EMC TEST REPORT
No. 170802302SHA-001

Applicant	:	
Manufacturer	:	
Product Name	:	Griddle Pan (Multi Portion Grill) for household use
Type/Model	:	SLG5020
TEST RESULT	**:**	**PASS**

SUMMARY

The equipment complies with the requirements according to the following standards:

EN 55014-1:2006/+A1:2009/+A2:2011: Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission

EN 55014-2:2015: Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 2: Immunity- Product family standard

EN 61000-3-2:2014: Electromagnetic compatibility (EMC) - Part 3-2: Limits **-** Limits for harmonic current emissions (equipment input current ≤ 16A per phase)

EN 61000-3-3:2013: Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16A per phase and not subject to conditional connection

Date of issue: November 01, 2017

Prepared by:	Approved by:
Reggie Yuan (*Project engineer*)	Leo Ye (*Reviewer*)

Contents

1. GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

Product Name	:	Griddle Pan (Multi Portion Grill) for household use
Description of EUT	:	The appliance covered in this report is griddle pan for household and indoor use. It is provided with a sheath type heating element embedded in a die-cast griddle pan, A detachable temperature-controlling probe is provided for connection to the power supply. It incorporates one thermostat and one thermal link to safeguard. After technical evaluation, we tested it and the worst test data is listed in the report as representative.
Model number	:	SLG5020
Rating	:	220-240V~, 50-60Hz, 1500W, Class I
Mains lead	:	0.8m
EUT type	:	☒ Table top ☐ Floor standing
☐ EUT is toy, defined as	:	☐ Category A ☐ Category B ☐ Category C ☐ Category D ☐ Category E
Sample received date	:	September 11, 2017
Date of test	:	September 11, 2017- September 21, 2017

1.2 Description of Client

Applicant	:	
Person of contact	:	Shen Hualie
Telephone	:	86 574 58941901
Telefax	:	86 574 58971900
Manufacturer	:	

1.3 Description of Test Facility

Name	Intertek Testing Services Hangzhou Limited
Address	16 No. 1 Ave., Xiasha Economic Development District, Hangzhou 310018, China
Telephone	86 571 28997803
Telefax	86 571 28997888

2. TEST SPECIFICATIONS

2.1 Standards

EN 55014-1:2006/+A1:2009/+A2:2011: Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission

EN 55014-2:2015: Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 2: Immunity - Product family standard

EN 61000-3-2:2014: Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16A per phase)

EN 61000-3-3:2013: Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤ 16A per phase and not subject to conditional connection

2.2 Mode of operation during the test / Test peripherals used

2.2.1 Description of operation

Within this test report, EUT was tested under all available operation modes and tested under its rating voltage and frequency. Other voltage and frequency is specified if used.

2.2.2 Test Peripherals

Equipment description (Including Brand name)	Model & Serial	Cable description (List Length, Type & Purpose)
-	-	-

2.3 Instrument list

Selected	Instrument	EH no.	Model	Valid until date
☒	EMI test receiver	EH 2003	ESCI	2018-6-08
☒	A.M.N.	EH 2005	ESH2-Z5	2018-6-08
☒	Absorbing clamp	EH 1331	MDS 21	2018-6-08
☒	Click meter	EH 2223	AFJ CL55C	2017-9-27
☒	LISN	EH 2223-1	AFJ LS16C	2018-6-11
☒	Harmonic-flicker sys.	EH 2008	DPA 500	2018-6-08
☒	AC Power Supply	EH 2008-1	ACS 500	2018-6-08
☒	Therom-Hygrograph	EH 1099	ZJ1-2A	2018-6-28
☒	Therom-Hygrograph	EH 1098	ZJ1-2A	2018-6-28
☒	Shielded room 1	EH 1184	GB88	2019-7-14

2.4 Test Summary

TEST ITEM	RESULT	NOTE
Mains terminal continuous disturbance voltage *	Pass	
Mains terminal discontinuous disturbance voltage/click	Pass	
Continuous disturbance power*	Pass	
Radiated emission	Pass	
Harmonics	Pass	
Voltage fluctuation-Flicker	Pass	
Electrostatic Discharge (ESD)	NA	
Radiated field susceptibility	NA	
Electric Fast Transient /Burst (EFT/B)	NA	
Surge	NA	
Injected current	NA	
Voltage dips and interruption	NA	

Notes:

1. NA =Not Applicable
2. Margin to the limit is within the uncertainty interval of the measured value.
3. *: According to clause 7.1.4 of the standard EN55014-1, a test at 160 kHz (conducted emission) and at 50 MHz (disturbance power) was made over a range of 0,9 to 1,1 times the rated voltage, and the worst test data is listed in the relevant clause of the report.

Emission Test

3. Mains/Load/Control Terminal Continuous Disturbance Voltage

Test result: PASS

3.1 Terminal Voltage Limits for the frequency range 148.5kHz to 30MHz

3.1.1 Limits for household appliances, electric power tools and similar devices at mains terminals

For household appliance

Frequency range (MHz)	Limits dB(μV) Quasi-peak	Average
0.15 ~ 0.5	66 ~ 56 *	59 ~ 46 *
0.5 ~ 5	56	46
5 ~ 30	60	50

Notes:
1. * means the limit decreasing linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.
2. If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the equipment under test shall be deemed to meet both limits and the measurement using the receiver with an average detector need not be carried out.

For electric power tools

Frequency (MHz)	Rated motor power not exceeding 700W		Rated motor power above 700W and not exceeding 1000W		Rated motor power above 1000W	
	dB(μV) Quasi-Peak	Average	dB(μV) Quasi-Peak	Average	dB(μV) Quasi-Peak	Average
0.15~0.35	66~59*	59~49*	70~63*	63~53*	76~69*	69~59*
0.35~5	59	49	63	53	69	59
5~30	64	54	68	58	74	64

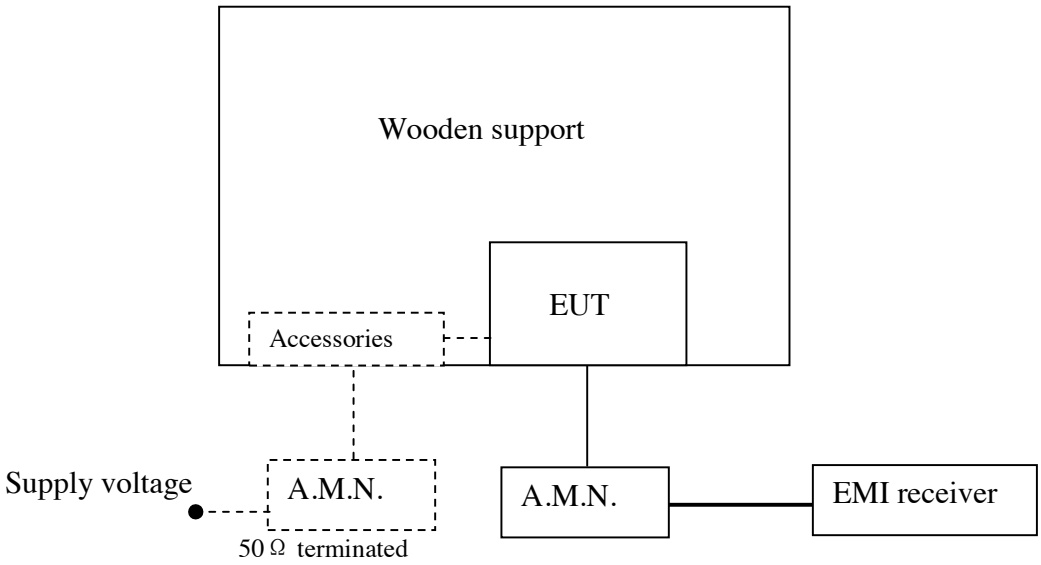
Notes :
1. * means the limit value decreasing linearly with the logarithm of the frequency.
2. If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the equipment under test shall be deemed to meet both limits and the measurement using the receiver with an average detector need not be carried out.

3.1.2 Limits for household appliances and similar devices at additional terminals

Frequency range (MHz)	Limits dB(μV)	
	Quasi-peak	Average
0.15 ~ 0.5	80	70
0.5 ~ 5	74	64
5 ~ 30	74	64
Notes: 1. If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the equipment under test shall be deemed to meet both limits and the measurement using the receiver with an average detector need not be carried out.		

3.2 Block diagram of Test setup

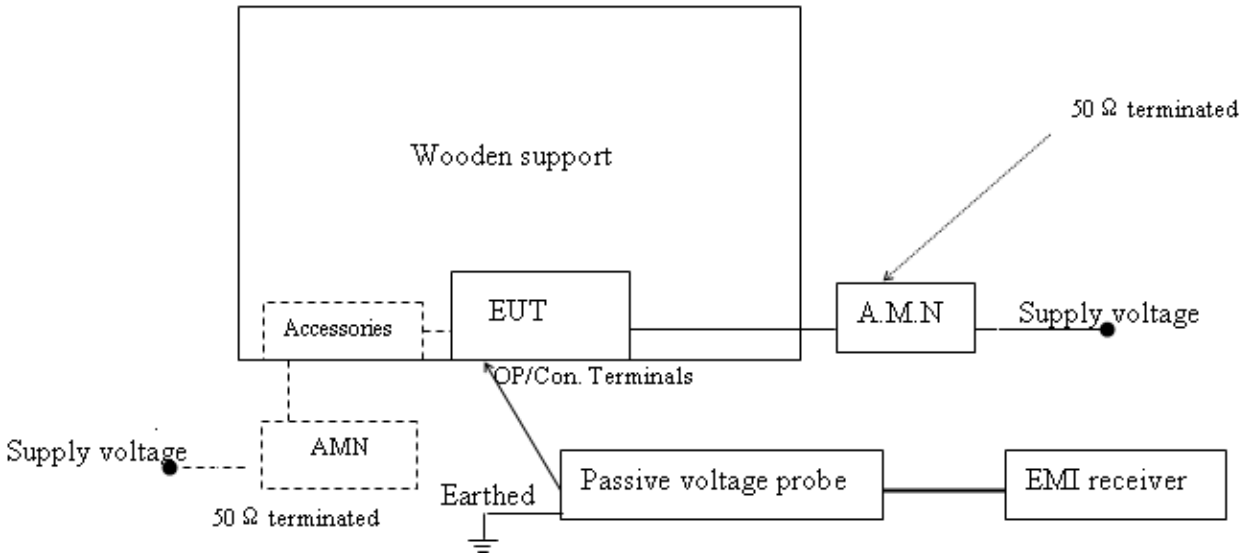
☒ At mains terminal



☒ For table top equipment, wooden support is 0.8m height table.

☐ For floor standing equipment, wooden support is 0.1m height rack.

☐ At output and control terminals



Note: ——— : power line
——— : signal line
- - - - - - - - : means the test setup while available

3.3 Test Setup and Test Procedure

Measurement was performed in shielded room, and instruments used were following Clause 5.1.1, 5.1.2, 5.1.3, 5.1.4 and 5.1.5 of EN 55014-1 if applicable.
Detailed test procedure and arrangement was following clause 5.2 of EN 55014-1.
Measurement methods and operation conditions of EUT was according to clause 7 of EN 55014-1.
Frequency range 150kHz – 30MHz was checked and EMI receiver measurement bandwidth was set to 9kHz.

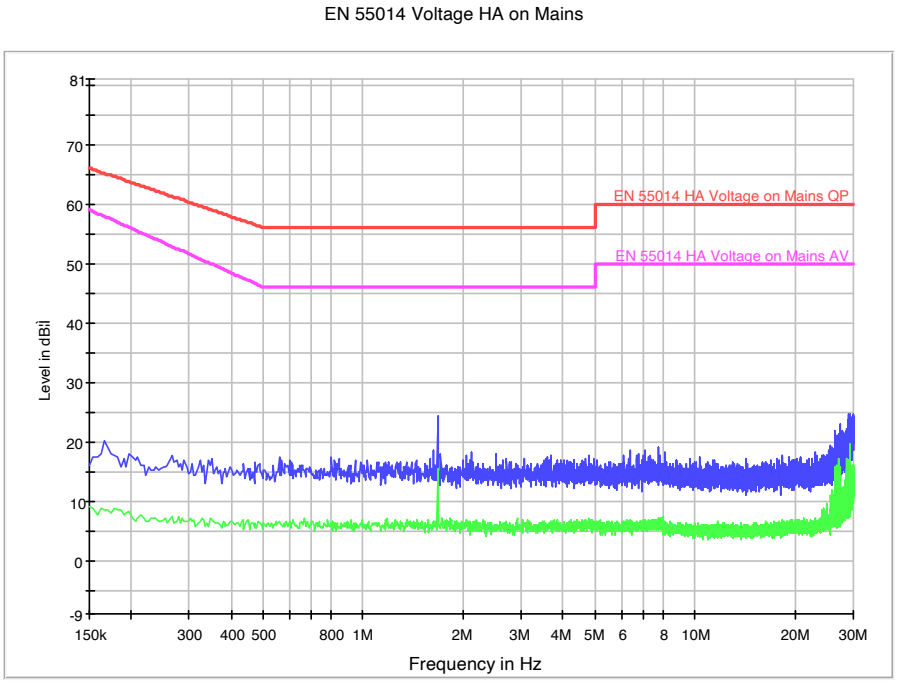
3.4 Test Protocol and Wave Form

At mains terminal: Pass

Temperature : 22°C

Relative Humidity : 43%

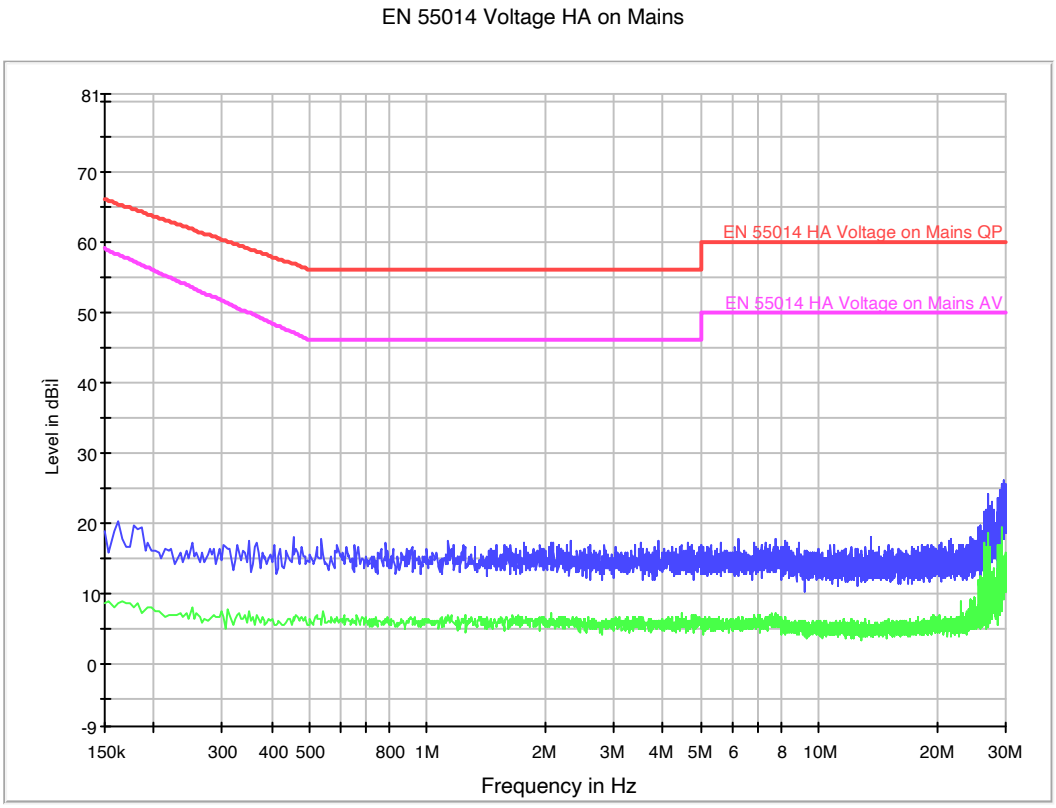
L Line:



Frequency (MHz)	Quasi-peak		Average	
	Disturbance level dB(µV)	Permitted limit dB(µV)	Disturbance level dB(µV)	Permitted limit dB(µV)
0.160000	*	65.46	*	58.30
0.240000	*	62.10	*	53.93
0.550000	*	56.00	*	46.00
1.000000	*	56.00	*	46.00
1.400000	*	56.00	*	46.00
2.000000	*	56.00	*	46.00
3.500000	*	56.00	*	46.00
6.000000	*	60.00	*	50.00
10.000000	*	60.00	*	50.00
22.000000	*	60.00	*	50.00
30.000000	*	60.00	*	50.00

Note: * means the emission level 20dB below the relevant limit.

N Line:



Frequency (MHz)	Quasi-peak		Average	
	Disturbance level dB(µV)	Permitted limit dB(µV)	Disturbance level dB(µV)	Permitted limit dB(µV)
0.160000	*	65.46	*	58.30
0.240000	*	62.10	*	53.93
0.550000	*	56.00	*	46.00
1.000000	*	56.00	*	46.00
1.400000	*	56.00	*	46.00
2.000000	*	56.00	*	46.00
3.500000	*	56.00	*	46.00
6.000000	*	60.00	*	50.00
10.000000	*	60.00	*	50.00
22.000000	*	60.00	*	50.00
30.000000	*	60.00	*	50.00

Note: * means the emission level 20dB below the relevant limit.

At load/control terminal: NA

Frequency (MHz)	Quasi-peak		Average	
	Disturbance level dB(μV)	Permitted limit dB(μV)	Disturbance level dB(μV)	Permitted limit dB(μV)
-	-	-	-	-
Note: * means the emission level 20dB below the relevant limit.				

3.5 Measurement Uncertainty

The measurement uncertainty describes the overall uncertainty of the given measured value during the operation of the EUT.
Measurement uncertainty at mains terminal: ± 2.96dB.
Measurement uncertainty at load/control terminal: ± 2.61dB.
The measurement uncertainty is given with a confidence of 95%, k=2.

4. Continuous Disturbance Power

Test result: PASS

4.1 Disturbance Power Limits for the frequency range 30MHz to 300MHz

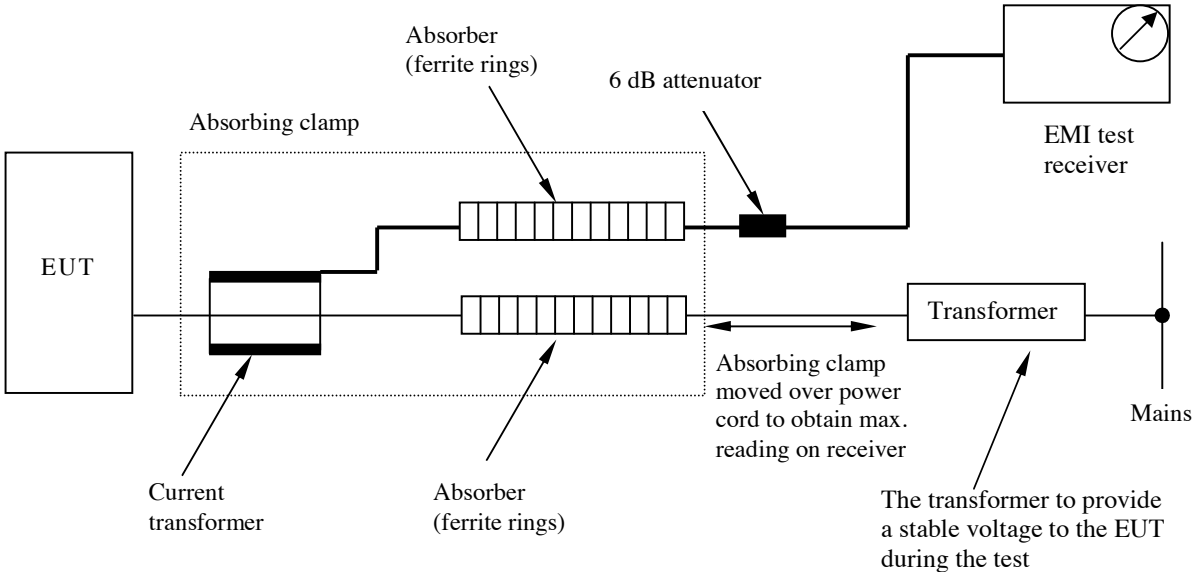
4.1.1 Limits for household and similar appliances

Frequency (MHz)	Quasi-peak dB(pW)	Average dB (pW)
30 ~ 300	45~55*	35 ~ 45*
Notes: 1. * means the limit increasing linearly with the frequency. 2. If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the equipment under test shall be deemed to meet both limits and the measurement with the receiver with average detector need not be carried out.		

4.1.2 Limits for electric tools

Frequency (MHz)	Rated motor power not exceeding 700W		Rated motor power above 700W and not exceeding 1000W		Rated motor power above 1000W	
	dB(pW)		dB(pW)		dB(pW)	
	Quasi-peak	Average	Quasi-peak	Average	Quasi-peak	Average
30~300	45~55*	35~45*	49~59*	39~49*	55~65*	45~55*
Notes: 1. * means the limit increasing linearly with the frequency. 2. If the limit for the measurement with the average detector is met when using a receiver with a quasi-peak detector, the equipment under test shall be deemed to meet both limits and the measurement with the receiver with average detector need not be carried out.						

4.2 Block Diagram of Test Setup



4.3 Test Setup and Test Procedure

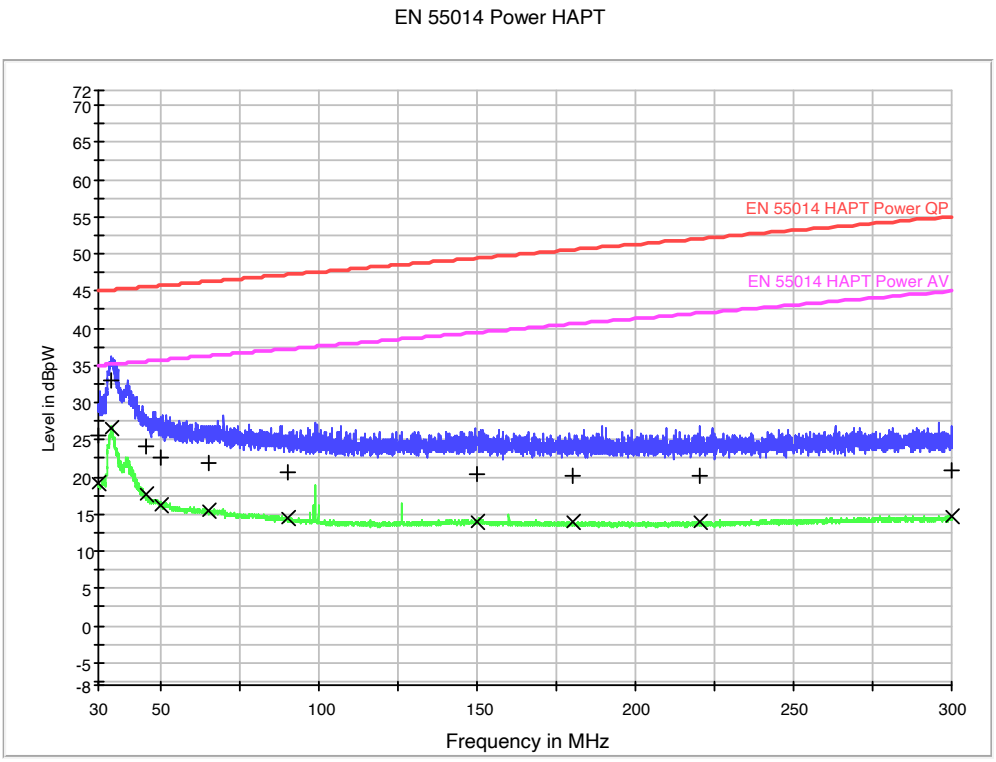
Measurement was performed in shielded room.
Instruments used were following clause 6.1 of EN 55014-1.
Detailed test procedure and arrangement was following clause 6.2 and 6.3 of EN 55014-1.
Operation conditions of EUT were according to clause 7 of EN 55014-1.
Frequency range 30MHz – 300MHz was checked and EMI receiver measurement bandwidth was set to 120kHz.

4.4 Test Protocol and Wave Form

Temperature : 24°C

Relative Humidity : 42%

At mains lead



Frequency (MHz)	Quasi-peak Disturbance level dB(pW)	Quasi-peak Permitted limit dB(pW)	Average Disturbance level dB(pW)	Average Permitted limit dB(pW)
30.000000	25.69	45.00	19.27	35.00
34.080000	33.02	45.15	26.62	35.15
45.000000	*	45.56	17.76	35.56
50.000000	*	45.74	16.27	35.74
65.000000	*	46.30	*	36.30
90.000000	*	47.22	*	37.22
150.000000	*	49.44	*	39.44
180.000000	*	50.56	*	40.56
220.000000	*	52.04	*	42.04
300.000000	*	55.00	*	45.00

Note: * means the emission level 20dB lower than the relevant limit.

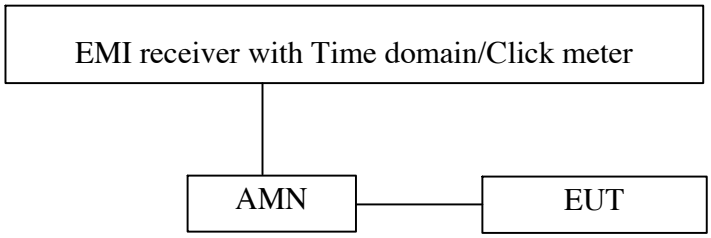
4.5 Measurement Uncertainty

The measurement uncertainty describes the overall uncertainty of the given measured value during the operation of the EUT.
Measurement uncertainty of mains lead and auxiliary lead: ± 4.16dB.
The measurement uncertainty is given with a confidence of 95%, k=2.

5. Mains Terminal Discontinuous Disturbance Voltage

Test result: PASS

5.1 Block Diagram of Test Setup



5.2 Test Set-up and Test Procedure

Measurement was performed in shielded room.
EMI receiver compliance to CISPR 16-1-1 with time domain function used during measurement.
EUT arrangement was following clause 5.2 of EN 55014-1.
Operation conditions were following clause 7 of EN 55014-1.
0.15MHz, 0.5MHz, 1.4MHz and 30MHz were spot checked, and upper quartile methods used during measurement.
The final judgment of test result was according to figure 9 of EN 55014-1.

5.3 Test Protocol and Wave form

Temperature : 24°C
Relative Humidity : 42%

Frequency (MHz)	0.15	0.5	1.4	30.0
Permitted limit for continuous interference (dBμV)	66	56	56	60
Counted click number	10	14	12	0
Observed time (min)	120	120	120	120
Click duration (ms)	<10	<10	<10	-
Click rate N	<5	<5	<5	0
Factor	-	-	-	-
Permitted limits for clicks (dBμv)	-	-	-	-
Counted clicks exceeding the limits	-	-	-	-
Test result	Pass	Pass	Pass	Pass
Any other descriptions: The click rate is less than 5, the caused clicks has a duration is less than 10ms, so it is deemed to comply with the limits without further testing.				

5.4 Measurement Uncertainty

The measurement uncertainty describes the overall uncertainty of the given measured value during the operation of the EUT.

Measurement uncertainty of mains discontinuous conducted disturbance voltage: ± 3.67dB.
The measurement uncertainty is given with a confidence of 95%, k=2.

6. Radiated emission

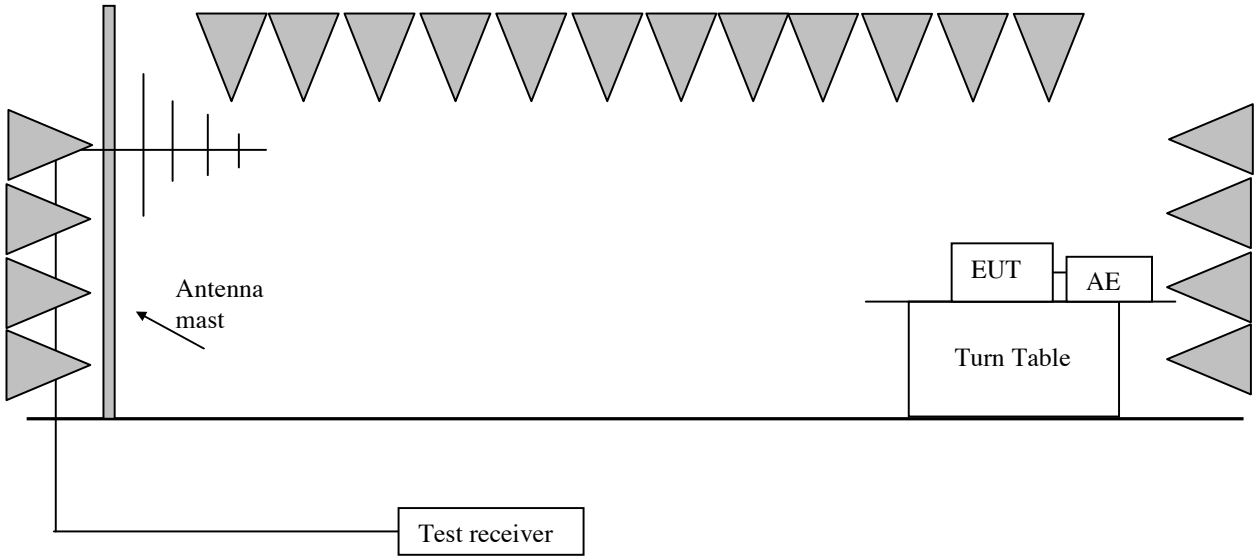
Test result: **PASS**

☒ As for in the disturbance power test all emission readings from the EUT are lower than the applicable limits(Table 2a) reduced by the margin(Table 2b) and the maximum clock frequency is less than 30MHz, the EUT is deemed to comply with the Radiated Emission requirement without test.

6.1 Radiated emission limit from frequency range 30MHz – 1000MHz

Frequency (MHz)	Permitted limit in dBμV/m (Quasi-peak) of Measurement Distance 3m	Permitted limit in dBμV/m (Quasi-peak) of Measurement Distance 10m
30-230	40	30
230-1000	47	37
Note: for the measurement distance other than 3m and 10m, the limit is varied according to 20dB/10 decades.		

6.2 Block diagram and test set up



The measurement was applied in a semi-anechoic chamber.
Measurement was performed according to CISPR 22.
Setting of EUT is according to clause 7 of EN 55014-1.
The bandwidth setting on Test Receiver was 120kHz.
The frequency range from 30MHz to 1000MHz was checked.

6.3 Test Protocol and Wave Form

Temperature : °C
Relative humidity: %

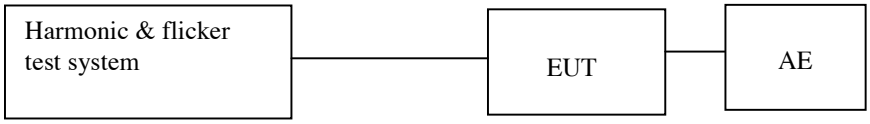
6.4 Measurement uncertainty

The measurement uncertainty describes the overall uncertainty of the given measured value during the operation of the EUT.
Measurement uncertainty of radiated emission is: ± 4.90dB (30MHz-1000MHz)
The measurement uncertainty is given with a confidence of 95%, k=2.

7. Harmonics

Test result: PASS

7.1 Block Diagram of Test Setup



7.2 Test Setup and Test Procedure

Harmonics of the fundamental current were measured up to 40 order harmonics using a digital power meter with an analogue output and frequency analyser which was integrated in the harmonic & flicker test system. The measurements were carried out under steady conditions.

☐ This product is not defined as lighting equipment, and has rated power of 75W or less, therefore, no limit apply according to EN 61000-3-2.

☐ The EUT is kitchen machines as listed in the scope of IEC 60335-2-14, therefore, is deemed to conform to the harmonic current limits of this standard without further testing.

7.3 Test Protocol and Wave form

Temperature : 24 °C Relative Humidity : 42 %

Power and THD results - DS: 1

True power P:	1.472kW	Apparent power S:	1.472kVA
Reactiv power Q:	2.663var	Power factor:	1.000
THD (U):	0.001	THD (I):	0.001
Crest Factor (U):	1.413	Crest Factor (I):	1.416

Average harmonic current results

Hn	Ieff [A]	% of Limit	Limit [A]	Result
1	6.343			
2	656.155E-6			PASS
3	1.136E-3			PASS
4	1.182E-3			PASS
5	2.367E-3			PASS
6	732.356E-6			PASS
7	1.501E-3			PASS
8	713.436E-6			PASS
9	1.722E-3			PASS
10	717.021E-6			PASS
11	1.408E-3			PASS
12	696.980E-6			PASS
13	811.352E-6			PASS
14	970.626E-6			PASS
15	2.183E-3			PASS
16	690.371E-6			PASS
17	2.822E-3			PASS
18	985.675E-6			PASS
19	1.599E-3			PASS
20	680.244E-6			PASS
21	1.283E-3			PASS
22	695.345E-6			PASS
23	2.675E-3			PASS
24	681.959E-6			PASS
25	2.357E-3			PASS
26	703.961E-6			PASS
27	1.171E-3			PASS
28	719.386E-6			PASS
29	1.157E-3			PASS
30	735.935E-6			PASS
31	1.686E-3			PASS
32	886.420E-6			PASS
33	1.874E-3			PASS
34	693.819E-6			PASS
35	1.388E-3			PASS
36	726.559E-6			PASS
37	977.886E-6			PASS
38	701.810E-6			PASS
39	1.861E-3			PASS
40	723.567E-6			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

Maximum harmonic current results

Hn	Ieff [A]	% of Limit	Limit [A]	Result
1	6.388			
2	1.184E-3			PASS
3	2.473E-3			PASS
4	1.933E-3			PASS
5	3.000E-3			PASS
6	1.391E-3			PASS
7	2.070E-3			PASS
8	1.193E-3			PASS
9	2.182E-3			PASS
10	1.097E-3			PASS
11	1.958E-3			PASS
12	921.870E-6			PASS
13	1.199E-3			PASS
14	1.138E-3			PASS
15	2.582E-3			PASS
16	839.083E-6			PASS
17	3.361E-3			PASS
18	1.141E-3			PASS
19	2.142E-3			PASS
20	811.088E-6			PASS
21	1.738E-3			PASS
22	876.865E-6			PASS
23	3.105E-3			PASS
24	794.529E-6			PASS
25	2.815E-3			PASS
26	983.131E-6			PASS
27	1.643E-3			PASS
28	859.701E-6			PASS
29	1.736E-3			PASS
30	972.132E-6			PASS
31	2.533E-3			PASS
32	1.080E-3			PASS
33	2.358E-3			PASS
34	908.882E-6			PASS
35	1.920E-3			PASS
36	834.063E-6			PASS
37	1.271E-3			PASS
38	880.154E-6			PASS
39	2.262E-3			PASS
40	1.019E-3			PASS

Harmonic currents less than 0.6% of the input current measured under the test conditions, or less than 5 mA, whichever is greater, are disregarded.

7.4 Measurement Uncertainty

The measurement uncertainty describes the overall uncertainty of the given measured value during the operation of the EUT.

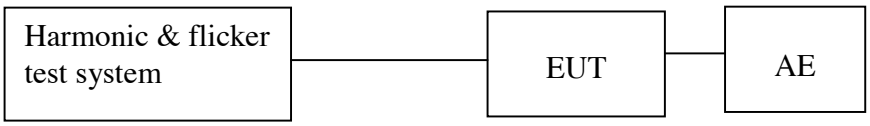
Measurement uncertainty of harmonic test is: ± 3.03%.

The measurement uncertainty is given with a confidence of 95%, k=2.

8. Voltage Fluctuations-Flicker

Test result: **PASS**

8.1 Block Diagram of Test Setup



8.2 Test Setup and Test Procedure

8.2.1 Definition

Flicker: impression of unsteadiness of visual sensation induced by a light stimulus whose luminance or spectral distribution fluctuates with time.

Pst: Short-term flicker severity.

Plt: long-term flicker severity.

dc: maximum steady state voltage change during an observation period.

dmax: maximum absolute voltage change during an observation period.

d(t): time function of the relative r.m.s. voltage change evaluated as a single value for each successive half period between zero-crossings of the source voltage, except during time interval in which the voltage is a steady-state condition for at least 1s.

8.2.2 Test condition

The EUT was set to produce the most unfavorable sequence of voltage changes.

8.3 Test Protocol

The tested object operated under the operating condition specified in EN 61000-3-3
The following limits apply

- the value of Pst shall not be greater than 1,0.
- the value of Plt shall not be greater than 0,65.
- Tmax, the accumulated time value of d(t) with a deviation exceeding 3,3 % during a single voltage change at the EUT terminals, shall not exceed 500 ms.
- the maximum relative steady-state voltage change, dc, shall not exceed 3,3 %.
- the maximum relative voltage change dmax, shall not exceed:

☐ 4% without additional conditions.

☒ 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.

☐ 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.

☐ for manual switch, dmax is measured in accordance with Annex B of standard, average dmax is calculated from 24 times measurement.

☐ The rate power of the EUT is no greater than 75W, which is unlikely to produce significant voltage fluctuations or flicker by technical analysis and evaluation. So it is deemed to fulfil the requirements without testing.

Temperature : 24°C Relative Humidity : 42 %

	EUT values	Limit	Result
Pst	0.319	1.00	PASS
dc [%]	1.234	3.30	PASS
dmax [%]	1.267	6.00	PASS
dt [s]	0.000	0.50	PASS

8.4 Measurement Uncertainty

The measurement uncertainty describes the overall uncertainty of the given measured value during the operation of the EUT.

Measurement uncertainty of voltage fluctuation and flicker is: ± 11.77%.

The measurement uncertainty is given with a confidence of 95%, k=2.

Immunity Test

Performance criteria

The performance criteria are based on the general criteria of the standard and derived from the product specification

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 except 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 except 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.

Conclusion

The EUT contains no electronic control circuitry. It is classified to Category I of the standard and is therefore deemed to fulfill the relevant immunity requirements without testing.

Appendix I: Photograph of equipment under test

Photo 1.

Description: Over view

Photo 2.

Description: Side view

Photo 3.

Description: Side view

Photo 4.

Description: Bottom view

Photo 5.

Description: Heating plate view

Photo 6.

Description: Locked device view

Photo 7.

Description: Earthing view

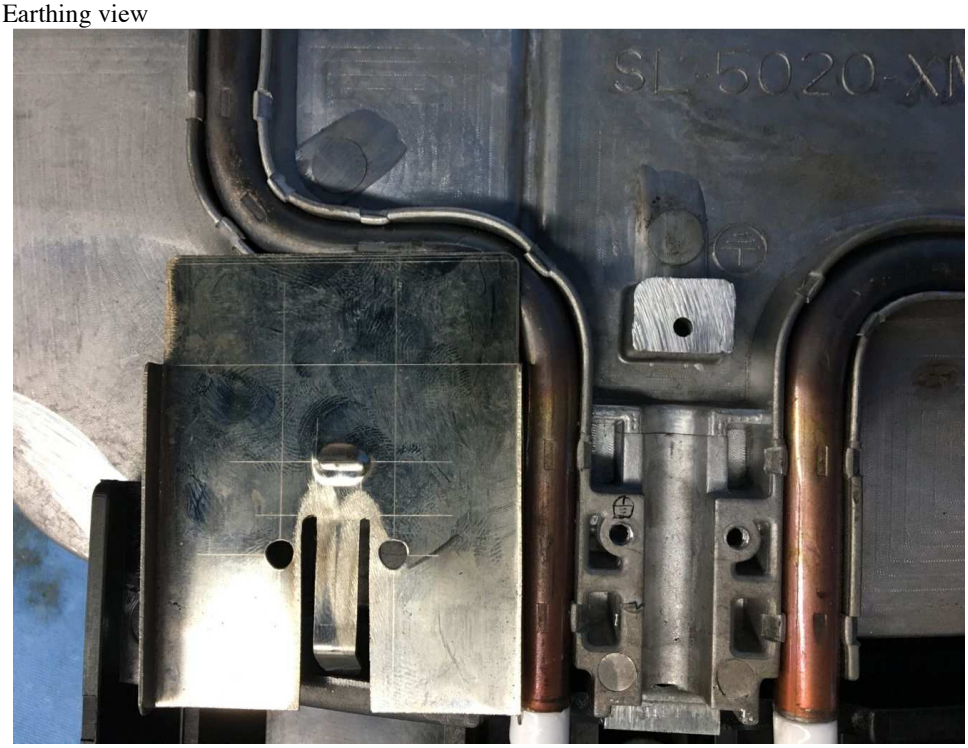


Photo 8.

Description: Over view of connector

Photo 9.

Description: Internal view of connector

END of the report