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EMC Test report for Concrete Saw(Cut-off Machine)

Model: C16; C405; CS16; CS405; PC16; PC405; PS16; PS405; QHS-400; KCS400

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By order of LEE YEONG INDUSTRIAL CO., LTD.

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CONTENTS

1 CONCLUSION

The equipment under test (EUT) does meet the essential requirements of the EMC Directive 2014/30/EU.

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

1.1 Model description

The apparatus as supplied for the test are concrete saws (cut-off machine) intended for residential use. The EUTs have neither electronic control nor earth connection.

According to the declaration from manufacturer, models C16; C405; CS16; CS405; PC16; PC405; PS16; PS405; QHS-400; KCS400 are identical except the model name.

Therefore, model C16 was selected for the full tests and the results are also representative for other models as well.

Figure 1 Overview

Figure 2 Label

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.

✓	**Category 1**	Apparatus containing no electronic control circuitry
	Category 2	Apparatus containing electronic control circuitry with no internal clock or oscillator frequency higher than 15 MHz.
	Category 3	Battery powered apparatus containing electronic control circuitry with no internal clock higher than 15 MHz.
	Category 4	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	1997	Immunity - Household appliances, electric tools and similar
A1	2001	
A2	2008	

2.2 Overview of results

Emission tests	Result
Mains conducted disturbance voltage	**PASS**
Disturbance power	**PASS**

Immunity tests	Result
Electrostatic Discharges (ESD)	**N/A***
Electrical fast transient (EFT)	**N/A***
Surge transients	**N/A***
Conducted RF disturbances	**N/A***
Power supply voltage interruptions & dips	**N/A***

Note*: The equipment is classified as category 1 equipment according to EN 55014-2; no immunity test is applicable.

3 GENERAL INFORMATION

Equipment under test	Concrete Saw(Cut-off Machine)
Trade mark	AGP
Tested Type	C16
Representative Types	C405; CS16; CS405; PC16; PC405; PS16; PS405; QHS-400; KCS400
Ratings	110-120 V; 50-60 Hz; 2300 W

3.1 Customer Information

Applicant	LEE YEONG INDUSTRIAL CO., LTD.
Address	No.2, Kejia Rd., Douliu City, Yunlin County 64057, Taiwan

Manufacturer	LEE YEONG INDUSTRIAL CO., LTD.
Address	No.2, Kejia Rd., Douliu City, Yunlin County 64057, Taiwan

Factory	LEE YEONG INDUSTRIAL CO., LTD.
Address	No.2, Kejia Rd., Douliu City, Yunlin County 64057, Taiwan

3.2 Test data

Location	QuieTek Technology (Suzhou) Co., Ltd.
Address	No. 99, Hongye Road, Suzhou Industrial Park Loufeng Hi-New-Tech Development Area, Suzhou City, China
Date of receipt of test item	Jan. 2016 (sample(s) provided by applicant)
Date(s) of performance of tests	Jan. 2016
Supervised by	Richie Tang

3.3 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%

3.4 Measurement Uncertainty

Conducted Emission Expanded Uncertainty: U = 3.22 dB
Disturbance Power Expanded Uncertainty: U = 2.38 dB

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		

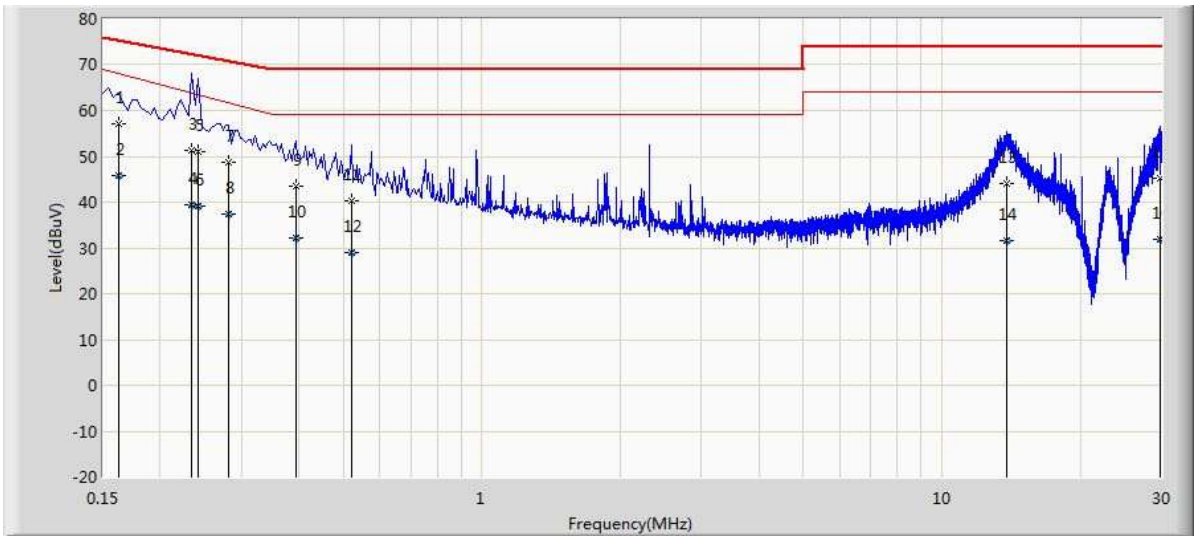
*) Limits decreasing linearly with the logarithm of the frequency

	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

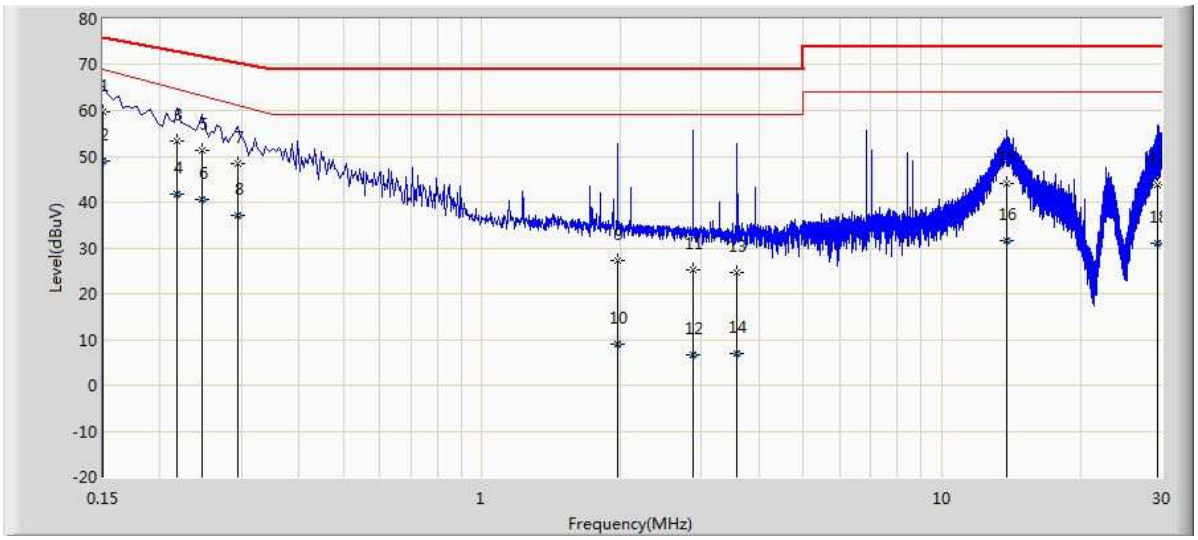
Results

Line



No	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1	0.162	57.087	47.467	-18.277	75.364	9.597	0.023	0.000	QP
2	0.162	45.846	36.226	-22.246	68.092	9.597	0.023	0.000	AV
3	0.234	51.309	41.689	-21.017	72.326	9.590	0.030	0.000	QP
4	0.234	39.465	29.845	-24.287	63.752	9.590	0.030	0.000	AV
5	0.242	51.042	41.423	-21.006	72.048	9.590	0.029	0.000	QP
6	0.242	39.191	29.572	-24.164	63.355	9.590	0.029	0.000	AV
7	0.282	48.804	39.182	-21.981	70.785	9.590	0.032	0.000	QP
8	0.282	37.320	27.698	-24.230	61.550	9.590	0.032	0.000	AV
9	0.394	43.547	33.917	-25.453	69.000	9.590	0.040	0.000	QP
10	0.394	32.030	22.401	-26.970	59.000	9.590	0.040	0.000	AV
11	0.522	40.295	30.659	-28.705	69.000	9.590	0.047	0.000	QP
12	0.522	28.853	19.216	-30.147	59.000	9.590	0.047	0.000	AV
13	13.846	44.169	34.276	-29.831	74.000	9.648	0.245	0.000	QP
14	13.846	31.698	21.805	-32.302	64.000	9.648	0.245	0.000	AV
15	29.778	45.220	35.293	-28.780	74.000	9.561	0.366	0.000	QP
16	29.778	31.806	21.879	-32.194	64.000	9.561	0.366	0.000	AV

Neutral



No	Frequency (MHz)	Measure Level (dBuV)	Reading Level (dBuV)	Over Limit (dB)	Limit (dBuV)	Probe (dB)	Cable (dB)	Amp (dB)	Type
1	0.150	59.738	50.137	-16.262	76.000	9.580	0.021	0.000	QP
2	0.150	49.020	39.419	-19.980	69.000	9.580	0.021	0.000	AV
3	0.218	53.246	43.643	-19.665	72.911	9.571	0.032	0.000	QP
4	0.218	41.766	32.163	-22.822	64.588	9.571	0.032	0.000	AV
5	0.246	51.320	41.718	-20.593	71.913	9.572	0.030	0.000	QP
6	0.246	40.435	30.833	-22.726	63.161	9.572	0.030	0.000	AV
7	0.294	48.528	38.923	-21.912	70.440	9.574	0.031	0.000	QP
8	0.294	37.077	27.472	-23.981	61.058	9.574	0.031	0.000	AV
9	1.974	27.125	17.452	-41.875	69.000	9.590	0.083	0.000	QP
10	1.974	9.002	-0.671	-49.998	59.000	9.590	0.083	0.000	AV
11	2.874	25.263	15.559	-43.737	69.000	9.596	0.107	0.000	QP
12	2.874	6.668	-3.036	-52.332	59.000	9.596	0.107	0.000	AV
13	3.590	24.636	14.909	-44.364	69.000	9.601	0.126	0.000	QP
14	3.590	6.900	-2.827	-52.100	59.000	9.601	0.126	0.000	AV
15	13.842	44.139	34.246	-29.861	74.000	9.648	0.245	0.000	QP
16	13.842	31.605	21.712	-32.395	64.000	9.648	0.245	0.000	AV
17	29.326	43.905	33.911	-30.095	74.000	9.633	0.361	0.000	QP
18	29.326	30.890	20.896	-33.110	64.000	9.633	0.361	0.000	AV

Refer to chapter 5 for the test set-up.

Conclusion:

PASS

4.2 Disturbance power

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

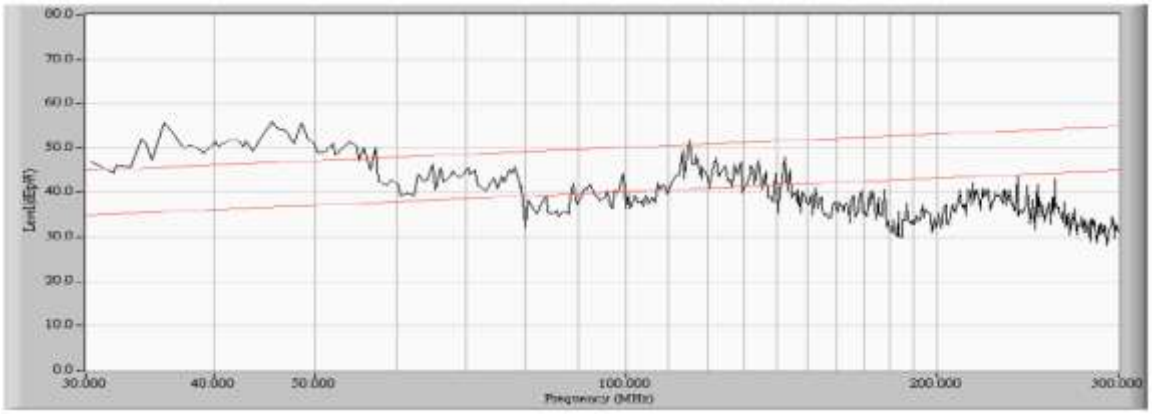
*) Limits increasing linearly with the frequency

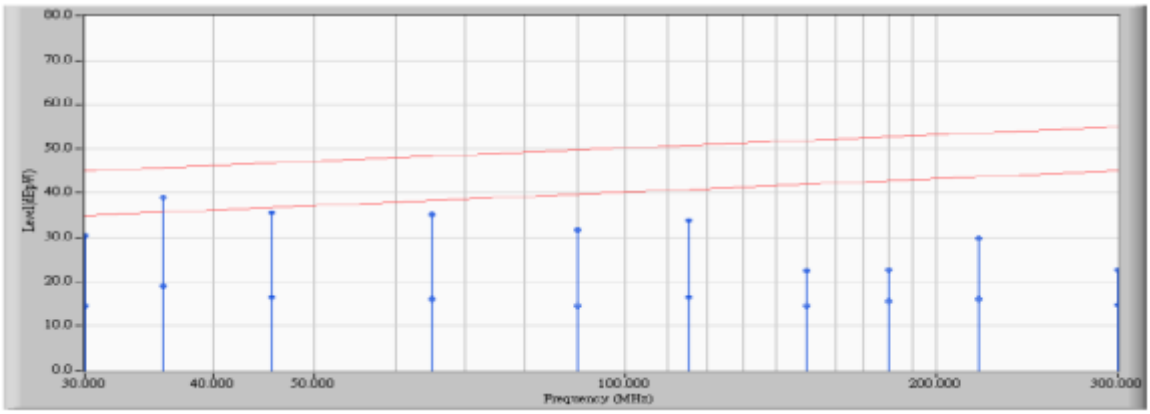
For tools the following limits apply to the AC Mains port:

	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

Results





		Frequency (MHz)	Correct Factor (dB)	Reading Level (dBpW)	Measure Level (dBpW)	Margin (dB)	Limit (dBpW)	Detector Type
1		30.000	3.700	26.660	30.360	-14.640	45.000	QUASIPEAK
2		30.000	3.700	10.870	14.570	-20.430	35.000	AVERAGE
3	*	35.687	4.720	34.420	39.140	-6.614	45.754	QUASIPEAK
4		35.687	4.720	14.390	19.110	-16.644	35.754	AVERAGE
5		45.437	5.567	30.020	35.588	-11.215	46.803	QUASIPEAK
6		45.437	5.567	10.950	16.518	-20.285	36.803	AVERAGE
7		65.000	6.420	28.860	35.280	-13.078	48.358	QUASIPEAK
8		65.000	6.420	9.570	15.990	-22.368	38.358	AVERAGE
9		90.000	6.823	24.840	31.663	-18.108	49.771	QUASIPEAK
10		90.000	6.823	7.760	14.583	-25.188	39.771	AVERAGE
11		115.312	7.747	26.220	33.966	-16.881	50.848	QUASIPEAK
12		115.312	7.747	8.840	16.586	-24.261	40.848	AVERAGE
13		150.000	8.855	13.760	22.615	-29.375	51.990	QUASIPEAK
14		150.000	8.855	5.760	14.615	-27.375	41.990	AVERAGE
15		180.000	9.968	12.820	22.788	-29.994	52.782	QUASIPEAK

Refer to chapter 5 for the test set-up.

According to clause 4.1.2.3.2 (EN 55014-1):

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

5 IDENTIFICATION OF THE EQUIPMENT UNDER TEST

The photographs show the tested device.

Figure 3 Conducted Emission test setup

Figure 4 Disturbance power test setup

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