

## **Relation between High-Volt Stun Baton / Stun Device and Human body Safety**

1. High-voltage stun baton is an improved security device under research of the result of electricity discharge phenomenon released by electric arc which is generated by impeding the air isolation based on high-voltage generation. The working theory is to supply the energy by battery and bring about a reinforced high voltage due to electronic circuit vibration. Afterwards, the volt is added up on the both ends of electrode to discharge electricity so as to generate electric arc and have a burst of bombing which can deter the attacker from threatening to meet the purpose of self-defense.
2. The voltage level is referable to distance between electrodes and its shape. Basically, the isolation voltage parameter under dry atmosphere is 30KV/cm; while this parameter has to be modified under uneven spread of electric fields.
3. The safe current parameter is referable to contacting time, contacting bodily parts and contacting areas to electrodes. The analysis and test results by Dr. C. F. Dalziel from Columbia University in USA is shown as below:

$$I = 0.165/\sqrt{t}$$

$$I^2t = 0.027$$

available range: 0.03 - 3 seconds.

Formula code: I= Effective current going through body, measured unit by: Ampere(A)  
T= stun duration, measured unit by: Second(S)  
0.027 = the energy parameter to human body tolerance

Analysis:

1. According to IEC 479-1, it's no risk to human body harm if AC current is below 500uA, while DC current below 2000uA. If below 100uA, it's completely no risk & no hazard to human body.
2. According to Page 33 of IEC 479-2, the pain critical energy of single current pulse is 50 - 100 x 10<sup>-6</sup> (A<sup>2</sup>S), the current to suffering contacting for 2 seconds would be 5mA-10mA.
3. The current parameter mentioned above is the result by testing from left hand to ground: The electric arc of stun baton is activated by partial contact, so its safe current value can be increased.

Signature: **Hsiao Hung Ching**

September 18, 2006

<b>Raysun X-1 Stun gun</b>	<b>Product name</b>		<b>King Jaw Industrial, Co., Ltd.</b>
			<b>Stun Baton/ Stun Device</b>
			<b>Test result report</b>
<b>33 KV</b>	<b>Electric shock high voltage</b>	<b>Test result</b>	
<b>Below 1.0 mA</b>	<b>Current</b>		
<b>No safety consideration ... Have safety risk</b>	<b>Impact to normal human body</b>		
<b>Electric &amp; Eng. Department, National Taiwan University of Science and Technology</b>	<b>Test organization</b>		
<b>The test is conducted complied with the sample as applicant's instruction. The test is only for research, not used for lawsuit. The test center is not liable for other products except this tested sample. According to IEC 479-1. It's no risk to human body as AC is below 2000uA.</b>	<b>Remark</b>		

Signature: **Hsiao Hung Ching**

Date: **Sep. 18, 2006**

**Electric & Engineering Department of  
National Taiwan University of Science and Technology**

**Test Report**

Report #: 95 年電清檢清字第 002 號

Applicant: **King Jaw Industrial, Co., Ltd.**

Product: **Raysun X-1 Stun Gun \*1 sample**

Test Result:

1. After test of this **Raysun X-1 Stun Gun** sample, the result is as below:  
Open-circuit discharging voltage: **33KV±2%**.  
Max. discharging voltage: **below 50KV±2%**.  
Simulated loaded discharging current: **below 1.0mA±2%** (analogue load is100M )
  
2. The test is conducted complied with the sample as applicant's instruction.  
The test is only for research, not used for lawsuit. The test center is not liable for other products except this tested sample.

Name: **Hsiao Hung Ching**

Authority: **Electric & Engineering Department of  
National Taiwan University of Science and Technology**

Date: Sep. 18, 2006

## **Relation between High-Volt Stun Baton / Stun Device and Human body Safety**

1. High-voltage stun baton is an improved security device under research of the result of electricity discharge phenomenon released by electric arc which is generated by impeding the air isolation based on high-voltage generation. The working theory is to supply the energy by battery and bring about a reinforced high voltage due to electronic circuit vibration. Afterwards, the volt is added up on the both ends of electrode to discharge electricity so as to generate electric arc and have a burst of bombing which can deter the attacker from threatening to meet the purpose of self-defense.
2. The voltage level is referable to distance between electrodes and its shape. Basically, the isolation voltage parameter under dry atmosphere is 30KV/cm; while this parameter has to be modified under uneven spread of electric fields.
3. The safe current parameter is referable to contacting time, contacting bodily parts and contacting areas to electrodes. The analysis and test results by Dr. C. F. Dalziel from Columbia University in USA is shown as below:

$$I = 0.165 / \sqrt{t}$$

$$I^2 t = 0.027$$

available range: 0.03 - 3 seconds.

Formula code:  $I$  = Effective current going through body, measured unit by: Ampere(A)  
 $T$  = stun duration, measured unit by: Second(S)  
0.027 = the energy parameter to human body tolerance

1. According to IEC 479-1, it's no risk to human body harm if AC current is below 500uA, while DC current below 2000uA. If below 100uA, it's completely no risk & no hazard to human body.
2. According to Page 33 of IEC 479-2, the pain critical energy of single current pulse is 50 - 100 x 10<sup>-6</sup> (A<sup>2</sup>S), the current to suffering contacting for 2 seconds would be 5mA-10mA.
3. The current parameter mentioned above is the result by testing from left hand to ground: The electric arc of stun baton is activated by partial contact, so its safe current value can be increased.

### Remarks:

1. The test report is only for the sample itself, not used for legal suit. The test center is not liable for other products except this one tested by us.
2. According to IEC 479-1, it's no risk to human body dangers if AC is below 500uA, while DC below 2000uA.

Raysun X-1 Stun gun with extension stick	Raysun X-1 Stun gun with probe cartridge	Product name		King Jaw Industrial, Co., Ltd.
				Stun Baton/ Stun Device
				Test result report
33 KV	33 KV	Electric shock high voltage	Test result	
Below 150 $\mu$ A		Current		
; No safety consideration ? Have safety risk		Impact to normal human body		
Electric & Eng. Department, National Taiwan University of Science and Technology		Test organization		
The test is conducted complied with the sample as applicant's instruction. The test is only for research, not used for lawsuit. The test center is not liable for other products except this tested sample. According to IEC 479-1. It's no risk to human body as AC is below 2000uA.		Remark		

Signature: **Hsiao Hung Ching**

Date: Feb. 07, 2007

**Electric & Engineering Department of  
National Taiwan University of Science and Technology**

**Test Report**

Report #: 96 年電清檢清字第 001 號

Applicant: **King Jaw Industrial, Co., Ltd.**

Product: **Probe cartridge of Raysun X-1 Stun Gun \*1 &  
Extension stick of Raysun X-1 Stun Gun \*1**

Test Result:

1. After test of these **Probe cartridge & Extension stick of Raysun X-1 Stun Gun**, the experimental parameters are as below:
  - (1) **Raysun X-1 Stun Gun with probe cartridge:**
    - Open-circuit discharging voltage: **33KV±2%.**
    - Max. discharging voltage: **below 50KV±2%.**
    - Simulated load (100M ) DC discharging current: **below 1.0mA±2%.**
  - (2) **Raysun X-1 Stun Gun with Extension stick:**
    - Open-circuit electricity discharge volt: **33KV±2%.**
    - Max. electricity discharge volt: **below 50KV±2%.**
    - Simulated load (100M ) DC discharging current: **below 1.0mA±2%.**
2. The test is conducted complied with the sample as applicant's instruction. The test is only for research, not used for lawsuit. The test center is not liable for other products except these tested samples.

Tester: **Hsiao Hung Ching**

Authority: Electric & Engineering Department of  
National Taiwan University of Science and Technology

Date: Feb. 7, 2007



NO. H95-08-254-01

Issue Date

發佈日期 2006/10/3

# 測試報告書

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Applicant 申請者 KING JAW INDUSTRIAL CO., LTD.			
Address 地址 No. 27, Lane 152, Kun-Yang Street Nan-Kang, Taipei			
Manufacturer 製造廠商 -----	Model No. 型號 RAYSUN X-1	Serial No. 序號 T00595	
Description 測試品名稱 STUN DEVICE			
Procedure used 測試程序 Refer Notes		Test Date 測試日期 2006/8/31	
Condition of Testing 測試之環境條件		Temp : 溫度 23±1°C	R.H. 相對濕度 42±2%
Standards Employed 測試時使用之標準器			
I. D. No. 識別號碼	MFG/Model No. 製造廠及型號	Description 儀器名稱	Due Date 到期日期
C-1384	BRANDENBURG 139D	HIGH VOLTAGE DIVIDER	2007/5/23
14979	TAMA-TDV-20ADS	HIGH VOLTAGE DIGITAL METER	2007/5/17
B040165	TEKTRONIX TDS 580D	DIGITIZING OSCILLOSCOPE	2007/8/9
2823A09359	HP 3458A	DIGITAL MULTIMETER	2007/5/10
B039802	TEKTRONIX P6015A	HF HV PROBE	2006/10/12
14821	TAMADENSOKU TDV-20ADS	HIGH VOLTAGE DIGITAL METER	2007/4/9
Traceability Parameter 追溯參數		Cal. Source and Report No. 校正機構及校正號碼	Calibration Date 校正日期
DC CURRENT		NML A950091	2006/1/24
RESISTANCE		NML A941047	2005/8/10
TIME/FREQUENCY		FTC-2004-12-28	2004/12/21
DC HV		NML A941559	2005/11/30

CMS in ITRI hereby certifies that the object under test noted herein has been tested with the above listed standards. The standards used to perform this test are traceable to the national measurement laboratory (NML) of ROC. The CMS laboratories are in compliance with ISO/IEC 17025.

工業技術研究院量測技術發展中心特此證明本受測品已使用上列標準器實施測試，上述之標準器可追溯至中華民國國家度量衡標準實驗室。本中心所屬實驗室之運作與管理均符合ISO/IEC 17025之要求。



Dept. Manager/Lab. Head  
 經理/室主任





1. Test Results :

(1)Open Circuit Voltage Output :

Actual: 33.0kV

(2)Current Output :

Actual: 0.063mA

(3)Frequency Output :

Actual: 0 Hz (DC)

2. Notes :

(1)The effect that the results of test report relate only to the item tested, and the test report shall not be reproduced except in full, without the approval of the laboratory.

(2)Test method : Using precision high impedance HV meter to measure (a)open circuit voltage output of the item tested (as photo attached), (b)the voltage of its output terminals with a precision  $100M\Omega$  resistor connected, then from the voltage divide by the actual resistor to calculate its output current. The frequency output of the item tested is measured by digitizing oscilloscope and HV probe.

(3)Expanded Uncertainty : Voltage : 2%

Current : 3.5%

Level of confidence at 95%, coverage factors equal 2

( Null below )



工業技術研究院

量測技術發展中心

Industrial Technology Research Institute

Center for Measurement Standards

H95-08-254-01

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# 測 試 報 告

# TEST REPORT

財團法人台灣電子檢驗中心  
ELECTRONICS TESTING CENTER, TAIWAN

地 址：桃園縣龜山鄉樂善村文明路29巷8號  
(林口工三工業區)

ADDRESS: NO. 8 LANE 29, WEN-MING RD.,  
LO-SHAN TSUN, KUI-SHAN HSIANG,  
TAOYUAN HSIEN, TAIWAN, R.O.C.

TEL: (03) 3280026 (代表號) FAX: (03) 3280034



## CONFORMANCE TEST REPORT FOR EN 50366

**Report No.: 07-07-MAS-183**

Client: **JIUN AN TECHNOLOGY CO., LTD.**  
 Product: **Stun Gun**  
 Model No.: **X-1**  
 Manufacturer/supplier: **King Jaw Industrial Co., Ltd.**  
 Date test item received: **2007/07/05**  
 Date test campaign completed: **2007/07/17**  
 Date of issue: **2007/07/26**

**The test result only corresponds to the tested sample. It is not permitted to copy this report, in part or in full, without the permission of the test laboratory.**

*Total number of pages of this test report: 07 pages*

*Total number of pages of this test photos: 04 pages*

Test Engineer	Checked By	Approved By
 Yi-Hone Cheng	 Terry Huang	 Tsung-Ching Liu

ELECTRONICS TESTING CENTER, TAIWAN  
 NO.8, LANE 29, WEN-MING RD.,  
 LO-SHAN TSUN, KUI-SHAN HSIANG,  
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Laboratory Introduction: Electronics Testing Center, Taiwan is recognized, filed and mutual recognition arrangement as following:

- ① ISO9001: TÜV Product Service
- ② ISO/IEC 17025: BSMI, CNLA, DGT, NVLAP, CCIBLAC, UL, Compliance
- ③ Filing: FCC, Industry Canada, VCCI
- ④ MRA: Australia, Hong Kong, New Zealand, Singapore, USA, Japan, Korea, China, APLAC through CNLA
- ⑤ FCC Registration Number: 90588, 91094, 91095

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**1 TEST REPORT CERTIFICATION**

Client : JIUN AN TECHNOLOGY CO., LTD.  
 Address : 1F NO. 12 SHAO HSING SOUTH STREET, TAIPEI, TAIWAN R.O.C.  
 Manufacturer : King Jaw Industrial Co., Ltd.  
 Address : No. 27 Lane 152 Kuenyang Street Nankang, Taipei, Taiwan R.O.C.  
 EUT : Stun Gun  
 Trade Name : Raysun  
 Model No. : X-1  
 Test Standard : Emissions  
 EN 50366:2003/A1:2006

The testing described in this report has been carried out to the best of our knowledge and ability, and our responsibility is limited to the exercise of reasonable care. This certification is not intended to believe the sellers from their legal and/or contractual obligations.

**2.3 Special Configuration:**

Product	Manufacturer	Model No.	Serial No.	Tester

**2.4 Defective Results:**

--	--	--	--	--

**2.5 Test Results Summary:**

--	--	--	--	--

## 2 GENERAL INFORMATIONS

### 2.1 Description of EUT:

- The most advanced and unique Non-lethal weapon.
- Safety and effectiveness.
- Flexible of using several different cartridges depend on your purpose.
- Easy operation and carrying.
- Two colors (black & red) for each part, different color combination can be ordered by users' preference.
- Much more functional than Taser Gun.

### 2.2 Related Information of EUT:

Power Supply : DC Power 7.2V  
 Adaptor Input 100~240Vac, 60/50Hz; Output 8.5Vdc, 0.5A

Power Line :  Nonshielded  Shielded  None , length: \_\_\_\_\_ m

LAN Line :  Nonshielded  Shielded  None , length: \_\_\_\_\_ m

Data Line :  Nonshielded  Shielded  None , length: \_\_\_\_\_ m

Signal Line :  Nonshielded  Shielded  None , length: \_\_\_\_\_ m

TEL Line :  Nonshielded  Shielded  None , length: \_\_\_\_\_ m

\* For more detailed features, please refer to User's Manual.

### 2.3 Tested Configuration:

No devices were required.

Product	Manufacturer	Model No.	Serial No.	I/O Cable
--	--	--	--	--

### 2.4 Deviation Record:

(If any deviation from additions to or exclusions from test method must be stated)

N/A

### 2.5 Modification Record:

No modifications were required. (That is the EUT complied with the requirement as tested.)



## 4 TEST DATA & RELATED INFORMATIONS

### 4.1 Emissions:

#### 4.1.1 Household and Similar Electrical Appliance Electromagnetic Fields Test:

##### 4.1.1.1 Household and Similar Electrical Appliance Electromagnetic Fields Test Data:

#### A. Operating Conditions of The EUT: Operation Mode

Test Date: Jul. 17, 2007

Test Specification	EN 50366:2003/A1:2006		
Test Equipment	Exposure Level Tester: ELT-400 (Narda)		
Climatic Condition	Ambient Temperature: <u>23</u> °C	Relative Humidity: <u>54</u> %RH	Atmospheric Pressure: <u>983</u> mbar
Test Result	Measured P%= <u>27.330</u> % Max (Std)	Range: Low	Low Cut: 10Hz
Power Supply System	DC Power: <u>6.0</u> V	Test Set-up: Table-top Equipment	EN50366

Measuring Distance	Test Point	P% (Limit: 100%)
10cm	1	6.890%
10cm	2	5.515%
10cm	3	16.330%
10cm	4	13.800%
10cm	5	27.330%
10cm	6	23.210%

**Test Point**

## ※ETC 服務項目

- 環境試驗及可靠度工程技術服務
- 電子零組件及成品系統測試服務
- EMC 電磁相容測試及驗證申請服務
- 通信設備測試及驗證申請服務
- 電子電器產品安全測試及驗證申請服務
- 儀器及設備校正服務
- 協助建立環安衛管理制度(ISO 14000系列/OHSAS/...)
- 綠色產品測試、驗證服務
- 醫療器材測試及驗證申請服務
- 專利授權鑑定服務及 IPR 管理服務
- 輔導申請及執行政府專案計畫
- 專業輔導：ISO,QS,TS,TL,IECQ,6 $\sigma$ ,SPC
- 專業訓練單位：開辦品質、管理、電子課程
- 冷氣驗證登錄

## ※電磁相容(EMC)服務項目

- 美國 FCC/ 歐盟 CE/ 加拿大 DOC/ 日本 VCCI 及電取法/ 台灣 BSMI/ 台灣 DGT/C-Tick/ 大陸 CCIB 之相關認證。
- 歐盟 R&TTE 無線電產品測試驗證申請 (提供快速且正確的驗證管道)。
- 電信終端設備 (Telecommunication Terminal Equipment TTE) EN 55024 附錄 A 解調音壓位準及解調差模雜訊之測量。
- 美國 (FCC)、台灣 (DGT)、加拿大 (IC)、澳洲 (C-Tick)、紐西蘭等國之無線電產品正確之測試與驗證申請。
- 高頻無線電通信產品 RF/EMC 驗證提供 40GHz 測試能量。
- SAR (例如: Bluetooth、Wireless Lan、無線耳機無線麥克風等)。
- 車用設備及零組件 ISO7637, BC1 台上市法、EMI, CISPR25 等測試驗證。
- EMC 教育訓練課程。
- 提供 EMC 到廠教育訓練課程。
- 提供 EMC 外測服務。
- 環境電波輻射強度評估服務。

客戶申訴專線 / (03)3276117

ETC網址 <http://www.etc.org.tw>

綠色電子資訊網站 <http://www.greenelectronics.org.tw>

### 中心本部電磁相容實驗室(Headquarters EMC Laboratory)

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AUTOMOTIVE RESEARCH & TESTING CENTER

公正 IMPARTIALITY / 科技 TECHNOLOGY / 服務 SERVICE

# Test report

## Amended Document

Original report no: B95DT258

Amended report no: B95DT258M

Date: Dec. 6, 2006

<b>Applicant Address</b>	King Jaw Industrial, Co., Ltd. No. 27, Lane 152, Kun-Yang Street Nan-Kang, Taipei
<b>Execution unit</b>	Real vehicles collision laboratory
<b>Test subject</b>	High-speed film photographing
<b>Test Classification</b>	Non-legislation test
<b>Subject Item name</b>	Probe cartridge
<b>Brand and Model</b>	Raysun x-1 Stun Gun
<b>Original report date</b>	Nov. 28, 2006
<b>Amended frequency</b>	1

1. This reports contain 4 pages, include its 3 pages of attachments.
2. To make any duplicate is not allowed without the prior approval in writing form the testing center.
3. The test result is only for sample itself, the testing center is not liable for other products except this tested one.



# Test report

Report No: B95DT258M

Date: Nov. 27, 2006

Item: High-speed film photography

Classification: Non-legislation test

Attachments Page: 1/3

<b>Apply Item identification data</b> Item name: Raysun x-1 Stun Gun Brand and Model: Probe cartridge Manufactured serial number: E10610A833, E10610A846
<b>Testing conditions</b> Temperature: normal Humidity: normal
<b>Testing standard &amp; procedure</b> Article speed measurement
<b>Testing equipment:</b> Digital high-speed camera (VRI PHANTOM/ V9.0)

Test result:

1. Gun body installation is shown as photo 1.
2. Subject weight:

Serial No.	Weight (gw)	Photo before test	Remarks
E10610A833.	4.69	Photo 2.	--
E10610A846	5.00	Photo 3.	--

Remark 1: The subject for testing contains two individual articles fire out from the same active energy power. This measured value is based on the weight of individuality.

3. Photographing speed: 3,902 films/sec.
4. Integrated test result:

Serial No.	Testing location	Image-analysis speed (m/s)	Remarks
E10610A833.	10cm away from gun muzzle	39.7	--
E10610A846	10cm away from gun muzzle	15.2	--

Examiner signature: Huang Hsin Yu

# Test Report

Report No. B95DT258M

Test item : High speed film photographing

Test date : Nom. 27, 2006

Test classification : Non-legislation test

Attachment page : Page 2 of 3



Photo 1. Installation of gun



Photo 2. E10610A833 status before testing

# Test Report

Report No. B95DT258M

Test date : Nom. 27, 2006

Test item : High speed film photographing

Test classification : Non-legislation test

Attachment page : Page 3 of 3



Photo 3. E10610A846 status before testing

