

Joint Transceiving Scheme for Multi-beam GEO Satellite Communications System

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Abstract—In multi-beam satellite communication systems, users suffer from 3dB power attenuation in beam-edge area. This problem also exists in terrestrial cellular network. To solve this problem, terrestrial system employs joint transceiving that makes adjacent cells transmit signals together. The purpose of this paper is to propose a method of joint transceiving by compositing beams for satellite systems. The equal-gain combination algorithm is presented to simplify beams from component beams. Then we propose a joint transceiving scheme based on component beams based on a simplified processing algorithm. Simulation results show that SIR of users in beamedge increases by 6dB when using the joint transceiving scheme.

Keyword—Satellite, Multi-beam, beamforming, Least Mean Square, joint transceiving



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