

**FCC PART 15.231**  
**MEASUREMENT AND TEST REPORT**  
For

EUT Name: Wireless Flash Trigger  
Item No.: Aster/PT-V4TX  
FCC ID: XBYASTERTX  
Serial No.: Not supplied by client



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**TEST REPORT DECLARATION**

Applicant : Shenzhen Fudasi Technology Co., Ltd.  
Manufacturer : Shenzhen Fudasi Technology Co., Ltd.  
EUT Description : Wireless Flash Trigger  
Model No. : Aster/PT-V4TX

The device described above is tested by SEM. Test Compliance Service Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits for both radiation and conduction emissions.

The measurement results are contained in this test report and Shenzhen Toby Technology Co., Ltd. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the FCC official limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Shenzhen Toby Technology Co., Ltd.

Tested by: Jacky Wang Date: Jan. 25, 2010  
Jacky Wang

Reviewed by: Benny Xu Date: Jan. 26, 2010  
Benny Xu

Approved by: Justin Zhang Date: Jan. 27, 2010  
Justin Zhang

## 1. GENERAL INFORMATION

### 1.1. Product Description for Equipment Under Test (EUT)

#### Client Information

Applicant: Shenzhen Fudasi Technology Co., Ltd.  
 Address of applicant : B Building, Shengde Industrial Park, DaLang, Longhua Town,  
 Baoan District, Shenzhen City, China

Manufacturer: Shenzhen Fudasi Technology Co., Ltd.  
 Address of manufacturer: B Building, Shengde Industrial Park, DaLang, Longhua Town,  
 Baoan District, Shenzhen City, China

#### General Description of E.U.T

Items	Description
EUT Description:	Wireless Flash Trigger
Trade Name:	/
Model No.:	Aster/PT-V4TX
Rated Voltage:	DC 12V 23AE-Size Alkaline Battery X 1 pc
Out Power:	<0 dBm
Frequency Range:	433.92 MHz
Tape of Antenna:	Integral Antenna
Size:	5.5cm x 3.8cm x 2.4cm
Comment:	Manually Operated Device

For more information refer to the circuit diagram form and the user's manual.

The test data is gathered from a production sample, provided by the manufacturer.

### 1.2. Test Standards

The following report is prepared on behalf of the Shenzhen Fudasi Technology Co., Ltd. in accordance with FCC Part 15, Subpart C, and section 15.231, 15.203, 15.205 and 15.209 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart C, and section 15.231, 15.203, 15.205 and 15.209 of the Federal Communication Commissions rules.

**Maintenance of compliance** is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission/immunity, should be checked to ensure compliance has been maintained.

**1.3. Related Submittal(s)/Grant(s)**

No Related Submittal(s).

**1.4. Test Methodology**

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted accordingly in reference to the Operating Instructions. The EUT was set to keep transmitting during the test.

**1.5. Accessories Equipment List and Details**

Manufacturer	Description	Model	Serial Number
/	/	/	/

**1.6. EUT Cable List and Details**

Cable Description	Length (M)	Shielded/ Unshielded	With Core/ Without Core
/	/	/	/

**1.7. Test Location****FCC – Registration No.: 994117**

SEM. Test Compliance Service Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 994117. SEM. Test Compliance Service Co., Ltd. Lab.

TOBY Tel: +86 0755 2804 5093 Fax: +86 0755 518055

## 2. SUMMARY OF TEST RESULTS

DESCRIPTION OF TEST	RESULT
§15.203 Antenna Requirement	Compliant
§15.205 Restricted Band	Compliant
§15.209 General Requirement	Compliant
§15.231 (b) Radiated Emission	Compliant
§15.231 (c) 20dB Bandwidth Testing	Compliant
§15.231 (a) Deactivation Testing	Compliant

### **3. §15.203 - ANTENNA REQUIREMENT**

#### **3.1. Standard Applicable**

According to FCC 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

#### **3.2. Test Result**

This product has a permanent antenna, fulfill the requirement of this section.

## 4. §15. 205, §15.209, §15.231 (B) RADIATED EMISSION

### 4.1. Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is + 3.0 dB.

### 4.2. Standard Applicable

According to §15.231(b), the field strength of emissions from intentional radiators operated under this section shall not exceed the following:

Fundamental frequency (MHz)	Field strength of fundamental (microvolts/meter)	Field strength of spurious emissions (microvolts/meter)
40.66-40.70.....	2,250.....	225
70-130.....	1,250.....	125
130-174.....	\1\ 1,250 to 3,750 .....	\1\ 125 to 375
174-260.....	3,750.....	375
260-470.....	\1\ 3,750 to 12,500 .....	\1\ 375 to 1,250
Above 470.....	12,500.....	1,250

\1\ Linear interpolations.

The limits on the field strength of the spurious emissions in the above table are based on the fundamental frequency of the intentional radiator. Spurious emissions shall be attenuated to the average (or, alternatively, CISPR quasi-peak) limits shown in this table or to the general limits shown in §15.209, whichever limit permits a higher field strength compliance with the provisions of §15.205 shall be demonstrated using the measurement instrumentation specified in that section.

### 4.3. Test Equipment List and Details

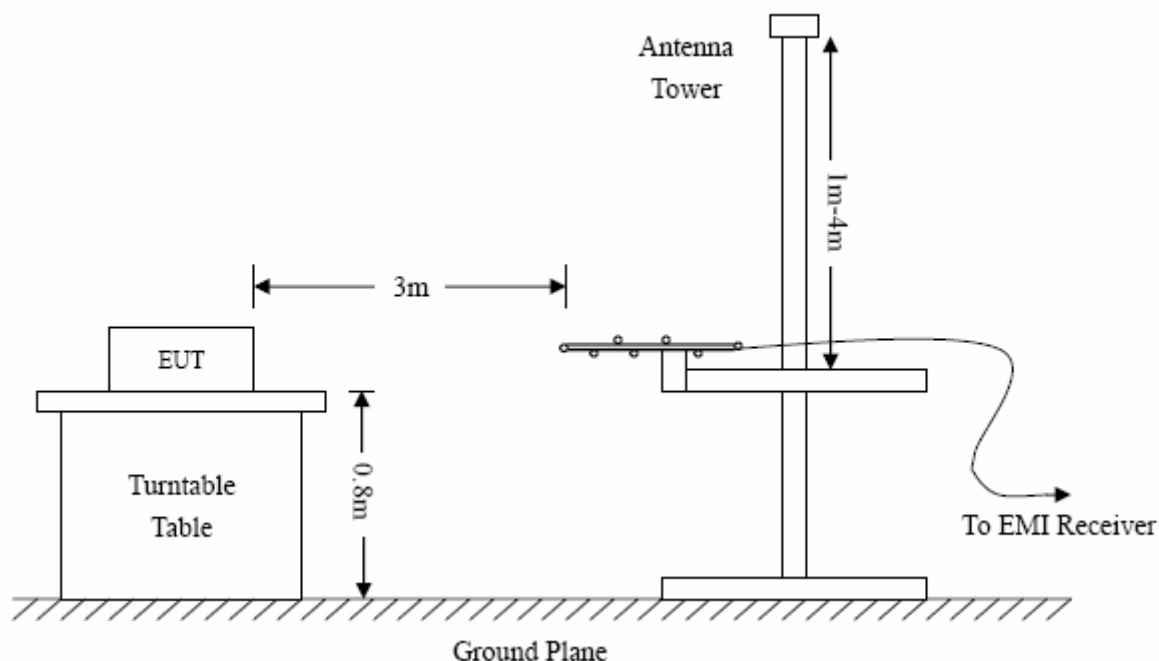


Description	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Date
Spectrum Analyzer	ROHDE& SCHWARZ	FSEA20	DE25181	2009-08-12	2010-08-11
Positioning Controller	C&C	CC-C-1F	N/A	2009-08-12	2010-08-11
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2009-07-21	2010-07-20
Horn Antenna	SCHWARZBECK	BBHX 9120	9120-426	2009-07-21	2010-07-20
RF Switch	EM	EMSW18	SW060023	2009-08-12	2010-08-11
Amplifier	Agilent	8447F	3113A06717	2009-08-12	2010-08-11
Coaxial Cable	SCHWARZBECK	AK9513	9513-10	2009-08-12	2010-08-11
EMI Test Receiver	ROHDE& SCHWARZ	ESPI	25498514	2009-08-12	2010-08-11
EMI Test Receiver	ROHDE& SCHWARZ	ESI26	838786/103	2009-08-12	2010-08-11
Receiver Horn Antenna	ROHDE& SCHWARZ	HF906	100013	2009-08-12	2010-08-11

**Statement of Traceability:** All calibrations have been performed per the NVLAP requirements traceable to the NIST.

#### 4.4. Test Procedure

The setup of EUT is according with per ANSI C63.4-2009 measurement procedure. The specification used was with the FCC Part 15.205 15.231(b) and FCC Part 15.209 Limit.



#### 4.5. Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Ant. Loss} + \text{Cab. Loss} - \text{Ampl. Gain}$$

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15.231 Limit}$$

#### 4.6. Environmental Conditions

Temperature:	20° C
Relative Humidity:	54 %
ATM Pressure:	1009 mbar

#### 4.7. Summary of Test Results/ Plots

According to the data below, the FCC Part 15.205, 15.209 and 15.231 standards, and had the worst margin is:

-10.02 dBμV at 1736.80 MHz in the Horizontal, Ave Detector polarization, 30 MHz to 5 GHz, 3Meters

**Plot of Radiation Emissions & Test Data**

Radiated Disturbance

EUT: Wireless Flash Trigger

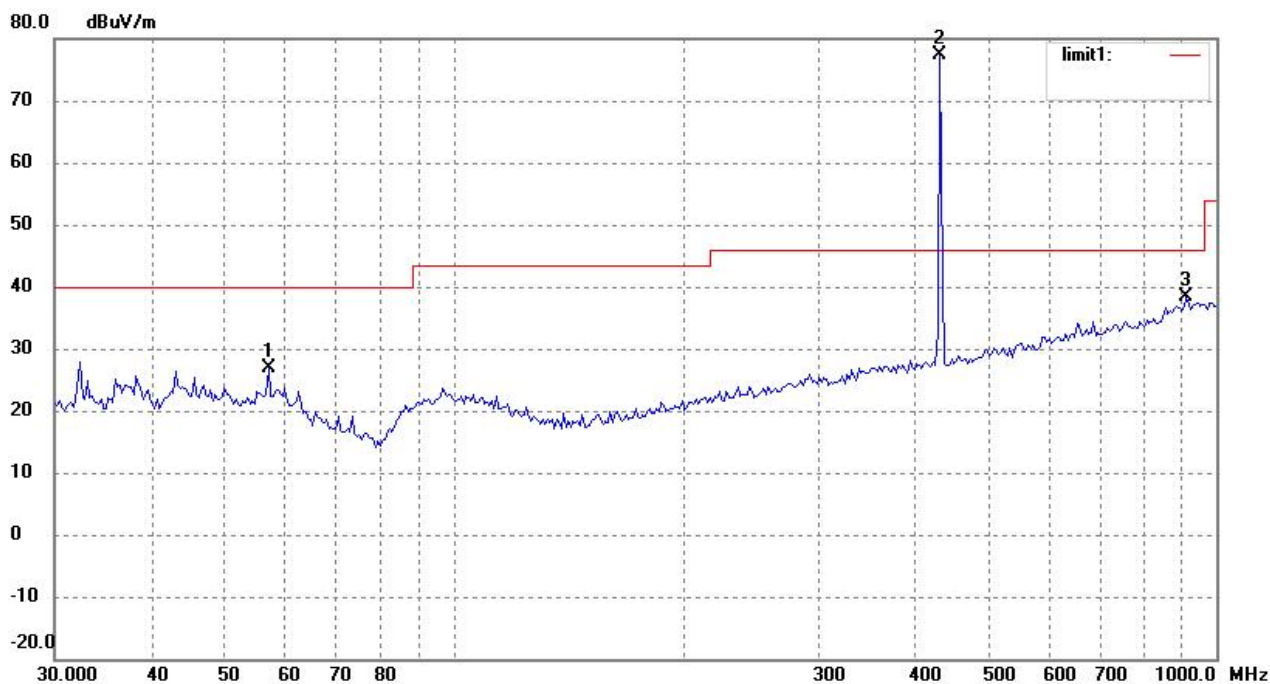
M/N: Aster/PT-V4TX

Operating Condition: ON

Test Specification: Horizontal &amp; Vertical

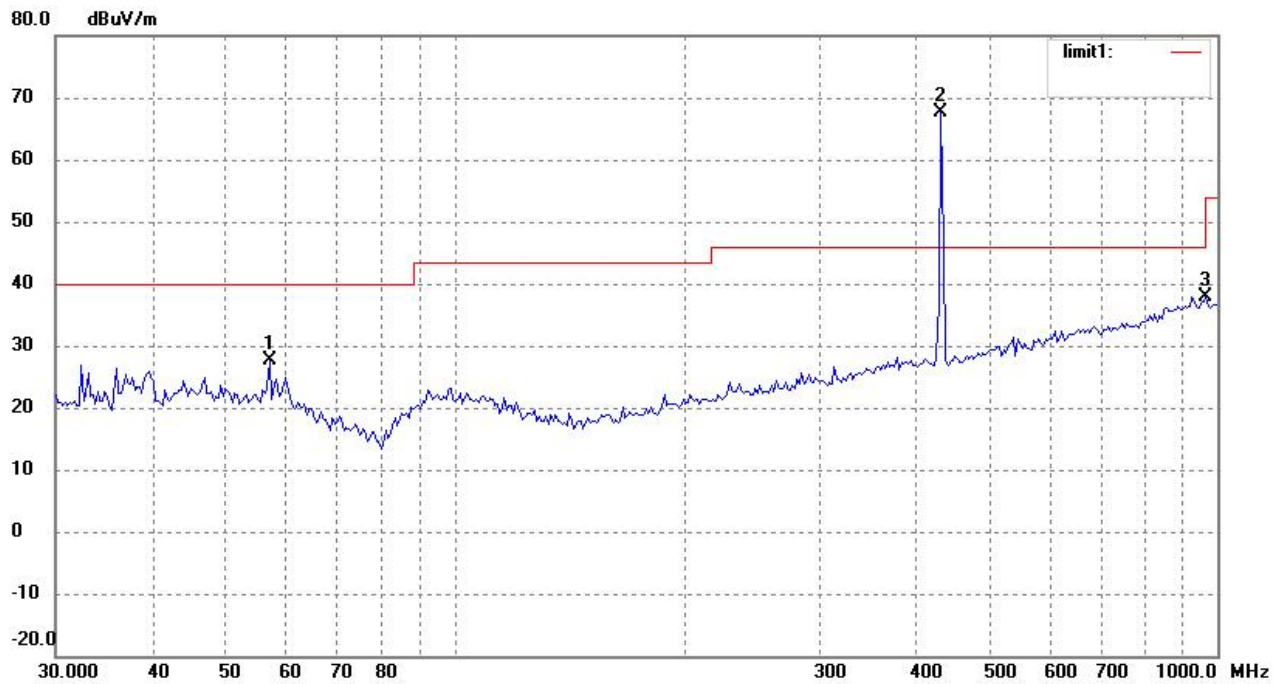
Comment: DC12V

Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (° )	Height (cm )	Remark
1	57.1914	19.34	7.66	27.00	40.00	-13.00	146	100	Peak
2	434.0651	64.75	12.65	77.40	100.80	-23.40	108	100	Peak
3	434.0651	21.30	12.65	34.00	80.80	-46.80	255	100	Ave
4	912.8620	17.58	20.79	38.37	46.00	-7.63	152	100	Peak

## Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (° )	Height (cm )	Remark
1	57.1914	19.99	7.66	27.65	40.00	-12.35	104	100	Peak
2	434.0650	54.97	12.65	67.62	100.80	-33.18	145	100	Peak
3	434.0651	30.05	12.65	42.70	80.80	-38.10	207	100	Ave
4	965.5421	16.68	21.21	37.89	54.00	-16.11	285	100	Peak

Note: The EUT was tested in all three orthogonal planes and frequency rang 30MHz to the tenth harmonics. Emissions attenuated closely to the noise base are not reported.

## 5. §15. 231(C) 20dB BANDWIDTH TESTING

### 5.1. Standard Applicable

According to FCC 15.231(c), The bandwidth of the emission shall be no wider than 0.25 % of the center frequency for devices operating above 70 MHz and below 900 MHz. Bandwidth is determined at the points 20 dB down from the modulated carrier.

### 5.2. Test Equipment List and Details

Description	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Date
Agilent	Spectrum Analyzer	E4402B	US41192821	2009-08-12	2010-08-11
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2009-08-12	2010-08-11
Receiver Antenna	ETS	2175	57337	2009-08-12	2010-08-11
50 ohm Coaxial Cable	ETS	SUCOFLEX 104	25498514	2009-08-12	2010-08-11

**Statement of Traceability:** All calibrations have been performed per the NVLAP requirements traceable to the NIST.

### 5.3. Test Procedure

With the EUT's antenna attached, the EUT's 20dB Bandwidth power was received by the test antenna, which was connected to the spectrum analyzer with the START, and STOP frequencies set to the EUT's operation band.

### 5.4. Environmental Conditions

Temperature:	20° C
Relative Humidity:	56 %
ATM Pressure:	1018 mbar

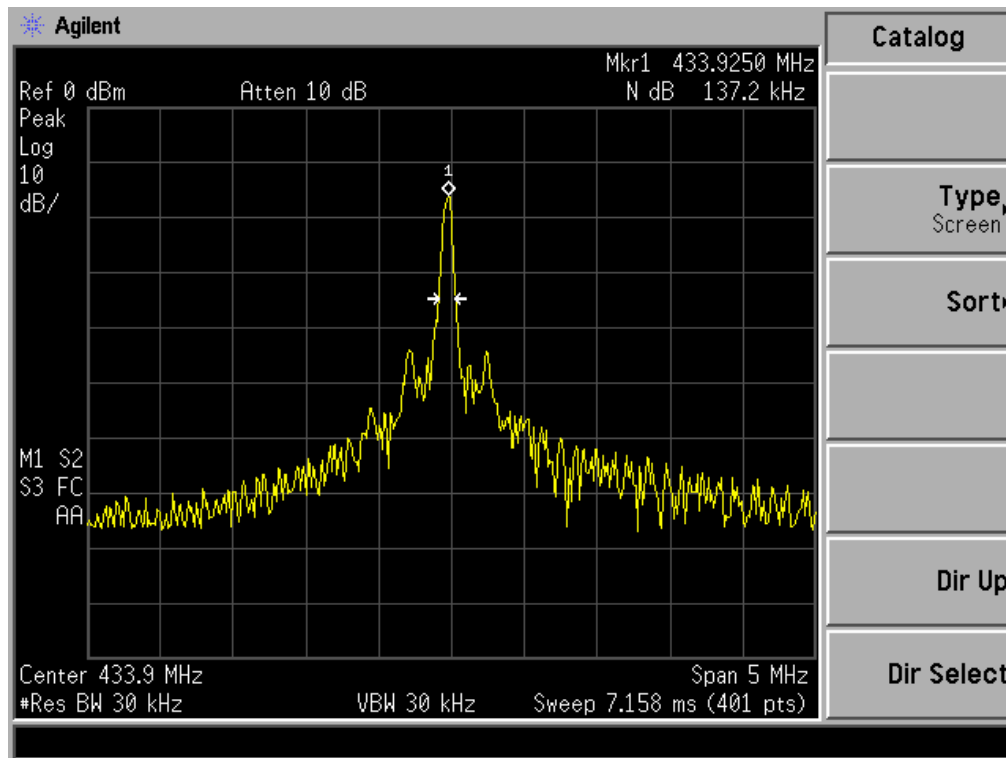
### 5.5. Summary of Test Results/Plots

Frequency MHz	20dB Bandwidth KHz	Limit KHz	Result
433.9	137.2	1084.8	Pass

Limit=Fundamental Frequency $\times$ 0.25%=433.9 $\times$ 0.25%=1084.8kHz

Please see the plot of 20 dB Bandwidth Test.

**Test Result: Pass**

**Plot of 20 dB Bandwidth Test**

## 6. §15. 231(A) DEACTIVATION TESTING

### 6.1. Standard Applicable

According to FCC 15.231 (a)(1) A manually operated transmitter shall employ a switch that will automatically deactivate the transmitter within not more than 5 seconds of being released.

### 6.2. Test Equipment List and Details

Description	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Date
Agilent	Spectrum Analyzer	E4402B	US41192821	2009-08-12	2010-08-11
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2009-08-12	2010-08-11
Receiver Antenna	ETS	2175	57337	2009-08-12	2010-08-11
50 ohm Coaxial Cable	ETS	SUCOFLEX 104	25498514	2009-08-12	2010-08-11

**Statement of Traceability:** All calibrations have been performed per the NVLAP requirements traceable to the NIST.

### 6.3. Test Procedure

With the EUT's antenna attached, the EUT's output signal was received by the test antenna, which was connected to the spectrum analyzer. Set the center frequency to 433.92MHz, then set the spectrum analyzer to Zero Span for the release time reading. During the testing, the switch was released then the EUT automatically deactivated.

### 6.4. Environmental Conditions

Temperature:	21° C
Relative Humidity:	53 %
ATM Pressure:	1014 mbar

### 6.5. Summary of Test Result & Plot for Duty Cycle

Refer to the duty cycle plot, the transmission time <5s.

**Test Result: Pass**

Duty Cycle Plot

