Nano WiReach MAC to MAC reference design

Revision History

Version	Date	Description
1.0	Feb 2009	Original release

Introduction

The Nano WiReach platform is based on the iChipSec™ CO2144 IP Controller™ and an 802.11b/g Wireless chip set. The nano WiReach module can connect any embedded device to a local LAN through an 802.11b/g Wireles Access Point or to an AdHoc Wireless network.

The Nano WiReach supports the following modes of operations:

- Bridge mode - MAC to MAC direct connection
- Bridge mode – PHY to PHY direct connection (Not covered on this document)
- Internet controller mode - AT+I host connection

The MAC access port on the Nano WiReach is based on the CO2144's internal Ethernet MAC, which connects over an RMII interface to an external MAC or Host devices. The design is intended to connect an external host device or an external MAC device through a standard RMII interface to the Nano WiReach module.

The reference design includes an optional connection to an external HOST device for controlling the nano WiReach module using the AT+I protocol over USB, SPI or UART interfaces.

Features

- RMII to RMII MAC/Host connection
- Power on Reset (POR) and Reset switch
- MSEL switch
- Power LED indicators
- Optional:
    - USB connection from Nano WiReach to host
    - UART connection from Nano WiReach to host
    - SPI connection from Nano WiReach to host

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Reference Design

This reference design outlines the required connections to link the Nano WiReach module with external MAC device or an HOST device that includes MAC. The connection is done over RMII interface using 50Mhz clock oscillator (U11).

The reference design includes the Power On Reset (U4) mechanism required by the nano WiReach module and an optional reset switch (SW2).

The nano WiReach module may be connected to external Host for management and control using the AT+I protocols. The reference design outlines the USB, SPI and UART interfaces optional connections toward the external Host. **Connecting the Nano WiReach to the host using one of these interfaces facilitates the configuration and control of the Nano WiReach and is highly recommended.**

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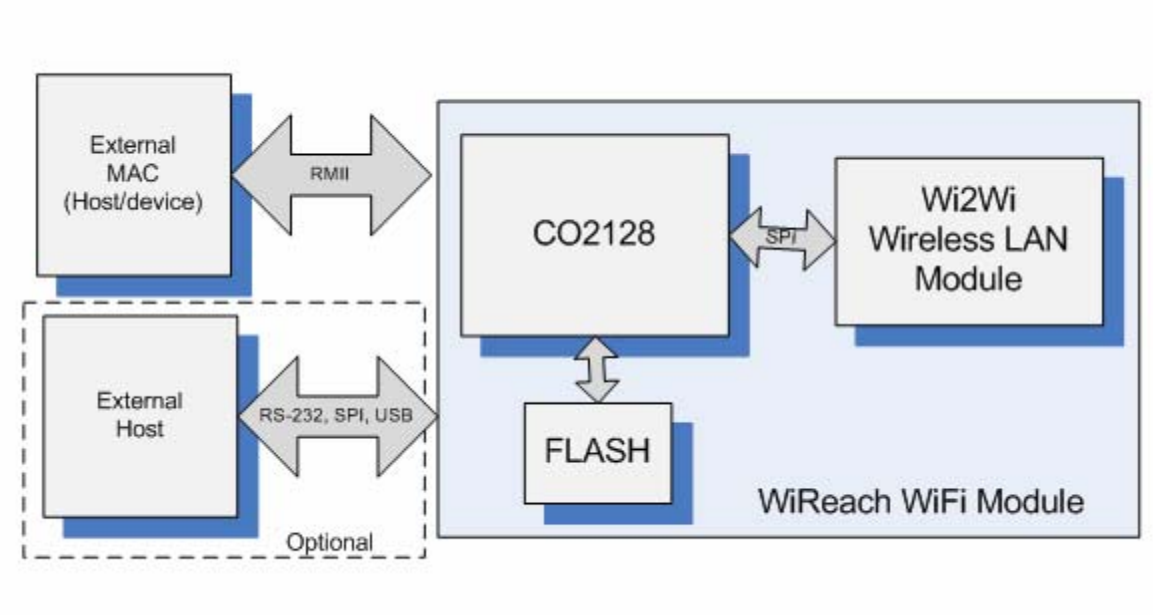
Block Diagram



Schematics:

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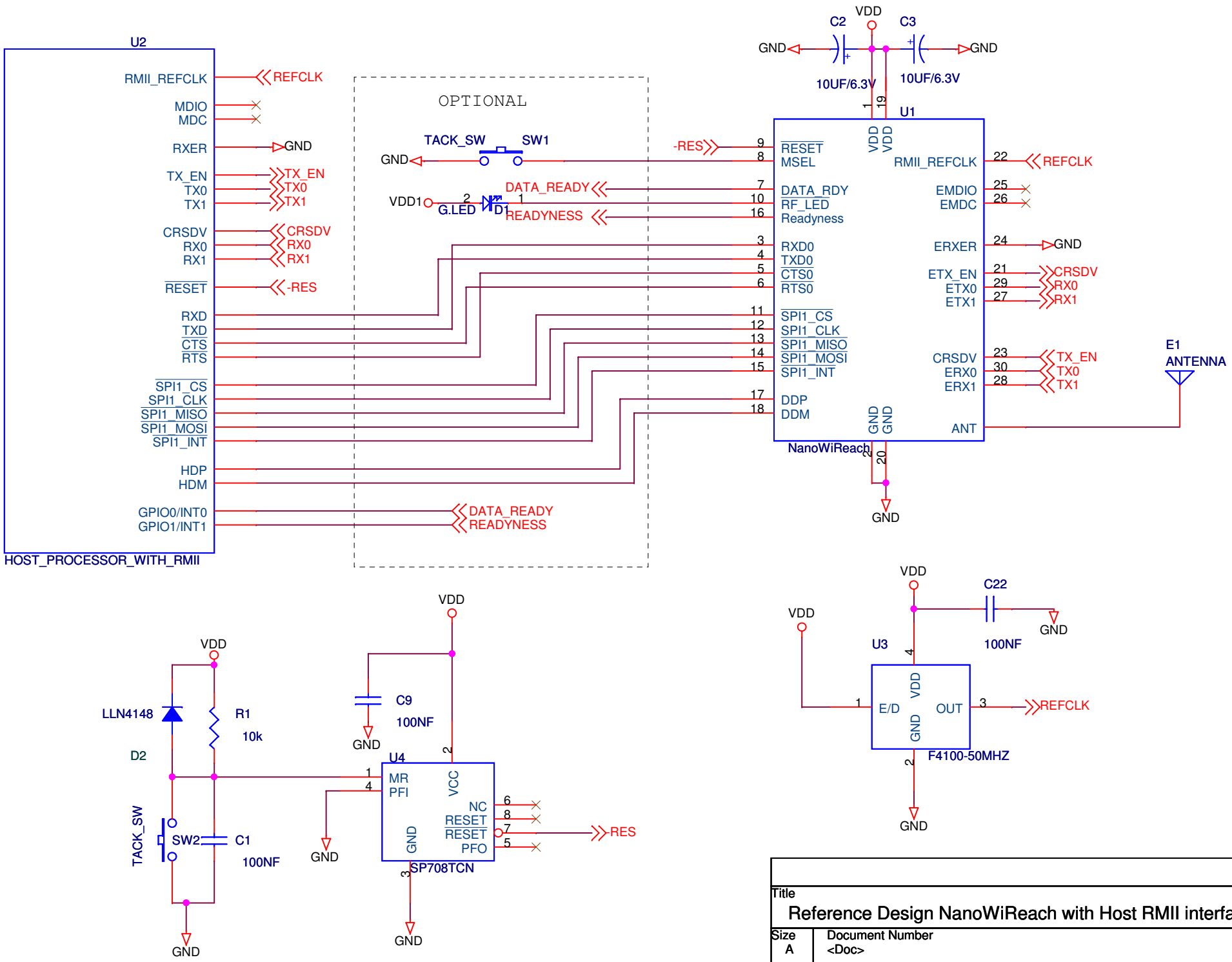

Title	Reference Design NanoWiReach with Host RMII interface.	
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Part Numbers

Part Name	Part Number	Function
Nano WiReach	U1	Nano WiReach embedded module
MAC/HOST	U2	External Host or MAC device using RMII interface
F4100-50Mhz	U3	50Mhz clock oscillator
SP708TCN	U4	Power On Reset

Nano WiReach Host Connection

Nano WiReach		External MAC/Host	
General Connection			
Pin Name	Pin Number	Pin Name	Remarks
VDD	1	VDD	
VDD	19	VDD	
GND	2	GND	
GND	20	GND	
RESETn	9		Reset active low
DATA_Ready	7	GPIO	Optional
Readyness	16	GPIO	Optional
RF_LEDn	10		Optional
MSEL_SW	8		Optional
MAC to MAC connection			
Pin Name	Pin Number	Pin Name	Remarks
EXT_EN	21	CRSDV	
EXT0	29	RX0	
EXT1	27	RX1	
CRSDV	23	TX_EN	
ERX0	30	TX0	
ERX1	28	TX1	
REF_CLK	22	REF_CLK	Clock 50Mhz
ERXER	24	GND	
--	--	RXER	Connect to GND
USB Host (Optional)			
Pin Name	Pin Number	Pin Name	Remarks
DDP	17	HDP	USB D+
DDM	18	HDM	USB D-
SPI Host (Optional)			
Pin Name	Pin Number	Pin Name	Remarks
SPI_CSn	11	SPI_CS	
SPI_CLK	12	SPI_CLK	
SPI_MISO	14	SPI_MISO	
SPI_MOSI	14	SPI_MOSI	
SPI_INTn	15	SPI_INTn	

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UART (Optional)			
Pin Name	Pin Number	Pin Name	Remarks
RXD0	3	TXD	
TXDO	4	RXD	
CTSn	5	RTSn	
RTSn	6	CTSn	

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