



# REPORT

For

## **Tri-M Engineering**



Unit 100 1407 Kebet Way  
Port Coquitlam, BC, V3C 6L3  
Canada

Date: June 7, 2006  
Report No.: 8448 - 1.0  
Revision No.: 1.0  
Project No.: 8448  
Equipment: DC to DC power supply  
Model: HESC104

**ONE STOP GLOBAL CERTIFICATION SOLUTIONS**



3133-20800 Westminster Hwy, Richmond, BC  
V6V 2W3, Canada  
Phone: 604-247-0444  
Fax: 604-247-0442  
[www.labtestcert.com](http://www.labtestcert.com)

TEST REPORT	
Report Reference No..... :	8448-1.0
Compiled by (+ signature)..... :	Ruben Ugarte 
Approved by (+ signature)..... :	Kavinder Dhillon 
Date of issue..... :	June 7, 2006
<b>Testing Laboratory name</b> ..... :	LabTest Certification Inc.
Address..... :	3133-20800 Westminster Hwy., Richmond, BC. V6V 2W3
Testing location..... :	Powertech Labs Inc. 12388 88th Ave., Surrey, B.C., Canada V3W 7R7
Applicant's name..... :	Tri-M Engineering
Address..... :	Unit 100 1407 Kebet Way, Port Coquitlam, BC, V3C 6L3, Canada
<b>Test specification:</b>	
Standards..... :	- MIL-STD-810C Method 514.2 – Vibration, Category f, Equipment mounted in ground vehicles: Procedure VIII, Table 514.2-VI, Figure 514.2-6. - MIL-STD-810C Method 516.2 – Shock, Procedure I, Figure 516.2-1.
Test procedure..... :	MIL STD
Non-standard test method..... :	N



## TEST REPORT

Powertech Labs Inc.  
12388 88<sup>th</sup> Ave., ☎ (604) 590-7500  
Surrey, B.C., 📠 (604) 590-5347  
Canada V3W 7R7 🌐 www.powertechlabs.com

Prepared for: Kavinder Dhillon

File Number: 16528-35-00

**Manufacturer:** Tri-M Engineering Inc.  
Unit 100  
1407 Kebet Way  
Port Coquitlam, BC V3C 6L3  
Canada

**Part Type:** HESC104 - Power Supply

**Model Number:**

**Part Data:** 15 VDC, 2 amps

**REVIEWED**  
By rubenug at 12:23 pm, 6/7/06

**TEST CONDUCTED:** May 10, 2006

The following test was conducted in accordance with:

- MIL-STD-810C Method 514.2 – Vibration, Category f, Equipment mounted in ground vehicles: Procedure VIII, Table 514.2-VI, Figure 514.2-6.

### TEST EQUIPMENT:

Ling Dynamic Vibratory System Model 860 (Large shaker), Dactron Laser Vibration Controller (Asset #11323), PCB 353 B32 Control Accelerometer (Asset #0926), PCB accelerometer 353B15 (Asset # 01083).

### TEST PROCEDURE:

#### Sine Sweep

Frequency Range	Amplitude
5 – 30 Hz	1.5 g peak
30 – 50 Hz	0.033 inches peak to peak
50 – 500 Hz	4.5 g peak


Sweep Rate: 5 – 500 – 5 Hz in 15 minutes

Duration: 3 hours per orthogonal axis

Unit is to operate (under load) during the test without incident.

### TEST RESULTS:

The HESC104 power supply functioned without incident during the vibration test. The unit passed the vibration test.

<b>Tested By:</b>  Rick Palylyk Sr. Projects Specialist II Materials Engineering	<b>Approved By:</b>  A. Rao, Director Materials Engineering
Date: June 2, 2006	

Management System Registered to ISO 9001 and ISO 14001

Input #1

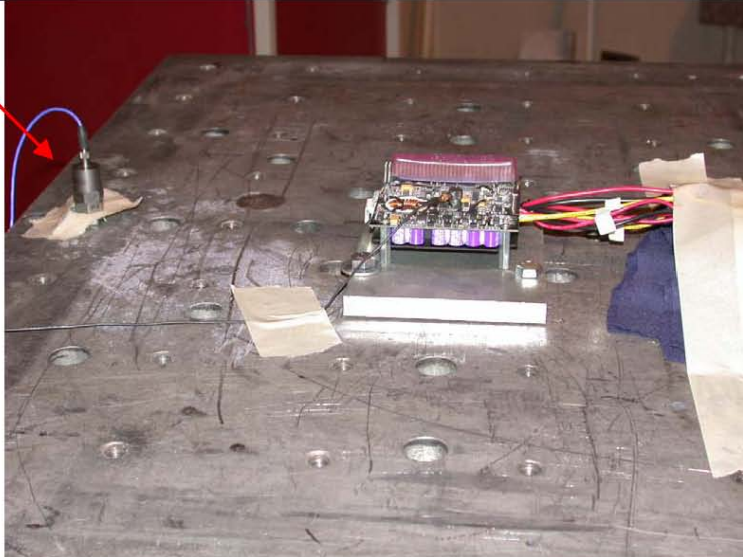


Figure 1: View of Tri-M power supply mounted on shaker head expander in the vertical direction. This test direction is the vertical (Z).

Input #2

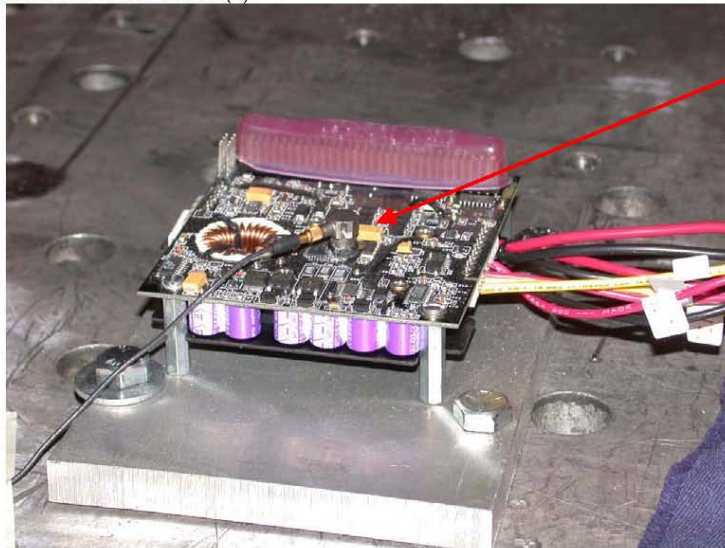


Figure 2: Input #2 location.

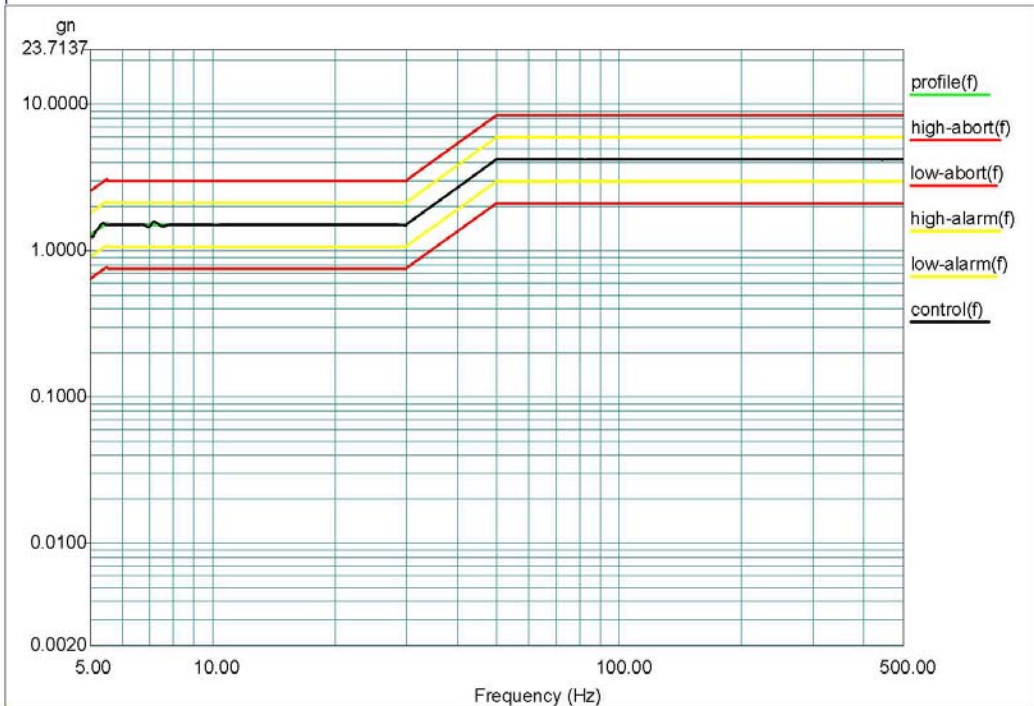


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#### VERTICAL (Z) SWEEP

Tri-M HESC104 - Power Supply - Vertical (Z)  
MIL STD 810C Method 514.2-VI Figure 514.2-6 W  
Project File Name: Tri-M.prj  
Profile Name: MIL 810C 514.2-37 Figure 514.2-6 W  
Run Folder: \RunDefault May 10,2006 10-17-06  
Test Type: Swept Sine



Level: 100 % Control Peak: 1.328494 gn Full Level Time: 03:00:00  
Sweep Type: Logarithmic  
Frequency: 5.127126 Hz Demand Peak: 1.343004 gn Time Remaining: 00:00:00  
Sweep Rate: 0.886 Oct/Min

Data saved at 01:22:03 PM, Wednesday, May 10, 2006 Report created at 01:22:10 PM, Wednesday, May 10, 2006

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Document: C:\Documents and Settings\hibom\Local Settings\Temporary Internet Files\OLKBTri-M Power Supply Vibration Test.doc

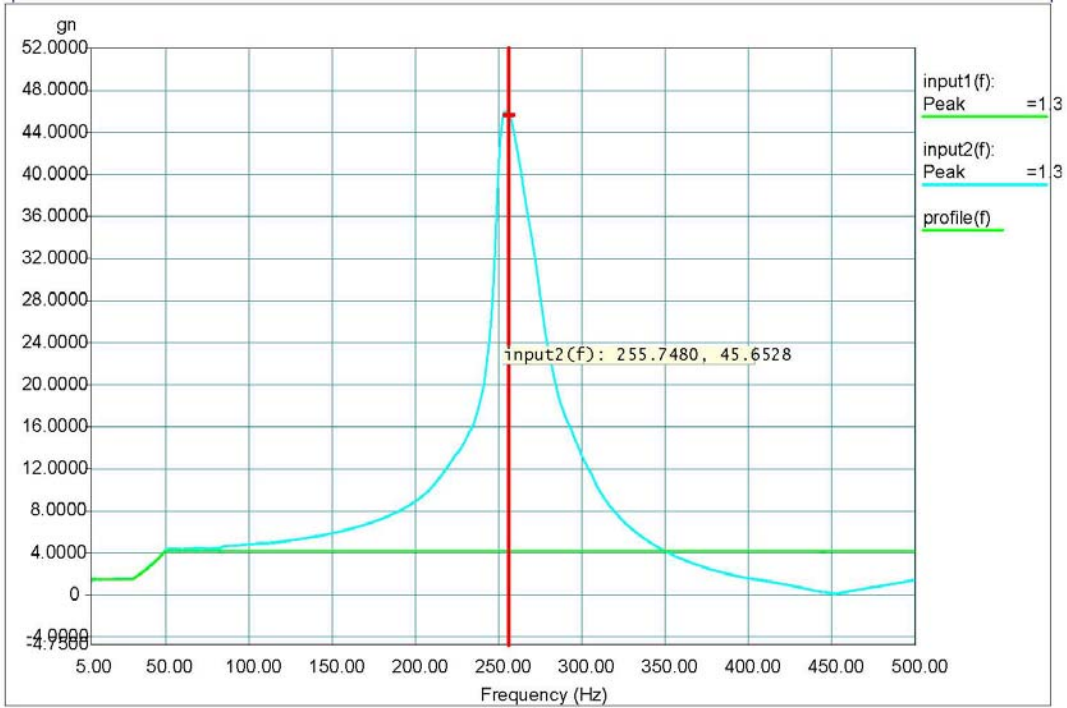
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Tri-M HESC104 - Power Supply - Vertical (Z)  
 MIL STD 810C Method 514.2-VI Figure 514.2-6 W  
 Project File Name: Tri-M.prj  
 Profile Name: MIL 810C 514.2-37 Figure 514.2-6 W  
 Run Folder: .RunDefault May 10,2006 10-17-06  
 Test Type: Swept Sine



Level: 100 % Control Peak: 1.328494 gn Full Level Time: 03:00:00  
 Sweep Type: Logarithmic  
 Frequency: 5.127126 Hz Demand Peak: 1.343004 gn Time Remaining: 00:00:00  
 Sweep Rate: 0.886 Oct/Min

Data saved at 01:22:03 PM, Wednesday, May 10, 2006 Report created at 01:22:10 PM, Wednesday, May 10, 2006

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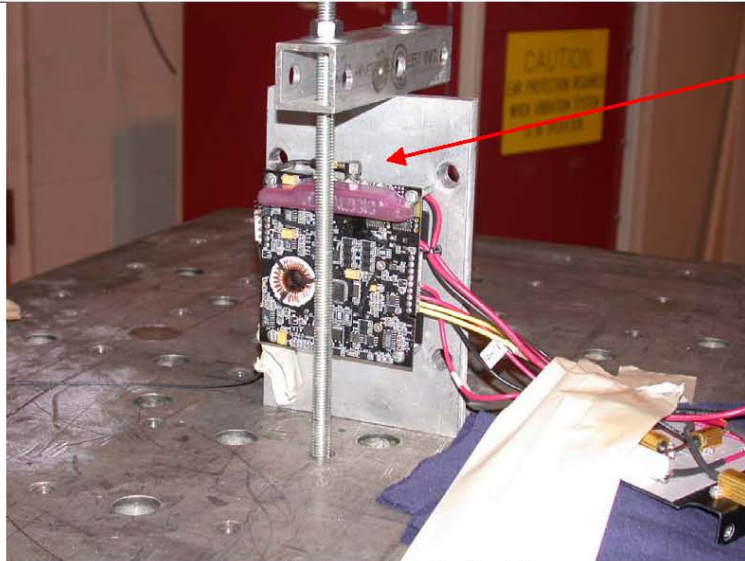


Figure 3: Mounting of power supply in the longitudinal direction (Y).

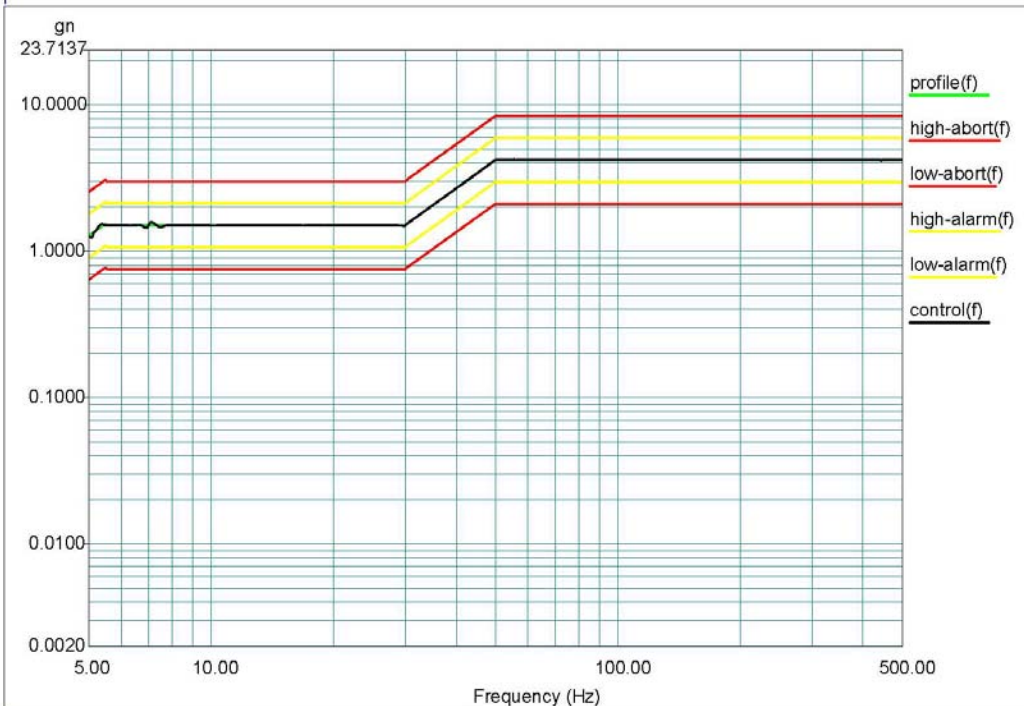


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#### LONGITUDINAL (Y) SWEEP

Tri-M HESC104 - Power Supply - Long. (Y)  
MIL STD 810C Method 514.2-VI Figure 514.2-6 W  
Project File Name: Tri-M.prj  
Profile Name: MIL 810C 514.2-37 Figure 514.2-6 W  
Run Folder: \RunDefault May 10,2006 13-30-50  
Test Type: Swept Sine



Level: 100 % Control Peak: 1.328659 gn Full Level Time: 03:00:00  
Sweep Type: Logarithmic  
Frequency: 5.127126 Hz Demand Peak: 1.343004 gn Time Remaining: 00:00:00  
Sweep Rate: 0.886 Oct/Min

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May 10, 2006

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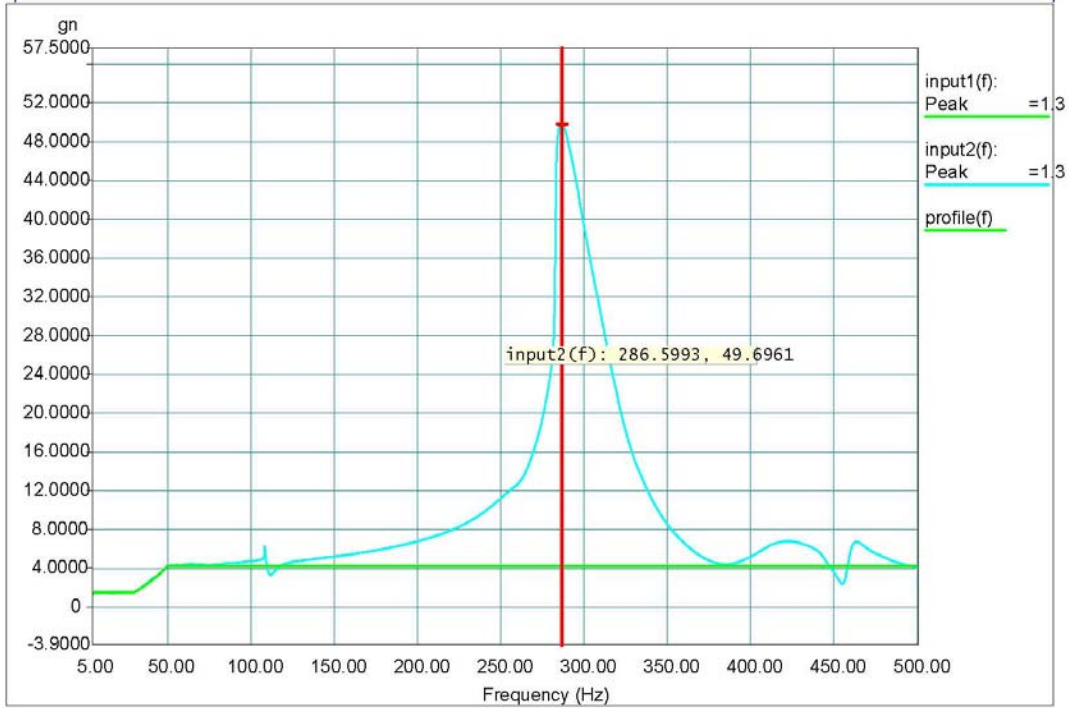




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Tri-M HESC104 - Power Supply - Long, (Y)  
MIL STD 810C Method 514.2-VI Figure 514.2-6 W  
Project File Name: Tri-M.prj  
Profile Name: MIL 810C 514.2-37 Figure 514.2-6 W  
Run Folder: .\RunDefault May 10,2006 13-30-50  
Test Type: Swept Sine



Level: 100 % Control Peak: 1.328659 gn Full Level Time: 03:00:00  
Sweep Type: Logarithmic  
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Sweep Rate: 0.886 Oct/Min

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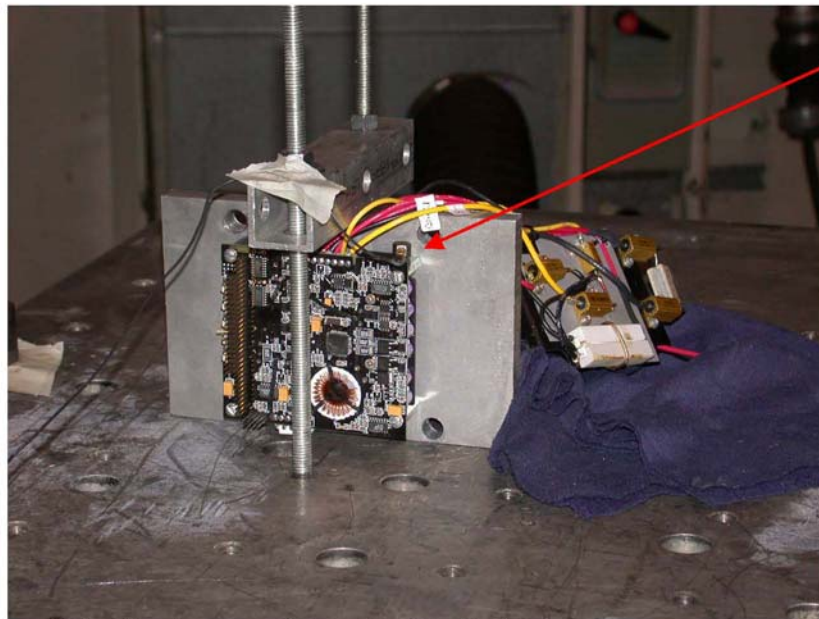


Figure 4: Mounting of power supply in the lateral direction (X).

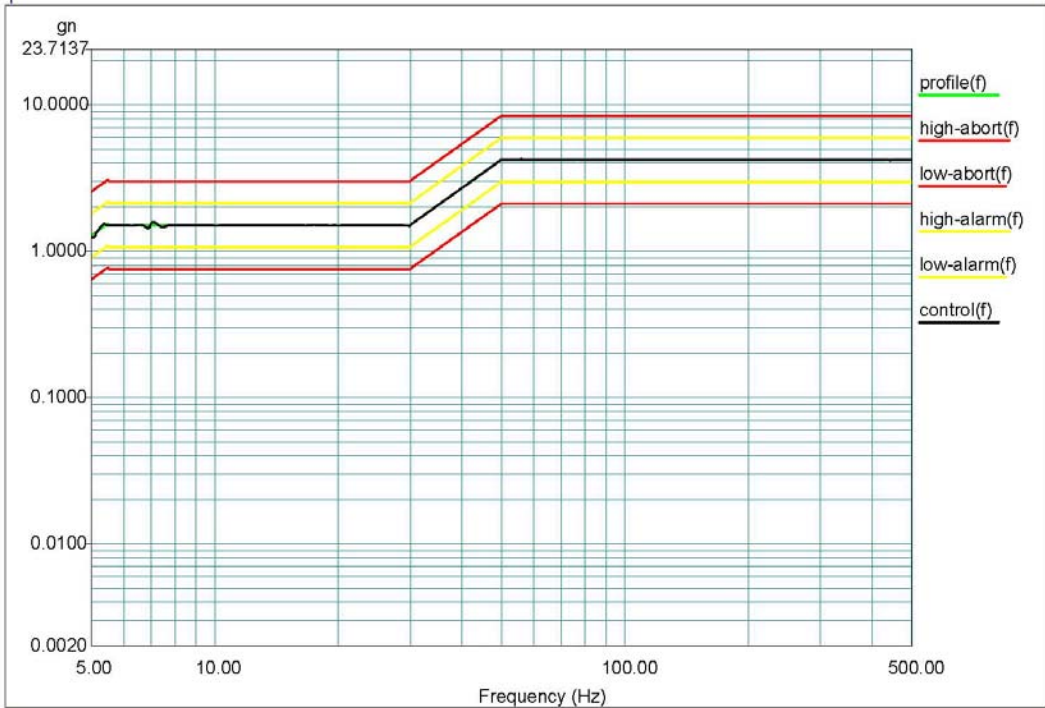


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**LATERAL (X) SWEEP**

Tri-M HESC104 - Power Supply - Lat. (X)  
 MIL STD 810C Method 514.2-VI Figure 514.2-6 W  
 Project File Name: Tri-M.prj  
 Profile Name: MIL 810C 514.2-37 Figure 514.2-6 W  
 Run Folder: \RunDefault May 10,2006 16-43-16  
 Test Type: Swept Sine



Level: 100 % Control Peak: 1.329439 gn Full Level Time: 03:00:00  
 Sweep Type: Logarithmic  
 Frequency: 5.128247 Hz Demand Peak: 1.343004 gn Time Remaining: 00:00:00  
 Sweep Rate: 0.886 Oct/Min

Data saved at 09:55:25 AM, Thursday, May 11, 2006 Report created at 09:55:27 AM, Thursday, May 11, 2006

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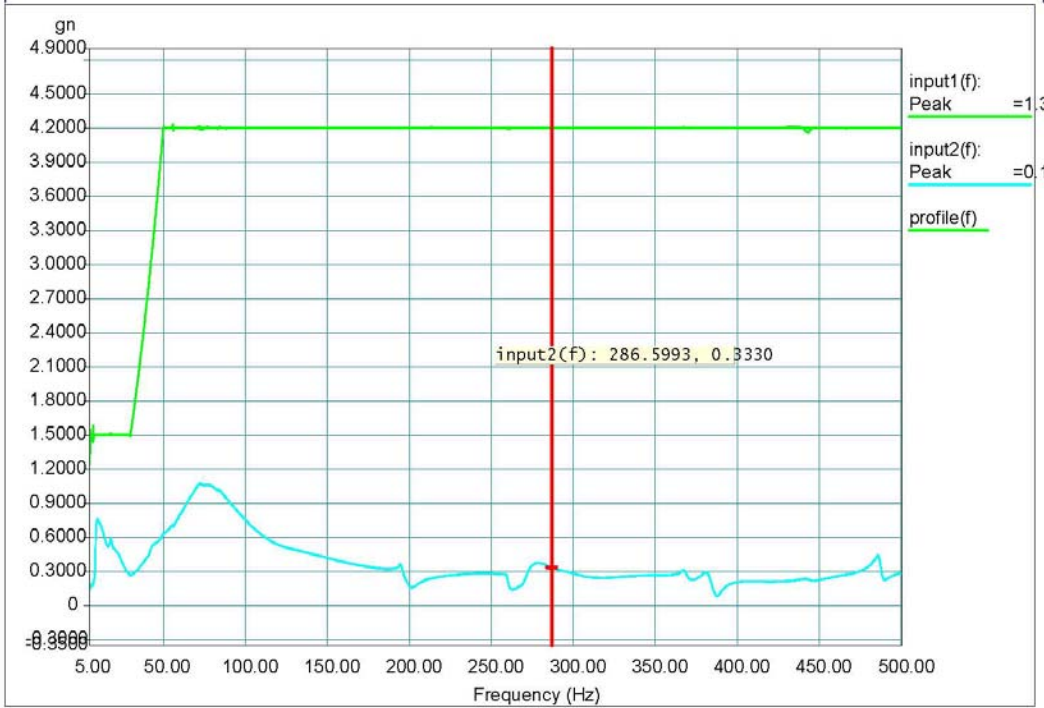
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Tri-M HESC104 - Power Supply - Lat. (X)  
 MIL STD 810C Method 514.2-VI Figure 514.2-6 W  
 Project File Name: Tri-M.prj  
 Profile Name: MIL 810C 514.2-37 Figure 514.2-6 W  
 Run Folder: .RunDefault May 10,2006 16-43-16  
 Test Type: Swept Sine



Level: 100 % Control Peak: 1.329439 gn Full Level Time: 03:00:00  
 Sweep Type: Logarithmic  
 Frequency: 5.128247 Hz Demand Peak: 1.343004 gn Time Remaining: 00:00:00  
 Sweep Rate: 0.886 Oct/Min

Data saved at 09:55:25 AM, Thursday, May 11, 2006 Report created at 09:55:27 AM, Thursday, May 11, 2006

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## CALIBRATIONS



**TEST REPORT**

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Calibration Report for LASER front end DSP box serial number: 4980838  
 Time And Date of Calibration: Tuesday, November 29, 2005 11:52:40

Calibrated by: Rick Palylyk  
 Voltage Meter Brand: Fluke  
 Voltage Meter Model Number: 8012A  
 Voltage Meter Serial Number:  
 Voltage Meter Traceability Certificate Number: Asset #30279  
 Voltage Meter Certificate Date: Sept. 30, 2005  
 Voltage Meter Certificate Due Date: Sept. 30, 2006

Front end DSP box Serial Number = 4980838  
 Number of Settings to Test for Output Channels = 3  
 Number of Output Channels = 1  
 Number of Settings to Test for Input Channels = 3  
 Number of Input Channels = 8

\*\*\*\*\*

Initial(uncalibrated) Output Channel Offsets (volts)  

Channel	10.0 Volt Range	1.0 Volt Range	0.1 Volt Range
Drive	0.009000	-0.001000	-0.001500

Initial(uncalibrated) Output Channel Gain Error (percentage)  

Channel	10.0 Volt Range	1.0 Volt Range	0.1 Volt Range
Drive	-9.909913	-8.088240	-7.063199

Final (calibrated) Output Channel Offsets (volts)  

Channel	10.0 Volt Range	1.0 Volt Range	0.1 Volt Range	Results
Drive	0.000500	0.000400	0.000010	Pass

Final (calibrated) Output Channel Gain Error (percentage)  

Channel	10.0 Volt Range	1.0 Volt Range	0.1 Volt Range	Results
Drive	0.000000	0.000000	-0.199597	Pass

\*\*\*\*\*

Initial(uncalibrated) Input Channel Offsets (volts)  

Channel Number	10.0 Volt Range	1.0 Volt Range	0.1 Volt Range
1	-0.054849	-0.007401	-0.002092
2	-0.066864	-0.005668	-0.000325
3	-0.061785	-0.002698	0.003318
4	-0.045959	-0.003906	0.001530
5	-0.060223	-0.007312	-0.002053
6	-0.042957	-0.003891	0.001429
7	-0.064847	-0.007849	-0.001818
8	-0.047369	-0.004993	-0.000600

Initial(uncalibrated) Input Channel Gain Error (percentage)  

Channel Number	10.0 Volt Range	1.0 Volt Range	0.1 Volt Range
1	-1.525824	-1.628571	-1.436238



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2	-1.501632	-1.602607	-1.410125
3	-2.382703	-2.477111	-2.286129
4	-2.327153	-2.432248	-2.242415
5	-4.607005	-4.703692	-4.519661
6	-3.954379	-4.057040	-3.858574
7	-3.665977	-3.768696	-3.580425
8	-4.148312	-4.251121	-4.060517

Final (calibrated) Input Channel Offsets (in volts)

Channel Number	10.0 Volt Range	1.0 Volt Range	0.1 Volt Range	Results
1	0.000017	-0.000008	0.000003	Pass
2	0.000012	-0.000006	0.000002	Pass
3	0.000005	-0.000006	0.000004	Pass
4	0.000007	-0.000004	0.000004	Pass
5	0.000007	-0.000008	0.000003	Pass
6	0.000010	-0.000007	-0.000001	Pass
7	-0.000008	-0.000007	0.000003	Pass
8	0.000002	-0.000010	-0.000006	Pass

Final (calibrated) Input Channel Gain Error (percentage)

Channel Number	10.0 Volt Range	1.0 Volt Range	0.1 Volt Range	Results
1	0.000668	-0.000906	-0.003196	Pass
2	0.000105	-0.001150	-0.003412	Pass
3	-0.000000	-0.002074	-0.003100	Pass
4	-0.000038	-0.002551	-0.003726	Pass
5	0.002394	-0.001562	0.000417	Pass
6	0.002451	-0.002140	-0.001252	Pass
7	-0.002728	0.002921	-0.003502	Pass
8	-0.002241	0.003254	-0.003122	Pass

\*\*\*\*\* end of calibration report \*\*\*\*\*

**Vibration Control Software**



**TEST REPORT**

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Powertech Labs Inc., 12388 - 88th Avenue, Surrey, B.C., Canada V3W 7R7

CERTIFICATE OF CALIBRATION

Client

MECH. ENG. SERVICES

Instrument

Asset #

Serial # (if applicable)

ACCELEROMETER  
PCB 353B34

#0926

#85627

The above instrument was calibrated using equipment with current calibrations that are traceable to N.R.C. or N.I.S.T. The instrument was calibrated using industry standard procedures and met the manufacturer's specifications, subject to limitations listed below.

Performance Limitations:

\_\_\_\_\_  
 \_\_\_\_\_

Calibration Data: 98.97 mV/g

Equipment Used	Asset #	Calibration Expiry
<u>PCB 394A10 SYSTEM REF ACCEL</u>	<u>#11324</u>	<u>MAY 15, 2006</u>

Date Calibrated: AUG 30, 2005 Calibrated by: Rick Paolyske

Calibration Expiry: AUG 30, 2006

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**INPUT #1**





**TEST REPORT**

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**Labtest Certification Inc – Tri-M Systems Inc.**  
**HESC104 - Power Supply Vibration Test Results**



Powertech Labs Inc., 12388 - 88th Avenue, Surrey, B.C., Canada V3W 7R7

**CERTIFICATE OF CALIBRATION**

Client

MECH. ENGE. SERVICES

Instrument

Asset #

Serial # (if applicable)

ACCELEROMETER  
PCB 353B15 (INPUT#2)

#01093

#72940

The above instrument was calibrated using equipment with current calibrations that are traceable to N.R.C. or N.I.S.T. The instrument was calibrated using industry standard procedures and met the manufacturer's specifications, subject to limitations listed below.

Performance Limitations:

\_\_\_\_\_  
 \_\_\_\_\_

Calibration Data: 10.26 mV/G.

Equipment Used	Asset #	Calibration Expiry
<u>PCB 394A10 SYSTEM REF.AGEE</u>	<u>#11324</u>	<u>MAY 18, 2006</u>

Date Calibrated: AUG 30, 2005

Calibrated by: Rick LaSalle

Calibration Expiry: AUG 30, 2006

pw\certcal.doc

**INPUT #2**



## TEST REPORT

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Prepared for: Kavinder Dhillon

File Number: 16528-35-00

**Manufacturer:** Tri-M Engineering Inc.  
Unit 100  
1407 Kebet Way  
Port Coquitlam, BC V3C 6L3  
Canada  
**Part Type:** HESC104 - Power Supply  
**Model Number:**  
**Part Data:** 15 VDC, 2 amps

**REVIEWED**  
By rubenug at 12:48 pm, 6/7/06

**TEST CONDUCTED:** May 11, 2006

The following test was conducted in accordance with:

- MIL-STD-810C Method 516.2 – Shock, Procedure I, Figure 516.2-1.

### TEST EQUIPMENT:

Ling Dynamic Vibratory System Model 860 (Large shaker), Dactron Laser Vibration Controller (Asset #11323), PCB 353 B32 Control Accelerometer (Asset #0926),

### TEST PROCEDURE:

#### Shock

Shock profile: trailing sawtooth  
Amplitude: 40 g's  
Duration: 11 msec.  
Number of pulses: +/-3 in all three directions (total of 18 pulses).  
Unit is to operate (under load) during the test without incident.

### TEST RESULTS:

The HESC104 power supply functioned without incident during the vibration test. The unit passed the shock test.

Tested By:  Rick Palylyk Sr. Projects Specialist II Materials Engineering	Approved By:  A. Rao, Director Materials Engineering
Date: June 2, 2006	

Management System Registered to ISO 9001 and ISO 14001

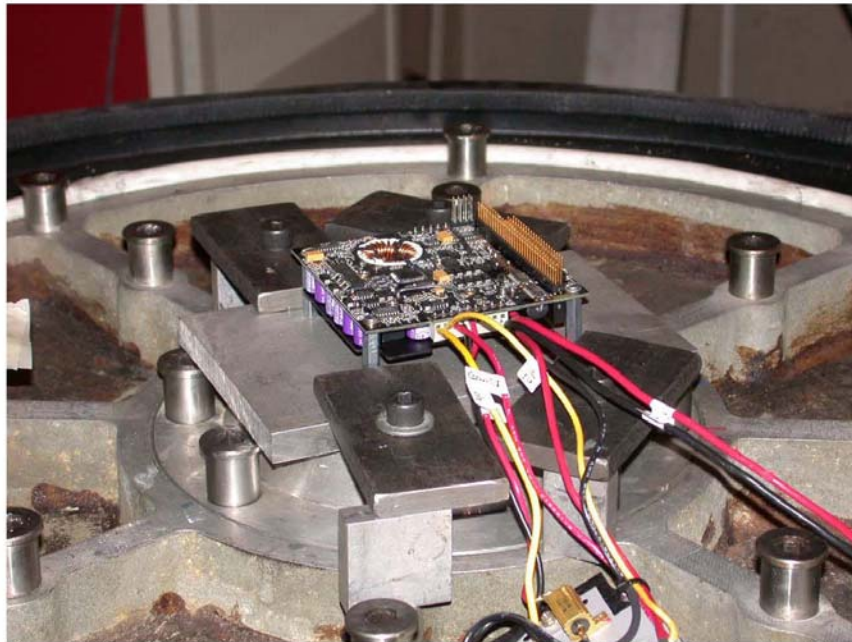


Figure 1: View of Tri-M power supply mounted on bare shaker head in the vertical direction (Z).

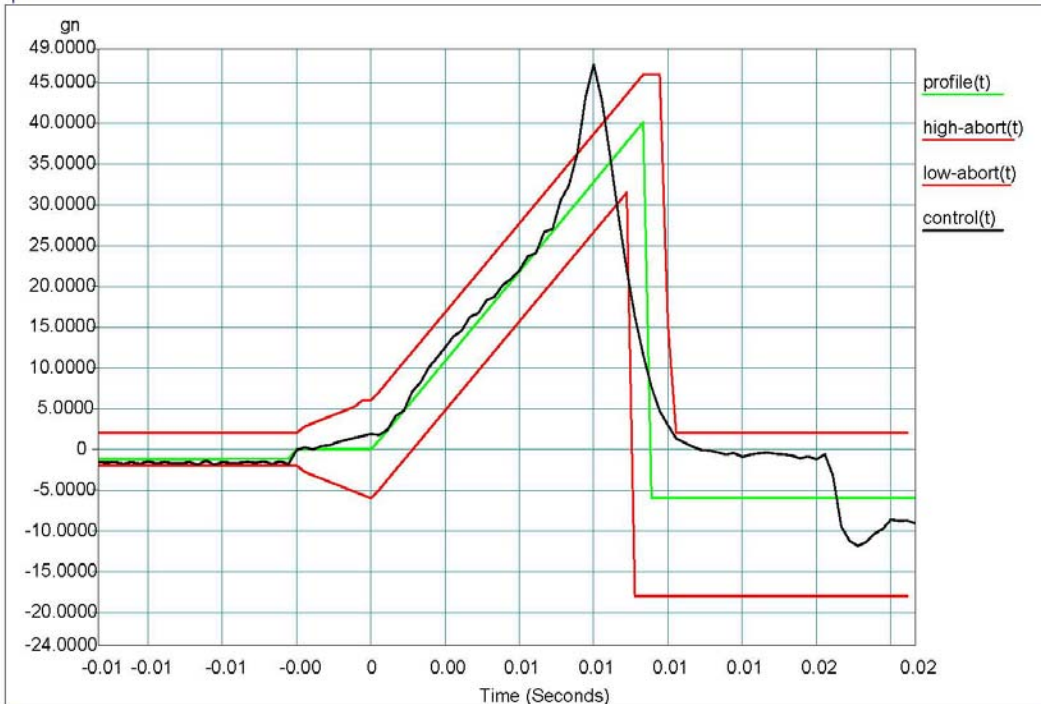


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**VERTICAL (Z) SHOCK**

Tri-M HESC104 - Power Supply - Vertical (+Z)  
 MIL STD 810C Method 516.2-1 Terminal Sawtooth 40 g's 11 msec. 3 pulses  
 Project File Name: Tri-M.prj  
 Profile Name: 40gn 11mSec Test Type: Classical Shock Run Folder:  
 \RunDefault May 11,2006 11-55-40



Level:	100 %	Block Size:	2048	Elapsed Pulses:	22
Frame Time:	0.682667 Seconds	Control Peak:	47.067471 gn	Control RMS:	
	3.658863 gn	Full Level Elapsed Pulses:	3		
dT:	0.000333 Seconds	Demand Peak:	40.000000 gn	Demand RMS:	
	3.484459 gn	Remaining Pulses:	0		
Pulse Type:	Forward Sawtooth	Amplitude:	40.000000 gn		
Data saved at 11:56:31 AM, Thursday, May 11, 2006 Report created at 11:56:32 AM, Thursday, May 11, 2006					

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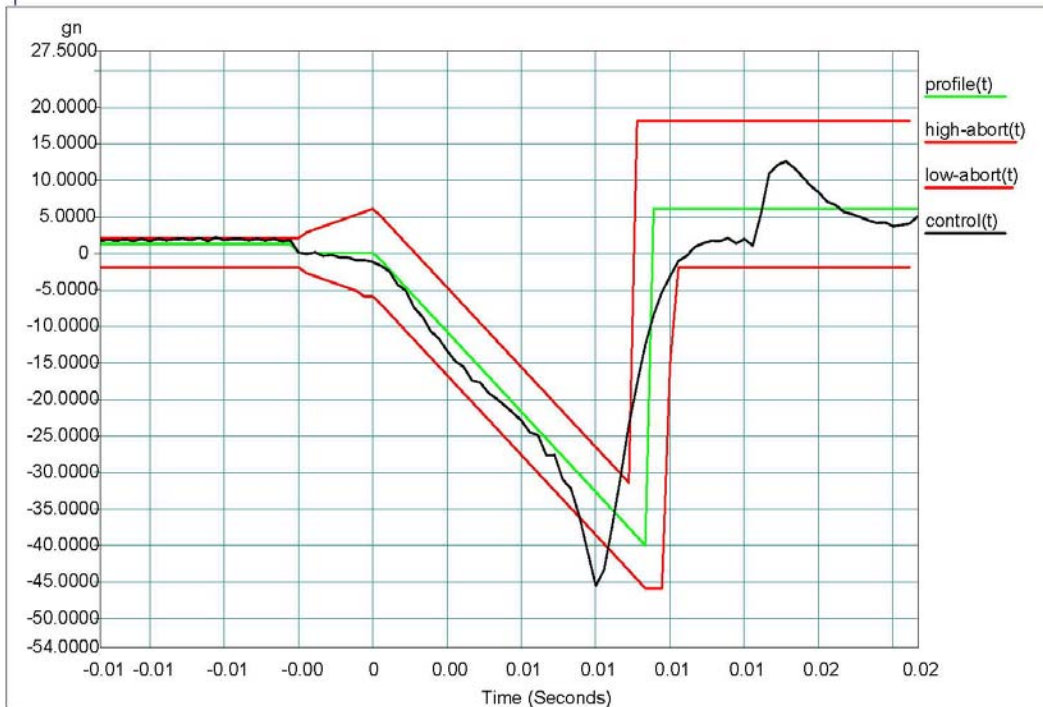
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Tri-M HESC104 - Power Supply - Vertical (-Z)  
MIL STD 810C Method 516.2-1 Terminal Sawtooth 40 g's 11 msec. 3 pulses  
Project File Name: Tri-M.prj  
Profile Name: 40gn 11mSec Test Type: Classical Shock Run Folder:  
RunDefault May 11,2006 11-53-11



Level: 100 %	Block Size: 2048	Elapsed Pulses: 22
Frame Time: 0.682667 Seconds	Control Peak: 45.519806 gn	Control RMS:
3.715824 gn	Full Level Elapsed Pulses: 3	
dT: 0.000333 Seconds	Demand Peak: 40.000000 gn	Demand RMS:
3.484459 gn	Remaining Pulses: 0	
Pulse Type: Forward Sawtooth	Amplitude: 40.000000 gn	
Data saved at 11:54:36 AM, Thursday, May 11, 2006		Report created at 11:54:37 AM, Thursday, May 11, 2006

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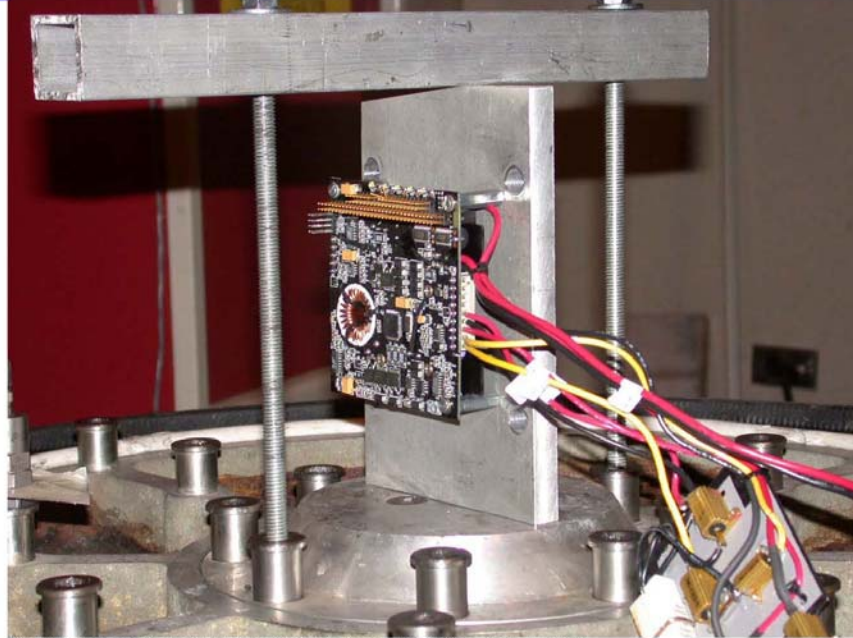


Figure 3: Mounting of power supply in the longitudinal direction (Y).

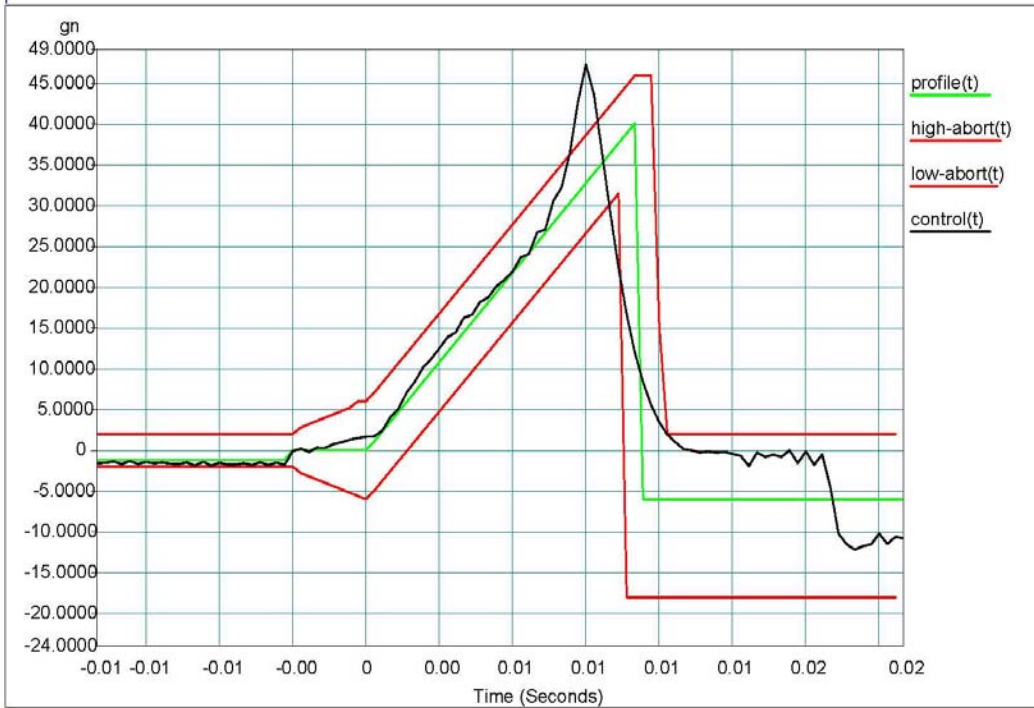


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#### LONGITUDINAL (Y) SHOCK

Tri-M HESC104 - Power Supply - Vertical (+Y)  
MIL STD 810C Method 516.2-1 Terminal Sawtooth 40 g's 11 msec. 3 pulses  
Project File Name: Tri-M.prj  
Profile Name: 40gn 11mSec Test Type: Classical Shock Run Folder:  
RunDefault May 11,2006 12-02-14



Level: 100 % Block Size: 2048 Elapsed Pulses: 25  
Frame Time: 0.682667 Seconds Control Peak: 47.208858 gn Control RMS:  
3.681432 gn Full Level Elapsed Pulses: 3  
dT: 0.000333 Seconds Demand Peak: 40.000000 gn Demand RMS:  
3.484459 gn Remaining Pulses: 0  
Pulse Type: Forward Sawtooth Amplitude: 40.000000 gn  
Data saved at 12:03:09 PM, Thursday, May 11, 2006 Report created at 12:03:11 PM, Thursday, May 11,  
2006

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Document: C:\Documents and Settings\hibom\Local Settings\Temporary Internet Files\OLKB\Tri-M Power Supply Shock Test.doc

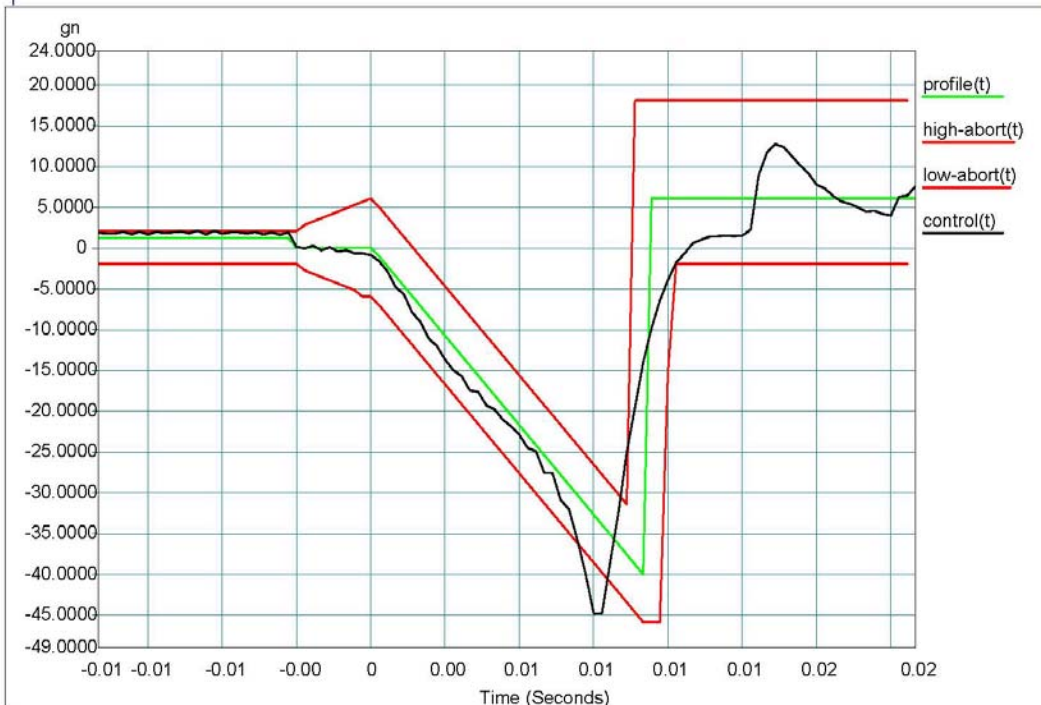
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### TEST REPORT

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Tri-M HESC104 - Power Supply - Vertical (-Y)  
MIL STD 810C Method 516.2-1 Terminal Sawtooth 40 g's 11 msec. 3 pulses  
Project File Name: Tri-M.prj  
Profile Name: 40gn 11mSec Test Type: Classical Shock Run Folder:  
RunDefault May 11,2006 12-04-04



Level: 100 % Block Size: 2048 Elapsed Pulses: 25  
Frame Time: 0.682667 Seconds Control Peak: 44.815868 gn Control RMS:  
3.756063 gn Full Level Elapsed Pulses: 3  
dT: 0.000333 Seconds Demand Peak: 40.000000 gn Demand RMS:  
3.484459 gn Remaining Pulses: 0  
Pulse Type: Forward Sawtooth Amplitude: 40.000000 gn  
Data saved at 12:04:58 PM, Thursday, May 11, 2006 Report created at 12:05:00 PM, Thursday, May 11,  
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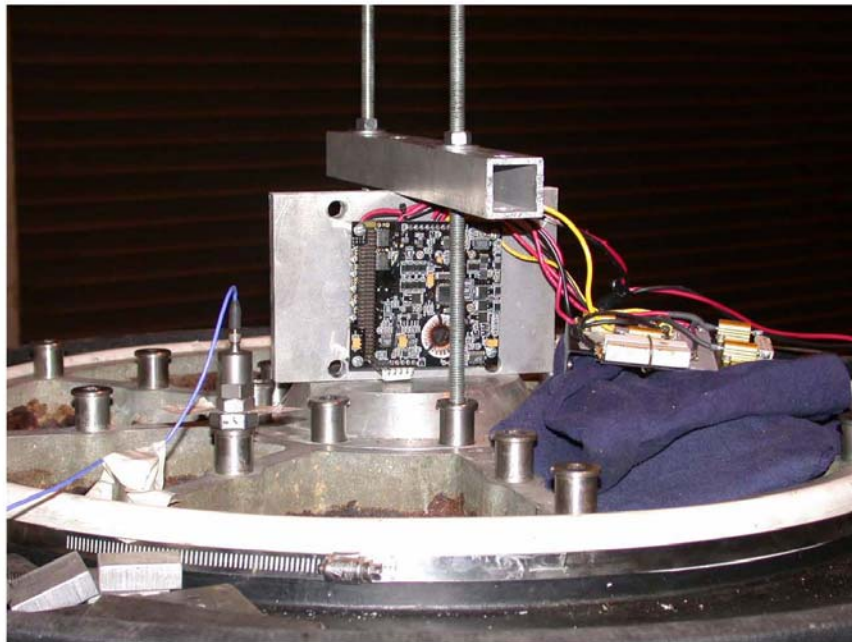


Figure 4: Mounting of power supply in the lateral direction (X).

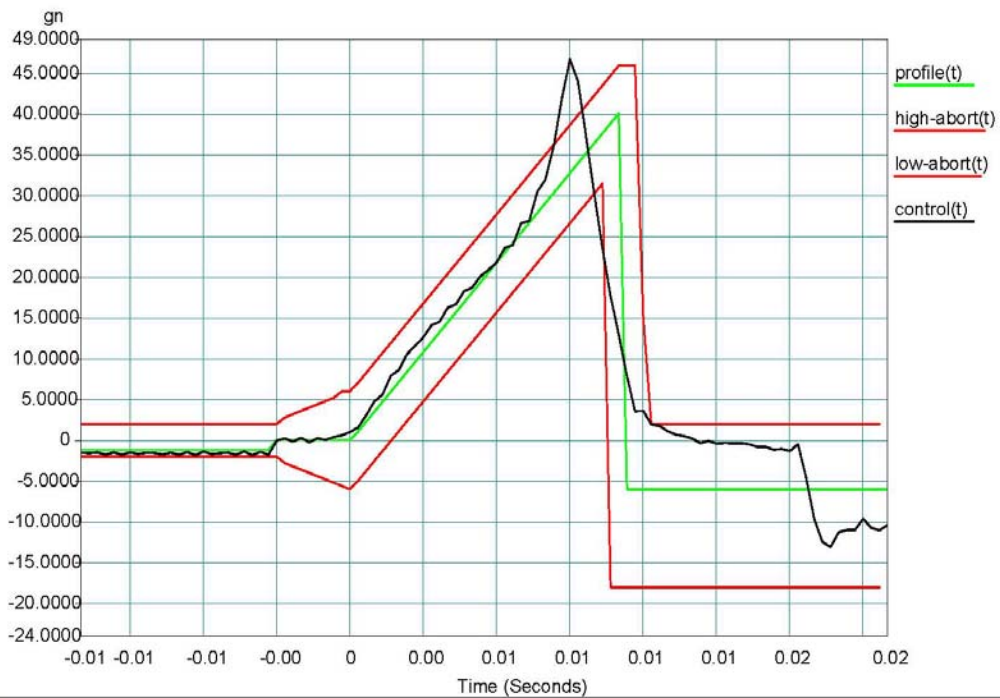


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**LATERAL (X) SWEEP**

Tri-M HESC104 - Power Supply - Lat. (+X)  
 MIL STD 810C Method 516.2-1 Terminal Sawtooth 40 g's 11 msec. 3 pulses  
 Project File Name: Tri-M.prj  
 Profile Name: 40gn 11mSec Test Type: Classical Shock Run Folder:  
 \RunDefault May 11,2006 12-11-21



Level:	100 %	Block Size:	2048	Elapsed Pulses:	25
Frame Time:	0.682667 Seconds	Control Peak:	46.609844 gn	Control RMS:	
	3.694695 gn	Full Level Elapsed Pulses:	3		
dT:	0.000333 Seconds	Demand Peak:	40.000000 gn	Demand RMS:	
	3.484459 gn	Remaining Pulses:	0		
Pulse Type:	Forward Sawtooth	Amplitude:	40.000000 gn		
Data saved at 12:12:19 PM, Thursday, May 11, 2006		Report created at 12:12:20 PM, Thursday, May 11, 2006			

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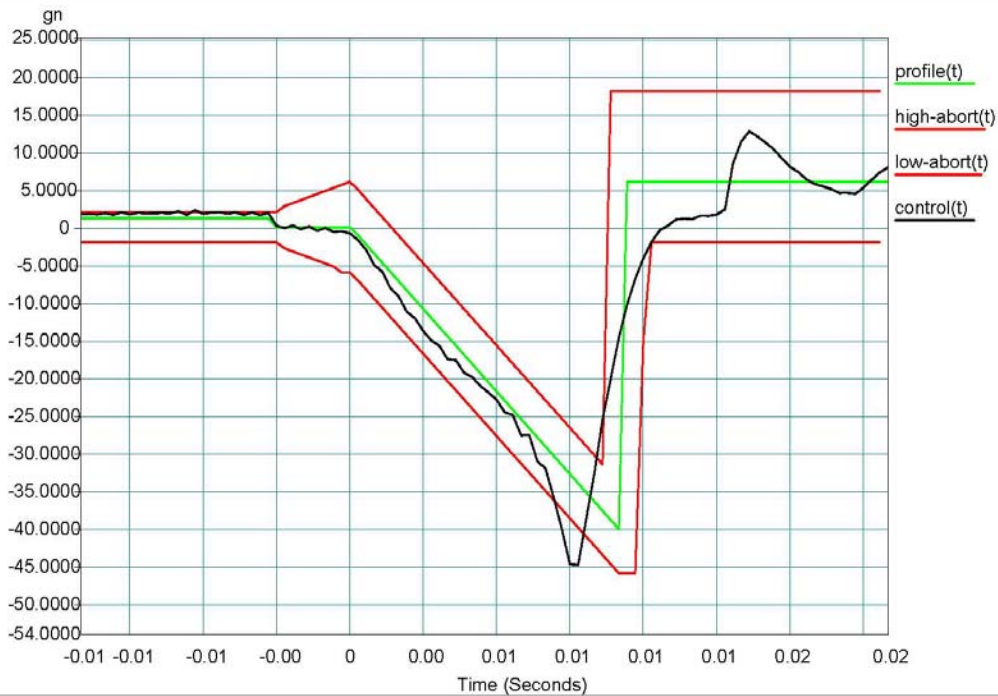
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Tri-M HESC104 - Power Supply - Lat. (-X)  
MIL STD 810C Method 516.2-1 Terminal Sawtooth 40 g's 11 msec. 3 pulses  
Project File Name: Tri-M.prj  
Profile Name: 40gn 11mSec Test Type: Classical Shock Run Folder:  
RunDefault May 11,2006 12-09-38



Level: 100 % Block Size: 2048 Elapsed Pulses: 25  
Frame Time: 0.682667 Seconds Control Peak: 43.518612 gn Control RMS:  
5.122677 gn Full Level Elapsed Pulses: 3  
dT: 0.000333 Seconds Demand Peak: 40.000000 gn Demand RMS:  
3.484459 gn Remaining Pulses: 0  
Pulse Type: Forward Sawtooth Amplitude: 40.000000 gn  
Data saved at 12:10:43 PM, Thursday, May 11, 2006 Report created at 12:10:44 PM, Thursday, May 11,  
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## TEST REPORT

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## CALIBRATIONS



## TEST REPORT

Powertech Labs Inc.  
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Calibration Report for LASER front end DSP box serial number: 4980838  
Time And Date of Calibration: Tuesday, November 29, 2005 11:52:40

Calibrated by: Rick Palylyk  
Voltage Meter Brand: Fluke  
Voltage Meter Model Number: 8012A  
Voltage Meter Serial Number:  
Voltage Meter Traceability Certificate Number: Asset #30279  
Voltage Meter Certificate Date: Sept. 30, 2005  
Voltage Meter Certificate Due Date: Sept. 30, 2006

Front end DSP box Serial Number = 4980838  
Number of Settings to Test for Output Channels = 3  
Number of Output Channels = 1  
Number of Settings to Test for Input Channels = 3  
Number of Input Channels = 8

\*\*\*\*\*

Initial(uncalibrated) Output Channel Offsets (volts)  
Channel 10.0 Volt Range 1.0 Volt Range 0.1 Volt Range  
Drive 0.009000 -0.001000 -0.001500

Initial(uncalibrated) Output Channel Gain Error (percentage)  
Channel 10.0 Volt Range 1.0 Volt Range 0.1 Volt Range  
Drive -9.909913 -8.088240 -7.063199

Final (calibrated) Output Channel Offsets (volts)  
Channel 10.0 Volt Range 1.0 Volt Range 0.1 Volt Range Results  
Drive 0.000500 0.000400 0.000010 Pass

Final (calibrated) Output Channel Gain Error (percentage)  
Channel 10.0 Volt Range 1.0 Volt Range 0.1 Volt Range Results  
Drive 0.000000 0.000000 -0.199597 Pass

\*\*\*\*\*

Initial(uncalibrated) Input Channel Offsets (volts)  
Channel Number 10.0 Volt Range 1.0 Volt Range 0.1 Volt Range  
1 -0.054849 -0.007401 -0.002092  
2 -0.066864 -0.005668 -0.000325  
3 -0.061785 -0.002698 0.003318  
4 -0.045959 -0.003906 0.001530  
5 -0.060223 -0.007312 -0.002053  
6 -0.042957 -0.003891 0.001429  
7 -0.064847 -0.007849 -0.001818  
8 -0.047369 -0.004993 -0.000600

Initial(uncalibrated) Input Channel Gain Error (percentage)  
Channel Number 10.0 Volt Range 1.0 Volt Range 0.1 Volt Range  
1 -1.525824 -1.628571 -1.436238

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**TEST REPORT**

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2	-1.501632	-1.602607	-1.410125
3	-2.382703	-2.477111	-2.286129
4	-2.327153	-2.432248	-2.242415
5	-4.607005	-4.703692	-4.519661
6	-3.954379	-4.057040	-3.858574
7	-3.665977	-3.768696	-3.580425
8	-4.148312	-4.251121	-4.060517

Final (calibrated) Input Channel Offsets (in volts)

Channel Number	10.0 Volt Range	1.0 Volt Range	0.1 Volt Range	Results
1	0.000017	-0.000008	0.000003	Pass
2	0.000012	-0.000006	0.000002	Pass
3	0.000005	-0.000006	0.000004	Pass
4	0.000007	-0.000004	0.000004	Pass
5	0.000007	-0.000008	0.000003	Pass
6	0.000010	-0.000007	-0.000001	Pass
7	-0.000008	-0.000007	0.000003	Pass
8	0.000002	-0.000010	-0.000006	Pass

Final (calibrated) Input Channel Gain Error (percentage)

Channel Number	10.0 Volt Range	1.0 Volt Range	0.1 Volt Range	Results
1	0.000668	-0.000906	-0.003196	Pass
2	0.000105	-0.001150	-0.003412	Pass
3	-0.000000	-0.002074	-0.003100	Pass
4	-0.000038	-0.002551	-0.003726	Pass
5	0.002394	-0.001562	0.000417	Pass
6	0.002451	-0.002140	-0.001252	Pass
7	-0.002728	0.002921	-0.003502	Pass
8	-0.002241	0.003254	-0.003122	Pass

\*\*\*\*\* end of calibration report \*\*\*\*\*

**Vibration Control Software**



**TEST REPORT**

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**Labtest Certification Inc – Tri-M Systems Inc.**  
**HESC104 - Power Supply Shock Test Results**



Powertech Labs Inc., 12388 - 88th Avenue, Surrey, B.C., Canada V3W 7R7

CERTIFICATE OF CALIBRATION

Client

MECH. ENG. SERVICES

Instrument

Asset #

Serial # (if applicable)

ACCELEROMETER  
PCB 353B34

#0926

#85627

The above instrument was calibrated using equipment with current calibrations that are traceable to N.R.C. or N.I.S.T. The instrument was calibrated using industry standard procedures and met the manufacturer's specifications, subject to limitations listed below.

Performance Limitations:

\_\_\_\_\_  
 \_\_\_\_\_

Calibration Data: 98.97 mV/g

Equipment Used	Asset #	Calibration Expiry
<u>PCB 394A10 SYSTEM REF ACCEL</u>	<u>#11324</u>	<u>MAY 15, 2006</u>

Date Calibrated: AUG 30, 2005 Calibrated by: Rick Paulyuk

Calibration Expiry: AUG 30, 2006

pw\certal.doc

**INPUT #1**