

# SPR ROBUST™ 2400 bps VOCODER HIGH QUALITY IN ANY CONDITIONS



## Supply

SPR Robust 2400 bps vocoder can be supplied as object code for any DSP, RISC or general purpose platform or in-chip.

The product delivery package includes object libraries, test environment (in C-code and executable files), test and reference samples and User Guide document, which describes vocoder algorithm, API and examples of the vocoder usage.

## Availability

- DSP object code for TMS320C55xx
- DLL for MS Windows

• Any DSP, RISC or general purpose platform within 2-3 months

## Applications

- Digital Voice over HF
- Wireless communications



SPR Robust 2400 bps vocoder is based on Sinusoidal Pulsed Representation (SPR) model, providing high quality and other superior characteristics inherent to this model.

Moreover, the vocoder contains Forward Error Correction (FEC) scheme, which is integrated into vocoder on base of "source-channel coding" approach and provides high robustness of the vocoder to channel errors.

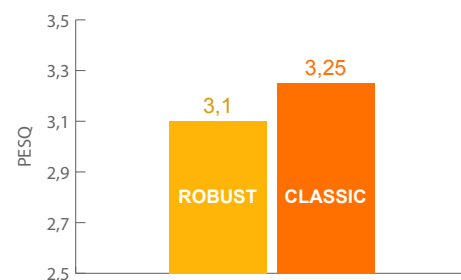
## Features

Compared with Classic version of the vocoder

### Speech Quality

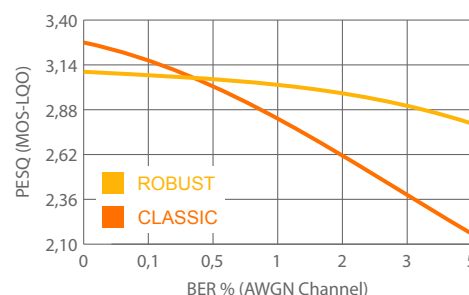
We used ITU-T P.50 multilanguage speech base and ITU-T P.862 utility to estimate speech quality. In clear channel SPR Robust 2400 bps vocoder provides speech quality near to SPR Classic 1200 bps vocoder, conseding to SPR Classic 2400 bps.

However, the vocoder keeps the speech quality in noisy channel, providing high robustness to errors at high BER.



### Robustness

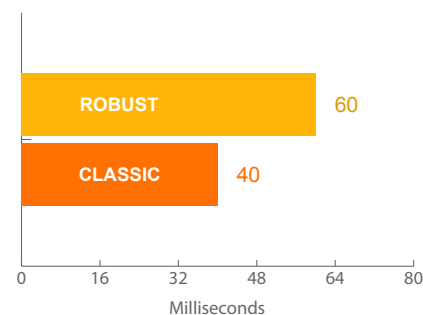
We passed encoded bit streams through AWGN channel simulator with various SNR and estimated quality of decoded speech. SPR Robust 2400 bps vocoder shows very high robustness to errors, keeping high speech quality in noisy channel with BER up to 5% and even higher.



### Algorithmic Delay

Time delay is very important characteristic of communication system. Algorithmic delay of vocoder does play determinative role in total delay. Well known, the delay more than 100 ms is not acceptable for normal conversation. SPR Robust 2400 bps vocoder provides 60 ms delay.

It is superior value for such low bit rate.



See more features on next page

**Customization**

To provide you the best solution, we are ready to customize vocoder according to your specific environment and requirements.

For example, bit rate and speech quality can be changed to any direction, error control coding can be added to increase robustness. Noise cancelling and/or echo cancelling can be added to vocoder; facilities of signaling (such as DTMF and single tone) can be implemented also.

To download demo wav-samples of SPR Robust 2400 bps vocoder, visit [www.dspini.com/dspini\\_spr2400r.htm](http://www.dspini.com/dspini_spr2400r.htm)

To evaluate PC-application of our vocoder, contact us: [request@dspini.com](mailto:request@dspini.com)



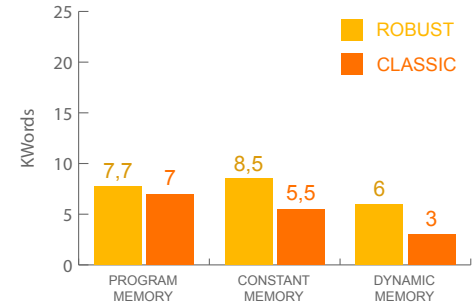
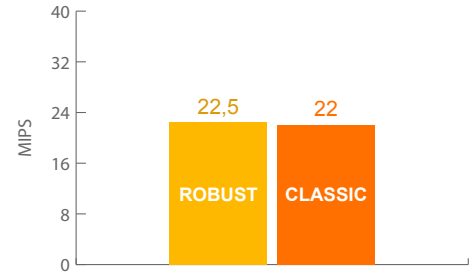
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**Computing Complexity**

SPR Robust 2400 bps is very effective vocoder and requires very little of the computing resources.  
 Less than 23 MIPS for TI's C55xx.

**Memory Usage**

SPR Robust 2400 bps vocoder needs uniquely little memory, providing high rate of the quality/cost.



**Performance for TI's C55xx DSP**

	Encoder	Decoder	Encoder + Decoder
MIPS (max)	11	11.5	22,5
Program Memory, KWords	-	-	7,7
Constant Memory, KWords	-	-	8.5
Dynamic Memory, KWords	-	-	6
Stack, KWords	-	-	0.5

**Reliability and Support**

We continuously test and improve the vocoder.  
**We guarantee complete support for each version of the product.**

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