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(54) **PHASE RANGING RFID LOCATION SYSTEM**

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H04Q 5/22 (2006.01)
G08C 19/16 (2006.01)
G08B 13/14 (2006.01)

(52) **U.S. Cl.**
USPC **340/10.1; 340/8.1; 340/12.1; 340/539.13; 340/572.4**

(58) **Field of Classification Search**
USPC 340/572.1, 825.49, 539.13, 572.7, 340/825.7, 10.1-10.6; 342/42, 44, 47, 127
See application file for complete search history.

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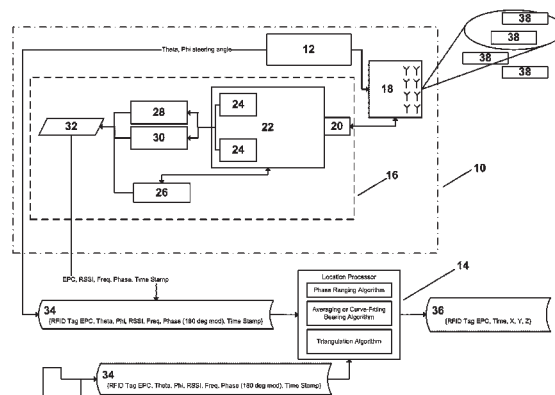
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(57) **ABSTRACT**

A method and apparatus for phase ranging the distance an RFID tag is from an RFID location system antenna along the interrogation signal beam, based upon the phase readings included in data sets obtained from monitoring reply signals corresponding to interrogation signals at multiple frequencies and a common interrogation signal beam direction; by comparison of measured phase and frequency data sets with theoretical phases calculated with respect to the same frequencies over a range of positions corresponding to a beam extent of the interrogation signal.

20 Claims, 7 Drawing Sheets



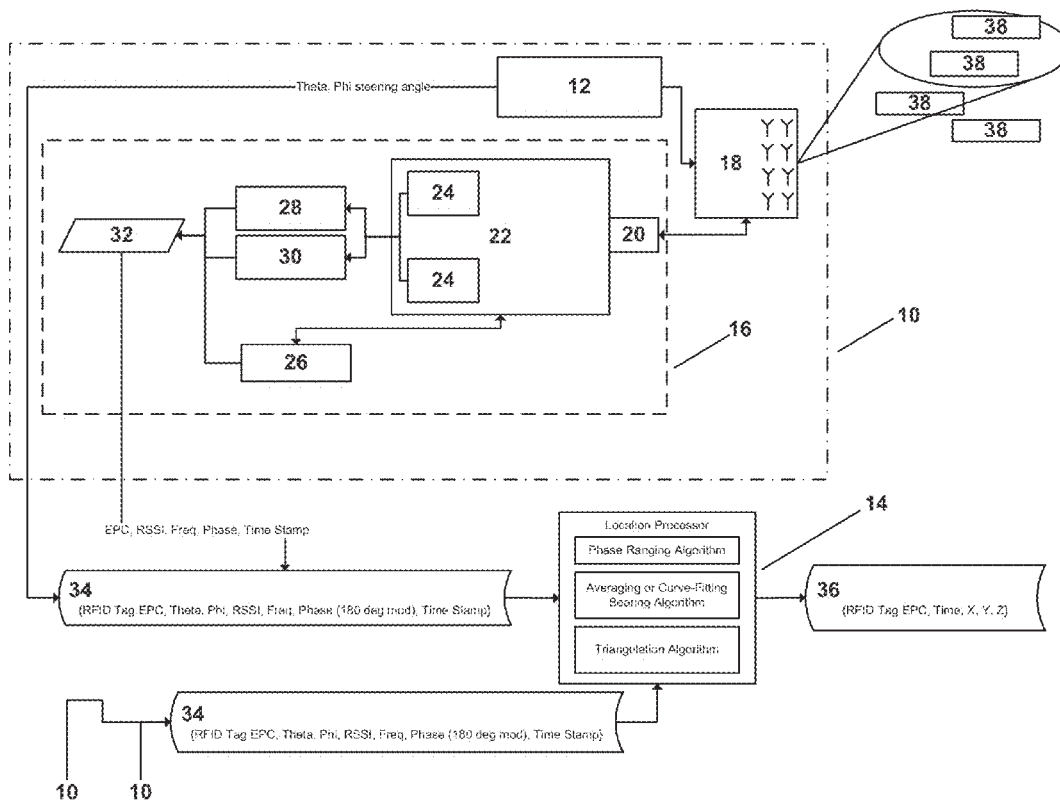


Fig. 1

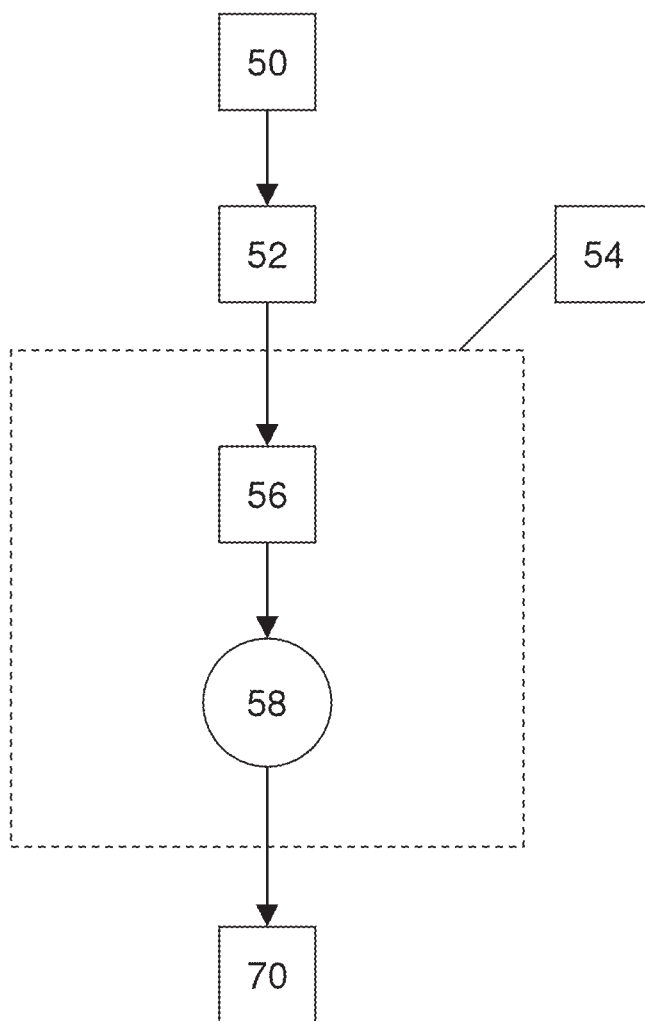


Fig. 2

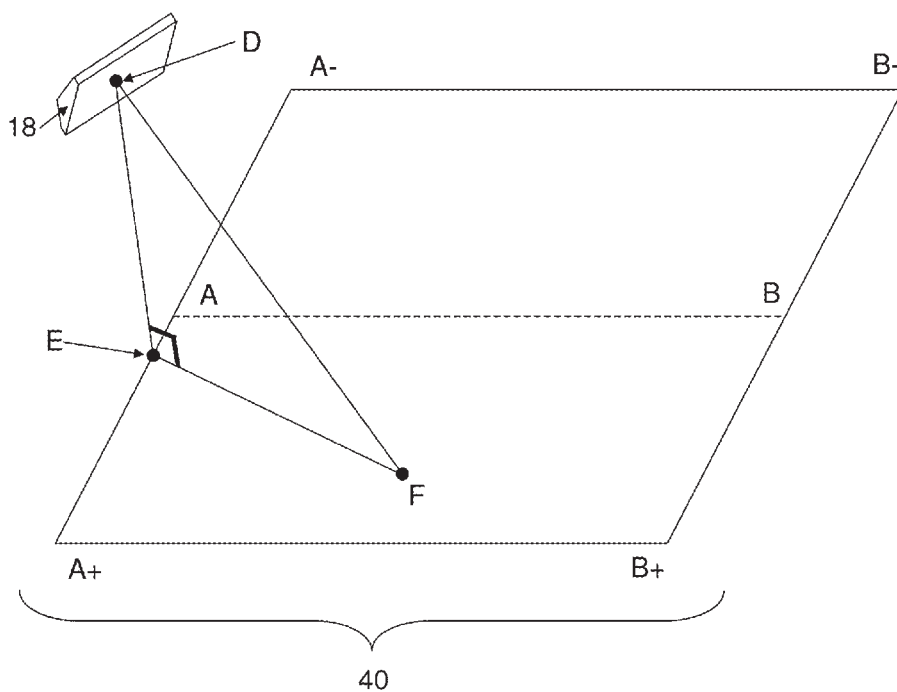


Fig. 3

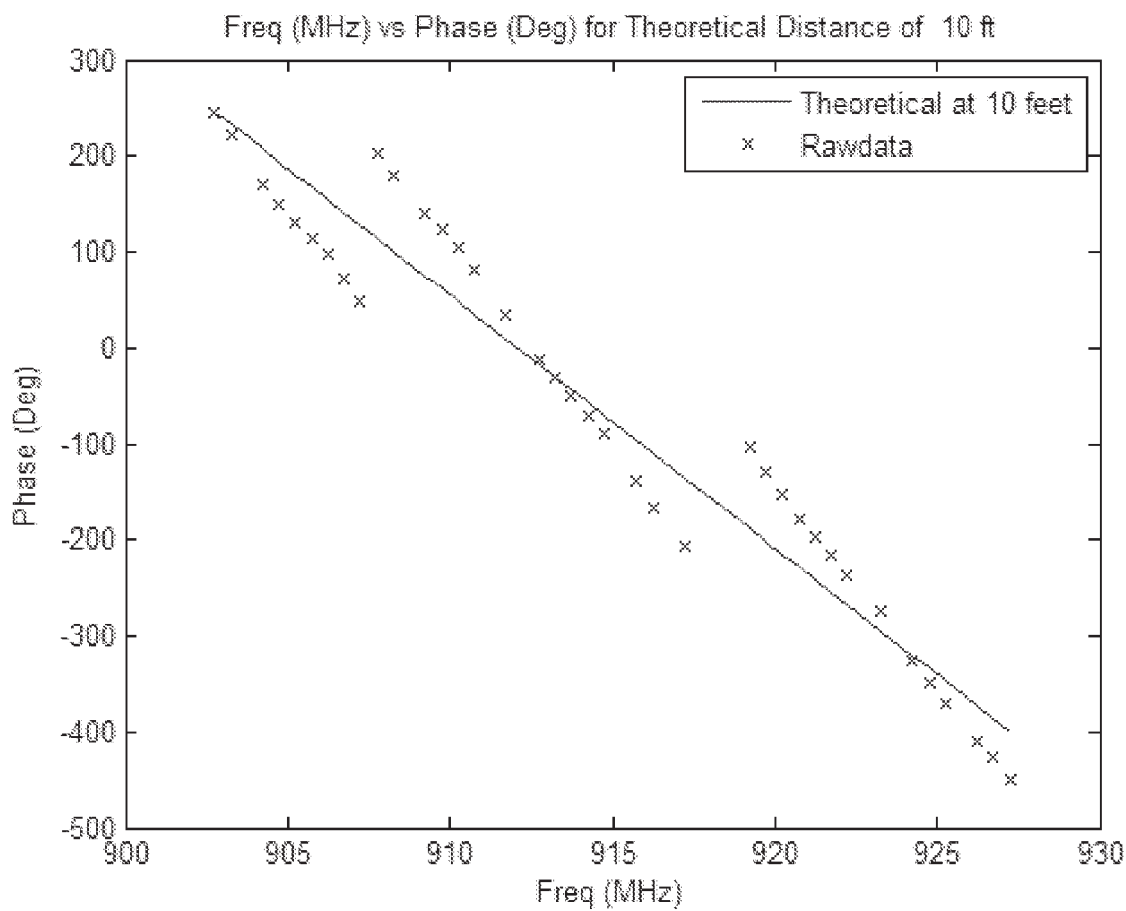


Fig. 4

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