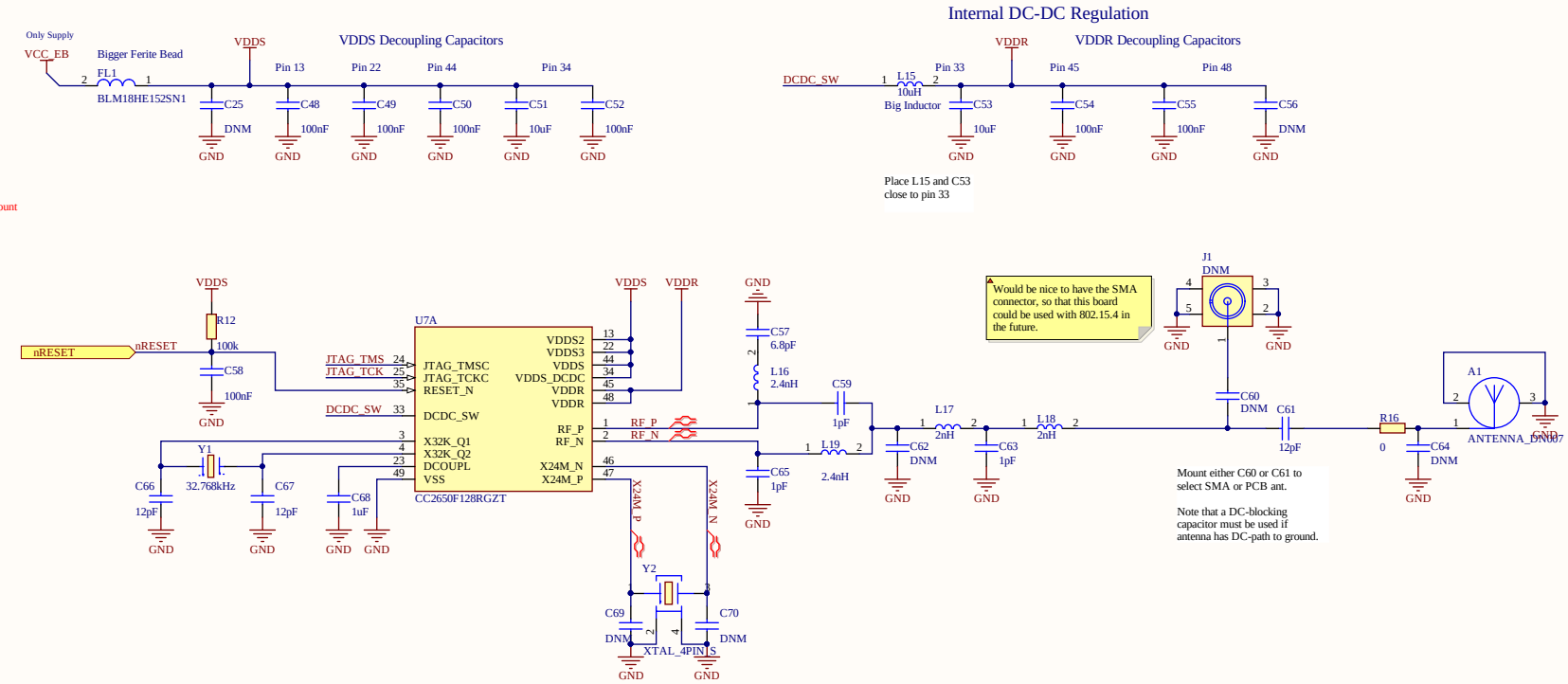


Title	TI CC2650 Radio and MCU	
Size: A3	Number:	Revision: 1
Date: 6/29/2016	Sheet of	
File: C:\Users\...\CC2650MCURadio.SchDoc	Drawn By: Craig Hesling	

TODO: Connect USB Shielding

P2
609-4613-1-ND

Shield6
Shield5
Shield4
Shield3
Shield2
Shield1
GND
ID
D+
D-
VCC
Pin5
Pin4
Pin3
Pin2
Pin1
USB_D_P
USB_D_N

GND
L20
62 Ω
1
2
USB_5V

C71
100pF
C72
100pF
GND
GND

FTDI_VIO
VIO used for CBUS and UART IO

FTDI_3V3
C73
100pF
GND

U8
FT232RQ-Tube

16 3V3OUT
VCC 19
VCCIO 1
15 USBDM
14 USBDP
18 RESET
27 OSCI
28 OSCO
26 TEST
AGND 24
GND 4
GND 17
GND 20
GND 33

TXD 30 FTDI_TX
RXD 2 FTDI_RX
DTR 31 FTDI_DTR
DSR 6
RTS 32 FTDI_RTS
CTS 8 FTDI_CTS
DCD 7
RI 3

CBUS0 22 CBUS0
CBUS1 21 CBUS1
CBUS2 10 CBUS2
CBUS3 11 CBUS3
CBUS4 9 CBUS4

NC 23
NC 25
NC 13
NC 12
NC 5
NC 29

USB_D_N
USB_D_P
Internal Pullup
Use Internal Oscillator
GND
GND
CBUS[0..4]

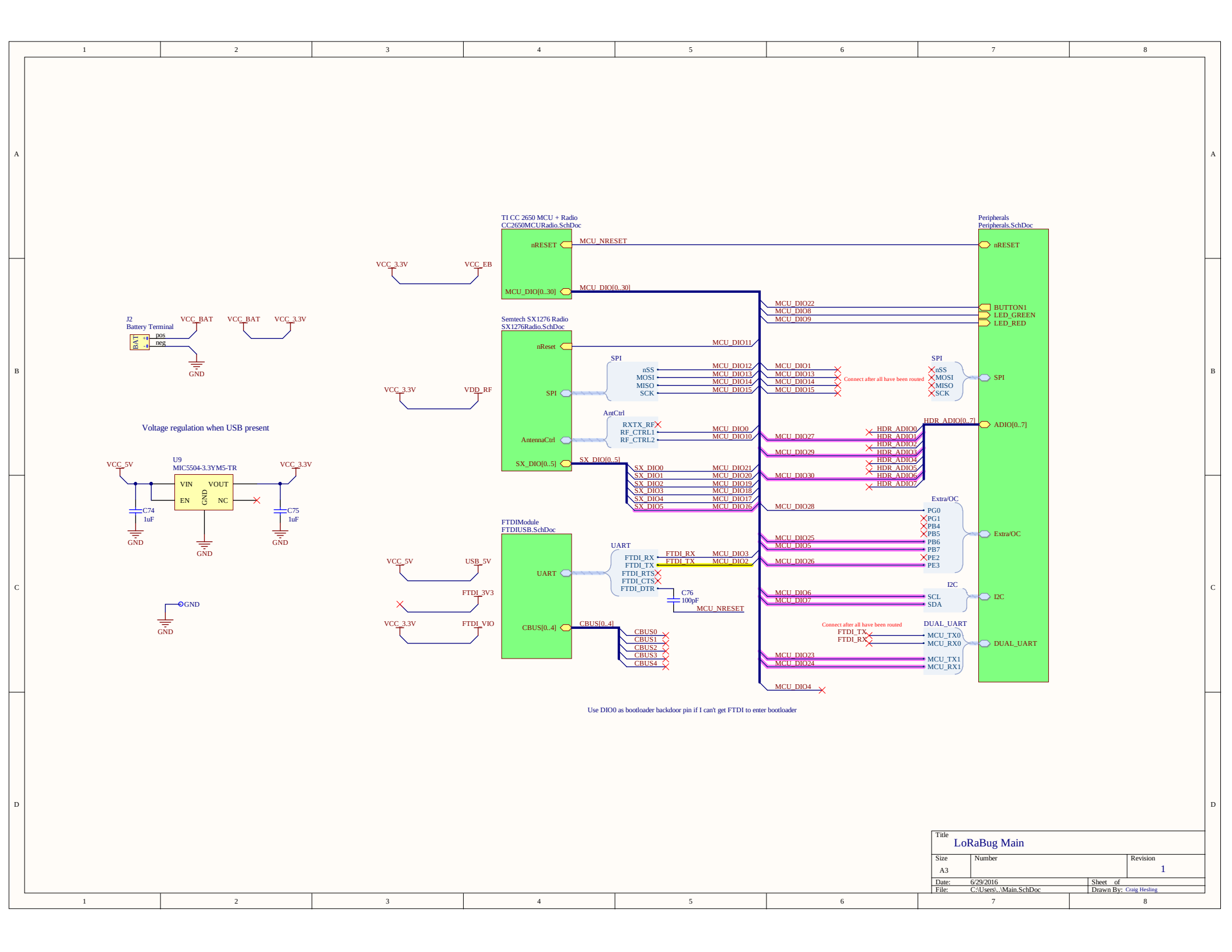
Interface

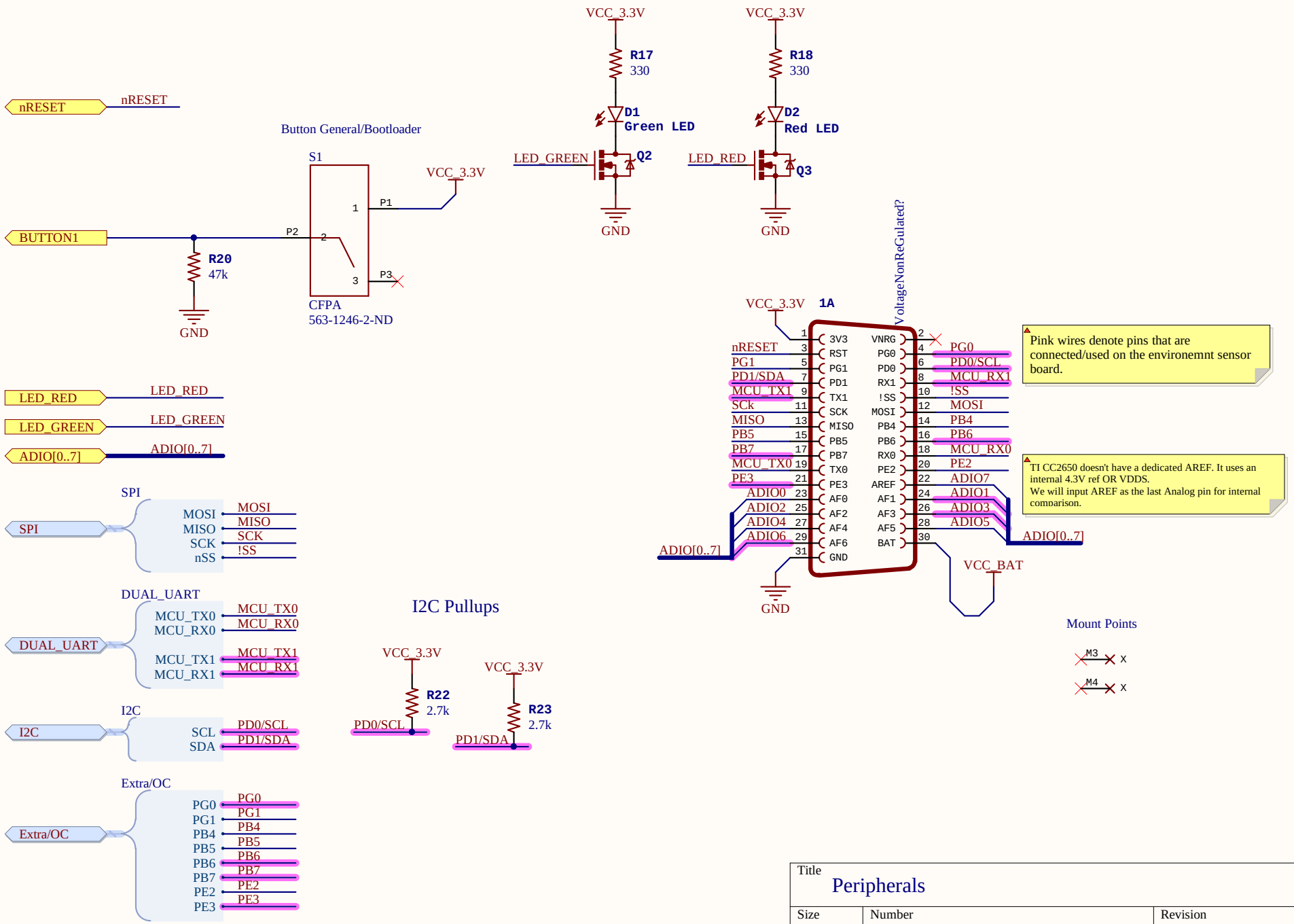
USB_5V
FTDI_3V3
FTDI_VIO

UART
UART
FTDI_RX
FTDI_TX
FTDI_RTS
FTDI_CTS
FTDI_DTR
FTDI_RX
FTDI_TX
FTDI_RTS
FTDI_CTS
FTDI_DTR

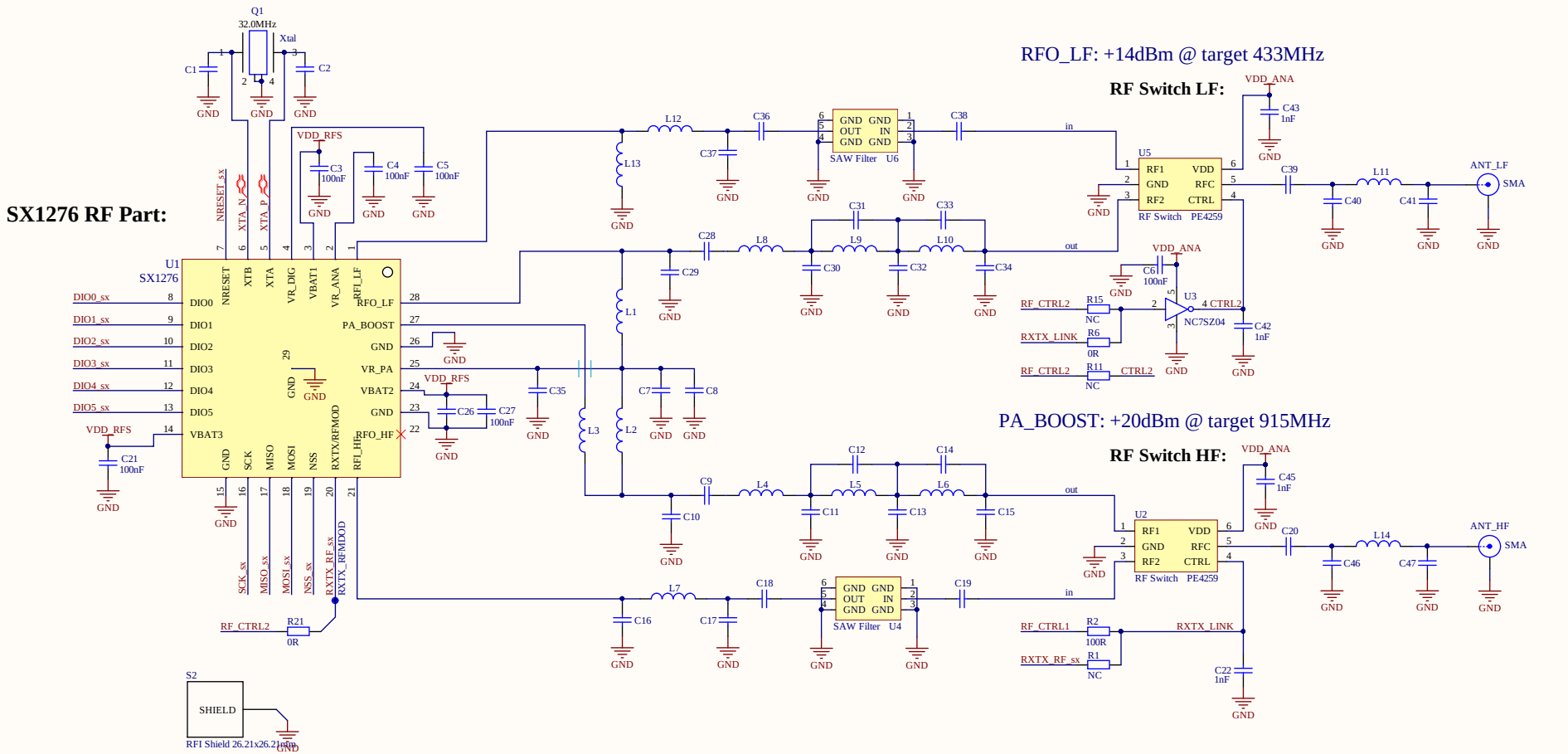
CBUS[0..4]
CBUS[0..4]

Title: FTDI USB		
Size: A	Number:	Revision: 1
Date: 6/29/2016		Sheet of
File: C:\Users\..\FTDIUSB.SchDoc		Drawn By: Craig Hesling

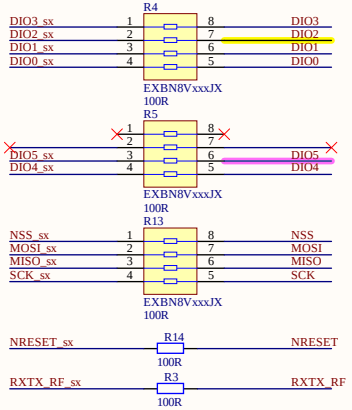

J2
Battery Terminal
BAT
+
-
pos
neg
VCC_BAT
VCC_BAT
VCC_3.3V
GND
Voltage regulation when USB present
VCC_5V
U9
MIC5504-3.3YM5-TR
VIN
VOUT
EN
GND
NC
VCC_3.3V
C74
1uF
C75
1uF
GND
GND
GND
GND
TI CC 2650 MCU + Radio
CC2650MCURadio.SchDoc
nRESET
MCU_NRESET
VCC_3.3V
VCC_EB
MCU_DIO[0..30]
MCU_DIO[0..30]
Peripherals
Peripherals.SchDoc
nRESET
MCU_DIO22
MCU_DIO8
MCU_DIO9
BUTTON1
LED_GREEN
LED_RED
Semtech SX1276 Radio
SX1276Radio.SchDoc
nReset
MCU_DIO11
SPI
nSS
MOSI
MISO
SCK
MCU_DIO12
MCU_DIO13
MCU_DIO14
MCU_DIO15
MCU_DIO1
MCU_DIO13
MCU_DIO14
MCU_DIO15
Connect after all have been routed
SPI
nSS
MOSI
MISO
SCK
SPI
VCC_3.3V
VDD_RF
AntCtrl
RXTX_RF
RF_CTRL1
RF_CTRL2
AntennaCtrl
MCU_DIO0
MCU_DIO10
MCU_DIO27
MCU_DIO29
MCU_DIO30
HDR_ADIO[0..7]
HDR_ADIO0
HDR_ADIO1
HDR_ADIO2
HDR_ADIO3
HDR_ADIO4
HDR_ADIO5
HDR_ADIO6
HDR_ADIO7
ADIO[0..7]
SX_DIO[0..5]
SX_DIO[0..5]
SX_DIO0
SX_DIO1
SX_DIO2
SX_DIO3
SX_DIO4
SX_DIO5
MCU_DIO21
MCU_DIO20
MCU_DIO19
MCU_DIO18
MCU_DIO17
MCU_DIO16
MCU_DIO28
Extra/OC
PG0
PG1
PB4
PB5
PB6
PB7
PE2
PE3
Extra/OC
FTDIModule
FTDIUSB.SchDoc
UART
FTDI_RX
FTDI_TX
FTDI_RTS
FTDI_CTS
FTDI_DTR
FTDI_RX
FTDI_TX
MCU_DIO3
MCU_DIO2
MCU_DIO25
MCU_DIO5
MCU_DIO26
VCC_5V
USB_5V
FTDI_3V3
VCC_3.3V
FTDI_VIO
C76
100pF
MCU_NRESET
I2C
SCL
SDA
I2C
MCU_DIO6
MCU_DIO7
CBUS[0..4]
CBUS[0..4]
CBUS0
CBUS1
CBUS2
CBUS3
CBUS4
Connect after all have been routed
FTDI_TX
FTDI_RX
DUAL_UART
MCU_TX0
MCU_RX0
MCU_TX1
MCU_RX1
DUAL_UART
MCU_DIO23
MCU_DIO24
MCU_DIO4
Use DIO0 as bootloader backdoor pin if I can't get FTDI to enter bootloader
Title
LoRaBug Main
Size
A3
Number
Revision
1
Date:
6/29/2016
Sheet of
File:
C:\Users\..\Main.SchDoc
Drawn By:
Craig Hesling



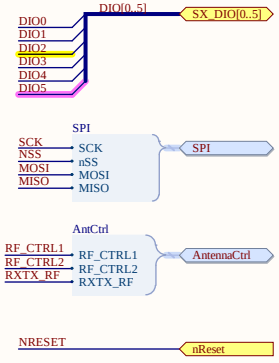
Title: Peripherals		
Size: A	Number:	Revision: 1
Date: 6/29/2016		Sheet of
File: C:\Users\..\Peripherals.SchDoc		Drawn By: Craig Hesling



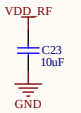
100Ohm Resistors:



Interface:

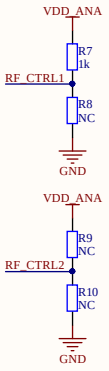


Power Input:



Power Select:

Pullup/Pulldowns:

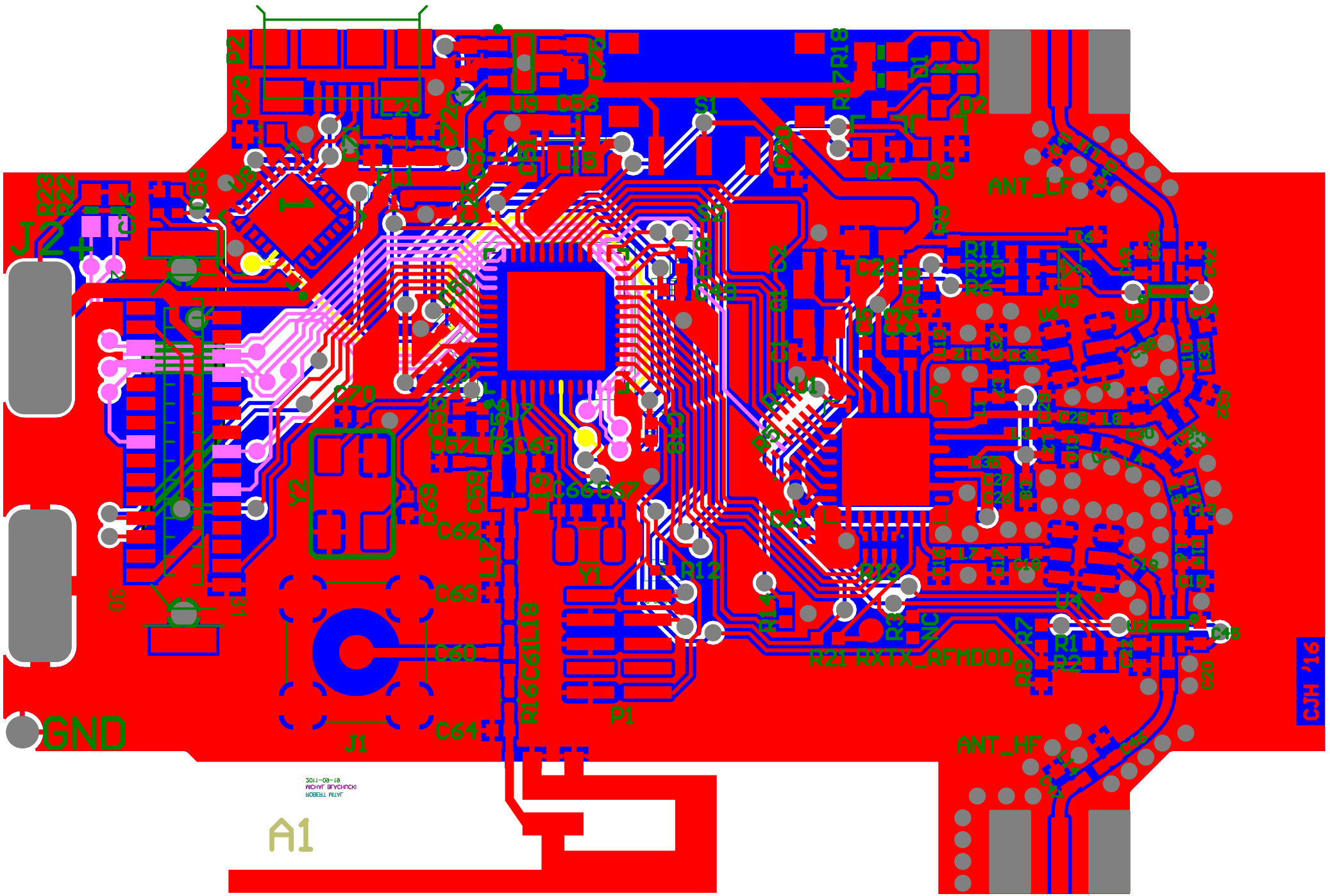


Design Notes

* PA_BOOST (Power Amplifier Boost) is configured for the high frequencie(HF) side. This provieds the +20dBm to the HF side. So, we do not use RFO_HF.
* The LF side can only do +14dBm with the RFO_LF
* Saw filter U4 should be 16MHz wide and centered at 915MHz
* Saw filter U6 should be centered at 433MHz
* When RF Switch CTRL is high RF1 is selected

RF Switch Configuration:
* The given resistor configuration is for linked control of both RF switched through RF_CTRL1.
  This is to mimic the controls of the Semtech mbed board.
  RF_CTRL2 is connected to the SX's RXTX_RF to get feedback from the SX.
  When RF_CTRL1 is high, both are in TX mode.

Title: Semtech SX1276 Radio		
Size: A3	Number:	Revision: 1
Date: 6/29/2016		Sheet of
File: C:\Users\...\SX1276Radio.SchDoc		Drawn By: Craig Hesling


GND
ANT_LF
ANT_HF
R21 RXTX_RFMDOD
P1
J1
J2
A1