
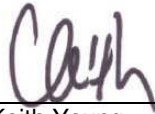





**BUREAU  
VERITAS**

**TEST REPORT No.: (5215)187-1697(A)**

## TEST REPORT

To:	<b>NKOK, INC</b>	To:	-
Attn:	LANNY HALIM	Attn:	-
Address:	5354 IRWINDALE AVE, UNIT A, IRWINDALE, CA 91706	Address:	-
Fax:	--	Fax:	-
E-mail:	<a href="mailto:testing@nkok.com">testing@nkok.com</a>	E-mail:	-
Folder No.:			--
Factory Name:			--
Location:			--
Product:	R/C Rock Crawler Vehicle Model: 81501 Additional Model No.: 81502, 81503, 81504		
	Sample No:	(5215)188-0219	
	Test date:	July 10, 2015	
	Test Requested:	FCC Part 15 – 2012	
	Test Method:	ANSI C63.4 – 2009	
	FCC ID:	XQPNS061627TX	
<b>The results given in this report are related to the tested specimen of the described electrical apparatus.</b>			
<b>CONCLUSION: The submitted sample was found to <u>COMPLY</u> with requirement of FCC Part 15 Subpart C.</b>			
Authorized Signature:			
			
Reviewed by: Keith Yeung		Approved by: Law Man Kit	
Date: September 05, 2016		Date: September 05, 2016	

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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.: (5215)187-1697(A)**

## 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 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"/>
26dB Bandwidth of Fundamental Emission	ANSI C63.4	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Duty Cycle Correction During 100mesc	ANSI C63.4	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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

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**TEST REPORT No.: (5215)187-1697(A)**

## 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.	CALIBRATION DUE
EMI TEST RECEIVER	R&S	ESCI	100379	20-JAN-2016
SIGNAL ANALYZER 40GHZ	R&S	FSV 40	100977	11-MAY-2016
LOOP ANTENNA	ETS-LINDGREN	6502	00102266	19-OCT-2015
BILOG ANTENNA	SCHAFFNER	CBL6112D	25229	02-JAN-2016
OPEN AREA TEST SITE	BVCPS	N/A	N/A	06-JUL-2016
ANECHOIC CHAMBER	ALBATROSS	M-CDC	80374004499B	04-FEB-2016
COAXIAL CABLE	SUHNER	RG214	N/A	22-SEP-2015

## Measurement Uncertainty

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

### 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)187-1697(A)

## Equipment Under Test [EUT]

### Description of Sample:

Product: R/C Rock Crawler Vehicle  
Model No.: 81501  
Additional Model name: --  
Additional Model number: 81502, 81503, 81504  
Additional Model Information: Declare the Circuit, PCB layout, Electrical parts and Appearance of the products are identical to the basic model, except the model number for market purpose.  
Power Supply: 3Vd.c. ("AA" size battery x 2)

### Description of EUT Operation:

The Equipment Under Test (EUT) is a **NKOK, INC** of Radio Control toy. The transmitter is 1 wheel and 1 trigger and operating at 27.145MHz. The EUT continues to transmit when trigger is being pressed, Modulation by IC, and type is pulse modulation.

The transmitter has different control:

1. Wheel – control left and right
2. Trigger– control forward and backward

### Antenna Requirement (Section 15.203)

The EUT is use of a permanently antenna. The antenna consists of 25.4cm long metal spring covered with rubber. 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)187-1697(A)**

**Test Results**

**Radiated Emissions (Fundamental)**

Test Requirement: FCC Part 15 Section 15.227  
 Test Method: ANSI C63.4  
 Test Date(s): 2015-07-10  
 Temperature: 30.0 °C  
 Humidity: 72.0 %  
 Atmospheric Pressure: 100.5 kPa  
 Mode of Operation: Transmission mode  
 Tested Voltage: 3Vd.c. ("AA" size battery x 2)

**Test Method:**

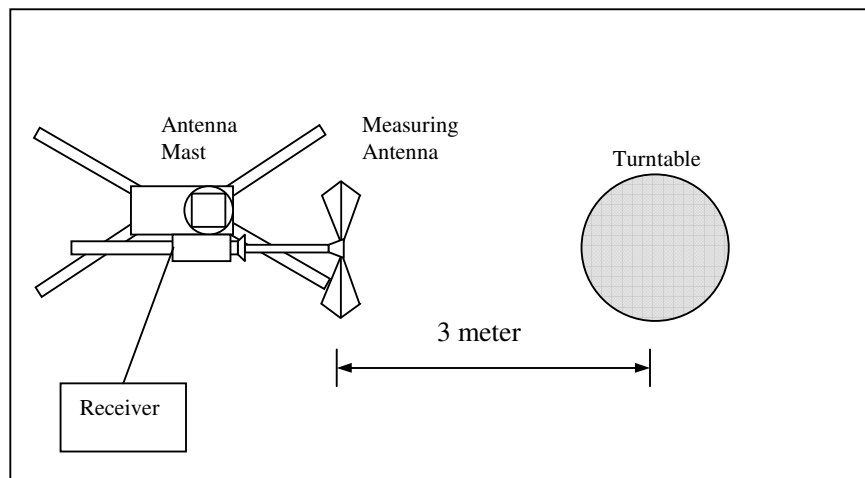
Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.4 – 2009.

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.: (5215)187-1697(A)**

**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)
27.145	V/0°	10.0	52.6	100.0	-47.4

**Detection mode: # Average**

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)
27.145	V/0°	10.0	**49.1	80.0	-30.9

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

\*\*Duty Cycle Correction =  $20\log(0.668) = -3.5\text{dB}$

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 100KHz  
VBW = 300KHz



## TEST REPORT No.: (5215)187-1697(A)

### Radiated Emissions (9kHz – 1GHz)

Test Requirement: FCC Part 15 Section 15.209  
 Test Method: ANSI C63.4  
 Test Date(s): 2015-07-10  
 Temperature: 30.0 °C  
 Humidity: 72.0 %  
 Atmospheric Pressure: 100.5 kPa  
 Mode of Operation: Transmission 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 [ $\mu$ 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
Above960	500	3



**TEST REPORT No.: (5215)187-1697(A)**

**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 (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
54.290	H	8.3	24.8	40.0	-15.2
81.435	H	8.1	19.3	40.0	-20.7
108.580	H	12.9	24.0	43.5	-19.5
135.725	H	12.5	24.7	43.5	-18.8
162.870	H	9.9	24.2	43.5	-19.3
190.015	H	9.8	23.3	43.5	-20.2
217.160	H	10.8	25.1	46.0	-20.9
244.305	H	12.8	24.5	46.0	-21.5
271.450	H	13.5	25.6	46.0	-20.4
298.595	H	13.8	26.8	46.0	-19.2

Frequency (MHz)	Polarity (H/V)	Antenna Factor and Cable Loss (dB/m)	Field Strength at 3m (dB $\mu$ V/m)	Limit at 3m (dB $\mu$ V/m)	Margin (dB)
54.290	V	8.3	24.2	40.0	-15.8
81.435	V	8.1	19.5	40.0	-20.5
108.580	V	12.9	24.2	43.5	-19.3
135.725	V	12.5	25.3	43.5	-18.2
162.870	V	9.9	23.7	43.5	-19.8
190.015	V	9.8	23.8	43.5	-19.7
217.160	V	10.8	24.8	46.0	-21.2
244.305	V	12.8	24.7	46.0	-21.3
271.450	V	13.5	25.0	46.0	-21.0
298.595	V	13.8	25.3	46.0	-20.7

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 120KHz  
 VBW = 120KHz





**TEST REPORT No.: (5215)187-1697(A)**

**26dB Bandwidth of Fundamental Emission**

Test Requirement: FCC 47 CFR 15.227  
 Test Method: ANSI C63.4  
 Test Date(s): 2015-07-10  
 Temperature: 30.0 °C  
 Humidity: 72.0 %  
 Atmospheric Pressure: 100.5 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 26dB Bandwidth of Fundamental Emission:**

Frequency [MHz]	26dB Bandwidth [KHz]	Limits [MHz]
27.1456	89.6	within 26.96 – 27.28



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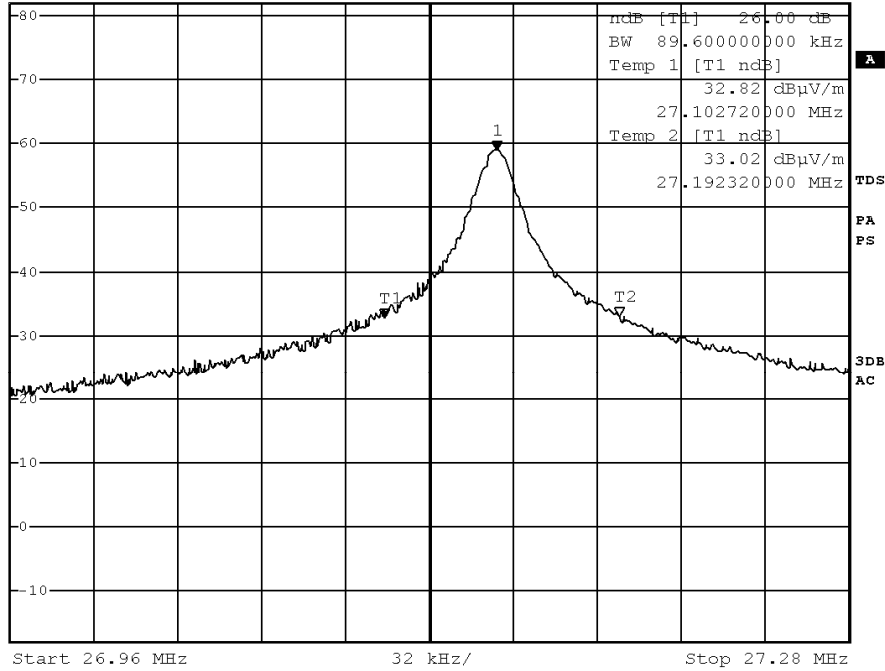
# TEST REPORT No.: (5215)187-1697(A)

## Measurement Data

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



\*RBW 10 kHz      Marker 1 [T1 ]  
 \*VBW 30 kHz      59.06 dBμV/m  
 \*SWT 100 ms      27.145600000 MHz  
 Ref 82 dBμV/m      \*Att 10 dB



Date: 10.JUL.2015 10:20:18



## TEST REPORT No.: (5215)187-1697(A)

### Duty Cycle Correction During 100msec:

Each function key sends a different series of characters, but each packet period (100msec) never exceeds a series of 22 long (1.4msec) and 60 short (0.6msec) pulses. Assuming any combination of short and long pulses maybe obtained due to encoding the worst case transmit duty cycle would be considered  $(22 \times 1.4\text{msec}) + (60 \times 0.6\text{msec})$  per 100msec = 66.8% duty cycle. Figure A through B shows the characteristics of the pulse train for one of these functions.

Remarks: -

Duty Cycle Correction =  $20\text{Log}(0.668) = -3.5\text{dB}$

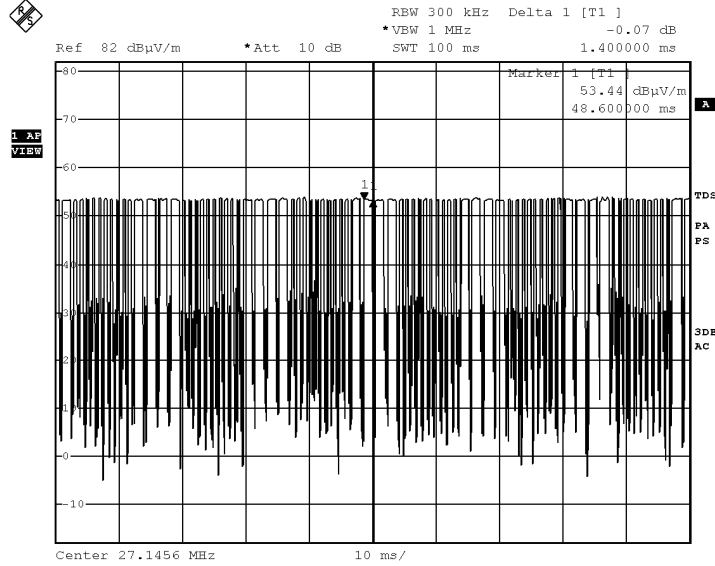
The following figures (Figure A to Figure B) show the characteristics of the pulse train for one of these functions.



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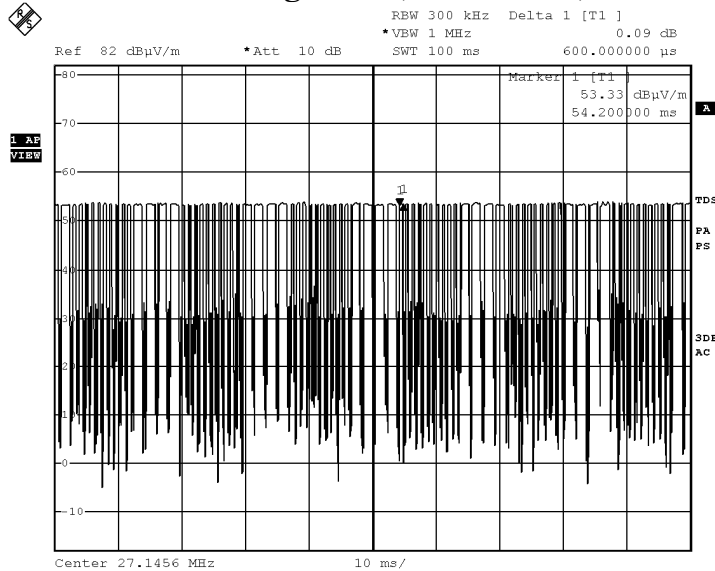
TEST REPORT No.: (5215)187-1697(A)

Figure A (Long Pulse)



Date: 10.JUL.2015 10:25:28

Figure B (Short Pulse)



Date: 10.JUL.2015 10:25:52

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**TEST REPORT No.: (5215)187-1697(A)**

**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)187-1697(A)

Photographs of EUT

Internal View of the product



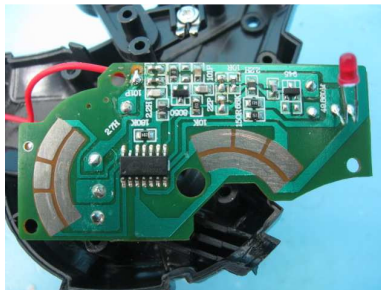
Internal View of the product



Inner Circuit Top View



Inner Circuit Bottom View



**TEST REPORT No.: (5215)187-1697(A)**

**Measurement of Radiated Emission Test Set Up**



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