US 20220360272A1

(19) United States

(12) Patent Application Publication (10) Pub. No.: US 2022/0360272 A1

Levi et al. (43) Pub. Date: Nov. 10, 2022

(54) **ANALOG TO DIGITAL CONVERTER AND A METHOD FOR ANALOG TO DIGITAL CONVERSION**

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(21) Appl. No.: **17/302,588**

(22) Filed: **May 6, 2021**

Publication Classification

(51) **Int. Cl.**
H03M 1/06 (2006.01)

(52) **U.S. Cl.**
CPC ***H03M 1/0617*** (2013.01); *H03M 1/1009* (2013.01)

(57) **ABSTRACT**

An analog to digital converter (ADC) that may include an input configured to receive a first signal and a second signal; a signal generator that is configured to generate multiple signals, the multiple signals may include a phase-shifted clock signals that are phase shifted from each other, first pulse width modulation (PWM) related signals indicative of a value of the first signal, second PWM related signals indicative of a value of the second signals, a first sampled stream, a second stream that have substantially opposite phases, and phase related signals related to the first sampled stream and the second sampled stream; wherein the first sampled stream and the second sampled stream are generated based on at least one of the phase shifted clock signals; and a processing unit that is configured to receive at least some of the multiple signals, the at least some of the multiple signals may include the first PWM related signals, the second PWM related signals, and the phase related signals; generate, based on the at least some of the multiple samples, virtual counter values and virtual phase values that are mutually aligned; determine a value of a difference between the first signal and the second signal, and output an ADC output signal indicative of the difference between the first signal and the second signal.