Shenzhen EBO Technology Co., Ltd.

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FCC REPORT

Applicant:	FEI JI TOYS FACTORY
Address of Applicant:	CHENGHAI DISTRICT,SHANTOU CITY,GUANGDONG PROVINCE,CHINA

Equipment Under Test (EUT)

Product Name:	THE TOY PLANE SERIES
Model No.:	8989-1
FCC ID:	2ACOT8989-1
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.227:2013
Date of sample receipt:	June 25, 2014
Date of Test:	July 1, 2014
Date of report issued:	July 1, 2014
Test Result :	PASS *

* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Kevin Yu
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the EBO product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.
This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of EBO International Electrical Approvals or testing done by EBO International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by EBO International Electrical Approvals in writing.
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2 Version

Version No.	Date	Description
00	*July 1, 2014*	*Original*

Prepared By:  ***Date:*** *July 1, 2014*

Project Engineer

Check By:  ***Date:*** *July 1, 2014*

Reviewer

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3 Contents

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4 Test Summary

Test Item	Section in CFR 47	Result
Antenna requirement	15.203	Pass
Field strength of the fundamental signal	15.227 (a)	Pass
Spurious emissions	15.227/15.209	Pass
20dB Bandwidth	ANSI C63.4/15.215	Pass

Pass: The EUT comply with the essential requirements in the standard.

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5 General Information

5.1 Client Information

Applicant:	FEI JI TOYS FACTORY
Address of Applicant:	CHENGHAI DISTRICT,SHANTOU CITY,GUANGDONG PROVINCE,CHINA
Manufacturer/Factory:	FEI JI TOYS FACTORY
Address of Manufacturer/Factory:	CHENGHAI DISTRICT,SHANTOU CITY,GUANGDONG PROVINCE,CHINA

5.2 General Description of E.U.T.

Product Name:	THE TOY PLANE SERIES
Model No.:	8989-1
Operation Frequency:	27.145MHz
Modulation type:	ASK
Antenna Type:	Integral
Antenna gain:	2dBi
Power supply:	DC3.0V (2x1.5V “AA” Size battery) Remark: During the testing, the battery is new battery.

5.3 E.U.T Operation mode

Operating Environment:	
Temperature:	24.0 °C
Humidity:	52 % RH
Atmospheric Pressure:	1008 mbar
Test mode:	
Transmitting mode:	Keep the EUT in continuously transmitting with modulation.

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5.4 Test Facility

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

● **CNAS —Registration No.: CNAS L5775**

CNAS has accredited Global United Technology Services Co., Ltd. To ISO/IEC 17025 General Requirements for the competence of testing and calibration laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

● **FCC —Registration No.: 600491**

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fuly described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files. Registration 600491, June 28, 2013.

● **Industry Canada (IC) —Registration No.: 9079A-2**

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 9079A-2, June 26, 2013.

5.5 Test Location

All tests were performed at:

Global United Technology Service Co., Ltd.
Address: 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen, China

5.6 Other Information Requested by the Customer

None.

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6 Test Instruments list

Radiated Emission:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.0(L)*6.0(W)* 6.0(H)	GTS250	Mar. 29 2013	Mar. 28 2015
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	ESU EMI Test Receiver	R&S	ESU26	GTS203	Jul. 02 2013	Jul. 02 2014
5	Loop Antenna	ZHINAN	ZN30900A	GTS220	Feb. 23 2014	Feb. 22 2015
4	BiConiLog Antenna	SCHWARZBECK	VULB9163	GTS214	Jun. 29 2014	Jun. 29 2015
5	Double -ridged waveguide horn	SCHWARZBECK	9120D	GTS208	Jun. 29 2014	Jun. 29 2015
6	RF Amplifier	HP	8347A	GTS204	Jun. 29 2014	Jun. 29 2015
7	Preamplifier	HP	8349B	GTS206	Jun. 29 2014	Jun. 29 2015
8	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
9	Coaxial cable	GTS	N/A	GTS210	Jun. 29 2014	Jun. 29 2015
10	Coaxial Cable	GTS	N/A	GTS211	Jun. 29 2014	Jun. 29 2015
11	Thermo meter	N/A	N/A	GTS256	Jun. 29 2014	Jun. 29 2015

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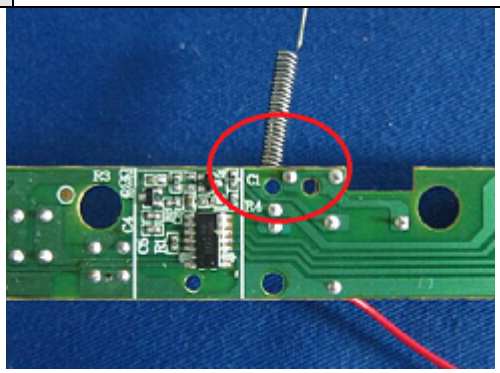
7 Test results and Measurement Data

7.1 Antenna requirement:

Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: *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, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.*	
E.U.T Antenna:	
	

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7.2 Radiated Emission

Test Requirement:	FCC Part15 C Section 15.227 and 15.209
Test Method:	ANSI C63.4: 2009
Test Frequency Range:	9KHz to 1000MHz
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)

Receiver setup:

Frequency	RBW	VBW	Detector
9KHz-30MHz	10KHz	30KHz	Quasi-peak
27.145MHz	100KHz	300KHz	Peak, Average
30MHz-1GHz	120KHz	300KHz	Quasi-peak

Limit:

(Field strength of the fundamental signal)

Frequency	Limit (dBuV/m @3m)	Value
26.96MHz~27.28MHz	80.0	Average detector
	100.0	Peak detector

Limit:

(Spurious Emissions)

Frequency	Limit (uV/m)	Value	Measurement Distance
0.009MHz-1.705MHz	2400/F(KHz)	Quasi-peak	300m
0.490MHz-1.705MHz	24000/F(KHz)	Quasi-peak	30m
1.705MHz-30MHz	30	Quasi-peak	30m
30MHz-88MHz	100	Quasi-peak	3m
88MHz-216MHz	150	Quasi-peak	
216MHz-960MHz	200	Quasi-peak	
960MHz-1GHz	500	Quasi-peak	

Test Procedure:

During the test, the new battery was used.

Below 30MHz:

1. For testing performed with the loop antenna, testing was performed in accordance to ANSI C63.4: 2009, section 8.2.1.

2. The center of the loop was positioned 1 m above the ground and positioned with its plane vertical at the specified distance from the EUT.

3. During testing the loop was rotated about its vertical axis for maximum response at each azimuth and also investigated with the loop positioned in the horizontal plane.

Above 30MHz:

1. The EUT is placed on a turntable, which is 0.8m above ground plane.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.

3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions.

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

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	5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. 6. Repeat above procedures until the measurements for all frequencies are complete. 7. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Measurement Data

7.2.1 Field Strength Of The Fundamental Signal

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization	Detector
27.145	67.19	14.59	0.51	32.04	50.25	100.00	-49.75	Horizontal	Peak
27.145	58.34	14.59	0.51	32.04	41.40	80.00	-38.60	Horizontal	Average
27.145	81.16	14.59	0.51	32.04	64.22	100.00	-35.78	Vertical	Peak
27.145	71.42	14.59	0.51	32.04	54.48	80.00	-25.52	Vertical	Average

7.2.2 Spurious Emissions

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization	Detector
26.96	23.52	14.60	0.51	32.04	6.59	69.54	-62.95	Horizontal	QP
27.28	25.64	14.57	0.51	32.05	8.67	69.54	-60.87	Horizontal	QP
54.25	38.74	15.05	0.81	31.95	22.65	40.00	-17.35	Horizontal	QP
108.53	39.62	14.39	1.27	31.80	23.48	43.50	-20.02	Horizontal	QP
325.82	39.70	15.39	2.49	32.09	25.49	46.00	-20.51	Horizontal	QP
651.87	39.22	20.65	3.92	31.12	32.67	46.00	-13.33	Horizontal	QP
789.71	39.44	21.92	4.92	31.31	34.97	46.00	-11.03	Horizontal	QP
26.96	31.92	14.60	0.51	32.04	14.99	69.54	-54.55	Vertical	QP
27.28	36.74	14.57	0.51	32.05	19.77	69.54	-49.77	Vertical	QP
54.25	49.90	15.05	0.81	31.95	33.81	40.00	-6.19	Vertical	QP
81.40	55.17	11.13	1.04	31.75	35.59	40.00	-4.41	Vertical	QP

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108.53	54.01	14.39	1.27	31.80	37.87	43.50	-5.63	Vertical	QP
434.45	51.24	17.54	3.02	31.77	40.03	46.00	-5.97	Vertical	QP
516.69	48.00	18.94	3.38	31.46	38.86	46.00	-7.14	Vertical	QP

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

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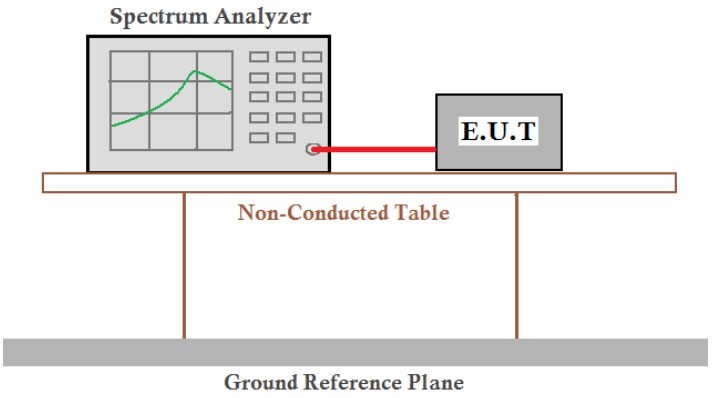
7.3 20dB Bandwidth

Test Requirement:	FCC Part15 C Section 15.215
Test Method:	ANSI C63.4:2009
Receiver setup:	RBW=10KHz, VBW=30KHz, detector: Peak
Limit:	Emissions from the intentional radiator shall be confined within the frequency range of 26.96MHz~27.28MHz.
Test Procedure:	1. According to the follow Test-setup, keep the relative position between the artificial antenna and the EUT. 2. Set the EUT to proper test channel. 3. Max hold the radiated emissions, mark the peak power frequency point and the -20dB upper and lower frequency points. 4. Read the frequency delta value between the -20dB upper and lower frequency points.
Test setup:	
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

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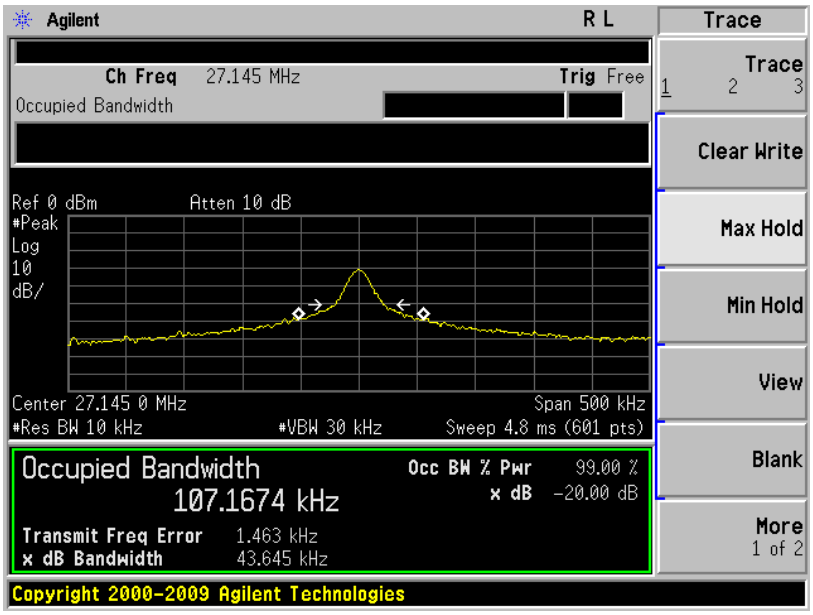
Test plot as follows:



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