TESTING LABORATORY
CERTIFICATE #4820.01

FCC PART 1.1310 & PART 2.1091
RSS-102 ISSUE 5 MARCH 2015
MAXIMUM PERMISSIBLE EXPOSURE (MPE)
EVALUATION REPORT

For

Proxim Wireless Corporation

2114 Ringwood Ave, San Jose, CA 95131, USA

FCC ID: HZB-NGPAP
IC: 1856A-NGPAP

Report Type:	**Product Name:**
Original Report	NGP LC 2.4 &5 GHz radios

Report Number:	RDG210319002-MPE
Report Date:	2021-03-25
Reviewed By:	Ivan Cao Assistant Manager
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:	NGP LC 2.4 &5 GHz radios
Test Model:	FCC: AP-9200R-US IC: AP-9200R-WD
Multiple Model:	AB-CCCCD-XXX-YYY-ZZ
Model Difference:	Refer to the DOS letter
Rated Input Voltage:	DC 56.0V from PoE
Serial Number:	RDG200805002-RF-S2
EUT Received Date:	2020.08.07
EUT Received Status:	Good

Objective

This type approval report is prepared on behalf of ***Proxim Wireless Corporation*** in accordance with 1.1310, 2.1091 of the Federal Communications Commission's rules and RSS-102, Issue 5, March 2015, Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands).

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.12, Pulong East 1st Road, Tangxia Town, Dongguan, Guangdong, China.

The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 897218, the FCC Designation No. : CN1220.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0022.

Declarations

BACL is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol "▲". Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

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Applicable Standard

According to subpart 15.247(i), 15.407(f) and subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (minutes)**
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f²)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

According to RSS-102 Clause 4 Table 4, RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)

Table 4: RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field (A/m rms)	Power Density (W/m^2)	Reference Period (minutes)
$0.003\text{-}10^{21}$	83	90	-	Instantaneous*
0.1-10	-	$0.73/f$	-	6**
1.1-10	$87/f^{0.5}$	-	-	6**
10-20	27.46	0.0728	2	6
20-48	$58.07/f^{0.25}$	$0.1540/f^{0.25}$	$8.944/f^{0.5}$	6
48-300	22.06	0.05852	1.291	6
300-6000	$3.142f^{0.3417}$	$0.008335f^{0.3417}$	$0.02619f^{0.6834}$	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	$616000/f^{1.2}$
150000-300000	$0.158f^{0.5}$	$4.21 \times 10^{-4} f^{0.5}$	$6.67 \times 10^{-5} f$	$616000/f^{1.2}$

Note: f is frequency in MHz.
*Based on nerve stimulation (NS).
** Based on specific absorption rate (SAR).

Calculation Methodology:

Prediction of power density at the distance of the applicable MPE limit
$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm^2);
P = power input to the antenna (in appropriate units, e.g., mW);
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

$=>R=(PG/4\pi S)^{0.5}$

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

SYSTEM TEST CONFIGURATION

Description of Configuration

The devices have below Optional Antenna Kit Accessory, the information as below▲:

Manufacturer	Model	Antenna Type	input impedance (Ohm)	Antenna Gain /Used Frequency Range
ARC Wireless	ARC-OA5813SD1	Dual Pol Omni Antenna	50	13 dBi/ 5.15-5.85GHz
ARC Wireless	ARC-VS5821SD1	Dual Polarization Variable Beamwidth Sector Antenna	50	21 dBi/ 5.15-5.85GHz
Proxim	PA5-0530-DP	High Gain Dual Polarized/Dual Slant Antenna	50	29.5 dBi/ 5.15-5.85GHz
UBIQUITI Networks	RD-5G34	2x2 PtP Bridge Dish Antenna	50	34 dBi/ 5.15-5.25G&5.725-5.85GHz
ARC Wireless	ARC-OA2413SD1	Omni	50	13.0dBi/2.4-2.5GHz
ARC Wireless	ARC-VS2418SD1	Variable Beamwidth Sector Antenna	50	18.0dBi/2.4-2.5GHz
Proxim	BLE	PCB	50	2.0 dBi/2.4-2.5GHz

Note: RD-5G34 was only used for Frequency 5.15-5.25G&5.725-5.85GHz.
PA5-0530-DP should be installed with the accessory 10dB Attenuators when Frequency setting for 5250-5350MHz or 5470-5725 MHz bands.

The Conducted output power including Tune-up Tolerance for each antenna/bands as below,which was declared by manufacturer▲:

Antenna Model	Frequency Range (GHz)	Conducted output power including Tune-up Tolerance (dBm)
ARC-OA5813SD1	5.15-5.25	17
	5.25-5.35	13
	5.470-5.725	15
	5.725-5.85	23
ARC-VS5821SD1	5.15-5.25	29
	5.25-5.35	9
	5.470-5.725	9
	5.725-5.85	23
PA5-0530-DP	5.15-5.25	23
	5.25-5.35	10.5
	5.470-5.725	10.5
	5.725-5.85	23
'RD-5G34	5.15-5.25	17
	5.725-5.85	23
ARC-OA2413SD1	2.4-2.5	23
ARC-VS2418SD1	2.4-2.5	23
BLE	2.4-2.5	-2.0

Minimum Distance Calculated For No Co-location:

Antenna Model	Frequency Range (GHz)	Antenna Gain (dBi)	Conducted output power including Tune-up Tolerance (dBm)	FCC Power Density Limit (mW/cm^2)	ISED Power Density Limit (W/m^2)	Minimum Distance(R) (cm)	
						FCC	ISED
ARC-OA5813SD1	5.15-5.25	13	17	1.0	9.01	8.92	9.40
	5.25-5.35	13	13	1.0	9.13	5.63	5.89
	5.470-5.725	13	15	1.0	9.39	7.09	7.31
	5.725-5.85	13	23	1.0	9.69	17.80	18.09
ARC-VS5821SD1	5.15-5.25	21	29	1.0	9.01	89.23	94.00
	5.25-5.35	21	9	1.0	9.13	8.92	9.34
	5.470-5.725	21	9	1.0	9.39	8.92	9.21
	5.725-5.85	21	23	1.0	9.69	44.72	45.43
PA5-0530-DP	5.15-5.25	29.5	23	1	9.01	118.99	125.36
	5.25-5.35	19.5	10.5	1	9.13	8.92	9.34
	5.470-5.725	19.5	10.5	1	9.39	8.92	9.21
	5.725-5.85	29.5	23	1	9.69	118.99	120.88
'RD-5G34	5.15-5.25	34	17	1.0	9.01	100.12	105.47
	5.725-5.85	34	23	1.0	9.69	199.76	202.93
ARC-OA2413SD1	2.4-2.5	13	23	1.0	5.35	17.80	24.52
ARC-VS2418SD1	2.4-2.5	18	23	1.0	5.35	31.66	43.61
BLE	2.4-2.5	2	-2.0	1.0	5.35	0.28	0.39

Result: The minimum distance should be more than above distance for **No Co-location condition.**

Minimum Distance Calculation For Co-location:
The WLAN 2.4G, 5G and BLE can transmit simultaneously(BLE Too small to be ignored):

$S_{2.4}/S_{limit-2.4} + S_5/S_{limit-5} = 1$

$\Rightarrow P_{2.4}G_{2.4}/(4\pi R_{(2.4+5)}^2)/ S_{limit-2.4} + P_5G_5/(4\pi R_{(2.4+5)}^2)/S_{limit-5} = 1$

$\Rightarrow R_{(2.4+5)}^2 = P_{2.4}G_{2.4}/(4\pi * S_{limit-2.4}) + P_5G_5/(4\pi * S_{limit-5})$

$\Rightarrow R_{(2.4+5)} = (R_{2.4}^2 + R_5^2)^{0.5}$

The Worst Combination is Antenna 'RD-5G34& ARC-VS2418SD1, the Minimum distance:

$R_{(2.4+5)} = (R_{2.4}^2 + R_5^2)^{0.5}$

$= (31.66^2 + 199.76^2)^{0.5} = 202.25$ cm for FCC

$= (43.61^2 + 202.93^2)^{0.5} = 207.56$ cm for ISED

When Combination is Antenna: ARC-OA2413SD1& ARC-OA5813SD1,

$R_{(2.4+5)} = (R_{2.4}^2 + R_5^2)^{0.5}$

$= (17.80^2 + 17.80^2)^{0.5} = 25$ cm for FCC

$= (18.09^2 + 24.52^2)^{0.5} = 30$ cm for ISED

******* END OF REPORT *******