



Project No: Report No.: TM-2502000081P TMWK2502000514KS FCC ID: 2AQ8A-KP3D7X1

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# **RF Exposure Evaluation Report**

FCC 47 CFR § 2.1091

for

# Kapture Square Deadbolt

# Model: KP3-D7P1, KP3-D791

Prepared for:

### Pamex Inc.

4680 Vinita Court, Chino, CA, 91710, United States

Prepared by

Compliance Certification Services Inc. Wugu Laboratory No.11, Wugong 6th Rd., Wugu Dist., New Taipei City, Taiwan Issued Date: April 7, 2025

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# **Revision History**

Rev.	lssue Date	Revisions	Effect Page	Revised By
00	March 25, 2025	Initial Issue	ALL	Peggy Tsai
01	April 7, 2025	See the following Note Rev. (01)	P.6, 7	Peggy Tsai

Note:

Rev. (01)

1. Modify Model Discrepancy in section 3.1.

2. Modify Notes in section 3.2.



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## **1** Attestation of Test Results

Applicant	Pamex Inc. 4680 Vinita Court, Chino, CA, 91710, United States			
Manufacturer	ALZK Co., Ltd.			
9F., No. 36, Sec. 3, Bade Rd., Songshan Dist., Taipei City, Taiwan				
Model Name	KP3-D7P1, KP3-D791			
Applicable Standards	FCC 47 CFR § 2.1091			
	FCC 47 CFR § 1.1307			
	FCC 47 CFR § 1.1310			
	Published RF exposure KDB procedures			
Receive EUT Date: February 7, 2025				

Compliance Certification Services Inc., tested the above equipment in accordance with the requirements set forth in the above standards. Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainy. All indications of Pass/Fail in this report are opinions expressed by Compliance Certification Services Inc, based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Approved & Released By:

Sky Zhou Asst. Section Manager



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# **2** Test Specification, Methods and Procedures

The tests documented in this report were performed in accordance with FCC 47 CFR § 2.1091, the following FCC Published RF exposure <u>KDB</u> procedures:

- o 447498 D04 Interim General RF Exposure Guidance v01
- o 865664 D02 RF Exposure Reporting v01r02



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# **3** Device Under Test (DUT) Information

### 3.1 DUT Description

Product	Kapture Square Deadbolt					
Brand Name	Kapture					
Model No.	KP3-D7P1, KP3-D	KP3-D7P1, KP3-D791				
		Main Model	Family Model			
Model Discrepancy	Model No.	KP3-D7P1	KP3-D791			
	Difference	Nickel (Color)	Black (Color)			
EUT Serial #	0000024	0000024				
Software Version	V0.0.1					
Hardware Version	dware Version V0.0.6					
Sample Stage	Identical prototype	Identical prototype				



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### 3.2 Wireless Technologies

	Bluetooth: 2402MHz-2480MHz						
	802.11b/g/n HT20: 2412MHz ~ 2462 MHz						
	🗌 802.11n HT40: 2422MHz ~ 2452MHz						
	🗌 802.11a/n HT20: 5180MHz ~ 5240MHz / 5260MHz ~ 5320MHz /						
	5500MHz ~ 5720MHz / 5745MHz ~ 5825MHz						
	802.11ac VHT20: 5180MHz ~ 5240MHz / 5260MHz ~ 5320MHz /						
	5500MHz ~ 5720MHz / 5745MHz ~ 5825MHz						
	802.11ax HE20: 5180MHz ~ 5240MHz / 5260MHz ~ 5320MHz /						
Frequency	5500MHz ~ 5720MHz / 5745MHz ~ 5825MHz / 802.11n HT40: 5190MHz ~ 5230MHz / 5270MHz ~ 5310MHz /						
Frequency bands	5510MHz ~ 5710MHz / 5755MHz ~ 5795MHz						
Danus	$\square$ 802.11ac VHT40: 5190MHz ~ 5230MHz ~ 5270MHz ~ 5310MHz /						
	5510MHz ~ 5710MHz / 5755MHz ~ 5795MHz						
	$\square$ 802.11ax HE40: 5190MHz ~ 5230MHz / 5270MHz ~ 5310MHz /						
	5510MHz ~ 5710MHz / 5755MHz ~ 5795MHz						
	802.11ac VHT80: 5210MHz / 5290MHz / 5530MHz ~ 5690MHz /						
	5775MHz						
	🗌 802.11ax HE80: 5210MHz / 5290MHz / 5530MHz ~ 5690MHz /						
	5775MHz						
	Others						
Exposure	Occupational/Controlled exposure						
classification	General Population/Uncontrolled exposure						
	Type: PCB Antenna						
	Type. FOB Antenna						
Antenna	BLE: Gain: 3.3 dBi						
Specification							
	BLE: Antenna Gain : 3.30 dBi (Numeric gain: 2.14) Worst						
Maximum							
Tune up	BLE 7.50 dBm (5.62 mW)						
power							

#### Notes:

- 1. For more details, please refer to the User's manual of the EUT.
- 2. Disclaimer: Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.
- 3. Disclaimer: Variant information between/among model numbers is provided by the applicant, test results of this report are applicable to the sample EUT received of main test model name.
- 4. The device supports two colors. The color difference does not affect the RF and EMC characteristics, so the laboratory chooses one color for complete evaluation.
- 5. The power referred the Tune up power of the test report TMWK2502000509KR for RF Exposure assessment purpose.



# 4 Maximum Permissible Exposure

### 4.1 Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm²)	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 <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) Limits for Ger	eral Population/Unco	ntrolled Exposure					
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				
<u>1,500-100,000</u>			1.0	30				

### Table 1 - Limits for Maximum Permissible Exposure (MPE)



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#### 4.2 MPE Calculation Method Calculation

Given  $E = \frac{\sqrt{30 \times P \times G}}{d} \& S = \frac{E^2}{377}$ Where E = Field strength in Volts / meter P = Power in Watts G = Numeric antenna gain d = Distance in meters S = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{377 \, d^2}$$

Changing to units of mW and cm, using:

 $\mathsf{P}\left(\mathsf{mW}\right)=\mathsf{P}\left(\mathsf{W}\right)/1000$  and

d(cm) = d(m) / 100

Yields

$$S = \frac{30 \times (P/1000) \times G}{377 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2}$$
Equation 1

Where d = Distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power density in mW / cm<sup>2</sup>

If, Substituting the MPE safe distance using d = 20 cm into Equation 1:

 $S = 0.000199 \times P \times G$ 

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### 4.3 MPE EXEMPTION

- (A) The available maximum time-averaged power is no more than 1 mW
- (B) The available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold *Pth* (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). *Pth* is given by:

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

Where

$$x = -\log_{10}\left(\frac{60}{ERP_{20} cm\sqrt{f}}\right)$$
 and  $f$  is in GHz;

and

$$ERP_{20\ cm}\ (\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases}$$

d = the separation distance (cm);

(C) Using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least  $\lambda/2\pi$ , where  $\lambda$  is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of  $\lambda/4$  or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

Single RF Sources Subject to Routine Environmental Evaluation RF Source frequency (MHz) Threshold ERP (watts)				
1.34-30	3,450 R <sup>2</sup> /f <sup>2</sup> .			
30-300	3.83 R <sup>2</sup> .			
300-1,500	0.0128 R <sup>2</sup> f.			
1,500-100,000	19.2R <sup>2</sup> .			
Note: R is in meters, f is in MHz.				



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### 4.4 Multiple RF sources

In the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation),

$$\sum_{i=1}^{a} \frac{P_i}{P_{\text{th},i}} + \sum_{j=1}^{b} \frac{ERP_j}{ERP_{\text{th},j}} + \sum_{k=1}^{c} \frac{Evaluated_k}{Exposure\ Limit_k} \le 1$$



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# 5 MPE Exemption Option B

### Bluetooth

Mode	Frequency (MHz)	R(m)	Max Tune-up power (dBm)	G(dBi)	Max Tune-up EIRP (dBm)	Max Tune-up ERP (dBm)	Max Tune-up ERP (mW)	ERP Threshold (mW)	MPE Exemption
BLE	2402	0.2	7.5	3.30	10.80	8.65	7.328	3060	Complies



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## 6 Facilities

All measurement facilities used to collect the measurement data are located at

No.11, Wugong 6th Rd., Wugu Dist., New Taipei City, Taiwan.

No. 12, Ln. 116, Wugong 3rd Rd., Wugu Dist., New Taipei City, Taiwan.

--End of Test Report--