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Coaxial Socket in mmWave Applications

Collins Sun / Ryan Chen / Hayden Chen
WinWay Technology Co., Ltd.



Abstract

Impedance control and significant crosstalk reduction can be achieved by a unique structure as found in WinWay's Brownie Coaxial Socket. These are essential test solutions requirements for mmWave applications (e.g., 5G, WiGig, and Automotive Radar).

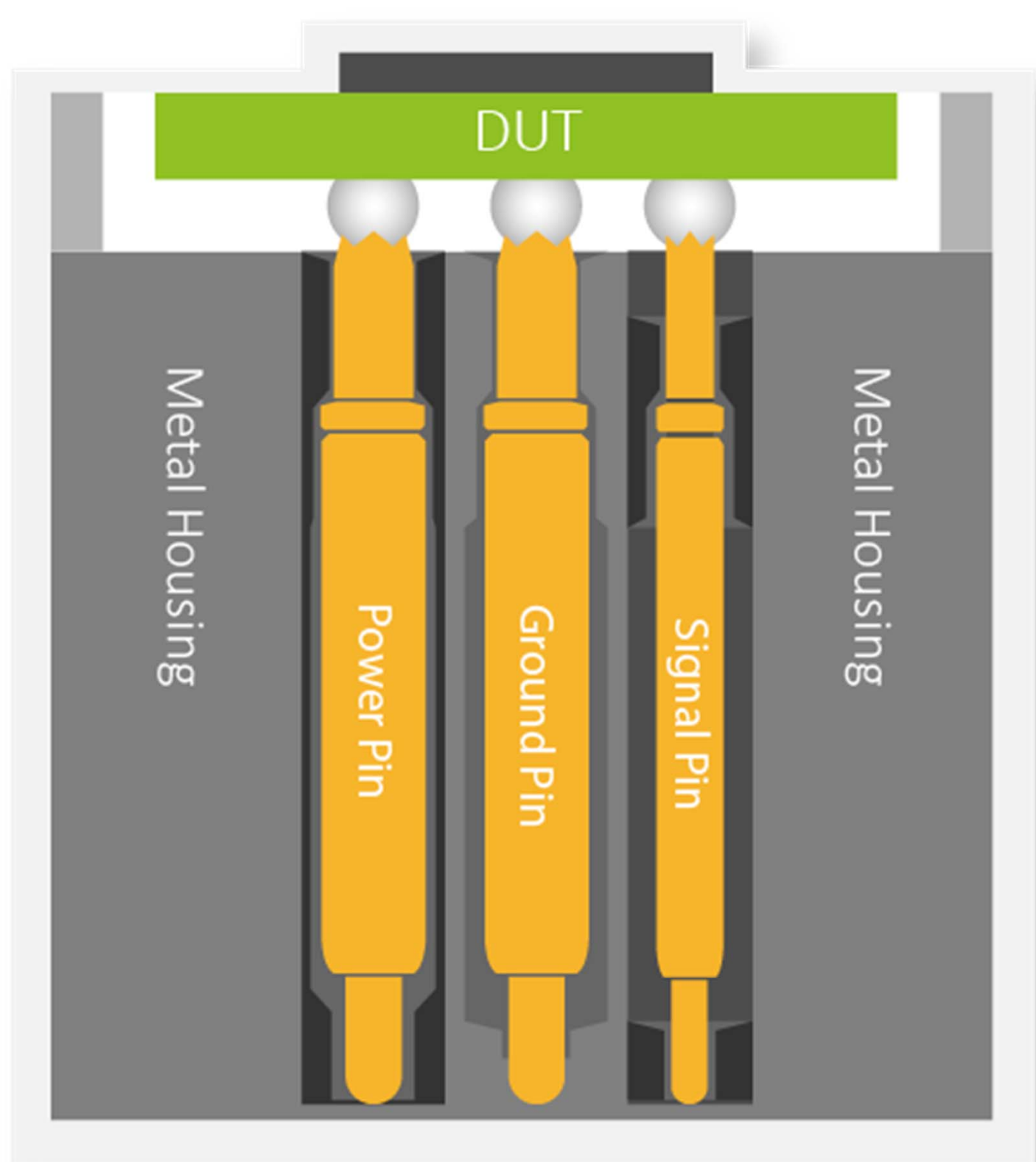


Benefits of Coaxial

- Superior Signal Protection
- Low Transmission Loss
- Anti-interference Ability



Features

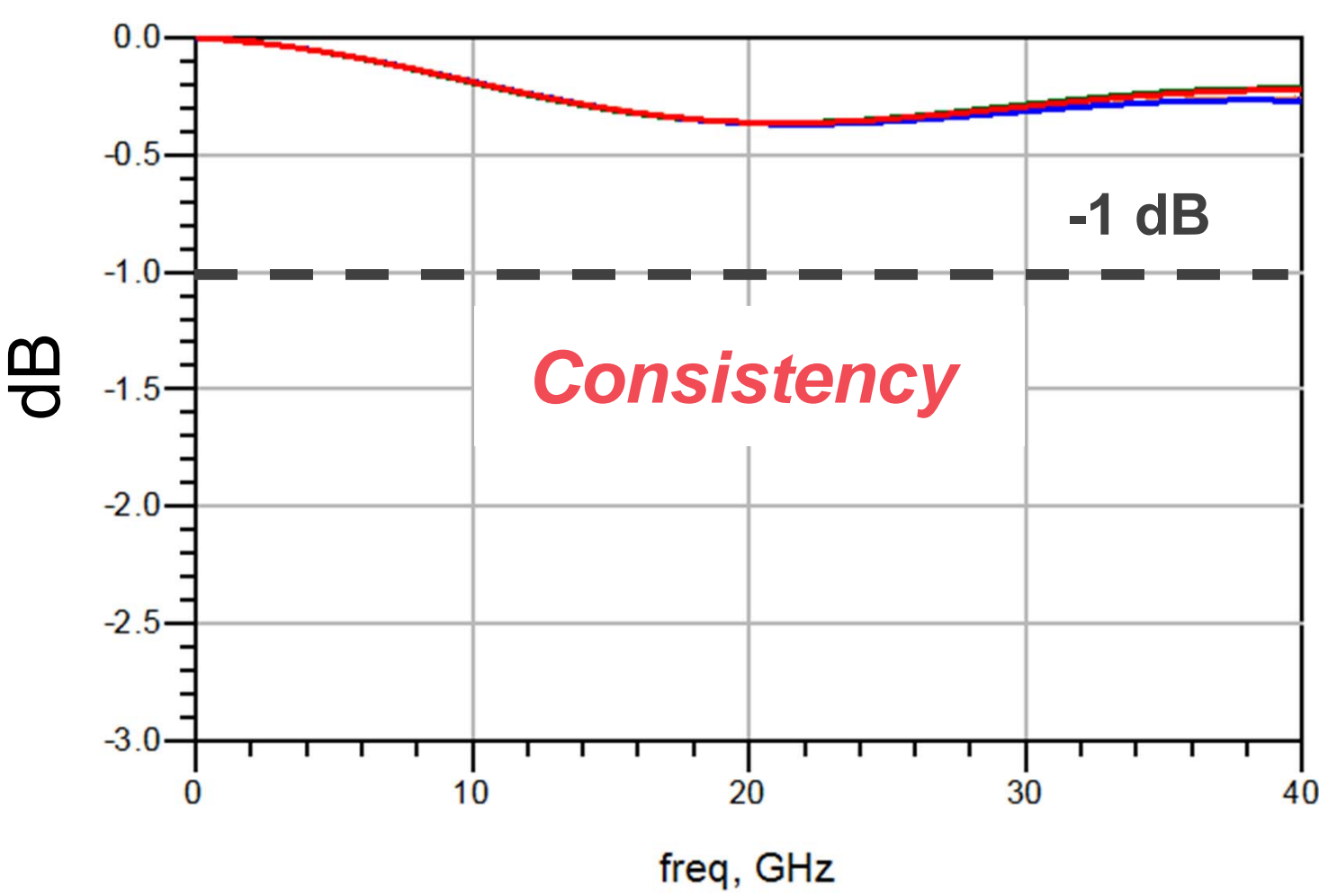


- **Through-hole Design**
→ Excellent Impedance Control / Fine Pitch Capabilities
- **Composite Insulation Materials with Low Dielectric Loss**
→ Superior Reliability for Mass Production
- **Fully Metal Shielding** → Perfect Signal Protection
- **Surface Insulation** → Avoiding Shorting Risk

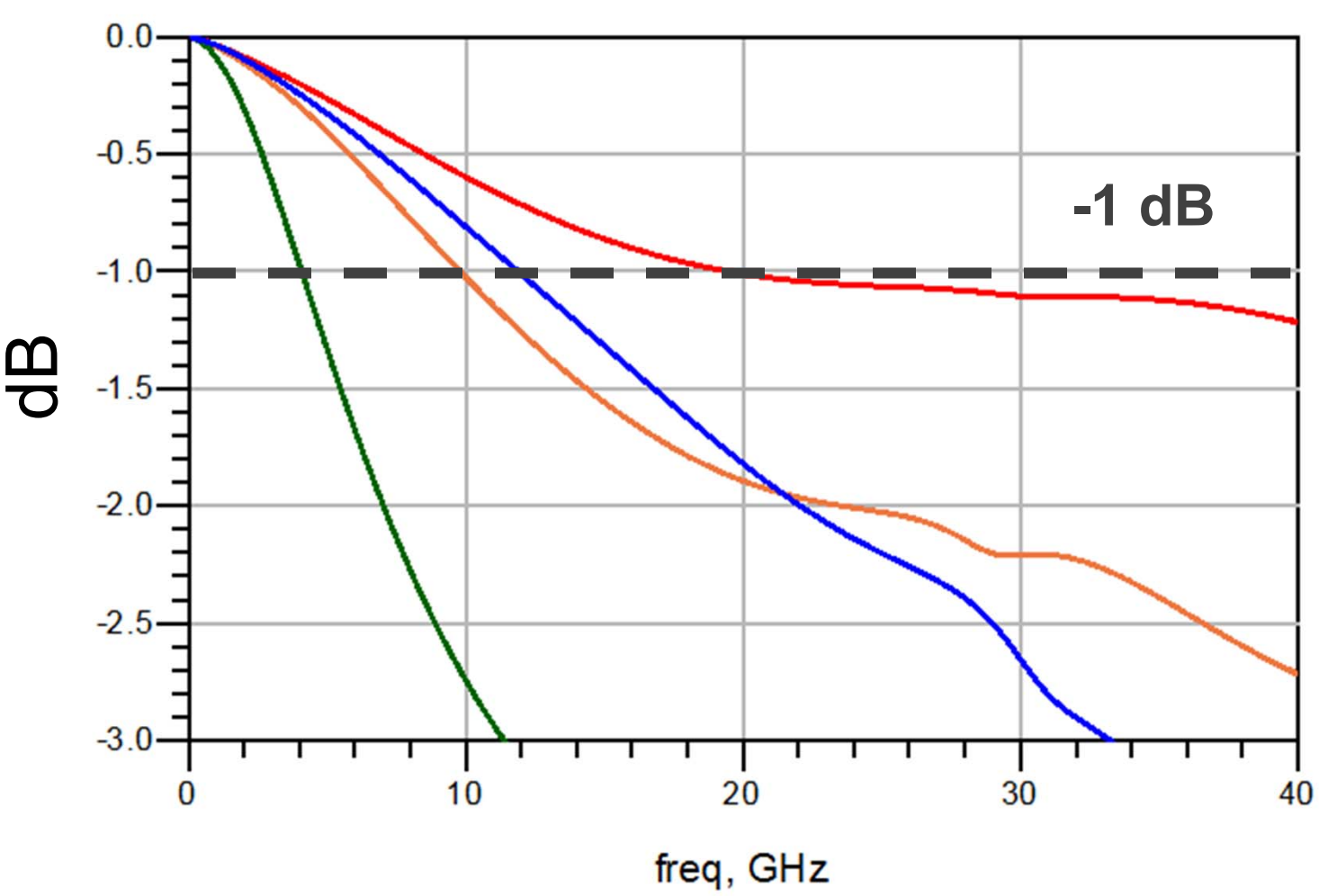


Perfect Shielding Design

Insertion Loss



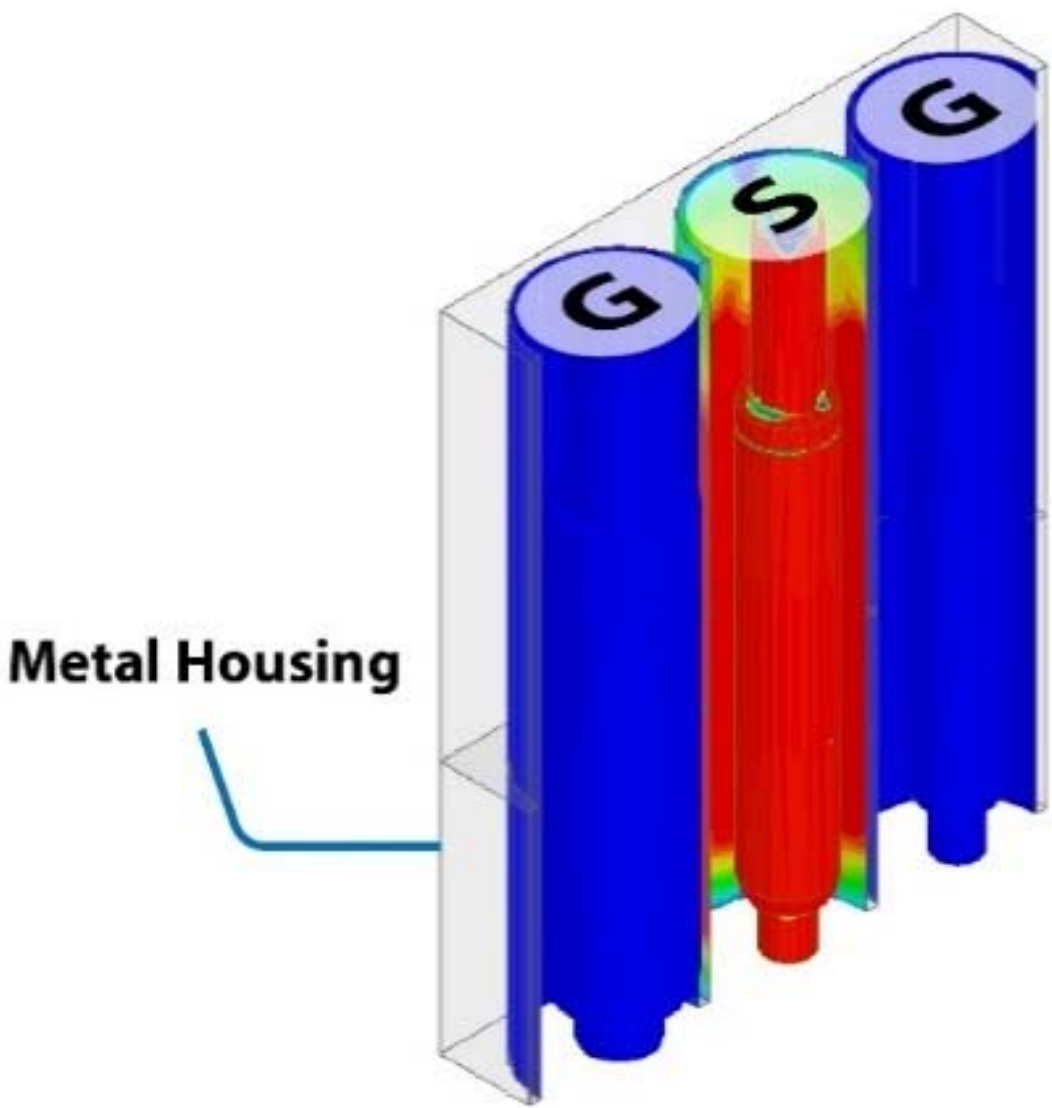
Brownie Coaxial



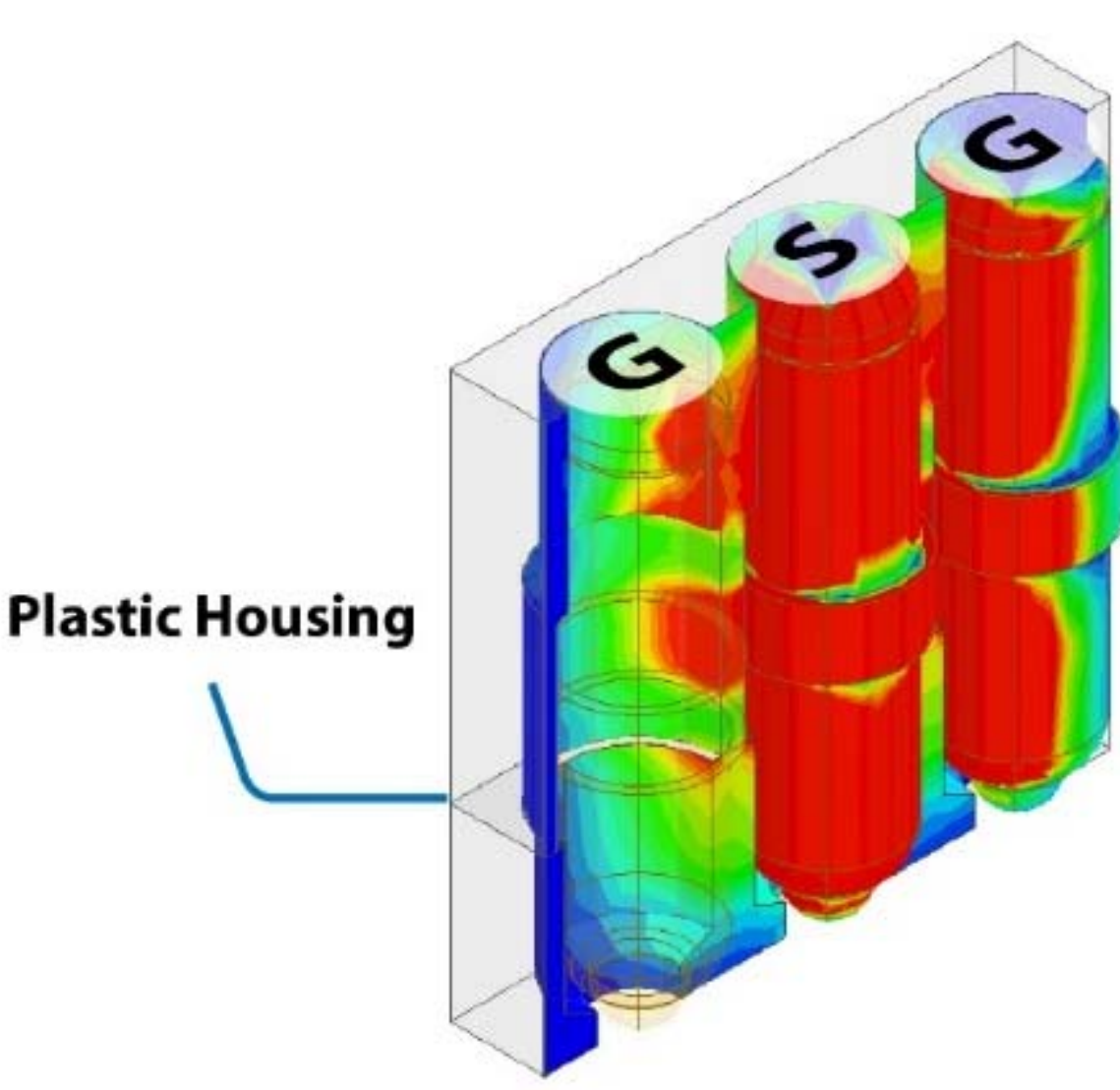
Plastic Socket



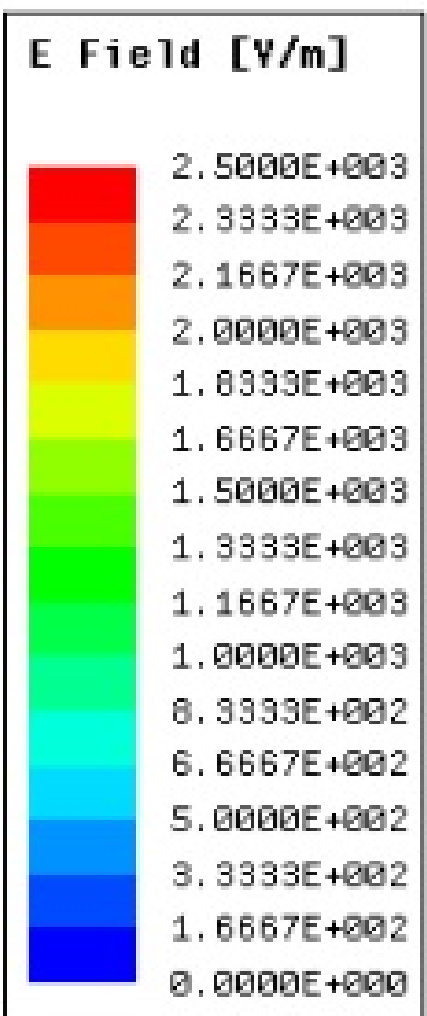
DUT Pin Map Schematic



Brownie Coaxial



Plastic Socket



As shown above, the performance of plastic socket highly depends on DUT pin map arrangement. Yet Brownie coaxial possesses excellent electrical properties, such as impedance control and crosstalk reduction by the fully shielding design.

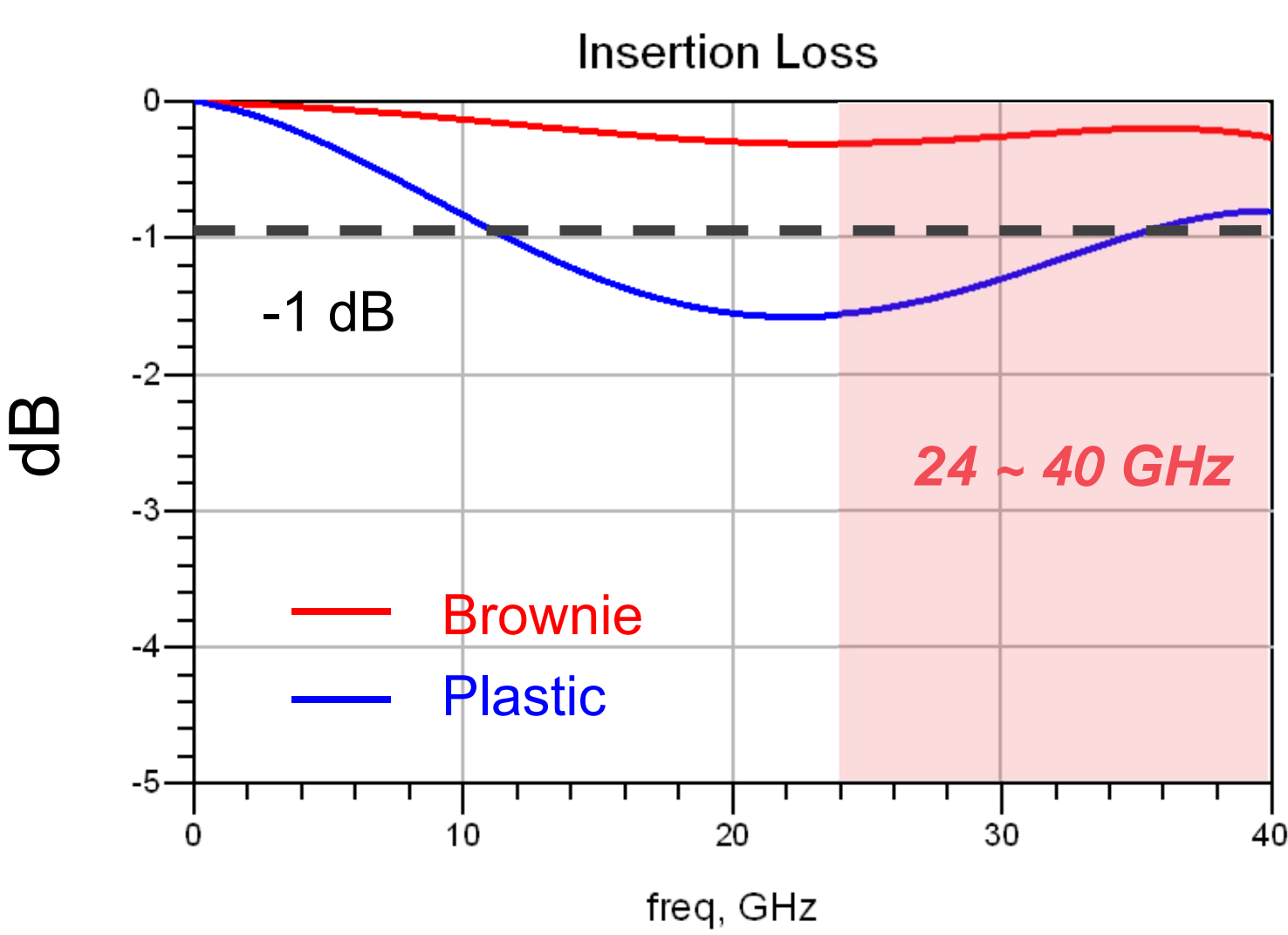
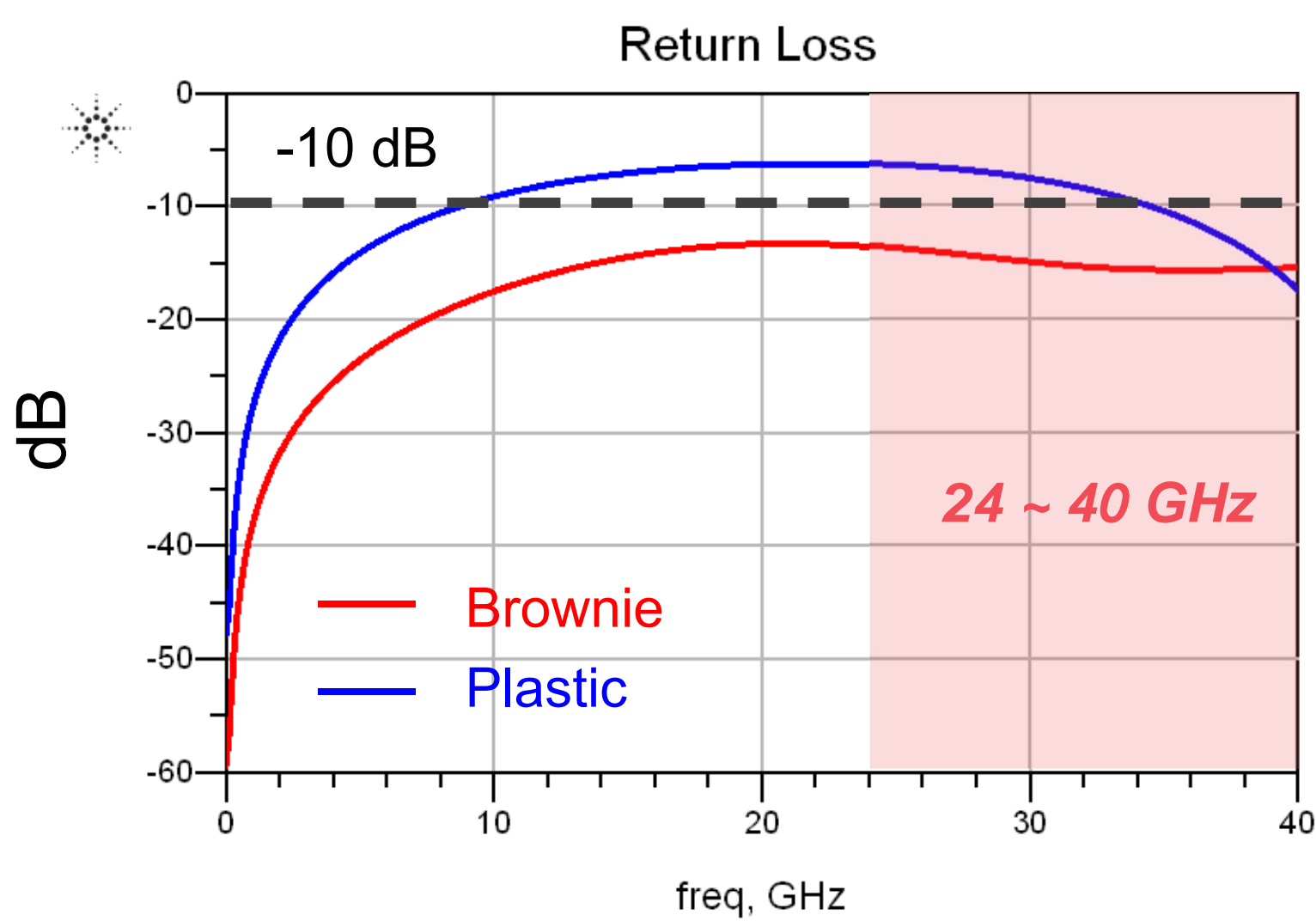


mmWave Applications

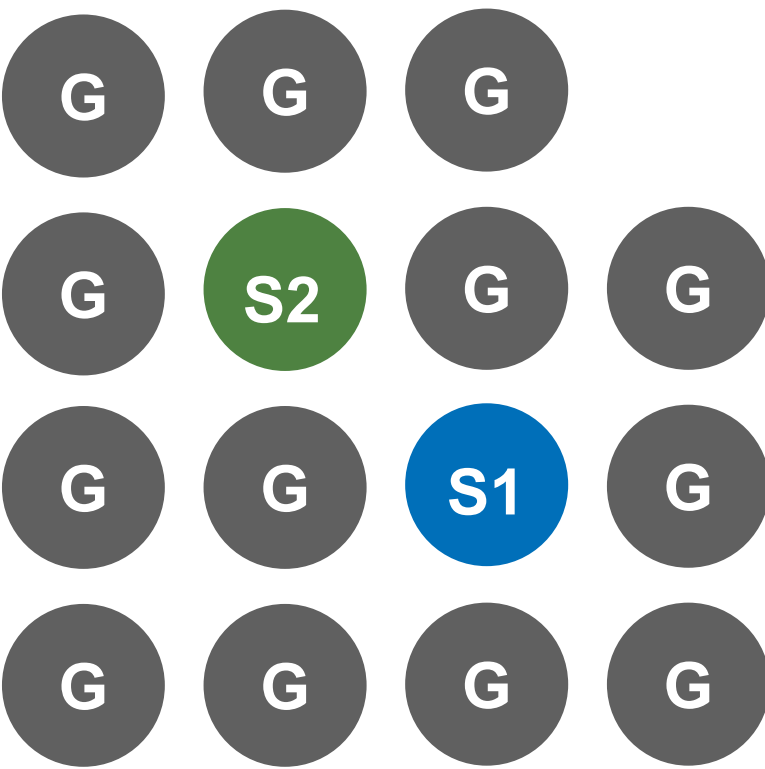


5th Generation Mobile Networks

To fulfill the increasing demand of edge computing devices and lots of network applications, new 5th generation mobile networks are announced from 24 to 40 GHz for mobile communication.



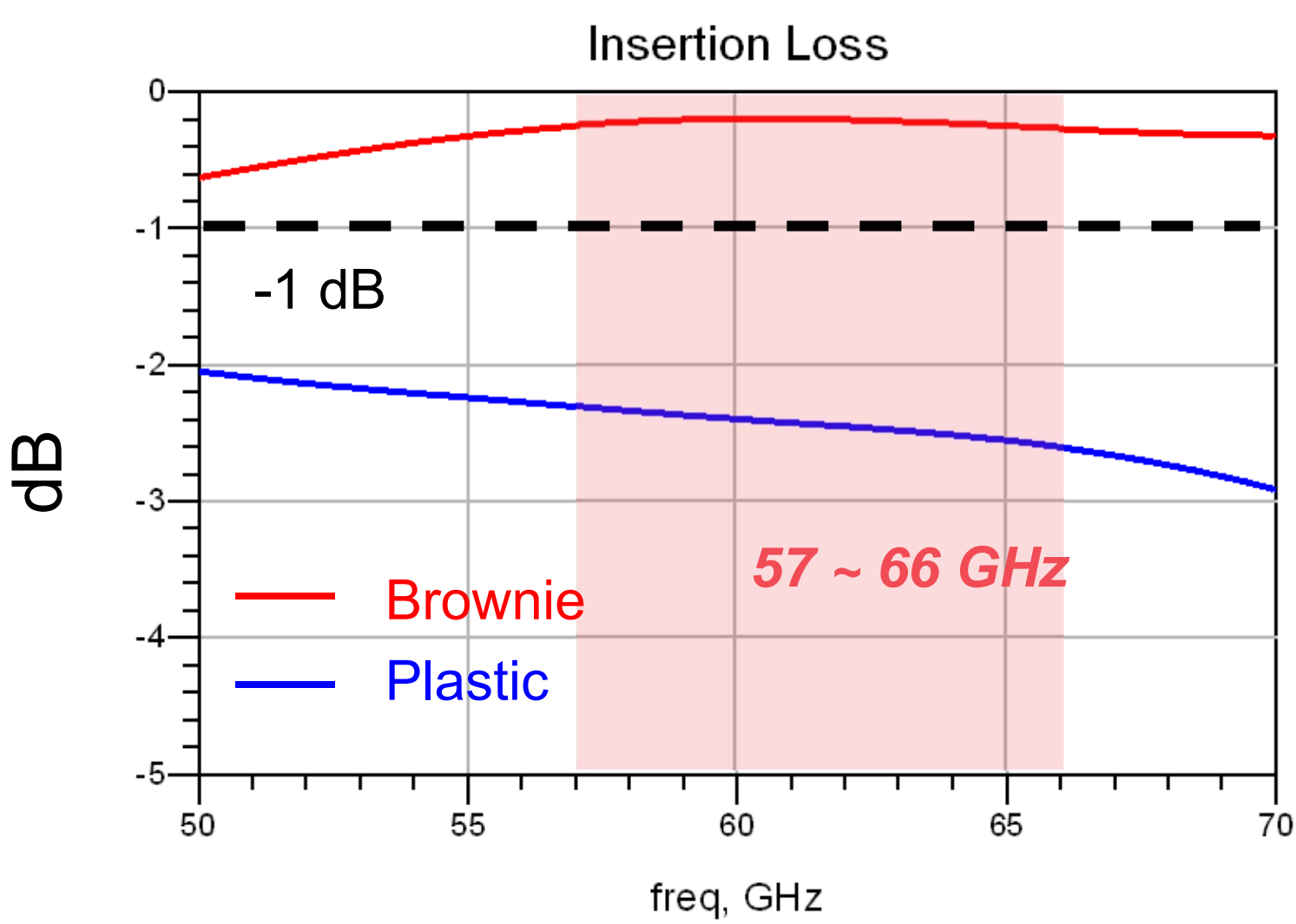
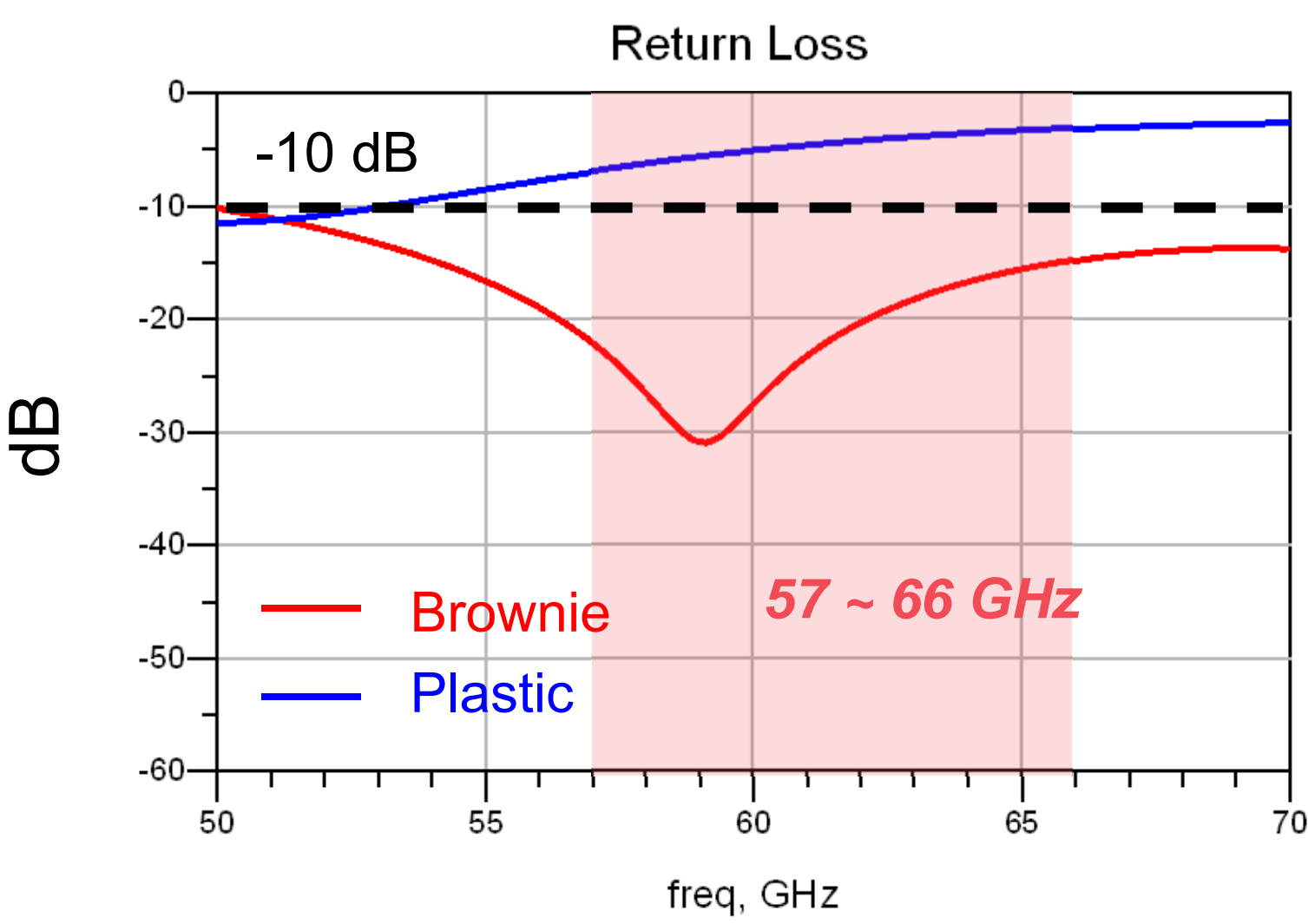
Pin Map Schematic



Device Pitch: 0.6 mm

WiGig

WiGig is a relatively new wireless technology that lives in a part of radio spectrum (60 GHz). It's a new standard for indoor application, expanding the Wi-Fi experience for virtual reality (VR), wireless docking, etc.



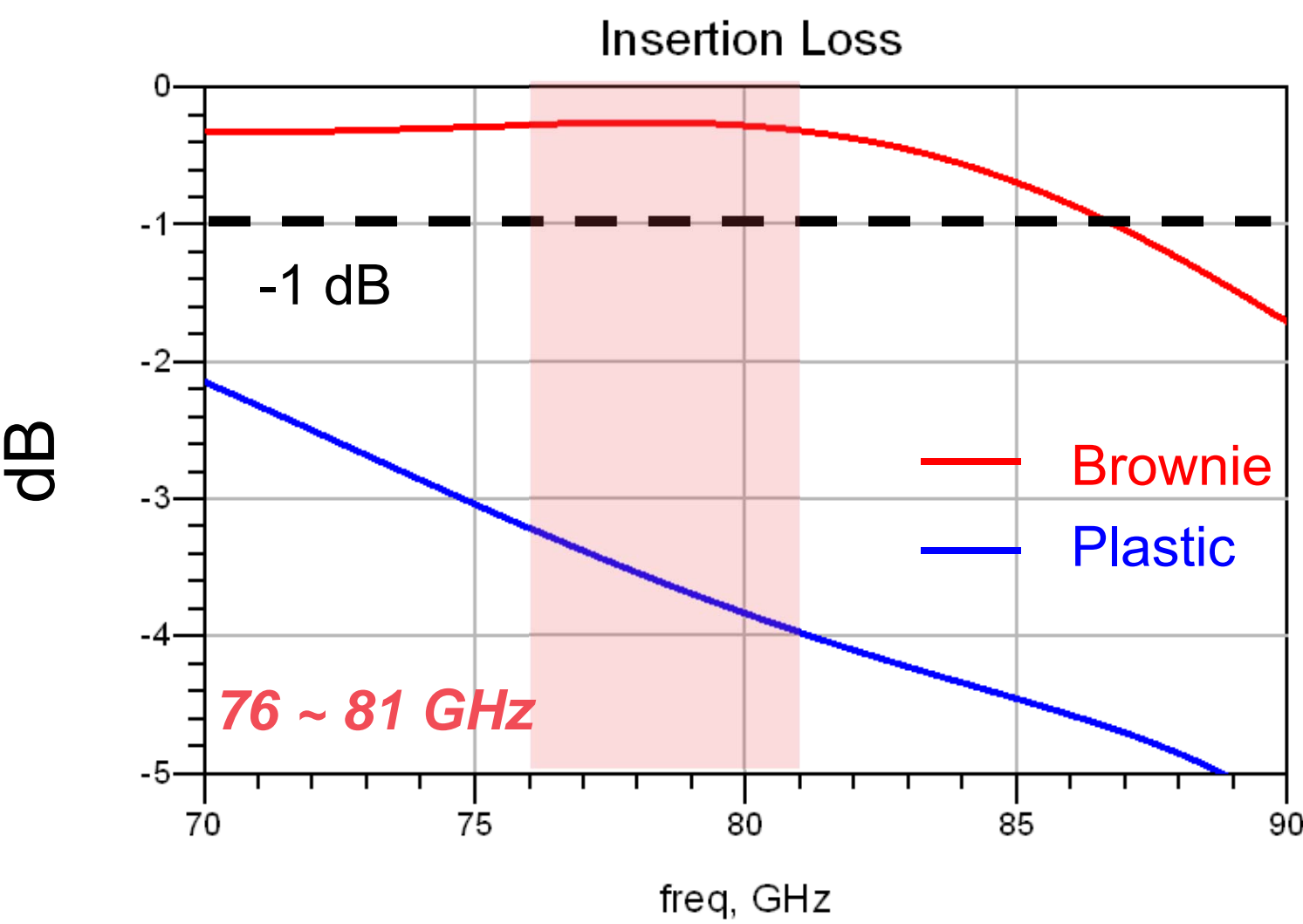
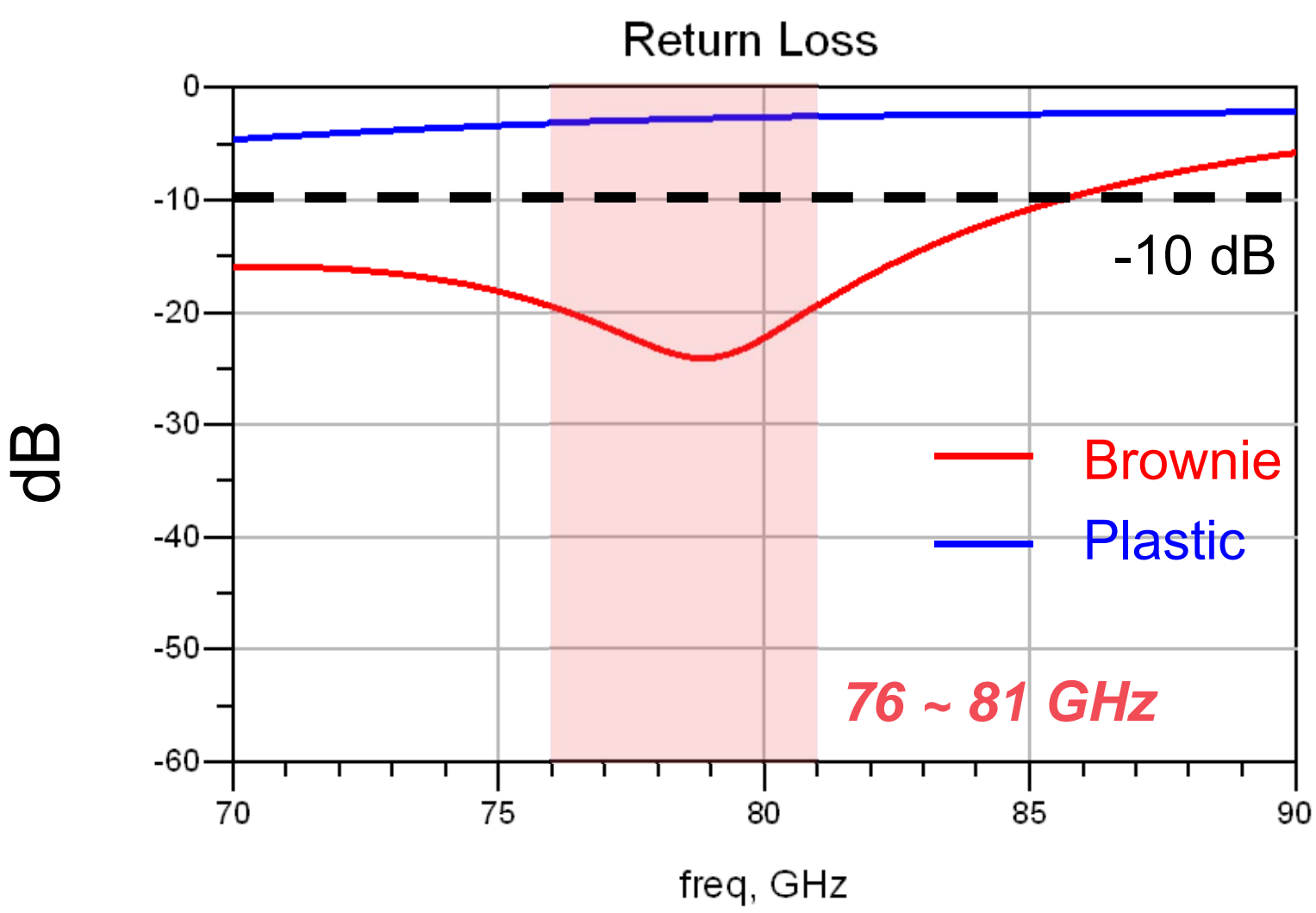
Pin Map Schematic



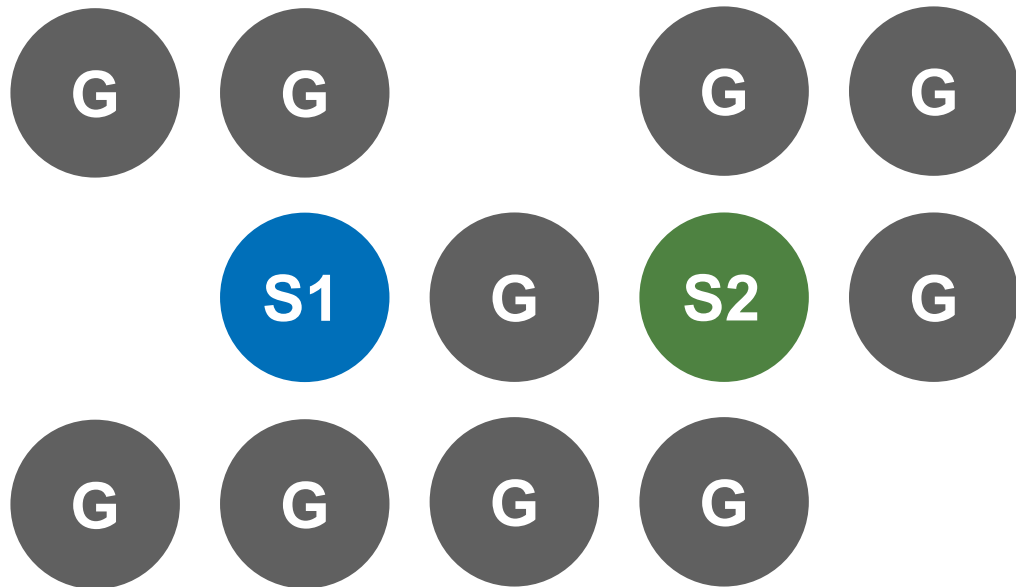
Device Pitch: 0.65 mm

Automotive Radar Applications

Advanced Driver Assistance Systems (ADAS) have been developed to create a more secure and comfortable driving environment. The operating bands are moving from 24 to 81 GHz for the different range of applications.



Pin Map Schematic

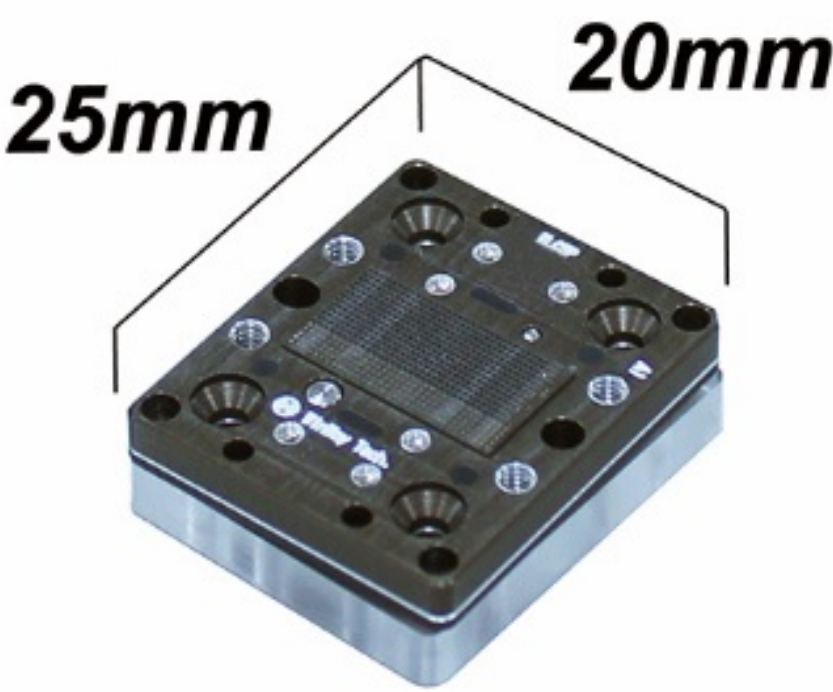


Device Pitch: 0.6 mm

Impedance	5G	WiGig	Automotive
Plastic Socket	30 ~ 36 Ω (Depends on Ball Map)		
Brownie Coaxial	40 ~ 50 Ω (Adjustable)		

Summary

The unique coaxial structure in WinWay's Brownie Coaxial Socket is a proven test solution for mmWave applications. It can also address the requirement for WLCSP Probe Head with fine pitch down to 350 um.



Package Size: 13.5 x 6.0 mm²
Pin Count: ~ 594
Device Pitch: 350 um