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## SECTION 9

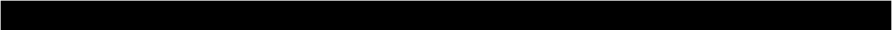
# Conclusion

**“Motorola's family of digital signal processors, combined with Motorola's data conversion parts, provide a complete, cost-efficient solution to frequency domain problems . . .”**

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**F**requency domain applications are becoming more important as inexpensive hardware solutions become more readily available. Motorola's Family of DSP56001/2 and DSP96002 digital signal processors provide particularly effective solutions to frequency domain problems. A highly parallel architecture, combined with an instruction set well suited for implementation of fast Fourier transforms, allow real-time computation of high-resolution FFTs up to very high sampling rates. Fast interrupts of the DSP56001/2 and the parallel DMA over a separate bus in the DSP96002 provide for data I/O with hardly any penalty in speed. Furthermore, the dual external buses on the DSP96002 allow fast calculation of FFTs of virtually unlimited size, with no performance penalty on external data access.

The large, 24-bit data representation of DSP56001/2, together with infinite-precision internal arithmetic and convergent rounding, lead to numerically superior results over 16-bit DSPs with truncation arithmetic. Special hardware provided in the DSP56001/2 allows no-overhead automatic scaling and block floating-point implementations of FFTs of virtually unlimited size, with result precision rivaling that of true floating point, for a fixed-point price.



For high-end applications, the DSP96002 provides full IEEE standard floating-point arithmetic for negligible roundoff errors. In addition to providing standard IEEE exception handling capabilities, the results obtained in the DSP96002 are portable across many applications that use the standard, such as high-level language simulations, data buses, etc. Motorola's family of digital signal processors, combined with Motorola's data conversion parts (see Reference 12), provide a complete, cost-efficient solution to frequency domain problems; from low-end small-size FFT applications, to high-end instrumentation and computer workstations for scientific computing. ■

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## Acknowledgments

The authors wish to thank Professor Raimund Meyer and K.Schwarz in University Erlangen in F.R Germany who provided the optimized 1024-point complex FFT program for the DSP96002; Vitus Ho in Dell Computer, Austin, Texas, who provided two dimensional FFT and DCT code for the DSP96002. Also a lot of thanks to Roman Robles in Motorola DSP Applications group for valuable comments and the C language code of Bergland's algorithm.