



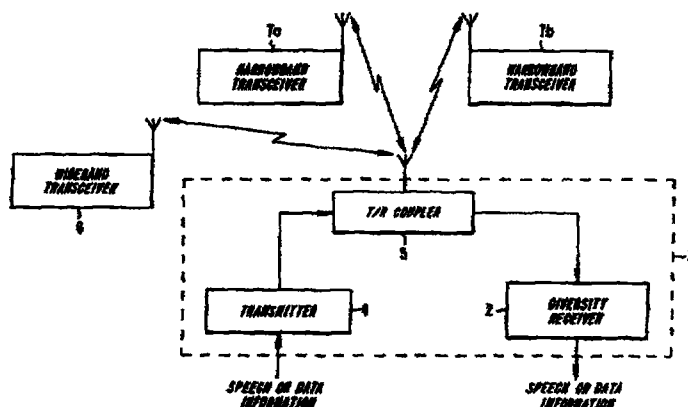
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(54) Title: DUAL-MODE RADIO RECEIVER FOR RECEIVING NARROWBAND AND WIDEBAND SIGNALS



(57) Abstract

A radio receiver for a radio operable in a radio communication system utilizing either a wideband standard such as GSM or a narrowband standard such as IS-54. The radio receiver has a wideband mode for demodulating wideband signals and a narrowband mode for demodulating narrowband signals. The radio receiver uses a wideband filter apparatus having a wide filter bandwidth adapted to the wideband signals for filtering both the wideband and narrowband signals. When in the narrowband mode, a digitizer digitizes the filtered signals containing the narrowband signal and produces digital signals having amplitude and phase signals corresponding to the filtered signals. A digital signal processor is used to frequency-shift the digital signals so as to shift the narrowband signals to the center frequency of the wideband filter apparatus. The frequency-shifted narrowband signals are then filtered to select the centered narrowband signals and the narrowband signals are then demodulated. The digital signal processor is adapted to frequency-shift a plurality of different narrowband signals at different radio channel frequencies and to demodulate the different narrowband signals to provide for diversity combination.