TAS5825M Process Flows

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ABSTRACT

The TAS5825M device has a powerful µCDSP audio processing core, which supports several selectable process flows. This application report explains the details of each process flow.

The TAS5825M process flows with standard processing, feature a few advanced audio processing blocks: *Dynamic Ranger Control* (DRC), *Automatic Gain Limiter* (AGL), *Dynamic Parametric Equalizer* (DPEQ) and *Spatializer*. A 3-band DRC + AGL structure limits the output power of the amplifier for three regions while controlling the peaking that can occur in the crossover region during compression. DPEQ dynamically adjusts the equalization curve that is applied to low-level signal and the curve that is applied to high-level signals. The Spatializer increases the field of sound for a broader and more encompassing audio experience.

The TAS5825M process flows with *SmartAmp Processing* replaces traditional continuous power design principles and hardware-based speaker protection methods with algorithms that allow significant increases in peak power output, loudness, and sound quality relative to conventional amplifiers. *Smart Amp* tools allow developers to understand how speakers are performing in the system and then make informed decisions to improve performance. The algorithms, characterization, and tuning tools allow developers to overcome a wide variety of audio challenges.

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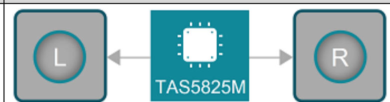
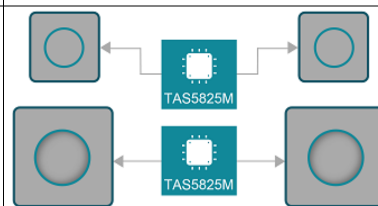
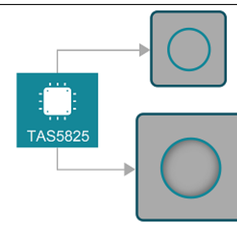
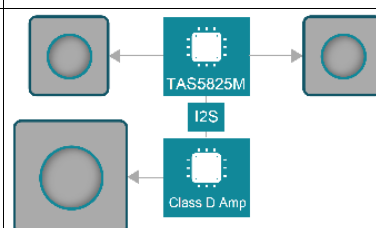
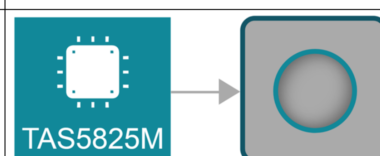
1 General Overview

1.1 Supported Use Cases

The TAS5825M process flows have been generated based upon several popular configurations, primarily around the number and type of amplified outputs. Table 1 shows the use cases supported by available process flows and the PPC3 GUI.

Table 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.	
2.2	Dual stereo	Two devices drive two-way speakers in stereo. One device drives two tweeters and one device drives two woofers.	
1.1	Bi-amped, dual mono	A single input signal is separated into high- and low-frequency content. One BTL output drives a high-frequency transducer and the other drives a low-frequency transducer.	
2.1	N/A	One device uses 2.0 mode and a separate device uses mono mode.	
Mono	0.1	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.	

2 Process Flows Cross Reference

Table 2 and Table 3 show the processing features of each process flow available in the current PPC3 GUI.

Table 2. Process Flows 1–4

Feature	Process Flow 1 (Base/Pro, 96 kHz, 2.0)	Process Flow 2 (2-Band DRC and AGL, 96 kHz, 2.0)	Process Flow 3 (3-Band DRC and AGL, 96 kHz, 2.0)	Process Flow 4 (SmartAMP, 96 kHz, 2.0)
Maximum Internal Sample Rate	96 kHz	96 kHz	96 kHz	96 kHz
SRC and Auto-detect	√	√	√	√
Supported Input Sample Rates (32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, and 96 kHz)	√	√	√	√
Support for Input Sample Rate 192 kHz	√	√	×	√
Biquads for EQ Filtering (Individual Left and Right)	15	15	15	15
Additional Biquad Bank (44.1 kHz, 88.2 kHz)	√	√	×	×
Input Mixer	√	√	√	√
Click and Pop Free Volume	√	√	√	√
Spatializer (Stereo Widening)	√	×	×	×
Dynamic Biquad	2nd Order	4th Order	2nd Order	2nd Order
DRC	3-Band 4th Order Crossover	2-Band 2nd Order Crossover	3-Band 2nd Order Crossover	×
Automatic Gain Limiter (AGL)	×	√	√	√
Smart Excursion, Smart Thermal, and Smart Bass	×	×	×	√
SmartEQ	×	×	×	√
Output Clipper	√	√	√	√
PVDD Tracking / Thermal Foldback	×	×	×	×
Hybrid PWM Mode	×	×	×	×

Table 3. Process Flows 5–8

Feature	Process Flow 5 (SmartAmp LookAhead ,48 kHz, 2.0)	Process Flow 6 (FIR, 48 kHz, 2.0)	Process Flow 7 (Base/Pro, 48 kHz, 2.0)	Process Flow 8 (Housekeeping, 2.0)
Maximum Internal Sample Rate	48 kHz	48 kHz	48 kHz	192 kHz
SRC and Auto-detect	√	√	√	√
Supported Input Sample Rates (16 kHz, 32 kHz, 44.1 kHz, and 48 kHz, 88.2 kHz, 96 kHz)	√	√	√	√
Support for Input Sample Rate 192k	×	×	×	√
Biquads for EQ Filtering (Individual Left and Right)	13	15	15	×
Additional Biquad Bank (44.1/88.2kHz)	×	×	×	×
Input Mixer	√	√	√	×
Click and Pop Free Volume	√	√	√	×
Spatializer (Stereo Widening)	×	×	√	×

Table 3. Process Flows 5–8 (continued)

Feature	Process Flow 5 (SmartAmp LookAhead ,48 kHz, 2.0)	Process Flow 6 (FIR, 48 kHz, 2.0)	Process Flow 7 (Base/Pro, 48 kHz, 2.0)	Process Flow 8 (Housekeeping, 2.0)
Dynamic Biquad	×	×	4th Order	×
DRC	×	3-Band 4th Order Crossover	3-Band 4th Order Crossover	×
Automatic Gain Limiter (AGL)	×	√	√	×
Smart Excursion, Smart Thermal, and Smart Bass	√	×	√	×
SmartEQ	√	×	√	×
Output Clipper	√	√	√	×
PVDD Tracking / Thermal Foldback	×	√	√	√
Hybrid PWM Mode	×	×	×	All Sample Rates Except 192kHz

Table 4. Process Flows 9–11

Feature	Process Flow 9 (Base/Pro, 48 kHz, 1.1)	Process Flow 10 (SmartAmp, 48 kHz, 1.1)	Process Flow 11 (96 kHz, 1.1)
Maximum Internal Sample Rate	48 kHz	48 kHz	96 kHz
SRC and Auto-detect	√	√	√
Supported Input Sample Rates (16 kHz, 32 kHz, 44.1 kHz, and 48 kHz, 88.2 kHz, 96 kHz)	√	√	√
Biquads for EQ Filtering (Individual Left and Right)	15	15	10
Input Mixer	√	√	√
Click and Pop Free Volume	√	√	√
Spatializer (Stereo Widening)	×	×	×
Dynamic Biquad	4th Order	4th Order	4th Order
DRC	3-Band 4th Order Crossover	2-Band 4th Order Crossover	2-Band 2nd Order Crossover
Automatic Gain Limiter (AGL)	√	×	√
Smart Excursion, Smart Thermal, and Smart Bass	×	√	√
SmartEQ	×	×	×
Output Clipper	√	√	√
Hybrid PWM Mode	×	×	×

Table 5. Process Flows 12–13

Feature	Process Flow 12 (Base/Pro, 48 kHz, 2.1)	Process Flow 13 (SmartAmp, 48 kHz, 2.1)
Maximum Internal Sample Rate	48 kHz	48 kHz
SRC and Auto-detect	√	√
Supported Input Sample Rates (16 kHz, 32 kHz, 44.1 kHz, and 48 kHz, 88.2 kHz, 96 kHz)	√	√
Biquads for EQ Filtering (Individual Left and Right)	15	15
Input Mixer	√	√

Table 5. Process Flows 12–13 (continued)

Feature	Process Flow 12 (Base/Pro, 48 kHz, 2.1)	Process Flow 13 (SmartAmp, 48 kHz, 2.1)
Click and Pop Free Volume	√	√
Spatializer (Stereo Widening)	√	√
Dynamic Biquad	4th Order	4th Order
DRC	3-Band 4th Order Crossover	2-Band 4th Order Crossover
Automatic Gain Limiter (AGL)	√	×
Smart Excursion, Smart Thermal, and Smart Bass	×	√
SmartEQ	×	×
Output Clipper	√	√
Hybrid PWM Mode	×	×

3 Process Flow 1 (Base/Pro, 96 kHz, 2.0)

This process flow supports a maximum internal sample rate of 96 kHz and is therefore considered “true” 96 kHz. It is intended for stereo speakers where the 3-band DRC will use individual coefficients for left and right. It is possible to tune the left and right Biquads (BQs) in the 15-BQ bank individually between left and right.

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

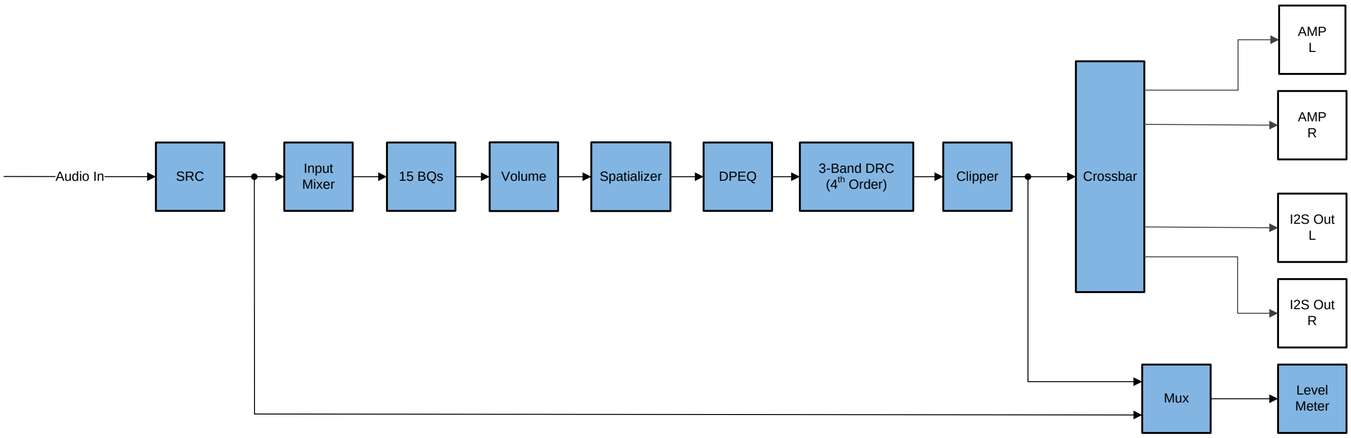


Figure 1. Process Flow 1

3.1 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 are converted to an 88.2 or 96 kHz sample rate.

3.2 Input Mixer

The input mixer is used to mix the left and right channel input signals. Refer to Section 16.1 for more details.

3.3 Equalizer

The equalizer contains 15 independent filters for both left and right channels. Refer to Section 16.2 for more details.

3.4 Volume

This volume block is click and pop free. Refer to Section 16.4 for more details.

3.5 Spatializer

Spatializer is a method to increase the field of sound for a broader and more encompassing audio experience. Refer to Section 16.5 for more details.

3.6 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 16.6 for more details.

3.7 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 16.7 for more details.

3.8 Clipper

A THD boost and fine volume together can be used for clipping. The THD boost block allows the user to programmatically increase the THD by clipping at an operating point earlier than that defined by the supply rails. Refer to Section 16.12 for more details.

3.9 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 16.13 for more details.

3.10 Level Meter

The level meter provides the end user with an easy way to study the power profile. Refer to Section 16.14 for more details.

3.11 DSP Memory Map

Refer to Section A.1 for details.

4 Process Flow 2 (2-Band DRC and AGL, 96 kHz, 2.0)

This process flow supports a maximum internal sample rate of 96 kHz and is therefore considered a "true" 96 kHz flow. This process flow is similar to *Process Flow 1*. The differences are: a) the 3-Band DRC and Spatializer are replaced by 2-Band DRC and AGL, b) the 4th order DPEQ becomes a 2nd order DPEQ.

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

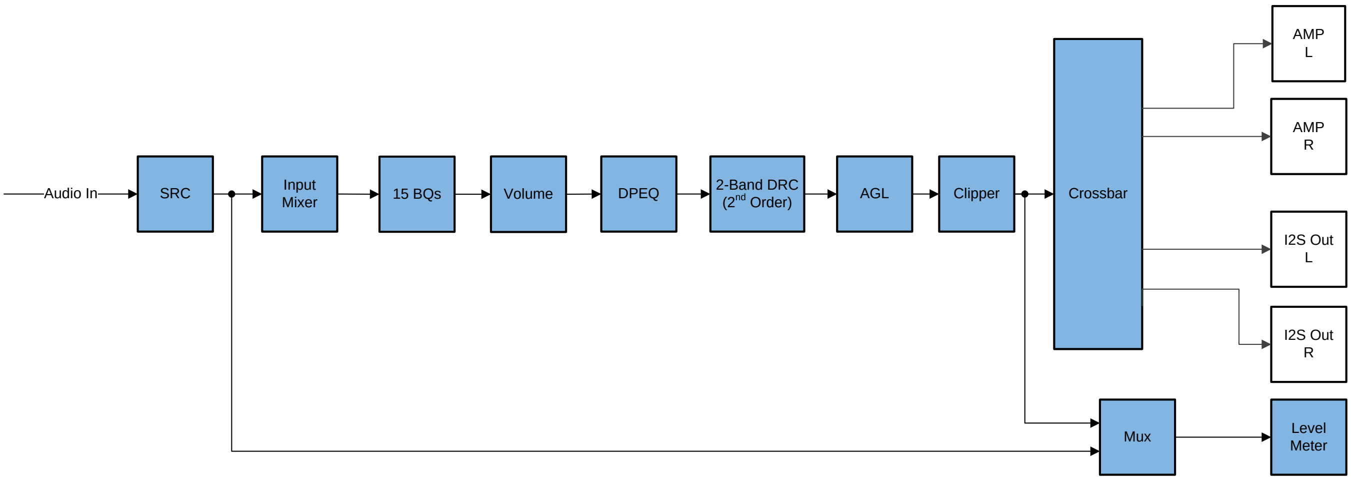


Figure 2. Process Flow 2

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 are converted to an 88.2 or 96 kHz sample rate.

4.2 *Input Mixer*

The input mixer is used to mix the left and right channel input signals. Refer to Section 16.1 for more details.

4.3 *Equalizer*

The equalizer contains 15 independent filters for both left and right channels. Refer to Section 16.2 for more details.

4.4 *Volume*

This volume block is click and pop free. Refer to Section 16.4 for more details.

4.5 *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 16.6 for more details.

4.6 *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 16.8 for more details.

4.7 AGL

The AGL can also be used to automatically control the audio signal amplitude or dynamic range within specified limits. Refer to Section 16.9 for more details.

4.8 Clipper

A THD boost and fine volume together can be used for clipping. The THD boost block allows the user to programmatically increase the THD by clipping at an operating point earlier than that defined by the supply rails. Refer to Section 16.12 for more details.

4.9 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 16.13 for more details.

4.10 Level Meter

The level meter provides the end user with an easy way to study the power profile. Refer to Section 16.14 for more details.

4.11 DSP Memory Map

Refer to Section A.2 for details.

5 Process Flow 3 (3-Band DRC and AGL, 96 kHz, 2.0)

This process flow supports a maximum internal sample rate of 96 kHz and is therefore considered a "true" 96 kHz flow. This process flow is similar to *Process Flow 1*. The differences are: a) the Spatializer is replaced by an AGL; b) the 4th order 3-Band DRC becomes a 2nd order 3-Band DRC.

Figure 3 depicts the signal path of this process flow. The blocks in Figure 3 correspond to the functions found in the PPC3 GUI.

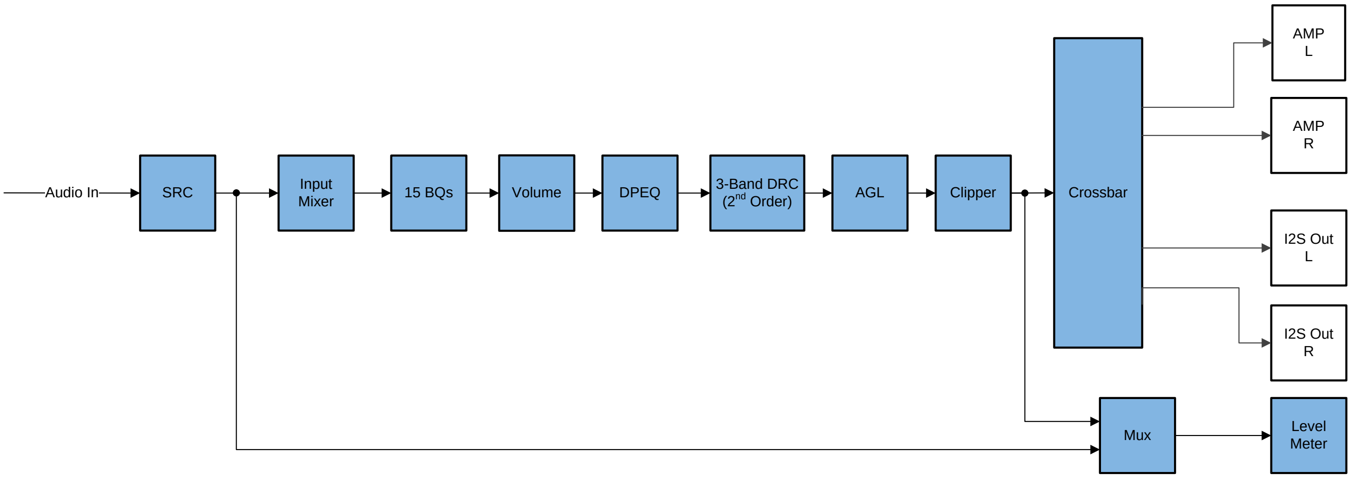


Figure 3. Process Flow 3

5.1 *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 are converted to an 88.2 or 96 kHz sample rate.

5.2 *Input Mixer*

The input mixer is used to mix the left and right channel input signals. Refer to Section 16.1 for more details.

5.3 *Equalizer*

The equalizer contains 15 independent filters for both left and right channels. Refer to Section 16.2 for more details.

5.4 *Volume*

This volume block is click and pop free. Refer to Section 16.4 for more details.

5.5 *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 16.6 for more details.

5.6 *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 16.7 for more details.

5.7 AGL

The AGL can also be used to automatically control the audio signal amplitude or dynamic range within specified limits. Refer to Section 16.9 for more details.

5.8 Clipper

A THD boost and fine volume together can be used for clipping. The THD boost block allows the user to programmatically increase the THD by clipping at an operating point earlier than that defined by the supply rails. Refer to Section 16.12 for more details.

5.9 Output Crossbar

The crossbar provides the end user with a very flexible way to control what finally appears on amplifier outputs and I2S SDOUT. Refer to Section 16.13 for more details.

5.10 Level Meter

The level meter provides the end user with an easy way to study the power profile. Refer to Section 16.14 for more details.

5.11 DSP Memory Map

Refer to Section A.3 for details.

6 Process Flow 4 (SmartAmp Processing, 96 kHz, 2.0)

This process flow supports a maximum internal sample rate of 96 kHz and is therefore considered a “true” 96 kHz flow. This process flow enables SmartAmp processing with the three components: *SmartBass* with morphing, *Excursion Limiter*, and *Thermal Limiter*.

Figure 4 depicts the signal path of this flow. The blocks in Figure 4 correspond to the functions found in the PPC3 GUI.

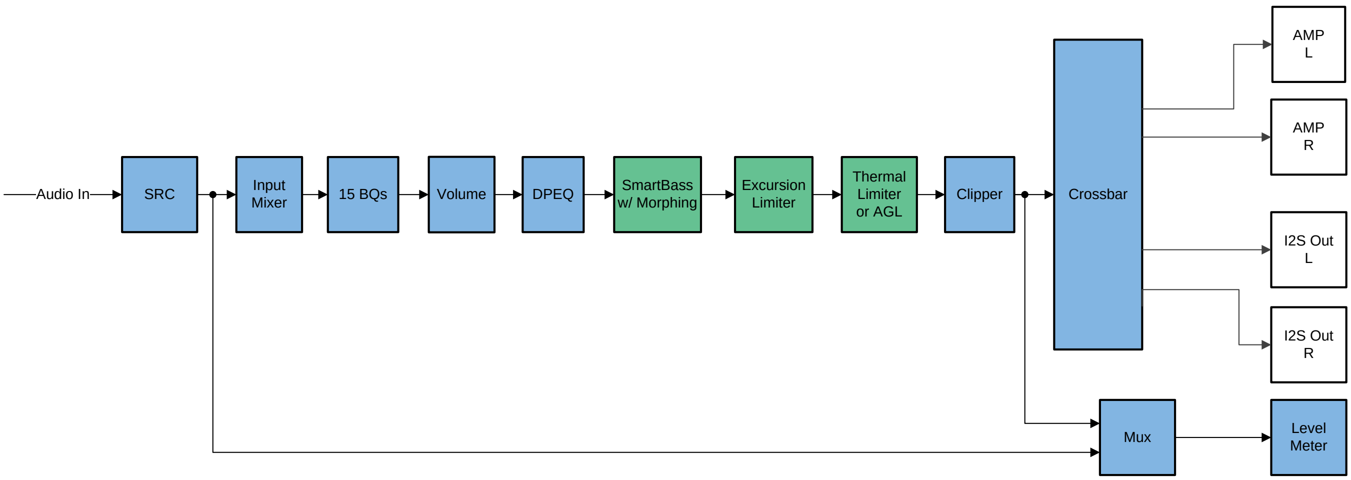


Figure 4. Process Flow 4

6.1 *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 88.2 or 96 kHz sample rate.

6.2 *Input Mixer*

The input mixer is used to mix the left and right channel input signals. Refer to Section 16.1 for more details.

6.3 *Equalizer*

The equalizer contains 15 independent filters for both left and right channels. Refer to Section 16.2 for more details.

6.4 *Volume*

This volume block is click and pop free. Refer to Section 16.4 for more details.

6.5 *Smart Bass, Excursion Limiter and Thermal Limiter*

Smart Bass is an intelligent *True Bass Alignment* algorithm. *Smart Bass* uses the combination of the speaker model and a desired target response selected by the user to equalize the speaker in the bass region. This target response is critical for the sound character and the user can apply the same target response to very different speakers and get the same sound. Refer to Section 17 to Section 19 for more details.

Based on mechanical, electrical, and acoustical properties of speakers, *Excursion Limiter* and *Thermal Limiter* can predict potentially damaging situations, take timely precautions, and therefore, protect speakers from over-excursion and overheating.

6.6 Clipper

The clipper allows the user to programmatically increase the THD by clipping at an operating point earlier than that defined by the supply rails. Refer to Section 16.12 for more details.

6.7 Output Crossbar

The crossbar provides the end user with a very flexible way to control what finally appears on amplifier outputs and I2S SDOUT. Refer to Section 16.13 for more details.

6.8 Level Meter

The level meter provides the end user with an easy way to study the power profile. Refer to Section 16.14 for more details.

6.9 DSP Memory Map

Refer to Section A.4 for details.

7 Process Flow 5 (SmartAmp LookAhead, 48 kHz, 2.0)

This process flow supports a maximum internal sample rate of 48 kHz. It enables SmartAmp processing with the following components: SmartBass, Excursion Limiter, Thermal Limiter and Anti Clipper.

Figure 5 depicts the signal path of this flow. The blocks in Figure 5 correspond to the functions found in the PPC3 GUI.

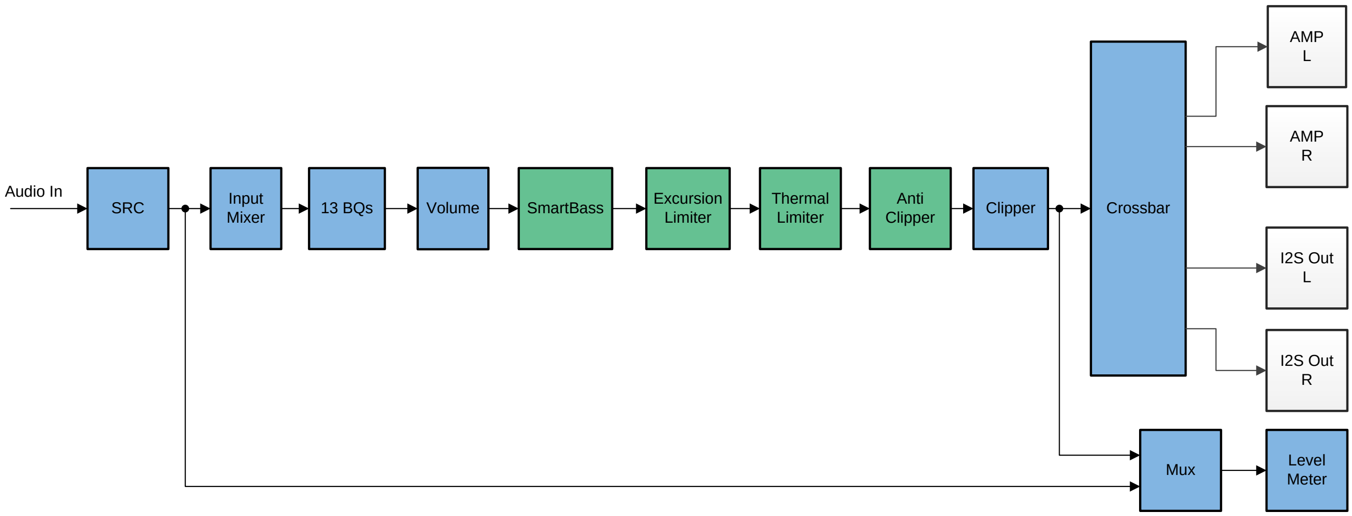


Figure 5. Process Flow 5

7.1 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 or 48 kHz sample rate.

7.2 Input Mixer

The input mixer is used to mix the left and right channel input signals. Refer to Section 16.1 for more details.

7.3 Equalizer

The equalizer contains 15 independent filters for both left and right channels. Refer to Section 16.2 for more details.

7.4 Volume

This volume block is click and pop free. Refer to Section 16.4 for more details.

7.5 Smart Bass, Excursion Limiter, Thermal Limiter and Anti Clipper.

Smart Bass is an intelligent True Bass Alignment algorithm. Smart Bass uses the combination of the speaker model and a desired target response selected by the user to equalize the speaker in the bass region. This target response is critical for the sound character and the user can apply the same target response to very different speakers and get the same sound. Refer to Section 17 and Section 19 for more details.

Based on mechanical, electrical and acoustical properties of speakers, Excursion Limiter and Thermal Limiter can predict potentially damaging situations, take timely precautions and therefore protect speakers from over-excursion and over-heating.

7.6 Clipper

The clipper allows the user to programmatically increase the THD by clipping at an operating point earlier than that defined by the supply rails. Refer to Section 16.12 for more details.

7.7 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 16.13 for more details.

7.8 Level Meter

The level meter provides the end user with an easy way to study the power profile. Refer to Section 16.14 for more details.

8 Process Flow 6 (FIR, 48 kHz, 2.0)

This process flow supports a maximum internal sample rate of 48 kHz and includes a 128-tap FIR filer.

Figure 6 depicts the signal path of this flow. The blocks in Figure 6 correspond to the functions found in the PPC3 GUI.

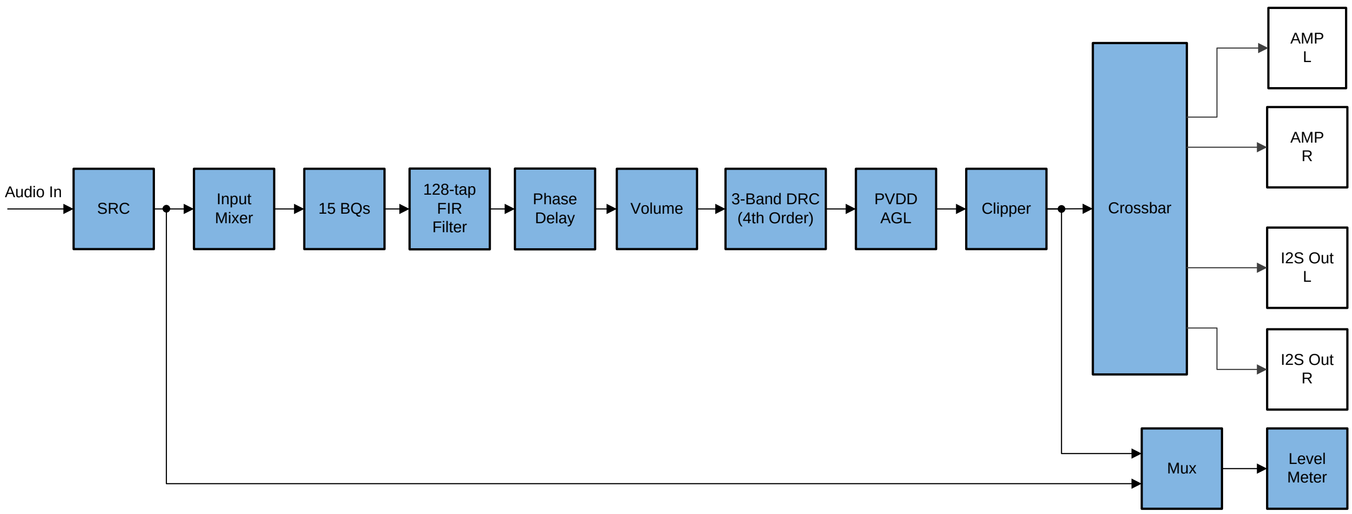


Figure 6. Process Flow 6

8.1 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 or 48 kHz sample rate.

8.2 Input Mixer

The input mixer is used to mix the left and right channel input signals. Refer to Section 16.1 for more details.

8.3 Equalizer

The equalizer contains 15 independent filters for both left and right channels. Refer to Section 16.2 for more details.

8.4 128-tap FIR Filter and Phase Delay

The 128-tap FIR Filter makes it easy to implement FIR filters. The phase delay block allows time aligning the left and right channel data. Refer to Section 16.3 for more details.

8.5 Volume

This volume block is click and pop free. Refer to Section 16.4 for more details.

8.6 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 16.7 for more details.

8.7 AGL

The AGL can also be used to automatically control the audio signal amplitude or dynamic range within specified limits. Refer to Section 16.9 for more details.

8.8 Clipper

The clipper allows the user to programmatically increase the THD by clipping at an operating point earlier than that defined by the supply rails. Refer to Section 16.12 for more details.

8.9 Crossover

The crossover block is used to set low pass filters on the woofer and high pass filters on the tweeter. Refer to Section 16.10 for more details.

8.10 Level Meter

The level meter provides the end user with an easy way to study the power profile. Refer to Section 16.14 for more details.

8.11 DSP Memory Map

Refer to Section A.5 for details.

9 Process Flow 7 (Base/Pro, 48kHz, 2.0)

This process flow supports a maximum internal sample rate of 48 kHz. It can accept both 48 and 96 kHz input sample rate but will down sample the 96 kHz to 48 kHz with a 2 x decimator. It enables SmartAmp processing with the following components: SmartBass, Excursion Limiter, Thermal Limiter and Anti Clipper.

Figure 7 depicts the signal path of this flow. The blocks below correspond to the functions found in the PPC3 GUI.

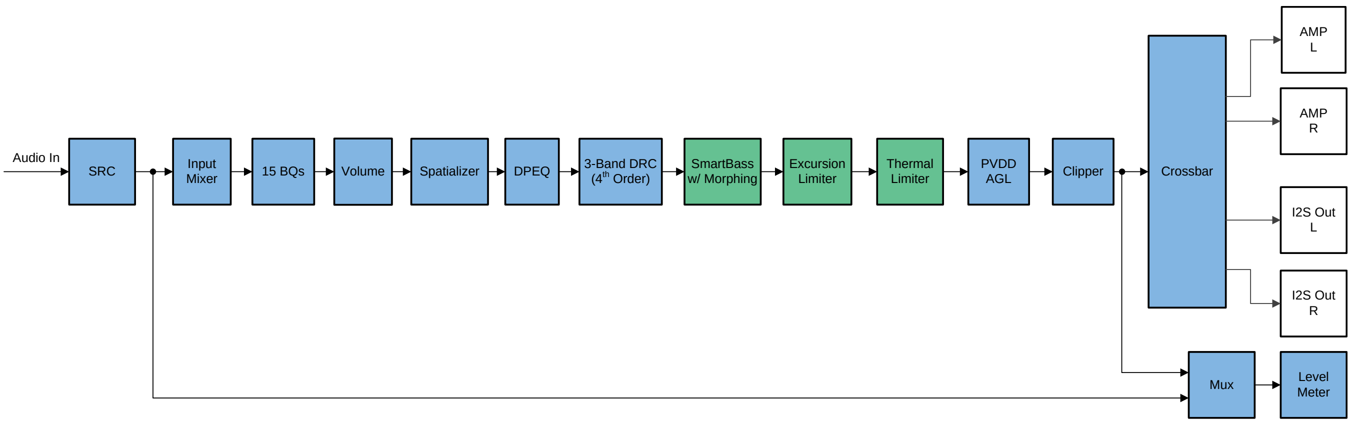


Figure 7. Process Flow 7

9.1 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 or 48 kHz sample rate.

9.2 Input Mixer

The input mixer is used to mix the left and right channel input signals. Refer to Section 16.1 for more details.

9.3 Equalizer

The equalizer contains 15 independent filters for both left and right channels. Refer to Section 16.2 for more details.

9.4 Spatializer

Spatializer is a method to increase the field of sound for a broader and more encompassing audio experience. Refer to Section 16.5 for more details.

9.5 Volume

This volume block is click & pop free. Refer to Section 16.4 for more details.

9.6 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 16.6 for more details.

9.7 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 16.7 for more details.

9.8 Smart Bass, Excursion Limiter and Thermal Limiter

Smart Bass is an intelligent True Bass Alignment algorithm. Smart Bass uses the combination of the speaker model and a desired target response selected by the user to equalize the speaker in the bass region. This target response is critical for the sound character and the user can apply the same target response to very different speakers and get the same sound. Refer to Section 17 and Section 19 for more details.

Based on mechanical, electrical and acoustical properties of speakers, Excursion Limiter and Thermal Limiter can predict potentially damaging situations, take timely precautions and therefore protect speakers from over-excursion and over-heating.

9.9 AGL

The AGL can also be used to automatically control the audio signal amplitude or dynamic range within specified limits. Refer to Section 16.9 for more details.

9.10 Clipper

The clipper allows the user to programmatically increase the THD by clipping at an operating point earlier than that defined by the supply rails. Refer to Section 16.12 for more details.

9.11 Output Crossbar

The crossbar provides the end user with a very flexible way to control what finally appears on amplifier outputs and I2S SDOUT. Refer to Section 16.13 for more details.

9.12 Level Meter

The level meter provides the end user with an easy way to study the power profile. Refer to Section 16.4 for more details.

10 Process Flow 8 (Housekeeping, 2.0)

This process flow can support a maximum internal sample rate of 192 kHz. Its target applications include high-end DTVs and audio applications that requires up to a 192 kHz sample rate. Simplified audio processing allows for faster sample rates required by high-end audio applications. In addition, Hybrid modulation mode is enabled in this flow.

Figure 8 depicts the signal path of this flow. The blocks below correspond to the functions found in the PPC3 GUI.

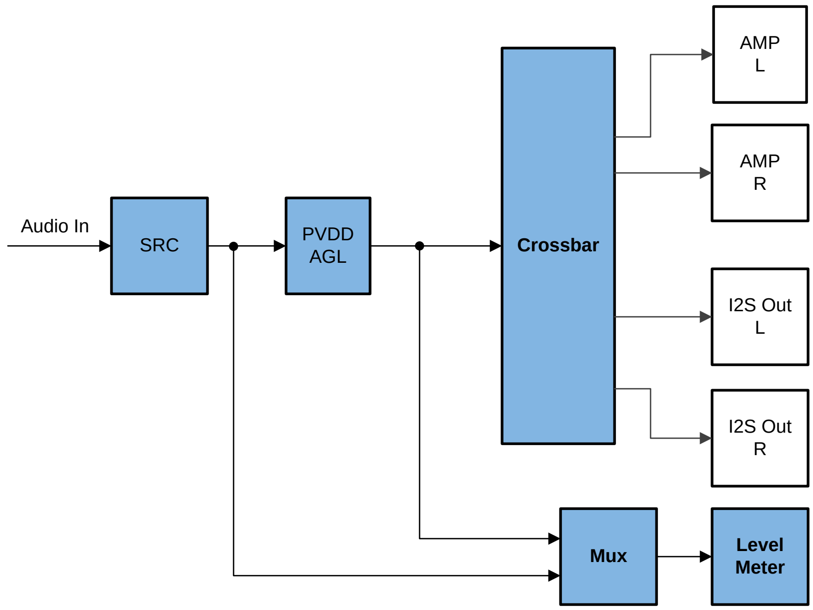


Figure 8. Process Flow 8

10.1 SRC

The Sample Rate Converter (SRC) supports 16 kHz, 32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz and 192 kHz input sample rates. These input sample rates can be converted to192 kHz sample rate.

10.2 AGL

The AGL can also be used to automatically control the audio signal amplitude or dynamic range within specified limits. Refer to Section 16.9 for more details.

10.3 Output Crossbar

The crossbar provides the end user with a very flexible way to control what finally appears on amplifier outputs and I2S SDOUT. Refer to Section 16.13 for more details.

10.4 Level Meter

The level meter provides the end user with an easy way to study the power profile. Refer to Section 16.14 for more details.

10.5 DSP Memory Map

Refer to Section A.6 for details.

11 Process Flow 9 (Base/Pro, 48kHz, 1.1)

This process flow supports 1.1 speaker configurations with a maximum internal sample rate of 48 kHz. It can accept both 48 and 96 kHz input sample rate but will down sample the 96 kHz to 48 kHz with a 2x decimator.

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

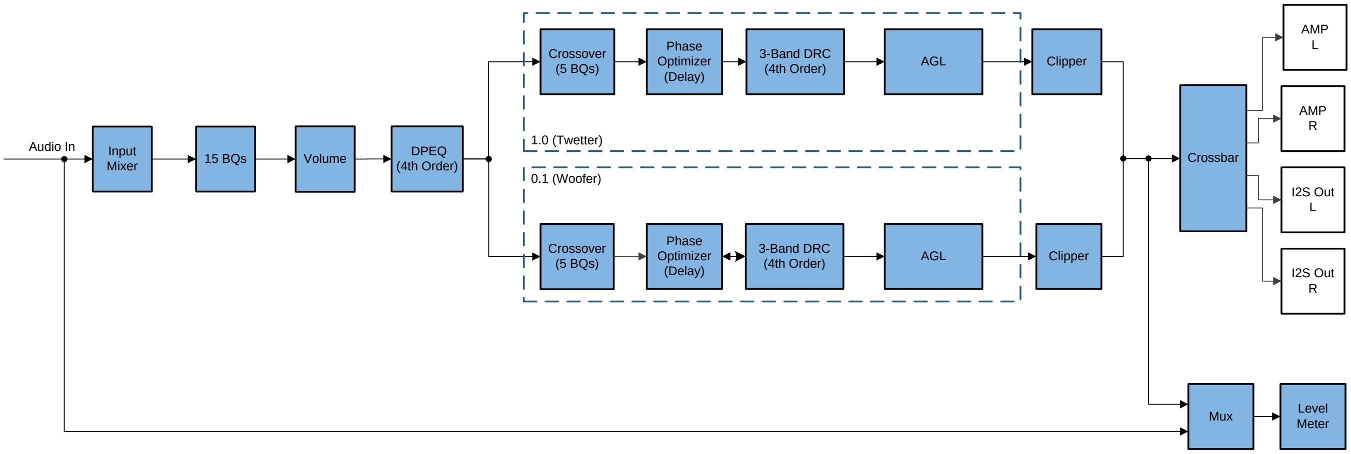


Figure 9. Process Flow 9

11.1 Input Mixer

The input mixer is used to mix the left and right channel input signals. Refer to Section 16.1 for more details.

11.2 Equalizer

The equalizer contains 15 independent filters for both left and right channels. Refer to Section 16.2 for more details.

11.3 Volume

This volume block is click & pop free. Refer to Section 16.4 for more details.

11.4 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 16.6 for more details.

11.5 Crossover

The crossover block is used to set low pass filters on the woofer and high pass filters on the tweeter. Refer to Section 16.10 for more details.

11.6 Phase Optimizer

The phase optimizer allows time aligning the 2.0 (tweeter) path with the 0.1 (woofer) path. Refer to Section Section 16.11 for more details.

11.7 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 16.7 for more details.

11.8 AGL

The AGL can also be used to automatically control the audio signal amplitude or dynamic range within specified limits. Refer to Section 16.9 for more details.

11.9 Clipper

The clipper allows the user to programmatically increase the THD by clipping at an operating point earlier than that defined by the supply rails. Refer to Section 16.12 for more details.

11.10 Output Crossbar

The crossbar provides the end user with a very flexible way to control what finally appears on amplifier outputs and I2S SDOUT. Refer to Section 16.13 for more details.

11.11 Level Meter

The level meter provides the end user with an easy way to study the power profile. Refer to Section 16.14 for more details.

12 Process Flow 10 (SmartAmp, 48kHz, 1.1)

This process flow supports 1.1 speaker configurations with a maximum internal sample rate of 48 kHz. It can accept both 48 and 96 kHz input sample rate but will down sample the 96 kHz to 48 kHz with a 2x decimator. It enables SmartAmp processing with the three components: SmartBass with morphing, Excursion Limiter and Thermal Limiter.

Figure 10 depicts the signal path of this flow. The blocks below correspond to the functions found in the PPC3 GUI.

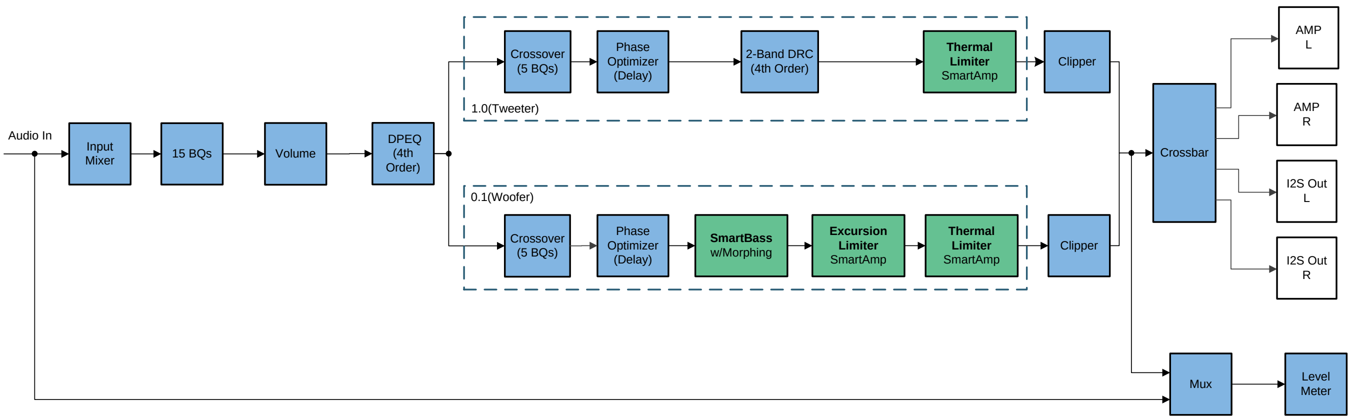


Figure 10. Process Flow 10

12.1 Input Mixer

The input mixer is used to mix the left and right channel input signals. Refer to Section 16.1 for more details.

12.2 Equalizer

The equalizer contains 15 independent filters for both left and right channels. Refer to Section 16.2 for more details.

12.3 Volume

This volume block is click & pop free. Refer to Section 16.4 for more details.

12.4 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 16.6 for more details.

12.5 Crossover

The crossover block is used to set low pass filters on the woofer and high pass filters on the tweeter. Refer to Section 16.10 for more details.

12.6 Phase Optimizer

The phase optimizer allows time aligning the 2.0 (tweeter) path with the 0.1 (woofer) path. Refer to Section 16.11 for more details.

12.7 Smart Bass, Excursion Limiter and Thermal Limiter

Smart Bass is an intelligent True Bass Alignment algorithm. Smart Bass uses the combination of the speaker model and a desired target response selected by the user to equalize the speaker in the bass region. This target response is critical for the sound character and the user can apply the same target response to very different speakers and get the same sound. Refer to Section 17 and Section 19 for more details.

12.8 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 16.8 for more details.

12.9 Clipper

The clipper allows the user to programmatically increase the THD by clipping at an operating point earlier than that defined by the supply rails. Refer to Section 16.12 for more details.

12.10 Output Crossbar

The crossbar provides the end user with a very flexible way to control what finally appears on amplifier outputs and I2S SDOUT. Refer to Section 16.13 for more details.

12.11 Level Meter

The level meter provides the end user with an easy way to study the power profile. Refer to Section 16.14 for more details.

13 Process Flow 11 (96kHz, 1.1)

This process flow supports 1.1 speaker configurations with an internal sample rate of 96 kHz. It enables SmartAmp processing with the three components: SmartBass with morphing, Excursion Limiter and Thermal Limiter.

Figure 11 depicts the signal path of this flow. The blocks below correspond to the functions found in the PPC3 GUI.

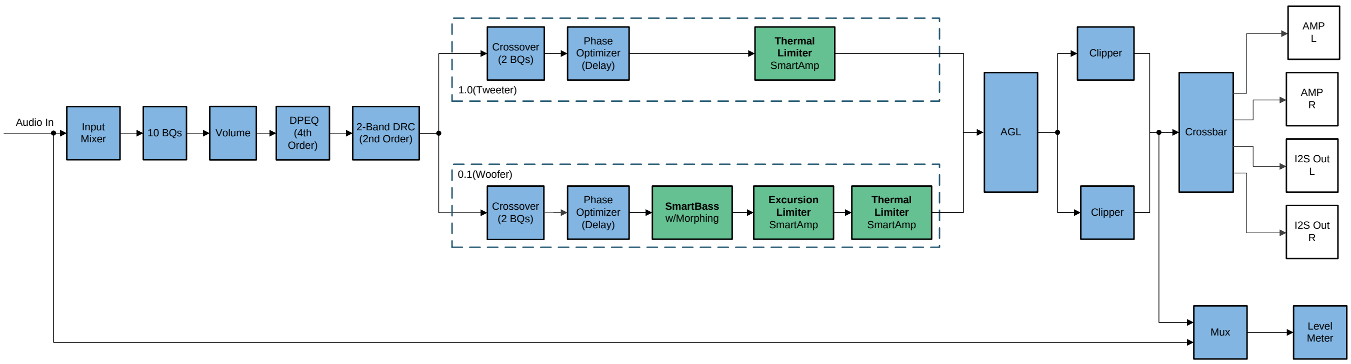


Figure 11. Process Flow 11

13.1 Input Mixer

The input mixer is used to mix the left and right channel input signals. Refer to Section 16.1 for more details.

13.2 Equalizer

The equalizer contains 10 independent filters for both left and right channels. Refer to Section 16.2 for more details.

13.3 Volume

This volume block is click & pop free. Refer to Section 16.4 for more details.

13.4 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 16.6 for more details.

13.5 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 16.8 for more details.

13.6 Crossover

The crossover block is used to set low pass filters on the woofer and high pass filters on the tweeter. Refer to Section 16.10 for more details.

13.7 Phase Optimizer

The phase optimizer allows time aligning the 2.0 (tweeter) path with the 0.1 (woofer) path. Refer to Section 16.11 for more details.

13.8 Smart Bass, Excursion Limiter and Thermal Limiter

Smart Bass is an intelligent True Bass Alignment algorithm. Smart Bass uses the combination of the speaker model and a desired target response selected by the user to equalize the speaker in the bass region. This target response is critical for the sound character and the user can apply the same target response to very different speakers and get the same sound. Refer to Section 17 to Section 19 more details.

13.9 AGL

The AGL can also be used to automatically control the audio signal amplitude or dynamic range within specified limits. Refer to Section 16.9 for more details.

13.10 Clipper

The clipper allows the user to programmatically increase the THD by clipping at an operating point earlier than that defined by the supply rails. Refer to Section 16.12 for more details.

13.11 Output Crossbar

The crossbar provides the end user with a very flexible way to control what finally appears on amplifier outputs and I2S SDOUT. Refer to Section 16.13 for more details.

13.12 Level Meter

The level meter provides the end user with an easy way to study the power profile. Refer to Section 16.14 for more details.

14 Process Flow 12 (Base/Pro, 48kHz, 2.1)

This process flow supports 2.1 speaker configurations with a maximum internal sample rate of 48 kHz. It can accept both 48 and 96 kHz input sample rate but will down sample the 96 kHz to 48 kHz with a 2x decimator.

Figure 12 depicts the signal path of this flow. The blocks below correspond to the functions found in the PPC3 GUI.

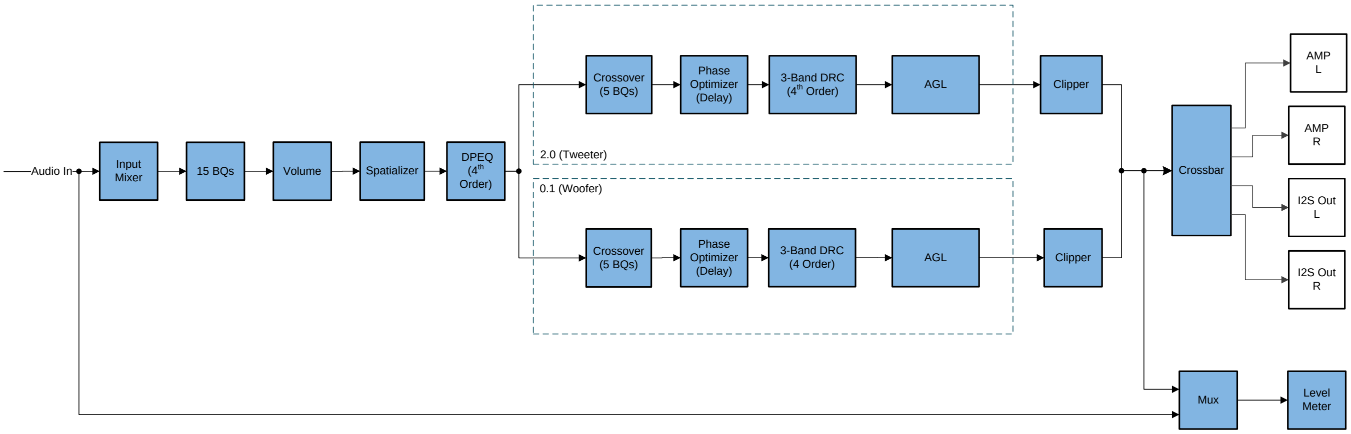


Figure 12. Process Flow 12

14.1 Input Mixer

The input mixer is used to mix the left and right channel input signals. Refer to Section 16.1 for more details.

14.2 Equalizer

The equalizer contains 15 independent filters for both left and right channels. Refer to Section 16.2 for more details.

14.3 Volume

This volume block is click & pop free. Refer to Section 16.4 for more details.

14.4 Spatializer

Spatializer is a method to increase the field of sound for a broader and more encompassing audio experience. Refer to Section 16.5 for more details.

14.5 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 16.6 for more details.

14.6 Crossover

The crossover block is used to set low pass filters on the woofer and high pass filters on the tweeter. Refer to Section 16.10 for more details.

14.7 Phase Optimizer

The phase optimizer allows time aligning the 2.0 (tweeter) path with the 0.1 (woofer) path. Refer to Section 16.11 for more details.

14.8 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 16.7 for more details.

14.9 AGL

The AGL can also be used to automatically control the audio signal amplitude or dynamic range within specified limits. Refer to Section 16.9 for more details.

14.10 Clipper

The clipper allows the user to programmatically increase the THD by clipping at an operating point earlier than that defined by the supply rails. Refer to Section 16.12 for more details.

14.11 Output Crossbar

The crossbar provides the end user with a very flexible way to control what finally appears on amplifier outputs and I2S SDOUT. Refer to Section 16.13 for more details.

14.12 Level Meter

The level meter provides the end user with an easy way to study the power profile. Refer to Section 16.14 for more details.

15 Process Flow 13 (SmartAmp, 48kHz, 2.1)

This process flow supports 2.1 speaker configurations with a maximum internal sample rate of 48 kHz. It can accept both 48 and 96 kHz input sample rate but will down sample the 96 kHz to 48 kHz with a 2x decimator. It enables SmartAmp processing with the three components: SmartBass with morphing, Excursion Limiter and Thermal Limiter.

Figure 13 depicts the signal path of this flow. The blocks below correspond to the functions found in the PPC3 GUI.

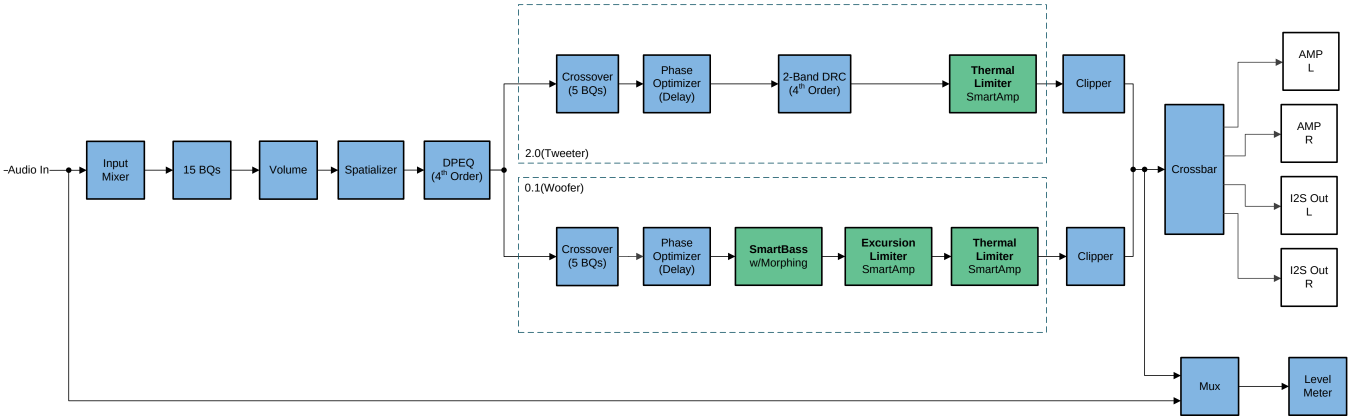


Figure 13. Process Flow 13

15.1 Input Mixer

The input mixer is used to mix the left and right channel input signals. Refer to Section 16.1 for more details.

15.2 Equalizer

The equalizer contains 15 independent filters for both left and right channels. Refer to Section 16.2 for more details.

15.3 Volume

This volume block is click & pop free. Refer to Section 16.4 for more details.

15.4 Spatializer

Spatializer is a method to increase the field of sound for a broader and more encompassing audio experience. Refer to Section 16.5 for more details.

15.5 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 16.6 for more details.

15.6 Crossover

The crossover block is used to set low pass filters on the woofer and high pass filters on the tweeter. Refer to Section 16.10 for more details.

15.7 Phase Optimizer

The phase optimizer allows time aligning the 2.0 (tweeter) path with the 0.1 (woofer) path. Refer to Section 16.11 for more details.

15.8 Smart Bass, Excursion Limiter and Thermal Limiter

Smart Bass is an intelligent True Bass Alignment algorithm. Smart Bass uses the combination of the speaker model and a desired target response selected by the user to equalize the speaker in the bass region. This target response is critical for the sound character and the user can apply the same target response to very different speakers and get the same sound. Refer to Section 17 to Section 19 more details.

15.9 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 16.8 for more details.

15.10 Clipper

The clipper allows the user to programmatically increase the THD by clipping at an operating point earlier than that defined by the supply rails. Refer to Section 16.12 for more details.

15.11 Output Crossbar

The crossbar provides the end user with a very flexible way to control what finally appears on amplifier outputs and I2S SDOUT. Refer to Section 16.13 for more details.

15.12 Level Meter

The level meter provides the end user with an easy way to study the power profile. Refer to Section 16.14 for more details.

16 Audio Processing Blocks

16.1 Input Mixer

The input mixer can be used to mix the left and right channel input signals as shown in Figure 14. The input mixer has four coefficients, which control the mixing and gains of the input signals.

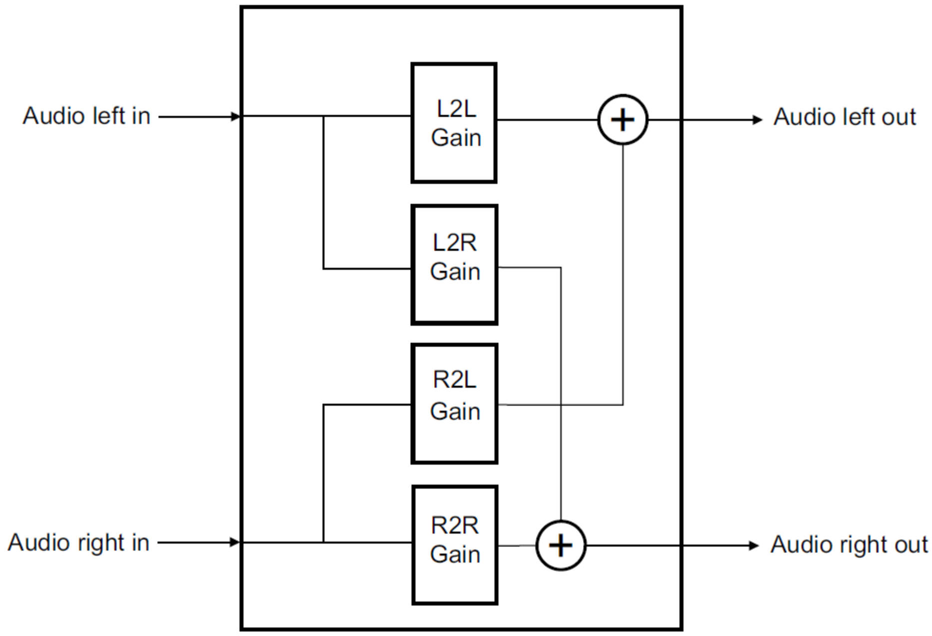


Figure 14. Input Mixer

The *Basic* tab (see Figure 15) provides the easiest method for configuration in PPC3 GUI.

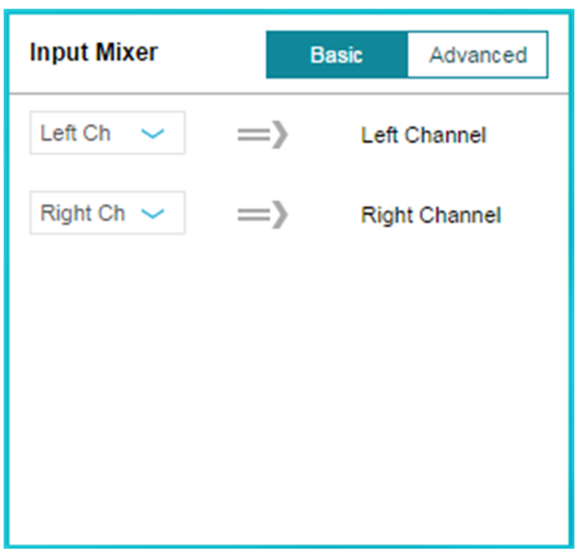


Figure 15. Input Mixer (Basic Tab)

Switch to the *Advanced* tab (see Figure 16) if all the four coefficients need to be adjusted. Note that the four parameters need to be specified in decibels (dB). The *Invert* options will reverse the sign of the gain values.

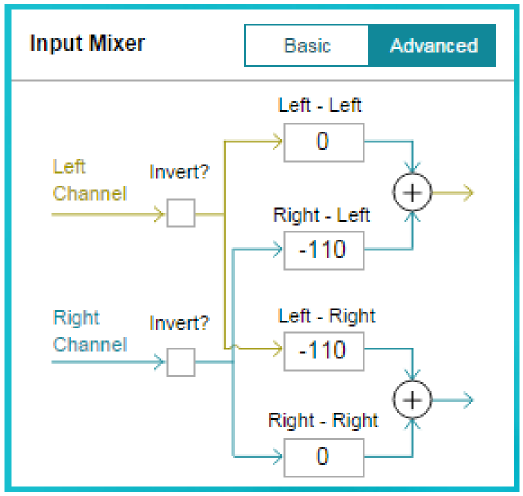


Figure 16. Input Mixer (Advanced Tab)

16.2 Equalizer

The equalizers are implemented using cascaded "direct form 1" BQs structures as shown in Figure 17.

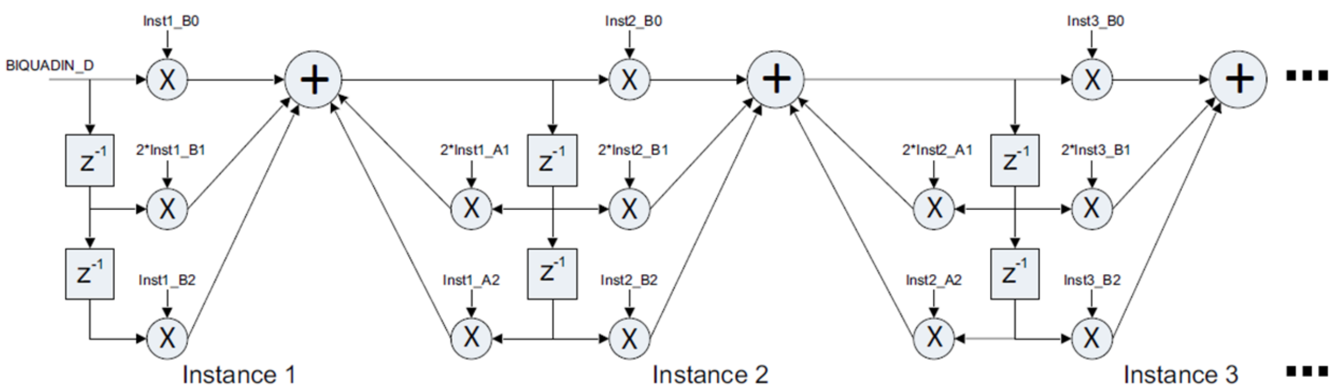


Figure 17. Cascaded BQ Structure

$$H(z) = \frac{b_0 + b_1 Z^{-1} + b_2 Z^{-2}}{a_0 + a_1 Z^{-1} + a_2 Z^{-2}} \quad (1)$$

All BQ coefficients are normalized with a0 to ensure that a0 is equal to 1. The structure requires 5 BQ coefficients as shown in Table 6. Any BQ with coefficients greater than 1 undergoes gain scaling.

Table 6. BQ Coefficients Normalization

BQ Coefficient	Coefficient Calculation
B0_DSP	b0 / a0
B1_DSP	b1 / (a0 × 2)
B2_DSP	b2 / a0
A1_DSP	–a1 / (a0 × 2)
A2_DSP	–a2 / a0

The *Equalizer Tuning* window contains 15 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.

As Figure 18 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 Figure 18. The composite plot (red) shows the overall frequency response alteration applied to the incoming digital audio data. *Phase*, *Group Delay*, *Impulse Response* and *Pole zero* charts are also available on the right side.

Figure 18. Equalizer Tuning Window

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

16.3 128-tap FIR Filter and Phase Delay

Normally the FIR filter coefficients are created in another tool such as Matlab and then imported using a file formatted for a specific number of taps. You can create filters from 1 to 128 taps by simply setting the unused tap coefficients to 0.0. For example, if you want to create a 58-tap FIR filter, the coefficients can be calculated in Matlab with 58 coefficients. A file is then created with the 58 coefficients and 70 coefficients set to 0.0.

The 128-tap FIR filter is implemented using the structure as shown in Figure 19.

Coefficients: b0, b1, b2, ..., b126, b127.

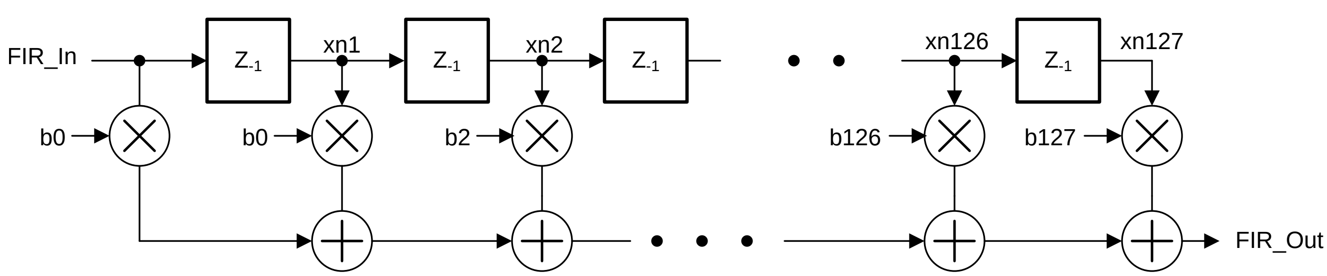


Figure 19. 128-tap FIR Filter Structure

The phase delay block allows time aligning the left and right channel data. A programmable phase delay of up to 50 samples can be applied. The Phase Delay Tuning Window pops up if the icon on the top right of 1280-tap FIR Filter Window is clicked.

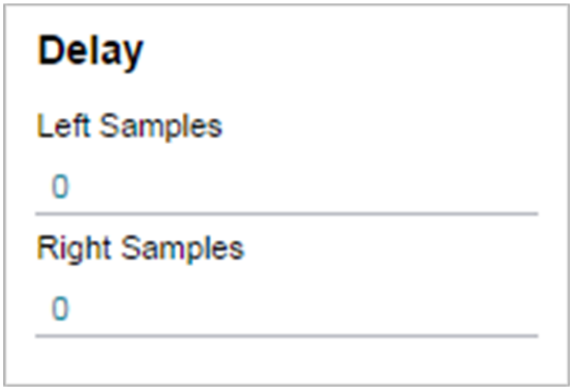


Figure 20. Phase Delay Tuning Window

16.4 Volume

Figure 21 shows the default volume in PPC3 GUI. Note that volume needs to be specified in decibels (dB). Independent volume change for the left and right channels is achieved by deselecting the *Gang* option.

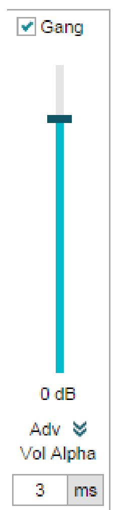


Figure 21. Volume

The volume block is implemented using an alpha filter structure. As Figure 22 shows, when a volume level change is initiated, the volume block will assure a smooth transition to the newly commanded volume level without producing artifacts such as pops and clicks.

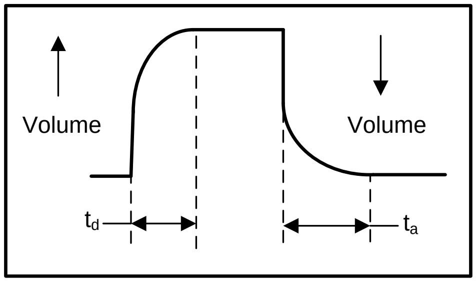


Figure 22. Volume Attack and Decay

16.5 Spatializer

Spatializer is a method to increase the field of sound for a broader and more encompassing audio experience. Here, copies of the left and right channels are subtracted from each other. This creates a signal that removes any audio or instrumentation that is shared by both channels. Next, a bandpass filter sets the frequency range for which the effect is active. After which, a level control adjusts the strength of this channel before being reintroduced back into the original left and right channels.

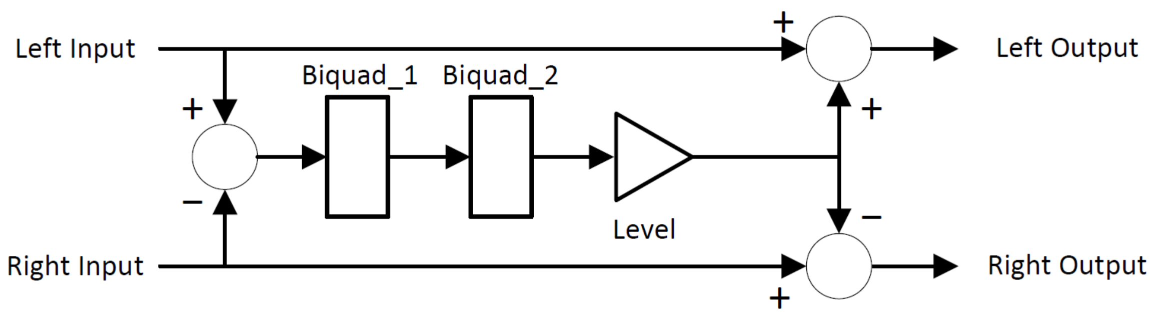


Figure 23. Spatializer Block Diagram

It is generally not recommend extending the bandpass filter below 300 Hz, since low-frequency content often presents itself in both channels. Extending the bandpass too low results in a loss of bass response. Similarly, extending the bandpass too high can create effects similar to reverb which can blur the spatial cues of music.

In the *Spatializer Tuning* window (see Figure 24), the pass band can be set as well as the *Level* which controls the level of the effect.

Figure 24. Spatializer Tuning Window

For a given piece of end equipment, it may be helpful to create three *presets* from which to choose. This provides the option of choosing the preferred type of spatializing effect. The three settings can vary both the HPF, LPF, and effect intensity and their settings stored in the system processor to be updated upon a button press from the end user.

Three recommended *presets* are available in the GUI:

Table 7. Recommended GUI Presets

Preset	Frequency Range	Level	Comment
Full	300 Hz to 20 kHz	0.75	Reverberant sounding
Medium	800 Hz to 6 kHz	0.5	
Low	4 kHz to 20 kHz	0.25	Works well in systems with a flat frequency response up to 16-18 kHz.

16.6 DPEQ

The dynamic parametric equalizer mixes the audio signals routed through two paths containing 1 or 2 Biquads each, based upon the signal level detected by the sense path, as shown in Figure 25.

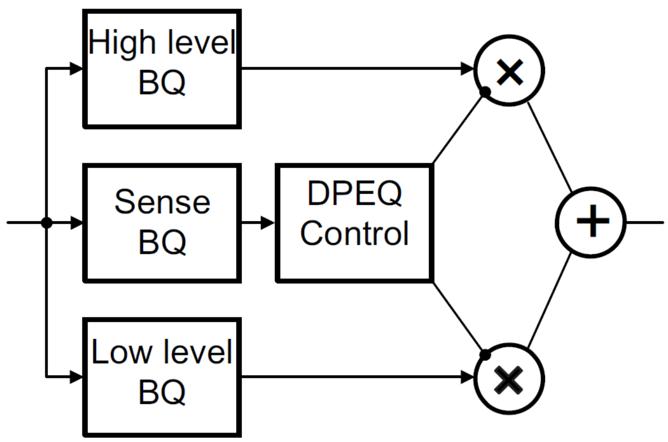


Figure 25. DPEQ

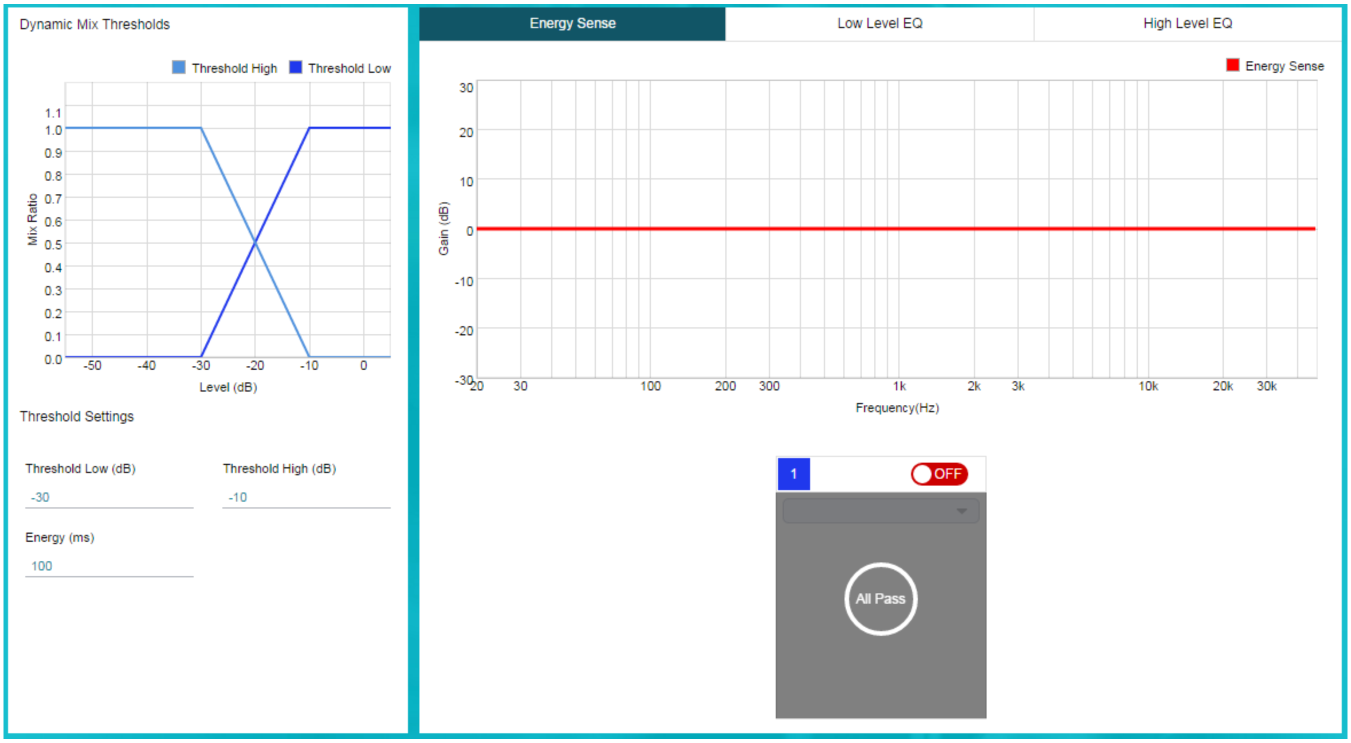


Figure 26. DPEQ Tuning Window

DPEQ

Energy (ms) simply tells the algorithm for how long to average the samples of audio before it determines 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.

Energy Sense

The sense path contains 1 or 2 configurable Biquads, which can be used to focus the DEQ sensing on a specific frequency bandwidth.

Low Level EQ

The low-level path also has 1 or 2 configurable Biquads 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.

High Level EQ

The high-level path, similar to the low-level path, has 1 or 2 Biquads that can set the EQ curve used when the time averaged input signal is above the upper mixing threshold.

16.7 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 27.

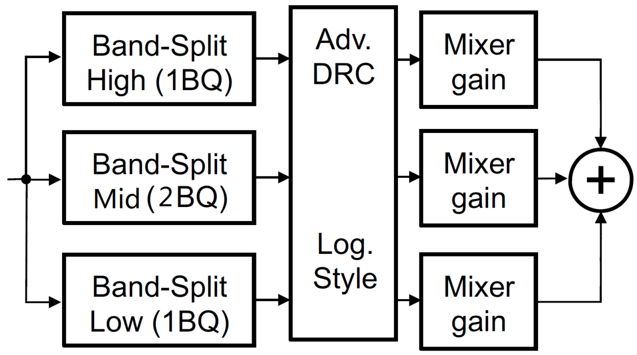


Figure 27. 3-Band DRC

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 the level remains above or below the threshold continuously during the time-constant time. And the constant time is controlled by the attack and release rate. If the attack or 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.

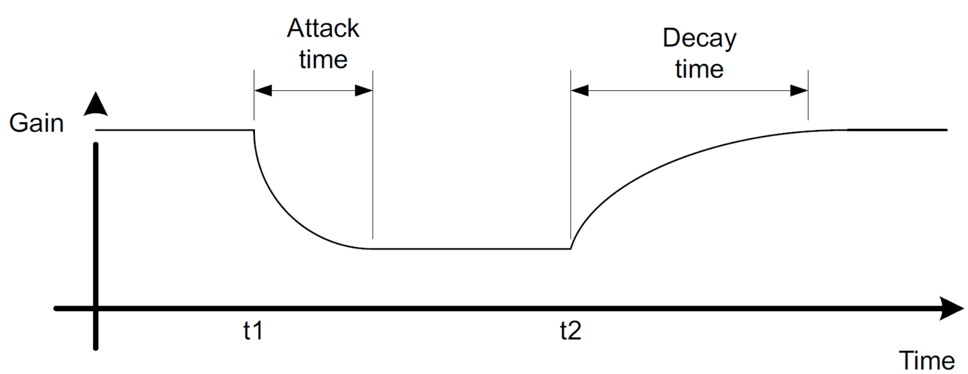


Figure 28. DRC Attack and Decay

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 29. DRC Tuning Window

The *DRC Tuning* window 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.

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; 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.** Since filters affect phase, a phase reversal or a 180 degree phase shift may be necessary. Use a negative sign on the coefficient to reverse the phase for the second-order LR filter.

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.

16.8 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 30.

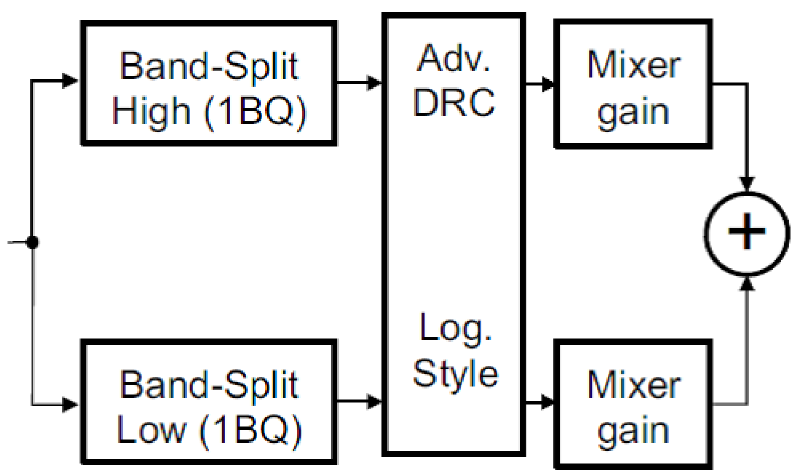


Figure 30. 2-Band DRC

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 and release rate. If the attack or 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 spilt into two 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.

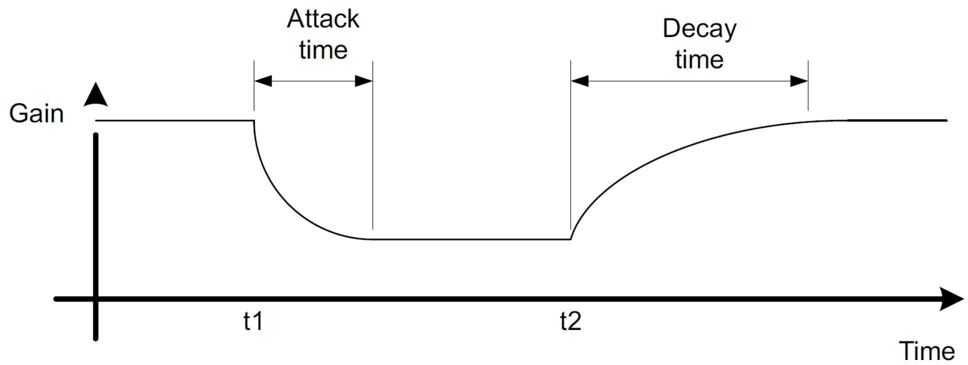


Figure 31. DRC Attack and Decay

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 32. DRC Tuning Window

The *DRC Tuning* window consists of two identical windows for low and high bands. Each has a DRC curve that offers 3 regions of compression.

Below the 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.

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; 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. Since filters effect phase, a phase reversal or a 180 degree phase shift may be necessary. Use a negative sign on the coefficient to reverse the phase for the second-order LR filter.

Crossover

By default, the two-band crossover frequencies are set to 1000 Hz, using second-order Linkwitz-Riley 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.

16.9 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 33 shows the *AGL Tuning* window. By default, the AGL is disabled and it can be enabled by clicking the ON/OFF switch on the top right corner.

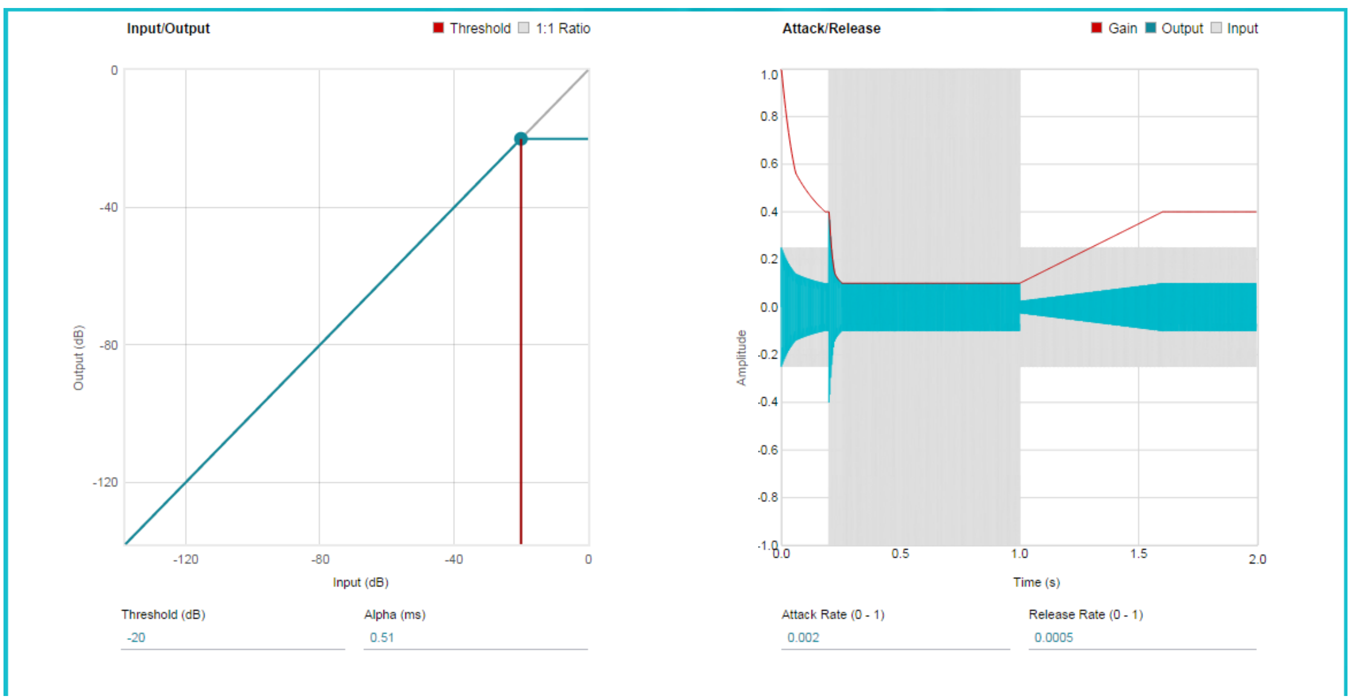


Figure 33. AGL Tuning Window

Threshold (dB)

This parameter sets the threshold at which the compressor will be activated. Lowering the threshold will cause the compression to be activated at lower volume levels. Once the signal exceeds this threshold, compression will be 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 will be applied to the signal. Higher values will cause the compressor to respond to signals quickly, while lower values will decrease the response time.

Release Rate (0 – 1)

This parameter controls how quickly compression will be removed from the signal as the signal gets quieter. Higher values will cause the compressor to release from signals quickly, while lower values will decrease the release time.

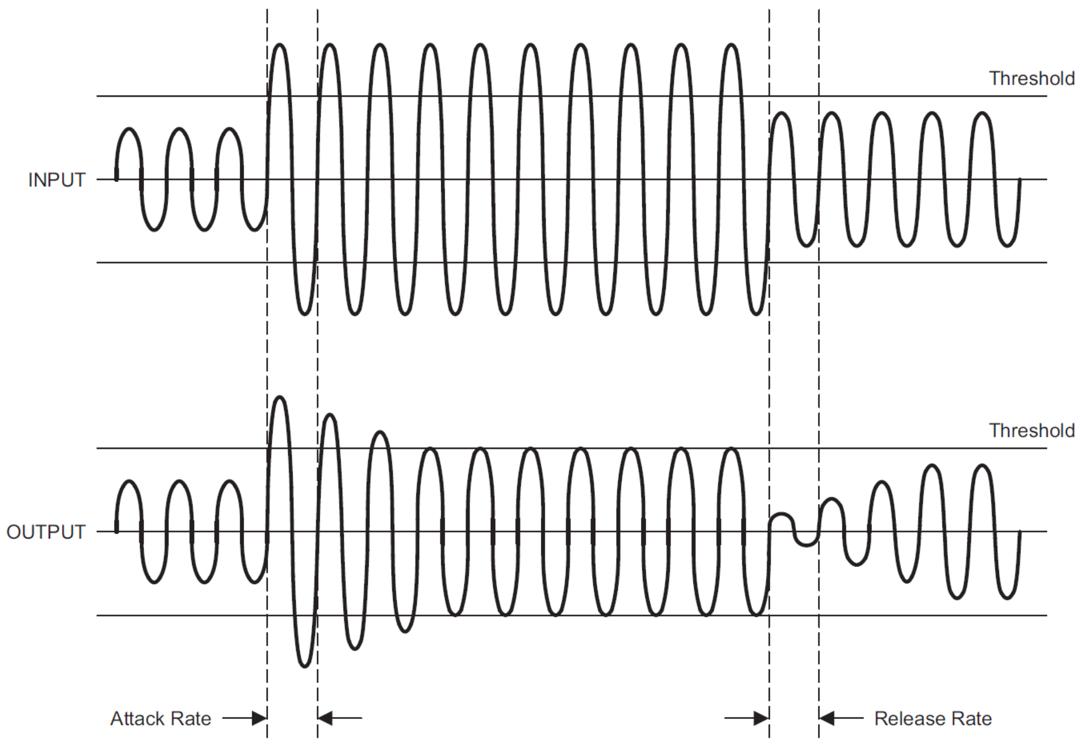


Figure 34. AGL Attack and Release

16.10 Crossover

The major purpose of a digital crossover is to split the frequencies and then send them off to each individual speaker. The crossover is actually a series of filters, which filter out the frequencies that should not go to each speaker. Usually, low pass filters are set on the woofer and high pass filters are set on the tweeter in the crossover.

The plot in Figure 35 in the *Crossover Tuning* window shows the response of the woofer and tweeter with crossover filters in place, and the combined response after crossover tuning. Five BQs are available for woofer and tweeter channel. Fine-tune the filters to get the smoothest response around the crossover frequency. Optimally, the crossover sum curve (dark green) is flat and crossover difference curve (light green) has a large dip. If the opposite is seen, it is necessary to invert the phase of BQ1 for the woofer or tweeter.

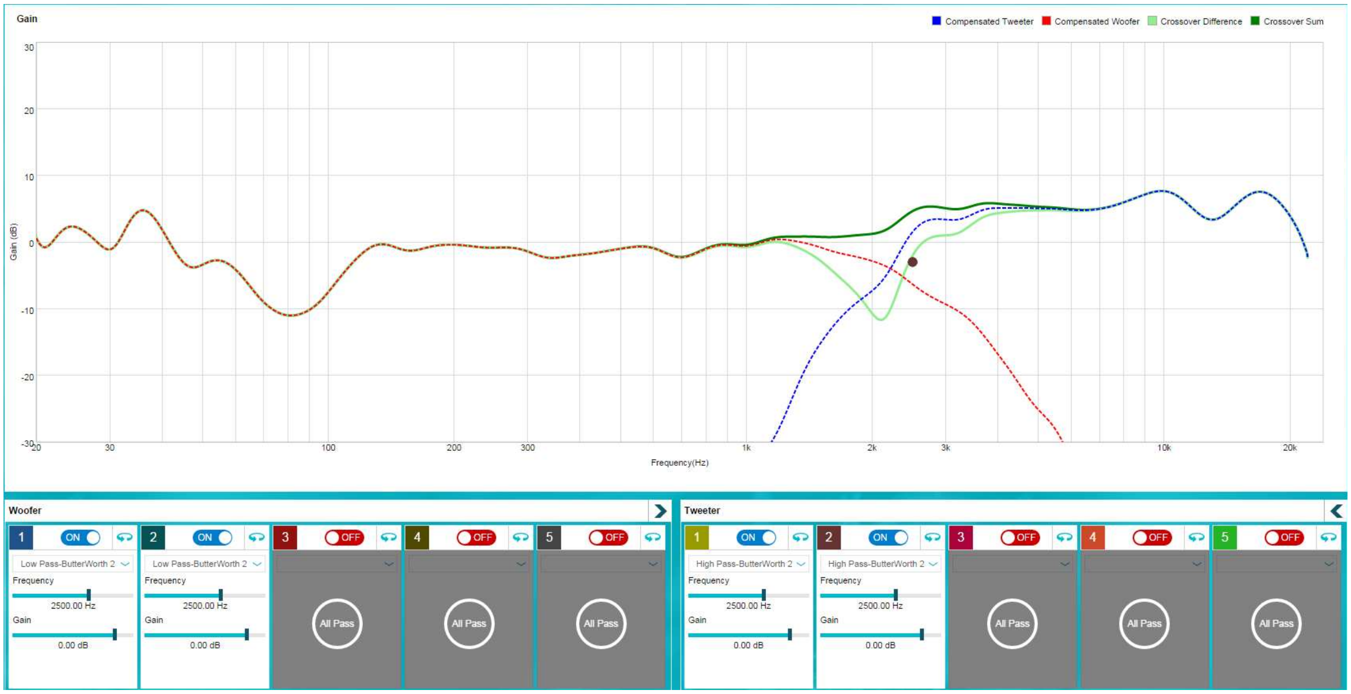


Figure 35. Crossover Tuning Window

16.11 Phase Optimizer

The phase optimizer allows time aligning the 2.0 (tweeter) path with the 0.1 (woofer) path. A programmable phase delay of up to 16 samples can be achieved for both the tweeter and woofer. The *Phase Delay Tuning Window* pops up if the icon on the top right of the *Crossover Tuning* window is clicked.

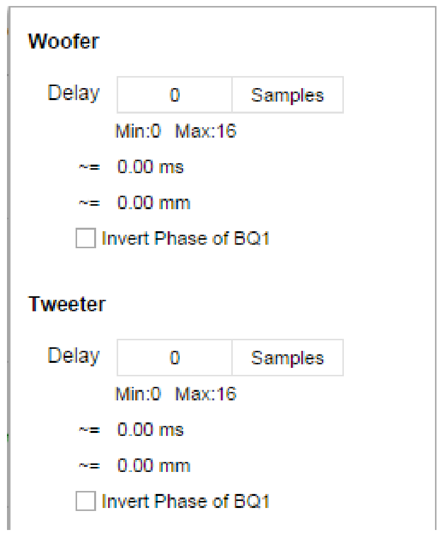


Figure 36. Phase Delay Tuning Window

16.12 Clipper

A *Clipper* can be used to digitally achieve the specified THD levels without voltage clipping. It allows users to achieve the same THD (for example, 10% THD) for different power levels (15 W, 10 W, 5 W) with same PVCC level.

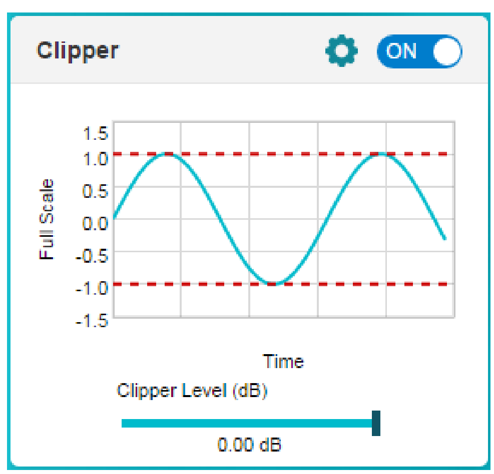


Figure 37. Clipper

Clipper Level

The clipper level controls the signal level at which clipping occurs.

Makeup Gain (dB)

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

16.13 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 provides the easiest way for configuration. Go to the *Advanced* tab if more parameters need to be adjusted. Note that all the parameters need to be specified in decibels (dB).

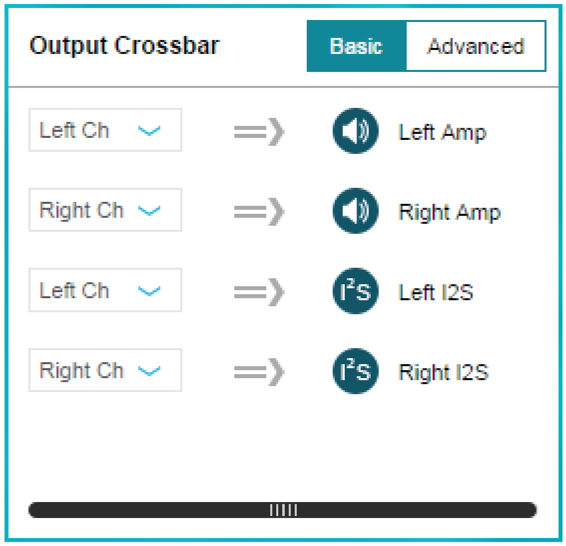


Figure 38. Output Crossbar (Basic Tab)

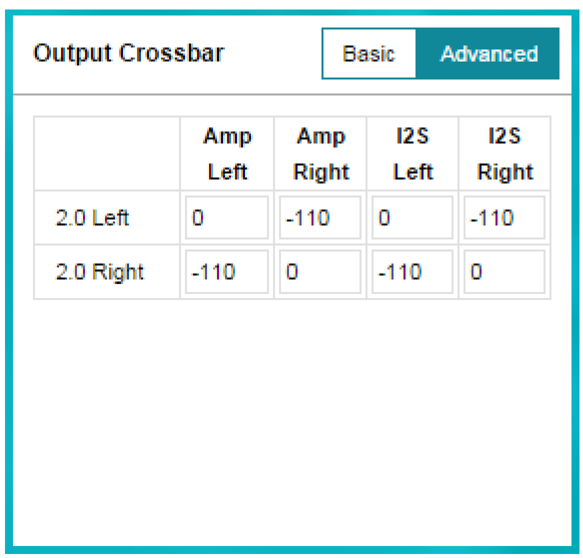


Figure 39. Output Crossbar (Advanced Tab)

16.14 Level Meter

Figure 40 shows the level meter, which uses an energy estimator with a programmable time constant to adjust the sensitivity level based on signal frequency and desired accuracy level. The level meter will appear if the LM icon on the bottom is clicked.

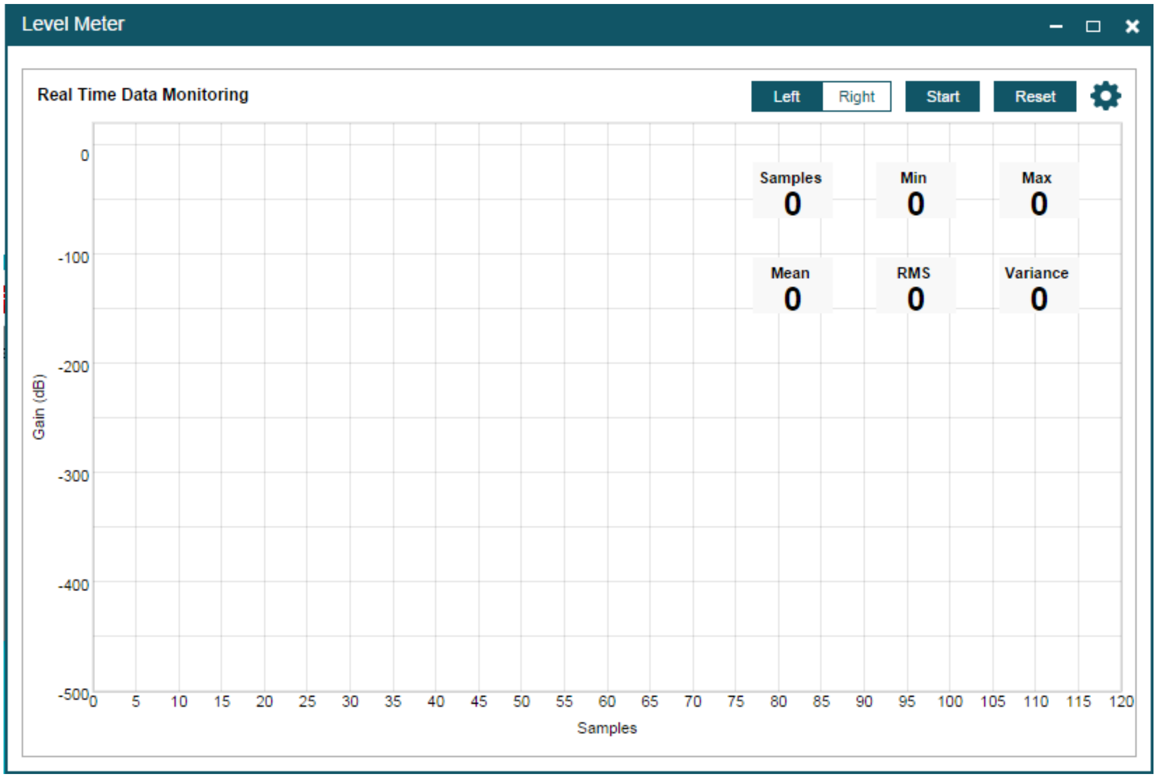


Figure 40. Level Meter

17 Smart Amp

Conventional hardware-based speaker protection matches the continuous power output of the audio amplifier with the speaker output rating and sometimes incorporates high-pass filtering to prevent over-excursion.

If the maximum output voltage limit of a traditional system is based on the average power of a full-scale sinusoid, there is risk of voice coil overheating if a square wave is provided as an input. This is due to the fact that a square wave has 6 dB higher average power than a sinusoid of the same peak amplitude as well as having the presence of higher-frequency components. Conservative designs may then have to trade off *sound pressure level* (SPL) with reliability.

More advanced methods to control load power include the use of limiters and dynamic range compressors. These methods can protect the speaker; however, peaks may be clipped or greatly reduced, especially on source material with high peak-to-average ratios (PAR).

PurePath™ Smart Amp replaces hardware-based speaker protection methods with predictive algorithms, speaker characterization tools, and real-time signal monitoring to increase the peak output of the speaker without damage.

Figure 41 and Figure 42 are actual song clips comparing the traditional method (left) against *Smart Amp* (right) to control output power. The dashed lines correspond to the output limit of a traditional system. Note that the average power (Pave) is increased while allowing peaks to cross the output limit.

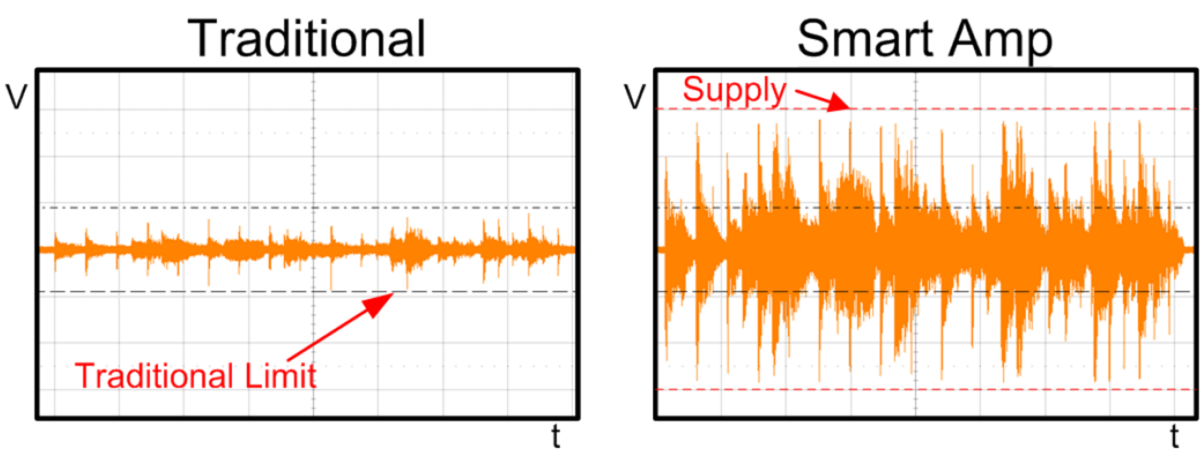


Figure 41. Audio Clip A, 22-dB Peak-to-Average Ratio Source

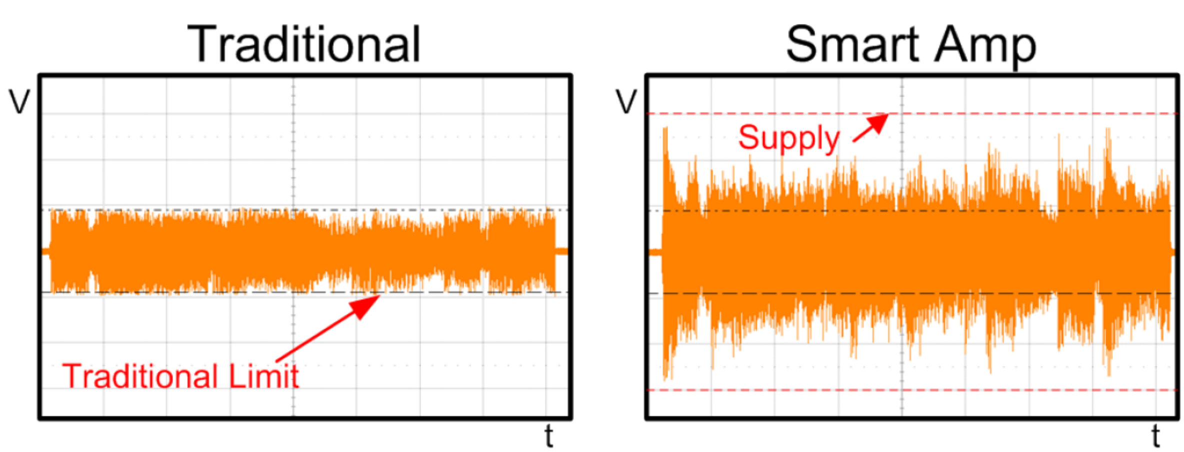


Figure 42. Audio Clip B, 9-dB Peak-to-Average Ratio Source

The first implementation step of *Smart Amp*-based audio solutions is characterizing the speaker with TI's *PurePath Console 3* and the *PurePath Learning Board*. These are powerful, easy- to-use tools designed specifically to simplify system-level characterization, tuning, and implementation. The characterization process creates a digital model of the speaker based on *thermal*, *electro-mechanical* and *acoustic* parameters.

The output of the characterization process is an initial set of coefficients that define the *Safe Operating Area* (SOA) which establishes the boundaries of maximum speaker diaphragm excursion and voice-coil temperature during operation. If the *SOA* is set correctly, the audio engineer need not worry about speaker damage during the audio tuning process – depending on how hard the system is pushed – audio might sound more or less desirable, but speaker safety is ensured if configured properly.

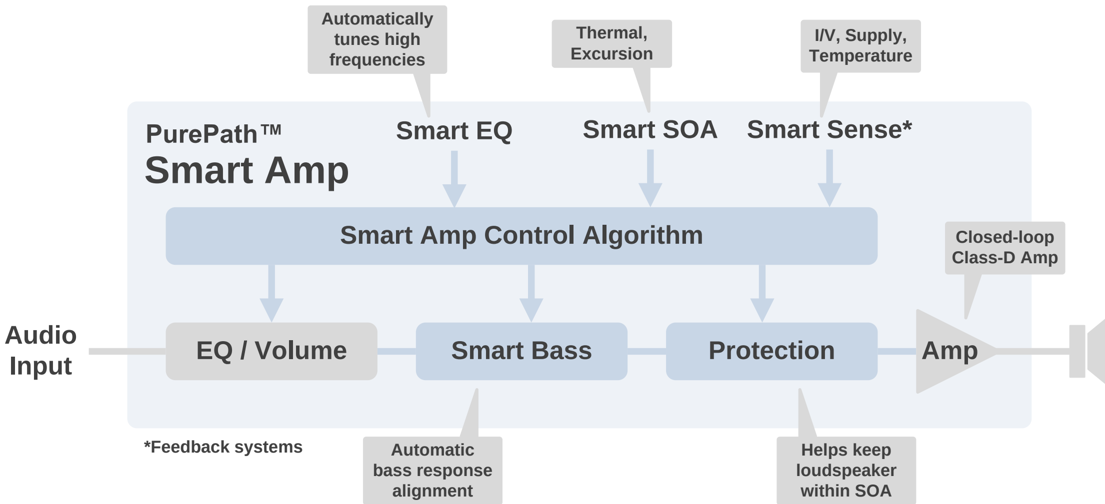
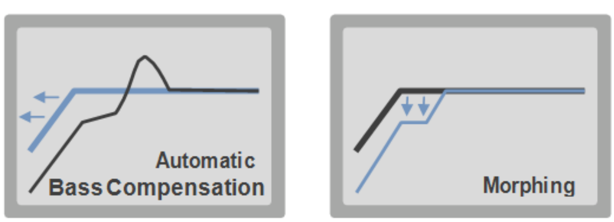


Figure 43. PurePath™ Smart Amp Block Diagram

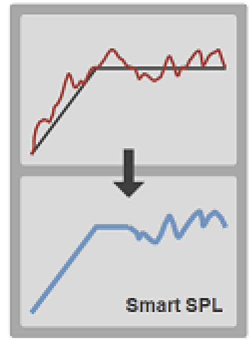
PurePath Smart Amp technology enables significant sound quality and system reliability improvements while reducing component size and cost. The *PurePath Console 3* GUI and *Learning Board* speaker characterization hardware provide simple configuration of advanced properties fully describing the acoustical, electrical, *thermal* and reliability capabilities of an audio system and simplifying system-level characterization, tuning, and integration.

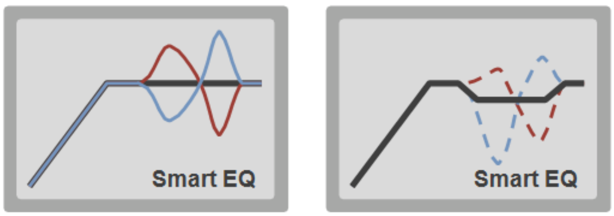
17.1 Smart Amp Features



Smart Bass
Bass can easily be *extended* into any alignment automatically. As signal amplitude is increased in the bass region, *Smart Bass* automatically *morphs* the response to accommodate for larger excursion.

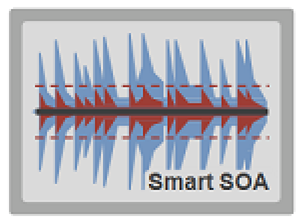
Smart SPL
High-frequency behavior of the loudspeaker diaphragm cannot be obtained electrically. Similarly, it is difficult to obtain accurate low-frequency acoustical measurements without an expensive anechoic chamber. Smart SPL automatically merges electrical and acoustical measurements to create a *full picture of the SPL response*.





Smart EQ
Automatically and efficiently tunes *high frequencies* to deliver a *flat response* or match a *target curve* in seconds.

Thermal and Excursion Protection
The *Smart Amp* algorithm understands the thermal and excursion limitations of the speaker. This allows to drive it at peak levels much louder than conventional amplifiers while keeping the voice coil temperature and excursion within the specified limits. This results in louder audio playback.



17.2 Smart Amp Development Overview

The following steps summarize *Smart Amp* evaluation, planning, characterization, tuning, and integration:

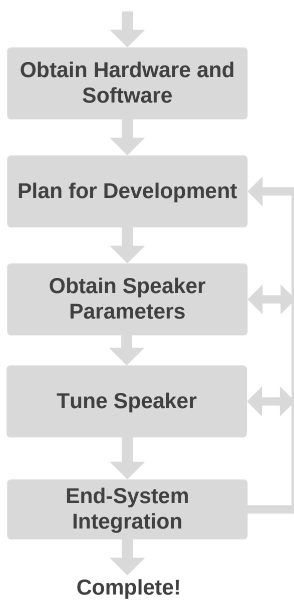


Figure 44. Smart Amp Development Overview

Step 1. **Obtain Hardware and Software** – Speaker characterization and tuning are performed using the *PurePath Console 3* software. The *TI Learning Board* and the *Smart Amp Target EVM* are needed in order to fully evaluate and develop with *Smart Amp*.

Step 2. **Plan for Development** – Developing *Smart Amp*-based systems for the first time can be different than working with conventional amplifiers. Information obtained during the speaker characterization process often leads to changes to the speaker or enclosure to maximize output and quality.

Step 3. **Obtain Speaker Parameters** – The next step is to understand the characteristics of the speaker to be tested. Once a speaker is characterized, the ppc3 file obtained from this step will be used on the next step.

Step 4. **Tune Speaker** – Once the speaker data is obtained, a speaker can be tuned using the *Target EVM* by importing a ppc3 file.

Step 5. **End-System Integration** – *Smart Amp* fundamentally shifts how audio systems are designed. Using the *Smart Amp* tool set, a designer gathers an in-depth understanding of speaker *electro-mechanical*, thermal and acoustic parameters. Based on these parameters, *Smart Amp* algorithms deliver high peak voltage and current to the speaker while protecting the speaker from excessive heat or movement. Increased voltage and current levels lead to changes in the system power design. For these reasons, it is important to understand the power supply requirements early in the design.

18 Loudspeaker Characterization

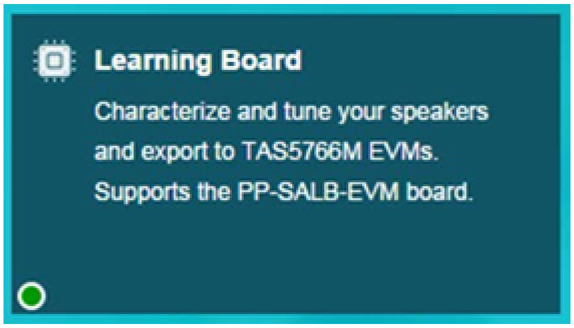
The main objective of the loudspeaker characterization is to obtain the *electro-mechanical* and thermal parameters and establish the *SOA* of the loudspeaker system. The *electro-mechanical* and thermal parameters are obtained using the *Learning Board*.

The *Learning Board App* has a step-by-step wizard that guides the user through the entire loudspeaker characterization process.

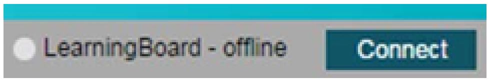
18.1 Characterization Process

To perform a loudspeaker characterization:

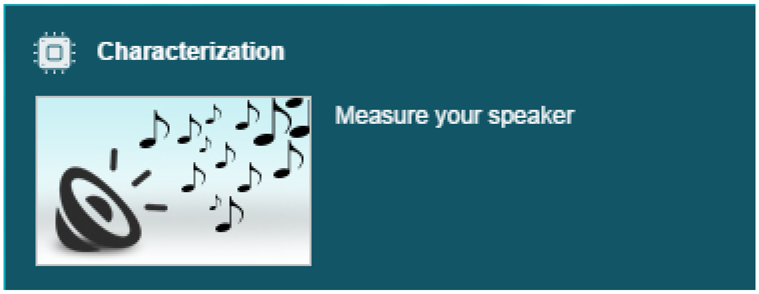
1. Connect the *Learning Board* to your PC using the USB cable.
   a. Provide a power supply
   b. Do not connect the speakers, yet
2. In *PurePath Console 3*, open the *Learning Board App* and select **New**



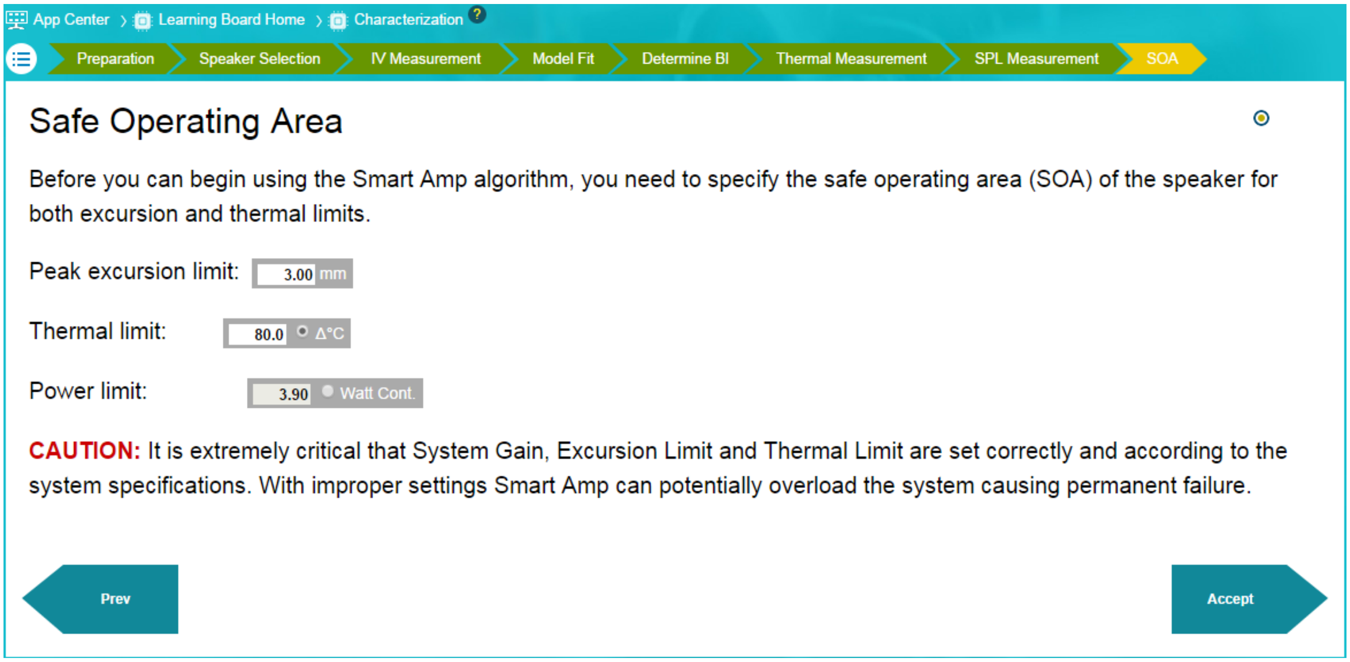
3. If the *Learning Board* is shown as offline, click **Connect**



4. Click **Characterization**



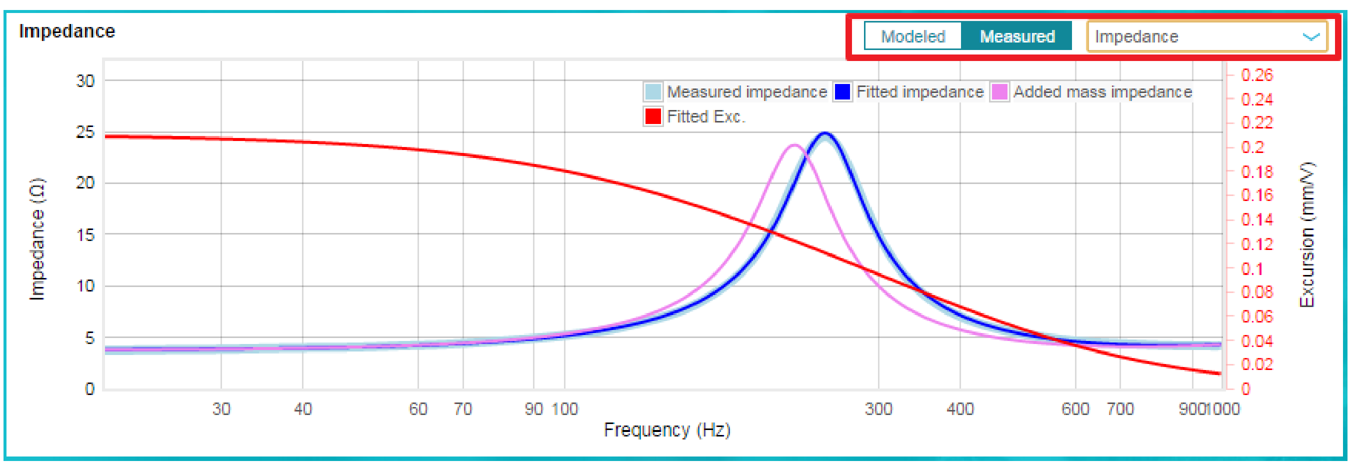
5. Follow the step-by-step wizard until the characterization is complete



6. Once complete, the *Characterization Summary* page is shown

18.2 Characterization Summary Page

The *Characterization Summary* page shows the results of the loudspeaker characterization. To verify the loudspeaker plots, use the controls on the top of the graph to select between Modeled SPL and Excursion or Measured Impedance, Temperature, and SPL plots.

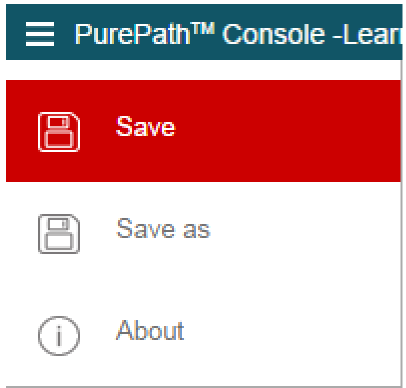


Driver and enclosure parameters are also shown as well as the established *Safe Operating Area* (SOA).

If desired, click the  button to redo the characterization. The  button will bring back the *Characterization Summary* page.

18.3 Saving a Characterization

The characterization data can be saved by clicking the button at the *Title Bar* and selecting *Save*. This will output a .ppc3 file. This .ppc3 file can later be imported into the *Target EVM App* for tuning.



19 Smart Amp Tuning

Tuning is a process involving both subjective and methodical approaches. This section provides guidelines to help establish a baseline to achieve the best possible tuning. The main objectives of the (iterative) audio tuning process, also referred to as 'voicing', are:

- Improve bass performance using *Smart Bass* controls by adjusting:
  - Bass Enhancement (Section 19.2.1)
  - Morphing Control (Section 19.2.2)
  - Harmonic Bass Alignment (Section 19.2.3)
- Improve high frequency response using Equalizer

The *Smart Amp Tuning Process* is summarized in Figure 45.

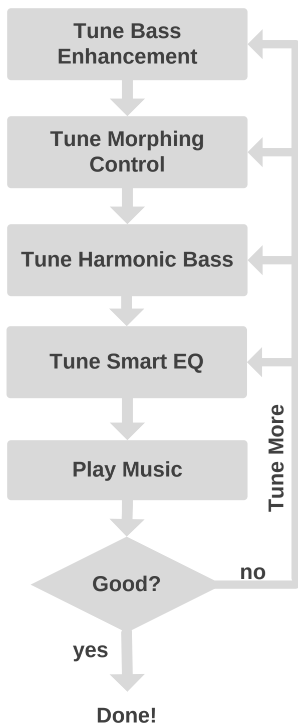


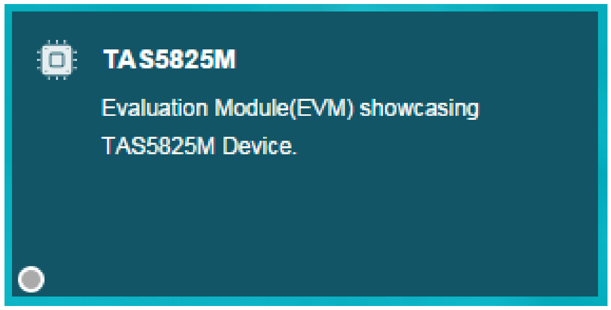
Figure 45. Smart Amp Tuning Process

19.1 Tuning Preparation

Tuning is performed using the TAS5825MEVM:

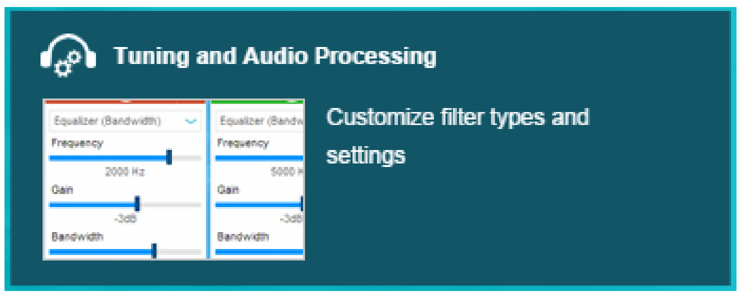
1. *Connect* the TAS5825MEVM to your PC using the USB cable.
   - Provide a power supply (matching the one to be used in the final system)
   - *Connect* the loudspeaker

2. In *PurePath Console 3*, open the *TAS5825M App*.



3. If the board is shown as offline, click **Connect**.

4. Click **Tuning and Audio Processing**.



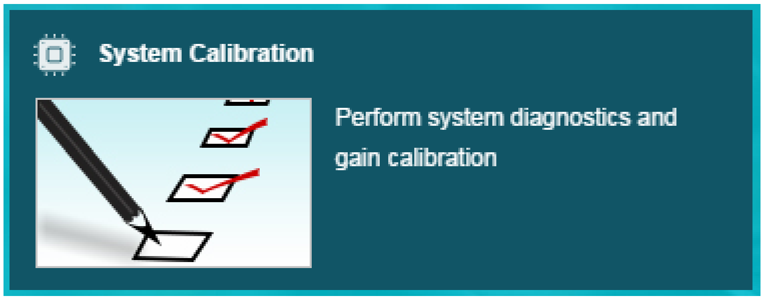
5. *Select* a *SmartAmp Processing* (48k or 96k).

Select Audio Mode

Feature	Base/Pro (2.0 96k)	2 Band DRC & AGL (2.0 96k)	3 Band DRC & AGL (2.0 96k)	SmartAmp (2.0 96k)	SmartAmp LookAhead (2.0 48k)	FIR (2.0 48k)	Base/Pro (2.0 48k)
	Select	Select	Select	Select	Select	Select	Select
Maximum Internal Sample Rate	96k	96k	96k	96k	48k	48k	48k
SRC and Auto-detect	✓	✓	✓	✓	✓	✓	✓
Supported Input Sample Rates 16k, 32k, 44.1k, 48k, 88.2k, 96k	✓	✓	✓	✓	All except 88.2k, 96k	All except 88.2k, 96k	All except 88.2k, 96k
Support for Input Sample Rate 192k	✓	✓	✗	✓	✗	✗	✓
Biquads for EQ filtering (Individual left/right)	15	15	15	15	13	15	15
Additional Biquad Bank (44.1/ 88.2 KHz)	✓	✓	✗	✗	✗	✗	✗
Input Mixer	✓	✓	✓	✓	✓	✓	✓
Click & Pop Free Volume	✓	✓	✓	✓	✓	✓	✓
Spatializer (Stereo Widening)	✓	✗	✗	✗	✗	✗	✓
Dynamic Biquad	2nd Order	4th Order	2nd Order	2nd Order	✗	✗	4th Order
DRC	3 Band 4th Order Crossover	2 Band 2nd Order Crossover	3 Band 2nd Order Crossover	✗	✗	3 Band 4th Order Crossover	3 Band 4th Order Crossover
Automatic Gain Limiter	✗	✓	✓	✓	✗	✓	✓
Smart Excursion, Smart Thermal and Smart Bass Tuning	✗	✗	✗	✓	✓	✗	✓
Smart EQ	✗	✗	✗	✓	✓	✗	✓
Output Clipper	✓	✓	✓	✓	✓	✓	✓

6. **Import** the characterization data that was obtained during the Characterization process by clicking the **Import** button.

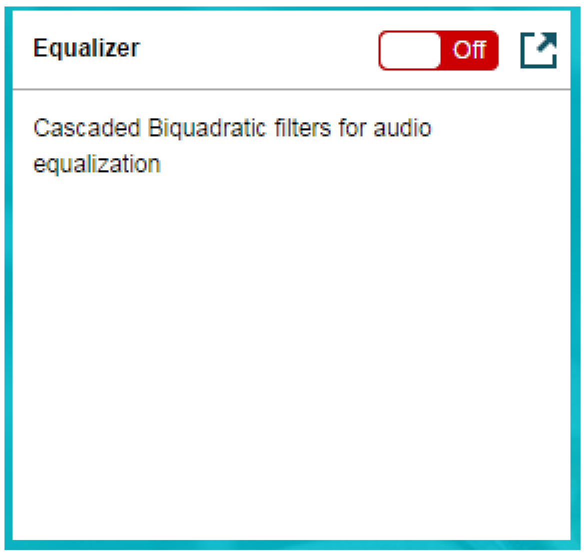
7. Click and perform a **System Calibration**. This process ensures that the *Smart Amp* algorithm is properly scaled based on the amplifier output gain.



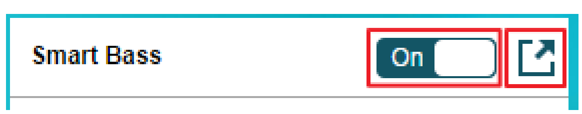
19.2 Smart Bass Tuning

During the characterization process, the low-frequency SPL model of the loudspeaker was obtained. Based on this model, the response is automatically optimized to match popular loudspeaker alignment types (that is Butterworth, Linkwitz-Riley, and so forth). This allows the audio engineer to focus on choosing the desired sound with just a few clicks.

When tuning *Smart Bass* for the first time, it is best to first disable the *Equalizer*.



To start tuning *Smart Bass*, enable *Smart Bass* and click the Expand symbol, as shown in the following image.



The *Smart Bass Tuning* page has all the controls needed for *Smart Bass* tuning. Several plots (such as Excursion) are provided as an aid to the tuning process.

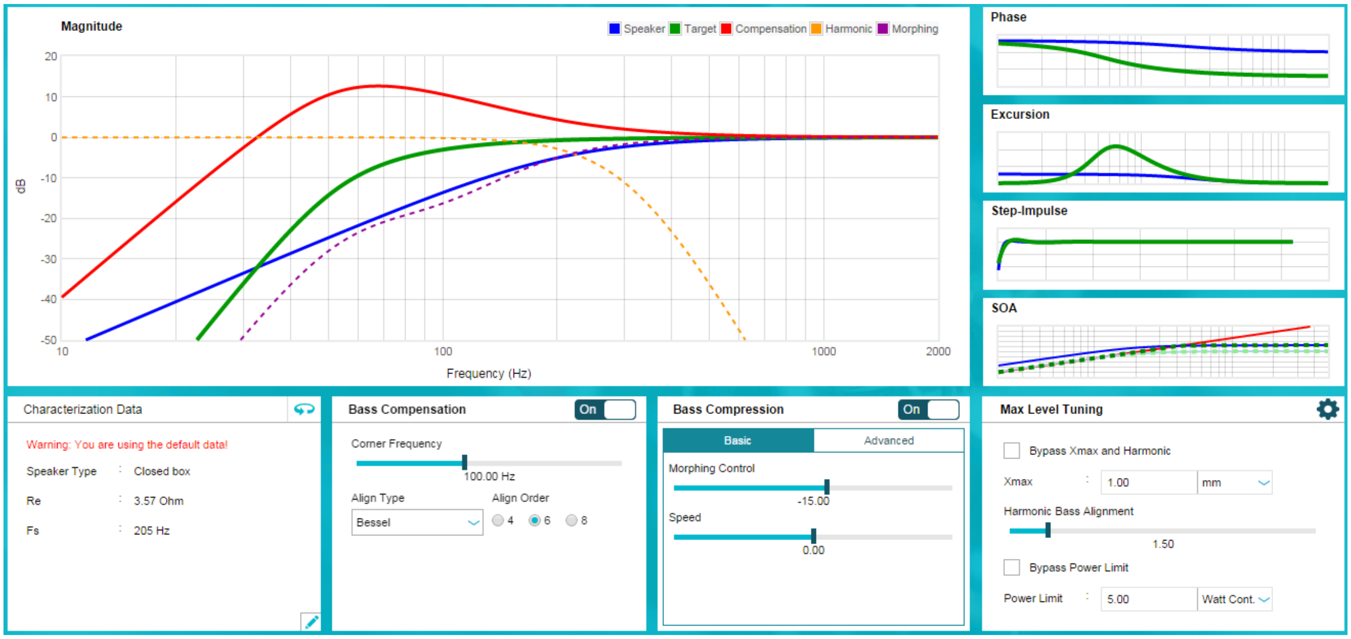
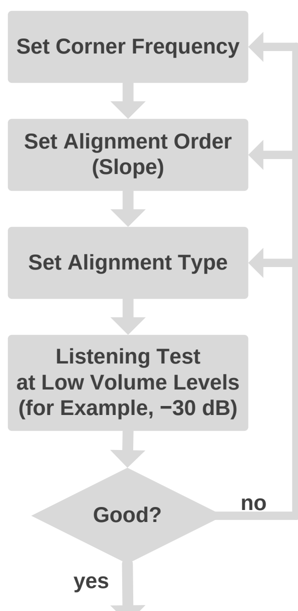


Figure 46. Smart Amp Tuning Page

19.2.1 Bass Enhancement (Low Volume Tuning)

The main objective is to maximize the bass response as much as possible and tune the bass, as desired. During this phase, it is important to listen at low volume levels only – this is to ensure that thermal and mechanical protection systems do not kick-in. Ensure that the *Morphing Control* (Section 19.2.2) is set at maximum during this phase.



Continue to Section 19.2.2.

Table 8. Bass Enhancement Parameters

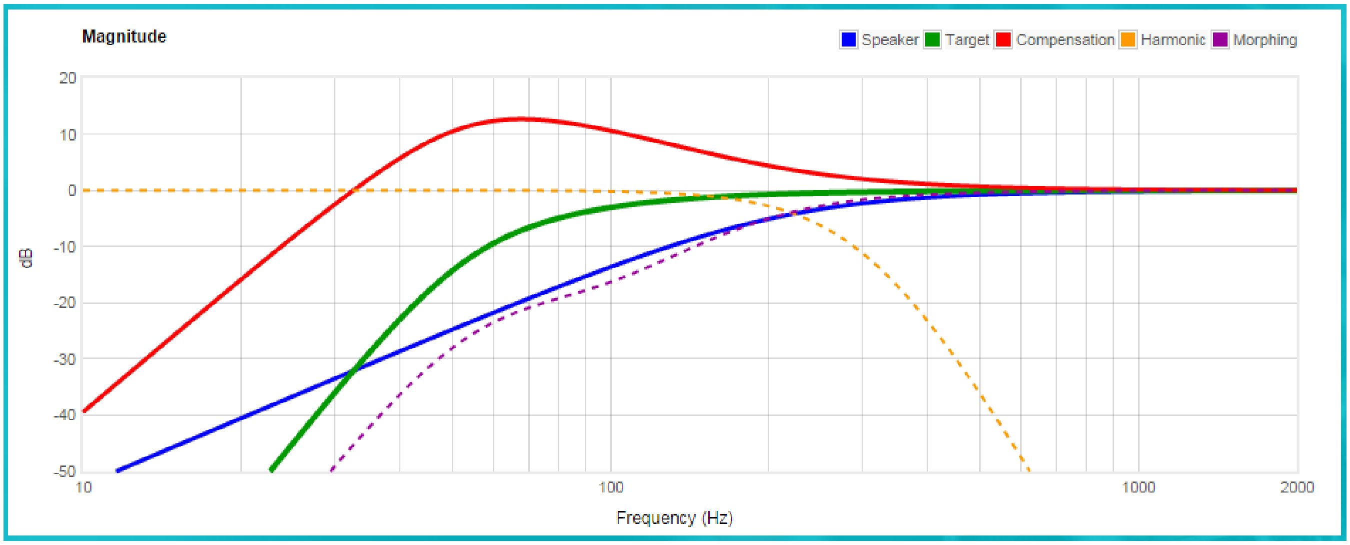
Field	Description
Corner Frequency	–3-dB point of the target response. Smaller speaker drivers should use higher corner frequency.
Order (Slope)	Determines the sharpness of the roll-off towards lower frequencies. For lower corner frequency, choose higher order.
Type	Selects the alignment type

Corner Frequency

The *Corner Frequency* indicates the –3-dB point of a flat response target (indicated by the green curve in the following image). Selecting a proper *Corner Frequency* is important for the overall performance of the speaker system. If the cutoff is set too high, the speaker will have limited bass response. If set too low, energy will be wasted trying to drive frequencies that the speaker will not be able to reproduce and the excursion protection system will be overly active.

TI recommends doing a series of listening tests while adjusting settings.

- Adjust *Corner Frequency* while watching the compensation (red curve) in the response plot window.
- Targeting between a 10- to 20-dB compensation (red curve) often provides the best results.
- Do not exceed the 20-dB line (at least initially).



Alignment Order and Type

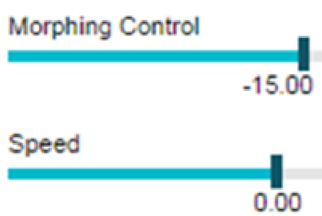
The *Order and Type* determine the bass roll-off. In other words, it determines what occurs below the corner frequency.

A high-order roll-off cuts bass faster, saving power and limiting speaker excursion that will not produce much SPL. Likewise, *Type* has significant influence on the SPL and energy below the corner frequency.

- Select a higher order if the speaker handles excursion poorly.
- Select a lower order to leave small amounts of low-frequency content in the signal.
- Butterworth is suitable for most applications. For ported or passive radiator systems that can reproduce 60–80 Hz, a Chebyshev alignment works well.

19.2.2 Morphing Control (Mid- to High-Volume Tuning)

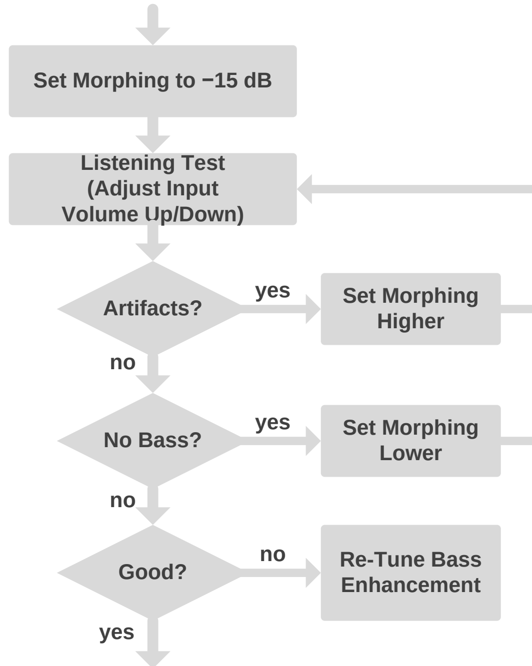
Morphing determines the headroom dependent balance between *Bass Enhancement* and *Harmonic Bass Alignment*. As excursion and thermal headroom drops with increase in music loudness, the *Morphing* feature gradually and dynamically reduces bass.



Depending on *Speed* and *Harmonic Alignment* settings, some residue of bass harmonics might remain in the frequency spectrum creating a psychoacoustic bass enhancement effect.

- Audible artifacts indicate too high Morphing setting
- Little but clean bass could indicate that the Morphing setting is too low

From Section 19.2.1



Continue to Section 19.2.3

NOTE: This is an iterative process! It is important to listen to different types of music and at several volume settings (listening levels).

Morphing Speed (Optional)

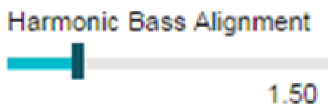
The *Morphing Speed* control determines the aggressiveness on which the *Smart Amp* algorithm adapts to a change of headroom.

Speakers react very differently to morphing speed and unfortunately there is no universal guideline for how to tune this for the best setting. TI recommends experimenting with several settings. This setting may also be left at the default value (0).

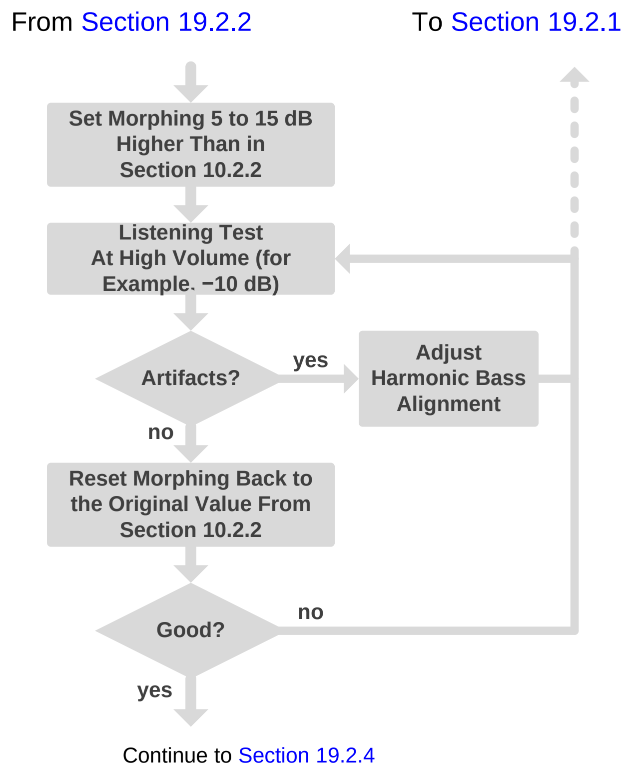
- Listen to different music types at moderate to high volume levels
- Listen for audible artifacts such as:
  - **Bass region:** distortion, especially with high transients (such as a kick drum)
  - **Mid/high range:** distortion, modulation artifacts

19.2.3 Harmonic Bass Alignment (Mid- to High-Volume Tuning)

The *Harmonic Bass Alignment* control determines the aggressiveness of the excursion protection algorithm as speaker headroom is reduced. Some speakers sound great with an aggressive setting (high value) where other speakers, typically of lower quality, will sound harsh and distorted and will require less aggressive setting (lower value).



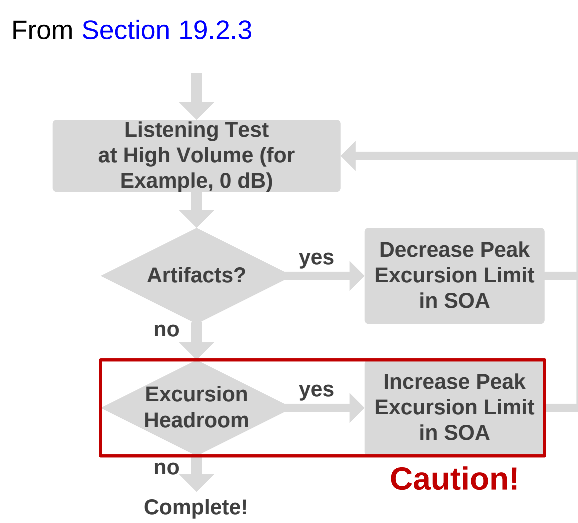
- Listen to different music types at moderate to high volume levels
- Listen for audible artifacts such as:
  – **Bass region:** distortion, especially with high transients (such as a kick drum)
  – **Mid/High range:** distortion



19.2.4 Excursion Tuning (Optional)

Depending on the type and quality of the speaker (as characterized in the measurement phase), the *Peak Excursion SOA* setting sometimes needs a post-audio-tuning adjustment for best sound quality. As a typical speaker approaches its *Xmax* the THD tends to rise quickly. This behavior can have an amplifying effect on artifacts.

- In the *Max Level Tuning* window, change the peak excursion limit value while you listen to audio.
- Reduce it if there are Artifacts at high volume settings.



Memory Maps

A.1 DSP Memory Map for Process Flow 1

Table 9. DSP Memory Map for Process Flow 1

BasePro(2.0 96k) Mode Memory Map — Book 0x78					
SUB ADDRESS	**PAGE**	**REGISTER NAME**	**NUMBER OF BYTES/ FORMAT**	**DEFAULT VALUE**	**DESCRIPTION**
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
BasePro(2.0 96k) Mode Memory Map — Book 0x8C					
SUB ADDRESS	**PAGE**	**REGISTER NAME**	**NUMBER OF BYTES/ FORMAT**	**DEFAULT VALUE**	**DESCRIPTION**
VOLUME ALPHA FILTER					
0x2C	0x01	Softening Filter Alpha	4 / 1.31	0x00E2C46B	Volume Time constant
DRC					
0x58	0x06	DRC 1 Mixer Gain	4 / 9.23	0x00800000	DRC 1 Mixer Gain coefficient
0x5C	0x06	DRC 2 Mixer Gain	4 / 9.23	0x00000000	DRC 2 Mixer Gain coefficient
0x60	0x06	DRC 3 Mixer Gain	4 / 9.23	0x00000000	DRC 3 Mixer Gain coefficient
0x64	0x06	DRC1 Energy	4 / 1.31	0x7FFFFFFF	DRC1 Energy Time constant
0x68	0x06	DRC1 Attack	4 / 1.31	0x7FFFFFFF	DRC1 Attack Time constant
0x6C	0x06	DRC1 Decay	4 / 1.31	0x7FFFFFFF	DRC1 Decay Time constant
0x70	0x06	K0_1	4 / 9.23	0x00000000	DRC1 Region 1 Slope (comp/Exp)
0x74	0x06	K1_1	4 / 9.23	0x00000000	DRC1 Region 2 Slope (comp/Exp)
0x78	0x06	K2_1	4 / 9.23	0x00000000	DRC1 Region 3 Slope (comp/Exp)
0x7C	0x06	T1_1	4 / 9.23	0xE7000000	DRC1 Threshold 1
0x08	0x07	T2_1	4 / 9.23	0xFE800000	DRC1 Threshold 2
0x0C	0x07	off1_1	4 / 9.23	0x00000000	DRC1 Offset 1
0x10	0x07	off2_1	4 / 9.23	0x00000000	DRC1 Offset 2
0x14	0x07	DRC2 Energy	4 / 1.31	0x7FFFFFFF	DRC2 Energy Time constant
0x18	0x07	DRC2 Attack	4 / 1.31	0x7FFFFFFF	DRC2 Attack Time constant
0x1C	0x07	DRC2 Decay	4 / 1.31	0x7FFFFFFF	DRC2 Decay Time constant

Table 9. DSP Memory Map for Process Flow 1 (continued)

0x20	0x07	k0_2	4 / 9.23	0x00000000	DRC2 Region 1 Slope (comp/Exp)
0x24	0x07	k1_2	4 / 9.23	0x00000000	DRC2 Region 2 Slope (comp/Exp)
0x28	0x07	k2_2	4 / 9.23	0x00000000	DRC2 Region 3 Slope (comp/Exp)
0x2C	0x07	t1_2	4 / 9.23	0xE7000000	DRC2 Threshold 1
0x30	0x07	t2_2	4 / 9.23	0xFE800000	DRC2 Threshold 2
0x34	0x07	off1_2	4 / 9.23	0x00000000	DRC2 Offset 1
0x38	0x07	off2_2	4 / 9.23	0x00000000	DRC2 Offset 2
0x3C	0x07	DRC3 Energy	4 / 1.31	0x7FFFFFFF	DRC3 Energy Time constant
0x40	0x07	DRC3 Attack	4 / 1.31	0x7FFFFFFF	DRC3 Attack Time constant
0x44	0x07	DRC3 Decay	4 / 1.31	0x7FFFFFFF	DRC3 Decay Time constant
0x48	0x07	k0_3	4 / 9.23	0x00000000	DRC3 Region 1 Slope (comp/Exp)
0x4C	0x07	k1_3	4 / 9.23	0x00000000	DRC3 Region 2 Slope (comp/Exp)
0x50	0x07	k1_3	4 / 9.23	0x00000000	DRC3 Region 3 Slope (comp/Exp)
0x54	0x07	t1_3	4 / 9.23	0xE7000000	DRC3 Threshold 1
0x58	0x07	t2_3	4 / 9.23	0xFE800000	DRC3 Threshold 2
0x5C	0x07	off1_3	4 / 9.23	0x00000000	DRC3 Offset 1
0x60	0x07	off2_3	4 / 9.23	0x00000000	DRC3 Offset 2
FS CLIPPER					
0x64	0x07	CH-LR THD Boost	4 / 9.23	0x00800000	THD LR Channel Prescale coefficient
0x6C	0x07	CH-L Fine Volume	4 / 2.30	0x3FFFFFFF	THD L Channel Postscale coefficient
0x70	0x07	CH-R Fine Volume	4 / 2.30	0x3FFFFFFF	THD R Channel Postscale coefficient
DPEQ CONTROL					
0x28	0x09	Alpha	4 / 1.31	0x02DEAD00	DPEQ Sense Energy Time constant
0x2C	0x09	Gain	4 / 1.31	0x74013901	DPEQ Threshold Gain
0x30	0x09	Offset	4 / 1.31	0x0020C49B	DPEQ Threshold Offset
SPATIALIZER					
0x38	0x0A	Spatializer Level	4 / 9.23	0x00000000	Spatializer Level coefficient
OUTPUT CROSS BAR					
0x64	0x0A	Digital Left from Left	4 / 9.23	0x00800000	I2S Left output gain from Left
0x68	0x0A	Digital Left from Right	4 / 9.23	0x00000000	I2S Left output gain from Right
0x6C	0x0A	Digital Right from Left	4 / 9.23	0x00000000	I2S Right output gain from Left
0x70	0x0A	Digital Right from Right	4 / 9.23	0x00800000	I2S Right output gain from Right
0x74	0x0A	Analog Left from Left	4 / 9.23	0x00800000	Analog Left output gain from Left

Table 9. DSP Memory Map for Process Flow 1 (continued)

0x78	0x0A	Analog Left from Right	4 / 9.23	0x00000000	Analog Left output gain from Right
0x7C	0x0A	Analog Right from Left	4 / 9.23	0x00000000	Analog Right output gain from Left
0x08	0x0B	Analog Right from Right	4 / 9.23	0x00800000	Analog Right output gain from Right
VOLUME CONTROL					
0x0C	0x0B	CH-L Volume	4 / 9.23	0x00800000	Left Channel Volume coefficient
0x10	0x0B	CH-R Volume	4 / 9.23	0x00800000	Right Channel Volume coefficient
INPUT MIXER					
0x14	0x0B	Left to Left	4 / 9.23	0x00800000	Left Channel Mixer Left Input Gain
0x18	0x0B	Right to Left	4 / 9.23	0x00000000	Left Channel Mixer Right Input Gain
0x1C	0x0B	Left to Right	4 / 9.23	0x00000000	Right Channel Mixer Left Input Gain
0x20	0x0B	Right to Right	4 / 9.23	0x00800000	Right Channel Mixer Right Input Gain
BYPASS DCBLOCK					
0x24	0x0B	Bypass DC block	4 / 32.0	0x00000000	DC Block flag
EQ CONTROL					
0x28	0x0B	Gang EQ	4 / 32.0	0x00000000	Gang EQ flag
0x2C	0x0B	Bypass EQ	4 / 32.0	0x00000000	Bypass EQ flag
LEVEL METER CONTROL					
0x30	0x0B	Softening Filter Alpha	4 / 1.31	0x00A7264A	Level Meter Energy Time constant
0x34	0x0B	Level Meter Input Mux	4 / 2.30	0x00000000	Level Meter Input Mux
Bank Switch					
0x20	0x0C	Bank Switch	4 / 32.0	0x00000000	Bank Switch flag
BasePro(2.0 96k) Mode Memory Map — Book 0xAA					
SUB ADDRESS	**PAGE**	**REGISTER NAME**	**NUMBER OF BYTES/ FORMAT**	**DEFAULT VALUE**	**DESCRIPTION**
EQ LEFT 15 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
0x6C	0x01	CH -L BQ 4 B0	4 / 5.27	0x08000000	Left BQ coefficient

Table 9. DSP Memory Map for Process Flow 1 (continued)

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
0x30	0x03	CH -L BQ 13 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x34	0x03	CH -L BQ 13 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x38	0x03	CH -L BQ 13 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x3C	0x03	CH -L BQ 13 A1	4 / 5.27	0x00000000	Left BQ coefficient

Table 9. DSP Memory Map for Process Flow 1 (continued)

0x40	0x03	CH -L BQ 13 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x44	0x03	CH -L BQ 14 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x48	0x03	CH -L BQ 14 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x4C	0x03	CH -L BQ 14 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x50	0x03	CH -L BQ 14 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x54	0x03	CH -L BQ 14 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x58	0x03	CH -L BQ 15 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x5C	0x03	CH -L BQ 15 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x60	0x03	CH -L BQ 15 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x64	0x03	CH -L BQ 15 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x68	0x03	CH -L BQ 15 A2	4 / 5.27	0x00000000	Left BQ coefficient
EQ RIGHT 15 BQS					
0x6C	0x03	CH -R BQ 1 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x70	0x03	CH -R BQ 1 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x74	0x03	CH -R BQ 1 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x78	0x03	CH -R BQ 1 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x7C	0x03	CH -R BQ 1 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x08	0x04	CH -R BQ 2 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x0C	0x04	CH -R BQ 2 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x10	0x04	CH -R BQ 2 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x14	0x04	CH -R BQ 2 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x18	0x04	CH -R BQ 2 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x1C	0x04	CH -R BQ 3 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x20	0x04	CH -R BQ 3 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x24	0x04	CH -R BQ 3 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x28	0x04	CH -R BQ 3 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x2C	0x04	CH -R BQ 3 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x30	0x04	CH -R BQ 4 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x34	0x04	CH -R BQ 4 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x38	0x04	CH -R BQ 4 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x3C	0x04	CH -R BQ 4 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x40	0x04	CH -R BQ 4 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x44	0x04	CH -R BQ 5 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x48	0x04	CH -R BQ 5 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x4C	0x04	CH -R BQ 5 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x50	0x04	CH -R BQ 5 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x54	0x04	CH -R BQ 5 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x58	0x04	CH -R BQ 6 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x5C	0x04	CH -R BQ 6 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x60	0x04	CH -R BQ 6 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x64	0x04	CH -R BQ 6 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x68	0x04	CH -R BQ 6 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x6C	0x04	CH -R BQ 7 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x70	0x04	CH -R BQ 7 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x74	0x04	CH -R BQ 7 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x78	0x04	CH -R BQ 7 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x7C	0x04	CH -R BQ 7 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x08	0x05	CH -R BQ 8 B0	4 / 5.27	0x08000000	Right BQ coefficient

Table 9. DSP Memory Map for Process Flow 1 (continued)

0x0C	0x05	CH -R BQ 8 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x10	0x05	CH -R BQ 8 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x14	0x05	CH -R BQ 8 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x18	0x05	CH -R BQ 8 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x1C	0x05	CH -R BQ 9 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x20	0x05	CH -R BQ 9 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x24	0x05	CH -R BQ 9 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x28	0x05	CH -R BQ 9 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x2C	0x05	CH -R BQ 9 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x30	0x05	CH -R BQ 10 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x34	0x05	CH -R BQ 10 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x38	0x05	CH -R BQ 10 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x3C	0x05	CH -R BQ 10 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x40	0x05	CH -R BQ 10 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x44	0x05	CH -R BQ 11 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x48	0x05	CH -R BQ 11 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x4C	0x05	CH -R BQ 11 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x50	0x05	CH -R BQ 11 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x54	0x05	CH -R BQ 11 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x58	0x05	CH -R BQ 12 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x5C	0x05	CH -R BQ 12 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x60	0x05	CH -R BQ 12 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x64	0x05	CH -R BQ 12 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x68	0x05	CH -R BQ 12 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x6C	0x05	CH -R BQ 13 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x70	0x05	CH -R BQ 13 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x74	0x05	CH -R BQ 13 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x78	0x05	CH -R BQ 13 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x7C	0x05	CH -R BQ 13 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x08	0x06	CH -R BQ 14 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x0C	0x06	CH -R BQ 14 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x10	0x06	CH -R BQ 14 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x14	0x06	CH -R BQ 14 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x18	0x06	CH -R BQ 14 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x1C	0x06	CH -R BQ 15 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x20	0x06	CH -R BQ 15 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x24	0x06	CH -R BQ 15 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x28	0x06	CH -R BQ 15 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x2C	0x06	CH -R BQ 15 A2	4 / 5.27	0x00000000	Right BQ coefficient
DRC BQS					
0x78	0x07	DRC low BQ 1 B0	4 / 5.27	0x08000000	DRC low BQ coefficient
0x7C	0x07	DRC low BQ 1 B1	4 / 5.27	0x00000000	DRC low BQ coefficient
0x08	0x07	DRC low BQ 1 B2	4 / 5.27	0x00000000	DRC low BQ coefficient
0x0C	0x07	DRC low BQ 1 A1	4 / 5.27	0x00000000	DRC low BQ coefficient
0x10	0x07	DRC low BQ 1 A2	4 / 5.27	0x00000000	DRC low BQ coefficient

Table 9. DSP Memory Map for Process Flow 1 (continued)

0x14	0x07	DRC low BQ 2 B0	4 / 5.27	0x08000000	DRC low BQ coefficient
0x18	0x07	DRC low BQ 2 B1	4 / 5.27	0x00000000	DRC low BQ coefficient
0x1C	0x07	DRC low BQ 2 B2	4 / 5.27	0x00000000	DRC low BQ coefficient
0x20	0x07	DRC low BQ 2 A1	4 / 5.27	0x00000000	DRC low BQ coefficient
0x24	0x07	DRC low BQ 2 A2	4 / 5.27	0x00000000	DRC low BQ coefficient
0x28	0x07	DRC high BQ 1 B0	4 / 5.27	0x08000000	DRC high BQ coefficient
0x2C	0x07	DRC high BQ 1 B1	4 / 5.27	0x00000000	DRC high BQ coefficient
0x30	0x07	DRC high BQ 1 B2	4 / 5.27	0x00000000	DRC high BQ coefficient
0x34	0x07	DRC high BQ 1 A1	4 / 5.27	0x00000000	DRC high BQ coefficient
0x38	0x08	DRC high BQ 1 A2	4 / 5.27	0x00000000	DRC high BQ coefficient
0x3C	0x08	DRC high BQ 2 B0	4 / 5.27	0x08000000	DRC high BQ coefficient
0x40	0x08	DRC high BQ 2 B1	4 / 5.27	0x00000000	DRC high BQ coefficient
0x44	0x08	DRC high BQ 2 B2	4 / 5.27	0x00000000	DRC high BQ coefficient
0x48	0x08	DRC high BQ 2 A1	4 / 5.27	0x00000000	DRC high BQ coefficient
0x4C	0x08	DRC high BQ 2 A2	4 / 5.27	0x00000000	DRC high BQ coefficient
0x50	0x08	DRC mid BQ 1 B0	4 / 5.27	0x08000000	DRC mid BQ coefficient
0x54	0x08	DRC mid BQ 1 B1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x58	0x08	DRC mid BQ 1 B2	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x5C	0x08	DRC mid BQ 1 A1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x60	0x08	DRC mid BQ 1 A2	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x64	0x08	DRC mid BQ 2 B0	4 / 5.27	0x08000000	DRC mid BQ coefficient
0x68	0x08	DRC mid BQ 2 B1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x6C	0x08	DRC mid BQ 2 B2	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x70	0x08	DRC mid BQ 2 A1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x74	0x08	DRC mid BQ 2 A2	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x78	0x08	DRC mid BQ 3 B0	4 / 5.27	0x08000000	DRC mid BQ coefficient
0x7C	0x08	DRC mid BQ 3 B1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x08	0x08	DRC mid BQ 3 B2	4 / 5.27	0x00000000	DRC mid BQ coefficient

Table 9. DSP Memory Map for Process Flow 1 (continued)

0x0C	0x08	DRC mid BQ 3 A1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x10	0x08	DRC mid BQ 3 A2	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x14	0x08	DRC mid BQ 4 B0	4 / 5.27	0x08000000	DRC mid BQ coefficient
0x18	0x08	DRC mid BQ 4 B1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x1C	0x08	DRC mid BQ 4 B2	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x20	0x08	DRC mid BQ 4 A1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x24	0x08	DRC mid BQ 4 A2	4 / 5.27	0x00000000	DRC mid BQ coefficient
DPEQ SENSE BQ					
0x34	0x09	BQ 1 B0	4 / 5.27	0x08000000	DPEQ sense BQ coefficient
0x38	0x09	BQ 1 B1	4 / 5.27	0x00000000	DPEQ sense BQ coefficient
0x3C	0x09	BQ 1 B2	4 / 5.27	0x00000000	DPEQ sense BQ coefficient
0x40	0x09	BQ 1 A1	4 / 5.27	0x00000000	DPEQ sense BQ coefficient
0x44	0x09	BQ 1 A2	4 / 5.27	0x00000000	DPEQ sense BQ coefficient
DPEQ LOW LEVEL PATH BQ					
0x5C	0x09	BQ 1 B0	4 / 5.27	0x08000000	DPEQ low BQ coefficient
0x60	0x09	BQ 1 B1	4 / 5.27	0x00000000	DPEQ low BQ coefficient
0x64	0x09	BQ 1 B2	4 / 5.27	0x00000000	DPEQ low BQ coefficient
0x68	0x09	BQ 1 A1	4 / 5.27	0x00000000	DPEQ low BQ coefficient
0x6C	0x09	BQ 1 A2	4 / 5.27	0x00000000	DPEQ low BQ coefficient
DPEQ HIGH LEVEL PATH BQ					
0x0C	0x0A	BQ 1 B0	4 / 5.27	0x08000000	DPEQ high BQ coefficient
0x10	0x0A	BQ 1 B1	4 / 5.27	0x00000000	DPEQ high BQ coefficient
0x14	0x0A	BQ 1 B2	4 / 5.27	0x00000000	DPEQ high BQ coefficient
0x18	0x0A	BQ 1 A1	4 / 5.27	0x00000000	DPEQ high BQ coefficient
0x1C	0x0A	BQ 1 A2	4 / 5.27	0x00000000	DPEQ high BQ coefficient
SPATIALIZER BQS					
0x3C	0x0A	Spatializer BQ 1 B0	4 / 5.27	0x08000000	Spatializer BQ coefficient
0x40	0x0A	Spatializer BQ 1 B1	4 / 5.27	0x00000000	Spatializer BQ coefficient
0x44	0x0A	Spatializer BQ 1 B2	4 / 5.27	0x00000000	Spatializer BQ coefficient
0x48	0x0A	Spatializer BQ 1 A1	4 / 5.27	0x00000000	Spatializer BQ coefficient

Table 9. DSP Memory Map for Process Flow 1 (continued)

0x4C	0x0A	Spatializer BQ 1 A2	4 / 5.27	0x00000000	Spatializer BQ coefficient
0x50	0x0A	Spatializer BQ 2 B0	4 / 5.27	0x08000000	Spatializer BQ coefficient
0x54	0x0A	Spatializer BQ 2 B1	4 / 5.27	0x00000000	Spatializer BQ coefficient
0x58	0x0A	Spatializer BQ 2 B2	4 / 5.27	0x00000000	Spatializer BQ coefficient
0x5C	0x0A	Spatializer BQ 2 A1	4 / 5.27	0x00000000	Spatializer BQ coefficient
0x60	0x0A	Spatializer BQ 2 A2	4 / 5.27	0x00000000	Spatializer BQ coefficient

A.2 DSP Memory Map for Process Flow 2

Table 10. DSP Memory Map for Process Flow 2

2 Band DRC & AGL(2.0 96k) Mode Memory Map — Book 0x78					
SUB ADDRESS	**PAGE**	**REGISTER NAME**	**NUMBER OF BYTES/ FORMAT**	**DEFAULT VALUE**	**DESCRIPTION**
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
2 Band DRC & AGL(2.0 96k) Mode Memory Map — Book 0x8C					
SUB ADDRESS	**PAGE**	**REGISTER NAME**	**NUMBER OF BYTES/ FORMAT**	**DEFAULT VALUE**	**DESCRIPTION**
ENABLE AGL					
0x28	0x01	AGL Enable	4 / 1.31	0x40000000	AGL Enable flag
VOLUME ALPHA FILTER					
0x2C	0x01	Softening Filter Alpha	4 / 1.31	0x00E2C46B	Volume Time constant
DRC					
0x58	0x06	DRC 1 Mixer Gain	4 / 9.23	0x00800000	DRC 1 Mixer Gain coefficient
0x60	0x06	DRC 3 Mixer Gain	4 / 9.23	0x00000000	DRC 3 Mixer Gain coefficient
0x64	0x06	DRC1 Energy	4 / 1.31	0x7FFFFFFF	DRC1 Energy Time constant
0x68	0x06	DRC1 Attack	4 / 1.31	0x7FFFFFFF	DRC1 Attack Time constant
0x6C	0x06	DRC1 Decay	4 / 1.31	0x7FFFFFFF	DRC1 Decay Time constant
0x70	0x06	K0_1	4 / 9.23	0x00000000	DRC1 Region 1 Slope (comp/Exp)
0x74	0x06	K1_1	4 / 9.23	0x00000000	DRC1 Region 2 Slope (comp/Exp)
0x78	0x06	K2_1	4 / 9.23	0x00000000	DRC1 Region 3 Slope (comp/Exp)
0x7C	0x06	T1_1	4 / 9.23	0xE7000000	DRC1 Threshold 1
0x08	0x07	T2_1	4 / 9.23	0xFE800000	DRC1 Threshold 2
0x0C	0x07	off1_1	4 / 9.23	0x00000000	DRC1 Offset 1
0x10	0x07	off2_1	4 / 9.23	0x00000000	DRC1 Offset 2
0x3C	0x07	DRC3 Energy	4 / 1.31	0x7FFFFFFF	DRC3 Energy Time constant

Table 10. DSP Memory Map for Process Flow 2 (continued)

0x40	0x07	DRC3 Attack	4 / 1.31	0x7FFFFFFF	DRC3 Attack Time constant
0x44	0x07	DRC3 Decay	4 / 1.31	0x7FFFFFFF	DRC3 Decay Time constant
0x48	0x07	k0_3	4 / 9.23	0x00000000	DRC3 Region 1 Slope (comp/Exp)
0x4C	0x07	k1_3	4 / 9.23	0x00000000	DRC3 Region 2 Slope (comp/Exp)
0x50	0x07	k1_3	4 / 9.23	0x00000000	DRC3 Region 3 Slope (comp/Exp)
0x54	0x07	t1_3	4 / 9.23	0xE7000000	DRC3 Threshold 1
0x58	0x07	t2_3	4 / 9.23	0xFE800000	DRC3 Threshold 2
0x5C	0x07	off1_3	4 / 9.23	0x00000000	DRC3 Offset 1
0x60	0x07	off2_3	4 / 9.23	0x00000000	DRC3 Offset 2
FS CLIPPER					
0x64	0x07	CH-LR THD Boost	4 / 9.23	0x00800000	THD LR Channel Prescale coefficient
0x6C	0x07	CH-L Fine Volume	4 / 2.30	0x3FFFFFFF	THD L Channel Postscale coefficient
0x70	0x07	CH-R Fine Volume	4 / 2.30	0x3FFFFFFF	THD R Channel Postscale coefficient
DPEQ CONTROL					
0x28	0x09	Alpha	4 / 1.31	0x02DEAD00	DPEQ Sense Energy Time constant
0x2C	0x09	Gain	4 / 1.31	0x74013901	DPEQ Threshold Gain
0x30	0x09	Offset	4 / 1.31	0x0020C49B	DPEQ Threshold Offset
AGL THRESHOLD					
0x34	0x0A	Attack Threshold	4 / 1.31	0x40000000	Threshold linear
OUTPUT CROSS BAR					
0x64	0x0A	Digital Left from Left	4 / 9.23	0x00800000	I2S Left output gain from Left
0x68	0x0A	Digital Left from Right	4 / 9.23	0x00000000	I2S Left output gain from Right
0x6C	0x0A	Digital Right from Left	4 / 9.23	0x00000000	I2S Right output gain from Left
0x70	0x0A	Digital Right from Right	4 / 9.23	0x00800000	I2S Right output gain from Right
0x74	0x0A	Analog Left from Left	4 / 9.23	0x00800000	Analog Left output gain from Left
0x78	0x0A	Analog Left from Right	4 / 9.23	0x00000000	Analog Left output gain from Right
0x7C	0x0A	Analog Right from Left	4 / 9.23	0x00000000	Analog Right output gain from Left
0x08	0x0B	Analog Right from Right	4 / 9.23	0x00800000	Analog Right output gain from Right
VOLUME CONTROL					
0x0C	0x0B	CH-L Volume	4 / 9.23	0x00800000	Left Channel Volume coefficient
0x10	0x0B	CH-R Volume	4 / 9.23	0x00800000	Right Channel Volume coefficient
INPUT MIXER					

Table 10. DSP Memory Map for Process Flow 2 (continued)

0x14	0x0B	Left to Left	4 / 9.23	0x00800000	Left Channel Mixer Left Input Gain
0x18	0x0B	Right to Left	4 / 9.23	0x00000000	Left Channel Mixer Right Input Gain
0x1C	0x0B	Left to Right	4 / 9.23	0x00000000	Right Channel Mixer Left Input Gain
0x20	0x0B	Right to Right	4 / 9.23	0x00800000	Right Channel Mixer Right Input Gain
BYPASS DCBLOCK					
0x24	0x0B	Bypass DC block	4 / 32.0	0x00000000	DC Block flag
EQ CONTROL					
0x28	0x0B	Gang EQ	4 / 32.0	0x00000000	Gang EQ flag
0x2C	0x0B	Bypass EQ	4 / 32.0	0x00000000	Bypass EQ flag
LEVEL METER CONTROL					
0x30	0x0B	Softening Filter Alpha	4 / 1.31	0x00A7264A	Level Meter Energy Time constant
0x34	0x0B	Level Meter Input Mux	4 / 2.30	0x00000000	Level Meter Input Mux
AGL					
0x48	0x0B	Softening Filter Alpha	4 / 1.31	0x051EB852	AGL Energy Time constant
0x4C	0x0B	Attack Rate	4 / 1.31	0x000369D0	AGL Attack Time constant
0x54	0x0B	Softening Filter Omega	4 / 1.31	0x7AE147AE	AGL Omega Time constant
0x58	0x0B	Release Rate	4 / 1.31	0x00005762	AGL Release Time constant
Bank Switch					
0x20	0x0C	Bank Switch	4 / 32.0	0x00000000	Bank Switch flag
2 Band DRC & AGL(2.0 96k) Mode Memory Map — Book 0xAA					
SUB ADDRESS	**PAGE**	**REGISTER NAME**	**NUMBER OF BYTES/ FORMAT**	**DEFAULT VALUE**	**DESCRIPTION**
EQ LEFT 15 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
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

Table 10. DSP Memory Map for Process Flow 2 (continued)

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
0x30	0x03	CH -L BQ 13 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x34	0x03	CH -L BQ 13 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x38	0x03	CH -L BQ 13 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x3C	0x03	CH -L BQ 13 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x40	0x03	CH -L BQ 13 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x44	0x03	CH -L BQ 14 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x48	0x03	CH -L BQ 14 B1	4 / 5.27	0x00000000	Left BQ coefficient

Table 10. DSP Memory Map for Process Flow 2 (continued)

0x4C	0x03	CH -L BQ 14 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x50	0x03	CH -L BQ 14 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x54	0x03	CH -L BQ 14 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x58	0x03	CH -L BQ 15 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x5C	0x03	CH -L BQ 15 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x60	0x03	CH -L BQ 15 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x64	0x03	CH -L BQ 15 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x68	0x03	CH -L BQ 15 A2	4 / 5.27	0x00000000	Left BQ coefficient
EQ RIGHT 15 BQS					
0x6C	0x03	CH -R BQ 1 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x70	0x03	CH -R BQ 1 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x74	0x03	CH -R BQ 1 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x78	0x03	CH -R BQ 1 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x7C	0x03	CH -R BQ 1 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x08	0x04	CH -R BQ 2 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x0C	0x04	CH -R BQ 2 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x10	0x04	CH -R BQ 2 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x14	0x04	CH -R BQ 2 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x18	0x04	CH -R BQ 2 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x1C	0x04	CH -R BQ 3 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x20	0x04	CH -R BQ 3 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x24	0x04	CH -R BQ 3 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x28	0x04	CH -R BQ 3 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x2C	0x04	CH -R BQ 3 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x30	0x04	CH -R BQ 4 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x34	0x04	CH -R BQ 4 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x38	0x04	CH -R BQ 4 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x3C	0x04	CH -R BQ 4 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x40	0x04	CH -R BQ 4 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x44	0x04	CH -R BQ 5 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x48	0x04	CH -R BQ 5 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x4C	0x04	CH -R BQ 5 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x50	0x04	CH -R BQ 5 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x54	0x04	CH -R BQ 5 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x58	0x04	CH -R BQ 6 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x5C	0x04	CH -R BQ 6 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x60	0x04	CH -R BQ 6 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x64	0x04	CH -R BQ 6 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x68	0x04	CH -R BQ 6 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x6C	0x04	CH -R BQ 7 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x70	0x04	CH -R BQ 7 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x74	0x04	CH -R BQ 7 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x78	0x04	CH -R BQ 7 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x7C	0x04	CH -R BQ 7 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x08	0x05	CH -R BQ 8 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x0C	0x05	CH -R BQ 8 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x10	0x05	CH -R BQ 8 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x14	0x05	CH -R BQ 8 A1	4 / 5.27	0x00000000	Right BQ coefficient

Table 10. DSP Memory Map for Process Flow 2 (continued)

0x18	0x05	CH -R BQ 8 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x1C	0x05	CH -R BQ 9 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x20	0x05	CH -R BQ 9 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x24	0x05	CH -R BQ 9 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x28	0x05	CH -R BQ 9 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x2C	0x05	CH -R BQ 9 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x30	0x05	CH -R BQ 10 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x34	0x05	CH -R BQ 10 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x38	0x05	CH -R BQ 10 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x3C	0x05	CH -R BQ 10 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x40	0x05	CH -R BQ 10 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x44	0x05	CH -R BQ 11 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x48	0x05	CH -R BQ 11 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x4C	0x05	CH -R BQ 11 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x50	0x05	CH -R BQ 11 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x54	0x05	CH -R BQ 11 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x58	0x05	CH -R BQ 12 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x5C	0x05	CH -R BQ 12 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x60	0x05	CH -R BQ 12 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x64	0x05	CH -R BQ 12 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x68	0x05	CH -R BQ 12 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x6C	0x05	CH -R BQ 13 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x70	0x05	CH -R BQ 13 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x74	0x05	CH -R BQ 13 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x78	0x05	CH -R BQ 13 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x7C	0x05	CH -R BQ 13 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x08	0x06	CH -R BQ 14 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x0C	0x06	CH -R BQ 14 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x10	0x06	CH -R BQ 14 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x14	0x06	CH -R BQ 14 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x18	0x06	CH -R BQ 14 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x1C	0x06	CH -R BQ 15 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x20	0x06	CH -R BQ 15 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x24	0x06	CH -R BQ 15 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x28	0x06	CH -R BQ 15 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x2C	0x06	CH -R BQ 15 A2	4 / 5.27	0x00000000	Right BQ coefficient
DRC BQS					
0x78	0x07	DRC low BQ 1 B0	4 / 5.27	0x08000000	DRC low BQ coefficient
0x7C	0x07	DRC low BQ 1 B1	4 / 5.27	0x00000000	DRC low BQ coefficient
0x08	0x07	DRC low BQ 1 B2	4 / 5.27	0x00000000	DRC low BQ coefficient
0x0C	0x07	DRC low BQ 1 A1	4 / 5.27	0x00000000	DRC low BQ coefficient
0x10	0x07	DRC low BQ 1 A2	4 / 5.27	0x00000000	DRC low BQ coefficient
0x28	0x07	DRC high BQ 1 B0	4 / 5.27	0x08000000	DRC high BQ coefficient

Table 10. DSP Memory Map for Process Flow 2 (continued)

0x2C	0x07	DRC high BQ 1 B1	4 / 5.27	0x00000000	DRC high BQ coefficient
0x30	0x07	DRC high BQ 1 B2	4 / 5.27	0x00000000	DRC high BQ coefficient
0x34	0x07	DRC high BQ 1 A1	4 / 5.27	0x00000000	DRC high BQ coefficient
0x38	0x08	DRC high BQ 1 A2	4 / 5.27	0x00000000	DRC high BQ coefficient
DPEQ SENSE BQ					
0x34	0x09	BQ 1 B0	4 / 5.27	0x08000000	DPEQ sense BQ coefficient
0x38	0x09	BQ 1 B1	4 / 5.27	0x00000000	DPEQ sense BQ coefficient
0x3C	0x09	BQ 1 B2	4 / 5.27	0x00000000	DPEQ sense BQ coefficient
0x40	0x09	BQ 1 A1	4 / 5.27	0x00000000	DPEQ sense BQ coefficient
0x44	0x09	BQ 1 A2	4 / 5.27	0x00000000	DPEQ sense BQ coefficient
0x48	0x09	BQ 2 B0	4 / 5.27	0x08000000	DPEQ sense BQ coefficient
0x4C	0x09	BQ 2 B1	4 / 5.27	0x00000000	DPEQ sense BQ coefficient
0x50	0x09	BQ 2 B2	4 / 5.27	0x00000000	DPEQ sense BQ coefficient
0x54	0x09	BQ 2 A1	4 / 5.27	0x00000000	DPEQ sense BQ coefficient
0x58	0x09	BQ 2 A2	4 / 5.27	0x00000000	DPEQ sense BQ coefficient
DPEQ LOW LEVEL PATH BQ					
0x5C	0x09	BQ 1 B0	4 / 5.27	0x08000000	DPEQ low BQ coefficient
0x60	0x09	BQ 1 B1	4 / 5.27	0x00000000	DPEQ low BQ coefficient
0x64	0x09	BQ 1 B2	4 / 5.27	0x00000000	DPEQ low BQ coefficient
0x68	0x09	BQ 1 A1	4 / 5.27	0x00000000	DPEQ low BQ coefficient
0x6C	0x09	BQ 1 A2	4 / 5.27	0x00000000	DPEQ low BQ coefficient
0x70	0x09	BQ 2 B0	4 / 5.27	0x08000000	DPEQ low BQ coefficient
0x74	0x09	BQ 2 B1	4 / 5.27	0x00000000	DPEQ low BQ coefficient
0x78	0x09	BQ 2 B2	4 / 5.27	0x00000000	DPEQ low BQ coefficient
0x7C	0x09	BQ 2 A1	4 / 5.27	0x00000000	DPEQ low BQ coefficient
0x08	0x0A	BQ 2 A2	4 / 5.27	0x00000000	DPEQ low BQ coefficient
DPEQ HIGH LEVEL PATH BQ					
0x0C	0x0A	BQ 1 B0	4 / 5.27	0x08000000	DPEQ high BQ coefficient
0x10	0x0A	BQ 1 B1	4 / 5.27	0x00000000	DPEQ high BQ coefficient
0x14	0x0A	BQ 1 B2	4 / 5.27	0x00000000	DPEQ high BQ coefficient

Table 10. DSP Memory Map for Process Flow 2 (continued)

0x18	0x0A	BQ 1 A1	4 / 5.27	0x00000000	DPEQ high BQ coefficient
0x1C	0x0A	BQ 1 A2	4 / 5.27	0x00000000	DPEQ high BQ coefficient
0x20	0x0A	BQ 2 B0	4 / 5.27	0x08000000	DPEQ high BQ coefficient
0x24	0x0A	BQ 2 B1	4 / 5.27	0x00000000	DPEQ high BQ coefficient
0x28	0x0A	BQ 2 B2	4 / 5.27	0x00000000	DPEQ high BQ coefficient
0x2C	0x0A	BQ 2 A1	4 / 5.27	0x00000000	DPEQ high BQ coefficient
0x30	0x0A	BQ 2 A2	4 / 5.27	0x00000000	DPEQ high BQ coefficient

A.3 DSP Memory Map for Process Flow 3

Table 11. DSP Memory Map for Process Flow 3

3 Band DRC & AGL(2.0 96k) Mode Memory Map — Book 0x78					
SUB ADDRESS	**PAGE**	**REGISTER NAME**	**NUMBER OF BYTES/ FORMAT**	**DEFAULT VALUE**	**DESCRIPTION**
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
3 Band DRC & AGL(2.0 96k) Mode Memory Map — Book 0x8C					
SUB ADDRESS	**PAGE**	**REGISTER NAME**	**NUMBER OF BYTES/ FORMAT**	**DEFAULT VALUE**	**DESCRIPTION**
ENABLE AGL					
0x28	0x01	AGL Enable	4 / 1.31	0x40000000	AGL Enable flag
VOLUME ALPHA FILTER					
0x2C	0x01	Softening Filter Alpha	4 / 1.31	0x00E2C46B	Volume Time constant
FS CLIPPER					
0x64	0x07	CH-LR THD Boost	4 / 9.23	0x00800000	THD LR Channel Prescale coefficient
0x6C	0x07	CH-L Fine Volume	4 / 2.30	0x3FFFFFFF	THD L Channel Postscale coefficient
0x70	0x07	CH-R Fine Volume	4 / 2.30	0x3FFFFFFF	THD R Channel Postscale coefficient
OUTPUT CROSS BAR					
0x64	0x0A	Digital Left from Left	4 / 9.23	0x00800000	I2S Left output gain from Left
0x68	0x0A	Digital Left from Right	4 / 9.23	0x00000000	I2S Left output gain from Right
0x6C	0x0A	Digital Right from Left	4 / 9.23	0x00000000	I2S Right output gain from Left
0x70	0x0A	Digital Right from Right	4 / 9.23	0x00800000	I2S Right output gain from Right
0x74	0x0A	Analog Left from Left	4 / 9.23	0x00800000	Analog Left output gain from Left
0x78	0x0A	Analog Left from Right	4 / 9.23	0x00000000	Analog Left output gain from Right

Table 11. DSP Memory Map for Process Flow 3 (continued)

0x7C	0x0A	Analog Right from Left	4 / 9.23	0x00000000	Analog Right output gain from Left
0x08	0x0B	Analog Right from Right	4 / 9.23	0x00800000	Analog Right output gain from Right
VOLUME CONTROL					
0x0C	0x0B	CH-L Volume	4 / 9.23	0x00800000	Left Channel Volume coefficient
0x10	0x0B	CH-R Volume	4 / 9.23	0x00800000	Right Channel Volume coefficient
INPUT MIXER					
0x14	0x0B	Left to Left	4 / 9.23	0x00800000	Left Channel Mixer Left Input Gain
0x18	0x0B	Right to Left	4 / 9.23	0x00000000	Left Channel Mixer Right Input Gain
0x1C	0x0B	Left to Right	4 / 9.23	0x00000000	Right Channel Mixer Left Input Gain
0x20	0x0B	Right to Right	4 / 9.23	0x00800000	Right Channel Mixer Right Input Gain
BYPASS DC BLOCK					
0x24	0x0B	Bypass DC block	4 / 32.0	0x00000000	DC Block flag
EQ CONTROL					
0x28	0x0B	Gang EQ	4 / 32.0	0x00000000	Gang EQ flag
0x2C	0x0B	Bypass EQ	4 / 32.0	0x00000000	Bypass EQ flag
LEVEL METER CONTROL					
0x30	0x0B	Softening Filter Alpha	4 / 1.31	0x00A7264A	Level Meter Energy Time constant
0x34	0x0B	Level Meter Input Mux	4 / 2.30	0x00000000	Level Meter Input Mux
AGL					
0x48	0x0B	Softening Filter Alpha	4 / 1.31	0x051EB852	AGL Energy Time constant
0x4C	0x0B	Attack Rate	4 / 1.31	0x000369D0	AGL Attack Time constant
0x54	0x0B	Softening Filter Omega	4 / 1.31	0x7AE147AE	AGL Omega Time constant
0x58	0x0B	Release Rate	4 / 1.31	0x00005762	AGL Release Time constant
DPEQ CONTROL					
0x5C	0x0E	Alpha	4 / 1.31	0x02DEAD00	DPEQ Sense Energy Time constant
0x60	0x0E	Gain	4 / 1.31	0x74013901	DPEQ Threshold Gain
0x64	0x0E	Offset	4 / 1.31	0x0020C49B	DPEQ Threshold Offset
AGL THRESHOLD					
0x2C	0x0F	Attack Threshold	4 / 1.31	0x40000000	Threshold linear
DRC					
0x14	0x10	DRC1 Energy	4 / 1.31	0x7FFFFFFF	DRC1 Energy Time constant
0x18	0x10	DRC1 Attack	4 / 1.31	0x7FFFFFFF	DRC1 Attack Time constant
0x1C	0x10	DRC1 Decay	4 / 1.31	0x7FFFFFFF	DRC1 Decay Time constant

Table 11. DSP Memory Map for Process Flow 3 (continued)

0x20	0x10	K0_1	4 / 9.23	0x00000000	DRC1 Region 1 Slope (comp/Exp)
0x24	0x10	K1_1	4 / 9.23	0x00000000	DRC1 Region 2 Slope (comp/Exp)
0x28	0x10	K2_1	4 / 9.23	0x00000000	DRC1 Region 3 Slope (comp/Exp)
0x2C	0x10	T1_1	4 / 9.23	0xE7000000	DRC1 Threshold 1
0x30	0x10	T2_1	4 / 9.23	0xFE800000	DRC1 Threshold 2
0x34	0x10	off1_1	4 / 9.23	0x00000000	DRC1 Offset 1
0x38	0x10	off2_1	4 / 9.23	0x00000000	DRC1 Offset 2
0x3C	0x10	DRC2 Energy	4 / 1.31	0x7FFFFFFF	DRC2 Energy Time constant
0x40	0x10	DRC2 Attack	4 / 1.31	0x7FFFFFFF	DRC2 Attack Time constant
0x44	0x10	DRC2 Decay	4 / 1.31	0x7FFFFFFF	DRC2 Decay Time constant
0x48	0x10	k0_2	4 / 9.23	0x00000000	DRC2 Region 1 Slope (comp/Exp)
0x4C	0x10	k1_2	4 / 9.23	0x00000000	DRC2 Region 2 Slope (comp/Exp)
0x50	0x10	k2_2	4 / 9.23	0x00000000	DRC2 Region 3 Slope (comp/Exp)
0x54	0x10	t1_2	4 / 9.23	0xE7000000	DRC2 Threshold 1
0x58	0x10	t2_2	4 / 9.23	0xFE800000	DRC2 Threshold 2
0x5C	0x10	off1_2	4 / 9.23	0x00000000	DRC2 Offset 1
0x60	0x10	off2_2	4 / 9.23	0x00000000	DRC2 Offset 2
0x64	0x10	DRC3 Energy	4 / 1.31	0x7FFFFFFF	DRC3 Energy Time constant
0x68	0x10	DRC3 Attack	4 / 1.31	0x7FFFFFFF	DRC3 Attack Time constant
0x6C	0x10	DRC3 Decay	4 / 1.31	0x7FFFFFFF	DRC3 Decay Time constant
0x70	0x10	k0_3	4 / 9.23	0x00000000	DRC3 Region 1 Slope (comp/Exp)
0x74	0x10	k1_3	4 / 9.23	0x00000000	DRC3 Region 2 Slope (comp/Exp)
0x78	0x10	k1_3	4 / 9.23	0x00000000	DRC3 Region 3 Slope (comp/Exp)
0x7C	0x10	t1_3	4 / 9.23	0xE7000000	DRC3 Threshold 1
0x08	0x11	t2_3	4 / 9.23	0xFE800000	DRC3 Threshold 2
0x0C	0x11	off1_3	4 / 9.23	0x00000000	DRC3 Offset 1
0x10	0x11	off2_3	4 / 9.23	0x00000000	DRC3 Offset 2
0x14	0x11	DRC 1 Mixer Gain	4 / 9.23	0x00800000	DRC 1 Mixer Gain coefficient
0x18	0x11	DRC 2 Mixer Gain	4 / 9.23	0x00000000	DRC 2 Mixer Gain coefficient
0x1C	0x11	DRC 3 Mixer Gain	4 / 9.23	0x00000000	DRC 3 Mixer Gain coefficient
3 Band DRC & AGL(2.0 96k) Mode Memory Map — Book 0xAA					
SUB ADDRESS	**PAGE**	**REGISTER NAME**	**NUMBER OF BYTES/ FORMAT**	**DEFAULT VALUE**	**DESCRIPTION**
EQ LEFT 15 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

Table 11. DSP Memory Map for Process Flow 3 (continued)

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
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

Table 11. DSP Memory Map for Process Flow 3 (continued)

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
0x30	0x03	CH -L BQ 13 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x34	0x03	CH -L BQ 13 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x38	0x03	CH -L BQ 13 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x3C	0x03	CH -L BQ 13 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x40	0x03	CH -L BQ 13 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x44	0x03	CH -L BQ 14 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x48	0x03	CH -L BQ 14 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x4C	0x03	CH -L BQ 14 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x50	0x03	CH -L BQ 14 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x54	0x03	CH -L BQ 14 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x58	0x03	CH -L BQ 15 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x5C	0x03	CH -L BQ 15 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x60	0x03	CH -L BQ 15 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x64	0x03	CH -L BQ 15 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x68	0x03	CH -L BQ 15 A2	4 / 5.27	0x00000000	Left BQ coefficient
EQ RIGHT 15 BQS					
0x6C	0x03	CH -R BQ 1 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x70	0x03	CH -R BQ 1 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x74	0x03	CH -R BQ 1 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x78	0x03	CH -R BQ 1 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x7C	0x03	CH -R BQ 1 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x08	0x04	CH -R BQ 2 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x0C	0x04	CH -R BQ 2 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x10	0x04	CH -R BQ 2 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x14	0x04	CH -R BQ 2 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x18	0x04	CH -R BQ 2 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x1C	0x04	CH -R BQ 3 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x20	0x04	CH -R BQ 3 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x24	0x04	CH -R BQ 3 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x28	0x04	CH -R BQ 3 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x2C	0x04	CH -R BQ 3 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x30	0x04	CH -R BQ 4 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x34	0x04	CH -R BQ 4 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x38	0x04	CH -R BQ 4 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x3C	0x04	CH -R BQ 4 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x40	0x04	CH -R BQ 4 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x44	0x04	CH -R BQ 5 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x48	0x04	CH -R BQ 5 B1	4 / 5.27	0x00000000	Right BQ coefficient

Table 11. DSP Memory Map for Process Flow 3 (continued)

0x4C	0x04	CH -R BQ 5 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x50	0x04	CH -R BQ 5 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x54	0x04	CH -R BQ 5 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x58	0x04	CH -R BQ 6 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x5C	0x04	CH -R BQ 6 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x60	0x04	CH -R BQ 6 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x64	0x04	CH -R BQ 6 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x68	0x04	CH -R BQ 6 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x6C	0x04	CH -R BQ 7 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x70	0x04	CH -R BQ 7 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x74	0x04	CH -R BQ 7 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x78	0x04	CH -R BQ 7 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x7C	0x04	CH -R BQ 7 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x08	0x05	CH -R BQ 8 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x0C	0x05	CH -R BQ 8 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x10	0x05	CH -R BQ 8 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x14	0x05	CH -R BQ 8 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x18	0x05	CH -R BQ 8 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x1C	0x05	CH -R BQ 9 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x20	0x05	CH -R BQ 9 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x24	0x05	CH -R BQ 9 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x28	0x05	CH -R BQ 9 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x2C	0x05	CH -R BQ 9 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x30	0x05	CH -R BQ 10 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x34	0x05	CH -R BQ 10 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x38	0x05	CH -R BQ 10 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x3C	0x05	CH -R BQ 10 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x40	0x05	CH -R BQ 10 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x44	0x05	CH -R BQ 11 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x48	0x05	CH -R BQ 11 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x4C	0x05	CH -R BQ 11 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x50	0x05	CH -R BQ 11 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x54	0x05	CH -R BQ 11 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x58	0x05	CH -R BQ 12 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x5C	0x05	CH -R BQ 12 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x60	0x05	CH -R BQ 12 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x64	0x05	CH -R BQ 12 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x68	0x05	CH -R BQ 12 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x6C	0x05	CH -R BQ 13 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x70	0x05	CH -R BQ 13 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x74	0x05	CH -R BQ 13 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x78	0x05	CH -R BQ 13 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x7C	0x05	CH -R BQ 13 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x08	0x06	CH -R BQ 14 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x0C	0x06	CH -R BQ 14 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x10	0x06	CH -R BQ 14 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x14	0x06	CH -R BQ 14 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x18	0x06	CH -R BQ 14 A2	4 / 5.27	0x00000000	Right BQ coefficient

Table 11. DSP Memory Map for Process Flow 3 (continued)

0x1C	0x06	CH -R BQ 15 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x20	0x06	CH -R BQ 15 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x24	0x06	CH -R BQ 15 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x28	0x06	CH -R BQ 15 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x2C	0x06	CH -R BQ 15 A2	4 / 5.27	0x00000000	Right BQ coefficient
DPEQ SENSE BQ					
0x68	0x0E	BQ 1 B0	4 / 5.27	0x08000000	DPEQ sense BQ coefficient
0x6C	0x0E	BQ 1 B1	4 / 5.27	0x00000000	DPEQ sense BQ coefficient
0x70	0x0E	BQ 1 B2	4 / 5.27	0x00000000	DPEQ sense BQ coefficient
0x74	0x0E	BQ 1 A1	4 / 5.27	0x00000000	DPEQ sense BQ coefficient
0x78	0x0E	BQ 1 A2	4 / 5.27	0x00000000	DPEQ sense BQ coefficient
DPEQ LOW LEVEL PATH BQ					
0x7C	0x0E	BQ 1 B0	4 / 5.27	0x08000000	DPEQ low BQ coefficient
0x08	0x0F	BQ 1 B1	4 / 5.27	0x00000000	DPEQ low BQ coefficient
0x0C	0x0F	BQ 1 B2	4 / 5.27	0x00000000	DPEQ low BQ coefficient
0x10	0x0F	BQ 1 A1	4 / 5.27	0x00000000	DPEQ low BQ coefficient
0x14	0x0F	BQ 1 A2	4 / 5.27	0x00000000	DPEQ low BQ coefficient
DPEQ HIGH LEVEL PATH BQ					
0x18	0x0F	BQ 1 B0	4 / 5.27	0x08000000	DPEQ high BQ coefficient
0x1C	0x0F	BQ 1 B1	4 / 5.27	0x00000000	DPEQ high BQ coefficient
0x20	0x0F	BQ 1 B2	4 / 5.27	0x00000000	DPEQ high BQ coefficient
0x24	0x0F	BQ 1 A1	4 / 5.27	0x00000000	DPEQ high BQ coefficient
0x28	0x0F	BQ 1 A2	4 / 5.27	0x00000000	DPEQ high BQ coefficient
DRC BQS					
0x3C	0x0F	DRC low BQ 1 B0	4 / 5.27	0x08000000	DRC low BQ coefficient
0x40	0x0F	DRC low BQ 1 B1	4 / 5.27	0x00000000	DRC low BQ coefficient
0x44	0x0F	DRC low BQ 1 B2	4 / 5.27	0x00000000	DRC low BQ coefficient
0x48	0x0F	DRC low BQ 1 A1	4 / 5.27	0x00000000	DRC low BQ coefficient
0x4C	0x0F	DRC low BQ 1 A2	4 / 5.27	0x00000000	DRC low BQ coefficient
0x50	0x0F	DRC high BQ 1 B0	4 / 5.27	0x08000000	DRC high BQ coefficient
0x54	0x0F	DRC high BQ 1 B1	4 / 5.27	0x00000000	DRC high BQ coefficient
0x58	0x0F	DRC high BQ 1 B2	4 / 5.27	0x00000000	DRC high BQ coefficient

Table 11. DSP Memory Map for Process Flow 3 (continued)

0x5C	0x0F	DRC high BQ 1 A1	4 / 5.27	0x00000000	DRC high BQ coefficient
0x60	0x0F	DRC high BQ 1 A2	4 / 5.27	0x00000000	DRC high BQ coefficient
0x64	0x0F	DRC mid BQ 1 B0	4 / 5.27	0x08000000	DRC mid BQ coefficient
0x68	0x0F	DRC mid BQ 1 B1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x6C	0x0F	DRC mid BQ 1 B2	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x70	0x0F	DRC mid BQ 1 A1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x74	0x0F	DRC mid BQ 1 A2	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x78	0x0F	DRC mid BQ 2 B0	4 / 5.27	0x08000000	DRC mid BQ coefficient
0x7C	0x0F	DRC mid BQ 2 B1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x08	0x10	DRC mid BQ 2 B2	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x0C	0x10	DRC mid BQ 2 A1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x10	0x10	DRC mid BQ 2 A2	4 / 5.27	0x00000000	DRC mid BQ coefficient

A.4 DSP Memory Map for Process Flow 4

Table 12. DSP Memory Map for Process Flow 4

SmartAmp (2.0 96k) Mode Memory Map — Book 0x78					
SUB ADDRESS	**PAGE**	**REGISTER NAME**	**NUMBER OF BYTES/FORMAT**	**DEFAULT VALUE**	**DESCRIPTION**
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
SmartAmp (2.0 96k) Mode Memory Map — Book 0x8C					
SUB ADDRESS	**PAGE**	**REGISTER NAME**	**NUMBER OF BYTES/FORMAT**	**DEFAULT VALUE**	**DESCRIPTION**
ENABLE AGL					
0x28	0x01	AGL Enable	4 / 1.31	0x40000000	AGL Enable flag
VOLUME ALPHA FILTER					
0x2C	0x01	Softening Filter Alpha	4 / 1.31	0x00E2C46B	Volume Time constant
FS CLIPPER					
0x64	0x07	CH-LR THD Boost	4 / 9.23	0x00800000	THD LR Channel Prescale coefficient
0x6C	0x07	CH-L Fine Volume	4 / 2.30	0x3FFFFFFF	THD L Channel Postscale coefficient
0x70	0x07	CH-R Fine Volume	4 / 2.30	0x3FFFFFFF	THD R Channel Postscale coefficient
OUTPUT CROSS BAR					
0x64	0x0A	Digital Left from Left	4 / 9.23	0x00800000	I2S Left output gain from Left

Table 12. DSP Memory Map for Process Flow 4 (continued)

0x68	0x0A	Digital Left from Right	4 / 9.23	0x00000000	I2S Left output gain from Right
0x6C	0x0A	Digital Right from Left	4 / 9.23	0x00000000	I2S Right output gain from Left
0x70	0x0A	Digital Right from Right	4 / 9.23	0x00800000	I2S Right output gain from Right
0x74	0x0A	Analog Left from Left	4 / 9.23	0x00800000	Analog Left output gain from Left
0x78	0x0A	Analog Left from Right	4 / 9.23	0x00000000	Analog Left output gain from Right
0x7C	0x0A	Analog Right from Left	4 / 9.23	0x00000000	Analog Right output gain from Left
0x08	0x0B	Analog Right from Right	4 / 9.23	0x00800000	Analog Right output gain from Right
VOLUME CONTROL					
0x0C	0x0B	CH-L Volume	4 / 9.23	0x00800000	Left Channel Volume coefficient
0x10	0x0B	CH-R Volume	4 / 9.23	0x00800000	Right Channel Volume coefficient
INPUT MIXER					
0x14	0x0B	Left to Left	4 / 9.23	0x00800000	Left Channel Mixer Left Input Gain
0x18	0x0B	Right to Left	4 / 9.23	0x00000000	Left Channel Mixer Right Input Gain
0x1C	0x0B	Left to Right	4 / 9.23	0x00000000	Right Channel Mixer Left Input Gain
0x20	0x0B	Right to Right	4 / 9.23	0x00800000	Right Channel Mixer Right Input Gain
BYPASS DC BLOCK					
0x24	0x0B	Bypass DC block	4 / 32.0	0x00000000	DC Block flag
EQ CONTROL					
0x28	0x0B	Gang EQ	4 / 32.0	0x00000000	Gang EQ flag
0x2C	0x0B	Bypass EQ	4 / 32.0	0x00000000	Bypass EQ flag
LEVEL METER CONTROL					
0x30	0x0B	Softening Filter Alpha	4 / 1.31	0x00A7264A	Level Meter Energy Time constant
THERMAL PROTECT					
0x5C	0x0E	Thermal	4 / -	0x0020C49C	Generated by GUI
0x60	0x0E	Thermal	4 / -	0x0020C49C	Generated by GUI
DPEQ CONTROL					
0x64	0x0E	Alpha	4 / 1.31	0x02DEAD00	DPEQ Sense Energy Time constant
0x68	0x0E	Gain	4 / 1.31	0x74013901	DPEQ Threshold Gain
0x6C	0x0E	Offset	4 / 1.31	0x0020C49B	DPEQ Threshold Offset
THERMAL PROTECT					
0x70	0x0E	Thermal	4 / -	0x0020C49C	Generated by GUI
0x74	0x0E	Thermal or AGL flag	4 / -	0x00000000	Generated by GUI
0x78	0x0E	Thermal Limit	4 / -	0x7FFFFFFF	Generated by GUI
MORPHING CONTROL					
0x7C	0x0E	Morphing Energy	4 / 1.31	0x7FFFFFFF	Morphing Energy Time constant

Table 12. DSP Memory Map for Process Flow 4 (continued)

0x08	0x0F	Morphing Attack	4 / 1.31	0x7FFFFFFF	Morphing Attack Time constant
0x0C	0x0F	Morphing Decay	4 / 1.31	0x7FFFFFFF	Morphing Decay Time constant
0x10	0x0F	Morphing K0_1	4 / 9.23	0x00000000	Morphing Region 1 Slope (comp/Exp)
0x14	0x0F	Morphing K1_1	4 / 9.23	0x00000000	Morphing Region 2 Slope (comp/Exp)
0x18	0x0F	Morphing K2_1	4 / 9.23	0x00000000	Morphing Region 3 Slope (comp/Exp)
0x1C	0x0F	Morphing T1_1	4 / 9.23	0xE7000000	Morphing Threshold 1
0x20	0x0F	Morphing T2_1	4 / 9.23	0xFE800000	Morphing Threshold 2
0x24	0x0F	Morphing off1_1	4 / 9.23	0x00000000	Morphing Offset 1
0x28	0x0F	Morphing off2_1	4 / 9.23	0x00000000	Morphing Offset 2
AGL THRESHOLD					
0x18	0x10	Attack Threshold	4 / 1.31	0x40000000	Threshold linear
EXCURSION					
0x1C	0x10	Excursion	4 / -	0x024D9999	Generated by GUI
0x20	0x10	Excursion	4 / -	0xFDB26667	Generated by GUI
0x24	0x10	Excursion	4 / -	0x00800000	Generated by GUI
0x28	0x10	Excursion	4 / -	0x062488E5	Generated by GUI
0x2C	0x10	Excursion	4 / -	0xFC1F497A	Generated by GUI
0x30	0x10	Excursion	4 / -	0x02E18722	Generated by GUI
0x34	0x10	Excursion	4 / -	0x7A0570FF	Generated by GUI
0x38	0x10	Excursion	4 / -	0x89A41D50	Generated by GUI
0x3C	0x10	Excursion	4 / -	0x7FFFFFFF	Generated by GUI
0x40	0x10	Excursion	4 / -	0x00000000	Generated by GUI
0x44	0x10	Excursion	4 / -	0x00000000	Generated by GUI
0x48	0x10	Excursion	4 / -	0x00000000	Generated by GUI
0x4C	0x10	Excursion	4 / -	0x00000000	Generated by GUI
0x50	0x10	Excursion	4 / -	0x7FFFFFFF	Generated by GUI
0x54	0x10	Excursion	4 / -	0x00000000	Generated by GUI
0x58	0x10	Excursion	4 / -	0x765BE2B0	Generated by GUI
0x5C	0x10	Excursion	4 / -	0x50CDD9C9	Generated by GUI
0x60	0x10	Excursion	4 / -	0xC3F79E7C	Generated by GUI
0x64	0x10	Excursion	4 / -	0x7FFFFFFF	Generated by GUI
0x68	0x10	Excursion	4 / -	0x00000000	Generated by GUI
0x6C	0x10	Excursion	4 / -	0x00000000	Generated by GUI
0x70	0x10	Excursion	4 / -	0x00000000	Generated by GUI
0x74	0x10	Excursion	4 / -	0x00000000	Generated by GUI
0x78	0x10	Excursion	4 / -	0x05C7955C	Generated by GUI
0x7C	0x10	Excursion	4 / -	0x05C7955C	Generated by GUI
0x08	0x11	Excursion	4 / -	0x05C7955C	Generated by GUI
0x0C	0x11	Excursion	4 / -	0x6CC6628E	Generated by GUI
0x10	0x11	Excursion	4 / -	0xA162B94B	Generated by GUI
0x14	0x11	Excursion	4 / -	0x05C7955C	Generated by GUI
0x18	0x11	Excursion	4 / -	0x05C7955C	Generated by GUI
0x1C	0x11	Excursion	4 / -	0x05C7955C	Generated by GUI

Table 12. DSP Memory Map for Process Flow 4 (continued)

0x20	0x11	Excursion	4 / -	0x6CC6628E	Generated by GUI
0x24	0x11	Excursion	4 / -	0xA162B94B	Generated by GUI
0x28	0x11	Excursion	4 / -	0x6E0A82F4	Generated by GUI
0x2C	0x11	Excursion	4 / -	0x91F57D0C	Generated by GUI
0x30	0x11	Excursion	4 / -	0x6E0A82F4	Generated by GUI
0x34	0x11	Excursion	4 / -	0x6CC6628E	Generated by GUI
0x38	0x11	Excursion	4 / -	0xA162B94B	Generated by GUI
0x3C	0x11	Excursion	4 / -	0x6E0A82F4	Generated by GUI
0x40	0x11	Excursion	4 / -	0x91F57D0C	Generated by GUI
0x44	0x11	Excursion	4 / -	0x6E0A82F4	Generated by GUI
0x48	0x11	Excursion	4 / -	0x6CC6628E	Generated by GUI
0x4C	0x11	Excursion	4 / -	0xA162B94B	Generated by GUI
SmartAmp (2.0 96k) Mode Memory Map — Book 0xAA					
SUB ADDRESS	**PAGE**	**REGISTER NAME**	**NUMBER OF BYTES/FORMAT**	**DEFAULT VALUE**	**DESCRIPTION**
EQ LEFT 15 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
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

Table 12. DSP Memory Map for Process Flow 4 (continued)

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
0x30	0x03	CH -L BQ 13 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x34	0x03	CH -L BQ 13 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x38	0x03	CH -L BQ 13 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x3C	0x03	CH -L BQ 13 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x40	0x03	CH -L BQ 13 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x44	0x03	CH -L BQ 14 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x48	0x03	CH -L BQ 14 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x4C	0x03	CH -L BQ 14 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x50	0x03	CH -L BQ 14 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x54	0x03	CH -L BQ 14 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x58	0x03	CH -L BQ 15 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x5C	0x03	CH -L BQ 15 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x60	0x03	CH -L BQ 15 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x64	0x03	CH -L BQ 15 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x68	0x03	CH -L BQ 15 A2	4 / 5.27	0x00000000	Left BQ coefficient
EQ RIGHT 15 BQS					
0x6C	0x03	CH -R BQ 1 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x70	0x03	CH -R BQ 1 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x74	0x03	CH -R BQ 1 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x78	0x03	CH -R BQ 1 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x7C	0x03	CH -R BQ 1 A2	4 / 5.27	0x00000000	Right BQ coefficient

Table 12. DSP Memory Map for Process Flow 4 (continued)

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

Table 12. DSP Memory Map for Process Flow 4 (continued)

0x50	0x05	CH -R BQ 11 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x54	0x05	CH -R BQ 11 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x58	0x05	CH -R BQ 12 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x5C	0x05	CH -R BQ 12 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x60	0x05	CH -R BQ 12 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x64	0x05	CH -R BQ 12 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x68	0x05	CH -R BQ 12 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x6C	0x05	CH -R BQ 13 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x70	0x05	CH -R BQ 13 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x74	0x05	CH -R BQ 13 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x78	0x05	CH -R BQ 13 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x7C	0x05	CH -R BQ 13 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x08	0x06	CH -R BQ 14 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x0C	0x06	CH -R BQ 14 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x10	0x06	CH -R BQ 14 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x14	0x06	CH -R BQ 14 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x18	0x06	CH -R BQ 14 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x1C	0x06	CH -R BQ 15 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x20	0x06	CH -R BQ 15 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x24	0x06	CH -R BQ 15 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x28	0x06	CH -R BQ 15 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x2C	0x06	CH -R BQ 15 A2	4 / 5.27	0x00000000	Right BQ coefficient
DPEQ SENSE BQ					
0x2C	0x0F	BQ 1 B0	4 / 5.27	0x08000000	DPEQ sense BQ coefficient
0x30	0x0F	BQ 1 B1	4 / 5.27	0x00000000	DPEQ sense BQ coefficient
0x34	0x0F	BQ 1 B2	4 / 5.27	0x00000000	DPEQ sense BQ coefficient
0x38	0x0F	BQ 1 A1	4 / 5.27	0x00000000	DPEQ sense BQ coefficient
0x3C	0x0F	BQ 1 A2	4 / 5.27	0x00000000	DPEQ sense BQ coefficient
DPEQ LOW LEVEL PATH BQ					
0x40	0x0F	BQ 1 B0	4 / 5.27	0x08000000	DPEQ low BQ coefficient
0x44	0x0F	BQ 1 B1	4 / 5.27	0x00000000	DPEQ low BQ coefficient
0x48	0x0F	BQ 1 B2	4 / 5.27	0x00000000	DPEQ low BQ coefficient
0x4C	0x0F	BQ 1 A1	4 / 5.27	0x00000000	DPEQ low BQ coefficient
0x50	0x0F	BQ 1 A2	4 / 5.27	0x00000000	DPEQ low BQ coefficient
DPEQ HIGH LEVEL PATH BQ					
0x54	0x0F	BQ 1 B0	4 / 5.27	0x08000000	DPEQ high BQ coefficient
0x58	0x0F	BQ 1 B1	4 / 5.27	0x00000000	DPEQ high BQ coefficient
0x5C	0x0F	BQ 1 B2	4 / 5.27	0x00000000	DPEQ high BQ coefficient
0x60	0x0F	BQ 1 A1	4 / 5.27	0x00000000	DPEQ high BQ coefficient

Table 12. DSP Memory Map for Process Flow 4 (continued)

0x64	0x0F	BQ 1 A2	4 / 5.27	0x00000000	DPEQ high BQ coefficient
MORPHING BQS					
0x68	0x0F	CH-L BQ 1 B0	4 / 5.27	0x7FFFFFFF	Left Channel Morphing BQ coefficient
0x6C	0x0F	CH-L BQ 1 B1	4 / 5.27	0x00000000	Left Channel Morphing BQ coefficient
0x70	0x0F	CH-L BQ 1 B2	4 / 5.27	0x00000000	Left Channel Morphing BQ coefficient
0x74	0x0F	CH-L BQ 1 A1	4 / 5.27	0x00000000	Left Channel Morphing BQ coefficient
0x78	0x0F	CH-L BQ 1 A2	4 / 5.27	0x00000000	Left Channel Morphing BQ coefficient
0x7C	0x0F	CH-L BQ 2 B0	4 / 5.27	0x7FFFFFFF	Left Channel Morphing BQ coefficient
0x08	0x10	CH-L BQ 2 B1	4 / 5.27	0x00000000	Left Channel Morphing BQ coefficient
0x0C	0x10	CH-L BQ 2 B2	4 / 5.27	0x00000000	Left Channel Morphing BQ coefficient
0x10	0x10	CH-L BQ 2 A1	4 / 5.27	0x00000000	Left Channel Morphing BQ coefficient
0x14	0x10	CH-L BQ 2 A2	4 / 5.27	0x00000000	Left Channel Morphing BQ coefficient

A.5 DSP Memory Map for Process Flow 6

Table 13. DSP Memory Map for Process Flow 6

FIR(2.0 48k) Mode Memory Map — Book 0x78					
SUB ADDRESS	**PAGE**	**REGISTER NAME**	**NUMBER OF BYTES/FORMAT**	**DEFAULT VALUE**	**DESCRIPTION**
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
FIR(2.0 48k) Mode Memory Map — Book 0x8C					
SUB ADDRESS	**PAGE**	**REGISTER NAME**	**NUMBER OF BYTES/FORMAT**	**DEFAULT VALUE**	**DESCRIPTION**
FS CLIPPER					
0x64	0x07	CH-LR THD Boost	4 / 9.23	0x00800000	THD LR Channel Prescale coefficient
0x6C	0x07	CH-L Fine Volume	4 / 2.30	0x3FFFFFFF	THD L Channel Postscale coefficient
0x70	0x07	CH-R Fine Volume	4 / 2.30	0x3FFFFFFF	THD R Channel Postscale coefficient
OUTPUT CROSS BAR					

Table 13. DSP Memory Map for Process Flow 6 (continued)

0x64	0x0A	Digital Left from Left	4 / 9.23	0x00800000	I2S Left output gain from Left
0x68	0x0A	Digital Left from Right	4 / 9.23	0x00000000	I2S Left output gain from Right
0x6C	0x0A	Digital Right from Left	4 / 9.23	0x00000000	I2S Right output gain from Left
0x70	0x0A	Digital Right from Right	4 / 9.23	0x00800000	I2S Right output gain from Right
0x74	0x0A	Analog Left from Left	4 / 9.23	0x00800000	Analog Left output gain from Left
0x78	0x0A	Analog Left from Right	4 / 9.23	0x00000000	Analog Left output gain from Right
0x7C	0x0A	Analog Right from Left	4 / 9.23	0x00000000	Analog Right output gain from Left
0x08	0x0B	Analog Right from Right	4 / 9.23	0x00800000	Analog Right output gain from Right
INPUT MIXER					
0x14	0x0B	Left to Left	4 / 9.23	0x00800000	Left Channel Mixer Left Input Gain
0x18	0x0B	Right to Left	4 / 9.23	0x00000000	Left Channel Mixer Right Input Gain
0x1C	0x0B	Left to Right	4 / 9.23	0x00000000	Right Channel Mixer Left Input Gain
0x20	0x0B	Right to Right	4 / 9.23	0x00800000	Right Channel Mixer Right Input Gain
BYPASS DCBLOCK					
0x24	0x0B	Bypass DC block	4 / 32.0	0x00000000	DC Block flag
EQ CONTROL					
0x28	0x0B	Gang EQ	4 / 32.0	0x00000000	Gang EQ flag
0x2C	0x0B	Bypass EQ	4 / 32.0	0x00000000	Bypass EQ flag
LEVEL METER CONTROL					
0x30	0x0B	Softening Filter Alpha	4 / 1.31	0x00A7264A	Level Meter Energy Time constant
0x34	0x0B	Level Meter Input Mux	4 / 2.30	0x00000000	Level Meter Input Mux
AGL					
0x48	0x0B	Softening Filter Alpha	4 / 1.31	0x051EB852	AGL Energy Time constant
0x4C	0x0B	Attack Rate	4 / 1.31	0x000369D0	AGL Attack Time constant
0x54	0x0B	Softening Filter Omega	4 / 1.31	0x7AE147AE	AGL Omega Time constant
0x58	0x0B	Release Rate	4 / 1.31	0x00005762	AGL Release Time constant
PVDD/TEMP AGL					
0x60	0x0B	PVDD Threshold	4 / 1.31	0x07CD549C	Threshold linear
0x64	0x0B	Temp scale	4 / 9.23	0x00800000	Temp scale linear
0x6C	0x0B	Volt scale	4 / 9.23	0x010D489D	Volt scale linear
0x70	0x0B	Volt/Temp scale	4 / 9.23	0x00080000	Volt/Temp scale linear
0x5C	0x0D	Softening Filter Alpha	4 / 1.31	0x20000000	PVDD Energy Time constant
0x60	0x0D	Softening Filter Alpha	4 / 1.31	0x20000000	Temp Energy Time constant
DRC					

Table 13. DSP Memory Map for Process Flow 6 (continued)

0x64	0x0D	DRC1 Energy	4 / 1.31	0x7FFFFFFF	DRC1 Energy Time constant
0x68	0x0D	DRC1 Attack	4 / 1.31	0x7FFFFFFF	DRC1 Attack Time constant
0x6C	0x0D	DRC1 Decay	4 / 1.31	0x7FFFFFFF	DRC1 Decay Time constant
0x70	0x0D	K0_1	4 / 9.23	0x00000000	DRC1 Region 1 Slope (comp/Exp)
0x74	0x0D	K1_1	4 / 9.23	0x00000000	DRC1 Region 2 Slope (comp/Exp)
0x78	0x0D	K2_1	4 / 9.23	0x00000000	DRC1 Region 3 Slope (comp/Exp)
0x7C	0x0D	T1_1	4 / 9.23	0xE7000000	DRC1 Threshold 1
0x08	0x0E	T2_1	4 / 9.23	0xFE800000	DRC1 Threshold 2
0x0C	0x0E	off1_1	4 / 9.23	0x00000000	DRC1 Offset 1
0x10	0x0E	off2_1	4 / 9.23	0x00000000	DRC1 Offset 2
0x14	0x0E	DRC2 Energy	4 / 1.31	0x7FFFFFFF	DRC2 Energy Time constant
0x18	0x0E	DRC2 Attack	4 / 1.31	0x7FFFFFFF	DRC2 Attack Time constant
0x1C	0x0E	DRC2 Decay	4 / 1.31	0x7FFFFFFF	DRC2 Decay Time constant
0x20	0x0E	k0_2	4 / 9.23	0x00000000	DRC2 Region 1 Slope (comp/Exp)
0x24	0x0E	k1_2	4 / 9.23	0x00000000	DRC2 Region 2 Slope (comp/Exp)
0x28	0x0E	k2_2	4 / 9.23	0x00000000	DRC2 Region 3 Slope (comp/Exp)
0x2C	0x0E	t1_2	4 / 9.23	0xE7000000	DRC2 Threshold 1
0x30	0x0E	t2_2	4 / 9.23	0xFE800000	DRC2 Threshold 2
0x34	0x0E	off1_2	4 / 9.23	0x00000000	DRC2 Offset 1
0x38	0x0E	off2_2	4 / 9.23	0x00000000	DRC2 Offset 2
0x3C	0x0E	DRC3 Energy	4 / 1.31	0x7FFFFFFF	DRC3 Energy Time
0x40	0x0E	DRC3 Attack	4 / 1.31	0x7FFFFFFF	DRC3 Attack Time constant
0x44	0x0E	DRC3 Decay	4 / 1.31	0x7FFFFFFF	DRC3 Decay Time constant
0x48	0x0E	k0_3	4 / 9.23	0x00000000	DRC3 Region 1 Slope (comp/Exp)
0x4C	0x0E	k1_3	4 / 9.23	0x00000000	DRC3 Region 2 Slope (comp/Exp)
0x50	0x0E	k1_3	4 / 9.23	0x00000000	DRC3 Region 3 Slope (comp/Exp)
0x54	0x0E	t1_3	4 / 9.23	0xE7000000	DRC3 Threshold 1
0x58	0x0E	t2_3	4 / 9.23	0xFE800000	DRC3 Threshold 2
0x5C	0x0E	off1_3	4 / 9.23	0x00000000	DRC3 Offset 1
0x60	0x0E	off2_3	4 / 9.23	0x00000000	DRC3 Offset 2
0x64	0x0E	DRC 1 Mixer Gain	4 / 9.23	0x00800000	DRC 1 Mixer Gain coefficient
0x68	0x0E	DRC 2 Mixer Gain	4 / 9.23	0x00000000	DRC 2 Mixer Gain coefficient
0x6C	0x0E	DRC 3 Mixer Gain	4 / 9.23	0x00000000	DRC 3 Mixer Gain coefficient
FIR					

Table 13. DSP Memory Map for Process Flow 6 (continued)

0x70	0x0E	128 Taps FIR Start Address	4 / 2.30	0x40000000	128 taps FIR coefficient
0x18	0x13	Delay Left	4 / 32.0	0x00000000	Left Channel Phase Optimizer
0x1C	0x13	Delay Right	4 / 32.0	0x00000000	Right Channel Phase Optimizer
VOLUME CONTROL					
0x20	0x13	CH-L Volume	4 / 9.23	0x00800000	Left Channel Volume coefficient
0x24	0x13	CH-R Volume	4 / 9.23	0x00800000	Right Channel Volume coefficient
0x28	0x13	Softening Filter Alpha	4 / 1.31	0x00E2C46B	Volume Time constant
FIR(2.0 48k) Mode Memory Map — Book 0xAA					
SUB ADDRESS	**PAGE**	**REGISTER NAME**	**NUMBER OF BYTES/FORMAT**	**DEFAULT VALUE**	**DESCRIPTION**
EQ LEFT 15 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
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

Table 13. DSP Memory Map for Process Flow 6 (continued)

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
0x30	0x03	CH -L BQ 13 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x34	0x03	CH -L BQ 13 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x38	0x03	CH -L BQ 13 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x3C	0x03	CH -L BQ 13 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x40	0x03	CH -L BQ 13 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x44	0x03	CH -L BQ 14 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x48	0x03	CH -L BQ 14 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x4C	0x03	CH -L BQ 14 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x50	0x03	CH -L BQ 14 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x54	0x03	CH -L BQ 14 A2	4 / 5.27	0x00000000	Left BQ coefficient
0x58	0x03	CH -L BQ 15 B0	4 / 5.27	0x08000000	Left BQ coefficient
0x5C	0x03	CH -L BQ 15 B1	4 / 5.27	0x00000000	Left BQ coefficient
0x60	0x03	CH -L BQ 15 B2	4 / 5.27	0x00000000	Left BQ coefficient
0x64	0x03	CH -L BQ 15 A1	4 / 5.27	0x00000000	Left BQ coefficient
0x68	0x03	CH -L BQ 15 A2	4 / 5.27	0x00000000	Left BQ coefficient
EQ RIGHT 15 BQS					
0x6C	0x03	CH -R BQ 1 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x70	0x03	CH -R BQ 1 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x74	0x03	CH -R BQ 1 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x78	0x03	CH -R BQ 1 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x7C	0x03	CH -R BQ 1 A2	4 / 5.27	0x00000000	Right BQ coefficient

Table 13. DSP Memory Map for Process Flow 6 (continued)

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

Table 13. DSP Memory Map for Process Flow 6 (continued)

0x50	0x05	CH -R BQ 11 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x54	0x05	CH -R BQ 11 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x58	0x05	CH -R BQ 12 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x5C	0x05	CH -R BQ 12 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x60	0x05	CH -R BQ 12 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x64	0x05	CH -R BQ 12 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x68	0x05	CH -R BQ 12 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x6C	0x05	CH -R BQ 13 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x70	0x05	CH -R BQ 13 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x74	0x05	CH -R BQ 13 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x78	0x05	CH -R BQ 13 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x7C	0x05	CH -R BQ 13 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x08	0x06	CH -R BQ 14 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x0C	0x06	CH -R BQ 14 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x10	0x06	CH -R BQ 14 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x14	0x06	CH -R BQ 14 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x18	0x06	CH -R BQ 14 A2	4 / 5.27	0x00000000	Right BQ coefficient
0x1C	0x06	CH -R BQ 15 B0	4 / 5.27	0x08000000	Right BQ coefficient
0x20	0x06	CH -R BQ 15 B1	4 / 5.27	0x00000000	Right BQ coefficient
0x24	0x06	CH -R BQ 15 B2	4 / 5.27	0x00000000	Right BQ coefficient
0x28	0x06	CH -R BQ 15 A1	4 / 5.27	0x00000000	Right BQ coefficient
0x2C	0x06	CH -R BQ 15 A2	4 / 5.27	0x00000000	Right BQ coefficient
DRC BQS					
0x34	0x0C	DRC low BQ 1 B0	4 / 5.27	0x08000000	DRC low BQ coefficient
0x38	0x0C	DRC low BQ 1 B1	4 / 5.27	0x00000000	DRC low BQ coefficient
0x3C	0x0C	DRC low BQ 1 B2	4 / 5.27	0x00000000	DRC low BQ coefficient
0x40	0x0C	DRC low BQ 1 A1	4 / 5.27	0x00000000	DRC low BQ coefficient
0x44	0x0C	DRC low BQ 1 A2	4 / 5.27	0x00000000	DRC low BQ coefficient
0x48	0x0C	DRC low BQ 2 B0	4 / 5.27	0x08000000	DRC low BQ coefficient
0x4C	0x0C	DRC low BQ 2 B1	4 / 5.27	0x00000000	DRC low BQ coefficient
0x50	0x0C	DRC low BQ 2 B2	4 / 5.27	0x00000000	DRC low BQ coefficient
0x54	0x0C	DRC low BQ 2 A1	4 / 5.27	0x00000000	DRC low BQ coefficient
0x58	0x0C	DRC low BQ 2 A2	4 / 5.27	0x00000000	DRC low BQ coefficient
0x5C	0x0C	DRC high BQ 1 B0	4 / 5.27	0x08000000	DRC high BQ coefficient
0x60	0x0C	DRC high BQ 1 B1	4 / 5.27	0x00000000	DRC high BQ coefficient
0x64	0x0C	DRC high BQ 1 B2	4 / 5.27	0x00000000	DRC high BQ coefficient
0x68	0x0C	DRC high BQ 1 A1	4 / 5.27	0x00000000	DRC high BQ coefficient
0x6C	0x0C	DRC high BQ 1 A2	4 / 5.27	0x00000000	DRC high BQ coefficient

Table 13. DSP Memory Map for Process Flow 6 (continued)

0x70	0x0C	DRC high BQ 2 B0	4 / 5.27	0x08000000	DRC high BQ coefficient
0x74	0x0C	DRC high BQ 2 B1	4 / 5.27	0x00000000	DRC high BQ coefficient
0x78	0x0C	DRC high BQ 2 B2	4 / 5.27	0x00000000	DRC high BQ coefficient
0x7C	0x0C	DRC high BQ 2 A1	4 / 5.27	0x00000000	DRC high BQ coefficient
0x08	0x0D	DRC high BQ 2 A2	4 / 5.27	0x00000000	DRC high BQ coefficient
0x0C	0x0D	DRC mid BQ 1 B0	4 / 5.27	0x08000000	DRC mid BQ coefficient
0x10	0x0D	DRC mid BQ 1 B1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x14	0x0D	DRC mid BQ 1 B2	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x18	0x0D	DRC mid BQ 1 A1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x1C	0x0D	DRC mid BQ 1 A2	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x20	0x0D	DRC mid BQ 2 B0	4 / 5.27	0x08000000	DRC mid BQ coefficient
0x24	0x0D	DRC mid BQ 2 B1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x28	0x0D	DRC mid BQ 2 B2	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x2C	0x0D	DRC mid BQ 2 A1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x30	0x0D	DRC mid BQ 2 A2	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x34	0x0D	DRC mid BQ 3 B0	4 / 5.27	0x08000000	DRC mid BQ coefficient
0x38	0x0D	DRC mid BQ 3 B1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x3C	0x0D	DRC mid BQ 3 B2	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x40	0x0D	DRC mid BQ 3 A1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x44	0x0D	DRC mid BQ 3 A2	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x48	0x0D	DRC mid BQ 4 B0	4 / 5.27	0x08000000	DRC mid BQ coefficient
0x4C	0x0D	DRC mid BQ 4 B1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x50	0x0D	DRC mid BQ 4 B2	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x54	0x0D	DRC mid BQ 4 A1	4 / 5.27	0x00000000	DRC mid BQ coefficient
0x58	0x0D	DRC mid BQ 4 A2	4 / 5.27	0x00000000	DRC mid BQ coefficient

A.6 DSP Memory Map for Process Flow 8

Table 14. DSP Memory Map for Process Flow 8

Housekeeping(2.0) Mode Memory Map — Book 0x78					
SUB ADDRESS	**PAGE**	**REGISTER NAME**	**NUMBER OF BYTES/ FORMAT**	**DEFAULT VALUE**	**DESCRIPTION**
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

Housekeeping(2.0) Mode Memory Map — Book 0x8C					
SUB ADDRESS	**PAGE**	**REGISTER NAME**	**NUMBER OF BYTES/ FORMAT**	**DEFAULT VALUE**	**DESCRIPTION**
ENABLE AGL					
0x28	0x01	AGL Enable	4 / 1.31	0x40000000	AGL Enable flag
OUTPUT CROSS BAR					
0x64	0x0A	Digital Left from Left	4 / 9.23	0x00800000	I2S Left output gain from Left
0x68	0x0A	Digital Left from Right	4 / 9.23	0x00000000	I2S Left output gain from Right
0x6C	0x0A	Digital Right from Left	4 / 9.23	0x00000000	I2S Right output gain from Left
0x70	0x0A	Digital Right from Right	4 / 9.23	0x00800000	I2S Right output gain from Right
0x74	0x0A	Analog Left from Left	4 / 9.23	0x00800000	Analog Left output gain from Left
0x78	0x0A	Analog Left from Right	4 / 9.23	0x00000000	Analog Left output gain from Right
0x7C	0x0A	Analog Right from Left	4 / 9.23	0x00000000	Analog Right output gain from Left
0x08	0x0B	Analog Right from Right	4 / 9.23	0x00800000	Analog Right output gain from Right
LEVEL METER CONTROL					
0x30	0x0B	Softening Filter Alpha	4 / 1.31	0x00A7264A	Level Meter Energy Time constant
0x34	0x0B	Level Meter Input Mux	4 / 2.30	0x00000000	Level Meter Input Mux
PVDD ALPHA					
0x38	0x0B	Softening Filter Alpha	4 / 1.31	0x20000000	PVDD Energy Time constant
TEMP ALPHA					
0x3C	0x0B	Softening Filter Alpha	4 / 1.31	0x20000000	Temp Energy Time constant
AGL					
0x48	0x0B	Softening Filter Alpha	4 / 1.31	0x051EB852	AGL Energy Time constant
0x4C	0x0B	Attack Rate	4 / 1.31	0x000369D0	AGL Attack Time constant
0x54	0x0B	Softening Filter Omega	4 / 1.31	0x7AE147AE	AGL Omega Time constant
0x58	0x0B	Release Rate	4 / 1.31	0x00005762	AGL Release Time constant
PVDD/TEMP AGL					
0x60	0x0B	PVDD Threshold	4 / 1.31	0x07CD549C	Threshold linear
0x64	0x0B	Temp scale	4 / 9.23	0x00800000	Temp scale linear
0x6C	0x0B	Volt scale	4 / 9.23	0x010D489D	Volt scale linear

Table 14. DSP Memory Map for Process Flow 8 (continued)

0x70	0x0B	Volt/Temp scale	4 / 9.23	0x00080000	Volt/Temp scale linear