



## 12. Radio Frequency Exposure

### 12.1 Applicable Standards

The measurements shown in this test report were made in accordance with the procedures given in FCC Part 2 (Section 2.1091)

KDB 447498

IEEE C95.1:2005

### 12.2 EUT Specification

|  |  |
|--|--|
| <b>Frequency band (Operating)</b>  | <input checked="" type="checkbox"/> WLAN: 2412MHz ~ 2462MHz<br><input type="checkbox"/> WLAN: 5150MHz ~ 5250MHz<br><input type="checkbox"/> WLAN: 5250MHz ~ 5350MHz<br><input type="checkbox"/> WLAN: 5470MHz ~ 5725MHz<br><input type="checkbox"/> WLAN: 5725MHz ~ 5850MHz<br><input type="checkbox"/> Bluetooth: 2402MHz ~ 2480MHz |
| <b>Device category</b>   | <input type="checkbox"/> Portable (<20cm separation)<br><input checked="" type="checkbox"/> Mobile (>20cm separation)  |
| <b>Exposure classification</b>   | <input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm <sup>2</sup> )<br><input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm <sup>2</sup> )  |
| <b>Antenna diversity</b>   | <input checked="" type="checkbox"/> Single antenna<br><input type="checkbox"/> Multiple antennas<br><input type="checkbox"/> Tx diversity<br><input type="checkbox"/> Rx diversity<br><input type="checkbox"/> Tx/Rx diversity   |
| <b>Evaluation applied</b>  | <input checked="" type="checkbox"/> MPE Evaluation*<br><input type="checkbox"/> SAR Evaluation<br><input type="checkbox"/> N/A   |
| <b>Remark:</b><br><br>1. The maximum conducted output power is <u>25.33dBm (341.193mW)</u> at <u>2412MHz</u> (with <u>2.81dBi antenna gain.</u> )<br>2. DTS device is not subject to routine RF evaluation; MPE estimate is used to justify the compliance.<br>3. For mobile or fixed location transmitters, no SAR consideration applied. The maximum power density is 0.130 mW/cm <sup>2</sup> even if the calculation indicates that the power density would be larger. |  |



### 12.3 Test Results

No non-compliance noted.

### 12.4 Calculation

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

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:

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

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

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>

**12.5 Maximum Permissible Exposure**

| Channel Frequency (MHz) | Max. Conducted output power(dBm) | Antenna Gain(dBi) | Distance (cm) | Power Density (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) |
|-------------------------|----------------------------------|-------------------|---------------|-------------------------------------|-----------------------------|
| 2412-2462               | 25.33                            | 2.81              | 20            | 0.130                               | 1                           |