RF Exposure Analysis

1. **Maximum Permissive Exposure**

   Performance Criterion: The human RF exposure limit is 1 mW/cm^2.

   Evaluation Results: Complies

   Details: The maximum permissible exposure (MPE) is predicted by using Equation (3) of Section 2 of FCC OET Bulletin 65, Edition 97-01:

   $$S = PG/4\pi R^2$$

   where: S = power density (in appropriate units, e.g. mW/cm^2)
           P = power input to the antenna (in appropriate units, e.g., mW)
           G = power gain of the antenna in the direction of interest relative to an isotropic radiator
           R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

   P = 86.7 mW, G = 1.7783 (2.5 dBi), R = 20 cm

   $$S = 0.0307 \text{ mW/cm}^2 = 0.307 \text{ W/m}^2$$

   MPE limit for uncontrolled exposure at prediction frequency: 1 mW/cm^2
   Maximum allowable antenna gain: 17.63 dBi

   Margin of Compliance at 20 cm = **15.13 dB**

RF Exposure Analysis

2. SAR Test Exclusion analysis

SAR Test Exclusion:

[(max. power of channel, mW) / (min. test separation distance, mm)] x [$\sqrt{f_{(GHz)}}$] ≤ 7.5

Evaluation Results: Complies

Details: The modules are designed for use on extremities only exposure conditions. Duty cycle measurement and calculation are included in Theory of Operation, so does the minimum test separation distance.

Max. power of channel:	86.7	mW
Duty cycle:	0.052564	
Source-based time-averaged max. power:	4.6	mW
Min. test separation distance:	6	mm
$f_{(GHz)}$:	2.44	GHz

$[(4.6 \text{ mW}) / (6 \text{ mm})] \times [\sqrt{2.44 \text{ GHz}}]$ = 1.2

          ≤ 7.5

The EUT satisfy the SAR Test Exclusion Threshold condition. Measurement or numerical simulation is not required.