



**KING DESIGN**®

Reliability & Communication Testing Instruments

**KING DESIGN INDUSTRIAL CO., LTD.**

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**VIBRATION TEST LABORATORY**

<http://www.kdi.tw>  
<http://www.vibration.com.tw>  
E-mail: [service@kdi.tw](mailto:service@kdi.tw)

## TESTING / INSPECTION REPORT

REPORT NO : VT-170223-1

COMPANY : Apacer Technology Inc.  
ADDRESS : 1F., No.32, Zhongcheng Rd., Tucheng Dist.,  
New Taipei City 236, Taiwan (R.O.C)  
TEL : 886-2-2267-8000  
FAX : 886-2-2267-2261  
SPECIMEN : MO-297 SSD  
DATE OF RECEIVED : 2017/02/06  
DATE OF TESTED : 2017/02/13

TEST / INSPECTION ITEMS : Vibration / Shock

### REMARKS :

- The laboratory is accredited by ISO/IEC 17025 General Requirements for the Competence of Calibration and Testing Laboratory.
- The results only apply to the device under test.
- This report is 26 pages, and no part of it may be abstracted or reproduced.

Test Engineer : <i>Peter Peng</i>	
Approval Signatory : <i>2017.2.3 David Lee</i>	Laboratory Head : <i>Hsin Jui Chang</i>

金頓科技實驗室

## TESTING / INSPECTION REPORT

### TESTING EQUIPMENT :

- |                         |  |
|-------------------------|--|
| 1.Vibration Tester      | : KING DESIGN KD-9363EM-1000F2K-50N120,<br>S/N : GUG02102091 |
| 2.Controller            | : DACTRON LASER USB, S/N : 12448370                          |
| 3.Control Accelerometer | : WILCOXON RESEARCH WR-784A, S/N : 23116                     |
| 4.Shock Testing System  | : KING DESIGN DP-1200-60, S/N : R2110086489                  |
| 5.Controller            | : DAS-105, S/N : 263210255                                   |
| 6.Accelerometer         | : B&K 4398, S/N : 2209044                                    |
| 7.Shock Testing System  | : KING DESIGN DP-1200-18, S/N : KDS02197998                  |
| 8.Controller            | : KING DESIGN DP-1200-03C, S/N : KD674                       |
| 9.Accelerometer         | : DYTRAN Model : 3200B6 S/N : 8594                           |

### TEST ENVIRONMENT :

- |                   |                      |
|-------------------|----------------------|
| Temperature       | : 25°C (25±10°C)     |
| Relative Humidity | : 65% RH (50±25% RH) |

### SPECIMEN :

- |          |             |
|----------|-------------|
| Model    | : SM220-297 |
| Quantity | : 1 unit    |

## TESTING / INSPECTION REPORT

### TEST SPECIFICATION(1) :

#### **Comply with MIL-STD 810G 514.6 category 7**

Random Vibration test (Non-Operating)

Frequency : 15 Hz to 2,000 Hz

Accelerate : 4.02 g rms

P.S.D. : 0.01 g<sup>2</sup>/Hz (15Hz)

0.01 g<sup>2</sup>/Hz (105.94Hz)

+6 dB/Oct (105.94Hz to 150Hz)

0.02 g<sup>2</sup>/Hz (150Hz)

0.02 g<sup>2</sup>/Hz (500Hz)

-6 dB/Oct (500Hz to 2,000Hz)

0.0013 g<sup>2</sup>/Hz (2,000Hz)

Test Axis : X, Y, Z axis

Test Time : 1 hr (Each axis)

Total Test Time : 3 hrs

### TEST SPECIFICATION(2) :

#### **Comply with MIL-STD 810G 514.6 category 24**

Random Vibration test (Operating)

Frequency : 20 Hz to 2,000 Hz

Accelerate : 7.69 g rms

P.S.D. : 0.04 g<sup>2</sup>/Hz (20Hz to 1,000Hz)

: -6 dB/Oct (1,000Hz to 2,000Hz)

Test Axis : X, Y, Z axis

Test Time : 1 hr (Each axis)

Total Test Time : 3 hrs

## TESTING / INSPECTION REPORT

### TEST SPECIFICATION(3) :

#### *As per applicant's requirement*

Wave Form : Half sine wave (Non-Operating)  
 Acceleration : 1,500 g  
 Duration Time : 0.5 mS  
 No. of Shock : Each axis 3 times  
 Shock Direction :  $\pm X$ ,  $\pm Y$ ,  $\pm Z$  axis

### TEST SPECIFICATION(4) :

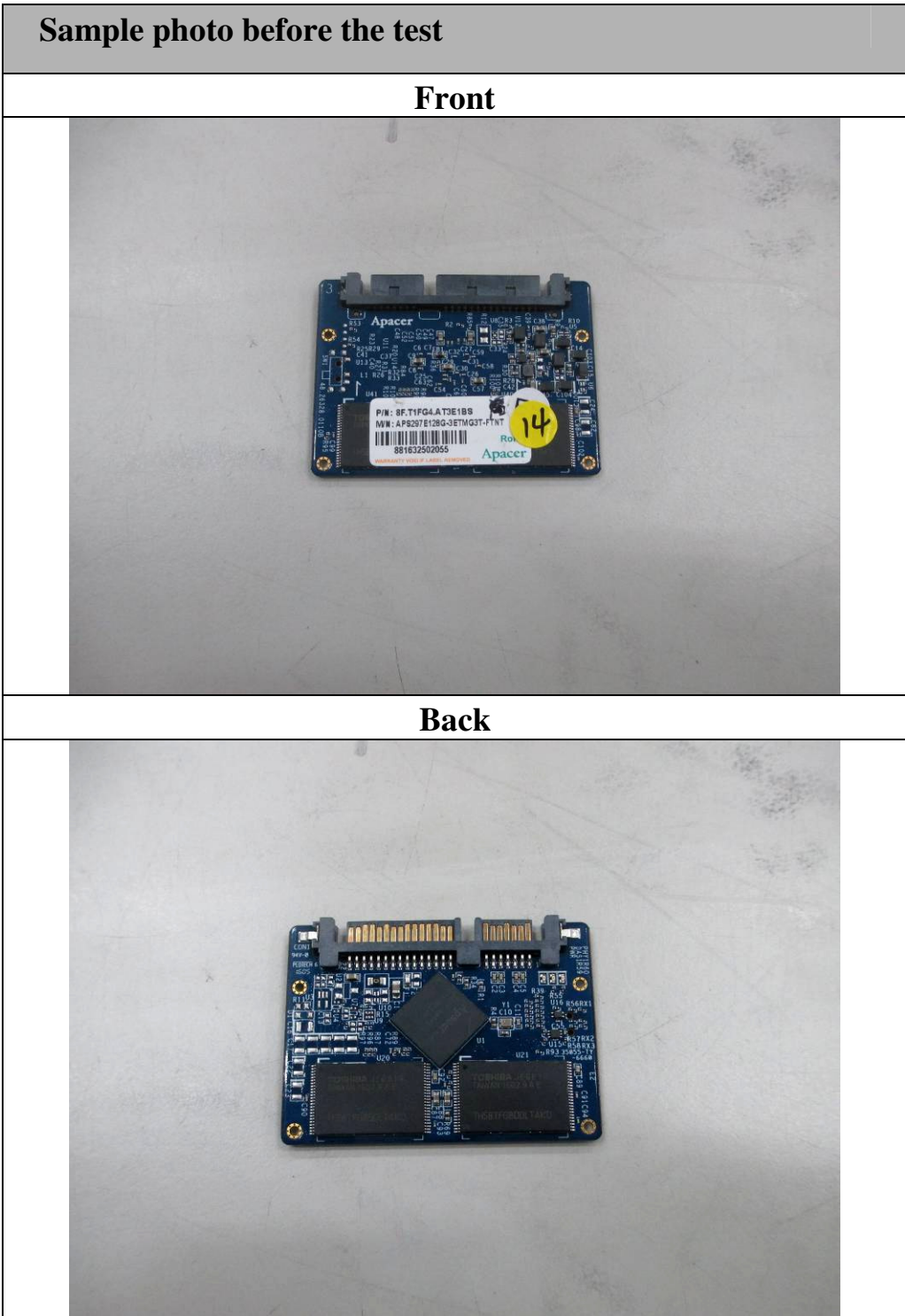
#### *As per applicant's requirement*

Wave Form : Half sine wave (Operating)  
 Acceleration : 50 g  
 Duration Time : 11 mS  
 No. of Shock : Each axis 3 times  
 Shock Direction :  $\pm X$ ,  $\pm Y$ ,  $\pm Z$  axis





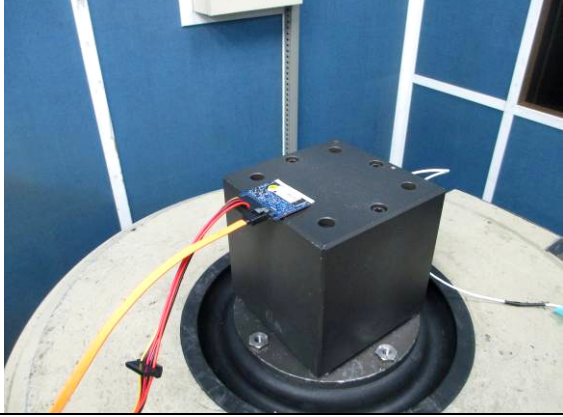
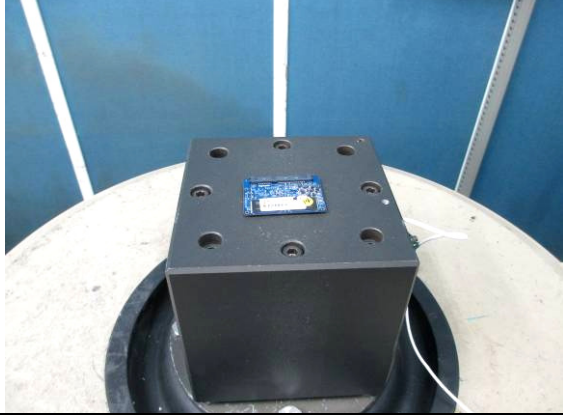
### TEST RESULT :

Describe	PASS	FAIL	Non-Judgment
Function judgment <sup>(1)</sup>	√	---	---
Appearance check <sup>(2)</sup>	√	---	---
(1)--Burn in function was normal after the test.			
(2)--No visible damages were found after the test.			

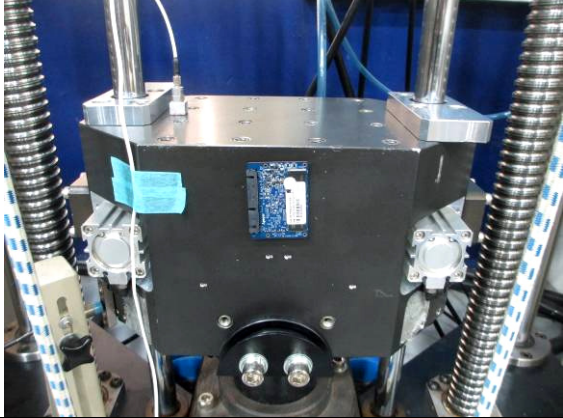
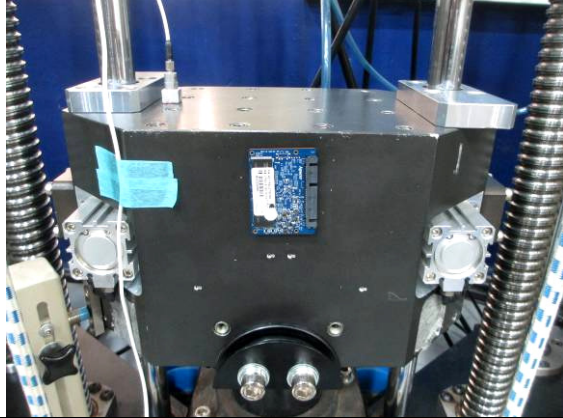
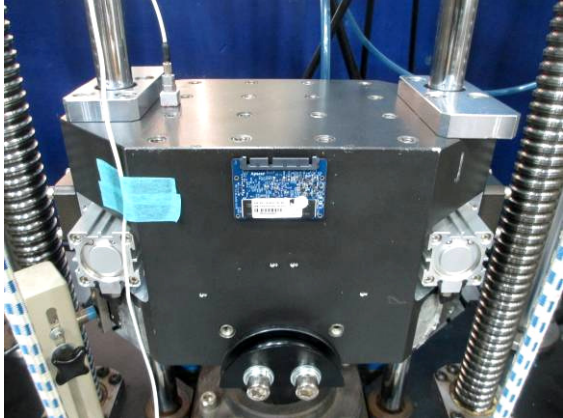
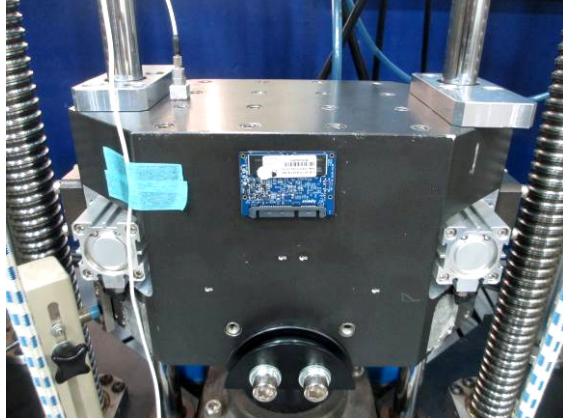
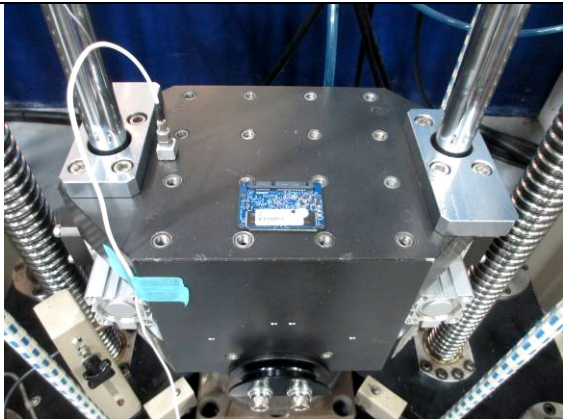
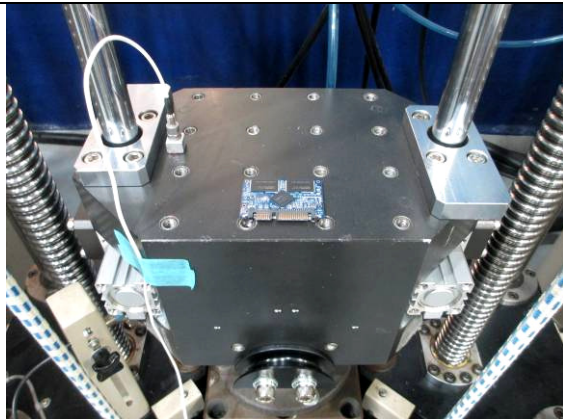
## TESTING / INSPECTION REPORT



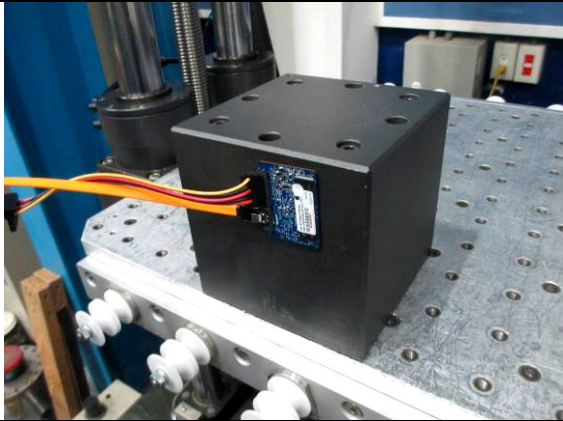
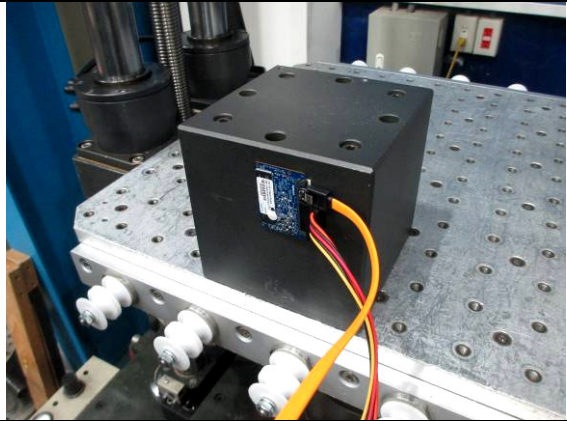
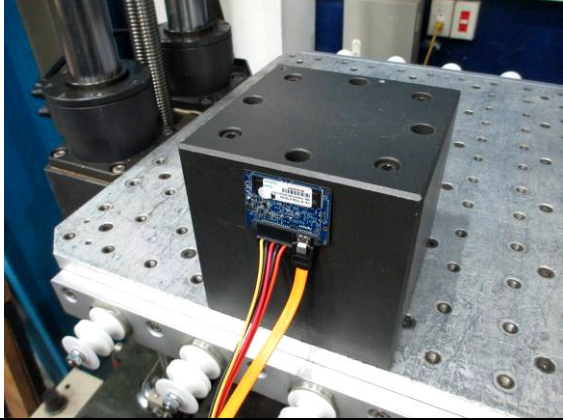

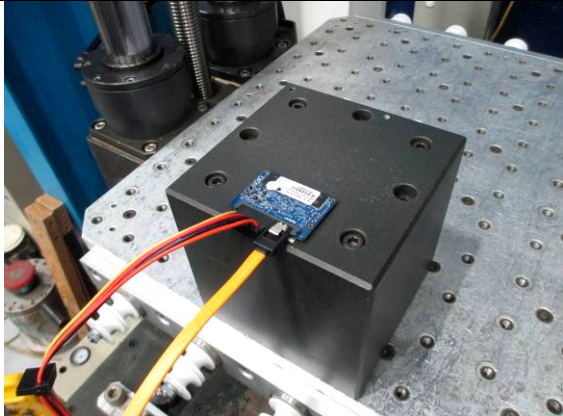
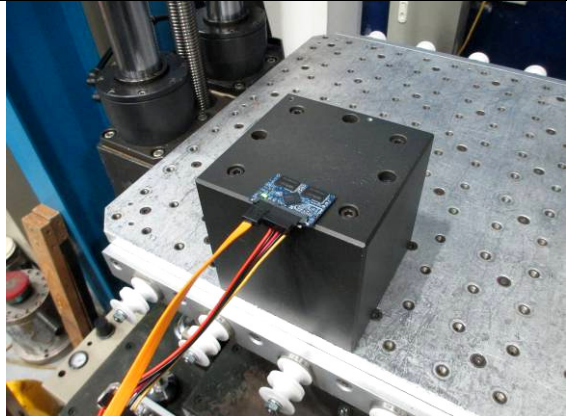
## TESTING / INSPECTION REPORT

Vibration testing photos	
X axis (Operating)	X axis (Non-Operating)
	
Y axis (Operating)	Y axis (Non-Operating)
	
Z axis (Operating)	Z axis (Non-Operating)
	

## TESTING / INSPECTION REPORT

Shock testing photos (Non-operating)	
<b>+X axis</b>	<b>-X axis</b>
	
<b>+Y axis</b>	<b>-Y axis</b>
	
<b>+Z axis</b>	<b>-Z axis</b>
	

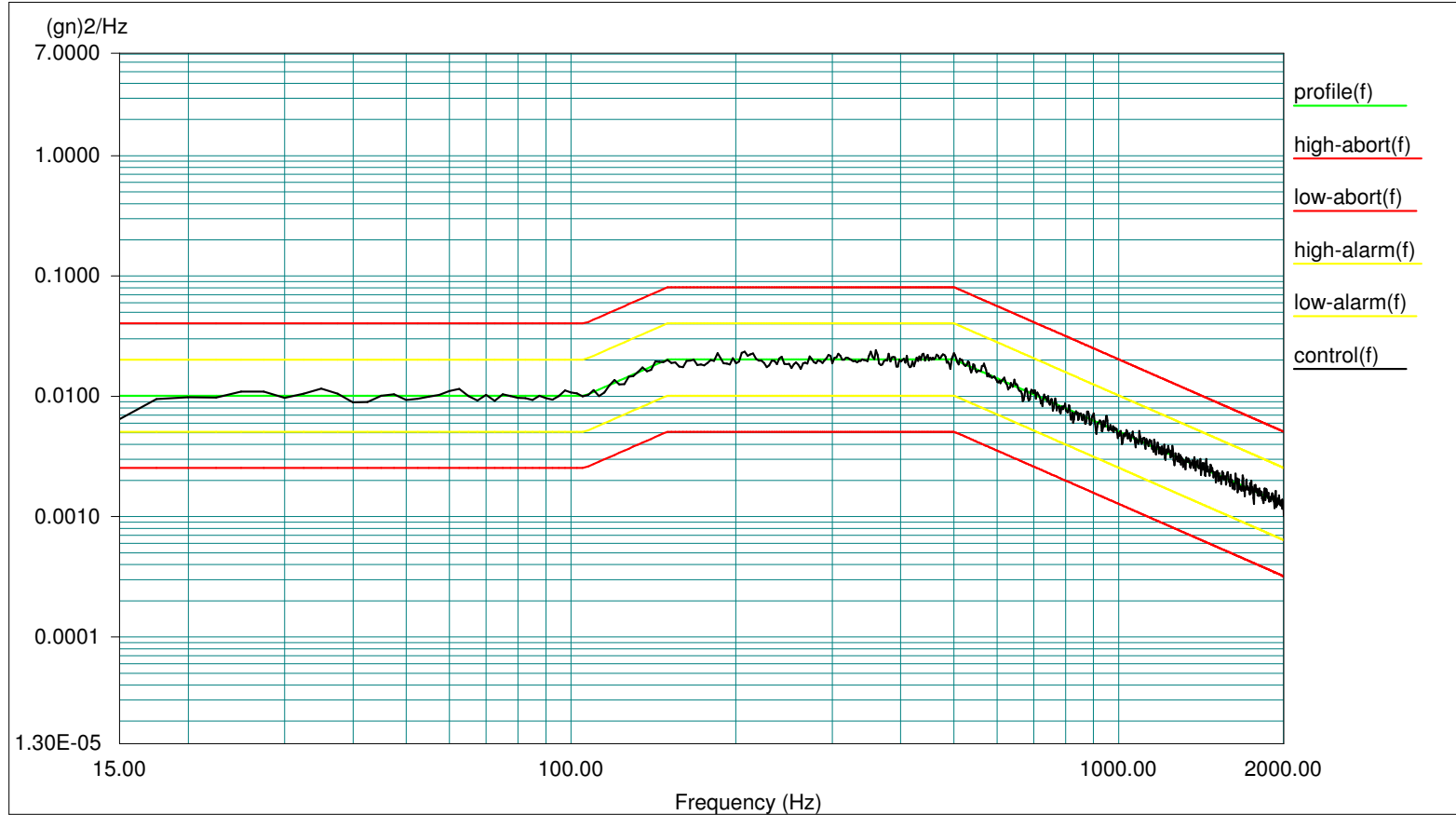
## TESTING / INSPECTION REPORT

Shock testing photos (Operating)	
<b>+X axis</b>	<b>-X axis</b>
	
<b>+Y axis</b>	<b>-Y axis</b>
	
<b>+Z axis</b>	<b>-Z axis</b>
	

X axis

Project File Name: 15-2000Hz 4.02grms.prj

Profile Name: Default Test Type: Random Run Folder: .\RunFolder



Level: 100 %

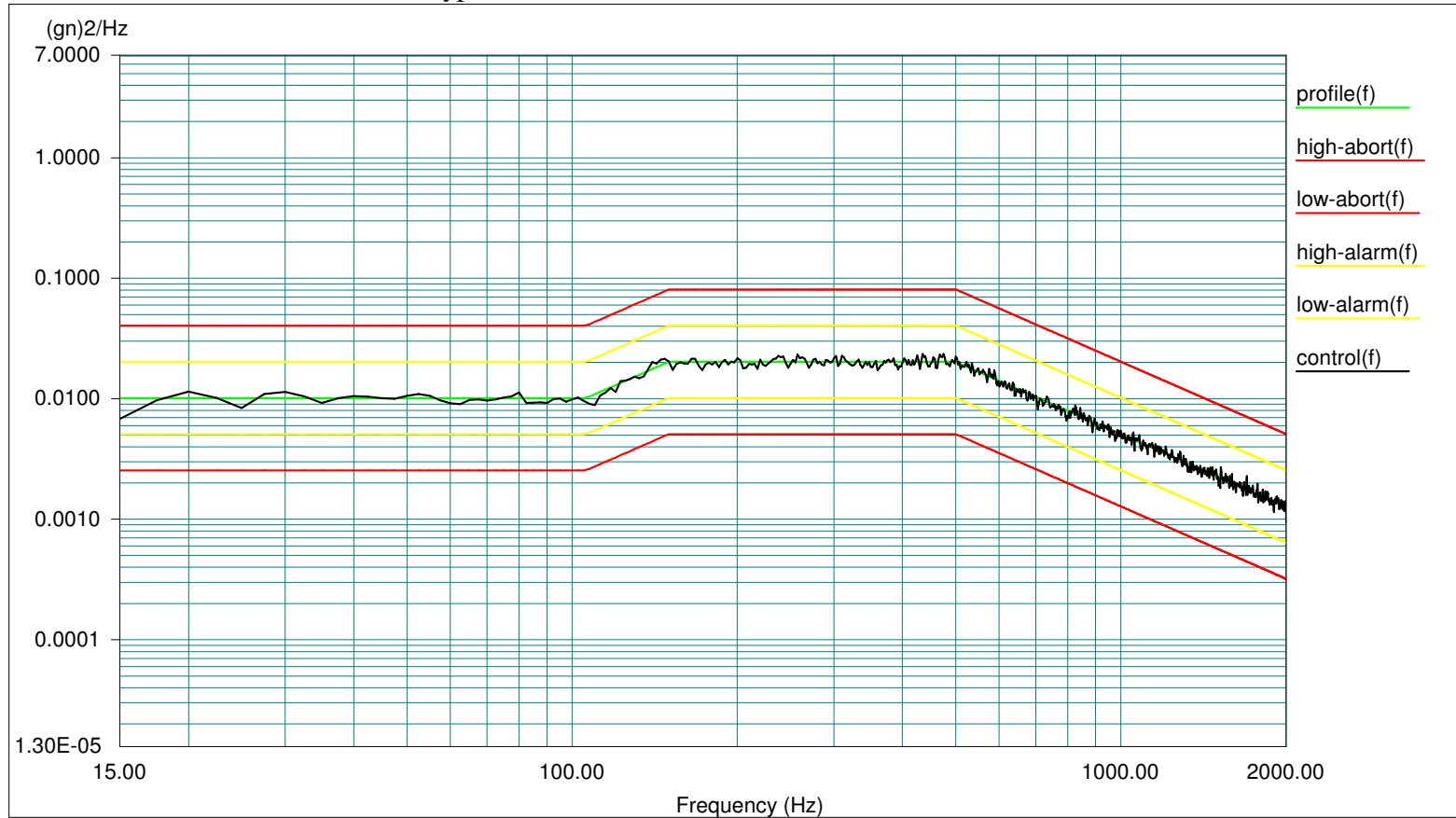
Control RMS: 4.011200 gn Full Level Elapsed Time: 01:00:00 Lines: 800 Frame Time: 0.400000 Seconds

Demand RMS: 4.021014 gn Remaining Time: 00:00:00 DOF: 154 dF: 2.500000 Hz

Y axis

Project File Name: 15-2000Hz 4.02grms.prj

Profile Name: Default Test Type: Random Run Folder: .\RunFolder



Level: 100 %

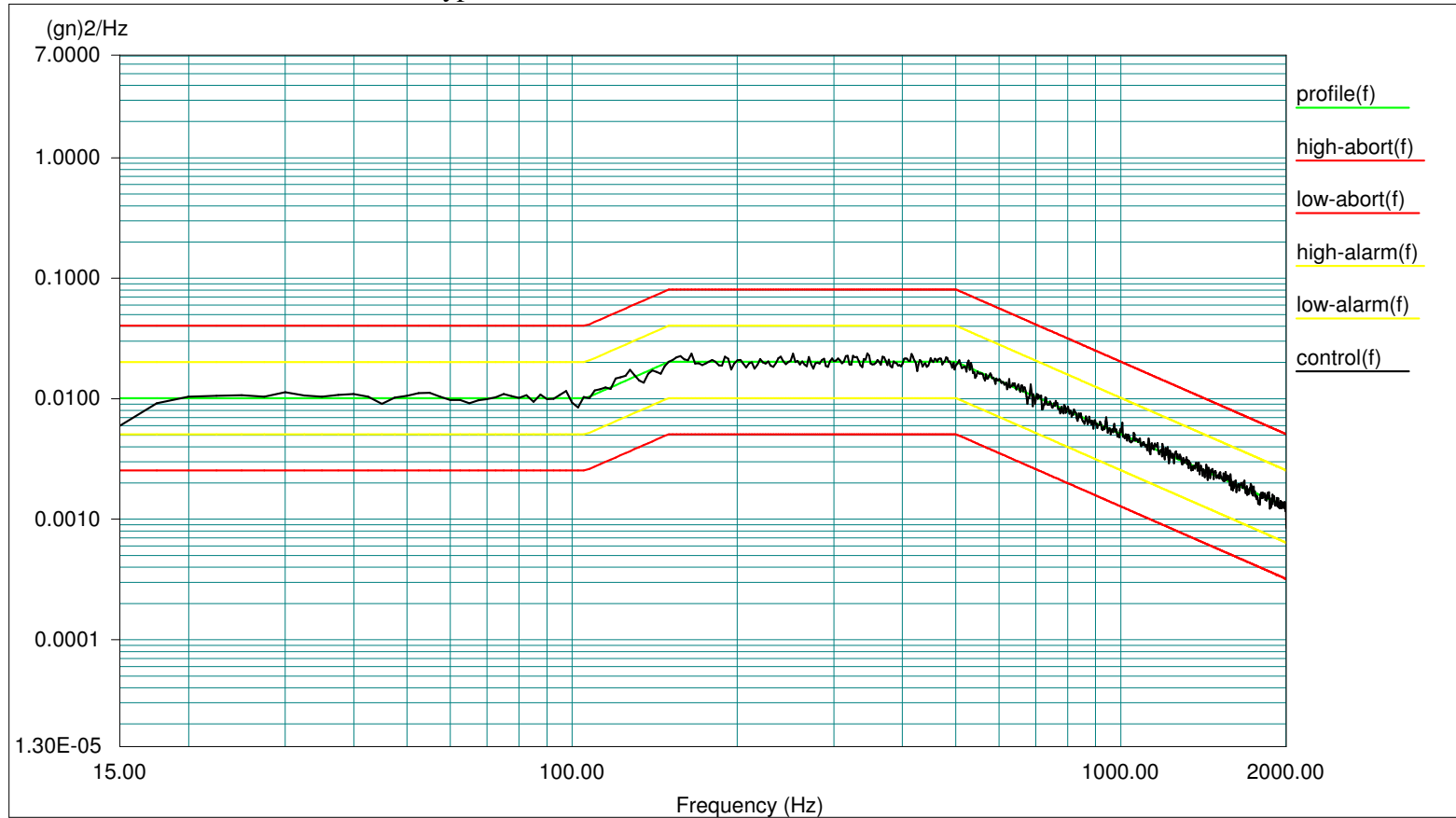
Control RMS: 4.005768 gn Full Level Elapsed Time: 01:00:00 Lines: 800 Frame Time: 0.400000 Seconds

Demand RMS: 4.021014 gn Remaining Time: 00:00:00 DOF: 154 dF: 2.500000 Hz

Z axis

Project File Name: 15-2000Hz 4.02grms.prj

Profile Name: Default Test Type: Random Run Folder: .\RunFolder



Level: 100 %

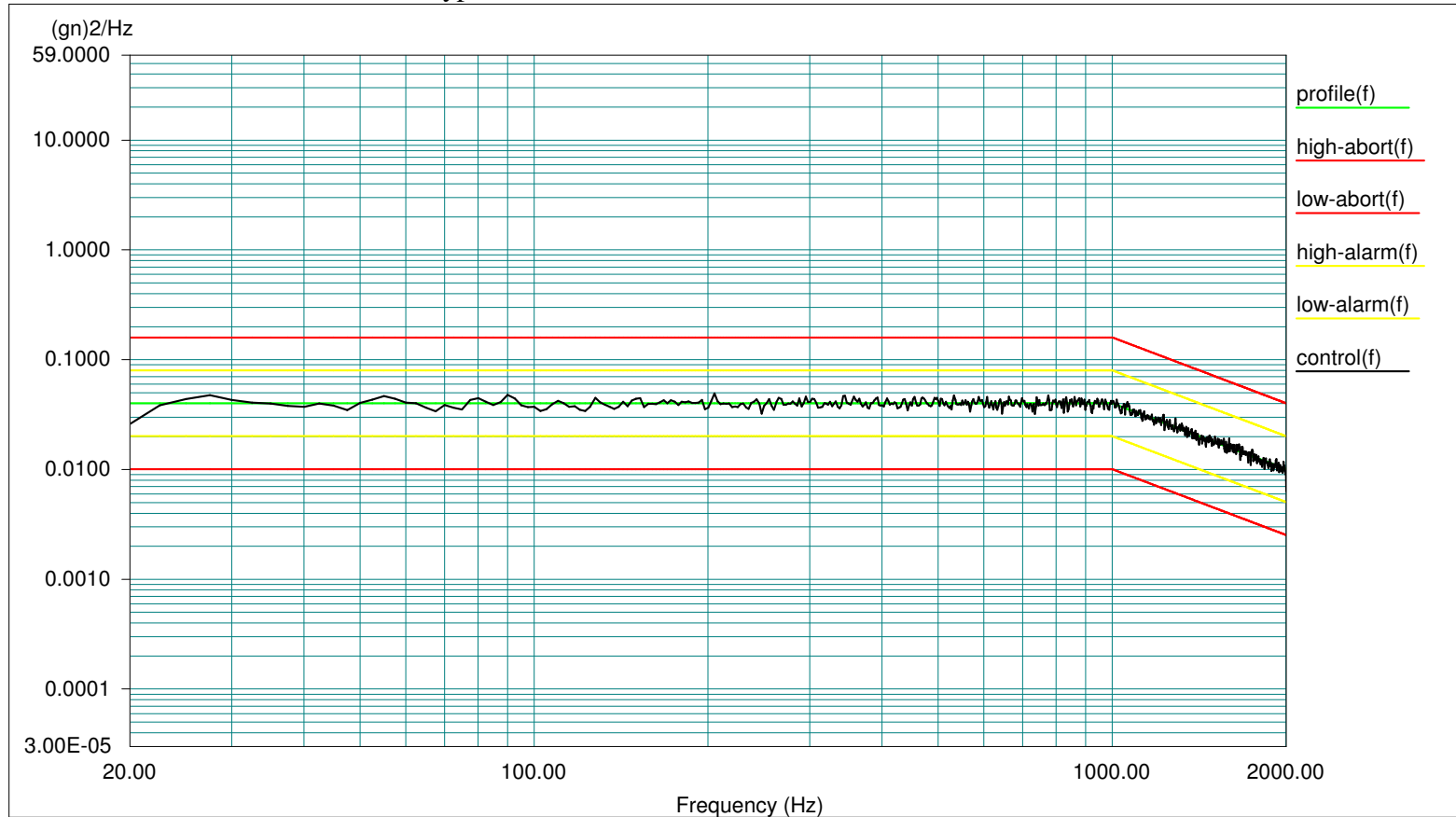
Control RMS: 4.024811 gn Full Level Elapsed Time: 01:00:00 Lines: 800 Frame Time: 0.400000 Seconds

Demand RMS: 4.021014 gn Remaining Time: 00:00:00 DOF: 154 dF: 2.500000 Hz

X axis

Project File Name: 20-2000Hz 7.69g rms.prj

Profile Name: Default Test Type: Random Run Folder: .\RunFolder



Level: 100 %

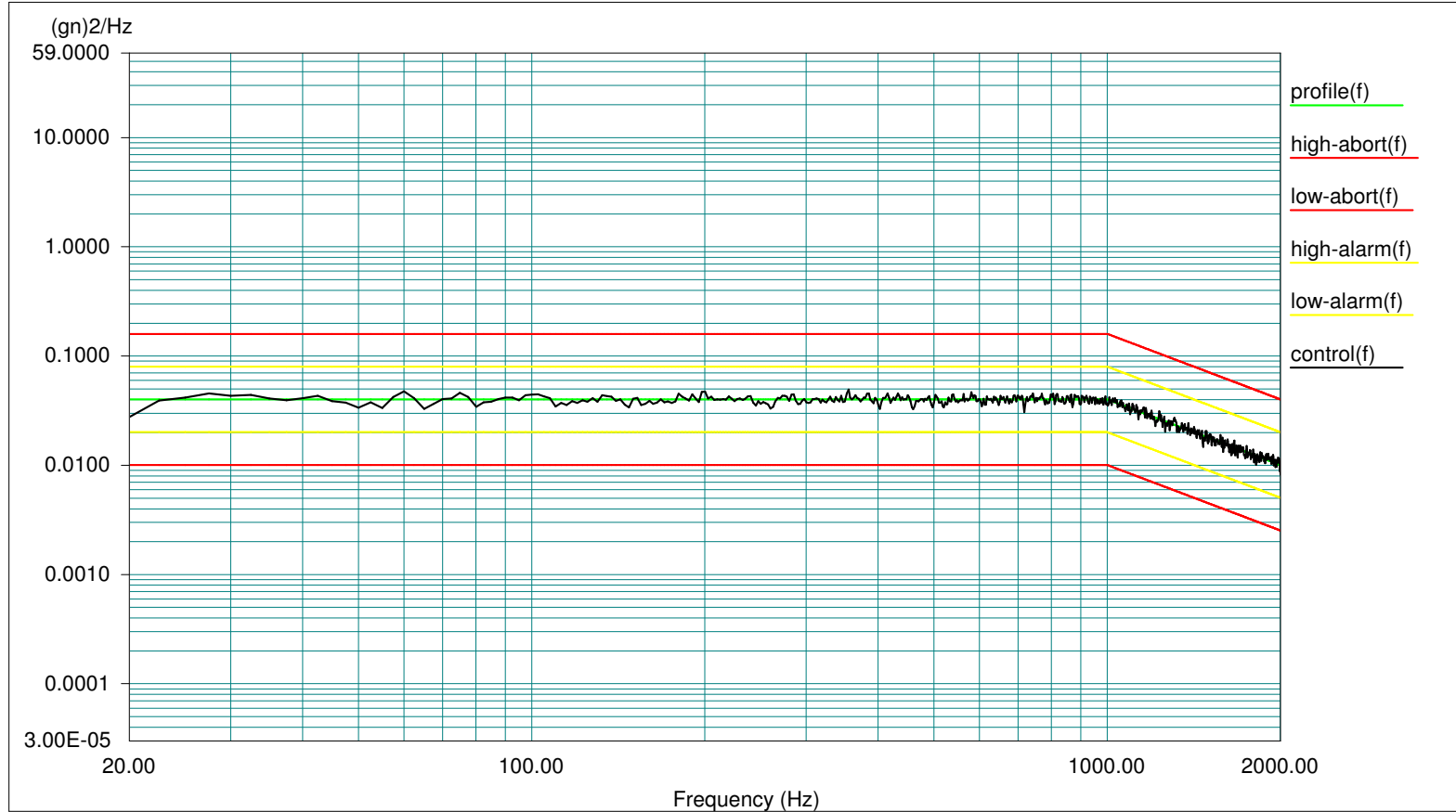
Control RMS: 7.692342 gn Full Level Elapsed Time: 01:00:00 Lines: 800 Frame Time: 0.400000 Seconds

Demand RMS: 7.691775 gn Remaining Time: 00:00:00 DOF: 154 dF: 2.500000 Hz

Y axis

Project File Name: 20-2000Hz 7.69g rms.prj

Profile Name: Default Test Type: Random Run Folder: .\RunFolder



Level: 100 %

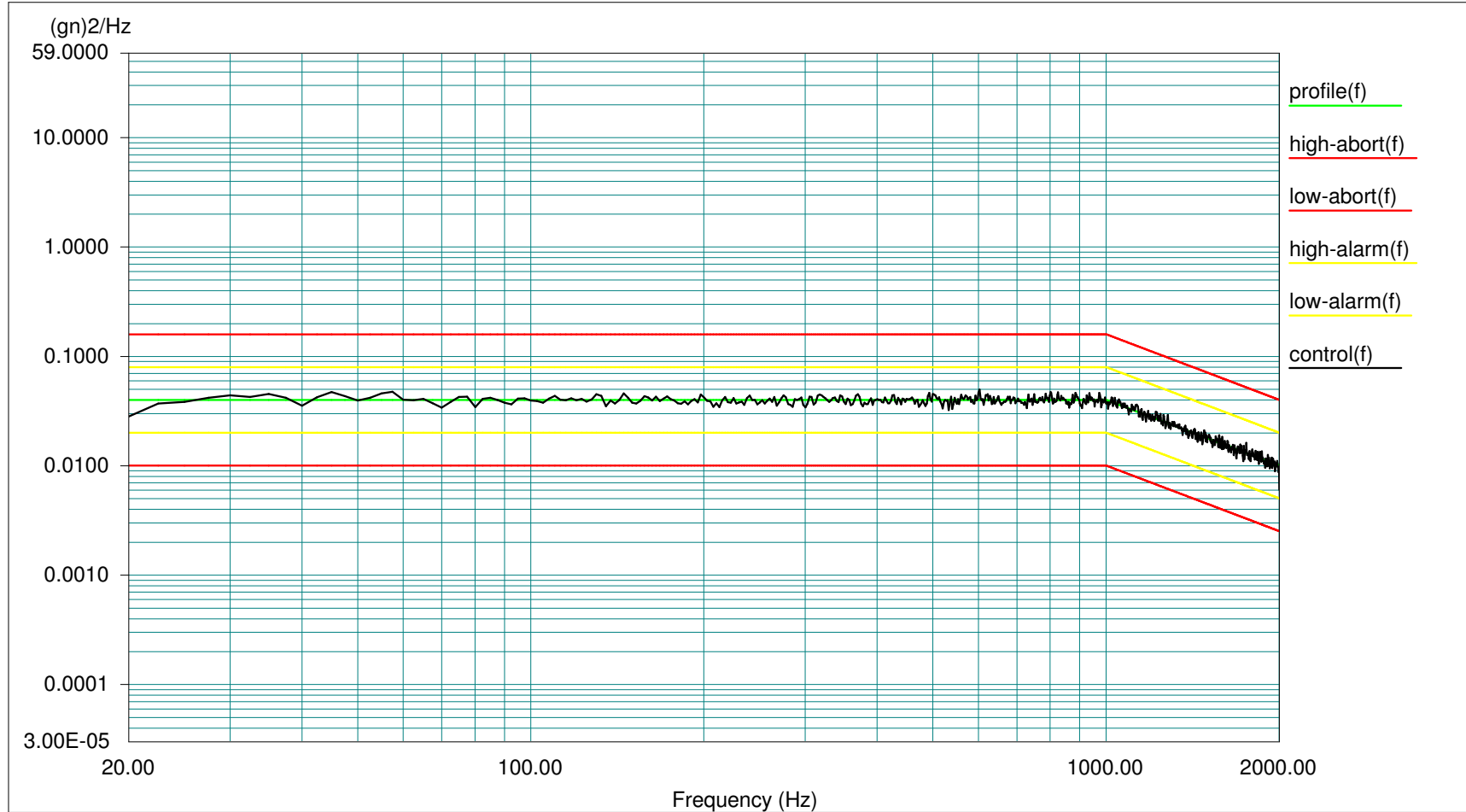
Control RMS: 7.686585 gn Full Level Elapsed Time: 01:00:00 Lines: 800 Frame Time: 0.400000 Seconds

Demand RMS: 7.691775 gn Remaining Time: 00:00:00 DOF: 154 dF: 2.500000 Hz

Z axis

Project File Name: 20-2000Hz 7.69g rms.prj

Profile Name: Default Test Type: Random Run Folder: .\RunFolder



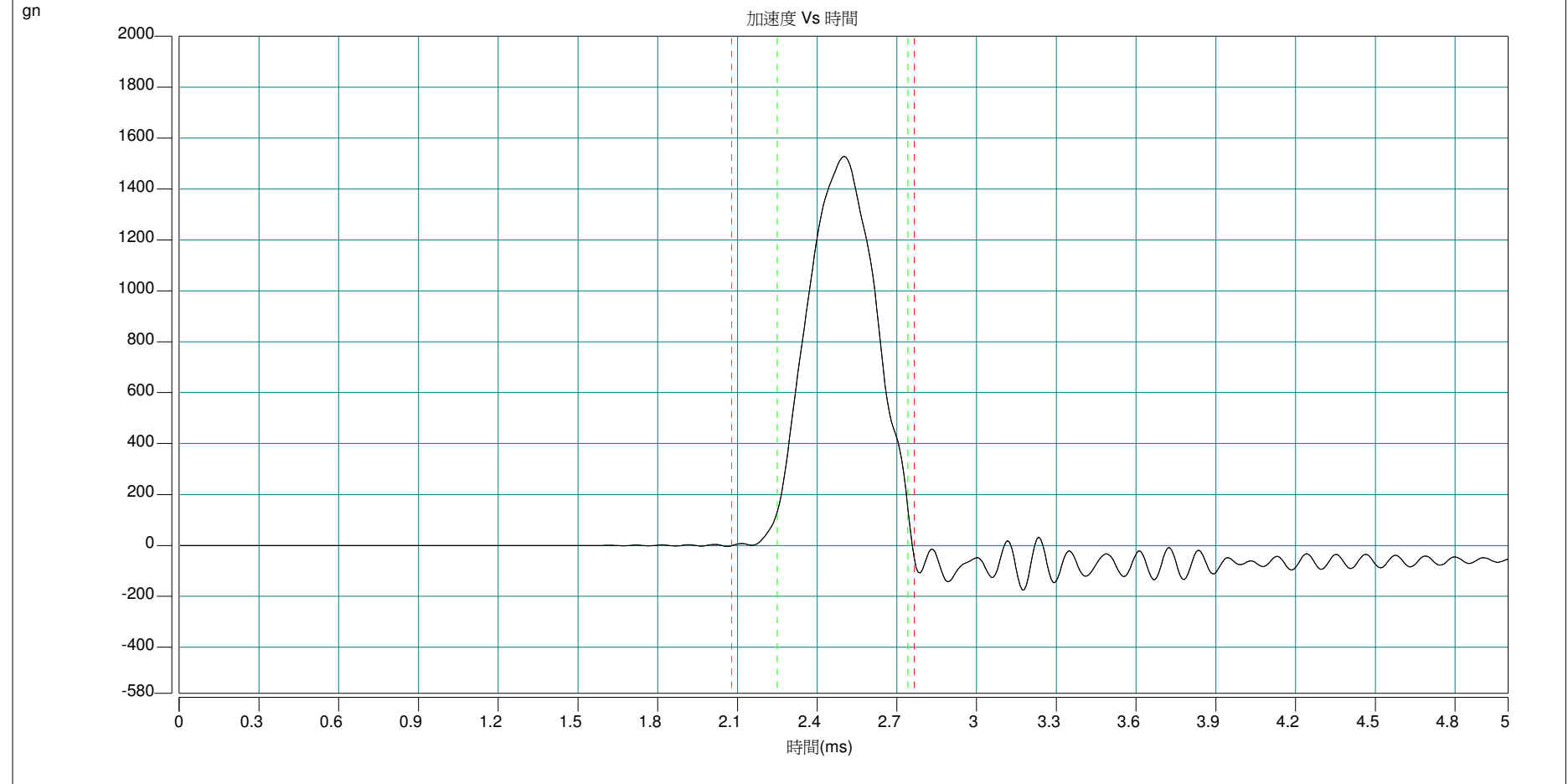
Level: 100 %

Control RMS: 7.692033 gn Full Level Elapsed Time: 01:00:00 Lines: 800 Frame Time: 0.400000 Seconds

Demand RMS: 7.691775 gn Remaining Time: 00:00:00 DOF: 154 dF: 2.500000 Hz

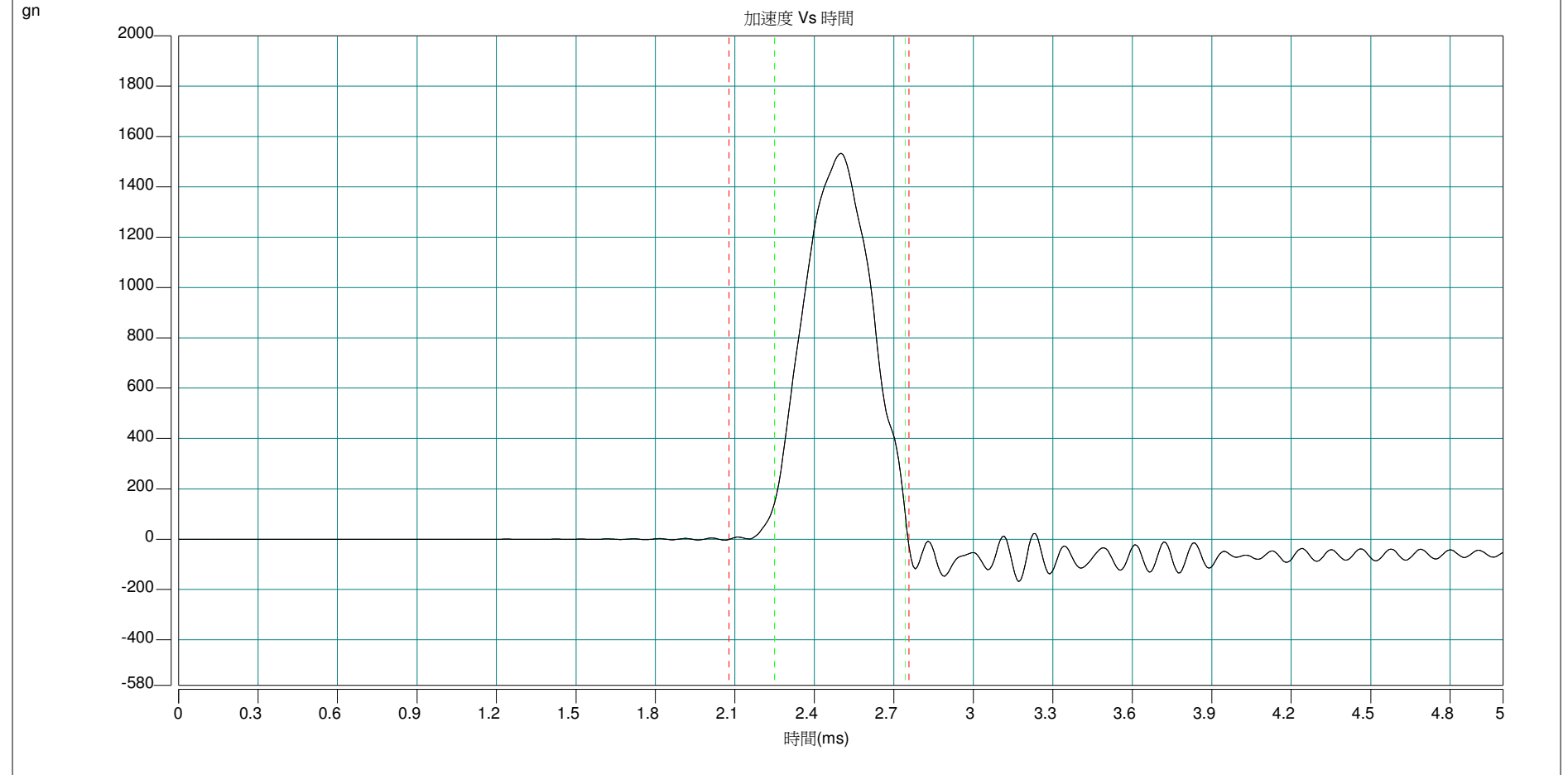
+X axis

訊號名稱	加速度(gn)	作動時間(ms)	速度變化率(In/s)	低通濾波(Hz)	最大加速度	最小加速度
Input1(t)	1528.19	0.49	179.79	10000.00	1528.19	-174.81



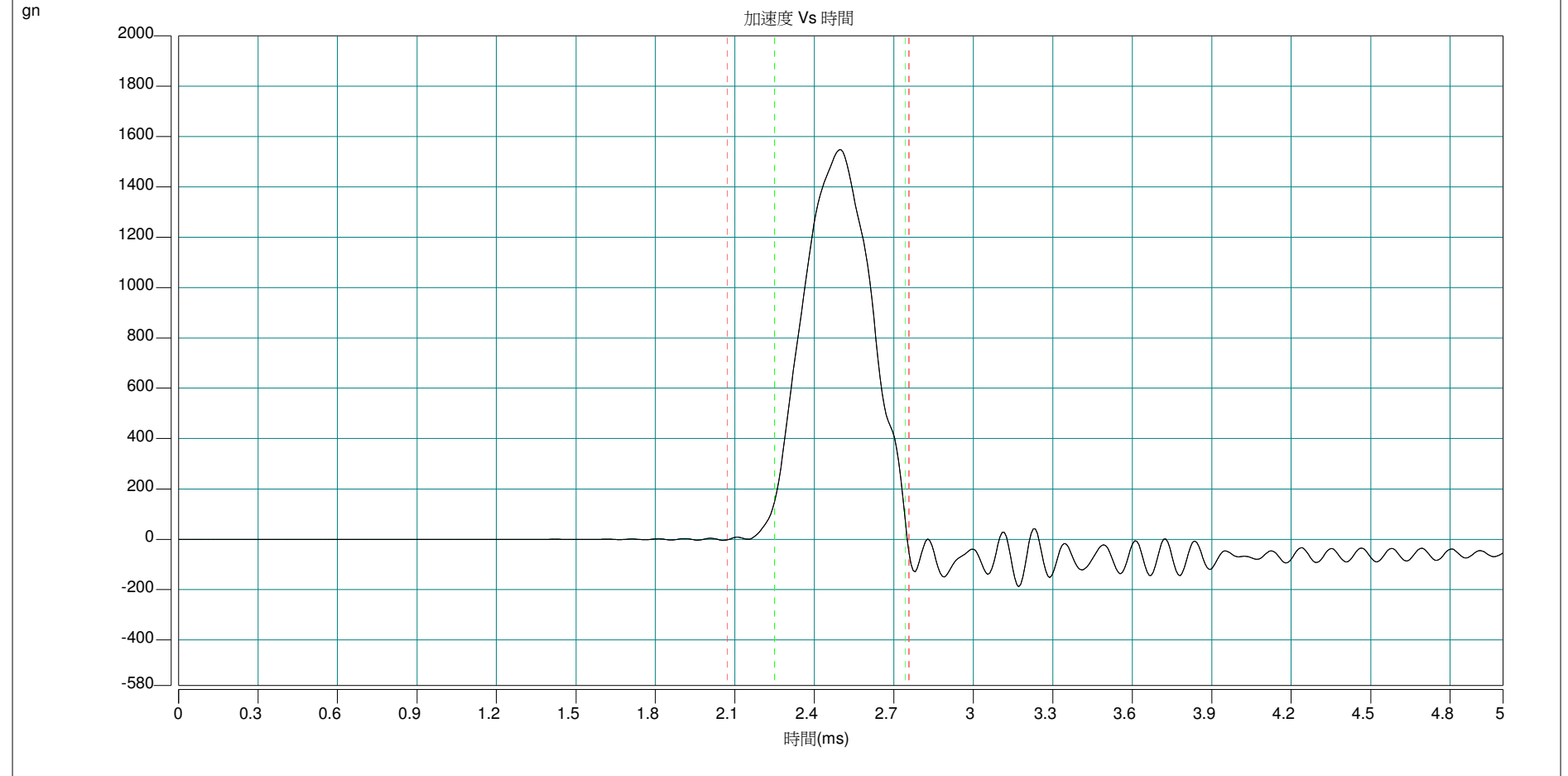
-X axis

訊號名稱	加速度(gn)	作動時間(ms)	速度變化率(In/s)	低通濾波(Hz)	最大加速度	最小加速度
Input1(t)	1535.26	0.49	179.87	10000.00	1535.26	-168.54



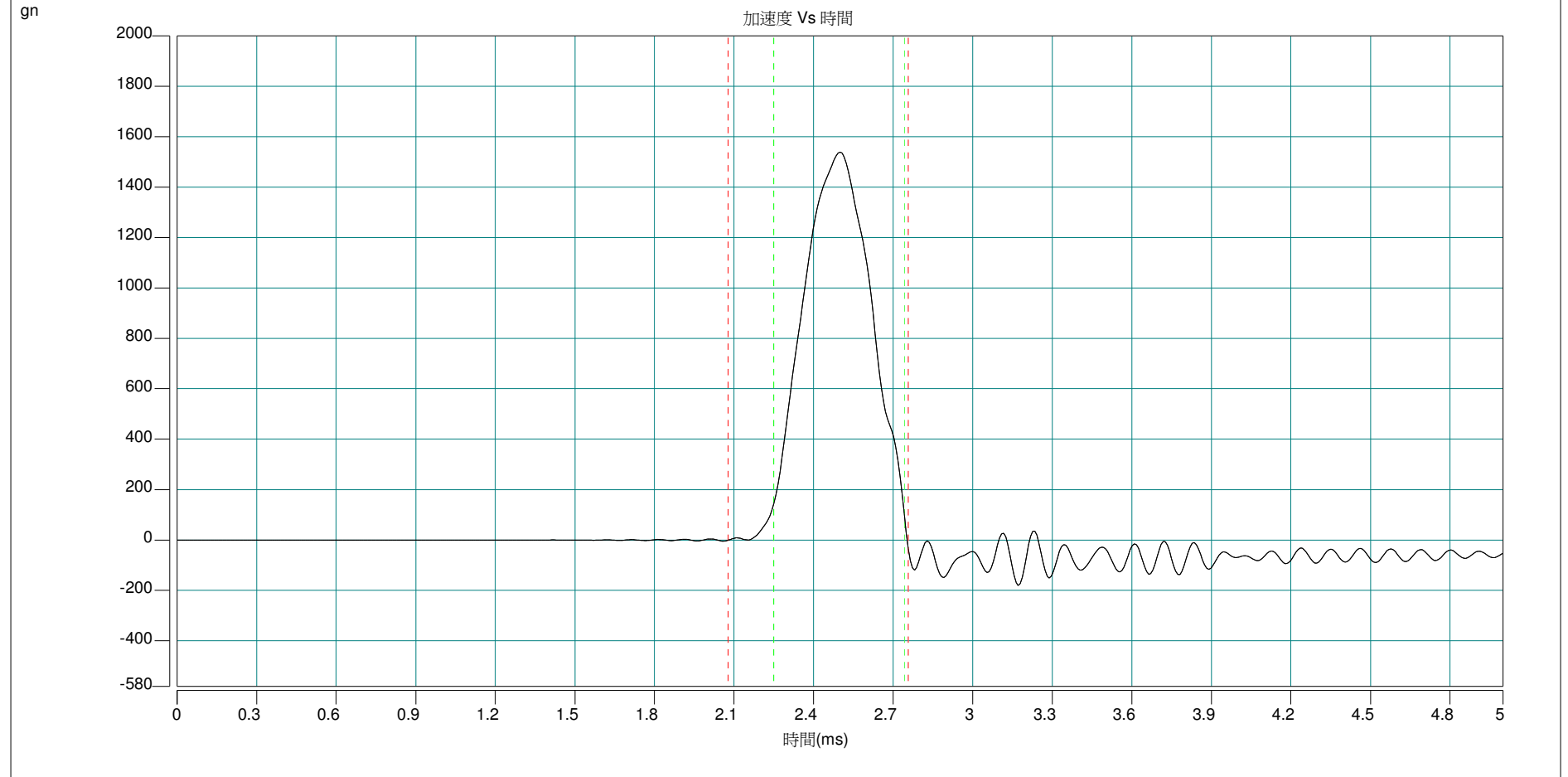
+Y axis

訊號名稱	加速度(gn)	作動時間(ms)	速度變化率(In/s)	低通濾波(Hz)	最大加速度	最小加速度
Input1(t)	1536.12	0.48	181.26	10000.00	1536.12	-188.72



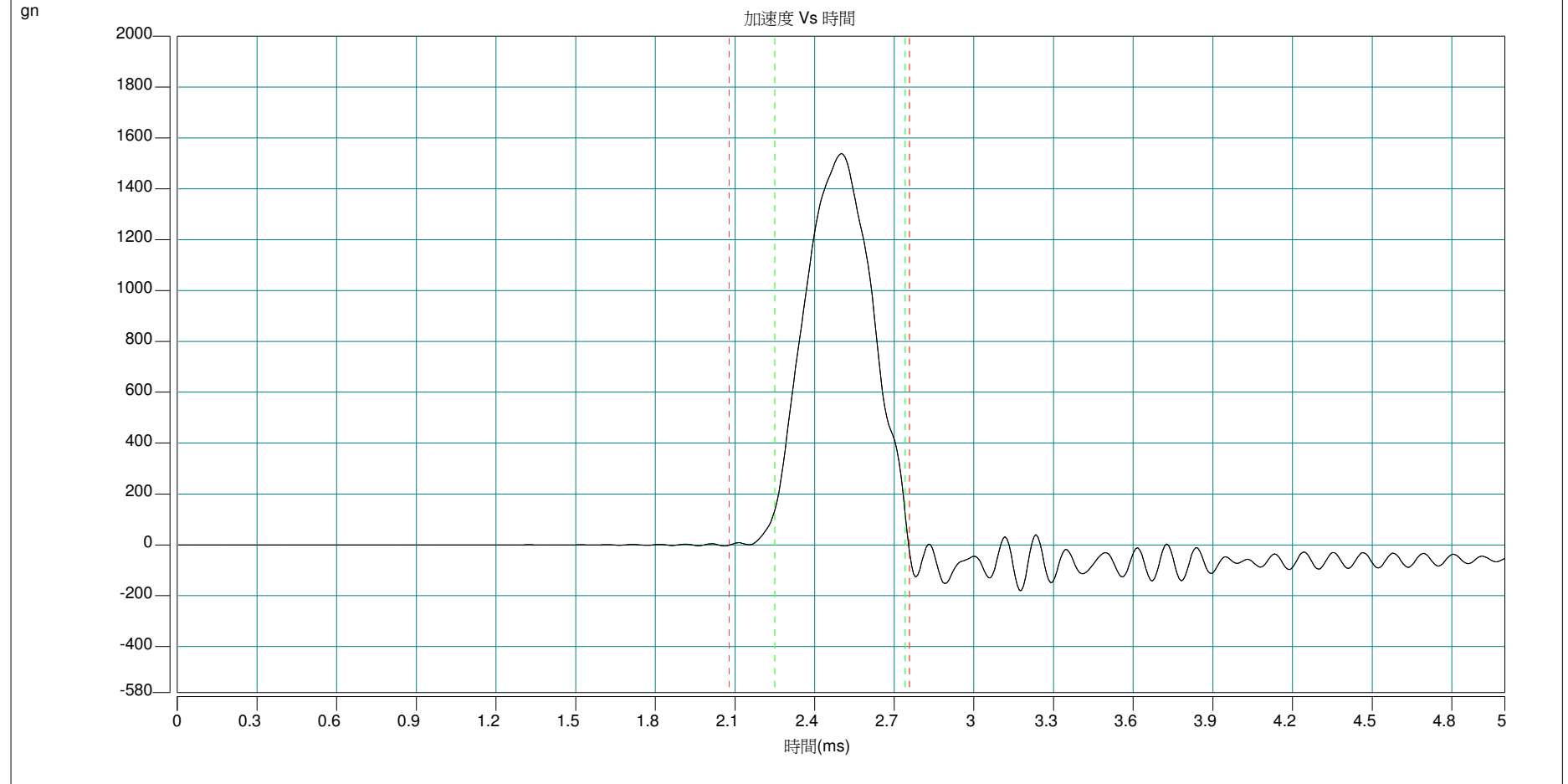
-Y axis

訊號名稱	加速度(gn)	作動時間(ms)	速度變化率(In/s)	低通濾波(Hz)	最大加速度	最小加速度
Input1(t)	1539.64	0.48	180.50	10000.00	1539.64	-179.99



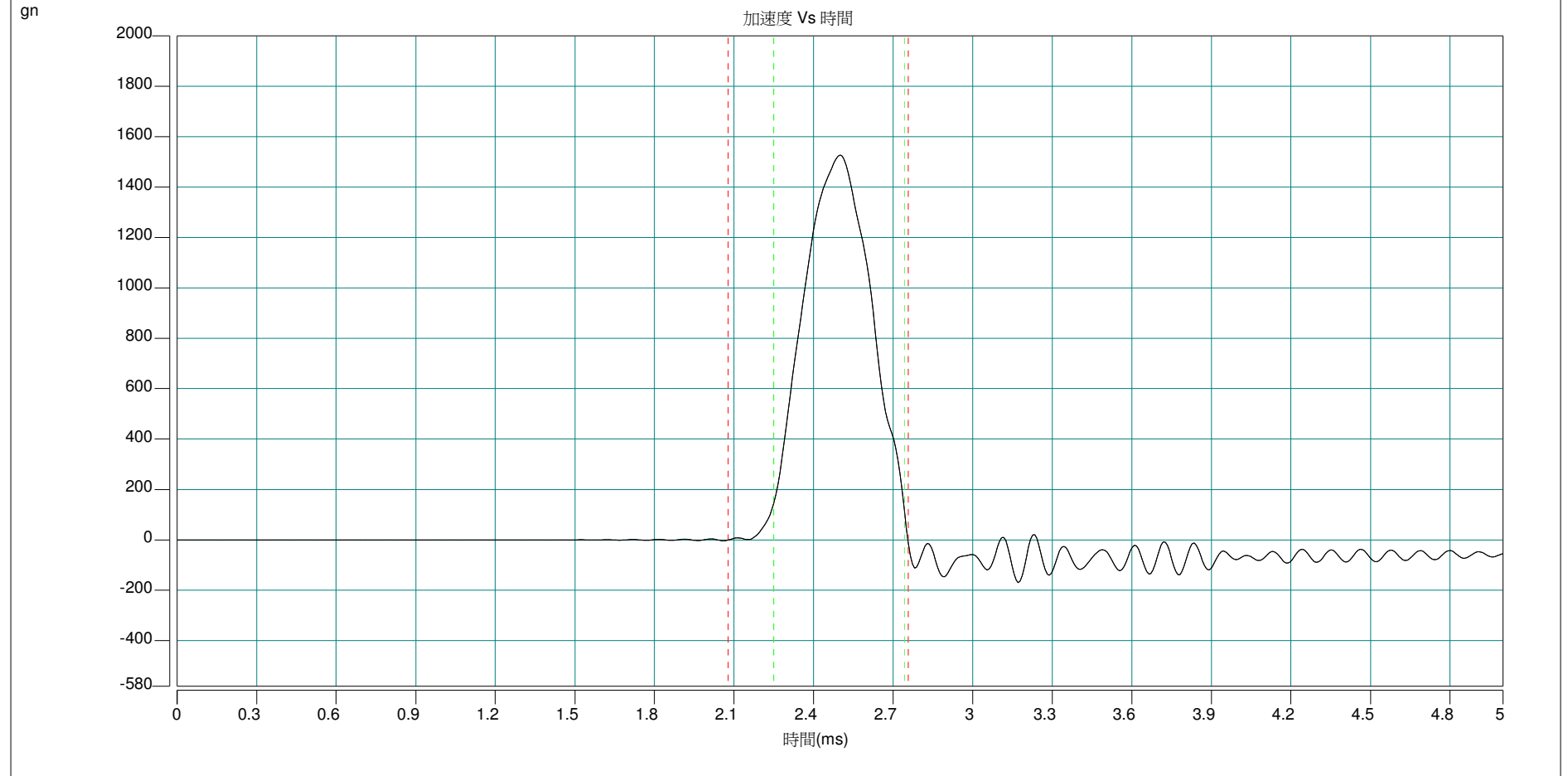
+Z axis

訊號名稱	加速度(gn)	作動時間(ms)	速度變化率(In/s)	低通濾波(Hz)	最大加速度	最小加速度
Input1(t)	1532.03	0.48	179.87	10000.00	1532.03	-179.18



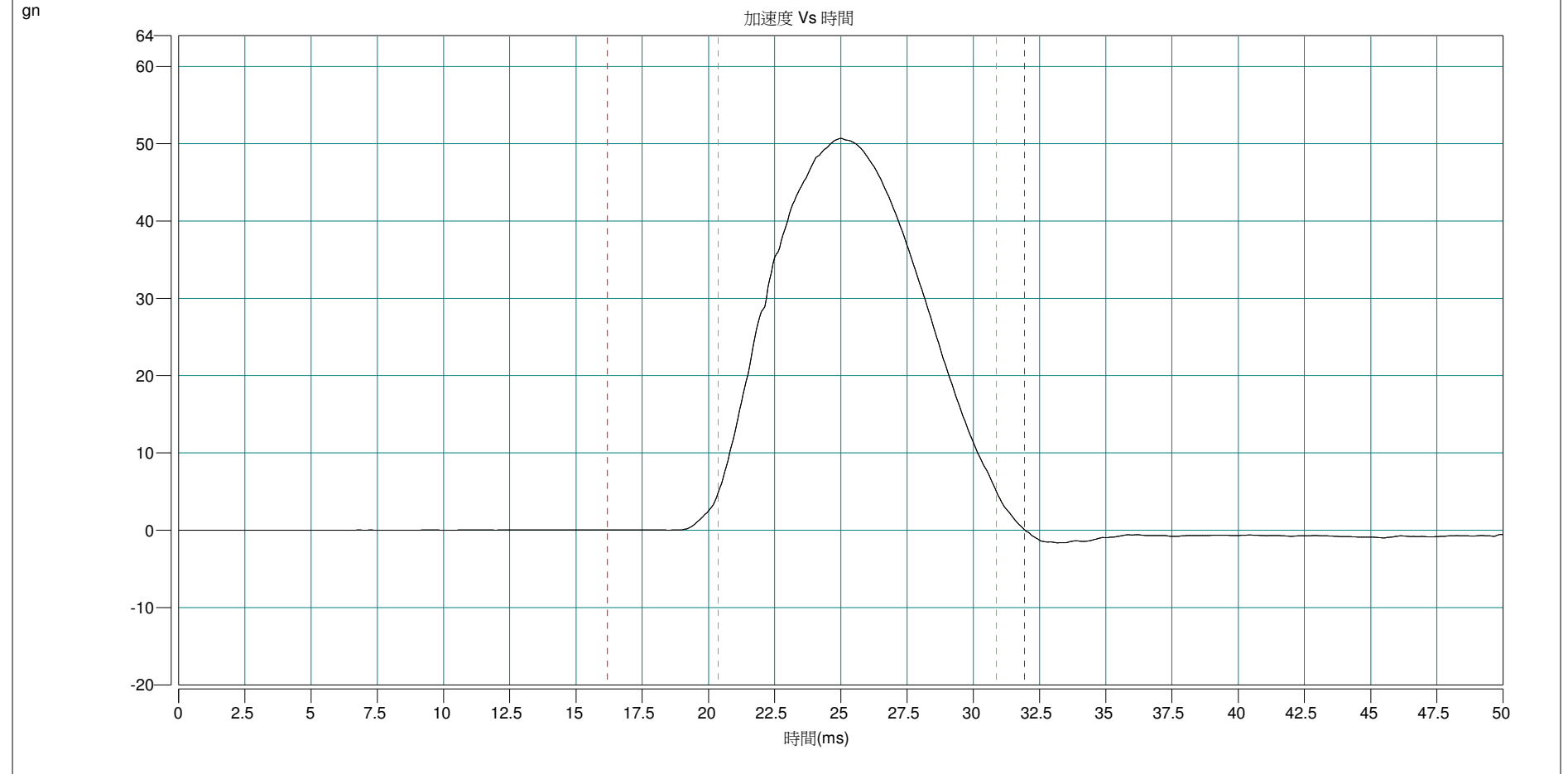
-Z axis

訊號名稱	加速度(gn)	作動時間(ms)	速度變化率(In/s)	低通濾波(Hz)	最大加速度	最小加速度
Input1(t)	1522.22	0.49	179.90	10000.00	1522.22	-169.44



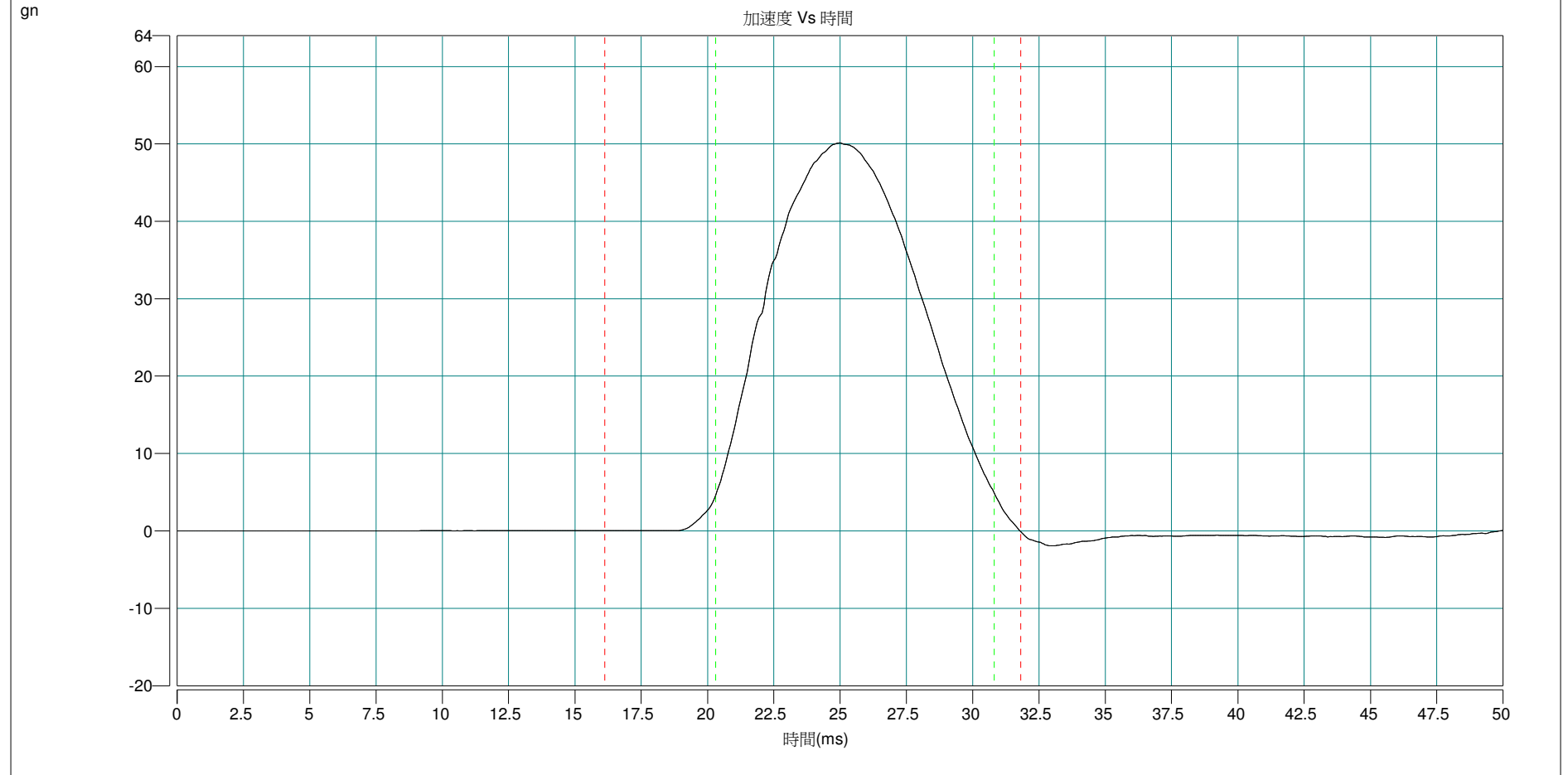
+X axis

訊號名稱	加速度(gn)	作動時間(ms)	速度變化率(In/s)	低通濾波(Hz)	最大加速度	最小加速度
Input1(t)	50.70	10.47	131.28	500.00	50.70	-1.63



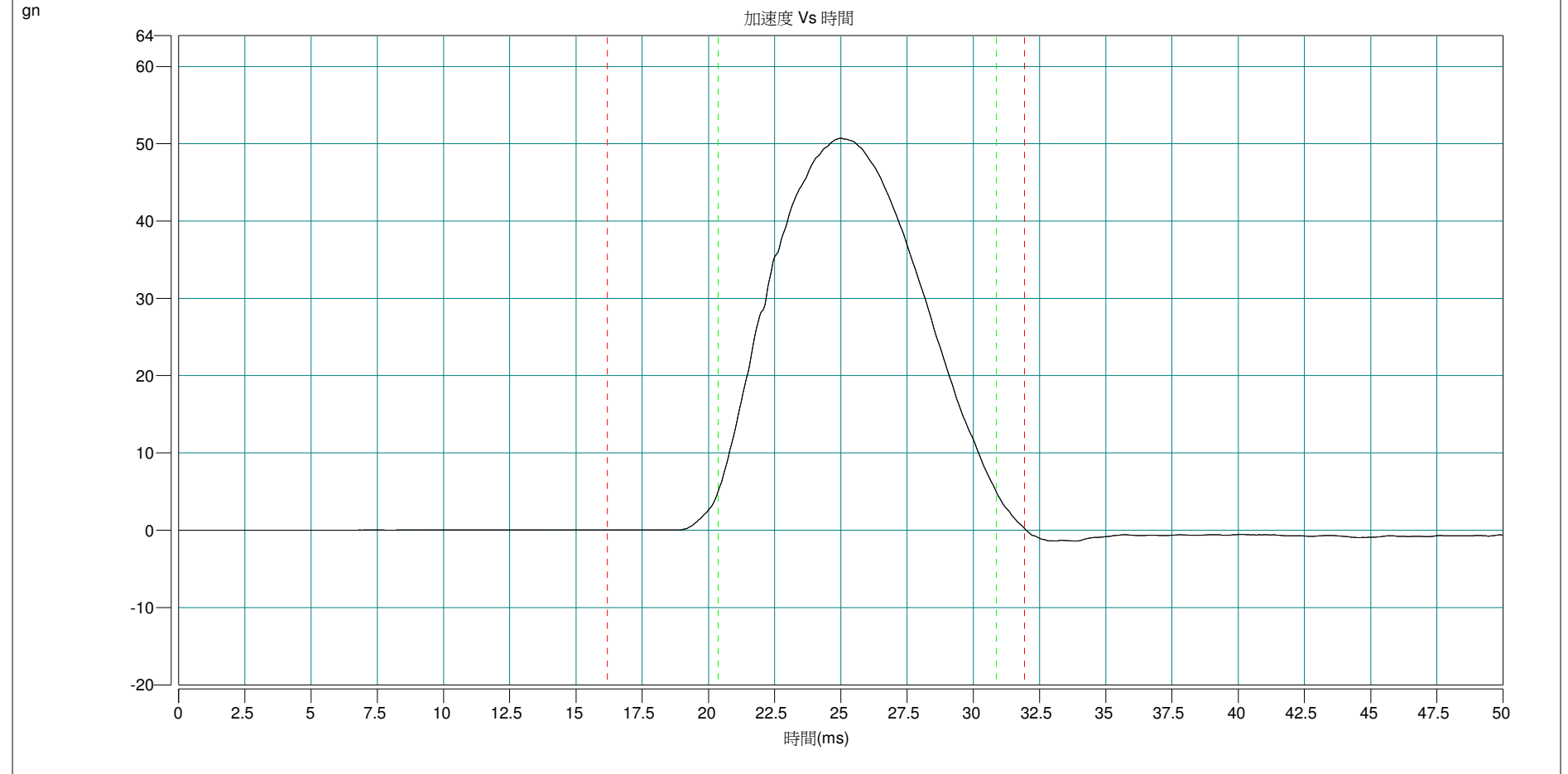
-X axis

訊號名稱	加速度(gn)	作動時間(ms)	速度變化率(In/s)	低通濾波(Hz)	最大加速度	最小加速度
Input1(t)	50.15	10.45	129.71	500.00	50.15	-1.93



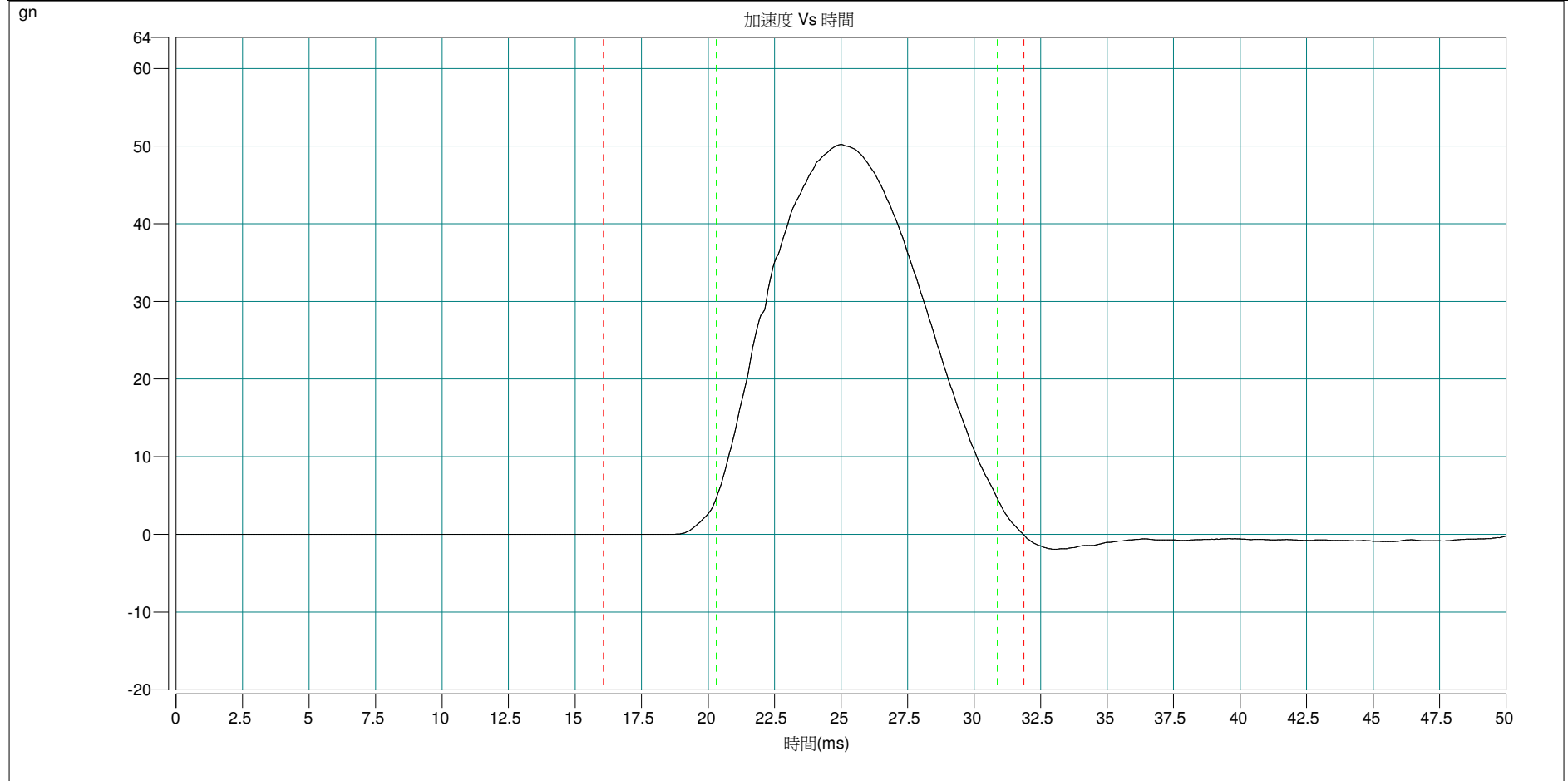
+Y axis

訊號名稱	加速度(gn)	作動時間(ms)	速度變化率(In/s)	低通濾波(Hz)	最大加速度	最小加速度
Input1(t)	50.73	10.48	131.73	500.00	50.73	-1.39



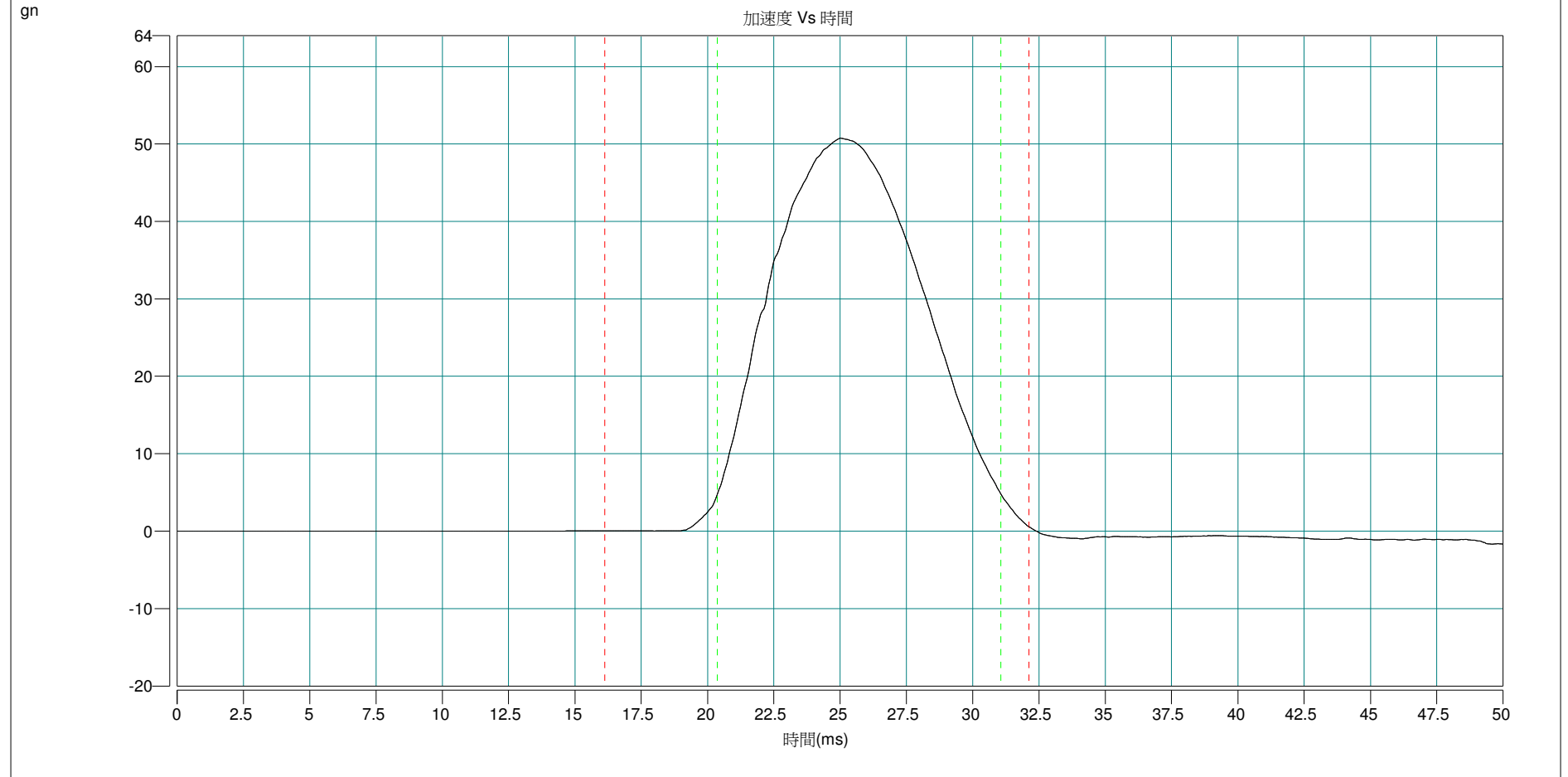
-Y axis

訊號名稱	加速度(gn)	作動時間(ms)	速度變化率(In/s)	低通濾波(Hz)	最大加速度	最小加速度
Input1(t)	50.24	10.47	130.01	500.00	50.24	-1.93



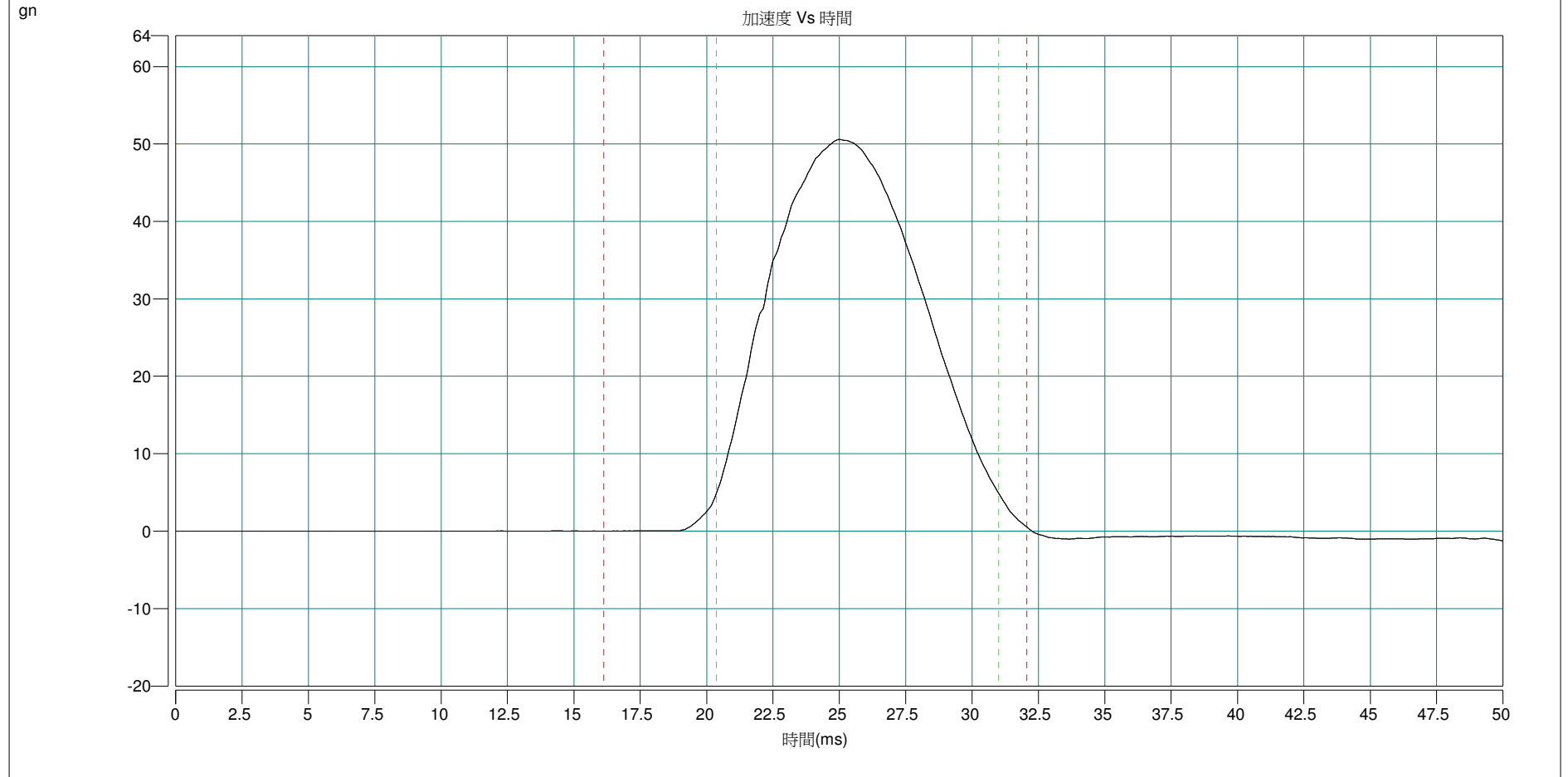
+Z axis

訊號名稱	加速度(gn)	作動時間(ms)	速度變化率(In/s)	低通濾波(Hz)	最大加速度	最小加速度
Input1(t)	50.77	10.61	132.60	500.00	50.77	-1.68



-Z axis

訊號名稱	加速度(gn)	作動時間(ms)	速度變化率(In/s)	低通濾波(Hz)	最大加速度	最小加速度
Input1(t)	50.61	10.58	132.07	500.00	50.61	-1.28



-END-