Introduction

Texas Instruments supplies a range of 8051-based System-on-Chip radio transceiver devices, identified by a "CC" part number prefix, that were originally designed by Chipcon. These devices may be programmed and debugged by a low-cost tool known as the CC Debugger.

This application note contains hints for using the CC Debugger interface together with a Merifix test fixture, to make a self-contained programming fixture suitable for use in the engineering lab or in low-volume production.

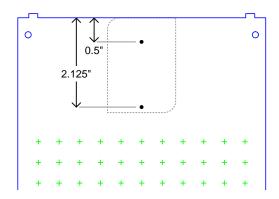## Mechanics

Mounting

The most convenient location to mount the CC Debugger is underneath the probe plate, with its USB receptacle against the rear panel insert.

Mounted like this the CC Debugger does not encroach into probable area at all. The photo

shows one mounted below the probe plate of an MF500 fixture. On the MF300 the situation is similar.
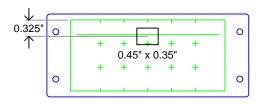
A straightforward way to mount the CC Debugger is to open the enclosure (it just clicks together), mount the bottom half to the underside of the probe plate with small self-tapping screws, then reinstall the circuit board and snap the top of the enclosure back on.

Suitable screws are #4 x 1/4" self-tapping, pan-head. Drill 1/8" (3mm) clearance holes in the enclosure and 5/64" (2mm) pilot holes in the probe plate. The circuit board sits on plastic standoffs inside the enclosure so there is sufficient clearance under it for the screw heads.

Rear Panel

A single cut-out in the rear insert is sufficient to provide access to the USB connector.

The hole must be big enough to clear the plastic part of the USB plug to allow it to plug in fully.

Drill a 1/4" hole then enlarge to the required size with a small file. The rear insert is soft plastic and cuts easily but will crack if stressed, so be careful.

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Wiring

Connection to the Target header of the CC Debugger may be made with a 2x5 IDC type receptacle and ribbon cable, with the individual wires separated for connection to the test probes.

Description	Manuf.	Part No
Receptacle	3M	3473-6600

A nicer arrangement is to use a 2x5 housing and crimp terminals for individual wires.

Description	Manuf.	Part No
Housing	Molex	22-55-2101
Terminals	Molex	16-02-0097

The discrete wire connector protrudes from the programmer a little more than the IDC type connector, but still does not encroach into the probable area.

The connections needed between the tool and the target are shown in the Texas Instruments "CC Debugger User's Guide", which can be found on the TI web site on the CC Debugger page or by searching for document number SWRU197.

In this scenario you are probably going to want the programming tool to supply power to the target. Connect your V_{DD} test probe to pin 9 of the header (3.3V power out) in addition to pin 2 (target voltage sense). This avoids the need for a separate power supply for the target.

If this does not work check that the CC Debugger is indeed supplying 3.3V from pin 9. If it is not, check that resistor R11 (on the top side of the board, near pin 9 of the target connector) is fitted. If it is not, fit a zero-ohm jumper (or a small solder blob).

Usage

For standalone programming it is likely most convenient to use the Texas Instruments SmartRF Flash Programmer software. This can be downloaded from the TI web site on the SmartRF Flash Programmer page or by searching for SWRC044.

The button on the CC Debugger is for use when upgrading the debugger firmware, and for retrying target device detection. When using the Texas Instruments SmartRF Flash Programmer software it is not normally needed after the initial connection. If you do need to occasionally press it, the open nature of the fixture means it is easy enough to reach under the probe plate.

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