



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

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(54) **METHOD AND SYSTEM FOR DYNAMIC DOWNLINK POWER CONTROL IN A TIME-DIVISION, MULTIPLEX WIRELESS SYSTEM**

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(57) **ABSTRACT**

A method for controlling downlink power in a time-division multiplex wireless system may provide different downlink transmit signal powers to different time-division multiplex channels of a single carrier. A base station receives a measured signal parameter data for a downlink transmit signal of a time-division multiplex channel. The base station determines an initial adjustment for the downlink transmit signal power of the time division multiplex channel if the measured signal parameter data differs from a target signal parameter data. The base station determines a revised adjustment for the downlink transmit power of the time division multiplex channel based on the initial adjustment and at least one adjustment range as appropriate to achieve synchronization of the demodulation of the downlink transmit signal.

(21) Appl. No.: **09/488,543**

(22) Filed: **Jan. 21, 2000**

(51) Int. Cl.<sup>7</sup> ..... **H04B 7/00; H04Q 7/20**

(52) U.S. Cl. .... **455/522; 455/67.1; 455/450; 455/436; 370/331; 370/318**

(58) **Field of Search** ..... 455/522, 422, 455/450, 436, 437, 439, 13.4, 67.1, 67.4; 370/331, 329, 318, 321

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**21 Claims, 8 Drawing Sheets**

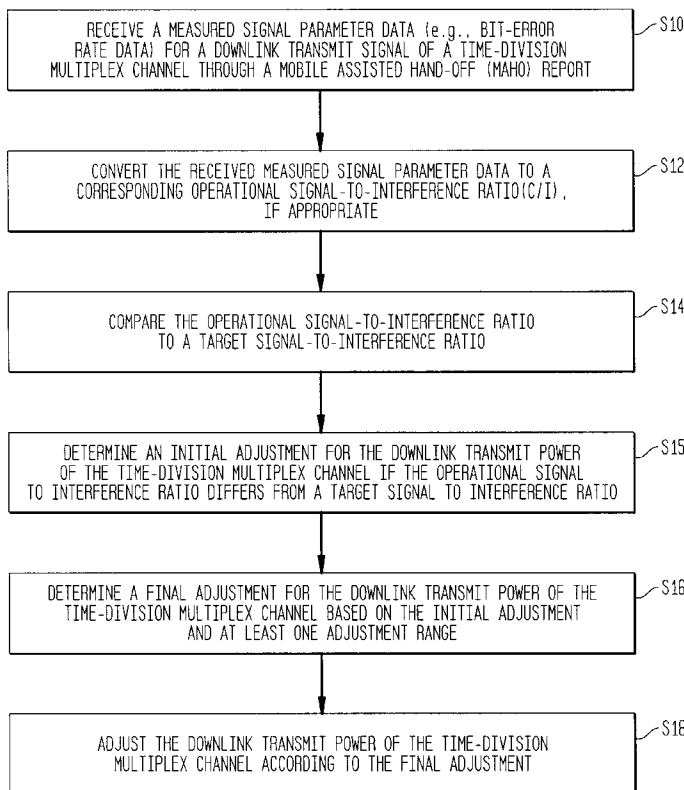


FIG. 1

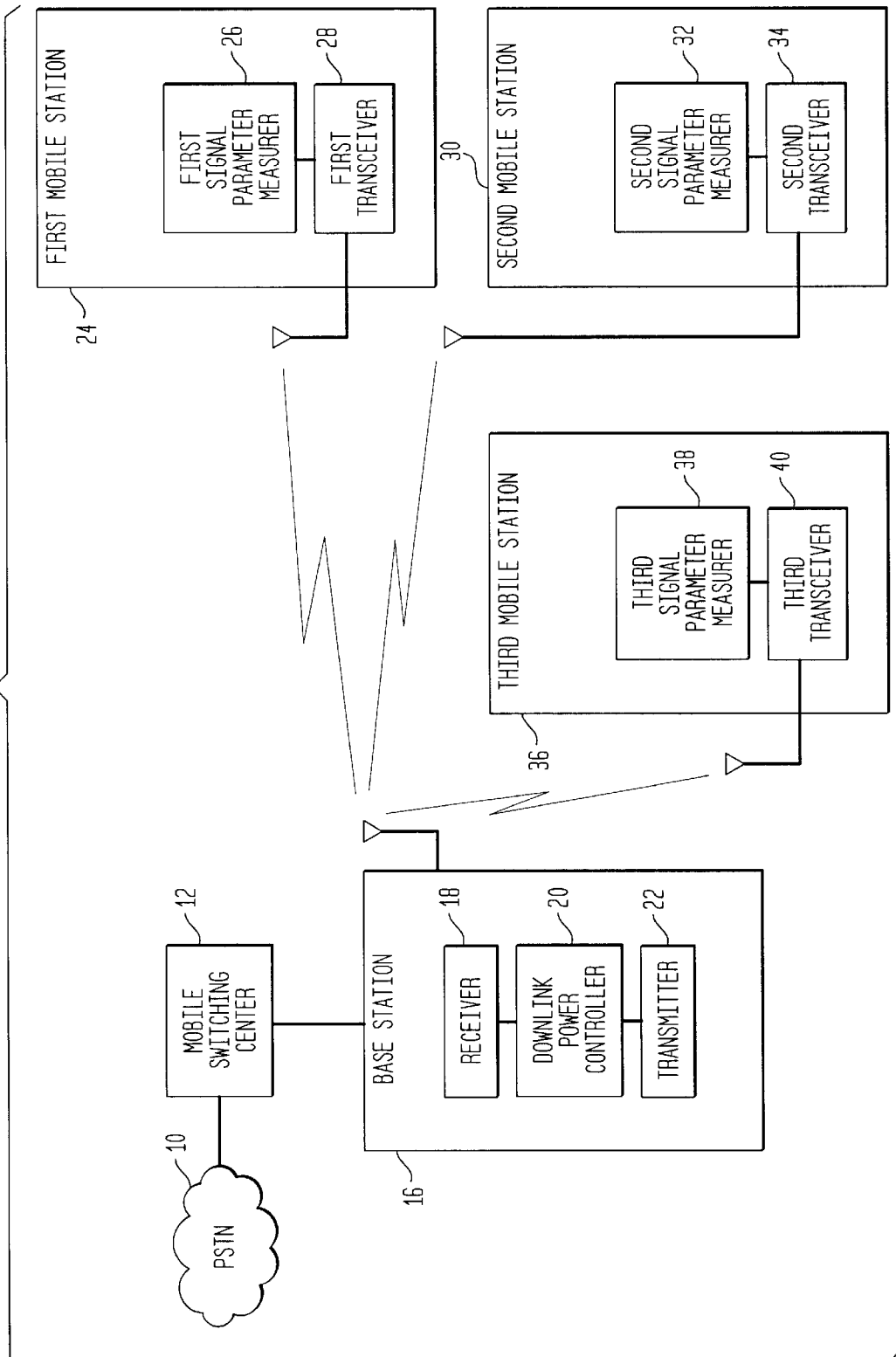


FIG. 2

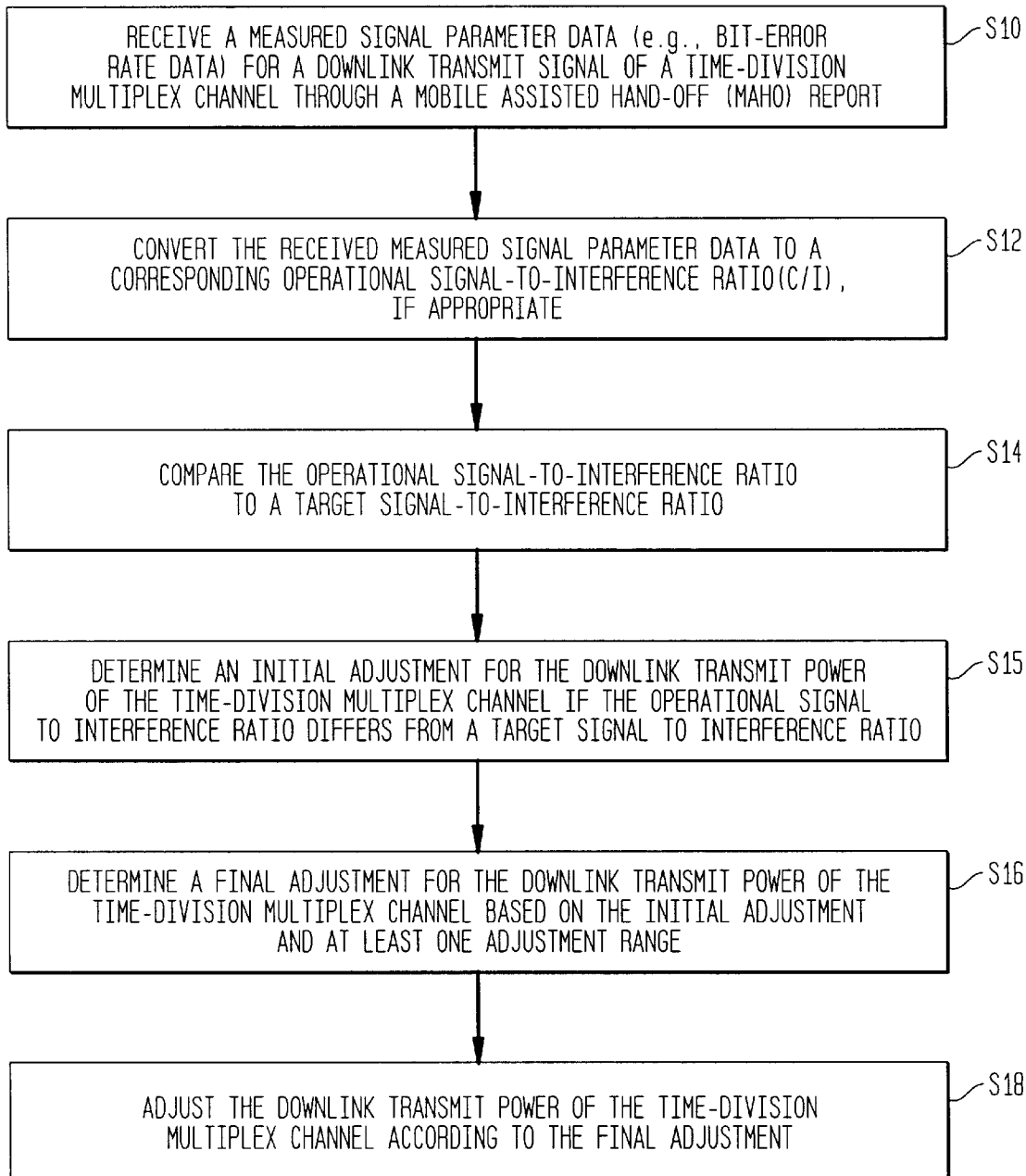
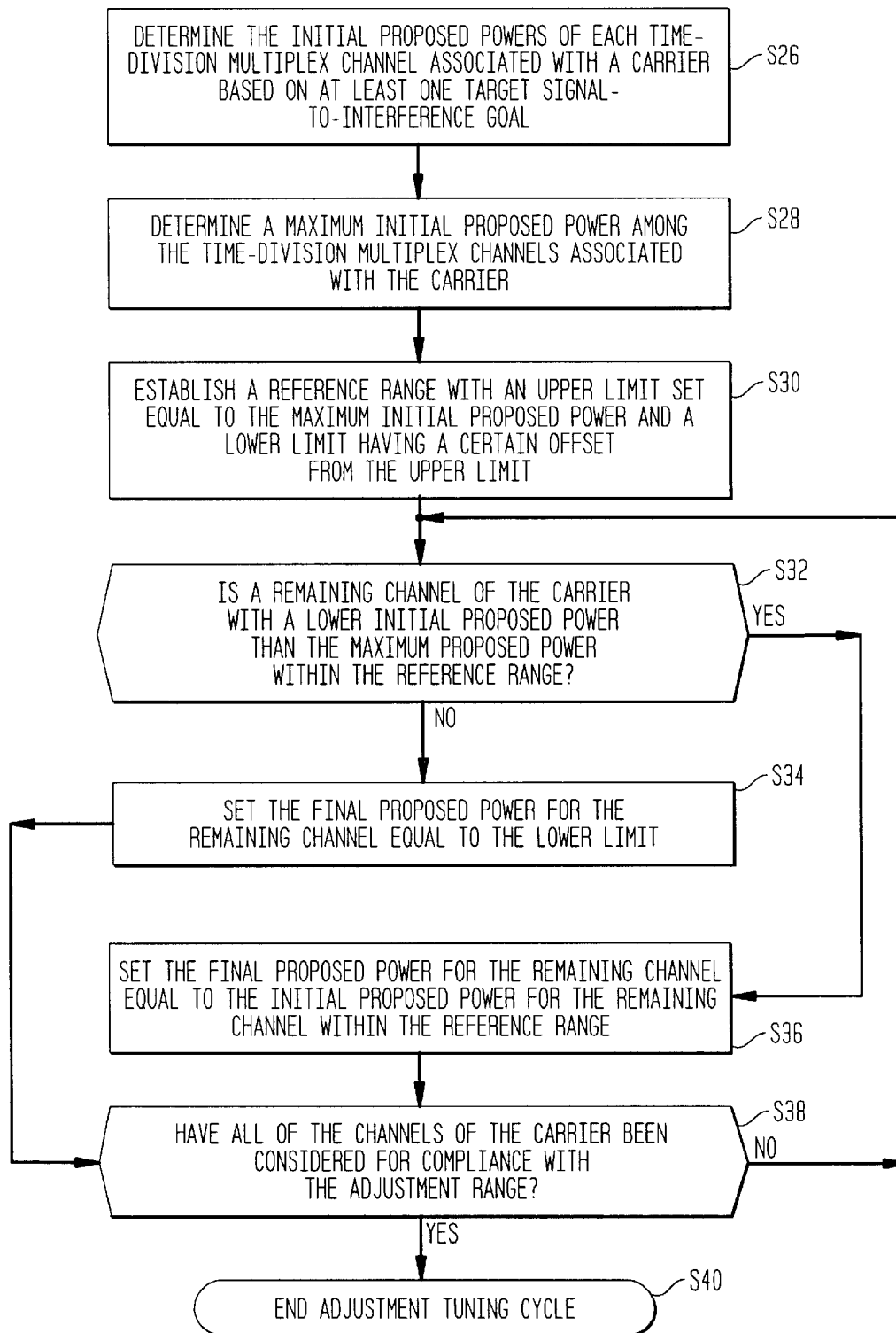


FIG. 3

BIT PATTERN	BER INTERVAL (%)	APPROXIMATE C/I (dB)
000	$0.01 > \text{BER}$	40
001	$0.1 > \text{BER} \geq 0.01$	35
010	$0.5 > \text{BER} \geq 0.1$	26
011	$1.0 > \text{BER} \geq 0.5$	21
100	$2.0 > \text{BER} \geq 1.0$	18
101	$4.0 > \text{BER} \geq 2.0$	15
110	$8.0 > \text{BER} \geq 4.0$	12
111	$\text{BER} \geq 8.0$	10

FIG. 4



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