

Uni-Trend Technology (China) Ltd

TEST REPORT

SCOPE OF WORK

EMC TESTING–UT131A, UT131B, UT131C, UT131D

REPORT NUMBER

170901033GZU-001

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Intertek Report No: 170901033GZU-001 Amendment1

Test standards

EN 61326-1: 2013

EN 61326-2-2:2013

Sample Description

Product : Palm Size Multimeter

Model No. : UT131A, UT131B, UT131C, UT131D

Electrical Rating : Battery operation: 1.5V X 2 AAA battery
Measurement category: CAT II 250 V

Serial No. : Not Labeled

Date Received : 24 October 2018

Date Test : 24 October 2018 to 11 January 2019

Conducted

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1. TEST RESULTS SUMMARY

Test Item	Standard	Result
Radiated EM field immunity	EN 61326-1: 2013, EN 61326-2-2 Reference: EN 61000-4-3:2006 +A1:2008+A2:2010	Pass

Remark:

1. The symbol "N/A" in above table means Not Applicable.
2. When determining the test results, measurement uncertainty of tests has been considered.
3. The EUT belonging to Class B, Group 1 equipment, as requirement by EN 55011.

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2. EMC RESULTS CONCLUSION

Test result:

It is found that the Palm Size Multimeter, models UT131A, UT131B, UT131C, UT131D met the requirements of 2014/30/EU directive and EN 61326-1, EN 61326-2-2 standards.

Report revision reason:

This report is the first revision of the previous test report 170901033GZU-001 dated on 22 November 2017 and shall be used together with it.

This report was issued because of the following changes:

- (1) For UT131A: delete C14, C15, L1;
- (2) For UT131B and UT131D: delete C13, C14, L1.
- (3) Changed the package of L2 as SMD for all models.

Based on engineering judgement, select UT131A, UT131B and UT131D to conduct the Radiated EM field immunity.

The production units are required to conform to the initial sample as received when the units are placed on the market.

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3. LABORATORY MEASUREMENTS

Configuration Information

Support Equipment:	N/A
Rated Voltage and frequency under test:	DC 3V
Condition of Environment:	Temperature: 22~28°C Relative Humidity:35~60% Atmosphere Pressure:86~106kPa

Notes:

- The EMI measurements had been made in the operating mode produced the largest emission in the frequency band being investigated consistent with normal applications. An attempt had been made to maximize the emission by varying the configuration of the EUT.
- The EMS measurements had been made in the frequency bands being investigated, with the EUT in the most susceptible operating mode consistent with normal applications. The configuration of the test sample had been varied to achieve maximum susceptibility.
- Test Location:
Intertek Testing Services Shenzhen Ltd. Guangzhou Branch
All tests were performed at:
Block E, No.7-2 Guang Dong Software Science Park, Caipin Road, Guangzhou Science City, GETDD Guangzhou, China
Except Radiated Disturbance and Radiated Susceptibility were performed at:
Room102/104, No 203, KeZhu Road, Science City, GETDD Guangzhou, China

4. Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conduction Emission (9 kHz-150 kHz)	2.51 dB
2	Conduction Emission (150 kHz-30 MHz)	2.69 dB
3	Disturbance Power (30 MHz-300 MHz)	3.21 dB
4	Radiated Emission (30 MHz-1 GHz)	4.79 dB
5	Radiated Emission (1 GHz-6 GHz)	5.02 dB
6	Radiated Emission (6 GHz-18 GHz)	5.17 dB

The measurement uncertainty describes the overall uncertainty of the given measured value during the operation of the EUT.

Measurement uncertainty is calculated in accordance with CISPR16-4-2:2011

The measurement uncertainty is given with a confidence of 95%, k=2.

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4. EQUIPMENT USED DURING TEST

Radiated Susceptibility

Equipment No.	Equipment	Model	Manufacturer	Cal. Due date (DD-MM-YYYY)	Calibration Interval
EM030-04	3m Semi-Anechoic Chamber	9×6×6 m ³	ETS LINDGREN	06/05/2019	1Y
EM031-01	Signal generator	SMB100A	R&S	18/07/2019	1Y
EM086-11	Power meter	NRP2	R&S	22/11/2019	1Y
EM086-11-01	Power sensor	NRP-Z91	R&S	22/11/2019	1Y
EM046-01	Power Amplifier	8ORF1000-300	MILMEGA	11/03/2019	1Y
EM046-03	Power Amplifier	AS0860-75-45	MILMEGA	09/09/2019	1Y
EM061-05	Log. - Per. Broadband Antenna	VULP 9118 E	SCHWARZBEC K	16/10/2019	2Y
EM061-07	Stacked Log.-Per. Broadband Antenna	STLP 9149	SCHWARZBEC K	25/10/2019	2Y
EM034-01	Open Switch and Control Platform	OSP120/1505 .3009K12	R&S	/	1Y
EM045-01-01	EMC32 software (RE/RS)	V10.01.00	R&S	/	1Y
SA047-118	Digital Temperature-Humidity Recorder	RS210	YIJIE	17/07/2019	1Y

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5. EMS TEST

Performance Criteria:

- Criterion A: The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permission loss of performance) specified by the manufacturer, when the apparatus is used as intended. 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 from what the user may reasonably expect from the apparatus if used as intended.
- Criterion B: The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level (or permission loss of performance) specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however, no change of actual operating state or stored data is allowed. 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 from what the user may reasonably expect from the apparatus if used as intended.
- Criterion C: Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls, or by any operation specified in the instruction for use.

Note: "N/A" means Not Applicable in below text.

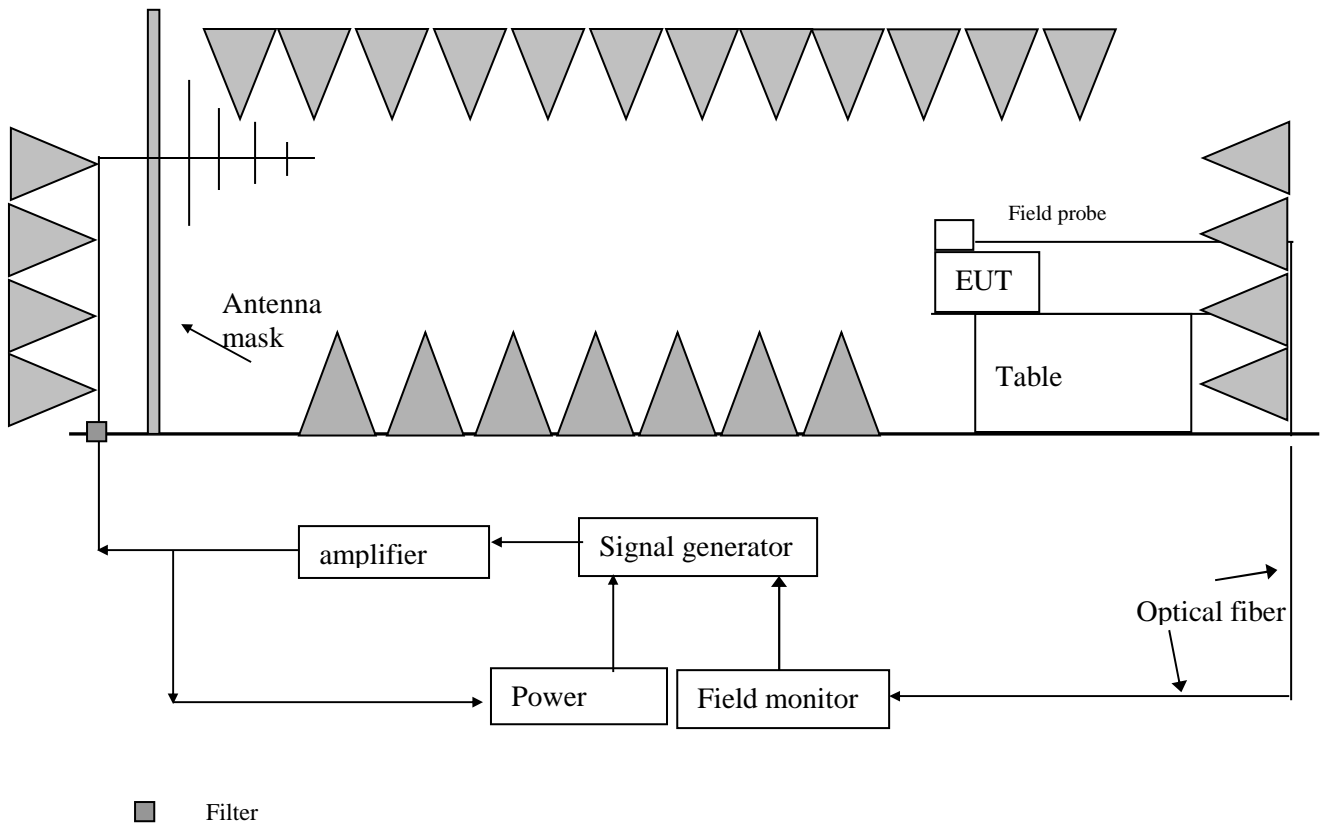
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5.1 EN 61000-4-3(Pursuant to EN 61326-1) Radiated Electromagnetic Field Immunity

Performance criterion: A

Test Result: Pass

5.1.1 Block Diagram of Test Setup



5.1.2 Test Setup and Procedure

The test was conducted in a fully anechoic chamber to maintain a uniform field of sufficient dimensions with respect to the EUT, and also in order to comply with various national and international laws prohibiting interference to radio communications.

The equipment was placed in the test facility on a non-conducting table 0.8m high (for floor standing EUT, is placed on a non-conducting support 0.1m height).

For all ports connected to EUT, manufacturer specified cable type and length was used, for those cables no specification, unshielded cable applied. Wire was left exposed to the electromagnetic field for a distance of 1m from the EUT. The EUT was arranged and connected according to its functional requirements

Before testing, the intensity of the established field strength had been checked by placing the field sensor at a calibration grid point, and with the field generating antenna and cables in the same positions as used for the calibration, the forward power needed to give the

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calibrated field strength was measured. Spot checks was made at a number of calibration grid points over the frequency range 80MHz to 1000MHz, both polarizations was checked.

After calibration, the EUT was initially placed with one face coincident with the calibration plane.

The frequency range was swept from 80 MHz to 1000 MHz at 3V/m EM field, 1.4 GHz to 2 GHz at 3V/m EM field and 2.0 GHz to 2.7 GHz at 1V/m EM field, with the signal 80% amplitude modulated with a 1 kHz sine-wave, pausing to adjust the r.f. signal level.

The dwell time at each frequency was 3s so as that the EUT to be exercised and be able to respond.

The step size was 1% of the fundamental with linear interpolation between calibrated points. Test was performed with the generating antenna facing each of the four sides of the EUT.

5.1.3 Test Result

Frequency (MHz)	Exposed Side	Field Strength (V/m)	Result
80 to 1000	Front	3V/m (r.m.s.)	A
80 to 1000	Left	3V/m (r.m.s.)	A
80 to 1000	Rear	3V/m (r.m.s.)	A
80 to 1000	Right	3V/m (r.m.s.)	A

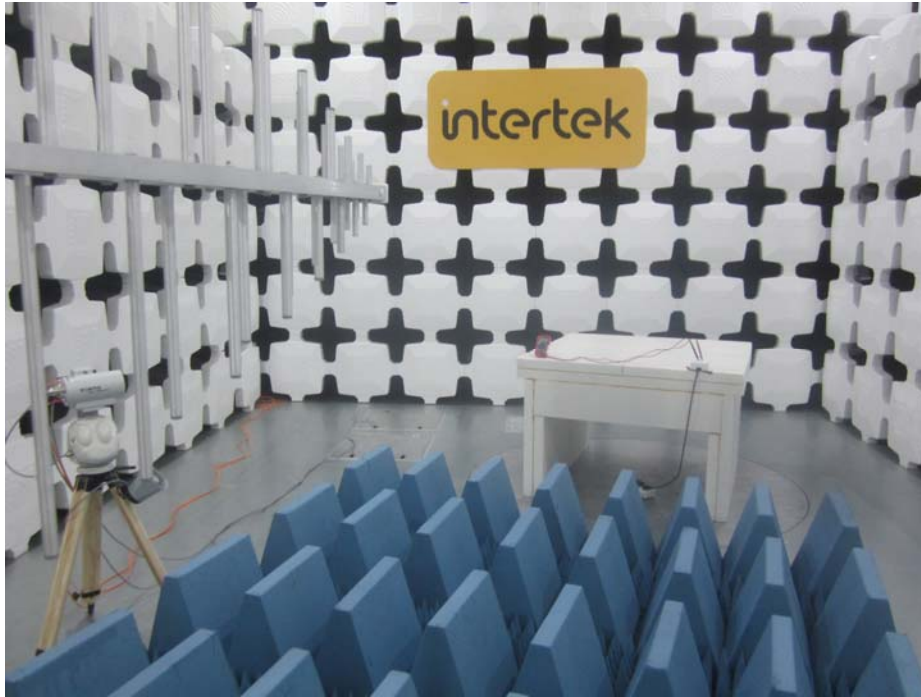
Frequency (GHz)	Exposed Side	Field Strength (V/m)	Result
1.4 to 2.0	Front	3V/m (r.m.s.)	A
1.4 to 2.0	Left	3V/m (r.m.s.)	A
1.4 to 2.0	Rear	3V/m (r.m.s.)	A
1.4 to 2.0	Right	3V/m (r.m.s.)	A

Frequency (GHz)	Exposed Side	Field Strength (V/m)	Result
2.0 to 2.7	Front	1V/m (r.m.s.)	A
2.0 to 2.7	Left	1V/m (r.m.s.)	A
2.0 to 2.7	Rear	1V/m (r.m.s.)	A
2.0 to 2.7	Right	1V/m (r.m.s.)	A

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6. APPENDIX I - PHOTOS OF TEST SETUP

Radiated EM field immunity



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7. APPENDIX II – PHOTOS OF EUT

New PCB view of UT131A



New PCB view of UT131A



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New PCB view of UT131C



New PCB view of UT131C



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New PCB view of UT131D



New PCB view of UT131D



*****End of Report*****