

EMC TEST REPORT
for
XIAMEN COMFORT SCIENCE & TECHNOLOGY GROUP CO., LTD
Massage Chair

Model No.: OGI-3210C, OGI-3210A/B/C/D/E/F/G-XXX,
OGI-3202A/B/C/D/E/F/G-XXX, OGI-3202

Prepared for : XIAMEN COMFORT SCIENCE & TECHNOLOGY GROUP
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Report No. : ATE20190179
Date of Test : April 22-April 27, 2019
Date of Report : April 29, 2019

TABLE OF CONTENT

Description

Page

Test Report Declaration

1.	TEST RESULTS SUMMARY	6
2.	GENERAL INFORMATION.....	7
2.1.	Description of Device (EUT).....	7
2.2.	Accessory and Auxiliary Equipment.....	7
2.3.	Classification of apparatus	7
2.4.	Description of Test Facility	8
2.5.	Measurement Uncertainty.....	8
3.	MEASURING DEVICE AND TEST EQUIPMENT	9
3.1.	For Disturbance voltage measurement	9
3.2.	For Disturbance power measurement	10
3.3.	For Harmonic current emission / Flicker measurement	10
3.4.	For Electrostatic discharge test.....	10
3.5.	For Fast transients test	10
3.6.	For Surge test.....	11
3.7.	For Injected current test.....	11
3.8.	For Voltage dips test.....	11
4.	MAINS PORTS DISTURBANCE VOLTAGE MEASUREMENT.....	12
4.1.	Block Diagram of Test Setup	12
4.2.	Measuring Standard	12
4.3.	Measuring Limits	13
4.4.	EUT Configuration on Measurement	13
4.5.	Operating Condition of EUT	13
4.6.	Measuring Procedure	13
4.7.	Data Sample	14
4.8.	Measuring Results	14
5.	DISTURBANCE POWER MEASUREMENT	17
5.1.	Block Diagram of Test Setup	17
5.2.	Measuring Standard	17
5.3.	Measuring Limits	18
5.4.	EUT Configuration on Measurement	18
5.5.	Operating Condition of EUT	18
5.6.	Measuring Procedure	18
5.7.	Data Sample	19
5.8.	Measuring Results	19
6.	RADIATED DISTURBANCE MEASUREMENT	22
6.1.	Block Diagram of Test.....	22
6.2.	Measuring Standard	22
6.3.	Measuring Limits	23
6.4.	EUT Configuration on Measurement	23
6.5.	Operating Condition of EUT	23
6.6.	Measuring Procedure	23
6.7.	Measuring Results	24
7.	HARMONIC CURRENT EMISSION MEASUREMENT	25
7.1.	Block Diagram of Test Setup	25
7.2.	Measuring Standard	25

7.3.	Operation Condition of EUT	25
7.4.	Measuring Results	25
8.	VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT	29
8.1.	Block Diagram of Test Setup	29
8.2.	Measuring Standard	29
8.3.	Operation Condition of EUT	29
8.4.	Measuring Results	29
9.	ELECTROSTATIC DISCHARGE TEST	31
9.1.	Block Diagram of Test Setup	31
9.2.	Test Standard	31
9.3.	Severity Levels and Performance Criterion	31
9.4.	EUT Configuration on Measurement	32
9.5.	Operating Condition of EUT	32
9.6.	Test Procedure	32
9.7.	Test Results	32
10.	FAST TRANSIENTS TEST	34
10.1.	Block Diagram of Test Setup	34
10.2.	Test Standard	34
10.3.	Severity Levels and Performance Criterion	34
10.4.	EUT Configuration on Measurement	35
10.5.	Operating Condition of EUT	35
10.6.	Test Procedure	35
10.7.	Test Result	35
11.	SURGE TEST	37
11.1.	Block Diagram of Test Setup	37
11.2.	Test Standard	37
11.3.	Severity Levels and Performance Criterion	37
11.4.	EUT Configuration on Measurement	38
11.5.	Operating Condition of EUT	38
11.6.	Test Procedure	38
11.7.	Test Result	38
12.	INJECTED CURRENTS TEST	40
12.1.	Block Diagram of Test Setup	40
12.2.	Test Standard	40
12.3.	Severity Levels and Performance Criterion	40
12.4.	EUT Configuration on Measurement	41
12.5.	Operating Condition of EUT	41
12.6.	Test Procedure	41
12.7.	Test Results	41
13.	VOLTAGE DIPS TEST	43
13.1.	Block Diagram of Test Setup	43
13.2.	Test Standard	43
13.3.	Severity Levels and Performance Criterion	43
13.4.	EUT Configuration on Measurement	44
13.5.	Operating Condition of EUT	44
13.6.	Test Procedure	44
13.7.	Test Result	44
14.	PHOTOGRAPHS	46
14.1.	Photo of Disturbance voltage measurement.....	46
14.2.	Photo of Disturbance power measurement.....	46
14.3.	Photo of Harmonic current / Flicker measurement	47
14.4.	Photo of Electrostatic discharge Test	47
14.5.	Photo of Fast transients Test	48

14.6. Photo of Surge and Voltage dips Test.....	48
14.7. Photo of Injected current Test.....	49
14.8. Photo of EUT	50

Test Report Declaration

Applicant : XIAMEN COMFORT SCIENCE & TECHNOLOGY GROUP CO., LTD
Address : (5/F) NO.168, QIANPU ROAD, SIMING DISTRICT, XIAMEN, CHINA
Manufacturer : XIAMEN OGAWA INTELLIGENT HEALTH EQUIPMENT CO.,LTD
Address : THREE FLOOR NO 38-40, TIANYANG ROAD, JIMEI ZONE, XIAMEN T:3521880
Product : Massage Chair
Model No. : OGI-3210C, OGI-3210A/B/C/D/E/F/G-XXX, OGI-3202A/B/C/D/E/F/G-XXX, OGI-3202

Test Procedure Used:

EN 55014-1: 2017

EN 61000-3-2: 2014

EN 61000-3-3: 2013

EN 55014-2: 2015 (IEC61000-4-2: 2008, IEC61000-4-4: 2012, IEC61000-4-5: 2014+A1:2017, IEC61000-4-6: 2013 IEC61000-4-11: 2004+A1:2017)

The device described above is tested by Shenzhen Accurate 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. This report shows the EUT to be technically compliant with the EN55014-1, EN61000-3-2, EN61000-3-3 and EN55014-2 requirements. The test results are contained in this report and Shenzhen Accurate Technology Co., Ltd. is assumed full responsibility for the accuracy and completeness of these tests.

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

Date of Test : April 22-April 27, 2019

Date of Report : April 29, 2019

Prepared by :

Shen Yang
(Shen Yang, Engineer)

Approve & Authorized Signer :

Sean Liu
(Sean Liu, Manager)

1. TEST RESULTS SUMMARY

Test Items	Test Standard	Test Results
Mains ports disturbance voltage measurement	EN 55014-1: 2017	Pass
Disturbance power measurement	EN 55014-1: 2017	Pass
Radiated disturbance measurement	EN 55014-1: 2017	N/A
Harmonic current emission measurement	EN 61000-3-2: 2014	Pass
Voltage fluctuation and flicker measurement	EN 61000-3-3: 2013	Pass
Electrostatic discharge test	EN 55014-2: 2015 (IEC61000-4-2: 2008)	Pass
Radio frequency electromagnetic fields test	EN 55014-2: 2015 (IEC61000-4-3:2006+A1:2007 +A2:2010)	N/A
Fast transients test	EN 55014-2: 2015 (IEC61000-4-4: 2012)	Pass
Surge test	EN 55014-2: 2015 (IEC61000-4-5: 2014+A1:2017)	Pass
Injected currents test	EN 55014-2: 2015 (IEC61000-4-6: 2013)	Pass
Voltage dips test	EN 55014-2: 2015 (IEC61000-4-11: 2004+A1:2017)	Pass

Remark: "N/A" means "Not applicable".

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT	:	Massage Chair
Model Number	:	OGI-3210C, OGI-3210A/B/C/D/E/F/G-XXX, OGI-3202A/B/C/D/E/F/G-XXX, OGI-3202 (Note: We hereby state that these models are identical in interior structure, electrical circuits and components, just model name is difference, Therefore, only model OGI-3210C is for EMC tested.)
Rating	:	AC 230V~ 50Hz 0.5A
Highest clock frequency	:	< 15MHz

2.2. Accessory and Auxiliary Equipment

N/A

2.3. Classification of apparatus

Category I: apparatus containing no electronic control circuitry.

Category II: transformer toys, dual supply toys, mains powered motor operated appliances, tools, heating appliances and similar electric apparatus (for example – UV radiators, IR radiators and microwave ovens) containing electronic control circuitry with no clock frequency higher than 15 MHz.

Category III: equipment which in normal use, is not connected to a power network and has no cables attached.

This category includes apparatus provided with rechargeable batteries, solar or other similar d.c. power sources which can be charged or operated by connecting the apparatus to the mains power. However, this apparatus shall also be tested as an apparatus in category II while it is connected to the mains network.

Category IV: all other apparatus covered by the scope of this standard.

The EUT belongs to Category II equipment. According to the section 7.2.2 of the standard EN 55014-2, Category II apparatus shall fulfill the following requirements:

- electrostatic discharge with performance criterion B (5.1);
- fast transients with performance criterion B (5.2);
- injected currents up to 230 MHz with performance criterion A (5.3);
- surges with performance criterion B (5.6);
- voltage dips with performance criterion C (5.7).

2.4. Description of Test Facility

EMC Lab : Recognition of accreditation by Federal Communications Commission (FCC)
The Designation Number is CN1189
The Registration Number is 708358

Listed by Innovation, Science and Economic Development Canada (ISED)
The Registration Number is 5077A-2

Accredited by China National Accreditation Service for Conformity Assessment (CNAS)
The Registration Number is CNAS L3193

Accredited by American Association for Laboratory Accreditation (A2LA)
The Certificate Number is 4297.01

Name of Firm : Shenzhen Accurate Technology Co., Ltd.
Site Location : 1/F., Building A, Changyuan New Material Port, Science & Industry Park, Nanshan District, Shenzhen, Guangdong, P.R. China

2.5. Measurement Uncertainty

Conducted emission expanded uncertainty : U=2.23dB, k=2

Power disturbance expanded uncertainty : U=2.92dB, k=2

Harmonic current expanded uncertainty : U=0.512%, k=2

Radiated emission expanded uncertainty (9kHz-30MHz) : U=3.08dB, k=2

Radiated emission expanded uncertainty (30MHz-1000MHz) : U=4.42dB, k=2

Radiated emission expanded uncertainty (Above 1GHz) : U=4.06dB, k=2

3. MEASURING DEVICE AND TEST EQUIPMENT

3.1. For Disturbance voltage measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCS30	100307	Jan. 05, 2019	1 Year
2.	Test Receiver	Rohde & Schwarz	ESPI	100396/003	Jan. 05, 2019	1 Year
3.	Test Receiver	Rohde & Schwarz	ESPI	101526/003	Jan. 05, 2019	1 Year
4.	Test Receiver	Rohde & Schwarz	ESR	101817	Jan. 05, 2019	1 Year
5.	L.I.S.N.	Schwarzbeck	NLSK8126	8126431	Jan. 05, 2019	1 Year
6.	L.I.S.N.	Rohde & Schwarz	ESH3-Z5	100305	Jan. 05, 2019	1 Year
7.	L.I.S.N.	Rohde & Schwarz	ESH3-Z5	100310	Jan. 05, 2019	1 Year
8.	L.I.S.N.	Rohde & Schwarz	ESH3-Z6	100132	Jan. 05, 2019	1 Year
9.	L.I.S.N.	Rohde & Schwarz	ESH3-Z6	100979	Jan. 05, 2019	1 Year
10.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100305	Jan. 05, 2019	1 Year
11.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100312	Jan. 05, 2019	1 Year
12.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100815	Jan. 05, 2019	1 Year
13.	50Ω Coaxial Switch	Anritsu Corp	MP59B	620028393 6	Jan. 05, 2019	1 Year
14.	50Ω Coaxial Switch	Anritsu Corp	MP59B	620028393 3	Jan. 05, 2019	1 Year
15.	50Ω Coaxial Switch	Anritsu Corp	MP59B	620050647 4	Jan. 05, 2019	1 Year
16.	VOLTAGE PROBE	Schwarzbeck	TK9416	N/A	Jan. 05, 2019	1 Year
17.	RF CURRENT PROBE	Rohde & Schwarz	EZ-17	100048	Jan. 05, 2019	1 Year
18.	8-Wire Impedance Stabilisation Network	Schwarzbeck	CAT5 8158	8158-0035	Jan. 05, 2019	1 Year
19.	RF Coaxial Cable	SUHNER	N-2m	No.2	Jan. 05, 2019	1 Year
20.	RF Coaxial Cable	SUHNER	N-2m	No.3	Jan. 05, 2019	1 Year
21.	RF Coaxial Cable	SUHNER	N-2m	No.14	Jan. 05, 2019	1 Year
22.	Measurement Software: ES-K1 V1.71					

3.2.For Disturbance power measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCS30	100307	Jan. 05, 2019	1 Year
2.	Test Receiver	Rohde & Schwarz	ESPI	100396/003	Jan. 05, 2019	1 Year
3.	Test Receiver	Rohde & Schwarz	ESPI	101526/003	Jan. 05, 2019	1 Year
4.	Test Receiver	Rohde & Schwarz	ESR	101817	Jan. 05, 2019	1 Year
5.	Absorbing Clamp	Rohde & Schwarz	MDS21	100142	Jan. 07, 2019	1 Year
6.	Absorbing Clamp	Rohde & Schwarz	MDS21	100136	Jan. 07, 2019	1 Year
7.	50Ω Coaxial Switch	Anritsu Corp	MP59B	6200283933	Jan. 05, 2019	1 Year
8.	50Ω Coaxial Switch	Anritsu Corp	MP59B	6200283936	Jan. 05, 2019	1 Year
9.	RF Coaxial Cable	JING CHENG	N-6m	No.4	Jan. 05, 2019	1 Year
10.	RF Coaxial Cable	JING CHENG	N-6m	No.5	Jan. 05, 2019	1 Year
11.	Measurement Software: ES-K1 V1.71					

3.3.For Harmonic current emission / Flicker measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	AC Power Source	California Instruments	5001iX-400	55689	Jan. 05, 2019	1 Year
2.	Test analyzer	California Instruments	PACS-1	72254	Jan. 05, 2019	1 Year
3.	Test Software: CTS 4 V4.15.0					

3.4.For Electrostatic discharge test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ESD Generator	TESEQ	NSG 437	823	Jan. 07, 2019	1 Year

3.5.For Fast transients test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ULTRA COMPACT SIMULATOR	EM TEST	UCS 500 N5	V0928104968	Jan. 05, 2019	1 Year
2.	CAPACITIVE CLAMP	EM TEST	HFK	0509-34	Jan. 05, 2019	1 Year
3.	EMCPRO SYSTEM (IMMUNITY TESTER)	THERMO	EMC PRO Plus-BASE	1108237	Jan. 05, 2019	1 Year
4.	EMCPRO SYSTEM (IMMUNITY TESTER)	THERMO	EMC PRO -BASE	0403271	Jan. 05, 2019	1 Year
5.	Test Software: iec control V5.0.8.0					

3.6.For Surge test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ULTRA COMPACT SIMULATOR	EM TEST	UCS 500 N5	V0928104968	Jan. 05, 2019	1Year
2.	EMCPRO SYSTEM (IMMUNITY TESTER)	THERMO	EMC PRO Plus-BASE	1108237	Jan. 05, 2019	1Year
3.	COUPLER DECOUPLER FOR TELECOM LINES	THERMO	CM-TEL-CD	0403273	Jan. 05, 2019	1Year
4.	Test Software: iec control V5.0.8.0					

3.7.For Injected current test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Conducted Immunity Test System	FRANKONIA	CIT-10	126B1121	Jan. 05, 2019	1Year
2.	CDN	FRANKONIA	CDN-M2/3	A3027020	Jan. 05, 2019	1 Year
3.	EM Injection Clamp	FCC	F-203I-23mm	091824	Jan. 05, 2019	1 Year
4.	6dB Attenuator	Weinschel	WA59-6-33	A329	Jan. 05, 2019	1 Year
5.	Test Software: IEC/EN61000-4-6 V1.1.1					

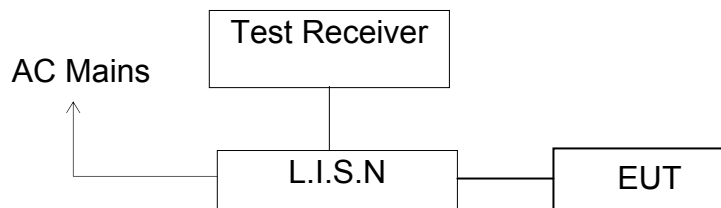
3.8.For Voltage dips test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ULTRA COMPACT SIMULATOR	EM TEST	UCS 500 N5	V0928104968	Jan. 05, 2019	1 Year
2.	EMCPRO SYSTEM (IMMUNITY TESTER)	THERMO	EMC PRO Plus-BASE	1108237	Jan. 05, 2019	1 Year
3.	Test Software: iec control V5.0.8.0					

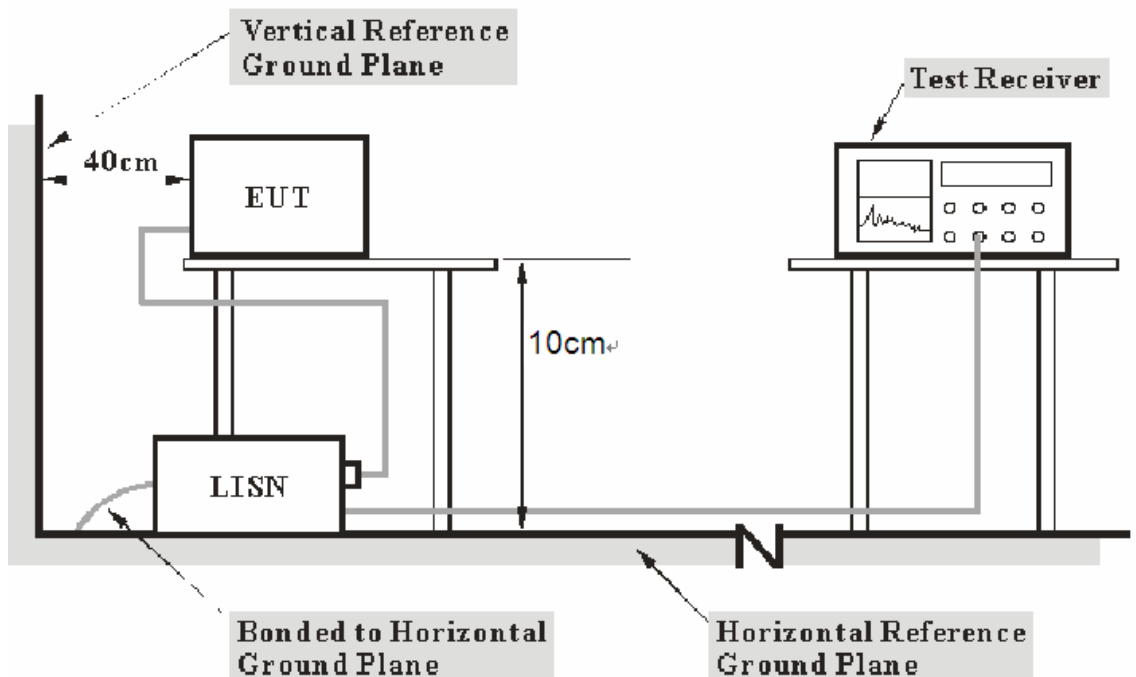
4. MAINS PORTS DISTURBANCE VOLTAGE MEASUREMENT

4.1. Block Diagram of Test Setup

4.1.1. Block diagram of connection between the EUT and simulators



4.1.2. Test System Setup



- Note:**
1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 10cm from other units and other metal planes support units.

4.2. Measuring Standard

EN 55014-1: 2017

4.3.Measuring Limits

Frequency (MHz)	Limit (dB μ V)	
	Quasi-peak Level	Average Level
0.15 - 0.50	66.0 - 56.0 *	59.0 - 46.0 *
0.50 - 5.00	56.0	46.0
5.00 - 30.00	60.0	50.0

Remark: * means decreasing linearly with logarithm of frequency.

4.4.EUT Configuration on Measurement

The following equipments are installed on Conducted Emission Measurement to meet EN55014-1 requirements and operating in a manner, which tend to maximize its emission characteristics in a normal application.

4.4.1.Massage Chair (EUT)

Model Number : OGI-3210C

Manufacturer : XIAMEN OGAWA INTELLIGENT HEALTH EQUIPMENT
CO.,LTD

4.5.Operating Condition of EUT

4.5.1.Setup the EUT as shown on Section 4.1.

4.5.2.Turn on the power of all equipments.

4.5.3.Let the EUT work in test modes and measure it.

4.6.Measuring Procedure

The EUT is put on the plane 0.1m high above the ground by insulating support and connected to the AC mains through a 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 EN55014-1 regulations during conducted emission measurement.

The bandwidth of the test receiver is set at 9KHz.

The frequency range from 150KHz to 30MHz is investigated.

4.7.Data Sample

Frequency (MHz)	Transducer value (dB)	QuasiPeak Level (dB μ V)	Average Level (dB μ V)	QuasiPeak Limit (dB μ V)	Average Limit (dB μ V)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
X.XX	10.6	25.3	17.0	59.0	49.0	33.4	31.7	Pass

Frequency(MHz) = Emission frequency in MHz

Transducer value(dB) = Insertion loss of LISN + Cable Loss

Level(dB μ V) = Quasi-peak Reading/Average Reading + Transducer value

Limit (dB μ V) = Limit stated in standard

Margin = Limit (dB μ V) - Level (dB μ V)

Calculation Formula:

Margin = Limit (dB μ V) - Level (dB μ V)

4.8.Measuring Results

Pass.

The frequency range from 150kHz to 30MHz is checked.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

Emissions attenuated more than 20 dB below the permissible value are not reported.

All data was recorded in the Quasi-peak and average detection mode.

We tested the all mode and recorded the worse case data.

The spectral diagrams are attached as below.

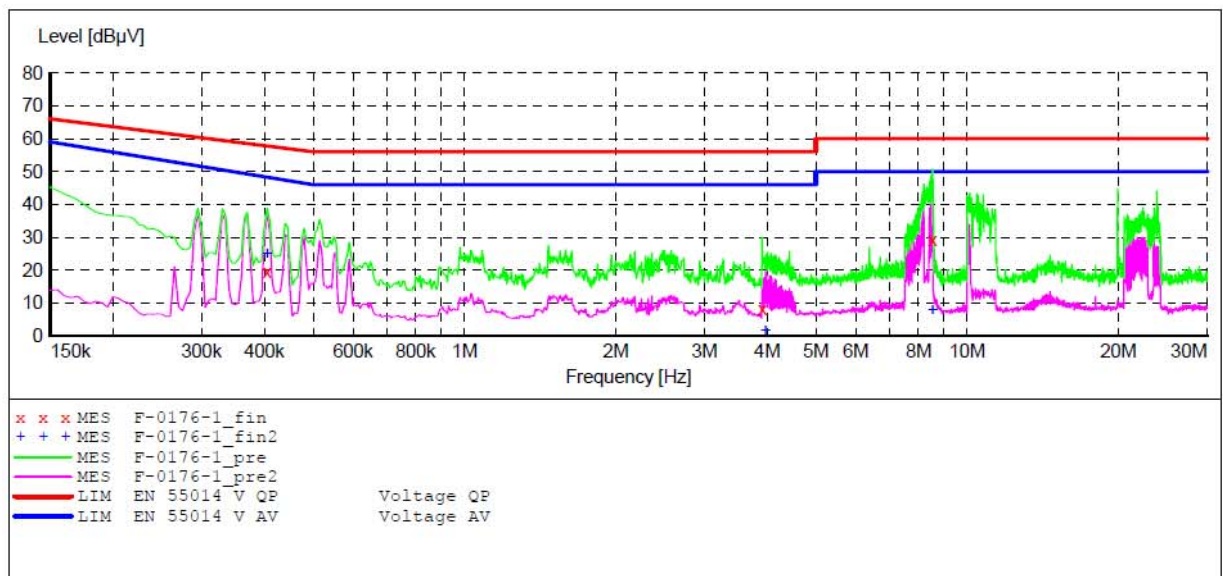
ACCURATE TECHNOLOGY CO., LTD

CONDUCTED EMISSION STANDARD EN 55014-1

EUT: Massage Chair M/N:OGI-3210C
 Manufacturer: XIAMEN COMFORT SCIENCE&TECHNOLOGY GROUP CO.,LTD
 Operating Condition: HIGH
 Test Site: 1# Shielding Room
 Operator: Frank
 Test Specification: L 230V/50Hz
 Comment: Report NO.:ATE20190179

SCAN TABLE: "V 150K-30MHz fin"

Short Description:		_SUB_STD_VTERM2 1.70				
Start	Stop	Step	Detector	Meas.	IF	Transducer
Frequency	Frequency	Width		Time	Bandw.	
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak	1.0 s	9 kHz	NSLK8126 2008
			Average			



MEASUREMENT RESULT: "F-0176-1_fin"

4/22/2019 3:44PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.405000	19.40	10.7	58	38.4	QP	L1	GND
3.910000	8.00	11.1	56	48.0	QP	L1	GND
8.540000	29.00	11.3	60	31.0	QP	L1	GND

MEASUREMENT RESULT: "F-0176-1_fin2"

4/22/2019 3:44PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.405000	25.00	10.7	48	23.3	AV	L1	GND
3.970000	1.40	11.1	46	44.6	AV	L1	GND
8.520000	7.80	11.3	50	42.2	AV	L1	GND

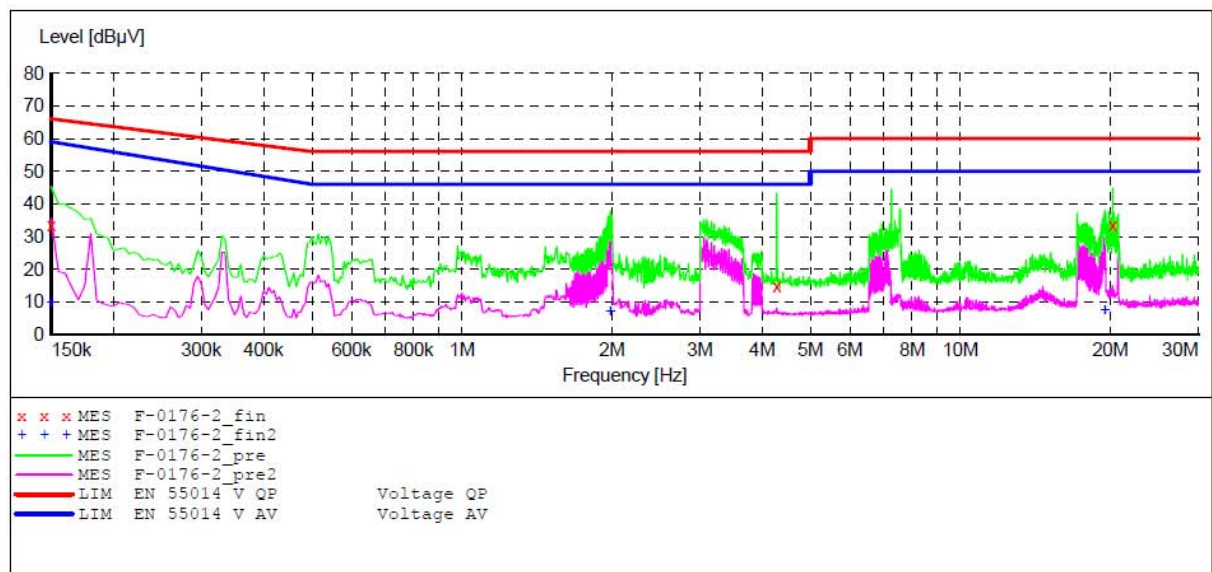
ACCURATE TECHNOLOGY CO.,LTD

CONDUCTED EMISSION STANDARD EN 55014-1

EUT: Message Chair M/N:OGI-3210C
 Manufacturer: XIAMEN COMFORT SCIENCE&TECHNOLOGY GROUP CO.,LTD
 Operating Condition: HIGH
 Test Site: 1# Shielding Room
 Operator: Frank
 Test Specification: N 230V/50Hz
 Comment: Report NO.:ATE20190179

SCAN TABLE: "V 150K-30MHz fin"

Short Description: _SUB_STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 150.0 kHz 30.0 MHz 4.5 kHz QuasiPeak 1.0 s 9 kHz NSLK8126 2008
 Average



MEASUREMENT RESULT: "F-0176-2_fin"

4/22/2019 3:47PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	33.60	10.5	66	32.4	QP	N	GND
4.280000	14.90	11.1	56	41.1	QP	N	GND
20.200000	33.50	11.4	60	26.5	QP	N	GND

MEASUREMENT RESULT: "F-0176-2_fin2"

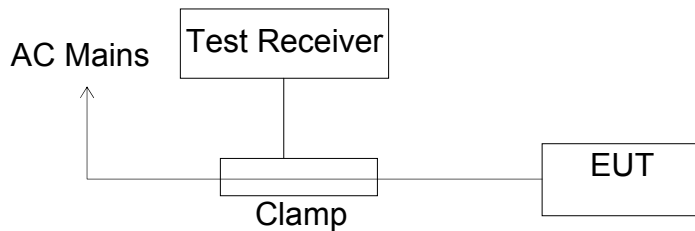
4/22/2019 3:47PM

Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.150000	9.90	10.5	59	49.1	AV	N	GND
1.985000	6.90	11.0	46	39.1	AV	N	GND
19.475000	7.40	11.4	50	42.6	AV	N	GND

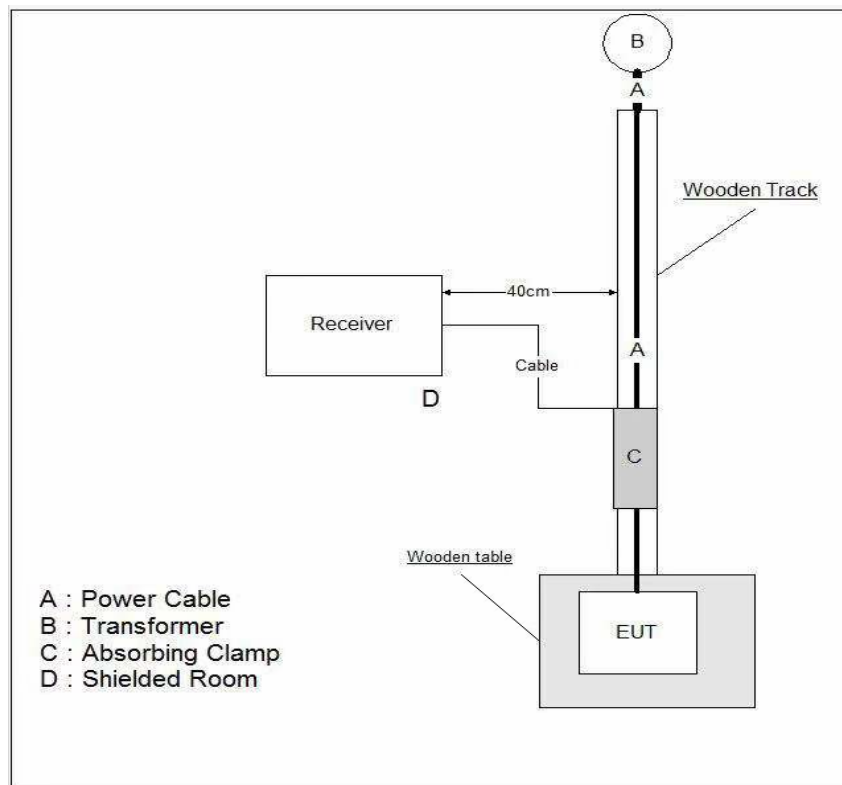
5. DISTURBANCE POWER MEASUREMENT

5.1. Block Diagram of Test Setup

5.1.1. Block diagram of connection between the EUT and simulators



5.1.2. Test System Setup



5.2. Measuring Standard

EN 55014-1: 2017

5.3.Measuring Limits

5.3.1. Disturbance power limits for the frequency range 30 MHz to 300 MHz

Frequency MHz	Limits dB(pW)	
	Quasi-peak Value	Average Value
30 - 300	45 Increasing Linearly with Frequency to 55 (QP)	35 Increasing Linearly with Frequency to 45 (AV)

(Table a)

5.3.2. Margin when performing disturbance power measurement in the frequency range 200MHz to300MHz

Frequency MHz	Limits dB(pW)	
	Quasi-peak Value	Average Value
200 - 300	0 Increasing Linearly with Frequency to 10 (QP)	- (AV)

Note: The measured result at a particular frequency shall be less than the relevant limit minus the corresponding margin (at that frequency)

(Table b)

5.4.EUT Configuration on Measurement

The configuration of EUT is listed in Section 4.4.

5.5.Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 4.5 except the test set up replaced as Section 5.1.

5.6.Measuring Procedure

The EUT is placed on the plane 0.1m high above the ground by insulating support 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 is set at 120KHz.

5.7.Data Sample

Frequency (MHz)	Transducer value (dB)	QuasiPeak Level (dBpW)	Average Level (dBpW)	QuasiPeak Limit (dBpW)	Average Limit (dBpW)	QuasiPeak Margin (dB)	Average Margin (dB)	Remark (Pass/Fail)
X.XX	8.1	41.40	29.70	45	35	3.9	5.6	Pass

Frequency(MHz) = Emission frequency in MHz

Transducer value(dB) = Insertion loss of LISN + Cable Loss

Level(dBpW) = Quasi-peak Reading/Average Reading + Transducer value

Limit (dBpW) = Limit stated in standard

Margin = Limit (dBpW) - Level (dBpW)

Calculation Formula:

Margin = Limit (dBpW) - Level (dBpW)

5.8.Measuring Results

Pass.

The frequency range from 30MHz to 300MHz is checked.

All data was recorded in the Quasi-peak and average detection mode.

Remark: All emission readings from the equipment under test are lower than the applicable limits (Table a) reduced by the margin (Table b)

We tested the all mode and recorded the worse case data.

The spectral diagrams are attached as below.

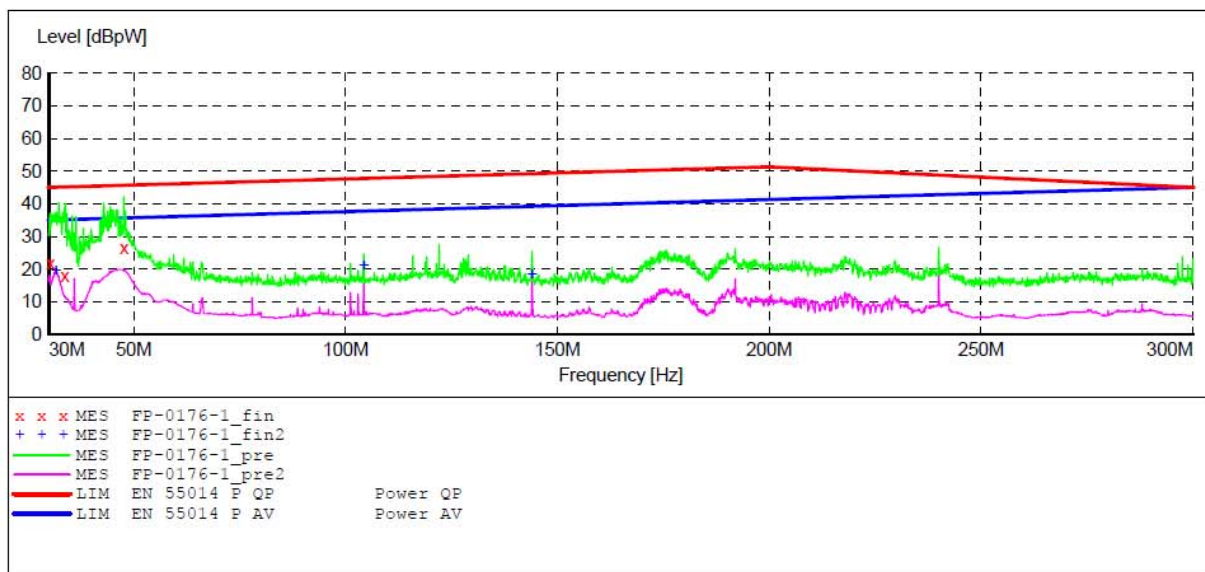
ACCURATE TECHNOLOGY CO., LTD

POWER DISTURBANCE STANDARD EN 55014-1

EUT: Massage Chair M/N:OGI-3210C
 Manufacturer: XIAMEN COMFORT SCIENCE&TECHNOLOGY GROUP CO.,LTD
 Operating Condition: HIGH
 Test Site: 1# Shielding Room
 Operator: Frank
 Test Specification: AC 230V/50Hz
 Comment: Report NO.:ATE20190179
 AC LINE

SCAN TABLE: "P 30MHz-300MHz fin"

Short Description: _SUB_STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 30.0 MHz 300.0 MHz 60.0 kHz QuasiPeak 1.0 s 120 kHz MDS-21
 Average



MEASUREMENT RESULT: "FP-0176-1_fin"

4/22/2019 5:11PM

Frequency MHz	Level dBpW	Transd dB	Limit dBpW	Margin dB	Det.	Position cm
30.300000	21.60	9.0	45	23.4	QP	0.0
33.700000	17.70	8.6	45	27.4	QP	0.0
47.700000	26.30	8.4	46	19.4	QP	0.0

MEASUREMENT RESULT: "FP-0176-1_fin2"

4/22/2019 5:11PM

Frequency MHz	Level dBpW	Transd dB	Limit dBpW	Margin dB	Det.	Position cm
31.600000	19.30	8.8	35	15.8	AV	0.0
104.300000	21.20	6.7	38	16.6	AV	0.0
144.000000	18.10	6.5	39	21.1	AV	0.0

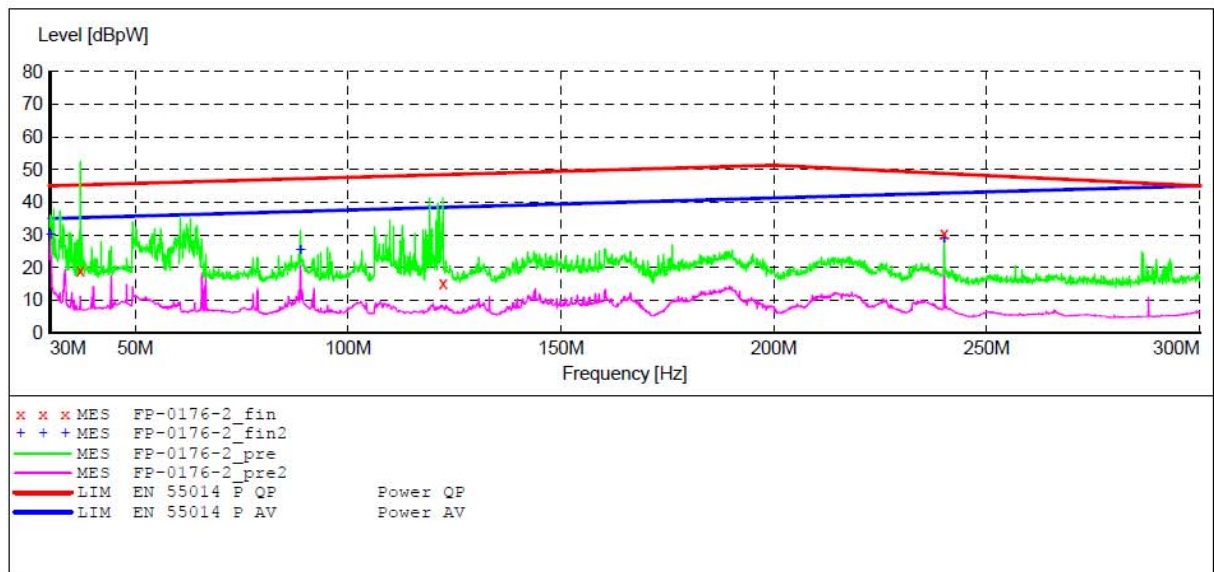
ACCURATE TECHNOLOGY CO.,LTD

POWER DISTUEBANCE STANDARD EN 55014-1

EUT: Massage Chair M/N:OGI-3210C
 Manufacturer: XIAMEN COMFORT SCIENCE&TECHNOLOGY GROUP CO.,LTD
 Operating Condition: HIGH
 Test Site: 1# Shielding Room
 Operator: Frank
 Test Specification: AC 230V/50Hz
 Comment: Report NO.:ATE20190179
 CONTROL LINE

SCAN TABLE: "P 30MHz-300MHz fin"

Short Description: _SUB_STD_VTERM2 1.70
 Start Stop Step Detector Meas. IF Transducer
 Frequency Frequency Width Time Bandw.
 30.0 MHz 300.0 MHz 60.0 kHz QuasiPeak 1.0 s 120 kHz MDS-21
 Average



MEASUREMENT RESULT: "FP-0176-2_fin"

4/22/2019 5:16PM

Frequency MHz	Level dBpW	Transd dB	Limit dBpW	Margin dB	Det.	Position cm
37.100000	18.90	8.2	45	26.4	QP	0.0
122.300000	15.00	6.8	48	33.4	QP	0.0
240.000000	30.40	6.1	49	18.4	QP	0.0

MEASUREMENT RESULT: "FP-0176-2_fin2"

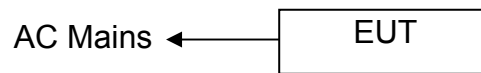
4/22/2019 5:16PM

Frequency MHz	Level dBpW	Transd dB	Limit dBpW	Margin dB	Det.	Position cm
30.100000	29.90	9.0	35	5.1	AV	0.0
88.800000	25.30	6.5	37	11.9	AV	0.0
240.000000	28.60	6.1	43	14.2	AV	0.0

6. RADIATED DISTURBANCE MEASUREMENT

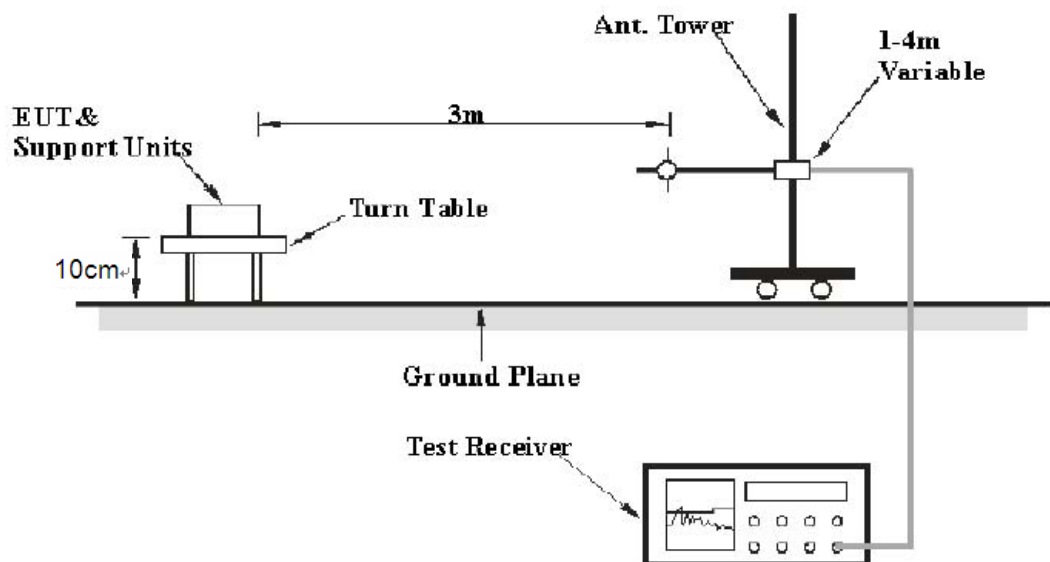
6.1. Block Diagram of Test

6.1.1. Block diagram of connection between the EUT and simulators



6.1.2. Block diagram of test setup (In chamber)

(B) Radiated Emission Test Set-Up, Frequency 30MHz-1GHz



6.2. Measuring Standard

EN 55014-1: 2017

6.3.Measuring Limits

All emanations from a 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 dB(μ V/m)
30—230	3	40
230-300	3	47
300—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.

6.4.EUT Configuration on Measurement

The configuration of EUT is listed in Section 4.4.

6.5.Operating Condition of EUT

6.5.1.Turn on the power.

6.5.2.After that, let the EUT work in test mode measure it.

6.6.Measuring 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 away from the receiving antenna, which 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 polarizations of the antenna are set on test.

The bandwidth of the Receiver is set at 120kHz.

6.7.Measuring Results

N/A

For mains operation, the assessment procedure of the 4.3.4.2 section of the standard EN 55014-1 shall be applied.

4.3.4.2 Mains operation:

The EUT shall be also deemed to comply with the requirement of this standard in the frequency range from 300 MHz to 1 000 MHz without further testing if both conditions 1) and 2) below are fulfilled:

- 1) the disturbance power emission from the EUT is lower than the limits of Table a reduced by the values of Table b;
- 2) the maximum clock frequency is less than 30 MHz

Result: The EUT meet the above two requirements, so this test does not need to be tested.

For battery operation, the assessment procedure of the 4.3.4.3 section of the standard EN 55014-1 shall be applied.

4.3.4.3 Battery operation:

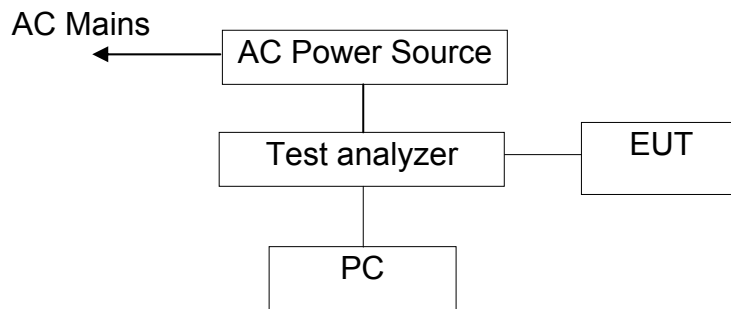
The EUT shall comply with the limits in Table 9 for the frequency range from 30 MHz to 1 000 MHz (see also Figure 5).

Battery operated remote controls used for equipment within the scope of this standard that do not use connecting cables need not be tested.

Result: The EUT not Battery operation mode, so this test does not need to be tested.

7. HARMONIC CURRENT EMISSION MEASUREMENT

7.1. Block Diagram of Test Setup



7.2. Measuring Standard

EN 61000-3-2: 2014, CLASS A

7.3. Operation Condition of EUT

7.3.1. Setup the EUT as shown on Section 7.1.

7.3.2. Turn on the power of all equipments.

7.3.3. Let the EUT work in test mode and measure it.

7.4. Measuring Results

Pass.

We tested the all mode and recorded the worse case data.

Please see the following page.

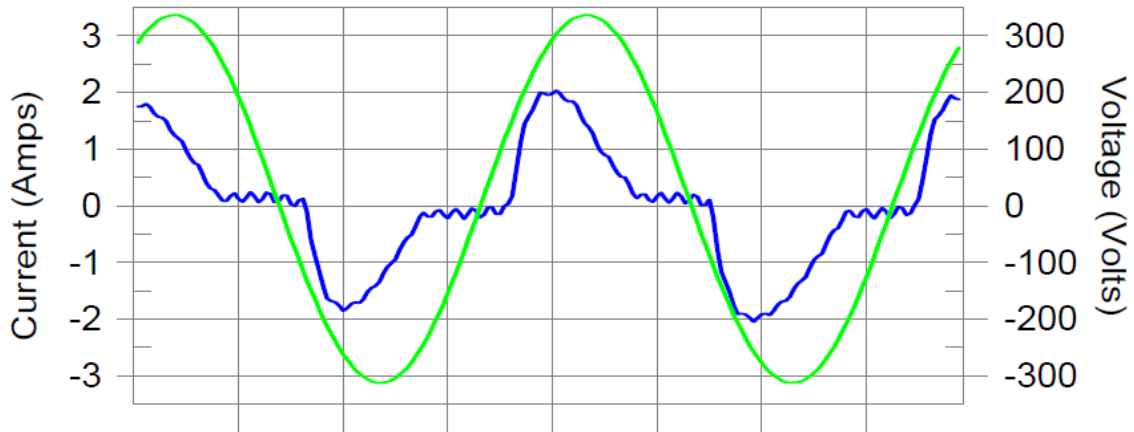
Harmonics – Class-A per Ed. 4.0 (2014)(Run time)

EUT: Massage Chair M/N:OGI-3210C
 Test category: Class-A per Ed. 4.0 (2014) (European limits)
 Test date: 2019/4/24 Start time: 10:44:52
 Test duration (min): 2.5 Data file name: H-000173.cts_data
 Comment: HIGH Report NO.:ATE20190179
 Customer: XIAMEN COMFORT SCIENCE&TECHNOLOGY GROUP CO.,LTD

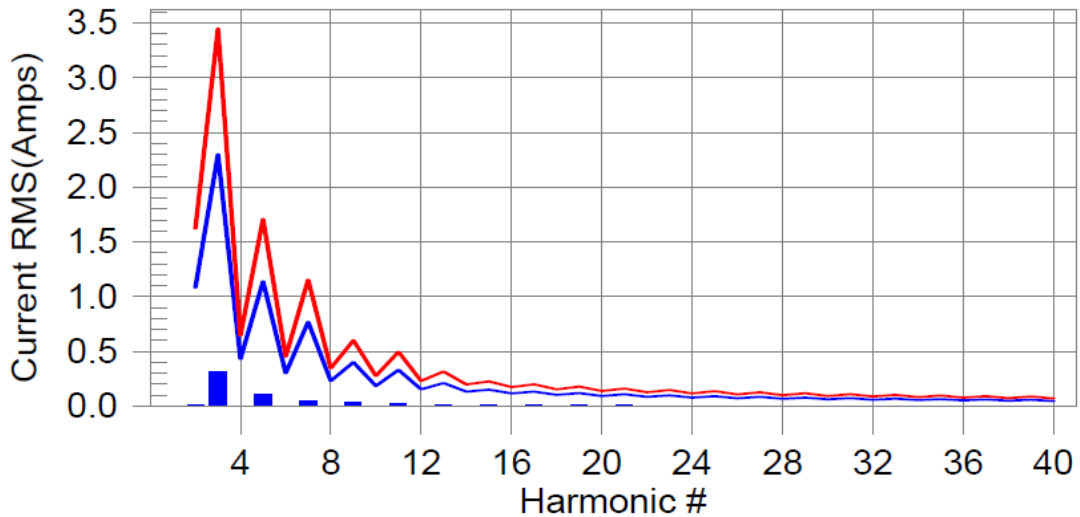
Tested by: CHARLEY
 Test Margin: 100
 End time: 10:47:33

Test Result: Pass Source qualification: Normal

Current & voltage waveforms



Harmonics and Class A limit line European Limits



Test result: Pass Worst harmonics H3-11.7% of 150% limit, H3-13.6% of 100% limit

Current Test Result Summary (Run time)

EUT: Massage Chair M/N:OGI-3210C Tested by: CHARLEY
 Test category: Class-A per Ed. 4.0 (2014) (European limits) Test Margin: 100
 Test date: 2019/4/24 Start time: 10:44:52 End time: 10:47:33
 Test duration (min): 2.5 Data file name: H-000173.cts_data
 Comment: HIGH Report NO.:ATE20190179
 Customer: XIAMEN COMFORT SCIENCE&TECHNOLOGY GROUP CO.,LTD

Test Result: Pass Source qualification: Normal
 THC(A): 0.339 I-THD(%): 38.8 POHC(A): 0.011 POHC Limit(A): 0.251

Highest parameter values during test:

V _{RMS} (Volts): 230.02	Frequency(Hz): 50.00
I _{Peak} (Amps): 2.060	I _{RMS} (Amps): 1.100
I _{Fund} (Amps): 0.874	Crest Factor: 3.482
Power (Watts): 198.0	Power Factor: 0.942

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.006	1.080	0.5	0.010	1.620	0.6	Pass
3	0.314	2.300	13.6	0.403	3.450	11.7	Pass
4	0.004	0.430	N/A	0.008	0.645	N/A	Pass
5	0.107	1.140	9.4	0.124	1.710	7.2	Pass
6	0.002	0.300	N/A	0.005	0.450	N/A	Pass
7	0.050	0.770	6.5	0.083	1.155	7.2	Pass
8	0.001	0.230	N/A	0.004	0.345	N/A	Pass
9	0.039	0.400	9.7	0.047	0.600	7.8	Pass
10	0.001	0.184	N/A	0.003	0.276	N/A	Pass
11	0.022	0.330	6.8	0.033	0.495	6.6	Pass
12	0.001	0.153	N/A	0.002	0.230	N/A	Pass
13	0.016	0.210	7.5	0.023	0.315	7.2	Pass
14	0.000	0.131	N/A	0.001	0.197	N/A	Pass
15	0.013	0.150	8.5	0.016	0.225	7.2	Pass
16	0.000	0.115	N/A	0.001	0.173	N/A	Pass
17	0.009	0.132	7.1	0.014	0.198	7.2	Pass
18	0.000	0.102	N/A	0.001	0.153	N/A	Pass
19	0.007	0.118	6.2	0.009	0.178	5.3	Pass
20	0.000	0.092	N/A	0.001	0.138	N/A	Pass
21	0.006	0.107	6.0	0.009	0.161	5.7	Pass
22	0.000	0.084	N/A	0.001	0.125	N/A	Pass
23	0.004	0.098	N/A	0.006	0.147	N/A	Pass
24	0.000	0.077	N/A	0.001	0.115	N/A	Pass
25	0.004	0.090	N/A	0.006	0.135	N/A	Pass
26	0.000	0.071	N/A	0.001	0.107	N/A	Pass
27	0.003	0.083	N/A	0.005	0.125	N/A	Pass
28	0.000	0.066	N/A	0.001	0.099	N/A	Pass
29	0.003	0.078	N/A	0.004	0.116	N/A	Pass
30	0.000	0.061	N/A	0.001	0.092	N/A	Pass
31	0.002	0.073	N/A	0.004	0.109	N/A	Pass
32	0.000	0.058	N/A	0.001	0.086	N/A	Pass
33	0.002	0.068	N/A	0.003	0.102	N/A	Pass
34	0.000	0.054	N/A	0.001	0.081	N/A	Pass
35	0.002	0.064	N/A	0.003	0.096	N/A	Pass
36	0.000	0.051	N/A	0.001	0.077	N/A	Pass
37	0.001	0.061	N/A	0.002	0.091	N/A	Pass
38	0.000	0.048	N/A	0.001	0.073	N/A	Pass
39	0.001	0.058	N/A	0.002	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: Massage Chair M/N:OGI-3210C Tested by: CHARLEY
Test category: Class-A per Ed. 4.0 (2014) (European limits) Test Margin: 100
Test date: 2019/4/24 Start time: 10:44:52 End time: 10:47:33
Test duration (min): 2.5 Data file name: H-000173.cts_data
Comment: HIGH Report NO.:ATE20190179
Customer: XIAMEN COMFORT SCIENCE&TECHNOLOGY GROUP CO.,LTD

Test Result: Pass Source qualification: Normal

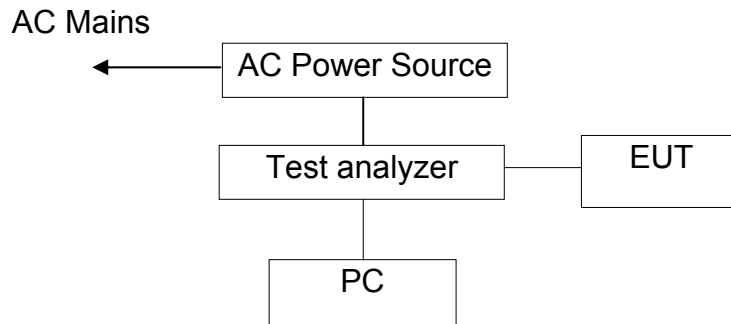
Highest parameter values during test:

Voltage (Vrms):	230.02	Frequency(Hz):	50.00
I_Peak (Amps):	2.060	I_RMS (Amps):	1.100
I_Fund (Amps):	0.874	Crest Factor:	3.482
Power (Watts):	198.0	Power Factor:	0.942

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.163	0.460	35.44	OK
3	0.591	2.070	28.54	OK
4	0.100	0.460	21.75	OK
5	0.086	0.920	9.32	OK
6	0.036	0.460	7.92	OK
7	0.061	0.690	8.78	OK
8	0.023	0.460	5.01	OK
9	0.061	0.460	13.20	OK
10	0.024	0.460	5.24	OK
11	0.044	0.230	19.35	OK
12	0.015	0.230	6.49	OK
13	0.029	0.230	12.46	OK
14	0.011	0.230	4.76	OK
15	0.022	0.230	9.66	OK
16	0.013	0.230	5.67	OK
17	0.021	0.230	8.99	OK
18	0.013	0.230	5.58	OK
19	0.011	0.230	4.73	OK
20	0.014	0.230	6.18	OK
21	0.011	0.230	4.65	OK
22	0.008	0.230	3.63	OK
23	0.010	0.230	4.31	OK
24	0.005	0.230	2.34	OK
25	0.013	0.230	5.56	OK
26	0.008	0.230	3.64	OK
27	0.009	0.230	3.94	OK
28	0.007	0.230	2.97	OK
29	0.009	0.230	3.81	OK
30	0.006	0.230	2.62	OK
31	0.007	0.230	3.03	OK
32	0.006	0.230	2.55	OK
33	0.008	0.230	3.28	OK
34	0.004	0.230	1.54	OK
35	0.005	0.230	2.25	OK
36	0.004	0.230	1.61	OK
37	0.005	0.230	2.36	OK
38	0.004	0.230	1.62	OK
39	0.005	0.230	2.23	OK
40	0.005	0.230	2.33	OK

8. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

8.1. Block Diagram of Test Setup



8.2. Measuring Standard

EN61000-3-3: 2013

8.3. Operation Condition of EUT

8.3.1. Setup the EUT as shown on Section 8.1.

8.3.2. Turn on the power of all equipments.

8.3.3. Let the EUT work in test mode (On/off) and measure it.

8.4. Measuring Results

Pass.

We tested the all mode and recorded the worse case data.

Please see the following page.

Flicker Test Summary per EN/IEC61000-3-3 Ed. 3.0 (2013) (Run time)

EUT: Massage Chair M/N:OGI-3210C
 Test category: All parameters (European limits)
 Test date: 2019/4/24 Start time: 10:09:06
 Test duration (min): 10 Data file name: F-000172.cts_data
 Comment: HIGH Report NO.:ATE20190179
 Customer: XIAMEN COMFORT SCIENCE & TECHNOLOGY GROUP CO., LTD

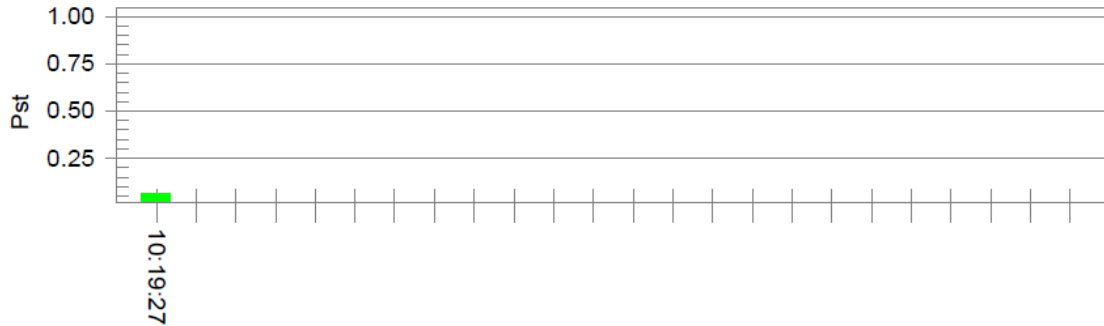
Tested by: charley
 Test Margin: 100
 End time: 10:19:33

Test Result: Pass

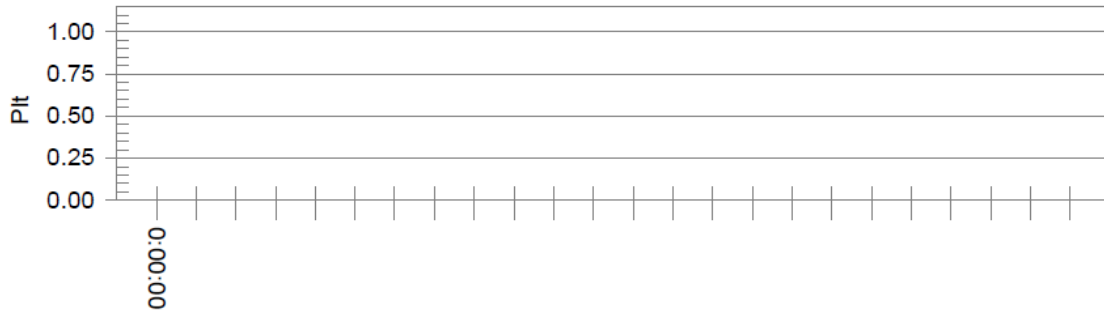
Status: Test Completed

Pst_i and limit line

European Limits



Plt and limit line



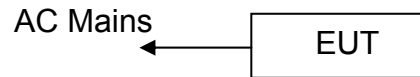
Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.44			
T-max (mS):	0	Test limit (mS):	500.0	Pass
Highest dc (%):	0.00	Test limit (%):	3.30	Pass
Highest dmax (%):	0.00	Test limit (%):	7.00	Pass
Highest Pst (10 min. period):	0.064	Test limit:	1.000	Pass
Highest Plt (2 hr. period):	0.028	Test limit:	0.650	Pass

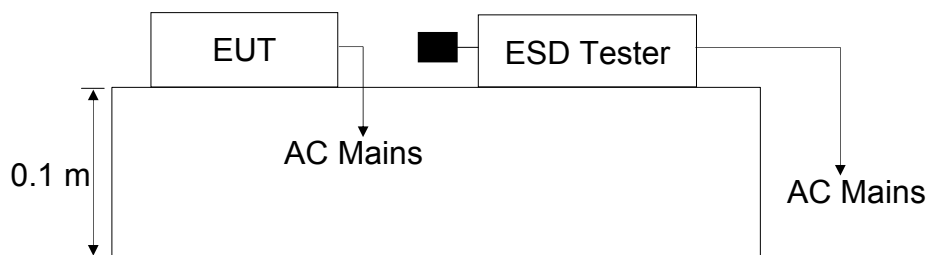
9. ELECTROSTATIC DISCHARGE TEST

9.1. Block Diagram of Test Setup

9.1.1. Block Diagram of the EUT



9.1.2. ESD Test Setup



9.2. Test Standard

EN 55014-2: 2015 (IEC61000-4-2: 2008)
Severity Level: 3 / Air Discharge: $\pm 8\text{kV}$, Level: 2 / Contact Discharge: $\pm 4\text{kV}$
Testing shall also be satisfied at the lower levels

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 Measurement

The configuration of EUT is listed in Section 4.4.

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 and measure it.

9.6.Test Procedure

9.6.1.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 20 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 discharges shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m * 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.

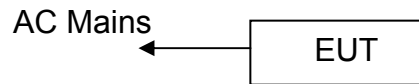
Electrostatic Discharge Test Results

Manufacturer : XIAMEN OGAWA INTELLIGENT HEALTH EQUIPMENT CO.,LTD	Test Date : April 25, 2019	
EUT : Massage Chair	Temperature : 25°C	
M/N : OGI-3210C	Humidity : 42%	
Power Supply: AC 230V/50Hz	Test Engineer : Frank	
Test Modes : On	Criterion : B	
Air Discharge: ± 2kV; ± 4kV; ± 8kV Contact Discharge: ± 2kV; ± 4KV # For each point positive 10 times and negative 10 times discharge		
Location	Kind	Result
	A-Air Discharge C-Contact Discharge	
All non-conducted enclosure	A	Pass
All conducted enclosure	C	Pass
HCP	C	Pass
VCP of the front	C	Pass
VCP of the rear	C	Pass
VCP of the left	C	Pass
VCP of the right	C	Pass
Remark: No degradation was observed during and after the tests.		
Test Equipment : 1. ESD Simulator (TESEQ, NSG 437)		

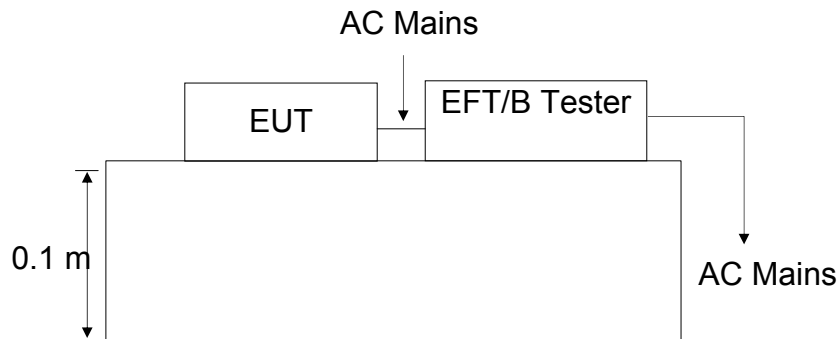
10.FAST TRANSIENTS TEST

10.1.Block Diagram of Test Setup

10.1.1.Block Diagram of the EUT



10.1.2.Block Diagram of Test Setup



10.2.Test Standard

EN 55014-2: 2015
(IEC61000-4-4: 2012 Severity Level, Level 2: 1kV & 0.5kV)

10.3.Severity Levels and Performance Criterion

10.3.1.Severity level

Open Circuit Output Test Voltage $\pm 10\%$		
Level	On Power Supply Lines	On I/O (Input/Output) Signal data and control lines
1.	0.50 KV	0.25 KV
2.	1.0 0KV	0.50 KV
3.	2 .00KV	1 .00KV
4.	4 .00KV	2.00 KV
X	Special	Special

10.3.2.Performance Criterion: **B**

10.4.EUT Configuration on Measurement

The configuration of EUT is listed in Section 4.4.

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 and measure it.

10.6.Test Procedure

The EUT is put on the table, which is 0.1 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.

10.6.1.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.

10.6.2.For signal lines and control lines ports:

It's unnecessary to test.

10.6.3.For DC line ports:

It's unnecessary to test.

10.7.Test Result

Pass.

Please refer to the following page.

Fast transients test results

Manufacturer : XIAMEN OGAWA INTELLIGENT HEALTH EQUIPMENT CO.,LTD		Test Date : April 25, 2019	
EUT : Massage Chair		Temperature : 25°C	
M/N : OGI-3210C		Humidity : 42%	
Power Supply: AC 230V/50Hz		Test Engineer : Frank	
Test Modes : On		Criterion : B	
Line : <input checked="" type="checkbox"/> AC Mains		Line : <input type="checkbox"/> Signal Line <input type="checkbox"/> DC Output Line	
Coupling : <input checked="" type="checkbox"/> Direct		Coupling : <input type="checkbox"/> Capacitive	
Test Time : 120s			
Line	Test Voltage	Result(+)	Result(-)
L, N, PE	0.5&1KV	Pass	Pass
Remark: No degradation was observed during and after the tests.			
Test Equipment: 1. ULTRA COMPACT SIMULATOR: UCS 500 N5 (EM TEST) 2. CAPACITIVE CLAMP: HFK (EM TEST) 3. Transformer: V4780S2 (EM TEST)			

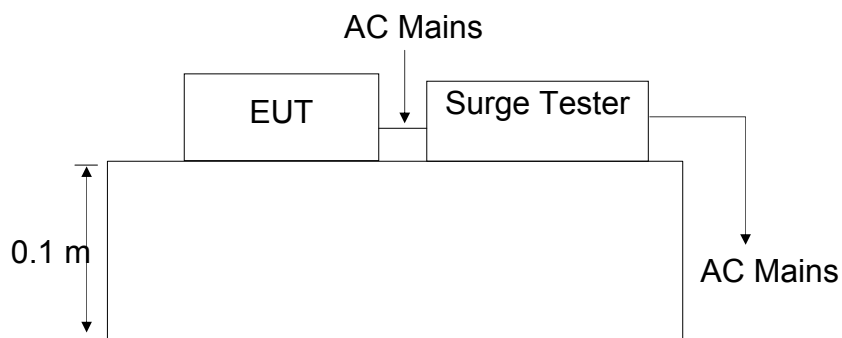
11.SURGE TEST

11.1. Block Diagram of Test Setup

11.1.1. Block Diagram of the EUT



11.1.2. Surge Test Setup



11.2. Test Standard

EN 55014-2: 2015
(IEC61000-4-5: 2014+1A:2017, Severity Level: Level 2, 1.0kV)
Testing shall also be satisfied at the lower levels

11.3. Severity Levels and Performance Criterion

11.3.1. Severity level

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

11.3.2. Performance Criterion: **B**

11.4. EUT Configuration on Measurement

The configuration of EUT is listed in Section 4.4.

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 modes and measure it.

11.6. Test Procedure

- 1) Set up the EUT and test generator as shown on Section 11.1.2.
- 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.

11.7. Test Result

Pass.

Please refer to the following page.

Surge Test Results

Manufacturer : XIAMEN OGAWA INTELLIGENT HEALTH EQUIPMENT CO.,LTD				Test Date : April 26, 2019	
EUT : Massage Chair				Temperature : 25°C	
M/N : OGI-3210C				Humidity : 42%	
Power Supply: AC 230V/50Hz				Test Engineer : Frank	
Test Modes : On				Criterion : B	
Location	Polarity	Phase Angle	Number of Pulse	Pulse Voltage (KV)	Result
L-N	+	90°	5	0.5 & 1.0	Pass
	-	270°	5	0.5 & 1.0	Pass
L-PE	+	90°	5	1.0 & 2.0	Pass
	-	270°	5	1.0 & 2.0	Pass
N-PE	+	90°	5	1.0 & 2.0	Pass
	-	270°	5	1.0 & 2.0	Pass
Remark: No degradation was observed during and after the tests.					
Test Equipment :					
1. ULTRA COMPACT SIMULATOR: UCS 500 N5 (EM TEST)					
2. Transformer: V4780S2 (EM TEST)					

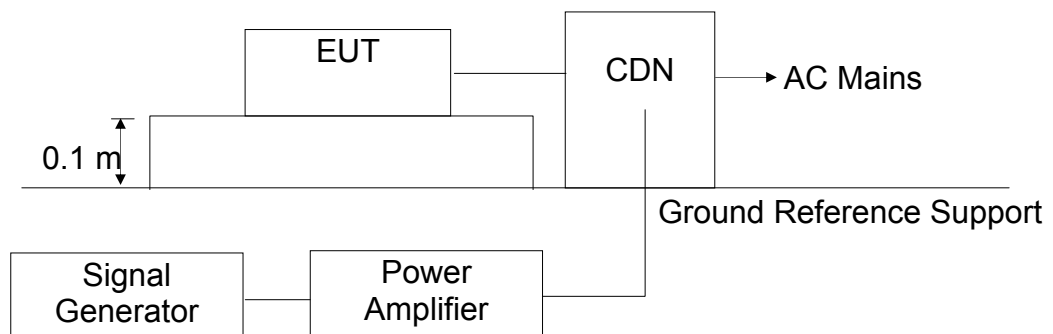
12.INJECTED CURRENTS TEST

12.1.Block Diagram of Test Setup

12.1.1.Block Diagram of the EUT



12.1.2.Block Diagram of Test Setup



12.2.Test Standard

EN 55014-2: 2015
(IEC61000-4-6: 2013, Severity Level 2: 3V (rms), 0.15MHz - 230MHz)

12.3.Severity Levels and Performance Criterion

12.3.1.Severity level

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

12.3.2.Performance Criterion: A

12.4.EUT Configuration on Measurement

The configuration of EUT is listed in Section 4.4.

12.5.Operating Condition of EUT

12.5.1.Setup the EUT as shown in Section 12.1.

12.5.2.Turn on the power of all equipments.

12.5.3.Let the EUT work in test mode and measure it.

12.6.Test Procedure

- 1) Set up the EUT, CDN and test generators as shown on Section 12.1.2.
- 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 to 230MHz 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.

12.7.Test Results

Pass.

Please refer to the following page.

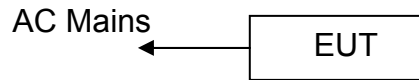
Injected Currents Test Results

Manufacturer : XIAMEN OGAWA INTELLIGENT HEALTH EQUIPMENT CO.,LTD		Test Date : April 26, 2019		
EUT : Massage Chair		Temperature : 25°C		
M/N : OGI-3210C		Humidity : 42%		
Power Supply: AC 230V/50Hz		Test Engineer : Frank		
Test Modes : On		Criterion : A		
Modulation Signal: 1KHz 80% AM				
Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15 - 230	AC Mains	3V	A	Pass
Test Mode :				
Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
Remark: No degradation was observed during and after the tests.				
Test Equipment :				
1. Conducted Immunity Test System: CIT-10 (FRANKONIA)				
2. <input checked="" type="checkbox"/> CDN : CDN-M2/3 (FRANKONIA)				
3. <input type="checkbox"/> EM Injection Clamp: F-203I-23mm (FCC)				
4. Calibration Fixture: F-203I-23mm-CF (FCC)				

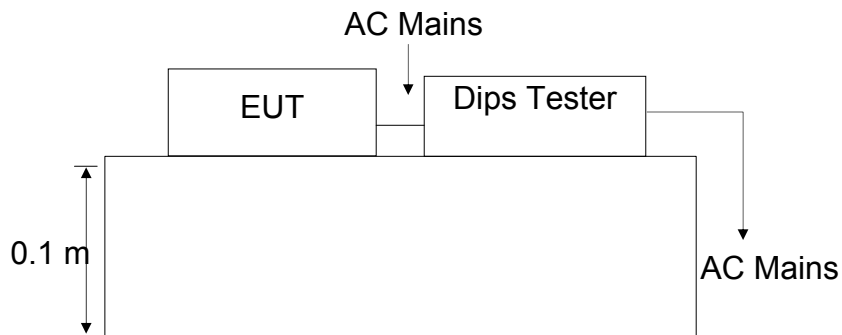
13.VOLTAGE DIPS TEST

13.1.Block Diagram of Test Setup

13.1.1.Block Diagram of the EUT



13.1.2.Dips Test Setup



13.2.Test Standard

EN 55014-2: 2015 (IEC61000-4-11: 2004+A1:2017)

13.3.Severity Levels and Performance Criterion

13.3.1.Severity level

Test Level %U _T	Voltage dip in %U _T	Duration (in period)(50Hz)	Duration (in period)(60Hz)
0	100	0.5 1	0.5 1
40	60	10	12
70	30	25	30
80	20	250	300

13.3.2.Performance Criterion: C

13.4.EUT Configuration on Measurement

The configuration of EUT is listed in Section 4.4.

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 modes and measure it.

13.6.Test Procedure

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

13.7.Test Result

Pass.

Please refer to the following page.

Voltage Dips Test Results

Manufacturer : XIAMEN OGAWA INTELLIGENT HEALTH EQUIPMENT CO.,LTD				Test Date : April 26, 2019	
EUT : Massage Chair				Temperature : 25°C	
M/N : OGI-3210C				Humidity : 42%	
Power Supply: AC 230V/50Hz				Test Engineer : Frank	
Test Modes : On					
Voltage Dips in % U_T	Test Level in % U_T	Durations for voltage dips (in periods)		Criterion <input type="checkbox"/> A <input type="checkbox"/> B <input checked="" type="checkbox"/> C <input type="checkbox"/> D	Result
		50Hz	60Hz		
100	0	0.5	0.5	C	Pass
60	40	10	12	C	Pass
30	70	25	30	C	Pass
Voltage Dips in % U_T	Test Level in % U_T	Durations for voltage dips (in periods)		Criterion <input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D	Result
		50Hz	60Hz		
Remark: U_T is the rated voltage of the equipment under test.					
Test Equipment : 1. ULTRA COMPACT SIMULATOR: UCS 500 N5 (EM TEST) 2. Transformer: V4780S2 (EM TEST)					

14. PHOTOGRAPHS

14.1.Photo of Disturbance voltage measurement



14.2.Photo of Disturbance power measurement



14.3.Photo of Harmonic current / Flicker measurement



14.4.Photo of Electrostatic discharge Test



14.5.Photo of Fast transients Test



14.6.Photo of Surge and Voltage dips Test



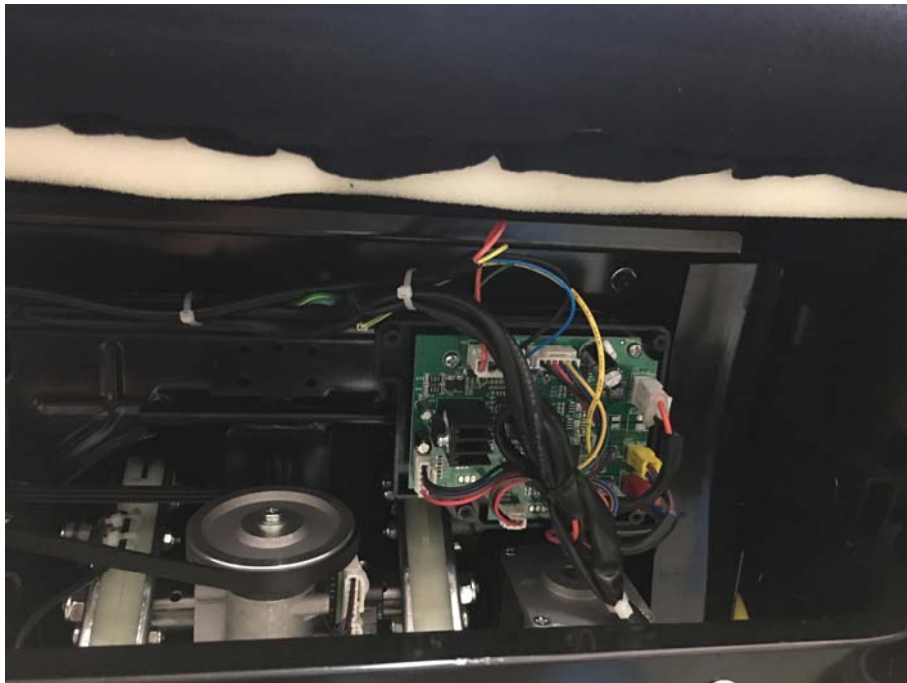
14.7.Photo of Injected current Test

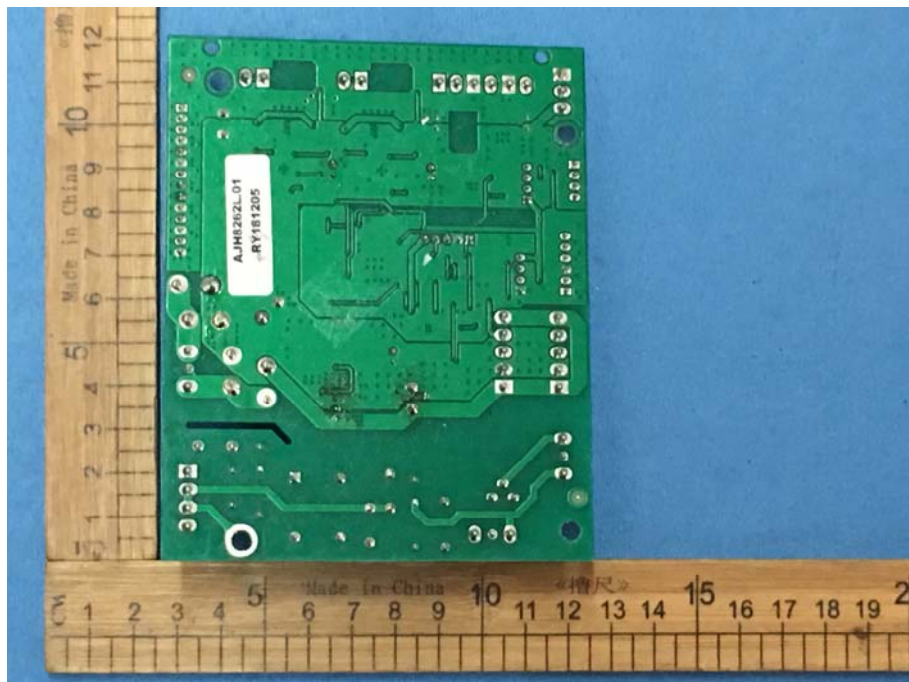
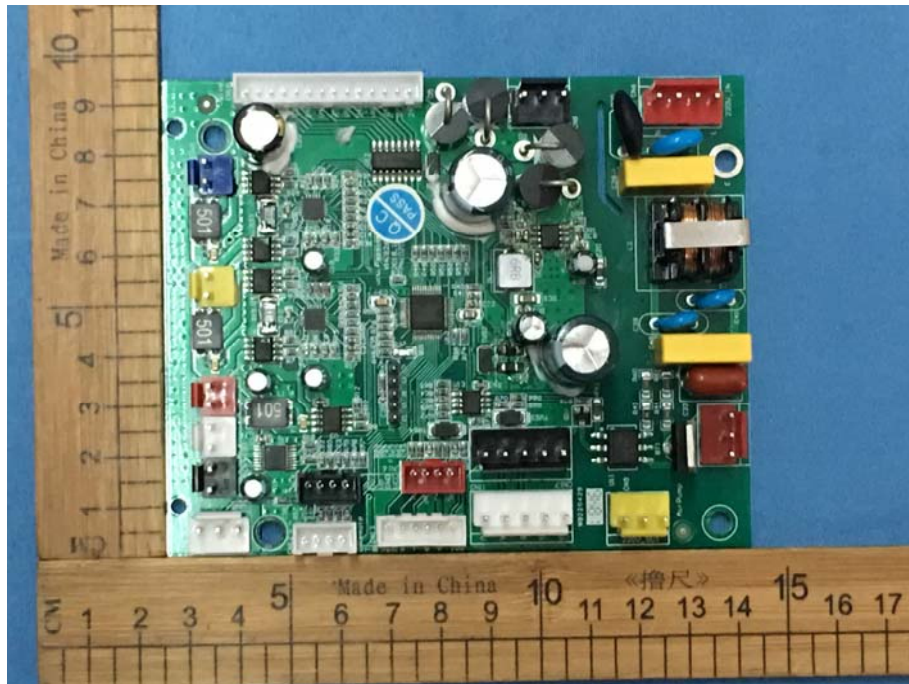


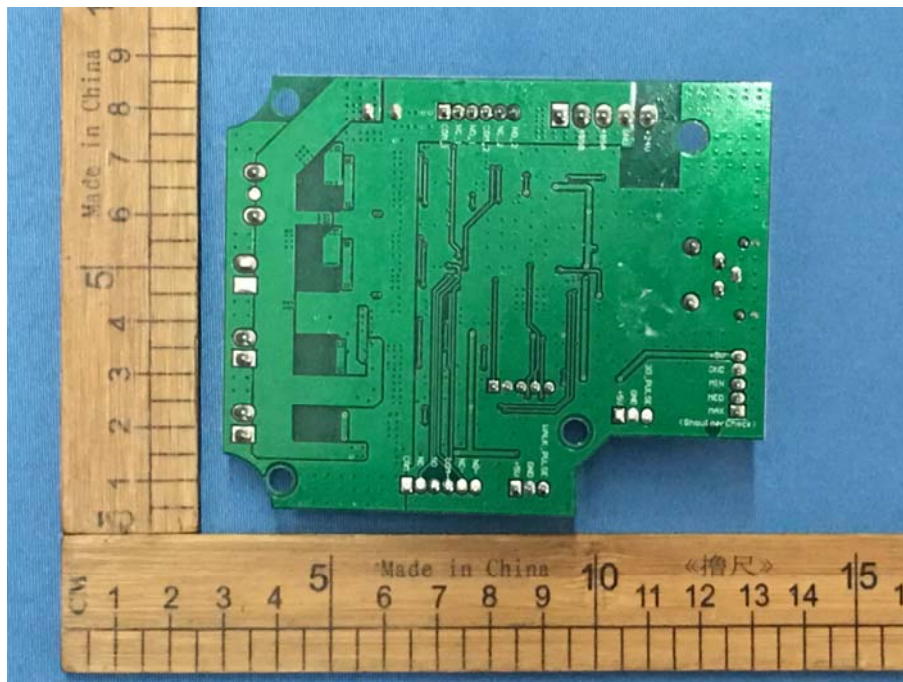
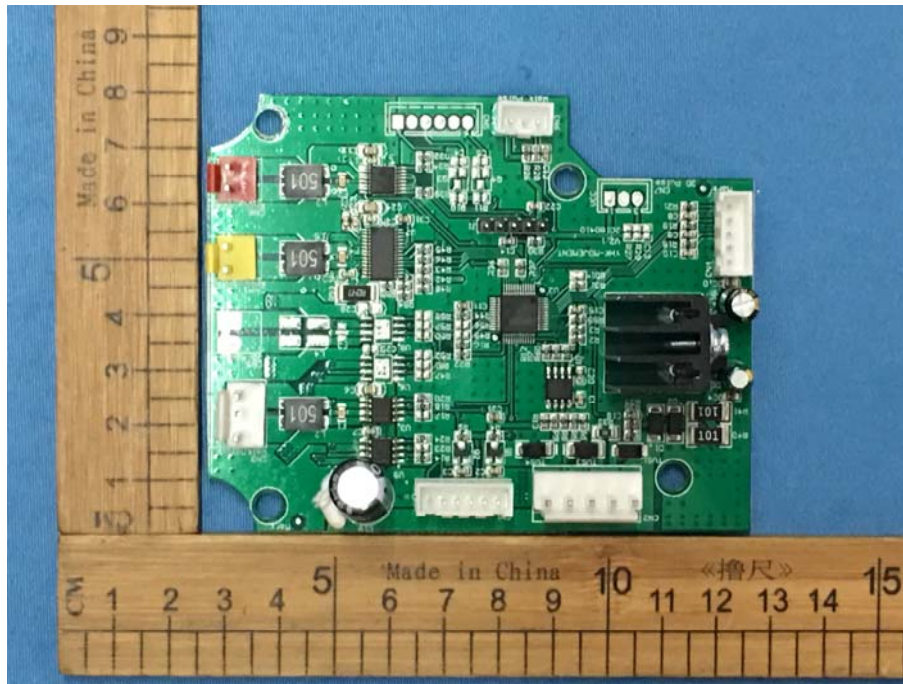
14.8.Photo of EUT

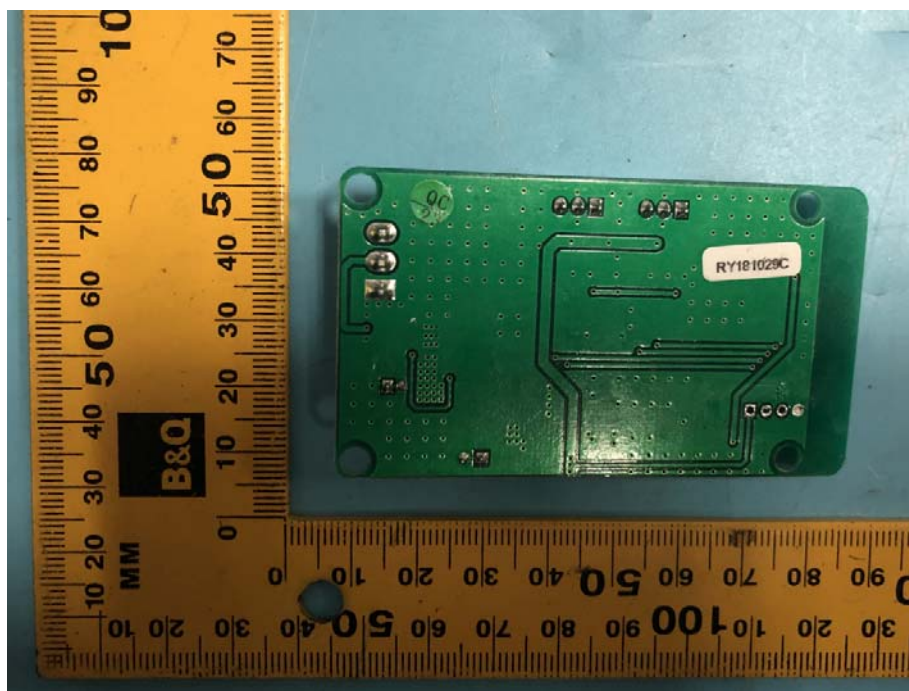
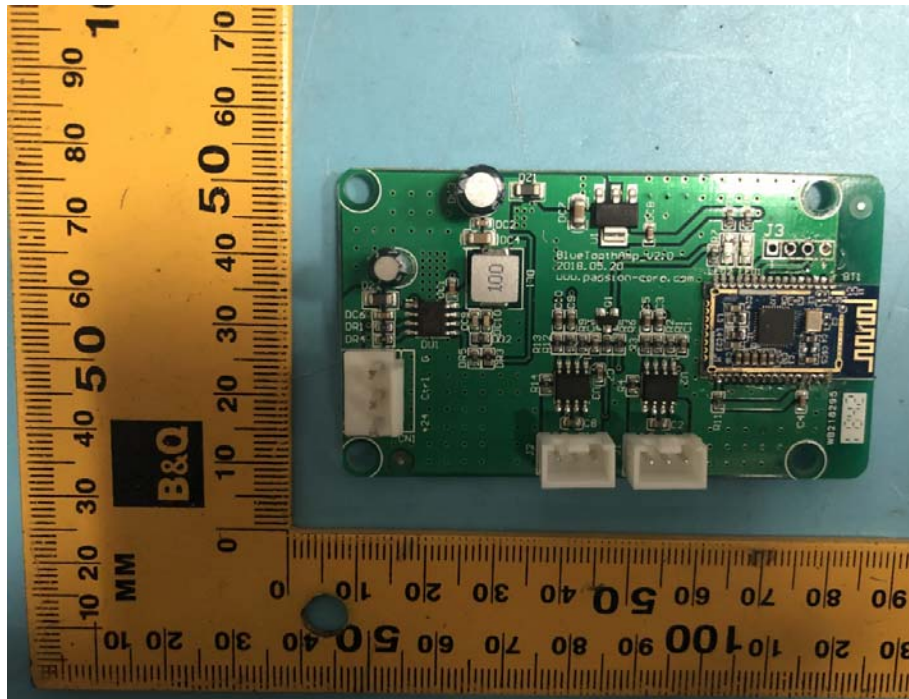


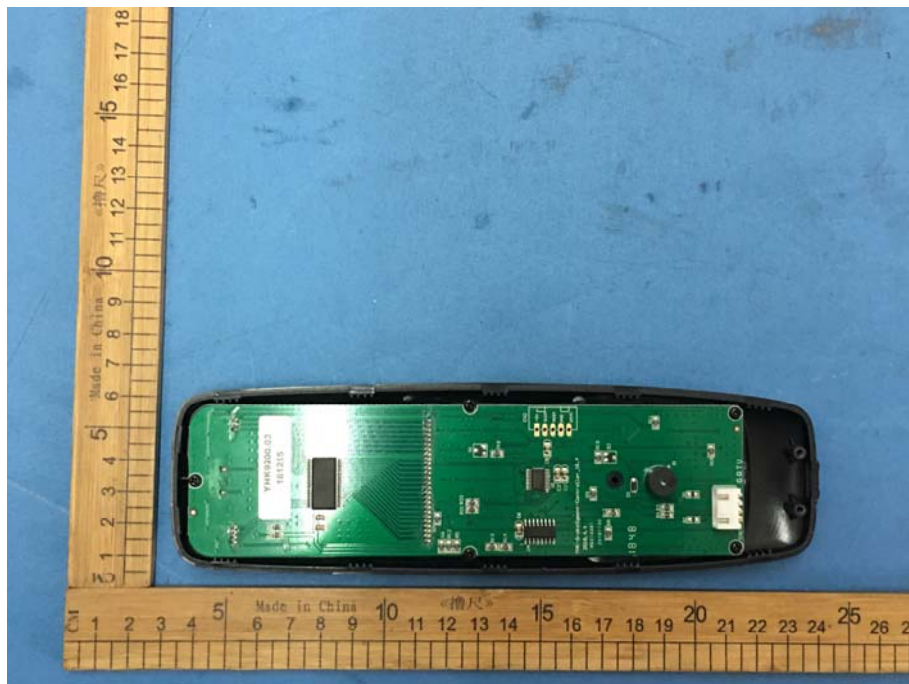


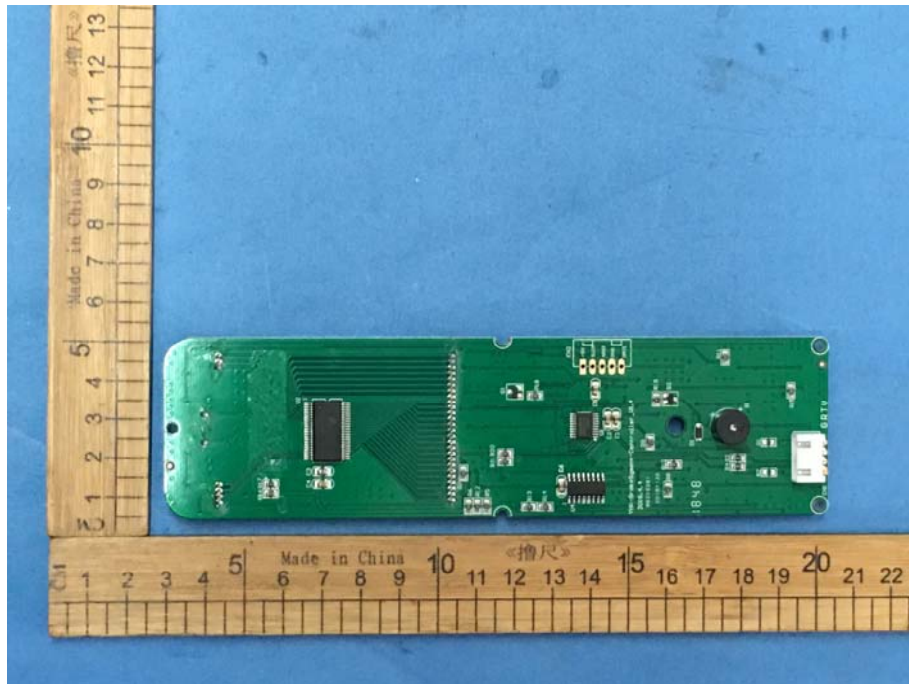












***** End of Test Report *****