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VIBRATION LABORATORY

<http://www.kdi.tw>
<http://www.vibration.com.tw>
E-mail:service@kdi.tw

TESTING / INSPECTION REPORT

REPORT NO : VT-201127-1

COMPANY : Apacer Technology Inc.
ADDRESS : 1F., No.32, Zhongcheng Rd., Tucheng Dist.,
New Taipei City 236, Taiwan
TEL : 886-2-2267-8000
FAX : 886-2-2267-2261
SPECIMEN : PCIe M.2 2230
DATE OF RECEIVED : 2020/11/16
DATE OF TESTED : 2020/11/26

TEST / INSPECTION ITEMS : Vibration & Shock Test

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.

金頓科技

Test Engineer :	<i>Diyoui Wu</i>	
Approval Signatory :	<i>David Lee</i>	Laboratory Head :
		<i>Hsin Tai Chang</i>

2020.12.10

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TESTING / INSPECTION REPORT

TESTING EQUIPMENT :

- | | |
|-------------------------|---|
| 1.Vibration Tester | : KING DESIGN KD-9363EM-600F2K-50N120,
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 | : Lansmont TP-3, S/N : 0506-046 |
| 9.Accelerometer | : DYTRAN Model : 3200B6 S/N : 8594 |

TEST ENVIRONMENT :

- | | |
|-------------------|----------------------|
| Temperature | : 24.5°C (25±10°C) |
| Relative Humidity | : 69% RH (50±25% RH) |

SPECIMEN :

- | | |
|----------|--------------|
| Model | : PX92B-M230 |
| 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 ² /Hz (15 Hz) 0.01 g ² /Hz (105.94 Hz) +6 dB/Oct (105.94 Hz to 150 Hz) 0.02 g ² /Hz (150 Hz) 0.02 g ² /Hz (500 Hz) -6 dB/Oct (500 Hz to 2,000 Hz) 0.0013 g ² /Hz (2,000 Hz)
Test Axis	: X, Y, Z axis
Test Time	: 1 hour (Each axis)
Total Test Time	: 3 hours

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 ² /Hz (20 Hz to 1,000 Hz) -6 dB/Oct (1,000 Hz to 2,000 Hz)
Test Axis	: X, Y, Z axis
Test Time	: 1 hour (Each axis)
Total Test Time	: 3 hours

TESTING / INSPECTION REPORT

TEST SPECIFICATION(3) :

Comply with MIL-STD-883K Method 2002.5.

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 : ±X, ±Y, ±Z axis

TEST SPECIFICATION(4) :

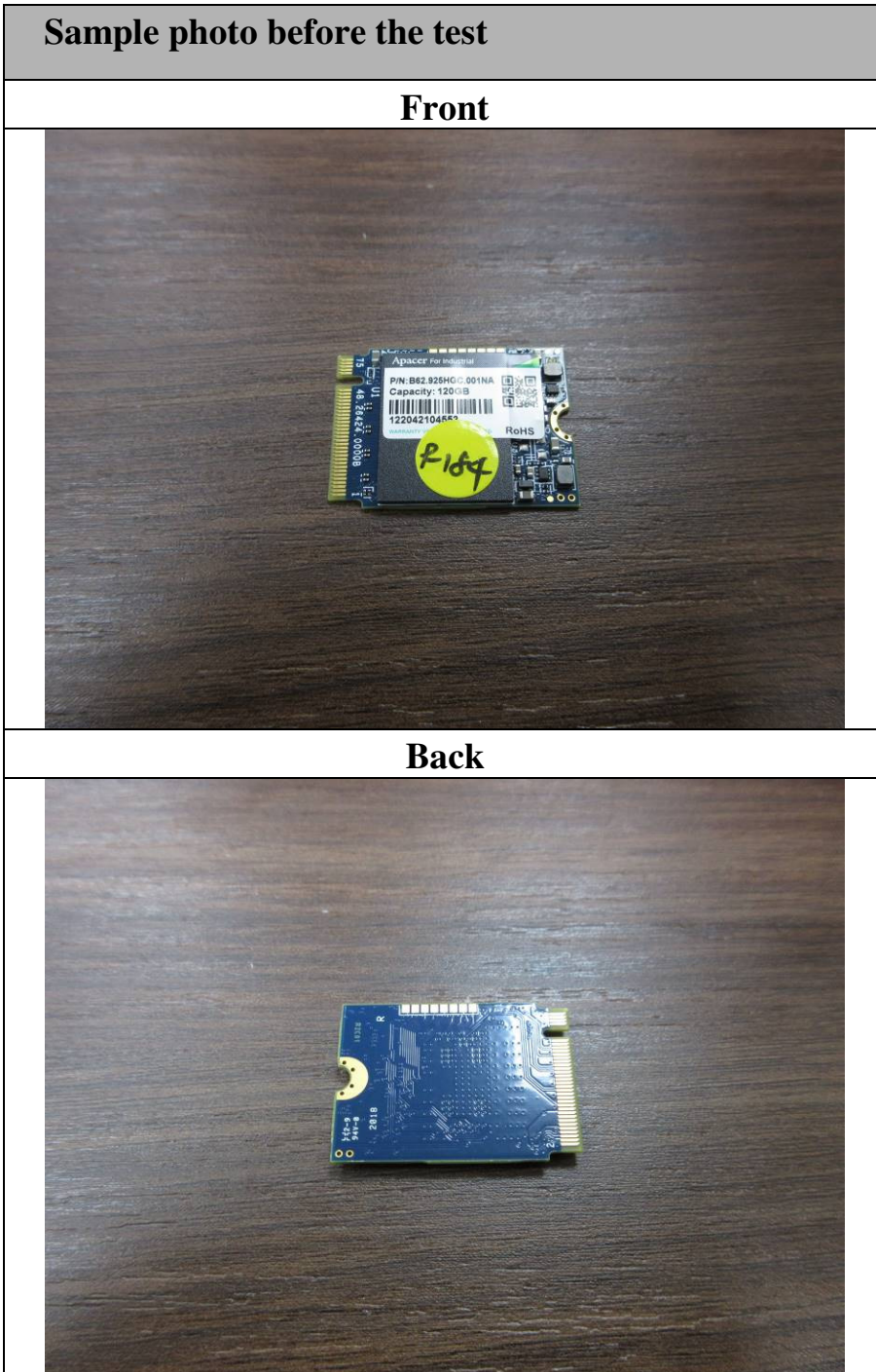
Comply with MIL-STD-202G, Method 213B

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






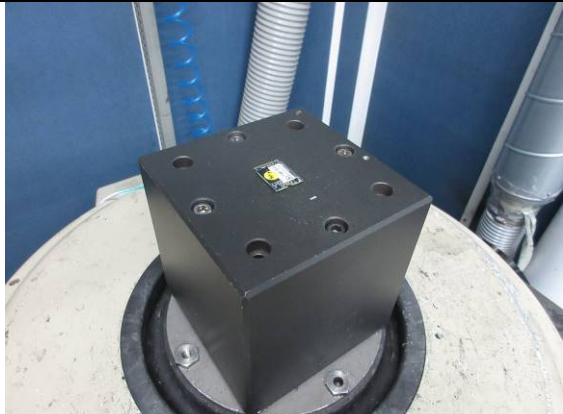
TEST RESULT :

Describe	PASS	FAIL	Non-Judgment
Function judgment	√ ⁽¹⁾	---	---
Appearance check	√ ⁽²⁾	---	---
(1)-- After the test, burn in function was normal. (2)-- No visible damages were found after the test.			

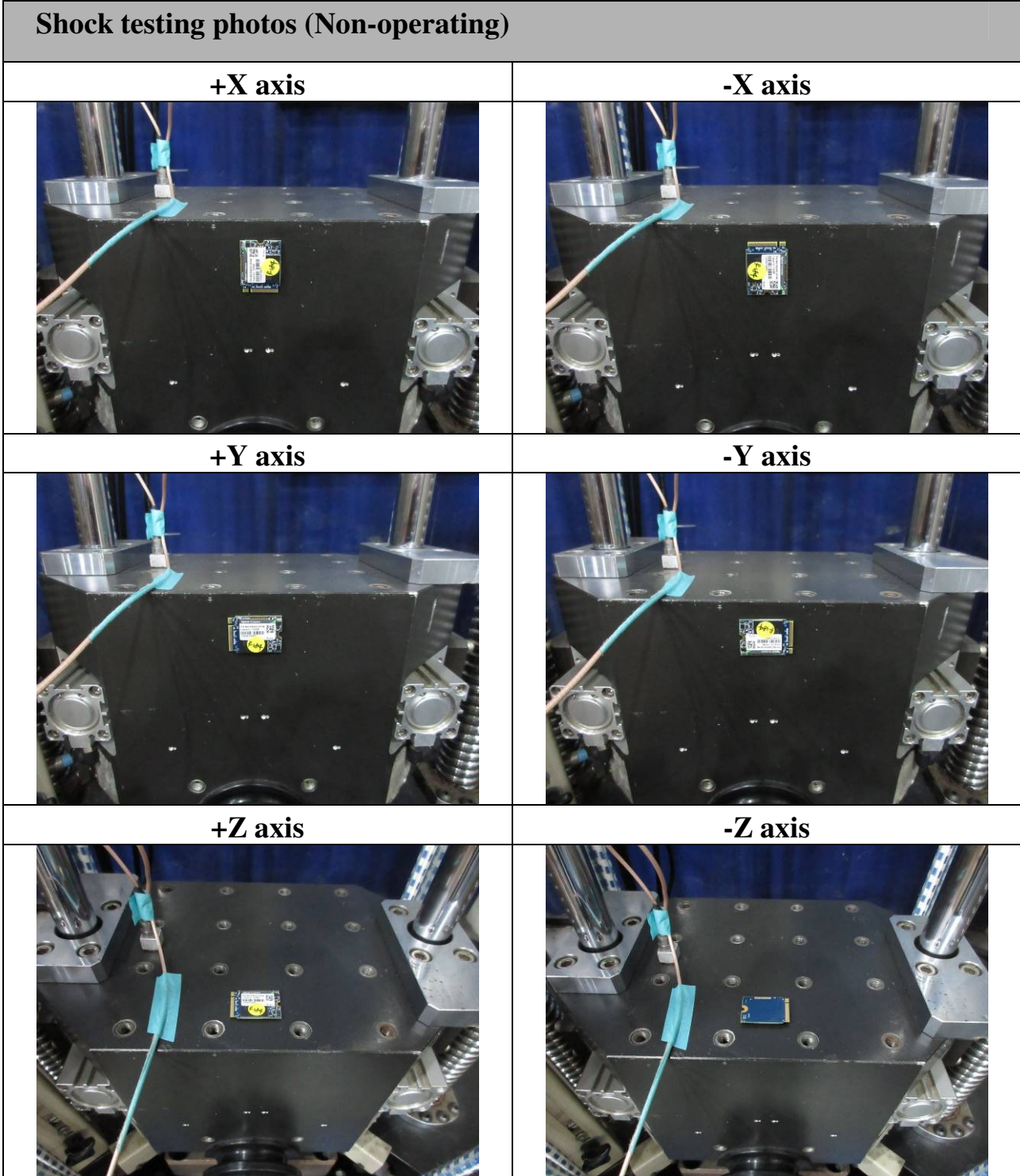
TESTING / INSPECTION REPORT



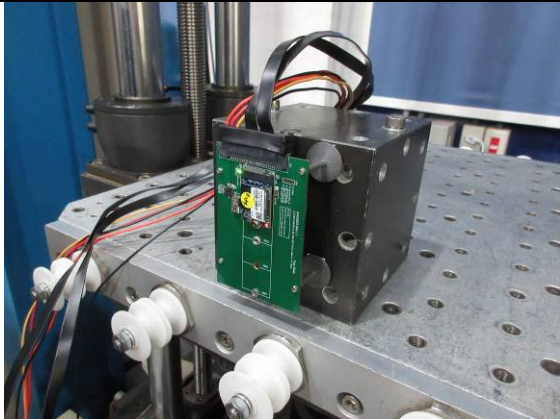


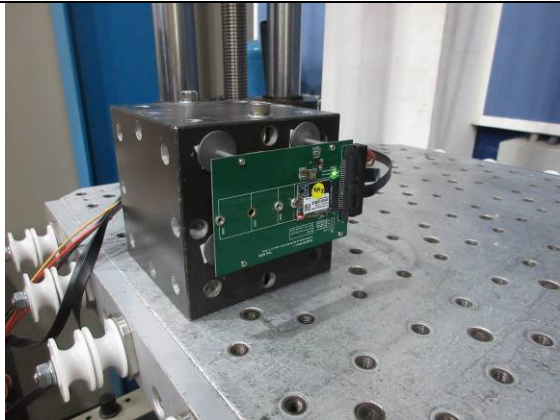
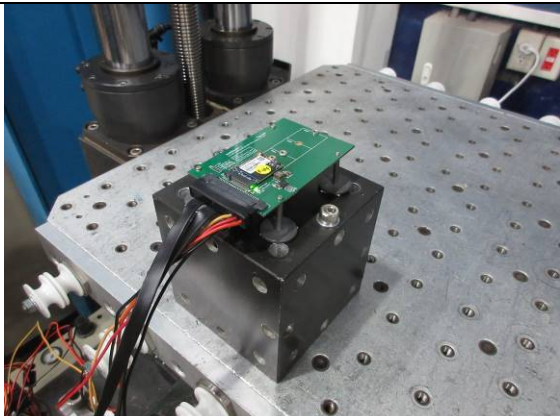
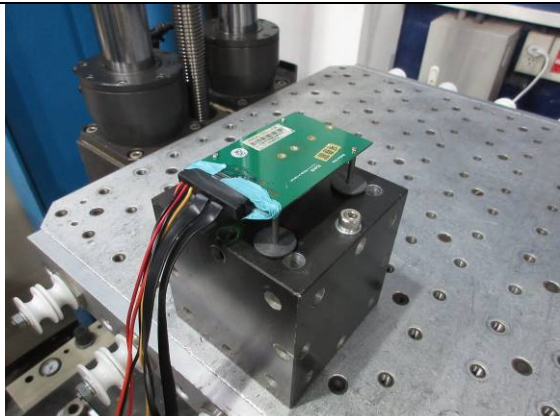
TESTING / INSPECTION REPORT

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

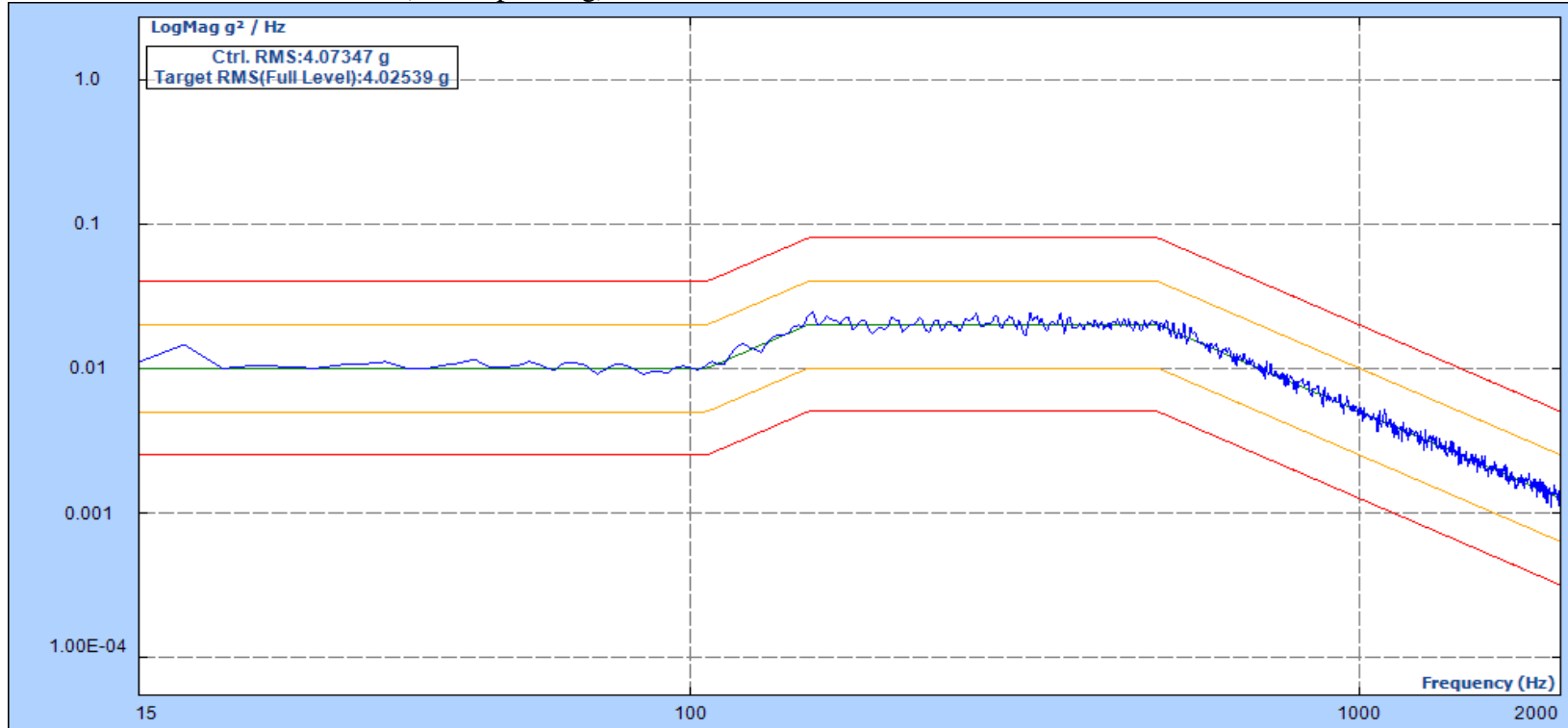
TESTING / INSPECTION REPORT



TESTING / INSPECTION REPORT

Shock testing photos (Operating)	
+X axis	-X axis
	
+Y axis	-Y axis
	
+Z axis	-Z axis
	

X axis_Random Vibration Test (Non-Operating)

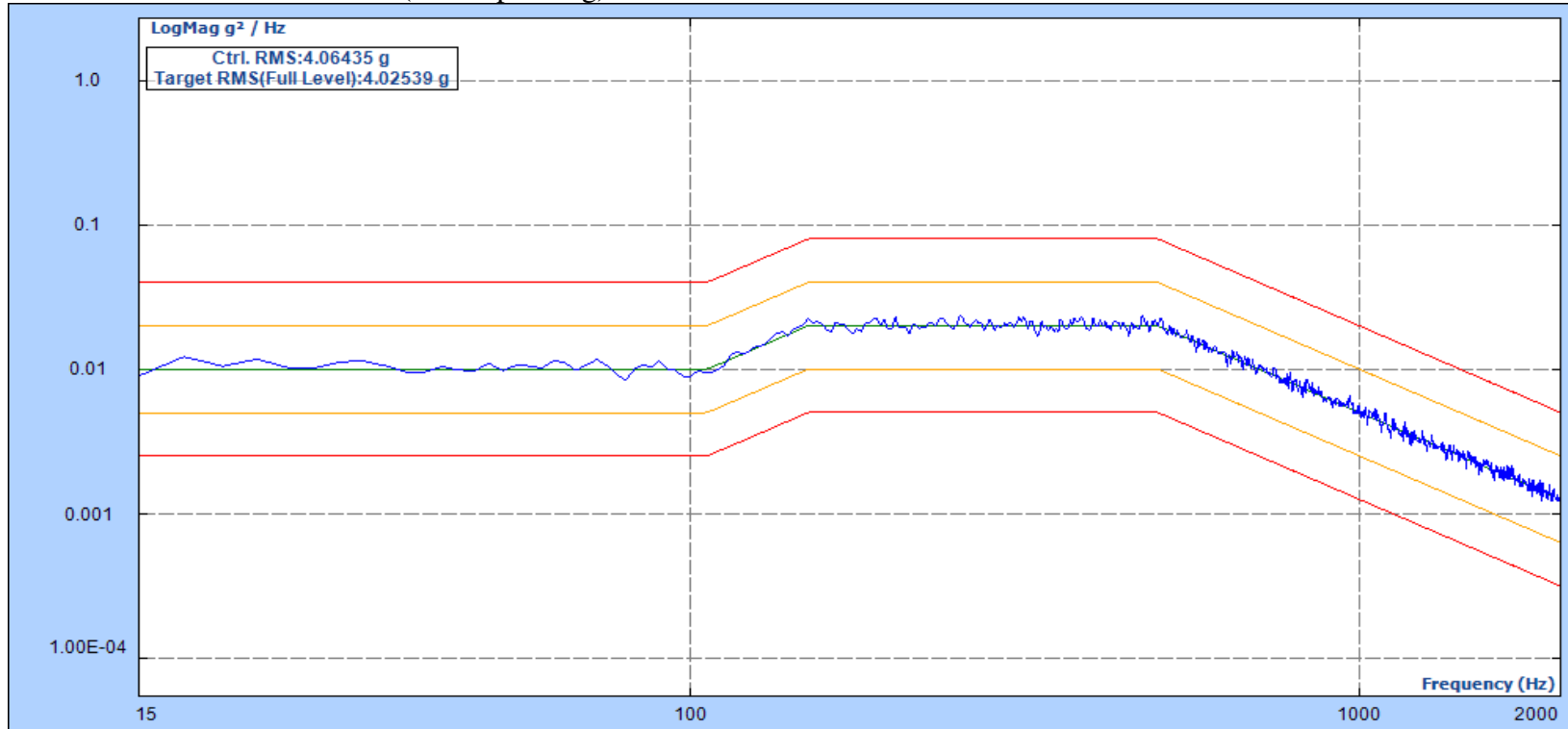


Level: 100.00 %
Velocity Pk: 0.137 m/s
Remaining: 00:00:00

Drive Pk: 0.440V
Control RMS: 4.073 g
Total Elapsed: 01:01:01

Est. Disp. : 1.813 mm Pk-Pk
Target RMS: 4.020 g
Full Level Elapsed: 01:00:00

Y axis_Random Vibration Test (Non-Operating)

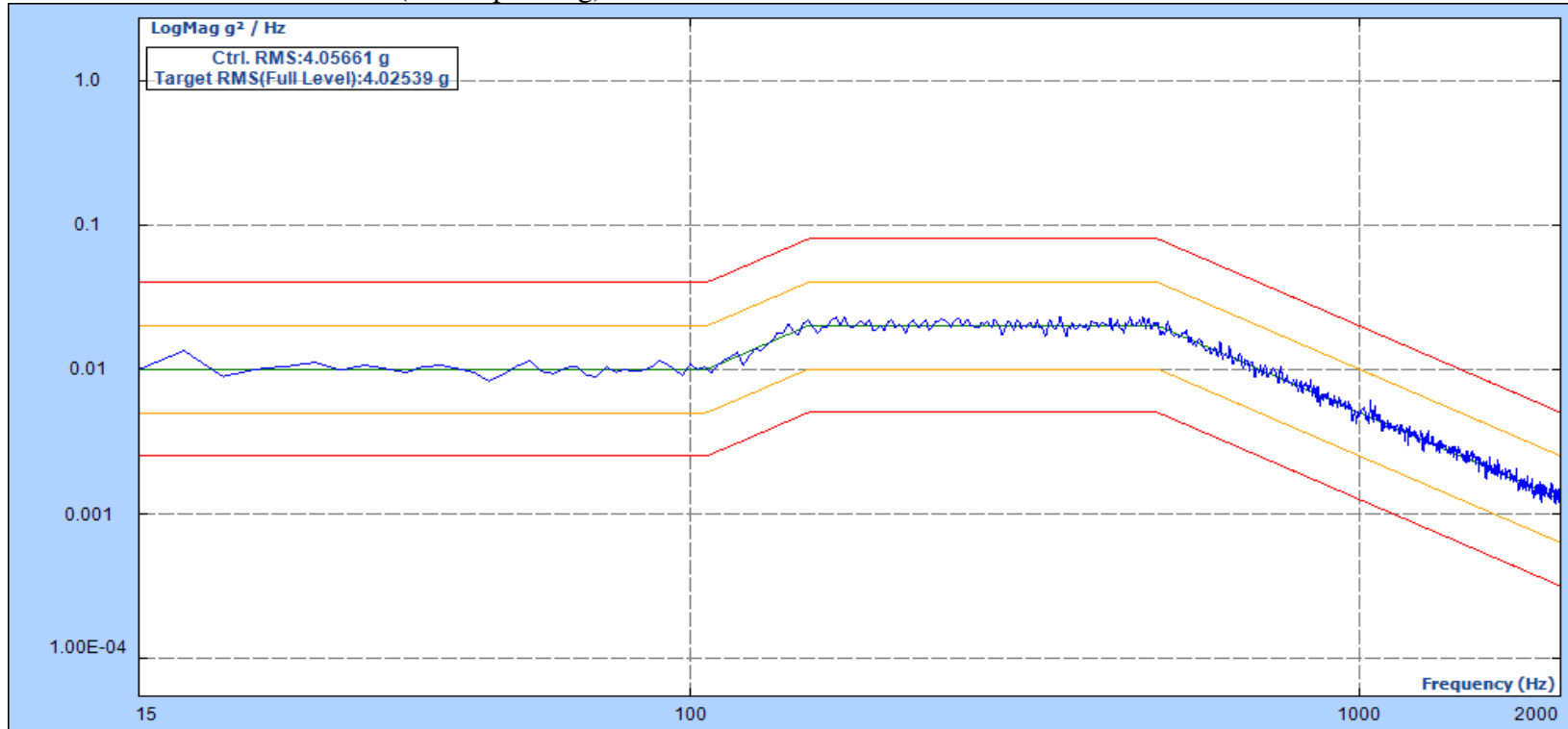


Level: 100.00 %
Velocity Pk: 0.135 m/s
Remaining: 00:00:00

Drive Pk: 0.469V
Control RMS: 4.064 g
Total Elapsed: 01:01:01

Est. Disp. : 1.731 mm Pk-Pk
Target RMS: 4.020 g
Full Level Elapsed: 01:00:00

Z axis_Random Vibration Test (Non-Operating)

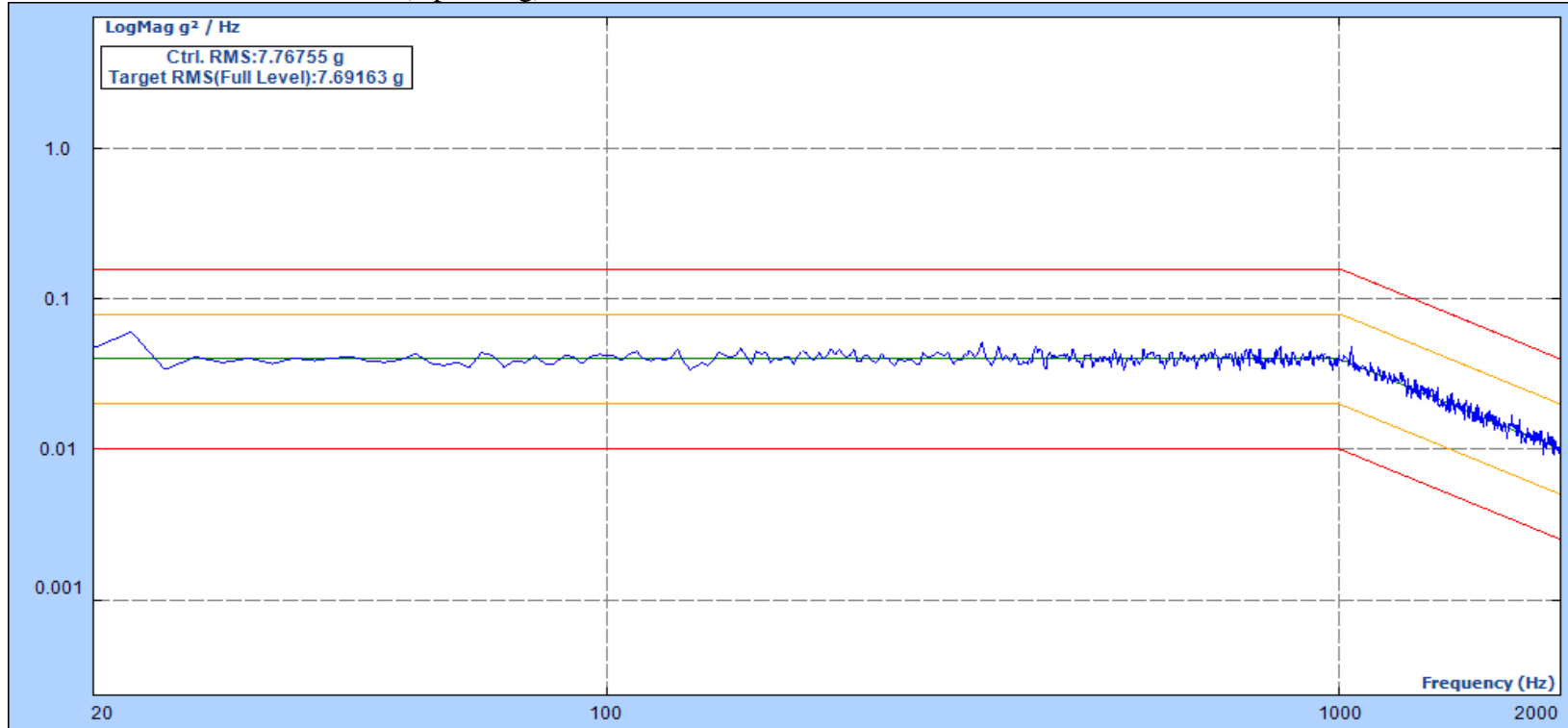


Level: 100.00 %
Velocity Pk: 0.134 m/s
Remaining: 00:00:00

Drive Pk: 0.468V
Control RMS: 4.057 g
Total Elapsed: 01:01:01

Est. Disp. : 1.763 mm Pk-Pk
Target RMS: 4.020 g
Full Level Elapsed: 01:00:00

X axis_Random Vibration Test (Operating)

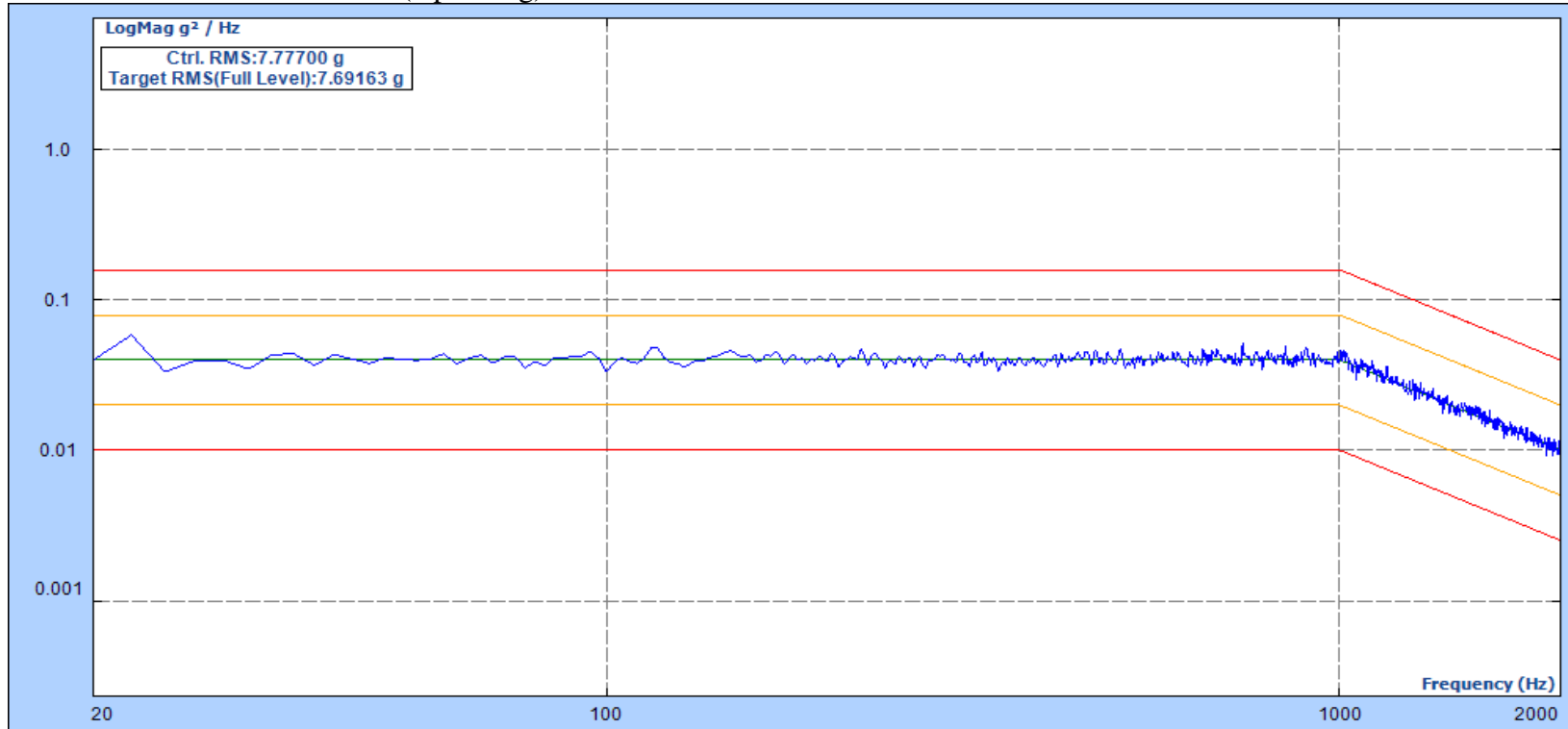


Level: 100.00 %
Velocity Pk: 0.222 m/s
Remaining: 00:00:00

Drive Pk: 1.116V
Control RMS: 7.768 g
Total Elapsed: 01:01:04

Est. Disp. : 2.267 mm Pk-Pk
Target RMS: 7.690 g
Full Level Elapsed: 01:00:00

Y axis_Random Vibration Test (Operating)

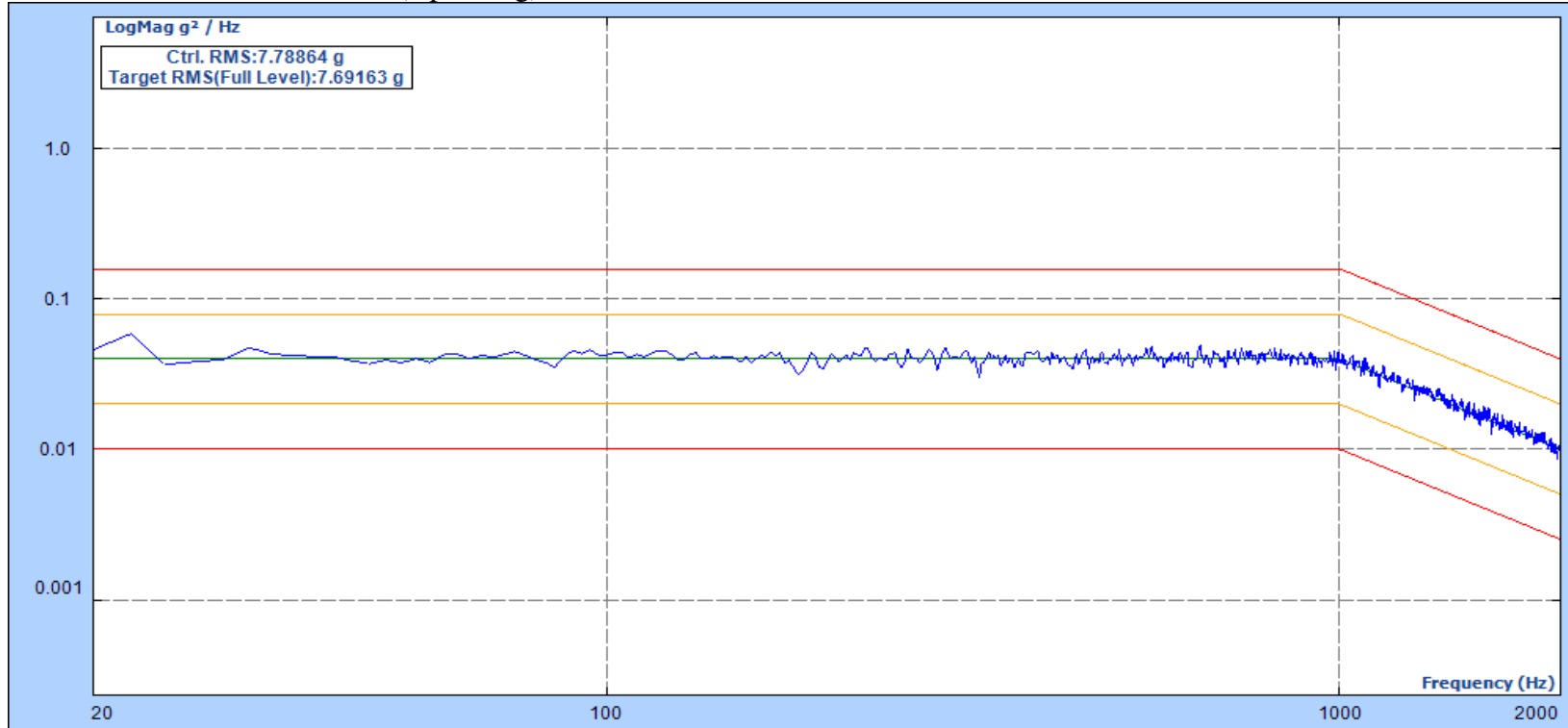


Level: 100.00 %
 Velocity Pk: 0.221 m/s
 Remaining: 00:00:00

Drive Pk: 1.068V
 Control RMS: 7.777 g
 Total Elapsed: 01:01:04

Est. Disp. : 2.224 mm Pk-Pk
 Target RMS: 7.690 g
 Full Level Elapsed: 01:00:00

Z axis_Random Vibration Test (Operating)



Level: 100.00 %
Velocity Pk: 0.223 m/s
Remaining: 00:00:00

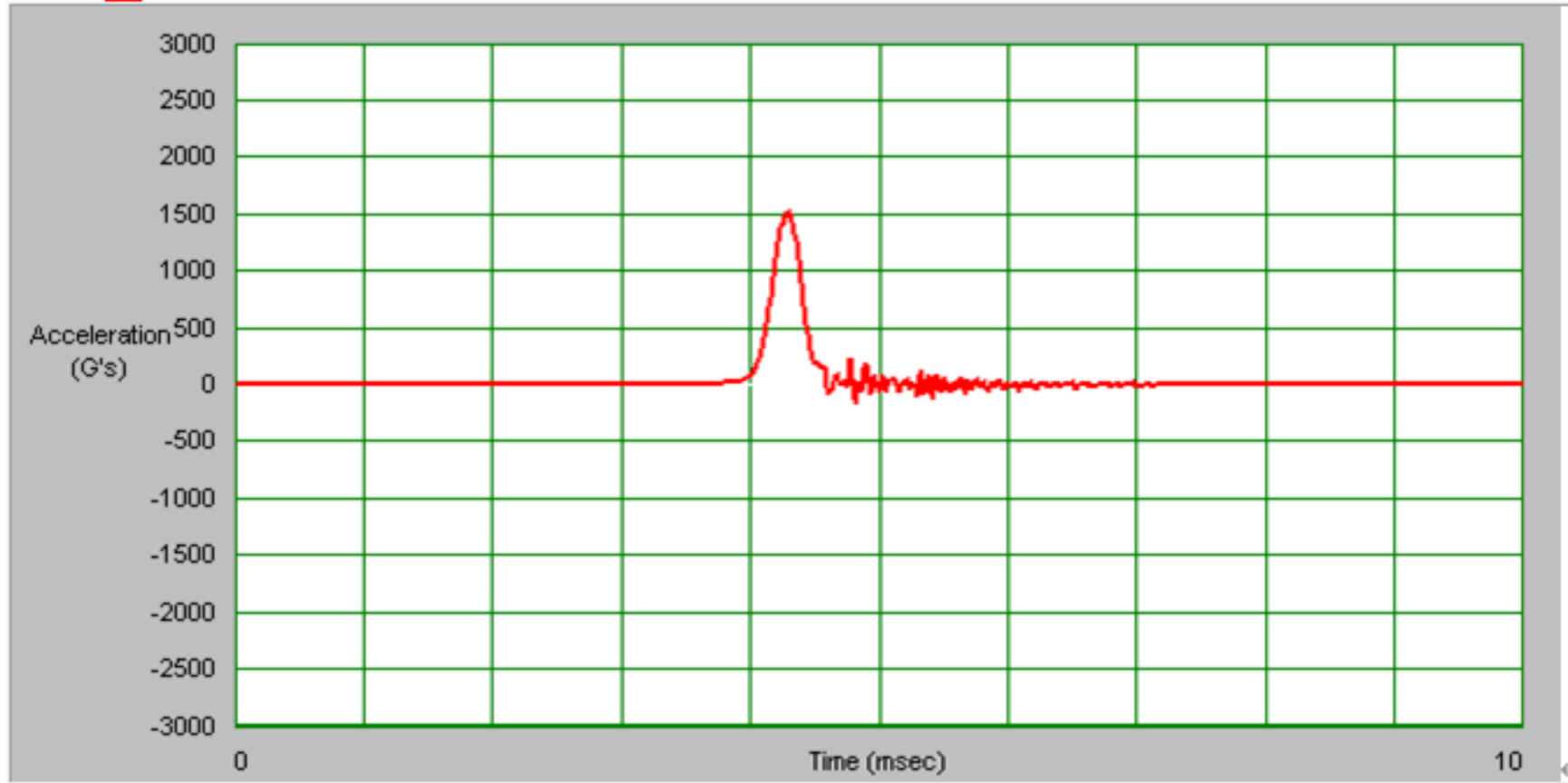
Drive Pk: 1.017V
Control RMS: 7.789 g
Total Elapsed: 01:01:04

Est. Disp. : 2.268 mm Pk-Pk
Target RMS: 7.690 g
Full Level Elapsed: 01:00:00

+X axis_1,500g 0.5ms (Non-Operating)

Acceleration vs Time

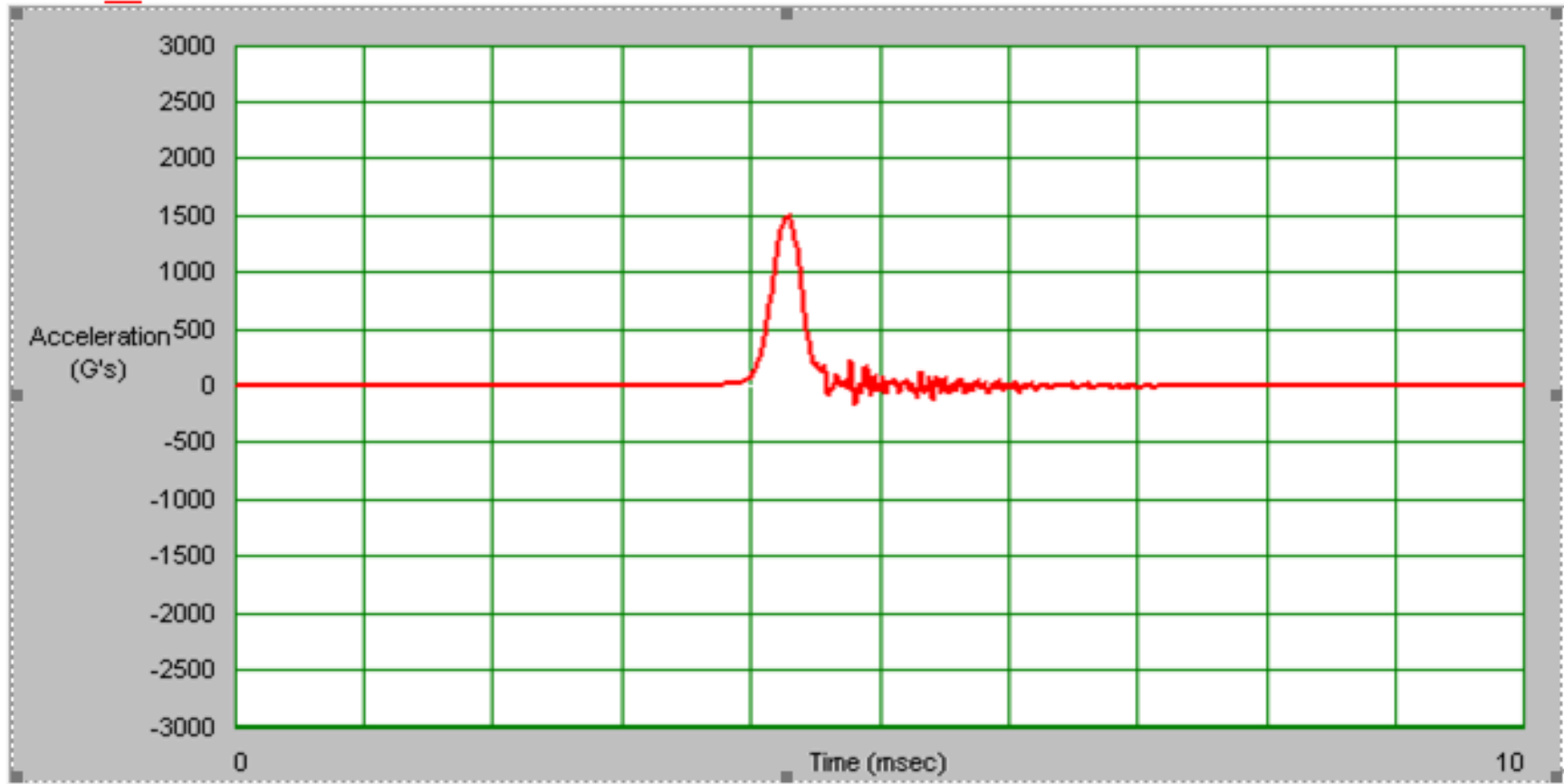
Channel Description:	G's'	msec'	m/s'	Filter Hz'	Max G's'	Min G's'
Ch1	1512.74'	0.51'	4.14'	5000.00'	1512.74'	-166.80'



-X axis_1,500g 0.5ms (Non-Operating)

Acceleration vs Time

Channel Description:	G's'	msec'	m/s'	Filter Hz'	Max G's'	Min G's'
Ch1	1501.27'	0.51'	4.12'	5000.00'	1501.27'	-165.46'



+Y axis_1,500g 0.5ms (Non-Operating)

Acceleration vs Time

Channel Description:	G's	msec	m/s	Filter Hz	Max G's	Min G's
Ch1 Table	1589.23	0.51	4.27	5000.00	1589.23	-188.76



-Y axis_1,500g 0.5ms (Non-Operating)

Acceleration vs Time

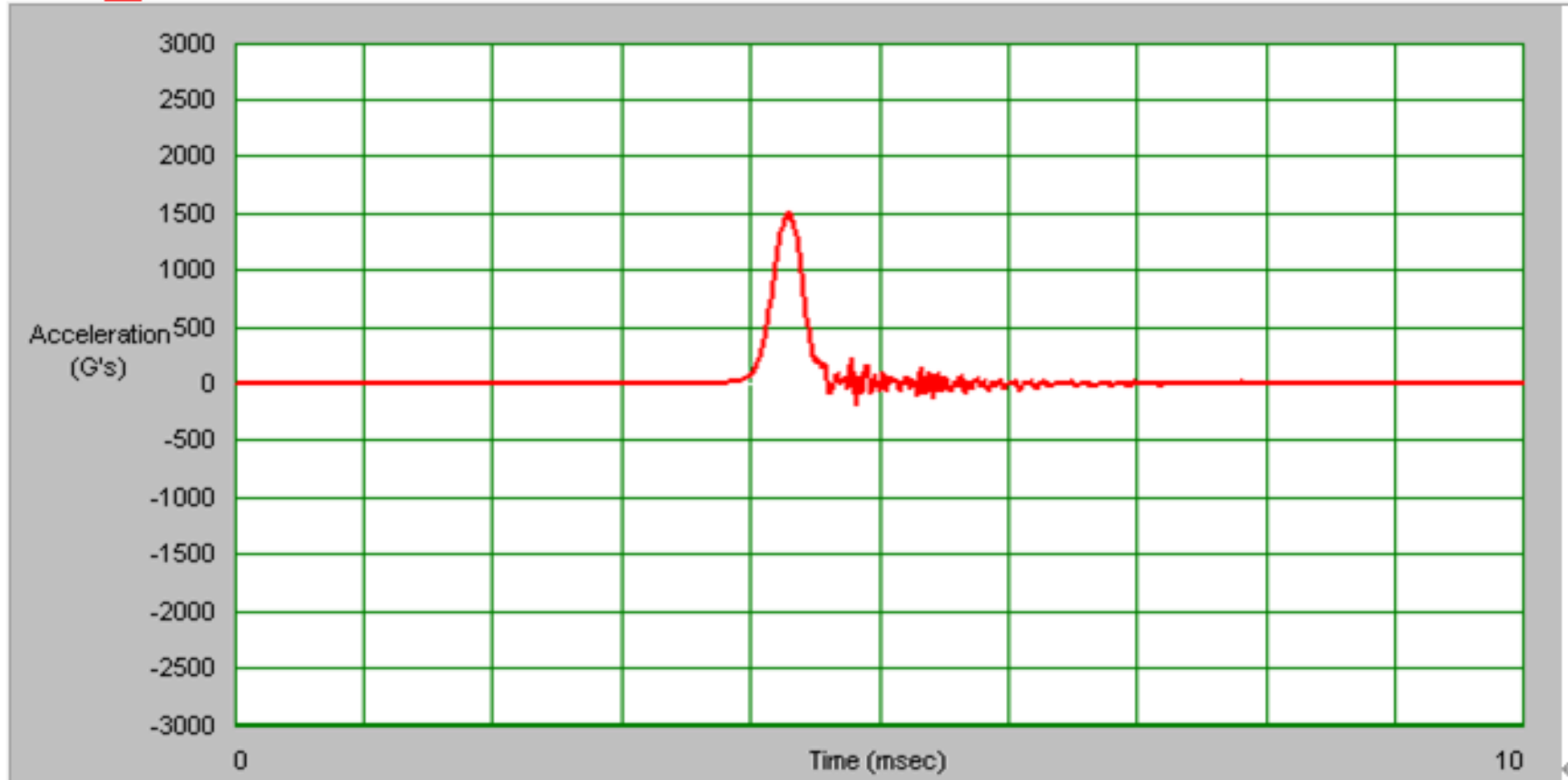
Channel Description:	G's	msec	m/s	Filter Hz	Max G's	Min G's
Ch1 Table	1588.15	0.51	4.27	5000.00	1588.15	-171.92



+Z axis_1,500g 0.5ms (Non-Operating)

Acceleration vs Time

Channel Description:	G's	msec	m/s	Filter Hz	Max G's	Min G's
Ch1 Table	1508.49	0.52	4.19	5000.00	1508.49	-179.29



-Z axis_1,500g 0.5ms (Non-Operating)

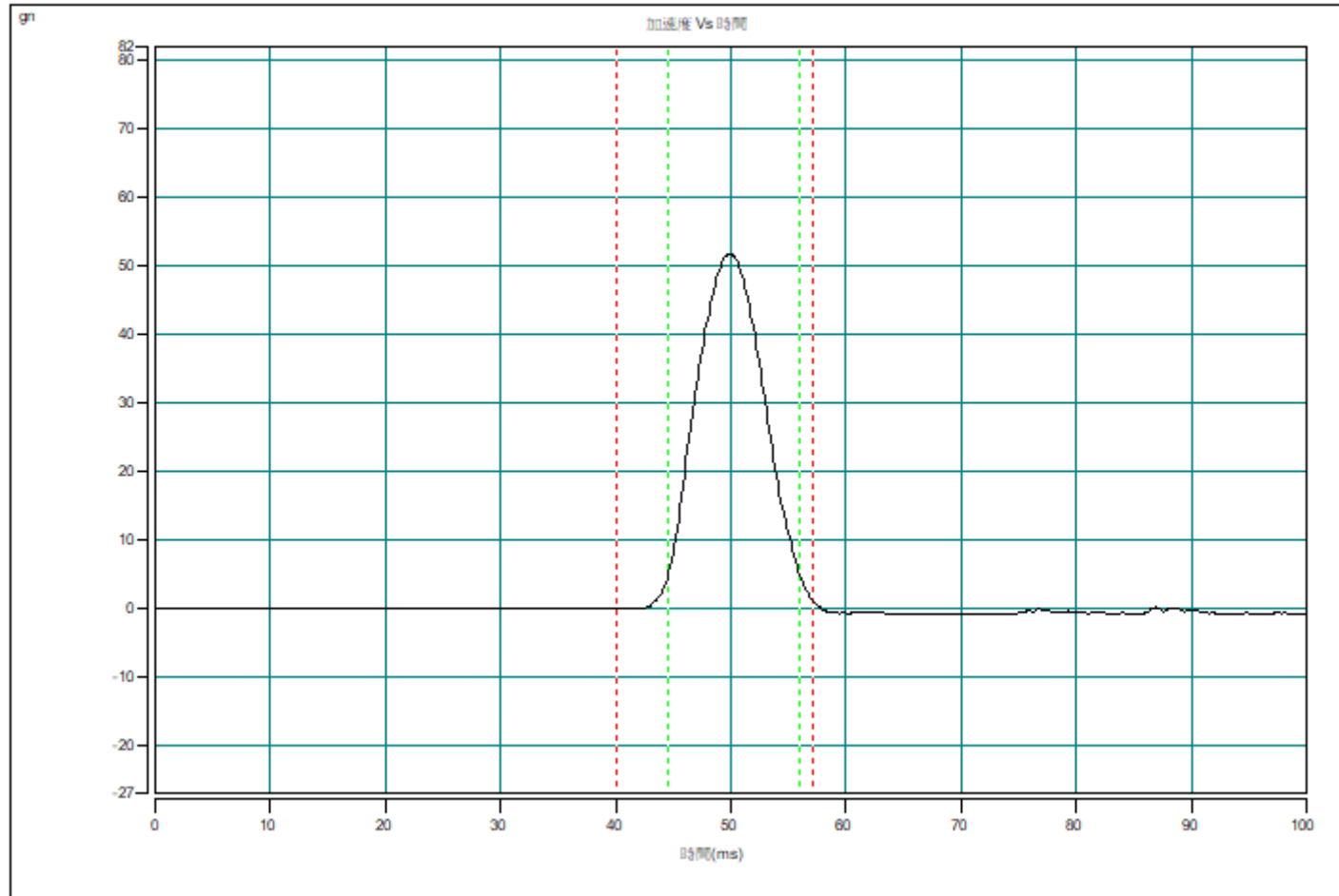
Acceleration vs Time

Channel Description:	G's	msec	m/s	Filter Hz	Max G's	Min G's
Ch1 Table	1536.03	0.51	4.22	5000.00	1536.03	-184.05



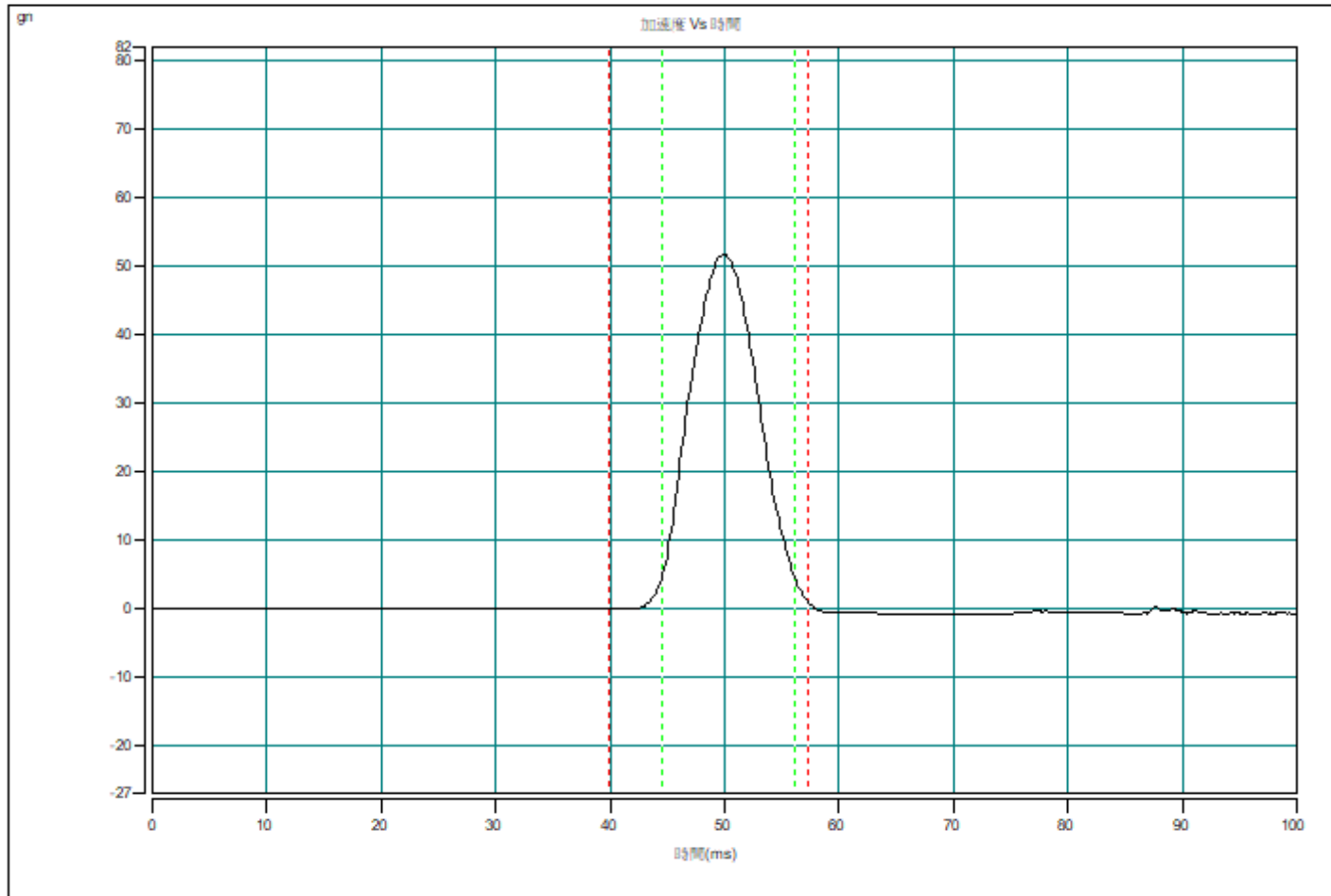
+X axis_50g 11ms (Operating)

訊號名稱	加速度 (gn)	作動時間 (ms)	速度變化率 (m/s)	低通濾波 (Hz)	最大加速度	最小加速度
Input1(t)	51.73	11.35	3.56	500.00	51.73	-0.96



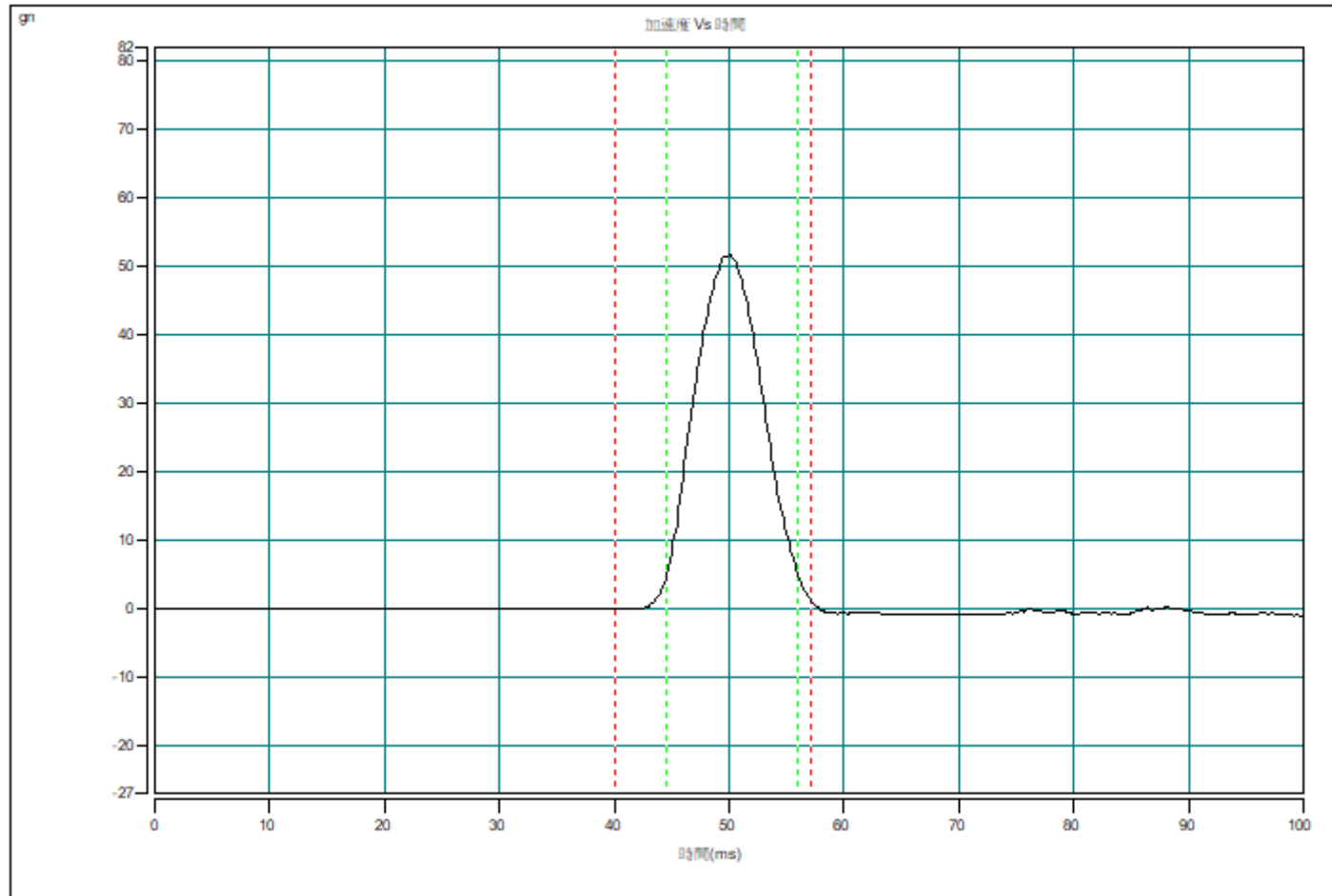
-X axis_50g 11ms (Operating)

訊號名稱	加速度 (gn)	作動時間 (ms)	速度變化率 (m/s)	低通濾波 (Hz)	最大加速度	最小加速度
Input1 (t)	51.80	11.36	3.56	500.00	51.80	-0.95



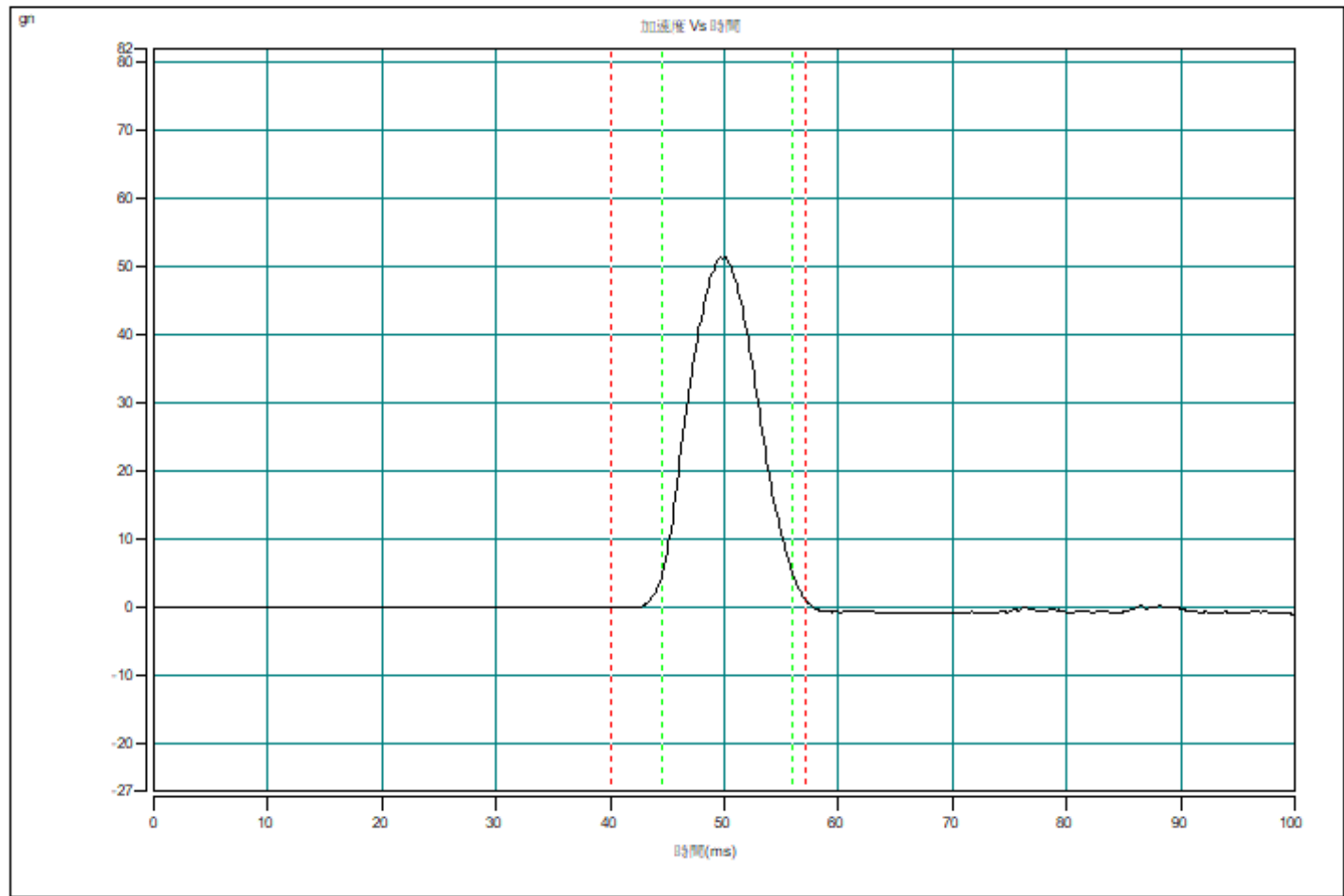
+Y axis_50g 11ms (Operating)

訊號名稱	加速度 (gn)	作動時間 (ms)	速度變化率 (m/s)	低通濾波 (Hz)	最大加速度	最小加速度
Input1(t)	51.68	11.35	3.55	500.00	51.68	-1.09



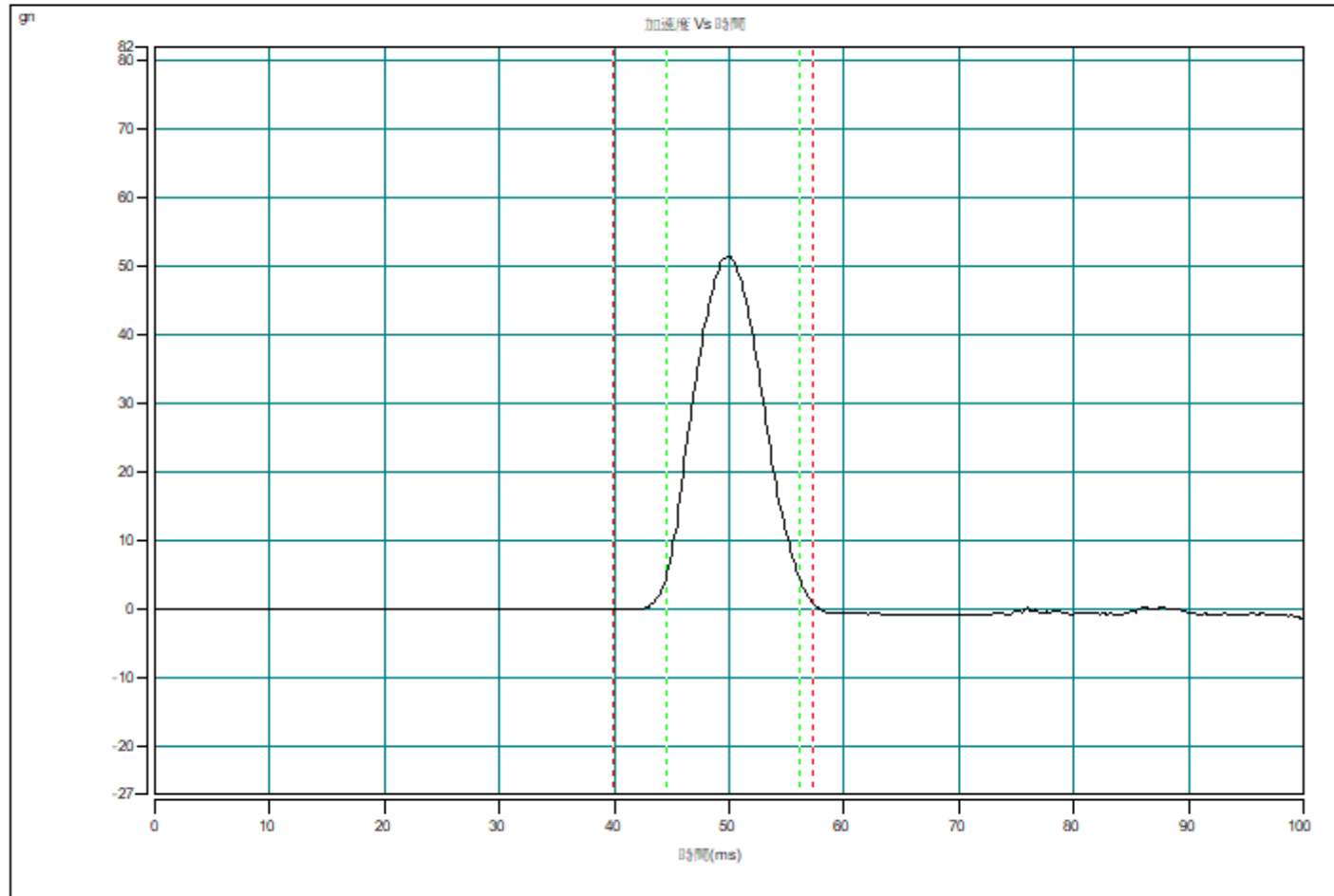
-Y axis_50g 11ms (Operating)

訊號名稱	加速度 (gn)	作動時間 (ms)	速度變化率 (m/s)	低通濾波 (Hz)	最大加速度	最小加速度
Input1(t)	51.38	11.35	3.54	500.00	51.38	-1.01



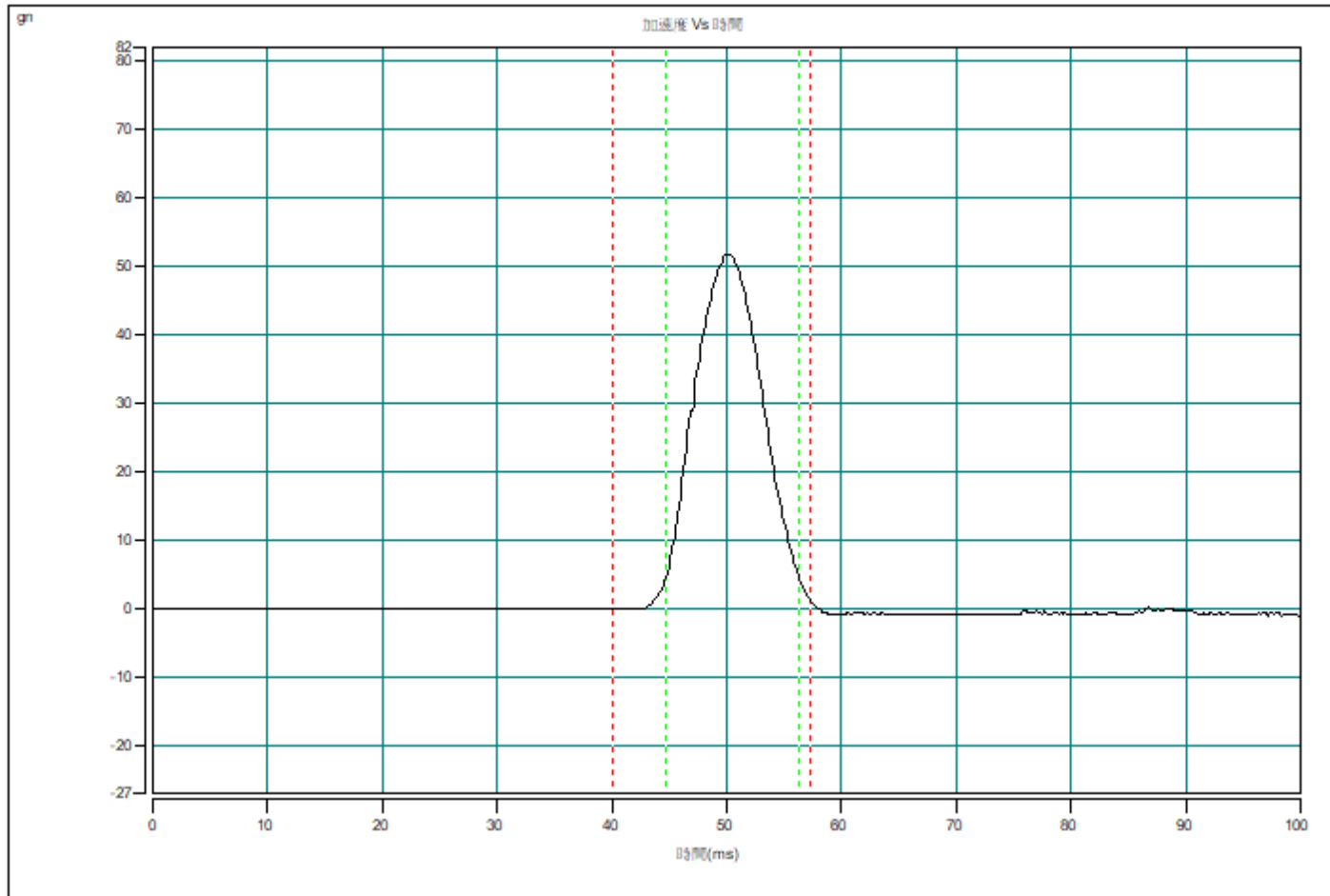
+Z axis_50g 11ms (Operating)

訊號名稱	加速度 (gn)	作動時間 (ms)	速度變化率 (m/s)	低通濾波 (Hz)	最大加速度	最小加速度
Input1(t)	51.45	11.40	3.55	500.00	51.45	-1.38



-Z axis_50g 11ms (Operating)

訊號名稱	加速度 (gn)	作動時間 (ms)	速度變化率 (m/s)	低通濾波 (Hz)	最大加速度	最小加速度
Input1(t)	51.71	11.37	3.56	500.00	51.71	-1.02



-END-