

RF Exposure Estimation

1. Introduction

Applicant:	Rollease Acmeda Inc
Address:	7th Floor / 750 East Main Street, Stamford, CT 06902, USA
Product:	Push Pro Remote
FCC ID:	2AGGZ003B9ACA60
Model No.:	MT02-0101-067013 r2, MT02-0101-050013 r2, MT02-0101-067014 r2, MT02-0101-050014 r2, MT02-0101-067018 r2, MT02-0101-050018 r2
Reference RF report #	6128626025701, 6128626025801

2. 447498 D04 Interim General RF Exposure Guidance v01 B.2 Blanket 1 mW Blanket Exemption

The 1 mW Blanket Exemption of § 1.1307(b)(3)(i)(A) applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power of no more than 1 mW, regardless of separation distance. The 1 mW blanket exemption applies at separation distances less than 0.5 cm, including where there is no separation. This exemption shall not be used in conjunction with other exemption criteria other than those for multiple RF sources in paragraph § 1.1307(b)(3)(ii)(A). The 1 mW exemption is independent of service type and covers the full range of 100 kHz to 100 GHz, but it shall not be used in conjunction with other exemption criteria or in devices with higher-power transmitters operating in the same time-averaging period. Exposure from such higher-power transmitters would invalidate the underlying assumption that exposure from the lower-power transmitter is the only contributor to SAR in the relevant volume of tissue.

3. RF Exposure Evaluation

Per the test report included herein, for 433.92MHz

According to C63.10-2020 Annex G

$$\text{EIRP} = p_t \times g_t = (E \times d)^2 / 30 \quad (\text{G.1})$$

where

p_t is the transmitter output power in watts

g_t is the numeric gain of the transmitting antenna (dimensionless)

E is the electric field strength in V/m

d is the measurement distance in meters (m)

$$\text{ERP} = \text{EIRP} / 1.64 = (E \times d)^2 / (30 \times 1.64) = (E \times d)^2 / 49.2 \quad (\text{G.2})$$

Transmitter output power for 433.92MHz Function

Field strength (E):	84.38 (dBuV/m) = 0.0166 (V/m)
Measurement distance (d):	3 (m)
ERP (W):	0.00005(W)
ERP (mW):	0.05(mW)

We used the maximum ERP/EIRP to perform RF exposure exemption evaluation.

	Evaluation method	Exempt Limit (mW)	Verdict
■	Blanket 1 mW Blanket Exemption	1mW	Yes
□	SAR-based Exemption (Pth)	7mW (ERP)	N/A
□	MPE-based Exemption (ERP)	3060mW	N/A

So, the device is qualified for SAR test exemption, the exemption report is in lieu of the SAR report.

4. 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 v05r02, 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.

5. RF Exposure Evaluation

2.4G BLE: $[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$

Conducted Power + tune up tolerance = 4.24dBm + 1dB = 5.24dBm = 3.34mW

Distance = 5 m

$f = 2402$ GHz

$[3.34/5] \cdot \text{SQRT}(2.402) = 1.035$

$1.035 \leq 3.0$

According to KDB 447498 D04 v01 clause 2.2.3, This ratio is defined as $\text{SPLSR} = (\text{SAR1} + \text{SAR2})^{1.5} / R_i$, where SAR1 and SAR2 are the highest reported SAR or estimated SAR [Glossary] values for the two sources in the pair i , and R_i is their distance in millimeters.

When $\text{SPLSR} \leq 0.04$ (rounded to two decimal digits), for all antenna pairs in the configuration, then the device qualifies for 1-g SAR test exemption.

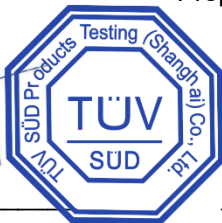
So, $\text{SPLSR} = (\text{SAR1} + \text{SAR2})^{1.5} / R_i = (0.05 + 1.035)^{1.5} / 30 = 0.037$ less than 0.04 and the device qualifies for 1-g SAR test exemption.



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-----End of Test Report-----