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**NIKITIN**(10) **Pub. No.: US 2022/0360277 A1**(43) **Pub. Date: Nov. 10, 2022**(54) **METHOD OF VERNIER  
DIGITAL-TO-ANALOG CONVERSION**(52) **U.S. CL.**  
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Petersburg (RU)(57) **ABSTRACT**(21) Appl. No.: **17/621,380**(22) PCT Filed: **Jun. 30, 2020**(86) PCT No.: **PCT/RU2020/050138**

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A digital-to-analog conversion, including: converting signal  $Y$  using word  $X=M+a^{-\alpha}N$  having length  $\Psi=\alpha+\beta$  digits, where  $M$  is high order digits of a long control word  $X$ ,  $a^{-\alpha}N$  is low order digits of  $\beta$  long control word  $X$ , wherein  $\alpha \approx \beta$ ; subjecting analog signal  $Z$  to three conversions, wherein, in the first conversion, signal  $Z_1$  is proportional to  $M\alpha$  long high order digits of  $X$ , and to reference signal  $Y_1$ , where  $Z_1=Y_1 \times M$ , in the second and third conversions, signals  $Z_2$  and  $Z_3$  are proportional to  $N\beta$  long low order digits of  $X$  and to signals  $Y_1$  and  $Y_2$ , respectively, where  $Z_2=Y_1 \times N$ , and  $Z_3=Y_2 \times N$ , wherein, before the conversions,  $a^{-\alpha}N$  low order digits of  $X$  are multiplied by  $a^{\alpha}$ ; and adding  $Z_1$ ,  $Z_2$ ,  $Z_3$  to generate output signal  $Z_0$ , wherein  $Y_1$  and  $Y_2$  relate by  $Y_2=Y_1(1 \pm a^{-\alpha})$ , wherein  $a$  is the base of the numbering system,  $\alpha$  is the number of digits, by which  $a^{-\alpha}N$  is shifted.

