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# 47 CFR PART 2.1091

## RADIOFREQUENCY RADIATION EXPOSURE EVALUATION: MOBILE DEVICES

**REPORT NUMBER: M2010040-5**

**STANDARD: 47 CFR § 2.1091**

**CLIENT: AUTOMATIC TECHNOLOGY  
AUSTRALIA PTY LTD**

**DEVICE: OVERHEAD GARAGE DOOR  
OPENER**

**MODEL: ATS-3AM**

**FCC ID: X4K-ATS3DCB11WS**

**DATE OF ISSUE: 24 JUNE 2021**

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Figure 1: ATS-3AM Device Samples

## REVISION TABLE

Version	Sec/Para Changed	Change Made	Date
1		Initial issue of document	24/06/2021

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## RADIOFREQUENCY RADIATION EXPOSURE EVALUATION REPORT - MPE

**Device:** Overhead Garage Door Opener  
**Model Number:** ATS-3AM  
**Serial Number:** 40601985

**Manufacturer:** Countermast Technology (Dalian) Company Limited  
**Inspected for:** Automatic Technology Australia Pty Ltd  
**Address:** 6-8 Fiveways Boulevard, Keysborough VIC 3173  
**Phone Number:** 9791 0275  
**Contact:** Nikolai Klepikov  
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**Standards:** **447498 D01 General RF Exposure Guidance v06**  
RF exposure procedures and equipment authorization policies for mobile and portable devices.


**47 CFR § 2.1091**


Radiofrequency radiation exposure evaluation: mobile devices (Transmitter is more than 20 cm from human body).

**Result:** Based on an assessment of the documentation provided the Overhead Garage Door Opener, model ATS-3AM complies with the RF exposure requirements of 47 CFR Part 2.1091, however an exclusion zone of 20 cm in front of the radiating elements applies, elsewhere the exposure level was below the applicable limits.. Refer to Report M2010040-5 for full details

**Assessment Date:** 23 June 2021

**Issue Date:** 24 June 2021

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## 1 INTRODUCTION

This report is intended to demonstrate compliance of the Overhead Garage Door Opener model ATS-3AM with the RF exposure requirements of 47 CFR Part 2.1091. Evaluation was performed in accordance with FCC KDB 447498 D01.

The test sample was provided by the Client. The conclusion herein is based on the information provided by the client.

### 1.1 Laboratory Overview

EMC Technologies Pty. Ltd. is an independently owned Australian company that is NATA accredited to ISO 17025 for both testing and calibration and ISO 17020 for Inspection. – **Accreditation Number 5292.**

### 1.2 Test Laboratory/Accreditations

Inspection was performed at EMC Technologies' laboratory in Keilor Park, Victoria Australia.

Table 1-1: *Accreditations for Conformity Assessment*

Country/Region	Body	
Australia/New Zealand	NATA	Accreditation Number: 5292
Europe	European Union	Notified Body Number: 0819
USA	FCC	Designation Number: AU0001 (Melb) Designation Number: AU0002 (Syd)
Canada	ISED Canada	Company Number: 3569B(Melb) Company Number: 4207A (Syd)
Japan	VCCI	Company Number: 785
Taiwan	BSMI	Lab Code SL2-IN-E-5001R

## 2 DEVICE DETAILS

The Overhead Garage Door Opener, model ATS-3AM is an electro-mechanical device for opening and closing Overhead Garage Doors automatically. It can be controlled from inside the garage using the physical buttons on the device, a wall mounted wireless transmitter WTX-7V1AM, from a remote location using a wireless handheld transmitter PTX-6V1AM or TB6V1AM, or smart phone via a network. The device also includes a passive NFC chip.

**Manufacturer:** Countermast Technology (Dalian) Company Limited  
**Inspected Sample:** Overhead Garage Door Opener  
**Model Number:** ATS-3AM  
**Serial Number:** 40601985

Transmit parameters were provided by the customer and are shown below:

Table 2-1: *Transmitter 1 Parameters*

Transmitter #1	
<b>Wireless Interface 1 (ToF):</b>	Wi-Fi module Model: WSS33-1; FCC ID: X4K-WSS33-1
<b>Operating Frequency:</b>	2412.0 - 2462.0 MHz
<b>Max. RF Output Power Level:</b>	0.032 W (32mW)
<b>Antenna Type:</b>	PCB antenna
<b>Max Antenna gain:</b>	1 dBi

Table 2-2: *Transmitter 2 Parameters*

Transmitter #2	
<b>Wireless Interface 1 (ToF):</b>	Proprietary
<b>Operating Frequency:</b>	902 – 928 MHz
<b>Max. RF Output Power Level:</b>	18 dBm (63.1mW)
<b>Antenna Type:</b>	¼ wave monopole
<b>Max Antenna gain:</b>	0 dBi



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### 3 LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE), §1.1310

Table 3-1: Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposure</b>				
0.3-3.0	614	1.63	* 100	6
3.0-30	1842/f	4.89/f	* 900/f <sup>2</sup>	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
0.3-1.34	614	1.63	* 100	30
1.34-30	824/f	2.19/f	* 180/f <sup>2</sup>	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz \* = Plane-wave equivalent power density

### 4 UNCERTAINTY

EMC Technologies has evaluated the tools and methods used to perform Radiated Electromagnetic Field predictions.

The estimated inspection uncertainties for the test shown within this report are as follows:

Electromagnetic Modelling

30 MHz to 100GHz ±2.8 dB

The above expanded uncertainties are based on standard uncertainties multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

### 5 ASSUMPTIONS IN THIS ASSESSMENT

This assessment does not include accumulated RF fields from nearby sites/antennas or possible radio signal reflections or attenuation due to buildings or the general environment.

Antenna Parameters and power settings were supplied by the customer.

A 100% duty cycle is assumed.

The aperture of the radiating element assumed to be a point source in free space and far field conditions.

## 6 RF EXPOSURE CALCULATIONS

The reference level was evaluated at 20 cm to show compliance with the power density listed in Table 4 (Section3)

The following formula was used to calculate the power density at 20 cm:

$$S = \frac{P * G}{4\pi R^2}$$

$$S = \frac{EIRP}{4\pi R^2}$$

Where:

- (S): Power density ( $mW/cm^2$ )
- (P): Output power at antenna terminal ( $mW$ )
- (G): Gain (ratio)
- (R): Minimum test separation distance (20 cm)

Table 6-1: Calculations

Technology	Frequency Band (MHz)	Power	Gain	Duty Cycle	EIRP	EIRP	Flux Density at 20 cm	Flux Density limit	Percentage of the limit
		<i>dBm</i>	<i>dBi</i>	%	<i>dBm</i>	<i>mW</i>	<i>mW/cm<sup>2</sup></i>	<i>mW/cm<sup>2</sup></i>	%
Proprietary	902 - 928	18	0	100%	18.0	63.1	0.1	0.6	2.1%
WLAN	2412 - 2462	1	6.5	100%	16.05	40.3	0.008	1	0.8%
<b>Total percentage of the limit at 20 cm for simultaneous transmission (Worst-case)</b>									<b>2.9%</b>

## 7 CO-LOCATION CONSIDERATION:

Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneously transmitting antennas incorporated in a host device is  $\leq 1.0$ .

$$\sum_{1}^N \frac{S_{eqN}}{S_{limN}} = \frac{S_{eq1}}{S_{lim1}} + \frac{S_{eq2}}{S_{lim2}} + \dots + \frac{S_{eqN}}{S_{limN}} \leq 1$$

- Where:  $S_{eq}$  = Power Spectral density ( $mW/cm^2$ ) of a specific transmitter
- $S_{lim}$  = MPE limit ( $mW/cm^2$ )

The following simultaneous transmissions are possible:

Transmitter 1	Transmitter 2	MPE Ratio Sum	Result
Proprietary	WLAN	0.03	Pass

## 8 CONCLUSION

Based on an assessment of the documentation provided the Overhead Garage Door Opener, model ATS-3AM complies with the 47 CFR Part 2.1091. An exclusion zone of 20 cm in front of the radiating elements applies, elsewhere the exposure level was below the applicable limits.

## APPENDIX A

### *Referenced Documents*

Document	Comments
Transmitters Details	Transmitter module, antenna, and peak power details
FORM 005 v14 ATA Customer Information Sheet (ATS-3AM)	Device and transmitter details
M2010040-3 RDO FCC 15C	900MHz transmitter Peak Output Power
RE_M2010040 EMR (Client email)	Separation distances



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