Qubit — Technical Sheet

Propagation Velocity

Propagation velocity in practical transmission systems is governed by dielectric permittivity and conductor geometry. By employing monocrystalline copper conductors and low-permittivity dielectrics such as PTFE, propagation velocity approaches a significant fraction of the theoretical limit defined by the speed of light.

Phase Behavior and Group Delay

Phase shift is an inherent linear property of transmission systems. What matters for signal integrity is the stability and predictability of group delay across frequency. Controlled geometry and dielectric behavior minimize dispersive effects and preserve temporal coherence.

Conductor Microstructure

Monocrystalline copper conductors exhibit extremely large crystal grains, reducing grain-boundary density. This minimizes electron scattering mechanisms and supports uniform conduction and mechanical stability.

Geometry and Shielding

Refined conductor geometry and advanced shielding architectures are employed to control electromagnetic field interaction, limit external interference, and stabilize propagation conditions.

Contacts and Boundary Conditions

Signal contacts are produced in-house using monocrystalline copper. RCA, XLR, Schuko, and IEC connectors are designed to maintain material continuity, stable contact pressure, and linear boundary behavior.

Design Considerations Summarized

Experimental geometries, extreme tolerance control, and boundary optimization.