

# RADIO FREQUENCY EXPOSURE

## New Dragon Electronic Ltd.

7F, No.6 Building, 107 National Rd, Yusheng Industrial Zone, No.467 Xixiang section, Xixiang Street, Bao'an District, Shenzhen

Model: X20

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<b>This Report Concerns:</b> <input checked="" type="checkbox"/> Original Report	<b>Equipment Type:</b> Vedia MID
<b>Test Engineer:</b> Nie Quan/	
<b>Report Number:</b> BCT11HR-1216E-3M	
<b>Test Date:</b> November 17~December 20, 2011	
<b>Reviewed By:</b> Kevin Chi /	
<b>Approved By:</b> Kendy Wang /	
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## **LIMIT**

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 of the Commission's guidelines. See §1.1307(b)(1) of this chapter.

### **EUT Specification**

<b>EUT</b>	<b>Tablet PC</b>
<b>Frequency band (Operating)</b>	<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 _____
<b>Device category</b>	<input checked="" type="checkbox"/> Portable (<20cm separation) <input type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others _____
<b>Exposure classification</b>	<input type="checkbox"/> Occupational/Controlled exposure ( $S = 5mW/cm^2$ ) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure ( $S=1mW/cm^2$ )
<b>Antenna diversity</b>	<input type="checkbox"/> Single antenna <input checked="" type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input checked="" type="checkbox"/> Tx/Rx diversity
<b>Max. output power</b>	9.64dBm (9.2mW)
<b>Antenna gain (Max)</b>	2 dBi (Numeric gain:1.58)
<b>Evaluation applied</b>	<input checked="" type="checkbox"/> MPE Evaluation <input type="checkbox"/> SAR Evaluation

#### **Note:**

1. The maximum output power is 9.64 dBm (9.2mW) at 2462MHz b mode (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.

## **TEST RESULT**

No non-compliance noted.

## 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>

## Maximum Permissible Exposure

EUT Output Power = 9.2 mW

Numeric antenna gain = 1.58

Substituting the MPE safe distance using  $d=20$  cm into **Equation 1** :

Yields

$$S = 0.000199 \times P \times G$$

Where  $P$  = Power in mW

$G$  = Numeric antenna gain

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

The power density  $S = 0.000199 \times 9.2 \times 1.58 \text{ mW / cm}^2 = 0.0028927 \text{ mW / cm}^2$

(For mobile or fixed location transmitters, the maximum power density is 1.0 mW / cm<sup>2</sup> even if the calculation indicates that the power density would be larger.)

**Evaluation result :** **PASS**