TEST REPORT

Applicant	JINXINGDA PLASTIC TOYS FACTORY
Address	CHENGHAI DISTRICT,SHANTOU CITY,GUANGDONG PROVINCE,CHINA

Manufacturer or Supplier	JINXINGDA PLASTIC TOYS FACTORY
Address	CHENGHAI DISTRICT,SHANTOU CITY,GUANGDONG PROVINCE,CHINA
Product	R/C HELICOPTER SERIES
Brand Name	N/A
Model	331
Additional Model & Model Difference	See Item 2.1
Date of tests	Jul. 25 ~ 29, 2011

☒ **FCC Part 15, Subpart C:2009**
☒ **ANSI C63.4 : 2003**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Reviewed by Jade Yang Supervisor / EMC Department	Approved by Sam Tung Manager / EMC Department
Jade Yang	Sam Tung
	Date: Aug. 3, 2011

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RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
Original release	N/A	Aug. 3, 2011

1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart B			
Standard Section	**Test Item**	**Result**	**Remark**
15.207	Conducted Emission Test	N/A	-
15.209	Radiated Emission Test (30MHz ~ 1GHz)	PASS	Meets Class B Limit Minimum passing margin is –0.91 dB at 187.02 MHz
15.227	26dB Bandwidth	PASS	-
	Duty Cycle	PASS	-

Note : 1. The maximum emission levels were compared with the requirements in section 15.209, 15.227 of FCC Part 15 regulation.

1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	150kHz ~ 30MHz	2.56 dB
Radiated emissions	30MHz ~ 1GHz	3.58 dB

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	R/C HELICOPTER SERIES
MODEL NO.	331、332、333、335、337、338、339、340、341、342、343、345、346、347、348、349、350、351、352、353、354、355、356、357、358、359、360、361、362、363、364、365、366、367、368、369、370、371、372、373、374、375、376、377、378、379、380、381、382、383、384、385、386、387、388、389、390、391、392、393、506、ODY-T6、ODY-333、AG31333、AG31338、6182-9E、6182-9EB、5852-7C BES
POWER SUPPLY	DC 9V
DATA CABLE SUPPLIED	N/A
OPERATING FREQUENCY	27.145MHz

NOTE:

1. The EUT is a wireless remote.
2. All model for remote are identical except model number.
3. For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.2 DESCRIPTION OF TEST MODES

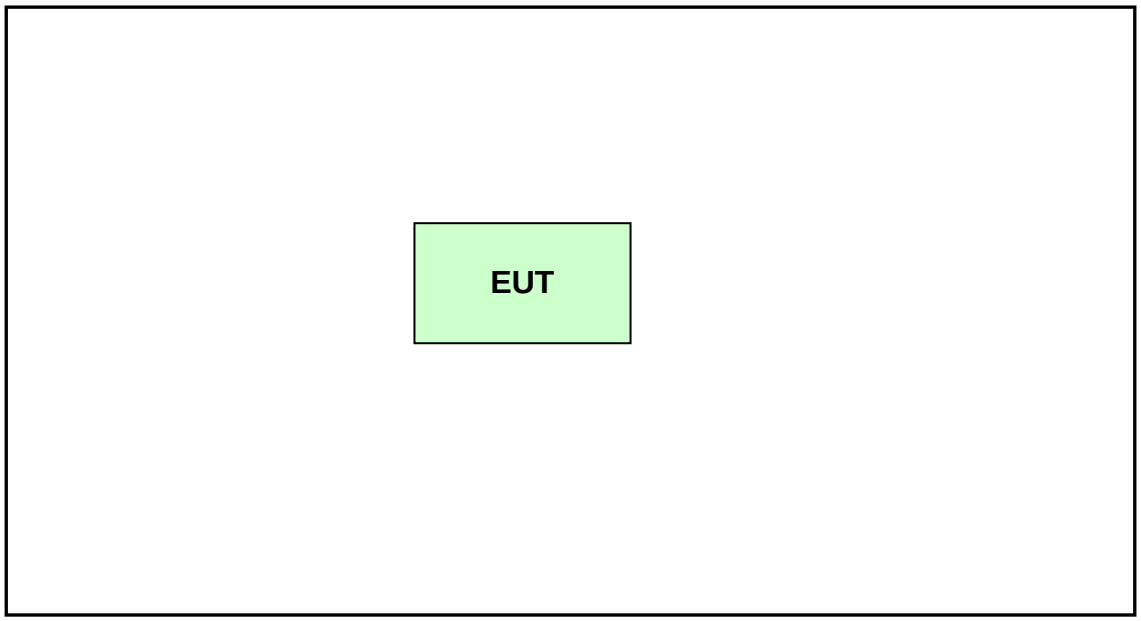
The EUT was tested under the following modes, the final worst mode were marked in boldface and recorded in this report.

TXMode

2.3 DESCRIPTION OF SUPPORT UNITS

N/A.

TEST CONFIGURATION



3 EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

The EUT'S power provide by battery. no data about this item test.

3.2 RADIATED EMISSION MEASUREMENT

Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.227]:

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [Peak] [μV/m]	Field Strength of Fundamental Emission [Average] [μV/m]
26.96 – 27.28	100,000 (100 dBμV/m)	10,000 (80 dBμV/m)

Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range [MHz]	Quasi-Peak Limits [μV/m]
1.705-30	300
30-88	100
88-216	150
216-960	200
Above960	500

Note: (1) The lower limit shall apply at the transition frequencies.
(2) Emission level (dBuV/m) = 20 log Emission level (uV/m).
(3) All emanation from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

3.2.1 TEST INSTRUMENTS

Frequency Range 30MHz~1GHz

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer	E7405A	MY45118807	May 25,11	May 25,12
Spectrum Analyzer	E4446A	MY46180622	Apr. 25,11	Apr. 25,12
EMI Test Receiver	ESVS10	841431/004	May 25,11	May 25,12
Bilog Antenna	CBL 6111D	25758	Nov.22,10	Nov.22,11
10m Semi-anechoic Chamber	21.4m*12.1m*8.8m	NSEMC006	May 2,11	May 2,12
RF Cable	IMRO-400	10m Cable 1#10m	May 2,11	May 2,12
RF Cable	IMRO-400	10m Cable 2#3m	May 2,11	May 2,12
Signal Amplifier	8447D	2944A11174	May 2,11	May 2,12

NOTE: 1. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to CEPREI/CHINA and NIM/CHINA.
2. The test was performed in Chamber 10m.

3.2.2 TEST PROCEDURE

The basic test procedure was in accordance with ANSI C63.4 (section 12).

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meters Semi-anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using new battery. The turntable was rotated to maximize the emission level.

g. For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.

NOTE:

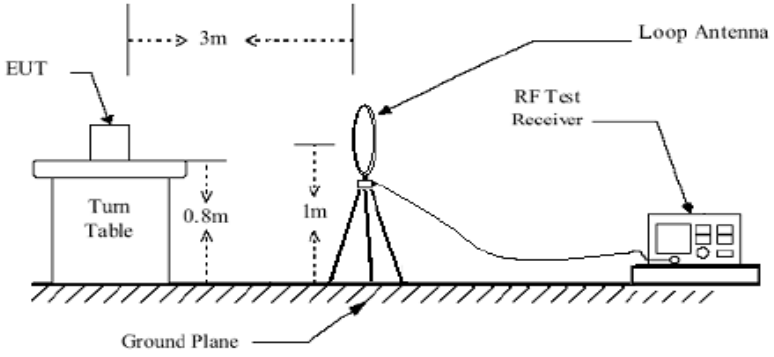
1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
4. Margin value = Emission level – Limit value.
5. Fundamental AV value =PK value +duty cycle.

3.2.3 DEVIATION FROM TEST STANDARD

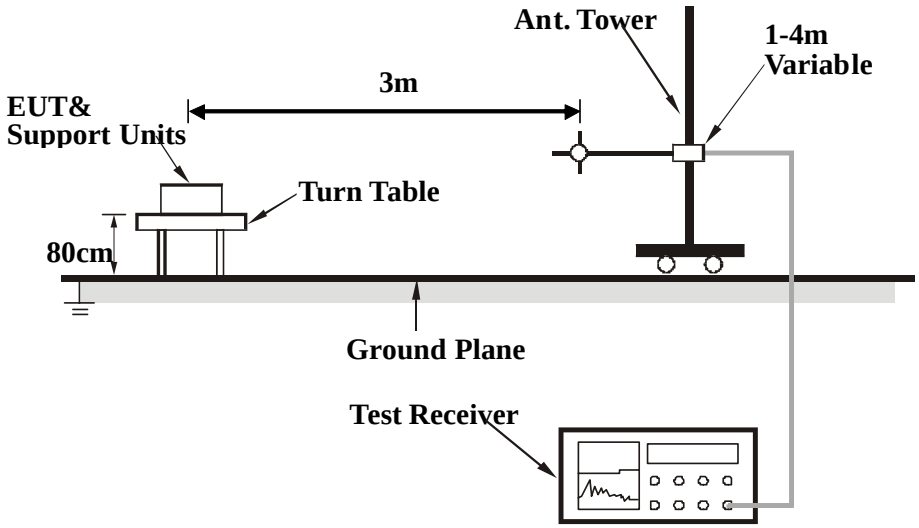
No deviation

3.2.4 TEST SETUP

Below 30MHz



About 30MHz~1GHz



3.2.5 EUT OPERATING CONDITIONS

Same as item 4.1.6.

3.2.6 TEST RESULT OF FUNDAMENTAL

Detection mode: Peak

Frequency (MHz)	antenna orientation (H/V) and table degree	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
27.145	0°/90°	18.73	75.62	100	-24.38

Detection mode: # Average

Frequency (MHz)	antenna orientation (H/V) and table degree	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
27.145	0°/90°	18.73	**70.32	80	-9.68

For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.
**Duty Cycle Correction = 20Log(0.544) =-5.3dB

Note: Field Strength includes Antenna Factor and Cable Loss.

3.2.7 TEST RESULTS OF OTHER

TEST MODE	TX Mode	**FREQUENCY RANGE**	30-1000MHz
INPUT POWER	9Vac	**DETECTOR FUNCTION & RESOLUTION BANDWIDTH**	Quasi-Peak, 120kHz
ENVIRONMENTAL CONDITIONS	23 deg. C, 72% RH, 1018 hPa	**TESTED BY**: Jade	

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	51.29	31.46 QP	40.00	-8.54	200	290	23.94	7.52
2	83.22	37.24 QP	40.00	-2.76	320	324	28.05	9.19
3	112.24	38.05 QP	43.50	-5.45	102	344	25.93	12.12
4	132.73	38.62 QP	43.50	-4.88	225	301	25.14	13.48
5	165.46	40.92 QP	43.50	-2.58	104	319	28.91	12.01
6	**187.02**	**42.59 QP**	**43.50**	**-0.91**	**374**	**258**	**32.00**	**10.59**

REMARKS: The emission levels of other frequencies were very low against the limit.

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	54.29	29.69 QP	40.00	-10.31	105	166	22.17	7.52
2	78.44	37.26 QP	40.00	-2.74	110	205	29.16	8.10
3	83.22	33.81 QP	40.00	-6.19	105	76	24.62	9.19
4	112.24	31.23 QP	43.50	-12.27	100	89	19.11	12.12
5	132.73	29.97 QP	43.50	-13.53	105	57	16.49	13.48
6	165.46	30.16 QP	43.50	-13.34	102	19	18.15	12.01

REMARKS: The emission levels of other frequencies were very low against the limit.

3.3 26DB BANDWIDTH OF FUNDAMENTAL EMISSION

3.3.1 LIMITS FOR 26DB BANDWIDTH OF FUNDAMENTAL EMISSION:

FREQUENCY (MHz)	26dB Bandwidth [KHz]	Limits [MHz]
27.145	75.4kHz	within 26.96 – 27.28

3.3.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer	FSL3	101507	May 25,11	May 25,12

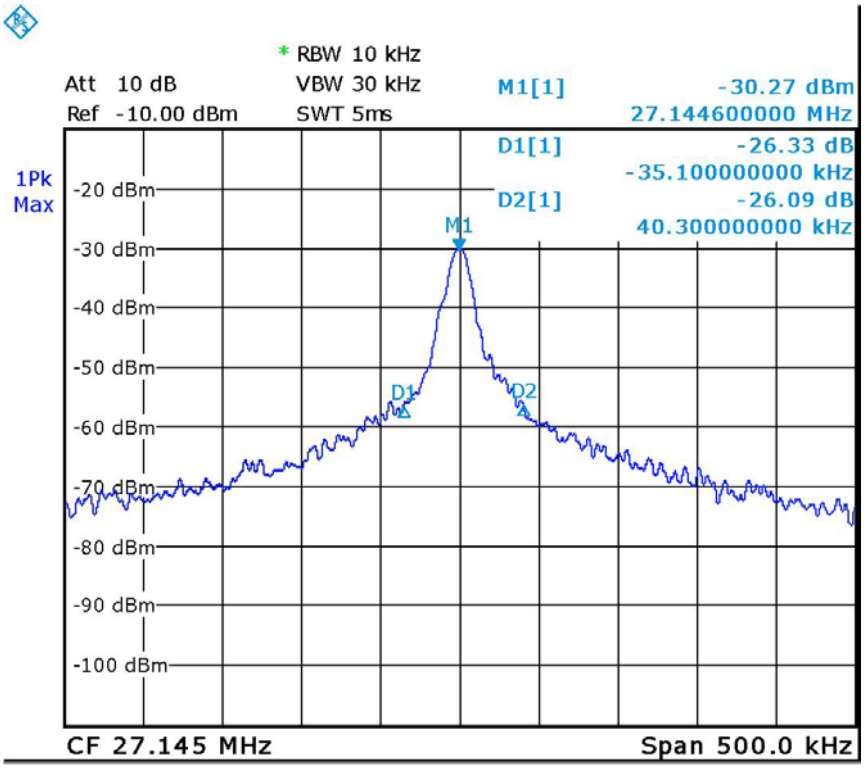
NOTE: 1. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to CEPREI/CHINA and NIM/CHINA.
2. The test was performed in Shielded Room 20.

3.3.3 TEST PROCEDURE

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

3.3.4 TEST RESULTS

Test Result of 26dB Bandwidth of Fundamental Emission: PASS



3.4 DUTY CYCLE CORRECTION DURING 100MSEC:

Each function key sends a different series of characters, but each packet period(100msec) never exceeds a series of 3 long (3.1msec) , 23 short(1.0msec) pulses and 13 middle (1.7 msec).
Assuming any combination of short or long pulses may be obtained due to encoding the worst case transmit duty cycle would be considered (3x3.1msec) +(23x1.0msec)+(13x1.7) per 100msec=54.4% duty cycle. Figure A and E show the characteristics of the pulse train for one of these functions.

Remarks:

Duty Cycle Correction = 20Log(0.544) =-5.3dB

The following figures [Figure A to Figure E] show the characteristics of the pulse train for one of these functions.

3.4.1 TEST RESULTS

Figure A

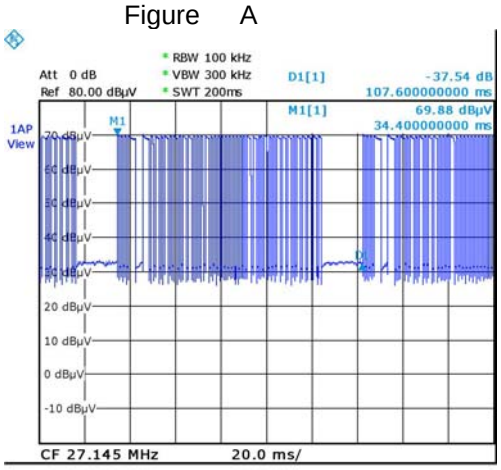


Figure B

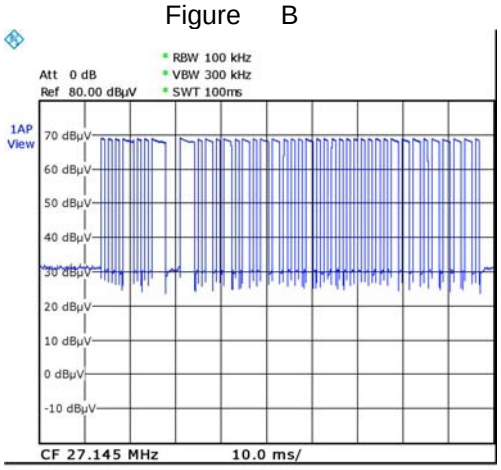


Figure C

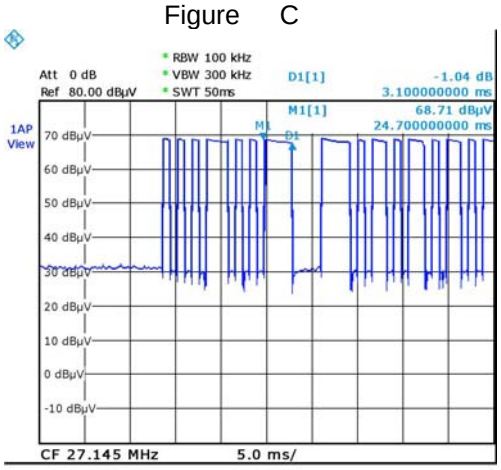


Figure D

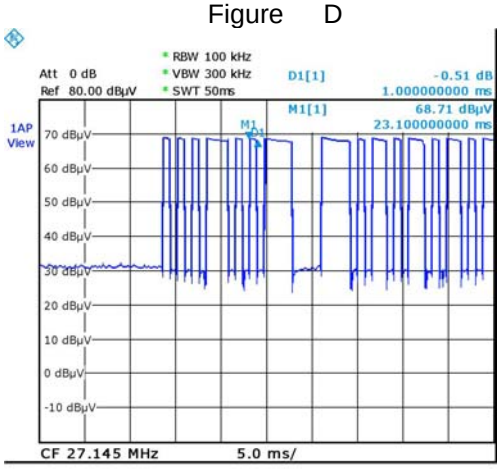
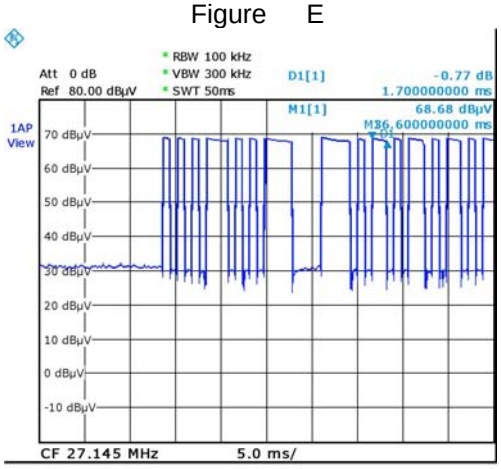


Figure E



4 PHOTOGRAPHS OF TEST CONFIGURATION

Please see test setup photo file.

5 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications were made to the EUT by the lab during the test.

---END---