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(12) **United States Patent**  
**Shin et al.**

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- (54) **FLEXIBLE BANDWIDTH OPERATION IN WIRELESS SYSTEMS**
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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 60 days.

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(51) **Int. Cl.**  
**H04W 4/00** (2009.01)  
**H04L 5/00** (2006.01)  
**H04W 72/04** (2009.01)

(52) **U.S. Cl.**  
CPC ..... **H04W 72/042** (2013.01); **H04L 5/0094** (2013.01); **H04L 5/001** (2013.01); **H04L 5/0044** (2013.01)  
USPC ..... **370/330**; 370/329; 370/436

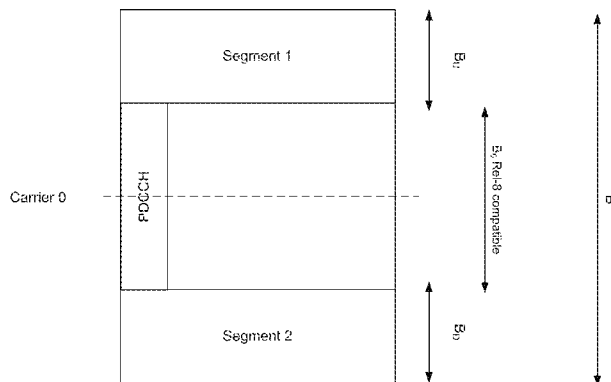
(58) **Field of Classification Search**  
USPC ..... 370/329, 330, 436  
See application file for complete search history.

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(57) **ABSTRACT**  
Systems, methods, and instrumentalities are disclosed for downlink resource allocation associated with a shared frequency band. A WTRU may receive resource allocation information associated with a component carrier and at least one carrier segment. The component carrier and the least one carrier segment may each comprise a plurality of resource block groups (RBG). At least two bitmaps may be associated with the resource allocation information. A size of a resource block group (RBG) of the component carrier and the at least one carrier segment may be based on a combined number of resource blocks (RB) of the component carrier and the one or more carrier segments divided by a 3GPP Rel-8/Rel-10 RBG size of the component carrier. The WTRU may determine at least one RBG allocated to the WTRU using the resource allocation information and may receive and decode the at least one RBG allocated to the WTRU.

**8 Claims, 24 Drawing Sheets**



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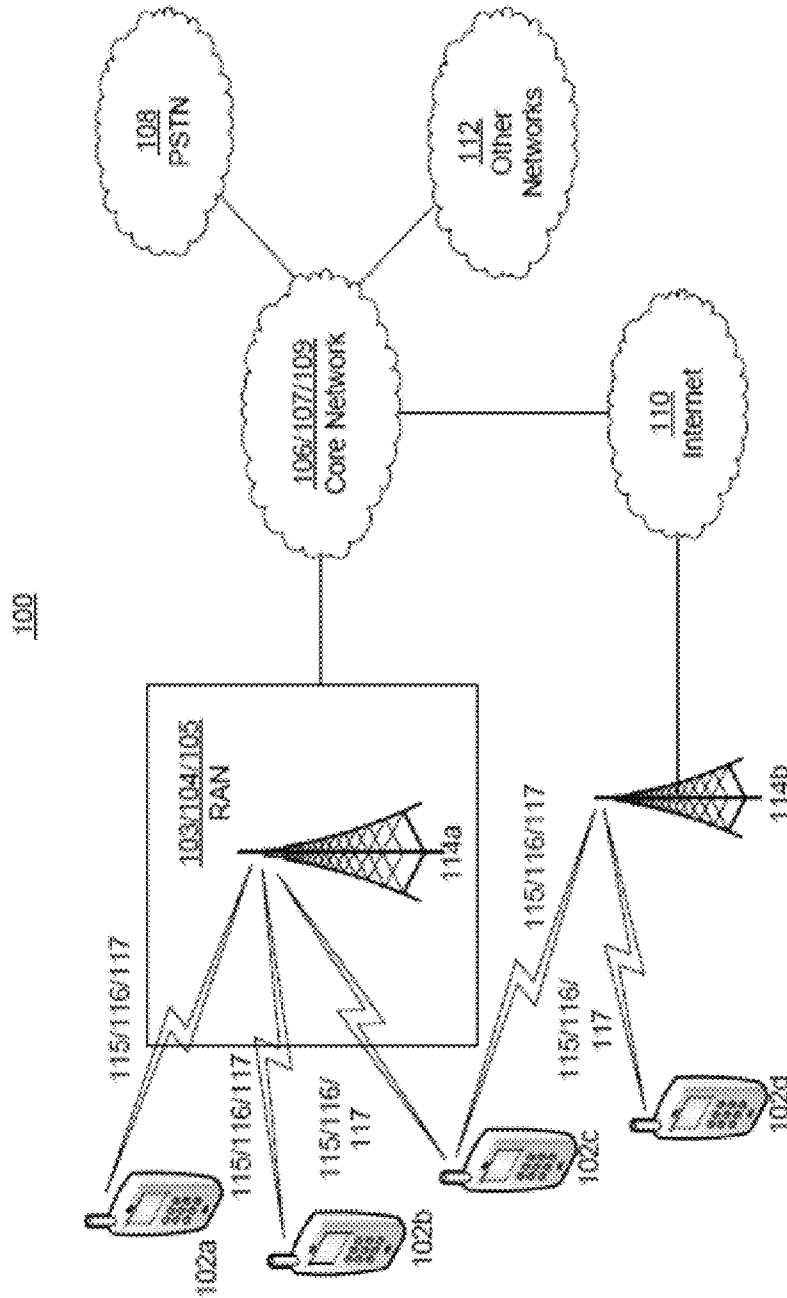


FIG. 1A

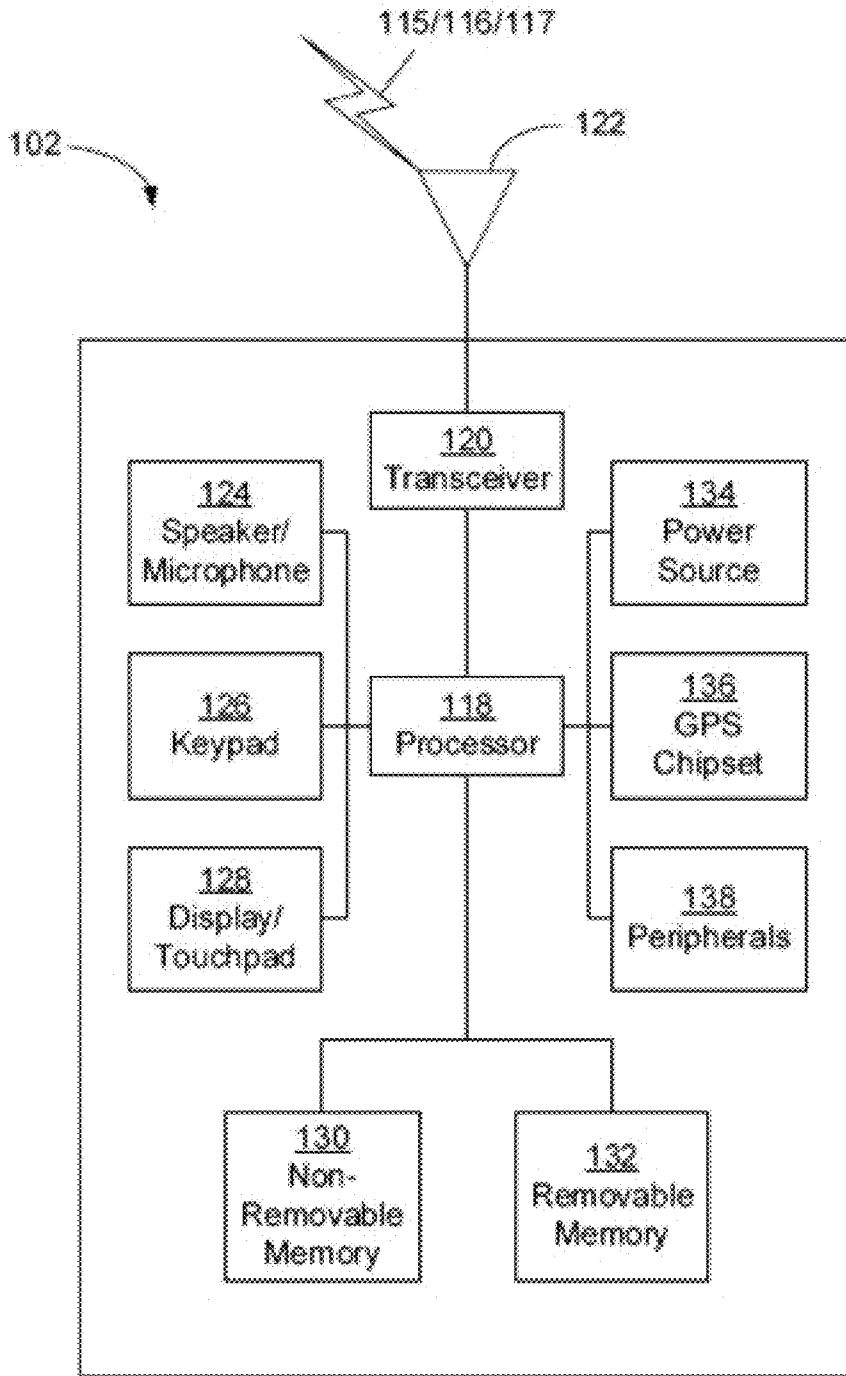


FIG. 1B

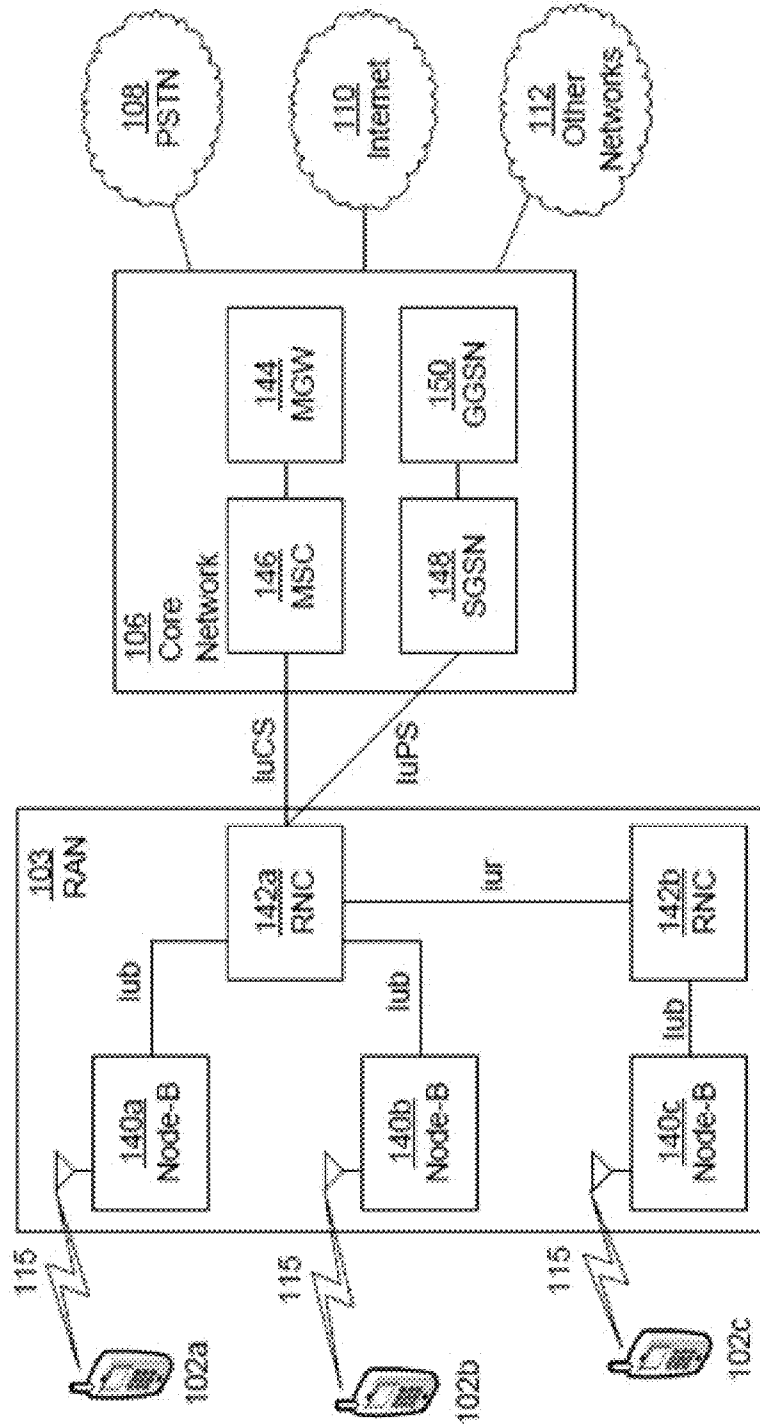


FIG. 1C

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