

# SPR CLASSIC™ 600 bps VOCODER SUPERIOR CHARACTERISTICS



## Supply

SPR Classic 600 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 600 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.

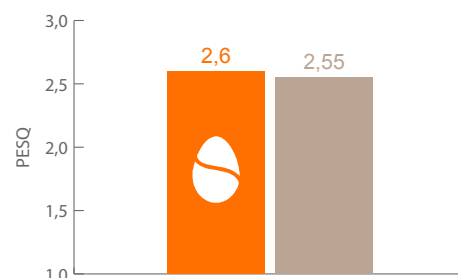
## Features

Compared with standard leading vocoder on the same bitrate

### Speech Quality

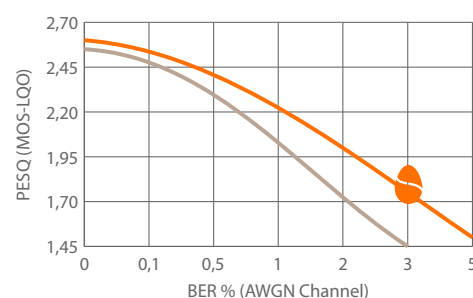
We used ITU-T P.50 multilanguage speech base and ITU-T P.862 utility to estimate speech quality. SPR 600 bps vocoder doesn't concede and even exceeds MELPe 600 bps standard vocoder for majority from twenty languages. Average PESQ is: 2.6 vs 2.55.

At the same time, all other characteristics of the SPR 600 vocoder excel considerably appropriate characteristics of the standard vocoder.



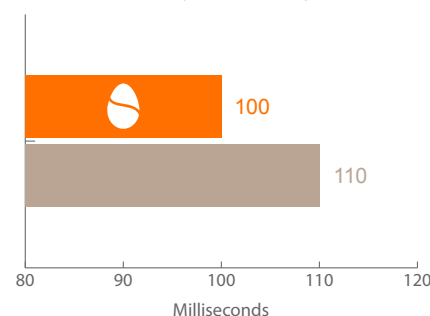
### Robustness

We passed encoded bit streams through AWGN channel simulator with various SNR and estimated quality of decoded speech. SPR 600 shows strong superiority over MELPe 600.



### 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 600 provides 100 ms delay, MELPe - 110 ms.



**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 600 bps vocoder, visit [www.dspini.com/dspini\\_spr600c.htm](http://www.dspini.com/dspini_spr600c.htm)

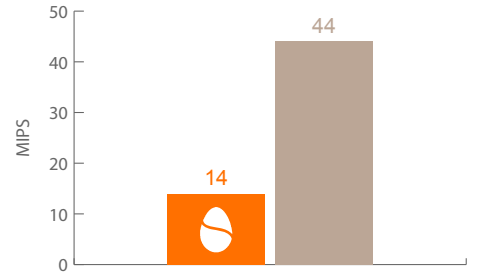
To evaluate PC-application of our vocoder, contact us: [request@dspini.com](mailto:request@dspini.com)



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)

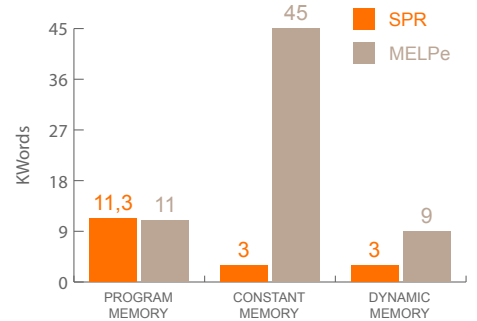
**Computing Complexity**

SPR 600 requires three times lower computing resources and shows strong superiority over MELPe 600. Only 14 MIPS versus 44 MIPS for TI's C55xx.



**Memory Usage**

SPR Classic 600 bps shows strong superiority over MELPe 600, providing important economy of memory, which allows to reduce considerably the cost and dimensions of the end equipment.



**Performance for TI's C55xx DSP**

	Encoder	Decoder	Encoder + Decoder
MIPS (max)	8.5	5.4	13.9
Program Memory, KWords	-	-	11.3
Constant Memory, KWords	-	-	3.0
Dynamic Memory, KWords	-	-	3.0
Stack, KWords	-	-	0.3

**Reliability and Support**

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

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