GreenOX®

PALLET TECHNOLOGY

Independent Third-Party Testing Reports

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Independent Third Party Testing Reports

CTC C872A

ISTA 3E Protocol Testing Report

CASCADE™ TEK

TEST REPORT

CTC C872B

May 20, 2014

Accredited by American Association for Laboratory Accreditation (A2LA)

Certified Commercial Package Testing Laboratory (ISTA)

MIL-STD Laboratory Suitability Status by Defence Logistics Agency (DLA)

LABORATORY LOCATIONS

OREGON
5245-A NE Elam Young Pkwy.
Hillsboro, OR, 97124 • Ph: 503-648-1818

COLORADO
1530 Vista View Drive
Longmont, CO, 80504 • Ph: 720-340-7810

www.cascadetek.com

Job Number: C872

Rev.	Description of the Revision	Date
---	Initial Release of the Certification Report.	Nov. 15, 2013
A	Added Edge Drop Retest; Deleted Original.	Dec. 3, 2013
B	Delete photos to reduce report size per custoer instructions.	May 20, 2014

Test Title	Test Summary
Atmospheric Preconditioning	The test was conducted per the required standard with no deviations.
Shock (Incline Impact)	The test was conducted per the required standard with no deviations.
Shock (Rotational Edge Drop)	The test was conducted per the required standard with no deviations.
Compression (Apply and Hold)	The test was conducted per the required standard with no deviations.
Random Vibration	The test was conducted per the required standard with no deviations.

Cascade Technical Sciences
www.cascadetek.com
1-888-835-9250

TESTING CERT #2582.02

May 20, 2014

Certification No: CTC C872B

Attention: Mr. Bob Giese
SVTS Global
15334 E Hinsdale Circle, Unit 1E
Centennial, CO 80112

Reference:

a. Cascade Tek Job No.:	C872
b. Cascade Tek Quote No.:	13946G
c. Client Purchase Order No.:	10004
d. Technical Specification:	1. Customer SOW Referencing ISTA 3E

Cascade Technical Sciences hereby certifies that Two (2) pallets, one wood and one P/N GOS-48.40 Green Ox, were subjected to the following tests:

1. Atmospheric Preconditioning per Reference (b) Item 1 and (d1), samples were held for a minimum of 12 hours at lab ambient conditions.

2. Shock (Incline Impact) per Reference (b) Item 2 and (d1), pallet with banded and shrink-wrapped 1600lb load was subjected to 4 impacts at a minimum velocity of 42 in/second.

3. Shock (Rotational Edge Drop) per Reference (b) Item 3 and (d1), sample was subjected to 4 Rotational Edge Drops from 8".

4. Compression (Apply and Hold) per Reference (b) Item 4 and (d1), compression load of 3200 lbs was added to existing load of 1600 lbs on pallet. Compression weight was maintained for one hour.

5. Random Vibration per Reference (b) Item 5 and (d1), the test sample was loaded with 1600lbs and subjected to four hours of random vibration exposure across a frequency range of 1-200Hz at an overall level of 0.54Grms. Following the four hour exposure, the load was transferred to the wooden pallet and the vibration exposure was performed for fifteen minutes to collect the load dynamic response data.

Testing was done in accordance with the above references as evidenced and reported in the accompanying data. The test samples were returned to the customer's facility for evaluation.

The original of this report is on file at Cascade Technical Sciences, Inc. under the above referenced certification number for review by authorized personnel. The results of the testing reported herein relate only to the actual items tested.

Respectfully submitted,

David Bowles
Quality Administrator
Cascade Technical Sciences, Inc.

Total number of pages in this document is 28.

The objective of this test program was to subject customer provided test hardware to environmental simulation in compliance with customer stated specification, including any authorized modification, deviations or concessions to the original requirements. The hardware consisted of items identified in the appropriate sections of this report. In addition to test hardware identification, each section contains information that describes the associated test setup and performance and the resulting data. Cascade TEK, Inc. measuring instruments used in testing were calibrated according to the requirements of ANSI/NCSL Z540-1-1944 and ISO/IEC 17025, 2nd Edition and are NIST traceable. Calibration records are on file and available for inspection by request. Because the test methods are well established and are qualitative or semi-quantitative in nature, Cascade TEK, Inc. does not apply measurement uncertainty unless obligated by contract. Measured value related to the corresponding tolerance requirement is used to decide whether a test meets the requirements of the specification. Any test hardware operational setups and resulting evaluations or inspections performed by the customer are not included in this report, unless they were explicitly requested. While observations and/or specification compliance statements may be reported, no interpretations or opinions regarding customer product performance are intended. Unless otherwise indicated in the appropriate report section, all contract obligations were met and the test objective achieved.

Test Data Log

Job Number: C872
Customer: SVTS Global

Date Started: 11/7/2013
Date Completed: 11/7/2013

Reviewing Engineer: David Bowles
Signature:

Responsible Technician: Keefe Hart

Type of Test: Shock(inclined impact)
Test Specification: ISTA 3E; sequence 3

Specimen Description: Corrugated pallet "Green Ox Pallet"
Specimen P/N: GOS-48.40
Specimen S/N: NA

Laboratory Temperature: +72°F

Laboratory Humidity: 22% RH

Test Description: Sample will be exposed to four impacts at a minimum velocity of 42"/sec. Pallet to be loaded with 1600# banded and shrink wrapped to pallet.

Initials	Date	Time	Notes	Photo
KH	11/7/2013	0840	Sample has completed a minimum of 12 hours at ambient lab conditions. Inclined impact tester is setup and dry run indicates distance is appropriate for 42 in/sec impact.	☐
KH	11/7/2013	0845	Pallet is loaded with 1600 pounds and banded and stretch wrapped.	☒
KH	11/7/2013	0900	Sample is placed on machine 1243.	☐
KH	11/7/2013	0905	First Impact. Wide face. 23.18 ms; 43.14 in/sec.	☐
KH	11/7/2013	0920	Second impact. Opposite wide face. 23.11 ms; 43.27 in/sec.	☐
KH	11/7/2013	0928	Third impact. Small face 23.22ms; 43.06 in/sec.	☐
KH	11/7/2013	0940	Fourth impact. Opposite small face 23.10ms; 43.29 in/sec.	☐
KH	11/7/2013	0945	Visual inspection shows no damage to pallet.	☒
KH	11/7/2013	0945	Inclined impact is complete. Sample remains onsite for further testing.	☐

DS2 - Test Equipment List

Test: Shock (Incline Impact) **Job Number:** C872 **Date:** November 7, 2013

Test Equipment List						
Equipment Description	**Manufacturer**	**Model**	**S/N**	**Cal No.**	**Calibrated Date (mm/dd/yy)**	**Calibration Due Date (mm/dd/yy)**
Impact Tester	LAB	2000-CT	774031	1243	Reference Only	
Velocity Meter	LAB	9000	207	FR55	03-11-13	03-31-14
Tape Ruler	Stanley	LeverLock	30-824	FR66	Verified Prior to Use	
Floor Scale	Digiweigh	DWP-102E/DWP-5500R	0890211040044	FR1239	07-15-13	07-31-14
Digital Temp/ RH Meter	Cole Palmer	90080-03	111435228	FR53	03-27-13	03-27-14


IMPACT
Date: 11 - 07 – 13
SVTS Global
Job # C872
Inclined Impact
1000 lbs
1000 lbs
11/07/2013


Date: 11 - 07 – 13
SVTS Global
Job # C872
Inclined Impact
Post Exposure
1000 lbs
11/07/2013

Test Data Log

Job Number: C872
Customer: SVTS Global

Date Started: 12/2/2013
Date Completed: 12/2/2013

Reviewing Engineer: David Bowles
Signature:

Responsible Technician: Keefe Hart

Type of Test: Shock (Rotational Edge Drop)
Test Specification: ISTA 3E; Sequence 7

Specimen Description: Corrugated pallet "Green Ox Pallet"
Specimen P/N: GOS-48.40
Specimen S/N: Sample #1

Laboratory Temperature: +71°C

Laboratory Humidity: 19%

Test Description: The test sample to be exposed to four 8" edge drops with a 0.75" piece of plywood placed under the sample to prevent the sample from folding; the side opposite the 8" elevation will be raised 4". The test sample will be loaded with 1600lbs banded to the pallet.

Initials	Date	Time	Notes	Photo
KH	12/2/2013	1050	Begin setting up for the test. Customer supplied device for dropping edge will be used with customer instruction.	☐
KH	12/2/2013	1100	The test sample is positioned with one short edge elevated 4" and the opposing short edge elevated 8".	☒
KH	12/2/2013	1105	Perform a drop on the edge elevated 8".	
KH	12/2/2013	1110	Reverse pallet to opposite short edge.	☒
KH	12/2/2013	1115	Perform drop on second short edge.	☒
KH	12/2/2013	1120	Arrange pallet with one long edge raised 4" and the opposite long edge elevated 8".	☐
KH	12/2/2013	1123	Perform drop on edge elevated 8".	☒
KH	12/2/2013	1125	Reverse pallet to second long edge.	☐
KH	12/2/2013	1130	Perform drop on second long edge.	
KH	12/2/2013	1140	All four edges have been dropped from an 8" height with the opposite edge elevated 4".	☒
KH	12/2/2013	1200	Customer will take sample with them. The testing is complete.	☐

DS2 - Test Equipment List

Test: Shock (Rotational Edge Drop) **Job Number:** C872 **Date:** November 8, 2013

Test Equipment List						
Equipment Description	**Manufacturer**	**Model**	**S/N**	**Cal No.**	**Calibrated Date (mm/dd/yy)**	**Calibration Due Date (mm/dd/yy)**
Tape Ruler	Stanley	LeverLock	30-824	FR66	Verified Before Use	
Digital Temp / RH Meter	Cole Palmer	90080-03	130033077	FR417	03-27-13	03-27-14


1000 lbs
1000 lbs
Date: 12 - 02 – 13
SVTS
Job # C872
Edge Drop
12/02/2013


Date: 12 - 02 – 13
SVTS
Job # C872
Edge Drop
Post Exposure
12/02/2013


12/02/2013


12/02/2013

Test Data Log

Job Number: C872
Customer: SVTS Global

Date Started: 11/7/2013
Date Completed: 11/7/2013

Reviewing Engineer: David Bowles
Signature:

Responsible Technician: Keefe Hart

Type of Test: Compression "apply and hold"
Test Specification: ISTA 3E; sequence 5

Specimen Description: Corrugated pallet "Green Ox Pallet"
Specimen P/N: GOS-48.40
Specimen S/N:

Laboratory Temperature: +71°F

Laboratory Humidity: 22% RH

Test Description: Sample will be subjected to apply and hold compression testing for a period of one hour with a load of 3200 pounds in addition to the 1600 pound static load on the pallet. Load weight was determined by customer onsite.

Initials	Date	Time	Notes	Photo
KH	11/7/2013	1040	3200 pound load assembled for compression test.	☐
KH	11/7/2013	1100	Sample positioned for load application.	☒
KH	11/7/2013	1110	3200 pound load applied on top of the 1600 pound load.	☒
KH	11/7/2013	1210	Load removed.	☒
KH	11/7/2013	1220	Visual examination post exposure reveals no damage to pallet. Compression testing is complete. Sample will remain onsite for further testing.	☐

5245-A NE Elam Young Pkwy, Hillsboro OR, 97124 1530 Vista View Drive, Longmont, CO 80504

DS2 - Test Equipment List

Test: Compression **Job Number:** C872 **Date:** November 7, 2013

Test Equipment List						
Equipment Description	**Manufacturer**	**Model**	**S/N**	**Cal No.**	**Calibrated Date (mm/dd/yy)**	**Calibration Due Date (mm/dd/yy)**
Stop Watch	Control Company	94460-28	122361624	FR148	01-24-13	01-24-15
Floor Scale	Digiweigh	DWP-102E/DWP-5500R	0890211040044	1239	05-14-13	05-31-14
Tape Ruler	Stanley	LeverLock	30-824	FR66	Verified Before Use	
Digital Temp/ RH Meter	Cole Palmer	90080-03	130033077	FR417	03-27-13	03-24-14


Date: 11 - 07 – 13
SVTS Global
Job # C872
Compression
1000 lbs
1500 lbs
1000 lbs
11/07/2013

Vibration Test Log

Job Number: C872
Customer: SVTS Global

Date Started: 11/7/2013
Date Completed: 11/8/2013

Reviewing Engineer: David Bowles
Signature:

Responsible Technician: Michael Bosica

Type of Vibration Test: Sine Sweep ☐ Resonant Search ☐ Resonant Dwell ☐
Random Vibration ☒ Random on Random Vibration ☐

Test Specification: ISTA 3E

Sample Description: Corrugated pallet "Green Ox Pallet" & Wooden Pallet
Sample P/N: GOS-48.40 & N/A
Sample S/N: Sample #1 and Sample #2

Laboratory Temperature: +72^{0}F
Laboratory Humidity: 12%RH
Operational: Yes ☐ No ☒

Computer Channel(s) Assignment(s)					
Channel No.	**Control / Response**	**pC/g**	**mV/g**	**Accelerometer S/N**	**Notes**
1	C	11.49	100	0000135	Control #1 – Top Graph
2	C	11.53	100	0000050	Control #2 – Top Graph
3	R	11.28	100	0000170	Corner #1 – Bottom Graph
4	R	39.68	100	AJ99	Corner #2 – Bottom Graph
5	R	N/A	98.83	55579	Center – Bottom Graph
6					
7					

Monitoring Equipment Set Up By: N/A
Fixture Property of: CTEK

CTS Slip No.: N/A
Head Expander No.: FR-Platform

Specified Test Requirements: The test sample will be loaded with 1600lbs and subjected to four hours of random vibration exposure across a frequency range of 1-200Hz at an overall level of 0.54Grms. The load will be fixed with three response accelerometers to record the dynamic response during the exposure. Following the four hour exposure, the load will be transferred to a wooden pallet and the vibration exposure will be performed for fifteen minutes to collect the load dynamic response data.

Vibration Test Log

Initials	Date	Time	Notes	Run	Photo
MB	11/7/2013	1300	Begin setting up the test sample, programming the control system and setting up the shaker (#1240).		☐
MB	11/8/2013	0830	The test sample is setup with Face 3 resting on the vibration platform.		☒
MB	11/8/2013	0845	Begin four hours of vibration exposure.	#1	☐
MB	11/8/2013	0915	Stop the exposure to reposition the test sample to the center of the platform.		☐
MB	11/8/2013	0928	Continue the exposure duration.		☐
MB	11/8/2013	1147	Stop the exposure to reposition the test sample to the center of the platform.		☐
MB	11/8/2013	1156	Continue the exposure duration.		☐
MB	11/8/2013	1310	The exposure is complete. Remove the sample from the shaker.		☐
MB	11/8/2013	1320	Perform a visual inspection of the test sample.		☒
MB	11/8/2013	1400	Begin setting up the wooden pallet sample.		☐
MB	11/8/2013	1434	The test sample is setup with Face 3 resting on the vibration platform.		☒
MB	11/8/2013	1441	Begin fifteen minutes of vibration exposure.	#2	☐
MB	11/8/2013	1458	The exposure is complete. Remove the sample from the shaker.		☐
MB	11/8/2013	1515	The test sample will be returned to the customer. The testing is complete.		☐

DS7 - Vibration Equipment List

Job No.: C872 **Date:** November 8, 2013

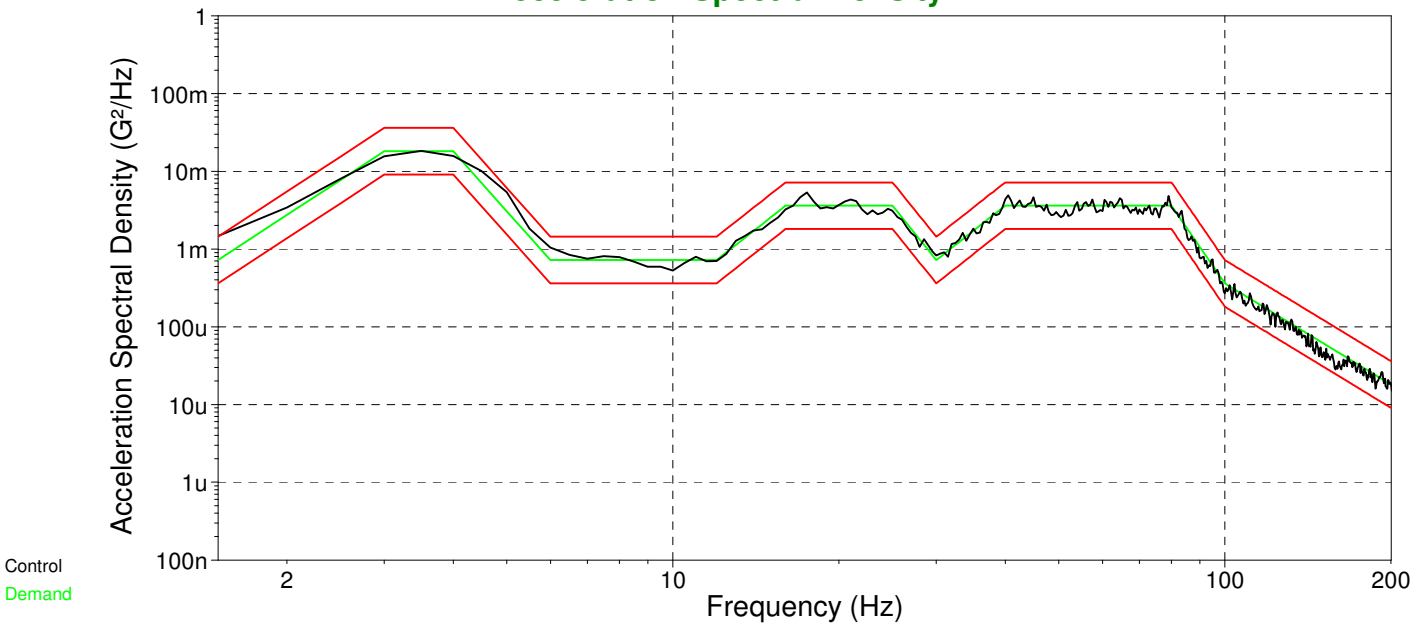
EQUIPMENT DESCRIPTION	MANUFACTURER	MODEL NUMBER	S/N	CAL NUMBER	LAST CALIBRATION	NEXT CALIBRATION
Vibration Shaker	Dynamic Solutions	DS-40000/23-180	041144	1240	Reference Only	
Shaker Amplifier	Dynamic Solutions	SA-180	041144	1240	Reference Only	
Vibration Controller	Vibration Research	VR9500	951147AF	FR146	11-30-13	11-30-14
Vibration Controller	Vibration Research	VR9500	9511470A	FR147	11-30-13	11-30-14
Charge Amplifier	Endevco	133	AR46	FR136	06-21-13	06-21-14
Charge Amplifier	Endevco	133	AN487	FR302	03-26-13	03-26-14
Control Accelerometer	Endveco	2271AM25	0000135	FR295	04-19-13	04-19-14
Control Accelerometer	Endveco	2271AM25	0000050	FR294	04-19-13	04-19-14
Response Accelerometer	Endveco	2217E	AJ99	FR292	03-25-13	03-25-14
Response Accelerometer	Endveco	2271AM25	0000170	FR293	03-25-13	03-25-14
Response Accelerometer	Dytran	3100B	5579	FR124	06-21-13	06-21-14
Digital Temp / RH Meter	Cole Palmer	90080-03	130033077	FR417	03-27-13	03-27-14
Floor Scale	Digiweigh	DWP-102E/DWP-5500R	0890211040044	FR328	07-15-13	07-31-14
Tape Ruler	Stanley	LeverLock	30-824	FR66	Verified Before Use	

CASCADE TEK TESTING SERVICES | **Remaining: 3:47:08** | **Level: 0 dB**

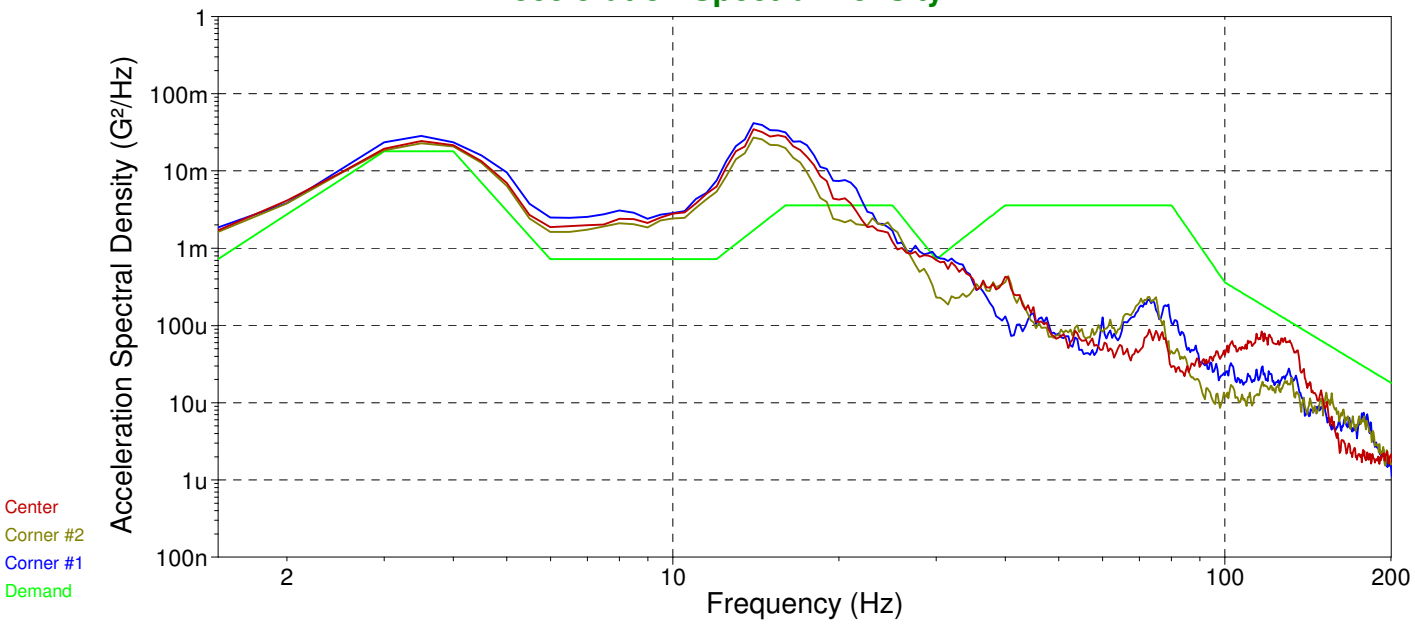
Job Number: C872 | **At Level: 0:12:52** | **Demand: 0.5414 G RMS**

For Customer: SVTS Global | **Elapsed: 0:15:09** | **Control: 0.5318 G RMS**

Acceleration Spectral Density



Acceleration Spectral Density



Axis: Vertical (Z) - Face 3 Down | **Start Time: Nov 08, 2013 08:45:09**

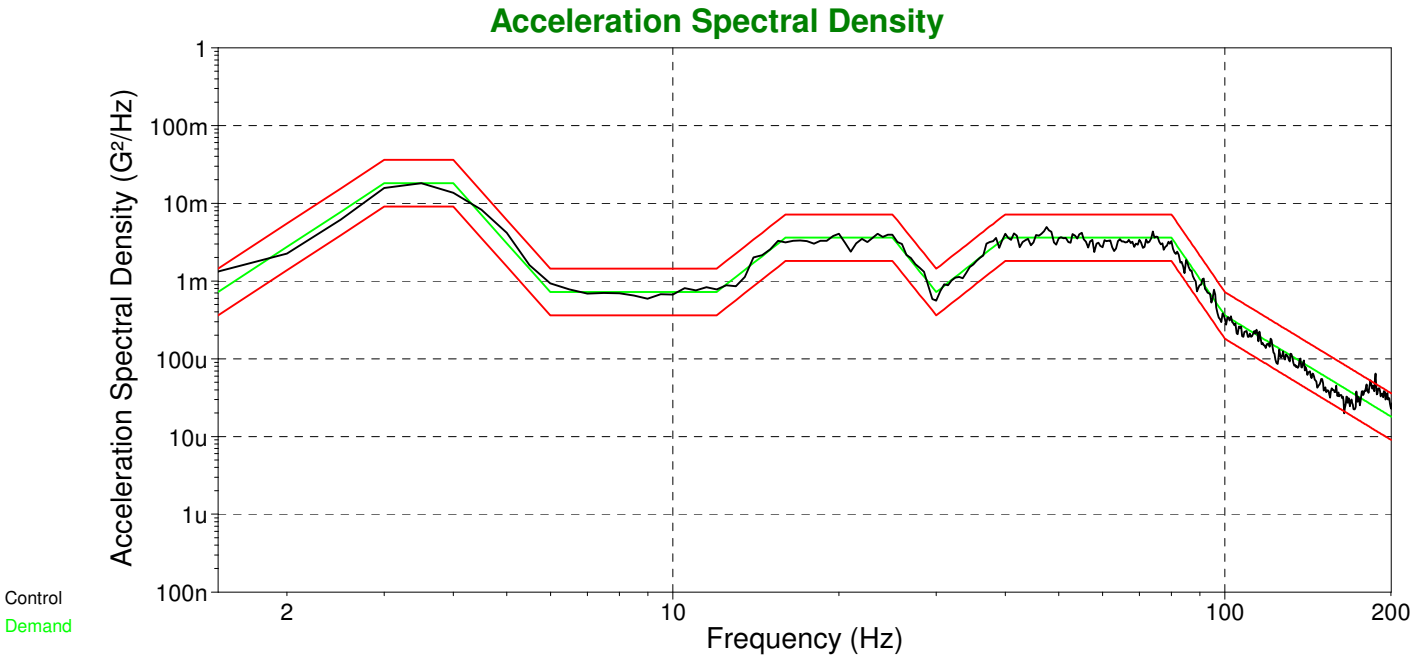
Test Item(s): Corrugated pallet “Green Ox Pallet” | **End Time: Nov 08, 2013 09:00:36**

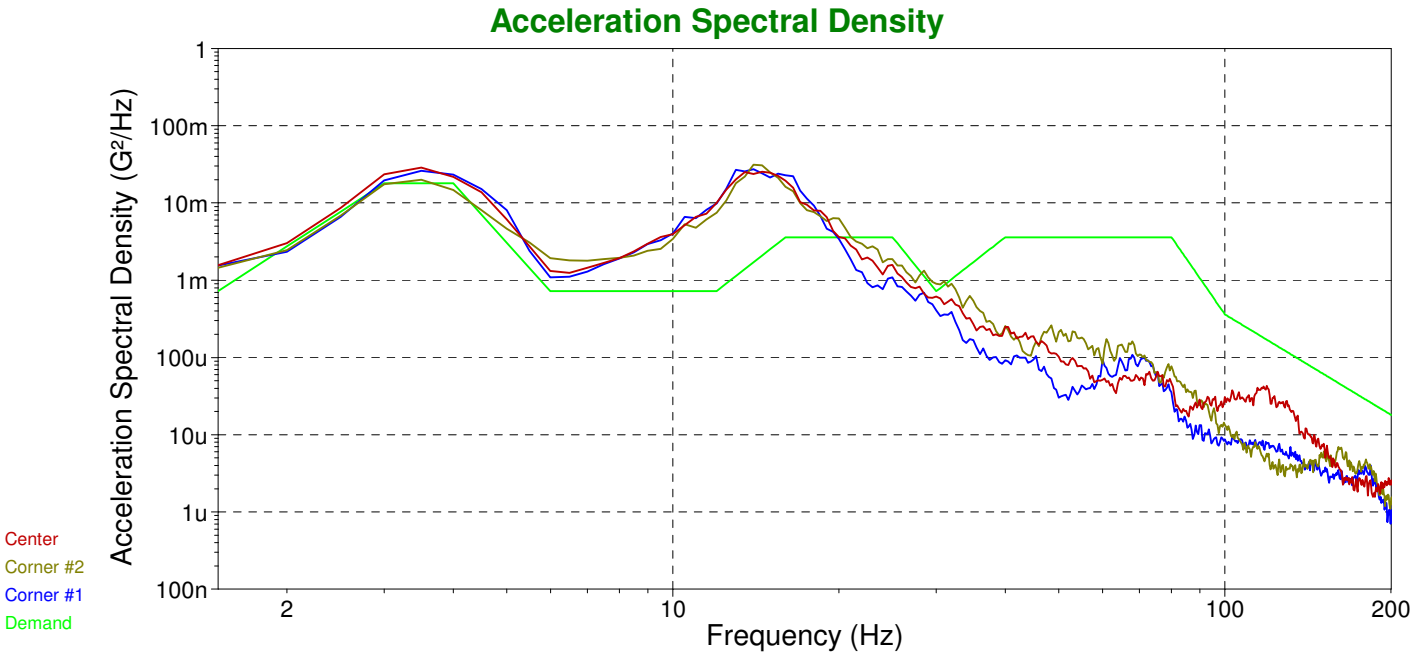
S/N(s): Sample #2

CASCADE TEK TESTING SERVICES | **Remaining: 0:00:00** | **Level: 0 dB**

Job Number: C872 | **At Level: 4:00:00** | **Demand: 0.5414 G RMS**

For Customer: SVTS Global | **Elapsed: 4:03:43** | **Control: 0.5205 G RMS**





Axis: Vertical (Z) - Face 3 Down | **Start Time: Nov 08, 2013 08:45:09**

Test Item(s): Corrugated pallet “Green Ox Pallet” | **End Time: Nov 08, 2013 13:10:37**

S/N(s): Sample #2

CASCADE TEK TESTING SERVICES

Job Number: C872

For Customer: SVTS Global

Remaining: 0:00:00

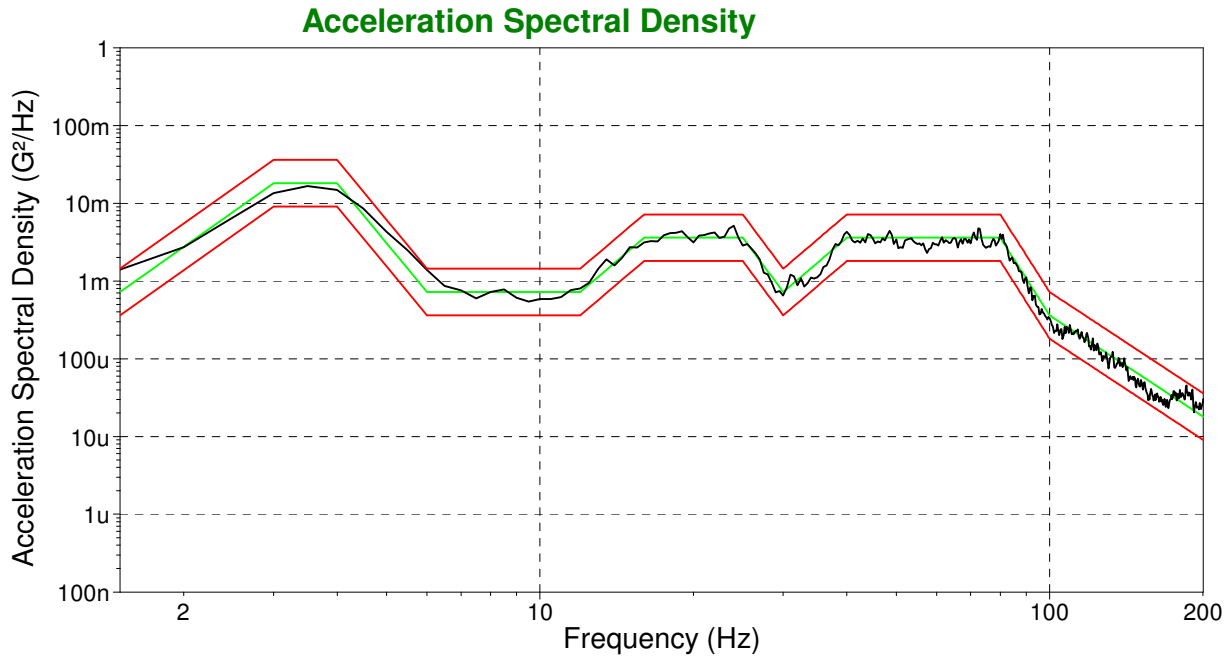
At Level: 0:15:00

Elapsed: 0:16:48

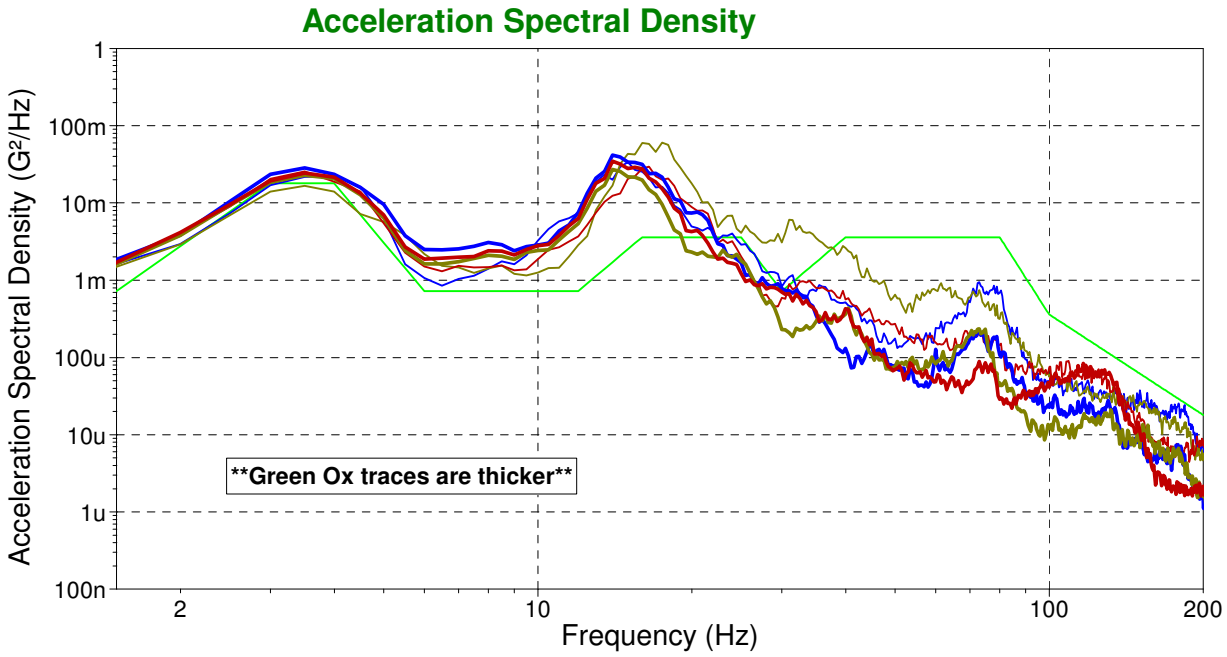
Level: 0 dB

Demand: 0.5414 G RMS

Control: 0.5223 G RMS



Control
Demand



Center - Green Ox
Corner #2 - Green Ox
Corner #1 - Green Ox
Center - Wood
Corner #2 - Wood
Corner #1 - Wood
Demand

Axis: Vertical (Z) - Face 3 Down

Test Item(s): Wooden pallet and Green Ox Pallet

S/N(s): Samples #1 and #2

Start Time: Nov 08, 2013 14:41:16

End Time: Nov 08, 2013 14:58:04

CASCADE TEK TESTING SERVICES

Job Number: C872

For Customer: SVTS Global

Remaining: 0:00:00

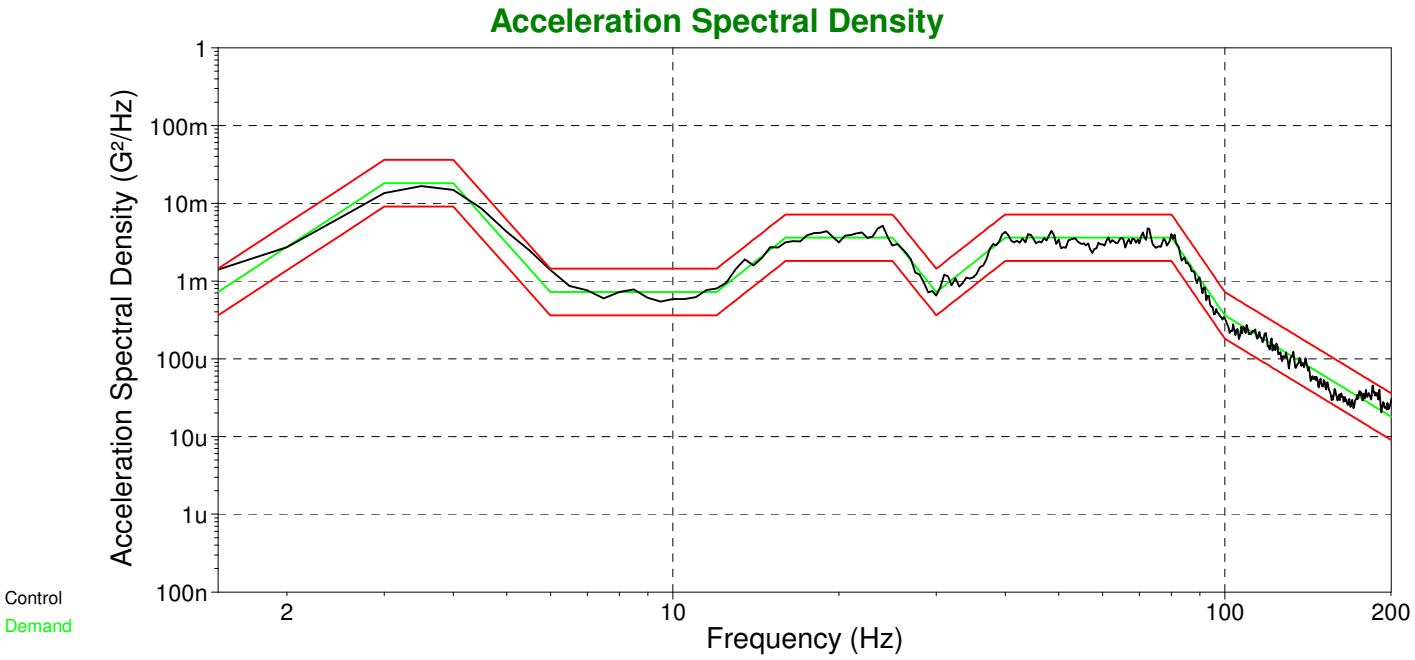
At Level: 0:15:00

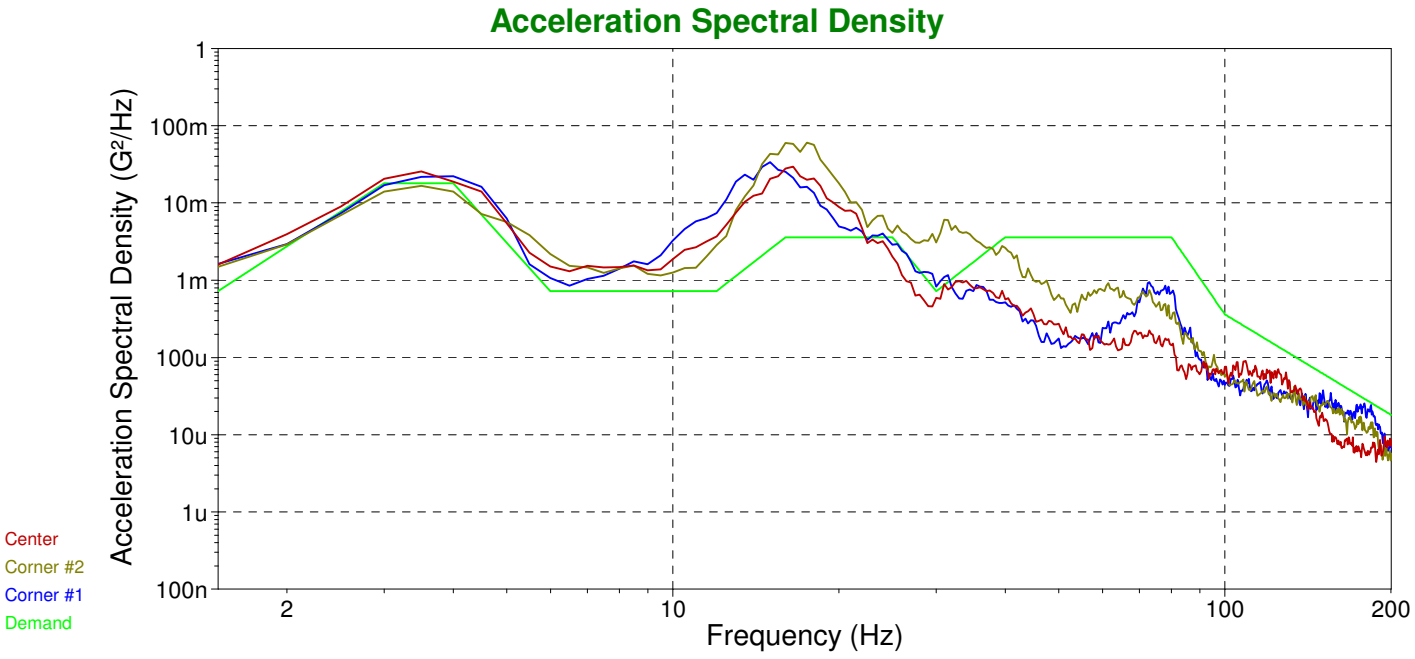
Elapsed: 0:16:48

Level: 0 dB

Demand: 0.5414 G RMS

Control: 0.5223 G RMS





Axis: Vertical (Z) - Face 3 Down

Test Item(s): Wooden pallet

S/N(s): Sample #1

Start Time: Nov 08, 2013 14:41:16

End Time: Nov 08, 2013 14:58:04


1000 lbs
Date: 11 - 08 - 13
SVTS Global
Job# C872
Random Vibration
Vertical (Z) Axis
Face 3 Down
11/08/2013


Date: 11 - 08 - 13
SVTS Global
Job# C872
Random Vibration
Vertical (Z) Axis
Post Exposure
1000 lbs
11/08/2013


1000 lbs
Date: 11 - 08 - 13
SVTS Global
Job# C872
Random Vibration
Vertical (Z) Axis
Face 3 Down
11/08/2013


1000 lbs
11/08/2013

CASCADE™ TEK

CTC 1009-1A

Humidity Testing Report

CASCADE™ TEK

TEST REPORT

CTC C1009-1A

May 20, 2014

Accredited by American Association for Laboratory Accreditation (A2LA)

Certified Commercial Package Testing Laboratory (ISTA)

MIL-STD Laboratory Suitability Status by Defence Logistics Agency (DLA)

LABORATORY LOCATIONS

OREGON
5245-A NE Elam Young Pkwy.
Hillsboro, OR, 97124 • Ph: 503-648-1818

COLORADO
1530 Vista View Drive
Longmont, CO, 80504 • Ph: 720-340-7810

www.cascadetek.com

Job Number: C1009-1

Rev.	Description of the Revision	Date
---	Initial Release of the Certification Report.	April 28, 2014
A	Delete photos to reduce report size per customer instructions.	May 20, 2014

Test Title	Test Summary
Atmospheric Conditioning	The test was conducted per the required standard with no deviations.

Cascade Technical Sciences
www.cascadetek.com
1-888-835-9250

TESTING CERT #2582.02

May 20, 2014

Certification No: CTC C1009-1A

Attention: Mr. Bob Giese
SVTS Global
15334 E Hinsdale Circle, Unit 1E
Centennial, CO 80112

Reference:

a. Cascade Tek Job No.:	C1009-1
b. Cascade Tek Quote No.:	CTQ 14235A
c. Client Purchase Order No.:	N/A
d. Technical Specification:	1. ISTA 3E

Cascade Technical Sciences hereby certifies that Two (2) GOS-48x40 Pallets were subjected to the following test:

1. Atmospheric Conditioning Test per Reference (b) Item 1 and (d1) Sequence 2: Samples with customer-supplied test loads on top were subjected to +100°F and 85%RH for 72 hours.

Testing was done in accordance with the above references as evidenced and reported in the accompanying data. The test samples were returned to the customer's facility for evaluation.

The original of this report is on file at Cascade Technical Sciences, Inc. under the above referenced certification number for review by authorized personnel. The results of the testing reported herein relate only to the actual items tested.

Respectfully submitted,

David Bowles
Quality Administrator
Cascade Technical Sciences, Inc.

Total number of pages in this document is 27.

The objective of this test program was to subject customer provided test hardware to environmental simulation in compliance with customer stated specification, including any authorized modification, deviations or concessions to the original requirements. The hardware consisted of items identified in the appropriate sections of this report. In addition to test hardware identification, each section contains information that describes the associated test setup and performance and the resulting data. Cascade TEK, Inc. measuring instruments used in testing were calibrated according to the requirements of ANSI/NCSL Z540-1-1944 and ISO/IEC 17025, 2nd Edition and are NIST traceable. Calibration records are on file and available for inspection by request. Because the test methods are well established and are qualitative or semi-quantitative in nature, Cascade TEK, Inc. does not apply measurement uncertainty unless obligated by contract. Measured value related to the corresponding tolerance requirement is used to decide whether a test meets the requirements of the specification. Any test hardware operational setups and resulting evaluations or inspections performed by the customer are not included in this report, unless they were explicitly requested. While observations and/or specification compliance statements may be reported, no interpretations or opinions regarding customer product performance are intended. Unless otherwise indicated in the appropriate report section, all contract obligations were met and the test objective achieved.

Test Data Log

Job Number: C1009-1
Customer: SVTS

Date Started: 4/21/2014
Date Completed: 4/25/2014

Reviewing Engineer: David Bowles
Signature: 

Responsible Technician: Keefe Hart

Type of Test: Temperature/Humidity
Test Specification: ISTA 3E Sequence 2

Specimen Description: Shipping/warehousing pallet

Specimen P/N or Model No.	Specimen S/N
GOS-48x40	Sample 1
GOS-48x40	Sample 2

Laboratory Temperature: +69

Laboratory Humidity: 22% RH

Test Description: Samples will be subjected to +100°F and 85% RH for a continuous period of 72 hours. At the conclusion of the 72 hour exposure, chamber will remain at exposure set points until customer is onsite.

Initials	Date	Time	Notes	Photo
KH	4/21/2014	1000	Customer onsite to deliver components and product for testing.	☐
KH	4/22/2014	1000	Customer onsite to set up racks and samples with test loads in chamber 1267.	☒
KH	4/22/2014	1030	Chamber is loaded. We will bring the temperature to +100°F (+38°C) and then slowly raise the RH to avoid overshoot. Over/under temp limits are set at +10°C and +45°C.	☒
KH	4/22/2014	1115	Chamber temperature is +100°F (+38°C) and humidity is 84.8%; start exposure time.	☐
KH	4/22/2014	1555	Chamber temperature is +100°F (+38°C) and humidity is 84.8%; continue exposure.	☐
KH	4/23/2014	0815	Chamber temperature is +100°F (+38°C) and humidity is 85.1%; continue exposure.	☐
KH	4/23/2014	1620	Chamber temperature is +100°F (+38.1°C) and humidity is 85.1%; continue exposure.	☐
KH	4/24/2014	0827	Chamber temperature is +100.0°F (+38.0°C) and humidity is 85.0%; continue exposure.	☐
KH	4/24/2014	1600	Chamber temperature is +100.0°F (+38.0°C) and humidity is 85.1%; continue exposure.	☐
KH	4/25/2014	0755	Chamber temperature is +100.0°F (+38.0°C) and humidity is 85.0%; continue exposure.	

Initials	Date	Time	Notes	Photo
KH	4/25/2014	1100	Exposure period is complete. Chamber will be brought back to ambient conditions over a 30 minute period. Customer is onsite to evaluate testing results.	☐
KH	4/25/2014	1120	Chamber is opened and customer evaluates condition of samples. Photos are taken per customer instructions.	☒
KH	4/25/2014	1130	Weight loads are removed and samples are taken out of the chamber.	☐
KH	4/25/2014	1145	Testing is complete.	☐

DS2 - Test Equipment List

Test: Temperature Humidity **Job Number:** C1009-1 **Date:** 4/21/2014

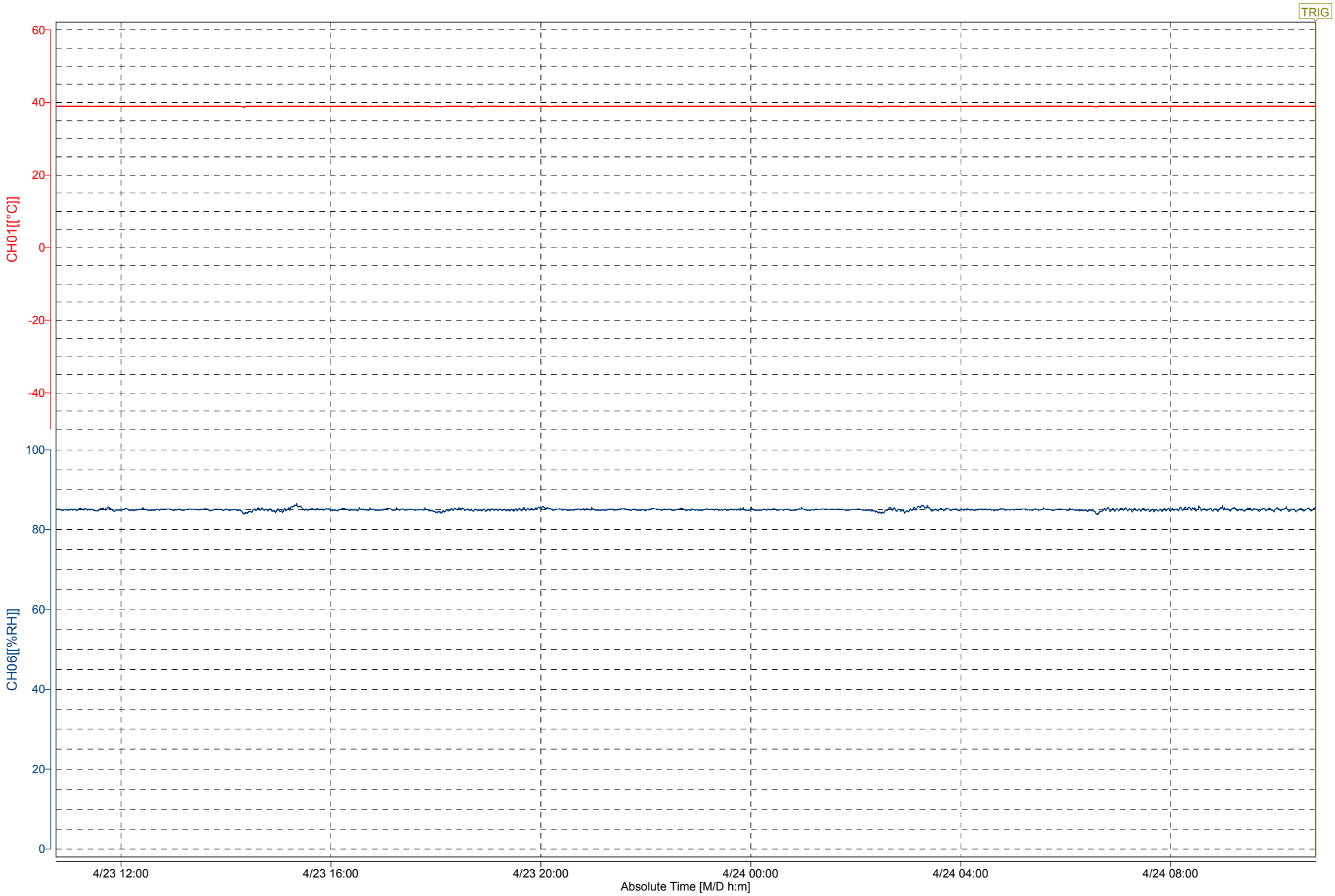
Test Equipment List						
Equipment Description	**Manufacturer**	**Model**	**S/N**	**Cal No.**	**Calibrated Date (mm/dd/yy)**	**Calibration Due Date (mm/dd/yy)**
Walk In Temperature/Humidity Chamber	Espec	EWPX823-30CW	358174	1267	06-25-13	06-25-14
Digital Temp/ RH Meter	Cole Palmer	90080-03	130033077	FR417	03-27-13	03-27-15
Tape Measure	Stanley	FatMax	---	FR66	Verified	Before Use

Start Time : 2014/04/22 10:45:50.000
Stop Time : 2014/04/23 10:45:40.000

Printed Group : GROUP 2
Printed Range : 2014/04/22 10:45:50.000 - 2014/04/23 10:45:40.000
Comment : SVTS Global, Job #C1009-1

Start Time : 2014/04/23 10:45:50.000
Stop Time : 2014/04/24 10:45:40.000

Printed Group : GROUP 2
Printed Range : 2014/04/23 10:45:50.000 - 2014/04/24 10:45:40.000
Comment : SVTS Global, Job #C1009-1

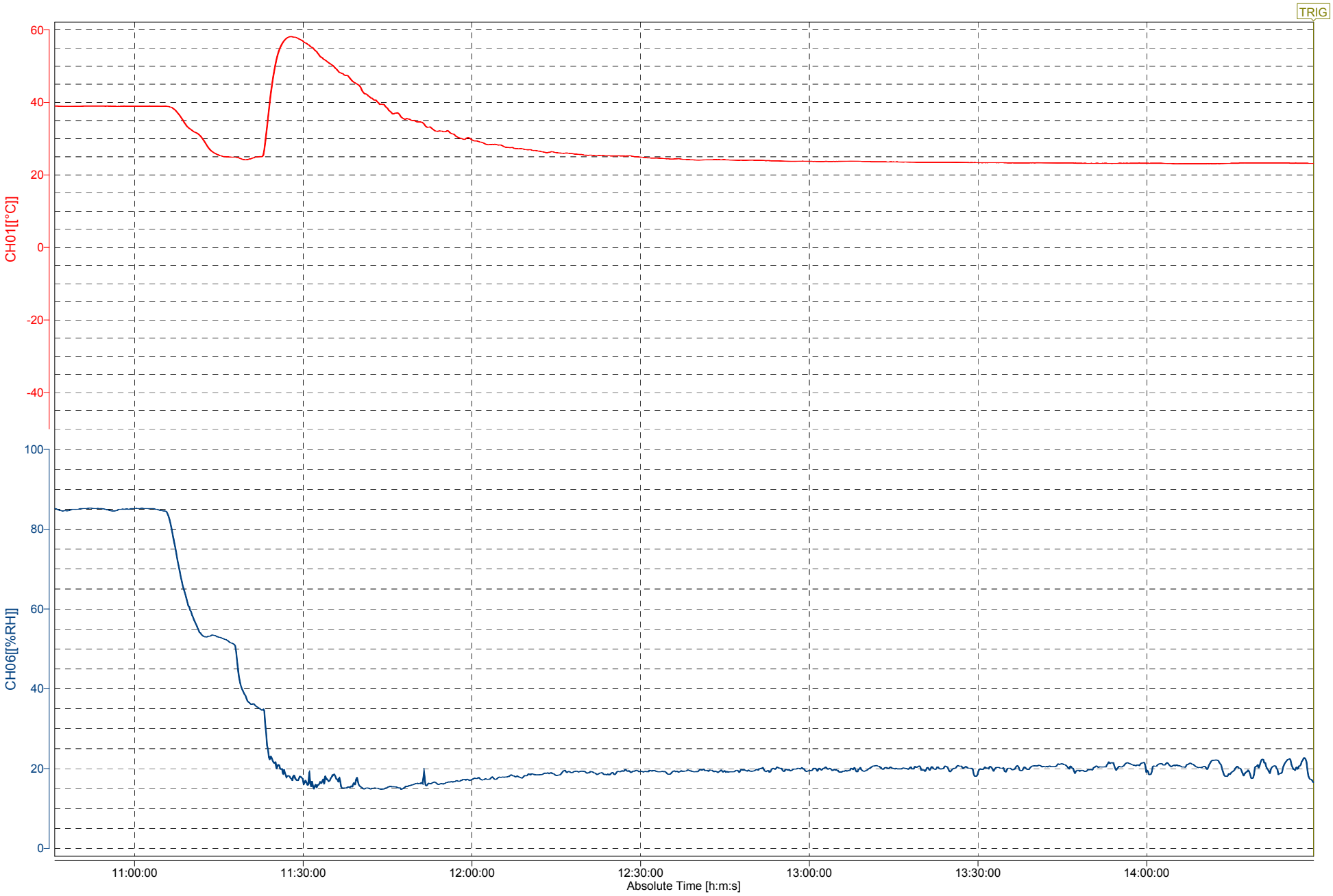


Start Time : 2014/04/24 10:45:50.000
Stop Time : 2014/04/25 10:45:40.000

Printed Group : GROUP 2
Printed Range : 2014/04/24 10:45:50.000 - 2014/04/25 10:45:40.000
Comment : SVTS Global, Job #C1009-1

Start Time : 2014/04/25 10:45:50.000
Stop Time : 2014/04/25 14:29:40.000

Printed Group : GROUP 2
Printed Range : 2014/04/25 10:45:50.000 - 2014/04/25 14:29:40.000
Comment : SVTS Global, Job #C1009-1



PRE-EXPOSURE PHOTOS


GreenOx
04/22/2014


04/22/2014


GreenOX
04/22/2014


04/22/2014


GreenOX
04/22/2014


GreenOX
04/22/2014


Gree
OX
PAL
ECHNOLOGY
No. 7,234,402
04/22/2014


GreenOX
Date: 04-22–2014
SVTS Global
Job C1009-1
Atmospheric
Conditioning
04/22/2014

POST-EXPOSURE PHOTOS


04/25/2014


GreenOX
Date: 04-25-2014
SVTS Global
Job C1009-1
Atmospheric Cond.
Post Exposure
04/25/2014


04/25/2014


Gree
ox
TECHNOLOGY
04/25/2014


04/25/2014


enox
ELLET TECHNOLOGY
Patent No 7,234,402
04/25/2014

CASCADE™ TEK

CTC 5623

Compression Testing Report

CASCADE™ TEK

TEST REPORT

CTC 5623A

May 20, 2014

Accredited by American Association for Laboratory Accreditation (A2LA)

Certified Commercial Package Testing Laboratory (ISTA)

MIL-STD Laboratory Suitability Status by Defence Logistics Agency (DLA)

LABORATORY LOCATIONS

OREGON
5245-A NE Elam Young Pkwy.
Hillsboro, OR, 97124 • Ph: 503-648-1818

COLORADO
1530 Vista View Drive
Longmont, CO, 80504 • Ph: 720-340-7810

www.cascadetek.com

Job Number: 5623

Rev.	Description of the Revision	Date
---	Initial Release of the Data Report.	May 13, 2014
A	Delete photos to reduce report size per customer instructions.	May 20, 2014

Test Title	Test Summary
Compression	The test was conducted per the required standard with no deviations.

Cascade Technical Sciences
www.cascadetek.com
1-888-835-9250

TESTING CERT #2582.01

May 20, 2014

Certification No: CTC 5623A

Attention: Mr. Bob Giese
SVTS Global
15334 E. Hinsdale Circle
Unit 1E
Centennial, CO 80112

Reference:

a. Cascade Tek Job No.:	5623
b. Cascade Tek Quote No.:	CTQ 14919
c. Client Purchase Order No.:	10011
d. Technical Specification:	1. ISTA 3E, Seq. 5 (Modified)

Cascade Technical Sciences hereby certifies that Three (3) Green OX Transport System Pallets, P/N GOS-48”x48”, were subjected to the following test:

1. Compression per Reference (b) and (d1): The samples were exposed to various apply & release compression loads to failure (if possible) as instructed by the customer (maximum of 10,000 force lbs.)

Testing was done in accordance with the above references as evidenced and reported in the accompanying data. The test samples were returned to the customer for evaluation.

The original of this report is on file at Cascade Technical Sciences, Inc. under the above referenced certification number for review by authorized personnel. The results of the testing reported herein relate only to the actual items tested.

Respectfully submitted,

David Bowles
Quality Administrator
Cascade Technical Sciences, Inc.

Total number of pages in this document is 18.

The objective of this test program was to subject customer provided test hardware to environmental simulation in compliance with customer stated specification, including any authorized modification, deviations or concessions to the original requirements. The hardware consisted of items identified in the appropriate sections of this report. In addition to test hardware identification, each section contains information that describes the associated test setup and performance and the resulting data. Cascade TEK, Inc. measuring instruments used in testing were calibrated according to the requirements of ANSI/NCSL Z540-1-1944 and ISO/IEC 17025, 2nd Edition and are NIST traceable. Calibration records are on file and available for inspection by request. Because the test methods are well established and are qualitative or semi-quantitative in nature, Cascade TEK, Inc. does not apply measurement uncertainty unless obligated by contract. Measured value related to the corresponding tolerance requirement is used to decide whether a test meets the requirements of the specification. Any test hardware operational setups and resulting evaluations or inspections performed by the customer are not included in this report, unless they were explicitly requested. While observations and/or specification compliance statements may be reported, no interpretations or opinions regarding customer product performance are intended. Unless otherwise indicated in the appropriate report section, all contract obligations were met and the test objective achieved.

Test Data Log

Job Number: 5623
Customer: SVTS Global

Date Started: 5/9/2014
Date Completed: 5/9/2014

Reviewing Engineer: Larry Harmon
Signature: Larry Harmon

Responsible Technician: Tony Arbogast

Type of Test: Compression
Test Specification: ISTA 3E Sequence 5 (modified)

Specimen Description: Green OX Transport System Pallets

Specimen P/N or Model No.	Specimen S/N
GOS-48"x48"	3 Samples

Laboratory Temperature: +75°F

Laboratory Humidity: 37%RH

Test Description: Expose the samples to various apply & release compression loads to failure (if possible) as instructed by the customer (maximum of 10,000 force lbs.).

Initials	Date	Time	Notes	Photo
TA	5/9/2014	1305	The customer and the samples are on-site. Begin set-up of sample #1 for exposure as specified by the customer.	☐
TA	5/9/2014	1330	Set-up is complete. Begin transition of the compression to sample #1 to 1,600 force lbs.	☒
TA	5/9/2014	1335	At 1,628 force lbs. displacement is at 0.45 inches.	☒
TA	5/9/2014	1339	At 2,534 force lbs. displacement is at 0.51 inches.	☒
TA	5/9/2014	1344	At 6,355 force lbs. displacement is at 0.70 inches.	☒
TA	5/9/2014	1347	At 9,485 force lbs. displacement is at 0.87 inches. Stop exposure on sample #1 with no visible crushing of the sample noted. Begin set-up of sample #2 for exposure.	☒
TA	5/9/2014	1359	Set-up is complete. Begin transition of the compression table to maximum force lbs. as instructed.	☒
TA	5/9/2014	1407	At 9,552 force lbs. displacement is at 0.78 inches. Stop exposure on sample #2 with no visible crushing of the sample noted. Begin set-up of sample #3 for exposure.	☒
TA	5/9/2014	1410	Set-up is complete. Begin transition of the compression table to maximum force lbs. as instructed.	☒
TA	5/9/2014	1413	At 9, 847 force lbs. displacement is at 0.78 inches. Stop exposure on sample #3 with no visible crushing of the sample noted. Return the samples to the on-site customer.	☒
Initials	Date	Time	Test Complete.	☐

DS2 - Test Equipment List

Test: Compression **Job Number:** 5623 **Date:** May 9, 2014

Test Equipment List						
Equipment Description	**Manufacturer**	**Model**	**S/N**	**Cal No.**	**Calibrated Date (mm/dd/yy)**	**Calibration Due Date (mm/dd/yy)**
Lab Ambient Temp/Hum	Extech	445703	CP100795	187	1/11/2013	1/31/2015
Compression Tester	Lab	5250	525050	1119	Reference	***
Force Gauge	Lab	5250A	001	098	11/26/2013	11/30/2014

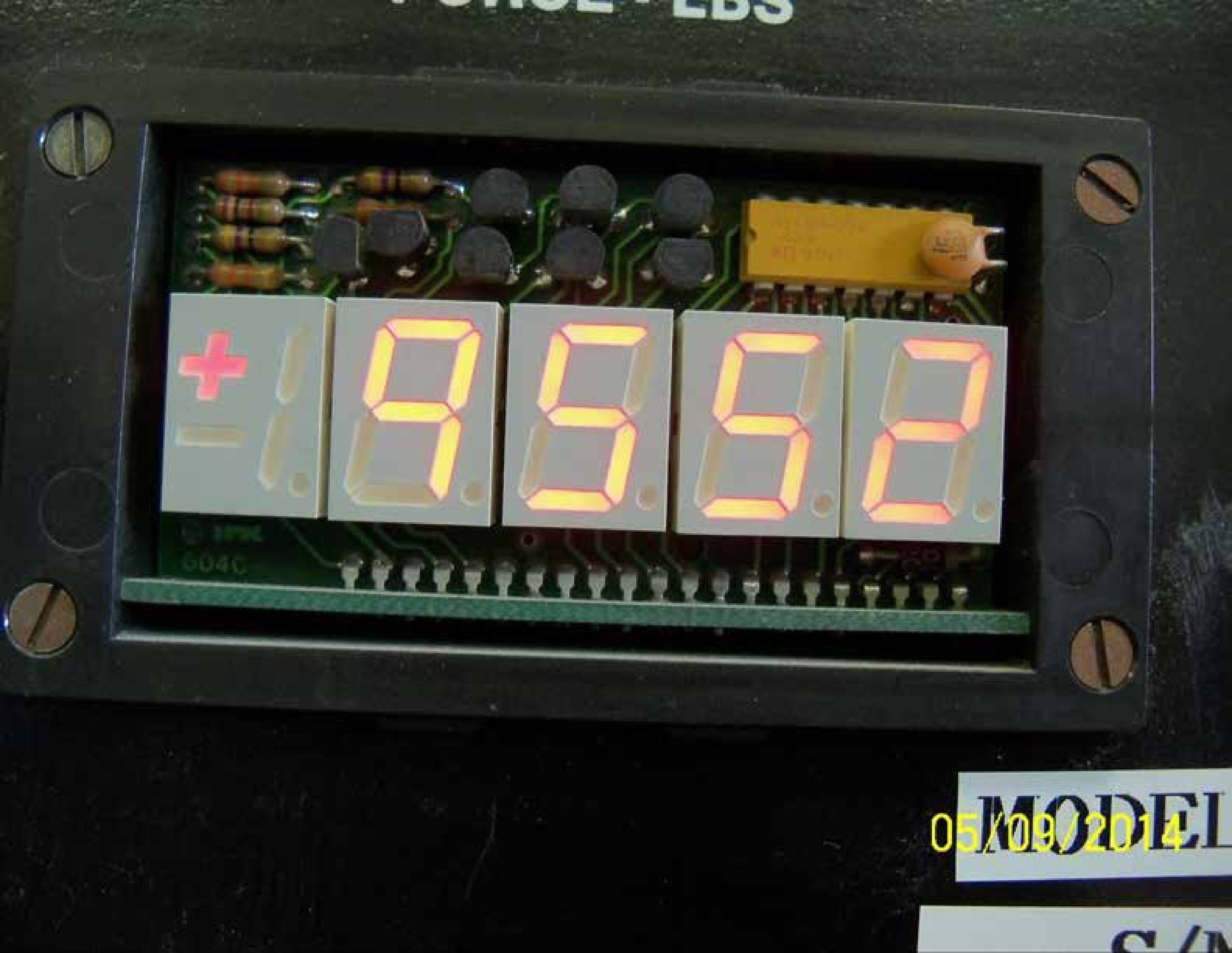

TEK
Date: 5 - 9 - 14
SVTS Global
Job# 5623
Compression #1
GreenOX
PALLET TECHNOLOGY
05/09/2014


MODEL
S/N
05/09/2014


DISPLACEMENT - INCHES
+ 0.87
OTTOTEK
05/09/2014


Date: 5 - 9 - 14
SVTS Global
Job# 5623
Compression #1
Post Compression
GreenOx
05/09/2014


TEK
Date: 5 - 9 - 14
SVTS Global
Job# 5623
Compression #2
GreenOX
PALLET TECHNOLOGY
05/09/2014


+9562
MODEL
05/09/2014


DISPLACEMENT - INCHES
+ 0.78
OTTOTEK
05/09/2014


Date: 5-9-14
SVTS Global
Job# 5623
Compression #2
Post Compression
9,552 Force Lbs. @ 0.79" Disp.
GreenOX
05/09/2014


CASCADE TEK
Date: 5 - 9 - 14
SVTS Global
Job# 5623
Compression #3
GreenOX
PALLET TECHNOLOGY
05/09/2014


+
1
9
8
4
7
MODEL
05/09/2014
S/N


DISPLACEMENT - INCHES
+ 0.78
OTTOTEK
05/09/2014


Date: 5 - 9 - 14
SVTS Global
Job# 5623
Compression #3
Post Compression
9,847 Force Lbs. @ 0.77" Disp.
GreenOX
05/09/2014