SENTON

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February 25, 2011

Prüfbericht / *Test Report* Nr. / *No.* 11383-03100-1 (Edition 1)

Auftraggeber *Applicant*	Kontron Embedded Computers GmbH
Geräteart *Type of equipment*	Industrial PC
Typenbezeichnung *Type designation*	KISS 4U 57-A
Auftragsnummer / *Order No.*	45246200
Prüfgrundlage *Test standards*	DIN EN 60068-2-6:2008-10 Vibration (sinusoidal) DIN EN 60068-2-27:2010-02 Shock

Trade Register Straubing HRB 9302
V.A.T. DE 131457658
Information pursuant to Section 2(1)
DL-InfoV (Germany) at
www.tuev-sued.com/imprint

Managing Director:
Johann Roidt

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Summary

Prüfergebnisse / *Test Results*	Auftragsnummer / *Order No.* **45246200**

Die Prüfungen wurden nach folgenden Vorschriften durchgeführt:
Tests were performed according to:

DIN EN 60068-2-6:2008-10 Vibration (sinusoidal)

DIN EN 60068-2-27:2010-02 Shock

Durchgeführte Prüfung ***Test performed***	**Betriebsart** ***Operation mode***		**Prüfergebnis** ***Testresult***	
	Betrieb *Operating*	ohne Betrieb / *non Operating*	Erfüllt *Passed*	Nicht erfüllt *Not Passed*
Sinus Vibration / *Sine Vibration*	☒	☒	☒	☐
Schock / *Shock*	☒	☒	☒	☐

Bemerkungen / *Remarks:*
Eine abschließende Funktionskontrolle obliegt dem Auftraggeber.
The final evaluation will be performed by the applicant.

Die Prüfergebnisse beziehen sich ausschließlich auf das zur Prüfung vorgestellte Prüfmuster. Ohne schriftliche Genehmigung des Prüflabors darf der Prüfbericht auszugsweise nicht vervielfältigt werden. *The test results relate only to the individual item which has been tested. Without the written approval of the test laboratory this report may not be reproduced in extracts.*

Datum / *Date*	Geprüft von / *Tested by*	Freigabe durch / *Checked by*
February 25, 2011	Reinhold Markl Responsible for testing	Johann Roidt Laboratory manager

Prüfergebnis / *Test Result*

☒ **Erfüllt / *Passed***

☐ **Nicht erfüllt / *Not passed***

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Table of Contents

1 Administrative Data

Application details	
Applicant:	Kontron Embedded Computers GmbH Oskar-von-Miller-Straße 1 85386 Eching Deutschland
Contact person:	Herr Ferit Durgut
Order number:	45246200 / 14.10.2010
Receipt of EUT:	February 1, 2011
Return of EUT:	February 8, 2011
Date(s) of test:	February 1, 2011
Note(s):	The final evaluation will be performed by the applicant.
Responsible for testing:	Mr. Reinhold Markl
Responsible for test report:	Mr. Reinhold Markl (sw)
Test report checked by:	Mr. Johann Roidt

Report details	
Report number:	11383-03100-1
Edition:	1
Issue date:	February 25, 2011

2 Details about the Test Laboratory

Details about the Test Laboratory	
Company name:	TÜV SÜD SENTON GmbH
Address:	Äußere Frühlingstraße 45 D-94315 Straubing Germany
Laboratory accreditation:	DAR-Registration No. DAT-PL-171/94-03
Contact:	Mr. Johann Roidt Phone: +49 9421 5522-0 Fax: +49 9421 5522-99

3 Description of the Equipment Under Test

Equipment characteristics	
Type designation:	KISS 4U 57-A
Parts of the system:	see table Table 1. Configuration
Options and accessories:	--
Type of equipment:	Industrial PC
Serial number:	123456789 Project Number: E KS001-W Article Number: 2-A0FE-2xxx
Manufacturer:	Kontron Embedded Computers GmbH
Power supply:	AC supply Nominal: 230 V Nominal frequency: 50 Hz
Version of EUT:	see photo and table Table 1. Configuration

Table 1. Configuration:

Components	*Name / Manufacturer*	*Article-Number*	*Serial-Nr. / Version*	*Remark*
MB / Baseboard	PT630-NRM ATX-Mainboard Q57	1036-5427	D04005142 R15B	
CPU	Intel Core i3-540 Desktop 3,06GHz	1038-5540	XXXX	
Memory	BGPM DIMM 2GB DDR3 1333 MHz	1031-8769	2x o. SNR.	
Raid	BGSO KISS Stor 5 schwarz ESD isol.Schloß	1043-2965	P004376130542783002	Model: ACS 76130
Harddisk	BGHD #EOL SATA300 3,5" 250GB WD RE3	1042-6764	WCAT1F937892	Model: WD2502ABYS
Harddisk	BGHD #EOL SATA300 3,5" 250GB WD RE3	1042-6764	WCAT1F972917	Model: WD2502ABYS
Harddisk	BGHD #EOL SATA300 3,5" 250GB WD RE3	1042-6764	WCAT1F908124	Model: WD2502ABYS
Harddisk	BGHD #EOL SATA300 3.5" 250GB Desk.P7K500	1021-8764	RBS19A8A	Model: HDP725025GLA380
DVD	BGOD DVD±RW SATA Sony Opt. AD-7260S	1009-1863	93MUR56L312	Model: AD-7200S
PSU	BGNT 90-264VAC/400W, 80+,PS2,FSP400-60PFB	1036-1972	S8431051998	Model: FSP400-60PFB
Mechanics-[illegible]	BGSO Barebone KISS4UV2	1035-7344	X4S40E32A03xxxxxxS	Revision: 10063-001-00 [illegible]

Firmware:	☐	BIOS: 08.00.15	☐
Operating System: Windows 7, 64 Bit	☐	ID : 1 AAAA 0000	☐

3.1 Photos of theTestsample

4 Operation Mode and Configuration of EUT

Operation Mode(s)
Operating: - PC powered with 230 VAC / 50 Hz - Windows running - Burn In Test operating Non Operating: - PC not powered (cables connected) - Functional test before and after each single test

List of ports and cables				
No.	*Description*	*Classification*[1]	*Cable type*	*Cable length*
A1	Power Supply	ac power	Unshielded	2 m
S1	VGA to Display	signal/control port	Shielded	2 m
S1	USB to Keybord/Mouse	signal/control port	Shielded	1,5 m

EUT mounting				
No.	*Description*	*Type designation*	*Serial no. or ID*	*Weight*
1	clamped down to headexpander/sliptable	4 M8 bolts and steel pipe 40x40x4	--	--
2	4 side blocks	each 1 M8 screw	--	--

List of devices connected to EUT				
No.	*Description*	*Type designation*	*Serial no. or ID*	*Manufacturer*
1	Display	VGA	--	--
1	USB Keyboard	USB	--	--
2	USB Mouse	USB	--	--

[1] Ports shall be classified as ac power, dc power or signal/control port.

List of support devices				
No.	*Description*	*Type designation*	*Serial no. or ID*	*Weight*
1	steel pipe 40 x 40 x 4 l = 500	stainless steel		appr. 5 kg
2	side blocks	steel	--	--

5 Performance Criteria and Methods of Observation

Methods of Observation			
Function	*Observed size*	*Permissible range*	*Observation method*
mechanical	constitution	--	visual
functional test	--	--	Burn In Testprogram
The final evaluation will be done by the applicant.			

6 Referenced Regulations

Publikation	*Titel*
DIN EN 60068-2-6:2008-10	Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal) (IEC 60068-2-6:2007); German version EN 60068-2-6:2008
DIN EN 60068-2-27:2010-02	Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock (IEC 60068-2-27:2008); German version EN 60068-2-27:2009

7 Test Results

Mechanical Tests

DIN EN 60068-2-6 Sine Vibration			
Operation Mode	OPERATION		
Test performed		*Test Result*	*Note*
frequency range	5..200 Hz	Test passed	X / Y / Z tested
constant amplitude	3,5 mm		
cross-over-frequency	8,5 Hz		
acceleration	10 m/s² (~1 g)		
duration	45 min		
sweep	1 octave / minute		

DIN EN 60068-2-6 Sine Vibration			
Operation Mode	NON OPERATION		
Test performed		*Test Result*	*Note*
frequency range	5..200 Hz	Test passed	X / Y / Z tested
constant amplitude	7 mm		
cross-over-frequency	8,5 Hz		
acceleration	20 m/s² (~2 g)		
duration	45 min		
sweep	1 octave / minute		

DIN EN 60068-2-27 Single Shock			
Operation Mode	OPERATION		
Test performed		*Test Result*	*Note*
shock acceleration	150 m/s² ~15 g	Test passed	X / Y / Z tested
shock duration	11 ms		
count of shocks	3 per axis and direction		
pulse shape	half-sine pulse		

DIN EN 60068-2-27 Single Shock			
Operation Mode	NON OPERATION		
Test performed		*Test Result*	*Note*
shock acceleration	300 m/s² ~30 g	Test passed	X / Y / Z tested
shock duration	11 ms		
count of shocks	3 per axis and direction		
pulse shape	half-sine pulse		

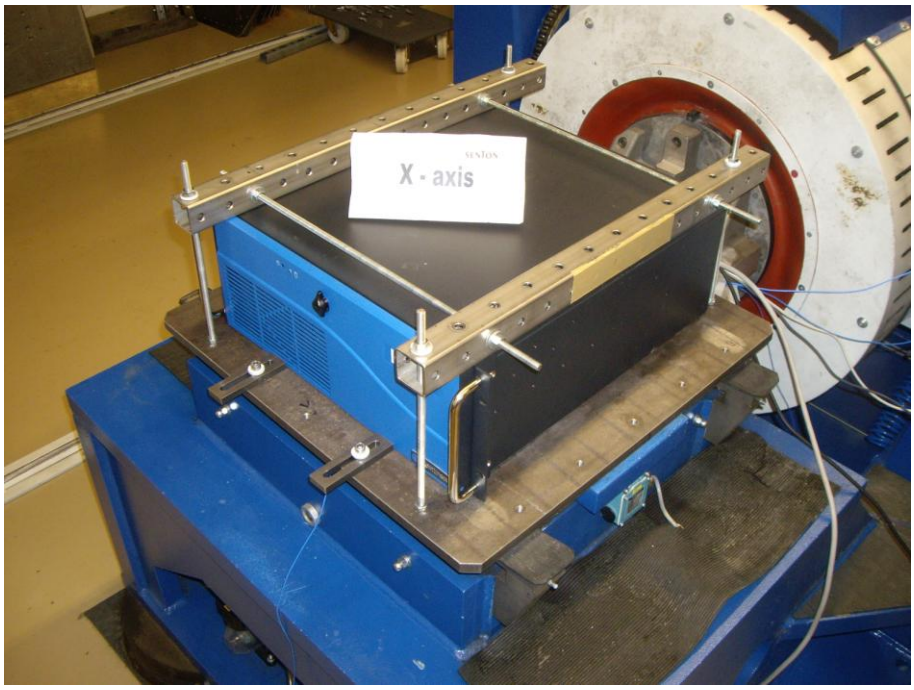
7.1 Mechanical Tests

7.1.1 Test Equipment List

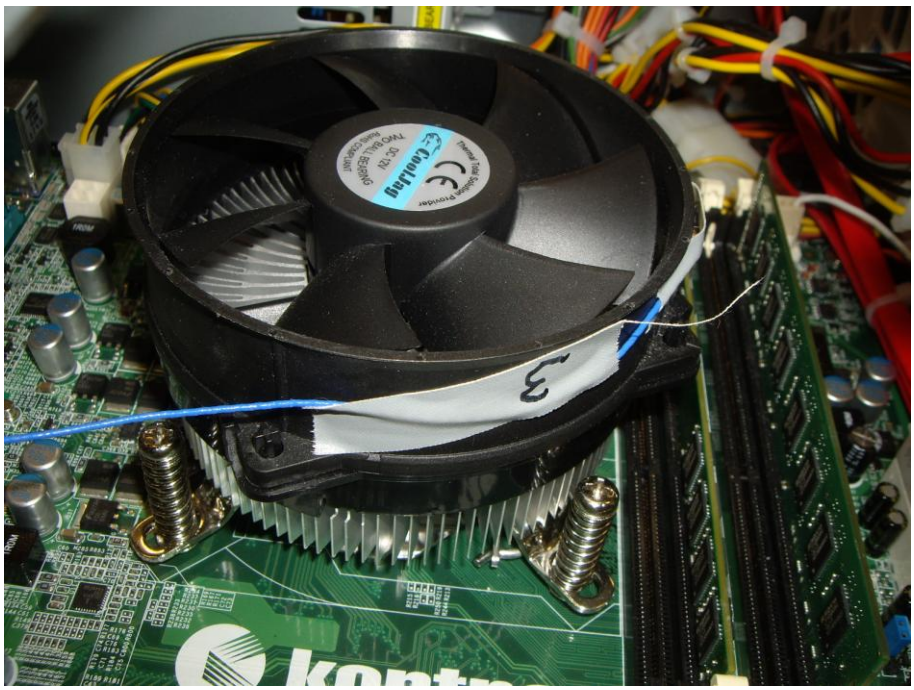
	Type	*Designation*	*Inv.-no.*	*Manufacturer*
☒	**Shakersystem**			TIRA GmbH
	Shaker	S597/AIT-340	1923	TIRA GmbH
	Power amplifier	A 54342	1923	TIRA GmbH
	Sliptable	TGT MO 20 XL	1923	TIRA GmbH
	4-channel - controlsystem	VR 8500-4	1924	Vibration Research
	Software	Vibration View	1925	Vibration Research
	Accelerometer	M320 C 03	1927	ICP
	Accelerometer	M320 C 33	2049	ICP
	Triaxial Accelerometer	M356A02	2046	ICP
	Triaxial Accelerometer	M356A15	1930	ICP
	Accelerometer	M352 C 22	2047	ICP
	Accelerometer	M352 C 22	2048	ICP
	Accelerometer	M352 C 22	2050	ICP
☐	**Vibration- and temperature-/climatic test chamber**	TIRAvibro TTV 7120 ES VH	1934	TIRA GmbH
	Software	WINKRATOS	1935	TIRA GmbH
☐	**Data Aquisition Switch Unit**	34970A	1967	Agilent Technologies
	20 channel multiplexer	34901A	1968	Agilent Technologies

7.1.2 Testsetup

Testsetup X-Axis




2
FSP GROUP
E190414
MODEL NO: FSP400-60PFB
AC INPUT:100-240V~,6-3A,60-50Hz
MAX. OUTPUT POWER: 400W
(+3.3V & +5V=150W Max) (+3.3V & +5V
DC OUTPUT: +3.3V 20.0A(ORG),+5V 20.0A(RED),-12V
+5Vsb 2.5A(PURP),+12V1 16.0A(YEL/BLACK),
P.G. SIGNAL(GRAY) , GROUND(BLACK)
CAUTION! HAZARDOUS AREA
SAFETY INSTRUCTIONS:
DO NOT REMOVE THE COVER
NO SERVICEABLE COMPONENTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.
WARNUNG! GEFAHRENZONE
SICHERHEITSHINWEISE:


3

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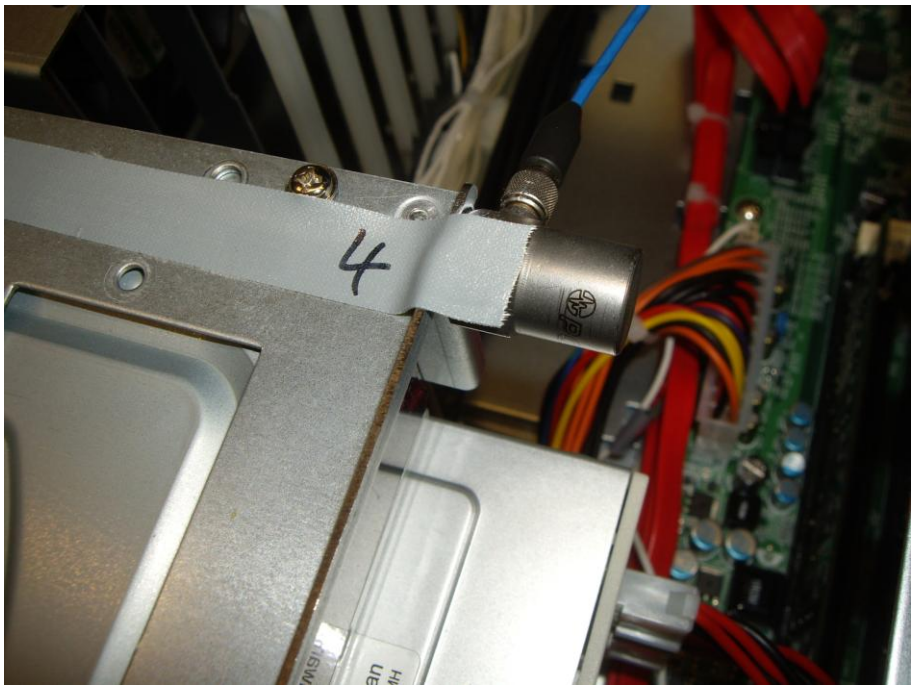
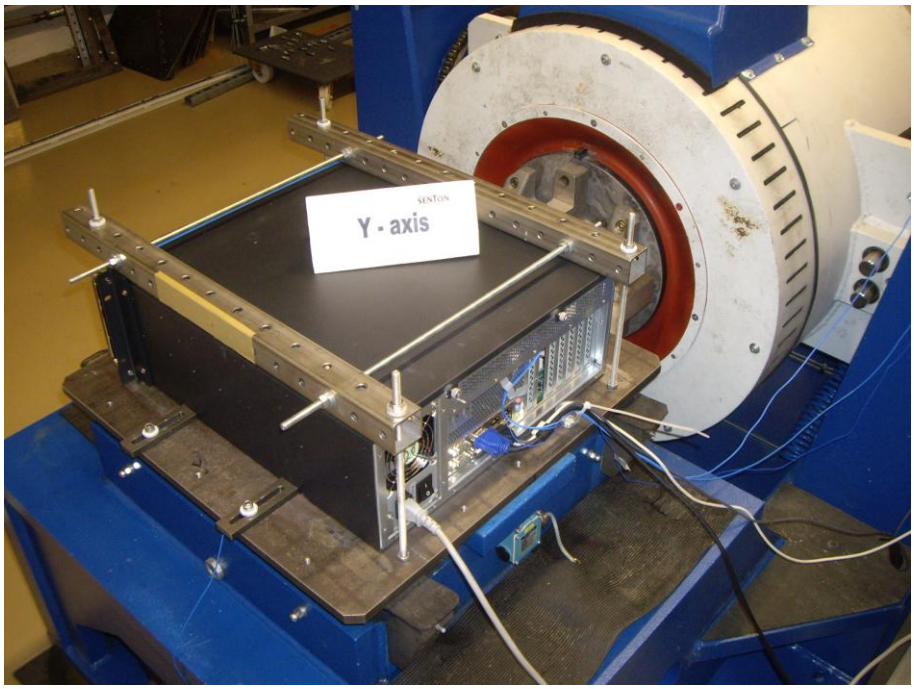
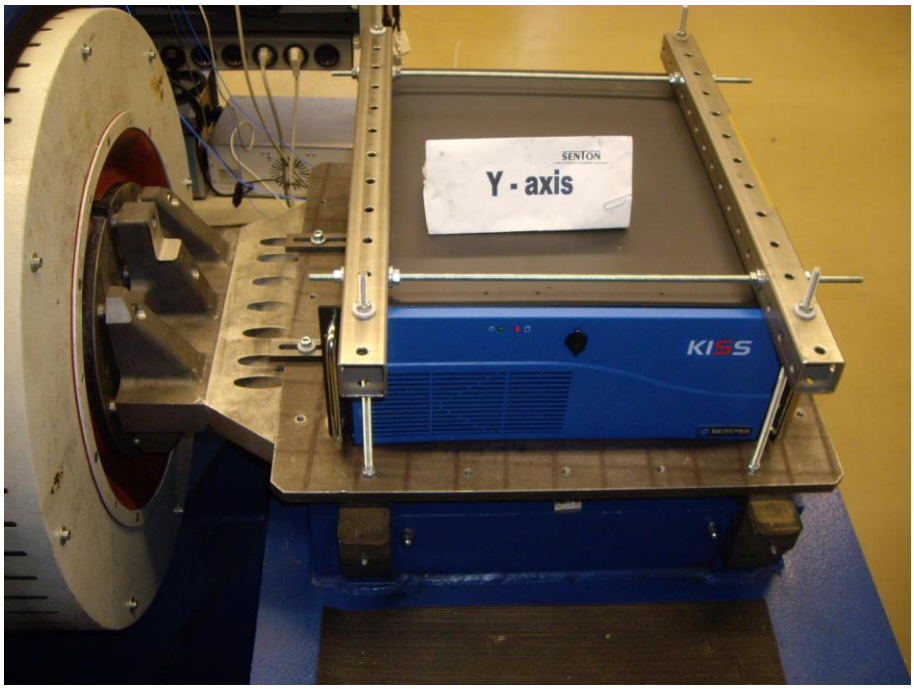
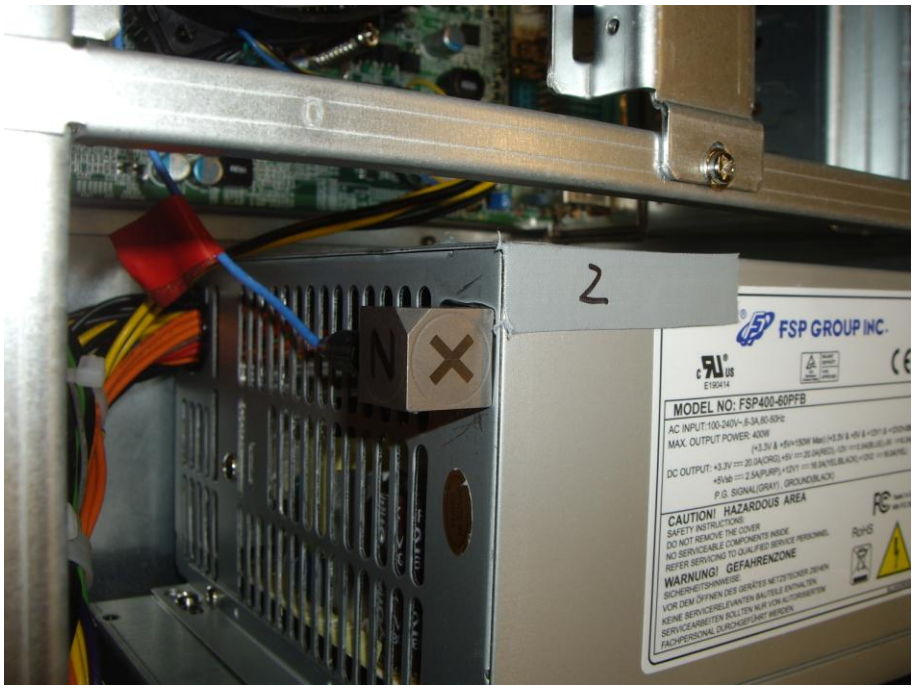


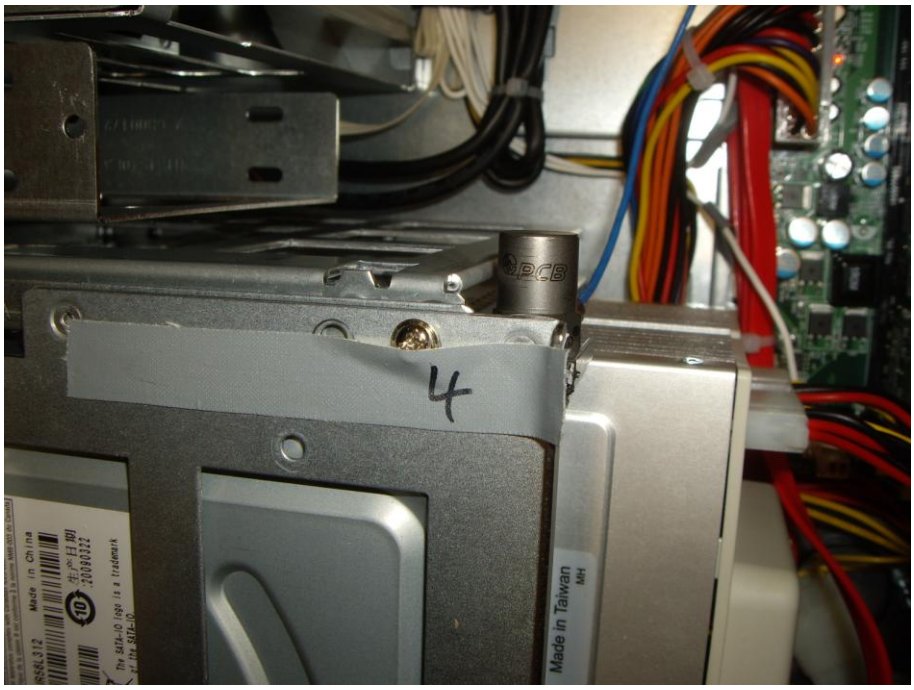
Testsetup Y-Axis



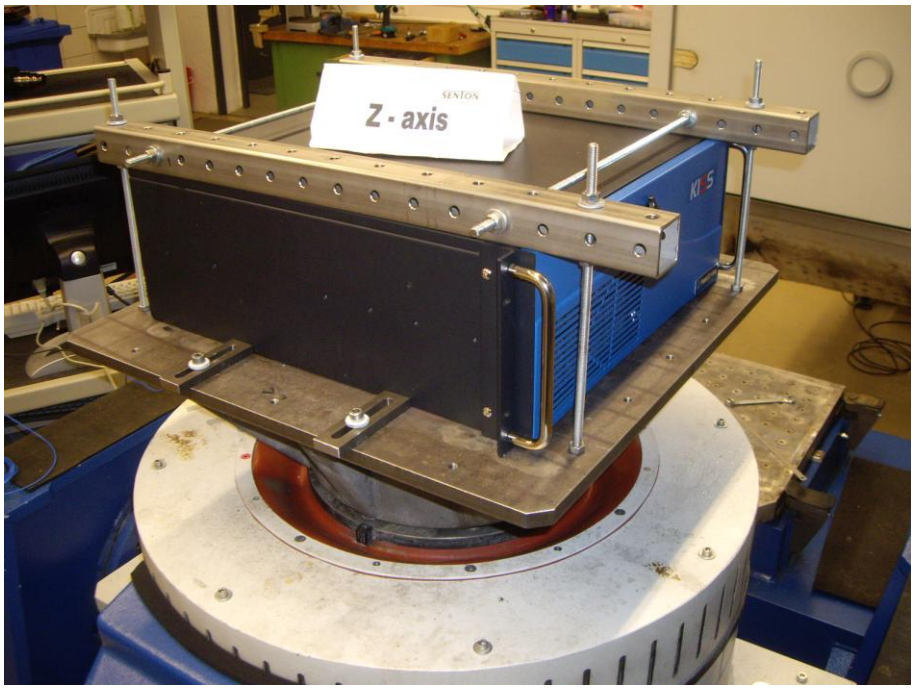


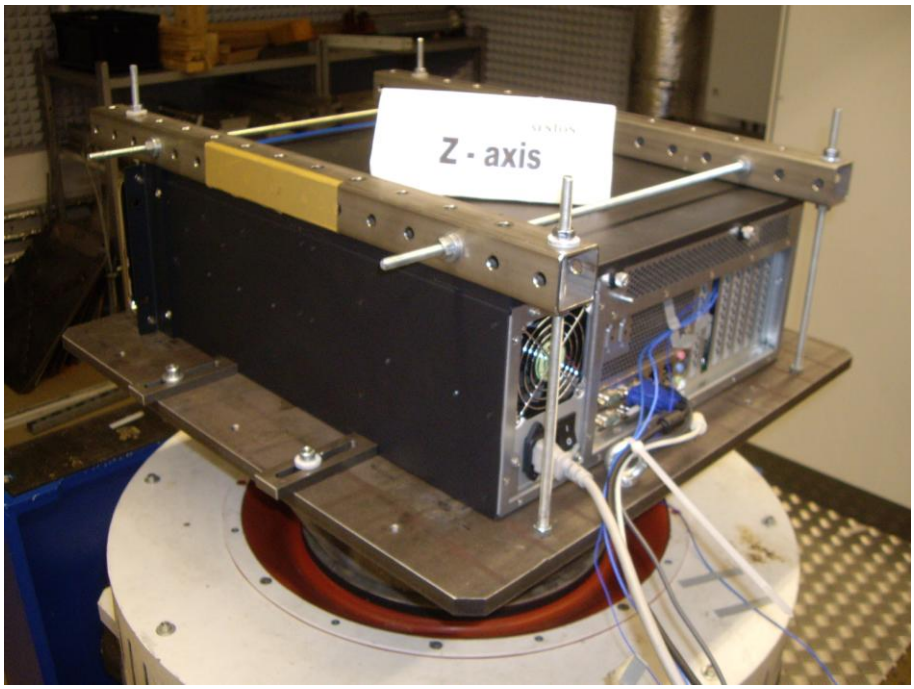

2
FSP GROUP INC.
MODEL NO: FSP400-60PFB
CAUTION! HAZARDOUS AREA
WARNUNG! GEFAHRENZONE

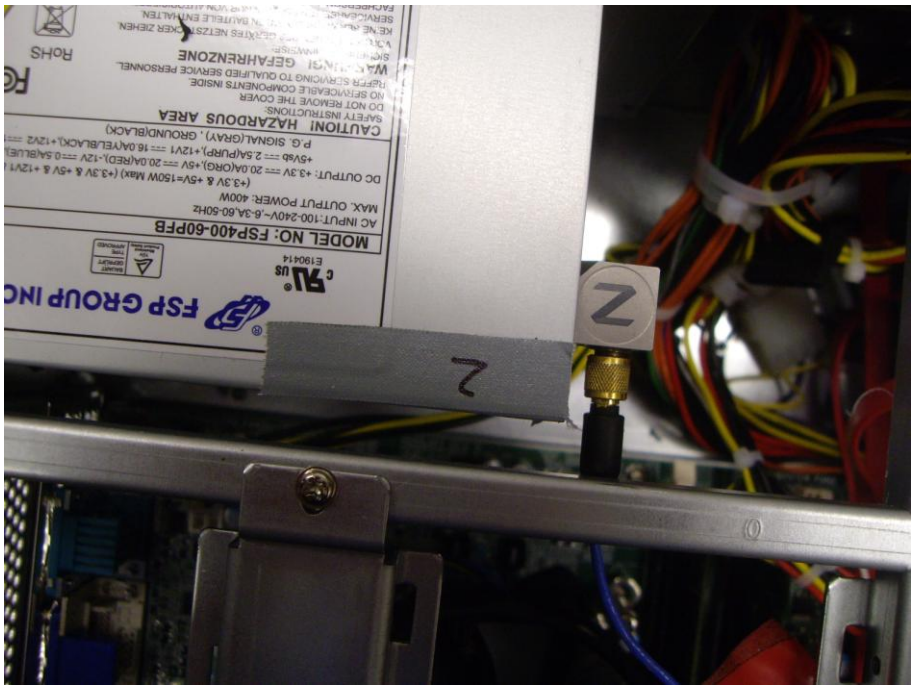

3
kontron
DC 12V
BALL BEARING

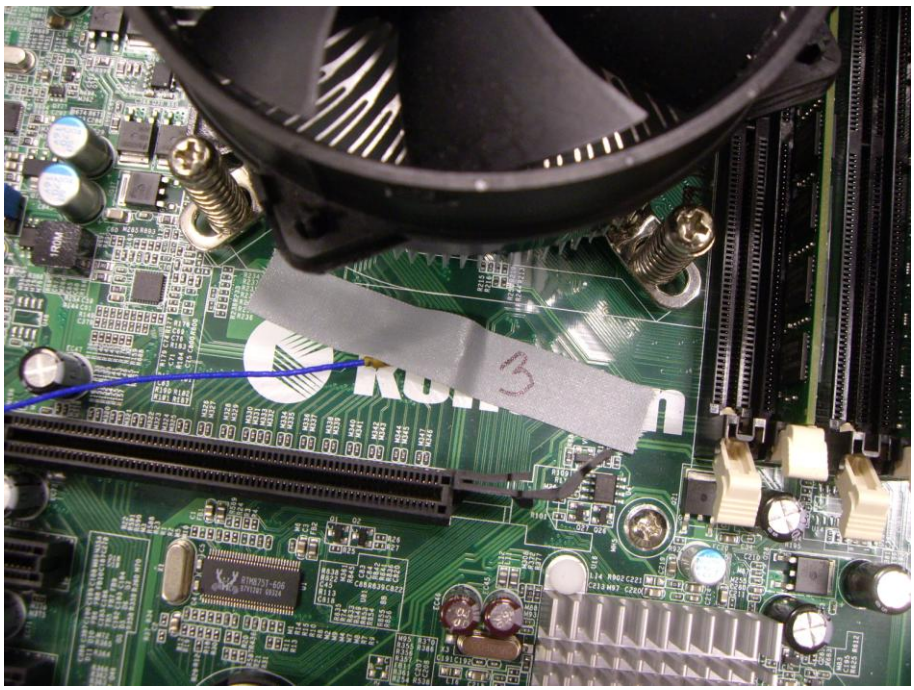

4
Made in Taiwan

Testsetup Z-Axis






MODEL NO: FSP400-60PFB
FSP GROUP INC
CAUTION! HAZARDOUS AREA
Z
Z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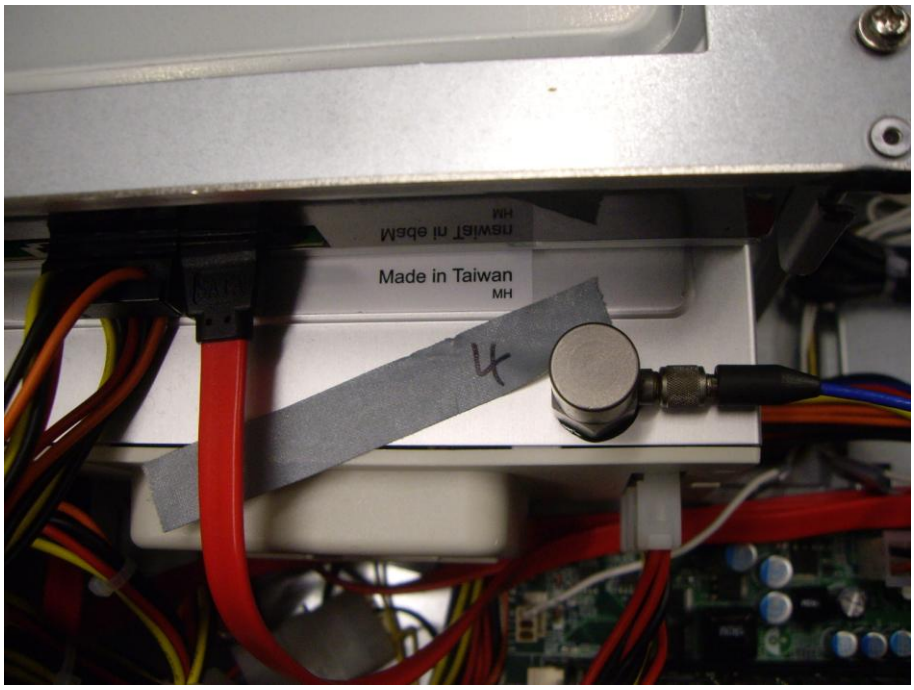
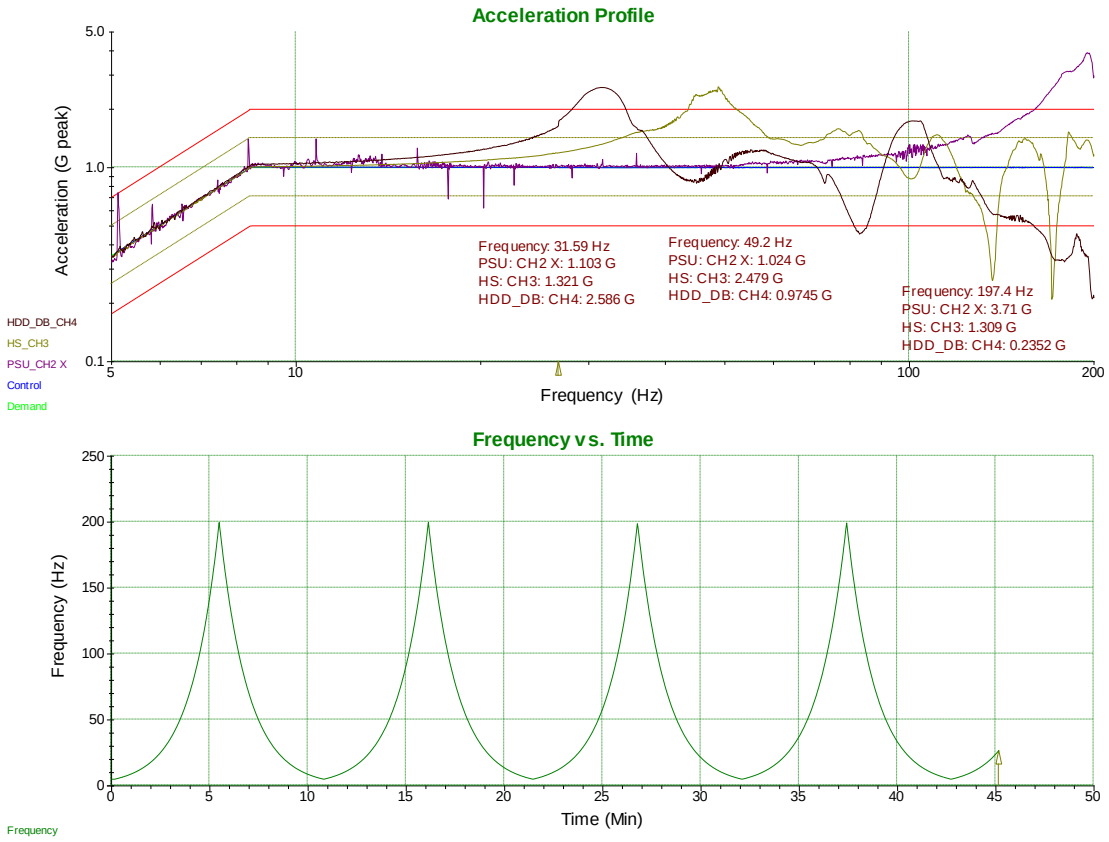

Made in Taiwan
MH

7.1.3 Sine Vibration – Operation

X-Axis



Breakpoint table:

Start Freq.	Amplitude	End Freq.	Amplitude
5 Hz	3.5 mm	8.42454 Hz	3.5 mm
8.42454 Hz	1 G	200 Hz	1 G

Sweep rate:

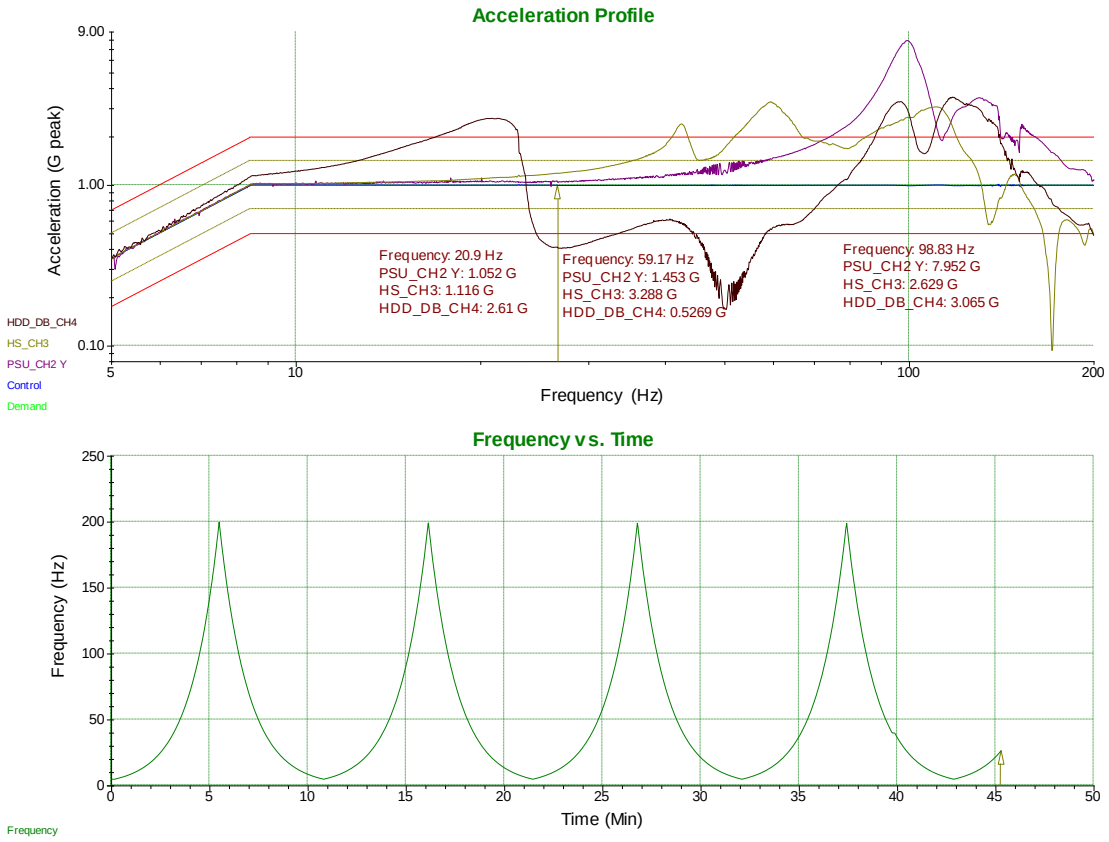
Sweep between 5 Hz and 200 Hz at 1 Oct/min

Test level schedule:

	Duration	Level
1)	0:45:00	100 %

** Test started Feb 01, 2011 11:27:53, running for 0:45:09
** Current level: 1, running at 100 %, 0:45:00 of 0:45:00 complete

Y-Axis



Breakpoint table:

Start Freq.	Amplitude	End Freq.	Amplitude
5 Hz	3.5 mm	8.42454 Hz	3.5 mm
8.42454 Hz	1 G	200 Hz	1 G

Sweep rate:

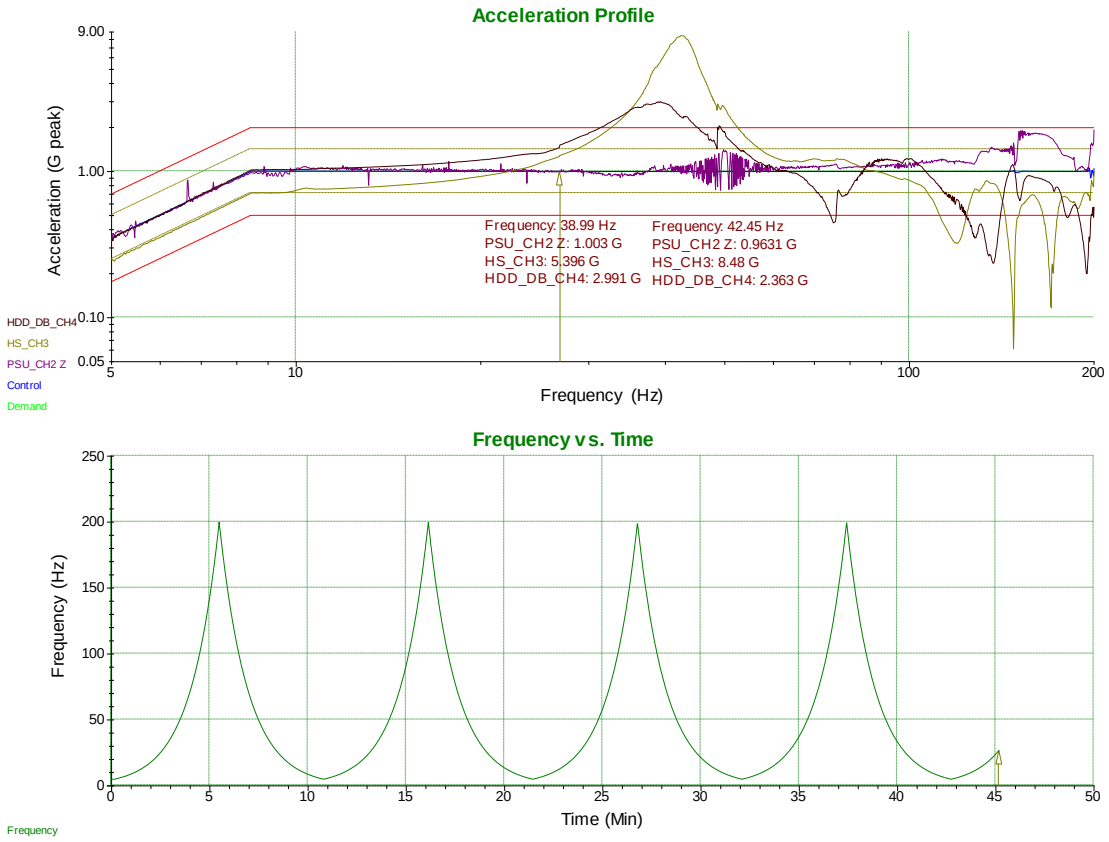
Sweep between 5 Hz and 200 Hz at 1 Oct/min

Test level schedule:

	Duration	Level
1)	0:45:00	100 %

** Test started Feb 01, 2011 14:41:52, running for 0:45:17
** Current level: 1, running at 100 %, 0:45:00 of 0:45:00 complete

Z-Axis



Breakpoint table:

Start Freq.	Amplitude	End Freq.	Amplitude
5 Hz	3.5 mm	8.42454 Hz	3.5 mm
8.42454 Hz	1 G	200 Hz	1 G

Sweep rate:

Sweep between 5 Hz and 200 Hz at 1 Oct/min

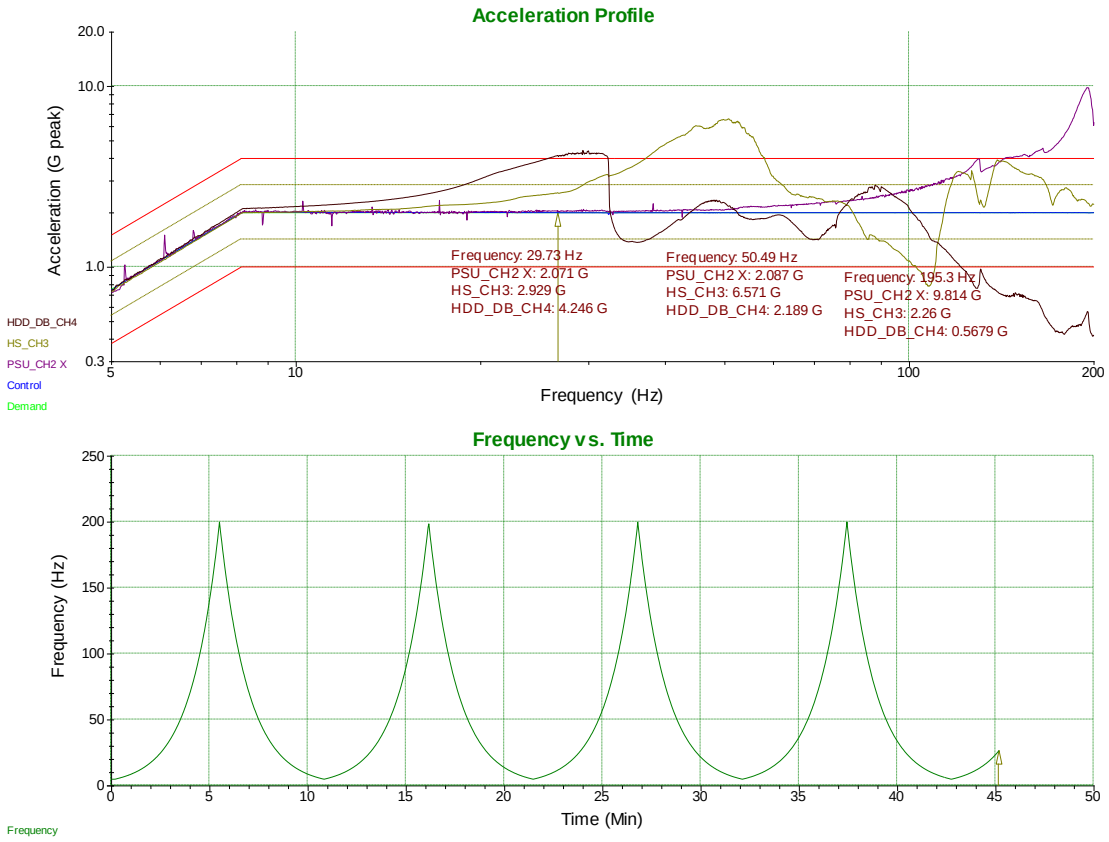
Test level schedule:

	Duration	Level
1)	0:45:00	100 %

** Test started Feb 01, 2011 17:57:05, running for 0:45:09
** Current level: 1, running at 100 %, 0:45:00 of 0:45:00 complete

7.1.4 Sine Vibration – Non Operation

X-Axis



Breakpoint table:

Start Freq.	Amplitude	End Freq.	Amplitude
5 Hz	7.5 mm	8.13888 Hz	7.5 mm
8.13888 Hz	2 G	200 Hz	2 G

Sweep rate:

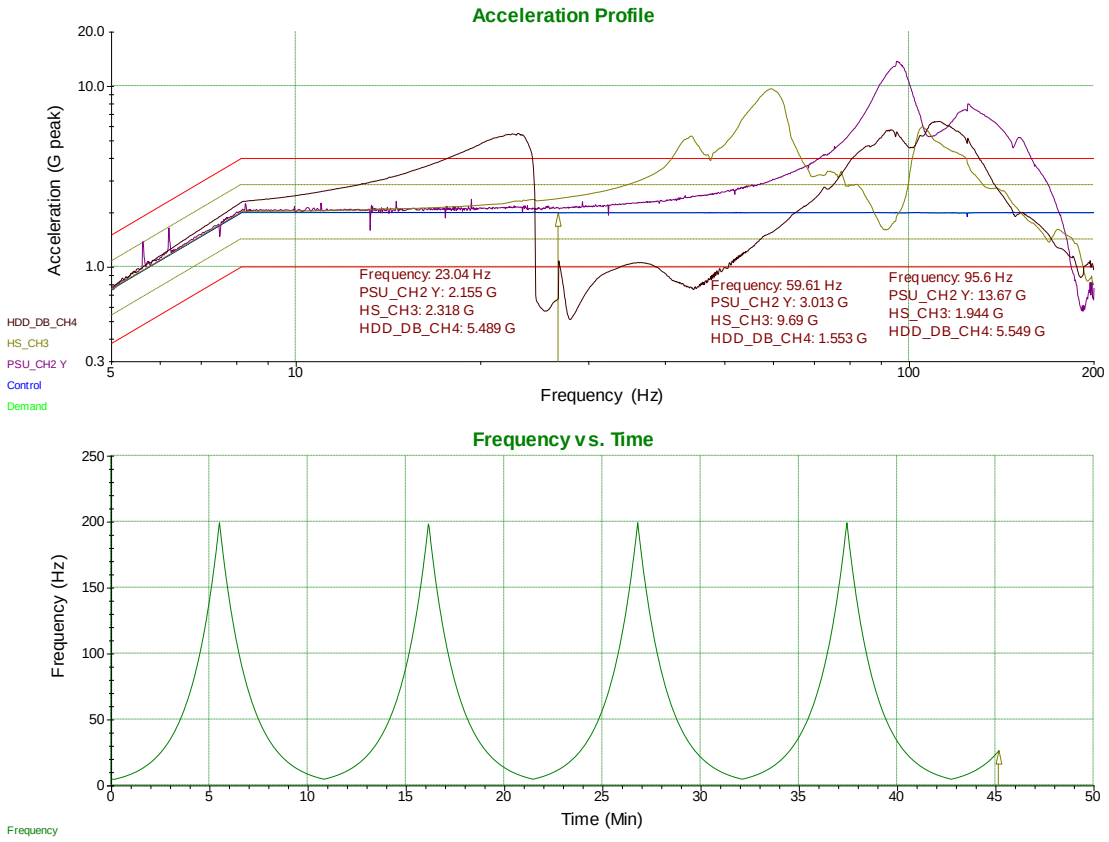
Sweep between 5 Hz and 200 Hz at 1 Oct/min

Test level schedule:

	Duration	Level
1)	0:45:00	100 %

** Test started Feb 01, 2011 12:38:35, running for 0:45:10
** Current level: 1, running at 100 %, 0:45:00 of 0:45:00 complete

Y-Axis



Breakpoint table:

Start Freq.	Amplitude	End Freq.	Amplitude
5 Hz	7.5 mm	8.13888 Hz	7.5 mm
8.13888 Hz	2 G	200 Hz	2 G

Sweep rate:

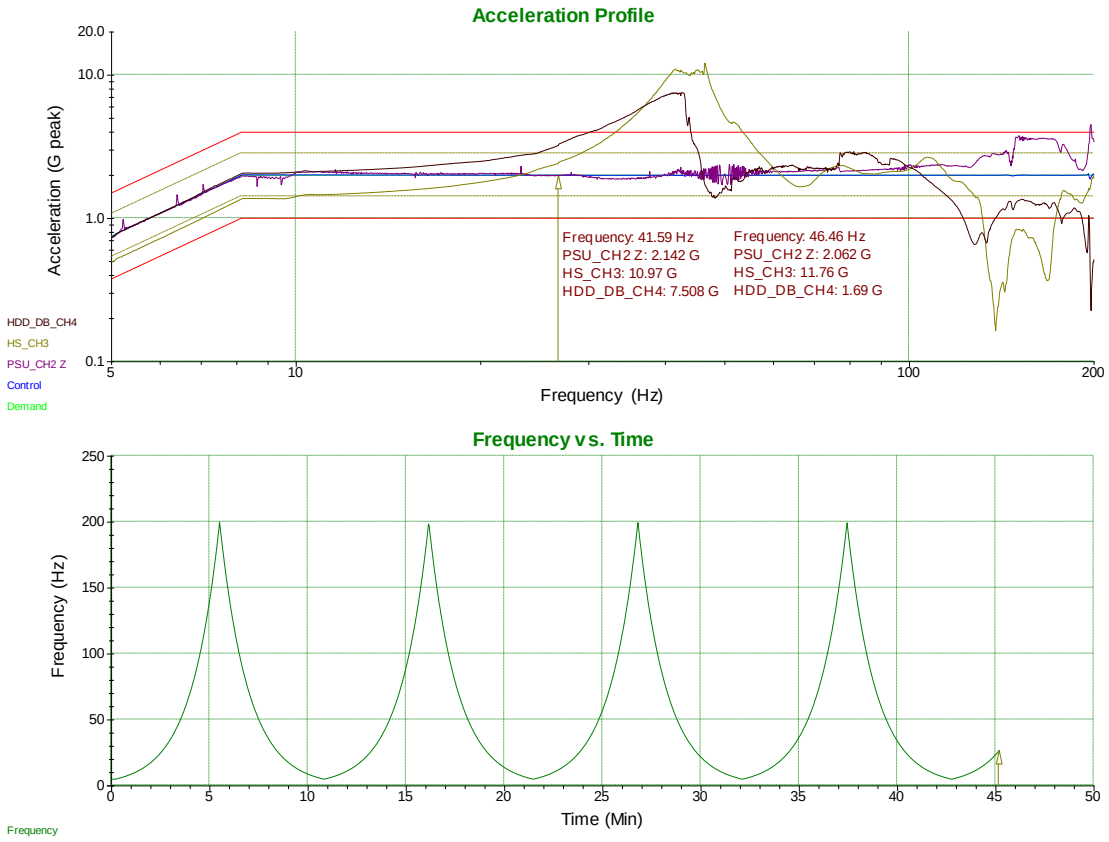
Sweep between 5 Hz and 200 Hz at 1 Oct/min

Test level schedule:

	Duration	Level
1)	0:45:00	100 %

** Test started Feb 01, 2011 15:51:59, running for 0:45:10
** Current level: 1, running at 100 %, 0:45:00 of 0:45:00 complete

Z-Axis



Breakpoint table:

Start Freq.	Amplitude	End Freq.	Amplitude
5 Hz	7.5 mm	8.13888 Hz	7.5 mm
8.13888 Hz	2 G	200 Hz	2 G

Sweep rate:

Sweep between 5 Hz and 200 Hz at 1 Oct/min

Test level schedule:

	Duration	Level
1)	0:45:00	100 %

** Test started Feb 01, 2011 18:51:30, running for 0:45:11
** Current level: 1, running at 100 %, 0:45:00 of 0:45:00 complete

7.1.5 Shock – Operating

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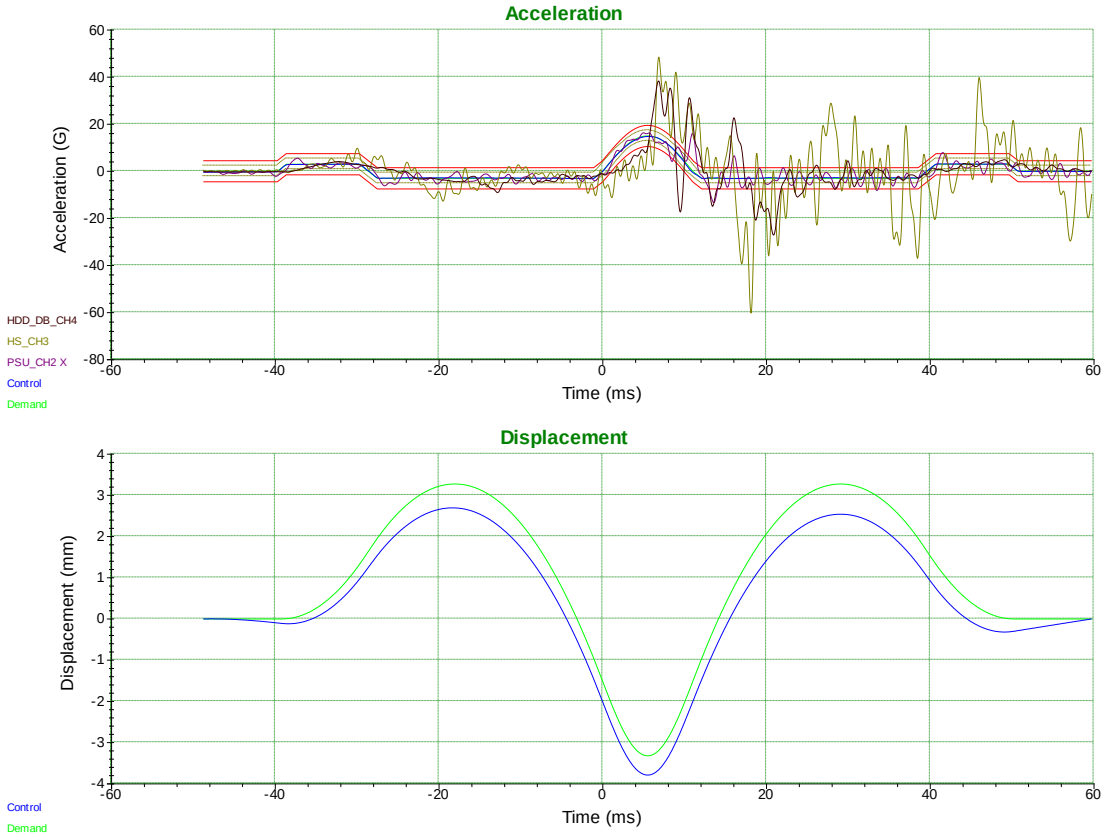
X-Axis positive



Test level schedule:

	Pulses	Level
1)	3	100 %

** Test started Feb 01, 2011 13:55:53
** Current level: 1, running at 100 % for 3 of 3 pulses

Test Profile:

11 ms Half Sine Pulse with amplitude 15 G (Positive)
Pre-pulse amplitude: 20 % of the peak acceleration
Post-pulse amplitude: 20 % of the peak acceleration
Normal limits used
Control channels: A-2049

Measurements:

Control amplitude: 14.8 G
Output voltage: 1.881 Volts peak

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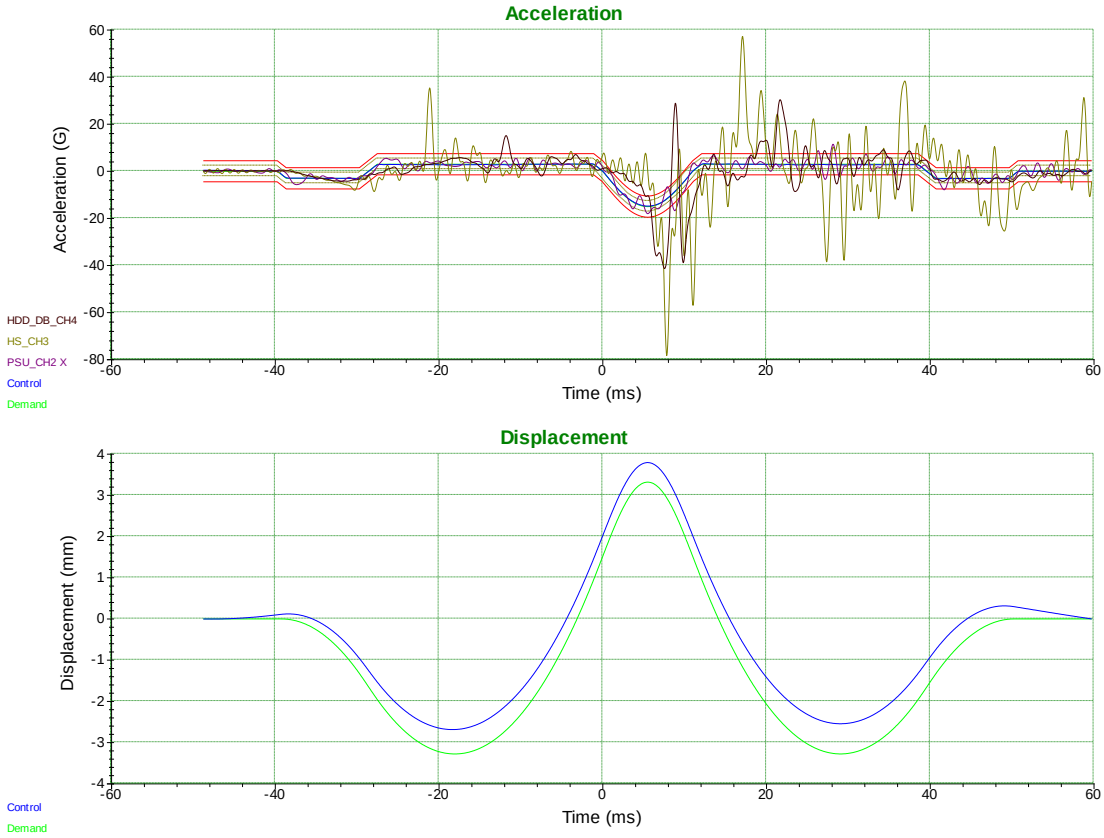
X-Axis negative



Test level schedule:

	Pulses	Level
1)	3	100 %

** Test started Feb 01, 2011 13:57:29
** Current level: 1, running at 100 % for 3 of 3 pulses

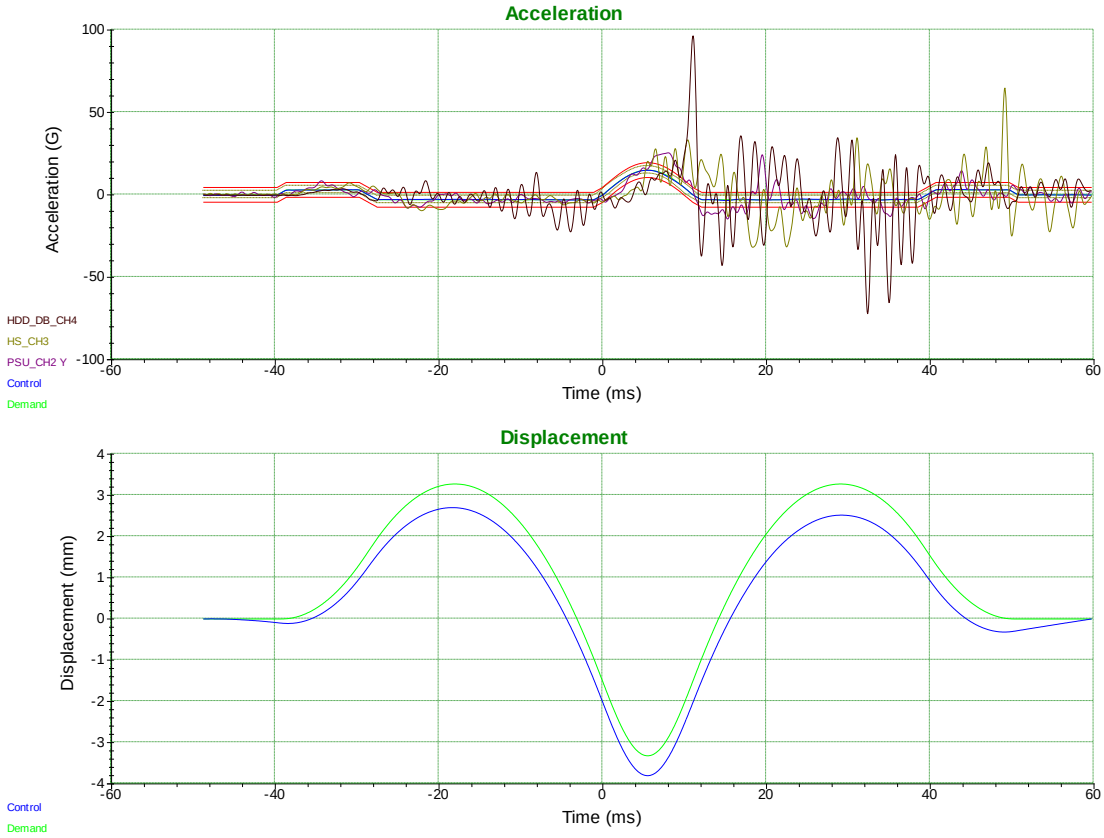
Test Profile:

11 ms Half Sine Pulse with amplitude 15 G (Negative)
Pre-pulse amplitude: 20 % of the peak acceleration
Post-pulse amplitude: 20 % of the peak acceleration
Normal limits used
Control channels: A-2049

Measurements:

Control amplitude: 14.78 G
Output voltage: 1.866 Volts peak

Y-Axis positive



Test level schedule:

	Pulses	Level
1)	3	100 %

** Test started Feb 01, 2011 16:46:06
** Current level: 1, running at 100 % for 3 of 3 pulses

Test Profile:

11 ms Half Sine Pulse with amplitude 15 G (Positive)
Pre-pulse amplitude: 20 % of the peak acceleration
Post-pulse amplitude: 20 % of the peak acceleration
Normal limits used
Control channels: A-2049

Measurements:

Control amplitude: 14.87 G
Output voltage: 1.643 Volts peak

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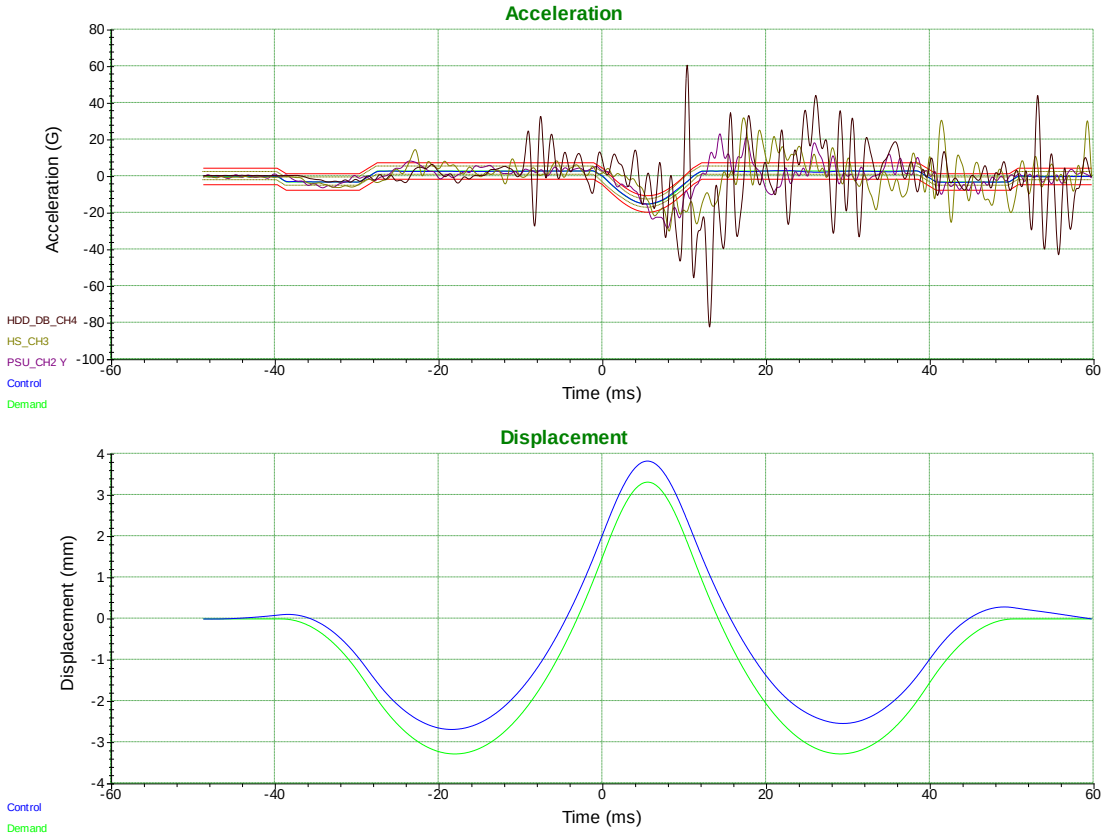
Y-Axis negative



Test level schedule:

	Pulses	Level
1)	3	100 %

** Test started Feb 01, 2011 16:45:26
** Current level: 1, running at 100 % for 3 of 3 pulses

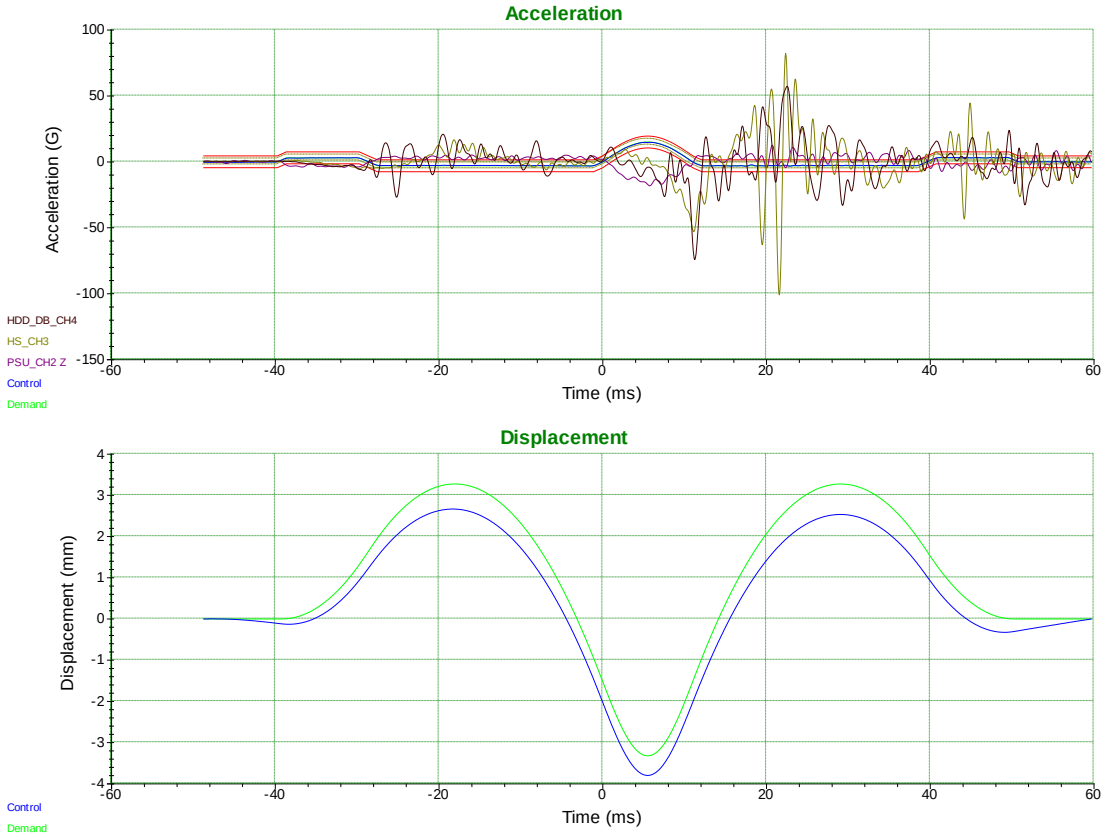
Test Profile:

11 ms Half Sine Pulse with amplitude 15 G (Negative)
Pre-pulse amplitude: 20 % of the peak acceleration
Post-pulse amplitude: 20 % of the peak acceleration
Normal limits used
Control channels: A-2049

Measurements:

Control amplitude: 15.05 G
Output voltage: 1.71 Volts peak

Z-Axis positive



Test level schedule:

	Pulses	Level
1)	3	100 %

** Test started Feb 01, 2011 19:39:11
** Current level: 1, running at 100 % for 3 of 3 pulses

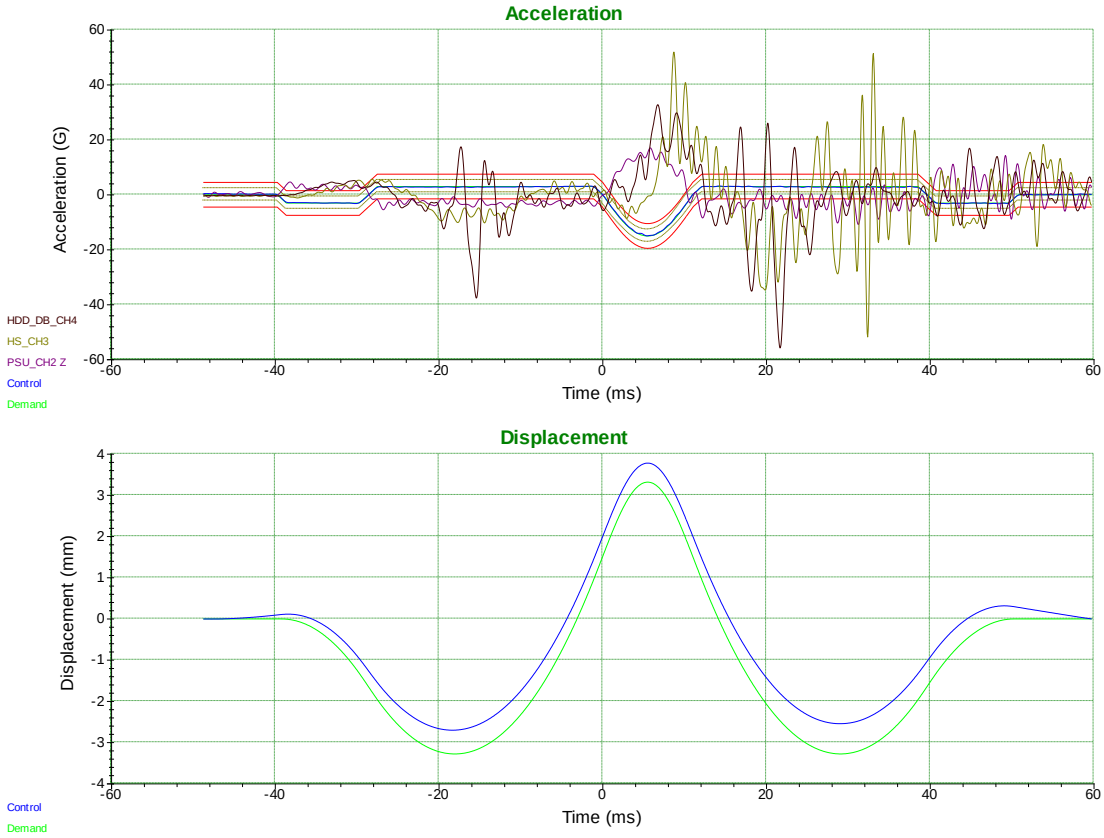
Test Profile:

11 ms Half Sine Pulse with amplitude 15 G (Positive)
Pre-pulse amplitude: 20 % of the peak acceleration
Post-pulse amplitude: 20 % of the peak acceleration
Normal limits used
Control channels: A-2049

Measurements:

Control amplitude: 14.73 G
Output voltage: 1.771 Volts peak

Z-Axis negative



Test level schedule:

	Pulses	Level
1)	3	100 %

** Test started Feb 01, 2011 19:44:27
** Current level: 1, running at 100 % for 3 of 3 pulses

Test Profile:

11 ms Half Sine Pulse with amplitude 15 G (Negative)
Pre-pulse amplitude: 20 % of the peak acceleration
Post-pulse amplitude: 20 % of the peak acceleration
Normal limits used
Control channels: A-2049

Measurements:

Control amplitude: 14.96 G
Output voltage: 1.828 Volts peak

7.1.6 Shock – Non Operating

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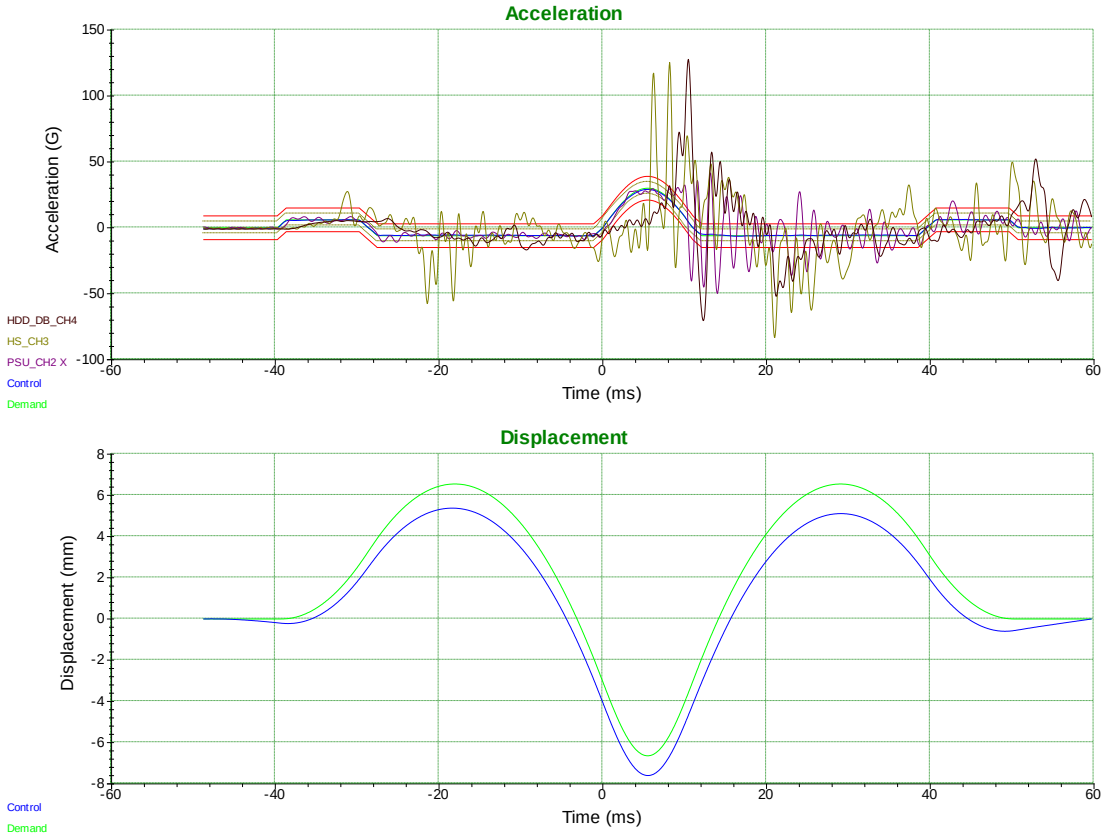
X-Axis positive



Test level schedule:

	Pulses	Level
1)	3	100 %

** Test started Feb 01, 2011 14:07:22
** Current level: 1, running at 100 % for 3 of 3 pulses

Test Profile:

11 ms Half Sine Pulse with amplitude 30 G (Positive)
Pre-pulse amplitude: 20 % of the peak acceleration
Post-pulse amplitude: 20 % of the peak acceleration
Normal limits used
Control channels: A-2049

Measurements:

Control amplitude: 29.1 G
Output voltage: 3.581 Volts peak

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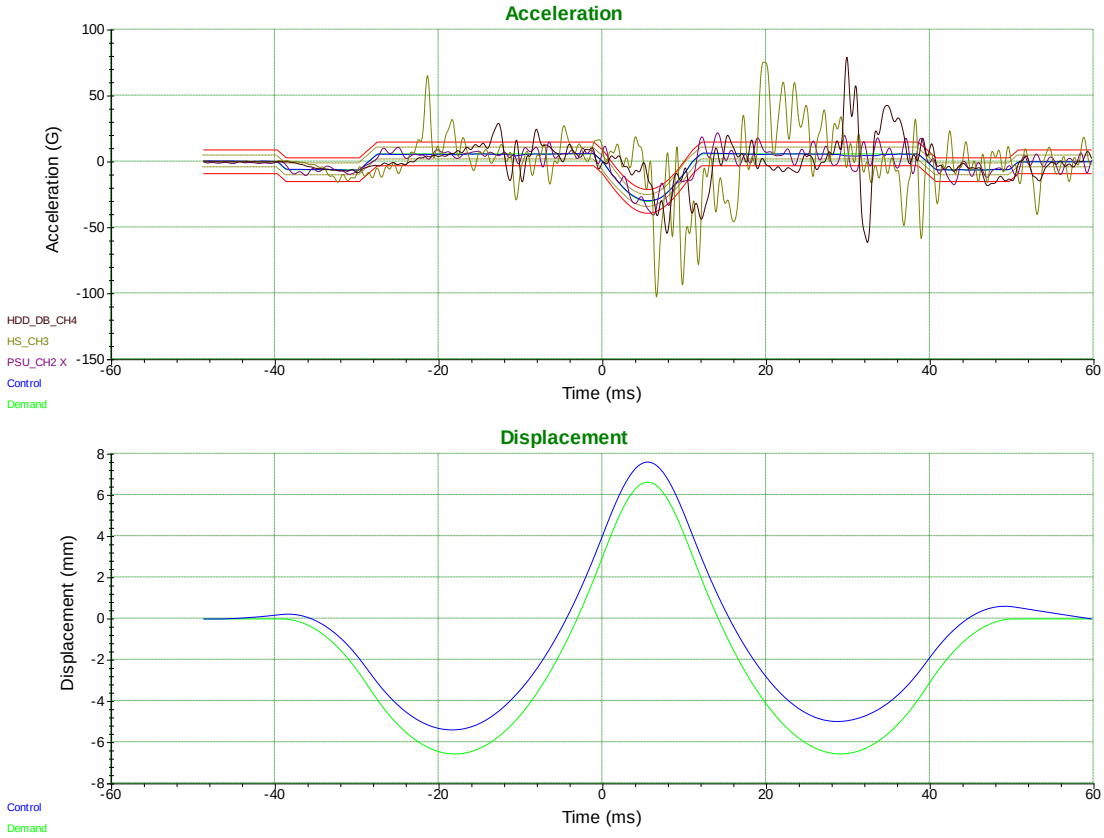
X-Axis negative



Test level schedule:

	Pulses	Level
1)	3	100 %

** Test started Feb 01, 2011 14:02:21
** Current level: 1, running at 100 % for 3 of 3 pulses

Test Profile:

11 ms Half Sine Pulse with amplitude 30 G (Negative)
Pre-pulse amplitude: 20 % of the peak acceleration
Post-pulse amplitude: 20 % of the peak acceleration
Normal limits used
Control channels: A-2049

Measurements:

Control amplitude: 29.48 G
Output voltage: 3.684 Volts peak

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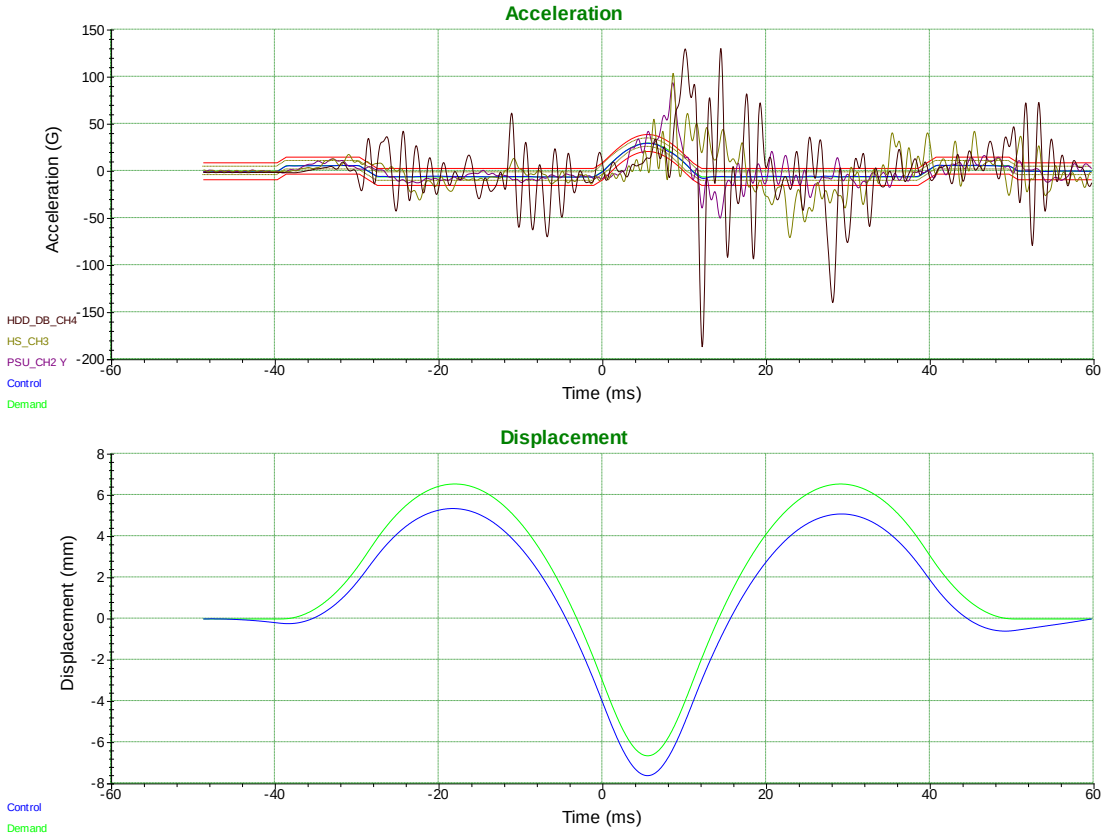
Y-Axis positive



Test level schedule:

	Pulses	Level
1)	3	100 %

** Test started Feb 01, 2011 16:48:15
** Current level: 1, running at 100 % for 3 of 3 pulses

Test Profile:

11 ms Half Sine Pulse with amplitude 30 G (Positive)
Pre-pulse amplitude: 20 % of the peak acceleration
Post-pulse amplitude: 20 % of the peak acceleration
Normal limits used
Control channels: A-2049

Measurements:

Control amplitude: 29.71 G
Output voltage: 3.379 Volts peak

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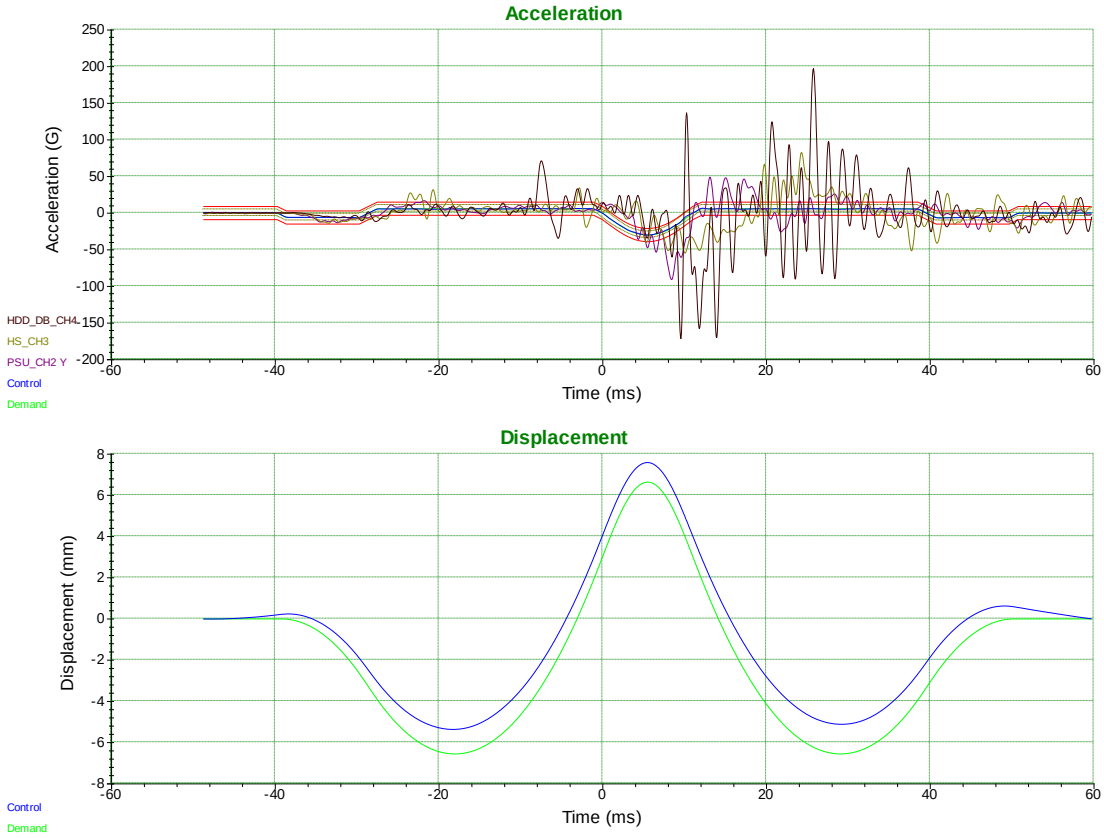
Y-Axis negative



Test level schedule:

	Pulses	Level
1)	3	100 %

** Test started Feb 01, 2011 16:49:07
** Current level: 1, running at 100 % for 3 of 3 pulses

Test Profile:

11 ms Half Sine Pulse with amplitude 30 G (Negative)
Pre-pulse amplitude: 20 % of the peak acceleration
Post-pulse amplitude: 20 % of the peak acceleration
Normal limits used
Control channels: A-2049

Measurements:

Control amplitude: 29.8 G
Output voltage: 3.489 Volts peak

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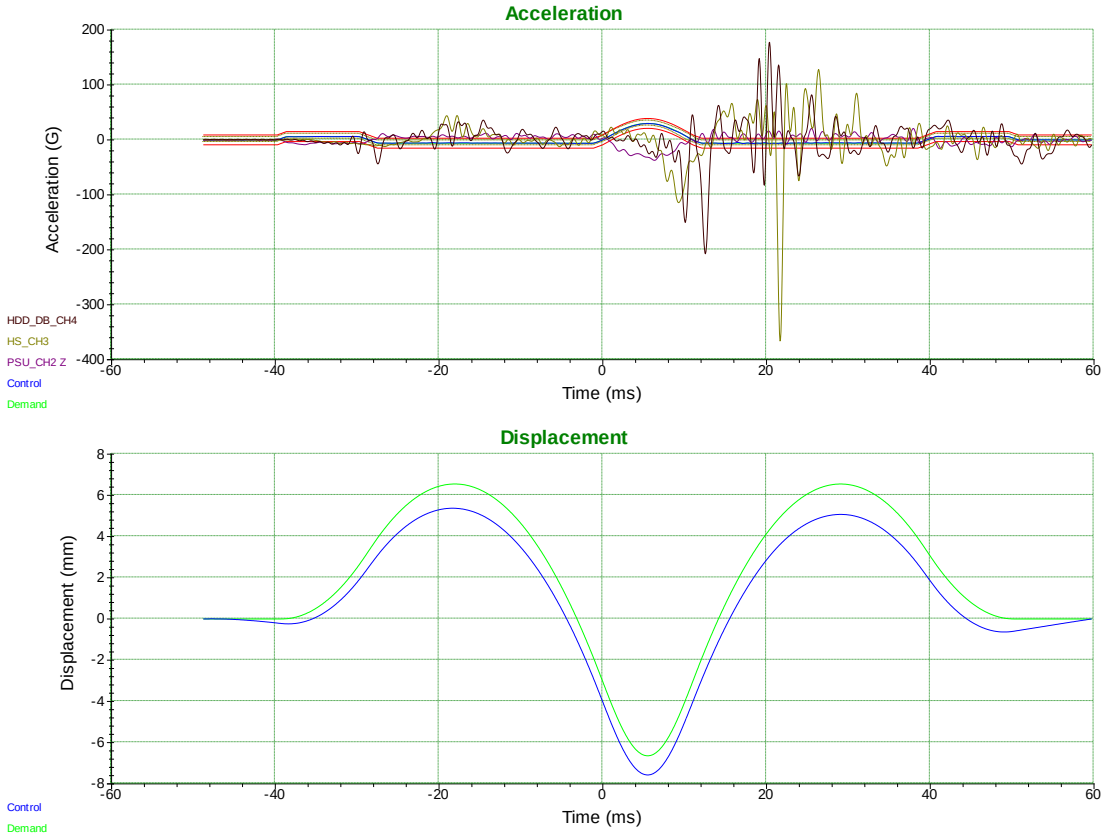
Z-Axis positive



Test level schedule:

	Pulses	Level
1)	3	100 %

** Test started Feb 01, 2011 19:50:21
** Current level: 1, running at 100 % for 3 of 3 pulses

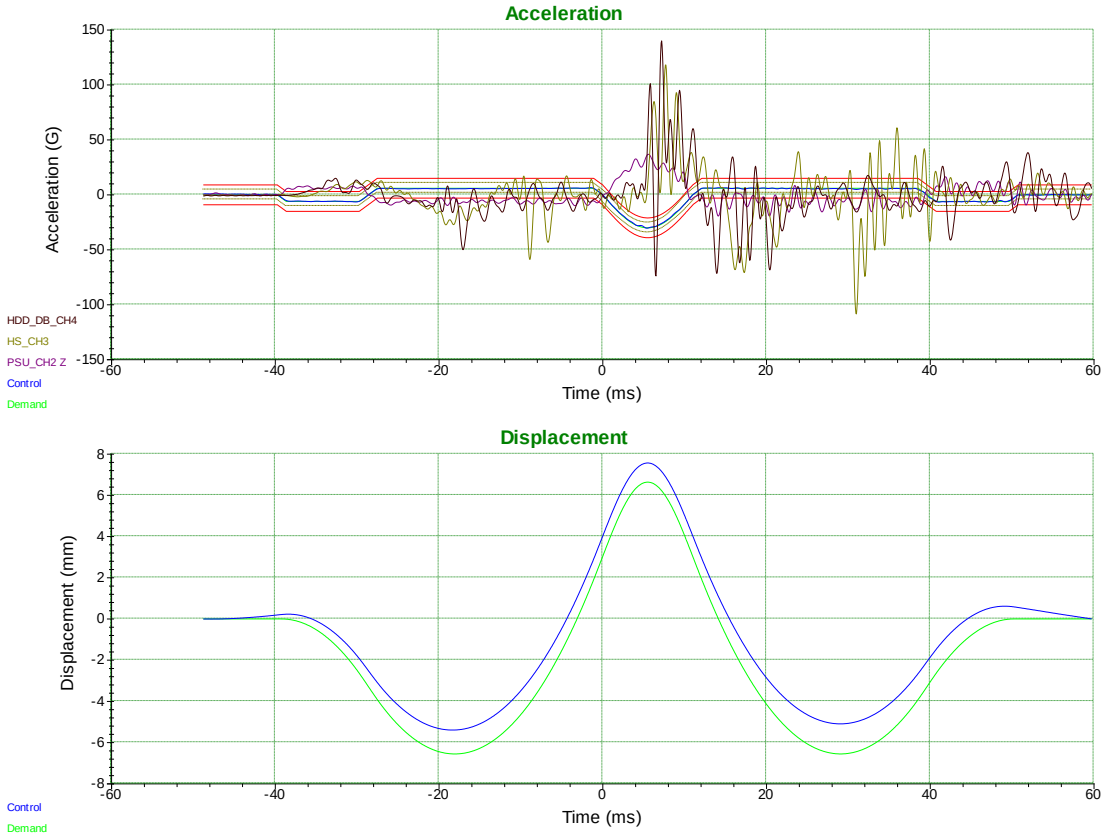
Test Profile:

11 ms Half Sine Pulse with amplitude 30 G (Positive)
Pre-pulse amplitude: 20 % of the peak acceleration
Post-pulse amplitude: 20 % of the peak acceleration
Normal limits used
Control channels: A-2049

Measurements:

Control amplitude: 29.66 G
Output voltage: 3.619 Volts peak

Z-Axis negative



Test level schedule:

	Pulses	Level
1)	3	100 %

** Test started Feb 01, 2011 19:46:50
** Current level: 1, running at 100 % for 3 of 3 pulses

Test Profile:

11 ms Half Sine Pulse with amplitude 30 G (Negative)
Pre-pulse amplitude: 20 % of the peak acceleration
Post-pulse amplitude: 20 % of the peak acceleration
Normal limits used
Control channels: A-2049

Measurements:

Control amplitude: 30.33 G
Output voltage: 3.68 Volts peak

8 Revision History

Revision History			
Edition	*Date*	*Issued by*	*Modifications*
1	February 25, 2011	Reinhold Markl (sw)	First Edition