ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
INTENTIONAL RADIATOR CERTIFICATION TO
FCC PART 95 SUBPART C REQUIREMENTS

OF

P-51 Mustang(TX)

MODEL No.: 4251

BRAND NAME: N/A

FCC ID:T534251

REPORT NO: SDEE080110702701

ISSUE DATE: March 26, 2008

Prepared for

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VERIFICATION OF COMPLIANCE

Applicant:	ZHONGSHAN SHENGLI TECHNOLOGY CO.,LTD No.2 MinYing Road,Civil Technolgical Garden,Shiqi,Guangdong,China
Product Description:	P-51 Mustang
Brand Name:	N/A
Model Number:	4251
Serial Number:	N/A
File Number:	SDEE080110702701
Date of Test:	March 3,2008 ~ March 26 , 2008

We hereby certify that:

The above equipment was tested by Centre Testing International (CTI), The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with FCC PART95C requirements.The test results of this report relate only to the tested sample identified in this report.

Prepared by : Forrest Lei

Reviewed by : Daisy Wu

Approved by: Jacky Guo
General Manager

Date : Mar. 26, 2008

TABLE OF CONTENTS

Description **Page**

1. GENERAL INFORMATION

1.1 Product Description

The TRANSMITTER. Model:4251(referred to as the EUT in this report) The EUT is an short range, lower power device. P-51 Mustang designed as an " output Device". It is designed by way of utilizing the FSK modulation achieves the system operating.

A major technical descriptions of EUT is described as following:

A). Operation Frequency: 27.195MHz
B). Modulation: FSK
C). Antenna Designation: unique antenna (it can't be moved during the test)
D). Power Supply: DC 9.0 V by battery.

1.2 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2003). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.3 Test Facility

The 3m Semi-Anechoic chamber test site and conducted measurement facility used to collect the radiated data is located on the address:

1F.,Building C, Hongwei Industrial Zone 70District.,Baoan,Shenzhen,Guangdong,China .

The Test Sites and the Line Conducted labs are constructed and calibrated to meet the

standard ANSI C63.4: 2003 requirements. **The test site FCC Registration Number:614926**

1.4 Special Accessories

Not available for this EUT intended for grant.

1.5Equipment Modifications

Not available for this EUT intended for grant.

2. System Test Configuration

2.1 EUT Configuration

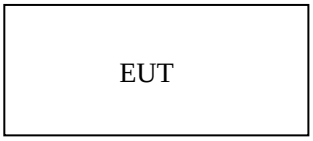
The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The Transmitter was operated in the normal operating mode. the TX frequency was fixed which was for the purpose of the measurements.

2.3 Configuration of Test setup

Configuration of Block diagram for EUT



Notes: Owing to the EUT is a handhold device, so the EUT have three place conditions : X(horizontal),Y(vertical),Z (another side vertical)axis. Please see the Setup photos for more detail. According to the test results analyze, Y axis is the worst test condition.

3. Description of test modes

1. The EUT has been tested under normal operating condition.
2. The EUT stay in continuous transmitting mode. The channel (**27.195MHz**) is chosen for testing.

4 Summary Of Test Results

FCC Rules	Description Of Test	Result
§ 15.207	Conducted Emission	Not applicable
§ 95.623	Frequency stability	Compliant
§ 95.631	Emission type	Compliant
§ 95.633	Emission bandwidth	Compliant
§ 95.635	Unwanted Radiation	Compliant
§ 95.639	Transmitter power	Compliant
§ 95.649	Power capability	Compliant

5. Conducted Emissions Test (Not applicable in this report)

5.1 Measurement Procedure:

1. The EUT was placed on a table which is 0.8m above ground plane.

2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.

3. Repeat above procedures until all frequency measured were complete.

5.2 Limitation

(1) Conducted Emission (Not applicable in this report)

According to section 15.207(a) Conducted Emission Limits is as following.

Frequency range	Limits dB(uV)	
MHz	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Note
1.The lower limit shall apply at the transition frequencies
2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

5.3 Test SET-UP (Block Diagram of Configuration)

N/A

5.4 Measurement Equipment Used:

Conducted Emission Test Site # 4					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
EMI Receiver	R&S	ESCI	100435	01/28/2008	01/28/2009
LISN	ETS	3816	00060336	06/07/2007	06/06/2008

5.5 Measurement Result:

N/A

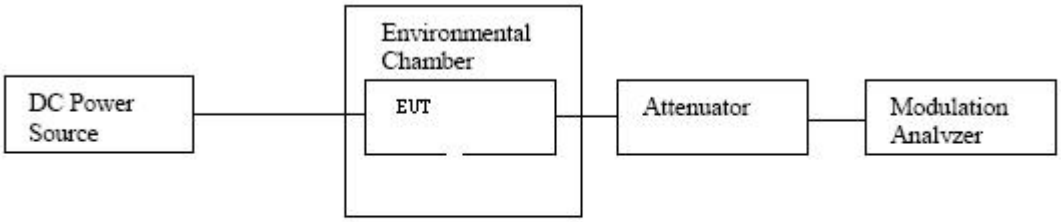
6 FREQUENCY STABILITY

Limits: See §2.1055, §95.623(b)

6.1 Test Procedure & Standard Requirements

The EUT was placed in an environmental chamber. All cables connecting to the EUT were routed through a port in the side of the chamber. The RC antenna output connector was connected to an attenuator, which was in turn connected to the input of a modulation analyzer located outside the chamber. The RC was then powered on and The frequency was selected. The Transmitter frequency was then measured to determine compliance with the0 .005% frequency tolerance. The procedure was repeated while varying the temperature from -30 to +50 degrees Celsius using 10 degree increments. At 25 degrees the input DC voltage was varied from 85% to115% of nominal and the frequency measured .

6.2 Block Diagram



6.3Test Equipment used

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.
Spectrum Analyzer	Agilent	E4443A	MY46185649	06/29/2007
Environmental chamber	Thermotron	SM-8C	32692	05/13/2007

6.4 Test Results

In all cases shown below, the output frequency is well within the 0.005% tolerance required by FCC Part §2.1055 and §95.623(b) for RC transmitters.

Frequency stability Temperature Data

Temperature	Measure power(dBm)	Measure Frequency(MHZ)	Delta(HZ)	Percent error(%)
50	-12.92	27.1948	-200	0.0007
40	-12.92	27.1955	500	0.0018
30	-12.92	27.195	0	0.0000
25	-12.92	27.1951	100	0.0007
20	-12.92	27.1951	100	0.0004
10	-12.92	27.1949	-100	0.0004
0	-12.92	27.1952	200	0.0007
-10	-12.92	27.195	0	0.0000
-20	-12.92	27.1949	-100	0.0004
-30	-12.92	27.1949	-100	0.0004

Frequency stability Input voltage Data

Power supply	Temperature	Measured Power	Measured Freq.(MHZ)	Delta(HZ)	Percent Error (%)
7.65V	25	-12.92	27.1948	-200	0.0007
10.35V	25	-12.92	27.1951	100	0.0004

7 Emission type

7.1 standard requirements

95.631 (b) An R/C transmitter may transmit any appropriate non-voice emission which meets the emission limitations of § 95.633.

7.2 Compliance

The EUT is solely used to control mode aircraft without transmitting any voice emission and it has been tested to comply with the emission limitation of §95.633，please see user manual for more details.

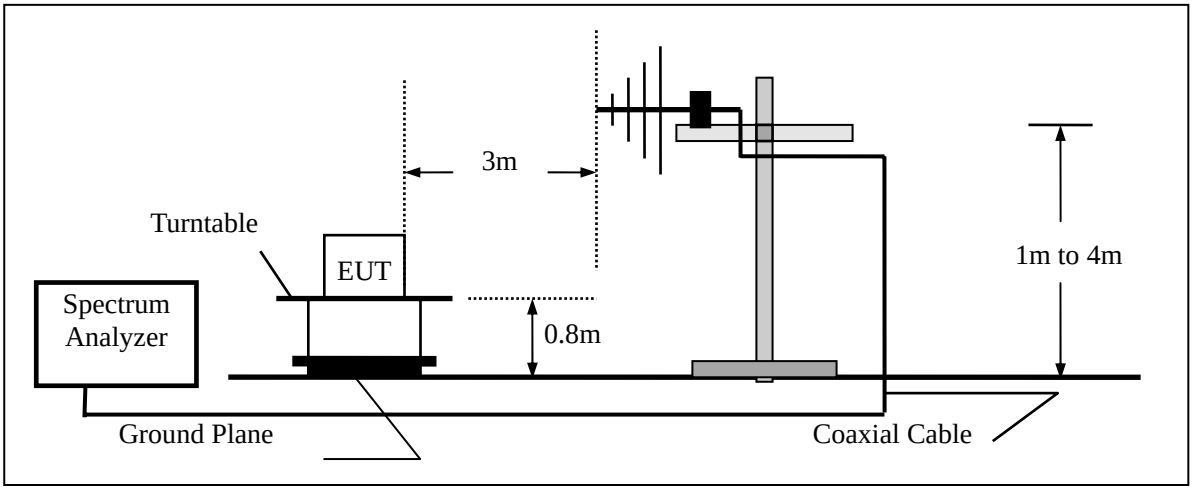
8. Emission bandwidth

8.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as normal operation
3. Set SPA Center Frequency = fundamental frequency , RBW=1kHz,VBW= 10KHz, Span =50KHz. set 20dB down to maximum carrier signal.
4. Set SPA Max hold. Find

8.2 Test SET-UP (Block Diagram of Configuration)

(A) Emission Bandwidth Test Set-Up



8.3 Measurement Equipment Used:

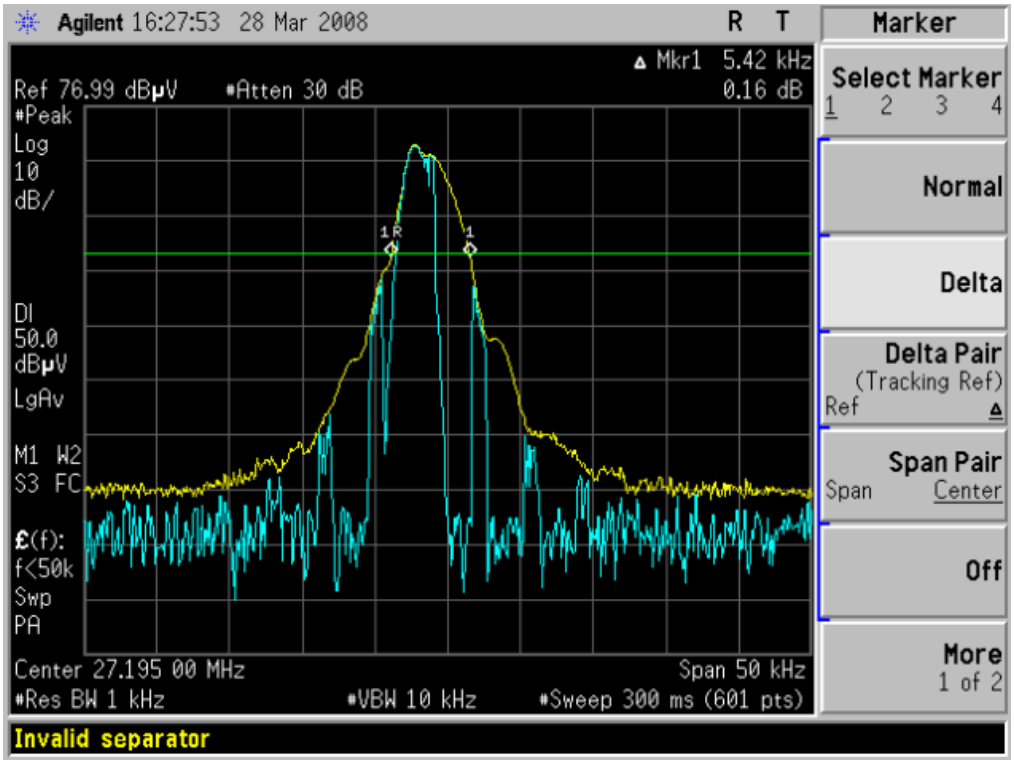
Open Area Test Site # 3					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Spectrum Analyzer	Agilent	E4443A	MY46185649	06/29/2007	06/28/2008
Biconilog Antenna	ETS	3142C	920250	05/30/2007	05/29/2008
Multi device Controller	ETS	2090	00057230	06/07/2007	06/06/2008

8.4 Standard requirements

The authorized bandwidth for any emission type transmitted by an R/C transmitter is 8 kHz. Emission bandwidth will be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 20 dB down relative to the maximum level of the modulated carrier.

8.5Measurement Results:

The 20dB bandwidth=5.42kHz



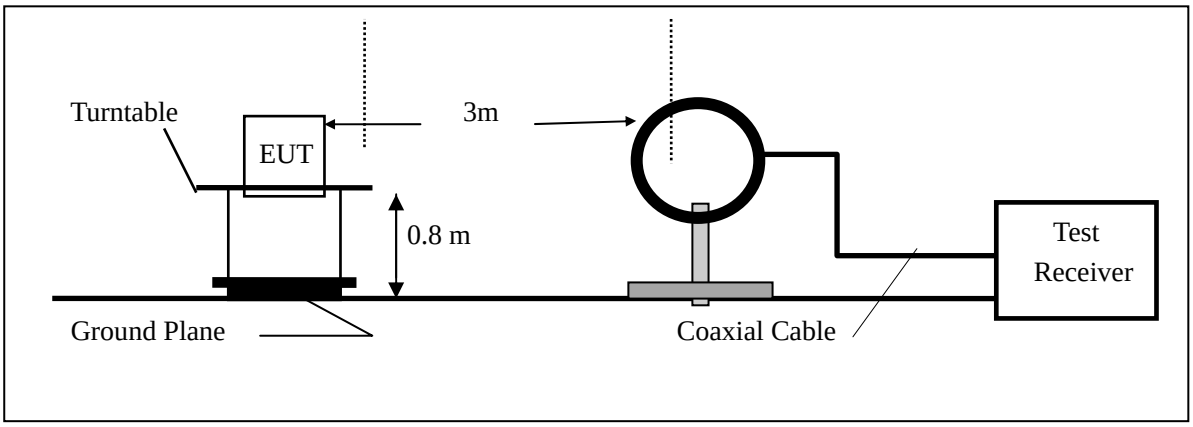
9. Unwanted Radiation

9.1 Measurement Procedure

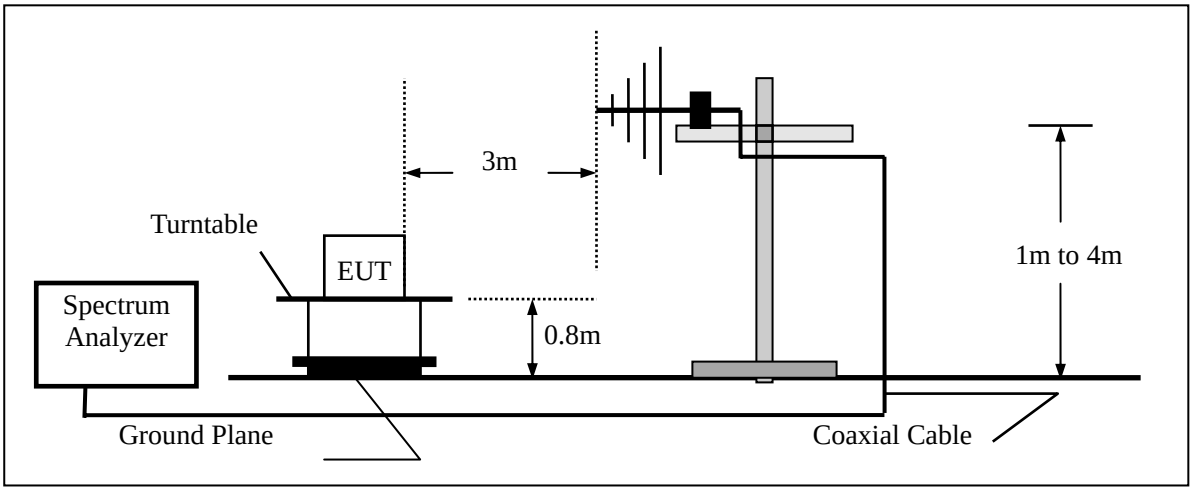
1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Set EUT as normal operation
3. The EUT is measured in horizontal and vertical position with searching of max radiation by rotation of turn table and changing of the antenna high 1m to 4m over a frequency EUT Generated frequency until the 10^{th} harmonic of it.

9.2 Test SET-UP (Block Diagram of Configuration)

(A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



9.3Measurement Equipment Used:

Open Area Test Site # 3					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Spectrum Analyzer	Agilent	E4443A	MY46185649	06/29/2007	06/28/2008
Biconilog Antenna	ETS	3142C	920250	05/30/2007	05/29/2008
Multi device Controller	ETS	2090	00057230	06/07/2007	06/06/2008

9.4 Standard requirements

(1) At least 25 dB (decibels) on any frequency removed from the center of the authorized bandwidth by more than 50% up to and including 100% of the authorized bandwidth.
(2) At least 35 dB on any frequency removed from the center of the authorized bandwidth by more than 100% up to and including 250% of the authorized bandwidth.
(3) At least 43 + 10 log10 (T) dB on any frequency removed from the center of the authorized bandwidth by more than 250%.
(4) Calculation:limit(dBm) = EL-43-10log10(T). EL is the emission level of output power expressed in dBm, limit(dBm)= -13

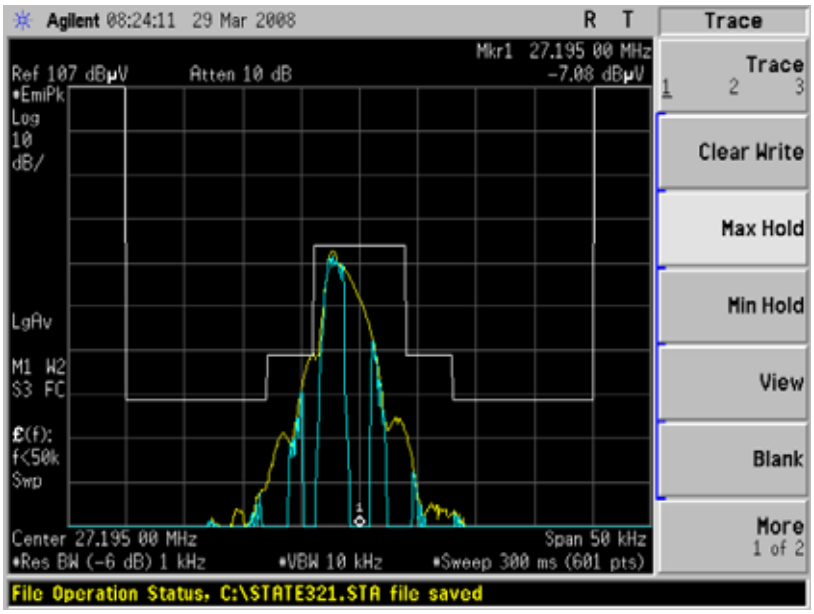
9.5 Test results

Ambient temperature:23.5C° Relative humidity:53%
Test condition: Y axis(worst condition)

Frequency (MHZ)	Reading At Analyzer (dBm)	Antenna Polarization	Correction Factor (dBm)	Result ERP (dBm)	Spec Limit (dBm)	Margin (dB)
55.187	-25.4	V	-10.4	-35.8	-13	22.8
71.283	-37.4	H	-10.2	-47.6	-13	34.6
123.377	-37.1	V	-9.9	-47	-13	34
135.472	-33.6	H	-11.7	-45.3	-13	32.3
162.566	-36.3	V	-10.2	-46.5	-13	33.5
179.66	-31.3	H	-9.5	-40.8	-13	27.8
226.754	-34.9	V	-9.5	-44.4	-13	31.4
243.849	-46.3	H	-10.7	-57	-13	44
375.943	-44.8	V	-10.5	-55.3	-13	42.3
*	*				-13	20

Notes:*means the output power of all other frequency is at least 20dB safety margin to the limit.

Transmitter Mask



10 Tansmitter power

10.1Measurement Procedure

1. On a test site, the EUT Shall be placed on a turn table ,and in the position closet to the normal use as declared by the user.
2. The test antenna shall be oriented initially for Vertical polarization located 3m from the EUT To correspond to the transmitter
3. The output of the antenna shall be connected to the measuring receiver and either a peak or quasi-peak detector was used for measurement as indicated on the report. The detector selection is based on how close the emission level was approaching the limit.
4. The transmitter shall be switch on if possible, with out the modulation and the measurement receiver shall be tuned to the frequency of the transmitter under test.
5. The test antenna shall be raised and lowered through the Specified range of height until the measuring receiver detects a maximum signal level.
6. corrected for gain of the substitution antenna if necessary.
7. Put the EUT in X,Y,Z axis conditions, repeat above procedures

10.2Test SET-UP (Block Diagram of Configuration)

Same as Emission Bandwidth Measurement.

10.3Measurement Equipment Used:

Same as Emission Bandwidth Measurement.

10.4 Standard Requirements

(1) 4 W in the 26–27 MHz frequency band, except on channel frequency 27.255 MHz;

10.5 Test Results

Ambient temperature:23.5C° Relative humidity53% Test condition: Y axis(The worst condition)

Measurement Frequency (MHZ)	**Read at Measurement equipment (dBm)**	**Correction Factor(dBm)**	**Measurement Power(dBm)**	**limit Power(dBm)**
27.195	-35.22	22.3	-12.92	36

11 power capability

11.1 Standard Requirements

No CB, R/C, LPRS, FRS, MICS,MURS or WMTS unit shall incorporate provisions for increasing its transmitter power to any level in excess of the limits specified in § 95.639.

11.2 Compliance

All the components employed by the EUT have the power capability less than 4W either being assembled or individual

APPENDIX 1 PHOTOGRAPHS OF SETUP

RADIATED EMISSION TEST SETUP

APPENDIX 2 PHOTOGRAPHS OF EUT

TOP VIEW OF SAMPLE

BOTTOM VIEW OF SAMPLE

----End of the report----