

SPIRIT 2400 bps Robust Vocoder

SPIRIT Robust 2400bps vocoder combines Mixed MBE-LPC speech coding algorithm with intelligent Forward Error Correction algorithm. The major advantage of such an innovative approach is high level of speech quality in the channel with errors.

Unequal error protection procedure utilized in the algorithm allows stronger protection for most sensitive bits of the most sensitive parameters.

An original decoding scheme based on the minimum residual redundancy provides high speech quality within the error free channel as well as within the channel with errors, unlike the typical approach that ensures high level of channel error resistance at the cost of speech quality.

Proprietary procedure of corrupted speech frames processing included in the algorithm enables comfortable speech quality even when the channel is badly distorted.

SPIRIT robust 2400bps vocoder is designed to work in two primary modes: “soft decision” and “hard decision”. “Soft decision” mode includes additional information and has mean speech quality 0.6 PESQMOS higher than “Hard Decision” mode (measured at 5% error rate).

Forward Error Correction algorithm is also available for other proprietary low-bit rate vocoder products – 1200, 4800, 6000 and 8000 bps.

Features

- High level of speech quality
- Bit Error Rate up to 5%
- 2400 bps encoded bit stream rate
- Frame size 30 ms
- Algorithmic delay 80 ms
- Channel error resistance
- Input/output samples format: Linear PCM, 8 kHz, 16 bits
- Simple application interface
- eXpressDSP compliant. Code is reentrant, supports multithreading and dynamic memory allocation. At the same time allows direct (non-eXpressDSP) interface to enable static memory allocation

Specifications

SPIRIT provides porting services to multiple DSP (TI, Motorola, Analog Devices, etc), RISC and general-purpose processors. The product is supplied with test environment and integration example code.

PLATFORM	TI C54xx		
	Encoder	Decoder	Encoder+Decoder
Peak MIPS	15.85	9.95	25.8
Program Memory, KWords	-	-	8.312
Constant Memory, KWords	-	-	7.7
Dynamic Memory, KWords	-	-	3.368
Stack, KWords	-	-	1.7

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Benefits

- Highly optimized
- Low bitrate
- High speech quality

Key Features

- Mixed MBE-LPC algorithm
- Unequal error protection
- Soft decision mode

Applications

- Trunking systems
- Wireless communications
- Digital voice over HF
- Call-logging systems
- Answering machines

Availability

SPIRIT robust 2400bps vocoder is available in the following forms:

- eXpressDSP compliant object code for TMS320C54xx
- eXpressDSP compliant object code for TMS320C55xx