Abstracts

An active integrated retrodirective transponder for remote information retrieval-on-demand

R.Y. Miyamoto, Yongxi Qian and T. Itoh. "An active integrated retrodirective transponder for remote information retrieval-on-demand." 2001 Transactions on Microwave Theory and Techniques 49.9 (Sep. 2001 [T-MTT] (Mini-Special Issue on the 2001 IEEE Radio Frequency Integrated Circuit (RFIC) Symposium)): 1658-1662.

A retrodirective transponder based on a novel compact phase-conjugating mixer with conversion gain has been developed. The active circuit uses one port for both incoming and outgoing signals, enabling a reduction of circuit size, and the balanced structure provides suppression of undesired signals. By using a modulated local oscillator, the circuit can modulate the received signal in order to retransmit local information to the remote site. A microstrip antenna is integrated with the phase conjugator and the whole system was fabricated on a single substrate, enabling a one-card system. A four-element prototype array with 0.5/spl lambda//sub 0/ array spacing demonstrated excellent measured retrodirectivity. Additionally, a simplified binary-phase-shift-keying signal transmitted by the array is recovered successfully at the source location, demonstrating great potential for remote tagging and wireless sensor applications.

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