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**Tellado et al.**

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- (54) **PEAK TO AVERAGE POWER RATIO REDUCTION**
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- (52) **U.S. Cl.** ..... 375/296; 375/295; 375/297; 375/298; 375/316
- (58) **Field of Search** ..... 375/296, 297, 375/298, 295, 316; 330/129

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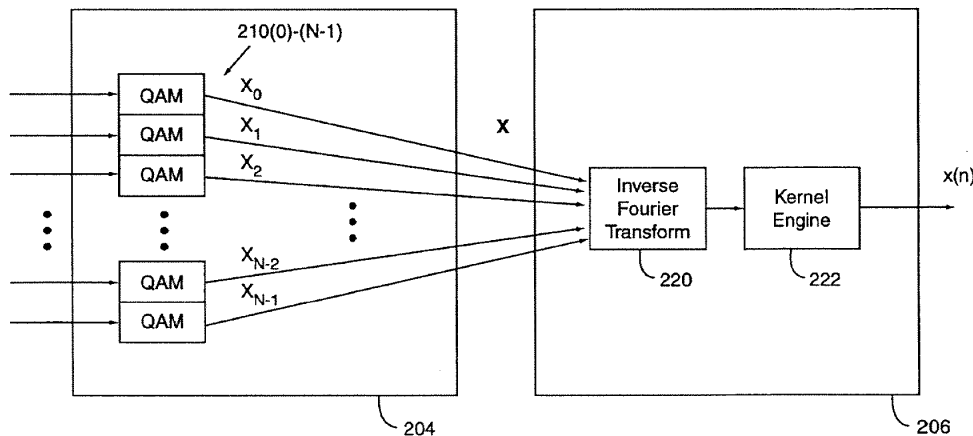
(57) **ABSTRACT**

The present inventions provide methods and systems for reducing the peak to average power ratio of a multi-carrier signal. Reducing the peak to average power ratio of a signal ensures that amplifiers and transmitters are not saturated, causing loss of data. Further, reducing peak to average power ratios reduces the consumption of power during transmission. Peak to average power ratios are reduced by selecting a subset of a plurality of frequencies that make up a multi-carrier symbol. Peak reduction signals, carried at the subset of frequencies, are computed to reduce the PAR of the symbol. In one embodiment, a kernel is generated that has components in the subset of frequencies. The kernel is adjusted to negate one or more peaks in the multi-carrier symbol. The adjustment of the kernel creates a subset of signals of a plurality of signals centered at the plurality of frequencies. Negation of the peaks may be performed iteratively to remove any peaks produced during prior peak reduction operations.

40 Claims, 13 Drawing Sheets

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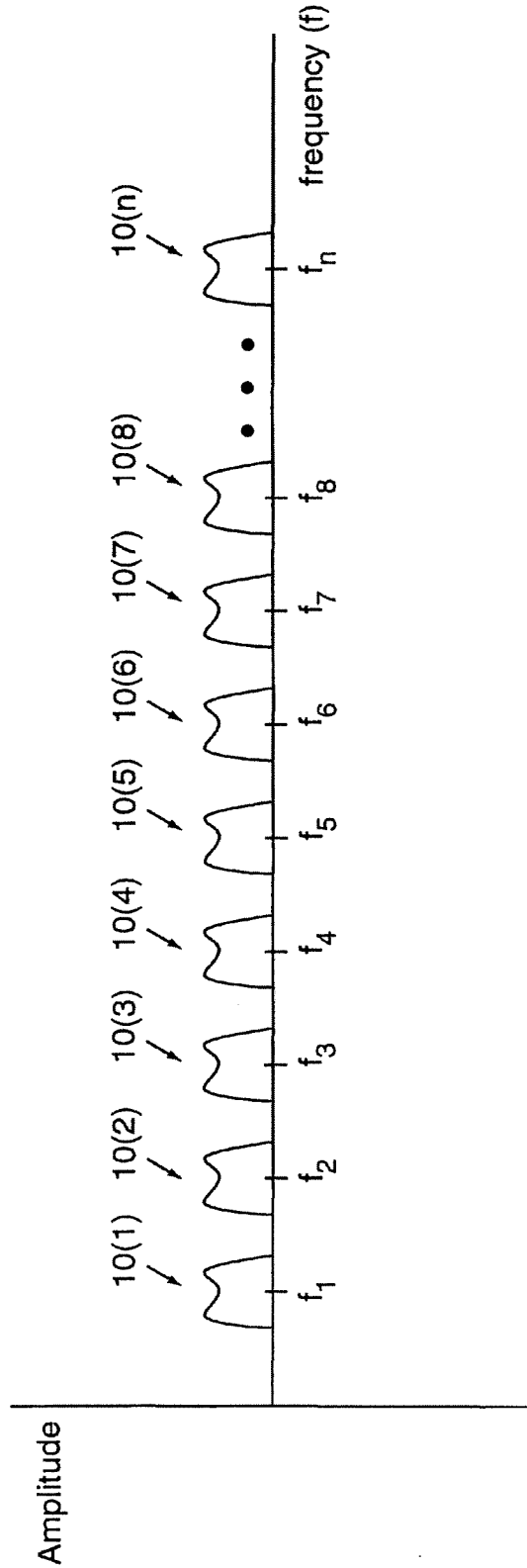


Fig. 1

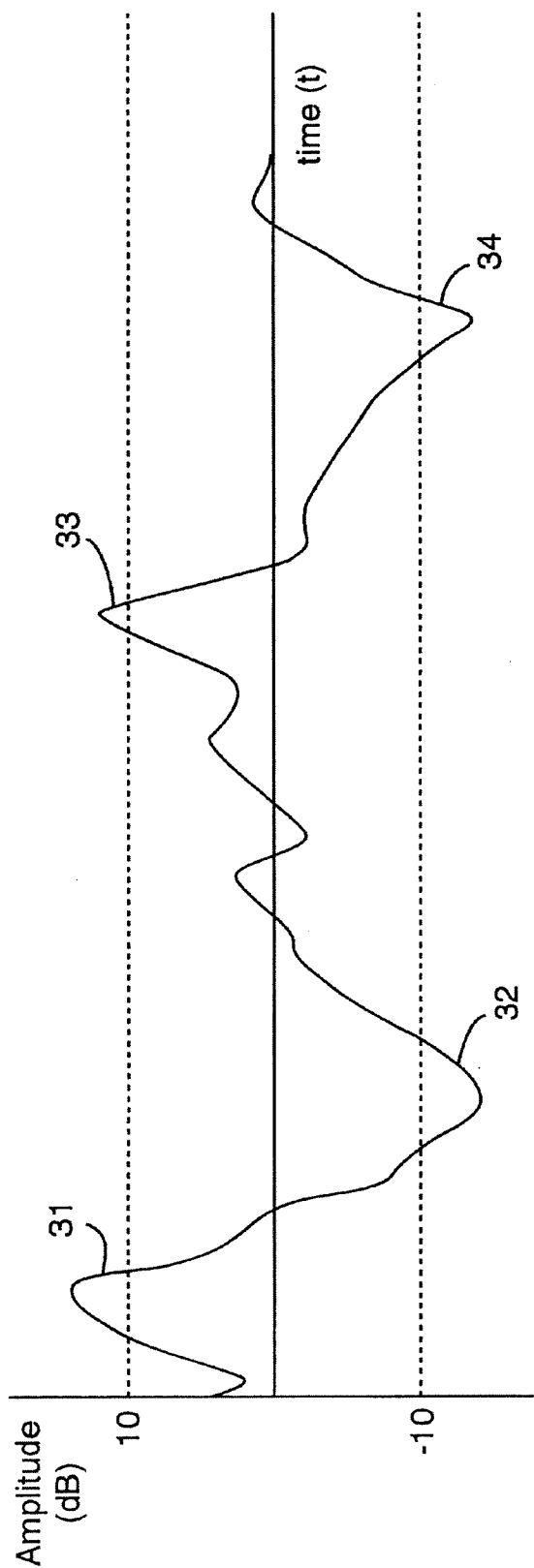


Fig. 2

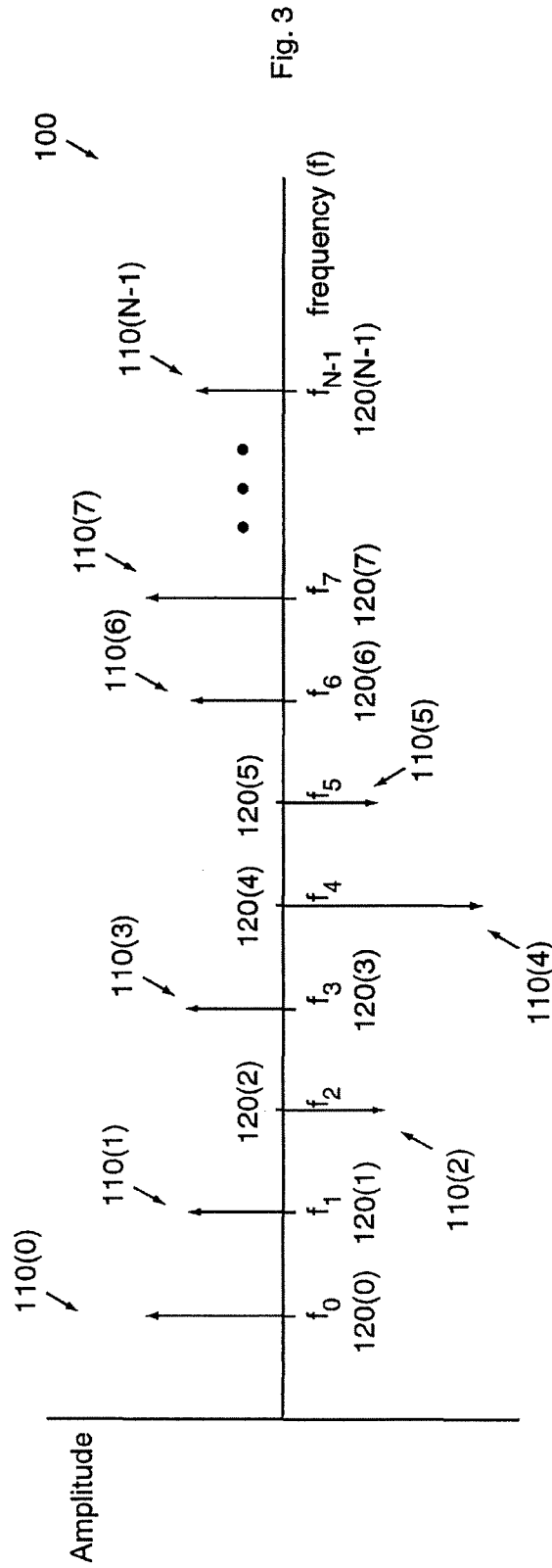


Fig. 3

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