



M1X U/H CE-BOX SPECIFICATION

M1X 前舱电器盒产品规范

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REVISION HISTORY 修订历史

Date	Description	Name	Rev.
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1. SCOPE 适用范围

1.1 Content 内容

This specification covers the performance, test and quality requirements for the M1X U/H CE-BOX (hereinafter referred to as UH Box).

This specification applies to the product 2361652-1, 2361652-2, 2361652-3 and 2373119-1, but not limited to it.

本规范适用于 M1X UH CE-Box (以下简称 U/H Box) 的性能, 测试和质量要求。

本规范适用但不仅限于以下零件号: 2361652-1, 2361652-2, 2361652-3, 2373119-1

2. APPLICABLE DOCUMENTS 适用文件

2.1 Usable document 使用文件

In the event of conflict between the requirements of this specification and the drawing, the drawing shall take precedent.

In the event of conflict between the requirement of this specification and the referenced documents, this specification shall take precedent.

在本规范的要求与图纸发生冲突时, 以产品图纸为准。在本规范的要求与参考文件发生冲突时, 以本规范为准。

2.2 TE specifications 泰科电子规范

109-1: General requirements for Test Specifications / 测试通用规范

2.3 Other specifications 其他规范

QC/T 707-2004	Technical specification of center box for motor vehicles 车用中央电器接线盒技术条件
GB/T 2423.17-2008	Environmental testing for electric and electronic products - Part 2: Test method - Test Ka: Salt mist 电工电子产品环境试验 第 2 部分: 试验方法 试验 Ka: 盐雾
IEC 60068-2-64-2008	Environmental testing Part 2: Test methods Test Fh: Vibration, broad-band random (digital control) and guidance 环境试验.第 2 部分:试验方法.试验 Fh:振动、宽带随机(数控)和指南

3. REQUIREMENT 要求

3.1 Design and Construction 设计和结构

Products must meet the design, construction and physical dimensions specified in the applicable product drawings.

产品必须满足产品图纸上的设计，结构和尺寸要求。

3.2 Material 材料

Description of the material sees the related product drawings.

材料描述见相关产品图纸。

3.3 Test parameters and tolerances 测试参数与公差

Table 1: Test parameters and tolerances

Requirement 要求	Tolerance 公差
Ambient temperature 环境温度	23°C ± 5°C
Relative humidity 相对湿度	45% to 75%
Atmospheric pressure 大气压力	96kPa ± 10kPa

3.4 Ratings 等级

A. Operating Temperature / 工作温度: -40~110°C

B. Storage Temperature / 储存温度: -40~115°C

C. Rated voltage / 额定工作电压: 12V

D. Application / 产品应用: Under-hood 发动机舱

3.5 General Performance and Test description 通用性能和试验描述

The product is designed to meet the electrical, mechanical and environmental performance requirements specified in Para.4. All testes must be performed at the test condition of the TE test specification 109-1 unless otherwise specified.

产品应能满足段落 4 中的电气，机械和环境等性能要求。所有试验均需按照 TE 规范 109-1 中的测试条件进行，除非另有说明。

3.6 Test sequence 试验顺序

Table 2: Test Sequence

Item 项目	Test No.	Test Group 组 别											
		A	B	C	D	E	F	G	H	I	J	K	L
Visual inspection / 外观检查	4.1.1	A4	B3	C2	D2	E5	F5	G5	H5	I5	J5	K5	L6
Fuse&Relay insertion and extraction force / 保险丝和继电器插拔出力	4.2.1	A1											
Insertion and extraction cycly / 插拔循环	4.2.2		B1			E1	F1	G1	H1	I1	J1	K1	L1
Torque test / 扭矩实验	4.2.3	A2											
Drop test / 耐跌落试验	4.2.4	A3											
Voltage drop / 电压降	4.3.1					E2, E4	F2, F4	G2, G4	H2, H4	I2, I4	J2, J4	K2, K4	L2, L5
Current load / 过电流强度试验	4.3.2		B2										
Withstanding voltage / 耐击穿电压强度试验	4.3.3			C1									L4
Insulation resistance / 绝缘阻抗	4.3.4				D1								
Temperature rise / 温升试验	4.4.1					E3							
Heat resistance / 耐高温试验	4.4.2						F3						
Cold resistance / 耐低温试验	4.4.3							G3					
Thermal shock / 温度交变试验	4.4.4								H3				
Temperature humidity cycling / 温湿度循环试验	4.4.5									I3			
Salt spray / 盐雾试验	4.4.6										J3		
Composite environmental vibration / 复合环境振动试验	4.4.7											K3	
Spray test / 喷淋试验	4.4.8												L3

4. TESTS 试验

4.1 Functional tests 功能测试

4.1.1 VISUAL INSPECTION 外观检查

PROCEDURE / 测试方法:

To check the sample without being open or cut. Component should not be removed
Shall be performed with naked eye or microscopic zoom if it's necessary.

在不拆卸样件的情况下检查，不能缺少零件。目测检查，如果必要需使用显微镜。

REQUIREMENTS / 要求:

Meets requirements of product drawing. No cracks, warping, damage or other defects.
After testing, the surface of test sample shall not exhibit obvious changes of color, the
internal circuit and housing shall not exhibit obvious ablation and melting phenomenon.
No abnormal sound when shaking the box assembly.

电器盒的外观、尺寸应符合产品图样的规定。不允许出现裂纹、翘曲、缺损等缺陷；表
面不应有明显的颜色改变，电器盒内部电路及壳体均不应出现明显烧蚀和熔融现象，用
手晃动模组不应有响声。

4.2 Mechanical tests 机械试验

4.2.1 FUSE & RELAY INSERTION AND EXTRACTION FORCE 保险丝和继电器插拔力

PROCEDURE / 测试方法:

- Insertion force / 插入力
Mount the box without fuses and relays in the fixture and fix it on the test machine, Insert fuse or relay at a uniform rate of (100 ± 10) mm/minute, record insertion force.
将不装有熔断器和继电器的电器盒放在能自动显示数值的专用试验台上进行测试, 插拔速度为 100 ± 10 mm/分钟, 记录插入力的数值。
- Extraction force / 拔出力
Extract fuse or relay at a uniform rate of (100 ± 10) mm/minute for ten times, record the tenth extraction force.
在能自动显示数值的专用试验台上进行, 插拔速度为 100 ± 10 mm/分钟, 进行10次插拔操作, 记录第10次拔出力的数值。

REQUIREMENTS / 要求:

- Insertion force and extraction force of fuse and relay shall meet the requirements specified in Table 3.
与电器盒相匹配熔断器和继电器的插入力及拔出力应符合表 3 的规定。

Table 3: Insertion and extraction of fuse and relay

Type 类型	Insertion Force (N) 插入力	Extraction Force (N) 拔出力
MIDI Fuse	≤ 49	$15.6 \leq F \leq 50$
JCASE Fuse	≤ 53	$9 \leq F \leq 50$
Spare Fuse	$4.9 \leq F \leq 49$	$9.8 \leq F \leq 29.4$
Relay	≤ 120	$50 \leq F \leq 130$

4.2.2 INSERTION AND EXTRACTION CYCLE 插拔循环

PROCEDURE / 测试方法:

- Mount the box without fuses and relays in the fixture and fix it on the test machine, Insert and extract fuses or relays at a uniform rate of (100 ± 10) mm/minute for 10 times.
将不装有熔断器和继电器的电器盒放在能自动显示数值的专用试验台上进行测试, 用 100 ± 10 mm/分钟的恒定速度对样品进行10次的熔断器或继电器的插拔实验。

REQUIREMENTS / 要求:

- Assemble the box again and get ready for the next test.
再次将样品装配好, 准备下一项试验。

4.2.3 TORQUE TEST 扭矩试验

PROCEDURE / 测试方法:

- Use torque spanner to tightening the nuts. Apply 5.5N.m for M5 bolt, 9N.m for M6 bolt and 13N.m for M8 bolt. Then unscrew the nut and check the appearance.
使用扭矩扳手紧固用于固定电器盒的标准件。使用的力矩为：M5 的螺栓使用 5.5N.m、M6 的螺栓使用 9N.m、M8 的螺栓使用 13N.m。取下标准件，对电器盒进行外观检查。

REQUIREMENTS / 要求:

- No cracks on the box.
电器盒不能出现开裂。

4.2.4 DROP TEST 跌落试验

PROCEDURE / 测试方法:

- The box assembly (including cover, housing and bracket) is subjected to a free fall of half meter onto a block of cement following along each of its 3 principal axes.
电器盒总成（包括上盖、本体、支架等所有零部件）从 0.5m 的高空，分别沿 X，Y，Z 三个方向跌落到水泥地面上。

REQUIREMENTS / 要求:

- No damage or cracks and function is normal.
没有损坏或裂纹且功能正常。

4.3 Electrical tests 电气测试

4.3.1 VOLTAGE DROP 电压降试验

PROCEDURE / 测试方法:

- Measure the voltage drop of every circuit. Detail measuring point See Figure 2.
测量每条回路的电压降，测量点见图 1.
- Apply 1A current for circuit.
对所测电路施加 1A 电流进行测试。
- Deduct the voltage drop of fuse and relay if the circuit contains fuse and relay.
如果装配了继电器和熔断器，则需要将其电压降数值从整条电路的电压降中扣除。

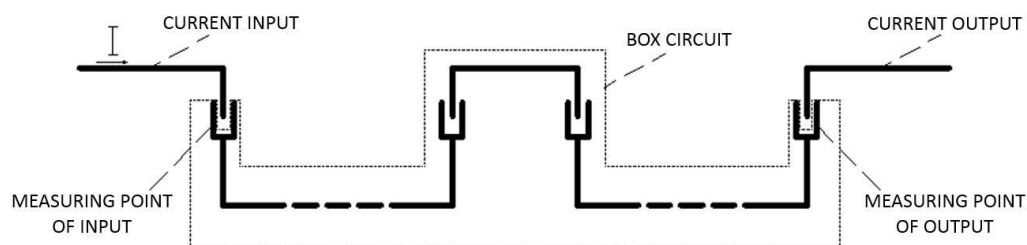


Figure 1. Measuring point of Voltage drop for box circuit

REQUIREMENTS / 要求:

- For PCB BOX, The Voltage drop of circuit shall not exceed 20mv/A before test.
PCB 式电器盒，整条回路试验前电压降不允许超过 20mv/A。
- Voltage drop of circuit shall not exceed 25mv/A after test.
试验后电压降不允许超过 25mv/A。

4.3.2 CURRENT OVERLOAD 过电流强度试验

PROCEDURE / 测试方法:

- Use shunt instead of fuse and relay for the assembled sample except MIDI fuse.
Apply overload current to all of the circuits.

除了 MIDI 保险以外，用桥接片来代替熔断器或继电器，所有回路均需测试。

- Apply the current load in Table 4 for all circuits.

根据表 4 中的电流加载对所有回路进行加载。

Table 4: Current load for overload

Fuse 保险丝	Current ratio 电流比	Time 加载时间
Mini Fuse	110%	1 h
	135%	30 min
SB Fuse	110%	1 h
	135%	30 min
MIDI Fuse (≤150A)	150%	1 h
	200%	5 min
MIDI Fuse 150A	Apply 150A for 10 minutes; then 140 for 10 minutes; then 130A for 10 minutes; and then 120A for 30 minutes	
	200%	Until fuse melt
MIDI Fuse 175A	150A	1 h
	200%	Until fuse melt
MIDI Fuse 200A	176A	1 h
	200%	Until fuse melt

REQUIREMENTS / 要求:

- No melting phenomenon for the sample after test.

试验后电器盒不应出现熔化的现象。

- Meet the requirement of visual inspection.

试验后满足外观的要求。

4.3.3 WITHSTANDING VOLTAGE 耐击穿电压试验

PROCEDURE / 测试方法:

- Apply 50Hz 1000V AC between the adjacent conductor and between conductor and housing.
在相邻的相互绝缘的导电零部件及导电零部件与外壳之间施加 50Hz 1000V 的交流电压。
 - 1) Apply less than 500V voltage at the beginning of the test.
试验开始时施加的电压应小于 500V;
 - 2) Raise voltage to full value at a uniform rate within 10 s.
在不小于 10s 的时间内稳步增加至全值;
 - 3) Hold the voltage for 1 min.
保持电压 1 分钟;
 - 4) Lower the voltage to zero at a uniform rate within 1 min.
在 1min 内均匀地下降至零。

REQUIREMENTS / 要求:

- No break down, spark, damage and other abnormal phenomena during the test.
试验过程中应无击穿、跳火和损伤等异常现象出现。

4.3.4 INSULATION RESISTANCE 绝缘阻抗

PROCEDURE / 测试方法:

- Measure the insulation resistance by applying 500V DC between each contacts and between each contacts and the housing for 1 minutes.
加载 500V 直流电 1 分钟,测量最近的连接片与外壳外表面之间的绝缘电阻。

REQUIREMENTS / 要求:

- Insulation resistance shall be greater than 100 MΩ.
绝缘阻抗不得小于 100 MΩ.

4.4 Environmental tests 环境试验

4.4.1 TEMPERATURE RISE 温升试验

PROCEDURE / 测试方法:

- Ambient temperature: 80°C (UH Box)
环境温度：80°C（前舱电器盒）
- Duty cycle: Apply 2 cycles / 1 hour for 1 cycle
工作周期：2 个周期/ 每个周期 1 小时
- Continue: 45 minutes ON and 15 minutes OFF
长时间工作负载：45 分钟开，15 分钟关。
- Intermit: 3 minutes ON and 3 minutes OFF
短时间工作负载：3 分钟开，3 分钟关。
- Measure the temperature of contact area (T) between box and external components (e.g.: fuses, relays and connectors) during the test.
测量电器盒与外部器件(熔断器，继电器，接插件)接触部的温度（T）
- $\Delta T = T - T_{\text{Ambient}}$
温升 = 电器盒与外部器件接触部温度 - 环境温度

REQUIREMENTS / 要求:

- The maximal temperature rise cannot exceed 55°C.
最大温升不能超过 55°C。

4.4.2 HEAT RESISTANCE 耐高温试验

PROCEDURE / 测试方法:

- Keep the component (Fuse and Relay) assembled sample in the 110°C chamber (under-hood) for 120 h.
将装配好熔断器和继电器的样品放置在温度为 110°C（发动机舱内）的试验箱中，保持 120 小时。
- Monitor the electrical continuity during the test.
在整个试验过程中监控瞬断。
- Lock and un-lock box cover for 20 times after the sample return to room temperature.
待恢复至室温后,拆卸和扣合上盖 20 次。
- Then measure the voltage drop.
测量样品的电压降。

REQUIREMENTS / 要求:

- The connection resistance shall not exceed 7Ω for a period of more than 1μs.
在整个试验过程中，电连续性（电阻大于 7Ω）的中断时间不超过 1μs。
- No lock break after test.
试验后不能出现锁止机构断裂等问题。
- Meet the voltage drop requirement.
试验后满足电压降的要求。
- Meet the requirement of visual inspection.
试验后满足外观要求。

4.4.3 COLD RESISTANCE 耐低温试验

PROCEDURE / 测试方法:

- Keep the component (Fuse and Relay) assembled sample in the -40°C chamber for 72 Hours.
将装配好熔断器和继电器的样品放置在温度为-40°C 的试验箱中，保持 72 小时。
- Monitor the electrical continuity during the test.
在整个试验过程中监控瞬断。
- Lock and un-lock box cover for 20 times after the sample return to room temperature.
待恢复至室温后,拆卸和扣合上盖 20 次。
- Measure the voltage drop after the sample return to the room temperature.
待恢复至室温后，测量样品的电压降。

REQUIREMENTS / 要求:

- The connection resistance shall not exceed 7Ω for a period of more than 1μs.
在整个试验过程中，电连续性（电阻大于 7Ω）的中断时间不超过 1μs。
- No lock break after test.
试验后不能出现锁止机构断裂等问题。
- Meet the voltage drop requirement.
试验后满足电压降的要求。
- Meet the requirement of visual inspection.
试验后满足外观要求。

4.4.4 THERMAL SHOCK 温度交变试验

PROCEDURE / 测试方法:

- Keep fully assembled sample in temperature controlled chamber for 50 cycles.
将组装好的样品在可调温试验箱中进行 50 个周期的循环试验。
- Monitor the electrical continuity during the test.
在整个试验过程中监控瞬断。
- Test cycle / 试验周期:
 - 1) Hold the chamber temperature at -40°C for 1 h.
保持试验箱温度-40°C 1 小时；
 - 2) Raise temperature to 110°C (under-hood) at a rate of 10°C/minute.
以 10°C/分钟的速率将温度升高至 110°C（发动机舱内）；
 - 3) Hold the chamber temperature at 110°C for 1 h.
将试验箱温度在 110°C 保持 1 小时；
 - 4) Lower temperature to -40°C at a rate of 10°C/minute.
以 10°C/分钟的速率将温度降至-40°C。
- Measure the voltage drop after the sample return to the room temperature.
待恢复至室温后，测量样品的电压降。

REQUIREMENTS / 要求:

- The connection resistance shall not exceed 7Ω for a period of more than 1μs.
在整个试验过程中，电连续性（电阻大于 7Ω）的中断时间不超过 1μs。
- Meet the requirement of voltage drop.
试验后满足电压降的要求。
- Meet the requirement of visual inspection.
试验后满足外观要求。

4.4.5 TEMPERATURE HUMIDITY CYCLING 温湿度循环试验

PROCEDURE / 测试方法:

- Keep the component (Fuse and Relay) assembled sample in chamber for 10 cycles.
将装配好熔断器、继电器等元件的电器盒，按下列顺序进行 10 个周期试验。
- Test cycle / 试验周期:
 - a) Hold the chamber temperature at $t_c = (23 \pm 5)^\circ\text{C}$ and 45% to 75% RH (relative humidity) for 4 h.
将试验箱温度 $(23 \pm 5)^\circ\text{C}$ ，相对湿度 45%~75%保持 4 小时；
 - b) Raise t_c to $(55 \pm 2)^\circ\text{C}$ at 95% to 99% RH within 0,5 h.
在 0.5 小时内将温度上升到 $(55 \pm 2)^\circ\text{C}$ ，相对湿度提高到 95%~99%；
 - c) Hold t_c at $(55 \pm 2)^\circ\text{C}$ at 95% to 99% RH for 10 h.
将试验箱温度 $(55 \pm 2)^\circ\text{C}$ ，湿度 95%~99% 保持 1 小时；
 - d) Lower t_c to -40°C within 2,5 h.
在 0.5 小时内将试验箱温度降到 -40°C ；
 - e) Hold t_c at -40°C for 2 h.
将试验箱温度在 -40°C 保持 2 小时；
 - f) Raise t_c to the applicable test temperature in Para.4.4 $\pm 2^\circ\text{C}$ from -40°C within 1,5 h.
在 1.5 小时内将试验箱温度上升至适合的测试温度；
 - g) Hold t_c at the applicable test temperature in Para.4.4 $\pm 2^\circ\text{C}$ for 2 h.
将测试箱温度在测试温度保持 2 小时；
 - h) Lower t_c to room temperature $(23 \pm 5)^\circ\text{C}$ within 1,5 h.
在 1.5 小时内将试验箱温度恢复至室温。
- Monitor the electrical continuity during the test.
在整个测试过程中检测瞬断。

NOTE / 注:

1. During the periods specified in d), e), f), g) and h), the relative humidity is uncontrolled.
在 d), e), f), g), h)过程中，不控制相对湿度。
2. If the chamber needs more than 1,5 h to reach class test temperature, the duration of period f) may be extended and period a) reduced accordingly.
如果试验箱达到分级试验温度的时间大于1.5小时，可延长f)项的时间，相应缩短a)项时间。
3. Test cycle according to Figure 2.
根据图2进行循环试验。
4. Applicable test temperature: upper limit of storage temperature in Para.3.4
适合的测试温度：段落3.4中储存温度的上限。

REQUIREMENTS / 要求:

- The connection resistance shall not exceed 7Ω for a period of more than $1\mu\text{s}$.
在整个试验过程中，电连续性（电阻大于 7Ω ）的中断时间不超过 $1\mu\text{s}$ 。
- Meet the requirement of voltage drop.
试验前后满足电压降的要求。
- Meet the requirement of insulation resistance.
试验后满足绝缘电阻要求。
- Meet the requirement of visual inspection.
试验后满足外观要求。

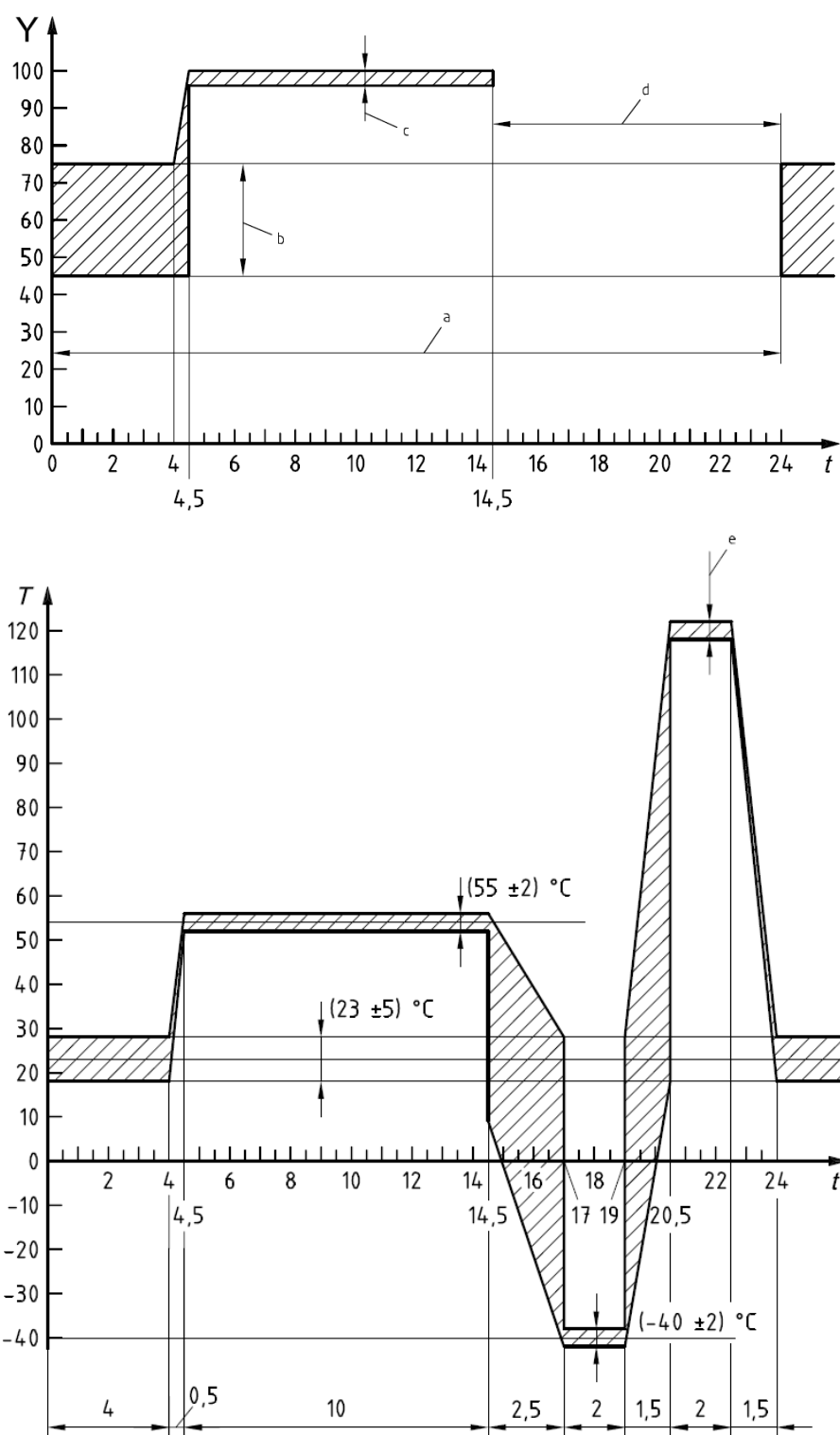


Figure 2 Temperature Humidity Cycling / 温湿度循环

NOTE: Hatched areas indicate allowed temperature/humidity tolerance.
阴影部分表示允许的温度/湿度公差。

Key

a	one cycle	一次循环	e	Storage temperature (see Para.4.4).	储存温度见 3.4
b	Humidity (45 to 47)%	湿度(45 to 47)%	t	time in hours	时间/小时
c	Humidity (95 to 99)%	湿度(95 to 97)%	T	temperature in °C	温度/°C
d	uncontrolled humidity	不控制湿度	Y	relative humidity in test room	试验箱的相对湿度

4.4.6 SALT SPRAY 盐雾试验

PROCEDURE / 测试方法:

- Carry out the salt spray test according to test method Ka in GB/T 2413.17.
按照 GB/T 2413.17 试验 Ka 盐雾试验方法的规定进行试验。
- The duration of the test shall be 144 h (under-hood).
试验持续时间为 144 小时（发动机舱）。

REQUIREMENTS / 要求:

- Components on test sample such as terminals, fuses, relay, PCB, ect., (except bolt for connection) shall not exhibit obvious corrosion phenomenon after test.
试验后电器盒上端子，保险丝，继电器及电路板等（连接用螺栓除外）不应出现明显锈蚀现象。
- Meet the requirement of voltage drop.
试验前后满足电压降的要求。

4.4.7 COMPOSITE ENVIRONMENTAL T VIBRATION 复合环境振动试验

PROCEDURE / 测试方法:

- Prepare two components (Fuses and Relays) assembled samples for the test.
为试验准备 2 个装配好熔断器和保险丝的样件。
- Random select a sample to do the test.
随机选取一个样件来做测试。
 - a) Humidity / 湿度:
Above 0°C, 90% to 95% RH; Below 0°C, no humidity control.
0°C 以上，湿度为 90% to 95%; 0°C 以下，不控制湿度。
 - b) Vibration / 振动:
 - ☐ Perform the test in accordance with IEC 60068-2-64 random vibration.
按照 IEC 60068-2-64 中的随机振动进行试验。
 - ☐ Test duration: 8 h for each axis (X, Y, Z).
测试时间：每个方向（X, Y, Z）各 8 小时。
 - ☐ Acceleration value: 19,7 m/s² (under-hood).
加速度：19,7 m/s²（发动机舱内）
 - ☐ The power spectral density (PSD) versus frequency is illustrated in Figure 3 and Table 5.
功率谱密度与频率可见图 3 与表 5。
 - c) Temperature cycle / 温度循环:
 - 1) Hold the chamber temperature at 80°C (under-hood) for 16 h.
将试验箱温度在 80°C（发动机舱内）保持 16 小时；
 - 2) Lower temperature to -40°C at a uniform rate within 2 h.
将温度在 2 小时内均匀降到-40°C；

- 3) Hold the chamber temperature at -40°C for 4 h.
将试验箱温度在-40°C 保持 4 小时；
 - 4) Raise temperature to 80°C (under-hood) within 2 h.
将温度在 2 小时内升高至 80°C（发动机舱内）。
- d) Monitor the electrical continuity during the test.
在整个测试过程中监控瞬断。
- Keep a new sample in chamber for 13 cycles.
将一个新的样件放置在试验箱中进行 13 个周期的试验。
First test cycle / 第一个周期:
 - a) Humidity / 湿度:
Above 0°C, 90% to 95% RH; Below 0°C, no humidity control.
0°C 以上, 湿度为 90% to 95%; 0°C 以下, 不控制湿度。
 - b) Vibration / 振动:
Perform the test in accordance with IEC 60068-2-64 random vibration.
按照 IEC 60068-2-64 中的随机振动进行试验。
 - ☐ Test duration: 8 h for each axis (X, Y, Z).
测试时间: 每个方向 (X, Y, Z) 各 8 小时。
 - ☐ Acceleration value: 19,7 m/s² (under-hood).
加速度: 19,7 m/s² (发动机舱内)
 - ☐ The power spectral density (PSD) versus frequency is illustrated in Figure 3 and Table 5.
功率谱密度与频率可见图 3 与表 5。
 - c) Temperature cycle / 温度循环:
 - 1) Hold the chamber temperature at 80°C (under-hood) for 16 h.
将试验箱温度在 80°C (发动机舱内) 保持 16 小时；
 - 2) Lower temperature to -40°C at a uniform rate within 2 h.
将温度在 2 小时内均匀降到-40°C；
 - 3) Hold the chamber temperature at -40°C for 4 h.
将试验箱温度在-40°C 保持 4 小时；
 - 4) Raise temperature to 80°C (under-hood) within 2 h.
将温度在 2 小时内升高至 80°C (发动机舱内)。
 - d) Apply the actual current load according to 5.4.1
根据 5.4.1 加载实际工作电流。

Second to thirteenth cycles / 第二至十三周期:
Repeat item a),c),d) of the first cycle for next twelve cycle.
其余的 12 个周期重复第一个周期的 a),c),d)。

REQUIREMENTS / 要求:

- The connection resistance shall not exceed 7Ω for a period of more than $1\mu\text{s}$.
在整个试验过程中，电连续性（电阻大于 7Ω ）的中断时间不超过 $1\mu\text{s}$ 。
- Meet the requirement of voltage drop.
试验后满足电压降的要求。
- Meet the requirement of visual inspection.
试验后满足外观要求。

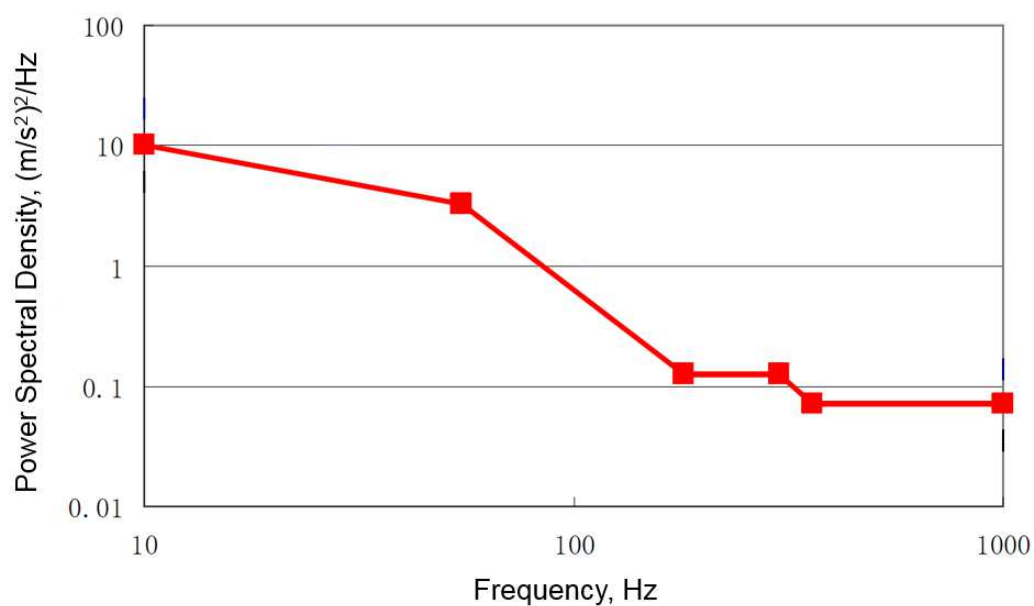


Figure 3. PSD of acceleration versus frequency / 功率谱密度曲线

Table 5: Values for PSD and frequency

Frequency 频率 Hz	PSD 功率谱密度 (m/s ²) ² /Hz
10	10
55	3,25
180	0,125
300	0,125
360	0,07
1000	0,07

4.4.8 Spray test 喷淋试验

PROCEDURE / 测试方法:

- The test method is based on DIN-40050-9. The test condition, test equipment, water flow rate, water pressure, water temperature, test duration time and other verification condition are carried out according to table 8 in the standard..

试验方法参照DIN 40050-9,根据电器盒不同的防水等级的定义进行验证, 试验条件、试验设备、水流速率、水压、水温、试验持续时间等验证条件参照标准中的表8进行。

- Measure the voltage drop and Withstanding voltage after the sample return to the room temperature.

待恢复至室温后, 测量样品的电压降及进行耐击穿试验。

REQUIREMENTS / 要求:

- After test, there is no water in terminals, connectors, fuses, relays area.
试验后端子、插接器、熔断器、继电器等区域无积水。
- Meet the requirement of voltage drop.
试验后满足电压降的要求。
- Meet the requirement of Withstanding voltage
- 试验后满足耐击穿的要求。

5. QUALITY 质量

5.1 Qualification test 鉴定

Samples must be in accordance with drawings and be taken in a random way in the production in progress.

样件必须与产品图纸一致，并且是生产过程中随机选取的。

5.2 Requalification test 重新鉴定

If changes significantly affecting form, fit, or function are made to the product or to the manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by product engineering.

如果产品或者制造过程中有显著影响外观，装配和功能的设变，质保需要协调按照原先工程部定义的测试顺序，重新验证全部或者部分测试项目。

5.3 Acceptance 验收

Acceptance is based on verification that the product meets the requirements of section 4. Failures attributed to equipment, test setup, or operator deficiencies shall not disqualify the product. When product failure occurs, corrective action shall be taken and samples resubmitted for qualification. Testing to confirm corrective action is required before resubmitted.

归咎于测试设备，样件安装或者操作员的失误的失效不应判定产品不合格。当产品失效发生时，需要有纠正措施以及重新提交样件进行验证。在重新验证前，需确认已有纠正措施。

5.4 Quality conformance inspection 质量合格检验

The applicable TE Connectivity quality inspection plan will specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification

TE Connectivity 的质量检验计划将指定适用的质量标准。尺寸和功能要求，应按照适用的产品图纸和本规范。