

Test Report # 318353 D

Equipment Under Test: Revolve Control Module with EX Holster

Test Date(s): March 28th – May 17th, 2019

Prepared for: Devicor Medical Products, Inc.
Attn: Kyle Wagner
300 E-Business Way, Fifth Floor
Cincinnati, OH 45241

Report Issued by: Zach Wilson, EMC Engineer

Signature: *Zach Wilson*

Date:

Report Reviewed by: Adam Alger, Quality Manager

Signature: *Adam Alger*

Date:

Report Constructed by: Zach Wilson, EMC Engineer

Signature: *Zach Wilson*

Date: 5/14/2019

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| | | |
|---|--------------|--|
| Company: Devicor Medical Products, Inc. | Page 1 of 23 | Name: Revolve Control Module with EX Holster |
| Report: TR 318353 D | | Model: MHEXH1 |
| Job: C-3148 | | Serial: MHEXH1000001, MHEXH1000002 |

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Laird Technologies Test Services in Review

The Laird Technologies, Inc. laboratory located at W66 N220 Commerce Court Cedarburg, Wisconsin, 53012 USA is recognized through the following organizations:



A2LA – American Association for Laboratory Accreditation

Accreditation based on ISO/IEC 17025:2017 with Electrical (EMC) Scope

A2LA Certificate Number: 1255.01

Scope of accreditation includes all test methods listed herein unless otherwise noted



Federal Communications Commission (FCC) – USA

Accredited Test Firm Registration Number: 953492

Recognition of two 3 meter Semi-Anechoic Chambers



**Government
of Canada**

Innovation, Science and Economic Development Canada

Accredited U.S. Identification Number: US0218

Recognition of two 3 meter Semi-Anechoic Chambers

| | | |
|---|--------------|--|
| Company: Devicor Medical Prodcuts, Inc. | Page 3 of 23 | Name: Revolve Control Module with EX Holster |
| Report: TR 318353 D | | Model: MHEXH1 |
| Job: C-3148 | | Serial: MHEXH1000001, MHEXH1000002 |

1 TEST REPORT SUMMARY

During **March 28th – May 17th, 2019** the Equipment Under Test (EUT), **Revolve Control Module with EX Holster**, as provided by **Devicor Medical Products Inc.** was tested to the following requirements of the **Federal Communications Commission** and **Innovation, Science and Economic Development Canada**:

| Requirements | Description | Specification | Method | Compliant |
|--------------------------------------|--|----------------------------|-------------|-----------|
| FCC: 15.209 (c) IC: RSS-GEN (8.9) | Radiated Emissions 1-13.11 MHz, 14.010 – 1000 MHz | 29.5 dB μ V/m @ 30m | ANSI C63.10 | Yes |
| FCC: 15.225 (a) IC: RSS-210 (B.6) | Radiated Emissions 13.110-14.010 MHz | 84 dB μ V/m @ 30m | ANSI C63.10 | Yes |
| FCC: 15.207 (a) IC: RSS-GEN (8.8) | Conducted AC Emissions | See Section 5.2.1 | ANSI C63.10 | Yes |
| FCC: 2.1049 IC: RSS-GEN (6.7) | Occupied Bandwidth | Reported | ANSI C63.10 | Reported |
| FCC: 15.225 (e) IC: RSS-210 (B.6) | Carrier Frequency Stability | \pm 0.01% | ANSI C63.10 | Yes |

Notice:

The results relate only to the item tested as configured and described in this report. Any additional configurations, modes of operation, or modifications made to the equipment under test after the specified test date(s) are at the decision of the client and may not apply to the data seen in this test report.

The decision rule for Pass / Fail assessment to the specification or standard listed in this test report has been agreed upon by the client and laboratory to be as follows:

| Measurement Type | Rule |
|-----------------------|--------------------------------|
| Emissions – Amplitude | 1 dB below specified limit |
| Emissions – Frequency | 1% less than the specification |
| Immunity | Tested at specified level |

2 CLIENT INFORMATION

| | |
|-----------------------|---|
| Company Name | Devicor Medical Products, Inc. |
| Contact Person | Kyle Wagner |
| Address | 300 E-Business Way, Fifth Floor Cincinnati, OH 45241 |

2.1 Equipment Under Test (EUT) Information

The following information has been supplied by the client

| | |
|---|--|
| Product Name | Revolve Control Module with EX Holster |
| Revolve EX Holster Model Number | MHEXH1 |
| Revolve Control Module Model Number | MSCM1 |
| Revolve EX Holster Serial Number | MHEXH1000001, MHEXH1000002 |
| Revolve Control Module Serial Number | MSCM1001769, MSCM1001770 |
| Revolve EX Holster Radio FCC ID | 2ATMT-MHEXH101 |
| Revolve EX Holster Radio IC ID | 25143-MHEXH101 |

2.2 Product Description

The Mammotome® Revolve system is a state-of-the-art next generation dual vacuum-assisted biopsy platform. The procedure performed with the Mammotome® system is a minimally invasive breast biopsy procedure using a single insertion vacuum assisted device that provides multiple samples for percutaneous removal of (breast) tissue for histological diagnosis. The user can provide inputs to the Mammotome® system at the control module and/or at buttons on the holster, keypad or footswitch to activate clinical functions for the biopsy procedure such as Biopsy, Vacuum, and Open/Close Aperture.

The holster contains a TRF7970A Texas Instruments 13.56 MHz RFID Transceiver. The RFID was active with a passive tag, GammaTag, inserted in the holster during testing. The manufacturer declared temperature range of the radio is -40°C to 110°C. The input voltage of the radio is 2.7

| | | |
|---|--------------|--|
| Company: Devicor Medical Products, Inc. | Page 5 of 23 | Name: Revolve Control Module with EX Holster |
| Report: TR 318353 D | | Model: MHEXH1 |
| Job: C-3148 | | Serial: MHEXH1000001, MHEXH1000002 |

VDC to 5.5 VDC. The antenna is a loop antenna etched into the PCB. Due to the nature of loop antennas, the conservative estimate of the antenna gain is 0 dBi. The radio uses ASK modulation. Per customer, unit tested at 100VAC/60Hz and 240VAC/50Hz.

2.3 Modifications Incorporated for Compliance

Conducted AC Emissions required the antenna to be disconnected to enable the frequencies near the transmit fundamental to be measured. A dummy load was placed at the output of the radio consisting of a 1.8Ω resistor and 910nH inductor in series. This is allowed per FCC/KDB-174176. The antenna was connected for all other testing.

2.4 Deviations and Exclusions from Test Specifications

None noted at time of test

2.5 Mode of Operation – Active Biopsy

EUT tested with an EX holster attached with a footswitch being used to trigger a biopsy. The EUT was placed in “normal mode” with the biopsy button held down, so the system would continuously cycle through biopsies endlessly.

2.6 Radio Programming Information

The radio begins transmitting and receiving when the holster is powered up by the console. No programming needed.

2.7 Software Versions

Revolve Control Module Software Version - 3.1.0.1721.315
 Revolve EX Holster Software Version - 3.3.1676.315

| | | |
|---|--------------|--|
| Company: Devicor Medical Prodcuts, Inc. | Page 6 of 23 | Name: Revolve Control Module with EX Holster |
| Report: TR 318353 D | | Model: MHEXH1 |
| Job: C-3148 | | Serial: MHEXH1000001, MHEXH1000002 |

3 REFERENCES

| Publication | Edition | Date | AMD 1 |
|--------------------|---------|------|-------|
| ANSI C63.10 | - | 2013 | - |
| CFR Title 47 | - | 2019 | - |
| RSS-GEN | 5 | 2018 | 2019 |
| RSS-210 | 9 | 2016 | 2017 |
| FCC/KDB-174176 D01 | v01r01 | 2015 | - |

4 UNCERTAINTY SUMMARY

Using the guidance of the following publications the calculated measurement uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level, using a coverage factor of $k = 2$.

| References | Version / Date |
|-----------------|------------------|
| CISPR 16-4-1 | Ed. 2 (2009-02) |
| CISPR 16-4-2 | Ed. 2 (2011-06) |
| CISPR 32 | Ed. 1 (2012-01) |
| ANSI C63.23 | 2012 |
| A2LA P103 | February 4, 2016 |
| A2LA P103c | August 10, 2015 |
| ETSI TR 100-028 | V1.3.1 (2001-03) |

| Measurement Type | Configuration | Uncertainty \pm |
|-----------------------------|-------------------------------|-------------------|
| Radiated Emissions | Biconical Antenna | 5.0 dB |
| Radiated Emissions | Log Periodic Antenna | 5.3 dB |
| Radiated Emissions | Horn Antenna | 4.7 dB |
| AC Line Conducted Emissions | Artificial Mains Network | 3.4 dB |
| Telecom Conducted Emissions | Asymmetric Artificial Network | 4.9 dB |
| Disturbance Power Emissions | Absorbing Clamp | 4.1 dB |
| Radiated Immunity | 3 Volts/meter | 2.2 dB |
| Conducted Immunity | CDN/EM/BCI | 2.4/3.5/3.4 dB |
| EFT Burst/Surge | Peak pulse voltage | 164 volts |
| ESD Immunity | 15 kV level | 1377 Volts |

| Parameter | ETSI U.C. \pm | U.C. \pm |
|--|--------------------|-----------------------|
| Radio Frequency, from F0 | 1×10^{-7} | 0.55×10^{-7} |
| Occupied Channel Bandwidth | 5 % | 2 % |
| RF conducted Power (Power Meter) | 1.5 dB | 1.2 dB |
| RF conducted emissions (Spectrum Analyzer) | 3.0 dB | 1.7 dB |
| All emissions, radiated | 6.0 dB | 5.3 dB |
| Temperature | 1° C | 0.65° C |
| Humidity | 5 % | 2.9 % |
| Supply voltages | 3 % | 1 % |

5 TEST DATA

5.1 Radiated Emissions

| | |
|--|---|
| <p>Description of Measurement</p> | <p>The frequency spectrum is investigated for intentional and / or unintentional signals emanating from the EUT by use of a standardized test site and measurement antenna.</p> <p>The antenna, cable, pre-amp, and other necessary measurement system correction factors are loaded onto the EMI receiver / spectrum analyzer when the measurements are performed allowing the data to be gathered and reported as corrected values.</p> <p>The maximum emissions from the EUT are determined by turn-table azimuth rotation (360°) and scanning of the measurement antenna. Maximized levels are noted at degree values of azimuth, measurement antenna height, and measurement antenna polarity.</p> |
| <p>Example Calculations</p> | <p>Measurement (dBμV) + Cable factor (dB) + Other (dB) + Antenna Factor (dB/m) = Corrected Reading (dBμV/m)</p> <p>Margin (dB) = Limit (dBμV/m) - Corrected Reading (dBμV/m)</p> <p>Example at 4000 MHz: Reading = 40 dBμV + 3.4 dB + 0.9 dB + 6.5 dB/m = 50.8 dBμV/m Average Limit = 20 log (500) = 54 dBμV/m Margin = 54 dBμV/m - 50.8 dBμV/m = 3.2 dB</p> |

Block Diagram



5.1.1 Radiated Emissions – Spurious and Fundamental

| | | | |
|--------------------|--|-----------------|-------------|
| Operator | Jon Dilley | QA | Shane Dock |
| Temperature | 23.3°C | R.H. % | 32.8% |
| Test Date | 3/28/2019, 4/4/2019 | Location | Chamber 3 |
| Requirement | FCC 15.225, FCC 15.209 RSS-210, RSS-GEN | Method | ANSI C63.10 |

Limits:

Spurious = 29.5 dBμV/m @ 30m

Fundamental = 84 dBμV/m @ 30m

Test Parameters

| | | | |
|-----------------------------|---|---------------------|--|
| Frequency | 1-1000 MHz | Distance | 3m |
| Detector(s) | Max peak hold with peak detector for plots. Quasi peak detector for final measurements. | Table height | 80cm |
| RBW | 1-30 MHz: 9 kHz 30-1000 MHz: 120 kHz | VBW | 1-30 MHz: 90 kHz 30-1000 MHz: 1.2 MHz |
| Notes (below 30 MHz) | Parallel Antenna data shown as worst case with respect to the limit. Parallel, skew, and horizontal antenna configurations tested. Emission measurements extrapolated to 30m. Fundamental meets the spurious limit and no emission was higher than the fundamental. | | |
| Example Calculations | Adjusting a 30m limit to a 3m limit = (30m limit) + 40*LOG(dnear/3) + 20*LOG(30/dnear) | | |

EUT Parameters

| | | | |
|--------------------|---|-------------|---------------|
| Input Power | 100VAC/60Hz, 240VAC/50Hz | Mode | Active Biopsy |
| EUT Radio | RFID Transmit and Receive with GammaTag | | |

Instrumentation



Date: 27-Mar-2019

Test: Radiated Emissions

Job: C-3148

PE: Zach Wilson

Customer: Leica Biosystems

Quote: 318353

| No. | Asset | Description | Manufacturer | Model | Serial | Cal Date | Cal Due Date | Equipment Status |
|-----|-----------|-------------------------------|-------------------|-------------|------------|-----------|--------------|---------------------|
| 1 | EE 960085 | Analyzer - EMI Receiver | Agilent | N9038A | MY51210148 | 4/24/2019 | 4/24/2020 | Active Calibration |
| 2 | AA 960128 | Antenna - Biconical | ETS Lindgren | 3110B | 00062899 | 5/16/2018 | 5/16/2019 | Active Calibration |
| 3 | AA 960163 | Antenna - Log Periodic | A.H. Systems, Inc | SAS-512-2 | 500 | 1/30/2018 | 1/30/2020 | Active Calibration |
| 4 | AA 960158 | Antenna - Double Ridge Horn | ETS Lindgren | 3117 | 109300 | 3/26/2018 | 3/26/2020 | Active Calibration |
| 5 | EE 960159 | Antenna - Low Noise Amplifier | Mini-Circuits | ZVA-213X-S+ | 691801732 | 3/26/2018 | 3/26/2020 | Active Calibration |
| 6 | LSC-300 | Cable | Chamber 3 Emiss - | - | - | 7/27/2018 | 7/27/2019 | Active Verification |
| 7 | LSC-500 | Cable | Chamber 5 Emiss - | - | - | 3/1/2018 | 3/1/2020 | Active Verification |

Tables

1-30 MHz Data

| Frequency (MHz) | dnear field | Limit Distance (m) | Antenna Polarity | Antenna Height (m) | Azimuth (degree) | Field Strength @ 3 m (dBµV/m) | FS Limit @ limit distance (dBµV/m) | Limit (dBµV/m) | Margin (dB) |
|-----------------|-------------|--------------------|------------------|--------------------|------------------|-------------------------------|------------------------------------|----------------|-------------|
| 4.9888 | 9.6 | 30 | Parallel | 1.00 | 0 | 28.8 | -1.3 | 29.5 | 30.8 |
| 5.0743 | 9.4 | 30 | Skew | 1.00 | 0 | 28.8 | -1.1 | 29.5 | 30.7 |
| 5.1824 | 9.2 | 30 | Perpendicular | 1.00 | 0 | 28.9 | -0.9 | 29.5 | 30.4 |
| 13.5577 | 3.5 | 30 | Parallel | 1.00 | 183 | 45.9 | 24.5 | 29.5 | 5.0 |
| 13.5604 | 3.5 | 30 | Perpendicular | 1.00 | 74 | 39.9 | 18.5 | 29.5 | 11.0 |
| 13.5623 | 3.5 | 30 | Skew | 1.00 | 302 | 37.0 | 15.6 | 29.5 | 14.0 |

30 -1000 MHz Data

| Frequency (MHz) | Antenna Polarity | Height (cm) | Azimuth (degree) | Quasi-Peak Reading (dBµV/m) | Quasi-Peak Limit (dBµV/m) | Quasi-Peak Margin (dB) | EUT Power |
|-----------------|------------------|-------------|------------------|-----------------------------|---------------------------|------------------------|-------------|
| 200.0 | Horizontal | 100 | 265 | 33.6 | 43.5 | 9.9 | 240VAC 50Hz |
| 200.0 | Vertical | 100 | 90 | 37.3 | 43.5 | 6.2 | 240VAC 50Hz |
| 70.2 | Vertical | 100 | 50 | 32.3 | 40.0 | 7.7 | 240VAC 50Hz |
| 800.0 | Horizontal | 166 | 40 | 36.6 | 46.0 | 9.4 | 240VAC 50Hz |
| 300.0 | Horizontal | 140 | 330 | 39.9 | 46.0 | 6.1 | 240VAC 50Hz |
| 300.0 | Vertical | 140 | 185 | 42.8 | 46.0 | 3.2 | 240VAC 50Hz |
| 320.0 | Horizontal | 100 | 52 | 38.5 | 46.0 | 7.5 | 100VAC 60Hz |
| 300.0 | Vertical | 140 | 191 | 44.0 | 46.0 | 2.0 | 100VAC 60Hz |
| 70.5 | Vertical | 100 | 45 | 31.0 | 40.0 | 9.0 | 100VAC 60Hz |
| 160.2 | Vertical | 100 | 0 | 31.3 | 43.5 | 12.2 | 100VAC 60Hz |
| 160.2 | Horizontal | 120 | 0 | 30.5 | 43.5 | 13.0 | 100VAC 60Hz |
| 200.0 | Vertical | 100 | 140 | 35.3 | 43.5 | 8.2 | 100VAC 60Hz |

Company: Devicor Medical Prodcuts, Inc.

Report: TR 318353 D

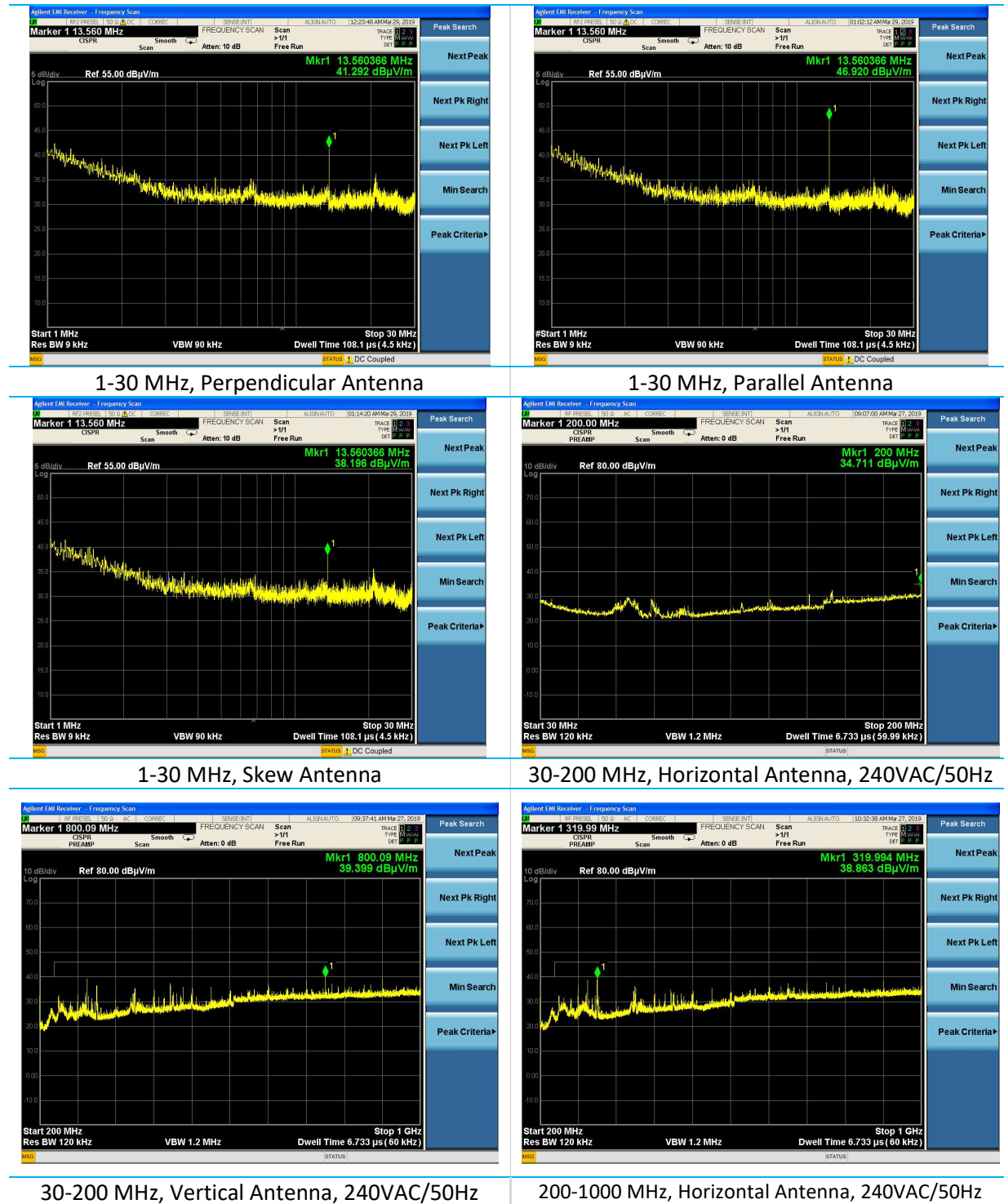
Job: C-3148

Name: Revolve Control Module with EX Holster

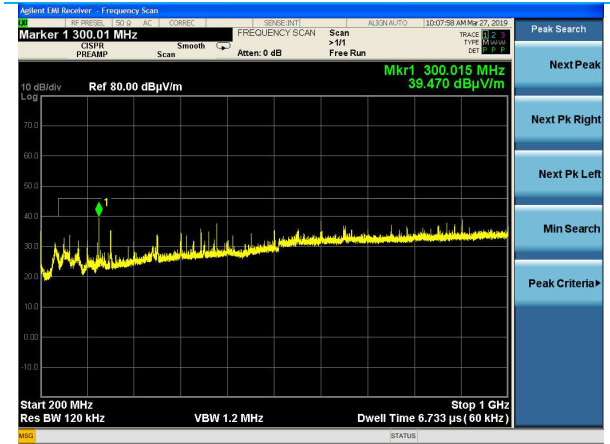
Model: MHEXH1

Serial: MHEXH1000001, MHEXH1000002

Plots



| | | |
|---|---------------|--|
| Company: Devicor Medical Prodcuts, Inc. | Page 12 of 23 | Name: Revolve Control Module with EX Holster |
| Report: TR 318353 D | | Model: MHEXH1 |
| Job: C-3148 | | Serial: MHEXH1000001, MHEXH1000002 |



200-1000 MHz, Vertical Antenna, 240VAC/50Hz

| | | |
|---|---------------|--|
| Company: Devicor Medical Prodcuts, Inc. | Page 13 of 23 | Name: Revolve Control Module with EX Holster |
| Report: TR 318353 D | | Model: MHEXH1 |
| Job: C-3148 | | Serial: MHEXH1000001, MHEXH1000002 |

5.1.2 Radiated Emissions – 99% Occupied Bandwidth

| | | | |
|--------------------|---------------------|-----------------|-----------------------|
| Operator | Zach Wilson | QA | Anthony Smith |
| Temperature | 23.3°C | R.H. % | 32.8% |
| Test Date | 5/15/2019 | Location | Environmental Chamber |
| Requirement | FCC 15.225, RSS-GEN | Method | ANSI C63.10 |

Test Parameters

| | | | |
|--------------------|-----------------------------|--------------|-------|
| Frequency | 13.56 MHz | Span | 5 kHz |
| Detector(s) | Peak detector with Max Hold | Sweep | Auto |
| RBW | 300 Hz | VBW | 1 kHz |

EUT Parameters

| | | | |
|--------------------|---|-------------|---------------|
| Input Power | 100VAC/60Hz | Mode | Active Biopsy |
| EUT Radio | RFID Transmit and Receive with GammaTag | | |

Instrumentation



Date: 16-May-2019 Test: OBW, Freq. Stab. Job: C-3148

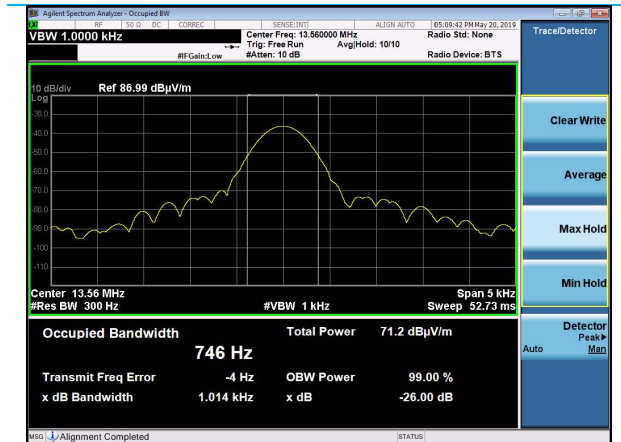
PE: Zach Wilson Customer: Leica Biosystems Quote: 318353

| No. | Asset | Description | Manufacturer | Model | Serial | Cal Date | Cal Due Date | Equipment Status |
|-----|------------|-------------------------|-------------------|-----------|------------|------------|--------------|---------------------|
| 1 | CC 000210C | Chamber - Environmental | Thermotron | S-8C | 28133 | 10/26/2018 | 10/26/2019 | Active Verification |
| 2 | EE 960087 | Analyzer - Spectrum | Agilent | N9010A | MY53400296 | 4/24/2019 | 4/24/2020 | Active Calibration |
| 3 | AA 960006 | Antenna - Active Loop | EMCO | 6502 | 9205-2753 | 8/28/2017 | 8/28/2019 | Active Calibration |
| 4 | AA 960172 | Cable | A.H. Systems, Inc | SAC-26G-1 | 387 | 6/4/2018 | 6/4/2019 | Active Verification |

Table

| |
|------------------------------------|
| 99% Occupied Bandwidth (Hz) |
| 746.0 |

Plots



99% Occupied Bandwidth

| | | |
|---|---------------|--|
| Company: Devicor Medical Prodcuts, Inc. | Page 15 of 23 | Name: Revolve Control Module with EX Holster |
| Report: TR 318353 D | | Model: MHEXH1 |
| Job: C-3148 | | Serial: MHEXH1000001, MHEXH1000002 |

5.1.3 Radiated Emissions – Frequency Stability

| | | | |
|--------------------|---------------------|-----------------|-----------------------|
| Operator | Zach Wilson | QA | Anthony Smith |
| Temperature | 23.3°C | R.H. % | 32.8% |
| Test Date | 5/15/2019 | Location | Environmental Chamber |
| Requirement | FCC 15.225, RSS-210 | Method | ANSI C63.10 |

Test Parameters

| | | | |
|--------------------|---|-------------------|-------------------------------|
| Frequency | 13.56 MHz | Temp Range | -20°C to 50°C |
| Detector(s) | Peak detector with Max Hold | Limit | ±0.01% of Operating Frequency |
| RBW | 30 Hz | VBW | 100 Hz |
| Notes | Voltage variation not possible as unit is powered off a data/power cable connected to console. Device will not function if this cable is changed. | | |

EUT Parameters

| | | | |
|--------------------|---|-------------|---------------|
| Input Power | 100VAC/60Hz | Mode | Active Biopsy |
| EUT Radio | RFID Transmit and Receive with GammaTag | | |

Instrumentation



Date: 16-May-2019 Test: OBW, Freq. Stab. Job: C-3148
 PE: Zach Wilson Customer: Leica Biosystems Quote: 318353

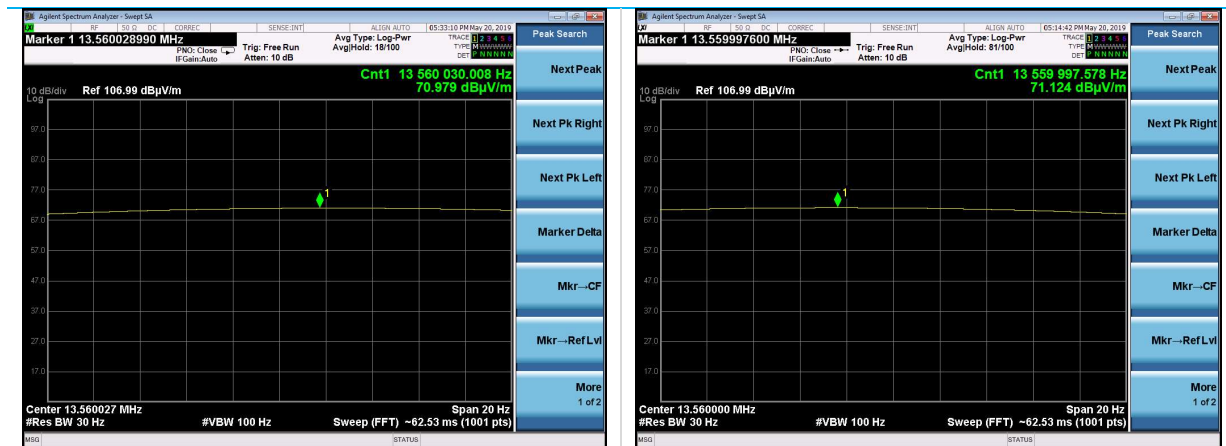
| No. | Asset | Description | Manufacturer | Model | Serial | Cal Date | Cal Due Date | Equipment Status |
|-----|------------|-------------------------|-------------------|-----------|------------|------------|--------------|---------------------|
| 1 | CC 000210C | Chamber - Environmental | Thermotron | S-8C | 28133 | 10/26/2018 | 10/26/2019 | Active Verification |
| 2 | EE 960087 | Analyzer - Spectrum | Agilent | N9010A | MY53400296 | 4/24/2019 | 4/24/2020 | Active Calibration |
| 3 | AA 960006 | Antenna - Active Loop | EMCO | 6502 | 9205-2753 | 8/28/2017 | 8/28/2019 | Active Calibration |
| 4 | AA 960172 | Cable | A.H. Systems, Inc | SAC-26G-1 | 387 | 6/4/2018 | 6/4/2019 | Active Verification |

| | | |
|---|---------------|--|
| Company: Devicor Medical Prodcuts, Inc. | Page 16 of 23 | Name: Revolve Control Module with EX Holster |
| Report: TR 318353 D | | Model: MHEXH1 |
| Job: C-3148 | | Serial: MHEXH1000001, MHEXH1000002 |

Table

| Temperature (°C) | Center Frequency (Hz) | Limit (±Hz) | Difference from Nominal (Hz) | Margin (Hz) |
|------------------|-----------------------|-------------|------------------------------|-------------|
| -20.0 | 13560030.0 | 1356.0 | 32.4 | 1323.6 |
| 20.0 | 13559997.6 | N/A | N/A | N/A |
| 50.0 | 13559994.5 | 1356.0 | 3.1 | 1352.9 |

Plots



-20°C Frequency Stability

20°C Frequency Stability



50°C Frequency Stability

5.2 AC Mains Conducted Emissions

A line impedance stabilization network (LISN) or artificial mains network (AMN) allows the emissions of the power supply conductors to be measured while isolating the EUT from the supply mains.

Description of Measurement

The AMN, cable, and other necessary measurement system correction factors are loaded onto the EMI receiver when the measurements are performed. The data is gathered and reported as the corrected values.

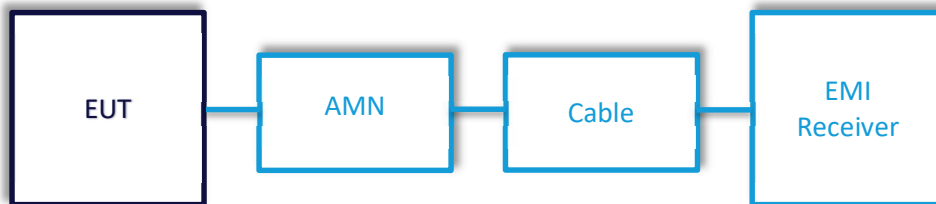
Maximum emissions are determined with a peak max hold trace then measurements at a selection of the highest points are made with quasi-peak and average detectors. Results are recorded and compared to limit for each line. (e.g. line and neutral)

Example Calculations

Measurement (dBμV) + Cable factor (dB) + Other (dB) = Corrected Reading (dBμV)

Margin (dB) = Limit (dBμV) - Corrected Reading (dBμV)

Block Diagram



5.2.1 AC Mains Conducted Emissions

| | | | |
|--------------------|-----------------------------|-----------------|-------------------------|
| Operator | Braden Smith, Anthony Smith | QA | Zach Wilson |
| Temperature | 21.1°C, 22.7°C | R.H. % | 44.4%, 44.1% |
| Test Date | 5/9/2019, 5/17/2019 | Location | Conducted Emissions GRP |
| Requirement | FCC 15.207, RSS-GEN | Method | ANSI C63.10, KDB-174176 |

Limits: FCC/ISED

| Frequency (MHz) | Quasi-peak Limit (dBµV) | Average Limit (dBµV) |
|-----------------|-------------------------|----------------------|
| 0.15-0.5 | 66 to 56* | 56 to 46* |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |

* Limit decreases with the logarithm of the frequency.

Test Parameters

| | | | |
|--------------------|--|---------------------|---------------|
| Frequency | 0.15-30 MHz | Distance | 40cm from VGP |
| Detector(s) | Max peak hold with peak detector for plots. Quasi-peak and average detectors for final measurements. | Table height | 80cm |
| RBW | 9 kHz | VBW | 90 kHz |
| Notes | Emissions tested with both antenna connected and disconnected. Antenna was disconnected to look at emissions near fundamental. Disconnection of antenna and replacement with a dummy load allowed per FCC/KDB-174176. Dummy load consists of a 1.8Ω resistor and 910nH inductor in series. | | |

Instrumentation



Date: 7-May-2019 Test: Conducted Emissions Job: C-3148
 PE: Zach Wilson Customer: Leica Biosystems Quote: 318353

| No. | Asset | Description | Manufacturer | Model | Serial | Cal Date | Cal Due Date | Equipment Status |
|-----|-----------|-------------------------|--------------|--------------------|------------------|------------|--------------|---------------------|
| 1 | EE 960089 | LISN | COM-POWER | LI-215A | 191943 | 4/22/2019 | 4/22/2020 | Active Calibration |
| 2 | EE 960088 | Analyzer - EMI Receiver | Agilent | N9038A | MY51210138 | 4/23/2019 | 4/23/2020 | Active Calibration |
| 3 | LSC-206 | Cable | Micro-Coax | UFB311A-0-0840-70U | 64639 224068-002 | 11/14/2018 | 11/14/2019 | Active Verification |

| | | |
|---|---------------|--|
| Company: Devicor Medical Prodcuts, Inc. | Page 19 of 23 | Name: Revolve Control Module with EX Holster |
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| Job: C-3148 | | Serial: MHEXH1000001, MHEXH1000002 |

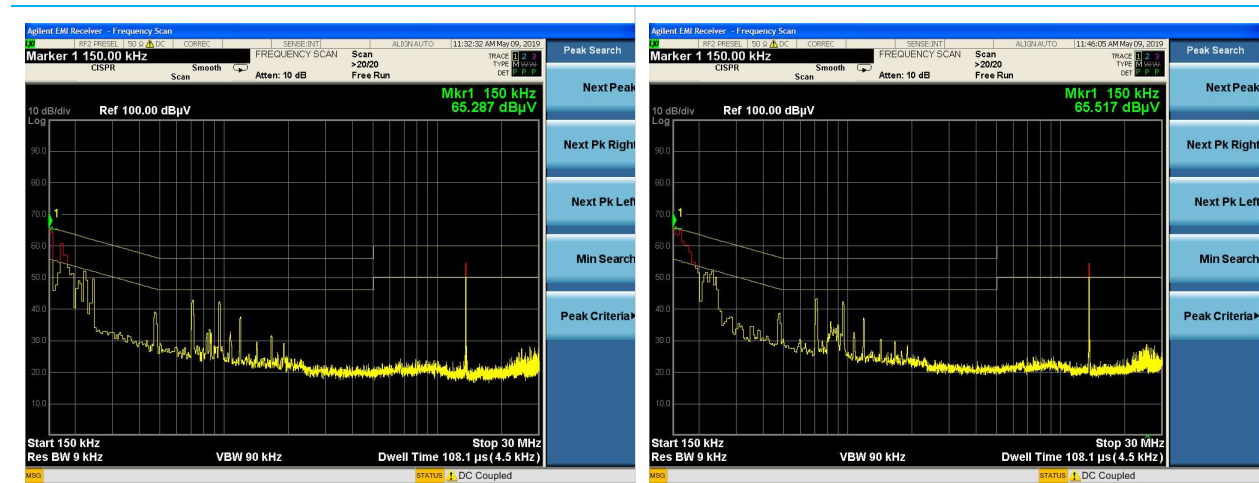
EUT Parameters

| | | | |
|--------------------|---|-------------|---------------|
| Input Power | 100VAC/60Hz, 240VAC/50Hz | Mode | Active Biopsy |
| EUT Radio | RFID Transmit and Receive with GammaTag | | |

Table

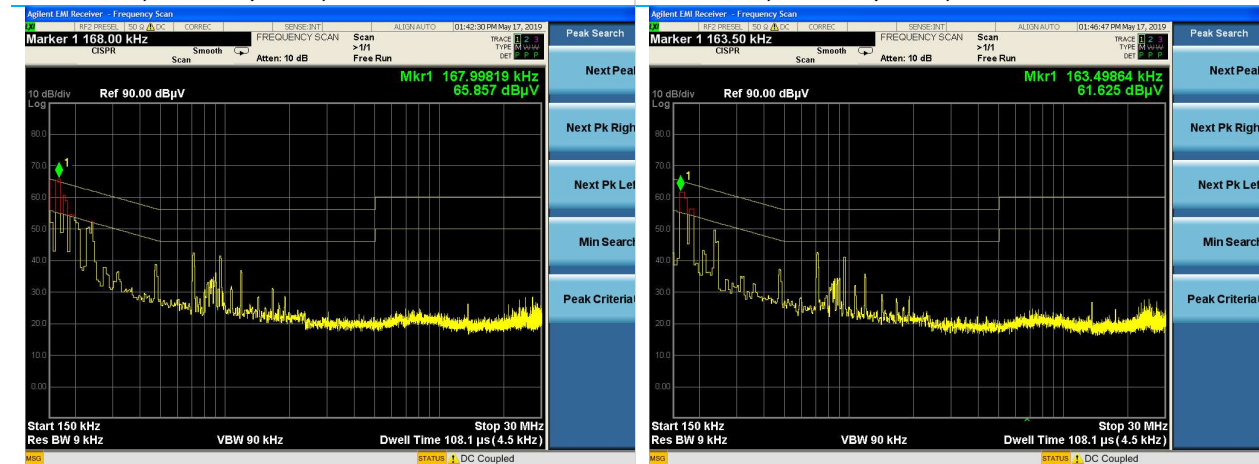
| Line | Frequency (MHz) | Peak Reading (dBμV) | Quasi-Peak Reading (dBμV) | Quasi-Peak Limit (dBμV) | Quasi-Peak Margin (dB) | Average Reading (dBμV) | Average Limit (dBμV) | Average Margin (dB) | Input Power |
|------|-----------------|---------------------|---------------------------|-------------------------|------------------------|------------------------|----------------------|---------------------|-------------|
| 1 | 0.168 | 65.9 | 56.5 | 65.1 | 8.6 | 29.2 | 55.1 | 25.9 | 100VAC/60Hz |
| 1 | 0.240 | 52.4 | 43.6 | 62.1 | 18.5 | 33.9 | 52.1 | 18.2 | 100VAC/60Hz |
| 1 | 0.712 | 42.8 | 41.5 | 56.0 | 14.5 | 38.2 | 46.0 | 7.8 | 100VAC/60Hz |
| 1 | 13.559 | 27.0 | 25.2 | 60.0 | 34.8 | 22.7 | 50.0 | 27.3 | 100VAC/60Hz |
| 2 | 0.164 | 64.7 | 55.6 | 65.3 | 9.7 | 29.2 | 55.3 | 26.1 | 100VAC/60Hz |
| 2 | 0.222 | 52.8 | 42.8 | 62.7 | 19.9 | 24.0 | 52.7 | 28.7 | 100VAC/60Hz |
| 2 | 0.712 | 43.4 | 42.0 | 56.0 | 14.0 | 38.8 | 46.0 | 7.2 | 100VAC/60Hz |
| 2 | 13.559 | 27.4 | 25.3 | 60.0 | 34.7 | 22.7 | 50.0 | 27.3 | 100VAC/60Hz |
| | | | | | | | | | |
| 1 | 0.150 | 55.1 | 49.1 | 66.0 | 16.9 | 33.3 | 56.0 | 22.7 | 240VAC/50Hz |
| 1 | 0.717 | 42.2 | 40.6 | 56.0 | 15.4 | 35.6 | 46.0 | 10.4 | 240VAC/50Hz |
| 1 | 0.951 | 41.2 | 39.3 | 56.0 | 16.7 | 34.1 | 46.0 | 11.9 | 240VAC/50Hz |
| 1 | 13.559 | 27.4 | 25.3 | 60.0 | 34.7 | 22.9 | 50.0 | 27.1 | 240VAC/50Hz |
| 2 | 0.155 | 54.4 | 47.1 | 65.8 | 18.7 | 34.0 | 55.8 | 21.8 | 240VAC/50Hz |
| 2 | 0.717 | 42.8 | 41.3 | 56.0 | 14.7 | 36.2 | 46.0 | 9.8 | 240VAC/50Hz |
| 2 | 0.951 | 41.6 | 39.3 | 56.0 | 16.7 | 33.9 | 46.0 | 12.1 | 240VAC/50Hz |
| 2 | 13.559 | 27.7 | 25.2 | 60.0 | 34.8 | 22.7 | 50.0 | 27.3 | 240VAC/50Hz |

Plots



Line 1, 100VAC/60Hz, Antenna Connected

Line 2, 100VAC/60Hz, Antenna Connected



Line 1, 100VAC/60Hz, Dummy Load

Line 2, 100VAC/60Hz, Dummy Load



Line 1, 100VAC/60Hz
Fundamental Emission with Dummy Load

Line 2, 100VAC/60Hz
Fundamental Emission with Dummy Load

Company: Devicor Medical Products, Inc.

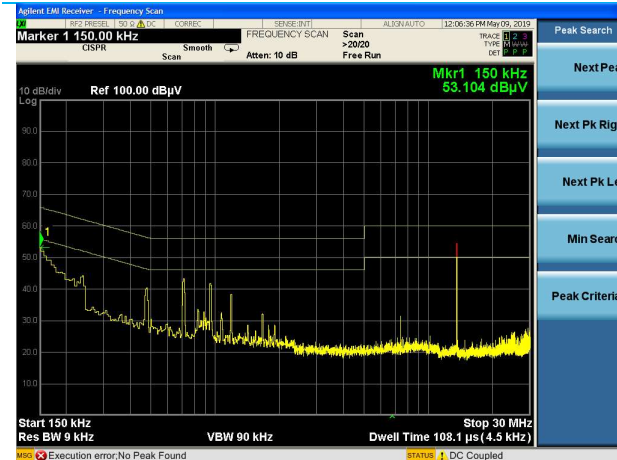
Report: TR 318353 D

Job: C-3148

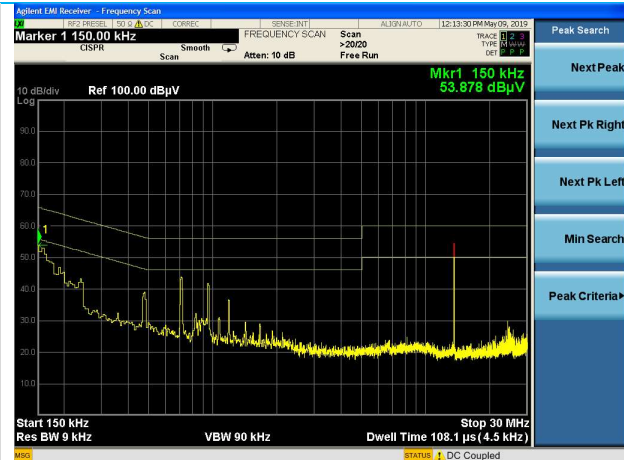
Name: Revolve Control Module with EX
Holster

Model: MHEXH1

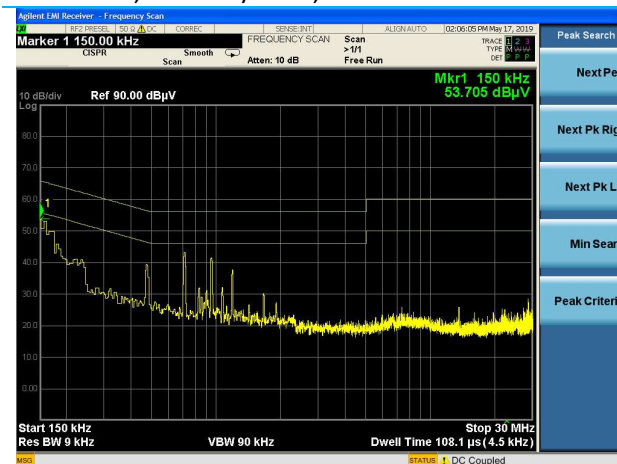
Serial: MHEXH1000001, MHEXH1000002



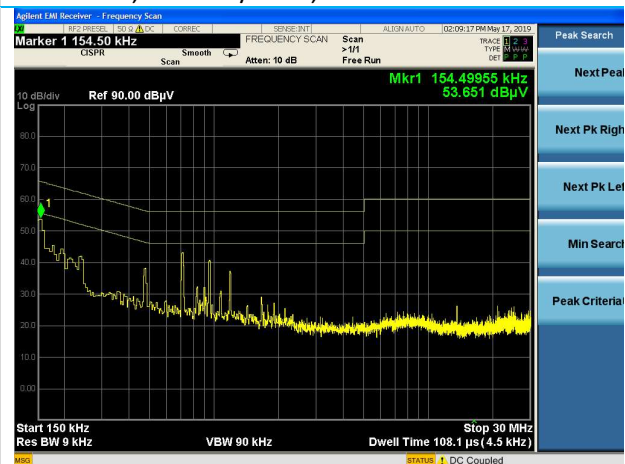
Line 1, 240VAC/50Hz, Antenna Connected



Line 2, 240VAC/50Hz, Antenna Connected



Line 1, 240VAC/50Hz, Dummy Load



Line 2, 240VAC/50Hz, Dummy Load



Line 1, 240VAC/50Hz
Fundamental Emission with Dummy Load



Line 2, 240VAC/50Hz
Fundamental Emission with Dummy Load

6 REVISION HISTORY

| Version | Date | Notes | Person |
|---------|-----------|--------------------------------------|-------------|
| v0.0 | 5-28-2019 | Initial Draft | Zach Wilson |
| v0.1 | 5-28-219 | Added information about the antenna. | Zach Wilson |
| v1.0 | 5-30-2019 | Revised after internal review | Zach Wilson |
| v2.0 | 3-5-2020 | Revised per TCB comments | Zach Wilson |

END OF REPORT