US008477592B2

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

(10) **Patent No.: US 8,477,592 B2**
(45) **Date of Patent: Jul. 2, 2013**

(54) **INTERFERENCE AND NOISE ESTIMATION IN AN OFDM SYSTEM**

(75) Inventors: **Arak Sutivong**, San Diego, CA (US); **Ayman Fawzy Naguib**, Cupertino, CA (US); **Avneesh Agrawal**, San Diego, CA (US)

(73) Assignee: **QUALCOMM Incorporated**, San Diego, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 885 days.

(21) Appl. No.: **10/809,538**

(22) Filed: **Mar. 24, 2004**

(65) **Prior Publication Data**

US 2005/0002324 A1 Jan. 6, 2005

Related U.S. Application Data

(60) Provisional application No. 60/470,724, filed on May 14, 2003.

(51) **Int. Cl.**
H04J 11/00 (2006.01)

(52) **U.S. Cl.**
USPC **370/208**

(58) **Field of Classification Search**
USPC 370/208, 210; 375/260, 267, 347, 375/326
See application file for complete search history.

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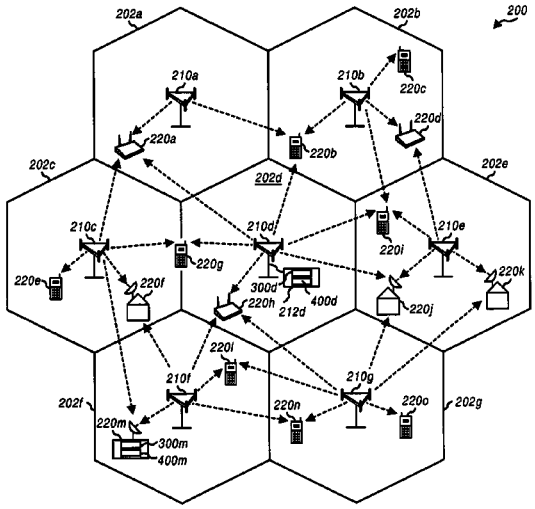
Primary Examiner — Chandrahas Patel
(74) *Attorney, Agent, or Firm* — Donald C. Kordich

(57) **ABSTRACT**

Noise and interference can be independently measured in a multiple user Orthogonal Frequency Division Multiplexing (OFDM) system. Co-channel interference is measured in a frequency hopping, multiple user, OFDM system by tracking the sub-carriers assigned to all users in a particular service area or cell. The composite noise plus interference can be determined by measuring the amount of received power in a sub-carrier whenever it is not assigned to any user in the cell. A value is stored for each sub-carrier in the system and the value of noise plus interference can be a weighted average of the present value with previously stored values. The noise component can be independently determined in a synchronous system. In the synchronous system, all users in a system may periodically be prohibited from broadcasting over a sub-carrier and the received power in the sub-carrier measured during the period having no broadcasts.

26 Claims, 6 Drawing Sheets