EMC
Measurement and Test Report

For

XIAMEN COMFORT SCIENCE & TECHNOLOGY GROUP CO., LTD.

(5/F) NO.168, QIANPU ROAD, SIMING DISTRICT, XIAMEN, CHINA

Test Standards:	EN 55014-1:2017 EN 61000-3-2:2019 EN 61000-3-3:2013/A1:2019 EN 55014-2:2015
Product Description:	Massage Chair
Tested Model:	EC-7506P
Report No.:	WTX20X04021719W-4
Tested Date:	Apr.23, 2020
Issued Date:	Apr.23, 2020 to Apr.23, 2020
Tested By:	Mike Shi
Reviewed By:	Evan Cai / EMC Manager
Approved & Authorized By:	Silin Chen / Manager
Prepared By:	

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TABLE OF CONTENTS

Report version

Version No.	Date of issue	Description
Rev.00	Apr.26, 2020	Original
/	/	/

1.GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Manufacturer:	XIAMEN COMFORT SCIENCE & TECHNOLOGY GROUP CO., LTD.
Address of manufacturer:	(5/F) NO.168, QIANPU ROAD, SIMING DISTRICT, XIAMEN,CHINA

General Description of EUT	
Product Name:	Massage Chair
Trade Name:	/
Model No.:	EC-7506P
Adding Model(s):	EC-7506J, Monarch
Note: The test data is gathered from a production sample, provided by the manufacturer. The appearance of others models listed in the report is different from main-test model EC-7506P, but the circuit and the electronic construction do not change, declared by the manufacturer.	

Technical Characteristics of EUT	
Rated Voltage:	AC220-240V 50-60Hz
Rated Current:	/
Rated Power:	/
Power Adaptor Model:	/
Highest Clock Frequency:	Above108MHz
Categories of Apparatus:	**Category IV**

1.2 Test Standards

The tests were performed according to following standards:

EN 55014-1:2017 Electromagnetic compatibility - Requirements for household appliance,electric tools and similar apparatus--Part 1:Emission.

EN 55014-2:2015 Electromagnetic compatibility - Requirements for household appliance,electric tools and similar apparatus--Part 2:Immunity.

EN 61000-3-2:2019 Electromagnetic compatibility (EMC) -- Part 3-2: Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase).
EN 61000-3-3:2013/A1:2019 Electromagnetic compatibility (EMC) -- Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connection.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product maybe which result in lowering the emission/immunity should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with the standards EN 55014-1, EN 61000-3-2 EN 61000-3-3 and EN 55014-2 for household appliances, electric tools and similar apparatus, and all related testing and measurement techniques intentional standards.

1.4 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission/immunity level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List:

Test Mode	Description	Remark	Power Supply Mode
TM1	Normal working	Connect to the AC230V/50Hz, and USB Port Full load, BT connect and playing.	/

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
AC Cable	1.88	Unshielded	Without Ferrite

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
/	/	/	/

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
/	/	/	/

1.5 Performance Criteria for EMS

All the test data has been collected, reduced, and analyzed within this report in accordance with Immunity requires the following as specific performance criteria:

A. The apparatus shall continue to operate as intended during and after the test. The manufacturer specifies some minimum performance level. The performance level may be specified by the manufacturer as a permissible loss of performance.

B. The apparatus shall continue to operate as intended after the test. This indicates that the EUT does not need to function at normal performance levels during the test, but must recover. Again some minimal performance is defined by the manufacturer. No change in operating state or loss of data is permitted.

C. Temporary loss of function is allowed. Operation of the EUT may stop as long as it is either automatically reset or can be manually restored by operation of the controls.

1.6 Test Equipment List and Details

Description	Manufacturer	Model	Serial No.	Cal Date	Due. Date
Spectrum Analyzer	Rohde & Schwarz	FSP	836079/035	2020-04-28	2021-04-27
EMI Test Receiver	Rohde & Schwarz	ESVB	825471/005	2020-04-28	2021-04-27
Amplifier	Agilent	8447F	3113A06717	2020-04-28	2021-04-27
Amplifier	C&D	PAP-1G18	2002	2020-04-28	2021-04-27
Trilog Broadband Antenna	Schwarz beck	VULB9163	9163-333	2019-05-05	2021-05-04
Trilog Broadband Antenna	Schwarz beck	VULB9163(B)	9163-635	2019-05-05	2021-05-04
Horn Antenna	ETS	3117	00086197	2019-05-05	2021-05-04
Loop Antenna	Schwarz beck	FMZB 1516	9773	2019-05-05	2021-05-04
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2020-04-28	2021-04-27
EMI Test Receiver	Rohde & Schwarz	ESPI	101391	2020-04-28	2021-04-27
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2020-04-28	2021-04-27
AC LISN	Schwarz beck	NSLK8126	8126-224	2020-04-28	2021-04-27
DC LISN	Schwarz beck	NNBM8126D	279	2020-04-28	2021-04-27
DC LISN	Schwarz beck	NNBM8126D	280	2020-04-28	2021-04-27
8-WIRE LISN	Schwarz beck	8158	CAT3-8158-0059	2020-04-28	2021-04-27
8-WIRE LISN	Schwarz beck	8158	CAT5-8158-0117	2020-04-28	2021-04-27
Clamp	Luthi	MDS21	3809	2020-04-28	2021-04-27
Digital Power Analyzer	California Instrument	CTS	72831	2020-04-28	2021-04-27
Power Source	California Instrument	5001IX-CTS-400	25965	2020-04-28	2021-04-27
ESD Generator	LIONCEL	ESD-203B	0170901	2020-04-28	2021-04-27
Amplifier	Agilent	8447D	2944A10179	2020-04-28	2021-04-27
Transient 2000	EMC PARTNER	TRA2000	863	2020-04-28	2021-04-27
Couple Clamp	EMC PARTNER	CN-EFT1000	513	2020-04-28	2021-04-27
CONDUCTED IMMUNITY TEST SYSTEM	FRANKONIA	CIT-10/75	126B1247/2013	2020-01-13	2021-01-12
Attenuator	EMTEST	MA-5100/6BF2	1009	2020-04-28	2021-04-27
CDN	Luthi	L-801M2/M3	2665	2020-04-28	2021-04-27
EM Injection Clamp	FCC	F-203I-23mm	91536	2019-05-31	2020-05-30
Signal Generator	HP	8688B	3438A00604	2020-04-28	2021-04-27
Power Meter	KEITHLEY	3500	1162591	2020-04-28	2021-04-27
Power Meter	KEITHLEY	3500	1121428	2020-04-28	2021-04-27
RF Power Amplifier	MicoTop	MPA-80-1000-250	MPA1906239	2020-04-28	2021-04-27
RF Power Amplifier	MicoTop	MPA-80-1000-100	MPA1906238	2020-04-28	2021-04-27
Antenna	SCHWARZBECK	STLP 9129	9129 114	N/A	N/A

2. SUMMARY OF TEST RESULTS

Standards	Description of Test Item	Result
EN 55014-1	Terminal Voltages	Compliant
	Disturbance Power	Compliant
	Radiated Disturbances	Compliant
	Discontinuous Disturbance	N/A
EN 61000-3-2	Harmonic Current Emission	Compliant
EN 61000-3-3	Voltage Fluctuation and Flicker	Compliant
EN 55014-2	Electrostatic Discharge Immunity in accordance with EN 61000-4-2	Compliant
	Radio Frequency Electromagnetic Fields Immunity in accordance with EN 61000-4-3	Compliant
	Fast Transient Immunity in accordance with EN 61000-4-4	Compliant
	Surges Immunity in accordance with EN 61000-4-5	Compliant
	Injected Currents Immunity in accordance with EN 61000-4-6	Compliant
	Voltage Dips/Interruptions Immunity in accordance with EN 61000-4-11	Compliant

N/A: not applicable

3. Terminal Voltages

3.1 Measurement Uncertainty

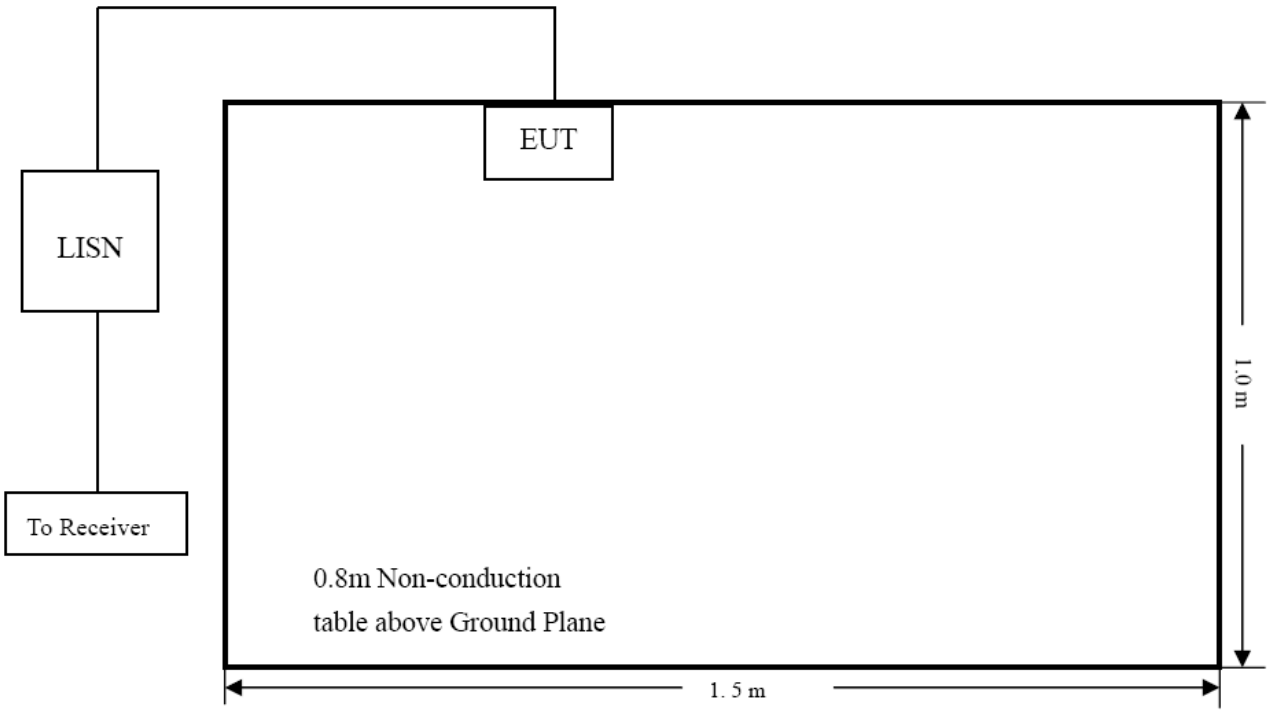
Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement

Measurement uncertainty		
Parameter	Conditions	Uncertainty
Conducted Emissions	Conducted	9-150kHz ±3.74dB
		0.15-30MHz ±3.34dB

3.2 Test Procedure

Test is conducting under the description of EN55014-1 Electromagnetic compatibility – Requirements for household appliances electric tools and similar apparatus - Part 1: Emission.

3.3 Basic Test Setup Block Diagram



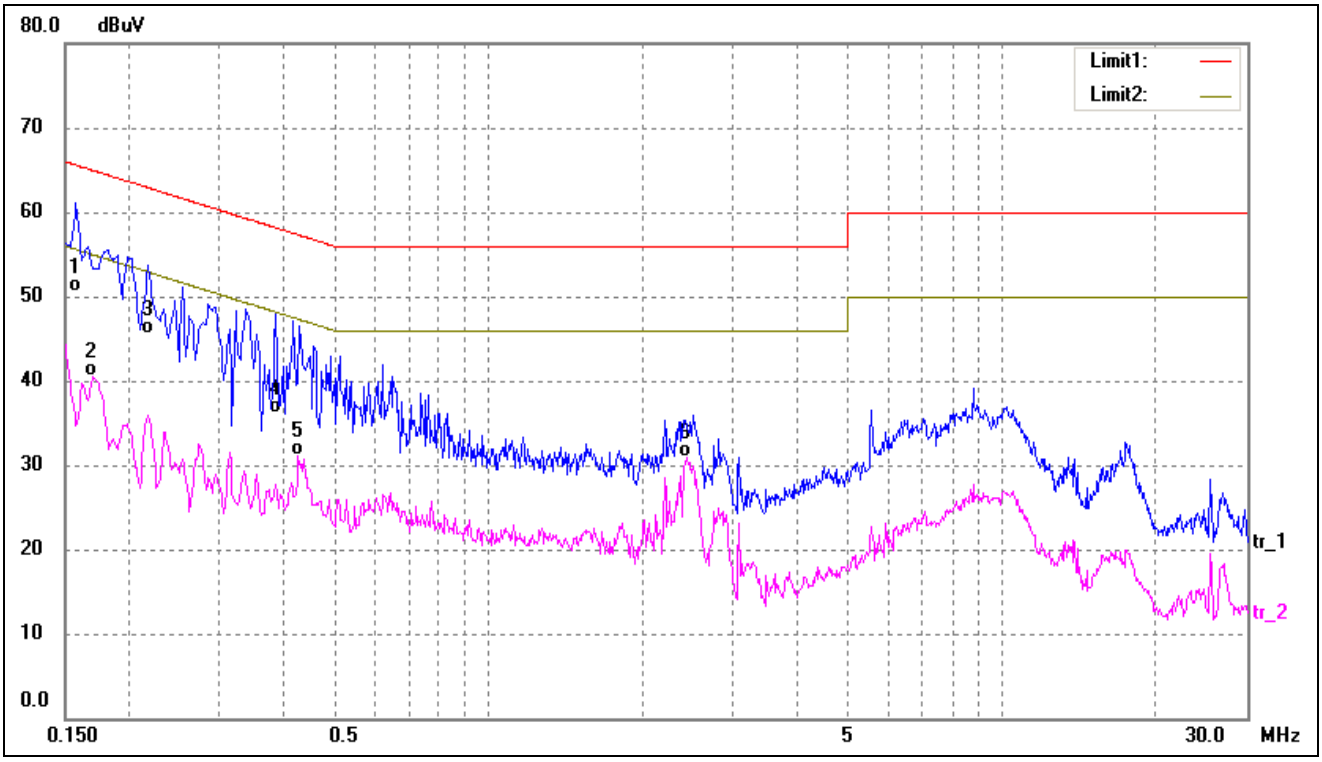
3.4 Environmental Conditions

Temperature:	26 ° C
Relative Humidity:	60 %
ATM Pressure:	1015 mbar

3.5 Summary of Test Results

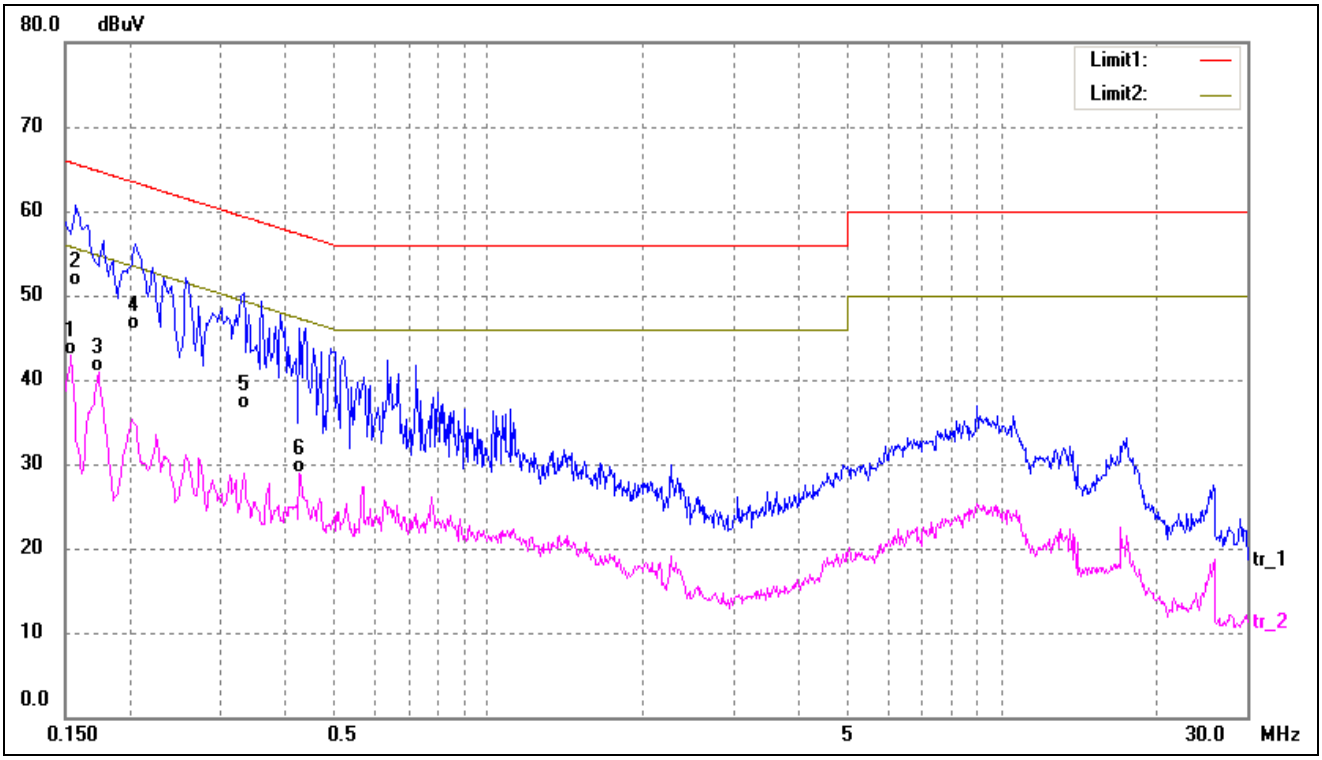
Look at the graphs and data below：

Test mode:	TM1	Polarity:	Neutral



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1	0.1580	40.46	9.95	50.41	65.57	-15.16	QP
2*	0.1700	30.50	9.95	40.45	54.96	-14.51	AVG
3	0.2180	35.54	9.98	45.52	62.89	-17.37	QP
4	0.3860	26.01	10.02	36.03	58.15	-22.12	QP
5	0.4260	21.02	10.01	31.03	47.33	-16.30	AVG
6	2.4420	20.53	10.37	30.90	46.00	-15.10	AVG

Test mode:	TM1	Polarity:	Line



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	0.1540	32.87	9.95	42.82	55.78	-12.96	AVG
2	0.1580	41.06	9.95	51.01	65.57	-14.56	QP
3	0.1740	31.04	9.95	40.99	54.77	-13.78	AVG
4	0.2060	35.87	9.97	45.84	63.37	-17.53	QP
5	0.3340	26.44	10.02	36.46	59.35	-22.89	QP
6	0.4300	18.98	10.01	28.99	47.25	-18.26	AVG

4. Disturbance Power

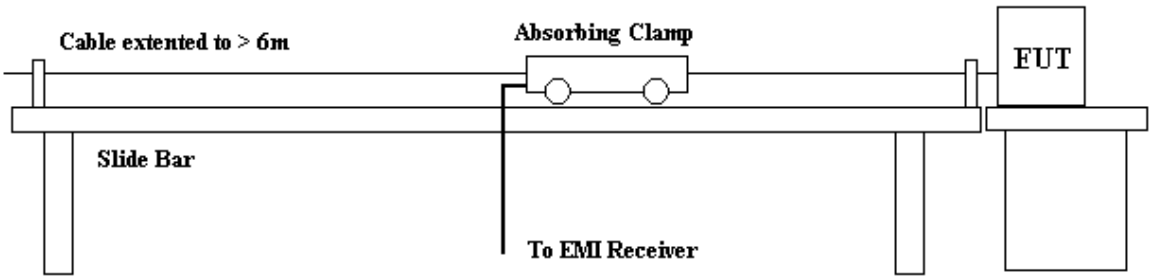
4.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 4.10 dB.

4.2 Test Procedure

Test is conducting under the description of EN 55014-1, Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus -- Part 1: Emission.

4.3 Test Configuration



4.4 Test Receiver Setup

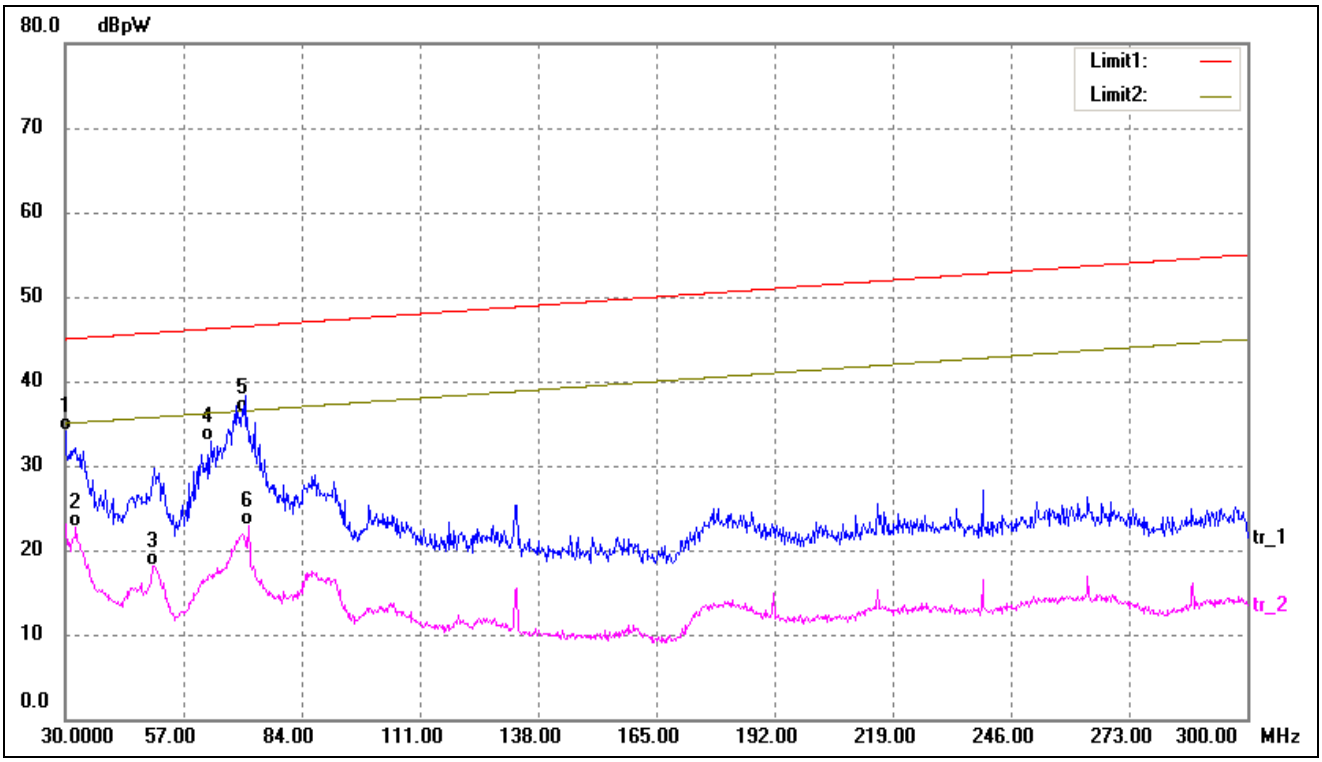
During the conducted emission test, the test receiver was set with the following configurations:

Start Frequency ..... 30 MHz
Stop Frequency..... 300 MHz
Sweep Speed ..... Auto
IF Bandwidth..... 10 kHz
Quasi-Peak Adapter Bandwidth ..... 120 kHz
Quasi-Peak Adapter Mode ..... Normal

4.5 Summary of Test Results

Look at the graphs and data below：

Test mode:	TM1	Port:	AC Line



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBpW)	(dB/m)	(dBpW)	(dBpW)	(dB)	
1	30.0000	12.76	21.27	34.03	45.00	-10.97	QP
2	32.6000	1.53	21.09	22.62	35.10	-12.48	AVG
3	50.2000	-0.80	18.87	18.07	35.75	-17.68	AVG
4	63.3600	15.36	17.47	32.83	46.24	-13.41	QP
5*	71.0400	18.82	17.51	36.33	46.52	-10.19	QP
6	71.9200	5.39	17.51	22.90	36.55	-13.65	AVG

5. Radiated Emission

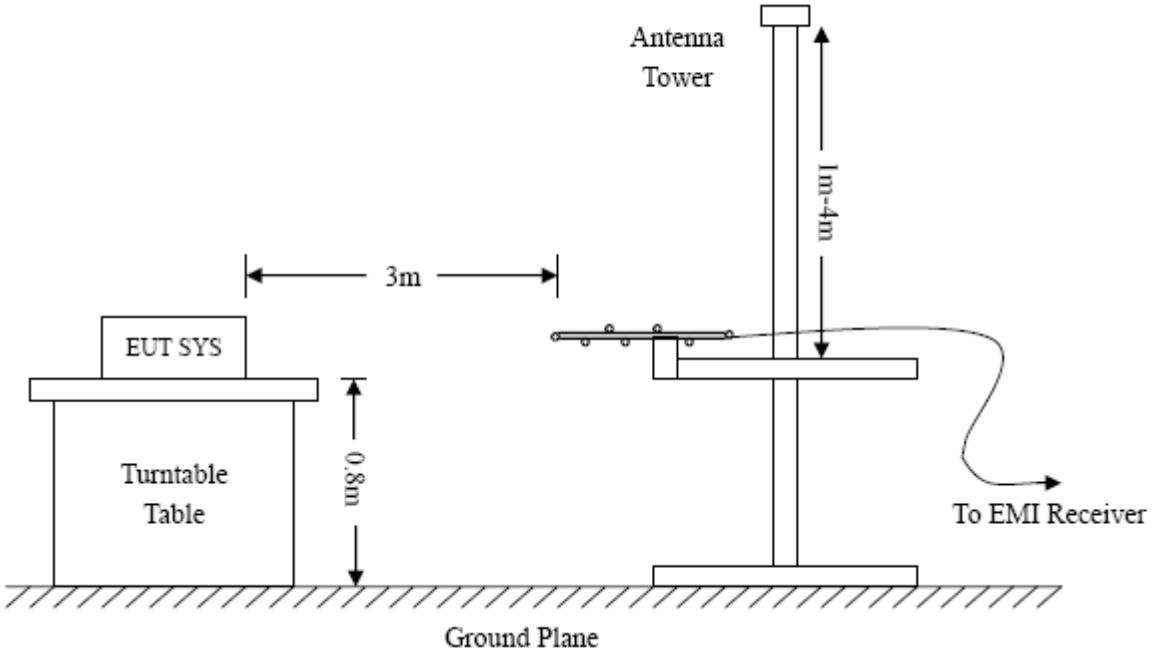
5.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement

Measurement uncertainty		
Parameter	Conditions	Uncertainty
Radiated Emissions	Radiated	30-200MHz ±4.52dB
		0.2-1GHz ±5.56dB
		1-6GHz ±3.84dB
		6-18GHz ±3.92dB

5.2 Test Procedure

Test is conducting under the description of EN 55014-1, Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus -- Part 1: Emission.



5.3 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

Corr. Ampl. = Indicated Reading + Correct

Correct=Ant.Factor + Cable Loss - Ampl.Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for a household device. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – EN 55014-1 Limit

5.4 Environmental Conditions

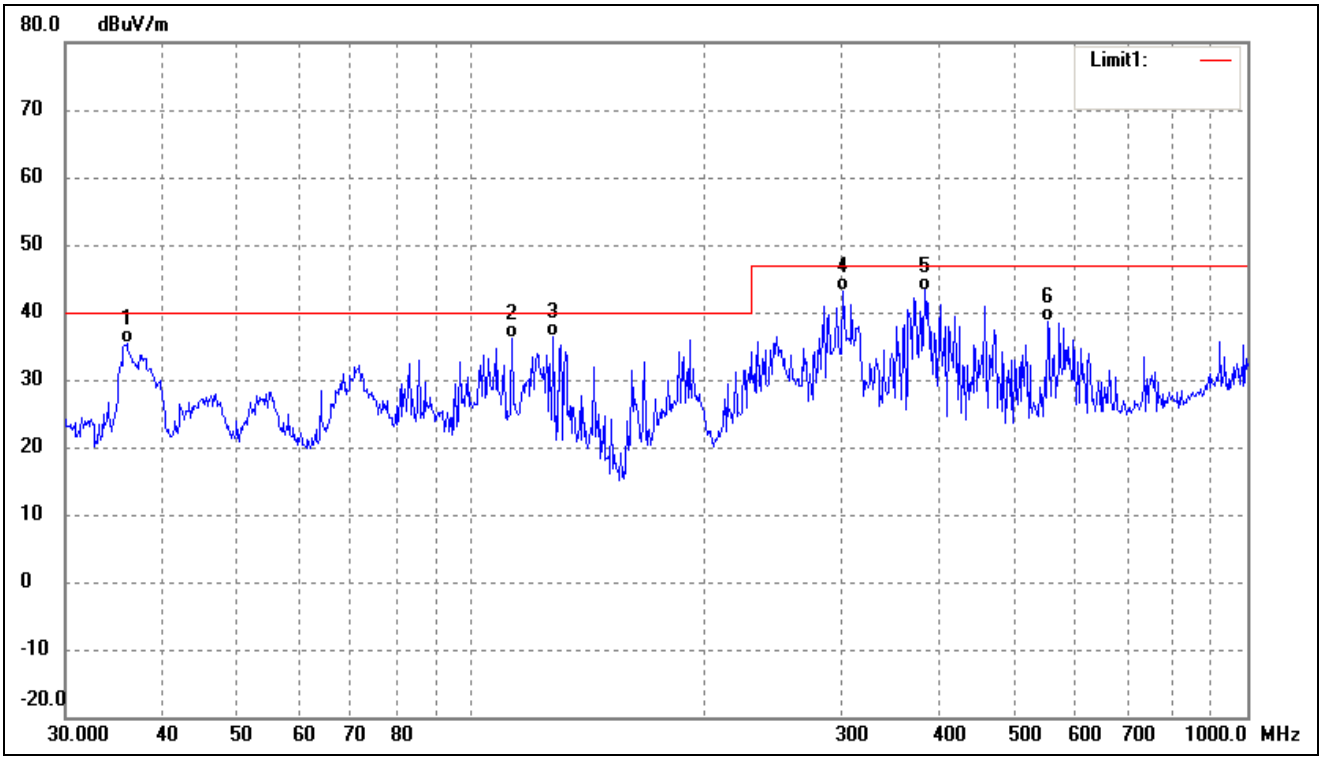
Temperature:	22° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

5.5 Summary of Test Results

Look at the graphs and data below：

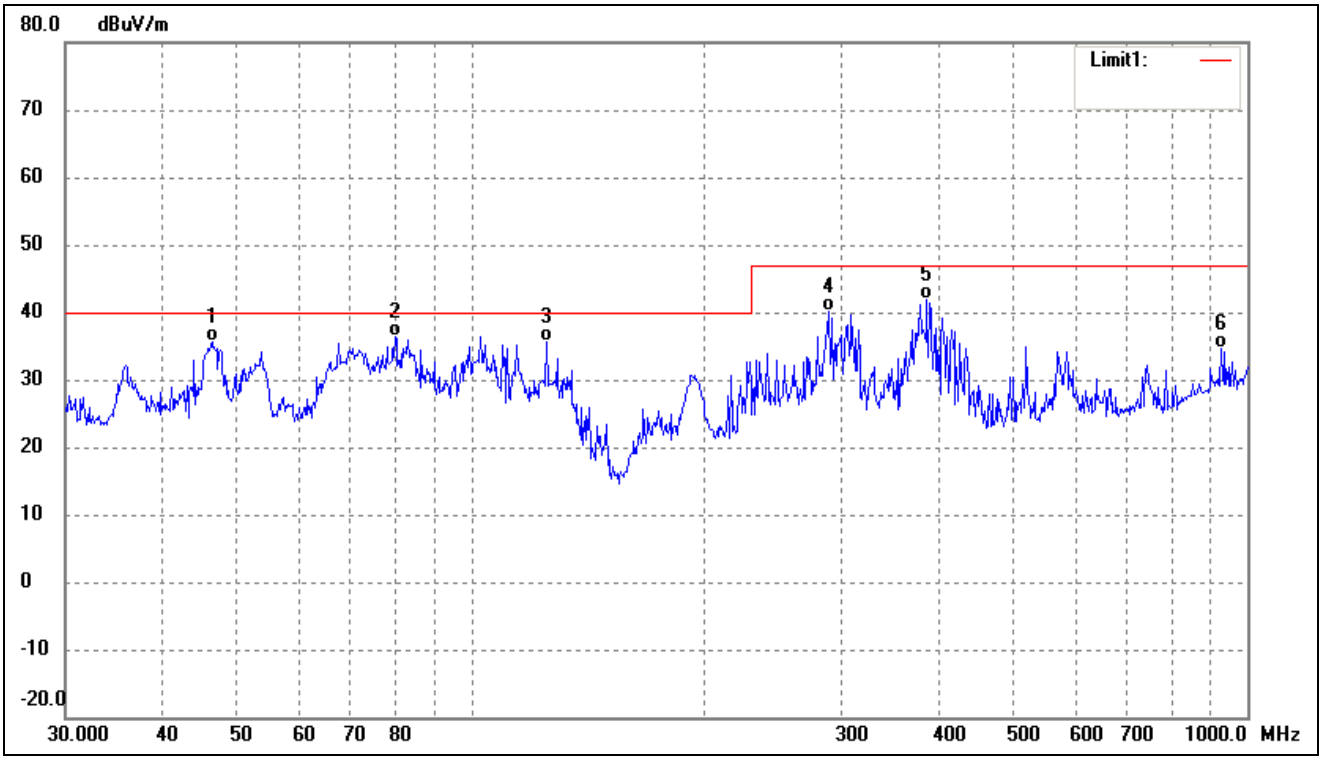
➢ 30MHz to 1GHz

Test mode:	TM1	Polarity:	Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	36.0007	51.06	-15.70	35.36	40.00	-4.64	-	-	QP
2	112.9196	51.05	-15.02	36.03	40.00	-3.97	-	-	QP
3	127.6645	53.92	-17.58	36.34	40.00	-3.66	-	-	QP
4	301.4224	50.92	-7.86	43.06	47.00	-3.94	-	-	QP
5	383.9318	51.17	-7.92	43.25	47.00	-3.75	-	-	QP
6	552.8833	46.03	-7.43	38.60	47.00	-8.40	-	-	QP

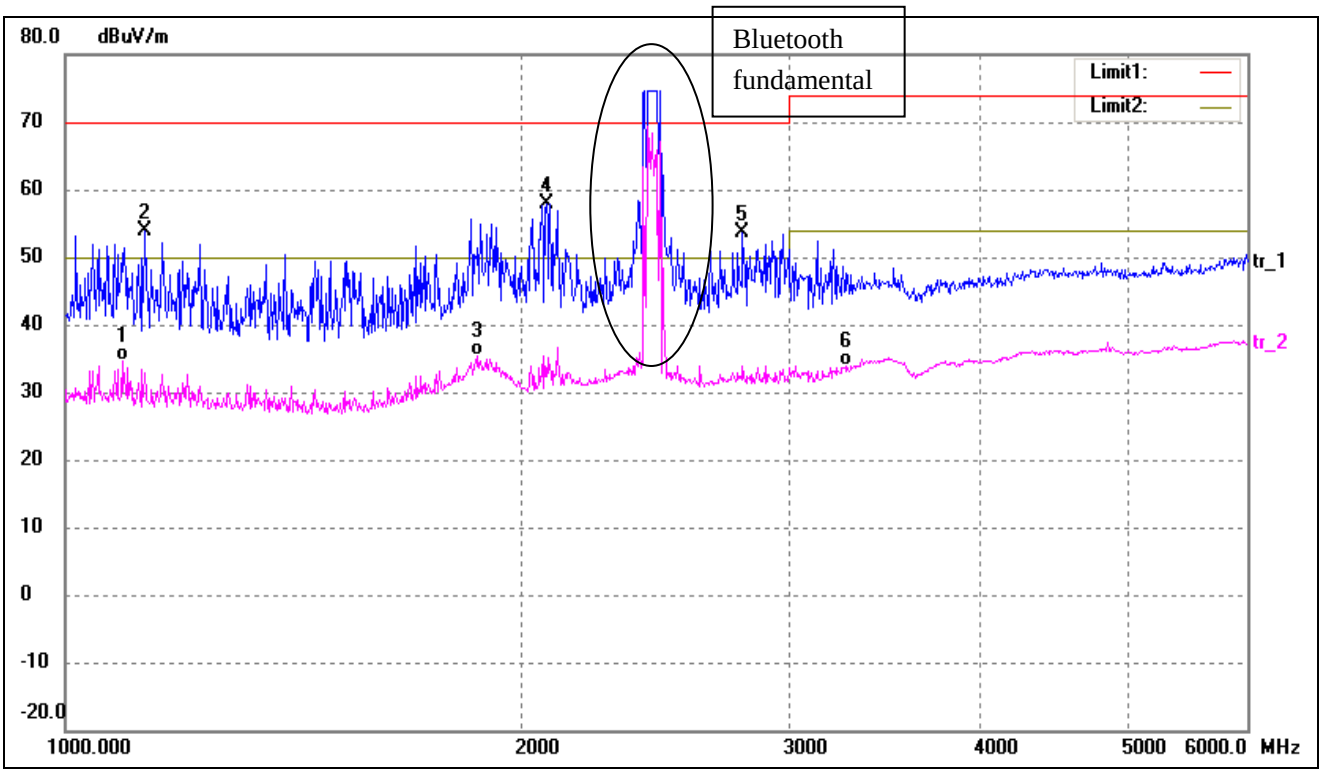
Test mode:	TM1	Polarity:	Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	46.3402	49.52	-13.86	35.66	40.00	-4.34	-	-	QP
2	79.8003	55.52	-19.07	36.45	40.00	-3.55	-	-	QP
3	125.0066	52.46	-16.90	35.56	40.00	-4.44	-	-	QP
4	289.0021	48.89	-8.77	40.12	47.00	-6.88	-	-	QP
5	386.6338	49.83	-7.92	41.91	47.00	-5.09	-	-	QP
6	925.7563	35.52	-0.79	34.73	47.00	-12.27	-	-	QP

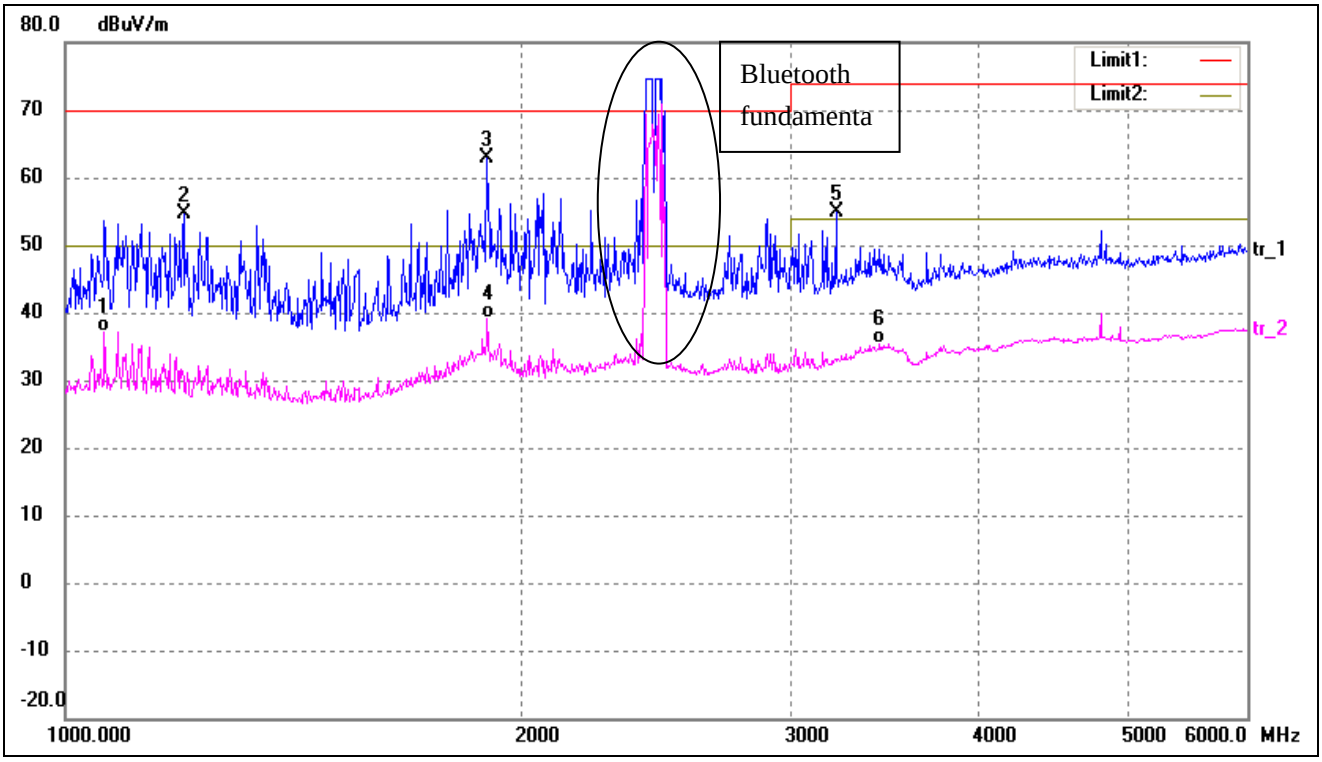
➢ Above 1GHz

Test mode:	TM1	Polarity:	Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	1089.811	48.43	-13.83	34.60	50.00	-15.40	-	-	AVG
2	1127.551	67.84	-13.86	53.98	70.00	-16.02	-	-	peak
3	1868.851	44.10	-8.83	35.27	50.00	-14.73	-	-	AVG
4	2073.517	68.06	-10.14	57.92	70.00	-12.08	-	-	peak
5	2791.777	62.47	-8.90	53.57	70.00	-16.43	-	-	peak
6	3262.720	41.78	-7.88	33.90	54.00	-20.10	-	-	AVG

Test mode:	TM1	Polarity:	Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	1060.911	50.84	-13.76	37.08	50.00	-12.92	-	-	AVG
2	1196.231	68.60	-13.90	54.70	70.00	-15.30	-	-	peak
3	1892.439	71.46	-8.63	62.83	70.00	-7.17	-	-	peak
4	1895.833	47.70	-8.60	39.10	50.00	-10.90	-	-	AVG
5	3216.286	62.86	-8.02	54.84	74.00	-19.16	-	-	peak
6	3436.736	42.73	-7.38	35.35	54.00	-18.65	-	-	AVG

Remark:‘-’Means’ the test Degree and Height is not recorded by the test software and only show the worst case in the test report.

6. Discontinuous Disturbance

6.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 2.50 dB.

6.2 Test Procedure

Test is conducting under the description of EN 55014-1, Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus -- Part 1: Emission.

6.3 Environmental Conditions

Temperature:	26° C
Relative Humidity:	52%
ATM Pressure:	1028 mbar

6.4 Discontinuous disturbance Test Data

Not applicable

7. Harmonic Current Emissions

7.1 Test Procedure

Test is conducting under the description of EN 61000-3-2.

7.2 Test Standards

EN 61000-3-2, Clause 7.1 Limits for Class A equipment.

Environmental Conditions

Temperature:	26 °C
Relative Humidity:	55%
ATM Pressure:	1022 mbar

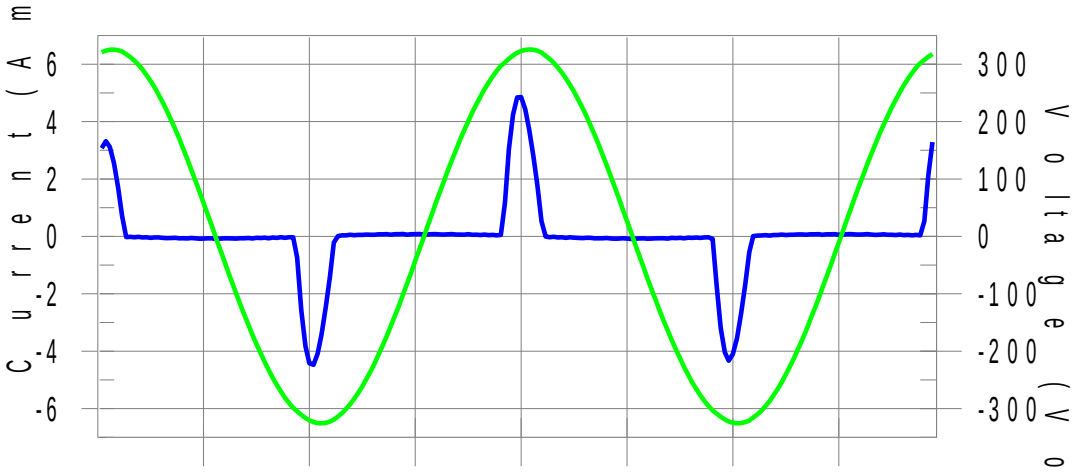
7.3 Harmonic Current Emissions Test Data

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

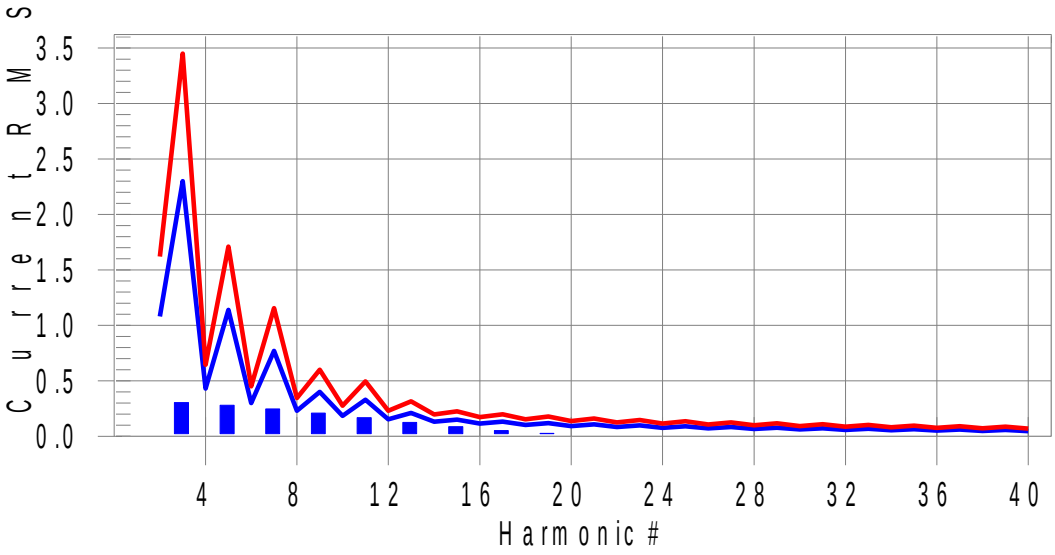
EUT: Massage Chair **Tested by: Will**
Test category: Class-A per Ed. 4.0 (2014) (European limits) **Test Margin: 100**
Test date: 2020-4-24 **Start time: 下午 06:06:23** **End time: 下午 06:09:04**
Test duration (min): 2.5 **Data file name: H-000502.cts_data**
Comment: Working
Customer: Customer

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

Current & voltage waveforms



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



Test result: Pass **Worst harmonics H9-45.2% of 150% limit, H13-59.5% of 100% limit**

Current Test Result Summary (Run time)

EUT: Massage Chair **Tested by: Will**
Test category: Class-A per Ed. 4.0 (2014) (European limits) **Test Margin: 100**
Test date: 2020-4-24 **Start time: 下午 06:06:23** **End time: 下午 06:09:04**
Test duration (min): 2.5 **Data file name: H-000502.cts_data**
Comment: Working
Customer: Customer

Test Result: Pass **Source qualification: Normal**
THC(A): 0.576 **I-THD(%): 124.4** **POHC(A): 0.045** **POHC Limit(A): 0.251**

Highest parameter values during test:

V_RMS (Volts):	230.03	Frequency(Hz):	50.00
I_Peak (Amps):	4.912	I_RMS (Amps):	1.066
I_Fund (Amps):	0.463	Crest Factor:	7.092
Power (Watts):	104.8	Power Factor:	0.512

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.003	1.080	N/A	0.009	1.620	N/A	Pass
3	0.304	2.300	13.2	0.436	3.450	12.6	Pass
4	0.003	0.430	N/A	0.008	0.645	N/A	Pass
5	0.280	1.140	24.6	0.394	1.710	23.0	Pass
6	0.003	0.300	N/A	0.007	0.450	N/A	Pass
7	0.248	0.770	32.2	0.337	1.155	29.2	Pass
8	0.003	0.230	N/A	0.005	0.345	N/A	Pass
9	0.209	0.400	52.3	0.271	0.600	45.2	Pass
10	0.002	0.184	N/A	0.004	0.276	N/A	Pass
11	0.167	0.330	50.7	0.202	0.495	40.8	Pass
12	0.002	0.153	N/A	0.003	0.230	N/A	Pass
13	0.125	0.210	59.5	0.140	0.315	44.4	Pass
14	0.002	0.131	N/A	0.003	0.197	N/A	Pass
15	0.086	0.150	57.0	0.090	0.225	40.0	Pass
16	0.001	0.115	N/A	0.002	0.173	N/A	Pass
17	0.051	0.132	38.9	0.059	0.198	30.0	Pass
18	0.001	0.102	N/A	0.002	0.153	N/A	Pass
19	0.025	0.118	21.4	0.036	0.178	20.2	Pass
20	0.001	0.092	N/A	0.002	0.138	N/A	Pass
21	0.013	0.107	12.4	0.028	0.161	17.7	Pass
22	0.001	0.084	N/A	0.002	0.125	N/A	Pass
23	0.016	0.098	16.2	0.034	0.147	23.3	Pass
24	0.001	0.077	N/A	0.002	0.115	N/A	Pass
25	0.021	0.090	23.0	0.034	0.135	24.9	Pass
26	0.001	0.071	N/A	0.001	0.107	N/A	Pass

27	0.022	0.083	26.0	0.028	0.125	22.2	Pass
28	0.001	0.066	N/A	0.001	0.099	N/A	Pass
29	0.019	0.078	24.5	0.022	0.116	18.7	Pass
30	0.001	0.061	N/A	0.001	0.092	N/A	Pass
31	0.014	0.073	19.5	0.018	0.109	16.2	Pass
32	0.001	0.058	N/A	0.001	0.086	N/A	Pass
33	0.009	0.068	13.2	0.013	0.102	12.9	Pass
34	0.000	0.054	N/A	0.001	0.081	N/A	Pass
35	0.006	0.064	8.7	0.010	0.096	10.9	Pass
36	0.000	0.051	N/A	0.001	0.077	N/A	Pass
37	0.005	0.061	N/A	0.013	0.091	N/A	Pass
38	0.000	0.048	N/A	0.001	0.073	N/A	Pass
39	0.006	0.058	10.7	0.012	0.087	14.0	Pass
40	0.000	0.046	N/A	0.001	0.069	N/A	Pass

Voltage Source Verification Data (Run time)

EUT: Massage Chair **Tested by: Will**
Test category: Class-A per Ed. 4.0 (2014) (European limits) **Test Margin: 100**
Test date: 2020-4-24 **Start time: 下午 06:06:23** **End time: 下午 06:09:04**
Test duration (min): 2.5 **Data file name: H-000502.cts_data**
Comment: Working
Customer: Customer

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

Highest parameter values during test:

Voltage (Vrms):	**230.03**	**Frequency(Hz):**	**50.00**
I_Peak (Amps):	**4.912**	**I_RMS (Amps):**	**1.066**
I_Fund (Amps):	**0.463**	**Crest Factor:**	**7.092**
Power (Watts):	**104.8**	**Power Factor:**	**0.512**

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.060	0.460	13.06	OK
3	0.566	2.070	27.37	OK
4	0.059	0.460	12.91	OK
5	0.083	0.920	9.01	OK
6	0.033	0.460	7.12	OK
7	0.129	0.690	18.70	OK
8	0.017	0.460	3.74	OK
9	0.147	0.460	31.88	OK
10	0.012	0.460	2.54	OK
11	0.119	0.230	51.71	OK
12	0.011	0.230	4.61	OK
13	0.101	0.230	43.73	OK
14	0.004	0.230	1.91	OK
15	0.065	0.230	28.36	OK
16	0.008	0.230	3.43	OK
17	0.054	0.230	23.58	OK
18	0.013	0.230	5.67	OK
19	0.038	0.230	16.60	OK
20	0.014	0.230	6.16	OK
21	0.031	0.230	13.62	OK
22	0.004	0.230	1.90	OK
23	0.041	0.230	17.79	OK
24	0.004	0.230	1.57	OK
25	0.041	0.230	17.96	OK
26	0.003	0.230	1.24	OK
27	0.040	0.230	17.57	OK

28	**0.005**	**0.230**	**2.28**	**OK**
29	**0.029**	**0.230**	**12.52**	**OK**
30	**0.004**	**0.230**	**1.74**	**OK**
31	**0.026**	**0.230**	**11.51**	**OK**
32	**0.004**	**0.230**	**1.61**	**OK**
33	**0.021**	**0.230**	**9.06**	**OK**
34	**0.003**	**0.230**	**1.29**	**OK**
35	**0.020**	**0.230**	**8.59**	**OK**
36	**0.003**	**0.230**	**1.49**	**OK**
37	**0.025**	**0.230**	**10.69**	**OK**
38	**0.004**	**0.230**	**1.55**	**OK**
39	**0.025**	**0.230**	**10.81**	**OK**
40	**0.008**	**0.230**	**3.38**	**OK**

8. Voltage Fluctuation and Flicker

8.1 Test Procedure

Test is conducting under the description of EN 61000-3-3.

8.2 Test Standards

EN 61000-3-3, Limit: Clause 5.

Environmental Conditions

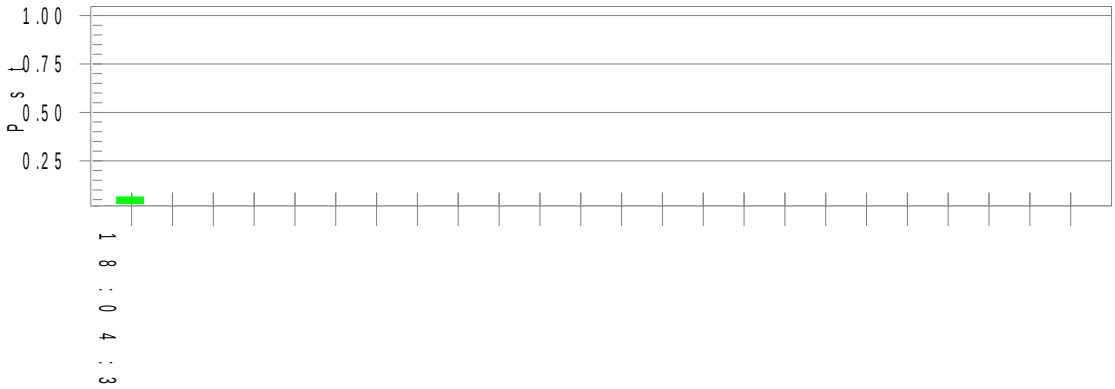
Temperature:	22 °C
Relative Humidity:	48%
ATM Pressure:	1022 mbar

8.3 Voltage Fluctuation and Flicker Test Data

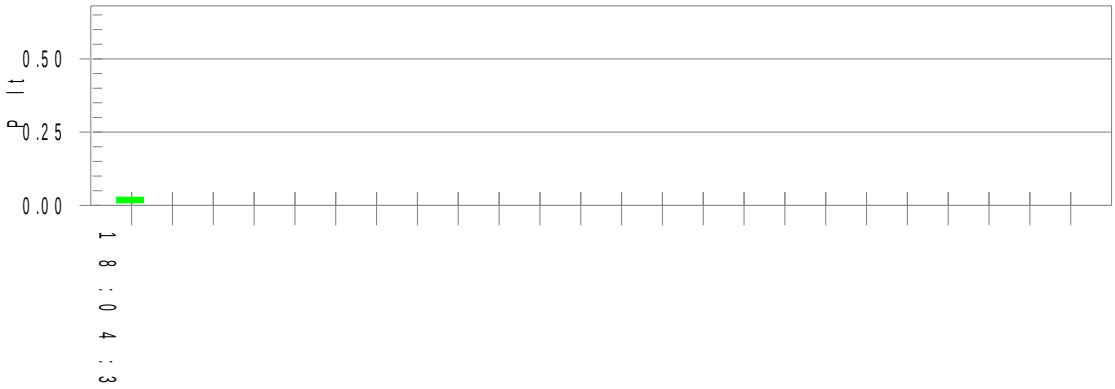
Test mode:	TM1

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

Pst and limit line **European Limits**



Plt and limit line



Parameter values recorded during the test:

Vrms at the end of test (Volt):	**229.85**			
T-max (mS):	**0**	**Test limit (mS):**	**500.0**	**Pass**
Highest dc (%):	**0.00**	**Test limit (%):**	**3.30**	**Pass**
Highest dmax (%):	**0.20**	**Test limit (%):**	**4.00**	**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 (ESD)

9.1 Test Procedure

Test is conducting under the description of EN 61000-4-2.

Test Performance

Performance Criterion: B

Environmental Conditions

Temperature:	26 °C
Relative Humidity:	55%
ATM Pressure:	1011 mbar

9.2 Electrostatic Discharge Immunity Test Data

Table 1: Electrostatic Discharge Immunity (Air Discharge)

EN 61000-4-2	Test Levels (kV)									
Test Points	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Button	A	A	A	A	A	A	A	A	/	/
Switch	A	A	A	A	A	A	A	A	/	/
Power Port	A	A	A	A	A	A	A	A	/	/
Enclosure	A	A	A	A	A	A	A	A	/	/

Table 2: Electrostatic Discharge Immunity (Direct Contact)

EN 61000-4-2	Test Levels (kV)									
Test Points	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Enclosure	A	A	A	A	/	/	/	/	/	/

Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP & VCP)

EN 61000-4-2	Test Levels (kV)									
Test Points	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
HCP (6 Sides)	A	A	A	A	/	/	/	/	/	/
VCP (4 Sides)	A	A	A	A	/	/	/	/	/	/

Test Result: Pass

10. Continuous Radiated Disturbances (R/S)

10.1 Test Procedure

Test is conducting under the description of EN 61000-4-3.

Test Performance

Performance Criterion: A

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1010 mbar

10.2 Continuous Radiated Disturbances Test Data

Frequency step: 1% of fundamental
Dwell time: 1 second
Modulation: AM by 1kHz sine wave with 80% modulation depth

Frequency Range(MHz)	Field (V/m)	Front		Rear		Left Side		Right Side	
		VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-1000	3	A	A	A	A	A	A	A	A

Test Result: Pass

11. Fast Transients (EFT)

11.1 Test Procedure

Test is conducting under the description of EN 61000-4-4.

Test Performance

Performance Criterion: B

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

11.2 Electrical Fast Transients Test Data

EN 61000-4-4 Test Points		Test Levels (kV)							
		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
Power Supply Power Port of EUT	L1	A	A	A	A	/	/	/	/
	L2	A	A	A	A	/	/	/	/
	PE	A	A	A	A	/	/	/	/
	L1+L2	A	A	A	A	/	/	/	/
	L1 + PE	A	A	A	A	/	/	/	/
	L2 + PE	A	A	A	A	/	/	/	/
	L1+L2+PE	A	A	A	A	/	/	/	/
Signal ports	/	/	/	/	/	/	/	/	/

Test Result: Pass

12. Surges

12.1 Test Procedure

Test is conducting under the description of EN 61000-4-5.

Test Performance

Performance Criterion: B

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

12.2 Surge Test Data

Level	Voltage	Poll	Path	Pass	Fail
1	0.5kV	±	L-N	A	/
2	1kV	±	L-N	A	/
3	2kV	±	L-PE, N-PE	A	/
4	4kV	±	L-N, L-PE, N-PE	/	/

Test Result: Pass

13. Injected Currents (C/S)

13.1 Test Procedure

Test is conducting under the description of EN 61000-4-6.

Test Performance

Performance Criterion: A

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

13.2 Continuous Conducted Disturbances Test Data

Sweep frequency range: 150kHz~230MHz
Frequency step: 1% of fundamental
Dwell time: 1 second

Level	Voltage Level (e.m.f.) U_0	Modulation:	Pass	Fail
1	1	AM 80%, 1kHz sinewave	/	/
2	3	AM 80%, 1kHz sinewave	A	/
3	10	AM 80%, 1kHz sinewave	/	/
X	Special	/	/	/

Test Result: Pass

14. Voltage Dips and Interruptions

14.1 Test Procedure

Test is conducting under the description of EN 61000-4-11.

Test Performance

Performance Criterion: B/C

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	50%
ATM Pressure:	1011 mbar

14.2 Voltage Dips And Interruptions Test Data

U: Vlotage dips in % U_T (U_T is rated voltage for the EUT)
T: Test duration

Level	U	T	Phase Angle	N	Pass	Fail
1	100%	10ms	0/90/180/270	3	A	/
2	60%	200ms	0/90/180/270	3	B	/
3	30%	1000ms	0/90/180/270	3	B	/

Test Result: Pass

EXHIBIT 1 - PRODUCT LABELING

Please refer to "ANNEX_EUT Label & Photos".

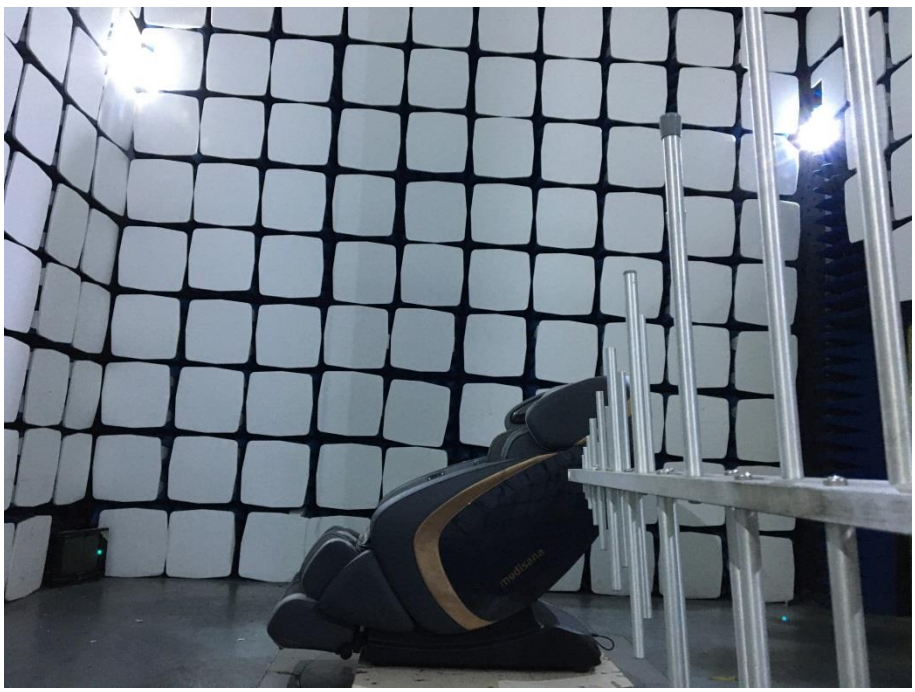
EXHIBIT 2 - EUT PHOTOGRAPHS

Please refer to "ANNEX_EUT Label & Photos".

EXHIBIT 3 - TEST SETUP PHOTOGRAPHS

Terminal Voltages Test View

Radiation Emission Test View (Below 1GHz)



Radiation Emission Test View (Above 1GHz)

Harmonic/Flicker Test View

EN 61000-4-2 Test View

EN 61000-4-3 Test View

EN 61000-4-4/5/11 Test View

EN 61000-4-6 Test View

******* END OF REPORT *******