A Radio Relay System for Remote Sensors in the Antarctic (or anywhere!)

Final Seminar

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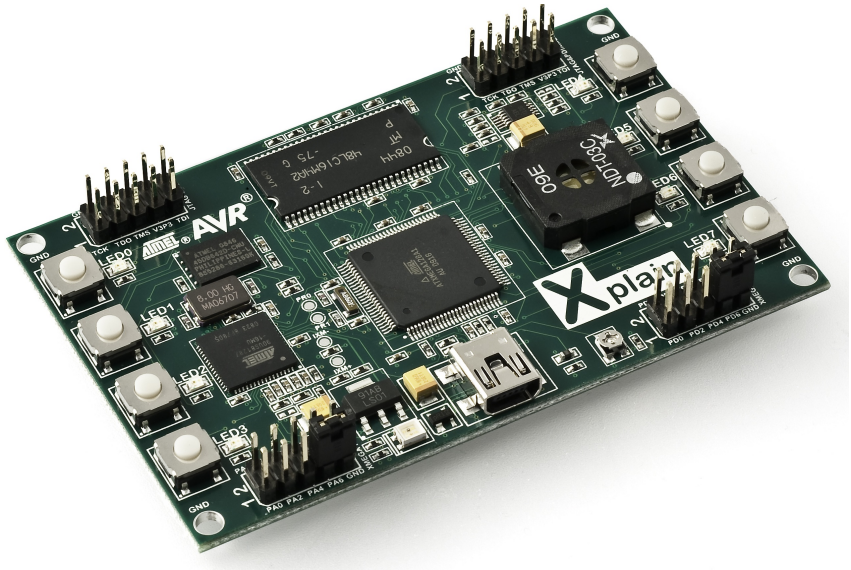
Project Aim

- Design and build a low power HF data transmitter for use in remote sensor systems.
- Originally intended for use in the Antarctic.
- Can be used anywhere!

Hardware & Software Overview

- Atmel XMega Micro-controller
- Analog Devices AD9835 Signal Generator IC
- Class E Power Amplifier

CPU - Atmel ATXmega128A1

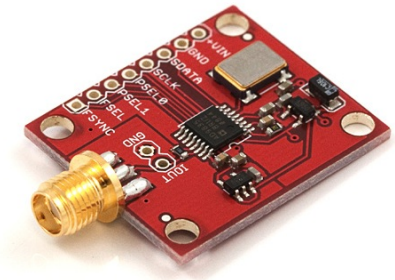


Atmel XPlain Development Board

- Atmel ATXmega128A1 Micro-Controller, clocked at 32MHz
- 8MB SDRAM
- 8MB NAND Flash Memory
- Low Power Consumption - 18mA @ 32MHz, 1.4mA @ 2MHz, 1.16μA Power-Save

Signal Generator - Analog Devices AD9835

- Original intention was to use an AD9834
- AD9835 Board ended up having the same power requirements!



Analog Devices AD9835

- Can generate Sine-waves between 1Hz - 25MHz.
- 2 programmable (via SPI) frequency registers.
- Dedicated pins for switching between registers.
- Using 16MHz SPI clock, can reprogram at 7500Hz.