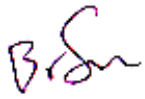
EMC Test Reports

Report No.: **EMC_SL15092101-HID-027-CE**
Supersede Report No.: None

Applicant	HID Global Corporation
Product Name	VertX EVO System
Model No.	VertX EVO V1000, VertX V100, VertX V200, VertX V300 and VertX EVO V2000
Test Standard	EN 50130-4:2011
Test Method	EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5
Date of test	2015/09/28-2015/10/02
Issue Date	2015-10-21
Test Result	☒ Pass ☐ Fail
Equipment complied with the specification	[x]
Equipment did not comply with the specification	[ ]
This Test Report is Issued Under the Authority of:	
	
Bryan Smith	Allen Crumm
Test Engineer	Engineer Reviewer
This test report may be reproduced in full only Test result presented in this test report is applicable to the tested sample only	

Issued By:
SIEMIC Laboratories
775 Montague Expressway, Milpitas, CA 95035

ACCREDITED
TESTING CERT # 2742-01

Laboratory Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.

In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

Country/Region	Accreditation Body	Scope
USA	FCC, A2LA	EMC, RF/Wireless, Telecom
Canada	IC, A2LA, NIST	EMC, RF/Wireless, Telecom
Taiwan	BSMI, NCC, NIST	EMC, RF, Telecom, Safety
Hong Kong	OFTA, NIST	RF/Wireless, Telecom
Australia	NATA, NIST	EMC, RF, Telecom, Safety
Korea	KCC/RRA, NIST	EMI, EMS, RF, Telecom, Safety
Japan	VCCI, JATE, TELEC, RFT	EMI, RF/Wireless, Telecom
Mexico	NOM, COFETEL, Caniety	Safety, EMC, RF/Wireless, Telecom
Europe	A2LA, NIST	EMC, RF, Telecom, Safety
Israel	MOC, NIST	EMC, RF, Telecom, Safety

Accreditations for Product Certifications

Country	Accreditation Body	Scope
USA	FCC TCB, NIST	EMC, RF, Telecom
Canada	IC FCB, NIST	EMC, RF, Telecom
Singapore	iDA, NIST	EMC, RF, Telecom
EU	NB	EMC & R&TTE Directive
Japan	MIC (RCB 208)	RF, Telecom
Hong Kong	OFTA (US002)	RF, Telecom

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1 Report Revision History

Report No.	Report Version	Description	Issue Date
EMC-SL15092101-HID-027_CE	Original	Original	2015-10-21

2 Executive Summary

The purpose of this test program was to demonstrate compliance of following product

Company: HID Global Corporation
Product: VertX EVO System
Model: VertX EVO V1000, VertX V100, VertX V200, VertX V300 and VertX EVO V2000

against the current Stipulated Standards. The specified model product stated above has demonstrated compliance with the Stipulated Standard listed on 1st page.

3 Customer information

Applicant Name	HID Global Corporation
Applicant Address	611 Center Ridge Drive, Austin, TX 78753
Manufacturer Name	HID Global Corporation
Manufacturer Address	10385 Westmoor Drive, Suite 300, Westminster, CO 80021

4 Test site information

Lab performing tests	SIEMIC Laboratories
Lab Address	775 Montague Expressway, Milpitas, CA 95035
FCC Test Site No.	881796
IC Test Site No.	4842D-2
VCCI Test Site No.	A0133

5 Modification

Index	Item	Description	Note
-	-	-	-

6 Test Software Version

Test Item	Vendor	Software	Version
Radiated Immunity	EMISoft	EMISoft Vasona	V6.013
Surge Immunity	Thermo Electron	CEWare	V4.0
Electrical Fast Transient	Thermo Electron	CEWare	V4.0

7 EUT Information

7.1 EUT Description

Product Name	VertX EVO System
Model No.	VertX EVO V1000, VertX V100, VertX V200, VertX V300 and VertX EVO V2000
Trade Name	HID Global Corporation
Serial No.	none
Input Power	100VAC-240VAC 50/60Hz 0.5A
Power Adapter Manu/Model	Elpac Power Systems / FWA020012A
Power Adapter SN	000048
Hardware version	N/A
Software version	GUI V1000- V.2.3.1.543 / V2000- V.2.3.1.219
Date of EUT received	2015-09-28
Equipment Class/ Category	Class B
Clock Frequencies	N/A
Port/Connectors	terminal blocks and RJ45, see I/O ports under section 8.2
Remark	EUT's were originally tested in 2010 and 2011. Retesting was done for ESD, RF Immunity, EFT and Surge for updated EN 50130-4 standard.
AC Power Cord Type	IEC Type B
DC Power Cable Type	-

7.2 EUT test modes/configuration Description

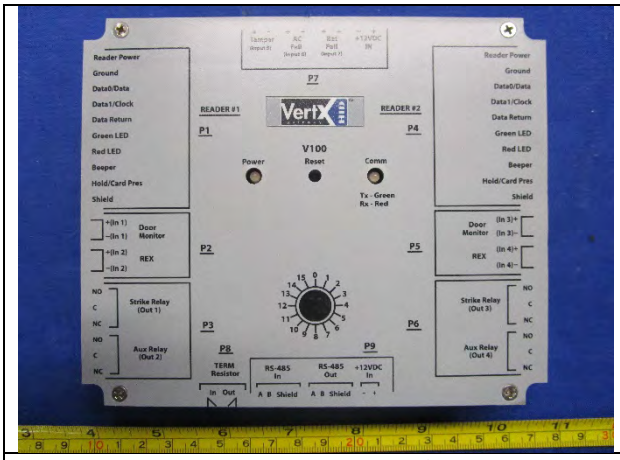
Pre-test mode

Prescan Test Mode		Note
Pre_test_mode_1	Normal Operating Mode	VertX EVO V1000 System
Pre_test_mode_2	Normal Operating Mode	VertX EVO V2000 System
Pre_test_mode_3	-	-
Pre_test_mode_4	-	-
Remark: VertX EVO V1000 system and VertX EVO V2000 systems were tested individually. VertX EVO V1000 system tested with VertX V100, VertX V200 and VertX V300. VertX EVO V2000 system tested with VertX V200, VertX V300 and VertX EVO V1000.		

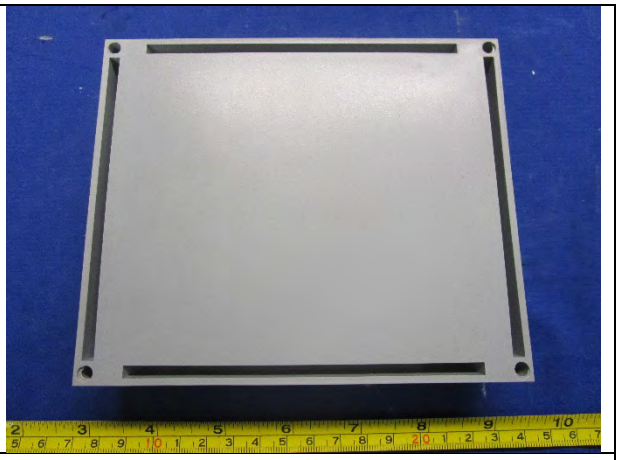
Final test mode

Final Test Mode		Note
Final_test_mode_1	Normal Operating Mode	V1000 System
Final_test_mode_2	Normal Operating Mode	V2000 System
Final_test_mode_3	-	-
Final_test_mode_4	-	-
Remark: VertX EVO V1000 system and VertX EVO V2000 systems were tested individually. VertX EVO V1000 system tested with VertX V100, VertX V200 and VertX V300. VertX EVO V2000 system tested with VertX V200, VertX V300 and VertX EVO V1000.		

7.3 EUT Photos - External



VertX V100 – Front View

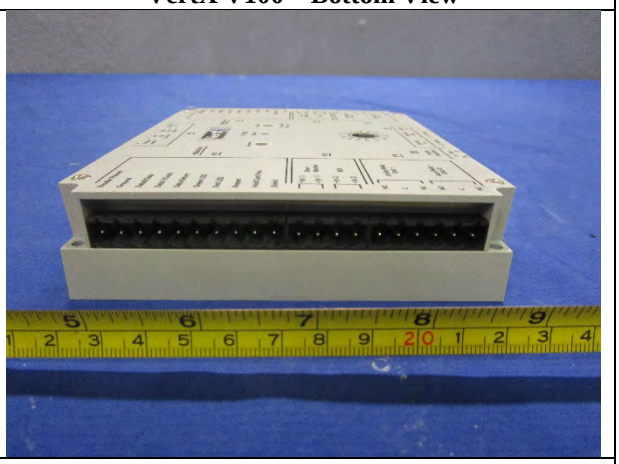


VertX V100 – Rear View

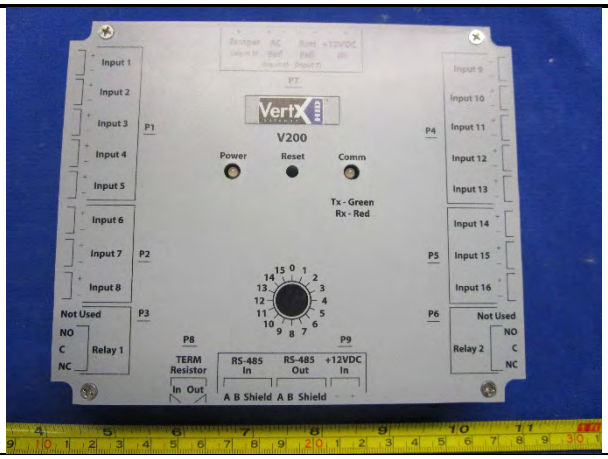
VertX V100 – Top View

VertX V100 – Bottom View

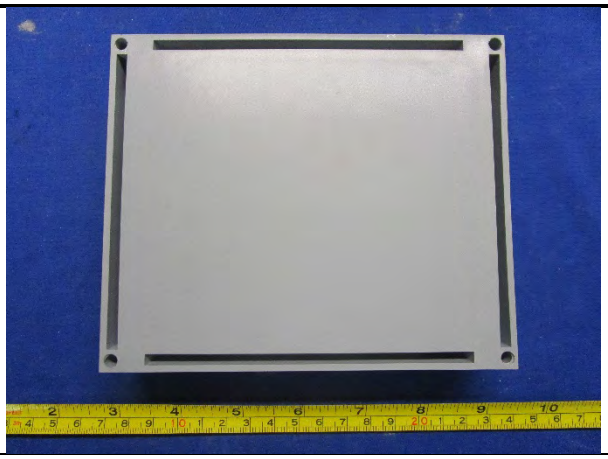
VertX V100 – Left Side View



VertX V100 – Right Side View

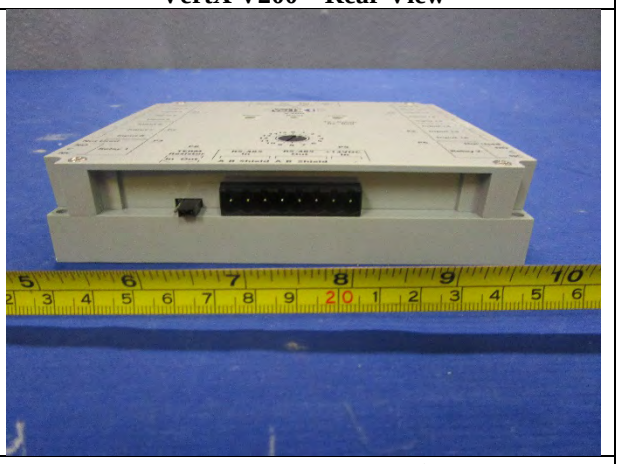


VertX V200 – Front View

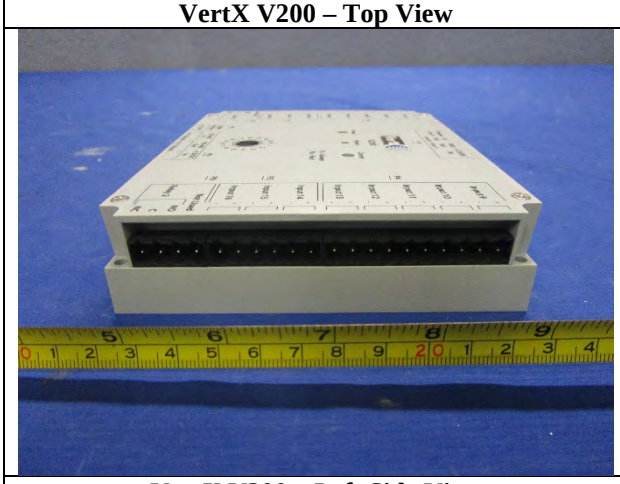


VertX V200 – Rear View

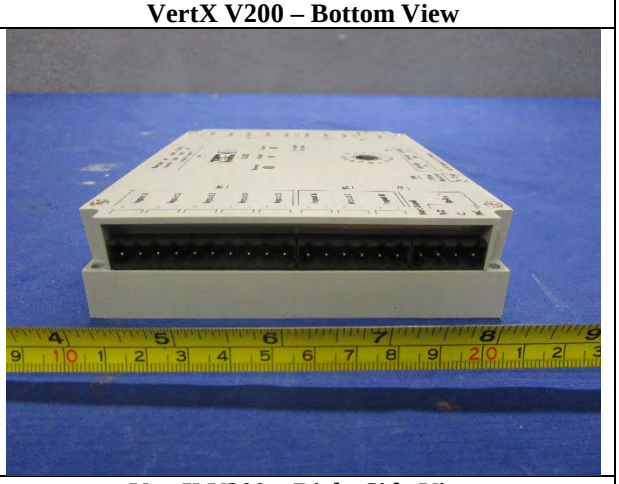
VertX V200 – Top View



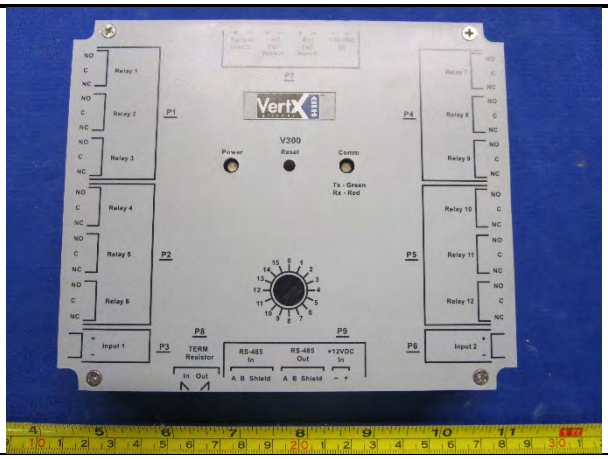
VertX V200 – Bottom View



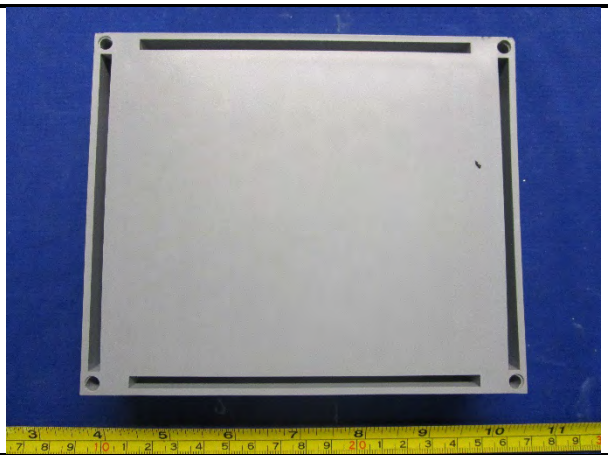
VertX V200 – Left Side View



VertX V200 – Right Side View

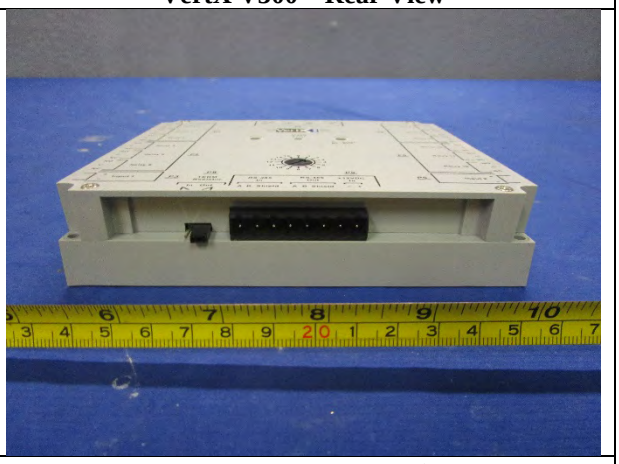


VertX V300 – Front View

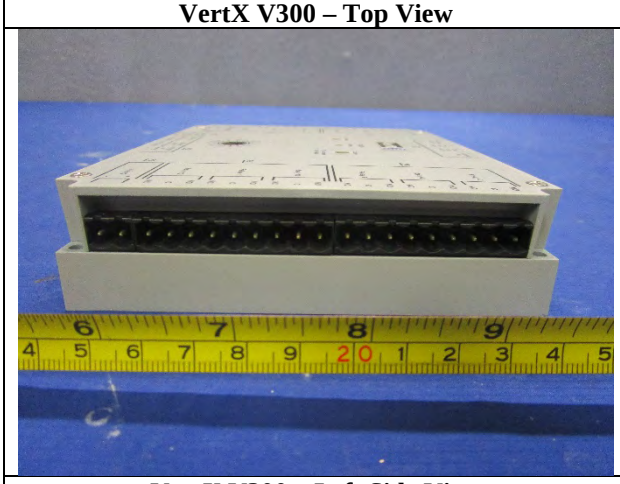


VertX V300 – Rear View

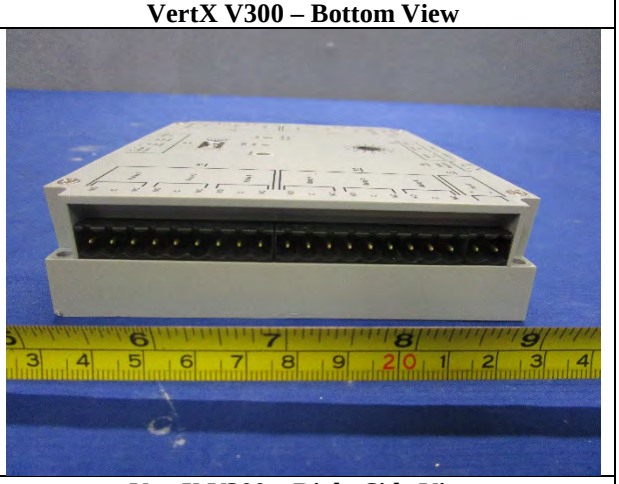
VertX V300 – Top View



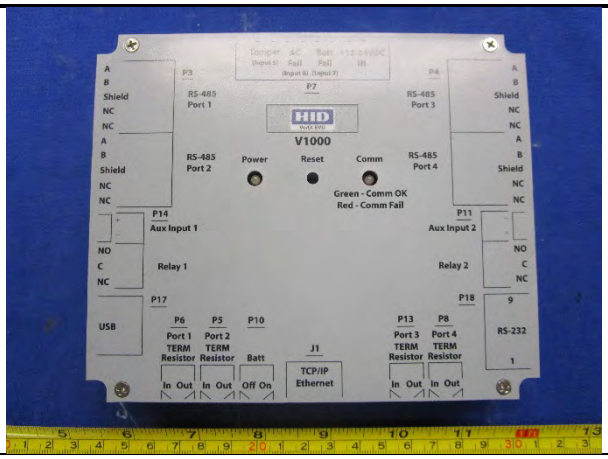
VertX V300 – Bottom View



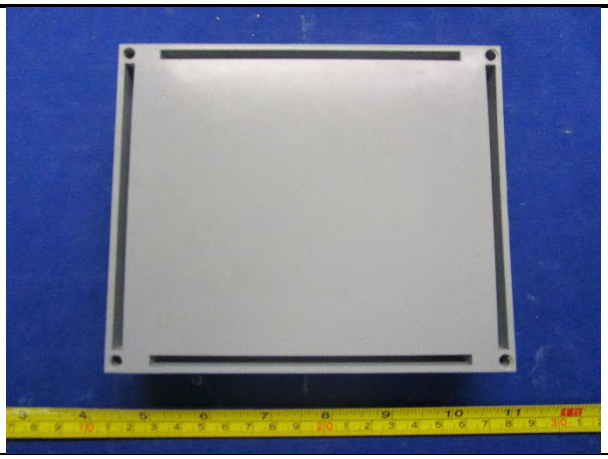
VertX V300 – Left Side View



VertX V300 – Right Side View

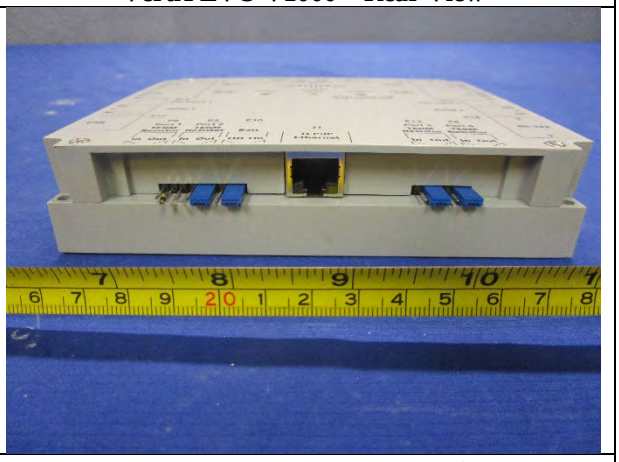


VertX EVO V1000 – Front View



VertX EVO V1000 – Rear View

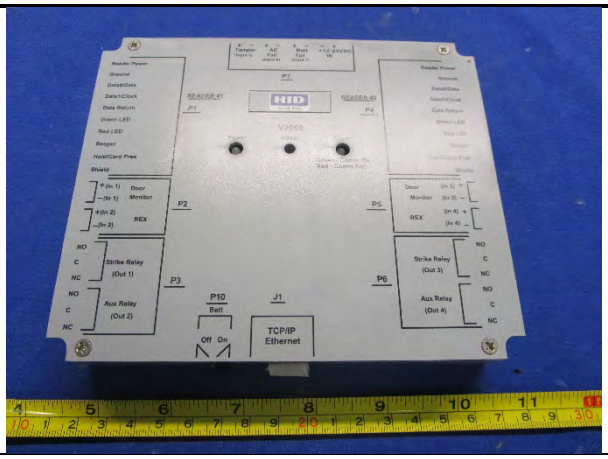
VertX EVO V1000 – Top View



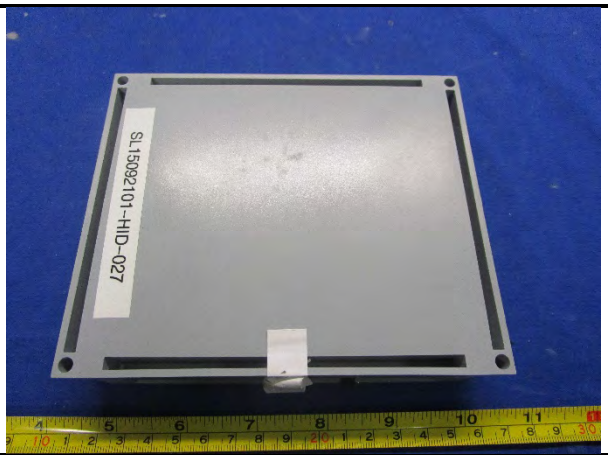
VertX EVO V1000 – Bottom View

VertX EVO V1000 – Left Side View

VertX EVO V1000 – Right Side View

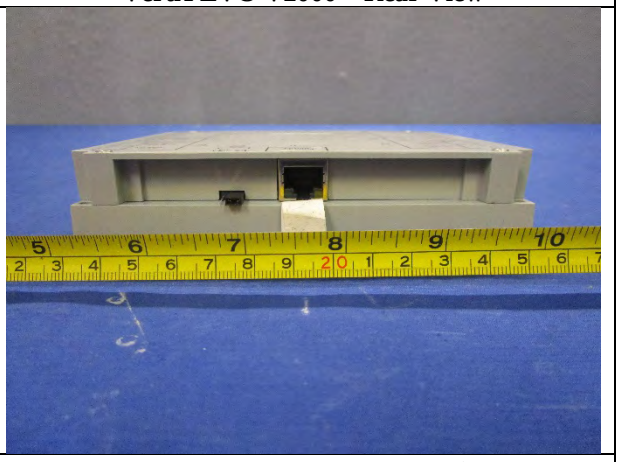


VertX EVO V2000 – Front View



VertX EVO V2000 – Rear View

VertX EVO V2000 – Top View

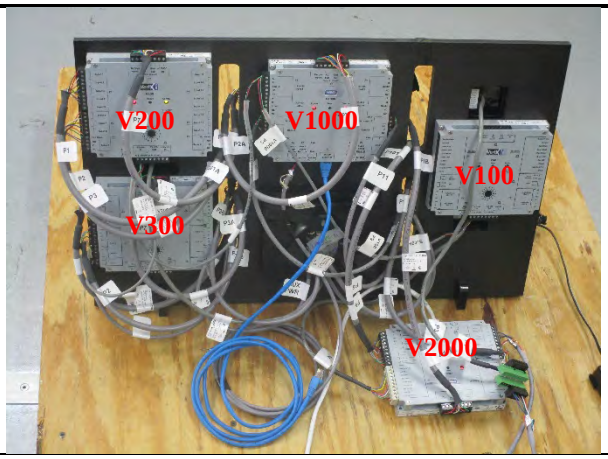


VertX EVO V2000 – Bottom View

VertX EVO V2000 – Left Side View

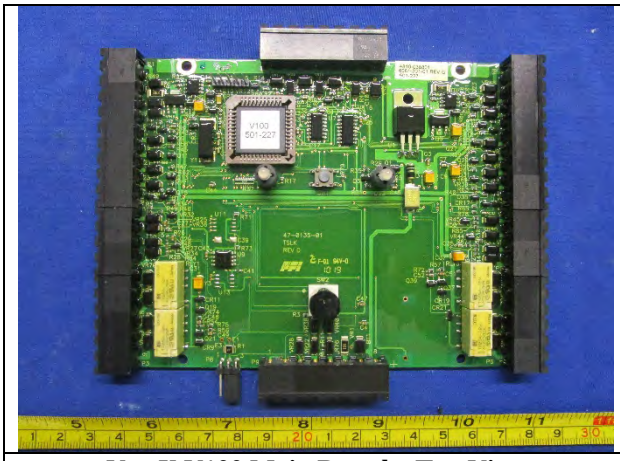
VertX EVO V2000 – Right Side View

EUT AC/DC Adapter

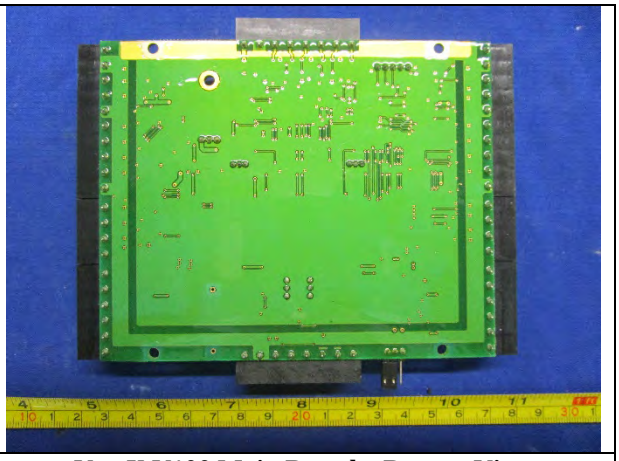


EUT Display Board Layout

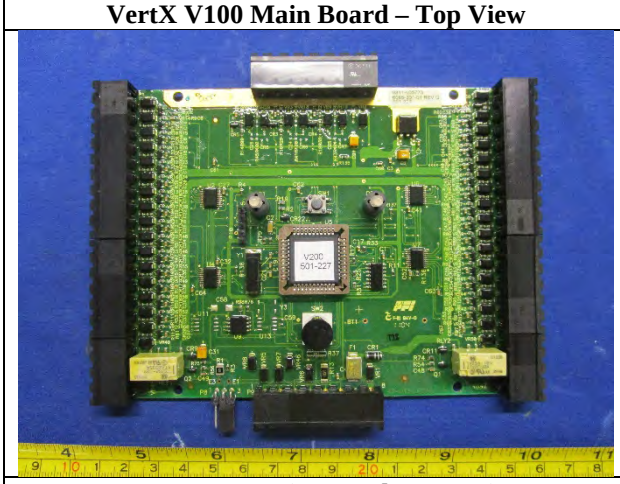
7.4 EUT Photos - Internal



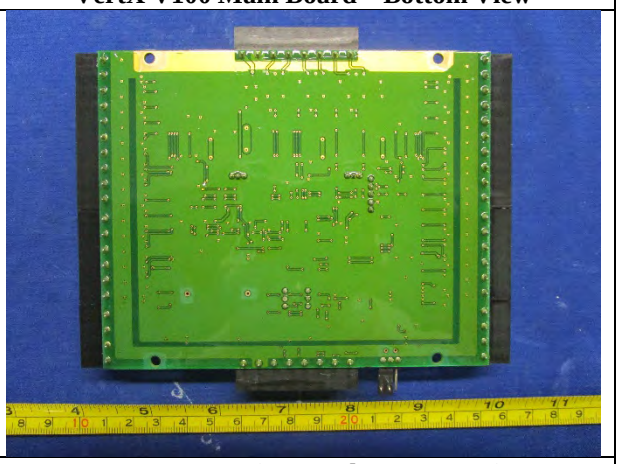
VertX V100 Main Board – Top View



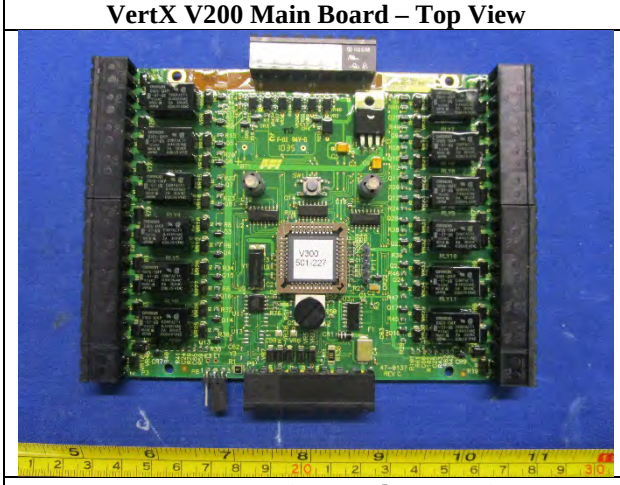
VertX V100 Main Board – Bottom View



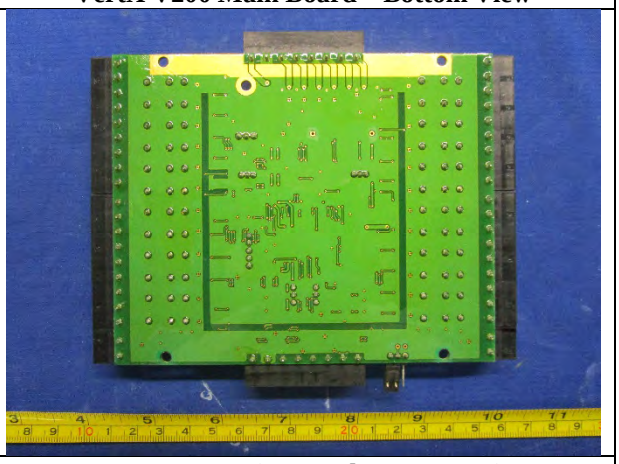
VertX V200 Main Board – Top View



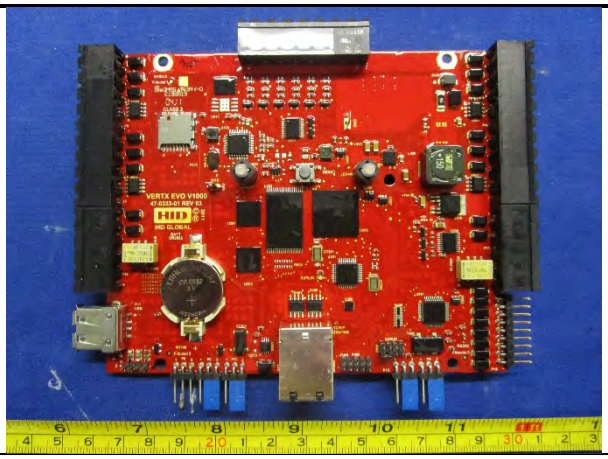
VertX V200 Main Board – Bottom View



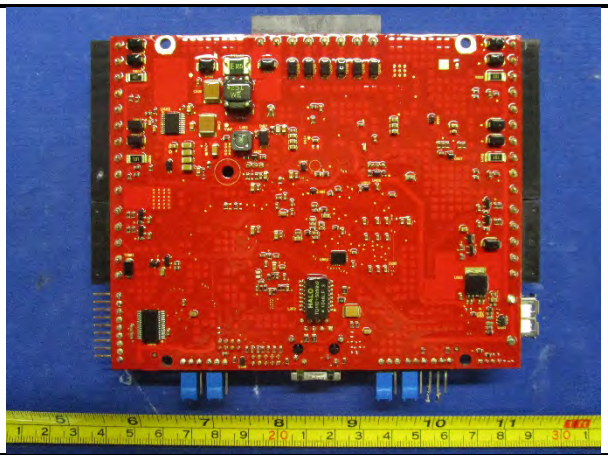
VertX V300 Main Board – Top View



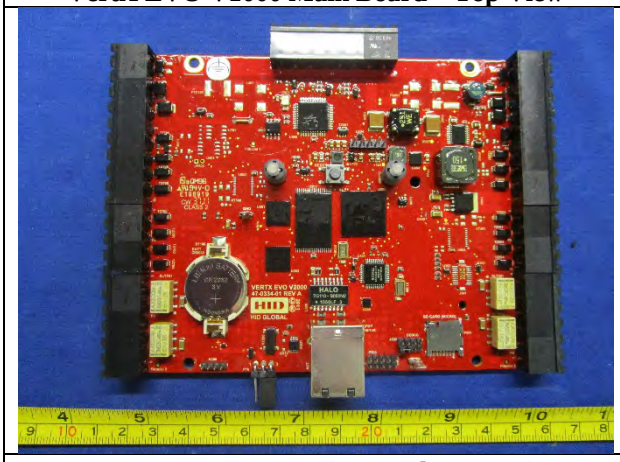
VertX V300 Main Board – Bottom View



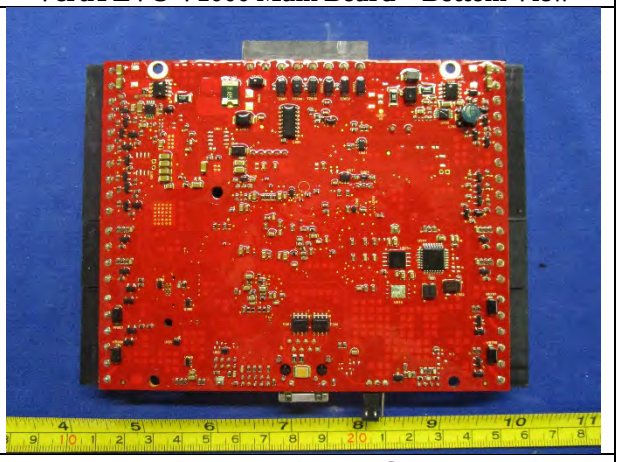
VertX EVO V1000 Main Board – Top View



VertX EVO V1000 Main Board – Bottom View

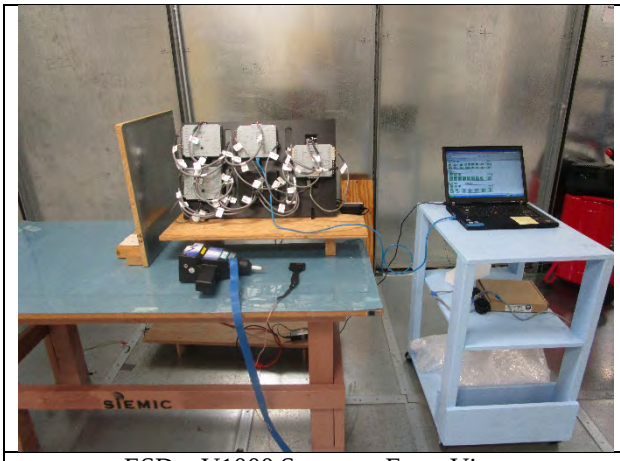


VertX EVO V2000 Main Board – Top View



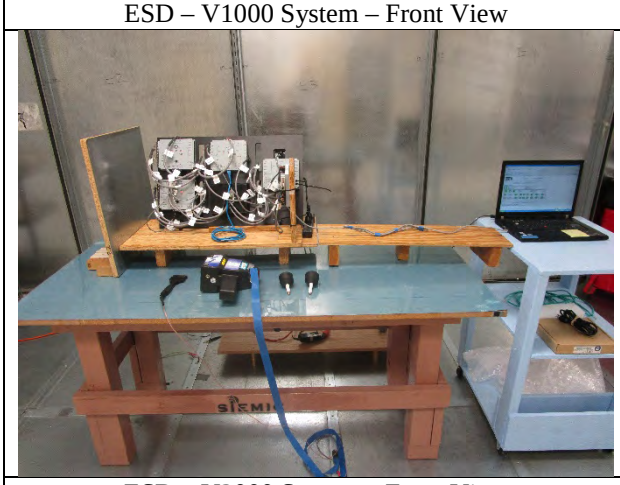
VertX EVO V2000 Main Board – Bottom View

7.5 EUT Test Setup Photos

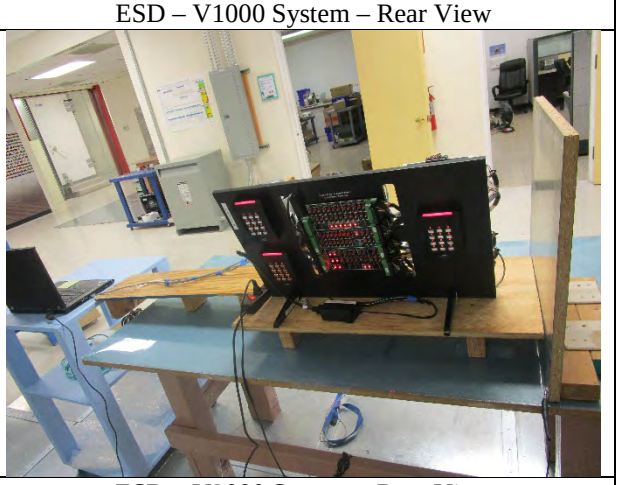


ESD – V1000 System – Front View

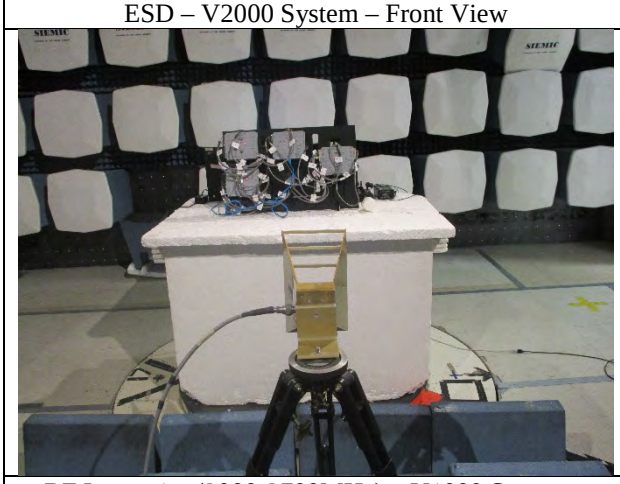
ESD – V1000 System – Rear View



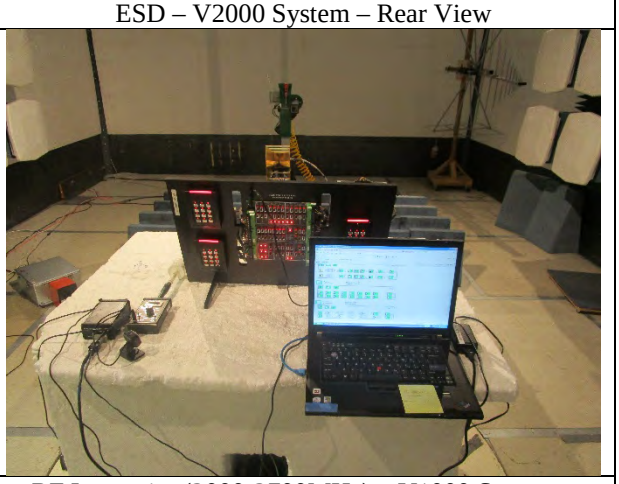
ESD – V2000 System – Front View



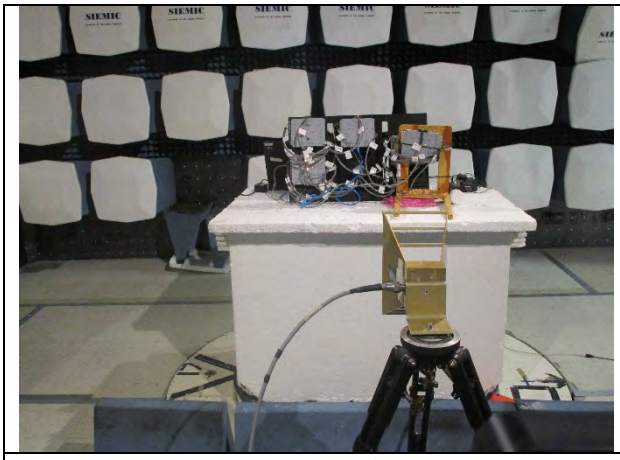
ESD – V2000 System – Rear View



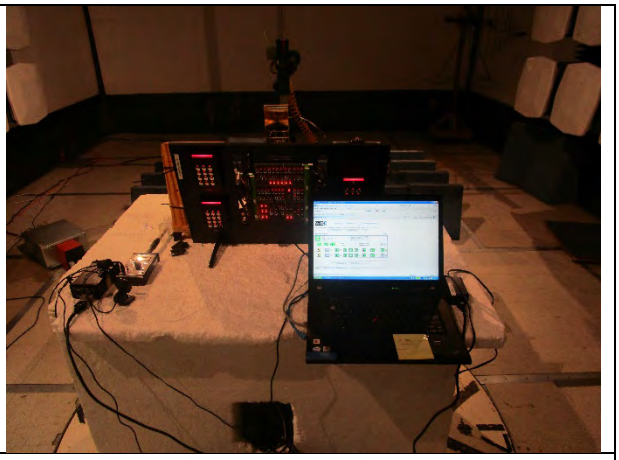
RF Immunity (2000-2700MHz) – V1000 System – Front View



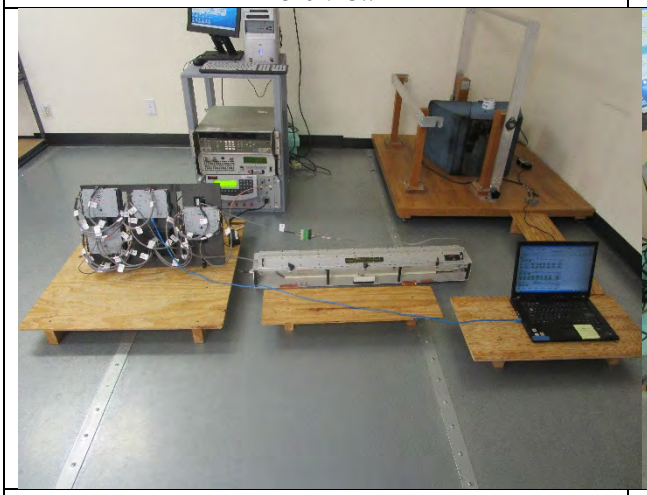
RF Immunity (2000-2700MHz) – V1000 System – Rear View



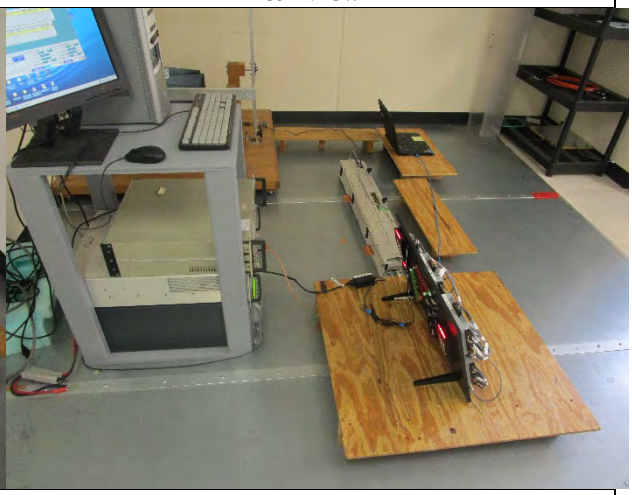
RF Immunity (2000-2700MHz) – V2000 System – Front View



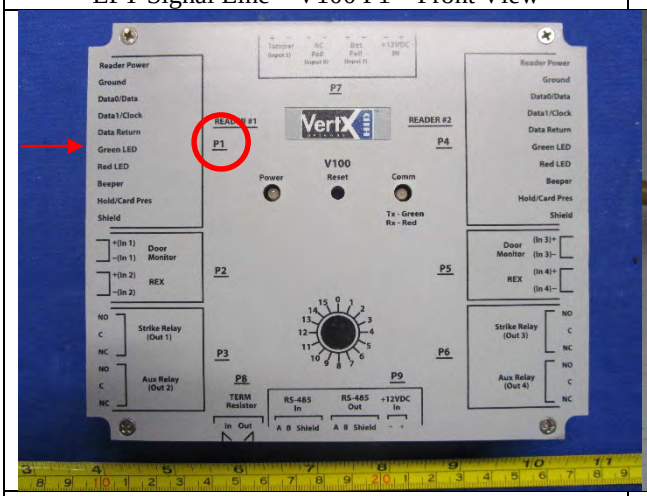
RF Immunity (2000-2700MHz) – V2000 System – Rear View



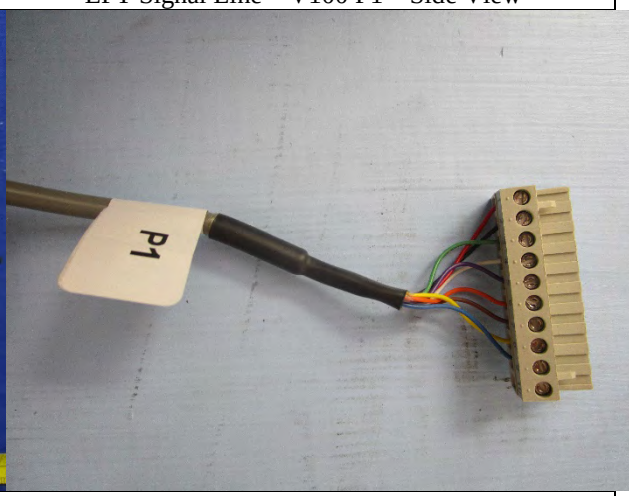
EFT Signal Line – V100 P1 – Front View



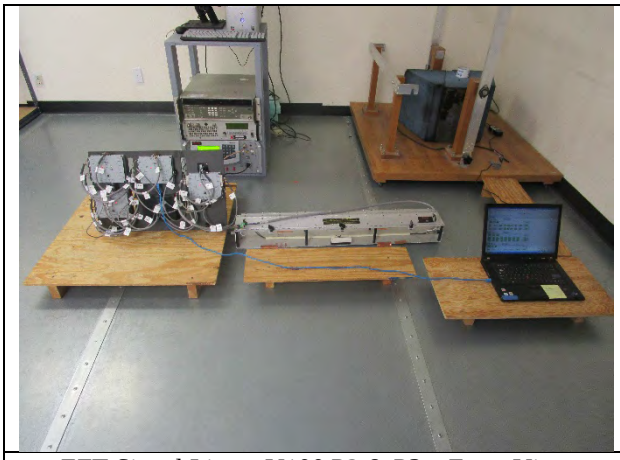
EFT Signal Line – V100 P1 – Side View



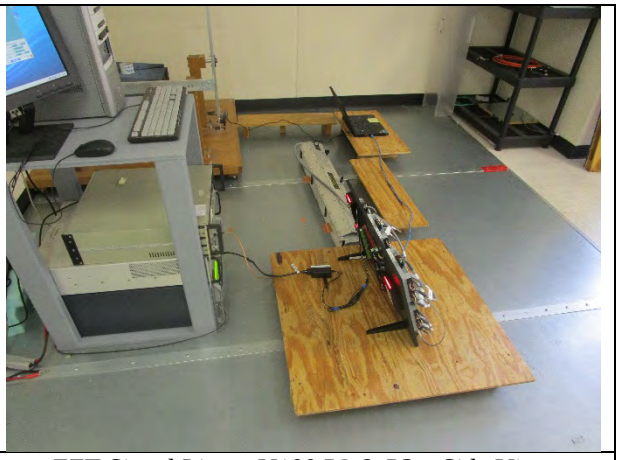
V100 P1 Location



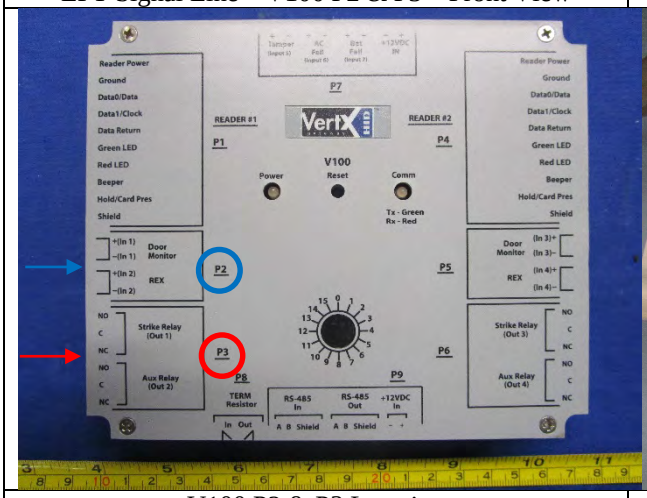
V100 P1 Cable



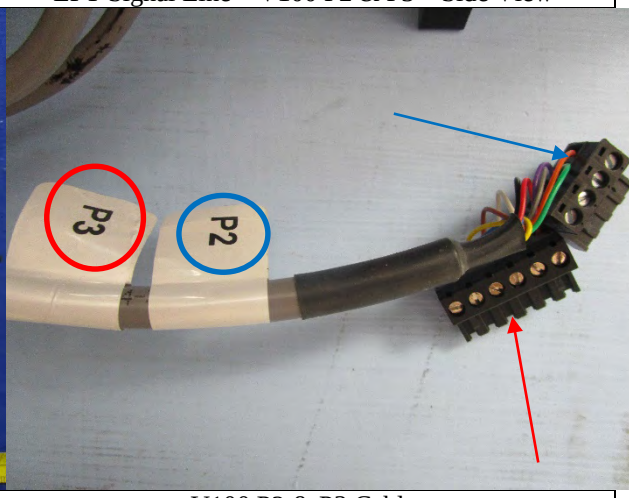
EFT Signal Line – V100 P2 & P3 – Front View



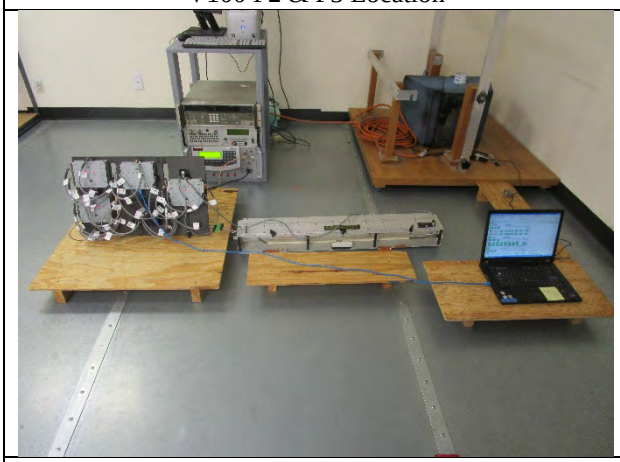
EFT Signal Line – V100 P2 & P3 – Side View



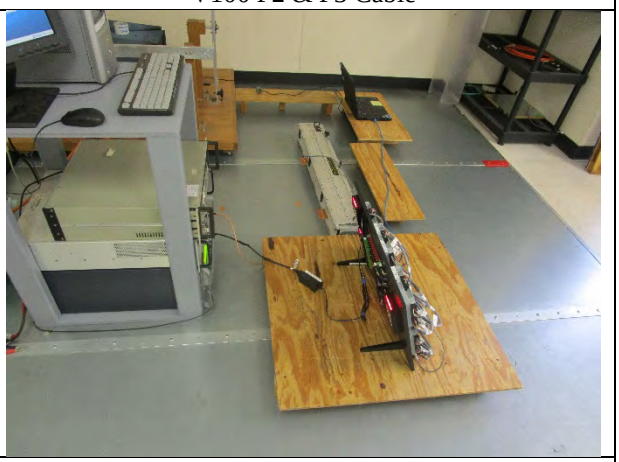
V100 P2 & P3 Location



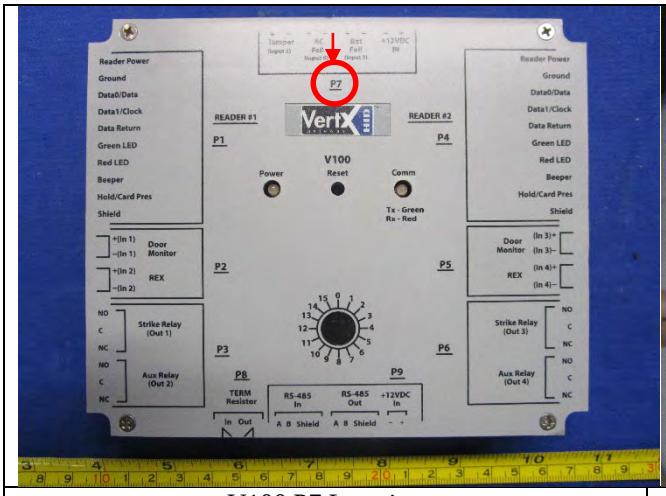
V100 P2 & P3 Cable



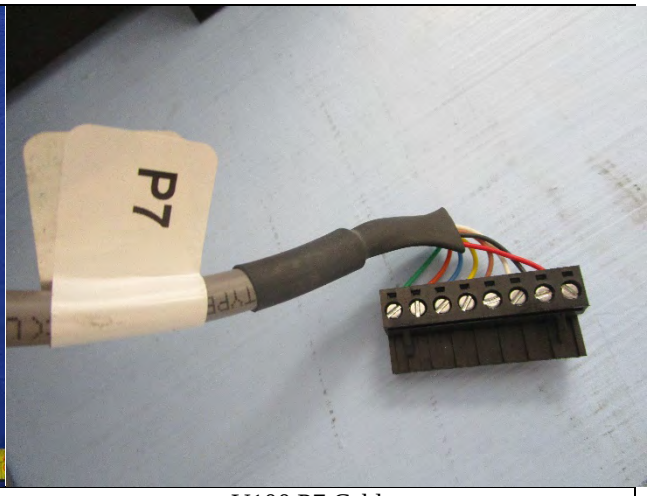
EFT Signal Line – V100 P7 – Front View



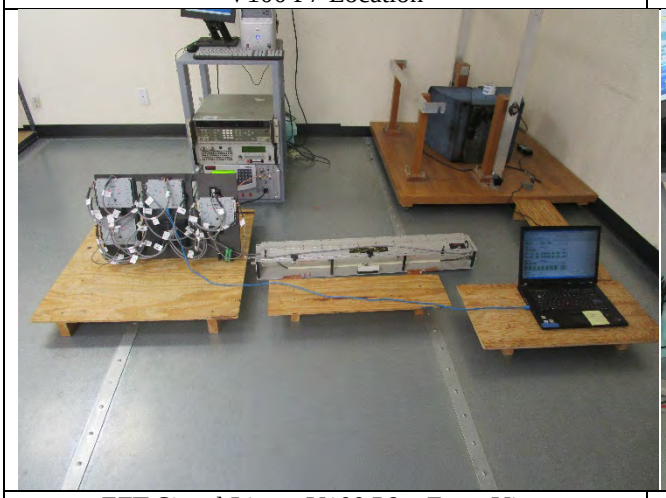
EFT Signal Line – V100 P7 – Side View



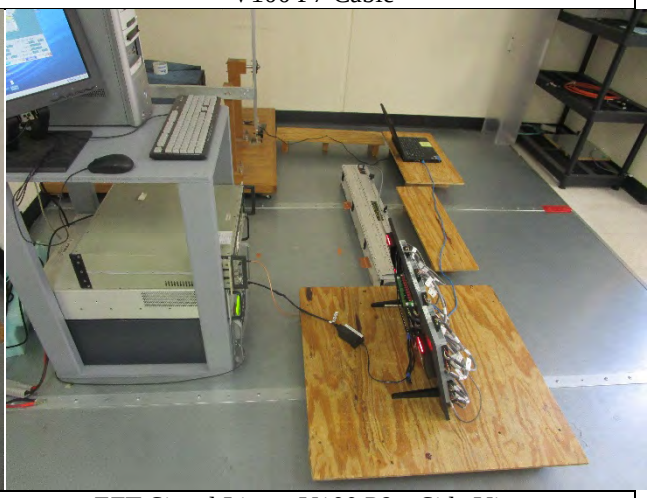
V100 P7 Location



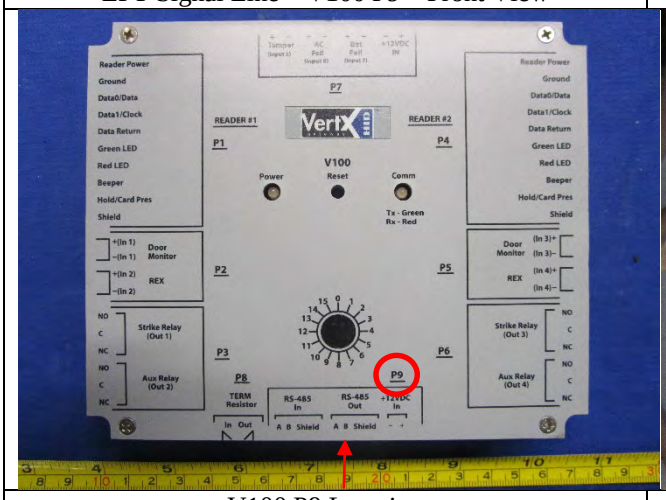
V100 P7 Cable



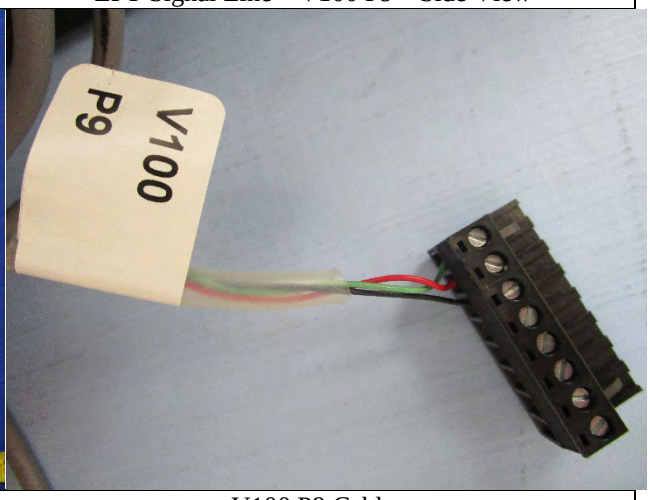
EFT Signal Line – V100 P9 – Front View



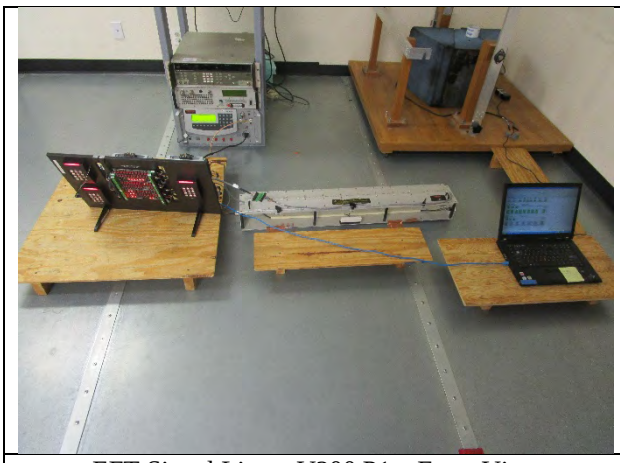
EFT Signal Line – V100 P9 – Side View



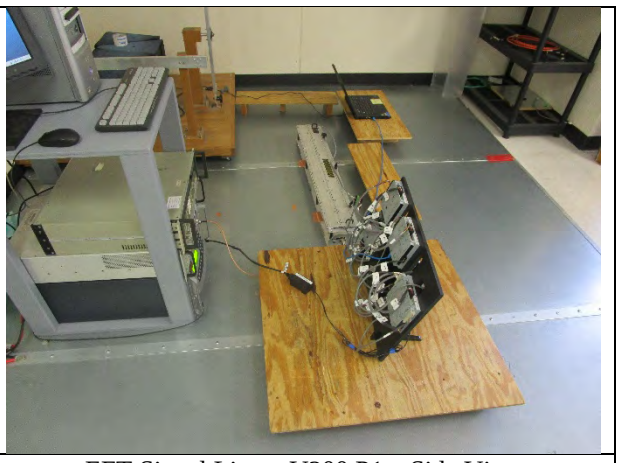
V100 P9 Location



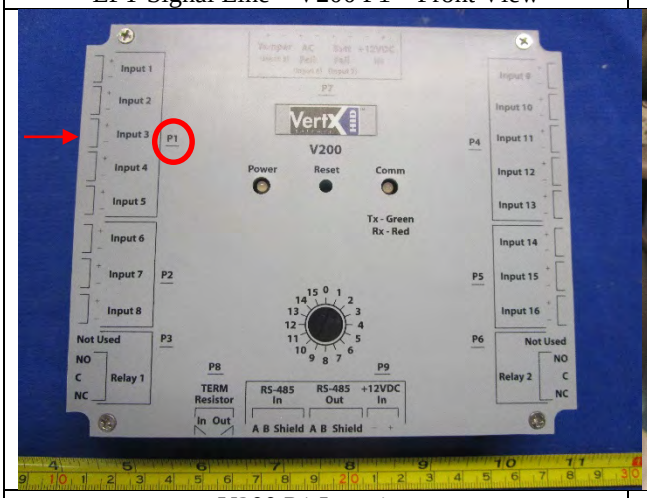
V100 P9 Cable



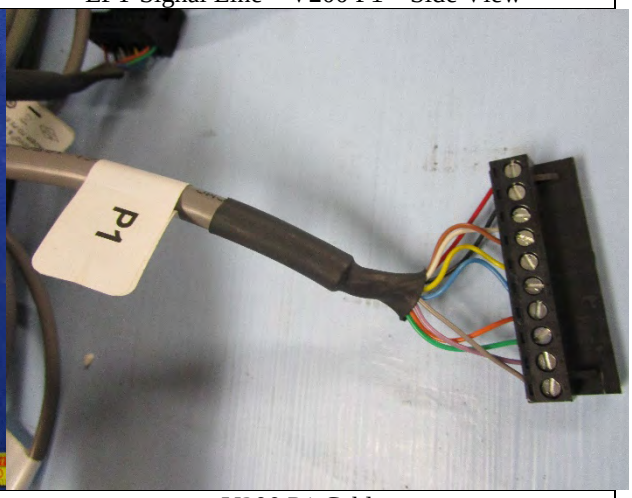
EFT Signal Line – V200 P1 – Front View



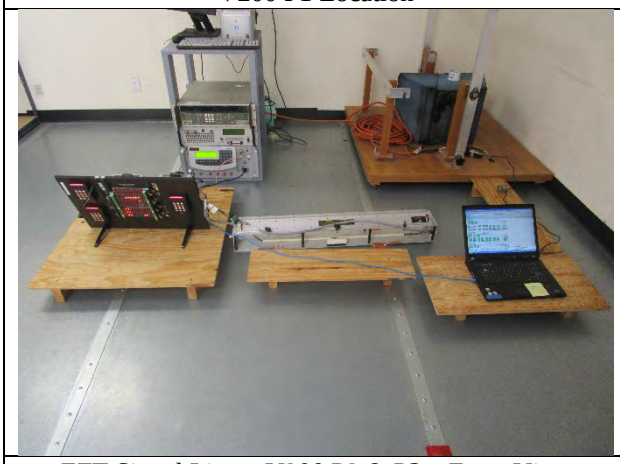
EFT Signal Line – V200 P1 – Side View



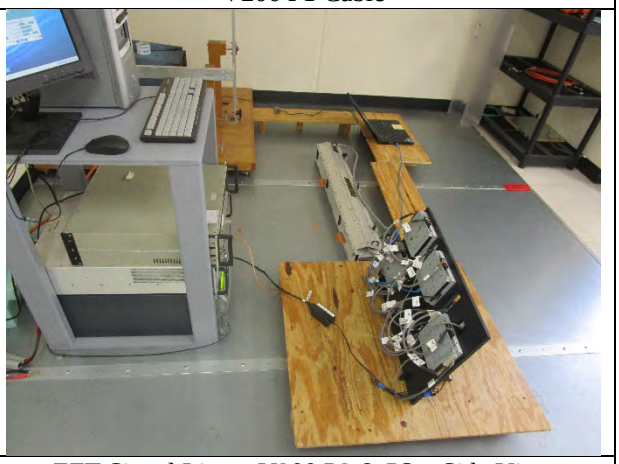
V200 P1 Location



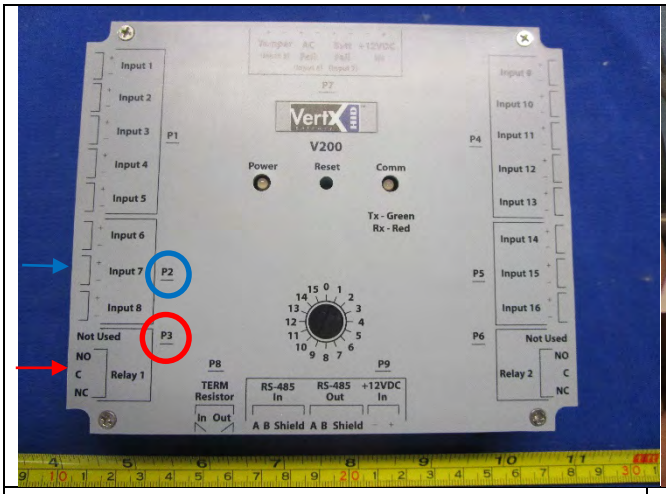
V200 P1 Cable



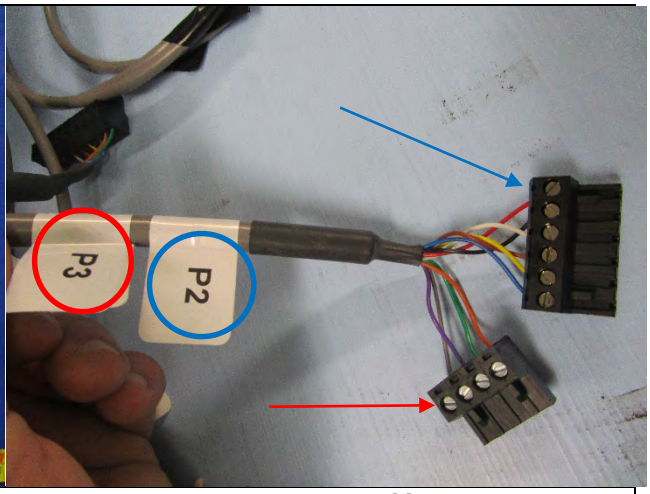
EFT Signal Line – V200 P2 & P3 – Front View



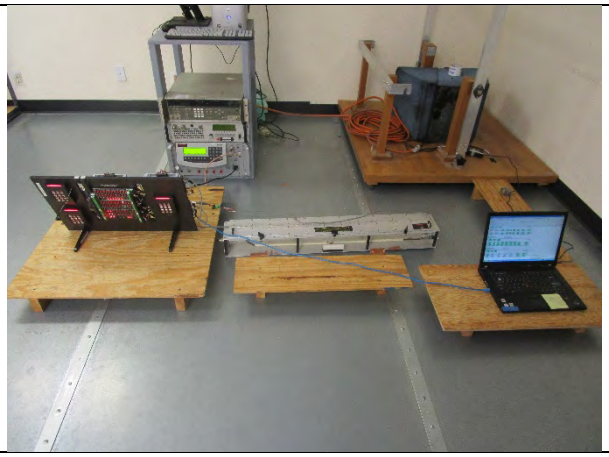
EFT Signal Line – V200 P2 & P3 – Side View



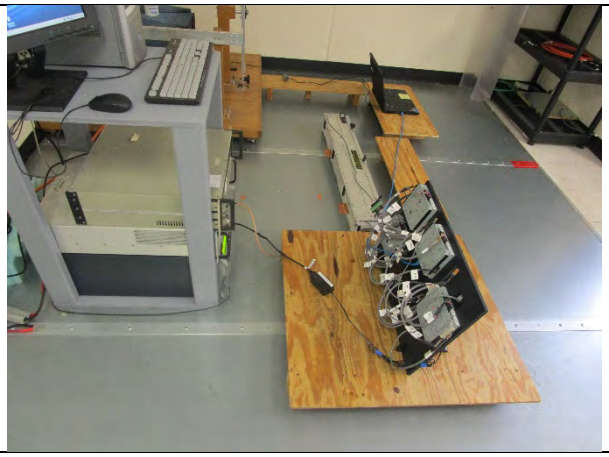
V200 P2 & P3 Location



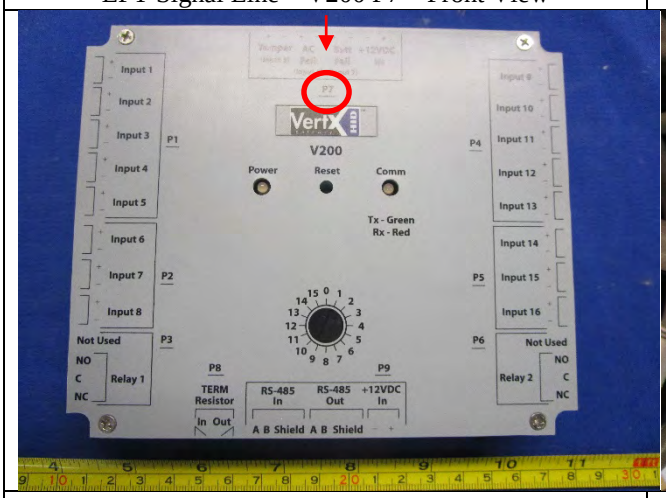
V200 P2 & P3 Cable



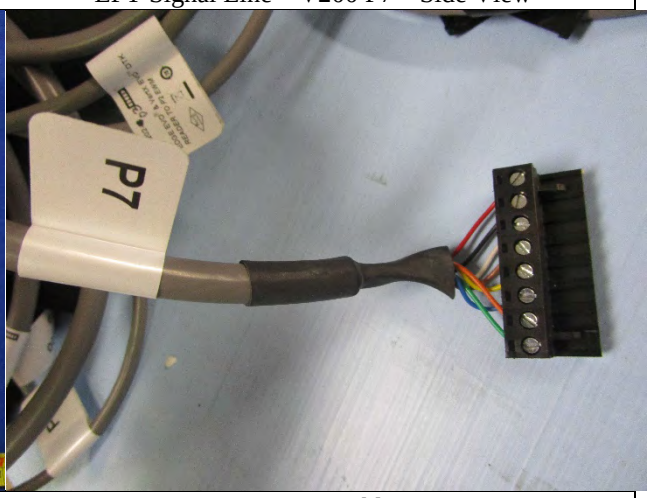
EFT Signal Line – V200 P7 – Front View



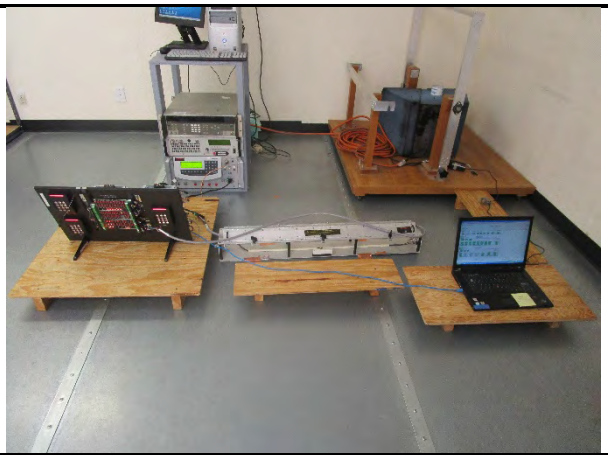
EFT Signal Line – V200 P7 – Side View



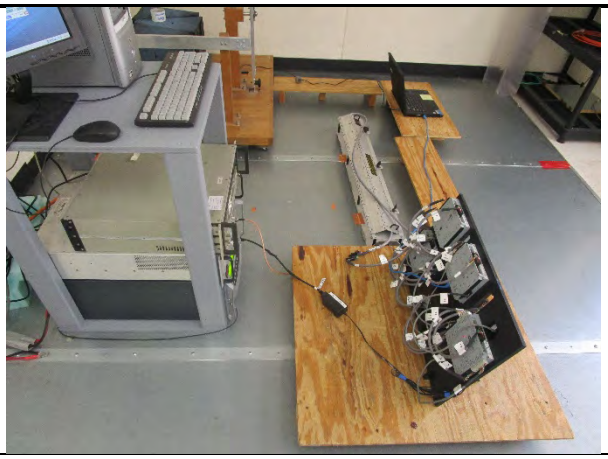
V200 P7 Location



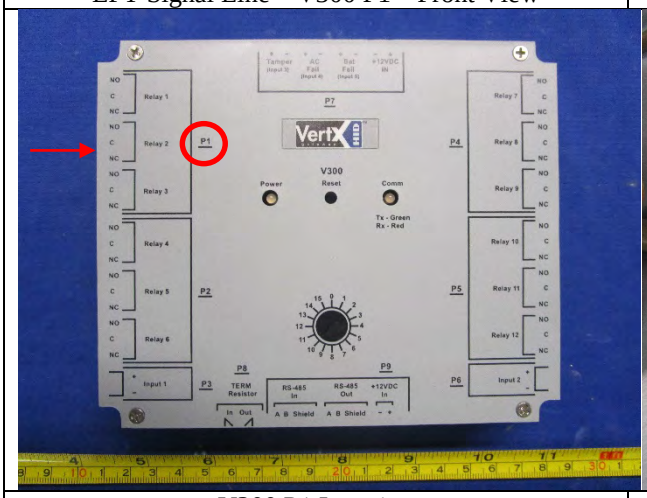
V200 P7 Cable



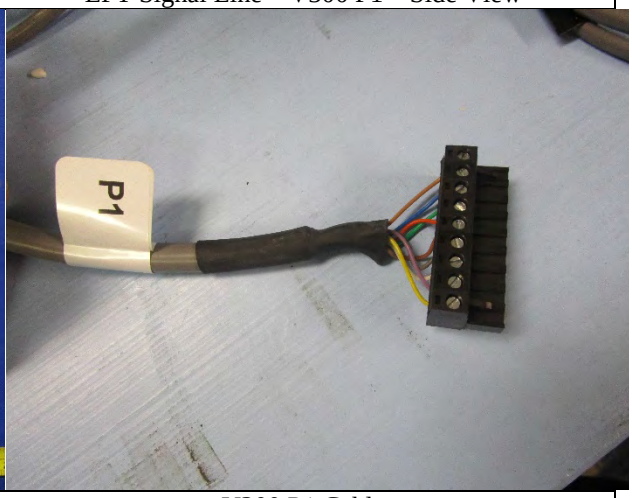
EFT Signal Line – V300 P1 – Front View



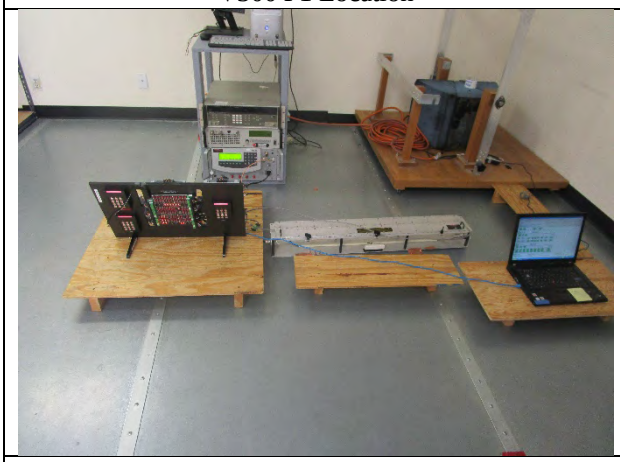
EFT Signal Line – V300 P1 – Side View



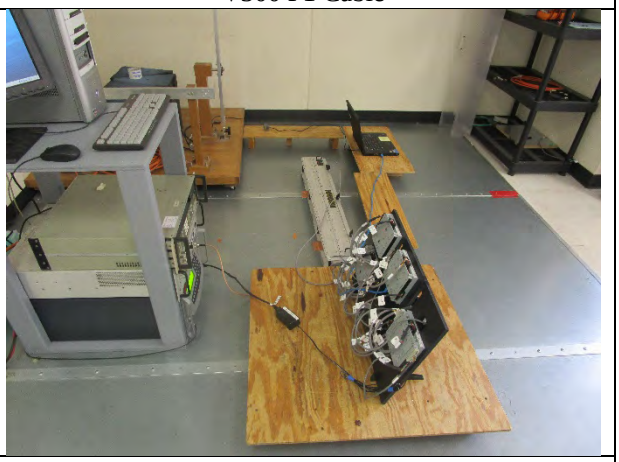
V300 P1 Location



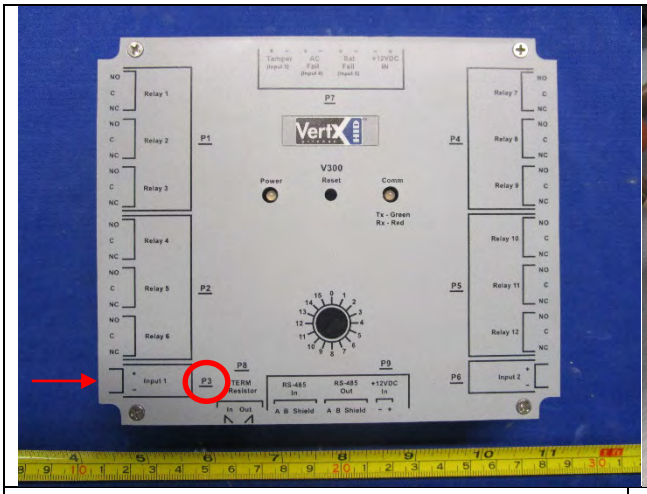
V300 P1 Cable



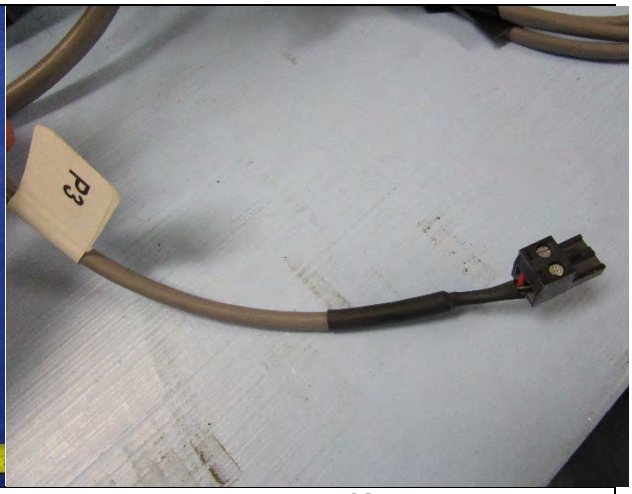
EFT Signal Line – V300 P3 – Front View



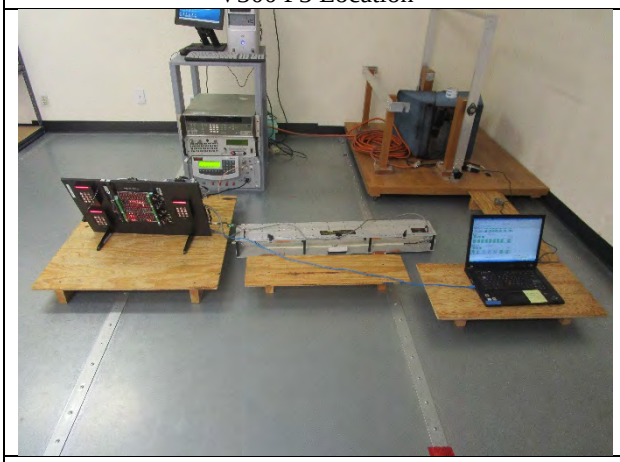
EFT Signal Line – V300 P3 – Side View



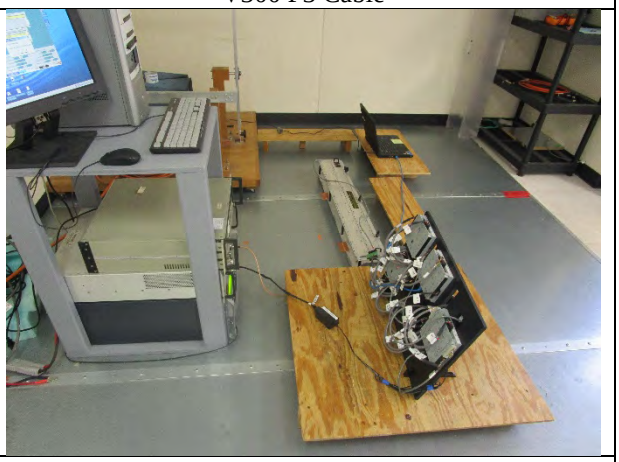
V300 P3 Location



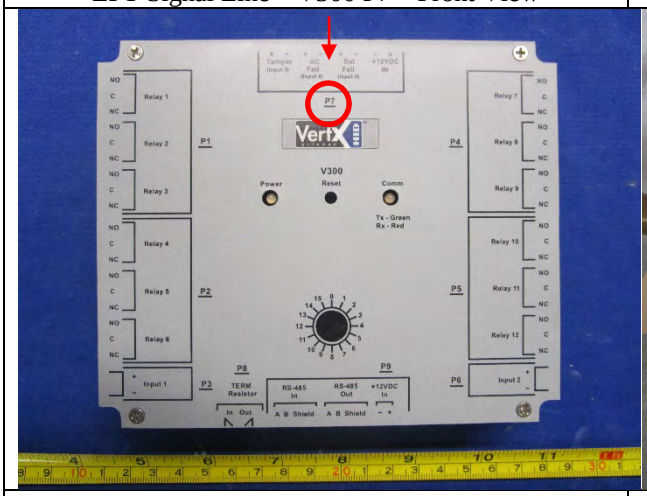
V300 P3 Cable



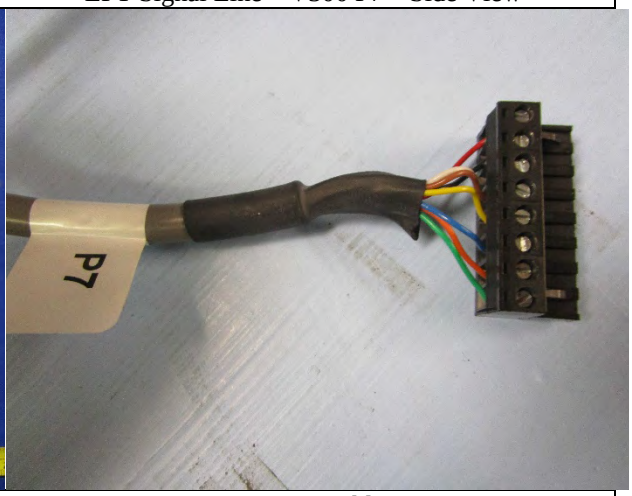
EFT Signal Line – V300 P7 – Front View



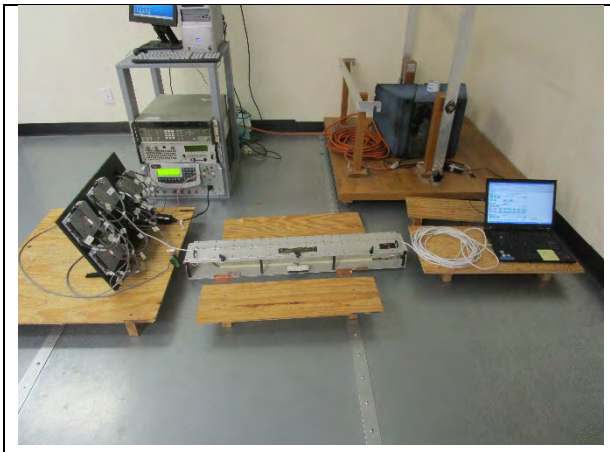
EFT Signal Line – V300 P7 – Side View



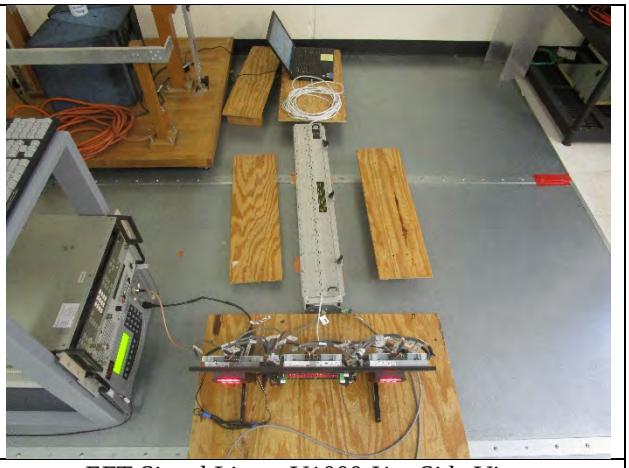
V300 P7 Location



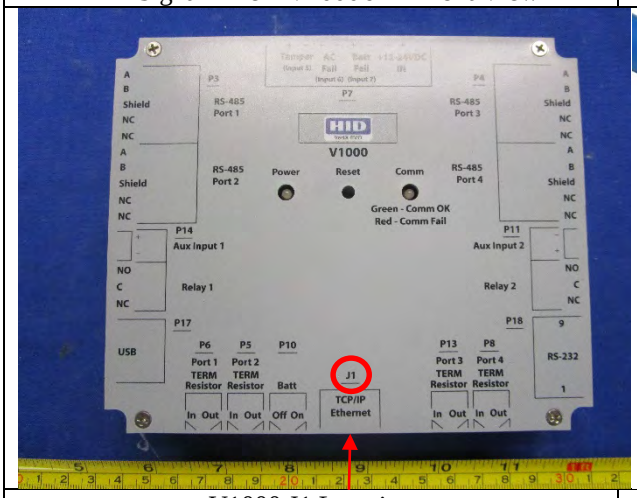
V300 P7 Cable



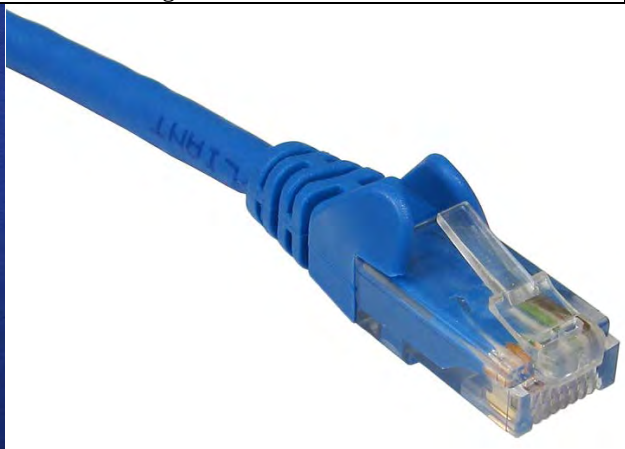
EFT Signal Line – V1000 J1 – Front View



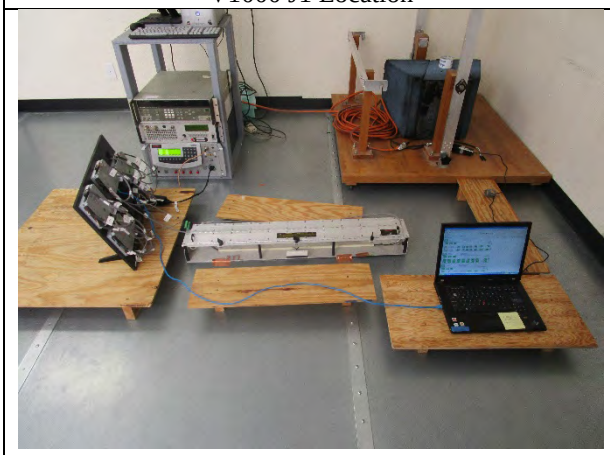
EFT Signal Line – V1000 J1 – Side View



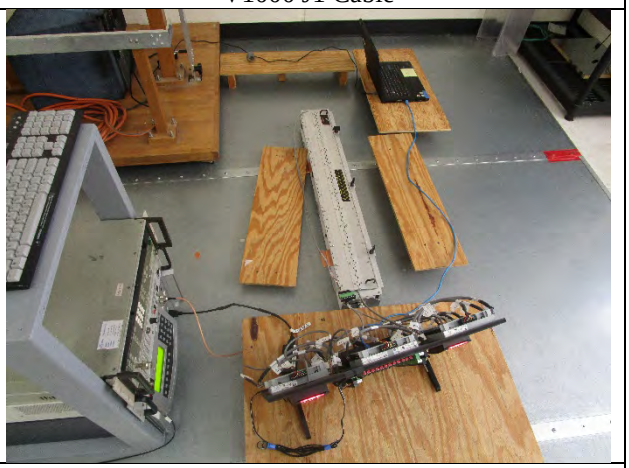
V1000 J1 Location



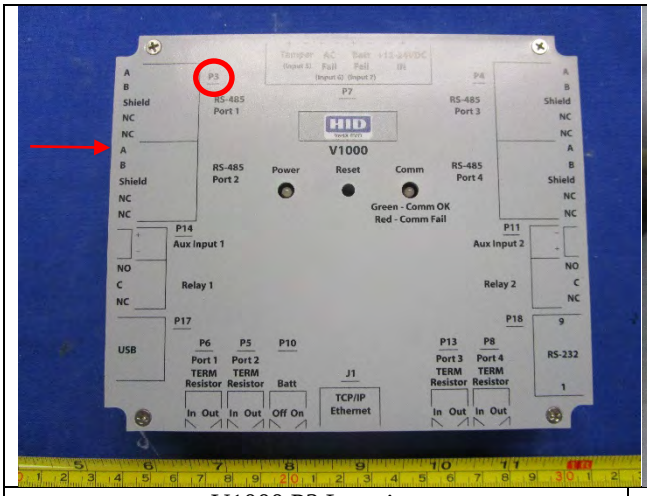
V1000 J1 Cable



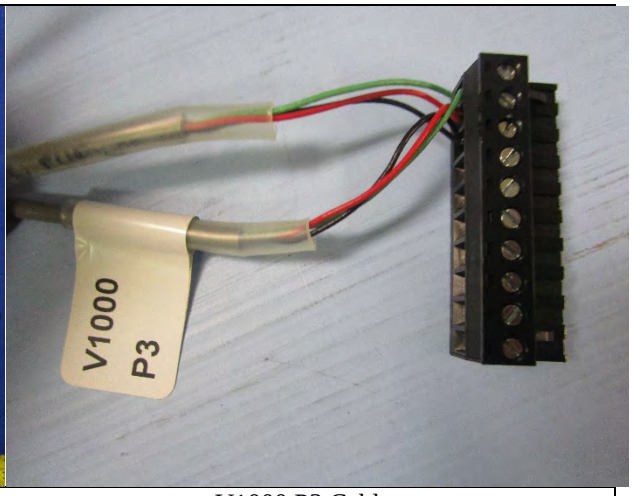
EFT Signal Line – V1000 P3 – Front View



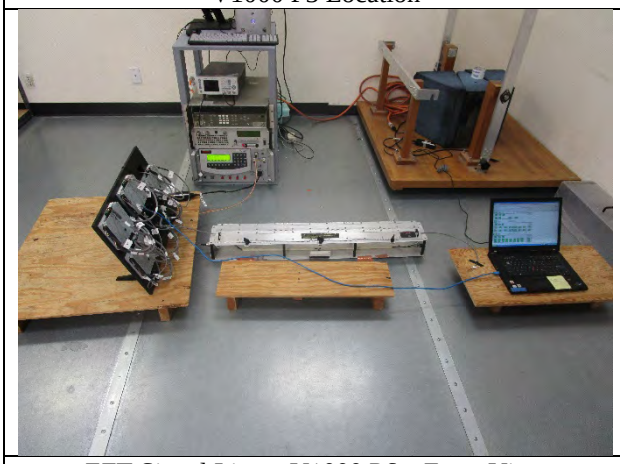
EFT Signal Line – V1000 P3 – Side View



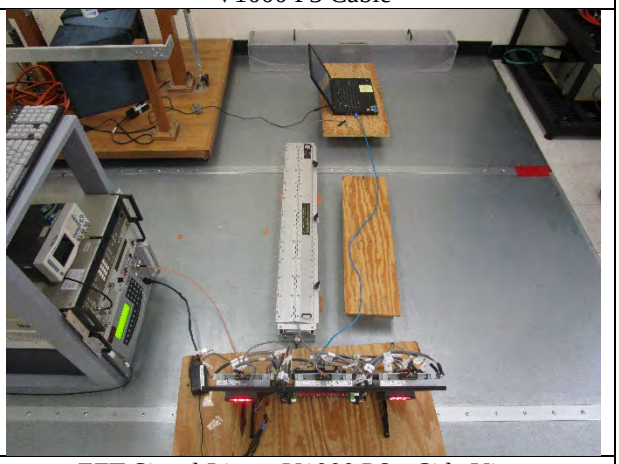
V1000 P3 Location



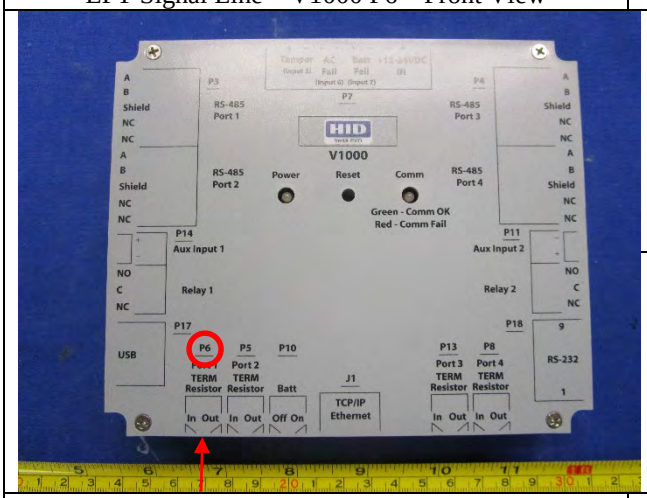
V1000 P3 Cable



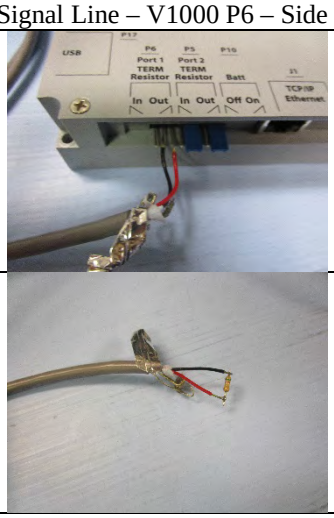
EFT Signal Line – V1000 P6 – Front View



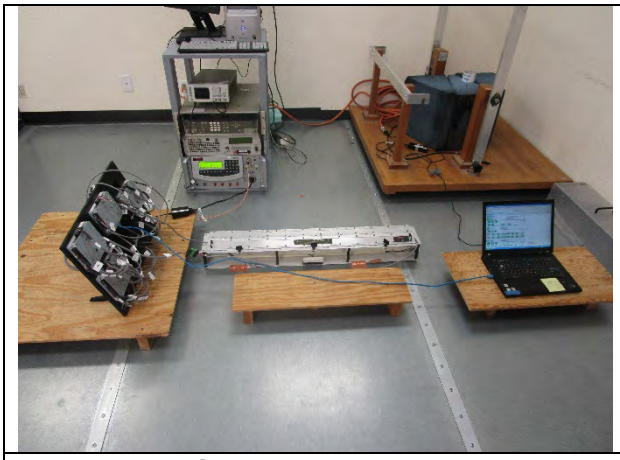
EFT Signal Line – V1000 P6 – Side View



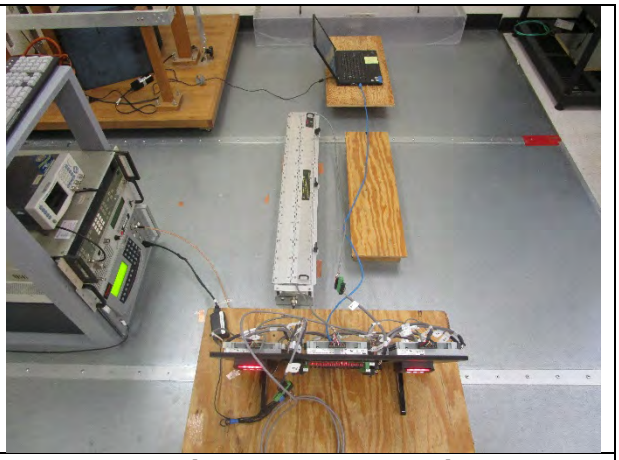
V1000 P6 Location



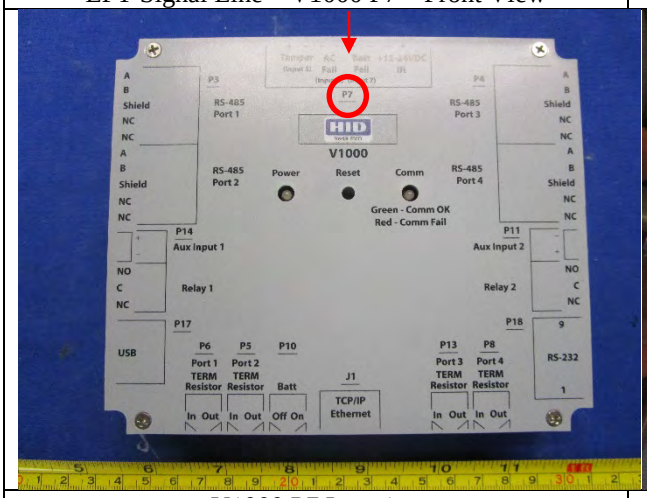
V1000 P6 Cable



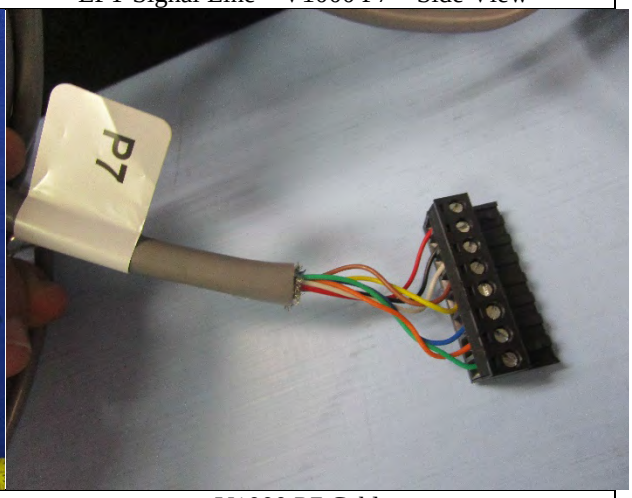
EFT Signal Line – V1000 P7 – Front View



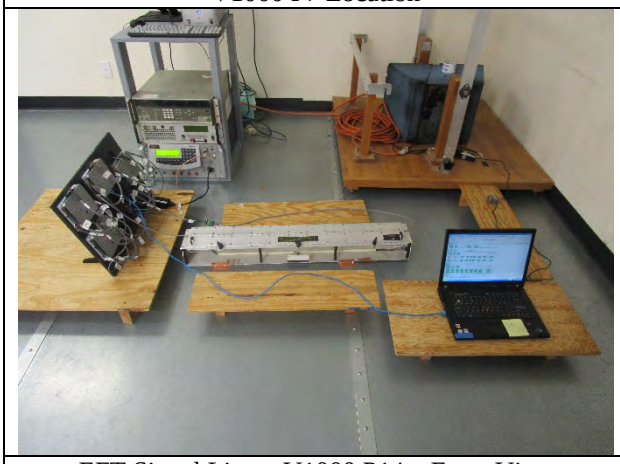
EFT Signal Line – V1000 P7 – Side View



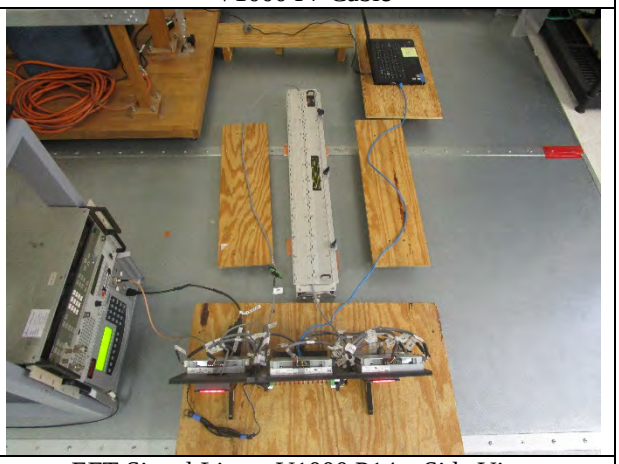
V1000 P7 Location



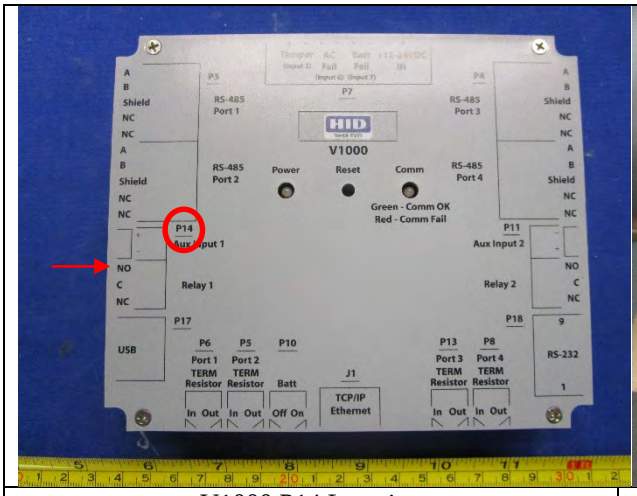
V1000 P7 Cable



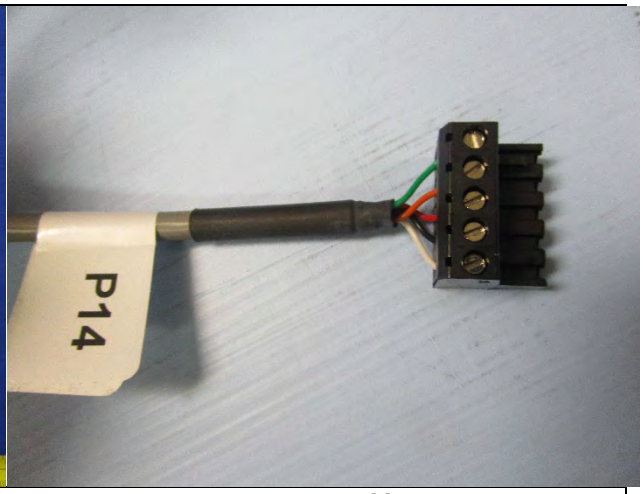
EFT Signal Line – V1000 P14 – Front View



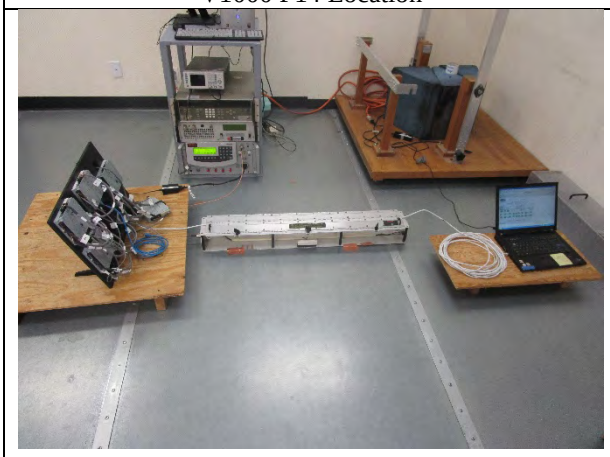
EFT Signal Line – V1000 P14 – Side View



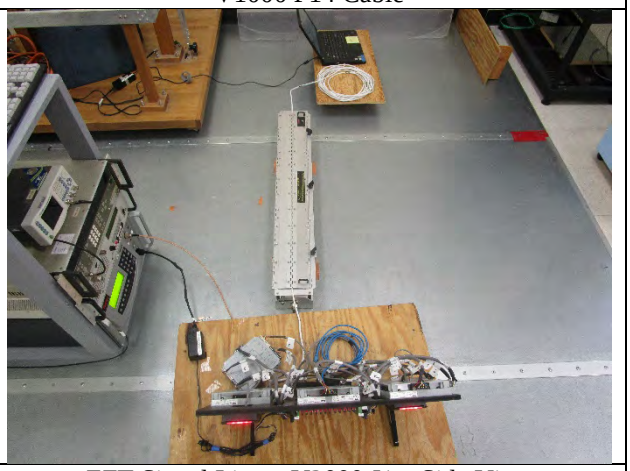
V1000 P14 Location



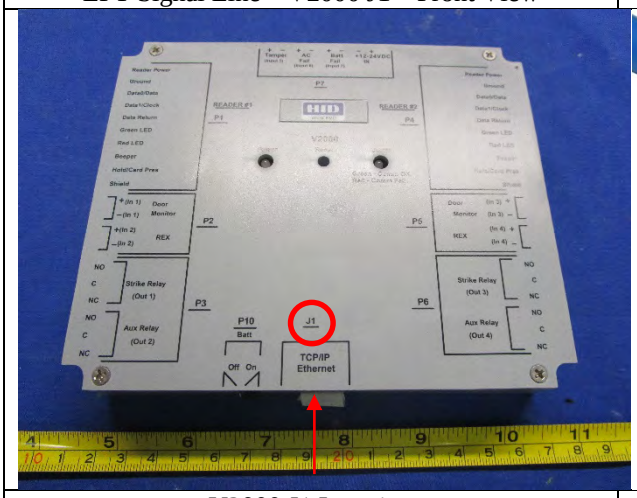
V1000 P14 Cable



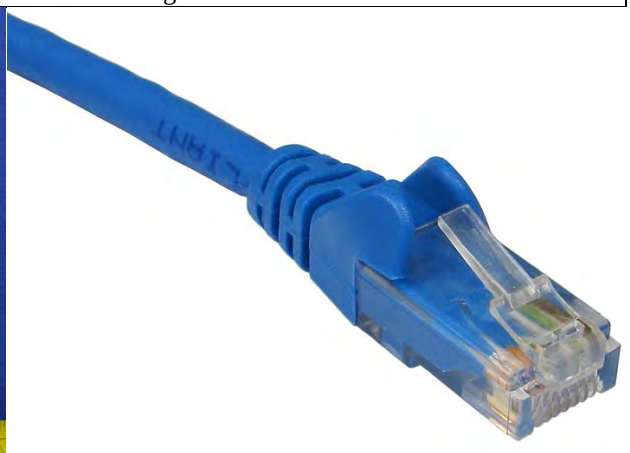
EFT Signal Line – V2000 J1 – Front View



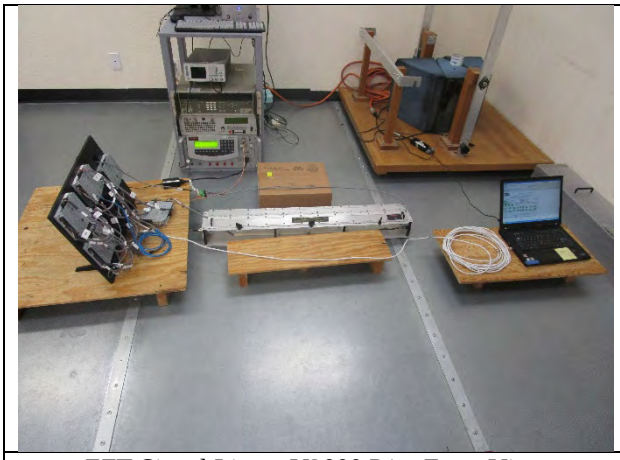
EFT Signal Line – V2000 J1 – Side View



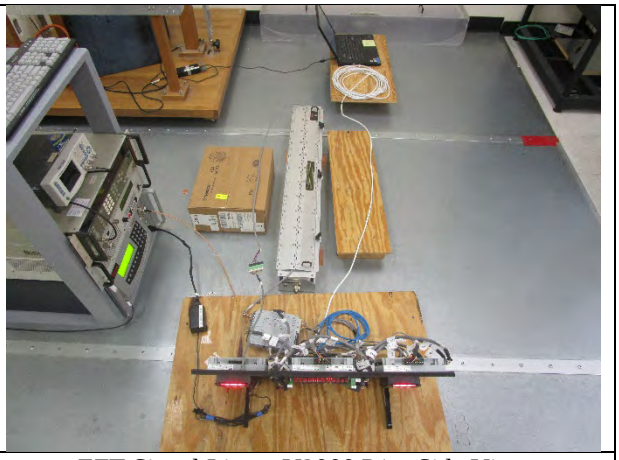
V2000 J1 Location



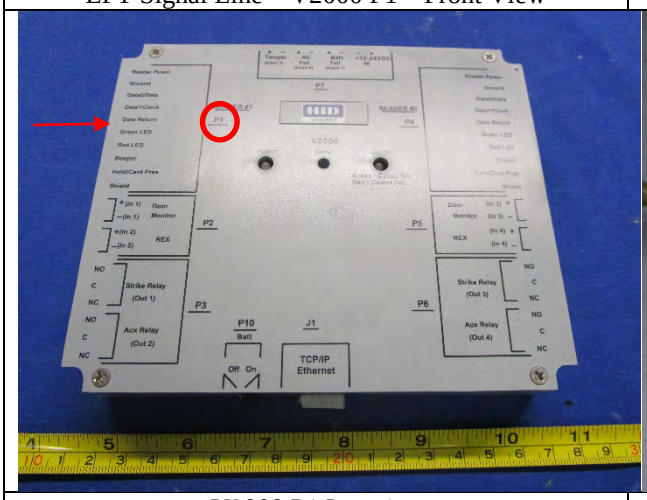
V2000 J1 Cable



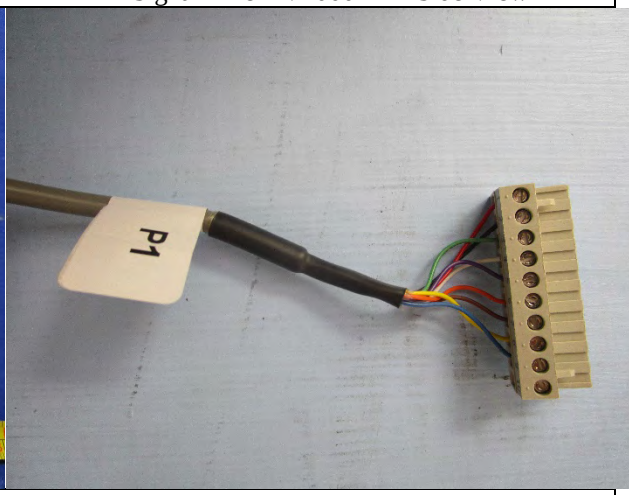
EFT Signal Line – V2000 P1 – Front View



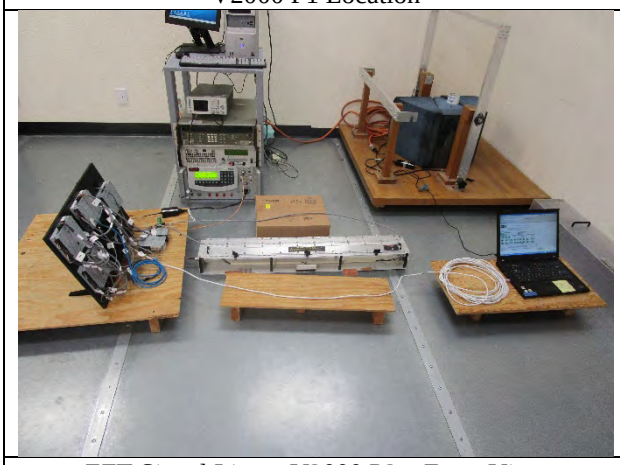
EFT Signal Line – V2000 P1 – Side View



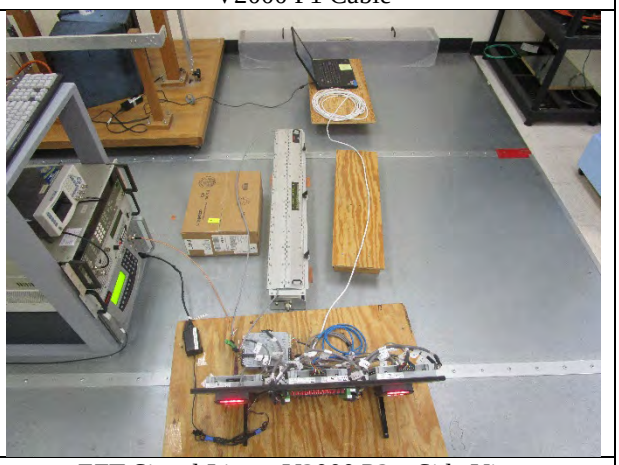
V2000 P1 Location



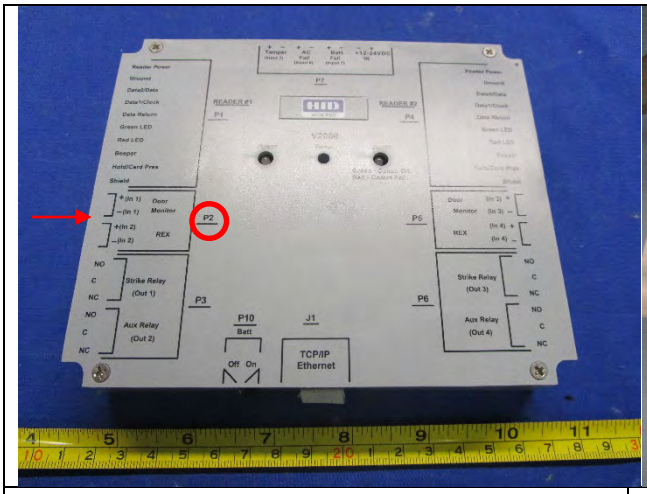
V2000 P1 Cable



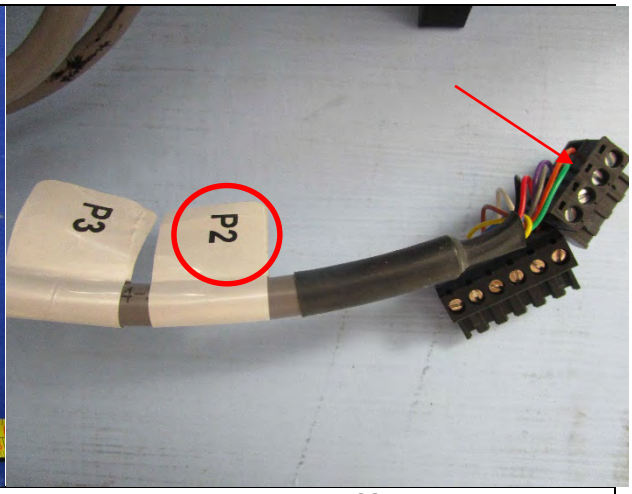
EFT Signal Line – V2000 P2 – Front View



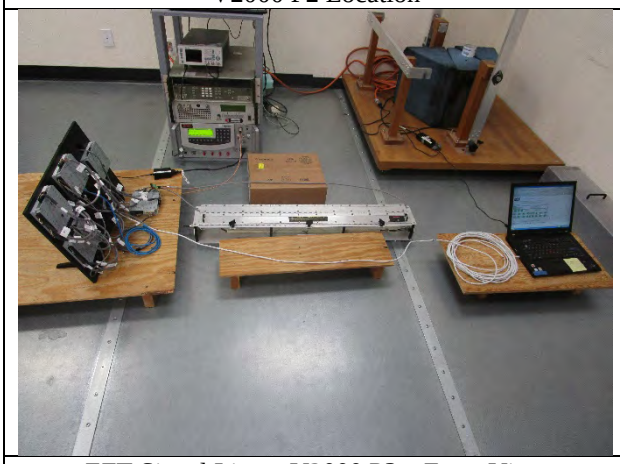
EFT Signal Line – V2000 P2 – Side View



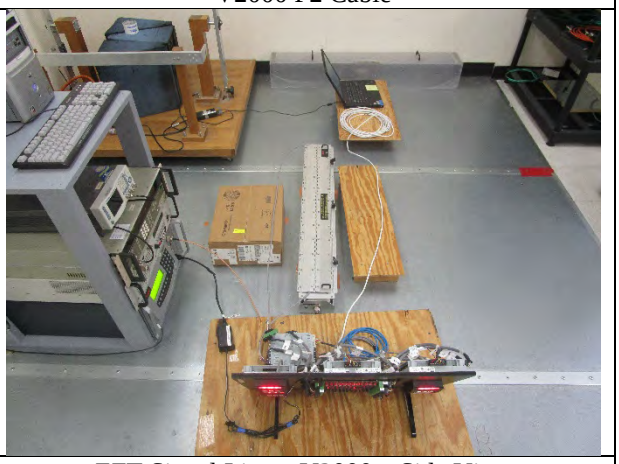
V2000 P2 Location



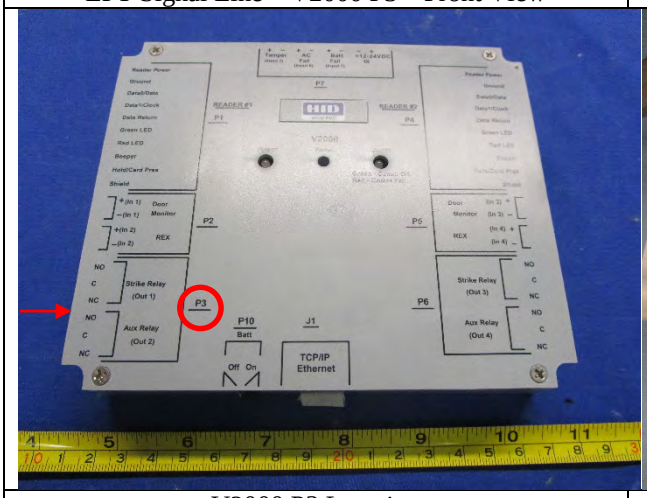
V2000 P2 Cable



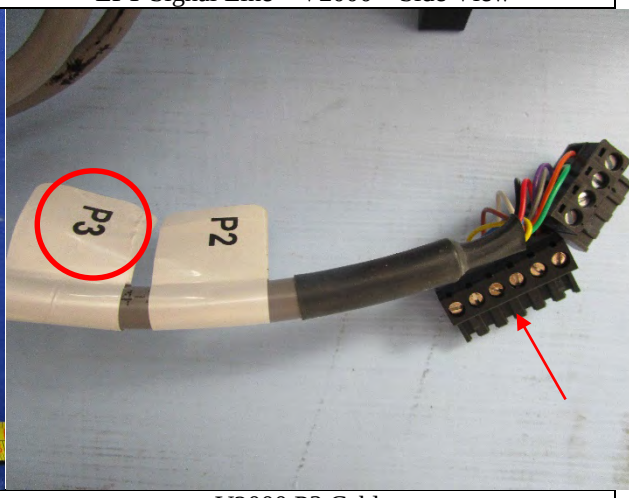
EFT Signal Line – V2000 P3 – Front View



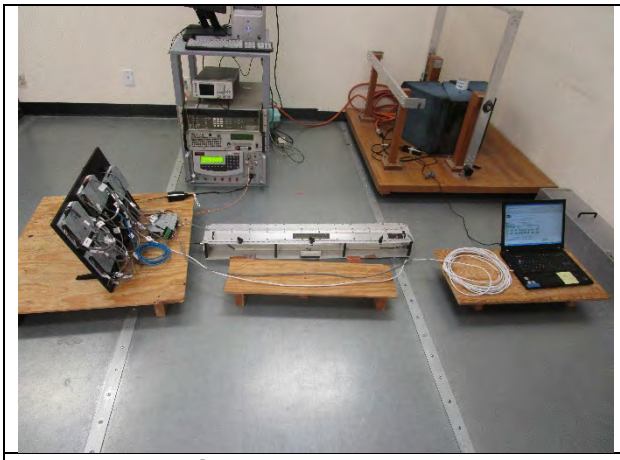
EFT Signal Line – V2000 – Side View



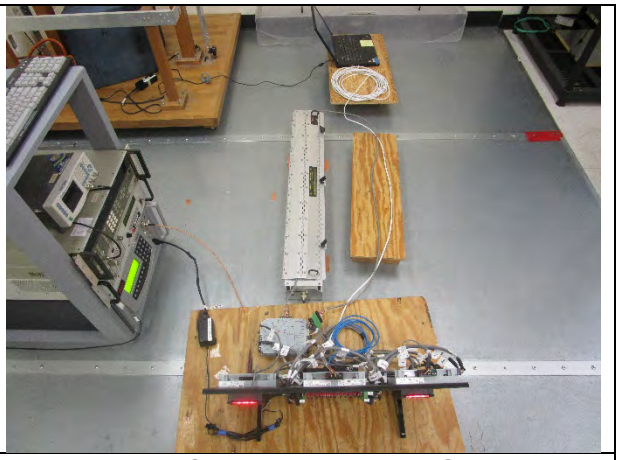
V2000 P3 Location



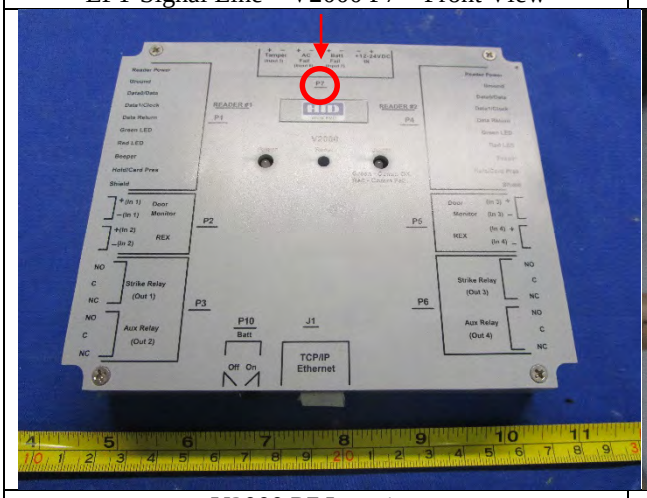
V2000 P3 Cable



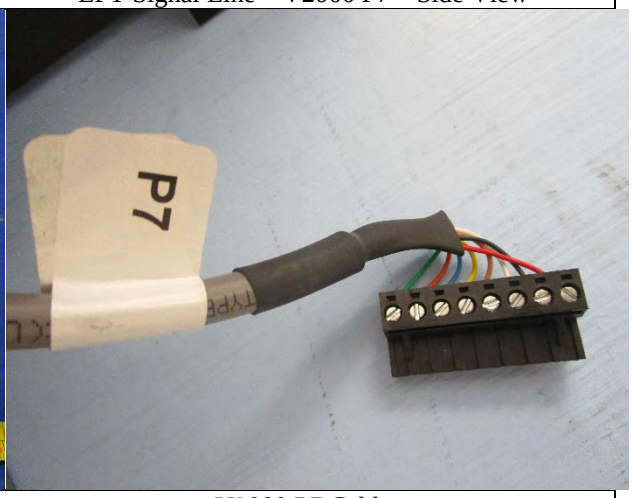
EFT Signal Line – V2000 P7 – Front View



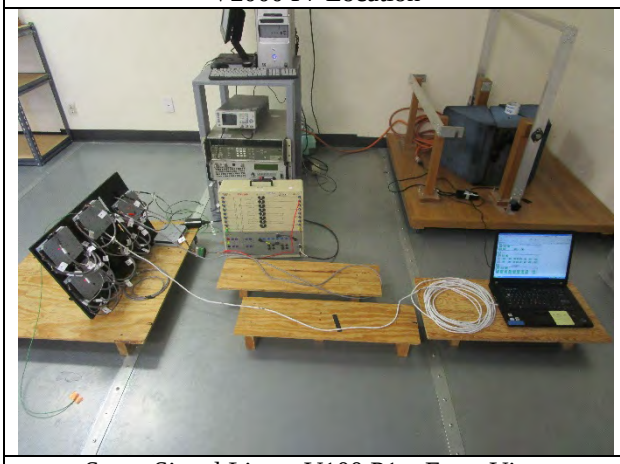
EFT Signal Line – V2000 P7 – Side View



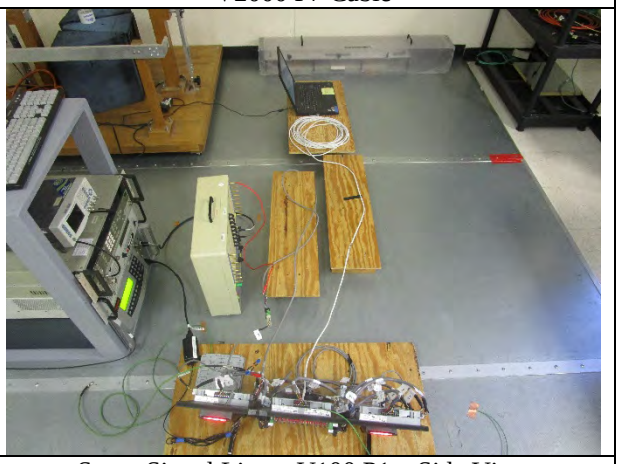
V2000 P7 Location



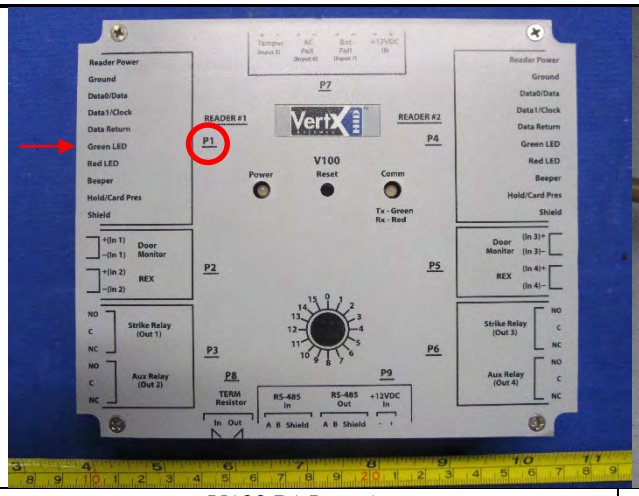
V2000 P7 Cable



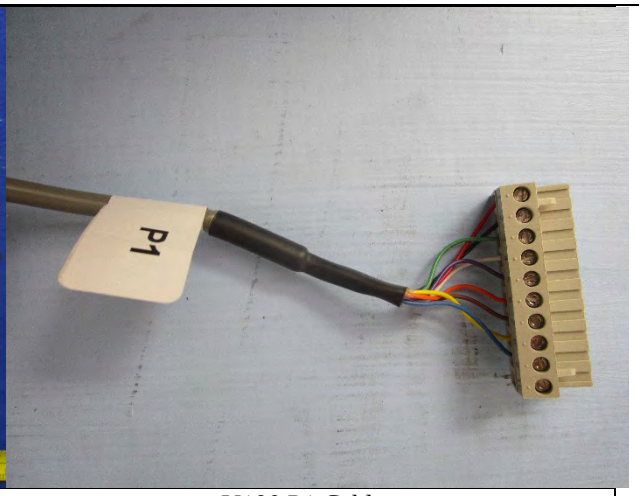
Surge Signal Line – V100 P1 – Front View



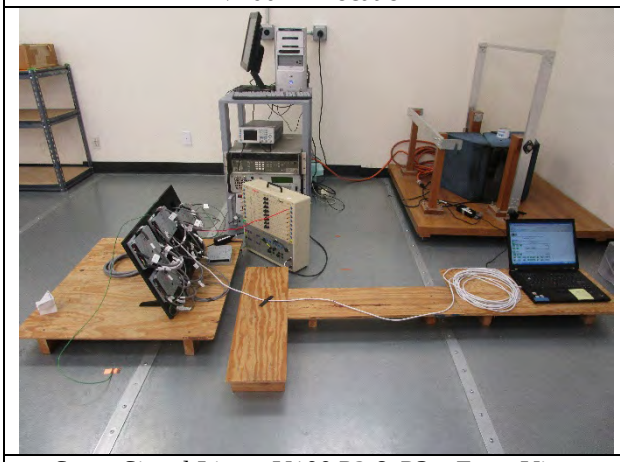
Surge Signal Line – V100 P1 – Side View



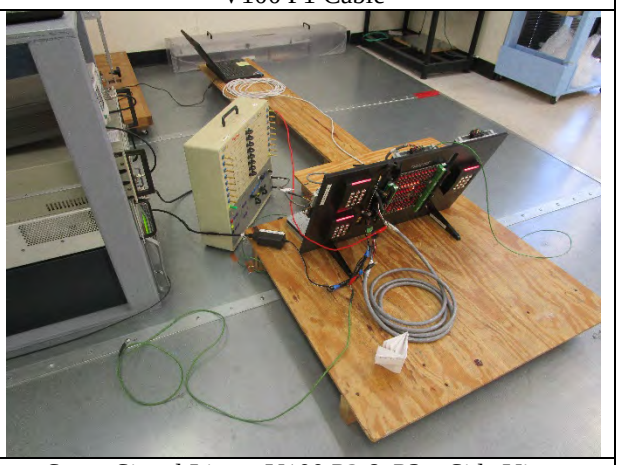
V100 P1 Location



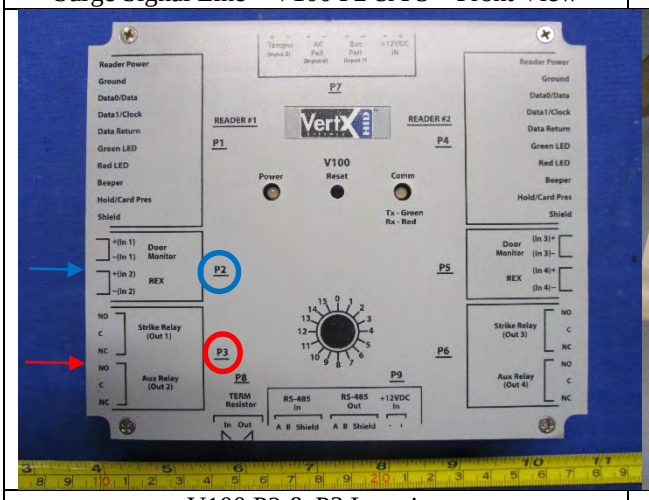
V100 P1 Cable



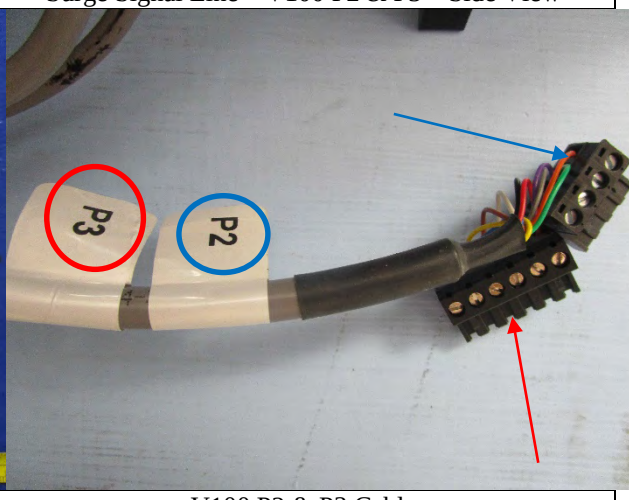
Surge Signal Line – V100 P2 & P3 – Front View



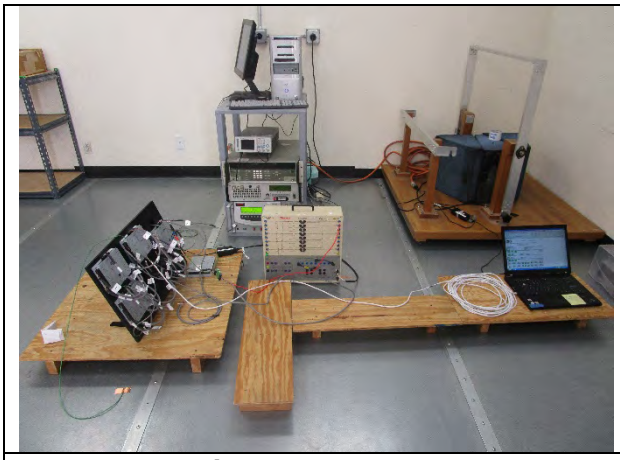
Surge Signal Line – V100 P2 & P3 – Side View



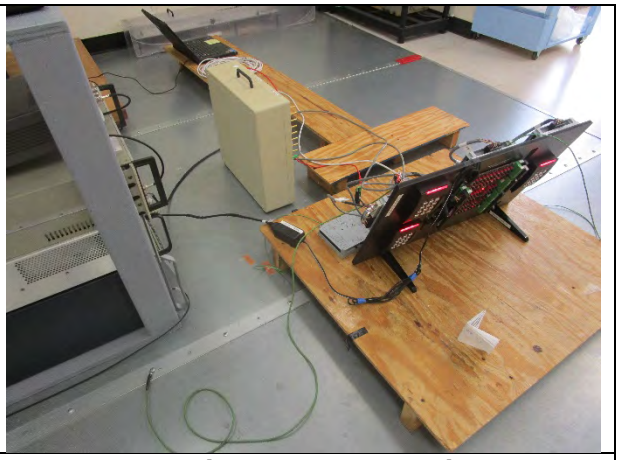
V100 P2 & P3 Location



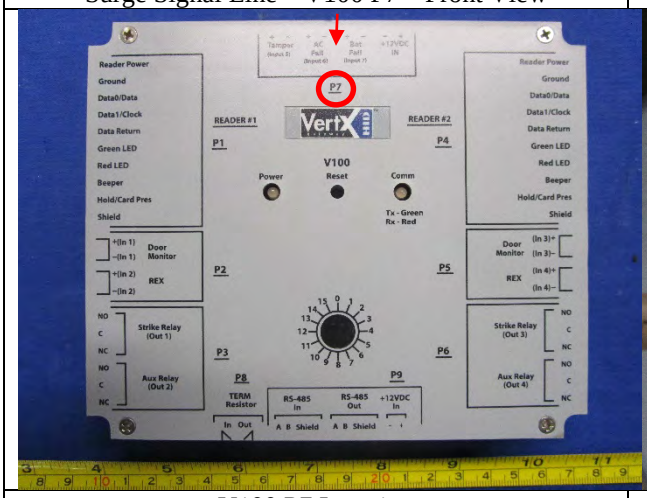
V100 P2 & P3 Cable



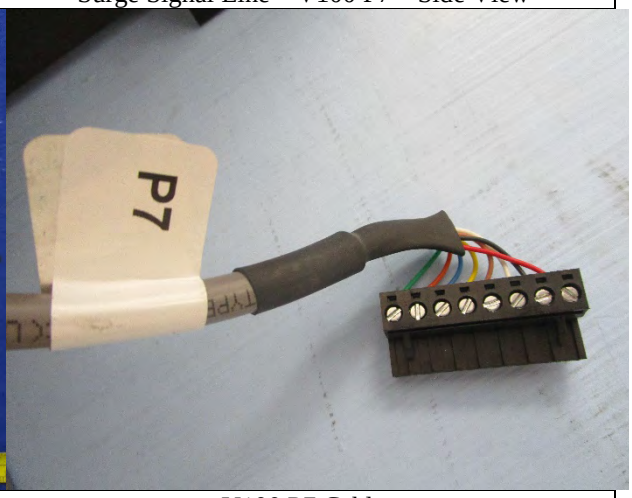
Surge Signal Line – V100 P7 – Front View



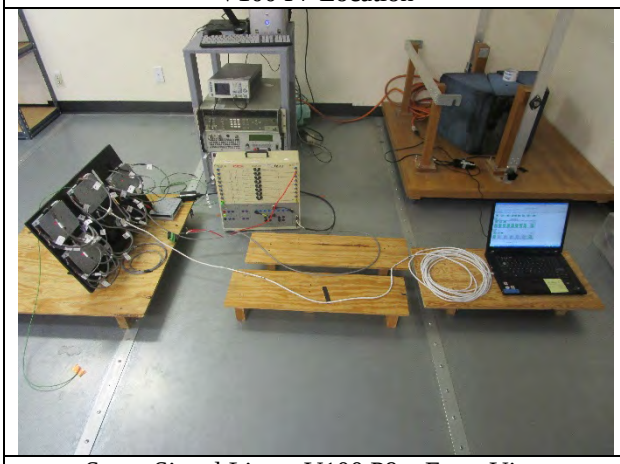
Surge Signal Line – V100 P7 – Side View



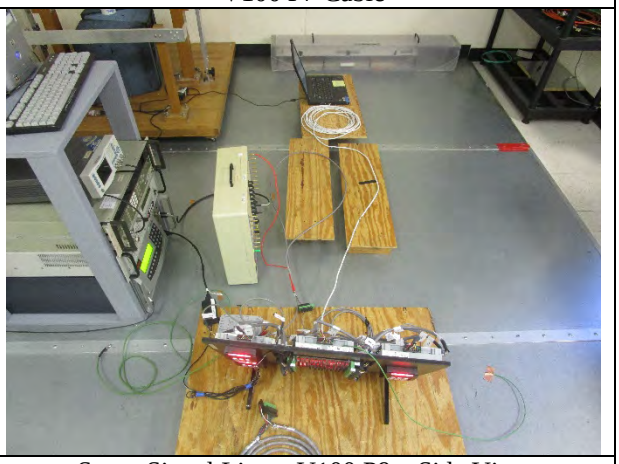
V100 P7 Location



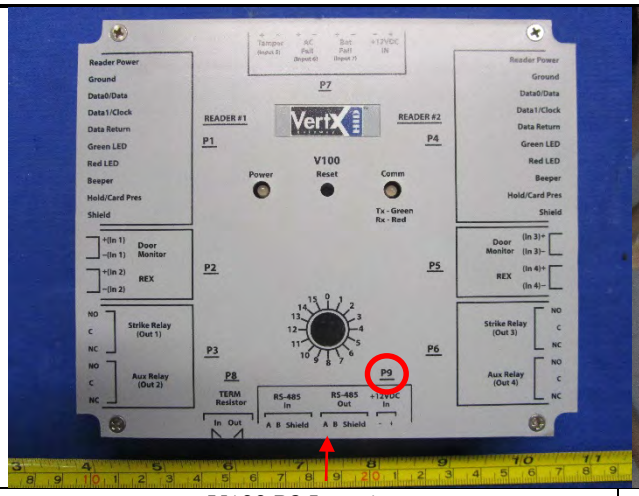
V100 P7 Cable



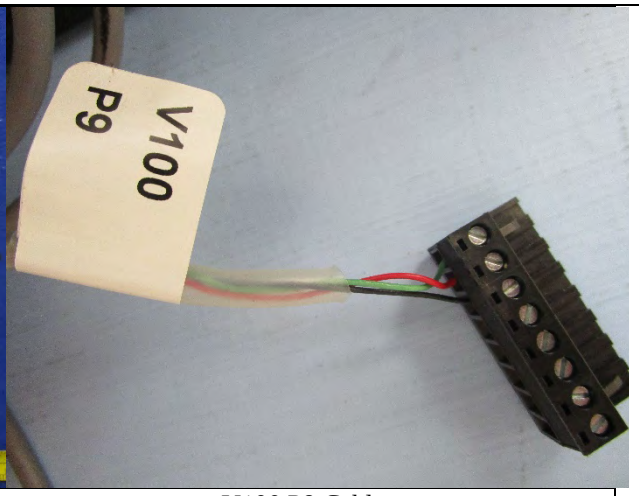
Surge Signal Line – V100 P9 – Front View



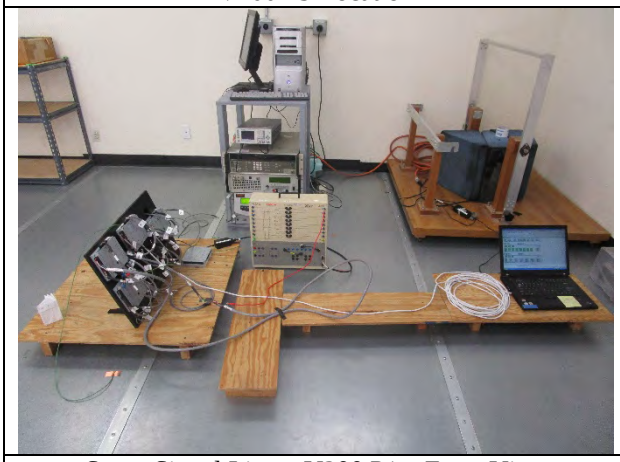
Surge Signal Line – V100 P9 – Side View



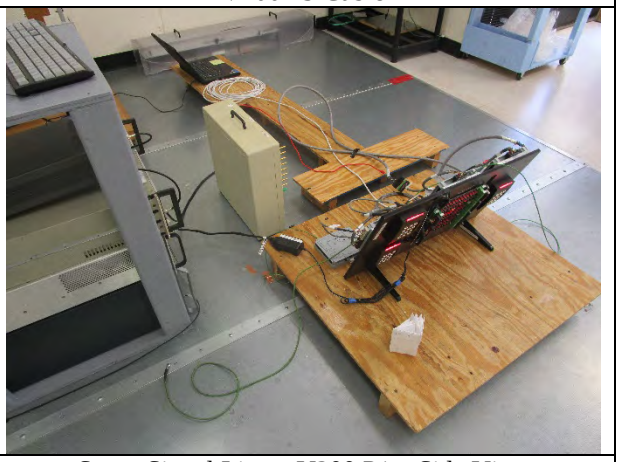
V100 P9 Location



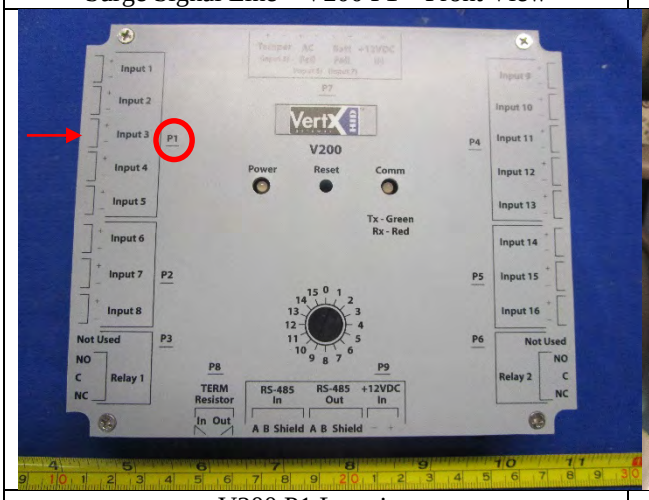
V100 P9 Cable



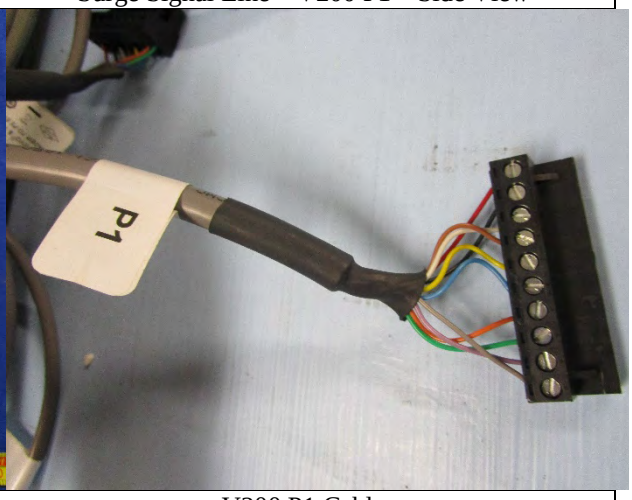
Surge Signal Line – V200 P1 – Front View



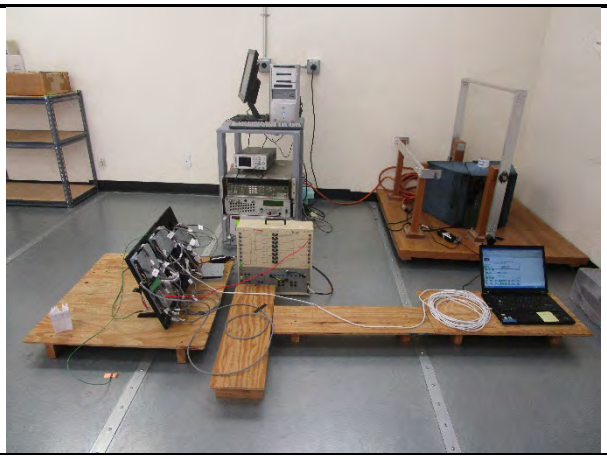
Surge Signal Line – V200 P1 – Side View



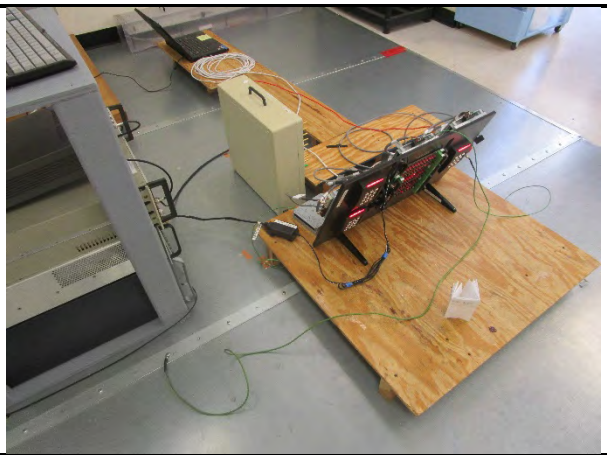
V200 P1 Location



V200 P1 Cable

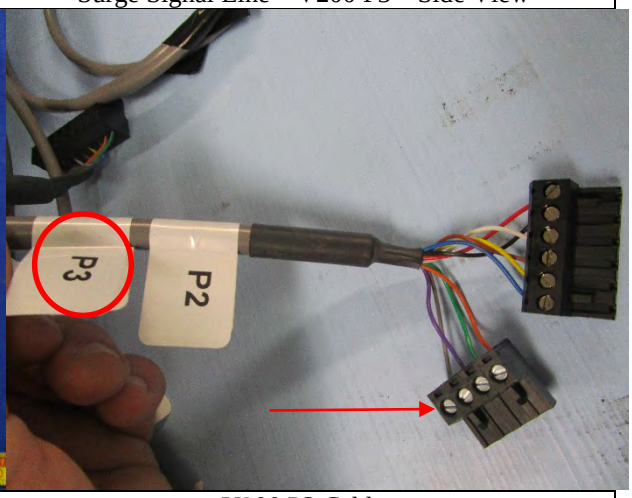


Surge Signal Line – V200 P3 – Front View

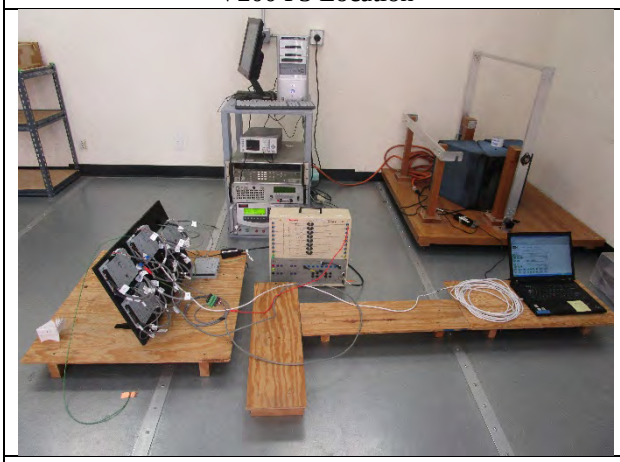


Surge Signal Line – V200 P3 – Side View

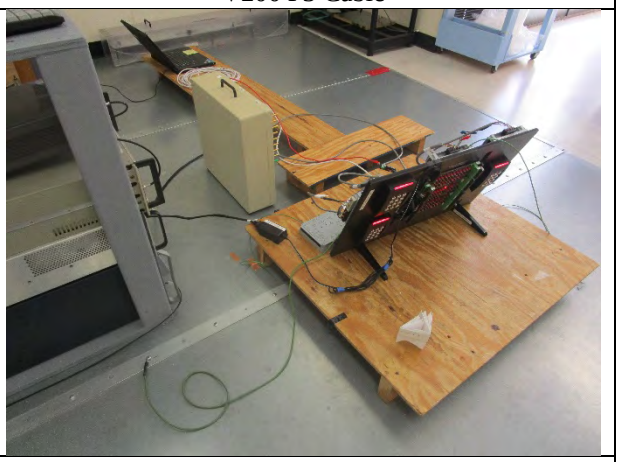
V200 P3 Location



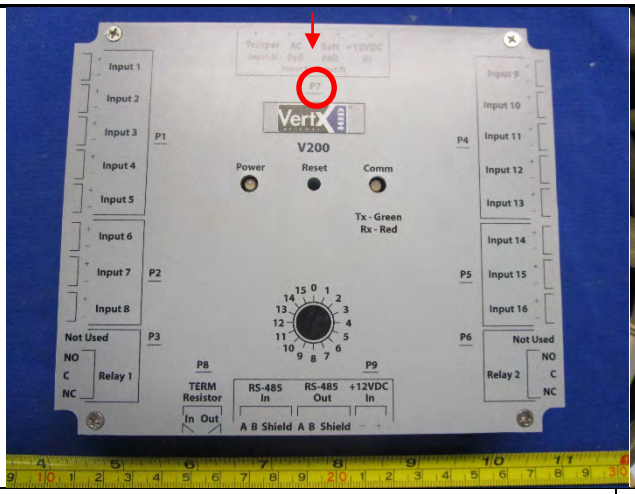
V200 P3 Cable



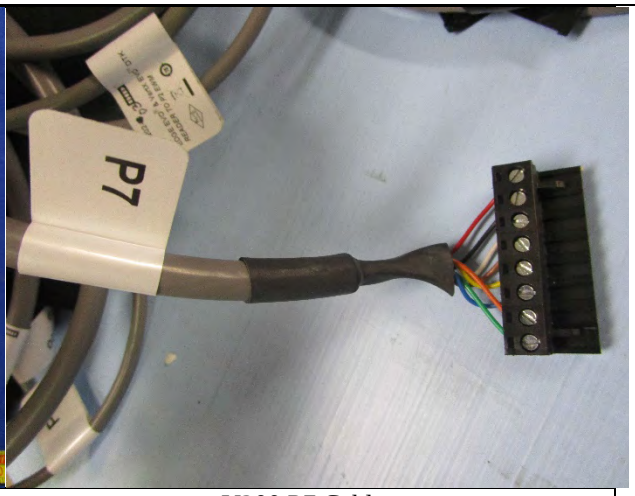
Surge Signal Line – V200 P7 – Front View



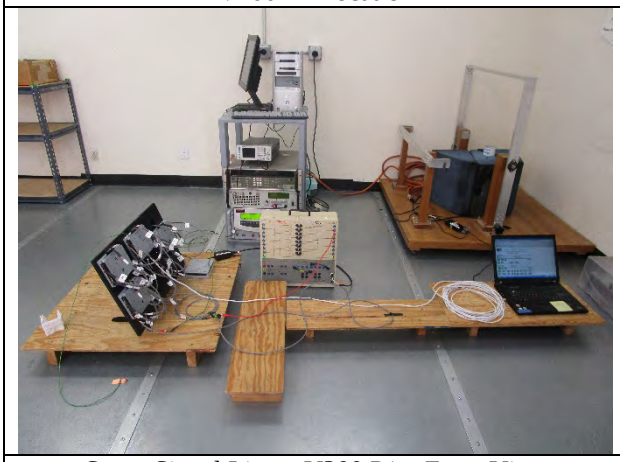
Surge Signal Line – V200 P7 – Side View



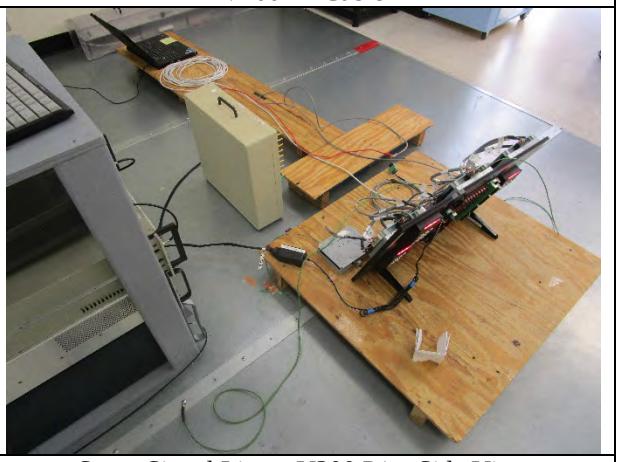
V200 P7 Location



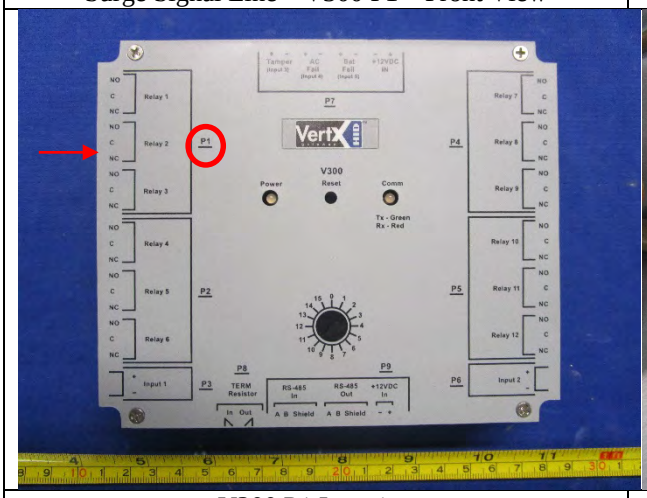
V200 P7 Cable



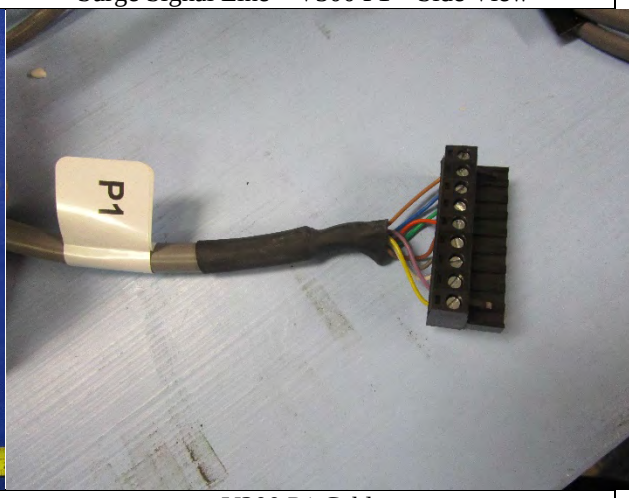
Surge Signal Line – V300 P1 – Front View



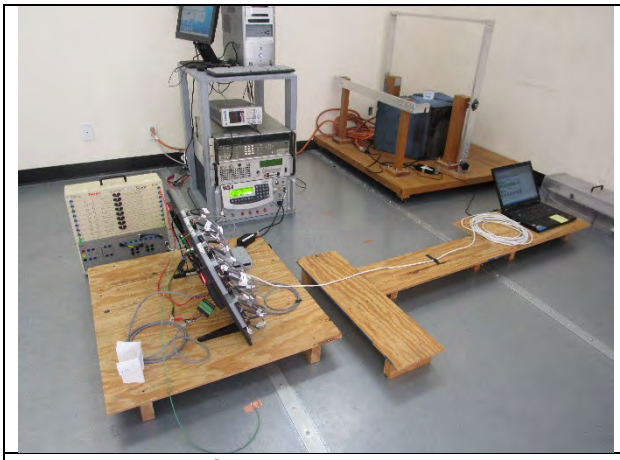
Surge Signal Line – V300 P1 – Side View



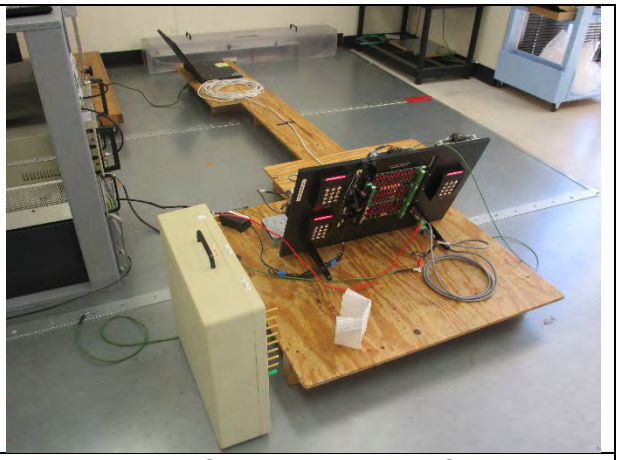
V300 P1 Location



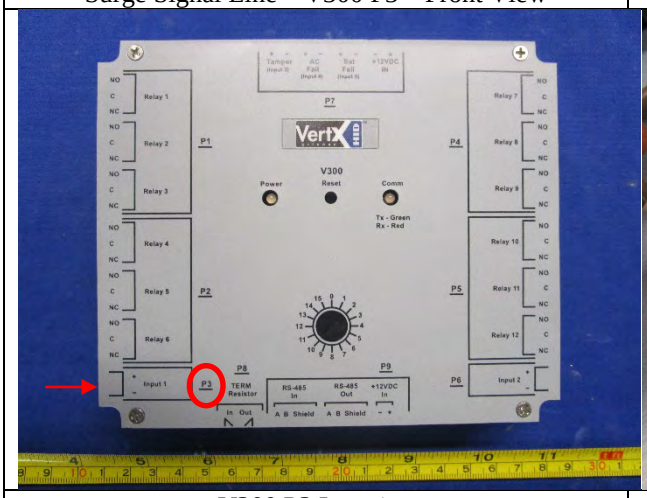
V300 P1 Cable



Surge Signal Line – V300 P3 – Front View

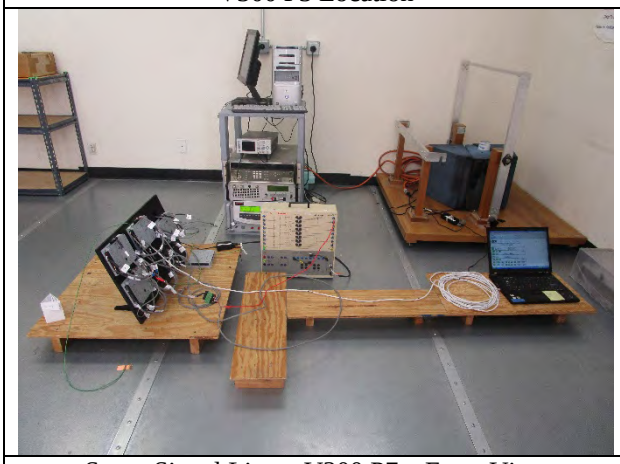


Surge Signal Line – V300 P3 – Side View

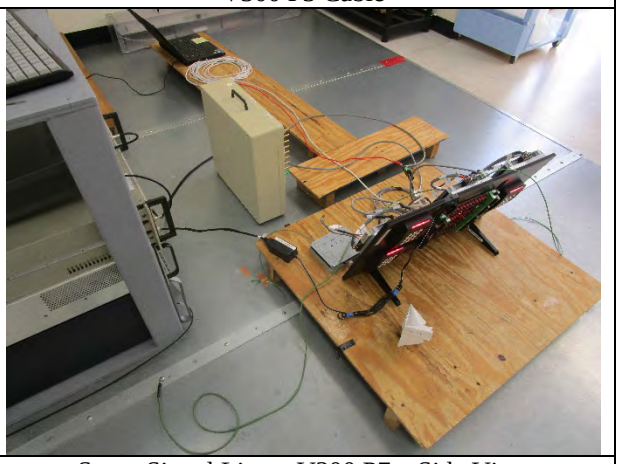


V300 P3 Location

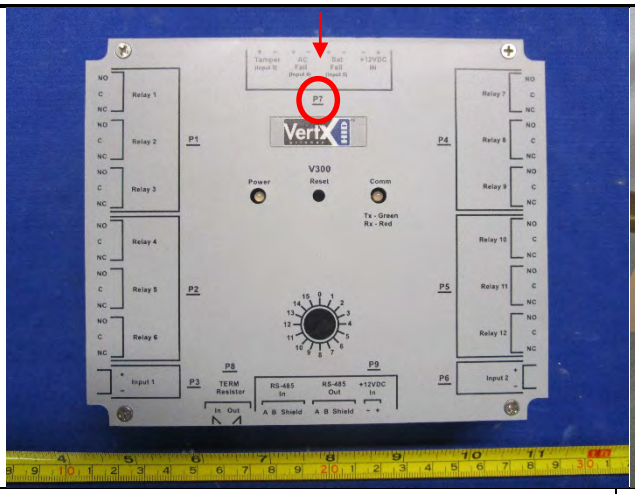
V300 P3 Cable



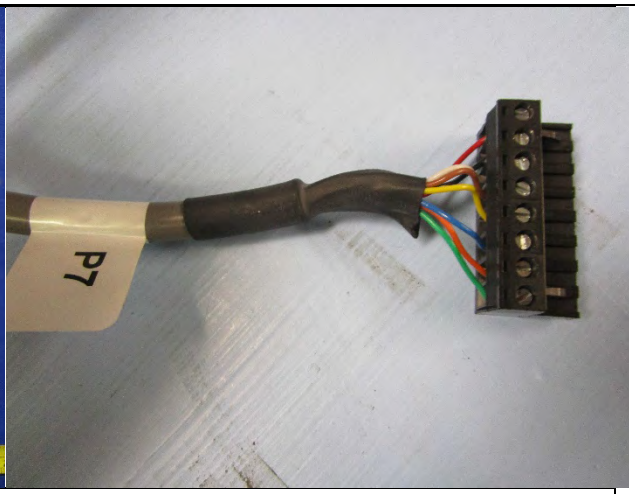
Surge Signal Line – V300 P7 – Front View



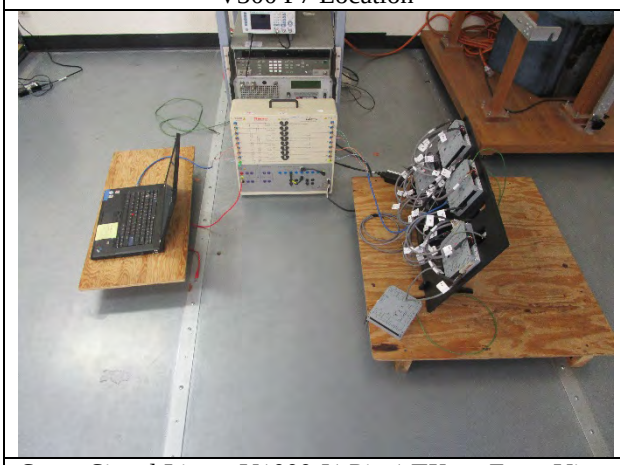
Surge Signal Line – V300 P7 – Side View



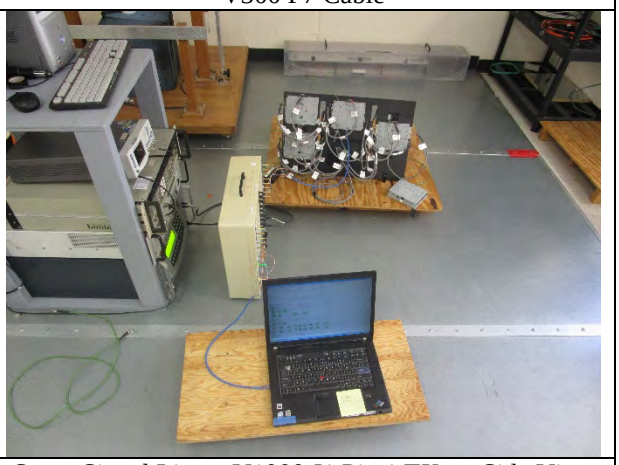
V300 P7 Location



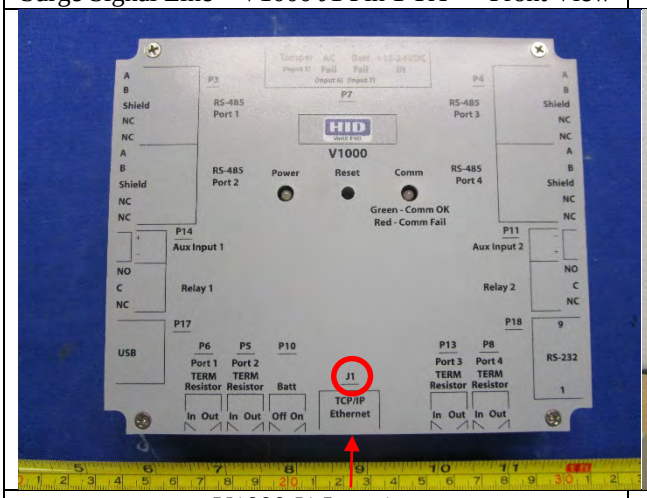
V300 P7 Cable



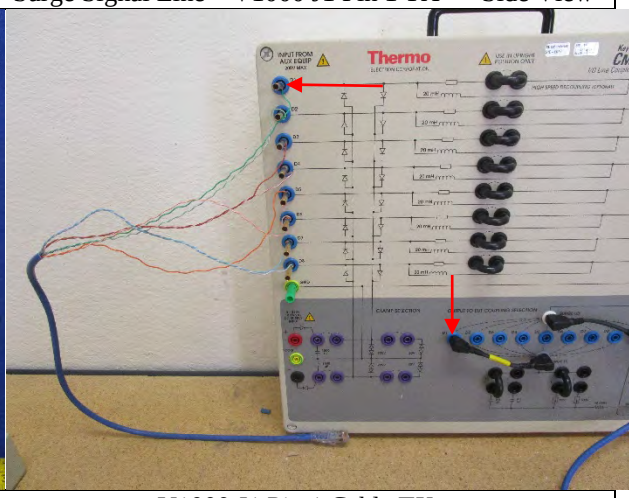
Surge Signal Line – V1000 J1 Pin 1 TX+ – Front View



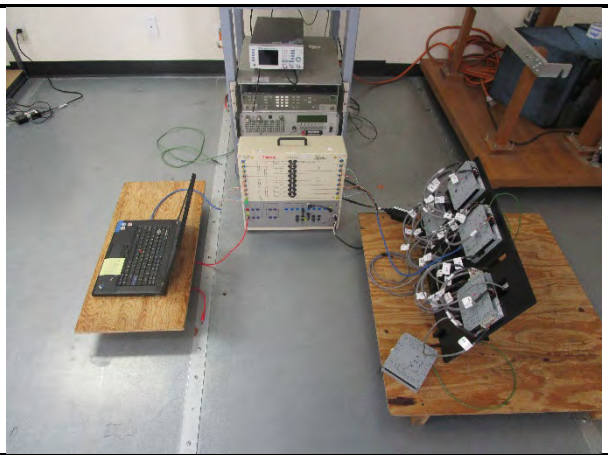
Surge Signal Line – V1000 J1 Pin 1 TX+ – Side View



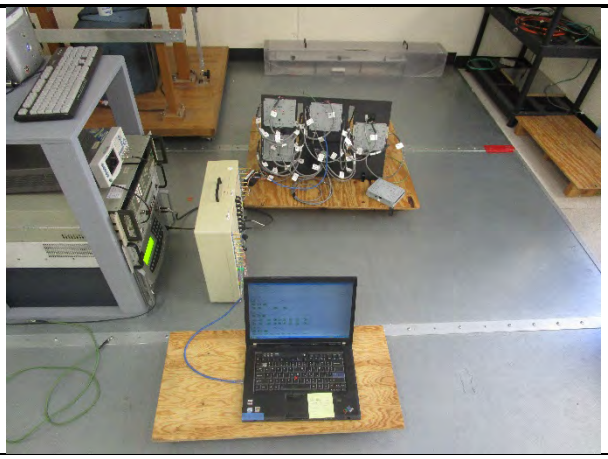
V1000 J1 Location



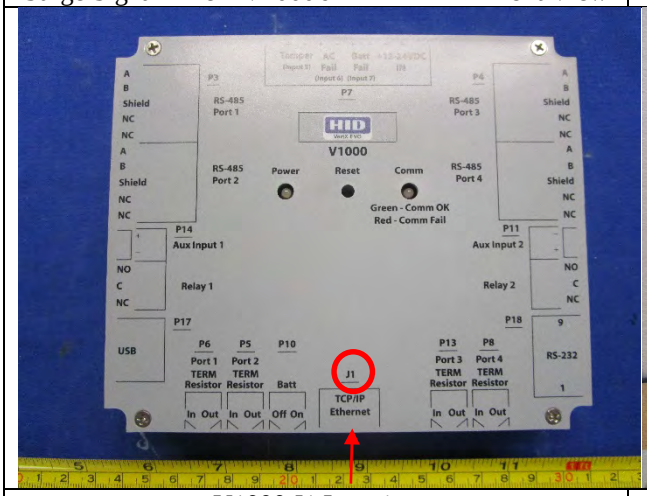
V1000 J1 Pin 1 Cable TX+



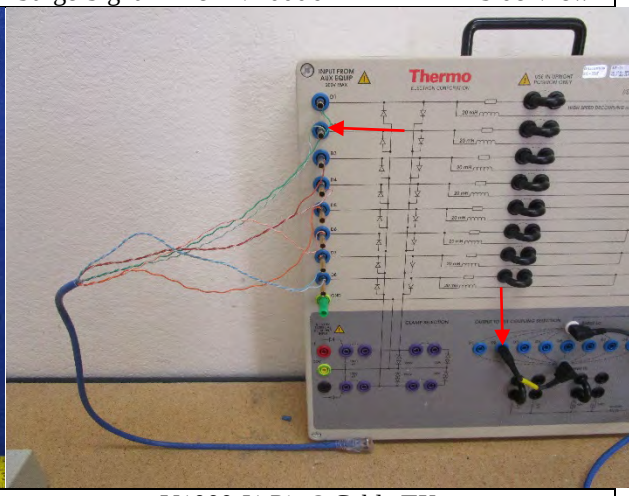
Surge Signal Line – V1000 J1 Pin 2 TX- – Front View



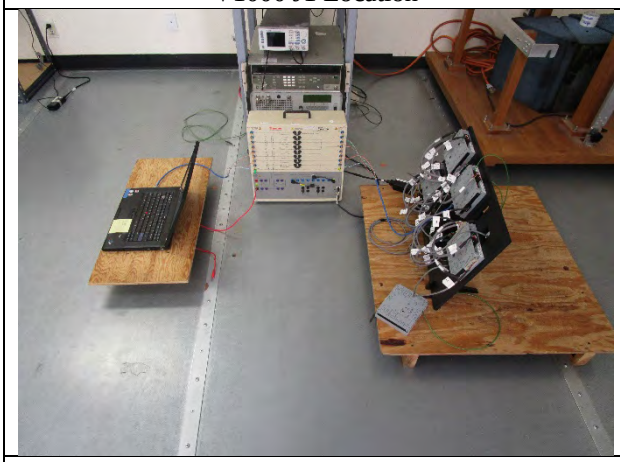
Surge Signal Line – V1000 J1 Pin 2 TX- – Side View



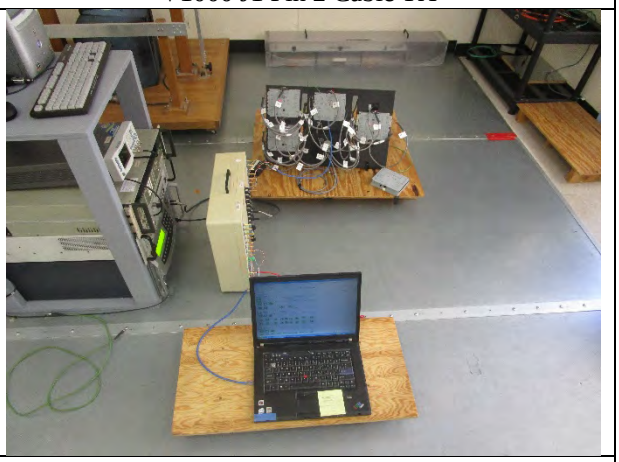
V1000 J1 Location



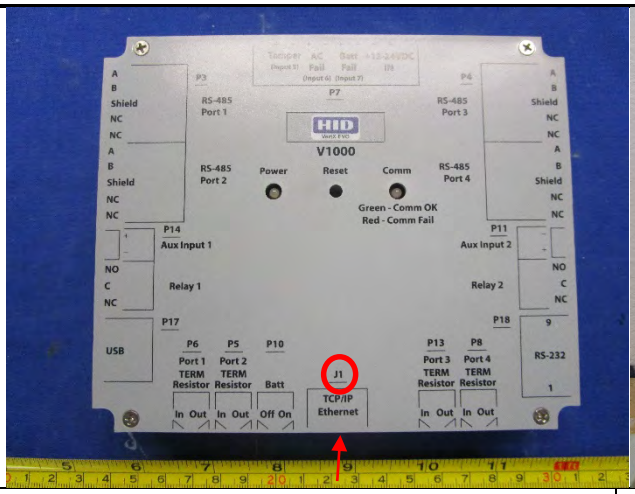
V1000 J1 Pin 2 Cable TX-



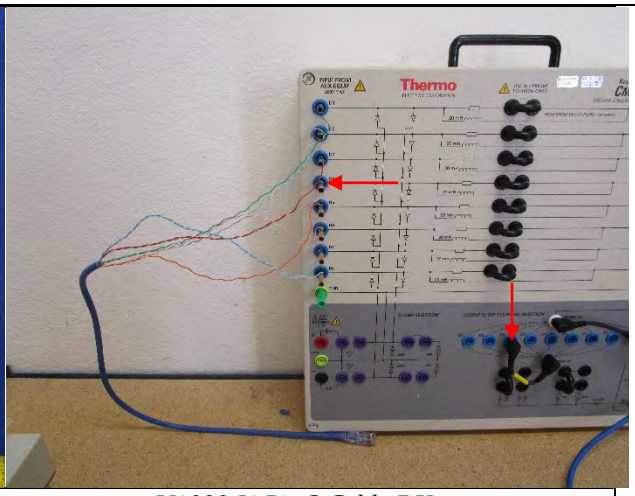
Surge Signal Line – V1000 J1 Pin 3 RX+ – Front View



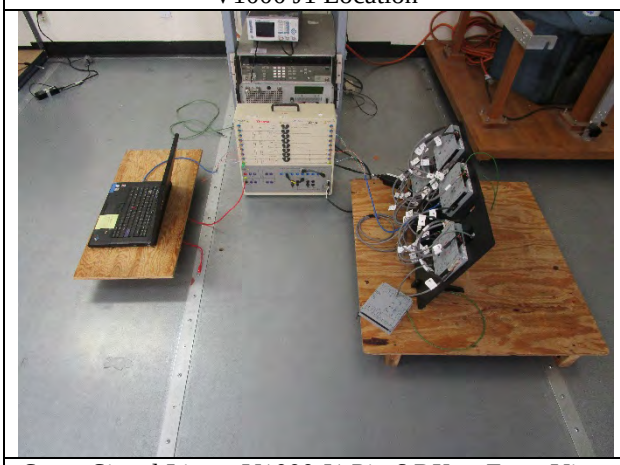
Surge Signal Line – V1000 J1 Pin 3 RX+ – Side View



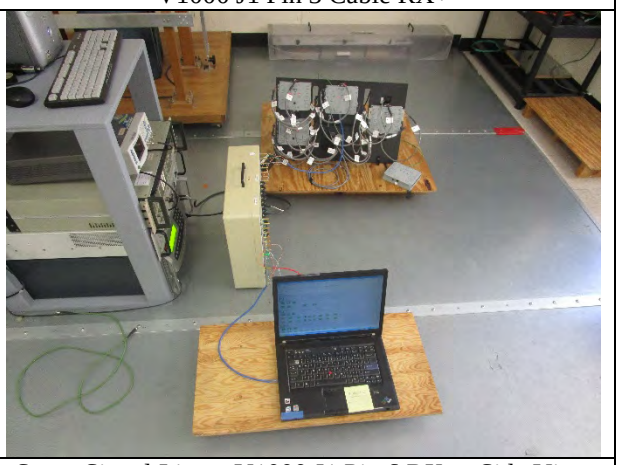
V1000 J1 Location



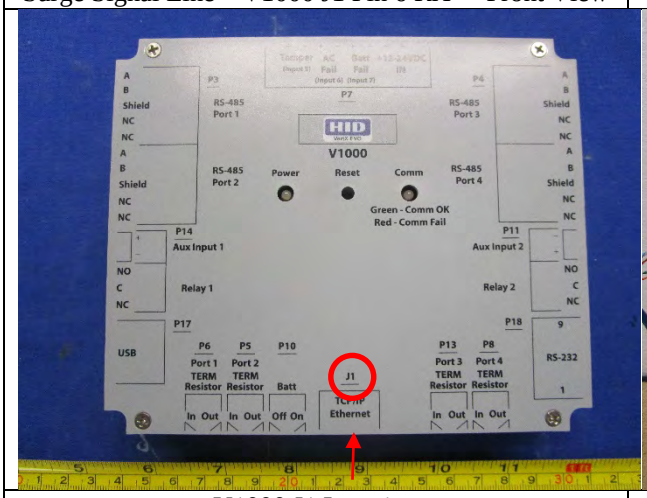
V1000 J1 Pin 3 Cable RX+



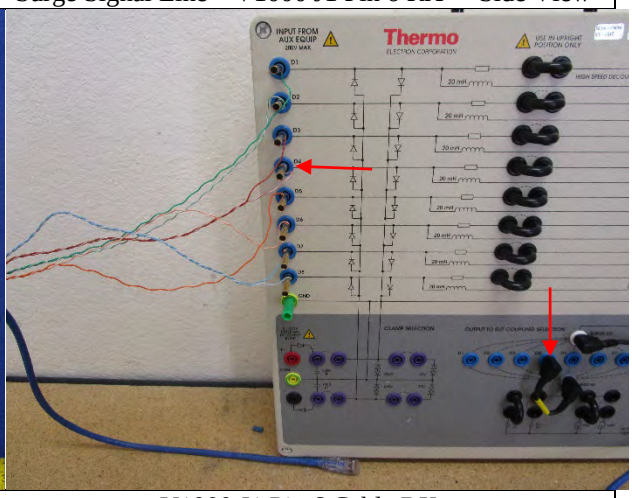
Surge Signal Line – V1000 J1 Pin 6 RX- – Front View



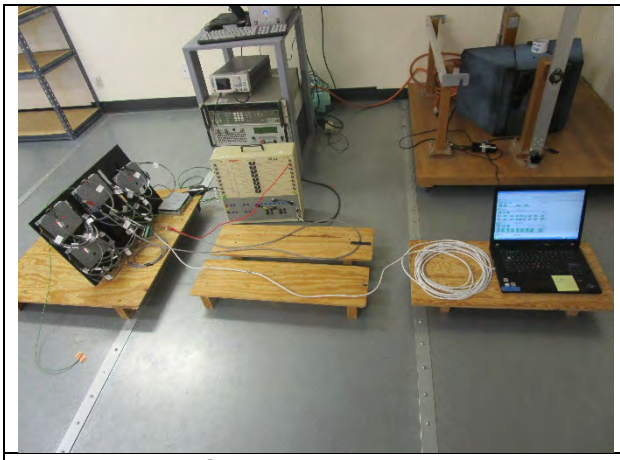
Surge Signal Line – V1000 J1 Pin 6 RX- – Side View



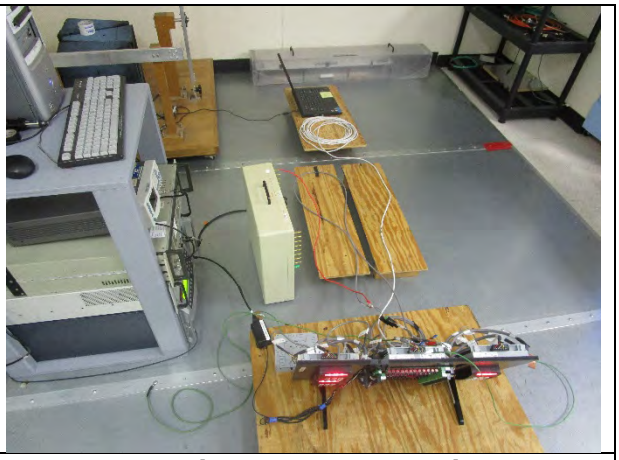
V1000 J1 Location



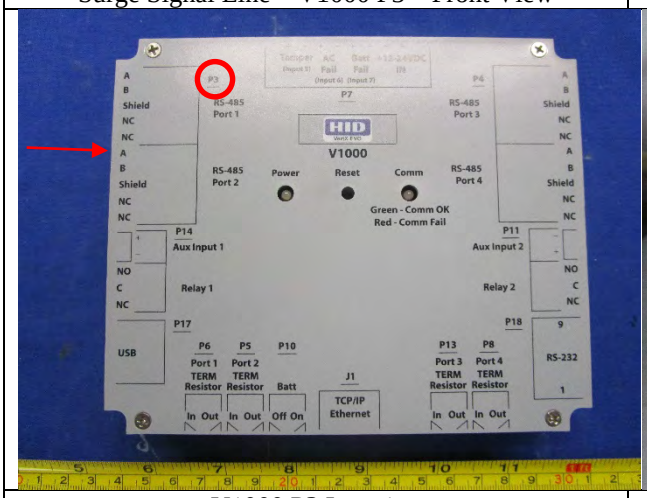
V1000 J1 Pin 6 Cable RX-



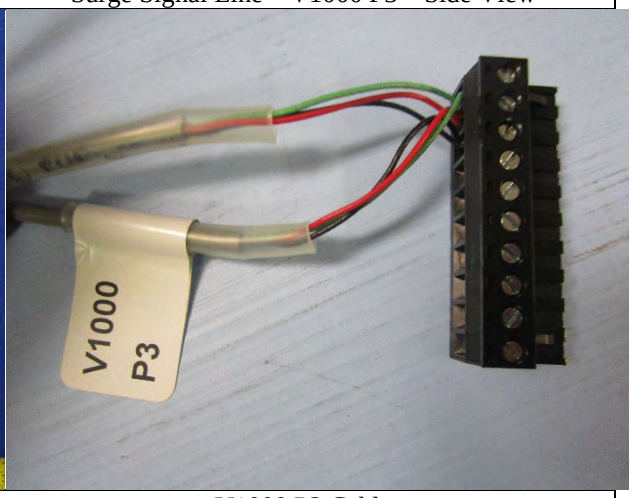
Surge Signal Line – V1000 P3 – Front View



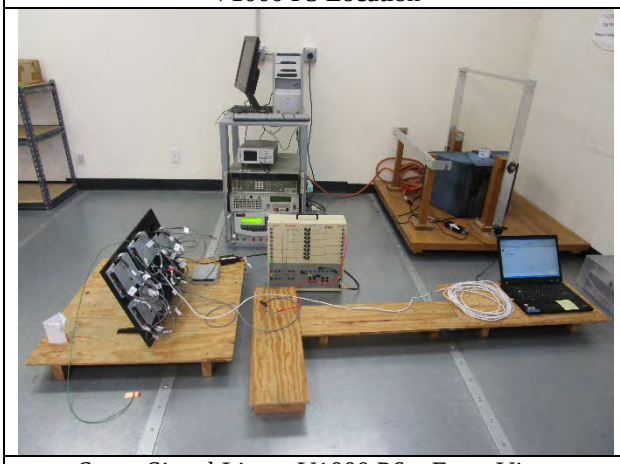
Surge Signal Line – V1000 P3 – Side View



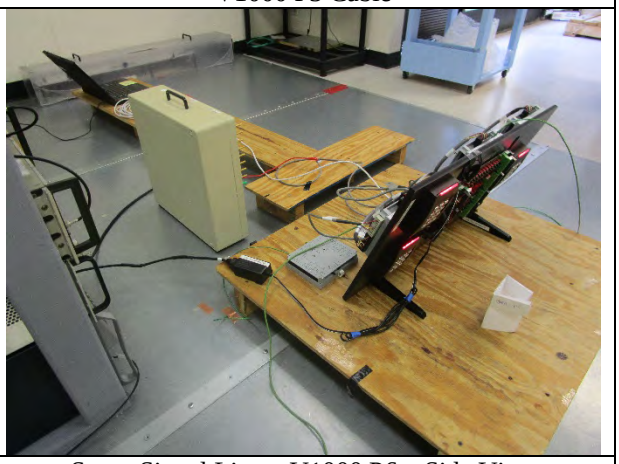
V1000 P3 Location



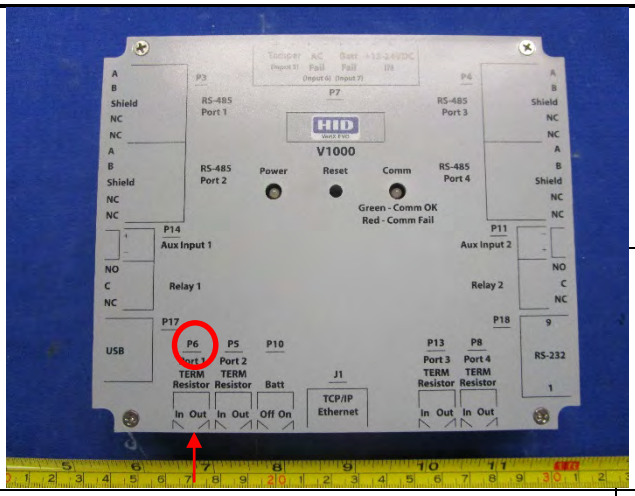
V1000 P3 Cable



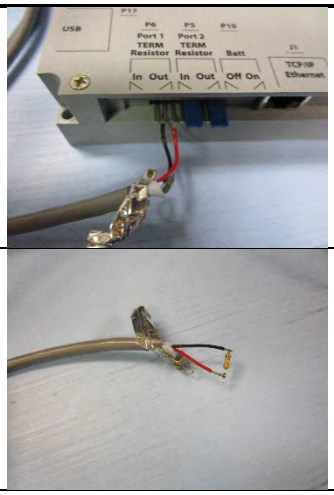
Surge Signal Line – V1000 P6 – Front View



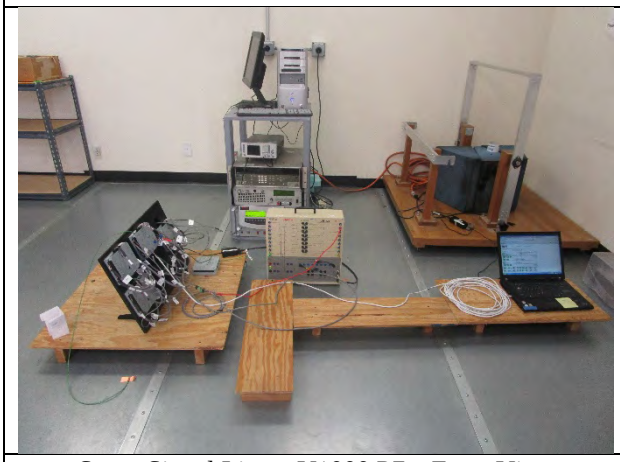
Surge Signal Line – V1000 P6 – Side View



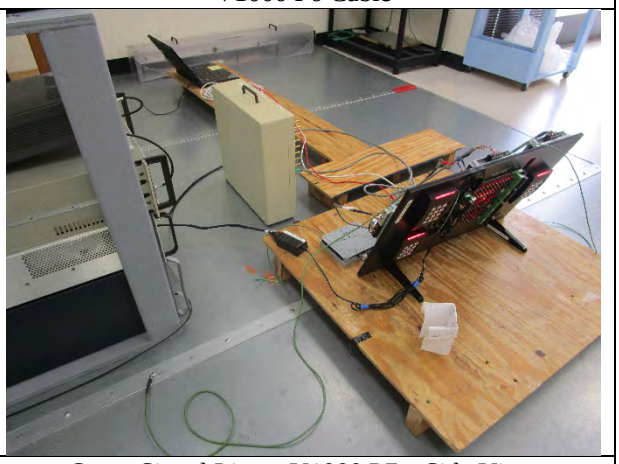
V1000 P6 Location



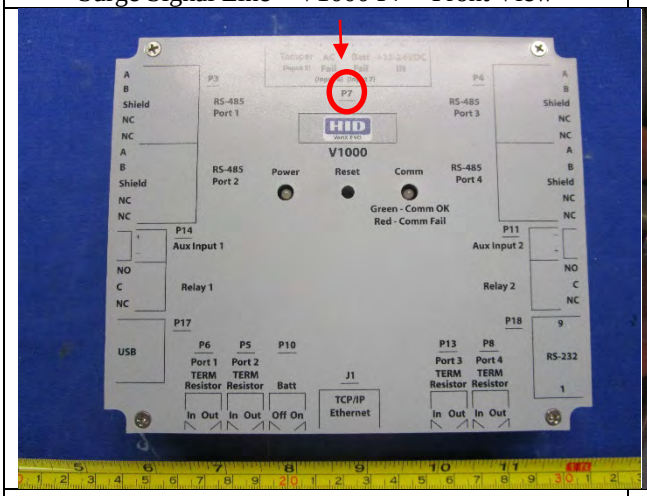
V1000 P6 Cable



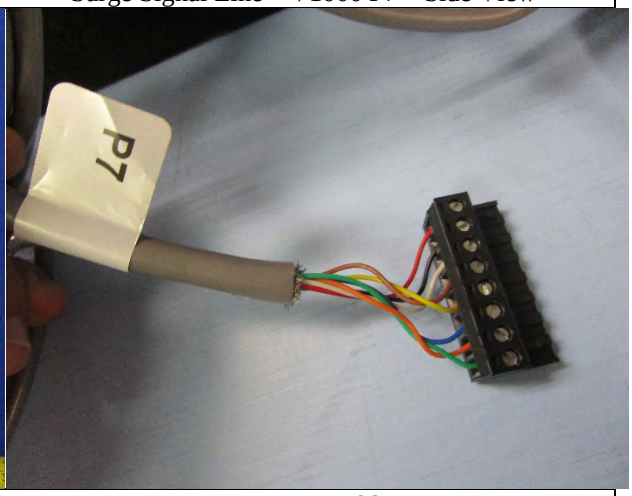
Surge Signal Line – V1000 P7 – Front View



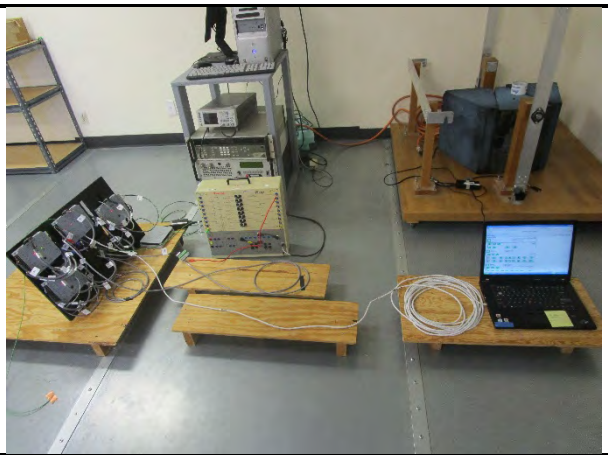
Surge Signal Line – V1000 P7 – Side View



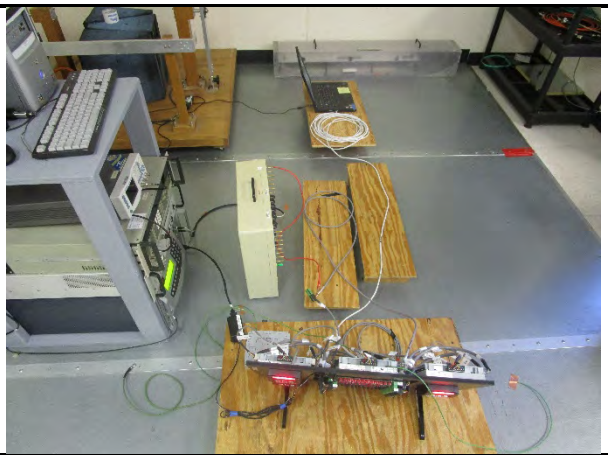
V1000 P7 Location



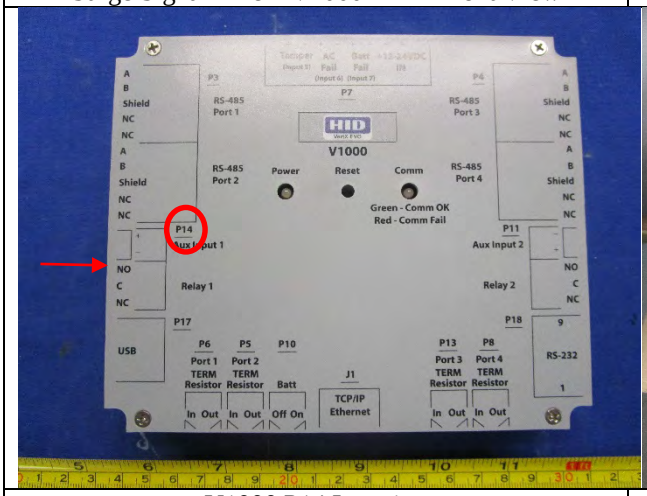
V1000 P7 Cable



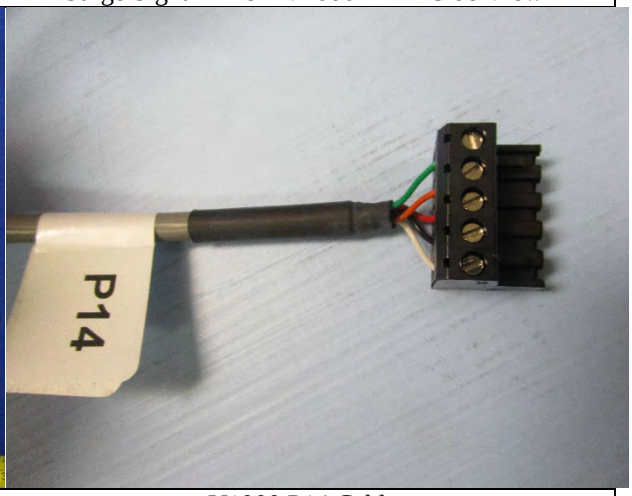
Surge Signal Line – V1000 P14 – Front View



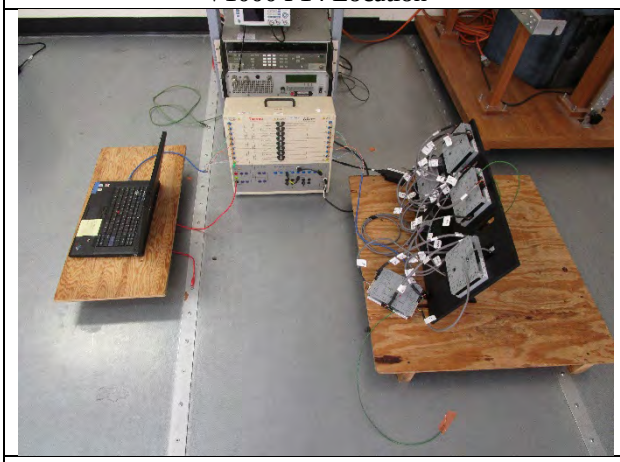
Surge Signal Line – V1000 P14 – Side View



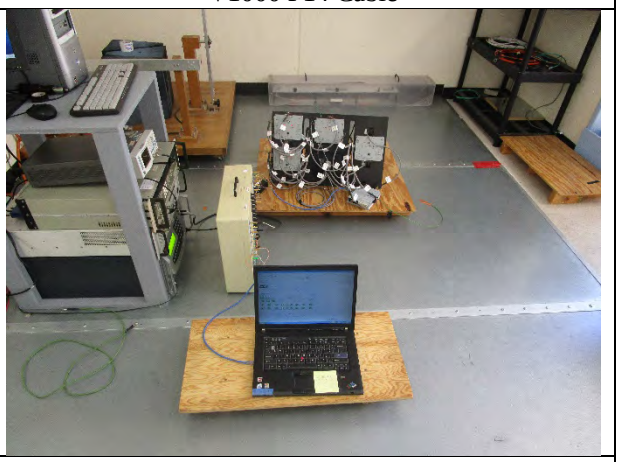
V1000 P14 Location



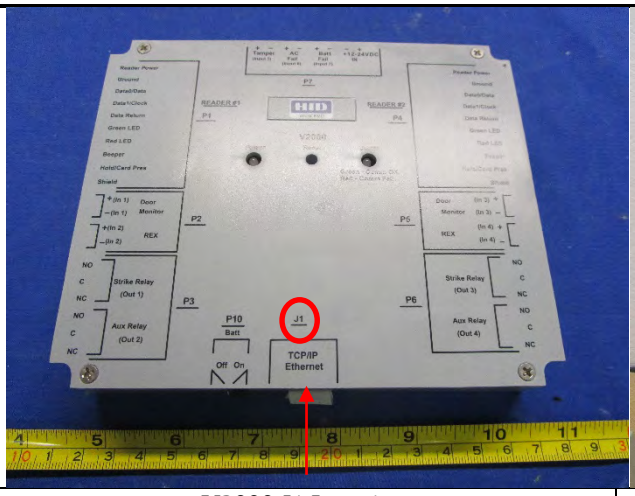
V1000 P14 Cable



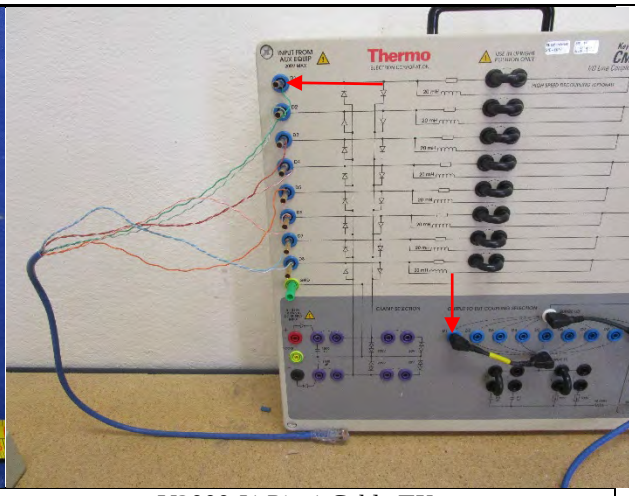
Surge Signal Line – V2000 J1 Pin 1 TX+ – Front View



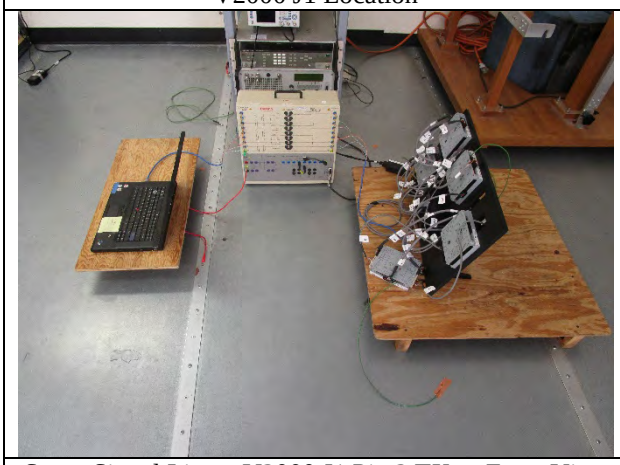
Surge Signal Line – V2000 J1 Pin 1 TX+ – Side View



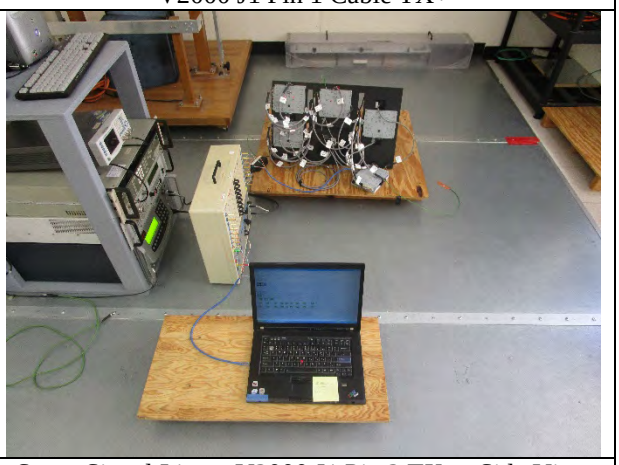
V2000 J1 Location



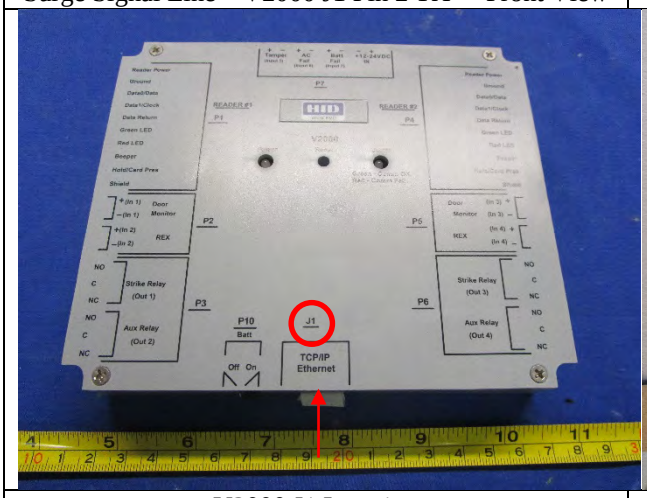
V2000 J1 Pin 1 Cable TX+



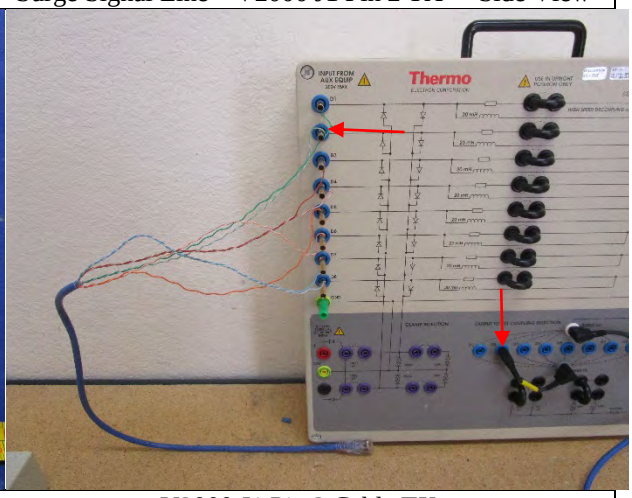
Surge Signal Line – V2000 J1 Pin 2 TX- – Front View



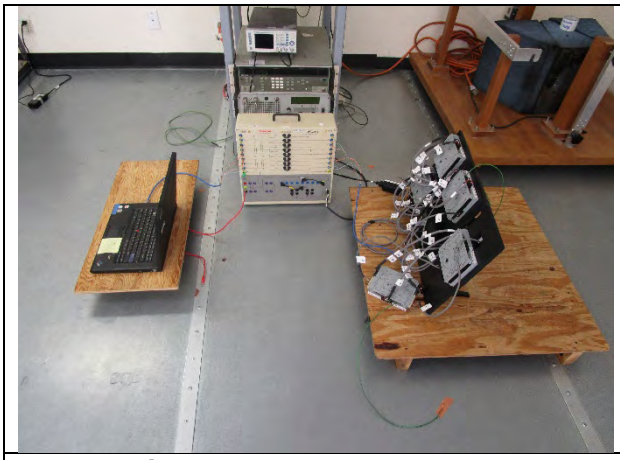
Surge Signal Line – V2000 J1 Pin 2 TX- – Side View



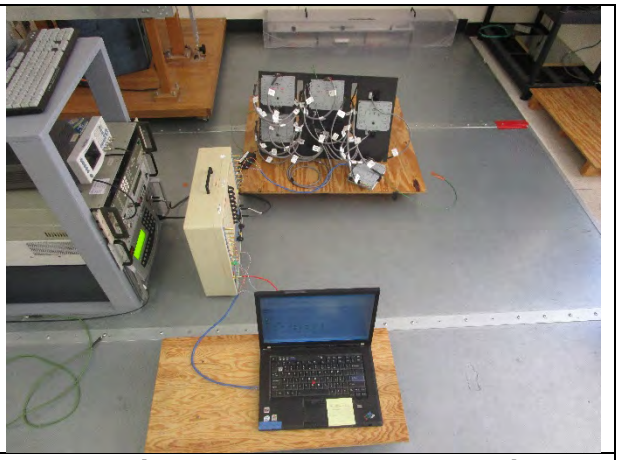
V2000 J1 Location



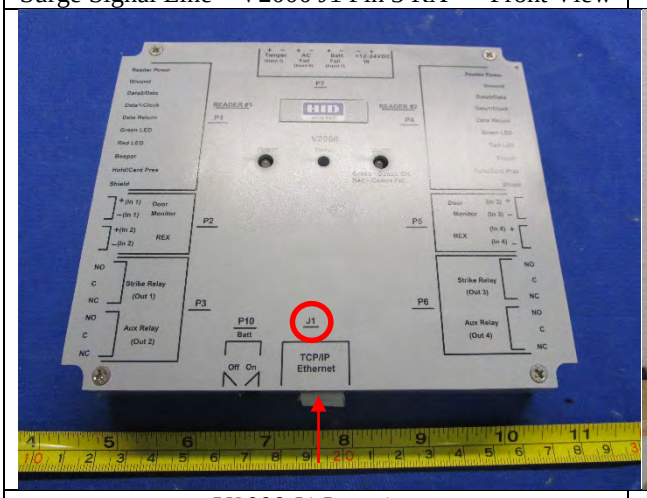
V2000 J1 Pin 2 Cable TX-



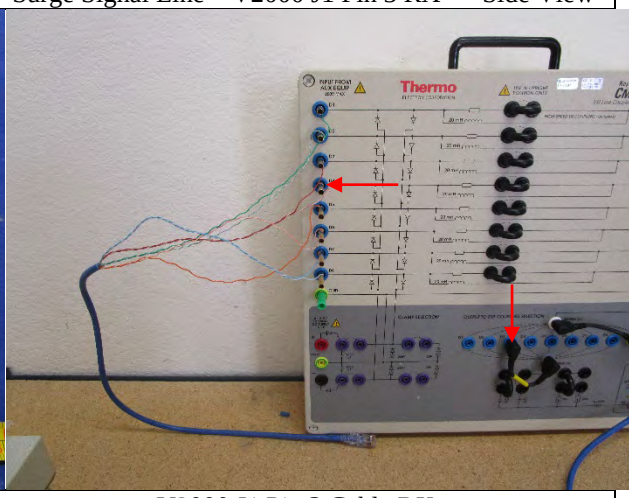
Surge Signal Line – V2000 J1 Pin 3 RX+ – Front View



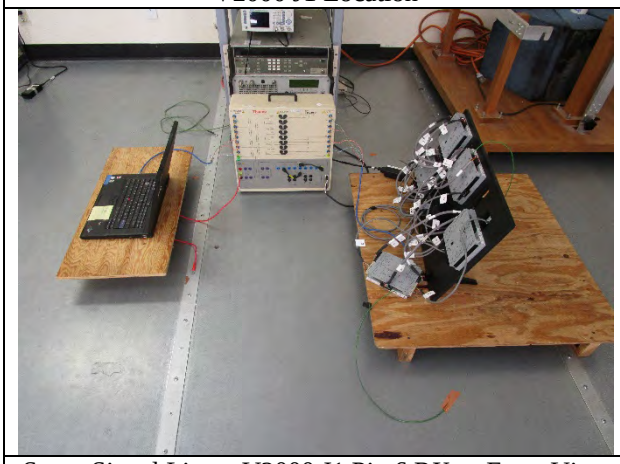
Surge Signal Line – V2000 J1 Pin 3 RX+ – Side View



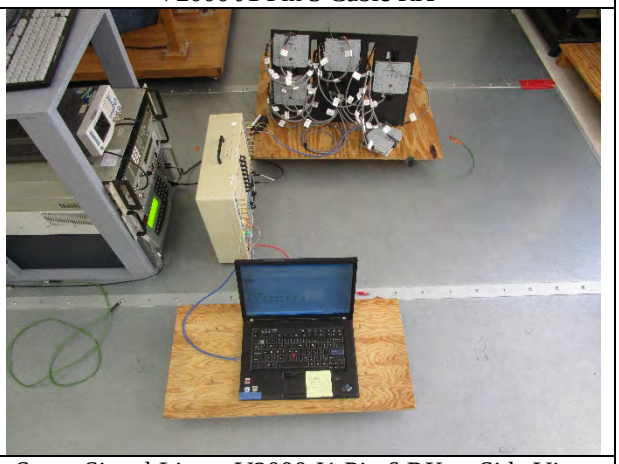
V2000 J1 Location



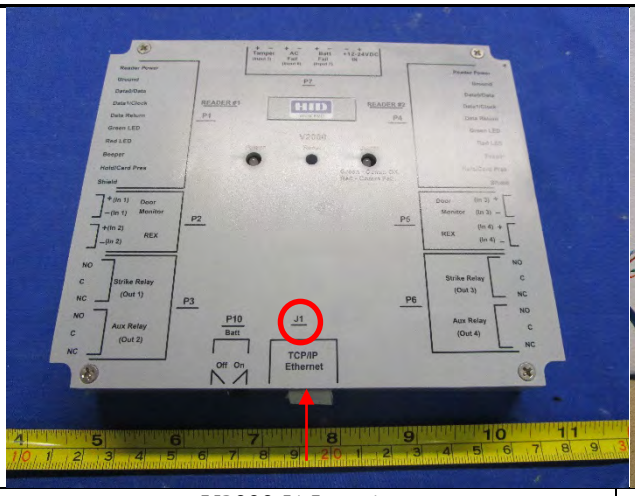
V2000 J1 Pin 3 Cable RX+



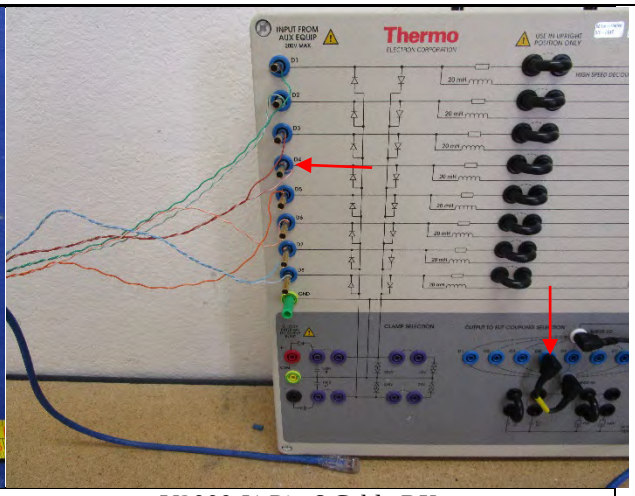
Surge Signal Line – V2000 J1 Pin 6 RX- – Front View



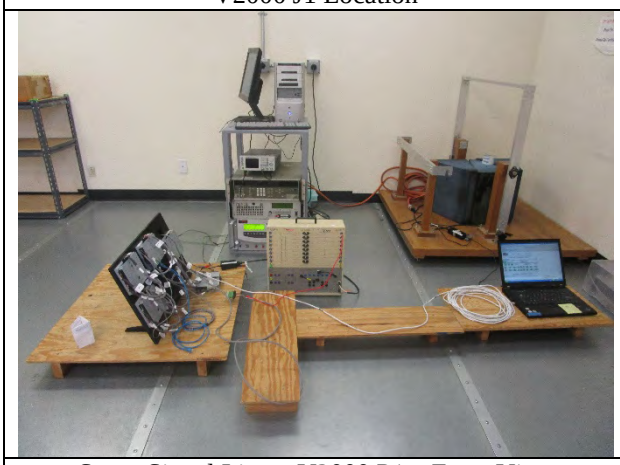
Surge Signal Line – V2000 J1 Pin 6 RX- – Side View



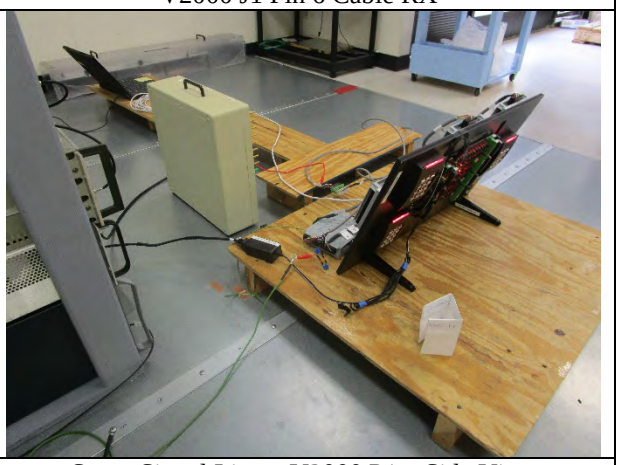
V2000 J1 Location



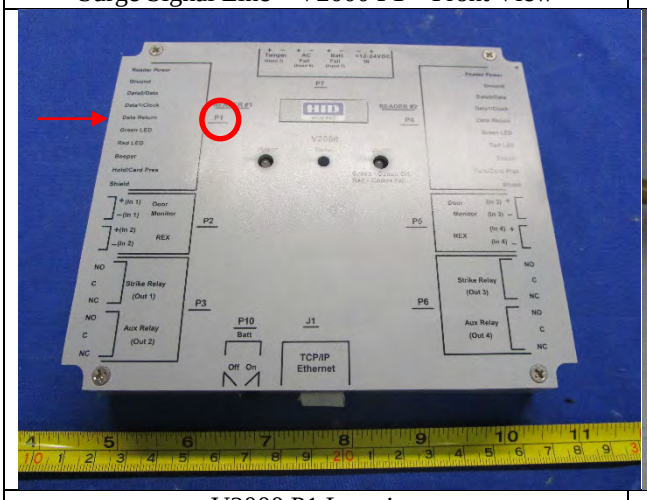
V2000 J1 Pin 6 Cable RX-



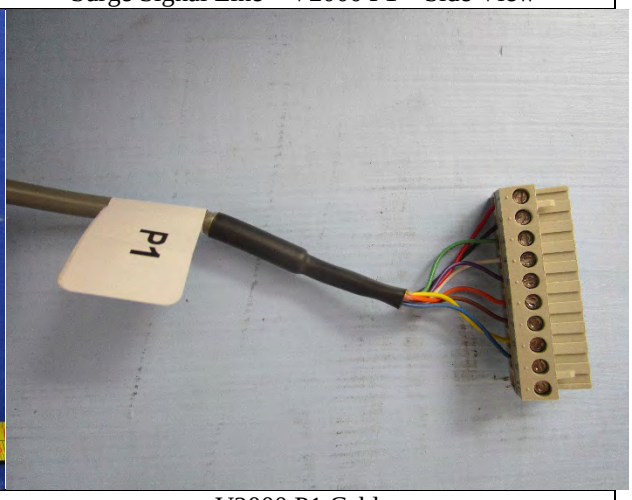
Surge Signal Line – V2000 P1 – Front View



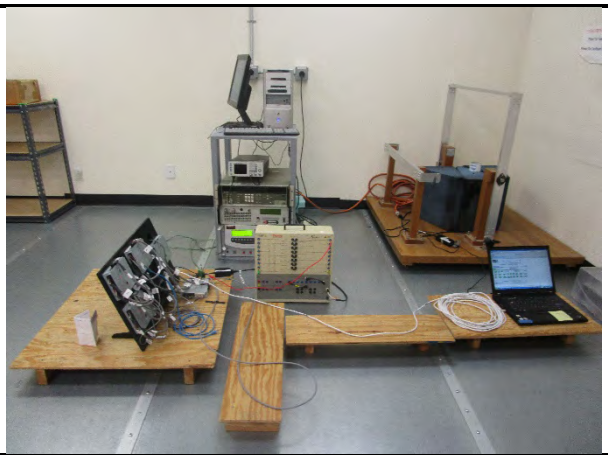
Surge Signal Line – V2000 P1 – Side View



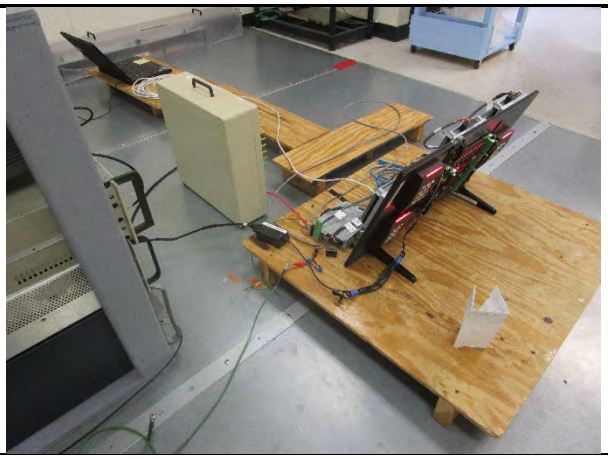
V2000 P1 Location



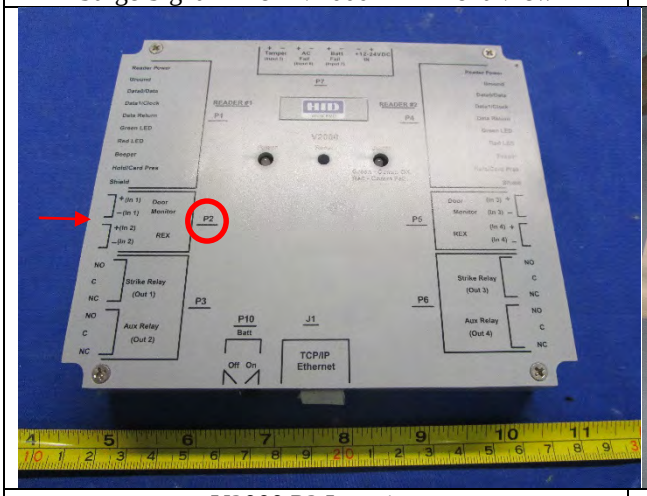
V2000 P1 Cable



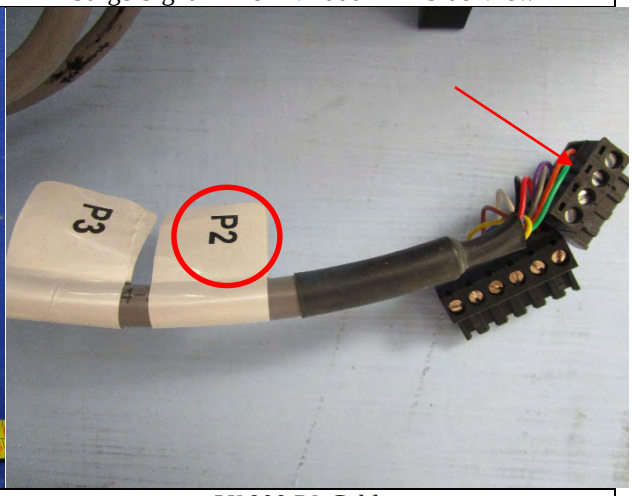
Surge Signal Line – V2000 P2 – Front View



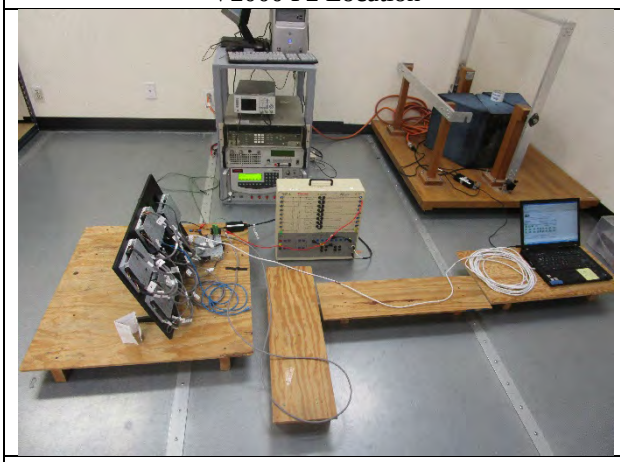
Surge Signal Line – V2000 P2 – Side View



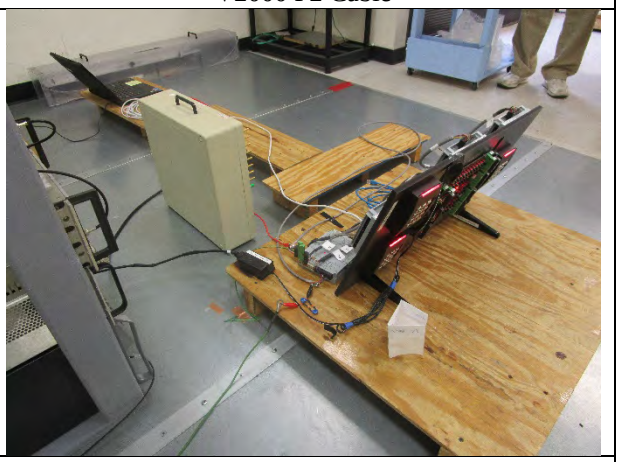
V2000 P2 Location



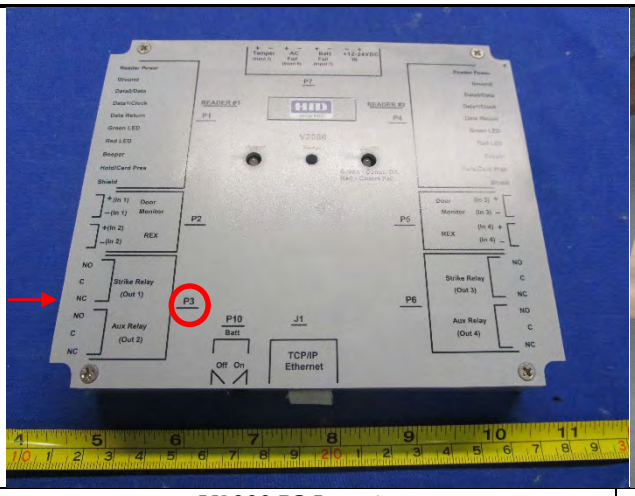
V2000 P2 Cable



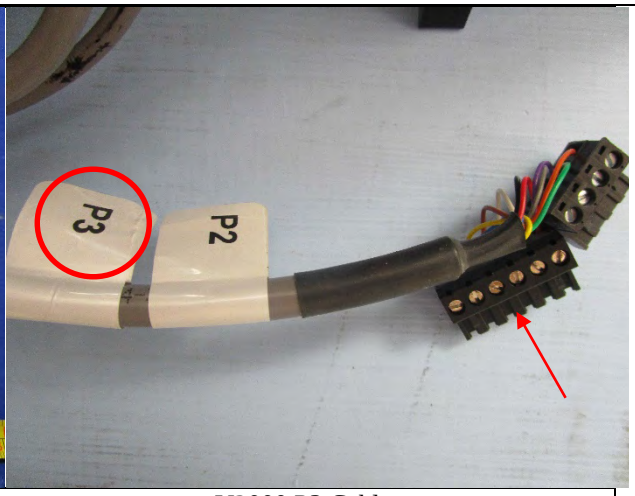
Surge Signal Line – V2000 P3 – Front View



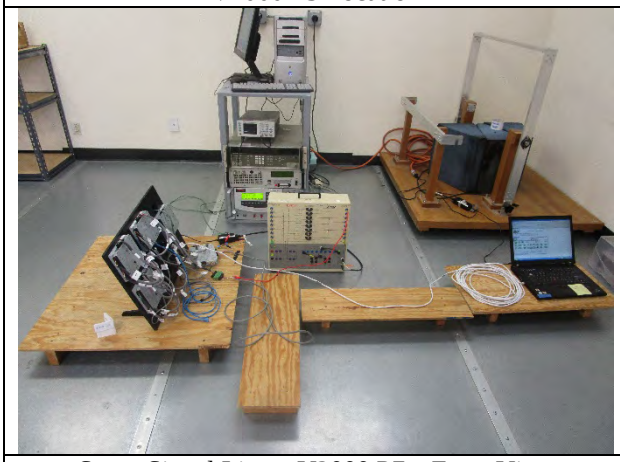
Surge Signal Line – V2000 – Side View



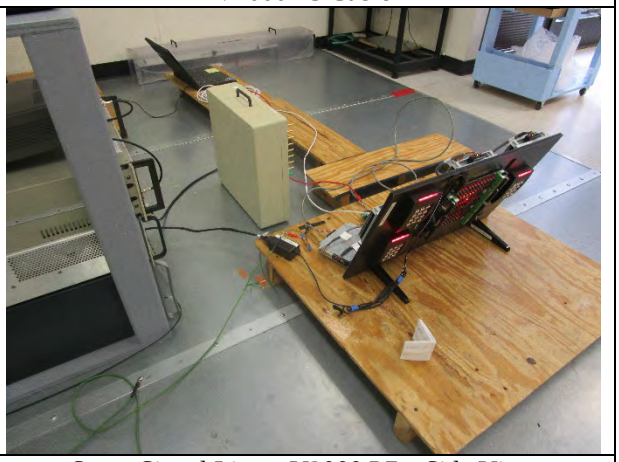
V2000 P3 Location



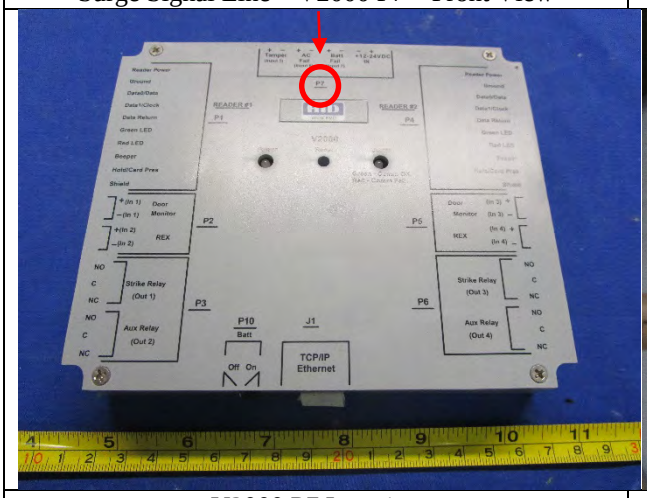
V2000 P3 Cable



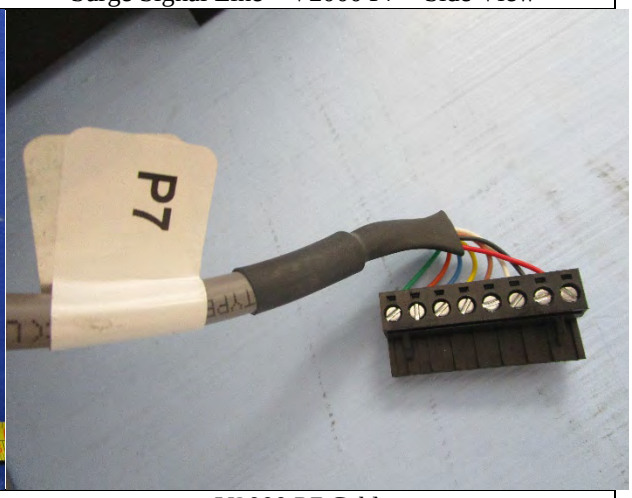
Surge Signal Line – V2000 P7 – Front View



Surge Signal Line – V2000 P7 – Side View



V2000 P7 Location



V2000 P7 Cable

8 Supporting Equipment/Software and cabling Description

8.1 Supporting Equipment

Item	Supporting Equipment Description	Model	Serial Number	Manufacturer	Note
1	Laptop	T60	L3-B4544	IBM/Lenovo	used for both V1000 system and V2000 system
2	Edge Plus EH400K System	Edge Plus EH400K	-	HID	used for both V1000 system and V2000 system
3	Card Readers X 3	Multi Class	-	HID	used for both V1000 system and V2000 system
4	Developer Tool Kit PCB	VertX EVO and Edge EVO Developer Tool Kit	-	HID	used for both V1000 system and V2000 system

8.2 I/O Ports

V1000 System with V100, V200 and V300

Item	Connection Start		Connection Stop		Length / shielding Info		Note
	From	I/O Port	To	I/O Port	Length (m)	Shielding	
1	VertX V100	P7	Developer Tool Kit PCB	P1B	<1m	shielded	-
2	VertX V100	P1	Multi Class Reader #1	-	<1m	shielded	-
3	VertX V100	P2/P3	Developer Tool Kit PCB	P101A	<1m	shielded	-
4	VertX V100	P4	Multi Class Reader #2	-	<1m	shielded	-
5	VertX V100	P5/P6	Developer Tool Kit PCB	P101B	<1m	shielded	-
6	VertX V100	P9	V1000-P3/V200-P9 /V300-P9	V1000-P3/V200-P9 /V300-P9	<1m	unshielded	-
7	VertX V200	P7	Developer Tool Kit PCB	P2B	<1m	shielded	-
8	VertX V200	P1	Developer Tool Kit PCB	P201A	<1m	shielded	-
9	VertX V200	P2/P3	Developer Tool Kit PCB	P201B	<1m	shielded	-
10	VertX V200	P9	V1000-P3/V100-P9 /V300-P9	V1000-P3/V100-P9 /V300-P9	<1m	unshielded	-
11	VertX V300	P7	Developer Tool Kit PCB	P3A	<1m	shielded	-
12	VertX V300	P1	Developer Tool Kit PCB	P301A	<1m	shielded	-
13	VertX V300	P2	Developer Tool Kit PCB	P301B	<1m	shielded	-
14	VertX V300	P3	Developer Tool Kit PCB	P301A/P301B	<1m	shielded	-
15	VertX V300	P9	V1000-P3/V100-P9 /V200-P9	V1000-P3/V100-P9 /V200-P9	<1m	unshielded	-
16	VertX EVO V1000	P7	Developer Tool Kit PCB	P3A	<1m	shielded	-
17	VertX EVO V1000	P3	V100-P9/V200-P9 /V300-P9	V100-P9/V200-P9 /V300-P9	<1m	unshielded	-
18	VertX EVO V1000	P14	Developer Tool Kit PCB	P1001A	<1m	shielded	-
19	VertX EVO V1000	P11	Developer Tool Kit PCB	P1001A	<1m	shielded	-
20	VertX EVO V1000	J1	Laptop	RJ45	>3m	unshielded	-

V2000 System with V200, V300 and V1000

Item	Connection Start		Connection Stop		Length / shielding Info		Note
	From	I/O Port	To	I/O Port	Length (m)	Shielding	
1	VertX EVO V2000	P7	Developer Tool Kit PCB	P1B	<1m	shielded	-
2	VertX EVO V2000	P1	Multi Class Reader #1	-	<1m	shielded	-
3	VertX EVO V2000	P2/P3	Developer Tool Kit PCB	P101A	<1m	shielded	-
4	VertX EVO V2000	J1	Laptop	RJ45	>3m	unshielded	-
5	VertX V200	P7	Developer Tool Kit PCB	P2B	<1m	shielded	-
6	VertX V200	P1	Developer Tool Kit PCB	P201A	<1m	shielded	-
7	VertX V200	P2/P3	Developer Tool Kit PCB	P201B	<1m	shielded	-
8	VertX V200	P9	V1000-P3/V100-P9 /V300-P9	V1000-P3/V100-P9 /V300-P9	<1m	unshielded	-
9	VertX V300	P7	Developer Tool Kit PCB	P3A	<1m	shielded	-
10	VertX V300	P1	Developer Tool Kit PCB	P301A	<1m	shielded	-
11	VertX V300	P2	Developer Tool Kit PCB	P301B	<1m	shielded	-
12	VertX V300	P3	Developer Tool Kit PCB	P301A/P301B	<1m	shielded	-
13	VertX V300	P9	V1000-P3/V100-P9 /V200-P9	V1000-P3/V100-P9 /V200-P9	<1m	unshielded	-
14	VertX EVO V1000	P7	Developer Tool Kit PCB	P3A	<1m	shielded	-
15	VertX EVO V1000	P3	V100-P9/V200-P9 /V300-P9	V100-P9/V200-P9 /V300-P9	<1m	unshielded	-
16	VertX EVO V1000	P14	Developer Tool Kit PCB	P1001A	<1m	shielded	-
17	VertX EVO V1000	P11	Developer Tool Kit PCB	P1001A	<1m	shielded	-

8.3 Test Software Description

Test Item	Software	Description
1	GUI V.2.3.1.543	VertX EVO V1000 system GUI
2	GUI V.2.3.1.219	VertX EVO V2000 system GUI

8.4 System setup block diagram

9 Test Summary

Emissions			
Test Item	Test standard	Test Method/Procedure	Pass / Fail
Conducted Emissions	EN 55022: 2010+AC:2011 (Class B)	EN 55022: 2010+AC:2011 ANSI C63.4:2009	☐ Pass ☐ Fail ☒ N/A*
Radiated Spurious Emissions	EN 55022: 2010+AC:2011 (Class B)	EN 55022: 2010+AC:2011 ANSI C63.4:2009	☐ Pass ☐ Fail ☒ N/A*
Limits for Harmonic Current Emissions	EN 61000-3-2: 2014	EN 61000-3-2: 2014	☐ Pass ☐ Fail ☒ N/A*
Limitation of Voltage Changes, Fluctuation & Flicker	EN 61000-3-3:2013	EN 61000-3-3:2013	☐ Pass ☐ Fail ☒ N/A*

Immunity			
Test Item	Test standard	Test Method/Procedure	Pass / Fail
Electrostatic Discharge Immunity	EN 50130-4:2011	EN 61000-4-2:2009	☒ Pass ☐ Fail ☐ N/A
Radiated RF Immunity	EN 50130-4:2011	EN 61000-4-3:2010	☒ Pass ☐ Fail ☐ N/A
Electrical Fast Transients/Bust Immunity	EN 50130-4:2011	EN 61000-4-4:2012	☒ Pass ☐ Fail ☐ N/A
Voltage Surge Immunity	EN 50130-4:2011	EN 61000-4-5:2014	☒ Pass ☐ Fail ☐ N/A
Conducted Disturbances Immunity	EN 50130-4:2011	EN 61000-4-6:2014	☐ Pass ☐ Fail ☒ N/A*
Power Frequency Magnetic Field Immunity	EN 50130-4:2011	EN 61000-4-8:2010	☐ Pass ☐ Fail ☒ N/A*
Voltage Dips and Short Interruptions Immunity	EN 50130-4:2011	EN 61000-4-11:2004	☐ Pass ☐ Fail ☒ N/A*
Remark	1. All measurement uncertainties are not taken into consideration for all presented test result. 2. The applicant shall ensure frequency stability by showing that an emission is maintained within the band of operation under all normal operating conditions as specified in the user's manual. 3. N/A: Test not applicable per customer request. 4. *Per customer request, only ESD, RF Immunity, EFT and Surge immunity tests were performed.		

10 Measurement Uncertainty

Emissions			
Test Item	Frequency Range	Description	Uncertainty
AC Conducted Emissions	150KHz – 30MHz	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2	±3.5dB
Radiated Spurious Emissions	30MHz – 1GHz	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+5.6dB/-4.5dB
Radiated Spurious Emissions	1GHz – 6GHz	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+4.3dB/-4.1dB

11 Performance Criteria for immunity testing

This standard would apply to test sample during or after tolerance test, which is as follows:

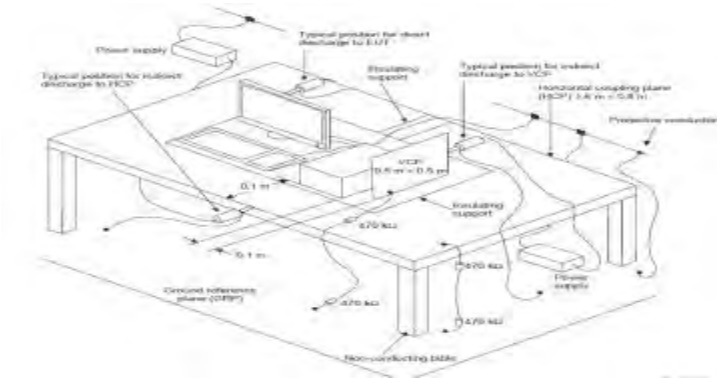
Performance evaluation standard A:
The equipment shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.

Performance evaluation standard B:
The equipment shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.

Performance evaluation standard C:
Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

12 Guideline for interference allowed

12.1 Electrostatic Discharge Immunity

<table>
<tr><th>Spec</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td>EN 50130-4:2011
EN 61000-4-2:2009</td><td>The test procedure shall be in accordance with EN 61000-4-2. Electrostatic discharges shall be applied only to those points and surfaces of the EUT which are expected to be touched during usual operation, including user access, as specified in the user manual.
The preferred range of test levels for ESD in given in the following table
<table>
<tr><th colspan="2">Contact Discharge</th><th colspan="2">Air Discharge</th></tr>
<tr><th>Level</th><th>Test Voltage (kV)</th><th>Level</th><th>Test Voltage (kV)</th></tr>
<tr><td>1</td><td>2</td><td>1</td><td>2</td></tr>
<tr><td>2</td><td>4</td><td>2</td><td>4</td></tr>
<tr><td>3</td><td>6</td><td>3</td><td>8</td></tr>
<tr><td>4</td><td>8</td><td>4</td><td>15</td></tr>
<tr><td>x[a]</td><td>Special</td><td>x[a]</td><td>Special</td></tr>
<tr><td colspan="4">[a] "x" is an open level. The level has to be specified in the dedicated equipment specification. If higher voltages than those shown are specified, special test equipment may be needed.</td></tr>
</table></td><td>☒</td></tr>
<tr><td>Test Setup</td><td>  </td><td></td></tr>
<tr><td>Test Condition</td><td>Discharging interval: 1 time / 1 second
Discharging impedance: 330 Ω / 150 pF
Discharge types: Direct discharge-aerial/contact discharge
Indirect Discharge - the horizontal coupling plane, the vertical coupling plane
Polarity: + / -
Discharging times: Aerial- more than 10 per position injected
Contact-more than 25 per position injected
Performance evaluation standard: B</td><td></td></tr>
</table>

Procedure	Common Conditions 1. Test sample and lab or metal materials must maintain more than 1m of separated distance. 2. Discharging return cable on generator must connect to a basic earth section (about 2m) and make sure that extra cable is not near earth section or placed more than 0.2m from electric conduction. 3. For portable devices or ones on table, place them on non-conducted test platform of 0.8m high from a basic earth section. For devices on floor, install a terminating stand of 0.1m thickness over a basic earth section and place test sample and cable over the said stand. 4. For reproducibility on test results, let generator on static electricity discharge inject test voltage on test sample surface vertically. Aerial discharging test Please move discharging polar tips (circular type) near to contact point of test sample as soon as possible avoiding mechanical damages of the said sample and separate it from sample after each discharge. Contact discharge test 1. Please connect a discharging polar tip (chip type) to test sample before turning switch on. 2. If sample's surface is applied with paint but paint composition is not mentioned on manufacture's manual, have discharging polar tip penetrate on paint section and take a contact discharging test.
Remarks	Per customer request - Only tested for indirect contact to Horizontal and Vertical Coupling Planes.
Result	☒ Pass ☐ Fail

Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☐ Yes (See below) ☒ N/A

Test specification	Electrostatic Discharge Immunity			
Environmental Conditions:	Temp (°C):	23.2	Result	☒ Pass ☐ Fail
	Humidity (%)	46.8		
	Atmospheric (mbar):	1013.7		
Mains Power:	230VAC, 50Hz			
Tested by:	Bryan Smith			
Test Date:	2015-09-29			
Remarks:	Per customer request - Only tested for indirect contact to Horizontal and Vertical Coupling Planes.			

Test Results

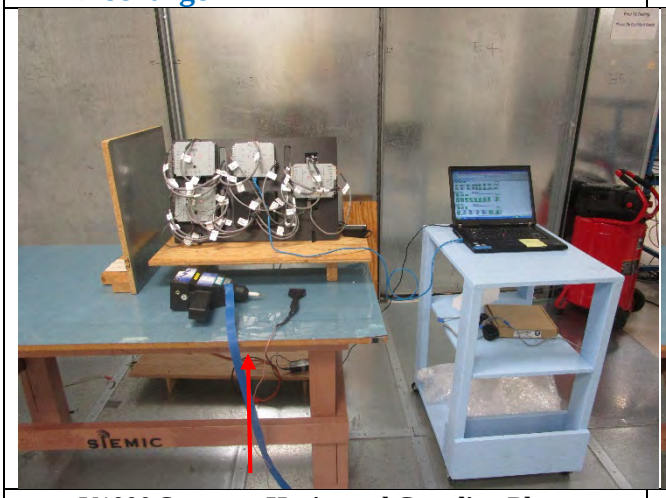
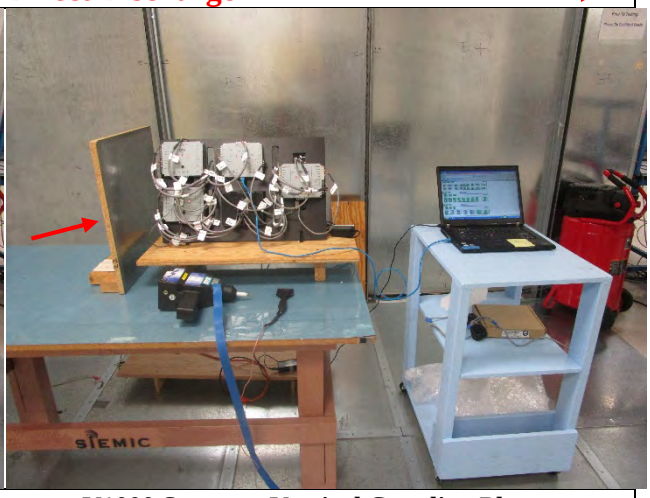
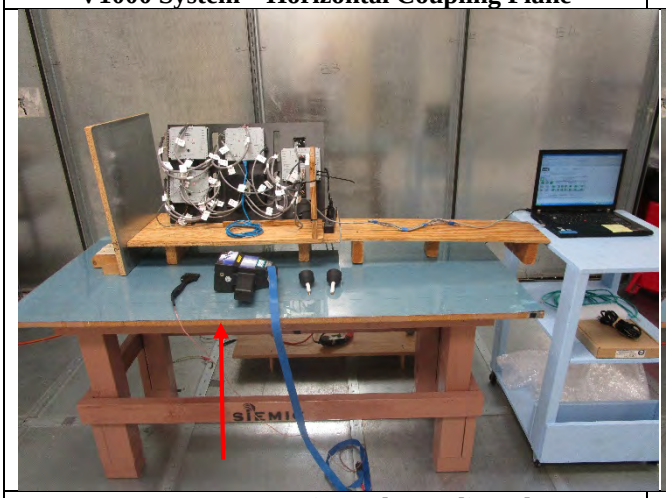
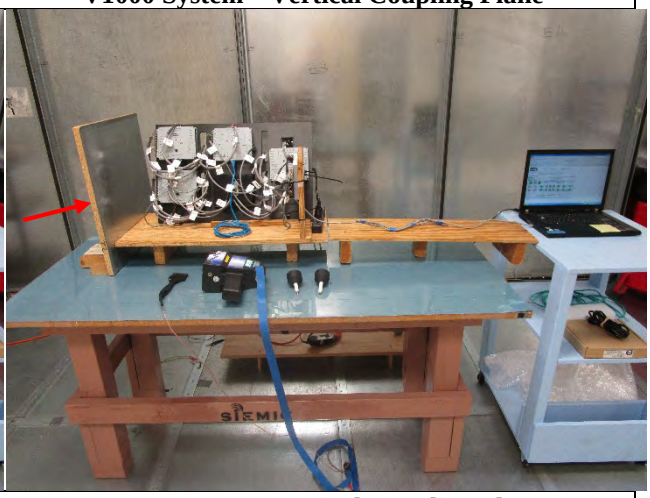
Discharge Type	Test Severity Level	Results
Air Discharges	±2kV, ±4kV, ±8kV	Not tested
Direct Contact Discharges	±2kV, ±4kV, ±6kV	Not tested
Indirect Contact Discharges	±2kV, ±4kV, ±6kV	Pass

VertX EVO V1000 System
tested with VertX V100,
VertX V200 and
VertX V300

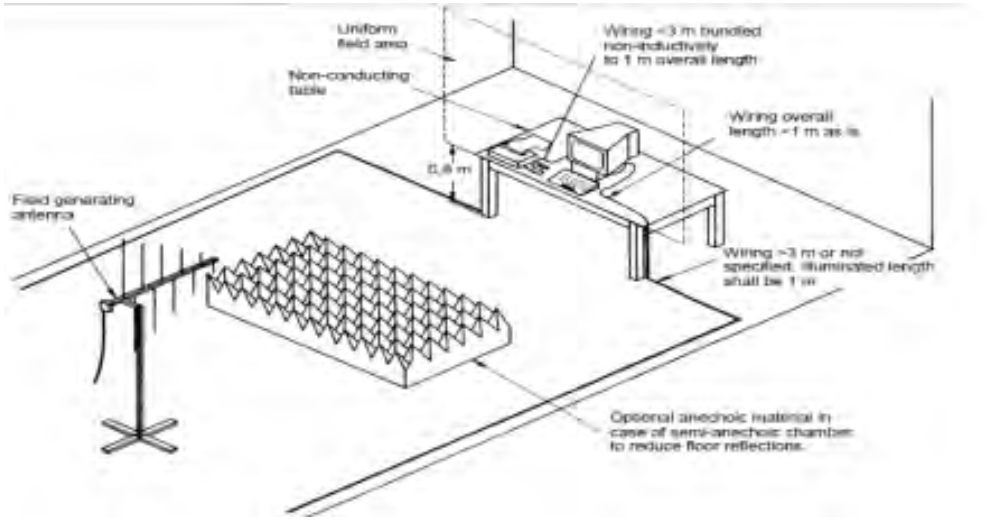
Injection type	Injection position	Discharging type	Standard	Tested	Reference
Indirect Injection	Horizontally connecting section – System Front Side	Contact	A	A	-
	Horizontally connecting section – System Left Side		A	A	-
	Horizontally connecting section – System Rear Side		A	A	-
	Horizontally connecting section – System Right Side		A	A	-
	Vertically connecting section – System Front Side		A	A	-
	Vertically connecting section – System Left Side		A	A	-
	Vertically connecting section – System Rear Side		A	A	-
	Vertically connecting section – System Right Side		A	A	-

VertX EVO V2000 System
tested with
VertX EVO V1000,
VertX V200 and
VertX V300

Injection type	Injection position	Discharging type	Standard	Tested	Reference
Indirect Injection	Horizontally connecting section – System Front Side	Contact	A	A	-
	Horizontally connecting section – System Left Side		A	A	-
	Horizontally connecting section – System Rear Side		A	A	-
	Horizontally connecting section – System Right Side		A	A	-
	Vertically connecting section – System Front Side		A	A	-
	Vertically connecting section – System Left Side		A	A	-
	Vertically connecting section – System Rear Side		A	A	-
	Vertically connecting section – System Right Side		A	A	-

Air Discharge ----------►	Direct Discharge ——————►
	
V1000 System – Horizontal Coupling Plane	**V1000 System – Vertical Coupling Plane**
	
V2000 System – Horizontal Coupling Plane	**V2000 System – Vertical Coupling Plane**

12.2 Radiated Susceptibility (RS)

<table>
<tr><th>Spec</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td>EN 50130-4:2011
EN 61000-4-3:2010</td><td>The test procedure shall be in accordance with EN 61000-4-3. The frequency range for the Radiated RF Immunity test is 80MHz to 1000MHz. The test levels are given in the following table.
<table>
<tr><th>Level</th><th>Test field strength (V/m)</th></tr>
<tr><td>1</td><td>1</td></tr>
<tr><td>2</td><td>3</td></tr>
<tr><td>3</td><td>10</td></tr>
<tr><td>x</td><td>Special</td></tr>
<tr><td colspan="2">Note: “x” is an open test level and the associated field strength may be any value. This level may be given in the product standard.</td></tr>
</table></td><td>☒</td></tr>
<tr><td>Test Setup</td><td> 
</td></tr>
<tr><td>Test Condition</td><td>Antenna position: Horizon & verticality
Antenna distance: 3 meters
Magnetic field strength: 10 V/m
Frequency ranges: 2000MHz to 2700MHz
Modulation: AM, 80 %, 1 kHz sine wave
PM, 1Hz
Sweep rates: 1.5 x 10-3 decades/sec
Frequency steps: 1 % step
Injection position: 4 sections
Performance evaluation standard: A</td></tr>
</table>

Procedure	1. The EUT was setup inside a semi-anechoic chamber in accordance with the standard. 2. The EUT was placed on top of a 0.8m high, non-metallic table in a typical configuration. 3. An isotropic field probe was placed adjacent to the EUT. 4. The EUT was switched on and allowed to warm up to its normal operating condition. 5. The EUT was exercised and monitored in the manner specified by the customer. 6. All test instruments were PC controlled, via their IEEE 488.2 bus interfaces, and the test was conducted in the following manner: a. The testing frequencies were swept over the required frequency range, with a step frequency equal to 1% of fundamental. The sweep rate was 1.0×10^{-3} decades/s. b. For each frequency tested, the signal generator output level was adjusted automatically until the unmodulated field strength registered by the field monitor reached the desired level. This level was held constant for the specified dwell time. 7. The EUT was continuously monitored during the test in accordance with the Pass / Fail criteria declared by the customer. 8. The test was done in both horizontal and vertical antenna polarizations and for all necessary sides of the EUT.
Remarks	Per customer request – Only tested 2000-2700MHz.
Result	☒ Pass ☐ Fail

Test Data ☒ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☒ N/A

Test specification	Radiated RF Immunity			
Environmental Conditions:	Temp (°C):	21.2	Result	☒ Pass ☐ Fail
	Humidity (%)	44.5		
	Atmospheric (mbar):	1011.5		
Mains Power:	220VAC, 50Hz			
Tested by:	Bryan Smith			
Test Date:	2015-09-28			
Remarks:	Per customer request – Only tested 2000-2700MHz.			

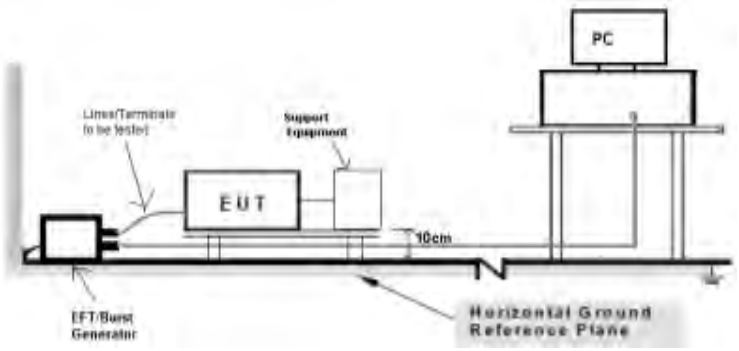
Test Results – VertX EVO V1000 System tested with VertX V100, VertX V200 and VertX V300

Sides Tested	Frequency Range (MHz)	Test Severity Level	Antenna Polarity	Standard	Tested	Result
Front	2000 - 2700	10V/m, 80% AM (1kHz)	Vertical	A	A	Pass
Left	2000 - 2700	10V/m, 80% AM (1kHz)	Vertical	A	A	Pass
Rear	2000 - 2700	10V/m, 80% AM (1kHz)	Vertical	A	A	Pass
Right	2000 - 2700	10V/m, 80% AM (1kHz)	Vertical	A	A	Pass
Front	2000 - 2700	10V/m, 80% AM (1kHz)	Horizontal	A	A	Pass
Left	2000 - 2700	10V/m, 80% AM (1kHz)	Horizontal	A	A	Pass
Rear	2000 - 2700	10V/m, 80% AM (1kHz)	Horizontal	A	A	Pass
Right	2000 - 2700	10V/m, 80% AM (1kHz)	Horizontal	A	A	Pass
Front	2000 - 2700	10V/m, PM (1Hz)	Vertical	A	A	Pass
Left	2000 - 2700	10V/m, PM (1Hz)	Vertical	A	A	Pass
Rear	2000 - 2700	10V/m, PM (1Hz)	Vertical	A	A	Pass
Right	2000 - 2700	10V/m, PM (1Hz)	Vertical	A	A	Pass
Front	2000 - 2700	10V/m, PM (1Hz)	Horizontal	A	A	Pass
Left	2000 - 2700	10V/m, PM (1Hz)	Horizontal	A	A	Pass
Rear	2000 - 2700	10V/m, PM (1Hz)	Horizontal	A	A	Pass
Right	2000 - 2700	10V/m, PM (1Hz)	Horizontal	A	A	Pass

Test Results – VertX EVO V2000 System tested with VertX V200, VertX V300 and VertX EVO V1000

Sides Tested	Frequency Range (MHz)	Test Severity Level	Antenna Polarity	Standard	Tested	Result
Front	2000 - 2700	10V/m, 80% AM (1kHz)	Vertical	A	A	Pass
Left	2000 - 2700	10V/m, 80% AM (1kHz)	Vertical	A	A	Pass
Rear	2000 - 2700	10V/m, 80% AM (1kHz)	Vertical	A	A	Pass
Right	2000 - 2700	10V/m, 80% AM (1kHz)	Vertical	A	A	Pass
Front	2000 - 2700	10V/m, 80% AM (1kHz)	Horizontal	A	A	Pass
Left	2000 - 2700	10V/m, 80% AM (1kHz)	Horizontal	A	A	Pass
Rear	2000 - 2700	10V/m, 80% AM (1kHz)	Horizontal	A	A	Pass
Right	2000 - 2700	10V/m, 80% AM (1kHz)	Horizontal	A	A	Pass
Front	2000 - 2700	10V/m, PM (1Hz)	Vertical	A	A	Pass
Left	2000 - 2700	10V/m, PM (1Hz)	Vertical	A	A	Pass
Rear	2000 - 2700	10V/m, PM (1Hz)	Vertical	A	A	Pass
Right	2000 - 2700	10V/m, PM (1Hz)	Vertical	A	A	Pass
Front	2000 - 2700	10V/m, PM (1Hz)	Horizontal	A	A	Pass
Left	2000 - 2700	10V/m, PM (1Hz)	Horizontal	A	A	Pass
Rear	2000 - 2700	10V/m, PM (1Hz)	Horizontal	A	A	Pass
Right	2000 - 2700	10V/m, PM (1Hz)	Horizontal	A	A	Pass

12.3 Electrical Fast Transients (EFT)

<table>
<tr><th>Spec</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td>EN 55024:2010
EN 61000-4-4:2012</td><td>The test procedure shall be in accordance with EN 61000-4-4. The preferential range of test levels for the electrical fast transient test, applicable to power, ground, signal and control ports of the equipment are given in the table below.
<table>
<tr><th colspan="5">Open circuit output test voltage and repetition rate of the impulses</th></tr>
<tr><th rowspan="2">Level</th><th colspan="2">On power port, PE</th><th colspan="2">On I/O (input/output) signals, data and control ports</th></tr>
<tr><th>Voltage peak (kV)</th><th>Repetition rate (kHz)</th><th>Voltage peak (kV)</th><th>Repetition rate (kHz)</th></tr>
<tr><td>1
2
3
4
X[a]</td><td>0.5
1
2
4
Special</td><td>5 or 100
5 or 100
5 or 100
5 or 100
Special</td><td>0.25
0.5
1
2
Special</td><td>5 or 100
5 or 100
5 or 100
5 or 100
Special</td></tr>
<tr><td colspan="5">NOTE 1: Use of 5 kHz repetition rates is traditional; however, 100 kHz is closer to reality. Product committees should determine which frequencies are relevant for specific products or product types.
NOTE 2: With some products, there may be no clear distinction between power ports and I/O ports, in which case it is up to product committees to make this determination for test purposes.</td></tr>
<tr><td colspan="5">[a] "X" is an open level. The level has to be specified in the dedicated equipment specification.</td></tr>
</table>
</td><td>☒</td></tr>
<tr><td>Test Setup</td><td> 
</td><td></td></tr>
<tr><td>Test Condition</td><td>Injection voltage & Polarity: Input/output AC power source terminal ±1.0 kV
Input/output DC power source terminal ±0.5 kV
Signal line & communication terminal ±0.5 kV

Impulse repeating rates: 100 kHz
Impulse rising time: 5 ns ±30 %
Impulse period: 50 ns±30 %
Burst staying time: 15 ms±20 %
Burst period: 300 ms±20 %
Injection time: More than one minute
Injection method: Input AC power source terminal (coupling/decoupling circuit networks)
Others (Capacitance coupling clamp)
Performance evaluation standard: B</td><td></td></tr>
</table>

Procedure	1. The test was performed using an EFT/B generator and capacitive coupling clamp that were compliant with the standard. 2. The EFT/B generator was placed on top of the ground plane and connected to the protective earth. 3. D.C./A.C. Power Line Test o The EUT was placed on top of a 0.1m high, non-metallic table, and placed at least 0.5m away from the walls of the room and other conductive surfaces. o The required power was supplied to the EUT via direct connection to the EFT/B generator. 4. I/O Signal & Control Line Test o Insulating supports were used to ensure that the EUT and its cables were 0.1m above the metallic ground plane. o The capacitive coupling clamp was placed on top (and in contact with) the metallic ground plane. o The Cable Under Test (CUT) was sandwiched between the plates of the capacitive coupling clamp. All other cables were kept as far away from the capacitive coupling clamp as possible, where possible, perpendicularly orientated with respect to the CUT. o The EFT/B generator output was connected to the capacitive coupling clamp. 5. The EUT was switched on and allowed to warm up to its normal operating condition. 6. The EUT was monitored during and after the test in accordance with the Pass / Fail criteria declared by the customer. 7. The test was performed with EFT bursts in the positive and negative polarities and repeated on all necessary lines.
Remarks	Per customer request – Only I/O port cables were tested at ±1kV
Result	☒ Pass ☐ Fail

Test Data ☒ Yes ☐ N/A

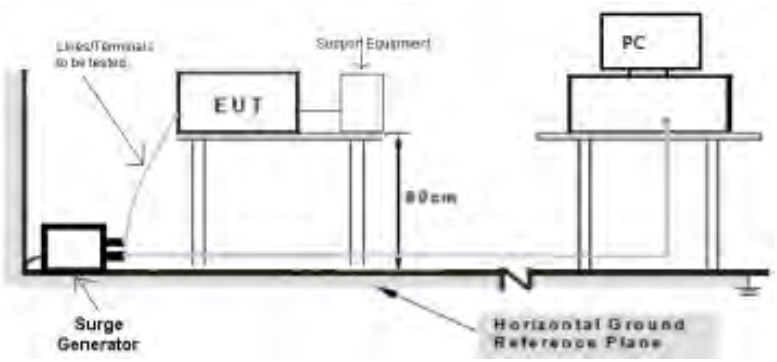
Test Plot ☐ Yes (See below) ☒ N/A

Test specification	Electrical Fast Transients/Burst Immunity			
Environmental Conditions:	Temp (°C):	23.2 / 23.1	Result	☒ Pass ☐ Fail
	Humidity (%)	46.8 / 51.4		
	Atmospheric (mbar):	1013.7 / 1014.3		
Mains Power:	220VAC, 50Hz			
Tested by:	Bryan Smith			
Test Date:	2015/09/29-30			
Remarks:	Per customer request – Only I/O port cables were tested at ±1kV			

No. of Test	Voltage	Frequency	Output: Line Coupling (Mains)	Standard	Tested	Results
Control and Signal Lines						
1	±1kV	100kHz	VertX V100 – P1 – tested with V1000 System	A	A	Pass
2	±1kV	100kHz	VertX V100 P2/P3 – tested with V1000 System	A	A	Pass
3	±1kV	100kHz	VertX V100 – P7 – tested with V1000 System	A	A	Pass
4	±1kV	100kHz	VertX V100 – P9 – tested with V1000 System	A	A	Pass
5	±1kV	100kHz	VertX V200 – P1 – tested with V1000 System	A	A	Pass
6	±1kV	100kHz	VertX V200 – P2/P3 – tested with V1000 System	A	A	Pass
7	±1kV	100kHz	VertX V200 – P7 – tested with V1000 System	A	A	Pass
8	±1kV	100kHz	VertX V300 – P1 – tested with V1000 System	A	A	Pass
9	±1kV	100kHz	VertX V300 – P3 – tested with V1000 System	A	A	Pass
10	±1kV	100kHz	VertX V300 – P7 – tested with V1000 System	A	A	Pass
11	±1kV	100kHz	VertX EVO V1000 – J1 – tested with V100, V200 and V300	A	A	Pass
12	±1kV	100kHz	VertX EVO V1000 – P3 – tested with V100, V200 and V300	A	A	Pass
13	±1kV	100kHz	VertX EVO V1000 – P6 – tested with V100, V200 and V300	A	A	Pass
14	±1kV	100kHz	VertX EVO V1000 – P7 – tested with V100, V200 and V300	A	A	Pass
15	±1kV	100kHz	VertX EVO V1000 – P14 – tested with V100, V200 and V300	A	A	Pass
16	±1kV	100kHz	VertX EVO V2000 – J1 – tested with V200, V300 and V1000	A	A	Pass

17	±1kV	100kHz	VertX EVO V2000 – P1 – tested with V200, V300 and V1000	A	A	Pass
18	±1kV	100kHz	VertX EVO V2000 – P2 – tested with V200, V300 and V1000	A	A	Pass
19	±1kV	100kHz	VertX EVO V2000 – P3 – tested with V200, V300 and V1000	A	A	Pass
20	±1kV	100kHz	VertX EVO V2000 – P7 – tested with V200, V300 and V1000	A	A	Pass

12.4 Surge

<table>
<tr><th>Spec</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td>EN 50130-4:2011
EN 61000-4-5:2014</td><td>The test procedure shall be in accordance with EN 61000-4-5. The preferred range of test levels for the surge test is given in the table below.
<table>
<tr><th>Level</th><th>Open-circuit test voltage ±10% kV</th></tr>
<tr><td>1</td><td>0.5</td></tr>
<tr><td>2</td><td>1.0</td></tr>
<tr><td>3</td><td>2.0</td></tr>
<tr><td>4</td><td>4.0</td></tr>
<tr><td>X</td><td>Special</td></tr>
<tr><td colspan="2">Note: X can be any level, above, below or in between the other levels. This level can be specified in the product standard.</td></tr>
</table></td><td>☒</td></tr>
<tr><td>Test Setup</td><td> 
</td><td></td></tr>
<tr><td>Test Condition</td><td>Surge voltage: Input AC power source terminal (line to line): ±1.0 kV
Line to earth plate: ± 2.0 kV
Input DC power source terminal line to earth plate: ± 0.5 kV

Signal & communication terminal line to line: ±1.5 kV
Signal & communication terminal line to earth plate: ± 1.0 kV</td><td></td></tr>
</table>

Procedure	1. The EUT was placed on a 0.8m high, non-conductive table. 2. The test was performed using a voltage surge generator, mains, and signal line coupling/decoupling networks that were compliant with the standard. 3. The voltage surge generator and coupling/decoupling networks were connected to the same protective earth. 4. The test level was set with the surge generator's HV output open-circuited. 5. For testing of the mains line, the mains coupling/decoupling network was inserted into the line. The voltage surge generator HV output cables were connected to the mains coupling/decoupling network, which has the necessary resistor/capacitor configurations (as required by the standard) built-in. The settings on the mains coupling/decoupling network were selected to give the required resistor/capacitor configuration as follows: a. An 18µF capacitor in series with the output of the generator for differential (line-to-line) mode testing. b. A 10 Ohm resistor and 9µF capacitor in series with the output of the generator for common (line-to-ground) mode testing 6. For testing of the signal lines, the signal line coupling/decoupling network was inserted into the line. The voltage surge generator HV output cables were connected to the signal line coupling/decoupling network, which has the necessary resistor/capacitor/gas arrestor configurations (as required by the standard) built-in. The settings on this network were selected to give the required resistor/capacitor/gas arrestor configuration as reflected in the standard. 7. The power supply of the EUT was switched on and allowed to warm up to its normal operating condition. 8. The open-circuit test level was set with the surge generator disconnected from the coupling network. 9. The output of the generator was then reconnected back to the coupling network. 10. Five discharges, generated by the voltage surge generator, were made on each relevant line, for each polarity, at each test level, with the relevant discharge interval. 11. The EUT was observed during, and checked after the test to determine the result.
Remarks	Per customer request – Only I/O port cables were tested at ±1kV
Result	☒ Pass ☐ Fail

Test Data ☒ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☒ N/A

Test specification	Voltage Surge Immunity			
Environmental Conditions:	Temp (°C):	21.5 / 21.7	Result	☒ Pass ☐ Fail
	Humidity (%)	52.9 / 49.6		
	Atmospheric (mbar):	1014.2 / 1015.9		
Mains Power:	230VAC, 50Hz			
Tested by:	Osvaldo Casorla and Bryan Smith			
Test Date:	2015/10/01-02			
Remarks:	Per customer request – Only I/O port cables were tested at ±1kV			

Signal Line Ports						
No. of Test	Voltage	Output: Line Coupling (Mains)	Phase Angles (Degrees)	Standard	Tested	Results
1	±1kV	VertX V100 – P1 – tested with V1000 System	N/A	A	A	Pass
2	±1kV	VertX V100 P2/P3 – tested with V1000 System	N/A	A	A	Pass
3	±1kV	VertX V100 – P7 – tested with V1000 System	N/A	A	A	Pass
4	±1kV	VertX V100 – P9 – tested with V1000 System	N/A	A	A	Pass
5	±1kV	VertX V200 – P1 – tested with V1000 System	N/A	A	A	Pass
6	±1kV	VertX V200 – P2/P3 – tested with V1000 System	N/A	A	A	Pass
7	±1kV	VertX V200 – P7 – tested with V1000 System	N/A	A	A	Pass
8	±1kV	VertX V300 – P1 – tested with V1000 System	N/A	A	A	Pass
9	±1kV	VertX V300 – P3 – tested with V1000 System	N/A	A	A	Pass
10	±1kV	VertX V300 – P7 – tested with V1000 System	N/A	A	A	Pass
11	±1kV	VertX EVO V1000 – J1 Pin 1 TX+ – tested with V100, V200 and V300	N/A	A	A	Pass
12	±1kV	VertX EVO V1000 – J1 Pin 2 TX- – tested with V100, V200 and V300	N/A	A	A	Pass
13	±1kV	VertX EVO V1000 – J1 Pin 3 RX+ – tested with V100, V200 and V300	N/A	A	A	Pass

14	±1kV	VertX EVO V1000 – J1 Pin 6 RX- – tested with V100, V200 and V300	N/A	A	A	Pass
15	±1kV	VertX EVO V1000 – P3 – tested with V100, V200 and V300	N/A	A	A	Pass
16	±1kV	VertX EVO V1000 – P6 – tested with V100, V200 and V300	N/A	A	A	Pass
17	±1kV	VertX EVO V1000 – P7 – tested with V100, V200 and V300	N/A	A	A	Pass
18	±1kV	VertX EVO V1000 – P14 – tested with V100, V200 and V300	N/A	A	A	Pass
19	±1kV	VertX EVO V2000 – J1 Pin 1 TX+ – tested with V200, V300 and V1000	N/A	A	A	Pass
20	±1kV	VertX EVO V2000 – J1 Pin 2 TX- – tested with V200, V300 and V1000	N/A	A	A	Pass
21	±1kV	VertX EVO V2000 – J1 Pin 3 RX+ – tested with V200, V300 and V1000	N/A	A	A	Pass
22	±1kV	VertX EVO V2000 – J1 Pin 6 RX- – tested with V200, V300 and V1000	N/A	A	A	Pass
23	±1kV	VertX EVO V2000 – P1 – tested with V200, V300 and V1000	N/A	A	A	Pass
24	±1kV	VertX EVO V2000 – P2 – tested with V200, V300 and V1000	N/A	A	A	Pass
25	±1kV	VertX EVO V2000 – P3 – tested with V200, V300 and V1000	N/A	A	A	Pass
26	±1kV	VertX EVO V2000 – P7 – tested with V200, V300 and V1000	N/A	A	A	Pass

Annex A. TEST INSTRUMENT & METHOD

Instrument	Model	Serial #	Cal Cycle	Cal Due	In use
Conducted Emissions					
EMI Test Receiver (9 kHz – 30 MHz)	ESHS10	830223/009	1 Year	06/24/2016	☐
Signal Analyzer	FSIQ7	825555/013	1 Year	05/28/2016	☐
V-LISN (150 kHz – 30 MHz)	NNLK 8129	8129-190	1 Year	08/21/2016	☐
LISN (9 kHz – 30 MHz)	MN2050B	1018	1 Year	08/07/2016	☐
TLISN	ISN T800	30814	1 Year	09/23/2016	☐
Radiated Emissions					
EMI Test Receiver (9 kHz – 6 GHz)	ESL6	100178	1 Year	05/27/2016	☐
EMI Test Receiver	ESIB 40	100179	1 Year	06/03/2016	☐
Antenna - Biconlog (30 MHz – 2 GHz)	JB1	A030702	1 Year	08/15/2016	☐
DoubleRidged Waveguide Horn Antenna (1-18 GHz)	3115	10SL0059	1 Year	08/25/2016	☐
Horn Antenna (18-40 GHz)	AH-840	101013	1 Year	08/28/2016	☐
RF Pre-Amplifier	LPA-6-30	11140711	1 Year	02/19/2016	☐
Microwave Preamplifier (18-40 GHz)	PA-840	181251	1 Year	02/19/2016	☐
2.4 GHz Notch Filter	BRM50702	116	1 Year	02/24/2016	☐
5GHz Notch Filter	BRM50716	072	1 Year	09/11/2016	☐
10 Meters SAC	10M	N/A	1 Year	05/06/2016	☐
3 Meters SAC	3M	N/A	1 Year	11/15/2015	☐
Harmonics and Flicker					
AC Power Source	5001 iX-208-411	56615	1 Year	07/15/2016	☐
Power Analyzer & Conditioning System	PACS-1	72394	1 Year	07/15/2016	☐
ESD Immunity					
ESD Simulator	PESD 1600	H907726	1 Year	04/28/2016	☒
Radiated RF Immunity					
High Power Solid State Amplifier (80 MHz- 1000 MHz)	CMC150	M631-0408	N/A	-	☐
Medium Power Solid State Amplifier (0.8 GHz - 4.2 GHz)	S41-25	M629-0408	N/A	-	☒
Synthesized Signal Generator (0.1 - 6000 MHz)	8665B-008	3744A01304	1 Year	09/21/2016	☒
Vector Signal Generator	SMIQ03B	837810/082	1 Year	06/24/2016	☐
Antenna - Biconlog (26 MHz – 2 GHz)	3141	1203	N/A	-	☐
DoubleRidged Waveguide Horn Antenna (1-18 GHz)	3115	10SL0059	1 Year	08/25/2016	☒
Smart Fieldmeter	RFP-04CE/PI-01	256	1 Year	08/21/2016	☒
3 Meters SAC	3M	N/A	1 Year	11/15/2015	☒
EFT/Burst Immunity					
EMCPro PLUS Systems Immunity Test System	EMCPRO-PLUS	802203	1 Year	09/02/2016	☒
Capacitive Clamp	CCL	0802255	1 Year	08/07/2016	☒
Surge Immunity					
EMCPro PLUS Systems Immunity Test System	EMCPRO-PLUS	802203	1 Year	09/02/2016	☒
Thermo Electron Corporation I/O Line Coupler/Decoupler	CM-I/OCD	0802253	1 Year	08/07/2016	☒

Conducted Disturbance Immunity					
High Power Solid State Amplifier (10 kHz - 220MHz)	SCCX75	M630	N/A	-	☐
Synthesized Signal Generator (0.1 MHz – 6000 MHz)	8665B-008	3744A01304	1 Year	09/21/2016	☐
Synthesized RF Signal Generator (100 kHz – 2100 MHz)	6062A	4720404	1 Year	03/08/2016	☐
Coupling/Decoupling Network	CDN-C75	561516	1 Year	09/25/2016	☐
Coupling/Decoupling Network	CDN-T4E	581312	1 Year	09/25/2016	☐
Coupling/Decoupling Network (150 kHz-80 MHz)	CDN-T8	581539	1 Year	09/25/2016	☐
M3 Coupling/Decoupling Network	CDN M3-25	521022	1 Year	09/25/2016	☐
M2 Coupling/Decoupling Network	CDN M2-25	511015	1 Year	09/25/2016	☐
Current Injection Probe	9108-1N	923738	N/A	-	☐
Power Frequency Magnetics					
EMCPro PLUS Systems Immunity Test System	EMCPRO-PLUS	802203	1 Year	09/02/2016	☐
ELF Field Monitor	ELF-60D	K71571-123	1 Year	09/21/2016	☐
Voltage Dips & Short Interruptions Immunity					
EMCPro PLUS Systems Immunity Test System	EMCPRO-PLUS	802203	1 Year	09/02/2016	☐

Annex B. SIEMIC Accreditation

Accreditations	Document	Scope / Remark
ISO 17025 (A2LA)		Please see the documents for the detailed scope
ISO Guide 65 (A2LA)		Please see the documents for the detailed scope
TCB Designation		A1, A2, A3, A4, B1, B2, B3, B4, C
FCC DoC Accreditation		FCC Declaration of Conformity Accreditation
FCC Site Registration		3 meter site
FCC Site Registration		10 meter site
IC Site Registration		3 meter site
IC Site Registration		10 meter site
EU NB		Radio & Telecommunications Terminal Equipment: EN45001 – EN ISO/IEC 17025
		Electromagnetic Compatibility: EN45001 – EN ISO/IEC 17025
Singapore iDA CB(Certification Body)		Phase I, Phase II
Vietnam MIC CAB Accreditation		Please see the document for the detailed scope
Hong Kong OFCA		(Phase II) OFCA Foreign Certification Body for Radio and Telecom
		(Phase I) Conformity Assessment Body for Radio and Telecom
Industry Canada CAB		Radio: Scope A – All Radio Standard Specification in Category I
		Telecom: CS-03 Part I, II, V, VI, VII, VIII

Japan Recognized Certification Body Designation		Radio: A1. Terminal equipment for purpose of calling Telecom: B1. Specified radio equipment specified in Article 38-2, Paragraph 1, Item 1 of the Radio Law
Korea CAB Accreditation		EMI: KCC Notice 2008-39, RRL Notice 2008-3: CA Procedures for EMI KN22: Test Method for EMI EMS: KCC Notice 2008-38, RRL Notice 2008-4: CA Procedures for EMS KN24, KN61000-4-2, -4-3, -4-4, -4-5, -4-6, -4-8, -4-11: Test Method for EMS
		Radio: RRL Notice 2008-26, RRL Notice 2008-2, RRL Notice 2008-10, RRL Notice 2007-49, RRL Notice 2007-20, RRL Notice 2007-21, RRL Notice 2007-80, RRL Notice 2004-68
		Telecom: President Notice 20664, RRL Notice 2007-30, RRL Notice 2008-7 with attachments 1, 3, 5, 6; President Notice 20664, RRL Notice 2008-7 with attachment 4
Taiwan NCC CAB Recognition		LP0002, PSTN01, ADSL01, ID0002, IS6100, CNS14336, PLMN07, PLMN01, PLMN08
Taiwan BSMI CAB Recognition		CNS 13438
Japan VCCI		R-3083: Radiation 3 meter site C-3421: Main Ports Conducted Interference Measurement T-1597: Telecommunication Ports Conducted Interference Measurement
Australia CAB Recognition		EMC: AS/NZS CISPR 11, AS/NZS CISPR 14.1, AS/NZS CISPR22, AS/NZS 61000.6.3, AS/NZS 61000.6.4
		Radio communications: AS/NZS 4281, AS/NZS 4268, AS/NZS 4280.1, AS/NZS 4280.2, AS/NZS 4295, AS/NZS 4582, AS/NZS 4583, AS/NZS 4769.1, AS/NZS 4769.2, AS/NZS 4770, AS/NZS 4771
		Telecommunications: AS/ACIF S002:05, AS/ACIF S003:06, AS/ACIF S004:06 AS/ACIF S006:01, AS/ACIF S016:01, AS/ACIF S031:01, AS/ACIF S038:01, AS/ACIF S040:01, AS/ACIF S041:05, AS/ACIF S043.2:06, AS/ACIF S60950.1
Australia NATA Recognition		AS/ACIF S002, AS/ACIF S003, AS/ACIF S004, AS/ACIF S006, AS/ACIF S016,AS/ACIF S031, AS/ACIF S038, AS/ACIF S040, AS/ACIF S041, AS/ACIF S043.2