Abstracts

The design of T/R module for X-band APAA system used in satellite communications

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This paper is concerned with the design of the X-band T/R module that is a key unit of the active phased array antenna (APAA) system for mobile satellite communications. In this module, the TX-part is primarily composed of 3-stage power amplifier having 4-watt output power, microstrip 4-bit phase shifter (MICPS) controlling 16 phase state and thermal compensation and power detection circuit. And, the RX-part composed of LNA using hetero junction FETs, MICPS and microstrip hairpin type BPF for TX power rejection. From the standpoint of mechanic design, focus is given to the T/RX isolation that is very important to prevent LNA saturation by TX leakage power. The T/R module achieved 35.6 dBm minimum P/sub 1/ dBc with 22 dB linear gain in TX-part, and 26.5 dB linear gain with 1.0 dB noise figure in RX-part.

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