Test Report

Verified Code:697397

Report No.:H202409032802-13EN

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-04U46
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 & TEST GROUP CO., LTD.

Issued Date: 2024/10/23

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H202409032802-13EN

Statement

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2. The sample information is provided by the client and responsible for its authenticity; The content of the report is only valid for the samples sent this time.

3. When there are reports in both Chinese and English, the Chinese version will prevail when the language problems are inconsistent.

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	☑Commissioning Test ☐Routine test ☐DV ☐ECV ☐PV ☐OTS ☐R&D test ☐Others_____			
Sample Source	☑Commissioned units send sample ☐Others:			
Sample	Model	Quantity	Sample No.	Test No.
SINORA HARD SHELL CASE	SIN-RIM-04U46	1	/	H202409032802-0013
Sample Components and Accessories	Components：/ Accessories：/			
Test with packaging or not	☐Yes, Outer Packing _____ ☑No			
Sample quality before test	☑Conformity Product ☐Non-conformity Product ☐Prototype ☐Others			
Abnormal condition of sample before test	No Abnormalities			
Environmental requirements	Temperature: 15.0℃~35.0℃ Relative Humidity: 25%~75% Atmospheric pressure: 86kPa~106kPa			
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 ℃ and the low temperature is -30 ℃. 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-04U46	1 pc	H202409032802-0013

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
H202409032802-0013	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
Frequency（Hz）	Acceleration（（g）^{2}/Hz）	Frequency（Hz）	Acceleration（（g）^{2}/Hz）	Frequency（Hz）	Acceleration（（g）^{2}/Hz）	
4	0.015	5	0.00013	5	0.0065	Vibration in horizontal, vertical, and vertical directions for 1 hour each
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)^2/Hz)	Left Slope (db/Oct)	Right Slope (db/Oct)	Test Axis And Time
15	0.003	0	0	Vibration in horizontal, vertical, and vertical directions for 1 hour each
1000	0.003	0	-6	
2000	0.0007	-6	0	
Root-Mean-Square Value: 2.11g				

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-04U46	1 pc	H202409032802-0013

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
H202409032802-0013	Appearance no crack no degumming no damage	Pass

2.5 Test Photos

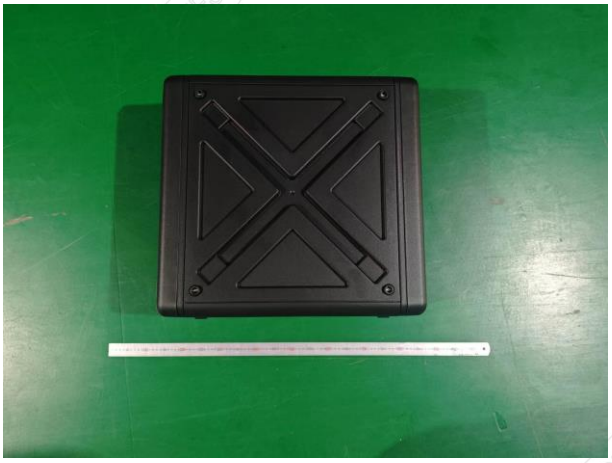

Fig.2-1 Appearance Inspection Before The Experiment

Fig.2-2 Visual Inspection After The Experiment

Fig.2-3 Vibration Test Subject Installation Status - X-Axis

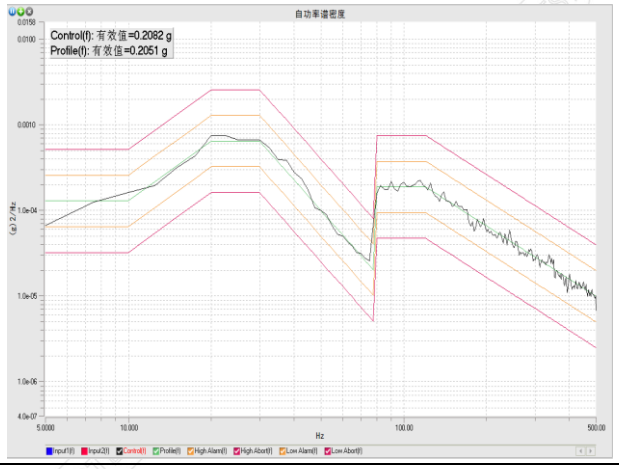

Fig.2-4 Vibration Test Highway Transportation Level Control Spectrum - X-Axis

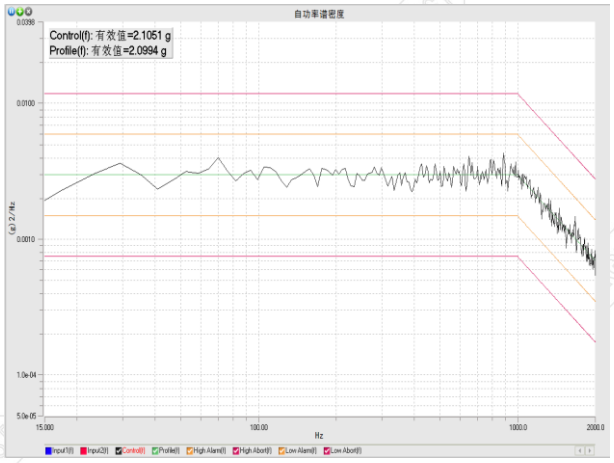

Fig.2-5 Vibration Test Spray Painting C-5 Level Control Spectrum - X-Axis

Fig.2-6 Vibration Test Subject Installation Status - Y-Axis

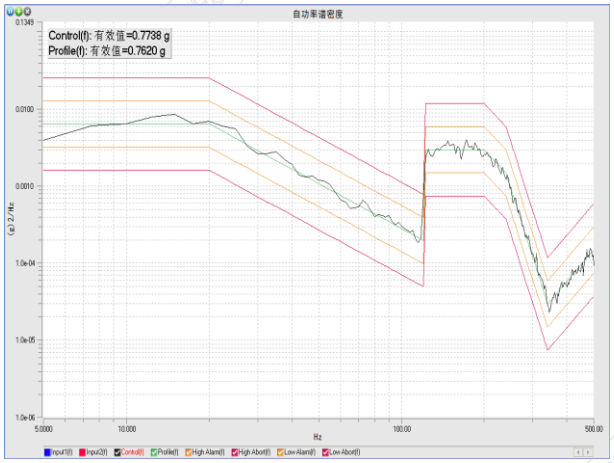

Fig.2-7 Vibration Test Highway Transportation Level Control Spectrum - Y-Axis

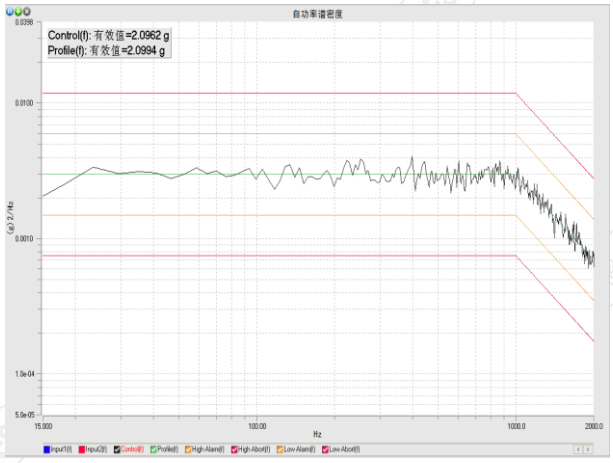

Fig.2-8 Vibration Test Spray Painting C-5 Level Control Spectrum - Y-Axis

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

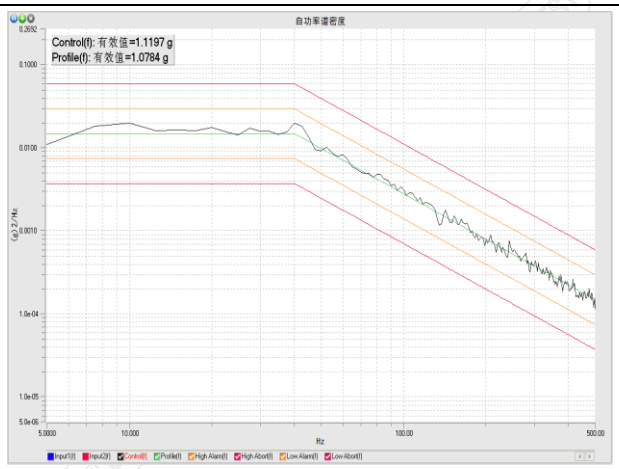

Fig.2-10 Vibration Test Highway Transportation Level Control Spectrum - Z-Axis

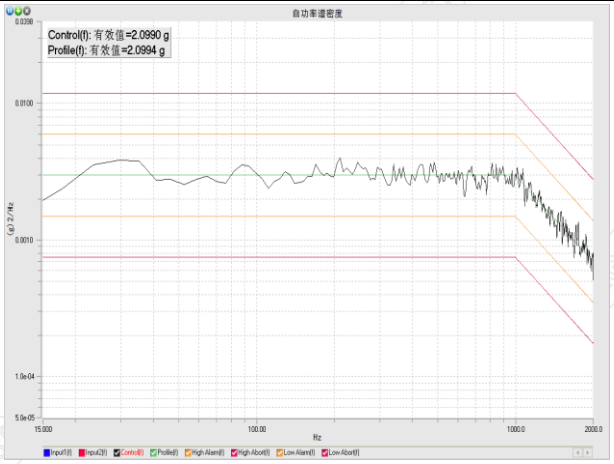

Fig.2-11 Vibration Test Spray Painting C-5 Level Control Spectrum - Z-Axis

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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-04U46	1 pc	H202409032802-0013

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
H202409032802-0013	Appearance no crack no degumming no damage	Pass

3.5 Test Photos

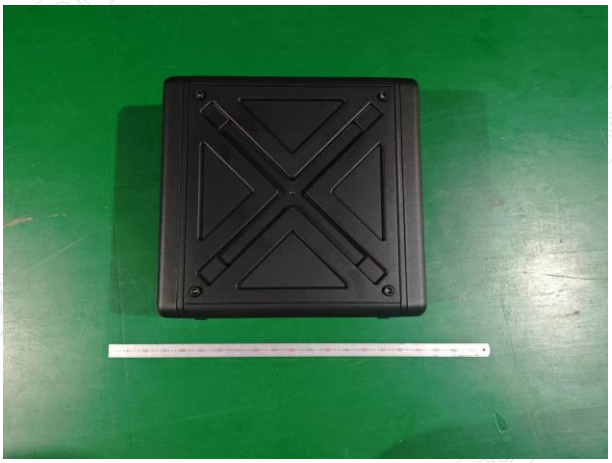

Fig.3-1 Appearance Inspection Before The Experiment

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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