

Introduction to AT86RF211 (TRX01) [a SmartRF™ transceiver]



Main features

"A single RFI C for data communication in I SM bands from 400 to 930 MHz"



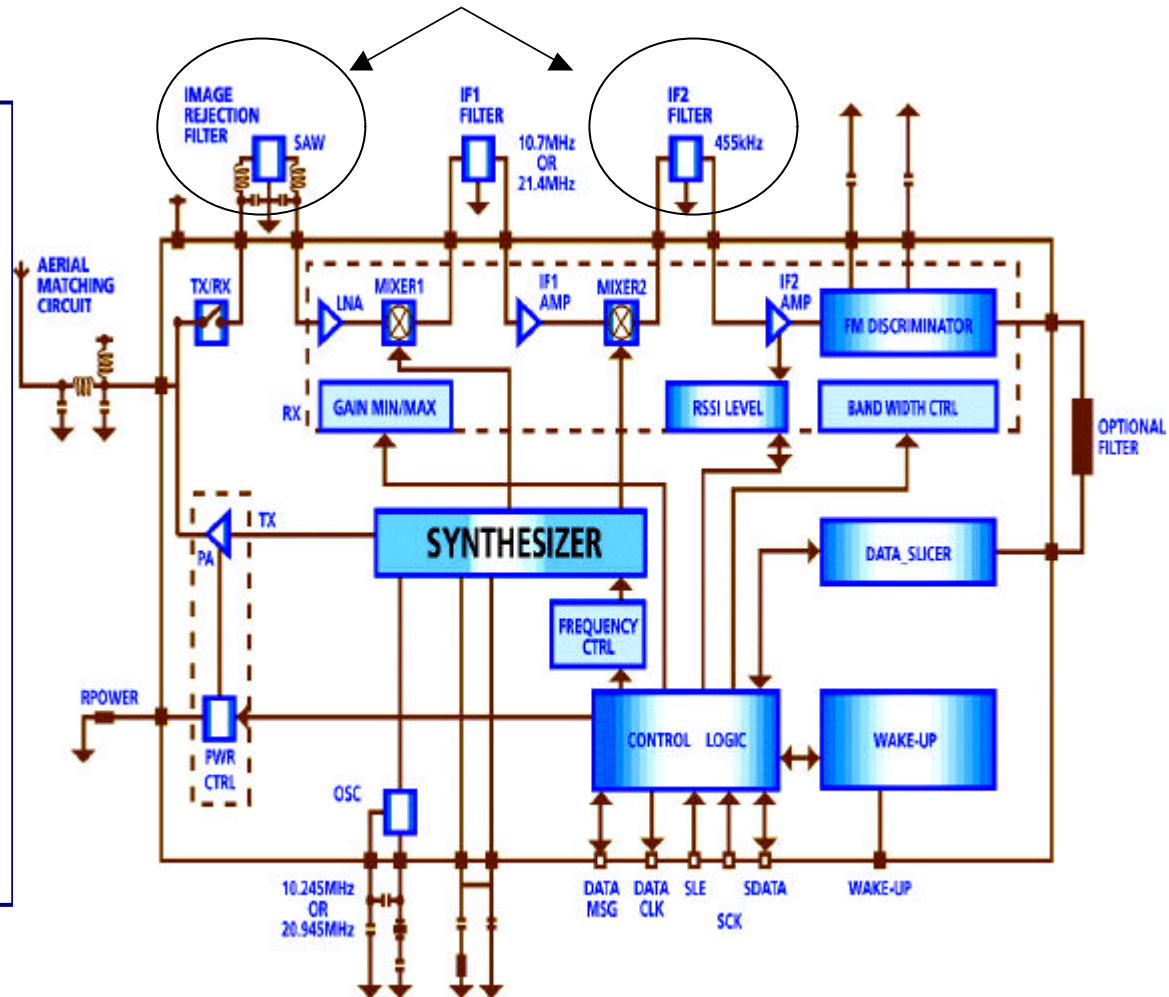
- ✓ Half Duplex FSK Transceiver
 - data rate : 20 kbps typ , up to 50 kbps
 - including TX/RX switch
- ✓ Secured transmissions
 - multi channels capability
 - any frequency in an I SM band can be set up by software (precision \approx 200 Hz)
 - fast frequency shifts --> FHSS
- ✓ Long Range : 300 to 800 m, open field
+14 dBm PA & good RX sensitivity (-105 dBm)
- ✓ Easy control & monitoring
 - 3 wires serial interface
 - Bit synchronization in RX mode
 - power management features, incl. stand alone wake-up procedure



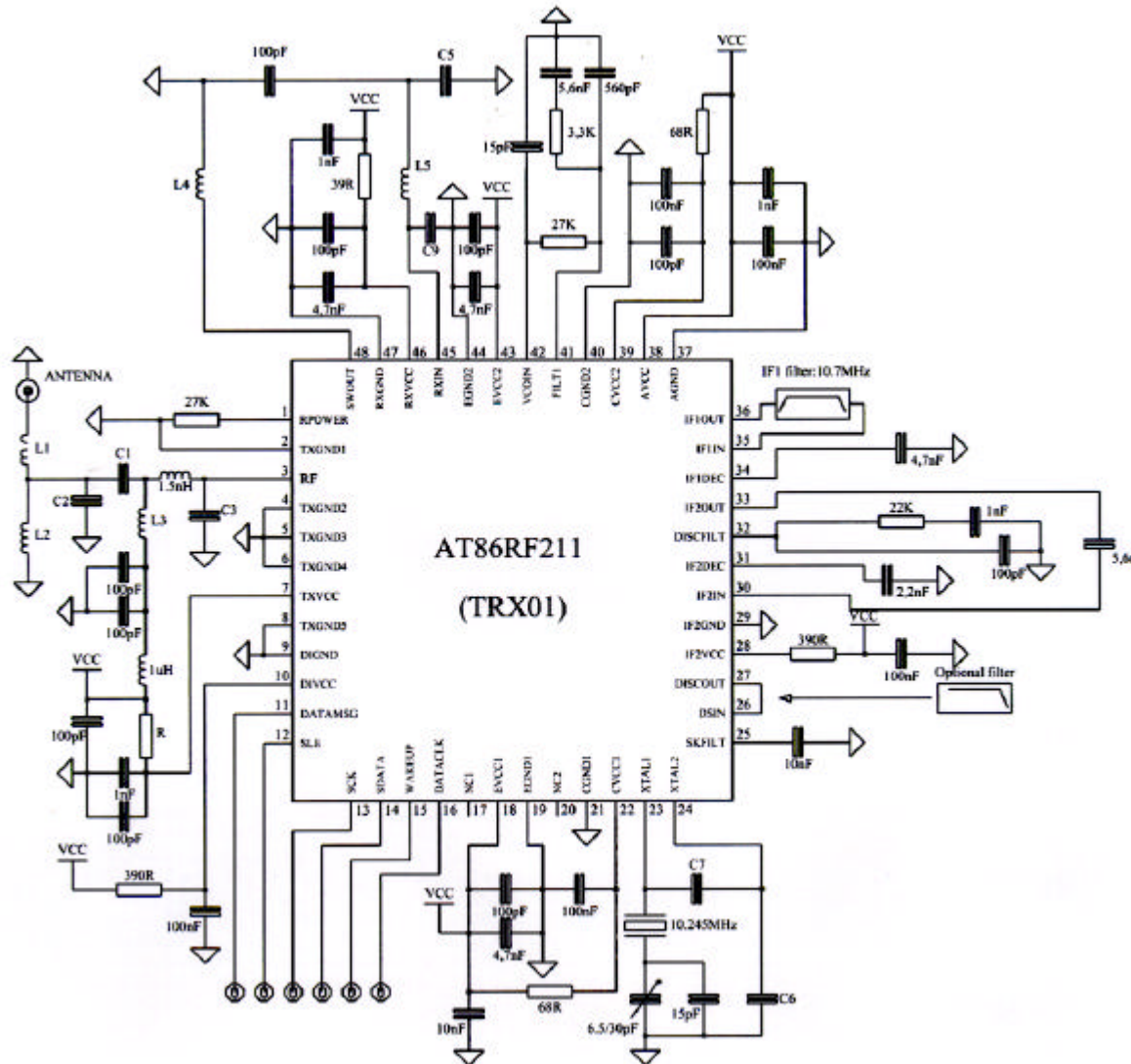
Schematics

Filters selected according to immunity & range requirements

- Integrated VCO & synthesizers (resolution $\approx 200\text{Hz}$)
- 20 kbps typ. (50 max)
- multi channels
- long range
- power management



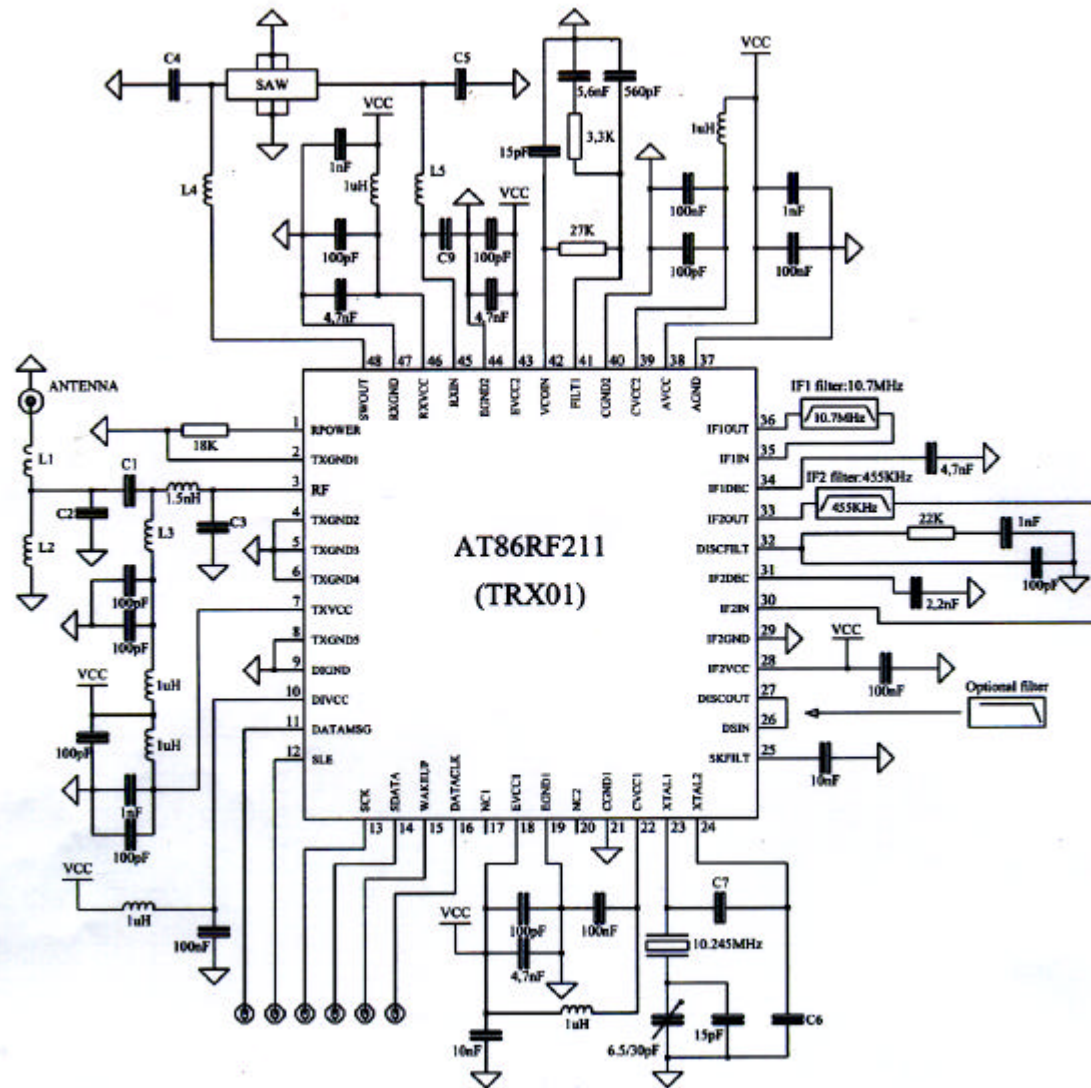
Typical Short-Range Applications



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Typical Long-Range Applications



AT86RF211-TRX01 typical applications



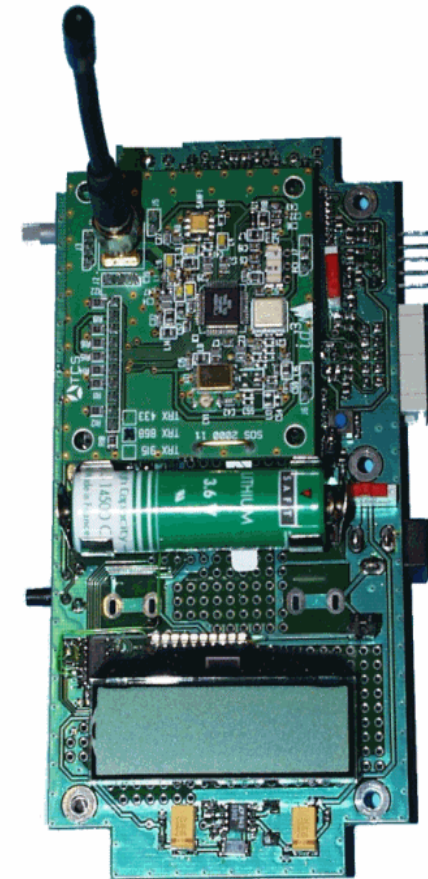
- Telemetry Systems / Sensors 'monitoring
 - incl AMR & energy management
 - incl Alarm & Security Systems
- Multi-media toys, Internet Appliances
- Smart card readers
- Electronic Point of Sales (EPOS)
- General purpose OEM boards
- Long range remote control



Refer to document "AT86RF211 Applications"

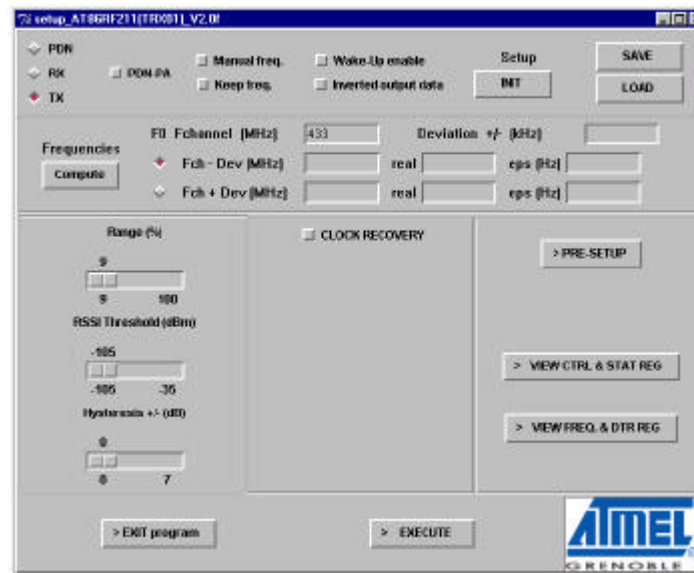
Developement Kit AT86RF211/AVR (1)

- A stand-alone board with :
 - AT86RF211 (TRX01) and AVR™ μ C (with battery, LCD & SPI)
 - Basic software functions (C language) :
 - read/write registers
 - send/receive data
 - display on LCD
 - In System Programming by using standard AVR starter kit's cable & software tools
 - Available frequencies = 433, 868 & 915 MHz



Developement Kit AT86RF211/AVR (2)

- The transceiver can be disconnected from AVR & directly linked to a PC for radio performances evaluation & software debug.
- A friendly user interface then allows to set up the chip & have direct access to all registers.



Choice of the companion microcontroller

- Development Kit 's microcontroller is AT90LS8535, which has got numerous functions (incl. A/D, UART) and 8kB of flash.
 - Can fit most applications.

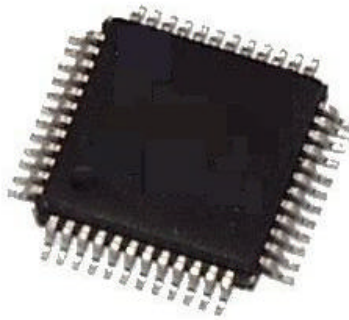
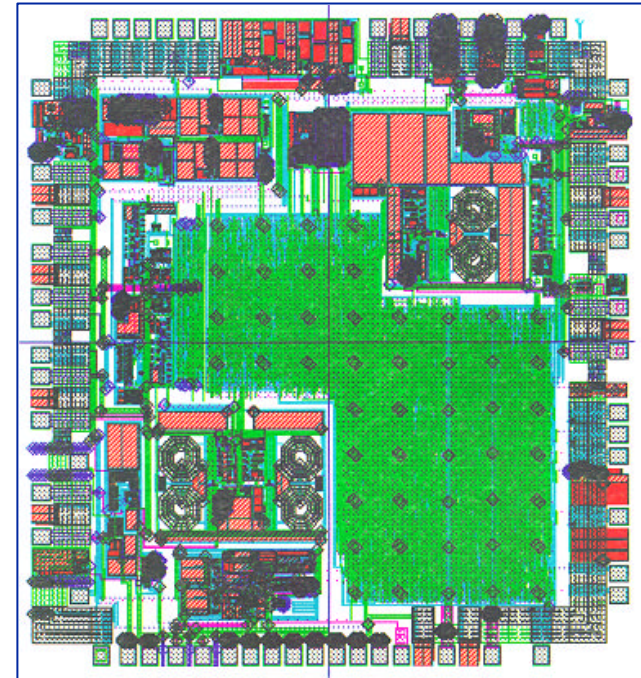
- For the final application, the software can be downloaded in a smaller microcontroller, depending on application 's needs :
 - AT90S8515 : 8 kB, no ADC
 - AT90LS4433 : 4 kB, 6 ADC



Availability

- Ramp-up from March 2001
 - Samples available

- Evaluation kit available
 - Will be replaced by a Development Kit with AVR® microcontroller from May



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