Abstracts

Satellites and Cables in the Future Marketplace and the Role of MMIC

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Satellite communications began in 1965 with a small, lightweight INTELSAT I satellite called Early Bird, placed in the geostationary orbit at an altitude of 22,300 miles above the equator. Its antenna was a simple dipole that generated a 360° toroidal (doughnut) beam pattern, only 17° of which intercepted the earth yielding only modest performance capabilities; viz. a receive gain-to-noise temperature ratio (G/T) of -20 dB/K and an e.i.r.p. toward the earth of only 11 dBw. It carried only one wideband transponder operating at the C-band frequencies of 6 GHz up, and 4 GHz down. This was sufficient to support 240 voice circuits between large 30-m-diameter aperture antennas with 63-dB gain and a G/T of 39 dB/K. These large earth stations were very expensive, a fact that would ultimately result in a lower bound on the cost of delivery of telephony service.

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