

FCC PART 15B
MEASUREMENT AND TEST REPORT
FOR

Libang Digital Electronics Manufacturing Co., Ltd.
One Of 2 Industrial Road, Huaglian Second Development Zone, Leliu
Town, Shunde District, Foshan City, Guangdong Province, China

FCC ID: UYRRX19933

Report Concerns: Original Report	Equipment Type: Remote Control Helicopter (Rx)
Model:	<u>HF-102</u> <u>HF-102A</u> <u>HF-102B</u> <u>HF-101</u> <u>HF-101A</u> <u>HF-101B</u>
Report No.:	<u>STR07018036I</u>
Test/Witness Engineer:	<u>Innaz Lee</u>
Test Date:	<u>2007-01-29</u>
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Approved & Authorized By:	 _____ PSQ Manager / Jandy So

Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by SEM.Test Compliance Service Co., Ltd.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: Libang Digital Electronics Manufacturing Co., Ltd.
Address of applicant: One Of 2, Industrial Road, Huanglian Second Development Zone, Leliu town, Shunde District, Foshan City, Guangdong Province, China

Manufacturer: Libang Digital Electronics Manufacturing Co., Ltd.
Address of manufacturer: One Of 2, Industrial Road, Huanglian Second Development Zone, Leliu town, Shunde District, Foshan City, Guangdong Province, China

General Description of E.U.T

Items	Description
EUT Description:	Remote Control Helicopter (Rx)
Trade Name:	HAPPY FLY
Model No.:	HF-102 HF-102A HF-102B HF-101 HF-101A HF-101B
Rated Voltage:	DC 10-13V
Receiving Frequency:	72.810MHz
Power:	1.5W-2W
Antenna:	Permanent Antenna
Size:	38.0X10.0X22.0 cm
For more information refer to the circuit diagram form and the user's manual.	

The test data gathered are from a production sample, provided by the manufacturer. The Model HF-102 is choose to test since the other Models have different appearance only.

1.2 Test Standards

The following report of is prepared on behalf of Libang Digital Electronics Manufacturing Co., Ltd. in accordance with Part 2, Subpart J, and Part 15, Subparts B section 15.109 and 15.205 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart B, and section 15.109 and 15.205 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 immunity level. Test is carried with playing mode which worst case has been showed. Test setup was adapted accordingly in reference to the Operating Instructions. The Model HF-102 is choose to test since the other Models have different appearance only.

1.5 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

China National Accreditation Committee for Laboratories (CNAL) accredits the Laboratory for conformance to FCC standards, EMC international standards and EN standards. The Registration Number is L0579.

United States of American Federal Communications Commission (FCC), and the registration number is 274801(semi anechoic chamber).

Voluntary Control Council for Interference by Information Technology Equipment (VCCI), and the registration number is R-1966 (semi anechoic chamber).

Industry Canada (IC), and the registration number is IC4174.

All measurement required was performed at laboratory of Shenzhen Academy of Metrology and Quality Inspection, Bldg. Of Metrology & Quality Inspection, Longzhu Road, Nanshan District, Shenzhen, Guangdong, China.

The EUT exercise program used during radiated and conducted testing was designed to exercise the system components. The test software, provided by the customer, is started while the EUT is On to simulate the normal work.

1.6 Accessories Equipment List and Details

Manufacturer	Description	Model	Serial Number
/	/	/	/

1.7 EUT Cable List and Details

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

2. SUMMARY OF TEST RESULTS

Description of Test	Result
§15.205 Restricted Bands	Compliant
§15.109 Radiated Emission	Compliant

3. §15.205 - RESTRICTED BANDS

3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is $\pm 0.5\text{dB}$.

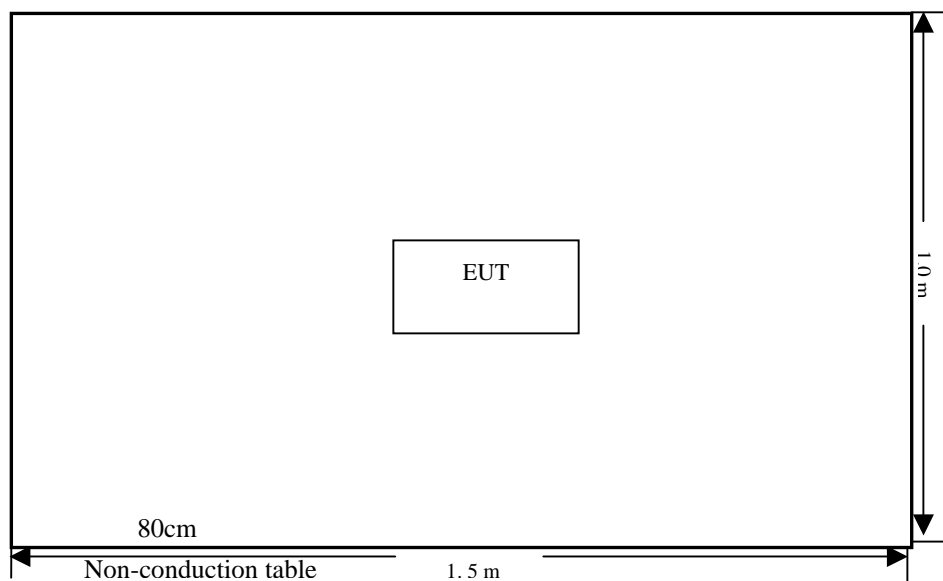
3.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESCS30	830245/009	2007-1-26	2008-1-25
Multi_Device Controller	ETS	2090	57230	2007-1-26	2008-1-25
Receiver Antenna	ETS	2175	57337	2007-1-26	2008-1-25
50 ohm Coaxial Cable	ETS	SUCOFLEX 104	25498514	2007-1-26	2008-1-25

3.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure.

3.4 Basic Test Setup Block Diagram



3.5 Environmental Conditions

Temperature:	26° C
Relative Humidity:	52%
ATM Pressure:	1011mbar

3.6 Summary of Test Results/Plots

The EUT produce low emission on the restricted band, it's deem to full fill the requirement of FCC 15.205.
Higher emission please refer to the Section 4 for more detail.

4. §15.205& §15.109 - 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.

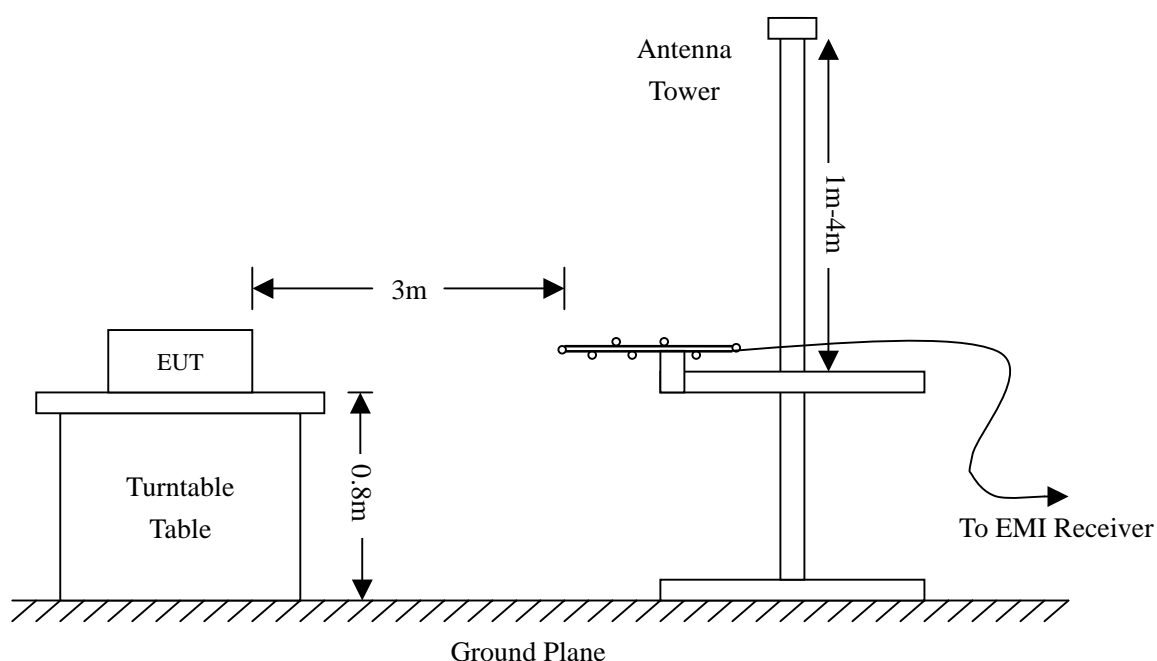
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Receiver Antenna	ETS	2175	57337	2007-1-26	2008-1-25
50 ohm Coaxial Cable	ETS	SUCOFLEX 104	25498514	2007-1-26	2008-1-25

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

4.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was the FCC Part 15.205 and FCC Part 15.109 Limit.



4.4 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:

$$\text{Corr. Ampl.} = \text{Indicated Reading} - \text{Corr. Factor}$$

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:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15B Limit}$$

4.5 Environmental Conditions

Temperature:	26° C
Relative Humidity:	52%
ATM Pressure:	1012 mbar

4.6 Summary of Test Results/Plots

According to the data in section 4.6, the EUT complied with the FCC 15 Class B standards, and had the worst margin is:

-9.40 dBμV at 416.20 MHz in the Vertical polarization, 30 MHz to 1 GHz, 3Meters

INDICATED		TABLE	ANTENNA		CORRECTED FACTOR	CORRECTED AMPLITUDE	FCC 15 CLASS B		DETECTOR
Freq. MHz	Ampl. dBμV/m	Angle Degree	Height Meter	Polar H/ V	dB	dBμV/m	Limit dBμV/m	Margin dB	PK/QP
416.20	43.4	66	1	V	6.76	36.6	46	-9.4	QP
95.52	50.9	135	1.2	V	16.86	34	43.5	-9.5	QP
60010	38.8	45	1	H	3.83	35	46	-11.0	PK
360.00	39.3	60	1.3	V	8.29	31	46	-15.0	PK
714.15	34.8	45	1.2	H	2.27	32.5	46	-13.5	PK
634.10	35.5	98	1.2	H	3.46	32	46	-14.0	PK
955.33	30.7	56	1.4	H	2.52	33.2	46	-12.8	PK
920.02	30.8	60	2	H	2.05	32.8	46	-13.2	PK
900.54	31.0	266	1	V	1.85	32.8	46	-13.2	PK
672.30	33.4	185	1.2	V	1.89	31.5	46	-14.5	PK
600.00	34.8	90	1.5	V	3.83	31	46	-15.0	PK
840.22	32.3	43	1	H	0.74	33	46	-13.0	PK

Plot of Radiation Emissions Test Data

Radiated Disturbance
EUT: Remote Control Helicopter (Rx)
M/N: HF-102
Operating Condition: Running
Test Specification: Horizontal & Vertical
Comment: DC 10-13V

