



FCC Part 1 Subpart I
FCC Part 2 Subpart J

RF EXPOSURE REPORT

FOR

5G-NR base station

MODEL NUMBER: PI-B260-DF10400A

FCC ID: 2A9VB-PIB260

REPORT NUMBER: R14417832-E2

ISSUE DATE: 2023-08-01

Prepared for
Bureau Veritas
100 Northpointe Pkwy
Buffalo, NY 14228-1884 USA

Manufacturer
JMA Wireless
140 Cortland Ave.
Syracuse, NY 13202 USA

Prepared by
UL LLC
12 Laboratory Dr.
Research Triangle Park, NC 27709 USA
TEL: (919) 549-1400



Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	2023-05-04	Initial Issue	Mike Antola
V2	2023-08-01	Updated declared maximum EIRP and minimum separation distance	Mike Antola

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Bureau Veritas
100 Northpointe Pkwy
Buffalo, NY 14228-1884 USA

EUT DESCRIPTION: 5G-NR base station

MANUFACTURER: JMA Wireless
140 Cortland Ave.
Syracuse, NY 13202 USA

MODEL: PI-B260-DF10400A

SERIAL NUMBER: J2232200294

DATE TESTED: 2022-11-22

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 1 SUBPART I & PART 2 SUBPART J	Complies

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC will constitute fraud and shall nullify the document.

Approved & Released For
UL LLC By:



Mike Antola
Staff Engineer
CONSUMER TECHNOLOGY DIVISION
UL LLC

Prepared By:



Henry Lindbo
Lab Engineer
CONSUMER TECHNOLOGY DIVISION
UL LLC

2. TEST METHODOLOGY

All calculations were made in accordance with FCC Parts 1.1310, 2.1091, KDB 447498 D01 v06, IEEE Std C95.1-2005, IEEE Std C95.3-2002.

3. REFERENCES

Details regarding the EUT are documented in the applicable test reports and product documentation.

4. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 12 Laboratory Dr., Research Triangle Park, NC 27709, USA and 2800 Perimeter Park Drive, Suite B, Morrisville, NC 27560.

UL LLC is accredited A2LA, certification # 0751.06, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
<input type="checkbox"/>	Building: 12 Laboratory Dr RTP, NC 27709, U.S.A	US0067	2180C	825374
<input checked="" type="checkbox"/>	Building: 2800 Perimeter Park Dr. Suite B Morrisville, NC 27560, U.S.A		27265	

5. DEVICE UNDER TEST

The EUT is a mmWave base station access point, operating in the FR2 n260 band.

Output power and Antenna gain data for the 37GHz radio is excerpted UL LLC test report R14417832-E1.

6. MAXIMUM PERMISSIBLE EXPOSURE (LIMITS AND EQUATIONS)

6.1. FCC RULES

§1.1310 The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

TABLE 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)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

Notes:

- (1) Occupational/controlled exposure limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when a person is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure.
- (2) General population/uncontrolled exposure limits apply in situations in which the general public may be exposed, or in which persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure

6.2. EQUATIONS

POWER DENSITY

Power density is given by:

$$S = \text{EIRP} / (4 * \text{Pi} * D^2)$$

Where

S = Power density in mW/cm²

EIRP = Equivalent Isotropic Radiated Power in mW

D = Separation distance in cm

Power density in units of mW/cm² is converted to units of W/m² by multiplying by 10.

DISTANCE

Distance is given by:

$$D = \text{SQRT} (\text{EIRP} / (4 * \text{Pi} * S))$$

Where

D = Separation distance in cm

EIRP = Equivalent Isotropic Radiated Power in mW

S = Power density in mW/cm²

SOURCE-BASED DUTY CYCLE

Where applicable (for example, multi-slot cell phone applications) a duty cycle factor may be applied.

$$\text{Source-based time-averaged EIRP} = (\text{DC} / 100) * \text{EIRP}$$

Where

DC = Duty Cycle in %, as applicable

EIRP = Equivalent Isotropic Radiated Power in mW

7. RF EXPOSURE RESULTS

In the table(s) below, Power and Gain are entered in units of dBm and dBi respectively and conversions to linear forms are used for the calculations.

Single transmitter									
Band	Mode	Chain for MIMO	FCC Limit (mW/cm ²)	Output AVG Power (dBm)	Ant. Gain (dBi)	EIRP (dBm)	Duty Cycle (%)	EIRP (mW)	Separ. Distance FCC (cm)
37 GHz	mmWave	1	1.00	-	12.00	42.00	100.0	15848.9	35.52

Notes:

- 1) For MPE, KDB 447498 requires the calculations to use the maximum rated power; that power should be declared by the manufacturer and should not be lower than the measured power.
- 2) Maximum average output power are extracted from applicable test reports and separation values derived accordingly.
- 3) The manufacturer configures output power so that the maximum power, after accounting for manufacturing tolerances, will never exceed the maximum power level measured.
- 4) The antenna gain in the table above is the maximum declared antenna gain.
- 5) Duty cycle is assumed at 100% as a worst-case condition.
- 6) EIRP was determined directly as a radiated measurement and reported accordingly.

Conclusion:

The computed power density values are less than the corresponding limits at a worse case separation distance of 36 cm; therefore, the device is compliant with the RF exposure limits for general population / uncontrolled exposure.

END OF TEST REPORT