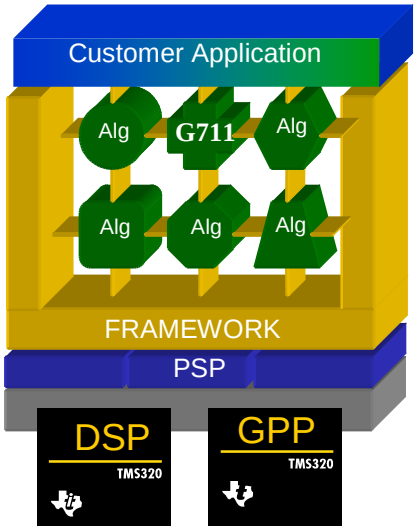
- **Compliant with the eXpressDSP Digital Media (XDM) interface**
- **A-law and U-law compression (encoding) and decompression (decoding) supported**
- **Operates on sets of 8 samples**
- **Little endian and Big endian mode of operation supported.**
- **Validated on TMS320C6455 DSK with Code Composer Studio version 4.2 and code generation tools version 7.2.0A10197**
- **Supports both ELF and COFF format's**



Description

G.711 is one of the earliest speech coders that convert 16-bit linear PCM samples to 8-bit compressed A-law or U-law samples to give a 64Kbps data rate in the encoder. Decoder expands 64Kbps bit stream into linear PCM samples of 16-bits each at 8 KHz

Summary of performance

Table 1. Configuration Table

CONFIGURATION	ID
Encoder(Little Endian) – 10ms	G711_001
Decoder(Little Endian) – 10ms	G711_002
Full Duplex(Little Endian) – 10ms	G711_003
Encoder(Big Endian) – 10ms	G711_004
Decoder(Big Endian) – 10ms	G711_005
Full Duplex(Big Endian) – 10ms	G711_006

Table 2. Cycles Information – – Profiled on TMS320C6455 DSK(COFF Library)

CONFIGURATION ID	PERFORMANCE STATISTICS (IN MEGA CYCLES PER SEC)[1, 2]	
	AVERAGE	PEAK
G711_001	0.304	0.306
G711_002	0.253	0.263
G711_003	0.558	0.571
G711_004	0.324	0.332
G711_005	0.242	0.259
G711_006	0.566	0.591

[1] Measured with frame size= 160 samples (10ms)
[2] Measured with 32K L1Pconfigured as cache, 32K L1D configured as cache, 2MB L2 configuration and with all Program and Data in L2 configured as SRAM. L1P and L1D invalidated before encoder/decoder execution.
Cycle numbers vary across C64x+ platforms depending on the size of cache at L1P, L1D, L2, DDR2 clock and DSP clock

Table 3. Cycles Information – – Profiled on TMS320C6455 DSK(ELF Library)

CONFIGURATION ID	PERFORMANCE STATISTICS (IN MEGA CYCLES PER SEC)[1, 2]	
	AVERAGE	PEAK

G711_001	0.288	0.334
G711_002	0.250	0.271
G711_003	0.538	0.605
G711_004	0.258	0.308
G711_005	0.279	0.294
G711_006	0.537	0.602

[1] Measured with frame size= 160 samples (10ms)
[2] Measured with 32K L1Pconfigured as cache, 32K L1D configured as cache, 2MB L2 configuration and with all Program and Data in L2 configured as SRAM. L1P and L1D invalidated before encoder/decoder execution.
Cycle numbers vary across C64x+ platforms depending on the size of cache at L1P, L1D, L2, DDR2 clock and DSP clock

Table 4. Memory Statistics - Generated with Code Generation Tools Version 7.2.0A10197(COFF Library)

CONFIGURATION ID	MEMORY STATISTICS[4]				
	PROGRAM MEMORY	DATA MEMORY			TOTAL
		INTERNAL	EXTERNAL	STACK	
G711_001	1.28	0.0039	0	0	1.284
G711_002	1.22	0.0039	0	0	1.224
G711_003	2.50	0.0078	0	0	2.508
G711_004	1.28	0.0039	0	0	1.284
G711_005	1.22	0.0039	0	0	1.224
G711_006	2.50	0.0078	0	0	2.508

[4] All memory requirements are expressed in kilobytes (1 kilobyte = 1024 bytes).

Table 5. Memory Statistics - Generated with Code Generation Tools Version 7.2.0A10197(ELF Library)

CONFIGURATION ID	MEMORY STATISTICS[4]				
	PROGRAM MEMORY	DATA MEMORY			TOTAL
		INTERNAL	EXTERNAL	STACK	
G711_001	1.28	0.0039	0	0	1.284
G711_002	1.22	0.0039	0	0	1.224
G711_003	2.50	0.0078	0	0	2.508

G711_004	1.28	0.0039	0	0	1.284
G711_005	1.22	0.0039	0	0	1.224
G711_006	2.50	0.0078	0	0	2.508

[4] All memory requirements are expressed in kilobytes (1 kilobyte = 1024 bytes).

Table 6. Internal Data Memory Split-up

CONFIGURATION ID	DATA MEMORY – INTERNAL[5]		
	SHARED		INSTANCE[6]
	CONSTANTS	SCRATCH	
G711_001	0	0	0.0039
G711_002	0	0	0.0039
G711_003	0	0	0.0078
G711_004	0	0	0.0039
G711_005	0	0	0.0039
G711_006	0	0	0.0078

[5] All memory requirements are expressed in kilobytes (1 kilobyte = 1024 bytes)
[6] Does not include I/O buffers

Notes

- 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)

References

- ITU-T Recommendation G.711:Pulse code modulation (PCM) of voice frequencies

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

EVM	Evaluation Module
ITU	International Telecommunication Union
ITU-T	Telecommunication Standardization Sector of ITU
PCM	Pulse Code Modulation
XDAIS	eXpressDSP Algorithm Interface Standard
XDM	eXpressDSP Digital Media

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third- party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.