

RF exposure Estimation

Applicant: Extreme Mist PCS LLC

Address: 10446 East Jomax Rd. Suite 105 - 2 scottsdale, AZ 85262 USA

FCC ID: 2ATNCEXTREMEMISTPCS

1. Product information

EUT is a Remote control which can transmit control signal at 433.92MHz.

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 following 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:

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

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

- $f(\text{GHz})$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before 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 4.1 is applied to determine SAR test exclusion.

3. Calculation method

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

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

Calculate the EIRP from the radiated field strength in the far field using Equation (22):

$$\text{EIRP} = E_{\text{Meas}} + 20 \log(d_{\text{Meas}}) - 104.7 \quad (22)$$

where

EIRP is the equivalent isotropically radiated power, in dBm
 E_{Meas} is the field strength of the emission at the measurement distance, in dB μ V/m
 d_{Meas} is the measurement distance, in m

NOTE—Because this equation yields the identical result whether the field strength is extrapolated using the default 20 dB/decade of distance extrapolation factor, or the field strength is not extrapolated for distance, this equation can generally be applied directly (with no further correction) to determine EIRP. In some cases, a different distance correction factor may be required; see 9.1.

Field Strength (E_{Meas}):	77.24 (dBuV/m) (f=0.43392 GHz)
Measurement Distance (d_{Meas}):	3 (m)
Equivalent Isotropically Radiated Power(EIRP):	0.016 (mW)

Radiated Power + tune up tolerance: 0.016mW
 Distance = 5 mm
 f = 0.43392 GHz

$[0.016/5] * \text{SQRT}(0.43392) = 0.002$
 $0.002 \leq 3.0$

Therefore, excluded from SAR testing.

TUV SUD China, Guangzhou Branch

Reviewed by:



Peter Jia
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Prepared By:



Matt Zhang
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