TEST REPORT No: (5215)132-1440

TEST REPORT

To:	**NEW BRIGHT INDUSTRIAL CO., LTD.**	To:	-
Attn:	Eric Kwok	Attn:	-
Address:	9/F., NEW BRIGHT BUILDING, 11 SHEUNG YUET ROAD, KOWLOON BAY, KOWLOON, HONG KONG.	Address:	-
Fax:	852 2795 3665	Fax:	-
E-mail:	ypeng01@newbright.com / chkwok01@newbright.com	E-mail:	-
Folder No.:	NBT-15MY101MTHS-B-A		
Factory name:	**NEW BRIGHT INDUSTRIAL CO., LTD.**		
Location:	9/F., NEW BRIGHT BUILDING, 11 SHEUNG YUET ROAD, KOWLOON BAY, KOWLOON, HONG KONG.		
Product:	Radio Control Toy Transmitter Model No.: GF21H3		

Sample No:	HK150507/047
Test date:	May 19, 2015 to June 09,2015
Test Requested:	FCC Part 15 - 2012
Test Method:	ANSI C63.4 - 2009
FCC ID:	G6DGF21H3

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: June 15, 2015	Date: June 15, 2015

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TEST REPORT No: (5215)132-1440
Test Result Summary

EMISSION TEST			
Test requirement: FCC Part 15 - 2012			
Test Condition	Test Method	Test Result	
		Pass	Failed
Radiated Emission Test, 9kHz to 40GHz	ANSI C63.4	☒	☐
Frequency range of Fundamental Emission	ANSI C63.4	☒	☐
26dB Bandwidth of Fundamental Emission	ANSI C63.4	☒	☐
Duty Cycle Correction During 100msec	ANSI C63.4	☒	☐

Report Revision & Sample Re-submit History:
Sample first submission date: May 08, 2015
Sample second submission date: May 29, 2015
Sample third submission date: June 09, 2015

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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	21-JAN-2015	20-JAN-2016
SPECTRUM ANALYZER	R&S	R3127	111000909	26-MAR-2015	25-MAR-2016
LOOP ANTENNA	ETS LINDGREN	6502	00102266	28-SEP-2014	27-SEP-2015
BILOG ANTENNA	SCHAFFNER	CBL6112D	25229	02-JAN-2015	02-JAN-2016
HORN ANTENNA	SCHWARZBECK	BBHA9120D	9120D-692	27-DEC-2014	26-DEC-2015
OPEN AREA TEST SITE	BVCPS	N/A	N/A	07-JUL-2014	06-JUL-2015
ANECHOIC CHAMBER	ALBATROSS	M-CDC	80374004499B	05-FEB-2014	03-FEB-2016
COAXIAL CABLE	HUBER + SUHNER	RG223	N/A	23-DEC-2014	22-DEC-2015
COAXIAL CABLE	HUBER + SUHNER	RG214	N/A	23-DEC-2014	22-DEC-2015
Signal Analyzer 40GHz	Rohde & Schwarz	FSV 40	100977	13-MAY-2015	12-MAY-2016
Wideband Horn Antenna 18 to 40GHz	STEATITE	QWH-SL-18-40-K-SG	12688	02-SEP-2014	01-SEP-2015
High frequency RF cable	Rohde & Schwarz	N/A	N/A	15-SEP-2014	14-SEP-2015

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

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Equipment Under Test [EUT]

Description of Sample:

Model Name:	TOY Transmitter
Model Number:	GF21H3
Additional Model Name:	--
Additional Model Number:	--
Additional Model information:	--
Rating:	3Vd.c. (“AA” size battery x 2)

Description of EUT Operation:

The Equipment Under Test (EUT) is a **NEW BRIGHT INDUSTRIAL CO., LTD.** of Remote Control Transceiver. It is 2 sticks & 3 buttons transceiver, operating at 27.147MHz & 2410MHz to 2473MHz. The frequency 27.147MHz and the lowest, middle and highest frequencies in range 2410MHz to 2473MHz were tested and the results are shown in the report. The EUT transmit while sticks are being pushed or pulled, Modulation by IC, and Modulation type are as below:
Pulse modulation for 27.147MHz, & GFSK for 2410MHz to 2473MHz.
There are total 64 channels in range 2410MHz to 2473MHz and below is the frequency list (MHz) :

ch.no	freq.	ch.no	freq.	ch.no	freq.	ch.no	freq.	ch.no	freq.	ch.no	freq.	ch.no	freq.
1	2410	**11**	2420	**21**	2430	**31**	2440	**41**	2450	**51**	2460	**61**	2470
2	2411	**12**	2421	**22**	2431	**32**	2441	**42**	2451	**52**	2461	**62**	2471
3	2412	**13**	2422	**23**	2432	**33**	2442	**43**	2452	**53**	2462	**63**	2472
4	2413	**14**	2423	**24**	2433	**34**	2443	**44**	2453	**54**	2463	**64**	2473
5	2414	**15**	2424	**25**	2434	**35**	2444	**45**	2454	**55**	2464		
6	2415	**16**	2425	**26**	2435	**36**	2445	**46**	2455	**56**	2465		
7	2416	**17**	2426	**27**	2436	**37**	2445	**47**	2456	**57**	2466		
8	2417	**18**	2427	**28**	2437	**38**	2447	**48**	2457	**58**	2467		
9	2418	**19**	2428	**29**	2438	**39**	2448	**49**	2458	**59**	2468		
10	2419	**20**	2429	**30**	2439	**40**	2449	**50**	2459	**60**	2469		

The transmitter has different control:

1. Left stick – control forward and backward
2. Left button – control for Start /Mute sound
3. Right stick – control leftward and rightward
4. Right button – press to issue sound
5. Middle button – control sound & movement of the figure

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Antenna Requirement (Section 15.203)

27.147MHz

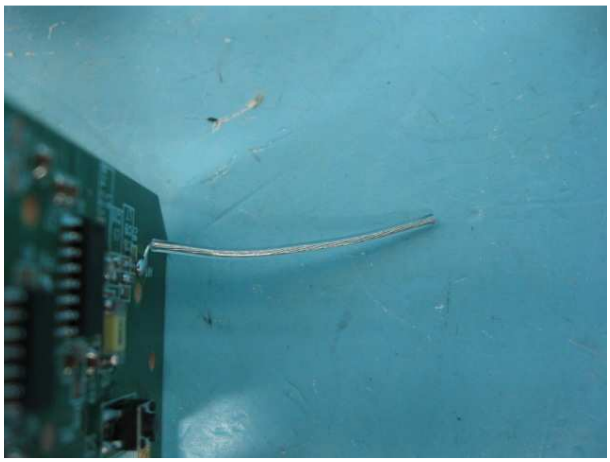
The EUT is use of a permanently antenna. It is soldered on the PCB. The antenna consists of 33.5cm long wire The antenna is not replaceable or user serviceable. The requirements of S15.203 are met. There are no deviations or exceptions to the specifications.

Photo of Antenna

2410MHz to 2473MHz

The EUT is use of a permanently antenna. It is soldered on the PCB. The antenna consists of 3.5cm 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



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Test Results

Radiated Emissions (Fundamental)

Test Requirement:	FCC Part 15 Section 15.227 & 15.249
Test Method:	ANSI C63.4
Test Date(s):	2015-06-09
Temperature:	28.0 °C
Humidity:	77.0 %
Atmospheric Pressure:	100.6 kPa
Mode of Operation:	Transmission mode
Tested Voltage:	3Vd.c. (“AA” size battery x 2)

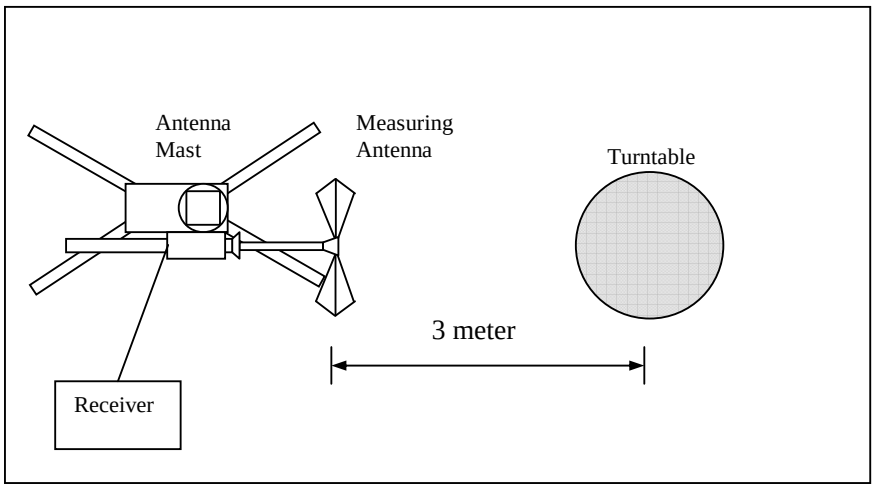
Test Procedure:

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



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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, 27.147 MHz): 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)
27.147	V/0°	10.0	-11.3	53.3	100	-46.7	**42.0	80	-38.0

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(0.272) = -11.3dB.

Note: Field Strength includes Antenna Factor and Cable Loss.
Receiver setting: RBW = 1MHz
VBW = 1MHz

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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, 2410MHz): 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)
2410.11	H	0.0	-13.8	76.4	114.0	-37.6	**62.6	94.0	-31.4
2410.11	V	0.0	-13.8	81.5	114.0	-32.5	**67.7	94.0	-26.3

Test Result of (Transmission mode, 2442MHz): 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)
2442.11	H	0.0	-13.8	74.8	114.0	-39.2	**61.0	94.0	-33.0
2442.11	V	0.0	-13.8	80.9	114.0	-33.1	**67.1	94.0	-26.9

Test Result of (Transmission mode, 2473MHz): 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)
2473.11	H	0.0	-13.8	76.5	114.0	-37.5	**62.7	94.0	-31.3
2473.11	V	0.0	-13.8	80.1	114.0	-33.9	**66.3	94.0	-27.7

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(0.2028) = -13.8dB.

Note: Field Strength includes Antenna Factor and Cable Loss.
Receiver setting: RBW = 1MHz
VBW = 1MHz

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TEST REPORT No: (5215)132-1440

Radiated Emissions (9kHz – 40GHz)

Test Requirement:	FCC Part 15 Section 15.209
Test Method:	ANSI C63.4
Test Date(s):	2015-06-09
Temperature:	28.0 °C
Humidity:	77.0 %
Atmospheric Pressure:	100.6 kPa
Mode of Operation:	Transmission mode (27.147MHz) and 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 [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)
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

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Measurement Data

Test Result of (On mode): PASS

Detection mode: Quasi-Peak

Frequency (MHz)	Polarity (H/V)	Field Strength at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
61.12	H	21.3	40.0	-18.7
160.48	H	22.4	43.5	-21.1
228.04	H	23.6	46.0	-22.4
343.52	H	25.8	46.0	-20.2
575.04	H	30.2	46.0	-15.8
764.68	H	33.5	46.0	-12.5

Frequency (MHz)	Polarity (H/V)	Field Strength at 3m (dBµV/m)	Limit at 3m (dBµV/m)	Margin (dB)
61.12	V	21.0	40.0	-19.0
160.48	V	22.6	43.5	-20.9
228.04	V	23.7	46.0	-22.3
343.52	V	26.2	46.0	-19.8
575.04	V	30.1	46.0	-15.9
764.68	V	33.7	46.0	-12.3

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 120KHz
VBW = 120KHz

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TEST REPORT No: (5215)132-1440

Measurement Data

Test Result of (Transmission mode, 27.147MHz): 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)
54.294	H	8.2	23.6	40.0	-16.4
81.441	H	8.0	20.4	40.0	-19.6
108.588	H	13.2	22.5	43.5	-21.0
135.735	H	13.5	23.9	43.5	-19.6
162.882	H	11.0	22.7	43.5	-20.8
190.029	H	10.8	21.8	43.5	-21.7
217.176	H	10.7	23.4	46.0	-22.6
244.323	H	13.3	23.5	46.0	-22.5
271.470	H	14.2	24.2	46.0	-21.8
298.617	H	14.8	25.7	46.0	-20.3

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)
54.294	V	8.2	23.1	40.0	-16.9
81.441	V	8.0	20.5	40.0	-19.5
108.588	V	13.2	22.8	43.5	-20.7
135.735	V	13.5	23.7	43.5	-19.8
162.882	V	11.0	22.5	43.5	-21.0
190.029	V	10.8	21.7	43.5	-21.8
217.176	V	10.7	23.2	46.0	-22.8
244.323	V	13.3	23.9	46.0	-22.1
271.470	V	14.2	24.1	46.0	-21.9
298.617	V	14.8	25.3	46.0	-20.7

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 120KHz
VBW = 120KHz

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TEST REPORT No: (5215)132-1440

Radiated Emissions (Spurious Emission)

Test Requirement:	FCC Part 15 Section 15.249
Test Method:	ANSI C63.4
Test Date(s):	2015-06-02
Temperature:	25.0 °C
Humidity:	75.0 %
Atmospheric Pressure:	100.2 kPa
Mode of Operation:	Transmission mode (2410MHz to 2473MHz)
Tested Voltage:	3Vd.c. ("AA" size battery x 2)

Measurement Data

Test Result of (Transmission mode, 2410MHz): 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)
4820.22	H	5.9	-13.8	59.6	74.0	-14.4	**45.8	54.0	-8.2
7230.33	H	12.7	-13.8	49.0	74.0	-25.0	**35.2	54.0	-18.8
9640.44	H	16.4	-13.8	50.3	74.0	-23.7	**36.5	54.0	-17.5
12050.55	H	18.4	-13.8	54.5	74.0	-19.5	**40.7	54.0	-13.3
14460.66	H	23.2	-13.8	60.1	74.0	-13.9	**46.3	54.0	-7.7
16870.77	H	22.0	-13.8	61.8	74.0	-12.2	**48.0	54.0	-6.0
19280.88	H	46.3	-13.8	61.1	74.0	-12.9	**47.3	54.0	-6.7
21690.99	H	47.1	-13.8	60.8	74.0	-13.2	**47.0	54.0	-7.0
24101.10	H	47.5	-13.8	62.0	74.0	-12.0	**48.2	54.0	-5.8
26511.21	H	48.5	-13.8	62.2	74.0	-11.8	**48.4	54.0	-5.6

For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.
**Duty Cycle Correction = 20Log(0.2028) = -13.8dB.

Note: Field Strength includes Antenna Factor and Cable Loss.
Receiver setting: RBW = 1MHz
VBW = 1MHz

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Measurement Data

Test Result of (Transmission mode, 2410MHz): 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)
4820.22	V	5.9	-13.8	56.7	74.0	-17.3	**42.9	54.0	-11.1
7230.33	V	12.7	-13.8	49.1	74.0	-24.9	**35.3	54.0	-18.7
9640.44	V	16.4	-13.8	51.2	74.0	-22.8	**37.4	54.0	-16.6
12050.55	V	18.4	-13.8	53.4	74.0	-20.6	**39.6	54.0	-14.4
14460.66	V	23.2	-13.8	60.0	74.0	-14.0	**46.2	54.0	-7.8
16870.77	V	22.0	-13.8	60.0	74.0	-14.0	**46.2	54.0	-7.8
19280.88	V	46.3	-13.8	61.5	74.0	-12.5	**47.7	54.0	-6.3
21690.99	V	47.1	-13.8	60.3	74.0	-13.7	**46.5	54.0	-7.5
24101.10	V	47.5	-13.8	61.9	74.0	-12.1	**48.1	54.0	-5.9
26511.21	V	48.5	-13.8	62.1	74.0	-11.9	**48.3	54.0	-5.7

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(0.2028) = -13.8dB.

Note: Field Strength includes Antenna Factor and Cable Loss.
Receiver setting: RBW = 1MHz
VBW = 1MHz

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TEST REPORT No: (5215)132-1440

Measurement Data
Test Result of (Transmission mode, 2442MHz): 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)
4884.22	H	5.9	-13.8	57.9	74.0	-16.1	**44.1	54.0	-9.9
7326.33	H	12.7	-13.8	47.3	74.0	-26.7	**33.5	54.0	-20.5
9768.44	H	16.4	-13.8	51.6	74.0	-22.4	**37.8	54.0	-16.2
12210.55	H	18.6	-13.8	55.0	74.0	-19.0	**41.2	54.0	-12.8
14652.66	H	25.0	-13.8	60.9	74.0	-13.1	**47.1	54.0	-6.9
17094.77	H	27.2	-13.8	60.8	74.0	-13.2	**47.0	54.0	-7.0
19536.88	H	46.5	-13.8	61.7	74.0	-12.3	**47.9	54.0	-6.1
21978.99	H	46.9	-13.8	62.0	74.0	-12.0	**48.2	54.0	-5.8
24421.10	H	48.0	-13.8	62.3	74.0	-11.7	**48.5	54.0	-5.5
26863.21	H	48.3	-13.8	62.6	74.0	-11.4	**48.8	54.0	-5.2

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)
4884.22	V	5.9	-13.8	54.4	74.0	-19.6	**40.6	54.0	-13.4
7326.33	V	12.7	-13.8	47.7	74.0	-26.3	**33.9	54.0	-20.1
9768.44	V	16.4	-13.8	52.2	74.0	-21.8	**38.4	54.0	-15.6
12210.55	V	18.6	-13.8	54.2	74.0	-19.8	**40.4	54.0	-13.6
14652.66	V	25.0	-13.8	60.3	74.0	-13.7	**46.5	54.0	-7.5
17094.77	V	27.2	-13.8	61.3	74.0	-12.7	**47.5	54.0	-6.5
19536.88	V	46.5	-13.8	62.5	74.0	-11.5	**48.7	54.0	-5.3
21978.99	V	46.9	-13.8	60.5	74.0	-13.5	**46.7	54.0	-7.3
24421.10	V	48.0	-13.8	60.9	74.0	-13.1	**47.1	54.0	-6.9
26863.21	V	48.3	-13.8	60.9	74.0	-13.1	**47.1	54.0	-6.9

For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.
**Duty Cycle Correction = 20Log(0.2028) = -13.8dB.

Note: Field Strength includes Antenna Factor and Cable Loss.
Receiver setting: RBW = 1MHz
VBW = 1MHz

Measurement Data
Test Result of (Transmission mode, 2473MHz): 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)
4946.22	H	5.9	-13.8	58.1	74.0	-15.9	**44.3	54.0	-9.7
7419.33	H	13.3	-13.8	48.9	74.0	-25.1	**35.1	54.0	-18.9
9892.44	H	16.4	-13.8	51.0	74.0	-23.0	**37.2	54.0	-16.8
12365.55	H	18.6	-13.8	55.2	74.0	-18.8	**41.4	54.0	-12.6
14838.66	H	25.0	-13.8	60.4	74.0	-13.6	**46.6	54.0	-7.4
17311.77	H	27.2	-13.8	62.0	74.0	-12.0	**48.2	54.0	-5.8
19784.88	H	46.6	-13.8	61.6	74.0	-12.4	**47.8	54.0	-6.2
22257.99	H	47.0	-13.8	61.8	74.0	-12.2	**48.0	54.0	-6.0
24731.10	H	48.1	-13.8	62.0	74.0	-12.0	**48.2	54.0	-5.8
27204.21	H	48.5	-13.8	61.9	74.0	-12.1	**48.1	54.0	-5.9

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)
4946.22	V	5.9	-13.8	51.0	74.0	-23.0	**37.2	54.0	-16.8
7419.33	V	13.3	-13.8	48.2	74.0	-25.8	**34.4	54.0	-19.6
9892.44	V	16.4	-13.8	51.4	74.0	-22.6	**37.6	54.0	-16.4
12365.55	V	18.6	-13.8	53.2	74.0	-20.8	**39.4	54.0	-14.6
14838.66	V	25.0	-13.8	61.4	74.0	-12.6	**47.6	54.0	-6.4
17311.77	V	27.2	-13.8	62.5	74.0	-11.5	**48.7	54.0	-5.3
19784.88	V	46.6	-13.8	61.2	74.0	-12.8	**47.4	54.0	-6.6
22257.99	V	47.0	-13.8	60.5	74.0	-13.5	**46.7	54.0	-7.3
24731.10	V	48.1	-13.8	61.4	74.0	-12.6	**47.6	54.0	-6.4
27204.21	V	48.5	-13.8	61.3	74.0	-12.7	**47.5	54.0	-6.5

For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.
**Duty Cycle Correction = 20Log(0.2028) = -13.8dB.

Note: Field Strength includes Antenna Factor and Cable Loss.
Receiver setting: RBW = 1MHz
VBW = 1MHz

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TEST REPORT No: (5215)132-1440

26dB Bandwidth of Fundamental Emission

Test Requirement:	FCC 47 CFR 15.227
Test Method:	ANSI C63.4
Test Date(s):	2015-05-19
Temperature:	28.0 °C
Humidity:	77.0 %
Atmospheric Pressure:	100.6 kPa
Mode of Operation:	Transmission mode (27.147MHz)
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.

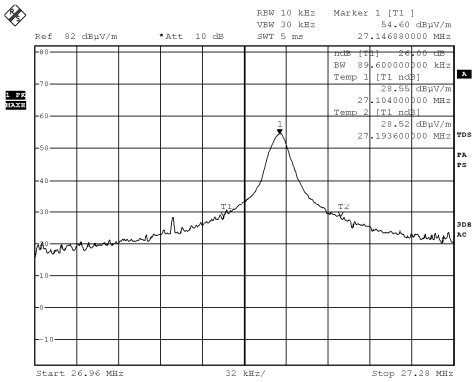
Limits for 26dB Bandwidth of Fundamental Emission:

Frequency [MHz]	26dB Bandwidth [KHz]	Limits [MHz]
27.14688	89.60	within 26.96 – 27.28

Measurement Data

Test Result of 26dB Bandwidth of Fundamental Emission: PASS

27.147MHz



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TEST REPORT No: (5215)132-1440

Frequency range of Fundamental Emission

Test Requirement:	FCC 47 CFR 15.249
Test Method:	ANSI C63.4
Test Date(s):	2015-05-19
Temperature:	24.0 °C
Humidity:	73.0 %
Atmospheric Pressure:	100.6 kPa
Mode of Operation:	Transmission mode (2410MHz to 2473MHz)
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]
2409.370 – 2473.830	2400.00 – 2483.50

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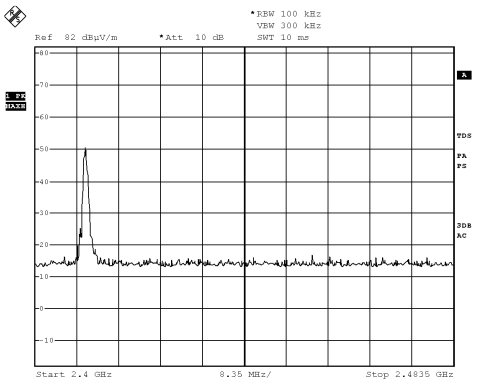
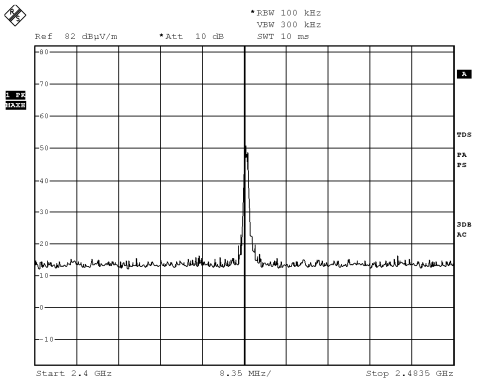
Measurement Data :

Test Result of Frequency Range of Fundamental Emission: PASS

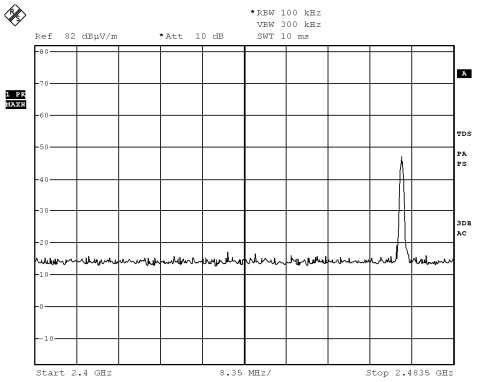
2410MHz



2442MHz



2473MHz



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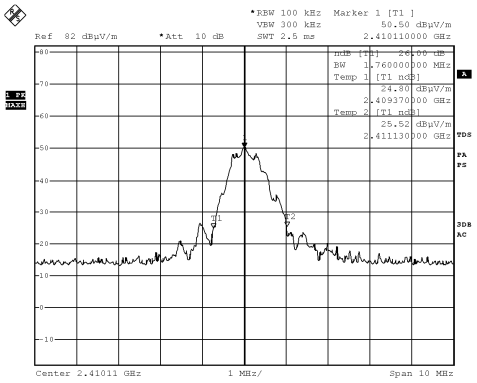
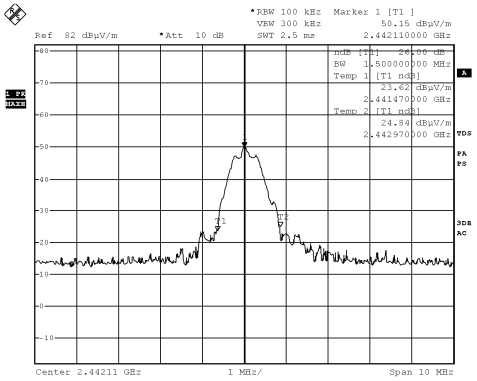
TEST REPORT No: (5215)132-1440
Measurement Data :

Test Result of 26dB Bandwidth of Fundamental Emission: PASS

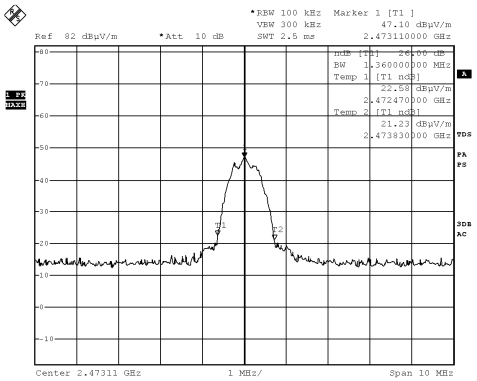
2410MHz



2442MHz



2473MHz



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Duty Cycle Correction During 100msec:

27.157MHz
Each function key sends a different series of characters, but each packet period (100msec) never exceeds a series of 16 (1.7msec) pulses. Assuming any combination of short and long pulses maybe obtained due to encoding the worst case transmit duty cycle would be considered (16 x 1.7msec) per 100msec = 27.2% duty cycle. Figure A through C shows the characteristics of the pulse train for one of these functions.

Remarks:

Duty Cycle Correction = 20Log(0.272) = -11.3dB

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

2410MHz to 2473MHz
Each function key sends a different series of characters, but each packet period (100msec) never exceeds a series of 39 pulses (0.52 msec). Assuming any combination of short and long pulses maybe obtained due to encoding the worst case transmit duty cycle would be considered 39*0.52 per 100msec = 20.28% duty cycle.

Remarks:

Duty Cycle Correction = 20Log(0.2028) = -13.8dB

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

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Measurement Data :

Figure A [Pulse Train (27.147MHz)]

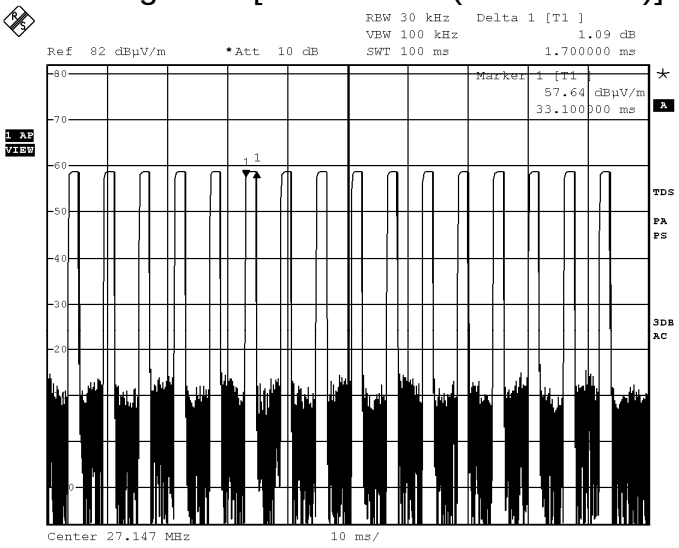
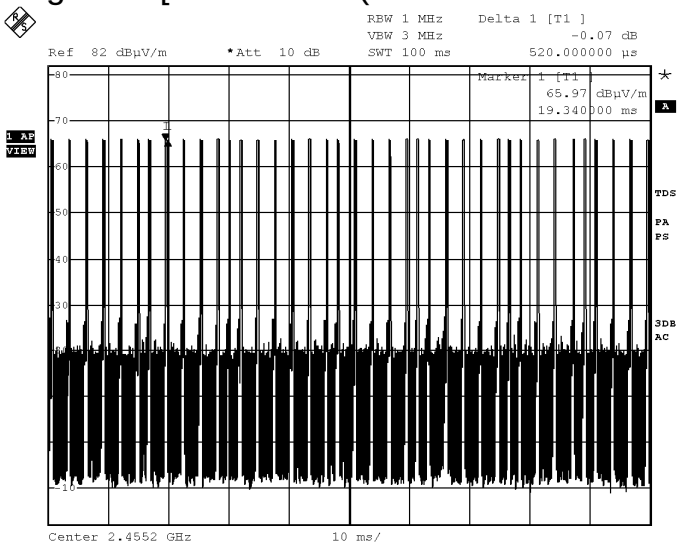


Figure B [Pulse Train (2410MHz – 2473MHz)]



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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

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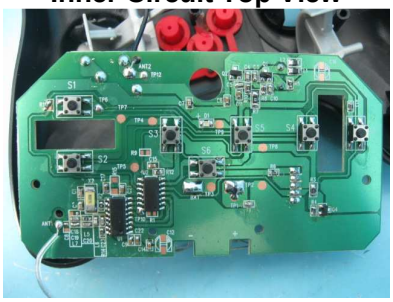
Photographs of EUT

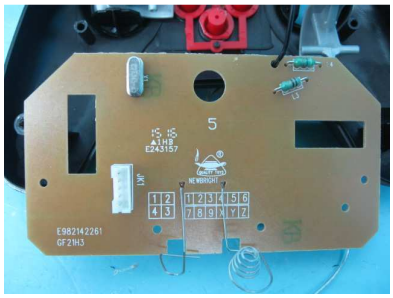
Internal View of the product

Internal View of the product

Inner Circuit Top View

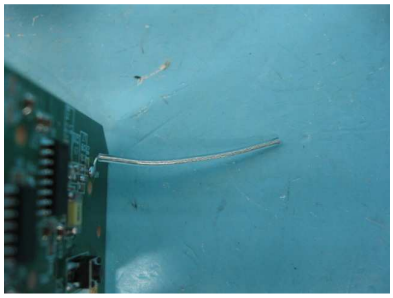


Inner Circuit Bottom View



Antenna

Antenna



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Measurement of Radiated Emission Test Set Up

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

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