

RF exposure Estimation for TA1

Introduction

TA1 (FCC ID: 2AZA6FY-RC-RF) is a wireless remote control operating at 433.933MHz.

1. Limit and Guidelines on Exposure to Electromagnetic Fields

According to 4.3 General SAR test exclusion guidance of KDB 447498 RF Exposure, no SAR required if power is lower than the flowing threshold:

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:

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

$[\sqrt{f(\text{GHz})}] \leq 3.0$ 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 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 4.3 is applied to determine SAR test exclusion.

2. Calculation method

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

According to ANSI C63.10-2013 (9.5 Equations to calculate EIRP),

For 433.933MHz.

Field Strength (E_{Meas}):	65.21 (dBuV/m) ($f=433.933$ MHz)
Measurement Distance(d_{Meas}):	3 (m)
Equivalent Isotropically Radiated Power(EIRP):	0.0010 (mW)

Radiated Power + tune up tolerance = 0.0010mW

Distance = 5 mm

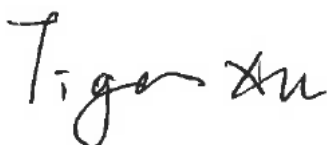
$f = 433.933\text{MHz}$

$[0.0010/5] \cdot \text{SQRT}(0.433933) = 0.000132$

$0.000132 \leq 3.0$

Therefore, excluded from SAR testing.

Signaturer



Tiger Xu

Date: 2023-07-14