Abstracts

Sixty-GHz-band Ultra-Miniature Monolithic T/R Modules For Multimedia Wireless Communication Systems

K. Ohata, T. Inoue, M. Funabashi, A. Inoue, Y. Takimoto, T. Kuwabara, S. Shinozaki, K. Maruhashi, K. Hosaya and H. Nagai. "Sixty-GHz-band Ultra-Miniature Monolithic T/R Modules For Multimedia Wireless Communication Systems." 1996 Transactions on Microwave Theory and Techniques 44.12 (Dec. 1996, Part II [T-MTT] (1996 Symposium Issue)): 2354-2360.

The development of 60 GHz-band ultra-miniature FM/frequency-shift keying (FM/FSK) transmitter/receiver modules fabricated with a complete monolithic-microwave integrated circuits (MMIC) chip set, including dielectrically stabilized fundamental-frequency oscillators for multimedia wireless communication systems, is reported. The 0.9 cc transmitter module, which consists of a voltage controlled oscillator (VCO) and two power amplifiers, exhibits 11.5 MHzJV modulation sensitivity, 10.2 dBm output power, and -2.4 ppm/° C frequency stability. With the receiver module, which consists of low noise amplifier (LNA), a mixer, and a local oscillator (LO), 5.4 dB double-side band (DSB) noise figure with 10.8 dB downconversion gain has been achieved. The 60 GHz-band monolithic dielectric-resonator (DR) stabilized oscillators offer a practical approach to ultra-miniature transmitter/receiver modules for high-speed wireless LAN systems with data rates greater than 10 Mbps and for video-signal and compressed HDTV-signal (MUSE) transmission systems.

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