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(12) **United States Patent**
Lindquist

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(54) **MOBILE TERMINALS AND METHODS FOR REGULATING POWER-ON/OFF OF A GPS POSITIONING CIRCUIT**

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(73) Assignees: **Sony Corporation**, Tokyo (JP); **Sony Mobile Communications AB**, Lund (SE)

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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 1028 days.

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Notification of Transmittal of the International Search Report and the Written Opinion of the International Searching Authority, or the Declaration; International Search Report; Written Opinion of the International Searching Authority, PCT Application No. PCT/EP2008/053726, Jul. 17, 2009.

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(51) **Int. Cl.**
H04W 24/00 (2009.01)

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(52) **U.S. Cl.**
USPC **455/456.1; 455/456.4; 455/456.2; 455/418; 455/556.1; 455/574**

(57) **ABSTRACT**

(58) **Field of Classification Search**
USPC 455/456.4, 574, 456.1, 456.2, 456.3, 455/552.1, 421; 370/311
See application file for complete search history.

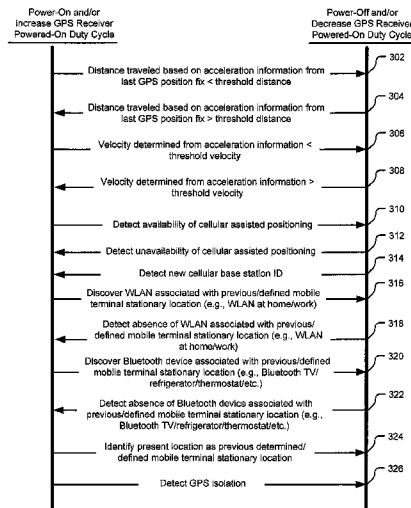
A method for determining location of a mobile terminal includes repetitively switching power-on and power-off to a GPS receiver circuit which determines location of the mobile terminal using GPS signals. The power-on to power-off duty cycle of the GPS receiver circuit is regulated in response to distance that the mobile terminal has moved from a previously determined location. The power-on to power-off duty cycle can be regulated in response to identifying GPS isolation, in response to an acceleration-determined distance from previous GPS-determine location, an acceleration-determined velocity of the mobile terminal, availability of position assistance information from a cellular system, presence/absence of signals from a WLAN/Bluetooth device, and/or detection of a new cellular base station ID.

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18 Claims, 3 Drawing Sheets



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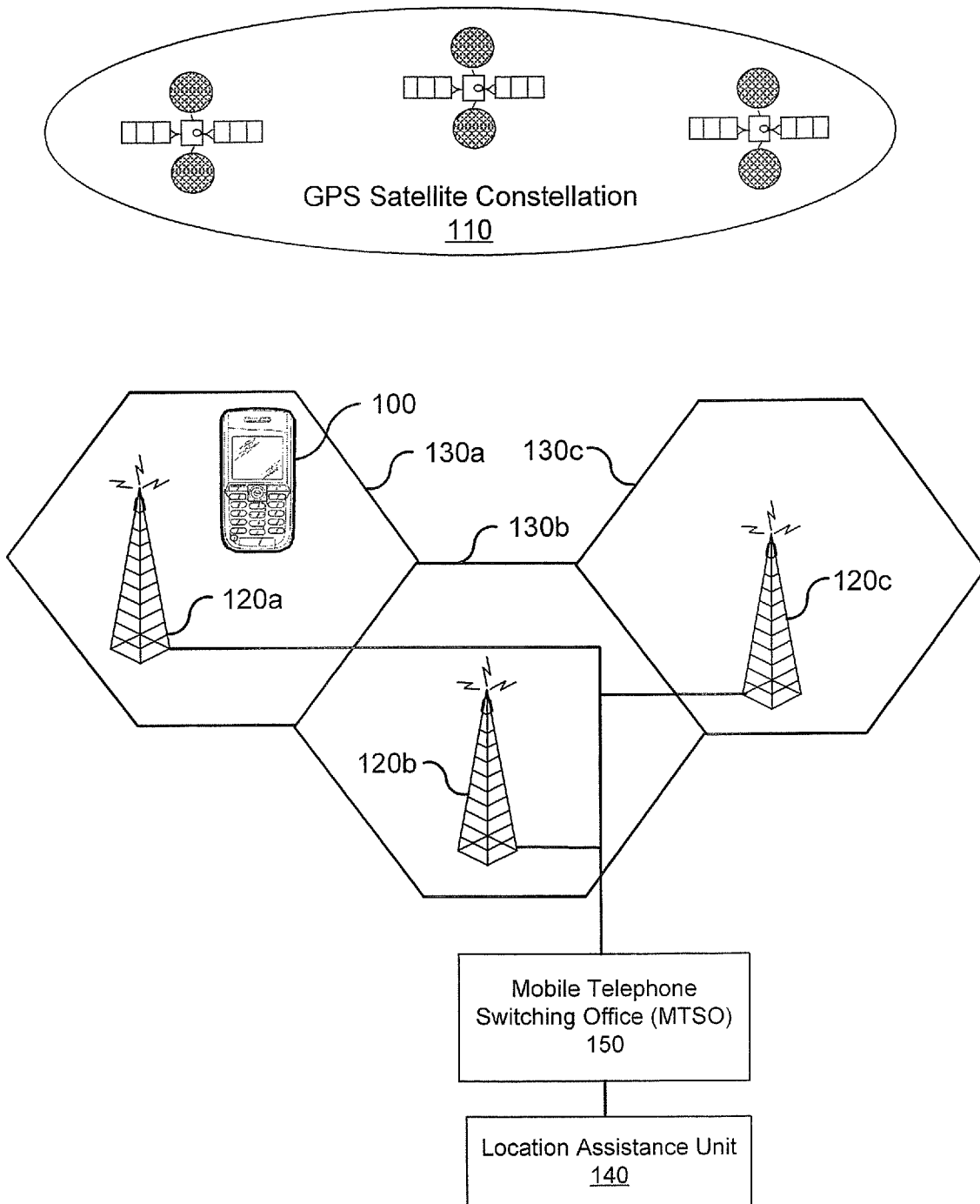


Figure 1

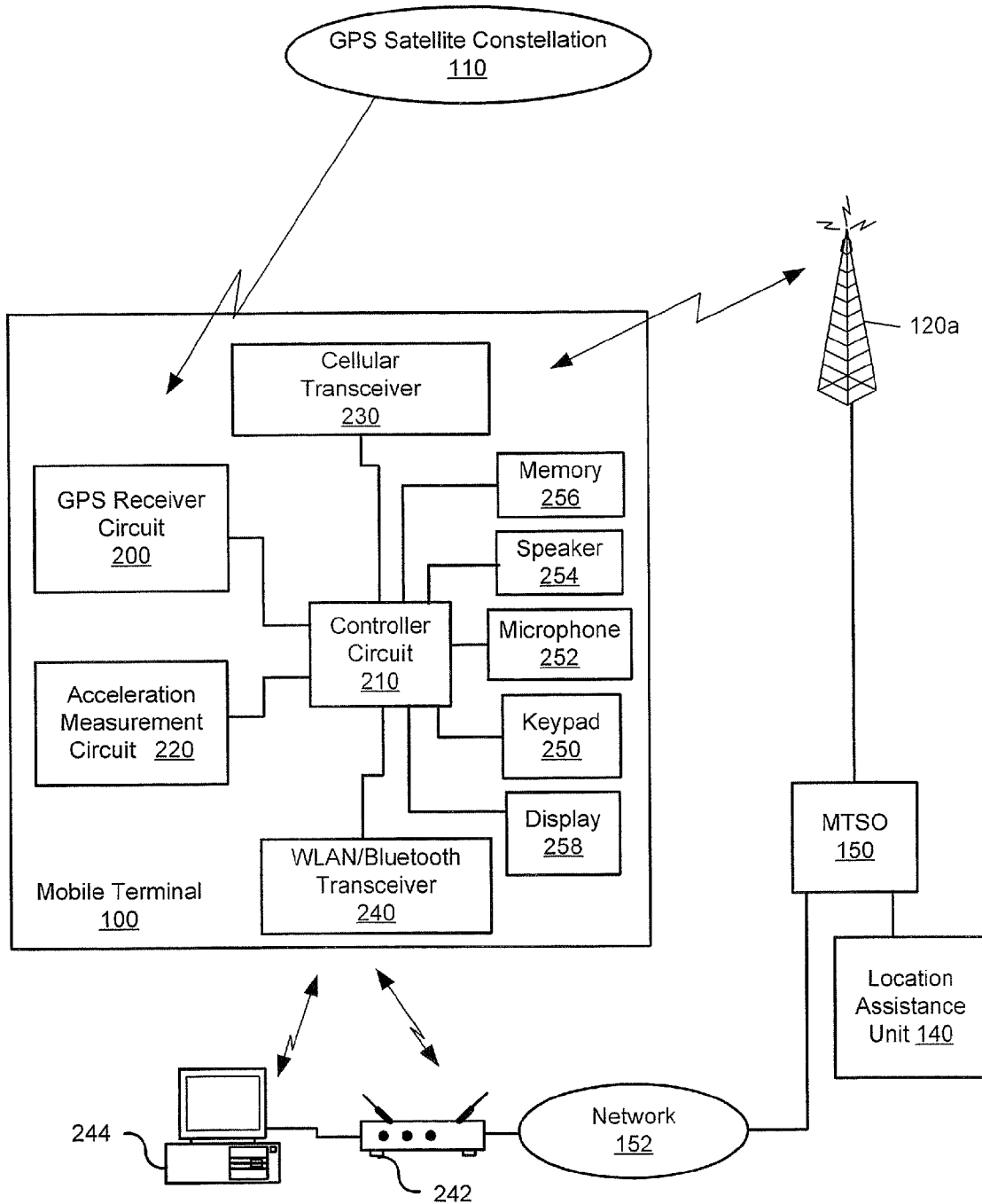


Figure 2

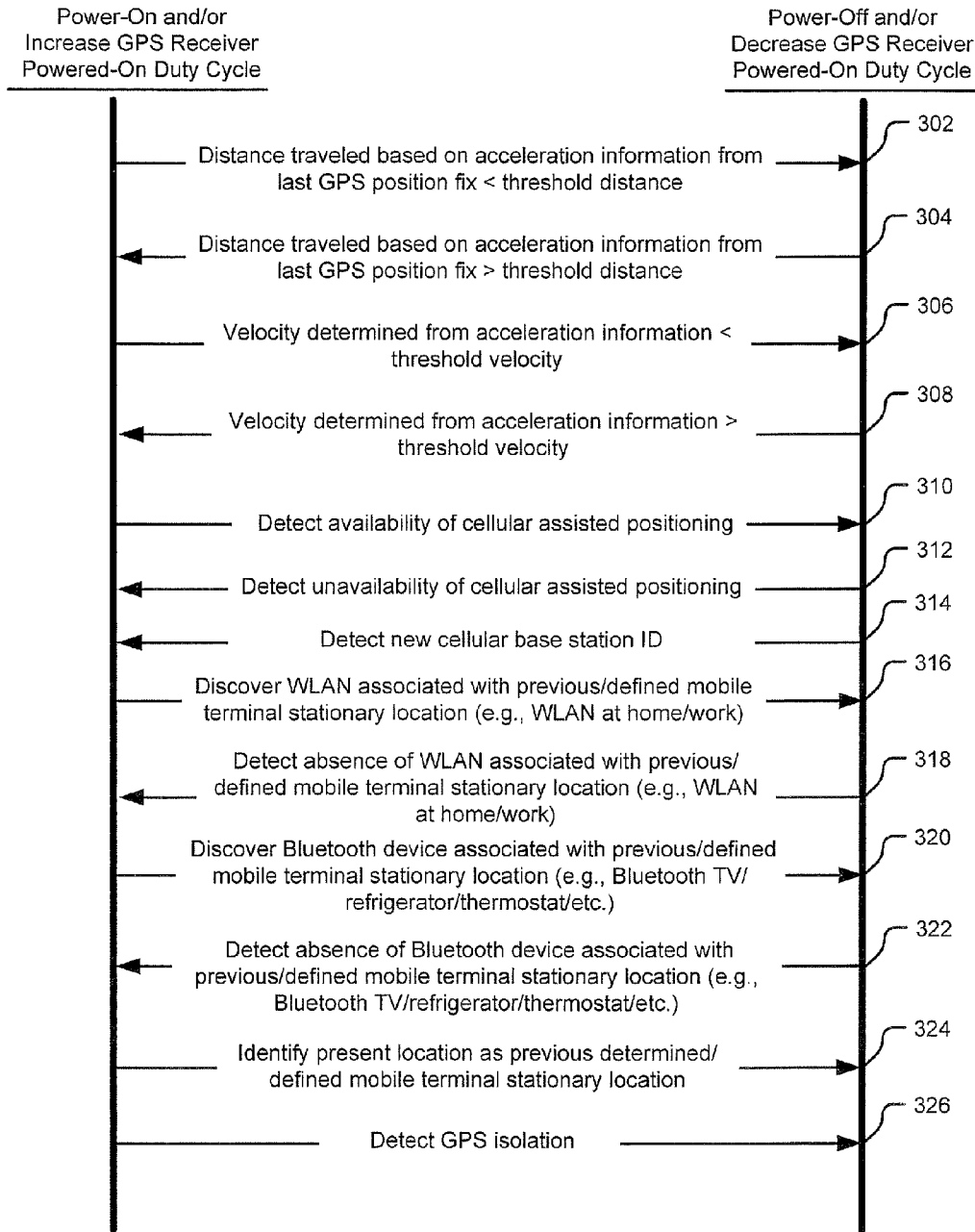


Figure 3

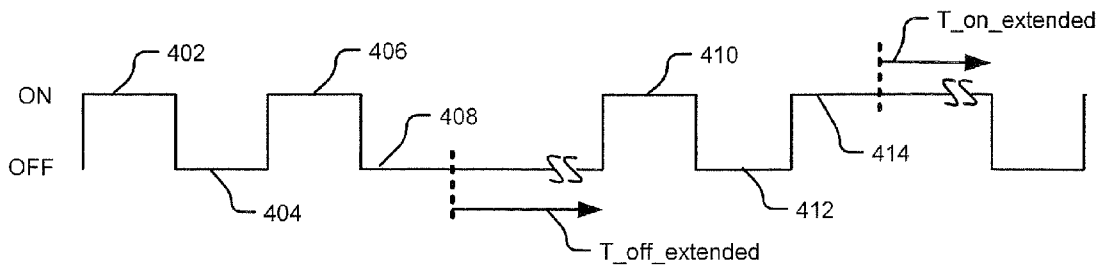


Figure 4

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