Maximum Permissible Exposure (MPE) Estimation for WIFI-9002

1. Introduction

WIFI-9002 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 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 sould be rather more conservative and on the safe side.

For EUT the following compliance boundary is calculated:

$Pd=(Pout*G)/(4*pi*r^2)$
Where Pd=power density in 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

Wi-Fi 9002:

Maximum Power output:
Pout=181.97mW (22.6dBm)

Max Antenna gain of the certified antenna list:
Gain=1dBi=1.259

Maximum EIRP from transmit antenna
EIRP=22.6 +1.0 =23.60dBm

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

Pd=0.0456mW/cm^2

The power density 20cm from the antennas of the EUT is 0.0456mW/cm^2, which is less than the permitted maximum power density (1mW/cm^2).

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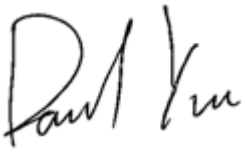

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