



Technical Report No. 68.182.16.086.01

Dated 2016-04-18

Client: Maestro Wireless Holdings Limited
Flat A&B, 9/F, Wing Cheong Factory Building, 121 King Lam Street,
Cheung Sha Wan, Hong kong

Contact person.....: Sam Law

Manufacturing place: Maestro Wireless Holdings Limited
Flat A&B, 9/F, Wing Cheong Factory Building, 121 King Lam Street,
Cheung Sha Wan, Hong kong

Test Subject: GPS

Model / Type reference.....: MT-40 series (MT-41, MT44, MT45)

Test Specification.....: EN 60529:1991+A1:2000+A2:2013

Purpose of examination.....: Test according to the above test specification.

Test result: The test results show that the presented product is in compliance with
the specified requirement.

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1 Description of the test subject

1.1 Function

GPS

1.2 Consideration of the foreseeable misuse

- Not applicable
- Covered through the applied standard
- Covered by the following comment
- Covered by attached risk analysis

1.3 Technical Data

- Degree of protection IP68

2 Order

2.1 Date of Purchase Order, Customer's Reference

2016-04-05

2.2 Receipt of Test Sample, Location

Samples were received on 2016-04-05, E&E Department, Shenzhen

2.3 Date of Testing

From 2016-04-05 to 2016-04-18

2.4 Location of Testing

E&E Department, Shenzhen



3 Test results

3.1 IP6X test procedure and requirement

13.1 Test means

Test means and the main test conditions are given in table 7.

Table 7 – Test means for the tests for protection against solid foreign objects

6	Dust chamber figure 2, with under-pressure	–	13.4 + 13.6
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13.4 Dust test for first characteristic numerals 5 and 6

The test is made using a dust chamber incorporating the basic principles shown in figure 2 whereby the powder circulation pump may be replaced by other means suitable to maintain the talcum powder in suspension in a closed test chamber. The talcum powder used shall be able to pass through a square-meshed sieve the nominal wire diameter of which is 50 µm and the nominal width of a gap between wires 75 µm. The amount of talcum powder to be used is 2 kg per cubic metre of the test chamber volume. It shall not have been used for more than 20 tests.

Category 1: Enclosures where the normal working cycle of the equipment causes reductions in air pressure within the enclosure below that of the surrounding air, for example, due to thermal cycling effects.

The object of the test is to draw into the enclosure, by means of depression, a volume of air 80 times the volume of the sample enclosure tested without exceeding the extraction rate of 60 volumes per hour. In no event shall the depression exceed 2 kPa (20 mbar) on the manometer shown in figure 2.

If an extraction rate of 40 to 60 volumes per hour is obtained the duration of the test is 2 h. If, with a maximum depression of 2 kPa (20 mbar), the extraction rate is less than 40 volumes per hour, the test is continued until 80 volumes have been drawn through, or a period of 8 h has elapsed.

13.6 Special conditions for first characteristic numeral 6

13.6.1 Test conditions for first characteristic numeral 6

The enclosure shall be deemed category 1, whether reductions in pressure below the atmospheric pressure are present or not.

3.2 Test result:

Observation after disassembly.

No deposit of dust is observed inside the enclosure after the test.



3.3 IPX8 test procedure and requirement

14.2 Test conditions

14.2.8 Test for second characteristic numeral 8: continuous immersion subject to agreement

Unless there is a relevant product standard, the test conditions are subject to agreement between manufacturer and user, but they shall be more severe than those prescribed in 14.2.7 and they shall take account of the condition that the enclosure will be continuously immersed in actual use.

Specified conditions by the manufacturer: the duration of the test is 1 hour, depth of 1.2m

14.3 Acceptance conditions

After testing in accordance with the appropriate requirements of the enclosure shall be inspected for ingress of water.

It is the responsibility of the relevant technical committee to specify the amount of water which may be allowed to enter the enclosure and the details of a dielectric strength test, if any.

In general, if any water has entered, it shall not:

- be sufficient to interfere with the correct operation of the equipment or impair safety;
- deposit on insulation parts where it could lead to tracking along the creepage distances;
- reach live parts or windings not designed to operate when wet;
- accumulate near the cable end or enter the cable if any.

If the enclosure is provided with drain-holes, it should be proved by inspection that any water which enters does not accumulate and that it drains away without doing any harm to the equipment.

For enclosures without drain-holes, the relevant product standard shall specify the acceptance conditions if water can accumulate to reach live parts.

3.4 Test result:

Observation after disassembly.

After test, water was not found from internal enclosure. It complies with IPX8 test.

4 Remark

4.1 Photo was attached in APPENDIX 1 – Product photo

All models are the similar except that model No.



Product Service

5 Documentation

N/A

6 Summary

The test specifications are met.

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch
TÜV SÜD Group

Engineer: _____
Darren Ding
Project Handler

Technical Report checked: _____
Ice Feng
Designated Reviewer

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APPENDIX 1 – Product photo



Overview



Overview

-END OF REPORT-