Abstracts

A Monolithic Integrated Millimeter Wave Transmitter for Automotive Applications

A. Stiller, E.M. Biebl, J.-F. Luy, K.M. Strohm and J. Buechler. "A Monolithic Integrated Millimeter Wave Transmitter for Automotive Applications." 1995 Transactions on Microwave Theory and Techniques 43.7 (Jul. 1995, Part II [T-MTT] (Special Issue on Emerging Commercial and Consumer Circuits, Systems, and Their Applications)): 1654-1658.

An integrated transmitter at 80 GHz is presented. This device finds many applications in civil sensor and communication systems, and is employed in automotive applications. The device consists of an IMPATT diode and a slotted patch resonator. The resonator acts simultaneously as an antenna. The resonator impedance seen by the IMPATT diode is calculated by means of a full wave analysis and the matching of the IMPATT diode is investigated using a large signal analysis. The transmitter devices have been fabricated employing a SIMMWIC (silicon millimeter wave integrated circuit) fabrication process and deliver a radiated power of up to 1 mW at 79 GHz. An excellent carrier-to-noise ratio of 81.7 dBc/Hz at an offset of 100 kHz has been achieved. The deviation of the measured values from the theoretically predicted values of frequency and power is -5.9% and -1.5 dB, respectively.

❑ Return to main document.