

Q60 AGEING PROBLEMS

The youngest member of the QL hardware family is a quarter of a century old and is beginning to show its age. There are two main issues - battery problems and monitor problems.

Peter Graf reports that his battery lasted for 18 years although another user reported his had lasted for 12. The battery itself cannot be changed as it is built in to the RTC, but a new RTC unit can be purchased for the usual suppliers for between €10 and €20.

The monitor problems are more serious. The Q60 cannot be used on most modern flat screen monitors and the old CRT monitors are becoming worn out and obsolete.

Peter Graf suggested five possible solutions:

"1) Create a 1024x768 signal with a modified CPLD, generating 1024x512 plus a black bar at the bottom of the screen. 800x600 does not fit the PLD. This solution seems to work with recent flatscreen monitors. For me on a 1920x1080 LG. But 1024x768 does not interpolate nicely, and the black area is annoying.

2) Design a Q60 graphics card. An ISA card would be slower than the onboard graphics, so the only socket where a graphics card could go (without modifying the mainboard) is the ROM sockets. This would have the nice side effect to replace the UV EPROMs by Flash. Unfortunately, a few additional address and byte select lines are required, which are not present on the ROM sockets.

3) Find a converter which can handle the Q60's 1024x512 resolution and does not misinterpret it as 800x600 like most VGA converters.

4) Find a flatscreen monitor with true multisync. A fellow QLer here in Germany owns such a rare monitor and the results are nice. It is sort of an industrial monitor. Unfortunately my attempts to get hands on a batch of similar devices failed yet.

5) Design a Q60 successor. I had seriously considered this, because debugging the FPGA-based CPU core inside the Q68 took so long. It would be a piggyback 68060 board on top of the Q68 hardware. The Q68 board providing video circuitry and peripherals, while the 68060 board holds the CPU, main RAM and glue logic. But this solution leads away from the original. Considering the Q60 is a vintage machine worth preserving, this has limited appeal."

There was a good deal of technical discussion on the QL-users email group about possible solutions, but no easy answers. Much of the discussion centred around the resolution that Q60 users would want. In particular a resolution of 800x600 would be difficult to achieve as neither of them are powers of 2. A resolution of 800x600 would require changes to QL operating systems and not be compatible with programs that directly write into the original 512x256 display. How far should the Q60 be compatible with classic QL software and how far optimised for more modern software?

One suggestion is that it would be better to concentrate on the Q68, a board that Peter Graf demonstrated at the QLis30 workshop in Edinburgh.



QLis30 demonstration. Q68 is on the left

Peter describes the specifications as:

“Runs about QXL speed, even without the cache I am working on. Features

- Plain 68000 core, 68020 nearly complete
- 32 MB SDRAM
- PS/2 keyboard and mouse
- Two fullsize SD card interfaces
- SER
- Ethernet
- Battery buffered RTC (and yes, the battery is separate!)
- Stereo sound
- Up to 1024x768 VESA VGA, QL modes in hardware
- 8x10 cm board size, fitting existing nice case
- Single 5V power supply



(Photo by vanpeebles - image downloaded from QL Forum)

Meanwhile I replaced the wired components you see on that picture by SMD for machine manufacture. QDOS Classic and Minerva are running, but issues with QL-SD driver and Pointer Environment.”

Peter has been working on the Q68 for about 8 years, well before the licensing restrictions on SMSQ-E were relaxed. At the moment SMSQ-E still has to be ported to the Q68.

A further complication is that many of the hardware and software developers have more family and employment responsibilities than they had 10 years ago and less time to devote to QL development.