

Date: 2007-06-01 Page 1 of 18

No.: HM158788

Futaba Corporation Applicant (STS002):

629 Oshiba, Mobara, Chiba Prefecture 297-8588, Japan

Dongang Electronic Co., Ltd. Manufacturer:

3rd Floor, No. 48, GongHe Industry Road, GongLe, Xixiang

Town, BaoAn Area, Shenzhen City

Model Name: Remote Controller and Receiver **Description of Samples:**

> **Brand Name:** Futaba Model Number: RCC-T11 FCC ID: AZPRRC-T11

Date Samples Received: 2007-05-14

Date Tested: 2007-05-18

Investigation Requested: Perform ElectroMagnetic Interference measurement in

> accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2006 and ANSI C63.4:2003 for FCC Certification.

Conclusions: The submitted product **COMPLIED** with the requirements of

> Federal Communications Commission [FCC] Rules and Regulations Part 15. The tests were performed in accordance with the standards described above and on Section 2.2 in this

Test Report.

Remarks:

LEE Kam Chuen, ElectroMagnetic Compatibility Department For and on behalf of

The Hong Kong Standards and Testing Centre Ltd.



Date: 2007-06-01 Page 2 of 18

No. : HM158788

CONTENT:

	Cover	Page 1 of 18
	Content	Page 2-3 of 18
1.0	General Details	
1.1	Test Laboratory	Page 4 of 18
1.2	Applicant Details Applicant HKSTC Code Number for Applicant Manufacturer	Page 4 of 18
1.3	Equipment Under Test [EUT] Description of EUT operation	Page 5 of 18
1.4	Date of Order	Page 5 of 18
1.5	Submitted Sample	Page 5 of 18
1.6	Test Duration	Page 5 of 18
1.7	Country of Origin	Page 5 of 18
<u>2.0</u>	Technical Details	
2.1	Investigations Requested	Page 6 of 18
2.2	Test Standards and Results Summary	Page 6 of 18
<u>3.0</u>	<u>Test Results</u>	
3.1	Radiated Emission	Page 7-14 of 18
3.2	Conducted Emission	Page 15 of 18



Date: 2007-06-01 Page 3 of 18

No. : HM158788

Appendix A

List of Measurement Equipment

Page 16 of 18

Appendix B

Page 17-18 of 18 Photographs



Date: 2007-06-01 Page 4 of 18

No. : HM158788

<u>1.0</u> **General Details**

1.1 **Test Laboratory**

The Hong Kong Standards and Testing Centre Ltd. **EMC Laboratory** 10 Dai Wang Street, Taipo Industrial Estate New Territories, Hong Kong

1.2 **Applicant Details** Applicant

Futaba Corporation 629 Oshiba, Mobara, Chiba Prefecture 297-8588, Japan

Manufacturer

Dongang Electronic Co., Ltd. 3rd Floor, No. 48, GongHe Industry Road, GongLe, Xixiang Town, BaoAn Area, Shenzhen City



Date: 2007-06-01 Page 5 of 18

No. : HM158788

1.3 Equipment Under Test [EUT] Description of Sample

Model Name: Remote Controller and Receiver Manufacturer: Dongang Electronic Co., Ltd.

Brand Name: Futaba
Model Number: RCC-T11

Input Voltage: 6Vd.c. ("AAA" size battery x 4)

1.3.1 Description of EUT Operation

The Equipment Under Test (EUT) is a Futaba Corporation, Remote Controller and Receiver, the transmission signal is frequency hopping with channel frequency range 2.410-2.470 GHz.

1.4 Date of Order

2007-05-14

1.5 Submitted Sample(s):

1 Sample

1.6 Test Duration

2007-05-18

1.7 Country of Origin

China

The Hong Kong Standards and Testing Centre Ltd.



Date: 2007-06-01 Page 6 of 18

No. : HM158788

2.0 Technical Details

Investigations Requested 2.1

Perform Electromagnetic Interference measurements in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15 Regulations and ANSI C63.4:2003 for FCC Certification.

2.2 **Test Standards and Results Summary Tables**

EMISSION Results Summary							
Test Condition	Test Requirement	Test Method	Class /	T	est Resi	ılt	
			Severity	Pass	Fail	N/A	
Field Strength of Fundamental & Harmonics Emissions	FCC 47CFR 15.249	ANSI C63.4:2003	N/A				
Radiated Emissions	FCC 47CFR 15.209	ANSI C63.4:2003	N/A				
Conducted Emissions on AC, 0.15MHz to 30MHz	FCC 47CFR 15.207	ANSI C63.4:2003	N/A				

Note: N/A - Not Applicable



Date: 2007-06-01 Page 7 of 18

No. : HM158788

3.0 Test Results

3.1 Emission

3.1.1 Radiated Emissions

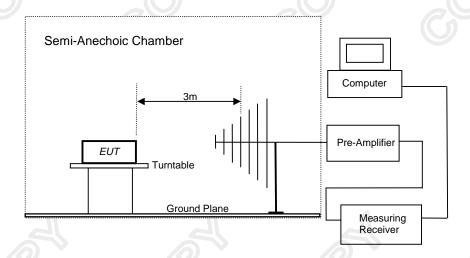
Test Requirement: FCC 47CFR 15.249
Test Method: ANSI C63.4:2003
Test Date: 2007-05-18
Mode of Operation: Tx mode

Test Method:

The sample was placed 0.8m above the ground plane of semi-anechoic Chamber*. Measurements in both horizontal and vertical polarities were performed. 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, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

* Semi-anechoic chamber located on the G/F of HKSTC with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 607756.

Test Setup:



The Hong Kong Standards and Testing Centre Ltd.



Date: 2007-06-01 Page 8 of 18

No. : HM158788

Limits for Field Strength of Fundamental & Harmonics Emissions [FCC 47CFR 15.249]:

Frequency Range of Fundamental	Field Strength of Fundamental Emission	Field Strength of Harmonics Emission	
[MHz]	[microvolts/meter]	[microvolts/meter]	
902-928	50,000 [Average]	500 [Average]	
2400-2483.5	50,000 [Average]	500 [Average]	

Results of Lowest Channel Frequency: Pass

	Field Strength of Fundamental Emissions Peak Value					
Frequency MHz	Measured Level @3m dBµV/m	Correction Factor dBµV/m	Field Strength dBµV/m	Field Strength µV/ m	Limit @3m µV/m	E-Field Polarity
2410.0	37.1	29.7	66.8	2,187.8	50,000	Horizontal
* 4820.0			500	Horizontal		
7230.0	1				500	Vertical
9640.0	1				500	Vertical
* 12050.0					500	Vertical
14460.0		No Emissio	on Detected		500	Vertical
16870.0	500 Verti					
* 19280.0	500 Vertical					
21690.0			500	Vertical		
24100.0					500	Vertical

Field Strength of Fundamental Emissions							
	Average Value						
Frequency	Measured	Correction	Field	Field	Limit @3m	E-Field	
	Level @3m	Factor	Strength	Strength		Polarity	
MHz	$dB\mu V/m$	dBμV/m	$dB\mu V/m$	uV/m	μV/m		
2410.0	11.4	29.7	41.1	113.5	50,000	Horizontal	

Remarks:

*: Denotes restricted band of operation.

Measurements were made using a peak detector. Any emission less than 1000 MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 and the limits of FCC Rules Part 15 Section 15.209 were applied.

Calculated measurement uncertainty : 30MHz to 1GHz ±5.2dB 1GHz to 18GHz ±5.1dB

The Hong Kong Standards and Testing Centre Ltd.



Date: 2007-06-01 Page 9 of 18

No. : HM158788

Limits for Field Strength of Fundamental & Harmonics Emissions [FCC 47CFR 15.249]:

Frequency Range of	Field Strength of	Field Strength of	
Fundamental	Fundamental Emission	Harmonics Emission	
[MHz]	[microvolts/meter]	[microvolts/meter]	
902-928	50,000 [Average]	500 [Average]	
2400-2483.5	50,000 [Average]	500 [Average]	

Results of Mid Channel Frequency: Pass

	Field Strength of Fundamental Emissions						
			Peak Value				
Frequency	Measured	Correction	Field	Field	Limit @3m	E-Field	
	Level @3m	Factor	Strength	Strength		Polarity	
MHz	$dB\mu V/m$	$dB\mu V/m$	$dB\mu V/m$	uV/m	μV/m	•	
2440.0	34.9	29.8	64.7	1,717.9	50,000	Horizontal	
* 4880.0		500 Horizontal					
7320.0					500	Vertical	
9760.0					500	Vertical	
* 12200.0					500	Vertical	
14640.0		No Emissio	on Detected		500	Vertical	
17080.0	500 Vertical						
* 19520.0	500 Vertical						
21960.0	500 V						
24400.0	500 Vertical 500 Vertical						

Field Strength of Fundamental Emissions							
	Average Value						
Frequency	Measured	Correction	Field	Field	Limit @3m	E-Field	
	Level @3m	Factor	Strength	Strength		Polarity	
MHz	$dB\mu V/m$	$dB\mu V/m$	$dB\mu V/m$	uV/m	μV/m		
2440.0	10.6	29.8	40.4	104.7	50,000	Horizontal	

Remarks:

*: Denotes restricted band of operation.

Measurements were made using a peak detector. Any emission less than 1000 MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 and the limits of FCC Rules Part 15 Section 15.209 were applied.

Calculated measurement uncertainty : 30MHz to 1GHz ±5.2dB 1GHz to 18GHz ±5.1dB

The Hong Kong Standards and Testing Centre Ltd.



Date : 2007-06-01 Page 10 of 18

No. : HM158788

Limits for Field Strength of Fundamental & Harmonics Emissions [FCC 47CFR 15.249]:

Frequency Range of Fundamental	Field Strength of Fundamental Emission	Field Strength of Harmonics Emission		
[MHz]	[microvolts/meter]	[microvolts/meter]		
902-928	50,000 [Average]	500 [Average]		
2400-2483.5	50,000 [Average]	500 [Average]		

Results of Highest Channel Frequency: Pass

	Field Strength of Fundamental Emissions						
			Peak Value				
Frequency	Measured	Correction	Field	Field	Limit @3m	E-Field	
	Level @3m	Factor	Strength	Strength		Polarity	
MHz	$dB\mu V/m$	$dB\mu V/m$	$dB\mu V/m$	uV/m	μV/m	•	
2470.0	34.4	29.9	64.3	1,640.6	50,000	Horizontal	
* 4940.0		500 Horizon					
7410.0					500	Vertical	
9880.0					500	Vertical	
* 12350.0					500	Vertical	
14820.0		No Emissio	on Detected		500	Vertical	
17290.0	500 Vertical						
* 19760.0	500 Vertical						
22230.0		500	Vertical				
24700.0	500 Vertical						

Field Strength of Fundamental Emissions							
	Average Value						
Frequency	Measured	Correction	Field	Field	Limit @3m	E-Field	
	Level @3m	Factor	Strength	Strength		Polarity	
MHz	$dB\mu V/m$	$dB\mu V/m$	$dB\mu V/m$	uV/m	μV/m		
2470.0	9.1	29.9	39.0	89.1	50,000	Horizontal	

Remarks:

*: Denotes restricted band of operation.

Measurements were made using a peak detector. Any emission less than 1000 MHz and falling within the restricted bands of FCC Rules Part 15 Section 15.205 and the limits of FCC Rules Part 15 Section 15.209 were applied.

Calculated measurement uncertainty : 30MHz to 1GHz ± 5.2 dB ± 5.1 dB ± 5.1 dB

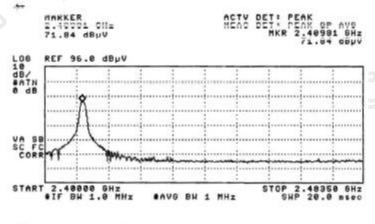
The Hong Kong Standards and Testing Centre Ltd.

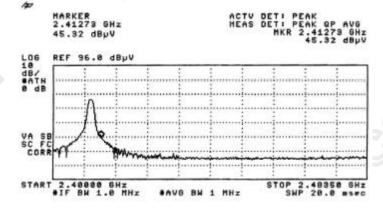


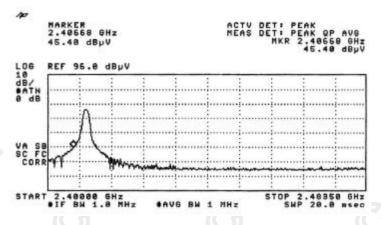
Date: 2007-06-01 Page 11 of 18

No. : HM158788

Lowest Channel Frequency





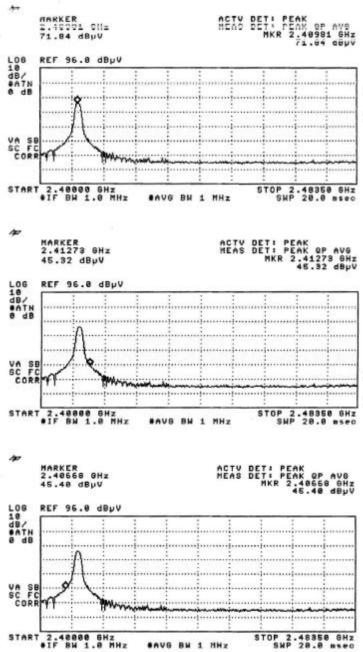




Date: 2007-06-01 Page 12 of 18

No. : HM158788

Mid Channel Frequency

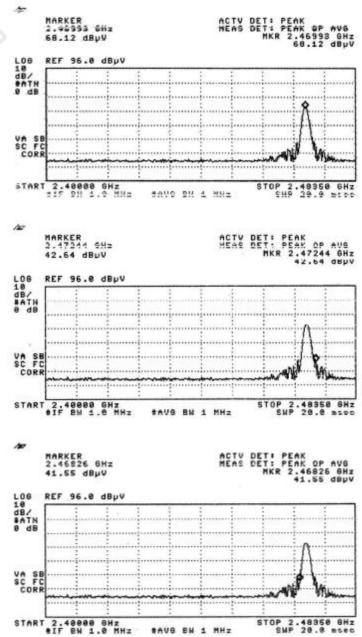




Date: 2007-06-01 Page 13 of 18

No. : HM158788

Highest Channel Frequency





Date: 2007-06-01 Page 14 of 18

No. : HM158788

Limits for Radiated Emissions [FCC 47 CFR 15.209 Class B]:

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

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Radiated Emissions								
Peak								
Emission	E-Field	Level	Limit	Level @3m	Limit			
Frequency	Polarity	@3m	@3m	@3m	@3m			
MHz	-	dBμV/m	dBμV/m	μV/m	$\mu V/m$			
Emissions detected are more than 20 dB below the limit line(s)								

Remarks:

Correction Factor included Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty 30MHz to 1GHz ±5.2dB

> $\pm 5.1 dB$ 1GHz to 18GHz



Date: 2007-06-01 Page 15 of 18

No. : HM158788

3.1.2 Conducted Emissions (0.15MHz to 30MHz)

Test Requirement: FCC 47CFR 15.207 Test Method: ANSI C63.4:2003

Test Date: N/A N/A Mode of Operation:

Results: N/A

There is no provision for operating the EUT from AC mains power, therefore, this test is not applicable.



Date: 2007-06-01 Page 16 of 18

No. : HM158788

Appendix A

List of Measurement Equipment

Radiated Emission

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.
EM007	SPECTRUM ANALYZER	HEWLETT PACKARD	HP85660B	3144A21192
EM008	SPECTRUM ANALYZER DISPLAY	HEWLETT PACKARD	HP85662A	3144A20514
EM009	QUASI PEAK ADAPTOR	HEWLETT PACKARD	HP85650A	3303A01702
EM010	RF PRESELECTOR	HEWLETT PACKARD	HP85685A	3221A01410
EM011	ATTENUATOR/SWITCH	HEWLETT PACKARD	HP11713A	2508A10595
EM012	PRE-AMPLIFIER	HEWLETT PACKARD	HP8449B	3008A00262
EM020	HORN ANTENNA	ETS-Linggren	3115	4032
EM022	LOOP ANTENNA	ETS-Linggren	6502	1189-2424
EM072	SIGNAL GENERATOR	HEWLETT PACKARD	8640B	1948A11892
EM083	OPEN AREA TEST SITE	HKSTC	N/A	N/A
EM131	EMC ANALYZER	HEWLETT PACKARD	8595EM	3710A00155
EM145	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESCS 30	830245/021
EM195	ANTENNA POSITIONING MAST	ETS-Linggren	2075	2368
EM196	MULTI-DEVICE CONTROLLER	ETS-Linggren	2090	1662
EM215	MULTIDEVICE CONTROLER	ETS-Linggren	2090	00024676
EM216	MINI MAST SYSTEM	ETS-Linggren	2075	00026842
EM217	ELECTRIC POWERED TURNTABLE	ETS-Linggren	2088	00029144
EM218	ANECHOIC CHAMBER	ETS-Linggren	FACT-3	-
EM219	BICONILOG ANTENNA	ETS-Linggren	3142C	00029071
EM229	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB40	100248

Line Conducted

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.
EM078	VARIAC	SHANGHAI VOLTAGE	TDGC-3/0.5	N/A
EM081	SMALL SCREENED ROOM	MIKO INST HK	N/A	N/A
EM119	LISN	ROHDE & SCHWARZ	ESH3-Z5	0831.5518.52
EM127	ISOLATION TRANSFORMER 220 TO 300V	WING SUN	N/A	N/A
EM233	PULSE LIMITER	ROHDE & SCHWARZ	ESH3-Z2	100314
EM181	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB7	100072
EM154	SHIELDING ROOM	SIEMENA MATSUSHITA COMPONENTS	N/A	803-740-057-99A
M197	LISN	ETS-Linggren	4825/2	1193

Remarks:-

CM Corrective Maintenance

Not Applicable or Not Available N/A

TBD To Be Determined

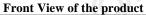


Date: 2007-06-01 Page 17 of 18

No. : HM158788

Appendix B

Photographs of EUT





Rear View of the product



Inner Circuit Top View



Inner Circuit Bottom View

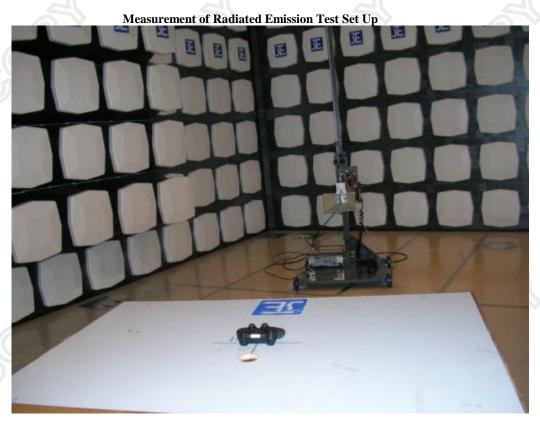




Date: 2007-06-01 Page 18 of 18

No. : HM158788

Photographs of EUT



***** End of Test Report *****