EMC Test Report

Product: High Pressure Washer

Model: See the Model list on the page 4

Applicant: Zhejiang Shuimoli Machinery and Electric Equipment Co., Ltd

Address: No.55, Yanhai Village,Sanjia Street,Jiaojiang District,Taizhou City, Zhejiang Province,China

Manufacture: Zhejiang Shuimoli Machinery and Electric Equipment Co., Ltd

Address: No.55, Yanhai Village,Sanjia Street,Jiaojiang District,Taizhou City, Zhejiang Province,China

Prepared by: Ningbo Tongpu Testing Technology Co.,Ltd
Address: Floor 1, Building 2, No.150, Xin Hua Road Hi-Tech Park Ningbo
Email: yc@tptlab.cn

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Test Report Description Page

Model list

Model	Voltage (V)	Frequency (Hz)	Max.Pressure (Bar)	Flow (L/min)	Speed (r/min)	Power (kW)
SML870M	380	50/60	100	25	1440	4
SML750M/G	380	50/60	150	15	1440	3
SML4000M-25	380	50/60	275	25	1440	11
SML3600M	380	50/60	248	15	1440	7.5
SML3100M	380	50/60	213	15	1440	5.5
SML2800M	380	50/60	193	15	1440	4
SML2800MB-25	380	50/60	193	25	1440	7.5
SML2200M/G	380	50/60	150	15	1440	3
SML2200MB	380	50/60	150	13.2	1440	3
SML2200MC	380	50/60	100	14	2880	3
SML1022M	380	50/60	100	22	1440	4
SML5800M	380	50/60	350	25	1440	15
SML7800M	380	50/60	500	25	1440	22
SML90A	380	50/60	50	40	1440	3
SML580B	380	**50/60**	**40**	**35**	**1440**	**3**
MXB-JS01	380	50/60	80	17.6	1440	3
MXB-JS02	380	50/60	80	25	1440	4
MXB-JS03	380	50/60	80	40	1440	4
MXB-JS05	380	50/60	80	25	1440	4

TEST REPORT DESCRIPTION

Applicant	:	Zhejiang Shuimoli Machinery and Electric Equipment Co., Ltd
Manufacturer	:	Zhejiang Shuimoli Machinery and Electric Equipment Co., Ltd
Trade Mark	:	N/A
EUT	:	High Pressure Washer
Model No.	:	See the model list on the page 4
Power Supply	:	AC 380V 50/60Hz

Measurement Procedure Used:

EN IEC 55014-1:2021
EN IEC 55014-2:2021
EN IEC61000-3-2:2019/A1:2021
EN61000-3-3:2013/A2:2021

The device described above is tested by Ningbo Tongpu Testing Technology Co.,Ltd to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Ningbo Tongpu Testing Technology Co.,Ltd is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the EN IEC55014-1,EN IEC 55014-2, EN IEC 61000-3-2 and EN 61000-3-3requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Ningbo Tongpu Testing Technology Co.,Ltd

Date of Test : September 22, 2023 to October 24 , 2023

Prepared by : James Yu

Approved & Authorized Signer : Linda Wang

1. SUMMARY OF TEST RESULT

EMISSION			
Description of Test Item	Standard	Limits	Results
Conducted Emissions at General Mains port	EN IEC 55014-1:2021	Table 5	N/A
Conducted Emissions at Mains Port for Tools	EN IEC 55014-1:2021	Table 6	N/A
Conducted Emissions at Mains Port for Induction Cooking	EN IEC 55014-1:2021	Table 2	N/A
Conducted Emissions at Associated Ports	EN IEC 55014-1:2021	Table 5	N/A
Click	EN IEC 55014-1:2021	Section 4.4.2	N/A
Disturbance Power	EN IEC 55014-1:2021	Table 7&8	N/A
Magnetic Field Induced Current at Induction Cooking	EN IEC 55014-1:2021	Table 4	N/A
Magnetic Field Strength at Induction Cooking	EN IEC 55014-1:2021	Table 3	N/A
Radiated Emission	EN IEC 55014-1:2021	Table 9	Pass
Harmonic Current Emission	EN IEC 61000-3-2:2019/ A1:2021	Class A	N/A
Voltage Fluctuation And Flicker	EN 61000-3-3:2013/A2:2021	Section 5	N/A
IMMUNITY (EN IEC 55014-2:2021 Category I)			
Description of Test Item	Basic Standard	Performance Criteria	Results
Electrostatic Discharge (ESD)	IEC 61000-4-2:2008	B	Pass
Radio frequency electromagnetic fields (R/S)	IEC 61000-4-3:2006+A1:2007+ A2:2010	A	Pass
Electrical Fast Transient / Burst (EFT/B)	IEC 61000-4-4:2012	B	N/A
Surge	IEC 61000-4-5:2014	B	N/A
Injected Current Susceptibility (C/S)	IEC 61000-4-6:2013	A	N/A
Voltage Dips	IEC 61000-4-11:2004	C	N/A
Note: N/A is an abbreviation for Not Applicable.			

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT : High Pressure Washer

Model Number : See the model list on the page 4
(Note: We prepared SML580B for EMC test.)

Test Voltage : AC 380V/50Hz

Highest Frequency : Below 15MHz

Sample Number : 1#

Applicant : Zhejiang Shuimoli Machinery and Electric Equipment Co., Ltd

Address : No.55, Yanhai Village,Sanjia Street,Jiaojiang District,Taizhou City, Zhejiang Province,China

Manufacturer : Zhejiang Shuimoli Machinery and Electric Equipment Co., Ltd

Address : No.55, Yanhai Village,Sanjia Street,Jiaojiang District,Taizhou City, Zhejiang Province,China

Date of Received : September 22, 2023

Date of Test : September 22, 2023 to October 24, 2023

2.2. Input / Output Ports

Port #	Name	Type*	Cable Max. >3m	Cable Shielded	Comments
1	Enclosure	N/E	--	--	None
2	AC mains	AC	No	Unshielded	None
/	/	/	/	/	/

*Note: Use abbreviations:
AC= AC Power port
DC= DC Power port
N/E= Non-Electrical
A/D=Analogue/digital data port (signal/control port, antenna port, wired network port, broadcast receiver tuner port, optical fibre port)

2.3. Independent Operation Modes

A. ON

2.4. Test Voltage and Frequency for EN 55014-1

During the tests, the EUT shall be operated at the rated voltage specified for the equipment.
For single-phase equipment with a rated voltage range in the range between:
- 100 V to 127 V, test at one nominal voltage within this range;
- 200 V to 240 V, test at one nominal voltage within this range;
- 100 V to 240 V, test at two voltages within this range, one test in the range 100 V to127 V and another test in the range 200 V to 240 V.

The recommended test voltages are 120 V for the range 100 V to 127 V; and 230 V for the range 200 V to 240 V.
Note: The nominal voltages of mains supply networks are 100 V, 110 V, 115 V, 120 V, 127 V, 200 V, 208 V, 220V, 230 V and 240 V.

During the tests the EUT shall be operated at the rated frequency specified for the equipment.
If the equipment has more than one rated frequency (e.g. 50 Hz to 60 Hz), then the EUT shall be tested at one of these frequencies only.
If the equipment has a rated frequency range (e.g. 50 Hz to 60 Hz), then the EUT shall be tested at one frequency within this range

We prepared AC 380V/50Hz voltage for AC Mains equipment test.

2.5. Test Manner

Test Items	Test Voltage	Operation Modes	Worst case
Conducted Emissions at General Mains port	AC 380V/50Hz	Mode A	Mode A
Disturbance Power	AC 380V/50Hz	Mode A	Mode A
Harmonic Current Emission	AC 380V/50Hz	Mode A	Mode A
Voltage Fluctuation And Flicker	AC 380V/50Hz	Mode A	Mode A

2.6. Description of Test Facility

Site Description

Tested by : Ningbo Tongpu Testing Technology Co.,Ltd
Site Location : Floor 1, Building 2,No. 150, Xin Hui Road Hi-Tech Park Ningbo

2.7. Test Software

Item		Software
Conducted Emission	:	EZ-EMC (Ver. CON-03A1)
Disturbance Power	:	EZ-EMC (Ver. CON-03A1)

2.8. Support Device

N/A

2.9. Measurement Uncertainty

Test Item		Uncertainty
Conducted Emission Uncertainty	:	2.08dB (9 k-150 kHz) 2.40dB (150 k-30 MHz)
Power Clamp Uncertainty	:	4.34dB
Uncertainty for Harmonic test	:	4.16% mA
Uncertainty for Flicker test	:	0.43% V

3. MEASURING DEVICE AND TEST EQUIPMENT

3.1. For Conducted Emissions at Mains Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCI	101108	July 08, 2023	1 Year
2.	L.I.S.N	Rohde & Schwarz	ENV216	101193	July 08, 2023	1 Year
3.	L.I.S.N	Schwarzbeck	NSLK 8126	8126-462	July 08, 2023	1 Year
4.	Pulse Limiter	MTS-systemtechnik	IMP-136	2611115-001-0033	July 08, 2023	1 Year
5.	RF Switching unit	CD	RSU-M2	38400	July 08, 2023	1 Year

3.2. For Disturbance Power Measurement

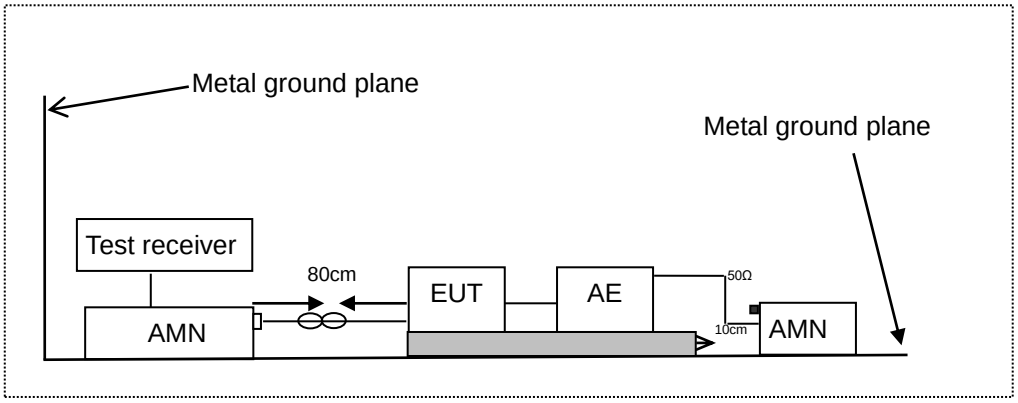
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCI	101108	July 08, 2023	1 Year
2.	Absorbing Clamp	Rohde & Schwarz	MDS21	100397	July 08, 2023	1 Year
3.	RF Switching unit	CD	RSU-M2	38400	July 08, 2023	1 Year

3.3. For Harmonic Current / Voltage Fluctuation And Flicker Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	AC Power source	California Instruments	5001iX-CTS-400-413	59739	July 08, 2023	1 Year
2.	Harmonic/ flicker analyzer	California Instruments	PACS-1	72795	July 08, 2023	1 Year

4. CONDUCTED EMISSIONS AT MAINS MEASUREMENT

4.1. Block Diagram of Test Setup



AMN: Artificial mains network
AE: Associated equipment
EUT: Equipment under test

4.2. Measurement Standard

EN IEC 55014-1:2021

4.3. Measurement Limits

☒General Mains port

Frequency range MHz	Quasi-peak dBuV	Average dBuV
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50
The lower limit applies at the transition frequencies. *: Decreasing linearly with logarithm of frequency from		

☐Tools Mains port

Frequency range	☐P≤700W		☐700W＜P≤1000W		☐P＞1000W	
MHz	Quasi-peak dBuV	Average dBuV	Quasi-peak dBuV	Average dBuV	Quasi-peak dBuV	Average dBuV
0.15 to 0.35	66 to 59*	59 to 49*	70 to 63*	63 to 53*	76 to 69*	69 to 59*
0.35 to 5	59	49	63	53	69	59
5 to 30	64	54	68	58	74	64
The lower limit applies at the transition frequencies. *: Decreasing linearly with logarithm of frequency from Key: P = rated power of the motor only.						

☐Induction Cooking Mains port

Frequency range	☐Appliances which are 100 V rated and without ban earth connection		☐All other appliances	
MHz	dBuV Quasi-peak	dBuV Average	dBuV Quasi-peak	dBuV Average
0,009 to 0,050	122	-	110	-
0.050 to 0.150	102 to 92*	-	90 to 80*	-
0.150 to 0.5	72 to 62*	62 to 52*	66 to 56*	56 to 46*
0,5 to 5	56	46	56	46
5 to 30	60	50	60	50
The lower limit applies at the transition frequencies. *: Decreasing linearly with logarithm of frequency from				

4.4. Test Procedure

The EUT was placed on a desk 0.1 m height from the metal ground plane and 0.4 m from the conducting wall of the shielding room and it was kept at least 0.8 m from any other grounded conducting surface. The size of the table will nominally be 1.5 m x1.0 m.

The rear of the arrangement shall be flush with the back of the supporting tabletop unless that would not be possible or typical of normal use.

All units of equipment forming the system under test (includes the EUT as well as connected peripherals and associated equipment or devices) shall be arranged such that a nominal 0.1 m separation is achieved between the neighboring units.

Connect EUT to the power mains through a artificial mains network (AMN). Where the mains cable supplied by the manufacturer is longer than 1 m, the excess should be folded at the centre into a bundle no longer than 0.4 m, so that its length is shortened to 1 m.

All the support units are connecting to the other AMN.
The AMN provides 50 ohm coupling impedance for the measuring instrument.
The CISPR states that the AMN with 50 ohm and 50 microhenry should be used.
Both sides of AC line were checked for maximum conducted interference.

For frequency band 9 KHz to 150 KHz, the bandwidth of the test receiver is set at 200 Hz. For frequency band 150 KHz to 30 MHz, the bandwidth is set at 9 KHz. The frequency range from 9 kHz or 150 kHz to 30 MHz is investigated.

Set the test-receiver system to quasi peak detect function and average detect function, and to measure the conducted emissions values.

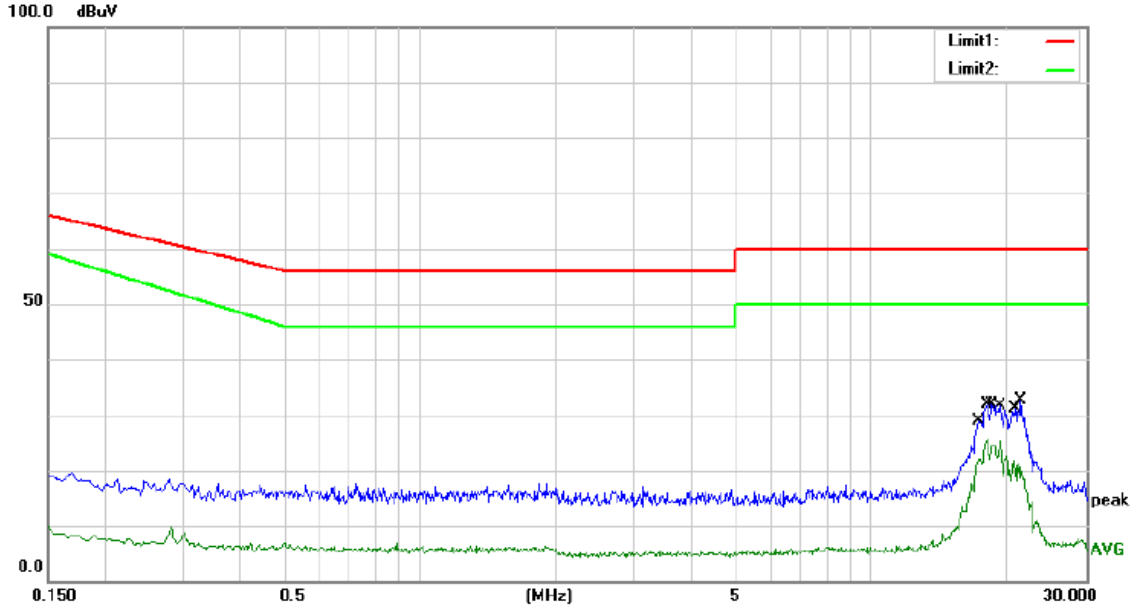
Test results were obtained from the following equation:
Measurement (dBμV) =Correct Factor (dB) + Reading (dBμV)
Over (dB) = Measurement (dBμV) - Limit (dBμV)

4.5. Measuring Results

Pass.

Please refer to the following pages.

Test Data:



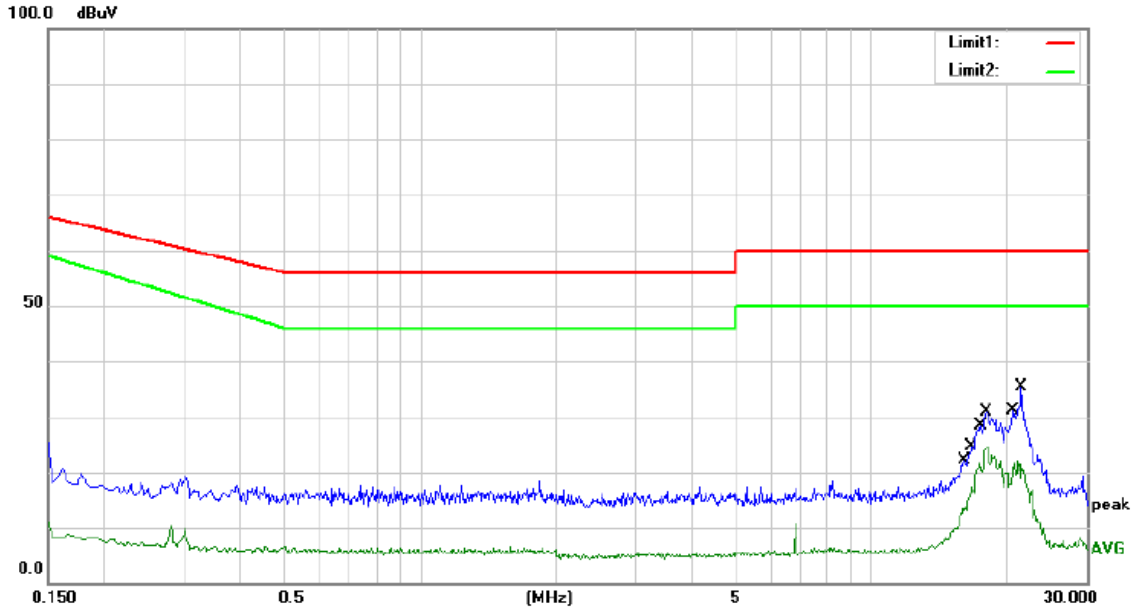
Site site #1 Phase: L1 Temperature: 24

Limit: (CE)EN 55014-1_QP Power: AC 380V/50Hz Humidity: 50 %

Mode: ON

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		17.4320	18.20	10.58	28.78	60.00	-31.22	QP	
2		17.4320	11.40	10.58	21.98	50.00	-28.02	AVG	
3		17.9800	20.80	10.58	31.38	60.00	-28.62	QP	
4		17.9800	14.70	10.58	25.28	50.00	-24.72	AVG	
5		18.6080	21.40	10.59	31.99	60.00	-28.01	QP	
6		18.6080	13.80	10.59	24.39	50.00	-25.61	AVG	
7		19.3200	20.90	10.60	31.50	60.00	-28.50	QP	
8	*	19.3200	14.70	10.60	25.30	50.00	-24.70	AVG	
9		20.9240	20.50	10.63	31.13	60.00	-28.87	QP	
10		20.9240	8.60	10.63	19.23	50.00	-30.77	AVG	
11		21.5040	21.90	10.64	32.54	60.00	-27.46	QP	
12		21.5040	9.90	10.64	20.54	50.00	-29.46	AVG	



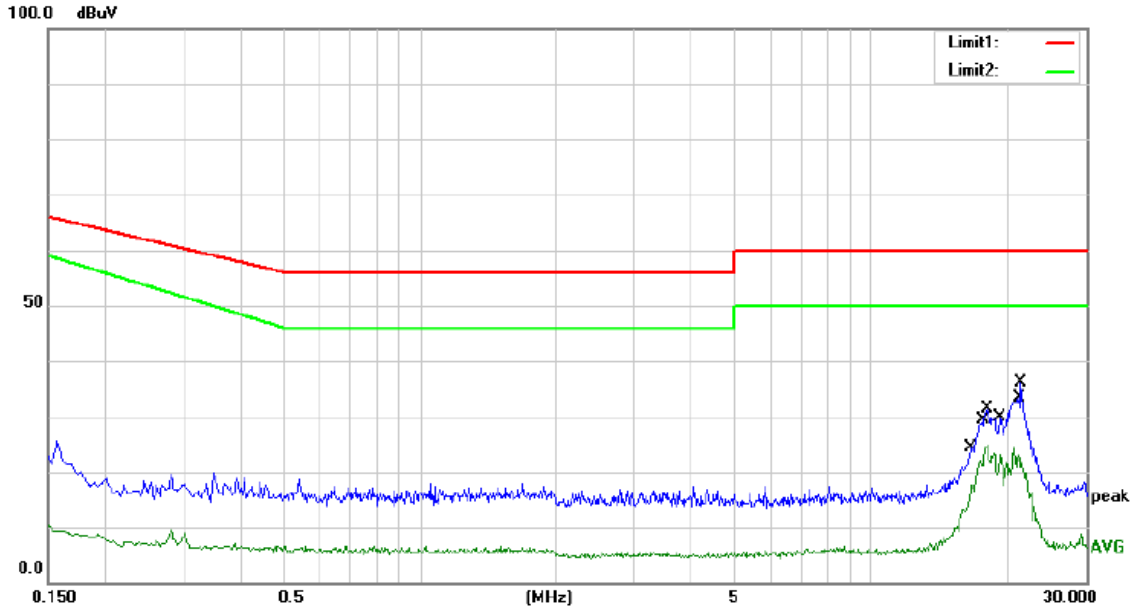
Site site #1 Phase: L2 Temperature: 24

Limit: (CE)EN 55014-1_QP Power: AC 380V/50Hz Humidity: 50 %

Mode: ON

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		16.0600	11.40	10.56	21.96	60.00	-38.04	QP	
2		16.0600	2.60	10.56	13.16	50.00	-36.84	AVG	
3		16.7320	14.10	10.57	24.67	60.00	-35.33	QP	
4		16.7320	6.80	10.57	17.37	50.00	-32.63	AVG	
5		17.3840	17.10	10.58	27.68	60.00	-32.32	QP	
6		17.3840	10.90	10.58	21.48	50.00	-28.52	AVG	
7		17.9560	20.30	10.58	30.88	60.00	-29.12	QP	
8		17.9560	13.70	10.58	24.28	50.00	-25.72	AVG	
9		20.5360	20.50	10.62	31.12	60.00	-28.88	QP	
10		20.5360	9.70	10.62	20.32	50.00	-29.68	AVG	
11	*	21.5520	24.70	10.64	35.34	60.00	-24.66	QP	
12		21.5520	10.70	10.64	21.34	50.00	-28.66	AVG	



Site site #1 Phase: L3 Temperature: 24

Limit: (CE)EN 55014-1_QP Power: AC 380V/50Hz Humidity: 50 %

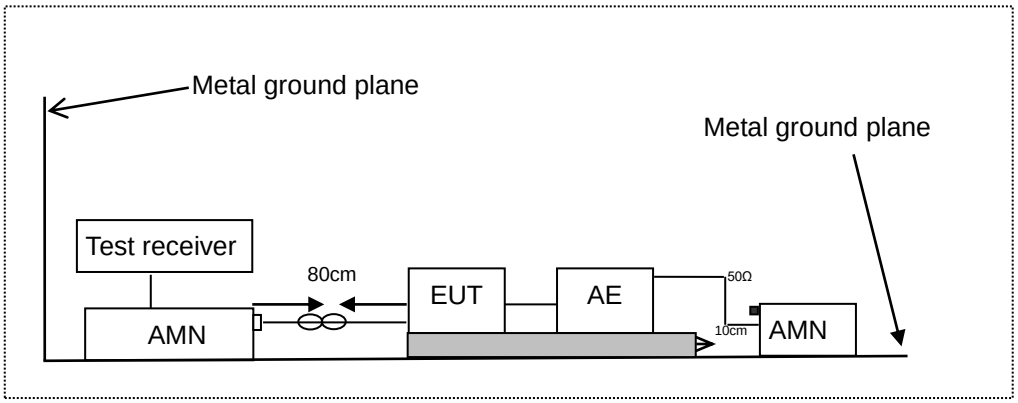
Mode: ON

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		16.6920	13.90	10.57	24.47	60.00	-35.53	QP	
2		16.6920	7.10	10.57	17.67	50.00	-32.33	AVG	
3		17.5560	18.00	10.58	28.58	60.00	-31.42	QP	
4		17.5560	11.60	10.58	22.18	50.00	-27.82	AVG	
5		18.0600	20.80	10.58	31.38	60.00	-28.62	QP	
6		18.0600	13.20	10.58	23.78	50.00	-26.22	AVG	
7		19.2840	19.30	10.60	29.90	60.00	-30.10	QP	
8		19.2840	12.60	10.60	23.20	50.00	-26.80	AVG	
9		21.1200	22.50	10.63	33.13	60.00	-26.87	QP	
10		21.1200	11.60	10.63	22.23	50.00	-27.77	AVG	
11	*	21.5520	25.50	10.64	36.14	60.00	-23.86	QP	
12		21.5520	12.00	10.64	22.64	50.00	-27.36	AVG	

5. CLICKS MEASUREMENT

5.1. Block Diagram of Test Setup



AMN: Artificial mains network
AE: Associated equipment
EUT: Equipment under test
Click: Click Switching Operation Box and Click Meter

5.2. Measurement Standard

EN IEC 55014-1:2021

5.3. Measurement Limits

According to Clause 4.4.2 of standard EN 55014-1.

5.4. Test Procedure

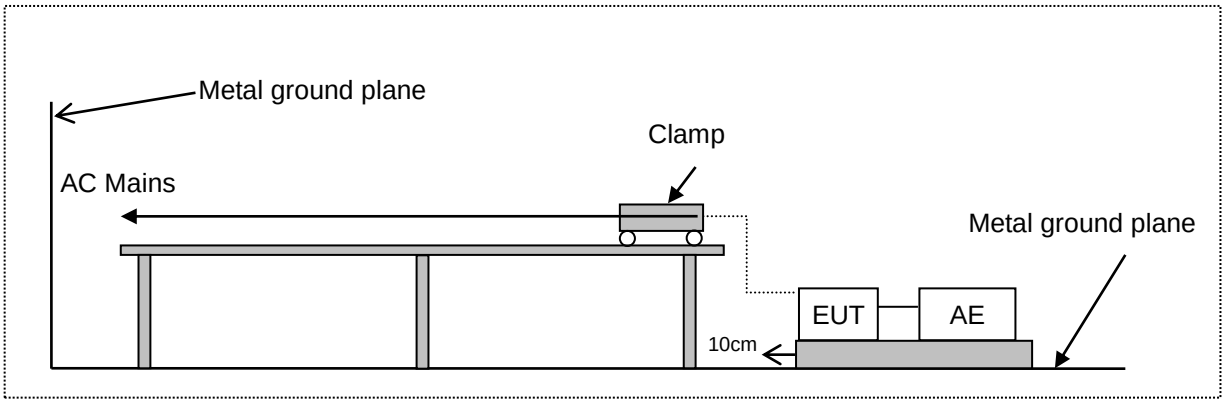
This test is done when switch operations in thermostatically controlled appliances, automatic program controlled machines and other electrically controlled or operated appliances may generate discontinuous disturbance (Click). The measurement of disturbance shall be performed at the following restricted number of frequencies: 150 KHz, 500 KHz, 1.4 MHz and 30 MHz. At each frequency, for appliances, which stop automatically, duration of the minimum number of complete programs necessary to produce 40 counted clicks or, where relevant, 40 counted clicks have not been produced, the test is stopped at the end of the program in course. The relevant click rate N. The appliance under test shall be deemed to comply with the limit if not more than a quarter of the number of the counted click registered during the observation time.

5.5. Test Result

N/A.

6. DISTURBANCE POWER MEASUREMENT

6.1. Block Diagram of Test Setup



6.2. Measurement Standard

EN IEC 55014-1:2021

6.3. Measurement Limits

All emanations from devices or system shall not exceed the level of field strengths specified below:

6.3.1.Limits (Table 7 of standard EN 55014-1)

Frequency range	☒General		Tools					
			☐P≤700W		☐700W＜P≤1000W		☐P＞1000W	
MHz	Quasi-peak dBpW	Average dBpW	Quasi-peak dBpW	Average dBpW	Quasi-peak dBpW	Average dBpW	Quasi-peak dBpW	Average dBpW
30 to 300	45 to 55*	35 to 45*	45 to 55*	35 to 45*	49 to 59*	39 to 49*	55 to 65*	45 to 55*
The lower limit applies at the transition frequencies. *: Decreasing linearly with logarithm of frequency from Key: P = rated power of the motor only.								

6.3.2. Margin when performing disturbance power measurement (Table 8 of standard EN 55014-1)

Frequency range	☒General		Tools					
			☐P≤700W		☐700W＜P≤1000W		☐P＞1000W	
MHz	Quasi-peak dBpW	Average dBpW	Quasi-peak dBpW	Average dBpW	Quasi-peak dBpW	Average dBpW	Quasi-peak dBpW	Average dBpW
30 to 300	0 to 10*	0	0 to 10*	0	0 to 10*	0	0 to 10*	0
The lower limit applies at the transition frequencies. *: Decreasing linearly with logarithm of frequency from Key: P = rated power of the motor only. Note: This table only applies if method a) specified in 4.3.4.2 is followed.								

6.4. Test Procedure

The EUT are placed on an insulating support 0.1m high above a ground reference plane and away from other metallic surface at least 0.8m. It is connected to the power mains through an extension cord of 6m min. The absorber clamp clamps the cord and moves from the far end to the EUT to measure the disturbing energy emitted from the cord.

The bandwidth of the receiver is set at 120 KHz in 30 MHz to 300 MHz. The frequency range from 30 MHz to 300 MHz is investigated.

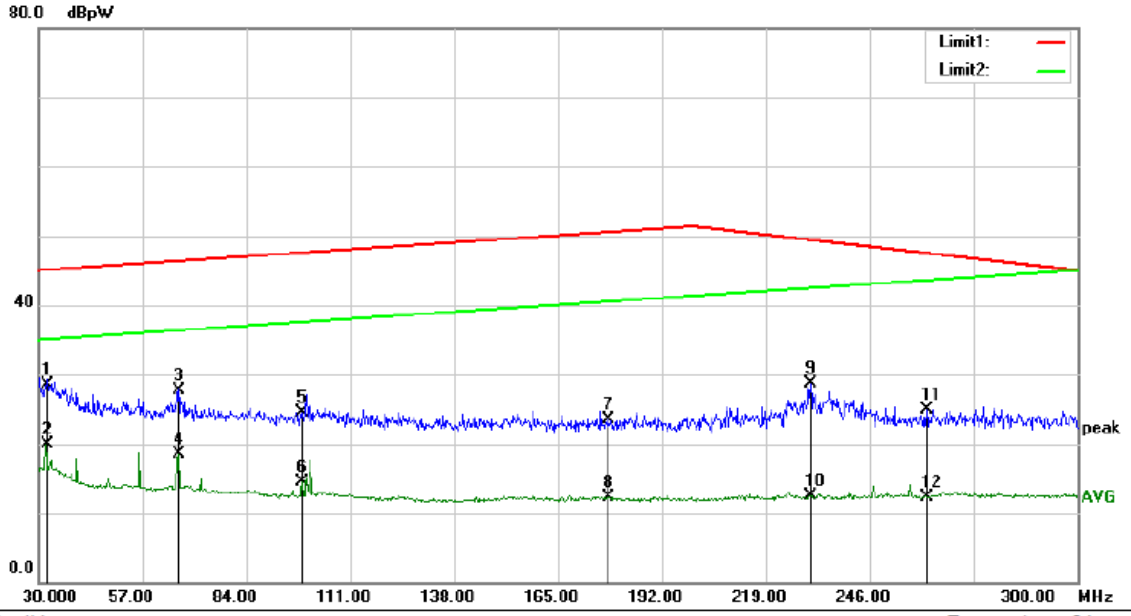
Test results were obtained from the following equation:
Measurement (dBμV) =Correct Factor (dB) + Reading (dBμV)
Over (dB) = Measurement (dBμV) - Limit (dBμV)

6.5. Test Results

Pass.

Please refer to the following pages.

Test Data:



Site site #1 Temperature: 24

Limit: (Clamp)EN 55014-1_QP Power: AC 380V/50Hz Humidity: 50 %

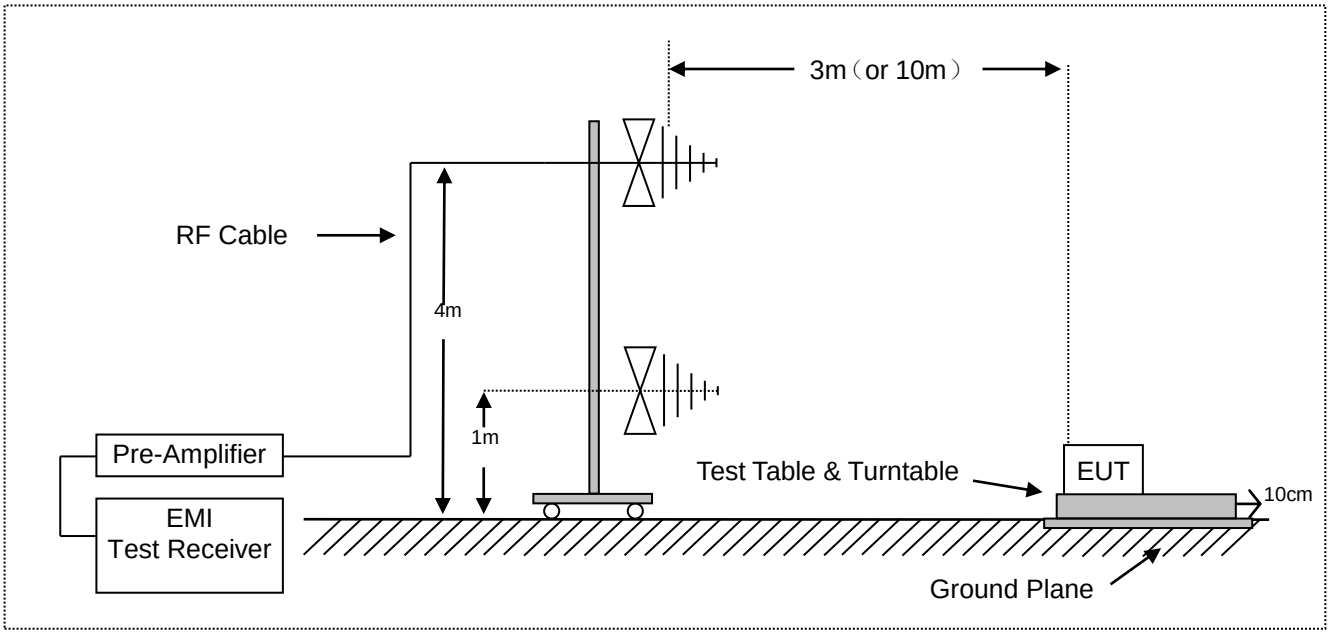
Mode: ON

Note:

No.	Mk.	Freq.	Reading Level	Final Correct	Measure-ment	Limit	Over	Position		
		MHz	dBpW	dB	dBpW	dBpW	dB	Detector	cm	Comment
1		32.1600	2.80	25.62	28.42	45.08	-16.66	QP	0	
2	*	32.1600	-5.70	25.62	19.92	35.08	-15.16	AVG	0	
3		66.5600	4.70	23.10	27.80	46.35	-18.55	QP	0	
4		66.5600	-4.60	23.10	18.50	36.35	-17.85	AVG	0	
5		98.6000	2.00	22.56	24.56	47.54	-22.98	QP	0	
6		98.6000	-8.00	22.56	14.56	37.54	-22.98	AVG	0	
7		178.3600	1.60	21.86	23.46	50.50	-27.04	QP	0	
8		178.3600	-9.50	21.86	12.36	40.49	-28.13	AVG	0	
9		230.7600	6.50	22.18	28.68	49.36	-20.68	QP	0	
10		230.7600	-9.70	22.18	12.48	42.44	-29.96	AVG	0	
11		260.9600	2.70	22.27	24.97	47.46	-22.49	QP	0	
12		260.9600	-10.00	22.27	12.27	43.55	-31.28	AVG	0	

7. RADIATED EMISSION MEASUREMENT

7.1. Block Diagram of Test Setup



7.2. Measuring Standard

EN IEC 55014-1:2021

7.3. Measurement Limits

Frequency range MHz	Measurement			Class B limits dB(μV/m)
	Facility	Distance (m)	Detector type / bandwidth	
30 to 230	OATS/SAC	10	Quasi Peak / 120 kHz	30
230 to 1 000				37
30 to 230	OATS/SAC	3		40
230 to 1 000				47

Note: (1) The lower limit is applies at the transition frequency.
(2)Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

7.4. Test Procedure

The EUT is placed on a turntable which is 0.1 meter high above the ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters or 10 meters away from the receiving antenna that is mounted on an antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Bilog antenna (calibrated by Dipole Antenna) is used as a receiving antenna. Both horizontal and vertical polarization of the antenna is set on test.

The bandwidth of the Receiver is set at 120 kHz. The frequency range from 30 MHz to 1000 MHz is investigated.

Test results were obtained from the following equation:
Measurement (dBμV) =Correct Factor (dB) + Reading (dBμV)
Over (dB) = Measurement (dBμV) - Limit (dBμV)

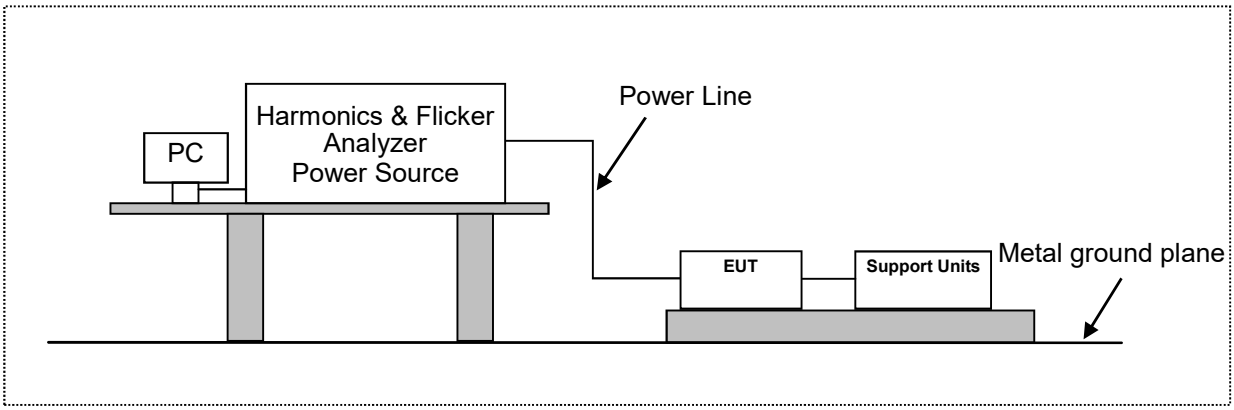
7.5. Measuring Results

N/A.

For the test data of disturbance power is lower than the applicable limits (Table 7) reduced by the margin (Table 8), and the maximum clock frequency is less than 30 MHz, so the radiated measurements in the frequency range from 300 MHz to 1000 MHz is unnecessary to test.

8. HARMONIC CURRENT EMISSION MEASUREMENT

8.1. Block Diagram of Test Setup



8.2. Measuring Standard

EN IEC 61000-3-2:2019/A1:2021, Class A

8.3. Measurement Limits

Table 1 - Limits for Class A equipment

Harmonic order n	Maximum permissible harmonic current (A)
Odd harmonics	
3	2.30
5	1.14
7	0.77
9	0.40
11	0.33
13	0.21
$15 \le n \le 39$	$0.15 \frac{0.15}{n}$
Even harmonics	
2	1.08
4	0.43
6	0.30
$8 \le n \le 40$	$0.23 \frac{8}{n}$

8.4. Test Procedure

The measurement of harmonic currents shall be performed as follows: i. For each harmonic order, measure the 1.5 s smoothed r.m.s. harmonic current in each DFT time window as defined in EN / IEC 61000-4-7:2009. ii. Calculate the arithmetic average of the measured values from the DFT time windows, over the entire observation period Short cyclic (T cycle≤2.5 min). Because of synchronisation to meet the requirements for repeatability in 5%.

8.5. Test Results

Pass.

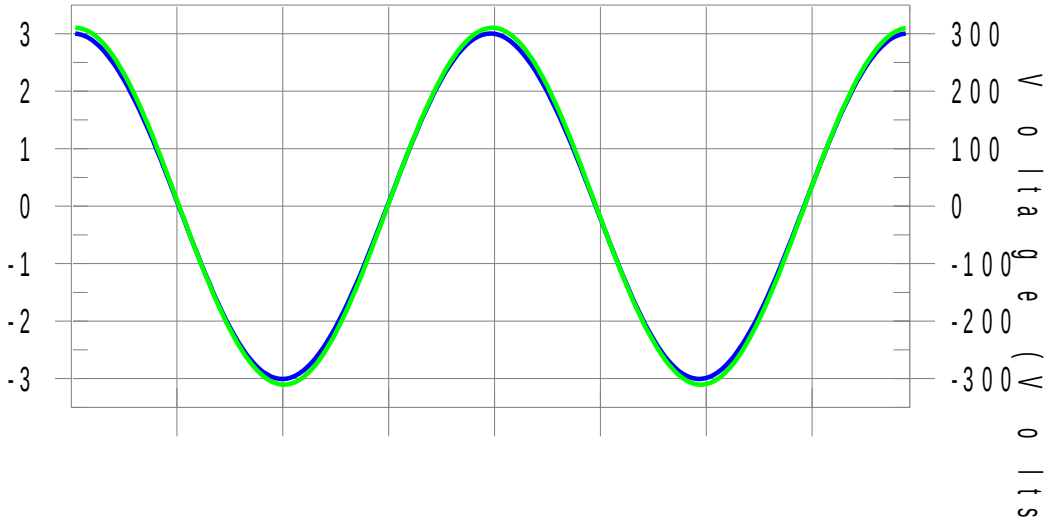
Please refer to the following pages.

Harmonics – Class-A per IEC 61000-3-2 (Run time)

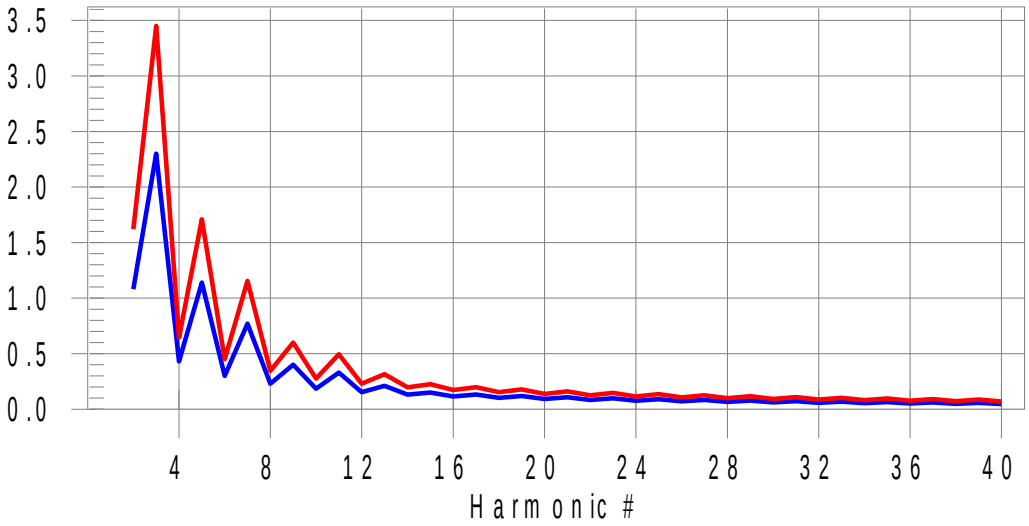
EUT: High Pressure Washer (SML580B) **Tested by: ALEX**
Test category: Class-A (European limits) **Test Margin: 100**
Test date: 2023/10/20 **Start time: 9:46:10** **End time: 9:48:51**
Test duration (min): 2.5 **Data file name: H-000065.cts_data**
Comment: ON
Customer: Customer information

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

Current & voltage waveforms



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



Test result: Pass **Worst harmonics H0-0.0% of 150% limit, H0-0% of 100% limit**

Current Test Result Summary (Run time)

EUT: High Pressure Washer (SML580B) **Tested by: ALEX**
Test category: Class-A (European limits) **Test Margin: 100**
Test date: 2023/10/20 **Start time: 9:46:10** **End time: 9:48:51**
Test duration (min): 2.5 **Data file name: H-000065.cts_data**
Comment: ON
Customer: Customer information

Test Result: Pass **Source qualification: Normal**
THC(A): 0.396 **I-THD(%): 37.8** **POHC(A): 0.005** **POHC Limit(A): 0.251**

Highest parameter values during test:

V_RMS (Volts):	219.68	Frequency(Hz):	50.00
I_Peak (Amps):	1.743	I_RMS (Amps):	1.132
I_Fund (Amps):	1.046	Crest Factor:	1.561
Power (Watts):	226.9	Power Factor:	0.928

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.032	1.080	3.0	0.043	1.620	2.6	Pass
3	0.360	2.300	15.7	0.372	3.450	10.8	Pass
4	0.010	0.430	2.2	0.012	0.645	1.9	Pass
5	0.160	1.140	14.0	0.167	1.710	9.8	Pass
6	0.003	0.300	N/A	0.006	0.450	N/A	Pass
7	0.009	0.770	1.1	0.009	1.155	0.8	Pass
8	0.003	0.230	N/A	0.004	0.345	N/A	Pass
9	0.006	0.400	N/A	0.008	0.600	N/A	Pass
10	0.001	0.184	N/A	0.002	0.276	N/A	Pass
11	0.004	0.330	N/A	0.004	0.495	N/A	Pass
12	0.001	0.153	N/A	0.001	0.230	N/A	Pass
13	0.005	0.210	N/A	0.005	0.315	N/A	Pass
14	0.001	0.131	N/A	0.001	0.197	N/A	Pass
15	0.004	0.150	N/A	0.004	0.225	N/A	Pass
16	0.000	0.115	N/A	0.001	0.173	N/A	Pass
17	0.004	0.132	N/A	0.005	0.198	N/A	Pass
18	0.001	0.102	N/A	0.001	0.153	N/A	Pass
19	0.003	0.118	N/A	0.004	0.178	N/A	Pass
20	0.000	0.092	N/A	0.001	0.138	N/A	Pass
21	0.002	0.107	N/A	0.003	0.161	N/A	Pass
22	0.000	0.084	N/A	0.000	0.125	N/A	Pass
23	0.002	0.098	N/A	0.002	0.147	N/A	Pass
24	0.000	0.077	N/A	0.001	0.115	N/A	Pass
25	0.002	0.090	N/A	0.002	0.135	N/A	Pass
26	0.000	0.071	N/A	0.000	0.107	N/A	Pass
27	0.002	0.083	N/A	0.002	0.125	N/A	Pass
28	0.000	0.066	N/A	0.000	0.099	N/A	Pass
29	0.001	0.078	N/A	0.001	0.116	N/A	Pass
30	0.000	0.061	N/A	0.000	0.092	N/A	Pass
31	0.001	0.073	N/A	0.002	0.109	N/A	Pass
32	0.000	0.058	N/A	0.000	0.086	N/A	Pass
33	0.001	0.068	N/A	0.001	0.102	N/A	Pass
34	0.000	0.054	N/A	0.000	0.081	N/A	Pass
35	0.001	0.064	N/A	0.001	0.096	N/A	Pass
36	0.000	0.051	N/A	0.000	0.077	N/A	Pass
37	0.001	0.061	N/A	0.001	0.091	N/A	Pass
38	0.000	0.048	N/A	0.000	0.073	N/A	Pass
39	0.001	0.058	N/A	0.001	0.087	N/A	Pass
40	0.000	0.046	N/A	0.000	0.069	N/A	Pass

Voltage Source Verification Data (Run time)

EUT: High Pressure Washer (SML580B) **Tested by: ALEX**
Test category: Class-A (European limits) **Test Margin: 100**
Test date: 2023/10/20 **Start time: 9:46:10** **End time: 9:48:51**
Test duration (min): 2.5 **Data file name: H-000065.cts_data**
Comment: ON
Customer: Customer information

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

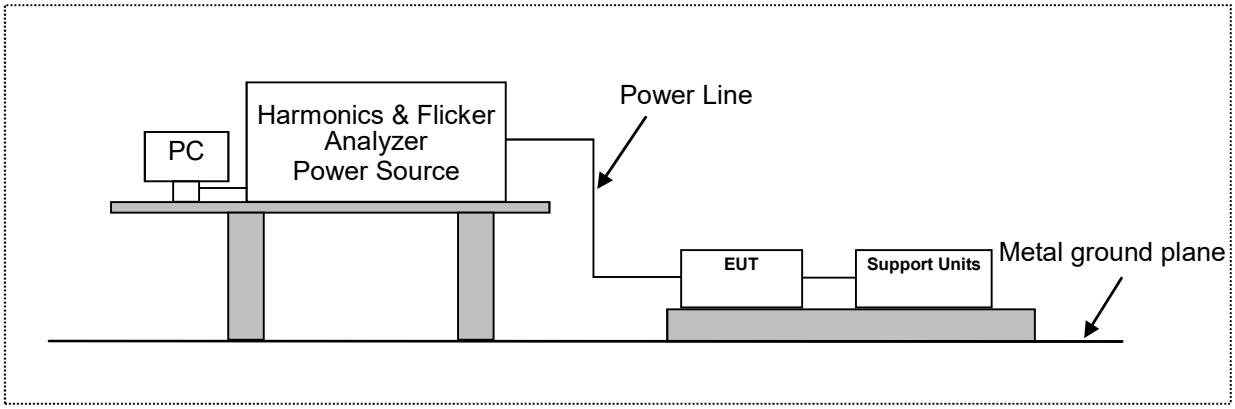
Highest parameter values during test:

Voltage (Vrms):	219.68	Frequency(Hz):	50.00
I_Peak (Amps):	1.743	I_RMS (Amps):	1.132
I_Fund (Amps):	1.046	Crest Factor:	1.561
Power (Watts):	226.9	Power Factor:	0.928

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.082	0.439	18.61	OK
3	0.578	1.977	29.26	OK
4	0.062	0.439	14.11	OK
5	0.082	0.879	9.39	OK
6	0.026	0.439	6.03	OK
7	0.033	0.659	4.95	OK
8	0.014	0.439	3.10	OK
9	0.044	0.439	9.93	OK
10	0.012	0.439	2.79	OK
11	0.017	0.220	7.66	OK
12	0.013	0.220	5.87	OK
13	0.013	0.220	6.03	OK
14	0.005	0.220	2.25	OK
15	0.011	0.220	4.92	OK
16	0.011	0.220	4.84	OK
17	0.012	0.220	5.51	OK
18	0.011	0.220	5.19	OK
19	0.008	0.220	3.80	OK
20	0.013	0.220	5.88	OK
21	0.008	0.220	3.68	OK
22	0.004	0.220	1.67	OK
23	0.005	0.220	2.45	OK
24	0.003	0.220	1.55	OK
25	0.004	0.220	1.93	OK
26	0.002	0.220	1.03	OK
27	0.007	0.220	3.18	OK
28	0.003	0.220	1.33	OK
29	0.004	0.220	1.82	OK
30	0.003	0.220	1.16	OK
31	0.004	0.220	1.91	OK
32	0.002	0.220	1.12	OK
33	0.004	0.220	1.76	OK
34	0.002	0.220	1.00	OK
35	0.004	0.220	2.04	OK
36	0.002	0.220	1.06	OK
37	0.005	0.220	2.48	OK
38	0.002	0.220	0.91	OK
39	0.005	0.220	2.48	OK
40	0.004	0.220	1.95	OK

9. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

9.1. Block Diagram of Test Setup



9.2. Measuring Standard

EN 61000-3-3:2013/A2:2021

9.3. Measurement Limits

The objective of voltage changes, voltage fluctuations and flicker in public low voltage supply systems during equipment with rated current≤16 A per phase, ensures that home appliances and certain other electrical equipment do not adversely affect lighting equipment when connected to the same power system.
Voltage Fluctuation and Flicker Limits:
— the value of Pst shall not be greater than 1.0;
— the value of Plt shall not be greater than 0.65;
— the value of d(t) during a voltage change shall not exceed 3.3 % for more than 500 ms;
— the relative steady-state voltage change, dc, shall not exceed 3.3 %;
— the maximum relative voltage change, dmax, shall not exceed 4.0 %;

9.4. Test Procedure

The total impedance of the test circuit, excluding the appliance under test, but including the internal impedance of the supply source, shall be equal to the reference impedance. The stability and tolerance of the reference impedance shall be adequate to ensure that the overall accuracy of 8% is achieved during the whole assessment procedure.

9.5. Test Results

Pass.

Please refer to the following page.

Flicker Test Summary per IEC61000-3-3 (Run time)

EUT: High Pressure Washer (SML580B) **Tested by: ALEX**
Test category: dt,dmax,dc and Pst (European limits) **Test Margin: 100**
Test date: 2023/10/20 **Start time: 9:55:26** **End time: 10:05:53**
Test duration (min): 10 **Data file name: F-000067.cts_data**
Comment: ON
Customer: Customer information

Test Result: Pass **Status: Test Completed**

Pst and limit line **European Limits**

Plt and limit line

Parameter values recorded during the test:

Vrms at the end of test (Volt):	**219.24**			
Highest dt (%):		**Test limit (%):**		
T-max (mS):	**40**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**3.92**	**Test limit (%):**	**4.00**	**Pass**
Highest Pst (10 min. period):	**0.619**	**Test limit:**	**1.000**	**Pass**

10. IMMUNITY PERFORMANCE CRITERIA DESCRIPTION

In accordance with the specification of EN 55014-2, the EUT does not contain any active electronic component and belongs to Category I appliance, which is deemed to fulfill the immunity requirements without testing.

APPENDIX I
(Photos of EUT)