



RF Exposure Report

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FCC ID: PY314200280

Test Model: EX7000

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Applicant: NETGEAR, Inc.

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Release Control Record

Issue No.	Description	Date Issued
SA140901E08B	Original release.	June 05, 2015

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/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

2.3 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**.

3 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	Cable Length(External only)
Antenna L	Netgear	NA	2	2412~2477 5150~5250 5250~5350 5470~5725 5725~5850	Dipole	Re-SMA	85+5/-0 mm
Antenna M	Netgear	NA	2	2412~2477 5150~5250 5250~5350 5470~5725 5725~5850	Dipole	Re-SMA	85+5/-0 mm
Antenna R	Netgear	NA	2	2412~2477 5150~5250 5250~5350 5470~5725 5725~5850	Dipole	Re-SMA	85+5/-0 mm

4 Calculation Result of Maximum Conducted Power

For 15.247 and 15.407 (U-NII-1 band & U-NII 3 band) data was copied from the original test report (Report No.: SA140901E08)

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
5260 ~ 5320	207.32	6.77	27	0.10757	1
5500 ~ 5700	209.369	6.77	27	0.10864	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
5260 ~ 5320	204.639	6.77	27	0.10618	1
5500 ~ 5700	209.113	6.77	27	0.10850	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
5270 ~ 5310	244.829	6.77	27	0.12704	1
5510 ~ 5670	243.878	6.77	27	0.12654	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
5290	153.597	6.77	27	0.07970	1
5530 ~ 5610	244.004	6.77	27	0.12661	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
5260 ~ 5320	204.639	6.77	27	0.10618	1
5500 ~ 5700	209.113	6.77	27	0.10850	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
5270 ~ 5310	205.19	6.77	27	0.10647	1
5510 ~ 5670	206.429	6.77	27	0.10711	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
5290	153.597	6.77	27	0.07970	1
5530 ~ 5610	206.913	6.77	27	0.10736	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:

CPD₁ / LPD₁ + CPD₂ / LPD₂ +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.

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