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December 5, 2012

Dale Williams
Tideland Signal Corporation
4310 Directors Row
Houston, Texas 77092

Dear Dale:

Thank you for the opportunity to perform environmental testing on the E-Navcon for Tideland Signal Corporation. Enclosed is the environmental test report with test details, charts, and photographs.

If you have any questions or comments about this report or the testing performed, feel free to contact me.

Sincerely,

Jeffrey A. Lenk
President

Enclosure

Project 13862-30

Tideland Signal Corporation
E-Navcon

Environmental Test Report

Prepared for:

Tideland Signal Corporation
4310 Directors Row
Houston, Texas 77092

By

Professional Testing (EMI), Inc.
1601 North A.W. Grimes Blvd., Suite B
Round Rock, Texas 78665

December 5, 2012

Reviewed by

Yuki Fukuda
Reliability Engineer

Written by

Tara Duval
Technical Writer

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(3) The significance of this report is dependent on the representative character of the test sample submitted for evaluation and the results apply only in reference to the sample tested. The manufacturer must continuously implement the changes shown herein to attain and maintain the required degree of compliance.

Test Summary

Applicant: Tideland Signal Corporation
Applicant's Address: 4310 Directors Row
Houston, Texas 77092

Model: E-Navcon
Serial Number: 7065
Part Number: E_NAVCON
Project Number: 13862-30

The **E-Navcon** by **Tideland Signal Corporation** was subjected to testing as detailed in the table below.

Test Type	Specifications	Test Conditions	Date	Result
Dry Heat (Storage)	IEC 60945, Sec 8.2.2 IEC 60068-2-2	+70° C up to 16 hrs	11/12/2012 to 11/14/2012	Pass
Dry Heat (Operational)	IEC 60945, Sec 8.2.1 IEC 60068-2-2	+55° C up to 16 hrs	11/12/2012 to 11/14/2012	Pass
Damp Heat	IEC 60945, Sec 8.3 IEC 60068-2-30	+40° C / 93% RH 1 cycle = 24 hrs	11/17/2012 to 11/18/2012	Pass
Low Temperature (Operational)	IEC 60945, Sec 8.4.2 IEC 60068-2-1	-25° C up to 24 hrs	11/16/2012 to 11/17/2012	Pass
Vibration	ISO 13628-6: 2006, Sec 11.2.5.2.1, Q2	+/– 2 mm displacement at 5-25 Hz, 5 G 25-150 Hz, 1 oct/min. A double sweep from 5-150 Hz back to 5Hz, 3 axes. 2 hour endurance test in one axis	11/20/2012 to 11/21/2012	Pass
Shock	ISO 13628-6: 2006, Sec 11.2.5.2.2, Q2	Half-sine, 10 G at 11 ms, 4 pulses, +/– in each axis, 3 axes	11/20/2012	Pass

1.0 Introduction

1.1 Scope

This report describes the extent to which the equipment under test (EUT) conformed to the requirements specified by IEC 60945 Ed 4: 2002-08 and ISO 13628-6: 2006, as well as Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/2012. Passing test results indicate that the EUT is compliant with those specifications, and therefore, can operate in its environment without experiencing performance degradation.

1.2 EUT Description

The EUT is the **E-Navcon** by **Tideland Signal Corporation**. The EUT is a navigational aid comprised of an AIS AtoN device and an X-Brand Racon. Both devices are housed in the same enclosure and function independently of one another. The device is intended for use on land, stationary off-shore platforms, buoys, or other stationary locations where navigational aid is required. The system tested consisted of the following:

	Manufacturer	Model	Serial #	Part #	Description
EUT	Tideland Signal Corporation	E-Navcon	7065	E_NAVCON	Navigational Aid
Remote Equipment	Tideland Signal Corporation	Junction Box	None		Junction Box
Remote Equipment	Dell	Latitude C610 Notebook	CN-0X076-48643-64C-5563		Notebook to Monitor EUT Functions
Cables	**Quantity**	**Length**	**Shielded or Unshielded?**		**Description**
Cables	1	20 feet	Shielded		Serial Port from Cable to Computer
Cables	1	15 feet	Shielded		Cable Bundle from Junction Box to EUT

1.3 EUT Operation

The EUT was tested while in an operational state for some tests, and in a non-operational state for other tests, as noted in the test results below.

1.4 Modifications to Equipment

No modifications were made to the EUT during the performance of the test program.

2.0 Applicable Documents

The following documents were used as reference for the test procedures specified herein.

Document Number	Document Title	Date of Publication
IEC 60945	Maritime navigation and radiocommunication equipment and systems – General requirements – Methods of testing and required test results	2002
ISO 13628-6	Petroleum and natural gas industries – Design and operation of subsea production systems – Part 6: Subsea production control systems, Second edition	2006
IEC 60068-2-1	Environmental testing – Part 2-1: Tests – Test A: Cold	2007
IEC 60068-2-2	Environmental testing – Part 2-2: Tests – Test B: Dry heat, Edition 5.0	2007
IEC 60068-2-30	Environmental testing – Part 2-30: Tests – Test Db: Damp heat, cyclic (12 h + 12 h cycle), Ed. 3.0	2005
N/A	Tideland Signal Test Plan for E-Navcon, Rev 0.3	6/4/2012

3.0 Environmental Testing Preparation and Setup

Environmental Testing Preparation and Setup

3.1 Test Site

Testing was performed at the Professional Testing, located in Round Rock, Texas. Professional Testing is an independent test laboratory, accredited by NVLAP, that provides a wide variety of regulatory and reliability testing services to the high-tech electronics industry.

3.2 Measurement Accuracy

The accuracy of instruments and test equipment is verified periodically. All instruments and test equipment used conform to laboratory standards with calibration traceable to prime standards at the U.S. National Institute of Standards and Technology.

3.3 Test Instrumentation

3.3.1 Equipment Nomenclature

The test instruments used for each test are listed in the applicable section of this test report. Each instrument was in calibration according to NIST standards.

4.0 Environmental Tests

4.1 Dry Heat Test

The objective of the dry heat tests was to verify the ability of the equipment to withstand high temperature conditions, which may be experienced during use and storage, without exhibiting degradation in performance during or after the test.

4.1.1 Test Procedures

On November 12 through 14, 2012, the EUT was subjected to dry heat testing according to the Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12, IEC 60945, Sections 8.2.1 and 8.2.2, and IEC 60068-2-2.

The dry heat (storage) test was conducted at +70° C ± 3° C, for a period of 10 to 16 hours. Upon completion of the test, EUT operation was verified at ambient environmental conditions.

With the EUT operational, the dry heat (operational) test was conducted at +55° C ± 3° C, for a period of 10 to 16 hours. The EUT operation was verified using Racon self-test and AIS presentation logging throughout the test.

4.1.2 Test Results

The EUT passed the performance check post dry heat test. No physical damage to the unit was observed. The EUT passed the requirements per IEC 60945, Sections 8.2.1 and 8.2.2.

Table 4.1.2.1: Dry Heat Test Equipment

Professional Testing, EMI, Inc.			
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 IEC 60945 and IEC 60068-2-2**		
Test Method:	**Dry Heat**		
Test Date:	**11/12 – 11/14/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**Dan Willemin**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

Dry Heat Test Equipment List					Page 1 of 1
Asset #	**Manufacturer**	**Model**	**Equipment Nomenclature**	**Serial #**	**Calibration Due Date**
0525	Tenney	T40RS	Chamber, Temp. & Humidity	12334	11/09/2013
0360	Fluke	2625A	Hydra Data Logger	5788600	9/06/2013
1544	Astron	RS-12A	Power Supply, DC	91041363	NCR*
NA	IBM	Thinkpad	Laptop	32P4414	NCR*

*NCR = No calibration required

Table 4.1.2.2: Dry Heat Test Results, Page 1

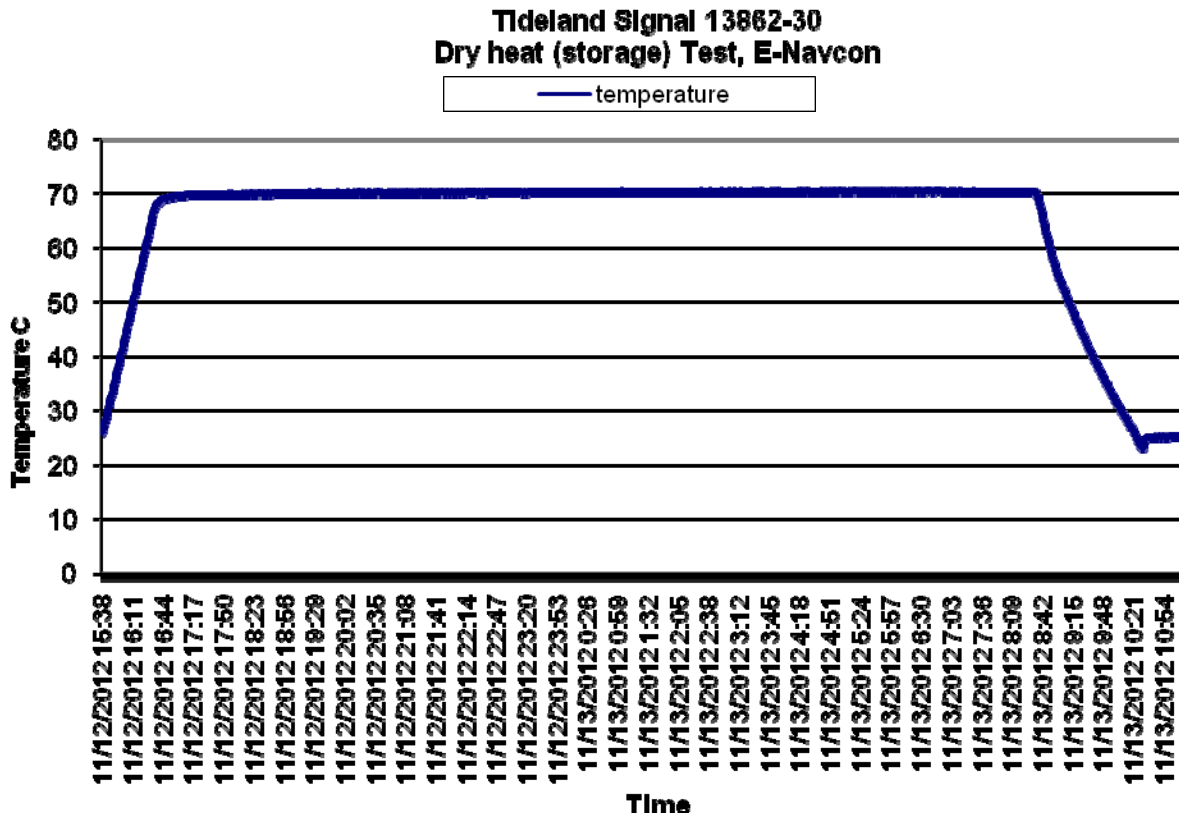
Professional Testing, EMI, Inc.			
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and IEC 60945 and IEC 60068-2-2**		
Test Method:	**Dry Heat**		
Test Date:	**11/12 – 11/14/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**Dan Willemin**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

Dry Heat Test Results	**Page 1 of 3**
Dry Heat (Storage) Test +70° C ± 3° C, for a period of 10 h to 16 h. At the end of the test, the EUT shall be returned to normal environmental conditions and then subjected to a performance check	Pass
Dry Heat (Operational) Test +55 °C ± 3 °C, for a period of 10 h to 16 h. EUT operational during test At the end of the test, the EUT shall be returned to normal environmental conditions and then subjected to a performance check	Pass

Table 4.1.2.3: Dry Heat Temperature Test Results, Page 2

Professional Testing, EMI, Inc.			
In Accordance With:	Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and IEC 60945 and IEC 60068-2-2		
Test Method:	Dry Heat		
Test Date:	11/12 – 11/13/2012	EUT Serial #:	SN 7065
Customer:	Tideland Signal Corporation	EUT Part #:	E_NAVCON
Project Number:	13862-30	Test Technician:	Dan Willemin
Purchase Order #:	116585	Supervisor:	Yuki Fukuda
Equip. Under Test:	E-Navcon		

Dry Heat Temperature Test Results — Page 2 of 3

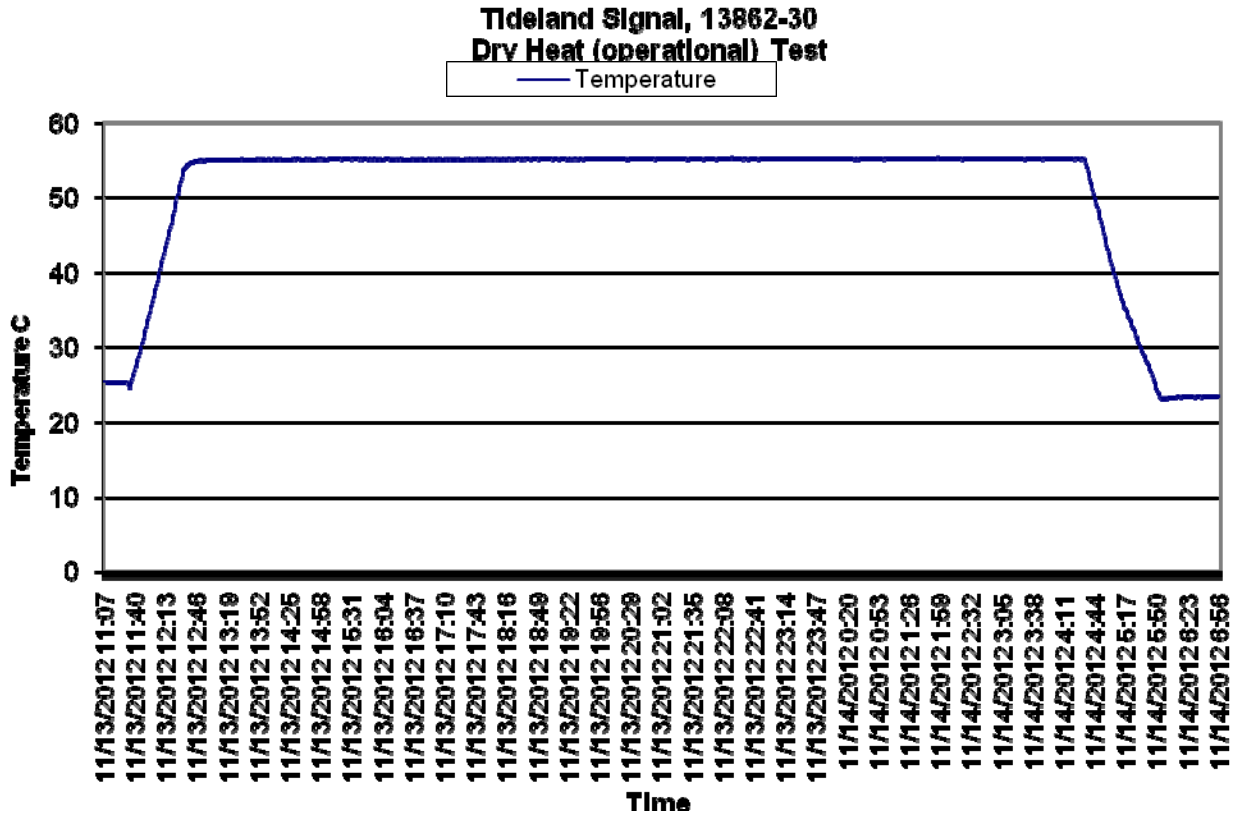


Dry Heat (Storage) Temperature Test Chart

Table 4.1.2.4: Dry Heat Temperature Test Results, Page 3

Professional Testing, EMI, Inc.			
In Accordance With:	Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and IEC 60945 and IEC 60068-2-2		
Test Method:	Dry Heat		
Test Date:	11/13 – 11/14/2012	EUT Serial #:	SN 7065
Customer:	Tideland Signal Corporation	EUT Part #:	E_NAVCON
Project Number:	13862-30	Test Technician:	Dan Willemin
Purchase Order #:	116585	Supervisor:	Yuki Fukuda
Equip. Under Test:	E-Navcon		

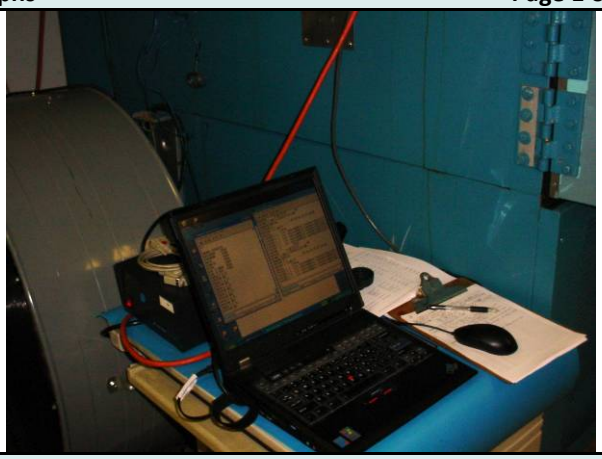
Dry Heat Temperature Test Results — Page 3 of 3



Dry Heat (Operational) Temperature Test Chart

Table 4.1.2.5: Dry Heat Temperature Test Photographs

Professional Testing, EMI, Inc.			
In Accordance With:	Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and IEC 60945 and IEC 60068-2-2		
Test Method:	Dry Heat		
Test Date:	11/12 – 11/14/2012	EUT Serial #:	SN 7065
Customer:	Tideland Signal Corporation	EUT Part #:	E_NAVCON
Project Number:	13862-30	Test Technician:	Dan Willemin
Purchase Order #:	116585	Supervisor:	Yuki Fukuda
Equip. Under Test:	E-Navcon		

Dry Heat Temperature Test Photographs	Page 1 of 1
	
EUT in Thermal Chamber	Functional Test Setup

4.2 Damp Heat and Low Temperature Tests

The objective of the damp heat and cold tests was to verify the ability of the equipment to withstand high humidity and low temperature conditions without exhibiting degradation in performance.

4.2.1 Test Procedures

On November 17 through 18, 2012, the EUT was subjected to damp heat, and on November 16 through 17, 2012, it was subjected to low temperature testing. Testing was performed according to the Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12, IEC 60945, Sections 8.3 and 8.4.2, IEC 60068-2-30, and IEC 60068-2-1.

For the damp heat test, the chamber temperature was raised to +40° C ± 2° C and 93% ± 3% over 3 hours. The conditions were maintained at 40° C/93% RH for 10 to 16 hours. The EUT was powered on and operated for at least 2 hours. At the end of the test period, the chamber temperature was ramped-down to room temperature in not less than 1 hour. At the end of the test, the EUT was returned to normal environmental conditions.

For the low temperature test, the EUT was subjected to a temperature of –25° C ± 3° C for up to 24 hours. The EUT was operational during this test.

EUT operation was verified using Racon self-test and AIS presentation logging throughout the both tests.

4.2.2 Test Results

The EUT passed the performance check during and post-damp heat test. No physical damage to the unit was observed. The EUT met the requirements per IEC 60945, Sections 8.3.

The EUT passed the performance check during and post-low temperature test, except that the Racon self-test indicated failure when the unit was turned on at -25° C. After a short interval, the self-test was repeated, and the EUT passed the self-test. Per the client, Racon will be operating continuously in any normal installation, so this was not considered a failure. No physical damage was observed post-low temperature test. The EUT met the requirements per IEC 60945, Section 8.4.2

Table 4.2.2.1: Damp Heat and Cold Test Equipment

Professional Testing, EMI, Inc.			
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 IEC 60945, IEC 60068-2-30, and IEC 60068-2-1**		
Test Method:	**Damp Heat and Cold**		
Test Date:	**11/16 – 11/18/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**Dan Willemin**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

Damp Heat and Cold Test Equipment List					**Page 1 of 1**
Asset #	**Manufacturer**	**Model**	**Equipment Nomenclature**	**Serial #**	**Calibration Due Date**
0983	Envirotronics	N/A	Chamber, Environmental	None	2/07/2013
0360	Fluke	2625A	Hydra Data Logger	5788600	9/06/2013
1544	Astron	RS-12A	Power Supply, DC	91041363	NCR*
NA	IBM	Thinkpad	Laptop	32P4414	NCR*

*NCR = No calibration required

Table 4.2.2.2: Damp Heat Test Results, Page 1

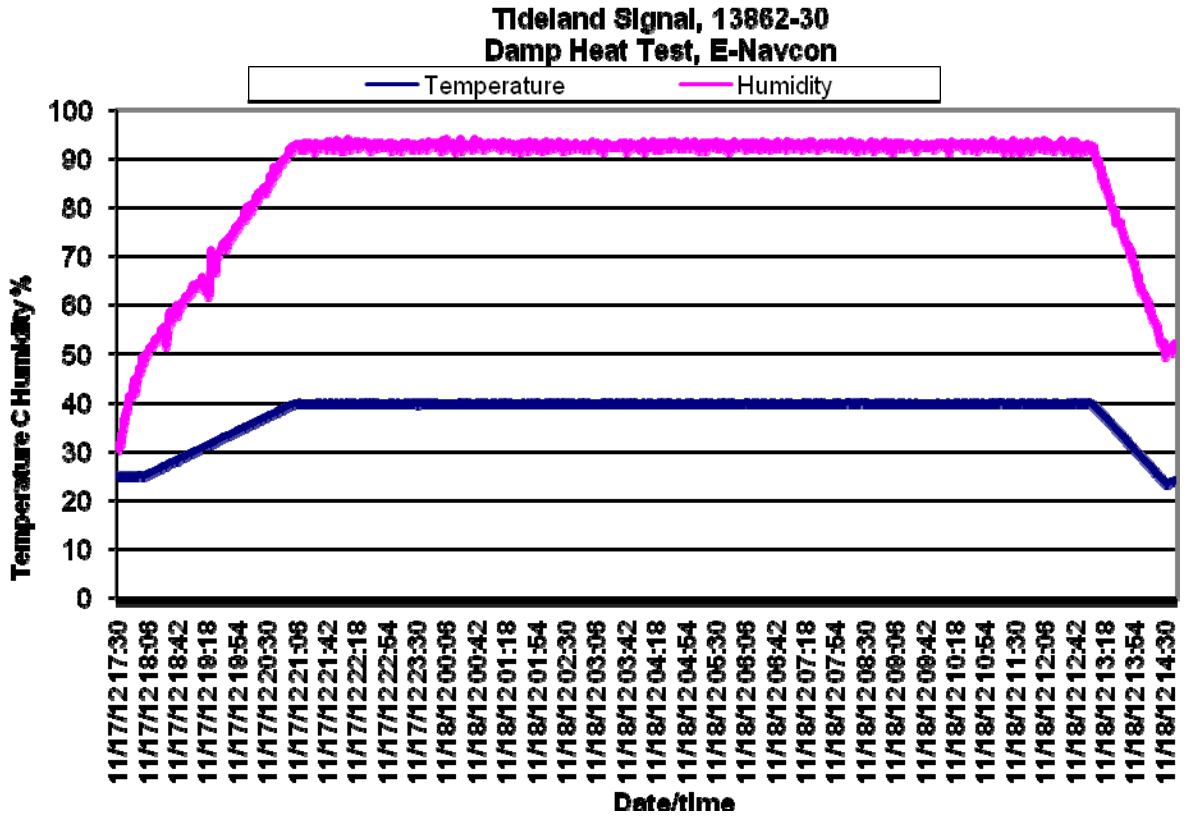
Professional Testing, EMI, Inc.			
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and IEC 60945 and IEC 60068-2-30**		
Test Method:	**Damp Heat**		
Test Date:	**11/17 – 11/18/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**Dan Willemin**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

Damp Heat Test Results	**Page 1 of 2**
Damp Heat Test Chamber temperature was raised to +40° C ± 2° C and 93% ± 3% over 3 hours. The conditions were maintained at 40° C/93% RH for 10 to 16 hours. The EUT was powered on and operated for at least 2 hours. At the end of the test period, the chamber temperature was ramped-down to room temperature in not less than 1 hour. At the end of the test, the EUT was returned to normal environmental conditions.	Pass

Table 4.2.2.3: Damp Heat Test Results, Page 2

Professional Testing, EMI, Inc.			
In Accordance With:	Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 IEC 60945 and IEC 60068-2-30		
Test Method:	Damp Heat		
Test Date:	11/17 – 11/18/2012	EUT Serial #:	SN 7065
Customer:	Tideland Signal Corporation	EUT Part #:	E_NAVCON
Project Number:	13862-30	Test Technician:	Dan Willemin
Purchase Order #:	116585	Supervisor:	Yuki Fukuda
Equip. Under Test:	E-Navcon		

Damp Heat Test Results — Page 2 of 2



Damp Heat Temperature Test Chart

Table 4.2.2.4: Damp Heat and Cold Temperature Test Photographs, Page 1

Professional Testing, EMI, Inc.			
In Accordance With:	Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 IEC 60945, IEC 60068-2-30, and IEC 60068-2-1		
Test Method:	Damp Heat and Cold		
Test Date:	11/16 – 11/18/2012	EUT Serial #:	SN 7065
Customer:	Tideland Signal Corporation	EUT Part #:	E_NAVCON
Project Number:	13862-30	Test Technician:	Dan Willemin
Purchase Order #:	116585	Supervisor:	Yuki Fukuda
Equip. Under Test:	E-Navcon		

Damp Heat and Cold Temperature Test Photographs	Page 1 of 1
EUT in Thermal Chamber	Functional Test Setup

Table 4.2.2.5: Cold Test Results, Page 1

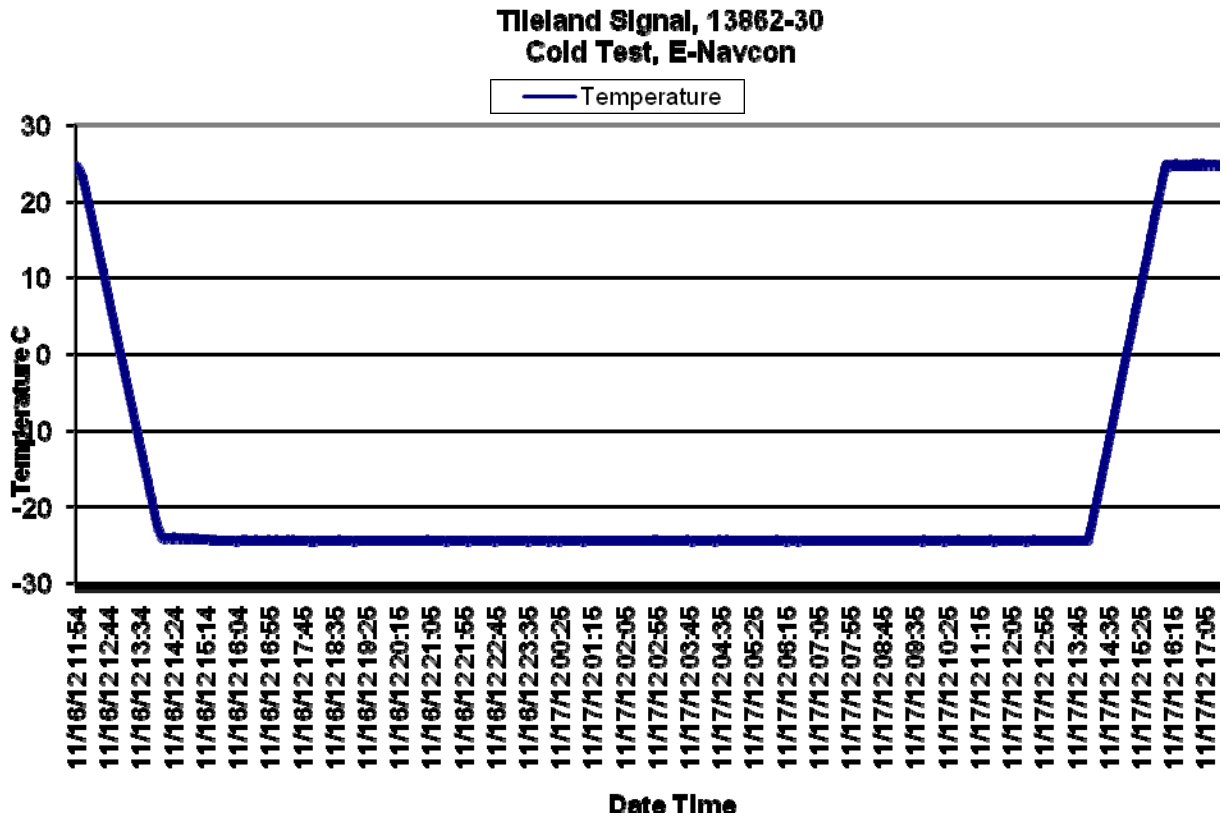
Professional Testing, EMI, Inc.			
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 IEC 60945 and IEC 60068-2-1**		
Test Method:	**Cold**		
Test Date:	**11/16 – 11/17/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**Dan Willemin**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

Cold Test Results	**Page 1 of 2**
Cold Test –25° C ± 3° C for up to 24 hours. The EUT was operational during the test.	Pass

Table 4.2.2.6: Cold Test Results, Page 2

Professional Testing, EMI, Inc.			
In Accordance With:	Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 IEC 60945 and IEC 60068-2-1		
Test Method:	Cold		
Test Date:	11/16 – 11/17/2012	EUT Serial #:	SN 7065
Customer:	Tideland Signal Corporation	EUT Part #:	E_NAVCON
Project Number:	13862-30	Test Technician:	Dan Willemin
Purchase Order #:	116585	Supervisor:	Yuki Fukuda
Equip. Under Test:	E-Navcon		

Cold Test Results	Page 2 of 2



Cold Test Chart

4.3 Vibration and Shock Tests

The objective of the vibration and shock tests was to verify the ability of the equipment to withstand vibration and shock stress, which may be experienced during use and transportation without exhibiting degradation in performance or structural damage.

4.3.1 Test Procedures

On November 20 through 21, 2012, the EUT was subjected to vibration and shock testing. Tests were conducted according to ISO 13628-6: 2006, Sections 11.2.5.2.1 and 11.2.5.2.2, Q2 requirement.

The EUT was subjected to sinusoidal vibration sweep from 5Hz to 25Hz with +/– 2 mm displacement, then from 25 Hz to 150 Hz at 5 G acceleration. A double sweep from 5 Hz to 150 Hz and back to 5 Hz was performed at a sweep rate of 1 octave per minute in each of the three orthogonal axes. The EUT was further subjected to random vibration endurance test per Figure 3 of ISO 13628-6: 2006. The composite excitation level was 6Grms, 20-2000Hz and test was performed for duration of 2 hours in Z axis.

The EUT was subjected to half-sine shock testing at 10 G at 11 ms, four pulses, +/– in each axis for all three axes.

During vibration and shock test, the EUT operation was verified using Racon self-test and AIS presentation logging.

4.3.2 Test Results

The EUT showed no damage post-vibration and shock tests. No resonance with mechanical amplification factor greater than 10 was observed in the range 5 Hz to 150 Hz during sinusoidal vibration test. The EUT passed the performance check during and after the vibration and shock test. The EUT met the requirements of ISO 13628: 2006, Sections 11.2.5.2.1 and 11.2.5.2.2, Q2.

Table 4.3.2.1: Vibration and Shock Test Equipment

Professional Testing, EMI, Inc.			
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and ISO 13628-6**		
Test Method:	**Vibration and Shock**	**Section:**	**Section 5.4.6**
Test Date:	**11/20 and 11/21/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**John Crawford**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

Vibration and Shock Test Equipment List — **Page 1 of 1**

Asset #	Manufacturer	Model	Equipment Nomenclature	Serial #	Calibration Due Date
1533	Dactron	V2.10	Shaker Controller	7221624	12/20/2012
1070	Dactron	V2.0	PCI DSP Card	3410179	N/A
1534	Ling	DMA4016E	Power Amp	035	N/A
1535	Ling	335VH	Shaker Table	154	N/A
1556	Endevco	133	Signal Conditioner	AF49	06/19/2013
2035	Dytran	3055B1G	Accelerometer	8952	10/12/2013
1618	Dytran	3055B1G	Accelerometer	3993	06/02/2013
2019	Dytran	3055B1G	Accelerometer	8732	06/07/2013

Table 4.3.2.2: Vibration and Shock Data Channel Designation

Professional Testing, EMI, Inc.			
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and ISO 13628-6**		
Test Method:	**Vibration and Shock**	**Section:**	**Section 5.4.6**
Test Date:	**11/20 and 11/21/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**John Crawford**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

Vibration Data Channel — **Page 1 of 1**

Input Channel	Description	Color
Input 1 (8952)	C1 Control on end of slip table in X & Y axis & on fixture in Z axis	Black
Input 2 (3993)	C2 Control on fixture in Z axis only for Random vibe	Black
Input 3 (8732)	R1 Response on unit above connector in axis	Red

Table 4.3.2.3: Vibration Test Results, Page 1

Professional Testing, EMI, Inc.			
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and ISO 13628-6**		
Test Method:	**Vibration**	**Section:**	**Section 5.4.6**
Test Date:	**11/20 and 11/21/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**John Crawford**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

Vibration Test Results			**Page 1 of 8**
	X Axis	**Y Axis**	**Z Axis**
Sine Sweep Vibration: 5 Hz to 25 Hz +/- 2 mm displacement at 3 dB per octave rise, 25 Hz to 150 Hz at 5 G acceleration, at 1 octave per minute. A double sweep from 5 Hz to 150 Hz and back to 5 Hz shall be performed in all 3 axes.	Pass Run #1	Pass Run #2	Pass Run #3
Random Vibration: 20 Hz to 80 Hz at 3 dB per octave rise, 80 Hz to 350 Hz at 0.04 g^2/Hz, 350 Hz to 2000 Hz at 3 dB per octave roll off. Composite 6 Grms for 2 hours in Z axis only	Not Required	Not Required	Pass Run #4

Table 4.3.2.4: Vibration Test Results, Page 2

Professional Testing, EMI, Inc.

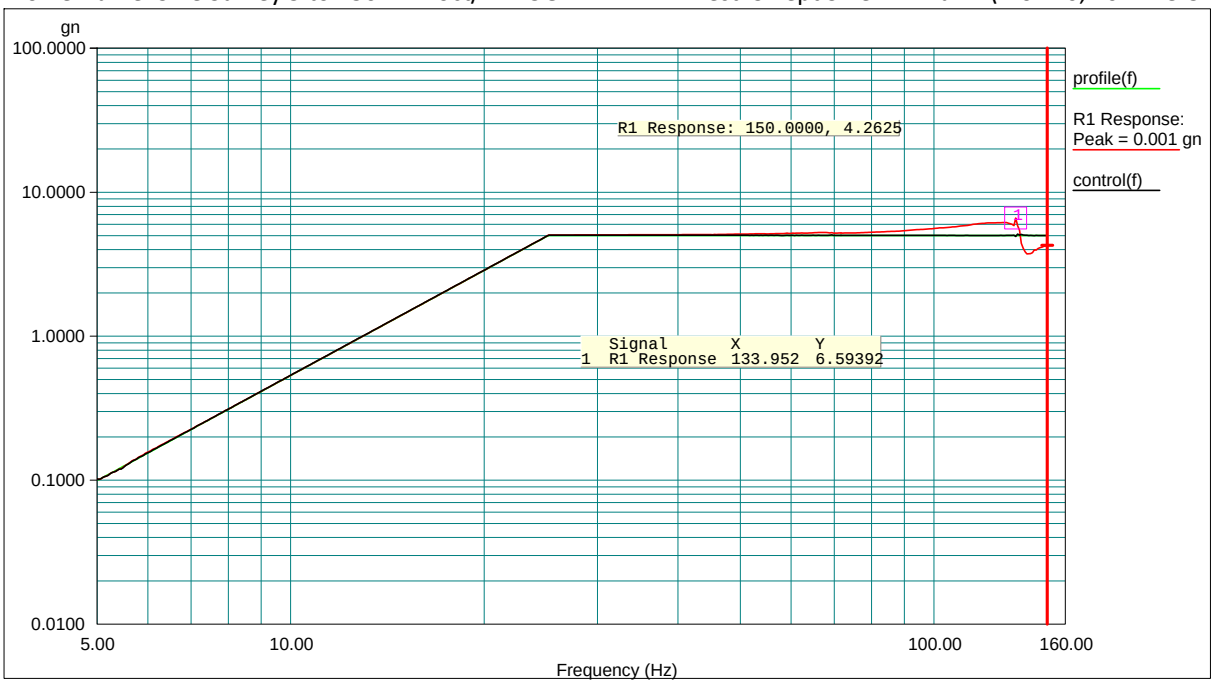
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and ISO 13628-6**		
Test Method:	**Vibration**	**Section:**	**Section 5.4.6**
Test Date:	**11/20 and 11/21/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**John Crawford**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

Vibration Test Results **Page 2 of 8**

Run # 1 X axis Sine Survey 5G PN E-NAVCON SN 7065 R1 marked sweep up

Project File Name: ISO 13628-6 5G sine 5-150Hz.prj

Profile Name: Sine Survey 5 to 150 Hz 1 oct/min 5G Test: Swept Sine Run : \ Nov 20, 2012 13-57-42



Level: 100 % Control Peak: 4.996784 gn Full Level Time: 00:04:55

Sweep Type: Logarithmic Frequency: 149.978378 Hz Demand Peak: 5.000000 gn

Time Remaining: 00:04:54 Sweep Rate: 1 Oct/Min

Data saved at 02:03:09 PM, Tuesday, November 20, 2012

Report created at 02:03:11 PM, Tuesday, November 20, 2012

X Axis, Run #1, Sine Sweep Up

Table 4.3.2.5: Vibration Test Results, Page 3

Professional Testing, EMI, Inc.

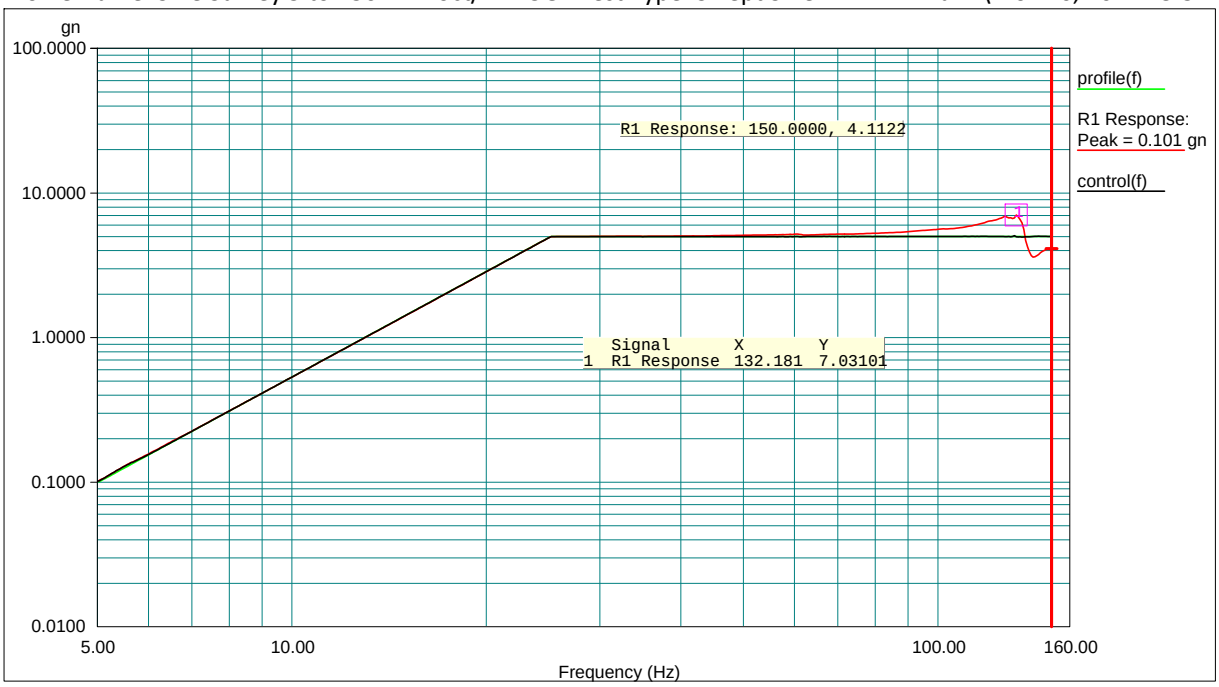
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and ISO 13628-6**		
Test Method:	**Vibration**	**Section:**	**Section 5.4.6**
Test Date:	**11/20 and 11/21/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**John Crawford**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

Vibration Test Results **Page 3 of 8**

Run # 1 X axis Sine Survey 5G PN E-NAVCON SN 7065 R1 marked sweep down

Project File Name: ISO 13628-6 5G sine 5-150Hz.prj

Profile Name: Sine Survey 5 to 150 Hz 1 oct/min 5G Test Type: Swept Sine Run: \ Nov 20, 2012 13-57-42



Level: 100 % Control Peak: 0.101278 gn Full Level Time: 00:09:49

Sweep Type: Logarithmic Frequency: 5.002398 Hz Demand Peak: 0.100642 gn

Time Remaining: 00:00:01 Sweep Rate: 1 Oct/Min

Data saved at 02:08:36 PM, Tuesday, November 20, 2012

Report created at 02:08:37 PM, Tuesday, November 20, 2012

X Axis, Run #1, Sine Sweep Down

Table 4.3.2.6: Vibration Test Results, Page 4

Professional Testing, EMI, Inc.

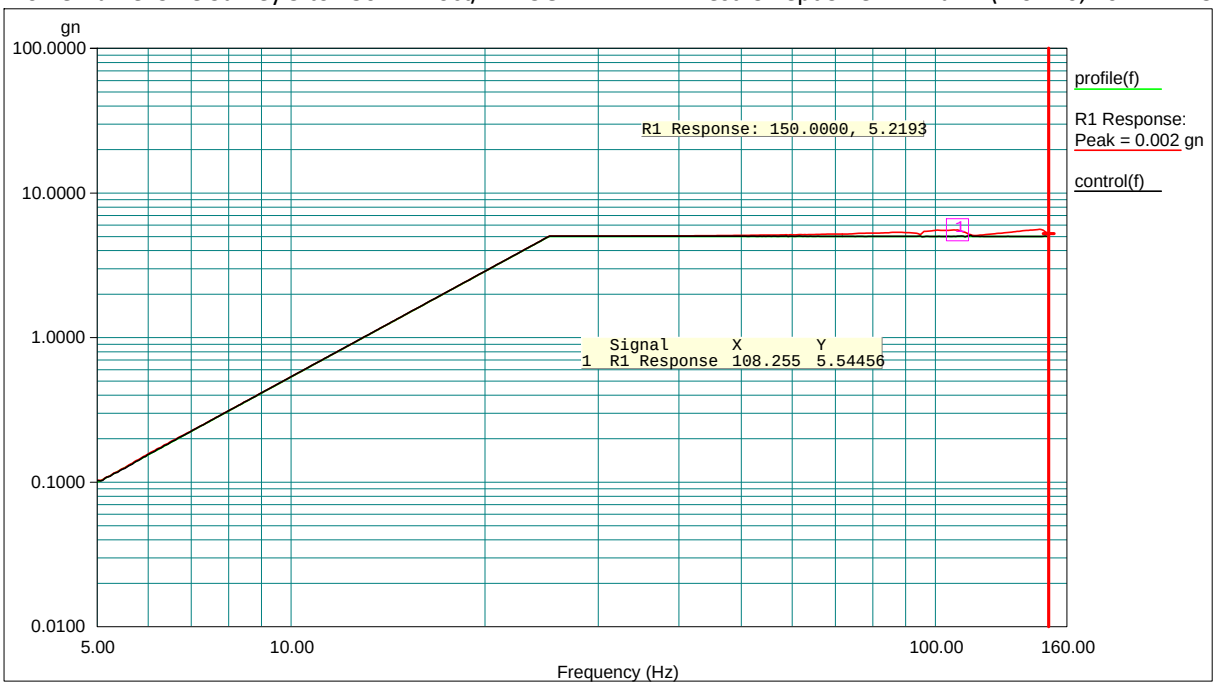
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and ISO 13628-6**		
Test Method:	**Vibration**	**Section:**	**Section 5.4.6**
Test Date:	**11/20 and 11/21/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**John Crawford**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

Vibration Test Results **Page 4 of 8**

Run # 2 Y axis Sine Survey 5G PN E-NAVCON SN 7065 R1 marked sweep up

Project File Name: ISO 13628-6 5G sine 5-150Hz.prj

Profile Name: Sine Survey 5 to 150 Hz 1 oct/min 5G Test: Swept Sine Run : \ Nov 20, 2012 14-29-42



Level: 100 % Control Peak: 5.015955 gn Full Level Time: 00:04:55

Sweep Type: Logarithmic Frequency: 149.867661 Hz Demand Peak: 5.000000 gn

Time Remaining: 00:04:54 Sweep Rate: 1 Oct/Min

Data saved at 02:35:22 PM, Tuesday, November 20, 2012

Report created at 02:35:23 PM, Tuesday, November 20, 2012

Y Axis, Run #2, Sine Sweep Up

Table 4.3.2.7: Vibration Test Results, Page 5

Professional Testing, EMI, Inc.

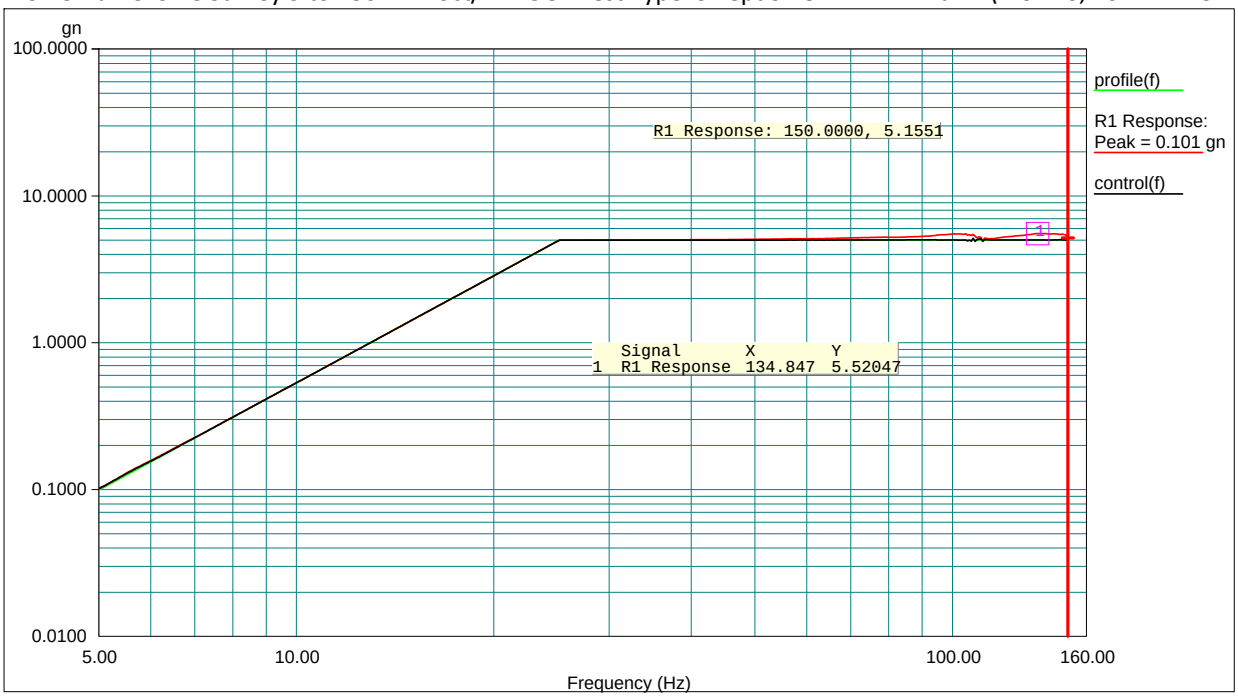
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and ISO 13628-6**		
Test Method:	**Vibration**	**Section:**	**Section 5.4.6**
Test Date:	**11/20 and 11/21/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**John Crawford**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

Vibration Test Results **Page 5 of 8**

Run # 2 Y axis Sine Survey 5G PN E-NAVCON SN 7065 R1 marked sweep down

Project File Name: ISO 13628-6 5G sine 5-150Hz.prj

Profile Name: Sine Survey 5 to 150 Hz 1 oct/min 5G Test Type: Swept Sine Run : \ Nov 20, 2012 14-29-42



Level: 100 % Control Peak: 0.101365 gn Full Level Time: 00:09:49

Sweep Type: Logarithmic Frequency: 5.001781 Hz Demand Peak: 0.100642 gn

Time Remaining: 00:00:01 Sweep Rate: 1 Oct/Min

Data saved at 02:40:54 PM, Tuesday, November 20, 2012

Report created at 02:40:55 PM, Tuesday, November 20, 2012

Y Axis, Run #2, Sine Sweep Down

Table 4.3.2.8: Vibration Test Results, Page 6

Professional Testing, EMI, Inc.

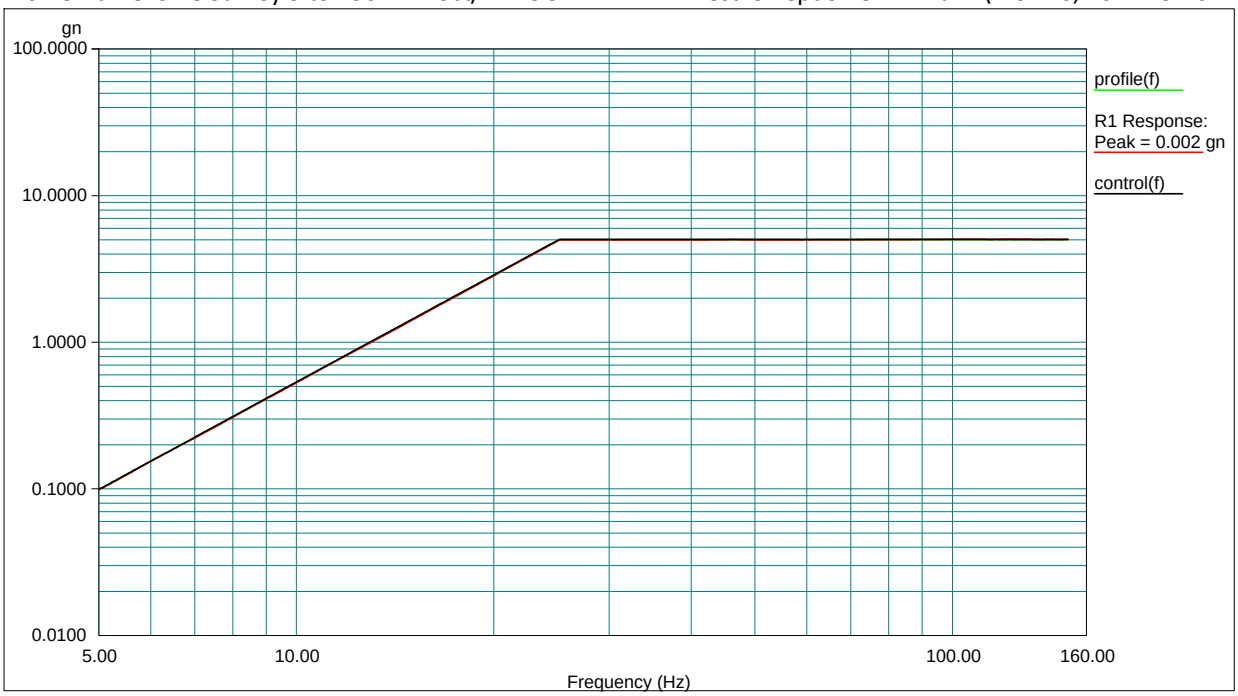
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and ISO 13628-6**		
Test Method:	**Vibration**	**Section:**	**Section 5.4.6**
Test Date:	**11/20 and 11/21/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**John Crawford**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

Vibration Test Results **Page 6 of 8**

Run # 3 Z axis Sine Survey 5G PN E-NAVCON SN 7065 R1 sweep up

Project File Name: ISO 13628-6 5G sine 5-150Hz.prj

Profile Name: Sine Survey 5 to 150 Hz 1 oct/min 5G Test: Swept Sine Run: \ Nov 20, 2012 15-20-44



Level: 100 % Control Peak: 5.017760 gn Full Level Time: 00:04:55

Sweep Type: Logarithmic Frequency: 149.959915 Hz Demand Peak: 5.000000 gn

Time Remaining: 00:04:54 Sweep Rate: 1 Oct/Min

Data saved at 03:26:16 PM, Tuesday, November 20, 2012

Report created at 03:26:17 PM, Tuesday, November 20, 2012

Z Axis, Run #3, Sine Sweep Up

Table 4.3.2.9: Vibration Test Results, Page 7

Professional Testing, EMI, Inc.

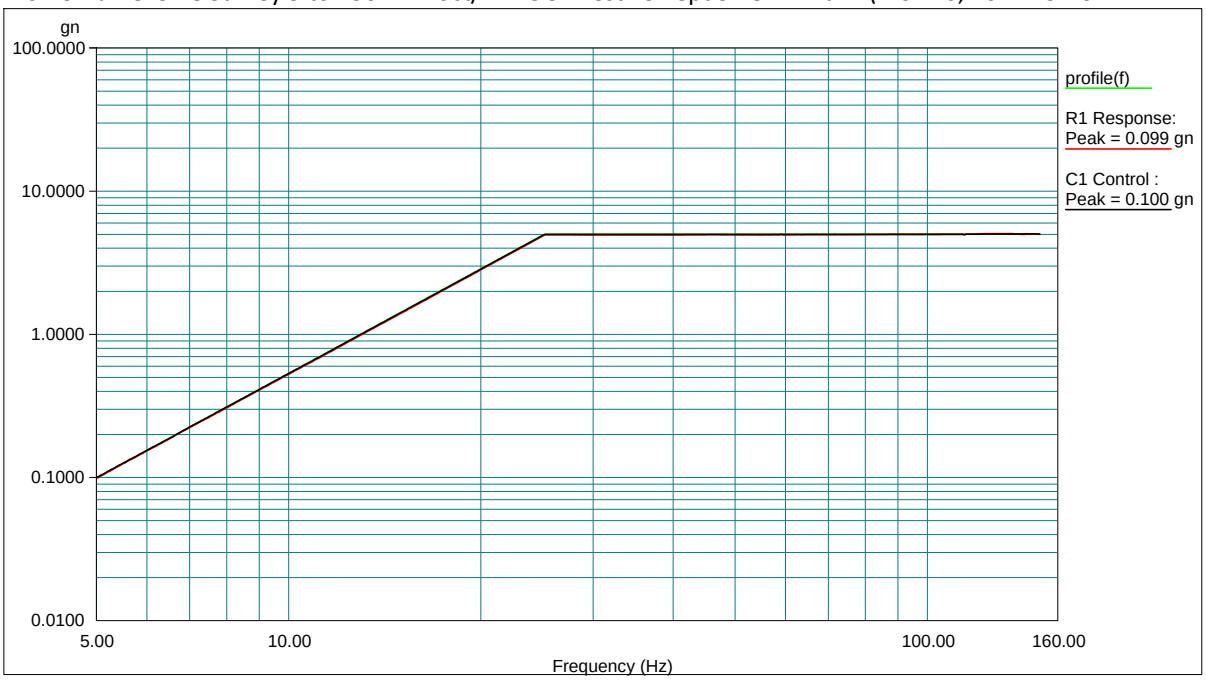
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and ISO 13628-6**		
Test Method:	**Vibration**	**Section:**	**Section 5.4.6**
Test Date:	**11/20 and 11/21/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**John Crawford**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

Vibration Test Results **Page 7 of 8**

Run # 3 Z axis Sine Survey 5G PN E-NAVCON SN 7065 R1 sweep down

Project File Name: ISO 13628-6 5G sine 5-150Hz.prj

Profile Name: Sine Survey 5 to 150 Hz 1 oct/min 5G Test : Swept Sine Run: \ Nov 20, 2012 15-20-44



Level: 100 % Control Peak: 0.100167 gn Full Level Time: 00:09:49

Sweep Type: Logarithmic Frequency: 5.001781 Hz Demand Peak: 0.100642 gn

Time Remaining: 00:00:01 Sweep Rate: 1 Oct/Min

Data saved at 03:32:27 PM, Tuesday, November 20, 2012

Report created at 03:32:28 PM, Tuesday, November 20, 2012

Z Axis, Run #3, Sine Sweep Down

Table 4.3.2.10: Vibration Test Results, Page 8

Professional Testing, EMI, Inc.

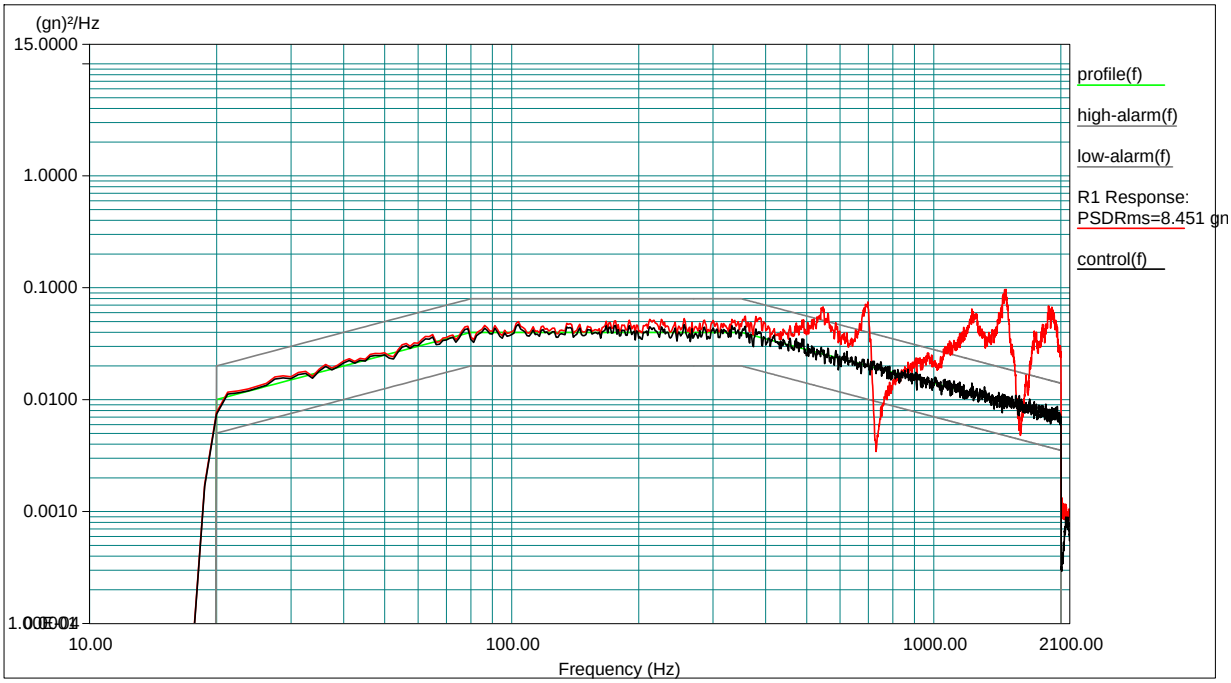
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and ISO 13628-6**		
Test Method:	**Vibration**	**Section:**	**Section 5.4.6**
Test Date:	**11/20 and 11/21/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**John Crawford**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

Vibration Test Results **Page 8 of 8**

Run # 4 Z axis PN E-NAVCON SN 7065 End of 2 hours

Project File Name: ISO 13628-6 Random 6.06 Grms 2 Hr.prj

Profile Name: Random 6.06 Grms 2 Hrs Test: Random Run: \ Nov 21, 2012 06-44-46



Level: 100 % Control RMS: 6.097196 gn Full Level Elapsed Time: 02:00:00

Lines: 1600 Frame Time: 0.800000 Seconds Demand RMS: 6.064654 gn

Remaining Time: 00:00:00 DOF: 154 dF: 1.250000 Hz

Data saved at 08:46:10 AM, Wednesday, November 21, 2012

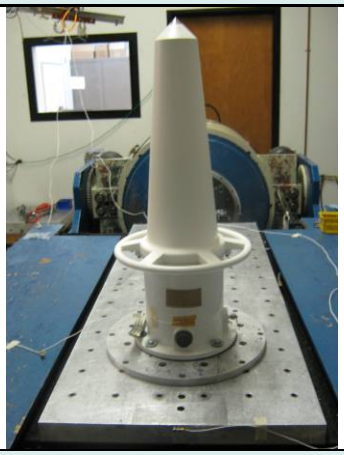
Report created at 08:46:14 AM, Wednesday, November 21, 2012

Z Axis, Run #4, Random Vibration

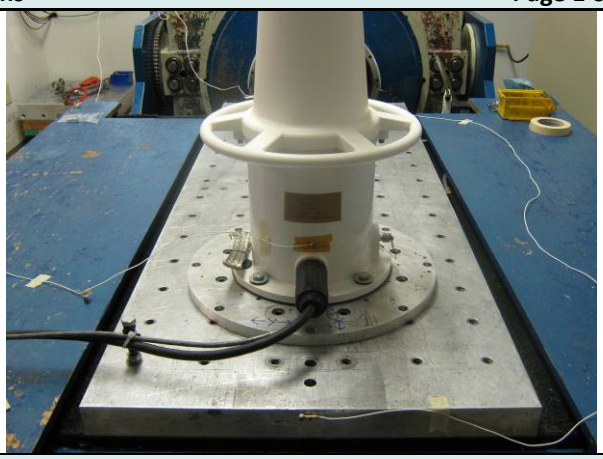
Table 4.3.2.11: Vibration and Shock Test Photographs, Page 1

Professional Testing, EMI, Inc.			
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and ISO 13628-6**		
Test Method:	**Vibration and Shock**	**Section:**	**Section 5.4.6**
Test Date:	**11/20 and 11/21/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**John Crawford**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

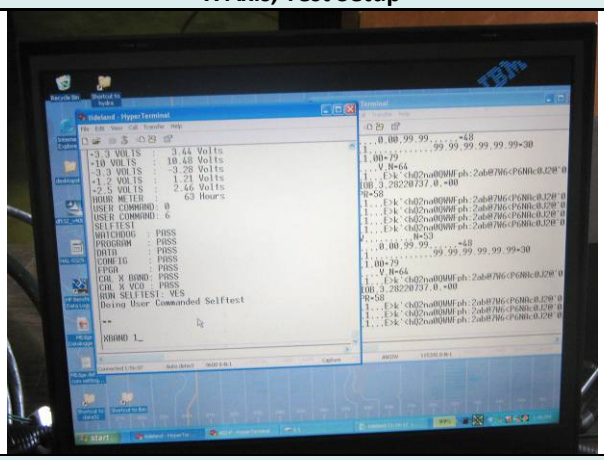
Vibration and Shock Test Photographs **Page 1 of 4**



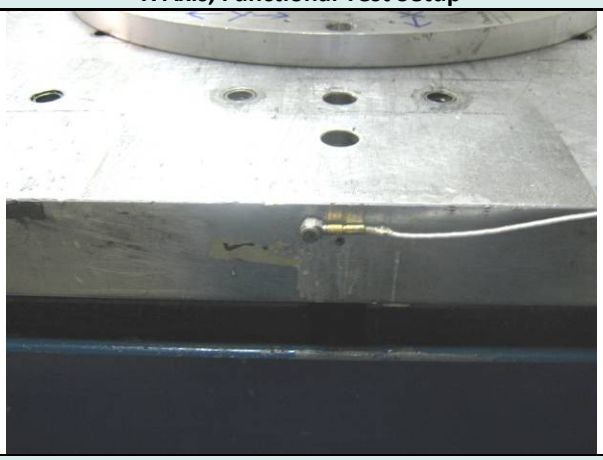
X Axis, Test Setup



X Axis, Functional Test Setup



X Axis, Functional Test Setup

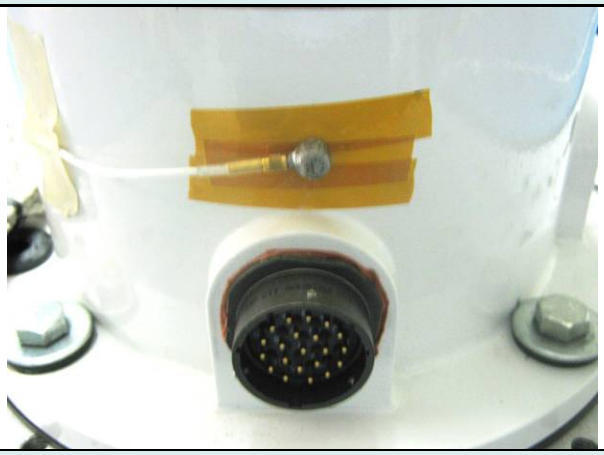


C1 Control in X Axis

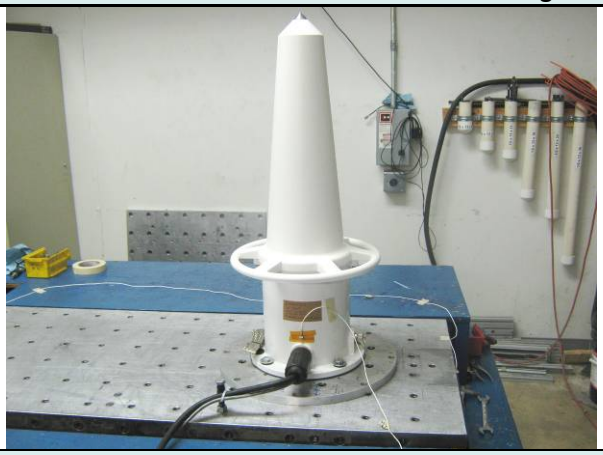
Table 4.3.2.12: Vibration and Shock Test Photographs, Page 2

Professional Testing, EMI, Inc.			
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and ISO 13628-6**		
Test Method:	**Vibration and Shock**	**Section:**	**Section 5.4.6**
Test Date:	**11/20 and 11/21/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**John Crawford**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

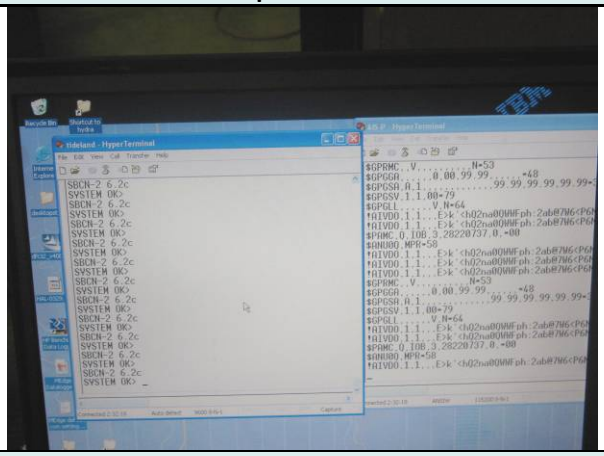
Vibration and Shock Test Photographs **Page 2 of 4**



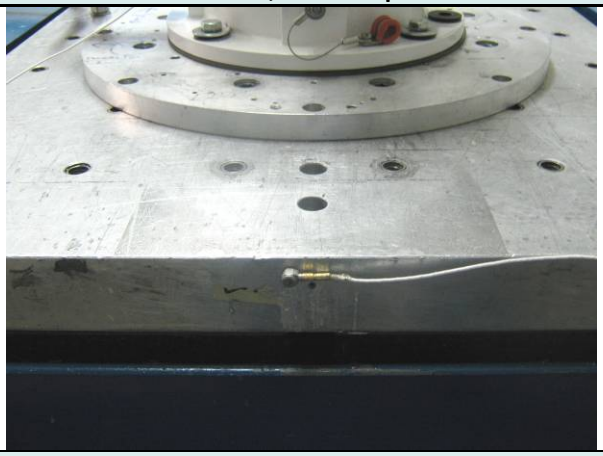
R1 Response in X Axis



Y Axis, Test Setup



Y Axis, Functional Test Setup



C1 Control in Y Axis

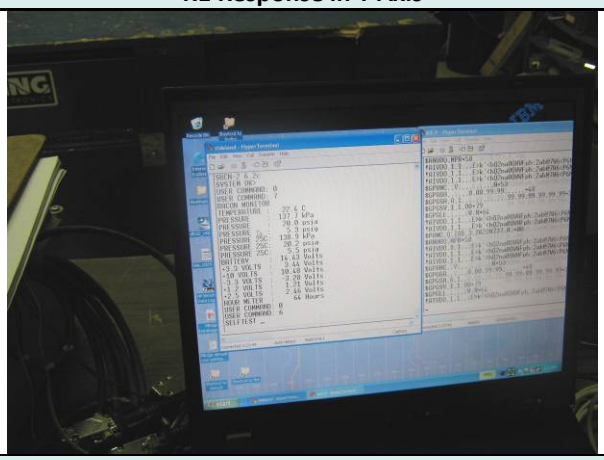
Table 4.3.2.13: Vibration and Shock Test Photographs, Page 3

Professional Testing, EMI, Inc.			
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and ISO 13628-6**		
Test Method:	**Vibration and Shock**	**Section:**	**Section 5.4.6**
Test Date:	**11/20 and 11/21/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**John Crawford**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

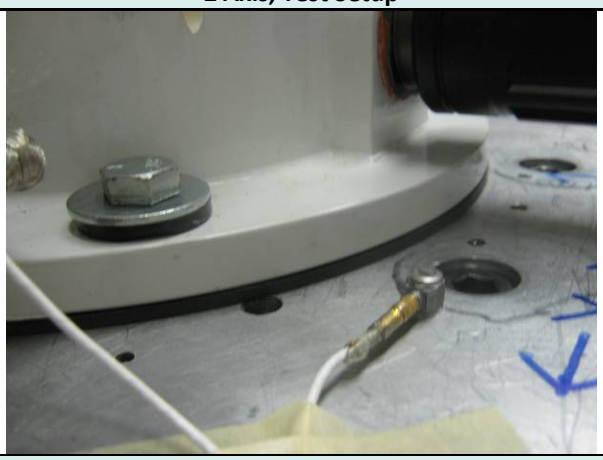
Vibration and Shock Test Photographs **Page 3 of 4**

R1 Response in Y Axis

Z Axis, Test Setup



Z Axis, Functional Test Setup

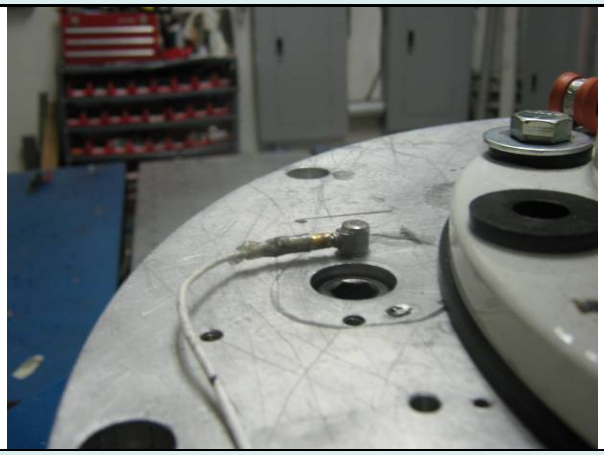


C1 Control in Z Axis

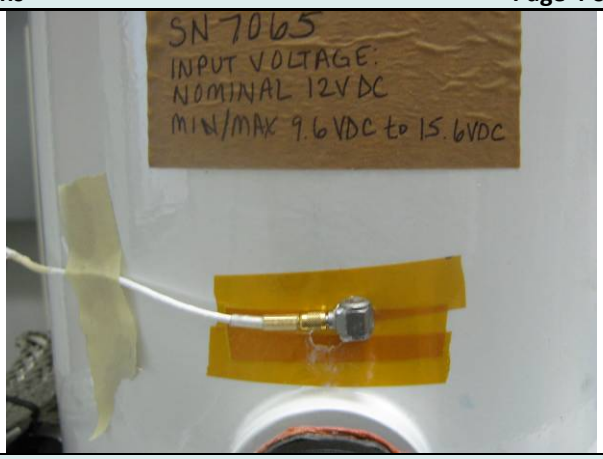
Table 4.3.2.14: Vibration and Shock Test Photographs, Page 4

Professional Testing, EMI, Inc.			
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and ISO 13628-6**		
Test Method:	**Vibration and Shock**	**Section:**	**Section 5.4.6**
Test Date:	**11/20 and 11/21/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**John Crawford**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

Vibration and Shock Test Photographs **Page 4 of 4**



C2 Control in Z Axis



R1 Response in Z Axis

Table 4.3.2.15: Shock Test Results, Page 1

Professional Testing, EMI, Inc.			
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and ISO 13628-6**		
Test Method:	**Shock**	**Section:**	**Section 5.4.6**
Test Date:	**11/20/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**John Crawford**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

Shock Test Results			**Page 1 of 7**
	X Axis	**Y Axis**	**Z Axis**
Shock: ISO 13628-6: 2006 Half sine 10 G, 11 ms, 4 shocks +/- each axis, 3 axes	Pass + / -	Pass + / -	Pass + / -

Table 4.3.2.16: Shock Test Results, Page 2

Professional Testing, EMI, Inc.

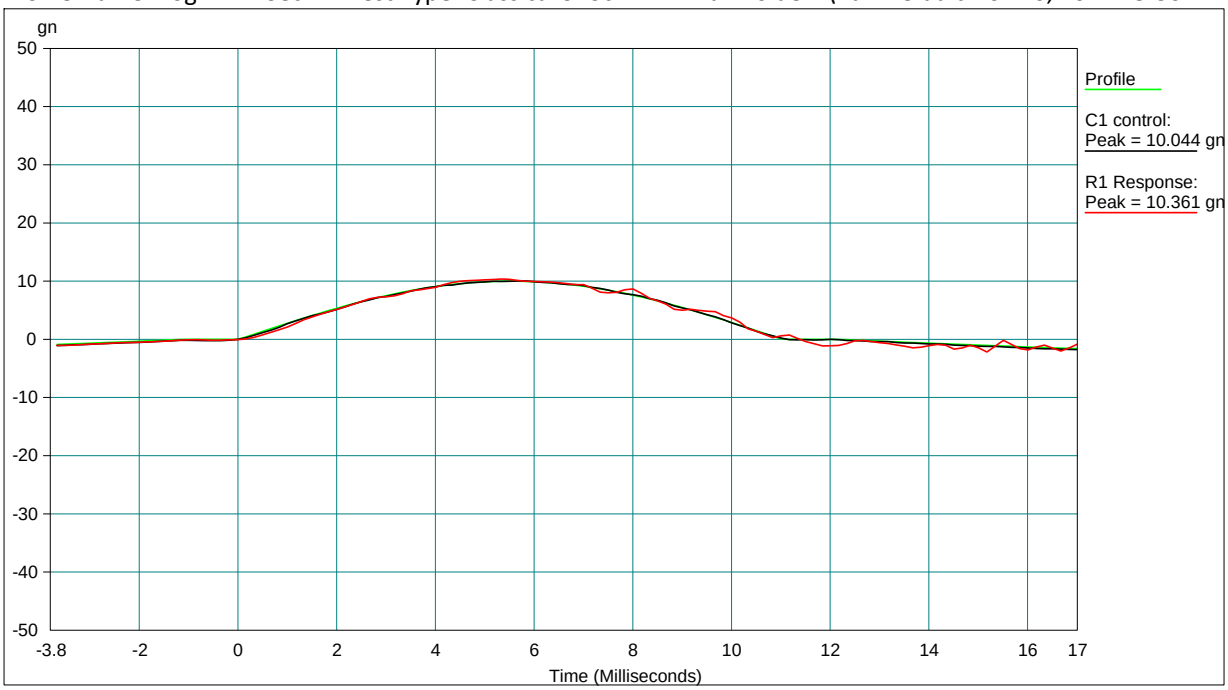
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and ISO 13628-6**		
Test Method:	**Shock**	**Section:**	**Section 5.4.6**
Test Date:	**11/20/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**John Crawford**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

Shock Test Results **Page 2 of 7**

+ X axis Op Shock 10g 11ms PN E-NAVCON SN 7065

Project File Name: ISO 13628-6 Shock Half Sine 10G 11ms.prj

Profile Name: 10gn 11mSec Test Type: Classical Shock Run Folder: \Run Default Nov 20, 2012 13-50-22



Level: 100 % Block Size: 1024 Elapsed Pulses: 10

Frame Time: 0.170667 Seconds Control Peak: 10.043740 gn Control RMS: 2.025975 gn

Full Level Elapsed Pulses: 4 dT: 0.000167 Seconds Demand Peak: 10.000000 gn

Demand RMS: 2.006089 gn Remaining Pulses: 0 Pulse Type: Half Sine

Amplitude: 10.000000 gn

Data saved at 01:51:07 PM, Tuesday, November 20, 2012

Report created at 01:51:09 PM, Tuesday, November 20, 2012

+ X Axis, Shock Test, 10 G, 11 ms

Table 4.3.2.17: Shock Test Results, Page 3

Professional Testing, EMI, Inc.

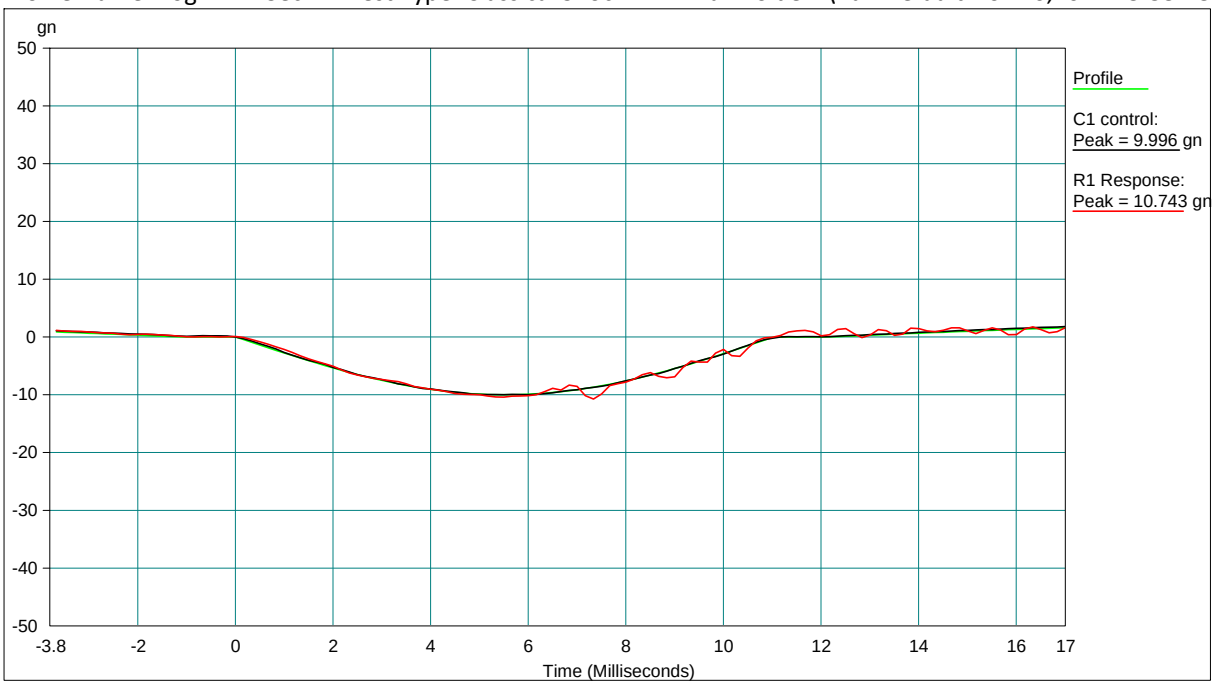
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and ISO 13628-6**		
Test Method:	**Shock**	**Section:**	**Section 5.4.6**
Test Date:	**11/20/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**John Crawford**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

Shock Test Results **Page 3 of 7**

- X axis Op Shock 10g 11ms PN E-NAVCON SN 7065

Project File Name: ISO 13628-6 Shock Half Sine 10G 11ms.prj

Profile Name: 10gn 11mSec Test Type: Classical Shock Run Folder: \Run Default Nov 20,2012 13-53-13



Level: 100 % Block Size: 1024 Elapsed Pulses: 10

Frame Time: 0.170667 Seconds Control Peak: 9.996268 gn Control RMS: 2.025826 gn

Full Level Elapsed Pulses: 4 dT: 0.000167 Seconds Demand Peak: 10.000000 gn

Demand RMS: 2.006089 gn Remaining Pulses: 0 Pulse Type: Half Sine

Amplitude: 10.000000 gn

Data saved at 01:54:18 PM, Tuesday, November 20, 2012

Report created at 01:54:19 PM, Tuesday, November 20, 2012

- X Axis, Shock Test, 10 G, 11 ms

Table 4.3.2.18: Shock Test Results, Page 4

Professional Testing, EMI, Inc.

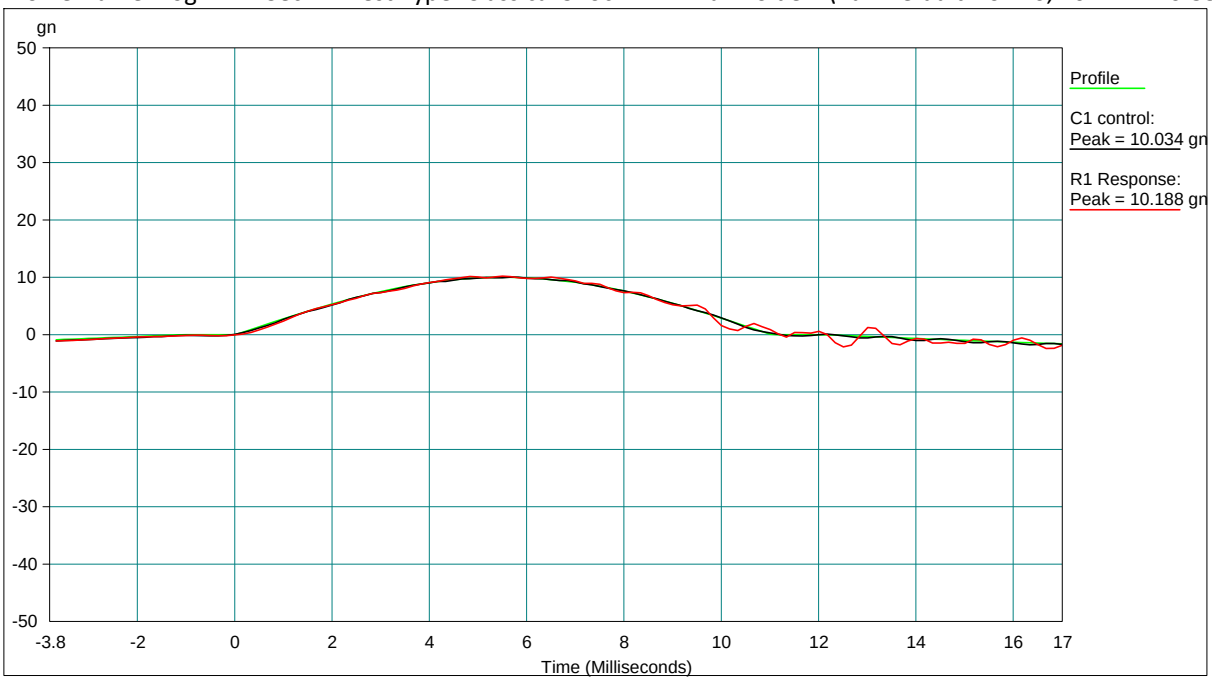
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and ISO 13628-6**		
Test Method:	**Shock**	**Section:**	**Section 5.4.6**
Test Date:	**11/20/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**John Crawford**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

Shock Test Results **Page 4 of 7**

+ Y axis Op Shock 10g 11ms PN E-NAVCON SN 7065

Project File Name: ISO 13628-6 Shock Half Sine 10G 11ms.prj

Profile Name: 10gn 11mSec Test Type: Classical Shock Run Folder: \Run Default Nov 20, 2012 14-26-53



Level: 100 % Block Size: 1024 Elapsed Pulses: 10

Frame Time: 0.170667 Seconds Control Peak: 10.034266 gn Control RMS: 2.024210 gn

Full Level Elapsed Pulses: 4 dT: 0.000167 Seconds Demand Peak: 10.000000 gn

Demand RMS: 2.006089 gn Remaining Pulses: 0 Pulse Type: Half Sine

Amplitude: 10.000000 gn

Data saved at 02:27:41 PM, Tuesday, November 20, 2012

Report created at 02:27:43 PM, Tuesday, November 20, 2012

+ Y Axis, Shock Test, 10 G, 11 ms

Table 4.3.2.19: Shock Test Results, Page 5

Professional Testing, EMI, Inc.

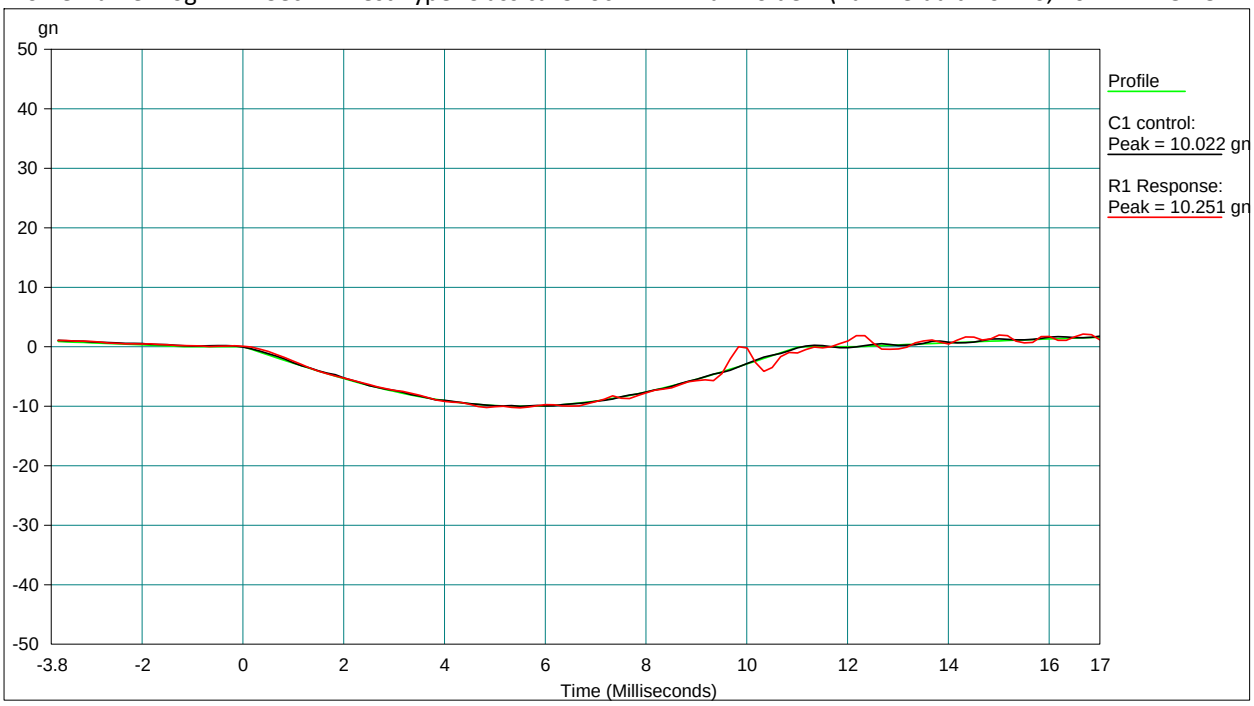
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and ISO 13628-6**		
Test Method:	**Shock**	**Section:**	**Section 5.4.6**
Test Date:	**11/20/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**John Crawford**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

Shock Test Results **Page 5 of 7**

- Y axis Op Shock 10g 11ms PN E-NAVCON SN 7065

Project File Name: ISO 13628-6 Shock Half Sine 10G 11ms.prj

Profile Name: 10gn 11mSec Test Type: Classical Shock Run Folder: \Run Default Nov 20, 2012 14-28-13



Level: 100 % Block Size: 1024 Elapsed Pulses: 10

Frame Time: 0.170667 Seconds Control Peak: 10.022056 gn Control RMS: 2.025358 gn

Full Level Elapsed Pulses: 4 dT: 0.000167 Seconds Demand Peak: 10.000000 gn

Demand RMS: 2.006089 gn Remaining Pulses: 0 Pulse Type: Half Sine

Amplitude: 10.000000 gn

Data saved at 02:28:57 PM, Tuesday, November 20, 2012

Report created at 02:28:59 PM, Tuesday, November 20, 2012

- Y Axis, Shock Test, 10 G, 11 ms

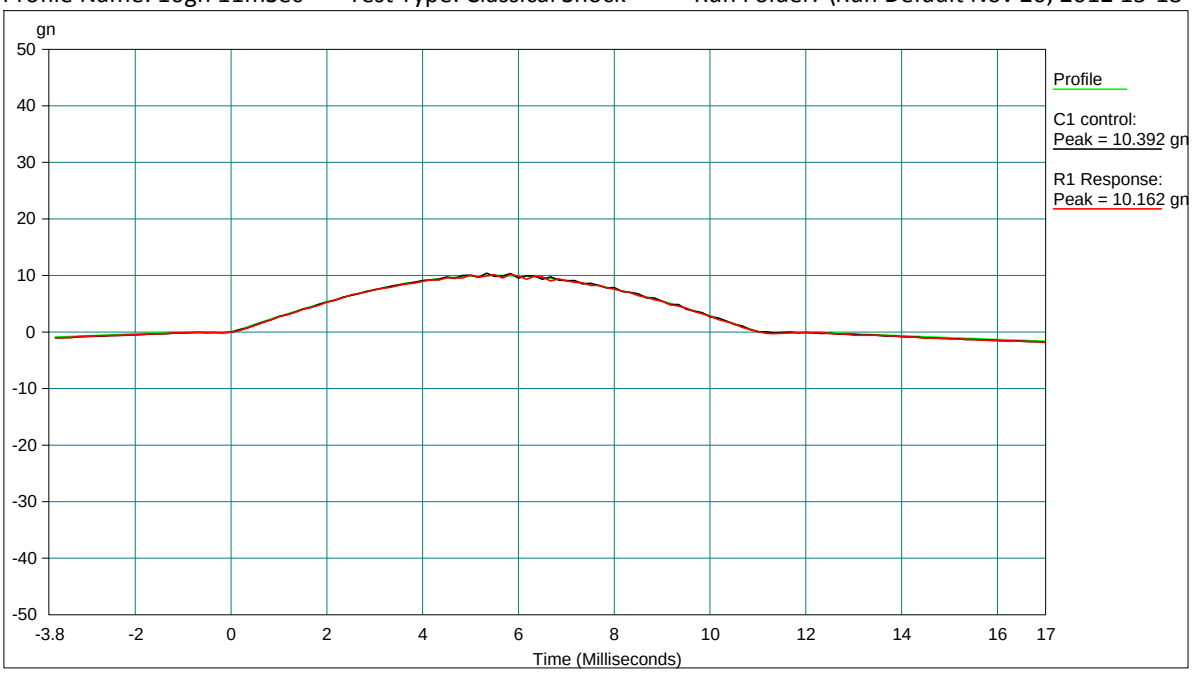
Table 4.3.2.20: Shock Test Results, Page 6

Professional Testing, EMI, Inc.

In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and ISO 13628-6**		
Test Method:	**Shock**	**Section:**	**Section 5.4.6**
Test Date:	**11/20/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**John Crawford**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

Shock Test Results **Page 6 of 7**

+ Z axis Op Shock 10g 11ms PN E-NAVCON SN 7065
Project File Name: ISO 13628-6 Shock Half Sine 10G 11ms.prj
Profile Name: 10gn 11mSec Test Type: Classical Shock Run Folder: \Run Default Nov 20, 2012 15-18-01



Level: 100 % Block Size: 1024 Elapsed Pulses: 10
Frame Time: 0.170667 Seconds Control Peak: 10.391979 gn Control RMS: 2.029878 gn
Full Level Elapsed Pulses: 4 dT: 0.000167 Seconds Demand Peak: 10.000000 gn
Demand RMS: 2.006089 gn Remaining Pulses: 0 Pulse Type: Half Sine
Amplitude: 10.000000 gn
Data saved at 03:18:53 PM, Tuesday, November 20, 2012
Report created at 03:18:56 PM, Tuesday, November 20, 2012

+ Z Axis, Shock Test, 10 G, 11 ms

Table 4.3.2.21: Shock Test Results, Page 7

Professional Testing, EMI, Inc.

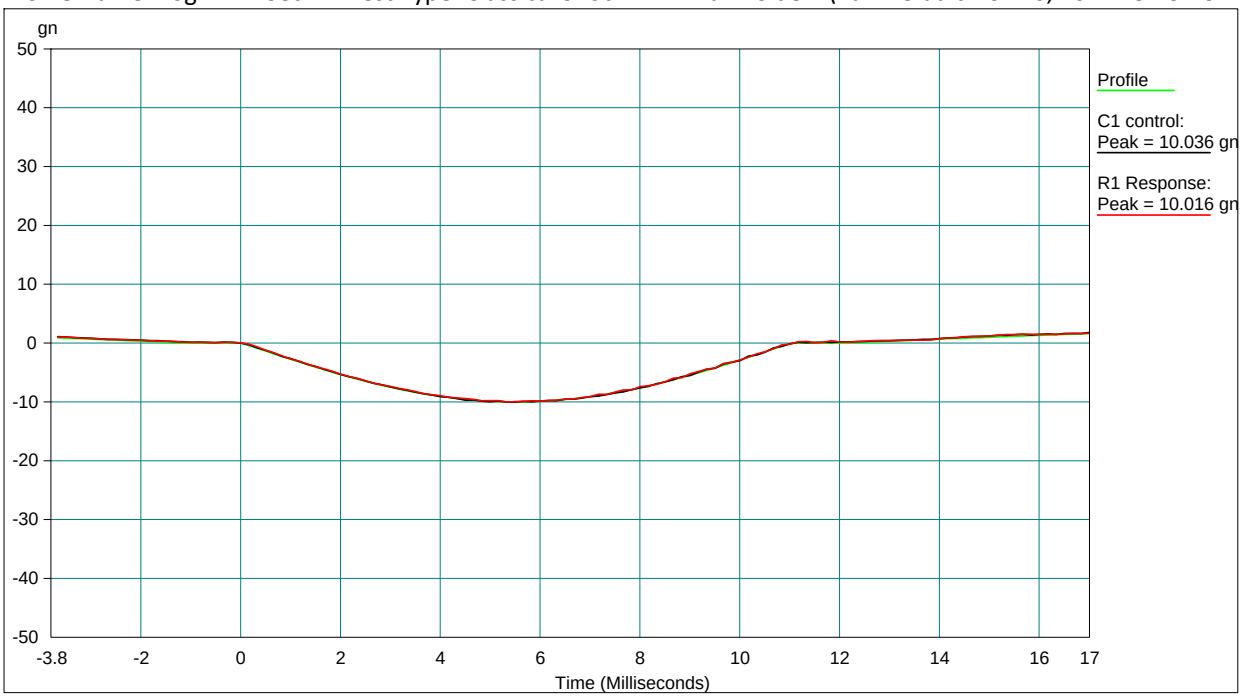
In Accordance With:	**Tideland Signal Test Plan for E-Navcon, Rev 0.3, Dated on 6/4/12 and ISO 13628-6**		
Test Method:	**Shock**	**Section:**	**Section 5.4.6**
Test Date:	**11/20/2012**	**EUT Serial #:**	**SN 7065**
Customer:	**Tideland Signal Corporation**	**EUT Part #:**	**E_NAVCON**
Project Number:	**13862-30**	**Test Technician:**	**John Crawford**
Purchase Order #:	**116585**	**Supervisor:**	**Yuki Fukuda**
Equip. Under Test:	**E-Navcon**		

Shock Test Results **Page 7 of 7**

- Z axis Op Shock 10g 11ms PN E-NAVCON SN 7065

Project File Name: ISO 13628-6 Shock Half Sine 10G 11ms.prj

Profile Name: 10gn 11mSec Test Type: Classical Shock Run Folder: \Run Default Nov 20, 2012 15-19-29



Level: 100 % Block Size: 1024 Elapsed Pulses: 10

Frame Time: 0.170667 Seconds Control Peak: 10.036228 gn Control RMS: 2.028631 gn

Full Level Elapsed Pulses: 4 dT: 0.000167 Seconds Demand Peak: 10.000000 gn

Demand RMS: 2.006089 gn Remaining Pulses: 0 Pulse Type: Half Sine

Amplitude: 10.000000 gn

Data saved at 03:20:13 PM, Tuesday, November 20, 2012

Report created at 03:20:14 PM, Tuesday, November 20, 2012

- Z Axis, Shock Test, 10 G, 11 ms

End of Report

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