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No. : HM166578

**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 Sample(s):** Product: Radio Control Toy Transmitter

Brand Name: New Bright
Model Number: G6DBT44-3
FCC ID: G6DBT44-3

**Date Sample(s) Received:** 2011-04-18

**Date Tested:** 2011-04-21 to 2011-04-27

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

accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2010 and ANSI C63.4:2009 for FCC Certification.

**Conclusion(s):** 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.

Remark(s): ---

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

# 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(s)

Product: Radio Control Toy Transmitter

Manufacturer: NEW BRIGHT INDUSTRIAL CO., LTD.

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

KOWLOON BAY, KOWLOON, H.K.

Brand Name: New Bright Model Number: G6DBT44-3

Input Voltage: 3.7Vd.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 4 buttons, the EUT continues to transmit while button is being on, It is pulse transmitter, Modulation by IC, and type is ASK modulation.

#### 1.4 Date of Order

2011-04-18

### 1.5 Submitted Sample(s):

1 Sample

## 1.6 Test Duration

2011-04-21 to 2011-04-27

## 1.7 Country of Origin

China



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# 2.0 Technical Details

## 2.1 Investigations Requested

Perform Electromagnetic Interference measurements in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2010 Regulations and ANSI C63.4:2009 for FCC Certification.

## 2.2 Test Standards and Results Summary Tables

EMISSION Results Summary										
Test Condition	Test Requirement	Test Method	Class /	Te	est Resu	ılt				
			Severity	Pass	Fail	N/A				
Field Strength of Fundamental & Harmonics Emissions	FCC 47CFR 15.249	ANSI C63.4:2009	N/A							
Radiated Emissions	FCC 47CFR 15.209	ANSI C63.4:2009	N/A							

Note: N/A - Not Applicable



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3.0 Test Results

3.1 Emission

#### 3.1.1 Radiated Emissions

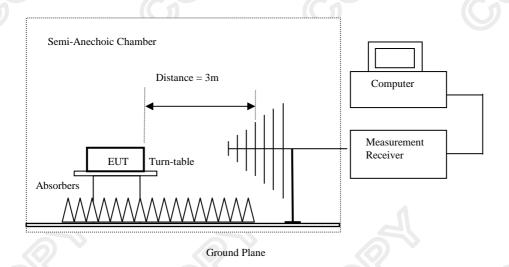
Test Requirement: FCC 47CFR 15.249
Test Method: ANSI C63.4:2009
Test Date: 2011-04-27
Mode of Operation: Tx mode

#### **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 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:**



Absorbers placed on top of the ground plane are for measurements above 1000MHz only.



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## 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 Tx mode: Pass

Field Strength of Fundamental Emissions									
Quasi-Peak Value									
Frequency	Measured	Correction	Field	Field	Limit @3m	E-Field			
	Level @ 3m	Factor	Strength	Strength		Polarity			
MHz	dBμV/m	dBμV/m	dBμV/m	μV/m	μV/m				
914.8	37.7	29.7	67.4	2,344.2	50,000	Horizontal			

	Field Strength of Harmonics Emission								
	Peak Value								
F	requency	Measured	Correction	Field	Field	Limit @3m	E-Field		
		Level @3m	Factor	Strength	Strength		Polarity		
<	MHz	dBμV/m	dBμV/m	dΒμV/m	μV/m	μV/m			
	1828.5	33.7	5.7	39.4	93.3	5,000	Horizontal		
*	2744.4	30.1	2.7	32.8	43.7	5,000	Vertical		
*	3659.3	32.1	-0.9	31.2	36.3	5,000	Horizontal		
*	4574.1	32.3	-1.9	30.4	33.1	5,000	Vertical		
	5488.8					5,000	Horizontal		
	6403.6	Emis	5,000	Horizontal					
*	7318.4	20	dB below the	5,000	Horizontal				
*	8233.2					5,000	Horizontal		
*	9148.0					5,000	Horizontal		

## Remarks:

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz

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

<sup>\*:</sup> Denotes restricted band of operation.



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## 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 Tx mode: Pass

	Field Strength of Harmonics Emission									
	Average Value									
F	requency	N	<b>1</b> easured	Correction	Field	Field	Limit @3m	E-Field		
		L	evel @3m	Factor	Strength	Strength		Polarity		
	MHz		dBμV/m	dBμV/m	dBμV/m	μV/m	μV/m			
	1828.5		13.7	5.7	19.4	9.3	5,000	Horizontal		
*	2744.4		10.1	2.7	12.8	4.4	5,000	Vertical		
*	3659.3		32.1	-0.9	31.2	36.3	5,000	Horizontal		
*	4574.1		12.3	-1.9	10.4	3.3	5,000	Vertical		
	5488.8						5,000	Horizontal		
	6403.6 Emissions detected are more than						5,000	Horizontal		
*	7318.4		20	dB below the	5,000	Horizontal				
*	8233.2						5,000	Horizontal		
*	9148.0						5,000	Horizontal		

#### Remarks:

Duty cycle correction factor has been applied to the measured PK levels

No additional spurious emissions found between lowest internal used/generated frequency and 30 MHz

\*: 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

1



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## Limits for 20dB Bandwidth of Fundamental Emission:

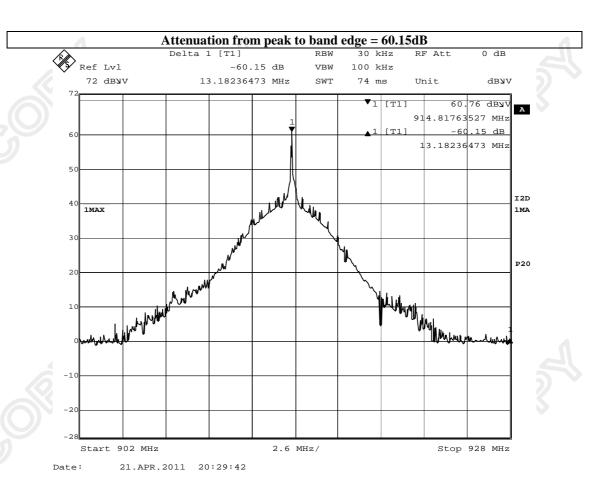
Frequency Range	20dB Bandwidth
[MHz]	[kHz]
914.81	885.772

#### 20dB Bandwidth of Fundamental Emission Marker 1 [T1 ndB] RBW 30 kHz RF Att 0 dB 20.00 dB VBW 100 kHz ndB 72 dbyv BW 885.77154309 kHz SWT 74 ms Unit dbyv A 4.81763527 MHz .00 dB вW 5.77154309 kHz $\nabla_{\mathrm{T}}$ 40.27 dBy [T1] 29659319 MHz 40.82 dBy I2D .18236473 MHz 1MAX Start 902 MHz 2.6 MHz/ Stop 928 MHz 21.APR.2011 20:29:15



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Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range [MHz]	Field strength [microvolts/meter]	Measurement distance [meters]		
0.009-0.490	2400/F(kHz)	300		
0.490-1.705	24000/F(kHz)	30		
1.705-30	30	30		
30-88	100	3		
88-216	150	3		
216-960	200	3		
Above960	500	3		

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 on mode (9k - 30MHz): PASS

	· · · · · · · · · · · · · · · · · · ·							
Field Strength of Spurious Emissions								
	Average Value							
Frequency	Measured	Correction	Field	Field	Limit	E-Field		
	Level	Factor	Strength	Strength		Polarity		
MHz	dΒμV	dB/m	dBμV/m	μV/m	μV/m			
1	Emissions detected are more than 20 dB below the FCC Limits							

## Results of Tx on mode (30MHz – 1000MHz): PASS

Field Strength of Spurious Emissions									
Quasi-Peak Value									
Frequency	Measured	Correction	Field	Field	Limit	E-Field			
	Level	Factor	Strength	Strength		Polarity			
MHz	dΒμV	dB/m	dBμV/m	μV/m	μV/m	11			
	Emissions	detected are	more than 20	dB below the I	CC Limits				

## Results of Tx on mode (Above 1000MHz): PASS

Field Strength of Spurious Emissions								
Peak Value								
Frequency	Measured	Correction	Field	Field	Limit	E-Field		
	Level	Factor	Strength	Strength		Polarity		
MHz	dΒμV	dB/m	dBμV/m	μV/m	μV/m			
Emissions detected are more than 20 dB below the FCC Limits								

#### Results of Tx on mode (Above 1000MHz): PASS

Field Strength of Spurious Emissions									
Average Value									
Frequency	Measured	Correction	Field	Field	Limit	E-Field			
	Level	Factor	Strength	Strength		Polarity			
MHz	dΒμV	dB/m	dBμV/m	μV/m	μV/m				
Emissions detected are more than 20 dB below the FCC Limits									

#### Remarks:

Correction Factor includes Antenna Factor and Cable Attenuation.

Calculated measurement uncertainty : 30MHz to 1GHz 5.1dB

## The Hong Kong Standards and Testing Centre Ltd.

10 Dai Wang Street, Taipo Industrial Estate, N.T., Hong Kong Tel: (852) 2666 1888 Fax: (852) 2664 4353 Homepage: www.hkstc.org E-mail: hkstc@hkstc.org



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## Appendix A

## **List of Measurement Equipment**

# **Radiated Emission**

Tudiuvu Eliilisioli									
EQP NO.	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CAL	DUE CAL			
EM020	HORN ANTENNA	EMCO	3115	4032	2009/09/02	2011/09/02			
EM215	MULTIDEVICE CONTROLLER	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	2010/02/09	2012/02/09			
EM229	EMI Test Receiver	R&S	ESIB40	100248	2010/11/02	2011/11/02			
EM022	LOOP ANTENNA	EMCO	6502	1189-2424	2009/07/26	2011/07/26			

#### Remarks:-

CMCorrective Maintenance

N/A Not Applicable **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 exceeded a series of 2 long (0.571142msec) 4 medium (0.270541msec) and 18 short (0.090180msec) pulses. Assuming any combination of short and long pulses may be obtained due to encoding the worse case transmit duty cycle would be considered (2x0.571142msec)+(4x0.270541msec)+(18x0.090180msec) per 100msec = 3.848% duty cycle. Figure A through E shows the characteristics of the pulses train for one of these functions.

#### Remarks:

Duty Cycle Correction = 20Log (0.03848) =-28.296dB

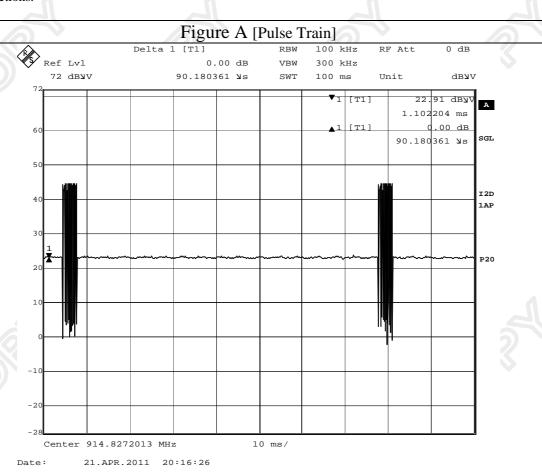
Duty Cycle Correction = -20dB, if the calculation duty cycle correction >-20dB.



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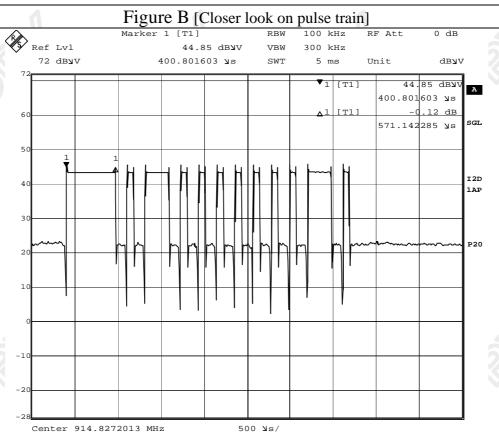
The following figures [Figure A to Figure E] showed the characteristics of the pulse train for one of these functions.





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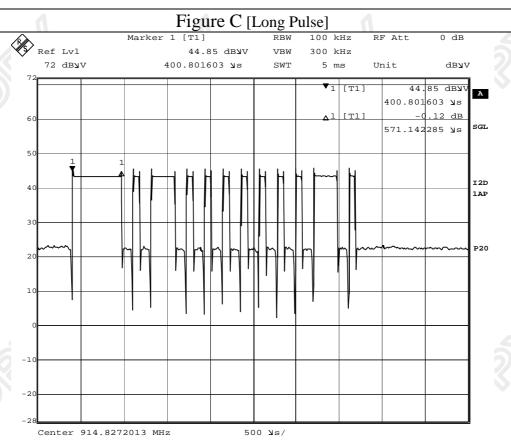


21.APR.2011 20:14:56 Date:



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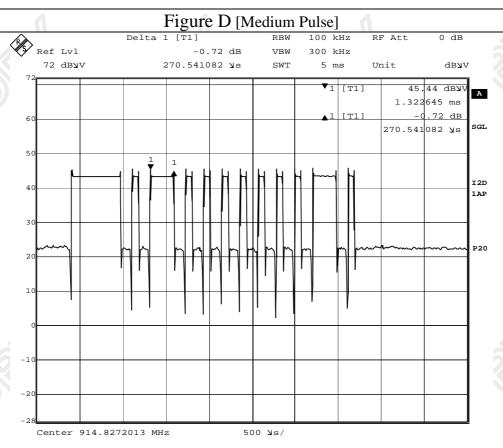


21.APR.2011 20:14:56 Date:



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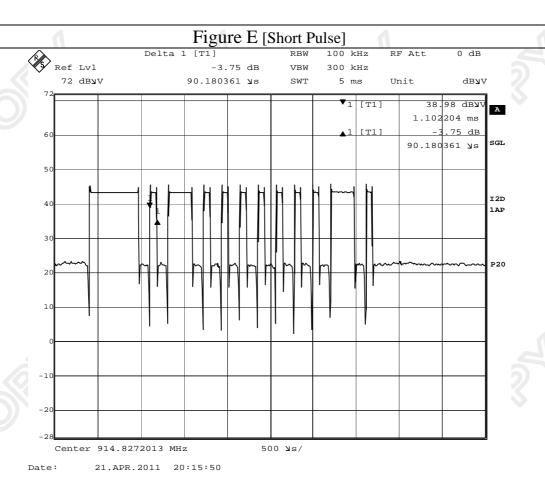


21.APR.2011 20:15:23 Date:



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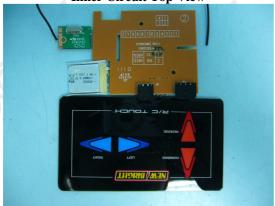
## Appendix C

## Photographs of EUT

Front View of the product



**Inner Circuit Top View** 



**Inner Circuit Bottom View** 



The Hong Kong Standards and Testing Centre Ltd.

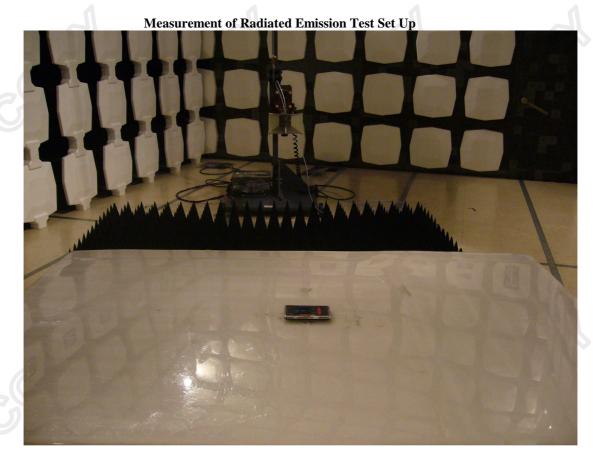
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## **Photographs of EUT**



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

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