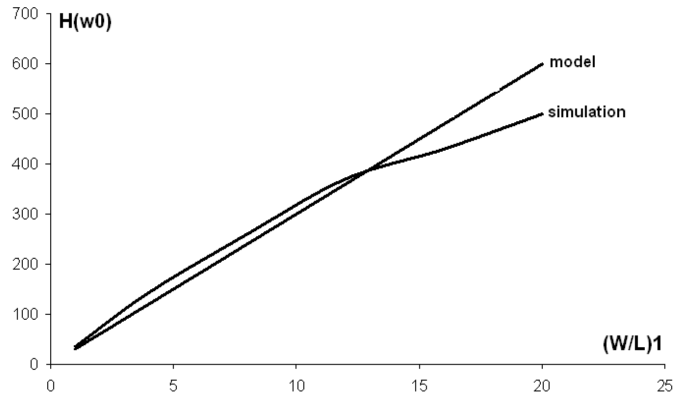

Fig. 9. $H(\omega_0) - (W/L)_1$ dependence.

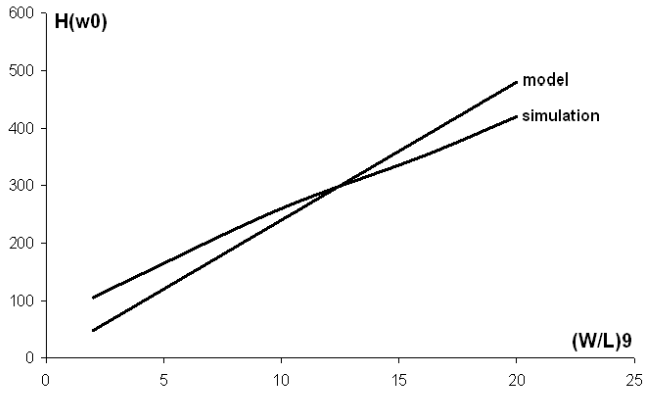

Fig. 10. $H(\omega_0) - (W/L)_9$ dependence.

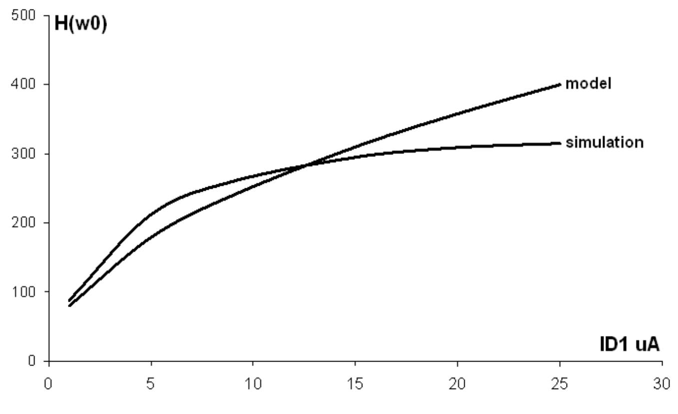

Fig. 11. $H(\omega_0) - I_{D1}$ dependence.

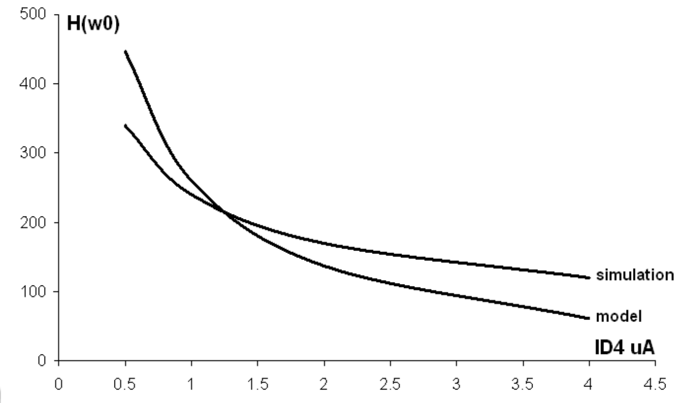

Fig. 12. H (ω_0) – I_{D4} dependence.

Conclusions

This paper presented the main design issues and an extended performance analysis of a frequency selective amplifier (FSA) intended for chopper stabilized amplifier use.

The FSA designed in this paper is based on an equivalent *RLC* parallel resonator, implemented using g_mC stages.

A simple model, suitable for manual analysis, of the FSA frequency behavior was developed: the FSA transfer function has a double pole at a design controlled frequency and a low frequency zero, which depends on the parasitic resistances of the high impedance node.

The peak gain value is determined by two transconductance stages g_m ratio.

In this paper, two different transconductance stage topologies were used: the simple differential pair and the linearized transconductance stage; in order to get a high g_m ratio.

Models suitable for manual analysis were presented for both topologies.

The manual estimation model results were backed up by SPICE simulation.

The amplifier designed in this paper has a resonating frequency of about 10 kHz with 256 gain peak value.

The manual analysis model validity of the gain peak value variation was validated by SPICE simulation.

The manual analysis results are in good agreement over a wide design parameters range with SPICE simulation results.

R E F E R E N C E S

[1] A. Danchiv, M. Bodea, C. Dan, *Chopper Stabilization Techniques. Part I: Chopper Amplifier Topologies Overview*, Annals of Academy of Romanian Scientist, Science and Technology of Information Series, Vol. 1, Number 1, pp. 31-42, 2008

[2] C.C Enz, G.C Temes, *Circuit techniques for reducing the effects of op-amp imperfections: autozeroing, correlated double sampling, and chopper stabilization*, Proc. IEEE, vol. 84, pp. 1584-1614, Nov. 1996.

[3] A. Mateescu, N. Dumitriu, L. Stanciu, *Semnale şi sisteme. Aplicaţii în filtrarea semnalelor*, Editura Teora, Bucureşti, 2001.

[4] A. Danchiv, M. Bodea, C. Dan, *Optimum Design of Frequency Selective Amplifier Intended for Chopper Stabilized Applications*, Proceedings of the International Symposium on System Theory, Automation, Robotics, Computers, Informatics, Electronics and Instrumentation, SINTES 2005, Craiova, Romania, , vol. 2, pp. 337-342, 2005.

[5] P. Gray, P. Hurst, S. Lewis, *and* R.G. Meyer, *Analysis and Design of Analog Integrated Circuits*, 4th Ed., McGrawHill, 2001

[6] F. Krummenacher, N. Joehl, *A 4-MHz CMOS Continuous Time Filter with On-Chip Automatic Tuning*, IEEE J. Solid State Circuits, Vol. 23, No. 3, March 1998.