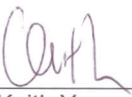
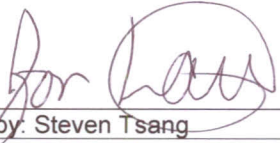




TEST REPORT No.: (5213)217-0940(B)

TEST REPORT

To:	HOBBYENGINE MODEL LTD.	To:	-
Attn:	Joey / Wendy	Attn:	-
Address:	Room 619, 6/F., Peninsula Center, 67 Mody Road, Tsimshatsui East, Kowloon, HK	Address:	-
Fax:	852 31000183	Fax:	-
E-mail:	yuchangl@gb-ts.com / info@hobbyengine.com.hk / lab_test@gb-ts.com / joeysiu@hobbyengine.com.hk	E-mail:	-
Folder No.:	--		
Factory Name:	--		
Location:	--		
Product:	TRACK LOADER (27.195MHz) Model No.: 0815		
(Please see the Exhibition – External Photo)	Sample No:	(5213)217-0940	
	Test Date(s):	August 12, 2013	
	Test Requested:	FCC Part 15 – 2012	
	Test Method:	ANSI C63.4 – 2009	
	FCC ID:	QW70815	
The results given in this report are related to the tested specimen of the described electrical apparatus.			
CONCLUSION: The submitted sample was found to <u>COMPLY</u> with requirement of FCC Part 15 Subpart C.			
Authorized Signature:			
			
Reviewed by: Keith Yeung		Approved by: Steven Tsang	
Date: September 23, 2013		Date: September 23, 2013	

BUREAU VERITAS HONG KONG LIMITED –
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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.: (5213)217-0940(B)

Test Result Summary

EMISSION TEST			
Test requirement: FCC Part 15 - 2012			
Test Condition	Test Method	Test Result	
		Pass	Failed
Radiated Emission Test (section 15.209), 9kHz to 1GHz	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"/>

Report Revision & Sample Re-submit History:

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TEST REPORT No.: (5213)217-0940(B)

Test Laboratory & Test Instruments List

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

Test Instrument List

Radiated Emission

EQUIPMENT	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CALIBRATION	CALIBRATION DUE
EMI TEST RECEIVER	R&S	ESCI	100379	29-JAN-2013	28-JAN-2014
LOOP ANTENNA	ETS-LINDGREN	6502	00102266	14-AUG-2012	13-AUG-2013
BILOG ANTENNA	SCHAFFNER	CBL6112D	25229	13-SEP-2012	12-SEP-2013
OPEN AREA TEST SITE	BVCPS	N/A	N/A	09-JUL-2013	08-JUL-2014
ANECHOIC CHAMBER	ALBATROSS	M-CDC	80374004499B	06-FEB-2013	05-FEB-2014
COAXIAL CABLE	SUHNER	RG214	N/A	25-SEP-2012	24-SEP-2013

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.: (5213)217-0940(B)

Equipment Under Test [EUT]

Description of Sample:

Product: TRACK LOADER (27.195MHz)
Model No.: 0815
Additional Model: --
Additional Model Information: --
Power Supply: 9Vd.c. ("6F22" size battery x 1)

Description of EUT Operation:

The Equipment Under Test (EUT) is a **HOBBYENGINE MODEL LTD.** of Radio Control toy. The transmitter is 2 buttons, 2 sticks and 1 switch transmitter and operating at 27.195MHz. The length of the antenna is adjustable, and the worst case (max length of the antenna) is shown in the report. The EUT continues to transmit buttons is being pressed, Modulation by IC, and type is pulse modulation.

The transmitter has different control:

1. ON / OFF switch – Power control
2. Left stick – Left wheel control
3. Right stick – Right wheel control
4. Left button – Arm up and down control
5. Right button – Bucket up and down control

Antenna Requirement (Section 15.203)

The EUT is use of a screw-on type antenna. The antenna consists of 48cm long metal antenna. The antenna connector is custom-made and not be able to found in the market. It also cannot be replaced with other antenna other than the one bundled inside the package. The requirements of S15.203 are met. There are no deviations or exceptions to the specifications.

Photo of Antenna

(Please see the Exhibition – Internal Photo)

TEST REPORT No.: (5213)217-0940(B)

Test Results

Radiated Emissions (Fundamental)

Test Requirement: FCC Part 15 Section 15.227
Test Method: ANSI C63.4
Test Date(s): 2013-08-12
Temperature: 32.0 °C
Humidity: 75.0 %
Atmospheric Pressure: 100.3 kPa
Mode of Operation: Transmission mode
Tested Voltage: 9Vd.c. ("6F22" size battery x 1)

Test Method:

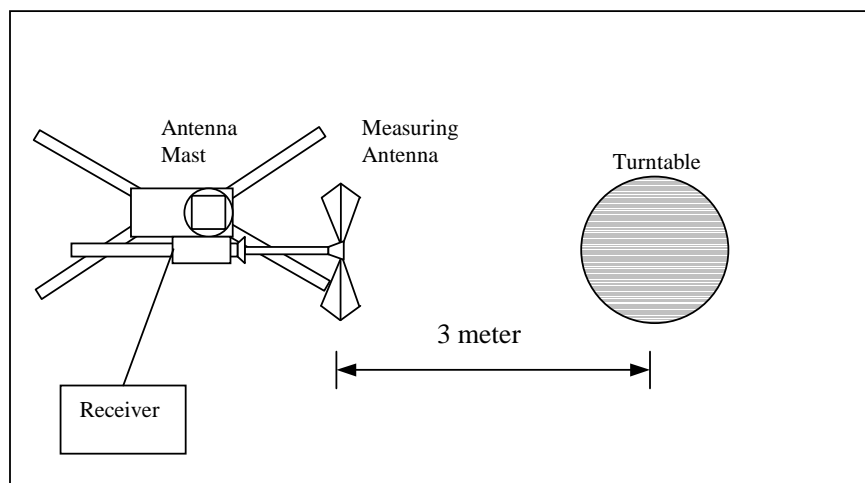
Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2009.

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 performed 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 placed 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.: (5213)217-0940(B)

Limits for Field Strength of Fundamental Emissions [FCC 47CFR 15.227]:

Frequency Range of Fundamental [MHz]	Field Strength of Fundamental Emission [Peak] [μV/m]	Field Strength of Fundamental Emission [Average] [μV/m]
26.96 – 27.28	100,000 (100 dBμV/m)	10,000 (80 dBμV/m)

Measurement Data

Test Result of (Transmission mode): PASS

Detection mode: Peak

Frequency (MHz)	Polarity (H/V) and degree	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
27.195	V/0°	11.0	76.9	100	-23.1

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 100KHz
VBW = 300KHz

*Average measurement is not required due to Peak result is less than Average limit.



TEST REPORT No.: (5213)217-0940(B)

Radiated Emissions (9kHz – 1GHz)

Test Requirement: FCC Part 15 Section 15.209
Test Method: ANSI C63.4
Test Date(s): 2013-08-12
Temperature: 32.0 °C
Humidity: 75.0 %
Atmospheric Pressure: 100.3 kPa
Mode of Operation: Transmission mode
Tested Voltage: 9Vd.c. ("6F22" size battery x 1)

Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range [MHz]	Quasi-Peak Limits [μV/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)
Except the fundamental emission – 27.195MHz, 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.: (5213)217-0940(B)

Measurement Data

Test Result of (Transmission mode): PASS

Detection mode: Quasi-Peak

Frequency (MHz)	Polarity (H/V)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
54.394	H	8.2	28.9	40.0	-11.1
81.591	H	7.1	23.6	40.0	-16.4
108.788	H	12.6	23.1	43.5	-20.4
135.985	H	12.2	20.3	43.5	-23.2
163.182	H	9.6	22.9	43.5	-20.6
190.379	H	9.6	24.7	43.5	-18.8
217.576	H	10.3	23.2	46.0	-22.8
244.773	H	12.3	22.4	46.0	-23.6
217.970	H	13.2	22.0	46.0	-24.0
299.167	H	13.6	23.0	46.0	-23.0

Frequency (MHz)	Polarity (H/V)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dBμV/m)	Limit at 3m (dBμV/m)	Margin (dB)
54.394	V	8.2	29.2	40.0	-10.8
81.591	V	7.1	23.5	40.0	-16.5
108.788	V	12.6	22.4	43.5	-21.1
135.985	V	12.2	20.5	43.5	-23.0
163.182	V	9.6	20.6	43.5	-22.9
190.379	V	9.6	21.0	43.5	-22.5
217.576	V	10.3	20.1	46.0	-25.9
244.773	V	12.3	21.6	46.0	-24.4
217.970	V	13.2	21.5	46.0	-24.5
299.167	V	13.6	21.3	46.0	-24.7

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 120KHz
VBW = 120KHz



TEST REPORT No.: (5213)217-0940(B)

26dB Bandwidth of Fundamental Emission

Test Requirement: FCC 47 CFR 15.227
Test Method: ANSI C63.4
Test Date(s): 2013-08-12
Temperature: 32.0 °C
Humidity: 75.0 %
Atmospheric Pressure: 100.3 kPa
Mode of Operation: Transmission mode
Tested Voltage: 9Vd.c. ("6F22" size battery x 1)

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.

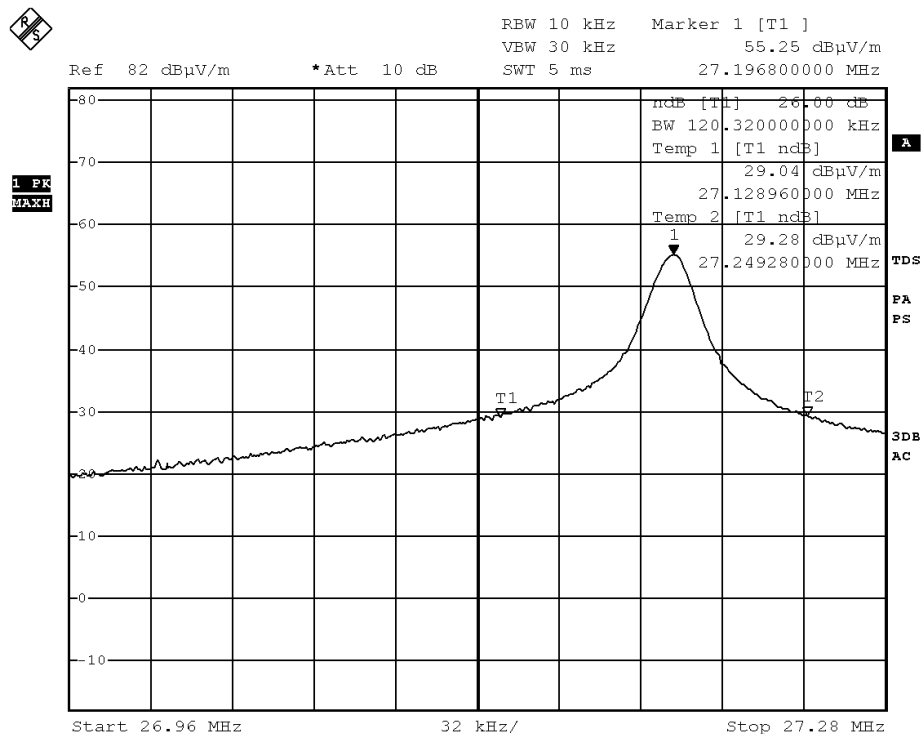
Limits for 26dB Bandwidth of Fundamental Emission:

Frequency [MHz]	26dB Bandwidth [KHz]	Limits [MHz]
27.1968	120.32	within 26.96 – 27.28

TEST REPORT No.: (5213)217-0940(B)

Measurement Data

Test Result of 26dB Bandwidth of Fundamental Emission: PASS



Date: 12.AUG.2013 13:52:53



TEST REPORT No.: (5213)217-0940(B)

Photographs of EUT

(Please see the Exhibition – External Photo & internal Photo)

Measurement of Radiated Emission Test Set Up

(Please see the Exhibition – Test Setup Photo)

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