

FCC REPORT

Applicant: MegaGain International Ltd.
Address of Applicant: Rm 1908 Greenfield Tower, Concordia Plaza, 1 Science Museum Road, T.S.T. East, Kowloon, H.K.
Equipment Under Test (EUT)
Product Name: Cars 2 RC Finn
Model No.: 1101-TDS02835(3124-W)
FCC ID: SIP-3124-W
Applicable standards: FCC CFR Title 47 Part 15 Subpart C Section 15.227:2010
Date of sample receipt: 07 Jun., 2011
Date of Test: 07-08 Jun., 2011
Date of report issued: 09 Jun., 2011
Test Result : PASS *

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

Authorized Signature:



Robinson Lo
Laboratory Manager



2 Version

Version No.	Date	Description
00	2011-06-09	Original

Prepared By:

Collin.He

Date:

2011-06-09

Project Engineer

Check By:

Hans.Hu

Date:

2011-06-09

Reviewer



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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 C63.4/15.227	PASS

Remark:

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

5 General Information

5.1 Client Information

Applicant:	MegaGain International Ltd.
Address of Applicant:	Rm 1908 Greenfield Tower, Concordia Plaza, 1 Science Museum Road, T.S.T. East, Kowloon, H.K.

5.2 General Description of E.U.T.

Product Name:	Cars 2 RC Finn
Model No.:	1101-TDS02835(3124-W)
Operation Frequency:	27.145MHz
Modulation type:	ASK
Antenna Type:	Integral
Power supply:	DC 9V("6F22" size 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 transmitting mode

5.4 Test Facility

<p>The test facility is recognized, certified, or accredited by the following organizations:</p> <ul style="list-style-type: none"> ● FCC —Registration No.: 600491 Global United Technology 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 files. Registration 600491, July 20, 2010. ● Industry Canada (IC) 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-1.

5.5 Test Location

All tests were performed at:
Global United Technology Services Co., Ltd. Address: 2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District, Shenzhen, China Tel: 0755-27798480 Fax: 0755-27798960

5.6 Other Information Requested by the Customer

None.


5.7 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	9.2(L)*6.2(W)* 6.4(H)	GTS201	Mar. 30 2011	Mar. 30 2012
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS202	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	Sep. 10 2010	Sep. 10 2011
4	Loop Antenna	Beijing Daze	ZN30900A	GTS206	Aug. 03 2010	Aug. 03 2011
5	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS204	Feb. 26 2011	Feb. 26 2012
6	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	9120D-829	GTS205	June 30 2010	June 30 2011
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS400	Apr. 01 2011	Apr. 01 2012
9	Coaxial Cable	GTS	N/A	GTS401	Apr. 01 2011	Apr. 01 2012
10	Coaxial cable	GTS	N/A	GTS402	Apr. 01 2011	Apr. 01 2012
11	Coaxial Cable	GTS	N/A	GTS407	Apr. 01 2011	Apr. 01 2012
12	Coaxial Cable	GTS	N/A	GTS408	Apr. 01 2011	Apr. 01 2012
13	Amplifier(10KHz-5GHz)	Sonnoma Instrument	305-1052	GTS210	Aug. 03 2010	Aug. 03 2011
14	Amplifier(2GHz-20GHz)	HP	8349B	GTS231	Aug. 03 2010	Aug. 03 2011
15	Universal radio communication tester	Rohde & Schwarz	CMU200	GTS235	May 11 2011	May 11 2012
16	Signal Generator	Rohde & Schwarz	SML03	GTS236	May 11 2011	May 11 2012
17	Temp. Humidity/Barometer	Oregon Scientific	BA-888	GTS248	May 11 2011	May 11 2012
18	D.C. Power Supply	Instek	PS-3030	GTS232	NA	NA
19	Splitter	Agilent	11636B	GTS237	May 11 2011	May 11 2012



6 Test results and Measurement Data

6.1 Antenna requirement:

Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: <i>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.</i>	
E.U.T Antenna:	
The antenna is integrated and no consideration of replacement.	
	

6.2 Radiated Emission

Test Requirement:	FCC Part15 C Section 15.227 and 15.209		
Test Method:	ANSI C63.4: 2003		
Test Frequency Range:	25MHz to 1000MHz		
Test site:	Measurement Distance: 3m (Semi-Anechoic Chamber)		
Receiver setup:	Below 30MHz: RBW=10KHz, VBW=30KHz Above 30MHz: RBW=100KHz, VBW=300KHz		
Limit: (Field strength of the fundamental signal)	Frequency	Limit (dBuV/m @3m)	Remark
	26.96MHz~27.28MHz	80.0	Average Value
		100.0	Peak Value
Limit: (Spurious Emissions)	Frequency	Limit (dBuV/m @3m)	Remark
	30MHz-88MHz	40.0	Quasi-peak Value
	88MHz-216MHz	43.5	Quasi-peak Value
	216MHz-960MHz	46.0	Quasi-peak Value
	960MHz-1GHz	54.0	Quasi-peak Value
Test Procedure:	<p>Below 30MHz:</p> <ol style="list-style-type: none"> 1. For testing performed with the loop antenna, testing was performed in accordance to ANSI C63.4: 2003, 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. <p>Above 30MHz:</p> <ol style="list-style-type: none"> 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. 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

6.2.1 Field Strength Of The Fundamental Signal

Peak value:

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
27.145	84.57	15.03	0.60	32.24	67.96	100.00	-32.04	Y axis

Average value:

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
27.145	66.90	15.03	0.60	32.24	50.29	80.00	-29.71	Y axis

6.2.2 Spurious Emissions

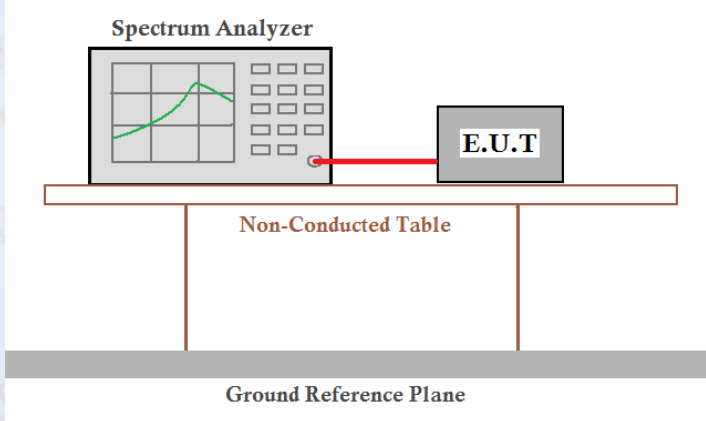
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	polarization
54.29	33.03	15.76	0.68	31.99	17.48	40.00	-22.52	Horizontal
81.44	34.02	12.29	0.96	31.81	15.46	40.00	-24.54	Horizontal
108.58	33.73	12.25	1.23	31.74	15.47	43.50	-28.03	Horizontal
190.02	34.44	10.60	1.72	32.20	14.56	43.50	-28.94	Horizontal
217.16	34.36	10.85	1.85	32.27	14.79	46.00	-31.21	Horizontal
271.45	34.45	11.80	2.00	32.29	15.96	46.00	-30.04	Horizontal
54.29	33.29	15.76	0.68	31.99	17.74	40.00	-22.26	Vertical
81.44	34.35	12.29	0.96	31.81	15.79	40.00	-24.21	Vertical
108.58	34.31	12.25	1.23	31.74	16.05	43.50	-27.45	Vertical
190.02	34.82	10.60	1.72	32.20	14.94	43.50	-28.56	Vertical
217.16	36.84	10.85	1.85	32.27	17.27	46.00	-28.73	Vertical
271.45	35.06	11.80	2.00	32.29	16.57	46.00	-29.43	Vertical

Note:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

$$\text{Final Test Level} = \text{Receiver Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Preamplifier Factor}$$

6.3 20dB Bandwidth

Test Requirement:	FCC Part15 C Section 15.227
Test Method:	ANSI C63.4:2003
Receiver setup:	RBW=3KHz, VBW=10KHz, detector: Peak
Limit:	Emissions from the intentional radiator shall be confined within the frequency range of 26.96MHz~27.28MHz.
Test Procedure:	<ol style="list-style-type: none"> 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 -26dB upper and lower frequency points. 4. Read the frequency delta value between the -20dB upper and lower frequency points.
Test setup:	 <p>The diagram illustrates the test setup. A Spectrum Analyzer is connected via a red cable to an E.U.T. (Equipment Under Test). Both are placed on a Non-Conducted Table. Below the table is a Ground Reference Plane.</p>
Test Instruments:	Refer to section 5.7 for details
Test mode:	Refer to section 5.3 for details
Test results:	Passed

Test plot as follows:

