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Singh et al.

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(54) **SYSTEMS AND METHODS FOR HANDOVER OF A HIGH POWER WIRELESS DEVICE OPERATING IN A WIRELESS NETWORK**

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CPC ... **H04W 28/0221** (2013.01); **H04W 28/0226** (2013.01); **H04W 28/0273** (2013.01); **H04W 36/0072** (2013.01); **H04W 40/08** (2013.01); **H04W 40/10** (2013.01)

(58) **Field of Classification Search**

CPC . H04W 28/0221; H04W 40/10; H04W 28/02; H04W 40/08; H04W 36/00  
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

9,078,220 B2	7/2015	Makhlouf et al.	
2004/0214575 A1 *	10/2004	Jovanovic	H04W 36/04 455/444
2011/0310781 A1 *	12/2011	Kim	H04L 5/0007 370/311
2016/0323922 A1 *	11/2016	Park	H04W 24/10
2018/0027437 A1 *	1/2018	Vitthaladevuni	H04L 1/0026 370/252

\* cited by examiner

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(57) **ABSTRACT**

Systems and methods are described for extending coverage of a wireless device. A plurality of wireless devices located in a coverage area of a first access node can be monitored for a first condition. At least one wireless device of the plurality of wireless devices that meets the first condition can be classified as a high power wireless device. Two or more indicators reported by the at least one wireless device are compared to a criteria. When the two or more indicators meet the criteria, a handoff of the at least one wireless device from the first access node to a second access node can be performed.

7 Claims, 7 Drawing Sheets

