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SAR Evaluation Report

Applicant: Shenzhen TAT Electronics Co., Ltd

Address of Applicant: F5-6, Building B, Hedong Industrial Park, Xixiang, Shenzhen, China

Manufacturer: Shenzhen TAT Electronics Co., Ltd

Address of Manufacturer: F5-6, Building B, Hedong Industrial Park, Xixiang, Shenzhen, China

Factory: Shenzhen TAT Electronics Co., Ltd

Address of Factory: F5-6, Building B, Hedong Industrial Park, Xixiang, Shenzhen, China

Equipment Under Test (EUT):

Product: Remote Control

Model No.: T14, T12

Brand Name: T14

FCC ID: N/A

Standards: 47 CFR Part 1.1307
47 CFR Part 2.1093
KDB447498D01 General RF Exposure Guidance v06

Date of Test: 2017-07-04 to 2017-07-11

Date of Issue: 2017-07-11

Report No. : CQASZ170701413EW-02

Test Result : **PASS***

Tested By:

(Aaron Ma)

Reviewed By:

(Owen Zhou)

Approved By:

(Jack Ai)



* In the configuration tested, the EUT complied with the standards specified above.

2 Version

Revision History Of Report

Report No.	Version	Description	Issue Date
CQASZ170701413EW-02	Rev.01	Initial report	2017-08-11

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4 General Information

4.1 Client Information

Applicant:	Shenzhen TAT Electronics Co., Ltd
Address of Applicant:	F5-6, Building B, Hedong Industrial Park, Xixiang, Shenzhen, China
Manufacturer:	Shenzhen TAT Electronics Co., Ltd
Address of Manufacturer:	F5-6, Building B, Hedong Industrial Park, Xixiang, Shenzhen, China
Factory:	Shenzhen TAT Electronics Co., Ltd
Address of Factory:	F5-6, Building B, Hedong Industrial Park, Xixiang, Shenzhen, China

4.2 General Description of EUT

Name:	Remote Control
Model No.:	T14, T12
Trade Mark :	N/A
Hardware Version:	V1.0
Software Version:	V10
Frequency Range:	2405 MHz ~ 2475MHz
Modulation Type:	GFSK
Number of Channels:	3 (declared by the client)
Sample Type:	Portable production
Test Software of EUT:	N/A
Antenna Type:	Integral antenna
Antenna Gain:	1.5dBi
Power Supply:	Lithium battery: CR2032, DC3V

Note: Only the model T14 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for the above models, with difference being color of appearance and model name.

5 SAR Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 Standard Requirement

According to KDB447498D01 General RF Exposure Guidance v06

4.3.1. Standalone SAR test exclusion considerations

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.

5.1.2 Limits

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:

$$\left[\frac{\text{max. power of channel, including tune-up tolerance, mW}}{[\sqrt{f(\text{GHz})}]} \leq 3.0 \text{ for 1-g SAR and } \leq 7.5 \text{ for 10-g extremity SAR, where} \right.$$

$f(\text{GHz})$ is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation¹⁷

The result is rounded to one decimal place for comparison

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 is applied to determine SAR test exclusion

5.1.3 EUT RF Exposure

$$\text{eirp} = \text{pt} \times \text{gt} = (\text{E} \times \text{d})^2 / 30$$

where:

pt = transmitter output power in watts,

gt = numeric gain of the transmitting antenna (unitless),

E = electric field strength in V/m, $10^{((\text{dB}\mu\text{V}/\text{m})/20)/10^6}$,

d = measurement distance in meters (m)---3m,

$$\text{So pt} = (\text{E} \times \text{d})^2 / 30 / \text{gt}$$

The worst case (refer to report CQASZ170701413EW-01) is below:

For 2.4G wireless:

Field strength = 91.31dB μ V/m @3m

Ant. gain 1.5dBi; so Ant numeric gain=1.41

$$\text{So pt} = \{ [10^{(91.31)/10} / 10^6 \times 3]^2 / 30 / 1.41 \} \times 1000 \text{mW} = 0.287 \text{mW}$$

$$\text{So } (0.287 \text{mW} / 5 \text{mm}) \times \sqrt{2.405 \text{GHz}} = 0.09,$$

$$0.09 < 3.0 \text{ for 1-g SAR}$$

So the SAR report is not required.