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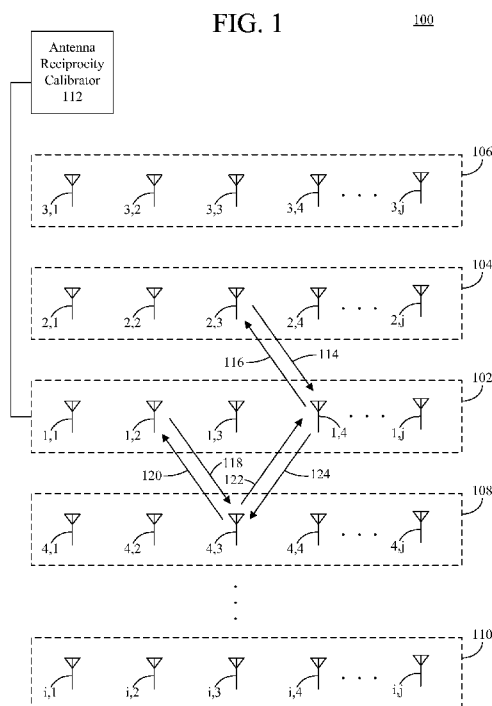
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(54) Title: ANTENNA RECIPROCITY CALIBRATION



(57) Abstract: A method and a system for calibrating at least one antenna (1,1-1,3, 1,j). At least a first antenna (1,4) within a first antenna array (102) can be selected as a primary reference antenna. At least one antenna (4,3) that is not within the first antenna array can be selected as a secondary reference antenna. At least a first signal propagation characteristic (122) can be measured based on at least one signal wirelessly communicated between the primary reference antenna and the secondary reference antenna. At least a second signal propagation characteristic (118) can be measured based on at least one signal wirelessly communicated between the secondary reference antenna and at least a second antenna (1,2) within the first antenna array. At least a first calibration coefficient can be determined for the second antenna.



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## AMENDED CLAIMS

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1. A method of calibrating at least one antenna, the method comprising:
  - selecting as a primary reference antenna at least a first antenna within a first antenna array;
  - selecting as a secondary reference antenna at least one antenna that is not within the first antenna array;
  - measuring at least a first signal propagation characteristic based on at least one signal wirelessly communicated between the primary reference antenna and the secondary reference antenna;
  - measuring at least a second signal propagation characteristic based on at least one signal wirelessly communicated between the secondary reference antenna and at least a second antenna within the first antenna array;
  - determining at least a first calibration coefficient for the second antenna within the first antenna array based on at least the first signal propagation characteristic and the second signal propagation characteristic; and
  - outputting the first calibration coefficient.
2. The method of claim 1 further comprising:
  - assigning a calibration coefficient to the primary reference antenna.
3. The method of claim 2 further comprising:
  - normalizing the first calibration coefficient for the second antenna to the calibration coefficient assigned to the primary reference antenna.
4. The method of claim 1 wherein measuring the first signal propagation characteristic comprises:
  - measuring a baseband response between the primary reference antenna and the secondary reference antenna.

5. The method of claim 4 wherein measuring the second signal propagation characteristic comprises:
  - measuring a baseband response between the secondary reference antenna and the second antenna within the first antenna array.
6. The method of claim 1 wherein measuring the first signal propagation characteristic comprises:
  - measuring a bi-directional baseband response between the primary reference antenna and the secondary reference antenna.
7. The method of claim 6 wherein measuring the second signal propagation characteristic comprises:
  - measuring a bi-directional baseband response between the secondary reference antenna and the second antenna within the first antenna array.
8. The method of claim 1 wherein selecting as the secondary reference antenna at least one antenna that is not within the first antenna array comprises:
  - selecting the secondary reference antenna from a plurality of antennas within a second antenna array.

9. An antenna reciprocity calibrator comprising:

a processor that:

selects as a primary reference antenna at least a first antenna within a first antenna array;

selects as a secondary reference antenna at least one antenna that is not within the first antenna array;

measures at least a first signal propagation characteristic based on at least one signal wirelessly communicated between the primary reference antenna and the secondary reference antenna;

measures at least a second signal propagation characteristic based on at least one signal wirelessly communicated between the secondary reference antenna and at least a second antenna within the first antenna array; and

determines at least a first calibration coefficient for the second antenna within the first antenna array based on at least the first signal propagation characteristic and the second signal propagation characteristic.