# 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)

## 12.2 EUT Specification

| | |
|---|---|
| **Frequency band (Operating)** | ☐ WLAN: 2412MHz ~ 2462MHz<br>☐ WLAN: 5150MHz ~ 5250MHz<br>☐ WLAN: 5250MHz ~ 5350MHz<br>☐ WLAN: 5470MHz ~ 5725MHz<br>☐ WLAN: 5725MHz ~ 5850MHz<br>☒ Bluetooth: 2402MHz ~ 2480MHz |
| **Device category** | ☐ Portable (<20cm separation)<br>☒ Mobile (>20cm separation) |
| **Exposure classification** | ☐ Occupational/Controlled exposure (S = 5mW/cm$^2$)<br>☒ General Population/Uncontrolled exposure (S=1mW/cm$^2$) |
| **Antenna diversity** | ☒ Single antenna<br>☐ Multiple antennas<br>☐ Tx diversity<br>☐ Rx diversity<br>☐ Tx/Rx diversity |
| **Evaluation applied** | ☒ MPE Evaluation*<br>☐ SAR Evaluation<br>☐ N/A |
| ***Remark:***<br>*1. The maximum conducted output power is 8.55dBm (7.161mW) at 2480MHz (with 0dBi antenna gain.)*<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 1.0 mW/cm$^2$ even if the calculation indicates that the power density would be larger.* | |

## 12.3 Test Results

No non-compliance noted.

## 12.4 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 (mW) = P (W) / 1000 and*
*d (cm) = d(m) / 100*

Yields

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

*Where* *d = Distance in cm*
*P = Power in mW*
*G = Numeric antenna gain*
*S = Power density in mW / cm$^2$*

## 12.5 Maximum Permissible Exposure

| Channel Frequency (MHz) | Max. Conducted output power (dBm) | Max. Tune up power (dBm) | Antenna Gain (dBi) | Distance (cm) | Power Density ($mW/cm^2$) | Limit ($mW/cm^2$) |
|---|---|---|---|---|---|---|
| 2402-2480 | 8.55 | 10.05 | 0 | 20 | 0.002 | 1 |