



SAR Exemption Report for BRAAPER

1. Introduction

BRAAPER is 2.4G Transmitter, which contain wireless function inside.

FCC ID: 2AK8NBRAAPER

2. Limit and Guidelines on Exposure to Electromagnetic Fields

According to §15.247(e)(i) and §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB 447498 D01 Mobile Portable RF Exposure v06, no SAR required if power is lower than the flowing threshold:

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

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

$$[\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$

- $f(\text{GHz})$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is ≤ 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 according to 5) in section 4.1 is applied to determine SAR test exclusion.

Step 2: At 100 MHz to 6 GHz and for test separation distances > 50 mm, the SAR test

exclusion threshold is determined according to the following, and as illustrated in Appendix B

a) $[\text{Power allowed at numeric threshold for 50 mm in step 1}) + (\text{test separation distance} - 50 \text{ mm}) \cdot (f(\text{MHz})/150)] \text{ mW}$, at 100 MHz to 1500 MHz

b) $[\text{Power allowed at numeric threshold for 50 mm in step 1}) + (\text{test separation distance} - 50 \text{ mm}) \cdot 10] \text{ mW}$ at > 1500 MHz and ≤ 6 GHz



3. Calculation method

Conducted Power + tune up tolerance = 0.43dBm = 1.104mW

$$\left[\frac{\text{max. power of channel, including tune-up tolerance, 1.104mW}}{\text{min. test separation distance, 5mm}} \right] \left[\sqrt{f(2.4\text{GHz})} \right] = 0.342 < 3.0 \text{ for 1-g SAR}$$

Therefore, excluded from SAR testing.

TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch

Reviewed by:

John Zhi/ EMC Project Manager

Date: 2017-06-06

Prepared By:

Leon Zhang/EMC Project Engineer

Date: 2017-06-06