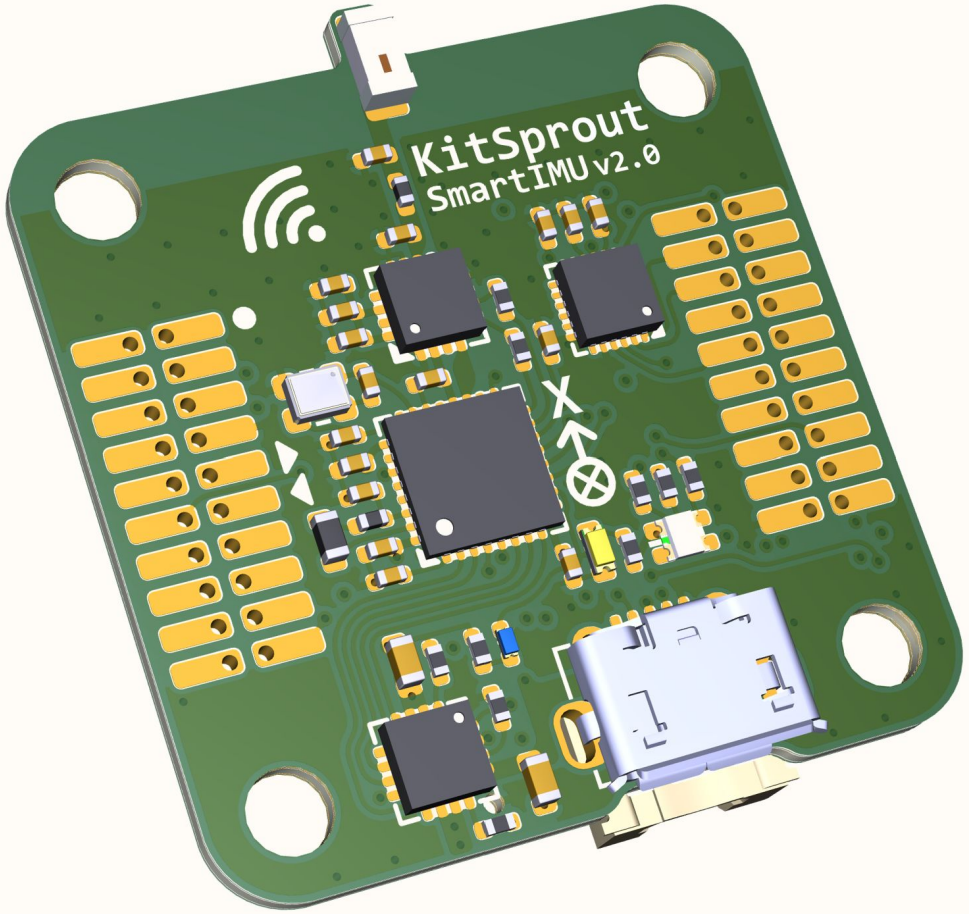
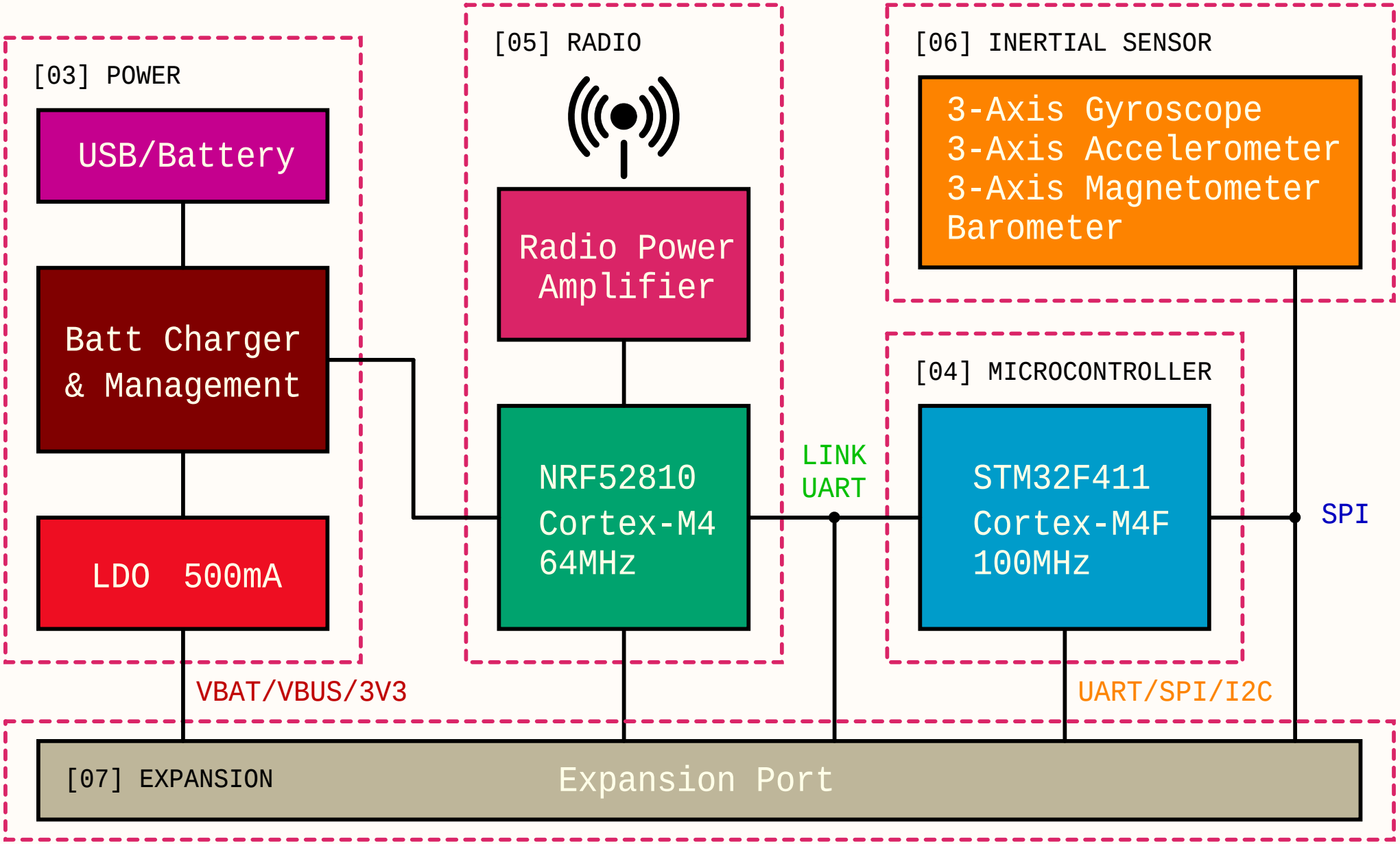
KitSprout
SmartIMU

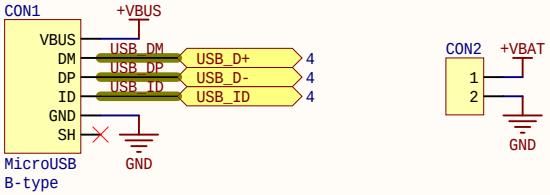
04/22/18
Ver. v2.0
Lib. v3.4

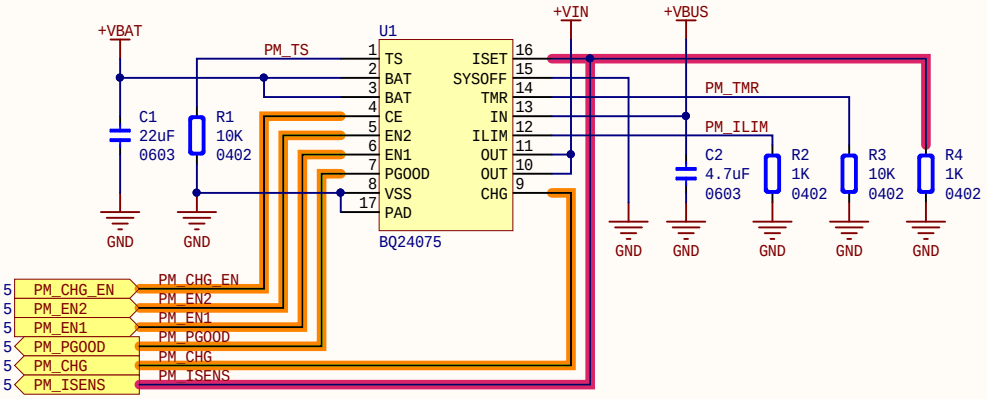


[02] BLOCK DIAGRAM

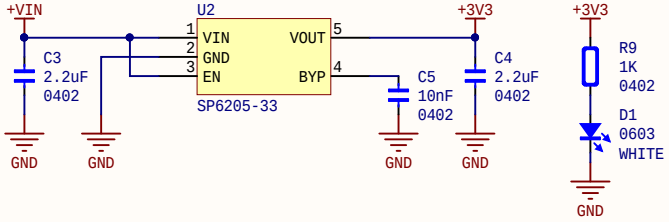


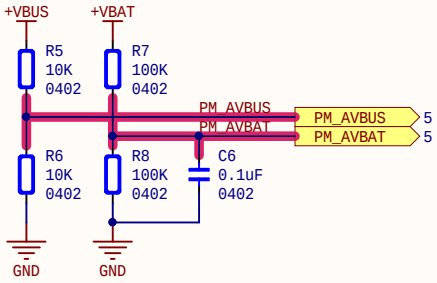
[03] POWER.SchDoc





Low-Dropout Linear Regulator
VIN:6V(MAX), VOUT:3V3/500mA



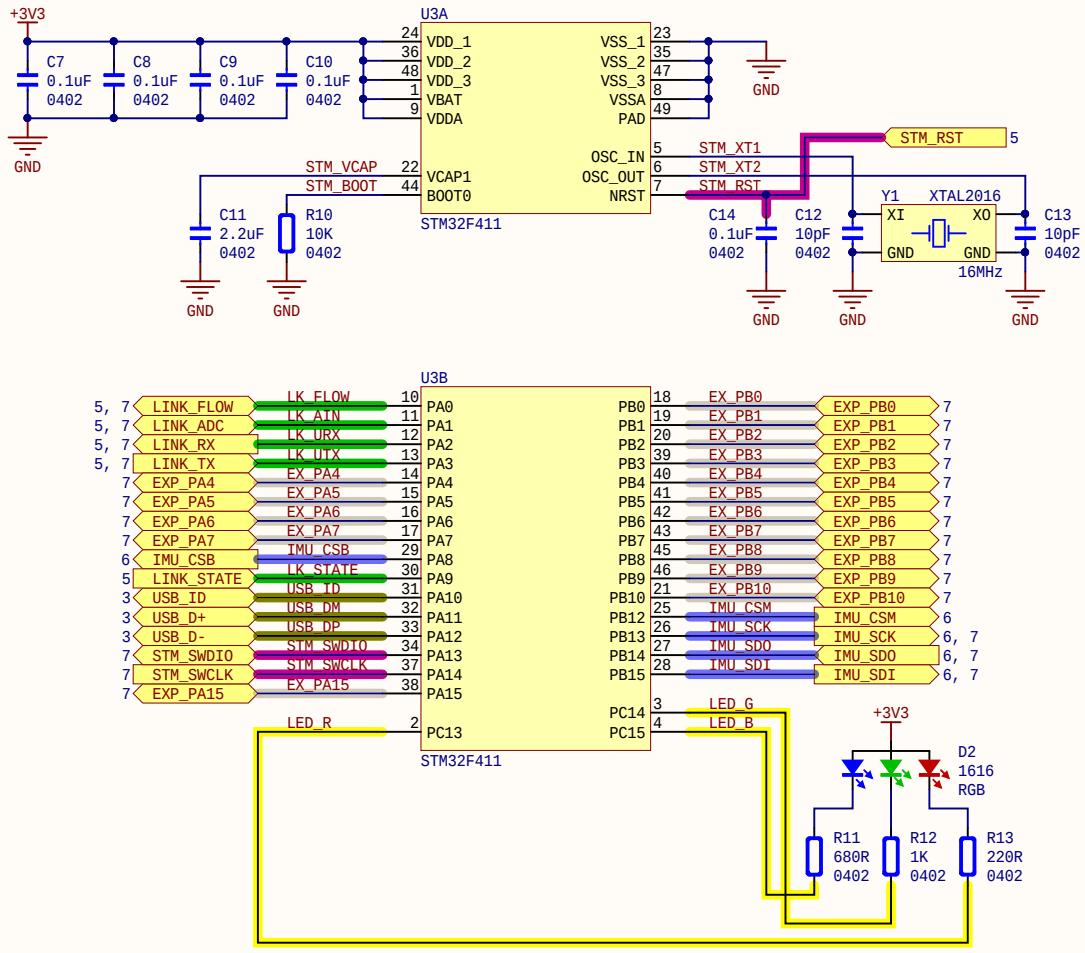


BQ24075

. Battery Charger
. Power-Path Management

EN1	EN2	MODE
L	L	100 mA. USB100 mode
H	L	500 mA. USB500 mode
L	H	Set by an external resistor
H	H	Standby (USB suspend mode)

[04] MICROCONTROLLER.SchDoc

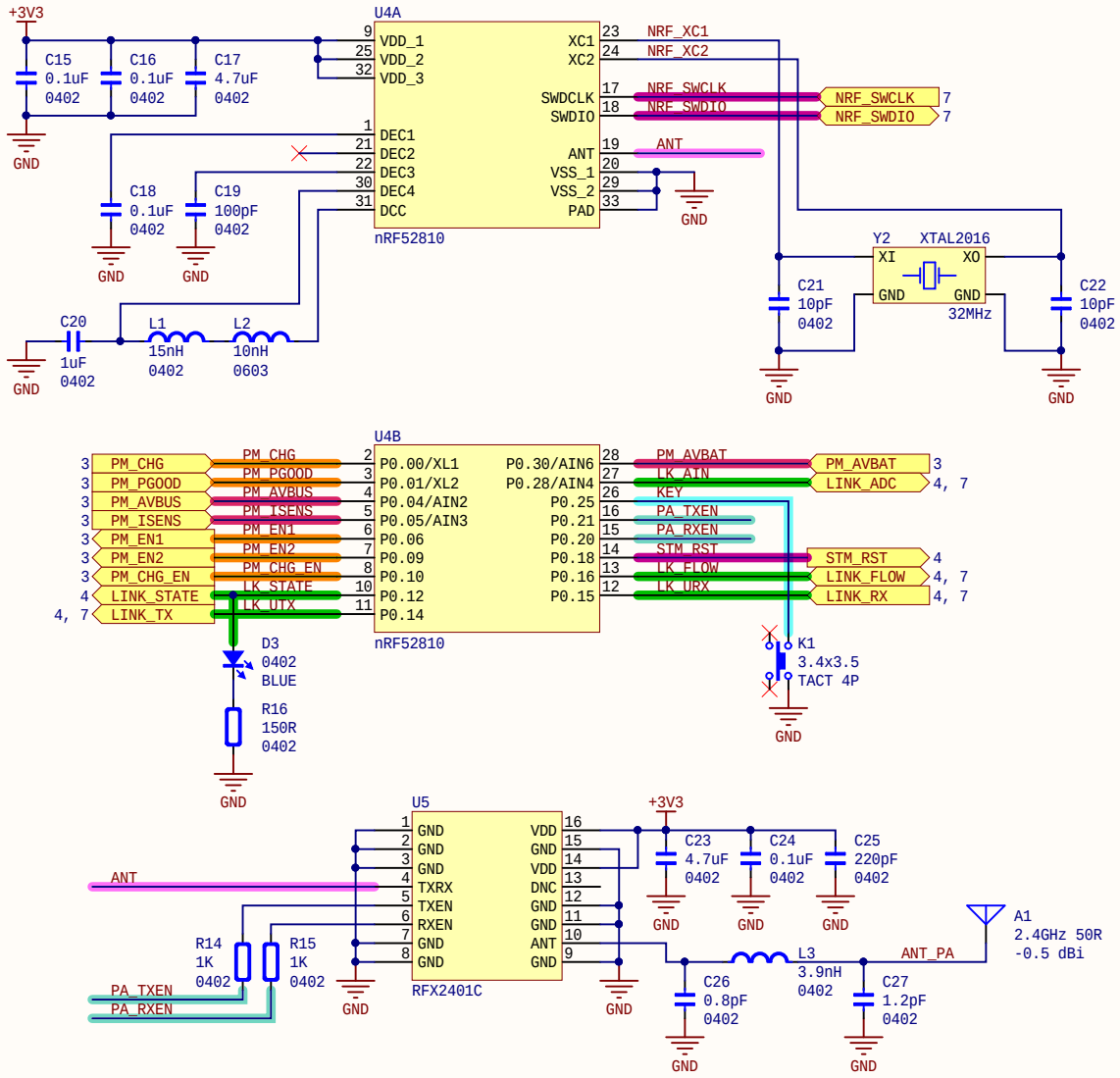


STM32F411CE

. CORTEX-M4 (WITH FPU) 100 MHz
. 256 Kbytes of Flash memory
. 128 Kbytes of SRAM

LK.FLOW	PA0	T2C1(AF1)	T5C1(AF2)	AIN0(ADC1)
LK.AIN	PA1	T2C2(AF1)	T5C2(AF2)	AIN1(ADC1)
LK.URX	PA2	———	———	U2TX(AF7)
LK.UTX	PA3	———	———	U2RX(AF7)
EX.PA4	PA4	———	S1CS(AF5)	AIN4(ADC1)
EX.PA5	PA5	T2C1(AF1)	S1CK(AF5)	AIN5(ADC1)
EX.PA6	PA6	T3C1(AF2)	S1SO(AF5)	AIN6(ADC1)
EX.PA7	PA7	T3C2(AF2)	S1SI(AF5)	AIN7(ADC1)
IMU.CSB	PA8	———	———	———
LK.STATE	PA9	T1C2(AF1)	———	U1TX(AF7)
USB.ID	PA10	———	———	———
USB.DM	PA11	———	———	U6TX(AF8)
USB.DP	PA12	———	———	U6RX(AF8)
ST.SWDIO	PA13	———	———	———
ST.SWCLK	PA14	———	———	———
EX.PA15	PA15	T2C1(AF1)	S3CS(AF6)	U1TX(AF7)
EX.PB0	PB0	T3C3(AF2)	———	AIN8(ADC1)
EX.PB1	PB1	T3C4(AF2)	———	AIN9(ADC1)
EX.PB2	PB2	———	———	———
EX.PB3	PB3	T2C2(AF1)	S3CK(AF6)	U1RX(AF7)
EX.PB4	PB4	T3C1(AF2)	S3SO(AF6)	———
EX.PB5	PB5	T3C2(AF2)	S3SI(AF6)	———
EX.PB6	PB6	T4C1(AF2)	I1CL(AF4)	U1TX(AF7)
EX.PB7	PB7	T4C2(AF2)	I1DA(AF4)	U1RX(AF7)
EX.PB8	PB8	T4C3(AF2)	I1CL(AF4)	———
EX.PB9	PB9	T4C4(AF2)	I1DA(AF4)	I2DA(AF9)
EX.PB10	PB10	T2C3(AF1)	———	I2CL(AF4)
IMU.CSM	PB12	———	S2CS(AF5)	———
IMU.SCK	PB13	———	S2CK(AF5)	———
IMU.SDO	PB14	———	S2SO(AF5)	———
IMU.SDI	PB15	———	S2SI(AF5)	———

[05] RADIO.SchDoc



NRF51810

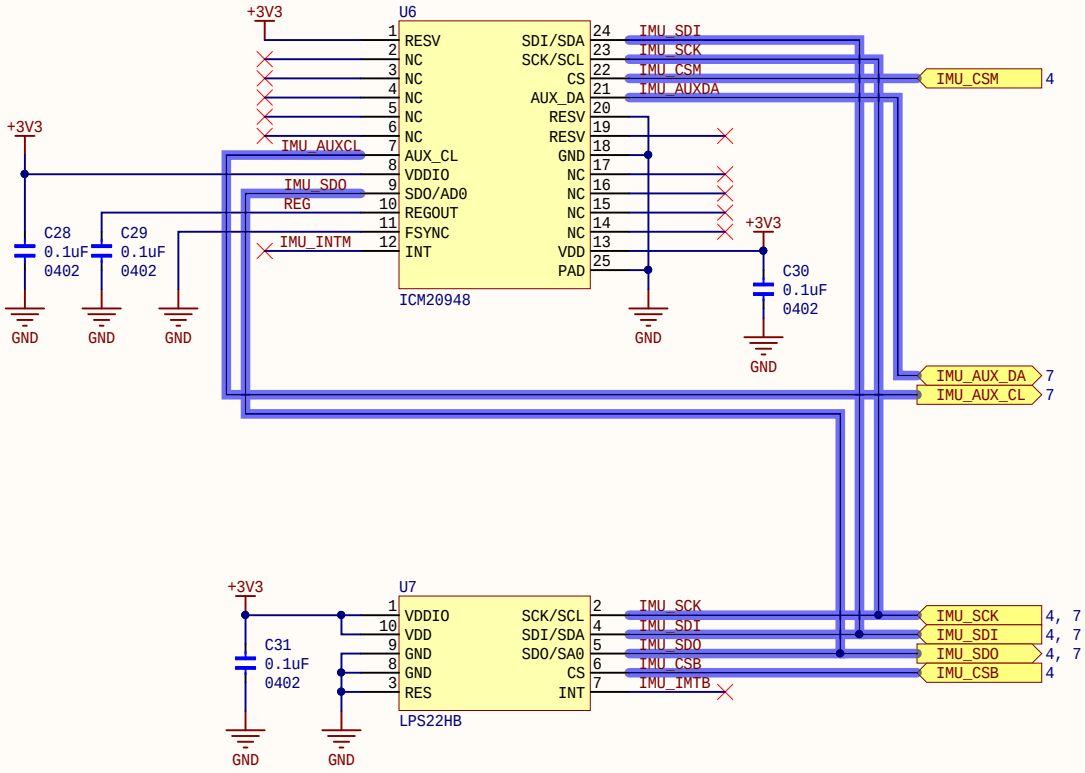
. CORTEX-M4 (WITHOUT FPU) 64 MHz
. 192 kB flash and 24 kB RAM
. 2.4GHz Radio / Bluetooth 5
. -20 to +4 dBm TX power (4 dB steps)
. -96 dBm sensitivity

RFX2401C

. Freq. 2.4 GHz to 2.525 GHz
. PA with up to +22 dBm output power
. LNA with 2.5 dB noise figure

MODE	PA_TXEN	PA_RXEN
TX active	H	X
RX active	L	H
Shutdown	L	L

[06] INERTIAL SENSOR.SchDoc



ICM20948(ICM20648)

. Gyroscope (±250/500/1000/2000 dps)
. Accelerometer (±2/4/8/16 g)
. Device ID = 0xEA
. I2C Address = 0xD0 (11010000)

ICM20948(AK09916)

. Magnetometer (±4900 uT)
. Device ID = 0x09
. I2C Address = 0x18

LPS22HB

. Barometer (2601260 hPa)
. Thermometer (-40+85 degC)
. Device ID = 0xB1
. I2C Address = 0xB8

[07] EXPANSION.SchDoc