



**BUREAU
VERITAS**

TEST REPORT No: (5215)022-0995(A)

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-15JA190ETHS-B-C		
Factory name:	NEW BRIGHT INDUSTRIAL CO., LTD.		
Location:	9/F., NEW BRIGHT BUILDING, 11 SHEUNG YUET ROAD, KOWLOON BAY, KOWLOON, HONG KONG.		
Product:	TOY Transmitter & Receiver Model No.: GF7ML		
	Sample No:	HK150113/024	
	Test date:	February 03, 2015 To February 05, 2015	
	Test Requested:	FCC Part 15 - 2012	
	Test Method:	ANSI C63.4 - 2009	
	FCC ID:	G6DGF7ML	
	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: February 12, 2015		Date: February 12, 2015	

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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.



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Test Result Summary

EMISSION TEST			
Test requirement: FCC Part 15 - 2012			
Test Condition	Test Method	Test Result	
		Pass	Failed
Conducted Emission Test, 0.15MHz to 30MHz	ANSI C63.4	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Radiated Emission Test, 9kHz to 40GHz	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:

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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	27-MAR-2014	26-MAR-2015
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-2014	12-MAY-2015
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

Conducted Emission

EQUIPMENT	MANUFACTURER	MODEL NO.	SERIAL NO.	LAST CALIBRATION	CALIBRATION DUE
EMI TEST RECEIVER	R&S	ESCI	100379	21-JAN-2015	20-JAN-2016
LISN	R&S	ENV216	100024	17-SEP-2014	16-SEP-2015

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 & Receiver
 Model Number: GF7ML
 Additional Model Name: --
 Additional Model Number: --
 Additional Model information: Declare the Circuit, PCB layout & Electrical parts of the products are identical to the basic model, except the appearance and colour.
 Rating: 117Va.c., 60Hz
 6.4Vd.c. ("rechargeable battery" x 1)

Description of Adaptor

Adaptor : --
 Model : A587500507
 Input : 100-240Va.c., 50/60Hz 10W
 Input power line cable : --
 Output : 13.5Vd.c. 400mA
 Output power line cable : --

Description of EUT Operation:

The Equipment Under Test (EUT) is a **NEW BRIGHT INDUSTRIAL CO., LTD.** of Remote Control Transceiver. It is a 1 switch transceiver and operating at 2406MHz to 2472MHz. 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 67 channels and below is the frequency list :

ch.no	freq.												
1	2406	11	2416	21	2426	31	2436	41	2446	51	2456	61	2466
2	2407	12	2417	22	2427	32	2437	42	2447	52	2457	62	2467
3	2408	13	2418	23	2428	33	2438	43	2448	53	2458	63	2468
4	2409	14	2419	24	2429	34	2439	44	2449	54	2459	64	2469
5	2410	15	2420	25	2430	35	2440	45	2450	55	2460	65	2470
6	2411	16	2421	26	2431	36	2441	46	2451	56	2461	66	2471
7	2412	17	2422	27	2432	37	2442	47	2452	57	2462	67	2472
8	2413	18	2423	28	2433	38	2443	48	2453	58	2463		
9	2414	19	2424	29	2434	39	2444	49	2454	59	2464		
10	2415	20	2425	30	2435	40	2445	50	2455	60	2465		

The transmitter has different control:

1. ON/OFF Switch – power control

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Antenna Requirement (Section 15.203)

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

Conducted Emissions (150kHz to 30MHz)

Test Requirement: FCC Part 15 Section 15.107
 Test Method: ANSI C63.4
 Test Limits: Class B
 Test Date(s): 2015-02-03
 Temperature: 24.0 °C
 Humidity: 62.0 %
 Atmospheric Pressure: 100.6 kPa
 Mode of Operation: Charge mode
 Tested Voltage: 117Va.c., 60Hz

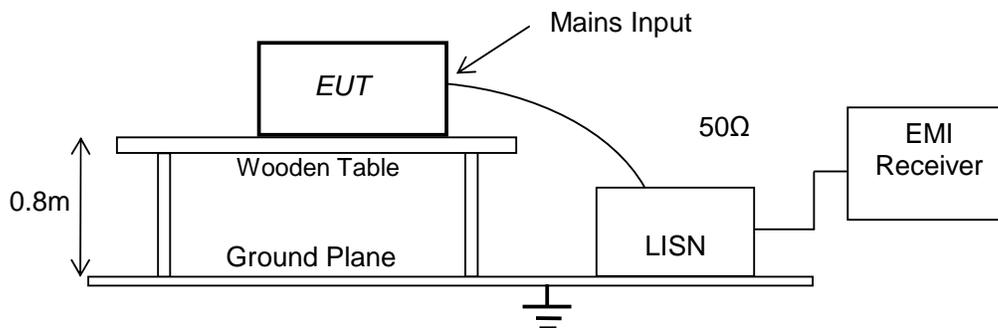
Test Method:

Conducted emissions measurements are investigated and also taken pursuant to the procedures of ANSI C63.4 – 2009. The EUT was setup as described in the procedures, and both lines were measured.

Initial measurements were performed in peak and average detection modes on the live and neutral line, any emissions recorded within 30dB of the relevant limit lines were re-measured using quasi-peak and average detection on the live and neutral lines with the worst case recorded in the table of results.

Location: No. 603, 6/F., Westin Centre, 26 Hung To Road, Kwun Tong, Kowloon, Hong Kong

Test Setup: Shielding Room





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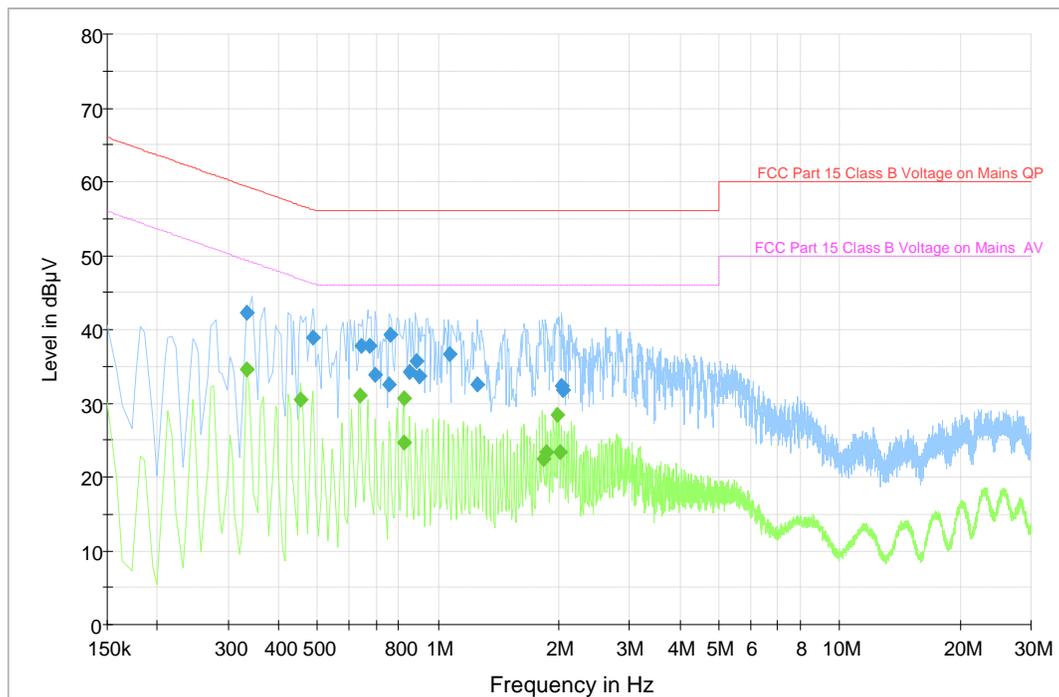
Measurement Data: Live

Test Result of (Charge mode): PASS

Results and limit lines for Conducted Emission:

Limits for Conducted Emission Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram.

FCC Part 15 Class B Voltage



TEST REPORT No: (5215)022-0995(A)
Results and limit lines for Conducted Emission:

Limits for Conducted Emission Test, please refer to limit lines (Quasi-Peak and Average) in the following tables.

Frequency (MHz)	QuasiPeak (dB μ V)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dB μ V)
0.334500	42.3	9.000	L1	-17.1	59.3
0.487500	38.9	9.000	L1	-17.3	56.2
0.645000	37.8	9.000	L1	-18.2	56.0
0.676500	37.8	9.000	L1	-18.2	56.0
0.699000	33.9	9.000	L1	-22.1	56.0
0.757500	32.6	9.000	L1	-23.4	56.0
0.762000	39.3	9.000	L1	-16.7	56.0
0.852000	34.2	9.000	L1	-21.8	56.0
0.883500	35.7	9.000	L1	-20.4	56.0
0.897000	33.7	9.000	L1	-22.3	56.0
1.068000	36.6	9.000	L1	-19.4	56.0
1.248000	32.5	9.000	L1	-23.5	56.0
2.035500	32.3	9.000	L1	-23.7	56.0
2.040000	31.7	9.000	L1	-24.3	56.0

Frequency (MHz)	Average (dB μ V)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dB μ V)
0.334500	34.5	9.000	L1	-14.8	49.3
0.456000	30.4	9.000	L1	-16.4	46.8
0.640500	31.0	9.000	L1	-15.0	46.0
0.820500	24.7	9.000	L1	-21.3	46.0
0.825000	30.6	9.000	L1	-15.4	46.0
1.828500	22.4	9.000	L1	-23.6	46.0
1.860000	23.3	9.000	L1	-22.7	46.0
1.986000	28.4	9.000	L1	-17.6	46.0
2.013000	23.4	9.000	L1	-22.6	46.0



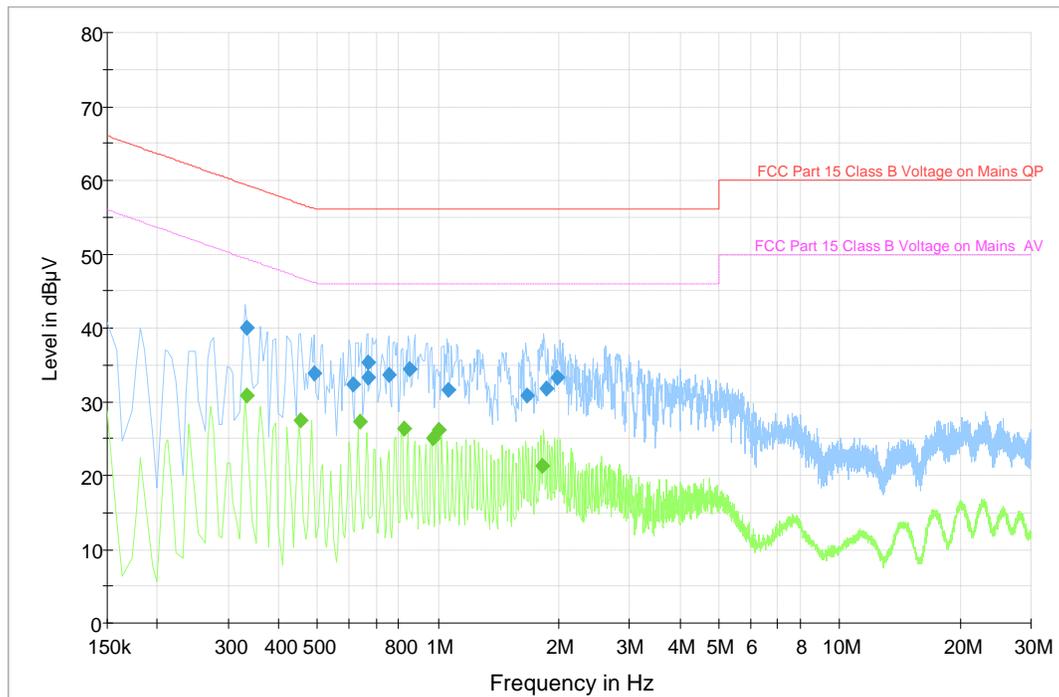
TEST REPORT No: (5215)022-0995(A)
Measurement Data: Neutral

Test Result of (Charge mode): PASS

Results and limit lines for Conducted Emission:

Limits for Conducted Emission Test, please refer to limit lines (Quasi-Peak and Average) in the following diagram.

FCC Part 15 Class B Voltage



TEST REPORT No: (5215)022-0995(A)
Results and limit lines for Conducted Emission:

Limits for Conducted Emission Test, please refer to limit lines (Quasi-Peak and Average) in the following tables.

Frequency (MHz)	QuasiPeak (dB μ V)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dB μ V)
0.334500	40.0	9.000	N	-19.3	59.3
0.492000	33.8	9.000	N	-22.3	56.1
0.613500	32.4	9.000	N	-23.6	56.0
0.667500	33.2	9.000	N	-22.8	56.0
0.672000	35.3	9.000	N	-20.7	56.0
0.757500	33.7	9.000	N	-22.3	56.0
0.852000	34.4	9.000	N	-21.6	56.0
1.063500	31.6	9.000	N	-24.4	56.0
1.671000	30.9	9.000	N	-25.2	56.0
1.855500	31.8	9.000	N	-24.2	56.0
1.977000	33.3	9.000	N	-22.7	56.0

Frequency (MHz)	Average (dB μ V)	Bandwidth (kHz)	Line	Margin (dB)	Limit (dB μ V)
0.334500	30.9	9.000	N	-18.4	49.3
0.456000	27.5	9.000	N	-19.3	46.8
0.640500	27.4	9.000	N	-18.6	46.0
0.820500	26.4	9.000	N	-19.6	46.0
0.973500	25.1	9.000	N	-20.9	46.0
1.005000	26.2	9.000	N	-19.8	46.0
1.824000	21.3	9.000	N	-24.7	46.0

TEST REPORT No: (5215)022-0995(A)

Test Results

Radiated Emissions (Fundamental)

Test Requirement: FCC Part 15 Section 15.249
 Test Method: ANSI C63.4
 Test Date(s): 2015-02-05
 Temperature: 18.0 °C
 Humidity: 73.0 %
 Atmospheric Pressure: 100.9 kPa
 Mode of Operation: Transmission mode
 Tested Voltage: 6.4Vd.c. ("rechargeable battery" x 1)

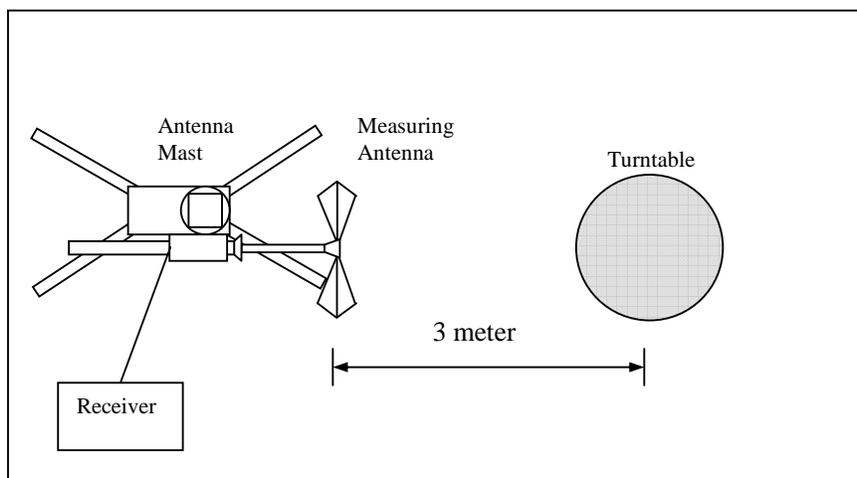
Test Procedure:

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 15.249]:

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)
2406.00	H	0.0	-20.0	86.3	114.0	-27.7	**66.3	94.0	-27.7
2406.00	V	0.0	-20.0	86.7	114.0	-27.3	**66.7	94.0	-27.3

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)
2443.00	H	0.0	-20.0	87.4	114.0	-26.6	**67.4	94.0	-26.6
2443.00	V	0.0	-20.0	81.5	114.0	-32.5	**61.5	94.0	-32.5

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)
2472.00	H	0.0	-20.0	92.2	114.0	-21.8	**72.2	94.0	-21.8
2472.00	V	0.0	-20.0	85.7	114.0	-28.3	**65.7	94.0	-28.3

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

**Duty Cycle Correction = $20\log(0.081) = -21.8\text{dB}$.

**Therefore, -20dB is taken.

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz
VBW = 1MHz



TEST REPORT No: (5215)022-0995(A)

Radiated Emissions (Spurious Emission)

Test Requirement: FCC Part 15 Section 15.249
 Test Method: ANSI C63.4
 Test Date(s): 2015-02-05
 Temperature: 18.0 °C
 Humidity: 73.0 %
 Atmospheric Pressure: 100.9 kPa
 Mode of Operation: Transmission mode
 Tested Voltage: 6.4Vd.c. ("rechargeable battery" x 1)

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)
4812.00	H	5.9	-20.0	62.8	74.0	-11.2	**42.8	54.0	-11.2
7218.00	H	12.7	-20.0	66.1	74.0	-7.9	**46.1	54.0	-7.9
9624.00	H	16.4	-20.0	57.8	74.0	-16.2	**37.8	54.0	-16.2
12030.00	H	18.4	-20.0	52.8	74.0	-21.2	**32.8	54.0	-21.2
14436.00	H	23.2	-20.0	58.6	74.0	-15.4	**38.6	54.0	-15.4
16842.00	H	22.0	-20.0	61.4	74.0	-12.6	**41.4	54.0	-12.6
19248.00	H	46.3	-20.0	60.4	74.0	-13.6	**40.4	54.0	-13.6
21654.00	H	47.1	-20.0	61.3	74.0	-12.7	**41.3	54.0	-12.7
24060.00	H	47.5	-20.0	60.2	74.0	-13.8	**40.2	54.0	-13.8
26466.00	H	48.5	-20.0	59.2	74.0	-14.8	**39.2	54.0	-14.8

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

**Duty Cycle Correction = $20\log(0.081) = -21.8\text{dB}$.

**Therefore, -20dB is taken.

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz
VBW = 1MHz



TEST REPORT No: (5215)022-0995(A)

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 μ V/m)	Limit at 3m – Peak (dB μ V/m)	Margin - Peak (dB)	Field Strength at 3m – Average (dB μ V/m)	Limit at 3m – Average (dB μ V/m)	Margin - Average (dB)
4812.00	V	5.9	-20.0	60.2	74.0	-13.8	**40.2	54.0	-13.8
7218.00	V	12.7	-20.0	64.4	74.0	-9.6	**44.4	54.0	-9.6
9624.00	V	16.4	-20.0	54.9	74.0	-19.1	**34.9	54.0	-19.1
12030.00	V	18.4	-20.0	52.0	74.0	-22.0	**32.0	54.0	-22.0
14436.00	V	23.2	-20.0	57.9	74.0	-16.1	**37.9	54.0	-16.1
16842.00	V	22.0	-20.0	60.2	74.0	-13.8	**40.2	54.0	-13.8
19248.00	V	46.3	-20.0	61.1	74.0	-12.9	**41.1	54.0	-12.9
21654.00	V	47.1	-20.0	60.4	74.0	-13.6	**40.4	54.0	-13.6
24060.00	V	47.5	-20.0	60.7	74.0	-13.3	**40.7	54.0	-13.3
26466.00	V	48.5	-20.0	61.3	74.0	-12.7	**41.3	54.0	-12.7

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

**Duty Cycle Correction = $20\text{Log}(0.081) = -21.8\text{dB}$.

**Therefore, -20dB is taken.

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, 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 4886.00 to 26873.00 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 4886.00 to 26873.00 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(0.081) = -21.8dB.

**Therefore, -20dB is taken.

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 1MHz

VBW = 1MHz

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

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BUREAU VERITAS

TEST REPORT No: (5215)022-0995(A)

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 4944.00 to 27192.00 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 4944.00 to 27192.00 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(0.081) = -21.8dB.

**Therefore, -20dB is taken.

Note: Field Strength includes Antenna Factor and Cable Loss.

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

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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)022-0995(A)

Radiated Emissions (9kHz – 40GHz)

Test Requirement: FCC Part 15 Section 15.209
 Test Method: ANSI C63.4
 Test Date(s): 2015-02-05
 Temperature: 18.0 °C
 Humidity: 73.0 %
 Atmospheric Pressure: 100.9 kPa
 Mode of Operation: On mode / Charge mode
 Tested Voltage: 117Va.c., 60Hz /
 6.4Vd.c. ("rechargeable battery" x 1)

Limits for Radiated Emissions [FCC 47 CFR 15.209]:

Frequency Range [MHz]	Quasi-Peak Limits [μ 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

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)022-0995(A)

Measurement Data

Test Result of (On mode): PASS

Detection mode: Quasi-Peak

Frequency (MHz)	Polarity (H/V)	Field Strength at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
58.82	H	24.4	40.0	-15.6
145.84	H	26.8	43.5	-16.7
190.76	H	25.9	43.5	-17.6
266.50	H	30.1	46.0	-15.9
602.22	H	33.5	46.0	-12.5
670.80	H	37.2	46.0	-8.8

Frequency (MHz)	Polarity (H/V)	Field Strength at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
58.82	V	24.1	40.0	-15.9
145.84	V	26.2	43.5	-17.3
190.76	V	25.4	43.5	-18.1
266.50	V	30.3	46.0	-15.7
602.22	V	33.7	46.0	-12.3
670.80	V	37.5	46.0	-8.5

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 120KHz
 VBW = 120KHz



TEST REPORT No: (5215)022-0995(A)
Measurement Data

Test Result of (Charge mode): PASS

Detection mode: Quasi-Peak

Frequency (MHz)	Polarity (H/V)	Field Strength at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
43.36	H	32.5	40.0	-7.5
158.48	H	25.7	43.5	-17.8
224.40	H	27.3	46.0	-18.7
311.56	H	28.4	46.0	-17.6
423.84	H	31.5	46.0	-14.5
508.00	H	32.6	46.0	-13.4

Frequency (MHz)	Polarity (H/V)	Field Strength at 3m (dB μ V/m)	Limit at 3m (dB μ V/m)	Margin (dB)
43.36	V	32.1	40.0	-7.9
158.48	V	25.4	43.5	-18.1
224.40	V	26.9	46.0	-19.1
311.56	V	28.5	46.0	-17.5
423.84	V	31.7	46.0	-14.3
508.00	V	32.2	46.0	-13.8

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 120KHz
 VBW = 120KHz



TEST REPORT No: (5215)022-0995(A)

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): 2015-02-05
Temperature: 18.0 °C
Humidity: 73.0 %
Atmospheric Pressure: 100.9 kPa
Mode of Operation: Transmission mode
Tested Voltage: 6.4Vd.c.("rechargeable 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 Frequency range of Fundamental Emission:

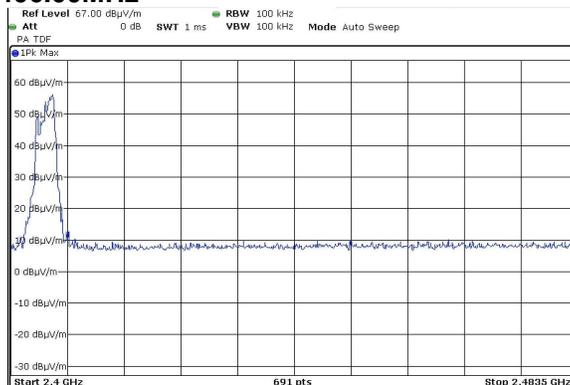
Frequency [MHz]	FCC Limits [MHz]
2403.149 – 2473.331	2400.00 – 2483.50

TEST REPORT No: (5215)022-0995(A)

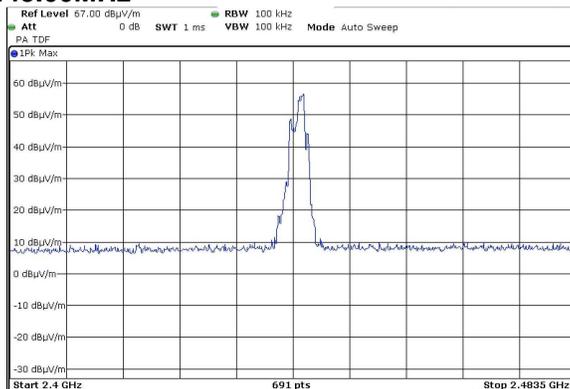
Measurement Data :

Test Result of Frequency Range of Fundamental Emission: PASS

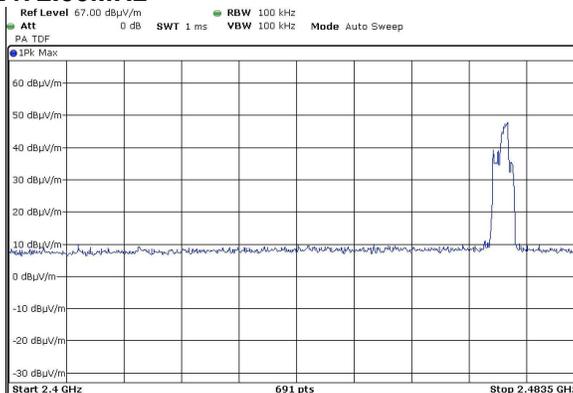
Lowest Frequency – 2406.00MHz



Middle Frequency – 2443.00MHz



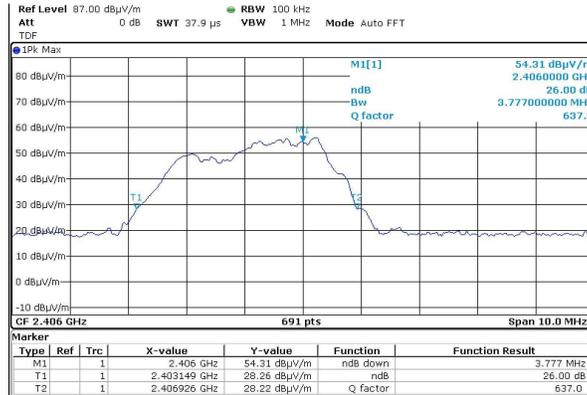
Highest Frequency – 2472.00MHz



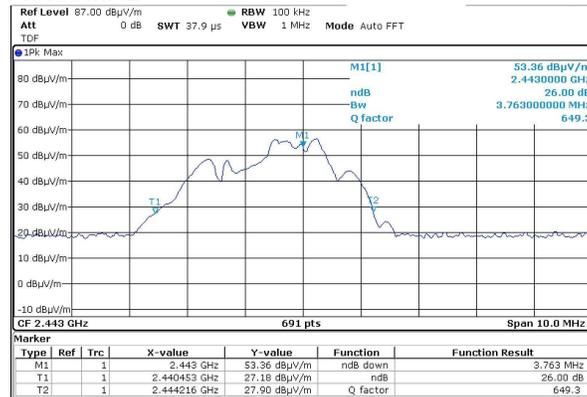
TEST REPORT No: (5215)022-0995(A)
Measurement Data :

Test Result of 26dB Bandwidth of Fundamental Emission: PASS

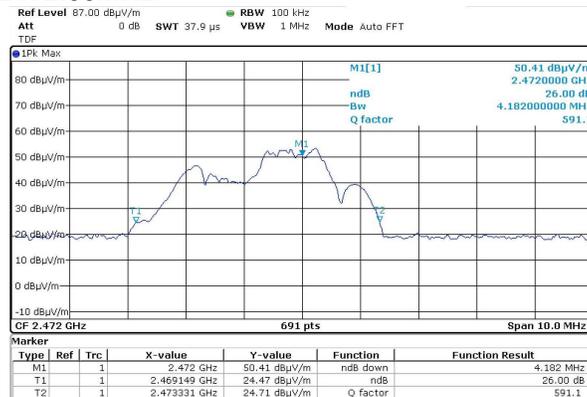
Lowest Frequency – 2406.00MHz



Middle Frequency – 2443.00MHz



Highest Frequency – 2472.00MHz





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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 pulses (2.029msec). Assuming any combination of short and long pulses maybe obtained due to encoding the worst case transmit duty cycle would be considered $\frac{2.029 \times 4}{100} = 8.1\%$ duty cycle.

Remarks:

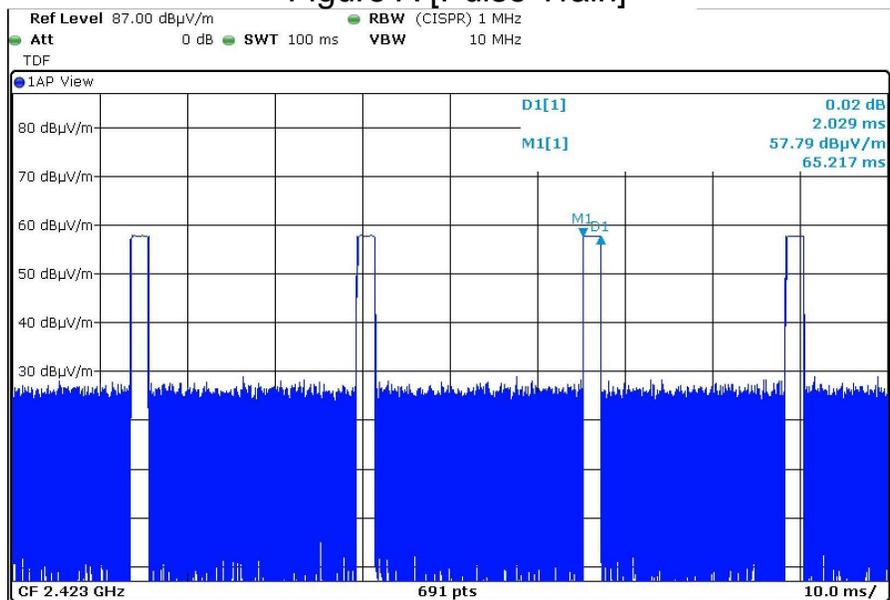
Duty Cycle Correction = $20\text{Log}(0.081) = -21.8\text{dB}$
Therefore, -20dB is taken

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

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Measurement Data :

Figure A [Pulse Train]



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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 and Charge





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TEST REPORT No: (5215)022-0995(A)

Photographs of EUT

Internal View of the product



Internal View of the product



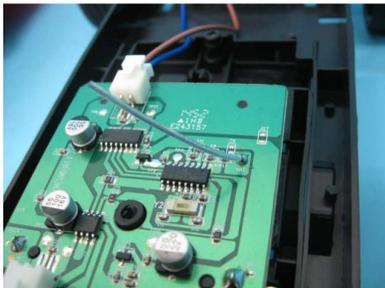
Inner Circuit Top View



Inner Circuit Bottom View



Antenna



Additional Photographs



TEST REPORT No: (5215)022-0995(A)

Measurement of Radiated Emission Test Set Up (Car)



Measurement of Radiated Emission Test Set Up (Charger for Car)



TEST REPORT No: (5215)022-0995(A)

Measurement of Conducted Emission Test Set Up (Charger for Car)



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