



ABSTRACT

The TAS5827, TAS5828M, and TAS5830 devices have a powerful uCDSP audio processing core, which supports several selectable process flows. This user's guide explains details of each process flow.

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Trademarks



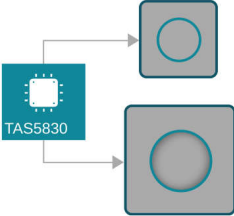
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1 General Overview

1.1 Supported Use Cases

The TAS5827, TAS5828M, and TAS5830 process flows have been generated based upon several popular configurations, primarily around the number and type of amplified outputs. [Table 1-1](#) shows the use cases supported by available process flows and PPC3 GUI.

Table 1-1. Supported Use Cases

Mode	Also Known As	Amplifier Output Configuration	Symbol in PPC3 GUI
2.0	Stereo	One device drives two full-range speakers in stereo	
Mono	1.0	A single signal, created from one or both of the two input signals sent via a single output created by placing the two output channels in parallel into a single channel, usually to drive more power.	
Mono	1.1	Two input channels are mixed into one. One device drives a tweeter on one channel and a woofer on the other.	

2 Process Flows

2.1 Overview

Table 2-1 shows the processing features of each process flow available in the current PPC3 GUI.

Table 2-1. Processing Features Comparison Table

Feature	Process Flow 1 (Base/Pro, 48kHz, 2.0)	Process Flow 2 (Base/Pro, 96kHz, 2.0)	Process Flow 3 (Base/Pro Hybrid, 2.0)	Process Flow 4 (Lite Mode, 2.0)	Process Flow 5 (Base/Pro, 48kHz, 1.0)	Process Flow 6 (Base/Pro, 96kHz, 1.0)	Process Flow 5 (Base/Pro Hybrid, 1.0)	Process Flow 6 (Lite Mode, 1.0)	Process Flow 9 (Base/Pro, 96kHz, 1.1)
Speaker Configuration	Stereo 2.0	Stereo 2.0	Stereo 2.0	Stereo 2.0	Mono 1.0	Mono 1.0	Mono 1.0	Mono 1.0	Mono 1.1
Maximum Internal Sample Rate	48kHz	96kHz	96kHz	192kHz	48kHz	96kHz	96kHz	192kHz	96kHz
SRC and Auto-detect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Supported Input Sample Rates (32k, 44.1k, 48k, 88.2k and 96k)	Yes	Yes	Yes	192kHz is supported	Yes	Yes	Yes	192kHz is supported	Yes
Biquads (BQs) for EQ Filtering (Individual Left / Right)	12	12	12	No	12	12	12	No	12
Input Mixer	Yes	Yes	Yes	No	Yes	Yes	Yes	No	Yes
Click and Pop Free Volume	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dynamic Parametric Equalizer (DPEQ)	Yes	No	No	No	Yes	No	No	No	No
DRC	3-Band 4 th Order Crossover	2-Band 4 th Order Crossover	2-Band 4 th Order Crossover	No	3-Band 4 th Order Crossover	2-Band 4 th Order Crossover	2-Band 4 th Order Crossover	No	2-Band 4 th Order Crossover
Automatic Gain Limiter	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
Output Clipper	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
Class-H	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Hybrid PWM Mode	Yes	No	Yes	Yes	No	No	Yes	Yes	No

2.2 Process Flow 1

This process flow supports a maximum internal sample rate of 48kHz. It is intended for stereo speakers where the 3-Band DRC uses individual coefficients for left and right. It is possible to tune the left and right Biquads (BQs) in the 12BQ bank and in the two post-EQ blocks individually between left and right. Hybrid modulation and class-H control are supported in this process flow.

Figure 2-1 depicts the signal path of this flow. The blocks below correspond to the functions found in the PPC3 GUI.

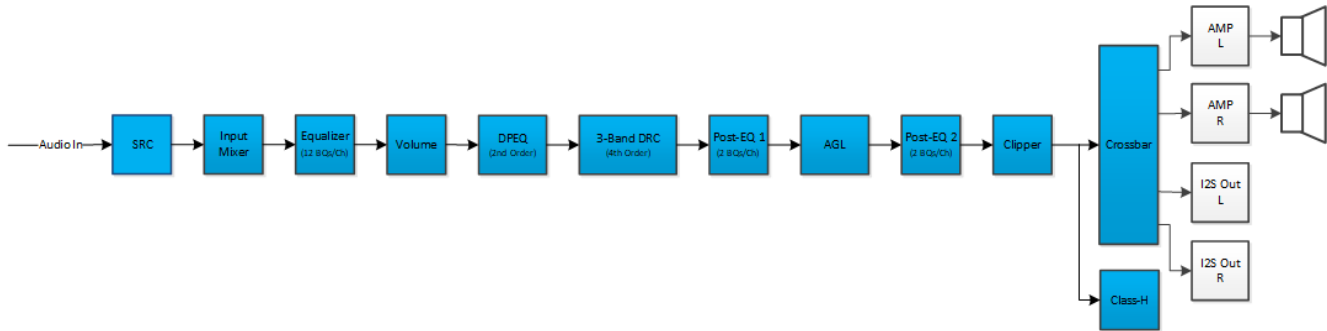


Figure 2-1. Process Flow 1

2.2.1 SRC

The Sample Rate Converter (SRC) supports 32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, and 96 kHz input sample rates. These input sample rates can be converted to 44.1 kHz or 48 kHz sample rates that the device uses for DSP processing.

2.2.2 Input Mixer

The input mixer is used to mix the left and right channel input signals. Refer to [Section 3.1](#) for more details.

2.2.3 Equalizer

The equalizer contains 12 independent filters for both left and right channels. This process flow also has two banks of two biquads for both channels that can be used for EQ later in the signal chain. Refer to [Section 3.2](#) for more details.

2.2.4 Volume

This volume block is click and pop free. Refer to [Section 3.3](#) for more details.

2.2.5 DPEQ

The dynamic parametric equalizer is used to mix the audio signals through two signal paths (low level and high level). These two paths are used with separate equalization properties. A third path monitors the incoming audio and determines the thresholds and mixing characteristics between these two paths. Thus, the mix between the two high- and low-level channels is dynamic in nature and depends on the incoming audio. Refer to [Section 3.4](#) for more details.

2.2.6 3-Band DRC

The 3-Band DRC can be used to automatically control the audio signal amplitude or the dynamic range within specified limits. Refer to [Section 3.5](#) for more details.

2.2.7 AGL

The AGL can also be used to automatically control the audio signal amplitude or dynamic range within specified limits. Refer to [Section 3.7](#) for more details.

2.2.8 Clipper

A THD boost and fine volume control together can be used for clipping. The Clipper block allows the user to programmatically increase the THD by clipping at an operating point earlier than that defined by the supply rails to achieve a higher output power. Refer to [Section 3.8](#) for more details.

2.2.9 Output Crossbar

The crossbar provides the end user with a very flexible way to control what finally appears on amplifier outputs and I2S SDOOUT. Refer to [Section 3.9](#) for more details.

2.2.10 DSP Memory Map

Refer to [Section A.1](#) for more details.

2.3 Process Flow 2

This process flow supports a maximum internal sample rate of 96kHz. It is intended for stereo speakers where the 2-Band DRC uses individual coefficients for left and right. It is possible to tune the left and right BQs in the 12 BQ bank individually between left and right. Class-H control is supported in this process flow.

[Figure 2-2](#) depicts the signal path for this flow. The blocks below correspond to the functions found in the PPC3 GUI.

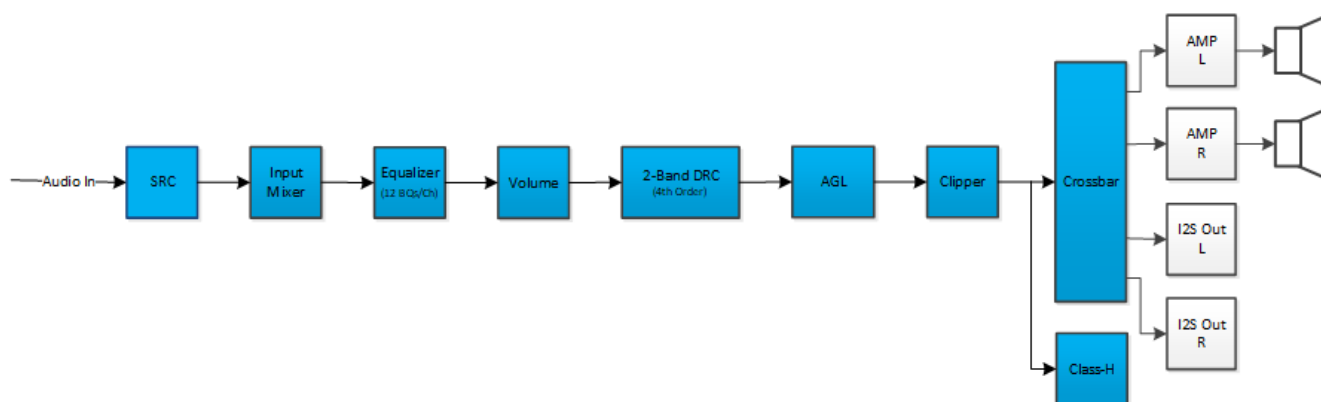


Figure 2-2. Process Flow 2

2.3.1 SRC

The Sample Rate Converter (SRC) supports 32kHz, 44.1kHz, 48kHz, 88.2kHz, and 96kHz input sample rates. These input sample rates can be converted to 88.2kHz or 96kHz sample rate that the device can use for DSP processing.

2.3.2 Input Mixer

The input mixer is used to mix the left and right channel input signals. Refer to [Section 3.1](#) for more details.

2.3.3 Equalizer

The equalizer contains 12 independent filters for both left and right channels. Refer to [Section 3.2](#) for more details.

2.3.4 Volume

This volume block is click and pop free. Refer to [Section 3.3](#) for more details.

2.3.5 2-Band DRC

The 2-Band DRC can be used to automatically control the audio signal amplitude or the dynamic range within specified limits. Refer to [Section 3.6](#) for more details.

2.3.6 AGL

The AGL can also be used to automatically control the audio signal amplitude or dynamic range within specified limits. Refer to [Section 3.7](#) for more details.

2.3.7 Clipper

A THD boost and fine volume control together can be used for clipping. The Clipper block allows the user to programmatically increase the THD by clipping at an operating point earlier than that defined by the supply rails to achieve a higher output power. Refer to [Section 3.8](#) for more details.

2.3.8 Output Crossbar

The crossbar provides the end user with a very flexible way to control what finally appears on amplifier outputs and I2S SDOOUT. Refer to [Section 3.9](#) for more details.

2.3.9 DSP Memory Map

Refer to [Section A.2](#) for more details.

2.4 Process Flow 3

This process flow supports a maximum internal sample rate of 96 kHz. It is intended for stereo speakers where the 2-Band DRC uses individual coefficients for left and right. It is possible to tune the left and right Biquads (BQs) in the 12 BQ bank individually between left and right. Hybrid modulation and class-H control are supported in this process flow.

[Figure 2-3](#) depicts the signal path of this flow. The blocks below correspond to the functions found in the PPC3 GUI.

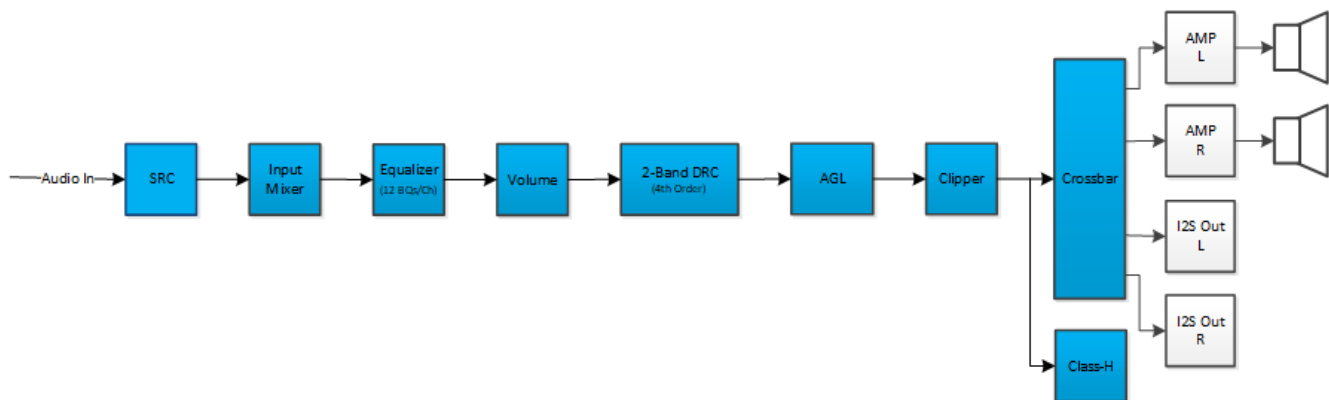


Figure 2-3. Process Flow 3

2.4.1 SRC

The Sample Rate Converter (SRC) supports 32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, and 96 kHz input sample rates. These input sample rates can be converted to 88.2kHz or 96 kHz sample rate that the device can use for DSP processing.

2.4.2 Input Mixer

The input mixer is used to mix the left and right channel input signals. Refer to [Section 3.1](#) for more details.

2.4.3 Equalizer

The equalizer contains 14 independent filters for both left and right channels. Refer to [Section 3.2](#) for more details.

2.4.4 Volume

This volume block is click & pop free. Refer to [Section 3.3](#) for more details.

2.4.5 2-Band DRC

The 2-Band DRC can be used to automatically control the audio signal amplitude or the dynamic range within specified limits. Refer to [Section 3.6](#) for more details.

2.4.6 AGL

The AGL can also be used to automatically control the audio signal amplitude or dynamic range within specified limits. Refer to [Section 3.7](#) for more details.

2.4.7 Clipper

A THD boost and fine volume control together can be used for clipping. The Clipper block allows the user to programmatically increase the THD by clipping at an operating point earlier than that defined by the supply rails to achieve a higher output power. Refer to [Section 3.8](#) for more details.

2.4.8 Output Crossbar

The crossbar provides the end user with a very flexible way to control what finally appears on amplifier outputs and I2S SDOOUT. Refer to [Section 3.9](#) for more details.

2.4.9 DSP Memory Map

Refer to [Section A.1](#) for details.

2.5 Process Flow 4

This process flow supports a maximum internal sample rate of 192kHz. It is intended for high sample rate applications where most of the DSP is disabled. Class-H control and hybrid modulation are both supported in this process flow.

[Figure 2-4](#) depicts the signal path for this flow. The blocks below correspond to the functions found in the PPC3 GUI.

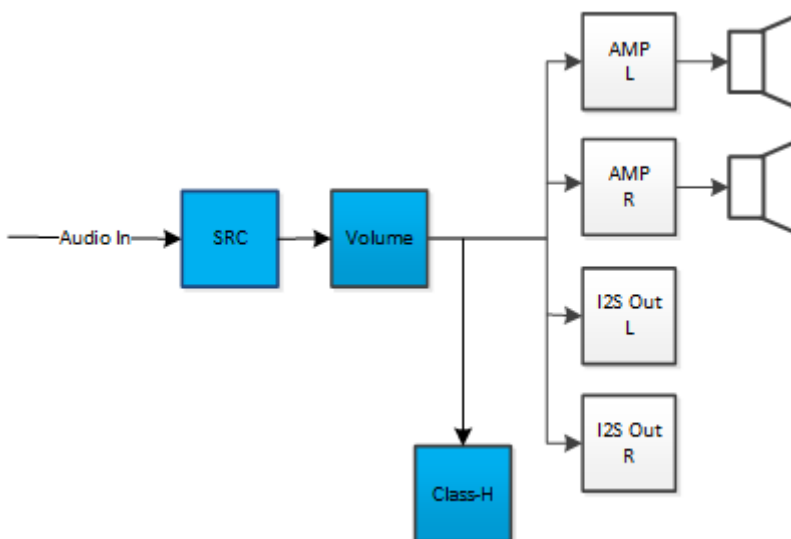


Figure 2-4. Process Flow 4

2.5.1 SRC

The Sample Rate Converter (SRC) supports 32kHz, 44.1kHz, 48kHz, 88.2kHz, 96kHz, and 192kHz input sample rates. These input sample rates can be converted to a 192kHz sample rate that the device can use for DSP processing.

2.5.2 Volume

This volume block is click & pop free. Refer to [Section 3.3](#) for more details.

2.5.3 DSP Memory Map

Refer to [Section A.2](#) for details.

2.6 Process Flow 5

This process flow supports 1.0 speaker configurations with a maximum internal sample rate of 48kHz. It is intended for a single speaker with the same blocks as a single channel in [Section 2.2](#) and supports class-H control.

[Figure 2-5](#) depicts the signal path of this flow. The blocks below correspond to the functions found in the PPC3 GUI.

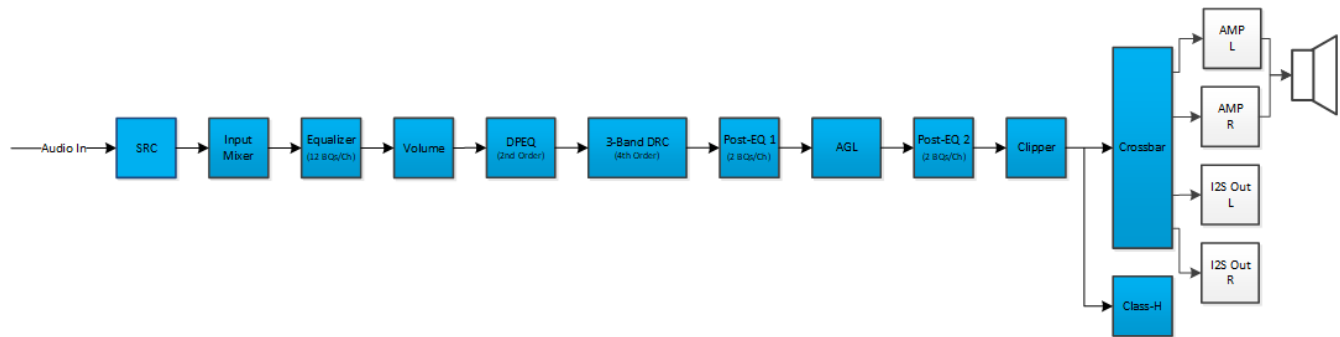


Figure 2-5. Process Flow 5

2.6.1 SRC

The Sample Rate Converter (SRC) supports 32kHz, 44.1kHz, 48kHz, 88.2kHz, and 96kHz input sample rates. These input sample rates can be converted to 44.1kHz or 48kHz sample rates that the device can use for DSP processing.

2.6.2 Input Mixer

The input mixer is used to mix the left and right channel input signals. Refer to [Section 3.1](#) for more details.

2.6.3 Equalizer

The equalizer contains 14 independent filters for the single channel. Refer to [Section 3.2](#) for more details.

2.6.4 Volume

This volume block is click & pop free. Refer to [Section 3.3](#) for more details.

2.6.5 DPEQ

The dynamic parametric equalizer is used to mix the audio signals through two signal paths (low level and high level). These two paths are used with separate equalization properties. A third path monitors the incoming audio and determines the thresholds and mixing characteristics between these two paths. Thus, the mix between the two high- and low-level channels is dynamic in nature and depends on the incoming audio. Refer to [Section 3.4](#) for more details.

2.6.6 3-Band DRC

The 3-Band DRC can be used to automatically control the audio signal amplitude or the dynamic range within specified limits. Refer to [Section 3.5](#) for more details.

2.6.7 AGL

The AGL can also be used to automatically control the audio signal amplitude or dynamic range within specified limits. Refer to [Section 3.7](#) for more details.

2.6.8 Clipper

A THD boost and fine volume control together can be used for clipping. The Clipper block allows the user to programmatically increase the THD by clipping at an operating point earlier than that defined by the supply rails to achieve a higher output power. Refer to [Section 3.8](#) for more details.

2.6.9 Output Crossbar

The crossbar provides the end user with a flexible way to control what finally appears on amplifier outputs and I2S SDOUT. Refer to [Section 3.9](#) for more details.

2.6.10 DSP Memory Map

Refer to [Section A.1](#) for details.

2.7 Process Flow 6

This process flow supports 1.0 speaker configurations with a maximum internal sample rate of 96kHz. It is intended for a single speaker with the same blocks as a single channel in [Section 2.3](#) and supports class-H control.

[Figure 2-6](#) depicts the signal path for this flow. The blocks below correspond to the functions found in the PPC3 GUI.

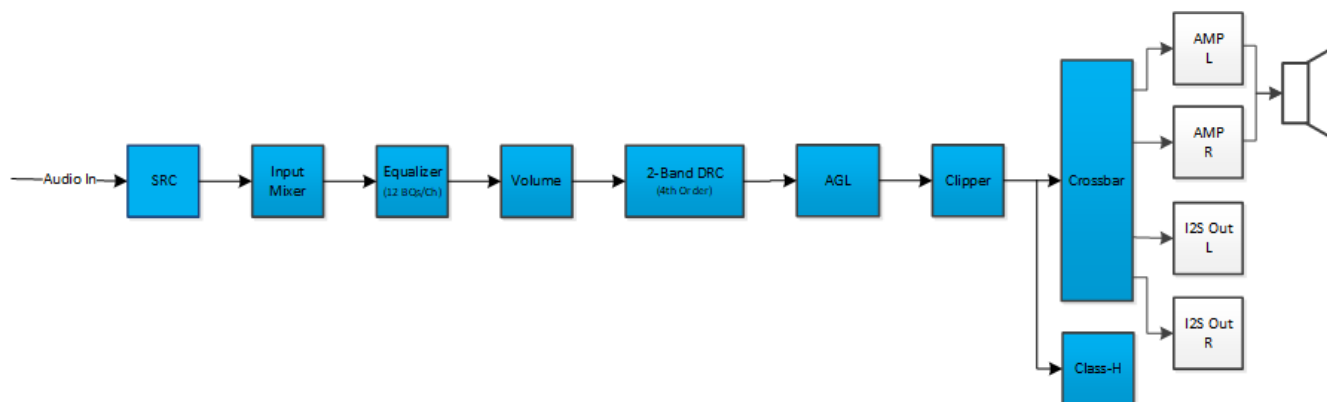


Figure 2-6. Process Flow 6

2.7.1 SRC

The Sample Rate Converter (SRC) supports 32kHz, 44.1kHz, 48kHz, 88.2kHz, and 96kHz input sample rates. These input sample rates can be converted to 88.2kHz or 96kHz sample rate that the device can use for DSP processing.

2.7.2 Input Mixer

The input mixer is used to mix the left and right channel input signals. Refer to [Section 3.1](#) for more details.

2.7.3 Equalizer

The equalizer contains 14 independent filters for the single channel. Refer to [Section 3.2](#) for more details.

2.7.4 Volume

This volume block is click & pop free. Refer to [Section 3.3](#) for more details.

2.7.5 2-Band DRC

The 2-Band DRC can be used to automatically control the audio signal amplitude or the dynamic range within specified limits. Refer to [Section 3.6](#) for more details.

2.7.6 AGL

The AGL can also be used to automatically control the audio signal amplitude or dynamic range within specified limits. Refer to [Section 3.7](#) for more details.

2.7.7 Clipper

A THD boost and fine volume control together can be used for clipping. The Clipper block allows the user to programmatically increase the THD by clipping at an operating point earlier than that defined by the supply rails to achieve a higher output power. Refer to [Section 3.8](#) for more details.

2.7.8 Output Crossbar

The crossbar provides the end user with a flexible way to control what finally appears on amplifier outputs and I2S SDOUT. Refer to [Section 3.9](#) for more details.

2.7.9 DSP Memory Map

Refer to [Section A.2](#) for details.

2.8 Process Flow 7

This process flow supports 1.0 speaker configurations with a maximum internal sample rate of 96kHz. It is intended for a single speaker with the same blocks as a single channel in [Section 2.4](#) and supports class-H control in addition to hybrid modulation.

[Figure 2-7](#) depicts the signal path of this flow. The blocks below correspond to the functions found in the PPC3 GUI.

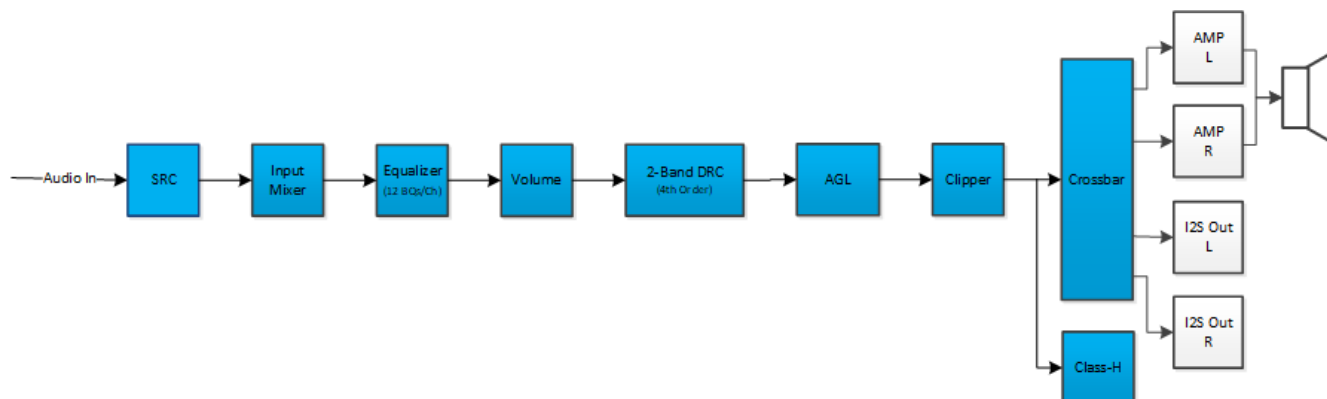


Figure 2-7. Process Flow 7

2.8.1 SRC

The Sample Rate Converter (SRC) supports 32kHz, 44.1kHz, 48kHz, 88.2kHz, and 96kHz input sample rates. These input sample rates can be converted to 88.2kHz or 96kHz sample rate that the device can use for DSP processing.

2.8.2 Input Mixer

The input mixer is used to mix the left and right channel input signals. Refer to [Section 3.1](#) for more details.

2.8.3 Equalizer

The equalizer contains 14 independent filters for the single channel. Refer to [Section 3.2](#) for more details.

2.8.4 Volume

This volume block is click & pop free. Refer to [Section 3.3](#) for more details.

2.8.5 2-Band DRC

The 2-Band DRC can be used to automatically control the audio signal amplitude or the dynamic range within specified limits. Refer to [Section 3.6](#) for more details.

2.8.6 AGL

The AGL can also be used to automatically control the audio signal amplitude or dynamic range within specified limits. Refer to [Section 3.7](#) for more details.

2.8.7 Clipper

A THD boost and fine volume control together can be used for clipping. The Clipper block allows the user to programmatically increase the THD by clipping at an operating point earlier than that defined by the supply rails to achieve a higher output power. Refer to [Section 3.8](#) for more details.

2.8.8 Output Crossbar

The crossbar provides the end user with a flexible way to control what finally appears on amplifier outputs and I2S SDOOUT. Refer to [Section 3.9](#) for more details.

2.8.9 DSP Memory Map

Refer to [Section A.1](#) for details.

2.9 Process Flow 8

This process flow supports a maximum internal sample rate of 192kHz. It is intended for a single speaker with the same blocks as a single channel in [Section 2.5](#) and supports class-H control in addition to hybrid modulation.

[Figure 2-8](#) depicts the signal path for this flow. The blocks below correspond to the functions found in the PPC3 GUI.

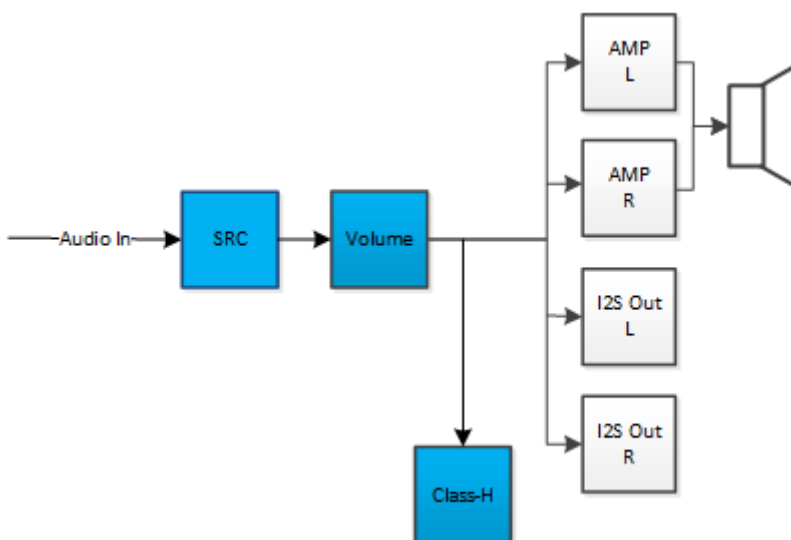


Figure 2-8. Process Flow 8

2.9.1 SRC

The Sample Rate Converter (SRC) supports 32kHz, 44.1kHz, 48kHz, 88.2kHz, 96kHz, and 192kHz input sample rates. These input sample rates can be converted to a 192kHz sample rate that the device can use for DSP processing.

2.9.2 Volume

This volume block is click & pop free. Refer to [Section 3.3](#) for more details.

2.9.3 DSP Memory Map

Refer to [Section A.2](#) for details.

2.10 Process Flow 9

This process flow supports 1.1 speaker configurations with a maximum internal sample rate of 96kHz. It is intended for a tweeter-woofer speaker combination where there are different processing options for the two channels. It is possible to tune the left and right BQs in the 12 BQ bank individually between the tweeter and woofer.

Figure 2-9 depicts the signal path for this flow. The blocks below correspond to the functions found in the PPC3 GUI.

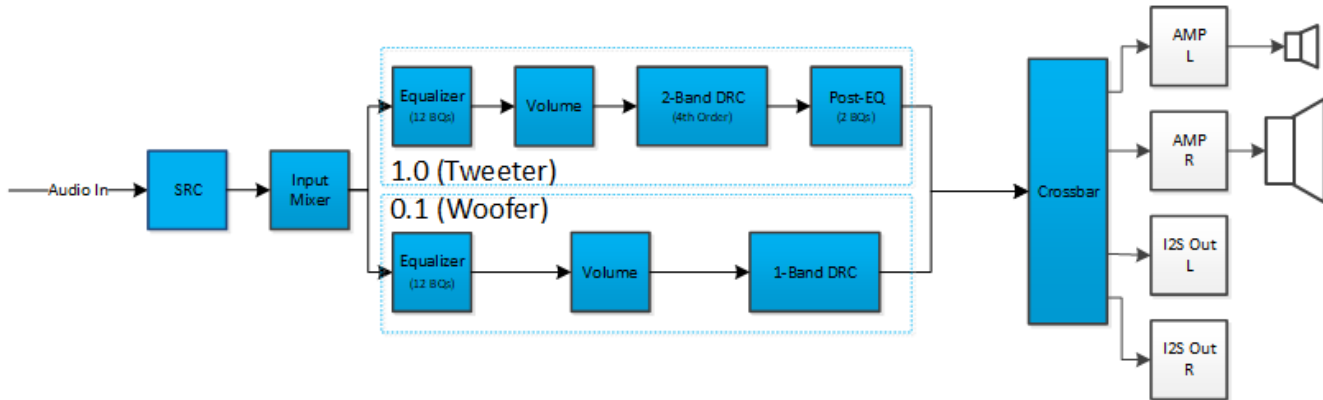


Figure 2-9. Process Flow 9

2.10.1 SRC

The Sample Rate Converter (SRC) supports 32kHz, 44.1kHz, 48kHz, 88.2kHz, and 96kHz input sample rates. These input sample rates can be converted to 88.2kHz or 96kHz sample rate that the device can use for DSP processing.

2.10.2 Input Mixer

The input mixer is used to mix the left and right channel input signals. Refer to [Section 3.1](#) for more details.

2.10.3 Equalizer

The equalizer contains 14 independent filters for both left and right channels. Refer to [Section 3.2](#) for more details.

2.10.4 Volume

This volume block is click & pop free. Refer to [Section 3.3](#) for more details.

2.10.5 2-Band DRC

The 2-Band DRC can be used to automatically control the audio signal amplitude or the dynamic range of the tweeter signal path within specified limits. Refer to [Section 3.6](#) for more details.

2.10.6 1-Band DRC

The 1-Band DRC can be used to automatically control the audio signal amplitude or the dynamic range of the woofer signal path within specified limits. It functions the same as the 2-Band DRC that is in the tweeter signal path but is applied to the full audio band instead of being split into a high and low bands by biquads. Refer to [Section 3.6](#) for more details.

2.10.7 Output Crossbar

The crossbar provides the end user with a flexible way to control what finally appears on amplifier outputs and I2S SDOUT. Refer to [Section 3.9](#) for more details.

2.10.8 DSP Memory Map

Refer to [Section A.4](#) for details.

3 Audio Processing Blocks

3.1 Input Mixer

The input mixer can be used to mix the left and right channel input signals as shown in Figure 3-1. The input mixer has four coefficients, which control the mixing and gains of the input signals.

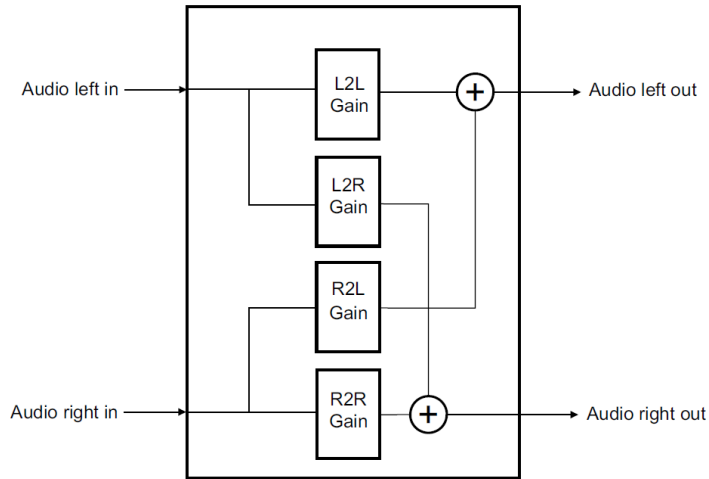


Figure 3-1. Input Mixer

The Basic Tab (See Figure 3-2) provides the easiest way for configuration in PPC3 GUI. Switch to the Advanced tab (See Figure 3-3) to adjust all the four coefficients manually. Note that the four parameters need to be specified in decibels (dB). You can invert the result of any of the gains by clicking on the "+" that is placed after the coefficient box in the GUI.

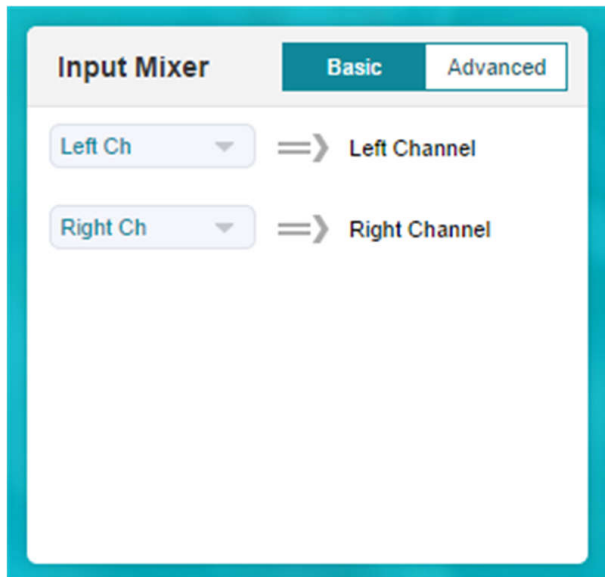


Figure 3-2. Input Mixer (Basic Tab)

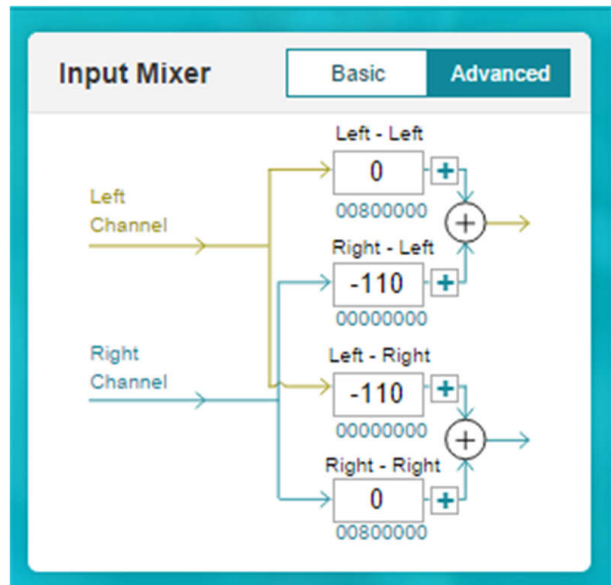


Figure 3-3. Input Mixer (Advanced Tab)

3.2 Equalizer

The equalizers are implemented using cascaded “direct form 1” BQs structures as shown in Figure 3-4.

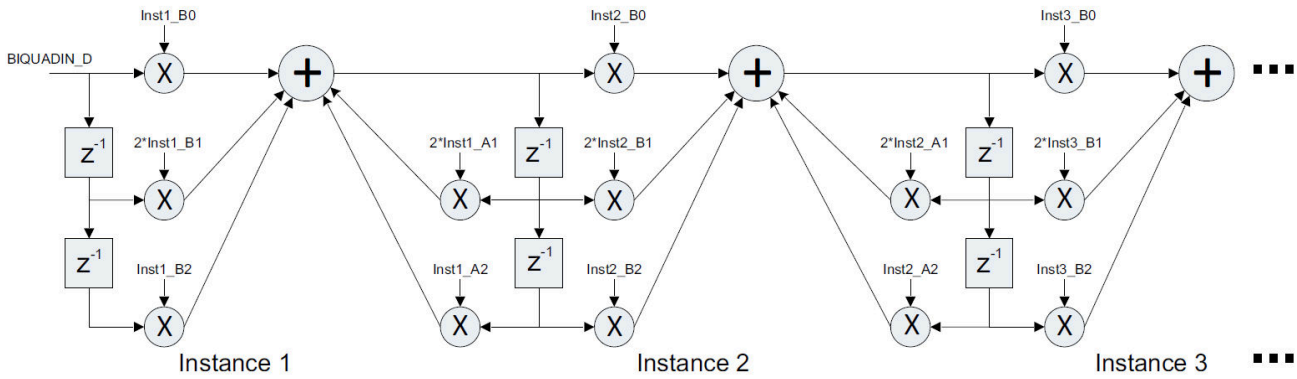


Figure 3-4. Cascaded BQ Structure

All BQ coefficients are normalized with a0 to insure that B0 is equal to 1. The structure requires 5 BQ coefficients as shown in Table 3-1.

Table 3-1. BQ Coefficients Normalization

BQ COEFFICIENT	COEFFICIENT CALCULATION
B0_DSP	b_0 / a_0
B1_DSP	$b_1 / (a_0 \times 2)$
B2_DSP	b_2 / a_0
A1_DSP	$-a_1 / (a_0 \times 2)$
A2_DSP	$-a_2 / a_0$

The Equalizer Tuning Window shown below in Figure 3-5 contains 14 independent filters for both left and right channels. They are designed for tuning the frequency response of the overall system. This is where the bulk of the frequency compensation occurs. Complex tuning shapes can be made to compensate for deficiencies in speaker response.

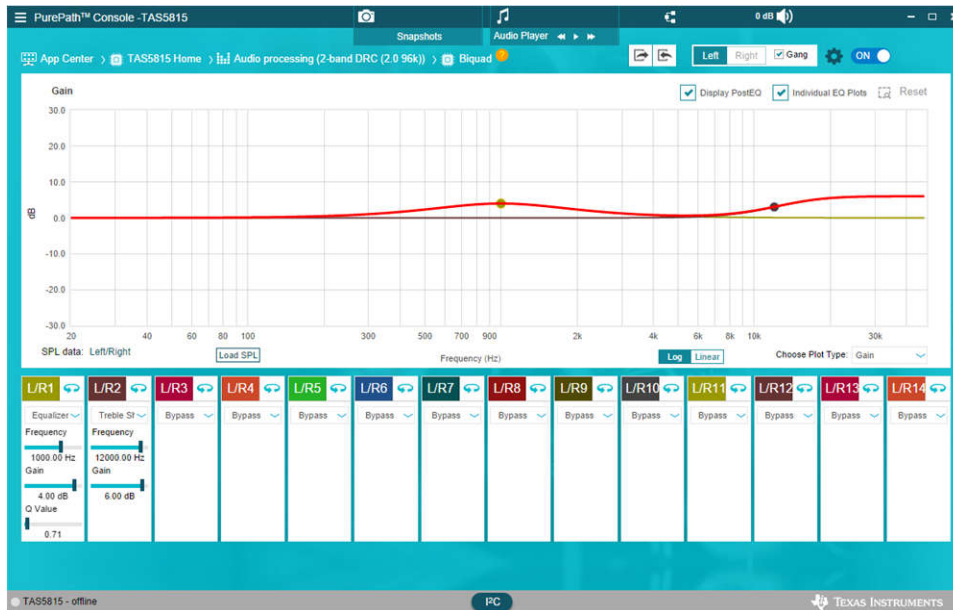


Figure 3-5. Equalizer Tuning Window

As [Figure 3-5](#) shows, each filter has quite a few different filter types and can be turned on or off independently. All the changes to these filters are reflected in the plot above. The composite plot (red) shows the overall frequency response alteration applied to the incoming digital audio data.

The equalizers for left and right channels are ganged by default, but they can be configured independently by deselecting “Gang” option.

3.3 Volume

[Figure 3-6](#) shows the default volume in PPC3 GUI. Note that volume needs to be specified in decibels (dB). Independent volume change for left and right channel can be achieved by deselecting the “Gang” option.



Figure 3-6. Volume

The volume block is implemented using an alpha filter structure. As [Figure 3-7](#) shows, when a volume level change is initiated, the volume block provides a smooth transition to the newly commanded volume level without producing artifacts such as pops and clicks.

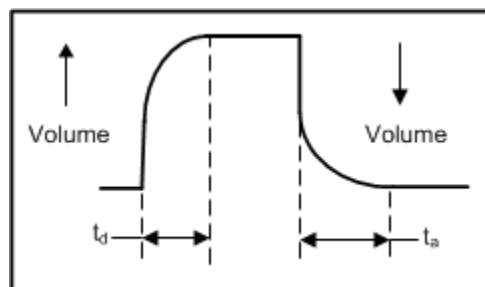


Figure 3-7. Volume Attack and Release

3.4 DPEQ

The dynamic parametric equalizer (DPEQ) mixes the audio signals routed through two paths containing 1 Biquad each, based upon the signal level detected by the sense path, as shown in Figure 3-8.

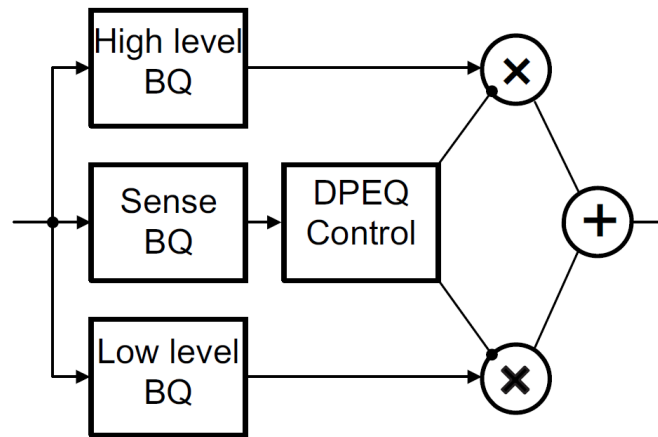


Figure 3-8. DPEQ

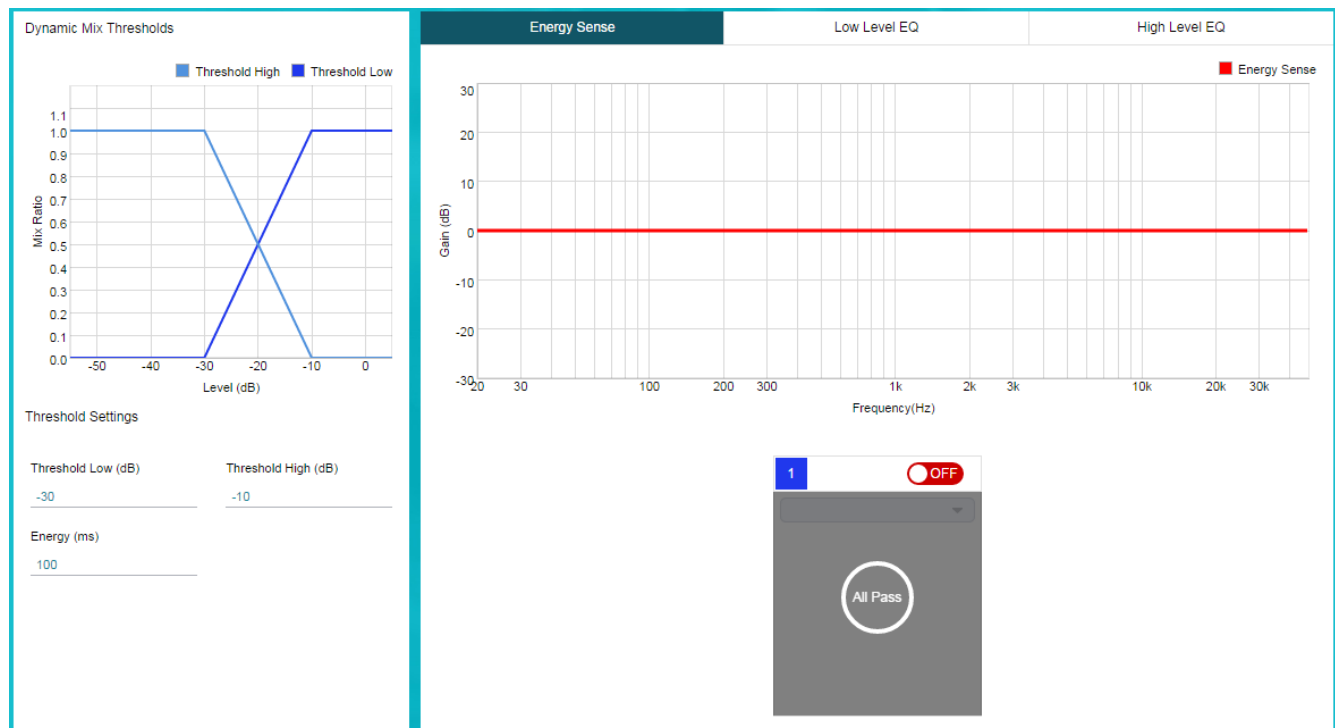


Figure 3-9. DPEQ Tuning Window

3.4.1 DPEQ

Energy (ms) simply tells the algorithm for how long to average the samples of audio before determining how it compares to the mixing thresholds. The shorter the time, the faster the mixer reacts to changes in the input signal level. The longer the time, the slower the mixer reacts to changes in level.

The mixing of the two paths (low level and high level) is controlled by setting *Threshold Low (dB)* and *Threshold High (dB)*. When the averaged signal (as set by the *Energy*) is below the *Threshold Low*, the dynamic mixer sends all of the audio through the low-level path. When the signal is above the *Threshold High*, it is sent through the upper-level path. When the signal is between the two, it is mixed together by the dynamic mixer level.

3.4.2 Energy Sense

The sense path contains 1 configurable Biquad, which can be used to focus the DEQ sensing on a specific frequency bandwidth.

3.4.3 Low Level EQ

The low-level path also has 1 configurable Biquad to establish the EQ curve the audio is sent through when the time average signal is at a low-level. This fully-functional Biquad can be assigned to several filter types. This determines frequency response when low-level is active based on the *Energy* configuration and the mixing thresholds.

3.4.4 High Level EQ

The high-level path, similar to the low-level path, has 1 Biquad that can set the EQ curve used when the time averaged input signal is above the upper mixing threshold.

3.5 3-Band DRC

The Dynamic Range Control (DRC) is a feed-forward mechanism that can be used to automatically control the audio signal amplitude or the dynamic range within specified limits. The dynamic range control is done by sensing the audio signal level using an estimate of the alpha filter energy then adjusting the gain based on the region and slope parameters that are defined. The 3-Band DRC is shown in [Figure 3-10](#).

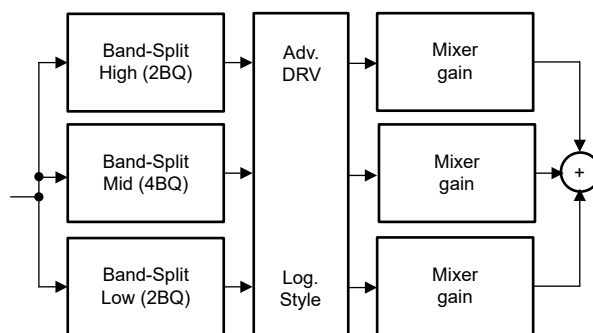


Figure 3-10. 3-Band DRC

The DRC works to reduce the peak of energy if it goes beyond the programmable threshold level. DRC starts an attack event (reduces gain) if energy goes above the threshold. Similarly, it starts a release event if the level goes below the threshold (increases gain back to the original value). Attack and release events occur only when level remains above or below the threshold continuously during the time-constant time. And the constant time is controlled by the attack/release rate. If the attack/release rate is short, DRC operates frequently. Attack time defines how fast to cut the signal to bring it under the threshold. Similarly, release time defines how fast to release the cut back to normal.

The 3-band DRC is comprised of three DRCs that can be split into three bands using the BQ at the input of each band. The DRC in each band is equipped with individual energy, attack, and decay time constants as shown in [Figure 3-11](#).

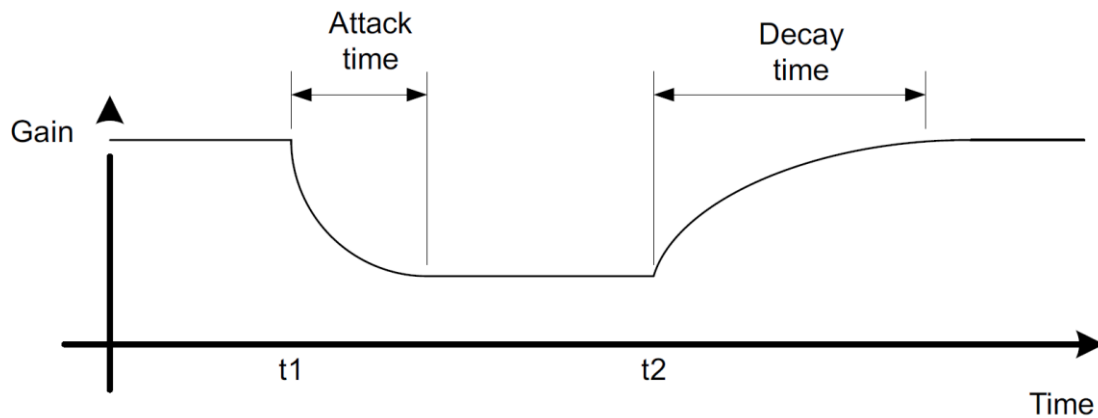


Figure 3-11. DRC Attack and Decay

This DRC can be used for power limiting and signal compression. Therefore, it must be tested with maximum signal levels for the desired application. Use a resistive load for initial testing. However, the speaker used in the end application must be used for final testing and tweaking.



Figure 3-12. 3-Band DRC Tuning Window

The 3-Band DRC Tuning Window as shown in Figure 3-12 consists of three identical windows for low, mid and high bands. Each has a DRC curve that offers 3 regions of compression. The points on the DRC curve can be dragged and dropped.

Below each DRC plot, parameters such as threshold, offset and ratio can be manually typed in for each of the 3 regions. By typing a value and pressing Enter on the keyboard, the DRC curve automatically adjusts to the entered parameter.

3.5.1 DRC Time Constant

Change time constants by entering new values for each band. Attack(ms) determines the attack time of the DRC and Release(ms) determines the release time once the windowed energy band passes. Energy(ms) controls the time averaging windowing uses to determine the average signal energy, and therefore where the incoming signal compares to the set DRC curve. It is beneficial to have control over the DRC time constant for a given frequency band to avoid beating tones caused by the DRC attack and the incoming signal frequency.

The mixer gain controls the relative gain of each of the 3 frequency bands after the DRCs when they are mixed together. This is used to attenuate one of the frequency bands relative to the others, if needed. Make note of the sign of the gain coefficients. Because filters affect phase, a phase reversal or a 180 degree phase shift can be necessary. Use a negative sign on the coefficient to reverse the phase for the second order LR filter.

3.5.2 Crossover

Configure the frequency range associated with each of the 3 bands used, where the tuning can take place. After tuning, the response is automatically displayed on the right side of the DRC plot. The Crossover configuration has two tabs. In the Basic Tab, only the filter type and cut-off frequencies need to be determined. Go to the Advanced Tab if more parameters need to be adjusted.

3.6 2-Band DRC

The Dynamic Range Control (DRC) is a feed-forward mechanism that can be used to automatically control the audio signal amplitude or the dynamic range within specified limits. The dynamic range control is done by sensing the audio signal level using an estimate of the alpha filter energy then adjusting the gain based on the region and slope parameters that are defined. The 2-Band DRC is shown in [Figure 3-13](#).

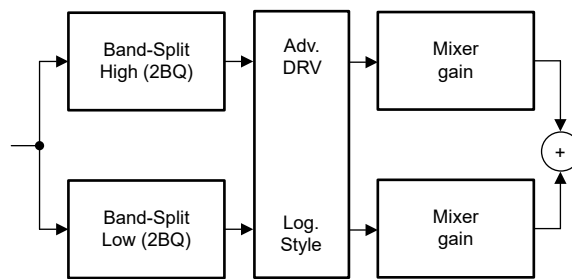


Figure 3-13. 2-Band DRC

The DRC works to reduce the peak of energy if it goes beyond the programmable threshold level. DRC starts an attack event (reduces gain) if energy goes above the threshold. Similarly, it starts a release event if the level goes below the threshold (increases gain back to the original value). Attack and release events occur only when level remains above or below the threshold continuously during the time-constant time. And the constant time is controlled by the attack/release rate. If the attack/release rate is short, DRC operates frequently. Attack time defines how fast to cut the signal to bring it under the threshold. Similarly, release time defines how fast to release the cut back to normal.

The 2-band DRC is comprised of two DRCs that can be split into two bands using the BQs at the input of each band. The DRC in each band is equipped individual with energy, attack, and decay time constants as shown in [Figure 3-14](#).

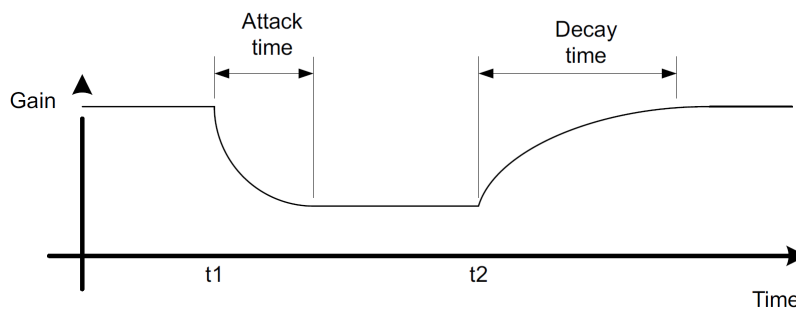


Figure 3-14. 2-Band DRC Attack and Decay

This DRC can be used for power limiting and signal compression. Therefore, it must be tested with maximum signal levels for the desired application. Use a resistive load for initial testing. However, the speaker used in the end application must be used for final testing and tweaking.

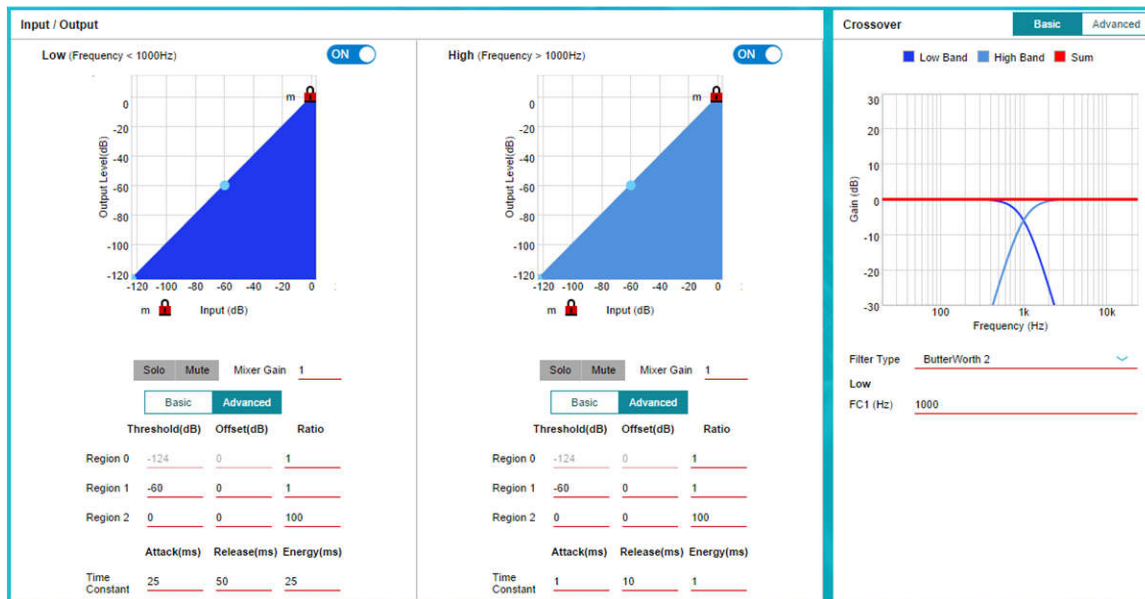


Figure 3-15. 2-Band DRC Tuning Window

The 2-Band DRC Tuning Window as shown in Figure 3-15 consists of two identical windows for low and high bands. Each has a DRC curve that offers 3 regions of compression. The points on the DRC curve can be dragged and dropped.

Below each DRC plot, parameters such as threshold, offset and ratio can be manually typed in for each of the 3 regions. By typing a value and pressing Enter on the keyboard, the DRC curve automatically adjusts to the entered parameter.

3.6.1 DRC Time Constant

Change time constants by entering new values for each band. Attack(ms) determines the attack time of the DRC and Release(ms) determines the release time once the windowed energy band passes. Energy(ms) controls the time averaging windowing used to determine the average signal energy, and therefore how the incoming signal compares to the set DRC curve. It is beneficial to have control over the DRC time constant for a given frequency band to avoid beating tones caused by the DRC attack and the incoming signal frequency.

The mixer gain controls the relative gain of each of the 2 frequency bands after the DRCs when they are mixed together. This is used to attenuate one of the frequency bands relative to the other, if needed. Make note of the sign of the gain coefficients. Because filters affect phase, a phase reversal or a 180 degree phase shift can be necessary. Use a negative sign on the coefficient to reverse the phase for the second order LR filter.

3.6.2 Crossover

By default, the two-band crossover frequencies are set to 1000Hz, using second-order Butterworth filters. This filter type is chosen because the total sum of the two-band signals has a flat response without having to calculate individual crossover frequencies for unity summation. The crossover frequencies need to be separated far enough in the frequency range from each other to avoid any dip caused by the filter sum response.

3.7 AGL

The Automatic Gain Limiter (AGL) is a feedback mechanism that can be used to automatically control the audio signal amplitude or dynamic range within specified limits. The automatic gain limiting is done by sensing the audio signal level using an alpha filter energy structure at the output of the AGL then adjusting the gain based on whether the signal level is above or below the defined threshold. Three decisions made by the AGL are engage, disengage, or do nothing. The rate at which the AGL engages or disengages depends on the attack and release settings respectively.

Figure 3-16 shows the AGL Tuning Window. By default, the AGL is disabled and can be enabled by clicking the ON/OFF switch on the top right corner.

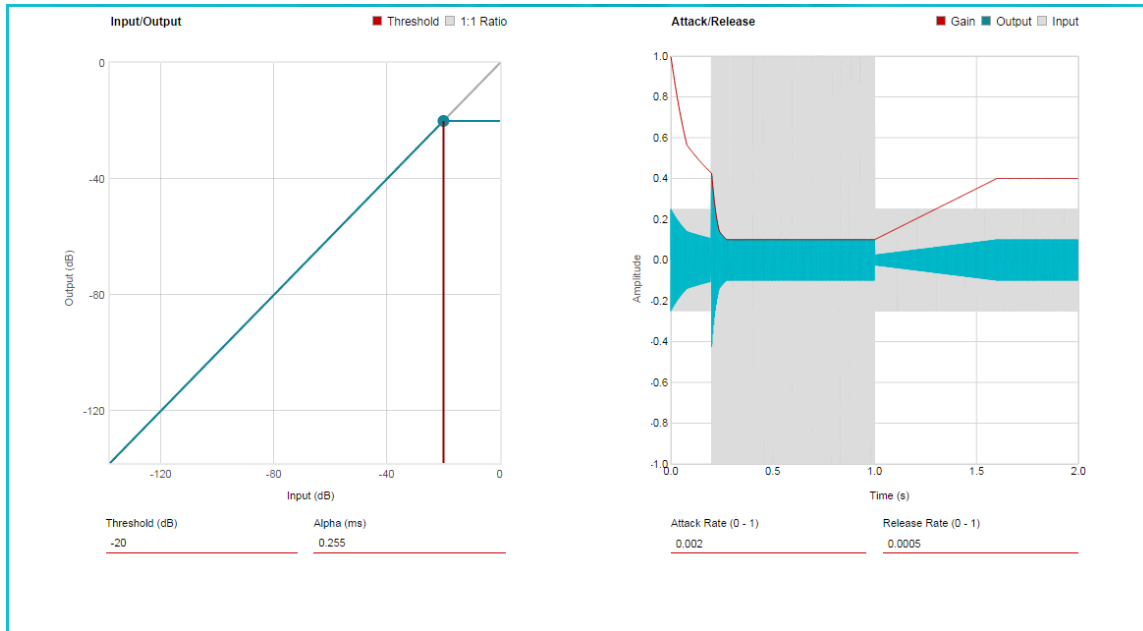


Figure 3-16. AGL Tuning Window

- Threshold (db)** This parameter sets the threshold at which the compressor is activated. Lowering the threshold causes the compression to be activated at lower volume levels. Once the signal exceeds this threshold, compression is applied.
- Alpha (ms)** This parameter configures the sharpness of the compression knee of the AGL.
- Attack Rate (0 – 1)** This parameter controls how quickly compression is applied to the signal. Higher values causes the compressor to respond to signals quickly, while lower values decrease the response time.
- Release Rate (0 – 1)** This parameter controls how quickly compression is removed from the signal as the signal gets quieter. Higher values cause the compressor to release from signals quickly, while lower values decrease the release time.

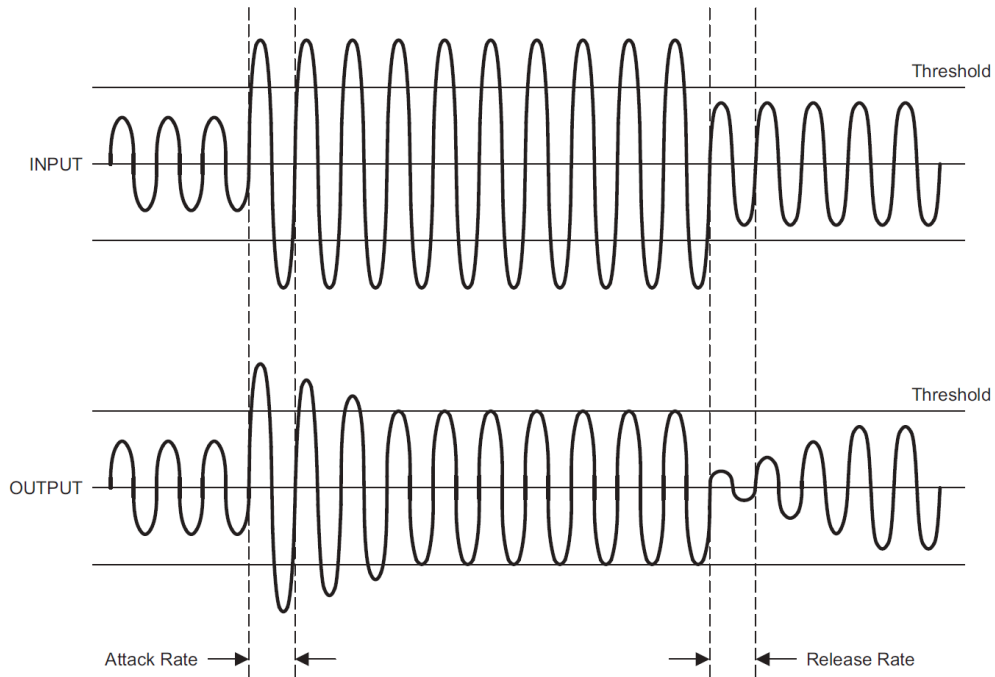


Figure 3-17. AGL Attack and Release

3.8 Clipper

The Clipper, shown below in [Figure 3-18](#), can be used to achieve digitally the specified THD levels without voltage clipping. It allows users to achieve the same THD (for example, 10% THD) for different power levels (15W, 10W, 5W) with same PVCC level.

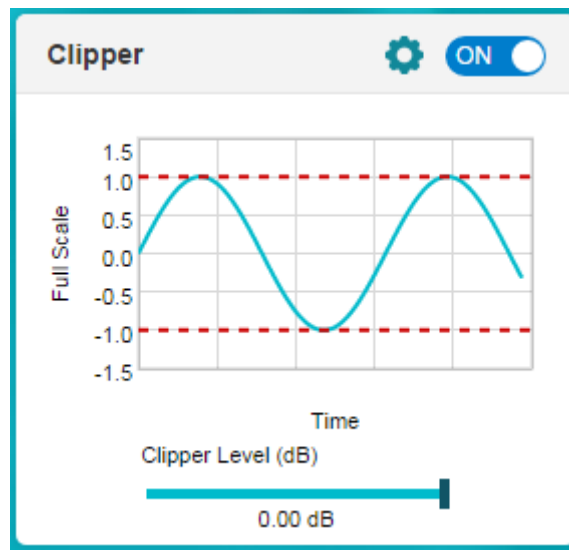


Figure 3-18. Clipper

Clipper Level (dB)

The Clipper Level controls the signal level at which clipping occurs.

Makeup Gain (dB)

The Makeup Gain sets additional gain steps from -110dB to 6dB .

3.9 Output Crossbar

The crossbar provides the end user with a very flexible way to control what finally appears on amplifier outputs and I2S SDOUT. The Basic Tab shown below in [Figure 3-19](#) provides the easiest way for configuration. Go to the Advanced Tab, shown below in [Figure 3-20](#), if more parameters need to be adjusted. Note that all the parameters need to be specified in decibels (dB).

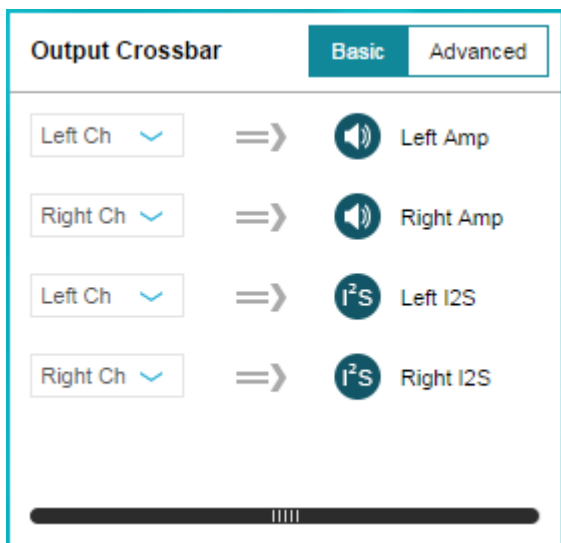


Figure 3-19. Output Crossbar (Basic Tab)

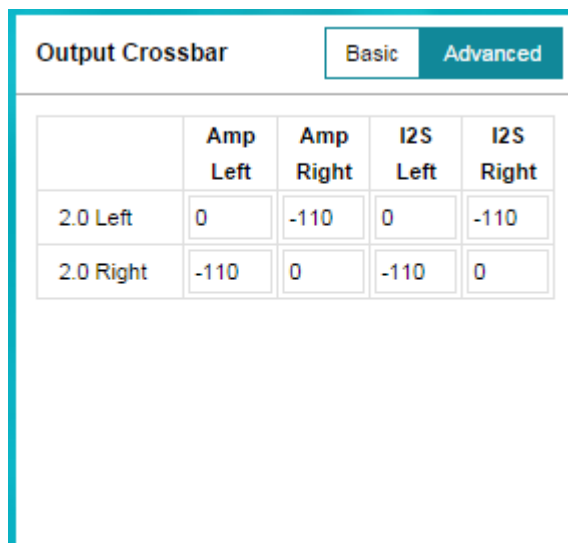


Figure 3-20. Output Crossbar (Advanced Tab)

A Appendix

A.1 DSP Memory Map for Process Flows 1 and 5

Table A-1. 2.0 and 1.0 48kHz Modes Memory Map — Book 0x78

SUB ADDRESS	PAGE	REGISTER NAME	NUMBER OF BYTES/FORMAT	DEFAULT VALUE	DESCRIPTION
LEVEL METER					
0x48	0x01	Level Meter Left Output	4 / 1.31	0x000000--	Level Meter Left Output flag
0x7C	0x01	Level Meter Right Output	4 / 1.31	0x000000--	Level Meter Right Output flag

Table A-2. 2.0 and 1.0 48kHz Modes Memory Map — Book 0x8C

SUB ADDRESS	PAGE	REGISTER NAME	NUMBER OF BYTES/FORMAT	DEFAULT VALUE	DESCRIPTION
BYPASS DCBLOCK					
0x58	0x06	Bypass DC block	4 / 32.0	0x00000000	DC Block flag
EQ CONTROL					
0x5C	0x06	Gang EQ	4 / 32.0	0x00000000	Gang EQ flag
0x60	0x06	Bypass EQ	4 / 32.0	0x00000000	Bypass EQ flag
VOLUME CONTROL					
0x64	0x06	CH-L Volume	4 / 9.23	0x00800000	Left Channel Volume coefficient
0x68	0x06	CH-R Volume	4 / 9.23	0x00800000	Right Channel Volume coefficient
0x6C	0x06	Softening Filter Alpha	4 / 1.31	0x00E2C46B	Volume Time constant
DPEQ CONTROL					
0x34	0x07	Alpha	4 / 1.31	0x02DEAD00	DPEQ Sense Energy Time constant
0x38	0x07	Gain	4 / 1.31	0x74013901	DPEQ Threshold Gain
0x3C	0x07	Offset	4 / 1.31	0x0020C49B	DPEQ Threshold Offset
DRC					
0x68	0x08	DRC1 Energy	4 / 1.31	0x7FFFFFFF	DRC1 Energy Time constant
0x6C	0x08	DRC1 Attack	4 / 1.31	0x7FFFFFFF	DRC1 Attack Time constant
0x70	0x08	DRC1 Decay	4 / 1.31	0x7FFFFFFF	DRC1 Decay Time constant
0x74	0x08	K0_1	4 / 9.23	0x00000000	DRC1 Region 1 Slope (comp/Exp)
0x78	0x08	K1_1	4 / 9.23	0x00000000	DRC1 Region 2 Slope (comp/Exp)
0x7C	0x08	K2_1	4 / 9.23	0x00000000	DRC1 Region 3 Slope (comp/Exp)
0x08	0x09	T1_1	4 / 9.23	0xE7000000	DRC1 Threshold 1
0x0C	0x09	T2_1	4 / 9.23	0xFE800000	DRC1 Threshold 2
0x10	0x09	off1_1	4 / 9.23	0x00000000	DRC1 Offset 1
0x14	0x09	off2_1	4 / 9.23	0x00000000	DRC1 Offset 2
0x18	0x09	DRC3 Energy	4 / 1.31	0x7FFFFFFF	DRC3 Energy Time constant
0x1C	0x09	DRC3 Attack	4 / 1.31	0x7FFFFFFF	DRC3 Attack Time constant
0x20	0x09	DRC3 Decay	4 / 1.31	0x7FFFFFFF	DRC3 Decay Time constant

Table A-2. 2.0 and 1.0 48kHz Modes Memory Map — Book 0x8C (continued)

SUB ADDRESS	PAGE	REGISTER NAME	NUMBER OF BYTES/FORMAT	DEFAULT VALUE	DESCRIPTION
0x24	0x09	k0_3	4 / 9.23	0x00000000	DRC3 Region 1 Slope (comp/Exp)
0x28	0x09	k1_3	4 / 9.23	0x00000000	DRC3 Region 2 Slope (comp/Exp)
0x2C	0x09	k1_3	4 / 9.23	0x00000000	DRC3 Region 3 Slope (comp/Exp)
0x30	0x09	t1_3	4 / 9.23	0xE7000000	DRC3 Threshold 1
0x34	0x09	t2_3	4 / 9.23	0xFE800000	DRC3 Threshold 2
0x38	0x09	off1_3	4 / 9.23	0x00000000	DRC3 Offset 1
0x3C	0x09	off2_3	4 / 9.23	0x00000000	DRC3 Offset 2
0x40	0x09	DRC2 Energy	4 / 1.31	0x7FFFFFFF	DRC2 Energy Time constant
0x44	0x09	DRC2 Attack	4 / 1.31	0x7FFFFFFF	DRC2 Attack Time constant
0x48	0x09	DRC2 Decay	4 / 1.31	0x7FFFFFFF	DRC2 Decay Time constant
0x4C	0x09	k0_2	4 / 9.23	0x00000000	DRC2 Region 1 Slope (comp/Exp)
0x50	0x09	k1_2	4 / 9.23	0x00000000	DRC2 Region 2 Slope (comp/Exp)
0x54	0x09	k2_2	4 / 9.23	0x00000000	DRC2 Region 3 Slope (comp/Exp)
0x58	0x09	t1_2	4 / 9.23	0xE7000000	DRC2 Threshold 1
0x5C	0x09	t2_2	4 / 9.23	0xFE800000	DRC2 Threshold 2
0x60	0x09	off1_2	4 / 9.23	0x00000000	DRC2 Offset 1
0x64	0x09	off2_2	4 / 9.23	0x00000000	DRC2 Offset 2
0x68	0x09	DRC 1 Mixer Gain	4 / 9.23	0x00800000	DRC 1 Mixer Gain coefficient
0x6C	0x09	DRC 3 Mixer Gain	4 / 9.23	0x00000000	DRC 3 Mixer Gain coefficient
0x70	0x09	DRC 2 Mixer Gain	4 / 9.23	0x00000000	DRC 2 Mixer Gain coefficient
INPUT MIXER					
0x74	0x09	Left to Left	4 / 9.23	0x00800000	Left Channel Mixer Left Input Gain
0x78	0x09	Right to Left	4 / 9.23	0x00000000	Left Channel Mixer Right Input Gain
0x7C	0x09	Left to Right	4 / 9.23	0x00000000	Right Channel Mixer Left Input Gain
0x08	0x0A	Right to Right	4 / 9.23	0x00800000	Right Channel Mixer Right Input Gain
OUTPUT CROSS BAR					
0x0C	0x0A	Digital Left from Left	4 / 9.23	0x00800000	I2S Left output gain from Left
0x10	0x0A	Digital Left from Right	4 / 9.23	0x00000000	I2S Left output gain from Right
0x1C	0x0A	Digital Right from Left	4 / 9.23	0x00000000	I2S Right output gain from Left
0x20	0x0A	Digital Right from Right	4 / 9.23	0x00800000	I2S Right output gain from Right
0x24	0x0A	Analog Left from Left	4 / 9.23	0x00800000	Analog Left output gain from Left
0x28	0x0A	Analog Left from Right	4 / 9.23	0x00000000	Analog Left output gain from Right
0x30	0x0A	Analog Right from Left	4 / 9.23	0x00000000	Analog Right output gain from Left
0x34	0x0A	Analog Right from Right	4 / 9.23	0x00800000	Analog Right output gain from Right

Table A-2. 2.0 and 1.0 48kHz Modes Memory Map — Book 0x8C (continued)

SUB ADDRESS	PAGE	REGISTER NAME	NUMBER OF BYTES/ FORMAT	DEFAULT VALUE	DESCRIPTION
THD CLIPPER					
0x3C	0x0A	CH-LR THD Boost	4 / 9.23	0x00800000	THD LR Channel Prescale coefficient
0x40	0x0A	CH-L Fine Volume	4 / 2.30	0x3FFFFFFF	THD L Channel Postscale coefficient
0x44	0x0A	CH-R Fine Volume	4 / 2.30	0x3FFFFFFF	THD R Channel Postscale coefficient
LEVEL METER CONTROL					
0x48	0x0A	Softening Filter Alpha	4 / 1.31	0x00A7264A	Level Meter Energy Time constant
0x4C	0x0A	Level Meter Input Mux	4 / 2.30	0x00000000	Level Meter Input Mux
CLASSH CONTROL					
0x50	0x0A	Bypass ClassH	4 / 32.0	0x00000000	ClassH Bypass flag
0x5C	0x0A	Delay Left	4 / 32.0	0x000000F0	Left Channel Delay Samples
0x60	0x0A	Delay Right	4 / 32.0	0x000000F0	Right Channel Delay Samples
0x68	0x0A	Max Detect Window	4 / 32.0	0x00000000	Max Detect Window Samples
0x6C	0x0A	Peak Hold	4 / 32.0	0x00000180	Peak Hold Samples
0x70	0x0A	Peak Detect Offset	4 / 1.31	0x7FDF3B64	Peak Detect Offset linear
0x74	0x0A	Peak Decay	4 / 1.31	0x7999999A	Peak Decay linear
0x78	0x0A	Peak Smooth	4 / 1.31	0x0538EF35	Peak Smooth Time constant
0x7C	0x0A	State Threshold	4 / 5.27	0x00000000	ClassH State Threshold linear
PVDD/TEMP AGL					
0x74	0x0B	Softening Filter Alpha	4 / 1.31	0x20000000	PVDD Energy Time constant
0x78	0x0B	Softening Filter Alpha	4 / 1.31	0x20000000	Temp Energy Time constant
0x08	0x0C	Softening Filter Alpha	4 / 1.31	0x051EB852	AGL Energy Time constant
0x0C	0x0C	Attack Rate	4 / 1.31	0x000369D0	AGL Attack Time constant
0x10	0x0C	AGL Enable	4 / 1.31	0x40000000	AGL Enable flag
0x18	0x0C	Softening Filter Omega	4 / 1.31	0x7AE147AE	AGL Omega Time constant
0x1C	0x0C	Release Rate	4 / 1.31	0x00005762	AGL Release Time constant
0x24	0x0C	Attack Threshold	4 / 1.31	0x40000000	Threshold linear
0x28	0x0C	Temp scale	4 / 9.23	0x00800000	Temp scale linear
0x30	0x0C	Volt scale	4 / 9.23	0x010D489D	Volt scale linear
0x34	0x0C	Volt/Temp scale	4 / 9.23	0x00080000	Volt/Temp scale linear

Table A-3. 2.0 96kHz Mode Memory Map — Book 0xAA

SUB ADDRESS	PAGE	REGISTER NAME	NUMBER OF BYTES/ FORMAT	DEFAULT VALUE	DESCRIPTION
EQ LEFT 12 BQS					
0x30	0x01	CH -L BQ 1 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x34	0x01	CH -L BQ 1 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x38	0x01	CH -L BQ 1 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x3C	0x01	CH -L BQ 1 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x40	0x01	CH -L BQ 1 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x44	0x01	CH -L BQ 2 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x48	0x01	CH -L BQ 2 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x4C	0x01	CH -L BQ 2 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x50	0x01	CH -L BQ 2 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x54	0x01	CH -L BQ 2 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x58	0x01	CH -L BQ 3 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x5C	0x01	CH -L BQ 3 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x60	0x01	CH -L BQ 3 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x64	0x01	CH -L BQ 3 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x68	0x01	CH -L BQ 3 A2	4 / 5.27	0x00000000	Left BQ coefficient

Table A-3. 2.0 96kHz Mode Memory Map — Book 0xAA (continued)

SUB ADDRESS	PAGE	REGISTER NAME	NUMBER OF BYTES/ FORMAT	DEFAULT VALUE	DESCRIPTION
0x6C	0x01	CH -L BQ 4 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x70	0x01	CH -L BQ 4 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x74	0x01	CH -L BQ 4 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x78	0x01	CH -L BQ 4 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x7C	0x01	CH -L BQ 4 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x08	0x02	CH -L BQ 5 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x0C	0x02	CH -L BQ 5 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x10	0x02	CH -L BQ 5 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x14	0x02	CH -L BQ 5 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x18	0x02	CH -L BQ 5 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x1C	0x02	CH -L BQ 6 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x20	0x02	CH -L BQ 6 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x24	0x02	CH -L BQ 6 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x28	0x02	CH -L BQ 6 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x2C	0x02	CH -LBQ 6 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x30	0x02	CH -L BQ 7 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x34	0x02	CH -L BQ 7 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x38	0x02	CH -L BQ 7 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x3C	0x02	CH -L BQ 7 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x40	0x02	CH -L BQ 7 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x44	0x02	CH -L BQ 8 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x48	0x02	CH -L BQ 8 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x4C	0x02	CH -L BQ 8 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x50	0x02	CH -L BQ 8 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x54	0x02	CH -L BQ 8 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x58	0x02	CH -L BQ 9 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x5C	0x02	CH -L BQ 9 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x60	0x02	CH -L BQ 9 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x64	0x02	CH -L BQ 9 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x68	0x02	CH -L BQ 9 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x6C	0x02	CH -L BQ 10 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x70	0x02	CH -L BQ 10 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x74	0x02	CH -L BQ 10 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x78	0x02	CH -L BQ 10 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x7C	0x02	CH -L BQ 10 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x08	0x03	CH -L BQ 11 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x0C	0x03	CH -L BQ 11 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x10	0x03	CH -L BQ 11 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x14	0x03	CH -L BQ 11 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x18	0x03	CH -L BQ 11 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x1C	0x03	CH -L BQ 12 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x20	0x03	CH -L BQ 12 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x24	0x03	CH -L BQ 12 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x28	0x03	CH -L BQ 12 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x2C	0x03	CH -L BQ 12 A2	4 / 5.27	0x00000000	Left BQ coefficient
EQ RIGHT 12 BQS					
0x30	0x03	CH -R BQ 1 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x34	0x03	CH -R BQ 1 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x38	0x03	CH -R BQ 1 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x3C	0x03	CH -R BQ 1 A1	4 / 5.27	0x00000000	Right BQ coefficient

Table A-3. 2.0 96kHz Mode Memory Map — Book 0xAA (continued)

SUB ADDRESS	PAGE	REGISTER NAME	NUMBER OF BYTES/ FORMAT	DEFAULT VALUE	DESCRIPTION
0x40	0x03	CH -R BQ 1 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x44	0x03	CH -R BQ 2 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x48	0x03	CH -R BQ 2 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x4C	0x03	CH -R BQ 2 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x50	0x03	CH -R BQ 2 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x54	0x03	CH -R BQ 2 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x58	0x03	CH -R BQ 3 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x5C	0x03	CH -R BQ 3 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x60	0x03	CH -R BQ 3 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x64	0x03	CH -R BQ 3 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x68	0x03	CH -R BQ 3 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x6C	0x03	CH -R BQ 4 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x70	0x03	CH -R BQ 4 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x74	0x03	CH -R BQ 4 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x78	0x03	CH -R BQ 4 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x7C	0x03	CH -R BQ 4 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x08	0x04	CH -R BQ 5 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x0C	0x04	CH -R BQ 5 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x10	0x04	CH -R BQ 5 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x14	0x04	CH -R BQ 5 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x18	0x04	CH -R BQ 5 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x1C	0x04	CH -R BQ 6 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x20	0x04	CH -R BQ 6 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x24	0x04	CH -R BQ 6 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x28	0x04	CH -R BQ 6 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x2C	0x04	CH -R BQ 6 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x30	0x04	CH -R BQ 7 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x34	0x04	CH -R BQ 7 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x38	0x04	CH -R BQ 7 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x3C	0x04	CH -R BQ 7 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x40	0x04	CH -R BQ 7 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x44	0x04	CH -R BQ 8 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x48	0x04	CH -R BQ 8 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x4C	0x04	CH -R BQ 8 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x50	0x04	CH -R BQ 8 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x54	0x04	CH -R BQ 8 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x58	0x04	CH -R BQ 9 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x5C	0x04	CH -R BQ 9 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x60	0x04	CH -R BQ 9 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x64	0x04	CH -R BQ 9 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x68	0x04	CH -R BQ 9 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x6C	0x04	CH -R BQ 10 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x70	0x04	CH -R BQ 10 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x74	0x04	CH -R BQ 10 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x78	0x04	CH -R BQ 10 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x7C	0x04	CH -R BQ 10 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x08	0x05	CH -R BQ 11 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x0C	0x05	CH -R BQ 11 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x10	0x05	CH -R BQ 11 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x14	0x05	CH -R BQ 11 A1	4 / 5.27	0x00000000	Right BQ coefficient

Table A-3. 2.0 96kHz Mode Memory Map — Book 0xAA (continued)

SUB ADDRESS	PAGE	REGISTER NAME	NUMBER OF BYTES/ FORMAT	DEFAULT VALUE	DESCRIPTION
0x18	0x05	CH -R BQ 11 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x1C	0x05	CH -R BQ 12 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x20	0x05	CH -R BQ 12 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x24	0x05	CH -R BQ 12 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x28	0x05	CH -R BQ 12 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x2C	0x05	CH -R BQ 12 A2	4 / 5.27	0x00000000	Right BQ coefficient
POST EQ1 LEFT 2 BQS					
0x30	0x05	CH -L BQ 1 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x34	0x05	CH -L BQ 1 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x38	0x05	CH -L BQ 1 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x3C	0x05	CH -L BQ 1 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x40	0x05	CH -L BQ 1 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x44	0x05	CH -L BQ 2 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x48	0x05	CH -L BQ 2 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x4C	0x05	CH -L BQ 2 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x50	0x05	CH -L BQ 2 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x54	0x05	CH -L BQ 2 A2	4 / 5.27	0x00000000	Left BQ coefficient
POST EQ1 RIGHT 2 BQS					
0x58	0x05	CH -R BQ 1 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x5C	0x05	CH -R BQ 1 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x60	0x05	CH -R BQ 1 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x64	0x05	CH -R BQ 1 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x68	0x05	CH -R BQ 1 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x6C	0x05	CH -R BQ 2 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x70	0x05	CH -R BQ 2 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x74	0x05	CH -R BQ 2 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x78	0x05	CH -R BQ 2 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x7C	0x05	CH -R BQ 2 A2	4 / 5.27	0x00000000	Right BQ coefficient
POST EQ2 LEFT 2 BQS					
0x08	0x06	CH -L BQ 1 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x0C	0x06	CH -L BQ 1 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x10	0x06	CH -L BQ 1 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x14	0x06	CH -L BQ 1 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x18	0x06	CH -L BQ 1 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x1C	0x06	CH -L BQ 2 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x20	0x06	CH -L BQ 2 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x24	0x06	CH -L BQ 2 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x28	0x06	CH -L BQ 2 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x2C	0x06	CH -L BQ 2 A2	4 / 5.27	0x00000000	Left BQ coefficient
POST EQ2 RIGHT 2 BQS					
0x30	0x06	CH -R BQ 1 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x34	0x06	CH -R BQ 1 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x38	0x06	CH -R BQ 1 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x3C	0x06	CH -R BQ 1 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x40	0x06	CH -R BQ 1 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x44	0x06	CH -R BQ 2 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x48	0x06	CH -R BQ 2 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x4C	0x06	CH -R BQ 2 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x50	0x06	CH -R BQ 2 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x54	0x06	CH -R BQ 2 A2	4 / 5.27	0x00000000	Right BQ coefficient

Table A-3. 2.0 96kHz Mode Memory Map — Book 0xAA (continued)

SUB ADDRESS	PAGE	REGISTER NAME	NUMBER OF BYTES/ FORMAT	DEFAULT VALUE	DESCRIPTION
DPEQ BQs					
0x70	0x06	BQ 1 B0	4 / 5.27	0x08000000	DPEQ sense BQ coefficient
0x74	0x06	BQ 1 B1	4 / 5.27	0x00000000	DPEQ sense BQ coefficient
0x78	0x06	BQ 1 B2	4 / 5.27	0x00000000	DPEQ sense BQ coefficient
0x7C	0x06	BQ 1 A1	4 / 5.27	0x00000000	DPEQ sense BQ coefficient
0x08	0x07	BQ 1 A2	4 / 5.27	0x00000000	DPEQ sense BQ coefficient
0x0C	0x07	BQ 1 B0	4 / 5.27	0x08000000	DPEQ low BQ coefficient
0x10	0x07	BQ 1 B1	4 / 5.27	0x00000000	DPEQ low BQ coefficient
0x14	0x07	BQ 1 B2	4 / 5.27	0x00000000	DPEQ low BQ coefficient
0x18	0x07	BQ 1 A1	4 / 5.27	0x00000000	DPEQ low BQ coefficient
0x1C	0x07	BQ 1 A2	4 / 5.27	0x00000000	DPEQ low BQ coefficient
0x20	0x07	BQ 1 B0	4 / 5.27	0x08000000	DPEQ high BQ coefficient
0x24	0x07	BQ 1 B1	4 / 5.27	0x00000000	DPEQ high BQ coefficient
0x28	0x07	BQ 1 B2	4 / 5.27	0x00000000	DPEQ high BQ coefficient
0x2C	0x07	BQ 1 A1	4 / 5.27	0x00000000	DPEQ high BQ coefficient
0x30	0x07	BQ 1 A2	4 / 5.27	0x00000000	DPEQ high BQ coefficient
DRC BQs					
0x40	0x07	DRC low BQ 1 B0	4 / 5.27	0x08000000	DRC low BQ coefficient
0x44	0x07	DRC low BQ 1 B1	4 / 5.27	0x00000000	DRC low BQ coefficient
0x48	0x07	DRC low BQ 1 B2	4 / 5.27	0x00000000	DRC low BQ coefficient
0x4C	0x07	DRC low BQ 1 A1	4 / 5.27	0x00000000	DRC low BQ coefficient
0x50	0x07	DRC low BQ 1 A2	4 / 5.27	0x00000000	DRC low BQ coefficient
0x54	0x07	DRC low BQ 2 B0	4 / 5.27	0x08000000	DRC low BQ coefficient
0x58	0x07	DRC low BQ 2 B1	4 / 5.27	0x00000000	DRC low BQ coefficient
0x5C	0x07	DRC low BQ 2 B2	4 / 5.27	0x00000000	DRC low BQ coefficient
0x60	0x07	DRC low BQ 2 A1	4 / 5.27	0x00000000	DRC low BQ coefficient
0x64	0x07	DRC low BQ 2 A2	4 / 5.27	0x00000000	DRC low BQ coefficient
0x68	0x07	DRC high BQ 1 B0	4 / 5.27	0x08000000	DRC high BQ coefficient
0x6C	0x07	DRC high BQ 1 B1	4 / 5.27	0x00000000	DRC high BQ coefficient
0x70	0x07	DRC high BQ 1 B2	4 / 5.27	0x00000000	DRC high BQ coefficient
0x74	0x07	DRC high BQ 1 A1	4 / 5.27	0x00000000	DRC high BQ coefficient
0x78	0x07	DRC high BQ 1 A2	4 / 5.27	0x00000000	DRC high BQ coefficient
0x7C	0x07	DRC high BQ 2 B0	4 / 5.27	0x08000000	DRC high BQ coefficient
0x08	0x08	DRC high BQ 2 B1	4 / 5.27	0x00000000	DRC high BQ coefficient
0x0C	0x08	DRC high BQ 2 B2	4 / 5.27	0x00000000	DRC high BQ coefficient
0x10	0x08	DRC high BQ 2 A1	4 / 5.27	0x00000000	DRC high BQ coefficient
0x14	0x08	DRC high BQ 2 A2	4 / 5.27	0x00000000	DRC high BQ coefficient
0x18	0x08	DRC mid BQ 1 B0	4 / 5.27	0x08000000	DRC mid BQ coefficient
0x1C	0x08	DRC mid BQ 1 B1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x20	0x08	DRC mid BQ 1 B2	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x24	0x08	DRC mid BQ 1 A1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x28	0x08	DRC mid BQ 1 A2	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x2C	0x08	DRC mid BQ 2 B0	4 / 5.27	0x08000000	DRC mid BQ coefficient
0x30	0x08	DRC mid BQ 2 B1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x34	0x08	DRC mid BQ 2 B2	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x38	0x08	DRC mid BQ 2 A1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x3C	0x08	DRC mid BQ 2 A2	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x40	0x08	DRC mid BQ 3 B0	4 / 5.27	0x08000000	DRC mid BQ coefficient
0x44	0x08	DRC mid BQ 3 B1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x48	0x08	DRC mid BQ 3 B2	4 / 5.27	0x00000000	DRC mid BQ coefficient

Table A-3. 2.0 96kHz Mode Memory Map — Book 0xAA (continued)

SUB ADDRESS	PAGE	REGISTER NAME	NUMBER OF BYTES/ FORMAT	DEFAULT VALUE	DESCRIPTION
0x4C	0x08	DRC mid BQ 3 A1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x50	0x08	DRC mid BQ 3 A2	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x54	0x08	DRC mid BQ 4 B0	4 / 5.27	0x08000000	DRC mid BQ coefficient
0x58	0x08	DRC mid BQ 4 B1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x5C	0x08	DRC mid BQ 4 B2	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x60	0x08	DRC mid BQ 4 A1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x64	0x08	DRC mid BQ 4 A2	4 / 5.27	0x00000000	DRC mid BQ coefficient

A.2 DSP Memory Map for Process Flow 2, 3, 6 and 7

Table A-4. 2.0 and 1.0 96kHz Modes Memory Map — Book 0x8C

SUB ADDRESS	PAGE	REGISTER NAME	NUMBER OF BYTES/ FORMAT	DEFAULT VALUE	DESCRIPTION
BYPASS DCBLOCK					
0x58	0x06	Bypass DC block	4 / 32.0	0x00000000	DC Block flag
EQ CONTROL					
0x5C	0x06	Gang EQ	4 / 32.0	0x00000000	Gang EQ flag
0x60	0x06	Bypass EQ	4 / 32.0	0x00000000	Bypass EQ flag
VOLUME CONTROL					
0x64	0x06	CH-L Volume	4 / 9.23	0x00800000	Left Channel Volume coefficient
0x68	0x06	CH-R Volume	4 / 9.23	0x00800000	Right Channel Volume coefficient
0x6C	0x06	Softening Filter Alpha	4 / 1.31	0x00E2C46B	Volume Time constant
DRC					
0x68	0x08	DRC1 Energy	4 / 1.31	0x7FFFFFFF	DRC1 Energy Time constant
0x6C	0x08	DRC1 Attack	4 / 1.31	0x7FFFFFFF	DRC1 Attack Time constant
0x70	0x08	DRC1 Decay	4 / 1.31	0x7FFFFFFF	DRC1 Decay Time constant
0x74	0x08	K0_1	4 / 9.23	0x00000000	DRC1 Region 1 Slope (comp/Exp)
0x78	0x08	K1_1	4 / 9.23	0x00000000	DRC1 Region 2 Slope (comp/Exp)
0x7C	0x08	K2_1	4 / 9.23	0x00000000	DRC1 Region 3 Slope (comp/Exp)
0x08	0x09	T1_1	4 / 9.23	0xE7000000	DRC1 Threshold 1
0x0C	0x09	T2_1	4 / 9.23	0xFE800000	DRC1 Threshold 2
0x10	0x09	off1_1	4 / 9.23	0x00000000	DRC1 Offset 1
0x14	0x09	off2_1	4 / 9.23	0x00000000	DRC1 Offset 2
0x18	0x09	DRC2 Energy	4 / 1.31	0x7FFFFFFF	DRC2 Energy Time constant
0x1C	0x09	DRC2 Attack	4 / 1.31	0x7FFFFFFF	DRC2 Attack Time constant
0x20	0x09	DRC2 Decay	4 / 1.31	0x7FFFFFFF	DRC2 Decay Time constant
0x24	0x09	k0_2	4 / 9.23	0x00000000	DRC2 Region 1 Slope (comp/Exp)
0x28	0x09	k1_2	4 / 9.23	0x00000000	DRC2 Region 2 Slope (comp/Exp)
0x2C	0x09	k1_2	4 / 9.23	0x00000000	DRC2 Region 3 Slope (comp/Exp)
0x30	0x09	t1_2	4 / 9.23	0xE7000000	DRC2 Threshold 1
0x34	0x09	t2_2	4 / 9.23	0xFE800000	DRC2 Threshold 2
0x38	0x09	off1_2	4 / 9.23	0x00000000	DRC2 Offset 1
0x3C	0x09	off2_2	4 / 9.23	0x00000000	DRC2 Offset 2
0x68	0x09	DRC 1 Mixer Gain	4 / 9.23	0x00800000	DRC 1 Mixer Gain coefficient
0x6C	0x09	DRC 2 Mixer Gain	4 / 9.23	0x00000000	DRC 2 Mixer Gain coefficient
INPUT MIXER					

Table A-4. 2.0 and 1.0 96kHz Modes Memory Map — Book 0x8C (continued)

SUB ADDRESS	PAGE	REGISTER NAME	NUMBER OF BYTES/FORMAT	DEFAULT VALUE	DESCRIPTION
0x74	0x09	Left to Left	4 / 9.23	0x00800000	Left Channel Mixer Left Input Gain
0x78	0x09	Right to Left	4 / 9.23	0x00000000	Left Channel Mixer Right Input Gain
0x7C	0x09	Left to Right	4 / 9.23	0x00000000	Right Channel Mixer Left Input Gain
0x08	0x0A	Right to Right	4 / 9.23	0x00800000	Right Channel Mixer Right Input Gain
OUTPUT CROSS BAR					
0x0C	0x0A	Digital Left from Left	4 / 9.23	0x00800000	I2S Left output gain from Left
0x10	0x0A	Digital Left from Right	4 / 9.23	0x00000000	I2S Left output gain from Right
0x1C	0x0A	Digital Right from Left	4 / 9.23	0x00000000	I2S Right output gain from Left
0x20	0x0A	Digital Right from Right	4 / 9.23	0x00800000	I2S Right output gain from Right
0x24	0x0A	Analog Left from Left	4 / 9.23	0x00800000	Analog Left output gain from Left
0x28	0x0A	Analog Left from Right	4 / 9.23	0x00000000	Analog Left output gain from Right
0x30	0x0A	Analog Right from Left	4 / 9.23	0x00000000	Analog Right output gain from Left
0x34	0x0A	Analog Right from Right	4 / 9.23	0x00800000	Analog Right output gain from Right
THD CLIPPER					
0x3C	0x0A	CH-LR THD Boost	4 / 9.23	0x00800000	THD LR Channel Prescale coefficient
0x40	0x0A	CH-L Fine Volume	4 / 2.30	0x3FFFFFFF	THD L Channel Postscale coefficient
0x44	0x0A	CH-R Fine Volume	4 / 2.30	0x3FFFFFFF	THD R Channel Postscale coefficient
CLASSH CONTROL					
0x50	0x0A	Bypass ClassH	4 / 32.0	0x00000000	ClassH Bypass flag
0x5C	0x0A	Delay Left	4 / 32.0	0x000000F0	Left Channel Delay Samples
0x60	0x0A	Delay Right	4 / 32.0	0x000000F0	Right Channel Delay Samples
0x68	0x0A	Max Detect Window	4 / 32.0	0x00000000	Max Detect Window Samples
0x6C	0x0A	Peak Hold	4 / 32.0	0x00000180	Peak Hold Samples
0x70	0x0A	Peak Detect Offset	4 / 1.31	0x7FDF3B64	Peak Detect Offset linear
0x74	0x0A	Peak Decay	4 / 1.31	0x7999999A	Peak Decay linear
0x78	0x0A	Peak Smooth	4 / 1.31	0x0538EF35	Peak Smooth Time constant
0x7C	0x0A	State Threshold	4 / 5.27	0x00000000	ClassH State Threshold linear
AGL					
0x08	0x0C	Softening Filter Alpha	4 / 1.31	0x051EB852	AGL Energy Time constant
0x0C	0x0C	Attack Rate	4 / 1.31	0x000369D0	AGL Attack Time constant
0x10	0x0C	AGL Enable	4 / 1.31	0x40000000	AGL Enable flag
0x18	0x0C	Softening Filter Omega	4 / 1.31	0x7AE147AE	AGL Omega Time constant
0x1C	0x0C	Release Rate	4 / 1.31	0x00005762	AGL Release Time constant
0x24	0x0C	Attack Threshold	4 / 1.31	0x40000000	Threshold linear

Table A-5. 2.0 and 1.0 96kHz Modes Memory Map — Book 0xAA

SUB ADDRESS	PAGE	REGISTER NAME	NUMBER OF BYTES/FORMAT	DEFAULT VALUE	DESCRIPTION
EQ LEFT 12 BQS					
0x30	0x01	CH -L BQ 1 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x34	0x01	CH -L BQ 1 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x38	0x01	CH -L BQ 1 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x3C	0x01	CH -L BQ 1 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x40	0x01	CH -L BQ 1 A2	4 / 5.27	0x00000000	Left BQ coefficient

Table A-5. 2.0 and 1.0 96kHz Modes Memory Map — Book 0xAA (continued)

SUB ADDRESS	PAGE	REGISTER NAME	NUMBER OF BYTES/ FORMAT	DEFAULT VALUE	DESCRIPTION
0x44	0x01	CH -L BQ 2 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x48	0x01	CH -L BQ 2 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x4C	0x01	CH -L BQ 2 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x50	0x01	CH -L BQ 2 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x54	0x01	CH -L BQ 2 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x58	0x01	CH -L BQ 3 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x5C	0x01	CH -L BQ 3 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x60	0x01	CH -L BQ 3 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x64	0x01	CH -L BQ 3 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x68	0x01	CH -L BQ 3 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x6C	0x01	CH -L BQ 4 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x70	0x01	CH -L BQ 4 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x74	0x01	CH -L BQ 4 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x78	0x01	CH -L BQ 4 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x7C	0x01	CH -L BQ 4 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x08	0x02	CH -L BQ 5 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x0C	0x02	CH -L BQ 5 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x10	0x02	CH -L BQ 5 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x14	0x02	CH -L BQ 5 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x18	0x02	CH -L BQ 5 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x1C	0x02	CH -L BQ 6 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x20	0x02	CH -L BQ 6 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x24	0x02	CH -L BQ 6 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x28	0x02	CH -L BQ 6 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x2C	0x02	CH -LBQ 6 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x30	0x02	CH -L BQ 7 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x34	0x02	CH -L BQ 7 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x38	0x02	CH -L BQ 7 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x3C	0x02	CH -L BQ 7 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x40	0x02	CH -L BQ 7 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x44	0x02	CH -L BQ 8 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x48	0x02	CH -L BQ 8 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x4C	0x02	CH -L BQ 8 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x50	0x02	CH -L BQ 8 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x54	0x02	CH -L BQ 8 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x58	0x02	CH -L BQ 9 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x5C	0x02	CH -L BQ 9 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x60	0x02	CH -L BQ 9 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x64	0x02	CH -L BQ 9 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x68	0x02	CH -L BQ 9 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x6C	0x02	CH -L BQ 10 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x70	0x02	CH -L BQ 10 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x74	0x02	CH -L BQ 10 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x78	0x02	CH -L BQ 10 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x7C	0x02	CH -L BQ 10 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x08	0x03	CH -L BQ 11 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x0C	0x03	CH -L BQ 11 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x10	0x03	CH -L BQ 11 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x14	0x03	CH -L BQ 11 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x18	0x03	CH -L BQ 11 A2	4 / 5.27	0x00000000	Left BQ coefficient

Table A-5. 2.0 and 1.0 96kHz Modes Memory Map — Book 0xAA (continued)

SUB ADDRESS	PAGE	REGISTER NAME	NUMBER OF BYTES/ FORMAT	DEFAULT VALUE	DESCRIPTION
0x1C	0x03	CH -L BQ 12 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x20	0x03	CH -L BQ 12 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x24	0x03	CH -L BQ 12 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x28	0x03	CH -L BQ 12 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x2C	0x03	CH -L BQ 12 A2	4 / 5.27	0x00000000	Left BQ coefficient
EQ RIGHT 12 BQS					
0x30	0x03	CH -R BQ 1 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x34	0x03	CH -R BQ 1 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x38	0x03	CH -R BQ 1 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x3C	0x03	CH -R BQ 1 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x40	0x03	CH -R BQ 1 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x44	0x03	CH -R BQ 2 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x48	0x03	CH -R BQ 2 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x4C	0x03	CH -R BQ 2 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x50	0x03	CH -R BQ 2 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x54	0x03	CH -R BQ 2 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x58	0x03	CH -R BQ 3 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x5C	0x03	CH -R BQ 3 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x60	0x03	CH -R BQ 3 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x64	0x03	CH -R BQ 3 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x68	0x03	CH -R BQ 3 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x6C	0x03	CH -R BQ 4 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x70	0x03	CH -R BQ 4 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x74	0x03	CH -R BQ 4 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x78	0x03	CH -R BQ 4 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x7C	0x03	CH -R BQ 4 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x08	0x04	CH -R BQ 5 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x0C	0x04	CH -R BQ 5 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x10	0x04	CH -R BQ 5 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x14	0x04	CH -R BQ 5 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x18	0x04	CH -R BQ 5 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x1C	0x04	CH -R BQ 6 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x20	0x04	CH -R BQ 6 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x24	0x04	CH -R BQ 6 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x28	0x04	CH -R BQ 6 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x2C	0x04	CH -R BQ 6 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x30	0x04	CH -R BQ 7 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x34	0x04	CH -R BQ 7 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x38	0x04	CH -R BQ 7 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x3C	0x04	CH -R BQ 7 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x40	0x04	CH -R BQ 7 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x44	0x04	CH -R BQ 8 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x48	0x04	CH -R BQ 8 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x4C	0x04	CH -R BQ 8 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x50	0x04	CH -R BQ 8 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x54	0x04	CH -R BQ 8 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x58	0x04	CH -R BQ 9 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x5C	0x04	CH -R BQ 9 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x60	0x04	CH -R BQ 9 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x64	0x04	CH -R BQ 9 A1	4 / 5.27	0x00000000	Right BQ coefficient

Table A-5. 2.0 and 1.0 96kHz Modes Memory Map — Book 0xAA (continued)

SUB ADDRESS	PAGE	REGISTER NAME	NUMBER OF BYTES/ FORMAT	DEFAULT VALUE	DESCRIPTION
0x68	0x04	CH -R BQ 9 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x6C	0x04	CH -R BQ 10 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x70	0x04	CH -R BQ 10 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x74	0x04	CH -R BQ 10 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x78	0x04	CH -R BQ 10 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x7C	0x04	CH -R BQ 10 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x08	0x05	CH -R BQ 11 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x0C	0x05	CH -R BQ 11 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x10	0x05	CH -R BQ 11 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x14	0x05	CH -R BQ 11 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x18	0x05	CH -R BQ 11 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x1C	0x05	CH -R BQ 12 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x20	0x05	CH -R BQ 12 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x24	0x05	CH -R BQ 12 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x28	0x05	CH -R BQ 12 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x2C	0x05	CH -R BQ 12 A2	4 / 5.27	0x00000000	Right BQ coefficient
DRC BQS					
0x40	0x07	DRC low BQ 1 B0	4 / 5.27	0x08000000	DRC low BQ coefficient
0x44	0x07	DRC low BQ 1 B1	4 / 5.27	0x00000000	DRC low BQ coefficient
0x48	0x07	DRC low BQ 1 B2	4 / 5.27	0x00000000	DRC low BQ coefficient
0x4C	0x07	DRC low BQ 1 A1	4 / 5.27	0x00000000	DRC low BQ coefficient
0x50	0x07	DRC low BQ 1 A2	4 / 5.27	0x00000000	DRC low BQ coefficient
0x54	0x07	DRC low BQ 2 B0	4 / 5.27	0x08000000	DRC low BQ coefficient
0x58	0x07	DRC low BQ 2 B1	4 / 5.27	0x00000000	DRC low BQ coefficient
0x5C	0x07	DRC low BQ 2 B2	4 / 5.27	0x00000000	DRC low BQ coefficient
0x60	0x07	DRC low BQ 2 A1	4 / 5.27	0x00000000	DRC low BQ coefficient
0x64	0x07	DRC low BQ 2 A2	4 / 5.27	0x00000000	DRC low BQ coefficient
0x68	0x07	DRC high BQ 1 B0	4 / 5.27	0x08000000	DRC high BQ coefficient
0x6C	0x07	DRC high BQ 1 B1	4 / 5.27	0x00000000	DRC high BQ coefficient
0x70	0x07	DRC high BQ 1 B2	4 / 5.27	0x00000000	DRC high BQ coefficient
0x74	0x07	DRC high BQ 1 A1	4 / 5.27	0x00000000	DRC high BQ coefficient
0x78	0x07	DRC high BQ 1 A2	4 / 5.27	0x00000000	DRC high BQ coefficient
0x7C	0x07	DRC high BQ 2 B0	4 / 5.27	0x08000000	DRC high BQ coefficient
0x08	0x08	DRC high BQ 2 B1	4 / 5.27	0x00000000	DRC high BQ coefficient
0x0C	0x08	DRC high BQ 2 B2	4 / 5.27	0x00000000	DRC high BQ coefficient
0x10	0x08	DRC high BQ 2 A1	4 / 5.27	0x00000000	DRC high BQ coefficient
0x14	0x08	DRC high BQ 2 A2	4 / 5.27	0x00000000	DRC high BQ coefficient

A.3 DSP Memory Map for Process Flow 4 and 8

Table A-6. 2.0 and 1.0 192kHz Mode Memory Map — Book 0x8C

SUB ADDRESS	PAGE	REGISTER NAME	NUMBER OF BYTES/ FORMAT	DEFAULT VALUE	DESCRIPTION
BYPASS DCBLOCK					
0x58	0x06	Bypass DC block	4 / 32.0	0x00000000	DC Block flag
INPUT MIXER					
0x74	0x09	Left to Left	4 / 9.23	0x00800000	Left Channel Mixer Left Input Gain
0x78	0x09	Right to Left	4 / 9.23	0x00000000	Left Channel Mixer Right Input Gain
0x7C	0x09	Left to Right	4 / 9.23	0x00000000	Right Channel Mixer Left Input Gain
0x08	0x0A	Right to Right	4 / 9.23	0x00800000	Right Channel Mixer Right Input Gain
CLASSH CONTROL					
0x50	0x0A	Bypass ClassH	4 / 32.0	0x00000000	ClassH Bypass flag
0x5C	0x0A	Delay Left	4 / 32.0	0x000000F0	Left Channel Delay Samples
0x60	0x0A	Delay Right	4 / 32.0	0x000000F0	Right Channel Delay Samples
0x68	0x0A	Max Detect Window	4 / 32.0	0x00000000	Max Detect Window Samples
0x6C	0x0A	Peak Hold	4 / 32.0	0x00000180	Peak Hold Samples
0x70	0x0A	Peak Detect Offset	4 / 1.31	0x7FDF3B64	Peak Detect Offset linear
0x74	0x0A	Peak Decay	4 / 1.31	0x7999999A	Peak Decay linear
0x78	0x0A	Peak Smooth	4 / 1.31	0x0538EF35	Peak Smooth Time constant
0x7C	0x0A	State Threshold	4 / 5.27	0x00000000	ClassH State Threshold linear

A.4 DSP Memory Map for Process 9

Table A-7. 1.1 96kHz Mode Memory Map — Book 0x8C

SUB ADDRESS	PAGE	REGISTER NAME	NUMBER OF BYTES/ FORMAT	DEFAULT VALUE	DESCRIPTION
BYPASS DCBLOCK					
0x58	0x06	Bypass DC block	4 / 32.0	0x00000000	DC Block flag
EQ CONTROL					
0x5C	0x06	Gang EQ	4 / 32.0	0x00000000	Gang EQ flag
0x60	0x06	Bypass EQ	4 / 32.0	0x00000000	Bypass EQ flag
VOLUME CONTROL					
0x64	0x06	Tweeter Volume	4 / 9.23	0x00800000	Tweeter Volume coefficient
0x68	0x06	Woofer Volume	4 / 9.23	0x00800000	Woofer Volume coefficient
0x6C	0x06	Softening Filter Alpha	4 / 1.31	0x00E2C46B	Volume Time constant
WOOFER DRC					
0x68	0x08	DRC1 Energy	4 / 1.31	0x7FFFFFFF	DRC1 Energy Time constant
0x6C	0x08	DRC1 Attack	4 / 1.31	0x7FFFFFFF	DRC1 Attack Time constant
0x70	0x08	DRC1 Decay	4 / 1.31	0x7FFFFFFF	DRC1 Decay Time constant
0x74	0x08	K0_1	4 / 9.23	0x00000000	DRC1 Region 1 Slope (comp/Exp)
0x78	0x08	K1_1	4 / 9.23	0x00000000	DRC1 Region 2 Slope (comp/Exp)
0x7C	0x08	K2_1	4 / 9.23	0x00000000	DRC1 Region 3 Slope (comp/Exp)
0x08	0x09	T1_1	4 / 9.23	0xE7000000	DRC1 Threshold 1
0x0C	0x09	T2_1	4 / 9.23	0xFE800000	DRC1 Threshold 2
0x10	0x09	off1_1	4 / 9.23	0x00000000	DRC1 Offset 1
0x14	0x09	off2_1	4 / 9.23	0x00000000	DRC1 Offset 2
0x68	0x09	DRC 1 Mixer Gain	4 / 9.23	0x00800000	DRC 1 Mixer Gain coefficient
INPUT MIXER					
0x74	0x09	Left to Tweeter	4 / 9.23	0x00800000	Tweeter Channel Mixer Left Input Gain
0x78	0x09	Right to Tweeter	4 / 9.23	0x00000000	Tweeter Channel Mixer Right Input Gain
0x7C	0x09	Left to Woofer	4 / 9.23	0x00000000	Woofer Channel Mixer Left Input Gain
0x08	0x0A	Right to Woofer	4 / 9.23	0x00800000	Woofer Channel Mixer Right Input Gain
OUTPUT CROSS BAR					
0x10	0x0A	Digital Left from Woofer	4 / 9.23	0x00000000	I2S Left output gain from Woofer
0x14	0x0A	Digital Left from Tweeter	4 / 9.23	0x00800000	I2S Left output gain from Tweeter
0x18	0x0A	Digital Right from Tweeter	4 / 9.23	0x00000000	I2S Right output gain from Tweeter
0x20	0x0A	Digital Right from Woofer	4 / 9.23	0x00800000	I2S Right output gain from Woofer
0x28	0x0A	Analog Left from Woofer	4 / 9.23	0x00000000	Analog Left output gain from Woofer
0x2c	0x0A	Analog Left from Tweeter	4 / 9.23	0x00800000	Analog Left output gain from Tweeter
0x34	0x0A	Analog Right from Woofer	4 / 9.23	0x00800000	Analog Right output gain from Woofer
0x38	0x0A	Analog Right from Tweeter	4 / 9.23	0x00000000	Analog Right output gain from Tweeter
TWEETER DRC					

Table A-7. 1.1 96kHz Mode Memory Map — Book 0x8C (continued)

SUB ADDRESS	PAGE	REGISTER NAME	NUMBER OF BYTES/FORMAT	DEFAULT VALUE	DESCRIPTION
0x24	0x0d	DRC1 Energy	4 / 1.31	0x7FFFFFFF	DRC1 Energy Time constant
0x28	0x0d	DRC1 Attack	4 / 1.31	0x7FFFFFFF	DRC1 Attack Time constant
0x2C	0x0d	DRC1 Decay	4 / 1.31	0x7FFFFFFF	DRC1 Decay Time constant
0x30	0x0d	K0_1	4 / 9.23	0x00000000	DRC1 Region 1 Slope (comp/Exp)
0x34	0x0d	K1_1	4 / 9.23	0x00000000	DRC1 Region 2 Slope (comp/Exp)
0x38	0x0d	K2_1	4 / 9.23	0x00000000	DRC1 Region 3 Slope (comp/Exp)
0x3C	0x0d	T1_1	4 / 9.23	0xE7000000	DRC1 Threshold 1
0x40	0x0d	T2_1	4 / 9.23	0xFE800000	DRC1 Threshold 2
0x44	0x0d	off1_1	4 / 9.23	0x00000000	DRC1 Offset 1
0x48	0x0d	off2_1	4 / 9.23	0x00000000	DRC1 Offset 2
0x4C	0x0d	DRC2 Energy	4 / 1.31	0x7FFFFFFF	DRC2 Energy Time constant
0x50	0x0d	DRC2 Attack	4 / 1.31	0x7FFFFFFF	DRC2 Attack Time constant
0x54	0x0d	DRC2 Decay	4 / 1.31	0x7FFFFFFF	DRC2 Decay Time constant
0x58	0x0d	k0_2	4 / 9.23	0x00000000	DRC2 Region 1 Slope (comp/Exp)
0x5C	0x0d	k1_2	4 / 9.23	0x00000000	DRC2 Region 2 Slope (comp/Exp)
0x60	0x0d	k1_2	4 / 9.23	0x00000000	DRC2 Region 3 Slope (comp/Exp)
0x64	0x0d	t1_2	4 / 9.23	0xE7000000	DRC2 Threshold 1
0x68	0x0d	t2_2	4 / 9.23	0xFE800000	DRC2 Threshold 2
0x6C	0x0d	off1_2	4 / 9.23	0x00000000	DRC2 Offset 1
0x70	0x0d	off2_2	4 / 9.23	0x00000000	DRC2 Offset 2
0x74	0x0d	DRC 1 Mixer Gain	4 / 9.23	0x00800000	DRC 1 Mixer Gain coefficient
0x78	0x0d	DRC 2 Mixer Gain	4 / 9.23	0x00000000	DRC 2 Mixer Gain coefficient

Table A-8. 1.1 96kHz Mode Memory Map — Book 0xAA

SUB ADDRESS	PAGE	REGISTER NAME	NUMBER OF BYTES/FORMAT	DEFAULT VALUE	DESCRIPTION
EQ TWEETER 12 BQS					
0x30	0x01	BQ 1 B0	4 / 5.27	0x08000000	Tweeter BQ coefficient
0x34	0x01	BQ 1 B1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x38	0x01	BQ 1 B2	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x3C	0x01	BQ 1 A1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x40	0x01	BQ 1 A2	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x44	0x01	BQ 2 B0	4 / 5.27	0x08000000	Tweeter BQ coefficient
0x48	0x01	BQ 2 B1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x4C	0x01	BQ 2 B2	4 / 5.27	0x00000000	Tweeter BQ coefficient

Table A-8. 1.1 96kHz Mode Memory Map — Book 0xAA (continued)

SUB ADDRESS	PAGE	REGISTER NAME	NUMBER OF BYTES/ FORMAT	DEFAULT VALUE	DESCRIPTION
0x50	0x01	BQ 2 A1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x54	0x01	BQ 2 A2	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x58	0x01	BQ 3 B0	4 / 5.27	0x08000000	Tweeter BQ coefficient
0x5C	0x01	BQ 3 B1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x60	0x01	BQ 3 B2	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x64	0x01	BQ 3 A1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x68	0x01	BQ 3 A2	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x6C	0x01	BQ 4 B0	4 / 5.27	0x08000000	Tweeter BQ coefficient
0x70	0x01	BQ 4 B1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x74	0x01	BQ 4 B2	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x78	0x01	BQ 4 A1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x7C	0x01	BQ 4 A2	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x08	0x02	BQ 5 B0	4 / 5.27	0x08000000	Tweeter BQ coefficient
0x0C	0x02	BQ 5 B1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x10	0x02	BQ 5 B2	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x14	0x02	BQ 5 A1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x18	0x02	BQ 5 A2	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x1C	0x02	BQ 6 B0	4 / 5.27	0x08000000	Tweeter BQ coefficient
0x20	0x02	BQ 6 B1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x24	0x02	BQ 6 B2	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x28	0x02	BQ 6 A1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x2C	0x02	BQ 6 A2	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x30	0x02	BQ 7 B0	4 / 5.27	0x08000000	Tweeter BQ coefficient
0x34	0x02	BQ 7 B1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x38	0x02	BQ 7 B2	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x3C	0x02	BQ 7 A1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x40	0x02	BQ 7 A2	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x44	0x02	BQ 8 B0	4 / 5.27	0x08000000	Tweeter BQ coefficient
0x48	0x02	BQ 8 B1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x4C	0x02	BQ 8 B2	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x50	0x02	BQ 8 A1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x54	0x02	BQ 8 A2	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x58	0x02	BQ 9 B0	4 / 5.27	0x08000000	Tweeter BQ coefficient
0x5C	0x02	BQ 9 B1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x60	0x02	BQ 9 B2	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x64	0x02	BQ 9 A1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x68	0x02	BQ 9 A2	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x6C	0x02	BQ 10 B0	4 / 5.27	0x08000000	Tweeter BQ coefficient
0x70	0x02	BQ 10 B1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x74	0x02	BQ 10 B2	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x78	0x02	BQ 10 A1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x7C	0x02	BQ 10 A2	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x08	0x03	BQ 11 B0	4 / 5.27	0x08000000	Tweeter BQ coefficient
0x0C	0x03	BQ 11 B1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x10	0x03	BQ 11 B2	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x14	0x03	BQ 11 A1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x18	0x03	BQ 11 A2	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x1C	0x03	BQ 12 B0	4 / 5.27	0x08000000	Tweeter BQ coefficient
0x20	0x03	BQ 12 B1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x24	0x03	BQ 12 B2	4 / 5.27	0x00000000	Tweeter BQ coefficient

Table A-8. 1.1 96kHz Mode Memory Map — Book 0xAA (continued)

SUB ADDRESS	PAGE	REGISTER NAME	NUMBER OF BYTES/ FORMAT	DEFAULT VALUE	DESCRIPTION
0x28	0x03	BQ 12 A1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x2C	0x03	BQ 12 A2	4 / 5.27	0x00000000	Tweeter BQ coefficient
EQ WOOFER 12 BQS					
0x30	0x03	BQ 1 B0	4 / 5.27	0x08000000	Woofers BQ coefficient
0x34	0x03	BQ 1 B1	4 / 5.27	0x00000000	Woofers BQ coefficient
0x38	0x03	BQ 1 B2	4 / 5.27	0x00000000	Woofers BQ coefficient
0x3C	0x03	BQ 1 A1	4 / 5.27	0x00000000	Woofers BQ coefficient
0x40	0x03	BQ 1 A2	4 / 5.27	0x00000000	Woofers BQ coefficient
0x44	0x03	BQ 2 B0	4 / 5.27	0x08000000	Woofers BQ coefficient
0x48	0x03	BQ 2 B1	4 / 5.27	0x00000000	Woofers BQ coefficient
0x4C	0x03	BQ 2 B2	4 / 5.27	0x00000000	Woofers BQ coefficient
0x50	0x03	BQ 2 A1	4 / 5.27	0x00000000	Woofers BQ coefficient
0x54	0x03	BQ 2 A2	4 / 5.27	0x00000000	Woofers BQ coefficient
0x58	0x03	BQ 3 B0	4 / 5.27	0x08000000	Woofers BQ coefficient
0x5C	0x03	BQ 3 B1	4 / 5.27	0x00000000	Woofers BQ coefficient
0x60	0x03	BQ 3 B2	4 / 5.27	0x00000000	Woofers BQ coefficient
0x64	0x03	BQ 3 A1	4 / 5.27	0x00000000	Woofers BQ coefficient
0x68	0x03	BQ 3 A2	4 / 5.27	0x00000000	Woofers BQ coefficient
0x6C	0x03	BQ 4 B0	4 / 5.27	0x08000000	Woofers BQ coefficient
0x70	0x03	BQ 4 B1	4 / 5.27	0x00000000	Woofers BQ coefficient
0x74	0x03	BQ 4 B2	4 / 5.27	0x00000000	Woofers BQ coefficient
0x78	0x03	BQ 4 A1	4 / 5.27	0x00000000	Woofers BQ coefficient
0x7C	0x03	BQ 4 A2	4 / 5.27	0x00000000	Woofers BQ coefficient
0x08	0x04	BQ 5 B0	4 / 5.27	0x08000000	Woofers BQ coefficient
0x0C	0x04	BQ 5 B1	4 / 5.27	0x00000000	Woofers BQ coefficient
0x10	0x04	BQ 5 B2	4 / 5.27	0x00000000	Woofers BQ coefficient
0x14	0x04	BQ 5 A1	4 / 5.27	0x00000000	Woofers BQ coefficient
0x18	0x04	BQ 5 A2	4 / 5.27	0x00000000	Woofers BQ coefficient
0x1C	0x04	BQ 6 B0	4 / 5.27	0x08000000	Woofers BQ coefficient
0x20	0x04	BQ 6 B1	4 / 5.27	0x00000000	Woofers BQ coefficient
0x24	0x04	BQ 6 B2	4 / 5.27	0x00000000	Woofers BQ coefficient
0x28	0x04	BQ 6 A1	4 / 5.27	0x00000000	Woofers BQ coefficient
0x2C	0x04	BQ 6 A2	4 / 5.27	0x00000000	Woofers BQ coefficient
0x30	0x04	BQ 7 B0	4 / 5.27	0x08000000	Woofers BQ coefficient
0x34	0x04	BQ 7 B1	4 / 5.27	0x00000000	Woofers BQ coefficient
0x38	0x04	BQ 7 B2	4 / 5.27	0x00000000	Woofers BQ coefficient
0x3C	0x04	BQ 7 A1	4 / 5.27	0x00000000	Woofers BQ coefficient
0x40	0x04	BQ 7 A2	4 / 5.27	0x00000000	Woofers BQ coefficient
0x44	0x04	BQ 8 B0	4 / 5.27	0x08000000	Woofers BQ coefficient
0x48	0x04	BQ 8 B1	4 / 5.27	0x00000000	Woofers BQ coefficient
0x4C	0x04	BQ 8 B2	4 / 5.27	0x00000000	Woofers BQ coefficient
0x50	0x04	BQ 8 A1	4 / 5.27	0x00000000	Woofers BQ coefficient
0x54	0x04	BQ 8 A2	4 / 5.27	0x00000000	Woofers BQ coefficient
0x58	0x04	BQ 9 B0	4 / 5.27	0x08000000	Woofers BQ coefficient
0x5C	0x04	BQ 9 B1	4 / 5.27	0x00000000	Woofers BQ coefficient
0x60	0x04	BQ 9 B2	4 / 5.27	0x00000000	Woofers BQ coefficient
0x64	0x04	BQ 9 A1	4 / 5.27	0x00000000	Woofers BQ coefficient
0x68	0x04	BQ 9 A2	4 / 5.27	0x00000000	Woofers BQ coefficient
0x6C	0x04	BQ 10 B0	4 / 5.27	0x08000000	Woofers BQ coefficient
0x70	0x04	BQ 10 B1	4 / 5.27	0x00000000	Woofers BQ coefficient

Table A-8. 1.1 96kHz Mode Memory Map — Book 0xAA (continued)

SUB ADDRESS	PAGE	REGISTER NAME	NUMBER OF BYTES/ FORMAT	DEFAULT VALUE	DESCRIPTION
0x74	0x04	BQ 10 B2	4 / 5.27	0x00000000	Woofer BQ coefficient
0x78	0x04	BQ 10 A1	4 / 5.27	0x00000000	Woofer BQ coefficient
0x7C	0x04	BQ 10 A2	4 / 5.27	0x00000000	Woofer BQ coefficient
0x08	0x05	BQ 11 B0	4 / 5.27	0x08000000	Woofer BQ coefficient
0x0C	0x05	BQ 11 B1	4 / 5.27	0x00000000	Woofer BQ coefficient
0x10	0x05	BQ 11 B2	4 / 5.27	0x00000000	Woofer BQ coefficient
0x14	0x05	BQ 11 A1	4 / 5.27	0x00000000	Woofer BQ coefficient
0x18	0x05	BQ 11 A2	4 / 5.27	0x00000000	Woofer BQ coefficient
0x1C	0x05	BQ 12 B0	4 / 5.27	0x08000000	Woofer BQ coefficient
0x20	0x05	BQ 12 B1	4 / 5.27	0x00000000	Woofer BQ coefficient
0x24	0x05	BQ 12 B2	4 / 5.27	0x00000000	Woofer BQ coefficient
0x28	0x05	BQ 12 A1	4 / 5.27	0x00000000	Woofer BQ coefficient
0x2C	0x05	BQ 12 A2	4 / 5.27	0x00000000	Woofer BQ coefficient
TWEETER DRC BQS					
0x4C	0x0c	DRC low BQ 1 B0	4 / 5.27	0x08000000	DRC low BQ coefficient
0x50	0x0c	DRC low BQ 1 B1	4 / 5.27	0x00000000	DRC low BQ coefficient
0x54	0x0c	DRC low BQ 1 B2	4 / 5.27	0x00000000	DRC low BQ coefficient
0x58	0x0c	DRC low BQ 1 A1	4 / 5.27	0x00000000	DRC low BQ coefficient
0x5C	0x0c	DRC low BQ 1 A2	4 / 5.27	0x00000000	DRC low BQ coefficient
0x60	0x0c	DRC low BQ 2 B0	4 / 5.27	0x08000000	DRC low BQ coefficient
0x64	0x0c	DRC low BQ 2 B1	4 / 5.27	0x00000000	DRC low BQ coefficient
0x68	0x0c	DRC low BQ 2 B2	4 / 5.27	0x00000000	DRC low BQ coefficient
0x6C	0x0c	DRC low BQ 2 A1	4 / 5.27	0x00000000	DRC low BQ coefficient
0x70	0x0c	DRC low BQ 2 A2	4 / 5.27	0x00000000	DRC low BQ coefficient
0x74	0x0c	DRC high BQ 1 B0	4 / 5.27	0x08000000	DRC high BQ coefficient
0x78	0x0c	DRC high BQ 1 B1	4 / 5.27	0x00000000	DRC high BQ coefficient
0x7C	0x0c	DRC high BQ 1 B2	4 / 5.27	0x00000000	DRC high BQ coefficient
0x08	0x0d	DRC high BQ 1 A1	4 / 5.27	0x00000000	DRC high BQ coefficient
0x0C	0x0d	DRC high BQ 1 A2	4 / 5.27	0x00000000	DRC high BQ coefficient
0x10	0x0d	DRC high BQ 2 B0	4 / 5.27	0x08000000	DRC high BQ coefficient
0x14	0x0d	DRC high BQ 2 B1	4 / 5.27	0x00000000	DRC high BQ coefficient
0x18	0x0d	DRC high BQ 2 B2	4 / 5.27	0x00000000	DRC high BQ coefficient
0x1C	0x0d	DRC high BQ 2 A1	4 / 5.27	0x00000000	DRC high BQ coefficient
0x20	0x0d	DRC high BQ 2 A2	4 / 5.27	0x00000000	DRC high BQ coefficient
TWEETER POST EQ 2 BQS					
0x7c	0x0d	BQ 1 B0	4 / 5.27	0x08000000	Tweeter BQ coefficient
0x08	0x0e	BQ 1 B1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x0C	0x0e	BQ 1 B2	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x10	0x0e	BQ 1 A1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x14	0x0e	BQ 1 A2	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x18	0x0e	BQ 2 B0	4 / 5.27	0x08000000	Tweeter BQ coefficient
0x1C	0x0e	BQ 2 B1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x20	0x0e	BQ 2 B2	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x24	0x0e	BQ 2 A1	4 / 5.27	0x00000000	Tweeter BQ coefficient
0x28	0x0e	BQ 2 A2	4 / 5.27	0x00000000	Tweeter BQ coefficient

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