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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-161229-2

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 : mSATA SSD

DATE OF RECEIVED : 2016/11/24

DATE OF TESTED : 2016/12/02

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 :

*Peter Peng*

Approval Signatory :

2017.1.5 *David Lee*

Laboratory Head :

*Hsin Zhi Chang*

金頓科技實驗

## TESTING / INSPECTION REPORT

### TESTING EQUIPMENT :

- |                         |   |
|-------------------------|---|
| 1.Vibration Tester      | : KING DESIGN KD-9363EM-600F2K-50N120,<br>S/N : KDS11054986 |
| 2.Controller            | : VCS-913+, S/N : 1312384                                   |
| 3.Control Accelerometer | : Wilcoxon Research WR-777, S/N : 4207                      |
| 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    | : SM230-300 |
| 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) :

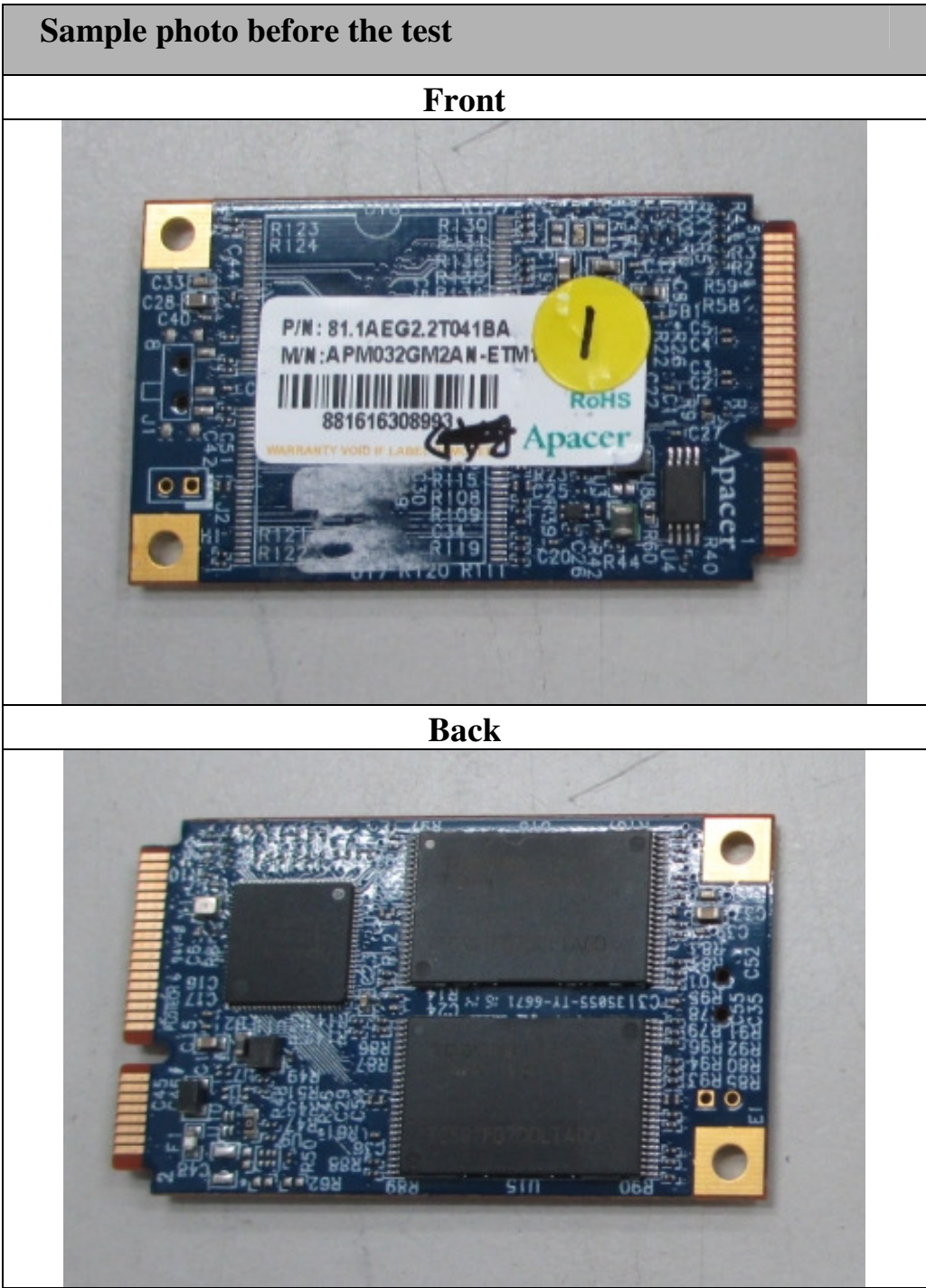
#### *As per applicant's requirement*

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



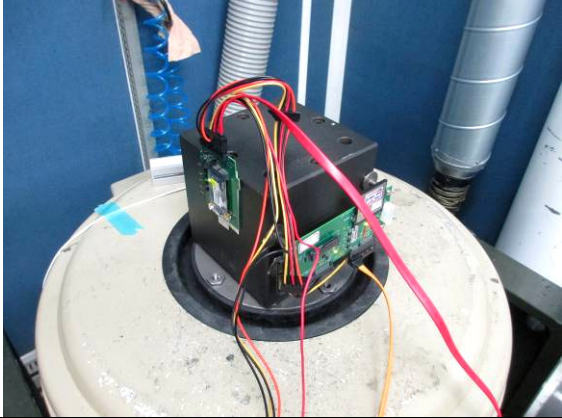



### TEST RESULT :

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.			

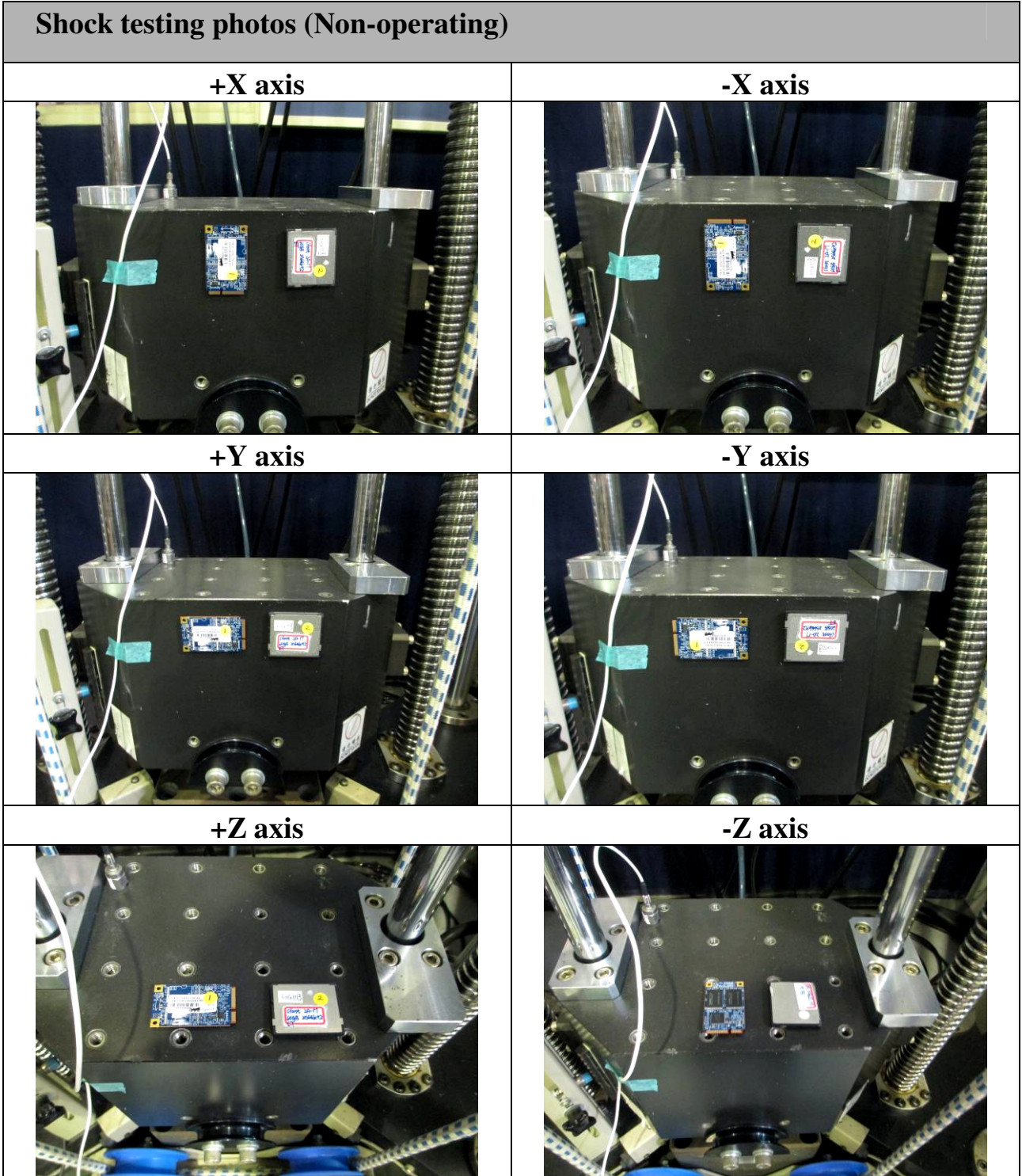
## TESTING / INSPECTION REPORT



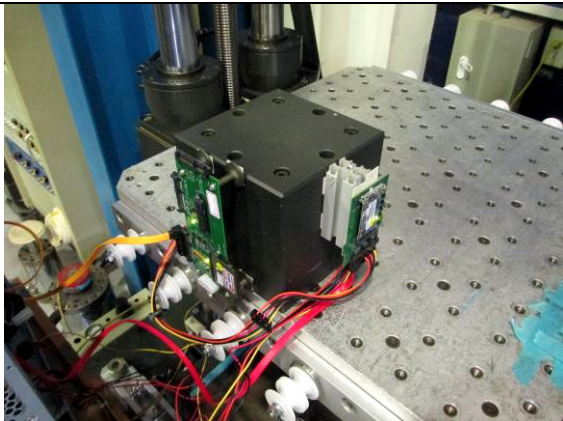
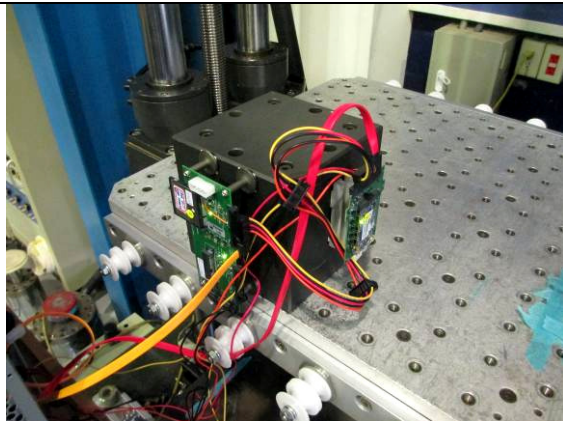
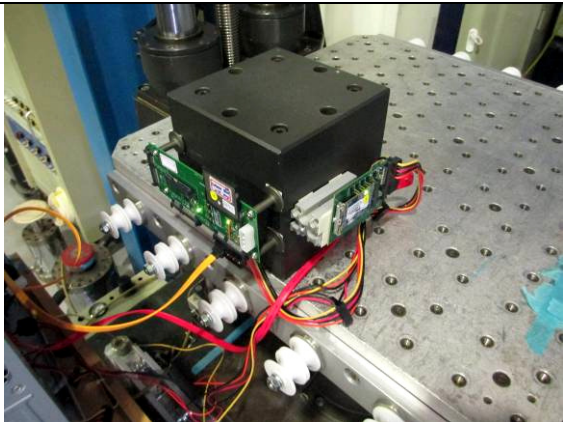
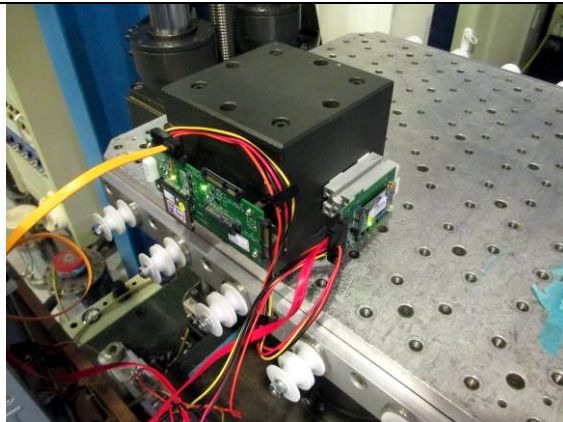
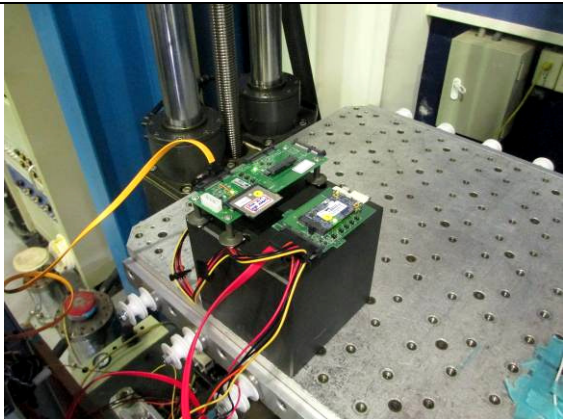
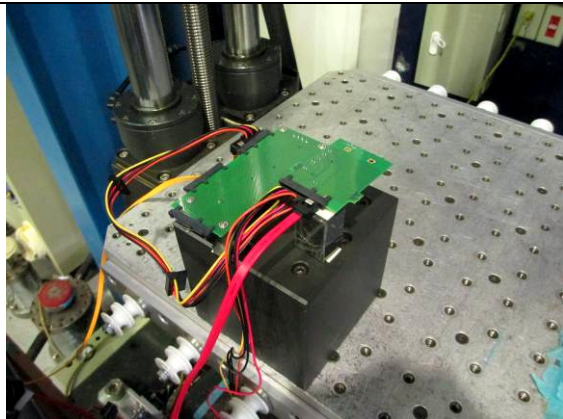
## TESTING / INSPECTION REPORT

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

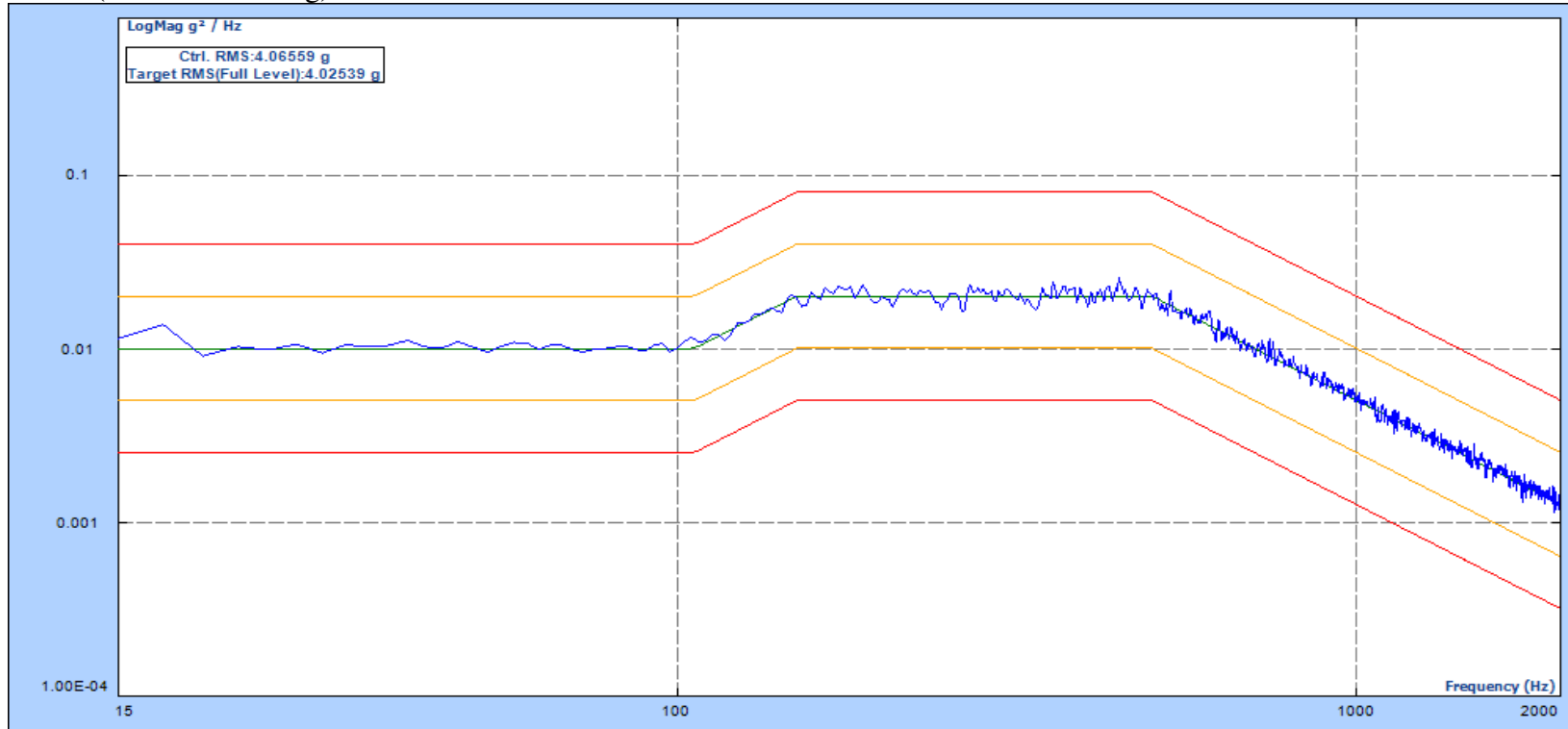
## TESTING / INSPECTION REPORT



## 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 (15-2000Hz 4.02g)

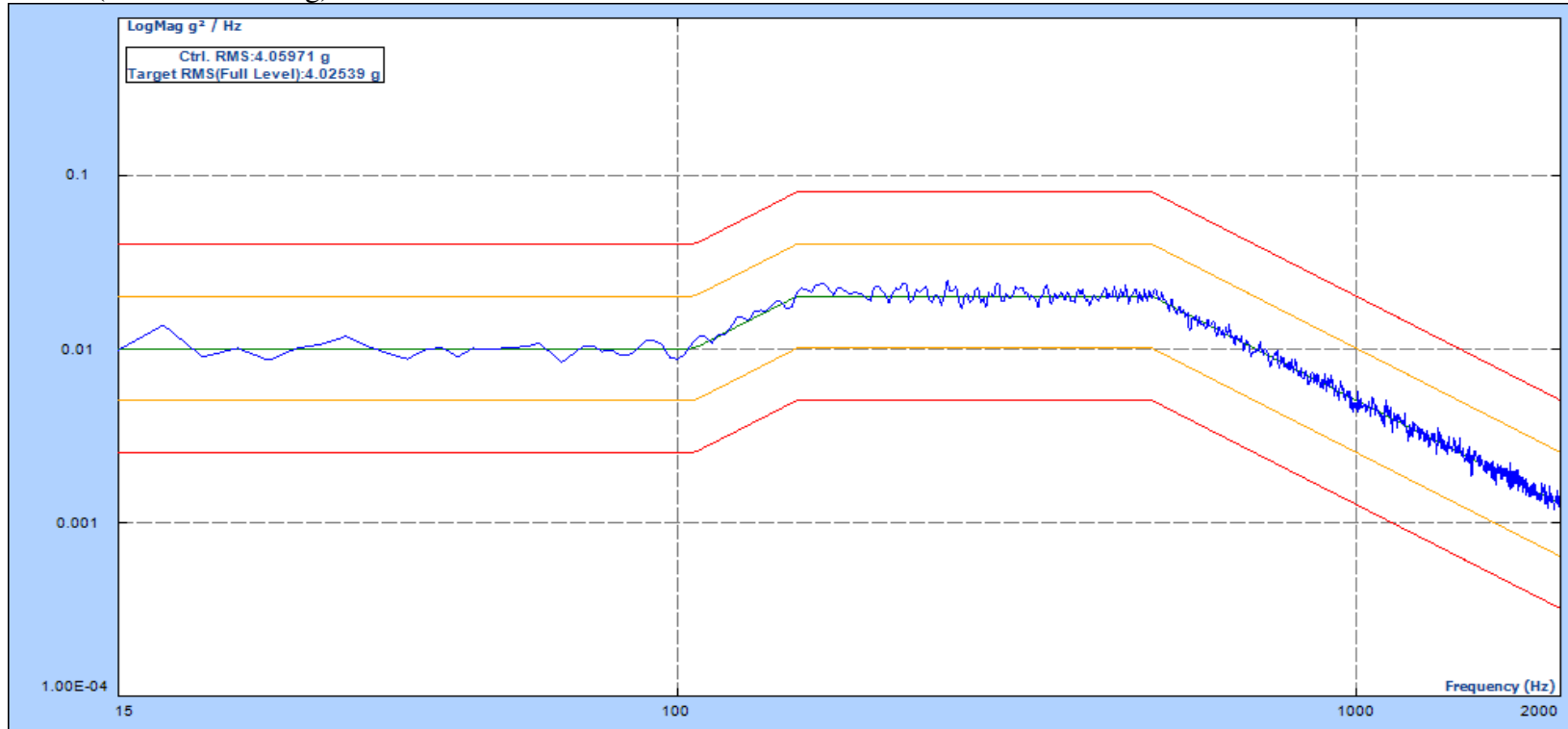


Level: 100.00 %  
 Velocity Pk: 5.339 in/s  
 Remaining: 00:00:00

Drive Pk: 0.484V  
 Control RMS: 4.066 g  
 Total Elapsed: 01:00:57

Est. Disp. : 1.791 mm Pk-Pk  
 Target RMS: 4.020 g  
 Full Level Elapsed: 01:00:00

Y axis (15-2000Hz 4.02g)

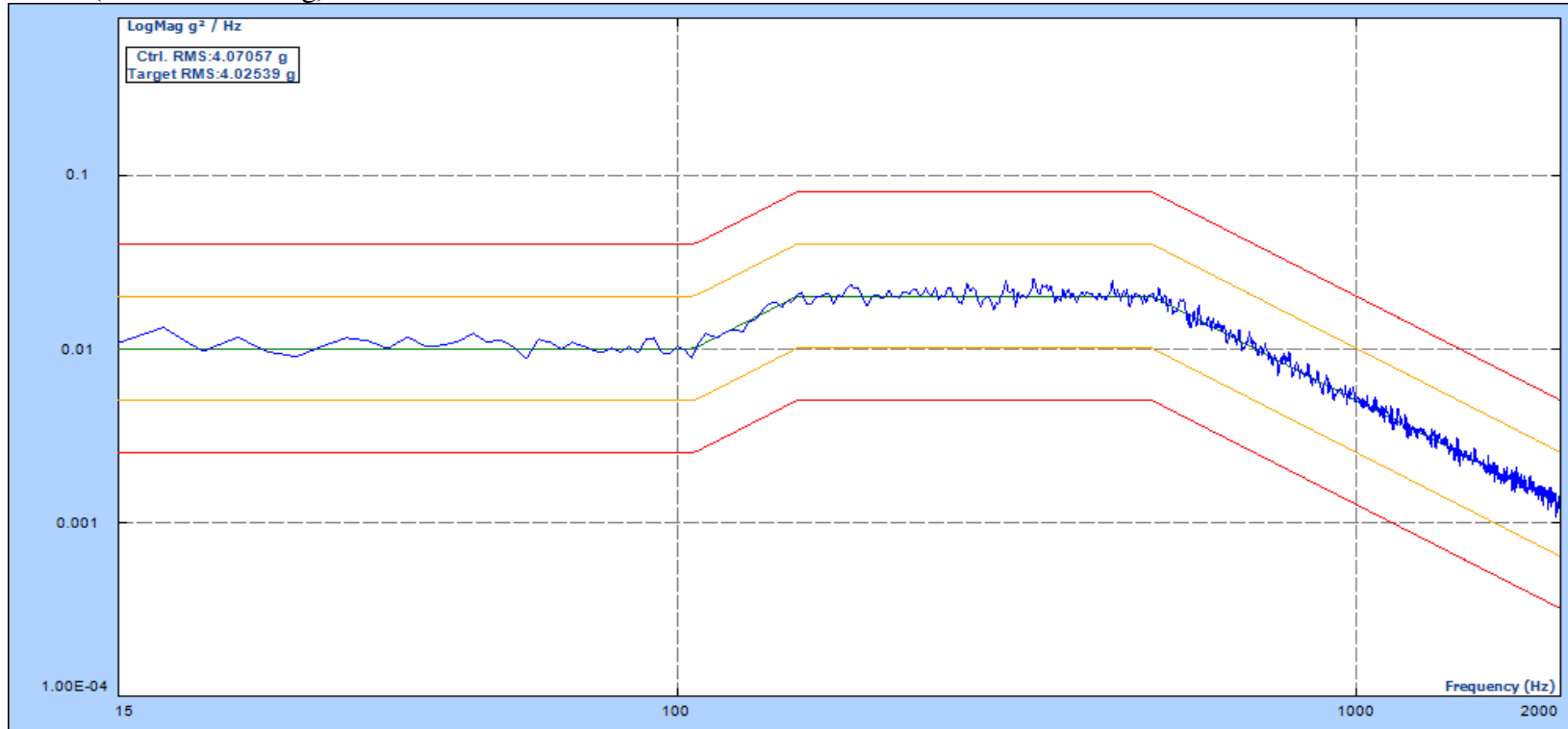


Level: 100.00 %  
Velocity Pk: 5.239 in/s  
Remaining: 00:00:00

Drive Pk: 0.497V  
Control RMS: 4.060 g  
Total Elapsed: 01:00:57

Est. Disp. : 1.729 mm Pk-Pk  
Target RMS: 4.020 g  
Full Level Elapsed: 01:00:00

Z axis (15-2000Hz 4.02g)

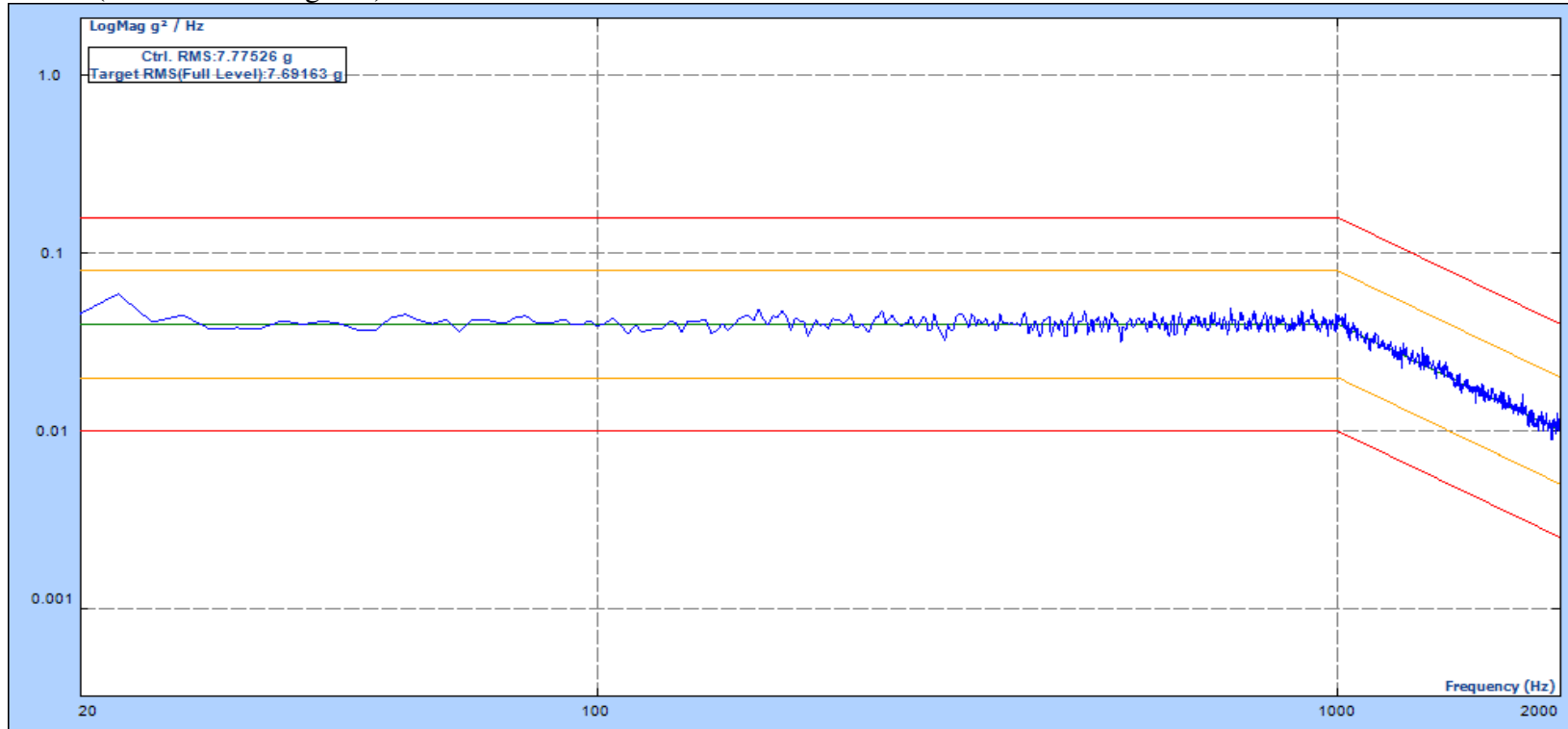


Level: 100.00 %  
Velocity Pk: 5.347 in/s  
Remaining: 00:00:00

Drive Pk: 0.525V  
Control RMS: 4.071 g  
Total Elapsed: 01:01:01

Est. Disp. : 1.777 mm Pk-Pk  
Target RMS: 4.020 g  
Full Level Elapsed: 01:00:00

X axis (20-2000Hz 7.69g rms)

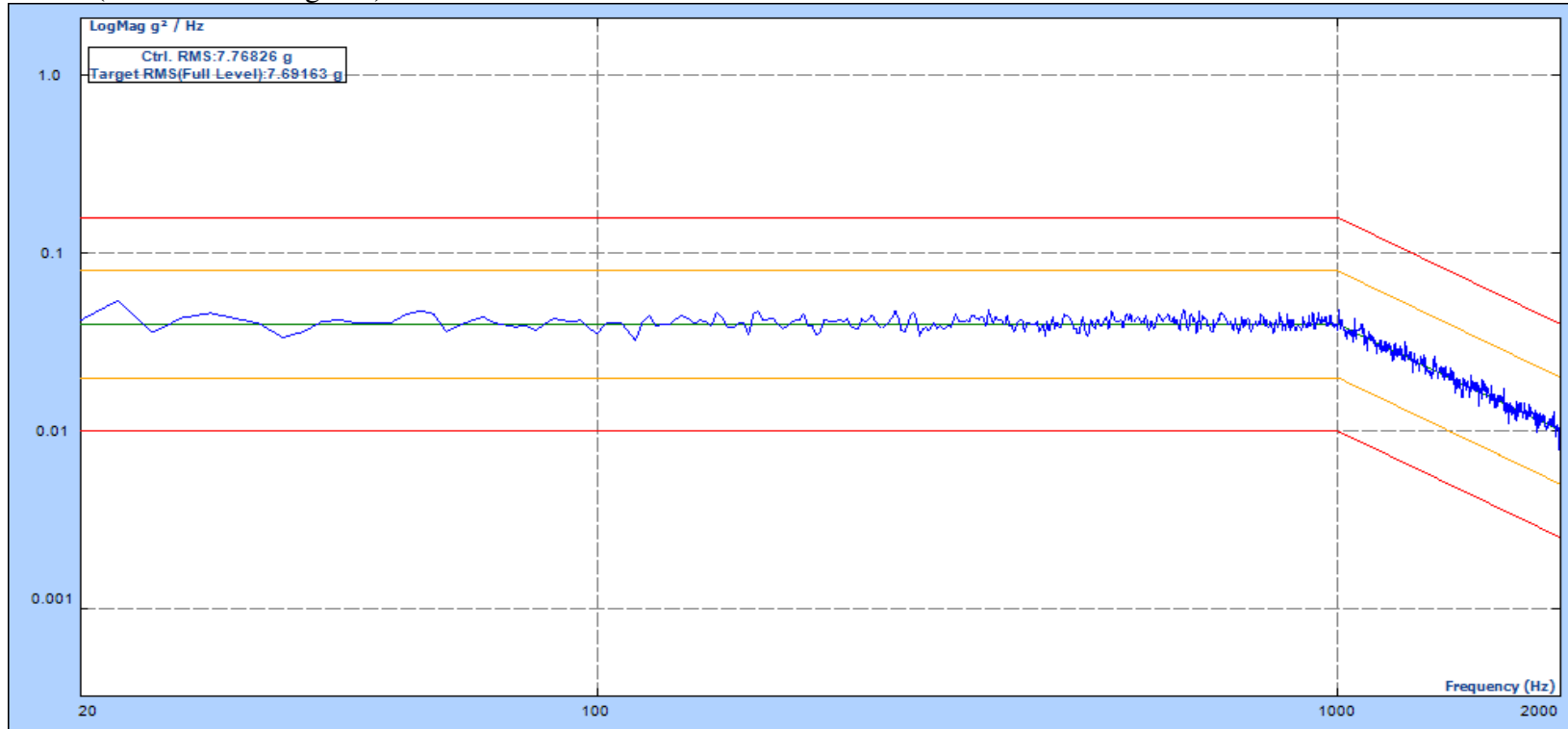


Level: 100.00 %  
Velocity Pk: 8.790 in/s  
Remaining: 00:00:00

Drive Pk: 0.879V  
Control RMS: 7.775 g  
Total Elapsed: 01:01:16

Est. Disp. : 2.275 mm Pk-Pk  
Target RMS: 7.690 g  
Full Level Elapsed: 01:00:00

Y axis (20-2000Hz 7.69g rms)



Level: 100.00 %

Velocity Pk: 8.746 in/s

Remaining: 00:00:00

Drive Pk: 1.015V

Control RMS: 7.768 g

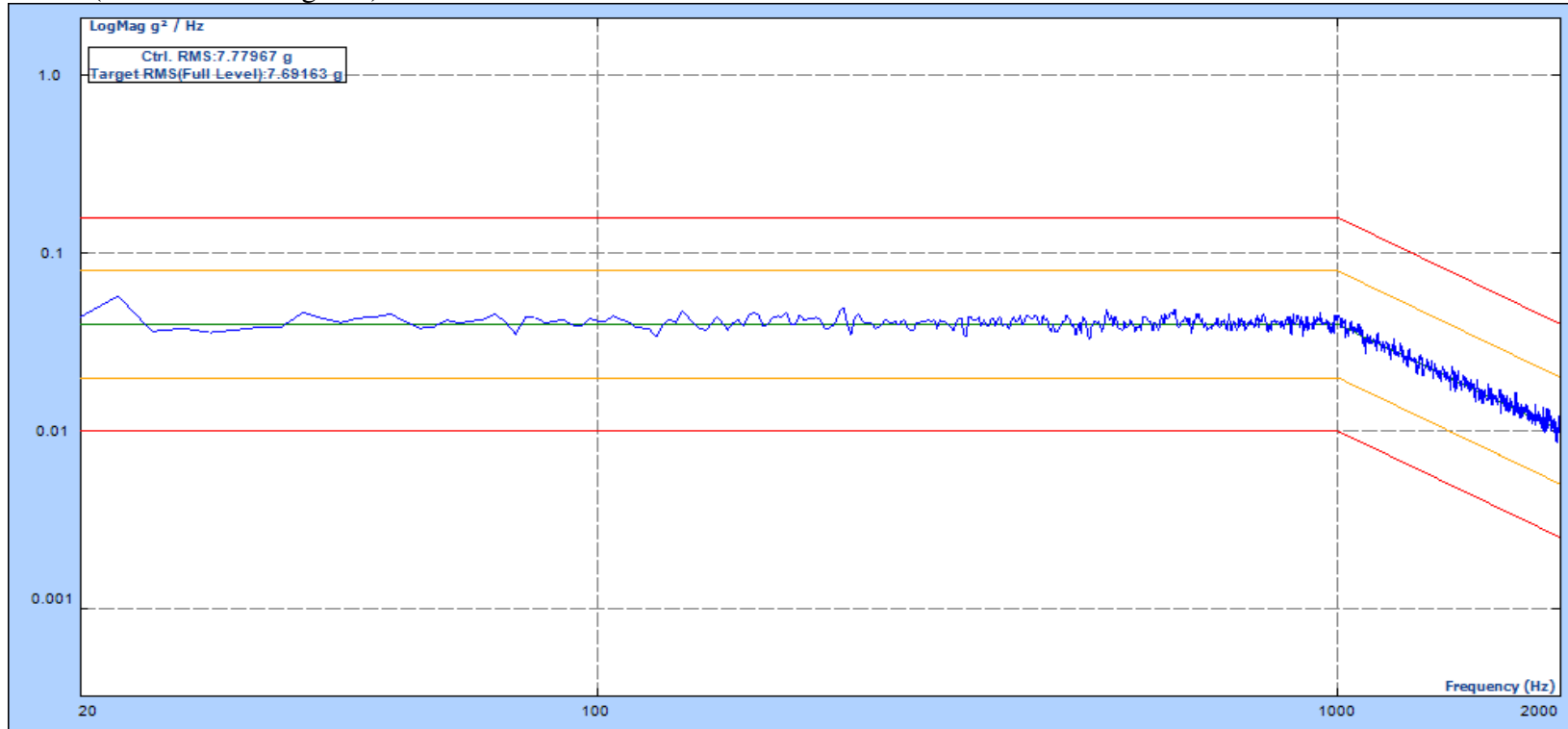
Total Elapsed: 01:01:02

Est. Disp. : 2.226 mm Pk-Pk

Target RMS: 7.690 g

Full Level Elapsed: 01:00:00

Z axis (20-2000Hz 7.69g rms)



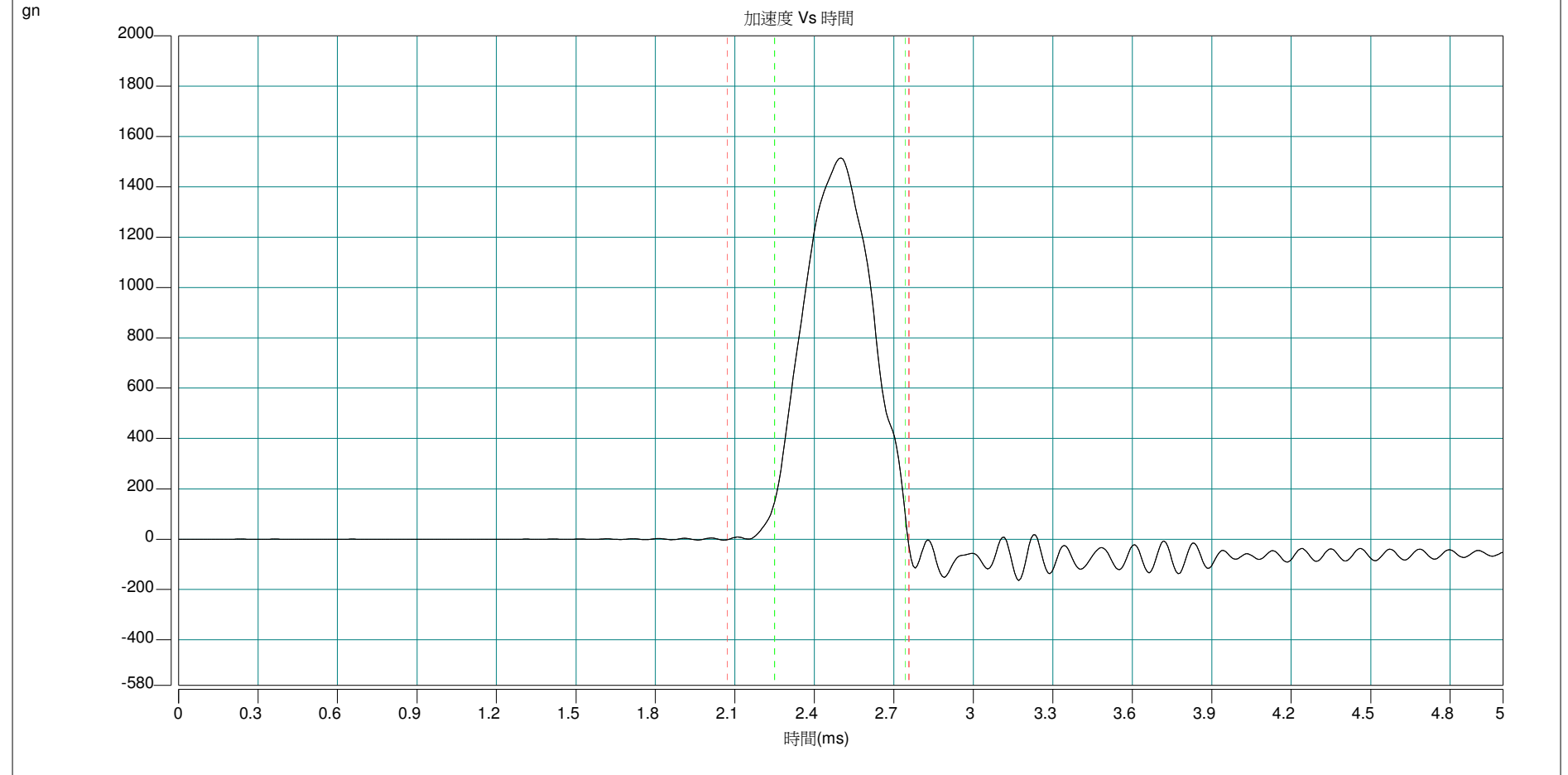
Level: 100.00 %  
Velocity Pk: 8.697 in/s  
Remaining: 00:00:00

Drive Pk: 1.006V  
Control RMS: 7.780 g  
Total Elapsed: 01:01:02

Est. Disp. : 2.216 mm Pk-Pk  
Target RMS: 7.690 g  
Full Level Elapsed: 01:00:00

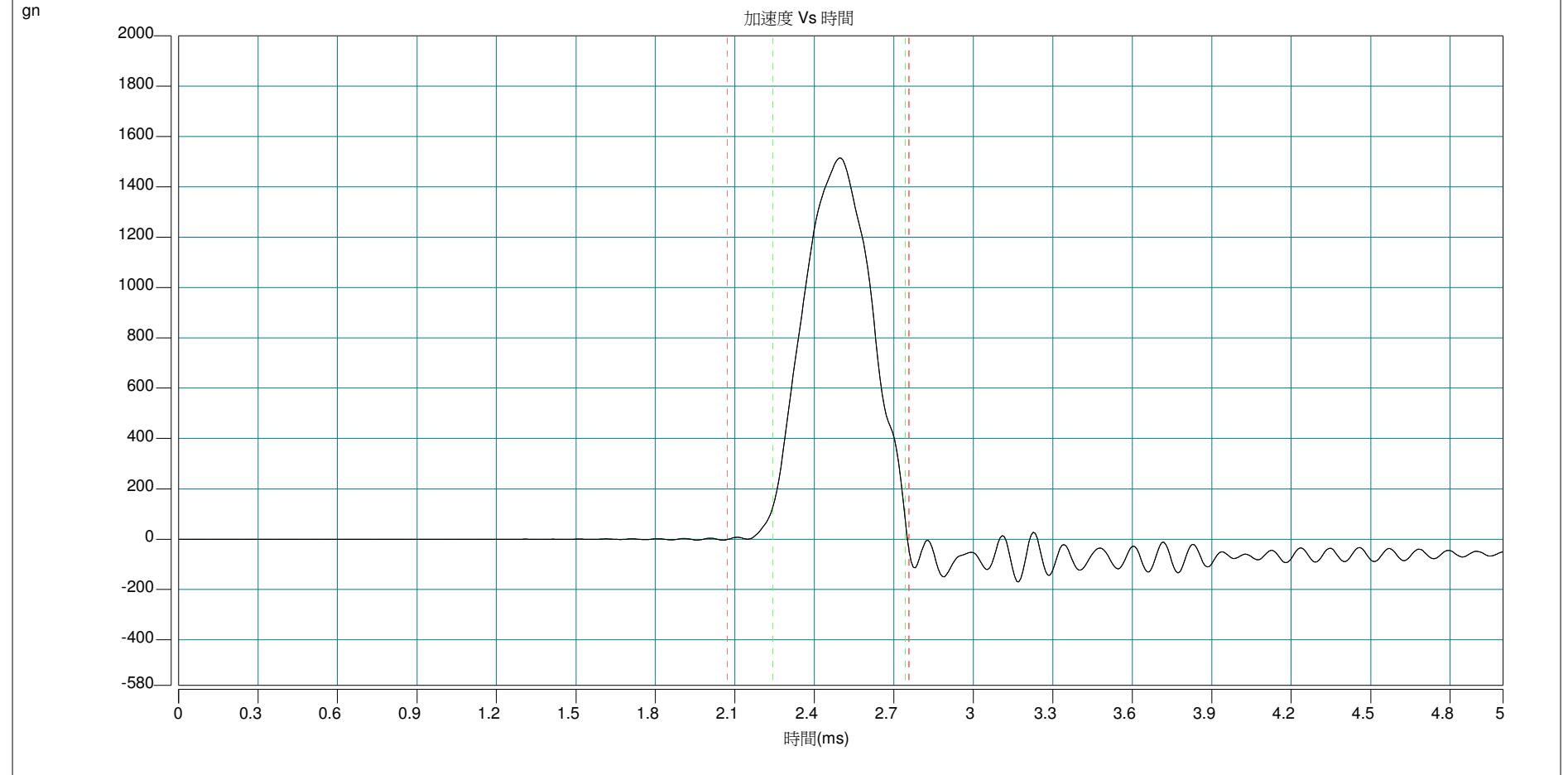
+X axis

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)	1515.58	0.49	178.67	10000.00	1515.58	-164.03



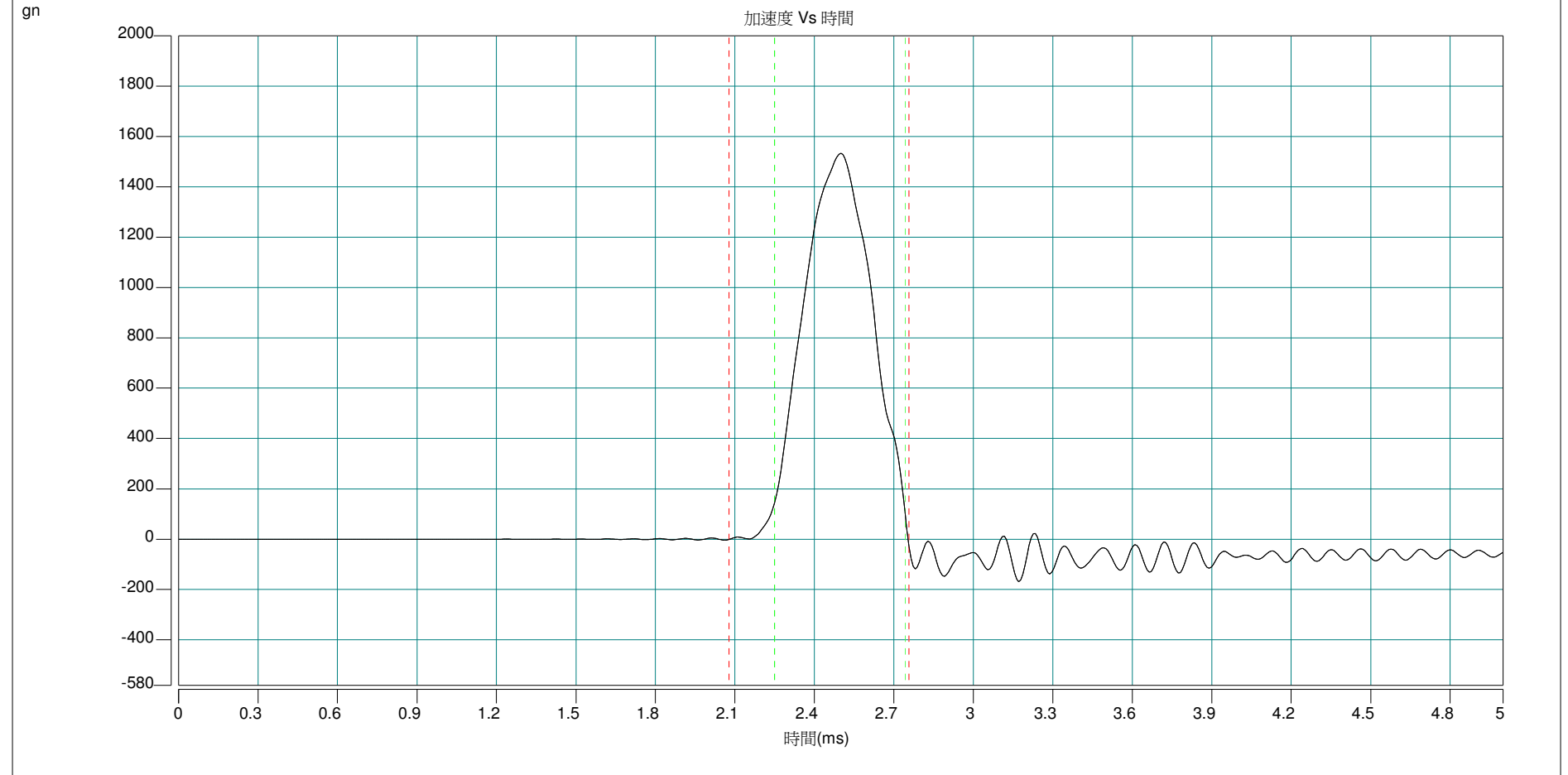
-X axis

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)	1514.76	0.49	178.41	10000.00	1514.76	-170.03



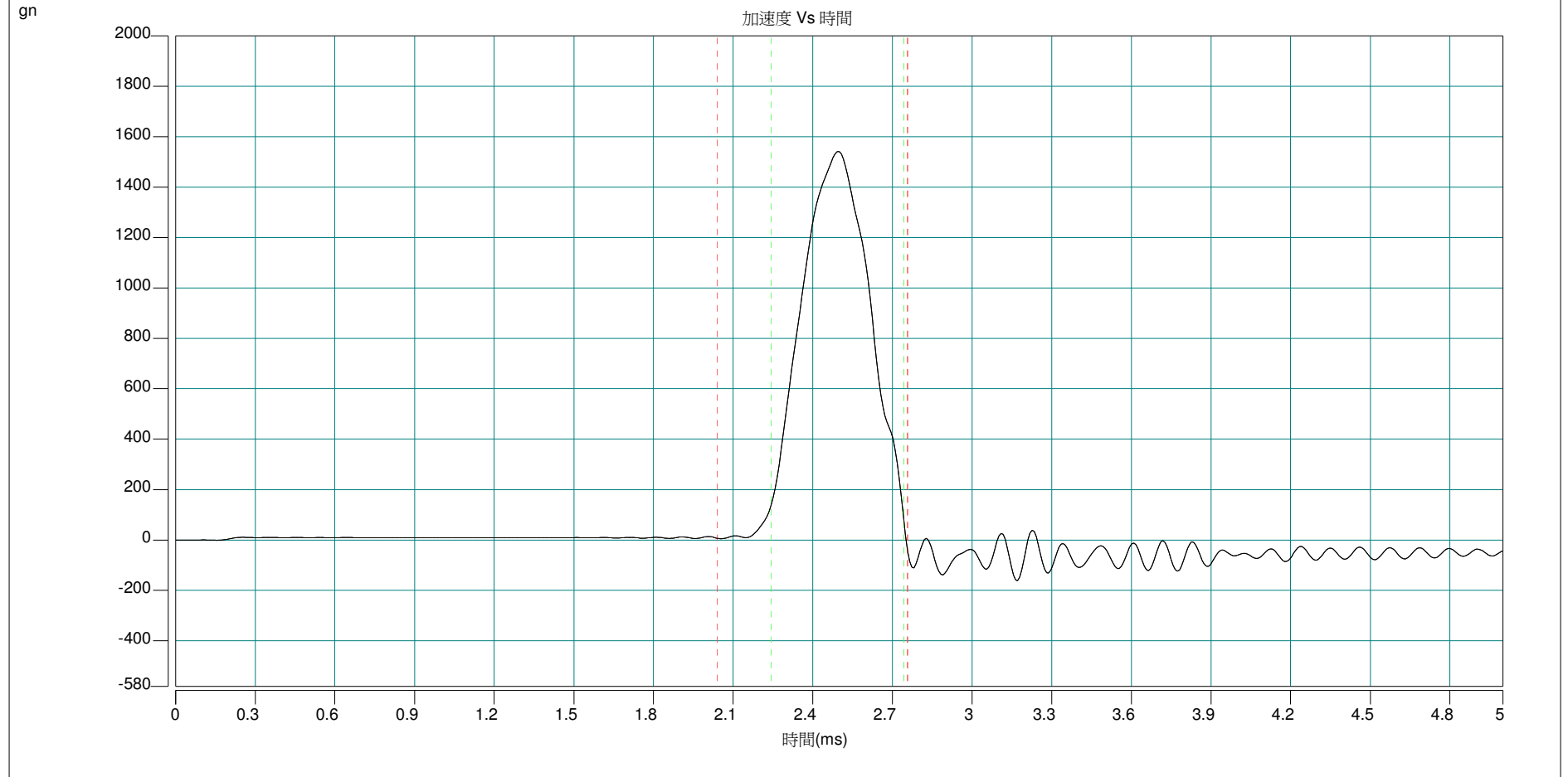
+Y axis

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)	1533.20	0.49	179.87	10000.00	1533.20	-168.54



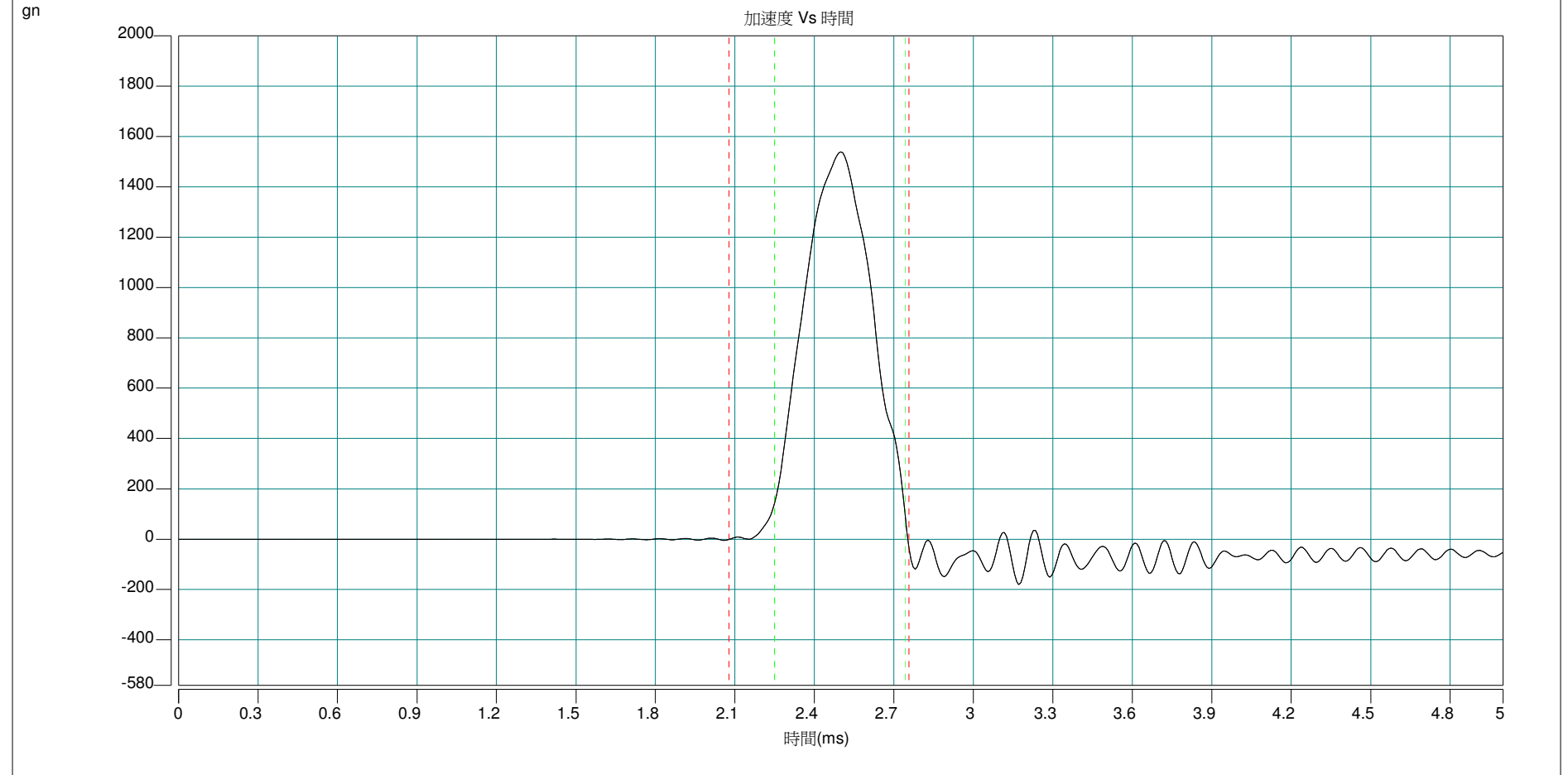
-Y axis

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)	1541.27	0.49	182.10	10000.00	1541.27	-161.74



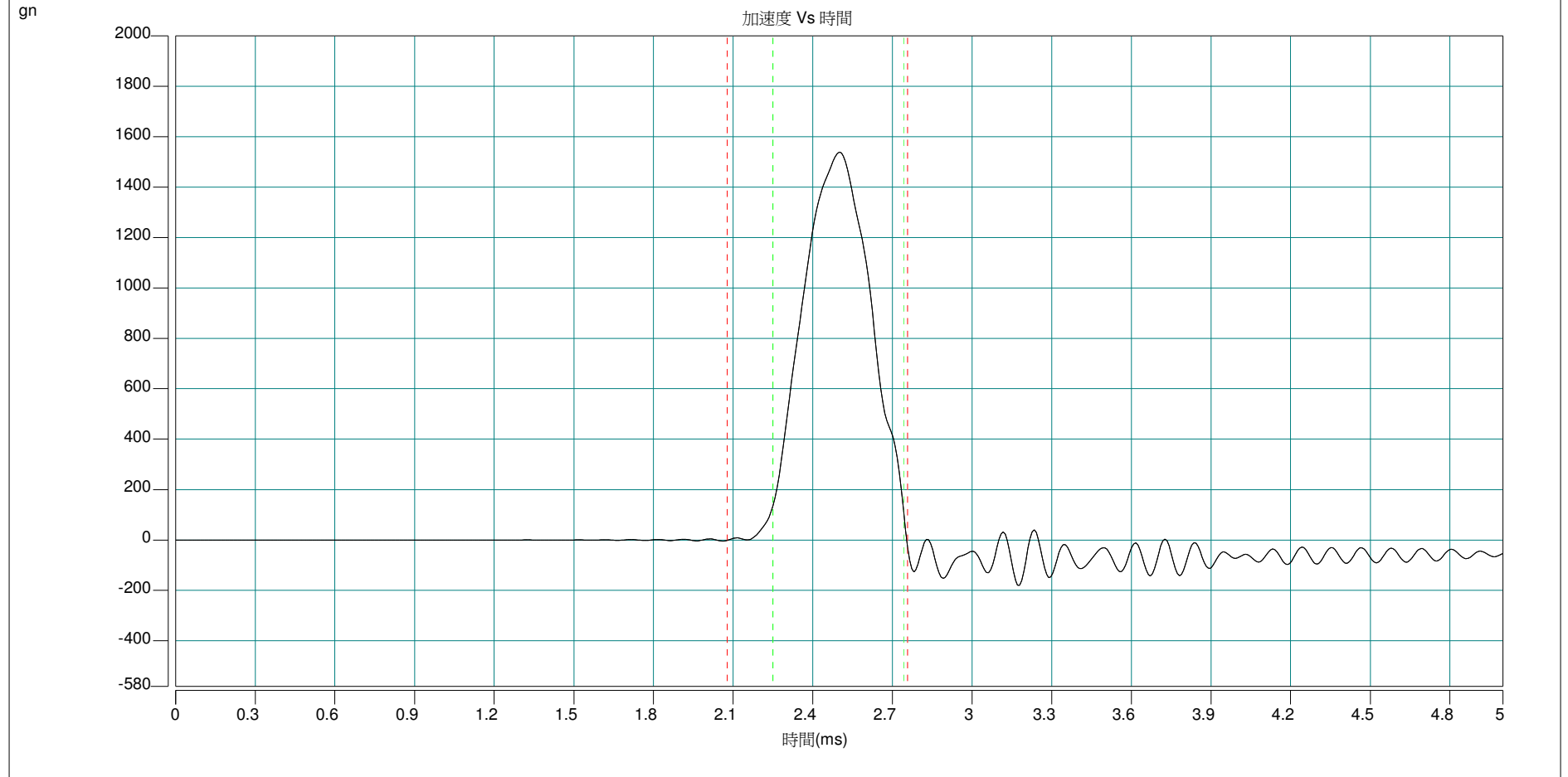
+Z axis

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)	1539.64	0.48	180.50	10000.00	1539.64	-179.99



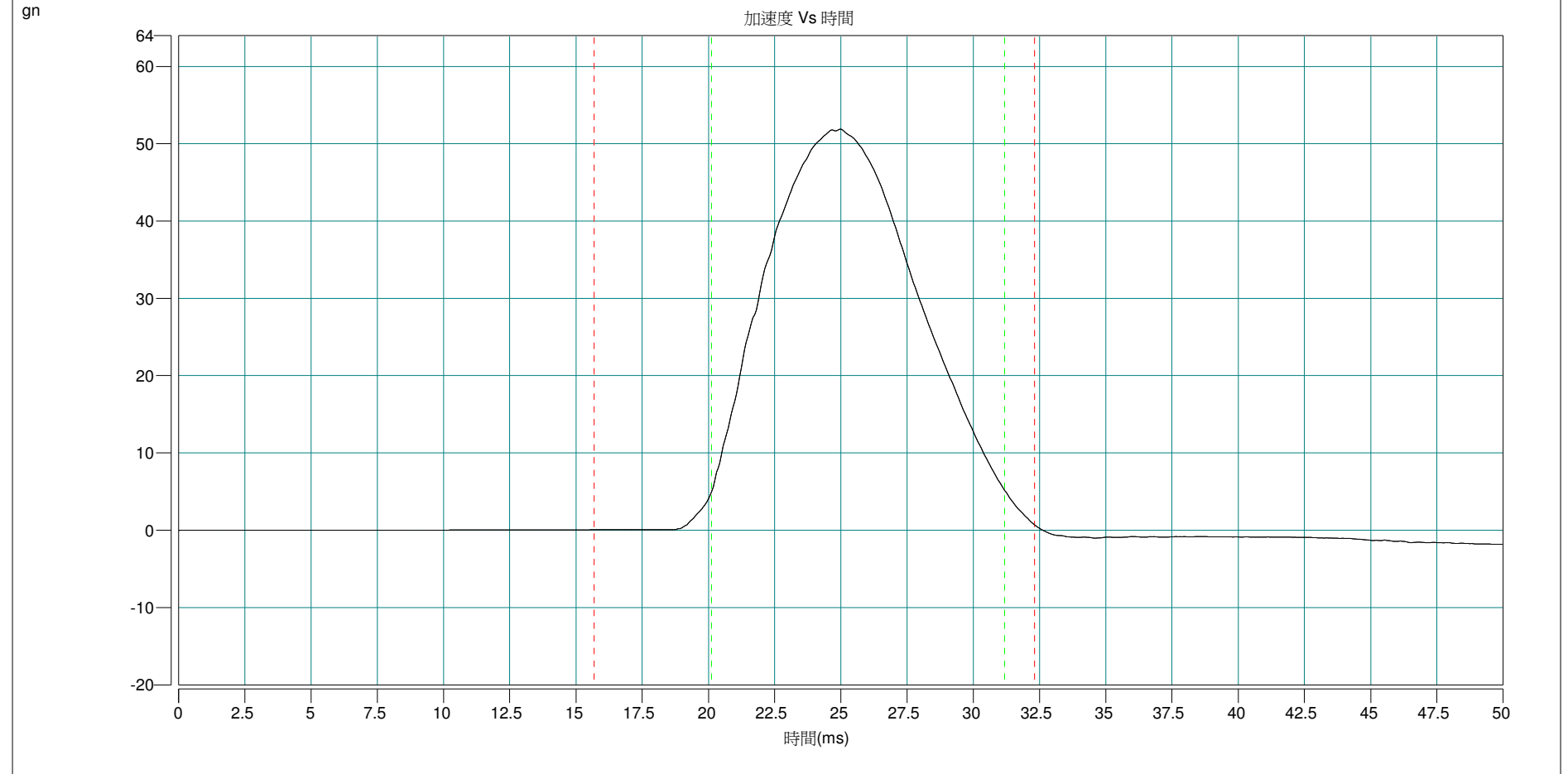
-Z axis

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)	1539.05	0.48	179.87	10000.00	1539.05	-179.18



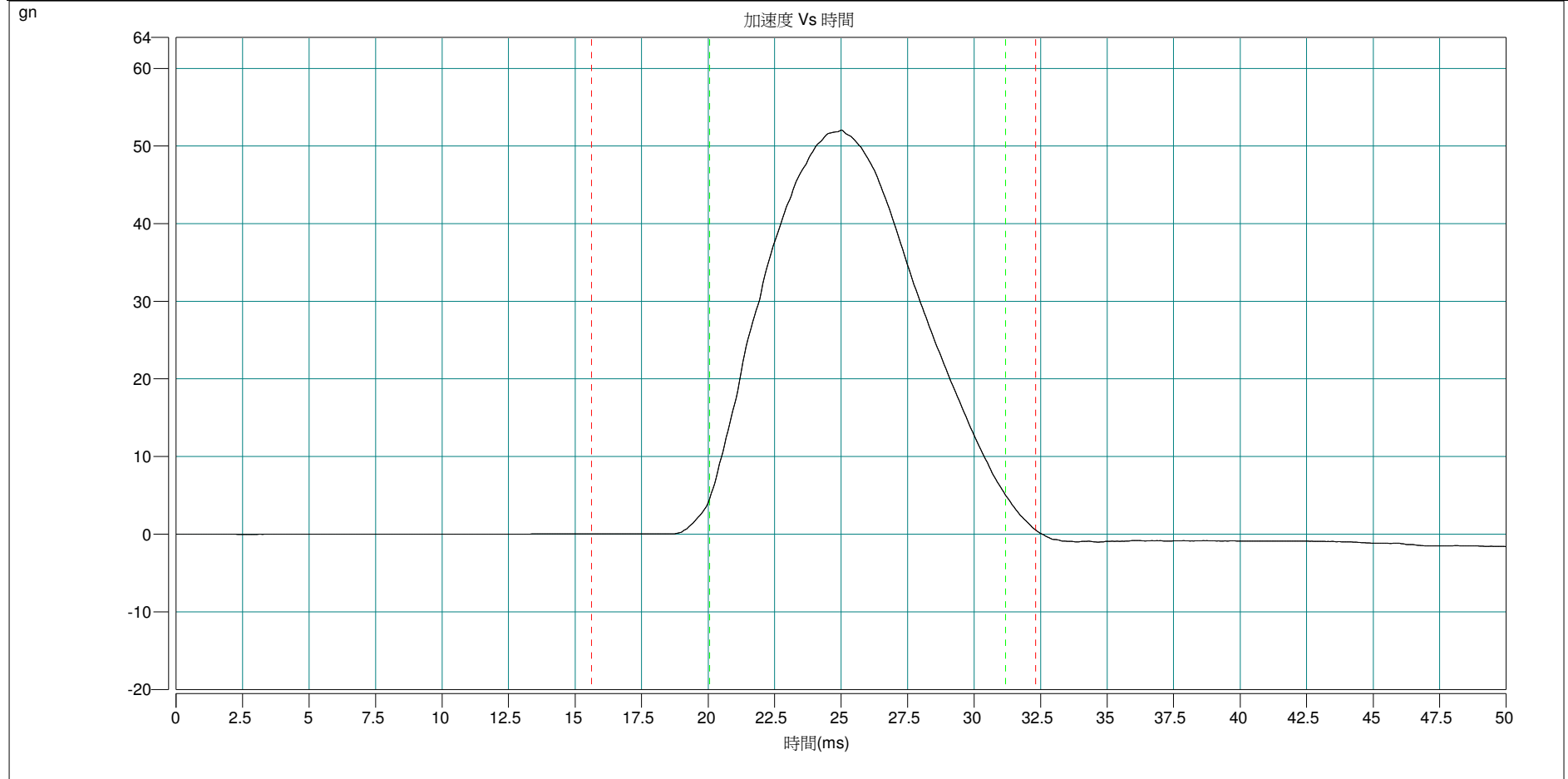
+X axis

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)	51.90	11.04	137.75	500.00	51.90	-1.82



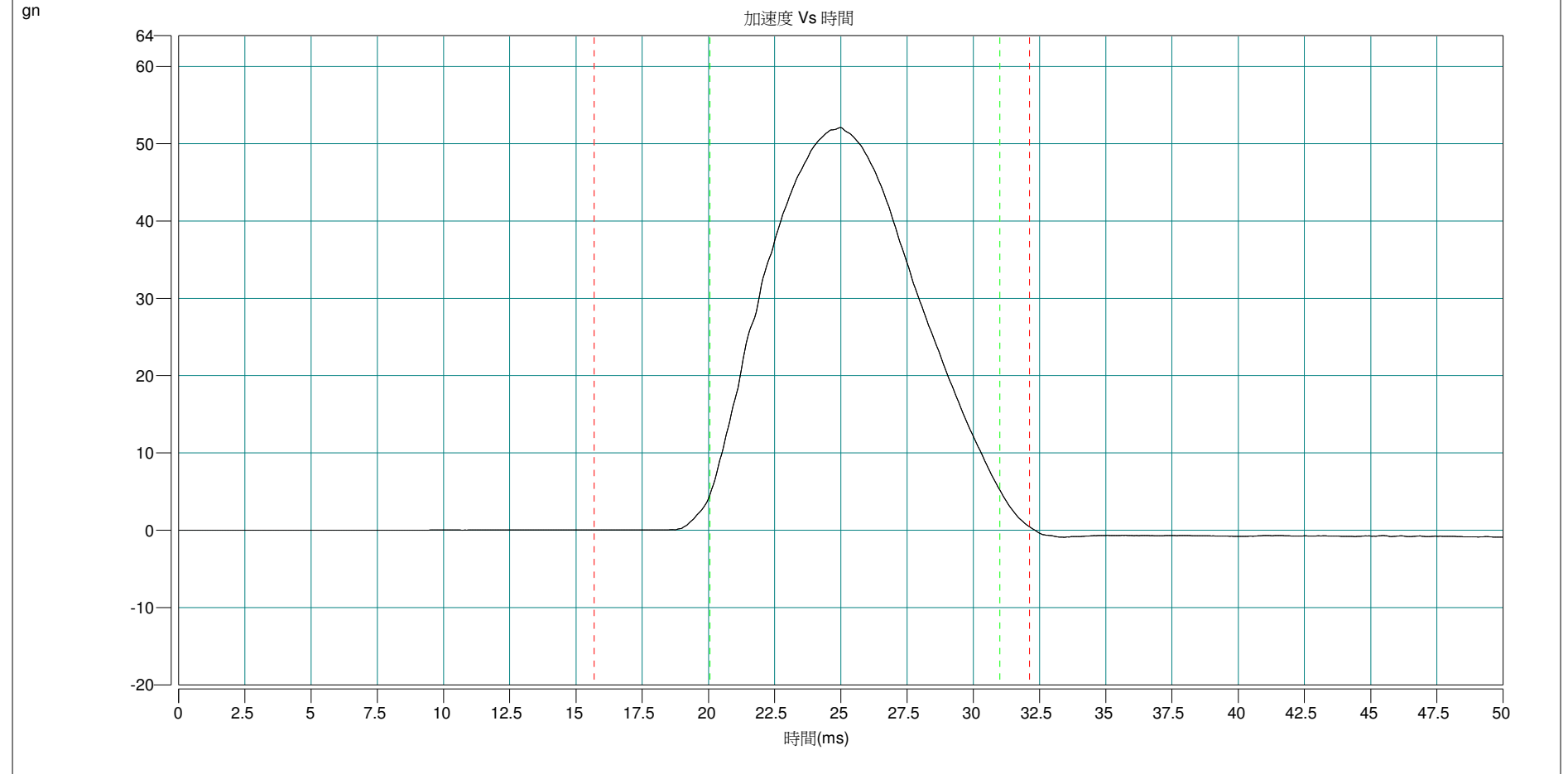
-X axis

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)	52.07	11.03	137.65	500.00	52.07	-1.60



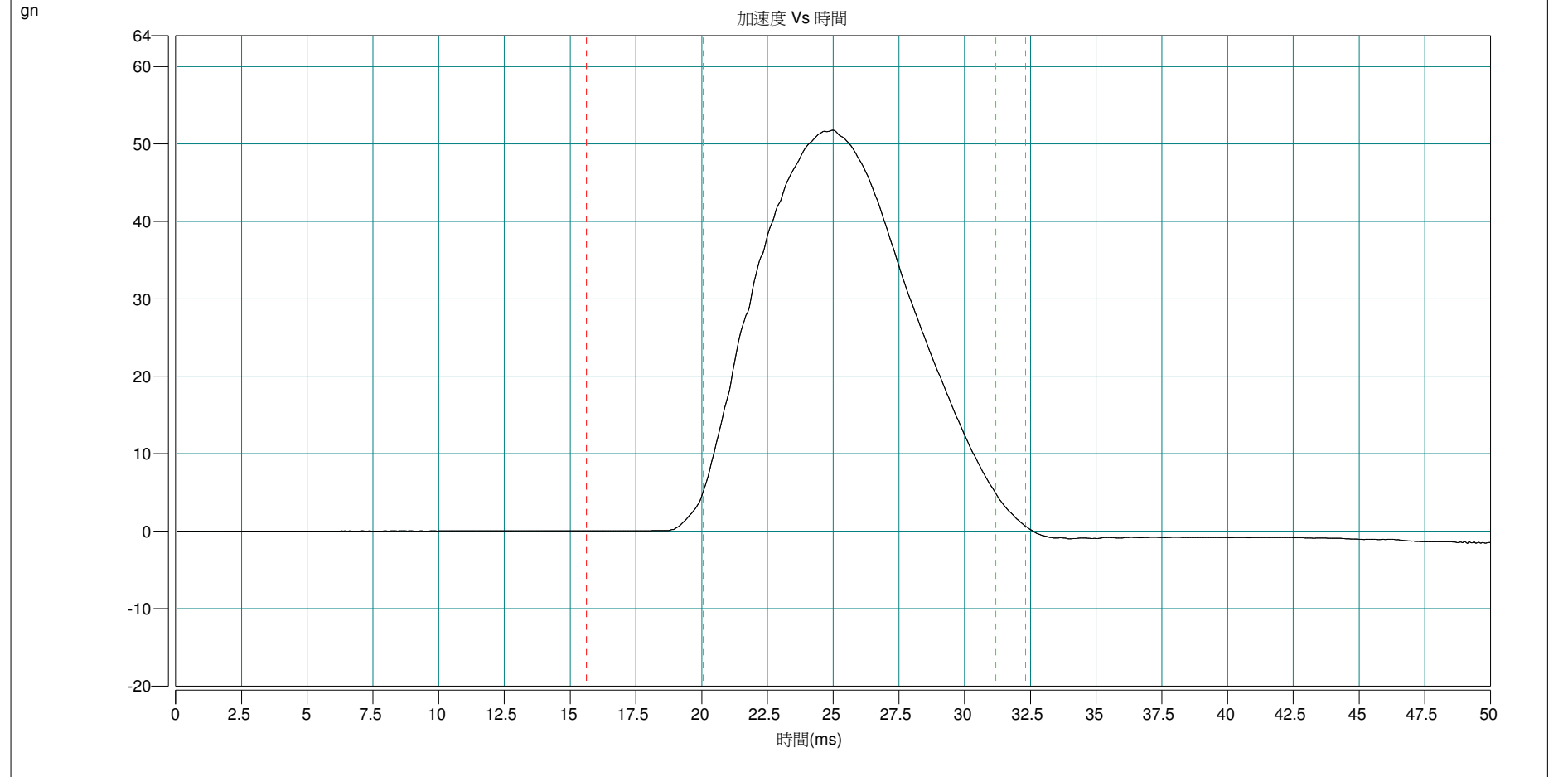
+Y axis

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)	52.11	10.88	136.48	500.00	52.11	-0.90



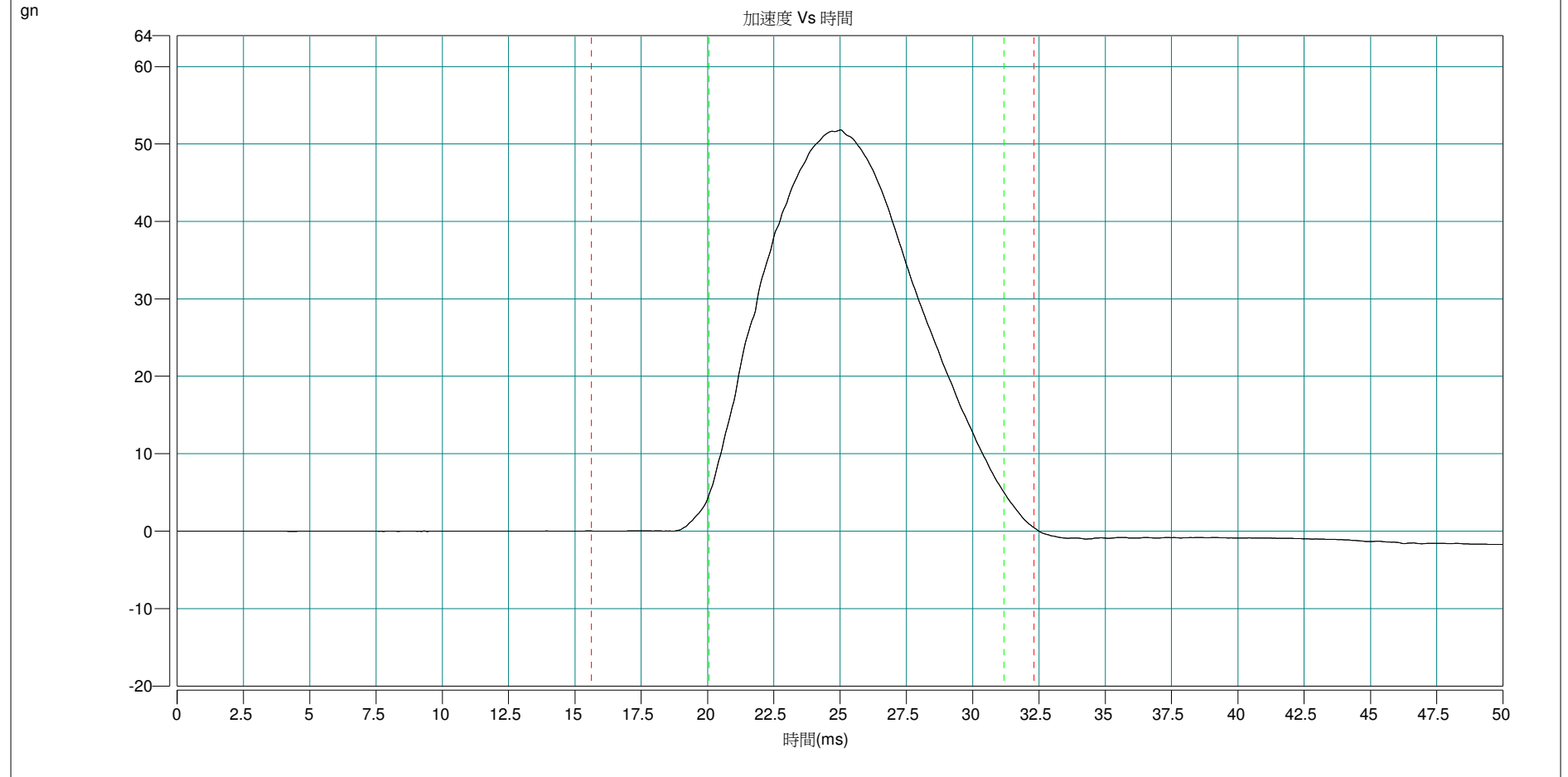
-Y axis

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)	51.82	11.06	137.55	500.00	51.82	-1.60



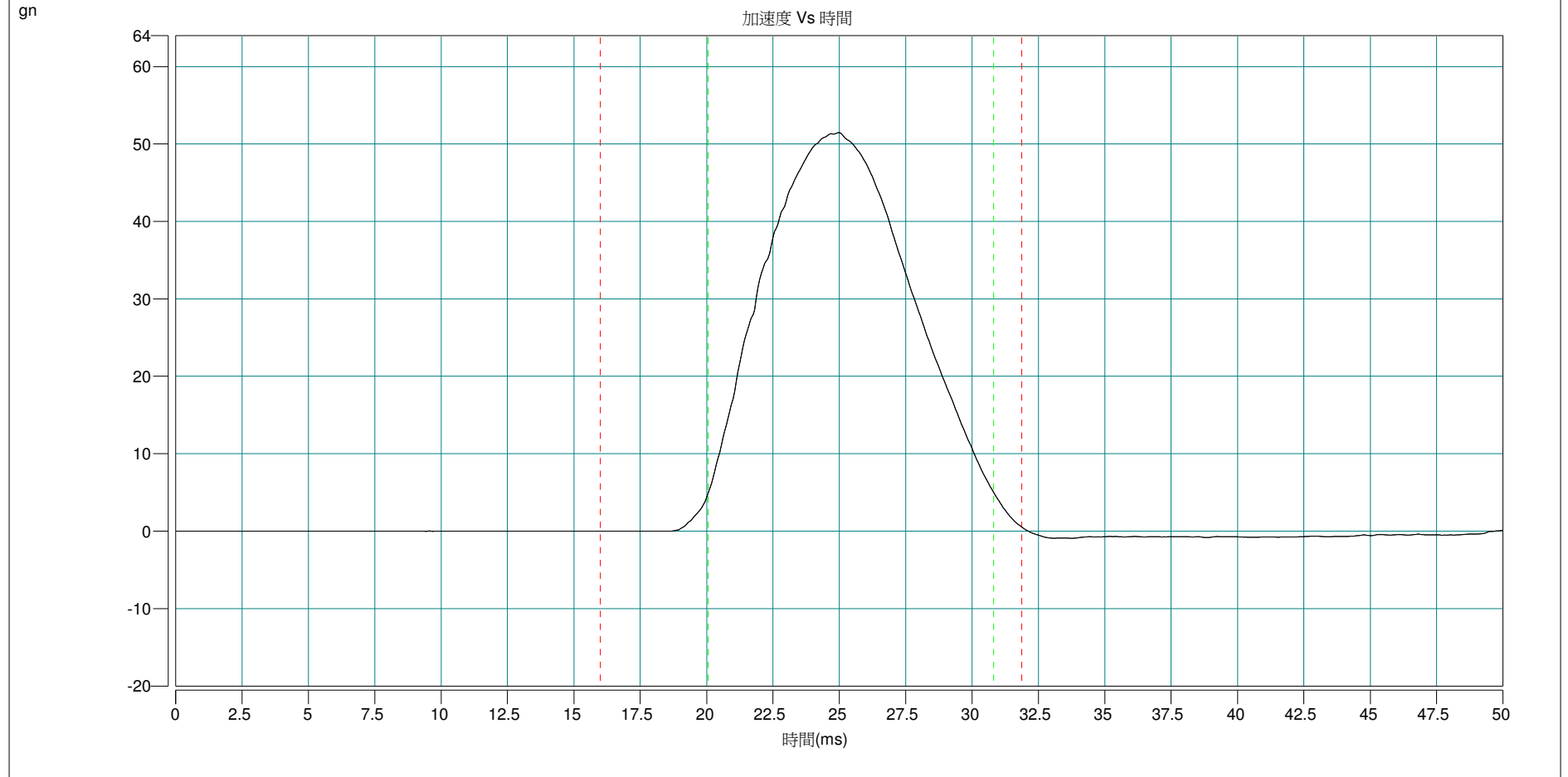
+Z axis

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)	51.84	11.04	137.30	500.00	51.84	-1.70



-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)	51.50	10.70	133.54	500.00	51.50	-0.93



-END-