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- (54) **ANTENNA DEVICE AND METHOD IN A MIMO SYSTEM**
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H04L 25/03 (2006.01)
H04L 25/49 (2006.01)
H04B 7/04 (2006.01)
H04B 7/06 (2006.01)

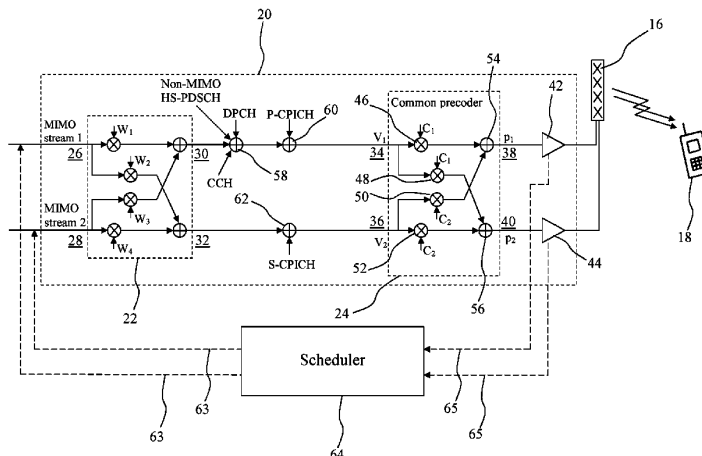
- (52) **U.S. Cl.**
CPC **H04B 7/0456** (2013.01); **H04B 7/0469** (2013.01); **H04B 7/0434** (2013.01); **H04B 7/0617** (2013.01)
USPC **375/297**; **375/295**; **375/296**

- (58) **Field of Classification Search**
CPC ... H04B 7/0434; H04B 7/0617; H04B 7/0456
USPC 375/297
See application file for complete search history.

(57) **ABSTRACT**

The invention relates to the technical field of radio communications, and in particular to an antenna device for a radio base station, and a method of operating an antenna device in a Multiple-Input Multiple-Output system. Embodiments of the invention disclose a secondary precoder (24) in series with a Multiple-Input Multiple-Output precoder (22). The Multiple-Input Multiple-Output precoder (22) has a first plurality of inputs (26, 28) for one or more Multiple-Input Multiple-Output data streams, and a first plurality of outputs (30, 32) for the one or more Multiple-Input Multiple-Output data streams. The secondary precoder has a second plurality of inputs (34, 36) and a second plurality of outputs (38, 40). The first plurality of outputs (30, 32) are in communication with the second plurality of inputs (34, 36). The antenna device further comprises a controller device (64), and the antenna device is operable to control an output power value of the one or more data streams at the second plurality of outputs (38, 40).

19 Claims, 6 Drawing Sheets



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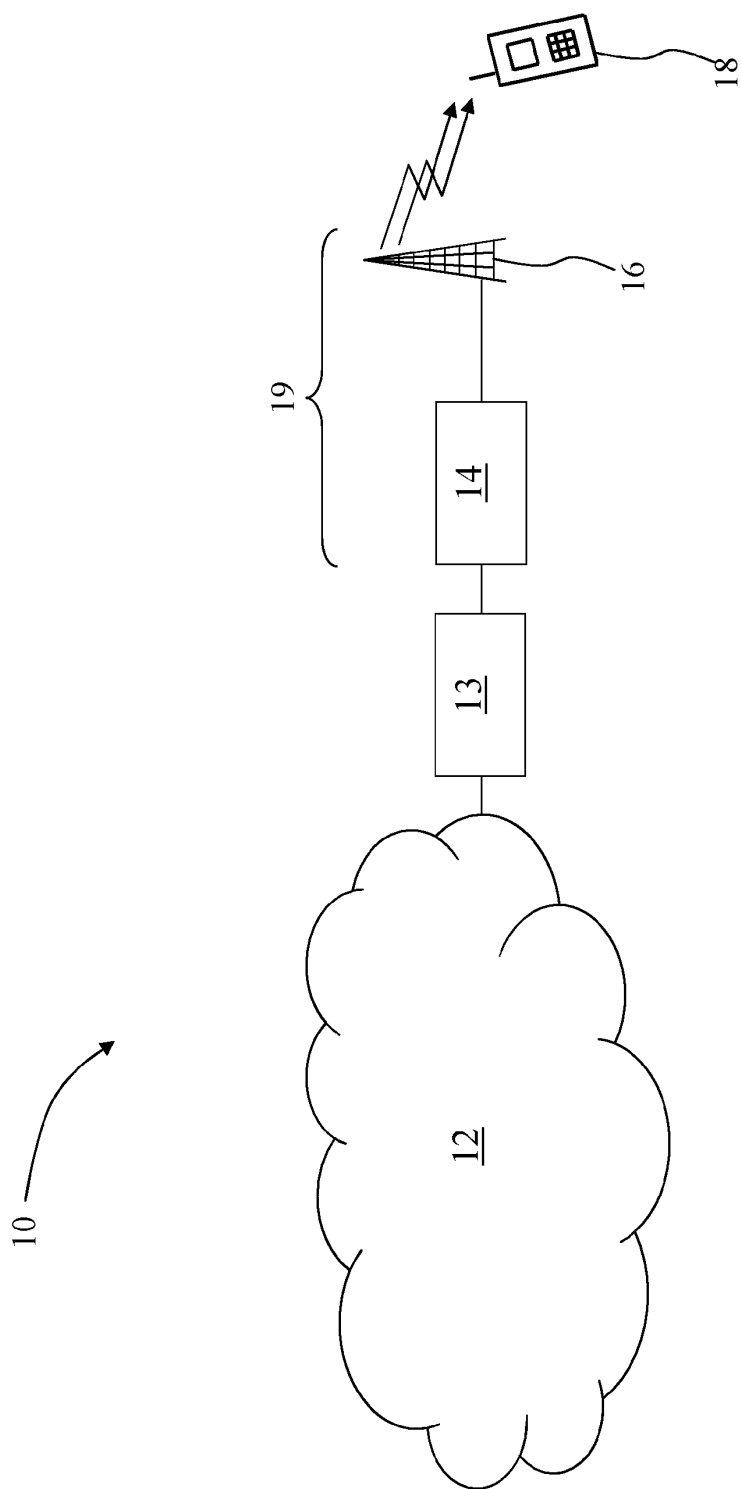
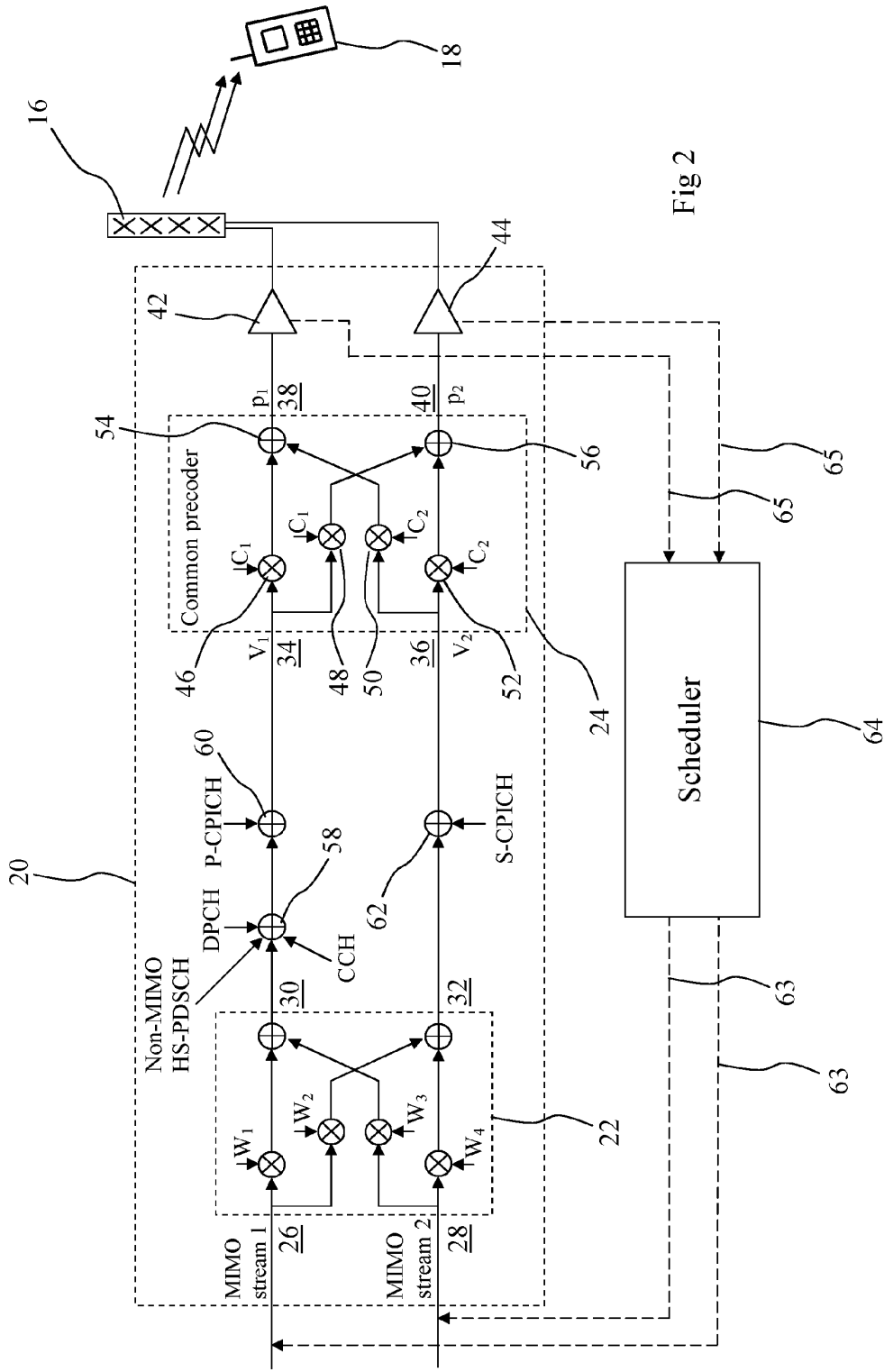


Fig 1



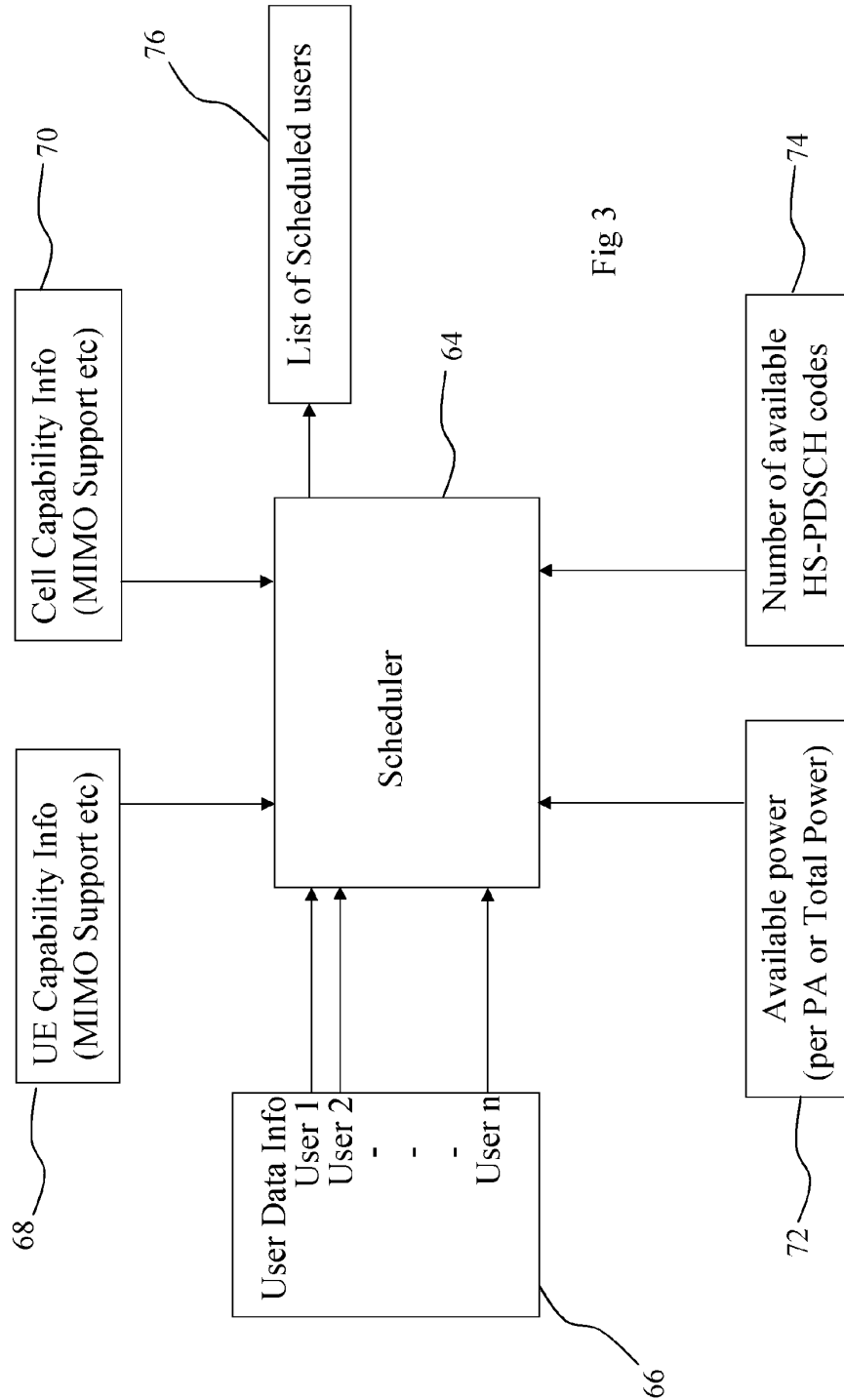


Fig 3

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