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Billhartz et al.

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(54) **WIRELESS COMMUNICATIONS SYSTEM INCLUDING A WIRELESS DEVICE LOCATOR AND RELATED METHODS**

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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 0 days.

This patent is subject to a terminal disclaimer.

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(51) **Int. Cl.**
H04Q 7/20 (2006.01)

(52) **U.S. Cl.** **455/456.2**; 455/456.1; 455/456.5; 455/456.6; 342/457; 370/328

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See application file for complete search history.

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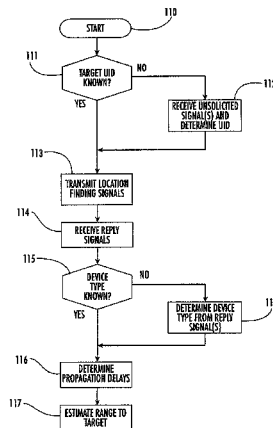
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(57) **ABSTRACT**

A wireless communications system may include a plurality of wireless communications devices and a wireless device locator. More particularly, the wireless device locator may include at least one antenna and a transceiver connected thereto, and a controller for cooperating with the transceiver for transmitting a plurality of location finding signals to a target wireless communications device from among the plurality thereof. The target device may transmit a respective reply signal for each of the location finding signals. Additionally, the controller may also cooperate with the transceiver for receiving the reply signals, and it may determine a propagation delay associated with the transmission of each location finding signal and the respective reply signal therefor based upon a known device latency of the target device. As such, the controller may estimate a range to the target device based upon a plurality of determined propagation delays.

25 Claims, 9 Drawing Sheets



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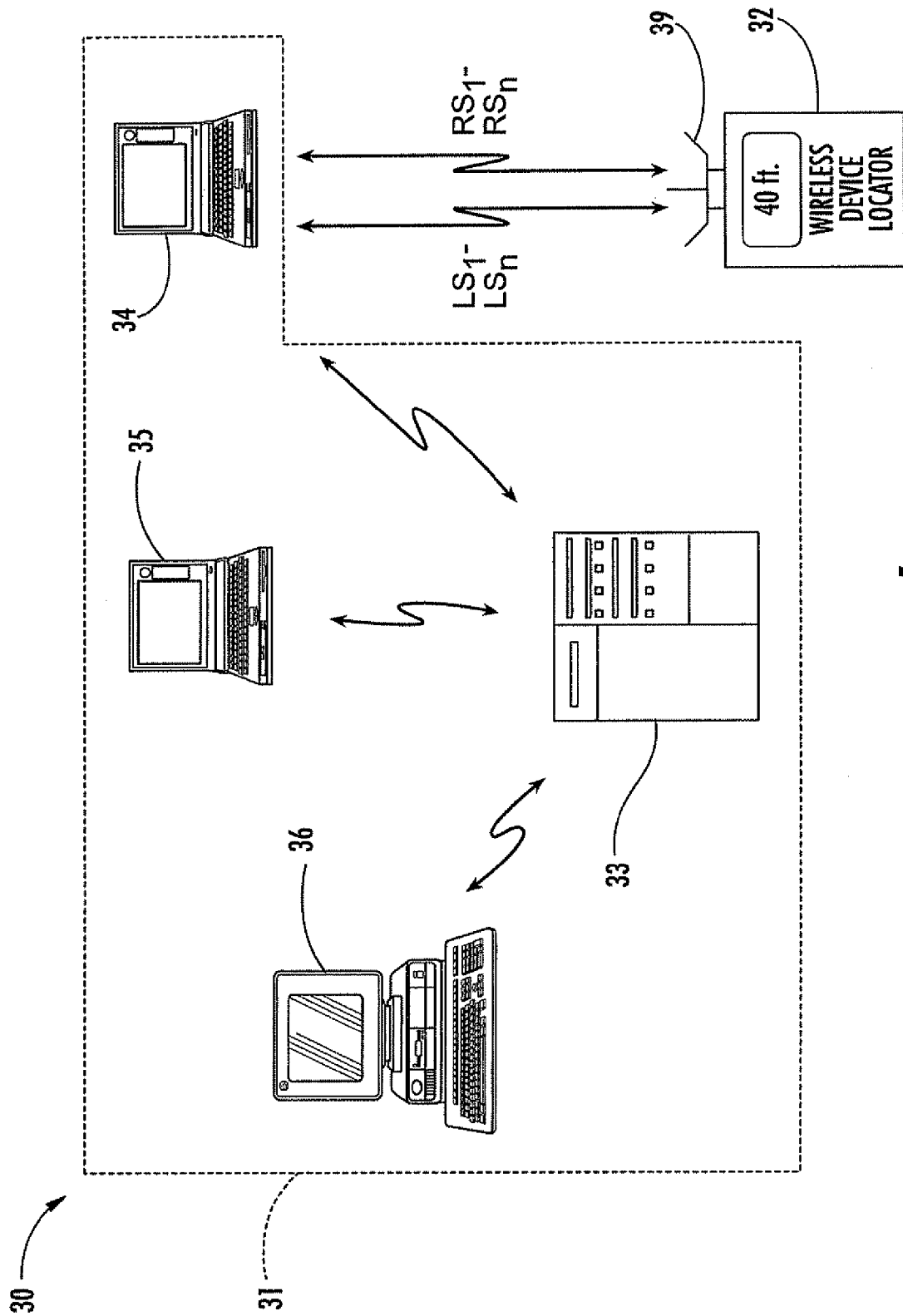


FIG. 1

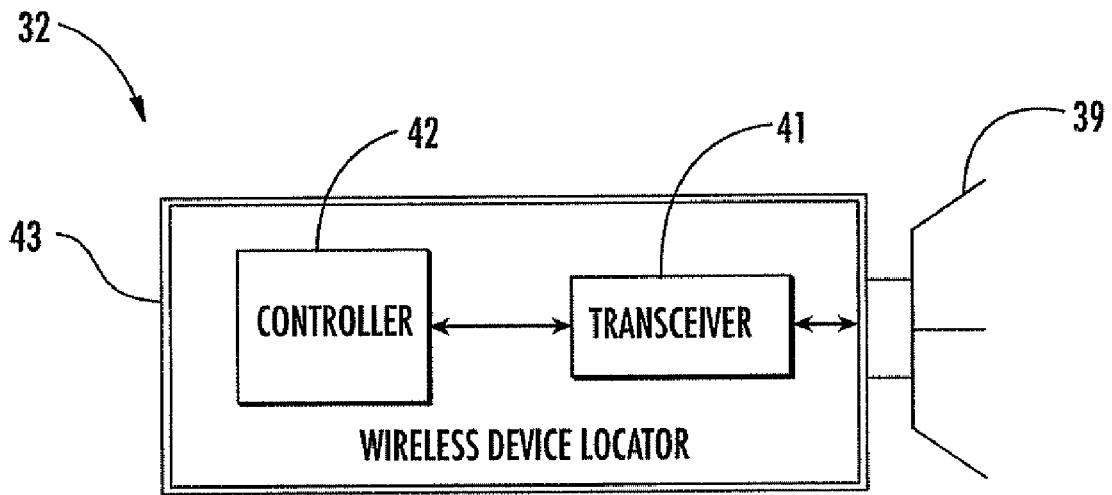


FIG. 2

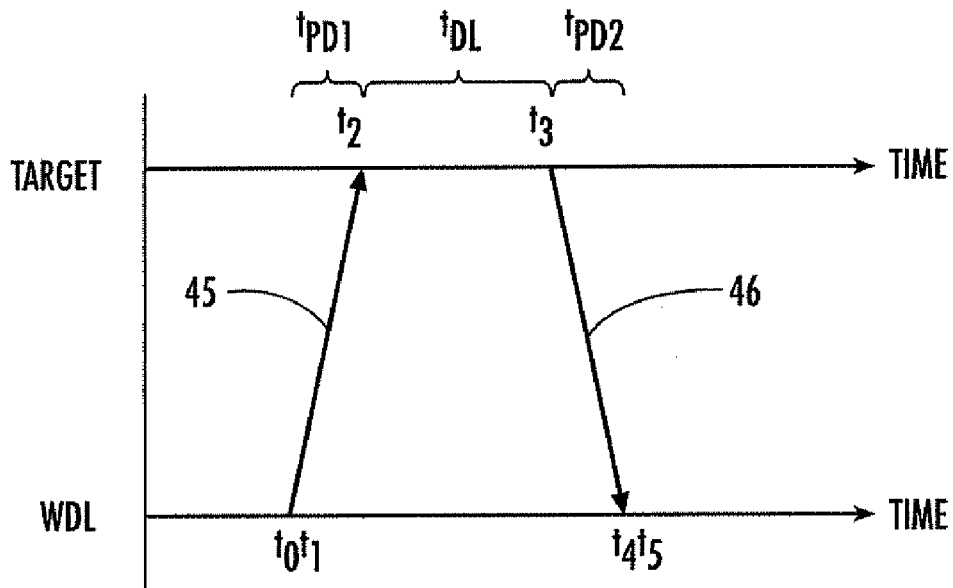


FIG. 3

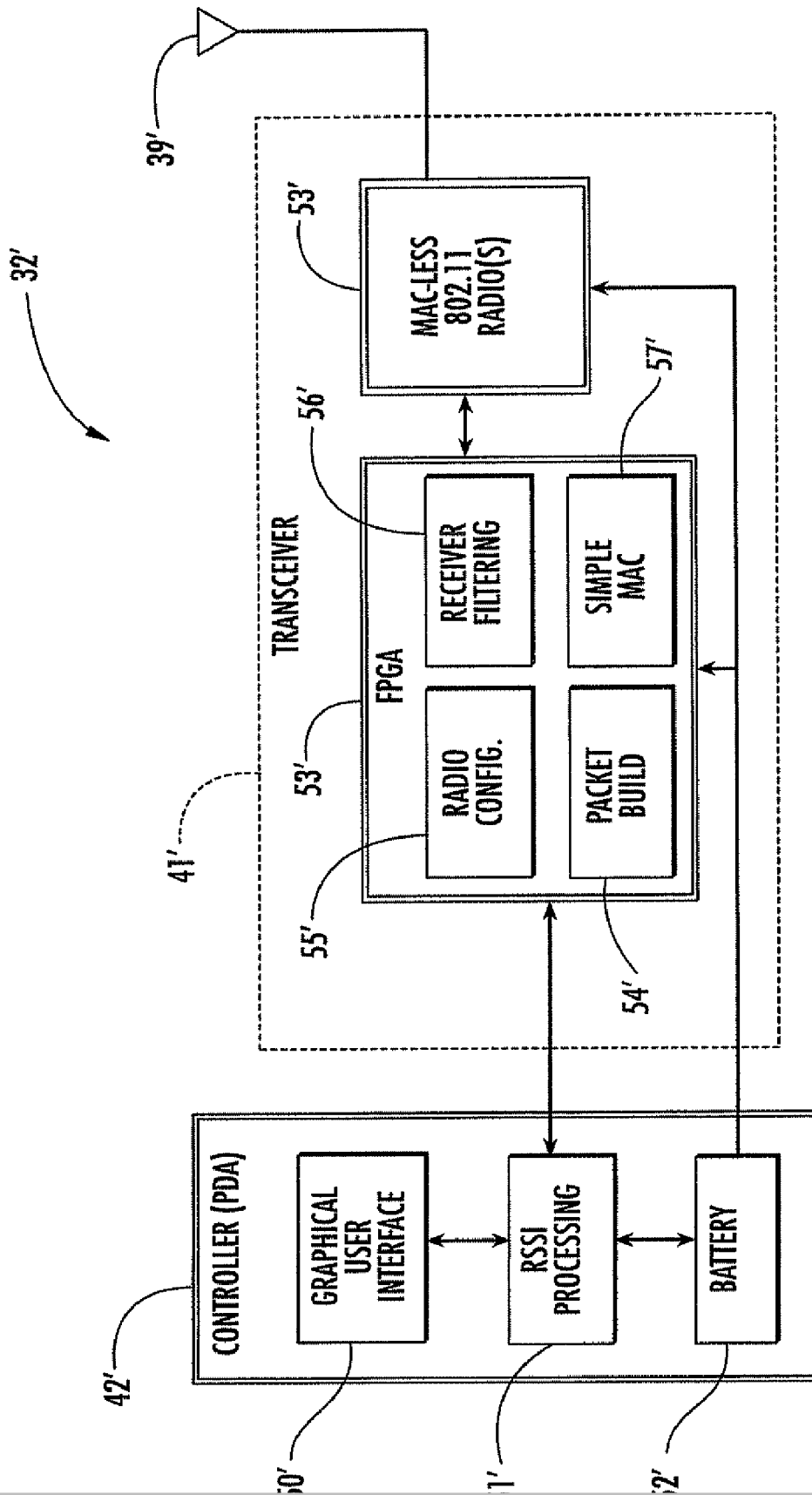


FIG. 4

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