

## EMC TEST REPORT

### No. JSH007100253-001

Applicant : Shanghai Nine Eagles Electronic Technology Co., Ltd.  
Room 1104, Huaxiang Building, No. 80 Moling Road, Shanghai, 200070, China

Manufacturer : Shanghai Nine Eagles Electronic Technology Co., Ltd.  
No. 28 Yulu road, Malu, Jiading District, Shanghai, China

Equipment : Eagle Jet

Type/Model : 88225, 88251, 88252, 88253, 88256, 88258, 98231, 98232, 98233, 98236, 98238

## SUMMARY

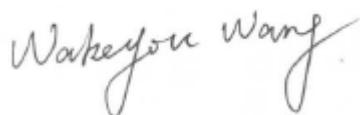
The equipment complies with the requirements according to the following standard(s):

**47CFR Part 15 (2006): Radio Frequency Devices**

**ANSIC63.4 (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**

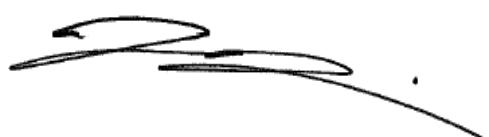
Date of issue: Nov 5, 2007

Tested by:



Wakeyou Wang (*Projector Engineer*)

Reviewed by:



Jonny Jing (*Reviewer*)

## **Description of Test Facility**

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## 1. General Information

### 1.1 Applicant Information

Applicant: Shanghai Nine Eagles Electronic Technology Co., Ltd.  
Room 1104, Huaxiang Building, No. 80 Moling Road, Shanghai, 200070, China

Name of contact: Mr. Huang Guochuan

Tel: 86 21 69152688  
Fax: 86 21 69152687

Manufacturer: Shanghai Nine Eagles Electronic Technology Co., Ltd.  
No. 28 Yulu road, Malu, Jiading District, Shanghai, China

Sample received date : Oct 12, 2007  
Date of test : Oct 17, 2007 ~ Nov 5, 2007

### 1.2 Identification of the EUT

Equipment: Eagle Jet

Type/model: 88225; 88251, 88252, 88253, 88256, 88258; 98231, 98232, 98233, 98236, 98238

Type identification: All the models above are identical in all hardware/software aspects except their different colour. Here the model 88225 was chosen to perform test.

FCC ID: U45-2714507001

### 1.3 Technical specification

Operation Frequency Band: 26.96MHz ~ 27.28MHz

Modulation: 2ASK

Antenna Designation: Single-pole antenna with non-standard antenna connector, Removable

Rating: Built-in Battery: DC 6\*1.5V  
Working frequency: 27.145MHz

Description of EUT: The EUT is a transmitter to transmit wireless signal so as to control the flight of plane model. There are two joy sticks on the panel: one control forward & back; the other control left & right. Nevertheless, the two joy sticks cannot work at the same time.

**FCC ID: U45-2714507001**

## 1.4 Mode of operation during the test / Test peripherals used

Within this test report, EUT was tested with modulation and tested under its rating voltage and frequency.

The two joy sticks were operated in turn and the worst test result was recorded.

## 2. Test Specification

### 2.1 Instrument list

Equipment	Type	Manu.	Internal no.	Cal. Date	Due date
Test Receiver	ESIB 26	R&S	EC 3045	2007-6-1	2008-5-31
Ultra-broadband antenna	HL 562	R&S	EC 3046-1	2007-6-1	2008-5-31
Signal generator	SMR 20	R&S	EC 3044-1	2007-8-22	2008-8-21
Power meter	PM2002	AR	EC3043-7	2007-1-23	2008-1-22
Power sensor	PH2000	AR	EC3043-8	2007-1-23	2008-1-22
Semi-anechoic chamber	-	Albatross project	EC 3048	2007-6-1	2008-5-31

### 2.2 Test Standard

47CFR Part 15 (2006)

ANSI C63.4: 2003

### 2.3 Test Summary

**This report applies to tested sample only. This report shall not be reproduced in part without written approval of Intertek Testing Service Shanghai Limited.**

TEST ITEM	FCC REFERANCE	RESULT
Radiated emission within the intentional radiator band	15.227(a)	Pass
Spurious emission outside the intentional radiator band	15.227(b)	Pass

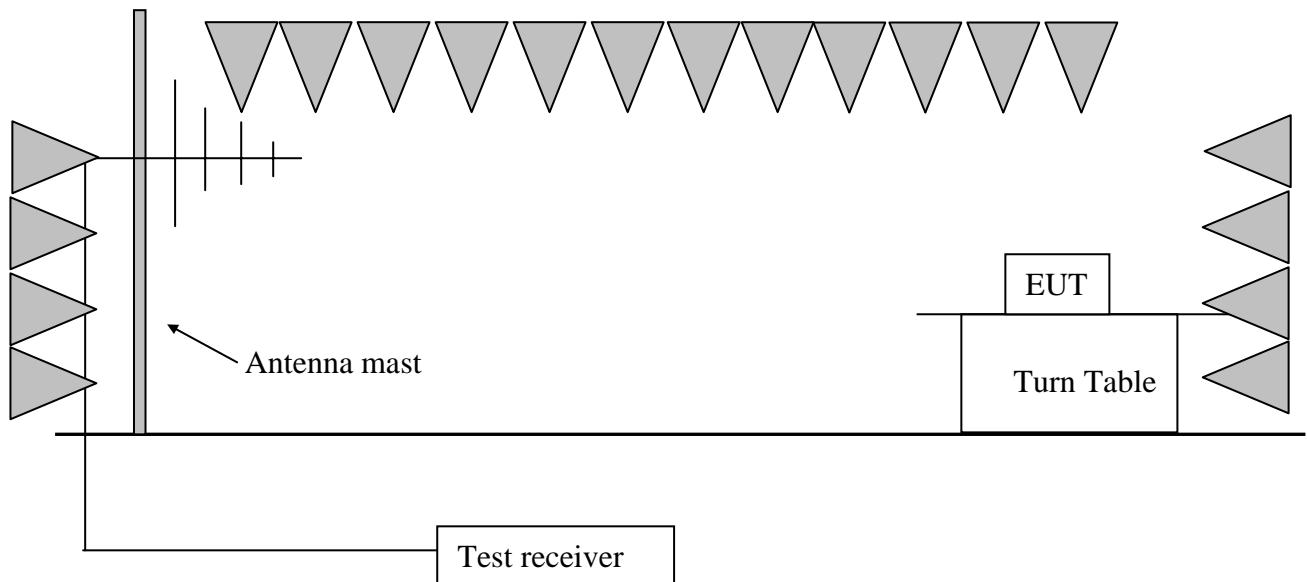
### 3. Radiated emission within the intentional radiator band

Test result: PASS

#### 3.1 Limit

Frequency (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measurement Distance (m)
26.96 ~ 27.28	10,000	80	3

#### 3.2 Test Configuration



#### 3.3 Test Procedure and test setup

The measurement was applied in a semi-anechoic chamber.

The EUT was placed on a 0.8m high wooden turntable above the horizontal metal ground plane. The turn table rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on an antenna mast. The antenna moved up and down from 1meter to 4 meters while the EUT was rotated in three orthogonal axes to find out the maximum emission level.

The frequency from 25MHz to 1000MHz was checked and the detector bandwidth of the test receiver was set to 120kHz.

### 3.4 Test Protocol

Temperature : 22°C  
 Relative Humidity : 43%

PK reading:

Antenna	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)
H	27.10	17.70	87.20	100.00	12.80
V	27.10	17.70	75.70	100.00	24.30

Remark: 1. Correct Factor = Antenna Factor + Cable Loss  
 2. Corrected Reading = Receiver Reading + Correct Factor  
 3. Margin = limit - Corrected Reading  
 4. For more details, please refer to the test data.

Calculating the AV result by duty cycle:

Antenna	Frequency (MHz)	PK Result (dBuV/m)	Correct Factor (dB)	AV Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
H	27.10	87.20	21.94	65.26	80.00	14.74
V	27.10	75.70	21.94	53.76	80.00	26.24

Remark: 1. Correct Factor =  $-20 * \log(\text{Duty cycle}) = -20 * \log(8\%)$   
 2. AV Result = PK Result - Correct Factor  
 3. Margin = limit - AV Result

### 3.5 Measurement uncertainty

The measurement uncertainty describes the overall uncertainty of the given measured value during the operation of the EUT.

Measurement uncertainty of radiated emission is:  $\pm 5.31\text{dB}$

The measurement uncertainty is given with a confidence of 95%,  $k=2$ .

The measurement uncertainty is traceable to internal procedure TI-036.

## 4. Spurious emission outside the intentional radiator band

Test result: PASS

### 4.1 Limit

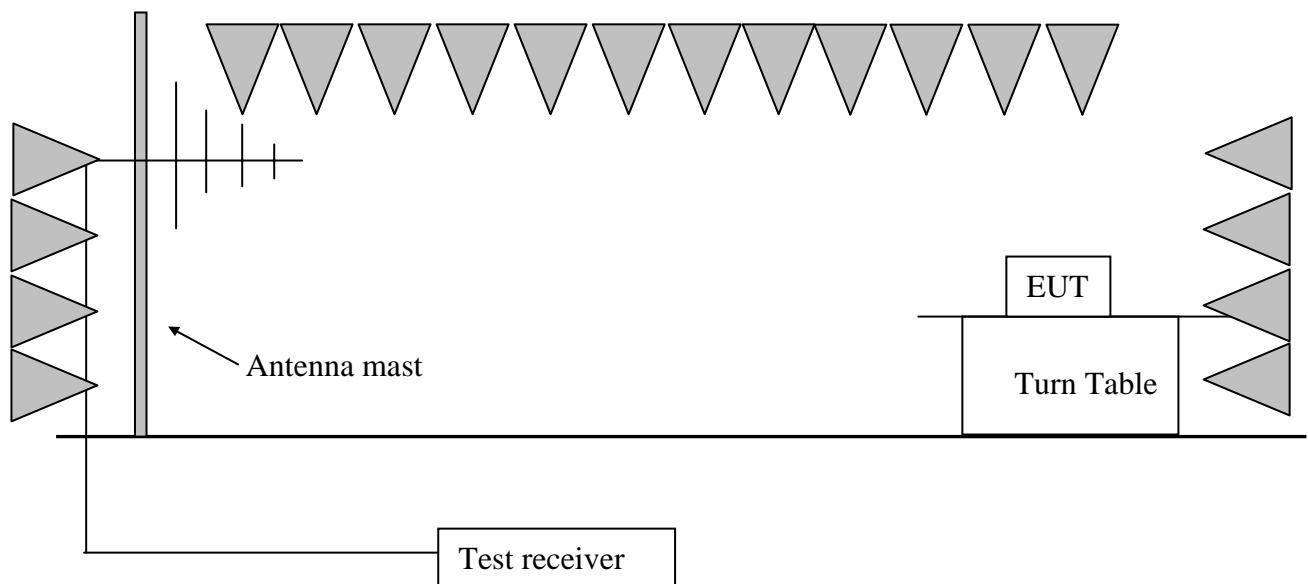
The spurious emission shall test through the 10th harmonic. It must comply with the radiated emission limits specified in §15.209(a) showed as below:

Frequency (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measurement Distance (m)
1.705 - 30	30(30m distance)	69.5	3
30 - 88	100	40.0	3
88 - 216	150	43.5	3
216 - 960	200	46.0	3
Above 960	500	54.0	3

For frequency  $< 30\text{MHz}$ , Field Strength limit (dBuV/m) =  $20\lg(30) + 40\lg(30/3)$

For frequency  $\geq 30\text{MHz}$ , Field Strength limit (dBuV/m) =  $20\lg(\text{limit of uV/m unit})$

### 4.2 Test Configuration



#### 4.3 Test Procedure and test setup

The measurement was applied in a semi-anechoic chamber.

The EUT was placed on a 0.8m high wooden turntable above the horizontal metal ground plane. The turn table rotated 360 degrees to determine the position of the maximum emission level. The EUT was set 3 meters away from the receiving antenna which was mounted on an antenna mast. The antenna moved up and down from 1meter to 4 meters while the EUT was rotated in three orthogonal axes to find out the maximum emission level.

The frequency from 25MHz to 1000MHz was checked and the detector bandwidth of the test receiver was set to 120kHz.

#### 4.4 Test Protocol

Temperature : 22°C  
 Relative Humidity : 43%

Antenna	Frequency (MHz)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)
H	32.82	18.30	37.20	40.00	2.80
H	81.66	9.20	38.60	40.00	1.40
H	109.02	10.30	42.30	43.50	1.20
H	298.55	12.00	43.60	46.00	2.40
V	32.82	18.30	30.50	40.00	9.50
V	81.66	9.20	25.30	40.00	14.70
V	189.13	8.10	39.10	43.50	4.40
V	244.31	10.70	30.20	46.00	15.80

Remark: 1. Correct Factor = Antenna Factor + Cable Loss

2. Corrected Reading = Receiver Reading + Correct Factor

3. Margin = limit - Corrected Reading

4. For more details, please refer to the test data.

For adjacent band spurious emission

Antenna	Frequency (MHz)	Reading (dBuV)	Correct Factor (dB/m)	Corrected Reading (dBuV/m)	Limit (dBuV/m)	Margin (dB)
H&V	26.96	18.85	17.40	36.25	69.50	33.25
H&V	27.28	24.03	17.40	41.43	69.50	28.07

Remark: 1. Correct Factor = Antenna Factor + Cable Loss

2. Corrected Reading = Receiver Reading + Correct Factor

3. Margin = limit - Corrected Reading

4. For more details, please refer to the test data.

#### 4.5 Measurement uncertainty

The measurement uncertainty describes the overall uncertainty of the given measured value during the operation of the EUT.

Measurement uncertainty of radiated emission is:  $\pm 5.31\text{dB}$

The measurement uncertainty is given with a confidence of 95%,  $k=2$ .

The measurement uncertainty is traceable to internal procedure TI-036.