# RF Exposure Report

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|---|---|
| **Report No.:** | SA160701E08 R2 |
| **FCC ID:** | ACQ-MT76125G |
| **Test Model:** | MT7612 5G |
| **Received Date:** | July 05, 2016 |
| **Test Date:** | July 15, 2016 |
| **Issued Date:** | Aug. 11, 2016 |
| **Applicant:** | ARRIS Group, Inc. |
| **Address:** | 6450 Sequence Drive, San Diego, CA USA, 92121 |
| **Issued By:** | Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory |
| **Lab Address:** | E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C. |

## Table of Contents

## Release Control Record

| Issue No. | Description | Date Issued |
|---|---|---|
| SA160701E08 | Original release. | July 28, 2016 |
| SA160701E08 R1 | Revised section 2.5 | Aug. 11, 2016 |
| SA160701E08 R2 | Revised address of applicant | Aug. 11, 2016 |

## 1 Certificate of Conformity

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|---|---|
| **Product:** | WiFi Wireless Module |
| **Brand:** | ARRIS |
| **Test Model:** | MT7612 5G |
| **Sample Status:** | ENGINEERING SAMPLE |
| **Applicant:** | ARRIS Group, Inc. |
| **Test Date:** | July 15, 2016 |
| **Standards:** | FCC Part 2 (Section 2.1091)<br>KDB 447498 D01 General RF Exposure Guidance v06<br>IEEE C95.1-1992 |

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**Prepared by :** _____ , **Date:** Aug. 11, 2016

Midoli Peng / Specialist

**Approved by :** _____ , **Date:** Aug. 11, 2016

May Chen / Manager

## 2 RF Exposure

### 2.1 Limits for Maximum Permissible Exposure (MPE)

| Frequency Range (MHz) | Electric Field Strength (V/m) | Magnetic Field Strength (A/m) | Power Density ($mW/cm^2$) | Average Time (minutes) |
|---|---|---|---|---|
| Limits For General Population / Uncontrolled Exposure | | | | |
| 300-1500 | … | … | F/1500 | 30 |
| 1500-100,000 | … | … | 1.0 | 30 |

F = Frequency in MHz

### 2.2 MPE Calculation Formula

$Pd = (Pout*G) / (4*pi*r^2)$

where

Pd = power density in $mW/cm^2$

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

### 2.3 Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as **Mobile Device**.

## 2.4 Antenna Gain

The antenna provided to the EUT, please refer to the following table:

| Set 1 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Transmitter Circuit | Brand | Model | Gain (dBi) (Include cable loss) | Antenna Type | Connecter Type | Frequency range (GHz to GHz) | Cable Length (mm) |
| Chain (0) | Amphenol | N5X20SC-G112U | 3.57 | PCB | i-pex(MHF) | 5.15~5.25 | 112 |
| | | | 3.41 | | | 5.25~5.35 | |
| | | | 3.01 | | | 5.47~5.725 | |
| | | | 3.48 | | | 5.725~5.85 | |
| Chain (1) | Amphenol | N5X20SC-G162U | 3.57 | PCB | i-pex(MHF) | 5.15~5.25 | 162 |
| | | | 3.41 | | | 5.25~5.35 | |
| | | | 3.01 | | | 5.47~5.725 | |
| | | | 3.48 | | | 5.725~5.85 | |
| **Set 2** | | | | | | | |
| Transmitter Circuit | Brand | Model | Gain (dBi) (Include cable loss) | Antenna Type | Connecter Type | Frequency range (GHz to GHz) | Cable Length (mm) |
| Chain (0) | Airgain | AMSTD-112-00 | 2 | PCB | i-pex(MHF) | 5.15~5.25 | 112 |
| | | | 2 | | | 5.25~5.35 | |
| | | | 2 | | | 5.47~5.725 | |
| | | | 2 | | | 5.725~5.85 | |
| Chain (1) | Airgain | AMSTD-162-00 | 2 | PCB | i-pex(MHF) | 5.15~5.25 | 162 |
| | | | 2 | | | 5.25~5.35 | |
| | | | 2 | | | 5.47~5.725 | |
| | | | 2 | | | 5.725~5.85 | |

## 2.5 Calculation Result of Maximum Conducted Power

| Frequency Band (MHz) | Max Power (mW) | Antenna Gain (dBi) | Distance (cm) | Power Density ($mW/cm^2$) | Limit ($mW/cm^2$) |
|---|---|---|---|---|---|
| 5180-5240 | 76.831 | 6.58 | 20 | 0.06954 | 1 |
| 5260-5320 | 76.039 | 6.42 | 20 | 0.06634 | 1 |
| 5500-5720 | 77.274 | 6.02 | 20 | 0.06148 | 1 |
| 5745-5825 | 77.193 | 6.49 | 20 | 0.06844 | 1 |

NOTE:

1. **For U-NII-1:** Directional gain = 3.57dBi + 10log(2) = 6.58dBi
2. **For U-NII-2A:** Directional gain = 3.41dBi + 10log(2) = 6.42dBi
3. **For U-NII-2C:** Directional gain = 3.01dBi + 10log(2) = 6.02dBi
4. **For U-NII-3:** Directional gain = 3.48dBi + 10log(2) = 6.49dBi

**BT-EDR (IP SET TOP BOX, FCC ID: ACQ-VIP4402W)**

| Frequency Band (MHz) | Max Power (mW) | Antenna Gain (dBi) | Distance (cm) | Power Density ($mW/cm^2$) | Limit ($mW/cm^2$) |
|---|---|---|---|---|---|
| 2402-2480 | 3.304 | 4.38 | 20 | 0.00180 | 1 |

**BT-LE (IP SET TOP BOX, FCC ID: ACQ-VIP4402W)**

| Frequency Band (MHz) | Max Power (mW) | Antenna Gain (dBi) | Distance (cm) | Power Density ($mW/cm^2$) | Limit ($mW/cm^2$) |
|---|---|---|---|---|---|
| 2402-2480 | 4.55 | 4.38 | 20 | 0.00248 | 1 |

**Conclusion:**

The formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + ……etc. < 1

CPD = Calculation power density

LPD = Limit of power density

Bluetooth + WLAN 5GHz = 0.06954 / 1 + 0.00248 / 1 = 0.07202

**Therefore the maximum calculations of above situations are less than the "1" limit.**

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