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Surprenant et al.

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(54) **ACOUSTIC MODULATION PROTOCOL**

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H04L 27/00 (2006.01)
H04L 25/38 (2006.01)
H04S 1/00 (2006.01)

(52) **U.S. Cl.**
CPC **H04S 1/007** (2013.01)
USPC **367/137; 375/141; 375/370; 375/326**

(58) **Field of Classification Search**
None
See application file for complete search history.

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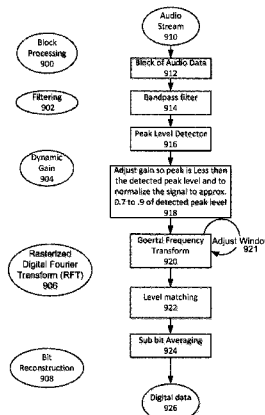
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(57) **ABSTRACT**

Exemplary embodiments provide a computer-implemented method for generating a modulated acoustic carrier signal for wireless transmission from a speaker of a transmit device to a microphone of a receive device. Aspects of the exemplary embodiments include converting a message to binary data; modulating one or more selected frequencies for one or more acoustic carrier signals based on the binary data to generate one or more modulated acoustic carrier signals; filtering the one or more modulated acoustic carrier signals to remove any unintended audible harmonics created during modulation, including; equalizing the modulated acoustic carrier signal to pre-compensate for known degradations that will occur further along a signal path; setting a level of the modulated acoustic carrier signal for the intended application; and storing the modulated acoustic carrier signal in a buffer for subsequent output and transmission by the speaker.

25 Claims, 16 Drawing Sheets



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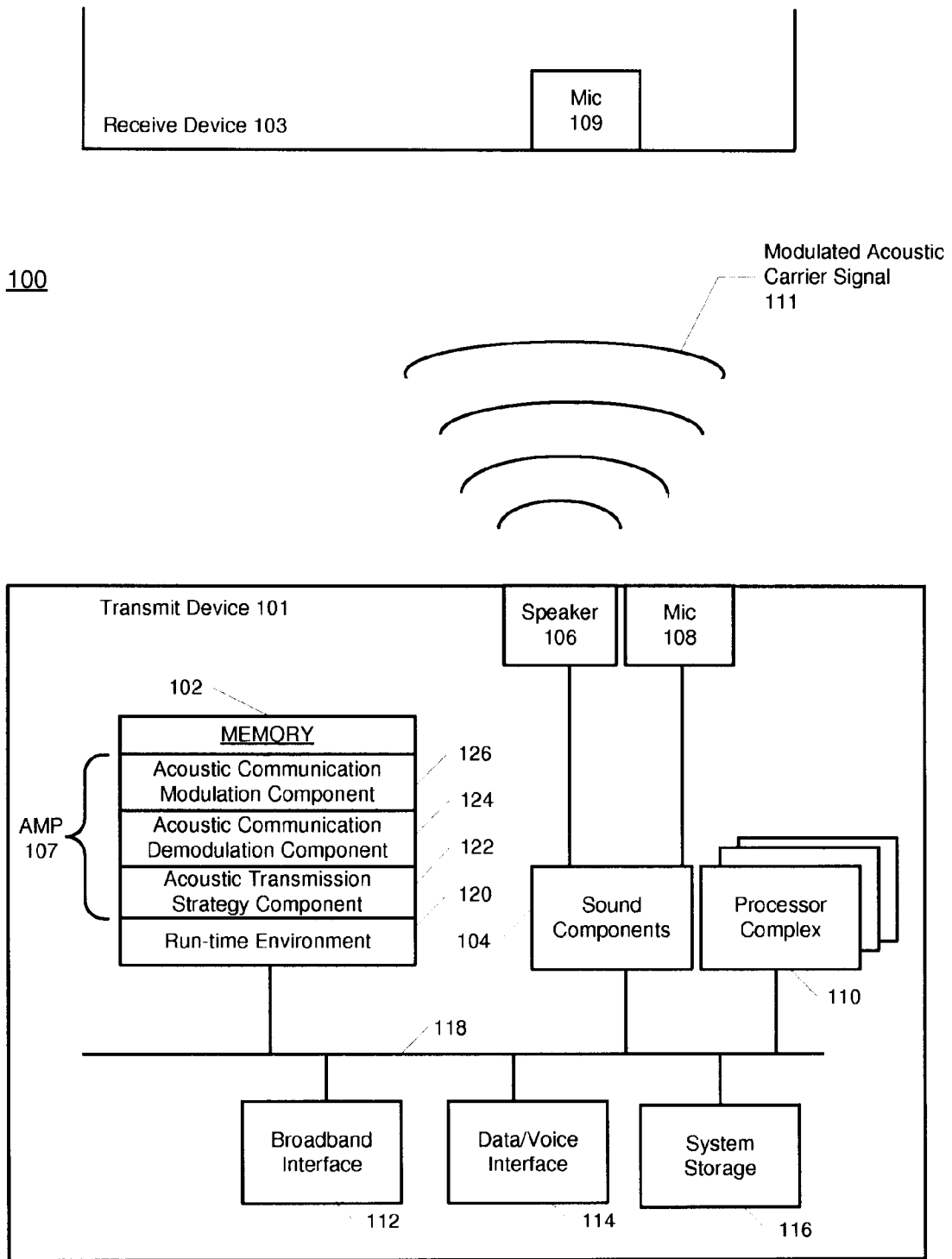


FIG. 1

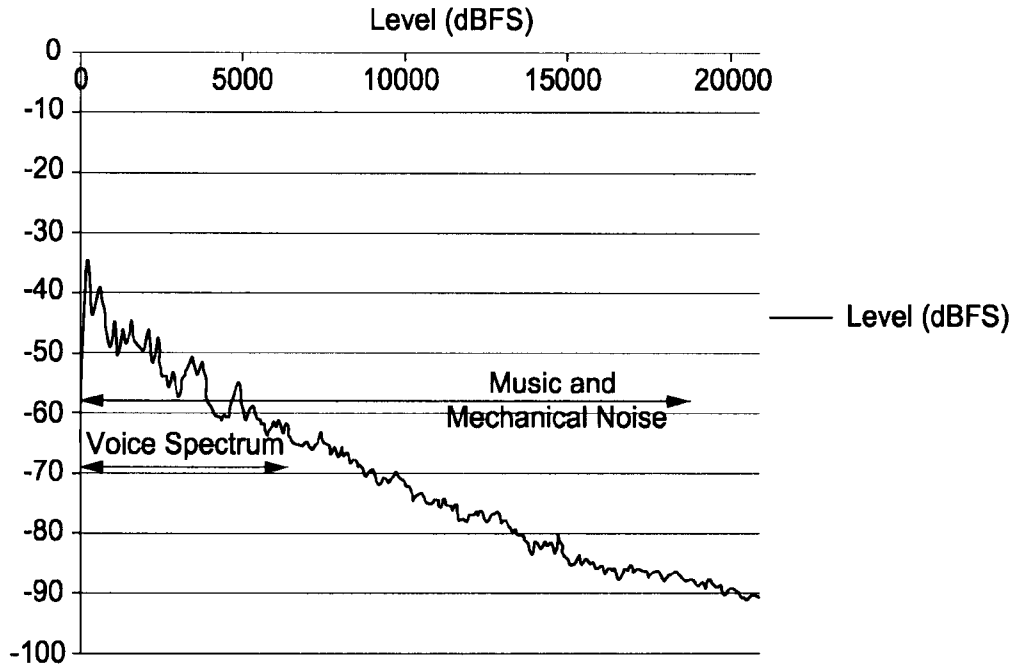


FIG. 2A

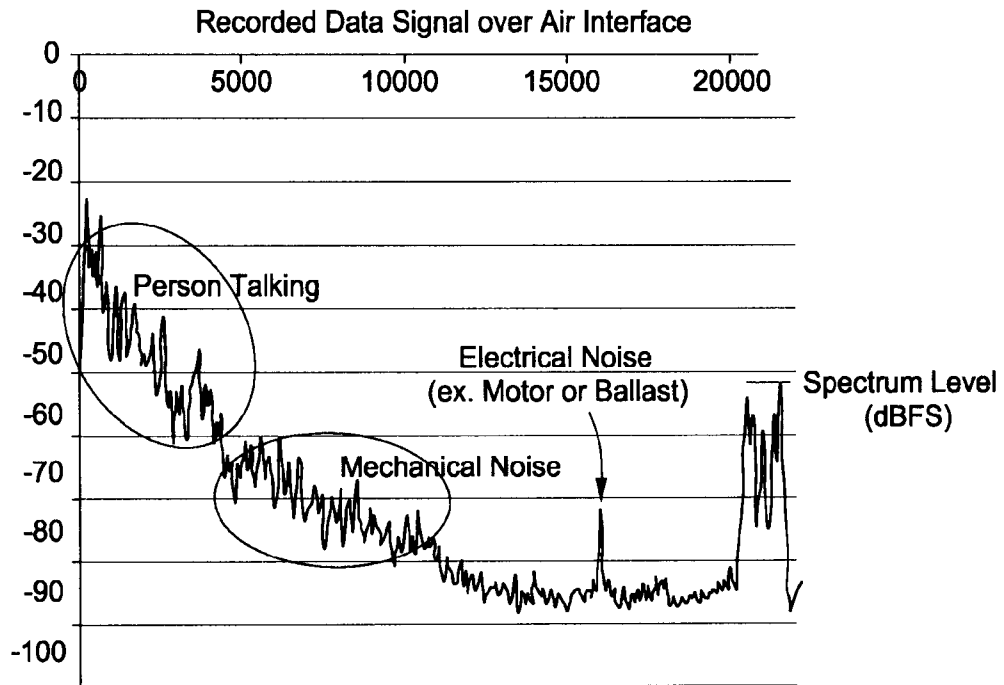


FIG. 2B

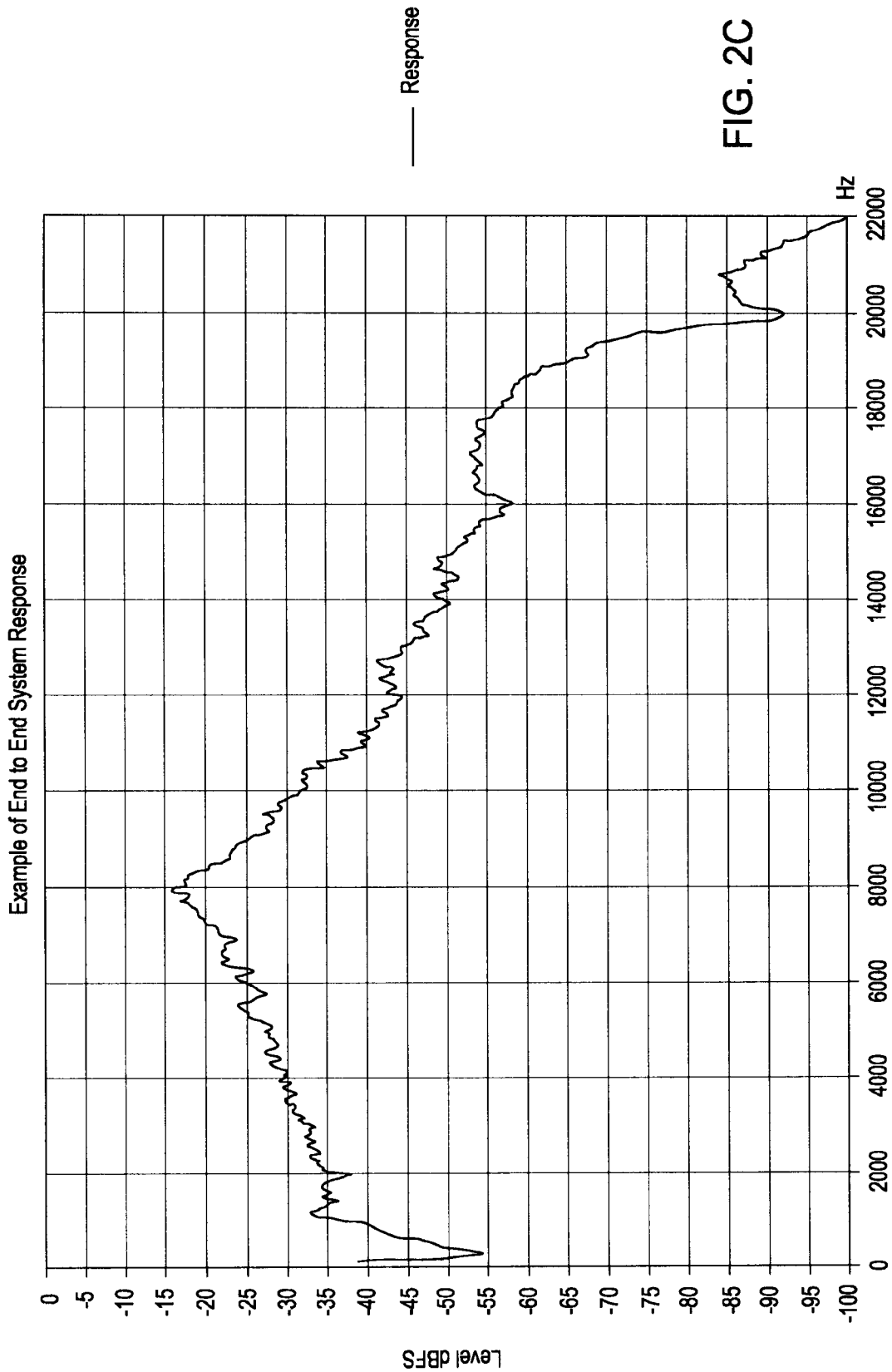


FIG. 2C

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