ADB1 Hardware modification

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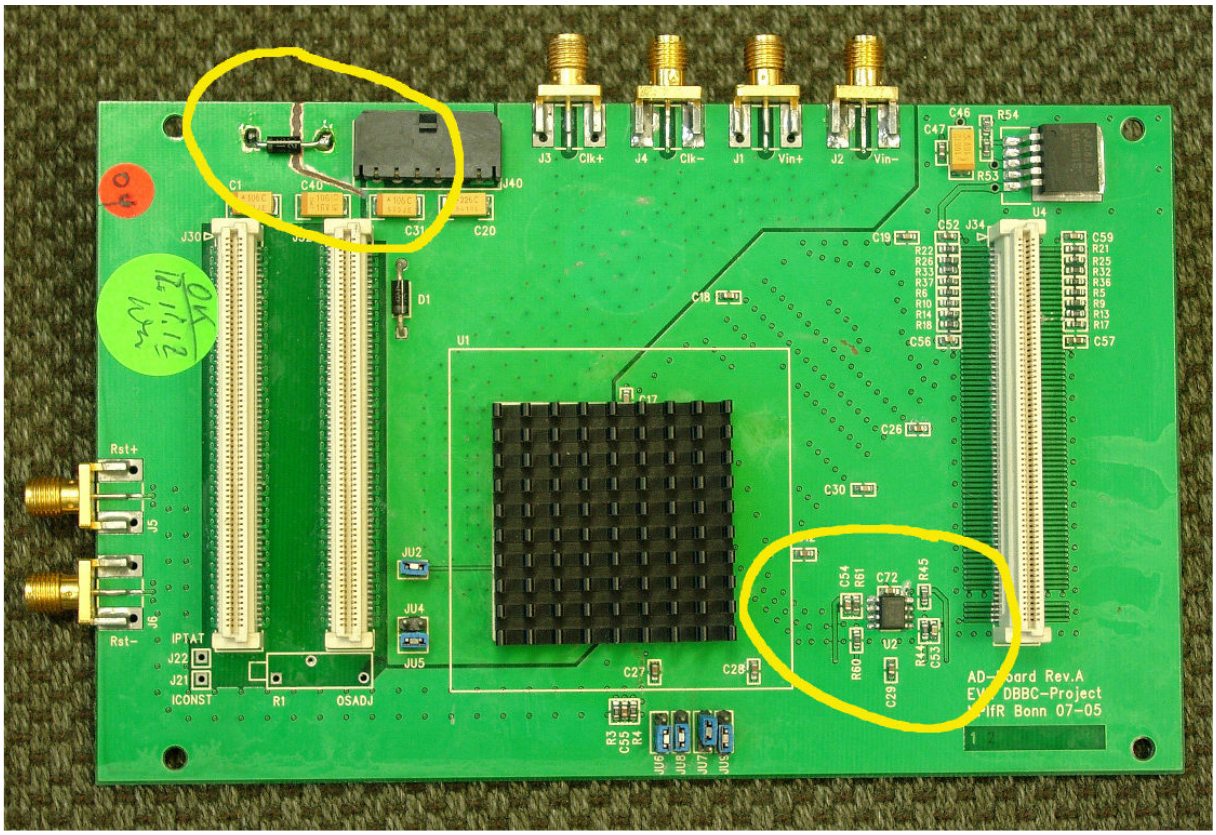
There is a problem with system noise in the standard setup ADB1 / ADB1-Core2-Intf. / Core2. Due to this effect it is quite **important to have the signal levels in the proper range** to get rid of this noise.

A first attempt was made to modify the ADB1-Core2-Interfaces. This has been made on a small scale and **solved the problem entirely**. It has not been done for all the systems in use, since that modification is quite a big job.

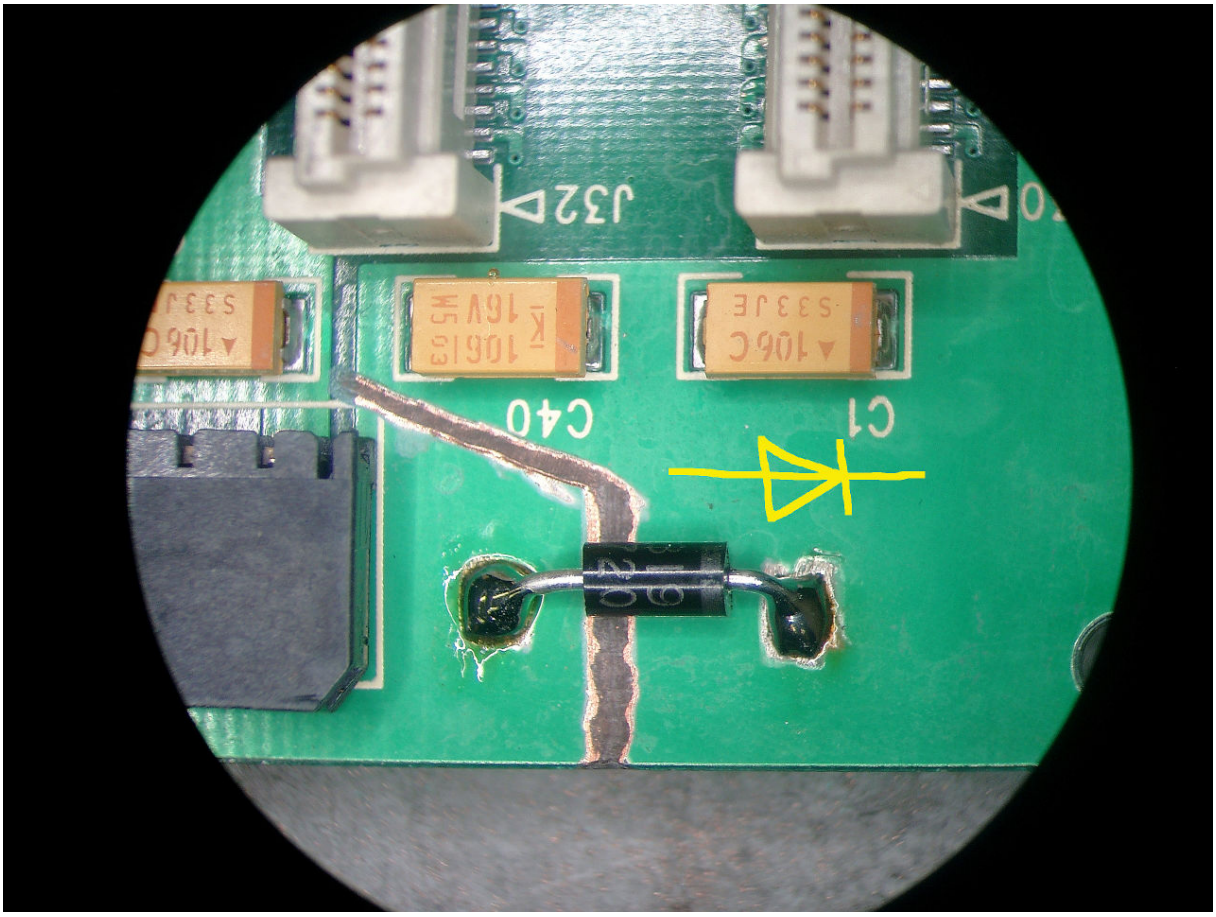
With VLBI2010 on the horizon a second problem occurred. A fully equiped system would contain 8 ADB1 boards, 8 interfaces and 8 core modules – which is impossible with the space available.

We found a very easy way to modify the ADB1 itself and thus **get rid of the interface completely.**

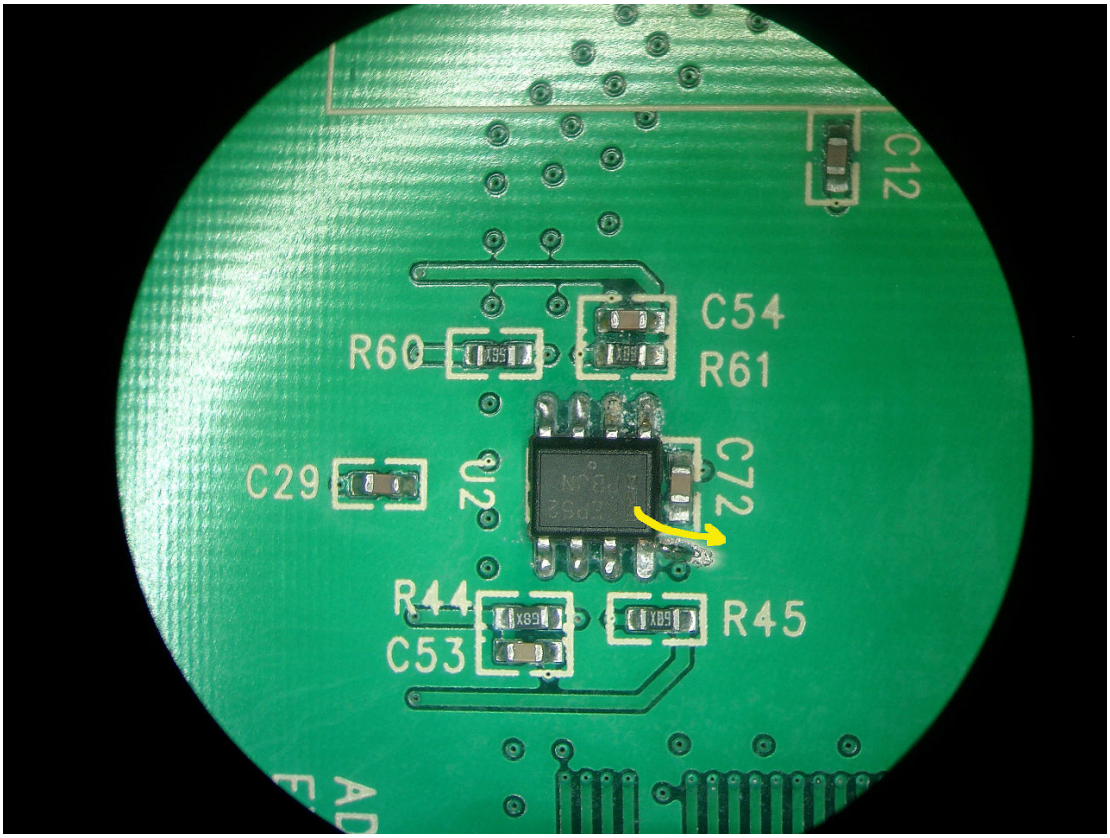


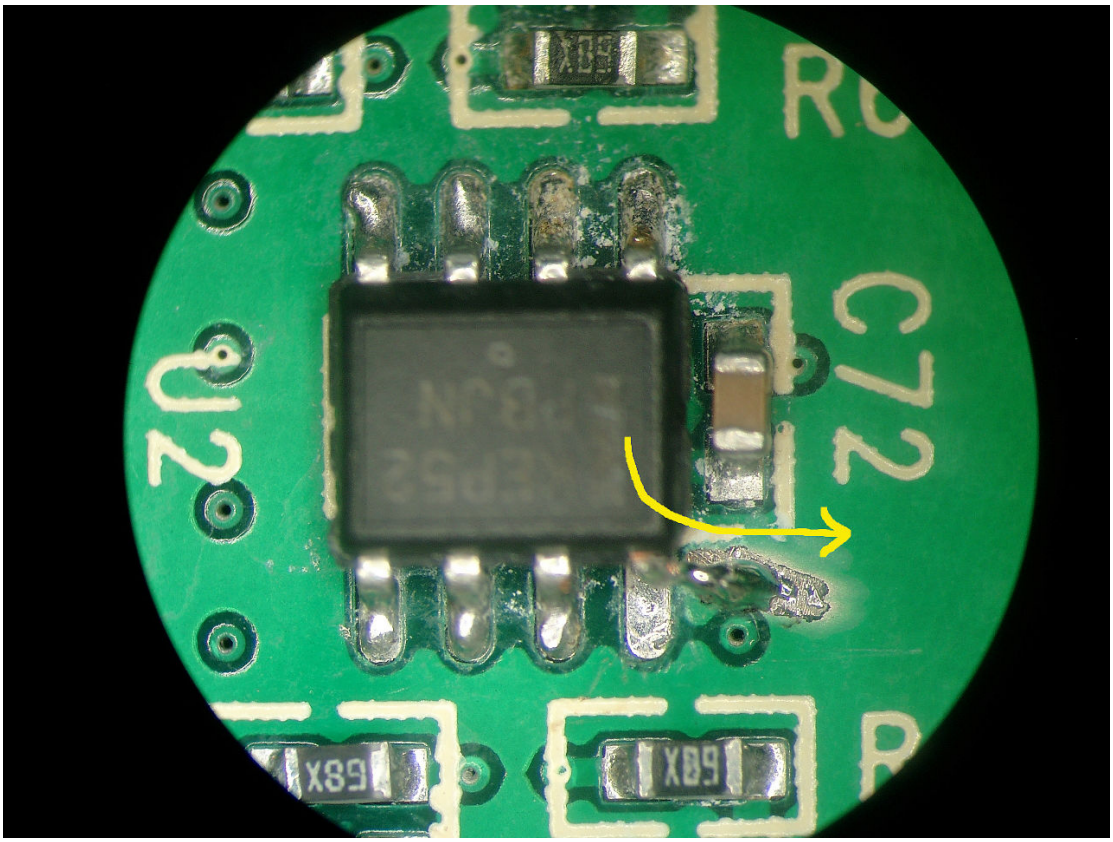
This shows the ADB1 with the two modifications already made.

1. The supply voltage of the digital electronics has to be reduced by about 0.5V. This is done by inserting a **Schottky diode (1N5819)** in the power plane. Parts of the plane need to be removed, then the diode is soldered on the board. Be careful when milling away the copper. This is a multilayer design, if you get too deep, the next layer may be damaged. Make sure the diode is mounted in the proper direction.



2. The clock driver needs a different supply voltage. This is easily made by **lifting** the pin from the pad and **resolder it** to the surrounding **power plane**.Remove a bit of the solder mask before. Be careful with this, since the pin can easily **break off** when you bend it sideways.





After this modification it is no longer necessary to have the ADB1-Core2-Interface, in fact the **system will no longer work if this interface is inserted**.

You will not notice any difference if your system had been calibrated properly before. But in case your power level is too low or too high the performance of the system will be much better, since the system noise has (almost) disappeared.

For that reason we **strongly recommend** to have this modification. Either made by us or made by yourself (**at your own risk**).