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RF Radiation Exposure Evaluation

In accordance with:

FCC KDB 447498 D01 v06

Automatic Technology Australia Pty. Ltd.

PTX-10V1AM

Handheld / Wall Remote Controls

FCC ID: X4K-TX10V1ATAMLT1

REPORT: E2310-1692A-2
DATE: December, 2023



RF Radiation Exposure Evaluation Report

EMC Bayswater Test Report: E2310-1692A-2
Issue Date: December, 2023

Product: Handheld / Wall Remote Controls
Model No: PTX-10V1AM
Serial No: Not stated
Mode: PTX-6AM Mode
FCC ID: X4K-TX10V1ATAMLT1

Customer Details: Mr. Nikolai Klepikov
Automatic Technology Australia Pty. Ltd.
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Standard(s): FCC KDB 447498 D01 v06
RF EXPOSURE PROCEDURES AND EQUIPMENT AUTHORIZATION POLICIES
FOR MOBILE AND PORTABLE DEVICES
CFR47 FCC Part 2, Subpart J, 2.1091
Radiofrequency radiation exposure evaluation: mobile devices.
CFR47 FCC Part 2, Subpart J, 2.1093
Radiofrequency radiation exposure evaluation: portable devices.

Results Summary: RF Radiation exposure requirements **Complied**

Test Date(s): 31st of October, 2023

Test House (Issued By): EMC Bayswater Pty Ltd
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The Automatic Technology Australia Pty. Ltd., PTX-10V1AM, Handheld / Wall Remote Controls, measured EIRP is below the SAR exception threshold (5mm distance) and the calculated power density level at a distance of 20cm are below the maximum levels allowed by regulations therefore complied with the requirements of CFR47 FCC Part 2, Subpart J, 2.1091.

This is to certify that the necessary evaluations were made by EMC Bayswater Pty Ltd, and that the Automatic Technology Australia Pty. Ltd., PTX-10V1AM, Handheld / Wall Remote Controls, has been tested in accordance with requirements contained in the appropriate commission regulations.

Prepared by:



Adnan Zaman
(EMC Test Engineer)

Approved by:



Neville Liyanapatabendige
(Manager)

15/12/2023 13:17

Date

RF Radiation Exposure Evaluation *for* Automatic Technology Australia Pty. Ltd.

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1. Introduction

RF Radiation Exposure evaluation was performed on an Automatic Technology Australia Pty. Ltd., PTX-10V1AM, Handheld / Wall Remote Controls in accordance with **CFR47 FCC Part 2, Subpart J, 2.1091**.

2. Test Report Revision History

None

3. Report Information

EMC Bayswater Pty Ltd reports apply only to the specific samples tested under the stated test conditions. All samples tested were in good operating condition throughout the entire test program unless otherwise stated. EMC Bayswater Pty Ltd does not in any way guarantees the later performance of the product/equipment. It is the manufacturer's responsibility to ensure that additional production units of the tested model are manufactured with identical electrical and mechanical components. EMC Bayswater Pty Ltd shall have no liability for any deductions, inference or generalisations drawn by the clients or others from EMC Bayswater Pty Ltd issued reports. This report shall not be used to claim, constitute or imply product endorsement by EMC Bayswater Pty Ltd. This report shall not be reproduced except in full, without the written approval of EMC Bayswater Pty Ltd. This document may be altered or revised by EMC Bayswater Pty Ltd personnel only, and shall be noted in the revision section of the document. Any alteration of this document not carried out by EMC Bayswater Pty Ltd will nullify the document.

4. Product Details

4.1. Product Sample Details

The device, as supplied by the client, is described as follows:

Product:	Handheld / Wall Remote Controls	
Model No:	PTX-10V1AM	
Serial No:	Not stated	
Mode:	PTX-6AM Mode	
Firmware:	Not stated	
Dimensions:	75x35x15mm (Length x Width x Height)	
Weight:	50 g	
EUT Type:	Tested as table-top	
Power Specifications:	3V Battery powered. CR2032	
Transmitter details:	Description:	Remote Control
	Type:	Handheld Remote Transmitter
	Max Transmit Power:	+11 dBm (conducted)
	Modulation Scheme:	FSK/OOK
	Channels:	3 channels: 433.47 MHz, 433.92 MHz, 434.37 MHz
	Antenna Details:	¼ wave Loop Antenna
	Antenna Gain:	-14.5dBi to -15.5dBi
	FCC ID:	X4K-TX10V1ATAMLT

(Customer supplied product information)

4.2. Product description

The device has been described by the customer as follows:

“The TX-10 is a range of remote transmitters, which is allows secure keyless access control for automatic gates and garage doors (open and close), and other ATA equipment, which require remote operations.”

(Customer supplied product description information)

5. SAR and RF Exposure exception evaluation

5.1. SAR exception evaluation

As per Appendix A of KDB 447498 D01 General RF Exposure Guidance v06

SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table. The equation and threshold in 4.3.1 must be applied to determine SAR test exclusion.

MHz	5	10	15	20	25	mm
150	39	77	116	155	194	<i>SAR Test Exclusion Threshold (mW)</i>
300	27	55	82	110	137	
450	22	45	67	89	112	
835	16	33	49	66	82	
900	16	32	47	63	79	
1500	12	24	37	49	61	
1900	11	22	33	44	54	
2450	10	19	29	38	48	
3600	8	16	24	32	40	
5200	7	13	20	26	33	
5400	6	13	19	26	32	
5800	6	12	19	25	31	

SAR test exclusion threshold for 433MHz transmitter is 22.5mW for 5mm distance.

- The customer declared maximum conducted power of the transmitter is 12.6mW (+11dBm).
- The Measured maximum EIRP is 0.361mW (Worst-case, Without Duty Cycle correction factor).

(The measurement uncertainty was calculated at ± 4.65 dB. The reported uncertainty is an expanded uncertainty calculated using a coverage factor of approximately $k=2$ which gives a level of confidence of approximately 95%).

The measured EIRP/customer declared maximum conducted power is below the SAR exception threshold for 5mm distance.

5.2. RF Exposure Evaluation (MPE)

As per section 1.1310 of CFR 47 following Maximum Permissible Exposure (MPE) limits are applicable.

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

Limits for Maximum Permissible Exposure (MPE) to radiofrequency electromagnetic fields for 433.9MHz as per Table 1 of Section 15.1310 is 0.289 mW/cm² (General Population/Uncontrolled).

Prediction Worst case:

Using equation

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

where: S = Power density

P = Power input to the antenna

G = Antenna gain

R = Distance to the center of radiation of the antenna

Prediction Worst case:

Maximum EIRP: 0.361mW (Worst-case, Without Duty Cycle correction factor)

Distance: 20cm

Calculated Power Density= 0.0000718 mW/cm²

MPE limit for General Population/Un-controlled exposure: 0.28 mW/cm²

6. Conclusion

The measured EIRP is below the SAR exception threshold (5mm distance) and the calculated power density level at a distance of 20cm are below the maximum levels allowed by regulations.