TEST REPORT

Product Name : Infrared Thermometer
Model Number : UT300R

Prepared for	:	Uni-Trend Technology (China) Co., Ltd
Address	:	No 6, Gong Ye Bei 1 st Road, Songshan Lake National High-Tech Industrial Development Zone, Dongguan City, Guangdong Province, China
Prepared by	:	EMTEK(DONGGUAN) CO., LTD.
Address	:	-1&2/F.,Buiding 2,Zone A,Zhongda Marine Biotechnology Research and Development Base,N.9,Xincheng Avenue,Songshanhu High-technology Industrial Development Zone, Dongguan, Guangdong, China Tel : +86-0769-22807078 Fax: +86-0769-22807079

Report Number	:	ED200323030E
Date(s) of Tests	:	March 23, 2020 to March 25, 2020
Date of issue	:	March 25, 2020

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TEST REPORT DESCRIPTION

Applicant	:	Uni-Trend Technology (China) Co., Ltd
Manufacturer	:	Uni-Trend Technology (China) Co., Ltd
EUT	:	Infrared Thermometer
Model No.	:	UT300R
Input Rating	:	9V battery (Size: 6F22)

Measurement Procedure Used:
EN 61326-1: 2013
EN 61326-2-3: 2013
(IEC 61000-4-2: 2008, IEC61000-4-3: 2006+A1: 2007+A2: 2010, IEC 61000-4-4: 2012, IEC 61000-4-5: 2014, IEC 61000-4-6: 2013, IEC 61000-4-11: 2004)

The device described above is tested by EMTEK(DONGGUAN) CO., LTD. and EMTEK(SHENZHEN) CO., LTD. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and EMTEK(DONGGUAN) CO., LTD. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the EN 61326-1, EN 61000-3-2, EN 61000-3-3 and EN 61326-2-3 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of EMTEK(DONGGUAN) CO., LTD.

Date of Test : March 23, 2020 to March 25, 2020

Prepared by : Bill Zhong / Editor

Reviewer : Galen Xiao / Supervisor

Approved & Authorized Signer : Sam Lv / Manager

Modified Information

Version	Summary	Revision Date	Report No.
Ver.1.0	Original Report	/	ED200323030E

1. DESCRIPTION OF STANDARDS AND RESULTS

EMISSION			
Description of Test Item	Standard	Limits	Results
Conducted Disturbance at Mains Terminals	EN 61326-1: 2013	Clause 5	N/A
Radiated Disturbance	EN 61326-1: 2013	Clause 6	Pass
IMMUNITY			
Description of Test Item	Basic Standard	Performance Criteria	Results
Electrostatic Discharge (ESD)	IEC 61000-4-2: 2008	B	Pass
Radio-Frequency, Continuous Radiated Disturbance	IEC 61000-4-3: 2006 +A1: 2007+A2: 2010	A	Pass
EFT/B Immunity	IEC 61000-4-4: 2012	B	N/A
Surge Immunity	IEC 61000-4-5: 2014	B	N/A
Conducted RF Immunity	IEC 61000-4-6: 2013	A	N/A
Power Frequency Magnetic Field	IEC 61000-4-8: 2009	--	N/A
Voltage Dips, >95% Reduction	IEC 61000-4-11: 2004	B	N/A
Voltage Dips, 30% Reduction		C	N/A
Voltage Interruptions		C	N/A
Note: N/A is an abbreviation for Not Applicable.			

2. GENERAL INFORMATION

2.1 Description of Device (EUT)

EUT	: Infrared Thermometer
Model Number	: UT300R
Trade Mark	: UNI-T
Power Supply for Test	: DC 9V from battery
Operating Mode	: Testing
Applicant	: Uni-Trend Technology (China) Co., Ltd
Address	: No 6, Gong Ye Bei 1 st Road, Songshan Lake National High-Tech Industrial Development Zone, Dongguan City, Guangdong Province, China
Manufacturer	: Uni-Trend Technology (China) Co., Ltd
Address	: No 6, Gong Ye Bei 1 st Road, Songshan Lake National High-Tech Industrial Development Zone, Dongguan City, Guangdong Province, China
Factory	: Uni-Trend Technology (China) Co., Ltd
Address	: No 6, Gong Ye Bei 1 st Road, Songshan Lake National High-Tech Industrial Development Zone, Dongguan City, Guangdong Province, China
Date of sample receiver	: March 23, 2020
Date of Test	: March 23, 2020 to March 25, 2020

2.2 Description of Test Facility

Site Description

EMC Lab	:	Accredited by CNAS, 2018.07.06 The certificate is valid until 2024.07.05 The Laboratory has been assessed and proved to be in compliance with CNAS/CL01:2006 The Certificate Registration Number is L3150 Registered on Industry Canada, January 13, 2017 The Certificate Number is 9444A.
Name of Firm	:	EMTEK(DONGGUAN) CO., LTD.
Site Location	:	-1&2/F.,Buiding 2,Zone A,Zhongda Marine Biotechnology Research and Development Base,N.9,Xincheng Avenue,Songshanhu High-technology Industrial Development Zone, Dongguan, Guangdong, China

2.3 Measurement Uncertainty

Test Item		Uncertainty
Conducted Emission Uncertainty	:	2.42dB
Radiated Emission Uncertainty (3m Chamber)	:	3.34dB (30M~1GHz Polarize: H) 3.32dB (30M~1GHz Polarize: V)
Uncertainty for Flicker test	:	0.07%
Uncertainty for Harmonic test	:	1.8%
Uncertainty for C/S Test	:	1.45(Using CDN Test) 2.37(Using EM Clamp Test)
Uncertainty for R/S Test	:	2.10dB(80MHz-200MHz) 1.76dB(200MHz-1000MHz)
Uncertainty for test site temperature and humidity	:	0.6℃ 4%

2.4 Description of Support Device

Adapter	:	Model : YSV6-0501000 Input: AC 100-240V, 50/60Hz Output: DC 5V, 1000mA

3. MEASURING DEVICES AND TEST EQUIPMENT

3.1 For Radiated Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	EMI Test Receiver	Rohde & Schwarz	ESCI	101415	May 23, 2019	1 Year
2.	Bilog Antenna	Schwarzbeck	VULB9163	9163-143	May 23, 2019	1 Year
3.	Power Amplifier	HP	8447F	EED184	May 23, 2019	1 Year
4.	Cable	N/A	CBL-26	N/A	May 23, 2019	1 Year
5.	Cable	N/A	CBL-26	N/A	May 23, 2019	1 Year
6.	Cable	N/A	CBL-26	N/A	May 23, 2019	1 Year
7.	Signal Analyzer	R&S	FSV30	103040	May 23, 2019	1 Year
8.	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1272	May 23, 2019	1 Year
9.	Power Amplifier	LUNAR EM	LNA1G18-40	J10100000081	May 23, 2019	1 Year
10.	Cable	H+S	RG 233/U	525178	May 23, 2019	1 Year
11.	Cable	H+S	RG 233/U	528948 WP	May 23, 2019	1 Year
12.	Cable	H+S	RG 233/U	525179	May 23, 2019	1 Year

3.2 For Electrostatic Discharge Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ESD Tester	TESEQ	NSG437	409	May 23, 2019	1 Year

3.3 For RF Strength Susceptibility Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Signal Generator	Agilent	N5181A	MY50145187	May 23, 2019	1 Year
2.	RF Power Meter.	BOONTON	4232A	10539	May 23, 2019	1 Year
3.	50ohm Diode Power Sensor	BOONTON	51011EMC	34236/34238	May 23, 2019	1 Year
4.	Field Strength Meter	DARE	RSS1006A	10I00037SO22	May 23, 2019	1 Year
5.	50ohm Diode Power Sensor	BOONTON	51011EMC	36164	May 23, 2019	1 Year
6.	Power Amplifier	MILMEGA	80RF1000-175	1059345	May 23, 2019	1 Year
7.	Power Amplifier	MILMEGA	AS0102-55	1018770	May 23, 2019	1 Year
8.	Power Amplifier	MILMEGA	AS1860-50	1059346	May 23, 2019	1 Year
9.	Log.-Per. Antenna	Schwarzbeck	VULP 9118E	811	May 23, 2019	1 Year
10.	Broad-Band Horn Antenna	Schwarzbeck	STLP 9149	9149-227	May 23, 2019	1 Year
11.	Multi-function interface system	DARE	CTR1009B	12I00250SNO72	N/A	N/A
12.	Automatic switch group	DARE	RSW1004A	N/A	N/A	N/A

4. RADIATED EMISSION MEASUREMENT

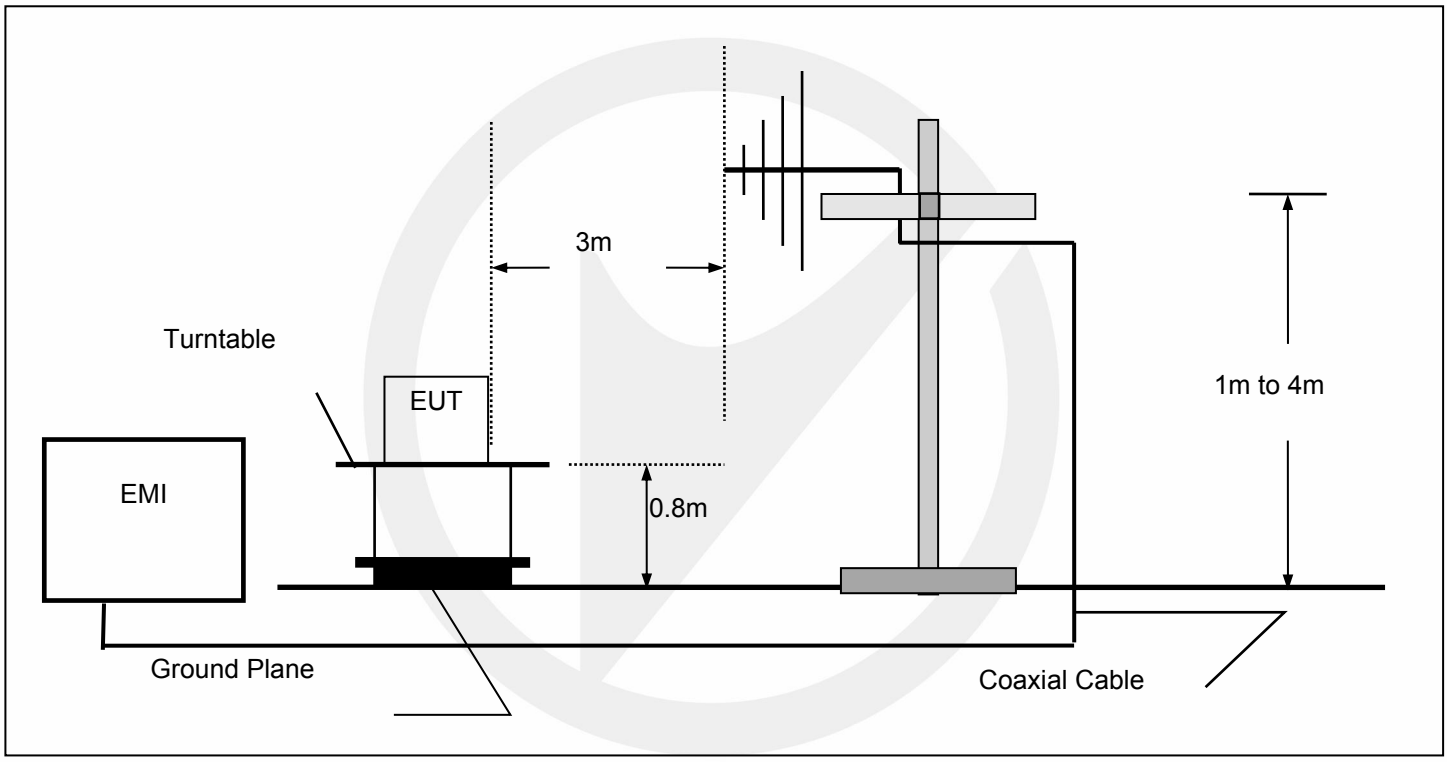
4.1 Block Diagram of Test

4.1.1 Block diagram of connection between the EUT and simulators

EUT

(EUT: Infrared Thermometer)

4.1.2 Block diagram of test setup (In chamber)



(EUT: Infrared Thermometer)

4.2 Measuring Standard

EN 61326-1: 2013

4.3 Radiated Emission Limits

All emanations from a device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:
Limits 6 GHz

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT (dBμV/m)
30 ~ 230	3	40
230 ~ 1000	3	47
1000~3000	3	70
3000~6000	3	74

Note: (1) The smaller limit shall apply at the combination point between two frequency bands.
(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

4.4 EUT Configuration on Test

The EN 55032 regulations test method must be used to find the maximum emission during radiated emission measurement.

EUT	:	Infrared Thermometer
Model Number	:	UT300R

4.5 Operating Condition of EUT

4.5.1 Turn on the power.

4.5.2 Let the EUT work in test mode (Charging,ON) and measure it.

4.6 Test Procedure

The EUT is placed on a turn table which is 0.8 meter high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Bilog antenna (calibrated by Dipole Antenna) is used as a receiving antenna. Both horizontal and vertical polarizations of the antenna are set on test.
The bandwidth of the Receiver (ESCI) is set at 120kHz.

4.7 Test Results

PASS.
The frequency range from 30MHz to 1000MHz is investigated.

All the test data are listed in the following pages.

Site Chamber #1 Polarization: *Horizontal* Temperature: 26

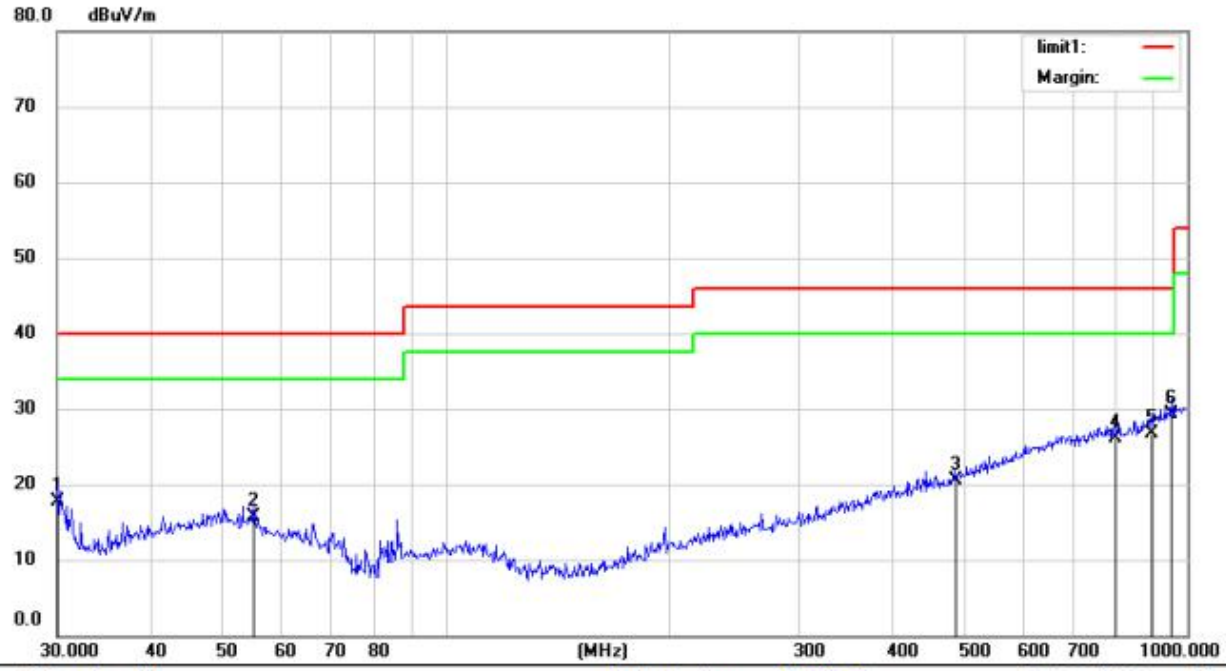
Limit: (RE)EN 61326-1 Power: DC 9V Humidity: 55 %

Mode: Testing

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		30.0000	36.54	-18.76	17.78	40.00	-22.22	QP			
2		54.8348	30.57	-15.93	14.64	40.00	-25.36	QP			
3		339.5888	29.84	-12.31	17.53	46.00	-28.47	QP			
4		400.4320	30.63	-11.09	19.54	46.00	-26.46	QP			
5	*	691.9867	29.86	-4.40	25.46	46.00	-20.54	QP			
6		989.5355	28.47	0.20	28.67	54.00	-25.33	QP			

*:Maximum data x:Over limit !:over margin Operator: Lian



Site Chamber #1 Polarization: *Vertical* Temperature: 26

Limit: (RE)EN 61326-1 Power: DC 9V Humidity: 55 %

Mode: Testing

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		30.0000	36.54	-18.76	17.78	40.00	-22.22	QP			
2		55.2207	31.75	-15.97	15.78	40.00	-24.22	QP			
3		485.6093	29.84	-9.38	20.46	46.00	-25.54	QP			
4		796.1830	29.37	-3.34	26.03	46.00	-19.97	QP			
5		890.7278	28.63	-2.00	26.63	46.00	-19.37	QP			
6	*	952.0937	29.74	-0.47	29.27	46.00	-16.73	QP			

*:Maximum data x:Over limit !:over margin Operator: Lian

5. ELECTROSTATIC DISCHARGE TEST

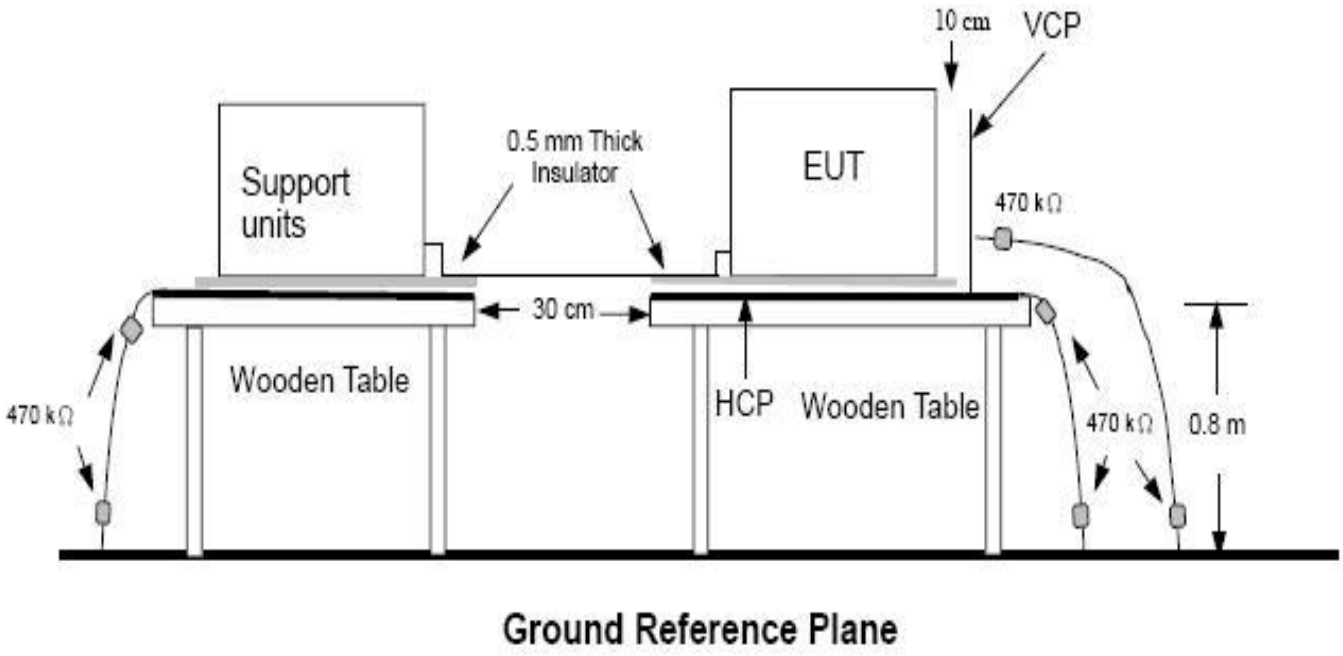
5.1Block Diagram of Test Setup

5.1.1 Block diagram of connection between the EUT and simulators

EUT

(EUT: Infrared Thermometer)

5.1.2 Block Diagram of ESD Test Setup



(EUT: Infrared Thermometer)

5.2 Test Standard

EN 61326-2-3: 2013
(IEC 61000-4-2: 2008 (Severity Level: 2 /Contact Discharge: ±4KV
Severity Level: 3 / Air Discharge: ±8KV))

5.3 Severity Levels and Performance Criterion

5.3.1 Severity level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1.	±2	±2
2.	±4	±4
3.	±6	±8
4.	±8	±15
X	Special	Special

8.3.2 Performance criterion**: B**

5.4 EUT Configuration

The configuration of EUT is listed in Section 5.1

5.5 Operating Condition of EUT

5.5.1 Setup the EUT as shown in Section 5.1.

5.5.2 Turn on the power of all equipments.

5.5.3 Let the EUT work in test mode (Testing) and measure it.

5.6 Test Procedure

5.6.1 Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 25 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

5.6.2 Contact Discharge:

All the procedure shall be same as Section 5.6.1. except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

5.6.3 Indirect discharge for horizontal coupling plane:

At least 20 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode positions vertically at a distance of 0.1m from the EUT and with the discharge electrode touching the coupling plane.

5.6.4 Indirect discharge for vertical coupling plane:

At least 20 single discharge shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

5.7 Test Results

PASS.

Please refer to the following page.

Electrostatic Discharge Test Results

EMTEK(DONGGUAN) CO., LTD.

Applicant	: Uni-Trend Technology (China) Co., Ltd	Test Date	: March 25, 2020
EUT	: Infrared Thermometer	Temperature	: 24℃
M/N	: UT300R	Humidity	: 53%
Power Supply	: DC 9V	Test Engineer:	Huang
Test Mode	: Testing	Criterion	: B

Air Discharge: ±2, 4, 8KV
Contact Discharge: ±2, 4KV # For each point positive 10 times and negative 10 times

Location	Kind A-Air Discharge C-Contact Discharge	Result
VCP	C	PASS
HCP	C	PASS
Gap	A	PASS
Switch	A	PASS
Plastic enclosure	A	PASS
Screen	A	PASS

Remark :

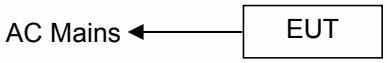
Test Equipment :
ESD Tester (TESEQ, 409)

Discharge should be considered on Contact and Air and Horizontal Coupling Plane (HCP) and Vertical Coupling Plane (VCP).

6. RF FIELD STRENGTH SUSCEPTIBILITY TEST

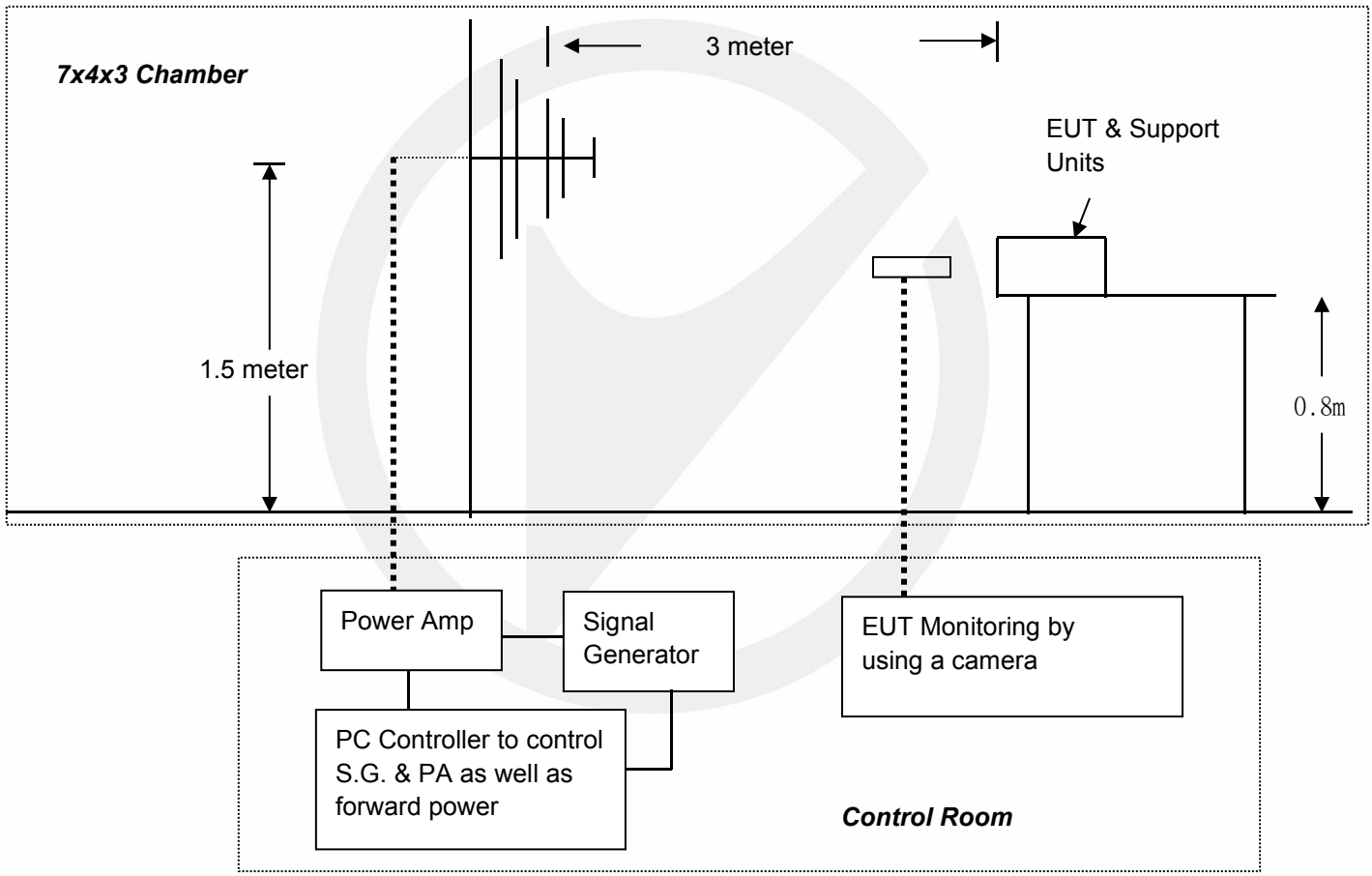
6.1 Block Diagram of Test Setup

6.1.1 Block diagram of connection between the EUT and simulators



(EUT: Infrared Thermometer)

6.1.2 Block diagram of R/S test set up



(EUT: Infrared Thermometer)

6.2Test Standard

EN 61326-2-3: 2013
(IEC 61000-4-3: 2006+A1: 2007+A2: 2010 (Severity Level 2, 3V / m))

6.3 Severity Levels and Performance Criterion

6.3.1 Severity level

Level	Field Strength V/m
1.	1
2.	3
3.	10
X	Special

9.3.1 Performance criterion**: A**

6.4 EUT Configuration

The configurations of EUT are listed in Section 6.1.

6.5 Operating Condition of EUT

6.5.1 Setup the EUT as shown in Section 6.1.

6.5.2 Turn on the power of all equipments.

6.5.3 Let the EUT work in test mode (Testing) and measure it.

6.6 Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. EUT is set 3 meter away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarizations of the antenna are set on test. Each of the four sides of EUT must be faced this transmitting antenna and measured individually. In order to judge the EUT performance, a CCD camera is used to monitor EUT screen. All the scanning conditions are as follows**:**

Condition of Test	Remarks
1. Fielded Strength	3 V/m (Severity Level 2)
2. Radiated Signal	Unmodulated
3. Scanning Frequency	80 - 1000 MHz
4. Dwell time of radiated	0.0015 decade/s
5. Waiting Time	1 Sec.

6.7 Test Results

PASS.

These test result outsourced to EMTEK(SHENZHEN) CO., LTD.

Please refer to the following page.

RF Field Strength Susceptibility Test Results

EMTEK(SHENZHEN) CO., LTD

Applicant: Uni-Trend Technology (China) Co., Ltd

Test Date : March 25, 2020

EUT : Infrared Thermometer

Temperature : 24℃

M/N : UT300R

Humidity : 5%

Field Strength: 3 V/m,1 V/m

Criterion: A

Power Supply: DC 9V

Frequency Range: 80 - 1000MHz, 1400-2000, 2000-2700MHz

Test Engineer: Tom

Modulation: ☑ AM ☐ Pulse ☐none 1 KHz 80%

Test Mode : Testing

	Frequency Range : 80 - 1000MHz, 1400-2700 MHz for 3V/m,	
Steps	1 %	
	Horizontal	Vertical
Front	PASS	PASS
Right	PASS	PASS
Rear	PASS	PASS
Left	PASS	PASS

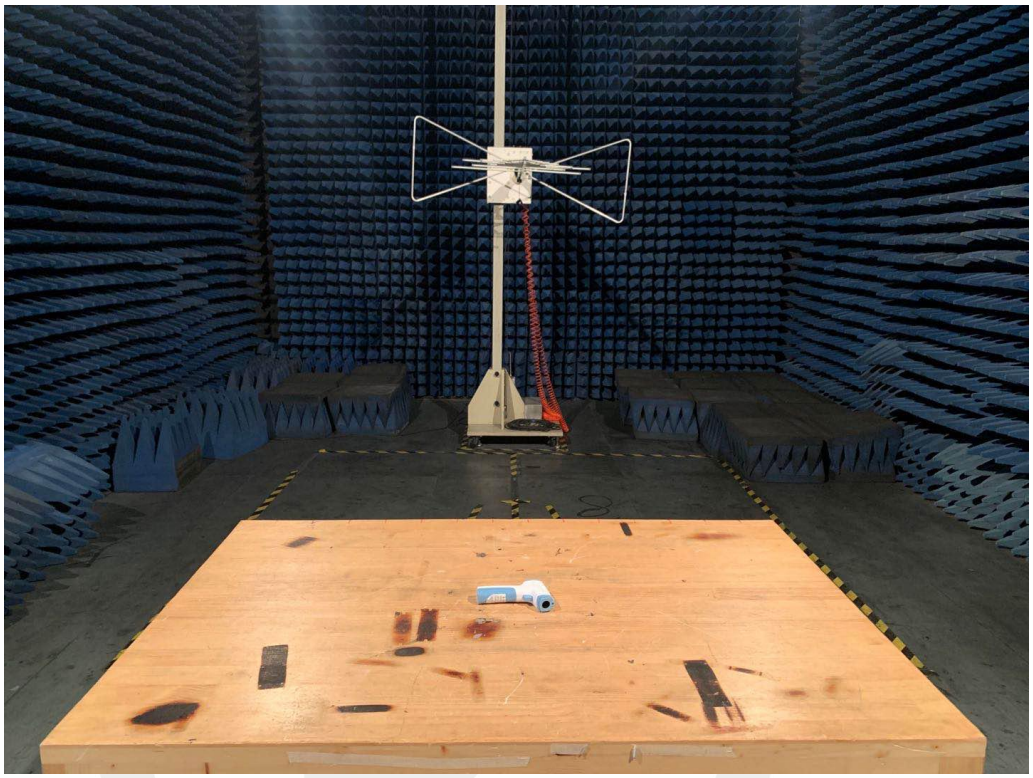
Test Equipment :

1. Signal Generator : N5181A (Agilent)
2. Power Amplifier : 80RF1000-175 (MILMEGA)& AS0102-55 (MILMEGA)& AS1860-50 (MILMEGA)
3. Log.-Per. Antenna: VULP 9118E(SCHWARZBECK)
4. Broad-Band Horn Antenna: STLP 9149 (SCHWARZBECK)
5. RF Power Meter. Dual Channel : 4232A (BOONTON)
6. Field Strength Meter: RSS1006A (DARE)

Note:

7. PHOTOGRAPH

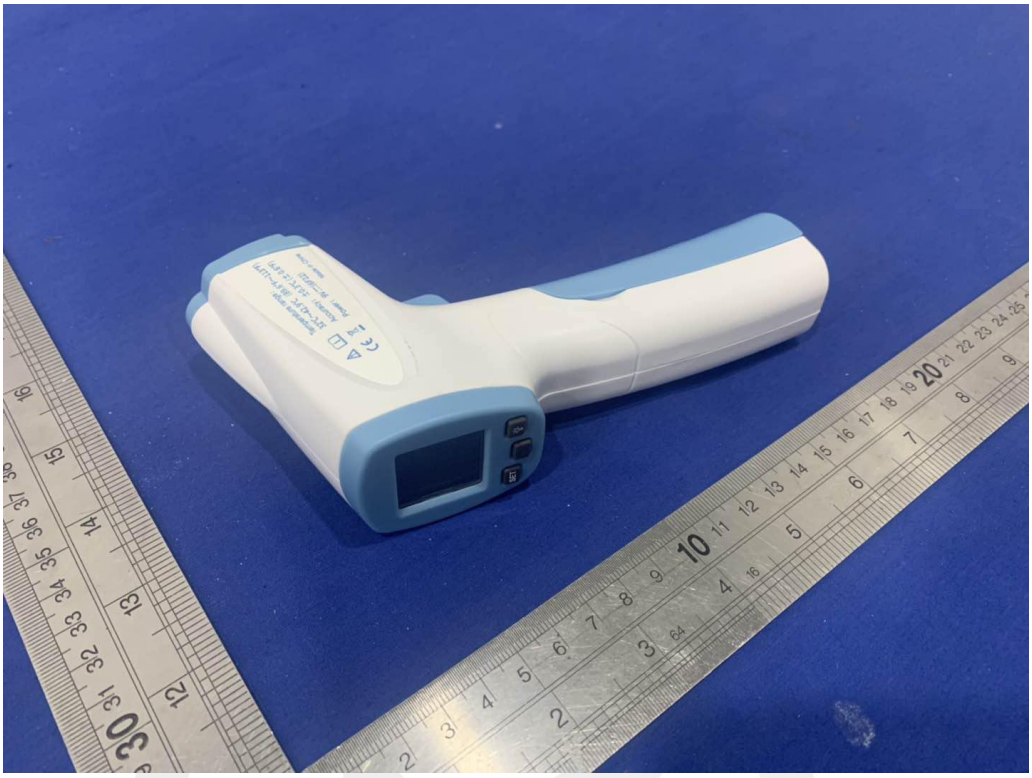
7.1 Photo of Radiation Emission Measurement



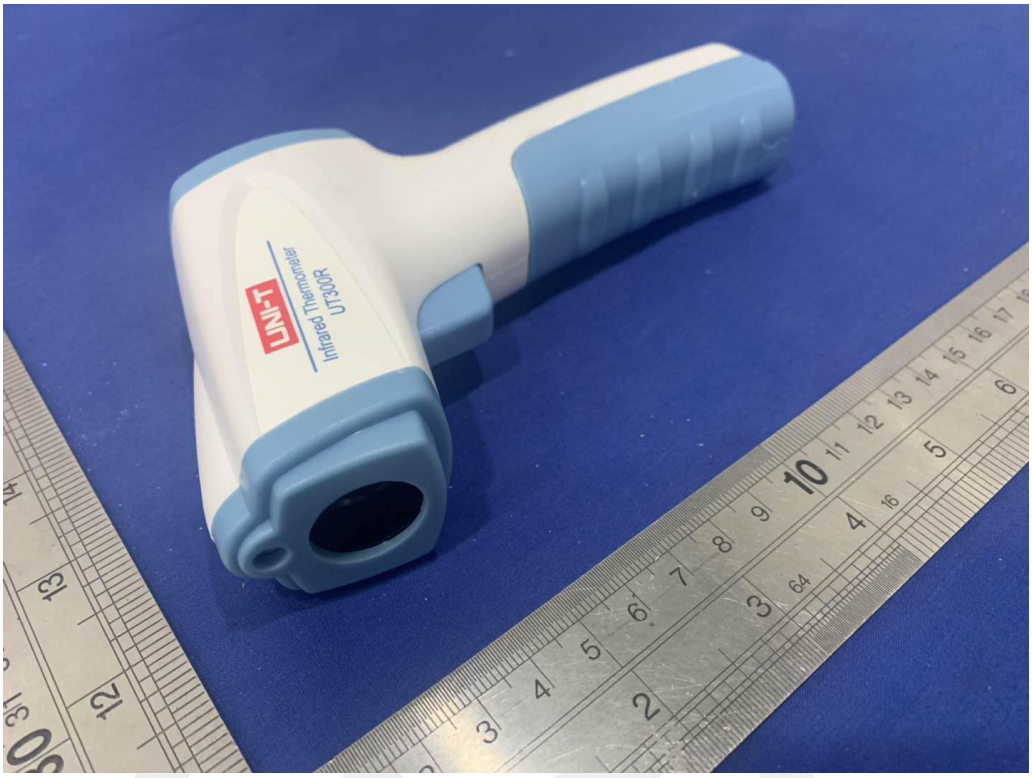
7.2 Photo of Electrostatic Discharge Test

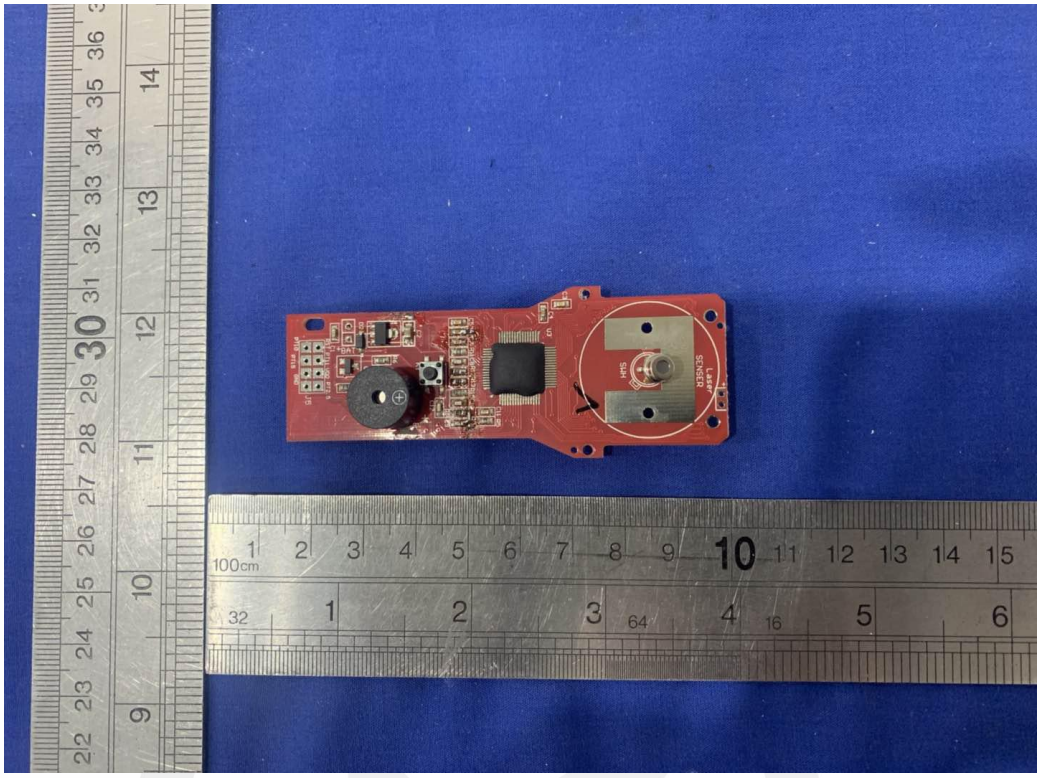
7.3 Photo of RF Field Strength susceptibility Test

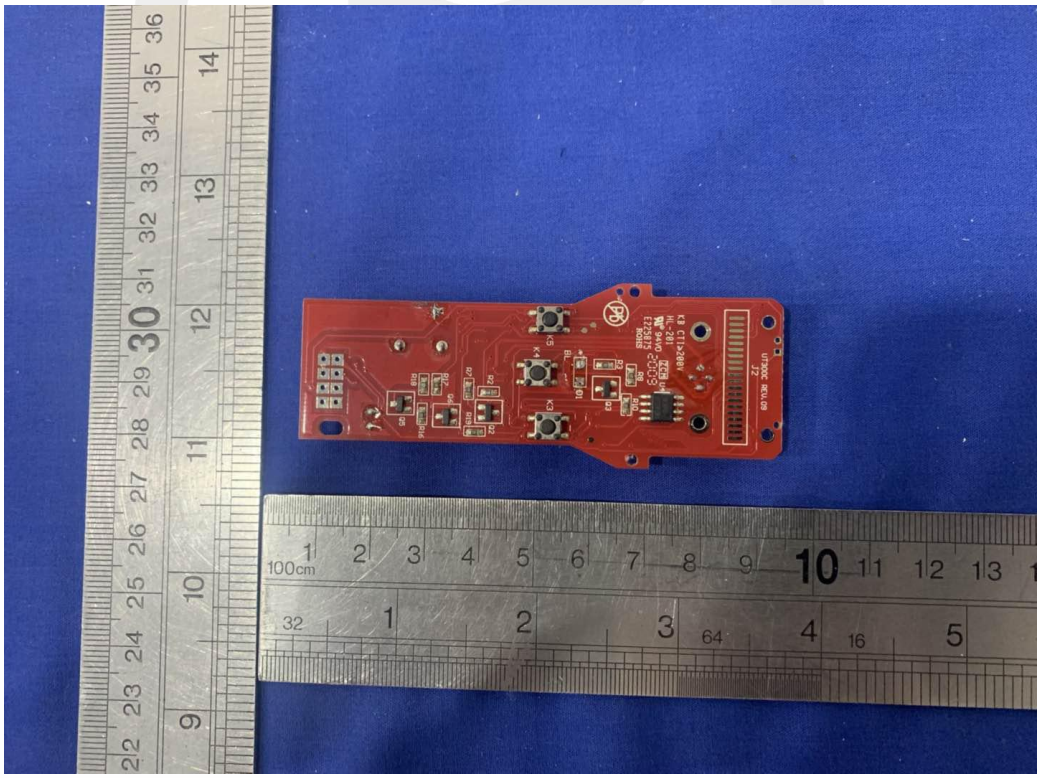
APPENDIX I
(Photos of EUT)




UNI-T
Infrared Thermometer
UT300R


UNI-T
Infrared Thermometer
UT30IR





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声 明
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