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STOICA et al.(10) **Pub. No.: US 2024/0213997 A1**(43) **Pub. Date: Jun. 27, 2024**(54) **GAIN AND OFFSET DIAGNOSIS OF
ANALOG-TO-DIGITAL CONVERTERS IN
SENSOR SIGNAL PATH**(52) **U.S. Cl.**CPC *H03M 1/34* (2013.01); *G10L 21/0232*
(2013.01); *H03M 1/0626* (2013.01)(71) Applicant: **Infineon Technologies AG**, Neubiberg
(DE)

(57)

ABSTRACT(72) Inventors: **Dan Ioan Dumitru STOICA**,
Bucharest (RO); **Constantin CRISU**,
Bucharest (RO); **Constantin STROI**,
Bucharest (RO); **Vlad BUICULESCU**,
Bucharest (RO); **Matthias BÖHM**,
Putzbrunn (DE); **Alessandro
CASPANI**, Villach (AT); **Cesare
BUFFA**, Villach (AT); **Franz Michael
DARRER**, Graz (AT)(21) Appl. No.: **18/146,641**(22) Filed: **Dec. 27, 2022****Publication Classification**(51) **Int. Cl.***H03M 1/34* (2006.01)*G10L 21/0232* (2006.01)*H03M 1/06* (2006.01)

A sensor circuit, having a startup phase and an operation phase, includes: a sensor configured to generate a sensor signal based on a measured property, wherein the sensor signal has a frequency spectrum defined by a first frequency and a second frequency that is greater than the first frequency; a signal processing circuit including an analog-to-digital converter (ADC) configured to convert the sensor signal into a digital sensor signal; and an offset diagnosis circuit. The offset diagnosis circuit includes: a low pass filter having a cutoff frequency less than the first frequency and configured to generate a filtered signal based on the digital sensor signal; an offset register configured to store a startup signal value of the filtered signal during the startup phase; and an offset comparator circuit configured to set a threshold range based on the startup signal value for use during the operation phase.

