# Abstracts

## A W-band dielectric-lens-based integrated monopulse radar receiver (Dec. 1998, Part II [T-MTT])

*S. Raman, N.S. Barker and G.M. Rebeiz. "A W-band dielectric-lens-based integrated monopulse radar receiver (Dec. 1998, Part II [T-MTT])." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2308-2316.*

An integrated monopulse radar receiver has been developed for tracking applications at W-band frequencies. The receiver is based on dielectric-lens-supported, coplanar-waveguide-fed slot-ring antennas integrated with /spl times/2 uniplanar subharmonic mixers. The slot-ring antenna is capable of supporting two orthogonal modes offering the possibility of dual/multiple receive polarizations. The design center frequency is 94 GHz and the IF bandwidth is 2-4 GHz. The measured DSB conversion losses of the individual receiver channels range from 14.4 to 14.7 dB at an LO frequency of 45.0 GHz and an IF of 1.4 GHz. This includes the lens reflection and absorption losses, backside radiation, RF feedline loss, mixer conversion loss, and IF distribution loss. Excellent monopulse patterns are achieved with better than 45 dB difference pattern nulls using IF monopulse processing. This translates to submilliradian angular accuracy for a 24 mm aperture. Better than 25 dB nulls are possible over a 600 MHz bandwidth. The receiver is robust with respect to RF frequency.

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