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TESTING
CNAS L0095

Deutsche
Akkreditierungsstelle
D-PL-17198-01-00

Test Report No.:
FCC2016-0005

TEST REPORT

EUT : **Polysher**

MODEL/TYPE : **P001**

CLIENT : **JF Polymers (Suzhou) Co. Ltd.**

Classification of Test：**COMMISSION TEST**

Vkan Certification & Testing Co., Ltd.

威凯检测技术有限公司

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Client	**Name: JF Polymers (Suzhou) Co. Ltd.** **Address: Haicheng Industrial Park, Bldg 7, Changshu Economic and Technological Zone, Changshu, Jiangsu, China**
Manufacturer	**Name: Polymaker LLC USA** **Address: 5 Shadow Ln., Great Neck, NY 11021, U.S.A.**
Equipment under Test	**Name : Polysher** **Model/Type : P001** **Trade mark : Polymaker** **Serial no. : —** **Sampling : —**

Date of Receipt.	**2016.12.01**	Date of Testing	**2016.12.01~2017.01.18**

Test Specification	**Test Result**
FCC PART 15,Subpart B （Class B）	PASS

Evaluation of Test Result	The equipment under test was found to comply with the requirements of the standards applied. **Issue Date: 2017.1.18**

Tested by:	Reviewed by:	Approved by:
Ao Dan	Liuyonghai	Zeng Bo
Name / Signature	Name / Signature	Name / Signature

Other Aspects:

The test report FCC2016-0005, originally issued on January 18th, 2017, was modified on February 9th, 2017 for the first time. The following pages were modified: P1. The modification contents as followed: Trade mark was changed to Polymaker. The symbol “XG1” was added behind the original test report number on the relevant modification page, as “FCC2016-0005 (XG1)”.

Abbreviations:OK, Pass = passed Fail = failed N/A= not applicable EUT= equipment, sample(s) under tested

Contents

1. General Product Information

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1.1 Product Function

Refer to the operation instruction.

1.2 Ratings and System Details

Input Voltage/ Rated current:		5VDC
Input Frequency	:	2000mA
Protection class	:	III
Power wire	:	Unshielded
Interconnecting wires	:	Unshielded
Classification	:	Class B ITE

Highest frequency of the internal sources of the EUT: 64MHz

1.3 Independent Operation Modes

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1.4 Submitted Documents

Operating Instructions and Installation Manual
Structural Parts
Rating Label
Wiring Diagram
Construction Drawing
Photographs of EUT
Material Bill (Parts List)

2. Test Sites

2.1 Test Facilities

The tests and measurements refer to this report were performed by EMC testing Lab. of Vkan Certification & Testing Co., Ltd.

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The EMC testing laboratory has been recognized by CNAS, and authorized by Nemko of Norway since 1997, and accredited by DAKKS of Germany since 2007, and assessed and found eligible to participated in the TDAP of VDE testing and certification Institute since 2004, and registered by FCC since 2001.

2.2 Description of Non-standard Method and Deviations

The testing and measurement methods used in this report are applied by all standard methods. Not any non-standard method or deviation from the used standards was used.

2.3 List of Test and Measurement Instruments

Refer to **Appendix A**.

3. Test Set-up and Operation Modes

3.1 Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

Immunity: The equipment under test (EUT) was configured to the representative operating mode and conditions.

3.2 Physical Configuration For Testing

Refer to relative descriptions in this test report.

3.3 Test Operation Mode and Test Software

None.

3.4 Peripheral and Auxiliary Equipment

None.

3.5 Countermeasures to Achieve EMC Compliance

None.

4. Emission Test Results

Perform Electromagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15 and ANSI C63.4: 2014 for FCC Certification.

Test Standards and Results Summary				
Test Condition	Test Requirement	Test Method	Class / Severity	Test Result Pass Failed N/A
Conducted Emissions on AC, 0.15MHz to 30MHz	FCC 47CFR 15.107	ANSI C63.4: 2014	Class B	☒ ☐ ☐
Radiated Emissions, 30MHz to 1GHz	FCC 47CFR 15.109	ANSI C63.4: 2014	Class B	☒ ☐ ☐

Note: N/A - Not Applicable

4.1 Conducted emission (0.15MHz ~ 30MHz)

RESULT : Pass

Test procedure : ANSI C63.4:2014
Frequency range : 0.15MHz ~30MHz
Limits : FCC PART 15, Section 15.107
Test Site : Shielding Room

Test Setup:

The ground of the shielding room is used as GRP (Ground Reference Plate).
The EUT was placed on a wooden table, 0.8m high, standing on the GRP.
The EUT was kept more than 0.8m from any other earthed conducting surface.

Test Conditions

Ambient Temperature : 25 ℃/ 25 ℃ (Before Test /After Test);
Relative Humidity : 60 %/ 60 % (Before Test /After Test);
Power Supply : 120 V / 60 Hz ;
Operating Mode of the EUT : On .

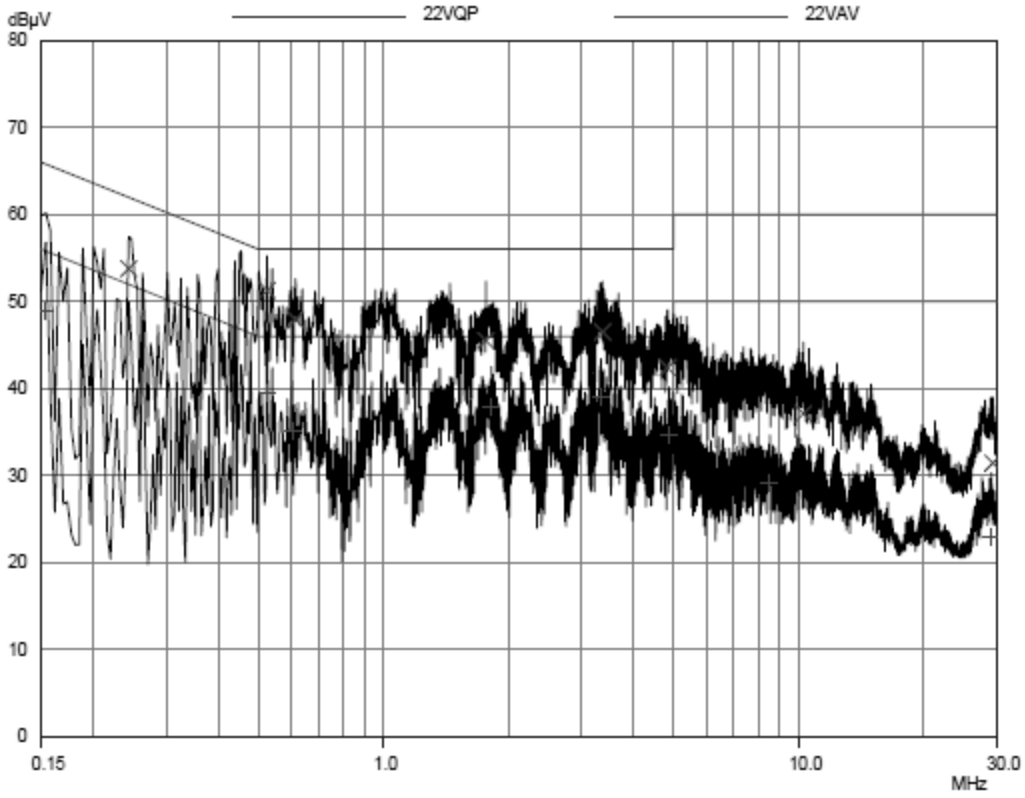
	Conducted Emission				
	Port: AC Power Line(Power line L)				
Freq. (MHz)	QP Reading (dBμV)	QP Limits (dBμV)	Freq. (MHz)	AV Reading (dBμV)	AV Limits (dBμV)
0.2437	53.76	61.97	0.153	48.80	55.79
0.525	51.25	56.00	0.525	39.44	46.00
0.614	47.87	56.00	0.603	35.09	46.00
1.767	45.50	56.00	1.821	37.86	46.00
3.376	46.49	56.00	3.341	38.99	46.00
4.841	42.38	56.00	4.888	34.57	46.00
10.282	37.09	60.00	8.528	29.08	50.00
29.411	31.43	60.00	29.161	22.89	50.00
/	/	/	/	/	/
/	/	/	/	/	/
/	/	/	/	/	/

Note: Where PK reading is less than relevant limit decrease 25dB, the QP reading and AV reading will not be recorded.

Where QP reading is less than relevant AV limit, the AV reading will not be measured.

The measurement uncertainty for mains terminal disturbance voltage from 150kHz to 30MHz: 3.460dB

Scan Graph and Scan Settings



Test Conditions

Ambient Temperature : 25 ℃/ 25 ℃ (Before Test /After Test);
Relative Humidity : 60 %/ 60 % (Before Test /After Test);
Power Supply : 120 V / 60 Hz ;
Operating Mode of the EUT : On .

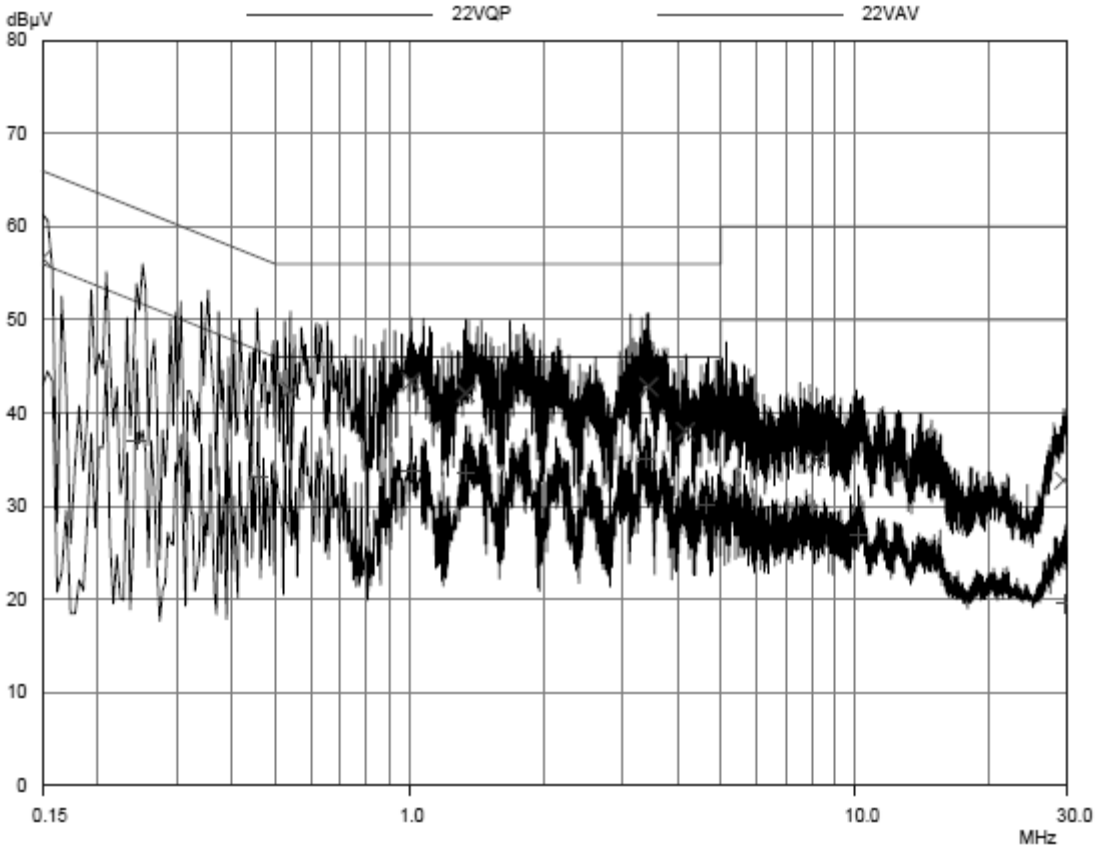
	Conducted Emission				
	Port: AC Power Line(Power line N)				
Freq. (MHz)	QP Reading (dBμV)	QP Limits (dBμV)	Freq. (MHz)	AV Reading (dBμV)	AV Limits (dBμV)
0.150	56.61	66.00	0.2437	37.00	51.97
0.540	42.44	56.00	0.458	33.11	46.72
1.009	43.36	56.00	1.009	33.86	46.00
1.337	42.13	56.00	1.337	33.58	46.00
3.446	42.80	56.00	3.400	35.09	46.00
4.173	38.02	56.00	4.650	30.09	46.00
8.224	35.02	60.00	10.204	26.80	50.00
29.466	32.76	60.00	29.728	19.53	50.00
/	/	/	/	/	/
/	/	/	/	/	/
/	/	/	/	/	/

Note: Where PK reading is less than relevant limit decrease 25dB, the QP reading and AV reading will not be recorded.

Where QP reading is less than relevant AV limit, the AV reading will not be measured.

The measurement uncertainty for mains terminal disturbance voltage from 150kHz to 30MHz: 3.460dB

Scan Graph and Scan Settings



4.2 Radiated emission

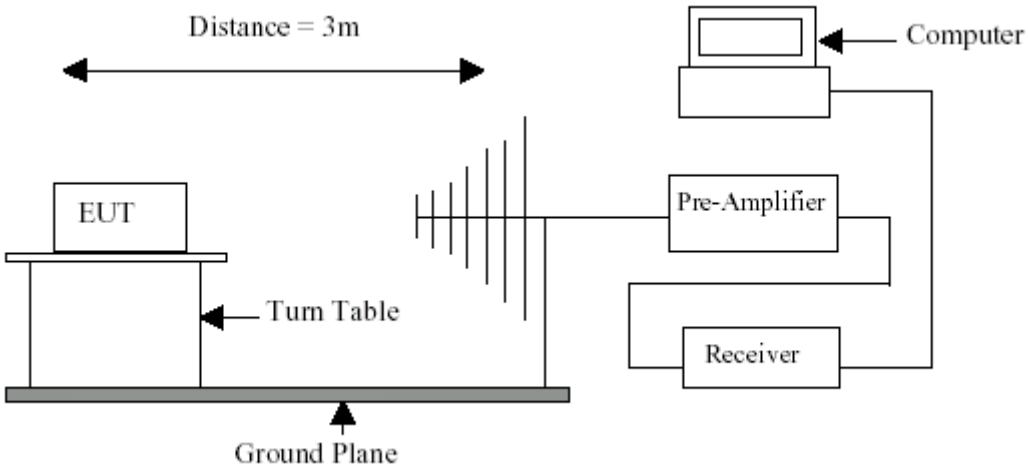
RESULT : Pass

Test Setup
Test procedure : ANSI C63.4:2014
Frequency range : 30 MHz ~ 1000MHz
Limits : FCC PART 15, Section 15.109
Test Site : 10m Anechoic Chamber,3 m distance

Test Method:

The EUT was placed on a wooden turntable, which could rotate from 0° to 360°, 0.8m high above the ground, at a distance of 3m in anechoic chamber, from the receiving broadband antenna, which was mounted on the antenna tower. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results below.

Test Setup:



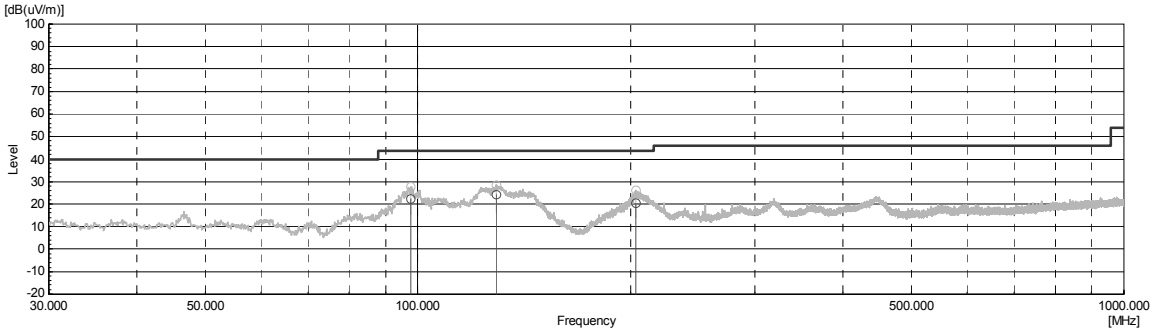
Ambient Temperature : 25 ℃/ 25 ℃ (Before Test /After Test);
Relative Humidity : 60 %/ 60 % (Before Test /After Test);
Power Supply : 120 V / 60 Hz ;
Operating Mode of the EUT : On .

Radiated disturbance			
Port: Enclosure			
Freq. (MHz)	Direction of antenna	QP Level (dB μ V/m)	QP Limits (dB μ V/m)
97.803	H	22.4	43.5
129.231	H	24.4	43.5
203.824	H	20.6	43.5
30.097	V	28.1	40.0
88.782	V	29.7	43.5
97.609	V	32.0	43.5
/	/	/	/
/	/	/	/
/	/	/	/
/	/	/	/
/	/	/	/

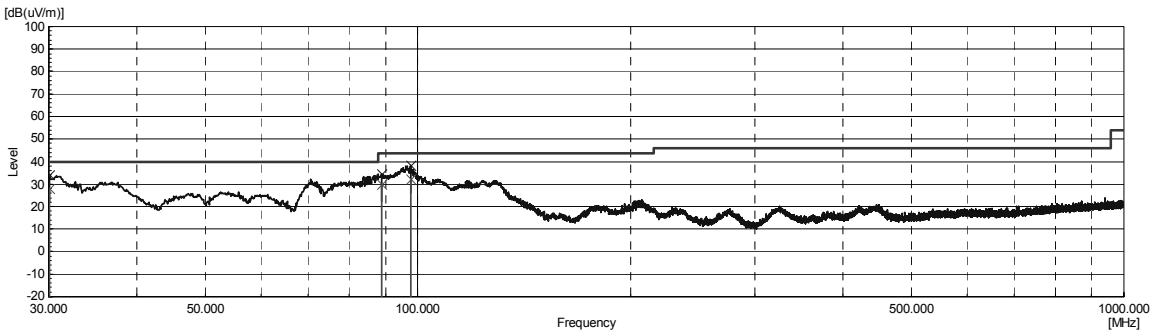
Note: Where PK reading is less than relevant limit decrease 25dB, the QP reading will not be recorded.

The measurement uncertainty for Radiated Electromagnetic Disturbance from 30MHz to 1000MHz is 4.906dB.

Scan Graph (Horizontal)



Scan Graph (Vertical)



5. Key components list

KEY COMPONENTS RELATIVE WITH EMC PERFORMANCE				
Component	Manufacture	Type	Parameter	Certification
Power Supply	Shenzhen Rongweixin Technology Co.,Ltd.	R122-0502000ID	INPUT:100-240V,50/60Hz,0.4A OUTPUT:DC5V 2000mA	/
MainPCB	Ningbo KEPO Electronics Co.,Ltd.	KB7.820.087	INPUT: DC5V MAX:1350MA	/
The end				

6. Outlook of the EUT:

Outlook of the EUT

Structure of internal wires

7. Photograph of the test setup

Continuous Disturbance Voltage

Radiated Disturbance (30MHz~1000MHz)

Appendix A

Test Equipment	Type/Mode	Equipment No.	Manufacturer	Cal. Due	Used
Emi test receiver	ESI26	EM-0087	R & S	2017.09.19	
Emi test receiver	ESCS30	KA-0080	R & S	2017.01.18	
Emi test receiver	ESCI	NB-0087	R & S	2017.01.18	
Emi test receiver	N9038A-508（10m）	EM-000396	Agilent	2017.05.12	✓
Emi test receiver	N9038A-508	EM-000397	Agilent	2017.05.12	✓
Plus limiter(20dB)	ESH2-Z11	K-037-8	R & S	2017.02.03	
Plus limiter	VTSD 9561F	EM-000367	SCHWARZBECK	2017.02.03	✓
Plus limiter	VTSD 9561F	EM-000368	SCHWARZBECK	2017.02.03	
LISN	ENV216	NB-0081-1	R & S	2017.02.10	
LISN	NSLK 8127	EM-000370	SCHWARZBECK	2017.02.03	
LISN	NSLK 8128	EM-000369	SCHWARZBECK	2017.02.03	✓
LISN NNLK8129	NNLK8129	EM-000388	SCHWARZBECK	2017.05.12	
Passive probe	TK9420	EM-000363	SCHWARZBECK	2017.02.08	
Discontinuous interference analyzer	DIA1512D	KE-0014	TESEQ	2017.08.01	
Absorbing clamp	MDS-21	NB-0081-2	R & S	2017.07.15	
Absorbing clamp	MDS21	NE-0035	R & S	2017.02.08	
Harmonic/flicker/ voltage dips testing system	PACS-1/5001IX	NA-0055	CALIFORNIA	2017.02.03	
Harmonic/flicker/ voltage dips testing system	Profline 2145-400	VGDS-0116	TESEQ	2017.05.12	
Large loop antenna	HXYZ9170	EM-000361	SCHWARZBECK	2017.02.03	
Antenna	VULB 9163	EM-000342	SCHWARZBECK	2017.08.01	
Antenna	VULB 9163	EM-000381	SCHWARZBECK	2018.10.28	✓
Antenna	VULB 9163	EM-000382	SCHWARZBECK	2018.10.28	
Waveguide horn antenna	3115	WKNA-0024-1	ETS	2017.01.19	
Waveguide horn antenna	3115	WKNA-0024-6	EMCO	2017.01.19	
Waveguide horn antenna (with-amplifier)	HF906	WKNA-0024-8	R&S	2017.01.17	
Active antenna	6502	WKNA-0024-3	EMCO	2017.04.15	
ESD generator	NSG438	NA-0091	TESEQ	2017.12.15	
Radiated e field immunity	2023A	EM-0092	ifr	2017.01.21	
Conducted immunity test system	NSG 4070	EM-000344	TESEQ	2017.08.01	
CDN	M532S	EM-000344-2	TESEQ	2017.05.12	
CDN	M016S	EM-000344-1	TESEQ	2017.08.01	
CDN	M016	EM-000300	TESEQ	2017.05.12	
EFT and surge testing system	NSG3060/CDN3063	EM-000337	TESEQ	2017.03.03	
Capacitive coupling clamp	CDN8014	EM-000337-4	TESEQ	2017.02.03	
Balance-to-unbalance transformer	SY 9501	NE-0037	SCHWARZBECK	2017.02.03	
Mixed signal oscilloscope	DSO7104B	WKDD-0031	AGILENT	2017.01.18	
Digital real-time oscilloscope	TDS680B	DD-0009	TEKTRONIX	2017.02.09	
ISN	T800	WKNE-0195	TESEQ	2017.02.09	
Mix network(6dB)	4901.17.B	DB-0016	HUBER+SUHNER	2017.02.07	

Test Equipment	Type/Mode	Equipment No.	Manufacturer	Cal. Due	Used
voltage dips and interruptions	EOS-1	EM-000362	California Instruments	2017.02.04	
Shielding room	GP1A	NF-0001	LEININ	2017.06.19	✓
Shielding room（auto）	/	NC-0113	ETS	2017.07.23	
Shielding room	/	WKNF-0006	LEININ	2017.06.19	
Semi-anechoic chamber	966	WKNA-0024	ETS	2020.07.09	
10m chamber	ALSE	/	Albtross	2017.06.17	✓
EMF tester	ELT-400	KA-0101	NARDA	2017.01.18	
MXG Analog Signal Generator	N5181A（250kHz-6GHz）	EM-000179	Agilent	2017.01.18	
RI antenna	STLP 9128(80-1500MHZ)	/	SCHWARZBECK	/	