

Unlicensed Transmitters: Approved Antennas List

<i>Manufacturer</i>	<i>Antenna</i>	<i>Description</i>	<i>Type</i>	<i>Peak Gain (dBi)</i>	<i>Min Cable loss (dB)</i>	<i>Ω</i>	<i>Connector Type</i>	<i>Notes</i>
Laird Technology	LYRA-P-Integrated Antenna 453-00090R	Chip Antenna	Chip	1.86	0	50	Integral	

Notes:

2.2 EFR32BG22 SoC

The EFR32BG22 SoC features a 32-bit ARM Cortex M33 core, a 2.4 GHz high-performance radio, 512 kB of flash memory, a rich set of MCU peripherals, and various clock management and serial interfacing options. Consult the [EFR32xG22 Wireless Gecko Reference Manual](#) and the [EFR32BG22 Data Sheet](#) for details.

Note that the Flash and other features in this product are not directly accessible, and are instead accessed through the product's abstracted command and variable set.

2.3 Antenna

BGX220P modules include a ceramic chip antenna on board with the characteristics detailed in the table below.

Table 2.1. Antenna Efficiency and Peak Gain

Parameter	With optimal layout	Note
Efficiency	-1 dB	Antenna efficiency, gain and radiation pattern are highly dependent on the application PCB layout and mechanical design. Refer to Design Guidelines for recommendations to achieve optimal antenna performance.
Peak gain	1.86 dBi	

2.4 Power Supply

The BGX220P requires a single nominal supply level of 3.0 V to operate. All necessary decoupling and filtering components are included in the module.

3.13.1 Antenna Radiation and Efficiency

Typical BGX220P radiation patterns and efficiency for the on-board chip antenna under optimal operating conditions are plotted in the figures that follow. Antenna gain and radiation patterns have a strong dependence on the size and shape of the application PCB the module is mounted on, as well as on the proximity of any mechanical design to the antenna.

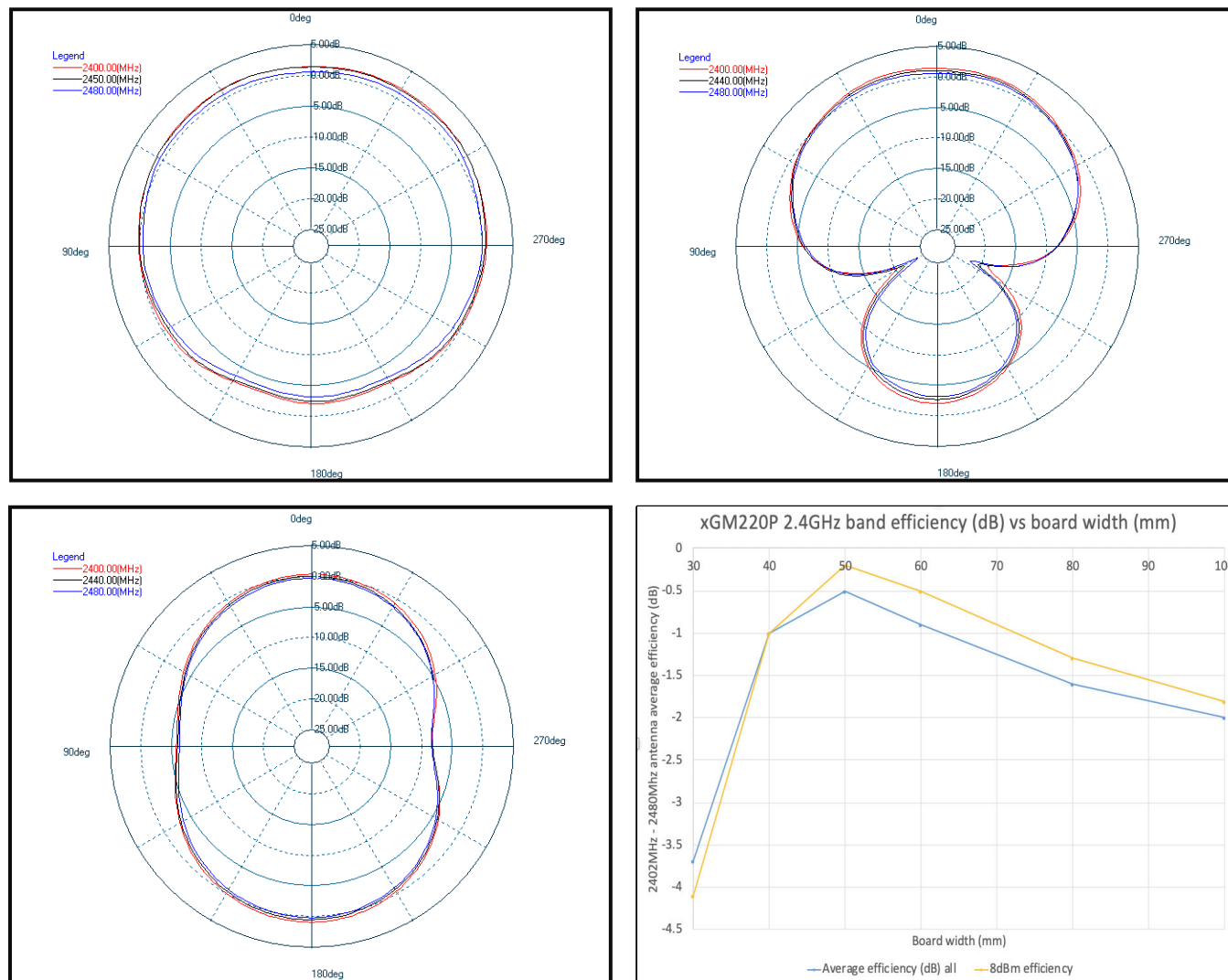


Figure 3.3. Typical 2D Antenna Radiation Patterns and Efficiency

Top Left: $\Phi = 0^\circ$, Top Right: $\Phi = 90^\circ$, Bottom Left: $\Theta = 90^\circ$, Bottom Right: Radiation Efficiency vs. Application Board GND Plane Width