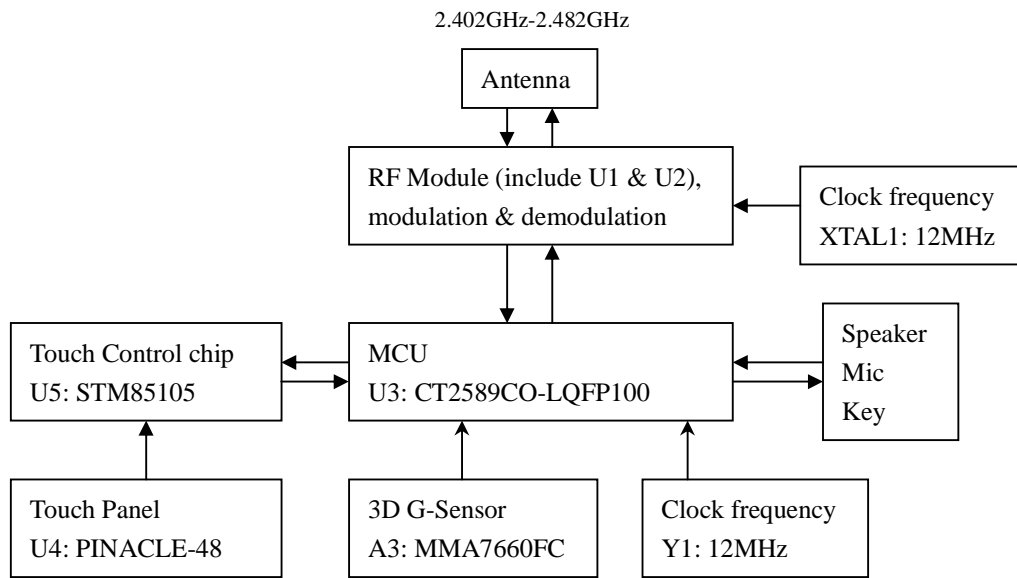


Block diagram



RF Module information.

## 1 2.4 GHz Smart Transceiver Module

This Application Note provides guidelines, hints, requirements and electrical specifications to enable customer to design in the 2.4 GHz Smart Transceiver module "Mc Adams" in wireless XBOX applications.

### 1.1 Overview

The 2.4 GHz Smart Transceiver module is intended to be used as a main building block in wireless XBOX peripheral systems. It can be easily connected to the host board. Communication between a backend processor and the module is done via a serial peripheral interface (SPI). The module top view is given in [Figure 3](#).

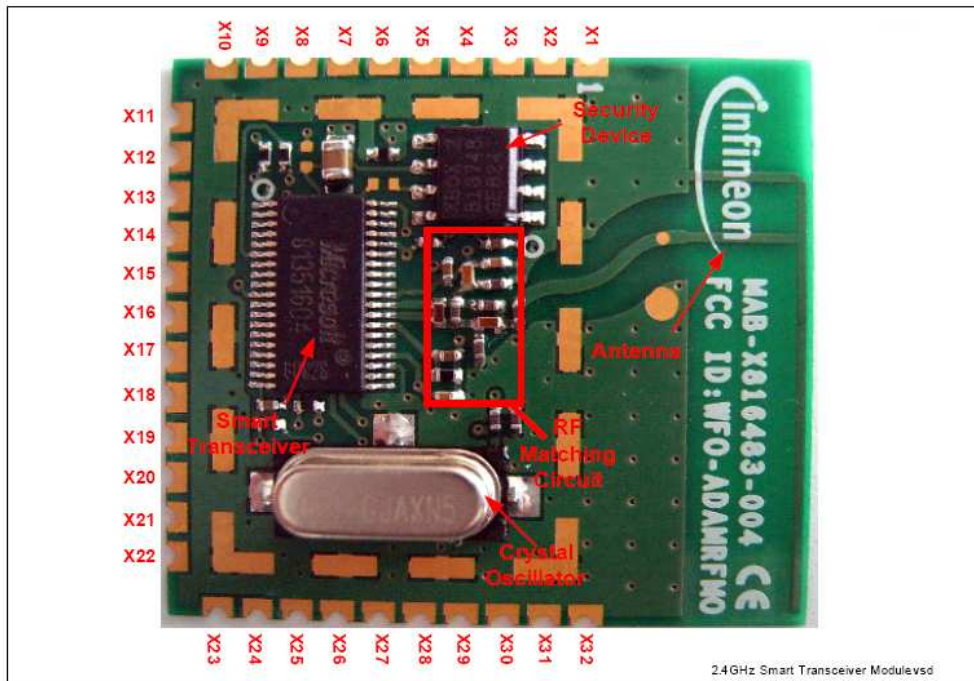


2.4GHz Smart Transceiver Module2.vsd

**Figure 3 Top View of the 2.4GHz Smart Transceiver Module**

The Mc Adams RF module comprises a 2.4 GHz Smart Transceiver IC that is supported by a 12 MHz crystal oscillator and a security device, needed for authorization as an XBOX conform peripheral. The RF output is connected via a matching circuit (discrete balun) to a printed inverted F-antenna.

*Note: Applications including the Mc Adams RF module must have an exterior label showing the information below:  
" Contains FCC ID:WFO-ADAMRFMO "*



**Figure 4 Top View of the 2.4GHz Smart Transceiver Module (Metal Case Removed)**

Furthermore it features module pins at the edges of the PCB which are described in [Table 1](#).

**Table 1 Module Pin Description**

Pin	Name	Type	Function
X1	VSSA	GND	analog GND
X2	VSSIO	GND	digital GND
X3	VSSIO	GND	digital GND (module extra GND pin)
X4	VDDIOSEC	Supply	IO Supply for security device <i>Note: For power optimization VDDIOSEC can be disabled by a voltage switch on the application host board controlled by VDDCREG. If power switching is not used VDDIOSEC has to be connected to VDDIO.</i>
X5	CLKOUT	O	12 MHz clock or SysClk output for backend <i>Note: Voltage range of the microcontroller clock input needs to be checked against output voltage on CLKOUT. If it doesn't fit a level shifter needs to be added on the host board.</i>
X6, X7	VSSIO	GND	digital GND (module extra GND pins)
X8..X10	VSSA	GND	analog GND (module extra GND pins)
X11	WAKEUP_1#	I	Wakeup_1, active low

**Table 1** Module Pin Description (cont'd)

Pin	Name	Type	Function
X12, X13	VDDIO	Supply	IO Supply
X14	GPIO(3)	IO	General Purpose IO
X15	GPIO(4)	IO	General Purpose IO
X16	D_AVAIL#	O	SPI slave data available
X17	GPIO(2)	IO	General Purpose IO or FRAME_SYNC#
X18	CS#	I	SPI chip select
X19	MOSI	I	SPI master output slave input signal
X20	MISO	O	SPI master input slave output signal
X21	WAKEUP_0#	I	Wakeup_0, active low
X22	CLK	I	SPI clock
X23	RESET#	I	Reset, active low
X24	VDDCREG	S	VDDC regulator output
X25..X32	VSSA	GND	analog GND (module extra GND pins)

Symbols:

- I: Input
- O: Output
- S: Supply