



SPORTON International Inc.

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Certificate No.: CB10309100

Maximum Permissible Exposure

Applicant's company	PEGATRON CORPORATION
Applicant Address	5F., NO. 76, LIGONG ST., BEITOU DISTRICT, TAIPEI CITY 112 Taiwan
FCC ID	VUICLG8202-NA
Manufacturer's company	MAINTEK COMPUTER
Manufacturer Address	233 Jinfeng Rd., Suzhou, Jiangsu, PRC

Product Name	Wireless Home Automation and Security
Brand Name	CISCO
Model Name	CLG-8202 NA; CLG-8202-WW NA
Ref. Standard(s)	47 CFR FCC Part 2 Subpart J, section 2.1091
EUT Freq. Range	2400 ~ 2483.5MHz / 2402 ~ 2480MHz / 2405 ~ 2480MHz
Received Date	Jul. 21, 2014
Final Test Date	Sep. 03, 2014
Submission Type	Original Equipment

Sam Chen

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Table of Contents

1. TABLE FOR MULTIPLE LIST.....	1
1.1. Table for Multiple List.....	1
2. MAXIMUM PERMISSIBLE EXPOSURE.....	2
2.1. Applicable Standard	2
2.2. MPE Calculation Method	2
2.3. Calculated Result and Limit.....	3

History of This Assessment Report

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA472942	Rev. 01	Initial issue of report	Sep. 18, 2014

1. TABLE FOR MULTIPLE LIST

1.1. Table for Multiple List

The model names in the following table are all refer to the identical product.

Brand Name	Model Name	Description
CISCO	CLG-8202 NA	All the models are identical, the difference model for difference brand served as marketing strategy.
	CLG-8202-WW NA	

Note: Assessed as above, there is only model: CLG-8202 NA selected to test and recorded in the report as a result.

2. MAXIMUM PERMISSIBLE EXPOSURE

2.1. Applicable Standard

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess limit for maximum permissible exposure. In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as a mobile device whereby a distance of 0.2 m normally can be maintained between the user and the device.

(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 Time 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
1500-100,000			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 Time 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
1500-100,000			1.0	30

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

2.2. MPE Calculation Method

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric field (V/m)

P = Peak RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$

From the EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained.

2.3. Calculated Result and Limit

Exposure Environment: General Population / Uncontrolled Exposure

<For WLAN>

Antenna Type : Printed Antenna

Conducted Power for IEEE 802.11n HT20: 18.73 dBm

Distance (m)	Antenna Gain (dBi)	Antenna Gain (numeric)	Average Output Power		Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
			(dBm)	(mW)			
0.2	3.62	2.3014	18.7306	74.6548	0.034199	1	Complies

<For Bluetooth>

Antenna Type : Printed Antenna

Conducted Power for Bluetooth 1.0: 9.22 dBm

Distance (m)	Antenna Gain (dBi)	Antenna Gain (numeric)	Average Output Power		Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
			(dBm)	(mW)			
0.2	3.62	2.3014	9.2200	8.3560	0.003828	1	Complies

<For Zigbee>

Antenna Type : Printed Antenna

Conducted Power for Zigbee: 14.48 dBm

Distance (m)	Antenna Gain (dBi)	Antenna Gain (numeric)	Average Output Power		Power Density (S) (mW/cm ²)	Limit of Power Density (S) (mW/cm ²)	Test Result
			(dBm)	(mW)			
0.2	1.68	1.4723	14.4800	28.0543	0.008221	1	Complies

CONCLUSION:

There are two Simultaneous Transmission Configurations as following:

- (1) Both of the WiFi + Zigbee
- (2) Both of the Bluetooth + Zigbee

can transmit simultaneously, the formula of calculated the MPE is:

$$CPD1 / LPD1 + CPD2 / LPD2 +etc. < 1$$

CPD = Calculation power density

LPD = Limit of power density

Therefore, the worst-case situation is

$$(1) 0.034199 / 1 + 0.008221 / 1 = 0.04242$$

$$(2) 0.003828 / 1 + 0.008221 / 1 = 0.012049$$

which is less than "1". This confirmed that the device comply with FCC 1.1310 MPE limit.

Note: Z-wave and NFC not need to assess co-location maximum permissible exposure.