

RF exposure Estimation

1. Introduction

Product:	eClip
Model no.:	904100
FCC ID:	2AQVJ9041EC
Rated Input:	3.0Vdc supplied by CR2032 button cell
RF Transmission Frequency:	2402MHz-2480MHz
No. of Operated Channel:	40
Modulation:	GFSK
Antenna Type:	Integrated antenna
Antenna Gain:	2.0dBi

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 General RF Exposure Guidance v06, no SAR required if power is lower than the flowing threshold:

For 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

$$\frac{[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})]}{[\sqrt{f(\text{GHz})}]} \leq 3.0$$
 for 1-g SAR and ≤ 7.5 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 calculation²⁵
- 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 b) 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 4.1 f) is applied to determine SAR test exclusion.

3. Calculation method

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

Conducted Power + tune up tolerance = 0.456mW (-3.41dBm)

Distance = 5 mm

f = 2.440 GHz

$$[0.456/5] \cdot \text{SQRT}(2.440) = 0.14$$

$$0.14 \leq 3.0$$

Therefore, excluded from SAR testing.

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

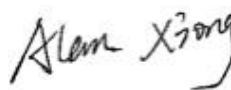
Reviewed by:



John Zhi/ Project Manager

Date: 2018-08-05

Prepared By:



Alan Xiong/ Project Engineer

Date: 2018-09-05