1. MAXIMUM PERMISSIBLE EXPOSURE (MPE)

1.1 General Information

Client Information

Applicant:	ATI Electronics (ShenZhen) Co. Ltd
Address of applicant:	1/F, B Tower, Shengdelan Industrial Park, Kukeng Village, Guanlan Town, Shenzhen, China.
Manufacturer:	ATI Electronics (ShenZhen) Co. Ltd
Address of manufacturer:	1/F, B Tower, Shengdelan Industrial Park, Kukeng Village, Guanlan Town, Shenzhen, China.

General Description of EUT:

Product Name:	Smart WI-FI Outlet
Trade Name:	VIVITAR
Model No.:	WE400, HA-1011
FCC ID:	SF4-WE400
Rated Voltage:	AC 100-240V

Technical Characteristics of EUT:

Wi-Fi

Support Standards:	802.11b, 802.11g, 802.11n(HT20)
Frequency Range:	2412-2462MHz
RF Output Power:	17.88dBm (Conducted)
Type of Modulation:	CCK, OFDM, QPSK, BPSK, 16QAM, 64QAM
Data Rate:	1-11Mbps, 6-54Mbps, up to 72.2Mbps
Quantity of Channels:	11
Channel Separation:	5MHz
Type of Antenna:	PCB
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)	Magnetic Field Strength (H)	Power Density (S) (mW/cm^2)	Averaging Times $\mid E \mid^2$, $\mid H \mid^2$ or

	(V/m)	(A/m)		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 $\mid E \mid^2$, $\mid H \mid^2$ 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

Wi-Fi:

Maximum Tune-Up output power: <u>18.0(dBm)</u>

Maximum peak output power at antenna input terminal: <u>63.10 (mW)</u>

Prediction distance: <u>>50(cm)</u>

Prediction frequency: <u>2412 (MHz)</u>

Antenna gain:<u>0 (dBi)</u>

Directional gain (numeric gain): <u>1</u>

The worst case is power density at prediction frequency at 20cm: <u>0.0013(mw/cm^2)</u>

MPE limit for general population exposure at prediction frequency: <u>1 (mw/cm^2)</u>

Result: Pass