

# Radio Frequency Exposure Report

On Behalf of

## PANODIC ELECTRIC (HONG KONG) LIMITED

**FCC ID:** ZU5-MC300

**Product Description:** Home Digital Media Center

**Model No.:** MC300

**Supplementary Model:** N/A

**Prepared for:** PANODIC ELECTRIC (HONG KONG) LIMITED  
Unit 1703A, 17/F, Nanyang Plaza, 57 Hung To Road, Kwun Tong,  
Kowloon, Hong Kong

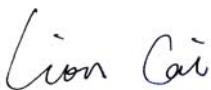
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**Report No.:** BCT13CR084E-2

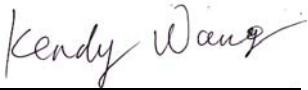
**Issue Date:** June 26, 2013

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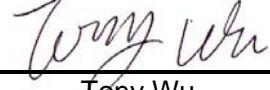
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## 1 - GENERAL INFORMATION

### 1.1 Product Description for Equipment Under Test (EUT)

Applicant:	<b>PANODIC ELECTRIC (HONG KONG) LIMITED</b>
Address of Applicant:	Unit 1703A,17/F,Nanyang Plaza,57 Hung To Road,Kwun Tong, Kowloon,Hong Kong
Manufacturer :	<b>PANODIC ELECTRIC(SHENZHEN) LIMITED</b>
Address of Manufacturer:	C.&D/bl.Zhengchangda Ind.Park,Jian'an Road, Tangwei, FuYong, Baoan Dist.,Shenzhen, China

### General Description of E.U.T

Items	Description
EUT Description:	Home Digital Media Center
Trade Name:	CIK
Model No.:	MC300
Supplementary Model:	N/A
Frequency Band:	IEEE 802.11b/g, IEEE 802.11n HT20 (ISM Band) : 2412MHz~2462MHz, IEEE 802.11n HT40 (ISM Band) : 2422MHz~2452MHz
Channel Spacing:	IEEE 802.11b/g, 802.11n HT20/HT40: 5MHz
Number of Channels:	IEEE 802.11b/g, 802.11n HT20:11 Channels IEEE 802.11n HT40 :7 Channels
Transmit Data Rate:	maximum of 150Mbps
Type of Modulation:	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20/40: OFDM (64QAM, 16QAM, QPSK, BPSK)
Antenna Type:	Built-in Antenna
Antenna Gain:	2.0dBi
Power Supply:	DC12V 1.5A From Adapter
Adapter Information:	Model:SUN-1200150 Input:100-240V 50/60Hz 0.6A Max Output: 12VDC 1500mA

Remark: \* The test data gathered are from the production sample provided by the manufacturer.

## 1.2 Objective

The objective of the following report is used to demonstrate that EUT operated in a manner that ensures the public is not exposed to radio frequency energy levels in excess of the relative provisions of FCC 47CFR Part 1.1307

## 1.3 General Description of Test

Items	Description
EUT Frequency band	<input type="checkbox"/> FHSS: 2.400GHz ~ 2.483GHz <input checked="" type="checkbox"/> WLAN: 2.400GHz ~ 2.483GHz <input type="checkbox"/> WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz <input type="checkbox"/> WLAN: 5.745GHz ~ 5825GHz <input type="checkbox"/> Others: _____
Device category	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others _____
Exposure classification	<input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm <sup>2</sup> ) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm <sup>2</sup> ) <input type="checkbox"/> Others: _____
Antenna diversity	<input checked="" type="checkbox"/> Single antenna <input type="checkbox"/> Multiple antennas: <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity
Max. output power	15.38dBm (0.00345W)
Antenna gain (Max)	2dBi (Numeric gain:1.58)
Evaluation applied	<input checked="" type="checkbox"/> MPE Evaluation <input type="checkbox"/> SAR Evaluation

**Note:**

1. The maximum output power is 15.38dBm (0.00345W) at 2462MHz (with 1.58 numeric antenna gain.)
2. For mobile or fixed location transmitters, no SAR consideration applied. The minimum separation generally be used is at least 20 cm, even if the calculations indicate that the MPE distance would be lesser.

## 1.4 Human Exposure Assessment Results

### Calculation

Given  $E = \frac{\sqrt{30 \times P \times G}}{d}$  &  $S = \frac{E^2}{3770}$

Where  $E$  = Field Strength in Volts / meter

$P$  = Power in Watts

$G$  = Numeric antenna gain

$d$  = Distance in meters

$S$  = Power Density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{3770 d^2}$$

Changing to units of mW and cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = 100 * d \text{ (m)}$$

Yields

$$S = \frac{30 \times (P/1000) \times G}{3770 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2} \quad \text{Equation 1}$$

Where  $d$  = distance in cm

$P$  = Power in mW

$G$  = Numeric antenna gain

$S$  = Power Density in mW/cm<sup>2</sup>

<b>EUT parameter (data from the separate report)</b>	
Given	Where G: numerical gain of transmitting antenna; TP: Transmitted power in watt; d: distance from the transmitting antenna in meter
$E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{3770}$	
Max average output power in Watt (TP)	15.38dBm (0.00345W)
Antenna gain (G)	2.0 dBi (Numeric gain: 1.58)
Exposure classification	$S=1\text{mW/cm}^2$
Minimum distance in meter (d) (from transmitting structure to the human body)	20cm (0.2m)

Yields

$$S = \frac{30xPxG}{3770d^2}, \quad P=0.00345W, G=1.58, d=0.2$$

$$S=0.00108\text{mW/cm}^2$$

Or

$$d = \sqrt{\frac{30xPxG}{3770S}}, \quad S=1, P=0.00345W, G=1.58$$

$$d=0.0065\text{m}$$

Conclusion:

$S=0.00108\text{mW/cm}^2$  is significant lower than the General Population Exposure Power Density Limit  $1\text{mW/cm}^2$  or except the distance when human body proximity to the antenna is less than  $0.65\text{cm}$  then will reach the General Population Exposure Power Density Limit

(For mobile or fixed location transmitters, the maximum power density is  $1.0\text{ mW / cm}^2$  even if the calculation indicates that the power density would be larger.)