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Zanati et al.(10) **Pub. No.: US 2024/0224423 A1**(43) **Pub. Date: Jul. 4, 2024**(54) **INTERPOSERS WITH MILLIMETER-WAVE
COAXIAL-TO-WAVEGUIDE TRANSITIONS**(71) Applicant: **NXP B.V.**, Eindhoven (NL)(72) Inventors: **Abdellatif Zanati**, Hamburg (DE);
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(57)

ABSTRACT

A circuit-board interposer includes contacts on a top surface and a bottom surface and includes a millimeter-wave coaxial transition structure formed using contacts on the top surface and vias extending into the interposer. A first via extends into the interposer to a first depth and is surrounded by additional vias that penetrate the interposer to a second depth smaller than the first depth. The interposer also includes a hollow conductive waveguide structure formed within the interposer that extends from the second depth to a third depth that has a first end and a second end. The first via extends into the waveguide at the first end and an aperture is present at the second end. The coaxial transition and the waveguide together are configured to couple millimeter-wave energy from a feed contact on the top surface of the interposer and direct it to the aperture.

