

EMC TEST REPORT  
For

Defiro Media Production S.R.L

Infrared thermometer

Test Model: DEF-TSV1

Additional Model No.: Please Refer to Page 9

Prepared for : Defiro Media Production S.R.L  
Address : Pipera no. 1/VII, Loc. Voluntari, Jud, Ilfov,  
Romania, CP 077190

Prepared by : Shenzhen LCS Compliance Testing Laboratory  
Address : Shenzhen LCS Compliance Testing Laboratory  
Ltd.  
Room 101, 201, Building A and Room 301,  
Building C, Juji Industrial Park, Yabianxueziwei,  
Shajing Street, Bao'an District, Shenzhen,  
Guangdong, China

Tel : (+86)755-82591330  
Fax : (+86)755-82591332  
Web : www.LCS-cert.com  
Mail : webmaster@LCS-cert.com

Date of receipt of test sample : May 19, 2020  
Number of tested samples : 1  
Serial number : Prototype  
Date of Test : May 19, 2020 ~ May 25, 2020  
Date of Report : May 26, 2020



**TEST REPORT**  
**EN 60601-1-2: 2015**

Medical electrical equipment -- Part 1-2: General requirements for basic safety and essential performance - Collateral standard: Electromagnetic compatibility - Requirements and tests

**Report Reference No. ....:** LCS200519007AE

**Date Of Issue .....** May 26, 2020

**Testing Laboratory Name ....:** Shenzhen LCS Compliance Testing Laboratory Ltd.

**Address .....** 101, 601, Xingyuan Industrial Park, Gushu Community, Xixiang Street, Bao' an District, Shenzhen, Guangdong, China

**Testing Location/ Procedure...:** Full application of Harmonised standards   
 Partial application of Harmonised standards   
 Other standard testing method

**Applicant's Name .....** Defiro Media Production S.R.L

**Address .....** Pipera no. 1/VII, Loc. Voluntari, Jud, Ilfov, Romania, CP 077190

**Test Specification:**

**Standard .....** EN 60601-1-2: 2015  
 EN 61000-3-2: 2014  
 EN 61000-3-3: 2013

**Test Report Form No.....:** LCSEMC-1.0

**TRF Originator.....:** Shenzhen LCS Compliance Testing Laboratory Ltd.

**Master TRF .....** Dated 2011-03

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**Test Item Description.....:** Infrared thermometer

**Trade Mark.....:** N/A

**Test Model.....:** DEF-TSV1

**Ratings .....** DC5V

**Result .....** Positive

**Compiled by:**

*Mia Huang*

Mia Huang/ File administrators

**Supervised by:**

*Jason Deng*

Jason Deng / Technique principal

**Approved by:**



Gavin Liang Manager

# EMC -- TEST REPORT

Test Report No. : LCS200519007AE

May 26, 2020  
Date of issue

Test Model.....	: DEF-TSV1
EUT.....	: Infrared thermometer
<b>Applicant.....</b>	<b>: Defiro Media Production S.R.L</b>
Address.....	: Pipera no. 1/VII, Loc. Voluntari, Jud, Ilfov, Romania, CP 077190
Telephone.....	: /
Fax.....	: /
<b>Manufacturer.....</b>	<b>: Guangzhou Leisure Auto Safety Technology Co.,ltd</b>
Address.....	: Rm605, #350-7, Xingangzhong RD. ,Haizhu District, Guangzhou, China
Telephone.....	: /
Fax.....	: /
<b>Factory.....</b>	<b>: Guangzhou Leisure Auto Safety Technology Co.,ltd</b>
Address.....	: Rm605, #350-7, Xingangzhong RD. ,Haizhu District, Guangzhou, China
Telephone.....	: /
Fax.....	: /

**Test Result** according to the standards on page 8: **Positive**

The test report merely corresponds to the test sample.  
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

### Revision History

Revision	Issue Date	Revisions	Revised By
000	May 26, 2020	Initial Issue	Gavin Liang

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# 1. SUMMARY OF STANDARDS AND RESULTS

## 1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

<b>EMISSION (EN 60601-1-2: 2015)</b>			
<b>Description of Test Item</b>	<b>Standard</b>	<b>Limits</b>	<b>Results</b>
Conducted disturbance at mains terminals	CISPR 11: 2016	Class B	PASS
Conducted disturbance at telecommunication port	CISPR 11: 2016	Class B	N/A
Radiated disturbance	CISPR 11: 2016	Class B	PASS
Harmonic current emissions	EN 61000-3-2: 2014	Class A	N/A
Voltage fluctuations & flicker	EN 61000-3-3: 2013	-----	PASS
<b>IMMUNITY (EN 60601-1-2: 2015)</b>			
<b>Description of Test Item</b>	<b>Basic Standard</b>	<b>Performance Criteria</b>	<b>Results</b>
Electrostatic discharge (ESD)	EN 61000-4-2: 2009/ IEC 61000-4-2:2008	PASS	PASS
Radio-frequency, Continuous radiated disturbance	EN 61000-4-3: 2006+A2: 2010/ IEC 61000-4-3:2010	PASS	PASS
Electrical fast transient (EFT)	EN 61000-4-4: 2012// IEC 61000-4-4:2012	PASS	PASS
Surge (Input a.c. power ports)	EN 61000-4-5: 2014+A1: 2017/ IEC 61000-4-5:2017	PASS	PASS
Surge (Telecommunication ports)		PASS	N/A
Radio-frequency, Continuous conducted disturbance	EN 61000-4-6: 2014/ IEC 61000-4-6:2013	PASS	PASS
Power frequency magnetic field	EN 61000-4-8: 2010/ IEC 61000-4-8:2009	PASS	PASS
Voltage dips, > 95% reduction	EN 61000-4-11: 2004+A1: 2017/ IEC 61000-4-11:2020	PASS	PASS
Voltage dips, > 60% reduction		PASS	PASS
Voltage dips, 30% reduction		PASS	PASS
Voltage interruptions > 95%		PASS	PASS
N/A is an abbreviation for Not Applicable.			

### Test mode:

Mode 1	ON	Record
--------	----	--------

## 2. GENERAL INFORMATION

### 2.1. Description of Device (EUT)

EUT	: Infrared thermometer
Trade Mark	: N/A
Test Model	: DEF-TSV1
Model Lists	: DEF-TSV2
Model Declaration	: PCB board, structure and internal of these model(s) are the same, So no additional models were tested
Power Supply	: DC5V

### 2.2. Description of Support Device

Name	Manufacturers	M/N	S/N
Adapter	OPPO	OP52KAUH	--

### 2.3. Description of Test Facility

Site Description EMC Lab.	: FCC Registration Number. is 254912. Industry Canada Registration Number. is 9642A. ESMD Registration Number. is ARCB0108. UL Registration Number. is 100571-492. TUV SUD Registration Number. is SCN1081. TUV RH Registration Number. is UA 50296516-001. NVLAP Registration Code is 600167-0.
------------------------------	--

### 2.4. Statement of the Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

## 2.5.Measurement Uncertainty

Test	Parameters	Expanded Uncertainty (U <sub>lab</sub> )	Expanded Uncertainty (U <sub>cispr</sub> )
Conducted Emission	Level accuracy (9kHz to 150kHz)	± 2.63 dB	± 3.8 dB
	(150kHz to 30MHz)	± 2.35 dB	± 3.4dB
Power Disturbance	Level accuracy (30MHz to 300MHz)	± 2.90dB	± 4.5 dB
Electromagnetic Radiated Emission (3-loop)	Level accuracy (9kHz to 30MHz)	± 3.60 dB	± 3.3 dB
Radiated Emission	Level accuracy (9kHz to 30MHz)	± 3.68 dB	N/A
Radiated Emission	Level accuracy (30MHz to 1000MHz)	± 3.48 dB	± 5.3 dB
Radiated Emission	Level accuracy (above 1000MHz)	± 3.90 dB	± 5.2 dB
Mains Harmonic	Voltage	± 0.510%	N/A
Voltage Fluctuations & Flicker	Voltage	± 0.510%	N/A

(1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.

(2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.



### 3. MEASURING DEVICE AND TEST EQUIPMENT

#### 3.1. Conducted Disturbance

Item	Test Equipment	Manufacturer	Model No	Serial No.	Last Cal.
1	EMI Test Software	AUDIX	E3	/	N/A
2	EMI Test Receiver	R&S	ESPI	101840	2019-06-11
3	Artificial Mains	R&S	ENV216	101288	2019-06-12
4	10dB Attenuator	SCHWARZBECK	MTS-IMP-136	261115-001-00 32	2019-06-11

#### 3.2. Radiated Disturbance (Electric Field)

Item	Test Equipment	Manufacturer	Model No	Serial No.	Last Cal.
1	EMI Test Software	AUDIX	E3	/	N/A
2	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2019-06-12
3	Positioning Controller	MF	MF-7082	/	2019-06-12
4	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2019-07-25
5	Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1925	2019-07-01
6	EMI Test Receiver	R&S	ESR 7	101181	2019-06-12
7	RS SPECTRUM ANALYZER	R&S	FSP40	100503	2019-11-14
8	AMPLIFIER	QuieTek	QTK	CHM/0809065	2019-11-14
9	RF Cable-R03m	Jye Bao	RG142	CB021	2019-06-12
10	RF Cable-HIGH	SUHNER	SUCOFLEX 106	03CH03-HY	2019-06-12

#### 3.3. Harmonic Current

Item	Test Equipment	Manufacturer	Model No	Serial No.	Last Cal.
1	Power Analyzer Test System	Voltech	PM6000	20000670053	2019-06-12

#### 3.4. Voltage fluctuation and Flicker

Item	Test Equipment	Manufacturer	Model No	Serial No.	Last Cal.
1	Power Analyzer Test System	Voltech	PM6000	20000670053	2019-06-12

#### 3.5. Electrostatic Discharge

Item	Test Equipment	Manufacturer	Model No	Serial No.	Last Cal.
1	ESD Simulator	SCHLODER	SESD 230	604035	2019-06-13

### 3.6.RF Field Strength Susceptibility

Item	Test Equipment	Manufacturer	Model No	Serial No.	Last Cal.
1	RS Test Software	Tonscend	/	/	N/A
2	ESG Vector Signal Generator	Agilent	E4438C	MY42081396	2019-11-14
3	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	2019-06-12
4	RF POWER AMPLIFIER	OPHIR	5225R	1052	NCR
5	RF POWER AMPLIFIER	OPHIR	5273F	1019	NCR
6	Stacked Broadband Log Periodic Antenna	SCHWARZBEC K	STLP 9128	9128ES-145	NCR
7	Stacked Mikrowellen Log.-Per Antenna	SCHWARZBEC K	STLP 9149	9149-484	NCR
8	Electric field probe	Narda S.TS./PMM	EP601	611WX80208	2020-03-24

Note: NCR means no calibration requirement

### 3.7.Electrical Fast Transient/Burst

Item	Test Equipment	Manufacturer	Model No	Serial No.	Last Cal.
1	Immunity Simulative Generator	EM TEST	UCS500 M4	0101-34	2019-06-11

### 3.8.Surge

Item	Test Equipment	Manufacturer	Model No	Serial No.	Last Cal.
1	Immunity Simulative Generator	EM TEST	UCS500 M4	0101-34	2019-06-11

### 3.9.Conducted Susceptibility

Item	Test Equipment	Manufacturer	Model No	Serial No.	Last Cal.
1	Simulator	FRANKONIA	CIT-10/75	A126A1195	2019-06-11
2	CDN	FRANKONIA	CDN-M2+M3	A2210177	2019-06-11
3	6dB Attenuator	FRANKONIA	DAM25W	1172040	2019-06-11

### 3.10.Power Frequency Magnetic Field Susceptibility

Item	Test Equipment	Manufacturer	Model No	Serial No.	Last Cal.
1	Power frequency mag-field generator System	EVERFINE	EMS61000-8K	906003	2019-06-11

### 3.11.Voltage Dips

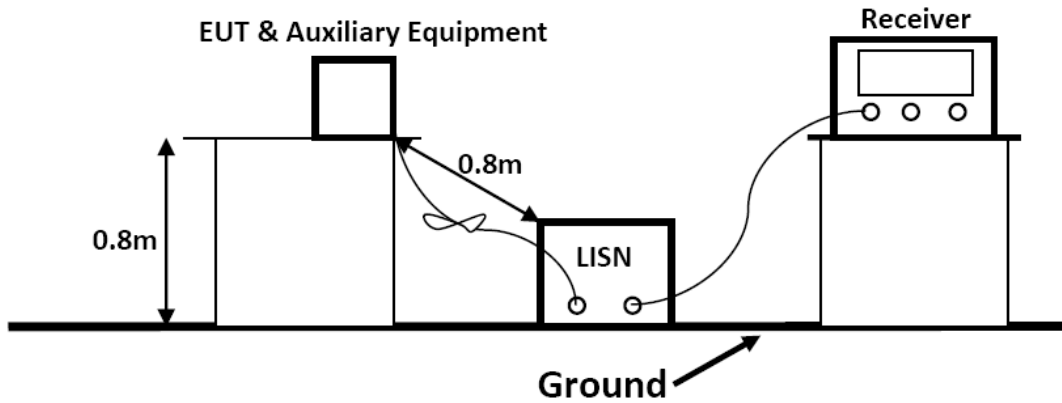
Item	Test Equipment	Manufacturer	Model No	Serial No.	Last Cal.
1	Voltage dips and up generator	3CTEST	VDG-1105G	EC0171014	2019-06-11

### 3.12.Voltage Short Interruptions

Item	Test Equipment	Manufacturer	Model No	Serial No.	Last Cal.
1	Voltage dips and up generator	3CTEST	VDG-1105G	EC0171014	2019-06-11

## 4. POWER LINE CONDUCTED EMISSION MEASUREMENT

### 4.1. Block Diagram of Test Setup



### 4.2. Test Standard

EN 60601-1-2: 2015 (CISPR 11: 2016)

#### Power Line Conducted Emission Limits (Class B)

Frequency (MHz)	Limit (dB $\mu$ V)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66.0 ~ 56.0 *	56.0 ~ 46.0 *
0.50 ~ 5.00	56.0	46.0
5.00 ~ 30.00	60.0	50.0

NOTE1-The lower limit shall apply at the transition frequencies.  
 NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

### 4.3. EUT Configuration on Test

The following equipments are installed on Conducted Emission Measurement to see

EN 55011 requirements and operating in a manner which tends to maximize its emission characteristics in normal application.

#### 4.4. Operating Condition of EUT

- 4.4.1. Setup the EUT as shown on Section 4.1.
- 4.4.2. Turn on the power of all equipments.
- 4.4.3. Let the EUT work in measuring mode (1) and measure it.

#### 4.5. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N). This provided 50-ohm coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the EN 55011 regulations during conducted emission measurement.

The bandwidth of the field strength meter is set at 9kHz in 150kHz~30MHz and 200Hz in 9kHz~150kHz.

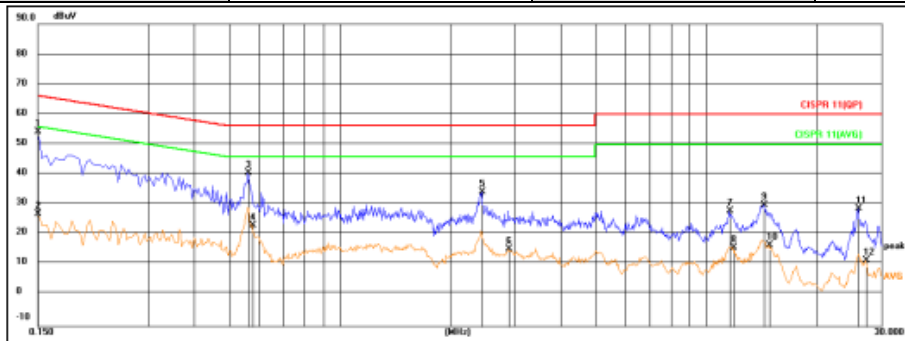
The frequency range from 150kHz to 30MHz is investigated

#### 4.6. Test Results

**PASS.**

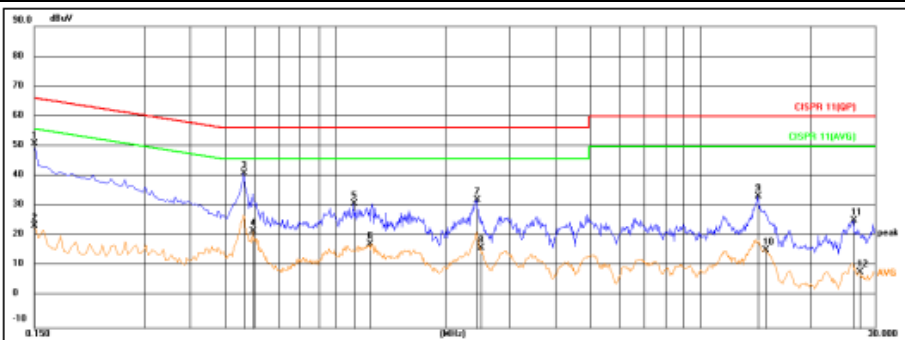
The test result please refer to the next page.

<b>Test Model</b>	DEF-TSV1	<b>Test Mode</b>	Mode 1
<b>Environmental Conditions</b>	23.3°C, 53.7% RH	<b>Test Engineer</b>	Carl Fu
<b>Pol</b>	Line	<b>Test Voltage</b>	AC 230V/50Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1500	35.31	19.14	54.45	66.00	-11.55	QP
2	0.1500	7.92	19.14	27.06	56.00	-28.94	AVG
3	0.5639	21.56	19.14	40.70	56.00	-15.30	QP
4	0.5775	4.09	19.16	23.25	46.00	-22.75	AVG
5	2.4360	14.99	19.43	34.42	56.00	-21.58	QP
6	2.8950	-3.97	19.46	15.49	46.00	-30.51	AVG
7	11.5665	8.28	19.82	28.10	60.00	-31.90	QP
8	11.8500	-3.80	19.85	16.05	50.00	-33.95	AVG
9	14.3340	10.12	20.08	30.20	60.00	-29.80	QP
10	14.8830	-3.41	20.15	16.74	50.00	-33.26	AVG
11	25.9395	8.72	20.08	28.80	60.00	-31.20	QP
12	27.1590	-8.42	20.10	11.68	50.00	-38.32	AVG

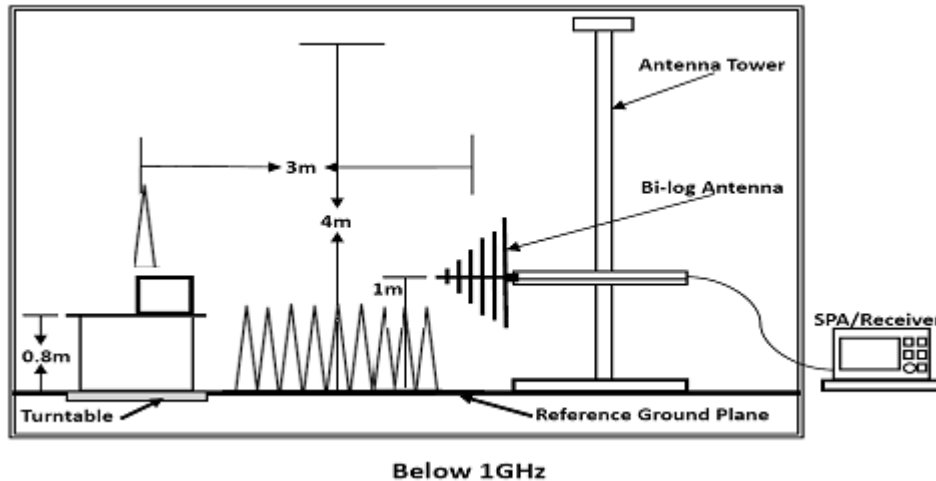
<b>Test Model</b>	DEF-TSV1	<b>Test Mode</b>	Mode 1
<b>Environmental Conditions</b>	23.3°C, 53.7% RH	<b>Test Engineer</b>	Carl Fu
<b>Pol</b>	Neutral	<b>Test Voltage</b>	AC 230V/50Hz



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.1500	31.92	19.14	51.06	66.00	-14.94	QP
2	0.1500	4.67	19.14	23.81	56.00	-32.19	AVG
3	0.5639	22.03	19.14	41.17	56.00	-14.83	QP
4	0.5955	3.02	19.18	22.20	46.00	-23.80	AVG
5	1.1265	11.93	19.27	31.20	56.00	-24.80	QP
6	1.2480	-1.47	19.28	17.81	46.00	-28.19	AVG
7	2.4360	12.97	19.43	32.40	56.00	-23.60	QP
8	2.5035	-2.80	19.43	16.63	46.00	-29.37	AVG
9	14.3475	13.59	20.08	33.67	60.00	-26.33	QP
10	15.0180	-4.38	20.17	15.79	50.00	-34.21	AVG
11	26.1689	5.49	20.08	25.57	60.00	-34.43	QP
12	27.1590	-11.49	20.10	8.61	50.00	-41.39	AVG

## 5. RADIATED EMISSION MEASUREMENT

### 5.1. Block Diagram of Test Setup



### 5.2. Measuring Standard

EN 60601-1-2: 2015(CISPR 11: 2016)

### 5.3. Radiated Emission Limits

EN 55011 Limits:

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

#### Limits for radiated disturbance Below 1GHz

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT (dB $\mu$ V/m)
30 ~ 230	3	42-35
230 ~ 1000	3	42

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.

### 5.4. EUT Configuration on Test

The EN 55011 regulations test method must be used to find the maximum emission during radiated emission measurement.

## 5.5. Operating Condition of EUT

5.5.1. Turn on the power.

5.5.2. After that, let the EUT work in test mode (1) and measure it.

## 5.6. Test Procedure

The EUT is placed on a turntable, which is 0.8 meter high above the ground. The turntable 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. By-log antenna is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.

The bandwidth of the Receiver is set at 120kHz.

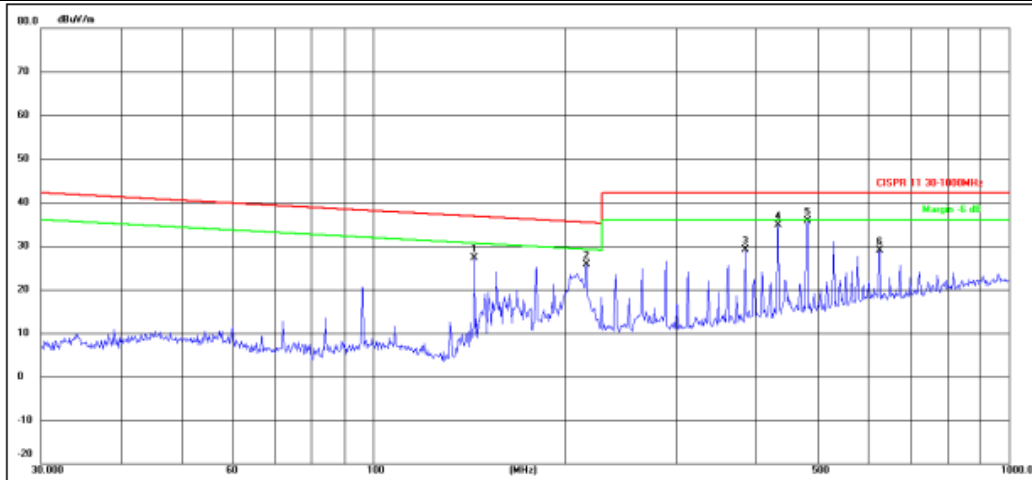
The frequency range from 30MHz to 1000MHz is investigated.

## 5.7. Test Results

**PASS.**

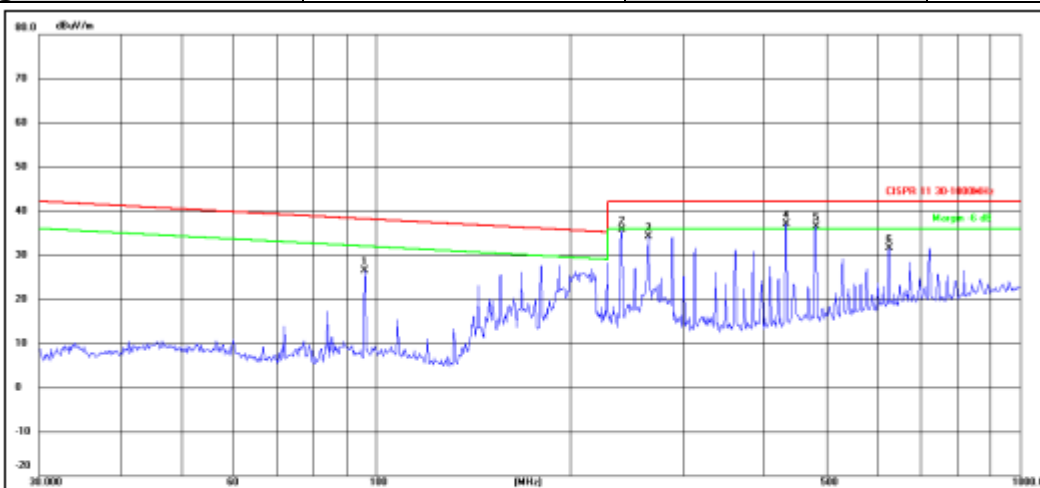
The test result please refer to the next page.

<b>Test Model</b>	DEF-TSV1	<b>Test Mode</b>	Mode 1
<b>Environmental Conditions</b>	24.6°C, 54.1% RH	<b>Detector Function</b>	Quasi-peak
<b>Pol</b>	Vertical	<b>Distance</b>	3m
<b>Test Engineer</b>	Carl Fu	<b>Test Voltage</b>	AC 230V/50Hz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	144.3346	49.02	-21.85	27.17	36.60	-9.43	QP
2	216.7828	43.51	-17.74	25.77	35.20	-9.43	QP
3	385.2803	42.83	-13.64	29.19	42.00	-12.81	QP
4	434.0649	47.48	-12.67	34.81	42.00	-7.19	QP
5 *	482.2155	47.66	-11.82	35.84	42.00	-6.16	QP
6	627.2736	37.93	-9.00	28.93	42.00	-13.07	QP

<b>Test Model</b>	DEF-TSV1	<b>Test Mode</b>	Mode 1
<b>Environmental Conditions</b>	24.6°C, 54.1% RH	<b>Detector Function</b>	Quasi-peak
<b>Pol</b>	Horizontal	<b>Distance</b>	3m
<b>Test Engineer</b>	Carl Fu	<b>Test Voltage</b>	AC 230V/50Hz

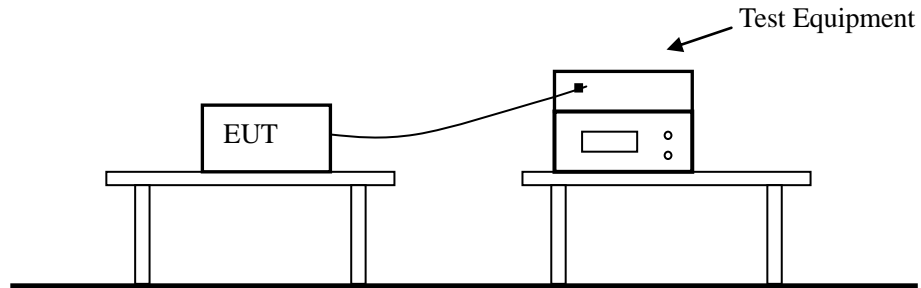


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	96.0985	45.54	-18.98	26.56	38.00	-11.44	QP
2	240.8303	52.75	-17.02	35.73	42.00	-6.27	QP
3	264.7457	50.66	-16.35	34.31	42.00	-7.69	QP
4 *	434.0650	49.76	-12.67	37.09	42.00	-4.91	QP
5 !	482.2155	48.37	-11.82	36.55	42.00	-5.45	QP
6	627.2737	40.68	-9.00	31.68	42.00	-10.32	QP



## 6. HARMONIC CURRENT EMISSION MEASUREMENT

### 6.1. Block Diagram of Test Setup



### 6.2. Test Standard

EN 61000-3-2: 2014

### 6.3. Operation Condition of EUT

Same as Section 3.4, except the test setup replaced as Section 6.1.

### 6.4. Test Results

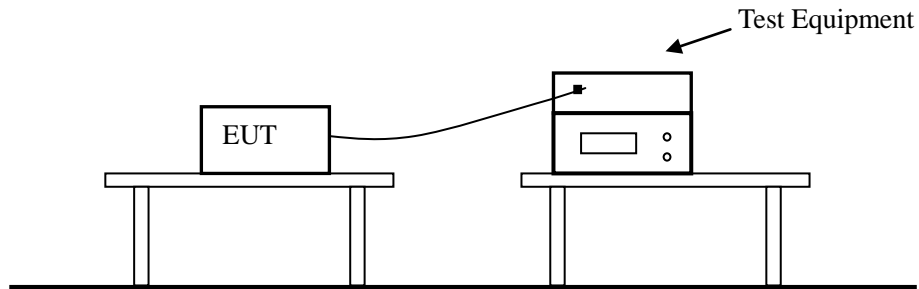
**PASS.**

The test result please refer to the next page.

Because the power of EUT is less than 75W, according to standard EN 61000-3-2, harmonic current is unnecessary to test.

## 7. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

### 7.1. Block Diagram of Test Setup



### 7.2. Measuring Standard

EN 61000-3-3: 2013

### 7.3. Operation Condition of EUT

Same as Section 3.4, except the test setup replaced as Section 7.1.

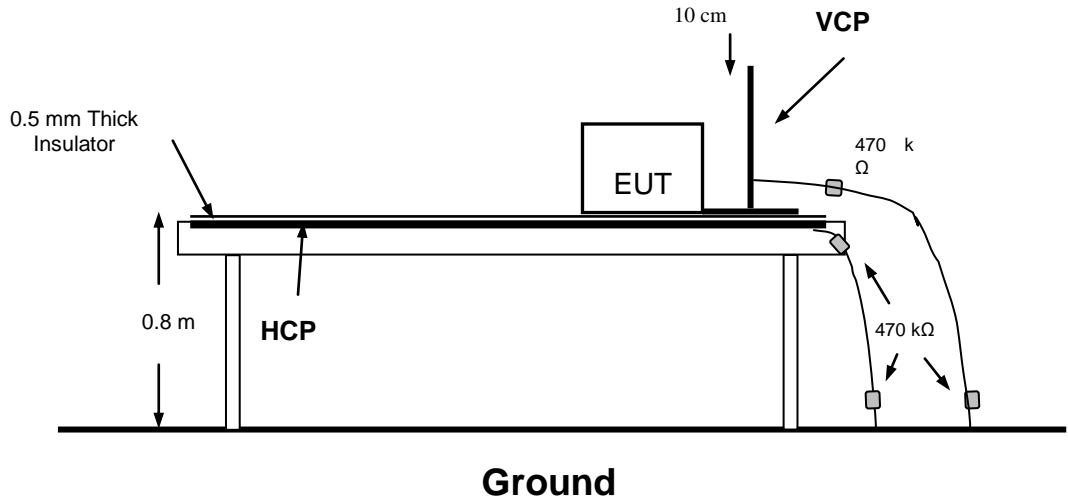
### 7.4. Test Results

**PASS.**

<b>Test Model</b>	DEF-TSV1		<b>Test Engineer</b>	Carl Fu
Overall Result:  <b>PASS</b>	Notes: Measurement method - Voltage			
	Pst	dc (%)	dmax (%)	d(t) > 3.3%(ms)
Limit	1.000	3.300	4.000	500
Reading 1	0.089	0.008	0.128	0

## 8. ELECTROSTATIC DISCHARGE IMMUNITY TEST

### 8.1. Block Diagram of Test Setup



### 8.2. Test Standard

EN 60601-1-2: 2015 (EN 61000-4-2: 2009, Severity Level: 4 / Air Discharge:  $\pm 15$  KV, Level: 4 / Contact Discharge:  $\pm 8$  KV)

### 8.3. Severity Levels and Performance Criterion

#### 8.3.1. Severity level

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

#### 8.3.2. Performance Criterion: Pass

### 8.4. EUT Configuration on Test

The configuration of EUT is listed in Section.3.

### 8.5. Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 3.4. Except the test set up replaced by Section 8.1.

## 8.6. Test Procedure

### 8.6.1. 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 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

### 8.6.2. Contact Discharge

All the procedure shall be same as Section 8.6.1. Except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

### 8.6.3. Indirect Discharge For Horizontal Coupling Plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

### 8.6.4. Indirect Discharge For Vertical Coupling Plane

At least 10 single discharge (in the most sensitive polarity) 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.

## 8.7. Test Results

**PASS.**

Please refer to the following pages

# Electrostatic Discharge Test Results

<b>Standard</b>	<input checked="" type="checkbox"/> IEC 61000-4-2 <input checked="" type="checkbox"/> EN 61000-4-2		
<b>Applicant</b>	Defiro Media Production S.R.L		
<b>EUT</b>	Infrared thermometer	<b>Temperature</b>	22.8°C
<b>M/N</b>	DEF-TSV1	<b>Humidity</b>	53.2%
<b>Criterion</b>	Pass	<b>Pressure</b>	1021mbar
<b>Test Mode</b>	Mode 1	<b>Test Engineer</b>	Carl Fu
<b>Test Voltage</b>	AC 230V/50Hz		

### Air Discharge

Test Points	Test Levels				Results		
	± 2KV	± 4KV	± 8KV	± 15KV	Passed	Fail	Performance Criterion
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Top	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Bottom	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B

### Contact Discharge

Test Points	Test Levels				Results		
	± 2 kV	±4 kV	±6 kV	±8 kV	Passed	Fail	Performance Criterion
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Top	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Bottom	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B

### Discharge To Horizontal Coupling Plane

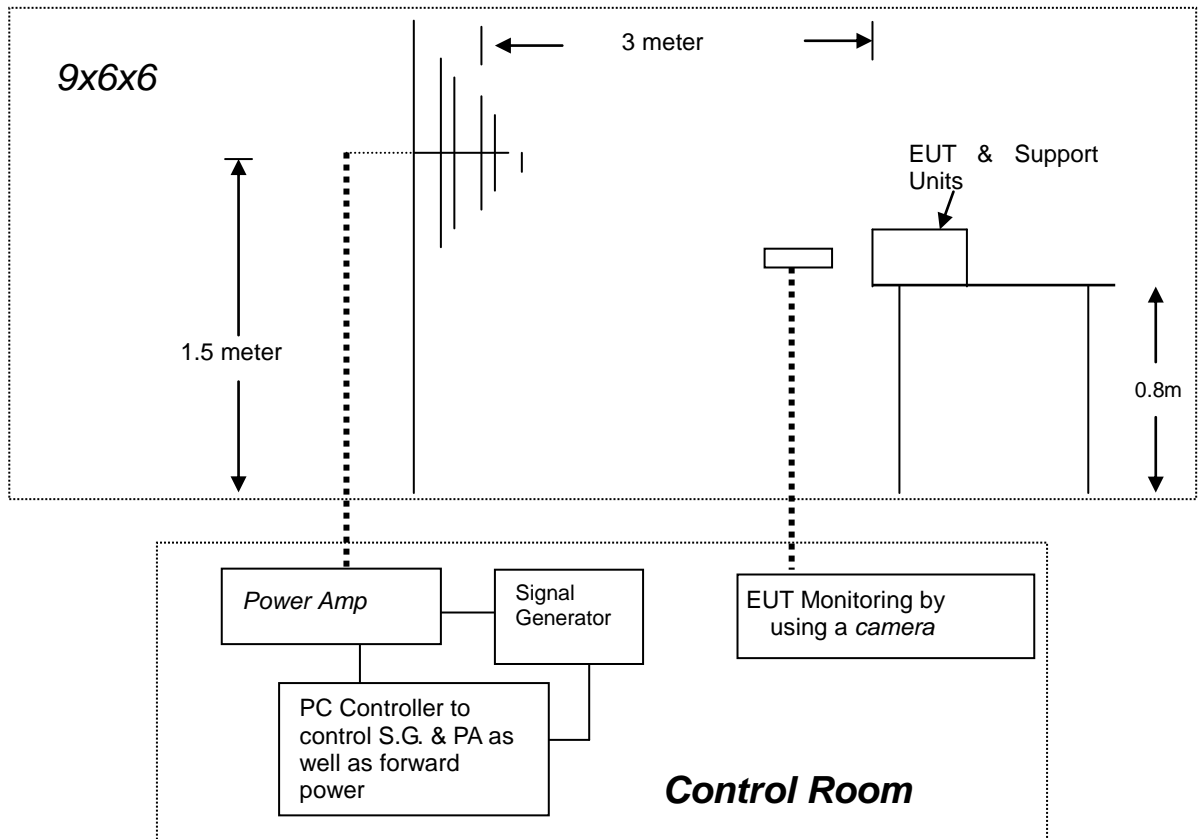
Side of EUT	Test Levels		Results		
	± 2 kV	± 4 kV	Passed	Fail	Performance Criterion
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B

### Discharge To Vertical Coupling Plane

Side of EUT	Test Levels		Results		
	± 2 kV	± 4 kV	Passed	Fail	Performance Criterion
Front	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Back	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Left	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B
Right	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> A <input checked="" type="checkbox"/> B

## 9. RF FIELD STRENGTH SUSCEPTIBILITY TEST

### 9.1. Block Diagram of Test



### 9.2. Test Standard

EN 60601-1-2: 2015

(EN 61000-4-3: 2006+A2: 2010 Severity Level: 3, 10V / m)

### 9.3. Severity Levels and Performance Criterion

#### 9.3.1. Severity Levels

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

#### 9.3.2. Performance Criterion: Pass

#### 9.4.EUT Configuration on Test

The configuration of the EUT is same as Section 3.

#### 9.5.Operating Condition of EUT

Same as radiated emission measurement, which is listed in Section 4.4, except the test setup replaced as Section 9.1.

#### 9.6.Test Procedure

The EUT are placed on a table, which is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna, which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna is set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually.

In order to judge the EUT performance, a CCD Recording is used to monitor its screen.

All the scanning conditions are as following:

Condition of Test -----	Remark -----
1. Fielded Strength	10V/m (Severity Level 3)
2. Radiated Signal	Unmodulated
3. Scanning Frequency	80 MHz to 2.7GHz
4. Sweep time of radiated	0.0015 Decade/s
5. Dwell Time	3 Sec.

#### 9.7.Test Results

**PASS.**

Please refer to the following page.

# RF Field Strength Susceptibility Test Results

<b>Standard</b>	<input checked="" type="checkbox"/> IEC 61000-4-3 <input checked="" type="checkbox"/> EN 61000-4-3		
<b>Applicant</b>	Defiro Media Production S.R.L		
<b>EUT</b>	Infrared thermometer	<b>Temperature</b>	22.5°C
<b>M/N</b>	DEF-TSV1	<b>Humidity</b>	53.1%
<b>Field Strength</b>	10 V/m	<b>Criterion</b>	Pass
<b>Test Mode</b>	Mode 1	<b>Test Engineer</b>	Carl Fu
<b>Frequency Range</b>	80 MHz to 2.7GHz	<b>Test Voltage</b>	AC 230V/50Hz
<b>Modulation</b>	<input type="checkbox"/> None <input type="checkbox"/> Pulse <input checked="" type="checkbox"/> AM 1KHz 80%		
<b>Steps</b>	1%		

	Horizontal	Vertical
<b>Front</b>	PASS	PASS
<b>Right</b>	PASS	PASS
<b>Rear</b>	PASS	PASS
<b>Left</b>	PASS	PASS

**Test Equipment:**

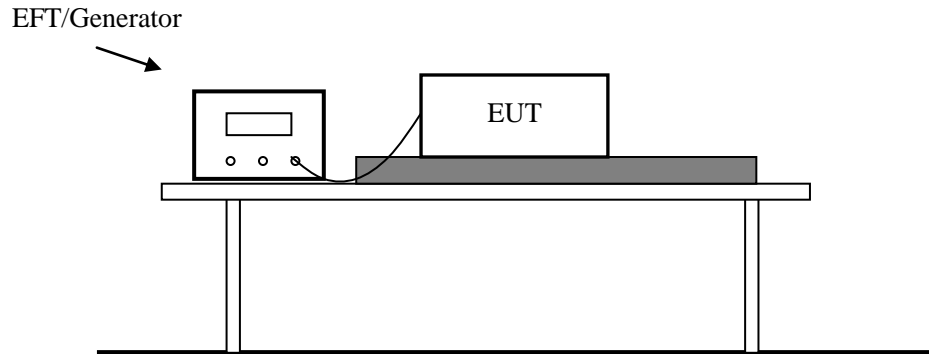
1. Signal Generator: 2031 (MARCONI)
2. Power Amplifier: 500A100 & 100W/1000M1 (A&R)
3. Power Antenna: 3108 (EMCO) & AT1080 (A&R)
4. Field Monitor: FM2000 (A&R)

Note:



## 10. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

### 10.1. Block Diagram of Test Setup



### 10.2. Test Standard

EN 60601-1-2: 2015  
(EN 61000-4-4: 2012, Severity Level, Level 3: 2KV)

### 10.3. Severity Levels and Performance Criterion

#### 10.3.1. Severity level

Level	Open Circuit Output Test Voltage $\pm 10\%$	
	On Power Supply Lines	On I/O (Input/Output) Signal data and control lines
1.	0.5 KV	0.25 KV
2.	1 KV	0.5 KV
3.	2 KV	1 KV
4.	4 KV	2 KV
X	Special	Special

#### 10.3.2. Performance Criterion: Pass

### 10.4. EUT Configuration on Test

The configuration of EUT is listed in Section 3

## 10.5. Operating Condition of EUT

10.5.1. Setup the EUT as shown in Section 10.1.

10.5.2. Turn on the power of all equipments.

10.5.3. Let the EUT work in test mode (1) and measure it.

## 10.6. Test Procedure

The EUT is put on the table, which is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

10.6.1. For input and output AC power ports:

The EUT is connected to the power mains by using a coupling device, which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

10.6.2. For signal lines and control lines ports: No I/O ports. It's unnecessary to test.

10.6.3. For DC output line ports: It's unnecessary to test.

## 10.7. Test Results

**PASS.**

Please refer to the following page.

# Electrical Fast Transient/Burst Test Results

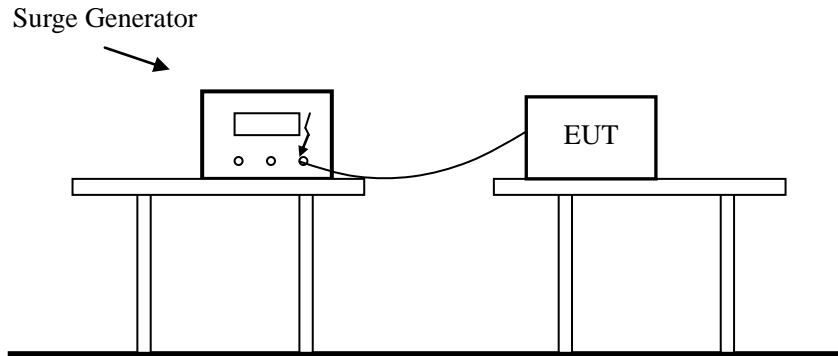
<b>Standard</b>	<input checked="" type="checkbox"/> IEC 61000-4-4 <input checked="" type="checkbox"/> EN 61000-4-4		
<b>Applicant</b>	Defiro Media Production S.R.L		
<b>EUT</b>	Infrared thermometer	<b>Temperature</b>	22.8°C
<b>M/N</b>	DEF-TSV1	<b>Humidity</b>	53.2%
<b>Test Mode</b>	Mode 1	<b>Criterion</b>	Pass
<b>Test Engineer</b>	Carl Fu	<b>Test Voltage</b>	AC 230V/50Hz

Line	Test Voltage	Result (+)	Result (-)
L	2KV	PASS	PASS
N	2KV	PASS	PASS
PE			
L-N	2KV	PASS	PASS
L-PE			
N-PE			
L-N-PE			
Signal Line			
I/O Cable			

Note:

## 11. SURGE IMMUNITY TEST

### 11.1. Block Diagram of Test Setup



### 11.2. Test Standard

EN 60601-1-2: 2015

(EN 61000-4-5: 2014+A1: 2017, Severity Level: Line to Line: Level 2, 1.0KV, Line to Earth: Level 3, 2.0KV)

### 11.3. Severity Levels and Performance Criterion

#### 11.3.1. Severity level

Severity Level	Open-Circuit Test Voltage (KV)
1	0.5
2	1.0
3	2.0
4	4.0
*	Special

#### 11.3.2. Performance Criterion: Pass

### 11.4. EUT Configuration on Test

The configuration of EUT is listed in Section 3

## 11.5. Operating Condition of EUT

11.5.1. Setup the EUT as shown in Section 11.1.

11.5.2. Turn on the power of all equipments.

11.5.3. Let the EUT work in test mode (1) and measure it.

## 11.6. Test Procedure

- 1) Set up the EUT and test generator as shown on Section 11.1.
- 2) For line to line coupling mode, provide a 1.0 KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
- 3) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
- 4) Different phase angles are done individually.
- 5) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

## 11.7. Test Results

**PASS.**

Please refer to the following page.

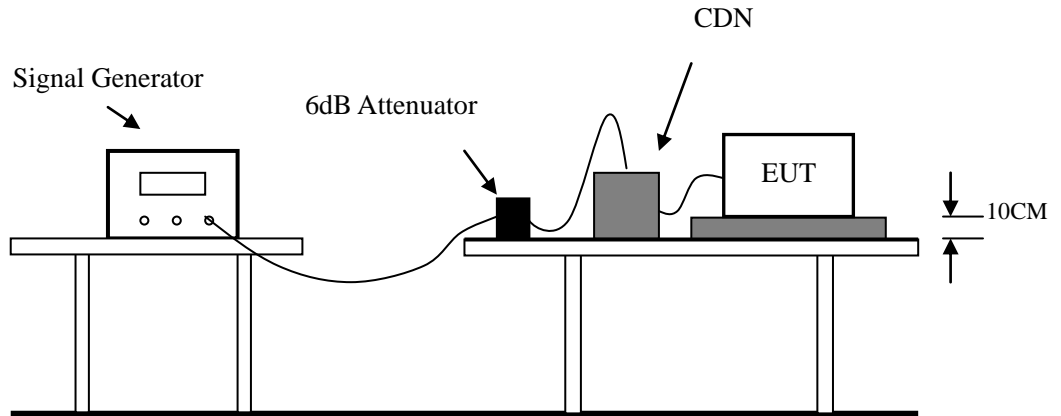
# Surge Immunity Test Result

<b>Standard</b>	<input checked="" type="checkbox"/> IEC 61000-4-5 <input checked="" type="checkbox"/> EN 61000-4-5		
<b>Applicant</b>	Defiro Media Production S.R.L		
<b>EUT</b>	Infrared thermometer	<b>Temperature</b>	22.8°C
<b>M/N</b>	DEF-TSV1	<b>Humidity</b>	53.2%
<b>Test Mode</b>	Mode 1	<b>Criterion</b>	Pass
<b>Test Engineer</b>	Carl Fu	<b>Test Voltage</b>	AC 230V/50Hz

Location	Polarity	Phase Angle	Number of Pulse	Pulse Voltage (KV)	Result
L-N	+	0°	5	1.0	PASS
	+	90°	5	1.0	PASS
	+	180°	5	1.0	PASS
	+	270°	5	1.0	PASS
	-	0°	5	1.0	PASS
	-	90°	5	1.0	PASS
	-	180°	5	1.0	PASS
	-	270°	5	1.0	PASS
L-PE					
N-PE					
Signal Line					
Note					

## 12. INJECTED CURRENTS SUSCEPTIBILITY TEST

### 12.1. Block Diagram of Test Setup



### 12.2. Test Standard

EN 60601-1-2: 2015

(EN 61000-4-6: 2014, Severity Level: Level 2, 3V (rms), Level 3, 10V (rms))

### 12.3. Severity Levels and Performance Criterion

#### 12.3.1. Severity level

Level	Field Strength (V)
1	1
2	3
3	10
X	Special

#### 12.3.2. Performance Criterion: Pass

#### 12.3.3.

### 12.4. EUT Configuration on Test

The configuration of EUT is listed in Section 3

## 12.5. Operating Condition of EUT

12.5.1. Setup the EUT as shown in Section 12.1.

12.5.2. Turn on the power of all equipments.

12.5.3. Let the EUT work in test mode (1) and measure it.

## 12.6. Test Procedure

12.6.1. Set up the EUT, CDN and test generators as shown on Section 12.1.

12.6.2. Let the EUT work in test mode and measure it.

12.6.3. The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).

12.6.4. The disturbance signal described below is injected to EUT through CDN.

12.6.5. The EUT operates within its operational mode(s) under intended climatic conditions after power on.

12.6.6. The frequency range is swept from 150kHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave.

12.6.7. The rate of sweep shall not exceed  $1.5 \times 10^{-3}$  decades/s. where the frequency is swept incrementally; the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.

12.6.8. Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

## 12.7. Test Results

**PASS.**

Please refer to the following page.



# Injected Currents Susceptibility Test Results

<b>Standard</b>	<input checked="" type="checkbox"/> IEC 61000-4-6 <input checked="" type="checkbox"/> EN 61000-4-6		
<b>Applicant</b>	Defiro Media Production S.R.L		
<b>EUT</b>	Infrared thermometer	<b>Temperature</b>	23.7°C
<b>M/N</b>	DEF-TSV1	<b>Humidity</b>	53.4%
<b>Test Mode</b>	Mode 1	<b>Criterion</b>	Pass
<b>Test Engineer</b>	Carl Fu	<b>Test Voltage</b>	AC 230V/50Hz

Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15~80 (outside ISM bands)	AC Mains	3V	A	PASS
0.15~80 in ISM bands)	AC Mains	10V	A	PASS

**Remark:**

1. Modulation Signal:1kHz 80% AM

2. Measurement Equipment :

Simulator: CWS 500 (SWITZERLAND EMTEST)

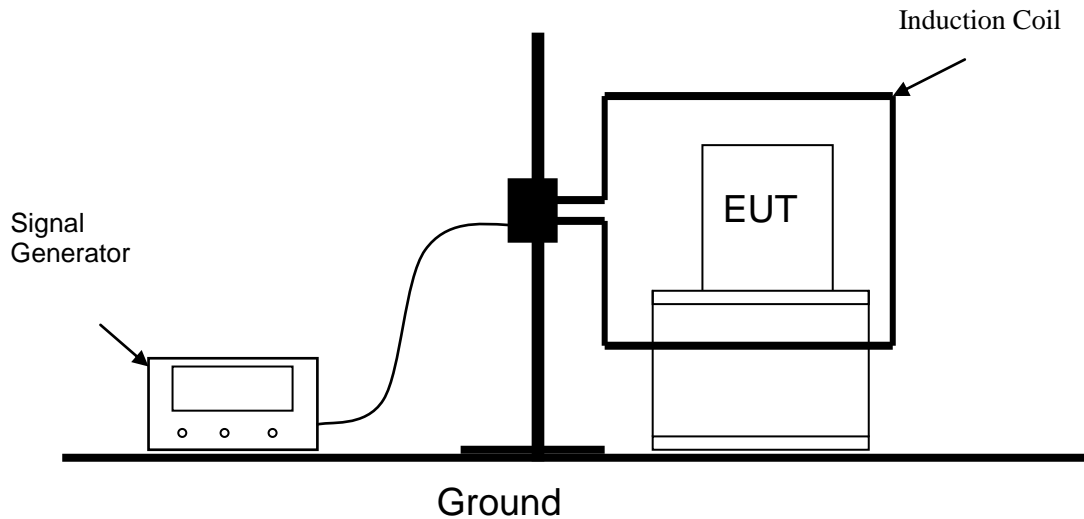
    CDN : CDN-M2 (SWITZERLAND EMTEST)    CDN-M3 (SWITZERLAND EMTEST)

3. The ISM (industrial, scientific and medical) bands between 150kHz and 80MHz are 6,765 MHz to 6,795 MHz; 13,553 MHz to 13,567 MHz; 26,957 MHz to 27,283 MHz; and 40,66 MHz to 40,70 MHz.

**Note:**

## 13. MAGNETIC FIELD SUSCEPTIBILITY TEST

### 13.1. Block Diagram of Test Setup



### 13.2. Test Standard

EN 60601-1-2: 2015  
(EN 61000-4-8: 2010, Severity Level: Level 4, 30A / m)

### 13.3. Severity Levels and Performance Criterion

#### 12.3.1. Severity Levels

Level	Field Strength (A/m)
1	1
2	3
3	10
4	30
5	100
X	Special

#### 13.3.2. Performance Criterion: Pass

### 13.4. EUT Configuration on Test

The configuration of the EUT is same as Section 3

### 13.5. Test Procedure

The EUT is placed in the middle of a induction coil (1\*1m), under which is a 1\*1\*0.1m (high) table, this small table is also placed on a larger table, 0.8 m above the ground. Both horizontal and vertical polarization of the induction coil is set on test, so that each side of the EUT is affected by the magnetic field. Also can reach the same aim by change the position of the EUT.

### 13.6. Test Results

**PASS.**

Please refer to the following page.

# Magnetic Field Immunity Test Result

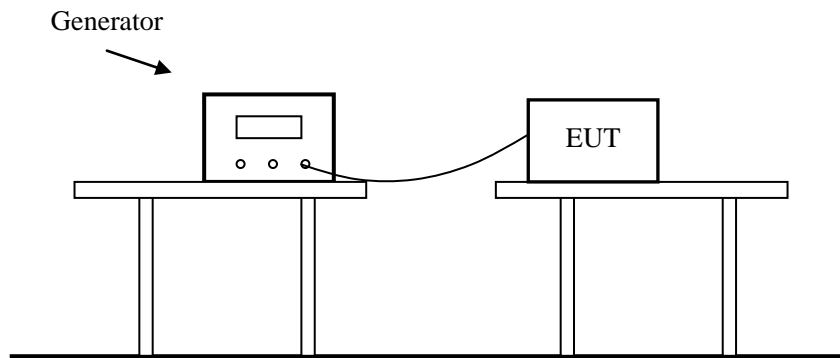
<b>Standard</b>	<input checked="" type="checkbox"/> IEC 61000-4-8 <input checked="" type="checkbox"/> EN 61000-4-8		
<b>Applicant</b>	Defiro Media Production S.R.L		
<b>EUT</b>	Infrared thermometer	<b>Temperature</b>	22.6°C
<b>M/N</b>	DEF-TSV1	<b>Humidity</b>	54.2%
<b>Test Mode</b>	Mode 1	<b>Criterion</b>	Pass
<b>Test Engineer</b>	Carl Fu	<b>Test Voltage</b>	AC 230V/50Hz

Test Level (A/M)	Testing Duration	Coil Orientation	Criterion	Result
3	5 mins	X	A	PASS
3	5 mins	Y	A	PASS
3	5 mins	Z	A	PASS

Note:

## 14. VOLTAGE DIPS AND INTERRUPTIONS TEST

### 14.1. Block Diagram of Test Setup



### 14.2. Test Standard

EN 60601-1-2: 2015 (EN 61000-4-11: 2004+A1: 2017)

### 14.3. Severity Levels and Performance Criterion

#### 14.3.1. Severity level

Test Level (%UT)	Voltage dip and short interruptions (%UT)	Duration (in period)
0	100	0.5
70	30	25
0	100	250

13.3.2. Performance Criterion: Pass

### 14.4. EUT Configuration on Test

The configuration of EUT is listed in Section 3.

## 14.5. Operating Condition of EUT

14.5.1. Setup the EUT as shown in Section 14.1.

14.5.2. Turn on the power of all equipments.

14.5.3. Let the EUT work in test mode (1) and measure it.

## 14.6. Test Procedure

- 1) Set up the EUT and test generator as shown on Section 14.1.
- 2) The interruptions are introduced at selected phase angles with specified duration.
- 3) Record any degradation of performance.

## 14.7. Test Results

**PASS.**

Please refer to the following page.

## Voltage Dips And Interruptions Test Results

<b>Standard</b>	<input checked="" type="checkbox"/> IEC 61000-4-11 <input checked="" type="checkbox"/> EN 61000-4-11		
<b>Applicant</b>	Defiro Media Production S.R.L		
<b>EUT</b>	Infrared thermometer	<b>Temperature</b>	23.2°C
<b>M/N</b>	DEF-TSV1	<b>Humidity</b>	53.1%
<b>Test Mode</b>	Mode 1	<b>Criterion</b>	Pass
<b>Test Engineer</b>	Carl Fu	<b>Test Voltage</b>	AC 230V/50Hz

Test Level % U <sub>T</sub>	Voltage Dips & Short Interruptions % U <sub>T</sub>	Duration (in periods)	Criterion	Result
<5	>95	0.5P	B	PASS
40	60	5	B	PASS
70	30	25P	B	PASS
<5	>95	250P	C	PASS

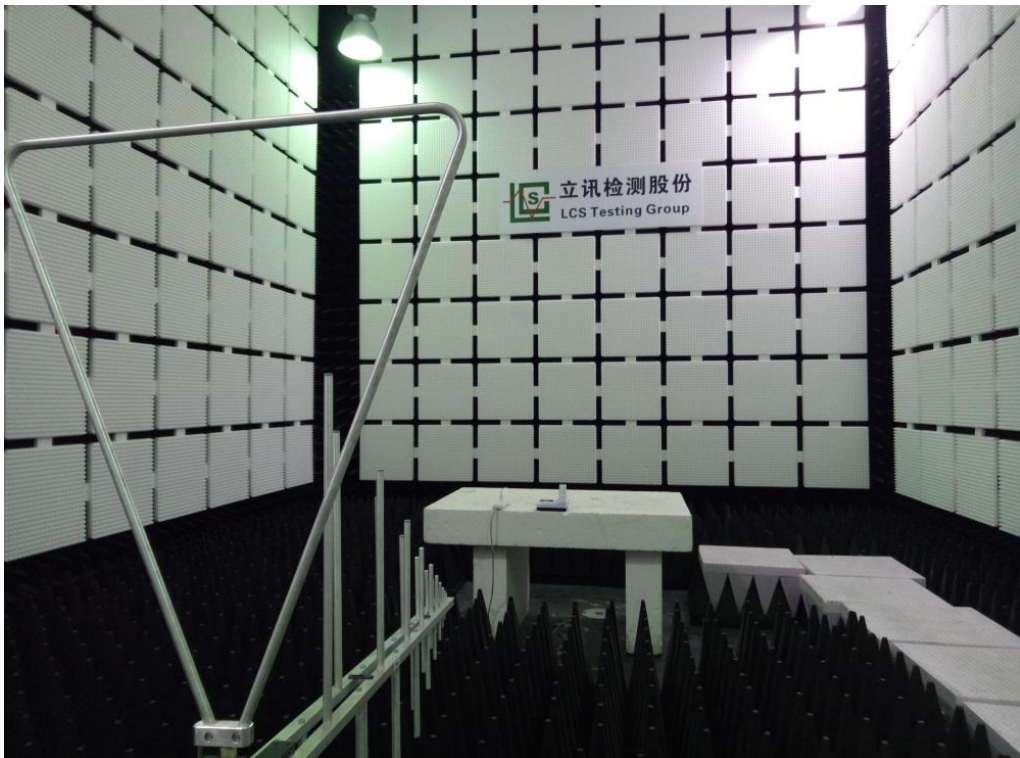
Note:

## 15. PHOTOGRAPH

### 15.1.Photo of Power Line Conducted Measurement

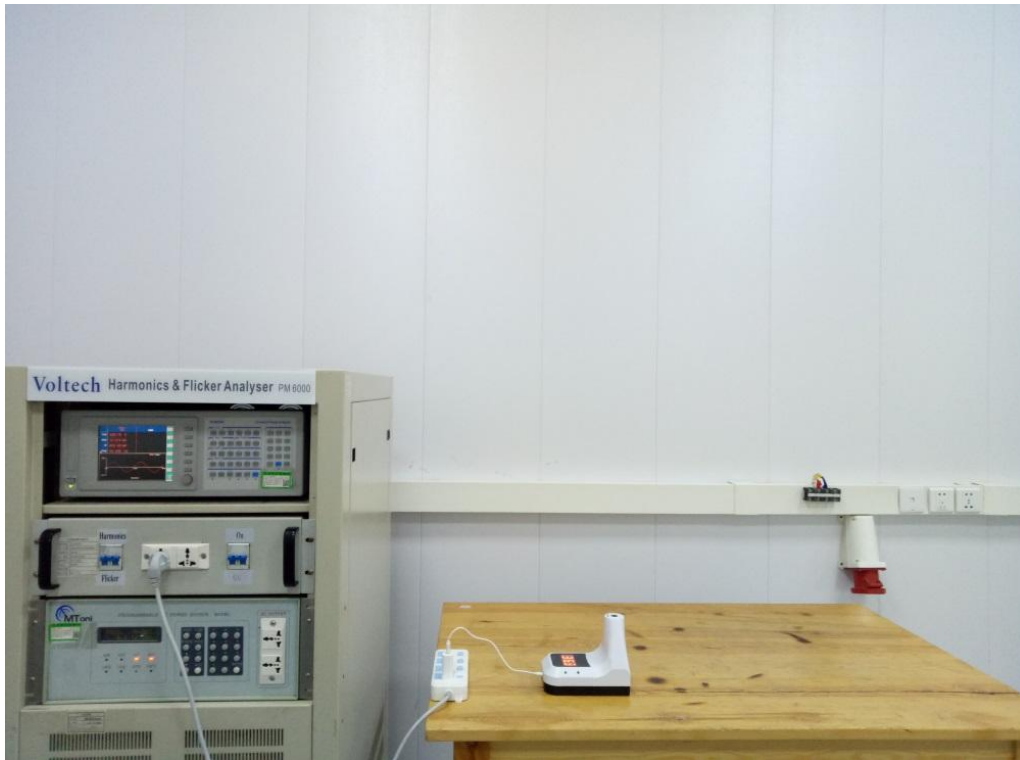


### 15.2.Photo of Radiated Measurement

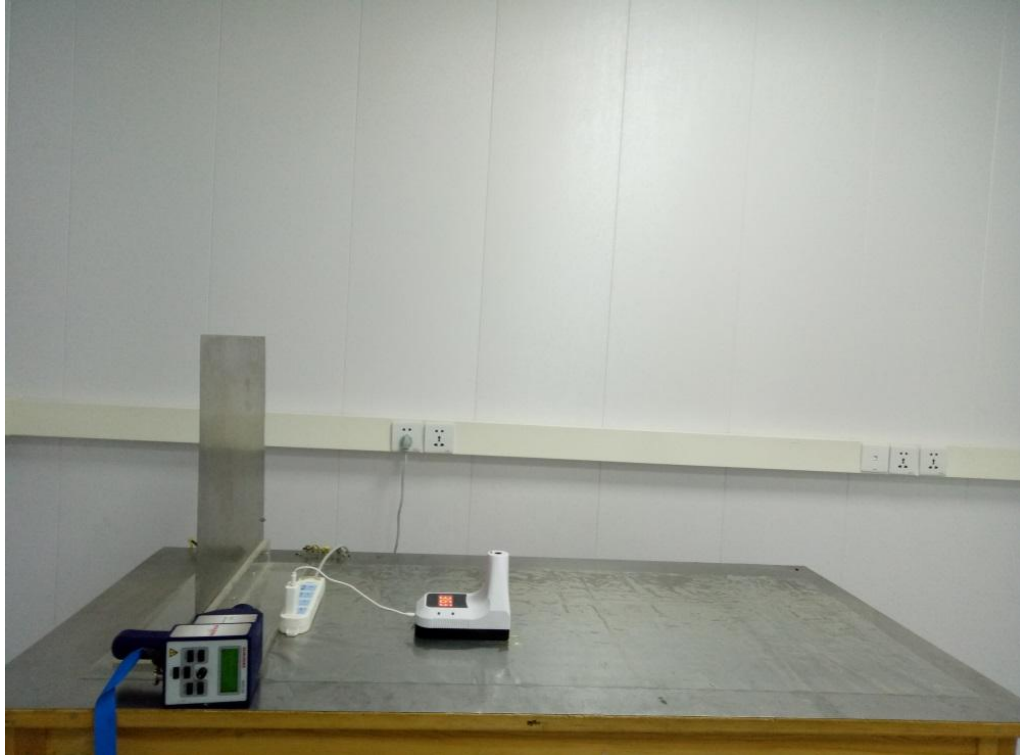




### 15.3. Photo of Harmonic / Flicker Measurement



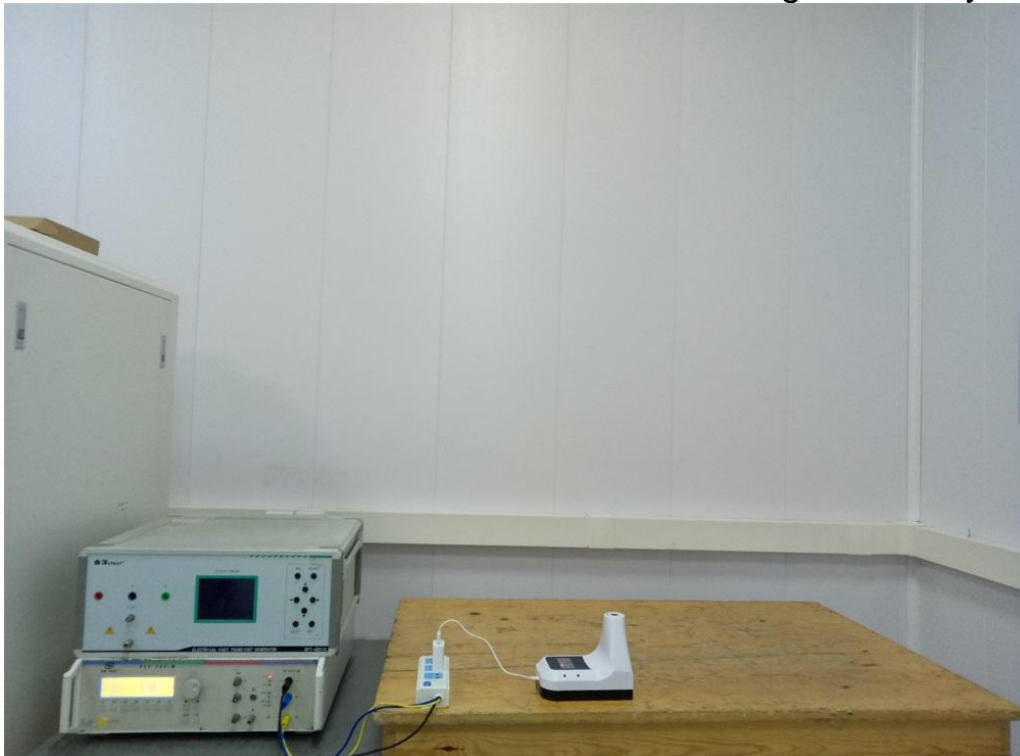
### 15.4. Photo of Electrostatic Discharge Test



### 15.5. Photo of Injected Currents Susceptibility Test



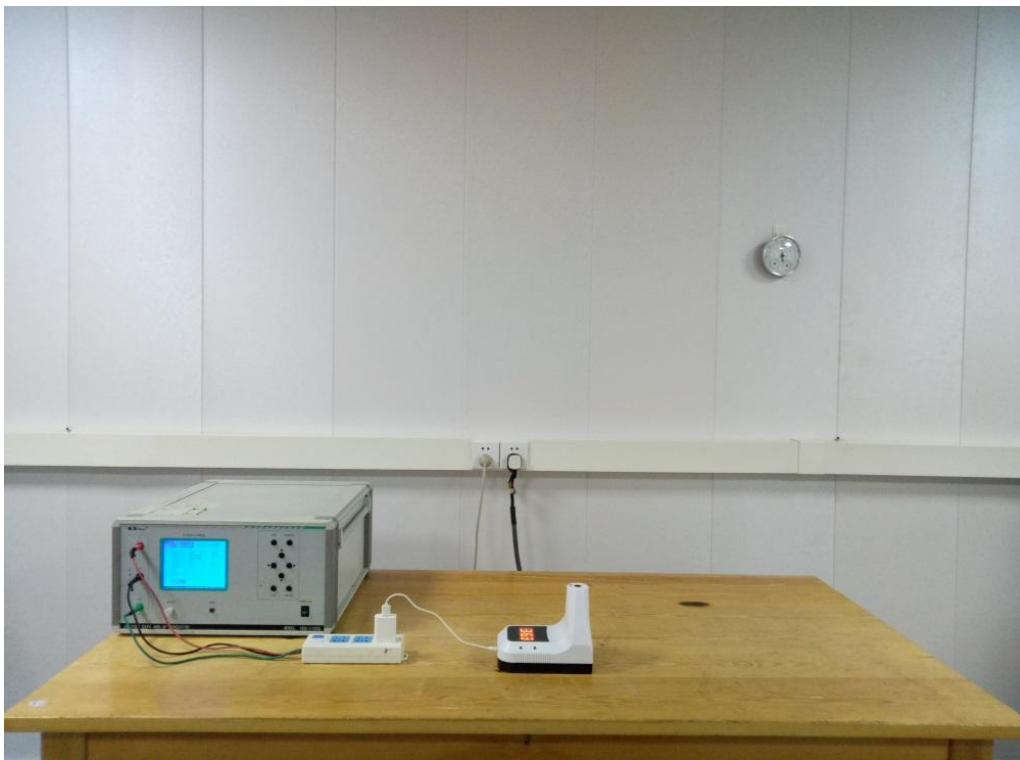
### 15.6. Photo of Electrical Fast Transient/Burst Test & Surge Immunity Test



### 15.7. Photo of Magnetic Field Immunity Test



### 15.8. Photo of Voltage Dips and Interruptions Test



## 16. EXTERNAL AND INTERNAL PHOTOS OF THE EUT



Fig. 1

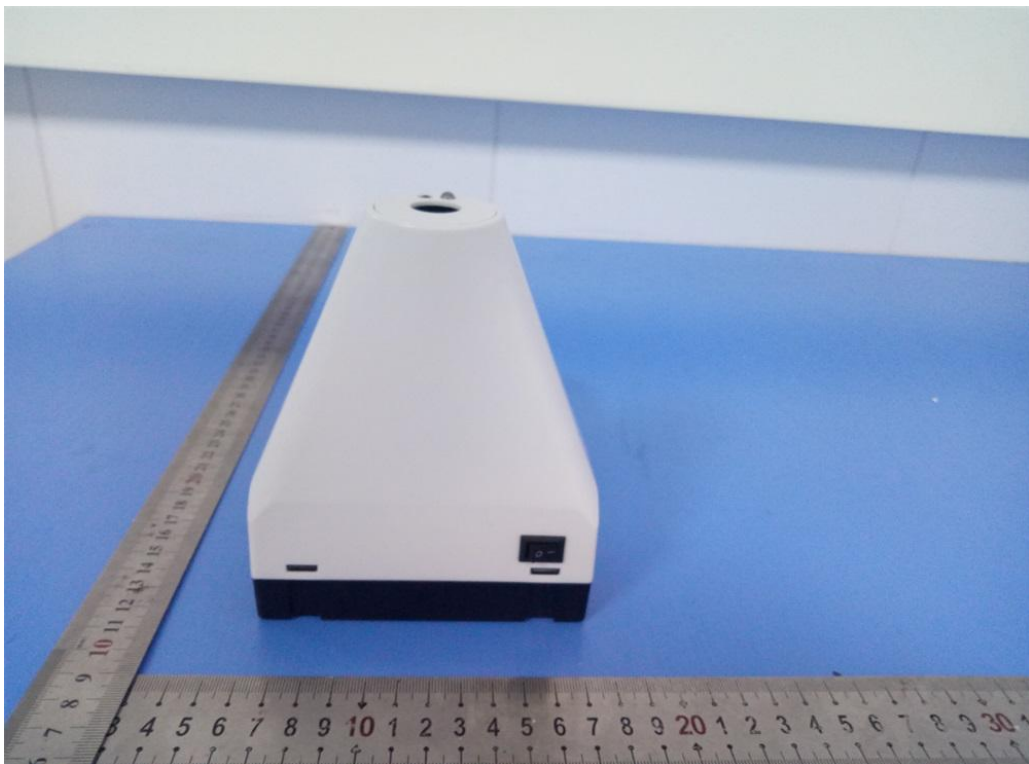


Fig. 2



Fig. 3

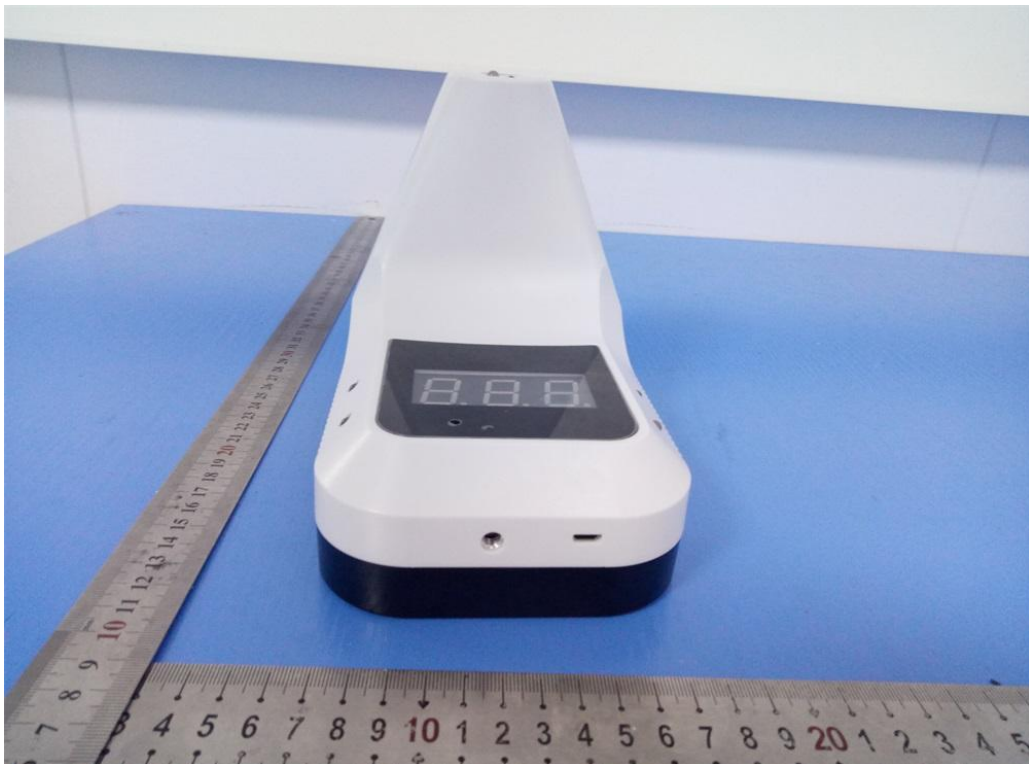


Fig. 4

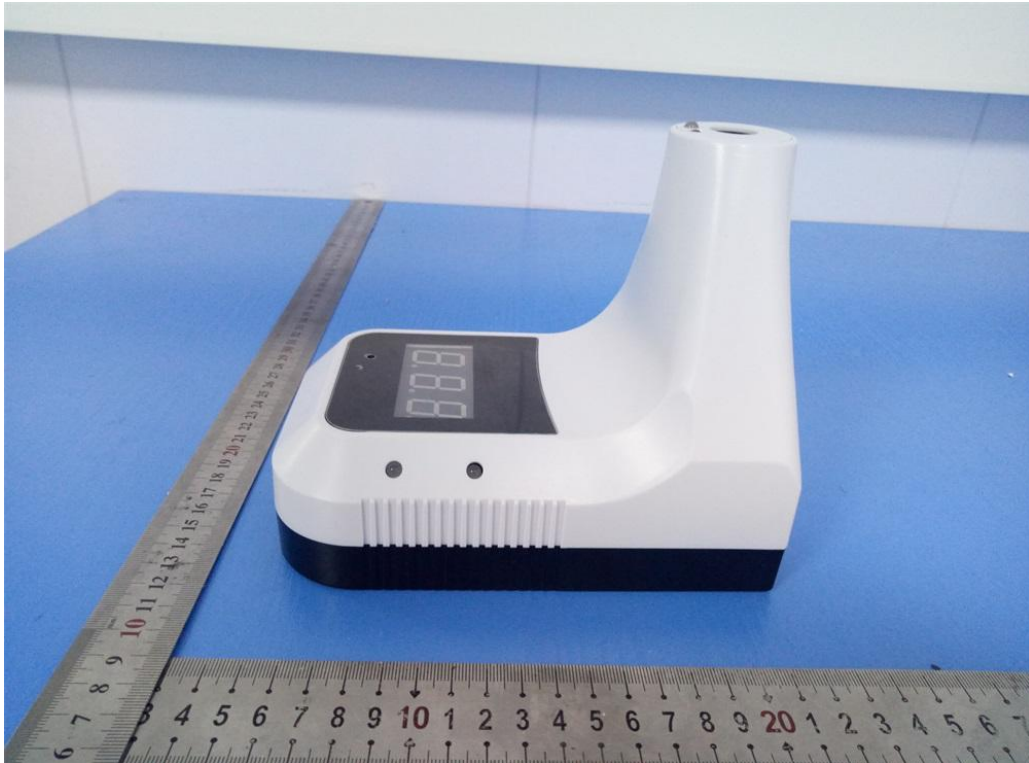


Fig. 5



Fig. 6

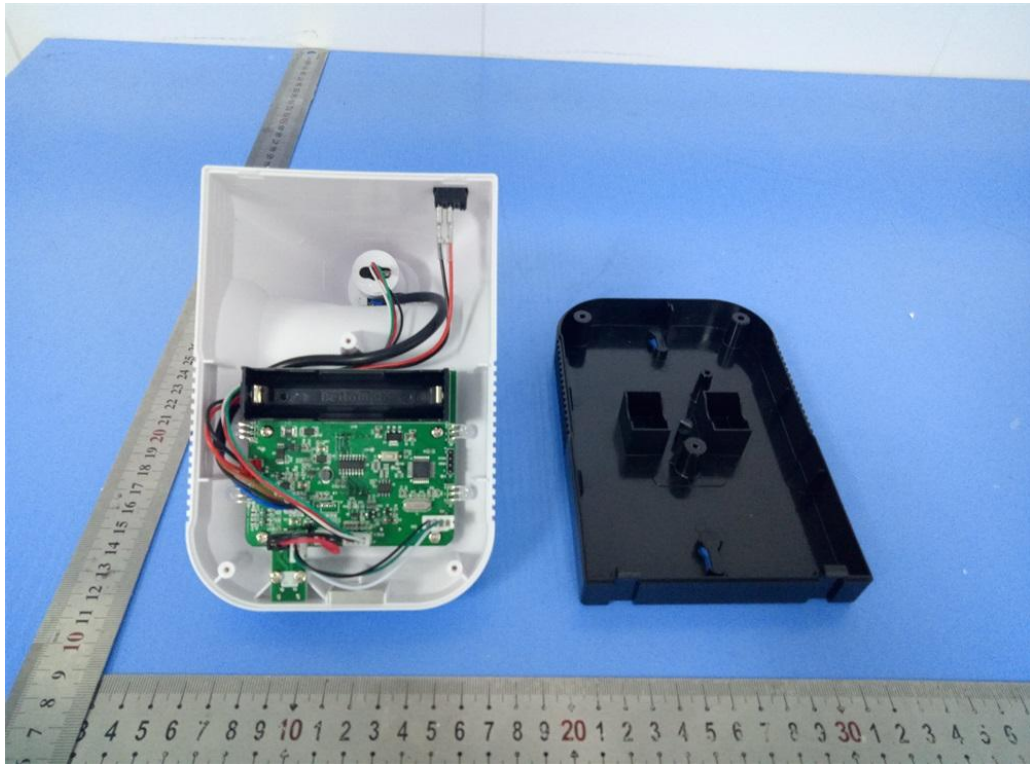


Fig. 7

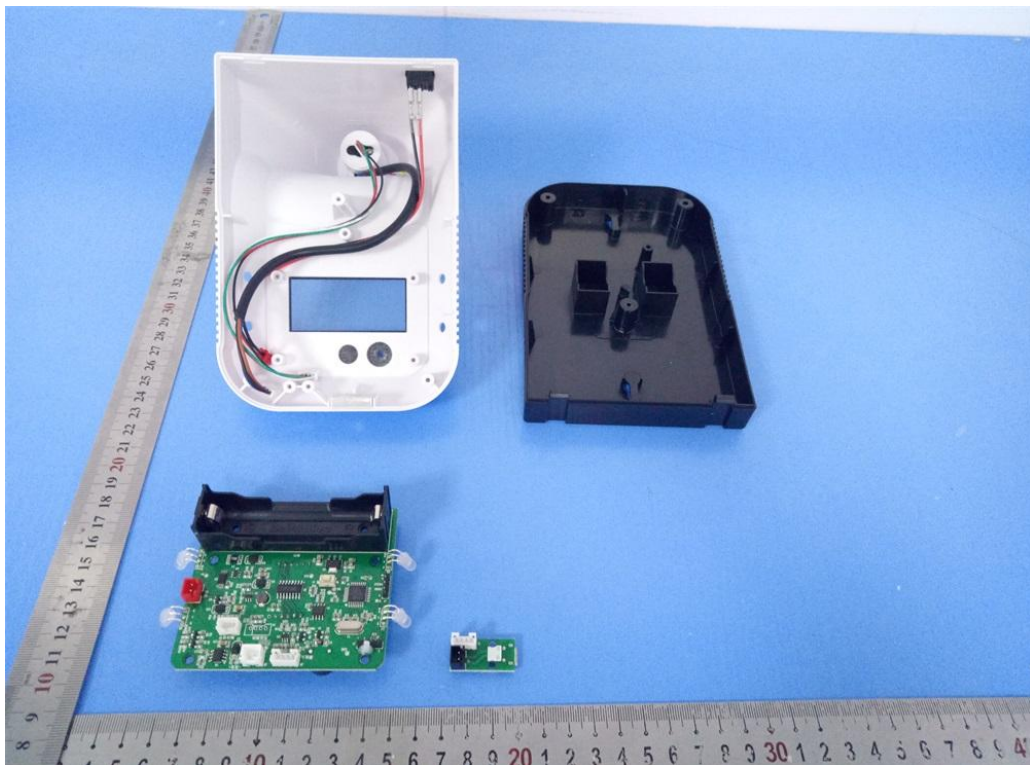


Fig. 8

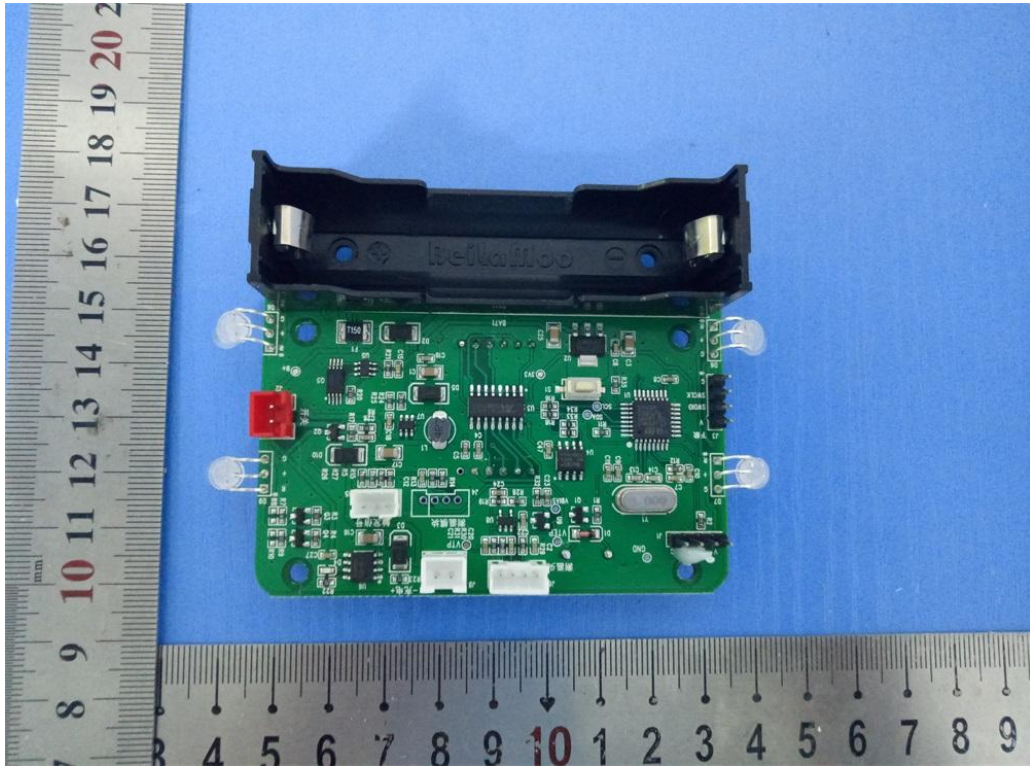


Fig. 9

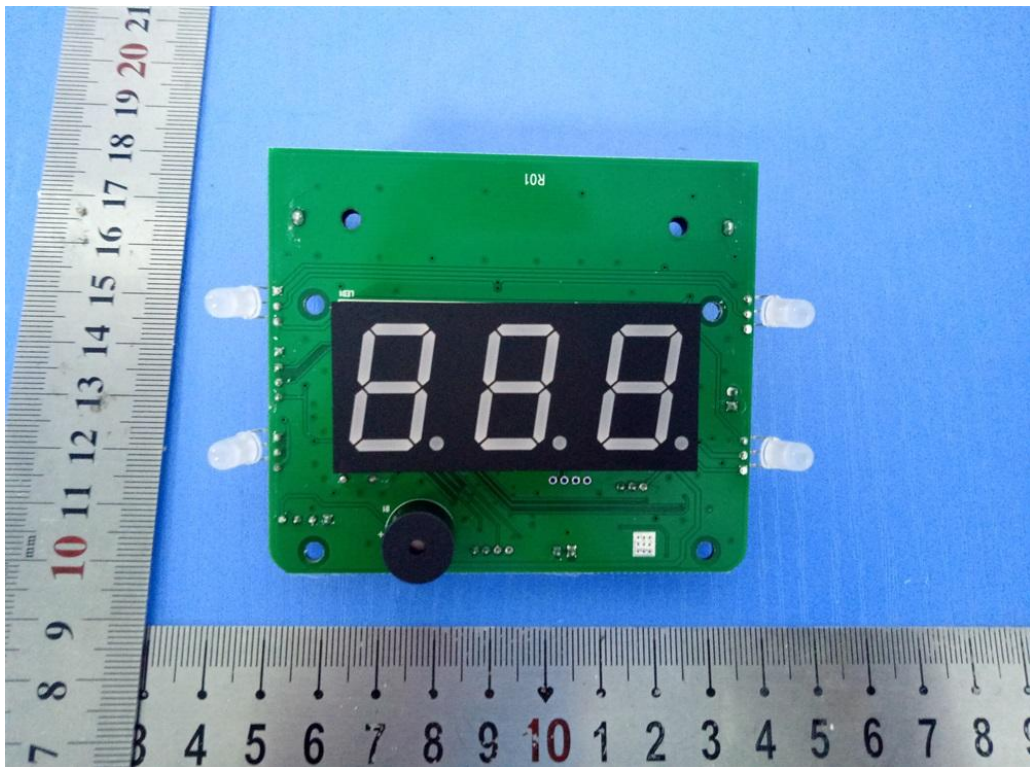


Fig. 10



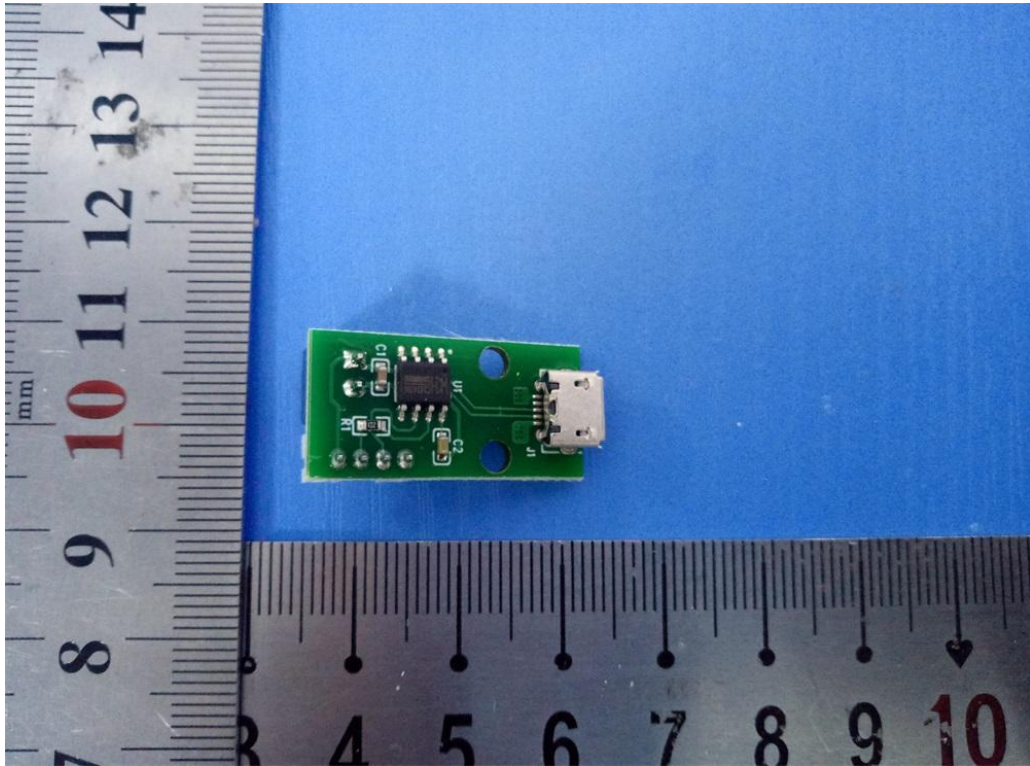


Fig. 11

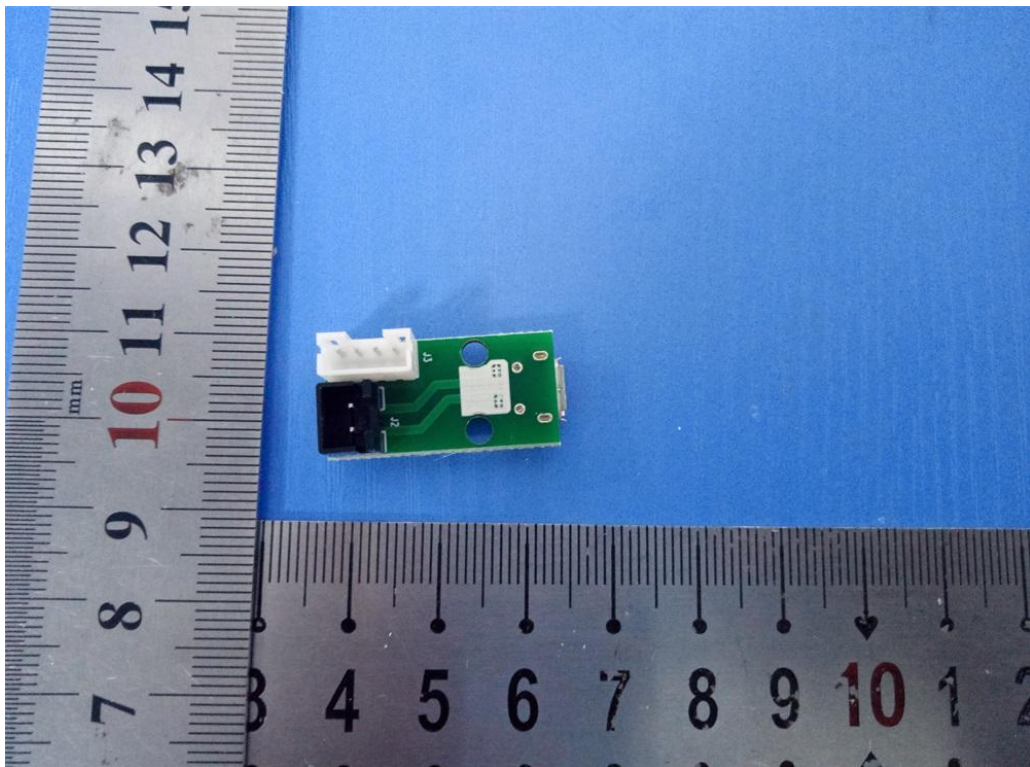


Fig. 12

----- THE END OF TEST REPORT -----