

EMC TEST REPORT

Report No.: EME-040385

Model No.: 239CH

Issued Date: May 21, 2004

Applicant: CHENGHAI MEIJIAXIN PLASTIC CEMENT
TOYS CO., LTD.
South Road, Xinye Laimei Industry District,
Chenghai, Shantou, Guangdong, China

Test By: Intertek Testing Services Taiwan Ltd.
No. 11, Lane 275, Ko-Nan 1 Street, Chia-Tung Li,
Shiang-Shan District, Hsinchu City, Taiwan

This test report consists of 13 pages in total. It may be duplicated completely for legal use with the allowance of the applicant. It shall not be reproduced except in full, without the written approval of Intertek Laboratory. The test result in this report only applies to the tested sample.

Project Engineer

Jackey Chiu

Jackey Chiu

Reviewed By

Victor Wen

Victor Wen

Table of Contents

Summary of Tests	3
1. General information	4
1.1 Identification of the EUT	4
1.2 Additional information about the EUT	4
1.3 Antenna description	5
2. Test specifications	6
2.1 Test standard	6
2.2 Operation mode	6
2.3 Test equipment	7
3. Radiated emission test FCC 15.227 (a)/(b)	8
3.1 Operating environment	8
3.2 Test setup & procedure	8
3.3 Emission limit	9
3.3.1 Fundamental and harmonics emission limits	9
3.3.2 General radiated emission limits	9
3.4 Radiated emission test data	11
3.4.1 Fundamental Radiated Emission Data	11
3.4.2 Spurious Radiated Emission Data	12

Summary of Tests**Wireless toy car -Model: 239CH
FCC ID: R6Q239CH**

Test	Reference	Results
Field strength of fundamental frequency	15.227(a)	Complies
Radiated emission	15.227(b), 15.209	Complies

1. General information

1.1 Identification of the EUT

Applicant:	CHENGHAI MEIJAXIN PLASTIC CEMENT TOYS CO., LTD.
Product:	Wireless toy car
Model No.:	239CH
FCC ID.:	R6Q239CH
Frequency Range:	27.14MHz
Channel Number:	1 channel
Type of Modulation:	AM
Power Supply:	Tx: 12Vdc Rx: 12Vdc
Power Cord:	N/A
Sample Received:	Apr. 28, 2004
Test Date(s):	May 13, 2004 ~ May 20, 2004

1.2 Additional information about the EUT

The EUT is a Wireless toy car, and was defined as information technology equipment.

We verified that 238CH and 256CH are series models to 239CH(EUT), for these models are identical in hardware aspect, and the different are in enclosure shape and trade name listed below.

Trade Name	Model Number
EXCITER	239CH
WINNER TEAM	238CH
NAVIGATOR	256CH

For more detail features, please refer to User's manual as file name "Installation guide.pdf"

1.3 Antenna description

The EUT uses a permanently connected antenna.

Antenna Gain: 0dBi max

Antenna Type: Monopole antenna

Connector Type: N/A

2. Test specifications

2.1 Test standard

The EUT was performed according to the procedures in FCC Part 15 Subpart C Paragraph 15.227.

The test of radiated measurements according to FCC Part15 Section 15.33(a) had been conducted and the field strength of this frequency band were all meet limit requirement, thus we evaluate the EUT pass the specified test.

2.2 Operation mode

During all of the tests, the transmitter was operated in transmitting continuously, and the receiver was operated in normal operation mode.

After verifying three steups of transmitter, we found the worst case was occurred at setup1. The final test was excute under this condition and recorded in this report.

2.3 Test equipment

Equipment	Brand	Frequency range	Model No.	Series No.	Last Cal.Date
EMI Test Receiver	Rohde & Schwarz	20Hz~26.5GHz	ESMI	825428/005	June 24, 2003
Bilog Antenna	SCHWARZBECK	25MHz~1.7GHz	VULB 9160	VULB 9160-3133	Feb. 21, 2004
Turn Table	HDGmbH	N/A	DS 420S	420/669/01	N/A
Antenna Tower	HDGmbH	N/A	MA 240	240/573	N/A

Note: The above equipments are within the valid calibration period.

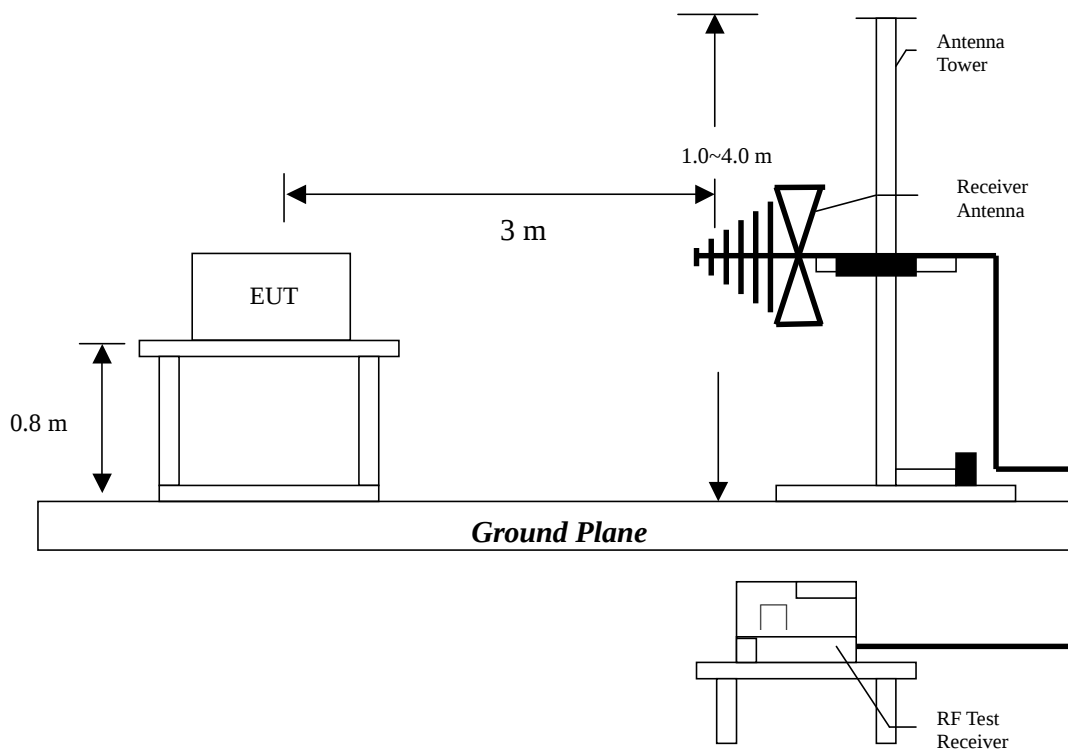
3. Radiated emission test FCC 15.227 (a)/(b)

3.1 Operating environment

Temperature:	22	°C	(10-40°C)
Relative Humidity:	51	%	(10-90%)
Atmospheric Pressure	1023	hPa	(860-1060hPa)

3.2 Test setup & procedure

The Diagram below shows the test setup, which is utilized to make these measurements.



Radiated emissions were investigated cover the frequency range from 30MHz to 1000MHz using a receiver RBW of 120kHz record QP reading, and the frequency over 1GHz using a spectrum analyzer RBW of 1MHz and 10Hz VBW record Average reading. (15.209 paragraph), the Peak reading (1MHz RBW/VBW) recorded also on the report. The EUT for testing is arranged on a wooden turntable. If some peripherals apply to the EUT, the peripherals will be connected to EUT and the whole system. During the test, all cables were arranged to produce worst-case emissions. The signal is maximized through rotation. The height of antenna and polarization is changing constantly for exploring for maximum signal level. The height of antenna can be up to 4 meters and down to 1 meter.

The measurement for radiated emission will be done at the distance of three meters unless the signal level is too low to measure at that distance. In the case of the reading under noise floor, a pre-amplifier is used and/or the test is conducted at a closer distance. And then all readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance.



Setup 1



Setup 2



Setup 3

The EUT configuration please refer to the “Spurious set-up photo.pdf”.

3.3 Emission limit

3.3.1 Fundamental and harmonics emission limits

Frequency (MHz)	Field Strength of Fundamental	
	(dBuV/m@3m)	(dBuV/m@3m)
26.96-27.28	10000	80

The emission limit above is based on measurement instrumentation employing an average detector. The provisions in Section 15.35 for limiting peak emissions apply.

3.3.2 General radiated emission limits

Frequency MHz	15.209 Limits (dB μ V/m@3m)
30-88	40
88-216	43.5
216-960	46
Above 960	54

Remark:

1. In the above table, the tighter limit applies at the band edges.
2. Distance refers to the distance in meters between the measuring antenna and the closed point of any part of the device or system

Uncertainty was calculated in accordance with NAMAS NIS 81.

Expanded uncertainty (k=2) of radiated emission measurement is ± 4.98 dB.

3.4 Radiated emission test data

3.4.1 Fundamental Radiated Emission Data

EUT : 239CH
 Test Unit : Tx
 Worst Case Condition : Setup 1
 Antenna Length : Short antenna

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV)	Margin (dB)	Antenna high (cm)	Turn Table angle (degree)
27.162	PK	V	12.92	32.56	45.48	100.00	-54.52	100	238
27.162	AV	V	12.92	32.36	45.28	80.00	-34.72	100	238
27.146	PK	H	12.92	36.93	49.85	100.00	-50.15	301	139
27.146	AV	H	12.92	36.67	49.59	80.00	-30.41	301	139

Remark:

1. Corrected Level = Reading Level + Correction Factor
2. Correction Factor = Antenna Factor + Cable Loss

3.4.2 Spurious Radiated Emission Data

EUT : 239CH
 Test Unit : Tx
 Worst Case Condition : Setup 1
 Antenna Length : Full extend

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV)	Margin (dB)	Antenna high (cm)	Turn Table angle (degree)
54.201	QP	V	12.88	10.20	23.08	40.00	-16.92	100	238
108.126	QP	V	11.31	11.00	22.31	43.50	-21.19	100	254
135.138	QP	V	13.69	11.79	25.48	43.50	-18.02	100	189
190.254	QP	V	13.39	9.40	22.79	43.50	-20.71	100	216
216.240	QP	V	12.13	10.10	22.23	46.00	-23.77	100	268
243.410	QP	V	12.52	11.10	23.62	46.00	-22.38	102	247
108.591	QP	H	11.31	17.50	28.81	43.50	-14.69	226	246
135.738	QP	H	13.69	18.80	32.49	43.50	-11.01	215	264
162.876	QP	H	14.68	12.40	27.08	43.50	-16.42	248	165
190.019	QP	H	13.39	16.60	29.99	43.50	-13.51	284	196
216.253	QP	H	12.13	16.80	28.93	46.00	-17.07	298	234
243.440	QP	H	12.52	19.40	31.92	46.00	-14.08	324	125

Remark:

1. Corrected Level = Reading Level + Correction Factor
2. Correction Factor = Antenna Factor + Cable Loss

The radiated emissions at

Frequency(MHz)	Margin
158.780	-2.21
214.570	-4.21
905.710	-0.58
927.550	-1.24

are less than uncertainty. This is within the stated measurement uncertainty, this may affect compliance determined in other test arrangements.

EUT : 239CH

Test Unit : Rx

Test Condition : Normal operation mode

Frequency (MHz)	Spectrum Analyzer Detector	Antenna Polariz. (H/V)	Correction Factor (dB/m)	Reading (dBuV)	Corrected Level (dBuV/m)	Limit @ 3 m (dBuV)	Margin (dB)	Antenna high (cm)	Turn Table angle (degree)
106.170	QP	V	11.13	16.12	27.25	43.50	-16.25	152.00	216.00
158.780	QP	V	14.92	26.37	41.29	43.50	-2.21	163.00	158.00
214.570	QP	V	12.23	27.06	39.29	43.50	-4.21	123.00	158.00
826.530	QP	V	24.59	10.86	35.45	46.00	-10.55	115.00	108.00
905.710	QP	V	25.31	20.11	45.42	46.00	-0.58	117.00	92.00
927.550	QP	V	25.54	19.22	44.76	46.00	-1.24	119.00	110.00
105.710	QP	H	11.13	13.72	24.85	43.50	-18.65	121.00	263.00
121.140	QP	H	12.55	17.20	29.75	43.50	-13.75	112.00	115.00
209.110	QP	H	12.52	25.61	38.13	43.50	-5.37	182.00	212.00
256.500	QP	H	12.80	27.30	40.10	46.00	-5.90	145.00	185.00
620.000	QP	H	20.91	0.93	21.84	46.00	-24.16	100.00	108.00
742.120	QP	H	23.21	6.97	30.18	46.00	-15.82	110.00	98.00

Remark:

1. Corrected Level = Reading Level + Correction Factor
2. Correction Factor = Antenna Factor + Cable Loss