



RF EXPOSURE REPORT

REPORT NO.: SA140901E08
MODEL NO.: EX7000
FCC ID: PY314200280
RECEIVED: Sep. 01, 2014
TESTED: Oct. 27 to 30, 2014
ISSUED: Dec. 04, 2014

APPLICANT: NETGEAR, Inc.

ADDRESS: 350 East Plumeria Drive San Jose, CA 95134

ISSUED BY: Bureau Veritas Consumer Products Services
(H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory

LAB ADDRESS : No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen,
Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan,
R.O.C.

TEST LOCATION (1): No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen,
Chiung Lin Hsiang, Hsin Chu Hsien 307, 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 should not be used by the client to claim product certification, approval, or endorsement by any government agencies.

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 specifically mentioned, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification

TABLE OF CONTENTS

| | |
|--|---|
| RELEASE CONTROL RECORD..... | 3 |
| 1. CERTIFICATION..... | 4 |
| 2. RF EXPOSURE LIMIT | 5 |
| 3. MPE CALCULATION FORMULA..... | 5 |
| 4. CLASSIFICATION..... | 5 |
| 5. ANTENNA GAIN | 6 |
| 6. CALCULATION RESULT OF MAXIMUM CONDUCTED POWER | 7 |



RELEASE CONTROL RECORD

| ISSUE NO. | REASON FOR CHANGE | DATE ISSUED |
|-------------|-------------------|---------------|
| SA140901E08 | Original release | Dec. 04, 2014 |

2. RF EXPOSURE LIMIT

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

3. MPE CALCULATION FORMULA

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

where

Pd = power density in mW/cm²

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

4. CLASSIFICATION

The antenna of this product, under normal use condition, is at least 27cm away from the body of the user. So, this device is classified as **Mobile Device**.

5. ANTENNA GAIN

1. The antennas provided to the EUT, please refer to the following table:

| Antenna No. | Brand | Model | Antenna Gain(dBi) | Frequency range (MHz ~ MHz) | Antenna Type | Connector Type |
|-------------|---------|-------|-------------------|---|--------------|----------------|
| Antenna L | Netgear | NA | 2 | 2412~2477 5150~5250 5250~5350 5470~5725 5725~5850 | Dipole | Re-SMA |
| Antenna M | Netgear | NA | 2 | 2412~2477 5150~5250 5250~5350 5470~5725 5725~5850 | Dipole | Re-SMA |
| Antenna R | Netgear | NA | 2 | 2412~2477 5150~5250 5250~5350 5470~5725 5725~5850 | Dipole | Re-SMA |

6. CALCULATION RESULT OF MAXIMUM CONDUCTED POWER

For 15.247(2.4GHz):

CDD Mode:

802.11b:

| FREQUENCY (MHz) | CONDUCTED POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/cm ²) | LIMIT (mW/cm ²) |
|-----------------|----------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 2412 ~ 2462 | 970.44 | 6.77 | 27 | 0.50354 | 1 |

Directional gain = 2dBi + 10log(3) = 6.77dBi

802.11g:

| FREQUENCY (MHz) | CONDUCTED POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/cm ²) | LIMIT (mW/cm ²) |
|-----------------|----------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 2412 ~ 2462 | 836.767 | 6.77 | 27 | 0.43418 | 1 |

Directional gain = 2dBi + 10log(3) = 6.77dBi

VHT20:

| FREQUENCY (MHz) | CONDUCTED POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/cm ²) | LIMIT (mW/cm ²) |
|-----------------|----------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 2412 ~ 2462 | 911.213 | 6.77 | 27 | 0.47280 | 1 |

Directional gain = 2dBi + 10log(3) = 6.77dBi

VHT40:

| FREQUENCY (MHz) | CONDUCTED POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/cm ²) | LIMIT (mW/cm ²) |
|-----------------|----------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 2422 ~ 2452 | 151.299 | 6.77 | 27 | 0.07851 | 1 |

Directional gain = 2dBi + 10log(3) = 6.77dBi

Beamforming Mode:

VHT20:

| FREQUENCY (MHz) | CONDUCTED POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/cm ²) | LIMIT (mW/cm ²) |
|-----------------|----------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 2412 ~ 2462 | 827.261 | 6.77 | 27 | 0.42924 | 1 |

Directional gain = 2dBi + 10log(3) = 6.77dBi

VHT40:

| FREQUENCY (MHz) | CONDUCTED POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/cm ²) | LIMIT (mW/cm ²) |
|-----------------|----------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 2422 ~ 2452 | 151.299 | 6.77 | 27 | 0.07851 | 1 |

Directional gain = 2dBi + 10log(3) = 6.77dBi

For 15.247(5GHz):

CDD Mode:

802.11a:

| FREQUENCY (MHz) | CONDUCTED POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/cm ²) | LIMIT (mW/cm ²) |
|-----------------|----------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 5745 ~ 5825 | 748.103 | 6.77 | 27 | 0.38817 | 1 |

Directional gain = 2dBi + 10log(3) = 6.77dBi

802.11ac (VHT20)

| FREQUENCY (MHz) | CONDUCTED POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/cm ²) | LIMIT (mW/cm ²) |
|-----------------|----------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 5745 ~ 5825 | 771.017 | 6.77 | 27 | 0.40006 | 1 |

Directional gain = 2dBi + 10log(3) = 6.77dBi

802.11ac (VHT40)

| FREQUENCY (MHz) | CONDUCTED POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/cm ²) | LIMIT (mW/cm ²) |
|-----------------|----------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 5755 ~ 5795 | 858.132 | 6.77 | 27 | 0.44526 | 1 |

Directional gain = 2dBi + 10log(3) = 6.77dBi

802.11ac (VHT80)

| FREQUENCY (MHz) | CONDUCTED POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/cm ²) | LIMIT (mW/cm ²) |
|-----------------|----------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 5755 | 377.16 | 6.77 | 27 | 0.19570 | 1 |

Directional gain = 2dBi + 10log(3) = 6.77dBi

Beamforming Mode:

802.11ac (VHT20)

| FREQUENCY (MHz) | CONDUCTED POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/cm ²) | LIMIT (mW/cm ²) |
|-----------------|----------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 5745 ~ 5825 | 771.017 | 6.77 | 27 | 0.40006 | 1 |

Directional gain = 2dBi + 10log(3) = 6.77dBi

802.11ac (VHT40)

| FREQUENCY (MHz) | CONDUCTED POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/cm ²) | LIMIT (mW/cm ²) |
|-----------------|----------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 5755 ~ 5795 | 819.794 | 6.77 | 27 | 0.42537 | 1 |

Directional gain = 2dBi + 10log(3) = 6.77dBi

802.11ac (VHT80)

| FREQUENCY (MHz) | CONDUCTED POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/cm ²) | LIMIT (mW/cm ²) |
|-----------------|----------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 5755 | 377.16 | 6.77 | 27 | 0.19570 | 1 |

Directional gain = 2dBi + 10log(3) = 6.77dBi

For 15.407(5GHz):

CDD Mode:

802.11a:

| FREQUENCY (MHz) | CONDUCTED POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/cm ²) | LIMIT (mW/cm ²) |
|-----------------|----------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 5180 ~ 5240 | 432.426 | 6.77 | 27 | 0.22437 | 1 |

Directional gain = 2dBi + 10log(3) = 6.77dBi

802.11ac (VHT20)

| FREQUENCY (MHz) | CONDUCTED POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/cm ²) | LIMIT (mW/cm ²) |
|-----------------|----------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 5180 ~ 5240 | 432.772 | 6.77 | 27 | 0.22455 | 1 |

Directional gain = 2dBi + 10log(3) = 6.77dBi

802.11ac (VHT40)

| FREQUENCY (MHz) | CONDUCTED POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/cm ²) | LIMIT (mW/cm ²) |
|-----------------|----------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 5190 ~ 5230 | 208.518 | 6.77 | 27 | 0.10819 | 1 |

Directional gain = 2dBi + 10log(3) = 6.77dBi

802.11ac (VHT80)

| FREQUENCY (MHz) | CONDUCTED POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/cm ²) | LIMIT (mW/cm ²) |
|-----------------|----------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 5210 | 90.311 | 6.77 | 27 | 0.04686 | 1 |

Directional gain = 2dBi + 10log(3) = 6.77dBi

Beamforming Mode:

802.11ac (VHT20)

| FREQUENCY (MHz) | CONDUCTED POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/cm ²) | LIMIT (mW/cm ²) |
|-----------------|----------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 5180 ~ 5240 | 432.772 | 6.77 | 27 | 0.22455 | 1 |

Directional gain = 2dBi + 10log(3) = 6.77dBi

802.11ac (VHT40)

| FREQUENCY (MHz) | CONDUCTED POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/cm ²) | LIMIT (mW/cm ²) |
|-----------------|----------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 5190 ~ 5230 | 208.518 | 6.77 | 27 | 0.10819 | 1 |

Directional gain = 2dBi + 10log(3) = 6.77dBi

802.11ac (VHT80)

| FREQUENCY (MHz) | CONDUCTED POWER (mW) | ANTENNA GAIN (dBi) | DISTANCE (cm) | POWER DENSITY (mW/cm ²) | LIMIT (mW/cm ²) |
|-----------------|----------------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 5210 | 90.311 | 6.77 | 27 | 0.04686 | 1 |

Directional gain = 2dBi + 10log(3) = 6.77dBi

CONCLUSION:

Both of the 2.4GHz and 5GHz WLAN can transmit simultaneously, the formula of calculated the MPE is:

$$CPD_1 / LPD_1 + CPD_2 / LPD_2 + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

Therefore, the worst-case situation is $0.50354 / 1 + 0.44526 / 1 = 0.949$, which is less than "1". This confirmed that the device comply with FCC 1.1310 MPE limit.

--- END ---