APPLICATION FOR EMC DIRECTIVE

On Behalf of

eMoMo Technology Co., Ltd

Medical Electric Push Rod

Trade Name: eMoMo

Model: 3MTRE, 3MTDE, 3MTME

Prepared For : **eMoMo Technology Co., Ltd**
4th,Floor,Yong He Building, Tai Wan Industrial Park, Shi Yan Town, Bao'an District, Shen Zhen, Guangdong, China

Prepared By : **TMC Testing Services (Shenzhen) Co., Ltd.**

1/F., Block A, Xinshidai Gongrong Industrial Park, No. 2, Shihuan Road, S hilong Community, Shiyan Street, Baoan District, Shenzhen, China
Tel: +86-755- 86642861
Web: www.tmc-lab.com
E-mail：Cert@tmc-lab.com

Date of Test : January 4, 2021- January 7, 2021

Date of Report : January 7, 2021

Report Number : TMC201231109-E

TABLE OF CONTENTS

TEST REPORT DECLARATION 4
1. TEST RESULTS SUMMARY 5
2. GENERAL INFORMATION 6
2.2 Measurement Uncertainty 6
3. PRODUCT DESCRIPTION 7
3.1 EUT Description 7
3.2 Block Diagram of EUT Configuration 7
3.3 Operating Condition of EUT 7
3.4 Test Conditions 7
3.5 Modifications 7
3.6 Abbreviations 8
3.7 Performance Criterion 8
4. TEST EQUIPMENT USED 9
4.1 For Conducted Emission Test 9
4.2 For Disturbance Power Test 9
4.3 For Harmonic / Flicker Test 9
4.4 For Electrostatic Discharge Immunity Test 9
4.5 For RF Strength Susceptibility Test 9
4.7 For Surge Test 9
4.8 For Injected Currents Susceptibility Test 10
4.9 For Magnetic Field Immunity Test 10
4.10 For Voltage Dips and Interruptions Test 10
5. POWER LINE CONDUCTED EMISSION TEST 11
5.1 Block Diagram of Test Setup 11
5.2 Test Standard 11
5.3 Power Line Conducted Emission Limit 11
5.4 EUT Configuration on Test 11
5.5 Operating Condition of EUT 12
5.6 Test Procedure 12
5.7 Test Result 12
6. DISTURBANCE POWER TEST 13
6.1 Block Diagram of Test Setup 13
6.2 Disturbance Power Limit 13
6.3 EUT Configuration on Test 13
6.4 Operating Condition of EUT 13
6.5 Test Procedure 14
6.6 Disturbance Power Test Result 14
7. HARMONIC CURRENT EMISSION TEST 15
7.1 Block Diagram of Test Setup 15
7.2 Test Standard and Limit 15
7.3 Test Procedure 16
7.4 Test Results 16
8. VOLTAGE FLUCTUATIONS & FLICKER TEST 17
8.1 Block Diagram of Test Setup 17
8.2 Test Standard 17
8.3 Operating Condition of EUT 17
8.4 Test Data 17
8.5 Test Results 17
9. ELECTROSTATIC DISCHARGE TEST 18

9.1 Block Diagram of ESD Test Setup 18
9.2 Test Standard 18
9.3 Severity Levels and Performance Criterion 18
9.4 EUT Configuration on Test 18
9.5 Operating Condition of EUT 19
9.6 Test Procedure 19
9.7 Test Results 19
10. RF FIELD STRENGTH SUSCEPTIBILITY TEST 21
10.1 R/S Test Setup 21
10.2 Test Standard 21
10.3 Severity Levels and Performance Criterion 21
10.4 EUT Configuration on Test 21
10.5 Operating Condition of EUT 22
10.6 Test Procedure 22
10.7 Test Results 22
11. ELECTRICAL FAST TRANSIENT/BURST TEST 24
11.1 EFT Test Setup 24
11.2 Test Standard 24
11.3 Severity Levels and Performance Criterion 24
11.4 EUT Configuration on Test 24
12. SURGE TEST 27
12.1 Surge Test Setup 27
12.2 Test Standard 27
12.3 Severity Levels and Performance Criterion 27
12.4 Operating Condition of EUT 27
12.5Test Procedure 28
12.6Test Results 28
13. INJECTED CURRENTS SUSCEPTIBILITY TEST 30
13.1 Block Diagram of Test AC Mains Setup 30
13.2 Test Standard 30
13.3 Severity Levels and Performance Criterion 30
13.2EUT Configuration on Test 30
13.3Operating Condition of EUT 30
13.4Test Procedure 30
13.5Test Results 31
14. VOLTAGE DIPS AND INTERRUPTIONS TEST 33
14.1 Voltage Dips and Interruptions Test Setup 33
14.2 Test Standard 33
14.3 Severity Levels and Performance Criterion 33
14.4 EUT Configuration on Test 33
14.5 Operating Condition of EUT 33
14.6 Test Procedure 33
14.7Test Result 34
APPENDIX I 36
APPENDIX Ⅱ 39
APPENDIX III 41

TEST REPORT DECLARATION

Applicant	:	eMoMo Technology Co., Ltd
Address	:	4th,Floor,Yong He Building, Tai Wan Industrial Park, Shi Yan Town, Bao'an District, Shen Zhen, Guangdong, China
Trade Name	:	N/A
EUT Description	:	Medical Electric Push Rod
Model Number	:	3MTRE, 3MTDE, 3MTME

Test Standards:
EN 55014-1:2017+A11:2020
EN 55014-2:2015
EN 61000-3-2:2019
EN 61000-3-3:2013+A1:2019

The EUT described above is tested by TMC Testing Services (Shenzhen) 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. TMC Testing Services (Shenzhen) Co., Ltd. EMC Laboratory is assumed full responsibility for the accuracy of the test results. Also, this report shows that the EUT technically complies with the 2014/30/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.

Prepared by : Nina Wu

Nina Wu / Assistant

Reviewer : Vivian Jiang

Vivian Jiang / Supervisor

Approved & Authorized Signer : Lemon Ra... Manager

1. TEST RESULTS SUMMARY

Table 1 Test Results Summary

Test Items	Test Results
Power Line Conducted Emission Test	PASS
Disturbance Power Test	PASS
Harmonic Current Emission Test	PASS
Voltage Fluctuations & Flicker Test	PASS
Electrostatic Discharge Test	PASS
RF Field Strength Susceptibility Test	PASS
Electrical Fast Transient/Burst Test	PASS
Surge Test	PASS
Injected Currents Susceptibility Test	PASS
Voltage Dips And Interruptions Test	PASS

2. GENERAL INFORMATION

2.1 Report information

2.1.1 This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that TMC approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that TMC in any way guarantees the later performance of the product/equipment.

2.1.2 The sample/s mentioned in this report is/are supplied by Applicant, TMC therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

2.1.3 Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through TMC, unless the applicant has authorized TMC in writing to do so.

2.2 Measurement Uncertainty

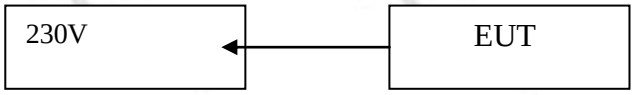
Available upon request.

3. PRODUCT DESCRIPTION

3.1 EUT Description

Description	:	Medical Electric Push Rod
Applicant	:	eMoMo Technology Co., Ltd 4th,Floor,Yong He Building, Tai Wan Industrial Park, Shi Yan Town, Bao'an District, Shen Zhen, Guangdong, China
Manufacturer	:	3MoMo Motor Technology Co., Ltd 3th,Floor,Yong He Building,Tai Wan Industrial Park,Shi Yan Town,Bao'an District,Shen Zhen,Guangdong,China
Model Number	:	3MTRE

3.2 Block Diagram of EUT Configuration



3.3 Operating Condition of EUT

Test mode 1: on

3.4 Test Conditions

Temperature: 23-26℃
Relative Humidity: 55-68 %

3.5 Modifications

No modification was made.

3.6 Abbreviations

AC	Alternating Current
AMN	Artificial Mains Network
DC	Direct Current
EM	ElectroMagnetic
EMC	ElectroMagnetic Compatibility
EUT	Equipment Under Test
IF	Intermediate Frequency
RF	Radio Frequency
rms	root mean square
EMI	Electromagnetic Interference
EMS	Electromagnetic Susceptibility

3.7 Performance Criterion

Criterion A: The equipment shall continue to operate as intended without operator intervention. No degradation of performance of loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended.

Criterion B: After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the equipment is used as intended.

Criterion C: Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions.

4. TEST EQUIPMENT USED

4.1 For Conducted Emission Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESHS30	828985/018	Apr.20, 20	1 Year
2.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100006	Apr.20, 20	1 Year
3.	L.I.S.N.	Rohde & Schwarz	ESH2-Z5	834549/005	Apr.20, 20	1 Year
4.	Conical	Emtek	N/A	N/A	N/A	N/A
5.	Voltage Probe	Schwarzbeck	TK9416	N/A	Apr.20, 20	1 Year
6.	Coaxial Switch	Anritsu	MP59B	6100214550	Apr.20, 20	1 Year

4.2 For Disturbance Power Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESHS30	828985/018	Apr.20, 20	1 Year
2.	Power Clamp	Rohde & Schwarz	MDS21	833711/025	Apr.20, 20	1 Year
3.	Coaxial Switch	Anritsu	MP59B	6100214550	Apr.20, 20	1 Year

4.3 For Harmonic / Flicker Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Power Frequency test system	HAEFELY	PHF555	080419-03	Apr.20, 20	1 Year

4.4 For Electrostatic Discharge Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ESD Tester	HAEFELY	PSD 1600	H708159	Apr.20, 20	1 Year

4.5 For RF Strength Susceptibility Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Signal Generator	HP	8648A	3633A02081	Apr.20, 20	1 Year
2.	Amplifier	A&R	500A100	17034	NCR	NCR
3.	Amplifier	A&R	100W/1000M1	17028	NCR	NCR
4.	Isotropic Field Monitor	A&R	FM2000	16829	NCR	NCR
5.	Isotropic Field Probe	A&R	FLW220100	16755	Apr.20, 20	1 Year
6.	Biconic Antenna	EMCO	3108	9507-2534	NCR	NCR
7.	Log-periodic Antenna	A&R	AT1080	16812	NCR	NCR
8.	PC	N/A	486DX2	N/A	N/A	N/A

4.6 For Electrical Fast Transient/Burst Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
	Burst Tester	HAEFELY	PEFT 4010	080981-16	Apr.20, 20	1 Year

4.7 For Surge Test

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

4.8 For Injected Currents Susceptibility Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
	Simulator	EMTEST	CWS 500C	0900-12	Apr.20, 20	1 Year
	CDN	EMTEST	CDN-M2	510010010010	Apr.20, 20	1 Year
	VDN	EMTEST	CDN-M3	0900-11	Apr.20, 20	1 Year
	Injection Clamp	EMTEST	F-2031-23MM	368	Apr.20, 20	1 Year
	Attenuator	EMTEST	ATT6	0010222a	Apr.20, 20	1 Year

4.9 For Magnetic Field Immunity Test

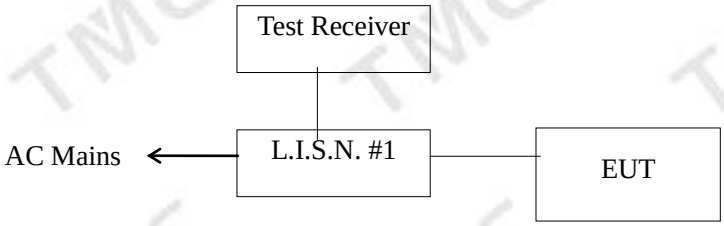
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
	Magnetic Field Tester	HEAFELY	MAG100.1	083858-10	Apr.20, 20	2 Year

4.10 For Voltage Dips and Interruptions Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
	Dips Tester	HEAFELY	PLINE 1610	083732-18	Apr.20, 20	1 Year

5. POWER LINE CONDUCTED EMISSION TEST

5.1 Block Diagram of Test Setup



5.2 Test Standard

EN 55014-1:2017+A11:2020

5.3 Power Line Conducted Emission Limit

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

5.4 EUT Configuration on Test

The following equipments are installed on conducted emission test to meet EN55014 requirement and operating in a manner, which tends to maximize its emission characteristics in a normal application.

5.4.1 EUT Information

Model Number : 3MTRE
Manufacturer : 3MoMo Motor Technology Co., Ltd

5.5 Operating Condition of EUT

5.5.1 Setup the EUT and simulators as shown in Section 5.1.

5.5.2 Turn on the power of all equipments.

5.5.3 Let the EUT work in test modes (EUT WORKING) and test it.

5.6 Test Procedure

The EUT is put on the ground and connected to the AC mains through a Artificial Mains Network (AMN). This provided 50ohm-coupling impedance for the tested equipments. Both sides of AC line are checked to find out the maximum conducted emission levels according to the EN55014-1 regulations during conducted emission test.

The bandwidth of the test receiver (R&S Test Receiver ESHS30) is set at 10KHz.

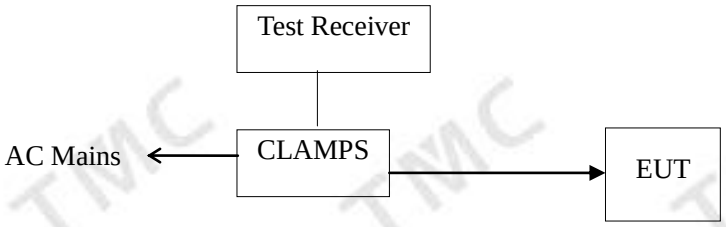
The frequency range from 150 KHz to 30 MHz is investigated. and all the scanning waveform is put in **Appendix I.**

5.7 Test Result

PASS.

6. DISTURBANCE POWER TEST

6.1 Block Diagram of Test Setup



(EUT: Medical Electric Push Rod)

6.2 Disturbance Power Limit

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

Frequency MHz	Interference Power Limits dB(pW)	
	Quasi-peak Value	Average Value
30 ~ 300	45 Increasing Linearly with Frequency to 55 (Q.P.)	35 Increasing Linearly with Frequency to 45 (A.V.)

6.3 EUT Configuration on Test

The EN55014 regulations test method must be used to find the maximum emission during radiated emission test.

The configuration of EUT is the same as used in conducted emission test. Please refer to Section 3.2

6.4 Operating Condition of EUT

Same as conducted emission test, which is listed in Section 5.1., except the test set up replaced as Section 6.1.

6.5 Test Procedure

The EUT is placed on the ground and away from other metallic surface at least 0.4m. 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 test receiver(R&S ESVS30) is set at 120kHz.

All the test results are listed in Section 6.6.
The frequency spectrum from 30 MHz to 300 MHz is investigated.
As the peak value is too low against the limit, so the quasi-peak value and average value have omitted. All the scanning waveforms are attached in **Appendix II.**

6.6 Disturbance Power Test Result

PASS

7. HARMONIC CURRENT EMISSION TEST

7.1 Block Diagram of Test Setup



7.2 Test Standard and Limit

7.2.1 Test Standard

EN 61000-3-2:2019

7.2.2 Limits

Table 12 Harmonic Current Test Limit (Class A)

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≤n≤39	0.15×15/**n**
Even harmonics	
2	1.08
4	0.43
6	0.30
8≤n≤40	0.23×8/**n**

7.3 Test Procedure

The power cord of the EUT is connected to the output of the test system. Turn on the Power of the EUT and use the test system to test the harmonic current level.

7.4 Test Results

PAS

8. VOLTAGE FLUCTUATIONS & FLICKER TEST

8.1 Block Diagram of Test Setup

Same as Section 7.1..

8.2 Test Standard

EN61000-3-3:2013+A1:2019

8.3 Operating Condition of EUT

Same as Section 7.3.. The power cord of the EUT is connected to the output of the test system. Turn on the power of the EUT and use the test system to test the harmonic current level.

Flicker Test Limit

Test items	Limits
Pst	1.0
dc	3.3%
dmax	4.0%
dt	Not exceed 3.3% for 500ms

8.4 Test Data

Flicker test Data

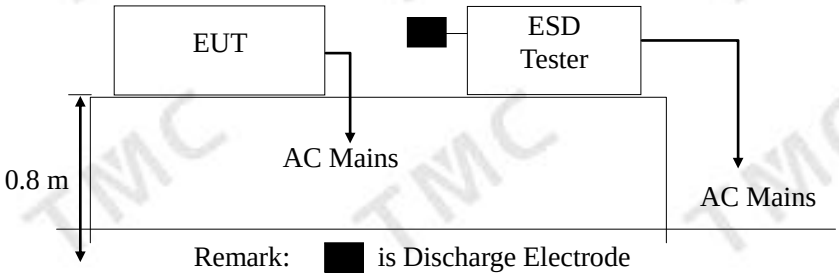
Model No.: 3MTRE Test Mode: 1		
Items	Reading	Limit
dmax	0.00	4.0%
dc	0.00	3.3%
dt	0.00	Not exceed 3.3% for 500ms
Pst	0.001	1.0

8.5 Test Results

PASS

9. ELECTROSTATIC DISCHARGE TEST

9.1 Block Diagram of ESD Test Setup



9.2 Test Standard

EN 55014-2:2015(EN61000-4-2:2009)
Severity Level 3 for Air Discharge at 8KV
Severity Level 2 for Contact Discharge at 4KV

9.3 Severity Levels and Performance Criterion

9.3.1 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

9.3.2 Performance criterion: B

9.4 EUT Configuration on Test

The configuration of EUT are listed in Section 3.2.

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 (Working) and test it.

9.6 Test Procedure

9.6.1 Air Discharge:

This test is done on a non-conductive surfaces. 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.

9.6.2 Contact Discharge:

All the procedure shall be same as Section 9.6.1. except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

9.6.3 Indirect discharge for horizontal coupling plane

At least 20 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode positions vertically at a distance of 0.1m from the EUT and with the discharge electrode touching the coupling plane.

9.6.4 Indirect discharge for vertical coupling plane

At least 20 single discharge 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.

9.7 Test Results

PASS.

Please refer to the following page.

Electrostatic Discharge Test Results

Applicant :	eMoMo Technology Co., Ltd	Test Date :	January 5, 2021
EUT :	Medical Electric Push Rod	Temperature :	22℃
M/N :	3MTRE	Humidity :	50%
Power Supply :	AC230V	Test Mode :	Working
Test Engineer :	Jason		

Air Discharge: ±8KV For each point positive 10 times and negative 10 times discharge.

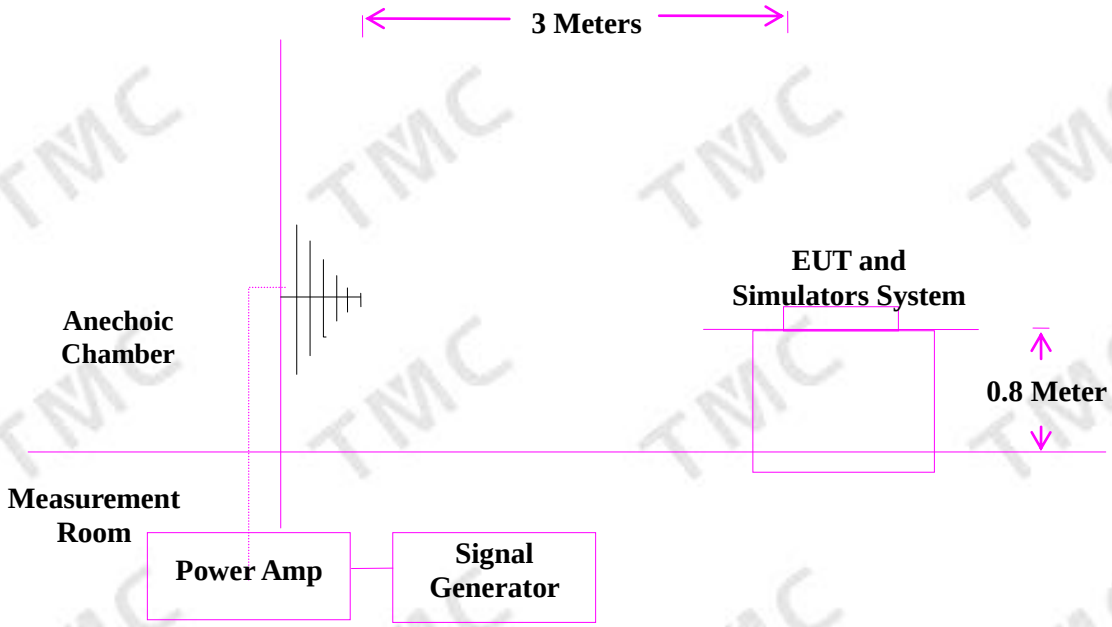
Contact Discharge: ±4KV

Location		Kind A-Air Discharge C-Contact Discharge	Result
Slot	10 points	A	PASS
Shell	10 points	A	PASS
Button	10 points	A	PASS
Screw	10 points	C	PASS
HCP	10 points	C	PASS
VCP of front	10 points	C	PASS
VCP of back	10 points	C	PASS
VCP of left	10 points	C	PASS
VCP of right	10 points	C	PASS

Test Equipment: ESD Simulator (HAEFELY, PESD1600)

10. RF FIELD STRENGTH SUSCEPTIBILITY TEST

10.1 R/S Test Setup



10.2 Test Standard

EN 55014-2:2015 (EN61000-4-3:2006+A1:2008+A2:2010)

10.3 Severity Levels and Performance Criterion

10.3.1 Severity level

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

10.3.2 Performance criterion : --

10.4 EUT Configuration on Test

The configuration of EUT are listed in Section 3.2..

10.5 Operating Condition of EUT

Setup the EUT as shown in Section 10.1.. The operating condition of EUT are listed in section 3.3.

10.6 Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter 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 EUT must be faced this transmitting antenna and measured individually.
In order to judge the EUT performance, a CCD camera is used to monitor the EUT.
All the scanning conditions are as follows **:**

Condition of Test	Remarks
11. Fielded Strength	3 V/m (Severity Level 2)
12. Radiated Signal	Modulated
13. Scanning Frequency	80 - 1000 MHz
14. Sweeping time of radiated	0.0015 decade/s
15. Dwell Time	1 Sec

10.7 Test Results

PASS

Please refer to the following page.

RF Field Strength Susceptibility Test Results

Applicant :	eMoMo Technology Co., Ltd	Test Date :	January 5, 2021
EUT :	Medical Electric Push Rod	Temperature :	22℃
M/N :	3MTRE	Humidity :	50％
Power Supply :	AC230V	Test Mode :	Working
Test Engineer :	Jason	Frequency Range :	80 MHz to 1000 MHz

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

Criterion : A

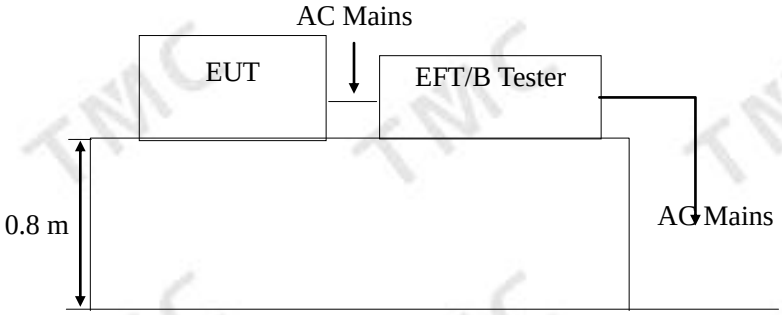
	Frequency Rang : 80-1000	
Steps	1%	1%
	Horizontal	Vertical
Front	Pass	Pass
Right	Pass	Pass
Rear	Pass	Pass
Left	Pass	Pass

Test Equipment :
1. Signal Generator : 8648A (HP)
2. Power Amplifier : 500A100 & 100W/1000M1 (A&R)
3. Power Antenna : 3108 (EMCO) & AT1080 (A&R)
4. Field Monitor : FM2000 (A&R)

NOTE:

11. ELECTRICAL FAST TRANSIENT/BURST TEST

11.1 EFT Test Setup



11.2 Test Standard

EN 55014-2:2015 (EN61000-4-4:2012)
Severity Level 2 at 1KV

11.3 Severity Levels and Performance Criterion

11.3.1 Severity level

Open Circuit Output Test Voltage ±10%		
Level	On POWER SUPPLYLines	On I/O (Input/Output) Signal data and control lines
12.	0.5 KV	0.25 KV
13.	1 KV	0.5 KV
14.	2 KV	1 KV
15.	4 KV	2 KV
X	Special	Special

Performance criterion : B

11.4 EUT Configuration on Test

The configuration of EUT are listed in Section 3.2..

11.5 Operating Condition of EUT

Setup the EUT as shown in Section 11.1.. The operating condition of EUT are listed in section 3.3.

11.6Test 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 the EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m.

11.6.1For 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.

11.6.2For signal lines and control lines ports:

It's necessary to test.

11.6.3For DC output line ports:

It's unnecessary to test.

11.7Test Results

PASS.

Please refer to the following page.

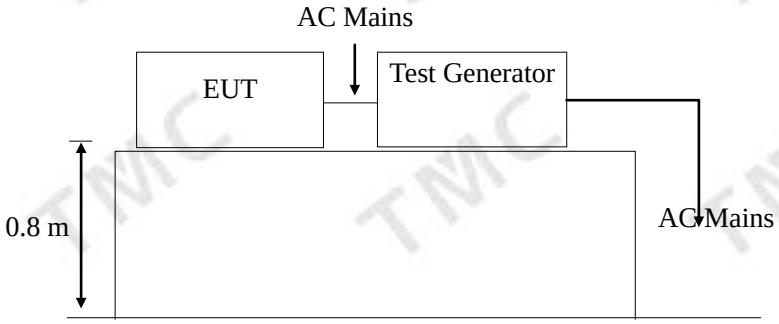
Electrical Fast Transient/Burst Test Results

Applicant	: eMoMo Technology Co., Ltd	Test Date	: January 5, 2021
EUT	: Medical Electric Push Rod	Temperature	: 22℃
M/N	: 3MTRE	Humidity	: 50％
Power Supply	: AC230V	Test Mode	: Working
Test Engineer	: Jason		
Inject Place : AC Mains			

Inject Line	Voltage KV	Inject Time(s)	Inject Method	Results	Inject Line	Voltage KV	Inject Time(s)	Inject Method	Results
L	±1	120	Direct	PASS					
N	±1	120	Direct	PASS					
L N	±1	120	Direct	PASS					

12. SURGE TEST

12.1 Surge Test Setup



12.2 Test Standard

EN 55014-2:2015 (EN61000-4-5:2014+A1:2017)

12.3 Severity Levels and Performance Criterion

12.3.1 Severity level

Severity Level	Open-Circuit Test Voltage KV
1	13. 5
2	14. 0
3	15. 0
4	4.0
*	Special

Performance criterion **:** --

EUT Configuration on Test

The configuration of EUT are listed in Section 3.2..

12.4 Operating Condition of EUT

Setup the EUT as shown in Section 12.1..

Turn on the power of all equipments.

Let the EUT work in test mode (Working) and test it.

12.5Test Procedure

Set up the EUT and test generator as shown on Section 12.1
For line to line coupling mode, provide a 0.5KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
Different phase angles are done individually.
Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

12.6Test Results

PASS.

Please refer to the following page.

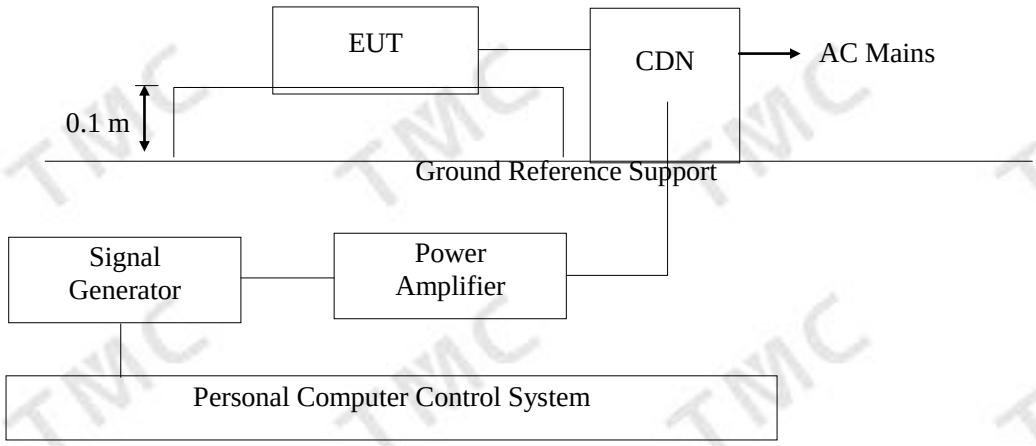
Surge Immunity Test Result

Applicant :	*eMoMo Technology Co., Ltd*		
EUT :	*Medical Electric Push Rod*	Test Date :	*January 5, 2021*
M/N :	*3MTRE*	Temperature :	*22 ℃*
POWER SUPPLY:	*AC230V*	Humidity :	*50%*
Test Engineer :	*Jason*	Criterion :	*C*
Test Mode :	*Working*		

Location	Polarity	Phase Angle	Number of Pulse	Pulse Voltage (KV)	Result
L-N	+	*0o*	*5*	*1.0*	*PASS*
	+	*90o*	*5*	*1.0*	*PASS*
	+	*180o*	*5*	*1.0*	*PASS*
	+	*270o*	*5*	*1.0*	*PASS*
	-	*0o*	*5*	*1.0*	*PASS*
	-	*90o*	*5*	*1.0*	*PASS*
	-	*180o*	*5*	*1.0*	*PASS*
	-	*270o*	*5*	*1.0*	*PASS*
L-PE	+	*0o*	*5*	*2.0*	*N/A*
	+	*90o*	*5*	*2.0*	*N/A*
	+	*180o*	*5*	*2.0*	*N/A*
	+	*270o*	*5*	*2.0*	*N/A*
	-	*0o*	*5*	*2.0*	*N/A*
	-	*90o*	*5*	*2.0*	*N/A*
	-	*180o*	*5*	*2.0*	*N/A*
	-	*270o*	*5*	*2.0*	*N/A*
N-PE	+	*0o*	*5*	*2.0*	*N/A*
	+	*90o*	*5*	*2.0*	*N/A*
	+	*180o*	*5*	*2.0*	*N/A*
	+	*270o*	*5*	*2.0*	*N/A*
	-	*0o*	*5*	*2.0*	*N/A*
	-	*90o*	*5*	*2.0*	*N/A*
	-	*180o*	*5*	*2.0*	*N/A*
	-	*270o*	*5*	*2.0*	*N/A*
Remark:				*Test Equipment : Surge Tester Psurge4.1*	

13. INJECTED CURRENTS SUSCEPTIBILITY TEST

13.1 Block Diagram of Test AC Mains Setup



13.2 Test Standard

EN 55014-2:2015 (EN61000-4-6:2014/AC:2015)
Severity Level 2 at 3 V (rms), 0.15MHz ~ 80MHz

13.3 Severity Levels and Performance Criterion

13.3.1 Severity level

Level	Field Strength V/m
14.	1
15.	3
16.	10
X	Special

Performance criterion: A

13.2EUT Configuration on Test

The configuration of EUT are listed in Section 3.2..

13.3Operating Condition of EUT

Setup the EUT as shown in Section 13.1.. The operating condition of EUT are listed in section 3.3.

13.4Test Procedure

Set up the EUT, CDN and test generators as shown on Section 13.1.

Let the EUT work in test mode and test it.
The EUT are placed on an insulating support 0.8m 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).
The disturbance signal described below is injected to EUT through CDN.
The EUT operates within its operational mode(s) under intended climatic conditions after power on.
The frequency range is swept from 150KHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave.
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.
Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

13.5Test Results

PASS

Please refer to the following page.

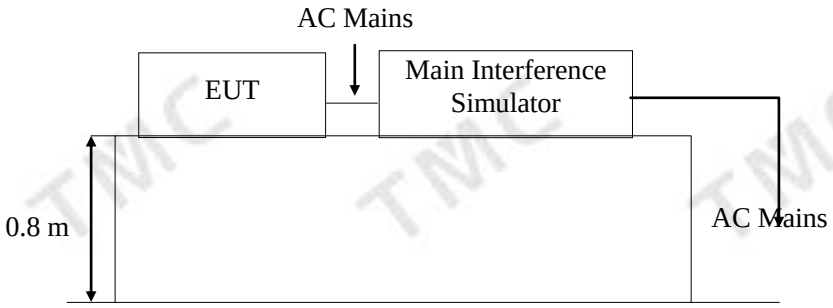
Injected Currents Susceptibility Test Results

Applicant :	eMoMo Technology Co., Ltd	Test Date :	January 5, 2021
EUT :	Medical Electric Push Rod	Temperature :	22℃
M/N :	3MTRE	Humidity :	50％
Power Supply :	AC230V	Test Mode :	Working
Test Engineer :	Jason		

Frequency Range (MHz)	Injected Position	Strength	Criterion	Result
0.15 ~ 20	SUPPLY PORT	3V(rms), Unmodulated	A	PASS
20 ~ 80	SUPPLY PORT	3V(rms), Unmodulated	A	PASS

14. VOLTAGE DIPS AND INTERRUPTIONS TEST

14.1 Voltage Dips and Interruptions Test Setup



Remark: Combination wave generator and decoupling network are included in test generator.

14.2 Test Standard

EN 55014-2:2015 (EN61000-4-11:2019)

14.3 Severity Levels and Performance Criterion

14.3.1 Severity level

Test Level %U_T	Voltage dip and short interruptions %U_T	Duration (in period)
0	100	250p
40	60	5p
70	30	0.5p

14.3.2 Performance criterion : C & B

14.4 EUT Configuration on Test

The configuration of EUT are listed in Section 3.2.

14.5 Operating Condition of EUT

14.5.1 Setup the EUT as shown in Section 14.1..

14.5.2 Turn on the power of all equipments.

14.5.3 Let the EUT work in test mode (SPEAKERS Playing) and test it.

14.6 Test Procedure

15. Set up the EUT and test generator as shown on Section 14.1.

16. The interruptions is introduced at selected phase angles with specified duration.
17. Record any degradation of performance.

14.7Test Result

PASS.

Please refer to the following page.

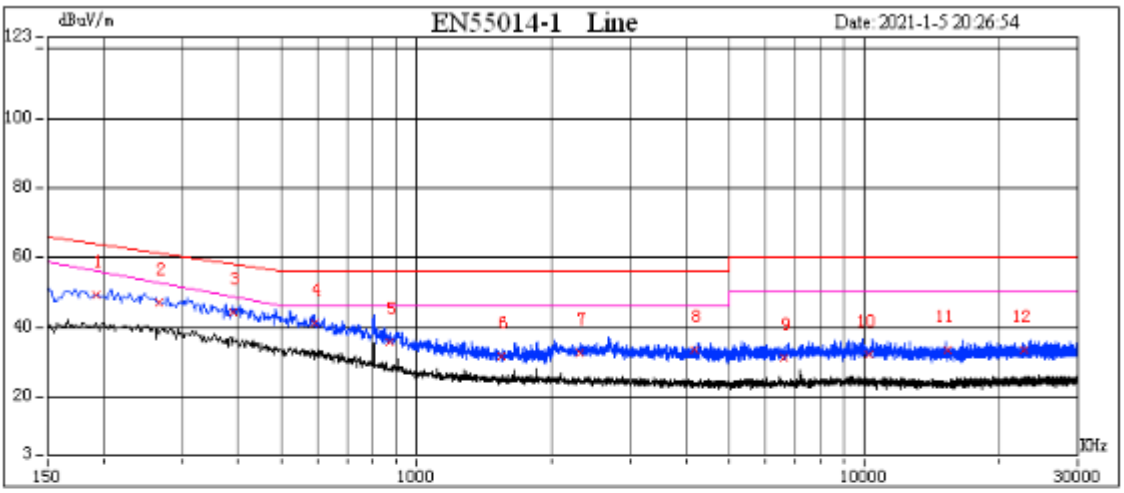
Voltage Dips And Interruptions Test Results

Applicant	: eMoMo Technology Co., Ltd	Test Date	: January 5, 2021
EUT	: Medical Electric Push Rod	Temperature	: 22℃
M/N	: 3MTRE	Humidity	: 50%
Power Supply	: AC230V	Test Mode	: Working
Test Engineer	: Jason		

Test Level % U_T	Voltage Dips & Short Interruptions % U_T	Duration (in period)	Phase Angle	Criterion	Result
0	100	250P	0° ~360°	C	PASS
40	60	5P	0° ~360°	C	PASS
70	30	0.5P	0° ~360°	B	PASS

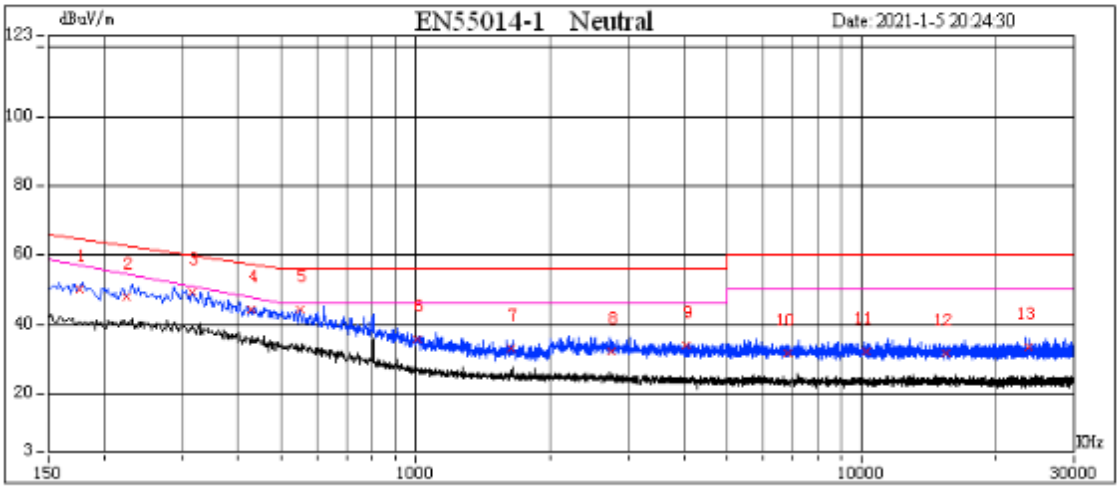
APPENDIX I

Index: 3 Temperature: Humidity: 843



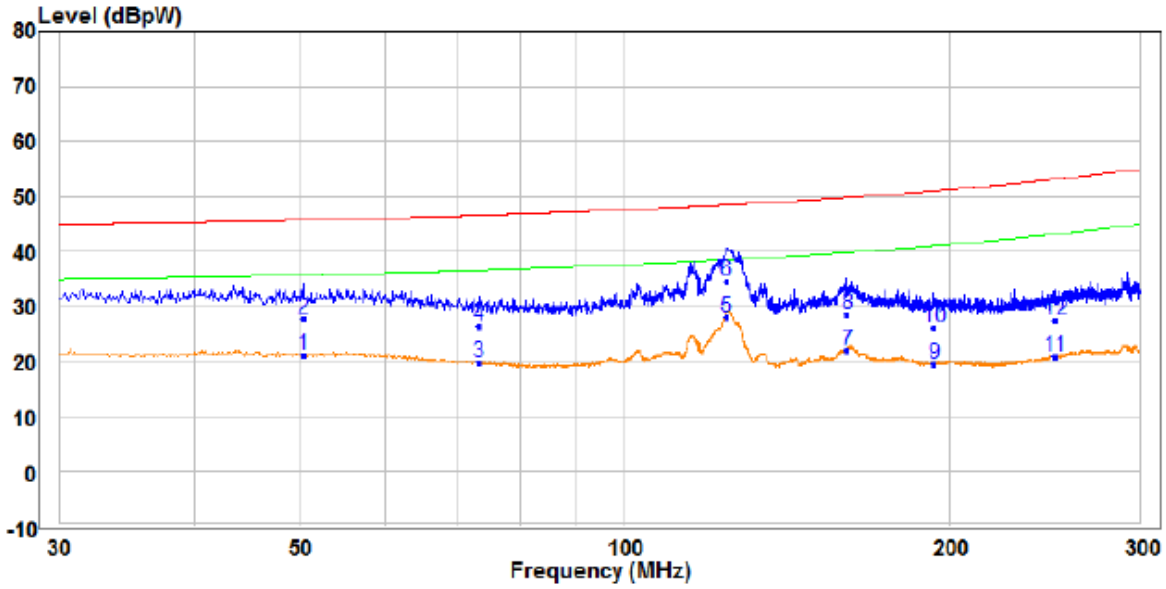
	Freq(KHz)	Peak Amptd(dBuV)	QP Amptd(dBuV)	Avg Amptd(dBuV)	QP Limit(dBuV)	Avg Limit(dBuV)	QP Margin(dB)	Avg Margin(dB)	Factor(dB)
1	192.5500	49.49	---	---	64.78	57.42	-15.29	-7.93	11.50
2	266.5500	47.25	---	---	62.67	54.67	-15.42	-7.42	11.58
3	388.6500	44.40	---	---	59.18	50.14	-14.78	-5.73	11.39
4	594.0000	40.98	---	---	56.00	46.00	-15.02	-5.02	12.26
5	875.2000	35.98	---	---	56.00	46.00	-20.02	-10.02	12.32
6	1543.0500	31.90	---	---	56.00	46.00	-24.10	-14.10	12.42
7	2315.0790	32.61	---	---	56.00	46.00	-23.39	-13.39	12.66
8	4191.5480	33.33	---	---	56.00	46.00	-22.67	-12.67	12.20
9	6615.0770	31.39	---	---	60.00	50.00	-28.61	-18.61	12.29
10	10271.5340	32.17	---	---	60.00	50.00	-27.83	-17.83	12.86
11	15391.1740	33.58	---	---	60.00	50.00	-26.42	-16.42	12.15
12	22871.1090	33.41	---	---	60.00	50.00	-26.59	-16.59	12.81

Index: 3 Temperature: Humidity: 843



	Freq(KHz)	Peak Amptd(dBuV)	QP Amptd(dBuV)	Avg Amptd(dBuV)	QP Limit(dBuV)	Avg Limit(dBuV)	QP Margin(dB)	Avg Margin(dB)	Factor(dB)
1	175.9000	50.17	---	---	65.26	58.04	-15.09	-7.87	11.89
2	224.0000	48.02	---	---	63.89	56.25	-15.86	-8.23	11.71
3	314.6500	49.20	---	---	61.30	52.88	-12.10	-3.68	12.18
4	427.5000	44.15	---	---	58.07	48.69	-13.92	-4.54	11.64
5	549.6000	44.38	---	---	56.00	46.00	-11.62	-1.62	12.04
6	1012.1000	35.63	---	---	56.00	46.00	-20.37	-10.37	12.06
7	1639.2500	33.01	---	---	56.00	46.00	-22.99	-12.99	12.49
8	2747.1870	32.36	---	---	56.00	46.00	-23.64	-13.64	12.56
9	4051.5130	34.06	---	---	56.00	46.00	-21.94	-11.94	12.23
10	6847.1060	31.91	---	---	60.00	50.00	-28.09	-18.09	11.96
11	10271.5340	32.22	---	---	60.00	50.00	-27.78	-17.78	11.91
12	15527.1910	31.91	---	---	60.00	50.00	-28.09	-18.09	12.06
13	23679.2100	33.64	---	---	60.00	50.00	-26.36	-16.36	11.85

APPENDIX Ⅱ



Trace: 1
Condition : Clamp(QP) Line1

		Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark	Pol/Phase
		MHz	dBpW	dB	dBpW	dBpW	dB		
1		50.400	2.36	18.90	21.26	35.76	-14.50	Average	Line1
2		50.400	8.95	18.90	27.85	45.76	-17.91	QP	Line1
3		73.300	2.23	17.49	19.72	36.60	-16.88	Average	Line1
4		73.300	8.87	17.49	26.36	46.60	-20.24	QP	Line1
5	PP	124.200	11.38	16.65	28.03	38.49	-10.46	Average	Line1
6	QP	124.200	17.99	16.65	34.64	48.49	-13.85	QP	Line1
7		160.500	4.02	18.12	22.14	39.83	-17.69	Average	Line1
8		160.500	10.54	18.12	28.66	49.83	-21.17	QP	Line1
9		193.300	2.10	17.50	19.60	41.05	-21.45	Average	Line1
10		193.300	8.74	17.50	26.24	51.05	-24.81	QP	Line1
11		250.200	2.33	18.62	20.95	43.16	-22.21	Average	Line1
12		250.200	8.95	18.62	27.57	53.16	-25.59	QP	Line1

APPENDIX III

Photo 1 General Appearance of the EUT

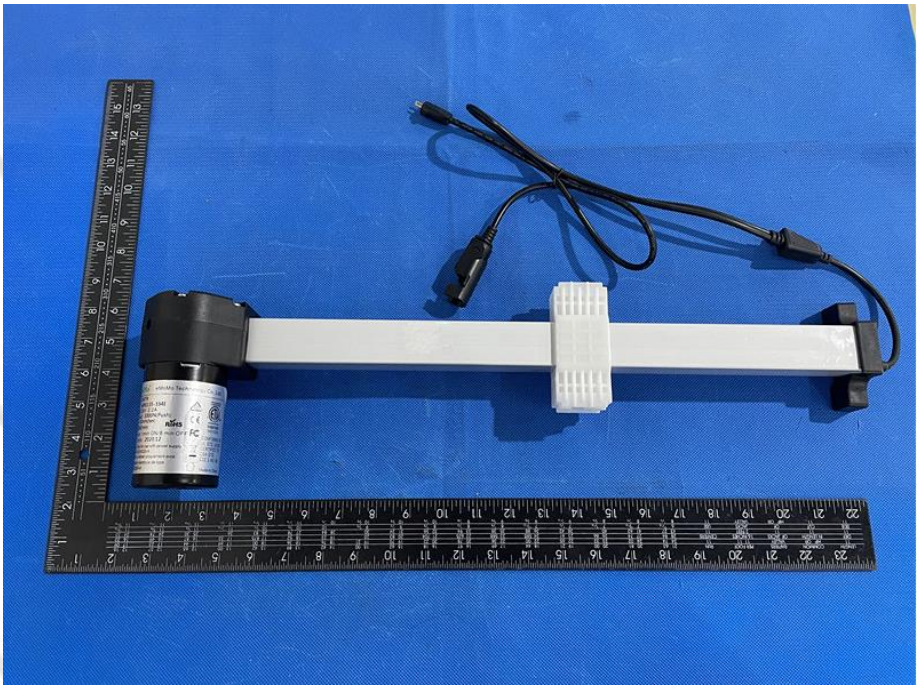


Photo 2 General Appearance of the EUT



Photo 3 General Appearance of the EUT



Photo 4 General Appearance of the EUT



Photo 5 Conducted Emission Test



Photo 6 Disturbance Power Test



End of report