

LG Electronics, Inc.
22 Digital-ro 10-gil
Geumcheon-gu, Seoul 153-801

March 13, 2019

Dear Seungjee Lee,

Enclosed are the test data and photographs obtained from the testing of the LG Electronics, Inc., LG X4 2019, LG K12+, LG K40, LG Phoenix Plus 2, LG Expression Plus 2, LG Solo LTE. The LG X4 2019, LG K12+, LG K40, LG Phoenix Plus 2, LG Expression Plus 2, LG Solo LTE was subjected to Environmental Testing in accordance with MIL-STD-810G, and LG Electronics, Inc. Order Number LGE_STD190117.

Thank you for using the services of Eurofins MET Labs: If you have any questions regarding these results or if MET can be of further service to you, please feel free to contact me.

Sincerely yours,
EUROFINS MET LABS



Jesse Trawinski
Process and Administrative Agent

Reference: (\LG Electronics, Inc.\ESL102368-MIL)

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Test Report

For the

LG Electronics, Inc.

LG X4 2019, LG K12+, LG K40, LG Phoenix Plus 2, LG Expression Plus 2, LG Solo LTE

Tested under

MIL-STD-810G

MET Report: ESL102368-MIL

March 13, 2019

Prepared For:

LG Electronics, Inc.

22 Digital-ro 10-gil

Geumcheon-gu, Seoul 153-801

Prepared By:

Eurofins MET Labs

914 West Patapsco Ave., Baltimore MD 21230

Test Data

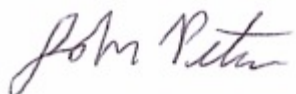
For the

LG Electronics, Inc.
LG X4 2019, LG K12+, LG K40, LG Phoenix Plus 2, LG Expression Plus 2, LG Solo LTE

Tested under

MIL-STD-810G

Eurofins MET Labs Report: ESL102368-MIL



John Peters
Project Engineer



Jesse Trawinski
Process and Administrative Agent



Johnnie Evans,
Manager, ESL

Report Status Sheet

Revision	Report Date	Reason for Revision
Ø	March 13, 2019	Initial Issue.

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Executive Summary

Eurofins MET Laboratories, Inc. was contracted by LG Electronics, Inc. to perform acceptance testing to MIL-STD-810G criteria on the LG X4 2019, LG K12+, LG K40, LG Phoenix Plus 2, LG Expression Plus 2, LG Solo LTE under the LG Electronics, Inc. purchase order number LGE_STD190117.

The tests were based on MIL-STD-810G: The results obtained relate only to the item(s) tested.

Test Method	Procedure	Compliance Status
Method 501.5 High Temperature	Procedure I - Storage (High Temp)	Compliant
	Procedure II - Operation (High Temp)	Compliant
Method 502.5 Low Temperature	Procedure I - Storage (Low Temp)	Compliant
	Procedure II - Operation (Low Temp)	Compliant
Method 503.5 Temperature Shock	Procedure I-C - Multi-Shocks	Compliant
Method 507.5 Humidity	Procedure I, Natural Cycles	Compliant
Method 514.6 Vibration	Procedure I - General Vibration	Completed
	Category 4 - Truck/Trailer/Tracked - Restrained Cargo	Completed
Method 516.6 Shock	Procedure IV - Transit Drop	Compliant

Equipment Configuration

Overview

This document describes the test setups, test methods, required test equipment, and the test limit criteria used to perform an Acceptance Test of the LG Electronics, Inc., LG X4 2019, LG K12+, LG K40, LG Phoenix Plus 2, LG Expression Plus 2, LG Solo LTE. The tests were based on MIL-STD-810G. The tests described in this document were formal tests as described with the objective of the testing was to verify compliance of the Equipment Under Test (EUT) to the requirements of the aforementioned specifications.

Model(s) Tested:	LG X4 2019, LG K12+, LG K40, LG Phoenix Plus 2, LG Expression Plus 2, LG Solo LTE
Model(s) Covered:	LG X4 2019, LG K12+, LG K40, LG Phoenix Plus 2, LG Expression Plus 2, LG Solo LTE
Analysis:	The results obtained relate only to the item(s) tested.
Evaluated by:	John Peters
Report Date:	March 13, 2019

References

ISO 1012-1: 1992 (E)	Quality Assurance Requirements for Measuring Equipment
MIL-STD-810G	Department of Defense Test Methods Standard For Environmental Engineering Considerations and Laboratory Tests

Test Site

All testing was performed in a limited access test laboratory facility located at Eurofins MET Laboratories, Inc., 914 West Patapsco Ave., Baltimore MD 21230: All testing performed at Eurofins MET Laboratories, Inc. was conducted in the Environmental Simulation Lab. All equipment used in making physical determinations is accurate and bears recent traceability to the National Standards and Technology.

Modifications

- a) **Modifications to the EUT**
 No modifications to the EUT were required.
- b) **Modifications to the Test Standard**
 No modifications to the Test Standard were necessary.

Disposition of EUT

The test sample including all support equipment (if any), submitted to the Environmental Simulation Lab for testing was returned to LG Electronics, Inc. upon completion of testing.

Equipment Details

Model(s) Tested:	MIL-STD-810G testing & reporting services for LG K40
Model(s) Covered:	LG X4 2019, LG K12+, LG K40, LG Phoenix Plus 2, LG Expression Plus 2, LG Solo LTE
EUT Specifications:	Voltage: 3.4 ~ 4.4V AC or DC: DC 4.4V MAX, Charging Battery Frequency: 50~60 Hz Number of phases: 1 Amperage: 1.0~1.8A Uses an external AC/DC adapter: Yes Additional comments: none
	Size: (HxWxD): 6.02 x 2.83 x 0.32 inches Weight: 0.32 lbs
Description of EUT:	To Certify LG K40, LG K40™, LG K12+, LG X40(2019) models with MIL-STD-810G test Claims.
Number of Samples Tested:	13 samples
Mode of Operation:	EUT will follow standard MIL-STD-810G test procedures.
Monitoring Method - Pass/Fail Criteria:	Refer to the enclosed file.
Configuration:	All of 13 sample units will be the same.

Name / Description	Model Number	Part Number	Rev. #
Smart Phone	LG L423DL	LG L423DL	Rev.1.0
Smart Phone	LG L423DL	LG L423DL	Rev.1.0
Smart Phone	LG L423DL	LG L423DL	Rev.1.0
Smart Phone	LG L423DL	LG L423DL	Rev.1.0
Smart Phone	LG L423DL	LG L423DL	Rev.1.0
Smart Phone	LG L423DL	LG L423DL	Rev.1.0
Smart Phone	LG L423DL	LG L423DL	Rev.1.0
Smart Phone	LG L423DL	LG L423DL	Rev.1.0
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Smart Phone	LG L423DL	LG L423DL	Rev.1.0
Smart Phone	LG L423DL	LG L423DL	Rev.1.0
Smart Phone	LG L423DL	LG L423DL	Rev.1.0
Smart Phone	LG L423DL	LG L423DL	Rev.1.0
Smart Phone	LG L423DL	LG L423DL	Rev.1.0
Smart Phone	LG L423DL	LG L423DL	Rev.1.0

Equipment Under Test

Test Data

High Temperature, Procedure I - Storage

Test Requirement(s): The equipment **shall not** sustain any damage or deterioration of functional performance during its operating life when operated within the conditions of MIL-STD-810G, Method 501.5, Procedure I – Storage.

Test Procedure:

- A. The EUT, in its storage configuration, was evaluated at ambient temperature and humidity level (25°C +/-5°C).
- B. With the EUT not operating, the chamber temperature was increased to 63°C.
- C. Temperature was maintained for at least two hours following temperature stabilization.
- D. At the conclusion of the test, the chamber temperature was decreased to ambient conditions.
- E. The EUT functionality was evaluated at ambient temperature and humidity level (25°C +/-5°C).

Test Results: Compliant. The temperatures were monitored in person and no abnormalities occurred.

Test Engineer: John Peters

Test Date: 02/07/19



Figure 1: Method 501.5, High Temperature, Procedure I – Storage, Test Setup

High Temperature, Procedure II - Operation

Test Requirement(s): The equipment **shall not** sustain any damage or deterioration of functional performance during its operating life when operated within the conditions of MIL-STD-810G, Method 501.5, Procedure II – Operation.

Test Procedure

- A. The EUT functionality was evaluated at ambient temperature and humidity level (25°C +/-5°C).
- B. With the EUT operating, the chamber temperature was increased to 43°C.
- C. Temperature was maintained for at least 2 hours following EUT stabilization.
- D. At the conclusion of the test, the chamber temperature was decreased to ambient conditions.
- F. The EUT functionality was evaluated at ambient temperature and humidity level (25°C +/-5°C).

Test Results: Compliant. The temperatures were monitored in person and no abnormalities occurred.

Test Engineer: John Peters

Test Date: 02/07/19



Figure 2: Method 501.5, High Temperature, Procedure II – Operational Test Setup

Low Temperature, Procedure I - Storage

Test Requirement(s): The equipment **shall not** sustain any damage or deterioration of functional performance during its operating life when operated within the conditions of MIL-STD-810G, Method 502.5, Procedure I – Storage.

Test Procedure:

- A. The EUT, in its storage configuration, was placed in a test chamber.
- B. With the EUT non-operating, the chamber temperature was decreased to -33°C.
- C. The chamber temperature was held at -33°C for 2 hours following EUT stabilization.
- D. At the conclusion of the test, the chamber temperature was increased to ambient conditions.
- E. The EUT functionality was evaluated at ambient temperature and humidity level (25°C, 55%RH).

Test Results: Compliant. The temperatures were monitored in person and no abnormalities occurred.

Test Engineer: John Peters

Test Date: 02/07/19



Figure 3: Method 502.5, Low Temperature, Procedure I – Storage, Test Setup

Low Temperature, Procedure II – Operation

Test Requirement(s): The equipment **shall not** sustain any damage or deterioration of functional performance during its operating life when operated within the conditions of MIL-STD-810G, Method 502.5, Procedure II – Operation.

Test Procedure

- A. The EUT functionality was evaluated at ambient temperature and humidity level (25°C +/-5°C, 55%RH).
- B. With the EUT operating, the chamber temperature was decreased to -21°C:
- C. The chamber temperature was held at -21°C for 2 hours following EUT stabilization, while the functionality of the EUT was evaluated.
- D. At the conclusion of the test, the chamber temperature was increased to ambient conditions
- E. The EUT functionality was evaluated at ambient temperature and humidity level (25°C, 55%RH):

Test Results: Compliant. The temperatures were monitored in person and no abnormalities occurred.

Test Engineer: John Peters

Test Date: 02/07/19



Figure 4: Method 502.5, Low Temperature, Procedure II – Operational, Test Setup

Temperature Shock, Procedure I-C – Multi-Cycle Shocks

Test Requirement(s): The equipment **shall not** sustain any damage or deterioration of functional performance during its operating life when operated within the conditions of MIL-STD-810G, Method 503.5, Procedure I-C – Multi-Cycle Shocks.

Test Procedure:

- A. The EUT was placed in the chamber and subjected to a temperature shock in Figure 5. The temperature was maintained for a period of 2 hours. The EUT was allowed to stabilize.
- B. The EUT temperature was increased to 43°C in no more than one minute. This temperature was maintained for a period of 2 hours. The EUT was allowed to stabilize.
- C. The chamber temperature was cycled for a total of 3 cycles.
- D. The EUT was returned to standard ambient conditions after the final cycle.
- E. The EUT was visually inspected and functionally evaluated.
- F. The above steps were repeated with the chamber temperature extreme set at 43 °C and -21 °C respectively.

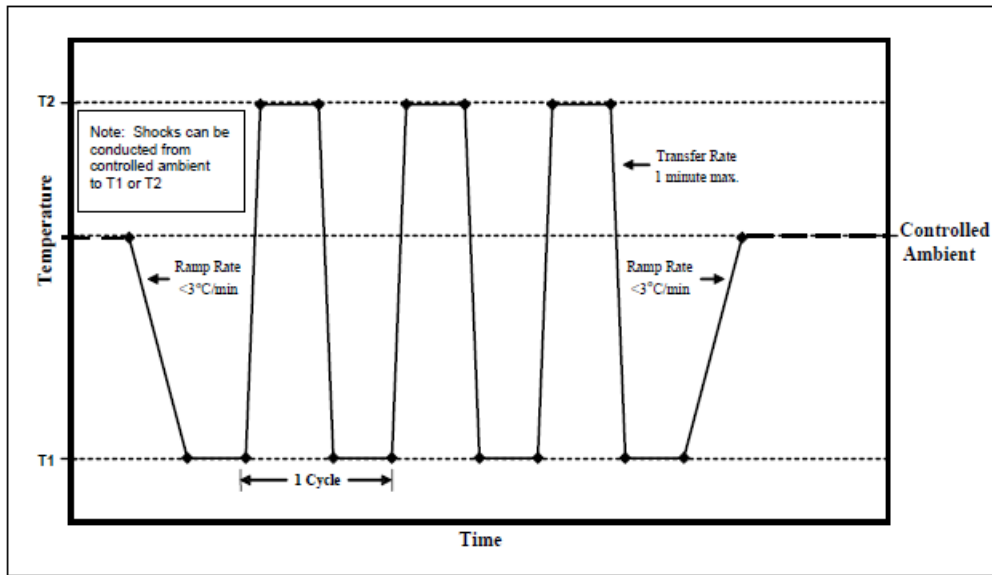


Figure 503.5-3. Multi-cycle shocks.

Figure 5: Method 503.5, Procedure I-C – Multi-Cycle Shocks

Test Results: Compliant.

Test Engineer: John Peters

Test Date: 02/13/19 – 02/15/19

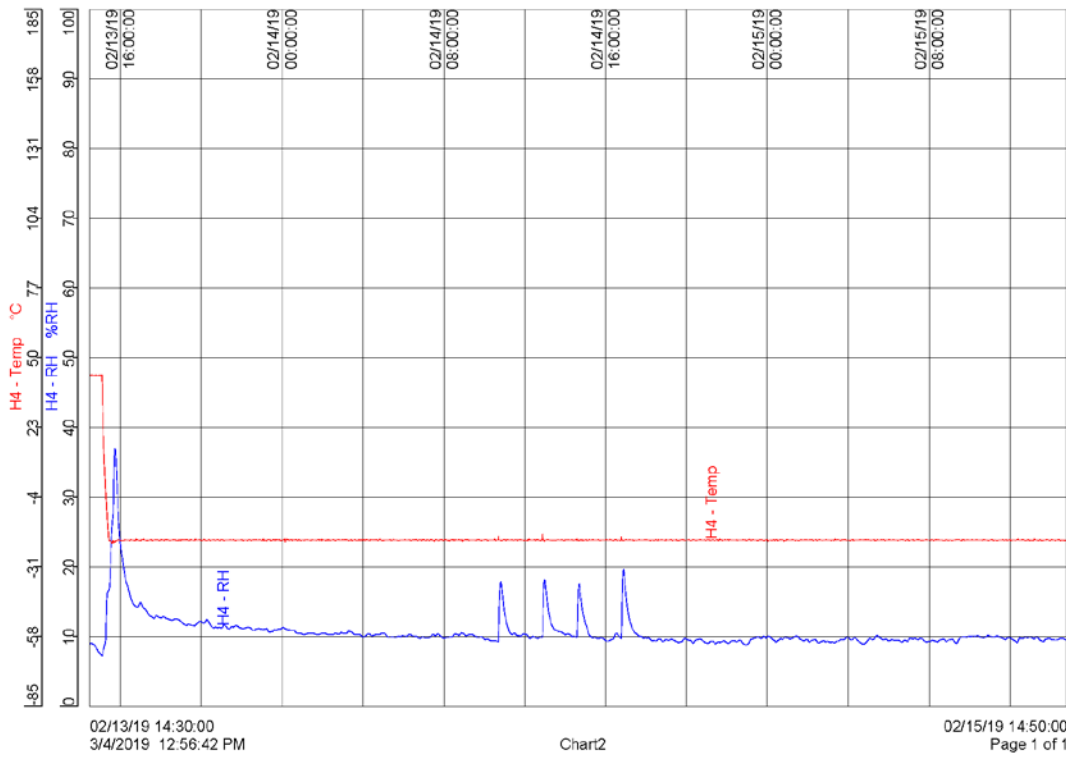


Figure 6: Method 503.5, Temperature Shock, Procedure I-C – Multi-Cycle Shocks, Low Temperature

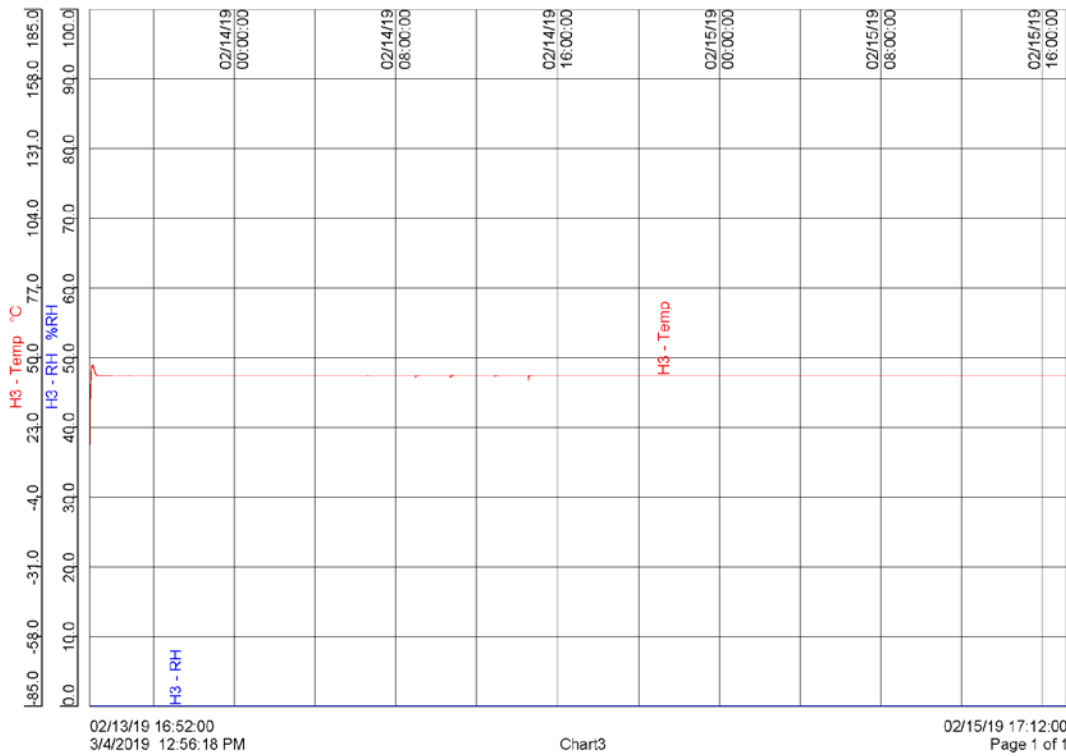


Figure 7: Method 503.5, Temperature Shock, Procedure I-C – Multi-Cycle Shocks, High Temperature



Figure 8: Method 503.5, Temperature Shock, Procedure I-C – Multi-Cycle Shocks, Test Setup

Humidity, Procedure I – Induced Storage/Transit, Natural and Cycles

Test Requirement(s): The equipment **shall not** sustain any damage or deterioration of functional performance when subjected to the conditions of MIL-STD-810G, Method 507.5, Humidity, Procedure I – Induced Storage/Transit, Natural and Cycles.

Test Procedure

- A. The operational EUT was functionally evaluated at ambient temperature and humidity levels ($25^{\circ}\text{C} \pm 5^{\circ}\text{C}$, 55%RH). The EUT was tested to Category B3.
- B. With the test item installed in the test chamber in its required configuration, the temperature was adjusted to $23 \pm 2^{\circ}\text{C}$ and $50 \pm 5\%$ RH, and maintained for 24 hours.
- C. The temperature and relative humidity were adjusted to those shown in the appropriate induced (storage and transit) category of Table 507.5-II.
- D. The EUT was subjected to the 16- 24 hour cycles by category shown in Table 507.5-II. Near the end of the fifth and tenth cycles, a EUT performance check was conducted.

Table 507.5-II. Test Cycles (days).

MATERIEL CATEGORY	NATURAL			INDUCED (STORAGE & TRANSIT)		
	Cycle B1	Cycle B2	Cycle B3	Cycle B1	Cycle B2	Cycle B3
Hazardous Items Normal Test Duration	90	90	30	180	180	30
Non-Hazardous Items Normal Test Duration ¹	45	45	15	90	90	15

¹ Perform operational checks at least once every five days; more frequent checks may provide early detection of potential problems.

Figure 9. Humidity – Test Cycles (Table 507.5-II)

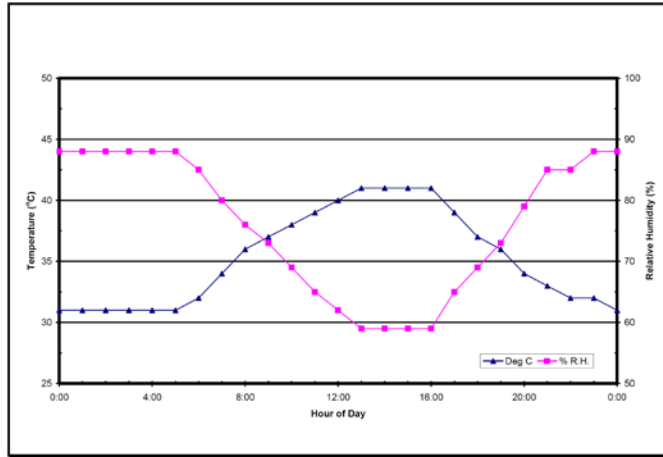


Figure 507.5-6. Natural Cycle B3 - Hot humid.

Table 507.5-VIII. Hot Humid – Natural Cycle B3.

Time	Temp.		RH %	Time	Temp.		RH %
	°F	°C			°F	°C	
0000	88	31	88	1300	105	41	59
0100	88	31	88	1400	105	41	59
0200	88	31	88	1500	105	41	59
0300	88	31	88	1600	105	41	59
0400	88	31	88	1700	102	39	65
0500	88	31	88	1800	99	37	69
0600	90	32	85	1900	97	36	73
0700	93	34	80	2000	94	34	79
0800	96	36	76	2100	91	33	85
0900	98	37	73	2200	90	32	85
1000	100	38	69	2300	89	32	88
1100	102	39	65	2400	88	31	88
1200	104	40	62				

Figure 10. Humidity – Natural Cycle B3

- E. The EUT was operational through testing.
- F. The temperature and humidity was adjusted to standard ambient conditions.
- G. The EUT was visually inspected and functionally verified.

Test Results: Compliant.

Test Engineer(s): John Peters

Test Date(s): 01/30/19 – 02/16/19

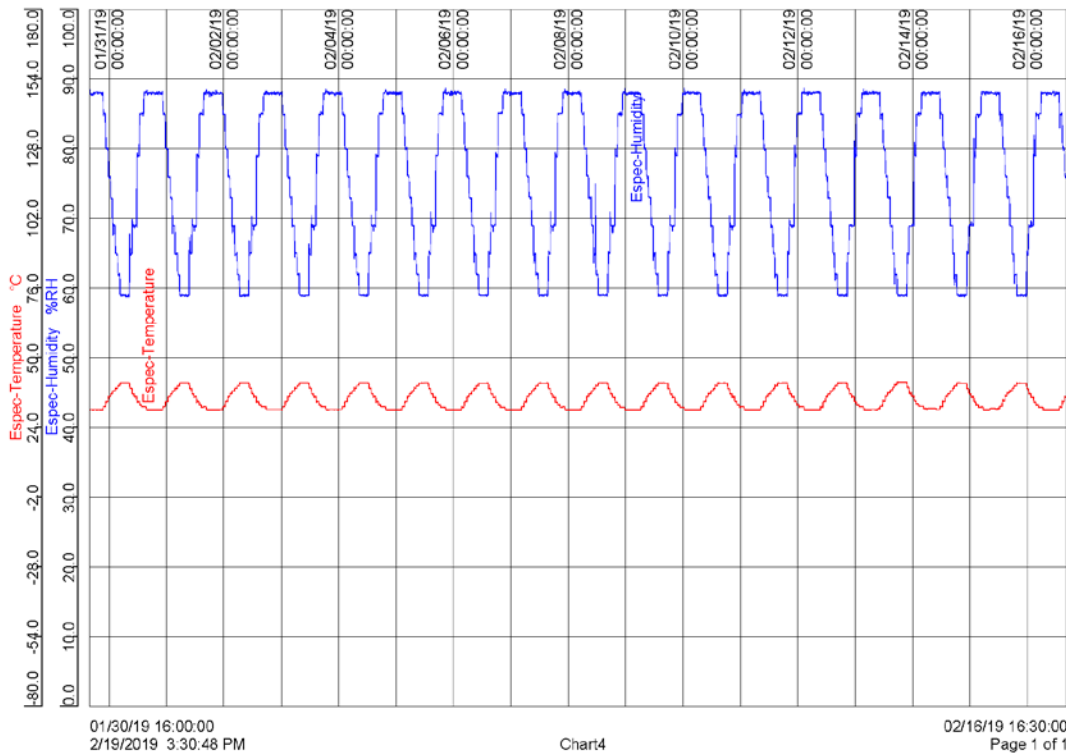


Figure 11: Method 507.5, Humidity, Procedure I, Natural Cycles, Storage, Test Profile



Figure 12: Method 507.5, Humidity, Procedure I, Natural Cycles, Storage Test Setup

Vibration, Category 4 - Composite Wheeled Vehicle Vibration Exposure (MIL-STD-810G Method 514.6)

Test Requirements The equipment **shall not** sustain any damage or deteriorate in functional performance during or after it has been exposed to the environment described in MIL-STD-810G Method 514.6, Procedure I - General Vibration, Category 4 - Truck/Trailer/Tracked - Restrained Cargo.

Test Procedure

- A. The EUT was installed on the vibration test fixture in the vertical axis:
- B. An input (control) accelerometer was mounted to the base of the test fixture as near as possible to the attachment point of the EUT: A monitor accelerometer was mounted to the frame of the fixture to record the response.
- C. The EUT was subjected to a random vibration, in the vertical axis, at the following test levels.
- D. The EUT was installed on the vibration test fixture in the longitudinal axis:
- E. An input (control) accelerometer was mounted to the base of the test fixture as near as possible to the attachment point of the EUT: A monitor accelerometer was mounted to the frame of the fixture to record the response.
- F. The EUT was subjected to a random vibration, in the longitudinal axis, at the following test levels.
- G. The EUT was installed on the vibration test fixture in the transverse axis.
- H. An input (control) accelerometer was mounted to the base of the test fixture as near as possible to the attachment point of the EUT: A monitor accelerometer was mounted to the frame of the fixture to record the response.
- I. The EUT was subjected to a random vibration, in the transverse axis, at the following test levels.
- J. The EUT was visually inspected before and after each axis of vibration.

Vibration, Category 4 – Composite Wheeled Vehicle Vibration Exposure

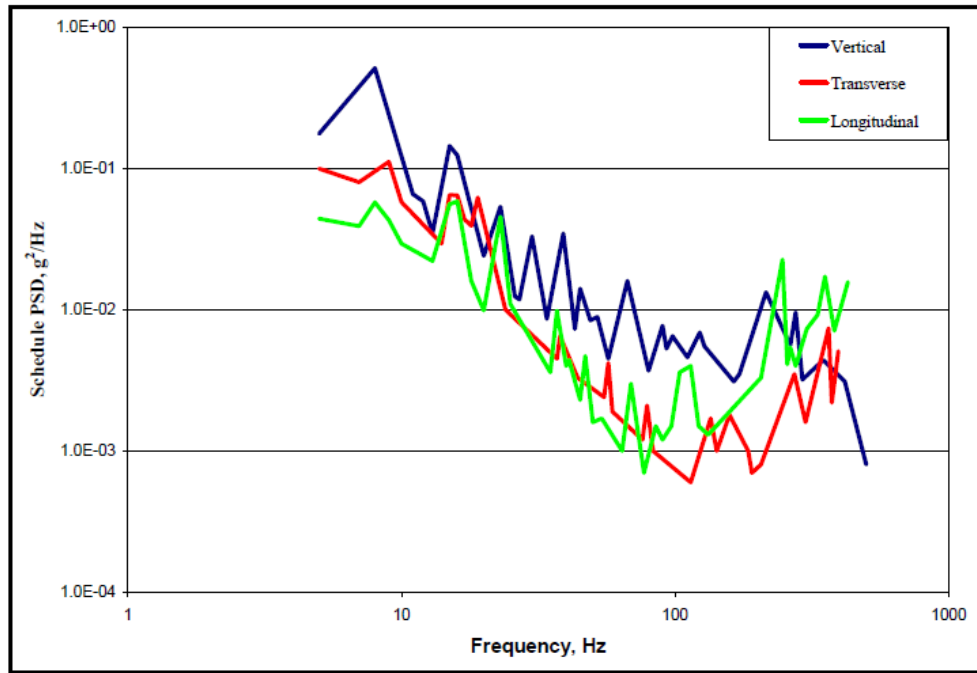


Figure 514.6C-3 – Category 4 - Composite wheeled vehicle vibration exposure.

Figure 13: Composite Wheeled Vehicle Vibration Exposure [Figure 514.6C-3]

Vibration, Category 4 – Composite Wheeled Vehicle Vibration Exposure

Table 514.6C-VI. Category - 4 - Composite wheeled vehicle vibration exposure. (Break points for curves of Figure 514.6C-3.)

Vertical		Transverse		Longitudinal	
Frequency, Hz	PSD, g ² /Hz	Frequency, Hz	PSD, g ² /Hz	Frequency, Hz	PSD, g ² /Hz
5	0.1759	5	0.0998	5	0.0441
8	0.5120	7	0.0799	7	0.0390
11	0.0660	9	0.1115	8	0.0576
12	0.0585	10	0.0577	9	0.0430
13	0.0348	14	0.0294	10	0.0293
15	0.1441	15	0.0651	13	0.0221
16	0.1237	16	0.0646	15	0.0558
20	0.0241	17	0.0436	16	0.0585
23	0.0536	18	0.0393	18	0.0160
26	0.0124	19	0.0622	20	0.0099
27	0.0118	24	0.0100	23	0.0452
30	0.0331	37	0.0045	25	0.0110
34	0.0086	38	0.0065	35	0.0036
39	0.0347	44	0.0033	37	0.0098
43	0.0073	55	0.0024	40	0.0040
45	0.0141	57	0.0042	41	0.0044
49	0.0084	59	0.0019	45	0.0023
52	0.0089	76	0.0012	47	0.0047
57	0.0045	79	0.0021	50	0.0016
67	0.0160	83	0.0010	54	0.0017
80	0.0037	114	0.0006	64	0.0010
90	0.0077	135	0.0017	69	0.0030
93	0.0053	142	0.0010	77	0.0007
98	0.0065	158	0.0018	85	0.0015
99	0.0063	185	0.0010	90	0.0012
111	0.0046	191	0.0007	97	0.0015
123	0.0069	206	0.0008	104	0.0036
128	0.0055	273	0.0035	114	0.0040
164	0.0031	300	0.0016	122	0.0015
172	0.0035	364	0.0074	132	0.0013
215	0.0133	374	0.0022	206	0.0033
264	0.0056	395	0.0051	247	0.0226
276	0.0096	500	0.0012	257	0.0041
292	0.0032	rms = 1.48 g		264	0.0054
348	0.0044			276	0.0040
417	0.0031			303	0.0073
500	0.0008			332	0.0092
rms = 2.24 g				353	0.0172
				382	0.0071
				428	0.0157
				500	0.0016
				rms = 1.90 g	

Figure 14: Composite Wheeled Vehicle Vibration Exposure [Table 514.6C-VI]

Test Results: Compliant.

Test Engineer(s): John Peters

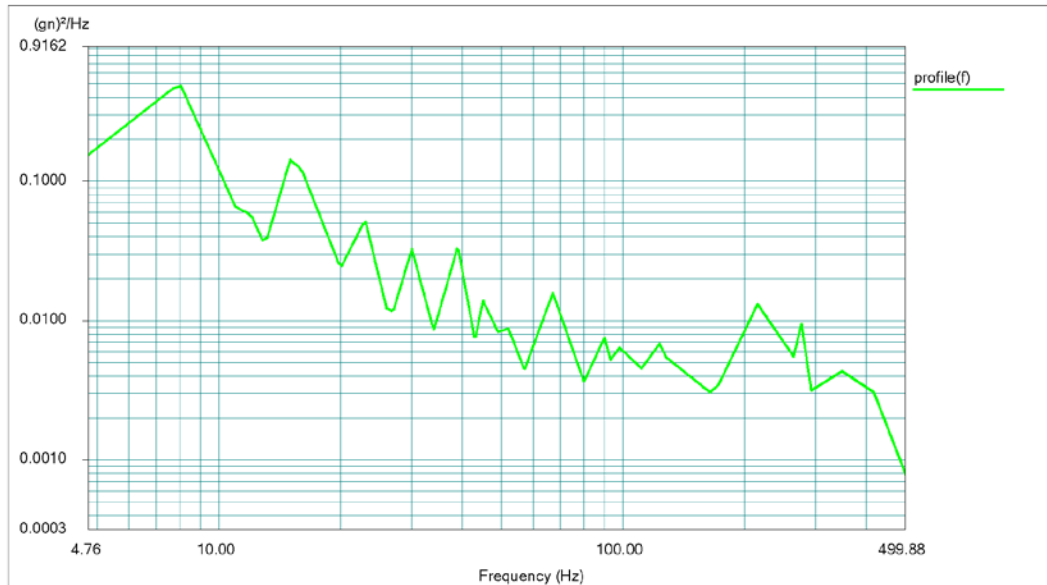
Test Date(s): 02/08/19

Project File Name: 810G 514 C3 Vert(RANDOM).prj

Profile Name: MIL-STD-810G, Fig. 514.6C-3, Composite Wheeled Vehicle - Vertical
 Folder: .\RunDefault Feb 08, 2019 14-52-53

Test Type: Random

Run



Level: 100 %

Control RMS: 2.223700 gn Full Level Elapsed Time: 00:59:59 Lines: 1600 Frame Time: 2.730667 Seconds

Demand RMS: 2.244116 gn Remaining Time: 00:00:00 DOF: 154 dF: 0.366211 Hz

Data saved at 03:57:25 PM, Friday, February 08, 2019

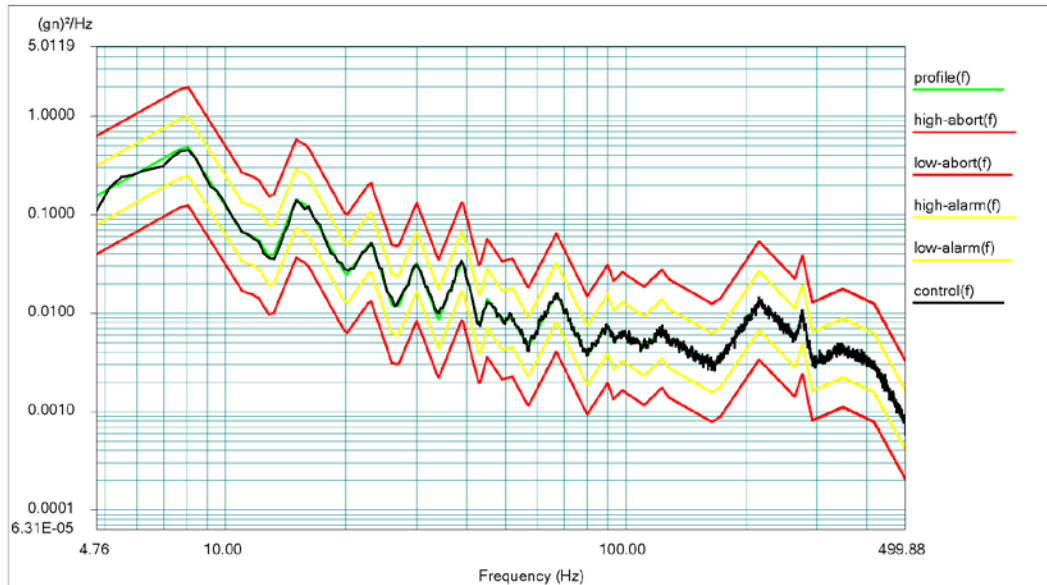
Report created at 03:57:26 PM, Friday, February 8, 2019

Figure 15: Method 514.6, Procedure I - General Vibration, Category 4 - Truck/Trailer/Tracked - Restrained Cargo, Vertical Axis (1)

Project File Name: 810G 514 C3 Vert(RANDOM).prj

Profile Name: MIL-STD-810G, Fig. 514.6C-3, Composite Wheeled Vehicle - Vertical
 Folder: .\RunDefault Feb 08, 2019 14-52-53

Test Type: Random Run



Level: 100 %

Control RMS: 2.223700 gn Full Level Elapsed Time: 00:59:59 Lines: 1600 Frame Time: 2.730667 Seconds

Demand RMS: 2.244116 gn Remaining Time: 00:00:00 DOF: 154 dF: 0.366211 Hz

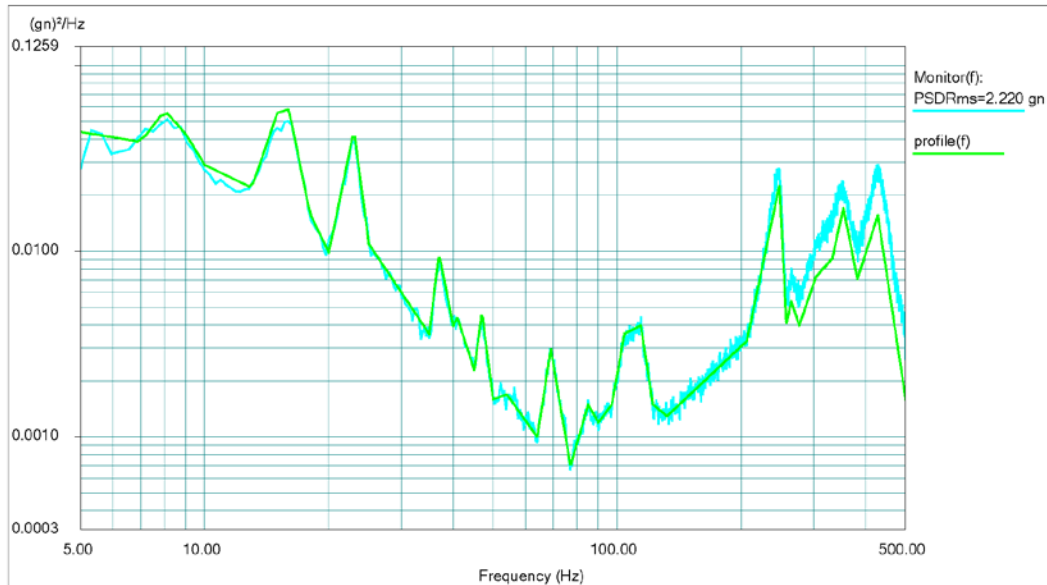
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Report created at 03:57:27 PM, Friday, February 8, 2019

Figure 16: Method 514.6, Procedure I - General Vibration, Category 4 - Truck/Trailer/Tracked - Restrained Cargo, Vertical Axis (2)

Project File Name: 810G 514 C3 Long.prj

Profile Name: MIL-STD-810G, Fig. 514.6C-3, Composite Wheeled Vehicle - Longitudinal Test Type: Random Run
 Folder: .\RunDefault Feb 08, 2019 09-47-01



Level: 100 %

Control RMS: 1.886969 gn Full Level Elapsed Time: 01:00:16 Lines: 1600 Frame Time: 3.200000 Seconds
 Demand RMS: 1.897761 gn Remaining Time: 00:00:00 DOF: 154 dF: 0.312500 Hz

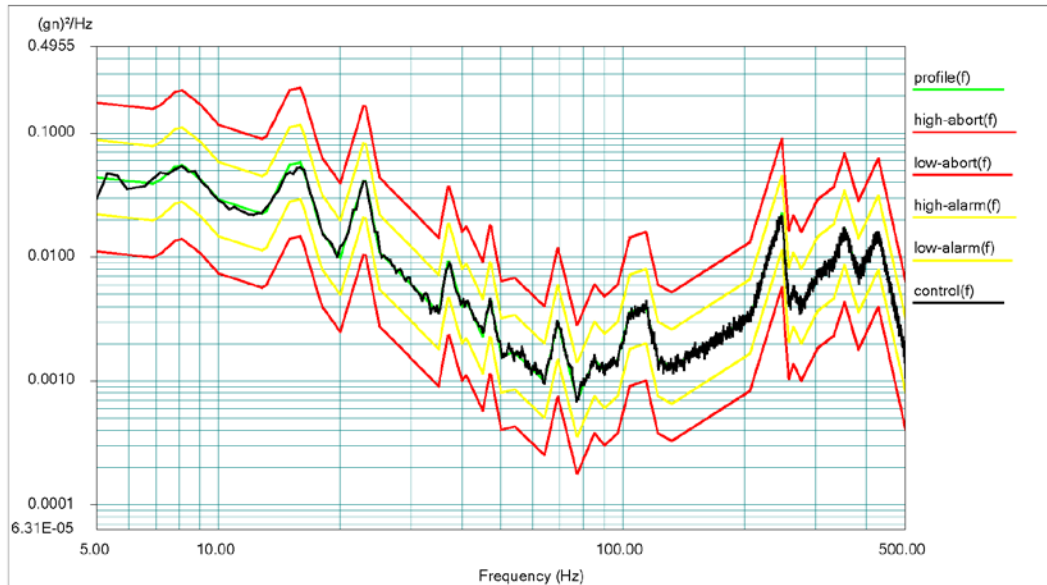
Data saved at 10:58:16 AM, Friday, February 08, 2019

Report created at 10:58:17 AM, Friday, February 8, 2019

Figure 17: Method 514.6, Procedure I - General Vibration, Category 4 - Truck/Trailer/Tracked - Restrained Cargo, Longitudinal Axis (1)

Project File Name: 810G 514 C3 Long.prj

Profile Name: MIL-STD-810G, Fig. 514.6C-3, Composite Wheeled Vehicle - Longitudinal Test Type: Random Run
 Folder: .\RunDefault Feb 08, 2019 09-47-01



Level: 100%

Control RMS: 1.886969 gn Full Level Elapsed Time: 01:00:16 Lines: 1600 Frame Time: 3.200000 Seconds
 Demand RMS: 1.897761 gn Remaining Time: 00:00:00 DOF: 154 dF: 0.312500 Hz

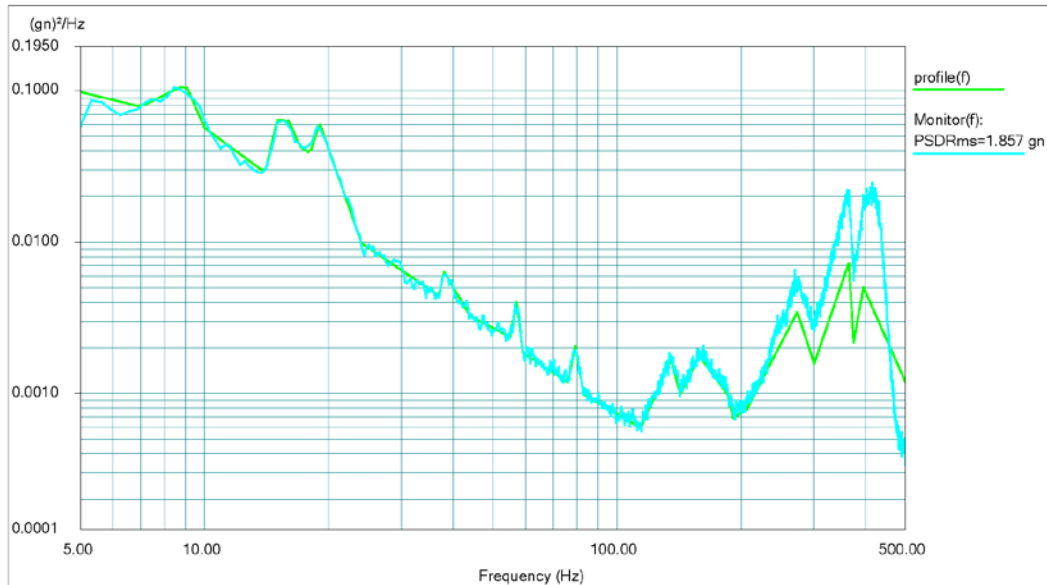
Data saved at 10:58:16 AM, Friday, February 08, 2019

Report created at 10:58:17 AM, Friday, February 8, 2019

Figure 18: Method 514.6, Procedure I - General Vibration, Category 4 - Truck/Trailer/Tracked - Restrained Cargo, Longitudinal Axis (2)

Project File Name: 810G 514 C3 Trans(RANDOM).prj

Profile Name: MIL-STD-810G, Fig. 514.6C-3, Composite Wheeled Vehicle - Transverse Test Type: Random Run
 Folder: .\RunDefault Feb 08, 2019 11-22-57



Level: 100 %

Control RMS: 1.458529 gn	Full Level Elapsed Time: 01:00:00	Lines: 1600	Frame Time: 3.200000 Seconds
Demand RMS: 1.465233 gn	Remaining Time: 00:00:00	DOF: 154	dF: 0.312500 Hz

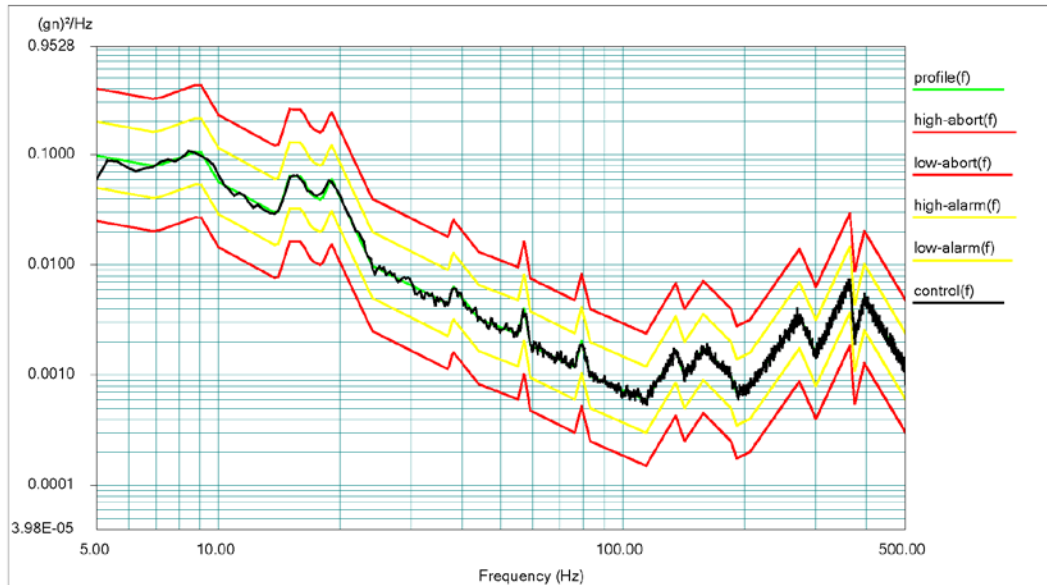
Data saved at 12:24:29 PM, Friday, February 08, 2019

Report created at 12:24:31 PM, Friday, February 8, 2019

Figure 19: Method 514.6, Procedure I - General Vibration, Category 4 - Truck/Trailer/Tracked - Restrained Cargo, Transverse Axis (1)

Project File Name: 810G 514 C3 Trans(RANDOM).prj

Profile Name: MIL-STD-810G, Fig. 514.6C-3, Composite Wheeled Vehicle - Transverse Test Type: Random Run
 Folder: .\RunDefault Feb 08, 2019 11-22-57



Level: 100 %

Control RMS: 1.458529 gn Full Level Elapsed Time: 01:00:00 Lines: 1600 Frame Time: 3.200000 Seconds
 Demand RMS: 1.465233 gn Remaining Time: 00:00:00 DOF: 154 dF: 0.312500 Hz

Data saved at 12:24:30 PM, Friday, February 08, 2019

Report created at 12:24:31 PM, Friday, February 8, 2019

Figure 20: Method 514.6, Procedure I - General Vibration, Category 4 - Truck/Trailer/Tracked - Restrained Cargo, Transverse Axis (2)

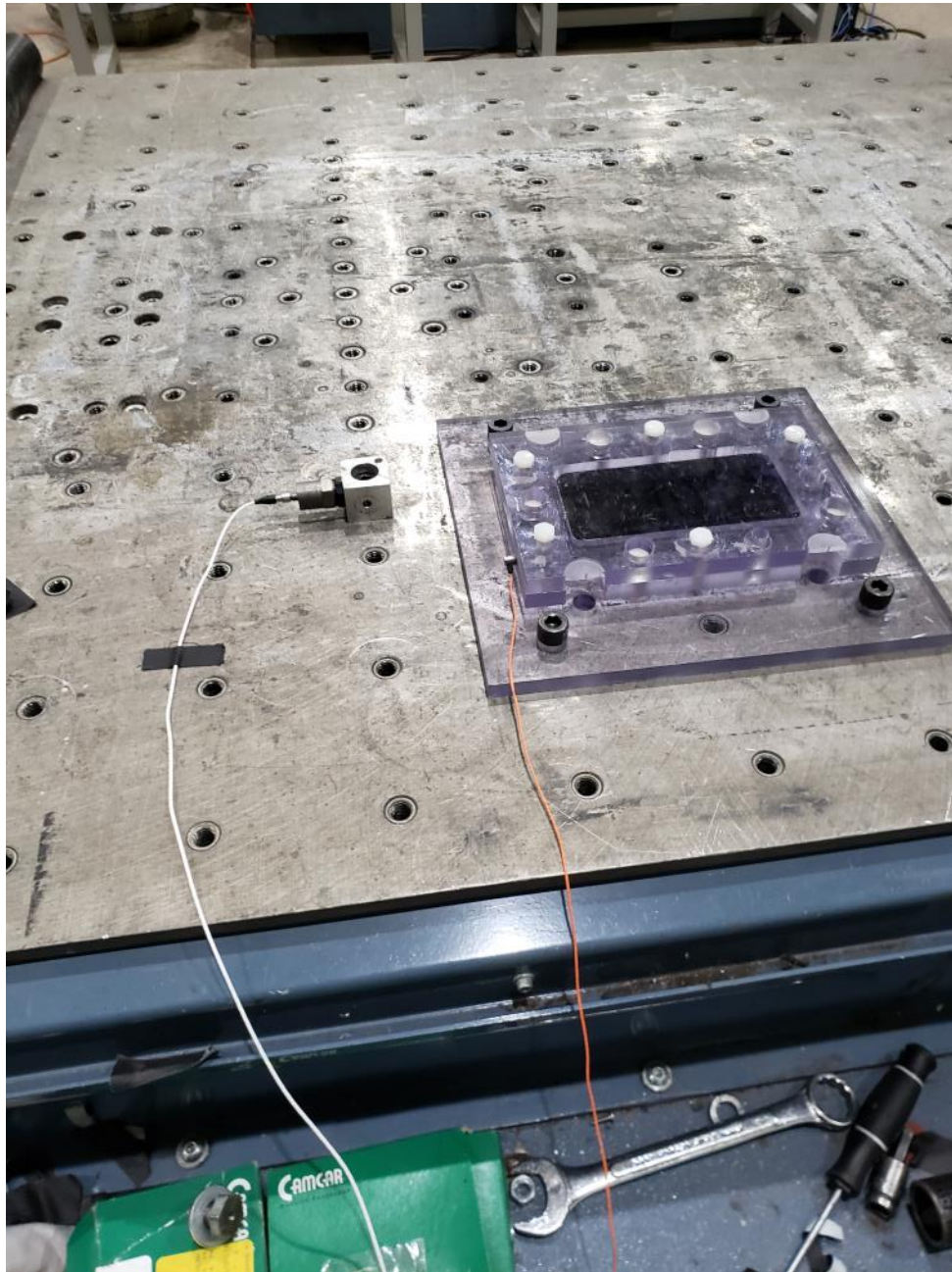


Figure 21: Method 514.6, Procedure I - General Vibration, Category 4 - Truck/Trailer/Tracked - Restrained Cargo, Vibration setup (1)

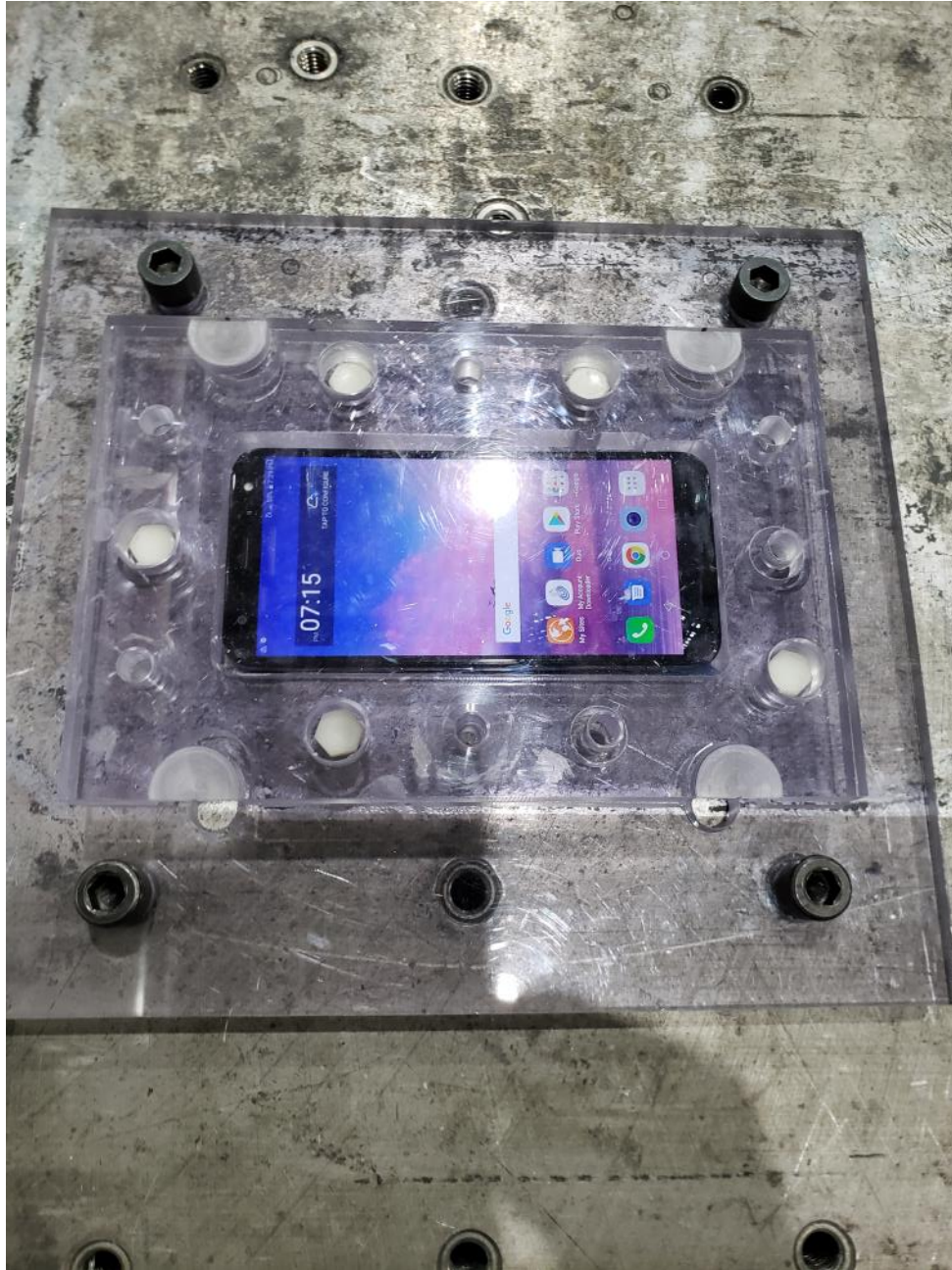


Figure 22: Method 514.6, Procedure I - General Vibration, Category 4 - Truck/Trailer/Tracked - Restrained Cargo, Vibration setup (2)

Shock, Procedure IV - Transit Drop (MIL-STD-810G Method 516.6)

Test Requirements The equipment **shall not** sustain any damage or deteriorate in functional performance during or after it has been exposed to the environment described in MIL-STD-810G.

Test Procedure

- A. The test was performed on an unpackaged EUT.
- B. The EUT was subjected to drops heights specified below.
- C. The EUT was dropped onto a 2-inch plywood backed by concrete.
- D. The EUT was dropped using drop tester-
- E. A visual and functional inspection was performed after the test.

Table 516.6-VI. Transit drop test.

Weight of Test Item & Case kg (lbs)	Largest Dimension, cm (in)	Notes	Height of Drop, h cm (in)	Number of Drops
Under 45.4 (100) Manpacked or man-portable	Under 91 (36)	<u>A/</u>	122 (48)	Drop on each face, edge and corner; total of 26 drops <u>D/</u>
	91 & over	<u>A/</u>	76 (30)	
45.4 - 90.8 (100 - 200) inclusive	Under 91	<u>A/</u>	76 (30)	Drop on each corner; total of eight drops
	91 & over	<u>A/</u>	61 (24)	
90.8-454 (200 - 1000) inclusive	Under 91	<u>A/</u>	61 (24)	
	91 - 152 (36 - 60)	<u>B/</u>	61 (24)	
	Over 152	<u>B/</u>	61 (24)	
Over 454	No limit	<u>C/</u>	46 (18)	Drop on each bottom edge. Drop on bottom face or skids; total of five drops

NOTES:

A/ Perform drops from a quick-release hook or drop tester. Orient the test item so that, upon impact, a line from the struck corner or edge to the center of gravity of the case and contents is perpendicular to the impact surface.

B/ With the longest dimension parallel to the floor, support the transit, or combination case with the test item within, at the corner of one end by a block 13 cm (five inches) in height, and at the other corner or edge of the same end by a block 30 cm (12 inches) in height. Raise the opposite end of the case to the specified height at the lowest unsupported corner and allow it to fall freely.

C/ While in the normal transit position, subject the case and contents to the edgewise drop test as follows (if the normal transit position is unknown, orient the case so the two longest dimensions are parallel to the floor):

Edgewise drop test: Support one edge of the base of the case on a sill 13-15 cm (five to six inches) in height. Raise the opposite edge to the specified height and allow it to fall freely. Apply the test once to each edge of the base of the case (total of four drops).

D/ If desired, divide the 26 drops among no more than five test items (see paragraph 4.6.5.1).

Figure 23: Transit Drop Test Procedures

Test Results: Compliant.

Test Engineer(s): John Peters

Test Date(s): 02/15/19



Figure 24: Method 516.6, Shock, Procedure IV - Transit Drop, Drop setup

LG Electronics, Inc.
LG X4 2019, LG K12+, LG K40, LG Phoenix Plus 2, LG Expression Plus 2, LG Solo LTE
Test Data

Test Equipment

MET #	EQUIPMENT	MANUFACTURER	MODEL #	LAST CAL	CAL DUE
2T8260	VIBRATION TEST SYSTEM	UNHOLTZ-DICKIE CORP	SAI90-K170-24C/CSTA	SEE NOTE	
2T8224	LASER USB VIBRATION CONTROL SYSTEM	DACTRON	LAS200/LAS210	14-DEC-18	14-DEC-19
2T5895	ACCELEROMETER (ICP)	PCB PIEZOTRONICS	J353B34	07-NOV-18	07-NOV-19
2T9553	ACCELEROMETER (VOLTAGE MODE)	DYTRAN INSTRUMENTS	3032A	16-JUN-18	16-JUN-19
2T4000	ESPEC TEMPERATURE/HUMIDITY CHAMBER ESPEC TEMPERATURE/HUMIDITY CHAMBER	ESPEC NORTH AMERICA, INC.	EPX-4H	22-MAY-18	22-MAY-19
2T8226	TEMPERATURE/HUMIDITY CHAMBER TEMPERATURE/HUMIDITY CHAMBER	ESPEC	EPX-4H	11-JAN-19	11-JAN-20
2T5566	TEMP/RH CHAMBER (H3) TEMP/RH CHAMBER (H3)	THERMOTRON	SM-32C	11-JUN-18	11-JUN-19
2T5888	TEMPERATURE RH CHAMBER (H4) TEMPERATURE RH CHAMBER (H4)	THERMOTRON	SM32C; 2800; 923494	11-JUL-18	11-JUL-19
2T8179	PDT DROP TEST SYSTEM PDT DROP TEST SYSTEM	LANSMONT CORPORATION	PDT-56ED	N/A	N/A

Note: Functionally verified test equipment is verified using calibrated instrumentation at time of testing.