

**AT4wireless, S.A.U**

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**Subject:** RF exposure analysis for the equipment with FCC ID: **RI7WE9223GR**; IC: **5131A-WE9223GR**

The device model: **WE922-3GR** (FCC ID: **RI7WE9223GR**; IC: **5131A-WE9223GR**) is designed to be installed in and used in mobile exposure conditions.

The antennas used for this device must be installed to provide a separation distance of at least 20 cm from all the persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

**MPE exposure limits**

The table below is excerpted from Table 1B of 47 CFR 1.1310 titled Limits for Maximum Permissible Exposure (MPE), Limits for General Population/Uncontrolled Exposure:

Frequency Range (MHz)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
1500 – 100.000	1,0	30

The table below is excerpted from RSS-102, Issue 5, section 4, titled “RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)”:

Frequency Range (MHz)	Power density (W/m <sup>2</sup> )	Reference Period (minutes)
300 – 6000	0.02619f <sup>0.6834</sup>	6

**Compliance analysis**

Using the equation  $S = \frac{PG}{4\pi R^2}$  to calculate the exposure to electromagnetic fields

where: S = power density (in appropriate units, e.g. mW/cm<sup>2</sup>)  
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  
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

compliance with FCC and IC MPE and EIRP limits is demonstrated based on the following calculations:

**1. Standalone analysis****1.1 RF exposure in 2.4 GHz band:**

Calculations done using the antenna gain specified for this band.

Only one of these 2.4 GHz modes works at a given moment. They do not work simultaneously.

Frequency Band	Mode	Frequency Range (MHz)	Reference frequency (Lowest freq.) (MHz)	Maximum conducted output power Pin (dBm)	TX slots	Duty cycle (%)	Evaluation distance R (cm)	Antenna gain (dBi)	S (mW/cm <sup>2</sup> )	MPE limit in USA (mW/cm <sup>2</sup> )	MPE limit in Canada (mW/cm <sup>2</sup> )	Worst case MPE limit	MPE Ratio (S/MPE limit)
2,4 ISM	BLE	2402 - 2480	2402,0	5,49	N/A	100,0%	20	2,30	0,0012	1,0000	0,5351	0,5351	0,0022
2,4 ISM	BL + EDR (GFSK)	2402 - 2480	2402,0	6,27	N/A	100,0%	20	2,30	0,0014	1,0000	0,5351	0,5351	0,0027
2,4 ISM	BL + EDR (pi/4-DQPSK)	2402 - 2480	2402,0	6,90	N/A	100,0%	20	2,30	0,0017	1,0000	0,5351	0,5351	0,0031
2,4 ISM	BL + EDR (8-DPSK)	2402 - 2480	2402,0	6,82	N/A	100,0%	20	2,30	0,0016	1,0000	0,5351	0,5351	0,0030
2,4 ISM	WiFi 2.4 GHz (802.11b)	2412 - 2462	2412,0	19,32	N/A	100,0%	20	2,30	0,0289	1,0000	0,5366	0,5366	0,0539
2,4 ISM	WiFi 2.4 GHz (802.11g)	2412 - 2462	2412,0	17,21	N/A	100,0%	20	2,30	0,0178	1,0000	0,5366	0,5366	0,0332
2,4 ISM	WiFi 2.4 GHz (802.11n20))	2412 - 2462	2412,0	16,42	N/A	100,0%	20	2,30	0,0148	1,0000	0,5366	0,5366	0,0276

## Conclusion

The higher of MPE ratios in this case is 0.0539

The higher S is 0.0289 mW/cm<sup>2</sup> → **S = 0.289 W/m<sup>2</sup>**

**In compliance with all limits of MPE**

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A handwritten signature in blue ink, appearing to read "Ken Bednasz", is written over a horizontal line.

By: Ken Bednasz  
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