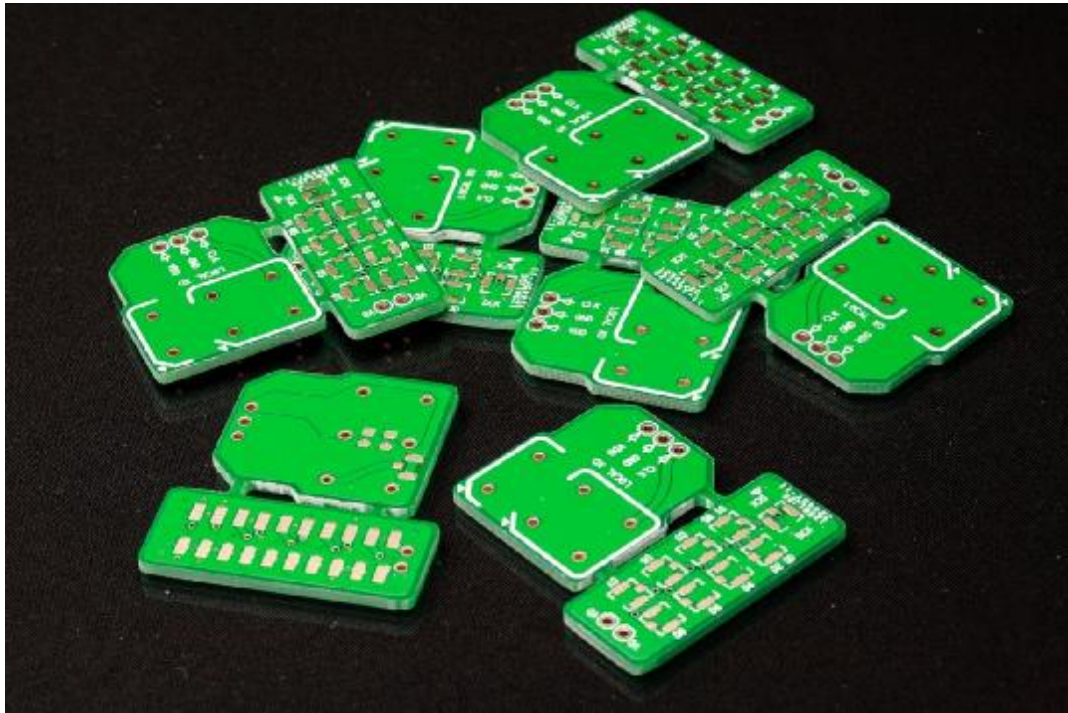


Buffalo III FIFO adapters

By Ian Jin 2012-07-12

Descriptions

Buffalo III U.FL input adapter and the clock adapter were designed into one PCB. So, first of all you have to separate them by a side cutter and file the cutting section if you want.

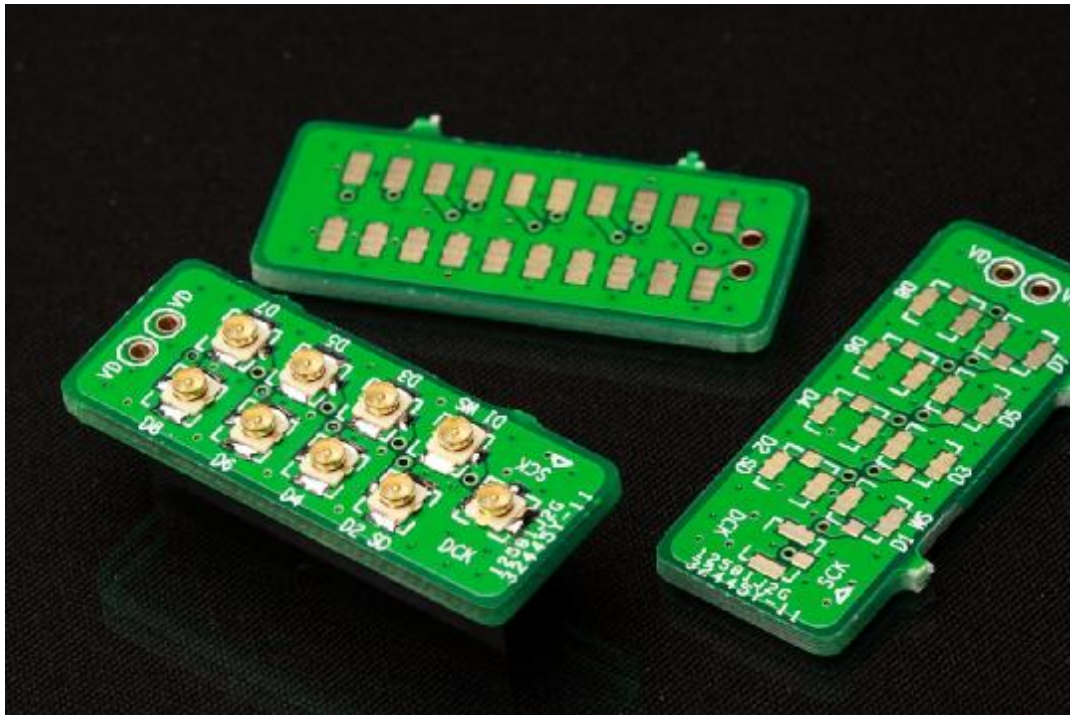


Buffalo III U.FL input adapter

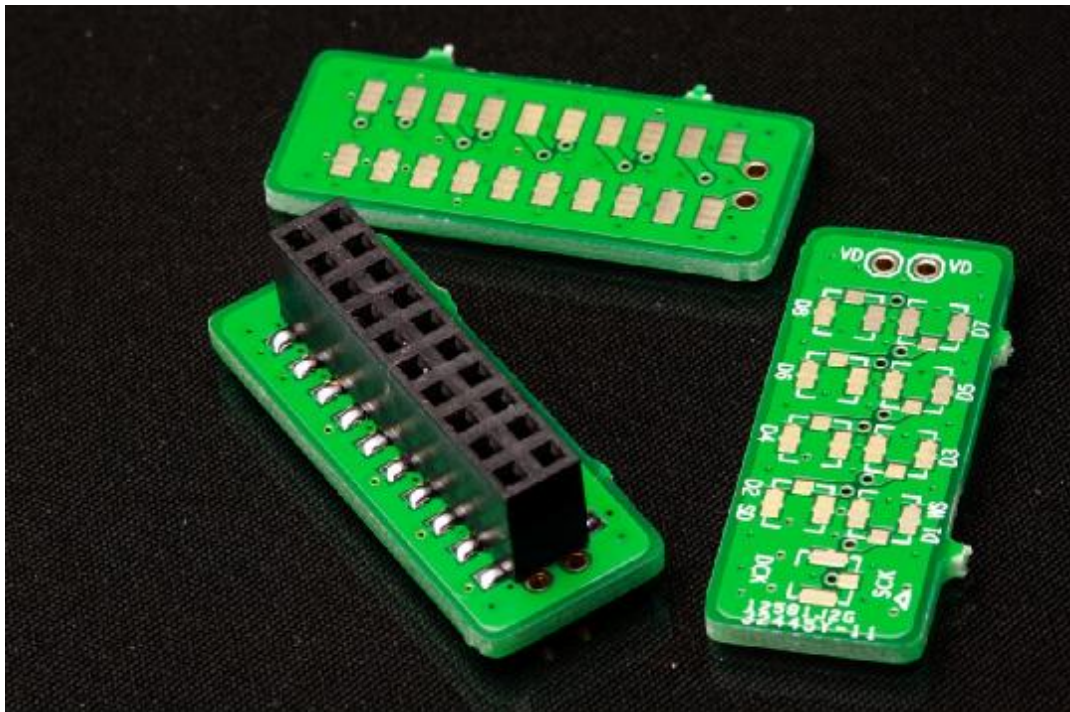
Because of the internal ASRC architecture, Sabre32 ESS DACs are quite sensitive to the jitter from the input signals. Both SYNC mode and ASYNC clock mode are. To work together with higher quality front end such as a FIFO, BIII need better input connections. This adapter is a kind of perfect solutions to introduce higher quality U.FL connectors and coaxial cables into BIII DAC. But may still not as good as those with U.FL sockets originally placed on the PCB.

There are 9 U.FL footprint on the input adapter PCB corresponding to DCK, D1-D8 signals from BIII DAC. It can support all modes: Multi-channel S/PDIF, stereo/multi-channel I2S, or stereo/multi-channel DSD. But you may not need all of them.

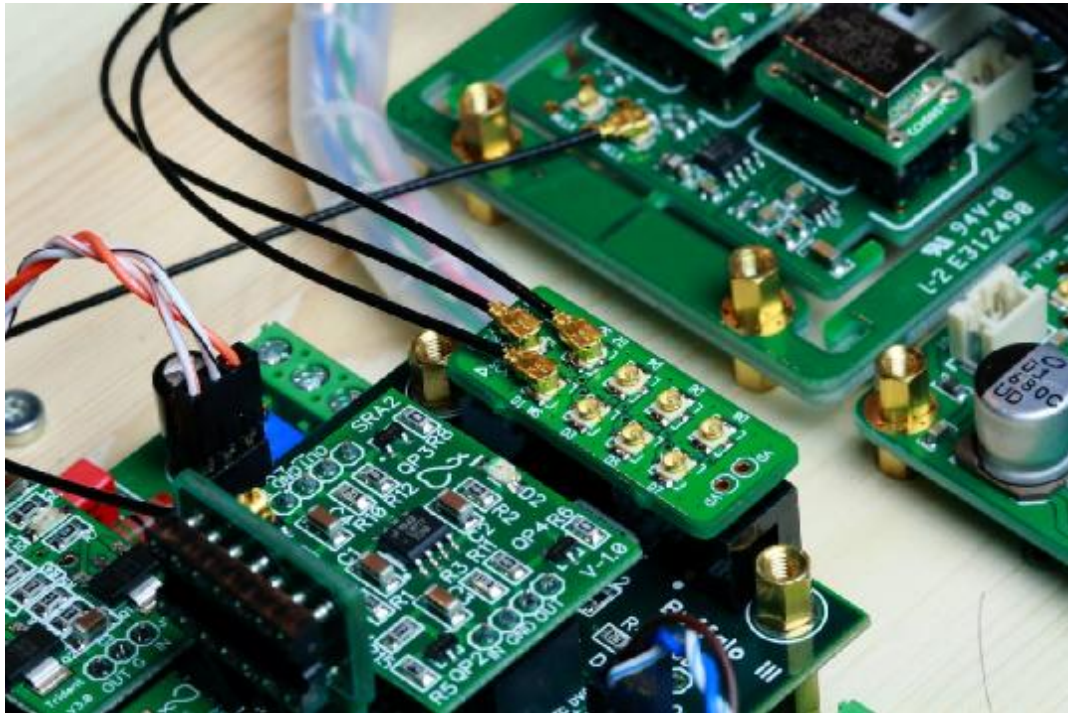
You can just mount U.FL sockets you need and keep the rest open. That's the first step.



Then, flip over the PCB, mount the 20 PIN SMT female connector header from the back.



Plug the adapter into the BIII input male socket (DIN). Please make sure the adapter is located just at the centre of the socket and SCK face to DCK. Then connect input signals to the corresponding U.FL sockets, it will work.



BIII SYNC/ASync clock adapter

BIII didn't design with the SYNC clock mode originally. But with this small adapter, it can achieve both ASync and SYNC clock mode.

Assemble the U14 PIN IC socket (cut the unused pin 2, 3, 5, 6, 9, 10, 12, 13 by a side cutter), U.FL socket, optional MLCCs and the 3 pin right angle connection to the adapter. Then remove the CCHD950 from BIII PCB. The three reserved through hole will appear under the XO position. Solder the CLOCK, GND and VDD_XO pins of the right angle connector from the adapter into the same name through hole on the BIII PCB.

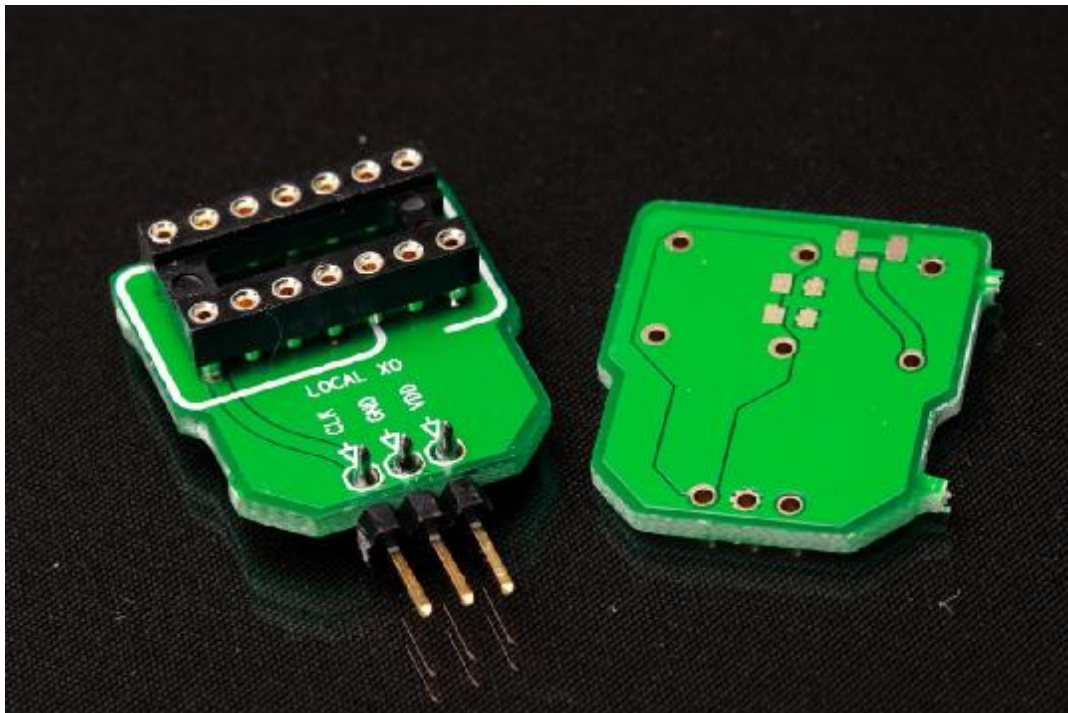
The two decoupling capacitors are optional. It could be two 100n 0603 MLCC. You may not need them if you already have good decoupling circuit on your XO.

With U.FL cable connected to the external clock from FIFO clock board and onboard XO removed from the socket, ESS9018 will work at SYNC clock mode; while with on board 100MHz CCHD950 plugged into the socket and

external U.FL clock cable disconnected, it will work at ASYNC clock mode. So, having this small BIII clock adapter, it would be very easy to switch between ASYNC and SYNC clock mode. Different modes with different clocks will be experienced and a lot of researching and comparing are waiting.

Please not the PIN1 of the XO socket is located at top-right corner of the adapter. Plug the XO into wrong position will damage the XO.

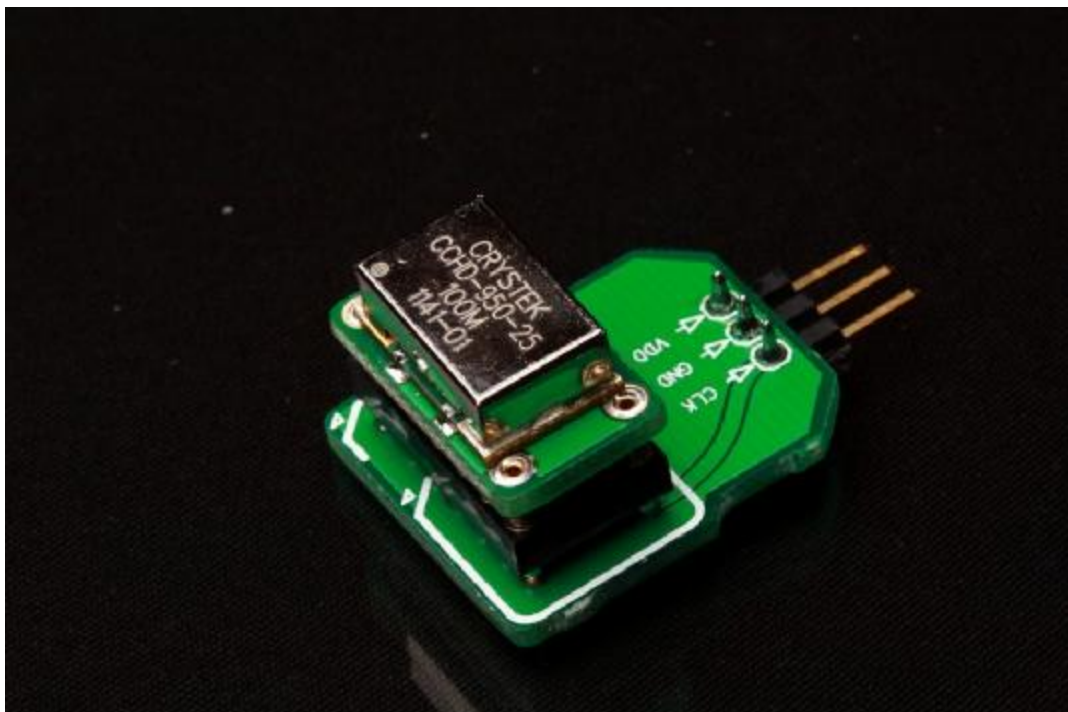
Please see the pictures below for details.



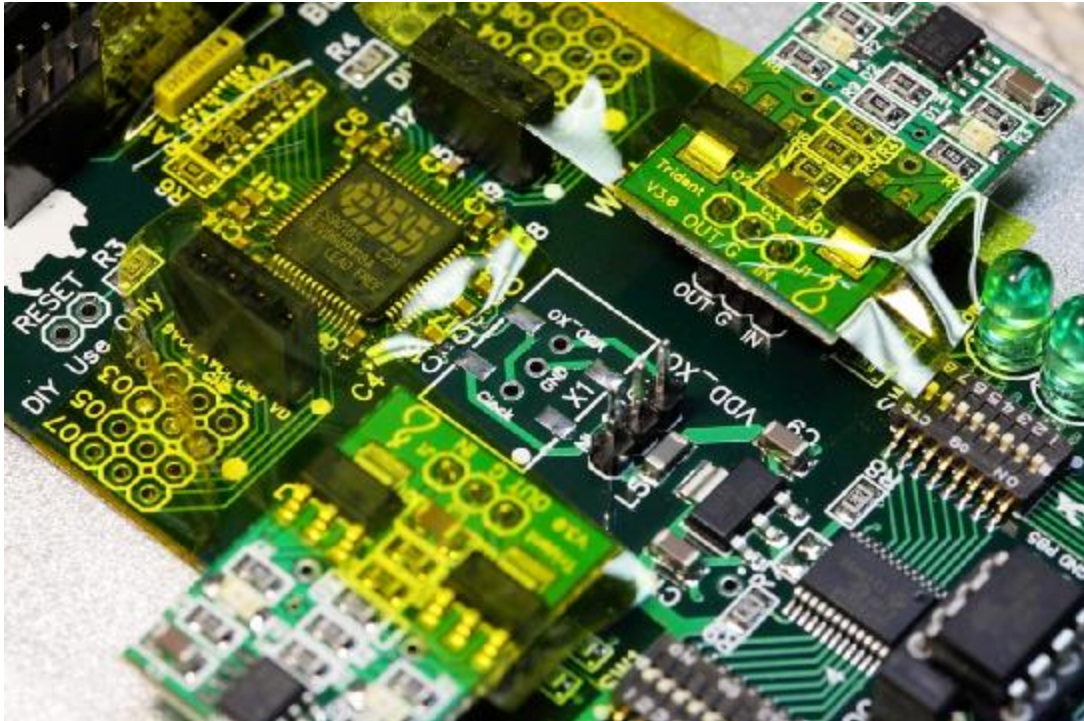
Mount the 14 pin IC socket and the right angle 3 pin connector to the BIII clock adapter



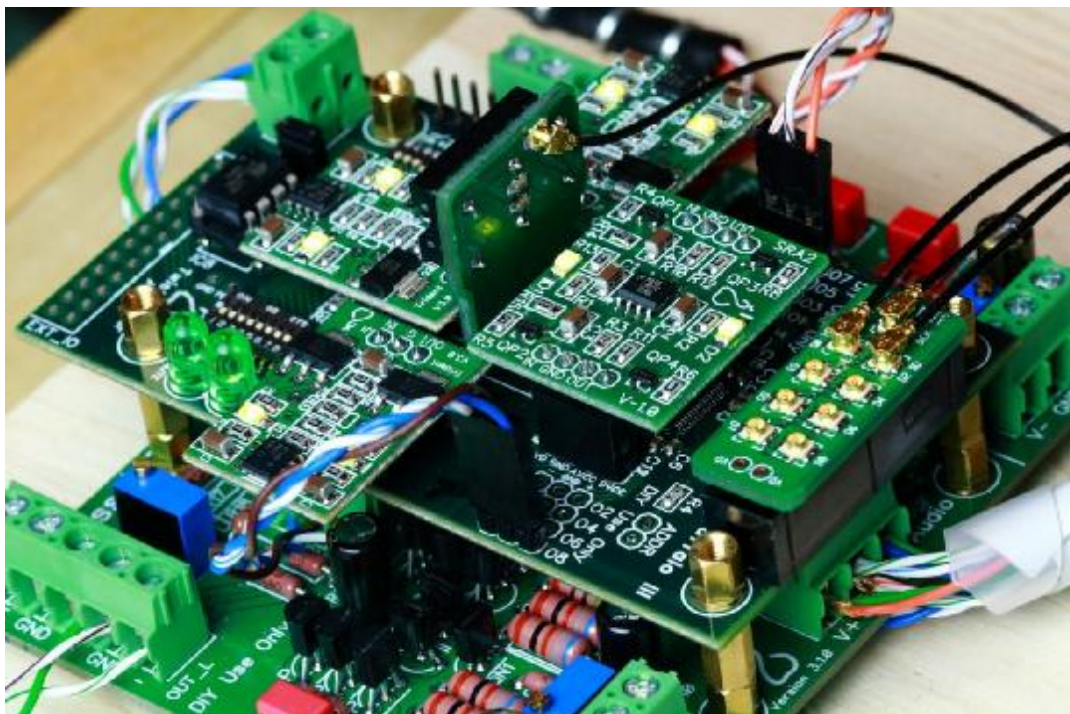
Mount the U.FL socket and the optional capacitors



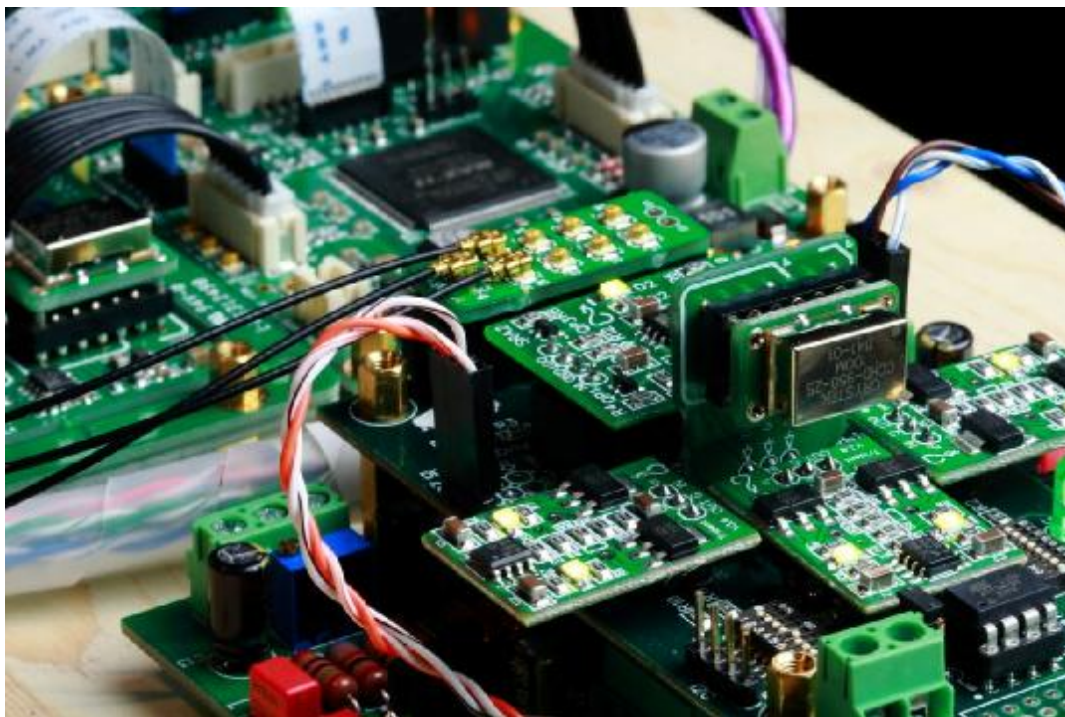
Finished BIII SYNC/ASync clock adapter



Remove the original SMT XO from the BIII PCB and appear the through holes



ESS9018 SYNC clock mode (I2S and MCLK from FIFO)



ESS9018 ASYNC clock mode (I2S from FIFO with MCLK from local)

Components Digikey part numbers

U.FL socket: H11891CT-ND

20 PIN SMT female header: S5719-ND

14PIN IC socket: 4-1571552-2-ND

Right angle pins: S1111E-36-ND

100n 0603 MLCC: 445-1316-2-ND

Tips: Always use U.FL coaxial cables as short as possible, especially for the clock signals.

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