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FEDERAL COMMUNICATIONS COMMISSION

Registration number: 556682

Report No.: SZEMO10060326301

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1 Cover Page

FCC REPORT

Application No. : SZEMO100603263ET(SGS SZ NO.: SZTYR100600741EM)
Applicant: EDU Science Co., Ltd.
Product Name: RADIO CONTROLLED RATTLE SNAKE
Operation Frequency: 49.860MHz
FCC ID: Q6N322ELB
Item Number: EL322/38012
Standards: FCC PART 15, SUBPART-C Section 15.235
Date of Receipt 2010-06-02
Date of Test 2010-06-03 to 2010-09-14
Date of Issue 2010-09-14

Test Result :	PASS *
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* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Jack Zhang
Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. 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 SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing. The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

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Test Summary

Test Item	Section in CFR 47	Result
Radiated Emission (30MHz to 1GHz)	Section 15.235	Pass
Occupied Bandwidth	Section 15.235	Pass

Remark: Pass: The EUT complies with the essential requirements in the standard.

Fail: The EUT does not comply with the essential requirements in the standard.



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3 General Information

3.1 Client Information

Applicant:	EDU Science Co., Ltd.
Address of Applicant:	Suite 701-703, Wing On Plaza T.S.T. East, Kowloon, Hong Kong

3.2 General Description of E.U.T.

Product Name:	RADIO CONTROLLED RATTLE SNAKE
Trade Name:	N/A
Item No.:	EL322/38012
Operation Frequency:	49.860MHz
Power supply:	9.0V DC (1*9.0V"6F22" Size Battery) for Tx
Country of Origin:	China
Power Cord:	N/A

3.3 E.U.T. Environment and test modes

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



3.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch E&E Lab

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China
518057

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No test was sub-contracted.

3.5 Other Information Requested by the Customer

None.

3.6 Test Facility

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

- **CNAS (No. CNAS L2929)**

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 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.

- **VCCI**

The 3m Semi-anechoic chamber and Shielded Room (7.5m x 4.0m x 3.0m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-2197 and C-2383 respectively.

Date of Registration: September 29, 2008. Valid until September 28, 2011.

- **FCC – Registration No.: 556682**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 556682, June 27, 2008.

- **Industry Canada (IC)**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1.



3.7 Test Instruments List

RE in Chamber						
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal.Date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	2010-05-17	2011-05-17
2	EMI Test Receiver	Rohde & Schwarz	ESIB26	SEL0023	2010-03-19	2011-03-19
3	EMI Test software	AUDIX	E3	SEL0050	N/A	N/A
4	Coaxial cable	SGS	N/A	SEL0028	2008-06-18	2011-06-18
5	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0015	2009-11-05	2010-11-05
6	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	2010-06-02	2011-06-02
7	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0006	2009-11-10	2010-11-10
8	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEL0076	2009-11-10	2010-11-10
9	Pre-amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	SEL0080	2010-05-04	2011-05-04
10	Band filter	Amindeon	Asi 3314	SEL0094	2010-06-02	2011-06-01
11	Active Loop Antenna	Beijing Daze	ZN30900A	SEL0097	2010-05-10	2011-05-10



4 Test Result & Measurement Data

4.1 Antenna requirement

Standard requirement:	FCC Part15-C Section 15.203
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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.

4.2 Radiated Emissions

Test Requirement:	FCC Part15-C Section 15.235
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Test Method:	ANSI C63.4: 2009
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Measurement Distance:	3m (Semi-Anechoic Chamber)
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Requirements:	Fundamental carrier signal level should not exceed 80dB μ V/m at 3m distance
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	Out of band emissions shall not exceed:
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	40.0 dB μ V/m between 30MHz & 88MHz
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	43.5 dB μ V/m between 88MHz & 216MHz
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	46.0 dB μ V/m between 216MHz & 960MHz
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	54.0 dB μ V/m above 960MHz
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Scanning Frequency range for spurious emission test :	30MHz to 1000MHz: Setting: RBW=120kHz & VBW=300kHz
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Test Procedure:	<p>The equipment under test (EUT) was placed at the middle of the 80 cm height turntable, and the turntable is 3 meters far from the measuring antenna. During the testing, the EUT was operated standalone and arranged for maximum emissions. The EUT was tested in three orthogonal planes.</p> <p>The measurement was performed with the EUT rotated 360 °, the antenna height scanned between 1m and 4m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations. Repeat the measurement steps until the maximum emissions were obtained.</p>
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Fundamental Signal Emission:

Test Frequency (MHz)	Peak Detection (dB μ V/m)		Limit (dB μ V/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
49.860	64.74	46.25	100.0	35.26	53.75

Test Frequency (MHz)	Average Detection (dB μ V/m)		Limit (dB μ V/m)	Margin (dB)	
	Vertical	Horizontal		Vertical	Horizontal
49.860	61.74	42.75	80.0	18.26	37.25

Spurious Emission Test:

Vertical Antenna Polarisation:

Frequency of Emission (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamplifier Factor (dB)	Read Level (dB μ V)	Quasi-Peak Result (dB μ V/m)	Limit (dB μ V/m)	Over Limit (dB)
97.900	1.18	9.02	27.89	56.00	38.31	43.50	-5.19
148.340	1.32	8.86	27.47	39.05	21.76	43.50	-21.74
249.220	1.67	12.27	26.92	43.52	30.54	46.00	-15.46
296.750	1.88	13.76	26.73	41.39	30.30	46.00	-15.70
583.870	2.69	19.33	27.63	33.12	27.51	46.00	-18.49

Horizontal Antenna Polarisation:

Frequency of Emission (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamplifier Factor (dB)	Read Level (dB μ V)	Quasi-Peak Result (dB μ V/m)	Limit (dB μ V/m)	Over Limit (dB)
97.900	1.180	9.020	27.890	40.460	22.770	43.500	-20.730
249.220	1.670	12.270	26.920	38.190	25.210	46.000	-20.790
296.750	1.880	13.760	26.730	39.320	28.230	46.000	-17.770
347.190	2.050	15.340	27.070	34.060	24.380	46.000	-21.620
634.310	2.770	20.540	27.490	41.490	37.310	46.000	-8.690

Remark:

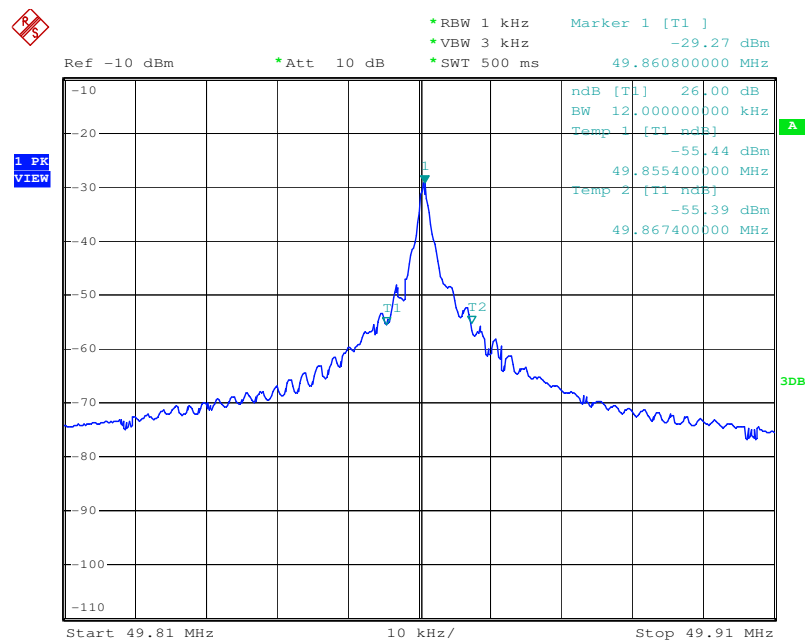
According to Part-15.35 (b) when average radiated emission measurements are specified in the regulations, including emission measurements below 1000 MHz, there is also a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules, e.g., see Section 15.255.

Test Results: The EUT complies with the requirements FCC Part 15-C Section 15.235

4.3 Occupied Bandwidth

Test Requirement:	FCC Part15-C Section 15.235
Test Method:	ANSI C63.4: 2009
Frequency range:	Operation within the band 49.82 – 49.90 MHz
Requirements:	The field strength of any emissions appearing between the band edges and up to 10 kHz above and below the band edges shall be attenuated at least 26 dB below the level of the un-modulated carrier or to the general limits in Section 15.209, whichever permits the higher emission levels. The field strength of any emissions removed by more than 10 kHz from the band edges shall not exceed the general radiated emission limits in Section 15.209
Method of measurement:	The fundamental signal from the EUT was measured by the spectrum analyzer with peak detector.

The graph as below: represents the emissions take for this device.



The results: The unit does meet the FCC Part 15 C Section 15.235 requirements.