

# SPR CLASSIC™ 1000 bps VOCODER HIGH QUALITY AT VERY LOW BIT RATE



## Supply

SPR Classic 1000 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 Classic 1000 bps vocoder is based on Sinusoidal Pulsed Representation (SPR) model, where excitation includes mixture of pitch-harmonics, noisy and aperiodic impulses. It allows to synthesize correctly any speech sounds, including mixed voiced+unvoiced and complex transients, to achieve much better speech quality in comparison with conventional model. Choice of optimal quantization schemes and high algorithmic optimization provided superior characteristics of this vocoder in comparison with others for the same bit rate.

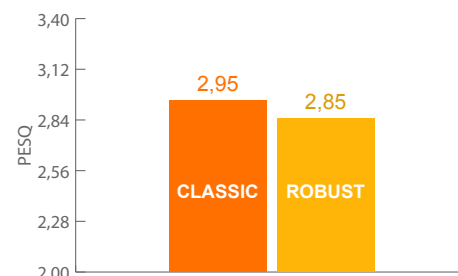
## Features

Compared with Robust version of the vocoder

### Speech Quality

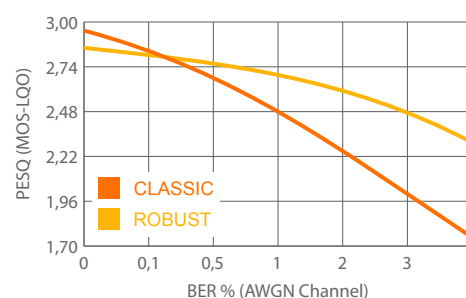
We used ITU-T P.50 multilanguage speech base and ITU-T P.862 utility to estimate speech quality. SPR 1000 bps vocoder provides high speech quality: very near to quality of 1200 bps vocoders.

Moreover, all other characteristics of the SPR 1000 vocoder excel considerably appropriate characteristics of the well-known vocoders.



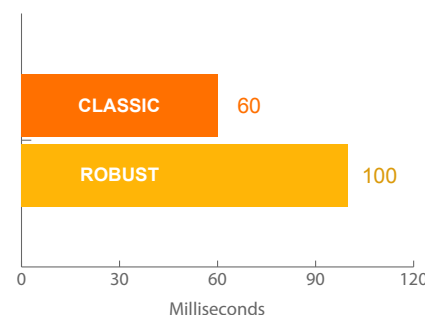
### Robustness

We passed encoded bit streams through AWGN channel simulator with various SNR and estimated quality of decoded speech. SPR Classic 1000 bps vocoder shows good robustness, conceding to SPR Robust 1000 bps vocoder only.



### 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 1000 provides 60 ms delay only. 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 Classic 1000 bps vocoder, visit [www.dspini.com/dspini\\_spr1000c.htm](http://www.dspini.com/dspini_spr1000c.htm)

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



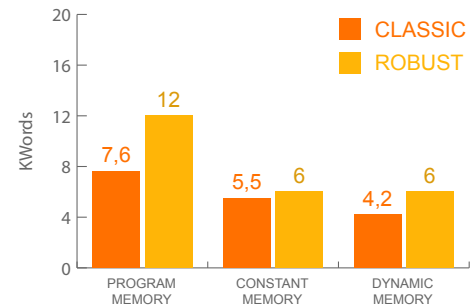
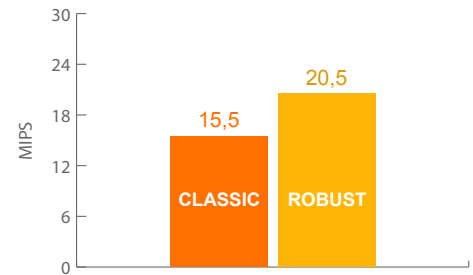
DSP Innovations Incorporated  
Slavi 4  
Penza 440000, Russian Federation  
Tel/Fax: +7.963.105.32.18  
[www.dspini.com](http://www.dspini.com)  
[request@dspini.com](mailto:request@dspini.com)

## Computing Complexity

SPR 1000 is very effective vocoder and requires very little of the computing resources. Only 16 MIPS for TI's C55xx.

## Memory Usage

SPR 1000 bps needs uniquely little memory, providing high rate of the quality/cost.



## Performance for TI's C55xx DSP

	Encoder	Decoder	Encoder + Decoder
MIPS (max)	11	4.5	15.5
Program Memory, KWords	-	-	7.6
Constant Memory, KWords	-	-	5.5
Dynamic Memory, KWords	-	-	4.2
Stack, KWords	-	-	0.5

## Reliability and Support

We continuously test and improve the vocoder.

**We guarantee complete support for each version of the product.**

Sinusoidal Pulsed Representation, SPR Classic, SPR Robust, SPR Vocoder, and the DSP Innovations logo are trademarks of DSP Innovations. All other trademarks are the property of their respective owners.  
© 2007-2009 DSP Innovations Incorporated. All rights reserved.