**TEST REPORT No: (5216)193-1063(F)**

# 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-16JY082MTHS-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 Receiver<br>Model No.: GF4MA | | |

| | |
|---|---|
| Sample No: | HK160707/017 |
| Date of Receipt: | July 07, 2016 |
| Test date: | August 03, 2016 |
| Test Requested: | FCC Part 15 - 2015 |
| Test Method: | ANSI C63.10 - 2013 |
| FCC ID: | G6DGF4MA |

**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: Law Man Kit |
| Date: August 08, 2016 | Date: August 08, 2016 |

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## TEST REPORT No: (5216)193-1063(F)

# Test Result Summary

| EMISSION TEST | | | |
|---|---|---|---|
| **Test requirement: FCC Part 15 - 2015** | | | |
| Test Condition | Test Method | Test Result | |
| | | Pass | Failed |
| Radiated Emission Test,<br>9kHz to 40GHz | ANSI C63.10 | ☒ | ☐ |
| Frequency range of Fundamental Emission | ANSI C63.10 | ☒ | ☐ |
| 26dB Bandwidth of Fundamental Emission | ANSI C63.10 | ☒ | ☐ |
| Duty Cycle Correction During 100msec | ANSI C63.10 | ☒ | ☐ |

## Report Revision & Sample Re-submit History:

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## TEST REPORT No: (5216)193-1063(F)

## 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 | 23-FEB-2016 | 22-FEB-2017 |
| SIGNAL ANALYZER 40GHZ | R&S | FSV 40 | 100977 | 29-JUN-2016 | 28-JUN-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 | 11-MAY-2016 | 10-MAY-2017 |
| 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-JUN-2016 | 16-JUN-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 | 07-JAN-2016 | 06-JAN-2017 |
| COAXIAL CABLE | HUBER + SUHNER | RG214 | N/A | 05-OCT-2015 | 04-OCT-2016 |

## 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: (5216)193-1063(F)

### Equipment Under Test [EUT]

### Description of Sample:

Model Name: TOY Receiver
Model Number: GF4MA
Additional Model Name: --
Additional Model Number: --
Additional Model information: --
Rating: 4.5Vd.c. ("AA" size battery x 3)

### 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 2410MHz to 2473MHz. 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 64 channels 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** | 2446 | **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. Switch – control on / off

### Antenna Requirement (Section 15.203)

The EUT is use of a permanently antenna. It is soldered on the PCB. The antenna consists of 3.0cm 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 Results

## Radiated Emissions (Fundamental)

| | |
|---|---|
| Test Requirement: | FCC Part 15 Section 15.249 |
| Test Method: | ANSI C63.10 |
| Test Date(s): | 2016-08-03 |
| Temperature: | 27.0 °C |
| Humidity: | 73.0 % |
| Atmospheric Pressure: | 99.7 kPa |
| Mode of Operation: | Transmission mode |
| Tested Voltage: | 4.5Vd.c. ("AA" size battery x 3) |

## Test Procedure:

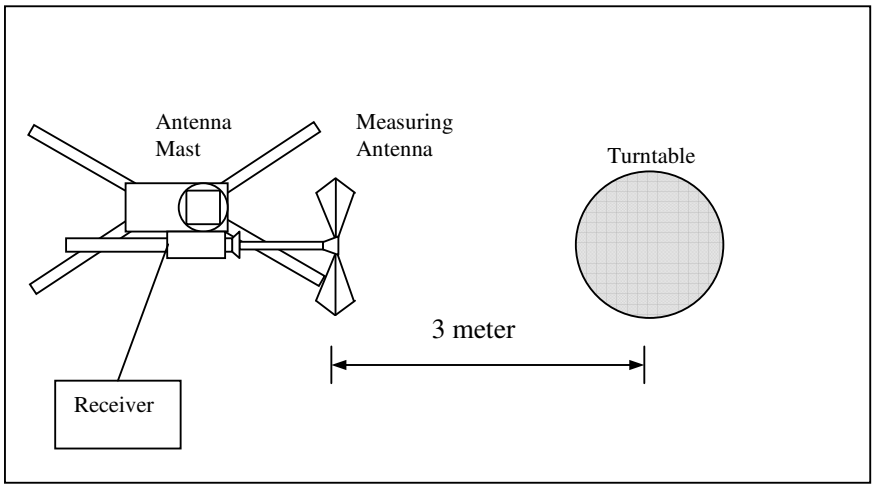
Radiated emissions measurements are investigated and taken pursuant to the procedures of ANSI C63.10 – 2013.

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

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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) |
|---|---|---|---|---|---|---|---|---|---|
| 2410.00 | H | -3.5 | -26.3 | 59.4 | 114.0 | -54.6 | **33.1 | 94.0 | -60.9 |
| 2410.00 | V | -3.5 | -26.3 | 64.0 | 114.0 | -50.0 | **37.7 | 94.0 | -56.3 |

## 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) |
|---|---|---|---|---|---|---|---|---|---|
| 2442.00 | H | -3.5 | -26.3 | 61.0 | 114.0 | -53.0 | **34.7 | 94.0 | -59.3 |
| 2442.00 | V | -3.5 | -26.3 | 63.8 | 114.0 | -50.2 | **37.5 | 94.0 | -56.5 |

## 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) |
|---|---|---|---|---|---|---|---|---|---|
| 2473.00 | H | -3.5 | -26.3 | 59.8 | 114.0 | -54.2 | **33.5 | 94.0 | -60.5 |
| 2473.00 | V | -3.5 | -26.3 | 63.9 | 114.0 | -50.1 | **37.6 | 94.0 | -56.4 |

# 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(0.048) = -26.3dB.

Note: Field Strength includes Antenna Factor, Cable Loss and Gain of pre-amplifier.
Receiver setting: RBW = 1MHz
VBW = 1MHz

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## TEST REPORT No: (5216)193-1063(F)

## Radiated Emissions (Spurious Emission)

| | |
|---|---|
| Test Requirement: | FCC Part 15 Section 15.249 |
| Test Method: | ANSI C63.10 |
| Test Date(s): | 2016-08-03 |
| Temperature: | 27.0 °C |
| Humidity: | 73.0 % |
| Atmospheric Pressure: | 99.7 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) |
|---|---|---|---|---|---|---|---|---|---|
| 4820.00 | H | 1.6 | -26.3 | 49.3 | 74.0 | -24.7 | **23.0 | 54.0 | -31.0 |
| 7230.00 | H | 10.7 | -26.3 | 47.2 | 74.0 | -26.8 | **20.9 | 54.0 | -33.1 |
| 9640.00 | H | 15.5 | -26.3 | 50.6 | 74.0 | -23.4 | **24.3 | 54.0 | -29.7 |
| 12050.00 | H | 18.0 | -26.3 | 51.5 | 74.0 | -22.5 | **25.2 | 54.0 | -28.8 |
| 14460.00 | H | 24.0 | -26.3 | 52.1 | 74.0 | -21.9 | **25.8 | 54.0 | -28.2 |
| 16870.00 | H | 19.1 | -26.3 | 53.2 | 74.0 | -20.8 | **26.9 | 54.0 | -27.1 |
| 19280.00 | H | 46.5 | -26.3 | 54.7 | 74.0 | -19.3 | **28.4 | 54.0 | -25.6 |
| 21690.00 | H | 46.8 | -26.3 | 55.5 | 74.0 | -18.5 | **29.2 | 54.0 | -24.8 |
| 24100.00 | H | 47.6 | -26.3 | 56.3 | 74.0 | -17.7 | **30.0 | 54.0 | -24.0 |
| 26510.00 | H | 48.6 | -26.3 | 57.2 | 74.0 | -16.8 | **30.9 | 54.0 | -23.1 |

# 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(0.048) = -26.3dB.

Note: Field Strength includes Antenna Factor, Cable Loss and Gain of pre-amplifier.
Receiver setting: RBW = 1MHz
VBW = 1MHz

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## TEST REPORT No: (5216)193-1063(F)

## 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) |
|---|---|---|---|---|---|---|---|---|---|
| 4820.00 | V | 1.6 | -26.3 | 47.8 | 74.0 | -26.2 | **21.5 | 54.0 | -32.5 |
| 7230.00 | V | 10.7 | -26.3 | 47.8 | 74.0 | -26.2 | **21.5 | 54.0 | -32.5 |
| 9640.00 | V | 15.5 | -26.3 | 50.9 | 74.0 | -23.1 | **24.6 | 54.0 | -29.4 |
| 12050.00 | V | 18.0 | -26.3 | 51.6 | 74.0 | -22.4 | **25.3 | 54.0 | -28.7 |
| 14460.00 | V | 24.0 | -26.3 | 52.2 | 74.0 | -21.8 | **25.9 | 54.0 | -28.1 |
| 16870.00 | V | 19.1 | -26.3 | 53.1 | 74.0 | -20.9 | **26.8 | 54.0 | -27.2 |
| 19280.00 | V | 46.5 | -26.3 | 54.3 | 74.0 | -19.7 | **28.0 | 54.0 | -26.0 |
| 21690.00 | V | 46.8 | -26.3 | 55.8 | 74.0 | -18.2 | **29.5 | 54.0 | -24.5 |
| 24100.00 | V | 47.6 | -26.3 | 56.0 | 74.0 | -18.0 | **29.7 | 54.0 | -24.3 |
| 26510.00 | V | 48.6 | -26.3 | 57.5 | 74.0 | -16.5 | **31.2 | 54.0 | -22.8 |

# For pulse modulated devices and using measuring equipment employing a peak detection mode, properly adjusted for such factor as pulse desensitisation.
**Duty Cycle Correction = 20Log(0.048) = -26.3dB.

Note: Field Strength includes Antenna Factor, Cable Loss and Gain of pre-amplifier.
Receiver setting: RBW = 1MHz
VBW = 1MHz

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## 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) |
|---|---|---|---|---|---|---|---|---|---|
| 4884.00 | H | 1.6 | -26.3 | 55.2 | 74.0 | -18.8 | **28.9 | 54.0 | -25.1 |
| 7326.00 | H | 10.7 | -26.3 | 56.1 | 74.0 | -17.9 | **29.8 | 54.0 | -24.2 |
| 9768.00 | H | 15.8 | -26.3 | 50.7 | 74.0 | -23.3 | **24.4 | 54.0 | -29.6 |
| 12210.00 | H | 17.9 | -26.3 | 51.6 | 74.0 | -22.4 | **25.3 | 54.0 | -28.7 |
| 14652.00 | H | 25.2 | -26.3 | 52.1 | 74.0 | -21.9 | **25.8 | 54.0 | -28.2 |
| 17094.00 | H | 22.1 | -26.3 | 54.0 | 74.0 | -20.0 | **27.7 | 54.0 | -26.3 |
| 19536.00 | H | 46.5 | -26.3 | 54.3 | 74.0 | -19.7 | **28.0 | 54.0 | -26.0 |
| 21978.00 | H | 47.1 | -26.3 | 55.1 | 74.0 | -18.9 | **28.8 | 54.0 | -25.2 |
| 24420.00 | H | 47.8 | -26.3 | 56.7 | 74.0 | -17.3 | **30.4 | 54.0 | -23.6 |
| 26862.00 | H | 48.6 | -26.3 | 57.0 | 74.0 | -17.0 | **30.7 | 54.0 | -23.3 |

| 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) |
|---|---|---|---|---|---|---|---|---|---|
| 4884.00 | V | 1.6 | -26.3 | 50.7 | 74.0 | -23.3 | **24.4 | 54.0 | -29.6 |
| 7326.00 | V | 10.7 | -26.3 | 56.1 | 74.0 | -17.9 | **29.8 | 54.0 | -24.2 |
| 9768.00 | V | 15.8 | -26.3 | 50.0 | 74.0 | -24.0 | **23.7 | 54.0 | -30.3 |
| 12210.00 | V | 17.9 | -26.3 | 51.6 | 74.0 | -22.4 | **25.3 | 54.0 | -28.7 |
| 14652.00 | V | 25.2 | -26.3 | 52.5 | 74.0 | -21.5 | **26.2 | 54.0 | -27.8 |
| 17094.00 | V | 22.1 | -26.3 | 53.2 | 74.0 | -20.8 | **26.9 | 54.0 | -27.1 |
| 19536.00 | V | 46.5 | -26.3 | 55.0 | 74.0 | -19.0 | **28.7 | 54.0 | -25.3 |
| 21978.00 | V | 47.1 | -26.3 | 55.2 | 74.0 | -18.8 | **28.9 | 54.0 | -25.1 |
| 24420.00 | V | 47.8 | -26.3 | 56.3 | 74.0 | -17.7 | **30.0 | 54.0 | -24.0 |
| 26862.00 | V | 48.6 | -26.3 | 57.6 | 74.0 | -16.4 | **31.3 | 54.0 | -22.7 |

# 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(0.048) = -26.3dB.

Note: Field Strength includes Antenna Factor, Cable Loss and Gain of pre-amplifier.
Receiver setting: RBW = 1MHz
VBW = 1MHz

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## 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) |
|---|---|---|---|---|---|---|---|---|---|
| 4946.00 | H | 1.7 | -26.3 | 53.8 | 74.0 | -20.2 | **27.5 | 54.0 | -26.5 |
| 7419.00 | H | 10.7 | -26.3 | 56.4 | 74.0 | -17.6 | **30.1 | 54.0 | -23.9 |
| 9892.00 | H | 15.9 | -26.3 | 50.9 | 74.0 | -23.1 | **24.6 | 54.0 | -29.4 |
| 12365.00 | H | 17.6 | -26.3 | 51.2 | 74.0 | -22.8 | **24.9 | 54.0 | -29.1 |
| 14838.00 | H | 24.6 | -26.3 | 52.3 | 74.0 | -21.7 | **26.0 | 54.0 | -28.0 |
| 17311.00 | H | 23.5 | -26.3 | 53.5 | 74.0 | -20.5 | **27.2 | 54.0 | -26.8 |
| 19784.00 | H | 46.6 | -26.3 | 54.2 | 74.0 | -19.8 | **27.9 | 54.0 | -26.1 |
| 22257.00 | H | 47.5 | -26.3 | 55.6 | 74.0 | -18.4 | **29.3 | 54.0 | -24.7 |
| 24730.00 | H | 47.9 | -26.3 | 56.1 | 74.0 | -17.9 | **29.8 | 54.0 | -24.2 |
| 27203.00 | H | 48.7 | -26.3 | 56.8 | 74.0 | -17.2 | **30.5 | 54.0 | -23.5 |

| 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) |
|---|---|---|---|---|---|---|---|---|---|
| 4946.00 | V | 1.7 | -26.3 | 50.3 | 74.0 | -23.7 | **24.0 | 54.0 | -30.0 |
| 7419.00 | V | 10.7 | -26.3 | 56.0 | 74.0 | -18.0 | **29.7 | 54.0 | -24.3 |
| 9892.00 | V | 15.9 | -26.3 | 50.6 | 74.0 | -23.4 | **24.3 | 54.0 | -29.7 |
| 12365.00 | V | 17.6 | -26.3 | 51.2 | 74.0 | -22.8 | **24.9 | 54.0 | -29.1 |
| 14838.00 | V | 24.6 | -26.3 | 52.0 | 74.0 | -22.0 | **25.7 | 54.0 | -28.3 |
| 17311.00 | V | 23.5 | -26.3 | 53.4 | 74.0 | -20.6 | **27.1 | 54.0 | -26.9 |
| 19784.00 | V | 46.6 | -26.3 | 54.5 | 74.0 | -19.5 | **28.2 | 54.0 | -25.8 |
| 22257.00 | V | 47.5 | -26.3 | 55.6 | 74.0 | -18.4 | **29.3 | 54.0 | -24.7 |
| 24730.00 | V | 47.9 | -26.3 | 56.9 | 74.0 | -17.1 | **30.6 | 54.0 | -23.4 |
| 27203.00 | V | 48.7 | -26.3 | 57.4 | 74.0 | -16.6 | **31.1 | 54.0 | -22.9 |

# 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(0.048) = -26.3dB.

Note: Field Strength includes Antenna Factor, Cable Loss and Gain of pre-amplifier.
Receiver setting: RBW = 1MHz
VBW = 1MHz

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## TEST REPORT No: (5216)193-1063(F)

## Radiated Emissions (9kHz – 40GHz)

| | |
|---|---|
| Test Requirement: | FCC Part 15 Section 15.209 |
| Test Method: | ANSI C63.10 |
| Test Date(s): | 2016-08-03 |
| Temperature: | 27.0 °C |
| Humidity: | 73.0 % |
| Atmospheric Pressure: | 99.7 kPa |
| Mode of Operation: | Transmission 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 [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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## TEST REPORT No: (5216)193-1063(F)

## 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) |
|---|---|---|---|---|
| 30.27 | H | 16.5 | 40.0 | -23.5 |
| 107.42 | H | 12.3 | 43.5 | -31.2 |
| 406.36 | H | 19.1 | 46.0 | -26.9 |
| 439.98 | H | 21.5 | 46.0 | -24.5 |
| 558.23 | H | 23.7 | 46.0 | -22.3 |
| 631.49 | H | 25.3 | 46.0 | -20.7 |

| Frequency (MHz) | Polarity (H/V) | Field Strength at 3m (dBµV/m) | Limit at 3m (dBµV/m) | Margin (dB) |
|---|---|---|---|---|
| 30.21 | V | 13.4 | 40.0 | -26.6 |
| 144.34 | V | 11.4 | 43.5 | -32.1 |
| 262.80 | V | 13.6 | 46.0 | -32.4 |
| 439.98 | V | 21.8 | 46.0 | -24.2 |
| 589.84 | V | 23.9 | 46.0 | -22.1 |
| 740.71 | V | 26.9 | 46.0 | -19.1 |

Note: Field Strength includes Antenna Factor and Cable Loss.

Receiver setting: RBW = 120KHz
VBW = 120KHz

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## TEST REPORT No: (5216)193-1063(F)

## Frequency range of Fundamental Emission

| | |
|---|---|
| Test Requirement: | FCC 47 CFR 15.249 |
| Test Method: | ANSI C63.10 Clause 6.10 |
| Test Date(s): | 2016-08-03 |
| Temperature: | 27.0 °C |
| Humidity: | 73.0 % |
| Atmospheric Pressure: | 99.7 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] |
|---|---|
| 2409.320 – 2473.720 | 2400.00 – 2483.50 |

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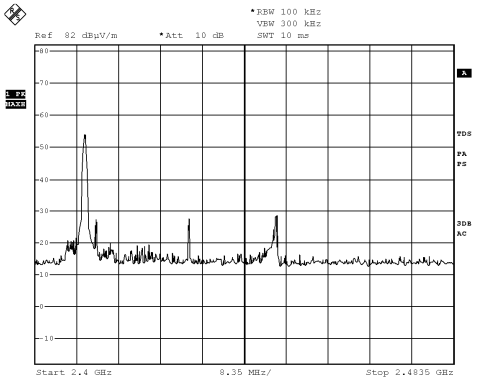
## TEST REPORT No: (5216)193-1063(F)

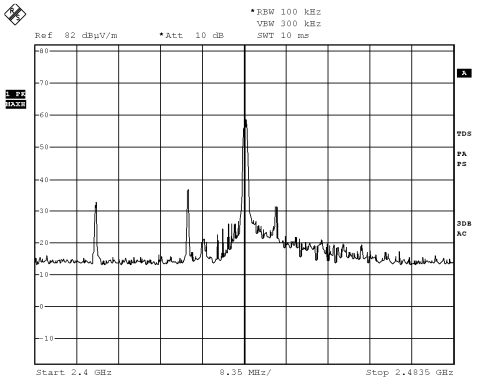
## Measurement Data :

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

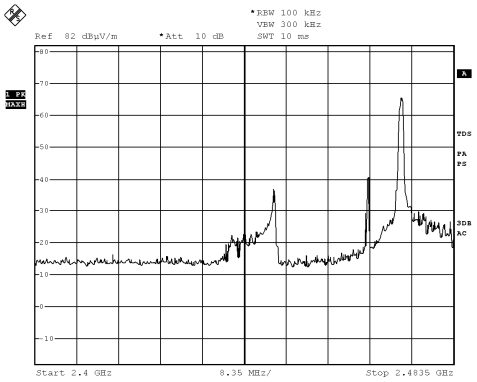
### Lowest Frequency – 2410.00MHz




### Middle Frequency – 2442.00MHz




### Highest Frequency – 2473.00MHz

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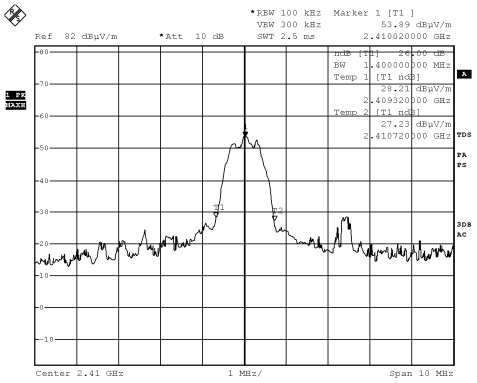
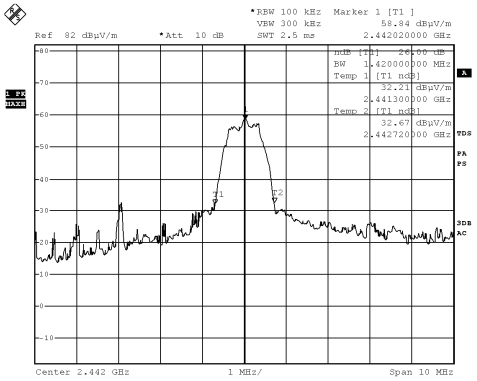
## TEST REPORT No: (5216)193-1063(F)
## Measurement Data :

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

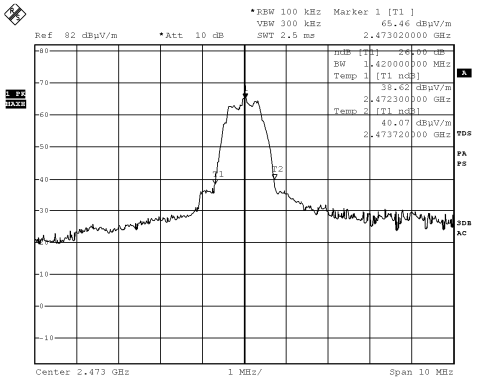
### Lowest Frequency – 2410.00MHz




### Middle Frequency – 2442.00MHz




### Highest Frequency – 2473.00MHz

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## TEST REPORT No: (5216)193-1063(F)

### Duty Cycle Correction During 100msec:

Each function key sends a different series of characters, but each packet period (100msec) never exceeds a series of 12 pulses (0.4 msec). Assuming any combination of short and long pulses maybe obtained due to encoding the worst case transmit duty cycle would be considered 12*0.4 per 100msec = 4.8% duty cycle.

Remarks:

Duty Cycle Correction = 20Log(0.048) = -26.3dB

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

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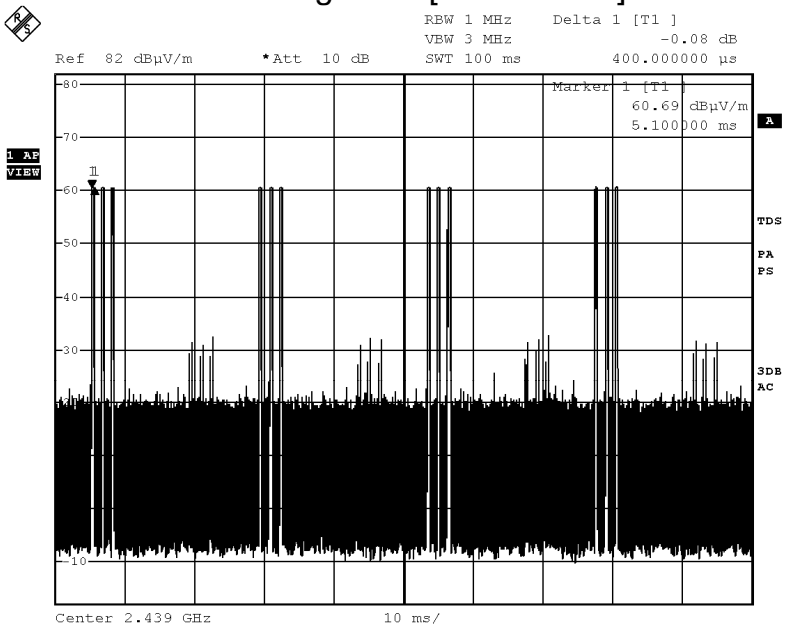
## Measurement Data :

Figure A [Pulse Train]

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# TEST REPORT No: (5216)193-1063(F)

## 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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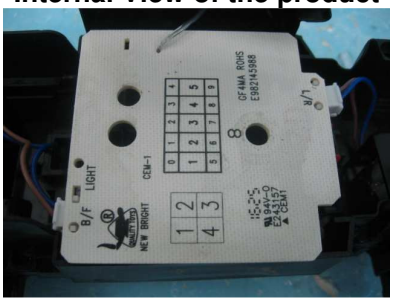
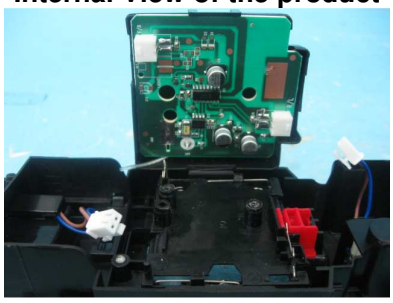
## Photographs of EUT

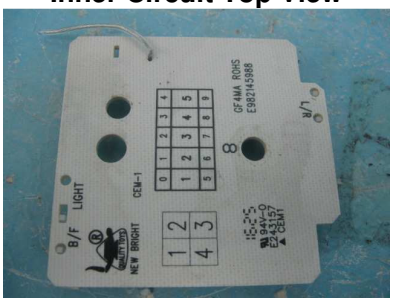
**Internal View of the product**



**Internal View of the product**



**Inner Circuit Top View**



**Inner Circuit Bottom View**

**Antenna**

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## Measurement of Radiated Emission Test Set Up

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

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