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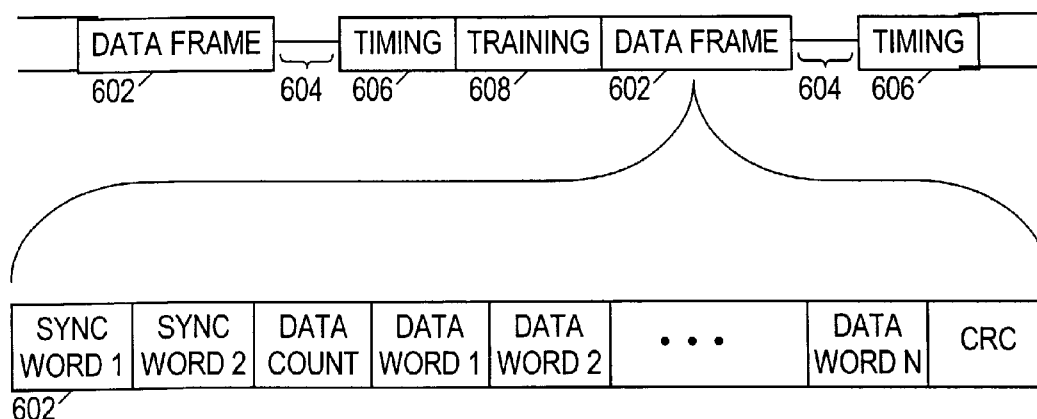
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(54) Title: BURST QAM DOWNHOLE TELEMETRY SYSTEM



(57) Abstract: A downhole telemetry system that transmits a burst-QAM uplink signal to the surface of the well is disclosed. In a preferred embodiment, a downhole instrument coupled to a pair of conductors in a wireline or composite tubing string transmits a burst-QAM uplink signal to a surface system. The burst-QAM signal preferably comprises a series of data frames (602) carrying telemetry data. Each data frame is preferably preceded by a quiet interval (604) (when no signal is present), a timing synchronization sequence (606), and a training sequence (608). The timing synchronization sequence is designed for easy timing recovery at the surface, and the training sequence is designed to aid the adaptation of the equalizer. The data frame itself preferably includes a synchronization field, a data count, and a checksum in addition to the data. Direct digital synthesis is preferably employed to modulate the uplink signal.



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