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## RF Exposure Report

**Report No.:** SA150706E06

**FCC ID:** PPD-QCASP241

**Test Model:** QCASP241

**Received Date:** July 06, 2015

**Test Date:** July 31, 2015

**Issued Date:** Dec. 17, 2015

**Applicant:** Qualcomm Atheros, Inc.

**Address:** 1700 Technology Drive, San Jose, CA 95110

**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.

**Test Location (1):** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
Taiwan R.O.C.

**Test Location (2):** No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin  
Chu Hsien 307, Taiwan R.O.C.

This report is 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. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the 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 based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that 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. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by any government agencies.



## Table of Contents

|                                                        |          |
|--------------------------------------------------------|----------|
| <b>Release Control Record</b> .....                    | <b>3</b> |
| <b>1 Certificate of Conformity</b> .....               | <b>4</b> |
| <b>2 RF Exposure</b> .....                             | <b>5</b> |
| 2.1 Limits for Maximum Permissible Exposure (MPE)..... | 5        |
| 2.2 MPE Calculation Formula .....                      | 5        |
| 2.3 Classification .....                               | 5        |
| 2.4 Antenna Gain .....                                 | 6        |
| 2.5 Calculation Result .....                           | 7        |



A D T

### Release Control Record

| Issue No.   | Description       | Date Issued   |
|-------------|-------------------|---------------|
| SA150706E06 | Original release. | Dec. 17, 2015 |

## 1 Certificate of Conformity

**Product:** Low-Energy WiFi Single-Band 802.11b/g/n

**Brand:** Qualcomm Atheros

**Test Model:** QCASP241

**Sample Status:** R&D SAMPLE

**Applicant:** Qualcomm Atheros, Inc.

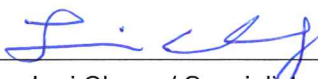
**Test Date:** July 31, 2015

**Standards:** FCC Part 2 (Section 2.1091)

447498 D01 GENERAL RF EXPOSURE GUIDANCE V06

IEEE STD C95.1-2005

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:** Dec. 17, 2015  
Lori Chung / Specialist

**Approved by :** , **Date:** Dec. 17, 2015  
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 <sup>2</sup> ) | 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

$$P_d = (P_{out} * G) / (4 * \pi * r^2)$$

where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = 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 gain was declared by client; please refer to the following table:

| Set No. | Transmitter Circuit | Brand | Model        | Ant. Type    | 2.4GHz Gain with cable loss (dBi) | 2.4GHz Cable Loss (dB)            | Connector Type | Cable Length (mm) |
|---------|---------------------|-------|--------------|--------------|-----------------------------------|-----------------------------------|----------------|-------------------|
| 1       | Chain (0)           | WNC   | 81-EBJ15.005 | PIFA         | 3.00                              | 1.15                              | IPEX           | 300               |
|         | Chain (1)           | WNC   | 81-EBJ15.005 | PIFA         | 3.62                              | 1.15                              | IPEX           | 300               |
| Set No. | Transmitter Circuit | Brand |              | Model        | Ant. Type                         | 2.4GHz Gain with cable loss (dBi) |                |                   |
| 2       | Chain (0)           | QCA   |              | QCASP241-Ant | PCB                               | 0.85                              |                |                   |

Note: 1. Above antenna gains of antenna No. 1 is Total (H+V).

Following antenna combination(s) was (were) selected as representative mode for test or evaluate in this report as listed.

| Set No. | Transmitter Circuit | Brand | Model        | Ant. Type | 2.4GHz Gain with cable loss (dBi) | 2.4GHz Cable Loss (dB) | Connector Type | Cable Length (mm) |
|---------|---------------------|-------|--------------|-----------|-----------------------------------|------------------------|----------------|-------------------|
| 1       | Chain (0)+(1)       | WNC   | 81-EBJ15.005 | PIFA      | 3.62                              | 1.15                   | IPEX           | 300               |

For QCASP241 SKU#1, the main or aux antenna port all equip the same antenna of highest gain for each frequency band.

## 2.5 Calculation Result

### 802.11b

| Frequency Band (MHz) | Max Power Avg. (dBm) | Max Power Avg. (mW) | Antenna Gain (dBi) | Distance (cm) | Power Density (mW/cm <sup>2</sup> ) | Limit (W/m <sup>2</sup> ) |
|----------------------|----------------------|---------------------|--------------------|---------------|-------------------------------------|---------------------------|
| 2412 - 2462          | 19.50                | 89.125              | 3.62               | 20            | 0.04081                             | 1                         |

**NOTE:** 1. This power include tune-up tolerance range that specified in QCASP241 Tune Up power table

### 802.11g

| Frequency Band (MHz) | Max Power Avg. (dBm) | Max Power Avg. (mW) | Antenna Gain (dBi) | Distance (cm) | Power Density (mW/cm <sup>2</sup> ) | Limit (W/m <sup>2</sup> ) |
|----------------------|----------------------|---------------------|--------------------|---------------|-------------------------------------|---------------------------|
| 2412 - 2462          | 19.50                | 89.125              | 3.62               | 20            | 0.04081                             | 1                         |

**NOTE:** 1. This power include tune-up tolerance range that specified in QCASP241 Tune Up power table

### 802.11n (HT20)

| Frequency Band (MHz) | Max Power Avg. (dBm) | Max Power Avg. (mW) | Antenna Gain (dBi) | Distance (cm) | Power Density (mW/cm <sup>2</sup> ) | Limit (W/m <sup>2</sup> ) |
|----------------------|----------------------|---------------------|--------------------|---------------|-------------------------------------|---------------------------|
| 2412 - 2462          | 19.50                | 89.125              | 3.62               | 20            | 0.04081                             | 1                         |

**NOTE:** 1. This power include tune-up tolerance range that specified in QCASP241 Tune Up power table

### 802.11n (HT40)

| Frequency Band (MHz) | Max Power Avg. (dBm) | Max Power Avg. (mW) | Antenna Gain (dBi) | Distance (cm) | Power Density (mW/cm <sup>2</sup> ) | Limit (W/m <sup>2</sup> ) |
|----------------------|----------------------|---------------------|--------------------|---------------|-------------------------------------|---------------------------|
| 2422 - 2452          | 17.50                | 56.234              | 3.62               | 20            | 0.02575                             | 1                         |

**NOTE:** 1. This power include tune-up tolerance range that specified in QCASP241 Tune Up power table

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