

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

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(54) **MULTIPLE RADIO LINK CONTROL (RLC) GROUPS**

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(73) Assignee: **Intel IP Corporation**, Santa Clara, CA (US)

(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 195 days.

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(51) **Int. Cl.**

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**H04W 72/04** (2009.01)

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(52) **U.S. Cl.**

CPC ..... **H04L 45/74** (2013.01); **G01C 21/005** (2013.01); **G01S 19/12** (2013.01);

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(58) **Field of Classification Search**

CPC ..... H04L 45/74; H04L 12/6418; H04W 28/0252; H04W 72/0433; H04W 4/02; (Continued)

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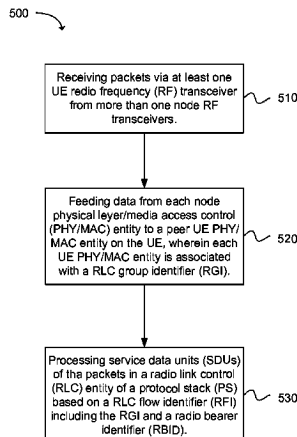
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(57) **ABSTRACT**

Technology to process radio link control (RLC) groups is disclosed. In an example, a carrier aggregation (CA) capable user equipment (UE) operable process radio link control (RLC) groups can include a UE radio frequency (RF) transceiver and a processor. The UE RF transceiver can be configured to receive packets from more than one cell via a sending node RF transceiver. The processor can be configured to process service data units (SDU) of the packets in a radio link control (RLC) entity of a protocol stack (PS). Each SDU can be associated with an RLC flow identifier (RFI). The RFI can comprise an RLC group identifier (RGI) indicating the sending node RF transceiver, and a radio bearer identifier (RBID).

**28 Claims, 15 Drawing Sheets**



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*G01C 21/00* (2006.01)  
*G01S 19/12* (2010.01)  
*H04W 28/02* (2009.01)  
*H04W 84/12* (2009.01)  
*H04W 88/06* (2009.01)  
*H04W 16/18* (2009.01)
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- (52) **U.S. Cl.**  
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*H04W 16/18* (2013.01); *H04W 84/12*  
 (2013.01); *H04W 88/06* (2013.01)
- (58) **Field of Classification Search**  
 CPC ... H04W 72/0453; G01C 21/005; G01S 19/12  
 See application file for complete search history.
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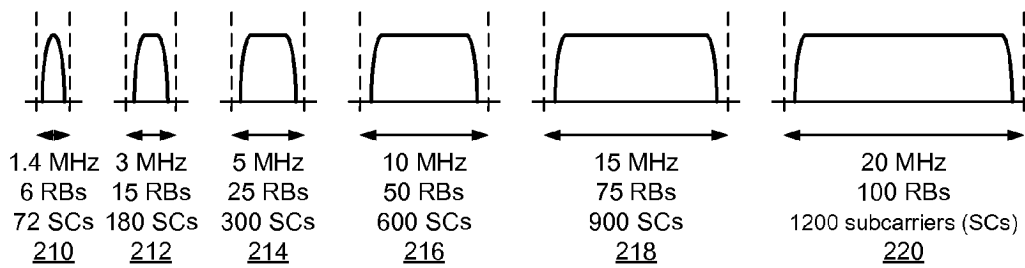


FIG. 1

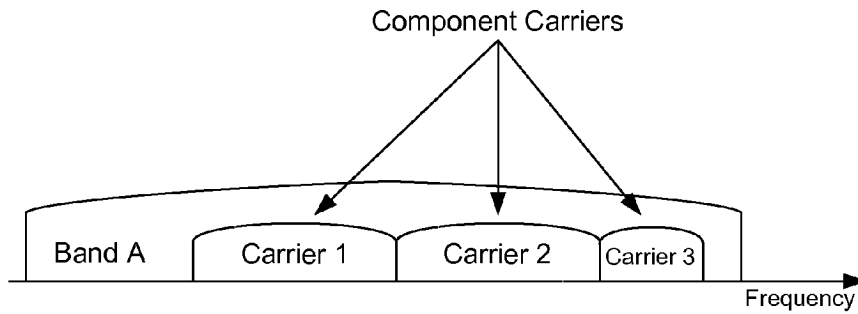


FIG. 2A

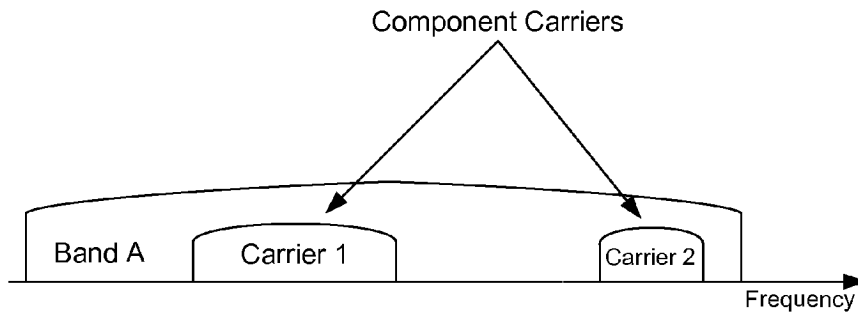


FIG. 2B

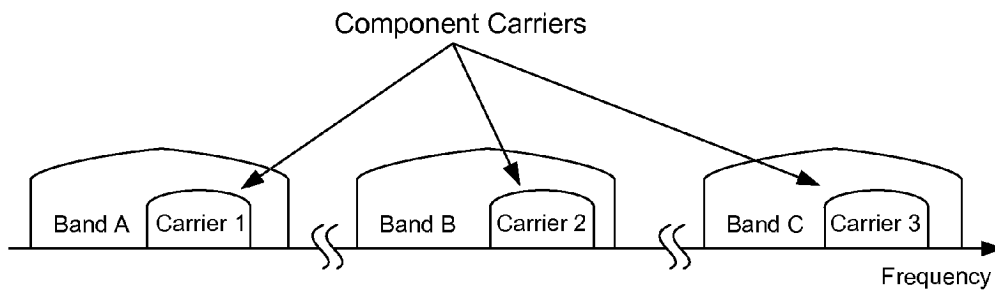


FIG. 2C

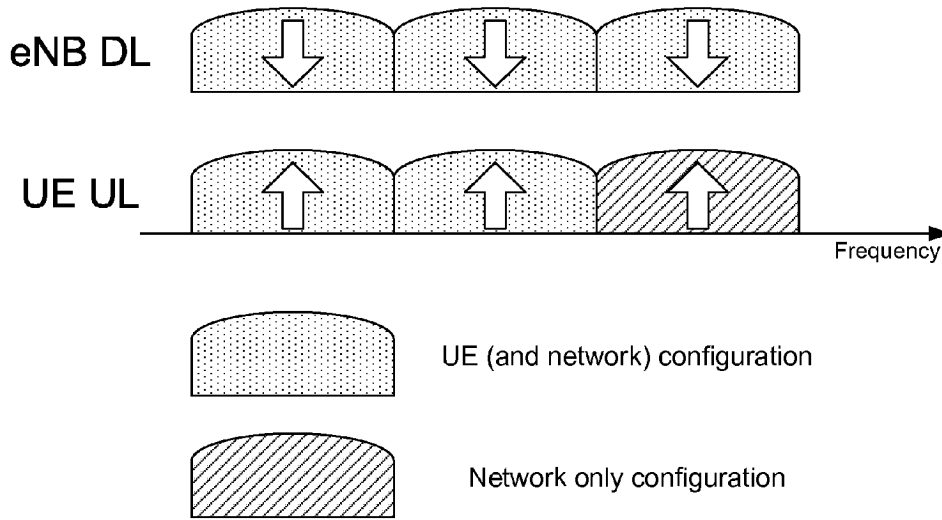


FIG. 3A

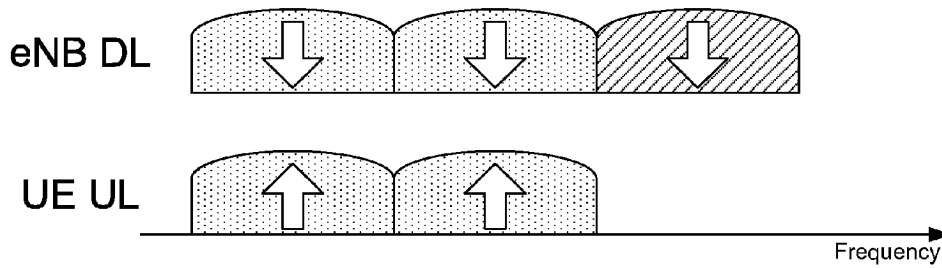


FIG. 3B

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