

Development of integrated Receiver & Transmitter module in millimeter-wave band for wide band wireless access system

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Results

The new constructions of millimeter wave band pass and band stop filters were designed. Filters are builded on the cheap plastic metalized substrates and are suitable for integration into the all-planar millimeter wave transceivers. The new constructions of hybrid integrated low-noise millimeter wave oscillators for frequency up- and down converters were designed. Oscillators can be used in the wireless broadband access system. The new constructions of all-planar orthomode transducers were designed and investigated both theoretically and experimentally. These parts enables transmitter and receiver to operate simultaneously into the common antenna with the difference of their working power levels, that exceeds 110 dB.

The experimental model of all hybrid integrated 26 GHz transceiver was designed and produced. It has 4,5 dB max receiver noise figure, 30 mW transmitter output power level and cross-polar isolation 30 dB min. Transceiver has power consumption less than 6 W (12 V DC), dimensions 40x100x100 mm and weight less than 650 g.