



SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

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Report No.: SZEM180900845202
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Human Exposure Report

Application No.: SZEM1809008452CR
Applicant: Navico Inc.
Address of Applicant: 4500 S. 129th East Avenue, Ste. 200, Tulsa, Oklahoma, 74134 United States
Manufacturer: Navico Auckland Limited
Address of Manufacturer: Arrenway Drive, Rosedale, Auckland, 0632 New Zealand
Factory: Shenzhen Hytera Communications Corporation Limited
Address of Factory: Hytera Techology Park, Baolong Industrial City, Longgang District, Shenzhen, China

Equipment Under Test (EUT):
EUT Name: INDUCTIVE CHARGER CRADLE FOR HS40/H60
Model No.: BC-12
Trade Mark: B&G, SIMRAD
FCC ID: RAYVHFBC12
Standards: 47 CFR Part 1, Subpart I, Section 1.1310
Date of Receipt: 2018-09-20
Date of Test: 2018-09-25 to 2018-10-19
Date of Issue: 2018-10-23

Test Result :	Pass*
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* In the configuration tested, the EUT complied with the standards specified above



Keny Xu

EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

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2 General Information

2.1 Details of E.U.T.

Power supply:	For Cradle Charger: Input: DC 12V, 500mA
Cable:	DC cable: longer than 300cm unshielded
Sample Type:	Fixed device
Operation Frequency:	131.25KHz-176.60KHz
Modulation Type:	Load modulation
Antenna Type:	Inductive Loop Coil Antenna
Remark:	This device has been tested the worst status of full load and the device has been tested with mobile phone built-in battery level at 5%, 50% and 100%.

2.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
DC power	ZHAOXIN	RXN-305D	REF. No.SEA2700
Martine VHF Radio	Provided by client	RS40	---
E-loading	provided by SGS	N/A	DC 5V/1A
Load Resistor	SGS	N/A	REF. No.SEA0600



2.3 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch E&E Lab,
No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China
518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.

2.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **A2LA (Certificate No. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 3816.01.

- **VCCI**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

- **FCC –Designation Number: CN1178**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

- **Industry Canada (IC)**

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 4620C-2, 4620C-3.

2.5 Deviation from Standards

None.

2.6 Abnormalities from Standard Conditions

None.



3 Equipments Used during Test

Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Due date
1	Shielding Room	SAEMC	MSR733	SEM001-09	2020-05-09
2	Electric and Magnetic Field Analyzer	Narda	EHP-50F	EMC092	2019-02-06



4 Test Results

4.1 RF Exposure test

Test Requirement: 47 CFR PART 1, Subpart I, Section 1.1310
Measurement Distance: 0cm
Test voltage: DC 12V
Limit:

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30
F=frequency in MHz *=Plane-wave equivalent power density RF exposure compliance will need to be determined with respect to 1.1307(c) and (d) of the FCC rules. The emissions should be within the limits at 300kHz in Table 1 of 1.1310(use the 300kHz limits for 150kHz:614V/m,1.63A/m).				

4.1.1 E.U.T. Operation

Operating Environment:
Temperature: 24.0 °C Humidity: 52% RH Atmospheric Pressure: 1010 mbar

EUT Operation:
This device has been tested the worst status of full load and the device has been tested with Martine VHF Radio built-in battery level at 5%, 50% and 100%.



4.1.2 Measurement Data

Output Voltage=DC 12V; The max output power =5W;Calculation of resistor value=5Ω

Electric Field Emissions

Operation frequency	Test Distance (cm)	Test Position	Probe Measure Result (V/m)	50% Limit (V/m)
147.2 kHz	0	Side 1	1.12	307
		Side 2	1.24	307
		Side 3	1.17	307
		Side 4	1.09	307
		Top	1.55	307

Magnetic Field Emissions

Operation frequency	Test Distance (cm)	Test Position	Probe Measure Result (A/m)	50% Limit (A/m)
147.2 kHz	0	Side 1	0.0520	0.815
		Side 2	0.0425	0.815
		Side 3	0.0314	0.815
		Side 4	0.0327	0.815
		Top	0.0318	0.815



Martine VHF Radio has been charge at zero charge, intermediate charge, and full charge.

Electric Field Emissions

Operation frequency	Test Distance (cm)	Test Position	Probe Measure Result(V/m)			50%Limit (V/m)
			zero charge	intermediate charge	full charge	
147.2 kHz	0	Side 1	1.33	1.42	1.25	307
		Side 2	1.70	1.62	1.53	307
		Side 3	1.57	1.64	1.55	307
		Side 4	1.53	1.64	1.52	307
		Top	1.23	1.26	1.21	307

Magnetic Field Emissions

Operation frequency	Test Distance (cm)	Test Position	Probe Measure Result(A/m)			50%Limit (A/m)
			zero charge	intermediate charge	full charge	
147.2 kHz	0	Side 1	0.0427	0.0224	0.0323	0.815
		Side 2	0.0429	0.0233	0.0327	0.815
		Side 3	0.0318	0.0121	0.0221	0.815
		Side 4	0.0325	0.0122	0.0218	0.815
		Top	0.0117	0.0018	0.0115	0.815

- End of the Report -