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检测
TESTING
CNAS L0470

EMC TEST REPORT

Report No.: 2015264-E

Name of product: Electronic Scale

Model of product: ED-H

Applicant Name: CAS CORPORATION

Address: CASBuilding,#440-1,Sungnae-dong,Gangdong-gu,
Seoul,Korea

Name of Laboratory：Chengdu Sanfang Electrical Co.,Ltd

Adress: No.24, Hangtian Road, Longtan Industry Zone, Erduan,
Dongsanhuan Road, Chengdu P.R.C

REPORT REFERENCE.....: 2015264-E	
Prepared by.....:	David Li
Reviewed by.....:	Wei Hu
Approved by .....:	Xing Jun
Date of issue.....: 2015-12-02	
Contents.....: 56 Pages	

Test specification:

Standard: EN 61326-1:2013 Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements

Testing laboratory Name : Chengdu Sanfang Electrical Co.,Ltd

Address: No.24, Hangtian Road, Longtan Industry Zone, Erduan, Dongsanhuan Road, Chengdu P.R.C

Summary of Testing and Conclusions

The sample(s) tested complies with the requirements of EN 61326-1:2013

Test Product Name.....:	Electronic Scale
Trademark.....:	-
Model / type reference.....:	ED-H/1509ED030787
Manufacturer.....:	CAS CORPORATION
Address.....:	CASBuilding,#440-1,Sungnae-dong,Gangdong-gu, Seoul,Korea
Rating(s).....:	Power: DC 15V 1.0A; Max: 3kg, T=-3kg, Min: 5g, e=d=0.1g, Temp:0 - 40℃ Switching mode power supply：AC 100-240V - 50/60Hz

Date of receipt of test.....: 2015-10-19

Date of performance of test.....: 2015-10-22 to 2015-11-26

Application products:

ED-H (3kg, 6kg, 15kg, 30kg)

Remarks:

This report is invalid unless signed by writer, reviser and approver and there is special stamp for inspection.
This report is not valid if it is altered.
This validity of the test result of this report only for the sample(s) tested.
It's not valid for part using this report content unless allowed by CDSFE.

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1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

EMISSION		
Standard	**Test Type**	**Result**
EN 61326-1: 2013 CISPR 11：2010 IEC61000-3-2：2009 IEC61000-3-3：2013	Mains terminal disturbance voltage Test	PASS
	Electromagnetic radiation disturbance Test	PASS
	Harmonic Current	PASS
	Voltage Fluctuation and Flicks	PASS
IMMUNITY		
Standard	**Test Type**	**Result**
EN 61326-1: 2013 IEC 61000-4-2: 2008	Electrostatic discharge immunity test	PASS
EN 61326-1: 2013 IEC 61000-4-3: 2010	Radiated, radio-frequency, electromagnetic field immunity test	PASS
EN 61326-1: 2013 IEC 61000-4-4: 2012	Electrical fast transient / burst immunity test.	PASS
EN 61326-1: 2013 IEC 61000-4-5: 2005	Surge immunity test	PASS
EN 61326-1: 2013 IEC 61000-4-6: 2013	Conducted disturbances, induced by radio-frequency fields immunity test	PASS
EN 61326-1: 2013 IEC 61000-4-8: 2009	Power frequency magnetic field immunity test	N/A
EN 61326-1: 2013 IEC 61000-4-11:2004	Voltage dips, short interruptions immunity test	PASS

2 GENERAL INFORMATION

2.1 DESCRIPTION OF EUT

The **Chengdu Pris Electronic Co., Ltd.**'s product, model number: **ED-H** or the "EUT" as referred to in this report is a Electronic Scale. The EUT has the plastic enclosure. Rated input voltage: DC 15V 1A. The serial no is *1509ED030787*, And the switching mode power supply model: GPE125-150100-Z(input voltage:AC100-240V,50/60Hz). The EUT is a Class B Group 1 equipment of the standard.

Other detailed information please reference the user manual.

2.2 DESCRIPTION OF TEST MODES

The EUT is working in normal mode.

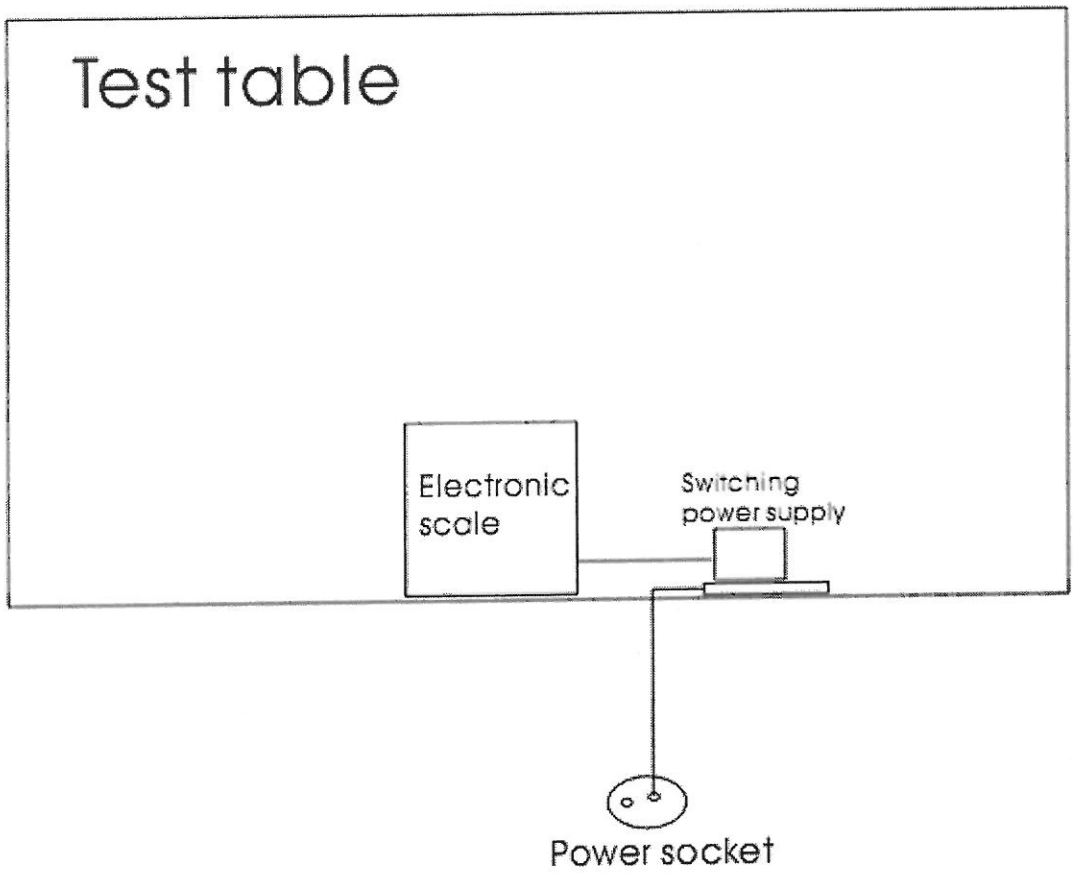
2.3 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units.

2.4 EXTERNAL I/O CABLE

Cable Description	Length (M)	From	To
DC Power Cable	1.8	Switching mode power supply	Electronic Scale

2.5 TEST SETUP CHART



3 EMISSION TEST

3.1.1 MAINS TERMINAL DISTURBANCE VOLTAGE

3.1.2 LIMITS OF MAINS TERMINAL DISTURBANCE VOLTAGE

FREQUENCY (MHz)	Class B Group 1	
	Quasi-peak(dBμV)	Average(dBμV)
0.15 - 0.5	66 - 56*	56 - 46*
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note: "*" : Decreasing linearly with logarithm of frequency

3.1.3 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Receiver R&S	ESR3	101716	2016-03-28
LISN R&S	ENV216	100036	2016-03-28

3.1.4 TEST PROCEDURE

The EUT shall be placed on a non-conductive table such that it is 0,8 m above the horizontal ground reference plane

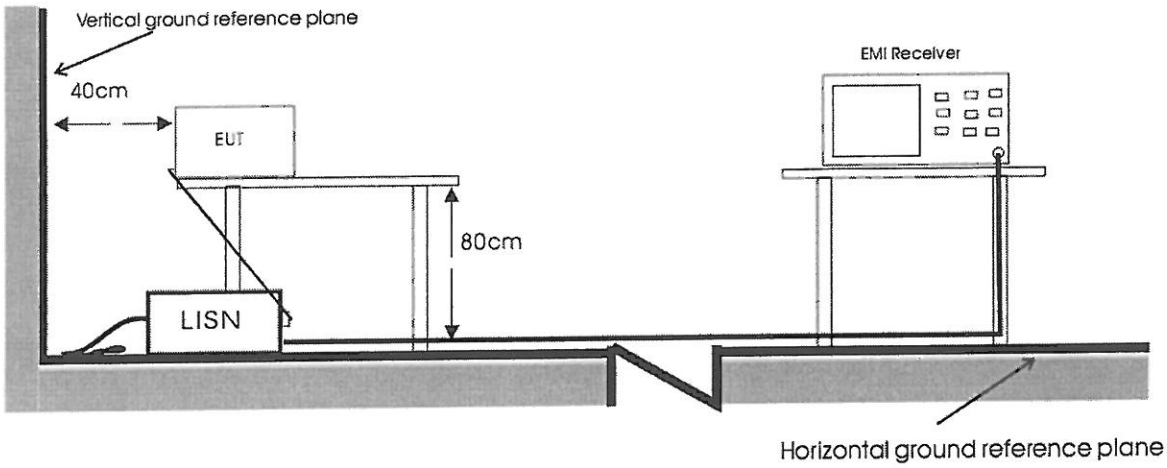
The rear of the EUT shall be 0,4 m from the vertical ground reference plane and 0.8m from the AMN.

During the mains terminal disturbance voltage test, the LISN is connected to the power cord of the EUT.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

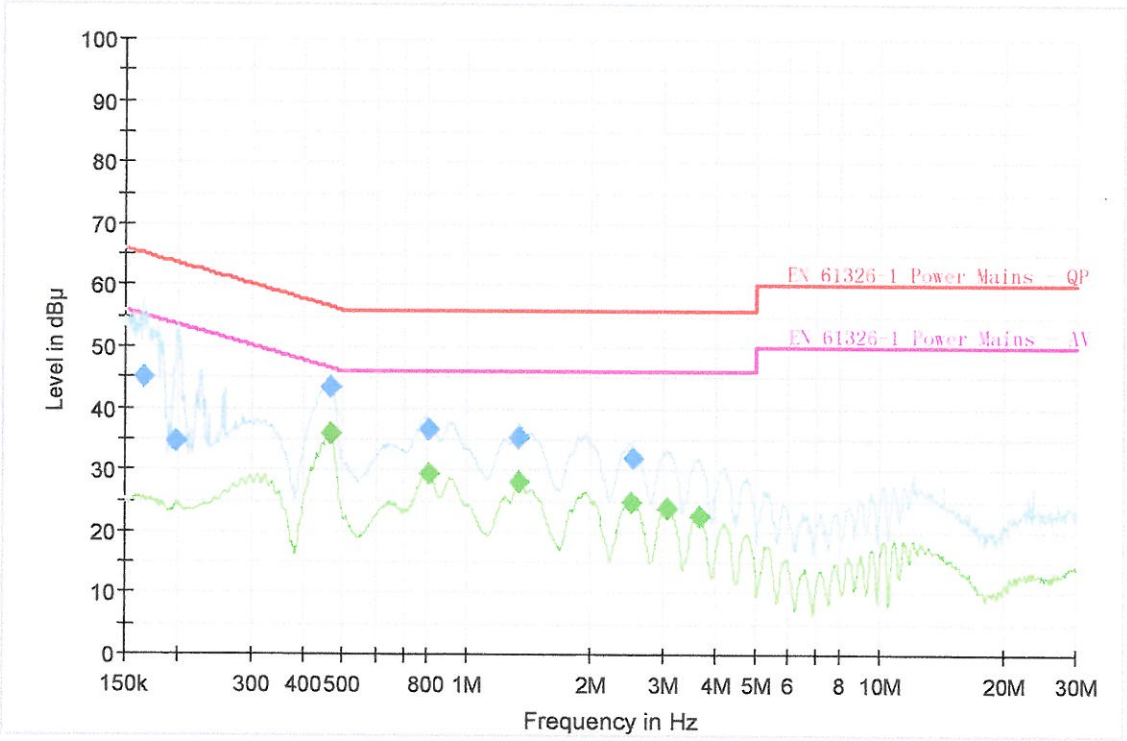
3.1.5 BLOCK DIAGRAM OF TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

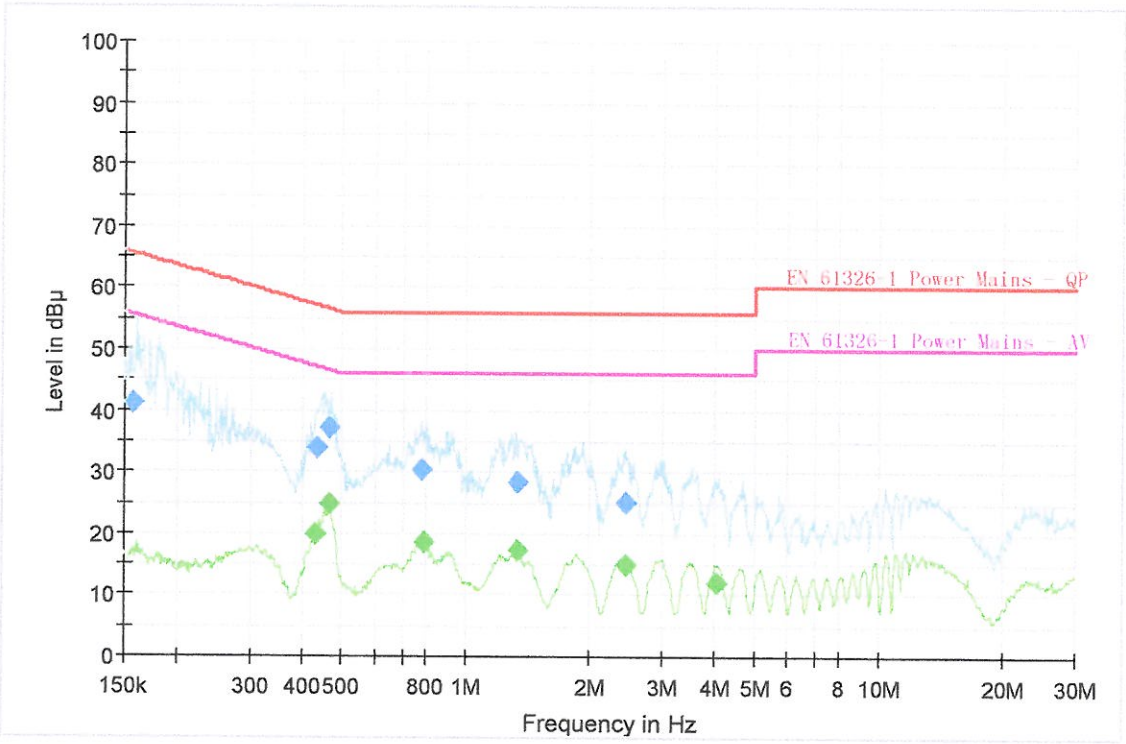
3.1.6 TEST RESULTS

EUT	Electronic Scale	MODEL NO.	ED-H
TEST MODE	Normal Mode	6dB BANDWIDTH	9kHz
INPUT SUPPLY	230Vac, 50Hz	PORT	AC INPUT Line (L)
ENVIRONMENTAL CONDITIONS	20 ℃ 52% RH	TESTED BY: Hu Wei	



Frequency (MHz)	Amplitude (dBµV)	Detector QP/AV	Meas. Time (ms)	Bandwidth (kHz)	Phase (L/N)	Limited (dBµV)	Margin (dBµV)
0.165734	58.0	QP	1000.0	9	L	65.2	7.2
0.201321	53.5	QP	1000.0	9	L	63.6	10.1
0.463043	45.5	QP	1000.0	9	L	56.6	11.2
0.797484	38.6	QP	1000.0	9	L	56.0	17.4
1.332988	37.6	QP	1000.0	9	L	56.0	18.4
2.511402	34.8	QP	1000.0	9	L	56.0	21.2
0.467685	36.4	AV	1000.0	9	L	46.6	10.2
0.801471	29.4	AV	1000.0	9	L	46.0	16.6
1.346351	28.4	AV	1000.0	9	L	46.0	17.6
2.474104	25.5	AV	1000.0	9	L	46.0	20.5
3.050651	24.4	AV	1000.0	9	L	46.0	21.6
3.650655	23.0	AV	1000.0	9	L	46.0	23.0

EUT	Electronic Scale	**MODEL NO.**	ED-H
TEST MODE	Normal Mode	**6dB BANDWIDTH**	9kHz
INPUT SUPPLY	230Vac, 50Hz	**PORT**	AC INPUT Neutral (N)
ENVIRONMENTAL CONDITIONS	20 ℃ 52% RH	**TESTED BY:** Hu Wei	



Frequency (MHz)	Amplitude (dBµV)	Detector QP/AV	Meas. Time	Bandwidth (kHz)	Phase (L/N)	Limited (dBµV)	Margin (dBµV)
0.156326	41.3	QP	1000.0	9	N	65.7	24.3
0.436314	33.9	QP	1000.0	9	N	57.1	23.2
0.463185	37.3	QP	1000.0	9	N	56.6	19.4
0.782342	30.5	QP	1000.0	9	N	56.0	25.5
1.326357	28.4	QP	1000.0	9	N	56.0	27.6
2.449486	25.3	QP	1000.0	9	N	56.0	30.7
0.429382	20.0	AV	1000.0	9	N	47.3	27.3
0.463185	24.8	AV	1000.0	9	N	46.6	21.8
0.789016	18.5	AV	1000.0	9	N	46.0	27.5
1.332954	17.2	AV	1000.0	9	N	46.0	28.8
2.449548	15.1	AV	1000.0	9	N	46.0	30.9
4.033593	12.0	AV	1000.0	9	N	46.0	34.0

4 ELECTROMAGNETIC RADIATION DISTURBANCE

4.1.1 LIMITS OF ELECTROMAGNETIC RADIATION DISTURBANCE

FREQUENCY	Class B Group 1 (at 10m)
(MHz)	dBμV/m
30 – 230	30
230 – 1000	37

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Receiver R&S	ESCI	100983	2016-03-28
Pre-amplifier Wireless	FPA-6592G	60020	2016-03-28
Broadband Antenna Schwarzbeck	HL562	100607	2016-12-14

4.1.3 TEST PROCEDURE

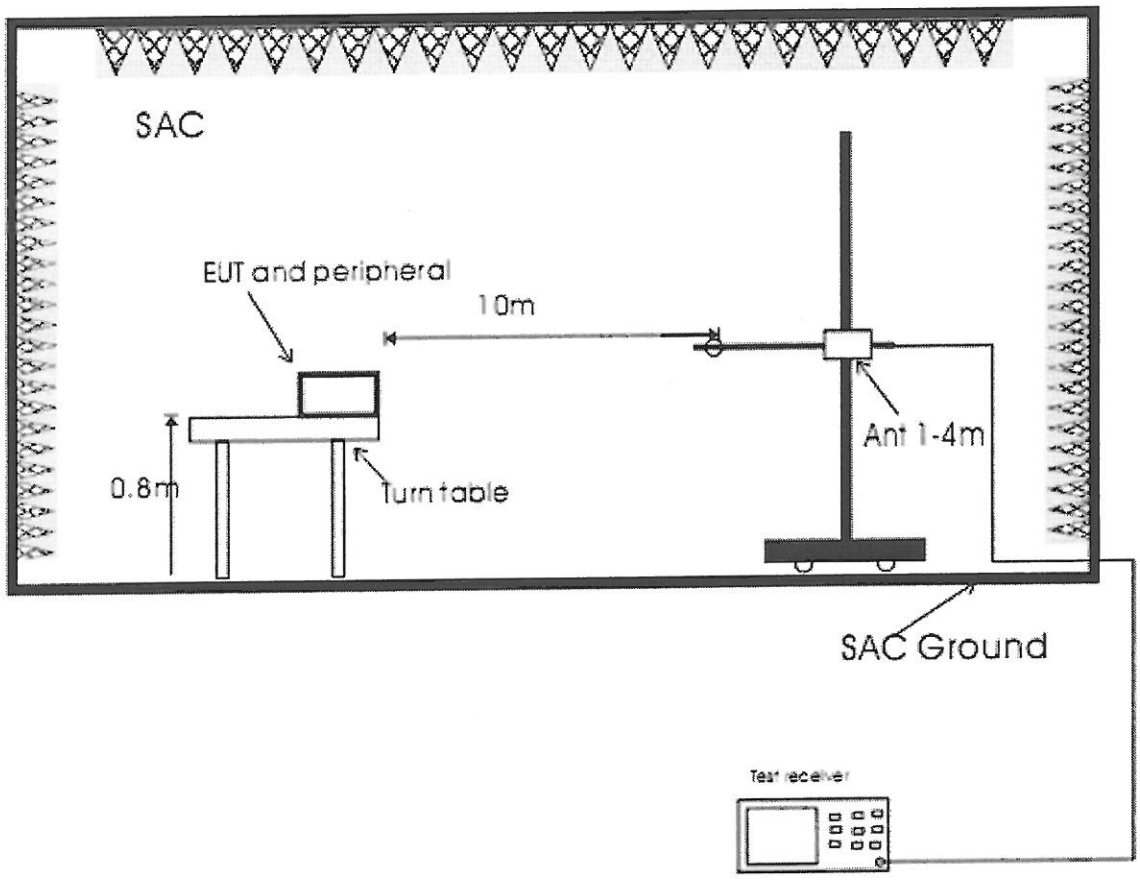
The EUT shall be placed on a non-conductive table such that it is 0,8 m above the SAC ground plane

For the radiated emissions test, the EUT was connected to AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the PK, QP or AV detection mode.

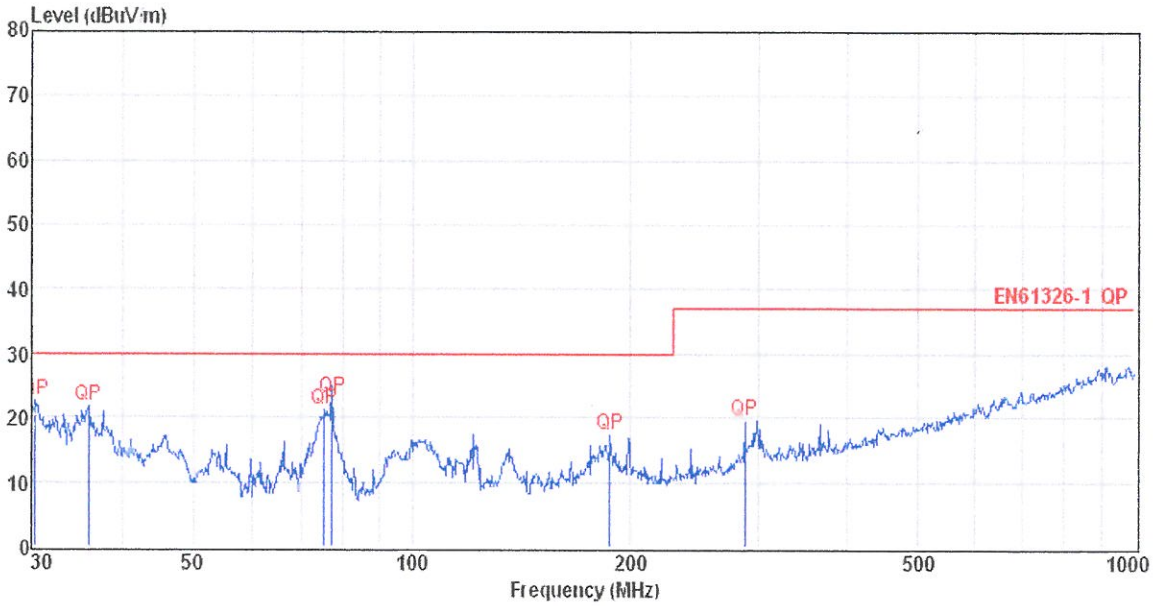
4.1.4 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

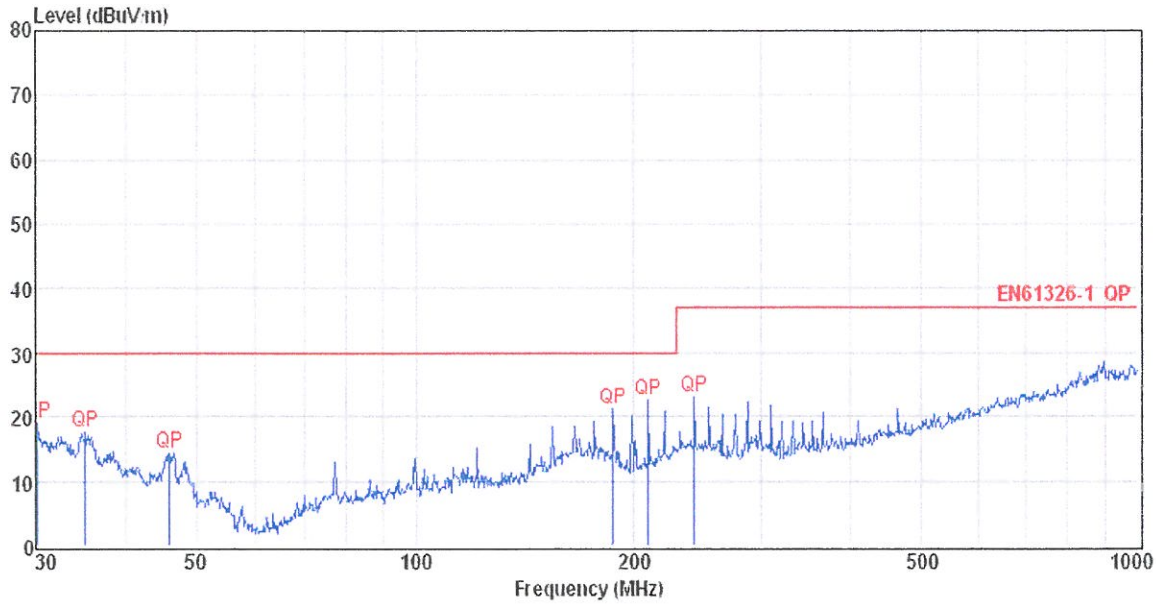
4.1.5 TEST RESULTS

EUT	Electronic Scale	MODEL NO.	ED-H
MODE	Normal Mode	INPUT SUPPLY	230Vac, 50Hz
FREQUENCY RANGE & POLARIZATION	30-1000 MHz Vertical	DETECTOR FUNCTION & BANDWIDTH	Quasi-Peak, 120kHz
ENVIRONMENTAL CONDITIONS	18 ℃ 57% RH	TESTED BY: Hu Wei	



Freq	Result	Limit	Margin	Height	Angle	Polarity	Detector
MHz	dBµV/m	dBµV/m	dBµV/m	cm	deg	H/V	PK/QP/AV
30.32	22.50	30.00	7.50	131	132	V	QP
35.88	21.71	30.00	8.29	107	-55	V	QP
75.45	21.10	30.00	8.90	178	113	V	QP
77.40	23.00	30.00	7.00	131	137	V	QP
187.75	17.33	30.00	12.67	122	-109	V	QP
287.99	19.50	37.00	17.50	141	55	V	QP

EUT	Electronic Scale	**MODEL NO.**	ED-H
MODE	Normal Mode	**INPUT SUPPLY**	230Vac, 50Hz
FREQUENCY RANGE & POLARIZATION	30-1000 MHz Horizontal	**DETECTOR FUNCTION & BANDWIDTH**	Quasi-Peak, 120kHz
ENVIRONMENTAL CONDITIONS	18 ℃ 57% RH	**TESTED BY**: Hu Wei	



Freq	Result	Limit	Margin	Height	Angle	Polarity	Detector
MHz	dBµV/m	dBµV/m	dBµV/m	cm	deg	H/V	PK/QP/AV
30.11	18.94	30.00	11.06	3510	-29	H	QP
35.13	17.63	30.00	12.37	143	-160	H	QP
45.86	14.35	30.00	15.65	205	-53	H	QP
187.75	21.20	30.00	8.80	377	-23	H	QP
210.05	22.52	30.00	7.48	342	143	H	QP
243.38	22.99	37.00	14.01	326	-15	H	QP

5 HARMONIC CURRENT TEST

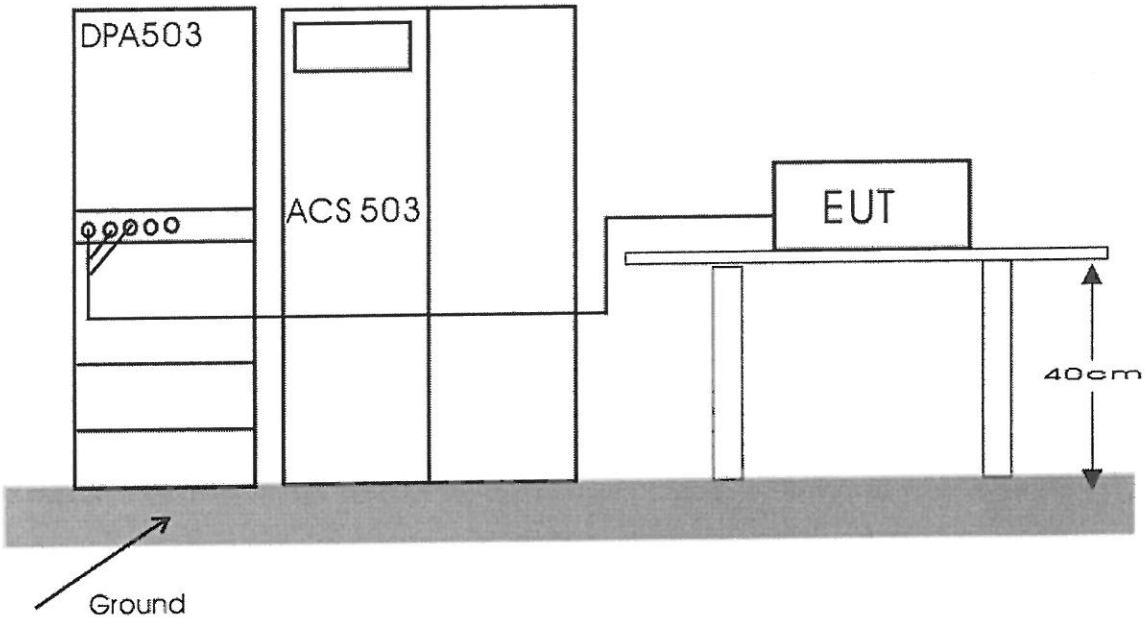
5.1.1 LIMITS OF HARMONICS CURRENT MEASUREMENT

Harmonic order n	Maximum permissible harmonic current A
Odd harmonics	
3	2,30
5	1,14
7	0,77
9	0,40
11	0,33
13	0,21
$15 \leq n \leq 39$	$0,15 \frac{15}{n}$
Even harmonics	
2	1,08
4	0,43
6	0,30
$8 \leq n \leq 40$	$0,23 \frac{8}{n}$

5.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
3-Phase AC Source EM-TEST	ACS 503 S4	V1013106191	2016-03-28
3 Phase Flicker Impedances EM-TEST	SIF 503 S4	V1002105739	2016-03-28
Power Analyzer EM-TEST	DPA 503	V1002105738	2016-03-28

5.1.3 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

5.1.4 TEST RESULT

Report title:	2015264-1
Date of test:	13:27 26.Nov 2015
Measurement file name:	ED-H HAR.rsd
Tester:	Hu Wei
Standard used:	EN/IEC 61000-3-2 Ed.3 Quasi-stationary Equipment class A <= 200% of the limit
Observation time:	600s
Windows width:	10 periods - (EN/IEC 61000-4-7 Edition 2002 + A1:2008)
Customer:	CAS
E. U. T.:	ED-H

Test Result	
E. U. T.:	PASS
Power Source:	PASS

E. U. T. Result

Harmonic(s) > 200%:	
Order (n):	None
Harmonic(s) with average > 90%:	
Order (n):	None
Harmonic(s) between 150% and 200% during more than 10% of the test time or max. 10min:	
Order (n):	None

Power Source Result

First dataset out of limit:	
DS (time):	None
Harmonic(s) out of limit:	
Order (n):	None

Average harmonic current results

Hn	Ieff [A]	% of Limit	Limit [A]	Result
1	16.672E-3			
2	2.933E-3			PASS
3	4.049E-3			PASS
4	2.320E-3			PASS
5	2.432E-3			PASS
6	2.133E-3			PASS
7	2.250E-3			PASS
8	2.069E-3			PASS
9	2.071E-3			PASS
10	2.104E-3			PASS
11	2.031E-3			PASS
12	2.018E-3			PASS
13	2.010E-3			PASS
14	2.036E-3			PASS
15	2.010E-3			PASS
16	1.993E-3			PASS
17	2.037E-3			PASS
18	1.981E-3			PASS
19	1.989E-3			PASS
20	1.999E-3			PASS
21	1.983E-3			PASS
22	1.980E-3			PASS
23	1.998E-3			PASS
24	2.002E-3			PASS
25	1.999E-3			PASS
26	1.987E-3			PASS
27	2.059E-3			PASS
28	2.007E-3			PASS
29	2.011E-3			PASS
30	2.017E-3			PASS
31	2.014E-3			PASS
32	2.004E-3			PASS
33	2.045E-3			PASS
34	2.038E-3			PASS
35	2.018E-3			PASS
36	2.021E-3			PASS
37	2.024E-3			PASS
38	2.019E-3			PASS
39	2.027E-3			PASS
40	2.015E-3			PASS

Maximum harmonic current results

Hn	Ieff [A]	% of Limit	Limit [A]	Result
1	55.260E-3			
2	43.443E-3	2.011	2.16	PASS
3	41.434E-3	0.901	4.60	PASS
4	40.137E-3	4.667	860.00E-3	PASS
5	39.066E-3	1.713	2.28	PASS
6	38.285E-3	6.381	600.00E-3	PASS
7	37.489E-3	2.434	1.54	PASS
8	37.226E-3	8.093	460.00E-3	PASS
9	35.994E-3	4.499	800.00E-3	PASS
10	36.248E-3	9.850	368.00E-3	PASS
11	34.895E-3	5.287	660.00E-3	PASS
12	35.455E-3	11.562	306.66E-3	PASS
13	34.123E-3	8.125	420.00E-3	PASS
14	34.949E-3	13.296	262.86E-3	PASS
15	33.887E-3	11.296	300.00E-3	PASS
16	34.397E-3	14.955	230.00E-3	PASS
17	33.785E-3	12.763	264.70E-3	PASS
18	33.784E-3	16.525	204.44E-3	PASS
19	33.566E-3	14.172	236.84E-3	PASS
20	33.203E-3	18.045	184.00E-3	PASS
21	33.163E-3	15.477	214.28E-3	PASS
22	32.369E-3	19.350	167.28E-3	PASS
23	32.536E-3	16.629	195.66E-3	PASS
24	31.800E-3	20.741	153.32E-3	PASS
25	31.963E-3	17.757	180.00E-3	PASS
26	31.082E-3	21.960	141.54E-3	PASS
27	31.236E-3	18.742	166.66E-3	PASS
28	30.606E-3	23.288	131.42E-3	PASS
29	30.399E-3	19.590	155.18E-3	PASS
30	29.931E-3	24.402	122.66E-3	PASS
31	29.731E-3	20.481	145.16E-3	PASS
32	29.599E-3	25.738	115.00E-3	PASS
33	29.188E-3	21.405	136.36E-3	PASS
34	28.860E-3	26.663	108.24E-3	PASS
35	28.282E-3	21.996	128.58E-3	PASS
36	28.151E-3	27.540	102.22E-3	PASS
37	27.651E-3	22.736	121.62E-3	PASS
38	27.573E-3	28.473	96.84E-3	PASS
39	27.058E-3	23.451	115.38E-3	PASS
40	26.786E-3	29.116	92.00E-3	PASS

Maximum harmonic voltage results

Hn	Ueff [V]	Ueff [%]	Limit [%]	Result
1	232.01	100.874		
2	60.58E-3	0.026	0.2	PASS
3	36.24E-3	0.016	0.9	PASS
4	25.48E-3	0.011	0.2	PASS
5	32.19E-3	0.014	0.4	PASS
6	13.60E-3	0.006	0.2	PASS
7	46.60E-3	0.020	0.3	PASS
8	8.82E-3	0.004	0.2	PASS
9	56.35E-3	0.024	0.2	PASS
10	18.29E-3	0.008	0.2	PASS
11	23.38E-3	0.010	0.1	PASS
12	19.22E-3	0.008	0.1	PASS
13	25.97E-3	0.011	0.1	PASS
14	18.62E-3	0.008	0.1	PASS
15	51.70E-3	0.022	0.1	PASS
16	17.07E-3	0.007	0.1	PASS
17	37.89E-3	0.016	0.1	PASS
18	8.36E-3	0.004	0.1	PASS
19	27.02E-3	0.012	0.1	PASS
20	12.45E-3	0.005	0.1	PASS
21	24.59E-3	0.011	0.1	PASS
22	12.54E-3	0.005	0.1	PASS
23	40.84E-3	0.018	0.1	PASS
24	7.79E-3	0.003	0.1	PASS
25	39.05E-3	0.017	0.1	PASS
26	8.62E-3	0.004	0.1	PASS
27	15.92E-3	0.007	0.1	PASS
28	11.19E-3	0.005	0.1	PASS
29	20.80E-3	0.009	0.1	PASS
30	9.26E-3	0.004	0.1	PASS
31	33.07E-3	0.014	0.1	PASS
32	12.52E-3	0.005	0.1	PASS
33	31.96E-3	0.014	0.1	PASS
34	9.98E-3	0.004	0.1	PASS
35	11.20E-3	0.005	0.1	PASS
36	8.49E-3	0.004	0.1	PASS
37	17.11E-3	0.007	0.1	PASS
38	12.29E-3	0.005	0.1	PASS
39	28.79E-3	0.013	0.1	PASS
40	11.19E-3	0.005	0.1	PASS

5.2 VOLTAGE FLUCTUATION AND FLICKS TEST

5.2.1 LIMITS OF VOLTAGE FLUCTUATION AND FLICKS MEASUREMENT

- the value of Pst shall not be greater than 1,0;
- the value of Plt shall not be greater than 0,65;
- the value of d(t) during a voltage change shall not exceed 3,3 % for more than 500 ms;
- the relative steady-state voltage change, dc, shall not exceed 3,3 %;
- the maximum relative voltage change dmax, shall not exceed

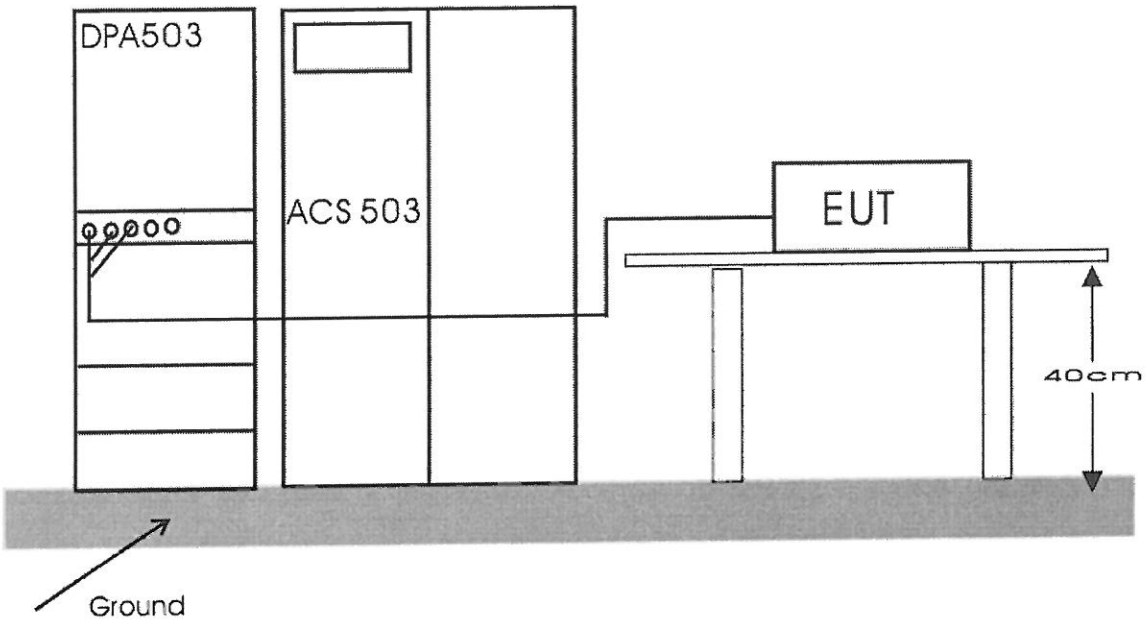
a) 4 % without additional conditions;
b) 6 % for equipment which is:
- switched manually, or
- switched automatically more frequently than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds), or manual restart, after a power supply interruption.

c) 7 % for equipment which is
- attended whilst in use (for example: hair dryers, vacuum cleaners, kitchen equipment such as mixers, garden equipment such as lawn mowers, portable tools such as electric drills), or
- switched on automatically, or is intended to be switched on manually, no more than twice per day, and also has either a delayed restart (the delay being not less than a few tens of seconds) or manual restart, after a power supply interruption.

5.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
3-Phase AC Source EM-TEST	ACS 503 S4	V1013106191	2016-03-28
3 Phase Flicker Impedances EM-TEST	SIF 503 S4	V1002105739	2016-03-28
Power Analyzer EM-TEST	DPA 503	V1002105738	2016-03-28

5.2.3 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

5.2.4 TEST RESULT

Report title:	2015264-2
Date of test:	13:52 26.Nov 2015
Tester:	Hu Wei
Standard used:	EN/IEC 61000-3-3 Flicker
Short time (Pst):	10 min
Observation time:	120 min (12 Flicker measurements)
Flickermeter:	230V / 50Hz according IEC 61000-4-15 Ed.2
Flicker Impedance:	Zref (IEC 60725)
Customer:	CAS
E. U. T.:	ED-H

Test Result	PASS

Maximum Flicker results

	EUT values	Limit	Result
Pst	0.028	1.00	PASS
Plt	0.028	0.65	PASS
dc [%]	0.109	3.30	PASS
dmax [%]	0.367	4.00	PASS
dt [s]	0.000	0.50	PASS

6 IMMUNITY TEST

6.1 PERFORMANCE CRITERIA FOR IMMUNITY TESTS

Performance criterion A
The equipment shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.
The max variation of the indication no more than 10d(1.0g).

Performance criterion B
The equipment shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.

Performance criterion C
Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

6.2 ELECTROSTATIC DISCHARGE IMMUNITY TEST

6.2.1 TEST SPECIFICATION

Basic Standard:	EN 61326-1; IEC 61000-4-2
Discharge Impedance:	330 Ω / 150 pF
Discharge Voltage:	Air Discharge: 8kV
	Contact Discharge: 4kV
Polarity:	Positive & Negative
Number of Discharge:	Air Discharge: min. 10 times at each test point
	Contact Discharge: min. 10 times at each test point
Discharge Mode:	Single Discharge
Discharge Period:	1 second minimum

6.2.2 TEST INSTRUMENTS

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ESD Simulator	EMTEST	DITO	V1236113585	2016-03-28

6.2.3 TEST PROCEDURE

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.

Contact Discharge:

This test is done on a conductive surface. All the procedure shall be same as Air Discharge, except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

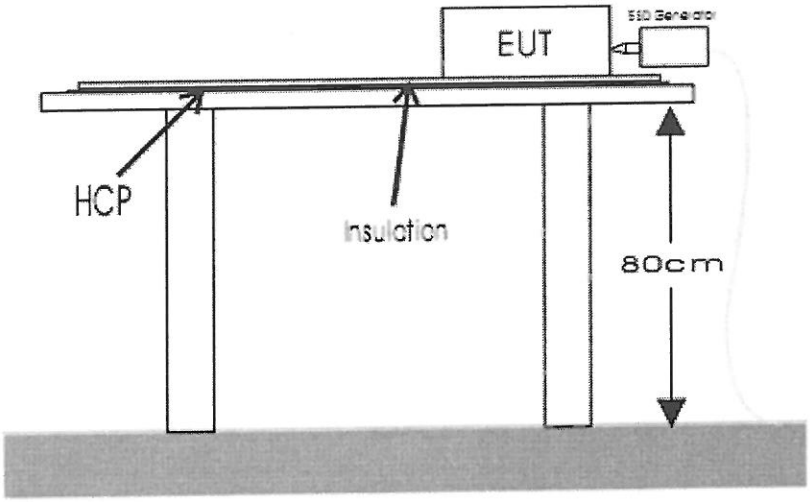
Indirect Discharge for Horizontal Coupling Plane

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.

Indirect Discharge for Vertical Coupling Plane

At least 20 single discharges 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.

6.2.4 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

6.2.5 TEST RESULTS

EUT	Electronic Scale	MODEL NO.	ED-H
TEST MODE	Normal Mode	INPUT SUPPLY	230Vac, 50Hz
ENVIRONMENTALCONDITIONS	22℃, 51% RH,	TESTED BY: Hu Wei	

Discharge Mode	Discharge Level (kV)	Polarity	Test Point	Test Result	Performance Decision	Verdict
Contact Discharge	2, 4	+/-	1	Max variation 0g	A	Pass
Air Discharge	2, 4, 8	+/-	2,3,4,5,6	Max variation 0g	A	Pass

Discharge Level (kV)	Polarity	Horizontal Coupling Plane	Vertical Coupling Plane	Test Result	Performance Decision	Verdict
2, 4	+/-	Front; Back; Left; Right	Front; Back; Left; Right	Max variation 0g	A	Pass

Description of test point:

1. Metallic plate
2. Power button
3. Display panel
4. Setting button
5. LED indicator
6. Switching power supply

6.3 RADIATED, RADIO-FREQUENCY, ELECTROMAGNETIC FIELD IMMUNITY TEST

6.3.1 TEST SPECIFICATION

Basic Standard:	EN 61326-1; IEC 61000-4-3
Frequency Range:	80 MHz – 1000 MHz; 1.4GHz – 2GHz; 2GHz – 2.7GHz
Field Strength:	3V/m;3 V/m; 1 V/m
Modulation:	1kHz Sine Wave, 80%, AM Modulation
Frequency Step:	1 % of fundamental
Polarity of Antenna:	Horizontal and Vertical
Test Distance:	3 m
Antenna Height:	1.5m
Dwell Time:	1 seconds

6.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Power Amplifier AR	AR 150W1000M3	0332731	2016-03-28
Signal Generator AR	AR SG6000	2327336	2016-03-28
Stacked double Log.-Per. Antenna Schwarzbeck	STLP 9128D	17	2016-03-28
Field-Strength Sensor AR	FL7006	0332270	2016-03-28
Power Meter AR	PM2002	0328313	2016-03-28

6.3.3 TEST PROCEDURE

The EUT is place on a 80cm high non-conducting test table. The EUT is set 3 meters 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.

Cables shall be attached to the EUT and arranged on the test site according to the manufacturer's installation instructions and shall replicate typical installations and use as much as possible.

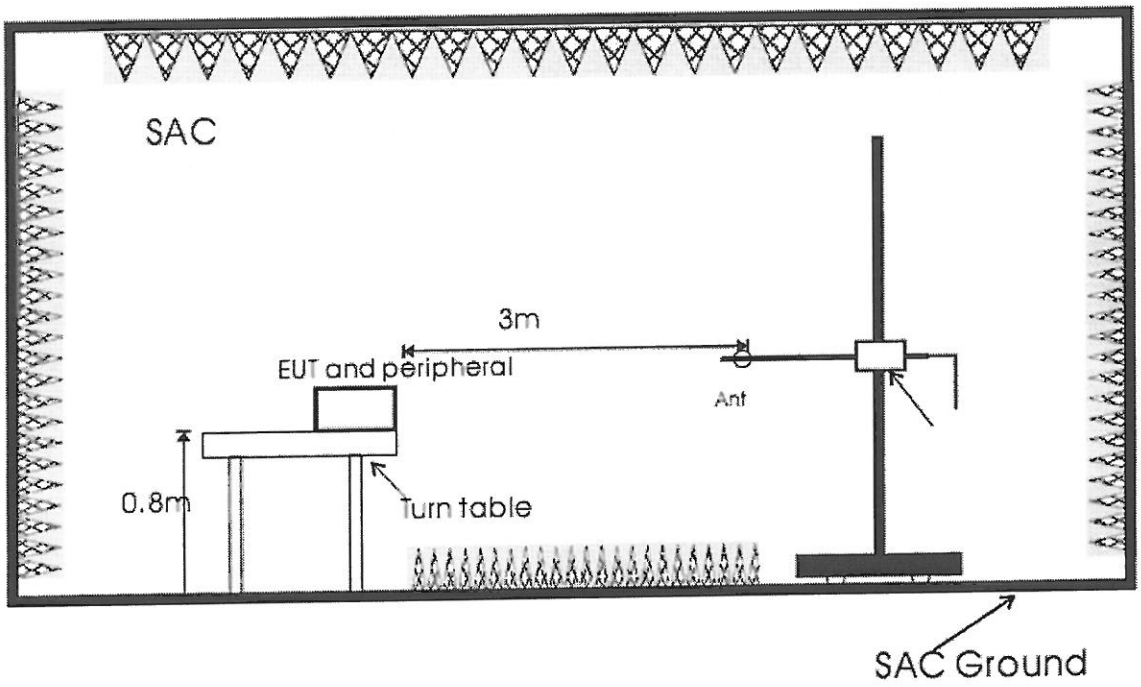
The EUT operates within its operational mode(s) under intended climatic conditions after power on.

The frequency range is swept seperate from 80 MHz to 1000 MHz and 1400MHz to 2000MHz using 3V signal level and 2000MHz to 2700MHz using 1V signal level, and with the disturbance signal 80% amplitude modulated with a 1 kHz sine wave.

Increase the frequency by a maximum of 1% of the present frequency and the dwell time is 1s at each frequency.

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

6.3.4 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

6.3.5 TEST RESULTS

EUT	Electronic Scale	MODEL NO.	ED-H
TEST MODE	Normal Mode	INPUT SUPPLY	230Vac, 50Hz
ENVIRONMENTALCONDITIONS	19 ℃ 58% RH	TESTED BY: Hu Wei	

Frequency (MHz)	Polarity	Direction	Field Strength (V/m)	Test Result	Performance Decision	Verdict
80 - 1000	V&H	Front	3	Max variation 0.2g	A	Pass
80 - 1000	V&H	Back	3	Max variation 0.2g	A	Pass
80 - 1000	V&H	Left	3	Max variation 0g	A	Pass
80 - 1000	V&H	Right	3	Max variation 0g	A	Pass
1400-2000	V&H	Front	3	Max variation 0.2g	A	Pass
1400-2000	V&H	Back	3	Max variation 0.2g	A	Pass
1400-2000	V&H	Right	3	Max variation 0.1g	A	Pass
1400-2000	V&H	Left	3	Max variation 0.1g	A	Pass
2000-2700	V&H	Front	1	Max variation 0g	A	Pass
2000-2700	V&H	Back	1	Max variation 0g	A	Pass
2000-2700	V&H	Right	1	Max variation 0g	A	Pass
2000-2700	V&H	Left	1	Max variation 0g	A	Pass

6.4 ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

6.4.1 TEST SPECIFICATION

Basic Standard:	EN 61326-1; IEC 61000-4-4
Test Voltage:	Power Line : 1kV
Polarity:	Positive & Negative
Impulse Frequency:	5 kHz
Impulse Waveshape :	5/50 ns
Burst Duration:	15 ms
Burst Period:	300 ms
Test Duration:	Not less than 1 min.

6.4.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Transient Generator Mainframe Teseq AG	NSG 3040	1730	2016-03-28

6.4.3 TEST PROCEDURE

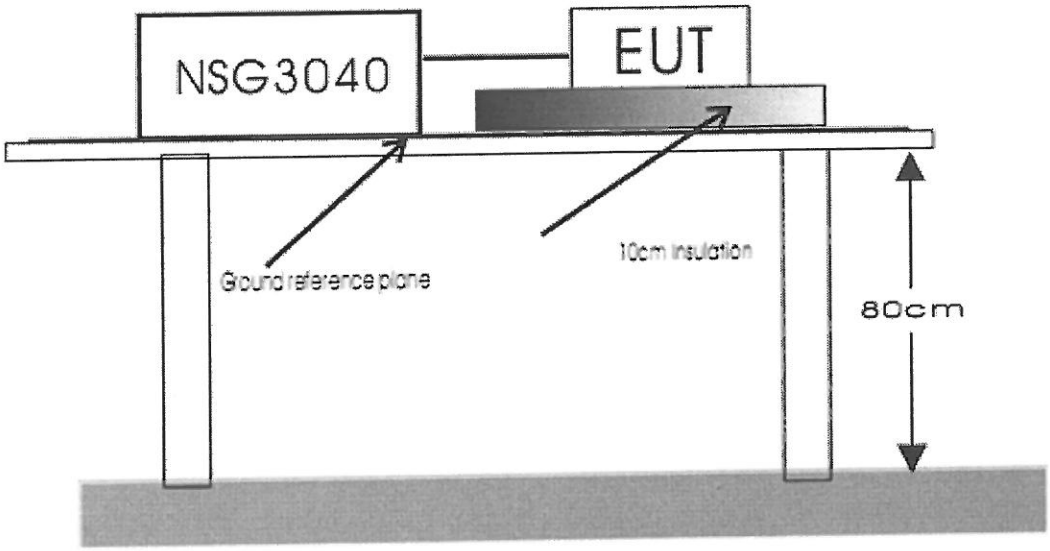
The EUT shall be placed on a ground reference plane and shall be insulated from it by an insulating support 0,1 m thick.

The test generator and the coupling/decoupling network shall be placed directly on, and bonded to, the ground reference plane.

All cables to the EUT shall be placed on the insulation support 0,1 m above the ground reference plane.

The EUT was arranged for Power Line Coupling through a CDN,

6.4.4 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

6.4.5 TEST RESULTS

EUT	Electronic Scale	MODEL NO.	ED-H
TEST MODE	Normal Mode	INPUT SUPPLY	230Vac, 50Hz
ENVIRONMENTAL CONDITIONS	20 ℃ 55% RH	TESTED BY: Hu Wei	

Test Port	Polarity	Test Level (kV)	Test Result	Performance Decision	Verdict
AC Input L + N	+ / -	1	Max variation 0g	A	Pass

6.5 SURGE IMMUNITY TEST

6.5.1 TEST SPECIFICATION

Basic Standard:	EN 61326-1; IEC 61000-4-5
Wave-Shape:	Combination Wave 1.2/50 μs Open Circuit Voltage 8 /20 μs Short Circuit Current
Test Voltage:	Coupling line to line : 0.5kV Coupling line to earth : 1kV
Surge Input/Output:	L-N, L-PE; N-PE
Generator Source Impedance:	2 Ω between L-N 12 Ω between L-PE and N-PE
Polarity:	Positive/Negative
Phase Angle:	0° ,90° ,180°,270°
Pulse Repetition Rate:	1 time / min. (maximum)
Number of Tests:	5 positive and 5 negative at selected points

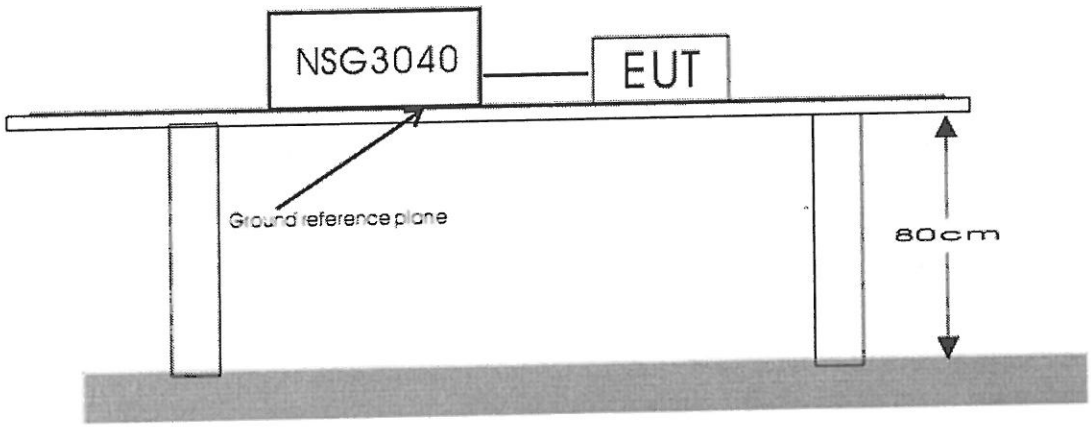
6.5.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
EFT/SURGE Generator Mainframe Teseq AG	NSG 3040	1730	2016-03-28

6.5.3 TEST PROCEDURE

The power cord between the EUT and the coupling/decoupling network shall not exceed 2 m in length.
For line to line coupling mode, provide a 0.5 kV 1.2/50μs voltage surge (at open-circuit condition) and Line to ground coupling mode, provide a 1 kV 1.2/50μs voltage surge (at open-circuit condition).
At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
Different phase angles(0°;90°;180°;270°) are done individually.
Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

6.5.4 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

6.5.5 TEST RESULTS

EUT	Electronic Scale	MODEL NO.	ED-H
TEST MODE	Normal Mode	INPUT SUPPLY	230Vac,50Hz
ENVIRONMENTAL CONDITIONS	20 ℃ 55% RH	TESTED BY: Hu Wei	

TEST PORT	TEST LEVEL (kV)	Test Result	Performance Decision	Verdict
L– N	+/-0.5	Max variation 0g	A	Pass

6.6 IMMUNITY TO CONDUCTED DISTURBANCES INDUCED BY RF FIELDS

6.6.1 TEST SPECIFICATION

Basic Standard:	EN 61326-1; IEC 61000-4-6
Frequency Range:	0.15 MHz -80 MHz
Field Strength:	3 V
Modulation:	1kHz Sine Wave, 80%, AM Modulation
Frequency Step:	1 % of fundamental
Coupled Cable:	AC Mains
Coupling Device:	CDN

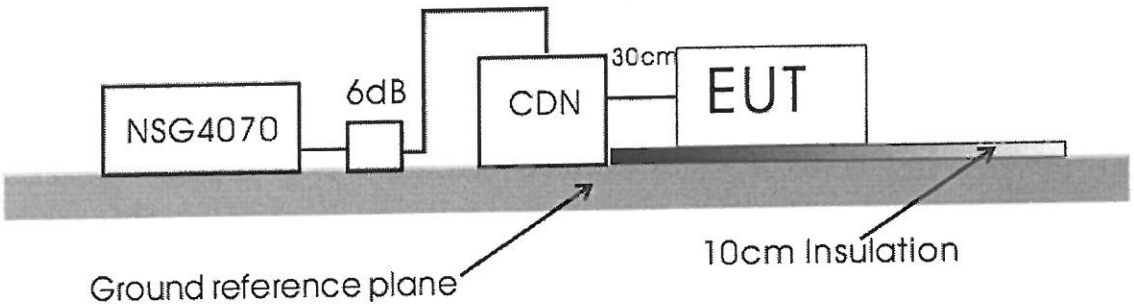
6.6.2 TEST INSTRUMENTS

DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
CS Immunity System	Teseq AG	NSG 4070-30	28189	2016-03-28
CDN	Teseq AG	CDN016	29001	2016-03-28

6.6.3 TEST PROCEDURE

Let the EUT work in test mode and test it.
The EUT are placed on an insulating support 0.1 m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3 m 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).
The disturbance signal described below is injected to EUT through CDN.
The EUT operates within its operational mode(s) under intended climatic conditions after power on.
The frequency range is swept from 150 kHz to 80 MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1 kHz sine wave.
Increase the frequency by a maximum of 1% of the present frequency and the dwell time is 1s at each frequency.
Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

6.6.4 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

6.6.5 TEST RESULTS

EUT	Electronic Scale	MODEL NO.	ED-H
TEST MODE	Normal Mode	INPUT SUPPLY	230Vac, 50Hz
ENVIRONMENTAL CONDITIONS	18 ℃ 57% RH	TESTED BY: Hu Wei	

Test Port	Injection Method	Frequency (MHz)	Field Strength (V)	Test Result	Performance Decision	Verdict
AC power cable	CDN	0.15 – 80	3	Max variation 0.4g	A	Pass

6.7 POWER-FREQUENCY MAGNETIC FIELDS IMMUNITY TEST

The EUT have not containing devices susceptible to magnetic fields. So this item is not applicable.

6.8 IMMUNITY TO VOLTAGE DIPS AND SHORT INTERRUPTIONS

6.8.1 TEST SPECIFICATION

Basic Standard:	EN 61326-1; IEC 61000-4-11
Voltage rise (and)fall time:	Between 1μs and 5μs
Phase shifting:	0°to 360°.
Phase relationship of voltage dips and interruptions :	Less than 10°
Test times:	3 times
Test Interval	More than 10s

6.8.2 TEST INSTRUMENTS

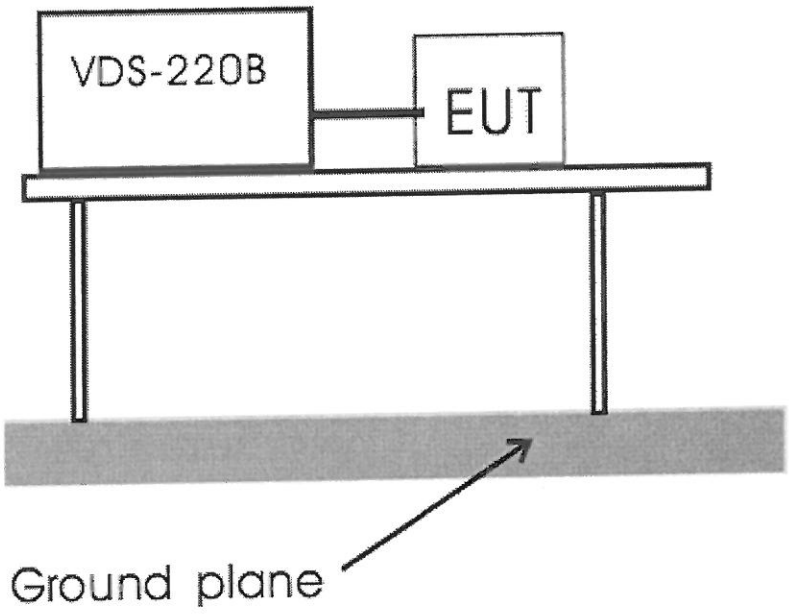
NAME	MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Voltage dips AC switch	Teseq AG	NSG2200-3	EK A18857	2016-03-28
Three phase voltage regulator	Shanghai voltage regulator	TSJA-100KVA	0403-16	2016-03-28

6.8.3 TEST PROCEDURE

For voltage dips, changes in supply voltage shall occur at zero crossings of the voltage, and at additional angles considered critical by product committees or individual product specifications preferably selected from 45°, 90°, 135°, 180°, 225°, 270° and 315° on each phase.

For each test, any degradation of performance shall be recorded. The monitoring equipment should be capable of displaying the status of the operational mode of the EUT during and after the tests. After each group of tests, a full functional check shall be performed.

6.8.4 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

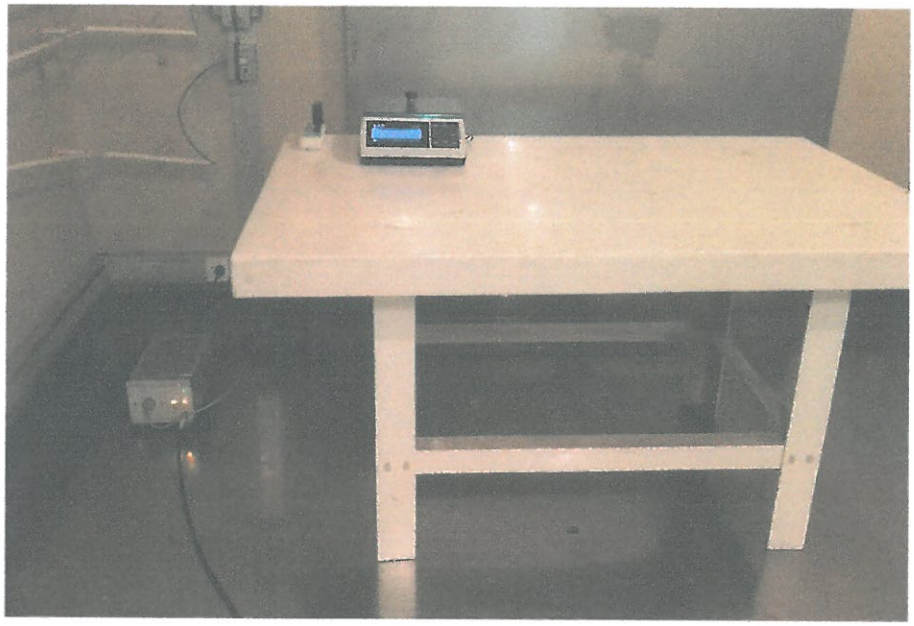
6.8.5 TEST RESULTS

EUT	Electronic Scale	MODEL NO.	ED-H
TEST MODE	Normal Mode	INPUT SUPPLY	230Vac, 50Hz
ENVIRONMENTAL CONDITIONS	18 ℃ 55% RH	TESTED BY: Hu Wei	

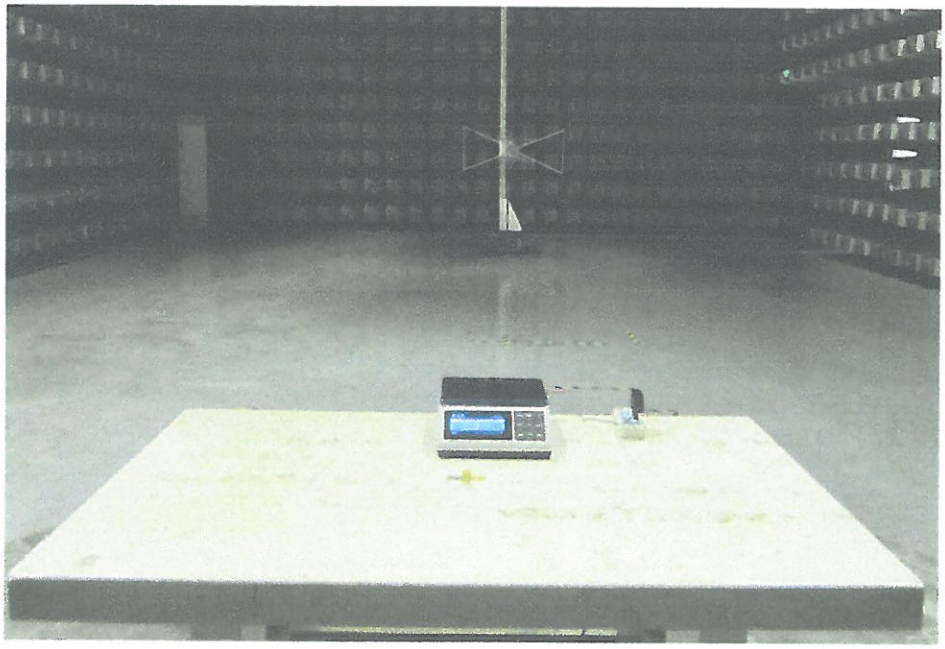
Test Level	Voltage Dips	Td (ms)	Phase Angle	Test Result	Performance Decision	Verdict
0%	100%	10	0/45/90/135/180/225/270/315	Max variation 0g	A	Pass
0%	100%	20	0/45/90/135/180/225/270/315	Max variation 0.1g	A	Pass
70%	30%	500	0/45/90/135/180/225/270/315	Max variation 0g	A	Pass
0%	100%	5000	0	Max variation 0.1g	A	Pass

7 PHOTOGRAPHS OF THE TEST CONFIGURATION

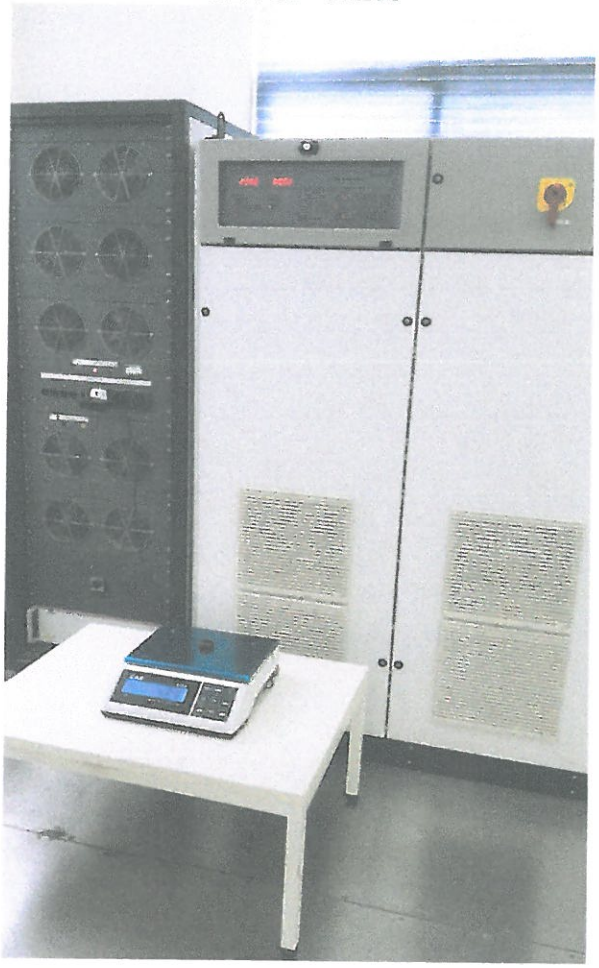
MAINS TERMINAL DISTURBANCE VOLTAGE TEST SETUP VIEW



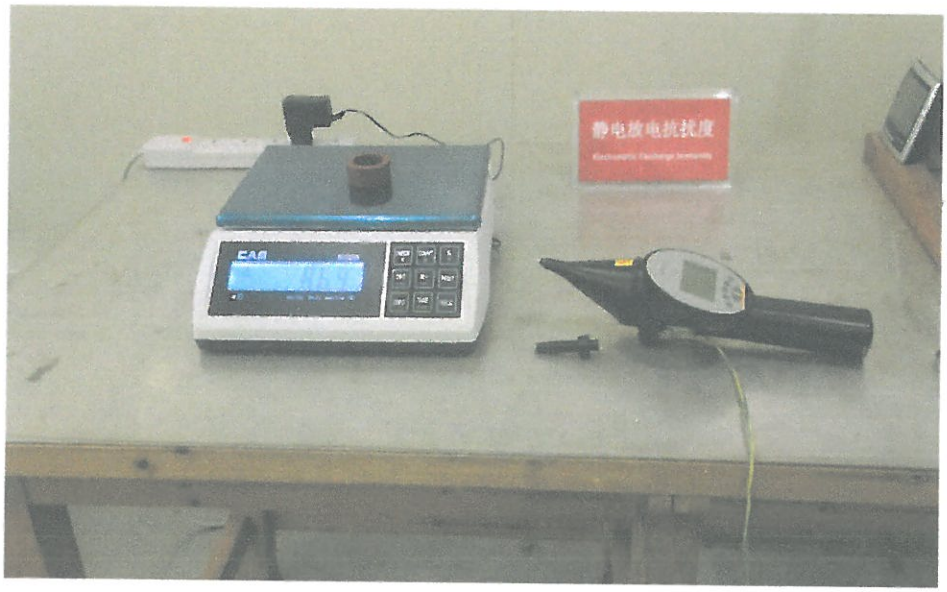
ELECTROMAGNETIC RADIATION DISTURBANCE TEST SETUP VIEW



HARMONIC CURRENT AND VOLTAGE FLUCTUATION AND FLICKER TEST SETUP VIEW



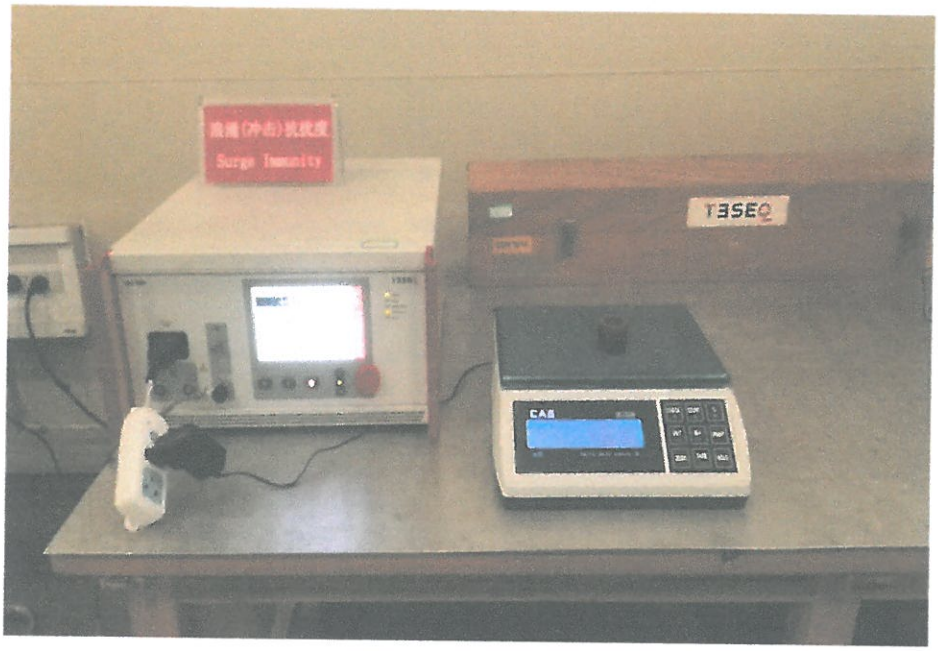
ELECTROSTATIC DISCHARGE IMMUNITY TEST SETUP VIEW (IEC 61000-4-2)



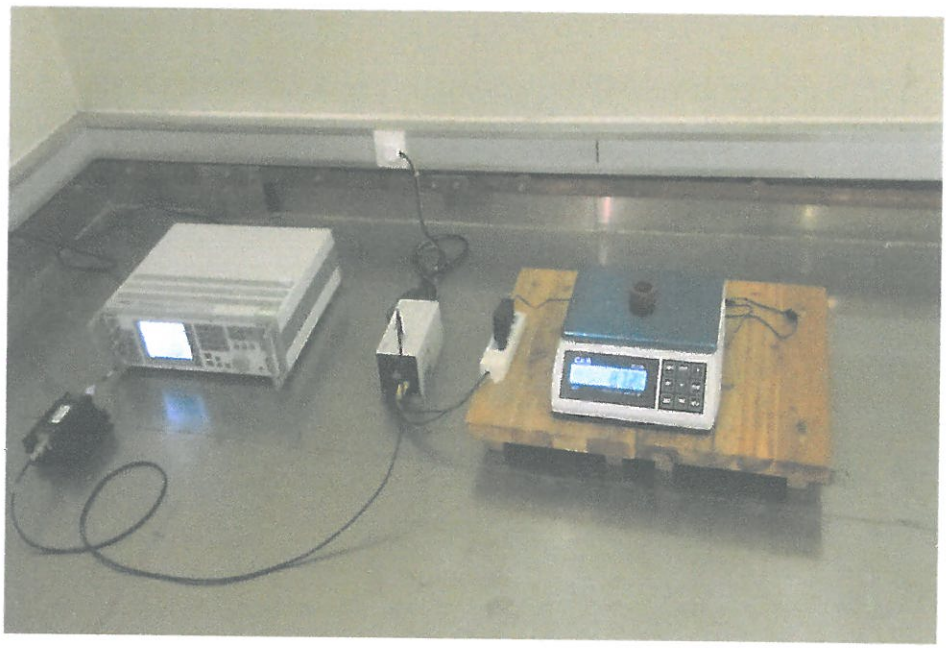
RADIATED, RADIO-FREQUENCY, ELECTROMAGNETIC FIELD IMMUNITY TEST SETUP VIEW (IEC 61000-4-3)

ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST SETUP VIEW (IEC 61000-4-4)

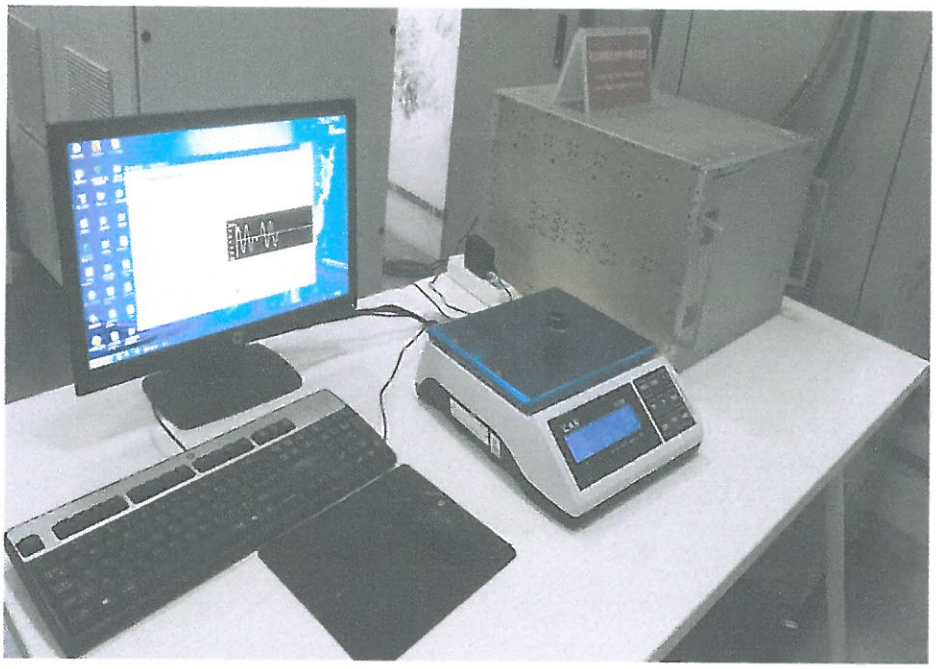
SURGE IMMUNITY TEST SETUP VIEW (IEC 61000-4-5)



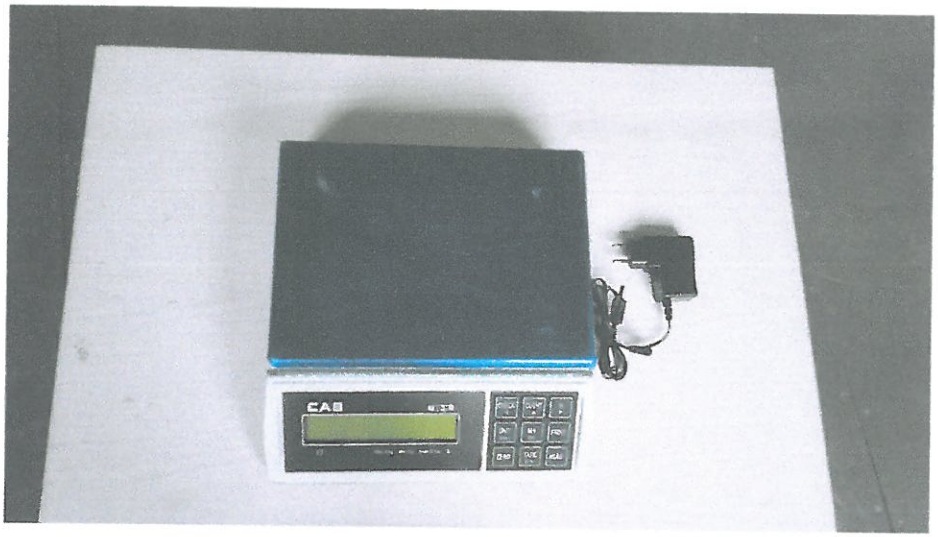
CONDUCTED DISTURBANCE, INDUCTED BY RADIO-FREQUENCY FIELDS IMMUNITY TEST SETUP VIEW (IEC 61000-4-6)

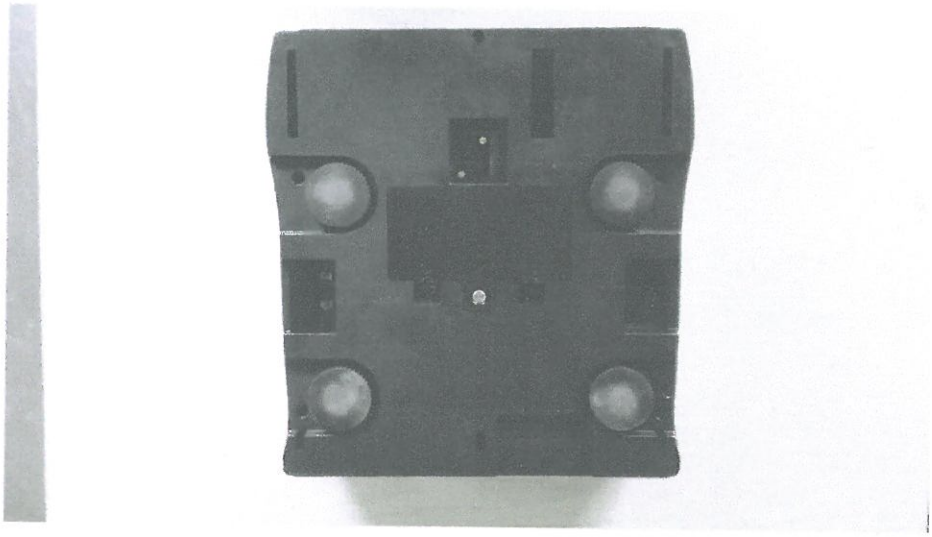


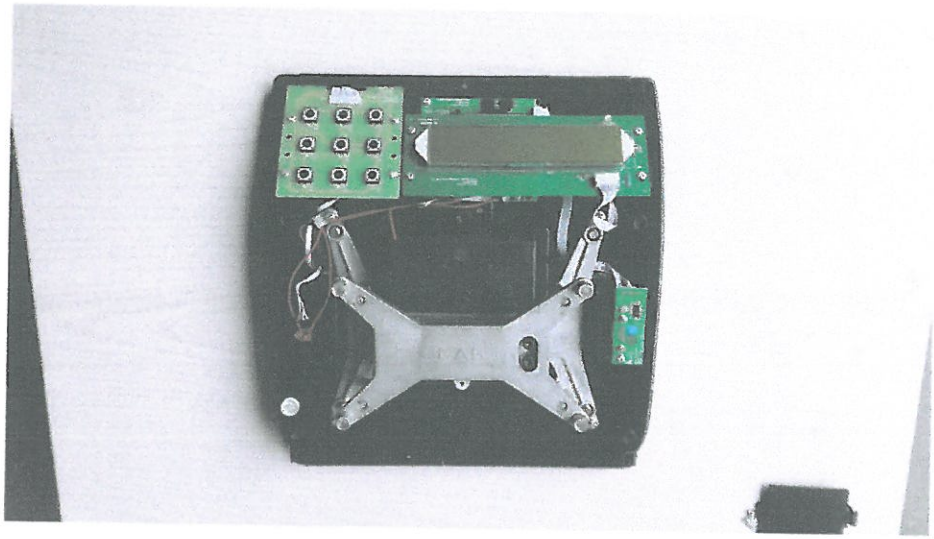
VOLTAGAE DIPS, SHORT INTERRUPTIONS IMMUNITY TEST SETUP VIEW (IEC 61000-4-11)

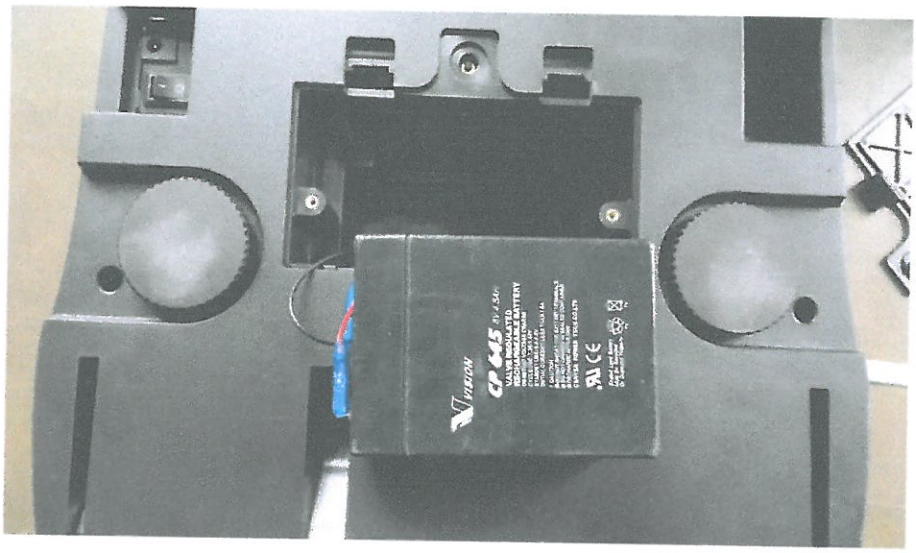


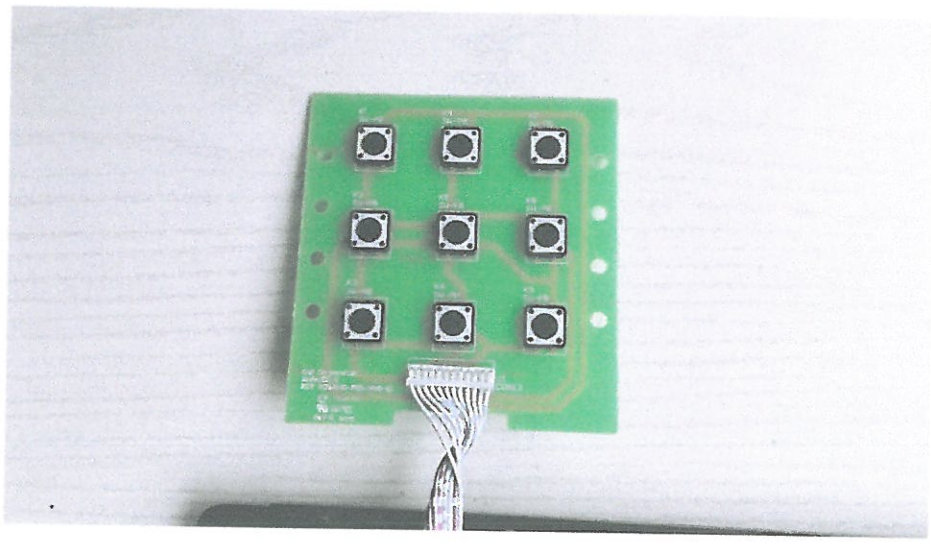
8 PHOTOGRAPHS OF THE EUT

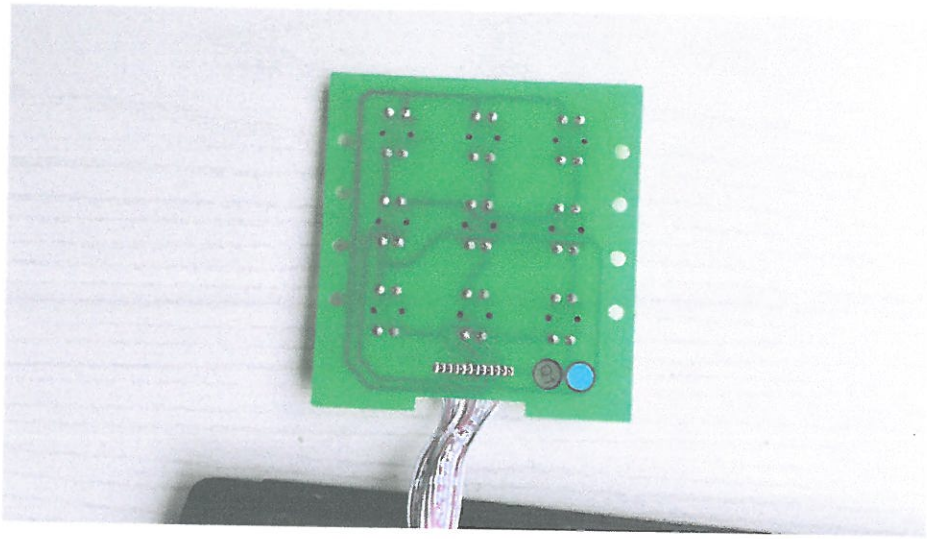


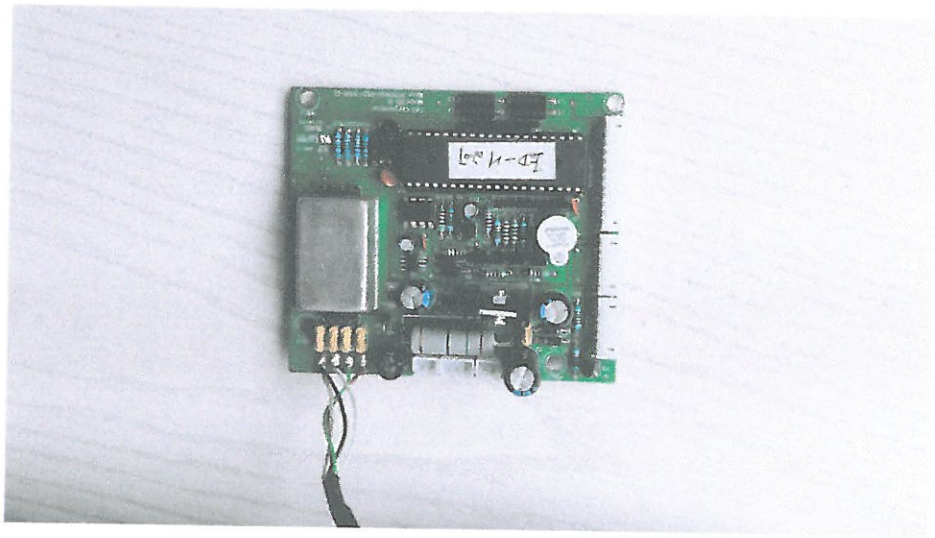


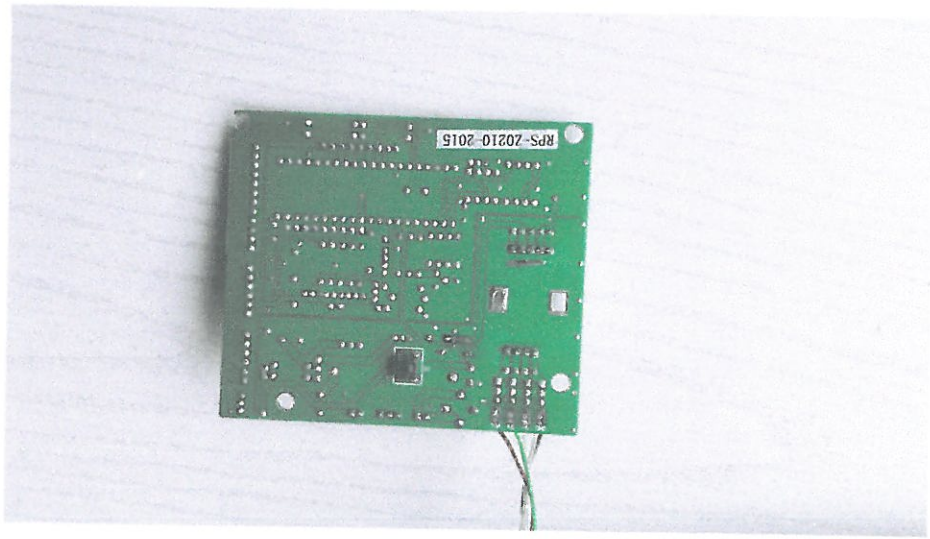











RPS-20210-2015