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ANNA-B112

Antenna and Antenna Connector Reference Designs

Scope

This document defines the essential specifications necessary to implement the ANNA-B112 antenna and antenna connector reference designs. The information contained herein and its references should be sufficient to guide a skilled person in an attempt to implement the design on a host carrier. It will provide the designer with PCB layout details. The instructions below will be included as an appendix in the *ANNA-B112 series System Integration Manual* that u-blox will be providing to its customers.

Antenna reference designs

Designers can take full advantage of ANNA-B112's Single-Modular Transmitter certification approval by integrating the u-blox reference design into their products. This approach requires compliance with the following rules:

- Only listed antennas can be used. Refer to ANNA-B112 Data sheet for the listed antennas.
- Schematics and parts used in the design must be identical to u-blox. RF components may show different behavior at the frequencies of interest due to different construction and parasitic; use u-blox's validated parts for antenna matching.
- PCB layout must be identical to the one provided by u-blox. Implement one of the reference designs included in this section or contact u-blox.
- The designer must use the stack-up provided by u-blox. RF traces on the carrier PCB are part of the certified design.

The available reference designs are presented in the following sections.

Antenna reference design for corner connected internal antenna

When using the ANNA-B112 together with this antenna reference design, the circuit trace layout must be made in strict compliance with the instructions below.

This section describes where the critical copper traces are positioned on the reference design.

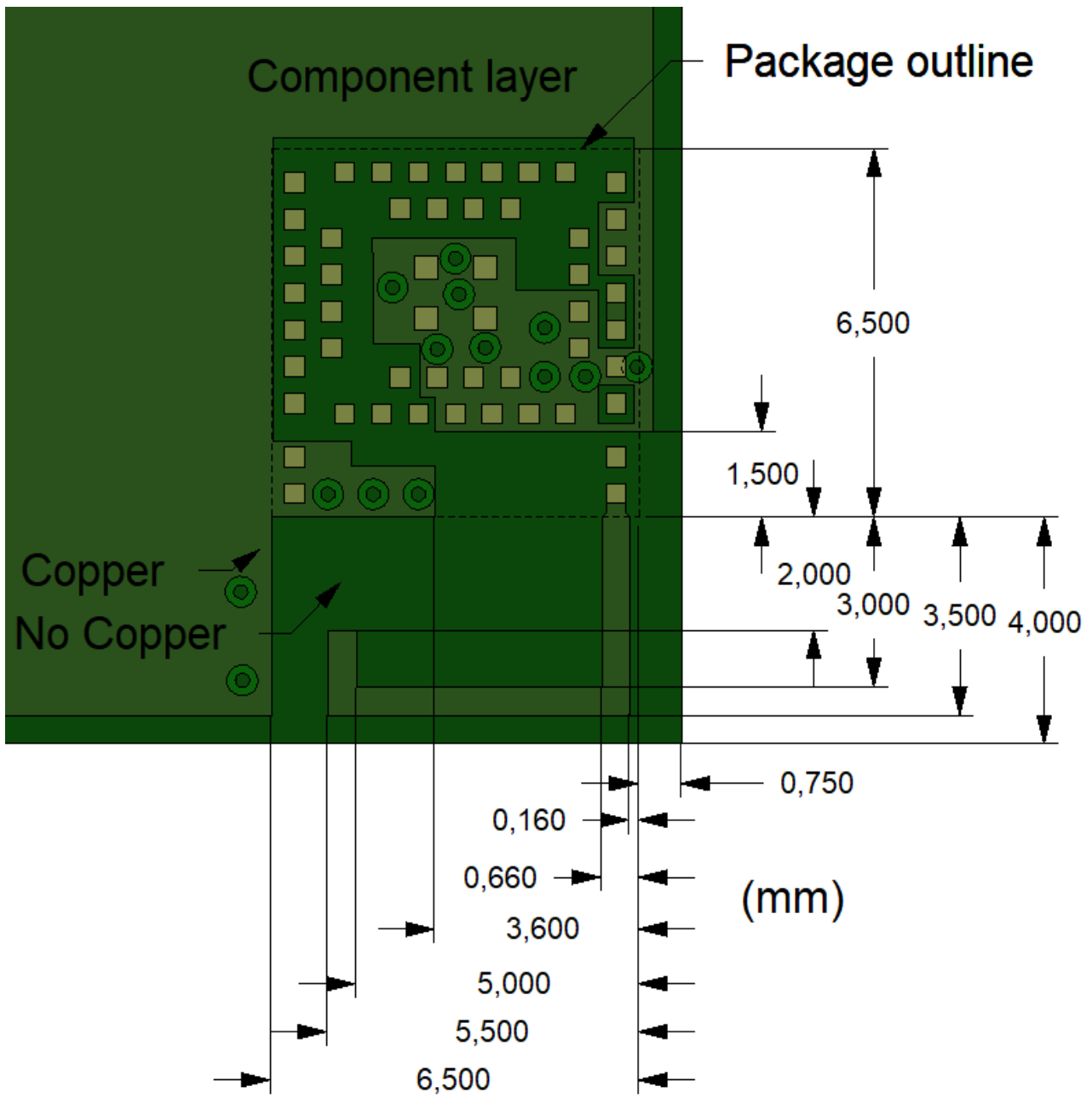


Figure 1: Reference design for internal antenna, corner version, top layer

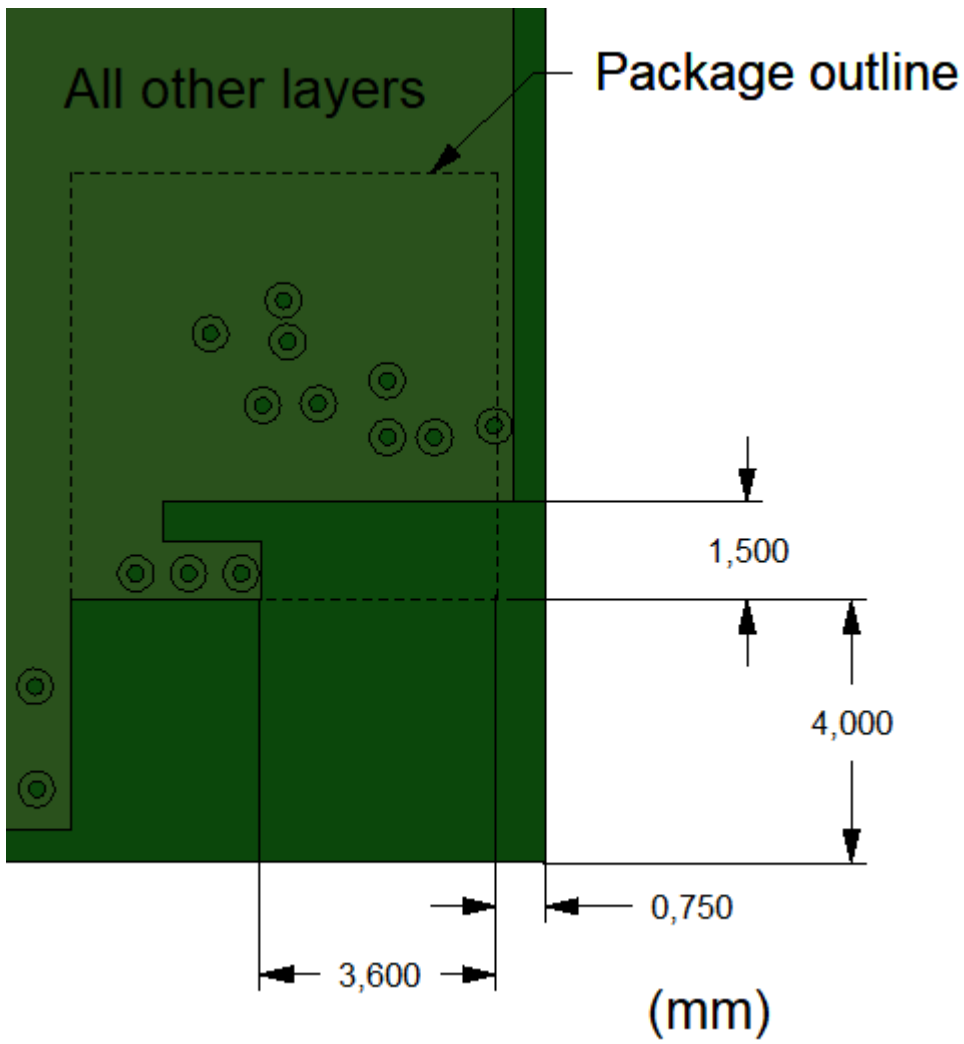


Figure 2: Reference design for internal antenna, corner version, other layer

Antenna reference design for edge connected internal antenna

When using the ANNA-B112 together with this antenna reference design, the circuit trace layout must be made in strict compliance with the instructions below.

This section describes where the critical copper traces are positioned on the reference design.

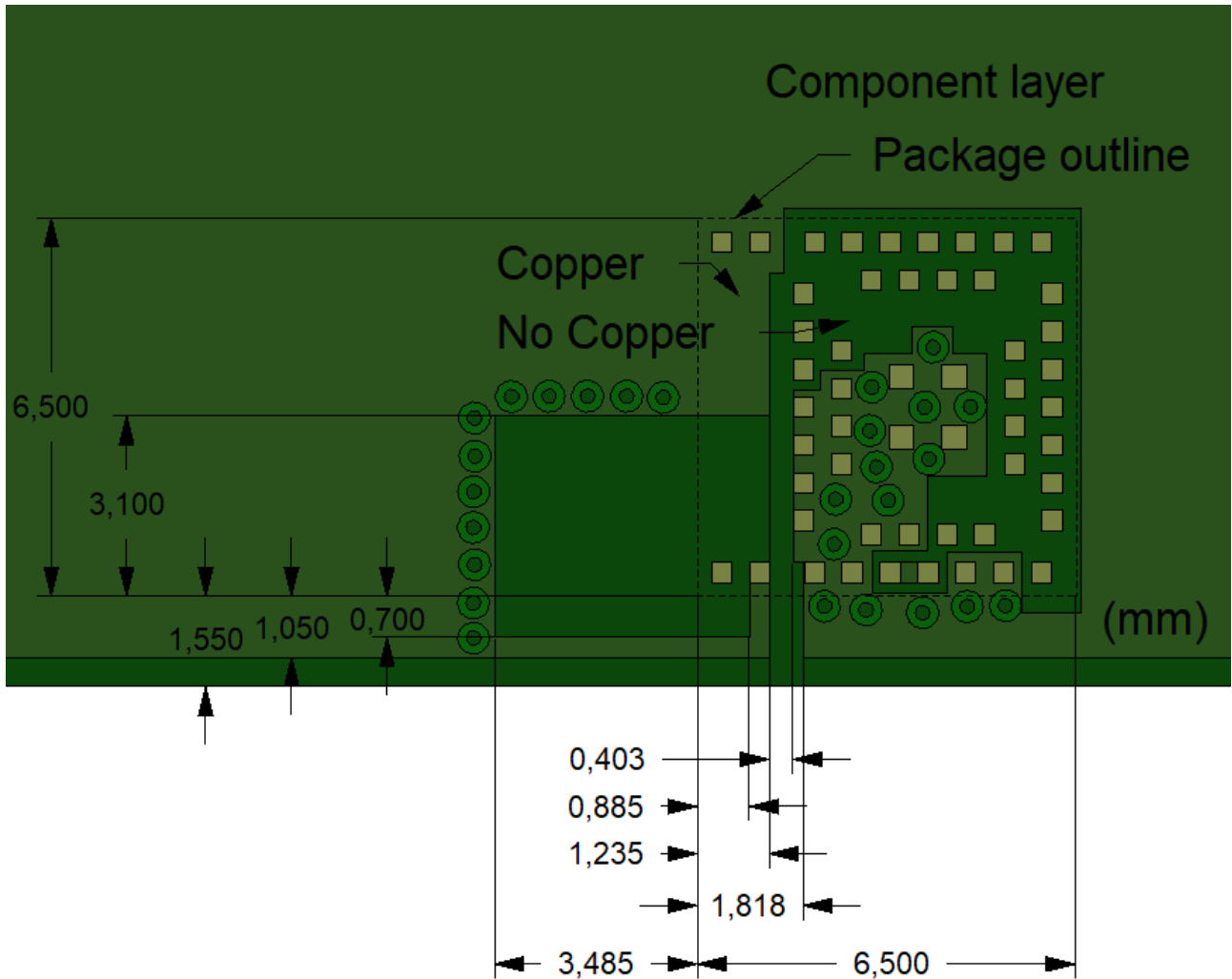


Figure 3: Reference design for internal antenna, edge version, top layer

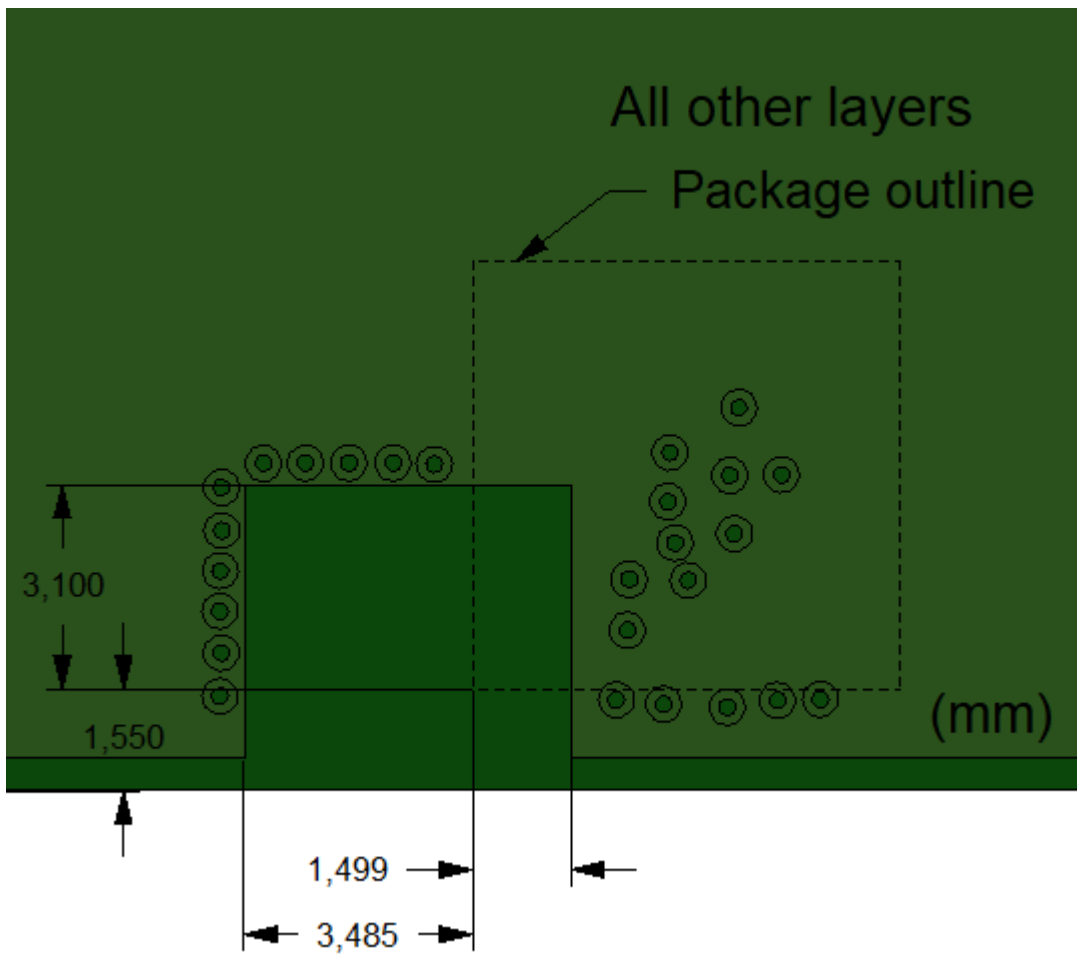


Figure 4: Reference design for internal antenna, edge version, other layers

Reference design for external antennas (U.FL connector)

When using the ANNA-B112 together with this antenna reference design, the circuit trace layout must be made in strict compliance with the instructions below.

All the components placed on each RF trace must be kept as indicated in the reference design. The reference design uses a micro coaxial connector that is connected to the external antenna via a 50 Ω pigtail.

This section describes where the critical components and copper traces are positioned on the reference design.

Part	Manufacturer	Description
U.FL-R-SMT-1(10)	Hirose	Coaxial Connector, 0 – 6 GHz, for external antenna

Table 1: U.FL connector used in the ANNA-B112 reference design

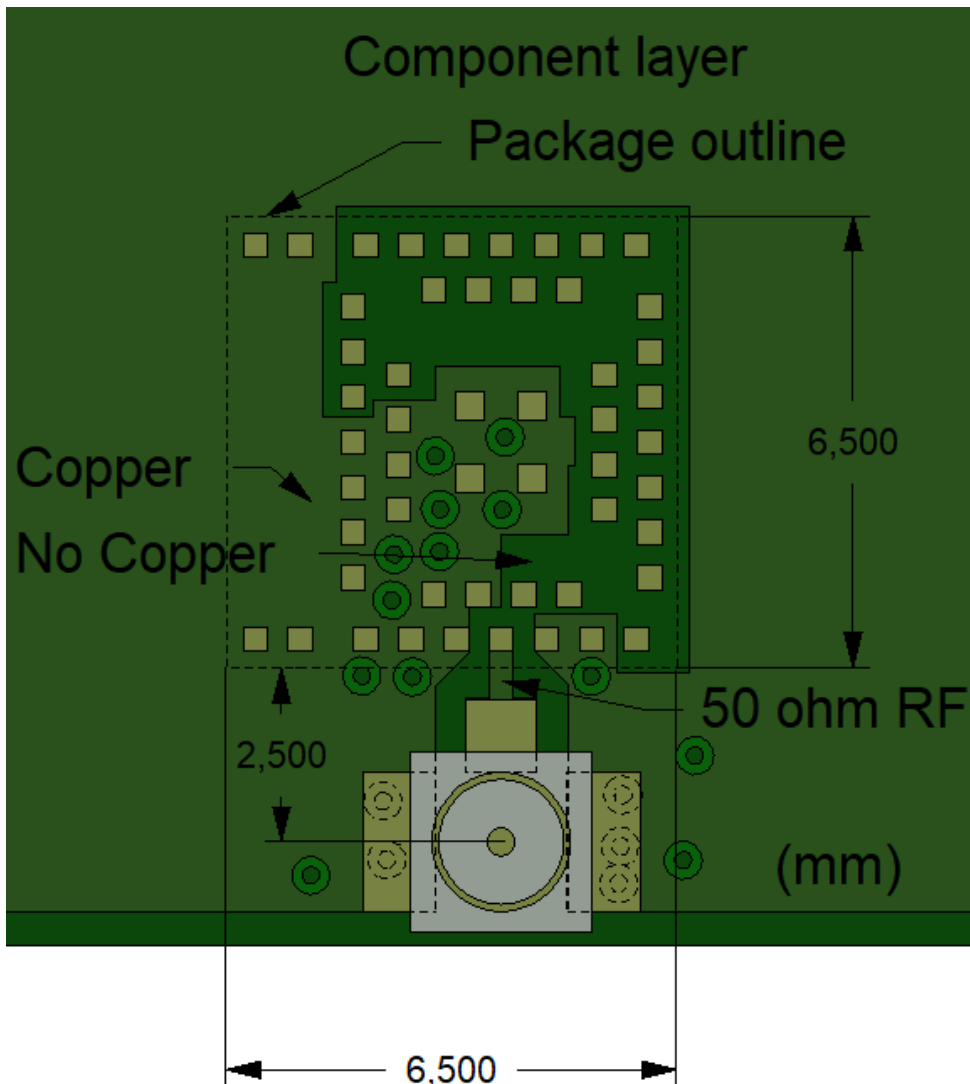


Figure 5: Reference design for external antenna, top layer

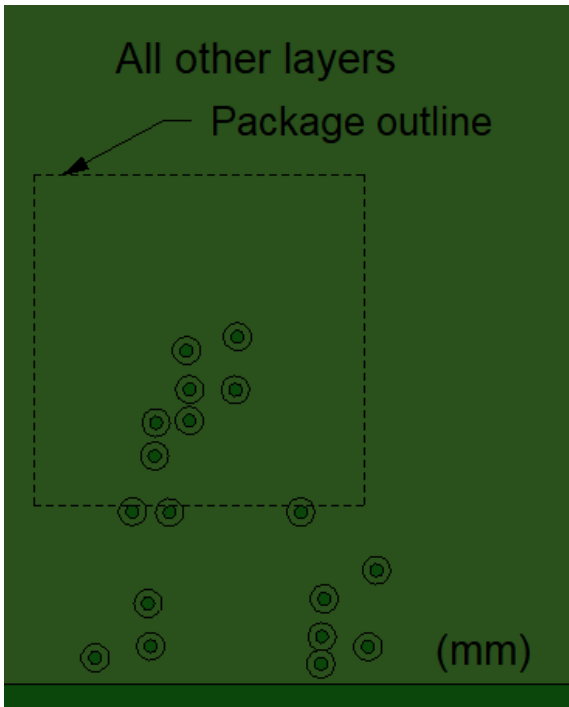


Figure 6: Reference design for external antenna, other layers