US006397083B2

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

(10) **Patent No.: US 6,397,083 B2**
(45) **Date of Patent: *May 28, 2002**

(54) **BOOTSTRAPPED, PIECEWISE-ASYMPTOTIC DIRECTIVITY PATTERN CONTROL MECHANISM SETTING WEIGHTING COEFFICIENTS OF PHASED ARRAY ANTENNA**

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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 0 days.

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **09/782,767**

(22) Filed: **Feb. 13, 2001**

**Related U.S. Application Data**

(63) Continuation of application No. 09/081,460, filed on May 19, 1998, now Pat. No. 6,188,915.

(51) **Int. Cl.**[7] ..... **H04B 1/38**

(52) **U.S. Cl.** ..... **455/562**; 455/277.2; 455/278.1; 342/378; 342/380; 342/381; 342/383

(58) **Field of Search** ..... 455/277.1, 277.2, 455/278.1, 279.1, 561, 562; 342/380, 381, 383, 378

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(57) **ABSTRACT**

Weighting coefficients for a phased array antenna are iteratively refined to optimal values by a 'bootstrapped' process that starts with a coarse set of weighting coefficients, to which received signals are subjected, to produce a first set of signal estimates. These estimates and the received signals are iteratively processed a prescribed number of times to refine the weighting coefficients, such that the gain and/or nulls of antenna's directivity pattern will maximize the signal to noise ratio. Such improved functionality is particularly useful in association with the phased array antenna of a base station of a time division multiple access (TDMA) cellular communication system, where it is necessary to cancel interference from co-channel users located in cells adjacent to the cell containing a desired user and the base station.

**20 Claims, 7 Drawing Sheets**