Abstracts

The IRIDIUM® K-Band MMIC Chip Set

B.T. Agar, Jr., D.S. Bowser, K.V. Buer, D.W. Corman and C.D. Grondahl. "The IRIDIUM® K-Band MMIC Chip Set." 1995 Microwave and Millimeter-Wave Monolithic Circuits Symposium Digest 95.1 (1995 [MCS]): 21-24.

A set of 16 K-band MMIC chips has been developed for the satellites in the IRIDIUM® communications program. Both high power and low noise 0.25 µm PHEMT technologies were used to develop this MMIC chip set. The MMICs consist of a broad band frequency doubler, up and down converters, high power amplifiers, variable gain amplifiers, low noise amplifiers, and an IF amplifier. A noise figure of less than 3.3 dB at 29 GHz and output power of over 4 watts at 23.3 GHz were achieved with no RF tuning. This paper describes statistical device characterization, design details, measured results, and integration of these MMIC chips into a high density multi-chip module (MCM). downlink frequency of 19.5 GHz. The satellite to satellite link was designed to transmit and receive at a frequency of 23.3 GHz. Each link had an IF frequency of 750 MHz. Two LNA MMICS were designed with greater than 12 dB of gain to establish the front-end noise figure of less than 3.4 dB at 23.3 GHz and 29.2 GHz. The 23.3 GHz LNA includes an input blanking switch to protect the LNA from high power reflections off the antenna during transmit mode.

❑ Return to main document.