

# RF Exposure evaluation

FCC ID: 2AANZVRBT

## 1. Reference

According to 447498 D01 General RF Exposure Guidance v06

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances  $\leq 50$  mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$  for 1-g SAR and  $\leq 7.5$  for 10-g extremity SAR,

Where:

- f (GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

and

$$\text{eirp} = p_t \times g_t = (E \times d)^2 / 30$$

Where:

$p_t$  = transmitter output power in watts,

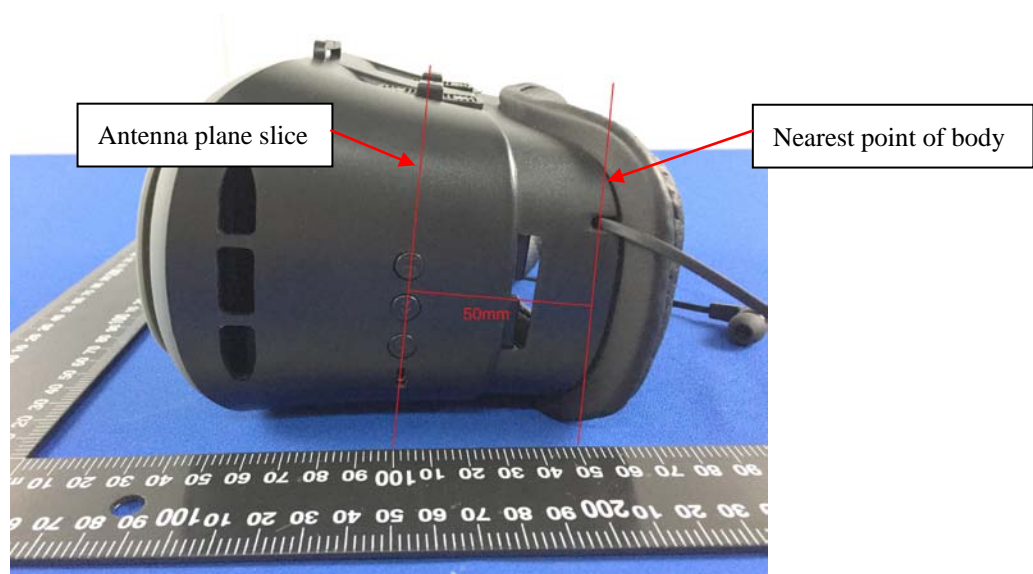
$g_t$  = numeric gain of the transmitting antenna (unitless),

E = electric field strength in V/m, ---  $10^{((\text{dBuV/m})/20)/10^6}$

d = measurement distance in meters (m) ---3m

## 2. Test distance

As the plot exhibit below, the distance of body to the Antenna plane is 50mm.



### 3. Result

As the antenna EUT used was 0dBi and the Max field strength level measured with duty cycle  $\geq 98\%$  in EMI test report, the sar exclusion value can obtained.

**According** to the formula described above:

$$E_{\max} = 97.39 \text{ dBuV/m} = 0.0740 \text{ V/m}, d=3\text{m}, g_t=1$$

$$P_t = (E \times d)^2 / (30 \times g_t) = (0.0740 \times 3)^2 / (30 \times 1) = 0.001645 = 1.64 \text{ mW}$$

The value is within the tune up  $2 \pm 1 \text{ dBm}$  stated by the manufacturer

Worse case is as below:

| Frequency (MHz) | Field strength dBuV/m | TX Power (mw) | TX Power with tune-up (mw) | Separation Distance (mm) | calculated value | exclusion thresholds |
|-----------------|-----------------------|---------------|----------------------------|--------------------------|------------------|----------------------|
| 2402            | 97.39                 | 1.64          | 2.00                       | 50                       | 0.1              | 3                    |

### 4. Conclusion

The SAR evaluation is not required.