Abstracts

Printed microwave couplers with thermal isolation

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This paper discusses design principles and measurements for three printed microwave couplers designed for thermal isolation. These couplers are intended to minimize heat leakage when used as connectors to a cryostat, thereby maintaining the low temperature for a longer period of time. The first coupler is designed for L-band operation and exhibits a 10 dB return loss and 2 dB insertion loss. The second design operates in the cellular band with a maximum return loss of 28 dB and insertion loss less than 0.5 dB. Simple thermal modeling suggests significant improvements over standard coaxial connections. The third coupler is designed for X-band with a 15.6 dB return loss and a measured insertion loss of a few tenths of a dB at 10 GHz.

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