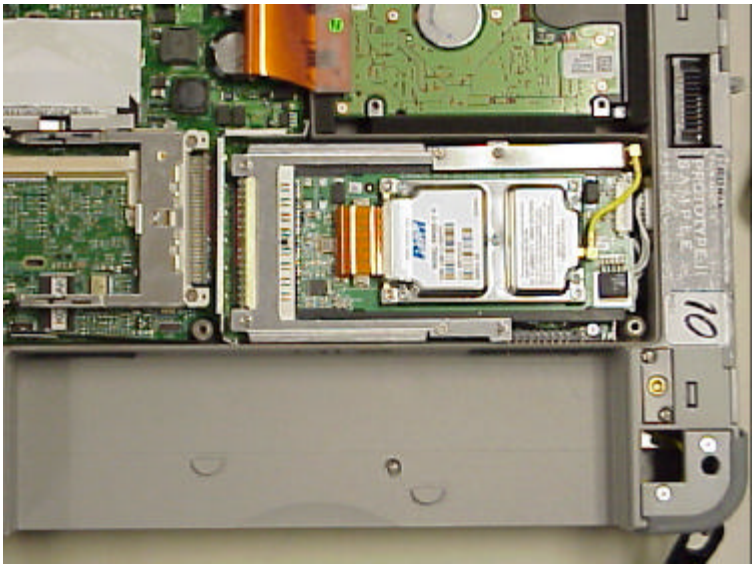
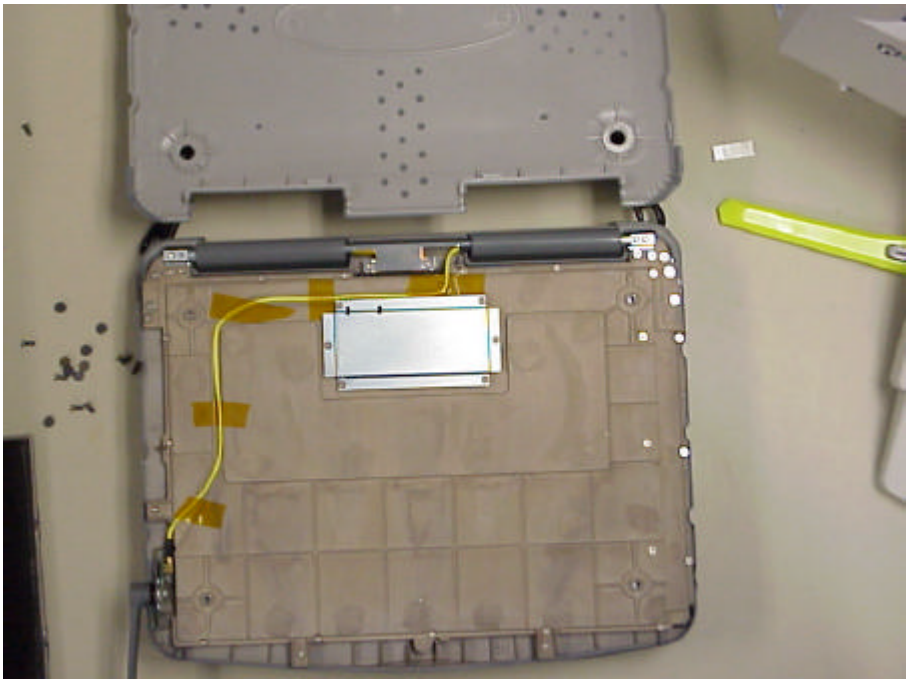
Comparison of Radio Integration on IX250 and IX550

Both the IX250 and IX550 are rugged laptop computers using similar approach to wireless integration. Both platforms will use identical radio modules, coax type, and antenna blades in order to reduce development time and effort. In both, the antenna is mounted on a corner of the display while the radio module is mounted in the base of the unit. The RF signal is routed through a cradle contact board which has a mechanical switch mounted on it. From the switch board a coax is routed through the display hinge, up the display, and to the antenna pcb. The antenna pcb is the same for both platforms except for passive component values needed for impedance matching. The following pages show the detailed coax routing and board locations for both platforms.

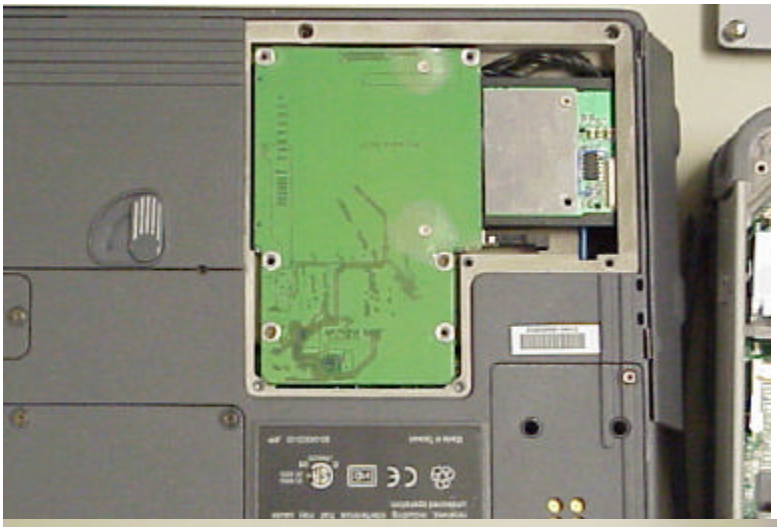


A 1.8 inch coax is routed from the radio to a MMCX to MMCX bulkhead in the magnesium case.

Outside the magnesium case and under the keyboard bezel a 3.8 inch cable routes to the cradle contact board that uses the same mechanical switch as the IX250. From the cable a 17.5 inch cable routes up through the display hinge.

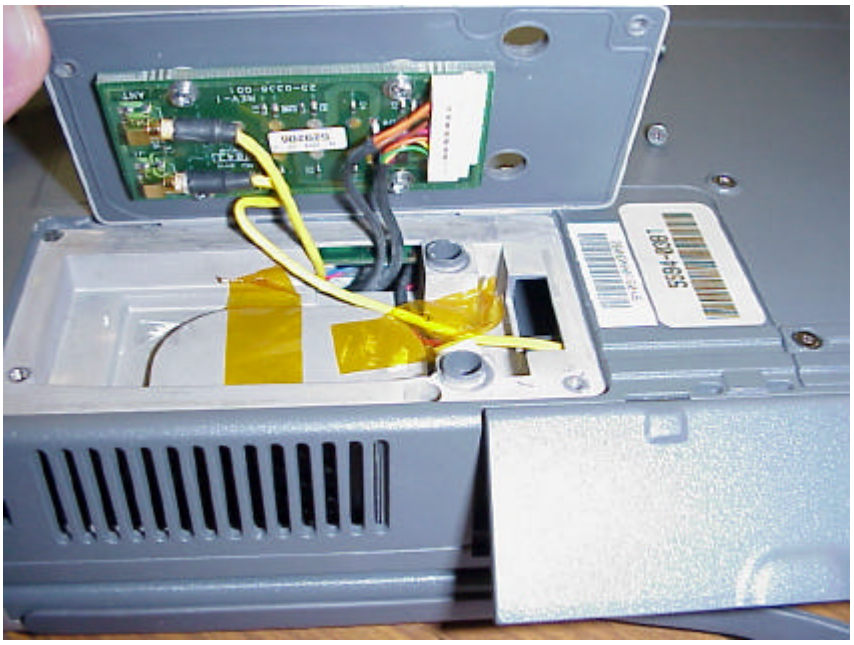


The coax then routes up the back of the display case to the antenna matching network PCB. The matching PCB varies with network type and is generally not the same between IX550 and IX250 due to the different mechanical form factors. The back case is covered with a plastic overmold. Note that the antenna is located on the upper left corner on the display on the IX550 and on the upper right for the IX250.

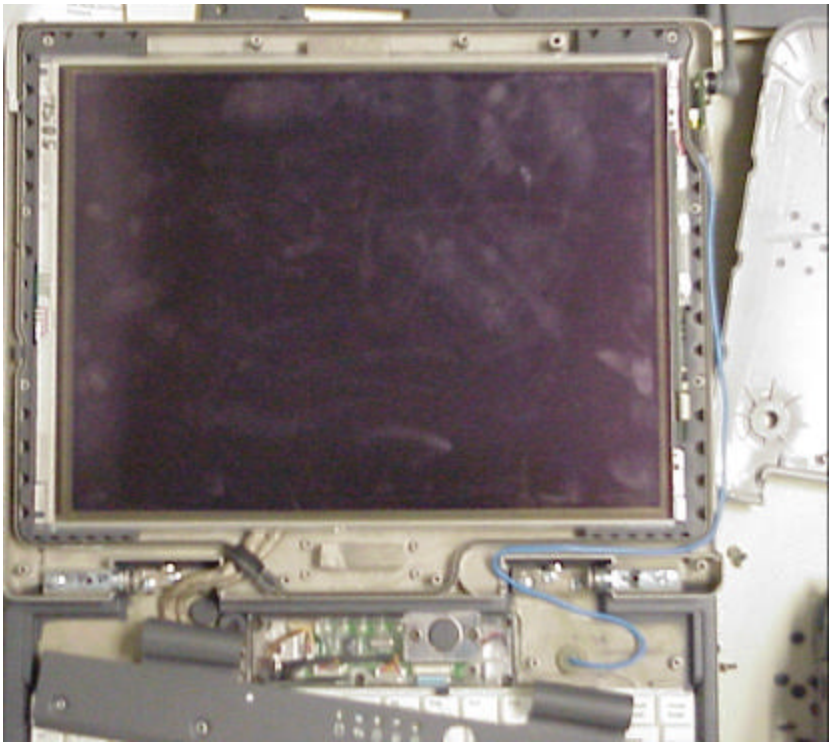


In the IX250 the radio board is located on the same side as the IX550 but more towards the front of the unit.

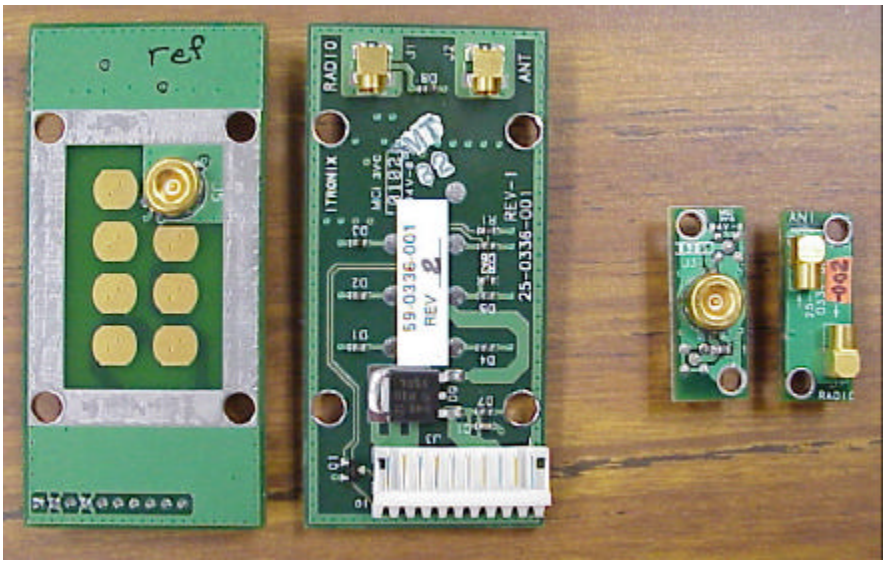
The IX250 does not use a bulkhead connector, but instead has a 8 inch coax that routes from the radio to a cradle contact board. The coax used is the same type as is used for IX550.



The IX250 uses a different cradle contact board with additional functions, but the RF path is similar to IX550's. The RF signal is routed onto the PCB through a mechanical switch and out towards the display. The second coax is approximately 20 inches in length.



The coax passes through a hole in the magnesium case and then routs through a hinge to the display case. It then routes up the right side in a channel to the antenna matching pcb. The side channel has a plastic cover to protect the coax and seal the display area. The antenna is located on the upper right corner. The IX250 and IX550 use the same metal radiating element encased in a slightly different overmold form. However, the overmold material is the same in both cases.



Although significantly different in size, the RF functionality is the same. The RF path routes through an identical mechanical switch which allows the signal to be switched to an external antenna. Both boards were designed with 50 ohm characteristic impedance traces. Also on the RF signal path is a low capacitance transient voltage suppression (TVS) component which is intended to provide ESD protection to the radio. Both boards use the same TVS part.