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Gesbert et al.

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(54) **MODE SELECTION FOR DATA TRANSMISSION IN WIRELESS COMMUNICATION CHANNELS BASED ON STATISTICAL PARAMETERS**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 553 days.

This patent is subject to a terminal disclaimer.

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(52) **U.S. Cl.** **714/774**; 714/704; 370/252; 370/345; 455/67.13; 455/102
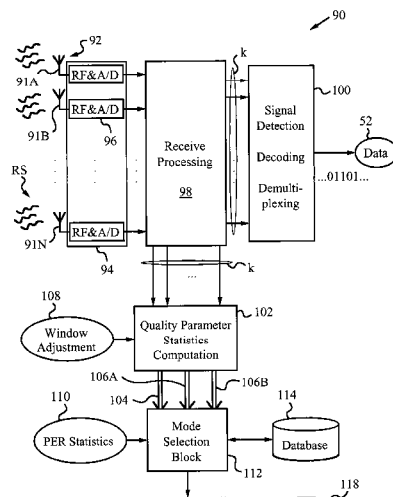
(58) **Field of Search** 714/774, 704, 714/708, 748, 751; 370/252, 345, 206; 375/261, 259, 267; 455/102, 67.11, 67.13

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(57) **ABSTRACT**

A method and communication system for selecting a mode for encoding data for transmission in a wireless communication channel between a transmit unit and a receive unit. The data is initially transmitted in an initial mode and the selection of the subsequent mode is based on a selection of first-order and second-order statistical parameters of short-term and long-term quality parameters. Suitable short-term quality parameters include signal-to-interference and noise ratio (SINR), signal-to-noise ratio (SNR), power level and suitable long-term quality parameters include error rates such as bit error rate (BER) and packet error rate (PER). The method of the invention can be employed in Multiple Input Multiple Output (MIMO), Multiple Input Single Output (MISO), Single Input Single Output (SISO) and Single Input Multiple Output (SIMO) communication systems to make subsequent mode selection faster and more efficient. Furthermore the method can be used in communication systems employing various transmission protocols including OFDMA, FDMA, CDMA, TDMA.

61 Claims, 4 Drawing Sheets
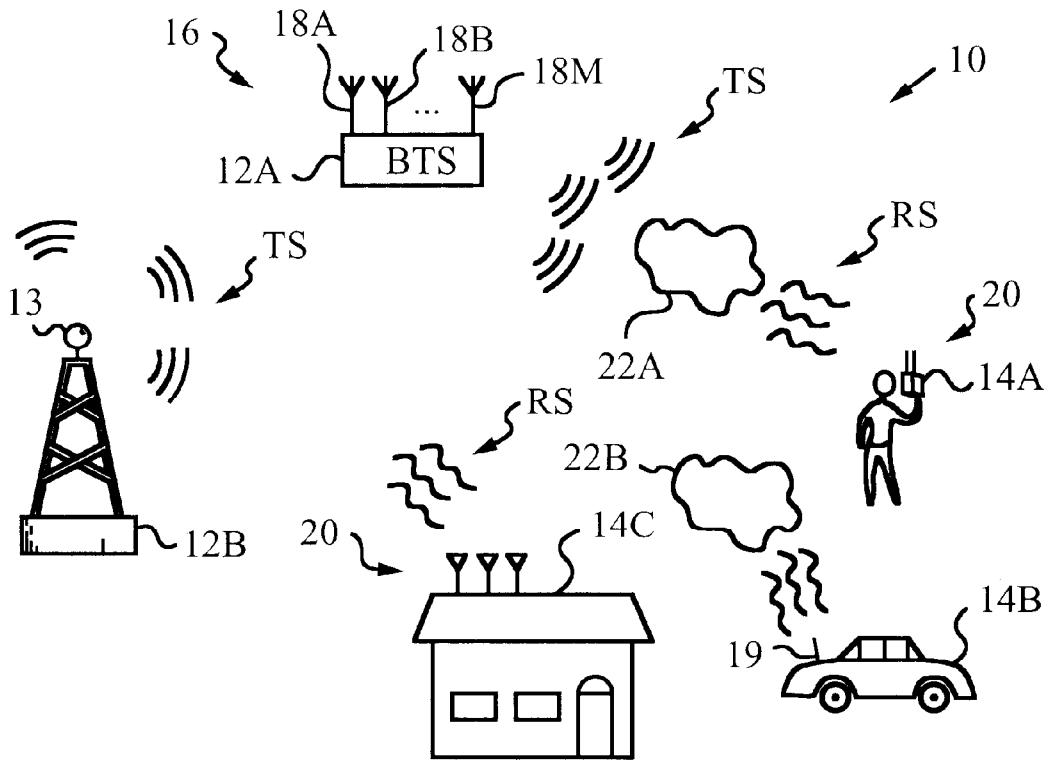
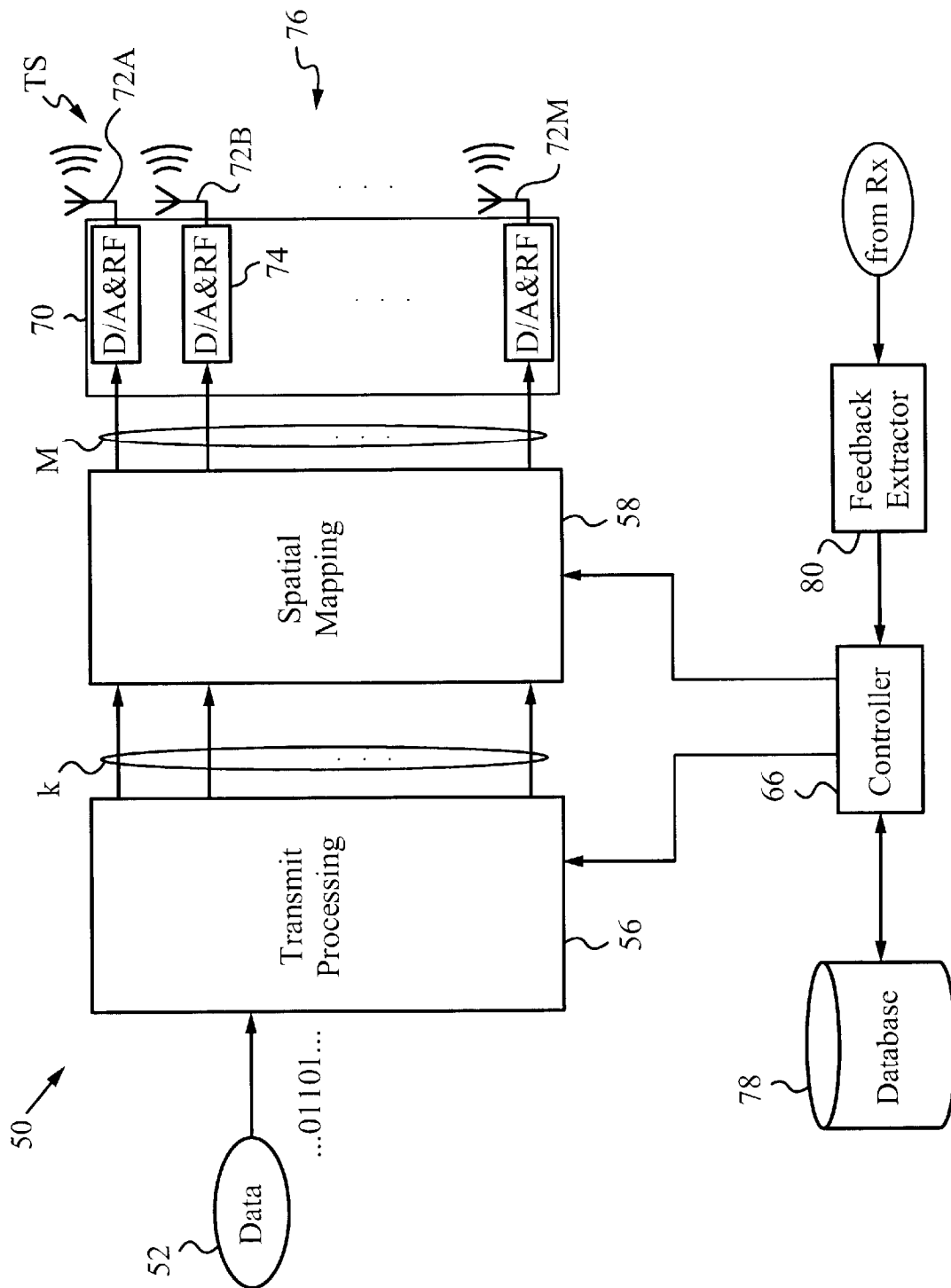**FIG. 1**
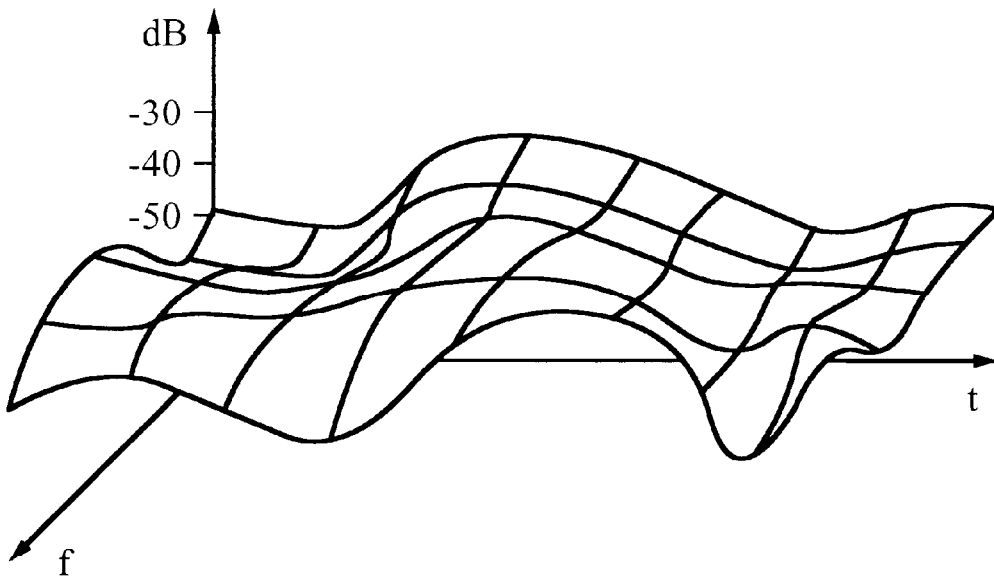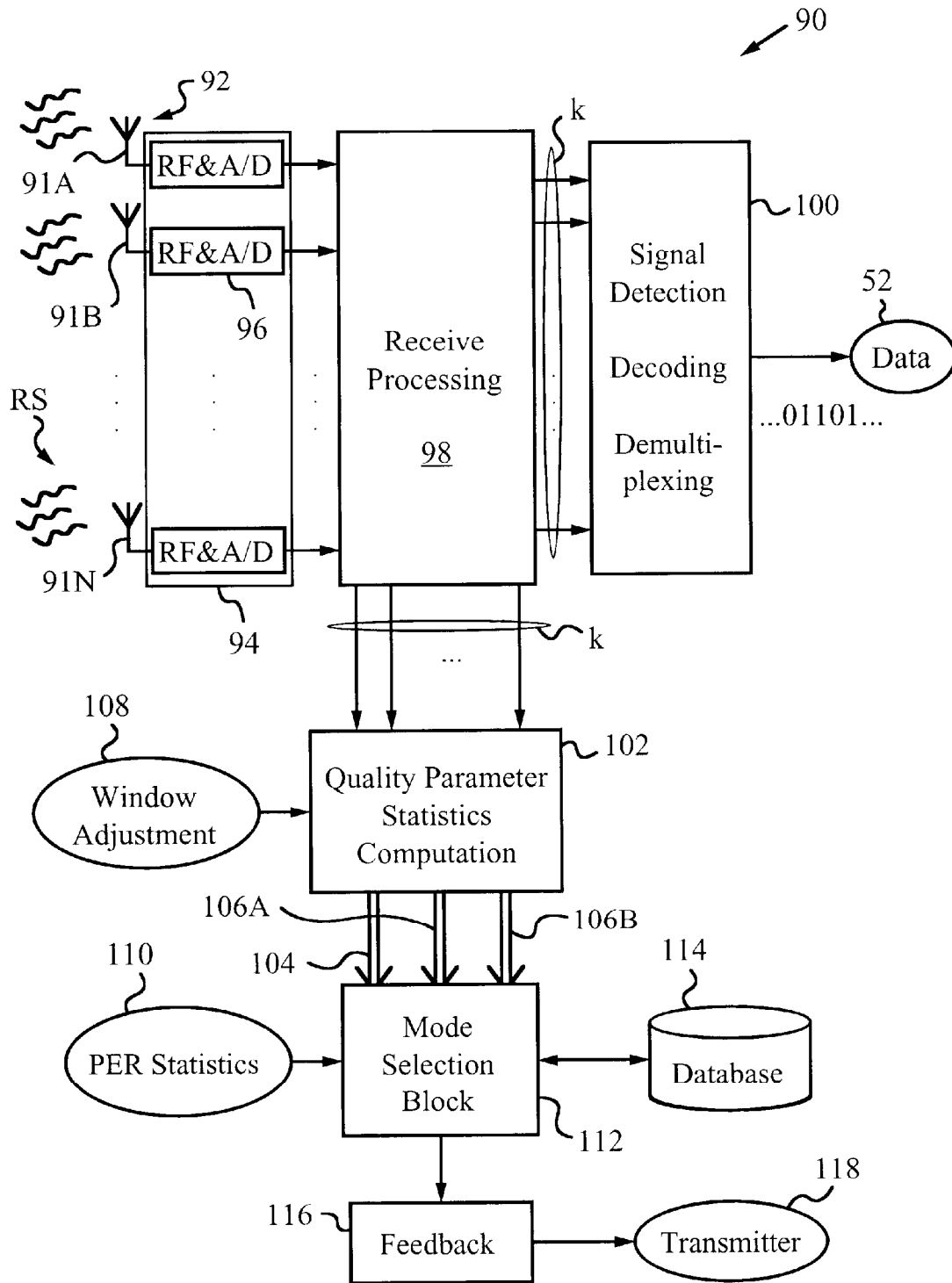

FIG. 2

FIG. 3

FIG. 4

FIG. 5

DOCKET ALARM
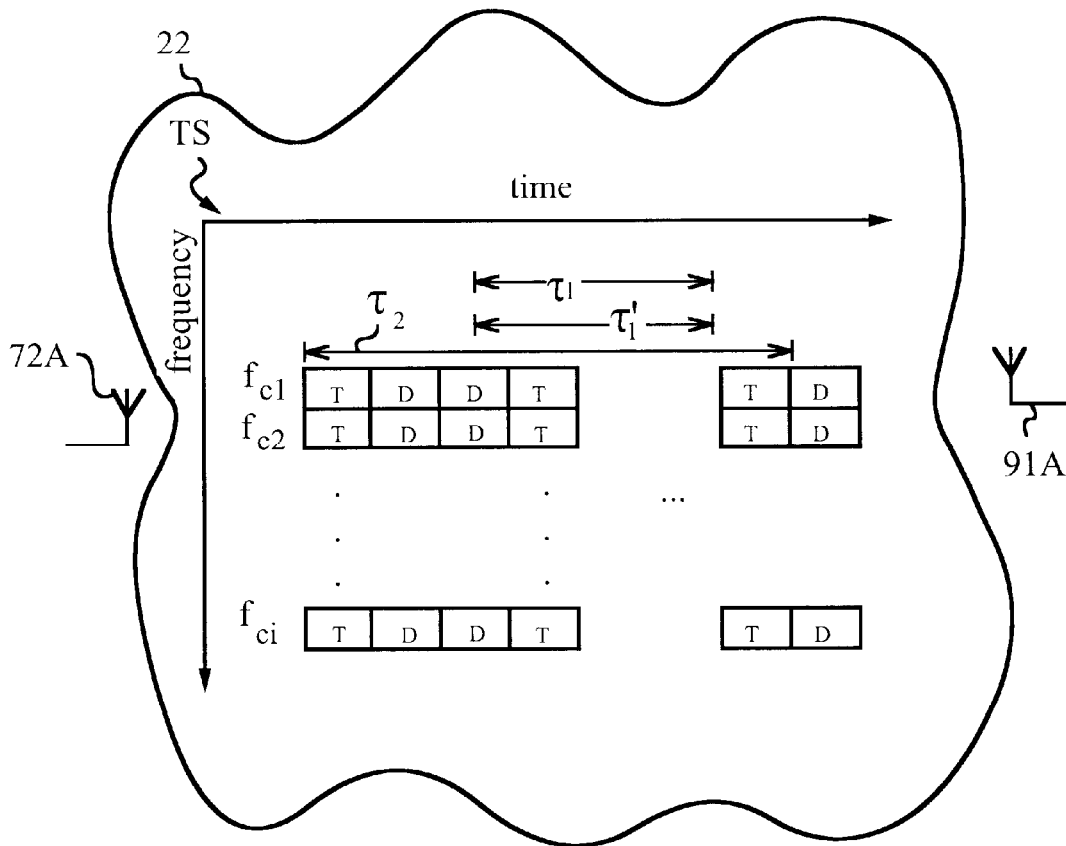
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