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(54) **SCALABLE PHASED-ARRAY SYSTEM FOR WIRELESS SYSTEMS**

(71) Applicant: **National Taiwan University**, Taipei (TW)

(72) Inventors: **Chun-Hsing Li**, Taipei (TW); **Pin-Chun Chiu**, Taipei (TW)

(73) Assignee: **National Taiwan University**, Taipei (TW)

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(58) **Field of Classification Search**

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See application file for complete search history.

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Primary Examiner — Phuongchau Ba Nguyen

(57) **ABSTRACT**

A scalable phased-array system for a wireless system includes: a plurality of transceivers, which are switched to form a transmitter mode and a receiver mode by means of time division duplexing (TDD), wherein each transceiver includes: a millimeter wave (mmWave) up-conversion circuit used to convert a baseband (BB) transmitter signal into an intermediate frequency (IF) transmitter signal; a power divider/combiner circuit used to divide the IF transmitter signal into a plurality of pairs of IF transmitter differential signals in the transmitter mode, and combine a plurality of pairs of BB receiver differential signals into a BB receiver signal in the receiver mode; and a beamforming circuit used to convert the pairs of the IF transmitter differential signals into a plurality of radio frequency (RF) transmitter signals in the transmitter mode, and convert a plurality of RF receiver signals into the pairs of the BB receiver differential signals in the receiver mode.

10 Claims, 5 Drawing Sheets