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### (54) POWER HEADROOM REPORTING METHOD

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patent is extended or adjusted under 35 U.S.C. 154(b) by 396 days.

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## Related U.S. Application Data

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(52) **U.S. Cl.** USPC ...... **455/522**; 455/68; 455/69

### (58) Field of Classification Search

See application file for complete search history.

## (56) References Cited

## U.S. PATENT DOCUMENTS

5,914,950 A *	6/1999	Tiedemann et al 370/348
7,558,535 B2*	7/2009	Cho et al 455/69
2003/0026324 A1	2/2003	Li et al.
2004/0252658 A1*	12/2004	Hosein et al 370/328
2007/0015476 A1*	1/2007	Akbar Attar et al 455/127.1
2007/0097962 A1*	5/2007	Yoon et al 370/352
2007/0270175 A1*	11/2007	Malladi et al 455/522

## (Continued)

## FOREIGN PATENT DOCUMENTS

EP	1 311 076 A1	5/2003
EP	1 628 413 A2	2/2006
WO	WO 00/03499	1/2000
WO	WO 00/62441	10/2000
	OTHER PU	BLICATION:

3GPP TS 36.300 V8.0.0 (Mar. 2007); 3<sup>rd</sup> Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall Description; Stage 2 (Release 8).

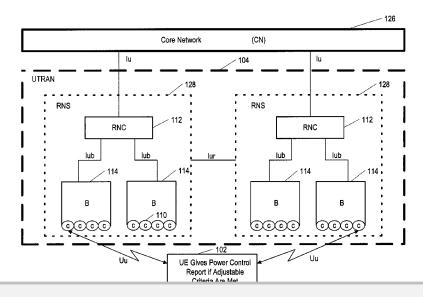
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## (57) ABSTRACT

A method, user equipment, network device, and software product enable a user equipment to determine that at least one of several triggering criterion have been met, in which case the user equipment provides a power control headroom report on an uplink from the user equipment. The triggering criterion includes a threshold having been reached, and the threshold is adjustable via a signal to the user equipment from a base station (such as an eNodeB).

## 35 Claims, 4 Drawing Sheets

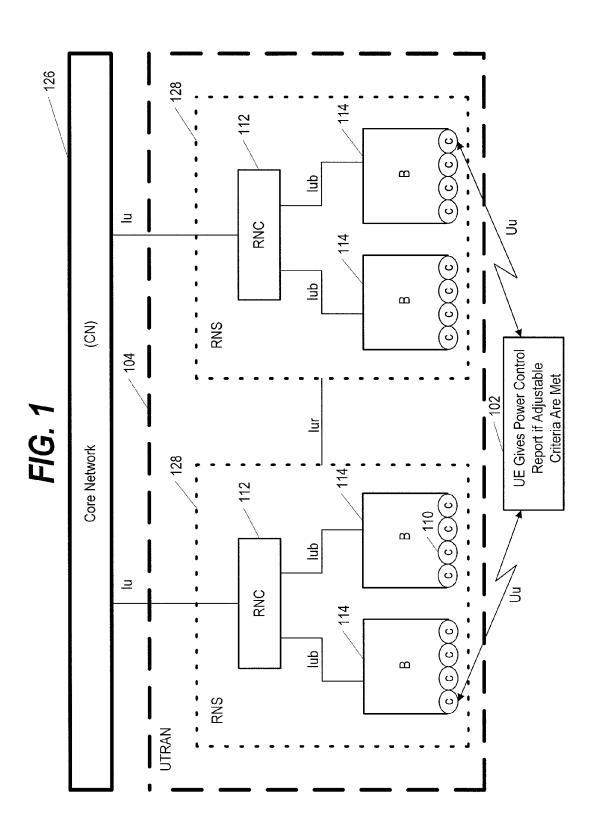




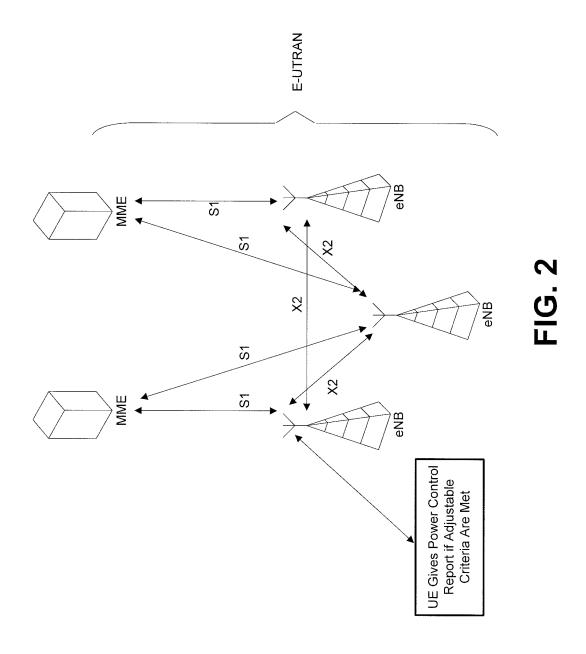
# **US 8,457,676 B2**Page 2

2008/0233992 A1* 2008/0240013 A1*	9/2008 10/2008	DOCUMENTS   Oteri et al. 455/522   Johnson et al. 370/315   Damnjanovic et al. 370/329	2010/0029212 A1*	2/2010	Wakayama et al. 370/332   Malladi et al. 455/63.1   Chen et al. 370/335
2008/0259833 A1*	10/2008	Ozturk et al 370/310	* cited by examiner		











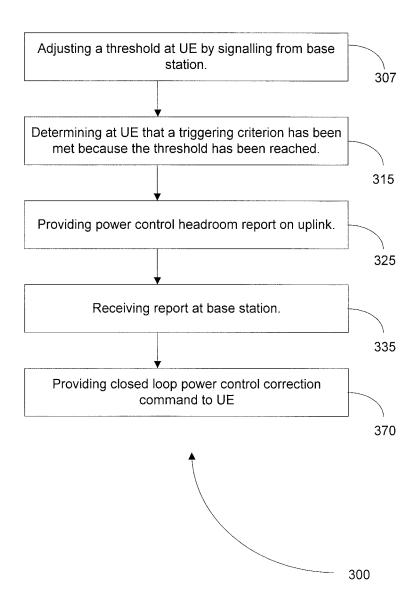


FIG. 3

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