

Maximum Permissible Exposure Evaluation

FCC ID:2ATH820230609

1. Client Information

Applicant	:	YING JIANG Technology Toys
Address	:	Hengxin Building material Opposite 324 National Road, Lianshang Town, Chenghai District, Shantou City, China
Manufacturer	:	YING JIANG Technology Toys
Address	:	Hengxin Building material Opposite 324 National Road, Lianshang Town, Chenghai District, Shantou City, China

2. General Description of EUT

EUT Name	:	remote control car
Model(s) No.	:	Please Refer To Page 2
Product Description	:	Operation Frequency: 27.145MHz
	:	Antenna Gain: 0dBi Spring Antenna
Power Supply	:	DC 1.5V by AA battery*2
Software Version	:	V.0
Hardware Version	:	V.0
Remark: The antenna gain provided by the applicant, the adapter and verified for the RF conduction test and adapter provided by TOBY test lab.		

Note: More test information about the EUT please refer the RF Test Report.

Model list

MT4336/MT4339,PT1939, YJ-003, YJ-005, YJ-006, YJ-007, YJ-009, YJ-010, YJ-011, YJ-012, YJ-013, YJ-014, YJ-015, YJ-016, YJ-017, YJ-018, YJ-019, YJ-020, YJ-021, YJ-022, YJ-023, YJ-024, YJ-004, YJ-004-1, YJ-004-2, YJ-038, YJ-039, YJ-040, YJ-041, YJ-042, YJ-043, YJ-044, YJ-045, YJ-046, YJ-047, YJ-048, YJ-051, YJ-051-1, YJ-052-1, YJ-050, YJ-049, YJ-052, YJ-053-4, YJ-053-3, YJ-053-2, YJ-053-1, YJ-053-5, YJ-057-1, YJ-058-1, YJ-058-2, YJ-059-1, YJ-059-2, YJ-060, YJ-061-1, YJ-061-2, YJ-062-1, YJ-062-2, YJ-062-3, YJ-062-4, YJ-062-5, YJ-062-6, YJ-062-7, YJ-062-8, YJ-062-9, YJ-062-10, YJ-062-11, YJ-062-12, YJ-062-13, YJ-062-14, YJ-062-15, YJ-062-16, YJ-062-17, YJ-062-18, YJ-062-19, YJ-062-20, YJ-072-1, YJ-072-2, YJ-073-1, YJ-073-2, YJ-074, YJ-075-1, YJ-075-2, YJ-075-3, YJ-075-4, YJ-076-1, YJ-076-2, YJ-076-3, YJ-076-4, YJ-077, YJ-078-1, YJ-079-1, YJ-078-4, YJ-078-3, YJ-078-2, YJ-079-2, YJ-079-3, YJ-079-4, YJ-080-1, YJ-080-2, YJ-080-3, YJ-080-4, YJ-081-1, YJ-081-2, YJ-081-3, YJ-081-4, YJ-082-1, YJ-082-2, YJ-082-3, YJ-082-4, YJ-083-1, YJ-083-2, YJ-083-3, YJ-083-4, YJ-084, YJ-084-1, YJ-084-2, YJ-084-3, YJ-084-4

Model Difference: All PCB boards and circuit diagrams are the same, the only difference is that model names.

The RF Exposure Evaluation for FCC:

SAR Test Exclusion Calculations

FCC: According to 447498 D04 Interim General RF Exposure Guidance v01.

The SAR-based exemption formula of § 1.1307(b)(3)(i)(B), repeated here as Formula (B.2), applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power or effective radiated power (ERP), whichever is greater, of less than or equal to the threshold P_{th} (mW).

This method shall only be used at separation distances from 0.5 cm to 40 cm and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by Formula (B.2).

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}}(d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right)$$

and f is in GHz, d is the separation distance (cm), and $ERP_{20 \text{ cm}}$ is per Formula (B.1). The example values shown in Table B.2 are for illustration only.

Table B.2—Example Power Thresholds (mW)

Frequency (MHz)	Distance (mm)									
	5	10	15	20	25	30	35	40	45	50
300	39	65	88	110	129	148	166	184	201	217
450	22	44	67	89	112	135	158	180	203	226
835	9	25	44	66	90	116	145	175	207	240
1900	3	12	26	44	66	92	122	157	195	236
2450	3	10	22	38	59	83	111	143	179	219
3600	2	8	18	32	49	71	96	125	158	195
5800	1	6	14	25	40	58	80	106	136	169

Calculations

1. Antenna Gain:

Spring Antenna: 0dBi.

2. EUT Operation Condition:

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

3. Exposure Evaluation:

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S=(PG)/4\pi R^2$$

Where

S: power density

P: power input to the antenna

G: power gain of the antenna in the direction of interest relative to an isotropic radiator.

R: distance to the center of radiation of the antenna

4. Test Result:

$$E = \text{EIRP} - 20\log D + 104.8$$

where:

E = electric field strength in dB μ V/m,

EIRP = equivalent isotropic radiated power in dBm

D = specified measurement distance in meters.

$$\text{EIRP} = E - 104.8 + 20\log D = 64.97 - 104.8 + 20\log 3 = -30.29\text{dBm}$$

Frequency (MHz)	Measured Power (dBm)	Tune up Tolerance \pm (dB)	Output power (Max. Turn-up Procedure) (mW)	Limit (mW)
27.145	-30.29	-30 \pm 1	0.001	39

Note: At separation distance of ≤ 5 mm

5. Conclusion:

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

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