

EMC TEST REPORT

Client Information:

Applicant: Shenzhen Hongda Electronic Technology Co., Ltd

Applicant add.: 3rd Floor, Building A, Industrial Zone, Yingrenshi Station,

Bao'an District, Shenzhen

Brand Name: N/A

Product Information:

Product Name: Multimeter

Model No.: XL830L, MAS830L, DT830B, DT830D, DT9205A, VC830L,

DT266, 1AC-D, VC-890DL, DT9205A+

Manufacturer: Shenzhen Hongda Electronic Technology Co., Ltd

Manufacturer add.: 3rd Floor, Building A, Industrial Zone, Yingrenshi Station,

Bao'an District, Shenzhen

Test Standard: EN IEC 61326-1:2021

Test Date: Oct. 12, 2023 - Oct. 18, 2023 Issue Date: Oct. 18, 2023

Test Result: PASS

Shenzhen Huapin Testing Technology Co., Ltd.

Issued by: Add.: Room 302, Comprehensive Building, Songbai Industrial

Park, No 4, Yangyong Industrial Road, Tangxiayong Community,

APPROVED

YanluoStreet, Bao'an District, Shenzhen.

Test Engineer Rose Xiang

Reviewed by Arny Cai

Approved by Ken Huang

Rose Xian Rose Xian Avny Co

Avny Cai

Ken Huang

This test report may be reproduced in full only
Test result presented in this test report is applicable to the tested sample only



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| | (14016 | . τνα πεαπο ποι αρμιτασίε) | |
| | | TESTING HPT | |



| | TESTING | | HPT TEST | HPT |
|------|------------------|---------------|-------------|----------|
| | 1. VERSION | JOT TESTING | HPT TES | |
| TES | Report No. | Issue Date | Description | Approved |
| | HPT-231012L1412E | Oct. 18, 2023 | Original | Valid |
| TEST | ING | HPT TEST | TING HPI | TEST |
| | TESTING | | HPT TES! | HAL |
| | ING HPT I | TESTING | HPT TES . | |
| TES! | | HPT TES | | UPT TES |



2. TEST SUMMARY

The Product has been tested according to the following specifications:

| | EMISSION | | | | | |
|--------------|-----------------------------------|------------------|--|--|--|--|
| Standard | Test Item | Test result | | | | |
| EN 61326-1 | Conducted disturbance | N/A ¹ | | | | |
| EN 61326-1 | Radiated disturbance | Pass | | | | |
| EN 61000-3-2 | Harmonic current emission(H) | N/A ¹ | | | | |
| EN 61000-3-3 | Voltage fluctuations & flicker(F) | N/A ¹ | | | | |

| IMMUNITY (EN 61326-1)) | | | | | |
|------------------------|---|------------------|--|--|--|
| Standard | Test Item | Test result | | | |
| IEC 61000-4-2 | Electrostatic discharge (ESD) | Pass | | | |
| IEC 61000-4-3 | Electromagnetic field(RS) | Pass# | | | |
| IEC 61000-4-4 | Burst (EFT) | N/A ¹ | | | |
| IEC 61000-4-5 | Surge | N/A¹ | | | |
| IEC 61000-4-6 | Conducted RF(CS) | N/A ¹ | | | |
| IEC 61000-4-8 | Power frequency magnetic field(PFMF) | N/A ² | | | |
| IEC 61000-4-11 | Voltage dips and voltage interruptions (DIPS) | N/A¹ | | | |

Remark:

[&]quot;#"indicates the testing item(s) was (were) fulfilled by subcontracted lab.

^{1.} The EUT is powered by the DC only, the test item is not applicable

^{2.} The Product doesn't contain any device susceptible to magnetic fields.



MEASUREMENT UNCERTAINTY

HPT TESTING

HPT TESTING Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product or appoint in Old Towns and the Product of Old Towns an an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2. HPT TESTI

| Test item | Value (dB) |
|---|------------|
| Conducted disturbance (150kHz-30MHz) | 1.82 |
| Radiated disturbance(30MHz~1GHz) | 2.51 |
| Radiated disturbance(1GHz~6GHz) | 2.51 |



PRODUCT INFORMATION AND TEST SETUP

Product Information 4.1

Model Difference:

All model's the function, software and electric circuit are the same, only with a product color and model named different.

Cable of Product

| VAC | | | | | | | |
|-------------|-----|---------------|----------|----------|---------------|---------------|------------|
| 7. | No. | Cable Type | Quantity | Provider | Length (m) | Specification | Note |
| HPT TESTING | 1 | | HPTT | 5/11 | | TING - HPT | - UPT TEST |
| 2. | | ESTIN | | | TOT | | ~1G |

4.2 Test Setup Configuration

See test photographs attached in EUT TEST SETUP PHOTOGRAPHS for the actual connections between Product and support equipment.

Support Equipment

| | No. | Device Type | Brand | Model | Series No. | Data Cable | Power Cord |
|-------|-------|-------------|-------|-------|------------|------------|------------|
| TESI" | 1. | | 461 | | -CTING | | TES! |
| N. | ntes. | STING | | | of TES. | -1G | Hr. |

Notes:

- 1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
- 2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.



ESTING **Test Mode** 4.4

| 1.1 | Test Mode | HP | TESTING | Page 7 o |
|----------------|---|---------|-----------|-------------|
| 4.4 (ESTING | Test item | TESTING | Test Mode | UPT TES |
| R | adiated disturbance(30MHz-1GHz) | HP | Working | ING I |
| | lectrostatic discharge (ESD) B] Air Discharge: ±2,4,8kV] Contact Discharge: ±4kV] HCP & VCP: ±4kV | TESTING | Working | ING HPT TES |
| 8 | lectromagnetic field(RS) A DMHz-1000MHz&1.4-2GHz,3V, 809 -2.7GHz,1V/m,80% | %, ST | Working | IN TES |
| 4.5 | Test Environment | HP | TEO | ING H |
| | emperature: | 25 ℃ | UPT TES! | |
| CTINE | lumidity: | 55% | AG PIL | |

4.5 Test Environment

| Temperature: | 25 ℃ | UPT TES | a)G |
|-----------------------|-------------|---------|---------|
| Humidity: | 55% | ,alG M | TESTING |
| Atmospheric Pressure: | 101 kpa | TESTING | HPT |
| TEST | | HPT , | |
| G HP | TESTING | UPT TES | |
| V. | IPT I | TING | TESTIN |



5. TEST FACILITY AND TEST INSTRUMENT USED

5.1 Test Facility

All measurement facilities used to collect the measurement data. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

5.2 Test Instrument Used

| | Radiat | ed disturban | ce Test (966 c | hamber) | | |
|--------------------------------|---|--|--|---|--|--|
| Equipment | Manufacture | r Model# | Serial# | Last Cal. | Next Cal. | |
| 966 chamber | ChengYu | 966 Roor | n 966 | Sep.12, 2023 | Sep.11, 2024 | |
| Receiver | R&S | ESRP | 101154 | Sep.12, 2023 | Sep.11, 2024 | |
| Amplifier | Schwarzbeck | BBV9718 | 3 9718-309 | Sep.12, 2023 | Sep.11, 2024 | |
| Amplifier | Schwarzbec | k BBV974 | 9744-0037 | Sep.12, 2023 | Sep.11, 2024 | |
| TRILOG Broadband Antenna | schwarzbeck | VULB 9163 | VULB9163 942 | Sep.12, 2023 | Sep.11, 2024 | |
| Horn Antenna | SCHWARZB CK | E BBHA912 D | 0 1201 | Sep.12, 2023 | Sep.11, 2024 | |
| Electrostatic discharge Test | | | | | | |
| Equipment | Manufacturer | Model# | Serial# | Last Cal. | Next Cal. | |
| ESD Tester | 3C TEST | EDS 30V | ES0121614 | Sep.12, 2023 | Sep.11, 2024 | |
| ESD Tester | KIKISUI | KES4201A | UH002321 | Sep.12, 2023 | Sep.11, 2024 | |
| Hb, | | CING | | OT TES | | |
| | 966 chamber Receiver Amplifier Amplifier TRILOG Broadband Antenna Horn Antenna Equipment ESD Tester | Equipment Manufacture 966 chamber Receiver R&S Amplifier Schwarzbeck Amplifier Schwarzbeck TRILOG Broadband Antenna Horn SCHWARZB Antenna CK Equipment Manufacturer ESD Tester 3C TEST | EquipmentManufacturerModel#966 chamberChengYu966 RoomReceiverR&SESRPAmplifierSchwarzbeckBBV9718AmplifierSchwarzbeckBBV9744TRILOG Broadband AntennaSchwarzbeckVULB 9163Horn AntennaSCHWARZBE CKBBHA912 DElectrostaticEquipmentManufacturerModel#ESD Tester3C TESTEDS 30V | EquipmentManufacturerModel#Serial#966 chamberChengYu966 Room966ReceiverR&SESRP101154AmplifierSchwarzbeckBBV97189718-309AmplifierSchwarzbeckBBV97449744-0037TRILOG Broadband AntennaschwarzbeckVULB | 966 chamber ChengYu 966 Room 966 Sep.12, 2023 Receiver R&S ESRP 101154 Sep.12, 2023 Amplifier Schwarzbeck BBV9718 9718-309 Sep.12, 2023 Amplifier Schwarzbeck BBV9744 9744-0037 Sep.12, 2023 TRILOG Broadband Antenna Schwarzbeck VULB 9163 942 Sep.12, 2023 Horn Antenna SCHWARZBE CK BBHA9120 D 1201 Sep.12, 2023 Electrostatic discharge Test Equipment Manufacturer Model# Serial# Last Cal. ESD Tester 3C TEST EDS 30V ES0121614 Sep.12, 2023 | |

| | Electromagnetic field Test (SMQ site) | | | | | | | | |
|-------------|--|--------------|-----------------|----------------|--------------|--------------|--|--|--|
| HPT | Equipment | Manufacturer | Model# | Serial# | Last Cal. | Next Cal. | | | |
| | Signal Generator | HP | 8648A | 3625U0057 3 | Sep.12, 2023 | Sep.11, 2024 | | | |
| TESTINI | Amplifier | A&R | 500A100 | 17034 | Sep.12, 2023 | Sep.11, 2024 | | | |
| HPT | Amplifier | A&R | 100W/1000M 1 | 17028 | Sep.12, 2023 | Sep.11, 2024 | | | |
| HPT TESTING | Audio Analyzer (20Hz~1GH z) | Panasonic | 2023B | 202301/428 | Sep.12, 2023 | Sep.11, 2024 | | | |
| | Isotropic Field Probe | A&R | FP2000 | 16755 | Sep.12, 2023 | Sep.11, 2024 | | | |
| FESTINI | Antenna | EMCO | 3108 | 9507-2534 | Sep.12, 2023 | Sep.11, 2024 | | | |
| HPT TES | Log-periodi c Antenna | A&R | AT1080 | 16812 | Sep.12, 2023 | Sep.11, 2024 | | | |
| | 107 | | 1.Ca | | ~ C 1 1 | | | | |

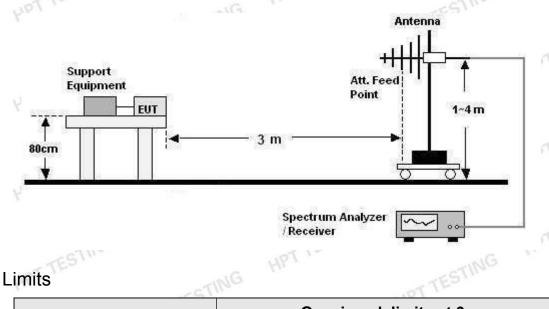
Tel: 0755-23143846 Email: hpt@hpt-lab.com.cn Web: Http://www.hpt-lab.com.cn



6. RADIATED DISTURBANCE TEST

Block Diagram Of Test Setup 6.1

30MHz ~ 1GHz:



Limits 6.2

| Frequency (MHz) | Quasi-peak limits at 3m dB(μV/m) |
|-----------------|-------------------------------------|
| 30-230 | 40 40 |
| 230-1000 | 47 |

Note: The lower limit shall apply at the transition frequencies.

6.3 Test Procedure

30MHz ~ 1GHz:

- a. The Product was placed on the nonconductive turntable 0.8 m above the ground in a semi anechoic chamber.
- b. Set the spectrum analyzer/receiver in Peak detector, Max Hold mode, and 120 kHz RBW. Record the maximum field strength of all the pre-scan process in the full band when the antenna is varied between 1~4 m in both horizontal and vertical, and the turntable is rotated from 0 to 360 degrees.
- c. For each frequency whose maximum record was higher or close to limit, measure its QP value: vary the antenna's height and rotate the turntable from 0 to 360 degrees to find the height and degree where Product radiated the maximum emission, then set the test frequency analyzer/receiver to QP Detector and specified bandwidth with Maximum Hold Mode, and record the maximum value.



ESTING **Test Results** 6.4

| 6 | 6.4 Test Res | ults | -mG | HPT TES! | TESTING HP |
|---------|--------------|-------------|---------------|--------------------|------------|
| OT TEST | //G | ~~~~ | Radiated dist | urbances Test Data | TING |
| Hr. | Temperature: | 26 ℃ | | Relative Humidity: | 54% |
| | Pressure: | 1009hPa | -mG | Phase : | Horizontal |



| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure- ment | Limit | Over | | Antenna Height | Table Degree | |
|-----|-----|----------|------------------|-------------------|------------------|-------|--------|----------|-------------------|-----------------|---------|
| | | MHz | dBu∀ | dB | dBuV/m | dB/m | dB | Detector | cm | degree | Comment |
| 1 | | 45.5348 | 29.11 | -14.03 | 15.08 | 40.00 | -24.92 | QP | | | |
| 2 | * | 84.7019 | 36.06 | -18.60 | 17.46 | 40.00 | -22.54 | QP | | | |
| 3 | | 127.2176 | 26.75 | -18.61 | 8.14 | 40.00 | -31.86 | QP | | | |
| 4 | | 252.0627 | 25.66 | -15.08 | 10.58 | 47.00 | -36.42 | QP | | | |
| 5 | | 504.7062 | 25.48 | -9.23 | 16.25 | 47.00 | -30.75 | QP | | | |
| 6 | | 955.4381 | 23.85 | -1.96 | 21.89 | 47.00 | -25.11 | QP | | | |
| | 2 | IPT TES | Lllan | | G | HP | 170 | | UPT | -cgTI | NG T. |
| | | | | | ESTING | | | | Tai | 150 | |



| N. S. | HPT | NG HPT TEST | ESTING HPT | Page 11 of 20 |
|---|--------------|-------------|-----------------------------|---------------|
| 11. | UPT TES | Padia | nted disturbances Test Data | -ESTING H. |
| TEST | Temperature: | | Relative Humidity: | 54% |
| HPT | Pressure: | 1009hPa | Phase : | Vertical |
| - | NG HPT TE | -EST | ING HP | TESTING |



| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure- ment | Limit | Over | | Antenna Height | Table Degree | | |
|-----|------|----------|------------------|-------------------|------------------|-------|--------|----------|-------------------|-----------------|---------|------|
| | | MHz | dBu∀ | dB | dBuV/m | dB/m | dB | Detector | cm | degree | Comment | |
| 1 | * | 53.1313 | 27.92 | -14.46 | 13.46 | 40.00 | -26.54 | QP | | 10000 | | - 10 |
| 2 | | 94.7601 | 26.51 | -16.53 | 9.98 | 40.00 | -30.02 | QP | | | | 30 |
| 3 | 1 | 213.0151 | 24.63 | -16.21 | 8.42 | 40.00 | -31.58 | QP | | | | -00 |
| 4 | | 252.9482 | 24.81 | -15.08 | 9.73 | 47.00 | -37.27 | QP | | | | -80 |
| 5 | 9 | 494.1984 | 23.18 | -9.59 | 13.59 | 47.00 | -33.41 | QP | | | | - (|
| 6 | 0.00 | 721.7259 | 23.48 | -5.03 | 18.45 | 47.00 | -28.55 | QP | | | | - 60 |
| | | HPT TE | 2 | | | HP | V | | НРТ | STI | JG. | |
| | | | | | ESTING | | | | HPT | LES | | |
| | | | | MbJ., | | | | | | | TES | |



HPT TESTING HPT TESTING HPT TESTING -port HPT TESTING HPT TESTING TESTING 7. IMMUNITY TEST OF GENERAL THE PERFORMANCE CRITERIA CTING HPT TESTING HPT TESTIN

| | -01 | | | | | | | |
|----------|------------------|--|--|-------------|------------|--|--|--|
| | Product Standard | | EN IEC 6132 | 26-1:2021 | | | | |
| -61 | CRITERION A | During testing, normal performance within the specification limits. During testing, temporary degradation, or loss of function or performance which is self-recovering. | | | | | | |
| IPT TES | CRITERION B | | | | | | | |
| IPT TEST | CRITERION C | | mporary degradat ch requires operat | | | | | |
| PT TEST | ING HPT TESTING | HPT TESTING | HPT | HPT TESTING | UPT TESTIN | | | |
| | ING HPT TESTING | TESTING | HPT IL | HPT TESTING | TIN | | | |



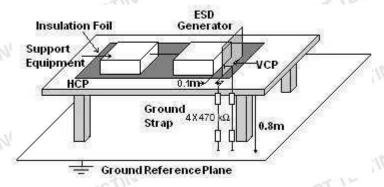
8. ELECTROSTATIC DISCHARGE (ESD)

8.1 Test Specification

Test Port : Enclosure port
Discharge Impedance : 330 ohm / 150 pF
Discharge Mode : Single Discharge

Discharge Period : one second between each discharge

8.2 Block Diagram of Test Setup



8.3 Test Procedure

- a. Electrostatic discharges were applied only to those points and surfaces of the Product that are accessible to users during normal operation.
- b. The test was performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.
- c. The time interval between two successive single discharges was at least 1 second.
- d. The ESD generator was held perpendicularly to the surface to which the discharge was applied and the return cable was at least 0.2 meters from the Product.
- e. Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.
- f. Air discharges were applied with the round discharge tip of the discharge electrode approaching the Product as fast as possible (without causing mechanical damage) to touch the Product. After each discharge, the ESD generator was removed from the Product and re-triggered for a new single discharge. The test was repeated until all discharges were complete.



- g. At least ten single discharges (in the most sensitive polarity) were applied to the Horizontal Coupling Plane at points on each side of the Product. The ESD generator was positioned vertically at a distance of 0.1 meters from the Product with the discharge electrode touching the HCP.
- h. At least ten single discharges (in the most sensitive polarity) were applied to the center of one vertical edge of the Vertical Coupling Plane in sufficiently different positions that the four faces of the Product were completely illuminated. The VCP (dimensions $0.5m \times 0.5m$) was placed vertically to and 0.1 meters from the Product.

8.4 Test Results

| rest Res | SUITS | | HPT TES | | | | |
|-------------------------|---|------------------|--|-------------------|--------------------------|--|--|
| Discharg e Method | Discharge Position | Voltage (±kV) | Min. No. of Discharge per polarity (Each Point) | Required Level | Performance Criterion | | |
| | Conductive Surfaces | 4 | STING 10 | В | HPT A | | |
| Contact Discharge | Indirect Discharge HCP | 4 | 10 | ESTINE | A | | |
| | Indirect Discharge VCP | 4 | 10 | В | A | | |
| Air Discharge | Slots, Apertures, and Insulating Surfaces | 8 | 10 | ESTING | A | | |
| | UPT 12 | | INIG | | TESTING | | |

Note: N/A



9. ELECTROMAGNETIC FIELD (RS)

9.1 Test Specification

Test Port : Enclosure port

Step Size : 1%

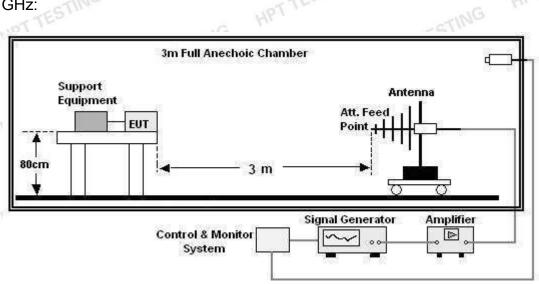
Modulation : 1kHz, 80% AM

Dwell Time : 1 second

Polarization : Horizontal & Vertical

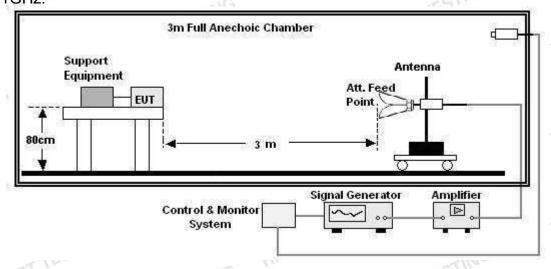
9.2 Block Diagram of Test Setup

Below 1GHz:



Above 1GHz:

HPT TESTING



MG

MG



9.3 Test Procedure

- a. The testing was performed in a fully-anechoic chamber. The transmit antenna was located at a distance of 3m or 1m from the Product.
- b. The frequency range is swept from 80MHz to 1000MHz and 1400MHz to 2700MHz, with the signal 80% amplitude modulated with a 1 kHz sine wave. The rate of sweep did not exceed 1.5x 10⁻³ decade/s. Where the frequency range is swept incrementally, the step size was 1%.
- c. The test was performed with the Product exposed to both vertically and horizontally polarized fields on each of the four sides.

9.4 Test Results

| Frequency | Position | Field Strength (V/m) | Required Level | Performance Criterion |
|-------------|--|----------------------------|----------------|--------------------------|
| 80 - 1000 | Front, Right, | UP 10 EST | А | IG HPT TES |
| 1400 - 2000 | Back, Left Front, Right, | 3 | A | A |
| 1400 - 2000 | Back, Left Front, Right, | OT TESTI | NG A | C HPT TES |
| 2000 - 2700 | Back, Left | Hr.1 | A TESTI | A |
| .l.(. NI/A | The state of the s | | | |

Note: N/A







TESTING **EUT PHOTOGRAPHS** 10. HPT TESTI

EUT Photo 1



EUT Photo 2





EUT Photo 3



EUT Photo 4





EUT Photo 5



HPTTESTING HPT TESTING ********* END OF REPORT *******