



US 20240223147A1

(19) **United States**(12) **Patent Application Publication**
Chee(10) **Pub. No.: US 2024/0223147 A1**(43) **Pub. Date: Jul. 4, 2024**(54) **STACKED DIGITAL CURRENT STEERING
AUTOMATIC GAIN CONTROL
ATTENUATOR**(52) **U.S. Cl.**CPC *H03G 3/3026* (2013.01); *H03F 3/195*
(2013.01); *H03G 1/0088* (2013.01); *H03G*
3/3063 (2013.01); *H03F 2200/294* (2013.01)(71) Applicant: **MOTOROLA SOLUTIONS, INC.**,
Chicago, IL (US)

(57)

ABSTRACT

An automatic gain control (AGC) attenuator for an amplifier. In one example, the AGC attenuator includes a first transistor stack including a plurality of first banks of current steering differential transistor pairs and configured to receive a radio frequency (RF) input signal and output a first attenuated RF signal. Each first bank of the plurality of first banks is configured to attenuate the RF input signal by a predetermined value. The AGC attenuator also includes a second transistor stack that includes a plurality of second banks of current steering differential transistor pairs. The second transistor stack is cascoded to the first transistor stack, and is configured to receive the first attenuated RF signal and output a second attenuated RF signal. Each second bank of the plurality of second banks is configured to attenuate the first attenuated RF signal by a predetermined value.

(72) Inventor: **Chong Hin Chee**, Gelugor (MY)(21) Appl. No.: **18/147,596**(22) Filed: **Dec. 28, 2022****Publication Classification**(51) **Int. Cl.***H03G 3/30* (2006.01)*H03F 3/195* (2006.01)*H03G 1/00* (2006.01)