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Report Reference ID:	REP008103
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Test specification:	RSS-102 Issue 5 March 2015 + Amendment 1 (2021) SPR-002 Issue 2 October 2022
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Applicant:	Nalu Medical
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Company name	Nemko USA Inc.
Address	2210 Faraday Ave, Suite 150
City	Carlsbad
State	California
Postal code	92008
Country	USA
Telephone	+1 760 444 3500
Website	www.nemko.com
FCC Site Number	Test Firm Registration Number: 392943; Designation Number: US5058
ISED Test Site	2040B-3

	Name and title	Date
Tested by:	Chenhao Ma Wireless test engineer	2023-03-29
Reviewed by:	James Cunningham, EMC/WL Manager 	2023-04-10

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Table of contents

SECTION 1: REPORT SUMMARY	6
SECTION 2: EQUIPMENT UNDER TEST	7
2.1 Identification of equipment under test (EUT)	7
2.2 Accessories and support equipment	7
2.3 EUT description	7
2.4 Technical specifications of the EUT	8
2.5 Applicant details	8
2.6 Certification details	9
2.7 EUT setup diagram	9
2.8 Operation of the EUT during testing	9
2.9 Modifications incorporated in the EUT	9
2.10 Operation of the EUT during testing	9
2.11 Modifications incorporated in the EUT	9
2.12 EUT setup	9
SECTION 3: TEST CONDITIONS	11
3.1 Deviations from laboratory tests procedures	11
3.2 Test conditions, power source and ambient temperatures	11
3.3 Measurement uncertainty	11
3.4 Test equipment	12
SECTION 4: RESULT SUMMARY	13
4.1 Summary of test results	13
APPENDIX A: TEST RESULTS	14

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	Report Number: REP008103-3TRFWL
	Specification: SPR-002 Issue 2 October 2022

Direct Measurement Against the RSS-102 Nerve Stimulation RLs	14
APPENDIX B: EUT PHOTOS	17

	Report Number: REP008103-3TRFWL
	Specification: SPR-002 Issue 2 October 2022

Section 1: Report summary

This report contains an assessment of apparatus against specifications based upon tests carried out on samples submitted at Nemko

Test specification:

RSS-102 Issue 5 March 2015 + Amendment 1 (2021)
SPR-002 Issue 2 October 2022


Compliance status:	Complies
Exclusions:	None
Non-compliances:	None
Report release history:	Original release
Test location:	RFI Chamber

The date of initial receipt of samples and the date of issue of the report.

Receipt date: 2023-03-08 Issue date: 2023-04-10

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	Report Number: REP008103-3TRFWL
	Specification: SPR-002 Issue 1 September 2016

Section 2: Equipment under test

2.1 Identification of equipment under test (EUT)

The following information identifies the EUT under test:

Type of equipment:	Wireless charger
Product marketing name (PMN):	Charging System for Wearable Medical Device
Models (HVIN) :	BSC
Serial number:	Not provided
Nemko sample number:	PRJ0029662
IC:	None
Date of receipt:	2023-03-08


2.2 Accessories and support equipment

The following information identifies accessories used to exercise the EUT during testing:

- None

2.3 EUT description

- Device is used to charge a medical wearable medical device
- Charging occurs via a Qi link and communication via NFC
- Device includes BLE and WiFi, but assumes use of approved module (2AEMI-P2)
- Charger powered via USB port
- Device includes one Qi Radio and one NFC Radio. This is what Nemko will test and certify
- Assume Qi is charge only (FCC Part 18)

	Report Number: REP008103-3TRFWL
	Specification: SPR-002 Issue 1 September 2016

Section 2: Equipment under test, continued


2.4 Technical specifications of the EUT

Product name	Charging System for Wearable Medical Device
Model	43012
Variant(s)	None
Serial number	None
Part number	None
Power requirements	120 VAC
Description/theory of operation	NFC: Data transfer via near field load modulation.

2.5 Applicant details

Applicant (certificate holder)	Name:	Nalu Medical Inc
	Address:	2320 Faraday Ave. Ste.100
	City:	Carlsbad
	Province/State:	CA
	Post code:	92008
	Country:	United States
Manufacturer (partly responsible for design and production specifications)	Name:	Nalu Medical Inc
	Address:	2320 Faraday Ave. Ste.100
	City:	Carlsbad
	Province/State:	CA
	Post code:	92008
	Country:	United States


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	Report Number: REP008103-3TRFWL
	Specification: SPR-002 Issue 1 September 2016

Section 2: Equipment under test, continued	
2.6 Certification details	
Services requested Type of assessment	<input checked="" type="checkbox"/> New certification <input type="checkbox"/> New family <input type="checkbox"/> Re-assessment <input type="checkbox"/> Existing family <input type="checkbox"/> Multiple listing
2.7 EUT setup diagram	
See 2.12	
2.8 Operation of the EUT during testing	
Continuous transmission mode	
2.9 Modifications incorporated in the EUT	
None	
2.10 Operation of the EUT during testing	
Continuous transmission mode	
2.11 Modifications incorporated in the EUT	
None	
2.12 EUT setup	

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	Report Number: REP008103-3TRFWL
	Specification: SPR-002 Issue 1 September 2016

Section 3: Test conditions

3.1 Deviations from laboratory tests procedures


No deviations were made from laboratory test procedures.

3.2 Test conditions, power source and ambient temperatures

Normal temperature, humidity and air pressure test conditions	Temperature: 15–30 °C Relative humidity: 20–75 % Air pressure: 860–1060 hPa When it is impracticable to carry out tests under these conditions, a note to this effect stating the ambient temperature and relative humidity during the tests shall be recorded and stated.
Power supply range:	The normal test voltage for equipment to be connected to the mains shall be the nominal mains voltage. For the purpose of the present document, the nominal voltage shall be the declared voltage, or any of the declared voltages $\pm 5\%$, for which the equipment was designed.

3.3 Measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report according to CISPR 16-4-2 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4-2: Uncertainties, statistics and limit modelling – Uncertainty in EMC measurements” and is documented in the Nemko. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device

	Report Number: REP008103-3TRFWL
	Specification: SPR-002 Issue 1 September 2016

Section 3: Test conditions, continued

Test	Field	Frequency range	Measurement Uncertainty	Notes
Field measurement	Electric	0.003÷30 MHz	26 %	(1)
		0.03÷40 GHz	26 %	
	Magnetic	0.003÷30 MHz	26 %	


NOTES:

(1) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor $k = 2$ which has been derived from the assumed normal probability distribution with infinite degrees of freedom and for a coverage probability of 95 %;

3.4 Test equipment

Equipment	Manufacturer	Model	Serial N°
Electric and Magnetic field analyzer	Narda	EHP-200A	170WX90208

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	Report Number: REP008103-3TRFWL
	Specification: SPR-002 Issue 1 September 2016

Section 4: Result summary

4.1 Summary of test results

The column headed 'Required' indicates whether the associated clauses were invoked for the apparatus under test. The following abbreviations are used:

N	No : not applicable / not relevant.
Y	Yes : Mandatory i.e. the apparatus shall conform to these tests.
N/T	Not Tested, mandatory but not assessed. (See report summary)

Clause	Test description	Verdict
RSS-Gen, Issue 4 tests result summary		
6.1.1	Direct Measurement Against the RSS-102 Nerve Stimulation RLs	P

Notes:

Possible test case verdicts:

test case does not apply to the test object: N/A (Not applicable)

test object does meet the requirement: P (Pass)

test object does not meet the requirement: F (Fail)

Appendix A: Test results

Direct Measurement Against the RSS-102 Nerve Stimulation RLs

Direct Measurement Against the RSS-102 Nerve Stimulation RLs

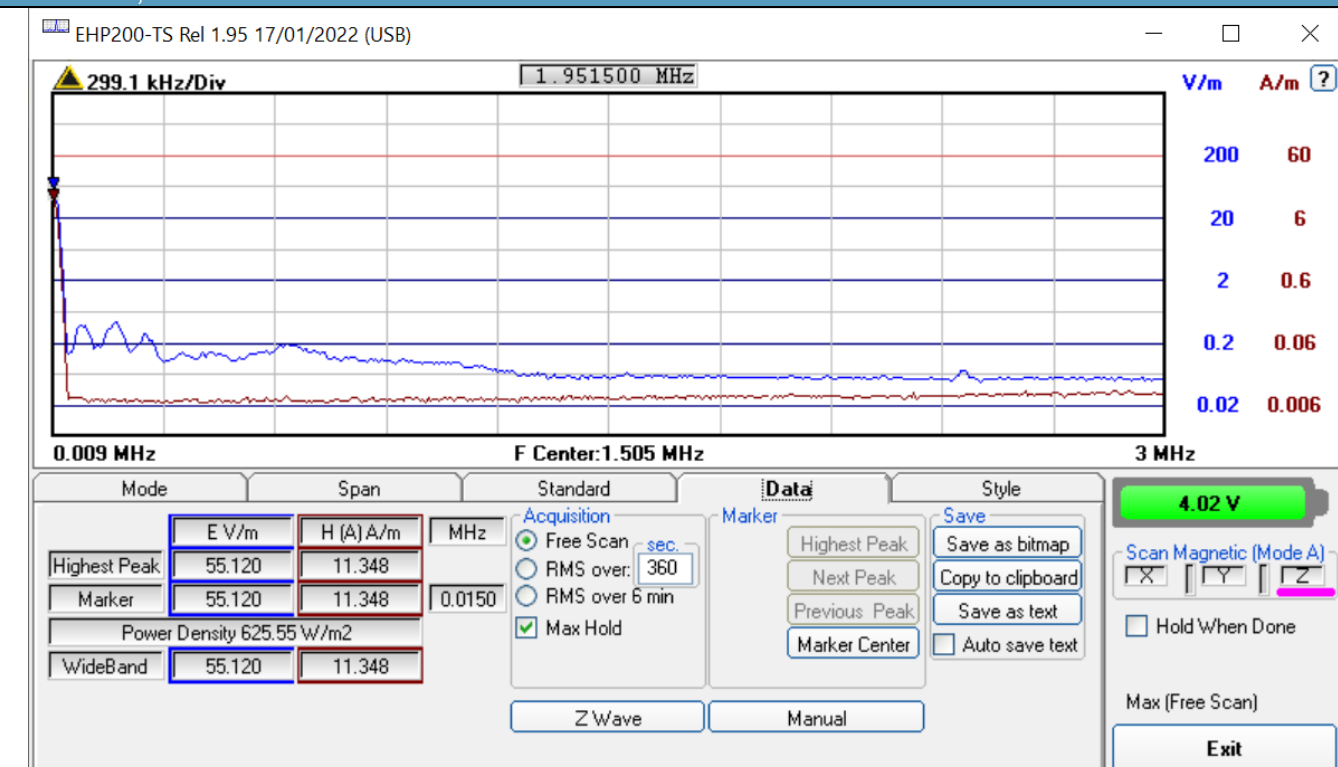
Table 4: RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)				
Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m ²)	Reference Period (minutes)
0.003-10 ²¹	83	90	-	Instantaneous*
0.1-10	-	0.73/ <i>f</i>	-	6**
1.1-10	87/ <i>f</i> ^{0.5}	-	-	6**
10-20	27.46	0.0728	-2	6
20-48	58.07/ <i>f</i> ^{0.25}	0.1540/ <i>f</i> ^{0.25}	8.944/ <i>f</i> ^{0.5}	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 <i>f</i> ^{0.3417}	0.008335 <i>f</i> ^{0.3417}	0.02619 <i>f</i> ^{0.8834}	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ <i>f</i> ^{1.2}
150000-300000	0.158 <i>f</i> ^{0.5}	4.21 x 10 ⁻⁴ <i>f</i> ^{0.5}	6.67 x 10 ⁻⁵ <i>f</i>	616000/ <i>f</i> ^{1.2}
<p>Note: <i>f</i> is frequency in MHz.</p> <p>* Based on nerve stimulation (NS).</p> <p>** Based on specific absorption rate (SAR).</p>				

Test date: 2023-03-29

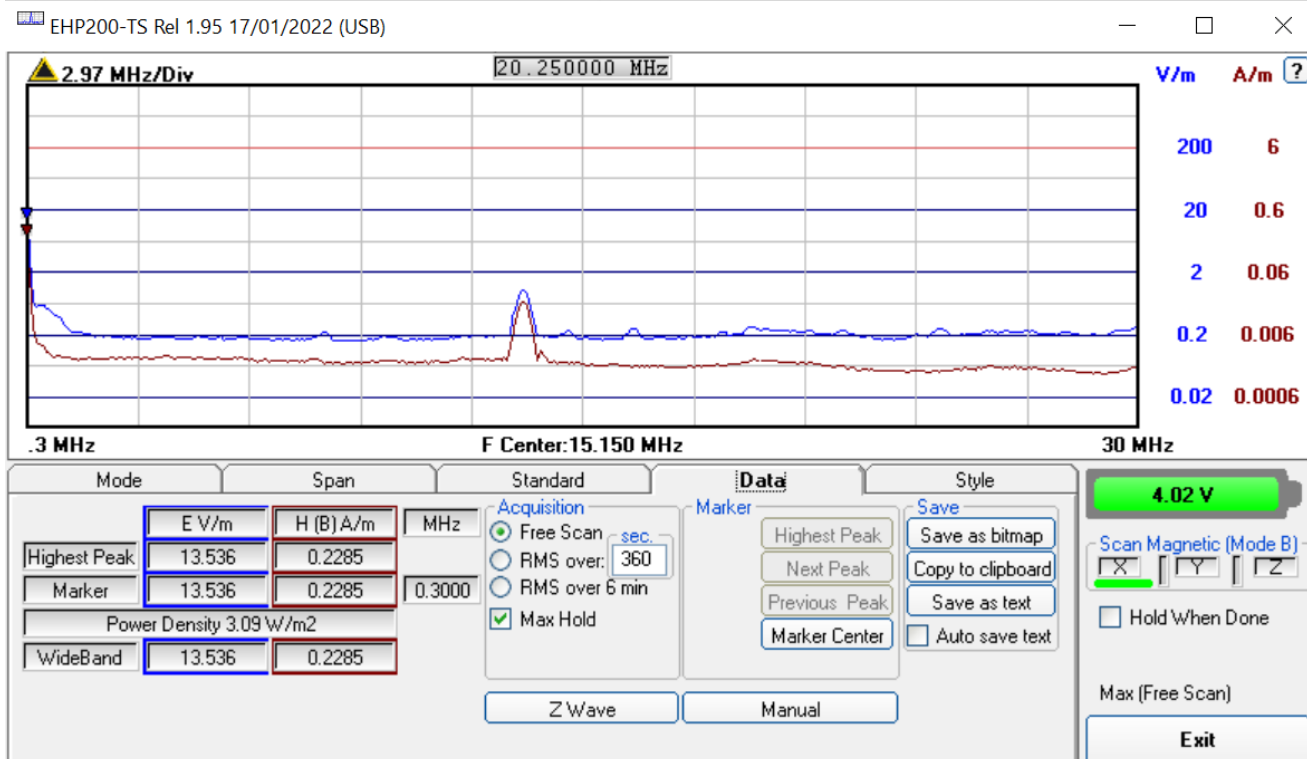
Test results: Pass

Direct Measurement Against the RSS-102 Nerve Stimulation RLs, continued

Test data, continued



Graph 1. Dual Band A, 9 kHz – 3 MHz



Graph 2. Dual Band B, 300 kHz – 30 MHz
Worst case was shown: maximum value measured

Whole Body / Torso / Head Evaluation									
Measurement Point ⁽²⁾	Relaxation Factor	Electric Field				Magnetic Field			
		Field measured (V/m r.m.s.) ⁽¹⁾	Limit (V/m r.m.s.)	Margin (V/m r.m.s.)	Result	Field measured (A/m r.m.s.) ⁽¹⁾	Limit (A/m r.m.s.)	Margin (A/m r.m.s.)	Result
1	1.0	55.12	83.0	27.88	P	11.348	90.0	78.652	P

⁽¹⁾ Measurement distance 20 cm;
⁽²⁾ Worst measurement point

Appendix B: EUT photos



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