RF Exposure Requirements

1 General Information

Client Information

Applicant	:	AQUAGEM TECHNOLOGY LIMITED
Address of applicant	:	FLAT/RM H 19/FMAXGRAND PLAZA3 TAI YAU STREETSAN POKONG KLHONG KONG
Manufacturer	:	Aquagem Manufacturing Limited
Address of manufacturer	:	NO.15, 101, 16, 401, 501, No.193, Jinlong Road, Dalong Street, Panyu District, Guangzhou

General Description of E.U.T

FCC ID	:	2BRMV-P230
Product Name	:	Surfing SwimJet
Model No.	:	P450, P720, P900, P1100 SJ100, P100, SJ160, P160, SJ200, P200, SJ230, P230, SJ240, P240 SJH100, H100, SJH160, H160, SJH200, H200, SJH240, H240 SJV100, V100, SJV160, V160, SJV200, V200, SJV240, V240
Model Description	:	All models have same electric circuit, PCB, WiFi module and Bluetooth module, the difference among them are the model name, flow parameters and external water pump. Series “iGarden SwimJet P Series” and “InverJet” are identical except the brand. Series “InverJet”, “InverJet H” and “InverJet V” are identical except the external water pump. Therefore the full tests were performed on model P230.
Rated Voltage	:	AC 100-120V, 60Hz
Battery Capacity	:	---
Power Adapter	:	---

Technical Characteristics of EUT

- **2.4G WiFi**

Support Standards	:	802.11b, 802.11g, 802.11n
Frequency Range	:	2412-2462MHz for 802.11b/g/n(HT20) 2422-2452MHz for 802.11n(HT40)
RF Output Power	:	16.35dBm (Conducted)
Modulation	:	802.11b: DSSS(DBPSK/DQPSK/CCK) 802.11g/n: OFDM (BPSK/QPSK/16QAM/64QAM)
Quantity of Channels	:	11 for 802.11b/g/n(HT20); 8 for 802.11n(HT40)
Channel Separation	:	5MHz
Type of Antenna	:	FPC Antenna
Antenna Gain	:	-2.97dBi

- **BLE**

Bluetooth Version ..... : Bluetooth LE

Frequency Range ..... : 2402-2480MHz

RF Output Power ..... : 1.97dBm (Conducted)

Modulation ..... : GFSK

Data Rate ..... : 1Mbps

Quantity of Channels ..... : 40

Channel Separation ..... : 2MHz

Type of Antenna ..... : PCB Antenna

Antenna Gain ..... : 0.80dBi

2 Applicable Standard

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

3 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), R=20cm.

4 MPE Calculation Result

Frequency (MHz)	Antenna Gain (dBi)	Numeric gain	Conducted Power (dBm)	Maximum Tune-up output power		PD (mW/cm2)	Limit (mW/cm2)
				(dBm)	(mW)		
2462 (2.4G WiFi)	-2.97	0.50	16.35	17.00	50.12	0.00503	1.0
2480 (BLE)	0.8	1.20	1.97	2.00	1.58	0.00038	1.0

Result: Pass

======End of Report======