Microtest
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Test Report

Report No.: MTi220728020-01E1

Date of issue: 2022-08-17

Applicant: Wireless-Tag Technology Co., Ltd.

Product: BLE Module

Model(s): WT05511A-S6

Shenzhen Microtest Co., Ltd.

http://www.mtitest.com

Address: 101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Tel: (86-755)88850135 Fax: (86-755) 88850136 Web: www.mtitest.com E-mail: mti@51mti.com

Instructions

1. This test report shall not be partially reproduced without the written consent of the laboratory.

2. The test results in this test report are only responsible for the samples submitted

3. This test report is invalid without the seal and signature of the laboratory.

4. This test report is invalid if transferred, altered, or tampered with in any form without authorization.

5. Any objection to this test report shall be submitted to the laboratory within 15 days from the date of receipt of the report.

Contents

Test Result Certification	
Applicant:	**Wireless-Tag Technology Co., Ltd.**
Address:	801, Block A, Building 6, Shenzhen International Innovation Valley, Dashi Road, Xili Community, Xili Street, Nanshan District, Shenzhen
Manufacturer:	**Wireless-Tag Technology Co., Ltd.**
Address:	801, Block A, Building 6, Shenzhen International Innovation Valley, Dashi Road, Xili Community, Xili Street, Nanshan District, Shenzhen
Product description	
Product name:	BLE Module
Trademark:	Wireless-tag
Model name:	WT05511A-S6
Serial Model:	N/A
Standards:	EN 61000-4-2:2009
Date of Test	
Date of test:	2022-08-11 ~ 2022-08-17
Test result:	Pass

Test Engineer : Maleah Deng

(Maleah Deng)

Reviewed By: Leon Chen

(Leon Chen)

Approved By: Tom Xue

(Tom Xue)

1 General Description

1.1 Description of the EUT

Product name:	BLE Module
Model name:	WT05511A-S6
Series Model:	N/A
Model difference:	N/A
Electrical rating:	Input: DC 3.3V
Accessories:	N/A

1.2 Description of test modes

All the test modes were carried out with the EUT in normal operation, the final test mode of the EUT was the worst test mode for emission test, which was shown in this report and defined as:

No.	Immunity test modes
Mode 1	Normal Working

1.3 Description of support units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Support equipment list			
Description	Model	Serial No.	Manufacturer
Laptop	E485	/	Lenovo
Support cable list			
Description	Length (m)	From	To
/	/	/	/

1.4 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15ºC~35ºC
Humidity:	20 % RH ~ 75 % RH (30 % RH ~ 60 % RH for ESD test)
Atmospheric pressure:	98 kPa~101 kPa

1.5 Measurement uncertainty

Measurement	Uncertainty
Conducted emission (150 kHz~30 MHz)	± 2.5 dB
Radiated emission (30 MHz~1 GHz)	± 4.2 dB
Radiated emission (above 1 GHz)	± 4.3 dB
Temperature	±1 degree
Humidity	± 5 %

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

2 Summary of Test Result

No.	Test Standard	Description of Test	Result
1	EN 61000-4-2:2009	Electrostatic discharges (ESD)	Pass

Note: N/A means not applicable.

3 Test Facilities and accreditations

3.1 Test laboratory

Test laboratory:	Shenzhen Microtest Co., Ltd.
Test site location:	101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China
Telephone:	(86-755)88850135
Fax:	(86-755)88850136
CNAS Registration No.:	CNAS L5868

4 List of test equipment

No.	Equipment	Manufacturer	Model	Serial No.	Cal. date	Cal. Due
Voltage dips & voltage interruptions						
MTI-E008	ESD Simulator	Schloder	SESD 30000	509325	2022/05/05	2023/05/04

5 Immunity test

5.1 General performance criteria description

According to item 8 of EN 55035, the following describes the general performance criteria.

Performance criteria	
Criterion	Description
A	The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
B	During the application of the disturbance, degradation of performance is allowed. However, no unintended change of actual operating state or stored data is allowed to persist after the test. After the test, the equipment shall continue to operate as intended without operator intervention; no degradation of performance or loss of function is allowed, below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level (or the permissible performance loss), or recovery time, is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
C	Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. A reboot or re-start operation is allowed. Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

5.1 Electrostatic discharges (ESD)

5.1.1 Test specification

Basic standard:	IEC 61000-4-2
Discharge impedance:	330 ohm / 150 pF
Discharge voltage:	Contact discharge: 4 kV (Direct &Indirect) Air Discharge: 8kV (Direct)
Polarity:	Positive / Negative
Number of discharges:	Minimum 10 times at each test point for each polarity
Discharge mode:	Single discharge
Discharge period:	second minimum

5.1.2 Test Procedures

a) The basic test procedure was in accordance with IEC 61000-4-2.

b) Direct discharges to the EUT:

Contact discharges were applied only to conductive surfaces of the EUT. Air discharges were applied only to non-conductive surfaces of the EUT. During the test, it was performed with single discharges. For the single discharge time between successive single discharges was at least 1 second. It was at least ten single discharges with positive and negative at the same selected point.

c) Indirect discharges to the EUT:

Vertical Coupling Plane (VCP):

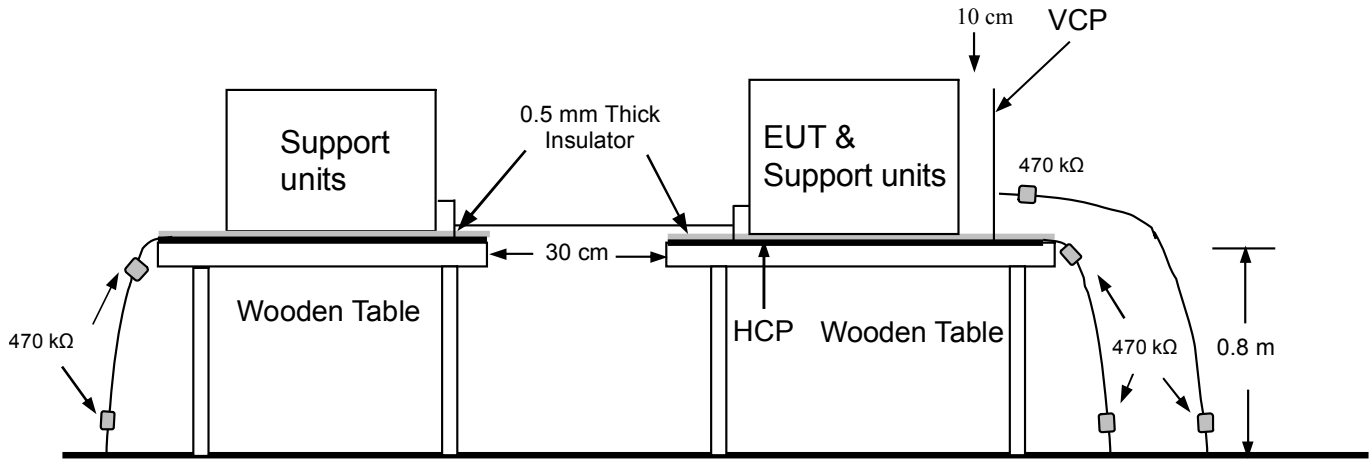
The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1 m from the EUT, with the discharge electrode touching the coupling plane. The four faces of the EUT will be performed with electrostatic discharge.

Horizontal Coupling Plane (HCP):

The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1 m from the EUT, with the discharge electrode touching the coupling plane.

d) Recording the test result in test record form.

5.1.3 Test Setup



For the actual test configuration, please refer to the related item – Photographs of the test setup.

5.1.2 Test result

Test mode:	Mode 1	Power supply:	Powered by PC
Environment conditions:	22℃, 49% RH	Tested by:	Vincent

Indirect Discharge				
Test Points	**Test Level (kV)**	**Performance Criteria**	**Performance Result**	**Observation**
VCP-Front side	± 4	B	A	Note 1
VCP-Rear side	± 4		A	
VCP-Left side	± 4		A	
VCP-Right side	± 4		A	
HCP	± 4		A	

Direct Discharge					
Test Points	**Test Level (kV)**	**Air/Con. discharge**	**Performance Criteria**	**Performance Result**	**Observation**
Each non-conductive location touchable by hand	± 2, ± 4, ± 8	Air-discharge	B	N/A	Note 1
Each conductive location touchable by hand	± 2, ± 4	Contact-discharge		N/A	

Note1: Module is electrostatic sensitive components, do not need direct discharge test.

Photographs of the test setup

ESD

----End of Report----