



TEST REPORT

Product Name	Hybrid inverter
Applicant	Ningbo Sunways Technologies Co., Ltd.
Manufacturer	Ningbo Sunways Technologies Co., Ltd.
Test Type	Entrustment

Zhejiang Kezheng Electronic Information Product Testing Co., Ltd.

Test Report

Product	Hybrid inverter	Model	STH-3KTL-LSS STH-3.6KTL-LSS STH-4KTL-LS STH-4.6KTL-LS STH-5KTL-LS STH-6KTL-LS STH-7.5KTL-LS STH-8KTL-LS
		Trademark	/
Entrusted By	Ningbo Sunways Technologies Co., Ltd.	Entrusting party address	No. 1, Second Road, Green Industrial Zone, Chongshou Town 315334 Cixi, Ningbo, Zhejiang, P.R. China
Manufacturer	Ningbo Sunways Technologies Co., Ltd.		
Sample Origin	Delivered	Delivery Date	2025-7-16
Sample Number	1pcs	Delivered by	Wu Junjun
Test site	Suzhou Laboratory	Test Date	2025-7-16~2025-7-28
Test Standards	GB/T 4208-2017<<外壳防护等级（IP 代码）>>And technical indicators		
Test Items	IP66、high-voltage insulation test、Vibration test, impact test		
Test Result	After inspection, it was found that the Hybrid inverter produced by Ningbo Sunways Techbologies Co., Ltd. met the requirements stipulated in the "Test Items" column of the inspection basis. Release date: 2025-08-01		
Remark			

Approved by: Jason Lang

Checked by: Zionglong Wang

Preparer: Yu Zhang

Main Testing Equipments and Instruments

No.	Instrument and equipment	Model	S/N	Cal due
1	Electrodynamic vibration system	DC-7500-80	SZ021	2026.05.05
2	Dust box	AGIP6X12	SZ029	2026.05.05
3	Remote-controlled rain test machine	AGIPX17R1	SZ024	2026.05.05
4	Ac/DC withstand voltage insulation tester	TH9320	SZ025	2026.05.05

Climatic conditions:

Except for the climatic and environmental tests, other tests are under the following normal atmospheric conditions:

Ambient temperature: (15~35) °C;

Relative humidity: (25~75) %;

Sample description

Power supply mode	Rated voltage: / Rated current: /
Sample Number	/

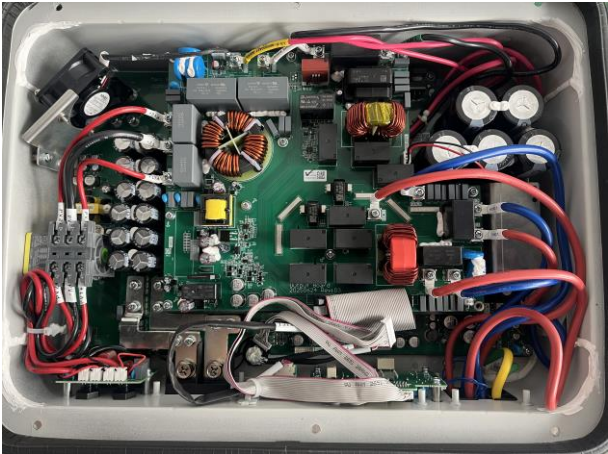
Sample distribution

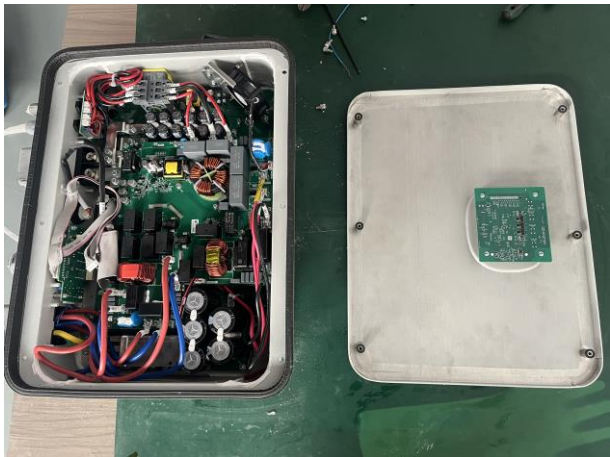
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Test result

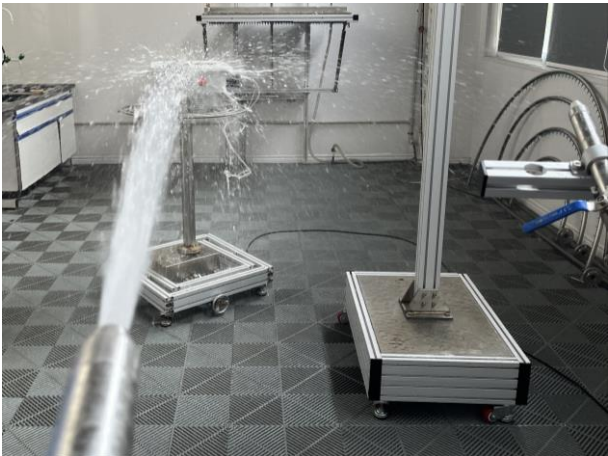
Test Items	GB/T 4208-2017	Test result	
		1#	
Dust test	Detection condition Type of dust: Talc powder; Dust dosage: 2 kg/m³ ; The suction speed is 40 to 60 times the volume of the enclosure per hour, and the test lasts for 2 hours. Test requirements: After the test, the sample should show no dust ingress.	The appearance of the initial sample was normal. The final inspection samples showed no abnormalities in appearance, and there was no dust ingress inside the samples upon disassembly.	Pass
Remark			
Tester:	<i>Yu Zhang</i>		

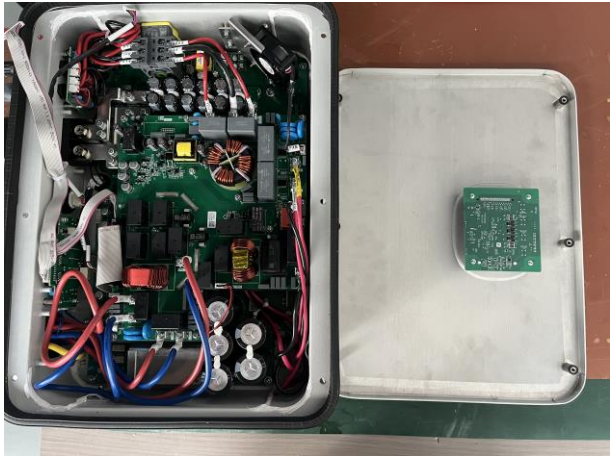
Test photos	
	Before the experiment - sample
	
	Sample erection
	
	In test

Test photos	
	After the dust-proof test
	
	After the experiment - sample
	
	After test

Test photos	 After test
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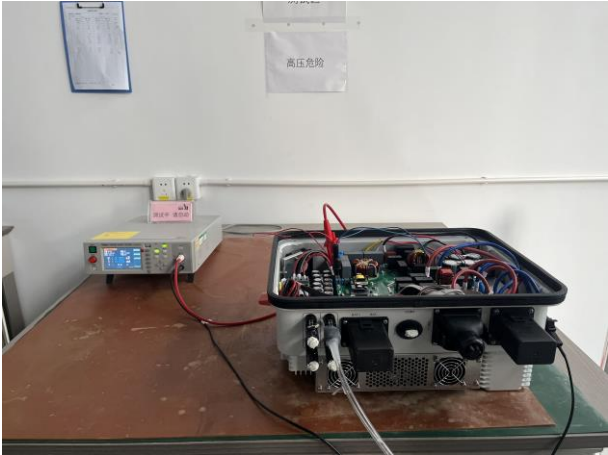
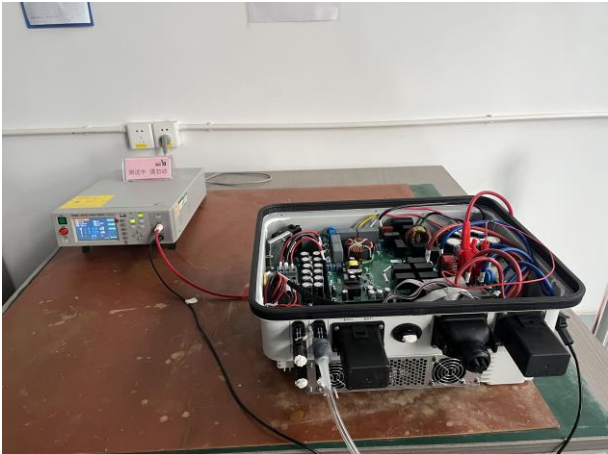
Test Items	GB/T 4208-2017	Test result	
		1#	
Water protection	Detection condition Nozzle inner diameter: 12.5mm. The nozzle sprays water. Water flow rate: 100 ± 5 L/min. Distance from nozzle to sample surface: 3m. Test duration: 3 minutes. Test requirements: After the test, the sample should show no sign of water infiltration.	The appearance of the initial sample was normal. The final inspection samples showed no abnormal conditions in appearance, and no water infiltration was observed inside the samples after disassembly.	Pass
Remark			
Tester:	<i>Yu Zhang</i>		

Test photos	
	In test
	
	In test
	
	In test

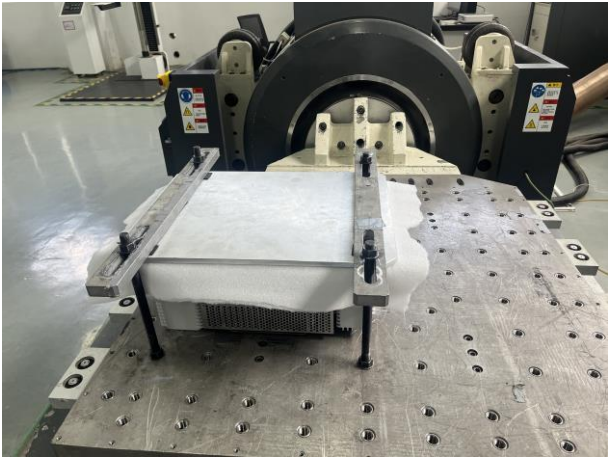
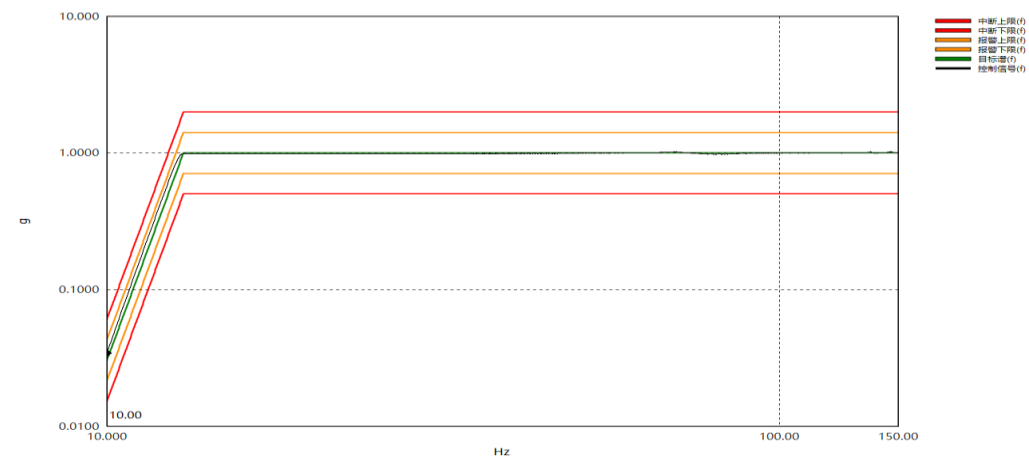
Test photos	
	In test
	
	After the experiment - sample
	
	After test

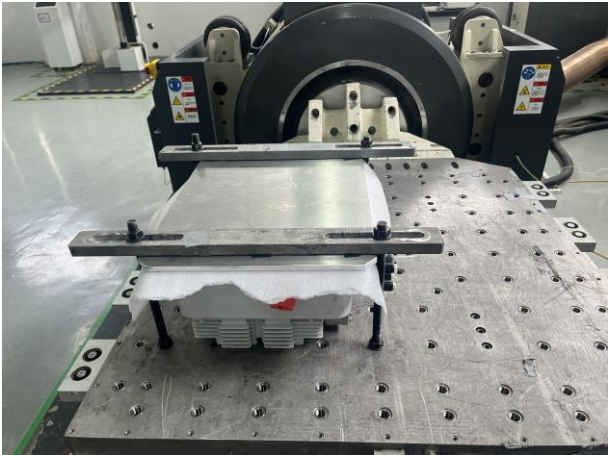
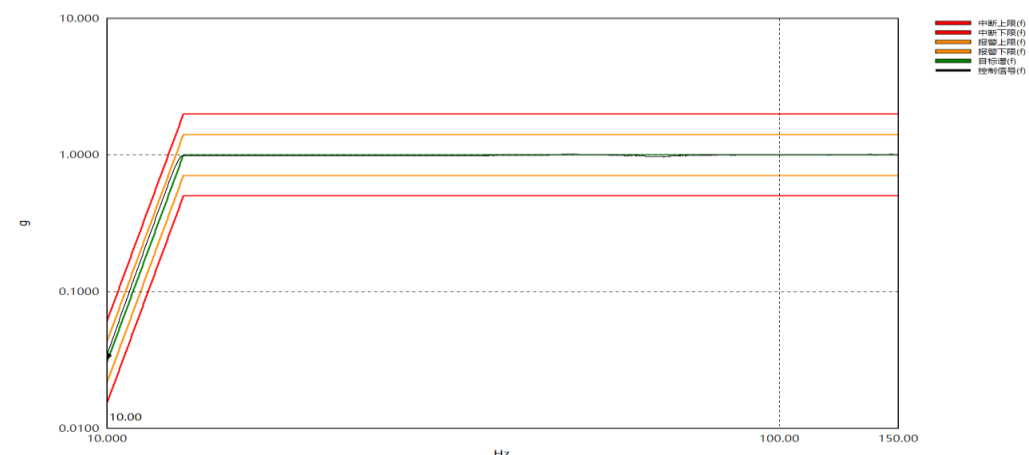
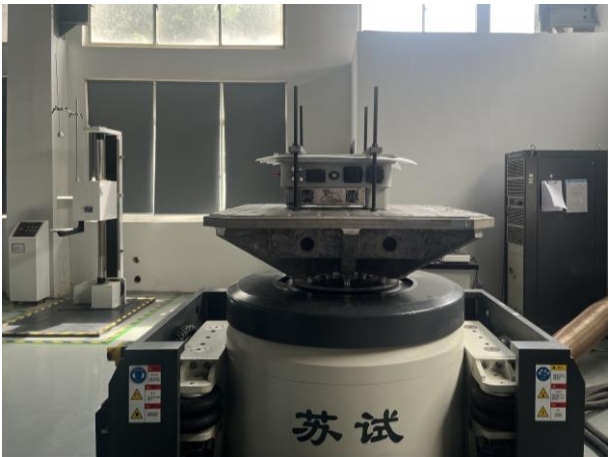
Test photos	 After test
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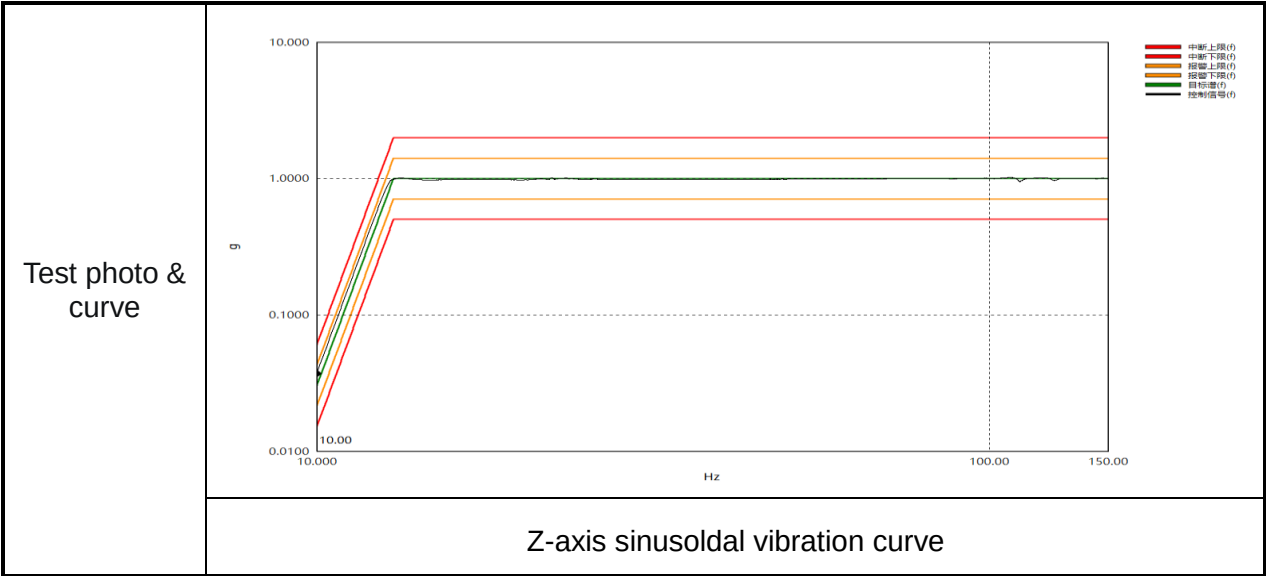
Test Items	Technical specifications	Test result	
		1#	
high-voltage insulation test	Detection condition Current: DC 2.2kV; Duration: 60 seconds; Upper limit value: 10mA; DC terminal to the outer shell; AC terminal to the outer shell. Test requirements: Dielectric breakdown or flashover shall not occur during the testing process	No dielectric breakdown or flashover occurred	Pass
Remark			
Tester:	Yu Zhang		

Test photos	
	In test(DC)
	
	In test(AC)

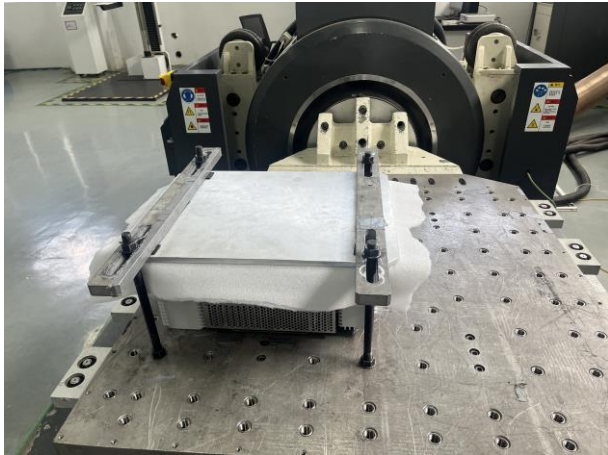
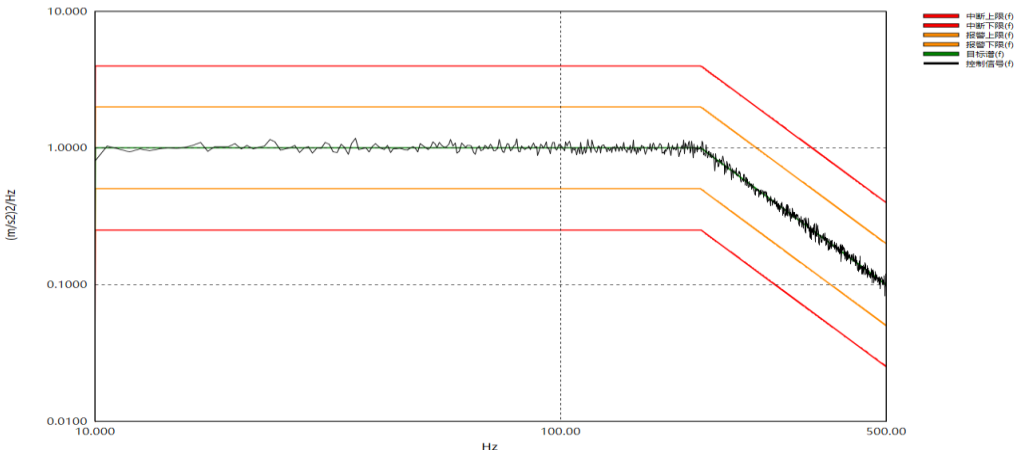
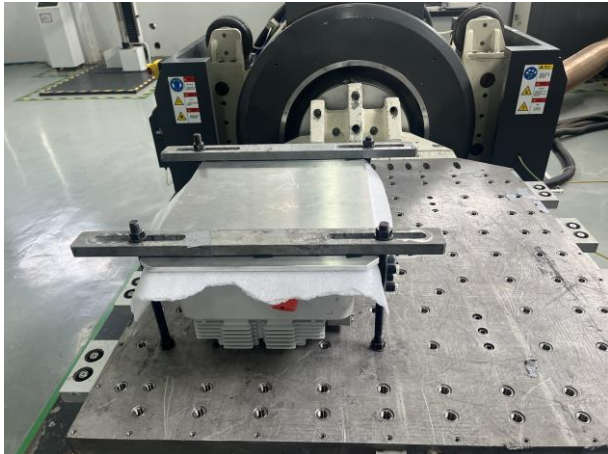
Test Items	Technical specifications	Test result													
		1#													
sinusoidal vibration test	Testing conditions:	The appearance of the initial sample was normal.	PASS												
	<table><tr><th>Frequency (Hz)</th><th>PSD (g2/Hz)</th><th>Displacement(mm)</th></tr><tr><td>10</td><td>/</td><td>0.15</td></tr><tr><td>13</td><td>1</td><td>/</td></tr><tr><td>150</td><td>1</td><td>/</td></tr></table>			Frequency (Hz)	PSD (g2/Hz)	Displacement(mm)	10	/	0.15	13	1	/	150	1	/
	Frequency (Hz)			PSD (g2/Hz)	Displacement(mm)										
	10			/	0.15										
	13			1	/										
150	1	/													
Vibration direction: Z、X、Y shaft															
Vibration time: 10 cycles/axis.															
Test requirements: After the test, there was no visible damage outside the EUT and no loosening part inside the EUT.															
Remark															
Tester: Yu Zhang															

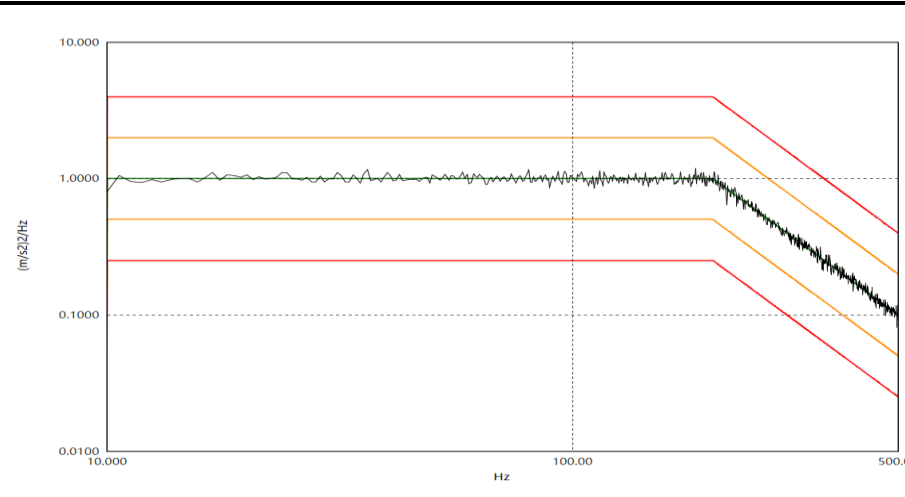
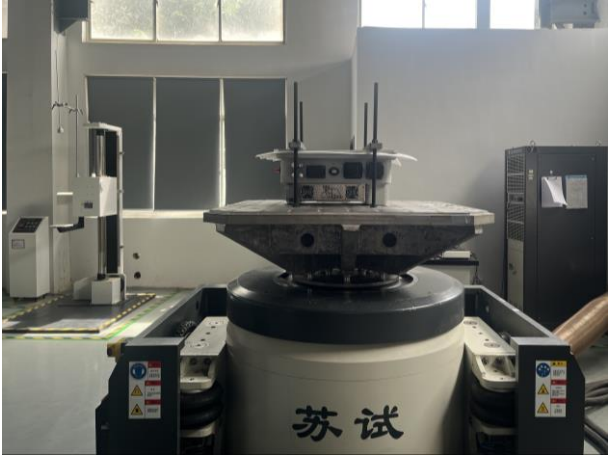
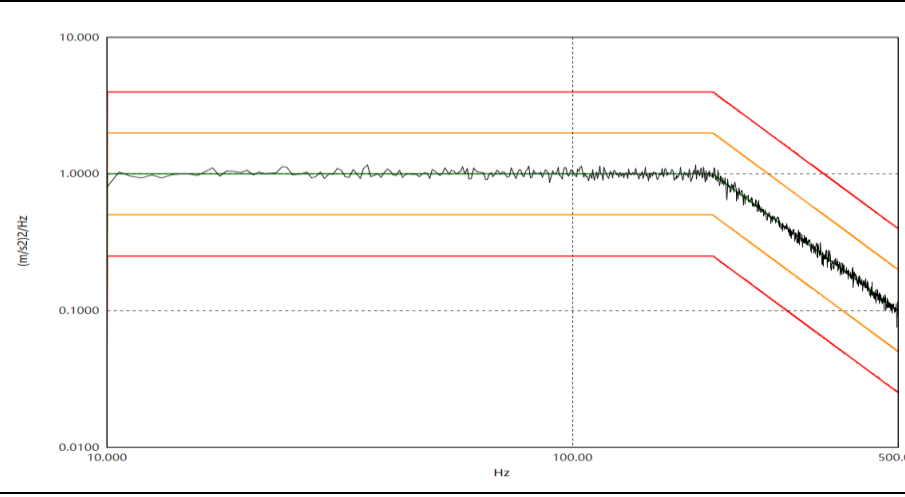
Test photo & curve	
	Before the experiment - sample
	
	Vibration test x-axis
	
	X-axis sinusoidal vibration curve

Test photo & curve	
	Vibration test Y-axis
	 The graph displays the Y-axis sinusoidal vibration curve. The vertical axis represents acceleration in g, ranging from 0.0100 to 10.000 on a logarithmic scale. The horizontal axis represents frequency in Hz, ranging from 10.000 to 150.00. The graph shows several curves: a red line for the upper limit, a yellow line for the lower limit, a green line for the target curve, and a blue line for the control signal. The curves show a sharp increase in acceleration at 10 Hz and then level off at higher frequencies.
	Y-axis sinusoidal vibration curve
	
	Vibration test Z-axis

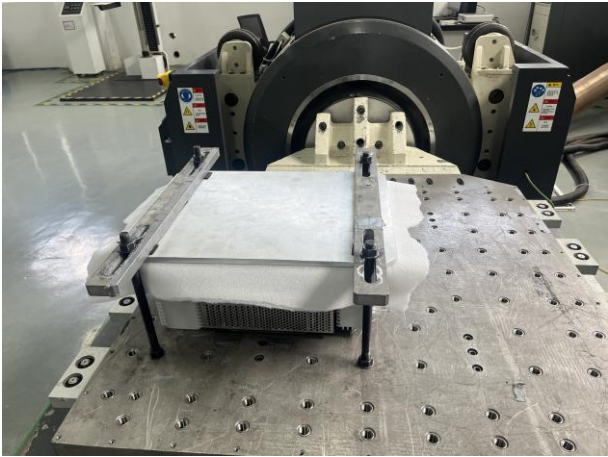
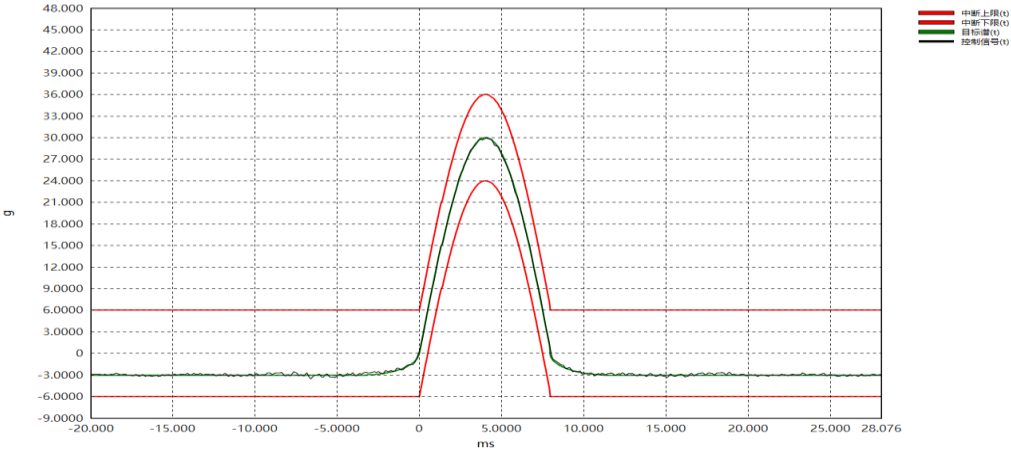
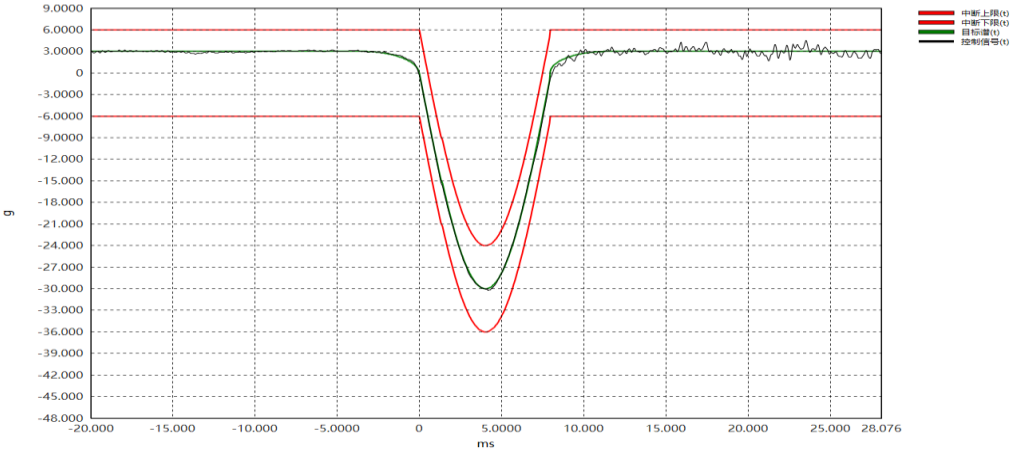


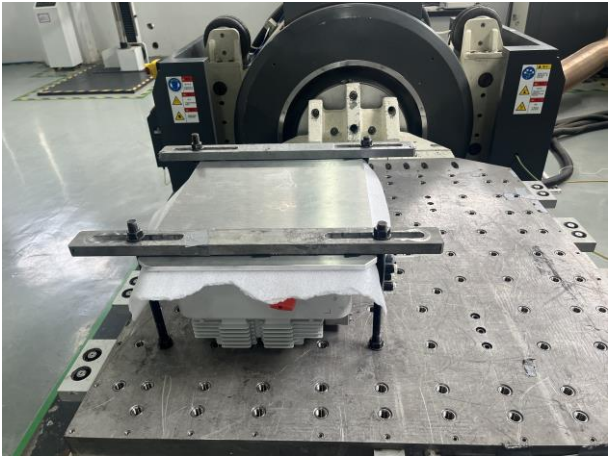
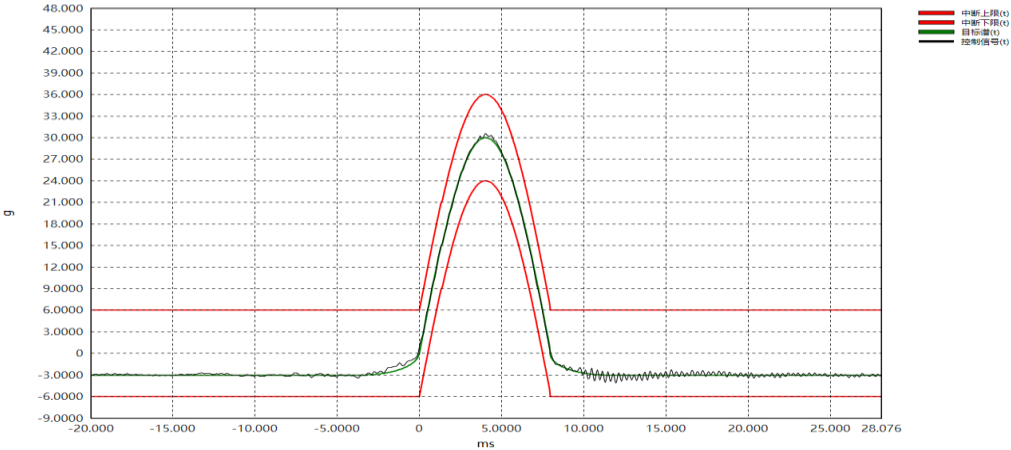
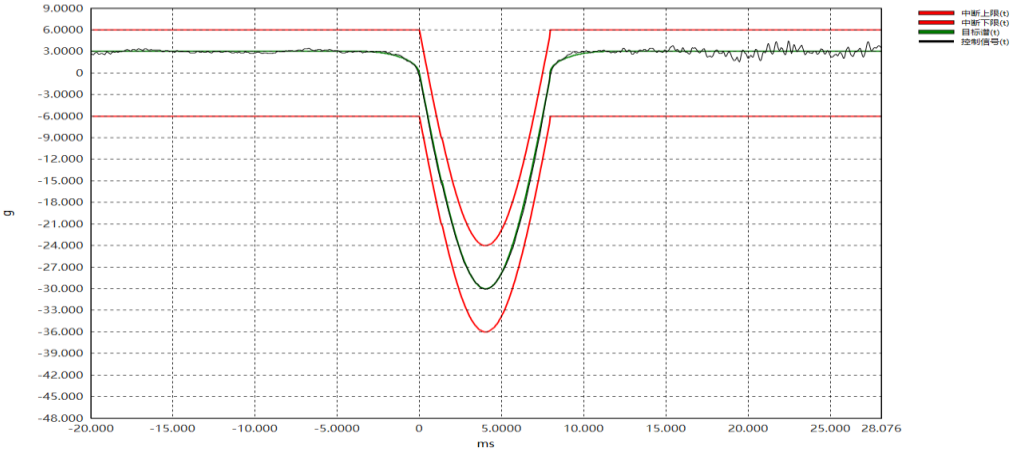
Test Items	Technical specifications	Test result									
		1#									
random vibration test	Testing conditions: <table><tr><th>Frequency (Hz)</th><th>ASD ((m/s²)²/Hz)</th></tr><tr><td>10</td><td>1</td></tr><tr><td>200</td><td>1</td></tr><tr><td>500</td><td>0.1</td></tr></table> Vibration direction: Z、X、Y shaft Vibration time: 30min/axis.	Frequency (Hz)	ASD ((m/s ²) ² /Hz)	10	1	200	1	500	0.1	The appearance of the initial sample was normal.	PASS
	Frequency (Hz)	ASD ((m/s ²) ² /Hz)									
10	1										
200	1										
500	0.1										
	Test requirements: After the test, there was no visible damage outside the EUT and no loosening part inside the EUT.	The final inspection showed that the appearance of the sample was normal and there was no looseness of components inside the sample.。									
Remark											
Tester: Yu Zhang											

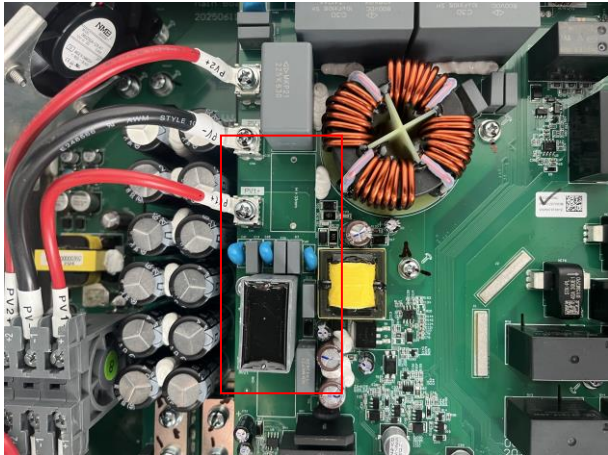
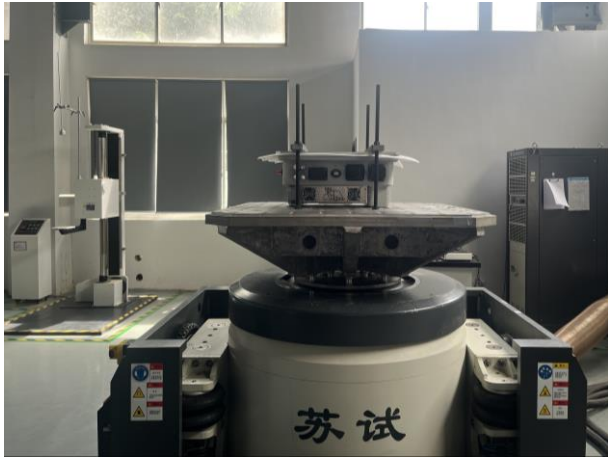
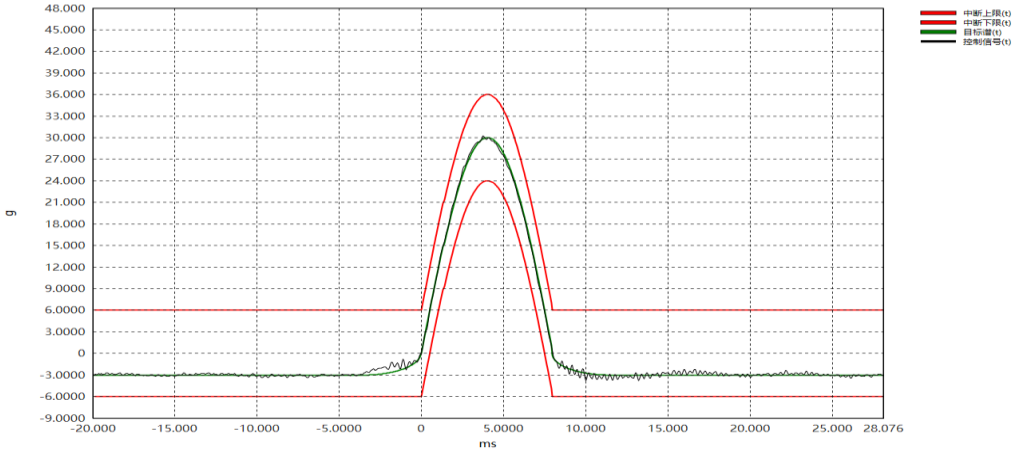
Test photo & curve	
	Vibration test x-axis
	
	X-axis random vibration curve
	
	Vibration test Y-axis

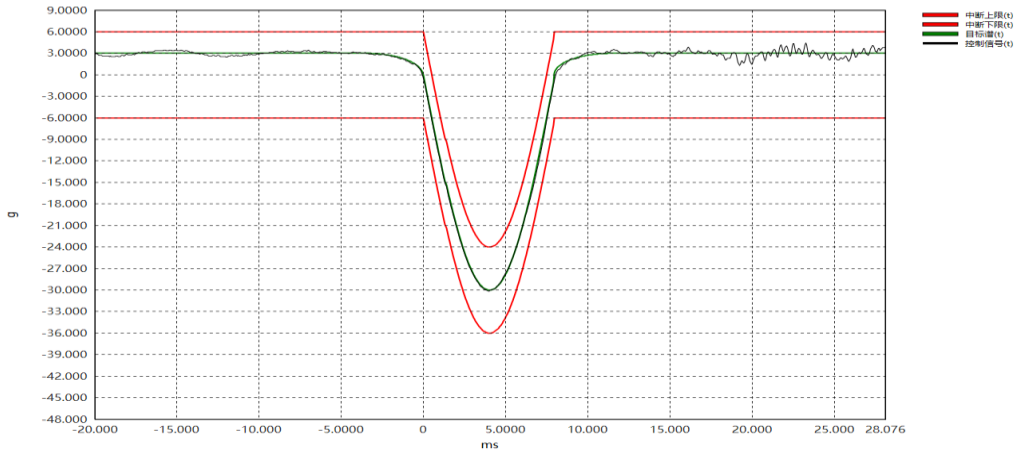
Test curve	 The graph shows the Y-axis random vibration curve. The y-axis is labeled (m/s²)/Hz and ranges from 0.0100 to 10.000 on a logarithmic scale. The x-axis is labeled Hz and ranges from 10.000 to 500.00 on a logarithmic scale. A vertical dashed line is at 100.00 Hz. The graph displays several curves: a red line for the upper limit, a yellow line for the target, and a green line for the control signal. The control signal is a noisy line that follows the target curve. The upper limit curve is a piecewise linear function that decreases after 100 Hz.
	Y-axis random vibration curve
	 The photograph shows the vibration test Z-axis. It features a large, white, cylindrical shaker with the Chinese characters '苏试' (Sutai) on its side. A black, multi-armed shaker head is mounted on top of the shaker. The background shows a laboratory setting with windows and other equipment.
	Vibration test Z-axis
	 The graph shows the Z-axis random vibration curve. The y-axis is labeled (m/s²)/Hz and ranges from 0.0100 to 10.000 on a logarithmic scale. The x-axis is labeled Hz and ranges from 10.000 to 500.00 on a logarithmic scale. A vertical dashed line is at 100.00 Hz. The graph displays several curves: a red line for the upper limit, a yellow line for the target, and a green line for the control signal. The control signal is a noisy line that follows the target curve. The upper limit curve is a piecewise linear function that decreases after 100 Hz.
	Z-axis random vibration curve

Test Items	Technical specifications	Test result	
		1#	
impact test	Testing conditions: 1. Peak acceleration: 30g; 2. Pulse waveform: Half sine wave; 3. Pulse duration: 8 ms; 4. Direction: $\pm X$, $\pm Y$, $\pm Z$; 5. Time: 3 times/axis, total is 18times.	The X-axis is normal, with no components falling inside. After the Y-axis impact test, there were components falling inside. We will continue with the Z-axis test. No new problems occurred after the test.	/
Remark			
Tester:	Yu Zhang		

Test photo & curve	
	Vibration test x-axis
	
	+X axis impact curve
	
	-X axis impact curve

Test photo & curve	
	Vibration test Y-axis
	
	+Y axis impact curve
	
	-Y axis impact curve

Test photo & curve	
	After the Y-axis test (when the component fell off)
	
	Vibration test Z-axis
	
	+Z axis impact curve

	
	-Z axis impact curve
Test photo	
	After the experiment - sample

*****The end*****

Notes

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4. Altered report is invalid.
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