Abstracts

A Ten Megawatt Radar Duplexer

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The high power duplexer array illustrated in Figure 1 consists of two balanced hybrid duplexers. Each duplexer is rated at 5 megawatts. The high power transmission is divided equally into two paths. Each path furnishes power to half an orthogonal-feed radar antenna which radiates 10 megawatts in a circular pattern. During high power transmission, the diode driver simultaneously supply forward bias to all T-R diodes. Since the conducting diodes offer a short-circuit across the collinear ports of the high power hybrids, the hybrids are able to route most of the power into the antenna. The leakage signals which escape the T-R short-circuits are terminated harmlessly in the dummy loads which are located on the low power hybrids. Total high power isolation is the sum of the T-R and hybrid isolations. Total high power transmission loss is the sum of the hybrid line and T-R short-circuit losses for each parallel path.

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