



# RF Exposure Evaluation

## REPORT

For

### Alpha Technologies Ltd.

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Date:	7 September 2023
Project No.:	22053
FCC ID:	2BA9E-GL0005322
IC ID.:	30668-GL0005322
Equipment:	WiFi/BT radio module for use in Alpha Equipment
Model No.:	GL0005322

*Labtest Certification*

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## Standard: FCC § 1.1310 - Radiofrequency radiation exposure limits

Specific absorption rate (SAR) shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in FCC § 1.1307(b) within the frequency range of 100 kHz to 6 GHz (inclusive). FCC 1.1310 states the criteria listed in table 1 below shall be used to evaluate the environmental impact of human exposure to RF radiation as specified in FCC § 1.1307(b) for uncontrolled Exposure for most devices. Portable devices shall be evaluated according to the provisions of FCC § 2.1093. Further information on evaluating compliance with these limits can be found in the FCC's OST/OET Bulletin Number 65, "Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radiofrequency Radiation".

**FCC § 1.1310 Table 1—Limits for Maximum Permissible Exposure (MPE)**

### **(ii) Limits for General Population/Uncontrolled Exposure**

<b>Frequency (MHz)</b>	<b>Electric Field (V/m)</b>	<b>Magnetic Field (A/m)</b>	<b>Power Density (mW/cm<sup>2</sup>)</b>	<b>Averaging time (minutes)</b>	
0.3-1.34	614	1.63	*100	30	
1.34-30	824/f	2.19/f	*180/f <sup>2</sup>	30	
30-300	27.5	0.073	0.2	30	
300-1500	-	-	f/1500	30	
1500-100,000	-	-	1	30	
<b>f = frequency in MHz</b> <b>* = Plane-wave equivalent power density</b>					

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### Description:

The Friis transmission formula is used to calculate the power density:

$$Pd = (P_{out} * G) / (4 * \pi * R^2) = EIRP / (4 * \pi * R^2)$$

Pd = power density in mW/cm<sup>2</sup>

P<sub>out</sub> = output power to antenna in mW

G = gain of antenna in linear scale

R = distance between observation point and center of the radiator in cm

EIRP = Equivalent isotopically radiated power (mW) = 10<sup>[(TX Power (dBm) + Ant Gain (dBi))/10]</sup>

For this method of calculation, this device's antenna must be mounted in a location that provides a distance of at least 20 cm to any person that may be in the area of the transmitter.

### Calculation:

Information of the EUT is added in the below table.

Frequency (MHz)	Conducted Output Peak Power (dBm)	Max Antenna Gain (dBi)	Max EIRP (mW)	Power Density (mW/cm <sup>2</sup> )	Distance (cm)
2402-2480 BLE	-3.279	3	0.937	1.864 e-4	20
2402-2480 BL	6.0206	3	7.98	0.001588	20
2412-2462 WiFi	20.334	3	215.47	0.04286	20

### Conclusion:

From FCC § 1.1310 Table 1, the Maximum Power Density safe exposure level for General Population Uncontrolled Exposure of 30 minutes for the frequency range of 1500-100,000 MHz is 1 mW/cm<sup>2</sup>. Therefore, this EUT passes for all transmitters.