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Poon

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(54) **SPATIAL PUNCTURING APPARATUS, METHOD, AND SYSTEM**

(75) Inventor: **Ada S. Y. Poon**, Emeryville, CA (US)

(73) Assignee: **Intel Corporation**, Santa Clara, CA (US)

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H04Q 7/00 (2006.01)

(52) **U.S. Cl.** **370/334**; 375/267; 455/562.1

(58) **Field of Classification Search** 370/477, 370/478, 480, 498, 343, 345, 203, 208, 252–254, 370/310, 328, 334, 447; 375/299, 347, 260, 375/267; 455/562.1, 561
See application file for complete search history.

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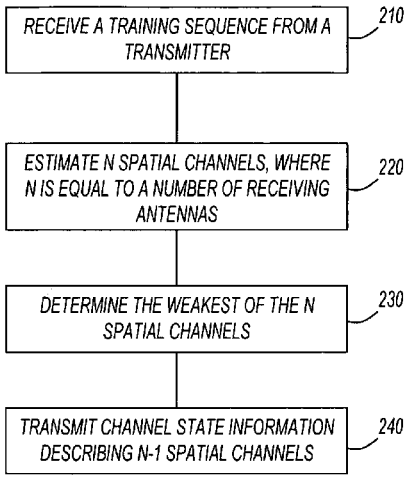
Primary Examiner—Ricky Ngo
Assistant Examiner—Pao Sinkantarakorn
(74) *Attorney, Agent, or Firm*—Dana B. Lemoine; Lemoine Patent Services, PLLC

(57) **ABSTRACT**

Stations in an N×N multiple-input-multiple-output (MIMO) wireless network always puncture the weakest spatial channel. A receiving station determines channel state information for N spatial channels and feeds back to the transmitting station channel state information for only N−1 spatial channels. The channel state information may include a beamforming matrix to cause the transmitting station to utilize N−1 spatial channels.

13 Claims, 6 Drawing Sheets



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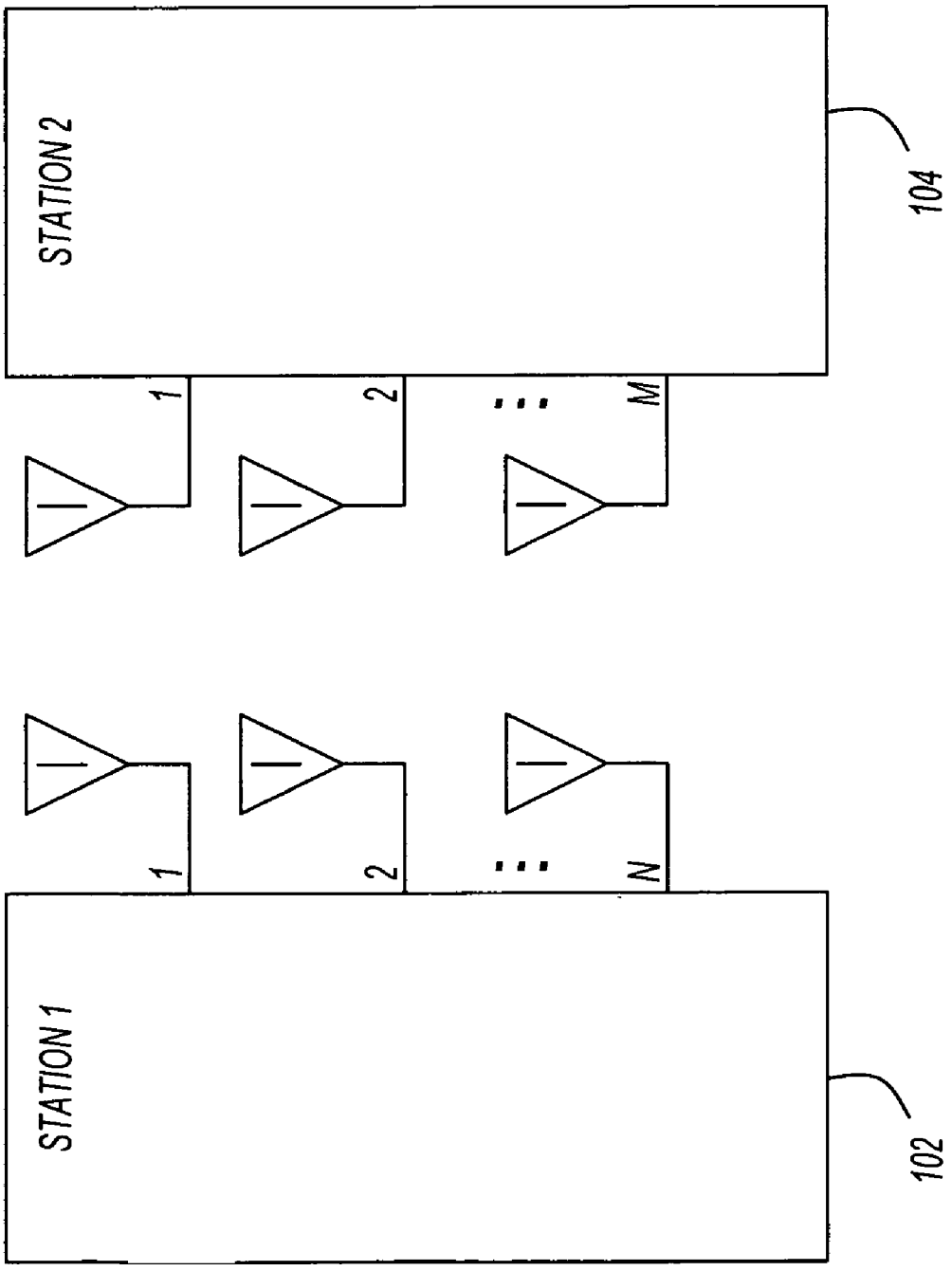

FIG. 1

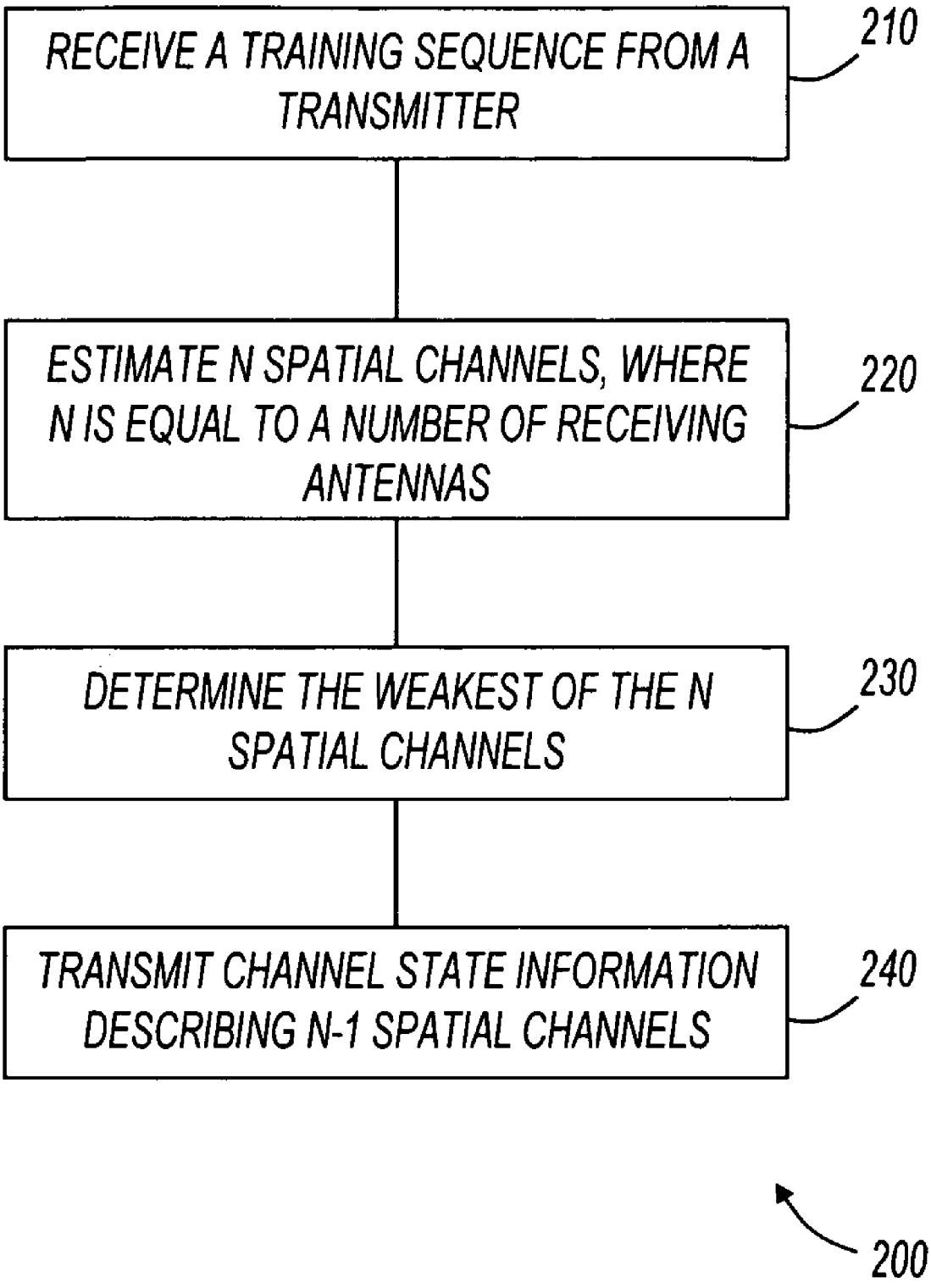

FIG. 2

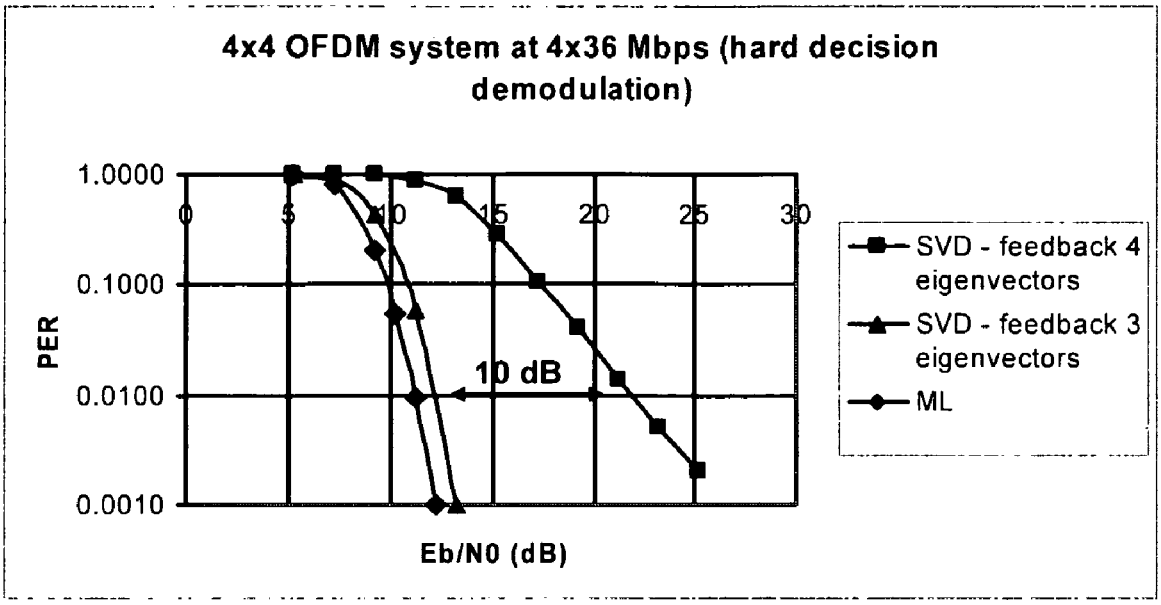

FIG. 3

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