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## EMC Test report for Hole Cutting Drill

**Models: HC127**

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By order of LEE YEONG Industrial Co., Ltd.



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DEKRA Testing and Certification (Shanghai) Ltd.

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DOCUMENT

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## 1 **CONCLUSION**

The tests described in this report do not result in the right to use any approval mark as conferred by DEKRA. As far as the tests were based on certain specifications, these are mentioned in the report.

The conclusion and results stated in this test report are based on a non-recurrent examination of sample provided by the applicant.

### 1.1 **Model description**

The apparatus as supplied for the test is a Hole Cutting Drill, model HC127 intended for residential use. The EUT has electronic control circuit and earth connection.

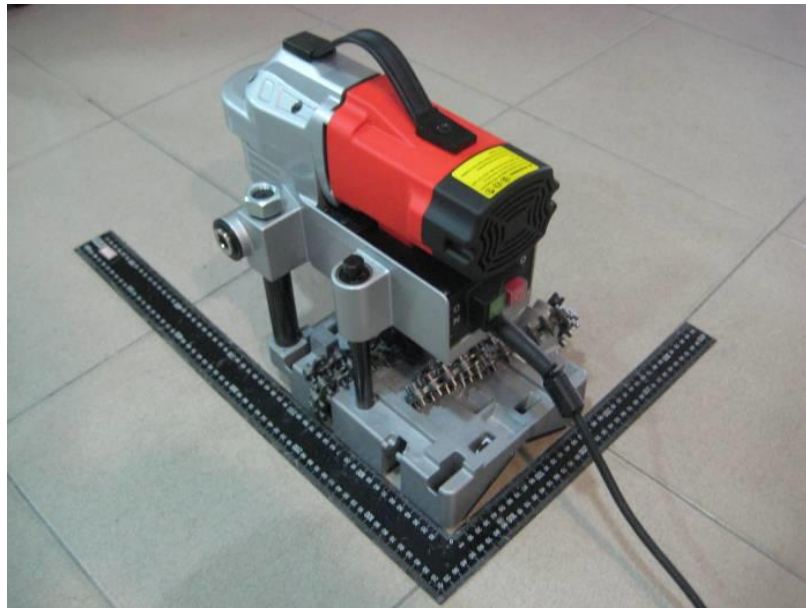


Figure 1 Overview

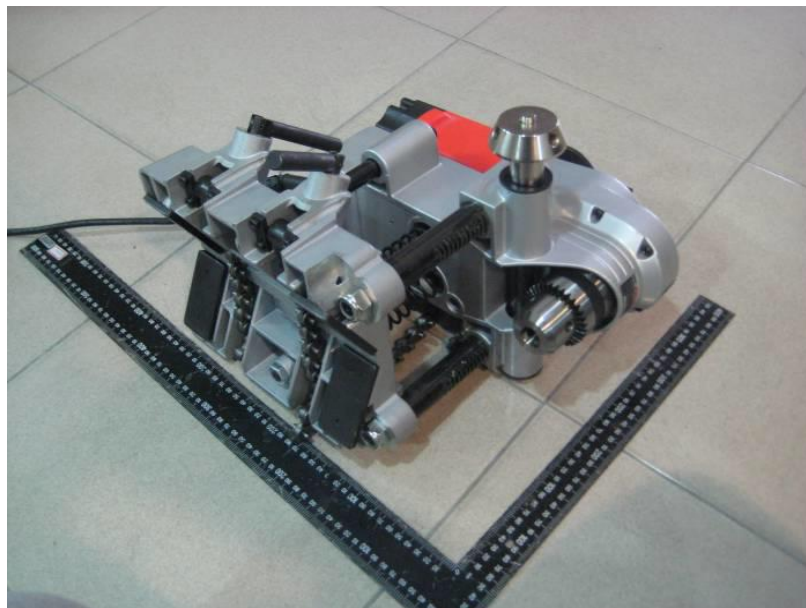


Figure 2 Overview

## 1.2 Environment

The requirements and standards apply to equipment intended for use in:

✓	Residential (domestic) environment
✓	Commercial and light-industrial environment
	Industrial environment
	Medical environment

## 1.3 Classification

The standard EN 55014-2 is subdivided in four categories. For each category, the specific immunity requirements are formulated.

	<b>Category 1</b>	Apparatus containing no electronic control circuitry
✓	<b>Category 2</b>	Apparatus containing electronic control circuitry with no internal clock or oscillator frequency higher than 15 MHz.
	<b>Category 3</b>	Battery powered apparatus containing electronic control circuitry.
	<b>Category 4</b>	All other apparatus.

## 2 SUMMARY

This chapter presents an overview of standards and results. Refer to the next chapters for details of measured test results and applied test levels.

### 2.1 Applied standards

Standard	Year	Title
EN 55014-1	2006	Emission – Electrical motor-operated and thermal appliances for household and similar purposes, electrical tools and similar electrical apparatus
A1	2009	
A2	2011	
EN 55014-2	2015	Immunity - Household appliances, electric tools and similar
EN 61000-3-2	2014	Limits for harmonic currents emissions
EN 61000-3-3	2013	Limitation of voltage fluctuations and flicker

### 2.2 Overview of results

Emission tests	Result
Mains conducted disturbance voltage	<b>PASS</b>
Radiated emission	<b>PASS</b>
Harmonic current emission	<b>PASS</b>
Limitation of voltage fluctuations (flicker)	<b>PASS</b>

Immunity tests	Result
Electrostatic Discharges (ESD)	<b>PASS</b>
Electrical fast transient (EFT)	<b>PASS</b>
Surge transients	<b>PASS</b>
Conducted RF disturbances	<b>PASS</b>
Power supply voltage interruptions & dips	<b>PASS</b>

### 3 GENERAL INFORMATION

#### 3.1 Product Information

Equipment under test	Hole Cutting Drill
Trade mark	AGP
Tested Type	HC127
Ratings	110-120 Vac or 220-240 Vac; 50-60 Hz; 1100 W; Class I

#### 3.2 Customer Information

Applicant	LEE YEONG Industrial Co., Ltd.
Address	No.2, Kejia Road, Douliu City, Yunlin County, Taiwan

Manufacturer	LEE YEONG Industrial Co., Ltd.
Address	No.2, Kejia Road, Douliu City, Yunlin County, Taiwan

Factory	LEE YEONG Industrial Co., Ltd.
Address	No.2, Kejia Road, Douliu City, Yunlin County, Taiwan

### 3.3 Test data

Location	Global Certification Corp.
Address	No.146, Sec. 2, Xiangzhang Rd., Xizhi Dist., New Taipei City 221, Taiwan
Date	Jan. 2011
Supervised by	Jerremy Cai

### 3.4 Environmental conditions

Tests have been performed in a controlled laboratory environment, where the environmental conditions are maintained within the applicable ranges.

Ambient temperature	15 °C – 35 °C
Relative Humidity air	30% - 60%

### 3.5 Measurement Uncertainty

Conducted Emission Expanded Uncertainty:  $U = 3.38$  dB

Disturbance Power Expanded Uncertainty:  $U = 3.92$  dB

Harmonic Current Expanded Uncertainty:  $U = 0.001$  mA



## 4 EMISSION TEST RESULTS

### 4.1 Mains conducted disturbance voltage

Standard	EN 55014-1 (Tools)					
Frequency [MHz]	QP [dB(μV)]			AV [dB(μV)]		
0,15 – 0,35	66	–	59 *)	59	–	49 *)
0,35 – 5	59			49		
5 – 30	64			54		

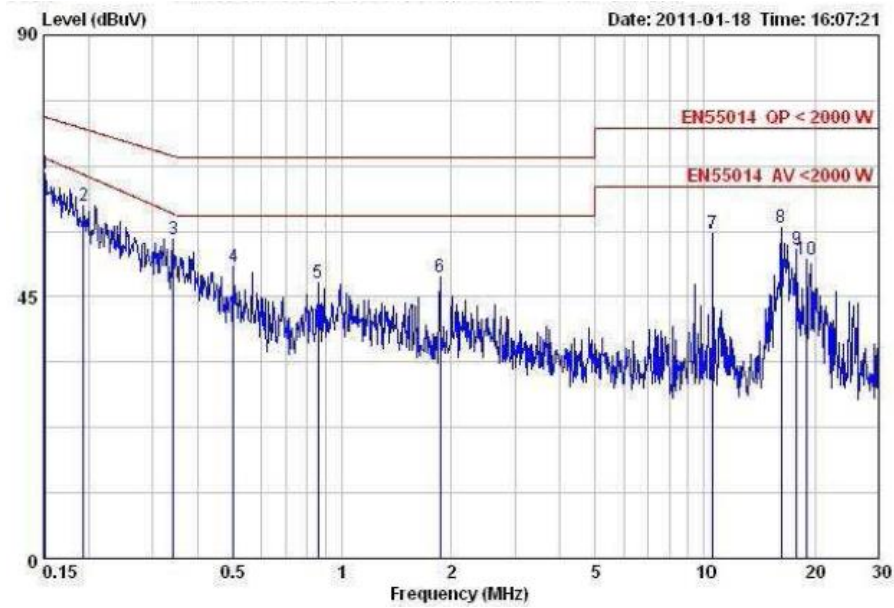
\*) Limits decreasing linearly with the logarithm of the frequency

	Rated power below 700 W	Limits as above
	Rated power between 700 and 1000 W	Limits +4 dB
✓	Rated power above 1000 W	Limits +10 dB

Port	AC mains
Test method	LISN
Mode	On mode with an artificial hand, no load

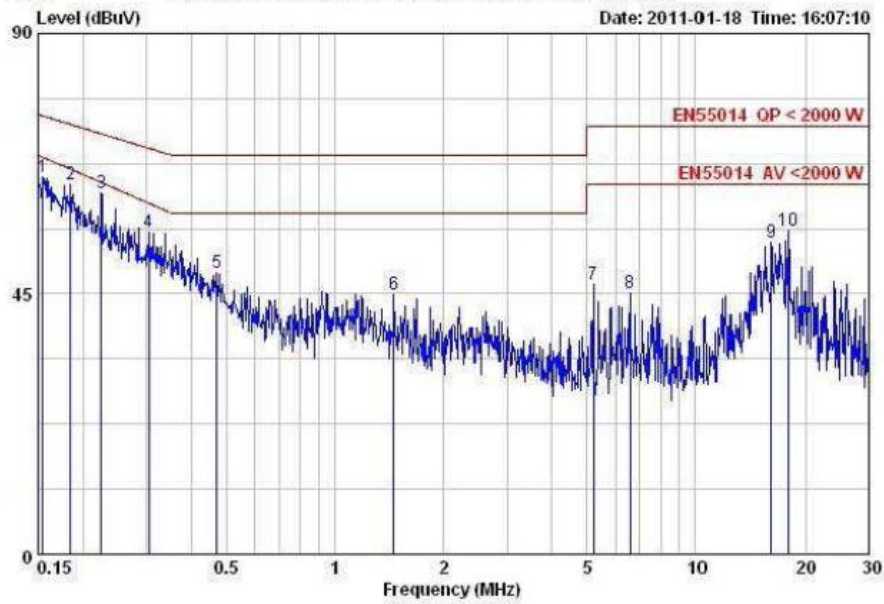
**Results for 110v model**

**Line**



	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.15	56.01	10.25	66.26	75.91	-9.65	Peak
2	0.19	50.39	10.24	60.63	73.90	-13.27	Peak
3	0.34	44.75	10.25	55.00	69.17	-14.17	Peak
4	0.50	39.85	10.25	50.10	69.00	-18.90	Peak
5	0.86	37.08	10.25	47.33	69.00	-21.67	Peak
6	1.87	38.07	10.26	48.33	69.00	-20.67	Peak
7	10.45	45.56	10.25	55.81	74.00	-18.19	Peak
8	16.14	46.69	10.22	56.91	74.00	-17.09	Peak
9	17.85	43.07	10.19	53.26	74.00	-20.74	Peak
10	19.02	41.11	10.18	51.29	74.00	-22.71	Peak

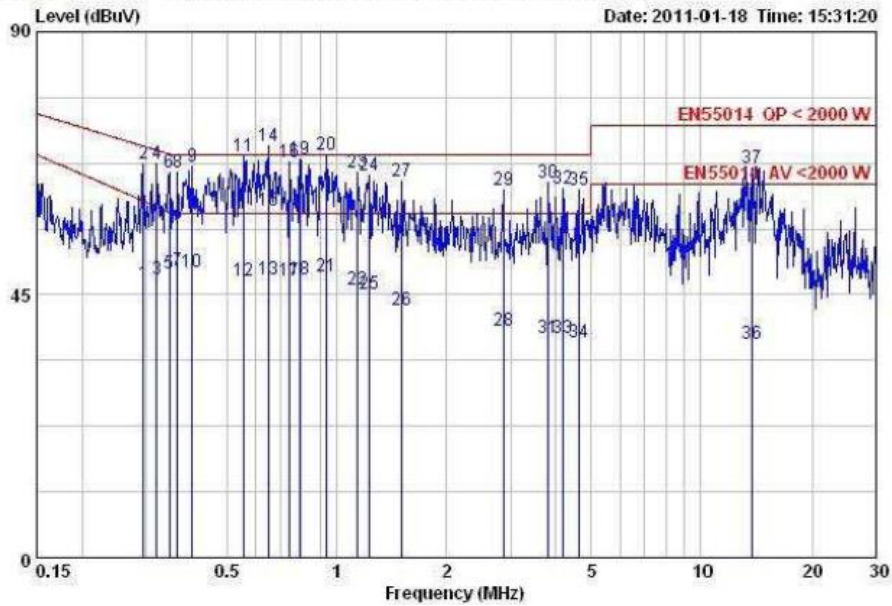
Neutral



	Read Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.15	53.99	11.15	65.14	75.74	-10.60	Peak
2	0.18	52.71	11.14	63.85	74.29	-10.44	Peak
3	0.22	51.17	11.14	62.31	72.67	-10.36	Peak
4	0.31	44.45	11.13	55.58	70.13	-14.55	Peak
5	0.47	37.53	11.13	48.66	69.00	-20.34	Peak
6	1.46	33.78	11.13	44.91	69.00	-24.09	Peak
7	5.22	35.41	11.11	46.52	74.00	-27.48	Peak
8	6.59	34.08	11.11	45.19	74.00	-28.81	Peak
9	16.05	42.89	11.05	53.94	74.00	-20.06	Peak
10	17.94	44.92	11.06	55.98	74.00	-18.02	Peak

Results for 230v model

Line

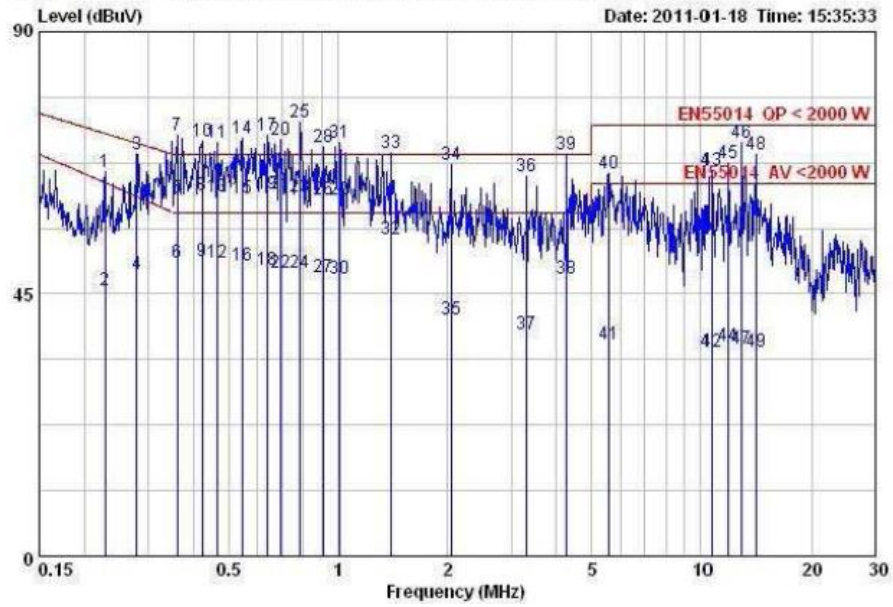


	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.29	36.62	10.25	46.87	70.44	-23.57	QP
2	0.29	57.09	10.25	67.34	70.44	-3.10	Peak
3	0.32	37.41	10.25	47.66	69.74	-22.08	QP
4	0.32	57.19	10.25	67.44	69.74	-2.30	Peak
5	0.35	38.29	10.25	48.54	69.08	-20.54	QP
6	0.35	55.64	10.25	65.89	69.08	-3.19	Peak
7	0.37	38.83	10.25	49.08	69.00	-19.92	QP
8	0.37	55.66	10.25	65.91	69.00	-3.09	Peak
9	0.40	56.79	10.25	67.04	69.00	-1.96	Peak
10	0.40	38.60	10.25	48.85	69.00	-20.15	QP
11	0.56	58.32	10.25	68.57	69.00	-0.43	Peak
12	0.56	37.10	10.25	47.35	69.00	-21.65	QP
13	0.65	37.27	10.26	47.53	59.00	-11.47	Average
14 X	0.65	60.27	10.26	70.53	69.00	1.53	Peak
15	0.65	49.06	10.26	59.32	69.00	-9.68	QP
16	0.74	57.33	10.25	67.58	69.00	-1.42	Peak
17	0.74	37.13	10.25	47.38	59.00	-11.62	Average
18	0.79	37.36	10.25	47.61	59.00	-11.39	Average

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
19	0.79	58.02	10.25	68.27	69.00	-0.73	Peak
20	0.94	58.63	10.25	68.88	69.00	-0.12	Peak
21	0.94	37.80	10.25	48.05	59.00	-10.95	Average
22	1.14	35.57	10.26	45.83	59.00	-13.17	Average
23	1.14	55.62	10.26	65.88	69.00	-3.12	Peak
24	1.22	55.15	10.25	65.40	69.00	-3.60	Peak
25	1.22	34.91	10.25	45.16	59.00	-13.84	Average
26	1.51	32.15	10.26	42.41	59.00	-16.59	Average
27	1.51	54.16	10.26	64.42	69.00	-4.58	Peak
28	2.87	28.60	10.25	38.85	59.00	-20.15	Average
29	2.87	52.74	10.25	62.99	69.00	-6.01	Peak
30	3.82	54.00	10.24	64.24	69.00	-4.76	Peak
31	3.82	27.25	10.24	37.49	59.00	-21.51	Average
32	4.16	52.96	10.24	63.20	69.00	-5.80	Peak
33	4.16	27.46	10.24	37.70	59.00	-21.30	Average
34	4.62	26.49	10.24	36.73	59.00	-22.27	Average
35	4.62	52.71	10.24	62.95	69.00	-6.05	Peak
36	13.70	26.33	10.25	36.58	64.00	-27.42	Average
37	13.70	56.53	10.25	66.78	74.00	-7.22	Peak



Neutral



	Read Freq	Level	Factor	Level	Limit	Over	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.23	54.88	11.14	66.02	72.54	-6.52	Peak
2	0.23	34.54	11.14	45.68	64.06	-18.38	Average
3	0.28	57.83	11.14	68.97	70.88	-1.91	Peak
4	0.28	37.21	11.14	48.35	61.68	-13.33	Average
5	0.36	50.22	11.13	61.35	69.00	-7.65	QP
6	0.36	39.38	11.13	50.51	59.00	-8.49	Average
7 X	0.36	61.01	11.13	72.14	69.00	3.14	Peak
8	0.42	50.90	11.13	62.03	69.00	-6.97	QP
9	0.42	39.61	11.13	50.74	59.00	-8.26	Average
10 X	0.42	60.07	11.13	71.20	69.00	2.20	Peak
11 X	0.47	59.93	11.13	71.06	69.00	2.06	Peak
12	0.47	39.28	11.13	50.41	59.00	-8.59	Average
13	0.47	50.50	11.13	61.63	69.00	-7.37	QP
14 X	0.54	60.45	11.13	71.58	69.00	2.58	Peak
15	0.54	50.39	11.13	61.52	69.00	-7.48	QP
16	0.54	38.81	11.13	49.94	59.00	-9.06	Average
17 X	0.64	61.17	11.13	72.30	69.00	3.30	Peak
18	0.64	38.01	11.13	49.14	59.00	-9.86	Average

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
19	0.64	51.15	11.13	62.28	69.00	-6.72	QP
20 X	0.69	60.26	11.13	71.39	69.00	2.39	Peak
21	0.69	51.02	11.13	62.15	69.00	-6.85	QP
22	0.69	37.56	11.13	48.69	59.00	-10.31	Average
23	0.79	50.52	11.12	61.64	69.00	-7.36	QP
24	0.79	37.63	11.12	48.75	59.00	-10.25	Average
25 X	0.79	63.33	11.12	74.45	69.00	5.45	Peak
26	0.91	50.07	11.12	61.19	69.00	-7.81	QP
27	0.91	36.84	11.12	47.96	59.00	-11.04	Average
28 X	0.91	59.15	11.12	70.27	69.00	1.27	Peak
29	1.01	49.98	11.12	61.10	69.00	-7.90	QP
30	1.01	36.63	11.12	47.75	59.00	-11.25	Average
31 X	1.01	59.85	11.12	70.97	69.00	1.97	Peak
32	1.40	43.36	11.12	54.48	69.00	-14.52	QP
33 X	1.40	58.05	11.12	69.17	69.00	0.17	Peak
34	2.04	56.05	11.13	67.18	69.00	-1.82	Peak
35	2.04	29.45	11.13	40.58	59.00	-18.42	Average
36	3.31	54.07	11.12	65.19	69.00	-3.81	Peak
37	3.31	27.11	11.12	38.23	59.00	-20.77	Average
38	4.27	36.42	11.11	47.53	69.00	-21.47	QP
39 X	4.27	57.91	11.11	69.02	69.00	0.02	Peak
40	5.56	54.56	11.11	65.67	74.00	-8.33	Peak
41	5.56	25.21	11.11	36.32	64.00	-27.68	Average
42	10.68	23.98	11.09	35.07	64.00	-28.93	Average
43	10.68	55.07	11.09	66.16	74.00	-7.84	Peak
44	11.81	24.94	11.07	36.01	64.00	-27.99	Average
45	11.81	56.37	11.07	67.44	74.00	-6.56	Peak
46	12.85	59.93	11.06	70.99	74.00	-3.01	Peak
47	12.85	24.66	11.06	35.72	64.00	-28.28	Average
48	14.06	57.81	11.04	68.85	74.00	-5.15	Peak
49	14.06	24.13	11.04	35.17	64.00	-28.83	Average

Refer to chapter 6 for the test set-up.

**Conclusion:**

**PASS**

#### 4.2 Radiated emission

Standard	EN 55014-1	
Frequency [MHz]	QP [dB(pW)]	AV [dB(pW)]
30 – 300	45 – 55 *)	35 – 45 *)

\*) Limits increasing linearly with the frequency

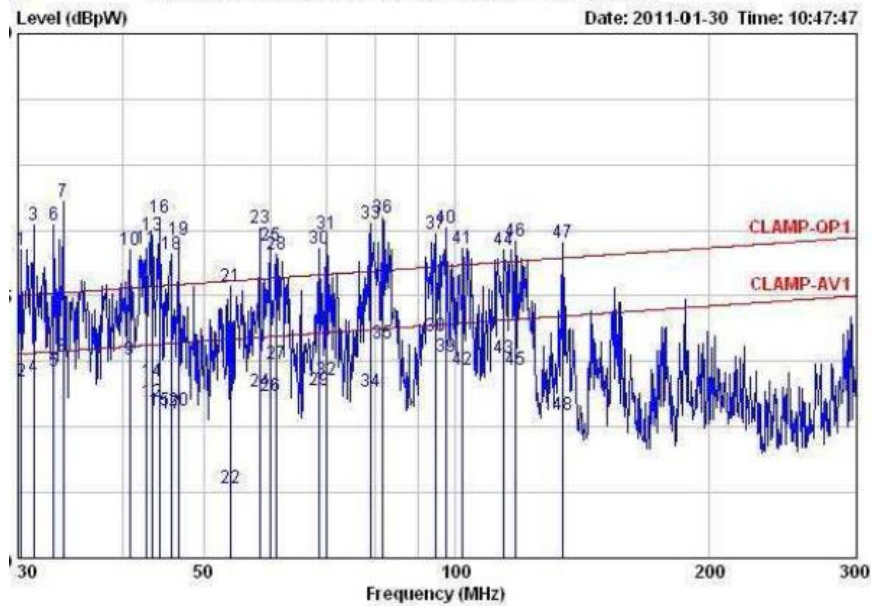
For tools the following limits apply to the AC Mains port:

	Rated power below 700 W	Limits as above
	Rated power between 700 and 1000 W	Limits +4 dB
✓	Rated power above 1000 W	Limits +10 dB

Port	AC Mains
Mode	On mode with no load

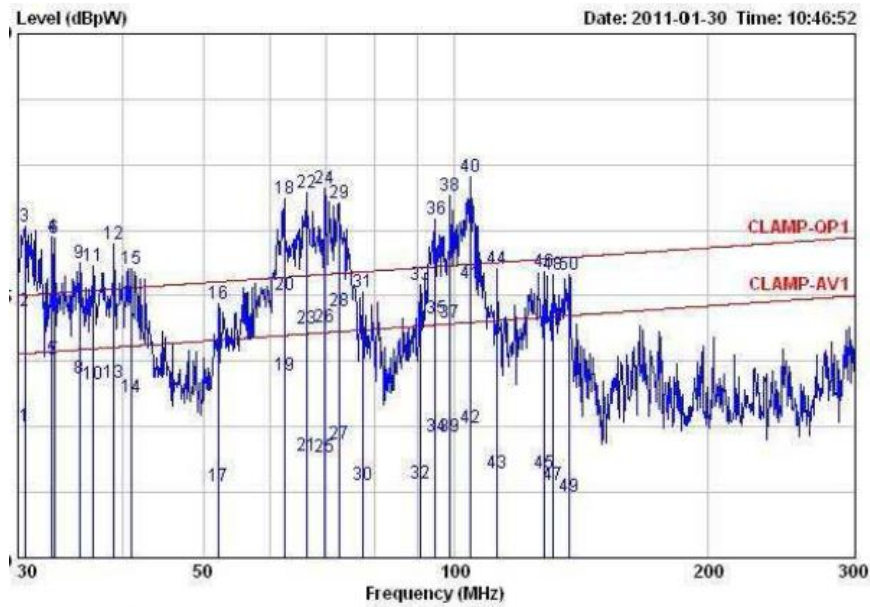


**Results for 110v model**



	Freq	Read		Limit	Over		
	MHz	Level	Factor	Level	Line	Limit	
		dBpW	dB	dBpW	dBpW	dB	Remark
1	33.97	18.83	15.67	34.5	55.55	-21.05	QP
2	45.72	9.55	15.26	24.81	56.84	-32.03	QP
3	60	13.07	14.8	27.87	58.02	-30.15	QP
4	70	15.92	14.6	30.52	58.69	-28.17	QP
5	94.65	23.93	14.25	38.18	60	-21.82	QP
6	134.01	10.65	13.87	24.5	61.51	-37.01	QP

Results for 230v model



	Freq	Read		Limit	Over		
	MHz	Level	Factor	Level	Line	Limit	
		dBpW	dB	dBpW	dBpW	dB	Remark
1	30.56	26.59	15.78	42.37	55.09	-12.72	QP
2	33.2	18.27	15.7	33.97	55.45	-21.48	QP
3	40.94	12.08	15.46	27.54	56.36	-28.82	QP
4	62.53	30.27	14.75	45.02	58.2	-13.18	QP
5	72.63	27.75	14.66	42.41	58.85	-16.44	QP
6	104.5	32.92	14.13	47.05	60.43	-13.38	QP

Refer to chapter 6 for the test set-up.

According to clause 4.1.2.3.2 (EN 55014-1:2006+A1:2009+A2:2011):

Appliances are deemed to comply in the frequency range from 300 MHz to 1 000 MHz if both of the following conditions (1) and 2)) are fulfilled:

- 1) all emission readings from the equipment under test shall be lower than the applicable limits (Table 2a) reduced by the margin (Table 2b);
- 2) the maximum clock frequency shall be less than 30 MHz.

**Conclusion:**

**PASS**

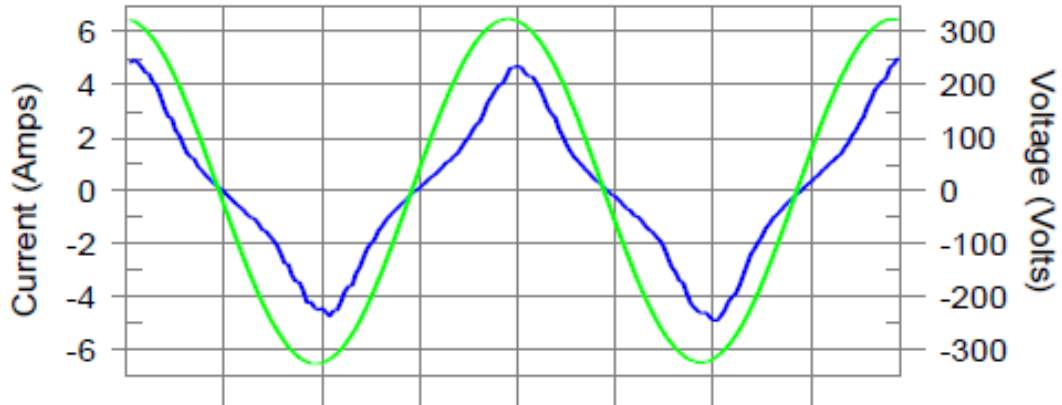
### 4.3 Harmonic currents

Standard	EN 61000-3-2
Port	AC Mains supply
Rated power	1100 W
Mode	On mode

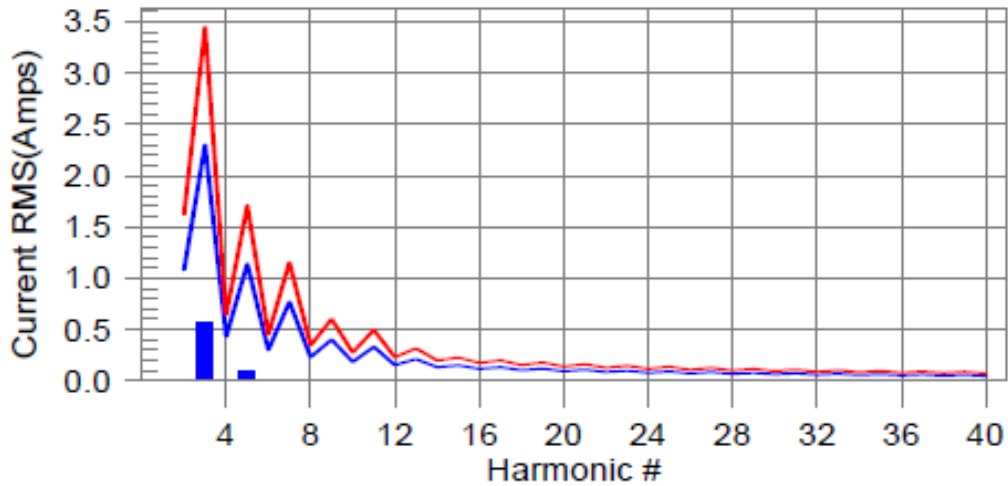
	Class A	All apparatus not classified as Class B, C or D
✓	Class B	Portable tools
	Class C	Lighting equipment
	Class D	Personal computers, television receivers

**Results for 230v model**

Current & voltage waveforms



Harmonics and Class A limit line      European Limits



Test result: Pass Worst harmonic was #36 with 20.47% of the limit.

Test Result: Pass      Source qualification: Distorted  
 THC(A): 0.52    I-THD(%): 20.75    POHC(A): 0.003    POHC Limit(A): 0.251

Highest parameter values during test:

V_RMS (Volts): 229.44	Frequency(Hz): 50.00
I_Peak (Amps): 5.143	I_RMS (Amps): 2.760
I_Fund (Amps): 2.666	Crest Factor: 1.887
Power (Watts): 613.7	Power Factor: 0.974

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.003	1.080	0.2	0.006	1.620	0.36	Pass
3	0.509	2.300	22.1	0.567	3.450	16.43	Pass
4	0.002	0.430	0.4	0.006	0.645	1.01	Pass
5	0.088	1.140	7.7	0.096	1.710	5.61	Pass
6	0.002	0.300	0.6	0.006	0.450	1.43	Pass
7	0.012	0.770	1.6	0.016	1.155	1.34	Pass
8	0.002	0.230	0.9	0.007	0.345	1.96	Pass
9	0.005	0.400	1.3	0.008	0.600	1.39	Pass
10	0.002	0.184	0.9	0.003	0.276	1.05	Pass
11	0.005	0.330	1.4	0.007	0.495	1.45	Pass
12	0.001	0.153	0.6	0.002	0.230	0.94	Pass
13	0.002	0.210	1.2	0.003	0.315	1.07	Pass
14	0.001	0.131	0.7	0.002	0.197	0.98	Pass
15	0.002	0.150	1.2	0.003	0.225	1.16	Pass
16	0.001	0.115	1.0	0.004	0.173	2.21	Pass
17	0.002	0.132	1.2	0.003	0.199	1.39	Pass
18	0.001	0.102	1.2	0.003	0.153	2.01	Pass
19	0.002	0.118	1.3	0.003	0.178	1.52	Pass
20	0.001	0.092	1.2	0.003	0.138	2.04	Pass
21	0.001	0.107	0.9	0.002	0.161	1.54	Pass
22	0.001	0.084	1.0	0.002	0.125	1.67	Pass
23	0.001	0.098	0.8	0.002	0.147	1.18	Pass
24	0.001	0.077	1.0	0.001	0.115	1.28	Pass
25	0.001	0.090	0.9	0.003	0.135	1.90	Pass
26	0.001	0.071	1.1	0.001	0.106	1.40	Pass
27	0.001	0.083	1.3	0.003	0.125	2.50	Pass
28	0.001	0.066	1.3	0.003	0.099	2.84	Pass
29	0.001	0.078	1.4	0.004	0.116	3.64	Pass
30	0.001	0.061	1.6	0.003	0.092	3.73	Pass
31	0.001	0.073	1.2	0.002	0.109	2.11	Pass
32	0.001	0.058	1.3	0.002	0.086	2.42	Pass
33	0.001	0.068	1.0	0.002	0.102	2.22	Pass
34	0.002	0.054	3.7	0.014	0.081	17.05	Pass
35	0.001	0.064	1.0	0.001	0.096	1.46	Pass
36	0.002	0.051	4.7	0.016	0.077	20.47	Pass
37	0.001	0.061	1.1	0.001	0.091	1.23	Pass
38	0.001	0.048	1.5	0.002	0.073	2.94	Pass
39	0.001	0.058	1.2	0.002	0.087	2.72	Pass
40	0.001	0.046	1.6	0.002	0.069	3.54	Pass

Conclusion:

**PASS**

#### 4.4 Voltage fluctuations (Flicker)

Standard	EN 61000-3-3
Port	AC Mains supply
Voltage	230 V <sub>AC</sub>
Mode	On mode

Equipment intended to be connected to 230/400 V<sub>AC</sub> 50 Hz supply systems may not produce voltage fluctuations in the supply systems due to variation of the input current above the limits as stated below.

P <sub>ST</sub>	Not applicable*
P <sub>LT</sub>	Not applicable*
T <sub>max</sub> (dt > 3,3%)	≤ 500 ms
d <sub>C</sub>	≤ 3,3%
d <sub>MAX</sub>	≤ 7%

#### Results for 230v model

T <sub>max</sub> (dt > 3,3%)	0,0 ms
Maximum voltage change d <sub>MAX</sub>	0,060%
Relative Voltage change d <sub>C</sub>	0,000%
Short term flicker P <sub>ST</sub>	Not applicable*
Long term flicker P <sub>LT</sub>	Not applicable*

**Conclusion:**

**PASS**

## 5 IMMUNITY TEST RESULTS

### 5.1 Electrostatic discharge immunity

Electrostatic discharges (ESD) are the result of persons or objects that accumulate static electricity due to for instance walking on synthetic carpets. The ESD can influence the operation of equipment or damage its electronics, either by a direct discharge or indirectly by coupling or radiation. Both effects are simulated during the tests.

#### Requirements

Standard	EN 55014-2
Basic standard	EN 61000-4-2
Port	Enclosure
Performance criterion	B; During the test degradation is allowed. No change of operating state or stored data is allowed.
Air discharges	8 kV
Contact discharges	4 kV
Mode	On mode

#### Performed tests

Air discharges	✓	4 kV	✓	8 kV		15 kV		
Contact discharges	✓	2 kV	✓	4 kV		8 kV		
Via coupling planes	✓	Horizontal			✓	Vertical		
Polarity	✓	Positive			✓	Negative		
Set-up	✓	Table-top				Floor standing		
Ambient temperature	21 °C							
Relative Humidity air	48%							

#### Observations

During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance was observed.

#### Conclusion:

**PASS**



## 5.2 Electrical Fast Transient immunity

The EFT immunity test simulates disturbances by bursts of very short transients caused for example by switching off loads such as an AC motor or bouncing relay contacts. The transients are likely to disturb electronics but less likely to cause damage.

### Requirements

Standard	EN 55014-2		
Basic standard	EN 61000-4-4		
Performance criterion	B; During the test degradation is allowed. No change of operating state or stored data is allowed.		
Pulse characteristics	5/50 ns		
Peak Voltage; Port	1 kV; AC input power port		
Repetition frequency	✓	5 kHz	2,5 kHz

### Performed tests

Tested Voltage; Port	1 kV; AC input power port		
Mode	On mode		
Injection method	✓	CDN	Capacitive clamp
Polarity	✓	Positive	✓ Negative
Set-up	✓	Table-top	Floor standing

### Observations

During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance was observed.

### Conclusion:

**PASS**

### 5.3 Surge transient immunity

The surge transient immunity test simulates the surges that are caused by overvoltages due to indirect (induced) lightning transients. The pulse is a slow transient with high-energy contents and due to its long duration may cause damage to an unprotected EUT.

#### Requirements

Standard	EN 55014-2
Basic standard	EN 61000-4-5
Performance criterion	B; During the test degradation is allowed. No change of operating state or stored data is allowed.
Pulse characteristics	1,2/50 $\mu$ s
Peak Voltage; Port	1 kV; AC input power port (Line to line) 2 kV; AC input power port (Line to earth)

#### Performed tests

Tested Voltage; Port	1 kV; AC input power port (Line to line) 2 kV; AC input power port (Line to earth)		
Mode	On mode		
Polarity	<input checked="" type="checkbox"/>	Positive	<input checked="" type="checkbox"/> Negative

#### Observations

During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance was observed.

#### Conclusion:

**PASS**

## 5.4 RF Conducted immunity

During this test the immunity of the equipment for induced or conducted electromagnetic fields is checked. Fields generated by radio and other transmitters cause RF voltages in long cables like the mains network. This test reproduces these induced disturbing voltages by injecting them to the EUT via the cabling.

### Requirements

Standard	EN 55014-2
Basic standard	EN 61000-4-6
Performance criterion	A; Operation as intended
Frequency range	0,15 – 230 MHz
Modulation	1 kHz – 80% AM
Test level; Port	3 V; AC input power port

### Performed tests

Tested level; Port	3 V; AC input power port		
Mode	On mode		
Frequency range	0,15 – 230 MHz		
Dwell time	3 seconds		
Injection method	✓	CDN-M3	EM clamp

### Observations

During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance was observed.

### Conclusion:

**PASS**

## 5.5 Power supply interruptions and dips

### Requirements

Basic standard	EN 61000-4-11
Performance criterion	B; During the test degradation is allowed. No change of operating state or stored data is allowed. C; Temporary, self-recoverable loss of function is allowed.

Standard	EN 55014-2		
AC input power port		50 Hz	60 Hz
	C	$U_{NOM} - 30\%$ (25 periods)	(30 periods)
	C	$U_{NOM} - 60\%$ (10 periods)	(12 periods)
	C	$U_{NOM} - 100\%$ (0,5 period)	(0,5 period)

### Performed tests

Tested voltage	AC input power port, 240 V <sub>AC</sub>	
Mode	On mode	
AC input power port	50 Hz	60 Hz
	$U_{NOM} - 30\%$ (25 periods)	$U_{NOM} - 30\%$ (30 periods)
	$U_{NOM} - 60\%$ (10 periods)	$U_{NOM} - 60\%$ (12 periods)
	$U_{NOM} - 100\%$ (0,5 period)	$U_{NOM} - 100\%$ (0,5 period)

### Observations

During the test no loss of performance was observed. After the test the EUT functioned as intended. No unacceptable loss of performance was observed.

### Conclusion:

**PASS**

## 6 IDENTIFICATION OF THE EQUIPMENT UNDER TEST

The photograph shows the tested device.



Figure 3 Conducted Emission test setup



Figure 4 Disturbance power test setup

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