



BUREAU VERITAS

TEST REPORT No: (5215)292-1793

# TEST REPORT

To:	<b>GOLDEN BRIGHT MANUFACTUER LTD.</b>	To:	-
Attn:	Eric Fung / Henry Lee / Carman Kwan	Attn:	-
Address:	Room 1008-9, 10/F., Peninsula Centre, 67 Mody Road, Tsim Sha Tsui East, Kowloon, HK	Address:	-
Fax:	27243821	Fax:	-
E-mail:	<a href="mailto:sales@golden-bright.com">sales@golden-bright.com</a> / <a href="mailto:labtest@gb-ts.com">labtest@gb-ts.com</a> / <a href="mailto:linyuchang@gb-ts.com">linyuchang@gb-ts.com</a>	E-mail:	-

Folder No.:	--
Factory name:	--
Location:	--
Product:	Remote Control Boat Model No.: 9310 Additional Model No.: 93101



Sample No:	(5215)292-1793
Test date:	October 28, 2015 to November 12, 2015
Test Requested:	FCC Part 15 - 2012
Test Method:	ANSI C63.4 - 2009
FCC ID:	O2X93100

The results given in this report are related to the tested specimen of the described electrical apparatus.

**CONCLUSION:** The submitted sample was found to COMPLY with requirement of FCC Part 15 Subpart C.

Authorized Signature:

Reviewed by: Keith Yeung	Approved by: Law Man Kit
Date: November 18, 2015	Date: November 18, 2015

**BUREAU VERITAS HONG KONG LIMITED –**  
**Kowloon Bay Office**  
**1/F Pacific Trade Centre,**  
**2 Kai Hing Road, Kowloon Bay,**  
**Kowloon, HONG KONG**  
 Tel: +852 2331 0888  
 Fax: +852 2331 0889  
 www.cps.bureauveritas.com

This report is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. Our report is limited to the test samples identified herein. The results set forth in this report are not necessarily indicative or representative of the statistical quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof. You shall have thirty days from receipt of this report to request additional testing of the samples or to notify us of any errors or omissions relating to our report, provided, however, such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.



**TEST REPORT No: (5215)292-1793**  
**Test Result Summary**

<b>EMISSION TEST</b>			
<b>Test requirement: FCC Part 15 - 2012</b>			
Test Condition	Test Method	Test Result	
		Pass	Failed
Radiated Emission Test, 9kHz to 25GHz	ANSI C63.4	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Frequency range of Fundamental Emission	ANSI C63.4	<input checked="" type="checkbox"/>	<input type="checkbox"/>
26dB Bandwidth of Fundamental Emission	ANSI C63.4	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Duty Cycle Correction During 100msec	ANSI C63.4	<input checked="" type="checkbox"/>	<input type="checkbox"/>

**Report Revision & Sample Re-submit History:**

Sample first submission date: October 23, 2015

Sample second submission date: November 11, 2015



## TEST REPORT No: (5215)292-1793

### Location of the test laboratory

Radiated and Conducted emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2009. An Open Area Test Site and Full Anechoic Chamber (FCC Listed Site, Registration No. 642151) are set up for investigation and located at :

### BUREAU VERITAS HONG KONG LIMITED, EMC CENTRE

No. 2106-2107, 21/F., Westin Centre,  
26 Hung To Road,  
Kwun Tong, Kowloon,  
Hong Kong

### List of measuring equipment

#### Radiated Emission

EQUIPMENT	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CALIBRATION	CALIBRATION DUE
EMI TEST RECEIVER	R&S	ESCI	100379	04-FEB-2015	03-FEB-2016
SIGNAL ANALYZER 40GHZ	ROHDE & SCHWARZ	FSV 40	100977	30-JUN-2015	29-JUN-2016
SPECTRUM ANALYZER	R&S	R3127	111000909	27-APR-2015	26-APR-2016
LOOP ANTENNA	ETS LINDGREN	6502	00102266	05-NOV-2014	06-NOV-2015
BILOG ANTENNA	SCHAFFNER	CBL6112D	25229	03-FEB-2015	02-FEB-2016
HORN ANTENNA	SCHWARZBECK	BBHA9120D	9120D-692	27-DEC-2014	26-DEC-2015
WIDEBAND HORN ANTENNA 18 TO 40GHZ	STEATITE	QWH-SL-18-40-K-SG	12688	03-SEP-2015	02-SEP-2016
OPEN AREA TEST SITE	BVCPS	N/A	N/A	19-JUN-2015	18-JUN-2016
ANECHOIC CHAMBER	ALBATROSS	M-CDC	80374004499B	13-FEB-2015	12-FEB-2016
COAXIAL CABLE	SUHNER	N/A	N/A	08-JAN-2015	07-JAN-2016
HIGH FREQUENCY RF CABLE	ROHDE & SCHWARZ	N/A	N/A	04-NOV-2015	03-NOV-2016

### Measurement Uncertainty

MEASUREMENT	FREQUENCY	UNCERTAINTY
Radiated emissions	9kHz to 30MHz	4.2dB
	30MHz to 1GHz	5.0dB
	1GHz to 18GHz	4.9dB
	18GHz to 40GHz	4.8dB

#### Remarks:-

N/A : Not Applicable or Not Available

The measurement instrumentation uncertainty would be taking into consideration on each of the test result

## TEST REPORT No: (5215)292-1793

### Equipment Under Test [EUT]

#### Description of Sample:

Model Name: Remote Control Boat  
 Model Number: 9310  
 Additional Model Number: 93101  
 Additional Model information: Declare the Circuit, PCB layout and Electrical parts of the products are identical to the basic model, except the appearance.  
 Rating: 3Vd.c. ("AA" size battery x 2)

#### Description of EUT Operation:

The Equipment Under Test (EUT) is a **GOLDEN BRIGHT MANUFACTUER LTD.** of Remote Control Transmitter. It is a 1 switch and 2 sticks transmitter and operating at 2414MHz to 2467MHz. The lowest, middle and highest frequencies were tested and the results are shown in the report. The EUT transmit while buttons is being pressed or sticks are being pushed or pulled, Modulation by IC, and type is GFSK.

There are total 18 channels and below is the frequency list :

2414	2417	2419	2421	2425	2428	2433	2436	2438	2442
2445	2447	2448	2451	2455	2459	2465	2467		

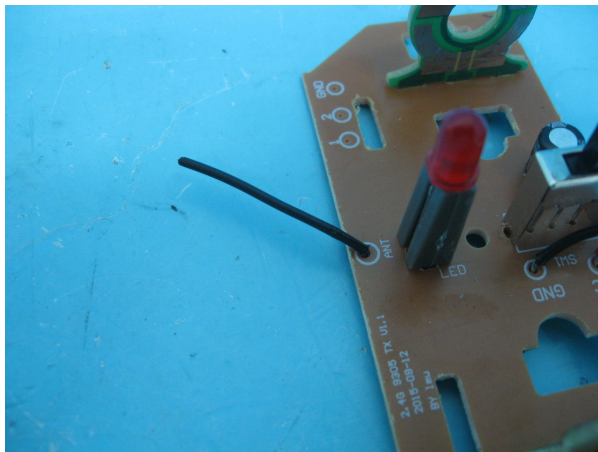
The transmitter has different control:

1. ON/OFF Switch – power control
2. Left Stick – left motor control
3. Right Stick – right motor control

#### Antenna Requirement (Section 15.203)

The EUT is use of a permanently antenna. It is soldered on the PCB. The antenna consists of 2.6cm long wire The antenna is not replaceable or user serviceable. The requirements of S15.203 are met. There are no deviations or exceptions to the specifications.

#### Photo of Antenna



**TEST REPORT No: (5215)292-1793**

**Test Results**

**Radiated Emissions (Fundamental)**

Test Requirement: FCC Part 15 Section 15.249  
 Test Method: ANSI C63.4  
 Test Date(s): 2015-11-12  
 Temperature: 30.0 °C  
 Humidity: 75.0 %  
 Atmospheric Pressure: 100.2 kPa  
 Mode of Operation: Transmission mode  
 Tested Voltage: 3Vd.c. ("AA" size battery x 2)

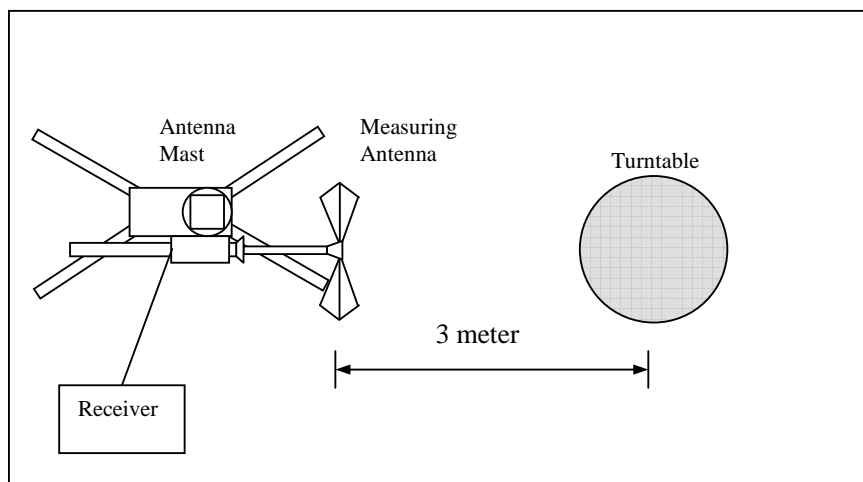
**Test Procedure:**

Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2009.

The equipment under test (EUT) was placed on a non-conductive turntable with dimensions of 1.5m x 1m and 0.8m high above the ground. 3m from the EUT, a broadband antenna mounting on the mast received the signal strength. 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, For battery operated equipment, the equipment tests shall be perform using new battery. The turntable was rotated to maximize the emission level. The antenna was then moving along the mast from 1m up to 4m until no more higher value was found. Both horizontal and vertical polarization of the antenna were placed and investigated.

Location: The Roof, Westin Centre, 26 Hung To Road, Kwun Tong, Kowloon, Hong Kong

**Test Setup: Open Area Test Site**





## TEST REPORT No: (5215)292-1793

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

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission (Average) [mV/m]	Field Strength of Harmonics Emission (Average) [μV/m]
2400-2483.5	50	500

### Measurement Data

#### Test Result of (Transmission mode, Lowest frequency): PASS

Frequency (MHz)	Polarity (H/V)	Antenna Factor & Cable Loss (dB/m)	Duty-cycle correction (dB)	Field Strength at 3m – Peak (dBμV/m)	Limit at 3m – Peak (dBμV/m)	Margin - Peak (dB)	Field Strength at 3m – Average (dBμV/m)	Limit at 3m – Average (dBμV/m)	Margin - Average (dB)
2414.00	H	*0.0	-24.4	84.6	114.0	-29.4	**60.2	94.0	-33.8
2414.00	V	*0.0	-24.4	84.4	114.0	-29.6	**60.0	94.0	-34.0

#### Test Result of (Transmission mode, Middle frequency): PASS

Frequency (MHz)	Polarity (H/V)	Antenna Factor & Cable Loss (dB/m)	Duty-cycle correction (dB)	Field Strength at 3m – Peak (dBμV/m)	Limit at 3m – Peak (dBμV/m)	Margin - Peak (dB)	Field Strength at 3m – Average (dBμV/m)	Limit at 3m – Average (dBμV/m)	Margin - Average (dB)
2445.00	H	*0.0	-24.4	83.9	114.0	-30.1	**59.5	94.0	-34.5
2445.00	V	*0.0	-24.4	83.6	114.0	-30.4	**59.2	94.0	-34.8

#### Test Result of (Transmission mode, Highest frequency): PASS

Frequency (MHz)	Polarity (H/V)	Antenna Factor & Cable Loss (dB/m)	Duty-cycle correction (dB)	Field Strength at 3m – Peak (dBμV/m)	Limit at 3m – Peak (dBμV/m)	Margin - Peak (dB)	Field Strength at 3m – Average (dBμV/m)	Limit at 3m – Average (dBμV/m)	Margin - Average (dB)
2467.00	H	*0.0	-24.4	85.8	114.0	-28.2	**61.4	94.0	-32.6
2467.00	V	*0.0	-24.4	85.4	114.0	-28.6	**61.0	94.0	-33.0

# For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.

\* Correction factor: Antenna factor + Cable loss - Gain of pre-amplifier

\*\*Duty Cycle Correction =  $20\text{Log}(0.06) = -24.4\text{dB}$ .

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz  
VBW = 1MHz



## TEST REPORT No: (5215)292-1793

### Radiated Emissions (Spurious Emission)

Test Requirement: FCC Part 15 Section 15.249  
 Test Method: ANSI C63.4  
 Test Date(s): 2015-11-12  
 Temperature: 30.0 °C  
 Humidity: 75.0 %  
 Atmospheric Pressure: 100.2 kPa  
 Mode of Operation: Transmission mode  
 Tested Voltage: 3Vd.c. ("AA" size battery x 2)

### Measurement Data

#### Test Result of (Transmission mode, Lowest frequency): PASS

Frequency (MHz)	Polarity (H/V)	Antenna Factor & Cable Loss (dB/m)	Duty-cycle correction (dB)	Field Strength at 3m – Peak (dBμV/m)	Limit at 3m – Peak (dBμV/m)	Margin - Peak (dB)	Field Strength at 3m – Average (dBμV/m)	Limit at 3m – Average (dBμV/m)	Margin - Average (dB)
4828.00	H	5.9	-24.4	59.2	74.0	-14.8	**34.8	54.0	-19.2
7242.00	H	12.7	-24.4	56.3	74.0	-17.7	**31.9	54.0	-22.1
9656.00	H	16.4	-24.4	52.9	74.0	-21.1	**28.5	54.0	-25.5
12070.00	H	18.4	-24.4	54.9	74.0	-19.1	**30.5	54.0	-23.5
14484.00	H	23.2	-24.4	61.3	74.0	-12.7	**36.9	54.0	-17.1
16898.00	H	22.0	-24.4	62.1	74.0	-11.9	**37.7	54.0	-16.3
19312.00	H	46.3	-24.4	61.7	74.0	-12.3	**37.3	54.0	-16.7
21726.00	H	47.1	-24.4	60.8	74.0	-13.2	**36.4	54.0	-17.6
24140.00	H	47.5	-24.4	62.0	74.0	-12.0	**37.6	54.0	-16.4
26554.00	H	48.5	-24.4	60.9	74.0	-13.1	**36.5	54.0	-17.5

# For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.

\*\*Duty Cycle Correction =  $20\text{Log}(0.06) = -24.4\text{dB}$ .

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz  
VBW = 1MHz



**TEST REPORT No: (5215)292-1793**

**Measurement Data**

**Test Result of (Transmission mode, Lowest frequency): PASS**

Frequency (MHz)	Polarity (H/V)	Antenna Factor & Cable Loss (dB/m)	Duty-cycle correction (dB)	Field Strength at 3m – Peak (dB $\mu$ V/m)	Limit at 3m – Peak (dB $\mu$ V/m)	Margin - Peak (dB)	Field Strength at 3m – Average (dB $\mu$ V/m)	Limit at 3m – Average (dB $\mu$ V/m)	Margin - Average (dB)
4828.00	V	5.9	-24.4	64.8	74.0	-9.2	**40.4	54.0	-13.6
7242.00	V	12.7	-24.4	57.2	74.0	-16.8	**32.8	54.0	-21.2
9656.00	V	16.4	-24.4	53.3	74.0	-20.7	**28.9	54.0	-25.1
12070.00	V	18.4	-24.4	54.7	74.0	-19.3	**30.3	54.0	-23.7
14484.00	V	23.2	-24.4	61.8	74.0	-12.2	**37.4	54.0	-16.6
16898.00	V	22.0	-24.4	62.7	74.0	-11.3	**38.3	54.0	-15.7
19312.00	V	46.3	-24.4	62.5	74.0	-11.5	**38.1	54.0	-15.9
21726.00	V	47.1	-24.4	62.8	74.0	-11.2	**38.4	54.0	-15.6
24140.00	V	47.5	-24.4	62.5	74.0	-11.5	**38.1	54.0	-15.9
26554.00	V	48.5	-24.4	61.1	74.0	-12.9	**36.7	54.0	-17.3

# For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.

\*\*Duty Cycle Correction =  $20\text{Log}(0.06) = -24.4\text{dB}$ .

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz  
VBW = 1MHz





BUREAU VERITAS

TEST REPORT No: (5215)292-1793

Measurement Data

Test Result of (Transmission mode, Middle frequency): PASS

Table with 10 columns: Frequency (MHz), Polarity (H/V), Antenna Factor & Cable Loss (dB/m), Duty-cycle correction (dB), Field Strength at 3m - Peak (dBµV/m), Limit at 3m - Peak (dBµV/m), Margin - Peak (dB), Field Strength at 3m - Average (dBµV/m), Limit at 3m - Average (dBµV/m), Margin - Average (dB). Rows include frequencies from 4890.00 to 26895.00 MHz.

Table with 10 columns: Frequency (MHz), Polarity (H/V), Antenna Factor & Cable Loss (dB/m), Duty-cycle correction (dB), Field Strength at 3m - Peak (dBµV/m), Limit at 3m - Peak (dBµV/m), Margin - Peak (dB), Field Strength at 3m - Average (dBµV/m), Limit at 3m - Average (dBµV/m), Margin - Average (dB). Rows include frequencies from 4890.00 to 26895.00 MHz.

# For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.

\*\*Duty Cycle Correction = 20Log(0.06) = -24.4dB.

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz, VBW = 1MHz



BUREAU VERITAS

TEST REPORT No: (5215)292-1793

Measurement Data

Test Result of (Transmission mode, Highest frequency): PASS

Table with 10 columns: Frequency (MHz), Polarity (H/V), Antenna Factor & Cable Loss (dB/m), Duty-cycle correction (dB), Field Strength at 3m - Peak (dBµV/m), Limit at 3m - Peak (dBµV/m), Margin - Peak (dB), Field Strength at 3m - Average (dBµV/m), Limit at 3m - Average (dBµV/m), Margin - Average (dB). Rows include frequencies from 4934.00 to 27137.00 MHz.

Table with 10 columns: Frequency (MHz), Polarity (H/V), Antenna Factor & Cable Loss (dB/m), Duty-cycle correction (dB), Field Strength at 3m - Peak (dBµV/m), Limit at 3m - Peak (dBµV/m), Margin - Peak (dB), Field Strength at 3m - Average (dBµV/m), Limit at 3m - Average (dBµV/m), Margin - Average (dB). Rows include frequencies from 4934.00 to 27137.00 MHz.

# For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.

\*\*Duty Cycle Correction = 20Log(0.06) = -24.4dB.

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz
VBW = 1MHz



**TEST REPORT No: (5215)292-1793**

**Radiated Emissions (30MHz – 2.4GHz)**

Test Requirement: FCC Part 15 Section 15.209  
 Test Method: ANSI C63.4  
 Test Date(s): 2015-10-28  
 Temperature: 29.0 °C  
 Humidity: 77.0 %  
 Atmospheric Pressure: 100.8 kPa  
 Mode of Operation: On mode  
 Tested Voltage: 3Vd.c. ("AA" size battery x 2)

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

Frequency Range [MHz]	Quasi-Peak Limits [ $\mu\text{V}/\text{m}$ ]	Measurement Distance m
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

**Measurement Data**

**Test Result of (On mode): PASS**

**Detection mode: Quasi-Peak**

Frequency	Polarity (H/V)	Field Strength	Limit	Margin (dB)
Emissions detected are more than 20 dB below the limit line(s) in 9kHz to 30MHz				

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 200Hz  
 VBW = 200Hz



**TEST REPORT No: (5215)292-1793**  
**Measurement Data**

**Test Result of (On mode): PASS**

**Detection mode: Quasi-Peak**

Frequency	Polarity	Field Strength	Limit	Margin (dB)
43.40	H	26.3	40.0	-13.7
119.40	H	22.4	43.5	-21.1
184.16	H	21.2	43.5	-22.3
285.00	H	24.9	46.0	-21.1
349.72	H	23.5	46.0	-22.5
516.52	H	29.0	46.0	-17.0

Frequency	Polarity	Field Strength	Limit	Margin (dB)
43.40	V	26.8	40.0	-13.2
119.40	V	22.1	43.5	-21.4
184.16	V	21.3	43.5	-22.2
285.00	V	24.6	46.0	-21.4
349.72	V	23.9	46.0	-22.1
516.52	V	29.2	46.0	-16.8

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 120kHz  
VBW = 120kHz



## TEST REPORT No: (5215)292-1793

### Frequency range of Fundamental Emission

Test Requirement: FCC 47 CFR 15.249  
Test Method: ANSI C63.4:2009 (Section 13.1.7)  
Test Date(s): 2015-10-28  
Temperature: 29.0 °C  
Humidity: 77.0 %  
Atmospheric Pressure: 100.8 kPa  
Mode of Operation: Transmission mode  
Tested Voltage: 3Vd.c. ("AA" size battery x 2)

#### 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.

#### Limits for Frequency range of Fundamental Emission:

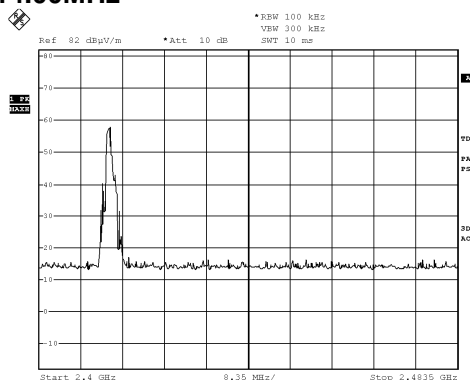
Frequency [MHz]	FCC Limits [MHz]
2413.10 – 2467.76	2400 – 2483.5

**TEST REPORT No: (5215)292-1793**

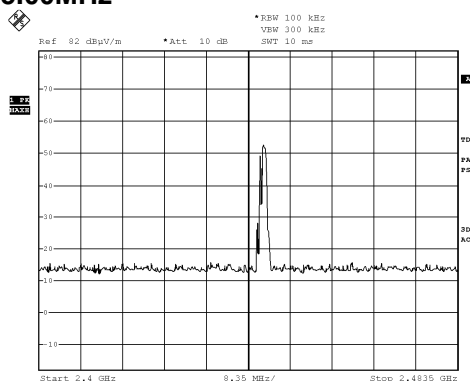
**Measurement Data :**

**Test Result of Frequency Range of Fundamental Emission: PASS**

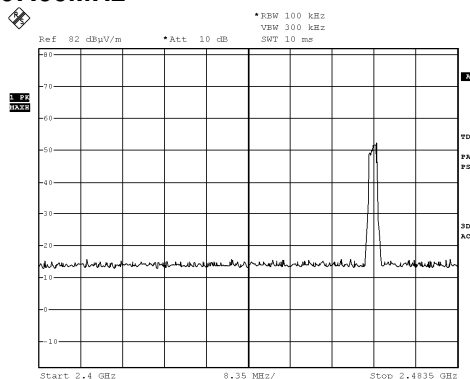
**Lowest Frequency – 2414.00MHz**



**Middle Frequency – 2445.00MHz**



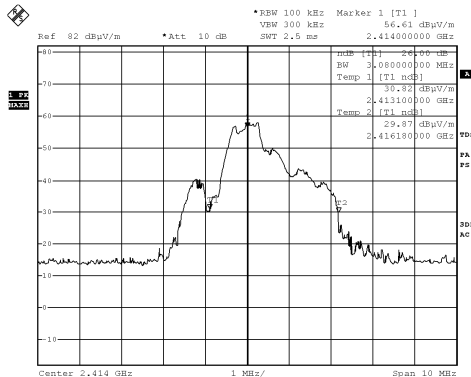
**Highest Frequency – 2467.00MHz**



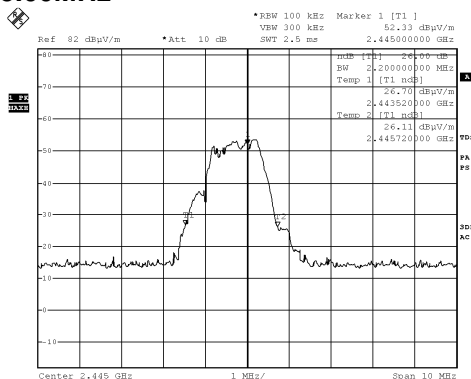
**TEST REPORT No: (5215)292-1793**  
**Measurement Data :**

**Test Result of 26dB Bandwidth of Fundamental Emission: PASS**

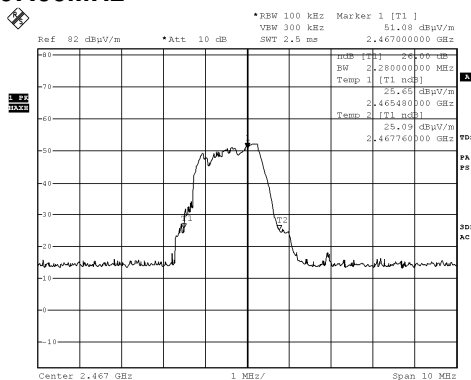
**Lowest Frequency – 2414.00MHz**



**Middle Frequency – 2445.00MHz**



**Highest Frequency – 2467.00MHz**





## TEST REPORT No: (5215)292-1793

### Duty Cycle Correction During 100msec:

Each function key sends a different series of characters, but each packet period (100msec) never exceeds a series of 3 pulses (2msec). Assuming any combination of short and long pulses maybe obtained due to encoding the worst case transmit duty cycle would be considered  $3 \times 2$  per 100msec = 6% duty cycle.

Remarks:

Duty Cycle Correction =  $20\text{Log}(0.06) = -24.4\text{dB}$   
Therefore, -20dB is taken

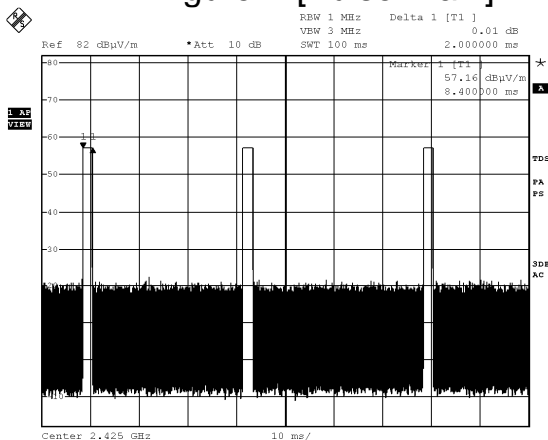
The following figures [Figure A] show the characteristics of the pulse train for one of these functions.



**TEST REPORT No: (5215)292-1793**

**Measurement Data :**

**Figure A [Pulse Train]**



**TEST REPORT No: (5215)292-1793**

**Photographs of EUT**

**Front View of the product**



**Rear View of the product**



**Top View of the product**



**Bottom View of the product**



**Side View of the product**



**Side View of the product**



**Battery compartment**



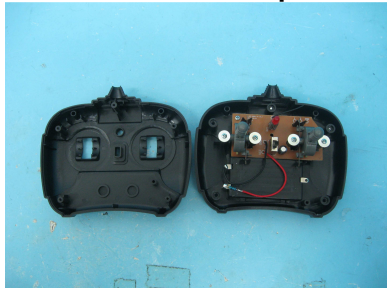
**Battery Cover**



**TEST REPORT No: (5215)292-1793**

**Photographs of EUT**

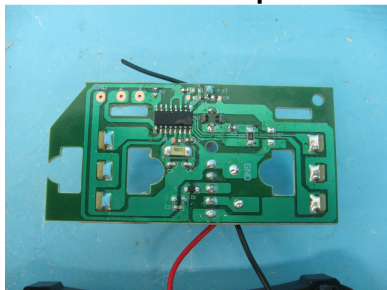
**Internal View of the product**



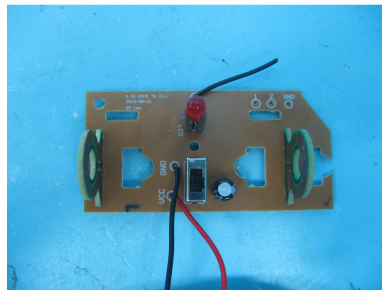
**Internal View of the product**



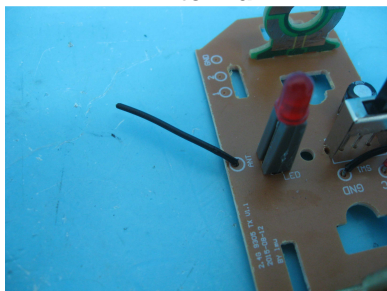
**Inner Circuit Top View**



**Inner Circuit Bottom View**



**Antenna**



**TEST REPORT No: (5215)292-1793**

**Measurement of Radiated Emission Test Set Up**



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