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No. : HM163520

**Applicant (NEB001):** NEW BRIGHT INDUSTRIAL CO., LTD.

9/F., NEW BRIGHT BUILDING, 11 SHEUNG YUET

ROAD, KOWLOON BAY, KOWLOON, H.K.

Manufacturer: NEW BRIGHT INDUSTRIAL CO., LTD.

9/F., NEW BRIGHT BUILDING, 11 SHEUNG YUET

ROAD, KOWLOON BAY, KOWLOON, H.K.

**Description of Samples:** Product: Radio Control Toy Transmitter

Brand Name: NEW BRIGHT Model Number: G6D1881H FCC ID: G6D1881H

**Date Samples Received:** 2009-05-04

**Date Tested:** 2009-05-08

**Investigation Requested:** Perform ElectroMagnetic Interference measurement in

accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2008 and ANSI C63.4:2003 for FCC Certification.

**Conclusions:** The submitted product <u>COMPLIED</u> 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: ----

Dr. LEE Kam Chuen,
Authorized Signatory
ElectroMagnetic Compatibility Department
For and on behalf of
The Hong Kong Standards and Testing Centre Ltd.



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# 1.0 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

Telephone: 852 2666 1888 Fax: 852 2664 4353

# 1.2 Applicant Details

#### **Applicant**

NEW BRIGHT INDUSTRIAL CO., LTD. 9/F., NEW BRIGHT BUILDING, 11 SHEUNG YUET ROAD, KOWLOON BAY, KOWLOON, H.K.

#### Manufacturer

NEW BRIGHT INDUSTRIAL CO., LTD. 9/F., NEW BRIGHT BUILDING, 11 SHEUNG YUET ROAD, KOWLOON BAY, KOWLOON, H.K.



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# 1.3 Equipment Under Test [EUT] Description of Sample

Product: Radio Control Toy Transmitter

Manufacturer: NEW BRIGHT INDUSTRIAL CO., LTD.

Brand Name: NEW BRIGHT Model Number: G6D1881H

Rating: 2.4Vd.c (Rechargeable battery x 1)

# 1.3.1 Description of EUT Operation

The Equipment Under Test (EUT) is a NEW BRIGHT INDUSTRIAL CO., LTD., Radio Control Toy Transmitter. The EUT is a transmitter of radio control toy. The transmitter was operating with button, the EUT continues to transmit while one of the buttons is being pressed, It is pulse transmitter, Modulation by IC, and type is pulse modulation.

# 1.4 Date of Order

2009-05-04

# 1.5 Submitted Sample(s):

2 Samples

#### 1.6 Test Duration

2009-05-08

# 1.7 Country of Origin

China



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# **<u>2.0</u>** Technical Details

# 2.1 Investigations Requested

Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2008 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 /	Т	est Result			
			Severity	Pass	Failed	N/A		
Field Strength of Fundamental Emissions & Spurious Emissions	FCC 47CFR 15.227	ANSI C63.4:2003	N/A	$\boxtimes$				
Radiated Emissions	FCC 47CFR 15.209	ANSI C63.4:2003	N/A					

Note: N/A - Not Applicable



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# 3.0 Test Results

# 3.1 Emission

#### 3.1.1 Radiated Emissions (30 – 1000MHz)

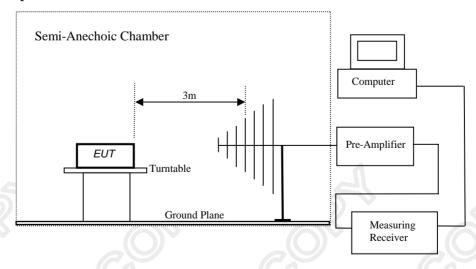
Test Requirement: FCC 47CFR 15.227
Test Method: ANSI C63.4:2003
Test Date: 2009-05-08
Mode of Operation: Tx mode

#### **Test Method:**

The sample was placed 0.8m above the ground plane on a standard radiated emission test site. 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. In the frequency range of 9kHz to 30MHz, The center of the loop antenna shall be 1 meter above the ground and rotated loop axis for maximum reading. The emissions worst-case are shown in Test Results of the following pages.

\*: Semi-anechoic chamber located on the G/F of The Hong Kong Standards and Testing Centre Ltd. with a metal ground plane filed with the FCC pursuant to section 2.948 of the FCC rules, with Registration Number: 607756.

#### **Test Setup:**





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# Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.227]:

Frequency Range of	Field Strength of	Field Strength of
Fundamental	Fundamental Emission	Fundamental Emission
	[Peak]	[Average]
[MHz]	$[\mu V/m]$	$[\mu V/m]$
26.96-27.28	100,000	10,000

#### Results of Tx Mode: PASS

Field Strength of Fundamental Emissions								
	Peak Value							
Frequency	Frequency Measured Correction Field Field Limit @3m E-Field							
	Level @3m	Factor	Strength	Strength		Polarity		
MHz	dΒμV	dB/m	dBμV/m	μV/m	μV/m	-		
27.145	47.20	10.4	57.6	758.6	100,000	Vertical		

Field Strength of Fundamental Emissions									
	Average Value								
Frequency	Measured	Adjusted by	Correction	Field	Field	Limit @3m	E-Field		
	Level @3m	Duty Cycle	Factor	Strength	Strength		Polarity		
MHz	dΒμV	dB	dB/m	dBμV/m	μV/m	μV/m			
27.145	42.6	-4.6	10.4	53.0	446.7	10,000	Vertical		

According to FCC 47CFR15.35, the limit on the radio frequency emissions as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

### Remarks:

Correction Factor includes Antenna Factor and Cable Attenuation. Calculated measurement uncertainty: 30MHz to 1GHz 5.2dB



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# Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range [MHz]	Quasi-Peak Limits [μV/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.

# **Results of Tx Mode: PASS**

Radiated Emissions								
Quasi-Peak								
Frequency	Measured	Correction	Field	Field	Limit @3m	E-Field		
	Level @3m	Factor	Strength	Strength		Polarity		
MHz	$dB\mu V$	dB/m	dBμV/m	μV/m	μV/m			
54.29	7.5	9.1	16.6	6.8	100	Vertical		
81.44	< 1.0	8.1	< 9.1	< 2.9	100	Vertical		
108.58	< 1.0	9.1	< 10.1	< 3.2	150	Vertical		
135.73	< 1.0	7.9	< 8.9	< 2.8	150	Vertical		
162.87	< 1.0	11.9	< 12.9	< 4.4	150	Vertical		
190.02	< 1.0	12.4	< 13.4	< 4.7	150	Vertical		
217.16	< 1.0	12.8	< 13.8	< 4.9	200	Vertical		
244.31	< 1.0	15.0	< 16.0	< 6.3	200	Vertical		
271.45	< 1.0	16.1	< 17.1	< 7.2	200	Vertical		

#### Remarks:

No further spurious emissions found between lowest internal frequency and 30MHz Correction Factor includes Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty: 30MHz to 1GHz 5.2dB



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# 3.2 20dB Bandwidth of Fundamental Emission

Test Requirement: FCC 47 CFR 15.227

Test Method: ANSI C63.4:2003 (Section 13.1.7)

Test Date: 2009-05-08 Mode of Operation: On mode

#### **Test Method:**

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

#### **Test Setup:**

As Test Setup of clause 3.1.1 in this test report.

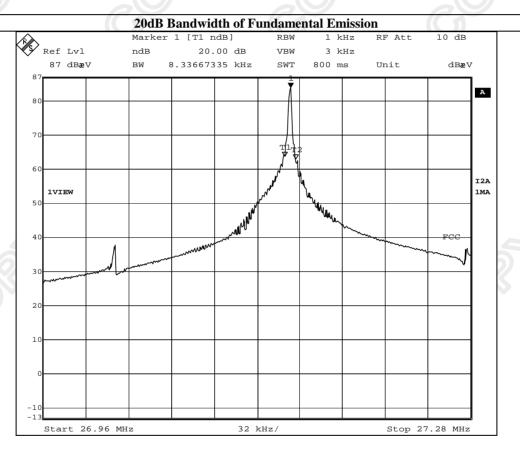


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# Limits for 20dB Bandwidth of Fundamental Emission:

Frequency Range	20dB Bandwidth	FCC Limits
[MHz]	[KHz]	[MHz]
27.145	8.337	within 26.96-27.28





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#### Appendix A

# List of Measurement Equipment

# **Radiated Emission**

EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL	
EM020	HORN ANTENNA	EMCO	3115	4032	2006/07/11	2009/07/11	
EM215	MULTIDEVICE CONTROLER	EMCO	2090	00024676	N/A	N/A	
EM216	MINI MAST SYSTEM	EMCO	2075	00026842	N/A	N/A	
EM217	ELECTRIC POWERED TURNTABLE	EMCO	2088	00029144	N/A	N/A	
EM218	ANECHOIC CHAMBER	ETS-Linggren	FACT-3		2008/12/01	2011/12/01	
EM174	BICONILOG ANTENNA	EMCO	3142B	1671	2008/01/24	2010/01/24	
EM181	EMI TEST RECEIVER	ROHDE & SCHWARZ	ESIB7	100072	2008/06/16	2009/06/16	
EM022	LOOP ANTENNA	EMCO	6502	1189-2424	2006/07/26	2009/07/26	

#### Remarks:-

CM Corrective Maintenance

N/A Not Applicable or Not Available

**TBD** To Be Determined



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# Appendix B

# **Duty Cycle Correction During 100msec**

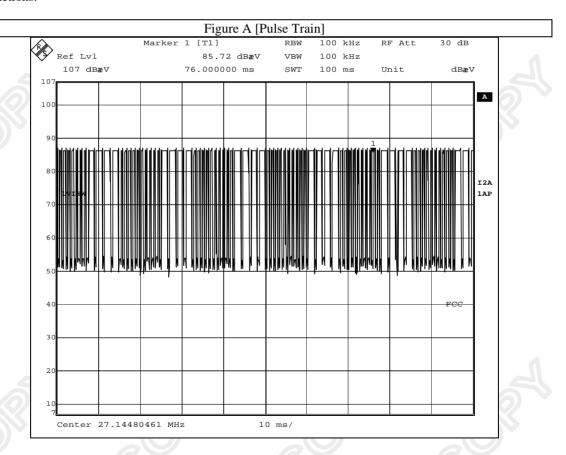
Each function key sends a different series of characters, but each packet period (100msec) never exceeds a series of 22 long pulses (1.44msec) and 57 short pulses (480.9μsec). Assuming any combination of short and long pulses may be obtained due to encoding the worst case transmit duty cycle would be considered (22x1.44msec)+(57x480.9μsec) per 100msec=59% duty cycle. Figure A through C show the characteristics of the pulse train for one of these functions.

#### Remarks:

Duty Cycle Correction = 20Log(0.059) =-4.6dB

Duty Cycle Correction =-20dB, if the calculation duty cycle correction >-20dB.

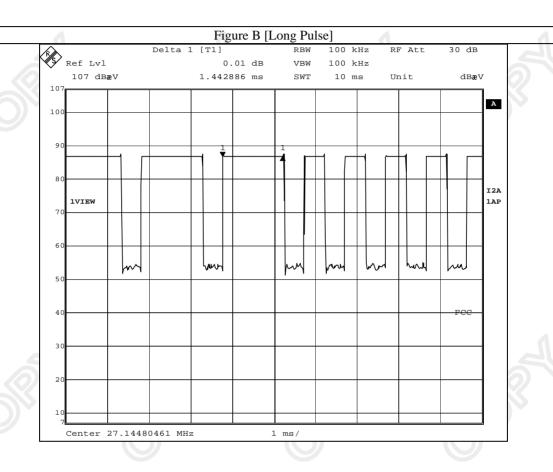
The following figures [Figure A to Figure C] show the characteristics of the pulse train for one of these functions.





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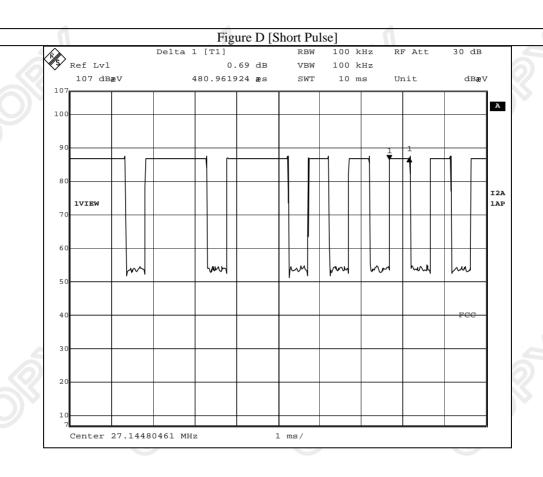
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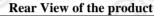
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# Appendix C

# **Photographs of EUT**

Front View of the product







**Inner Circuit Top View** 



**Inner Circuit Bottom View** 

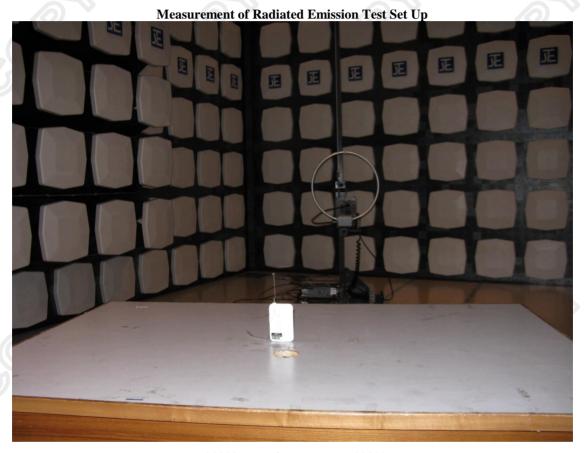




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# **Photographs of EUT**



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

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