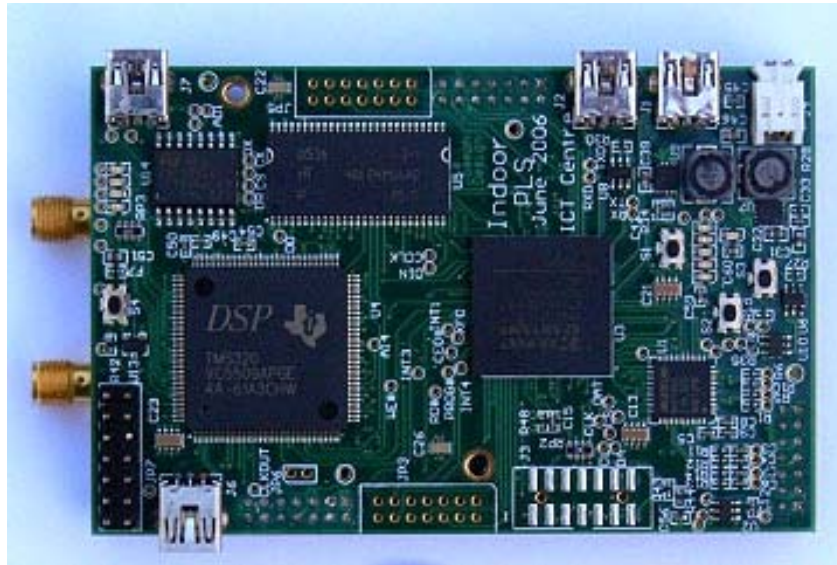


Radio Node – The Digital Board



The DSP is a Texas Instruments TMS320VC5509A which can perform 400 MIPS with 256 Kbytes of internal RAM and 8 Mbytes of external SDRAM.

The FPGA is a Xilinx Spartan 3E with the equivalent of 1.2 million gates and 504 kbits of block ram and 28 multipliers capable of 7 GMACS!

Two 10-bit DACs for I and Q channels on transmit, and two 8-bit ADCs for I and Q channels on receive. Both have a maximum sample rate of 40 MSPS.

One 12 bit 1 MSPS Converter for Received Signal Strength Indicator.

The Digital Board also contains sensors and interfaces for use in various applications, and these are:

- 8 LEDs for visual output.
- 2 switches for user input.
- 1 buzzer for audio output.
- Battery Voltage and Temperature Monitors
- Inertial sensors to complement localization research:
 - Digital Compass.
 - Three axis accelerometer.
 - One axis gyroscope.
- An MMC connector for an external memory module.
- Three UART interfaces with data rates programmable up to 921,600 baud.
- Expansion connectors – directly connected to FPGA for maximum flexibility.
- Connectors to RF Board for analog and digital control signals.