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Theory of Operation

Bug Y.T. is a general purpose computing platform. It is an OMAP3530 based system that has 3 PIM (plug-in module) connectors and one PIM+ connector. The design has been made modular enough to house different modules on these PIM connectors and release the functionality of a product.

The Bug Y.T. uses a port replicator which has a 10/100 Mbps LAN interface that can transfer data from the Bug Y.T. to a host system.

The PIMs have certain features implemented including presence indication, interrupts, EEPROM identification, GPIO, power control, LCD serializer, and camera serializer. The Bug Y.T. provides interface functionality to these PIMs.

The power subsystem on the Bug Y.T. and the PIMs are implemented in such a way that each one can derive power from the other. The Bug Y.T. and PIM modules can run directly from DC power/ Battery. Battery charging can happen from the Bug Y.T. to the PIM or vice versa.

Transmitter functions:

The wireless network communications uses an integrated radio transceiver, which is IEEE 802.15.4 compliant and operates in the 2.4GHz to 2.4835GHz ISM unlicensed bands.

The IC contains a 2.4GHz RF transmitter/receiver with digital direct sequence spread spectrum (DSSS) baseband modem with MAC support.

The antenna is a chip antenna placed on the top layer of the printed circuit board. It is tuned to 2450MHz and has a characteristic input impedance of 115Ω unbalanced. This is a folded monopole $\lambda/4$ wave with reasonable omnidirectional radiation.

The antenna section should be kept away from all metal objects; there should be no pcb traces or power planes under or around the antenna section. The antenna is located on the edge of the board.

The FCC certification does not allow an external antenna to be connected to the PCB.