

# MELPe 600, 1200, 2400 bps VOCODER STANAG 4591



## Supply

MELPe 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

- Object Code for TI's C55xx DSP
- DLL (Win32) for PC
- Any DSP, RISC or general purpose platform within 2-3 months

## Applications

- Digital Voice over HF
- Wireless communications



Enhanced Mixed Excitation Linear Predictive (MELPe) Vocoder is implemented in accordance with STANAG 4591 standard as three standalone software and as Dual-Rate or Triple-Rate Vocoder in any combination of the bit rates.

Our MELPe implementation differs by high optimization, in spite of the fact that MELPe algorithm requires a lot of computational resources and memory.

## Features

### Speech Quality

We used ITU-T P.50 multilanguage speech base and ITU-T P.862 utility to estimate speech quality for each bit rate. Speech quality of the MELPe vocoder is:

- about 3.3 PESQ for 2400 bps rate,
- about 3.1 PESQ for 1200 bps rate,
- about 2.6 PESQ for 600 bps rate.

If your application doesn't require strict usage of the standard, we recommend to use our proprietary vocoders (SPR Classic or SPR Robust). These vocoders provide the same speech quality, however have all other characteristics much better in comparison with MELPe.

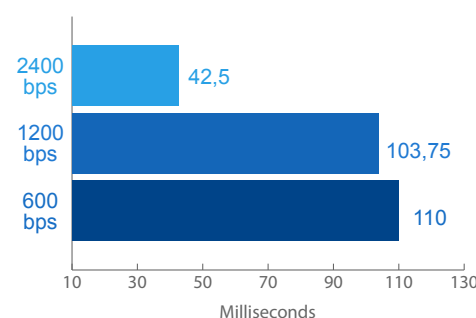
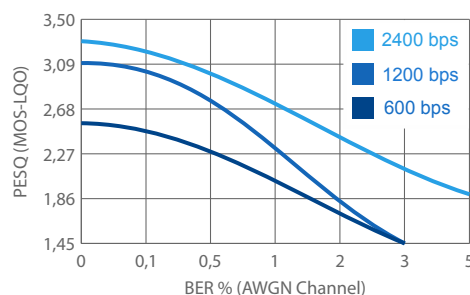
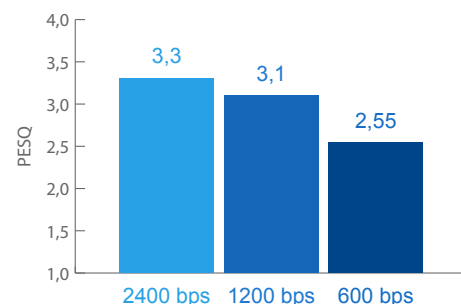
### Robustness

We passed encoded bit streams through AWGN channel simulator with various SNR and estimated quality of decoded speech for each bit rate. MELPe provides good robustness in channel with low errors. However, it provide a poor robustness in channel with errors more than 1%. If you need a high-robust vocoder and if usage of the standard is not required strictly in your application, we recommend to use our proprietary vocoders of the "SPR Robust" line.

### Algorithmic Delay

Time delay is very important characteristic of communication system. Algorithmic delay of vocoder does play determinative role in total delay of communication system.

We recommend to use our proprietary vocoders (SPR Classic or SPR Robust), which have much less time delay in comparison with MELPe.



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.

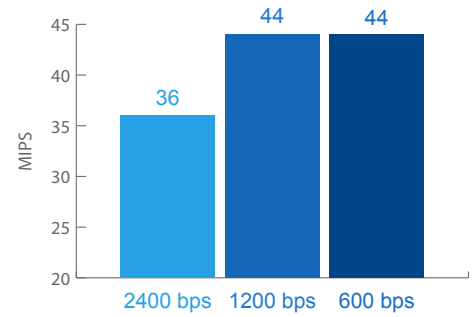
To download demo wav-samples of MELPe vocoder, visit [www.dspini.com/dspini\\_melpe.htm](http://www.dspini.com/dspini_melpe.htm)

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

**Computing Complexity**

Computing complexity defines both a cost and a power consumption of the end-user equipment. MELPe Object Code for TI's C55xx DSP requires:

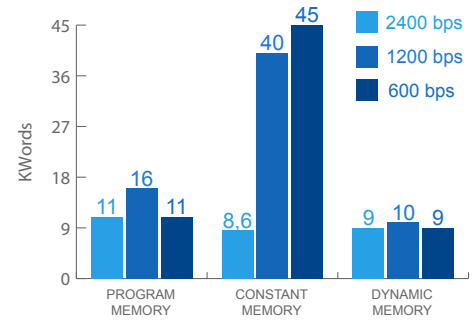
- about 36 MIPS for 2400 bps rate,
- about 44 MIPS for 1200 bps rate,
- about 44 MIPS for 600 bps rate.



**Memory Usage**

A cost of the end-user equipment is depended upon memory volume, which is required for used software.

As you can see on the figure, MELPe requires relatively a lot of memory, in low bit rate eminently.



If your application doesn't require strict usage of the standard, we recommend to use our proprietary vocoders (SPR Classic or SPR Robust), which require much less of the resources in comparison with MELPe.

Visit [www.dspini.com/dspini\\_vocoders.htm](http://www.dspini.com/dspini_vocoders.htm) for information about SPR Vocoders.

**Performance for TI's C55xx DSP**

	Encoder			Decoder			Encoder + Decoder		
	2400 bps	1200 bps	600 bps	2400 bps	1200 bps	600 bps	2400 bps	1200 bps	600 bps
MIPS (max)	23	30	30	13	14	14	36	44	44
Program Memory, KWords	-	-	-	-	-	-	11	16	11
Constant Memory, KWords	-	-	-	-	-	-	8.6	40	45
Dynamic Memory, KWords	-	-	-	-	-	-	9.0	10	9.0
Stack, KWords	-	-	-	-	-	-	0.5	0.5	0.5



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)

**Reliability and Support**

We continuously test and improve the vocoder.

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

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