Abstracts

A low cost miniature MMIC W-band transceiver with planar antenna

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This paper presents design and performance of a unique, low cost, miniature planar all MMIC W-band transceiver. The transceiver incorporates a planar 4-element circularly, polarized patch antenna, a monopulse comparator, two receiver channels, one for the sum and the other for a selectable difference in either azimuth or elevation. Two PIN diode switches provide the TR and difference channel switching. Each receiver has a balanced LNA, an image rejection/image enhancement subharmonic mixer and an IF amplifier. Test circuits are included for system calibration and verification. The double sided transceiver uses an optimal arrangement of quartz, alumina, and LTCC for an overall size less than 1 inch diameter and 0.25 inch thick. The antenna cross pole isolation is typically 15 dB with a monopulse null depth of 25 dB. The receiver gain is 30 dB with a 25 dB image rejection.

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