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Rao et al.

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(54) **LOCATION DETERMINATION USING RF FINGERPRINTING**

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(73) Assignee: **PPM, Inc.**, Los Altos Hills, CA (US)

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(*) Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(51) **Int. Cl.**⁷ **H04Q 7/20**

(52) **U.S. Cl.** **455/456; 455/186.1**

(58) **Field of Search** 455/410, 440, 455/456, 454, 186.1, FOR 100; 342/457

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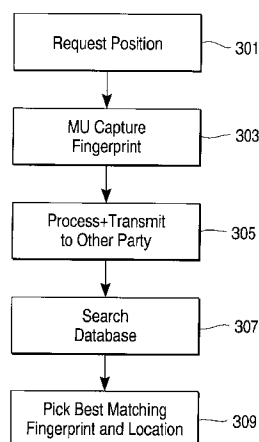
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(57) **ABSTRACT**

The location of a mobile unit (MU) in a wireless communication system is determined by comparing a snapshot of a predefined portion of the radio-frequency (RF) spectrum taken by the MU to a reference database containing multiple snapshots taken at various locations. The result of the comparison is used to determine if the MU is at a specific location. The comparison may be made in the MU, or at some other location situated remotely from the MU. In the latter case, sufficient information regarding the captured fingerprint is transmitted from the MU to the remote location. The database may be pre-compiled or generated on the fly.

19 Claims, 5 Drawing Sheets



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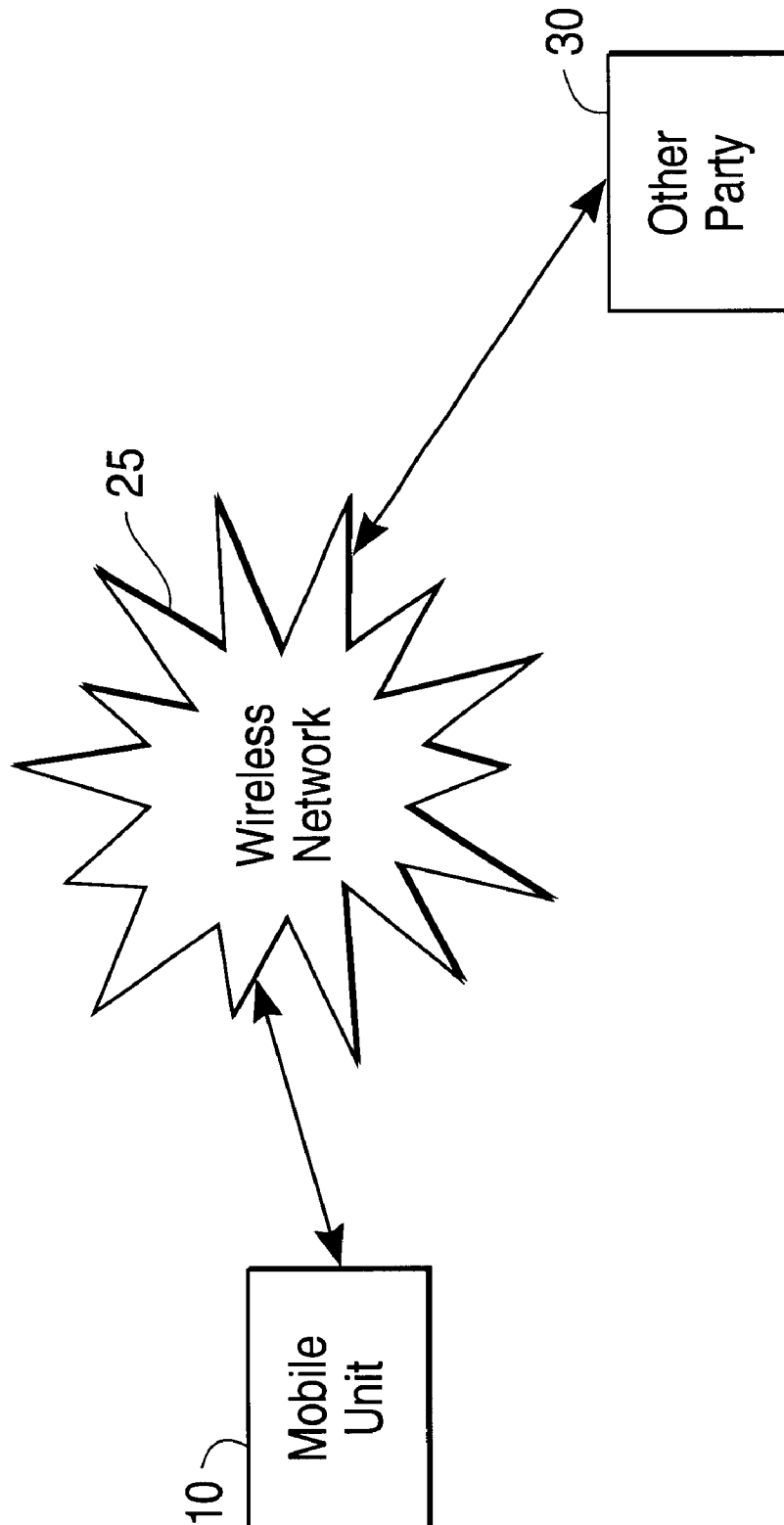


FIG. 1

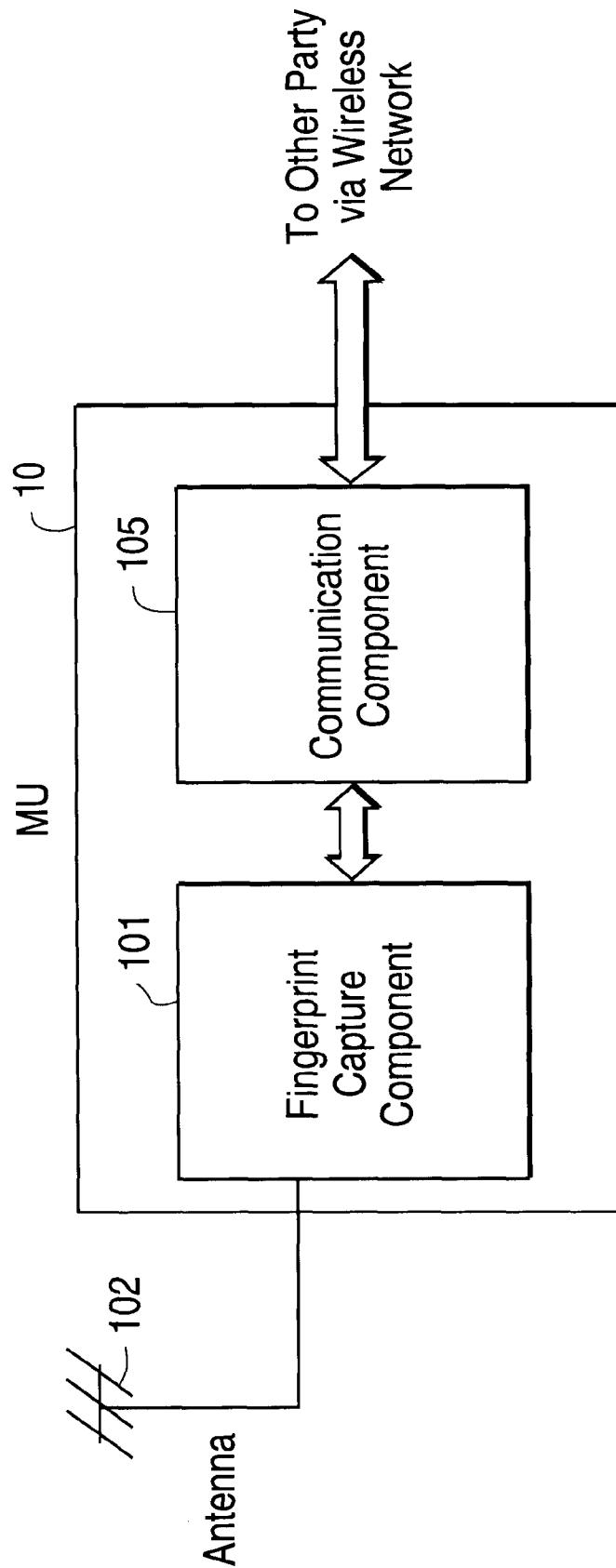


FIG. 2

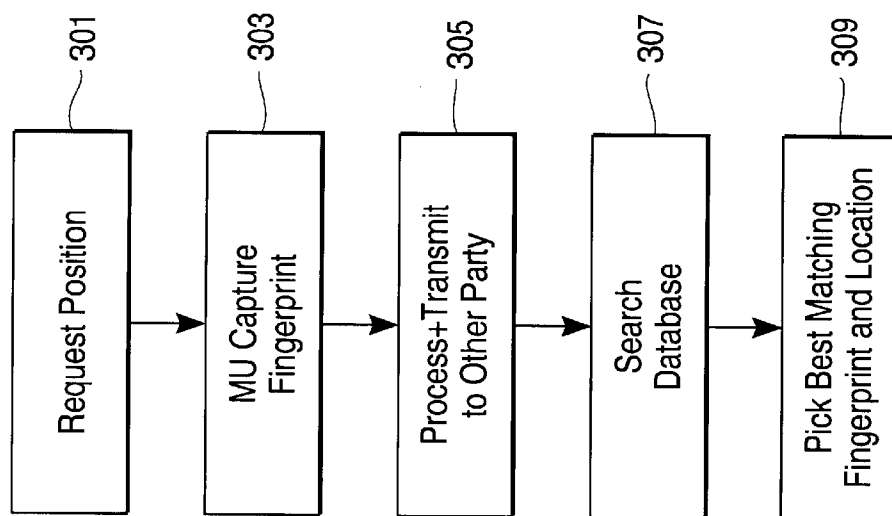


FIG. 3

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