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Digital Volume Control – TAS2557/TAS2559/TAS2560

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ABSTRACT

This document explains how to set the digital volume control for TAS2557, TAS2559 and TAS2560. This volume control is included in the ROM Mode processing blocks.

Contents

1   Digital Volume

This volume control can adjust the gain of the signal from 0dB to -110dB. Below it is explained how to configure the device for a specific gain. This gain volume control is included in the ROM modes.

2   Control Registers

This volume control is set by the values of 4 registers, starting from Book 0 Page 50 Register 12 to Register 15.

3   Obtain Register Values

Volume is controlled by writing specific values for the registers mentioned before. A formula exists to calculate such register values:

$$Ratio = 10^{\frac{Gain}{20}} * 2^{31}$$

Once *Ratio* is obtained, it is rounded to the next integer value and finally convert this decimal value into hex and write it into the registers mentioned before. If the hex value has less than 8 bits, fill with 0's on the left side.

4   Example

On this example, a gain of -23dB will be written to the device:

1. Gain = -23dB, calculate *Ratio*:

   a. $Ratio = 10^{\frac{Gain}{20}} * 2^{31} = 10^{\frac{-23}{20}} * 2^{31} = 152030199.6$

2. Round *Ratio* to next integer value:

   a. $Ratio \cong 152030200$

3. Convert decimal to hex:

   a. $152030200 = 90FCBF8$

4. Complete the 8 bits

   a. $90FCBF8 = 090FCBF8$

5. Write hex value into device registers

   a. w 98 00 00
      w 98 7f 00
      w 98 00 32
      w 98 0c 09 0F CB F8