EMC TEST REPORT

On Behalf of

Prepared For :	**GUANGZHOU BONESTAR AUTOMATIC TECHNOLOGY CO.,LTD** Shop 110, No. 13, Lane 1, ChenChong West Road, Chenyong Village, Qiaonan Street, Panyu District, Guangzhou
Trade Mark :	**N/A**
Product Name :	**Adaptive Constant Force Grinding Kit**
Model(s) :	LMAAK250S25AB1.5KW2PV-XS-AKS,LMAAK Series,LWASK Series,AGP Series
Prepared By:	**Shenzhen CDT Testing Technology Co., Ltd** Room 301, building B, Xinyi Industrial Park, Yuquan Road, Yulv community, Yutang street, Guangming New District, Shenzhen,Guangdong, China Tel: 400-8788-299 Tel:0755-23400418 Web:www.cdt-prc.com Email: cdt@cdt-prc.com
Test Date:	**Dec.06,2022 -Dec.12, 2022**
Date of Report:	**Dec.12, 2022**
Report No. :	**CDT-2022120921-EMC**

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior written consent of Shenzhen CDT Testing Technology Co., Ltd

Test Report Description

TEST REPORT DECLARATION

Applicant	:	**GUANGZHOU BONESTAR AUTOMATIC TECHNOLOGY CO.,LTD**
Address :	:	Room 606,NO.39-1 Chuangxin 2nd Road,shenyang area,China(liaoning)Pilot Free Trade Zone
Manufacturer:	:	**GUANGZHOU BONESTAR AUTOMATIC TECHNOLOGY CO.,LTD**
Address :	:	Shop 110, No. 13, Lane 1, ChenChong West Road, Chenyong Village, Qiaonan Street, Panyu District, Guangzhou
EUT Description :	:	**Adaptive Constant Force Grinding Kit**
Model Number	:	LMAAK250S25AB1.5KW2PV-XS-AKS
Rating(s)	:	AC200-240V,50-60Hz,3.1KW

Test Standards:

EN IEC 61000-6-2:2019
EN IEC 61000-6-4: 2019
EN IEC 61000-3-2:2019/A1:2021
EN 61000-3-3:2013/A2:2021

The EUT described above is tested by CDT Testing Technology Co., Ltd. EMC Laboratory to determine the maximum emissions from the EUT and ensure the EUT to be compliance with the immunity requirements of the EUT. Shenzhen CDT Testing Technology Co., Ltd is assumed full responsibility for the accuracy of the test results. Also, this report shows that the EUT technically complies with the2014/30/EU directive and its amendment requirements.
The test report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory.

Date of Test: **Dec.06,2022 -Dec.12, 2022**

Prepared by (Engineer) :

Reviewer by (Quality Manager) :

Approved by (Manager) :

SHENZHEN CDT TESTING TECHNOLOGY CO.,LTD CDT Testing Service

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Client Information

Applicant: GUANGZHOU BONESTAR AUTOMATIC TECHNOLOGY CO.,LTD

Address : Shop 110, No. 13, Lane 1, ChenChong West Road, Chenyong Village, Qiaonan Street, Panyu District, Guangzhou

Manufacturer: GUANGZHOU BONESTAR AUTOMATIC TECHNOLOGY CO.,LTD

Address: Shop 110, No. 13, Lane 1, ChenChong West Road, Chenyong Village, Qiaonan Street, Panyu District, Guangzhou

General Description of E.U.T

EUT Description: Adaptive Constant Force Grinding Kit

Trade Name: N/A

EUT Model No.: LMAAK250S25AB1.5KW2PV-XS-AKS

Test Voltage: AC200-240V,50-60Hz,3.1KW

1.2. Test Standards

Test Standards	
EN IEC 61000-6-2:2019	Electromagnetic compatibility(EMC)-part 6-2: Genericstandards- Immunity standard for industrial environments
EN IEC 61000-6-4: 2019	Electromagnetic compatibility(EMC)-part 6-4: Genericstandards- Emission standard for industrial environments
EN IEC 61000-3-2:2019/A1:2021	Electromagnetic compatibility(EMC)-Part 3-2:Limits-Limits for harmonic current emissions(equipment input current ≤16A per phase)
EN61000-3-3:2013+A1-2019	Electromagnetic compatibility(EMC)-Part 3-3:Limits-Limitation of voltage changes,Voltage fluctuations and fliker in public low-voltage supply systems. For equipment with Rated current ≤16A per phase and not subject to conditional connection

1.3. Test Summary

For the EUT described above.

Table 1: Tests Carried Out Under EN61000-6-3:2007+A1:2011+AC: 2012

Standard	Test Items	Status
EN IEC 61000-6-2:2019	Immunity requirements covering the frequency range 0 Hz to 400 GHz	√

√ Indicates that the test is applicable
× Indicates that the test is not applicable

Table 2: Tests Carried Out Under EN IEC 61000-6-4: 2019

Standard	Test Items	Status
EN61000-4-2:2009	Electrostatic discharge Immunity	√
EN61000-4-3:2006	Radiated Susceptibility (80MHz to 1GHz)	√
EN61000-4-4:2004+A1:2010	Electrostatic Fast Transient/Burst Immunity	√
EN61000-4-5:2006	Surge Immunity	√
EN61000-4-6:2009	Conducted Susceptibility (150KHz to 80MHz)	√
EN61000-4-8:2001	Power Frequency Magnetic Field Immunity (50Hz)	√
EN61000-4-11:2004	Voltage Dips Short Interruptions Immunity Tests	√

√ Indicates that the test is applicable
× Indicates that the test is not applicable

Table 3: Tests Carried Out Under EN61000-3-2:2019& EN61000-3-3:2013+A1-2019

Standard	Test Items	Status
EN61000-3-2:2019	Harmonic Current	×
EN61000-3-3:2013+A1-2019	Voltage Fluctuations	√

√ Indicates that the test is applicable
× Indicates that the test is not applicable

1.4. Test Methodology

All measurements contained in this report were conducted with CISPR 16-1, radio disturbance and immunity measuring apparatus, and CISPR16-2, Method of measurement of disturbances and immunity.

All measurement required was performed at laboratory of Shenzhen CDT Testing Technology Co., Ltd, at
Room 301, building B, Xinyi Industrial Park, Yuquan Road, Yulv community, Yutang street, Guangming New District, Shenzhen,Guangdong, China

1.5. Test Facility

The test facility is recognized, certified, or accredited by the following organizations: The facility also complies with the radiated and AC line conducted test site criteria set forth in CISPR 16-1, CISPR16-2.

1.6. Measurement Uncertainty

Radiation Uncertainty : Ur = ±

3.84 dB Conduction Uncertainty : Uc

= ± 2.72 dB

2. MEASURING DEVICE AND TEST EQUIPMENT

2.1. For Power Line Conducted Emission

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCS30	828985/018	Jun. 20, 2022	1 Year
2.	L.I.S.N	Rohde & Schwarz	ESH2-Z5	834549/005	Jun. 20, 2022	1 Year
3.	50ΩCoaxial Switch	Anritsu	MP59B	M20531	N/A	N/A
4.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100006	Jun. 20, 2022	1 Year
5.	Voltage Probe	Rohde & Schwarz	TK9416	N/A	Jun. 20, 2022	1 Year

2.2. For Radiated Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	ANRITSU	MS2661C	6200140915	Jun. 20, 2022	1 Year
2.	Test Receiver	Rohde & Schwarz	ESCS30	828985/018	Jun. 20, 2022	1 Year
3.	Bilog Antenna	Schwarzbeck	VULB9163	142	Jun. 20, 2022	1 Year
4.	50 Coaxial Switch	Anritsu Corp	MP59B	6100237248	Jun. 20, 2022	1 Year
5.	EMI Power Line Filter	DUOJI EME	FNF 201 B16	N/A	Jun. 20, 2022	1 Year
6.	EMI Power Line Filter	JIANLI	DL-40C	N/A	Jun. 20, 2022	1 Year
7.	Cable	Schwarzbeck	AK9513	ACRX1	Jun. 20, 2022	1 Year
8.	Cable	Rosenberger	N/A	FP2RX2	Jun. 20, 2022	1 Year
9.	Cable	Schwarzbeck	AK9513	CRPX1	Jun. 20, 2022	1 Year
10.	Cable	Schwarzbeck	AK9513	CRRX2	Jun. 20, 2022	1 Year
11.	Signal Generator	HP	8648A	3625U00573	Jun. 20, 2022	1 Year

2.3. For Harmonic Current / Flicker Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Power Frequency Test System	HAEFELY	PHF555	080419-03	Jun. 20, 2022	1 Year
2.	PC	N/A	P2L97	N/A	Jun. 20, 2022	N/A

2.4. For Electrostatic Discharge Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ESD Tester	HAEFELY	PESD1600	H708159	Jun. 20, 2022	1 Year

2.5. For RF Strength Susceptibility Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Signal Generator	HP	8648A	3625U00573	Jun. 20, 2022	1 Year
2.	Amplifier	AR	500A100	17034	NCR	NCR
3.	Amplifier	AR	100W/1000M1	17028	NCR	NCR
4.	Isotropic Field Monitor	AR	FM2000	16829	NCR	NCR
5.	Isotropic Field Probe	AR	FP2000	16755	Jun. 20, 2022	1 Year
6.	Biconic Antenna	EMCO	3108	9507-2534	NCR	NCR
7.	Log-periodic Antenna	AR	AT1080	16812	NCR	NCR
8.	PC	N/A	486DX2	N/A	N/A	N/A

2.6. For Electrical Fast Transient /Burst Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Burst Tester	HAEFELY	PEFT4010	080981-16	Jun. 20, 2022	1Year
2.	Coupling Clamp	HAEFELY	IP-4A	147147	Jun. 20, 2022	1Year

2.7. For Surge Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Surge Tester	HAEFELY	PSURGE4.1	080107-04	Jun. 20, 2022	1Year

2.8. For Injected Current Susceptibility Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Simulator	EMTEST	CWS500C	0900-12	Jun. 20, 2022	1Year
2.	CDN	EMTEST	CDN-M2	5100100100	Jun. 20, 2022	1Year
3.	CDN	EMTEST	CDN-M3	0900-11	Jun. 20, 2022	1Year
4.	Injection Clamp	EMTEST	F-2031-23 MM	368	Jun. 20, 2022	1Year
5.	Attenuator	EMTEST	ATT6	0010222A	Jun. 20, 2022	1Year

2.9. For Magnetic Field Immunity Test

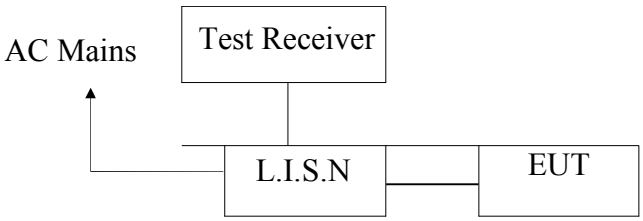
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Magnetic Field Tester	HAEFELY	MAG100	250040.1	Jun. 20, 2022	1Year

2.10. For Voltage Dips and Interruptions Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Dips Tester	HAEFELY	Pline1610	083732-12	Jun. 20, 2022	1Year

3. POWER LINE CONDUCTED EMISSION MEASUREMENT

3.1. Block Diagram of Test Setup



(EUT: Adaptive Constant Force Grinding Kit)

3.2. Measuring Standard

EN61000-6-3:2007+A1:2011+AC: 2012

Power Line Conducted Emission Limits (Class B)

Frequency (MHz)	Limit (dBμV)	
	Quasi-Peak Level	Average Level
0.15 ~ 0.50	66.0 ~ 56.0 *	56.0 ~ 46.0 *
0.50 ~ 5.00	56.0	46.0
5.00 ~ 30.00	60.0	50.0
NOTE1-The lower limit shall apply at the transition frequencies. NOTE2-The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.		

3.3. EUT Configuration on Measurement

The following equipments are installed on Conducted Emission Measurement to meet EN61000-6-3 requirements and operating in a manner which tends to maximize its emission characteristics in a normal application.

EUT: Adaptive Constant Force Grinding Kit

Model Number : LMAAK250S25A B1.5KW2PV-XS-AKS

Serial Number : N/A

3.4. Operating Condition of EUT

3.4.1. Setup the EUT as shown on Section 3.1. 3.4.2.Turn on the power of all equipments.

3.4.3.Let the EUT work in measuring mode (On) and measure it.

3.5. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and connected to the AC mains through Line Impedance Stability Network (L.I.S.N). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are investigated to find out the maximum conducted emission according to the EN61000-6-3 regulations during conducted emission measurement.
The bandwidth of the field strength meter (R&S Test Receiver ESCS30) is set at 9KHz in 150KHz~30MHz and 200Hz in 9KHz~150KHz.
The frequency range from 150kHz to 30MHz is investigated

3.6 Measuring Results

PASS

Please reference to the following pages.

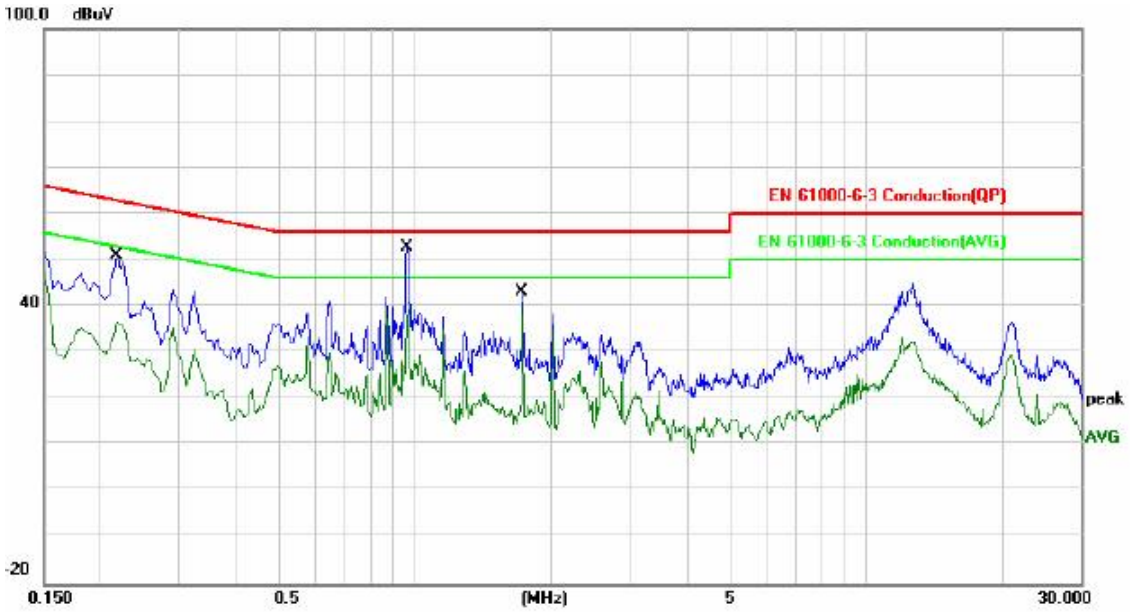
Conducted Emission

EUT :Adaptive Constant Force Grinding Kit

Date : 2022-12-12

Model : LMAAK250S25AB1.5KW2PV-XS-AKS Power Supply :AC230V,50Hz

Model : Normal Working Phase : L-line

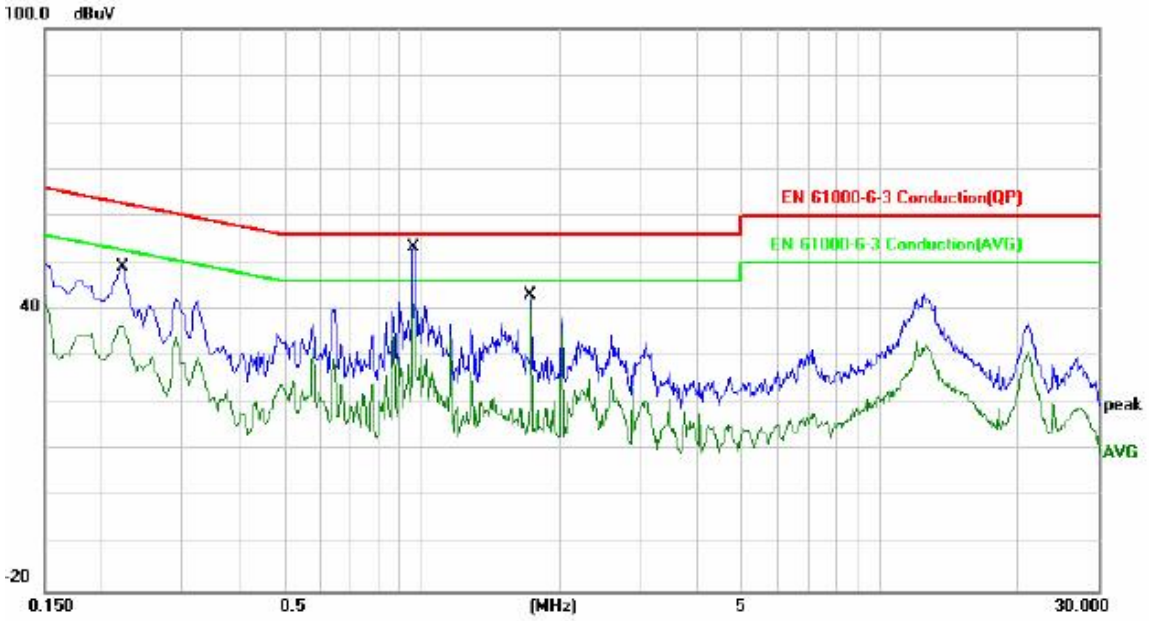


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2174	46.20	0.00	46.20	62.91	-16.71	QP	
2		0.2174	36.48	0.00	36.48	52.91	-16.43	AVG	
3	*	0.9635	51.40	0.00	51.40	56.00	-4.60	QP	
4		0.9635	38.28	0.00	38.28	46.00	-7.72	AVG	
5		1.7329	42.21	0.00	42.21	56.00	-13.79	QP	
6		1.7329	33.63	0.00	33.63	46.00	-12.37	AVG	

Conducted Emission

EUT : Adaptive Constant Force Grinding Kit
Date: 2022-12-12

Model : LMAAK250S25AB1.5KW2PV-XS-AKS Power Supply : AC230V,50Hz
Model : Normal Working Phase : N-line

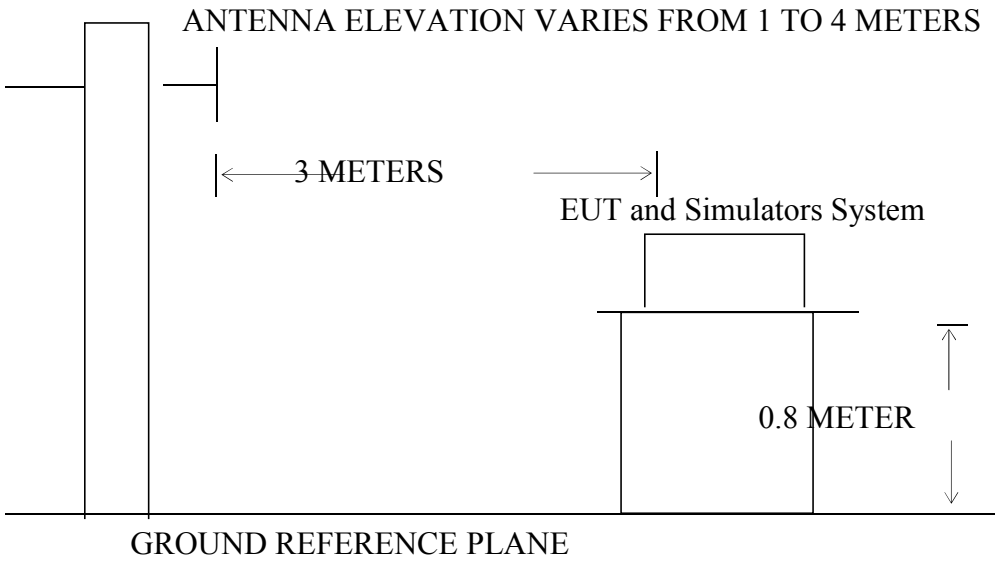


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.2198	46.09	0.00	46.09	62.82	-16.73	QP	
2		0.2198	36.71	0.00	36.71	52.82	-16.11	AVG	
3	*	0.9600	51.32	0.00	51.32	56.00	-4.68	QP	
4		0.9600	37.28	0.00	37.28	46.00	-8.72	AVG	
5		1.7318	41.96	0.00	41.96	56.00	-14.04	QP	
6		1.7318	34.63	0.00	34.63	46.00	-11.37	AVG	

4. RADIATED EMISSION MEASUREMENT

4.1. Block Diagram of Test

4.1.1. Block diagram of test setup (In chamber)



(EUT: Adaptive Constant Force Grinding Kit)

4.2. Measuring Standard

EN61000-6-3:2007+A1:2011+AC: 2012

4.3. Radiated Emission Limits

All emanations from a class B device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT (dBμV/m)
30 ~ 230	3	40
230 ~ 1000	3	47

Note**:** (1) The smaller limit shall apply at the combination point between two frequency bands.

(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

4.4. EUT Configuration on Test

The EN61000-6-3 regulations test method must be used to find the maximum emission during radiated emission measurement.

4.5. Operating Condition of EUT

4.5.1. Turn on the power.

4.5.2. After that, let the EUT work in test mode (Normal) and measure it.

4.6. Test Procedure

The EUT is placed on a turn table which is 0.8 meter high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a 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 are set on test.

The bandwidth of the Receiver (ESCS30) is set at 120kHz. The frequency range from 30MHz to 1000MHz is investigated.

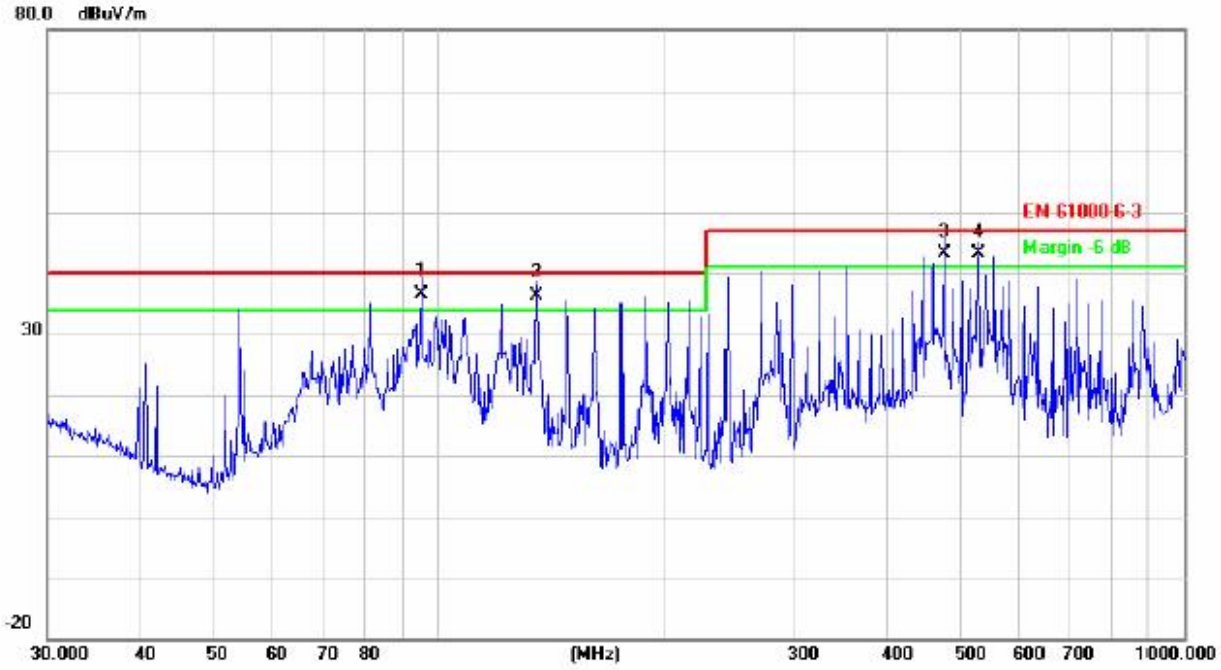
4.7. Measuring Results

PASS.

Please reference to the following pages

Radiated Emission Test Data

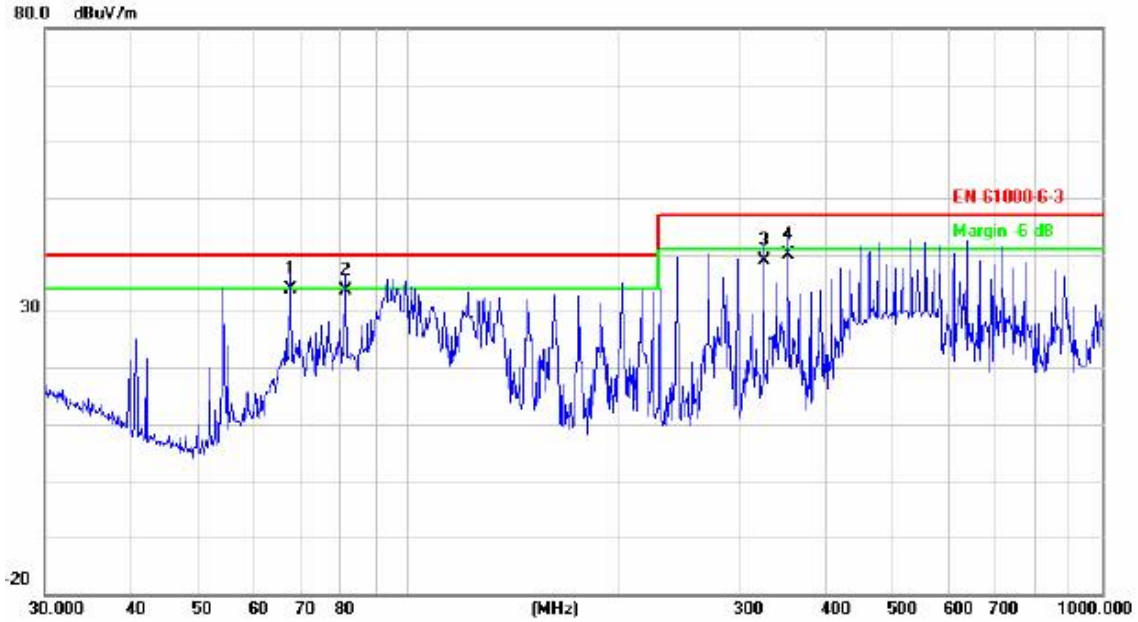
Standard:	EN61000-6-3 Class B RE	Polarization:	Horizontal
Test item:	Radiation Test	Date:	2022-12-12
EUT:	Adaptive Constant Force Grinding Kit	Test By:	Mark
Model:	LMAAK250S25AB1.5KW2PV-XS-AKS	Distance:	3m
Note:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	94.7600	54.63	-17.95	36.68	40.00	-3.32	QP			
2	!	135.5062	50.81	-14.52	36.29	40.00	-3.71	QP			
3	!	475.4990	53.61	-10.49	43.12	47.00	-3.88	QP			
4	!	530.1014	52.86	-9.80	43.06	47.00	-3.94	QP			

Radiated Emission Test Data

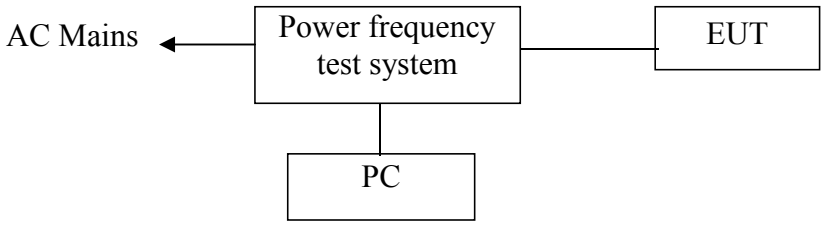
Standard:	EN61000-6-3 Class B RE	Polarization:	Vertical
Test item:	Radiation Test	Date:	2022-12-12
EUT:	Adaptive Constant Force Grinding Kit	Test By:	Mark
Model:	LMAAK250S25AB1.5KW2PV-XS-AKS	Distance:	3m
Note:			



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	67.6751	54.24	-20.35	33.89	40.00	-6.11	QP			
2		81.2116	53.96	-20.38	33.58	40.00	-6.42	QP			
3		325.5957	52.57	-13.69	38.88	47.00	-8.12	QP			
4		352.9433	52.86	-12.98	39.88	47.00	-7.12	QP			

5. HARMONIC CURRENT EMISSION MEASUREMENT

5.1 Block Diagram of Test Setup



(EUT: N/A)

5.2 Measuring Standard

EN 61000-3-2: 2006+A1:2009+A2:2009

5.3 Operation Condition of EUT

Same as Section 3.4, except the test setup replaced as Section 5.1.

5.4 Measuring

Results

PASS

Please reference to the following page

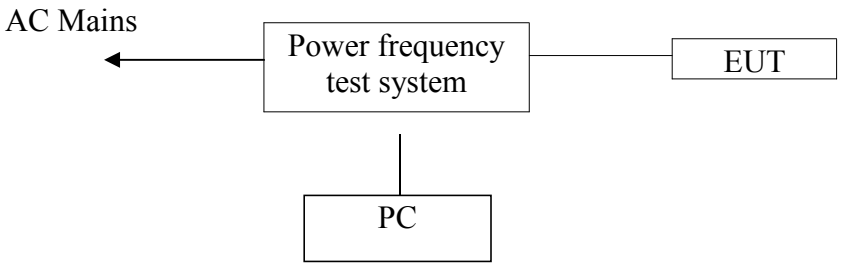
Current Test Result Summary (Run time)

EUT: Adaptive Constant Force Grinding Kit M/N: LMAAK250S25AB1.5KW2PV-XS-AKS Tested by: Mark
Test category: Class-A per A-14 (European limits) Test
Margin: 100 Test date: 2022-12-12 Start time: 16:06:17 End time: 16:09:57
Test duration (min): 2.5 Data file name: H-03134.cts_data Comment: Normal Working Temp:25.3'C Humi:54%
Customer:GUANGZHOU BONESTAR AUTOMATIC TECHNOLOGY CO.,LTD

Harmonic #	Harm(avg)	100%Limits	% of Limit	Harm (max)	150%Limit	% of Limit	Status
2	0.12	1.08	11.11	0.132	1.62	8.15	pass
3	1.68	2.30	73.04	1.70	33.45	49.36	pass
4	0.08	0.43	18.60	0.10	10.65	15.66	pass
5	0.31	1.14	27.19	0.35	11.71	20.53	pass
6	0.03	0.30	10.00	0.04	20.45	9.33	pass
7	0.21	0.77	27.27	0.223	1.16	19.31	pass
8	0.03	0.23	13.04	0.044	0.35	12.75	pass
9	0.11	0.40	27.50	0.135	0.60	22.50	pass
10	0.04	0.18	21.74	0.049	0.28	17.75	pass
11	0.1	0.33	30.30	0.122	0.50	24.65	pass
12	0.03	0.15	19.57	0.048	0.23	20.87	pass
13	0.08	0.21	38.10	0.102	0.32	32.38	pass
14	0.03	0.13	22.83	0.0403	0.20	20.44	pass
15	0.02	0.15	13.33	0.031	0.23	13.78	pass
16	0.02	0.12	17.39	0.03	10.17	17.97	pass
17	0.02	0.13	15.11	0.032	0.20	16.12	pass
18	0.01	0.10	9.78	0.015	0.15	9.78	pass
19	0.01	0.12	8.44	0.013	0.18	7.32	pass
20	0.01	0.09	10.87	0.017	0.14	12.32	pass
21	0.01	0.11	9.33	0.01 8	0.16	11.20	pass
22	0.01	0.08	11.96	0.012	0.13	9.57	pass
23	0.01	0.10	10.22	0.015	0.15	10.22	pass
24	0.01	0.08	13.04	0.012	0.12	10.43	pass
25	0.01	0.09	11.11	0.014	0.14	10.37	pass
26	0.01	0.07	14.13	0.015	0.11	14.13	pass
27	0.01	0.08	12.00	0.015	0.13	12.00	pass
28	0.01	0.07	15.22	0.017	0.10	17.25	pass
29	0.01	0.08	12.89	0.012	0.12	10.31	pass
30	0.01	0.06	16.30	0.013	0.09	14.13	pass
31	0.01	0.07	13.78	0.012	0.11	11.02	pass
32	0.01	0.06	17.39	0.013	0.09	15.07	pass
33	0.01	0.07	14.67	0.013	0.10	12.71	pass
34	0.01	0.05	18.48	0.015	0.08	18.48	pass
35	0.01	0.06	15.56	0.016	0.10	16.59	pass
36	0.01	0.05	19.57	0.014	0.08	18.26	pass
37	0.01	0.06	16.44	0.016	0.09	17.54	pass
38	0.01	0.05	20.65	0.018	0.07	24.78	pass
39	0.01	0.06	17.33	0.014	0.09	16.18	pass
40	0.01	0.05	21.74	0.016	0.07	23.19	pass

6. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

6.1 Block Diagram of Test Setup



(EUT: Adaptive Constant Force Grinding Kit)

6.2 Measuring Standard

EN61000-3-3:2013+A1-2019

6.3 Operation Condition of EUT

6.3.1 Setup the EUT and simulators as shown in Section6.1.

6.3.2 Turn on the power of all equipments.

6.3.3 Let the EUT work in test modes (Normal) and test it.

6.4 Measuring Results

PASS

Please reference to the following page

EN 61000-3-3 TEST REPORT 2022-12-12 15:56

Unit: Adaptive Constant Force Grinding Kit
M/N:LMAAK250S25AB1.5KW2PV-XS-AKS
Test mode: Normal

Working Manufacturer:

GUANGZHOU BONESTAR AUTOMATIC TECHNOLOGY CO.,LTD

Operator: Mark

==========

TEST SETUP

Test Freq.:	50.00 Hz.	Test Voltage:	380.0 vac
Waveform :	SINE		
Test Time:	120.0 min.	Tshort:	10.0 min.
Prog. Zo Enabled:	YES	Prog. Zo:	0.000

Voltage Change less than once per Hour: NO Impedance selected: IEC-725 STD. REF.

Synthetic R+L Enabled: NO
Resistance: 0.380 Ohms Inductance:
460.000 uH

TEST DATA

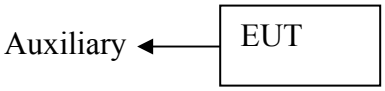
Result: PASS

	EUT Data	Limit	Result	Test Enabled
Pst max	0.189	1.00	PASS	true
Plt max	0.166	0.65	PASS	true
dc %	0.00	3.00	PASS	true
dmax %	1.32	4.00	PASS	true
d(t) sec.	0.00	0.20	PASS	true
Power Source Data				
Source Pst max	0.231	0.400	PASS	true
% THD	0.03	3.00	PASS	true

7. ELECTROSTATIC DISCHARGE IMMUNITY TEST

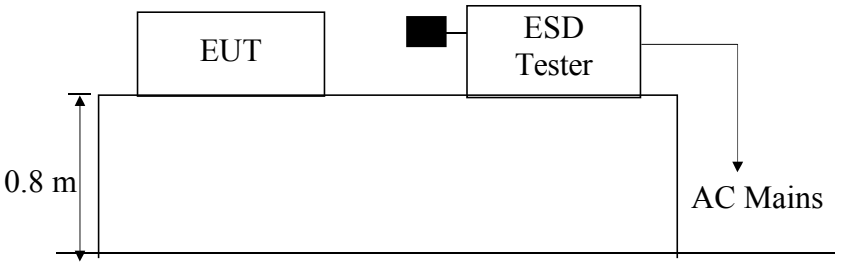
7.1 Block Diagram of Test Setup

7.1.1 Block Diagram of the EUT and the simulators



(EUT: Adaptive Constant Force Grinding Kit)

7.1.2 Block diagram of ESD test setup



(EUT: Adaptive Constant Force Grinding Kit)

7.2 Test Standard

EN61000-6-1:2019(EN61000-4-2: 2009)
Severity Level: 3 / Air Discharge: ±8KV Level: 2 / Contact Discharge: ±4KV)

7.3 Severity Levels and Performance Criterion

7.3.1 Severity level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1.	±2	±2
2.	±4	±4
3.	±6	±8
4.	±8	±15
X	Special	Special

7.3.2 Performance criterion: **B**

7.4 EUT Configuration

The configuration of EUT is listed in Section 3.3.

7.5 Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 3.4. Except the test set up replaced by Section 7.1.

7.6 Test Procedure

7.6.1 Air Discharge**:**

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

7.6.2 Contact Discharge**:**

All the procedure shall be same as Section 7.6.1. except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

7.6.3 Indirect discharge for horizontal coupling plane

At least 10 single discharges (in the most sensitive polarity) shall be applied at the front edge of each HCP opposite the center point of each unit (if applicable) of the EUT and 0.1m from the front of the EUT. The long axis of the discharge electrode shall be in the plane of the HCP and perpendicular to its front edge during the discharge.

7.6.4 Indirect discharge for vertical coupling plane

At least 10 single discharge (in the most sensitive polarity) shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

7.7 Test

Resul

ts

PASS

Please refer to the following page

Electrostatic Discharge Test Result

Shenzhen CDT Testing Technology Co., Ltd

Applicant	: GUANGZHOU BONESTAR AUTOMATIC TECHNOLOGY CO.,LTD	Test Date	: 2022-12-12
EUT	: Adaptive Constant Force Grinding Kit	Temperature	: 22℃
M/N	: LMAAK250S25AB1.5KW2PV-XS-AKS	Humidity	: 50%
Power Supply	: AC230V,50Hz	Test Mode	: Normal
Air discharge	: ±2.0KV, ±4.0KV, ±8.0KV	Criterion	: B
Contact discharge:	±2.0KV, ±4.0KV	Test Engineer	: Mark

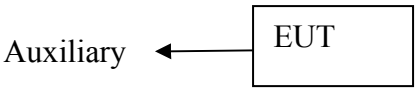
Location	**Kind** A-Air Discharge C-Contact Discharge	**Result**
Gap 10 points	A	PASS
Screw 10 points	C	PASS
Metal 10 points	C	PASS
HCP 4 points	C	PASS
VCP 4 points	C	PASS

Test Equipment: ESD Simulator (HAEFELY, PESD1600)

8. RF FIELD STRENGTH SUSCEPTIBILITY TEST

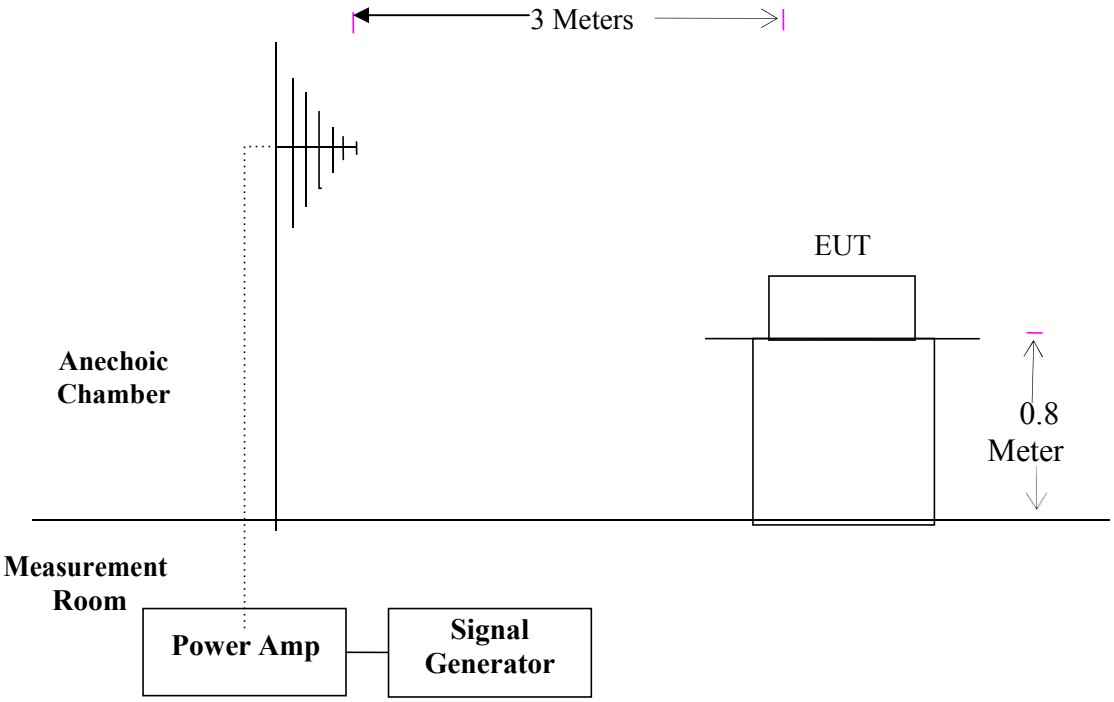
8.1 Block Diagram of Test

8.1.1 Block diagram of connection between the EUT and Load



(EUT: Adaptive Constant Force Grinding Kit)

8.1.2 Block diagram of RS test setup



(EUT: Adaptive Constant Force Grinding Kit)

8.2 Test Standard

EN61000-6-1:2019(EN61000-4-3: 2006 (Severity Level: 2, 3V / m))

8.3 Severity Levels and Performance Criterion

8.3.1 Severity Levels

Level	Field Strength V/m
1.	1
2.	3
3.	10
X	Special

8.3.2 Performance Criterion : **A**

8.4 EUT Configuration on Test

The configuration of the EUT is same as Section 3.3.

8.5 Operating Condition of EUT

Same as radiated emission measurement which is listed in Section 3.4, except the test setup replaced as Section 8.1.

8.6 Test Procedure

The EUT are placed on a table which is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna are set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually. In order to judge the EUT performance, a CCD camera is used to monitor its screen.

All the scanning conditions are as following:

Condition of Test	Remark
1. Fielded Strength	3V/m (Severity Level 2)
2. Radiated Signal	Modulated
3. Scanning Frequency	80-1000MHz
4. Sweep time of radiated	0.0015 Decade/s
5. Dwell Time	1 Sec.

8.7 Test Results

PASS.

Please refer to the following page.

RF Field Strength Susceptibility Test Results

Shenzhen CDT Testing Technology Co., Ltd

Applicant :	GUANGZHOU BONESTAR AUTOMATIC TECHNOLOGY CO.,LTD	Test Date :	2022-12-12
EUT :	Adaptive Constant Force Grinding Kit	Temperature :	22℃
M/N :	LMAAK250S25AB1.5KW2PV-XS-AKS	Humidity :	50 %
Test Engineer :	Mark	Criterion :	A
Power Supply :	AC230V,50Hz	Test Mode :	Normal
Frequency Range:	80 MHz to1000 MHz	Field Strength :	3 V/m

Modulation: ☐None ☐ Pulse ☑AM 1KHz 80%

	Frequency Rang 1: 80~ 1000MHz		Frequency Rang 2:	
Steps	1 / %		2 / %	
	Horizontal	Vertical	Horizontal	Vertical
Front	PASS	PASS		
Right	PASS	PASS		
Rear	PASS	PASS		
Left	PASS	PASS		

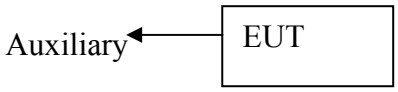
Test Equipment：
1. Signal Generator : 2031 (MARCONI)
2. Power Amplifier : 500A100 & 100W/1000M1 (A&R)
3. Power Antenna : 3108 (EMCO) & AT1080 (A&R)
4. Field Monitor : FM2000 (A&R)

Note:

9. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

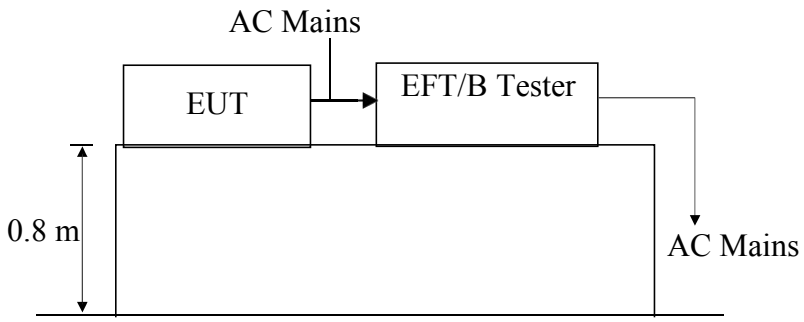
9.1 Block Diagram of Test Setup

9.1.1. Block Diagram of the EUT



(EUT: Adaptive Constant Force Grinding Kit)

9.1.2. EFT Test Setup



(EUT: Adaptive Constant Force Grinding Kit)

9.2 Test Standard

EN61000-6-1:2019(EN61000-4-4:2004+A1:2010, Severity Level, Level 2**:** 1KV)

9.3 Severity Levels and Performance Criterion

9.3.1 Severity level

Open Circuit Output Test Voltage ±10%		
Level	On Power Supply Lines	On I/O (Input/Output) Signal data and control lines
1.	0.5 KV	0.25 KV
2.	1 KV	0.5 KV
3.	2 KV	1 KV
4.	4 KV	2 KV
X	Special	Special

9.3.2 Performance criterion **: B**

9.4 EUT Configuration

The configuration of EUT is listed in Section 3.3.

9.5 Operating Condition of EUT

9.5.1 Setup the EUT as shown in Section 9.1.

9.5.2 Turn on the power of all equipments.

9.5.3 Let the EUT work in test mode (Normal) and measure it.

9.6 Test Procedure

The EUT is put on the table which is 0.8 meter high above the ground. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

9.6.1 For input and output AC power ports**:**

The EUT is connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 mins.

9.6.2 For signal lines and control

lines ports**:** No I/O ports. It's

unnecessary to test.

9.6.3 For DC output

line ports**:** It's

unnecessary to test.

9.7 Test Result

PASS

Please reference to the following page

Electrical Fast Transient/Burst Test Results

Shenzhen CDT Testing Technology Co., Ltd

Standard	❂ IEC 61000-4-4 ☼ EN 61000-4-4	Result : ☼ PASS / ❂ FAIL

Applicant : GUANGZHOU BONESTAR AUTOMATIC TECHNOLOGY CO.,LTD

EUT : Adaptive Constant Force Grinding Kit

M/N :LMAAK250S25AB1.5KW2PV-XS-AKS

Input Voltage: AC230V,50Hz

Criterion : B

Ambient Condition : 20 ℃ 50% RH

Operation Mode : Normal

Line : ☼ AC Mains	Line : ❂ Signal line ☼ DC line
Coupling : ☼ Direct	Coupling : ❂ Capacitive
Test Time : 120s	

Line	Test Voltage	Result(+)	Result(-)
L	1KV	PASS	PASS
N	1KV	PASS	PASS
L、N	1KV	PASS	PASS

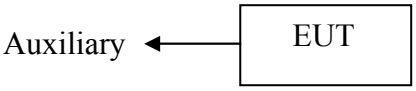
Note:

Test Equipment	Burst Tester Model : PEFT 4010

10. SURGE IMMUNITY TEST

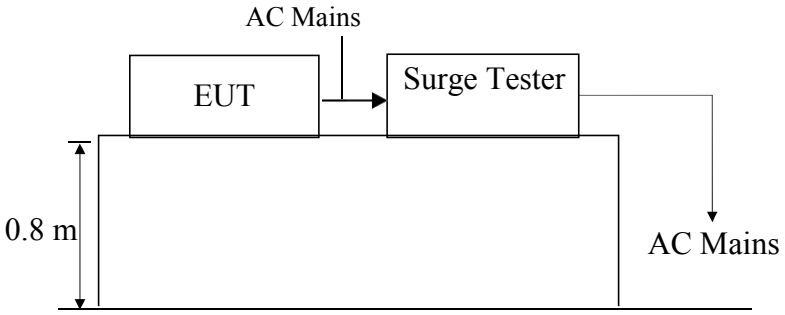
10.1 Block Diagram of Test Setup

10.1.1 Block Diagram of the EUT



(EUT: Adaptive Constant Force Grinding Kit)

10.1.2. Surge Test Setup



(EUT: Adaptive Constant Force Grinding Kit)

10.2 Test Standard

EN61000-6-1:2019(EN61000-4-5: 2006) Severity Level**:** Line to Line: Level 2, 1.0KV

10.3 Severity Levels and Performance Criterion

10.3.1.Severity level

Severity Level	Open-Circuit Test Voltage KV
1	0.5
2	1.0
3	2.0
4	4.0
*	Special

10.3.2 Performance criterion **: B**

10.4 EUT Configuration

The configuration of EUT is listed in Section 3.3.

10.5 Operating Condition of EUT

10.5.1 Setup the EUT as shown in Section 10.1.

10.5.2. Turn on the power of all equipments.

10.5.3. Let the EUT work in test mode (Normal) and measure it.

10.6 Test Procedure

1) Set up the EUT and test generator as shown on Section 10.1.2.
2) For line to line coupling mode, provide a 1.0 KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
3) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
4) Different phase angles are done individually.
5) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

10.7 Test Result

PASS

Please reference to the following page

Surge Immunity Test Result

Shenzhen CDT Testing Technology Co., Ltd

Applicant : GUANGZHOU BONESTAR AUTOMATIC TECHNOLOGY CO.,LTD EUT : Adaptive Constant Force Grinding Kit M/N :LMAAK250S25AB1.5KW2PV-XS-AKS Power Supply :AC230V,50Hz Test Engineer : Mark	Test Date : 2022-12-12 Temperature : 22℃ Humidity : 50% Test Mode : Normal Criterion : B

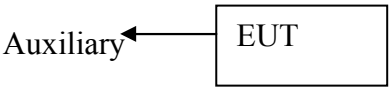
Location	Polarity	Phase Angle	Number of Pulse	Pulse Voltage (KV)	Result
L-N	+	0°	5	1.0	PASS
	+	90°	5	1.0	PASS
	+	180°	5	1.0	PASS
	+	270°	5	1.0	PASS
	-	0°	5	1.0	PASS
	-	90°	5	1.0	PASS
	-	180°	5	1.0	PASS
	-	270°	5	1.0	PASS

Remark:	Test Equipment : Surge Tester Psurge4.1

11. INJECTED CURRENTS SUSCEPTIBILITY TEST

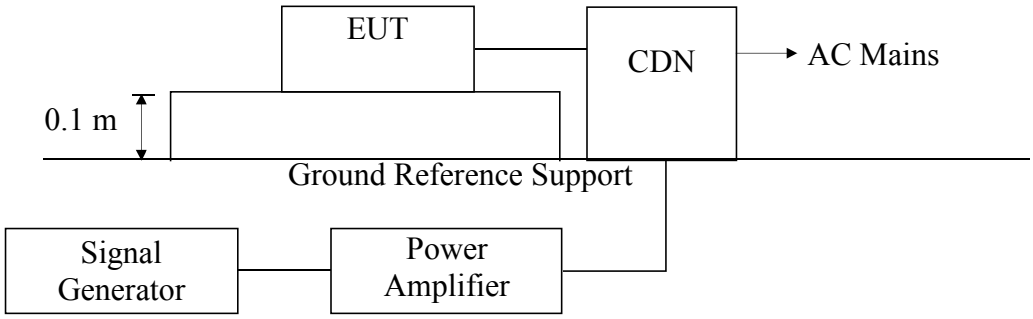
11.1 Block Diagram of Test Setup

11.1.1 Block Diagram of the EUT



(EUT: Adaptive Constant Force Grinding Kit)

11.1.2 Block Diagram of Test Setup



(EUT: Adaptive Constant Force Grinding Kit)

11.2 Test Standard

EN61000-6-1:2019 (EN61000-4-6: 2009, Severity Level: Level 2, 3V (rms), (0.15MHz ~ 80MHz)

11.3 Severity Levels and Performance Criterion

11.3.1 Severity level

Level	Field Strength V
1	1
2	3
3	10
X	Special

11.3.2 Performance criterion**: A**

11.4 EUT Configuration

The configuration of EUT is listed in Section 3.3.

11.5 Operating Condition of EUT

11.5.1 Setup the EUT as shown in Section 11.1.

11.5.2 Turn on the power of all equipments.

11.5.3 Let the EUT work in test mode (Normal) and measure it.

11.6 Test Procedure

1) Set up the EUT, CDN and test generators as shown on Section 11.1.2.
2) Let the EUT work in test mode and measure it.
3) The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
4) The disturbance signal described below is injected to EUT through CDN.
5) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
6) The frequency range is swept from 150KHz to80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave.
7) The rate of sweep shall not exceed $1.5*10^{-3}$decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
8) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

11.7 Test Results

PASS

Please reference to the following page

Injected Currents Susceptibility Test Results

Shenzhen CDT Testing Technology Co., Ltd

Applicant : GUANGZHOU BONESTAR AUTOMATIC TECHNOLOGY CO.,LTD EUT : Adaptive Constant Force Grinding Kit M/N :LMAAK250S25AB1.5KW 2PV-XS-AKS Power Supply : AC230V,50Hz Test Engineer : Mark	Test Date: 2022-12-12 Temperature : 22℃ Humidity : 58%

Test Mode : Normal

Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15 ~ 80	AC Input	3V	A	PASS

Test Mode :

Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result

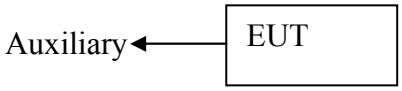
Remark : 1. Modulation Signal:1KHz 80% AM
Measurement Equipment :
Simulator: CWS 500 (SWITZERLAND EMTEST)
CDN : ☼CDN-M2 (SWITZERLAND EMTEST)
☼CDN-M3 (SWITZERLAND EMTEST)

Note:

12. MAGNETIC FIELD SUSCEPTIBILITY TEST

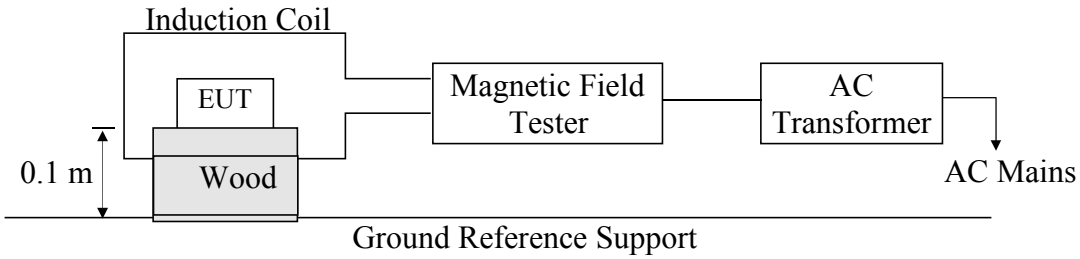
12.1 Block Diagram of Test

12.1.1 Block diagram of test setup



(EUT: Adaptive Constant Force Grinding Kit)

12.1.2 Magnetic field test setup



(EUT: Adaptive Constant Force Grinding Kit)

12.2 Test Standard

EN61000-6-1:2019 (EN61000-4-8: 2001, Severity Level: Level 2, 3A / m)

12.3 Severity Levels and Performance Criterion

12.3.1 Severity Levels

Level	Field Strength A/m
1	1
2	3
3	10
4	30
5	100
X	Special

12.3.2 Performance Criterion : **A**

12.4 EUT Configuration on Test

The configuration of the EUT is same as Section 3.3.

12.5 Test Procedure

The EUT is placed in the middle of a induction coil (1*1m), under which is a 1*1*0.1m (high) table, this small table is also placed on a larger table,0.8 m above the ground. Both horizontal and vertical polarization of the induction coil are set on test, so that each side of the EUT is affected by the magnetic field. Also can reach the same aim by change the position of the EUT.

12.6 Test Results

PASS

Please reference to the following page

Magnetic Field Immunity Test Result

Shenzhen CDT Testing Technology Co., Ltd

Standard	☉ IEC 61000-4-8 ☼ EN 61000-4-8	Result: ☼ Pass / ☉ Fail

Applicant : GUANGZHOU BONESTAR AUTOMATIC TECHNOLOGY CO.,LTD

EUT : Adaptive Constant Force Grinding Kit

M/N: LMAAK250S25AB1.5KW2PV-XS-AKS

Input Voltage : AC230V,50Hz

Date of Test : 2022-12-12 Test Engineer: Mark

Ambient Condition : Temp : 22℃ Humid: 58%

Criterion: A

Operation Mode : Normal

Test Level (A/M)	Testing Duration	Coil Orientation	Criterion	Result
3	5 mins	X	A	PASS
3	5 mins	Y	A	PASS
3	5 mins	Z	A	PASS

Operation Mode :

Test Level (A/M)	Testing Duration	Coil Orientation	Criterion	Result

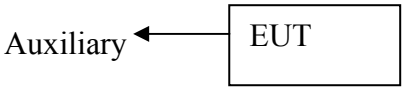
Test Equipment	Magnetic Field Test: HEAFELY MAG 100.1

Note:

13. VOLTAGE DIPS AND INTERRUPTIONS TEST

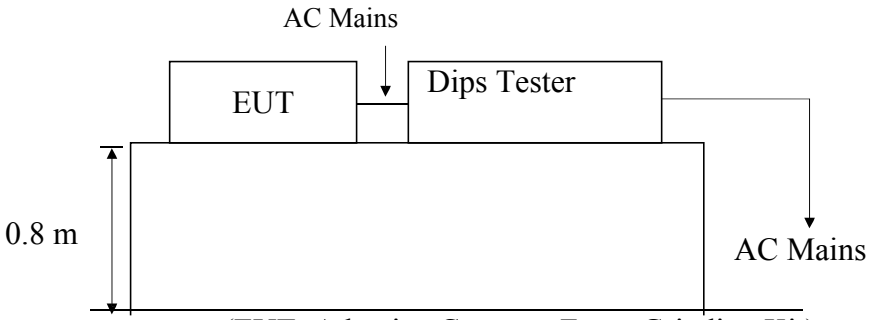
13.1 Block Diagram of Test Setup

13.1.1 Block Diagram of the EUT



(EUT: Adaptive Constant Force Grinding Kit)

13.1.2 Dips Test Setup



(EUT: Adaptive Constant Force Grinding Kit)

13.2 Test Standard

EN61000-6-1:2019(EN61000-4-11: 2004)

13.3 Severity Levels and Performance Criterion

13.3.1 Severity level

Test Level %UT	Voltage dip and short interruptions %UT	Duration (in period)
0	100	0.5 1 5 10 25 50 *
40	60	
70	30	

13.3.2 Performance criterion **: B&C**

13.4 EUT Configuration

The configuration of EUT is listed in Section 3.3.

13.5 Operating Condition of EUT

13.5.1 Setup the EUT as shown in Section 13.1.

13.5.2 Turn on the power of all equipments.

13.5.3 Let the EUT work in test mode (Normal) and measure it.

13.6 Test Procedure

1) Set up the EUT and test generator as shown on Section 13.1.2.
2) The interruptions is introduced at selected phase angles with specified duration.
3) Record any degradation of performance.

13.7 Test Result

PASS

Please reference to the following page

Voltage Dips And Interruptions Test Results

Shenzhen CDT Testing Technology Co., Ltd

Applicant : GUANGZHOU BONESTAR AUTOMATIC TECHNOLOGY CO.,LTD EUT:Adaptive Constant Force Grinding Kit M/N :LMAAK250S25AB1.5KW2PV-XS-AKS Power Supply : AC230V,50Hz	Test Date : 2022-12-12 Temperature : 22℃ Humidity : 50% Test Engineer : Mark

Test Mode: Normal

Test Level % U_T	Voltage Dips & Short Interruptions % U_T	Duration (in periods)	Criterion ☐A ☑B ☑C ☐D	Result P=PASS F=Fail
0	100	250P	C	P
70	30	25P	C	P
0	100	1P	B	P

Test Mode :

Test Level % U_T	Voltage Dips & Short Interruptions % U_T	Duration (in periods)	Criterion ☐A ☐B ☐C ☐D	Result P=PASS F=FAIL

Note:

APPENDIX I
(Photos of EUT)

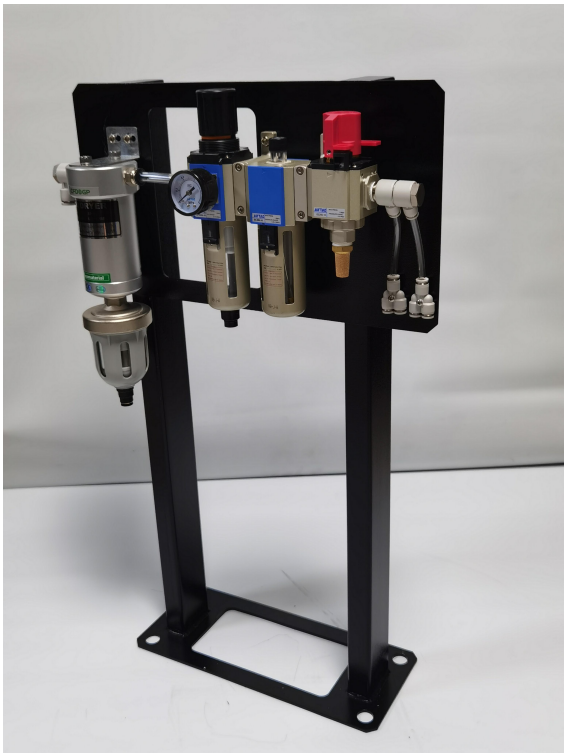
FIGURE
GENERAL APPEARANCE OF EUT

Figure-1

Figure-2

Figure-3

Figure-4



**********THE END**********