1. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Client Information

Applicant:	Shenzhen Free Dynamic Development Co., LTD.
Address of applicant:	402, Kingson Building, No.1 ChuangSheng Road, xili street, Nanshan District, shenzhen, China
Manufacturer:	Shenzhen Free Dynamic Development Co., LTD.
Address of manufacturer:	402, Kingson Building, No.1 ChuangSheng Road, xili street, Nanshan District, shenzhen, China

General Description of EUT	
Product Name:	Robotic Vacuum Cleaner
Trade Name:	--
Model No.:	R342
Adding Model(s):	R342W, R342B, R342L, R342Y, R342O, R342G, R342P,
	R342M
Rated Voltage:	Battery:DC14.4V
Battery Capacity:	36Wh
Power Adapter Model:	Model NO: GQ12-190060-AU INPUT:100-240V~ 50/60Hz 0.4A MAX OUTPUT:DC19V,600mA
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 R342, but the circuit and the electronic construction do not change, declared by the manufacturer.	

Technical Characteristics of EUT	
Support Standards:	802.11b, 802.11g, 802.11n-HT20
Frequency Range:	2412-2462MHz for 802.11b/g/n-HT20
RF Output Power:	16.41dBm (Conducted)
Type of Modulation:	DBPSK,BPSK,DQPSK,QPSK,16QAM,64QAM
Data Rate:	1-11Mbps, 6-54Mbps, up to 65Mbps
Quantity of Channels:	11 for 802.11b/g/n-HT20
Channel Separation:	5MHz
Type of Antenna:	Integral Antenna
Antenna Gain:	0dBi

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

WIFI
Maximum Tune-Up output power: 16.41 (dBm)
Maximum peak output power at antenna input terminal: 43.75(mW)
Prediction distance: >20(cm)
Prediction frequency: 2437 (MHz)
Antenna gain: 0 (dBi)
Directional gain (numeric gain): 1
The worst case is power density at prediction frequency at 20cm: 0.009(mw/cm^2)
MPE limit for general population exposure at prediction frequency: 1 (mw/cm^2)

Result: Pass