9038A-526/WXP	EF01070	2021-07	2023-01
Horn Antenna	Schwarzbeck	BBHA 9120D	EF01678	2021-03	2024-03
Horn Antenna	Schwarzbeck	HWRD 650	EF01679	2021-03	2024-03
Horn Antenna	Amplifier Research	AT4560	EF00302	2021-06	2023-06

3.3.5 Procedure

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

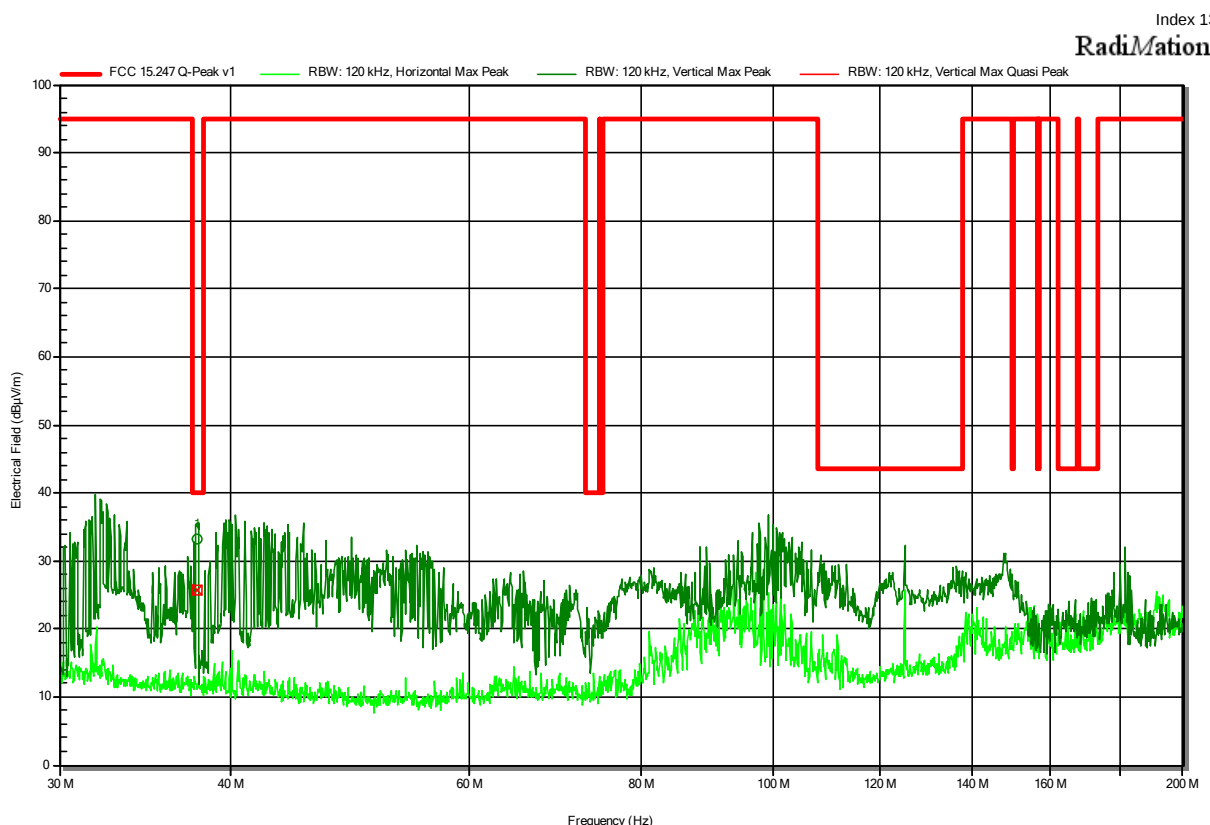
3.3.6 Results

Test Results						
Channel [MHz]	Emission [MHz]	Level [dBμV/m]	Det.	Pol.	Limit [dBμV/m]	Margin [dB]
7 (2442 GHz) ANT 1+2	32.2986	32.50	qpk	ver	40.00	-07.47
7 (2442 GHz) ANT 1+2	40.3855	30.30	qpk	ver	40.00	-09.70
7 (2442 GHz) ANT 1+2	500.0004	35.20	qpk	hor	46.00	-10.77
7 (2442 GHz) ANT 1+2	749.9985	39.20	qpk	ver	46.00	-06.81
7 (2442 GHz) ANT 1+2	1125	33.37	avg	ver	53.98	-20.61
7 (2442 GHz) ANT 1+2	7500	39.81	pk	ver	74.00	-34.19
7 (2442 GHz) ANT 1+2	7500	34.68	avg	ver	53.98	-19.30
7 (2442 GHz) ANT 1+2	10000	33.35	avg	ver	53.98	-20.63
7 (2442 GHz) ANT 1+2	1125	33.17	avg	ver	53.98	-20.81

ANNEX A Transmitter spurious emissions

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

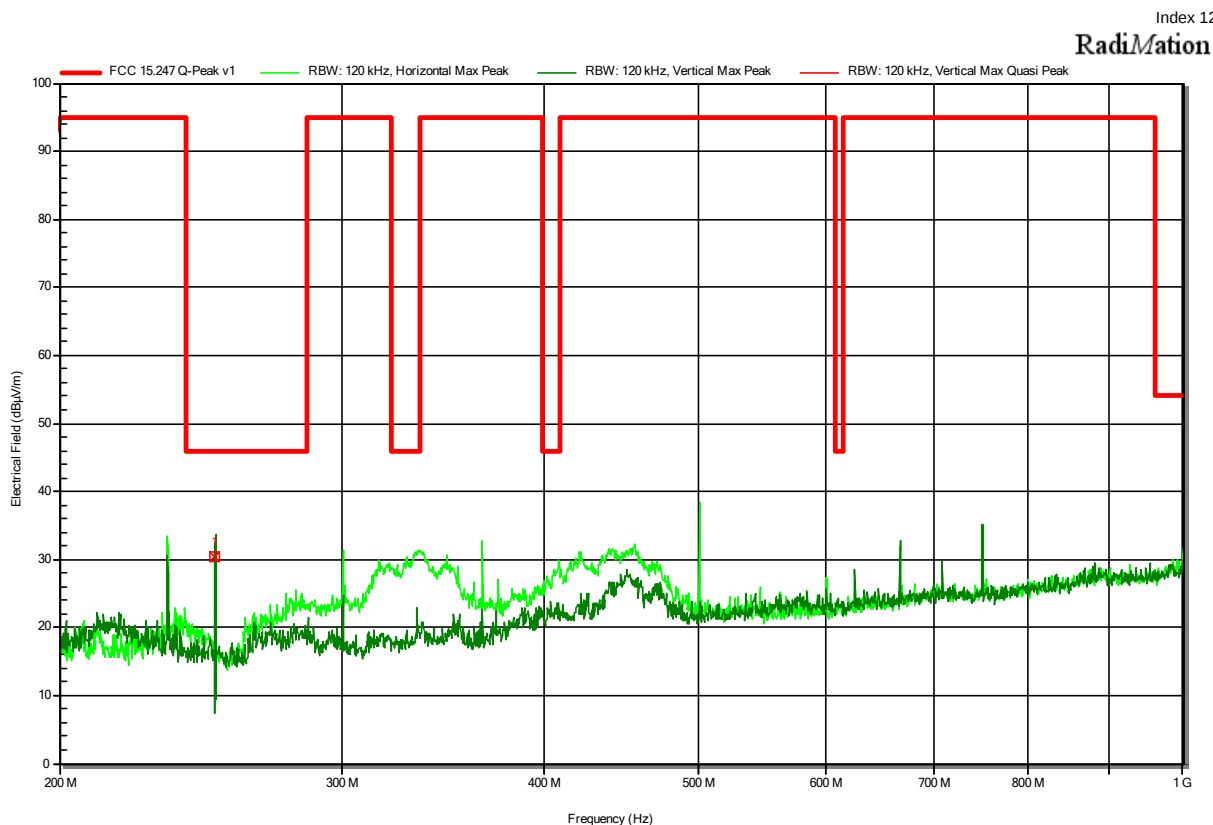
Project Number: G0M-2206-1512
 Applicant: BIOTRONIK
 Model Description: Data Gateway for Electrophysiology Lab
 Model: Qubic Connect
 Test Sample ID: 40181 (SN: 00298859)
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Voigt
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 12.0 V DC
 Antenna: Rohde & Schwarz HK 116
 Measurement distance: 3 m
 Mode: Tx; WLAN 2.4GHz 802.11 b_CH: 7 (2442 GHz)_DBPSK_1Mbps_ANT 1
 Test Date: 2022-06-23
 Note: EUT horizontal



Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Polarization
37.82 MHz	25.7 dBμV/m	40 dBμV/m	-14.33 dB	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

Project Number:	G0M-2206-1512
Applicant:	BIOTRONIK
Model Description:	Data Gateway for Electrophysiology Lab
Model:	Qubic Connect
Test Sample ID:	40181 (SN: 00298859)
Test Site:	Eurofins Product Service GmbH
Operator:	Mr. Voigt
Measurement software:	RadiMation, version 2020.1.8
Test Conditions:	Tnom: 24 °Celsius, Vnom: 12.0 V DC
Antenna:	Rohde & Schwarz HL 223
Measurement distance:	3 m
Mode:	Tx; WLAN 2.4GHz 802.11 b_CH: 7 (2442 GHz)_DBPSK_1Mbps_ANT 1
Test Date:	2022-06-23
Note:	EUT horizontal



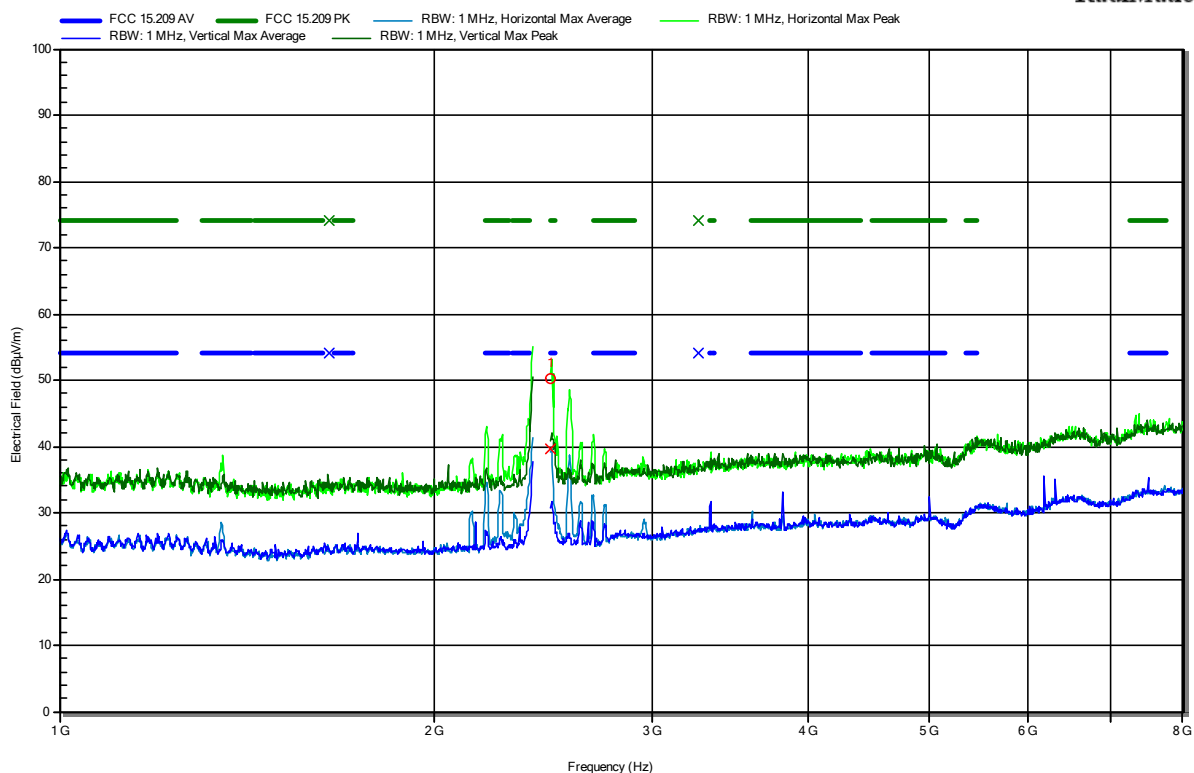
Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Polarization
250 MHz	30.4 dBμV/m	46 dBμV/m	-15.58 dB	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

Project Number: G0M-2206-1512
 Applicant: BIOTRONIK
 Model Description: Data Gateway for Electrophysiology Lab
 Model: Qubic Connect
 Test Sample ID: 40181 (SN: 00298859)
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 12.0 V DC
 Antenna: Schwarzbeck BBHA 9120B
 Measurement distance: 3 m
 Mode: Tx; WLAN 2.4GHz 802.11 b_CH: 7 (2442 GHz)_DBPSK_1Mbps_ANT 1
 Test Date: 2022-06-20
 Note: EUT horizontal

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RadiMation



Frequency 2.484 GHz	Peak 50.16 dBμV/m	Peak Limit 74 dBμV/m	Peak Difference -23.84 dB	Peak Status Pass	Polarization Horizontal
Frequency 2.484 GHz	Average 39.6 dBμV/m	Average Limit 54 dBμV/m	Average Difference -14.4 dB	Average Status Pass	Polarization Horizontal

Test Report No.: G0M-2206-1512-TFC247WF-V01

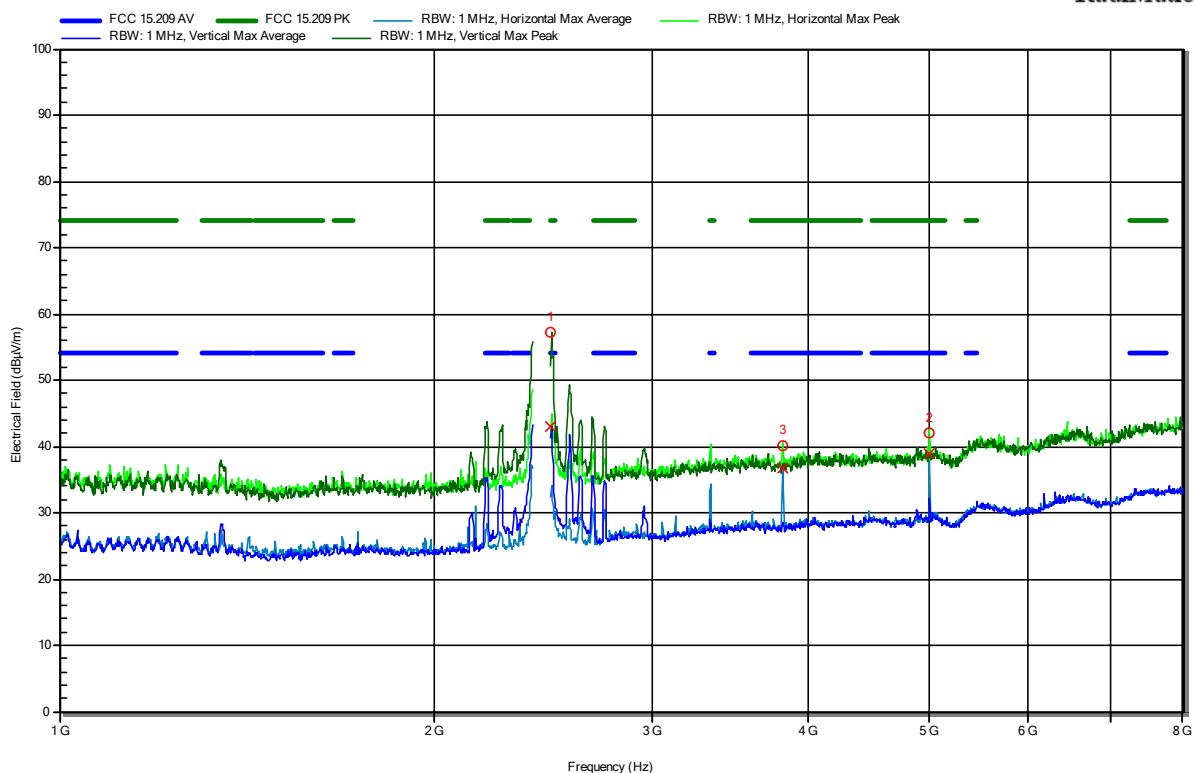
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

Project Number: G0M-2206-1512
 Applicant: BIOTRONIK
 Model Description: Data Gateway for Electrophysiology Lab
 Model: Qubic Connect
 Test Sample ID: 40181 (SN: 00298859)
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 12.0 V DC
 Antenna: Schwarzbeck BBHA 9120B
 Measurement distance: 3 m
 Mode: Tx; WLAN 2.4GHz 802.11 b_CH: 7 (2442 GHz)_DBPSK_1Mbps_ANT 1
 Test Date: 2022-06-20
 Note: EUT vertical

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RadiMation



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
2.4837 GHz	57.21 dBµV/m	74 dBµV/m	-16.79 dB	Pass	Vertical
3.8124 GHz	40.11 dBµV/m	74 dBµV/m	-33.89 dB	Pass	Horizontal
4.9997 GHz	42.1 dBµV/m	74 dBµV/m	-31.9 dB	Pass	Horizontal

Frequency	Average	Average Limit	Average Difference	Average Status	Polarization
2.4837 GHz	42.9 dBµV/m	54 dBµV/m	-11.1 dB	Pass	Vertical
3.8124 GHz	36.78 dBµV/m	54 dBµV/m	-17.22 dB	Pass	Horizontal
4.9997 GHz	38.82 dBµV/m	54 dBµV/m	-15.18 dB	Pass	Horizontal

Test Report No.: G0M-2206-1512-TFC247WF-V01

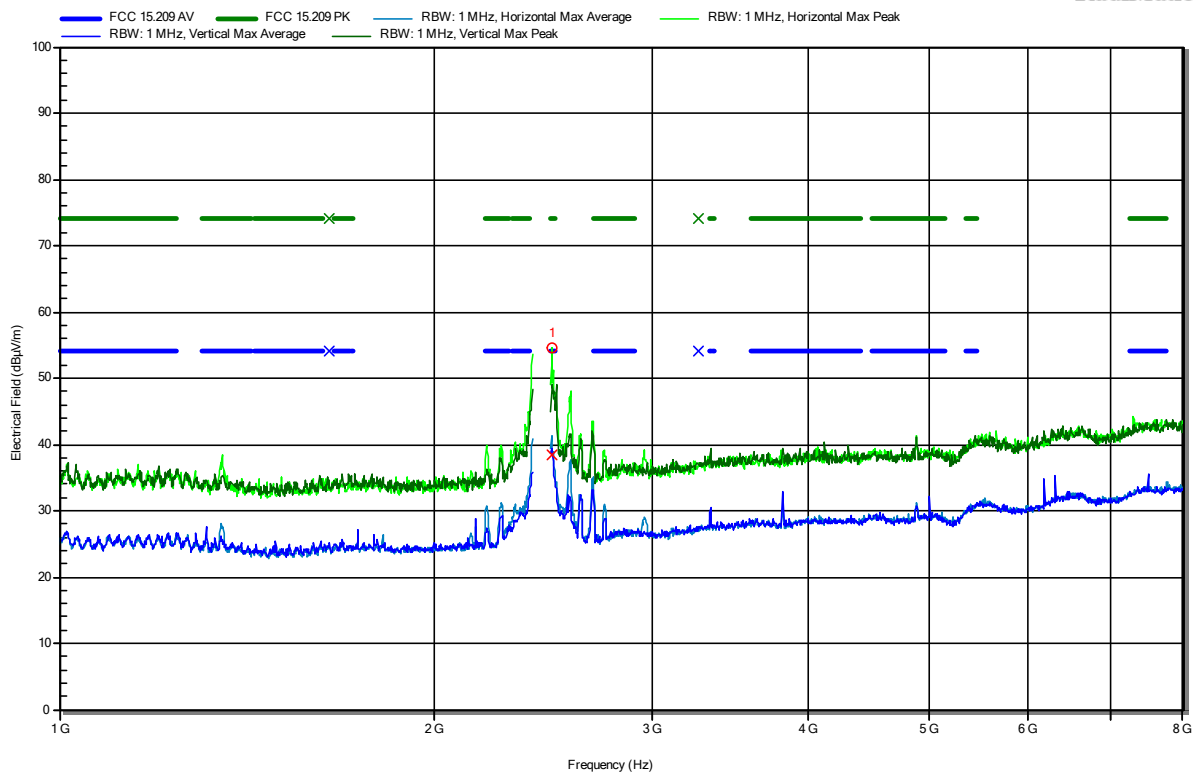
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

Project Number: G0M-2206-1512
 Applicant: BIOTRONIK
 Model Description: Data Gateway for Electrophysiology Lab
 Model: Qubic Connect
 Test Sample ID: 40181 (SN: 00298859)
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 12.0 V DC
 Antenna: Schwarzbeck BBHA 9120B
 Measurement distance: 3 m
 Mode: Tx; WLAN 2.4GHz 802.11 b_CH: 7 (2442 GHz)_DBPSK_1Mbps_ANT 2
 Test Date: 2022-06-20
 Note: EUT horizontal

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RadiMation



Frequency 2.4871 GHz	Peak 54.57 dBμV/m	Peak Limit 74 dBμV/m	Peak Difference -19.43 dB	Peak Status Pass	Polarization Horizontal
Frequency 2.4871 GHz	Average 38.4 dBμV/m	Average Limit 54 dBμV/m	Average Difference -15.6 dB	Average Status Pass	Polarization Horizontal

Test Report No.: G0M-2206-1512-TFC247WF-V01

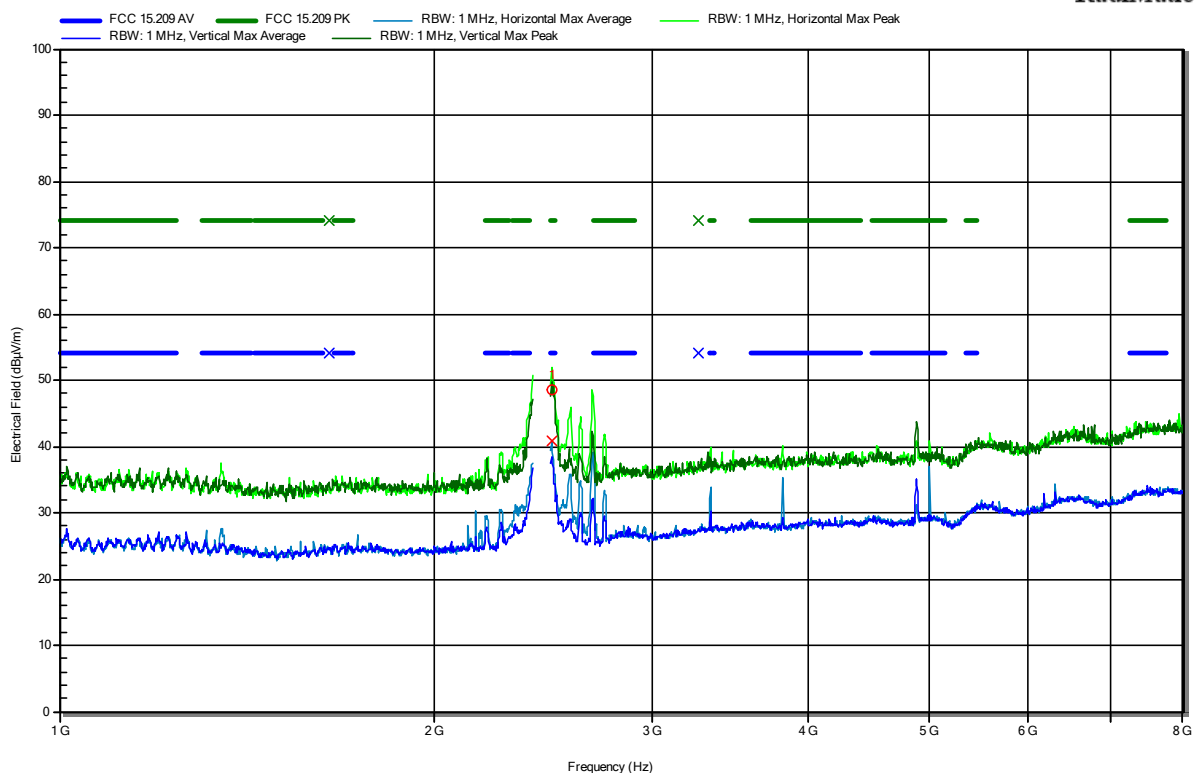
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

Project Number: G0M-2206-1512
 Applicant: BIOTRONIK
 Model Description: Data Gateway for Electrophysiology Lab
 Model: Qubic Connect
 Test Sample ID: 40181 (SN: 00298859)
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 12.0 V DC
 Antenna: Schwarzbeck BBHA 9120B
 Measurement distance: 3 m
 Mode: Tx; WLAN 2.4GHz 802.11 b_CH: 7 (2442 GHz)_DBPSK_1Mbps_ANT 2
 Test Date: 2022-06-20
 Note: EUT vertical

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RadiMation



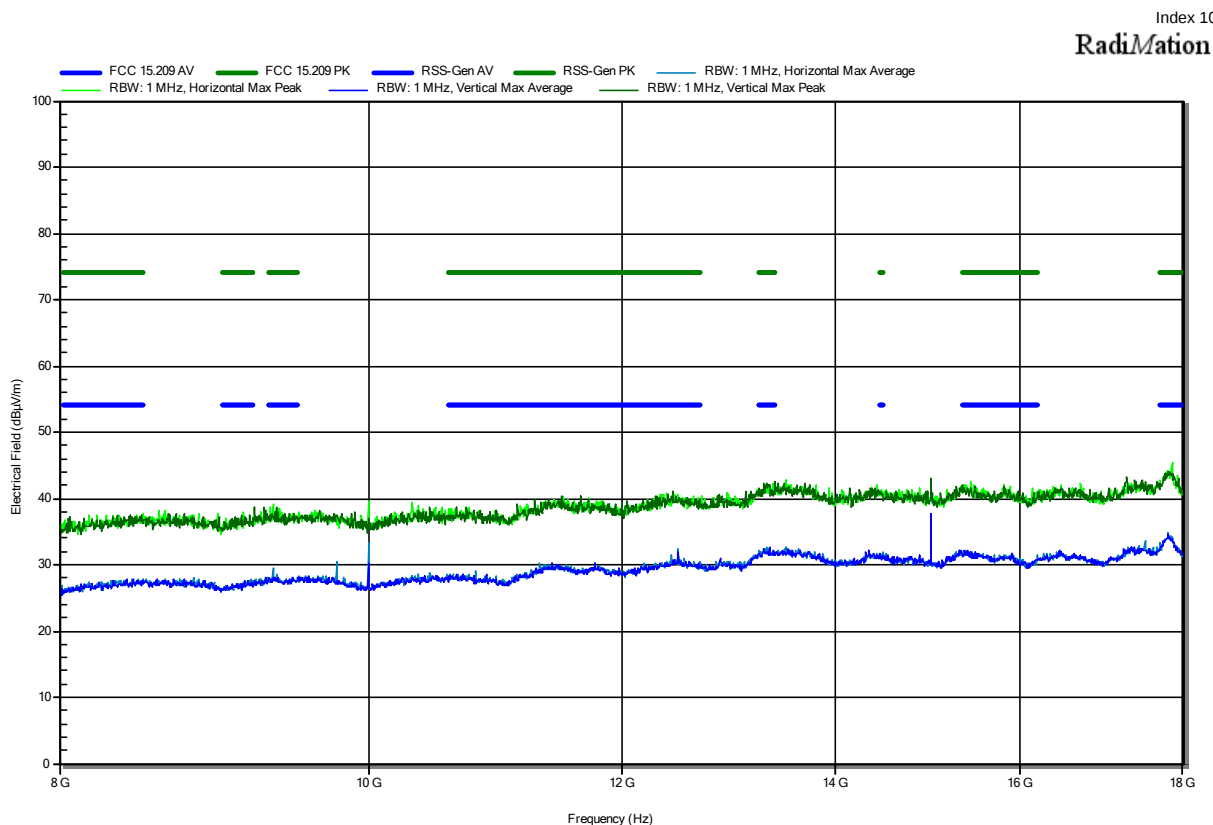
Frequency 2.486 GHz	Peak 48.65 dBV/m	Peak Limit 74 dBV/m	Peak Difference -25.35 dB	Peak Status Pass	Polarization Horizontal
Frequency 2.486 GHz	Average 40.77 dBV/m	Average Limit 54 dBV/m	Average Difference -13.23 dB	Average Status Pass	Polarization Horizontal

Test Report No.: G0M-2206-1512-TFC247WF-V01

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

Project Number: G0M-2206-1512
 Applicant: BIOTRONIK
 Model Description: Data Gateway for Electrophysiology Lab
 Model: Qubic Connect
 Test Sample ID: 40181 (SN: 00298859)
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 12.0 V DC
 Antenna: Schwarzbeck HWRD 650
 Measurement distance: 3 m
 Mode: Tx; WLAN 2.4GHz 802.11 b_CH: 7 (2442 GHz)_DBPSK_1Mbps_ANT 1
 Test Date: 2022-06-20
 Note: EUT vertical

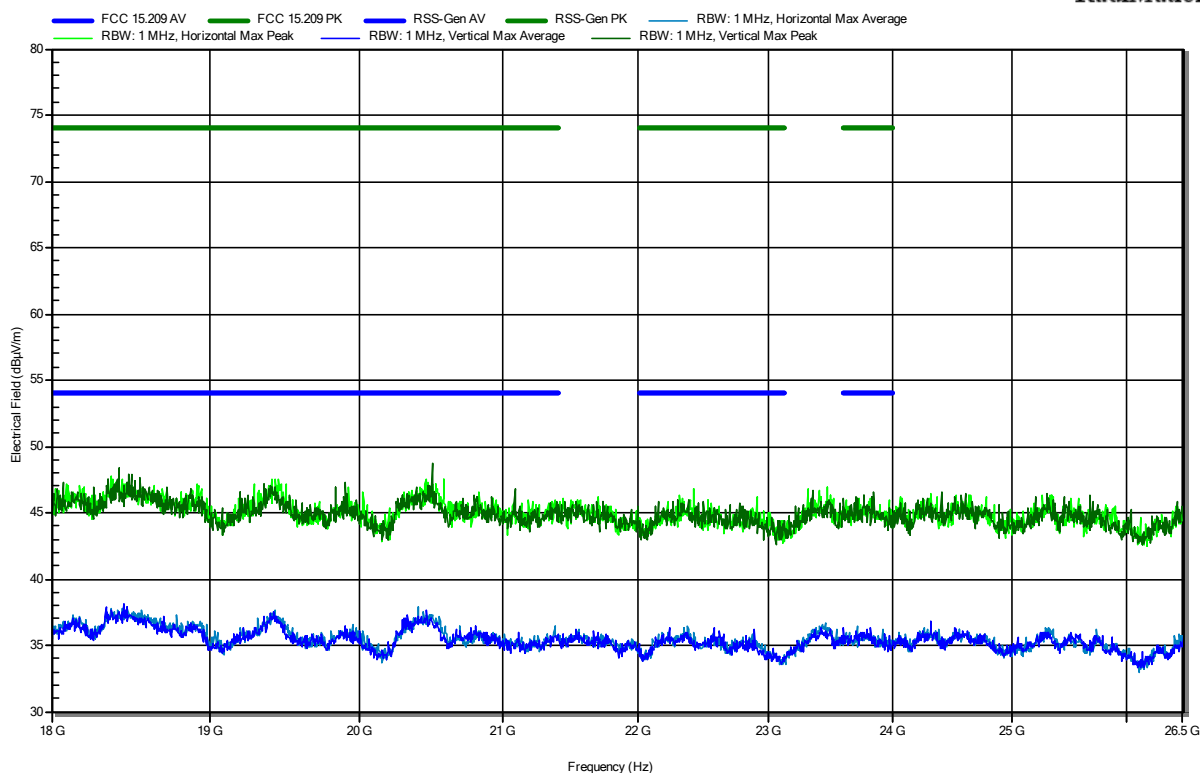


Radiated Spurious Emissions according to 47 CFR Part 15.247, RSS-247

Project Number: G0M-2206-1512
 Applicant: BIOTRONIK
 Model Description: Data Gateway for Electrophysiology Lab
 Model: Qubic Connect
 Test Sample ID: 40181 (SN: 00298859)
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 12.0 V DC
 Antenna: Amplifier Research AT4560
 Measurement distance: 3 m
 Mode: Tx; WLAN 2.4GHz 802.11 b_CH: 7 (2442 GHz)_DBPSK_1Mbps_ANT 1
 Test Date: 2022-06-20
 Note: EUT vertical

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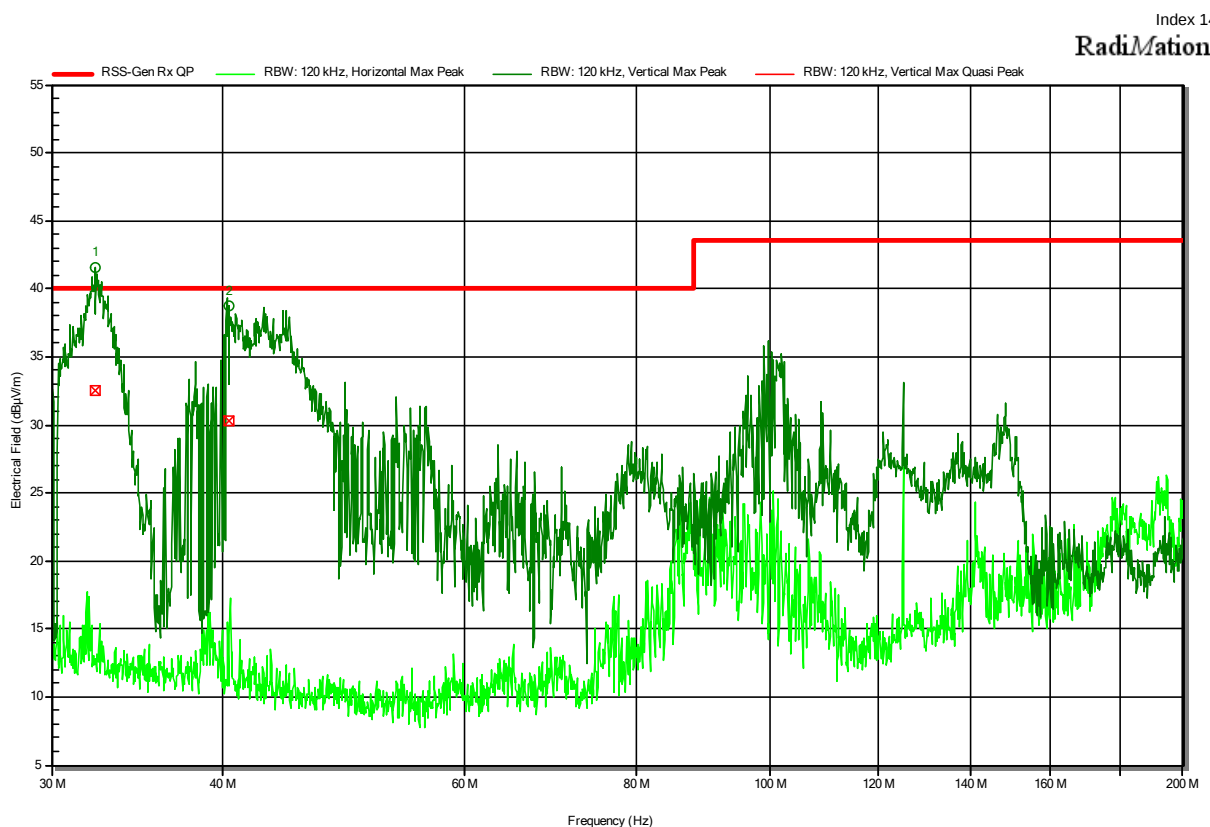
RadiMation



ANNEX B Receiver spurious emissions

Radiated Spurious Emissions according to RSS-247

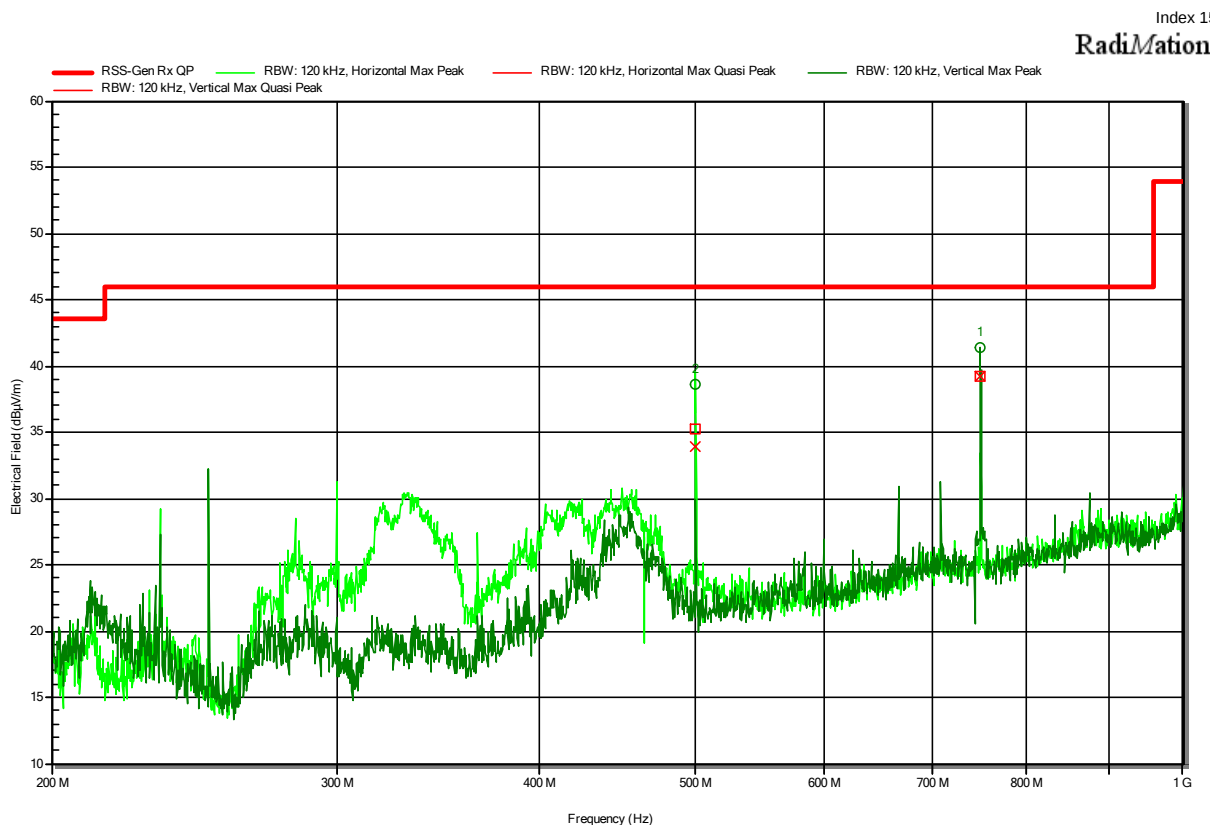
Project Number: G0M-2206-1512
 Applicant: BIOTRONIK
 Model Description: Data Gateway for Electrophysiology Lab
 Model: Qubic Connect
 Test Sample ID: 40181 (SN: 00298859)
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Voigt
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 12.0 V DC
 Antenna: Rohde & Schwarz HK 116
 Measurement distance: 3 m
 Mode: Rx; WLAN 2.4GHz 802.11 b/g/n_CH: 7 (2442 GHz)_ANT 1+2
 Test Date: 2022-06-23
 Note: EUT horizontal



Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Polarization
32.2986 MHz	32.5 dBµV/m	40 dBµV/m	-7.47 dB	Pass	Vertical
40.3855 MHz	30.3 dBµV/m	40 dBµV/m	-9.7 dB	Pass	Vertical

Radiated Spurious Emissions according to RSS-247

Project Number: G0M-2206-1512
 Applicant: BIOTRONIK
 Model Description: Data Gateway for Electrophysiology Lab
 Model: Qubic Connect
 Test Sample ID: 40181 (SN: 00298859)
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Voigt
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 12.0 V DC
 Antenna: Rohde & Schwarz HL 223
 Measurement distance: 3 m
 Mode: Rx; WLAN 2.4GHz 802.11 b/g/n_CH: 7 (2442 GHz)_ANT 1+2
 Test Date: 2022-06-23
 Note: EUT vertical



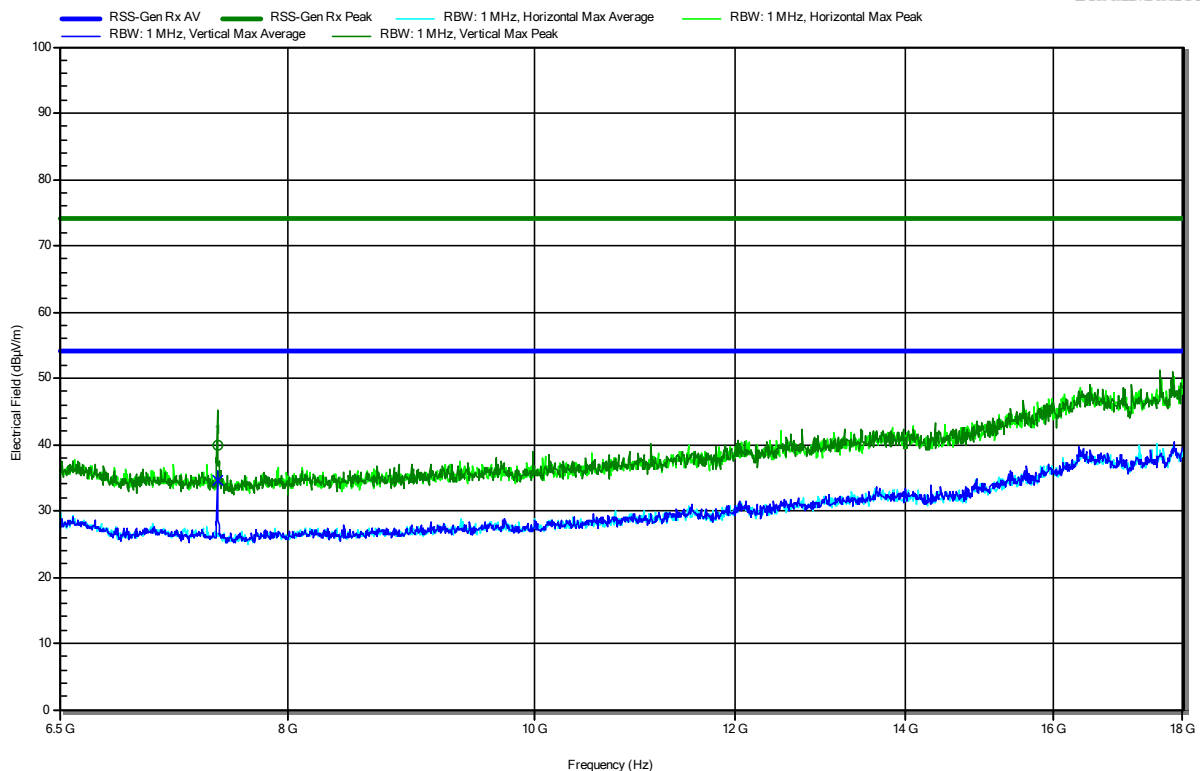
Frequency	Quasi-Peak	Quasi-Peak Limit	Quasi-Peak Difference	Quasi-Peak Status	Polarization
500.0004 MHz	35.2 dBμV/m	46 dBμV/m	-10.77 dB	Pass	Horizontal
749.9985 MHz	39.2 dBμV/m	46 dBμV/m	-6.81 dB	Pass	Vertical

Radiated Spurious Emissions according to RSS-247

Project Number: G0M-2206-1512
 Applicant: BIOTRONIK
 Model Description: Data Gateway for Electrophysiology Lab
 Model: Qubic Connect
 Test Sample ID: 40181 (SN: 00298859)
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Voigt
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 12.0 V DC
 Antenna: Schwarzbeck HWRD 650
 Measurement distance: 3 m
 Mode: Rx; WLAN 2.4GHz 802.11 b/g/n_CH: 7 (2442 GHz)_ANT 1+2
 Test Date: 2022-06-24
 Note: EUT horizontal

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RadiMation



Frequency 7.5 GHz	Peak 39.81 dBµV/m	Peak Limit 74 dBµV/m	Peak Difference -34.19 dB	Peak Status Pass	Polarization Vertical
Frequency 7.5 GHz	Average 34.68 dBµV/m	Average Limit 53.98 dBµV/m	Average Difference -19.3 dB	Average Status Pass	Polarization Vertical

Test Report No.: G0M-2206-1512-TFC247WF-V01

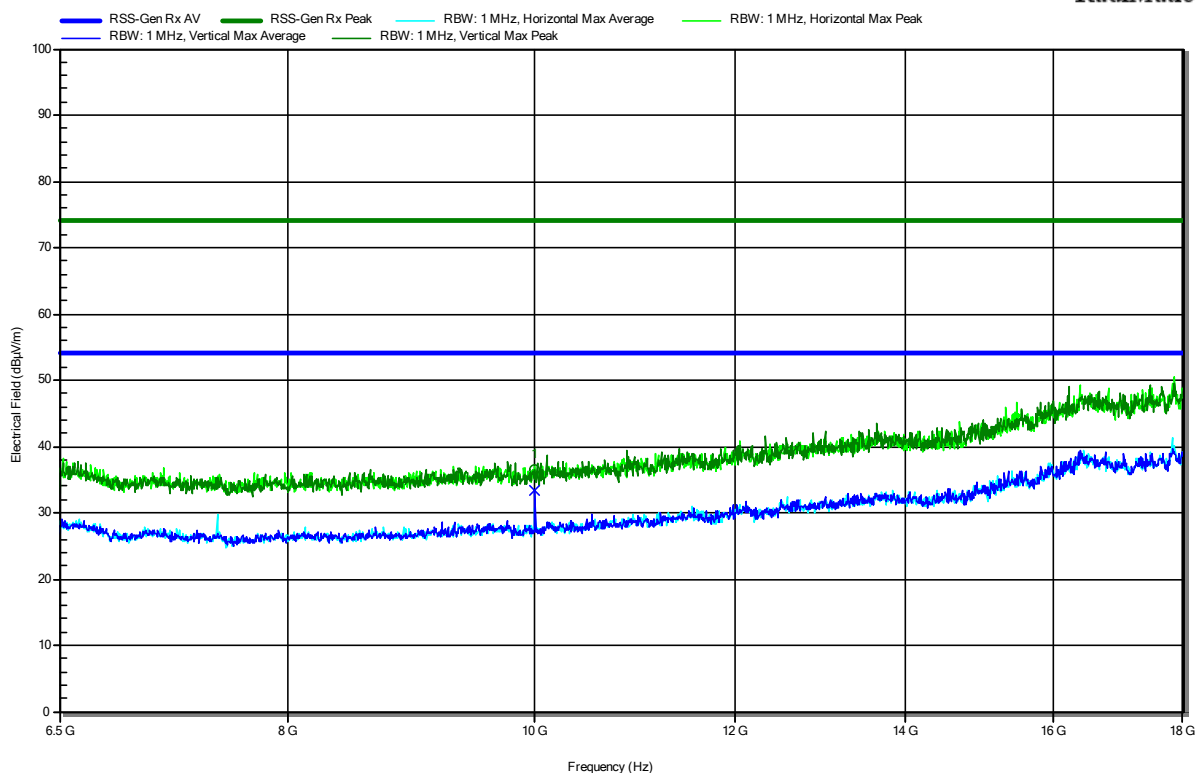
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated Spurious Emissions according to RSS-247

Project Number: G0M-2206-1512
 Applicant: BIOTRONIK
 Model Description: Data Gateway for Electrophysiology Lab
 Model: Qubic Connect
 Test Sample ID: 40181 (SN: 00298859)
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Voigt
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 12.0 V DC
 Antenna: Schwarzbeck HWRD 650
 Measurement distance: 3 m
 Mode: Rx; WLAN 2.4GHz 802.11 b/g/n_CH: 7 (2442 GHz)_ANT 1+2
 Test Date: 2022-06-24
 Note: EUT vertical

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RadiMation



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
10 GHz	36.5 dBμV/m	74 dBμV/m	-37.5 dB	Pass	Vertical
Frequency	Average	Average Limit	Average Difference	Average Status	Polarization
10 GHz	33.35 dBμV/m	53.98 dBμV/m	-20.63 dB	Pass	Vertical

Test Report No.: G0M-2206-1512-TFC247WF-V01

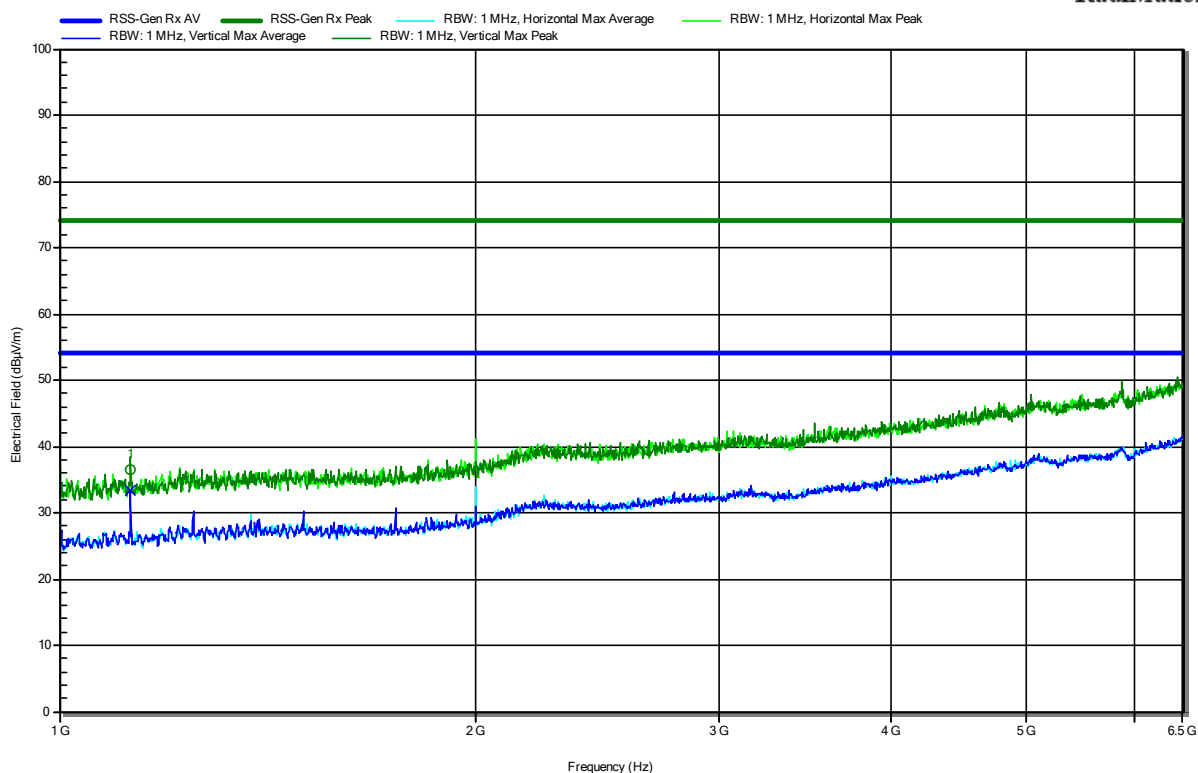
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated Spurious Emissions according to RSS-247

Project Number: G0M-2206-1512
 Applicant: BIOTRONIK
 Model Description: Data Gateway for Electrophysiology Lab
 Model: Qubic Connect
 Test Sample ID: 40181 (SN: 00298859)
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Voigt
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 12.0 V DC
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Rx; WLAN 2.4GHz 802.11 b/g/n_CH: 7 (2442 GHz)_ANT 1+2
 Test Date: 2022-06-24
 Note: EUT horizontal

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RadiMation



Frequency 1.125 GHz	Peak 36.44 dBµV/m	Peak Limit 74 dBµV/m	Peak Difference -37.56 dB	Peak Status Pass	Polarization Vertical
Frequency 1.125 GHz	Average 33.37 dBµV/m	Average Limit 53.98 dBµV/m	Average Difference -20.61 dB	Average Status Pass	Polarization Vertical

Test Report No.: G0M-2206-1512-TFC247WF-V01

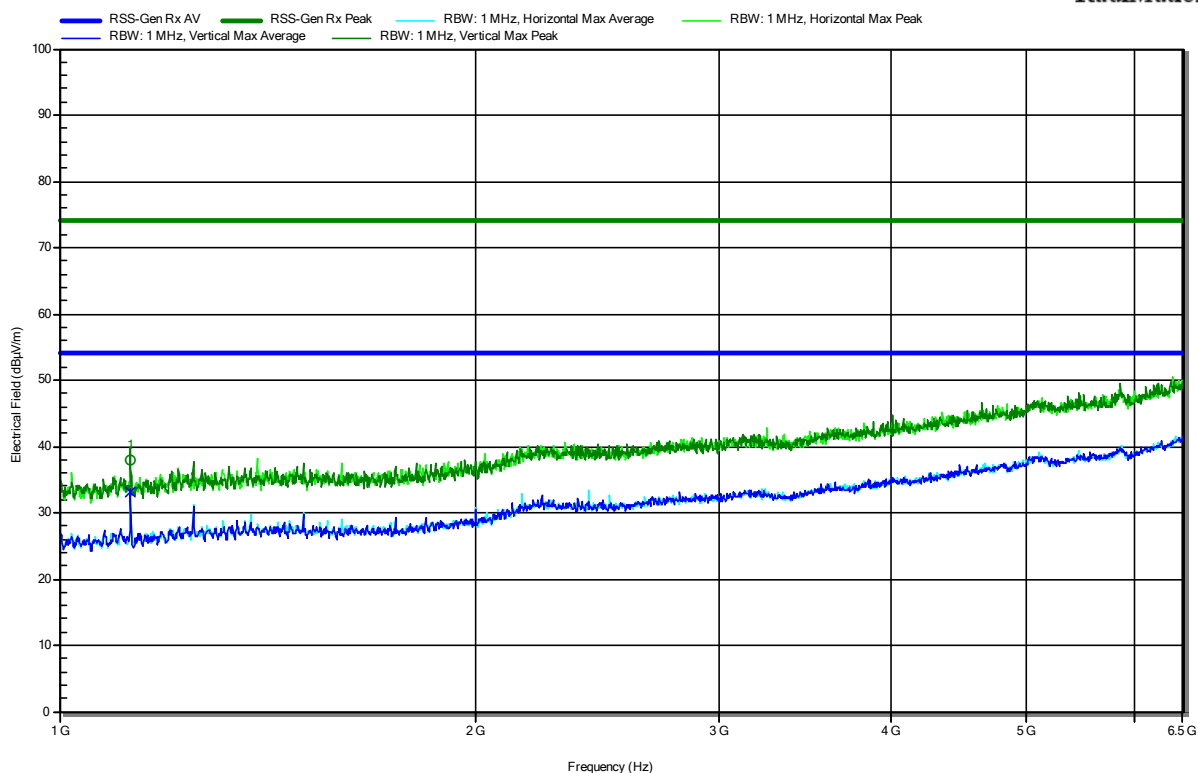
Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany

Radiated Spurious Emissions according to RSS-247

Project Number: G0M-2206-1512
 Applicant: BIOTRONIK
 Model Description: Data Gateway for Electrophysiology Lab
 Model: Qubic Connect
 Test Sample ID: 40181 (SN: 00298859)
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Voigt
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 12.0 V DC
 Antenna: Schwarzbeck BBHA 9120D
 Measurement distance: 3 m
 Mode: Rx; WLAN 2.4GHz 802.11 b/g/n_CH: 7 (2442 GHz)_ANT 1+2
 Test Date: 2022-06-24
 Note: EUT vertical

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RadiMation



Frequency 1.125 GHz	Peak 37.97 dBμV/m	Peak Limit 74 dBμV/m	Peak Difference -36.03 dB	Peak Status Pass	Polarization Vertical
Frequency 1.125 GHz	Average 33.17 dBμV/m	Average Limit 53.98 dBμV/m	Average Difference -20.81 dB	Average Status Pass	Polarization Vertical

== = END OF TEST REPORT == =

Test Report No.: G0M-2206-1512-TFC247WF-V01

Eurofins Product Service GmbH
 Storkower Str. 38c, D-15526 Reichenwalde, Germany