

**TEST REPORT No: (5217)116-1107**

## TEST REPORT

To:	<b>HUANG BO TOYS FACTORY</b>	To:	-
Attn:	Wei Huang Wang	Attn:	-
Address:	25 4 <sup>th</sup> Road, Dongguahu Industrial Area, Huaize, Lianx, Shantou, Guangdong Province, China	Address:	-
Fax:	--	Fax:	-
E-mail:	--	E-mail:	-
Folder No.:	--		
Factory name:	--		
Location:	--		
Product:	2.4G Radio Control climb car Model No.: HB-P1001		
		Sample No:	(5217)116-1107
		Date of Receipt:	May 04, 2017
		Test date:	June 10, 2017
		Test Requested:	FCC Part 15 - 2015
		Test Method:	ANSI C63.10 - 2013
		FCC ID:	ZY3-HB-P1001-24
<p><b>The results given in this report are related to the tested specimen of the described electrical apparatus.</b></p> <p><b>CONCLUSION: The submitted sample was found to <u>COMPLY</u> with requirement of FCC Part 15 Subpart C.</b></p>			
Authorized Signature:			
			
Reviewed by: Kinko Wong		Approved by: Law Man kit	
Date: June 22, 2017		Date: June 22, 2017	



**TEST REPORT No: (5217)116-1107**

## **Test Result Summary**

<b>EMISSION TEST</b>			
<b>Test requirement: FCC Part 15 - 2015</b>			
Test Condition	Test Method	Test Result	
		Pass	Failed
Radiated Emission Test, 9kHz to 24GHz	ANSI C63.10	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Frequency range of Fundamental Emission	ANSI C63.10	<input checked="" type="checkbox"/>	<input type="checkbox"/>
26dB Bandwidth of Fundamental Emission	ANSI C63.10	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Duty Cycle Correction During 100msec	ANSI C63.10	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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

--



## TEST REPORT No: (5217)116-1107

### Location of the test laboratory

Radiated and Conducted emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.10 – 2013. An Open Area Test Site and Full Anechoic Chamber 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.	CAL. DATE	CAL. DUE DATE
EMI TEST RECEIVER	R&S	ESCI	100379	22-FEB-2017	21-FEB-2018
SIGNAL ANALYZER 40GHZ	R&S	FSV 40	100977	16-AUG-2016	15-AUG-2017
BILOG ANTENNA	SCHAFFNER	CBL6112D	25229	27-FEB-2016	26-FEB-2018
OPEN AREA TEST SITE	BVCPS	N/A	N/A	18-JUN-2016	17-JUN-2017
ANECHOIC CHAMBER	ALBATROSS	M-CDC	80374004499B	10-MAY-2017	09-MAY-2018
BICONICAL ANTENNA	R&S	HK116	100179	14-APR-2016	13-APR-2018
LOG-PERIODIC DIPOLE ARRAY ANTENNA	R&S	HL223	832369/001	07-APR-2016	06-APR-2018
LOOP ANTENNA	ETS-LINDGREN	6502	00102266	06-NOV-2015	05-NOV-2017
HORN ANTENNA (1-18GHZ)	SCHWARZBECK	BBHA9120D	9120D-692	05-NOV-2016	04-NOV-2018
HORN ANTENNA (7.5 – 18GHZ)	SCHWARZBECK	HWRD 750	00015	17-JUNE-2016	16-JUNE-2018
WIDEBAND HORN ANTENNA	STEATITE	QWH-SL-18-40- K-SG	12688	03-SEP-2015	02-SEP-2017
COAXIAL CABLE	SUHNER	N/A	N/A	06-JAN-2017	05-JAN-2018
COAXIAL CABLE	HUBER + SUHNER	RG214	N/A	04-OCT-2016	03-OCT-2017

#### Measurement Uncertainty

MEASUREMENT	FREQUENCY	UNCERTAINTY
Radiated emissions	9kHz to 30MHz	4.2dB
	30MHz to 200MHz	4.5dB
	200MHz to 1GHz	5.6dB
	1GHz to 18GHz	4.7dB
	18GHz to 40GHz	5.2dB

#### 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: (5217)116-1107

### Equipment Under Test [EUT]

#### Description of Sample:

Model Name:	2.4G Radio Control climb car
Model Number:	HB-P1001
Additional Model Name:	--
Additional Model Number:	HB-P1002, HB-P1003
Additional Model information:	Declare the Circuit, PCB layout, Electrical parts and Appearance of the products are identical to the basic model except the Color.
Rating:	4.5Vd.c. ("AA" size battery x 3)

## TEST REPORT No: (5217)116-1107

### Description of EUT Operation:

The Equipment Under Test (EUT) is a **HUANG BO TOYS FACTORY** of Remote Control Transceiver. It is 1 wheel, 1 trigger and 1 switch transceiver and operating at 2404MHz to 2480MHz. The lowest, middle and highest frequencies were tested and the results are shown in the report. The EUT transmit while corresponding remote controller sticks are being pushed or pulled, Modulation by IC, and type is GFSK.

There are total 77 channels and below is the frequency list :

2404	2405	2406	2407	2408	2409	2410	2411	2412	2413
2414	2415	2416	2417	2418	2419	2420	2421	2422	2423
2424	2425	2426	2427	2428	2429	2430	2431	2432	2433
2434	2435	2436	2437	2438	2439	2440	2441	2442	2443
2444	2445	2446	2447	2448	2449	2450	2451	2452	2453
2454	2455	2456	2457	2458	2459	2460	2461	2462	2463
2464	2465	2466	2467	2468	2469	2470	2471	2472	2473
2474	2475	2476	2477	2478	2479	2480			

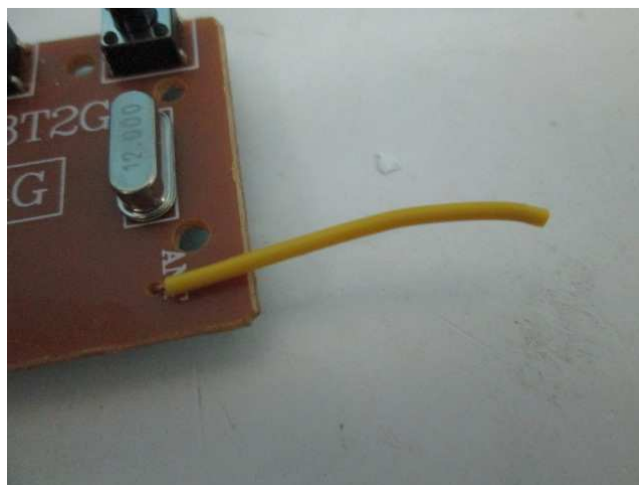
The transmitter has different control:

1. Wheel – control left and right
2. Trigger– control forward and backward
3. Switch – On/Off control

### Antenna Requirement (Section 15.203)

The EUT is use of a permanently antenna. It is soldered on the PCB. The antenna consists of 2.8cm 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: (5217)116-1107

### Test Results

#### Radiated Emissions (Fundamental)

Test Requirement: FCC Part 15 Section 15.249  
Test Method: ANSI C63.10  
Test Date(s): 2017-06-10  
Temperature: 31.0 °C  
Humidity: 72.0 %  
Atmospheric Pressure: 99.6 kPa  
Mode of Operation: Transmission mode  
Tested Voltage: 4.5Vd.c. ("AA" size battery x 3)

#### Test Procedure:

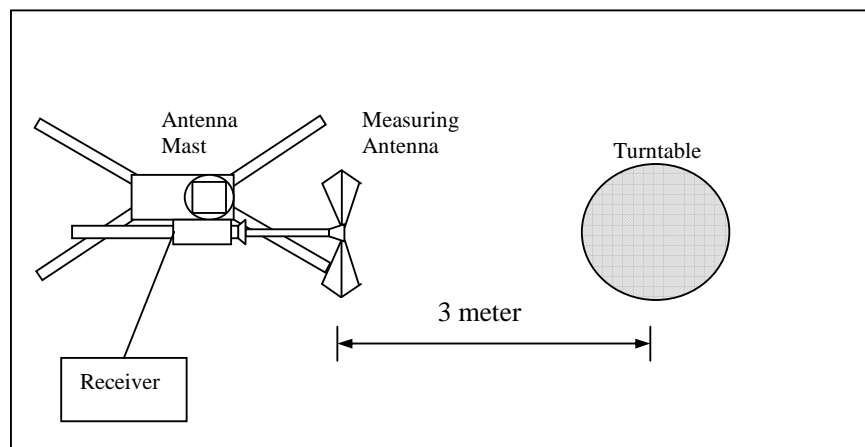
Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.10 – 2013.

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 for measurement frequency below 1GHz and 1.5m high above the ground for measurement frequency above 1GHz. 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.

For below 30MHz, a loop antenna with its vertical plane is place 3m from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. And the centre of the loop shall be 1m above the ground.

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

#### Test Setup: Open Area Test Site



## TEST REPORT No: (5217)116-1107

### 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)
2404.00	H	-4.8	-17.8	90.7	114.0	-23.3	**72.9	94.0	-21.1
2404.00	V	-4.8	-17.8	90.5	114.0	-23.5	**72.7	94.0	-21.3

#### 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)
2440.00	H	-4.8	-17.8	89.5	114.0	-24.5	**71.7	94.0	-22.3
2440.00	V	-4.8	-17.8	90.9	114.0	-23.1	**73.1	94.0	-20.9

#### 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)
2480.00	H	-4.8	-17.8	90.0	114.0	-24.0	**72.2	94.0	-21.8
2480.00	V	-4.8	-17.8	91.9	114.0	-22.1	**74.1	94.0	-19.9

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

\*\*Duty Cycle Correction =  $20\log(0.12752) = -17.8$ .

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz  
VBW = 1MHz



## TEST REPORT No: (5217)116-1107

### Radiated Emissions (Spurious Emission)

Test Requirement: FCC Part 15 Section 15.249  
 Test Method: ANSI C63.10  
 Test Date(s): 2017-06-10  
 Temperature: 31.0 °C  
 Humidity: 72.0 %  
 Atmospheric Pressure: 99.6 kPa  
 Mode of Operation: Transmission mode  
 Tested Voltage: 4.5Vd.c. ("AA" size battery x 3)

### 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)
2404.00	H	-4.8	-17.8	63.8	74.0	-10.2	**46.0	54.0	-8.0
4808.00	H	4.8	-17.8	69.6	74.0	-4.4	**51.8	54.0	-2.2
7212.00	H	12.4	-17.8	65.2	74.0	-8.8	**47.4	54.0	-6.6
9616.00	H	13.5	-17.8	57.7	74.0	-16.3	**39.9	54.0	-14.1
12020.00	H	19.6	-17.8	53.9	74.0	-20.1	**36.1	54.0	-17.9
14424.00	H	25.8	-17.8	56.6	74.0	-17.4	**38.8	54.0	-15.2
16828.00	H	21.2	-17.8	56.5	74.0	-17.5	**38.7	54.0	-15.3
19232.00	H	46.7	-17.8	56.0	74.0	-18.0	**38.2	54.0	-15.8
21636.00	H	46.9	-17.8	56.3	74.0	-17.7	**38.5	54.0	-15.5
24040.00	H	48.0	-17.8	54.5	74.0	-19.5	**36.7	54.0	-17.3
26444.00	H	48.5	-17.8	57.2	74.0	-16.8	**39.4	54.0	-14.6

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

\*\*Duty Cycle Correction =  $20\log(0.12752) = -17.8$ .

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz  
VBW = 1MHz



## TEST REPORT No: (5217)116-1107

### 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)
2404.00	V	-4.8	-17.8	61.3	74.0	-12.7	**43.5	54.0	-10.5
4808.00	V	4.8	-17.8	71.1	74.0	-2.9	**53.3	54.0	-0.7
7212.00	V	12.4	-17.8	69.2	74.0	-4.8	**51.4	54.0	-2.6
9616.00	V	13.5	-17.8	59.6	74.0	-14.4	**41.8	54.0	-12.2
12020.00	V	19.6	-17.8	52.8	74.0	-21.2	**35.0	54.0	-19.0
14424.00	V	25.8	-17.8	55.6	74.0	-18.4	**37.8	54.0	-16.2
16828.00	V	21.2	-17.8	55.5	74.0	-18.5	**37.7	54.0	-16.3
19232.00	V	46.7	-17.8	54.4	74.0	-19.6	**36.6	54.0	-17.4
21636.00	V	46.9	-17.8	55.2	74.0	-18.8	**37.4	54.0	-16.6
24040.00	V	48.0	-17.8	54.8	74.0	-19.2	**37.0	54.0	-17.0
26444.00	V	48.5	-17.8	55.2	74.0	-18.8	**37.4	54.0	-16.6

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

\*\*Duty Cycle Correction =  $20\log(0.12752) = -17.8$ .

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz  
VBW = 1MHz

## TEST REPORT No: (5217)116-1107

### Measurement Data

#### 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)
4880.00	H	4.8	-17.8	66.2	74.0	-7.8	**48.4	54.0	-5.6
7320.00	H	12.4	-17.8	61.6	74.0	-12.4	**43.8	54.0	-10.2
9760.00	H	13.8	-17.8	59.7	74.0	-14.3	**41.9	54.0	-12.1
12200.00	H	19.5	-17.8	53.6	74.0	-20.4	**35.8	54.0	-18.2
14640.00	H	26.5	-17.8	55.0	74.0	-19.0	**37.2	54.0	-16.8
17080.00	H	23.1	-17.8	56.5	74.0	-17.5	**38.7	54.0	-15.3
19520.00	H	46.7	-17.8	56.0	74.0	-18.0	**38.2	54.0	-15.8
21960.00	H	47.3	-17.8	54.9	74.0	-19.1	**37.1	54.0	-16.9
24400.00	H	48.2	-17.8	55.5	74.0	-18.5	**37.7	54.0	-16.3
26840.00	H	48.5	-17.8	55.4	74.0	-18.6	**37.6	54.0	-16.4

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)
4880.00	V	4.8	-17.8	70.5	74.0	-3.5	**52.7	54.0	-1.3
7320.00	V	12.4	-17.8	66.7	74.0	-7.3	**48.9	54.0	-5.1
9760.00	V	13.8	-17.8	60.0	74.0	-14.0	**42.2	54.0	-11.8
12200.00	V	19.5	-17.8	53.3	74.0	-20.7	**35.5	54.0	-18.5
14640.00	V	26.5	-17.8	54.9	74.0	-19.1	**37.1	54.0	-16.9
17080.00	V	23.1	-17.8	55.9	74.0	-18.1	**38.1	54.0	-15.9
19520.00	V	46.7	-17.8	56.5	74.0	-17.5	**38.7	54.0	-15.3
21960.00	V	47.3	-17.8	54.9	74.0	-19.1	**37.1	54.0	-16.9
24400.00	V	48.2	-17.8	54.6	74.0	-19.4	**36.8	54.0	-17.2
26840.00	V	48.5	-17.8	55.5	74.0	-18.5	**37.7	54.0	-16.3

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

\*\*Duty Cycle Correction =  $20\log(0.12752) = -17.8$ .

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz

VBW = 1MHz

## TEST REPORT No: (5217)116-1107

### Measurement Data

### 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)
2483.50	H	-4.8	-17.8	60.4	74.0	-13.6	**42.6	54.0	-11.4
4960.00	H	4.9	-17.8	67.9	74.0	-6.1	**50.1	54.0	-3.9
7440.00	H	12.6	-17.8	64.2	74.0	-9.8	**46.4	54.0	-7.6
9920.00	H	13.9	-17.8	60.1	74.0	-13.9	**42.3	54.0	-11.7
12400.00	H	19.2	-17.8	51.6	74.0	-22.4	**33.8	54.0	-20.2
14880.00	H	25.9	-17.8	55.3	74.0	-18.7	**37.5	54.0	-16.5
17360.00	H	24.5	-17.8	56.0	74.0	-18.0	**38.2	54.0	-15.8
19840.00	H	46.8	-17.8	56.1	74.0	-17.9	**38.3	54.0	-15.7
22320.00	H	47.3	-17.8	55.1	74.0	-18.9	**37.3	54.0	-16.7
24800.00	H	48.2	-17.8	55.5	74.0	-18.5	**37.7	54.0	-16.3
27280.00	H	48.7	-17.8	55.6	74.0	-18.4	**37.8	54.0	-16.2

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

\*\*Duty Cycle Correction =  $20\log(0.12752) = -17.8$ .

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz  
VBW = 1MHz

## TEST REPORT No: (5217)116-1107

### Measurement Data

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)
2483.50	V	-4.8	-17.8	61.8	74.0	-12.2	**44.0	54.0	-10.0
4960.00	V	4.9	-17.8	71.4	74.0	-2.6	**53.6	54.0	-0.4
7440.00	V	12.6	-17.8	67.4	74.0	-6.6	**49.6	54.0	-4.4
9920.00	V	13.9	-17.8	57.3	74.0	-16.7	**39.5	54.0	-14.5
12400.00	V	19.2	-17.8	52.5	74.0	-21.5	**34.7	54.0	-19.3
14880.00	V	25.9	-17.8	55.2	74.0	-18.8	**37.4	54.0	-16.6
17360.00	V	24.5	-17.8	55.6	74.0	-18.4	**37.8	54.0	-16.2
19840.00	V	46.8	-17.8	55.4	74.0	-18.6	**37.6	54.0	-16.4
22320.00	V	47.3	-17.8	53.3	74.0	-20.7	**35.5	54.0	-18.5
24800.00	V	48.2	-17.8	54.8	74.0	-19.2	**37.0	54.0	-17.0
27280.00	V	48.7	-17.8	55.0	74.0	-19.0	**37.2	54.0	-16.8

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

\*\*Duty Cycle Correction =  $20\log(0.12752) = -17.8$ .

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz  
VBW = 1MHz



## TEST REPORT No: (5217)116-1107

### Radiated Emissions (9kHz – 2.4GHz)

Test Requirement: FCC Part 15 Section 15.209  
Test Method: ANSI C63.10  
Test Date(s): 2017-06-10  
Temperature: 31.0 °C  
Humidity: 72.0 %  
Atmospheric Pressure: 99.6 kPa  
Mode of Operation: On mode  
Tested Voltage: 4.5Vd.c. ("AA" size battery x 3)

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

Frequency Range [MHz]	Quasi-Peak Limits [ $\mu$ V/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
Above 960	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: (5217)116-1107

### Measurement Data

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

**Detection mode: Quasi-Peak**

Frequency (MHz)	Polarity (H/V)	Field Strength at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
33.86	H	27.1	40.0	-12.9
72.58	H	20.2	40.0	-19.8
198.32	H	21.5	43.5	-22.0
255.76	H	22.8	46.0	-23.2
307.24	H	23.7	46.0	-22.3
511.28	H	28.4	46.0	-17.6

Frequency (MHz)	Polarity (H/V)	Field Strength at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
33.86	V	27.5	40.0	-12.5
72.58	V	20.1	40.0	-19.9
198.32	V	21.4	43.5	-22.1
255.76	V	22.3	46.0	-23.7
307.24	V	23.5	46.0	-22.5
511.28	V	28.0	46.0	-18.0

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 120KHz  
VBW = 120KHz



## TEST REPORT No: (5217)116-1107

### Frequency range of Fundamental Emission

Test Requirement: FCC 47 CFR 15.249  
Test Method: ANSI C63.10 Clause 6.10  
Test Date(s): 2017-06-10  
Temperature: 31.0 °C  
Humidity: 72.0 %  
Atmospheric Pressure: 99.6 kPa  
Mode of Operation: Transmission mode  
Tested Voltage: 4.5Vd.c. ("AA" size battery x 3)

#### 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:

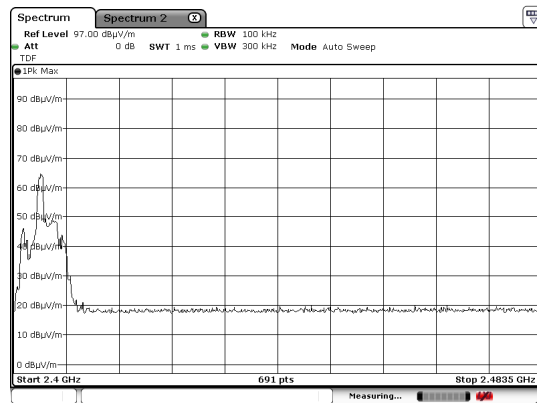
Frequency [MHz]	FCC Limits [MHz]
2402.726 – 2481.708	2400 – 2483.5

**TEST REPORT No: (5217)116-1107**

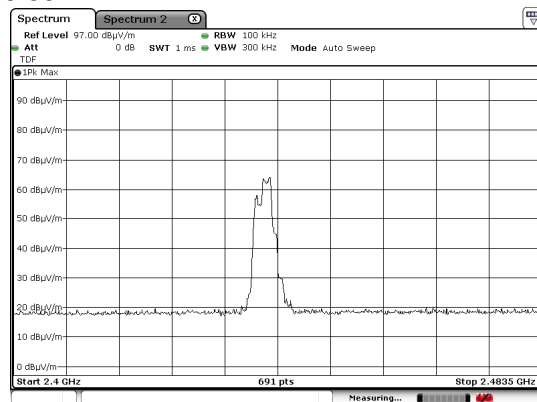
**Measurement Data:**

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

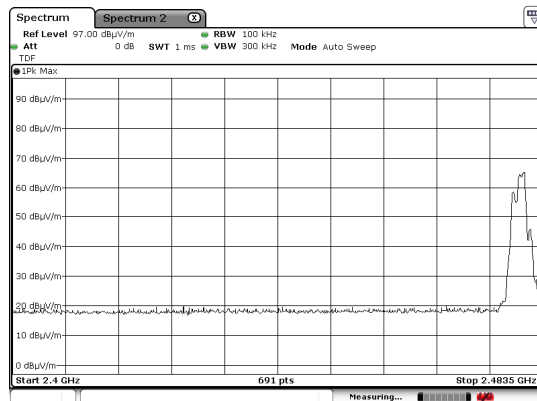
**Lowest Frequency – 2404.00MHz**



**Middle Frequency – 2440.00MHz**



**Highest Frequency – 2480.00MHz**

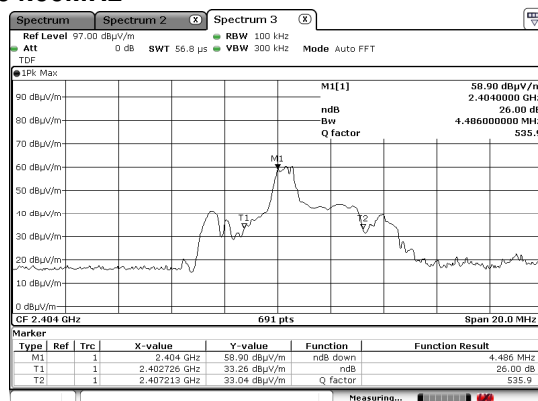


**TEST REPORT No: (5217)116-1107**

**Measurement Data:**

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

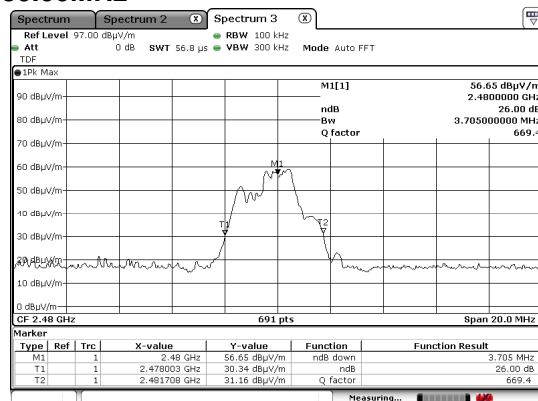
**Lowest Frequency – 2404.00MHz**



**Middle Frequency – 2440.00MHz**



**Highest Frequency – 2480.00MHz**





## TEST REPORT No: (5217)116-1107

### Duty Cycle Correction During 100msec:

Each function key sends a different series of characters, but each packet period (100msec) never exceeds a series of 4 (3.188msec) pulses. Assuming any combination of short or long pulses may be obtained due to encoding the worst case transmit duty cycle would be considered  $4 \times 3.188$  per 100msec = 12.752% duty cycle.

Remarks:

Duty Cycle Correction =  $20\text{Log}(0.12752) = -17.8$ .

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

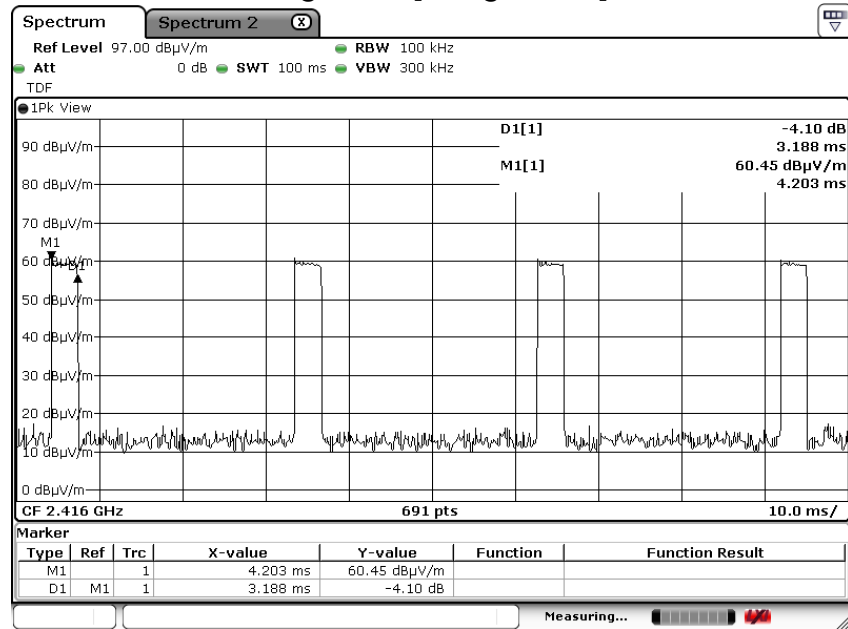


BUREAU  
VERITAS

TEST REPORT No: (5217)116-1107

Measurement Data :

Figure A [Long Pulse]



## TEST REPORT No: (5217)116-1107

### 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: (5217)116-1107

### Photographs of EUT

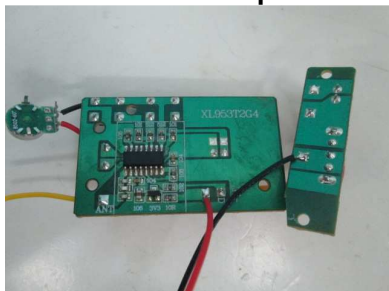
**Internal View of the product**



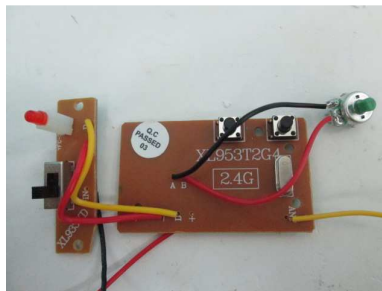
**Internal View of the product**



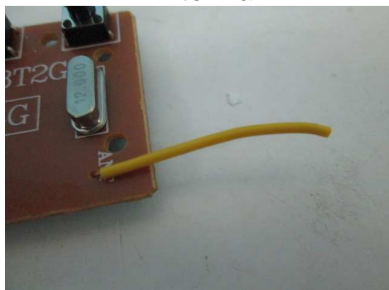
**Inner Circuit Top View**



**Inner Circuit Bottom View**



**Antenna**



**TEST REPORT No: (5217)116-1107**

**Measurement of Radiated Emission Test Set Up**



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