EUROFINS PRODUCT TESTING SERVICE (SHANGHAI) CO., LTD.

EMC TEST- REPORT

TEST REPORT NUMBER: EFSH22091226-IE-01-E01

eurofins
Eurofins Product Testing Service (Shanghai) Co., Ltd.
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2 General Information

2.1 Notes

The results of this test report relate exclusively to the item tested as specified in chapter “EUT Information” and are not transferable to any other test items.

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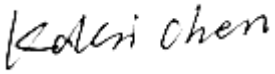
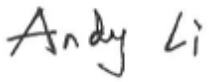
Operator:

2022-11-09		Kalsi Chen / Project Engineer	
Date	Eurofins-Lab.	Name / Title	Signature

Technical responsibility for area of testing:

2022-11-09		Andy Li / Supervisor	
Date	Eurofins	Name / Title	Signature

2.2 Testing laboratory

Eurofins Product Testing Service (Shanghai) Co., Ltd.
Building 18, No.2168 Chenhang Highway, Minhang District, Shanghai, China
Telephone : +86-21-61819181
Telefax : +86-21-61819180

Test location, where different:

2.3 Details of approval holder

Name :
Address :

Telephone : ./.
Fax : ./.

2.4 Application details

Date of receipt of test item : 2022-09-20
Date of test : 2022-09-20

2.5 EUT information

Product type : Air Fryer
Model name : AF-D5502AS, AF-D5502ASH, AF-D5502AT, AT-D5502AT-1700, AF-D5508AT, AF-D5508AT-2500, AF-D5508AT-1700
Brand name :
Serial number : ./.
Ratings : 220-240V~, 50-60Hz, Class I
AF-D5502AS, AF-D5508AT-1700, AT-D5502AT-1700: 1700W;
AF-D5502ASH, AF-D5502AT, AF-D5508AT: 2700W
AF-D5508AT-2500:2500W
Test voltage 230V~, 50Hz
Additional information :

The appliance covered by this report is Air Fryer for household use only.
All models incorporate NTC sensor and two thermal links to safeguard themselves.
They have the similar construction and critical component, some characteristic as following:

Model	Power input	Photo
AF-D5502ASH	2700W	
AF-D5502AS	1700W	
AF-D5502AT	2700W	
AF-D5502AT-1700	1700W	
AF-D5508AT	2700W	
AF-D5508AT-2500	2500W	
AF-D5508AT-1700	1700W	

After review, AF-D5508AT was selected to full tests, AF-D5502AT was selected to do ESD test and the most unfavourable data were recorded.

2.6 Test standards

Technical standard :

EN IEC 55014-1: 2021

EN IEC 55014-2: 2021

EN IEC 61000-3-2: 2019+A1: 2021

EN 61000-3-3: 2013+A1: 2019+A2: 2021

3 Technical test

3.1 Summary of test results

No deviations from the technical specification(s) were ascertained in the course of the tests performed. ☒

or

The deviations as specified were ascertained in the course of the tests performed. ☐

3.2 Test environment

Temperature	: 20	...	25°C
Relative humidity content	: 30	...	60%
Air pressure	: 100	...	103kPa

3.3 Test mode

Operating Mode (max. level)

3.4 Test equipment utilized

Measurement Equipment List				
No.	**Name:**	**Type:**	**Manufacturer:**	**Cal due date:**
1	EMI test receiver	ESR3	R&S	2023-06-13
2	Artificial mains	ENV216	R&S	2023-06-13
3	Click analyser	CL55C	AFJ	2023-09-06
4	Absorbing clamp	MDS 21B	TESEQ	2023-06-13
5	Single phase Harmonics & Flicker analyser	PACS-1	California Instruments	2023-06-06
6	AC Power Source	5001ix	California Instruments	2023-06-06
7	ESD Gun	NSG 437	TESEQ	2023-06-14
8	Ultra Compact Simulator	UCS 500N7	EMTEST	2023-06-06
9	Continuous wave simulator	CWS500N1	EMTEST	2023-06-06
10	Coupling/Decoupling Network	L 801 M2/M3	Luethi	2023-06-06
11	Attenuator	WA59-6-33	Weinschel	2023-06-13

3.5 Test results

☒ 1st test ☐ test after modification ☐ production test

Test case	Subclause	Required	Test passed	Test failed
Conducted Emission	Clause 4.3.2 & 4.3.3 of EN IEC 55014-1	☒	☒	☐
Disturbance power	Clause 4.3.4 of EN IEC 55014-1	☒	☒	☐
Radiated disturbance	Clause 4.3.4 of EN IEC 55014-1	☐	☐	☐
Radiated disturbance (1GHz to 6GHz)	Clause 4.3.5 of EN IEC 55014-1	☐	☐	☐
Magnetic field (equipment using IPT)	Clause 4.3.2 of EN IEC 55014-1	☐	☐	☐
Discontinuous disturbance	Clause 4.4.2 of EN IEC 55014-1	☐	☐	☐
Harmonic Current Emissions	EN IEC 61000-3-2	☒	☒	☐
Voltage Changes, Voltage Fluctuations and Flicker	EN 61000-3-3	☒	☒	☐
Electrostatic Discharge	Clause 5.1 of EN IEC 55014-2 & IEC 61000-4-2	☒	☒	☐
Electrical Fast Transients	Clause 5.2 of EN IEC 55014-2 & IEC 61000-4-4	☒	☒	☐
Injected currents	Clause 5.3 & 5.4 of EN IEC 55014-2 & IEC 61000-4-6	☒	☒	☐
Radio frequency electromagnetic fields	Clause 5.5 of EN IEC 55014-2 & IEC 61000-4-3	☐	☐	☐
Surges	Clause 5.6 of EN IEC 55014-2 & IEC 61000-4-5	☒	☒	☐
Voltage dips	Clause 5.7 of EN IEC 55014-2 & IEC 61000-4-11	☒	☒	☐

Note 1: The additional margin (0-10dB) was meet in the frequency range 200MHz to 300MHz in Disturbance power test (absorbing clamp), and the EUT did not contained any circuit with clock frequency more than 30MHz, so the EUT was compliant with the Radiated disturbance test

Note 2: Radiated disturbance test in the frequency range from 1 GHz to 6 GHz is not required as the highest clock frequency (Fx) of EUT is less than 108MHz.

Note 3: The click rate was less than 5, and the click duration was less than 10ms. So it is deemed to comply with Discontinuous disturbance test.

Note 4: The Radio frequency electromagnetic fields test was not required as the appliance did not contain clock frequency higher than 15MHz.

4 Emission Test

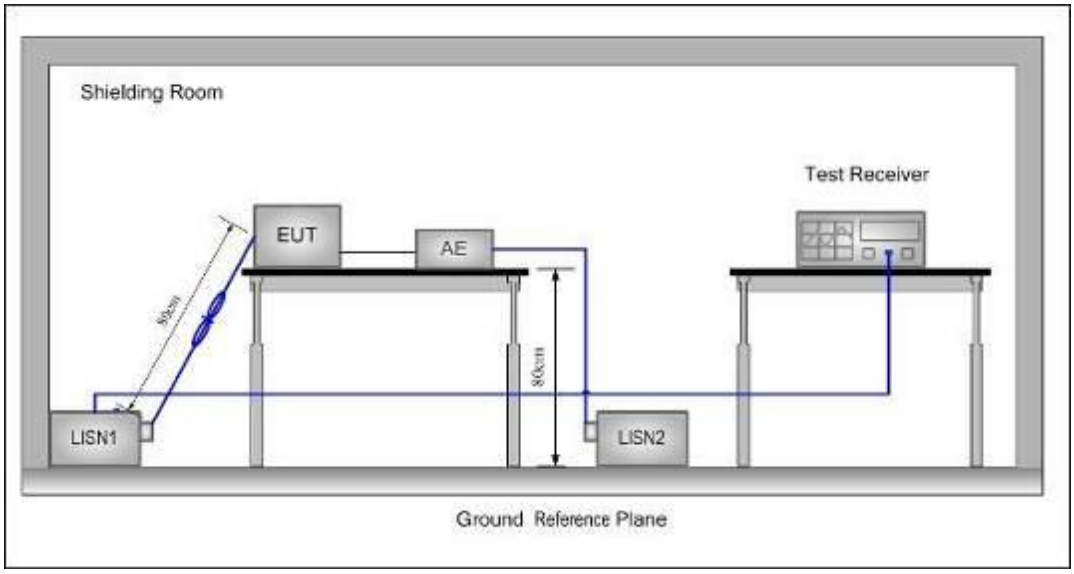
4.1 Conducted Emission

This clause lays down the general requirements for the measurement of disturbance voltage produced at the terminals of apparatus.

4.1.1 Limits

Frequency range MHz	At mains terminals dB (μV)	
	Quasi-peak Limit	Average Limit
0.15 to 0.50	66 to 56	59 to 46
0.50 to 5	56	46
5 to 30	60	50
Note1: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 30 MHz. Note2: The lower limit is applicable at the transition frequency.		

4.1.2 Measurement procedure



1. The mains terminal disturbance voltage was measured with the EUT in a shielded room.
2. The EUT was connected to AC power source through a LISN (Line Impedance Stabilization Network) which provides a (50 μ H + 5 Ω) || 50 Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN, which was bonded to the ground reference plane in the same way as the LISN for the unit being measured.
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.

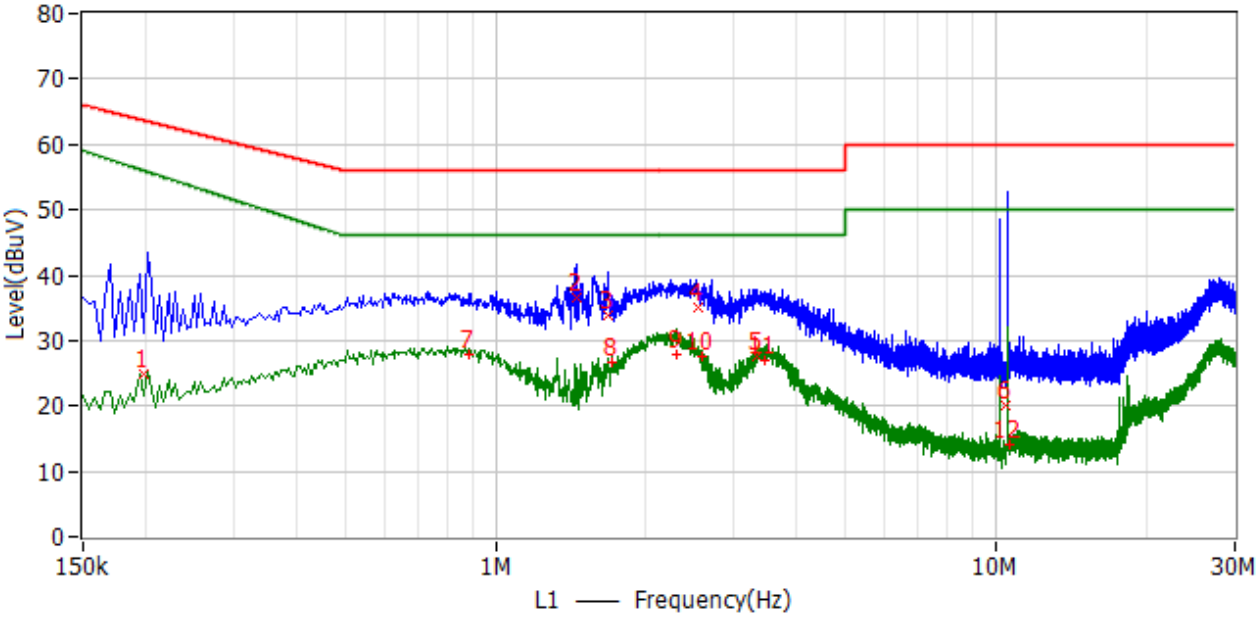
4. Before get the final emission results with quasi-peak(QP) detector and average(AVG) detector, a pre-scan was performed with the peak(PK) and average(AVG) detector to find out the maximum emission data plots of the EUT.

4.1.3 Measurement uncertainty

Ulab(cond) = 2.36dB at 95% level of confidence, k=2

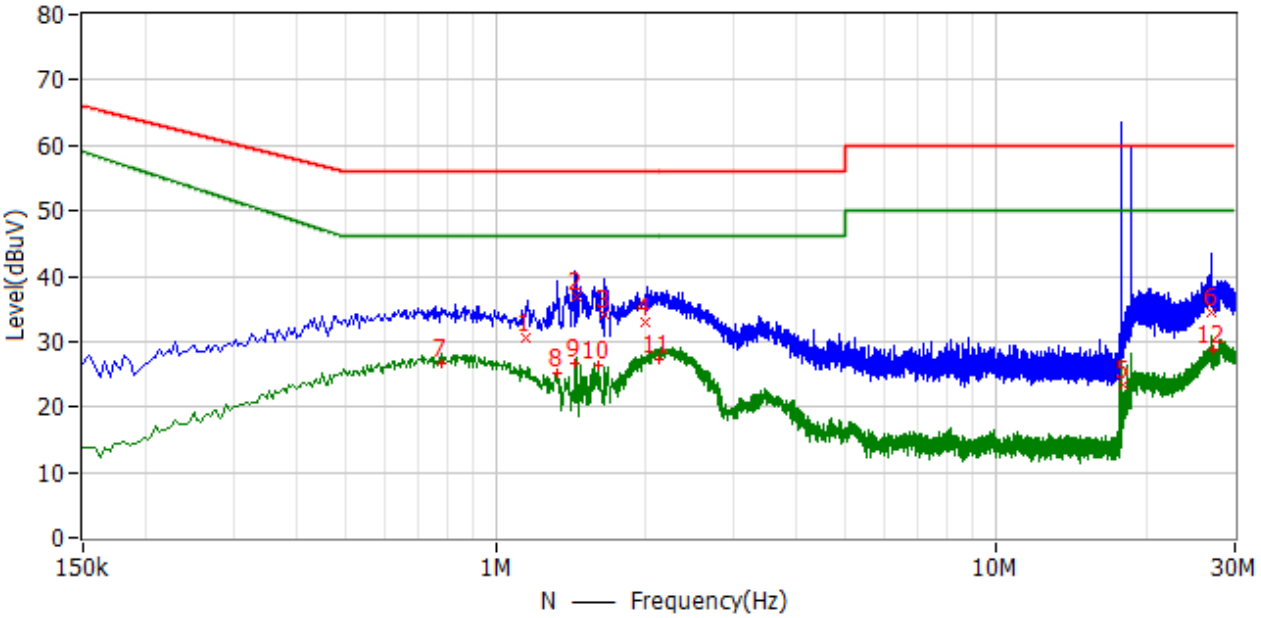
4.1.4 Results -Measurement Data

Live Line:
Level



No.	Frequency	Limit dBuV	Level dBuV	Delta dB	Factor dB	Detector	Phase
1	198.000 kHz	63.7	24.9	-38.8	10.0	QP	L1
2	1.450 MHz	56.0	36.7	-19.3	9.9	QP	L1
3	1.674 MHz	56.0	34.0	-22.0	10.0	QP	L1
4	2.534 MHz	56.0	35.1	-20.9	10.1	QP	L1
5	3.342 MHz	56.0	27.7	-28.3	10.2	QP	L1
6	10.410 MHz	60.0	20.2	-39.8	10.5	QP	L1
7	882.000 kHz	46.0	27.9	-18.1	9.8	CAV	L1
8	1.710 MHz	46.0	26.7	-19.3	10.0	CAV	L1
9	2.294 MHz	46.0	27.8	-18.2	10.1	CAV	L1
10	2.586 MHz	46.0	27.5	-18.5	10.1	CAV	L1
11	3.442 MHz	46.0	27.0	-19.0	10.2	CAV	L1
12	10.614 MHz	50.0	14.2	-35.8	10.5	CAV	L1

Neutral Line:
Level



No.	Frequency	Limit dBuV	Level dBuV	Delta dB	Factor dB	Detector	Phase
1	1.154 MHz	56.0	30.6	-25.4	9.9	QP	N
2	1.450 MHz	56.0	36.8	-19.2	9.9	QP	N
3	1.654 MHz	56.0	34.3	-21.7	10.0	QP	N
4	1.998 MHz	56.0	32.9	-23.1	10.0	QP	N
5	17.906 MHz	60.0	23.3	-36.7	10.5	QP	N
6	27.034 MHz	60.0	34.4	-25.6	10.5	QP	N
7	782.000 kHz	46.0	26.8	-19.2	9.8	CAV	N
8	1.330 MHz	46.0	25.3	-20.7	9.9	CAV	N
9	1.446 MHz	46.0	26.7	-19.3	9.9	CAV	N
10	1.598 MHz	46.0	26.3	-19.7	10.0	CAV	N
11	2.118 MHz	46.0	27.2	-18.8	10.1	CAV	N
12	27.234 MHz	50.0	28.7	-21.3	10.5	CAV	N

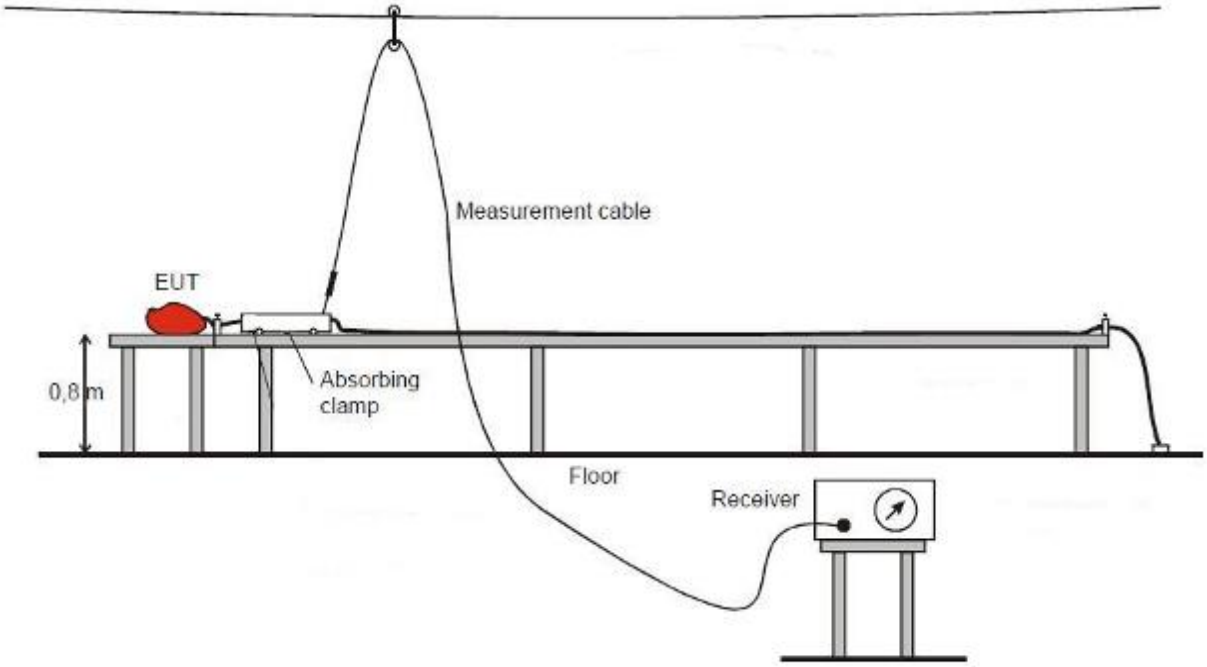
4.2 Disturbance power

This clause lays down the general requirements for the measurement of disturbance power produced at the terminals of apparatus.

4.2.1 Limits

Frequency range MHz	Limit dB (pW)	
	Quasi-peak	Average
30 to 300	45 to 55	35 to 45
Note1: Increasing linearly with the frequency from.		

4.2.2 Measurement procedure



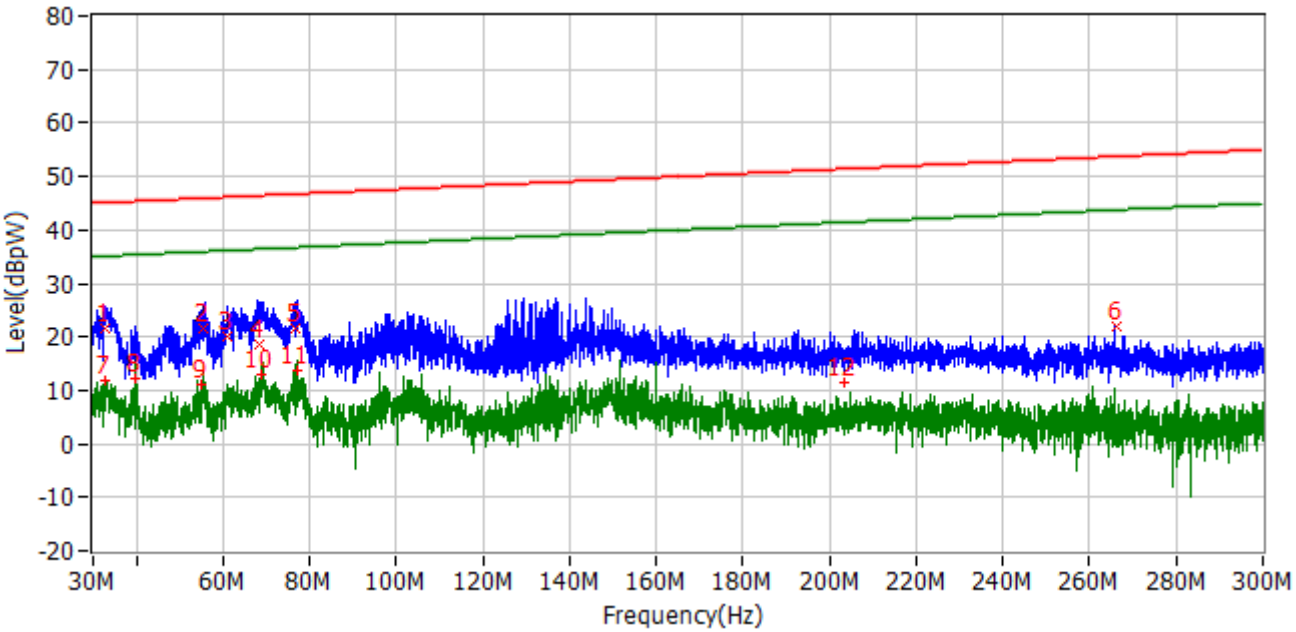
The test configuration corresponds to the standard EN IEC 55014-1. The equipment under test is placed on a non metallic table with 0,8 m high. The lead to be measured is stretched horizontally in a straight line, to permit variation in position of the absorbing clamp along the lead to find the maximum indication. The lead shall be at least length of 6 meter. Before get the final emission results with quasi-peak(QP) detector and average(AVG) detector, a pre-scan was performed with the peak(PK) detector to find out the maximum emission data plots of the EUT. The absorbing clamp is placed around the lead.

4.2.3 Measurement uncertainty

Ulab(cond) = 4.00 dB at confidence of 95%, k=2

4.2.4 Results

Level



No.	Frequency	Limit dBpW	Level dBpW	Delta dB	Factor dB	Detector
1	32.760 MHz	45.1	21.6	-23.5	7.6	QP
2	55.320 MHz	45.9	21.5	-24.5	8.5	QP
3	60.960 MHz	46.1	20.2	-25.9	8.9	QP
4	68.220 MHz	46.4	18.5	-27.9	9.0	QP
5	76.860 MHz	46.7	21.6	-25.1	9.0	QP
6	266.160 MHz	53.7	22.1	-31.6	10.9	QP
7	32.940 MHz	35.1	11.9	-23.3	7.6	CAV
8	39.480 MHz	35.4	12.3	-23.1	8.5	CAV
9	54.780 MHz	35.9	11.2	-24.7	8.5	CAV
10	69.060 MHz	36.4	13.1	-23.3	9.0	CAV
11	77.220 MHz	36.7	13.7	-23.0	9.0	CAV
12	203.280 MHz	41.4	11.6	-29.8	10.8	CAV

4.3 Harmonic Current Emissions

This part deals with the limitation of harmonic currents injected into the public supply system.

4.3.1 Limits

Table 1 – Limits for Class A equipment

Harmonic order h	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
$15 \leq h \leq 39$	$0{,}15\frac{15}{h}$
Even harmonics	
2	1,08
4	0,43
6	0,30
$8 \leq h \leq 40$	$0{,}23\frac{8}{h}$

Table 2 – Limits for Class C equipment [a]

Harmonic order h	Maximum permissible harmonic current expressed as a percentage of the input current at the fundamental frequency %
2	2
3	27 [b]
5	10
7	7
9	5
$11 \leq h \leq 39$ (odd harmonics only)	3

[a] For some Class C products, other emission limits apply (see 7.4).

[b] The limit is determined based on the assumption of modern lighting technologies having power factors of 0,90 or higher.

Table 3 – Limits for Class D equipment

Harmonic order h	Maximum permissible harmonic current per watt mA/W	Maximum permissible harmonic current A
3	3,4	2,30
5	1,9	1,14
7	1,0	0,77
9	0,5	0,40
11	0,35	0,33
$13 \leq h \leq 39$ (odd harmonics only)	$\frac{3,85}{h}$	See Table 1

Limits for Class A equipment:
For Class A equipment, the harmonics of the input current shall not exceed the values given in Table 1

Limits for Class B equipment:
For Class B equipment, the harmonics of the input current shall not exceed the values given in Table 1 multiplied by a factor of 1,5.

Limits for Class C equipment:
Rated power > 25 W:
For luminaires with incandescent lamps and built-in phase control dimming having a rated power greater than 25W, the harmonics of the input current shall not exceed the limits givein in Table 1.
For any other lighting equipment having a rated power greater than 25W, the harmonics of the input current shall not exceed the relative limits given in Table 2.

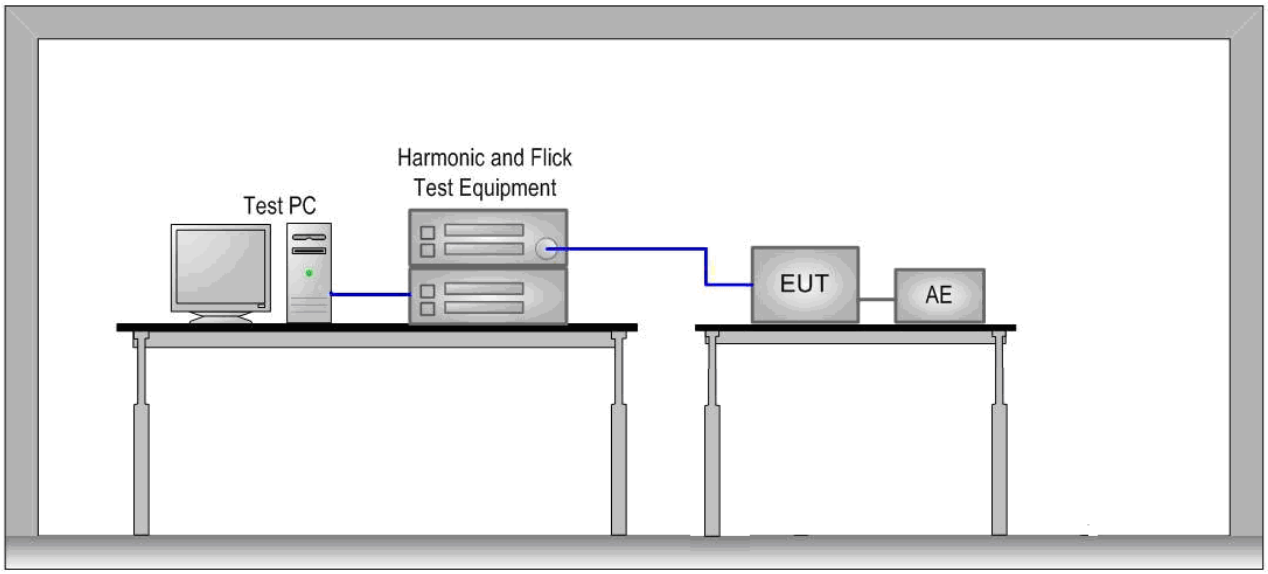
Rated power ≥ 5 W and ≤25 W:
Lighting equipment having a rated power greater than or equal to 5 W and less than or equal to 25 W shall comply with one of the following three sets of requirement:
The harmonic currents shall not exceed the power-related limits of Table 3, column 2.
Or
The third harmonic current, expressed as a percentage of the fundamental current, shall not exceed 86 % and the fifth harmonic current shall not exceed 61 %. In addition, the waveform of the input current shall be such that it reaches the 5 % current threshold before or at 60º, has its peak value before or at 65º and does not fall below the 5 % current threshold before 90º, referenced to any zero crossing of the fundamental supply voltage. The current threshold is 5 % of the highest absolute peak value that occurs in the measurement window, and the phase angle measurements are made on the cycle that includes this absolute peak value.
Or
The THD shall not exceed 70%. The third order harmonic current, expressed as a percentage of the fundamental current, shall not exceed 35%, the fifth order current shall not exceed 25%, the seventh order current shall not exceed 30%, the ninth and eleventh order currents shall not exceed 20% and the second order current shall not exceed 5%.

Limits for Class D equipment:
For Class D equipment, the input current at harmonic frequencies shall not exceed the values given in Table 3.

For the following categories of equipment, limits are not specified:

- Lighting equipment with a rated power less than but not equal to 5W;
- Equipment with rated power of 75 W or less, other than lighting equipment;
- Professional equipment with a total rated power greater than 1 kW;
- Symmetrically controlledheating elements with a rated power less than or equal to 200 W;
- Independent phase control dimmers with a rated power less than or equal to 1 kW when operating incandescent lamps, or with a rated power less than or equal to 200 W for trailing edge dimmers when operating lighting equipment other than incandescent lamps, or with a rated power less than or equal to 100 W for leading ede dimmers when operaing lighting equipment other than incandescent lamps.

4.3.2 Measurement procedure



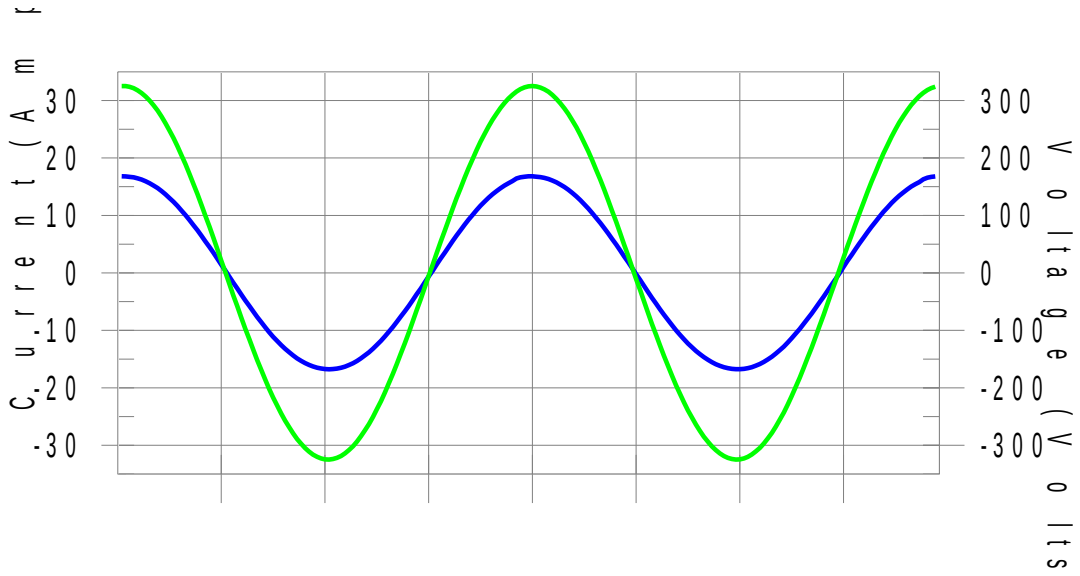
The equipment under test is placed on a wooden table with a height of 0,8 m in the EMC lab. For each harmonic order, measure the 1,5 s smoothed r.m.s. harmonic current in each DFT time window and calculate the arithmetic average of the measured values from the DFT time windows, over the entire observation period. Each harmonic order, all 1.5 s smoothed r.m.s. harmonic current values and the average values for the individual harmonic currents, taken over the entire test observation period shall be less than or equal to the applicable limits.

4.3.3 Results

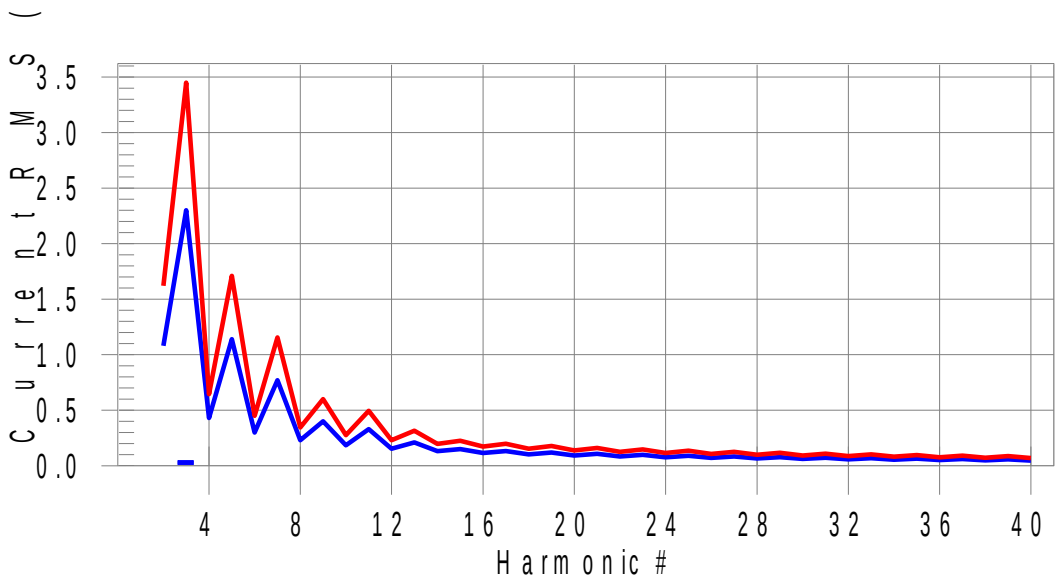
Harmonics – Class-A

Test Result: Pass **Source qualification: Normal**

Current & voltage waveforms



Harmonics and Class A limit line **European Limits**



Test result: Pass Worst harmonics H10-3.6% of 150% limit, H10-3.6% of 100% limit

Current Test Result Summary

Test Result: Pass **Source qualification: Normal**
THC(A): 0.052 **I-THD(%): 0.4** **POHC(A): 0.004** **POHC Limit(A): 0.251**

Highest parameter values during test:

V_RMS (Volts):	230.19	Frequency(Hz):	50.00
I_Peak (Amps):	16.823	I_RMS (Amps):	11.922
I_Fund (Amps):	11.922	Crest Factor:	1.834
Power (Watts):	2740.2	Power Factor:	1.000

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.008	1.080	0.7	0.025	1.620	1.5	Pass
3	0.046	2.300	2.0	0.055	3.450	1.6	Pass
4	0.009	0.430	2.1	0.015	0.645	2.4	Pass
5	0.006	1.140	0.5	0.009	1.710	0.5	Pass
6	0.007	0.300	2.4	0.012	0.450	2.7	Pass
7	0.008	0.770	1.0	0.012	1.155	1.1	Pass
8	0.007	0.230	3.1	0.010	0.345	2.9	Pass
9	0.007	0.400	1.8	0.012	0.600	2.1	Pass
10	0.007	0.184	3.6	0.010	0.276	3.6	Pass
11	0.005	0.330	1.6	0.008	0.495	1.6	Pass
12	0.005	0.153	3.5	0.007	0.230	3.3	Pass
13	0.004	0.210	N/A	0.007	0.315	N/A	Pass
14	0.005	0.131	N/A	0.007	0.197	N/A	Pass
15	0.004	0.150	N/A	0.006	0.225	N/A	Pass
16	0.004	0.115	N/A	0.005	0.173	N/A	Pass
17	0.003	0.132	N/A	0.005	0.198	N/A	Pass
18	0.003	0.102	N/A	0.004	0.153	N/A	Pass
19	0.002	0.118	N/A	0.004	0.178	N/A	Pass
20	0.003	0.092	N/A	0.004	0.138	N/A	Pass
21	0.002	0.107	N/A	0.003	0.161	N/A	Pass
22	0.002	0.084	N/A	0.003	0.125	N/A	Pass
23	0.002	0.098	N/A	0.003	0.147	N/A	Pass
24	0.002	0.077	N/A	0.002	0.115	N/A	Pass
25	0.002	0.090	N/A	0.003	0.135	N/A	Pass
26	0.001	0.071	N/A	0.002	0.107	N/A	Pass
27	0.001	0.083	N/A	0.002	0.125	N/A	Pass
28	0.001	0.066	N/A	0.002	0.099	N/A	Pass
29	0.001	0.078	N/A	0.002	0.116	N/A	Pass
30	0.001	0.061	N/A	0.002	0.092	N/A	Pass
31	0.001	0.073	N/A	0.002	0.109	N/A	Pass
32	0.001	0.058	N/A	0.002	0.086	N/A	Pass
33	0.001	0.068	N/A	0.002	0.102	N/A	Pass
34	0.001	0.054	N/A	0.002	0.081	N/A	Pass
35	0.001	0.064	N/A	0.002	0.096	N/A	Pass
36	0.001	0.051	N/A	0.002	0.077	N/A	Pass
37	0.001	0.061	N/A	0.002	0.091	N/A	Pass
38	0.001	0.048	N/A	0.001	0.073	N/A	Pass
39	0.001	0.058	N/A	0.001	0.087	N/A	Pass
40	0.001	0.046	N/A	0.001	0.069	N/A	Pass

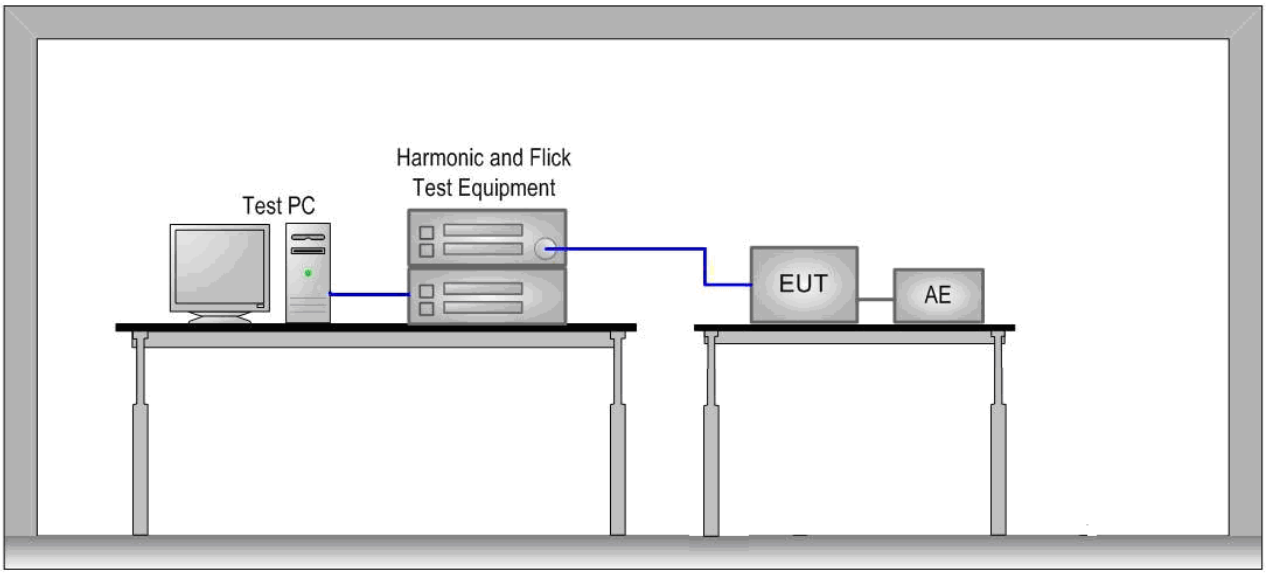
4.4 Voltage Changes, Voltage Fluctuations and Flicker

This part is concerned with the limitation of voltage fluctuations and flicker impressed on the public low-voltage system.

4.4.1 Limits

Value	Limit
Pst	1,0
Plt	0,65
dt	3,3%
dc	3,3%
dmax	4,0%

4.4.2 Measurementest procedure



The equipment under test is placed on a wooden table with a height of 0,8 m in the EMC lab. The voltage fluctuations and flicker were measured at the supply terminals of the EUT.

4.4.3 Results

Parameter values recorded during the test:

Vrms at the end of test (Volt):	**230.15**			
T-max (mS):	**0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**-2.16**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**-2.17**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.414**	**Test limit:**	**1.000**	**Pass**

5 Immunity Test

5.1 Performance Criteria Description in Clause 6 of EN IEC 55014-2

Criterion A:	The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.
Criterion B:	The apparatus shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however. 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, then either of these may be derived from the product description and documentation and from what the user may reasonably expect from the apparatus if used as intended.
Criterion C:	Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls, or by any operation specified in the instructions for use.

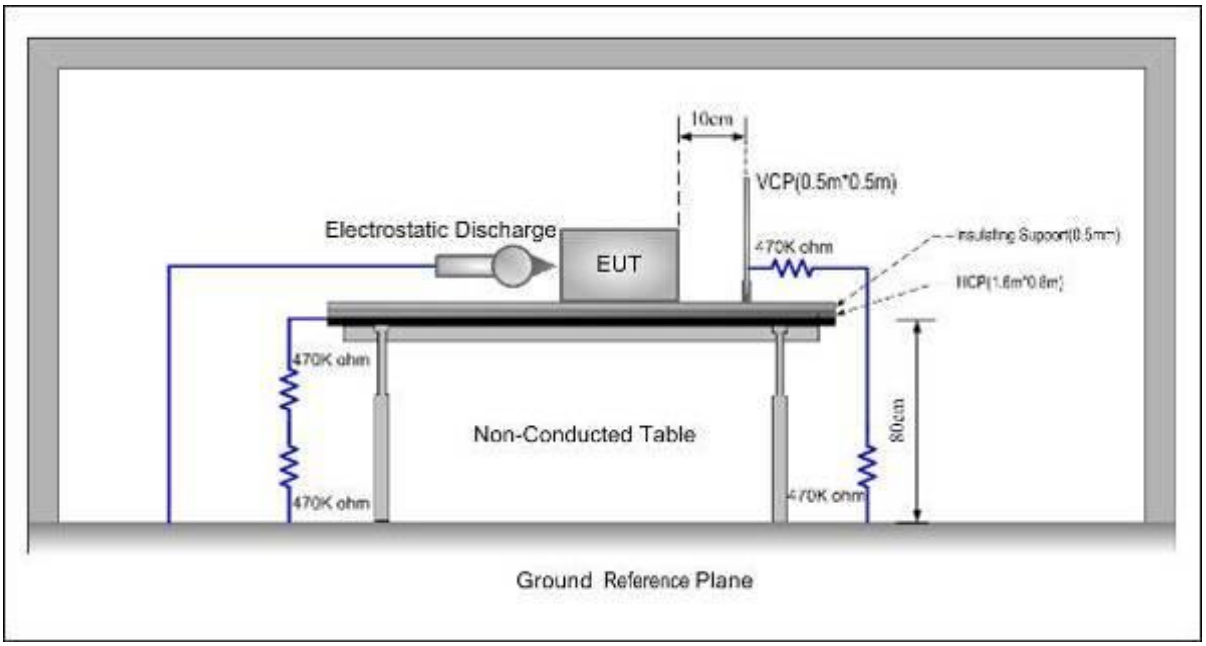
5.2 Classification of apparatus

Category I:	equipment containing no electronic control circuitry.
Category II:	mains operated equipment containing electronic control circuitry with no clock frequency higher than 15 MHz.
Category III:	battery operated equipment not included in Category I. This category also includes equipment provided with rechargeable batteries, which can be charged, directly or indirectly, from the mains. Accordingly, this equipment shall also be subjected to the test requirements for mains operated equipment but only when testing the charging function If the equipment can operate its intended functions when connected, directly or indirectly to the mains, then it is not battery operated. Accordingly, it shall be classified as Category II, Category IV or Category V, as applicable, and subjected to the corresponding test requirements when in mains operation.
Category IV:	mains operated equipment containing electronic control circuitry with a highest clock frequency greater than 15 MHz but lower than or equal to 200 MHz.
Category V:	mains operated equipment containing electronic control circuitry with a highest clock frequency greater than 200 MHz.

The EUT belongs to Category II.

5.3 ESD

5.3.1 Test Procedures



1. Contact discharge was applied only to conductive surfaces of the EUT. Air discharge was applied only to non-conducted surfaces of the EUT.
2. The EUT was put on a 0.8m high wooden table for table-top equipment or 0.1m high for floor standing equipment standing on the ground reference plane (GRP).
3. A horizontal coupling plane(HCP) 1.6m by 0.8m in size was placed on the table, and the EUT with its cables were isolated from the HCP by an insulating support thick than 0.5mm. The VCP 0.5m by 0.5m in size while HCP were constructed from the same material type and thickness as that of the GRP, and connected to the GRP via a 470kΩ resistor at each end. The distance between EUT and any of the other metallic surfaces excepted the GRP, HCP and VCP was greater than 1m.
4. During the contact discharges, the tip of the discharge electrode was touching the EUT before the discharge switch is operated. During the air discharges, the round discharge tip of the discharge electrode was approached as fast as possible to touch the EUT. After each discharge, the ESD generator was removed from the EUT, the generator is then retriggered for a new single discharge. For ungrounded product, a discharge cable with two resistances was used after each discharge to remove remnant electrostatic voltage. 10 times of each polarity single discharge were applied to HCP and VCP.

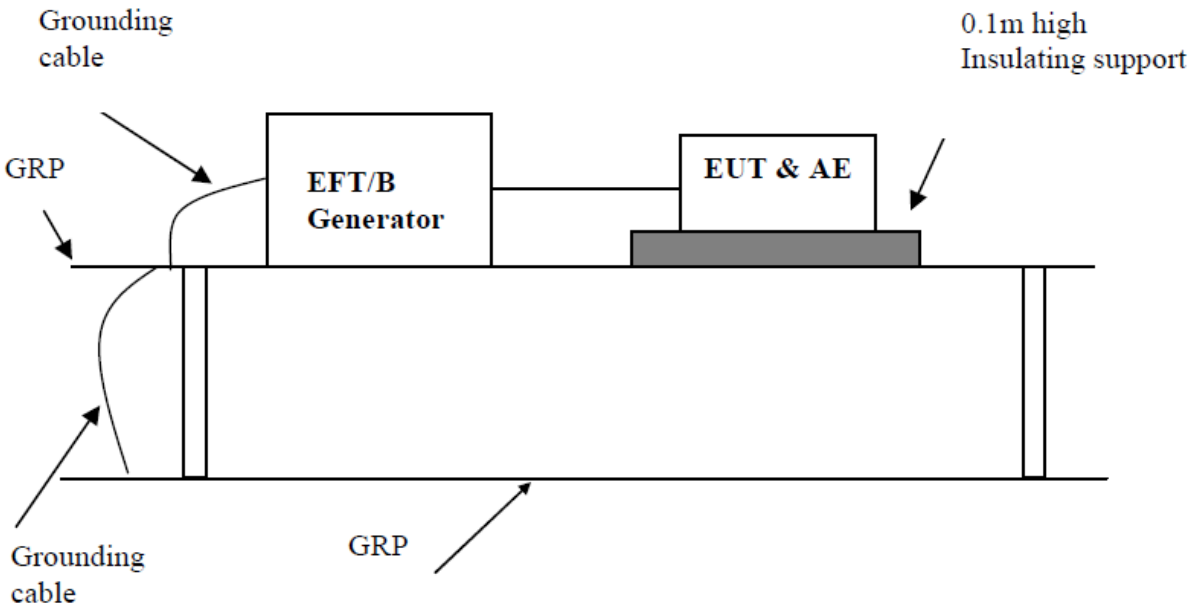
5.3.2 Results

Test point	Table (T) Floor (F)	Contact (C) Air (A)	Voltage (kV)	Number of discharge	Polarity (+ / -)	Opinion
Air discharge	T	A	8	20	+ / -	A
Contact discharge	T	C	4	20	+ / -	A
HCP	T	C	4	20	+ / -	A
VCP	T	C	4	20	+ / -	A

A: no loss of function.

5.4 Electrical Fast Transients

5.4.1 Measurement procedure



1. The EUT was placed on a ground reference plane(GRP) insulated by an insulating support 0,1 m thick and the GRP was placed on a 0.8m high wooden table for table-top equipment. For floor standing equipment, the EUT was placed on a 0.1m high wooden support above the GRP.
2. The GRP shall project beyond the EUT and the clamp by at least 0.1m on all sides. The distance between the EUT and any other of the metallic surface except the GRP was greater than 0.5m. All cables to the EUT was placed on the insulation support 0.1m above GRP. Cables not subject to EFT was routed as far as possible from cable under test to minimize the coupling between the cables.
3. The length of signal and power cable between the EUT and EFT generator was 0.5m. If the cable is a non-detachable supply cable more than 0.5m, the excess length of this cable shall be folded to avoid a flat coil and situated at a distance of 0.1m above the GRP.

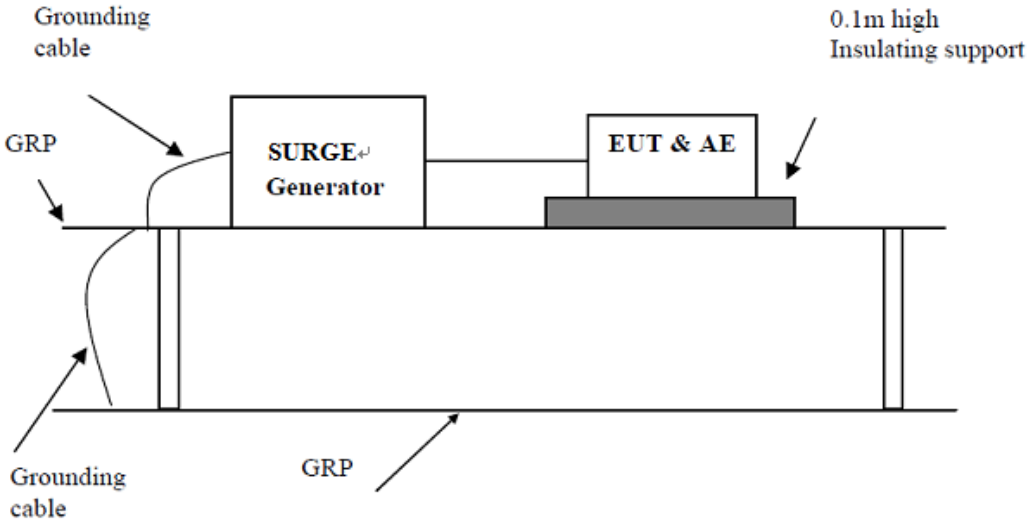
5.4.2 Results

Test port	Voltage (kV)	Polarity (+ / -)	Duration (s or min)	Waveform Tr / Th	Repetition Frequency (kHz)	Opinion
AC power line	1	+	2 min	5/50 ns	5	A
AC power line	1	-	2 min	5/50 ns	5	A

A: no loss of function.

5.5 Surge Immunity

5.5.1 Measurement procedure



1. The EUT was placed on a ground reference plane(GRP) insulated by an insulating support 0,1 m thick and the GRP was placed on a 0.8m high wooden table for table-top equipment. For floor standing equipment, the EUT was placed on a 0.1m high wooden support above the GRP.
2. The 1,2/50 µs surge was to be applied to the EUT power supply terminals via the capacitive coupling network. Decoupling networks were required in order to avoid possible adverse effects on equipment not under test that may be powered by the same lines and to provide sufficient decoupling impedance to the surge wave so that the specified wave may be applied on the lines under test.
3. The positive pulses are applied 90° relative to the phase angle of the a.c. line voltage to the equipment under test, and the negative pulses are applied 270° relative to the phase angle of the a.c. line voltage to the equipment under test.

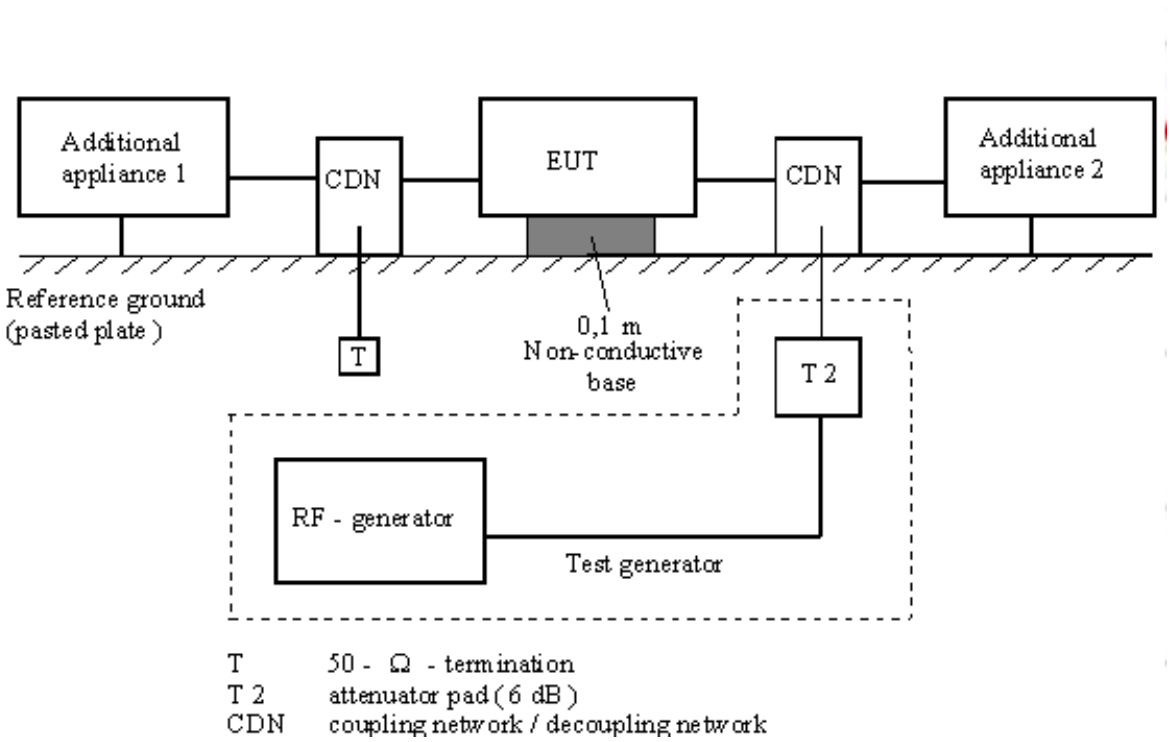
5.5.2 Results

Test mode	Polarity (+ / -)	Voltage (kV)	Waveform Tr / Th	Number of pulses	Opinion
Live-Neutral	+ / -	1	1.2/50 µs	5	A
Live-Earth	+ / -	2	1.2/50 µs	5	A
Neutral-Earth	+ / -	2	1.2/50 µs	5	A

A: no loss of function.

5.6 Injected currents (RF continues conducted)

5.6.1 Measurement procedure



1. The EUT was placed on an insulating support of 0.1m height above a ground reference Plane, arranged and connected to satisfy its functional requirement. All cables exiting the EUT was supported at a height of at least 30 mm above the ground reference plane.
2. The coupling and decoupling devices were required, they were located between 0,1 m and 0,3 m from the EUT. This distance was to be measured horizontally from the projection of the EUT on to the ground reference plane to the coupling and decoupling device.
3. The frequency range was swept from 150 kHz to 230 MHz, using the signal levels established during the setting process, and with the disturbance signal 80 % amplitude modulated with a 1 kHz sine wave, pausing to adjust the RF signal level or to change coupling devices as necessary. Where the frequency was swept incrementally, the step size does not exceed 1 % of the preceding frequency value. The dwell time of the amplitude modulated carrier at each frequency was not less than the time necessary for the EUT to be exercised and to respond, and was not less than 3s.

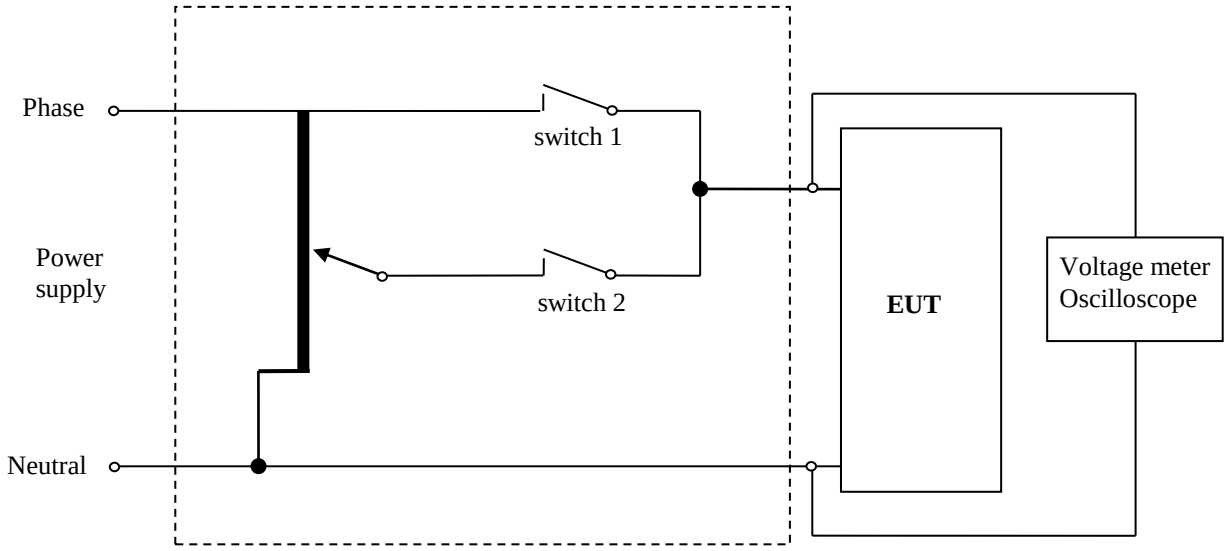
5.6.2 Results

Test port	Voltage (e.m.f.)	Modulation	Frequency Range	Opinion
AC power line	3V	80% AM 1 kHz	150 kHz - 230 MHz	A

A: no loss of function.

5.7 Voltage dips and Interruption

5.7.1 Measurement procedure



1. The EUT was placed on a ground reference plane(GRP) insulated by an insulating support 0,1 m thick and the GRP was placed on a 0.8m high wooden table for table-top equipment. For floor standing equipment, the EUT was placed on a 0.1m high wooden support above the GRP.
2. The test was performed with the EUT connected to the test generator with the shortest power supply cable as specified by the EUT manufacturer. Voltage change shall occur at zero crossing.
3. The EUT was tested for each selected combination of test level and duration with a sequence of three dips /interruptions with intervals of 10 s minimum. Each representative mode of operation was tested.

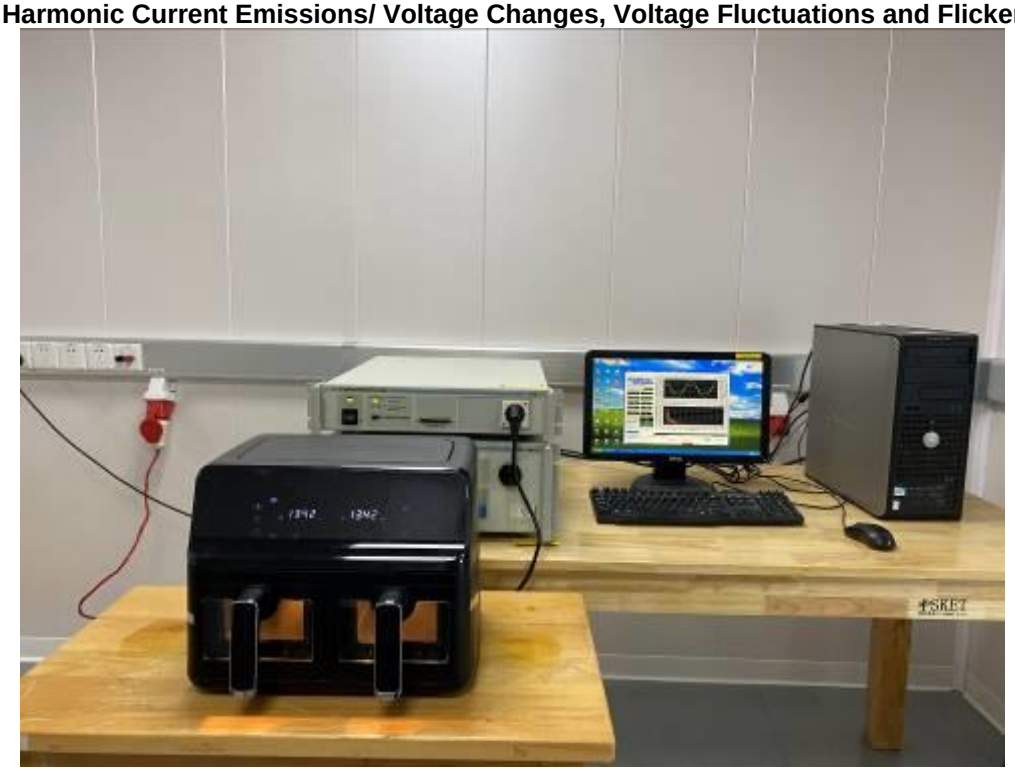
5.7.2 Results

Reduction of supply voltage of	Voltage in % (in V)	Duration in parts of period (in ms)	Opinion
interruption	0 % (0V)	0,5 (10 ms)	A
60 %	40 % (92 V)	10 (200 ms)	B
30 %	70 % (161 V)	25 (500 ms)	B

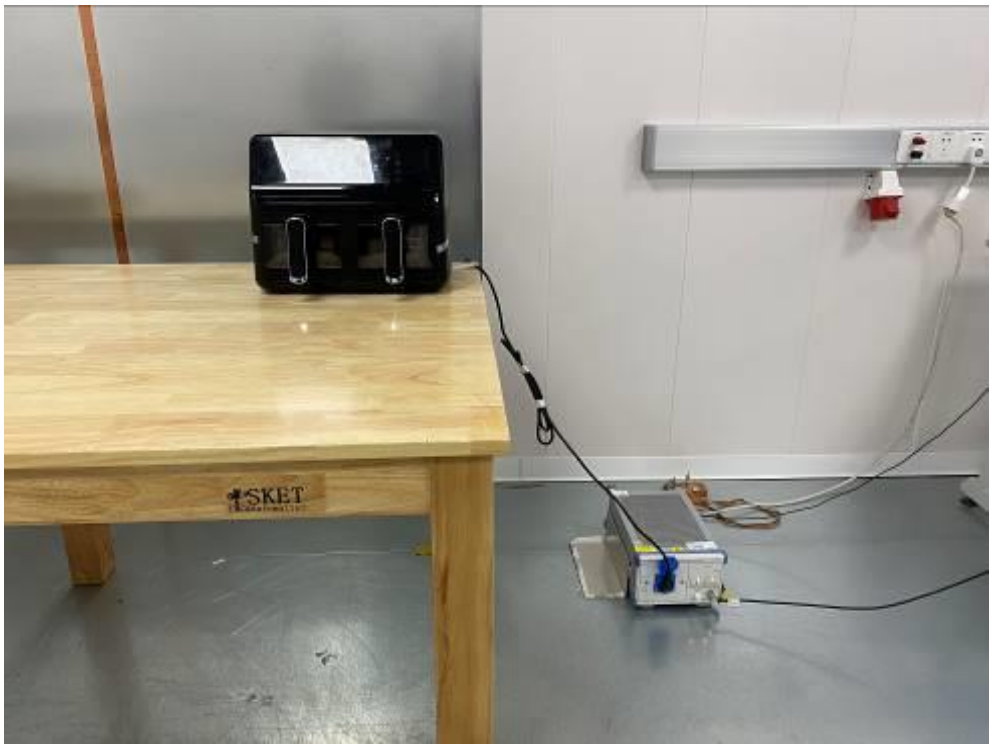
A: no loss of function.
B: the appliance would not work normally during test, but after test it could be recover.

6 Test Setup Photos

Harmonic Current Emissions/ Voltage Changes, Voltage Fluctuations and Flicker



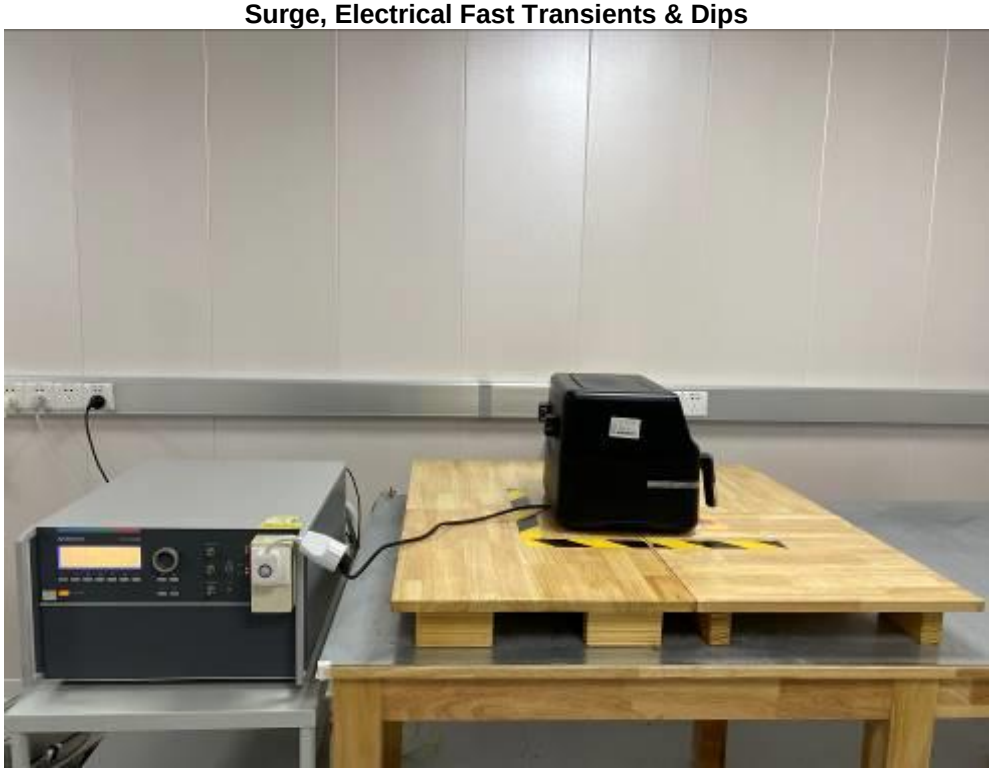
Conducted Emission



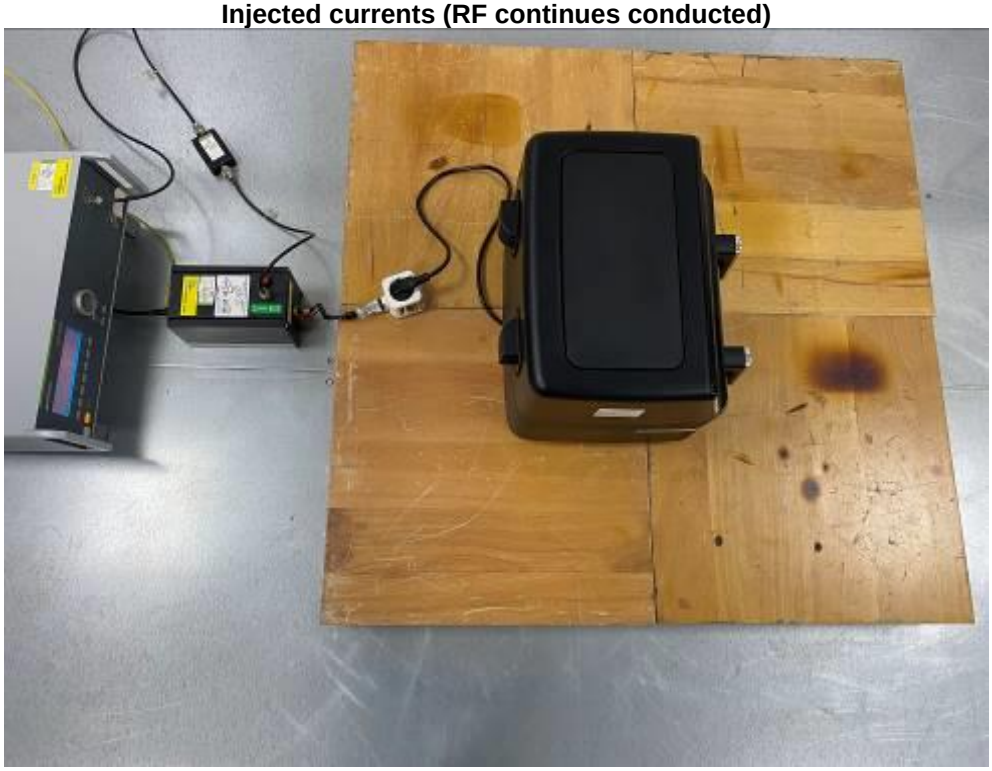
Disturbance power

ESD

Surge, Electrical Fast Transients & Dips



Injected currents (RF continues conducted)



7 EUT Photos

Photo 1.
Description: Overall view for AF-D5502AS, AF-D5502ASH

Photo 2.
Description: Side view for AF-D5502AS, AF-D5502ASH

Photo 3.
Description: Rear view for AF-D5502AS, AF-D5502ASH

Photo 4.
Description: Bottom view for AF-D5502AS, AF-D5502ASH

Photo 5.
Description: Overall view for AF-D5502AT, AF-D5502AT-1700

Photo 6.
Description: Side view for AF-D5502AT, AF-D5502AT-1700

Photo 7.
Description: Rear view for AF-D5502AT, AF-D5502AT-1700

Photo 8.
Description: Bottom view for AF-D5502AT, AF-D5502AT-1700

Photo 9.
Description: Frying pot view for AF-D5502AS, AF-D5502ASH, AF-D5502AT, AF-D5502AT-1700

Photo 10.
Description: Frying pot view for AF-D5502AS, AF-D5502ASH, AF-D5502AT, AF-D5502AT-1700

Photo 11.
Description: Frying pot view for AF-D5502AS, AF-D5502ASH, AF-D5502AT, AF-D5502AT-1700

Photo 12.
Description: Internal view for AF-D5502AS, AF-D5502ASH

Photo 13.
Description: Internal view for AF-D5502AS, AF-D5502ASH

Photo 14.
Description: Internal view for AF-D5502AS, AF-D5502ASH

Photo 15.
Description: Internal view for AF-D5502AS

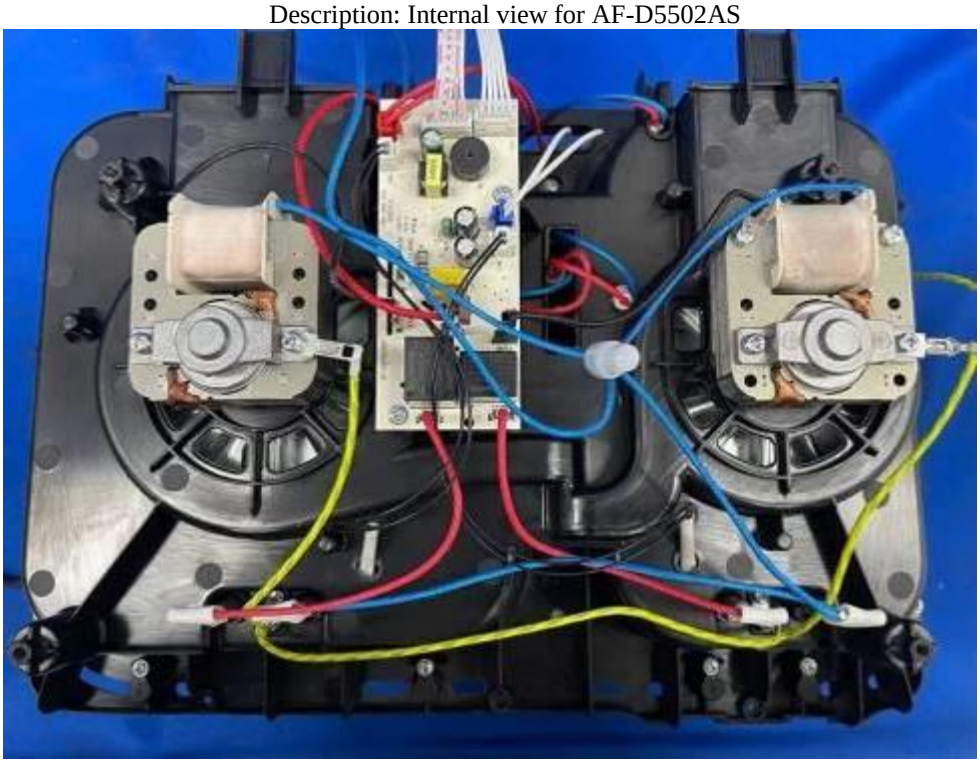


Photo 16.
Description: Internal view for AF-D5502ASH

Photo 17.
Description: Internal view for AF-D5502AS, AF-D5502ASH

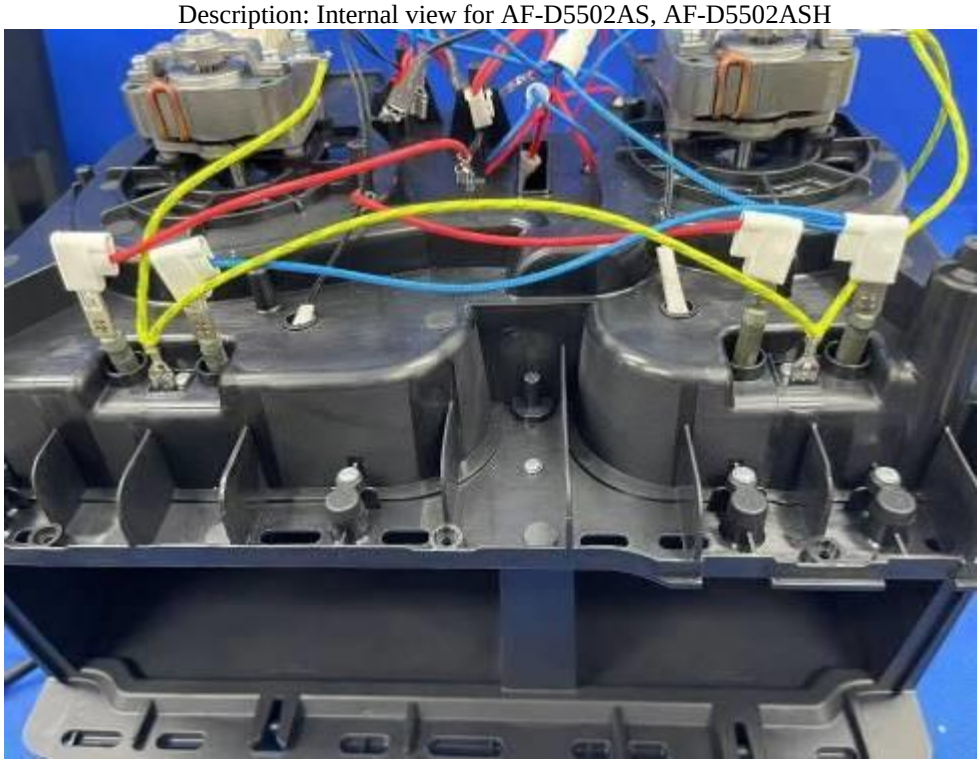


Photo 18.
Description: Heating element view for AF-D5502AS, AF-D5502ASH

Photo 19.
Description: Internal view for AF-D5502AT, AF-D5502AT-1700

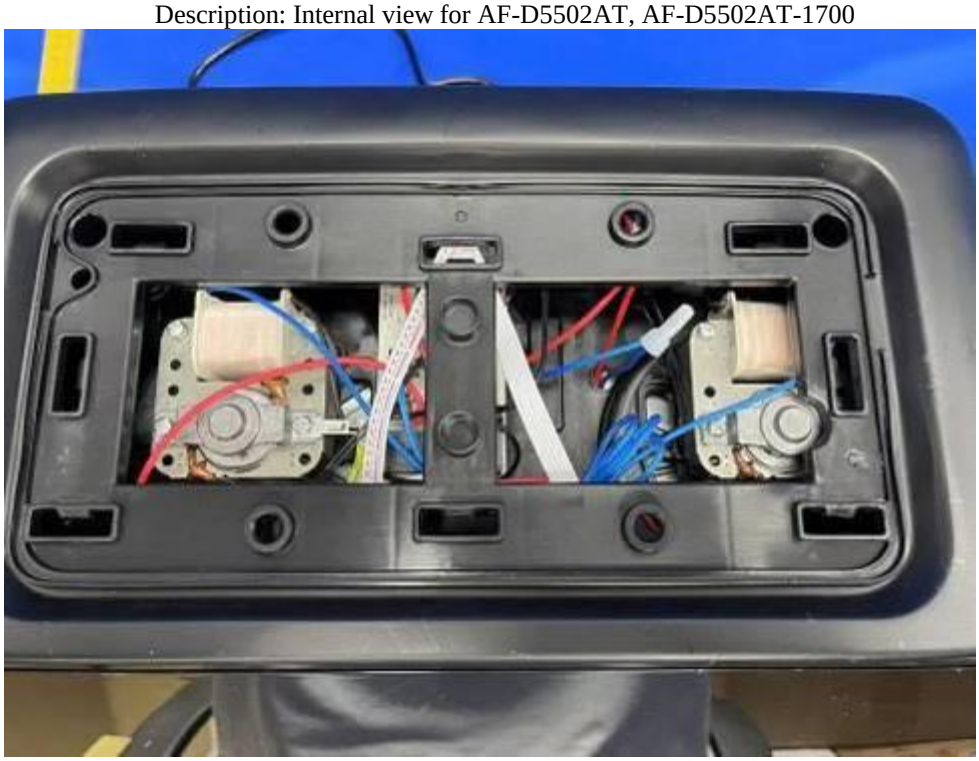


Photo 20.
Description: Internal view for AF-D5502AT, AF-D5502AT-1700

Photo 21.
Description: Internal view for AF-D5502AT, AF-D5502AT-1700

Photo 22.
Description: Internal view for AF-D5502AT, AF-D5502AT-1700

Photo 23.
Description: Internal view for AF-D5502AT, AF-D5502AT-1700

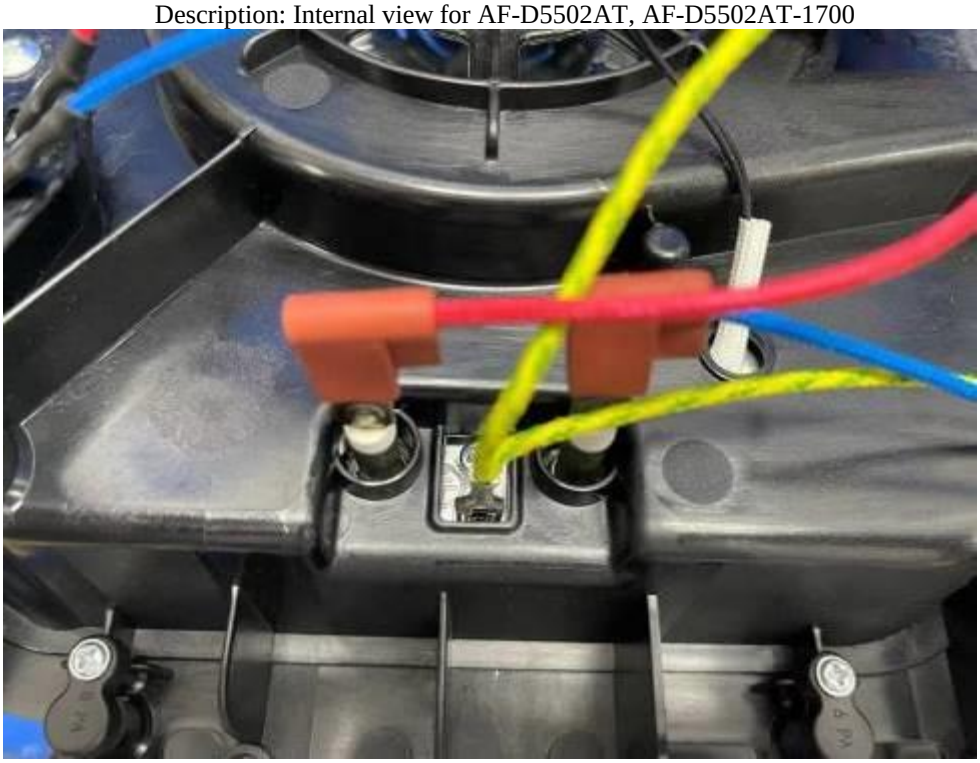


Photo 24.
Description: Heating element view for AF-D5502AT, AF-D5502AT-1700

Photo 25.
Description: Internal view for AF-D5502AT, AF-D5502AT-1700

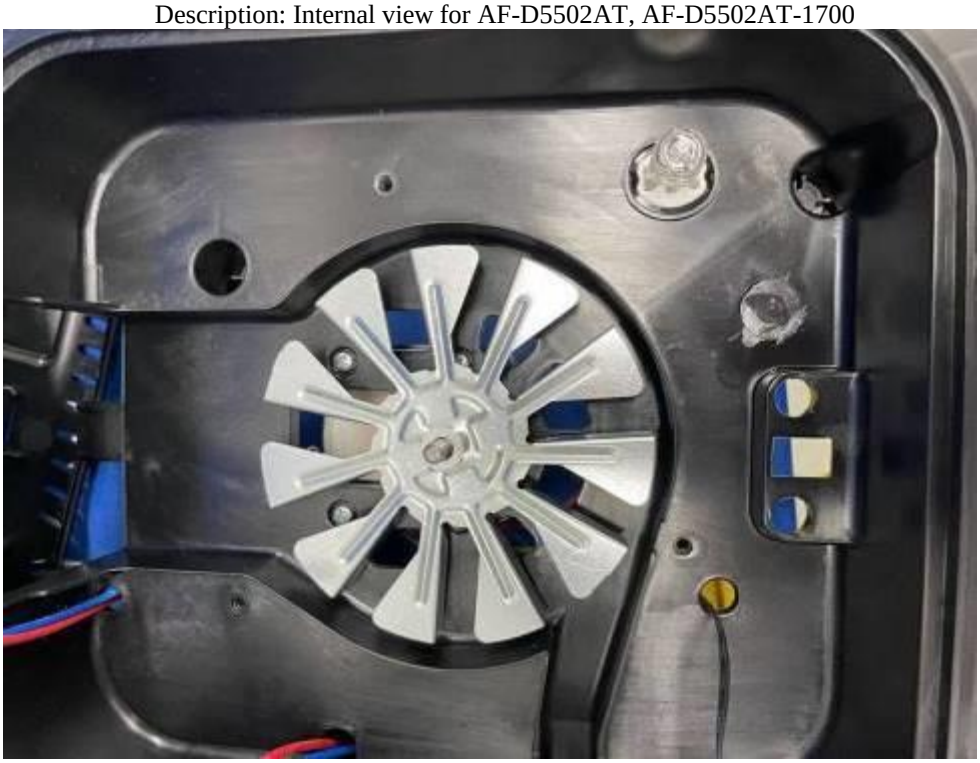


Photo 26.
Description: Internal view for AF-D5502AS, AF-D5502ASH, AF-D5502AT, AF-D5502AT-1700

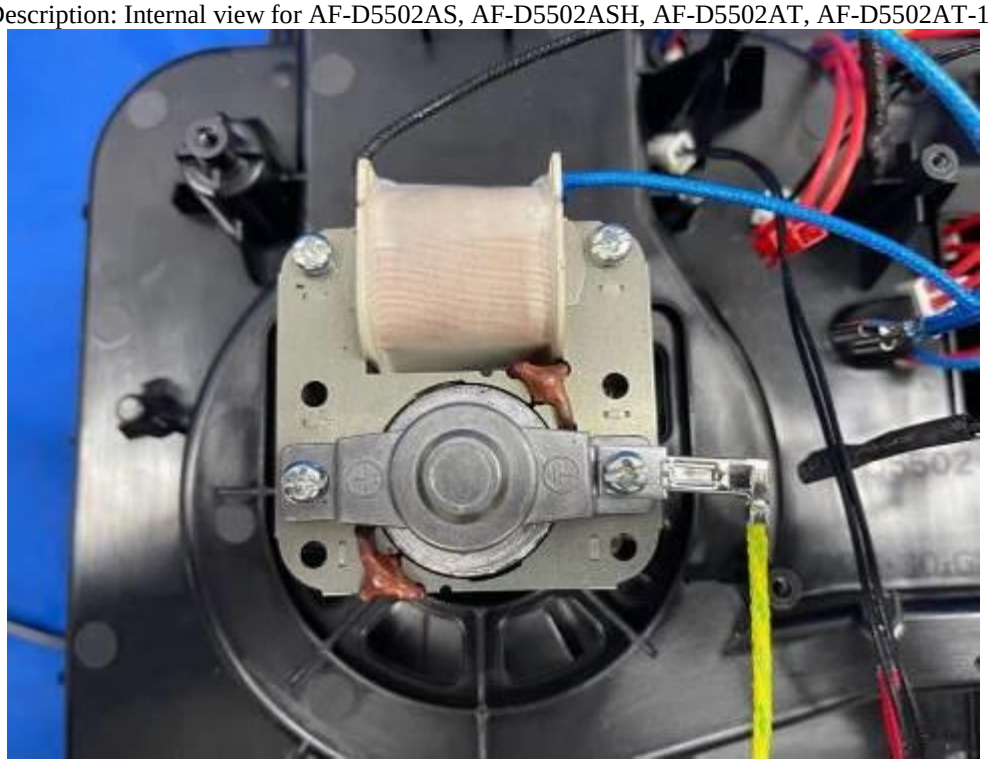


Photo 27.
Description: Internal view for AF-D5502AS, AF-D5502ASH, AF-D5502AT, AF-D5502AT-1700

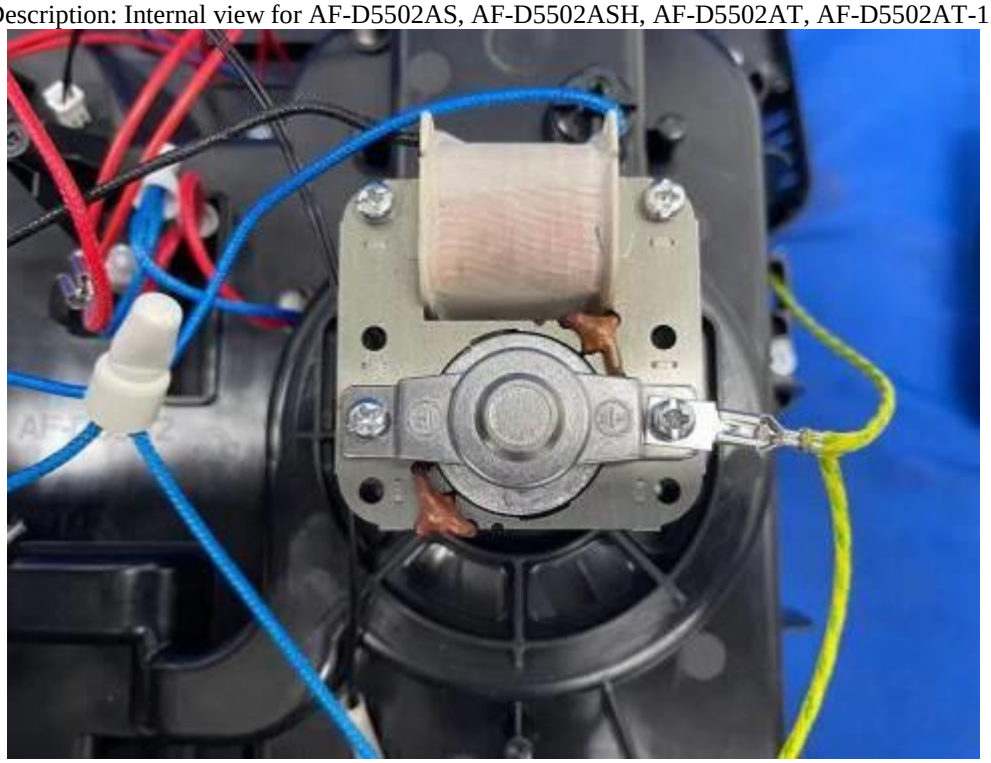


Photo 28.
Description: Control PCB for AF-D5502AS, AF-D5502ASH, AF-D5502AT, AF-D5502AT-1700

Photo 29.
Description: Control PCB for AF-D5502AS, AF-D5502ASH, AF-D5502AT, AF-D5502AT-1700

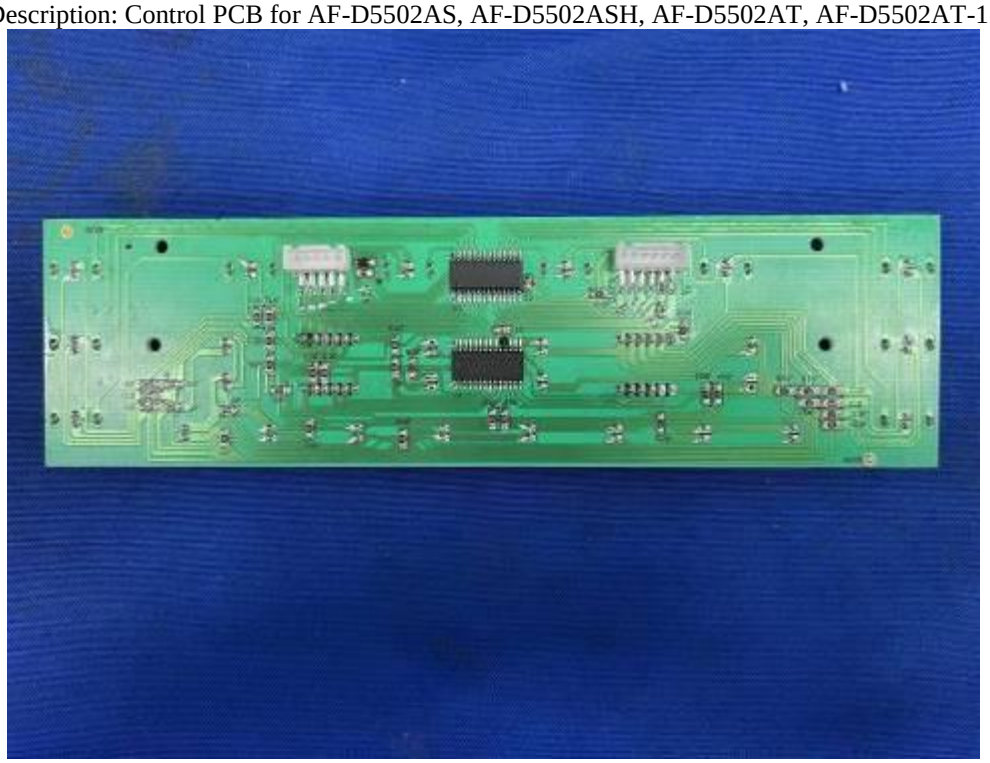


Photo 30.
Description: Main PCB for AF-D5502AS, AF-D5502AT-1700

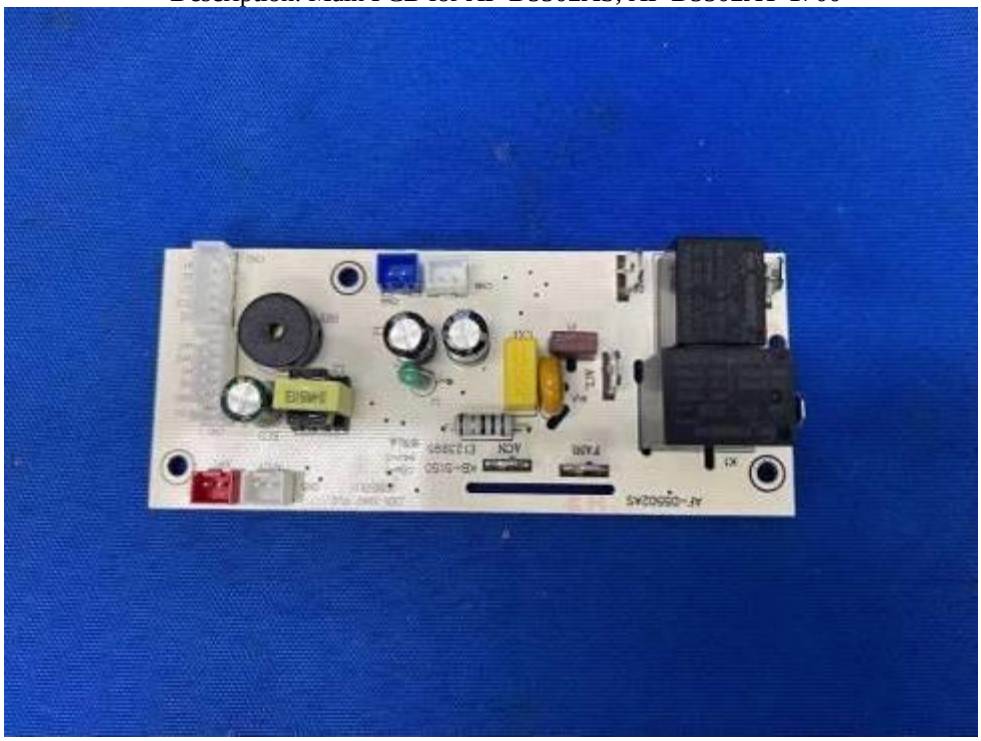


Photo 31.
Description: Main PCB for AF-D5502AS, AF-D5502AT-1700

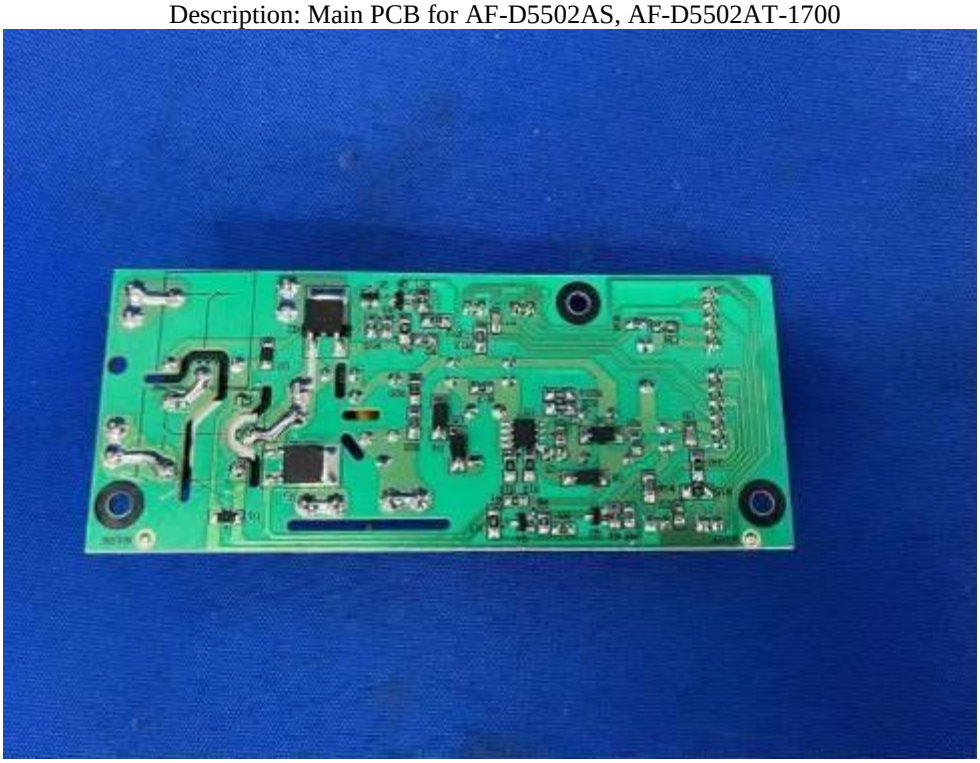


Photo 32.
Description: Main PCB for AF-D5502AT, AF-D5502ASH

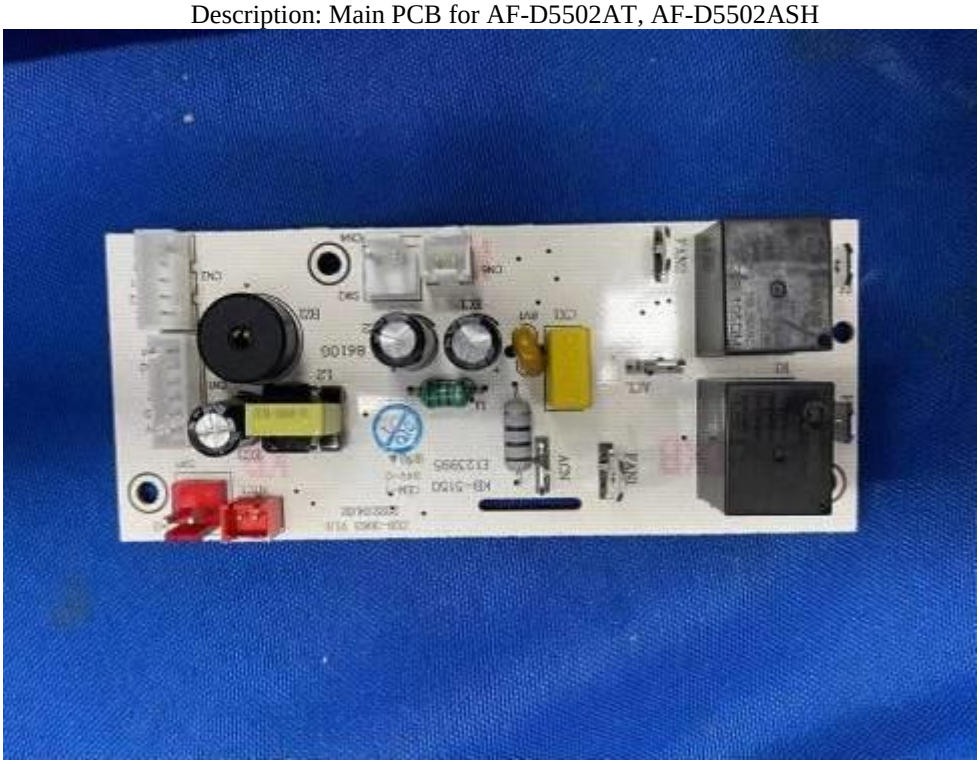


Photo 33.
Description: Main PCB for AF-D5502AT, AF-D5502ASH

Photo 34.
Description: Overall view of AF-D5508AT, AF-D5508AT-2500, AF-D5508AT-1700

Photo 35.
Description: Overall view of AF-D5508AT, AF-D5508AT-2500, AF-D5508AT-1700

Photo 36.
Description: Overall view of AF-D5508AT, AF-D5508AT-2500, AF-D5508AT-1700

Photo 37.
Description: Overall view of AF-D5508AT, AF-D5508AT-2500, AF-D5508AT-1700

Photo 38.
Description: Internal view of AF-D5508AT, AF-D5508AT-2500, AF-D5508AT-1700

Photo 39.
Description: Internal view of AF-D5508AT, AF-D5508AT-2500, AF-D5508AT-1700

Photo 40.
Description: Internal view of AF-D5508AT, AF-D5508AT-2500, AF-D5508AT-1700

Photo 41.
Description: Internal view of AF-D5508AT, AF-D5508AT-2500, AF-D5508AT-1700

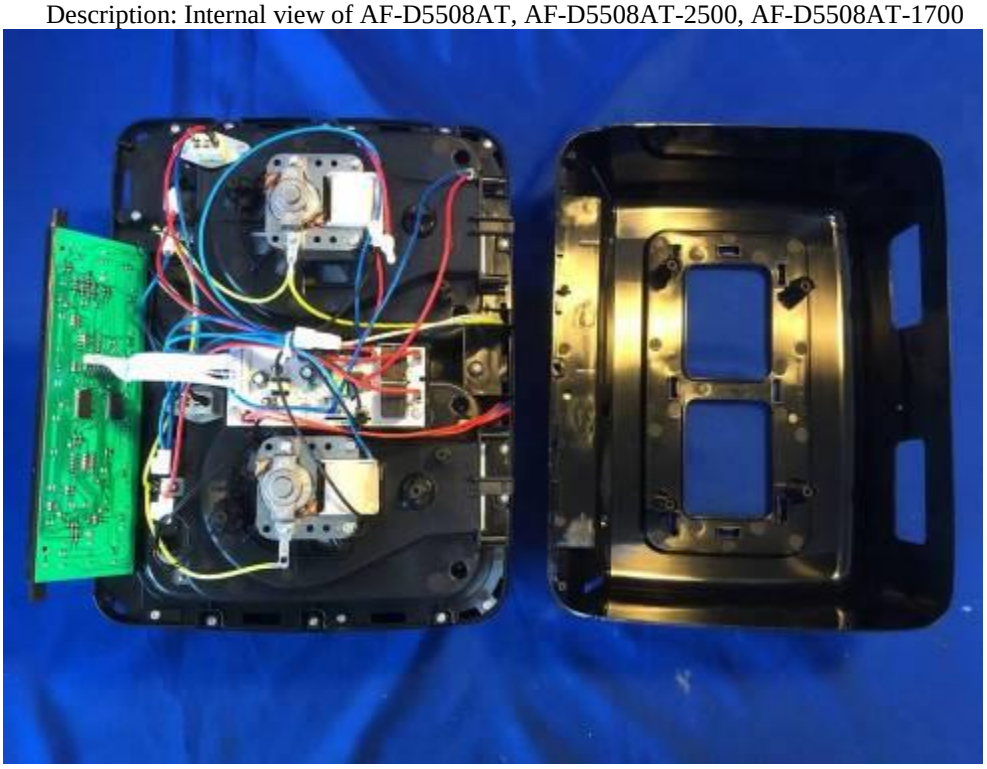


Photo 42.
Description: Control PCB view of AF-D5508AT, AF-D5508AT-2500, AF-D5508AT-1700

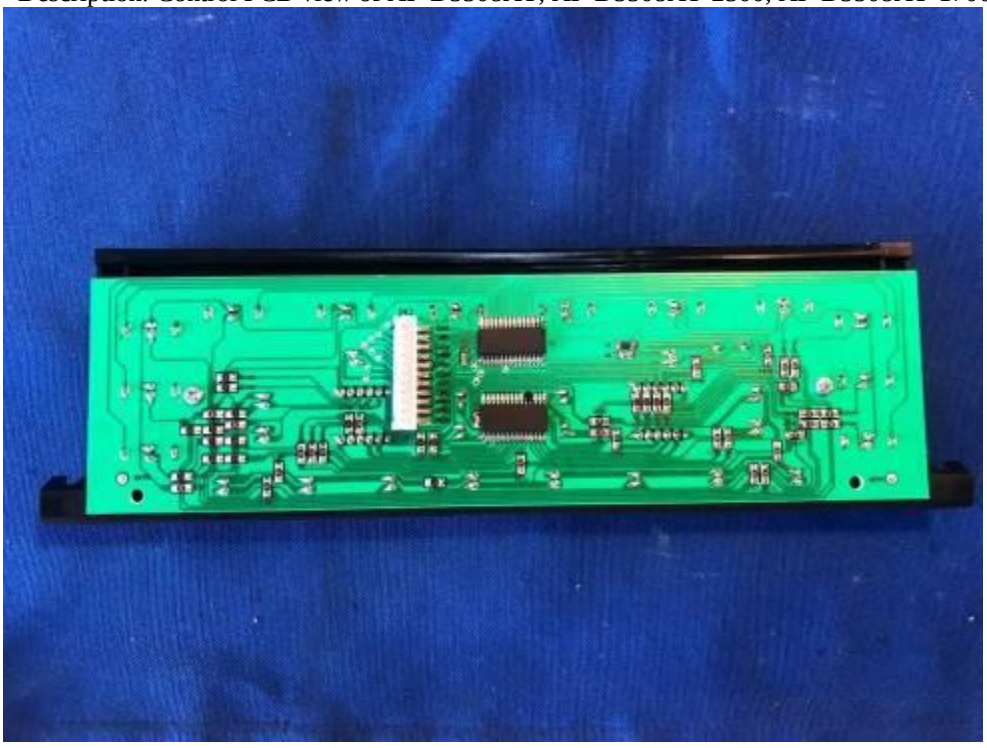


Photo 43.
Description: Control PCB view of AF-D5508AT, AF-D5508AT-2500, AF-D5508AT-1700

Photo 44.
Description: Main PCB view of AF-D5508AT, AF-D5508AT-2500

Photo 45.
Description: Main PCB view of AF-D5508AT, AF-D5508AT-2500

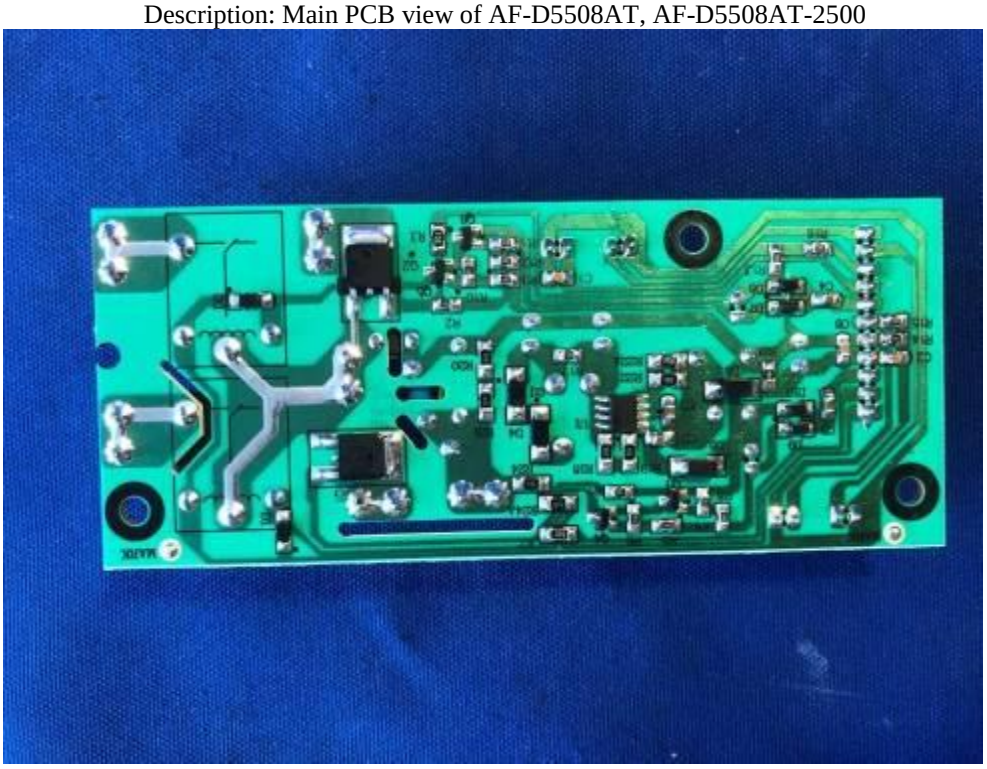


Photo 46.
Description: Main PCB view of AF-D5508AT-1700

Photo 47.
Description: Main PCB view of AF-D5508AT-1700

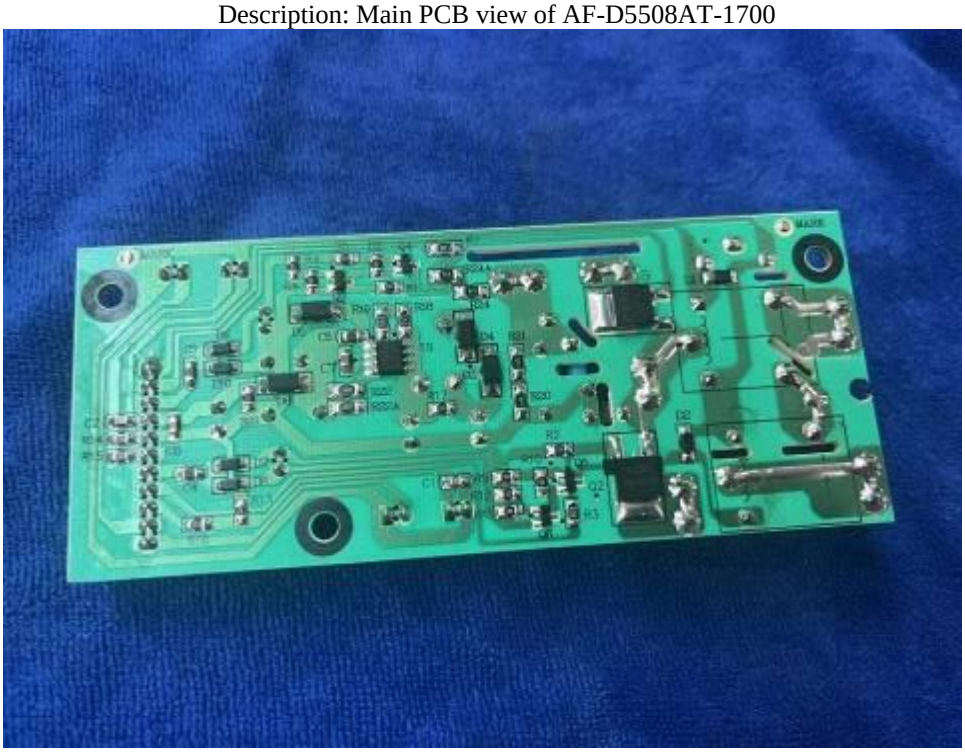


Photo 48.
Description: Heating element view of AF-D5508AT, AF-D5508AT-2500, AF-D5508AT-1700

Photo 49.
Description: Frying pot view of AF-D5508AT, AF-D5508AT-2500, AF-D5508AT-1700

Photo 50.
Description: Alternative frying pot view of AF-D5502AT, AF-D5502AT-1700