

## Maximum Permissible Exposure (MPE) Estimation for DNUA-93C2

### 1. Introduction

DNUA-93C2 is a Wi-Fi module, which contain 802.11b/g/n.

### 2. Limit and Guidelines on Exposure to Electromagnetic Fields

The minimum safe distance per FCC part 2.1091 was calculated the power density of  $1 \text{ mW/cm}^2$  limit for maximum permissible exposure in an uncontrolled environment per FCC part 1, section 1.1307(b). So the minimum safe distance is the larger of this calculated distance or 20cm. As this Wi-Fi module, it is being insured by specify the minimum safe distance the antenna must be kept from the user is 20cm in User manual. So this Wi-Fi module is compliance with the FCC part 2.1091.

### 3. Calculation method

For the final determination of compliance boundary the model for far-field calculation is used since this overestimates the field strength in the near-field region. Thus the calculated compliance boundary should be rather more conservative and on the safe side.

For EUT the following compliance boundary is calculated:

$$Pd = (P_{out} * G) / (4 * \pi * r^2)$$

Where Pd=power density in  $\text{mW/cm}^2$

Pout=output power to antenna in mW

G=gain of antenna in linear scale

Pi=3.14159

R=distance between observation point and center of the radiator in cm

#### DNUA-93C2:

**Maximum Power output:** Pout=21.10dBm

**Max Antenna gain of the certified antenna list:** Gain=5.15dBi

**Maximum EIRP from transmit antenna** EIRP=21.10+5.15=26.25dBm

To determine the overall exposure at 20 cm from the EUT(R=20cm)

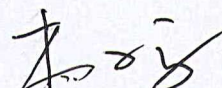
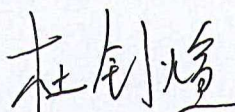
$$Pd = 0.0839 \text{ mW/cm}^2$$

The power density 20cm from the antennas of the EUT is  $0.0839 \text{ mW/cm}^2$ , which is less than the permitted maximum power density ( $1 \text{ mW/cm}^2$ ).

TMC Telecommunication Metrology Center of Ministry of Industry and Information Technology

Reviewed by:

Prepared By:



Du Zhaoxuan/EMC Project Manager

Date: 2012-06-15

Yang Zi'an/EMC Test Engineer

Date: 2012-06-15