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(54) **DAC INL COMPENSATION THROUGH THERMOMETER SEGMENT TUNING**

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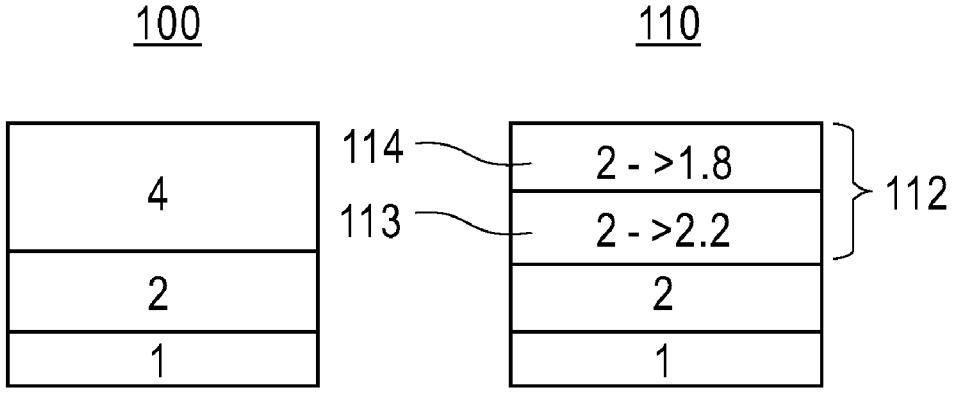
(57) **ABSTRACT**

A system and method for compensating segmented DAC intrinsic INL by adjusting the relative strength of DAC thermometer segments. In the method, the strength of each thermometer segment is adjusted sequentially to reduce INL to 0 at one point on each thermometer code range. The strength of the binary section is also adjusted to further reduce INL while conserving output amplitude. The system includes a calibration circuit that senses the DAC differential output and compares it to an ideal output generated from the same DAC via dithering between 0 and a maximum code. The compensation scheme only performs a specific type of DAC compensation, specifically compensating for systematic non-linearity rather than for mismatch-induced non-linearity. The method can also be applied to calibrate a full thermometer DAC.



Codes
000->0
001->1
010->2
011->1+2=3
100->4
101->4+1=5
110->4+2=6
111->4+2+1=7

Codes
0000->0
0001->1
0010->2
0011->1+2=3
0110->2+2=4
0111->2+2+1=5
1110->2+2+2=6
1111->2+2+2+1=7