EMTEK
Access to the World

TEST REPORT

Product Name : **Professional Thermal Imager**

Model Number : **UTi165K, UTi165B, UTi85K, UTi220K, UTi260K, ZK-178K, UTi120B, UTi220B, UTi260B, UTi220A PRO, UTi690B, UTi260A**

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 : +86-769-22807078
Fax: +86-769-22807079

Report Number : EDG2205310081E00101RM7
Date(s) of Tests : March 17, 2020 to March 20, 2020
Date of issue : June 07, 2022

TABLE OF CONTENTS

TEST REPORT DESCRIPTION

Applicant	:	UNI-TREND TECHNOLOGY (CHINA) CO.,LTD.
Manufacturer	:	UNI-TREND TECHNOLOGY (CHINA) CO.,LTD.
EUT	:	Professional Thermal Imager
Model No.	:	UTi165K, UTi165B, UTi85K, UTi220K, UTi260K, ZK-178K, UTi120B, UTi220B, UTi260B, UTi220A PRO, UTi690B, UTi260A
Rating	:	DC 5V from adapter DC 3.6V from Li-ion battery

Measurement Procedure Used:
EN 61326-1: 2013
EN 61326-2-3:2013
EN IEC 61000-3-2: 2019+A1:2021
EN 61000-3-3:2013+A2:2021
(IEC 61000-4-2: 2008, IEC 61000-4-3:2020, IEC 61000-4-4: 2012,
IEC 61000-4-5: 2014+AMD1:2017, IEC 61000-4-6:2013/COR1:2015, IEC 61000-4-11: 2020)

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 61326-2-3, EN IEC 61000-3-2 and EN 61000-3-3 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 17, 2020 to March 20, 2020

Prepared by : Galen Xiao / Editor

Reviewer : Tim Dong / Supervisor

Approved & Authorized Signer : Sam Lv / Manager

Modified Information

Version	Summary	Revision Date	Report No.
	Original Report	March 20, 2020	ED191204008E
M1	Update the EUT number	March 17, 2020	ED191204008E-1
M2	Update the EUT number	April 08, 2020	ED191204008E-2
M3	Update the EUT number and photos	April 26, 2020	ED191204008E-3
M4	Update the EUT number	May 26, 2020	ED191204008E-4
M5	Update the EUT number	August 22, 2020	ED191204008E-5
M6	Update the model number	June 19, 2021	ED200317031E-6
M7	Add the model number	June 07, 2022	EDG2205310081E00101RM7

1. DESCRIPTION OF STANDARDS AND RESULTS

EMISSION			
Description of Test Item	Standard	Limits	Results
Conducted Disturbance at Mains Terminals	EN 61326-1: 2013	Class B	Pass
Radiated Disturbance	EN 61326-1: 2013	Class B	Pass
Harmonic Current Emissions	EN IEC 61000-3-2: 2019+A1:2021	--	N/A
Voltage Fluctuation and Flicker	EN 61000-3-3:2013+A2:2021	Clause 5	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	Pass
Surge Immunity	IEC 61000-4-5: 2014+AMD1:2017	B	Pass
Conducted RF Immunity	IEC 61000-4-6:2013/COR1:2015	A	Pass
Power Frequency Magnetic Field	IEC 61000-4-8: 2009	--	N/A
Voltage Dips, >95% Reduction	IEC 61000-4-11: 2020	B	Pass
Voltage Dips, 30% Reduction		C	Pass
Voltage Interruptions		C	Pass
Note: N/A is an abbreviation for Not Applicable.			

2. GENERAL INFORMATION

2.1 Description of Device (EUT)

EUT	: Professional Thermal Imager
Model Number	: UTi165K, UTi165B, UTi85K, UTi220K, UTi260K, ZK-178K, UTi120B, UTi220B, UTi260B, UTi220A PRO, UTi690B, UTi260A (Note: These models are similar except software, so UTi165K was selected for full testing)
Trade Mark	: UNI-T, ZKTeco
Power Supply for Test	: DC 5V from power supply DC 3.6V from battery
Operating Mode	: On, Charging, Data Transfer
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 17, 2020
Date of Test	: March 17, 2020 to March 20, 2020

2.2 Description of Test Facility

Site Description

EMC Lab	:	Accredited by CNAS, 2020.08.27 The certificate is valid until 2024.07.05 The Laboratory has been assessed and proved to be in compliance with CNAS/CL01:2018 The Certificate Registration Number is L3150
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)	:	3.32dB (30M~1GHz Polarize: H) 3.24dB (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 Power Line Conducted Emission

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde&Schwarz	ESCI	100137	May 23, 2019	1 Year
2.	L.I.S.N.	Rohde&Schwarz	ENV216	101209	May 23, 2019	1 Year
3.	RF Switching Unit	CDS	RSU-M2	38401	May 23, 2019	1 Year
4	Artificial Mains Network	Schwarzbeck	NNLK-8121-641	8121-641	May 23, 2019	1 Year

3.2 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

3.3 For Harmonic / Flicker Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Power Frequency Test System	TESEQ	5001IX-CTS-400-SCH	1805A03008	May 23, 2019	1 Year
2.	AC Frequency Conversion Power	TESEQ	100-CTS-230-TSQ	1804A03259	May 23, 2019	1 Year
3.	PC	LENOVO	T2900D	SS12485803	May 23, 2019	1 Year

3.4 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

3.5 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	12I00250SNO 72	N/A	N/A
12.	Automatic switch group	DARE	RSW1004A	N/A	N/A	N/A

3.6 For Electrical Fast Transient/Burst, Surge, Voltage Dips and Interruptions Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Three-in-one tester	HTEC	HCOMPACT1	190305	May 23, 2019	1 Year
2	Dips module	HTEC	HV1P16T	190302	May 23, 2019	1 Year

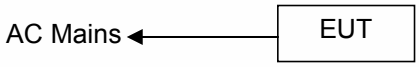
3.7 For Injected Currents Susceptibility Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Simulator	EM TEST	CWS500C	0900-12	May 23, 2019	1Year
2.	CDN	EM TEST	CDN-M2	5100100100	May 23, 2019	1 Year
3.	CDN	EM TEST	CDN-M3	0900-11	May 23, 2019	1 Year
4.	Injection Clamp	EM TEST	F-2031-23MM	368	May 23, 2019	1 Year
5.	Attenuator	EM TEST	ATT6	0010222A	May 23, 2019	1 Year

4. POWER LINE CONDUCTED MEASUREMENT

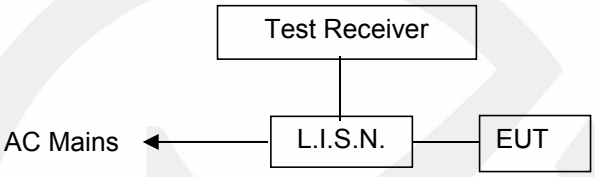
4.1 Block Diagram of Test Setup

4.1.1 Block diagram of connection between the EUT and simulators



(EUT: Professional Thermal Imager)

4.1.2 Block diagram of test setup



(EUT: Professional Thermal Imager)

4.2 Conducted Power Line Emission Measurement Standard and Limits

4.2.1 Standard:

EN 61326-1: 2013

4.2.2Limits

Frequency	At mains terminals (dBμV)	
	Quasi-peak Level	Average Level
150KHz ~ 0.5MHz	66 ~ 56*	56 ~ 46*
0.5MHz ~ 5MHz	56	46
5.0MHz ~ 30MHz	60	50

1. At the transition frequency the lower limit applies.
2. * decreasing linearly with logarithm of the frequency.

4.3 EUT Configuration on Measurement

The configuration of the EUT is same as Section 4.1.

4.4 Operating Condition of EUT

4.4.1 Setup the EUT as shown in Section 4.1.

4.4.2 Turn on the power of all equipments.

4.4.3 Let the EUT work in measuring mode (Charging) and measure it.

4.5 Test Procedure

The EUT is put on the table which is 0.8 meter high above the ground and connected to the AC mains through a Line Impedance Stabilization Network (L.I.S.N.). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are checked to find out the maximum conducted emission according to the EN 61326 regulations during conducted emission measurement. And the voltage probe had been used for the load terminals measurement according to the EN 61326 standard.

The bandwidth of the test receiver (ESCI) is set at 200Hz in 9K~150KHz range and 9KHz in 150K~30MHz range.

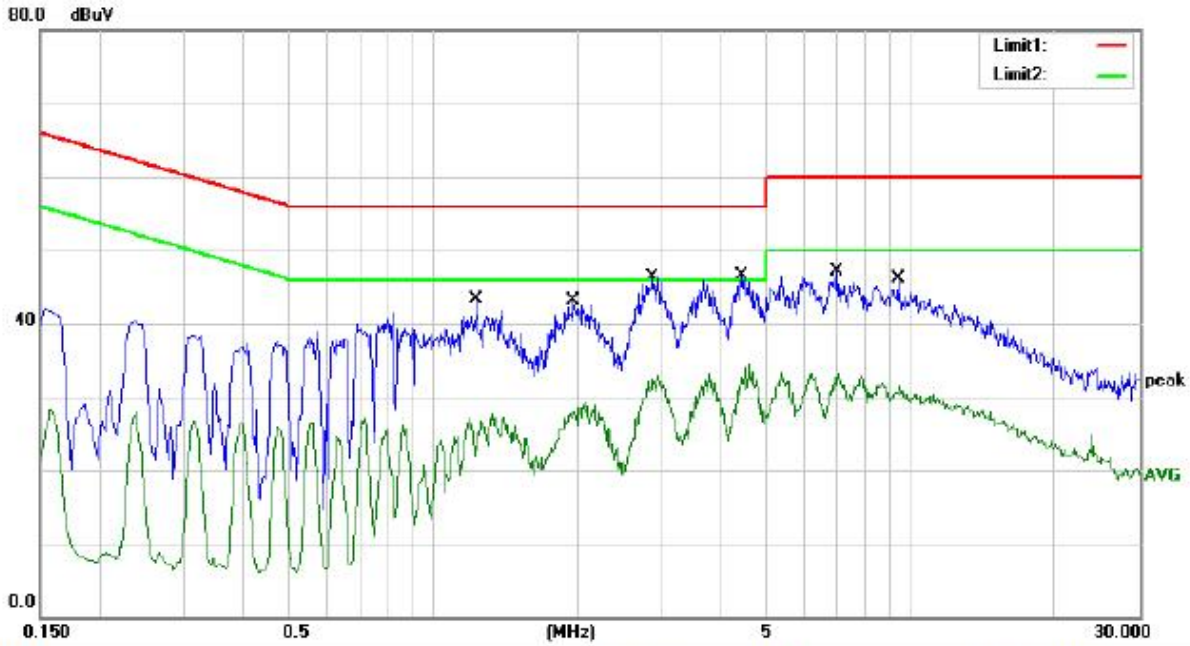
The frequency range from 150KHz to 30MHz is checked.

4.6 Measurement Results

PASS.

The frequency range from 150KHz to 30MHz is investigated.

The test data are attached in the following pages.



Site site #1 Phase: L1 Temperature: 25

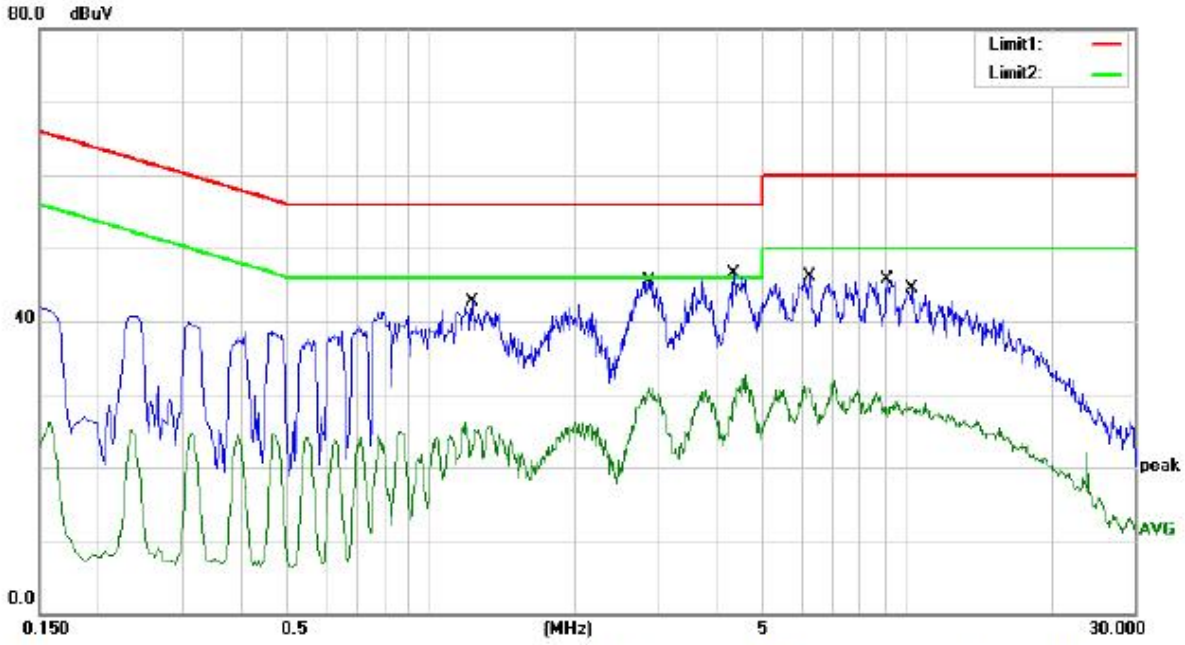
Limit: (CE)EN61326-1_QP Power: AC 230V/50Hz Humidity: 55 %

Mode: Charging

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		1.2340	33.51	9.84	43.35	56.00	-12.65	QP	
2		1.2340	17.77	9.84	27.61	46.00	-18.39	AVG	
3		1.9660	33.33	9.84	43.17	56.00	-12.83	QP	
4		1.9660	19.49	9.84	29.33	46.00	-16.67	AVG	
5		2.8820	36.41	9.85	46.26	56.00	-9.74	QP	
6		2.8820	23.10	9.85	32.95	46.00	-13.05	AVG	
7	*	4.4260	36.69	9.85	46.54	56.00	-9.46	QP	
8		4.4260	24.56	9.85	34.41	46.00	-11.59	AVG	
9		6.9900	37.28	9.90	47.18	60.00	-12.82	QP	
10		6.9900	23.15	9.90	33.05	50.00	-16.95	AVG	
11		9.3980	36.24	9.96	46.20	60.00	-13.80	QP	
12		9.3980	22.00	9.96	31.96	50.00	-18.04	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: HU



Site site #1 Phase: N Temperature: 25

Limit: (CE)EN61326-1_QP Power: AC 230V/50Hz Humidity: 55 %

Mode: Charging

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		1.2180	32.95	9.84	42.79	56.00	-13.21	QP	
2		1.2180	16.26	9.84	26.10	46.00	-19.90	AVG	
3		2.8620	35.57	9.85	45.42	56.00	-10.58	QP	
4		2.8620	21.06	9.85	30.91	46.00	-15.09	AVG	
5	*	4.3260	36.72	9.85	46.57	56.00	-9.43	QP	
6		4.3260	22.79	9.85	32.64	46.00	-13.36	AVG	
7		6.2380	36.30	9.88	46.18	60.00	-13.82	QP	
8		6.2380	21.16	9.88	31.04	50.00	-18.96	AVG	
9		9.0620	35.79	9.96	45.75	60.00	-14.25	QP	
10		9.0620	20.40	9.96	30.36	50.00	-19.64	AVG	
11		10.2820	34.48	9.99	44.47	60.00	-15.53	QP	
12		10.2820	18.61	9.99	28.60	50.00	-21.40	AVG	

*:Maximum data x:Over limit !:over margin Comment: Factor build in receiver. Operator: HU

5. RADIATED EMISSION MEASUREMENT

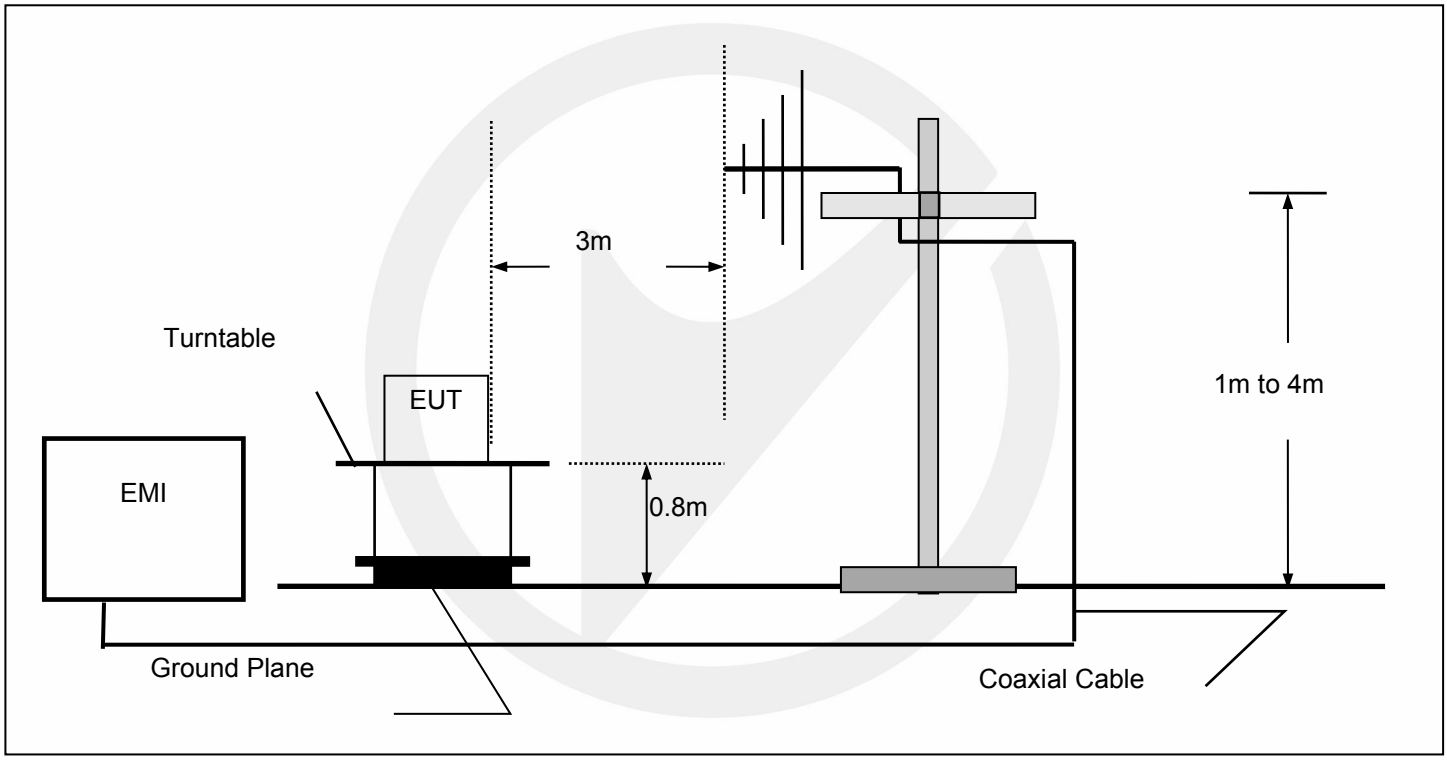
5.1 Block Diagram of Test

5.1.1 Block diagram of connection between the EUT and simulators

AC Mains ◄——— EUT

(EUT: Professional Thermal Imager)

5.1.2 Block diagram of test setup (In chamber)



(EUT: Professional Thermal Imager)

5.2 Measuring Standard

EN 61326-1: 2013

5.3 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 1 GHz

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

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 61326 regulations test method must be used to find the maximum emission during radiated emission measurement.

EUT	:	Professional Thermal Imager
Model Number	:	UTi165K

5.5 Operating Condition of EUT

5.5.1 Turn on the power.

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

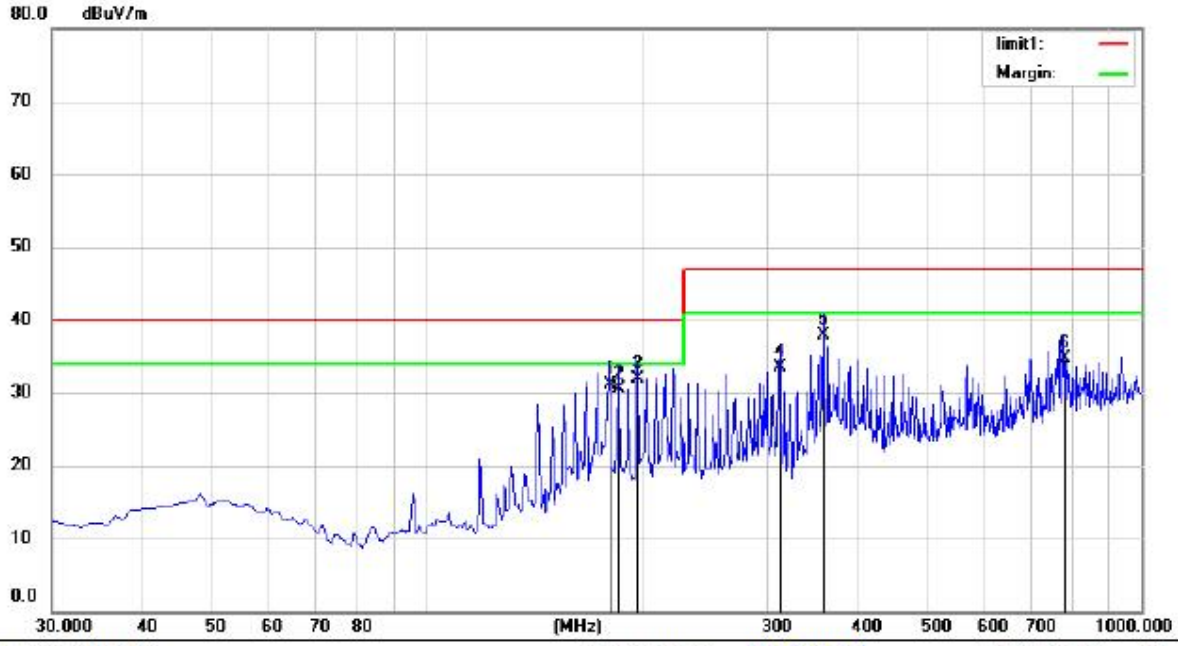
5.6 Test Procedure

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.

5.7 Test Results

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

The test data are listed in the following pages.



Site Chamber #1
Limit: (RE)EN61326-1 3m
Mode: ON
Note:

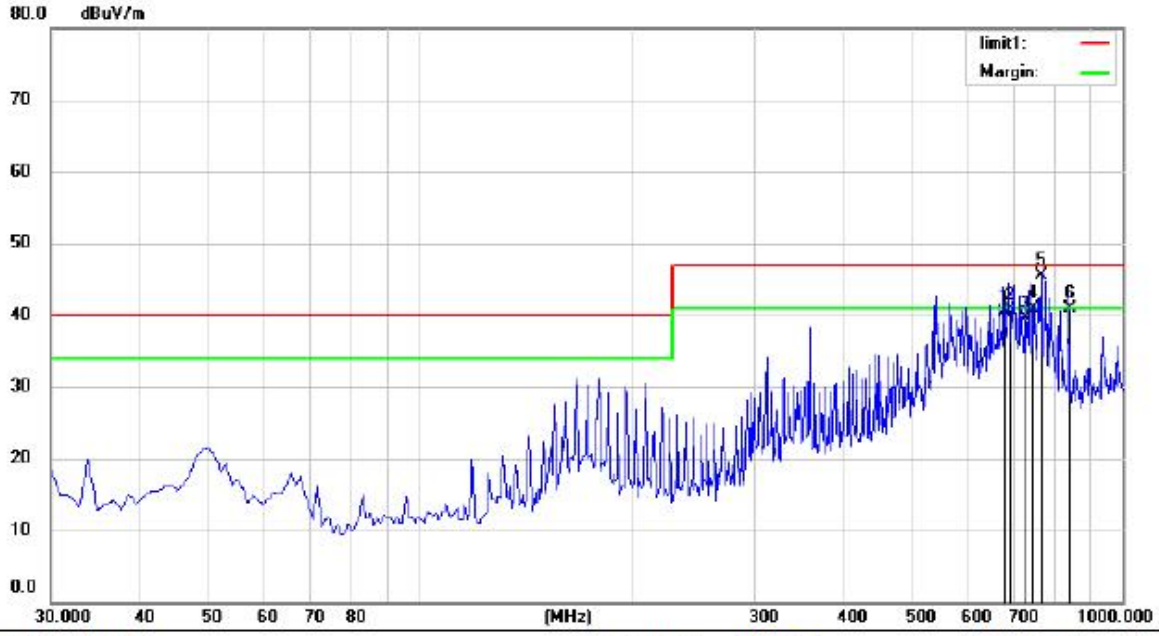
Polarization: *Horizontal*
Power: DC 3.6V

Temperature: 26
Humidity: 55 %

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		180.3500	50.50	-19.39	31.11	40.00	-8.89	QP			
2		186.1700	49.30	-18.79	30.51	40.00	-9.49	QP			
3	*	197.8100	49.30	-17.46	31.84	40.00	-8.16	QP			
4		312.2700	47.10	-13.69	33.41	47.00	-13.59	QP			
5		359.8000	50.10	-12.16	37.94	47.00	-9.06	QP			
6		780.7800	38.30	-3.53	34.77	47.00	-12.23	QP			

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

Operator: HUANG



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

Limit: (RE)EN61326-1 3m Power: DC 3.6V Humidity: 55 %

Mode:ON

Note:

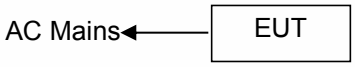
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		678.9300	45.10	-4.71	40.39	47.00	-6.61	QP			
2		691.5400	45.20	-4.41	40.79	47.00	-6.21	QP			
3		727.4300	43.60	-4.01	39.59	47.00	-7.41	QP			
4		743.9200	44.60	-3.67	40.93	47.00	-6.07	QP			
5	*	768.1700	49.10	-3.54	45.56	47.00	-1.44	QP			
6		841.8900	43.90	-2.96	40.94	47.00	-6.06	QP			

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

6. HARMONIC CURRENT MEASUREMENT

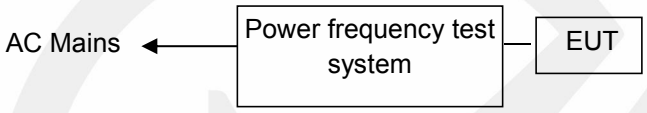
6.1 Block Diagram of Test Setup

6.1.1 Block diagram of connection between the EUT and simulators



(EUT: Professional Thermal Imager)

6.1.2 Block Diagram of Harmonic Test Setup



(EUT: Professional Thermal Imager)

6.2 Measuring Standard

EN IEC 61000-3-2: 2019+A1:2021 Class A Power≤75W

6.3 Operating Condition of EUT

Same as Section 4.4 except that the test setup replaced by Section 6.1.

6.4 Test Results

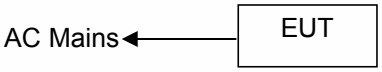
Not Applicable.

Because power of EUT is less than 75W, according to standard EN61000-3-2, Harmonics Current is not required.

7. VOLTAGE FLUCTUATIONS & FLICKER MEASUREMENT

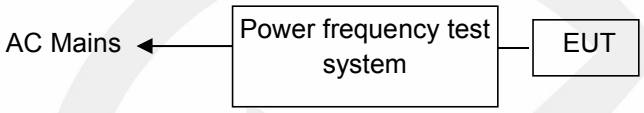
7.1 Block Diagram of Test Setup

7.1.1Block diagram of connection between the EUT and simulators



(EUT: Professional Thermal Imager)

7.1.2Block Diagram of Flicker Test Setup



(EUT: Professional Thermal Imager)

7.2 Measuring Standard

EN 61000-3-3:2013+A2:2021

7.3 Operating Condition of EUT

Same as Section 4.4 except that the test setup replaced by Section 7.1.

7.4 Test Results

Pass.

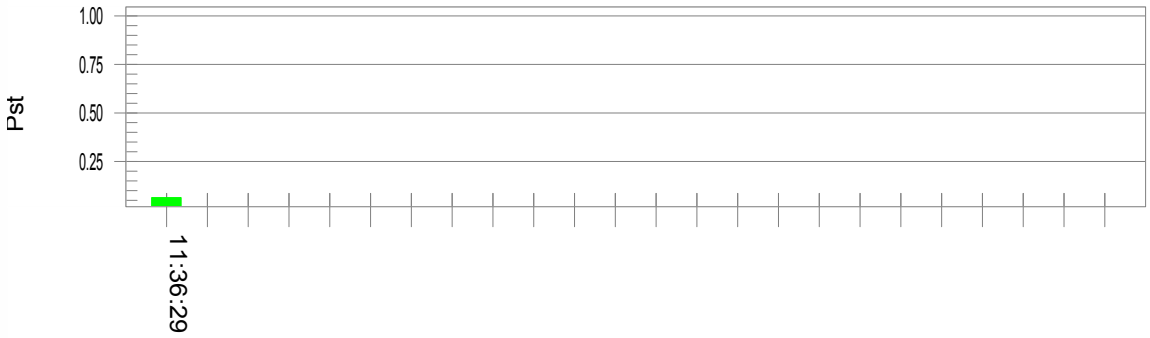
Please refer to the following pages.

Flicker Test Summary per EN/IEC61000-3-3 Ed. 3.0 (2013) (Run time)

EUT: UTi165K **Tested by: Lian**
Test category: dt,dmax,dc and Pst (European limits) **Test Margin: 100**
Test date: 2020-3-20 **Start time: 11:26:08** **End time: 11:36:35**
Test duration (min): 10 **Data file name: F-000414.cts_data**
Comment: Charging
Customer: Customer information

Test Result: Pass **Status: Test Completed**

Pst_i and limit line **European Limits**



Plt and limit line

Parameter values recorded during the test:

Vrms at the end of test (Volt):	**229.80**			
T-max (mS):	**0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**0.00**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.064**	**Test limit:**	**1.000**	**Pass**

8. Electrostatic Discharge TEST

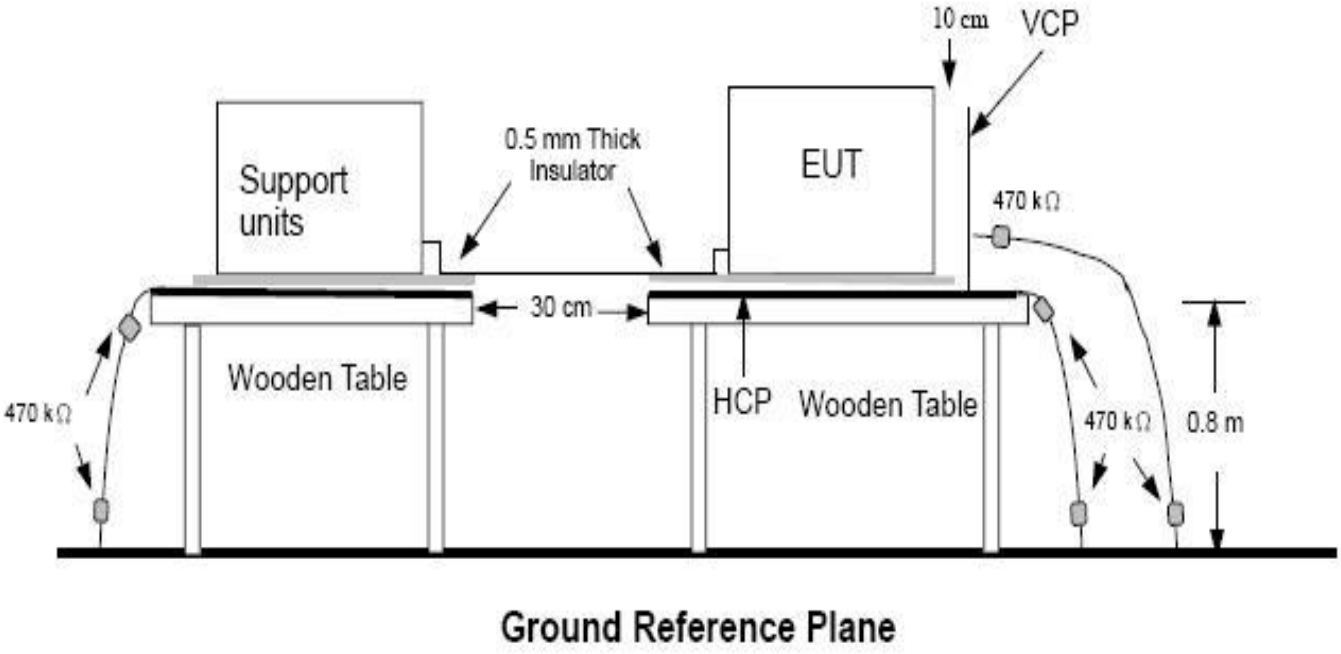
8.1 Block Diagram of Test Setup

8.1.1 Block diagram of connection between the EUT and simulators

AC Mains ← EUT

(EUT: Professional Thermal Imager)

8.1.2 Block Diagram of ESD Test Setup



(EUT: Professional Thermal Imager)

8.2 Test Standard

EN 61326-1: 2013
(IEC 61000-4-2: 2008 (Severity Level: 2 /Contact Discharge: ±4KV
Severity Level: 3 / Air Discharge: ±8KV))

8.3 Severity Levels and Performance Criterion

8.3.1 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**

8.4 EUT Configuration

The configuration of EUT is listed in Section 8.1

8.5 Operating Condition of EUT

8.5.1 Setup the EUT as shown in Section 8.1.

8.5.2 Turn on the power of all equipments.

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

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 25 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 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.

8.6.4 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.

8.7 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 20, 2020
EUT	: Professional Thermal Imager	Temperature	: 24℃
M/N	: UTi165K	Humidity	: 53%
Power Supply	: DC 5V from power supply, DC 3.6V	Test Engineer:	Ccyf
Test Mode	: Charging, ON	Criterion	: B

Air Discharge: ±2, 4, 8KV

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

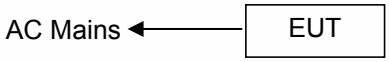
Location	**Kind** A-Air Discharge C-Contact Discharge	**Result**
VCP	C	PASS
HCP	C	PASS
Enclosure	A	PASS
Gap	A	PASS
Metal	C	PASS
Note: No observable change.		

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

9. RF FIELD STRENGTH SUSCEPTIBILITY TEST

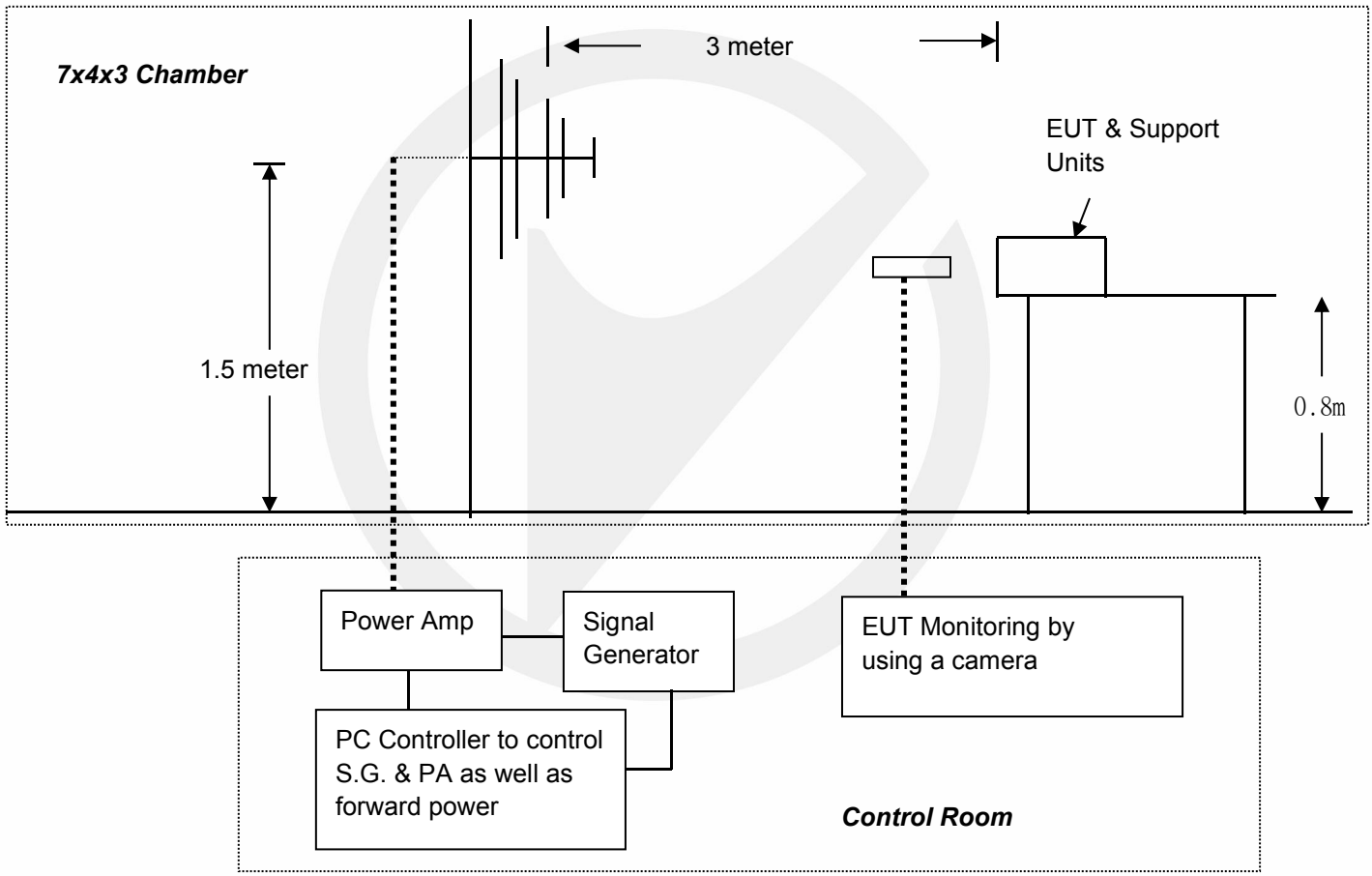
9.1 Block Diagram of Test Setup

9.1.1 Block diagram of connection between the EUT and simulators



(EUT: Professional Thermal Imager)

9.1.2 Block diagram of R/S test set up



(EUT: Professional Thermal Imager)

9.2Test Standard

EN 61326-1: 2013
(IEC 61000-4-3:2020 (Severity Level 2, 3V / m))

9.3 Severity Levels and Performance Criterion

9.3.1 Severity level

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

9.3.2 Performance criterion: **A**

9.4 EUT Configuration

The configurations of EUT are listed in Section 9.1.

9.5 Operating Condition of EUT

9.5.1 Setup the EUT as shown in Section 9.1.

9.5.2 Turn on the power of all equipments.

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

9.6 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	1 V/m (Severity Level 1), 3 V/m (Severity Level 2)
2. Radiated Signal	Unmodulated
3. Scanning Frequency	80 - 2700 MHz
4. Dwell time of radiated	0.0015 decade/s
5. Waiting Time	1 Sec.

9.7 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 20, 2020

EUT : Professional Thermal Imager

Temperature : 24℃

M/N : UTi165K

Humidity : 53%

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

Criterion: A

Power Supply: DC 5V from power supply, DC 3.6V

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

Test Engineer: Tom

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

Test Mode : Charging, ON(Data transfer)

	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 :

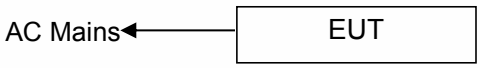
1. Signal Generator : N5181A (Agilent)
2. Power Amplifier : 80RF1000-175 (MILMEGA)& AS0102-55 (MILMEGA)& AS1860-50 (MILMEGA)
3. Log.-Per. Antenna: VULP 9118E(SCHWARZBECK)
4. Broad-Band Horn Antenna: STLP 9149 (SCHWARZBECK)
5. RF Professional Thermal Imager. Dual Channel : 4232A (BOONTON)
6. Field Strength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

Note: No observable change.

10. ELECTRICAL FAST TRANSIENT/BURST TEST

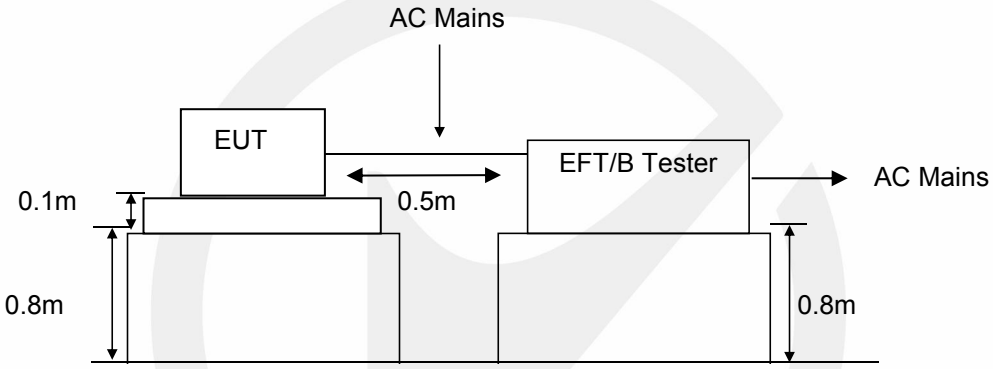
10.1 Block Diagram of Test Setup

10.1.1 Block Diagram of connection between the EUT and simulators



(EUT: Professional Thermal Imager)

10.1.2 Block Diagram of EFT Test Setup



(EUT: Professional Thermal Imager)

10.2 Test Standard

EN 61326-1: 2013
(IEC 61000-4-4: 2012, Severity Level, Level 2: 1KV)

10.3 Severity Levels and Performance Criterion

10.3.1Severity level

Open circuit output test voltage and repetition rate of the impulses				
Level	On power port, PE		On I/O (Input/Output) Signal data and control ports	
	Voltage peak KV	Repetition rate KHz	Voltage peak KV	Repetition rate KHz
1.	0.5 KV	5 or 100	0.25 KV	5 or 100
2.	1 KV	5 or 100	0.5 KV	5 or 100
3.	2 KV	5 or 100	1 KV	5 or 100
4.	4 KV	5 or 100	2 KV	5 or 100
X	Special	Special	Special	Special
NOTE 1 Use of 5 KHz repetition rates is traditional; however, 100 KHz is closer to reality. Product committees should determine which frequencies are relevant for specific products or product types. NOTE 2 With some products, there may be no clear distinction, between power ports and I/O ports, in which case it is up to product committees to make this determination for test purposes.				
"X" is an open level. The level has to be specified in the dedicated equipment specification.				

10.3.2 Performance criterion**: B**

10.4 EUT Configuration

The configurations of EUT are listed in Section 10.1.

10.5 Operating Condition of EUT

10.5.2 Setup the EUT as shown in Section 10.1.

10.5.3 Turn on the power of all equipments.

10.5.4 Let the EUT work in test mode (Charging) 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.

10.6.2 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.

10.6.3 For signal lines and control lines ports**:**

No I/O ports. It's unnecessary to test.

10.7 Test Results

PASS.

Please refer to the following page.

Electrical Fast Transient/Burst Test Results

EMTEK(DONGGUAN) CO., LTD

Standard :	☒ IEC 61000-4-4 ☐ EN 61000-4-4	Result : ☒ PASS / ☐ FAIL

Applicant : UNI-TREND TECHNOLOGY (CHINA) CO.,LTD.

EUT : Professional Thermal Imager

M/N : UTi165K

Input Voltage: DC 5V from power supply

Criterion : B

Ambient Condition : 21.2℃ 50% RH

Operation Mode : Charging

Line : ☒ AC Mains	Line : ☐ Signal ☐ I/O Cable
Coupling : ☒ Direct	Coupling : ☐ Capacitive
Test Time : *120s*	

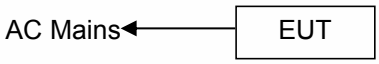
Line	Test Voltage	Result (+)	Result (-)
L	1KV	PASS	PASS
N	1KV	PASS	PASS
L、N	1KV	PASS	PASS

Note: No observable change.

11. SURGE IMMUNITY TEST

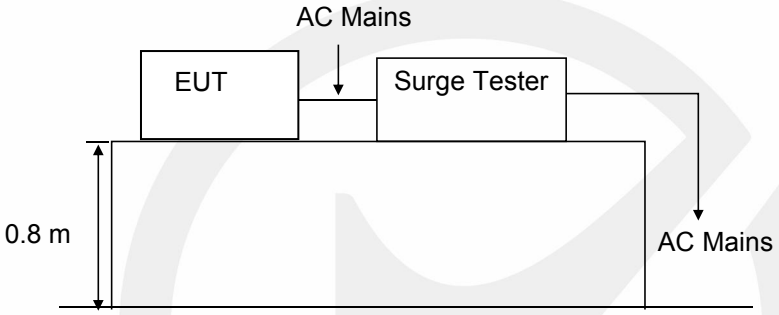
11.1 Block Diagram of Test Setup

11.1.1 Block Diagram of the EUT



(EUT: Professional Thermal Imager)

11.1.2 Surge Test Setup



(EUT: Professional Thermal Imager)

11.2 Test Standard

EN 61326-1: 2013
(IEC 61000-4-5: 2014+AMD1:2017, Severity Level: Line to Line: Level 2, 1.0KV)

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**: B**

11.4 EUT Configuration

The configurations of EUT are listed in Section 11.1.

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 (Charging) and measure it.

11.6 Test Procedure

1) Set up the EUT and test generator as shown on Section 11.1.2.
2) For line to line coupling mode, provide a 1.0KV, 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 Results

EMTEK(DONGGUAN) CO., LTD.

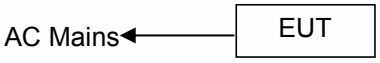
Applicant : UNI-TREND TECHNOLOGY (CHINA) CO.,LTD.	Test Date : March 20, 2020
EUT : Professional Thermal Imager	Temperature : 21.2℃
M/N : UTi165K	Humidity : 50%
Power Supply : DC 5V from power supply	Test Engineer : Ccyf
Test Mode : Charging	Criterion : B

Location	Polarity	Phase Angle	No of Pulse	Pulse Voltage (KV)	Result
L-N	±	0^0	5	1.0	PASS
	±	90^0	5	1.0	PASS
	±	180^0	5	1.0	PASS
	±	270^0	5	1.0	PASS
Note: No observable change.					

12. INJECTED CURRENTS SUSCEPTIBILITY TEST

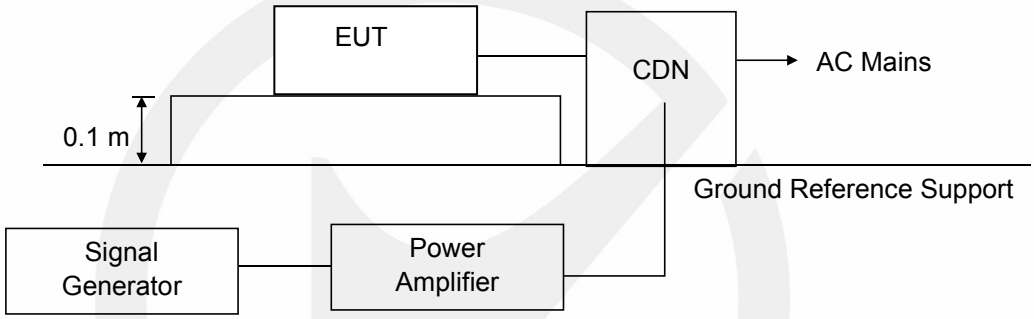
12.1 Block Diagram of Test Setup

12.1.1 Block Diagram of the EUT



(EUT: Professional Thermal Imager)

Block Diagram of Test Setup



(EUT: Professional Thermal Imager)

12.2 Test Standard

EN 61326-1: 2013
(IEC 61000-4-6:2013/COR1:2015, Severity Level 2: 3V (rms), 0.15MHz ~ 80MHz)

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**: A**

12.4 EUT Configuration

The configurations of EUT are listed in Section 12.1.

12.5 Operating Condition of EUT

12.5.2 Setup the EUT as shown in Section 12.1.

12.5.3 Turn on the power of all equipments.

12.5.4 Let the EUT work in test mode (Charging) and measure it.

12.6 Test Procedure

1) Set up the EUT, CDN and test generators as shown on Section 12.1.2.
2) Let the EUT work in test mode and measure it.
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).
4) The disturbance signal described below is injected to EUT through CDN.
5) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
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.
7) The rate of sweep shall not exceed $1.5*10^{-3}$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.
8) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

12.7 Test Results

PASS.

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

Please refer to the following page.

Injected Currents Susceptibility Test Results

EMTEK(SHENZHEN) CO., LTD

Applicant : UNI-TREND TECHNOLOGY (CHINA) CO.,LTD.	Test Date : March 20, 2020
EUT : Professional Thermal Imager	Temperature : 21.2℃
M/N : UTi165K	Humidity : 50%
Power Supply : DC 5V from power supply	Test Engineer : Tom

Test Mode : Charging

Frequency Range (MHz)	Injected Position	Strength	Criterion	Result
0.15 ~ 80	AC Mains	3V(rms)	A	PASS

Test Mode :

Frequency Range (MHz)	Injected Position	Strength	Criterion	Result

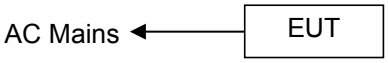
Remark : 1. Modulation Signal:1KHz 80% AM
Measurement Equipment :
CDN : ☑CDN-M2 (SWITZERLAND EM TEST)
☐CDN-M3 (SWITZERLAND EM TEST)

Note: No observable change.

13. VOLTAGE DIPS AND INTERRUPTIONS TEST

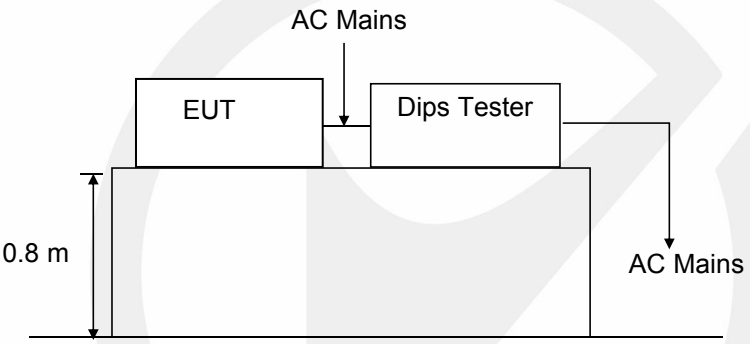
13.1 Block Diagram of Test Setup

13.1.1 Block Diagram of the EUT



(EUT: Professional Thermal Imager)

13.1.2 Dips Test Setup



(EUT: Professional Thermal Imager)

13.2 Test Standard

EN 61326-1: 2013
(IEC 61000-4-11: 2020)

13.3 Severity Levels and Performance Criterion

13.3.1 Severity level

Test Level %UT	Voltage dip and short interruptions %UT	Duration (in period)
0	100	0.5 1 5 10 25 50 *
40	60	
70	30	

13.3.2 Performance criterion**: B, C**

13.4 EUT Configuration

The configurations of EUT are listed in Section 13.1.

13.5 Operating Condition of EUT

13.5.1 Setup the EUT as shown in Section 13.1.

13.5.2 Turn on the power of all equipments.

13.5.3 Let the EUT work in test mode (Charging) and measure it.

13.6 Test Procedure

1) Set up the EUT and test generator as shown on Section 13.1.2.
2) The interruption is introduced at selected phase angles with specified duration.
3) Record any degradation of performance.

13.7 Test Results

PASS.

Please refer to the following page.

Voltage Dips And Interruptions Test Results

EMTEK(DONGGUAN) CO., LTD

Applicant : UNI-TREND TECHNOLOGY (CHINA) CO.,LTD.	Test Date : March 20, 2020
EUT : Professional Thermal Imager	Temperature : 21.2℃
M/N : UTi165K	Humidity : 47%
Power Supply : DC 5V from power supply	Test Engineer : Ccyf

Test Model : Charging

Test Level % U_T	Voltage Dips & Short Interruptions % U_T	Duration (in period)	Criterion ☐A ☒B ☒C ☐D	Result
70	30	25P	C	PASS
0	100	1P	B	PASS
0	100	0.5P	B	PASS
0	100	250P	C	PASS

Test Model : Charging(60Hz)

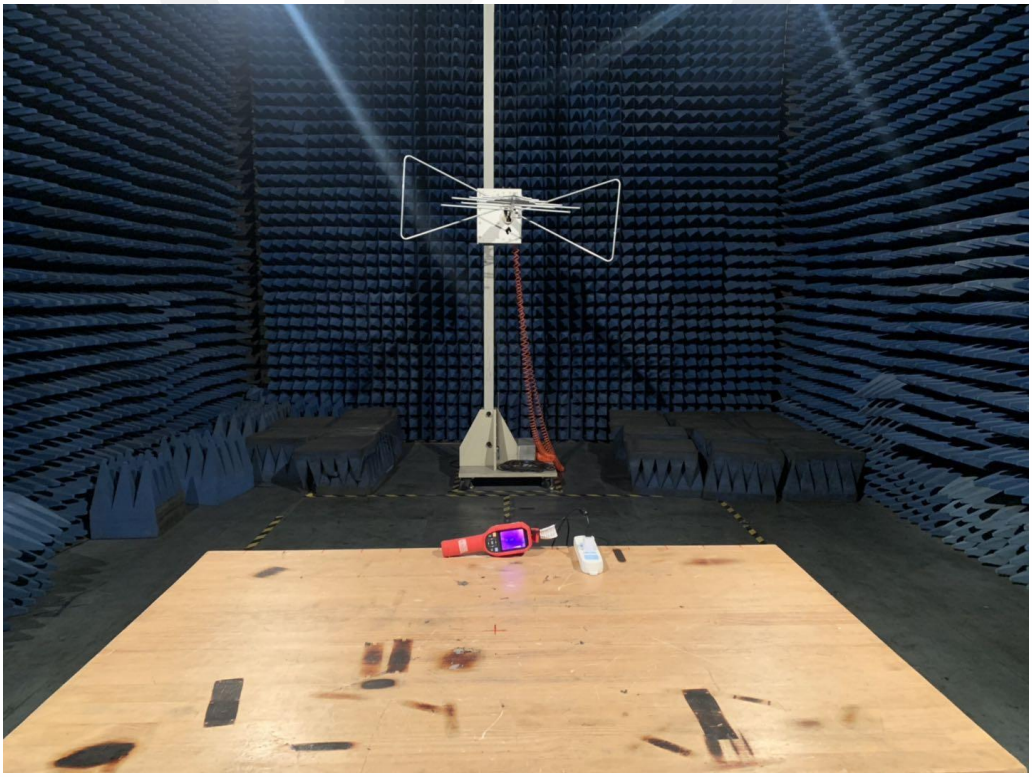
Test Level % U_T	Voltage Dips & Short Interruptions % U_T	Duration (in period)	Criterion ☐A ☒B ☒C ☐D	Result
70	30	30P	C	PASS
0	100	1P	B	PASS
0	100	0.5P	B	PASS
0	100	300P	C	PASS

Remark: U_T is the rated voltage for the equipment.

14. PHOTOGRAPH

14.1 Photo of Conducted Emission Measurement

14.2 Photo of Radiation Emission Measurement



14.3 Photo of Harmonic / Flicker Measurement

14.4 Photo of Electrostatic Discharge Test

14.5 Photo of RF Field Strength susceptibility Test

14.6 Photo of Electrical Fast Transient /Burst Test

14.7 Photo of Surge Immunity Test

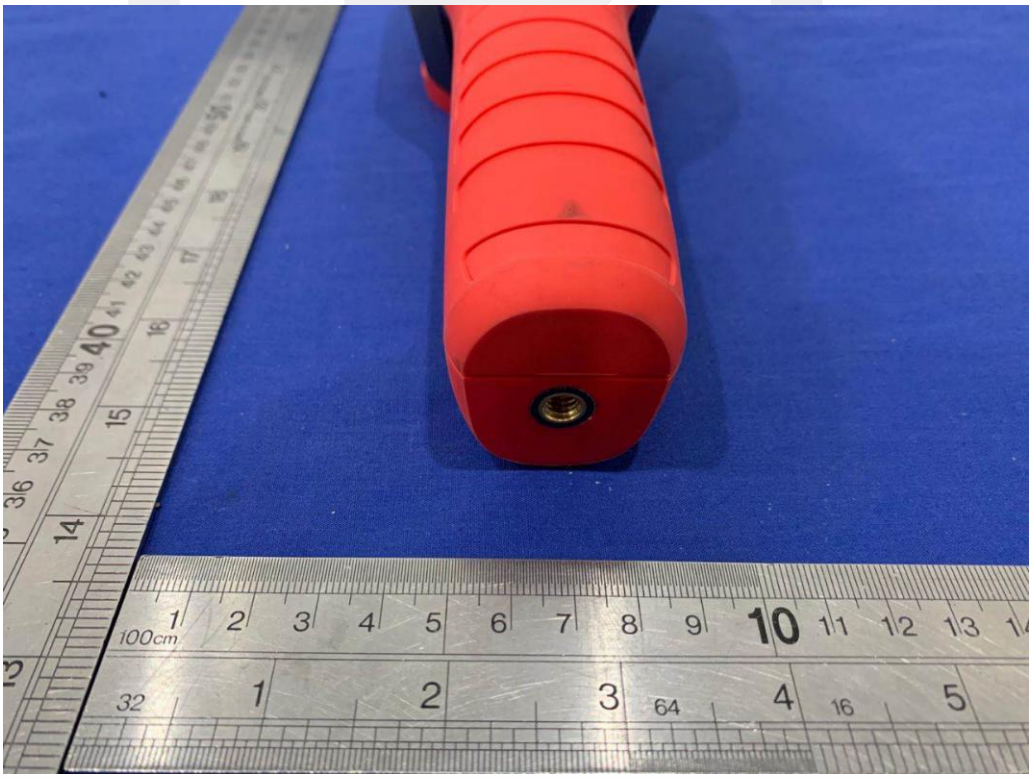
14.8 Photo of Injected Currents Susceptibility Test

14.9 Photo of Voltage Dips and Interruption Immunity Test

APPENDIX I
(Photos of EUT)


SET


SET



----------The end----------

声 明
Statement

1. 本报告无授权批准人签字及“检验报告专用章”无效；
   This report will be void without authorized signature or special seal for testing report.

2. 未经许可本报告不得部分复制；
   This report shall not be copied partly without authorization.

3. 本报告的检测结果仅对送测样品有效，委托方对样品的代表性和资料的真实性负责；
   The test results or observations are applicable only to tested sample. Client shall be responsible for representativeness of the sample and authenticity of the material.

4. 本检测报告中检测项目标注有特殊符号则该项目不在资质认定范围内，仅作为客户委托、科研、教学或内部质量控制等目的使用；
   The observations or tests with special mark fall outside the scope of accreditation, and are only used for purpose of commission, research, training, internal quality control etc.

5. 本检测报告以实测值进行符合性判定，未考虑不确定度所带来的风险，本实验室不承担相关责任，特别约定、标准或规范中有明确规定的除外；
   The test results or observations are provided in accordance with measured value, without taking risks caused by uncertainty into account. Without explicit stipulation in special agreements, standards or regulations, EMTEK shall not assume any responsibility.

6. 对本检测报告若有异议，请于收到报告之日起 20 日内提出；
   Objections shall be raised within 20 days from the date receiving the report.