

SPiRiT G.726 Codec

SPiRiT G.726 conforms to ITU-T G.726 recommendation that specifies speech compression and decompression at rates of 16, 24, 32 and 40 Kbps based on Adaptive Differential Pulse Code Modulation (ADPCM). It can be effectively used for audio and speech compression in such applications as speech storing, digital circuit multiplication and telephony applications.

Features

- Fully bit exact with ITU-T G.726
- Sample-by-sample or block based analog input
- 16, 24, 32 or 40 Kbps bit stream rate
- A-law, μ -law and 14-bit uniform 8 kHz PCM input/output
- Input/output samples format: Linear PCM, 8 kHz, 16 bits. Both sample-by-sample and block based processing supported
- Can process blocks of different lengths
- Both MIPS and memory optimized versions are available
- Very simple application interface
- eXpressDSP compliant. Code is reentrant, supports multithreading and dynamic memory allocation

Specifications

SPiRiT provides porting services to multiple DSP (Motorola, Analog Devices, etc), RISC and general-purpose processors.

The product is supplied with test environment and integration example code.

Detailed Product Annotation and User Guide documents describing testing procedures, interface and integration of this product, as well as PC-based and DSP-based (C54CST EVM) demos are available for evaluation upon request.

Resource Requirements

| PLATFORM | | TI C54xx (G.726 + G.711) | | |
|-------------------------|--------------|--------------------------|---------|-----------------|
| | | Encoder | Decoder | Encoder+Decoder |
| Peak MIPS | Linear law | 5.0 | 4.7 | 10.8 |
| | μ /A law | 5.3 | 6.3 | 13.3 |
| Program Memory, KWords | | 1.0 | 1.2 | 2.2 |
| Constant Memory, KWords | | 0.3 | 0.3 | 0.5 |
| Dynamic Memory, KWords | | 0.05 | 0.05 | 0.1 |

Note 1: SPiRiT provides three different object codes: Encoder (MIPS optimized), Decoder (MIPS optimized) and Encoder + Decoder (Memory Optimized). If you want to license Encoder + Decoder (MIPS optimized), you can license 2 separate MIPS optimized objects for encoder and decoder.

Note 2: TMS320C54CST chip contains Encoder + Decoder version (memory optimized) in on-chip ROM.

Benefits

- Highly optimized code ideal for resource constrained applications
- Easy integration and fast time-to-market

Applications

- VoIP gateways
- Communication devices
- IP-PBX
- VoIP clients

Availability

- TI OMAP3
- Tensilica HiFi2
- Encoder / Decoder eXpressDSP compliant object code for TMS320C54xx (MIPS optimized)
- Encoder / Decoder eXpressDSP compliant object code for TMS320C54xx (Memory optimized)
- Encoder / Decoder eXpressDSP compliant object code for TMS320C55xx
- Encoder / Decoder eXpressDSP compliant object code for TMS320C64xx
- Object code for ARM9, ARM9E
- Object code for MIPS4000
- Fully functional evaluation object code (available upon request)
- DLL for MS Windows

| PLATFORM | | TI C55xx | | | |
|-------------------------|------------|----------|---------|-------------------|-----------------------------|
| | | Encoder | Decoder | Encoder + Decoder | 8-channel Encoder + Decoder |
| Peak MIPS | Linear law | 5.3 | 4.7 | 10.7 | 85.6 |
| | u/A law | 5.5 | 6.4 | 13.4 | 107.2 |
| Program Memory, KWords | | 0.9 | 1.1 | 2.0 | 2.0 |
| Constant Memory, KWords | | 0.3 | 0.3 | 0.5 | 0.5 |
| Dynamic Memory, KWords | | 0.05 | 0.05 | 0.1 | 0.8 |

| PLATFORM | | TI C64xx | | |
|---------------------|--|----------|---------|-----------------|
| | | Encoder | Decoder | Encoder+Decoder |
| Peak MIPS | | 2.5 | 8.8 | 5.3 |
| Program Memory, KB | | - | - | 8.1 |
| Constant Memory, KB | | 0.46 | 0.46 | 0.46 |
| Dynamic Memory, KB | | 0.09 | 0.09 | 0.18 |

| PLATFORM | | MIPS4000 | | |
|-----------|--|----------|---------|-----------------|
| | | Encoder | Decoder | Encoder+Decoder |
| Peak MIPS | | 7.4 | 8.8 | 16.2 |

| PLATFORM | ARM9 | ARM9E | Tensilica HiFi2 |
|------------------------|-----------------|-----------------|-----------------|
| | Encoder+Decoder | Encoder+Decoder | Encoder+Decoder |
| Peak MIPS, MHz | 23.2 | 19 | 13 |
| Code Size, KB | 8.6 | 9.9 | 10 |
| Constant Memory, Bytes | 484 | 484 | 512 |
| Dynamic Memory, Bytes | 100 | 100 | 204.8 |
| Stack, Bytes | 108 | 140 | 307.2 |

| PLATFORM | | PC | | |
|-------------------------|------------|-----------------|-----------------|-----------------|
| | | Encoder | Decoder | Encoder+Decoder |
| Peak MIPS | Linear law | 10 | 10 | 58 |
| | u/A law | 30 | 30 | 60 |
| Program Memory, KWords | | 12 | 13 | 25 |
| Constant Memory, KWords | | 2 | 2 | 4 |
| Dynamic Memory, KWords | | 0.5 per channel | 0.5 per channel | 1.0 per channel |

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