

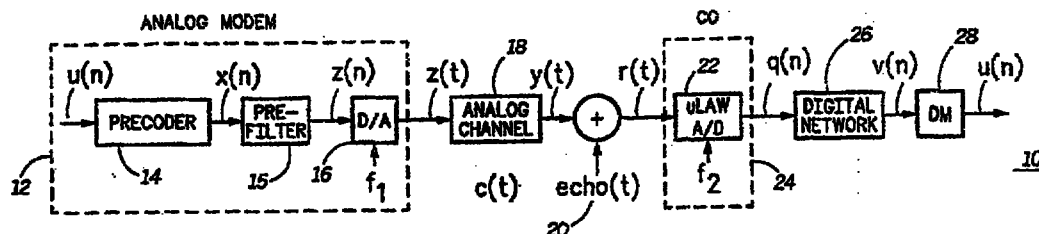
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(54) Title: SYSTEM, DEVICE AND METHOD FOR PCM UPSTREAM TRANSMISSION UTILIZING AN OPTIMIZED TRANSMIT CONSTELLATION



(57) Abstract

A transmitter in an analog pulse code modulation (PCM) modem (12) which transmits analog levels over an analog channel (18) to produce constellation points at a quantization device (26), wherein the constellation points correspond to groups of data bits to be transmitted to a digital PCM modem (28), the transmitter includes: a transmitter device which selects for each group of data bits to be transmitted a constellation point corresponding to the group of data bits and transmits over the analog channel a level that will produce at the input to the quantization device the selected constellation point; wherein the constellation points are chosen from a transmit constellation consisting of a plurality of non-uniformly spaced constellation points that have substantially equivalent, minimized error probability, constellation point to constellation point.