

Title (en)
PHOTONIC INTEGRATED CIRCUIT FOR OPTICAL CDMA

Title (de)
PHOTONISCHE INTEGRIERTE SCHALTUNG FÜR OPTISCHES CDMA

Title (fr)
CIRCUIT PHOTONIQUE INTEGRE POUR AMRC OPTIQUE

Publication
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Application
EP 00918287 A 20000322

Priority

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Abstract (en)
[origin: WO0070804A1] An optical CDMA system is implemented at least partially within a photonic integrated circuit. A broad-spectrum light source is modulated with data to be transmitted. The light source is spatially dispersed, for example using a diffraction grating, and passed through a spatial spectrum-coding mask embodied within the photonic integrated circuit. The dispersed frequencies of the encoded modulated light beam are then recombined to provide a modulated, encoded spread spectrum optical signal for injection into an optical fiber or another optical communication system. Received light is split into two components and provided to a pair of complementary decoders. Within each of the complementary encoders, the received portion of the light beam is spatially dispersed and passed through a spatial decoding mask. Both the dispersion element and the mask are embodied within the photonic integrated circuit. One of the decoders includes a spatial decoding mask that embodies the spatial encoding function U of the original transmitting mask and the other, complementary decoder includes a complementary function U*. Within each of the complementary decoders the spatially spread light signals are recombined after passing through the decoding masks. The signals passing through the complementary decoding masks are then provided to different inputs of a differential detector and the data originally modulated within the light is recovered.

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