

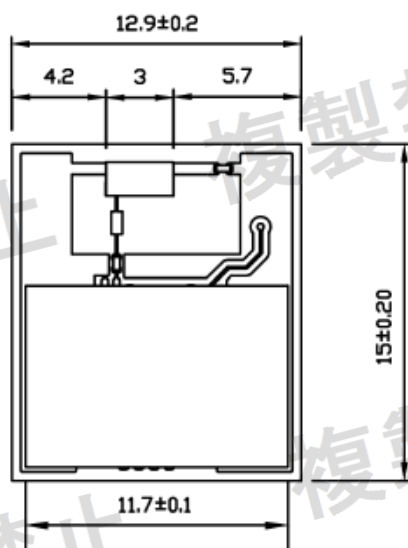
3.3 Antenna

BGM210P modules include a built-in antenna with the characteristics detailed in the table below. They also include a 50 Ω -matched RF pin to enable the use of an external antenna instead of the one built-in. See Section 4.15.1 [Antenna Radiation and Efficiency](#) and Section 11.1 [Qualified Antennas](#) for other relevant details. Antenna diversity is not supported.

Table 3.1. Antenna Efficiency and Peak Gain

Parameter	With optimal layout	Note
Efficiency	-1 to -2 dB	Antenna efficiency, gain and radiation pattern are highly dependent on the application PCB layout and mechanical design. Refer to the Design Guidelines for recommendations to achieve optimal antenna performance.
Peak gain	1.86 dBi	

Operation Frequency: 2402-2480MHz



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4.15.1 Antenna Radiation and Efficiency

Typical BGM210P 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.

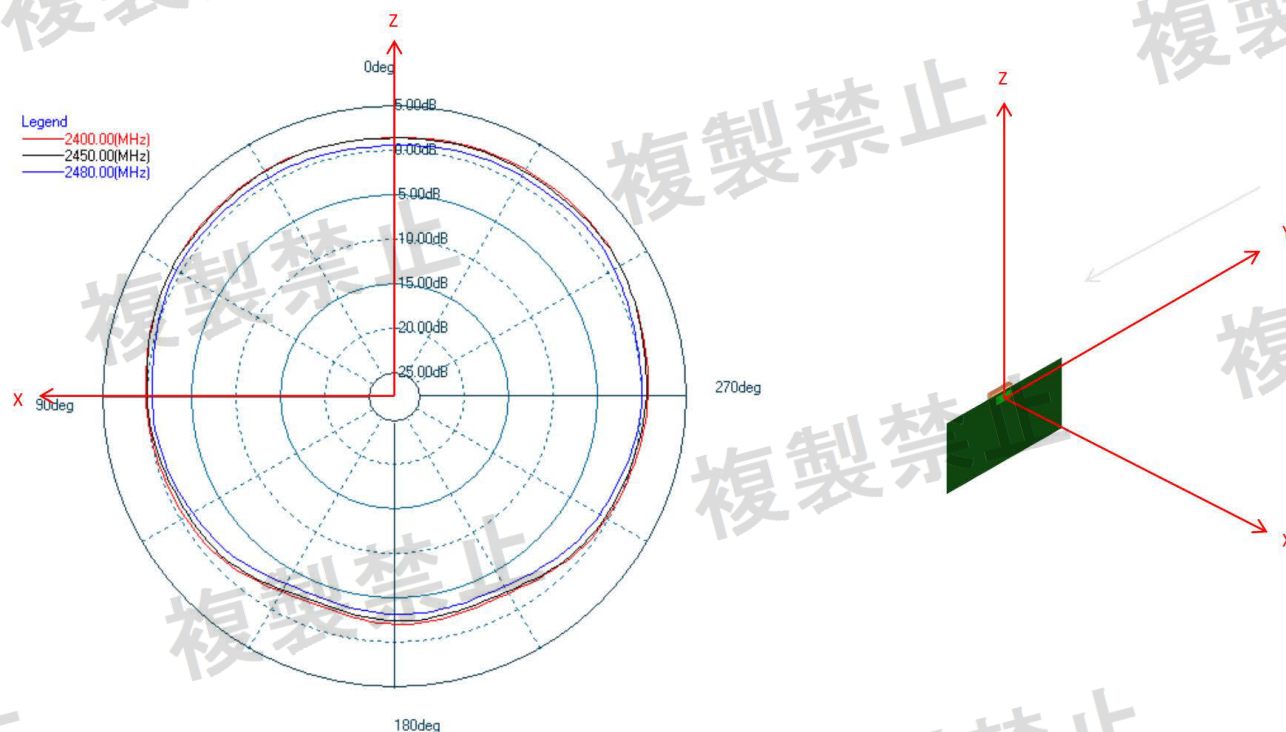


Figure 4.1. Typical 2D Antenna Radiation Patterns - Phi 0° (Side View) Gain (dBi)

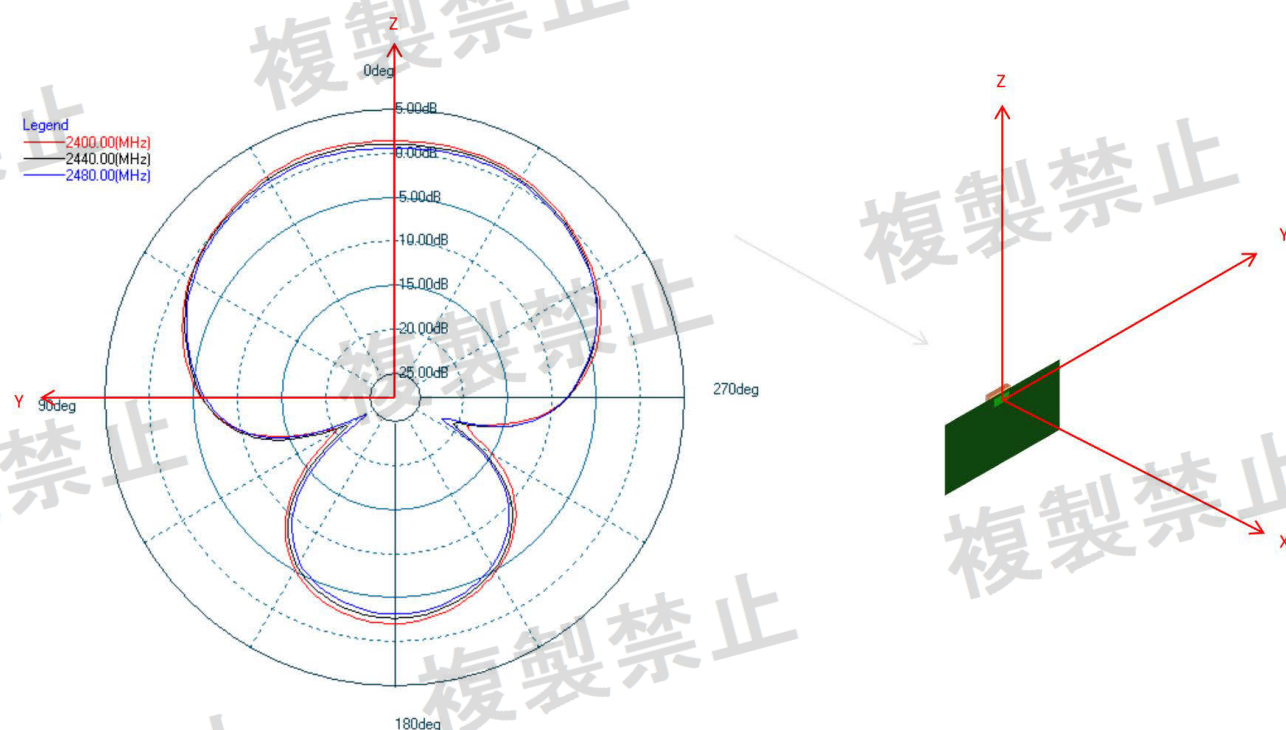


Figure 4.2. Typical 2D Antenna Radiation Patterns - Phi 90° (Top View) Gain (dBi)

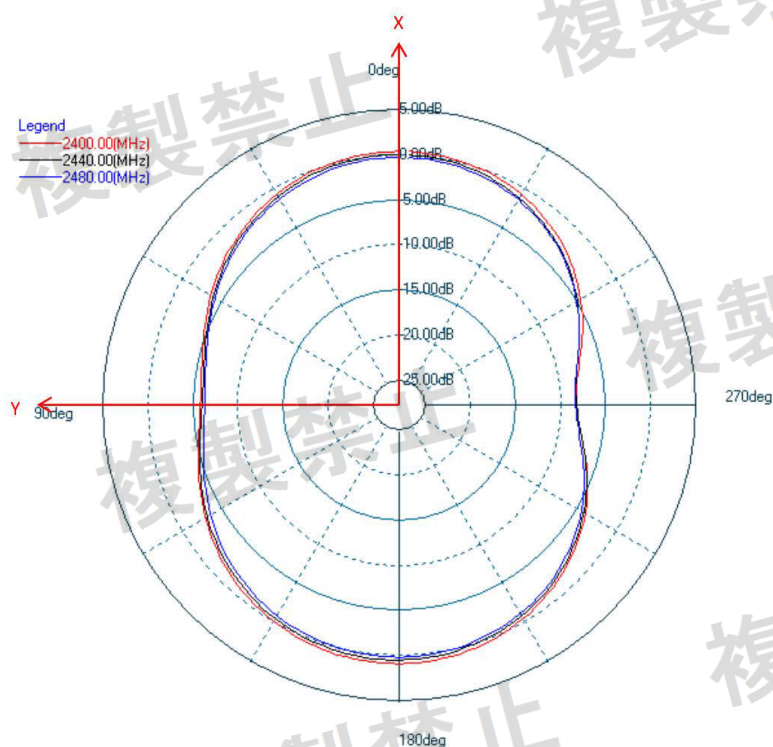


Figure 4.3. Typical 2D Antenna Radiation Patterns - Theta 90° (Front View) Gain (dBi)

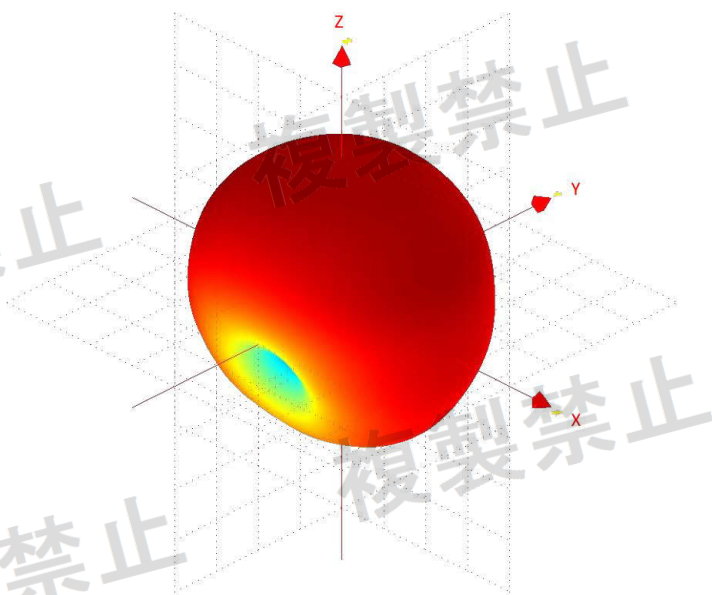


Figure 4.4. 3D Radiation Pattern at 2440MHz

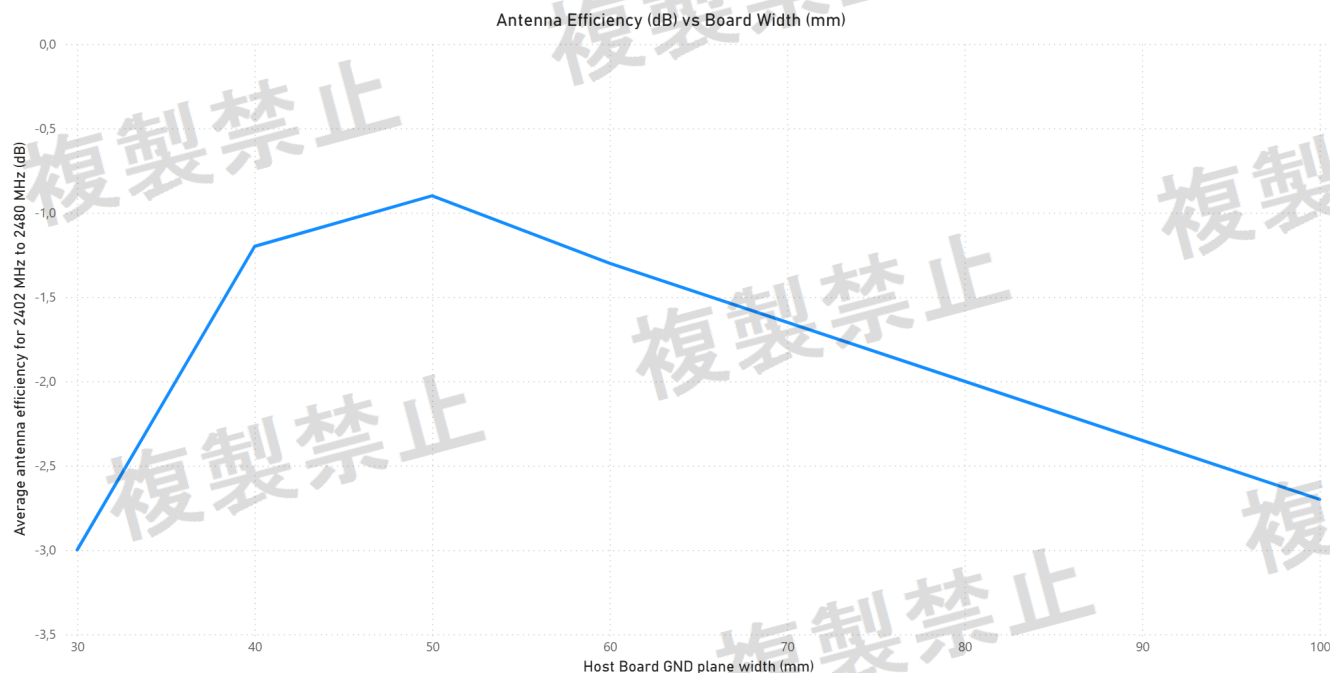


Figure 4.5. Efficiency of the Built-in Antenna as Function of the Carrier Board Width (mm)