A USER'S REVEW OF THE RADIUS -16 ACCELERATOR BOARD

I recently purchased and installed the Radius -16 accelerator board in my SE, and I'm posting this mini-review for other mac users who are thinking of getting an accelerator board.

After using a Mac II at work for a few weeks, it became apparent to me that my SE at home was a turtle. I decided the most economical way to go to speed thing up, was to purchase an accelerator board.

After intensely studying several mac-magazines, I decided that the Radius-16 Accelerator board offered the best performance for the dollar. The Radius board would supposedly increase the speed of my SE by 3 times, which would be comparable to a standard Mac II. The specifications of the board are as follows:

Board :	Radius - 16 Accelerator Board
Processor :	Motorola MC 68020
Clock Speed:	15.667 MHz
Co-Processor:	Motorola MC 68881 (optional)
Memory:	Board has 32K of High speed static RAM
Numerical Support :	Uses a modified SANE for computations

The Radius board was packaged very professionally, containing an anti-static wrist band, accelerator board, instructions, and necessary software. Following the provided instructions, it took 30 minutes to install the board. The Radius board is supported above the motherboard by 3 plastic pegs. On the board, is an additional socket for attaching an optional Radius Large Screen display.

The Radius board uses 32K of high speed static ram as a data and instructions cache for the cpu. It does not rob the main memory for data cache as do other accelerator boards. Thus, the ram on the motherboard can be used exclusively for memory. (4 Mb maximum). The Radius board does not have a socket for a PMMU.

After re-assembling the case, I powered the system up, and immediately noticed a speed increase in typical mac operations.

Windows opened faster, MacDraw drawings re-drew themselves quicker, scrolling through a document was very quick! I tried a variety of software programs and DA's ; everything worked fine. Some game programs , however, didn't work properly since they were written specifically for the 68000 cpu.

Radius provides their own SANE in the form of an INIT, which will intercept math instructions that normally use the Apple SANE for floating point arithmetic calculations. This results in tremendous speed improvements for mathematical calculations. Radius claims that their SANE performs trigonometric calculations at approximately 15 times faster than Apple's MC68881 version of SANE. Arithmetic calculations are 1.5 times faster.

I proceeded to perform a mini-benchmark test. The below test was performed using a

Mac SE with 2.5 Mb of ram, a 20 Mb internal apple hard disk, and the Radius-16 board with the optional math co-processor.

Task	Standard SE	Radius-16	
		w/o SANE (mins)	w SANE (mins)
Word - converting a MacWrite document (114k).	2:05	0:44	0:44
Word - Saving a doc (123 k).	1:21	0:30	0:30
MacDraw - Load & Draw an image (90k)	1:00	0:20	0:20
multiply (25x25) square matrix by a (25x25) square matrix.	0:22	0:11	0:03
multiply (50x50) square matrix by a (50x50) square matrix.	2:57	1:26	0:29
multiply (75x75) square matrix by a (75x75) square matrix.	10:00	4:50	1:38

As you can see from the above tests, the SE does increase execution time significantly. Some operations do not benefit from using the Radius SANE.

Multiplying the square matrices indicates how quickly the Radius board can execute multiplication and addition operations. 843,750 multiplication and additions operations were performed by the accelerator board in 1 min, 38 seconds.

The Radius board can easily be disengaged. When booting up, hold the mouse button down. After a few seconds, a control panel will be displayed on the screen. You can use the mouse to turn a dial on the control panel to "off". Click the "ok" button, and the SE boots up like the standard system.

I have used Multifinder under Radius -16 , and everything works fine.

For the cost of the board, I have effectively upgraded to a Mac II. I don't have the color and stereo sound of a Mac II, but in a computational foot race, I now stand neck-n-neck with the Mac II.

Radius also offers a board with a 25 MHz MC68020 cpu, which is 15-20% faster than the Radius -16 board. For the cost/performance, however, it is more economical to purchase the Radius - 16 board.