1. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.1 General Information

Client Information

Applicant:	XIAMEN COMFORT SCIENCE & TECHNOLOGY GROUP CO., LTD
Address of applicant:	(5/F) NO.168, QIANPU ROAD, SIMING DISTRICT, XIAMEN, CHINA
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-218E
Adding Model(s):	CZ-640
FCC ID:	YMX-EC218E
Rated Voltage:	AC110-120V 60Hz

Technical Characteristics of EUT:

Bluetooth Version:	V4.0 (Only BDR/EDR mode)
Frequency Range:	2402-2480MHz
RF Output Power:	6.408dBm (Conducted)
Data Rate:	1Mbps, 2Mbps, 3Mbps
Modulation:	GFSK, Pi/4 QDPSK, 8DPSK
Quantity of Channels:	79
Channel Separation:	1MHz
Type of Antenna:	PCB Antenna
Antenna Gain:	2.5dBi
Device Category:	Fixed Device

Note 1: The appearance of others models listed in the report is different from main-test model EC-218E, but the circuit and the electronic construction do not change, declared by the manufacturer.

1.2 Standard Applicable

According to §1.1307(b)(1) and KDB 447498 D01 General RF Exposure Guidance v06, system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

(a) Limits for Occupational / Controlled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Times $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	F/300	6
1500-100000	/	/	5	6

(b) Limits for General Population / Uncontrolled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Times $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-100000	/	/	1	30

Note: f = frequency in MHz: * = Plane-wave equivalents power density

1.3 MPE Calculation Method

$S = (30*P*G) / (377*R^2)$

S = power density (in appropriate units, e.g., mw/cm^2)

P = power input to the antenna (in appropriate units, e.g., mw)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor is normally numeric gain.

R = distance to the center of radiation of the antenna (in appropriate units, e.g., cm)

1.4 MPE Calculation Result

Maximum Tune-Up output power: 7 (dBm)
Maximum peak output power at antenna input terminal: 5.01 (mW)
Prediction distance: >20(cm)
Prediction frequency: 2480 (MHz)
Antenna gain: 2.5 (dBi)
Directional gain (numeric gain): 1.78
The worst case is power density at prediction frequency at 20cm: 0.002(mw/cm^2)
MPE limit for general population exposure at prediction frequency: 1 (mw/cm^2)

Result: Pass

1.5 Test Setup Photos