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# Test Report

Verified Code:234946

Report No.:H202201241776-01EN

Customer: Key Technology (China) Limited

Address: Floor 7, Building S8, Fenggang Tianan Cyber Park, No. 208 Fenggang Section, Dongshen Road, Fenggang Town, DongGuan City, Guang Dong Province, P.R. China. Zip Code: 523703

Sample Name: IEC60945 keyboard and mouse

Sample Model: K-TEK-M440-OTB-FN-BL-NV-EMC-DWP

Receive Sample Date: Mar.07,2022

Test Date: Mar.14,2022 ~Apr.13,2022

Reference Document: IEC60945: 2002

Test Result: Pass

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Issued Date: 2022/4/26

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**Sample description**

<b>Sample</b>	IEC60945 keyboard and mouse
<b>Model</b>	K-TEK-M440-OTB-FN-BL-NV-EMC-DWP
<b>Applicant</b>	Name: Key Technology (China) Limited Address: Floor 7, Building S8, Fenggang Tianan Cyber Park, No. 208 Fenggang Section, Dongshen Road, Fenggang Town, DongGuan City, Guang Dong Province, P.R. China. Zip Code: 523703
<b>Manufacturer</b>	Name: Key Technology (China) Limited Address: Floor 7, Building S8, Fenggang Tianan Cyber Park, No. 208 Fenggang Section, Dongshen Road, Fenggang Town, DongGuan City, Guang Dong Province, P.R. China. Zip Code: 523703
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**Summary of test results**

Serial number	Test Item	Test basis	Test parameters	Test conclusion	Page number
1	Dry heat	Section 8.2 of IEC60945: 2002	Storage: 70 °C, 16h Action: 55 °C, 16h	Pass	P5
2	Damp heat	Section 8.3 of IEC60945: 2002	40°C RH93%, 16h	Pass	P7
3	Low temperature	Section 8.4 of IEC60945: 2002	Storage: - 30 °C, 16h Action: - 20 °C, 16h	Pass	P9
4	Corrosion test (salt spray)	Section 8.12 of IEC60945: 2002	Salt spray 2h, 168h 40 °C RH93%	Pass	P12
5	Vibration	Section 8.7 of IEC60945: 2002	30Hz, 7m / S <sup>2</sup> , 3 axial, 2h per shaft	Pass	P15
6	Rain and spray(IPX6)	Section 8.8 of IEC60945: 2002	IPX6	Pass	P19

## 1 Dry heat

### 1.1 Test Condition

1.1.1 Test basis: Section 8.2 of IEC60945:2002;

1.1.2 High temperature storage: place the tested equipment in the environment of 70 °C for 16h, and the equipment is not powered on;

1.1.3 High temperature action: place the tested equipment at 55 °C for 16h, and conduct a performance inspection 16h and 55 °C.

### 1.2 Sample Information

Sample information is shown in Table 1-1.

**Table 1-1 Sample Information**

Sample name	Model	Quantity	Test No.
IEC60945 keyboard and mouse	K-TEK-M440-OTB-FN-BL-NV-EMC-DWP	1PC	H202201241776-01#

### 1.3 Test Requirements

1.3.1 Judgment basis: Section 8.2 of IEC60945:2002;

1.3.2 High temperature storage: it shall meet the performance inspection after the test;

1.3.3 High temperature action: it shall meet the performance inspection during and after the test.

### 1.4 Test Result

The test results are shown in Table 1-2.

**Table 1-2 Test results**

Test No.	Test results		Conclusion
	High temperature storage	High temperature action	
H202201241776-01#	After the test, the sample function is normal.	During and after the test, the function of the sample is qualified.	Pass

1.5 Test Photos



Fig.1-1 Before test



Fig.1-2 After test



Fig.1-3 High temperature storage erection



Fig.1-4 Temperature interface (high temperature storage)



Fig.1-5 High temperature action erection



Fig.1-6 High temperature action function inspection

## 2 Damp heat

### 2.1 Test Condition

2.1.1 Test basis: Section 8.3 of IEC60945:2002;

2.1.2 The tested equipment shall be placed in a room with normal temperature and relative humidity.

Within 3-hour cycle, the temperature shall be increased to 40 °C and the relative humidity shall be increased to 93%, and the cycle shall be maintained for 16h;

2.1.3 30min after the end of the test, the equipment under test should be turned on and kept in operation for at least 2 hours, during which the equipment under test shall be subject to a performance check.

### 2.2 Sample Information

Sample information is shown in Table 2-1.

**Table 2-1 Sample Information**

Sample name	Model	Quantity	Test No.
IEC60945 keyboard and mouse	K-TEK-M440-OTB-FN-BL-NV-EMC-DWP	1PC	H202201241776-01#

### 2.3 Test Requirements

2.3.1 Judgment basis: Section 8.3 of IEC60945:2002;

2.3.2 After the test, it shall meet the performance inspection.

### 2.4 Test Result

The test results are shown in Table 2-2.

**Table 2-2 Test results**

Test No.	Damp heat test results	Conclusion
H202201241776-01#	After the test, the function of the sample is normal.	Pass

### 2.5 Test Photos



Fig.2-1 Before test

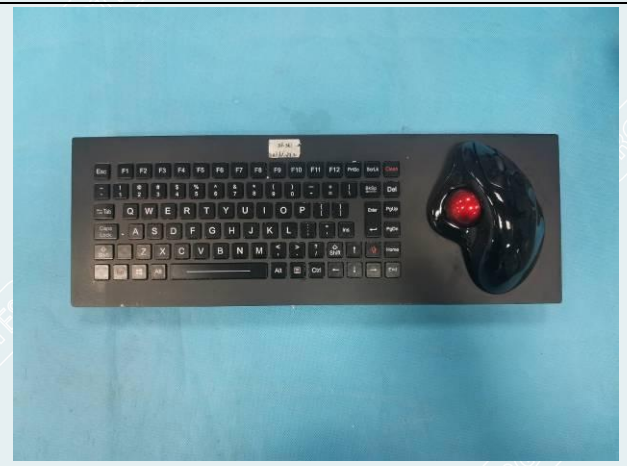


Fig.2-2 After test



Fig.2-3 Test erection

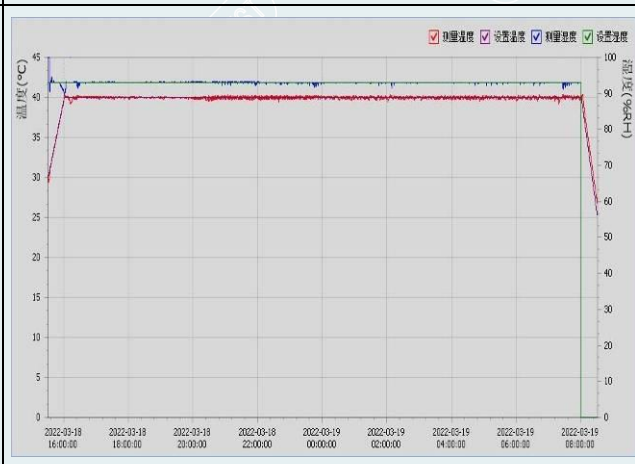


Fig.2-4 Test curve

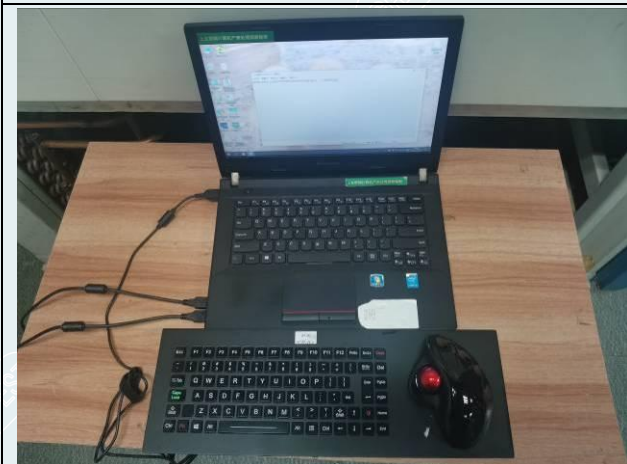
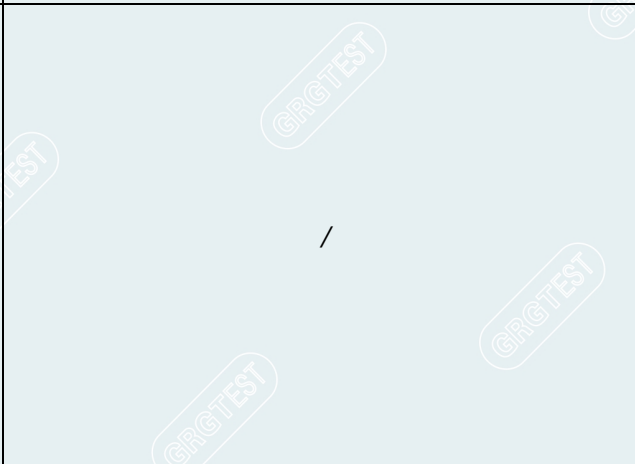


Fig.2-5 Functional check after test



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### 3 Low temperature

#### 3.1 Test Condition

3.1.1 Test basis: Section 8.4 of IEC60945:2002;

3.1.2 Low temperature storage: place the tested equipment in - 30 °C environment for 16h, and the equipment is not powered on;

3.1.3 Low temperature action: place the tested equipment at - 20 °C for 16h, the equipment under test shall be subject to one-time energy inspection in this environment.

#### 3.2 Sample Information

Sample information is shown in Table 3-1.

**Table 3-1 Sample Information**

Sample name	Model	Quantity	Test No.
IEC60945 keyboard and mouse	K-TEK-M440-OTB-FN-BL-NV-EMC-DWP	1PC	H202201241776-01#

#### 3.3 Test Requirements

3.3.1 Judgment basis: Section 8.4 of IEC60945:2002;

3.3.2 Low temperature storage: it shall meet the performance inspection after the test;

3.3.3 Low temperature action: it shall meet the performance inspection during and after the test.

#### 3.4 Test Result

The test results are shown in Table 3-2.

**Table 3-2 Test results**

Test No.	Test results		Conclusion
	Low temperature storage	Low temperature action	
H202201241776-01#	After the test, the sample function is normal.	During and after the test, the function of the sample is qualified.	Pass

3.5 Test Photos



Fig.3-1 Before test



Fig.3-2 After test



Fig.3-3 Low temperature storage erection



Fig.3-4 Temperature interface (low temperature storage)



Fig.3-5 Low temperature action erection



Fig.3-6 Low temperature action function inspection



Fig.3-7 Low temperature operation temperature interface

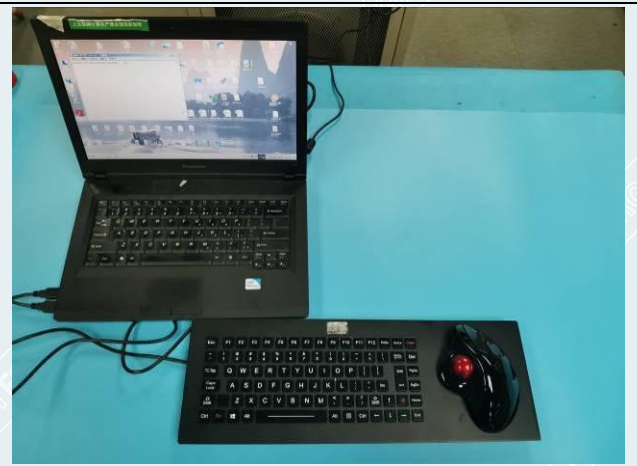


Fig.3-8 Functional check after test

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## 4 Corrosion test (salt spray)

### 4.1 Test Condition

4.1.1 Test basis: Section 8.12 of IEC60945:2002;

4.1.2 The tested equipment is placed in the salt spray box and sprayed for 2h. The configured concentration of NaCl salt solution is  $(5 \pm 1)\%$  and the salt spray deposition in the test box is  $(1.0 \sim 2.0) \text{ mL} / (80\text{cm})^2 \cdot \text{h}$ , the pH value of the salt solution is  $(6.5 \sim 7.2)$  under the temperature condition of  $(35 \pm 2) \text{ }^\circ\text{C}$ ;

4.1.3 After the salt spray test, the tested equipment shall be placed in the environment of  $40 \text{ }^\circ\text{C}$  and  $90\% \sim 95\%$  relative humidity for 7 days.

### 4.2 Sample Information

Sample information is shown in Table 4-1.

**Table 4-1 Sample Information**

Sample name	Model	Quantity	Test No.
IEC60945 keyboard and mouse	K-TEK-M440-OTB-FN-BL-NV-EMC-DWP	1PC	H202201241776-01#

### 4.3 Test Requirements

4.3.1 Judgment basis: Section 8.12 of IEC60945:2002;

4.3.2 After the test, it shall comply with the performance inspection, and the metal parts shall be free from improper damage or corrosion

### 4.4 Test Result

The test results are shown in Table 4-2.

**Table 4-2 Test results**

Test No.	Corrosion test (salt spray) results	Conclusion
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H202201241776-01#	After the test, the function of the sample is normal, and the metal parts are free from improper damage and corrosion.	Pass
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**4.5 Test Photos**



Fig.4-1 Before test



Fig.4-2 After test



Fig.4-3 Salt spray erection



Fig.4-4 Salt spray test in progress

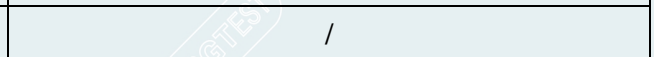
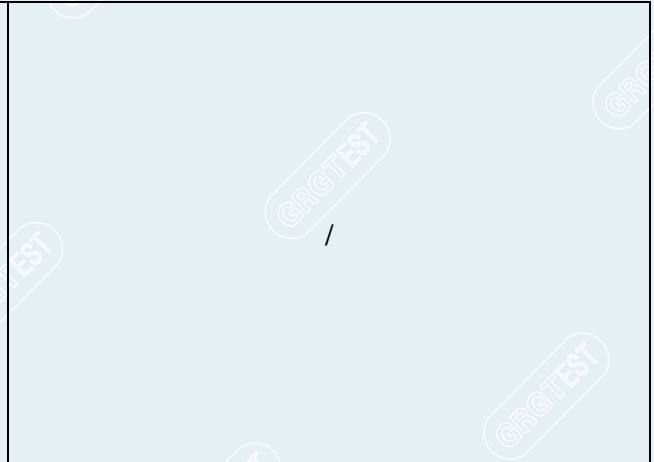


Fig.4-5 Temperature treatment erection

Fig.4-6 Temperature interface



Fig.4-7 Functional check after test



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## 5 Vibration

### 5.1 Test Condition

5.1.1 Test basis: Section 8.7 of IEC60945:2002;

5.1.2 Resonance point search:

2Hz to 5Hz ~ 13.2Hz, amplitude  $\pm 1$ mm, 13.2Hz ~ 100Hz, acceleration  $7m / S^2$ , frequency sweep rate 0.5oct/min;

5.1.3 Standing frequency test:

- a) Vibrate for 2h at the resonance moving point or 30Hz, and the vibration directions are three mutually perpendicular directions;
- b) During each vibration test, at least one performance inspection shall be carried out in three mutually perpendicular directions.

### 5.2 Sample Information

Sample information is shown in Table 5-1.

**Table 5-1 Sample Information**

Sample name	Model	Quantity	Test No.
IEC60945 keyboard and mouse	K-TEK-M440-OTB-FN-BL-NV-EMC-DWP	1PC	H202201241776-01#

### 5.3 Test Requirements

5.3.1 Judgment basis: Section 8.7 of IEC60945:2002;

5.3.2 The performance inspection shall be met during and after the test.

**5.4 Test Result**

The test results are shown in Table 5-2.

**Table 5-2 Test results**

Test No.	Test results		Conclusion
	Resonance point search	Standing frequency test	
H202201241776-01#	No resonance points were found in the three mutually perpendicular directions.	In the 30Hz vibration test, the function of the sample is qualified, and the function of the sample is normal after the test.	Pass

**5.5 Test Photos**



Fig.5-1 Before test



Fig.5-2 After test



Fig.5-3 Resonance point search (X)



Fig.5-4 Resonance point search curve (X)



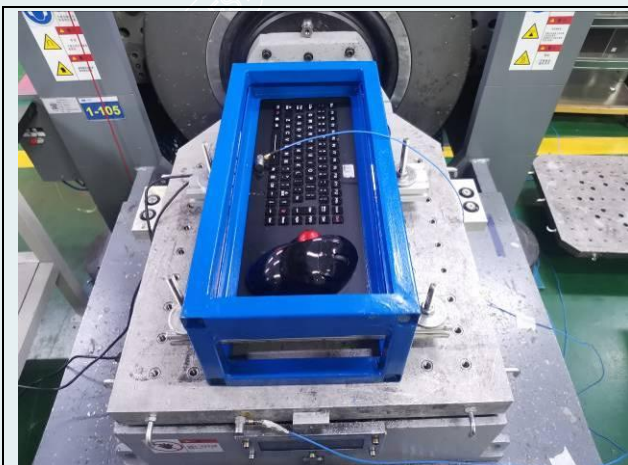


Fig.5-5 Resonance point search (Y)

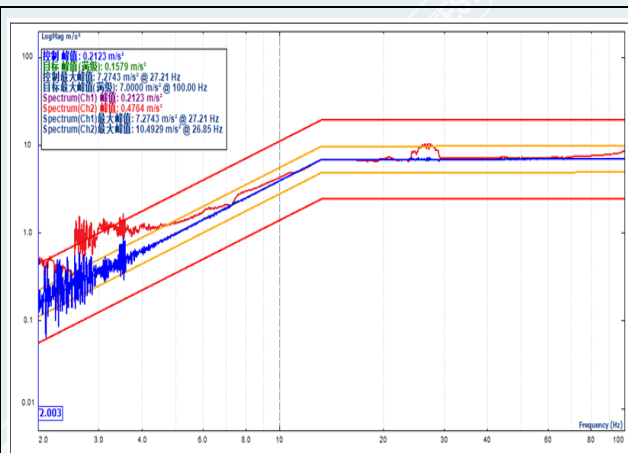


Fig.5-6 Resonance point search curve (Y)



Fig.5-7 Resonance point search (Z)

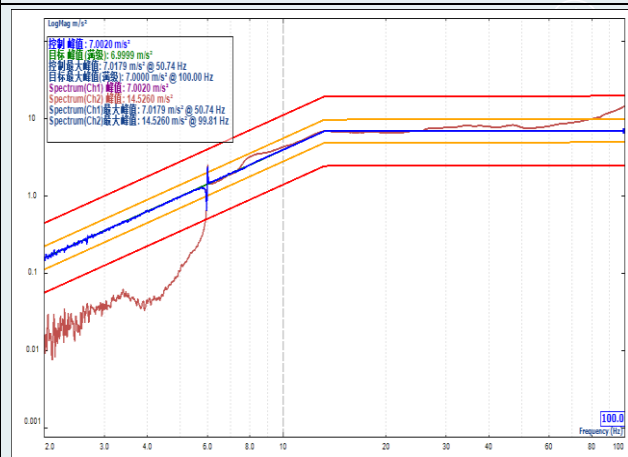


Fig.5-8 Resonance point search curve (Z)



Fig.5-9 Standing frequency test (X)

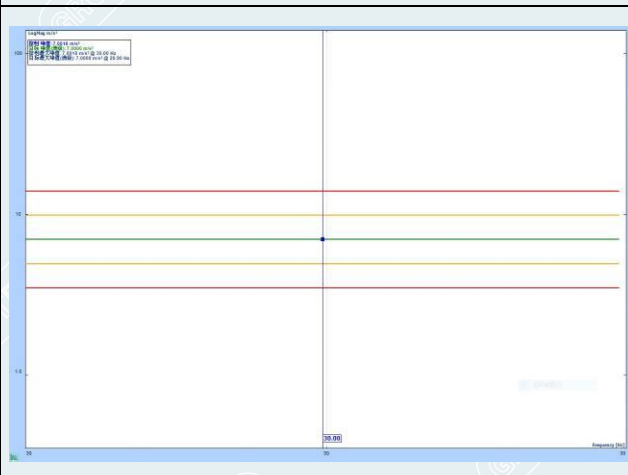


Fig.5-10 Standing frequency curve (X)



Fig.5-11 Standing frequency test (Y)

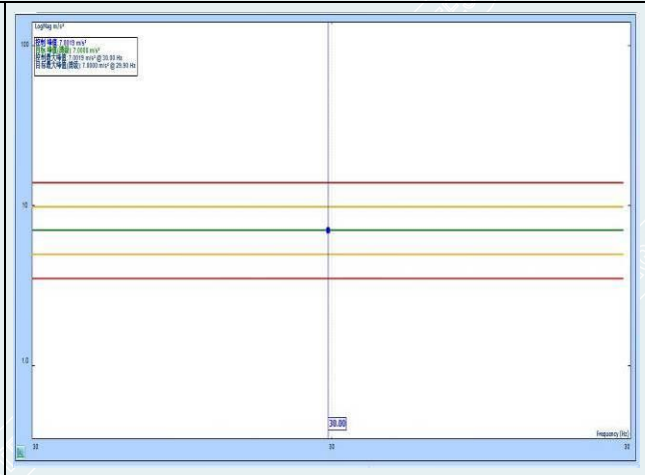


Fig.5-12 Standing frequency curve (Y)

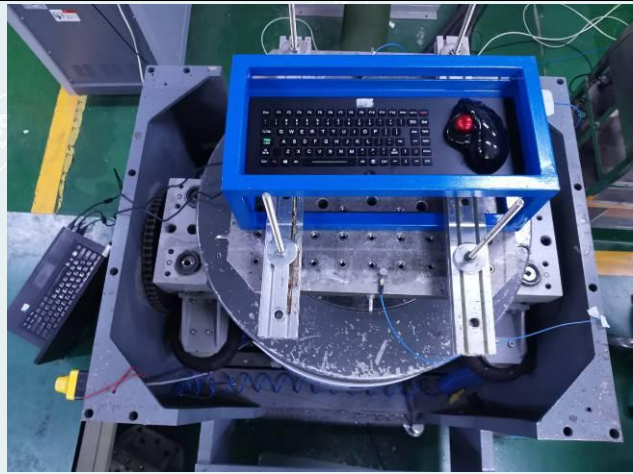


Fig.5-13 Standing frequency test (Z)

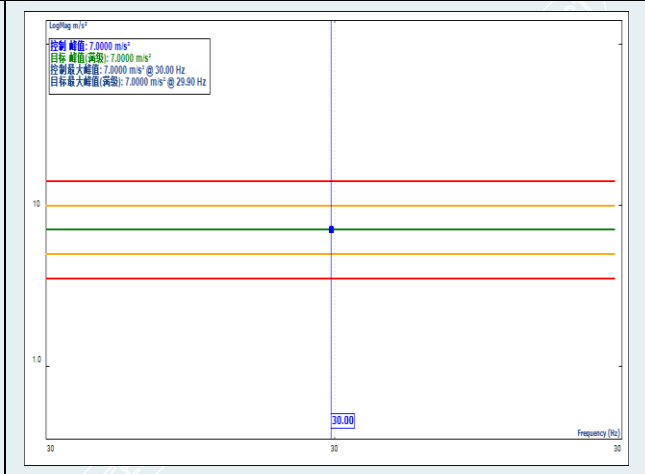
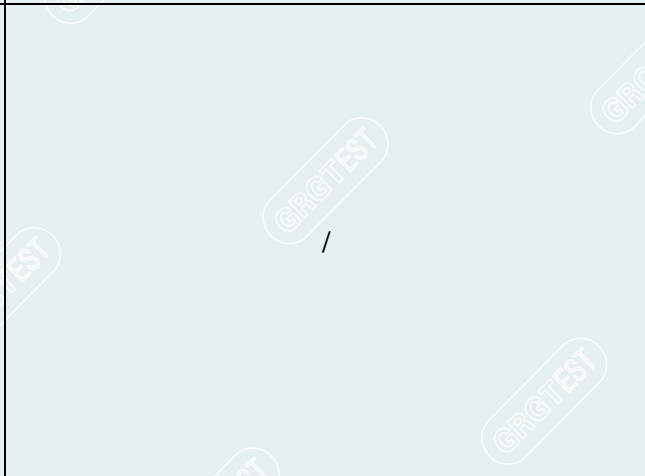


Fig.5-14 Standing frequency curve (Z)



Fig.5-15 Functional inspection after test



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## 6 Rain and spray(IPX6)

### 6.1 Test Condition

- 6.1.1 Test basis: Section 8.8 of IEC60945:2002;
- 6.1.2 Spray the tested equipment with the water flow from a standard test nozzle;
- 6.1.3 Test method:
- 1) Inner diameter of nozzle: 12.5mm;
  - 2) Water flow:  $(100 \pm 5)$  L / min;
  - 3) Water pressure: adjust to the specified transmission speed;
  - 4) The center of the main water flow: a circle with a diameter of about 120mm at a distance of 2.5m from the nozzle;
  - 5) Test duration: 30min;
  - 6) Distance from nozzle to equipment surface: About 3m.

### 6.2 Sample Information

Sample information is shown in Table 6-1.

**Table 6-1 Sample Information**

Sample name	Model	Quantity	Test No.
IEC60945 keyboard and mouse	K-TEK-M440-OTB-FN-BL-NV-EMC-DWP	1PC	H202201241776-01#

### 6.3 Test Requirements

- 6.3.1 Judgment basis: Section 8.8 of IEC60945:2002;
- 6.3.2 After the test, it shall meet the performance inspection.

### 6.4 Test Result

The test results are shown in Table 6-2.

**Table 6-2 Test results**

Test No.	Rain and spray(IPX6) test results	Conclusion
H202201241776-01#	After the test, the sample function is normal.	Pass

6.5 Test Photos



Fig.6-1 Before test



Fig.6-2 After test



Fig.6-3 Test erection



Fig.6-4 Functional inspection after test

## 7 Test Instrument & Equipment

List of Instrument for Testing Equipment					
No.	Testing Item	Instrument/Equipment	Type	Serial No.	Calibration Valid Date
1	Dry heat	High and low temperature damp heat test chamber	DSW1040S	201111179	2022-02-23~2023-02-22
2	Damp heat	0.4m <sup>3</sup> high and low temperature damp heat test chamber	CH600C	151190	2022-03-24~2023-03-23
3	Low temperature	High and low temperature damp heat test chamber	DSW1040S	201111179	2022-02-23~2023-02-22
4	Corrosion test (salt spray)	Salt spray corrosion test chamber	BY-952C	1409Z059	2022-03-21~2023-03-20
		0.4m <sup>3</sup> high and low temperature damp heat test chamber	CH600C	151190	2022-03-24~2023-03-23
5	Vibration	sensor	357B03	LW65245	2021-07-26~2022-07-25
		sensor	351B03	LW65246	2021-07-26~2022-07-25
		Electromagnetic vibration table	DH-4000-40	191409001	2021-08-08~2022-08-07
6	Rain and spray(IPX6)	Pendulum tube waterproof test equipment	RN8000-345 6	191195	2021-11-26~2022-11-25

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