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1/06/2025

Devicor Medical Products Inc.
Kyle Wagner
300 E-Business Way, Fifth Floor
Cincinnati, OH 45241
USA

Dear Kyle Wagner,

Enclosed is the Radio test report for compliance testing of the Devicor Medical Products Inc. Mammotome AutoCore (Model: MAHC) as tested to the requirements of FCC Part 15.247 and RSS-247 Issue 3 for Intentional Radiators.

Thank you for using the services of Eurofins MET Labs. If you have any questions regarding these results or if MET can be of further service to you, please feel free to contact me.

Sincerely yours,
EUROFINS MET LABS

A handwritten signature in blue ink that reads "Nancy LaBrecque".

Nancy LaBrecque
Documentation Department

Reference: WIRA121643-WIRA121643-FCC247 RSS247_R2

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FHSS Test Report

for the

Devicor Medical Products Inc.
Mammotome AutoCore
Model: MAHC

Tested under

FCC Part 15.247 and RSS-247 Issue 3

For Intentional Radiators

(Limited to Radiated Spurious Emissions Per KDB996369 Module Integration Guide)



Bryan Taylor, Wireless Team Lead
Electromagnetic Compatibility Lab



Nancy LaBrecque
Documentation Department

Engineering Statement: The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules Part 15.247 under normal use and maintenance.



Matthew Hinojosa
EMC Manager, Austin Electromagnetic Compatibility Lab

Report Status Sheet

Revision	Report Date	Reason for Revision
Ø	12/05/2023	Initial Issue.
1	12/03/2024	Reviewer Comments
2	1/06/2025	Reviewer Comments

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List of Terms and Abbreviations

AC	Alternating Current
ACF	Antenna Correction Factor
Cal	Calibration
<i>d</i>	Measurement Distance
dB	Decibels
dB μ A	Decibels above one micro amp
dB μ V	Decibels above one micro volt
dB μ A/m	Decibels above one micro amp per meter
dB μ V/m	Decibels above one micro volt per meter
DC	Direct Current
E	Electric Field
DSL	Digital Subscriber Line
ESD	Electrostatic Discharge
EUT	Equipment Under Test
<i>f</i>	Frequency
FCC	Federal Communications Commission
GRP	Ground Reference Plane
H	Magnetic Field
HCP	Horizontal Coupling Plane
Hz	Hertz
IEC	International Electrotechnical Commission
kHz	kilohertz
kPa	kilopascal
kV	kilovolt
LISN	Line Impedance Stabilization Network
MHz	Megahertz
μ H	micro henry
μ	micro farad
μ s	micro seconds
NEBS	Network Equipment-Building System
PRF	Pulse Repetition Frequency
RF	Radio Frequency
RMS	Root-Mean-Square
TWT	Traveling Wave Tube
V/m	Volts per meter
VCP	Vertical Coupling Plane

I. Executive Summary

A. Purpose of Test

An EMC evaluation was performed to determine compliance of the Devicor Medical Products Inc. MAHC, with the requirements of FCC Part 15.247 and RSS-247 Issue 3. Devicor Medical Products Inc. should retain a copy of this document which should be kept on file for at least two years after the manufacturing of the MAHC, has been **permanently** discontinued.

B. Executive Summary

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 15.247 and RSS-247 Issue 3, in accordance with Devicor Medical Products Inc. purchase order number D1253750. All tests were conducted using measurement procedures ANSI C63.4-2014 and ANSI C63.10-2013.

FCC Reference 47 CFR Part 15.247:2005	IC Reference RSS-247 Issue 3 RSS-GEN Issue 5	Description	Compliance
Title 47 of the CFR, Part 15 §15.247(d); §15.209; §15.205	RSS-GEN (6.13), (8.9), & (8.10)	Radiated Spurious Emissions Requirements	Compliant

Note: The Mammutome AutoCore integrates a preapproved BLE transmitter module (nBlue BR-LE5.0-S1A). Therefore the FCC Part 15.247 and RSS-247 testing was limited to radiated spurious emissions (per the KDB996369 module integration guide.) The testing of the nBlue BR-LE5.0-S1A in stand alone mode were performed on the module itself.

Table 1. Executive Summary

II. Equipment Configuration

A. Overview

Eurofins MET Labs was contracted by Devicor Medical Products Inc. to perform testing on the MAHC, under Devicor Medical Products Inc. purchase order number D1253750.

This document describes the test setups, test methods, required test equipment, and the test limit criteria used to perform compliance testing of the Devicor Medical Products Inc. MAHC.

The results obtained relate only to the item(s) tested.

Product Name:	Mammotome AutoCore	
Model(s) Tested:	MAHC	
Model(s) Covered:	MAHC	
FCCID:	2ATMT-MAHC01	
Module FCCID:	XDULE50-S1A	
Module ICID:	8455A-LE5S1	
Sample Number:	22609-2	
EUT Specifications:	Primary Power: Battery	
	Type of Modulations:	BLE
	Equipment Code:	DTS
	EUT Frequency Ranges:	2402-2480 MHz
Analysis:	The results obtained relate only to the item(s) tested.	
Environmental Test Conditions:	Temperature: 15-35° C	
	Relative Humidity: 30-60%	
	Barometric Pressure: 860-1060 mbar	
Evaluated by:	Bryan Taylor	
Report Date(s):	1/06/2025	

Table 2. EUT Summary Table

B. References

CFR 47, Part 15, Subpart C	Federal Communication Commission, Code of Federal Regulations, Title 47, Part 15: General Rules and Regulations, Allocation, Assignment, and Use of Radio Frequencies
RSS-247, Issue 3	Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices
RSS-GEN, Issue 5, March 2019	General Requirements and Information for the Certification of Radio Apparatus
ANSI C63.4:2014	Methods and Measurements of Radio-Noise Emissions from Low-Voltage Electrical And Electronic Equipment in the Range of 9 kHz to 40 GHz
ISO/IEC 17025:2017	General Requirements for the Competence of Testing and Calibration Laboratories
ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

Table 3. References

C. Test Site

All testing was performed at Eurofins MET Labs, 13501 McCallen Pass, Austin, TX 78753. All equipment used in making physical determinations is accurate and bears recent traceability to the National Institute of Standards and Technology.

Radiated Emissions measurements were performed in a 10 meter semi-anechoic chamber (equivalent to an Open Area Test Site). In accordance with §2.948(a)(3), a complete site description is contained at MET Laboratories.

ISED Lab Info:

CAB Identifier: US0004
Company Number: 2043D

FCC Lab Info:

Designation Number: US1127

D. Measurement Uncertainty

Test Method	Typical Expanded Uncertainty	K	Confidence Level
RF Frequencies	±4.52 Hz	2	95%
RF Power Conducted Emissions	±2.97 dB	2	95%
RF Power Radiated Emissions	±2.95 dB	2	95%

Table 4. Uncertainty Calculations Summary

E. Description of Test Sample

Name of EUT/Model:	Mammotome AutoCore / MAHC
Description of EUT and its intended use:	The Mammotome AutoCore Single Insertion Core Biopsy System is a single insertion, automated, spring-loaded core needle device. The system is used to take breast biopsy samples. The system consists of a reusable motorized battery-powered holster, charging base, and disposable probes. The intended user is a breast surgeon in a hospital setting. The Mammotome AutoCore integrates a preapproved BLE transmitter module (nBlue BR-LE5.0-S1A).
Selected Operation Mode(s):	During the testing the BLE radio was transmitting continuously in FHSS mode at maximum output power (+8dBm) while paired with a laptop computer running the AutoCore Dashboard 0.1.0 software.
Rationale for the selection of the Operation Mode(s):	The selected mode of operation allowed for measurement of the fundamental as well as spurious emissions.
External Support Software:	AutoCore Dashboard 0.1.0
Size (HxWxD)	8" x 2" x 1"
Test Sample Number:	22609-14

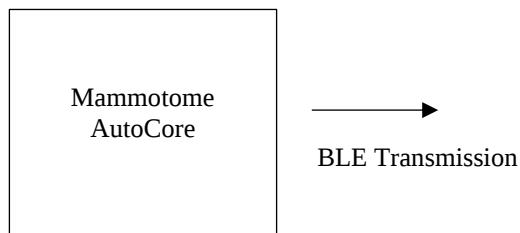


Figure 1. Block Diagram of Test Configuration

F. Support Equipment

Name/Description	Manufacturer	Model Number	Customer Supplied Calibration Data
Laptop Computer	Lenovo	Thinkpad	Not a calibrated item
BLE USB Dongle	BlueRadios	BR-MUSB-LE5.0-S1A	Not a calibrated item

Table 5. Support Equipment

G. Ports and Cabling Information

Ref. ID	Port name on EUT	Cable Description or reason for no cable	Qty	Length as tested (m)	Max Length (m)	Shielded? (Y/N)	Termination Box ID & Port Name
There were no cables associated with the selected operating mode							

Table 6. Ports and Cabling Information

H. Mode of Operation

During the testing the BLE radio was transmitting its normal FHSS signal.

I. Method of Monitoring EUT Operation

A spectrum analyzer was used to confirm proper transmitter operation.

J. Modifications

a) Modifications to EUT

No modifications were made to the EUT.

b) Modifications to Test Standard

No modifications were made to the test standard.

K. Disposition of EUT

The test sample including all support equipment submitted to the Electro-Magnetic Compatibility Lab for testing was returned to Devicor Medical Products Inc. upon completion of testing.

III. Electromagnetic Compatibility Criteria for Intentional Radiators

Electromagnetic Compatibility Criteria for Intentional Radiators

§ 15.247(d) Radiated Spurious Emissions Requirements and Band Edge

Test Requirements: §15.247(d); §15.205: Emissions outside the frequency band.

§15.247(d): In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in § 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a).

§15.205(a): Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090–0.110-----	16.42–16.423	399.9–410	4.5–5.15
¹ 0.495–0.505-----	16.69475–16.69525	608–614	5.35–5.46
2.1735–2.1905-----	16.80425–16.80475	960–1240	7.25–7.75
4.125–4.128-----	25.5–25.67	1300–1427	8.025–8.5
4.17725–4.17775-----	37.5–38.25	1435–1626.5	9.0–9.2
4.20725–4.20775-----	73–74.6	1645.5–1646.5	9.3–9.5
6.215–6.218-----	74.8–75.2	1660–1710	10.6–12.7
6.26775–6.26825-----	108–121.94	1718.8–1722.2	13.25–13.4
6.31175–6.31225-----	123–138	2200–2300	14.47–14.5
8.291–8.294-----	149.9–150.05	2310–2390	15.35–16.2
8.362–8.366-----	156.52475–156.52525	2483.5–2500	17.7–21.4
8.37625–8.38675-----	156.7–156.9	2655–2900	22.01–23.12
8.41425–8.41475-----	162.0125–167.17	3260–3267	23.6–24.0
12.29–12.293-----	167.72–173.2	3332–3339	31.2–31.8
12.51975–12.52025-----	240–285	3345.8–3358 36.	43–36.5
12.57675–12.57725-----	322–335.4	3600–4400	(²)

Table 7. Restricted Bands of Operation

¹ Until February 1, 1999, this restricted band shall be 0.490 – 0.510 MHz.

² Above 38.6

Test Requirement(s): § 15.209 (a): Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in Table 8.

Frequency (MHz)	§ 15.209(a), Radiated Emission Limits (dBµV) @ 3m
30 - 88	40.00
88 - 216	43.50
216 - 960	46.00
Above 960	54.00

Table 8. Radiated Emissions Limits Calculated from FCC Part 15, § 15.209 (a)

Test Procedures: Testing was performed per Per KDB996369 D04, Module Integration Guide Section 3.0 (Host Product Testing Guidance). This procedure applies to host products which are integrating pre-approved transmitter modules in order to check for any harmonics, intermodulation products, or intermixing signals that may exceed the applicable limits for the specific radio type. For the specific transmitters installed on this device the FCC restricted band limits from 15.205 and general field strength limits from 15.209 are applicable.

Test Results: The EUT was compliant with the Radiated Spurious Emission limits of § 15.247(d).

Test Engineer(s): Bryan Taylor

Test Date(s): 10/10/2022

Radiated Spurious Emissions Test Results

Frequency [MHz]	QPK Level [dBμV/m]	QPK Limit [dBμV/m]	QPK Margin [dB]	Correction [dB]	Polarization	Azimuth [deg]	Antenna Height [m]	Meas. BW [kHz]	Result
73.140	24.09	40.00	15.91	-13.73	H	228	1.85	120.000	Pass
73.470	24.17	40.00	15.83	-13.72	V	190	1.08	120.000	Pass
74.910	21.55	40.00	18.45	-13.63	H	270	1.71	120.000	Pass
121.470	22.37	43.52	21.15	-7.57	V	35	1.11	120.000	Pass
166.050	15.41	43.52	28.11	-9.56	H	239	1.58	120.000	Pass
401.730	24.99	46.02	21.03	-2.48	V	100	2.14	120.000	Pass

Figure 2. Transmitter Unwanted Emissions in the Spurious Domain, Test Results Below 1GHz

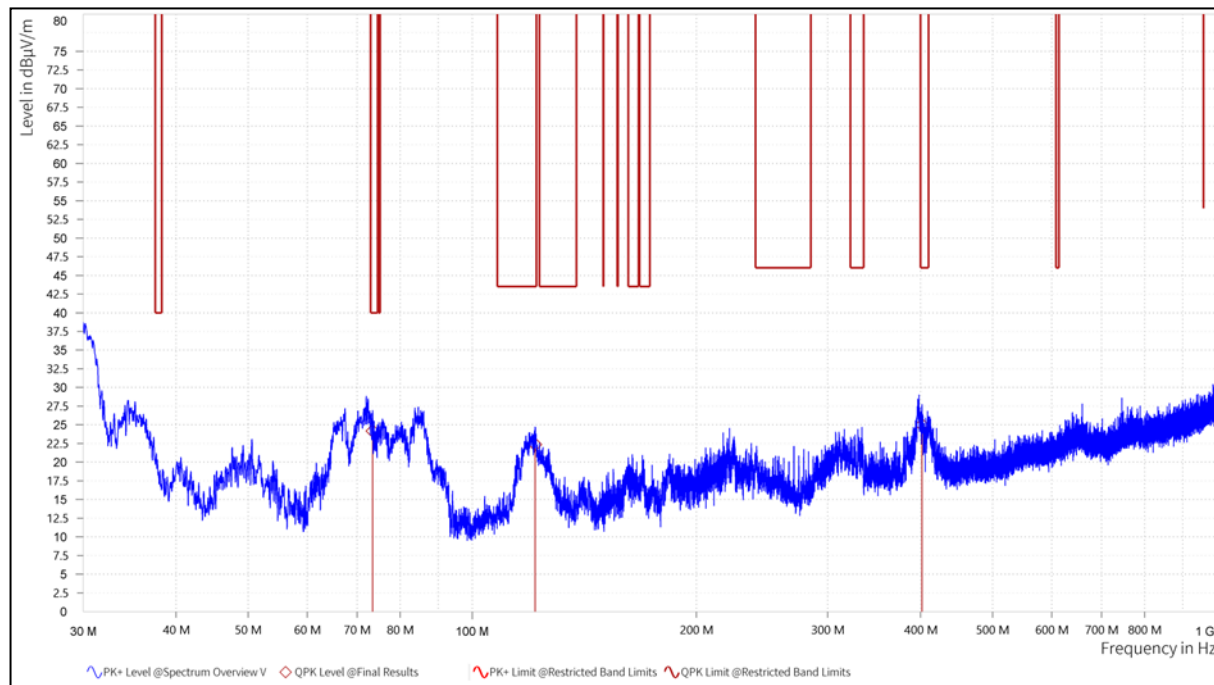


Figure 3: Transmitter Emissions in the Spurious Domain, Vertical Polarity

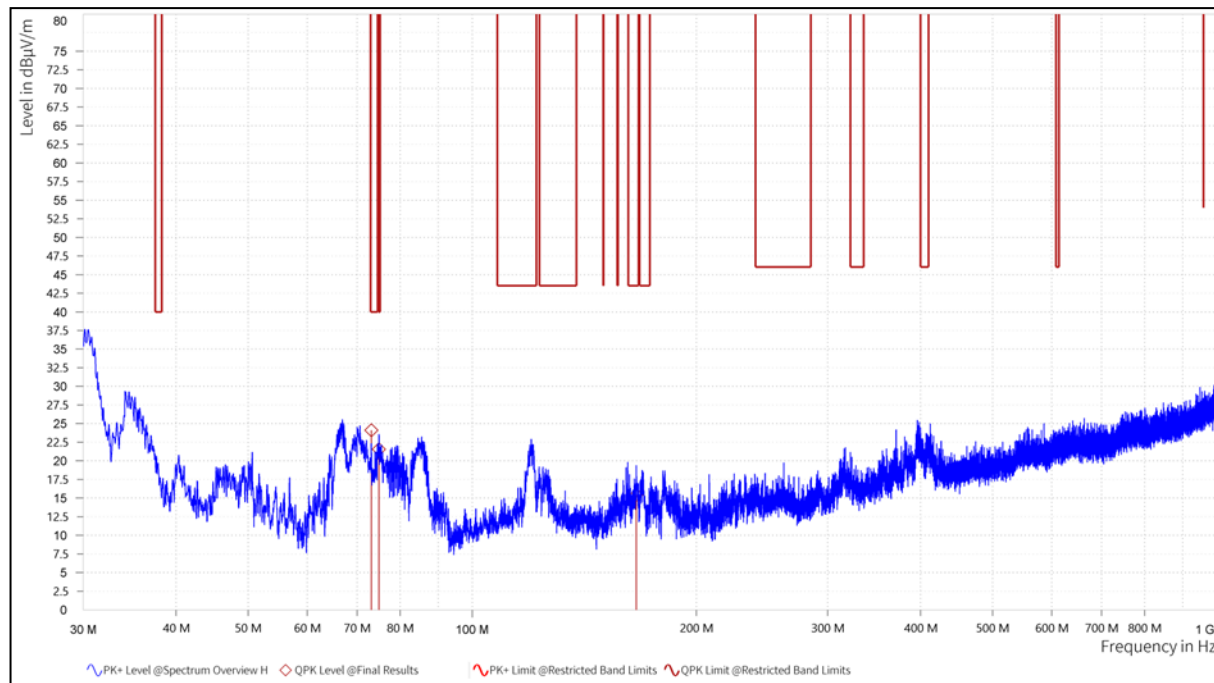


Figure 4: Transmitter Emissions in the Spurious Domain, Horizontal Polarity

Figure 5: Transmitter Emissions in the Spurious Domain, Test Results Above 1GHz



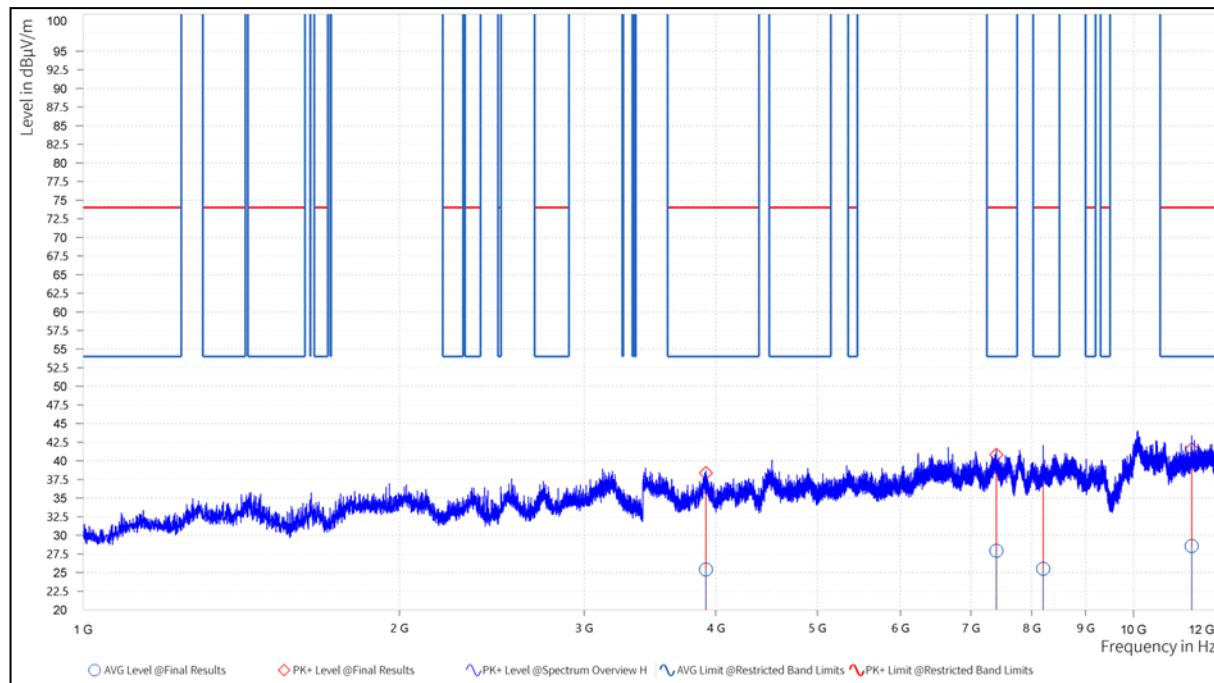


Figure 7: Transmitter Emissions in the Spurious Domain, Horizontal Polarity

IV. Test Equipment

Test Equipment

Calibrated test equipment utilized during testing was maintained in a current state of calibration per the requirements of ISO/IEC 17025:2017.

Table 9. Test Equipment List

Met Asset #	Equipment	Manufacturer	Model	Last Cal Date	Cal Due Date
1A1083	Test Receiver	Rohde & Schwarz	ESU40	10/14/2022	10/14/2023
1A1147	Bilog Antenna	Sunol Sciences Corp	JB3	2/14/2022	2/14/2024
1A1047	Horn Antenna (1-18ghz)	ETS - Lindgren	3117	6/16/2022	6/16/2024
1A1088	Pre-Amp	Rohde & Schwarz	TS-PR1	See Note	
1A1080	Multi-Device Controller	ETS-Emco	2090	See Note	
1A1180	Pre-Amp	Miteq	AMF-7D-01001800-22-10P	See Note	
1A1106	10m Semi-Anechoic Chamber	Lindgren	N/A	See Note	

Note: Functionally tested equipment is verified using calibrated instrumentation at the time of testing.

End of Report