Test Report to BS EN 62479:2010

Assessment of the compliance of low power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields (10 MHz to 300 GHz)

Report Number: AT72132224-2R1

Manufacturer: Johnson Outdoors Marine Electronics, Inc.

Model(s): Solix 10 SI

Report Issue Date: December 22, 2017

FOR THE SCOPE OF ACCREDITATION UNDER Certificate Number AT-2021

This report must not be used by the client to claim product certification, approval, or endorsement by ANAB, NIST, or any agency of the Federal Government.

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This report contains 13 pages

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1.0 GENERAL

1.1 Purpose

To verify compliance of the Equipment Under Test (EUT) with regards to EMF exposure requirements as defined under the test specification BS EN 62479:2010.

1.2 Manufacturer Information

Johnson Outdoors Marine Electronics, Inc.
678 Humminbird Ln
Eufaula, AL 36027

1.3 Product Description

Product Name: Solix 10
Solix 10 SI (Tested Variant)

The Humminbird Solix series is a Sonar/Fishfinder/GPS product to be used in the marine environment. The Solix 10 has a 10” display with a PCAP touchscreen, 10 keypad buttons, encoder and joystick, 2 SD card slots and displays sonar return information on the display. The Solix 10 SI has down imaging and side imaging sonar, while the Solix 10 has 2D sonar. Both variants contain a Bluetooth Low Energy and Bluetooth classic radio. This test report documents the compliance of the GNSS receiver only.

1.4 Test Methodology and Considerations

All measurements and/or calculations contained in this report were conducted with BS EN 62479:2010. Assessment of the compliance of low power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields (10 MHz to 300 GHz).

The GNSS receiver is inherently compliant as a non-transmitter radio system.

1.5 Modifications of EUT

No modification of the EUT were required for compliance.

1.6 References

- BS EN 62479:2010. Assessment of the compliance of low power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields (10 MHz to 300 GHz).
- IEC 62311:2008. Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz to 300 GHz).
- ICNIRP Guidelines. For Limiting Exposure to Time-Varying Electric, Magnetic and Electromagnetic Fields (Up to 300 GHz). Published in: Health Physics 74 (4):494-522; 1998.
- Council Recommendation of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz)(1999/519/EC).
- G0F-1306-2897-TEU311E-V01 Test Report (Issued by Eurofins Product Service GmbH, Storkower Str. 38c, 15526 Reichenwalde, Germany, December 2013).
- G0M-1702-6263-TEU328BT-PAN1326-V01 Test Report (Issued by Eurofins Product Service GmbH, Storkower Str. 38c, 15526 Reichenwalde, Germany, March 2017).
- G0M-1702-6263-TEU328BL-PAN1326-V02 Test Report (Issued by Eurofins Product Service GmbH, Storkower Str. 38c, 15526 Reichenwalde, Germany, May 2017).
- G0M-1606-5719-TEU328BL-PAN1326-V01 Test Report (Issued by Eurofins Product Service GmbH, Storkower Str. 38c, 15526 Reichenwalde, Germany, August 2017).
- G0M-1606-5719-TEU328BT-PAN1326-V01 Test Report (Issued by Eurofins Product Service GmbH, Storkower Str. 38c, 15526 Reichenwalde, Germany, August 2017).

2.0 TEST FACILITIES

2.1 Location

The radiated and conducted emissions test sites are located at the following address:

TÜV SÜD America, Inc.
5015 B.U. Bowman Drive
Buford, GA 30518
Phone: (770) 831-8048
Fax: (770) 831-8598

2.2 Laboratory Accreditations/Recognitions/Certifications

TÜV SÜD America, Inc. is accredited to ISO/IEC 17025 by the ANSI-ASQ National Accreditation Board/ANAB accreditation program, and has been issued certificate number AT-2021 in recognition of this accreditation. Unless otherwise specified, all tests methods described within this report are covered under the ISO/IEC 17025 scope of accreditation.

The Semi-Anechoic Chamber Test Site, Open Area Test Site (OATS) and Conducted Emissions Site have been fully described, submitted to, and accepted by the FCC, ISED Canada and the Japanese Voluntary Control Council for Interference by information technology equipment.

FCC Registration Number: 391271
ISED Canada Lab Code: IC 4175A
VCCI Member Number: 1831

- VCCI OATS Registration Number R-1526
- VCCI Conducted Emissions Site Registration Number: C-1608

3.0 CONCLUSIONS, OBSERVATIONS AND COMMENTS

The test report will be filed at TÜV SÜD America, Inc. for a period of 10 years following the issue of this report. It may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval from TÜV SÜD America, Inc.

The results of the tests as stated in this report are exclusively applicable to the EUT as identified in this report. TÜV SÜD America, Inc. cannot be held liable for properties of the EUT that have not been observed during these tests.

TÜV SÜD America, Inc. assumes the sample to comply with the requirements of EN 62479 for the respective test sector, if the test results turn out positive.

Comments: The provider was responsible for ensuring the test samples provided were representative of final production units.

4.0 CONFORMITY ASSESSMENT METHODS

Figure 4-1 summarizes the applicable assessment route for the EUT corresponding with the essential requirements defined in Section 4.0 of BS EN 62479:2010.

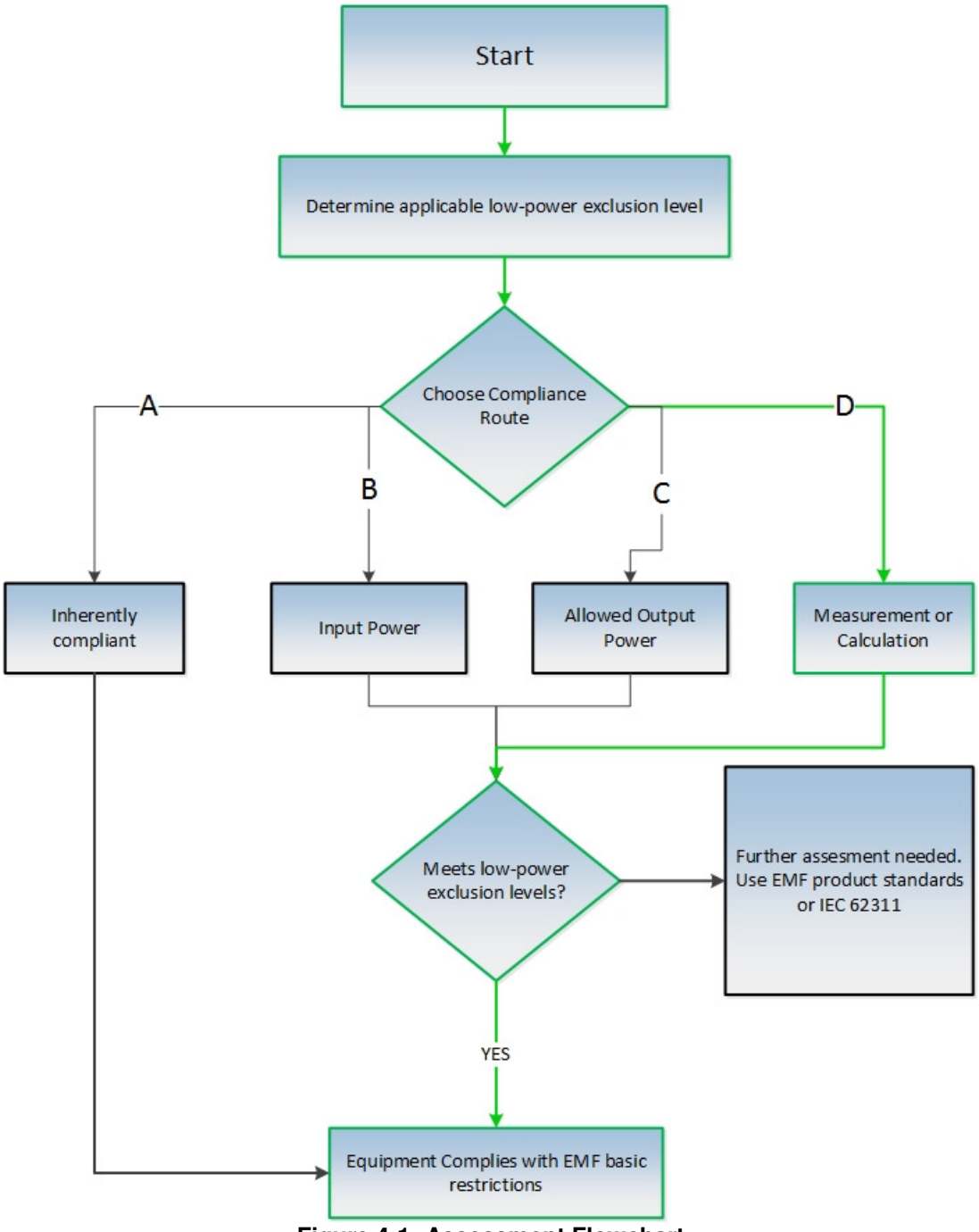

Figure 4-1: Assessment Flowchart

5.0 VERIFICATION PROCEDURE, LIMITS, AND RESULTS

5.1 Verification Procedure

Verification is based on power levels and declared antenna gains detailed in this test report and were taken from the following RF module test report(s):

Test Report	Radio Standard	Issued by:
G0M-1702-6263-TEU328BL-PAN1326-V02	EN 300 328 v2.1.1	Eurofins Product Service GmbH, Storkower Str. 38c, 15526 Reichenwalde, Germany (May 2017)
G0M-1606-5719-TEU328BL-PAN1326-V01	EN 300 328 v1.9.1	Eurofins Product Service GmbH, Storkower Str. 38c, 15526 Reichenwalde, Germany (August 2016)
G0M-1702-6263-TEU328BT-PAN1326-V01	EN 300 328 v2.1.1	Eurofins Product Service GmbH, Storkower Str. 38c, 15526 Reichenwalde, Germany (March 2017)
G0M-1606-5719-TEU328BL-PAN1326-V01	EN 300 328 v1.9.1	Eurofins Product Service GmbH, Storkower Str. 38c, 15526 Reichenwalde, Germany (August 2016)

EUT test information such as test equipment used, date of actual test, environmental conditions, measurement uncertainty and the person who performed the original tests are referenced in the above test reports.

5.2 Verification Limits

The applicable limits from Table A.1 of BS EN 62479:2010 are found in Table 5.2-1 below.

Table 5.2-1: BS EN 62479:2010 limits in Table A.1

Guideline/Standard	SAR limit, SAR_{max} W/kg	Averaging mass, *m* g	P*max* mW	Exposure tier	Region of body
ICNIRP	2	10	20	General Public	Head and Trunk

Where P*max* is the low-power exclusion level. Specified condition on device output power, which may also depend on other variables such as frequency and distance of radiating source from persons, such that the exposure level produced by the source will not exceed a specific basic restriction. If the device output power is less than P*max*, then the device is deemed to comply with the basic restrictions

5.3 Verification Results

The verification results are summarized in Table 5.3-1 below.

Table 5.3-1: Verification Results

Technology	Modulation	Frequency Range (MHz)	Duty Cycle (%)	Maximum EIRP (dBm)	Limit (dBm)	Compliance
Bluetooth LE	GFSK	2402 - 2480	100	9.962	13	Pass
Bluetooth 2.1+EDR	GFSK π/4-DQPSK 8-DPSK	2402 – 2480	100	9.700	13	Pass

6.0 PHOTOGRAPHS OF THE EQUIPMENT (UUT)

Figure 6-1: External Photo

Figure 6-2: External Photo

Figure 6-3: External Photo

Figure 6-4: External Photo

Figure 6-5: External Photo

Figure 6-6: External Photo

END REPORT