SGS-CSTC Standards Technical Services Co., Ltd.

1/F., Building No. 1, Agriculture Machinery
Materials Co., Wushan Road, Shipai,
Tianhe District, Guangzhou, China
Telephone: +86 (0) 20 3848 1001
Fax: +86 (0) 20 3848 1006
Email: sgs_internet_operations@sgs.com

FCC Test Report

Application No.: GELMO050100258RF
Applicant: EDU-SCIENCE (HK) LIMITED
FCC ID: Q6N139ELB

Equipment Under Test (EUT):

EUT Name: Wireless Ultralite
Item No.: EL137
Serial No.: Not supplied by client
Standards: FCC PART 15 SUBPART B:2004
Date of Receipt: 21 April 2005
Date of Test: 22 to 27 April 2005
Date of Issue: 29 April 2005

Test Result :	**PASS***

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

Authorized Signature:

Kent Hsu
Laboratory Manager

2 Test Summary

Test	Test Requirement	Test Method	Class / Severity	Result
Radiated Emission (30MHz to 1GHz)	FCC PART 15, SUBPART B: 2004	ANSI C63.4:2003	Class B	PASS
Conducted Emission (150KHz to 30MHz)	FCC PART 15, SUBPART B: 2004	ANSI C63.4:2003	Class B	PASS

3 Contents

4 General Information

4.1 Client Information

Applicant:	EDU-SCIENCE (HK) LIMITED
Address of Applicant:	Suite 701-703 Wing On Plaza TST East, Kowloon Hong Kong.

4.2 General Description of E.U.T.

EUT Name:	Wireless Ultralite (Receiver Part)
Item No.:	EL137
Serial No.:	Not supplied by client

4.3 Details of E.U.T.

Power Supply:	9V DC (1 x '6F22' Size Battery) for Tx Inside Rechargeable Battery for Rx. Charger Part: Supplied by AC/DC Adapter which provided by the applicant. Input: 120Vac/60Hz; Output: DC 13.8V 8W.
Power Cord:	2 wires, 1.8m unshielding DC output cable.
Signal Cable:	None.

4.4 Description of Support Units

The EUT was tested as an independent unit: a receiver for 49.860MHz radio controller.

4.5 Standards Applicable for Testing

The customer requested FCC tests for a Wireless Ultralite (Receiver).
The standard used was FCC PART 15, SUBPART B, CLASS B (2004)

4.6 Test Location

All tests were performed at: -
SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory, 1/F, Building No. 1, Agriculture Machinery Materials Company Warehouse Ltd., Wushan Road Shipai, Tianhe District, Guangzhou, China. P.C. 510630.

Tel: +86 20 3848 1001 Fax: +86 20 3848 1006

No tests were sub-contracted.

4.7 Test Facility

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

- **NVLAP – Lab Code: 200611-0**
  SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is recognized under the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0. Effective through December 31, 2004.
- **ACA**
  SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.
- **VCCI**
  The 3m Semi-anechoic chamber and Shielded Room (11.5m x 4m x 4m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-1599 and C-1706 respectively.
  Date of Registration: February 28, 2003. Valid until May 30, 2005
- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**
  Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.
- **CNAL – LAB Code: L0141**
  SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAL/AC01:2002 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of Testing Laboratories.
- **FCC – Registration No.: 282399**
  SGS-CSTC Standards Technical Services Co., Ltd., 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 282399, May 31, 2002. With the above and NVLAP's accreditation, SGS-CSTC is an authorised test laboratory for the DoC process.
  SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAL/AC01:2002 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:1999 General Requirements) for the Competence of Testing Laboratories.
- **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.: 5169.

4.8 Deviation from Standards

None.

4.9 Abnormalities from Standard Conditions

None.

5 Equipments Used during Test

RE in Chamber						
No:	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date (dd-mm-yy)**	**Cal.Due date (dd-mm-yy)**
1	3m Semi- Anechoic Chamber	Frankonia	N/A	N/A	31-01-2005	30-01-2006
2	EMI Test Receiver	Rohde & Schwarz	ESCS30	100085	10-10-2004	09-10-2005
3	EMI Test Software	Rohde & Schwarz	ES-K1	N/A	N/A	N/A
4	Coaxial cable	SGS	N/A	N/A	05-12-2003	04-12-2005
5	Bilog Type Antenna	Schaffner -Chase	CBL6143	5070	17-01-2005	16-01-2006
6	Horn Antenna	Rohde & Schwarz	HF906	100095	02-04-2004	01-04-2005
7	Spectrum Analyzer	Rohde & Schwarz	FSP30	100324	29-10-2004	28-10-2005
8	0.1-1300 MHz Pre-Amplifier	HP	8447D OPT 010	2944A06252	31-05-2004	30-05-2005
9	1-26.5 GHz Pre-Amplifier	Agilent	8449B	3008A01649	26-01-2004	25-01-2006

Conducted Emission						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date (d-m-y)**	Due date **(d-m-y)**
1	Shielding Room	Frankonia	12 x 4 x 4 m^3	EMC0103	N/A	N/A
2	LISN	Schaffner Chase	MNZ050D11	1421	05-11-2004	04-11-2005
3	EMI Test Receiver	Rohde & Schwarz	ESCS30	100086	10-12-2004	09-12-2005
4	Coaxial Cable	SGS	2m	EMC0107	02-06-2004	01-06-2005

General used equipment						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date (dd-mm-yy)**	**Cal.Due date (dd-mm-yy)**
1	Temperature, Humidity & Barometer	OREGON/VAISALA/ TESTO/ANDTEK	BA-888/ HM34C/605-H1/ HT-6290	EMC0001 to EMC0004	02-08-2004	01-08-2005
2	DMM	Fluke	73	70681569 or 70671122	10-09-2004	09-09-2005

6 Test Results

6.1 Conducted Emissions Mains Terminals, 150kHz to 30MHz

Test Requirement:	FCC Part15 B
Test Method:	ANSI C63.4
Test Date:	22 April 2005
Frequency Range:	150KHz to 30MHz
Class / Severity:	Class B
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth)
	Quasi-Peak if maximised peak within 6dB of Quasi-Peak limit

6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 24.0 °C Humidity: 52% RH Atmospheric Pressure: 1018 Mbar

EUT Operation: Test the EUT in Charging mode.

6.1.2 Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

The following Quasi-Peak and Average measurements were performed on the EUT on 20 July 2004:

Freq. MHz	Line	QP Level dBuV	Limit dBuV	Margin dB	AV Level dBuV	Limit dBuV	Margin dB
0.157	Live	1.2	65.6	64.4	-0.2	55.6	55.8
0.653	Live	1.3	56.0	54.7	-0.1	46.0	46.1
1.499	Live	0.8	56.0	55.2	-0.3	46.0	46.3
7.769	Live	-0.4	60.0	60.4	-0.9	50.0	50.9
15.693	Live	0.7	60.0	59.3	0.1	50.0	49.9
17.578	Live	0.8	60.0	59.2	0.2	50.0	49.8
0.157	Neutral	0.8	65.6	64.8	-0.2	55.6	55.8
0.653	Neutral	0.9	56.0	55.1	-0.3	46.0	46.3
1.499	Neutral	0.5	56.0	55.5	-0.5	46.0	46.5
7.769	Neutral	-0.8	60.0	60.8	-1.2	50.0	51.2
15.693	Neutral	0.3	60.0	59.7	-0.3	50.0	50.3
17.578	Neutral	0.4	60.0	59.6	-0.2	50.0	50.2

6.2 Radiated Emissions, 30MHz to 1GHz

Test Requirement:	FCC Part15 B
Test Method:	ANSI C63.4
Test Date:	24 April 2005
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Class:	Class B
Limit:	40.0 dBμV/m between 30MHz & 88MHz
	43.5 dBμV/m between 88MHz & 216MHz
	46.0 dBμV/m between 216MHz & 960MHz
	54.0 dBμV/m zbove 960MHz
Detector:	Peak for pre-scan (120kHz resolution bandwidth)
	Quasi-Peak if maximised peak within 6dB of limit

6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 24.0 °C Humidity: 56% RH Atmospheric Pressure: 1009 mbar

EUT Operation:
1. Test the EUT in Receiving mode.
2. Test the EUT in Charging mode.

6.2.2 Measurement Data

An initial pre-scan was performed in the 3m chamber using the spectrum analyser in peak detection mode. The EUT was measured by Bilog antenna with 2 orthogonal polarities and peak emissions from the EUT were detected within 6dB of the class B limit line.

The following quasi-peak measurements were performed on the EUT:

1. Receiving mode:

Vertical:

Frequency (MHz)	Transducer (dB)	Receiver QP Reading (dBμ V)	Receiver QP Level (dBμ V/m)	Limit (dBμ V/m)	Margin (dB)	Antenna High(m)	Turntable Angle(°)
223.500	13.0	14.8	27.8	46.0	18.2	1.00	195
235.938	13.5	12.8	26.3	46.0	19.7	1.00	327
579.500	21.5	7.1	28.6	46.0	17.4	1.00	341
621.750	22.4	0.2	22.6	46.0	23.4	1.00	174
639.750	22.4	1.2	23.6	46.0	22.4	1.00	52
849.875	24.1	1.3	25.4	46.0	20.6	1.00	118

Horizontal:

Frequency (MHz)	Transducer (dB)	Receiver QP Reading (dBμ V)	Receiver QP Level (dBμ V/m)	Limit (dBμ V/m)	Margin (dB)	Antenna High(m)	Turntable Angle(°)
620.938	12.7	8.8	21.5	46.0	24.5	1.26	185
735.125	22.8	0.8	23.6	46.0	22.4	3.21	328
800.045	23.8	0.4	24.2	46.0	21.8	1.56	146
872.650	24.2	1.1	25.3	46.0	20.7	2.54	119
912.784	24.8	1.9	26.7	46.0	19.3	3.98	384
934.875	25.7	2.8	28.5	46.0	17.5	2.85	184

1. Transducer = Antenna Factor + Cable Loss.

2. 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

2. Charging mode:

Vertical:

Frequency (MHz)	Transducer (dB)	Receiver QP Reading (dBμ V)	Receiver QP Level (dBμ V/m)	Limit (dBμ V/m)	Margin (dB)	Antenna High(m)	Turntable Angle(°)
223.500	13.0	14.8	27.8	46.0	18.2	1.00	195
235.938	13.5	12.8	26.3	46.0	19.7	1.00	327
579.500	21.5	7.1	28.6	46.0	17.4	1.00	341
621.750	22.4	0.2	22.6	46.0	23.4	1.00	174
639.750	22.4	1.2	23.6	46.0	22.4	1.00	52
849.875	24.1	1.3	25.4	46.0	20.6	1.00	118

Horizontal:

Frequency (MHz)	Transducer (dB)	Receiver QP Reading (dBμ V)	Receiver QP Level (dBμ V/m)	Limit (dBμ V/m)	Margin (dB)	Antenna High(m)	Turntable Angle(°)
43.438	14.7	12.4	27.1	40.0	12.9	1.01	121
450.000	18.5	12.7	31.2	47.0	15.8	1.02	352
550.000	20.2	13.6	33.8	47.0	13.2	3.46	91
650.000	22.4	11.0	33.4	47.0	13.6	1.40	5
800.000	23.8	10.8	34.6	47.0	12.4	1.19	292
884.710	24.3	12.4	36.7	47.0	10.3	1.05	345

1. Transducer = Antenna Factor + Cable Loss.

2. 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.