

# Test Report

Verified Code:303726

Report No.:H202409032802-14EN

Customer: ProTech CO., Ltd

Address: No. 18, Baoying Road, Dawang High-Tech District, Zhaoqing, Guangdong

Sample Name: SINORA HARD SHELL CASE

Sample Model: SIN-RIM-06U46

Receive  
Sample Date: Sep.10th,2024

Test Date: Sep.11th,2024~Oct.12th,2024

Reference  
Document: MIL-STD-810H-2019

Test Result: Pass

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GRG METROLOGY &amp; TEST GROUP CO., LTD.

Issued Date: 2024/10/23

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H202409032802-14EN



## Statement

1. The report is invalid without "special seal for inspection and testing"; some copies are invalid; The report is invalid if it is altered or missing; The report is invalid without the signature of the person who prepared, reviewed and approved it.
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4. If there is any objection concerning the report, please inform us within 15 days from the date of receiving the report.
5. The test report only used for scientific research, teaching, internal quality control and other purposes.

Test type	<input checked="" type="checkbox"/> Commissioning Test <input type="checkbox"/> Routine test <input type="checkbox"/> DV <input type="checkbox"/> ECV <input type="checkbox"/> PV <input type="checkbox"/> OTS <input type="checkbox"/> R&D test <input type="checkbox"/> Others _____			
Sample Source	<input checked="" type="checkbox"/> Commissioned units send sample <input type="checkbox"/> Others:			
Sample	Model	Quantity	Sample No.	Test No.
SINORA HARD SHELL CASE	SIN-RIM-06U46	1	/	H202409032802-0014
Sample Components and Accessories	Components: / Accessories: /			
Test with packaging or not	<input type="checkbox"/> Yes, Outer Packing _____ <input checked="" type="checkbox"/> No			
Sample quality before test	<input checked="" type="checkbox"/> Conformity Product <input type="checkbox"/> Non-conformity Product <input type="checkbox"/> Prototype <input type="checkbox"/> Others			
Abnormal condition of sample before test	No Abnormalities			
Environmental requirements	Temperature: 15.0°C~35.0°C Atmospheric pressure: 86kPa~106kPa Relative Humidity: 25%~75%			
Test Address	Shenzhen Laboratory: No. 10, Dafu Industrial Zone, Guanlan Street, Longhua District, Shenzhen City, Guangdong Province, China			

**Summary of Test Information**

No.	Item Name	Test Standard	Test Result	Page
1	Temperature shock test	According to the requirements of the client	Pass	Page 5
2	Vibration test	According to the requirements of the client	Pass	Page 8
3	Drop test	According to the requirements of the client	Pass	Page 12

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## 1 Temperature shock test

### 1.1 Test Condition

According to MIL-STD-810H-2019 method 503.7

1.1.1 Initial detection: Before the experiment, conduct initial testing on the test sample under standard atmospheric conditions

1.1.2 Sample Installation: Place the test sample flat on the rack inside the temperature shock test chamber and keep it within the effective volume of the chamber, allowing air to flow freely inside the chamber.

1.1.3 Experimental operation: The experiment starts from the low temperature range. During the experiment, the high temperature is 80 °C and the low temperature is -30 °C. The holding time for both high and low temperatures is 2 hours, and the transition time between high and low temperatures is no more than 1 minute. A total of 3 cycles are conducted.

1.1.4 Recovery processing: at the end of the experiment, the test chamber returns to indoor temperature, and the chamber door is opened to allow the test sample to recover for 2 hours under the standard atmospheric conditions of the experiment.

1.1.5 Final testing: After the experiment, the final detection of the test sample is carried out under the standard atmospheric conditions of the experiment.

### 1.2 Sample Information

Sample information is shown in Table 1-1.

**Table 1-1 Sample Information**

Sample Name	Sample Model	Sample Quantity	Test No
SINORA HARD SHELL CASE	SIN-RIM-06U46	1 pc	H202409032802-0014

### 1.3 Test Requirements

According to the requirements of the client

The appearance of the test sample should be free of cracks, debonding, and damage.

#### 1.4 Test Result

The test result is shown in Table 1-2.

**Table 1-2 Temperature Shock Test Result**

Test No	Detection Result	Conclusion
H202409032802-0014	Appearance no crack no degumming no damage	Pass

#### 1.5 Test Photos

	
Fig.1-1 Appearance Inspection Before The Experiment	Fig.1-2 Visual Inspection After The Experiment
	
Fig.1-3 Low Temperature Installation Diagram	Fig.1-4 Low Temperature Test Operation Interface Diagram



Fig.1-5 High Temperature Installation Diagram



Fig.1-6 High Temperature Test Operation Interface Diagram

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## 2 Vibration Test

### 2.1 Test Condition

According to MIL-STD-810H-2019 method 514.8.

2.1.1 Initial Detection: Before the experiment, conduct initial testing on the test sample under standard atmospheric conditions.

2.1.2 Sample Installation And positioning: Install the test sample on the fixture, then rigidly fix the fixture on the vibration table, install control sensors on the bottom bracket of the test sample, and use two-point average control method.

2.1.3 Experimental Operation: Conduct a 1-hour vibration test on each axis of the test specimen according to the conditions of Table 2-1 Highway Transportation Vibration Test Scale and Table 2-2 Jet C-5 Vibration Test Scale, with the test sequence being X-axis, Y-axis, and Z-axis.

2.1.4 Final Testing: After the experiment, the final detection of the test sample is carried out under the standard atmospheric conditions of the experiment.

**Table 2-1 Highway Transportation - Vibration Test Scale**

Z-Axis (Vertical)		X-Axis (Transverse)		Y-Axis (longitudinal)		Test axis and its time  Vibration in horizontal, vertical, and vertical directions for 1 hour each
Frequency (Hz)	Acceleration ( (g) <sup>2</sup> /Hz)	Frequency (Hz)	Acceleration ( (g) <sup>2</sup> /Hz)	Frequency (Hz)	Acceleration ( (g) <sup>2</sup> /Hz)	
4	0.015	5	0.00013	5	0.0065	
40	0.015	10	0.00013	20	0.0065	
500	0.00015	20	0.00065	120	0.0002	
/	/	30	0.00065	121	0.003	
/	/	78	0.00002	200	0.003	
/	/	79	0.00019	240	0.0015	
/	/	120	0.00019	340	0.00003	
/	/	500	0.00001	500	0.00015	
Root-Mean-Square Value: 1.08g		Root-Mean-Square Value: 0.21g		Root-Mean-Square Value: 0.76g		

**Table 2-2 Vibration Test Scale Of Jet C-5**

Frequency (Hz)	Acceleration ( (g) <sup>2</sup> /Hz)	Left Slope (db/Oct)	Right Slope (db/Oct)	Test Axis And Time
15	0.003	0	0	
1000	0.003	0	-6	
2000	0.0007	-6	0	
Root-Mean-Square Value: 2.11g				Vibration in horizontal, vertical, and vertical directions for 1 hour each

## 2.2 Sample Information

Sample information is shown in Table 2-3.

**Table 2-3 Sample Information**

Sample Name	Sample Model	Sample Quantity	Test No
SINORA HARD SHELL CASE	SIN-RIM-06U46	1 pc	H202409032802-0014

## 2.3 Test Requirements

According to the requirements of the client

The appearance of the test sample should be free of cracks, debonding, and damage.

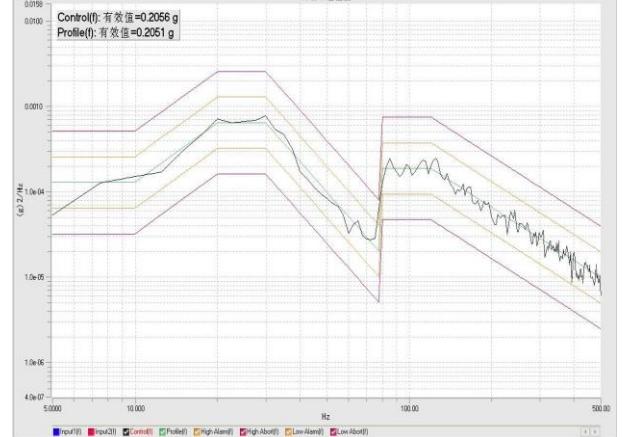
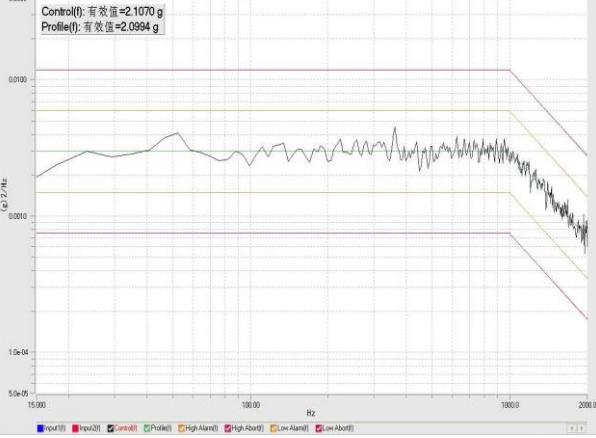
## 2.4 Test Result

The test result is shown in Table 2-4.

**Table 2-4 Vibration Test Results**

Test No	Detection Result	Conclusion
H202409032802-0014	Appearance no crack no degumming no damage	Pass

## 2.5 Test Photos

	
<p>Fig.2-1 Appearance Inspection Before The Experiment</p>	<p>Fig.2-2 Visual Inspection After The Experiment</p>
	
<p>Fig.2-3 Vibration Test Subject Installation Status - X-Axis</p>	<p>Fig.2-4 Vibration Test Highway Transportation Level Control Spectrum - X-Axis</p>
	
<p>Fig.2-5 Vibration Test Spray Painting C-5 Level Control Spectrum - X-Axis</p>	<p>Fig.2-6 Vibration Test Subject Installation Status - Y-Axis</p>

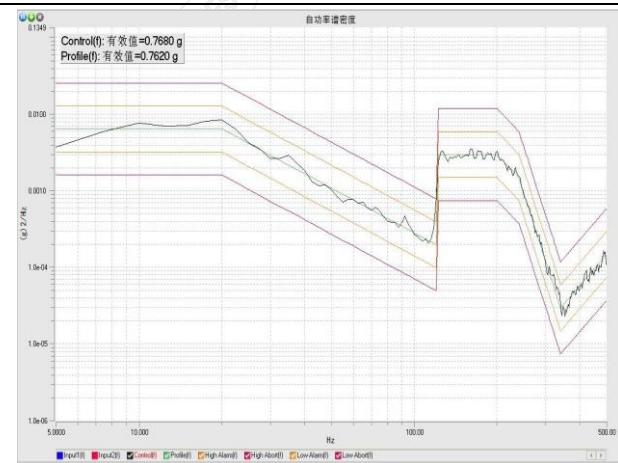


Fig.2-7 Vibration Test Highway Transportation Level Control Spectrum - Y-Axis

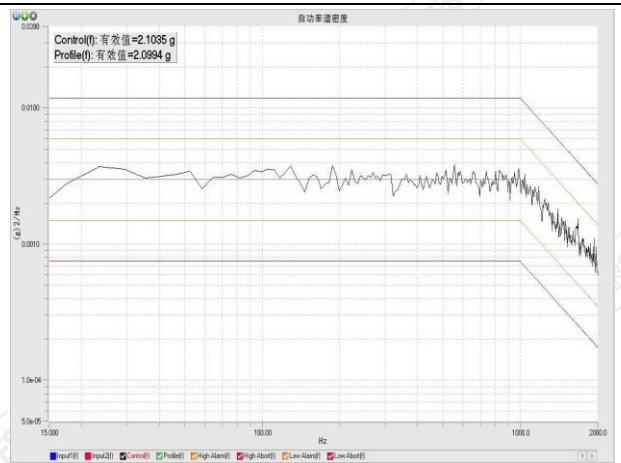


Fig.2-8 Vibration Test Spray Painting C-5 Level Control Spectrum - Y-Axis



Fig.2-9 Vibration Test Subject Installation Status - Z-Axis

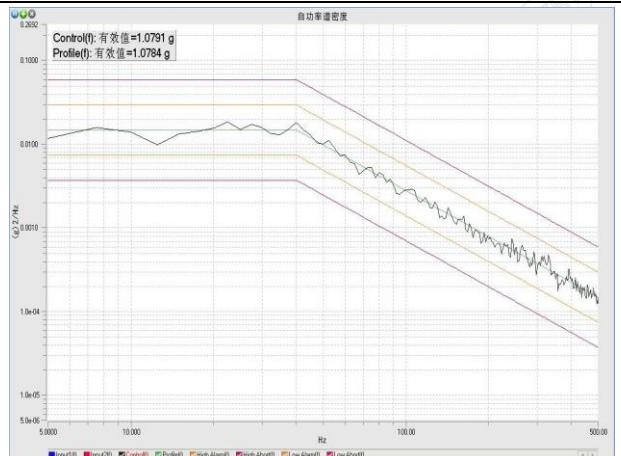


Fig.2-10 Vibration Test Highway Transportation Level Control Spectrum - Z-Axis

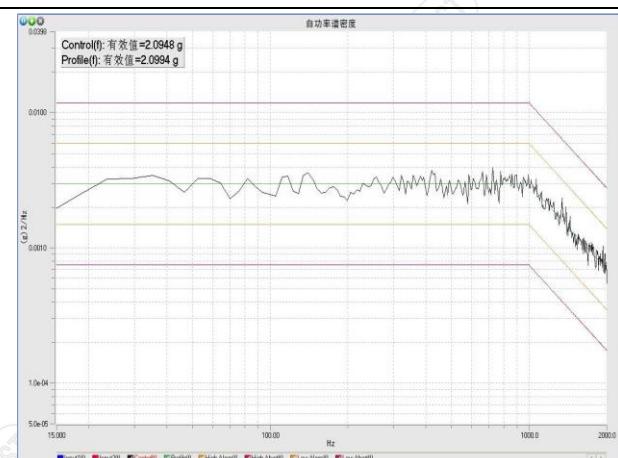


Fig.2-11 Vibration Test Spray Painting C-5 Level Control Spectrum - Z-Axis

### 3.1 Drop Test

According to MIL-STD-810H-2019 method 516.8.

3.1.1 Initial detection: Before the experiment, conduct initial testing on the test sample under standard atmospheric conditions

3.1.2 Sample Installation And positioning: Install the test sample on the drop testing machine.eep it within the effective volume of the chamber, allowing air to flow freely inside the chamber.

3.1.3 Experimental operation: Perform the drop test according to the conditions in Table 3-1.

**Table 3-1 Drop Test Conditions**

Falling Surface	Drop Height (cm)	Number Of Drops
12 edges	122	each edge once, a total of 12 times
8 corners	122	1 time per corner, a total of 8 times
6 faces	122	1 time per face, a total of 6 times

### 3.2 Sample Information

Sample information is shown in Table 3-2.

**Table 3-2 Sample Information**

Sample Name	Sample Model	Sample Quantity	Test No
SINORA HARD SHELL CASE	SIN-RIM-06U46	1 pc	H202409032802-0014

### 3.3 Test Requirements

According to the requirements of the client

The appearance of the test sample should be free of cracks, debonding, and damage.

### 3.4 Test Result

The test result is shown in Table 3-3.

**Table 3-3 Temperature Shock Test Result**

Test No	Detection Result	Conclusion
H202409032802-0014	Appearance no crack no degumming no damage	Pass

**3.5 Test Photos**

	
Fig.3-1 Appearance Inspection Before The Experiment	Fig.3-2 Visual Inspection After The Experiment
	
Fig.3-3 Operation Diagram Of Drop Testing Machine Interface	Fig.3-4 Drop Test Operation - Angle Diagram

	
Fig.3-5 Drop test Operation - Surface Schematic Diagram	Fig.3-6 Drop Test Operation - Edge Diagram

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#### 4 Testing instruments and equipment

List of Instrument for Testing Equipment					
No.	Testing Item	Instrument/Equipment	Type	Serial No.	Calibration Valid Date
1	Temperature shock test	Walk-in high and low temperature humid heat test chamber	SZ-A-70000D	202404007	2024-04-26~2025-04-25
		Walk-in temperature and humidity test chamber	UC9-50150-R	181419	2024-01-04~2025-01-03
2	Vibration test	Digital vibration test system	DC-10000-100	160913	2024-09-10~2025-09-09
		Sensor	YMC2107CM	20081242	2024-01-24~2025-01-23
		Sensor	YMC2107CM	20081249	2024-01-24~2025-01-23
3	Drop test	Drop tester	GZ-DEZL	NJ167	2023-11-21~2024-11-20

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