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(54) **MINIATURIZED DUAL-BALANCED MIXER CIRCUIT BASED ON A DOUBLE SPIRAL LAYOUT ARCHITECTURE**

(75) Inventors: **Che-Chung Kuo**, Taipei (TW); **Huei Wang**, Taipei (TW)

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

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See application file for complete search history.

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Primary Examiner — Long Nguyen
(74) *Attorney, Agent, or Firm* — Peter F. Corless; Steven M. Jensen; Edwards Wildman Palmer LLP

(57) **ABSTRACT**

A miniaturized dual-balanced mixer circuit based on a double spiral layout architecture is proposed, which is designed for use to provide a frequency mixing function for millimeter wave (MMW) signals, and which features a downsized circuit layout architecture that allows IC implementation to be more miniaturized than the conventional star-type dual-balanced mixer (DBM). The proposed miniaturized dual-balanced mixer circuit is distinguished from the conventional star-type DBM particularly in the use of a double spiral layout architecture for the layout of two balun circuit units. This feature allows the required layout area to be only about 15% of that of the conventional star-type DBM.

22 Claims, 7 Drawing Sheets