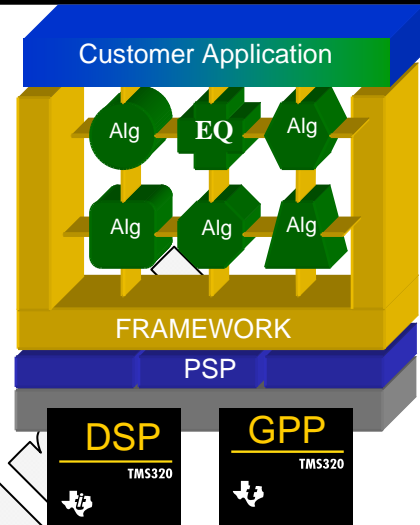




- EQ for TI c55x DSP family
- eXpressDSP™ compliant



## description

- Supports N bands of Equalization
- Gain adjustable from  $-15\text{dB}$  to  $+15\text{dB}$  in 1 dB steps
- Distortion free flat spectrum at 0 dB gain
- No unpleasant audible artifacts during gain changes
- 16-bit mono PCM input and output audio data
- Center frequencies and bandwidths are configurable off – line
- Implemented by 2<sup>nd</sup> order IIR sections in cascade.
- Fully validated on TMS320C55xx EVM using CCS version 2.2 with the code generation tools version 2.56

PRODUCT PREVIEW



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REL\_TII\_EQ\_02\_30\_00\_000



## Summary of performance

Table 1. Configuration Table

CONFIGURATION	ID
N=5 (dB Gain: 6,6,6,6,6)	EQ_001

Table 2. Cycles Information – Profiled on TMS320C55xx EVM with CCS 2.2/ cgtools 2.56

CONFIGURATION ID	TEST FILE PARAMETERS	PERFORMANCE STATISTICS (IN MEGACYCLES /SEC) <sup>1</sup>	
		AVERAGE	PEAK
EQ_001	Oops_44khz.pcm	7.637	7.849

Table 3. Memory Statistics - Generated with Code Generation Tools Version 2.56

CONFIGURATION	MEMORY STATISTICS <sup>2</sup>				
	PROGRAM MEMORY	DATA MEMORY			TOTAL
		INTERNAL	EXTERNAL	STACK	
EQ_001	1.15	.344	0	0.58	2.074

<sup>2</sup> All memory requirements are expressed in kilobytes (1 kilobyte = 1024 8-bit bytes).

Table 4. Internal Data Memory Split-up

CONFIGURATION	DATA MEMORY – INTERNAL <sup>2</sup>		
	SHARED		INSTANCE <sup>3</sup>
	CONSTANTS	SCRATCH	
EQ_001	.219	0	0.125

<sup>2</sup> All memory requirements are expressed in kilobytes (1 kilobyte = 1024 8-bit bytes)

<sup>3</sup> Does not include I/O buffers

**notes**

- I/O Buffers - Input Buffer Size = 128 bytes, Output Buffer Size = 128 bytes.
- Total Data Memory for N *Non-Pre-Emptive* Instances =  
Constants + Runtime Tables + Scratch + N\*(Instance + I/O buffers + Stack)
- Total Data Memory for N *Pre-Emptive* Instances =  
Constants + Runtime Tables + N\*(Instance + I/O buffers + Stack + Scratch)  
Stack includes stack and sysstack

**references**

Texas Instruments "EQ user manual" Version 1.4

**glossary**

Constants	Elements that go into .const memory section
Scratch	Memory space that can be reused across different instances of the algorithm
Shared	Sum of Constants and Scratch
Instance	Persistent-memory that contains persistent information - allocated for each instance of the algorithm.

**acronyms**

EQ	Equalizer
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## REVISION HISTORY

**Scope:** Applicable updates to the Equalizer on TMS320C55xx EVM have been incorporated.

DATE	VERSION	ADDITIONS/CHANGES/DELETIONS
23 <sup>rd</sup> DEC 03	1.0	Data sheet modified according to new template.
29 <sup>th</sup> JAN 04	1.1	Data sheet modified according to new template.

NDA Required

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