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United States Patent
Davies

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Non-linear subcarrier predistortion and upconversion system

Abstract

A method and apparatus for harmonically upconverting a phase and/or amplitude modulated subcarrier signal to a higher frequency through a non-linear optical link is disclosed. The method requires that a bandpass signal, with a carrier frequency at a submultiple of the desired radio transmission frequency, be frequency translated in a non-linear two-port device. To avoid the inherent distortion inflicted on the information signal in harmonic upconversion, a predistortion technique is outlined. This consists of phase compression in the case of a phase modulated signal, amplitude scaling in the case of amplitude only and combined phase-amplitude predistortion for QAM type signals. With predistortion on the subcarrier signal input to the non-linear two-port, the resulting upconverted signal may be transmitted in a standard form suitable for demodulation at the signal destination without special equipment.

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Field of Search: 359/326,327,328,329,330,331,332

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