

Page 1 of 22

Applicant (NEB001): Manufacturer:	NEW BRIGHT INDUSTRIAL CO., LTD. 9/F., NEW BRIGHT BUILDING, 11 SHEUNG YUET ROAD, KOWLOON BAY, KOWLOON, H.K. NEW BRIGHT INDUSTRIAL CO., LTD. 9/F., NEW BRIGHT BUILDING, 11 SHEUNG YUET ROAD, KOWLOON BAY, KOWLOON, H.K.			
Description of Sample(s):	Product: Brand Name: Model Number: FCC ID:	Radio Control Toy Transmitter New Bright G6DBT44-6 G6DBT44-6		
Date Sample(s) Received:	2011-04-29			
Date Tested:	2011-05-11 to 2011-05-16			
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.

This report shall not be reproduced unless with prior written approval from the Hong Kong Standards and Testing Centre Ltd. For full text of "Conditions of Issuance of Test Report", please refer to overleaf or refer to the website of Homepage.



Page 2 of 22

CON	TENT:	
	Cover Content	Page 1 of 22 Page 2-3 of 22
<u>1.0</u>	General Details	
1.1	Test Laboratory	Page 4 of 22
1.2	Applicant Details Applicant Manufacturer	Page 4 of 22
1.3	Equipment Under Test [EUT] Description of EUT operation	Page 5 of 22
1.4	Date of Order	Page 5 of 22
1.5	Submitted Sample	Page 5 of 22
1.6	Test Duration	Page 5 of 22
1.7	Country of Origin	Page 5 of 22
<u>2.0</u>	Technical Details	
2.1	Investigations Requested	Page 6 of 22
2.2	Test Standards and Results Summary	Page 6 of 22
<u>3.0</u>	Test Results	
3.1	Radiated Emission	Page 7-13 of 22



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



Page 3 of 22

# <u>Appendix A</u>

List of Measurement Equipment

Appendix B

Duty Cycle Correction During 100 msec

## Appendix C

Photographs

Page 21-22 of 22

Page 15-20 of 22

Page 14 of 22





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



No. : HM166629

# 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.

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Ltd. For Conditions of Issuance of this test report, please refer to the overleaf or Homepage

Page 4 of 22



No. : HM166629

## 1.3 Equipment Under Test [EUT] Description of Sample(s)

Product:Radio Control Toy TransmitterManufacturer:NEW BRIGHT INDUSTRIAL CO., LTD.<br/>9/F., NEW BRIGHT BUILDING, 11 SHEUNG YUET ROAD,<br/>KOWLOON BAY, KOWLOON, H.K.Brand Name:New BrightModel Number:G6DBT44-6Input 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	
	2011-04-19	
1.5	Submitted Sample(s): 1 Sample	
1.6	Test Duration	
	2011-05-11 to 2011-05-16	
1.7	Country of Origin	
	China	

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

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Ltd. For Conditions of Issuance of this test report, please refer to the overleaf or Homepage

Page 5 of 22



Page 6 of 22

# 2.0 <u>Technical Details</u>

## 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 / Test Result						
			Severity	Pass	Fail	N/A
Field Strength of Fundamental & Harmonics Emissions	FCC 47CFR 15.249	ANSI C63.4:2009	N/A	$\boxtimes$		
Radiated Emissions	FCC 47CFR 15.209	ANSI C63.4:2009	N/A	$\square$		
4						

Note: N/A - Not Applicable



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

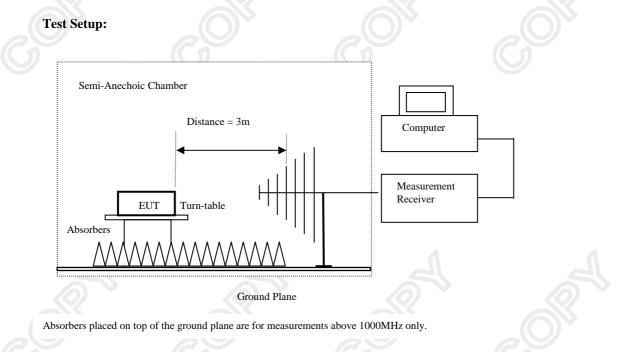


Date	: 2011-05-20		Page 7 of 22
No.	: HM166629		
<u>3.0</u>	<u>Test Results</u>		
3.1	Emission		
3.1.1	Radiated Emissions		
	Test Requirement:	FCC 47CFR 15.249	
	Test Method:	ANSI C63.4:2009	
	Test Date: Mode of Operation:	2011-05-16 Tx mode	
	mode of Operation.	1 A HIOUC	

#### **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.



## 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



No. : HM166629

Page 8 of 22

# 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
1 2	Level @3m	Factor	Strength	Strength		Polarity
MHz	dBµV/m	dBµV/m	dBµ√/m	μV/m	μV/m	
914.8	44.5	29.7	74.2	5,128.6	50,000	Horizontal

Field Strength of Harmonics Emission 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
1829.6	dDµ V/III	αDμ γ/m	αDμ V/III	μν/Π	5,000	Horizontal
* 2744.4			5,000	Horizontal		
* 3659.2	Emiss	Emissions detected are more than				Horizontal
* 4574.0	20	20 dB below the Limits				Horizontal
5488.8						Horizontal
6403.6						Horizontal
* 7318.4	]					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

- \*: 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 1GHz to 18GHz 5.2dB

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



No. : HM166629

Page 9 of 22

## 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						
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	
1829.6						Horizontal
* 2744.4						Horizontal
* 3659.2	Emiss	sions detected	are more than	l	500	Horizontal
* 4574.0	20	20 dB below the Limits				Horizontal
5488.8						Horizontal
6403.6						Horizontal
* 7318.4	]				500	Horizontal
* 8233.2					500	Horizontal
* 9148.0	1					Horizontal

Remarks:

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

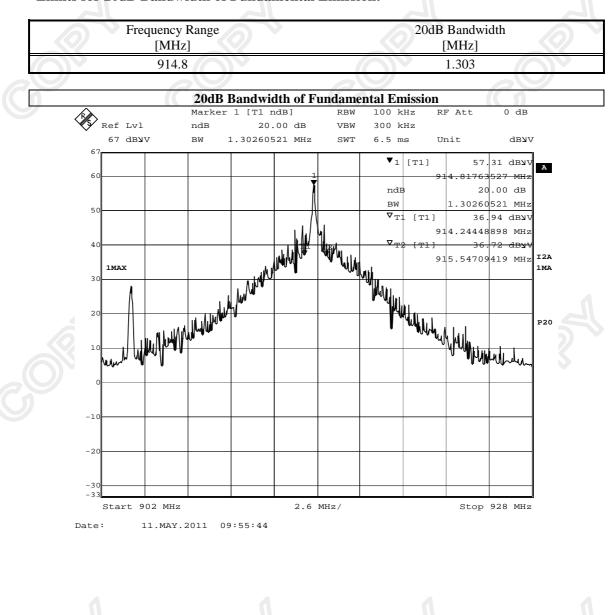


The Hong Kong Standards and Testing Centre Ltd. 10 Dai Wang Street, Taipo Industrial Estate, N.T., Hong Kong Tel: (852) 2666 1888 Fax: (852) 2664 4353 Homepage: www.hkstc.org E-mail: hkstc@hkstc.org



Page 10 of 22

## Limits for 20dB Bandwidth of Fundamental Emission:



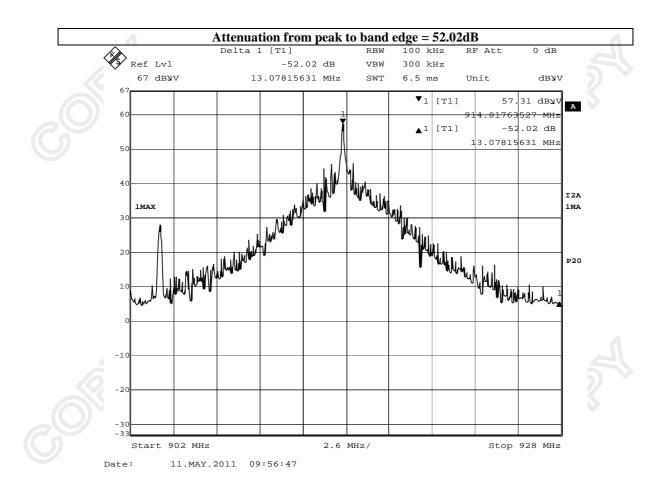


The Hong Kong Standards and Testing Centre Ltd. 10 Dai Wang Street, Taipo Industrial Estate, N.T., Hong Kong Tel: (852) 2666 1888 Fax: (852) 2664 4353 Homepage: www.hkstc.org E-mail: hkstc@hkstc.org



Page 11 of 22

No. : HM166629





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



No. : HM166629

Page 12 of 22

## 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							
A verage Value							
Frequency	Measured	Correction	Field	Field	Limit	E-Field	
	Level	Factor	Strength	Strength		Polarity	
MHz	dBμV	dB/m	_dBµV/m_	μV/m	μV/m		
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	9	Polarity		
MHz	dBµV	dB/m	dBµV/m_	μV/m	μV/m			
30.60	0.1	18.2	18.3	8.2	100.0	Horizontal		
84.80	0.1	9.1	9.2	2.9	100.0	Horizontal		
212.20	0.2	12.1	12.3	4.1	150.0	Horizontal		
570.20	0.1	21.4	21.5	11.9	200.0	Horizontal		
798.10	0.1	24.8	24.9	17.6	200.0	Horizontal		



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



Page 13 of 22

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

	<b>Field Streng</b>	th of Spuriou	s Emissions		
		Peak Value			
Measured	Correction	Field	Field	Limit	E-Field
Level	Factor	Strength	Strength		Polarity
dBµV	dB/m	dBµV/m	μV/m	μV/m	
	Level	Measured Correction Level Factor	Peak ValueMeasuredCorrectionFieldLevelFactorStrength	Measured LevelCorrectionFieldFieldFactorStrengthStrength	Peak ValueMeasuredCorrectionFieldFieldLimitLevelFactorStrengthStrength

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

Field Strength of Spurious Emissions							
A verage Value							
Frequency	Measured	Correction	Field	Field	Limit	E-Field	
	Level	Factor	Strength	Strength		Polarity	
MHz	dBµV	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



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	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:-

- CM Corrective Maintenance
- N/A Not Applicable
- TBD To Be Determined



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

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Ltd. For Conditions of Issuance of this test report, please refer to the overleaf or Homepage

Page 14 of 22



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 (0.561122msec) 6 medium (0.280561msec) and 16 short (0.080160msec) pulses. Assuming any combination of short and long pulses may be obtained due to encoding the worse case transmit duty cycle would be considered (2x0.561122msec)+(16x0.280561msec)+(16x0.080160msec) per 100msec = 4.088% duty cycle. Figure A through E shows the characteristics of the pulses train for one of these functions.

Remarks:

Duty Cycle Correction = 20Log (0.04088) =-27.77dB Duty Cycle Correction = -20dB, if the calculation duty cycle correction >-20dB.



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

This report shall not be reproduced unless with prior written approval from The Hong Kong Standards and Testing Centre Ltd. For Conditions of Issuance of this test report, please refer to the overleaf or Homepage

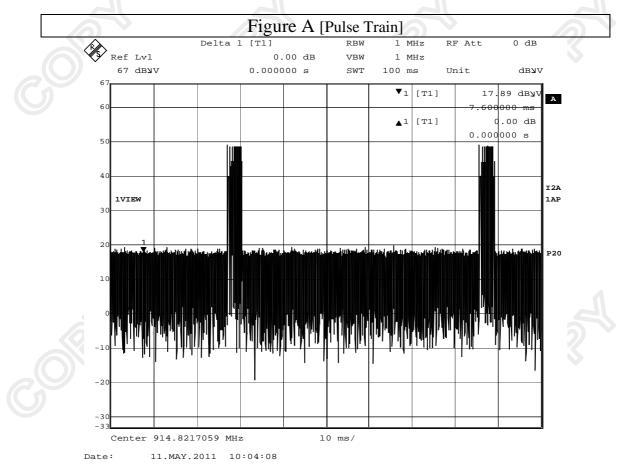
Page 15 of 22



Page 16 of 22

No. : HM166629

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

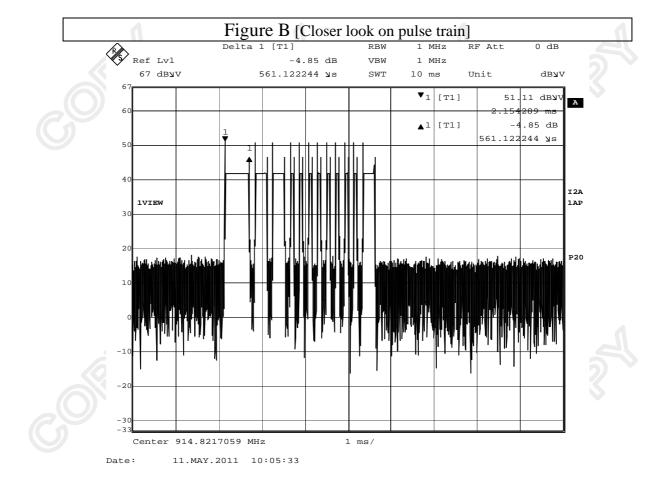




The Hong Kong Standards and Testing Centre Ltd. 10 Dai Wang Street, Taipo Industrial Estate, N.T., Hong Kong Tel: (852) 2666 1888 Fax: (852) 2664 4353 Homepage: www.hkstc.org E-mail: hkstc@hkstc.org



Page 17 of 22

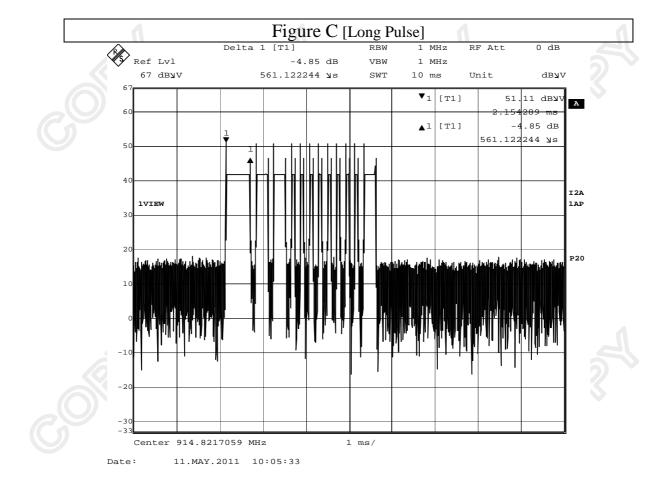




The Hong Kong Standards and Testing Centre Ltd. 10 Dai Wang Street, Taipo Industrial Estate, N.T., Hong Kong Tel: (852) 2666 1888 Fax: (852) 2664 4353 Homepage: www.hkstc.org E-mail: hkstc@hkstc.org



Page 18 of 22

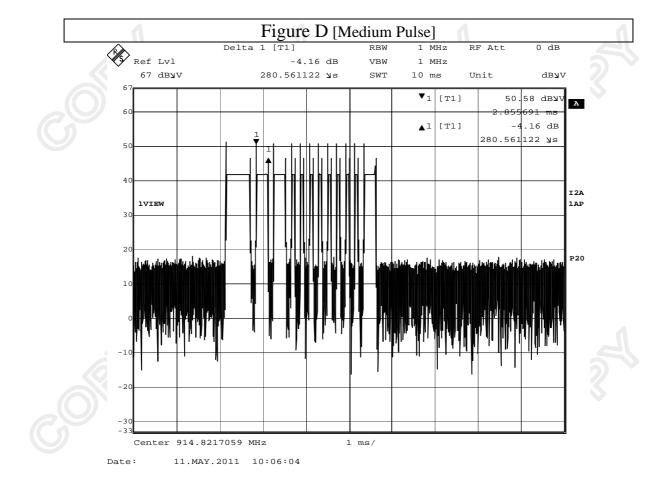




The Hong Kong Standards and Testing Centre Ltd. 10 Dai Wang Street, Taipo Industrial Estate, N.T., Hong Kong Tel: (852) 2666 1888 Fax: (852) 2664 4353 Homepage: www.hkstc.org E-mail: hkstc@hkstc.org



Page 19 of 22

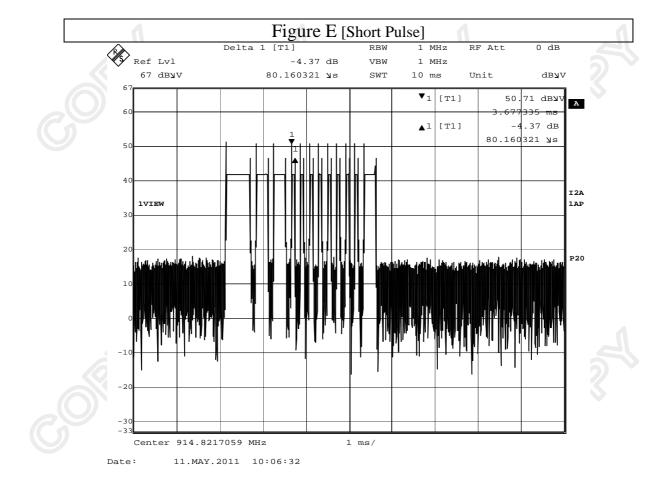




The Hong Kong Standards and Testing Centre Ltd.10 Dai Wang Street, Taipo Industrial Estate, N.T., Hong KongTel: (852) 2666 1888Fax: (852) 2664 4353Homepage: www.hkstc.orgE-mail: hkstc@hkstc.org



Page 20 of 22

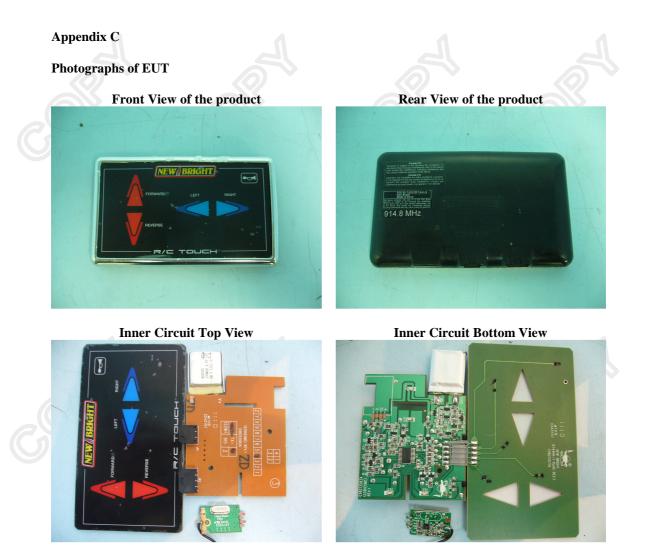




The Hong Kong Standards and Testing Centre Ltd.10 Dai Wang Street, Taipo Industrial Estate, N.T., Hong KongTel: (852) 2666 1888Fax: (852) 2664 4353Homepage: www.hkstc.orgE-mail: hkstc@hkstc.org



Page 21 of 22





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



#### **Photographs of EUT**

Page 22 of 22



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



The Hong Kong Standards and Testing Centre Ltd.10 Dai Wang Street, Taipo Industrial Estate, N.T., Hong KongTel: (852) 2666 1888Fax: (852) 2664 4353Homepage: www.hkstc.orgE-mail: hkstc@hkstc.org