

National Technical Systems Test Report for Environmental and Dynamics Testing of the Media Converter

Prepared For

Amphenol Aerospace | 191 Delaware Ave | Sidney, NY 13838

Performed By

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A handwritten signature in blue ink, reading "Brett Leslie".

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Technical Writer

A handwritten signature in blue ink, reading "Mark Betts".

Mark Betts
ENV Project Engineer

A handwritten signature in blue ink, reading "Mark Betts".

Mark Betts
Quality Management Representative

This report and the information contained herein represents the results of testing of only those articles/products identified in this document and selected by the client. The tests were performed to specifications and/or procedures approved by the client. National Technical Systems ("NTS") makes no representations expressed or implied that such testing fully demonstrates efficiency, performance, reliability, or any other characteristic of the articles being tested, or similar products. This report should not be relied upon as an endorsement or certification by NTS of the equipment tested, nor does it present any statement whatsoever as to the merchantability or fitness of the test article or similar products for a particular purpose. This document shall not be reproduced except in full without written approval from NTS.



Revision History

Rev.	Description	Issue Date
0	Initial Release	02/04/2022

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1.0 Introduction

This document presents the test procedures used and the results obtained during the performance of an Environmental and Dynamics test program. The test program was conducted to assess the ability of the specified Equipment Under Test (EUT) to successfully satisfy the requirements listed in Section 2.0.

2.0 References

The following references listed below form a part of this document to the extent specified herein.

- Test Specification: Customer provided document, *Environmental Requirements for Equipment in the Gripen E Aircraft. Cabin REF39-P-4.1.2 Rev 5*, dated 12/08/2017
- Amphenol Aerospace Purchase Order(s) 366684, dated 12/17/2021
- National Technical Systems (NTS) Quote(s) OP0595536-1, dated 10/26/2021
- ISO/IEC 17025:2017(E) *General Requirements for the Competence of Testing and Calibration Laboratories*, dated 11/1/2017

3.0 Product Selection and Description

Amphenol Aerospace selected and provided the test sample(s) to be used as the Equipment Under Test. Details below:

Table 3.0-1: Product Identification - Equipment Under Test (EUT)

Item	Qty.	Name/Description	Part Number	Serial Number
1	4	Media Converter	CF-020011-36N	0001, 0002, 0003, 0005

3.0.1 Received EUT Photographs



EUT Receiving 1



EUT Receiving 2



EUT Receiving 3



EUT Receiving 4



EUT Receiving 5



EUT Receiving 6



EUT Receiving 7



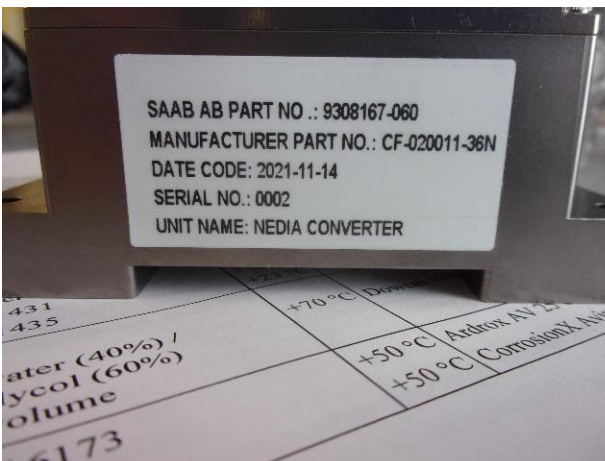
EUT Receiving 8



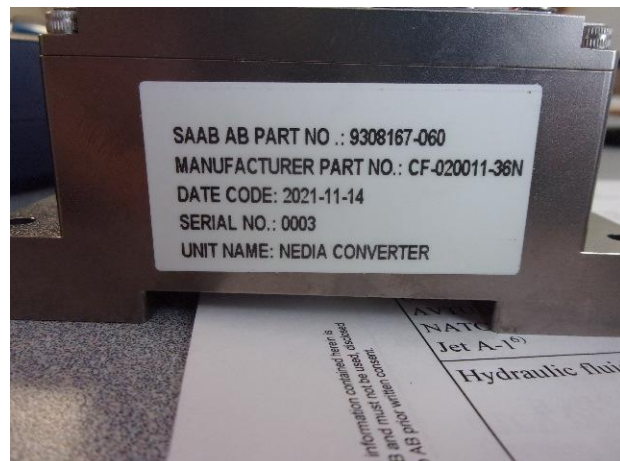
EUT Receiving 9



EUT Receiving 10



EUT Receiving SN/PN



EUT Receiving SN/PN



3.1 Security Classification

Non-classified

4.0 General Test Requirements

4.1 Test Equipment

The instrumentation used in the performance of these tests is periodically calibrated and standardized within manufacturer's rated accuracies and are traceable to the National Institute of Standards and Technology. The calibration procedures and practices are in accordance with ISO 17025:2017. Certification of calibration is on file subject to inspection by authorized personnel.



5.0 Test Descriptions and Results

Table 5.0-1: Summary of Test Information & Results

Section	Test	Specification	Test Facility	Test Date	Part #	Serial #	Test Result
5.1	Water - Drip	Customer provided document, Environmental Requirements for Equipment in the Gripen E Aircraft. Cabin REF39-P-4.1.2 Rev 5	Tinton Falls	12/06/2021	CF-020011-36N	0001	Passed
5.2	Explosive Atmosphere	Customer provided document, Environmental Requirements for Equipment in the Gripen E Aircraft. Cabin REF39-P-4.1.2 Rev 5	Tinton Falls	12/09/2021	CF-020011-36N	0001	Passed
5.3	Acceleration	Customer provided document, Environmental Requirements for Equipment in the Gripen E Aircraft. Cabin REF39-P-4.1.2 Rev 5	Tinton Falls	12/10/2021	CF-020011-36N	0001	Passed
5.4	Blowing Dust	Customer provided document, Environmental Requirements for Equipment in the Gripen E Aircraft. Cabin REF39-P-4.1.2 Rev 5	Tinton Falls	12/14/2021 - 12/15/2021	CF-020011-36N	0001	Passed
5.5	Blowing Sand	Customer provided document, Environmental Requirements for Equipment in the Gripen E Aircraft. Cabin REF39-P-4.1.2 Rev 5	Tinton Falls	12/16/2021 - 12/17/2021	CF-020011-36N	0001	Passed
5.6	Contamination by Fluids	Customer provided document, Environmental Requirements for Equipment in the Gripen E Aircraft. Cabin REF39-P-4.1.2 Rev 5	Tinton Falls	12/15/2021 - 01/17/2022	CF-020011-36N	0002, 0003	Passed
5.7	Bump	Customer provided document, Environmental Requirements for Equipment in the Gripen E Aircraft. Cabin REF39-P-4.1.2 Rev 5	Tinton Falls	12/21/2021	CF-020011-36N	0001	Passed
5.8	Humidity - Damp Heat	Customer provided document, Environmental Requirements for Equipment in the Gripen E Aircraft. Cabin REF39-P-4.1.2 Rev 5	Tinton Falls	12/21/2021 - 01/04/2022	CF-020011-36N	0005	Passed

Section	Test	Specification	Test Facility	Test Date	Part #	Serial #	Test Result
5.9	Bench Handling	Customer provided document, Environmental Requirements for Equipment in the Gripen E Aircraft. Cabin REF39-P-4.1.2 Rev 5	Tinton Falls	01/04/2022	CF-020011-36N	0005	Passed
5.10	Ice - Freezing Rain	Customer provided document, Environmental Requirements for Equipment in the Gripen E Aircraft. Cabin REF39-P-4.1.2 Rev 5	Tinton Falls	01/05/2022 - 01/07/2022	CF-020011-36N	0005	Passed

The decision rule for Test Results was based on the Test Specification used for testing.



5.1 Water - Drip

5.1.1 Test Procedure

The EUT was tested in accordance with the customer provided document, Environmental Requirements for Equipment in the Gripen E Aircraft. Cabin REF39-P-4.1.2 Rev 5.

5.1.2 Test Result

Test Result: The EUT passed.

5.1.3 Test Datasheets

DATA SHEET					
Job Number: PR149154			Date: 12/6/21		Page 1 of 1
Client: Amphenol Aerospace			P. O. No.:		
Test: Drip			Test Item: FTC Converter		
Specification: REF39-P-4.1.2 Issue 5			Model or P/N: CF-020011-36N		
Para./Sect.: Section 1.14			S/N(s): 0001		
Remarks: The test was performed with the drip pan at a minimum height of 3 feet above the EUT. A functional test was performed before and after the waterproofness testing.					
Interval (mins)	Unit Temp. (°C)	Water Temp. (°C)	Drip Rate (L/m²/hr)	Result Pass/Fail	Operational/Non-Operational
15	30	20	280	Pass	Non-Operational
Test Performed By: Brian Pasznik					
Project Manager: Mark Betts					



GENERAL LOG SHEET			
Job Number: PR149154		Date: 12/6/21	Page 1 of 1
Client: Amphenol Aerospace			
Test: Drip		Test Item: FTC Converter	
Specification: REF39-P-4.1.2 Issue 5		Model or P/N: CF-020011-36N	
Para./Sect.: Section 1.14		S/N(s): 0001	
Date	Time	Log Entries	Init.
12/6	13:11	Placed EUT in the temperature chamber and set the temperature to 30C	BP
12/6	13:55	Started the drip test at a height of 3ft	BP
12/6	14:11	Completed Testing - Pass	BP
Test Performed By: Brian Pasznik			

5.1.4 Test Photographs



EUT SN



Pre Test Stabilization



Drip



Drip 2



Post Test 1



Post Test 2



5.1.5 Test Equipment List

Table 5.1-1: Water - Drip Test Equipment List

Asset Number	Asset Type	Manufacturer	Model	Calibrated	Due
WC005534	Pan (Drip)	National Technical Systems	N/A	NCR	NCR
WC005550	Stopwatch (Digital)	Radio Shack	63-5017	08/12/2021	08/12/2022

Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required



5.2 Explosive Atmosphere

5.2.1 Test Procedure

The EUT was tested in accordance with the customer provided document, Environmental Requirements for Equipment in the Gripen E Aircraft. Cabin REF39-P-4.1.2 Rev 5.

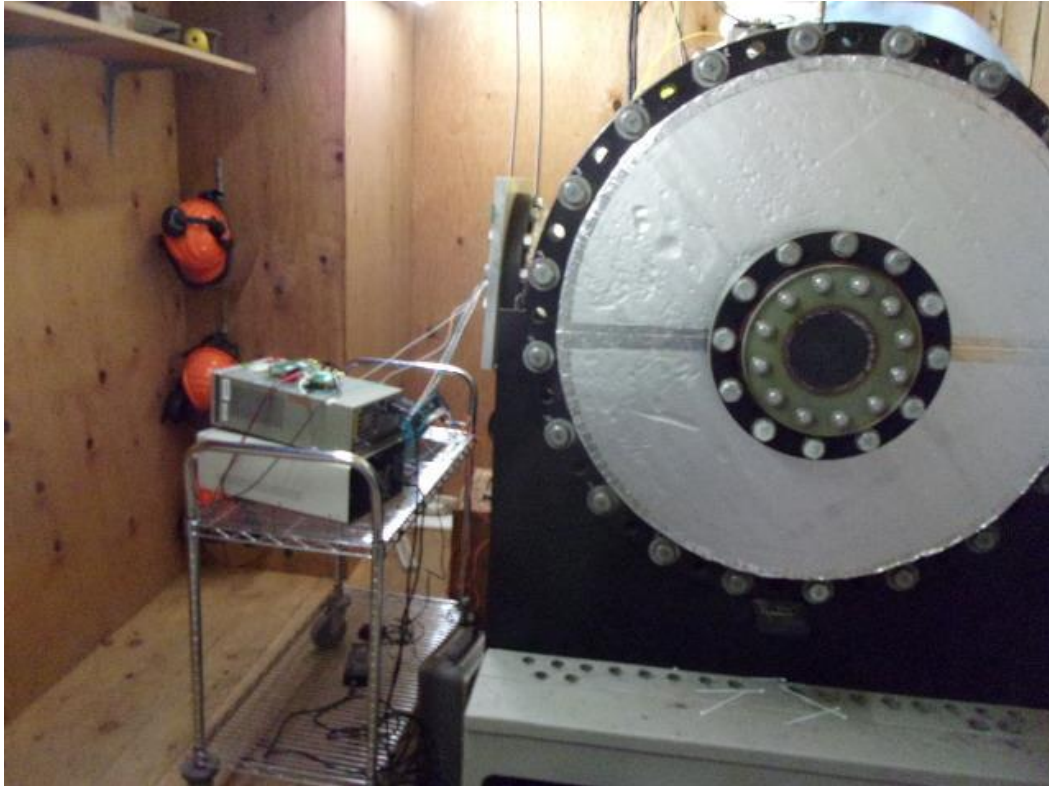
5.2.2 Test Result

Test Result: The EUT passed.

5.2.3 Test Datasheets

GENERAL LOG SHEET			
Job Number: PR149154		Date: 12/9/21	Page 1 of 1
Client: Amphenol Aerospace			
Test: Explosive Atmosphere		Test Item: FTC Converter	
Specification: REF39-P-4.1.2 Rev 5		Model or P/N: CF-020011-36N	
Para./Sect.: Method 511.5		S/N(s): 0001	
Date	Time	Log Entries	Init.
12/9	7:37	Started heating chamber to 60C	BP
12/9	13:38	Started ramp to 36,500ft	BP
12/9	13:42	Added 61ml of hexane	BP
12/9	13:45	Adjusted chamber to 33,300ft	BP
12/9	13:46	Verified explosiveness of the chamber	BP
12/9	13:47	Powered on EUT a total of 3 cycles and started the functional check	BP
12/9	13:50	Adjusted chamber to 26,600ft	BP
12/9	14:09	Verified explosiveness of the chamber	BP
12/9	14:11	Adjusted chamber to 6600ft	BP
12/9	14:15	Added 144ml of hexane (205ml total)	BP
12/9	14:19	Verified explosiveness of the chamber	BP
12/9	14:21	Powered on EUT a total of 3 cycles and started the functional check	BP
12/9	14:24	Adjusted chamber to 0ft	BP
12/9	14:34	Verified explosiveness of the chamber	BP
12/9	14:45	Completed Testing - Pass	BP
Test Performed By: Brian Pasznik			

5.2.4 Test Photographs

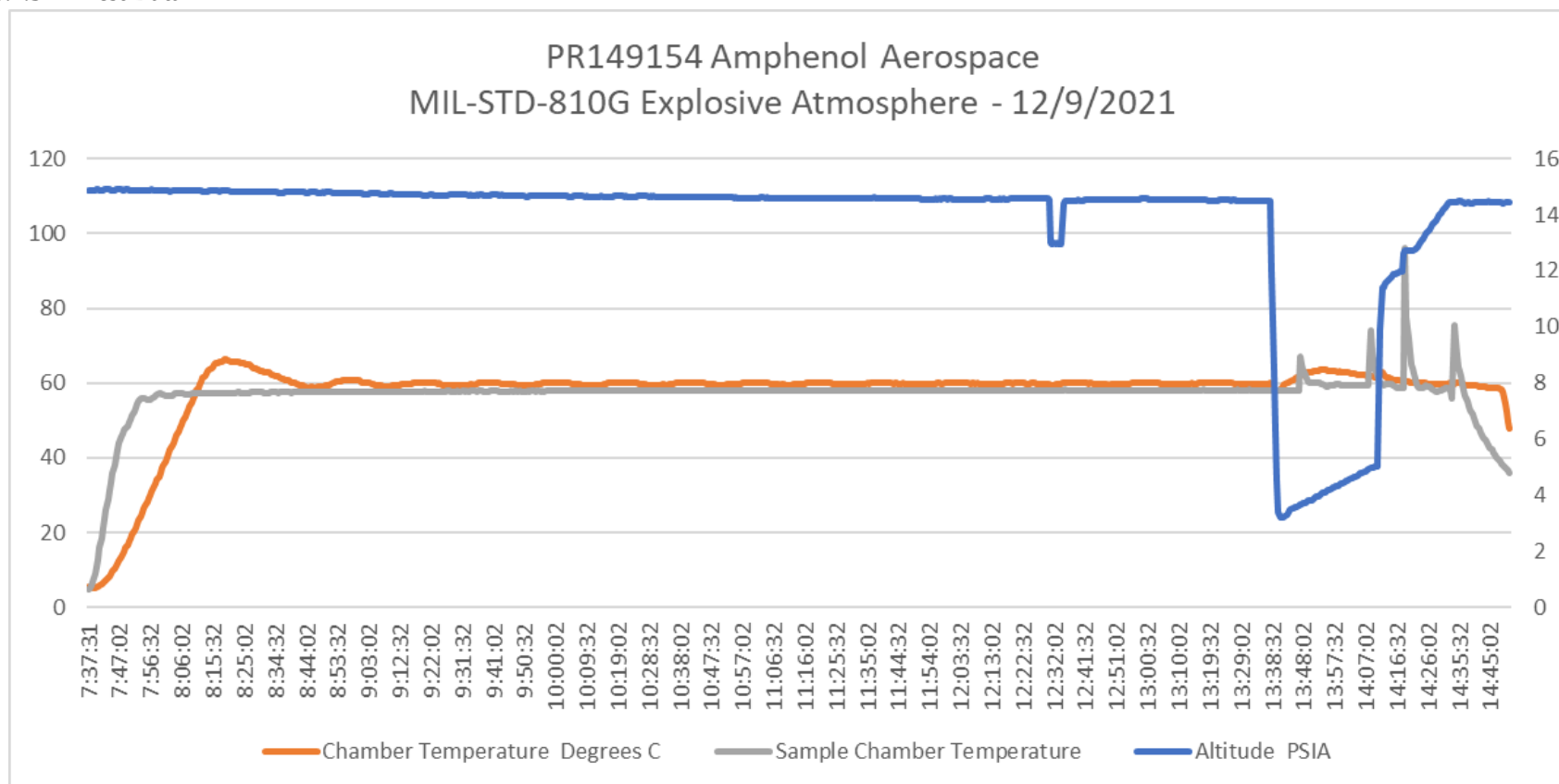


Explosive Atmosphere Setup



Explosive Atmosphere

5.2.5 Test Data



DATE /TIME	TEST ALT	Chamber Temp (C)	Specimen Temp (C)	Wall Temp (C)	Specimen Operating	COMMENTS (Insure Fuel Quantity is added here)	INIT
12/9/2021	Site	60C	60C	60C	Yes	144 Milliliters of Hexane added (205ml total)	BP
12/9/2021	30kft	60C	60C	60C	Yes	61 Milliliters of Hexane added	BP



5.2.6 Test Equipment List

Table 5.2-1: Explosive Atmosphere Test Equipment List

Asset Number	Asset Type	Manufacturer	Model	Calibrated	Due
WC005609	Chamber (Explosive Atmosphere)	National Technical Systems	NTS	10/26/2021	10/26/2022

Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required



5.3 Acceleration

5.3.1 Test Procedure

The EUT was tested in accordance with the customer provided document, Environmental Requirements for Equipment in the Gripen E Aircraft. Cabin REF39-P-4.1.2 Rev 5.

5.3.2 Test Result

Test Result: The EUT passed.

5.3.3 Test Datasheets

$$\text{RPM} = \sqrt{(35000 * G's) / \text{radius}}$$

Direction	G Level	Radius (in)	RPM
Lateral +	40	27	232
Lateral -	40	21	263
Forward	40	23.25	250
Aft	40	23.25	250
Up	40	30.25	219
Down	40	29.5	222
Duration	1 Minute		

TEST SETUP AND RESULTS

Test Started:	12/10/2021	Test Completed:	12/10/2021
---------------	------------	-----------------	------------

Unit Under Test Information	Y	N	N/A	Comments
Tested in shipping container:		X		
Operating during test:		X		
Operated by Client:		X		
Powered during testing:		X		
Passes post-test functionals:	X			
Physical damage noted:		X		
Does unit(s) pass requirements:	X			

COMMENTS: N/A

Test Technician:	Brian Pasznik
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GENERAL LOG SHEET			
Job Number: PR149154		Date: 12/10/21	Page 1 of 1
Client: Amphenol Aerospace			
Test: Acceleration		Test Item: FTC Converter	
Specification: REF39-P-4.1.2		Model or P/N: CF-020011-36N	
Para./Sect.: Section 2.1		S/N(s): 0001	
Date	Time	Log Entries	Init.
12/10	8:02	Started Steady State Acceleration Testing	BP
12/10	10:38	Completed Testing - Pass	BP
Test Performed By: Brian Pasznik			

5.3.4 Test Photographs



X Axis +



X Axis -



Y Axis +



Y Axis -



Z Axis +



Z Axis -



5.3.5 Test Equipment List

Table 5.3-1: Acceleration Test Equipment List

Asset Number	Asset Type	Manufacturer	Model	Calibrated	Due
WC005473	Centrifuge	National Technical Systems	NTS1	NCR	NCR
WC005474	Centrifuge Controller (Motor)	Leeson	174918	8/13/2021	08/13/2022

Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required



5.4 Blowing Dust

5.4.1 Test Procedure

The EUT was tested in accordance with the customer provided document, Environmental Requirements for Equipment in the Gripen E Aircraft. Cabin REF39-P-4.1.2 Rev 5.

5.4.2 Test Result

Test Result: The EUT passed.

5.4.3 Test Datasheets

GENERAL LOG SHEET			
Job Number: PR149154		Date: 12/14/21-12/15/21	Page 1 of 1
Client: Amphenol Aerospace			
Test: Blowing Dust		Test Item: FTC Converter	
Specification: REF39-P-4.1.2		Model or P/N: CF-020011-36N	
Para./Sect.: 2.17		S/N(s): 0001	
Date	Time	Log Entries	Init.
12/14	8:59	Started blowing dust on face 1 at 23C	BP
12/14	10:02	Rotated EUT 90°	BP
12/14	11:04	Rotated EUT 90°	BP
12/14	12:05	Rotated EUT 90°	BP
12/14	13:10	Rotated EUT 90°	BP
12/14	14:13	Rotated EUT 90°	BP
12/15	7:25	Started heating chamber to 71C	BP
12/15	8:25	Started blowing dust on face 1 at 71C	BP
12/15	9:28	Rotated EUT 90°	BP
12/15	10:33	Rotated EUT 90°	BP
12/15	11:35	Rotated EUT 90°	BP
12/15	12:39	Rotated EUT 90°	BP
12/15	13:41	Rotated EUT 90°	BP
12/15	14:42	Completed Testing - Pass	BP
Test Performed By: Brian Pasznik			

5.4.4 Test Photographs



Blowing Dust Face 1



Blowing Dust Face 2



Blowing Dust Face 3



Blowing Dust Face 4

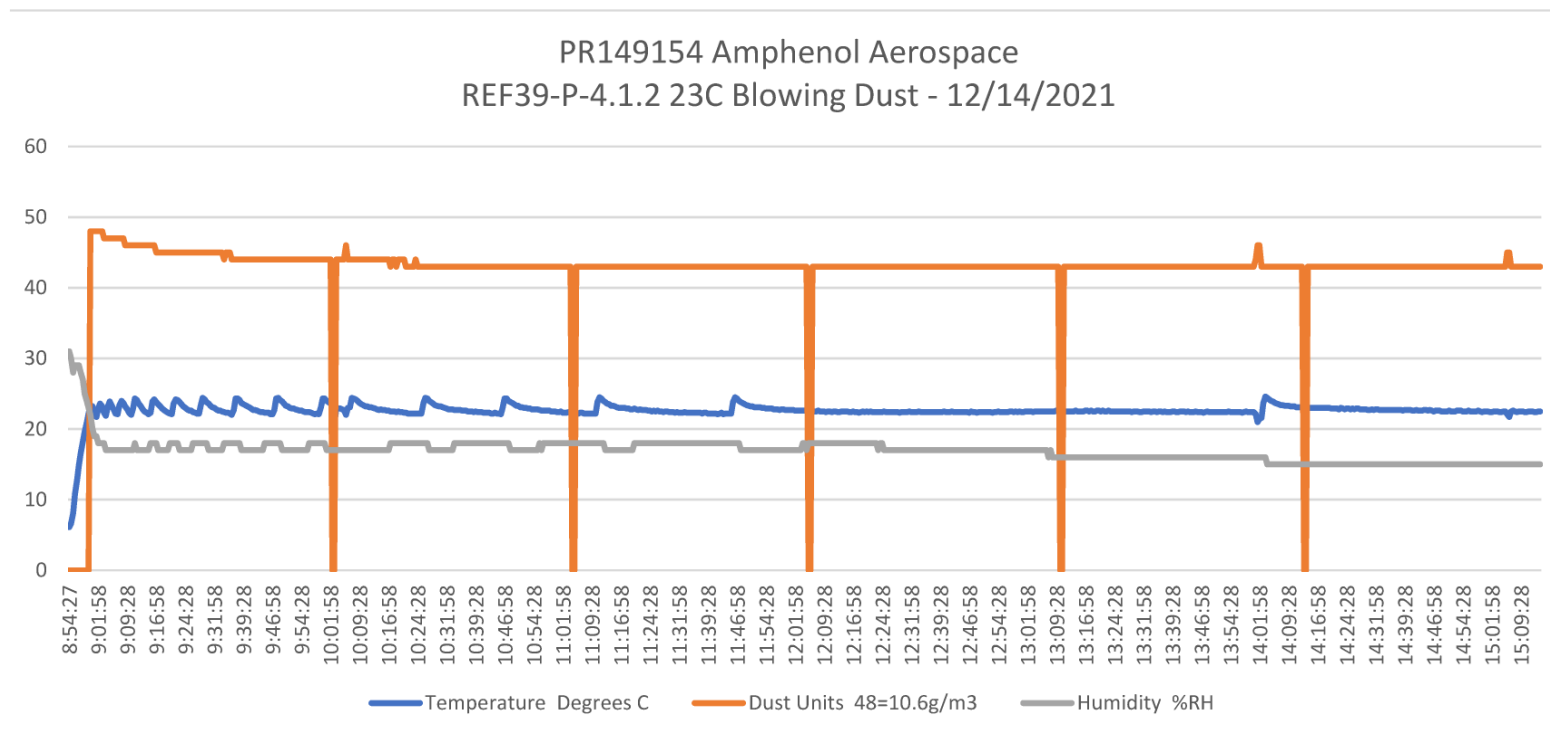


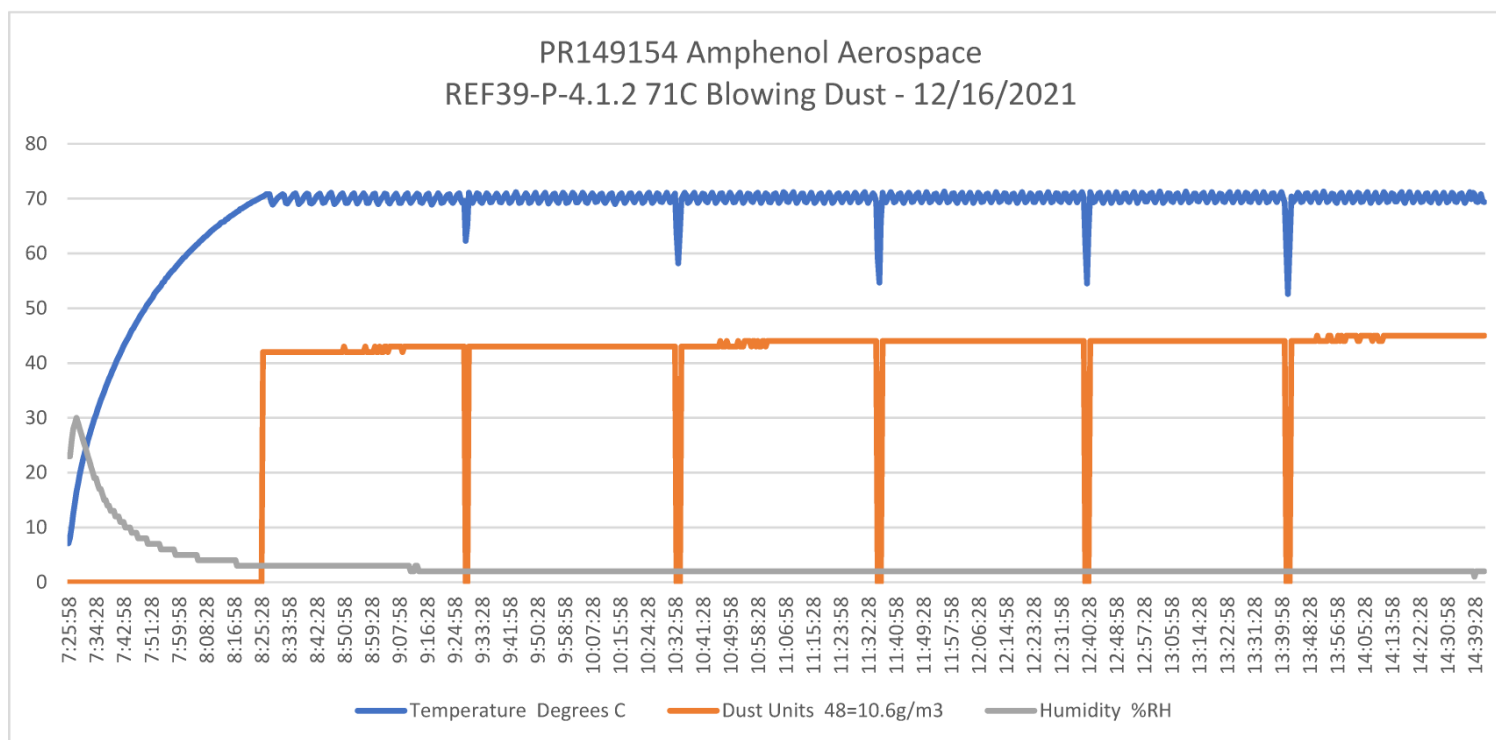
Blowing Dust Face 5



Blowing Dust Face 6

5.4.5 Test Data







5.4.6 Test Equipment List

Table 5.4-1: Blowing Dust Test Equipment List

Asset Number	Asset Type	Manufacturer	Model	Calibrated	Due
WC005409	Chamber (Sand)	National Technical Systems	N/A	NCR	NCR
WC058488	Meter (Anemometer)	Fluke	922	03/25/2021	03/25/2022

Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required



5.5 Blowing Sand

5.5.1 Test Procedure

The EUT was tested in accordance with the customer provided document, Environmental Requirements for Equipment in the Gripen E Aircraft. Cabin REF39-P-4.1.2 Rev 5.

5.5.2 Test Result

Test Result: The EUT passed.

5.5.3 Test Datasheets

DATA SHEET					
Job Number: PR149154			Date: 12/16/21		Page 1 of 1
Client: Amphenol Aerospace			P. O. No.:		
Test: Blowing Sand			Test Item: FTC Converter		
Specification: REF39-P-4.1.2			Model or P/N: CF-020011-36N		
Para./Sect.: 2.17			S/N(s): 0001		
Remarks: N/A					
Duration (mins)	Temperature (°C)	Air Flow (m/sec)	Humidity (%)	Concentration (g/m ³)	Orientation
90	69-73	20	7	2.2	Started test on the front of the EUT
90	69-73	20	5	2.2	Rotated EUT 90°
90	69-73	20	5	2.2	Rotated EUT 90°
90	69-73	20	4	2.2	Rotated EUT 90°
90	69-73	20	4	2.2	Rotated EUT 90°
90	69-73	20	4	2.2	Rotated EUT 90°
Test Performed By: Brian Pasznik					
Project Manager: Mark Betts					



GENERAL LOG SHEET			
Job Number: PR149154		Date: 12/16/21-12/17/21	Page 1 of 1
Client: Amphenol Aerospace			
Test: Blowing Sand		Test Item: FTC Converter	
Specification: REF39-P-4.1.2		Model or P/N: CF-020011-36N	
Para./Sect.: 2.17		S/N(s): 0001	
Date	Time	Log Entries	Init.
12/16	7:23	Started heating chamber to 71C	BP
12/16	8:02	Started blowing sand on face 1 at 71C	BP
12/16	9:35	Rotated EUT 90°	BP
12/16	11:09	Rotated EUT 90°	BP
12/16	12:44	Rotated EUT 90°	BP
12/16	14:17	Rotated EUT 90°	BP
12/16	15:51	Rotated EUT 90°	BP
12/16	17:28	Completed Testing	BP
12/17		During the post test visual inspection it was noted that the labels were no longer legible. The customer was notified and stated it wasn't a failure and to continue testing	BP
12/17		Performed a functional post test - Pass	MB
Test Performed By: Brian Pasznik			

5.5.4 Test Photographs



Blowing Sand Face 1



Blowing Sand Face 2



Blowing Sand Face 3



Blowing Sand Face 4



Blowing Sand Face 5



Blowing Sand Face 6



Blowing Sand Post Test



Blowing Sand Post Test 2



5.5.5 Test Equipment List

Table 5.5-1: Blowing Sand Test Equipment List

Asset Number	Asset Type	Manufacturer	Model	Calibrated	Due
WC005410	Chamber (Dust, Blowing)	National Technical Systems	N/A	08/11/2021	08/11/2022
WC058532	Meter (Light)	Cole-Parmer	3251,98766-92	06/24/2021	06/24/2023
WC058488	Meter (Anemometer)	Fluke	922	03/25/2021	03/25/2022

Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required

5.6 Contamination by Fluids

5.6.1 Test Procedure

The EUT was tested in accordance with the customer provided document, Environmental Requirements for Equipment in the Gripen E Aircraft. Cabin REF39-P-4.1.2 Rev 5.

5.6.2 Test Result

Test Result: The EUT passed.

5.6.3 Test Datasheets

TEST DESCRIPTION

Testing is performed in accordance with Procedure REF39-P-4.1.2.

Fluid Name	Category	Temp., C
JP-8	Fuels	70C
MIL-PRF-5606 (Royco 756)	Hydraulic Fluids	70C
MIL-PRF-7808 (Royco 808)	Lubricating Oils	70C
AMS1424 (Octaflo)	Deicing Fluids	23C
AMS1435 (Cryotech E36)	Runway Deicing Fluids	23C
40% Water/60% Ethylene Glycol	Radar Coolants	70C
MIL-PRF-16173 (LPS)	Anti-Corrosion Compunds	50C
AMS2644 (Zyglo)	Penetrant Dyes	50C
Naphta	Solvents and Cleaning Fluids	23C
Detergent	Solvents and Cleaning Fluids	23C
Degreasing Agent (CRC)	Solvents and Cleaning Fluids	23C
AMS1526 (CEE-BEE-210D)	Solvents and Cleaning Fluids	23C
Denatured Ethanol	Solvents and Cleaning Fluids	23C
DS108	Solvents and Cleaning Fluids	23C
Methyl Ethyl Ketone	Solvents and Cleaning Fluids	23C
Diestone DLS	Solvents and Cleaning Fluids	23C

COMMENTS: The EUT and the test fluids were preconditioned at the temperatures provided in table 6 of the test procedure.

Test Technician:

Brian Pasznik



GENERAL LOG SHEET			
Job Number: PR149514		Date: 12/15/21-1/17/22	Page 1 of 2
Client: Amphenol Aerospace			
Test: Contamination by Fluids		Test Item: FTC Converter	
Specification: REF39-P-4.1.2		Model or P/N: CF-020011-36N	
Para./Sect.: Section 2.25		S/N(s): 0002, 0003	
Date	Time	Log Entries	Init.
12/15	9:23	Started pre conditioning SN2 and SN3 at 50C	BP
12/15	9:25	Started pre conditioning the fluids at 70C	BP
12/15	10:35	Sprayed SN2 with Royco 808	BP
12/15	10:36	Sprayed SN3 with Royco 756	BP
12/15	10:40	Placed both units in the temperature chamber at 70C	BP
12/20	7:34	Started pre conditioning SN2 and SN3 at 50C	BP
12/20	7:38	Started pre conditioning the JP8 at 70C and the Cryotech 36 at 23C	BP
12/20	8:10	Sprayed SN2 with Cryotech 36	BP
12/20	8:11	Sprayed SN3 with Royco JP8	BP
12/20	8:21	Placed SN3 in the temperature chamber at 70C	BP
12/20	8:21	Placed SN2 in the temperature chamber at 23C	BP
12/27	7:24	Started pre conditioning SN2 and SN3 at 50C	BP
12/27	7:26	Started pre conditioning the water/ethylene glycol at 70C and the AMS1424(Octaflo) at 23C	BP
12/27	8:06	Sprayed SN2 with the Water/Ethylene Glycol mixture	BP
12/27	8:08	Sprayed SN3 with AMS1424 Octaflo	BP
12/27	8:19	Placed SN3 in the temperature chamber at 23C	BP
12/27	8:19	Placed SN2 in the temperature chamber at 70C	BP
12/30	8:33	Started pre conditioning SN2 and SN3 at 50C	BP
12/30	8:35	Started pre conditioning the Degreasing Agent at 23C and the AMS2644 at 50C	BP
Test Performed By: Brian Pasznik			



GENERAL LOG SHEET (continued)			
Job Number: PR149514		Date: 12/30/21	Page 2 of 2
Client: Amphenol Aerospace			
Date	Time	Log Entries	Init.
12/30	8:59	Sprayed SN2 with the Degreasing Agent	BP
12/30	9:00	Sprayed SN3 with AMS2644	BP
12/30	9:04	Placed SN3 in the temperature chamber at 50C	BP
12/30	9:04	Placed SN2 in the temperature chamber at 23C	BP
1/4	7:36	Started pre conditioning SN2 and SN3 at 50C	BP
1/4	7:40	Started pre conditioning the AMS1526 at 23C and the Diestone DLS at 23C	BP
1/4	8:13	Sprayed SN2 with the Diestone DLS	BP
1/4	8:14	Sprayed SN3 with AMS1526 (CEE-BEE-210D)	BP
1/4	8:30	Placed SN2 & SN3 in the temperature chamber at 23C	BP
1/7	9:02	Started pre conditioning SN2 and SN3 at 50C	BP
1/7	9:04	Started pre conditioning the Naphta at 23C and the DS108 at 23C	BP
1/7	9:45	Sprayed SN2 with the Naphta	BP
1/7	9:46	Sprayed SN3 with DS108	BP
1/7	10:00	Placed SN2 & SN3 in the temperature chamber at 23C	BP
1/11	7:41	Started pre conditioning SN2 and SN3 at 50C	BP
1/11	7:42	Started pre conditioning the Detergent at 23C and the Denatured Ethanol at 23C	BP
1/11	8:08	Sprayed SN2 with the Detergent (Aerowash)	BP
1/11	8:10	Sprayed SN3 with Denatured Ethanol	BP
1/11	8:11	Placed SN2 & SN3 in the temperature chamber at 23C	BP
1/14	8:59	Started pre conditioning SN2 and SN3 at 50C	BP
1/14	8:01	Started pre conditioning the MEK at 23C and the MIL-PRF-16173(LPS) at 50C	BP
1/14	8:59	Sprayed SN2 with the MEK	BP
1/14	8:59	Sprayed SN3 with MIL-PRF-16173	BP
1/14	9:02	Placed SN2 in the temperature chamber at 23C and SN3 in the chamber at 50C	BP
1/17	9:10	Completed Testing - Pass	BP
Test Performed By: Brian Pasznik			

5.6.4 Test Photographs



50C Pre Conditioning



MIL-5606



MIL-7808



72 Hour Drying Period



AMS1435



JP-8



Ethylene Glycol-Water



AMS1424



Degreasing Agent



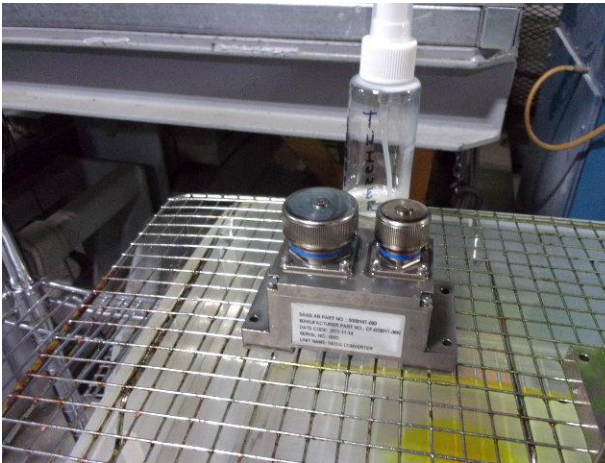
AMS2644



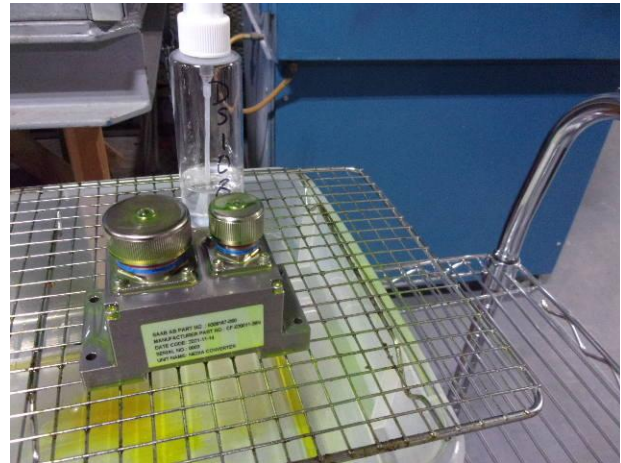
AMS1526



Diestone DLS



Naphta



DS108



Detergent



Denatured Ethanol



MEK



MIL-PRF-16173



5.6.5 Test Equipment List

Table 5.6-1: Contamination by Fluids Test Equipment List

Asset Number	Asset Type	Manufacturer	Model	Calibrated	Due
WC005348	Chamber (Temperature/Humidity)	Tenney	T30RC	05/07/2019	NCR
WC024140	Recorder (Data)	Agilent Technologies	34970A	09/16/2021	09/16/2022

Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required



5.7 Bump

5.7.1 Test Procedure

The EUT was tested in accordance with the customer provided document, Environmental Requirements for Equipment in the Gripen E Aircraft. Cabin REF39-P-4.1.2 Rev 5.

5.7.2 Test Result

Test Result: The EUT passed.

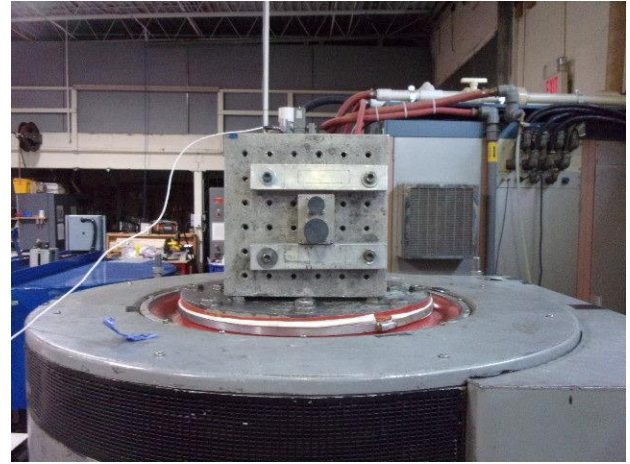
5.7.3 Test Datasheets

GENERAL LOG SHEET			
Job Number: PR149154		Date: 12/21/21	Page 1 of 1
Client: Amphenol Aerospace			
Test: Bumps		Test Item: FTC Converter	
Specification: REF39-P-4.1.2		Model or P/N: CF-020011-36N	
Para./Sect.: Section 1.4		S/N(s): 0001	
Date	Time	Log Entries	Init.
12/21	10:49	Performed Z Axis Bumps	BP
12/21	11:27	Performed Y Axis Bumps	BP
12/21	11:52	Performed X Axis Bumps	BP
12/21		Performed a post test visual inspection – No damage was seen on the EUT	BP
12/21		Performed a post test functional check - Pass	BP
Test Performed By: Brian Pasznik			

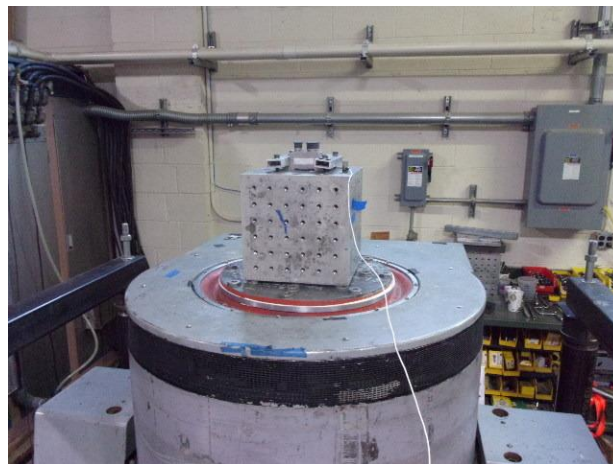
5.7.4 Test Photographs



X Axis Bumps



Y Axis Bumps

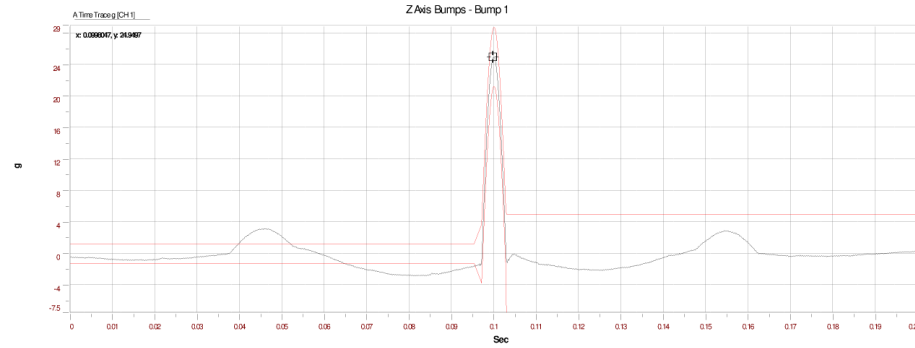


Z Axis Bumps

5.7.5 Test Data

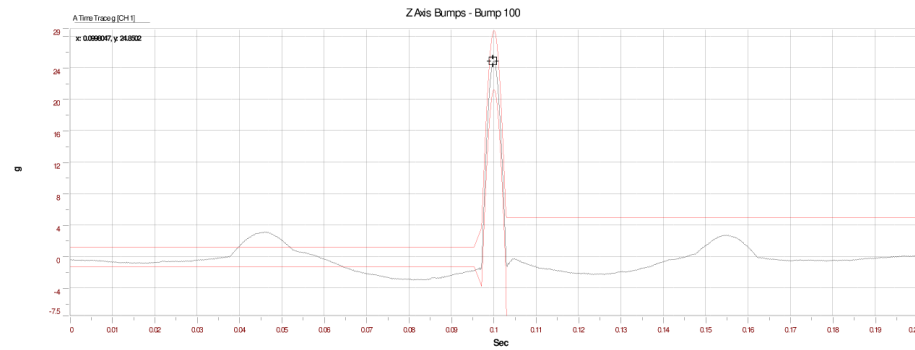
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NATIONAL TECHNICAL SYSTEMS



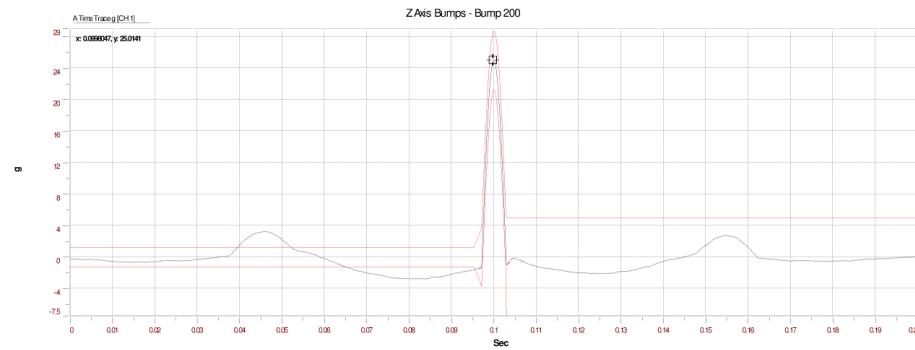
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NATIONAL TECHNICAL SYSTEMS



2A

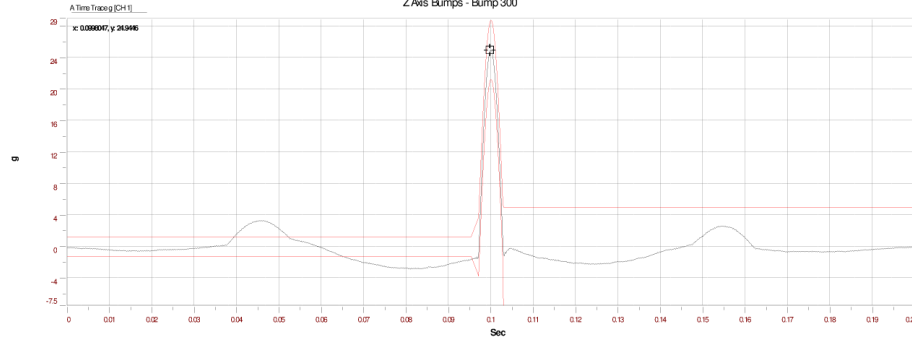
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NATIONAL TECHNICAL SYSTEMS

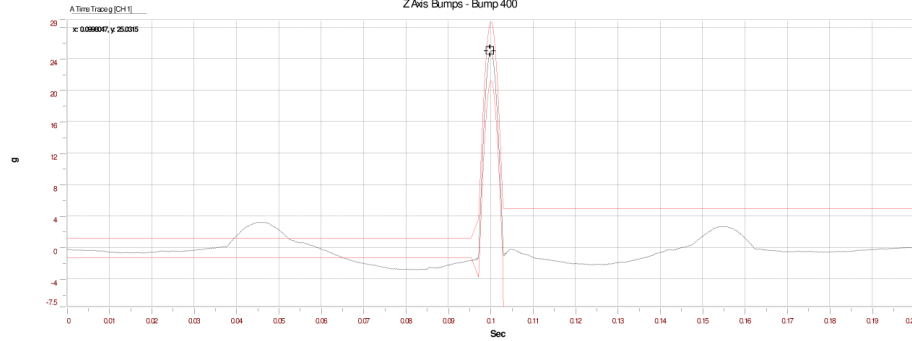
Z Axis Bumps - Bump 300



2B

NATIONAL TECHNICAL SYSTEMS

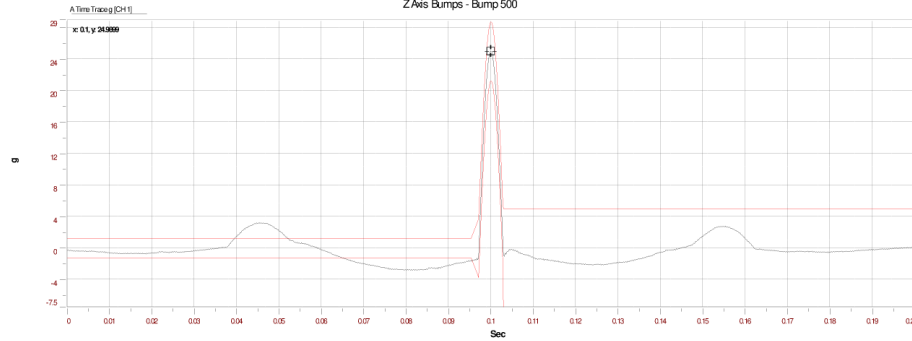
Z Axis Bumps - Bump 400



2C

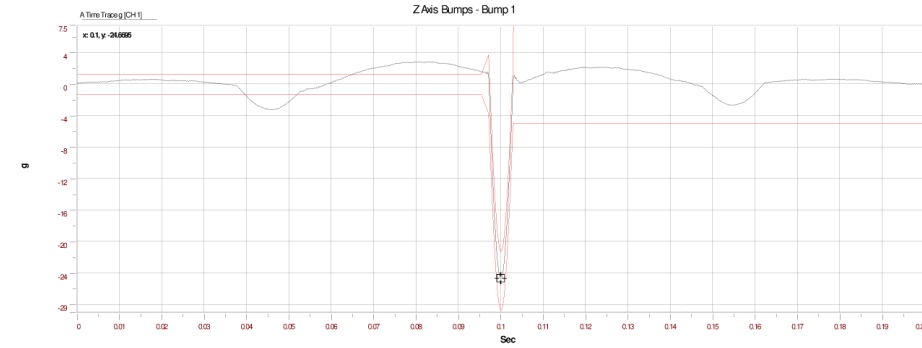
NATIONAL TECHNICAL SYSTEMS

Z Axis Bumps - Bump 500



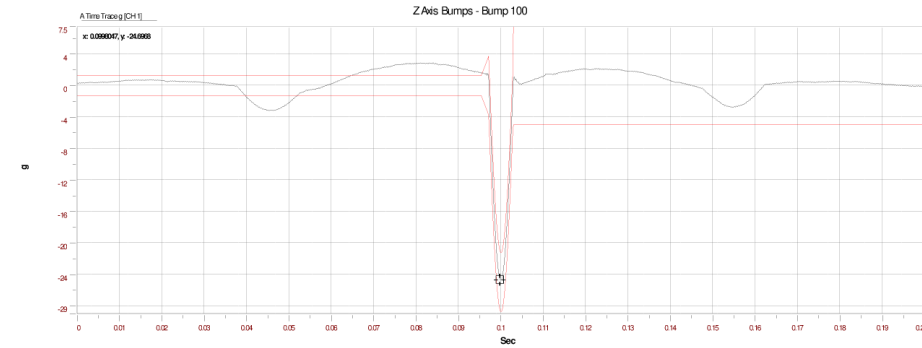
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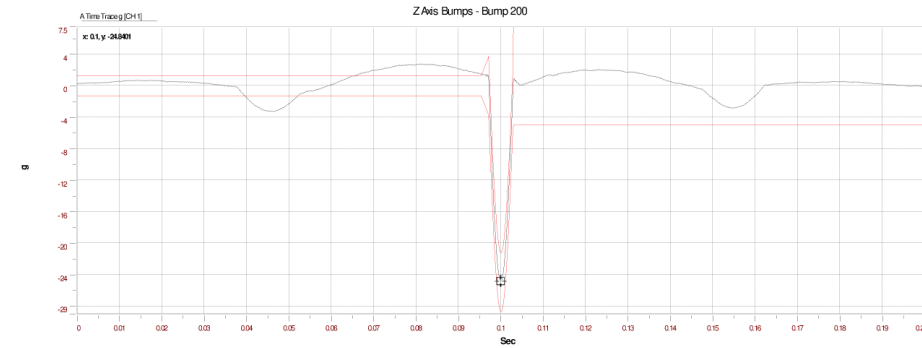
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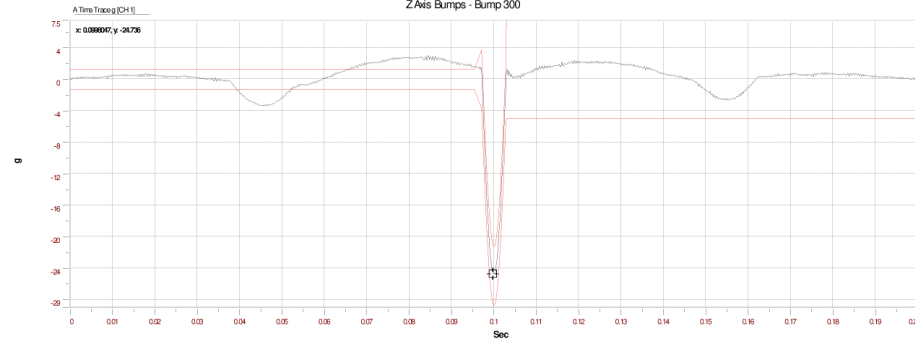
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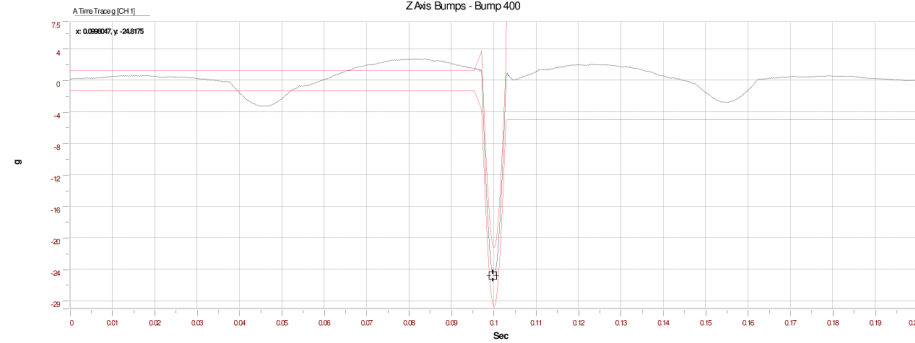
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1B

NATIONAL TECHNICAL SYSTEMS

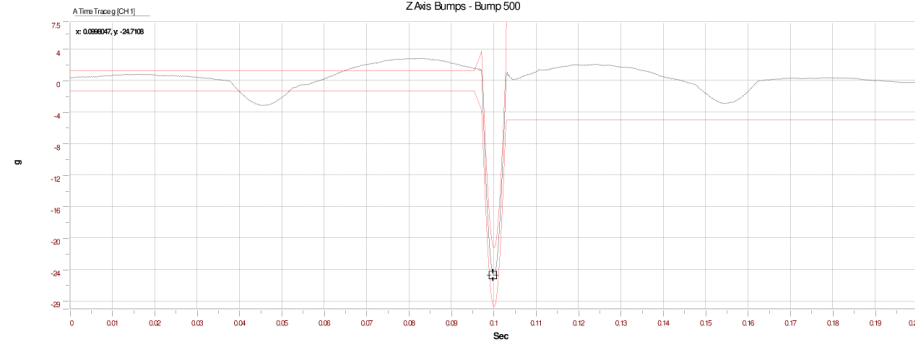
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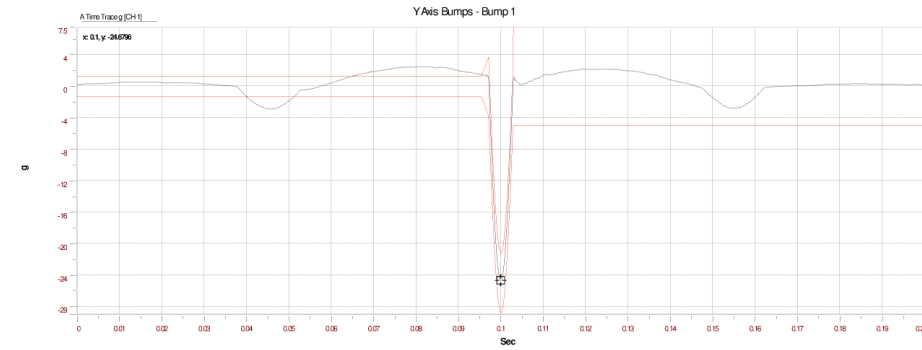
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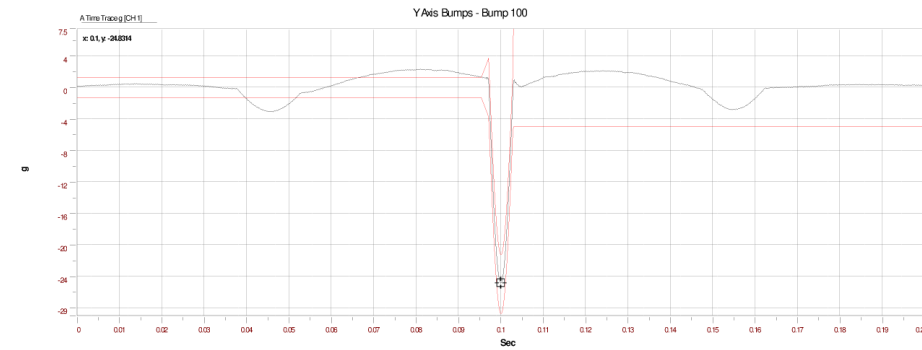
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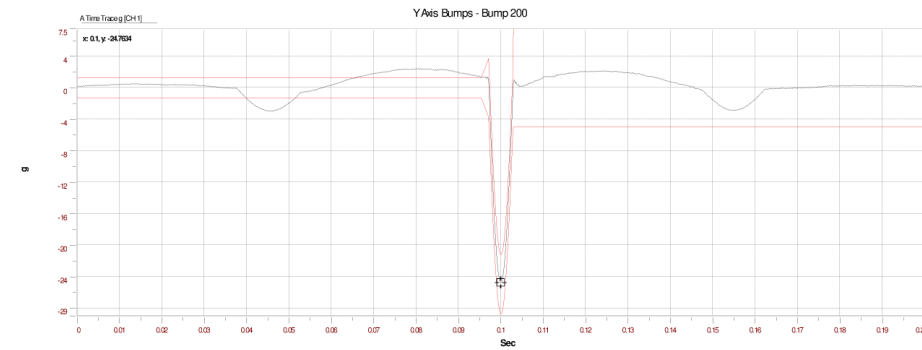
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NATIONAL TECHNICAL SYSTEMS



1C

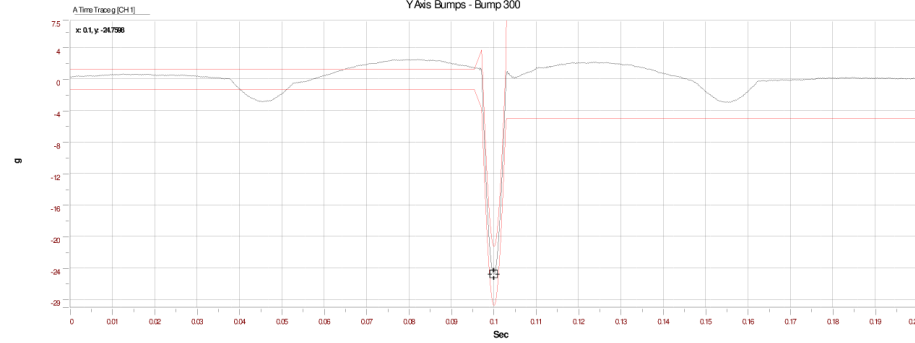
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1A

NATIONAL TECHNICAL SYSTEMS

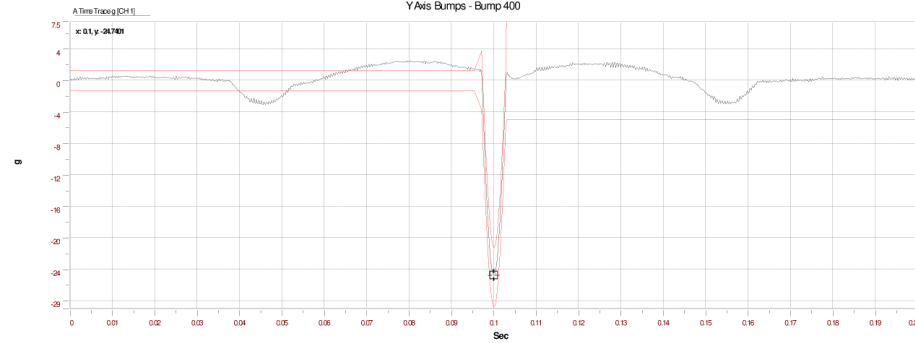
Y Axis Bumps - Bump 300



1B

NATIONAL TECHNICAL SYSTEMS

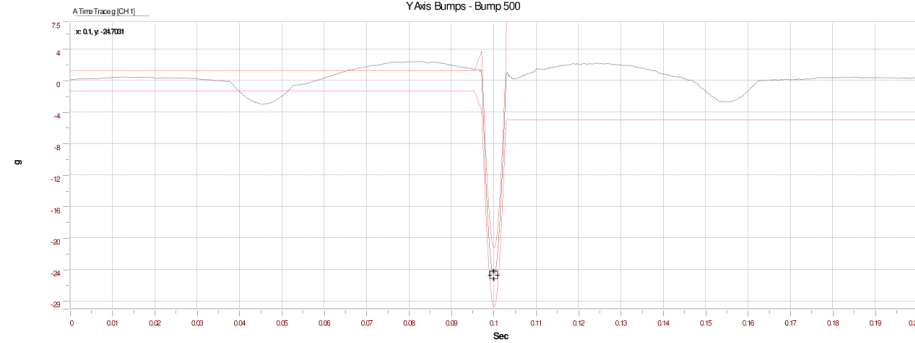
Y Axis Bumps - Bump 400



1C

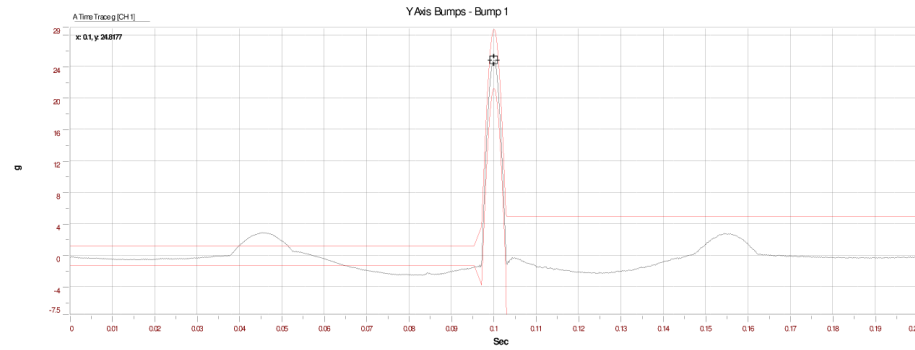
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Y Axis Bumps - Bump 500



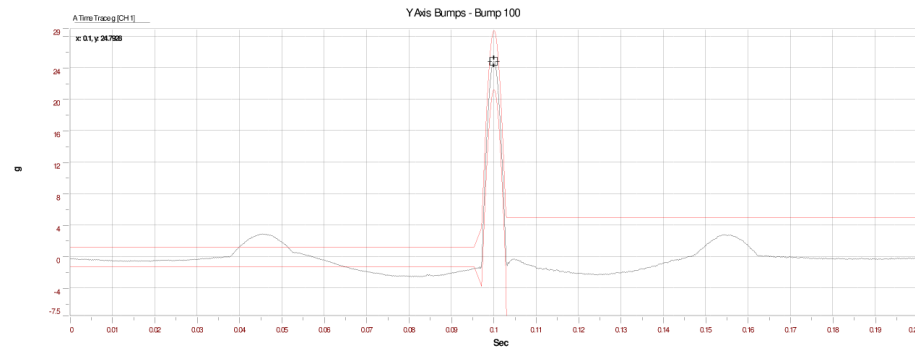
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NATIONAL TECHNICAL SYSTEMS



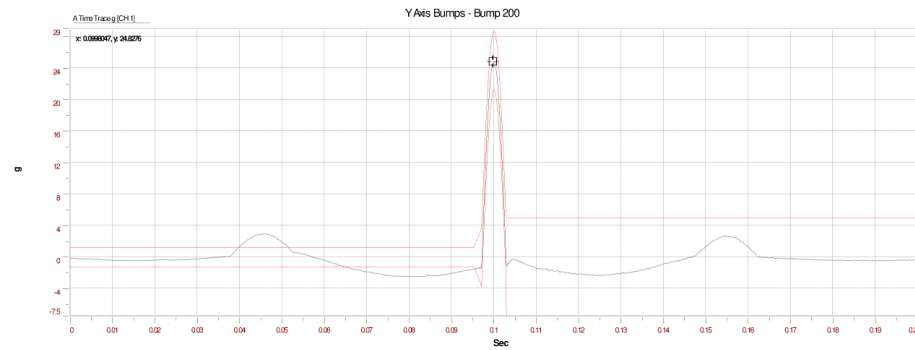
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NATIONAL TECHNICAL SYSTEMS



2C

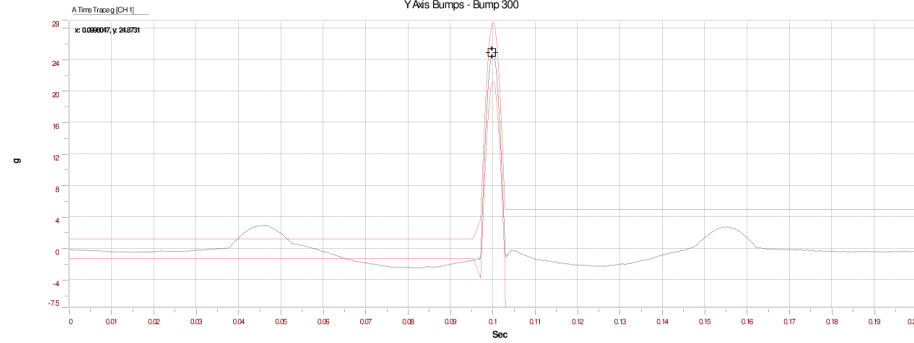
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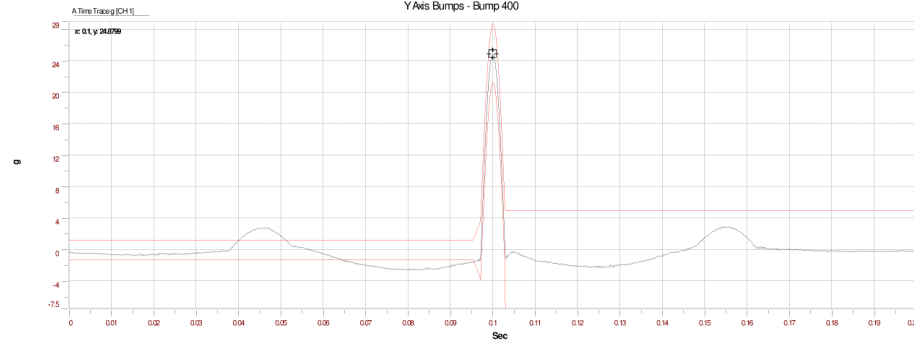
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2B

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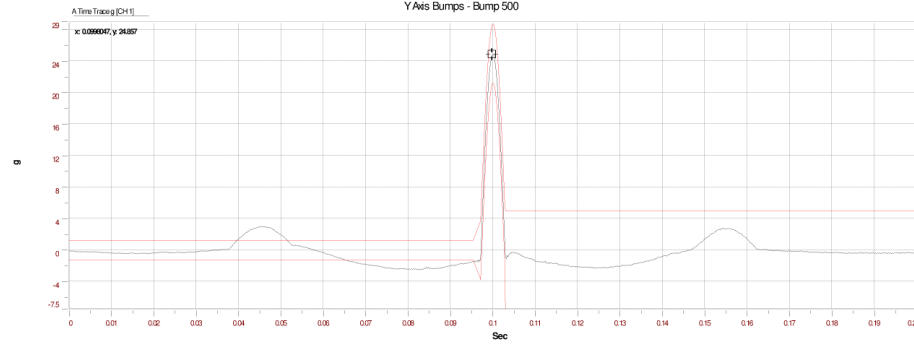
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2C

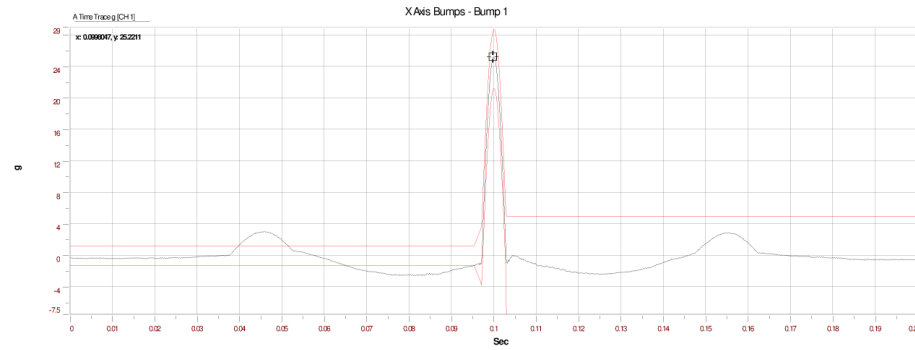
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Y Axis Bumps - Bump 500



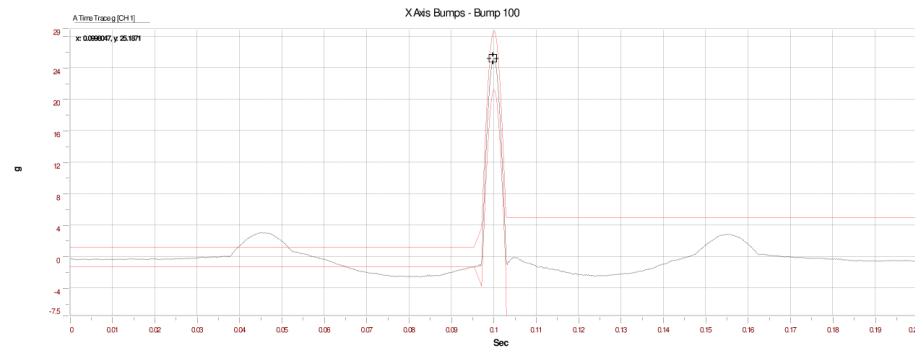
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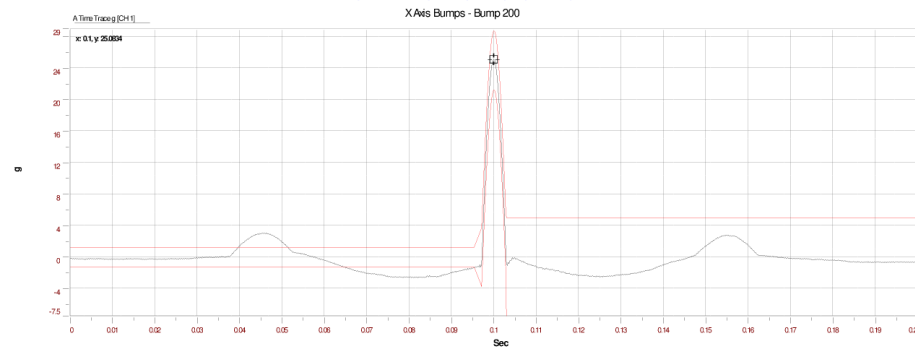
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NATIONAL TECHNICAL SYSTEMS



2C

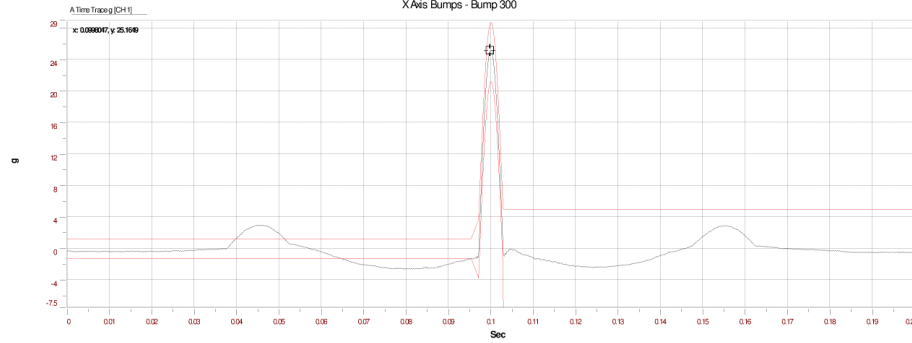
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2A

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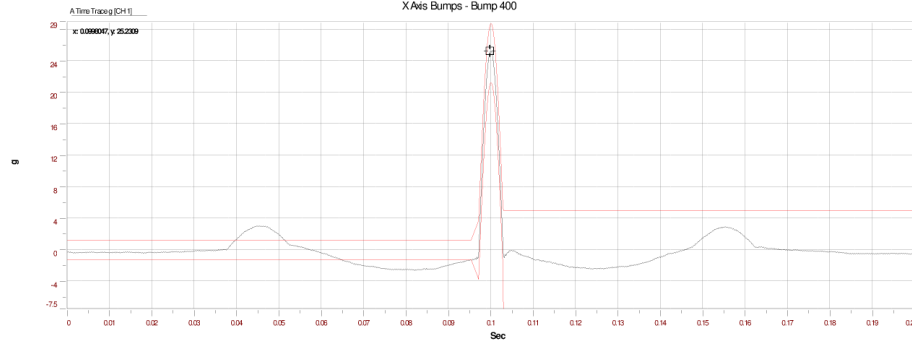
X Axis Bumps - Bump 300



2B

NATIONAL TECHNICAL SYSTEMS

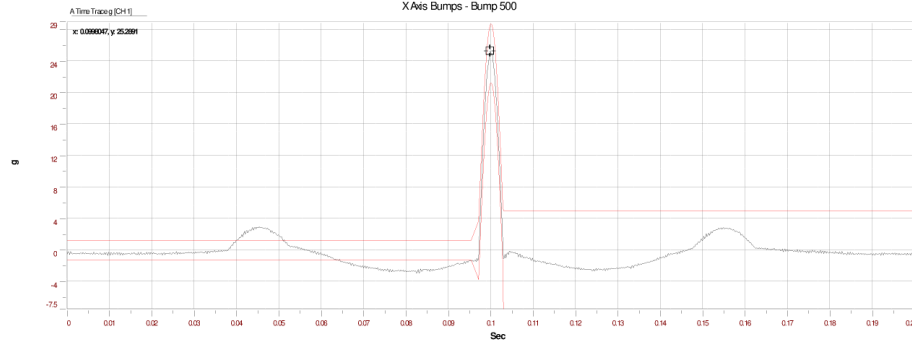
X Axis Bumps - Bump 400



2C

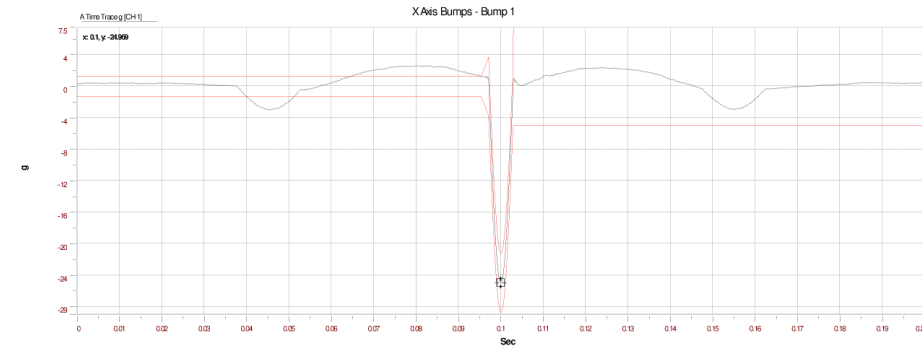
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X Axis Bumps - Bump 500



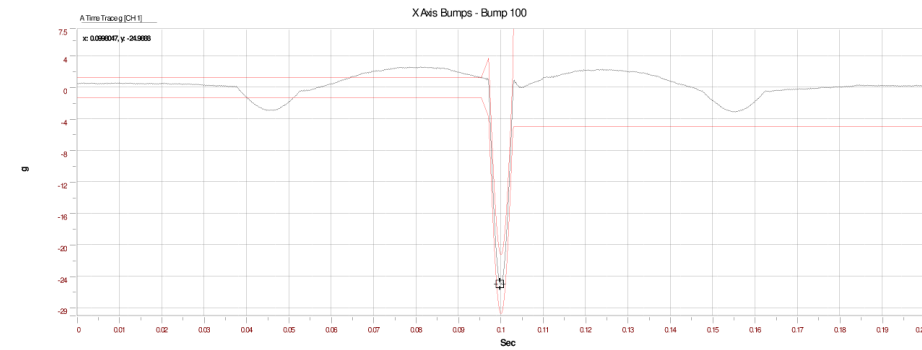
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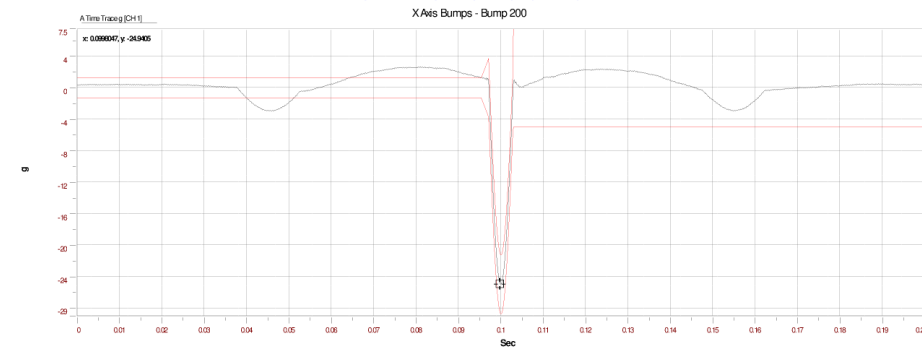
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NATIONAL TECHNICAL SYSTEMS



1C

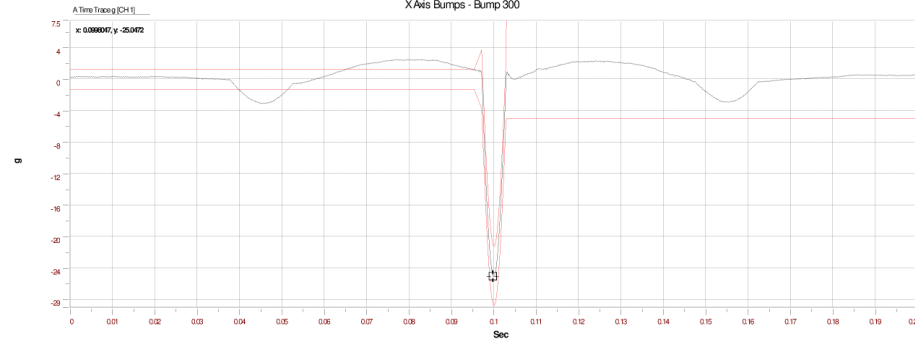
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1A

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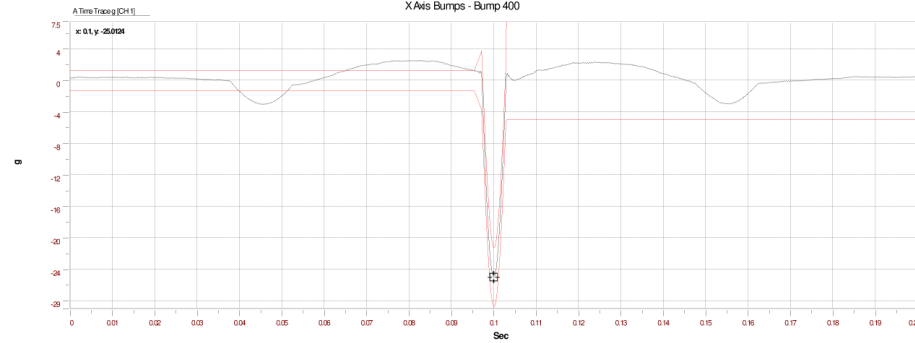
X Axis Bumps - Bump 300



1B

NATIONAL TECHNICAL SYSTEMS

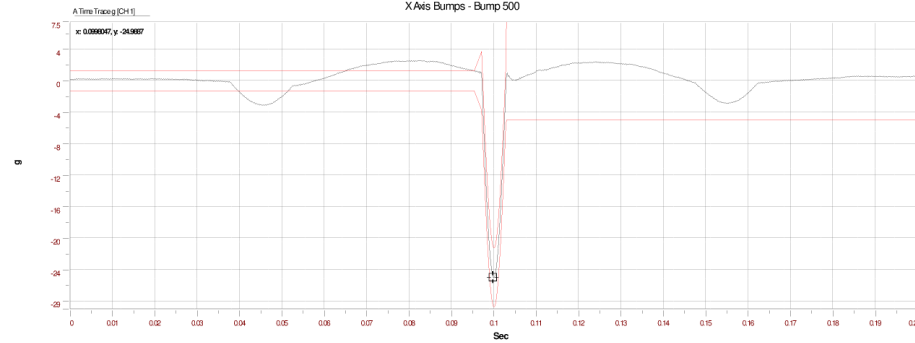
X Axis Bumps - Bump 400



1C

NATIONAL TECHNICAL SYSTEMS

X Axis Bumps - Bump 500





5.7.6 Test Equipment List

Table 5.7-1: Bump Test Equipment List

Asset Number	Asset Type	Manufacturer	Model	Calibrated	Due
WC011829	Shaker (Electro-Dynamic)	Unholtz-Dickie	T-1000-14	NCR	NCR
WC005360	Accelerometer (Vibration)	PCB Piezotronics	352C33	08/12/2021	08/12/2022
WC005346	Amplifier (Vibration)	Unholtz-Dickie	MA145A-130IAR	NCR	NCR
WC040825	Controller (Vibration)	Spectral Dynamics	2425-9708-1	08/10/2021	08/10/2022

Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required



5.8 Humidity - Damp Heat

5.8.1 Test Procedure

The EUT was tested in accordance with the customer provided document, Environmental Requirements for Equipment in the Gripen E Aircraft. Cabin REF39-P-4.1.2 Rev 5.

5.8.2 Test Result

Test Result: The EUT passed.

5.8.3 Test Datasheets

GENERAL LOG SHEET			
Job Number: PR149154		Date: 12/21/21-1/4/22	Page 1 of 1
Client: Amphenol Aerospace			
Test: Damp Heat		Test Item: FTC Converter	
Specification: REF39-P-4.1.2		Model or P/N: CF-020011-36N	
Para./Sect.: Section 2.15		S/N(s): 0005	
Date	Time	Log Entries	Init.
12/21	8:11	Started damp heat profile	BP
		The EUT was operational throughout the duration of the damp heat test	BP
1/1	8:30	Completed Testing	BP
1/4	9:45	Performed a post test functional check – Pass	BP
Test Performed By: <u>Brian Pasznik</u>			

5.8.4 Test Photographs



EUT SN

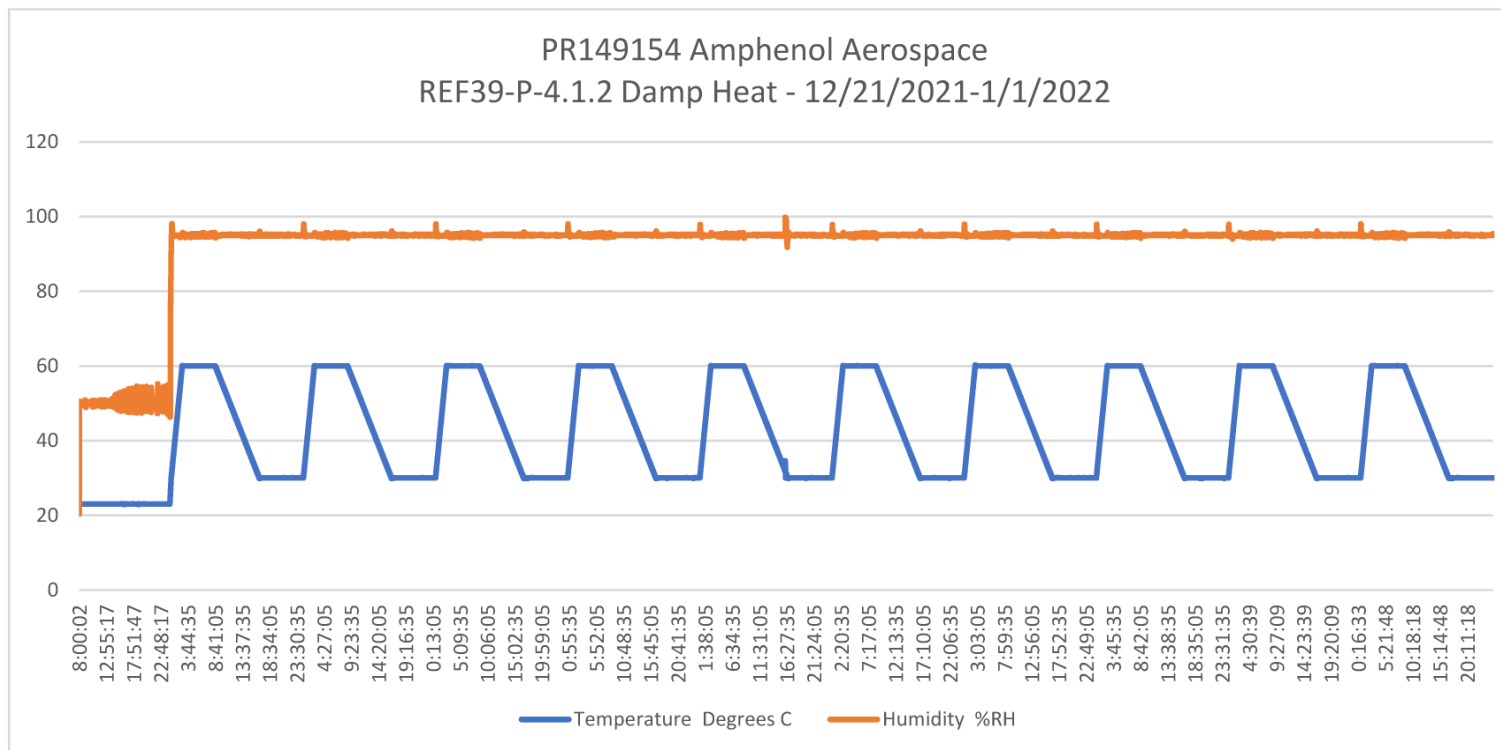


Humidity Setup



Humidity

5.8.5 Test Data





5.8.6 Test Equipment List

Table 5.8-1: Humidity - Damp Heat Test Equipment List

Asset Number	Asset Type	Manufacturer	Model	Calibrated	Due
WC058537	Chamber (Temperature/Humidity)	Thermotron	SE1000-6-6	10/25/2021	10/25/2022

Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required



5.9 Bench Handling

5.9.1 Test Procedure

The EUT was tested in accordance with the customer provided document, Environmental Requirements for Equipment in the Gripen E Aircraft. Cabin REF39-P-4.1.2 Rev 5.

5.9.2 Test Result

Test Result: The EUT passed.

5.9.3 Test Datasheets

Drop Height	45 Degree Angle
Packaged/Unpackaged	Unpackaged
Total # of Drops	4

TEST SETUP AND RESULTS

Test Started:	1/4/2022	Test Completed:	1/4/2022
---------------	----------	-----------------	----------

Orientation	Release Type			Topple Y/N
	4"	45 Deg Angle	Balance Point	
Side 1 (Unit# 1)		√		N
Side 2 (Unit# 1)		√		N
Side 3 (Unit# 1)		√		N
Side 4 (Unit# 1)		√		N

Unit Under Test Information	Y	N	N/A	Comments
Tested in shipping container:		X		
Physical damage noted:		X		
Does unit(s) pass requirements:	X			

Test Technician:	Brian Pasznik
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GENERAL LOG SHEET			
Job Number: PR149154		Date: 1/4/22	Page 1 of 1
Client: Amphenol Aerospace			
Test: Bench Handling		Test Item: FTC Converter	
Specification: REF39-P-4.1.2		Model or P/N: CF-020011-36N	
Para./Sect.: Section 2.2		S/N(s): 0005	
Date	Time	Log Entries	Init.
1/4	7:43	Performed bench handling on bottom edge 1 of the EUT	BP
1/4	7:45	Performed bench handling on bottom edge 2 of the EUT	BP
1/4	7:47	Performed bench handling on bottom edge 3 of the EUT	BP
1/4	7:49	Performed bench handling on bottom edge 4 of the EUT	BP
1/4	8:05	Performed a functional post test - Pass	BP
Test Performed By: _____ Brian Pasznik _____			

5.9.4 Test Photographs



Setup



Bottom Edge 1



Bottom Edge 2



Bottom Edge 3



Bottom Edge 4



5.9.5 Test Equipment List

Table 5.9-1: Bench Handling Test Equipment List

Asset Number	Asset Type	Manufacturer	Model	Calibrated	Due
WC005371	Tower (Packaged Drop)	L.A.B.	AD-160A	NCR	NCR

Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required



5.10 Ice - Freezing Rain

5.10.1 Test Procedure

The EUT was tested in accordance with the customer provided document, Environmental Requirements for Equipment in the Gripen E Aircraft. Cabin REF39-P-4.1.2 Rev 5.

5.10.2 Test Result

Test Result: The EUT passed.

5.10.3 Test Datasheets

Accumulated Ice	6mm (.25")
Initial Temperature in Degrees C	23°C
End Temperature in Degrees C	-10°C
Dwell Time After Ice Accumulated	2 Hours

TEST SETUP AND RESULTS

Test Started:	1/5/2022	Test Completed:	1/7/2022
---------------	----------	-----------------	----------

Unit Under Test Information	Y	N	N/A	Comments
Tested in shipping container:		X		
Operating during test:	X			
Operated by client:	X			
Powered during testing:	X			
Passes post-test functionals:	X			
Physical damage noted:		X		
Does unit(s) pass requirements:	X			

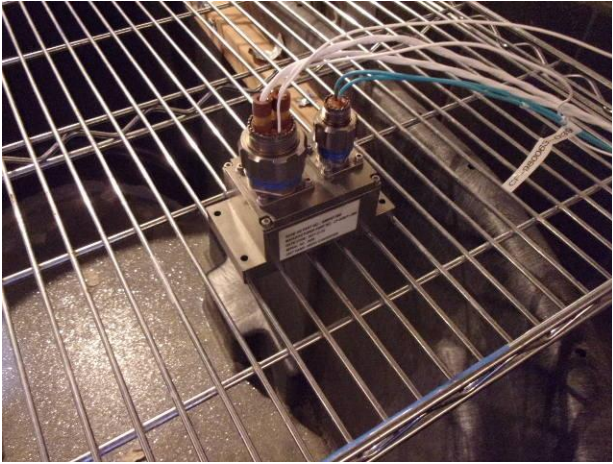
COMMENTS: While the chamber temperature was maintained at -10C and 6mm of ice was accumulated on the EUT a functional check was performed.

Test Technician:	Brian Pasznik
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GENERAL LOG SHEET			
Job Number: PR149154		Date: 1/5/22-1/7/22	Page 1 of 1
Client: Amphenol Aerospace			
Test: Ice – Freezing Rain		Test Item: FTC Converter	
Specification: REF39-P-4.1.2		Model or P/N: CF-020011-36N	
Para./Sect.: Section 2.22		S/N(s): 0005	
Date	Time	Log Entries	Init.
1/5	11:01	Placed EUT in the temperature chamber and sprayed the EUT with water while at ambient temperature	BP
1/5	11:06	Ramped the chamber to -10C	BP
1/5-1/7		The EUT was sprayed with water every hour until 6mm of ice was accumulated	BP
1/7	12:28	Performed a functional check while the EUT was still covered in ice at -10C	BP
1/7	12:35	Completed Testing - Pass	BP
Test Performed By: Brian Pasznik			

5.10.4 Test Photographs



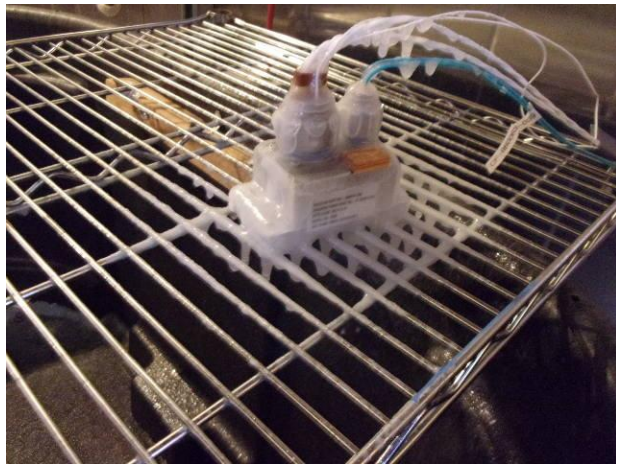
Pre Test



Initial Spray



6mm of Ice



6mm of Ice 2



5.10.6 Test Equipment List

Table 5.10-1: Ice - Freezing Rain Test Equipment List

Asset Number	Asset Type	Manufacturer	Model	Calibrated	Due
WC005475	Chamber (Temperature/Humidity)	Thermotron	WP-904-TCM-10	08/10/2021	08/10/2022

Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required



End of Test Report