

EMC TEST REPORT

**FCC 47 CFR Part 15B
Industry Canada ICES-003**

Electromagnetic compatibility - Unintentional radiators

Report Reference No. : G0M-1603-5489-EF0115B-V01

Testing Laboratory : Eurofins Product Service GmbH

Address : Storkower Str. 38c
15526 Reichenwalde
Germany

Accreditation



A2LA Accredited Testing Laboratory, Certificate No.: 1983.01
FCC Filed Test Laboratory, Reg.-No.: 96970
IC OATS Filing assigned code: 3470A

Applicant's name : Biotronik SE & Co. KG

Address : Woermannkehre 1
12359 Berlin
GERMANY

Test specification:

Standard..... : 47 CFR Part 15 Subpart B
ICES-003, Issue 5:2012
ANSI C63.4:2014

Equipment under test (EUT):

| | | |
|-----------------------------|--|------------------|
| Product description | Measuring device for visualization of the contact force of the ablation catheter tip on the cardiac wall | |
| Model No. | Qubic Force | |
| Additional Models | None | |
| Hardware version | HWS.A | |
| Firmware / Software version | FU_MR1.x | |
| Contains | FCC-ID: QRIQFORCE | IC: 4708A-QFORCE |
| Test result | Passed | |

Possible test case verdicts:

- not applicable to test object: N/A
- test object does meet the requirement.....: P (Pass)
- test object does not meet the requirement.....: F (Fail)

Testing:

Date of receipt of test item: 2016-04-11

Date (s) of performance of tests: 2016-04-26 - 2016-05-11

Compiled by: Yu Yu

Tested by (+ signature).....: Yu Yu



Approved by (+ signature): Jens Marquardt

Deputy Head of Lab



Date of issue: 2016-05-30

Total number of pages: 31

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:

The tested representative configurations, consistent with INTENDED USE, are most likely to result in unacceptable EMC RISK.

Other possible auxiliary equipment are listed in the following tables.

List of Accessories**Accessories:**

(i.e. power cord / patient cable)

- VK-118/ 0,5m, 5m, 30m; (Ethernet data cable)
- VK-119 (RS-232 data cable)
- VK-120 (RS-232 null-modem cable)
- VK-124 (HDMI cable); Cable for connecting external monitor
- PK-147; Cable for connecting a BIOTRONIK ablation catheter (AlCath Force);
- PK-147; Cable for connecting ablator Stockert EP Shuttle
- PK-111; Cable for connecting ablator Osypka HAT 300 Smart
- Pk-112; Cable for connecting ablator Medtronik Atakr
- PK-142; Cable for connecting ablator SJM IBI-1500
- PK-143; Cable for connecting ablator BSC Maestro
- PK 150; Cable for connecting ablator Stockert SmartAblate
- NK-3 ; Power cord for EU
- NK-11 ; Power cord for USA and Japan
- NK-16-GB ; Power cord for the United Kingdom
- NK-19-CN ; Power cord for China
- NK-21-AU, UY; Power cord for Australia and Uruguay
- NK-22-AR ; Power cord for Argentina
- NK-25-CH ; Power cord for Switzerland
- NK-26-CL, IT ; Power cord for Chile and Italy
- NK-27-IL ; Power cord for Israel
- NK-28-DK ; Power cord for Denmark
- NK-33-BR ; Power cord for Brazil

Cable Information

Cable length/Shielding:

| Type | Length | Shielding |
|----------------------------|--------|-----------|
| VK-118 (Ethernet cable) | 0.5 m | Yes |
| | 5.0 m | Yes |
| | 30 m | Yes |
| VK-119 (RS-232 data cable) | 1.8 m | Yes |
| VK-120 (RS-232 data cable) | 1.8 m | Yes |
| VK-124 (HDMI cable) | 5.0 m | Yes |
| | 15.0 m | Yes |
| PK-111 | 2.0 m | No |
| PK-112 | 2.0 m | No |
| PK-142 | 2.5 m | No |
| PK-143 | 2.5 m | No |
| PK-147 | 2.5 m | No |
| PK-150 | 2.5 m | No |
| NK-3 | 2,5 m | No |
| NK-11 | 3,0 m | No |
| NK-16-GB | 2,0 m | No |
| NK-19-CN | 2,5 m | No |
| NK-21-AU, UY | 2,5 m | No |
| NK-22-AR | 2,5 m | No |
| NK-25-CH | 2,5 m | No |
| NK-26-CL, IT | 2,5 m | No |
| NK-27-IL | 2,5 m | No |
| NK-28-DK | 2,5 m | No |
| NK-33-BR | 2,5 m | No |

Version History

| Version | Issue Date | Remarks | Revised by |
|---------|------------|-----------------|------------|
| V01 | 2016-05-30 | Initial Release | |

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1 Equipment (Test item) Description

| | | |
|------------------------------------|--|---------------------------------------|
| Description | Measuring device for visualization of the contact force of the ablation catheter tip on the cardiac wall | |
| Model | Qubic Force | |
| Additional Models | None | |
| Serial number | 64300004 | |
| Hardware version | HWS.A | |
| Software / Firmware version | FU_MR1.x | |
| Contains FCC-ID | QRIQFORCE | |
| Contains IC | 4708A-QFORCE | |
| Power supply | 100-240V AC 50/60Hz | |
| Radio module | Type | RFID |
| | Model | RFIDM 1356 - 001 |
| | Manufacturer | KTS - Kommunikationstechnik & Systeme |
| | HW Version | 2.1 |
| | SW Version | 3.17 |
| Manufacturer | Biotronik SE & Co. KG Woermannkehre 1 12359 Berlin GERMANY | |
| Highest emission frequency | 1GHz | |
| Device classification | Class A | |
| Equipment type | Tabletop | |
| Number of tested samples | 1 | |

1.4 Supporting Equipment Used During Testing

| Product Type* | Device | Manufacturer | Model No. | Comments (e.g. serial no.) |
|---------------|------------------------------|--------------|------------------|------------------------------|
| AE | Catheter | Biotronik | ALCath Force Red | |
| CABL | Ablation catheter connection | Biotronik | PK-147 | Between EUT and ALCath Force |
| CABL | Ablator connection | Biotronik | PK-147 | Between EUT and RF generator |
| AE | Monitor | Samsung | LE22B350F2WXXC | |
| AE | USB | Lexar | LJD850-16G | |

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

AE : Auxiliary/Associated Equipment, or

SIM : Simulator (Not Subjected to Test)

CABL : Connecting cables

1.5 Input / Output Ports

| Port # | Name | Type* | Max. Cable Length | Cable Shielded | Comments (e.g. Cat. of Cable) |
|--------|------------------|-------|-------------------|----------------|-------------------------------|
| 1 | Power | AC | 2.5 | No | |
| 2 | HDMI-Port | I/O | 15 | Yes | |
| 3 | USB | I/O | - | No | For direct plug only |
| 4 | Generator input | RF | 2.5 | No | |
| 5 | Catheter | RF | 2.5 | No | |
| 6 | Optical catheter | N/E | 2.5 | No | |
| 7 | Ethernet | TP | 30 | Yes | Won't be used |
| 8 | RS232-DTE | I/O | 1.8 | Yes | Won't be used |
| 9 | RS232-DCE | I/O | 1.8 | Yes | Won't be used |
| 10 | AUX output(typo) | I/O | - | No | Won't be used |

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

AC : AC power port

DC : DC power port

N/E : Non electrical

I/O : Signal input or output port

TP : Telecommunication port

1.6 Operating Modes and Configurations

| Mode # | Description |
|--------|--|
| 1 | Measuring and displaying the contact force of the catheter tip |

| Configuration # | EUT Configuration |
|-----------------|--|
| 1 | Generator input port is connected with PK-147 Catheter port is connected with PK-147 and catheter AlCath Force Optical Catheter port is connected with catheter AlCath Force HDMI port is connected with VK-124(15m) to external monitor Binary interface 1 (RS-232 port) is connected with a null-modem cable (VK-120) Binary interface 2 (RS-232 port) is connected with a serial data cable (VK-119) USB-stick on USB- port Ethernet interface is connected with VK-118 (30 m) |
| 2 | Generator input port is connected with PK-147 Catheter port is connected with PK-147 and catheter AlCath Force Optical Catheter port is connected with catheter AlCath Force HDMI port is connected with VK-124(15m) to external monitor Binary interface 1 (RS-232 port) is connected with a null-modem cable (VK-120) Binary interface 2 (RS-232 port) is connected with a serial data cable (VK-119) Ethernet interface is connected with VK-118 (30 m) |

1.7 Test Equipment Used During Testing

| Measurement Software | | | | | |
|----------------------|------------------|------------|--|-----------|--|
| Description | Manufacturer | Name | | Version | |
| EMC Test Software | Dare Instruments | Radimation | | 2015.1.12 | |

| Radiated emissions – 3m Chamber | | | | | |
|---------------------------------|--------------|------------|------------|-----------|----------|
| Description | Manufacturer | Model | Identifier | Cal. Date | Cal. Due |
| Biconical Antenna | R&S | HK 116 | EF00012 | 2016-02 | 2019-02 |
| LPD-Antenne | R&S | HL 223 | EF00187 | 2014-03 | 2017-03 |
| Horn antenna | Schwarzbeck | BBHA 9120D | EF00018 | 2013-09 | 2016-09 |
| EMI Test Receiver | R&S | ESU26 | EF00887 | 2016-01 | 2017-01 |

| Conducted emissions | | | | | |
|---------------------|--------------|---------|------------|-------------|-------------|
| Description | Manufacturer | Model | Identifier | Cal. Date | Cal. Due |
| AMN | R&S | ESH2-Z5 | EF00182 | 2014-11 | 2016-11 |
| AMN | R&S | ESH3-Z5 | EF00036 | 2014-12 | 2016-12 |
| EMI Test Receiver | R&S | ESR7 | EF00943 | 2015-09 | 2016-09 |
| Cable | - | RG58/U | - | System Cal. | System Cal. |

1.8 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 dB μ V. 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).

Limit:

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

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

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:

$$\begin{array}{lll} \text{Reading} + \text{AF} = & \text{Net Reading} : & \text{Net reading - FCC limit} = \text{Margin} \\ 21.5 \text{ dB}\mu\text{V} + 26 \text{ dB} = & 47.5 \text{ dB}\mu\text{V/m} : & 47.5 \text{ dB}\mu\text{V/m} - 57.0 \text{ dB}\mu\text{V/m} = -9.5 \text{ dB} \end{array}$$

2 Result Summary

| FCC 47 CFR Part 15B, Industry Canada ICES-003 | | | | |
|---|-----------------------------------|------------------|--------|---------|
| Product Specific Standard | Requirement – Test | Reference Method | Result | Remarks |
| 47 CFR 15.109 ICES-003 Item 6.2 | Radiated emissions | ANSI C 63.4 | PASS | - |
| 47 CFR 15.107 ICES-003 Item 6.1 | AC power line conducted emissions | ANSI C63.4 | PASS | - |
| Remarks: | | | | |

3 Test Conditions and Results

3.1 Test Conditions and Results – Radiated emissions

| Radiated emissions acc. FCC 47 CFR 15.109 / ICES-003 | | | Verdict: PASS | | | |
|--|----------------------------|-----------------|------------------------|--------|---------------------|--------|
| Laboratory Parameters: | Required prior to the test | During the test | | | | |
| Ambient Temperature | 15 to 35 °C | 22.4 °C | | | | |
| Relative Humidity | 30 to 60 % | 35 % | | | | |
| Test according referenced standards | Reference Method | | | | | |
| | ANSI C63.4 | | | | | |
| Sample is tested with respect to the requirements of the equipment class | Equipment class | | | | | |
| | A | | | | | |
| Test frequency range determined from highest emission frequency | Highest emission frequency | | | | | |
| | 1 GHz | | | | | |
| Fully configured sample scanned over the following frequency range | Frequency range | | | | | |
| | 30 MHz to 5 GHz | | | | | |
| Operating mode | 1 | | | | | |
| Configuration | 1 | | | | | |
| Limits and results Class A | | | | | | |
| Frequency [MHz] | Quasi-Peak [dB μ V/m] | Result | Average [dB μ V/m] | Result | Peak [dB μ V/m] | Result |
| 30 – 88 | 39.085 | PASS | - | | - | - |
| 88 – 216 | 43.522 | PASS | - | | - | - |
| 216 – 960 | 46.444 | PASS | - | | - | - |
| 960 – 1000 | 49.542 | PASS | - | | - | - |
| > 1000 | - | - | 54 | PASS | 74 | PASS |
| Comments: | | | | | | |

Test Procedure:

The test site is in accordance with ANSI C63.4:2014 requirements and is listed by FCC.
The measurement procedure is as follows:

Exploratory measurement:

- The EUT was placed on a non-conductive table at a height of 0.8m.
- The EUT and support equipment were set up to simulate typical usage.
- Cables, of type and length specified by the manufacturer, were connected to at least one port of each type and were terminated by a device or simulating load of actual usage.
- The antenna was placed at a distance of 3 or 10 m.
- The received signal was monitored at the measurement receiver.
 - Cables not bundled were manipulated within the range of likely arrangements to produce the highest emission amplitude
 - To maximize the suspected emissions the EUT is rotated 360 degrees. If the signal exceeds the previous amplitude, go back to the corresponding azimuth and manipulate the cables again for maximizing the emissions if possible.
 - Move the antenna from 1 to 4m to maximize the suspected highest amplitude signal.
- This procedure has to be performed in both antenna polarizations, horizontal and vertical.
- The arrangement of the equipment with the maximum emission level is shown on the setup picture at item 1.3.

Final measurement:

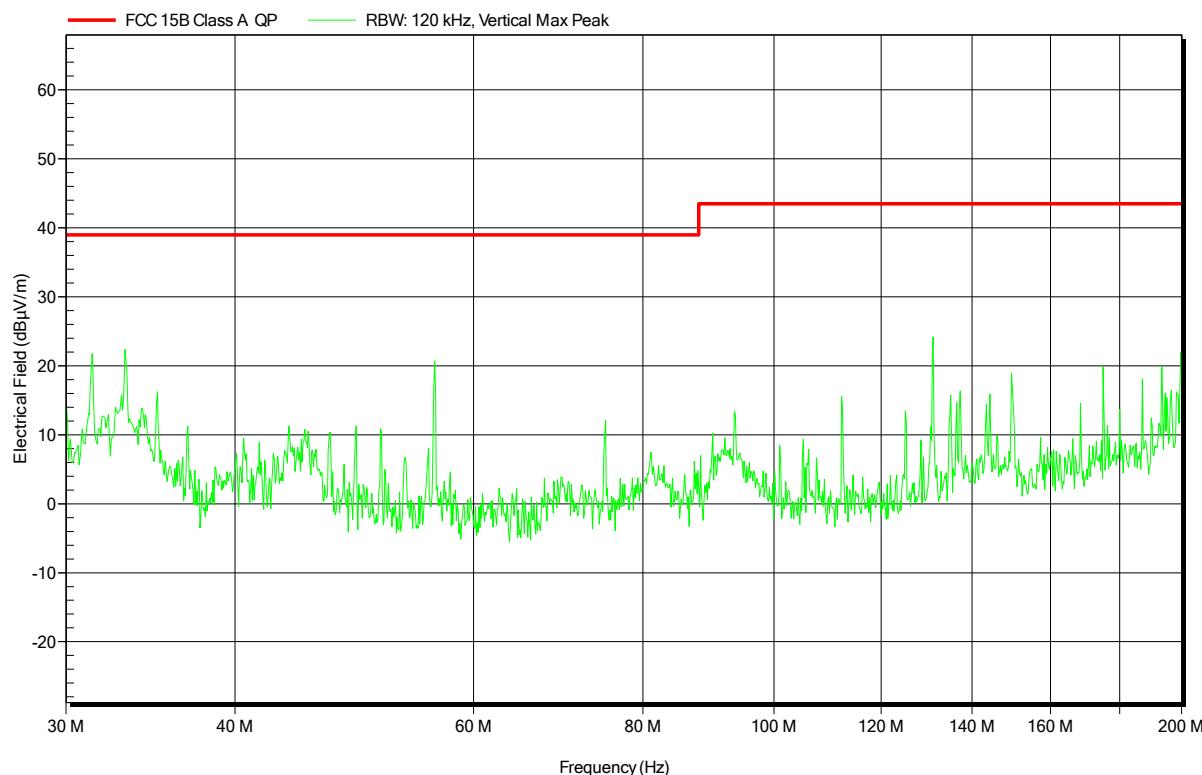
- The EUT was placed on a 0.8 m non-conductive table at a 3 m distance from the receive antenna. The antenna output was connected to the measurement receiver
- A biconical antenna was used for the frequency range 30 – 200 MHz, a logarithmic periodical antenna was used for the frequency range from 200 – 1000 MHz. Above one 1 GHz a Double Ridged Broadband Horn antenna was used. The antenna was placed on an adjustable height antenna mast
- The EUT and cable arrangement were based on the exploratory measurement results
- Emissions were maximized at each frequency by rotating the EUT and adjusting the receive antenna height and polarization. The maximum values were recorded.
- The test data of the worst-case conditions were recorded and shown on the next pages.

Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1603-5489

Applicant: Biotronik SE & Co. KG
EUT Name: Measuring device for visualization of the contact force of the ablation catheter tip on the cardiac wall
Model: Cubic Force
Test Site: Eurofins Product Service GmbH
Operator: Mr. Yu
Test Conditions: Tnom: 22.4°C, Unom: 120V AC
Antenna: Rohde & Schwarz HK 116, Vertical
Measurement distance: 3m, converted to 10m
Mode: 1
Test Date: 2016-04-26
Note:

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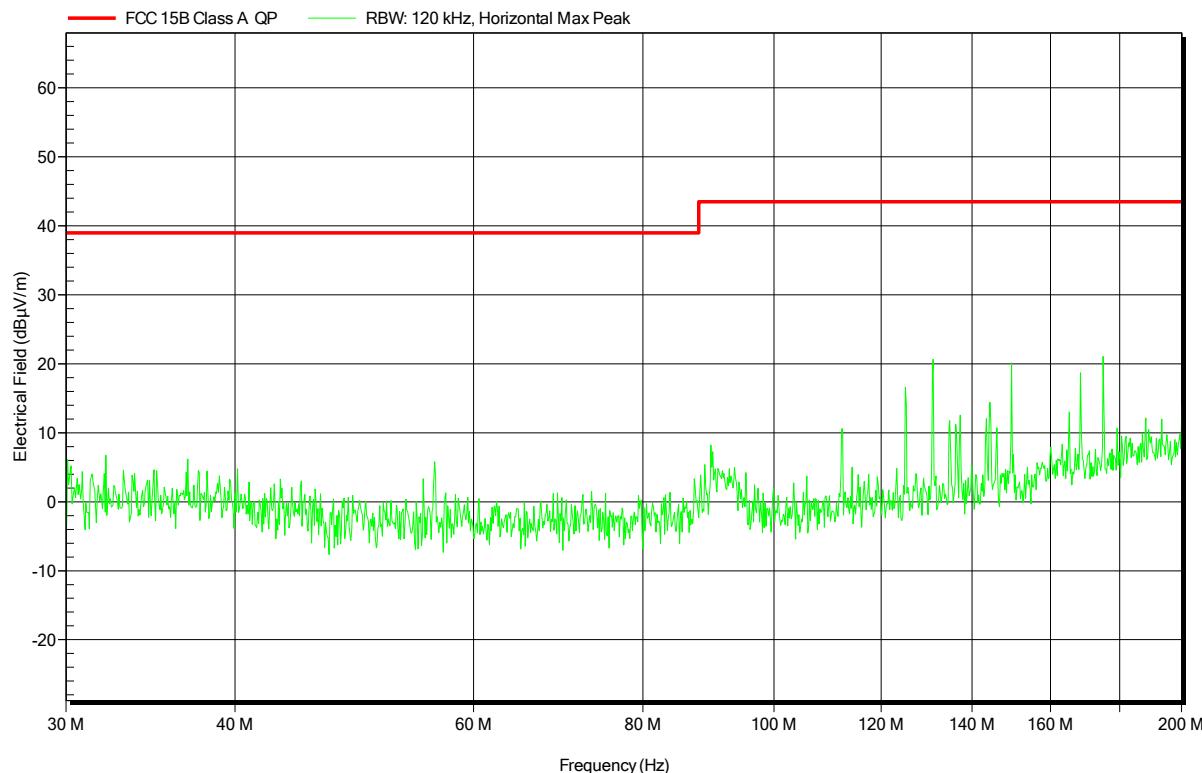


Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1603-5489

Applicant: Biotronik SE & Co. KG
EUT Name: Measuring device for visualization of the contact force of the ablation catheter tip on the cardiac wall
Model: Cubic Force
Test Site: Eurofins Product Service GmbH
Operator: Mr. Yu
Test Conditions: Tnom: 22.4°C, Unom: 120V AC
Antenna: Rohde & Schwarz HK 116, Horizontal
Measurement distance: 3m, converted to 10m
Mode: 1
Test Date: 2016-04-26
Note:

Index 3

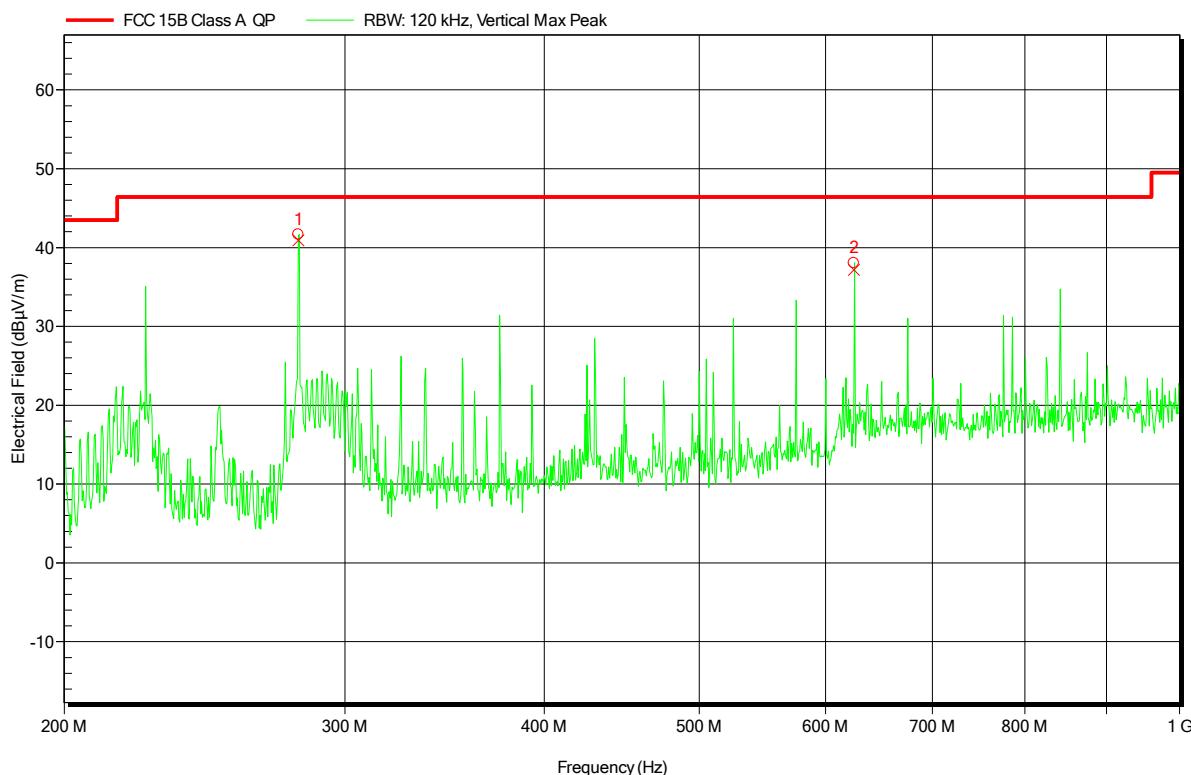


Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1603-5489

Applicant: Biotronik SE & Co. KG
 EUT Name: Measuring device for visualization of the contact force of the ablation catheter tip on the cardiac wall
 Model: Cubic Force
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Yu
 Test Conditions: Tnom: 22.4°C, Unom: 120V AC
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3m, converted to 10m
 Mode: 1
 Test Date: 2016-04-26
 Note:

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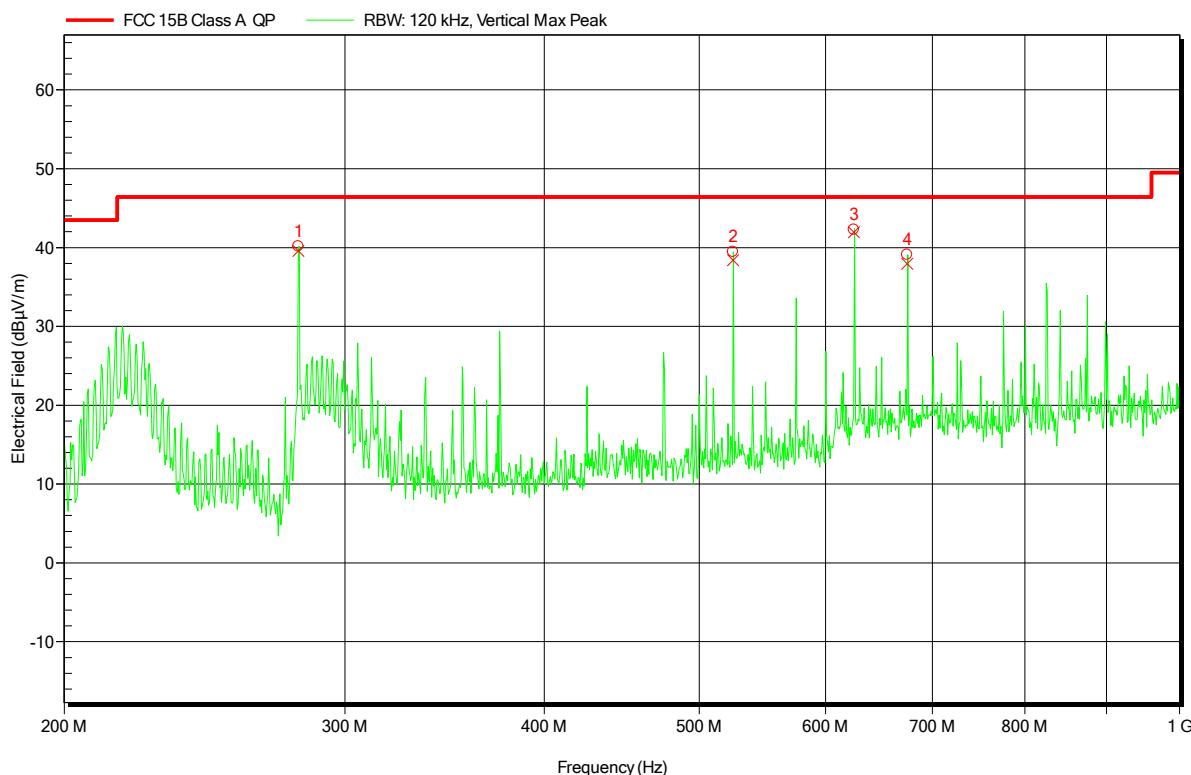
| Peak Number | Frequency | Quasi-Peak | Quasi-Peak Limit | Quasi-Peak Difference | Quasi-Peak Status | Angle | Height |
|-------------|-------------|--------------------|-------------------|-----------------------|-------------------|-----------|--------|
| 1 | 280.502 MHz | 40.9 dB μ V/m | 46.4 dB μ V/m | -5.5 dB | Pass | 60 Degree | 1 m |
| 2 | 624.986 MHz | 37.19 dB μ V/m | 46.4 dB μ V/m | -9.21 dB | Pass | 60 Degree | 1 m |

Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1603-5489

Applicant: Biotronik SE & Co. KG
 EUT Name: Measuring device for visualization of the contact force of the ablation catheter tip on the cardiac wall
 Model: Cubic Force
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Yu
 Test Conditions: Tnom: 22.4°C, Unom: 120V AC
 Antenna: Rohde & Schwarz HL 223, Vertical
 Measurement distance: 3m, converted to 10m
 Mode: 1
 Test Date: 2016-04-26
 Note:

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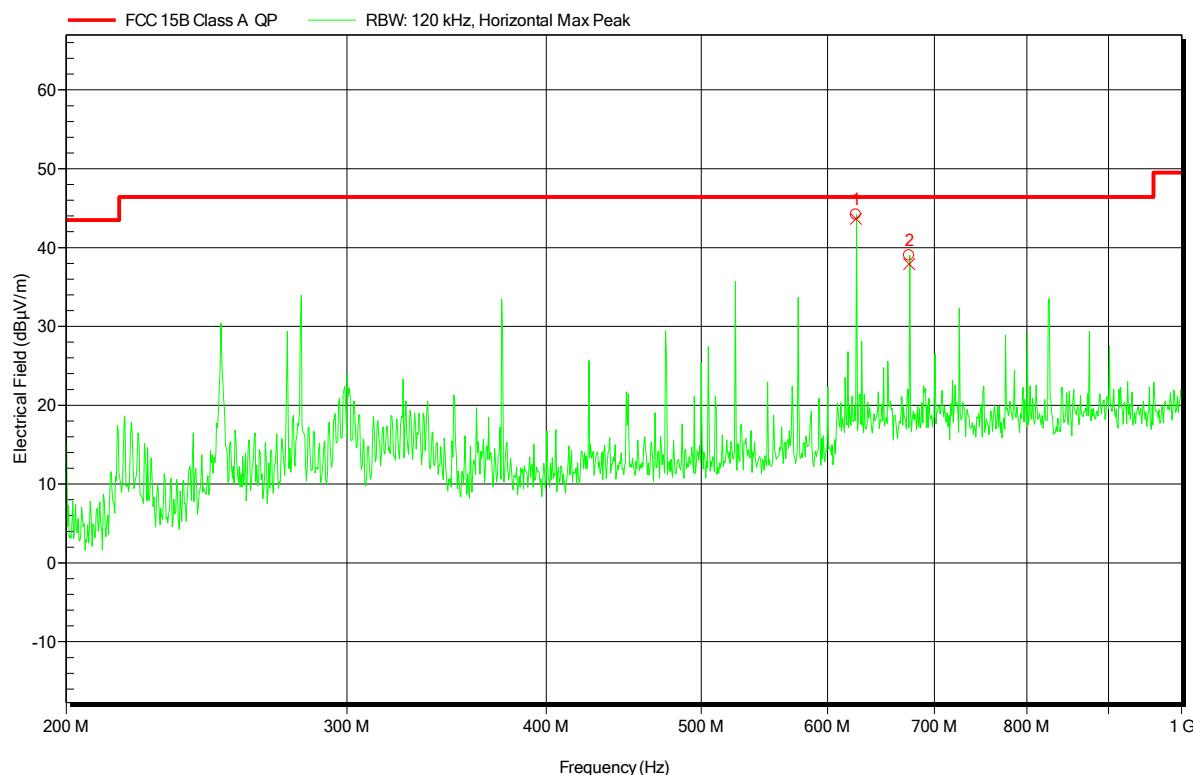
| Peak Number | Frequency | Quasi-Peak | Quasi-Peak | Quasi-Peak | Quasi-Peak | Angle | Height |
|-------------|-------------|--------------------|-------------------|------------|------------|------------|--------|
| 1 | 280.502 MHz | 39.57 dB μ V/m | 46.4 dB μ V/m | -6.83 dB | Pass | 290 Degree | 1 m |
| 2 | 524.99 MHz | 38.4 dB μ V/m | 46.4 dB μ V/m | -8 dB | Pass | 290 Degree | 1 m |
| 3 | 624.986 MHz | 41.92 dB μ V/m | 46.4 dB μ V/m | -4.48 dB | Pass | 290 Degree | 1 m |
| 4 | 674.99 MHz | 37.93 dB μ V/m | 46.4 dB μ V/m | -8.47 dB | Pass | 290 Degree | 1 m |

Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1603-5489

Applicant: Biotronik SE & Co. KG
 EUT Name: Measuring device for visualization of the contact force of the ablation catheter tip on the cardiac wall
 Model: Cubic Force
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Yu
 Test Conditions: Tnom: 22.4°C, Unom: 120V AC
 Antenna: Rohde & Schwarz HL 223, Horizontal
 Measurement distance: 3m, converted to 10m
 Mode: 1
 Test Date: 2016-04-26
 Note:

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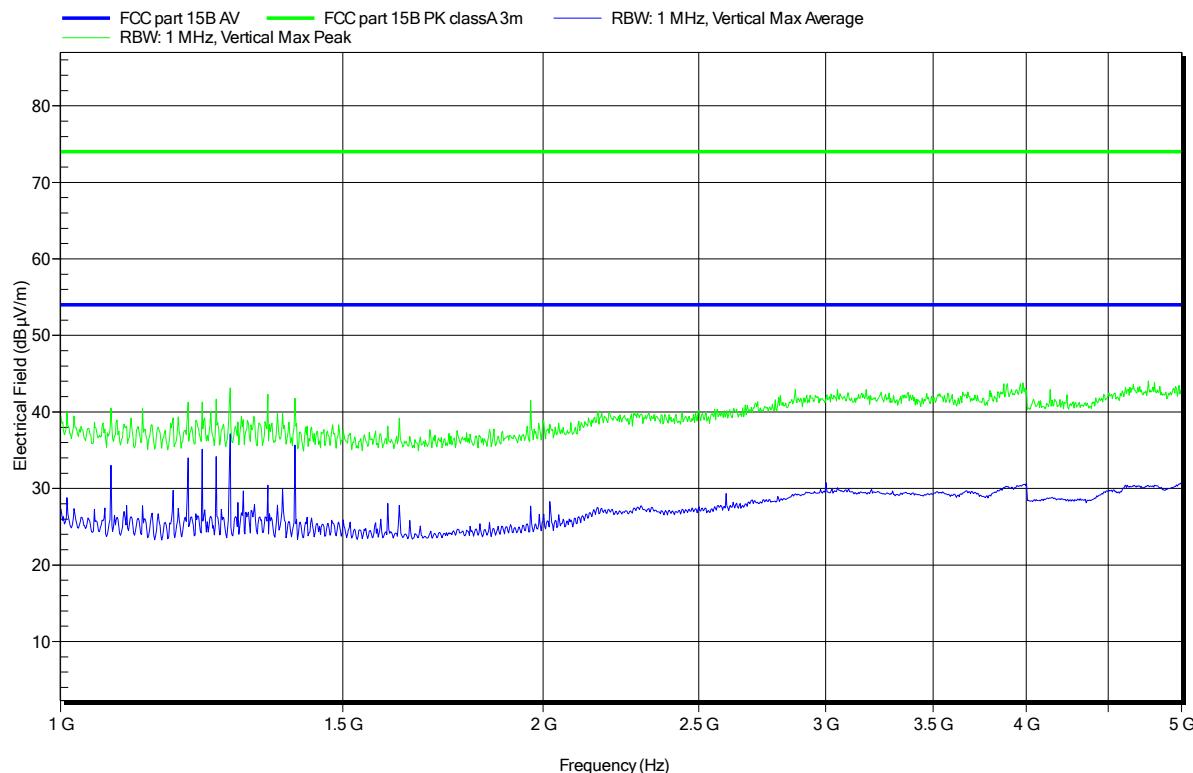
| Peak Number | Frequency | Quasi-Peak | Quasi-Peak Limit | Quasi-Peak Difference | Quasi-Peak Status | Angle | Height |
|-------------|-------------|--------------------|---------------------|--------------------------|----------------------|------------|--------|
| 1 | 624.985 MHz | 43.63 dB μ V/m | 46.4 dB μ V/m | -2.77 dB | Pass | 197 Degree | 1 m |
| 2 | 674.985 MHz | 37.9 dB μ V/m | 46.4 dB μ V/m | -8.5 dB | Pass | 197 Degree | 1 m |

Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1603-5489

Applicant: Biotronik SE & Co. KG
EUT Name: Measuring device for visualization of the contact force of the ablation catheter tip on the cardiac wall
Model: Cubic Force
Test Site: Eurofins Product Service GmbH
Operator: Mr. Yu
Test Conditions: Tnom: 22.4°C, Unom: 120V AC
Antenna: Schwarzbeck BBHA 9120D, Vertical
Measurement distance: 3m
Mode: 1
Test Date: 2016-04-26
Note:

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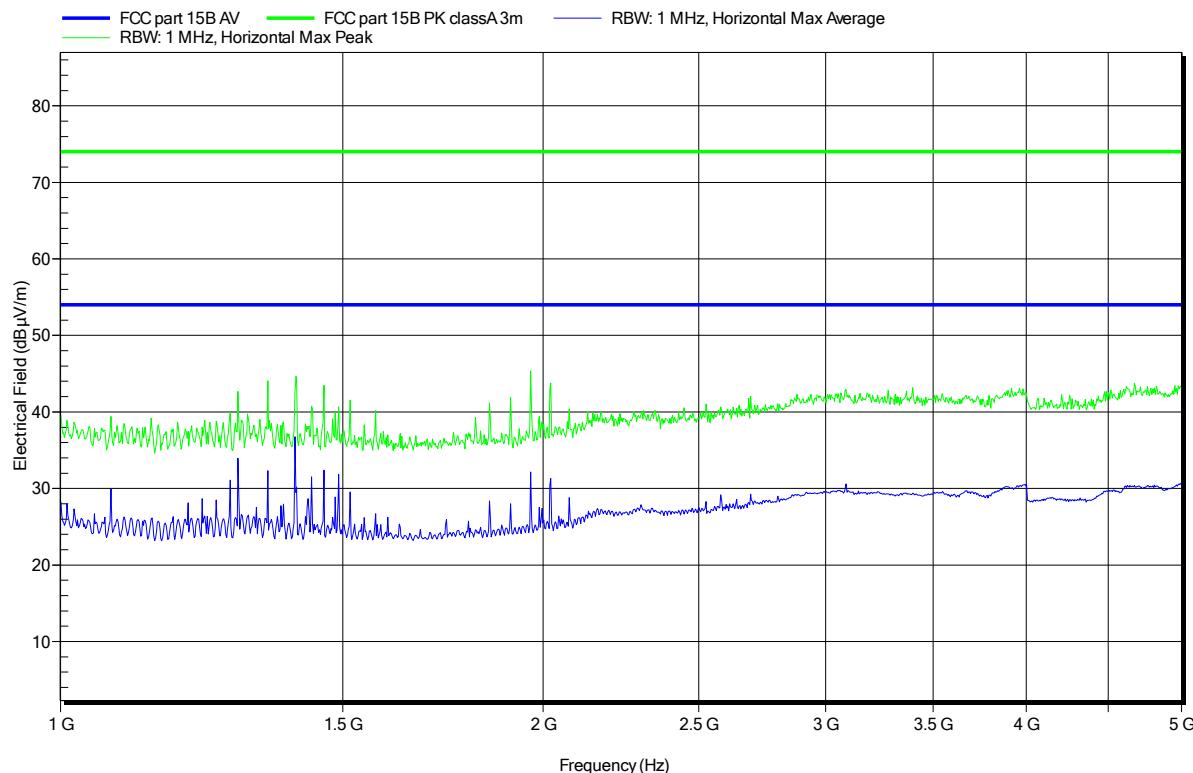


Spurious emissions under normal conditions according to FCC Part 15b

Project number: G0M-1603-5489

Applicant: Biotronik SE & Co. KG
EUT Name: Measuring device for visualization of the contact force of the ablation catheter tip on the cardiac wall
Model: Cubic Force
Test Site: Eurofins Product Service GmbH
Operator: Mr. Yu
Test Conditions: Tnom: 22.4°C, Unom: 120V AC
Antenna: Schwarzbek BBHA 9120D, Horizontal
Measurement distance: 3m
Mode: 1
Test Date: 2016-04-26
Note:

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3.2 Test Conditions and Results – AC power line conducted emissions

| Conducted emissions acc. FCC 47 CFR 15.107 / ICES-003 | | | Verdict: PASS |
|--|----------------------------|-----------------|----------------------|
| Laboratory Parameters: | Required prior to the test | During the test | |
| Ambient Temperature | 15 to 35 °C | 22.4 °C | |
| Relative Humidity | 30 to 60 % | 35 % | |
| Test according referenced standards | Reference Method | | |
| | ANSI C63.4 | | |
| Fully configured sample scanned over the following frequency range | Frequency range | | |
| | 0.15 MHz to 30 MHz | | |
| Sample is tested with respect to the requirements of the equipment class | Equipment class | | |
| | A | | |
| Points of Application | Application Interface | | |
| AC Mains | LISN | | |
| Operating mode | 1 | | |
| Configuration | 2 | | |
| Limits and results Class A | | | |
| Frequency [MHz] | Quasi-Peak [dB μ V] | Result | Average [dB μ V] |
| 0.15 to 0.5 | 66 | PASS | 79 |
| 5 to 30 | 60 | PASS | 73 |
| Comments: * Limit decreases linearly with the logarithm of the frequency. | | | |

Test Procedure:

The test site is in accordance with ANSI C63.4:2014 requirements and is listed by FCC.
The measurement procedure is as follows:

Exploratory measurement:

- The EUT was placed on a non conductive table 0.8 m above the reference ground plane and 0.4 m away from the vertical conducting plane (ANSI C63.4: 2014 item 7.3.1)
- The power cord that is normally supplied or recommended by the manufacturer was connected to the LISN.
- The distance between the outer edge of the EUT and the LISN shall be set to 0.8 m. A longer power cord shall be bundled to this length (bundling shall not exceed 40 cm in length).
- The LISN measurement port was connected to a measurement receiver
- I/O cables were bundled not longer than 0.4 m
- Measurement was performed in the frequency range 0.15 – 30MHz on each current-carrying conductor
- To maximize the emissions the cable positions were manipulated
- The worst configuration of EUT and cables is shown on a test setup picture at item 1.3

Test Procedure:

Final measurement:

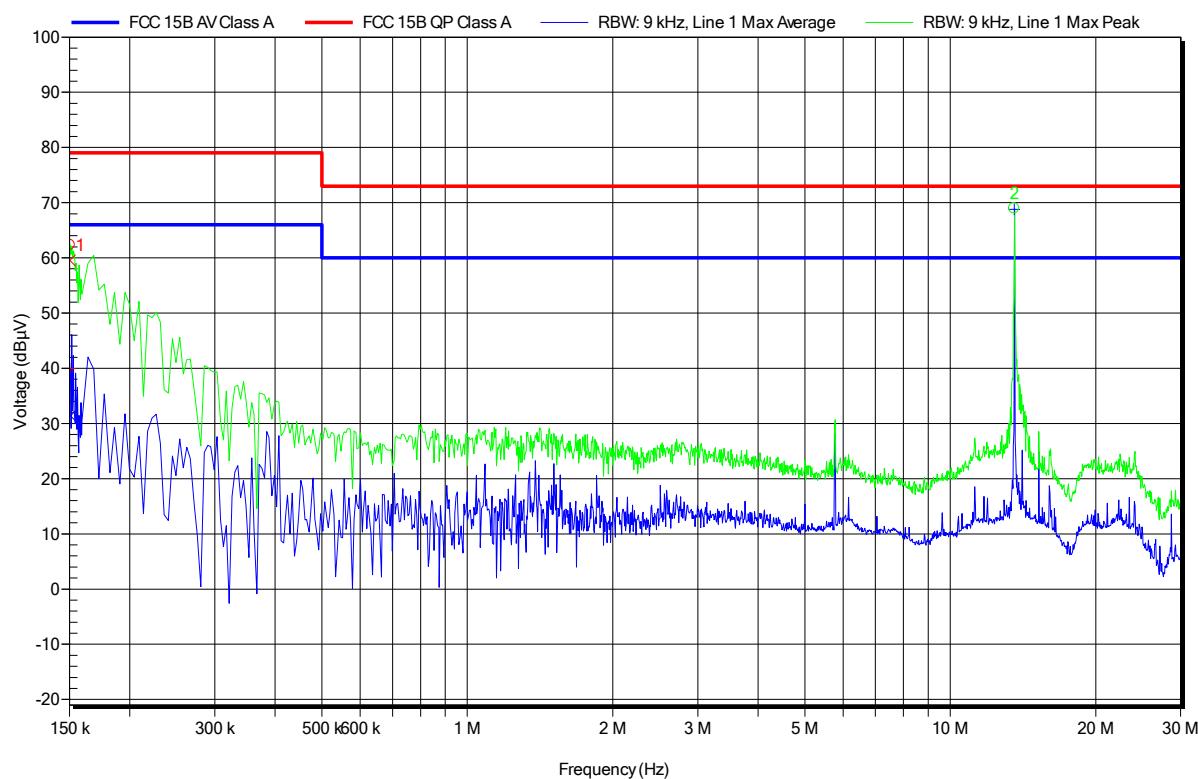
- The EUT was placed on a non conductive table 0.8 m above the reference ground plane and 0.4 m away from the vertical conducting plane (ANSI C63.4: 2014 item 7.3.1)
- The power cord that is normally supplied or recommended by the manufacturer was connected to the LISN.
- The distance between the outer edge of the EUT and the LISN shall be set to 0.8 m. A longer power cord shall be bundled to this length (bundling shall not exceed 40 cm in length).
- The LISN measurement port was connected to a measurement receiver
- The EUT and cable arrangement were based on the exploratory measurement results
- The test data of the worst-case conditions were recorded and shown on the next pages.

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

Project number: G0M-1603-5489

Applicant: Biotronik SE & Co. KG
 EUT Name: Measuring device for visualization of the contact force of the ablation catheter tip on the cardiac wall
 Model: Cubic Force
 Test Site: Eurofins Product Service GmbH
 Operator: Mr. Yu
 Test Conditions: Tnom: 22.4°C, Unom: 120V AC
 LISN: ESH2-Z5 L
 Mode: 1
 Test Date: 2016-05-02
 Note:

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| Peak Number | Frequency | Quasi-Peak | Quasi-Peak Limit | Quasi-Peak Difference | Quasi-Peak Status |
|-------------|------------------------|------------------|------------------|-----------------------|-------------------|
| 1 | 150.45 kHz | 59.54 dB μ V | 79 dB μ V | -19.46 dB | Pass |
| 2 | 13.56 MHz RFID carrier | | | | Pass |
| Peak Number | Frequency | Average | Average Limit | Average Difference | Average Status |
| 1 | 150.45 kHz | 39.94 dB μ V | 66 dB μ V | -26.06 dB | Pass |
| 2 | 13.56 MHz RFID carrier | | | | Pass |

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

Project number: G0M-1603-5489

Applicant: Biotronik SE & Co. KG
EUT Name: Measuring device for visualization of the contact force of the ablation catheter tip on the cardiac wall
Model: Cubic Force
Test Site: Eurofins Product Service GmbH
Operator: Mr. Yu
Test Conditions: Tnom: 22.4°C, Unom: 230CAC
LISN: ESH2-Z5 N
Mode: 1
Test Date: 2016-05-02
Note:

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