For Scope of Accreditation Under Certificate Number: 2955.09

America

Choose certainty.
Add value.

EMI Test Report

In Accordance with:

AS/NZS CISPR 32:2015

Authorization Type: Verification

Manufacturer: JOHNSON OUTDOORS
Model Covered: HELIX 9 G3N
Model Variants: HELIX 9 CHIRP GPS G3N, HELIX 9X CHIRP GPS G3N, HELIX 9 MDI GPS G3N, HELIX 9X MDI GPS G3N, HELIX 9 MSI GPS G3N, HELIX 9X MSI GPS G3N, HELIX 8 CHIRP GPS G3N, HELIX 8X CHIRP GPS G3N, HELIX 8 MDI GPS G3N, HELIX 8X MDI GPS G3N, HELIX 8 MSI GPS G3N, HELIX 8X MSI GPS G3N

Report Number: AT72141977.1V3
Report Revision: C
Report Issue Date: 12/10/2018

This report contains Page 22 pages

TÜV SÜD America Inc., 5945 Cabot Parkway, Suite 100 Alpharetta, GA 30005
Tel: (678) 341-5900. Website: www.TUVamerica.com

Project Manager:

Arthur Sumner
EMC Engineer
TÜV SÜD America Inc.

Reviewed by:

Ray Verar
Service Line Manager, EMC
TÜV SÜD America Inc.

This report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, or any agency of the Federal Government.

REVISION HISTORY
Report Number: AT72141977.1V3
Manufacturer: JOHNSON OUTDOORS
Model: HELIX 9 G3N

DATE	OLD REVISION	NEW REVISION	REASON	PAGES AFFECTED	APPROVED BY
11/7/2018	---	A	Initial Release	All	Ray Verar
12/3/2018	A	B	Revisions to block diagram and data tables	All	Ray Verar
12/10/18	B	C	Revised EUT info	All	Ray Verar

Project Information

Applicant Details

Manufacturer: JOHNSON OUTDOORS
Street Address: 1220 Old Alpharetta Road Suite 340
City, State/Province and Postal Code: Alpharetta, GA 30005
Country: USA
Contact: Kim Lincoln

Phone: +177088862921076
Fax:
Email: Kim.Lincoln@johnsonoutdoors.com

Sample Information

Model: HELIX 9 G3N
Model Variant(s): HELIX 9 CHIRP GPS G3N, HELIX 9X CHIRP GPS G3N, HELIX 9 MDI GPS G3N, HELIX 9X MDI GPS G3N, HELIX 9 MSI GPS G3N, HELIX 9X MSI GPS G3N, HELIX 8 CHIRP GPS G3N, HELIX 8X CHIRP GPS G3N, HELIX 8 MDI GPS G3N, HELIX 8X MDI GPS G3N, HELIX 8 MSI GPS G3N, HELIX 8X MSI GPS G3N
Environment of Use: Residential
Sample Receive Date: 10/2/2018
Sample Receive Condition: Good
Test Mode Description: Powered ON; Monitoring depth, speed, temp, GPS

Highest Frequency Generated or Used: 800 MHz

Source: Main processor

Product Description

Helix 9X Chirp MSI GPS G3N – main unit – supports 2D, MDI and MSI Sonar with GNSS receiver, BT/BLE and Ether net port
Helix 9X Chirp MDI GPS G3N – same as main but MSI Sonar is disabled via software
Helix 9X Chirp GPS G3N – same as main unit but MSI and MDI Sonar disabled via software
Helix 8X Chirp MSI GPS G3N – same as main but with smaller screen
Helix 8X Chirp MDI GPS G3N – same as main but MSI Sonar is disabled via software, and smaller screen
Helix 8X Chirp GPS G3N – same as main but MSI and MDI Sonar is disabled via software, and smaller screen

Test Information

Test Start Date: 10/2/2018
Test End Date: 10/4/2018
Emissions Pre-scan Site: SAC
Final Emissions Site: SAC
EMI Freq. Band: 150KHz-18GHz
Radiated Emissions Equipment Class: Class B

Test Methods/Standards Applied

AS/NZS CISPR 32:2015 – Electromagnetic compatibility of multimedia equipment – Emission requirements

Project Information(continued)

Test Methods/Standards Applied

(Check all that apply):

☐ **ANSI C63.4-2014 -** American National Standard for Methods of Measurement of Radio-Noise Emissions from low-voltage electrical and electronic equipment in the range of 9kHz to 40 GHz.

☐ **US Code of Federal Regulations (CFR):** Title 47, Part 15, Radio Frequency Devices, Subpart B, Unintentional Radiators.

☐ **Innovation, Science and Economic Development (ISED) Canada ICES-003 Issue 6:** Information Technology Equipment (Including Digital Apparatus) – Limits and methods of measurement

☐ **CISPR 16-2-1 -** Specification for radio disturbance and immunity measuring apparatus and methods Part 2-1: Methods of measurement of disturbances and immunity-Conducted Disturbance measurement

☐ **CISPR 16-2-3** - Specification for radio disturbance and immunity measuring apparatus and methods Part 2-2: Methods of measurement of disturbances and immunity-Measurement of disturbance power

☐ **CISPR 22:2010 -** Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement

☐ **EN 55032:2012 –** Electromagnetic compatibility of multimedia equipment – Emission requirements

☐ **EN 55011:2009 + A1:2010 -** Industrial, scientific and medical (ISM) radio-frequency equipment - Electromagnetic disturbance characteristics - Limits and methods of measurement

☐ **EN 61000-6-3:2007 + A1:2011** Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments

☐ **EN 61000-6-4:2007 + A1:2011** Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments

☒ **AS/NZS CISPR 32:2015 –** Electromagnetic compatibility of multimedia equipment – Emission requirements

☐ **VCCI V-3/2015.04 –** Agreement of Voluntary Control Council for Interference by Multimedia Equipment (VCCI) - Technical Requirements: VCCI-CISPR 32:2016

☐ **CNS 13438:2006** - CNS Limits and methods of measurement of radio interference characteristics of information technology equipment

Table of Contents

1.0 Introduction

1.1 Scope

This report documents conformance with the Electromagnetic Interference requirements outlined in the product information sheet and details the results of testing performed on 10/2/2018 through 10/4/2018 on the model HELIX 9 G3N manufactured by JOHNSON OUTDOORS .

1.2 Performance Criteria

For model HELIX 9 G3N the limits which apply are Class B. These limits are found in Table 1.2-1 below:

Table 1.2-1 Emissions Limits Class B

Emission Type	Frequency Range (MHz)	Quasi-Peak/Peak[4] Limits	Average Limits
Conducted Class B (Mains Port) (dBµV)	0.15 to 0.50	66 to 56[1]	56 to 46[1]
	0.50 to 5.00	56	46
	5.00 to 30.0	60	50
Conducted Class B (Telecom Ports)	0.15 to 0.5	84 to 74 (V)[1,2] 40 to 30 (I)[1,3]	74 to 64 (V)[1,2] 30 to 20 (I)[1,3]
	0.5 to 30	87 (V)[2] 43 (I)[3]	74 (V)[2] 30 (I)[3]
Radiated Class B at 3 Meters (dBµV/m)	30.0 to 230.0	40.5	
	230.0 to 1000.0	47.5	
	1000 to 3000	70	50
	3000 to 6000	74	54

1 - Decreases Linearly with Logarithm of Frequency **Note: Lower Limit Applies at Transition Frequency**
2 – (V) Indicates voltage limits in dBµV
3 – (I) Indicates current limits in dBµA
4 – Limits <1GHz are Quasi-Peak and Peak >1GHz

2.0 Test Facilities & Environment

2.1 Test Facilities

All testing was performed at the following address:

TÜV SÜD America Inc.
5945 Cabot Parkway
Suite 100
Alpharetta, GA 30005
Phone: (678) 341-5900
www.TUVamerica.com

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

The laboratory is fully equipped to carry out the tests outlined in the project information section on page 3.

2.2 Laboratory Accreditations/Recognitions/Certifications

TÜV SÜD America, Inc. is accredited to ISO/IEC 17025 by the American Association for Laboratory Accreditation/A2LA accreditation program and has been issued certificate number 2955.09 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.

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.

TÜV SÜD America Inc. has been designated through NIST (US Identification Number: US0156) as a Phase I CAB under the APECTel MRA to perform testing for:

- Chinese Taipei's (Taiwan) Bureau of Standards, Metrology and Inspection: BSMI Number SL2-IN-E-1127R
- Hong Kong's Office of the Telecommunications Authority (OFTA)
- Singapore's Infocomm Development Authority of Singapore (IDA)
- Australia's Australian Communication and Media Authority (ACMA)

TÜV SÜD America Inc. test sites are also designated by Japan's Voluntary Control Council for Interference (VCCI) to perform testing in accordance with VCCI technical regulations. The VCCI has issued the following designation code in recognition of these test sites: A-0295.

2.3 Test Environment

Unless otherwise specified by the generic or product standard, the EUT was evaluated within the climate conditions of the EUT as specified by the manufacturer.

Where the manufacturer does not specify climate parameters for the EUT, all test are performed within the ambient temperature range of 40°F to 104°F.

3.0 Equipment Under Test (EUT)

3.1 Manufacturer

JOHNSON OUTDOORS
1220 Old Alpharetta Road Suite 340
Alpharetta, GA 30005

Kim Lincoln
+177088862921076
Kim.Lincoln@johnsonoutdoors.com

3.2 Modifications

Table 3.2-1 below describes any modification required to bring the EUT into compliance with the test standard. Photographs of the modifications, if any, are contained in appendix a.

Table 3.2-1: EUT Modifications

☒ **Modifications were not required to bring the EUT into compliance with the requirements.** ☐ **Modifications were required to bring the EUT into compliance with the requirements.**					
Modification Type	**Component/Material Description (Model)**	**Location**	**Test Required For**	**Specific Need**	**Photograph Designation**

3.3 System Block Diagram and Support Equipment

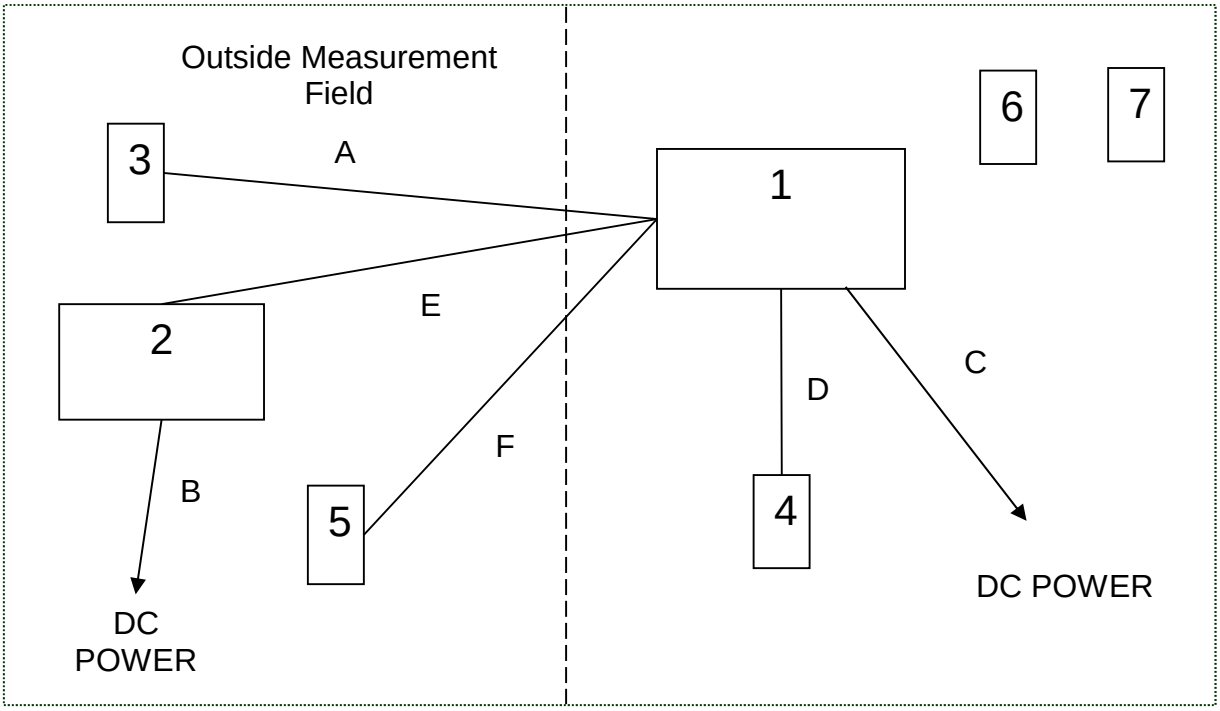

Figure 3.3-1: System Block Diagram

Table 3.3-1: EUT and Support Equipment Description

Item #	Type Device	Manufacturer	Model/Part #	Serial #
1	EUT	Johnson Outdoors	H9 G3N ENG	18080854-0015
2	Auxiliary Equipment	Johnson Outdoors	HELIX 7	180424220007
3	Precision GPS Module	Humminbird	AS*GPS	18081742-0006
4	Transducer	Johnson Outdoors	N/A	N/A
5	Speed sensor	Johnson Outdoors	N/A	N/A
6	Cellular Phone	N/A	N/A	N/A
7	Remote Control	Johnson Outdoors	RMT 1	N/A

Table 3.3-2: Cable Description

Cable #	Cable Type	Length	Shield	Termination
A	GPS	20’	No	1 - 3
B	DC leads	3’	No	2 – DC power
C	DC leads	4’	No	1 – DC power
D	Transducer cable	20’	No	1 - 4
E	Ethernet	20’	No	1 - 2
F	Speed sensor cable	20’	No	1 - 5

3.4 Observations

Any general observations regarding any part of the evaluation are given in table 3.4-1.

Table 3.4-1: Observations

Observation No.	Description

3.5 EUT Photographs

Figure 3.5-1: EUT Photo – Front

Figure 3.5-2: EUT Photo – Back

4.0 Radiated and Conducted Emissions

4.1 Radiated Emissions

4.1.1 Radiated Emissions Test Site

4.1.1.1 Open Area Test Site (Buford Facility)

The open area test site consists of a 40’ x 66’ concrete pad covered with a perforated electro-plated galvanized sheet metal. The perforations in the sheet metal are 1/8” holes that are staggered every 3/16”. The individual sheets are placed to overlap each other by 1/4” and are riveted together to provide a continuous seam. Rivets are spaced every 3” in a 3 x 20 meter perimeter around the antenna mast and EUT area. Rivets in the remaining area are spaced as necessary to properly secure the ground plane and maintain the electrical continuity.

The entire ground plane extends 12’ beyond the turntable edge and 16’ beyond the antenna mast when set to a 10 meter measurement distance. The ground plane is grounded via 4 - 8’ copper ground rods, each installed at a corner of the ground plane and bound to the ground plane using 3/4" stainless steel braided cable.

The turntable is an all aluminum 10’ flush mounted table installed in an all aluminum frame. The table is remotely operated from inside the control room located 40’ from the range. The turntable is electrically bonded to the surrounding ground plane via steel fingers installed on the edge of the turn table. The steel fingers make constant contact with the ground plane during operation.

Adjacent to the turntable is a 7’ x 7’ square and 4’ deep concrete pit used for support equipment if necessary. The pit is equipped with 5 - 4” PVC chases from the pit to the control room that allow for cabling to the EUT if necessary. The underside of the turntable can be accessed from the pit so cables can be supplied to the EUT from the pit. The pit is covered with 2 sheets of 1/4" diamond style re-enforced steel sheets. The sheets are painted to match the perforated steel ground plane; however the underside edges have been masked off to maintain the electrical continuity of the ground plane. All reflecting objects are located outside of the ellipse defined in ANSI C63.4.

A diagram of the Open Area Test Site is shown in Figure 4.1.1.1-1 below:

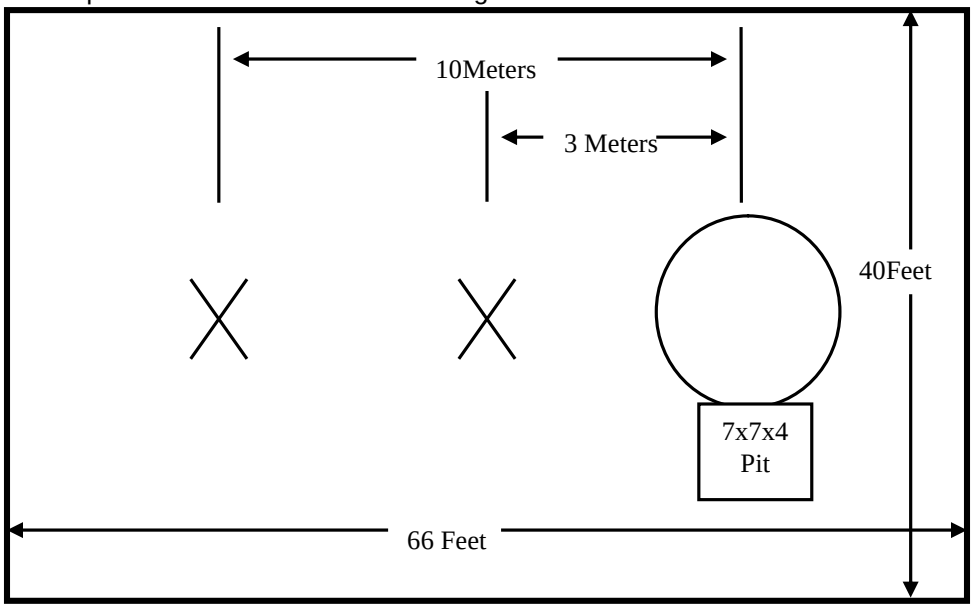

Figure 4.1.1.1-1: Open Area Test Site

4.1.1.2 Semi-Anechoic Chamber (Alpharetta Facility)

The Semi-Anechoic Chamber Test Site consists of a 20'W x 30'L x 20'H shielded enclosure. The chamber is lined with ETS-Lindgren Ferrite Absorber, model number FT-1500. The ferrite tile 600 mm x 600 mm (2.62 in x 23.62 in) panels and are mounted directly on the inner walls of the chamber shield.

The specular regions of the chamber are lined with additional ETS-Lindgren PS-600 hybrid absorber to extend its frequency range up to 18GHz and beyond.

The turntable is a 2m ETS-Lindgren Model 2170, and installed off the center axis is located 5'6" from the back wall of the chamber. The chamber is grounded via 1 - 8' copper ground rod, installed at the center of the back wall, it is bound to the shield using #8 solid copper wire.

The antenna mast is an EMCO 1060 and is remotely controlled from the control room for both antenna height and polarization.

A diagram of the Semi-Anechoic Chamber Test Site is shown in Figure 4.1.1.2-1 below:

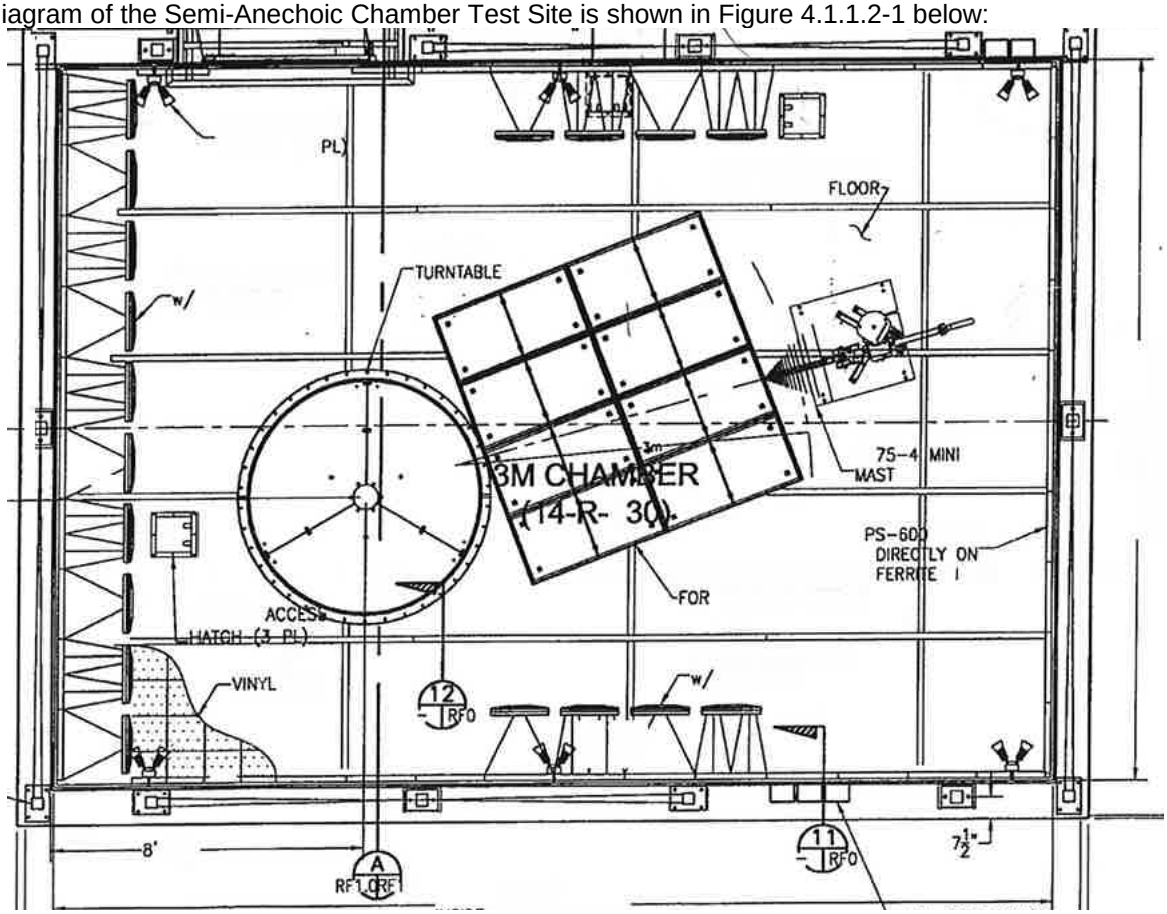

Figure 4.1.1.2-1: Semi-Anechoic Chamber Test Site

4.1.1.3 Fully Anechoic Chamber (Alpharetta Facility)

The 3m fully anechoic chamber is used for pre-screening the EUT for emissions only. Final screening is performed on the OATS or in case of Class B EUT's, in the 3m semi-anechoic chamber. The Fully Anechoic Chamber has been characterized for field uniformity in accordance with IEC 61000-4-3 and can be used for final radiated fields immunity testing.

The Fully-Anechoic Chamber Test Site consists of a 24'L x 16'W x 12'H shielded enclosure. The chamber is fully lined with RF absorbing foam. The foam ranges in type from 8-24" conventional pyramidal cones, 8-12" conventional wedges and 6" and 16" Hybrid Foam over ferrite tile. The Hybrid material is placed in the 6 specular regions of the chamber for better low-frequency performance. The specular regions are 1) directly behind the receiving antenna, 2) on the floor between the receiving antenna and the EUT table, 3) the wall directly behind the EUT, 4&5) the side walls between the receiving antenna and the EUT table and 6) the ceiling between the receiving antenna and the EUT. The specular regions are 6' x 4' in size.

The chamber is grounded via 1 - 8' copper ground rod, installed at the center of the back wall, it is bound to the shield using 3/4" stainless steel braided cable.

The turntable is a remotely controlled EMCO Model 1060 and is 150cm in diameter and is located 1m from the absorber on the back wall of the chamber.

A diagram of the Fully Anechoic Chamber Test Site is shown in Figure 4.1.1.3-1 below:

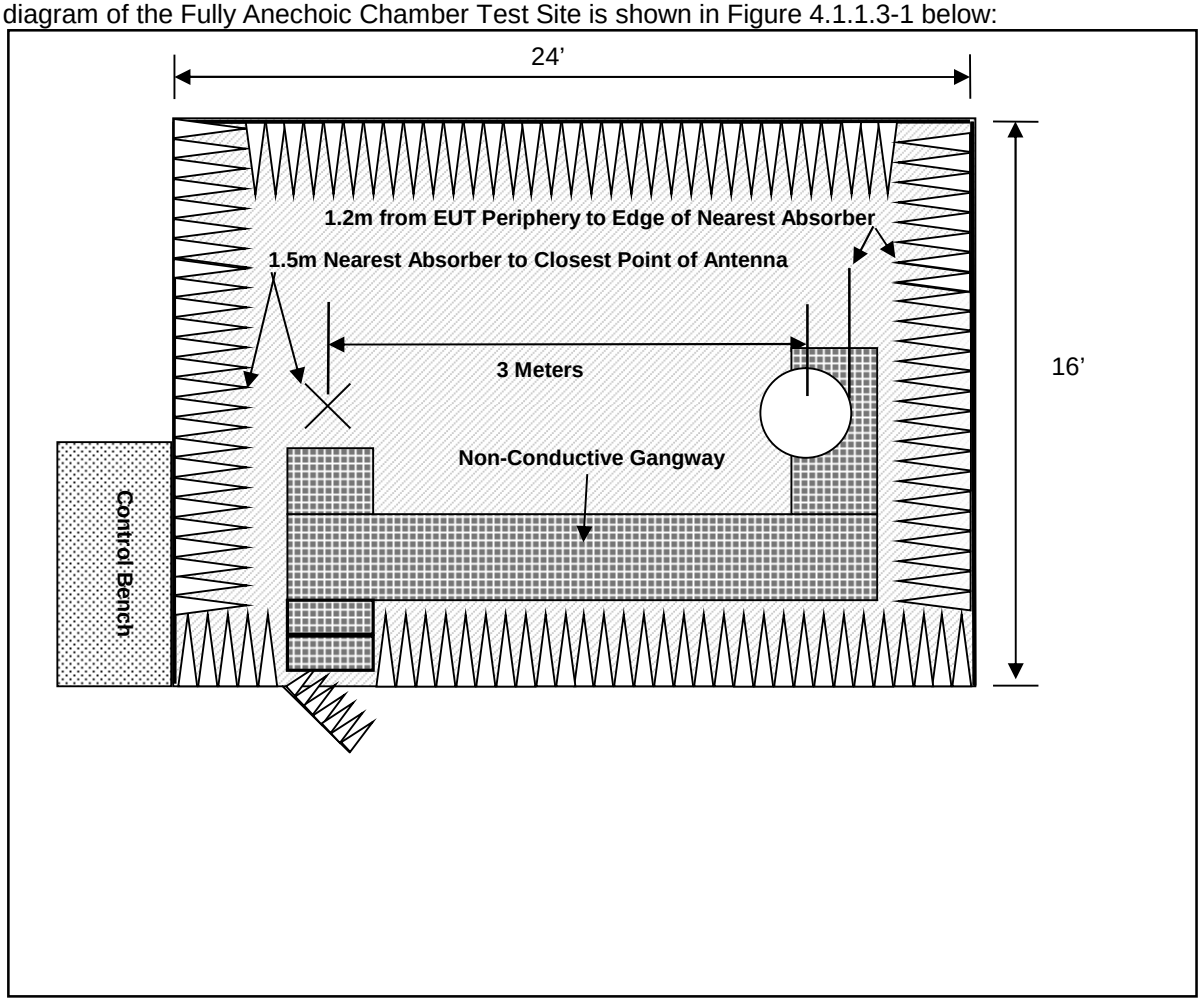

Figure 4.1.1.3-1: Fully Anechoic Chamber Test Site

4.1.2 Test Equipment

Table 4.1.2-1 identifies all equipment used for radiated emissions respectively.

Table 4.1.2-1 Test Equipment – Radiated Emissions

Semi-Anechoic Chamber

AssetID	Manufacturer	Model#	Equipment Type	Serial#	Calibration Performed Date	Calibration Due Date
731	EMCO	3104	Antennas	2659	11/09/2016	11/09/2018
213	TEC	PA 102	Amplifiers	44927	7/19/2018	7/19/2019
836	ETS Lindgren	Chamber B EMI Cable Set	Cable Set	836	5/1/2018	5/1/2019
412	Electro Metrics	LPA-25	Antennas	1241	8/22/2018	8/22/2020
819	Rohde & Schwarz	ESR26	EMI Test Receiver	101345	10/31/2017	10/31/2018
90	Electro-metrics	LPA25	Antennas	1476	1/3/2018	1/3/2020
144	Omega	RH411	Climate Monitoring Equipment	H0103373	9/1/2016	3/11/2019

Semi-Anechoic Chamber High Frequency

AssetID	Manufacturer	Model#	Equipment Type	Serial#	Calibration Performed Date	Calibration Due Date
30	Spectrum Technologies	DRH-0118	Antennas	970102	5/9/2017	5/9/2019
338	Hewlett Packard	8449B	Amplifiers	3008A01111	7/11/2017	7/11/2019
836	ETS Lindgren	Chamber B EMI Cable Set	Cable Set	836	5/1/2018	5/1/2019
819	Rohde & Schwarz	ESR26	EMI Test Receiver	101345	10/31/2017	10/31/2018
144	Omega	RH411	Climate Monitoring Equipment	H0103373	9/1/2016	3/11/2019

Open Area Test Site

AssetID	Manufacturer	Model#	Equipment Type	Serial#	Calibration Performed Date	Calibration Due Date
90	Electro-metrics	LPA25	Antennas	1476	1/3/2018	1/3/2020
193	ACS	OATS Cable Set	Cable Set	0193	5/1/2018	5/1/2019
211	Eagle	C7RFM3NFNM	Filters	HLC-700	10/15/2017	10/15/2018
213	TEC	PA 102	Amplifiers	44927	7/19/2018	7/19/2019
819	Rohde & Schwarz	ESR26	EMI Test Receiver	101345	10/31/2017	10/31/2018
731	EMCO	3104	Antennas	2659	11/09/2016	11/09/2018

NCR = No Calibration Required

4.1.3 Test Methodology

4.1.3.1 Pre-Scans

Radiated pre-scans are performed on all EUT's in either the 3m Semi-Anechoic or the 3m Fully-Anechoic Chamber. Final emission testing for Class A equipment is performed on the 3/10m Open Area Test Site (OATS) as described in section 4.1.1.1. Final emission testing on Class B equipment can be performed either in the 3m Semi-Anechoic chamber described in section 4.1.1.2 or on the OATS.

Pre-scans are a method by which the 10 highest emissions can be identified for final evaluation. This is achieved by taking automated emission snapshots of the EUT at various azimuths and antenna heights. The software is programmed to perform a peak sweep of the band using the maxhold function. This sweep is performed every 90º in both horizontal and vertical polarities and at antenna heights of 100cm and 300cm. Although not a fully maximized scan, the pre-scan gives a good indication of pass or fail.

4.1.3.2 Final Scans

Radiated emissions measurements were made over the frequency range of 150KHz-18GHz. Quasi-Peak measurements are taken with the Spectrum Analyzer's resolution bandwidth was set to 120KHz and video bandwidth set to 300 kHz for measurements below 1000MHz. Average measurements are taken above 1000MHz with the RBW set to 1MHz and VBW set to 10Hz. The calculation for the radiated emissions field strength is as follows:

Corrected Reading = Analyzer Reading + Cable Loss + Antenna Factor – Amplifier Gain
Margin(dB) = Applicable Limit - Corrected Reading

4.1.3.3 Test Criteria

The EUT must meet the Class B Limits as given in section 1.2.

4.1.3.4 Test Justification

☒ **No justification - The EUT was tested per the appropriate test methods and test plan.**
☐ **The test method, standard, and/or test plan was deviated from for the following reason:**

4.1.4 Test Setup Photographs

Figure 4.1.4-1: Radiated Emissions - Front View

Figure 4.1.4-2: Radiated Emissions - Rear View

4.1.5 Test Data

Final tabulated radiated emissions data are reported in the Test Data Table below:

Test Parameters:

Test Date:	**October 5, 2018**	**Temperature (ºC)**	**22**
Technician:	**Tyler Leeson**	**Humidity (%)**	**37**
Equipment Class:	**Class B**	**Barometric Pressure (mBar)**	**1018**
Tested Modes:	**EUT on; auxillary unit, GPS puck, depth simulator and speedometer blade under floor**		
AC Input Power:	**n/a**		
DC Input Power:	**12 VDC**		

Test Data Table:

Measurement Distance:

☐ FAC ☐ SAC ☒ OATS
☐ 1 Meter ☐ 3 Meter ☒ 10 Meter

Frequency (MHz)	Measured Level (dBuV)		Antenna Polarity (H/V)	Antenna Height (cm)	Turntable Position (o)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	Pk	Qpk/Av					Pk	Qpk/Av	Pk	Qpk/Av	Pk	Qpk/Av
42.07	41.70	37.10	V	100	90	-13.24	---------	23.86	--------	30.0	---------	6.1
250	34.70	29.50	H	150	270	-9.90	---------	19.60	--------	37.0	---------	17.4
350	25.50	15.10	H	100	360	-7.10	---------	8.00	--------	37.0	---------	29.0

Qpk = Quasi-Peak Measurement or Limit (< 1GHz)
AV = Average Measurement or Limit (>1GHz)

Test Data Table:

Measurement Distance:

☐ FAC ☒ SAC ☐ OATS
☐ 1 Meter ☒ 3 Meter ☐ 10 Meter

Frequency (MHz)	Measured Level (dBuV)		Antenna Polarity (H/V)	Antenna Height (cm)	Turntable Position (o)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	Pk	Qpk/Av					Pk	Qpk/Av	Pk	Qpk/Av	Pk	Qpk/Av
98.4675	50.10	45.30	V	100	264	-11.71	---------	33.59	--------	40.5	---------	6.9
550	40.80	36.90	V	100	360	-2.50	---------	34.40	--------	47.5	---------	13.1
777.95	24.30	14.90	H	100	360	0.88	---------	15.78	--------	47.5	---------	31.7

Qpk = Quasi-Peak Measurement or Limit (< 1GHz)
AV = Average Measurement or Limit (>1GHz)

Notes:

98.4675 MHz, 550 MHz, and 777.95 MHz measured in SAC due to local ambient interference.

4.2 Conducted Emissions

4.2.1 Test Justification

☐ **No justification - The EUT was tested per the appropriate test methods and test plan.**
☒ **The test method, standard, and/or test plan was deviated from for the following reason:**

Conducted Emissions was not applicable because the EUT is DC-powered. Telecom emissions testing was also not applicable because the EUT functions in closed loop network, and does not connect to a public data network.

5.0 Measurement Uncertainty

General

Measurement Uncertainty is based on the following publications:

- CISPR 16-4-2: Uncertainties, statistics and limit modeling – Uncertainty in EMC measurements
- The Guide to the Expression of Uncertainty in Measurement(GUM): 1995
- ANSI / NCSL Z540.2-1997 (R2002) U.S. Guide to Expression of Uncertainty in Measurement

Calculations for measurement uncertainty are available upon request.

Emissions:

Table 5.0-1: Values of U_{cispr} and U_{Lab}

Measurement	U_{cispr}	U_{Lab}
Conducted disturbance (mains port) (9 kHz – 150 kHz) (150 kHz – 30 MHz)	 4,0 dB 3,6 dB	2.54 dB
Radiated disturbance (electric field strength on an open area test site or alternative test site) (30 MHz – 1 000 MHz)	 5,2 dB	3.93 dB

NOTE U_{cispr} resembles a value of measurement uncertainty for a specific test, which was determined by considering uncertainties associated with the quantities listed in CISPR 16-4-2:2003 Section 4.2.

Compliance or non-compliance with a disturbance limit shall be determined in the following manner.

If U_{Lab} is less than or equal to U_{cispr} in Table 5.0-1, then:

- compliance is deemed to occur if no measured disturbance exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance exceeds the disturbance limit.

If U_{Lab} is greater than U_{cispr}, then:

- compliance is deemed to occur if no measured disturbance, increased by ($U_{Lab} – U_{cispr}$), exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance, increased by ($U_{Lab} – U_{cispr}$), exceeds the disturbance limit.

The calculated MU is much less than the internationally accepted MU, therefore an adjustment to the measured result as mentioned above is not necessary.

6.0 Conclusion

The EUT is determined to meet the requirements as defined in the applicable regulations.

Appendix A – ANAB Accreditation Certificate

CERTIFICATE OF ACCREDITATION

ANSI-ASQ National Accreditation Board
500 Montgomery Street, Suite 625, Alexandria, VA 22314, 877-344-3044

This is to certify that

TÜV SÜD America, Inc.
5015 B. U. Bowman Drive
Buford, GA 30518

has been assessed by ANAB
and meets the requirements of international standard

ISO/IEC 17025:2005

while demonstrating technical competence in the field of

TESTING

Refer to the accompanying Scope of Accreditation for information regarding the types of tests to which this accreditation applies.

AT-2021
Certificate Number

ANAB Approval

Certificate Valid: 03/14/2018 - 12/17/2018
Version No. 013 Issued: 03/14/2018

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017).