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(54) Title: TIME VARYING QUANTIZATION-BASED LINEARITY ENHANCEMENT OF SIGNAL CONVERTERS AND MIXED-SIGNAL SYSTEMS

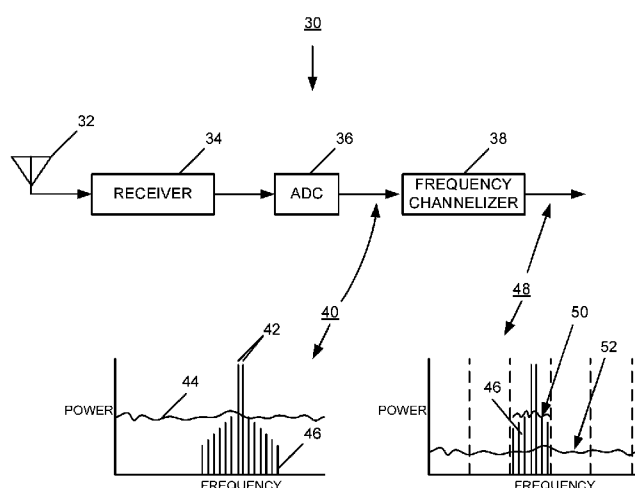


FIG. 2

(57) Abstract: A signal-linearization system and method reduces nonlinear distortions in a digitized signal generated by an analog-to-digital converter (ADC) when converting an analog input signal from analog to digital form. A signal adder adds a dither waveform to the analog input signal. An ADC includes sample-and-hold (S/H) circuitry and quantizer circuitry. The ADC converts the analog input signal with the added dither waveform into a digitized signal. The dither waveform operates to suppress nonlinear distortions attributed to the quantizer circuitry. A linearizer processor performs nonlinear equalization (NLEQ) on the digitized signal to suppress nonlinear distortions attributed to the S/H circuitry. A dither waveform removal module removes a digital counterpart of the dither waveform from the digitized signal.

**A. CLASSIFICATION OF SUBJECT MATTER*****H04B 1/10(2006.01)i, H04B 7/04(2006.01)i, H03M 1/12(2006.01)i***

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

H04B 1/10; H04B 1/04; H03F 1/32

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) &amp; Keywords: distortion, non-linear, Analog-to-Digital Converter.

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                       | Relevant to claim No. |
|-----------|----------------------------------------------------------------------------------------------------------|-----------------------|
| A         | EP 2128991 A2 (INSTRUMENTATION TECHNOLOGIES D.O.O.) 02 December 2009<br>See abstract and paragraph 0003. | 1-31                  |
| A         | JP 2009-246655 A (FUJITSU LTD) 22 October 2009<br>See abstract.                                          | 1-31                  |
| A         | KR 10-2007-0081199 A (SAMSUNG ELECTRONICS CO., LTD.) 16 August 2007<br>See abstract.                     | 1-31                  |



Further documents are listed in the continuation of Box C.



See patent family annex.

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|-------------------------------------------|---------------------|-------------------------------------|--------------------------|
| EP 2128991 A2                             | 02.12.2009          | US 2009-0295471 A1<br>US 8060045 B2 | 03.12.2009<br>15.11.2011 |
| JP 2009-246655 A                          | 22.10.2009          | None                                |                          |
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