

TÜV SÜD Canada

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Test Performed By: Peter Frosch Test Reviewed By: Manager Name Test Previously Performed (Yes/No): No Previous Quotation Number: NA

Pro V&V Voting Machine Testing

Report/Quotation Number: PVV-5028.00 (CM380832205802.0)

Revision Number of Report: 0

Pro V&V

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Test Technician

Date

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Program Manager

Test Start Date: May 5, 2016

Report Issue Date: July 7, 2016

Test Completion Date: July 1, 2016

14-Jul-16

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Test Report

Test Description

Perform MIL-STD-810D environmental testing on supplied Pro V & V (Dominion) Voting system components, as per quotation CM380832205802, and customer's additional instructions by email.

Test and Setup Procedures

General Setup Description

Samples provided by the customer were tested as per the following test sections. Refer to the Sample Description and Quantities section, for specific details regarding each sample number.

Shock - Bench Handling (MIL-STD-810D, 516.3, I-3.8)

Pro V&V samples 1, 2, 5 and 6 were used Pro V&V samples 1 to 6 were used for Shock – Bench Handling tests. Samples were dropped on their edges, as agreed upon with the customer. Using one edge as a pivot, the opposite edge of the chassis unit was lifted until the face reached 45° with horizontal bench top, or 4 inches above bench top (whichever occurred first). This was repeated with each practical edge, of the same horizontal face. Refer to Appendix A: Shock Setup & Data.

Vibration – Basic Transportation (MIL-STD-810D, 514.3, I-3.2.1)

Pro V&V samples 1 to 6 were used for Vibration – Basic Transportation testing. Vibration was performed at ambient/room temperature (20°C +/-3 °C) in the X, Y and Z axis as per Table 1 (below).

Table 1: Vibration Profiles

Axis	Profile				
	BREFL-POINTS FREQ PSD VALU				
v	10 .00013 20 .00065				
X	30 .00065 78 .00002 79 .00019				
	120 .00019 500 .00001				
	BREAKPOINTS				
	FREQ PSD VALUE				
	10 .00650 20 .00650				
Y	120 .00020				
1	121 .00300				
	200 .00300 240 .00150				
	340 .00003				
	500 .00015				
	BREAKPOINTS				
v	FRED PSD VALUE				
X	10 .01500				
	40 .01500 500 .00015				

Refer to Appendix B: Vibration Setup and Data.

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Low Temperature - Storage (MIL-STD-810D, 502.2, II-3)

Pro V&V samples 1 to 24 (plus accessories) were used for Low Temperature - Storage testing. Samples were soaked at a temperature of -4°F (-20°C +/-3 °C) for a duration of 4 hours, after which operation was confirmed by the customer. Samples were not powered, and were soaked in their packaging for the duration of the test. They were removed from the boxes for operational verification after the test. Refer to Appendix C: Low Temperature Setup and Data.

High Temperature - Storage (MIL-STD-810D, 501.2, I-3.2)

Pro V&V samples 1 to 24 (plus accessories) were used for High Temperature - Storage testing as per procedure I. Samples were soaked at a temperature of 140°F (60°C +/-3 °C) for a duration of 4 hours, after which operation was confirmed by the customer. Samples were not powered, and were soaked in their packaging for the duration of the test. They were removed from the boxes for operational verification after the test. Refer to Appendix D: High Temperature Setup and Data.

Humidity – Hot/Humid (MIL-STD-810D, 507.2, I-3.2)

Pro V&V samples 1 to 24 (plus accessories) were used for Humidity testing as per Procedure I – Hot/Humid. Samples were soaked as per Table 507.2-I, Hot-Humid (Cycle 1), for a duration of 240 hours (10 days), after which operation was confirmed by the customer. Samples were not powered/operational, and were soaked in their packaging for the duration of the test, and were removed from the boxes for operational verification. Refer to Appendix E: Humidity Setup and Data.

Temp-Power Variation Testing (MIL-STD-810D, 501.2/502.2)

Pro V&V samples 1 to 24 (plus accessories) were used for Temp-Power Variation testing. Samples completed 85 hours as per the following environment profile (Table 2 – below).

Table 2: Temp-Power Variation Profile

1- Ramp to 10°C
2- Hold 10°C for 12 hours
3- Ramp to 35°C over 1 hour
4- Hold 35°C for 12 hours
5- Ramp to 10°C over 1 hour
6- Repeat until 85 hours cycling at profile is achieved
7- Ramp to 35°C over 1 hour
8- Hold 35°C for 12 hours
9- Ramp to 23°C over 1 hour
10- Hold for duration of test

Samples were powered and being operated by the customer for the duration of the environmental profile, to confirm operation. Refer to Appendix F: Temp-Power Variation Setup and Data.

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Sample Description and Quantities

TUV ID	Sample Description	Customer ID	Shock-Bench Handling	Vibration	Low. Temp, High Temp., Humidity, Temp-Power Variation
1	Voting System Component	ICP	X	X	X
2	Voting System Component	ICX 15"	X	X	X
3	Voting System Component	Cannon Image LBP151DW		X	X
4	Voting System Component	HP Laserjet M402dn		X	X
5	Voting System Component	ICX 21"	X	X	X
6	Voting System Component	ICX Samsung	X	X	X
7	Voting System Component	Cannon Image LBP151DW			X
8	Voting System Component	Cannon Image LBP151DW			X
9	Voting System Component	Cannon Image LBP151DW			X
10	Voting System Component	Cannon Image LBP151DW			X
11	Voting System Component				X
12	Voting System Component	Smart Ups 1000/1500VA			X
13	Voting System Component				X
14	Voting System Component	Smart Ups 1000/1500VA			X
15	Voting System Component	Cannon Image LBP151DW			X
16	Voting System Component	Smart Ups 1000/1500VA			X
17	Voting System Component	Cannon ImageDR-M160II			X
18	Voting System Component				X
19	Voting System Component	cart			X
20	Voting System Component	cart			X
21	Voting System Component	Smart Ups 1000/1500VA			X
22	Voting System Component	Smart Ups 1000/1500VA			X
23	Voting System Component	Smart Ups 1000/1500VA			X
24	Voting System Component	Cannon ImageDR-M160II			X
N/a	Voting System Component	Armadillo casing, Joystick, Hand held ATI device, Sip and puff, Tecla (small square device), Lava link (small square device)			X

Deviations

N/A

Subcontractors

N/A

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Summary of Test Results

Shock - Bench Handling (MIL-STD-810D, 516.3, I-3.8)

Pro V&V samples 1, 2, 5 and 6 were used Pro V&V samples 1 to 6 were used for Shock – Bench Handling tests. Samples completed the required drops on each edge without any signs of visual damage, and customer stated they remained functional. Refer to Appendix A: Shock Setup & Data.

Vibration – Basic Transportation (MIL-STD-810D, 514.3, I-3.2.1)

Pro V&V samples 1 to 6 were used for Vibration – Basic Transportation testing. Samples completed the required vibration in the X, Y and Z axes without any signs of visual damage, and customer stated they remained functional. Refer to Appendix B: Vibration Setup and Data.

Low Temperature - Storage (MIL-STD-810D, 502.2, II-3)

Pro V&V samples 1 to 24 (plus accessories) were used for Low Temperature - Storage testing. Samples completed the required soak without any signs of visual damage, and customer stated they remained functional. Refer to Appendix C: Low Temperature Setup and Data.

High Temperature - Storage (MIL-STD-810D, 501.2, I-3.2)

Pro V&V samples 1 to 24 (plus accessories) were used for High Temperature - Storage testing as per procedure I. Samples completed the required soak without any signs of visual damage, and customer stated they remained functional. Refer to Appendix D: High Temperature Setup and Data

Humidity – Hot/Humid (MIL-STD-810D, 507.2, I-3.2)

Pro V&V samples 1 to 24 (plus accessories) were used for Humidity testing as per Procedure I – Hot/Humid. Samples completed the required soak without any signs of visual damage, and customer stated they remained functional. Refer to Appendix E: Humidity Setup and Data.

Temp-Power Variation Testing (MIL-STD-810D, 501.2/502.2)

Pro V&V samples 1 to 24 (plus accessories) were used for Temp-Power Variation testing. Samples completed the required 85 hours without any signs of visual damage, and customer stated they remained functional for the entire duration of the cycle. Refer to Appendix F: Temp-Power Variation Setup and Data.

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Test Equipment & Uncertainty

Equipment Description	Gauge ID	Measurement Uncertainty (K Factor = 2, 95% Confidence Level)	
Walk-in Environmental Chamber	CH-ENV-09	1.14C, 2.06% RH	
Computer Data Acquisition System	DATA-AQ-13	0.82C	
Mitutoyo Digital Protractor	DP-360-02	0.16 deg	
Tape Measure	TM-025-01	3.06 mm	
Vibration Controller	VR-8500-01	0.12 Vrms	
Accelerometer	AC-050-02,	0.84 mv/g	

Note: Measurement Uncertainty not factored when evaluating test data.

Attached Documents

Appendix A: Shock Setup and Data (11 pages)

Appendix B: Vibration Setup and Data (16 pages)

Appendix C: Low Temperature Setup and Data (1 page)

Appendix D: High Temperature Setup and Data (1 page)

Appendix E: Humidity Setup and Data (# pages)

Appendix F: Temp-Power Variation Setup and Data (5 pages)

Distribution

TÜV SÜD Canada, 1 original copy Pro V & V, 1 digital copy

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Appendix A: Shock and Setup Data

(11 pages)

Technical Form Number	N/a	Revision Number		Revision Date	11-Sep-15
	Chaol: De	nah Handling Toot (Satur Baran	notoro	

Shock - Bench Handling - Test Setup Parameters

Sample Description	Voting Machine Systems
Number of samples	4
Sample Number(s)	5028-1 (ICP) ,5028-2 (ICX 15"), 5028-5 (ICX 21") , 5028-6 (ICX Samsung)
Specification	MIL-STD-810D, Military Standard Environmental Test Methods and Engineering Guidelines
Section	II-3.8 Procedure VI- Bench Handling
Test Description	Using one edge as a pivot, lift the opposite edge of the chassis unit one of the following conditions occur,45° with horizontal bench top or 4 inches above bench top. Repeat using other practical edges of the same horizontal face as a pivot point for a total of four drops.
Data to be Provided	Test Data Sheets and photographs
Requirement	No Visual damage , must remain functional during customers checks.













Shock - Bench Handling - Test Setup Parameters

Job: PVV-5028

Sample Description	Voting Machine Systems
Number of samples	4
Sample Number(s)	5028-1 (ICP) ,5028-2 (ICX 15"), 5028-5 (ICX 21") , 5028-6 (ICX Samsung)
Specification	MIL-STD-810D, Military Standard Environmental Test Methods and Engineering Guidelines
Section	II-3.8 Procedure VI- Bench Handling
Test Description	Using one edge as a pivot, lift the opposite edge of the chassis unit one of the following conditions occur,45° with horizontal bench top or 4 inches above bench top. Repeat using other practical edges of the same horizontal face as a pivot point for a total of four drops.
Data to be Provided	Test Data Sheets and photographs
Requirement	No Visual damage , must remain functional during customers checks.

Setup Photographs







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Technical Form Number N/a Revision Number N/a Revision Date 11-Sep-15

Shock - Bench Handling - Test Setup Parameters

Sample Description	Voting Machine Systems
Number of samples	4
Sample Number(s)	5028-1 (ICP) ,5028-2 (ICX 15"), 5028-5 (ICX 21") , 5028-6 (ICX Samsung)
Specification	MIL-STD-810D, Military Standard Environmental Test Methods and Engineering Guidelines
Section	II-3.8 Procedure VI- Bench Handling
Test Description	Using one edge as a pivot, lift the opposite edge of the chassis unit one of the following conditions occur,45° with horizontal bench top or 4 inches above bench top. Repeat using other practical edges of the same horizontal face as a pivot point for a total of four drops.
Data to be Provided	Test Data Sheets and photographs
Requirement	No Visual damage , must remain functional during customers checks.









Technical Form Number N/a Revision Number N/a Revision Date 11-Sep-15

Shock - Bench Handling - Test Setup Parameters

Sample Description	Voting Machine Systems
Number of samples	4
Sample Number(s)	5028-1 (ICP) ,5028-2 (ICX 15"), 5028-5 (ICX 21") , 5028-6 (ICX Samsung)
Specification	MIL-STD-810D, Military Standard Environmental Test Methods and Engineering Guidelines
Section	II-3.8 Procedure VI- Bench Handling
Test Description	Using one edge as a pivot, lift the opposite edge of the chassis unit one of the following conditions occur,45° with horizontal bench top or 4 inches above bench top. Repeat using other practical edges of the same horizontal face as a pivot point for a total of four drops.
Data to be Provided	Test Data Sheets and photographs
Requirement	No Visual damage , must remain functional during customers checks.

















TUV SUD Canada					Technical Form Num	ber: N/a	Page: DS-05
Job Number: PVV	-5028				Revision Num	ber: N/a	
Job Description: Pro	√&V Voting Machi	ine Testing			Revision D	ate: N/a	
			Shock - E	Bench Handling - Se	etup Checklist		
Abuse Chamber	n/a			,			
Drop Surface	wood	Dro	p Apply Fixture	n/a			
					Sample	Numbers	
Feature to	be checked		5028-1 (ICP)	5028-2 (ICX 15")	5028-5 (ICX 21")	5028-6 (ICX Samsung)	
			. ,	, ,	, ,	,	
Make sure Sample	e Matrix updated (Yes	5)	Yes	Yes	Yes	Yes	
Drop Height verified and recorde drop surfa	ed from the lowest poir ace (4" or 45°)	nt of sample to	Yes	Yes	Yes	Yes	
Drop Orientation - Describe desired impact point of sample		Yes	Yes	Yes	Yes		
Drop surface description wood (1.675 inches)		nes)	Yes	Yes	Yes	Yes	
Drop surface level: -2° to +2°			Yes	Yes	Yes	Yes	
Drop surface clear of any debris (Yes)			Yes	Yes	Yes	Yes	
Data Lo	ogging Rate		N/a	N/a	N/a	N/a	
"Fresh eyes" re	eview of test setup		Yes	Yes	Yes	Yes	
General Set	up Photos taken		Yes	Yes	Yes	Yes	
Video of Test Recorded and start time			N/a	N/a	N/a	N/a	
Pre Test Photos taken of sample from each side		Yes	Yes	Yes	Yes		
Post Test Photos taken of sample from each side		Yes	Yes	Yes	Yes		
Gauges used for Set up Recorded		Yes	Yes	Yes	Yes		
[Date		15-Jun-16	16-Jun-16	16-Jun-16	16-Jun-16	
Gauges			DP-360-02, TM-025-01	DP-360-02, TM-025-01	DP-360-02, TM-025-01	DP-360-02, TM-025-01	

P.F

P.F

P.F

P.F

Initials

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Shock - Bench Handling - Pre Test Photographs

Pre Test Photographs





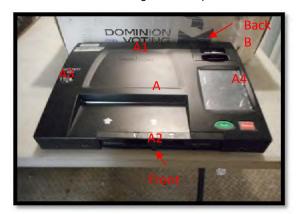




Shock - Bench Handling - Data - ICP

	Measured	Drop Height (INCHES)	Gauge	Date	Initials
Free Fall Setup		4"	TM-025-01	15-Jun-16	P.F

Note: Check for visual damage and sample functional following testing.



Face A = Bottom

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11-Sep-15

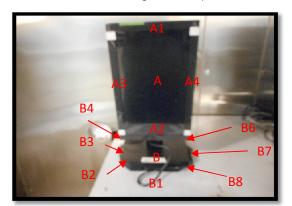
Face B = Back

Sample Number	Face	Pivot Edge	Impact Edge	4 inch or 45°	Sample still Functional?	Any Visual Damage ?	Initials	Gauges	
	Α	A1	A2	4"	Yes	NO	P.F		
<u>Ĝ</u>	Α	A2	A1	4"	Yes	NO	P.F	DP-360-02	
5028-1 (ICP)	Α	А3	A4	4"	Yes	NO	P.F	TH-025-01	
78-1	Α	A4	А3	4"	Yes	NO	P.F		
203									
	В	B1	B2	Balance	Yes	NO	P.F		
<u>G</u>	В	B2	B1	Balance	Yes	NO	P.F	DP-360-02	
9)	В	В3	B4	4"	Yes	NO	P.F	TH-025-01	
5028-1 (ICP)	В	B4	В3	4"	Yes	NO	P.F		
20									

Shock - Bench Handling - Data - ICX 15"

	Measured	Drop Height (INCHES)	Gauge	Date	Initials
Free Fall Setup		4"	TH-025-01	16-Jun-16	P.F

Note: Check for visual damage and sample functional following testing.



Face A = Monitor

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Face B = Base

Sample Number	Face	Pivot Edge	Impact Edge	4 inch or 45°	Sample still Functional?	Any Visual Damage ?	Initials	Gauges	
	Α	A1	A2	4"	yes	No	P.F		
	Α	A2	A1	4"	yes	No	P.F	DP-360-02	
	Α	A3	A4	4"	yes	No	P.F	TM-025-01	
	Α	A4	А3	4"	yes	No	P.F		
15.									
Σ									
5028-2 (ICX 15")									
028									
ū									
	В	B1	B5	Balance	yes	No	P.F		
	В	B5	B1	4"	yes	No	P.F		
	В	B2	B6	4"	yes	No	P.F		
	В	B6	B2	4"	yes	No	P.F	DP-360-02	
5028-2 (ICX 15")	В	В3	B7	4"	yes	No	P.F	TM-025-01	
υ <u>ς</u>	В	B7	В3	4"	yes	No	P.F		
7,	В	B4	B8	4"	yes	No	P.F		
028	В	B8	B4	4"	yes	No	P.F		
Ω									

Shock - Bench Handling - Data - ICX 21"

	Measure	d Drop Height (INCH)	Gauge	Date	Initials
Free Fall Setu	р	4"	TH-025-01	16-Jun-16	P.F

Note: Check for visual damage and sample functional following testing.



Face A = Monitor

Page: DS-09

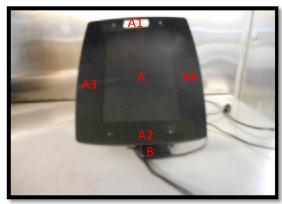
Face B = Base

Sample Number	Face	Pivot Edge	Impact Edge	4 inch or 45°	Sample still Functional?	Any Visual Damage ?	Initials	Gauges	
	Α	A1	A2	4"	Yes	No	P.F		
	Α	A2	A1	4"	Yes	No	P.F	DP-360-02	
	Α	A3	A4	4"	Yes	No	P.F	TM-025-01	
_	Α	A4	А3	4"	Yes	No	P.F		
21"									
Š									
5028-5(ICX 21")									
028									
ω									
	В	B1	B5	4"	Yes	No	P.F		
	В	B5	B1	Balance	Yes	No	P.F		
	В	B2	B6	4"	Yes	No	P.F		
	В	В6	B2	Balance	Yes	No	P.F	DP-360-02	
5028-5(ICX 21")	В	В3	B7	Balance	Yes	No	P.F	TM-025-01	
\simeq	В	B7	В3	Balance	Yes	No	P.F		
3-5(В	B4	B8	Balance	Yes	No	P.F		
3028	В	B8	B4	4"	Yes	No	P.F		
υ,									

Shock - Bench Handling - Data - ICX Samsung

Mea	ured Drop	Height (INCHES)	Gauge	Date	Initials
Free Fall Setup		4"	TH-025-01	16-Jun-16	P.F

Note. Check for visual damage and sample functional following testing. If there is visual damage of loss of function, supplier should label part with "TO THROW AWAY IN CASE OF FREE-FALL"



Face A = Monitor

Page: DS-10

Face B = Base

Sample Number	Face	Pivot Edge	Impact Edge	4 inch or 45°	Sample still Functional?	Any Visual Damage ?	Initials	Gauges	
	Α	A1	A2	4"	Yes	No	P.F		
	Α	A2	A1	4"	Yes	No	P.F	DP-360-02	
	Α	A3	A4	4"	Yes	No	P.F	TM-025-01	
5028-6(ICX Samsung)	Α	A4	A3	4"	Yes	No	P.F		
msı									
Sa									
<u>S</u>									
9-6(
9203									
4)									
	В	B1	B2	4"	Yes	No	P.F		
	В	B2	B1	4"	Yes	No	P.F	DP-360-02	
_	В	В3	B4	4"	Yes	No	P.F	TM-025-01	
(bur	В	B4	В3	4"	Yes	No	P.F		
ารแ									
Sa									
\simeq									
3-6(
5028-6(ICX Samsung)						_			_
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						_		_	_

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Shock - Bench Handling - Post Test Photographs

Post Test Photographs









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Appendix B: Vibration Setup and Data

(16 pages)

Vibration - Test Setup Parameters

Job: PVV-5028

Sample Description	Various Voting system components, in shipping boxes
Number of samples	6
Sample Number(s)	5028-1 (ICP) ,5028-2 (ICX 15"), 5028-3 (Cannon Image LBP151DW) ,5028-4 (HP Laserjet M402dn),5028-5 (ICX 21") , 5028-6 (ICX Samsung)
Specification	MIL-STD-10D
Section	514.3
Test Description	Basic Transportation in the X ,Y and Z axis
Data to be Provided	Test data sheets and photographs
Requirement	No Visual damage , must remain functional durring customers checks.

Setup Parameters							
	BREFFOINTS FREQ PSD VALU	Test Temperature	20°C +/-4°C				
Random Profile	10 .00013 20 .00065 30 .00065 78 .00002 79 .00019 120 .00019 500 .00001	Relative Humidity	N/a				
		Atmospheric Pressure	N/a				
Test Axes	X	Duration per Axis	30 minutes per axis				







Vibration - Test Setup Parameters

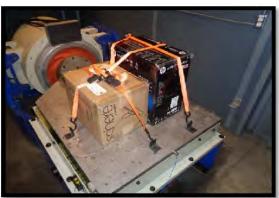
Job: PVV-5028

Sample Description	Various Voting system components, in shipping boxes
Number of samples	6
Sample Number(s)	6-Jan
Specification	MIL-STD-10D
Section	514.3
Test Description	Basic Transportation in the X ,Y and Z axis
Data to be Provided	Test data sheets and photographs
Requirement	No Visual damage , must remain functional durring customers checks.

Setup Parameters							
	BREAKPOINTS FREQ PSD VALUE 10 .00650	Test Temperature	20°C +/-4°C				
Random Profile	20 .00650 120 .00020 121 .00300 200 .00300 240 .00150 340 .0003 500 .00015	Relative Humidity	N/a				
		Atmospheric Pressure	N/a				
Test Axes	Y	Duration per Axis	30 minutes per axis				





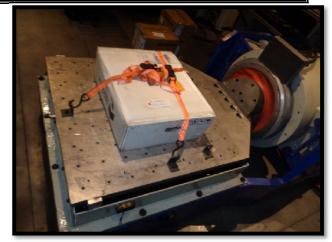


Vibration - Test Setup Parameters

Job: PVV-5028

Sample Description	Various Voting system components, in shipping boxes
Number of samples	6
Sample Number(s)	6-Jan
Specification	MIL-STD-10D
Section	514.3
Test Description	Basic Transportation in the X ,Y and Z axis
Data to be Provided	Test data sheets and photographs
Requirement	No Visual damage , must remain functional durring customers checks.

Setup Parameters				
	BREAKPOINTS FREQ PSD VALUE	Test Temperature	20°C +/-4°C	
Random Profile	10 .01500 40 .01500	Relative Humidity	N/a	
	500 .00015	Atmospheric Pressure	N/a	
Test Axes	Z	Duration per Axis	30 minutes per axis	









Vibration - Data Acquisition Test Setup Parameters

Data Acquisition Program: VR-8500-01

Data Acquisition Program Worksheet: Vibesuite Live Random

Job: PVV-5028

Measurement Description	Data Acquisition System	Data Acquisition Frequency	Channel
X-Axis Random Vibration	VR-8500-01	variable	CH-1
Y-Axis Random Vibration	VR-8500-01	variable	CH-1
Z-Axis Random Vibration	VR-8500-01	variable	CH-1



TUV SUD Canada				Technical Form Number:	N/a	Page: VIB-05
				recillical rolli Nulliber.	11/8	rage. VIB-05
Job Number: PV	V-5028			Revision Number:	N/a	
Job Description: Vot	ting Machine Envir	onmental & Vibration		Revision Date:	N/a	
			Vibration - Setup C	hecklist		
Env. Chamber	N/a	Load Fixture	N/a	Data Acquisition Cart (1)	VR-8500-01	
Base Fixture	N/a			Data Acquisition Cart (2)	N/a	1

Facture to be observed	Feature to be checked Sample Numbers				
reature to be checked	Samples 1-6				
Sample Description - Make sure Sample Matrix updated	Voting System Component				
Profile Plotted in Vibration controller	Yes				
Duration:30 minutes per axis	Yes				
Sample Checked for function after Axis	N/A- Customer to do evaluation				
Accelerometer scaling set on controller	Yes				
Fixture Mounted securely to table	Yes				
Sample mounted securely to fixture	N/A				
Test Temperature (20°C +/-4°C)	Yes				
Pre Test Photos taken of sample from each side (and in fixture setup)	Yes				
"Fresh eyes" review of test setup	Yes				
General Set up Photos taken	Yes				
Video of Test Recorded and Start Time	N/A				
Post Test Photos taken of sample from each side	Yes				
Date	9-Jun-16				
Gauges	VR-8500-01 AC-050-02,				
Initials	C.G				

Note:

TUV SUD Ca	anada Job: PVV-5028	Votir	ng Machine E	nvironmental	& Vibration	1	<u>-</u>				Page:	VIB-06
	Bas	ic Trans	portatio	n					Spe	cification:	CETP:00.00	-E-412,SEC 5.11,Table 6.4.6.b
Sample		Duration	n per Axis (30	Minutes)	Start	Start Start ,			End			
Number	Repeating Acceleration Profile	Х	Y	Z	Date	Time	Initials	End Date	Time	Initials	Gauges	Comments
		30			9-Jun-16	2:55PM	C.G	9-Jun-16	3:25PM	C.G		No signs of visual damage
1			30		9-Jun-16	3:45PM	C.G	9-Jun-16	3:45PM	C.G	AC-050-02, VR-8500-01	following test, and customer stated samples were operational.
				30	10-Jun-16	9:30AM	C.G	10-Jun-16	10:00AM	C.G		stated samples were operational.
		30			10-Jun-16	2:05PM	C.G	10-Jun-16	2:35PM	C.G		No signs of visual damage
2			30		10-Jun-16	1:15PM	C.G	10-Jun-16	1:45PM	C.G	AC-050-02, VR-8500-01	
				30	10-Jun-16	3:00PM	C.G	10-Jun-16	3:30PM	C.G]	
	3	30			9-Jun-16	2:55PM	C.G	9-Jun-16	3:25PM	C.G		No since of circulate and
3			30		9-Jun-16	3:45PM	C.G	9-Jun-16	3:45PM	C.G	AC-050-02, VR-8500-01	No signs of visual damage following test, and customer
	Con Catur Chanta			30	9-Jun-16	4:25PM	C.G	9-Jun-16	4:55PM	C.G	stated samples were operations	stated samples were operational
	See Setup Sheets	30			9-Jun-16	12:00PM	C.G	9-Jun-16	12:30PM	C.G		No since of viewel decrees
4			30		9-Jun-16	1:30PM	C.G	9-Jun-16	2:00PM	C.G	AC-050-02, VR-8500-01	No signs of visual damage following test, and customer
				30	9-Jun-16	2:10PM	C.G	9-Jun-16	2:40PM	C.G		stated samples were operational.
		30			10-Jun-16	2:05PM	C.G	10-Jun-16	2:35PM	C.G		No start of the later of
5			30		10-Jun-16	1:15PM	C.G	10-Jun-16	1:45PM	C.G	AC-050-02, VR-8500-01	No signs of visual damage following test, and customer
				30	10-Jun-16	3:00PM	C.G	10-Jun-16	3:30PM	C.G		stated samples were operational.
		30			9-Jun-16	12:00PM	C.G	9-Jun-16	12:30PM	C.G		No signo of viewel degree
6			30		9-Jun-16	1:30PM	C.G	9-Jun-16	2:00PM	C.G	AC-050-02, VR-8500-01	No signs of visual damage following test, and customer
				30	9-Jun-16	2:10PM	C.G	9-Jun-16	2:40PM	C.G	1	stated samples were operational.

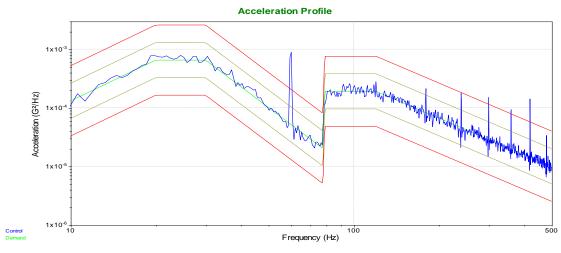
Job#: Samples 1 and 3 X-Axis

 $Data: C: \label{lem:condition} Data: \label{lem:condition} Data: C: \label{lem:condition} Data: \label{lem:condit$

Test: C:\Documents and Settings\User\Desktop\TUV Test Jobs\PVV-5028\X-Axis Random (Transverse).vrp

Data stored on Jun 09, 2016 15:24:53

End of Test





Breakpoint table

Frequency	G^2/Hz	dB/Octave
10 Hz	0.00013	6.99
20 Hz	0.00065	0
30 Hz	0.00065	-10.97
78 Hz	2e-005	532
79 Hz	0.00019	0
120 Hz	0.00019	-6.211
500 Hz	1e-005	

Measurements:

Demand: 0.2036 G RMS 0.4713 mm pk-pk Control: 0.2107 G RMS 0.4944 mm pk-pk

Channel Measurements:

Ch1: 0.2086 G RMS Ch1 in-band: 0.2107 G RMS Ch2: 0.005257 G RMS Ch2 in-band: 0.001011 G RMS

Ch3: n/a Ch3 in-band: n/a Ch4: n/a Ch4 in-band: n/a

Drive voltage: 0.02303 Vrms

System gain is 0.1093 Volts/G (Max system gain limit = 5 Volts/G

Job#: Samples 2 and 5 X-Axis

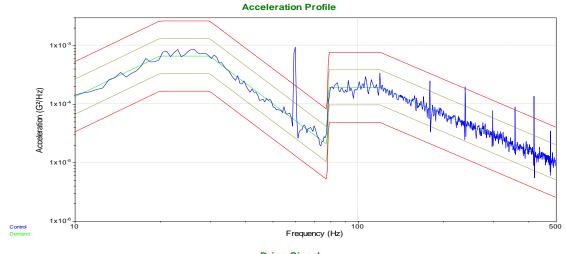
 $Data: C: \label{lem:condition} Data: \label{lem:condition} Data: C: \label{lem:condition} Data: \label{lem:condit$

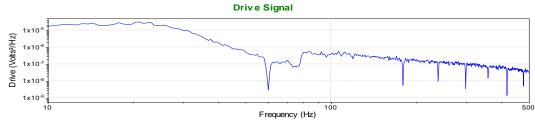
Test: C:\Documents and Settings\User\Desktop\TUV Test Jobs\PVV-5028\X-Axis Random (Transverse).vrp

Data stored on Jun 10, 2016 14:36:01

End of Test

v





Breakpoint table

Frequency	G ² /Hz	dB/Octave
10 Hz	0.00013	6.99
20 Hz	0.00065	0
30 Hz	0.00065	-10.97
78 Hz	2e-005	532
79 Hz	0.00019	0
120 Hz	0.00019	-6.211
500 Hz	1e-005	

Measurements:

Demand: 0.2036 G RMS 0.4713 mm pk-pk Control: 0.2086 G RMS 0.49 mm pk-pk

Channel Measurements:

Ch1: 0.2102 G RMS Ch2: 0.008914 G RMS Ch2: 0.008914 G RMS Ch2 in-band: 0.00102 G RMS

Ch3: n/a Ch3 in-band: n/a Ch4: n/a Ch4 in-band: n/a

Drive voltage: 0.02309 Vrms

System gain is 0.1107 Volts/G (Max system gain limit = 5 Volts/G

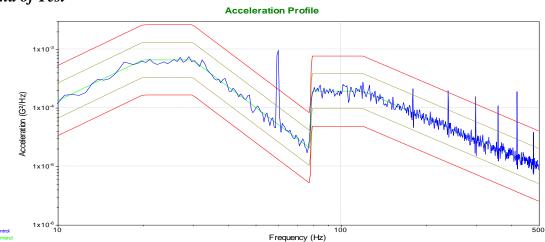
Job#: Samples 4 and 6 X-Axis

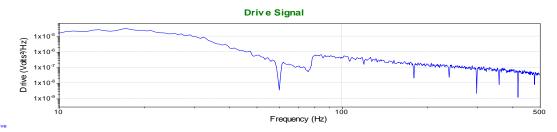
 $Data: C: \label{lem:condition} Data: \label{lem:condition} Data: C: \label{lem:condition} Data: \label{lem:condit$

Test: C:\Documents and Settings\User\Desktop\TUV Test Jobs\PVV-5028\X-Axis Random (Transverse).vrp

Data stored on Jun 09, 2016 12:34:16

End of Test





Breakpoint table

Frequency	G ² /Hz	dB/Octave
10 Hz	0.00013	6.99
20 Hz	0.00065	0
30 Hz	0.00065	-10.97
78 Hz	2e-005	532
79 Hz	0.00019	0
120 Hz	0.00019	-6.211
500 Hz	1e-005	

Measurements:

Demand: 0.2036 G RMS 0.4713 mm pk-pk Control: 0.208 G RMS 0.4813 mm pk-pk

Channel Measurements:

Ch1: 0.2099 G RMS Ch2: 0.005111 G RMS Ch2: 0.005111 G RMS Ch2: 0.0051008 G RMS

Ch3: n/a Ch3 in-band: n/a Ch4: n/a Ch4 in-band: n/a

Drive voltage: 0.02301 Vrms

System gain is 0.1106 Volts/G (Max system gain limit = 5 Volts/G)

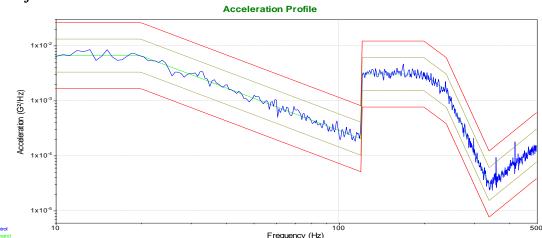
Job#: Sample 1 and 3 Y-Axis

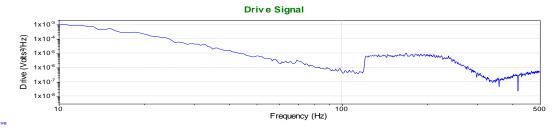
 $Data: C: \label{lem:condition} Data: \label{lem:condition} Data: C: \label{lem:condition} Data: \label{lem:condit$

Test: C:\Documents and Settings\User\Desktop\TUV Test Jobs\PVV-5028\Y-Axis Random (Longitudinal).vrp

Data stored on Jun 09, 2016 16:13:27

End of Test





Breakpoint table

Frequency	G^2/Hz	dB/Octave
10 Hz	0.0065	0
20 Hz	0.0065	-5.849
120 Hz	0.0002	982.3
121 Hz	0.003	0
200 Hz	0.003	-11.44
240 Hz	0.0015	-33.81
340 Hz	3e-005	12.56
500 Hz	0.00015	

Measurements:

Demand: 0.7419 G RMS 2.277 mm pk-pk Control: 0.7498 G RMS 2.488 mm pk-pk

Channel Measurements:

Ch1: 0.7443 G RMS Ch2: 0.008574 G RMS Ch2: 0.008574 G RMS Ch2: in-band: 0.001129 G RMS

Ch3: n/a Ch3 in-band: n/a Ch4: n/a Ch4 in-band: n/a

Drive voltage: 0.08777 Vrms

System gain is 0.1171 Volts/G (Max system gain limit = 5 Volts/G)

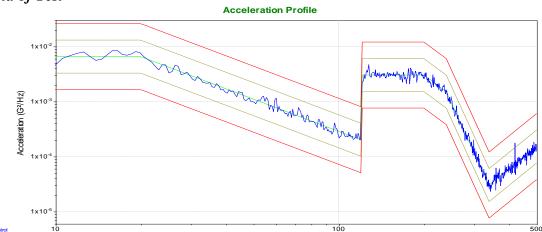
Job#: Sample 2 and 5 Y-Axis

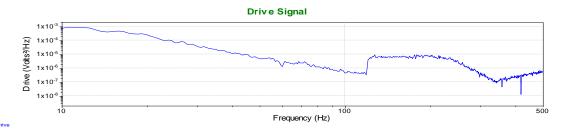
 $Data: C: \label{lem:condition} Data: \label{lem:condition} Data: C: \label{lem:condition} Data: \label{lem:condit$

Test: C:\Documents and Settings\User\Desktop\TUV Test Jobs\PVV-5028\Y-Axis Random (Longitudinal).vrp

Data stored on Jun 10, 2016 13:40:13

End of Test





Breakpoint table

Frequency	G^2/Hz	dB/Octave
10 Hz	0.0065	0
20 Hz	0.0065	-5.849
120 Hz	0.0002	982.3
121 Hz	0.003	0
200 Hz	0.003	-11.44
240 Hz	0.0015	-33.81
340 Hz	3e-005	12.56
500 Hz	0.00015	

Measurements:

Demand: 0.7419 G RMS 2.277 mm pk-pk Control: 0.7449 G RMS 2.401 mm pk-pk

Channel Measurements:

Ch1: 0.7421 G RMS Ch2: 0.007164 G RMS Ch2: 0.007164 G RMS Ch2: 0.007164 G RMS Ch2 in-band: 0.001177 G RMS

Ch3: n/a Ch3 in-band: n/a Ch4: n/a Ch4 in-band: n/a

Drive voltage: 0.08709 Vrms

System gain is 0.1169 Volts/G (Max system gain limit = 5 Volts/G

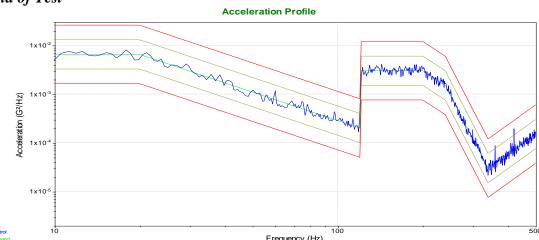
Job#: Samples 4 and 6 Y-Axis

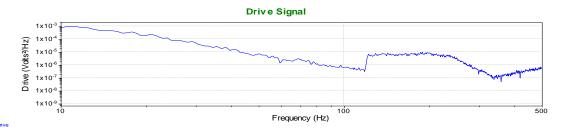
 $Data: C: \label{lem:condition} Data: \label{lem:condition} Data: C: \label{lem:condition} Data: \label{lem:condit$

Test: C:\Documents and Settings\User\Desktop\TUV Test Jobs\PVV-5028\Y-Axis Random (Transverse).vrp

Data stored on Jun 09, 2016 14:02:28

End of Test





Breakpoint table

Frequency	G^2/Hz	dB/Octave
10 Hz	0.0065	0
20 Hz	0.0065	-5.849
120 Hz	0.0002	982.3
121 Hz	0.003	0
200 Hz	0.003	-11.44
240 Hz	0.0015	-33.81
340 Hz	3e-005	12.56
500 Hz	0.00015	

Measurements:

Demand: 0.7419 G RMS 2.277 mm pk-pk Control: 0.7506 G RMS 2.42 mm pk-pk

Channel Measurements:

Ch1: 0.751 G RMS Ch2: 0.008175 G RMS Ch2: 0.008175 G RMS Ch2 in-band: 0.00115 G RMS

Ch3: n/a Ch3 in-band: n/a Ch4: n/a Ch4 in-band: n/a

Drive voltage: 0.08664 Vrms

System gain is 0.1154 Volts/G (Max system gain limit = 5 Volts/G

Job#: Sample 1 Z-Axis

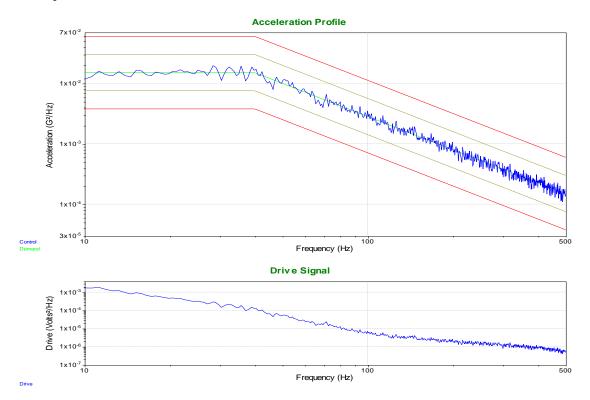
 $Data: C:\VibeSuite\Data\2016-06\2016 Jun 10-1057-0001.vrd$

Test: C:\Documents and Settings\User\Desktop\TUV Test Jobs\PVV-5028\Z-Axis Random (Vertical).vrp

Data stored on Jun 10, 2016 11:27:52

- -

End of Test



Breakpoint table

Frequency	G^2/Hz	dB/Octave
10 Hz	0.015	0
40 Hz	0.015	-5.489
500 Hz	0.00015	

Measurements:

Demand: 1.046 G RMS 3.528 mm pk-pk Control: 1.049 G RMS 3.645 mm pk-pk

Channel Measurements:

Ch1: 1.053 G RMS Ch1 in-band: 1.047 G RMS Ch2: 0.005823 G RMS Ch2 in-band: 0.001206 G RMS

Ch3: n/a Ch3 in-band: n/a Ch4: n/a Ch4 in-band: n/a

Drive voltage: 0.1362 Vrms

System gain is 0.1298 Volts/G (Max system gain limit = 5 Volts/G)

Job#: Samples 2 and 5 Z-Axis

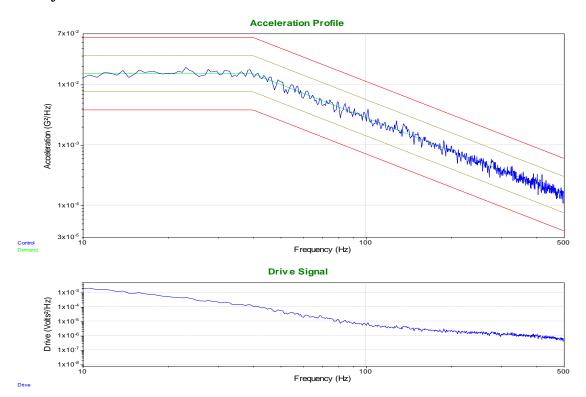
 $Data: C:\VibeSuite\Data\2016-06\2016 Jun 10-1459-0001.vrd$

Test: C:\Documents and Settings\User\Desktop\TUV Test Jobs\PVV-5028\Z-Axis Random (Vertical).vrp

Data stored on Jun 10, 2016 15:29:24

- -

End of Test



Breakpoint table

Frequency	G^2/Hz	dB/Octave
10 Hz	0.015	0
40 Hz	0.015	-5.489
500 Hz	0.00015	

Measurements:

Demand: 1.046 G RMS 3.528 mm pk-pk Control: 1.054 G RMS 3.688 mm pk-pk

Channel Measurements:

Ch1: 1.053 G RMS Ch1 in-band: 1.052 G RMS Ch2: 0.007736 G RMS Ch2 in-band: 0.001179 G RMS

Ch3: n/a Ch3 in-band: n/a Ch4: n/a Ch4 in-band: n/a

Drive voltage: 0.1378 Vrms

System gain is 0.1308 Volts/G (Max system gain limit = 5 Volts/G)

Job#: Sample 3 Z-Axis

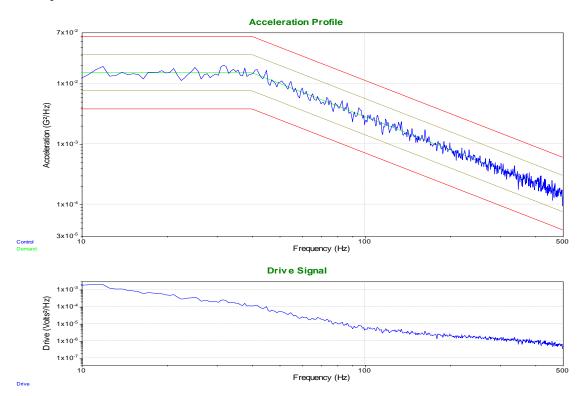
Data: C:\VibeSuite\Data\2016-06\2016Jun09-1626-0001.vrd

Test: C:\Documents and Settings\User\Desktop\TUV Test Jobs\PVV-5028\Z-Axis Random (Vertical).vrp

Data stored on Jun 09, 2016 16:56:27

- -

End of Test



Breakpoint table

Frequency	G^2/Hz	dB/Octave
10 Hz	0.015	0
40 Hz	0.015	-5.489
500 Hz	0.00015	

Measurements:

Demand: 1.046 G RMS 3.528 mm pk-pk Control: 1.048 G RMS 3.699 mm pk-pk

Channel Measurements:

Ch1: 1.052 G RMS Ch1 in-band: 1.046 G RMS Ch2: 0.007835 G RMS Ch2 in-band: 0.001201 G RMS

Ch3: n/a Ch3 in-band: n/a Ch4: n/a Ch4 in-band: n/a

Drive voltage: 0.1356 Vrms

System gain is 0.1294 Volts/G (Max system gain limit = 5 Volts/G)

Job#: Samples 1 and 3 X-Axis

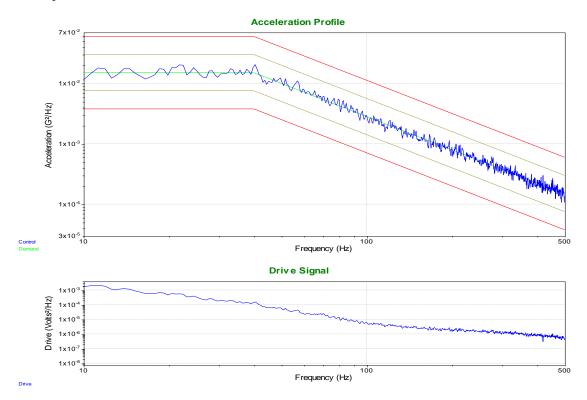
Data: C:\VibeSuite\Data\2016-06\2016Jun09-1411-0001.vrd

Test: C:\Documents and Settings\User\Desktop\TUV Test Jobs\PVV-5028\Z-Axis Random (Vertical).vrp

Data stored on Jun 09, 2016 14:41:34

- -

End of Test



Breakpoint table

Frequency	G^2/Hz	dB/Octave
10 Hz	0.015	0
40 Hz	0.015	-5.489
500 Hz	0.00015	

Measurements:

Demand: 1.046 G RMS 3.528 mm pk-pk Control: 1.059 G RMS 3.706 mm pk-pk

Channel Measurements:

Ch1: 1.047 G RMS Ch1 in-band: 1.057 G RMS Ch2: 0.008475 G RMS Ch2 in-band: 0.001198 G RMS

Ch3: n/a Ch3 in-band: n/a Ch4: n/a Ch4 in-band: n/a

Drive voltage: 0.1381 Vrms

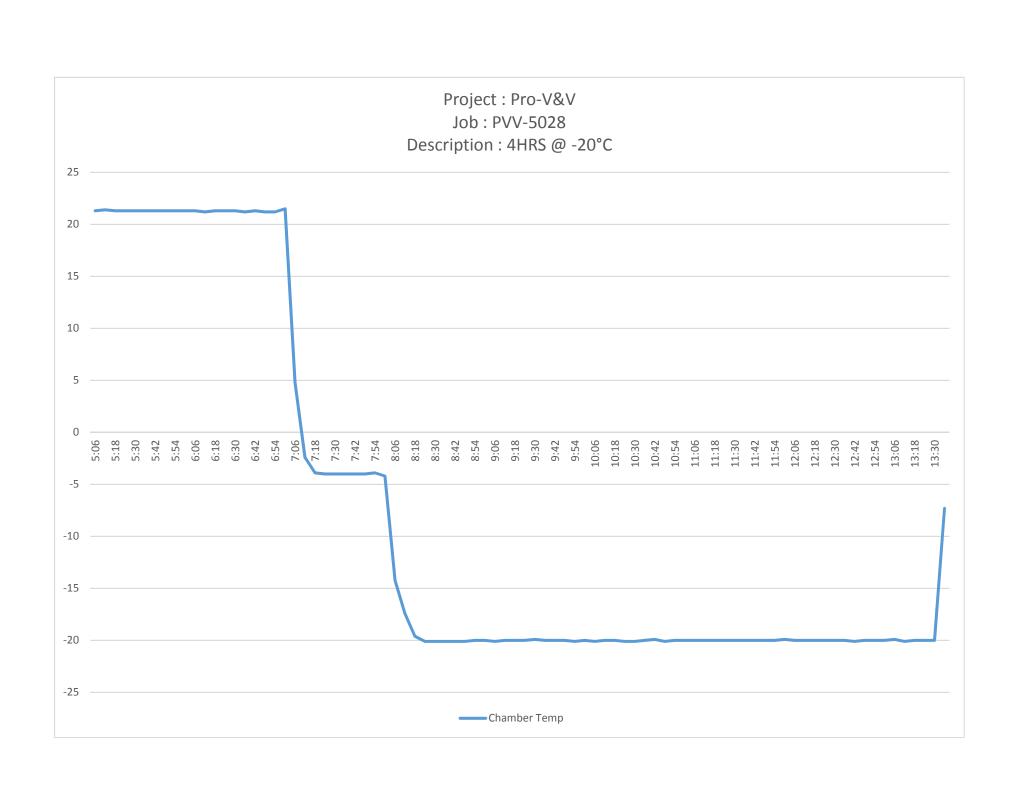
System gain is 0.1304 Volts/G (Max system gain limit = 5 Volts/G)

Report Number: PVV-5028.00 Revision Number: 0

Issue Date: July 14, 2016

Appendix C: Low Temperature Setup and Data

(1 page)

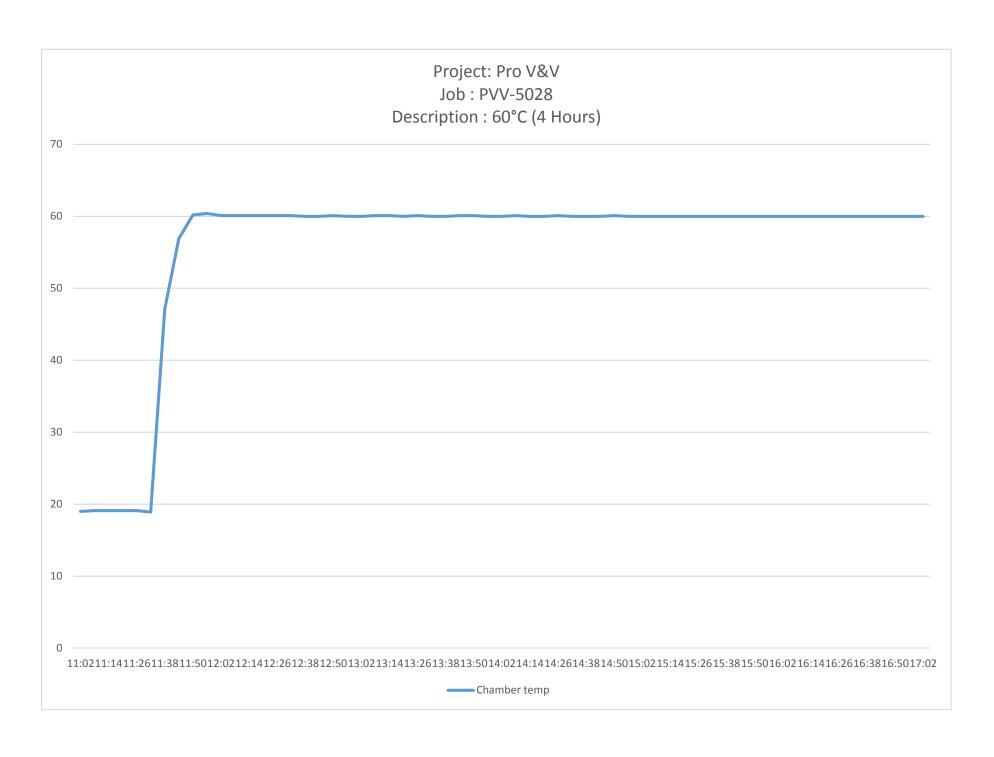


Report Number: PVV-5028.00 Revision Number: 0

Issue Date: July 14, 2016

Appendix D: High Temperature Setup and Data

(?? pages)



Report Number: PVV-5028.00 Revision Number: 0

Issue Date: July 14, 2016

Appendix E: Humidity Setup and Data

(7 pages)

Technical Form Number

N/a

Page: HUM-01

Humidity Testing - Test Setup Parameters/Diagrams

Revision Number

	, ,							
Sample Description	Voting Machine Systems	Voting Machine Systems						
Number of samples	6 Samples							
Sample Number(s)	5028-1 (ICP) ,5028-2 (ICX 15"), 5028-3 5028-5 (ICX 21") , 5028-6 (ICX Samsur	(Cannon Image LBP151DW) ,5028-4 (Fing)	HP Laserjet M402dn),					
Specification	MIL-STD-810D, Military Standard	Environmental Test Methods and E	ngineering Guidelines					
Section	Method 507.2 Humidity - Procedure I - I	Natural (Hot-Humid, Cycle 1)						
Test Description	Place the samples in an environmental walk-in chamber, and perform the Hot-Humid (Cycle 1) humidity profile outlined under MIL-STD-810D, Table 507.2-I (Cycle 1), for a total of 10 cycles (240hrs).							
Data to be Provided	Temperature and Humidity Data. Photographs of Setup Photographs of samples before and after test							
Requirement	Completion of required humidity cycles.	Completion of required humidity cycles. Customer to perform final operational check						
Setup Parameters	Setup Parameters							
Supply Voltage	N/a (Customer) Line Resistance (ohms) N/a (Customer)							
Cycles	10	Cycle Duration	24 hours					
Operation during Test	t Non-operating							
Profile	MIL-STD-810D, Table 507.2-I (Cyc	MIL-STD-810D, Table 507.2-I (Cycle 1)						

Customer Supplied monitoring Equipment? (Yes or No)	Yes
Customer Supplied Equipment Details and Notes (If Applicable)	Customer to monitor equipment when required

Setup Photographs









Technical Form Number N/a Revision Number N/a Revision Date 25-May-16

Humidity Testing - Program Verification

Program Verfications

Note: Steps 1 to 18 (below) are 1 Natural Humidity Cycle, Hot-Humid (24hrs) - Repeat this sequence 10 times for a total of 10 temperature cycles (240hrs, 10 days)

		Step	Start	Step End					
Step Number	Description	Temperature (°C)	Relative Humidity (%RH)	Temperature (°C)	Relative Humidity (%RH)	Duration	Step Checked	Comments	
1	Hold	31	88	31	88 5 hrs Yes Starting from manually s 16 @ 1:30pm		Starting from manually set 31°C, 88%RH , 26-MAY-16 @ 1:30pm		
2	Ramp	31	88	32	85	1 hr	Yes	32.2°C / 84.9%RH	
3	Ramp	32	85	34	80	1 hr	Yes	34.2°C / 80%RH	
4	Ramp	34	80	36	76	1 hr	Yes	36.1°C / 75.7%RH	
5	Ramp	36	76	37	73	1 hr	Yes	37.1°C / 72.6%RH	
6	Ramp	37	73	38	69	1 hr	Yes	38.1°C / 68.5 %RH	
7	Ramp	38	69	39	65	1 hr	Yes	39.1°C / 64.8%RH	
8	Ramp	39	65	40	62	1 hr	Yes	40.1°C / 62.3%RH	
9	Ramp	40	62	41	59	1 hr	Yes	41°C / 59.4%RH	
10	Hold	41	59	41	59	3 hrs	Yes	40.9°C / 59.4%RH	
11	Ramp	41	59	39	65	1 hr	Yes	38.9°C / 64.7%RH	
12	Ramp	39	65	37	69	1 hr	Yes	36.9°C / 69.2%RH	
13	Ramp	37	69	36	73	1 hr	Yes	35.9°C / 73.4%RH	
14	Ramp	36	73	34	79	1 hr	Yes	33.9°C / 79.3%RH	
15	Ramp	34	79	33	85	1 hr	Yes	32.9°C / 85%RH	
16	Ramp	33	85	32	85	1 hr	Yes	32°C / 85.2%RH	
17	Ramp	32	85	32	88	1 hr	Yes	31.9°C / 88.3%RH	
18	Ramp	32	88	31	88	1 hr	Yes	31°C / 88.1%RH	
								Loop to step 1, Repeating for a total of 10 cycles	

Humidity Testing - Data Acquisition Test Setup Parameters

Job: PVV-5028

Data Acquisition Program:	N/a
Data Acquisition Program Worksheet:	N/a

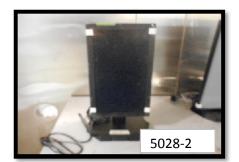
Measurement Description	Data Acquisition System	Data Acquisition Frequency	Channel
N/a	N/a	N/a	N/a
	_		
	_	_	

TÜV SÜD Canada Job Number: PVV-5028 Job Description: Pro V&V Voting Machine Testing	Technical Form Number: N/a Revision Number: N/a Povision Date: 25 May 16							Page:	HUM-04	
Job Description. Flo vav voting Machine Testing	Humidity T	Revision Date: 25-May-16								
		Humidity Testing - Setup Checklist Sample Numbers								
Setup Parameters	1 to 6									
Sample Description - Make sure Sample Matrix updated	yes									
Suppply Voltage (N/a)	N/A									
Line Resistance (N/a)	N/A									
Cycle Profile Programmed and Checked (Yes)	yes									
Cycle Preset (10 Temp. Cycles)	yes									
Graph of one complete cycle recorded (Yes)	yes									
"Fresh eyes" review of test setup	yes									
General Set up Photos taken	yes									
Pre Test Photos taken of sample (each side) & in fixture	yes									
Post Test Photos taken of sample from each side	yes									
Date	26-May-16									
Time	1:30pm									
Gauges	CH-ENV-09									
Initials	P.F	_								

Humidity Testing - Pre Test Photographs



Job: PVV-5028



Page: HUM-05







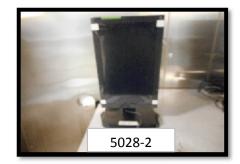


Technical Form N	Number		١	√a			Revision Number			Re	vision Number	N/a Revision Date 25-May-16	
							Ηι	ımi	dity	Te	stin	g - Test Mo	nitoring
Samp	le & Ten	nperature Ve	rfica	tions	3								
		.,ролоно					<u>l</u>						
Ch	Chamber/Gauges: CH-ENV-31, DATA-AQ-16												
					Car		o On	a = a ti a	mal				
					Sai		Y or l	eratio N)	onai			Temperature	
Date	Initials	Total Cycles	1 (ICP)	2 (ICX 15")	3 (Cannon LBP151dw)	4 (HP PrinterM402	5 (ICX21")	6 (ICX Samsung	0			Profile Running Correctly (Yes or No)	Comments
26-May-16	P.F	N/A	х	х	х	х	х	х				N/A	Test started at 130pm
27-May-16	P.F	1	х	х	х	х	х	х				Yes	36.6°C /70.5%RH (7:30AM)
27-May-16	P.F	1	х	х	х	х	х	х				Yes	31°C / 88%RH (2:18PM)
28-May-16	P.F	2	х	х	х	х	х	х				Yes	33.1°C / 84.6%RH (10:20AM)
30-May-16	P.F	4	х	х	х	х	х	х				Yes	34.4°C / 78.1%RH (9:15AM)
31-May-16	P.F	5	х	х	х	х	х	х				Yes	36.4°C /71.2%RH (8:10AM)
1-Jun-16	P.F	6	х	х	х	х	х	х				Yes	36.5°C / 71.7%RH (8:00AM)
2-Jun-16	P.F	7	х	х	х	х	х	х				Yes	33.8°C / 80.4%RH (9:40AM)
3-Jun-16	P.F	8	х	х	х	х	х	х				Yes	36°C / 72.4%RH (8:25AM)
4-Jun-16	P.F	9	х	х	х	х	Х	х				Yes	33.2°C /84.2%rh (10:15AM)
5-Jun-16	P.F	10	х	Х	х	х	Х	х				Yes	test completed at 1:30pm

Humidity Testing - Post Test Photographs



Job: PVV-5028



Page: HUM-07









Report Number: PVV-5028.00 Revision Number: 0 Issue Date: July 14, 2016

Appendix F: Temp-Power Variation Setup and Data

(5 pages)

Temperature Testing

Samples Under Test 5028-1 (ICP) ,5028-2 (ICX 15"), 5028-3 (Cannon Image LBP151DW) ,5028-4 (HP Laserjet M402dn), 5028-5 (ICX 21") , 5028-6 (ICX Samsung)

Specification	Customer email request, sent October 15, 2015 at 11:54 AM					
Supply Voltage	N/a	Line Resistance (ohms)	N/a			
Hours	85hrs	Part acclimatization Time (T _s)	N/a			
Exposure Time (T ₁)	12hrs	Hot Temperature (T _{max})	35°C (+/- 3°C)			
Ramp Time (T ₂)	1 hr	Cold Temperature (T _{min})	10°C (+/- 3°C)			

Customer Supplied monitoring Equipment? (Yes or No)	No
Customer Supplied Equipment Details and Notes (If Applicable)	N/a
Operating Status During Testing	Operational - customer monitored.

Data Acquisition Program & Worksheet: 4TC Logger App.vi			
Measurement Description	Data Aq. System	Data Aq. Freq.	Channel
Temperature Monitoring	DATA-AQ-13	10Hz	TC-01,

Pre Test Setup photograph













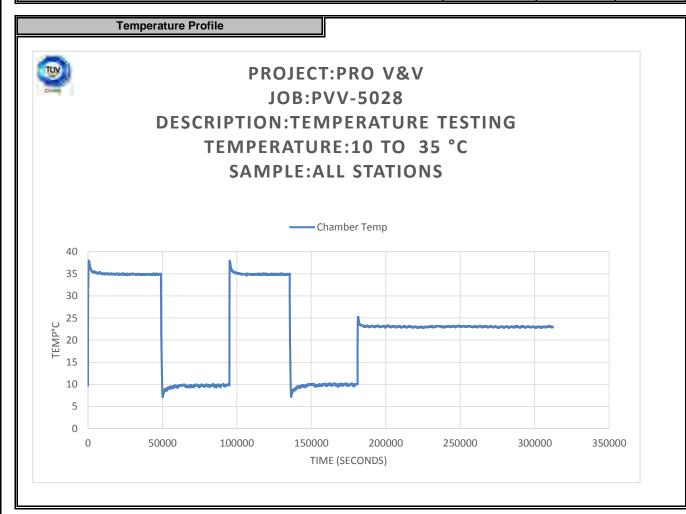
Temperature Profile

5028-1 (ICP) ,5028-2 (ICX 15"), 5028-3 (Cannon Image LBP151DW) ,5028-4 (HP Laserjet M402dn), Samples Under Test 5028-5 (ICX 21") , 5028-6 (ICX Samsung)

Specification	Customer email request, sent October 15, 2015 at 11:54 AM						
Supply Voltage	N/a	Line Resistance (ohms)	N/a				
Hours	85hrs	Part acclimatization Time (T _s)	N/a				
Exposure Time (T ₁)	12hrs	Hot Temperature (T _{max})	35°C (+/- 3°C)				
Ramp Time (T ₂)	1 hr	Cold Temperature (T _{min})	10°C (+/- 3°C)				

Customer Supplied monitoring Equipment? (Yes or No)	No
Customer Supplied Equipment Details and Notes (If Applicable)	N/a
Operating Status During Testing	Operational - customer monitored.

Data Acquisition Program & Worksheet: 4TC Logger App.vi			
Measurement Description	Data Aq. System	Data Aq. Freq.	Channel
Temperature Monitoring	DATA-AQ-13	10Hz	TC-01



TÜV SÜD Canada			Technical Form Number:				N/a		Page: THAS-03	
Job Number: PVV-5028				Re	vision Num	ber:	N/a		·	
Job Description: Pro V&V Voting Machine Testing					Revision Date: 12-May-15					
	Se	tup Checkl	ist - Therma	al Shock Te	esting					
Setup Parameters		Group Numbers								
Setup Farameters	5028-1	5028-2	5028-3	5028-4	5028-5	5028-6				
Sample Description - Make sure Sample Matrix updated	Yes	Yes	Yes	Yes	Yes	Yes				
Exposure Time (T ₁) =12 hours	12hrs	12hrs	12hrs	12hrs	12hrs	12hrs				
Ramp Time (T ₂) (Automatic, <1 hour)	1hr	1hr	1hr	1hr	1hr	1hr				
Part acclimatization Time (Ts) (N/A)	N/a	N/a	N/a	N/a	N/a	N/a				
Cycle Preset (85 hours)	Yes	Yes	Yes	Yes	Yes	Yes				
Graph of one Hot/Cold Cycle recorded (Yes)	Yes	Yes	Yes	Yes	Yes	Yes				
Required Powering Profile Confirmed (N/a)	N/a	N/a	N/a	N/a	N/a	N/a				
"Fresh eyes" review of test setup	Yes	Yes	Yes	Yes	Yes	Yes				
General Set up Photos taken	Yes	Yes	Yes	Yes	Yes	Yes				
post photo's taken	Yes	Yes	Yes	Yes	Yes	Yes				
Date	27-Jun-16	27-Jun-16	27-Jun-16	27-Jun-16	27-Jun-16	27-Jun-16				
Time	10:30 pm	10:30 pm								
Gauges	CH-ENV-09 DATA-AQ-13	CH-ENV-09 DATA-AQ-13	CH-ENV-09 DATA-AQ-13	CH-ENV-09 DATA-AQ-13	CH-ENV-09 DATA-AQ-13	CH-ENV-09 DATA-AQ-13				_

P.F

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Initials

Technical Form Number

Revision Date Revision Number 12-May-15 N/a

Page: THAS-04

Thermal Shock - Test Monitoring

PVV-5028

N/a

Job:

Date	Initials	Total Hours	Hot Temp.(°C)	Cold Temp.(°C)	Comments		
26-Jun-16	9 P.F. 0			Profile Confirmation			
					1- Ramp to 10°C		
					2- Hold 10°C for 12 hours		
					3- Ramp to 35°C		
					4- Hold 35°C for 12 hours		
					5- Ramp to 10°C		
					6- Hold 10°C for 12 hours		
					7- Ramp to 35°C		
					8- Hold 35°C for 12 hours		
					9- Ramp to 23°C		
					10- Hold for duration of test		
27-Jun-16	P.F	0	N/A	N/A	Started ramp to 10°C @ 10:50am (data_6_27_2016_11_08_31)		
27-Jun-16	P.F	0	N/A	9.23°C	Stopped test 11:03am		
27-Jun-16	P.F	0	N/A	N/A	Started ramp to 35°C @ 7:50pm (data_6_27_2016_7_44_23)		
27-Jun-16	C.G	0	35.01°C	N/A	Test started at 10:00pm ,35.01°C .CH-ENV-09, DATA-AQ-13		
28-Jun-16	P.F	11.2	34.93°C	N/A	Started to ramp to 10°C , 9:20AM		
28-Jun-16	C.G	24	N/A	10.07°C	Started to ramp to 35°C , 10:00PM		
29-Jun-16	P.F	36	34.85°C	N/A	Started to ramp to 10°C , 9:25AM		
29-Jun-16	C.G	48	N/A	10.15°C	Started to ramp to 23.0°C @ 10:00PM		
1-Jul-16	P.F	84.5	22.93°C	N/A	Test completed @ 10:30AM		

Technical Form Number N/a Revision Number N/a Revision Date 12-May-15

Temperature Testing - Post Test Photographs

Post Test Photographs









