



STC Test Report

Date : 2010-12-15

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No. : HM166049

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:	G6DBT44-2
FCC ID:	G6DBT44-2

Date Sample(s) Received: 2010-12-08

Date Tested: 2010-12-13

Investigation Requested: Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15: 2009 and ANSI C63.4:2009 for FCC Certification.

Conclusion(s): 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.

Remark(s): ---

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

The Hong Kong Standards and Testing Centre Ltd.

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List of Measurement Equipment

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Duty Cycle Correction During 100 msec

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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: G6DBT44-2
Input Voltage: 3.7Vd.c. (Rechargeable Battery)

1.3.1 Description of EUT Operation

The Equipment Under Test (EUT) is a New Bright Industrial Co., Ltd., Radio Control Toy Transmitter. The transmission frequency is 925MHz.

1.4 Date of Order

2010-12-08

1.5 Submitted Sample(s):

1 Sample

1.6 Test Duration

2010-12-13

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: 2009 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 / Severity	Test Result		
				Pass	Fail	N/A
Field Strength of Fundamental & Harmonics Emissions	FCC 47CFR 15.249	ANSI C63.4:2009	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Radiated Emissions	FCC 47CFR 15.209	ANSI C63.4:2009	N/A	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Note: N/A - Not Applicable

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3.0 Test Results

3.1 Emission

3.1.1 Radiated Emissions

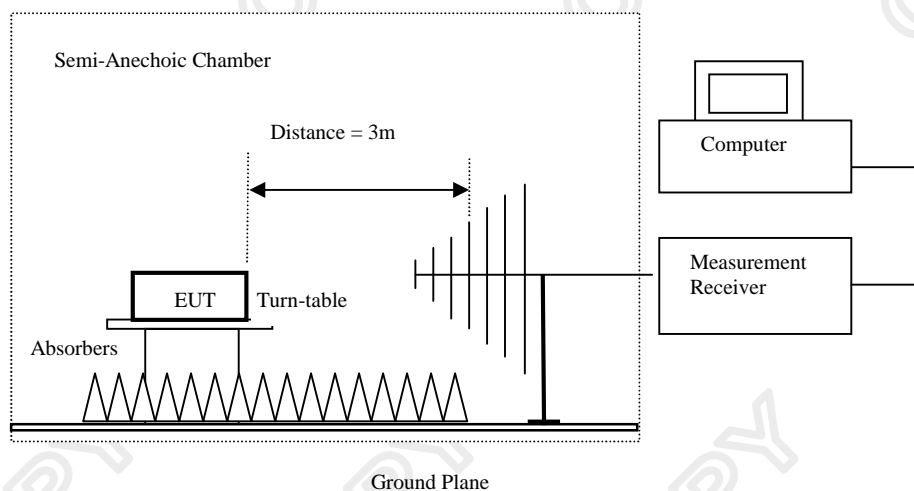
Test Requirement: FCC 47CFR 15.249
Test Method: ANSI C63.4:2009
Test Date: 2010-12-13
Mode of Operation: Tx mode

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 [MHz]	Field Strength of Fundamental Emission [microvolts/meter]	Field Strength of Harmonics Emission [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 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
925.0	54.1	26.4	80.5	10,592.5	50,000	Horizontal

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
1850.0	31.5	27.5	59.0	891.3	5,000	Horizontal
* 2775.0	21.6	29.4	51.0	354.8	5,000	Horizontal
* 3700.0	No Emission Detected				5,000	Horizontal
* 4625.0					5,000	Horizontal
5550.0					5,000	Horizontal
6475.0					5,000	Horizontal
* 7400.0					5,000	Horizontal
* 8325.0					5,000	Horizontal
9250.0					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 5.2dB
1GHz to 18GHz 5.1dB

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

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [microvolts/meter]	Field Strength of Harmonics Emission [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							
Frequency MHz	Measured Level @3m Peak dBμV/m	Duty Cycle	Correction Factor dBμV/m	Field Strength dBμV/m	Field Strength Average μV/m	Limit @3m Average μV/m	E-Field Polarity
1850.0	31.5	-5.6	27.5	53.4	469.9	500	Horizontal
* 2775.0	21.6	-5.6	29.4	49.1	285.1	500	Horizontal
* 3700.0	No Emission Detected					500	Horizontal
* 4625.0						500	Horizontal
5550.0						500	Horizontal
6475.0						500	Horizontal
* 7400.0						500	Horizontal
* 8325.0						500	Horizontal
9250.0						500	Horizontal

Remarks:

Measured PK values – Duty Cycle Correction Factor = AV value(s).

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.

Duty Cycle Correction = $20\text{Log}(0.5272) = -5.56\text{dB}$

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

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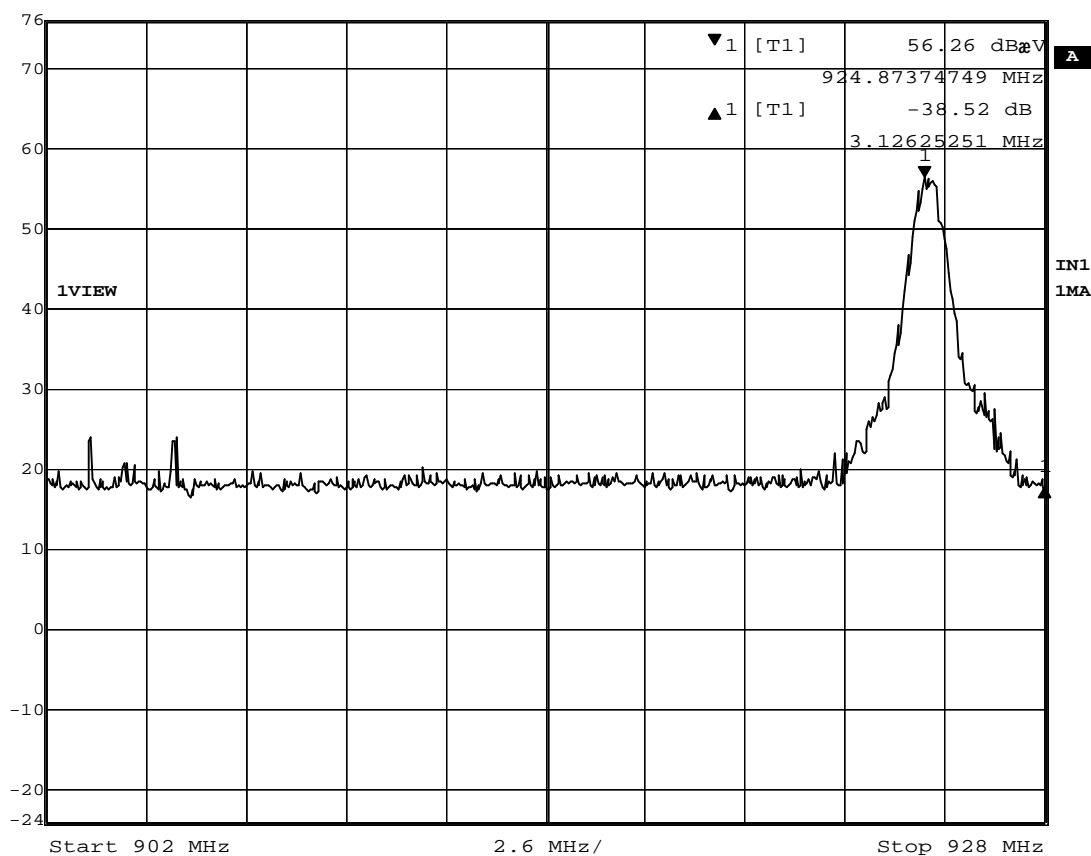
No. : HM166049

Limits for 20dB Bandwidth of Fundamental Emission:

Frequency Range [MHz]	20dB Bandwidth [MHz]
924.87	1.61

20dB Bandwidth of Fundamental Emission

	Delta 1 [T1]	RBW	300 kHz	RF Att	0 dB
Ref Lvl	-38.52 dB	VBW	300 kHz		
76 dB μ V	3.12625251 MHz	SWT	100 ms	Unit	dB μ V



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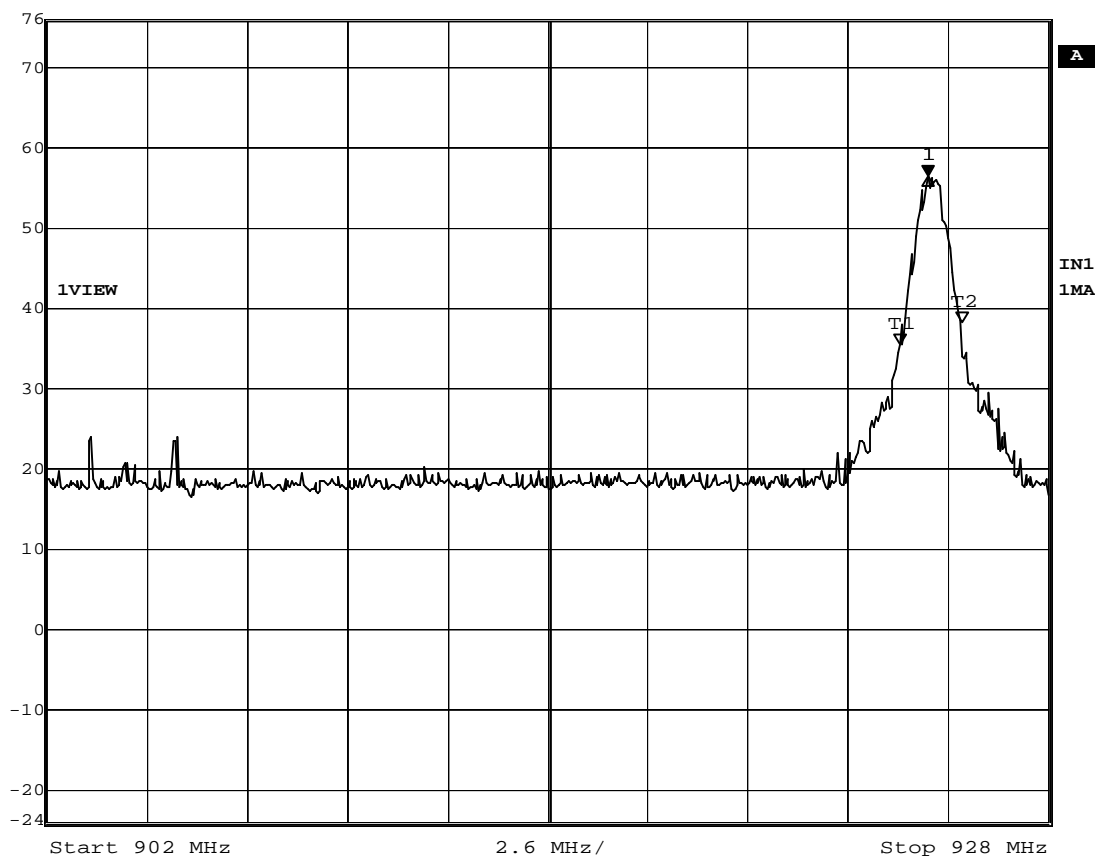
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Marker 1 [T1 ndB] RBW 300 kHz RF Att 0 dB
Ref Lvl ndB 20.00 dB VBW 300 kHz
76 dB μ V BW 1.61523046 MHz SWT 100 ms Unit dB μ V



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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
Above 960	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 MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
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 MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
Emissions detected are more than 20 dB below the FCC Limits						

Results of Tx on mode (1000MHz): PASS

Field Strength of Spurious Emissions Peak Value						
Frequency MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
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 MHz	Measured Level dBμV	Correction Factor dB/m	Field Strength dBμV/m	Field Strength μV/m	Limit μV/m	E-Field Polarity
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

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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	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 TURNABLE	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

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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 8 long (1.48msec) and 85 short (480.96µsec) pulses. Assuming any combination of short and long pulses may be obtained due to encoding the worse case transmit duty cycle would be considered $(8 \times 1.48\text{msec}) + (85 \times 480.96 \times 10^{-3})\text{msec}$ per 100msec = 52.72% duty cycle. Figure A through C shows the characteristics of the pulses train for one of these functions.

Remarks:

Duty Cycle Correction = $20\text{Log}(0.5272) = -5.56\text{dB}$

Duty Cycle Correction = -20dB, if the calculation duty cycle correction $> -20\text{dB}$.

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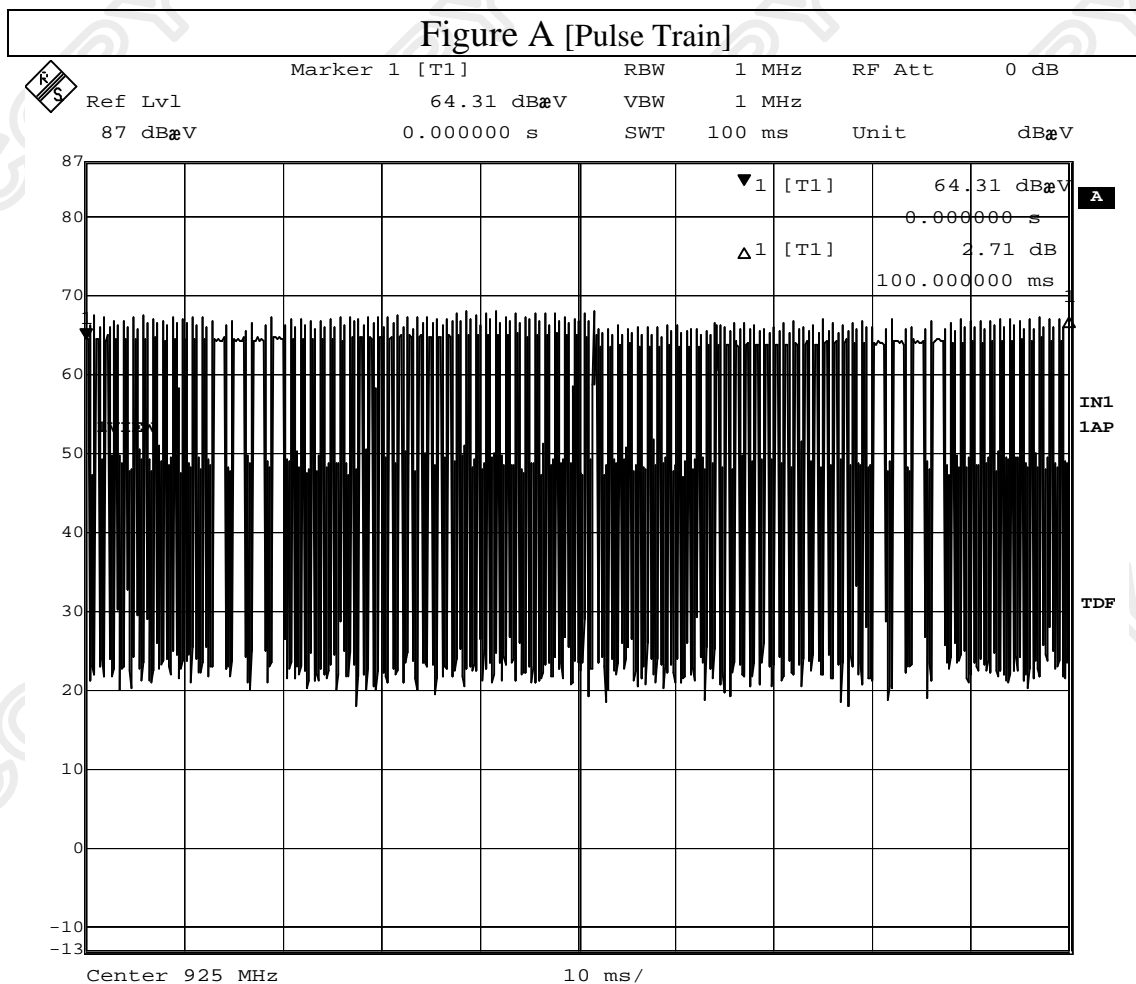
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The following figures [Figure A to Figure C] showed the characteristics of the pulse train for one of these functions.



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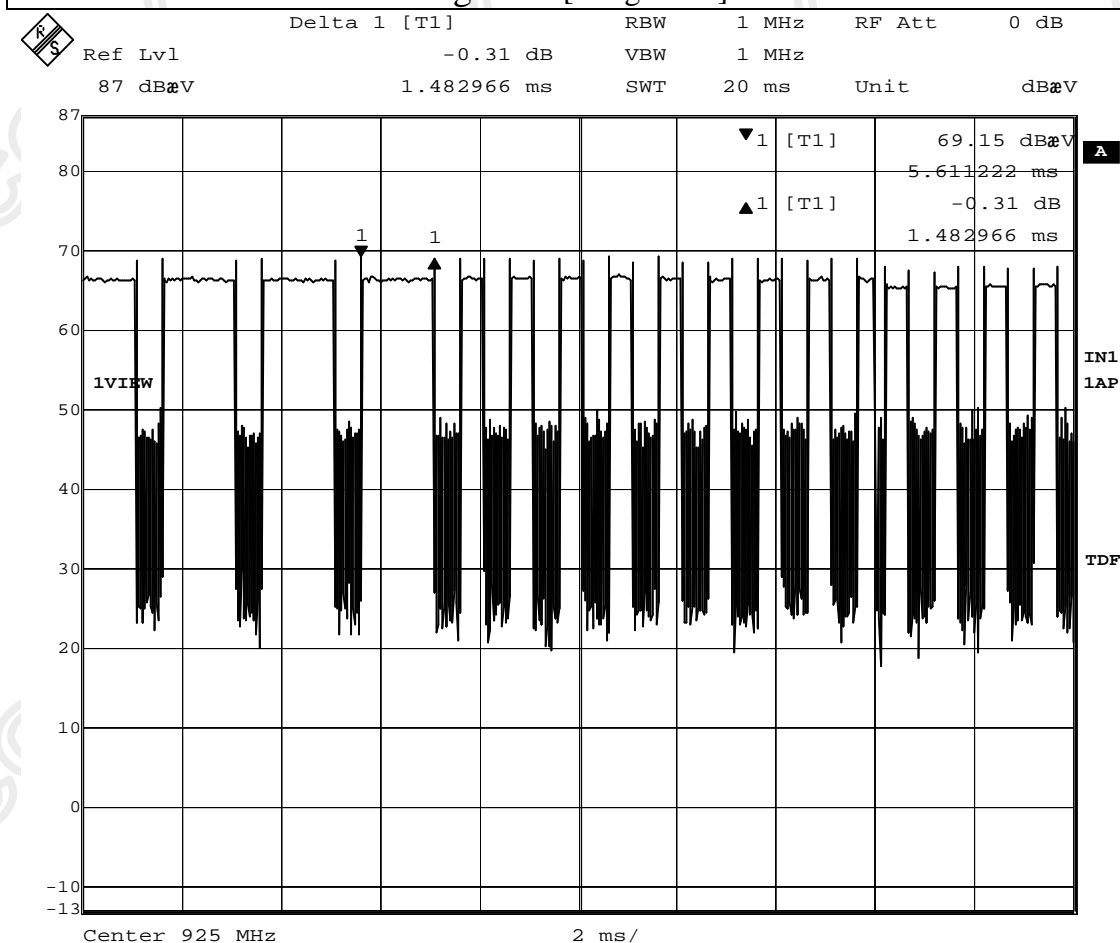
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Figure B [Long Pulse]



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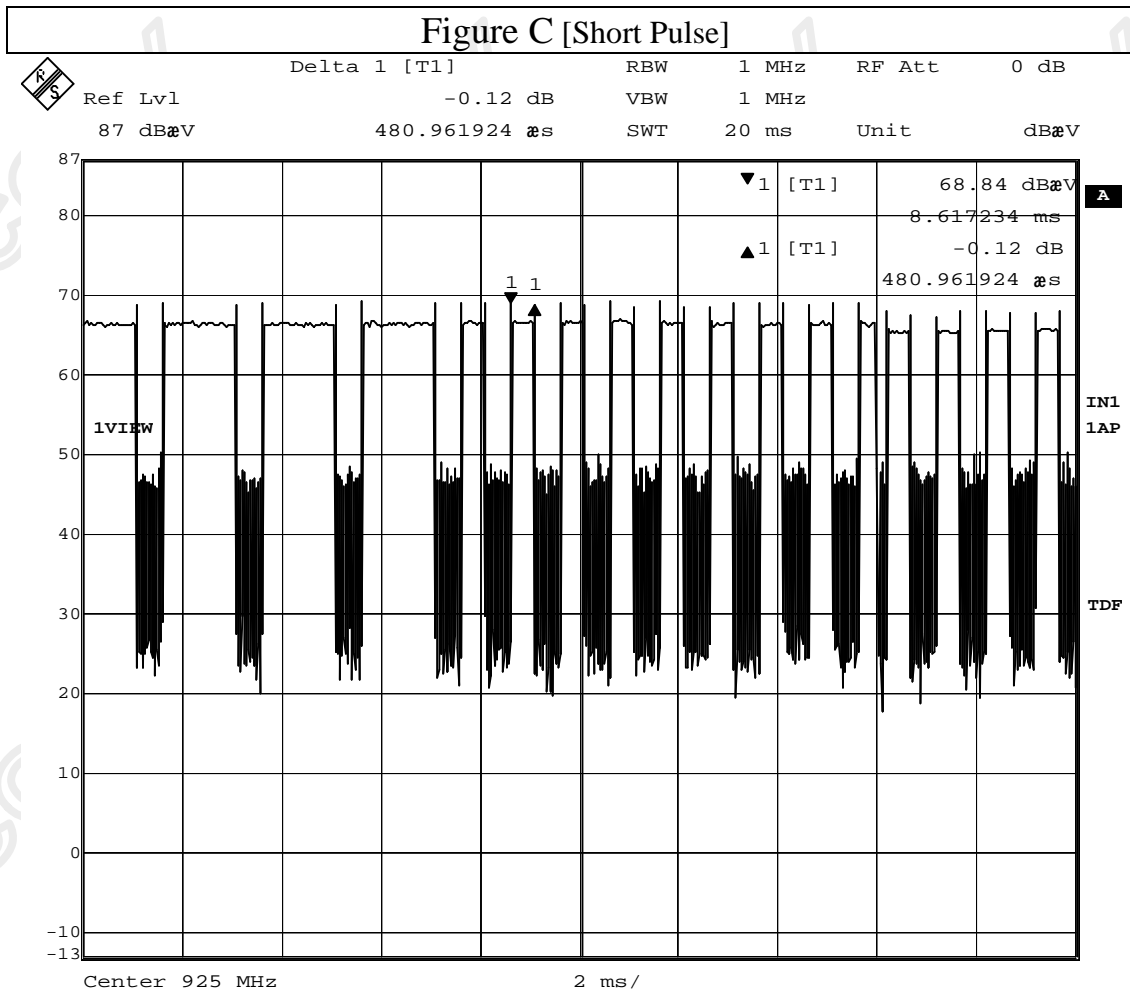
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Figure C [Short Pulse]



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Appendix C

Photographs of EUT

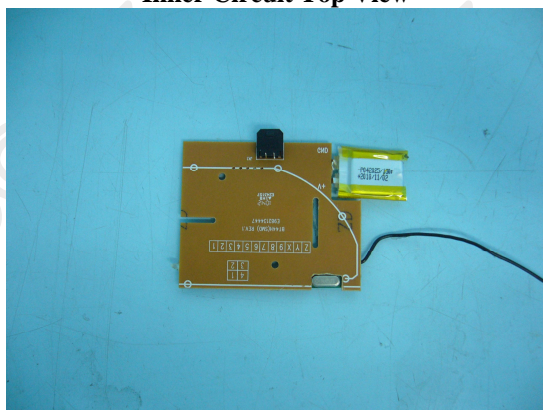
Front View of the product



Rear View of the product



Inner Circuit Top View



Inner Circuit Bottom View



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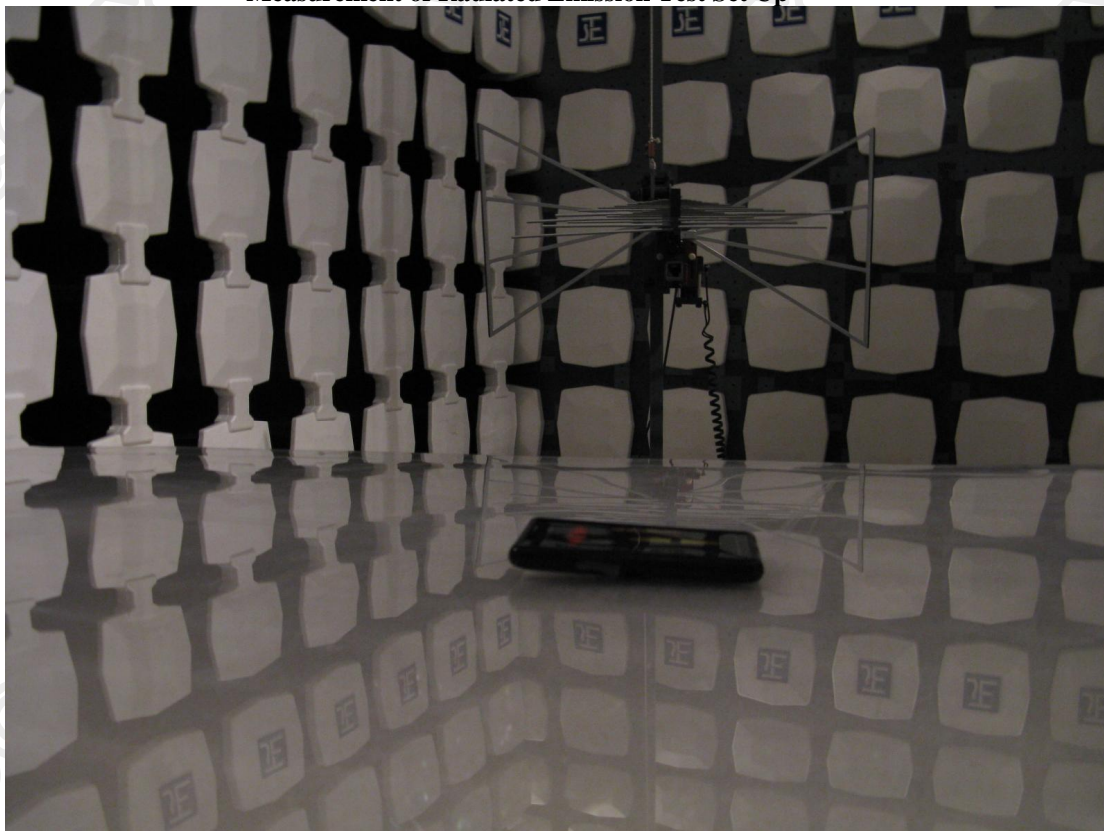
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Photographs of EUT

Measurement of Radiated Emission Test Set Up



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