6. Safety Human exposure

6.1 Radio Frequency Exposure Compliance

6.1.1 Maximum Permissible Exposure

RESULT: **Passed**

Test standard   **:**   RSS-102 Issue 4
                                                      FCC KDB Publication 447498
                                                      FCC 1.1310

MPE Calculation

According to the formula $Pd = \dfrac{Pout * G}{4R^2\pi}$

Where

Pd = power density in mW/cm^2
Pout = output power to antenna in mW
G = Antenna gain in numeric
π = 3.14159
R = Distance between observation point and the center of radiator in cm

The antenna of this product, under normal use condition, is at least 20cm away form the body of the user. Warning statement to the user for keeping the safety distance from the antenna should be included in the user manual.

The highest measured power is 6.96dBm at 2480 MHz for Bluetooth operation, hence the Maximum Permissible Exposure (MPE) value:

Bluetooth operation: $Pd = \dfrac{Pout * G}{4R^2\pi} = \dfrac{4.97 * 1.479}{4 * 20^2 * 3.14159} = 0.000146 mW/cm^2 < $ 1mW/cm^2

Wi-Fi operation: $Pd = \dfrac{Pout * G}{4R^2\pi} = \dfrac{127.057 * 1.995}{4 * 20^2 * 3.14159} = 0.0504 mW/cm^2 < $ 1mW/cm^2

The summed maximum permissible exposure (MPE) level is 0.05055mW/cm^2. It is less than MPE limit 1mW/cm^2, therefore the device is exclusion from SAR test, and compliance with MPE limit.

6. Safety Human exposure

6.1 Radio Frequency Exposure Compliance

6.1.1 Maximum Permissible Exposure

RESULT: **Passed**

Test standard   **:**   RSS-102 Issue 4
                                                FCC KDB Publication 447498
                                                FCC 1.1310

MPE Calculation

According to the formula $Pd = \dfrac{Pout * G}{4R^2\pi}$

Where

Pd = power density in mW/cm^2
Pout = output power to antenna in mW
G = Antenna gain in numeric
π = 3.14159
R = Distance between observation point and the center of radiator in cm

The antenna of this product, under normal use condition, is at least 20cm away form the body of the user. Warning statement to the user for keeping the safety distance from the antenna should be included in the user manual.

The highest measured power is 21.04dBm at 2462 MHz for Wi-Fi operation and 7.46dBm at 2480MHz for Bluetooth Low Energy operation, hence the Maximum Permissible Exposure (MPE) value:

Wi-Fi operation: $Pd = \dfrac{Pout * G}{4R^2\pi} = \dfrac{127.057 * 1.995}{4 * 20^2 * 3.14159} = 0.0504 mW/cm^2 <$ 1mW/cm^2

Bluetooth Low Energy operation: $Pd = \dfrac{Pout * G}{4R^2\pi} = \dfrac{5.572 * 1.479}{4 * 20^2 * 3.14159} = 0.000164 mW/cm^2 <$ 1mW/cm^2

The summed maximum permissible exposure (MPE) level is 0.05204mW/cm^2. It is less than MPE limit 1mW/cm^2, therefore the device is exclusion from SAR test, and compliance with MPE limit.