

Sealing Protection Testing

Preface

MAXMAC evaluates ion-module sealing protection through a controlled IP50 dust-exposure program. Six modules are placed in a dust chamber with their wiring harnesses connected and power off, followed by internal inspection and functional checks.

The program alternates 6 seconds of dust circulation with a 15-minute pause over 20 cycles. The report records a small amount of dust inside the samples, Class A function after exposure and an overall Pass judgment. Original setup, inspection and functional photographs accompany the method.

Recorded Test Conditions

Parameter	Recorded condition
Test designation	IP50 dustproof sealing test
Test basis	Q/MAT 5502-2023, 9.13; ISO 20653 referenced in the execution sheet
Samples	6 modules; 31#-36#
Operating mode	1.2; harness connected, power off
Orientation	Reference vehicle installation direction
Dust circulation	6 s per cycle
Pause	15 min per cycle
Repetition	20 cycles

Recorded Outcome

The source result states: **Class A requirements met; a small amount of dust was present inside the samples.** The final test conclusion is **Pass**.

Dates: 23-24 July 2025.

Laboratory ambient: 21-25 °C; 45-50% RH.

Original Dust-Chamber Arrangement



Figure 1 Original six-module chamber arrangement, source p. 94.

Test Sequence

1. Identify the six modules and record their exterior condition.
2. Arrange the modules in the chamber with harnesses connected and power off.
3. Run 20 dust-circulation / pause cycles.
4. Open and inspect the samples, then complete the functional checks and record the result.

Testing: Zhejiang Kezheng Electronic Information Product Inspection Co., Ltd.

Source: Leg4 pp. 93-101; conditions p. 94; procedure p. 96; observations p. 97; conclusion p. 101.

Dust-Circulation Program and Test Equipment

One Cycle, Repeated 20 Times



Figure 2 Timing sequence redrawn from the recorded procedure. Repeat the pair 20 times.

Duration Calculations

Dust circulation:

$$20 \times 6 \text{ s} = 120 \text{ s} = 2 \text{ min.}$$

Pause time:

$$20 \times 15 \text{ min} = 300 \text{ min.}$$

Sum of the prescribed intervals:

$$2 \text{ min} + 300 \text{ min} = 302 \text{ min} \\ = 5 \text{ h } 2 \text{ min.}$$

Original Chamber Schematic

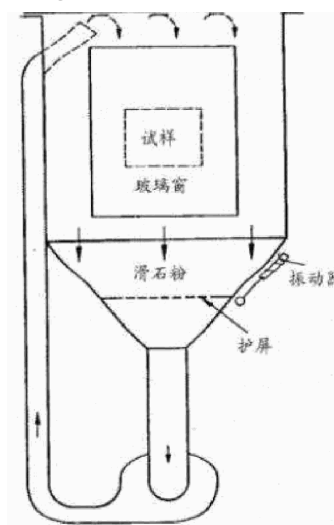


Figure 3 Original dust-circulation schematic from the procedure, source p. 96.

Recorded Controller Photographs



Figure 4 Original equipment-screen photographs retained with the test record, source p. 97.

Dust-Chamber Arrangement

The original schematic shows the specimen inside a glass chamber, talc powder, a protective screen, a vibrator and the dust-recirculation path. The chamber photograph records the physical arrangement of the six modules.

Equipment in the Final Record

Equipment	Model
Dust test chamber	SC-500
Meter	TH1941
Meter	VC890C
DC regulated supply	SS-3020KDS

Table 1 Equipment transcribed from the test conclusion, source p. 101.

Post-Exposure Verification

The source combines **internal dust inspection** with **functional verification**. Opened-module photographs document the sample interiors, while the subsequent bench photographs record airflow, ion output, module monitoring and electrical measurement.

The result records Class A function alongside the observation of a small amount of internal dust.

Internal Inspection and Functional Results

All Six Samples: Opened Inspection

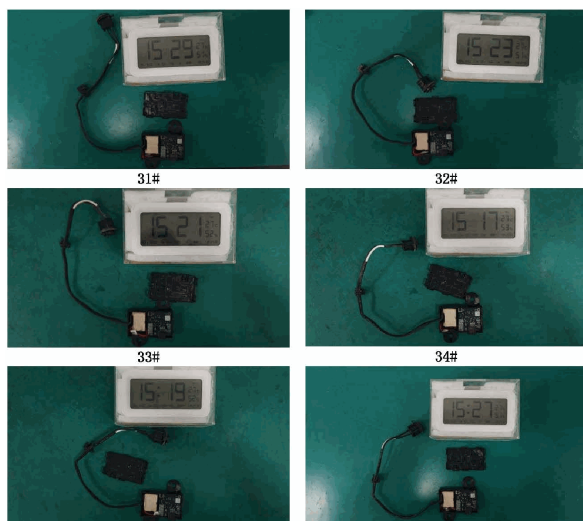


Figure 5 Original opened-module photographs for 31#-36#: top row 31# / 32#, middle row 33# / 34#, bottom row 35# / 36#. Source p. 97.

What Was Observed

The report records **a small amount of dust inside the samples**. The modules met **Class A** requirements, and the test group received **Pass**.

Check	Recorded result
Internal inspection	Small amount of dust inside the samples
Functional status	Meets Class A
Sample group	31#-36#; six modules
Final judgment	Pass

Table 2 Observations and result from source pp. 97 and 101.

Sample 31#: Final Functional Check



Figure 6 Original post-exposure bench photographs: airflow and ion-output measurement above; module monitoring and electrical checks below. Source p. 98.

Six-Sample Functional Record Index

Sample	Original final record
31#	p. 98
32#	p. 98
33#	p. 99
34#	p. 99
35#	p. 100
36#	p. 100

Table 3 Source-page locations of the six individual final functional checks.

Original report:

Kunlun-DVC_R-30.01-P000025455001-004-V1.0.

Execution report: K0025050101548-C1-4.

Section: dustproof sealing test (IP50), pp. 93-101.

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