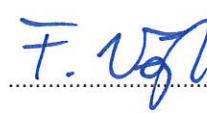


RADIO REPORT FCC 47 CFR Part 22H, FCC 47 CFR Part 24E, FCC 47 CFR Part 27, FCC 47 CFR Part 90	
Report Reference No	G0M-2206-1512-TFCMOCORSE-V01
Testing Laboratory	Eurofins Product Service GmbH
Address	Storkower Str. 38c 15526 Reichenwalde Germany
Accreditation	 DAkkS - Registration number : D-PL-12092-01-04 (FCC) FCC Filed Test Laboratory, Reg.-No.: 96970
Applicant	BIOTRONIK SE & Co. KG
Address	Woermannkehre 1 12359 Berlin GERMANY
Test Specification	47 CFR Part 22H 47 CFR Part 24E 47 CFR Part 27L/H 47 CFR Part 90S
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)	LTE Modem Firmware: 24.01.514
FCC ID	QRI-QCONNECT
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 °C – 23 °C	
Test Lab Humidity	32 % – 38 %	
Date of receipt of test item	2022-06-15	
Report:		
Compiled by	Burkhard Pudell	
Tested by (+ signature) (Responsible for Test)	Burkhard Pudell	
Tested by (+ signature) (Supervised)	Florian Voigt	
Approved by (+ signature) (Test Lab Engineer)	Dhamia Almozani	
Date of Issue	2023-01-09	
Total number of pages	51	
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	2023-01-09	Initial Release	

ABBREVIATIONS AND ACRONYMS

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

REPORT INDEX

1	Equipment (Test Item) Under Test.....	6
1.1	Photos – Equipment External	7
1.2	Photos – Equipment Internal	11
1.3	Support Equipment.....	15
1.4	Test Modes	16
1.5	Sample emission level calculation.....	19
2	Result Summary.....	21
3	Test Conditions and Results.....	22
3.1	Test Conditions and Results - Radiated power	22
3.2	Test Conditions and Results - Transmitter radiated emissions	25
ANNEX A	Transmitter radiated emissions	31

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)	00298859	
Test Sample Id(s)	40181	
Hardware Version(s)	A.A	
Software Version(s)	LTE Modem Firmware: 24.01.514	
FCC ID	QRI-QCONNECT	
Equipment type	End Product	
Radio type	Transceiver	
Radio technologies	LTE	
LTE frequency bands	LTE FDD 2 : UL = 1850 - 1910 MHz, DL = 1930 - 1990 MHz LTE FDD 4 : UL = 1710 - 1755 MHz, DL = 2110 - 2155 MHz LTE FDD 5 : UL = 824 - 849 MHz, DL = 869 - 894 MHz LTE FDD12 : UL = 699 - 716 MHz, DL = 729 - 746 MHz LTE FDD17 : UL = 704 - 716 MHz, DL = 734 - 746 MHz LTE FDD25 : UL = 1850 - 1915 MHz, DL = 1930 - 1995 MHz LTE FDD26 : UL = 814 - 849 MHz, DL = 859 - 894 MHz LTE FDD29 : UL = N/A, DL = 717 - 728 MHz LTE FDD66 : UL = 1710 - 1780 MHz, DL = 2110 - 2200 MHz	
LTE Modulations	QPSK, 16-QAM, 64-QAM	
Number of modules	1	
Radio Module	Type	LTE/WCDMA/GNSS radio module
	Model	LM940
	Manufacturer	Telit
	HW Version	2.0
	SW Version	24.01.514
	FCC-ID	RI7LM940
	IC	None
Antenna 1 & 2 (same type)	Type	External detachable
	Model	88977
	Manufacturer	DELOCK
	Gain	FDD2, FDD4, FDD25, FDD66: 1.5 dBi FDD12, FDD13, FDD17, FDD29: 1.5 dBi FDD5, FDD26: 0 dBi FDD7: 4 dBi (manufacturer declaration)
Supply Voltage	V _{NOM}	120 VAC
AC/DC-Adaptor	Model	AKM65US12
	Vendor	XP Power
	Input	100 – 240 V AC
	Output	12 V DC
Manufacturer	BIOTRONIK SE & Co. KG Woermannkehre 1 12359 Berlin GERMANY	

1.3 Support Equipment

Product Type	Device	Manufacturer	Model	Comment
SIM	Communication Tester	R&S	CMW500	Base Station Simulator
AE	single-board computer	Raspberry Pi Foundation	Raspberry Pi 4 Model B	provided by customer (4 pieces)
CBL	Ethernet cable	unspecified	unspecified	provided by customer
AE	SIM Card	Comprion	form factor 2FF	provided by Eurofins
Description:				
AE	Auxiliary Equipment			
SIM	Simulator			
CBL	Connecting Cable			
SFT	Software			
Comment:				

1.4 Test Modes

Mode	Description
LTE FDD 2 / QPSK LTE FDD 2 / PMAx	Channel = 18900 Mode = RMC TPC = Max. Power Modulation = QPSK Bandwidth = 20 MHz Number of resource blocks = 1 Resource block offset = 0 Duty cycle = 100 %
LTE FDD 2 / QAM	Channel = 19100 Mode = RMC TPC = Max. Power Modulation = 16-QAM Bandwidth = 20 MHz Number of resource blocks = 1 Resource block offset = 99 Duty cycle = 100 %
LTE FDD 4 / QPSK LTE FDD 4 / PMAx	Channel = 20050 Mode = RMC TPC = Max. Power Modulation = QPSK Bandwidth = 20 MHz Number of resource blocks = 1 Resource block offset = 0 Duty cycle = 100 %
LTE FDD 4 / QAM	Channel = 20300 Mode = RMC TPC = Max. Power Modulation = 16-QAM Bandwidth = 20 MHz Number of resource blocks = 1 Resource block offset = 49 Duty cycle = 100 %
LTE FDD 5 / QPSK LTE FDD 5 / PMAx	Channel = 20600 Mode = RMC TPC = Max. Power Modulation = QPSK Bandwidth = 10 MHz Number of resource blocks = 1 Resource block offset = 0 Duty cycle = 100 %
LTE FDD 5 / QAM	Channel = 20600 Mode = RMC TPC = Max. Power Modulation = 16-QAM Bandwidth = 10 MHz Number of resource blocks = 1 Resource block offset = 0 Duty cycle = 100 %

LTE FDD 12 / QPSK LTE FDD 12 / PMAX	Channel = 23095 Mode = RMC TPC = Max. Power Modulation = QPSK Bandwidth = 10 MHz Number of resource blocks = 1 Resource block offset = 0 Duty cycle = 100 %
LTE FDD 12 / QAM	Channel = 23095 Mode = RMC TPC = Max. Power Modulation = 16-QAM Bandwidth = 10 MHz Number of resource blocks = 1 Resource block offset = 49 Duty cycle = 100 %
LTE FDD 17 / QPSK LTE FDD 17 / PMAX	Channel = 23780 Mode = RMC TPC = Max. Power Modulation = QPSK Bandwidth = 10 MHz Number of resource blocks = 1 Resource block offset = 0 Duty cycle = 100 %
LTE FDD 17 / QAM	Channel = 23780 Mode = RMC TPC = Max. Power Modulation = 16-QAM Bandwidth = 10 MHz Number of resource blocks = 1 Resource block offset = 49 Duty cycle = 100 %
LTE FDD 25 / QPSK LTE FDD 25 / PMAX	Channel = 26340 Mode = RMC TPC = Max. Power Modulation = QPSK Bandwidth = 20 MHz Number of resource blocks = 1 Resource block offset = 0 Duty cycle = 100 %
LTE FDD 25 / QAM	Channel = 26340 Mode = RMC TPC = Max. Power Modulation = 16-QAM Bandwidth = 20 MHz Number of resource blocks = 1 Resource block offset = 99 Duty cycle = 100 %

LTE FDD 26H / QPSK LTE FDD 26H / PMAx	Channel = 26865 Mode = RMC TPC = Max. Power Modulation = QPSK Bandwidth = 15 MHz Number of resource blocks = 1 Resource block offset = 0 Duty cycle = 100 %
LTE FDD 26H / QAM	Channel = 26965 Mode = RMC TPC = Max. Power Modulation = 16-QAM Bandwidth = 15 MHz Number of resource blocks = 1 Resource block offset = 37 Duty cycle = 100 %
LTE FDD 26L / QPSK LTE FDD 26L / PMAx	Channel = 26765 Mode = RMC TPC = Max. Power Modulation = QPSK Bandwidth = 15 MHz Number of resource blocks = 1 Resource block offset = 37 Duty cycle = 100 %
LTE FDD 26L / QAM	Channel = 26765 Mode = RMC TPC = Max. Power Modulation = 16-QAM Bandwidth = 15 MHz Number of resource blocks = 1 Resource block offset = 0 Duty cycle = 100 %
LTE FDD 66 / QPSK LTE FDD 66 / PMAx	Channel = 132322 Mode = RMC TPC = Max. Power Modulation = QPSK Bandwidth = 20 MHz Number of resource blocks = 1 Resource block offset = 0 Duty cycle = 100 %
LTE FDD 66 / QAM	Channel = 132322 Mode = RMC TPC = Max. Power Modulation = 16-QAM Bandwidth = 20 MHz Number of resource blocks = 1 Resource block offset = 0 Duty cycle = 100 %
Comment: Above worst case scenarios were found in module test report: FG750208B_R02, Jul.14, 2017, FW750208_R01, Jul. 14, 2017 issued by SPORTON INTERNATIONAL INC.	

1.5 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:

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

Net:

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

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.

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:

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

Example only for radiated field strength:

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

Di:

This is the measurement distance between the test sample and the measurement antenna in meter (m)

ERP:

This is the emitted power by the test sample as Effective Radiated Power (dBm)

EIRP:

This is the emitted power by the test sample as Effective Isotropic Radiated Power (dBm)

Calculation of measurement result:

$$\text{ERP} = \text{Net field strength (dB}\mu\text{V/m)} + 20 \cdot \log(\text{Di}) - 106.95$$

$$\text{EIRP} = \text{Net field strength (dB}\mu\text{V/m)} + 20 \cdot \log(\text{Di}) - 104.8$$

P_{Watt}:

This is power in Watts

P_{dBm}:

This is power in dBm. $P_{\text{dBm}} = 10 \cdot \log(P_{\text{Watt}} \cdot 1000)$

Power limit:

This is the radiated emission limit expressed in P_{dBm}. FCC limits are typically given as an attenuation of carrier power in dB by the formula $x + 10 \cdot \log(P_{\text{Watt}})$

Calculation example of emission limit:

Assuming $x = 43$

$$\text{Power-Limit} = P_{\text{dBm}} - 43 + 10 \cdot \log(P_{\text{Watt}})$$

$$\text{Power-Limit} = 30 \text{ dBm} - 43 + 10 \cdot \log(1 \text{ W}) = -13 \text{ dBm}$$

Example only for radiated power:

Reading + AF	= Net Reading
+21.5 dB μ V + 26 dB/m	= 47.5 dB μ V/m

Net Reading + 20 · log(Di) - 104.8	= EIRP
47.5 dB μ V/m + 20 · log(3 m) - 104.8	= -47.8 dBm

EIRP - Power limit	= Margin
-47.8 dBm - (-13dBm)	= -34.8 dB

2 Result Summary

Test Summary)				
Product Standard Reference	Requirement	Reference Method	Result	Remarks
47 CFR §22.913 47 CFR §24.232 47 CFR §27.50 47 CFR §90.635	Radiated power	ANSI C63.26 KDB 971168	PASS	
47 CFR §22.917 47 CFR §24.238 47 CFR §27.53 47 CFR §90.691	Transmitter conducted emissions	ANSI C63.26 KDB 971168	N/T	
47 CFR §22.917 47 CFR §24.238 47 CFR §27.53 47 CFR §90.691	Transmitter radiated emissions	ANSI C63.26 KDB 971168	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 - Radiated power

3.1.1 Information

Test Information	
Reference	47 CFR §22.913 47 CFR §24.232 47 CFR §27.50 47 CFR §90.635
Method	Calculation
Operator	Florian Voigt
Date	2022-10-12

3.1.2 Limits

Limits - Portable equipment					
Band	Frequency range UL [MHz]	Power limit [dBm ERP]	Power limit [W ERP]	Power limit [dBm EIRP]	Power limit [W EIRP]
LTE FDD 2	1850 - 1910	30.85	1.22	33.00	2.0
LTE FDD 4	1710 - 1780	27.85	0.61	30.00	1.0
LTE FDD 5 LTE FDD26	824 - 849	38.45	7.00	40.60	11.5
LTE FDD12	699 - 716	34.77	3.00	36.92	4.92
LTE FDD17	704 - 716	34.77	3.00	36.92	4.92
LTE FDD25	1850 - 1915	30.85	1.22	33.00	2.0
LTE FDD26	814 - 824	50.00	100	52.15	164
LTE FDD66	1710 - 1780	27.85	0.61	30.00	1.00

3.1.3 Procedure

Test Procedure
1. The highest conducted output power for each radio technology, band, modulation and bandwidth is determined 2. The antenna gain for the corresponding transmission frequency is added to the conducted output power 3. The calculated radiated power is compared to the transmitter output power limit
Comment: Above worst case scenarios were found in module test report: FG750208B_R02, Jul.14, 2017, FW750208_R01, Jul. 14, 2017 issued by SPORTON INTERNATIONAL INC.

3.1.4 Results

Test Results - LTE FDD2						
Mode	Power [dBm]	Antenna gain [dBi]	Radiated power [dBm EIRP]	Limit [dBm EIRP]	Margin [dB]	Result
LTE FDD 2 / QPSK LTE FDD 2 / PMAx	22.71	1.5	24.21	33	-08.79	PASS
LTE FDD 2 / QAM	21.93	1.5	23.43	33	-09.57	PASS

Test Results - LTE FDD4						
Mode	Power [dBm]	Antenna gain [dBi]	Radiated power [dBm EIRP]	Limit [dBm EIRP]	Margin [dB]	Result
LTE FDD 4 / QPSK LTE FDD 4 / PMAx	22.68	1.5	24.18	30	-05.82	PASS
LTE FDD 4 / QAM	21.80	1.5	23.30	30	-06.70	PASS

Test Results - LTE FDD5						
Mode	Power [dBm]	Antenna gain [dBi]	Radiated power [dBm EIRP]	Limit [dBm EIRP]	Margin [dB]	Result
LTE FDD 5 / QPSK LTE FDD 5 / PMAx	22.64	0	22.64	40.6	-17.96	PASS
LTE FDD 5 / QAM	21.92	0	21.92	40.6	-18.68	PASS

Test Results - LTE FDD12						
Mode	Power [dBm]	Antenna gain [dBi]	Radiated power [dBm EIRP]	Limit [dBm EIRP]	Margin [dB]	Result
LTE FDD 12 / QPSK LTE FDD 12 / PMAx	22.10	1.5	23.60	36.92	-13.32	PASS
LTE FDD 12 / QAM	21.46	1.5	22.96	36.92	-13.96	PASS

Test Results - LTE FDD17						
Mode	Power [dBm]	Antenna gain [dBi]	Radiated power [dBm EIRP]	Limit [dBm EIRP]	Margin [dB]	Result
LTE FDD 17 / QPSK LTE FDD 17 / PMAx	22.09	1.5	23.59	36.92	-13.33	PASS
LTE FDD 17 / QAM	21.39	1.5	22.89	36.92	-14.03	PASS

Test Results - LTE FDD25						
Mode	Power [dBm]	Antenna gain [dBi]	Radiated power [dBm EIRP]	Limit [dBm EIRP]	Margin [dB]	Result
LTE FDD 25 / QPSK LTE FDD 25 / PMAX	22.62	1.5	24.12	33	-08.88	PASS
LTE FDD 25 / QAM	21.89	1.5	23.39	33	-09.61	PASS

Test Results - LTE FDD26						
Mode	Power [dBm]	Antenna gain [dBi]	Radiated power [dBm EIRP]	Limit [dBm EIRP]	Margin [dB]	Result
LTE FDD 26H / QPSK LTE FDD 26H / PMAX	22.88	0	22.88	40.6	-17.72	PASS
LTE FDD 26H / QAM	22.04	0	22.04	40.6	-18.56	PASS
LTE FDD 26L / QPSK LTE FDD 26L / PMAX	22.52	0	22.52	52.15	-29.36	PASS
LTE FDD 26L / QAM	21.71	0	21.71	52.15	-30.44	PASS

Test Results - LTE FDD66						
Mode	Power [dBm]	Antenna gain [dBi]	Radiated power [dBm EIRP]	Limit [dBm EIRP]	Margin [dB]	Result
LTE FDD 66 / QPSK LTE FDD 66 / PMAX	23.02	1.5	24.52	30	-05.48	PASS
LTE FDD 66 / QAM	22.33	1.5	23.83	30	-06.17	PASS

3.2 Test Conditions and Results - Transmitter radiated emissions

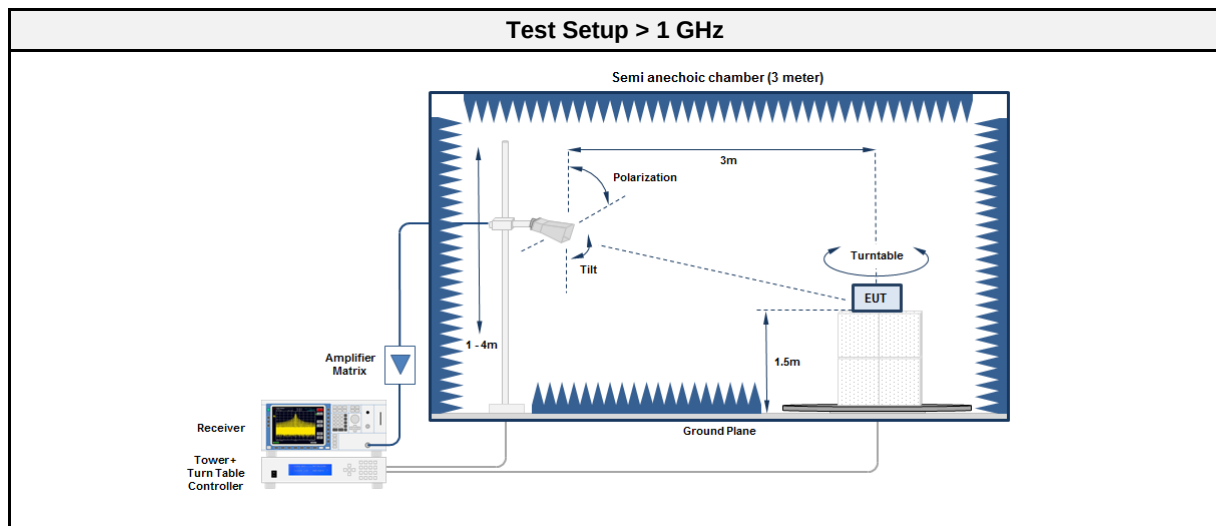
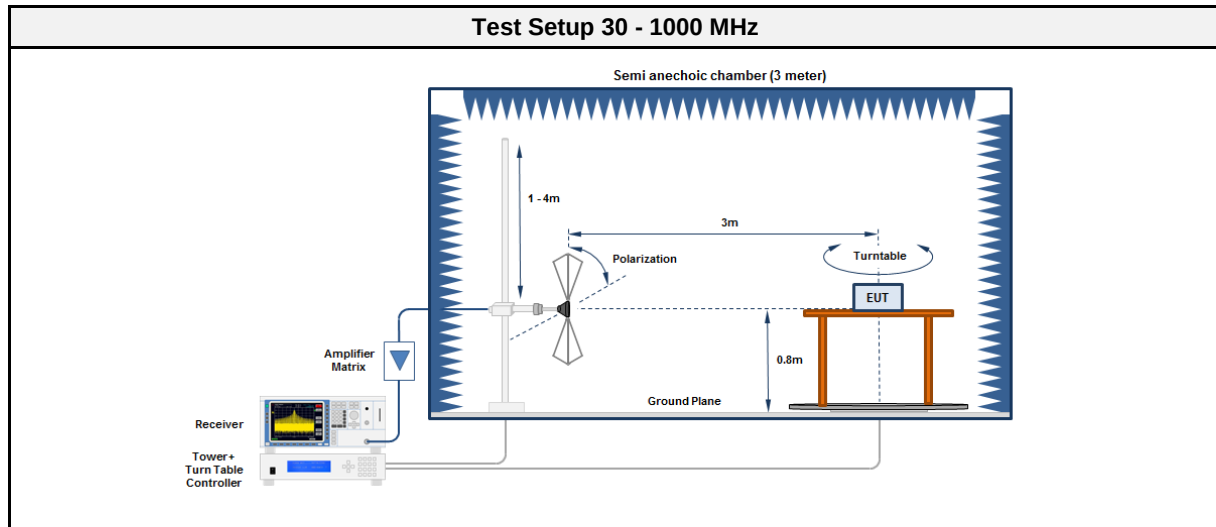
3.2.1 Information

Test Information	
Reference	47 CFR §22.917 47 CFR §24.238 47 CFR §27.53 47 CFR §90.691
Measurement Method	FCC KDB 971168 D01 Section 7 ANSI C63.26-2015 5.5
Measurement Uncertainty	± 5.95 dB
Tested Modes	LTE FDD 25 / PMAx, LTE FDD 5 / PMAx, LTE FDD 12 / PMAx, LTE FDD 26L / PMAx, LTE FDD 66 / PMAx
Operator	Burkhard Pudell, Florian Voigt
Date	2022-06-15 - 2022-08-18
Comment	Only worse case LTE bands were selected for testing out of all supported LTE bands in cases where LTE bands are spectrally included within another LTE band.

3.2.2 Limits

Limits FCC				
Band	Frequency range UL [MHz]	Bandwidth	Attenuation [dB]	Limit [dBm EIRP]
LTE FDD2	1850 - 1910	1 MHz	$43+10\log_{10}(P[W])$	-13
LTE FDD4	1710 - 1755	1 MHz	$43+10\log_{10}(P[W])$	-13
LTE FDD5	824 - 849	100 kHz / 1 MHz	$43+10\log_{10}(P[W])$	-13
LTE FDD12	699 - 716	100 kHz	$43+10\log_{10}(P[W])$	-13
LTE FDD17	704 - 716	100 kHz	$43+10\log_{10}(P[W])$	-13
LTE FDD25	1850 - 1915	1 MHz	$43+10\log_{10}(P[W])$	-13
LTE FDD26	814 - 849	100 kHz / 1 MHz	$43+10\log_{10}(P[W])$	-13
LTE FDD66	1710 - 1780	1 MHz	$43+10\log_{10}(P[W])$	-13

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 - 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
Horn Antenna	R&S	HK 116	EF00030	2021-05	2024-05
Horn 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	AC 2	EF01616	functional test	functional test
Spectrum analyzer	R&S	FSU43	EF01631	2022-08	2023-08
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

3.2.5 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	

3.2.6 Results

Test Results - LTE FDD5						
Mode	Frequency [MHz]	Level [dBm]	Polarization	Limit [dBm]	Margin [dB]	Result
LTE FDD 5 / PMAX	125.111	-54.00	ver	-13.00	-40.99	PASS

Test Results - LTE FDD12						
Mode	Frequency [MHz]	Level [dBm]	Polarization	Limit [dBm]	Margin [dB]	Result
LTE FDD 12 / PMAX	124.996	-45.70	hor	-13.00	-32.66	PASS

Test Results - LTE FDD25						
Mode	Frequency [MHz]	Level [dBm]	Polarization	Limit [dBm]	Margin [dB]	Result
LTE FDD 25 / PMAX	34.246	-34.80	ver	-13.00	-21.81	PASS
LTE FDD 25 / PMAX	875.12	-48.20	ver	-13.00	-35.16	PASS

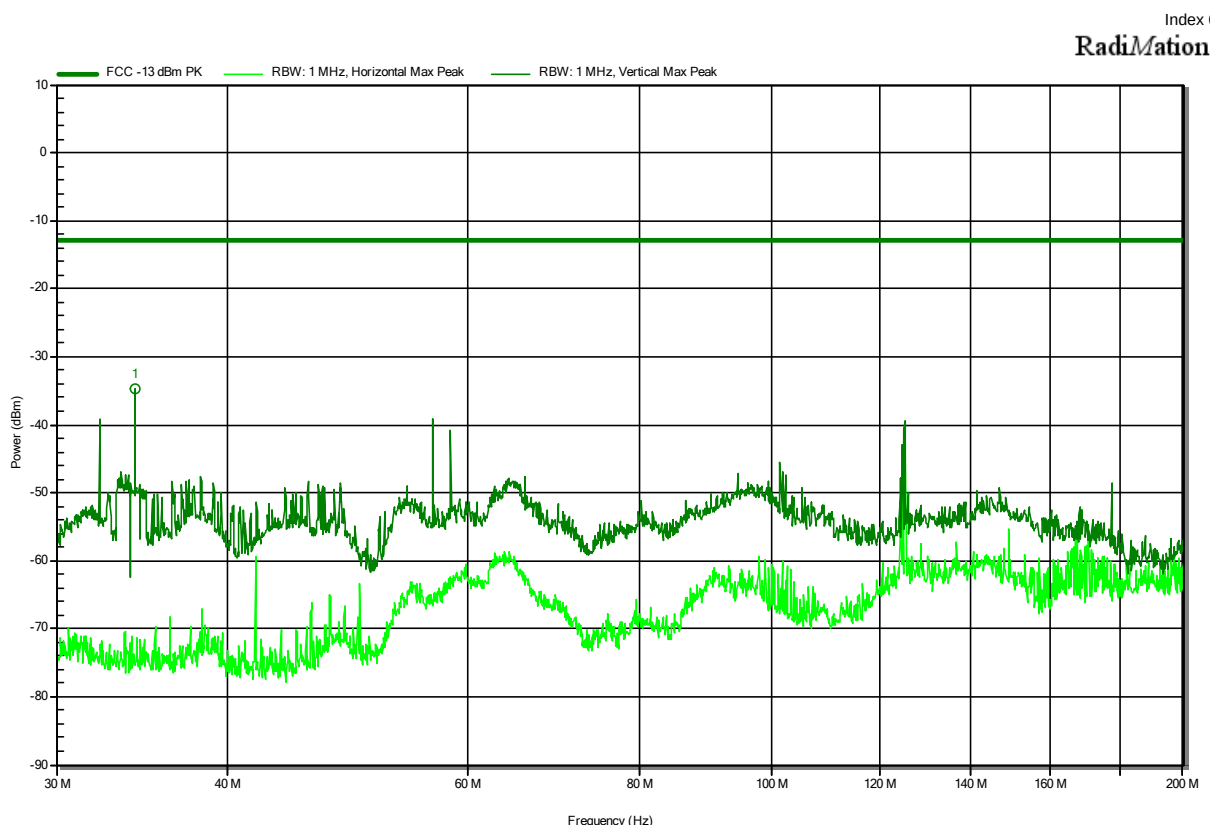
Test Results - LTE FDD26						
Mode	Frequency [MHz]	Level [dBm]	Polarization	Limit [dBm]	Margin [dB]	Result
LTE FDD 26 / PMAX	100.533	-57.00	ver	-13.00	-43.98	PASS

Test Results - LTE FDD66 / QPSK						
Mode	Frequency [MHz]	Level [dBm]	Polarization	Limit [dBm]	Margin [dB]	Result
LTE FDD 66 / PMAX	125.038	-39.00	ver	-13.00	-26.01	PASS
LTE FDD 66 / PMAX	875.14	-44.70	hor	-13.00	-31.66	PASS
LTE FDD 66 / PMAX	10417	-37.20	hor	-13.00	-24.16	PASS

ANNEX A Transmitter radiated emissions

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

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; LTE FDD 25_CH: 26340 (1880.0 MHz)_QPSK_BW20_RB 1_RBstart 0_Pmax
 Test Date: 2022-08-18
 Note: EUT horizontal



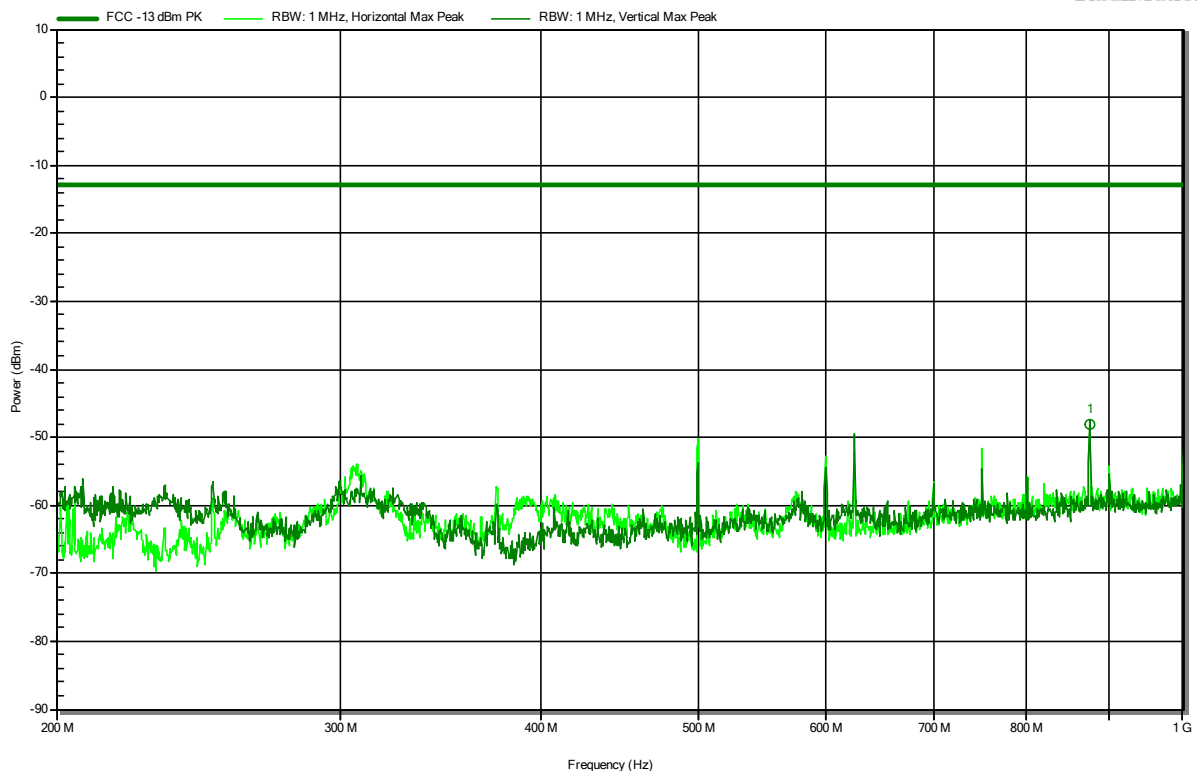
Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
34.246 MHz	-34.8 dBm	-13 dBm	-21.81 dB	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

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; LTE FDD 25_CH: 26340 (1880.0 MHz)_QPSK_BW20_RB 1_RBstart 0_Pmax
 Test Date: 2022-08-18
 Note: EUT horizontal

Index 8

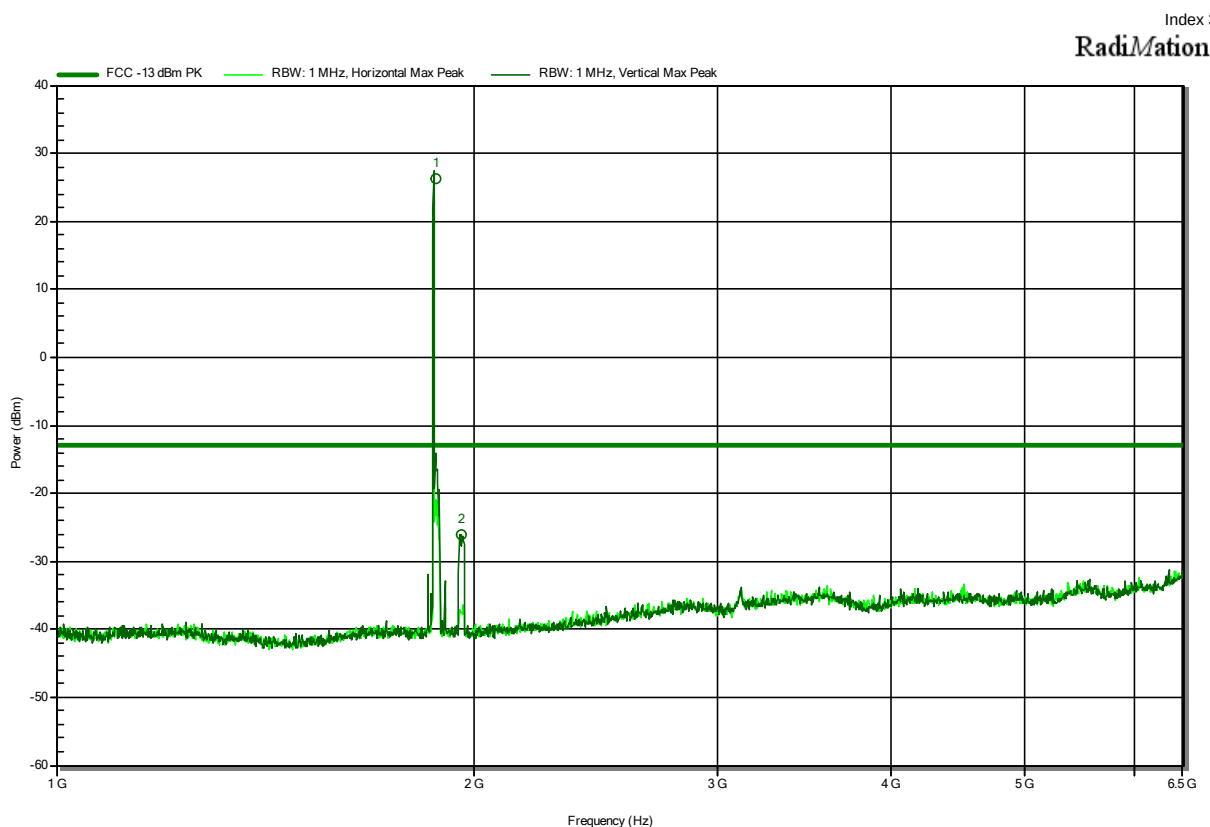
RadiMation



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
875.12 MHz	-48.2 dBm	-13 dBm	-35.16 dB	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

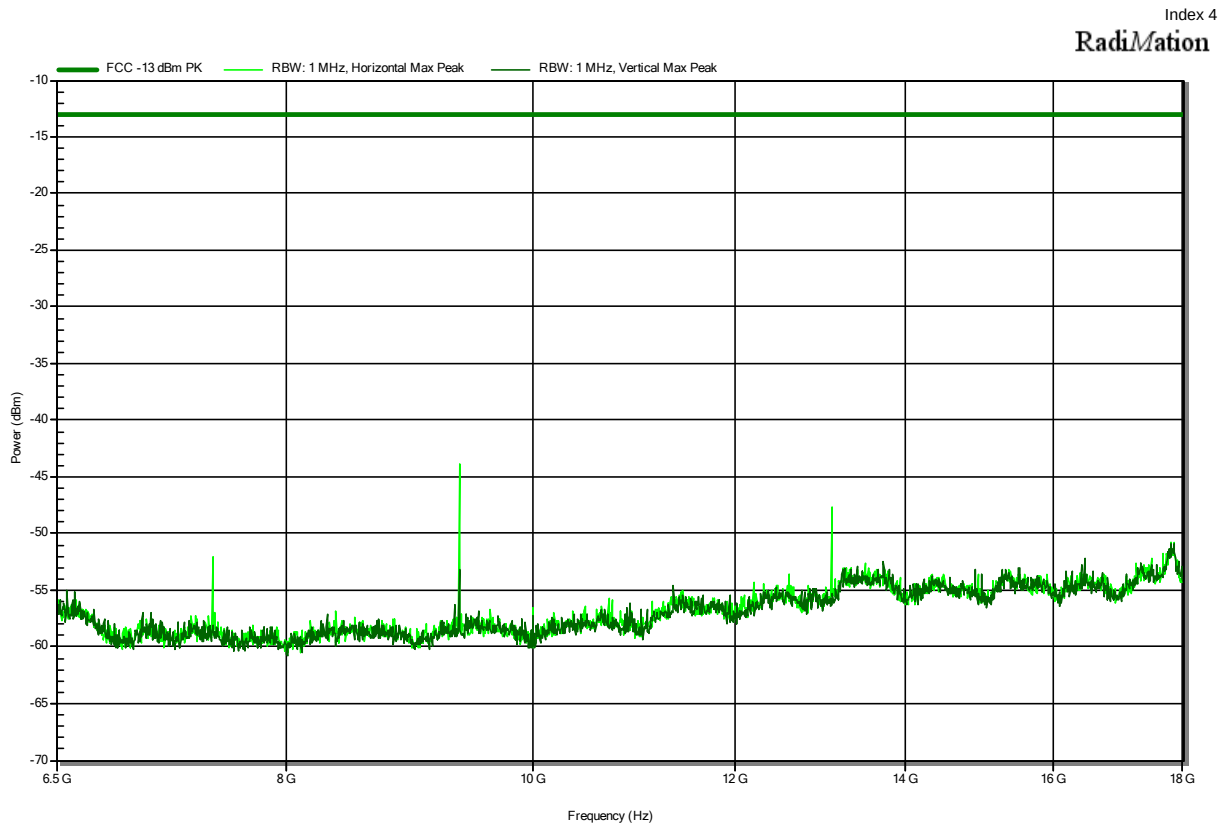
Project Number: G0M-2206-1512
 Applicant: BIOTRONIK
 Model Description: Data Gateway for Electrophysiology Lab
 Model: Qubic Connect
 Test Sample ID: 40181 (SN: 00298859)
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Pudell
 Measurement software: RadiMation, version 2020.1.8
 Test Conditions: Tnom: 24 °Celsius, Vnom: 12.0 V DC
 Antenna: Schwarzbeck BBHA 9120B
 Measurement distance: 3 m
 Mode: Tx; LTE FDD 25_CH: 26340 (1880.0 MHz)_QPSK_BW20_RB 1_RBstart 0_Pmax
 Test Date: 2022-06-17
 Note: EUT vertical



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
1.878 GHz	26.3 dBm	---	---	LTE uplink	-
1.96 GHz	-26 dBm	---	---	LTE downlink	-

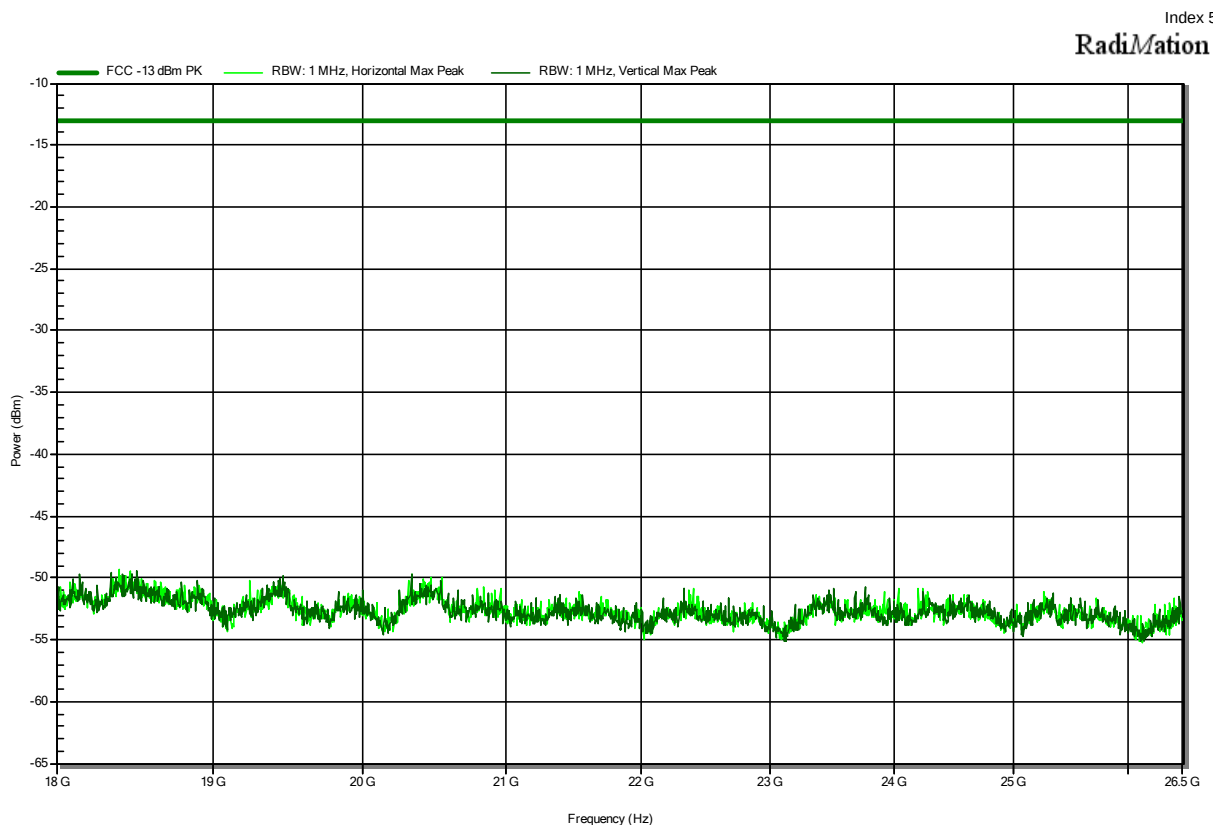
Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

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; LTE FDD 25_CH: 26340 (1880.0 MHz)_QPSK_BW20_RB 1_RBstart 0_Pmax
 Test Date: 2022-06-17
 Note: EUT vertical



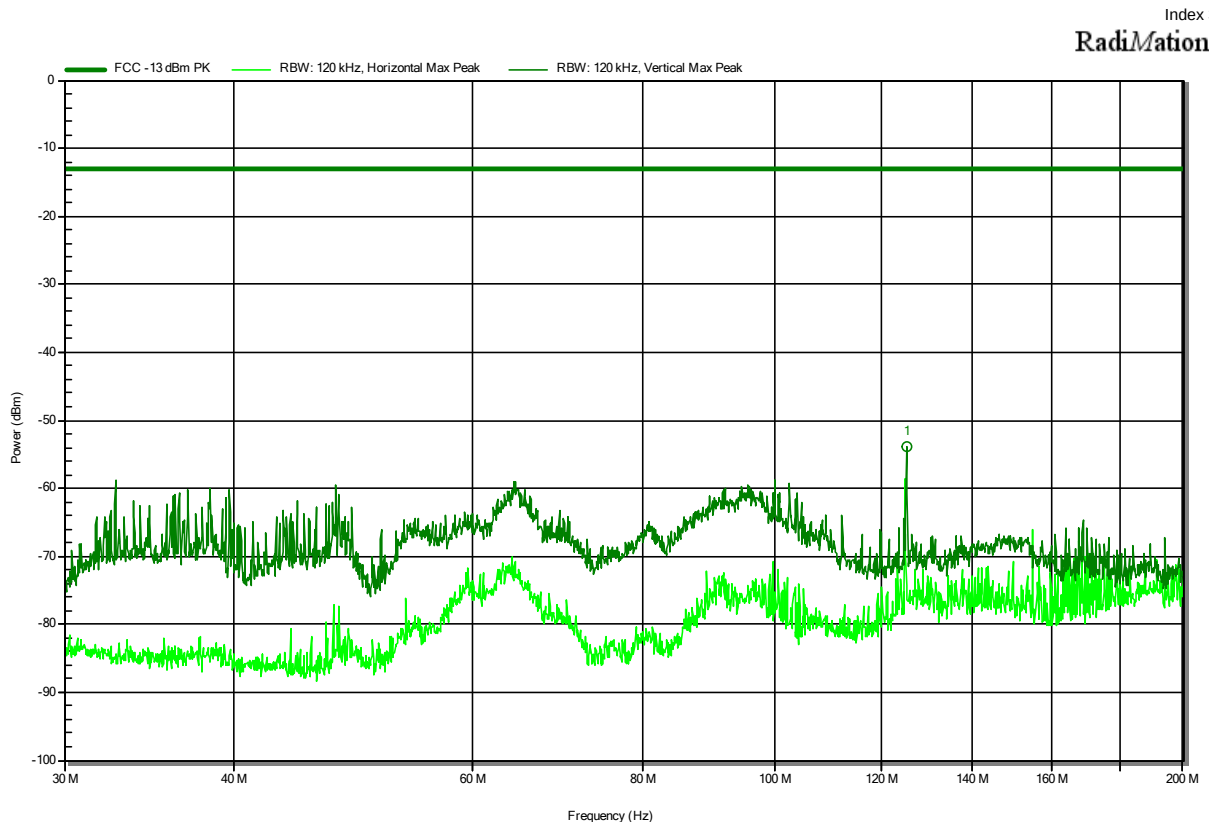
Radiated Spurious Emissions according to 47 CFR Part 24 Subpart E

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; LTE FDD 25_CH: 26340 (1880.0 MHz)_QPSK_BW20_RB 1_RBstart 0_Pmax
 Test Date: 2022-06-17
 Note: EUT horizontal



Radiated Spurious Emissions according to 47 CFR Part 22 Subpart H

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; LTE FDD 5_CH: 20600 (844.0 MHz)_QPSK_BW10_RB 1_RBstart 0_Pmax
 Test Date: 2022-08-18
 Note: EUT horizontal



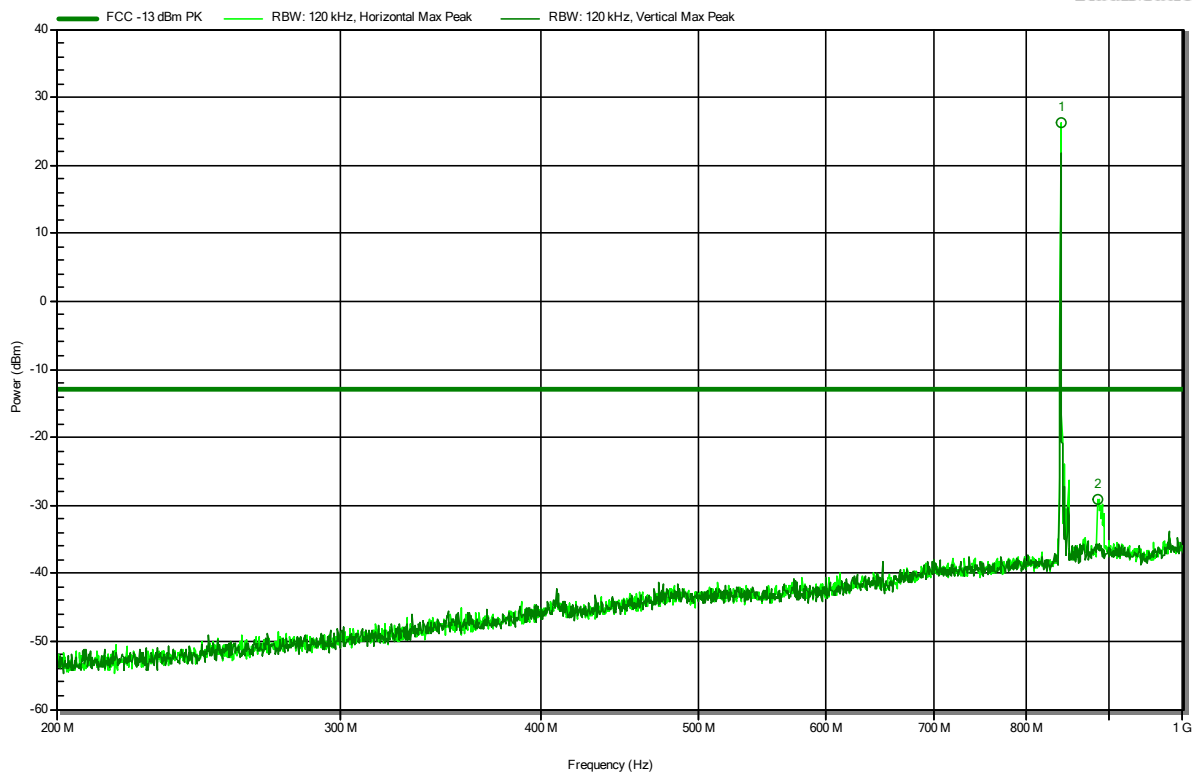
Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
125.111 MHz	-54 dBm	-13 dBm	-40.99 dB	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 22 Subpart H

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; LTE FDD 5_CH: 20600 (844.0 MHz)_QPSK_BW10_RB 1_RBstart 0_Pmax
 Test Date: 2022-08-18
 Note: EUT horizontal

Index 4

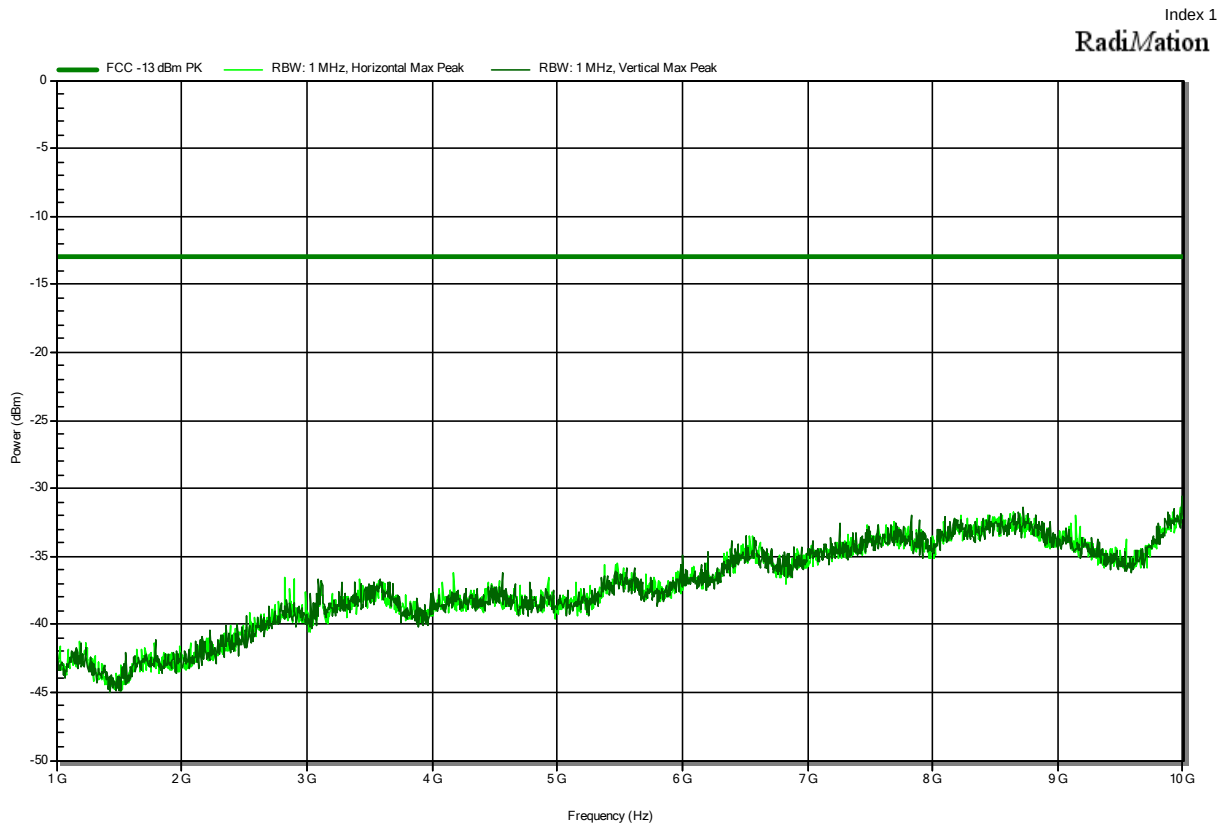
RadiMation



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
839.54 MHz	26.3 dBm	---	---	LTE uplink	Horizontal
885.42 MHz	-29.2 dBm	---	---	LTE downlink	Horizontal

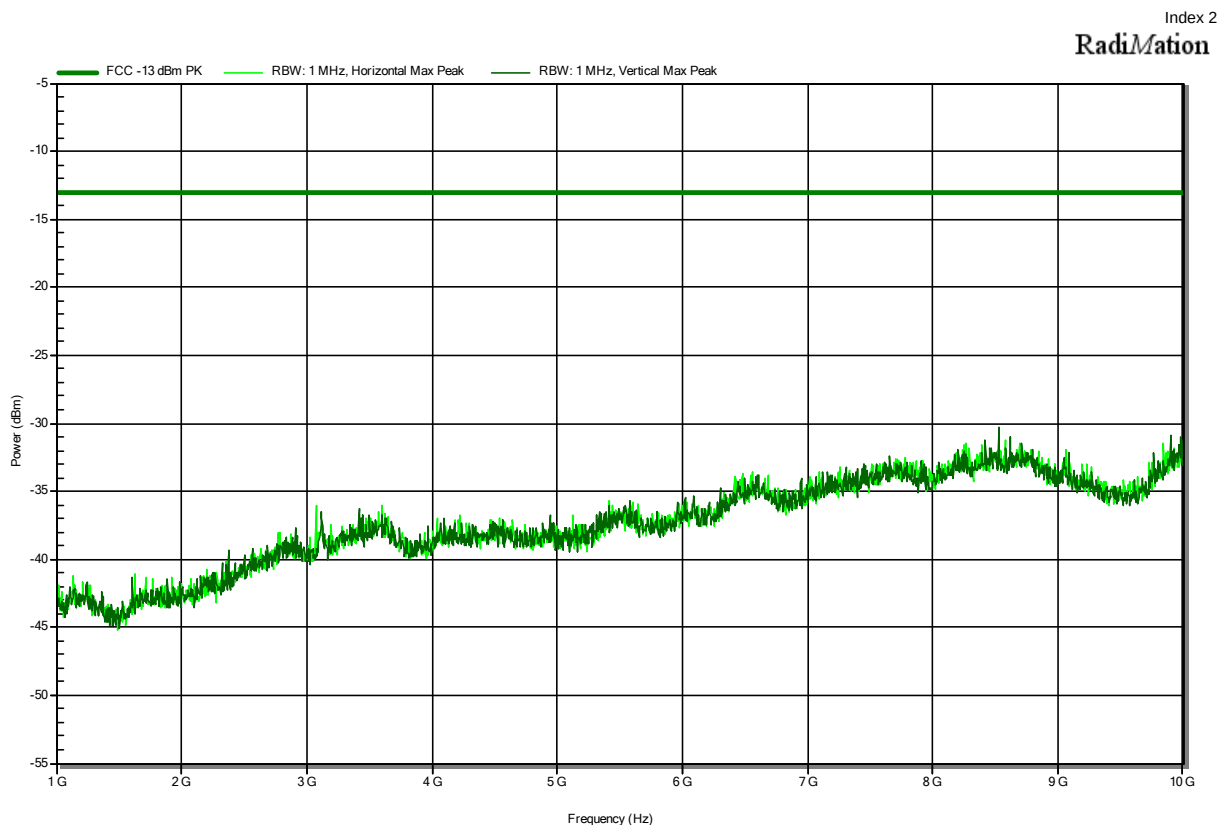
Radiated Spurious Emissions according to 47 CFR Part 22 Subpart H

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; LTE FDD 5_CH: 20600 (844.0 MHz)_QPSK_BW10_RB 1_RBstart 0_Pmax
 Test Date: 2022-06-15
 Note: EUT horizontal



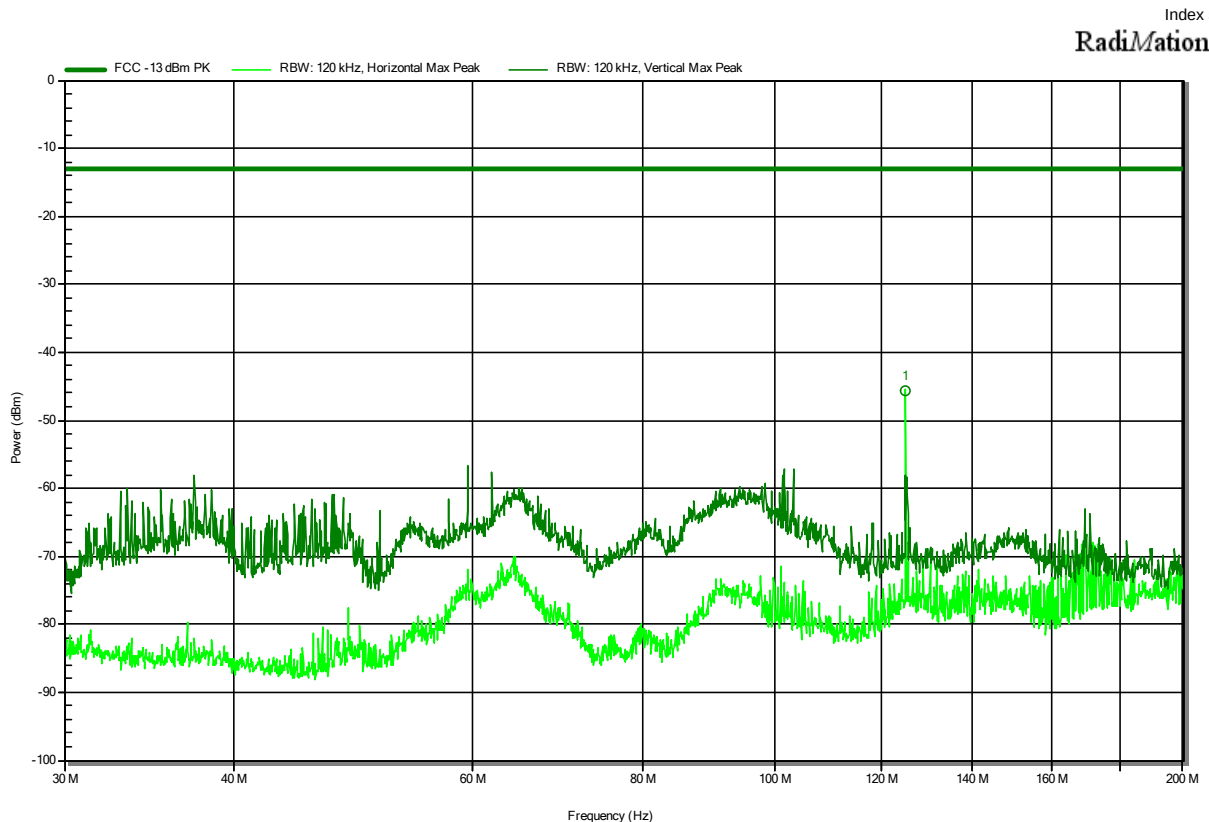
Radiated Spurious Emissions according to 47 CFR Part 22 Subpart H

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; LTE FDD 5_CH: 20600 (844.0 MHz)_QPSK_BW10_RB 1_RBstart 0_Pmax
 Test Date: 2022-06-16
 Note: EUT vertical



Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

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; LTE FDD 12_CH: 23095 (707.5 MHz)_QPSK_BW10_RB 1_RBstart 0_Pmax
 Test Date: 2022-08-18
 Note: EUT horizontal



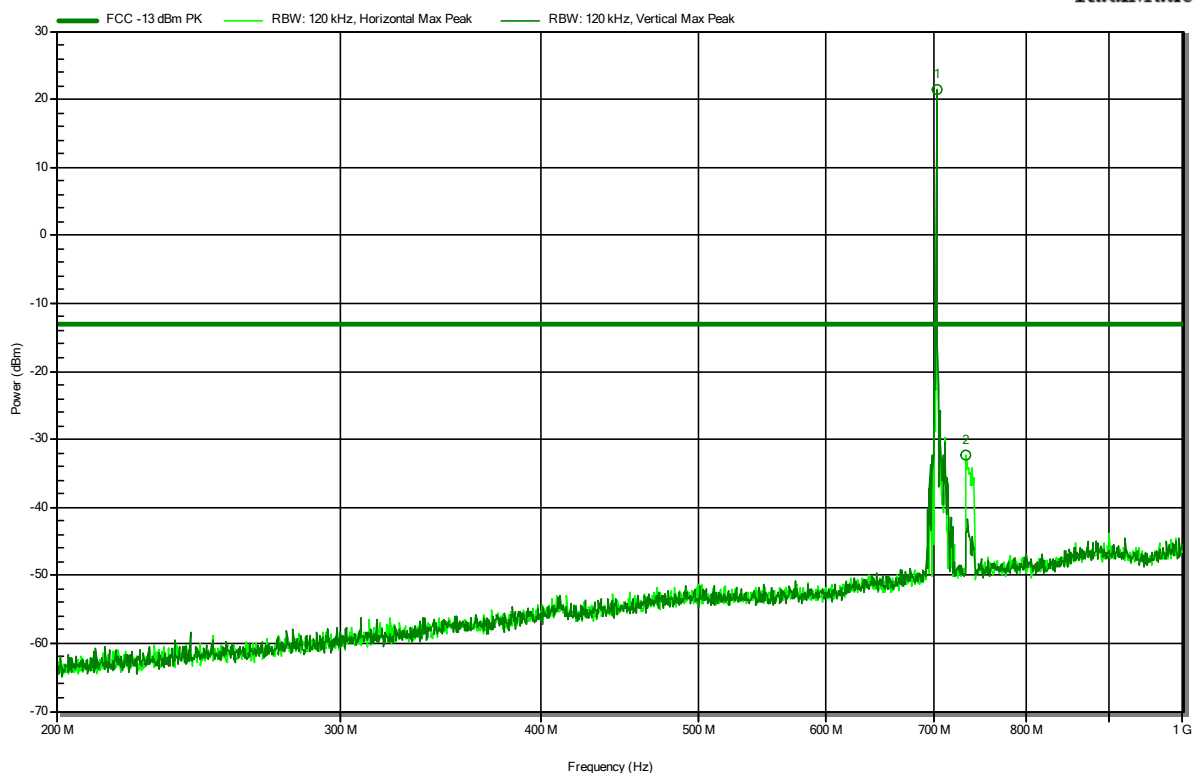
Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
124.996 MHz	-45.7 dBm	-13 dBm	-32.66 dB	Pass	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

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; LTE FDD 12_CH: 23095 (707.5 MHz)_QPSK_BW10_RB 1_RBstart 0_Pmax
 Test Date: 2022-08-18
 Note: EUT horizontal

Index 6

RadiMation



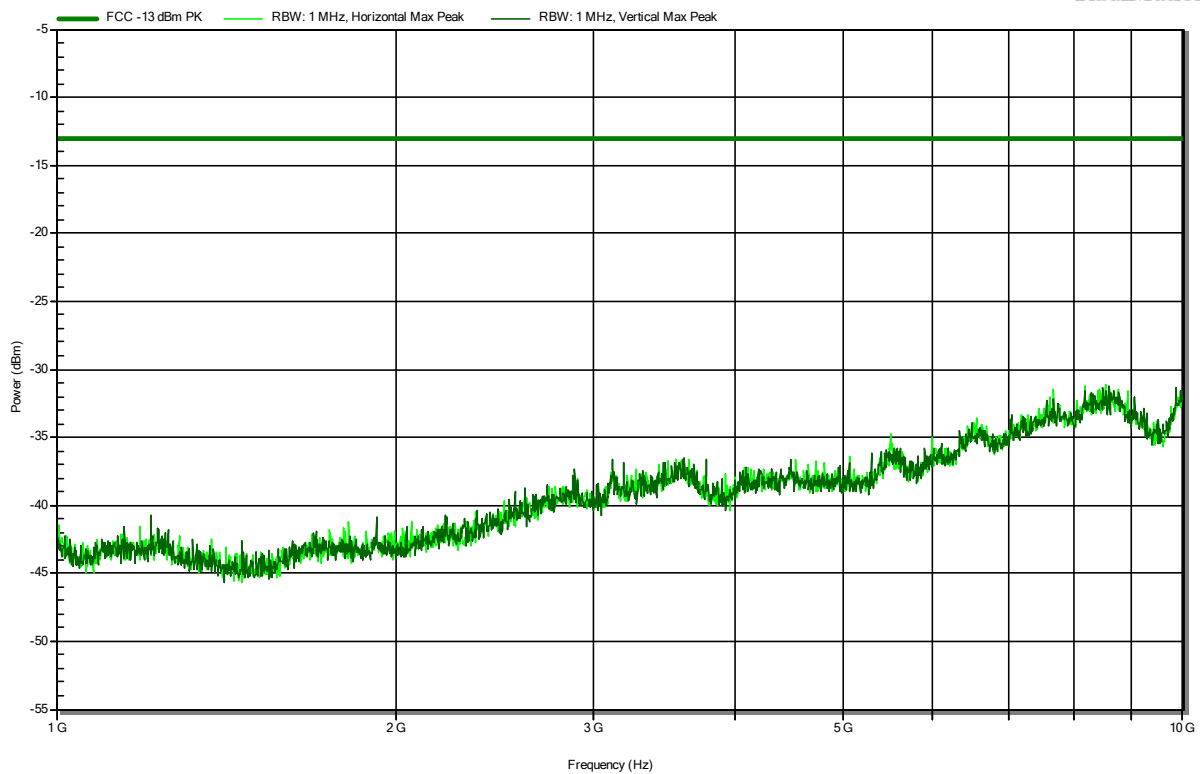
Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
703.06 MHz	21.4 dBm	---	---	LTE uplink	Vertical
733.82 MHz	-32.4 dBm	---	---	LTE downlink	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

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; LTE FDD 12_CH: 23095 (707.5 MHz)_QPSK_BW10_RB 1_RBstart 0_Pmax
 Test Date: 2022-06-16
 Note: EUT vertical

Index 4

RadiMation

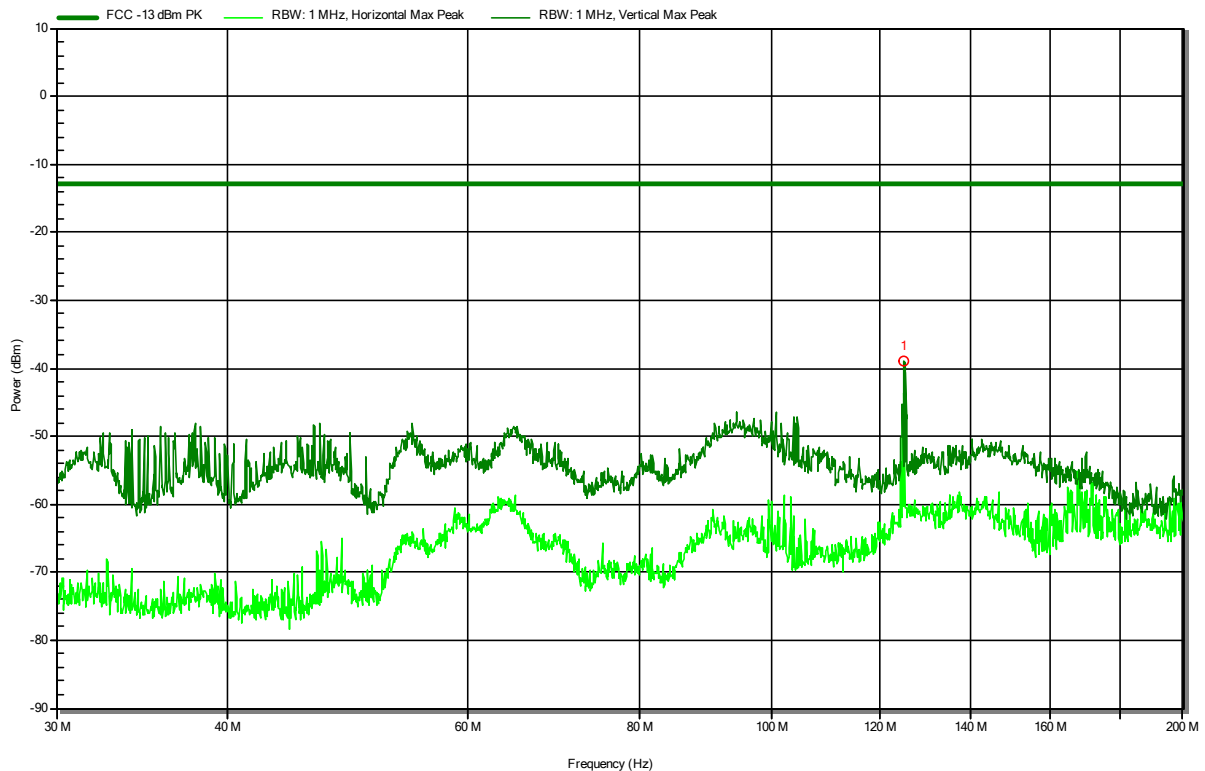


Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

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: 22 °Celsius, Vnom: 12.0 V DC
 Antenna: Rohde & Schwarz HK 116
 Measurement distance: 3 m
 Mode: Tx; LTE FDD 66_CH: 132322 (1745.0 MHz)_QPSK_BW20_
 RB 1_RBstart 0_Pmax
 Test Date: 2022-08-18
 Note: EUT horizontal

Index 9

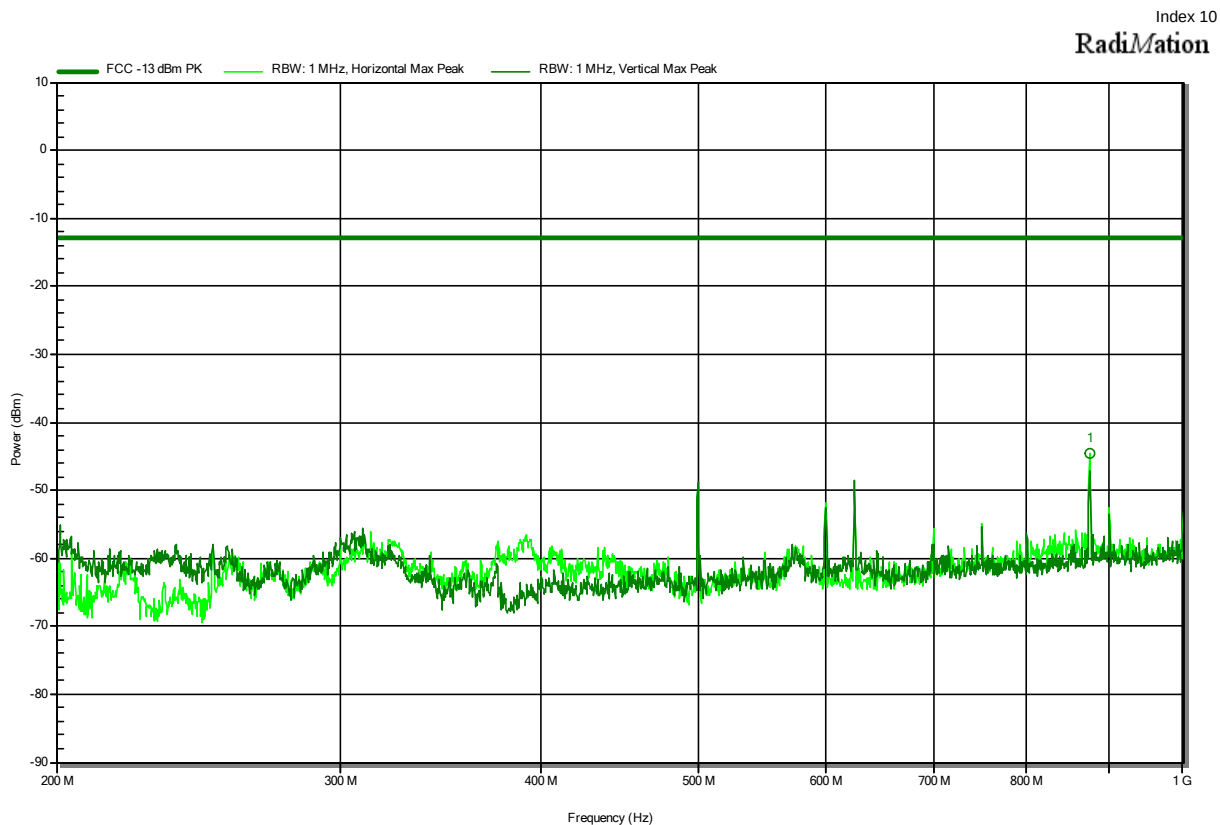
RadiMation



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
125.038 MHz	-39 dBm	-13 dBm	-26.01 dB	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

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: 22 °Celsius, Vnom: 12.0 V DC
 Antenna: Rohde & Schwarz HL 223
 Measurement distance: 3 m
 Mode: Tx; LTE FDD 66_CH: 132322 (1745.0 MHz)_QPSK_BW20_
 RB 1_RBstart 0_Pmax
 Test Date: 2022-08-18
 Note: EUT horizontal



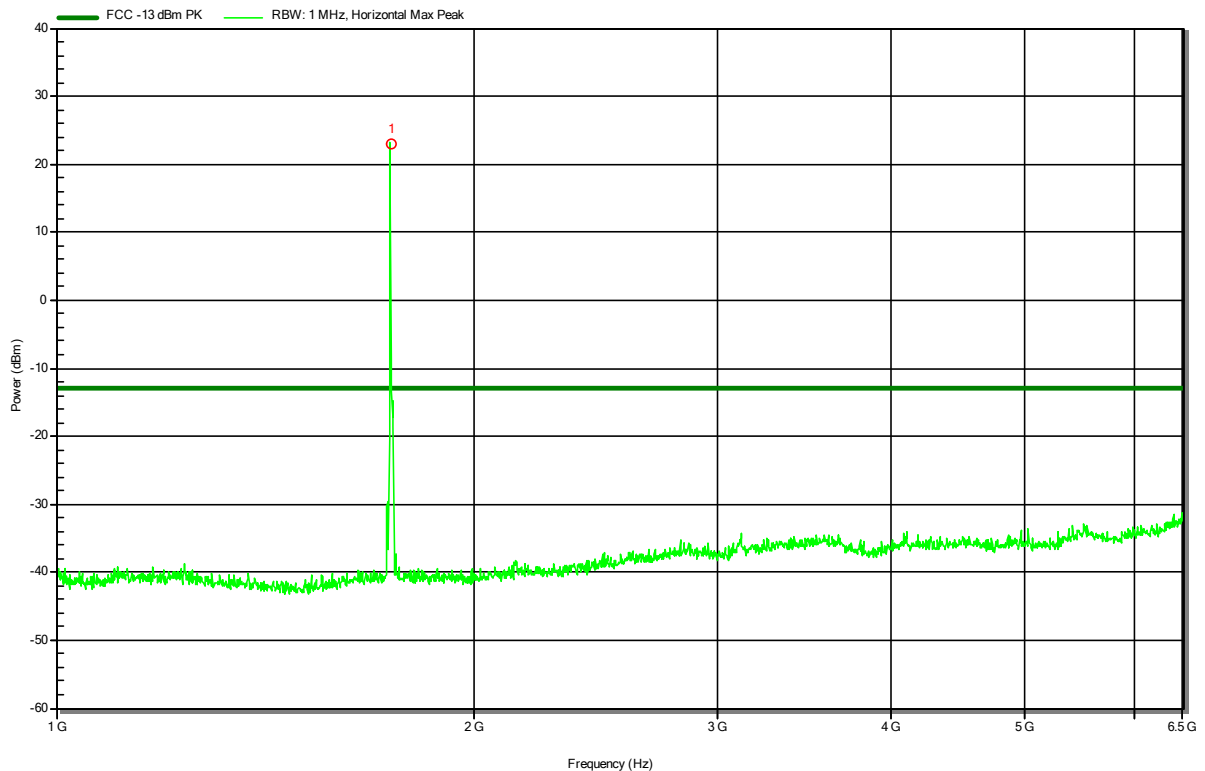
Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
875.14 MHz	-44.7 dBm	-13 dBm	-31.66 dB	Pass	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

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; LTE FDD 66_CH: 132322 (1745.0 MHz)_QPSK_BW20_
 RB 1_RBstart 0_Pmax
 Test Date: 2022-06-16
 Note: EUT vertical

Index 5

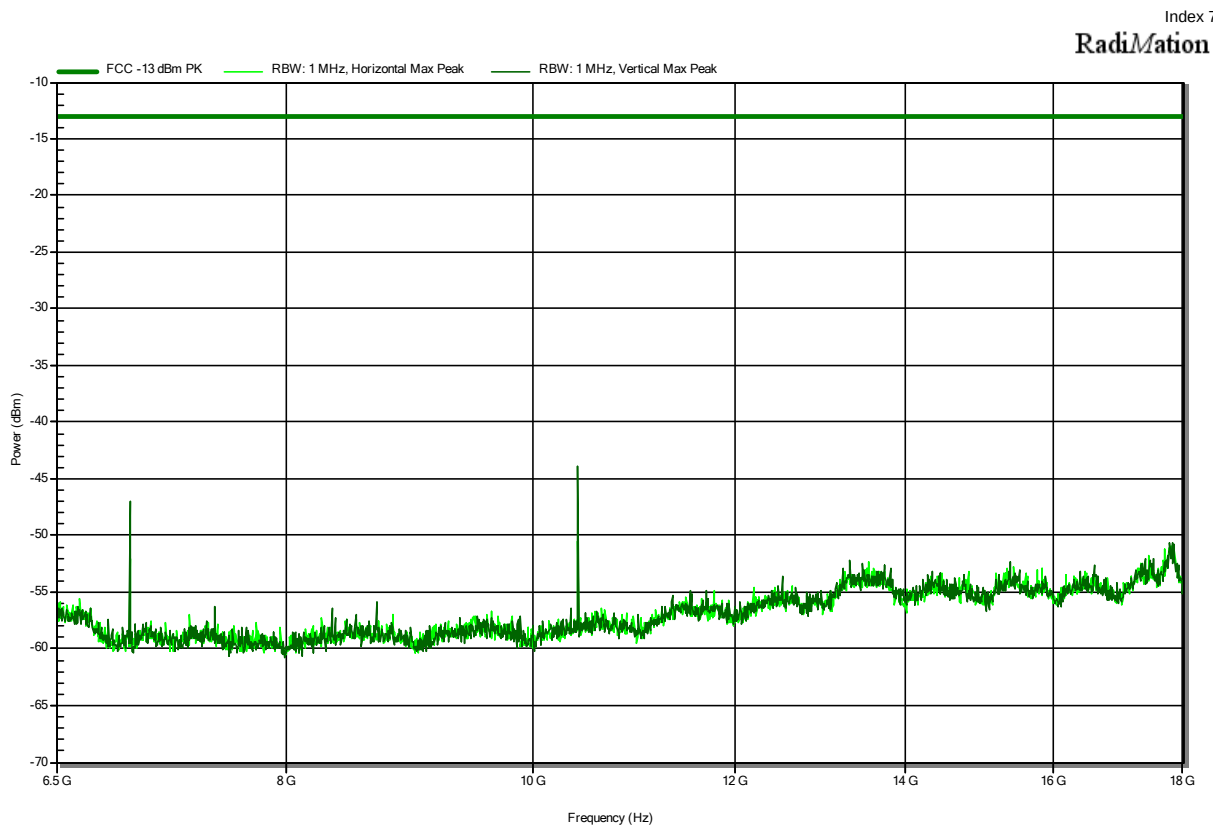
RadiMation



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
1.745 GHz	23.1 dBm	---	---	LTE downlink	-

Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

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; LTE FDD 66_CH: 132322 (1745.0 MHz)_QPSK_BW20_
 RB 1_RBstart 0_Pmax
 Test Date: 2022-06-17
 Note: EUT horizontal

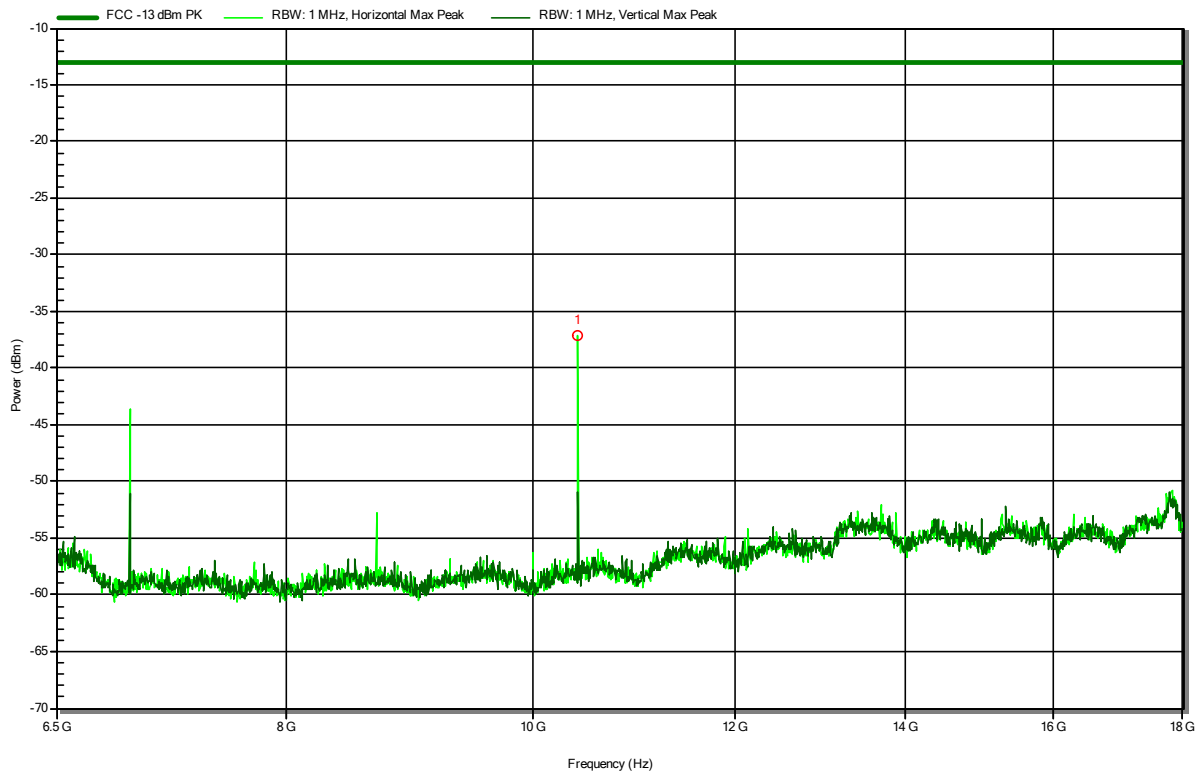


Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

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; LTE FDD 66_CH: 132322 (1745.0 MHz)_QPSK_BW20_
 RB 1_RBstart 0_Pmax
 Test Date: 2022-06-17
 Note: EUT vertical

Index 6

RadiMation



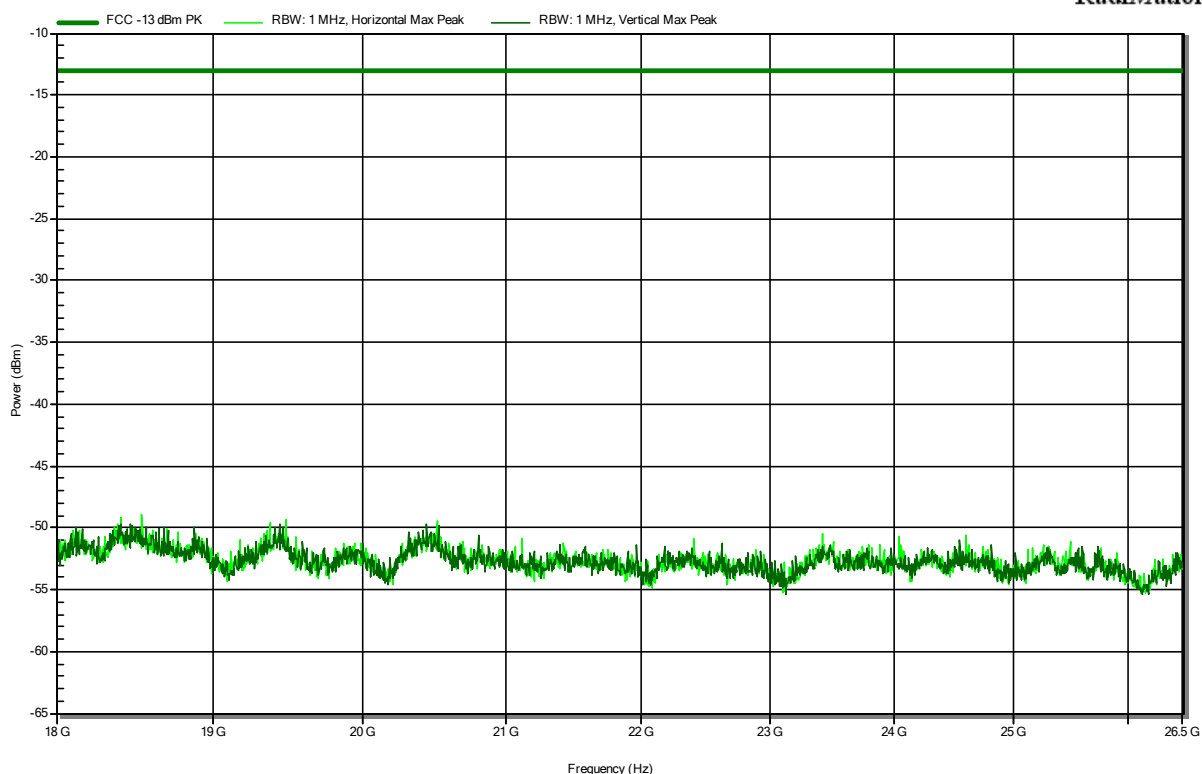
Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
10.417 GHz	-37.2 dBm	-13 dBm	-24.16 dB	Pass	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 27 Subpart C

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; LTE FDD 66_CH: 132322 (1745.0 MHz)_QPSK_BW20_
 RB 1_RBstart 0_Pmax
 Test Date: 2022-06-17
 Note: EUT horizontal

Index 8

RadiMation

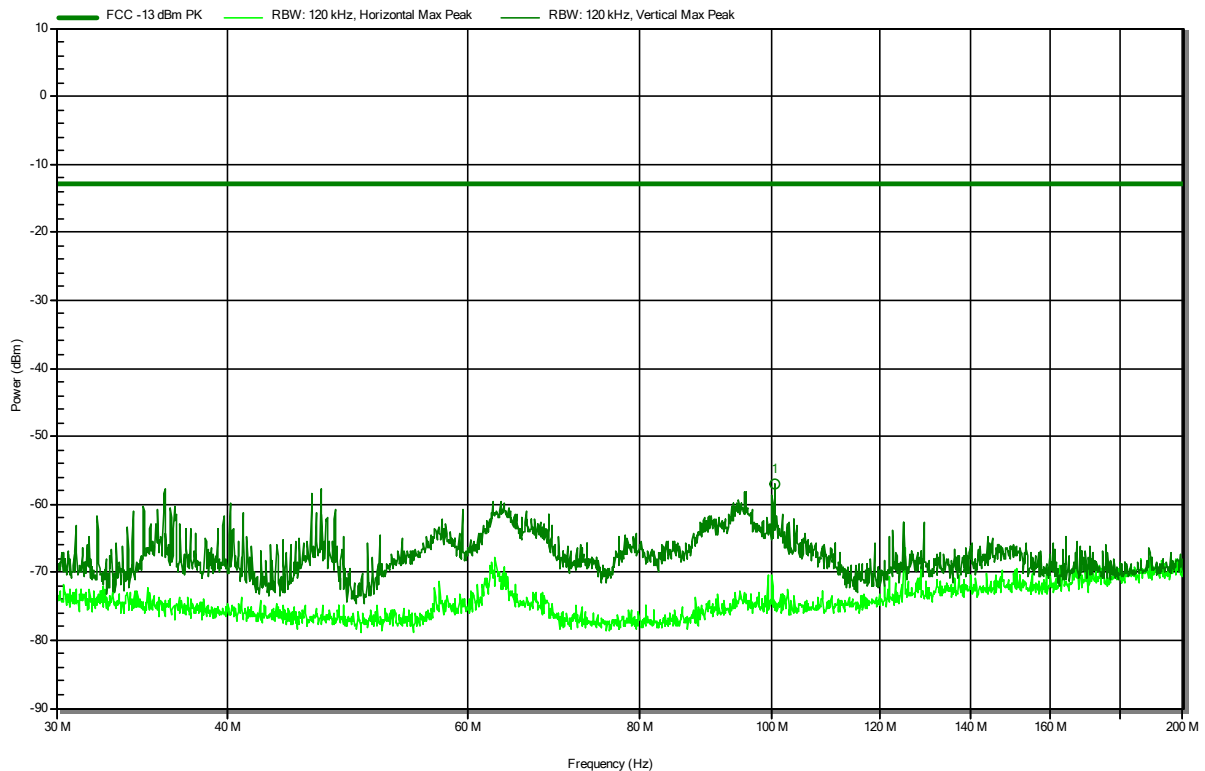


Radiated Spurious Emissions according to 47 CFR Part 90 Subpart S

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; LTE FDD 26_CH: 26765 (821.5 MHz)_QPSK_BW15_
 RB 1_RBstart 37_Pmax
 Test Date: 2022-08-18
 Note: EUT horizontal

Index 4

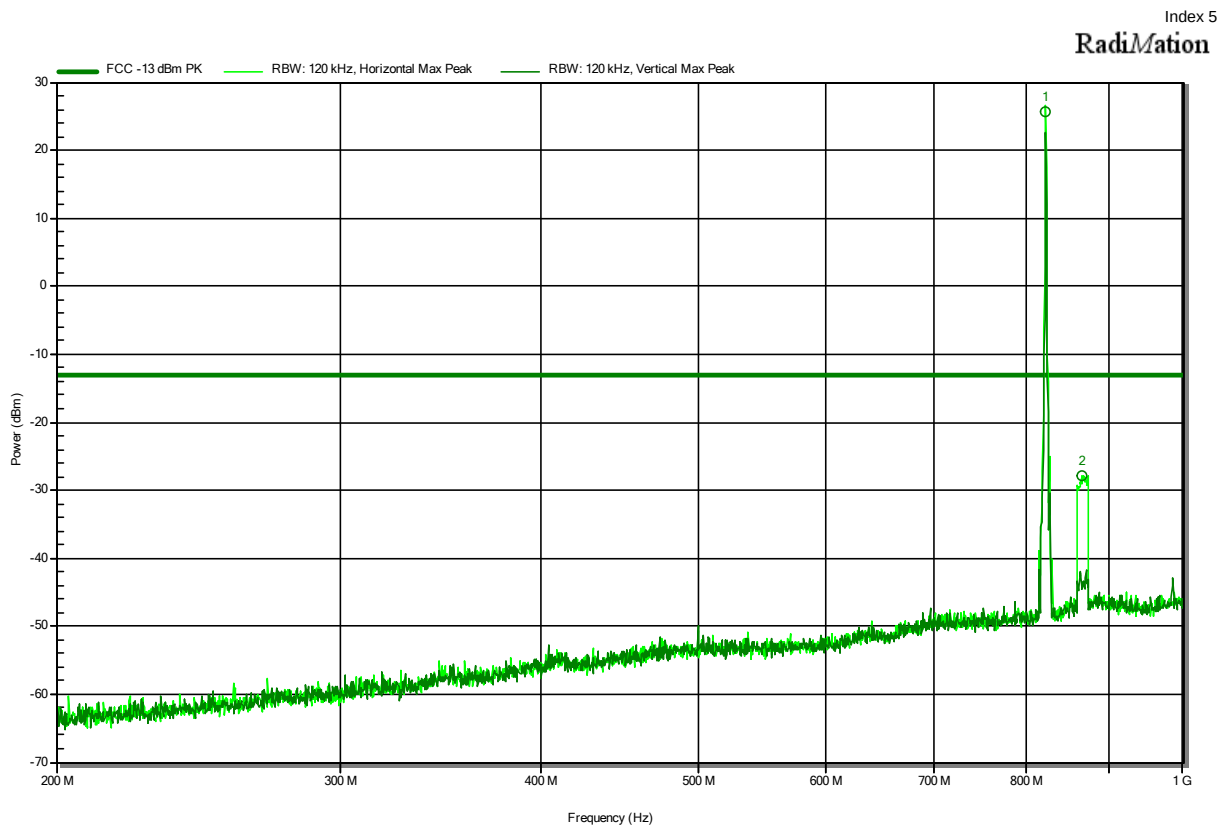
RadiMation



Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
100.533 MHz	-57 dBm	-13 dBm	-43.98 dB	Pass	Vertical

Radiated Spurious Emissions according to 47 CFR Part 90 Subpart S

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; LTE FDD 26_CH: 26765 (821.5 MHz)_QPSK_BW15_
 RB 1_RBstart 37_Pmax
 Test Date: 2022-08-18
 Note: EUT horizontal



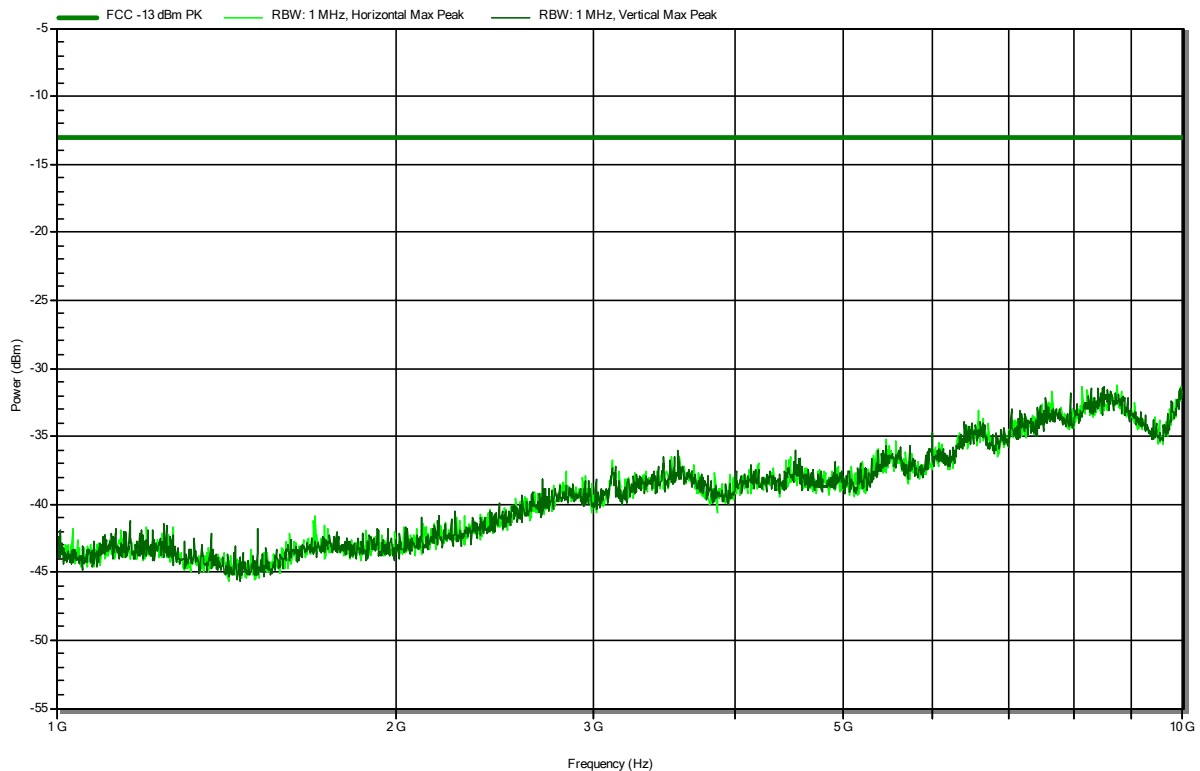
Frequency	Peak	Peak Limit	Peak Difference	Peak Status	Polarization
821.68 MHz	25.6 dBm	---	---	LTE uplink	Horizontal
865.98 MHz	-28 dBm	---	---	LTE downlink	Horizontal

Radiated Spurious Emissions according to 47 CFR Part 90 Subpart S

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; LTE FDD 26_CH: 26765 (821.5 MHz)_QPSK_BW15_
 RB 1_RBstart 37_Pmax
 Test Date: 2022-06-16
 Note: EUT vertical

Index 3

RadiMation



=== End of test report ===