

# 1 SAR Evaluation

## 1.1 RF Exposure Compliance Requirement

### 1.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06

#### 4.3.1. Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

### 1.1.2 Limits

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:

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

$f(\text{GHz})$  is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation<sup>17</sup>

The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is  $\leq 50$  mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is  $< 5$  mm, a distance of 5 mm is applied to determine SAR test exclusion

### 1.1.3 EUT RF Exposure

#### For BT3.0: Measurement Data

| GFSK mode          |                         |
|--------------------|-------------------------|
| Test channel       | Peak Output Power (dBm) |
| Lowest             | 1.46                    |
| Middle             | 1.71                    |
| Highest            | 1.65                    |
| $\pi/4$ DQPSK mode |                         |
| Test channel       | Peak Output Power (dBm) |
| Lowest             | 2.05                    |
| Middle             | 2.68                    |
| Highest            | 2.86                    |
| 8DPSK mode         |                         |
| Test channel       | Peak Output Power (dBm) |
| <b>Lowest</b>      | <b>3.01</b>             |
| Middle             | 2.85                    |
| Highest            | 2.77                    |

**For BLE: Measurement Data**

| GFSK mode    |                         |
|--------------|-------------------------|
| Test channel | Peak Output Power (dBm) |
| Lowest       | 0.27                    |
| Middle       | 0.81                    |
| Highest      | 1.09                    |

The Max Conducted Peak Output Power is 3.01dBm in Lowest channel(2.402GHz);

The best case gain of the antenna is 0dBi.

EIRP= 3.01dBm + 0dBi = 3.01dBm

3.01dBm logarithmic terms convert to numeric result is nearly 2.0mW

According to the formula. calculate the EIRP test result:

$$\left[ \frac{\text{(max. power of channel, including tune-up tolerance, mW)}}{\text{(min. test separation distance, mm)}} \right] \cdot \sqrt{f(\text{GHz})}$$

General RF Exposure =  $(2.0\text{mW} / 5 \text{ mm}) \times \sqrt{2.402\text{GHz}} = 0.61$  ①

SAR requirement:

S= 3.0

② ;

① < ②.

So the SAR report is not required.

Remark: The Conducted Peak Output Power data refer to report CQASZ170501347EW-01 and CQASZ170501347EW-02.