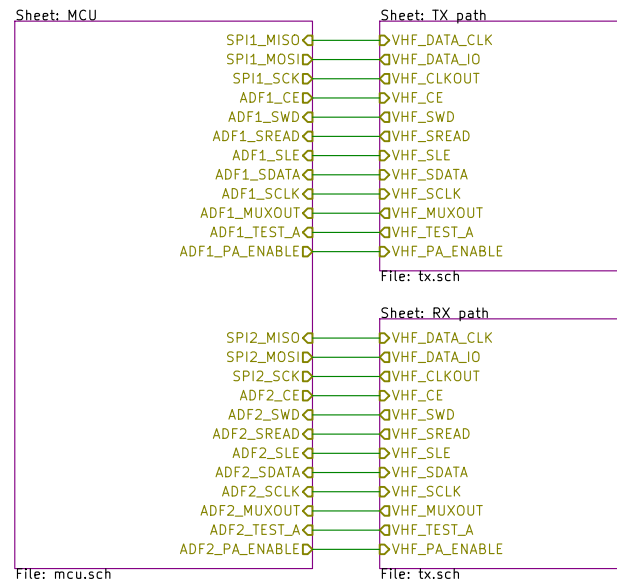


VHF: 144 - 146 MHz
 UHF: 430 - 440 MHz

SPI1 is used for VHF Downlink
 SPI2 is used for UHF Uplink
 SPI3 is used for storage
 UART4 is debug serial



VHF TX Downlink

UHF RX Uplink

SPI Mode

In SPI mode, the TxRxCLK pin is configured to input transmit data in transmit mode. In receive mode, the receive data is available on the TxRxDATA pin. The data clock in both transmit and receive modes is available on the CLKOUT pin. In transmit mode, data is clocked into the ADF7021 on the positive edge of CLKOUT. In receive mode, the TxRxDATA data pin is sampled by the microcontroller on the positive edge of the CLKOUT.

To enable SPI interface mode, set R0_DB28 high and set R15_DB[17:19] to 0x7. Figure 8 and Figure 9 show the relevant timing diagrams for SPI mode, while Figure 60 shows the recommended interface to a microcontroller using the SPI mode of the ADF7021.

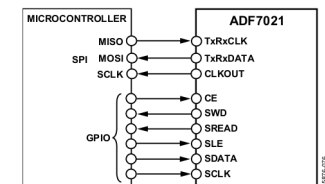


Figure 60. ADF7021 (SPI Mode) to Microcontroller Interface

Improvement suggestions:

- Add "sniffer" port aka power splitter after LNA to another SMA to connect to external SDR
- Add more GPIO to the external switching connector
- Seperate LDO for ADF TCXO
- Make 10µF caps with a bigger footprint for example Capacitor_SMD:C_1812_4532Metric for the PA
- Shall we add a Harwin M83 interface too?
 - CAN
 - Power
 - Ethernet?

A VHF and UHF packet radio for the sky

Nick Østergaard

AAUSAT6

Sheet: /

File: vhf_uhf_com.sch

Title: SKYpeater

Size: A4

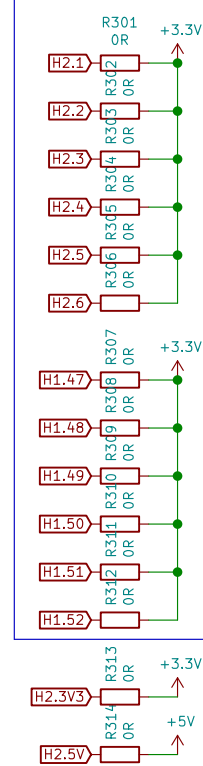
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KiCad E.D.A. kicad (5.1.4-26-gdcd31f570)

Rev: 1.0

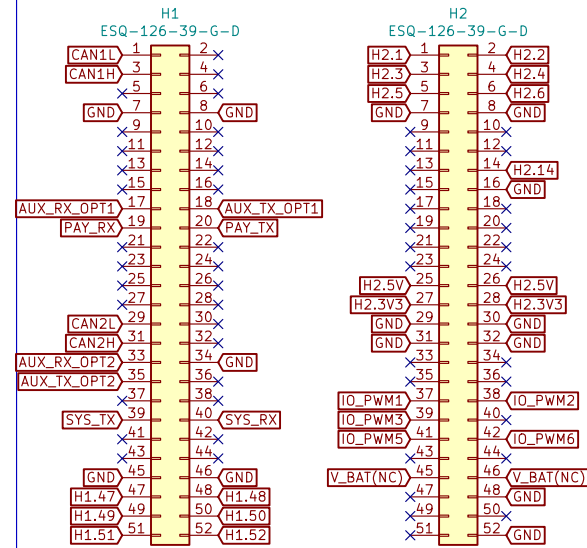
Id: 1/5

Power Options



Stack Connector

According to CubeSat Kit "Standard"



We don't use the un-protected supplies on H2

NOTE: <something>(NC) are not connected stack pins, the netlabels are used to make the mirror header connect to it as a mirror.

A VHF and UHF packet radio for the sky

Nick Østergaard

AUSAT6

Sheet: /Stack Connector/

File: stack.sch

Title: SKYPEATER

Size: A4

Date:

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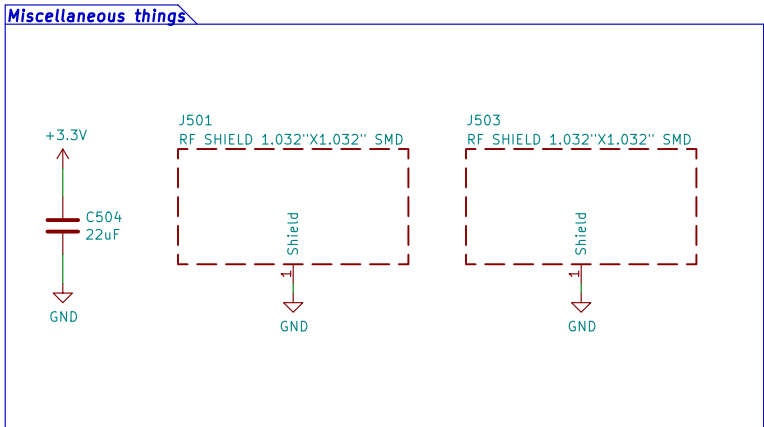
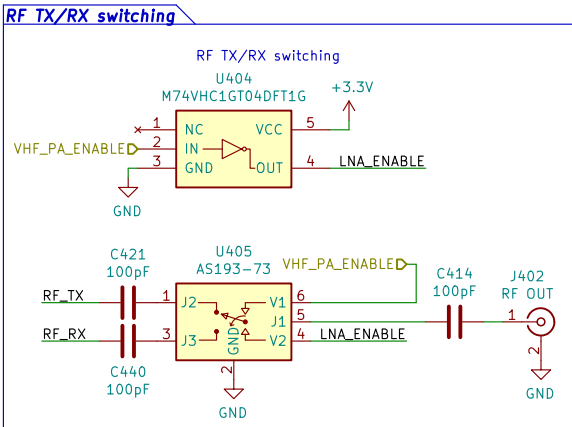
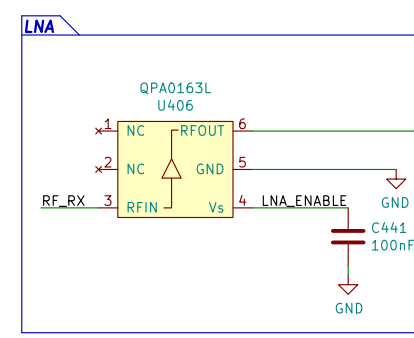
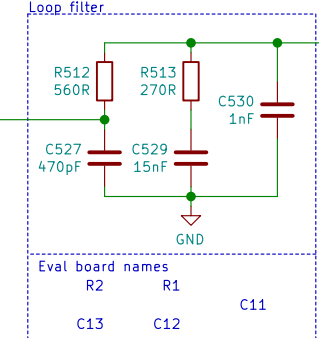
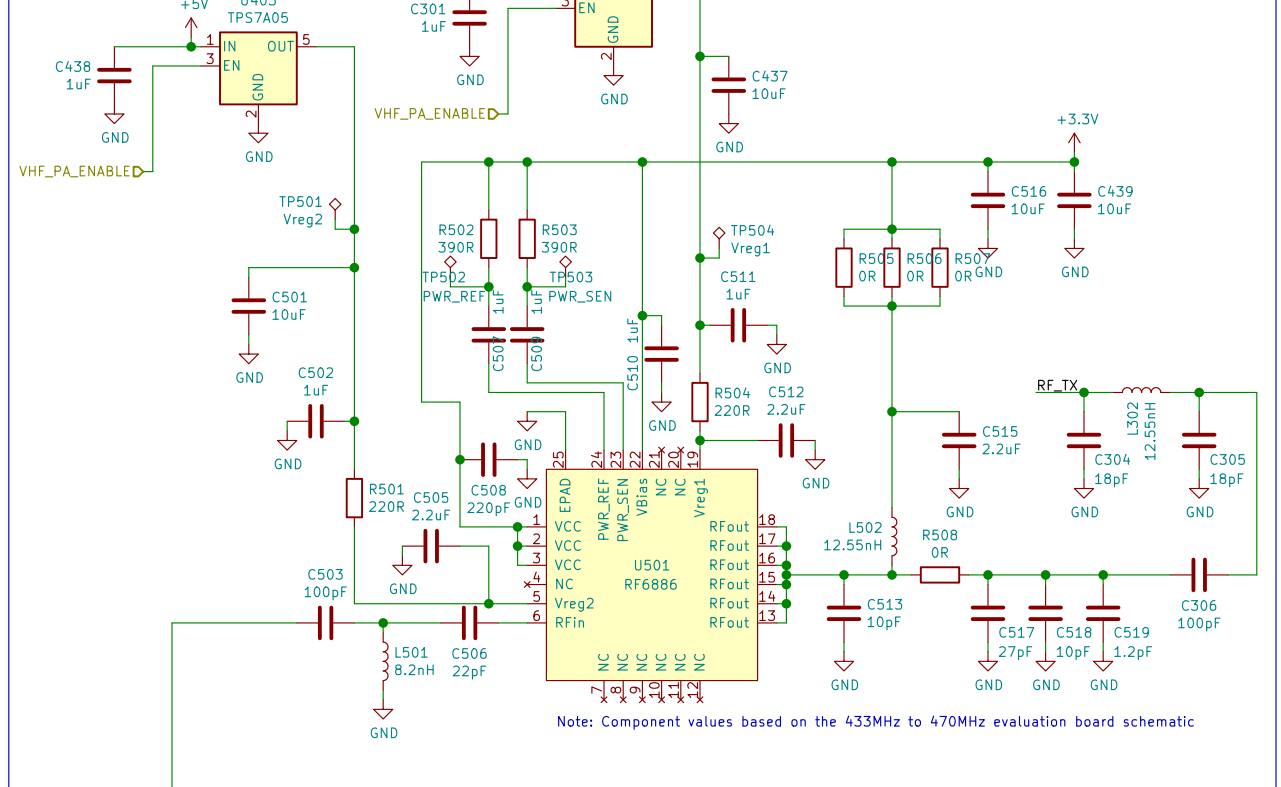
Rev: 1.0

Id: 2/5

Power amplifier

Mostly from RF6886 datasheet

BIAS Voltage:
We connect Vreg1 and Vreg2 together.
I don't think we need to tune these sperately.
Use TPS7A05 series when we teted what voltage we need.



Potential PA 5V:
TQP7M9105
TQP7M9106
MMZ09332BT1
RFPA3800
BGA2776
RF6886
GRF5115
SKY65366-21 for UHF
SKY65367-11 for VHF

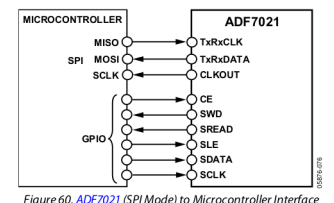
Potential PA 7.5V:
AFIC901NT1
RFPA3800
TAT7427B

The IF Filter response can be viewed on a spectrum analyzer by AC coupling

SPI Mode

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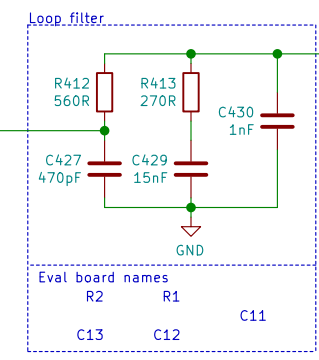
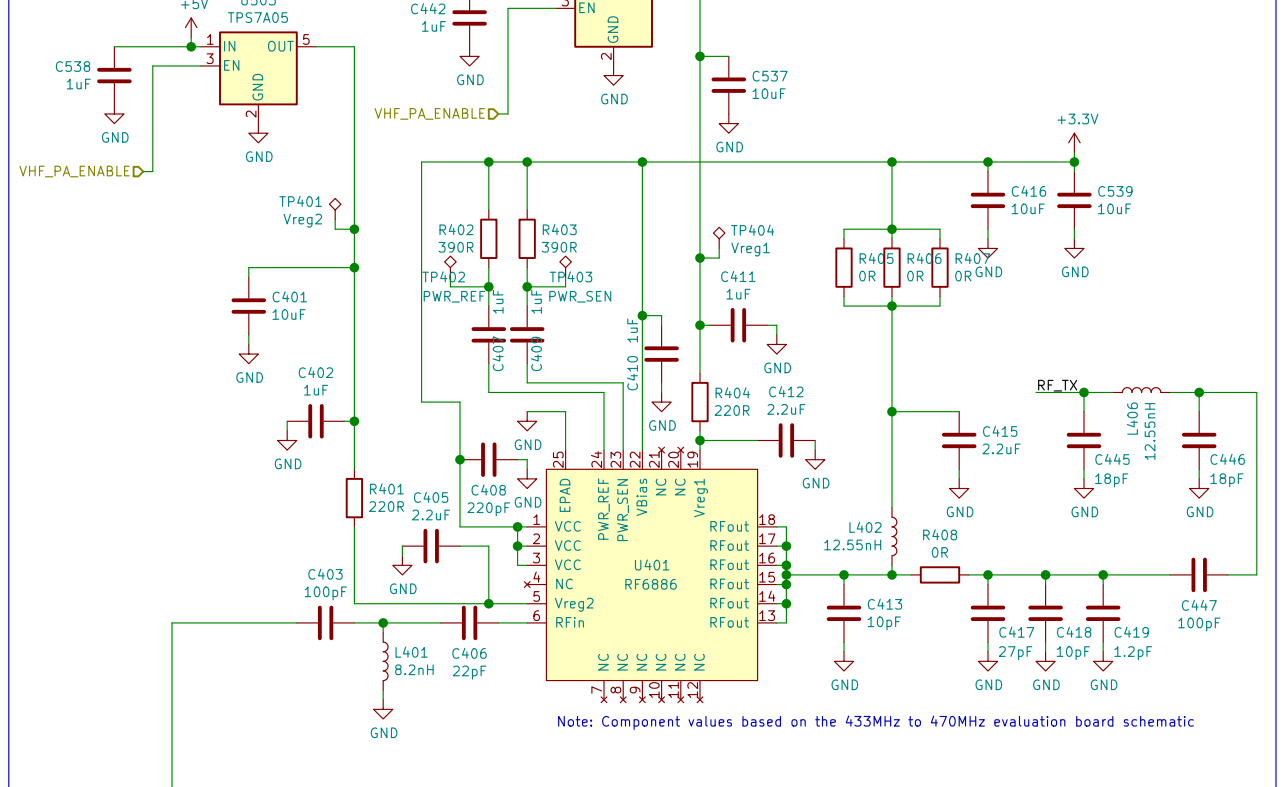
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Sheet: /TX path/ File: tx.sch		Title: SKYpeater
Size: A3	Date: 2019-04-05	
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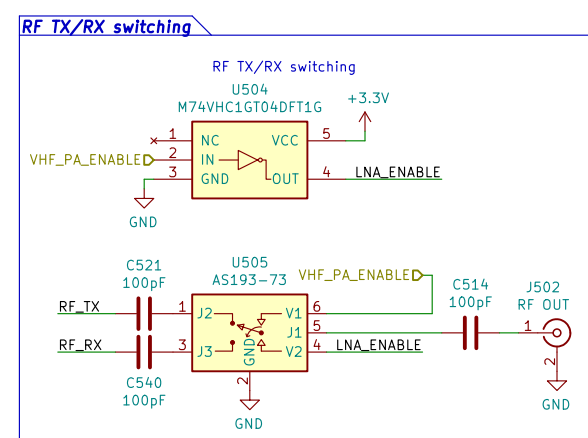
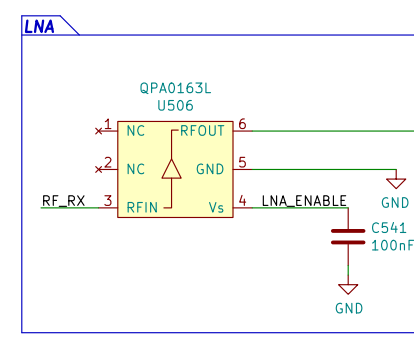
Power amplifier

Mostly from RF6886 datasheet

BIAS Voltage:
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Use TPS7A05 series when we teted what voltage we need.



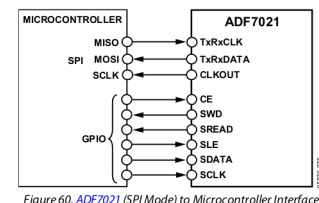
NOTE: This is to make it easy to hack if we need to test with seperate supply.



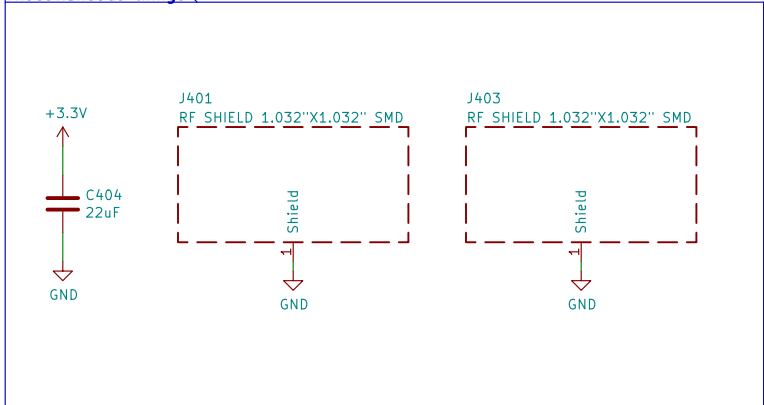
SPI Mode

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Miscellaneous things

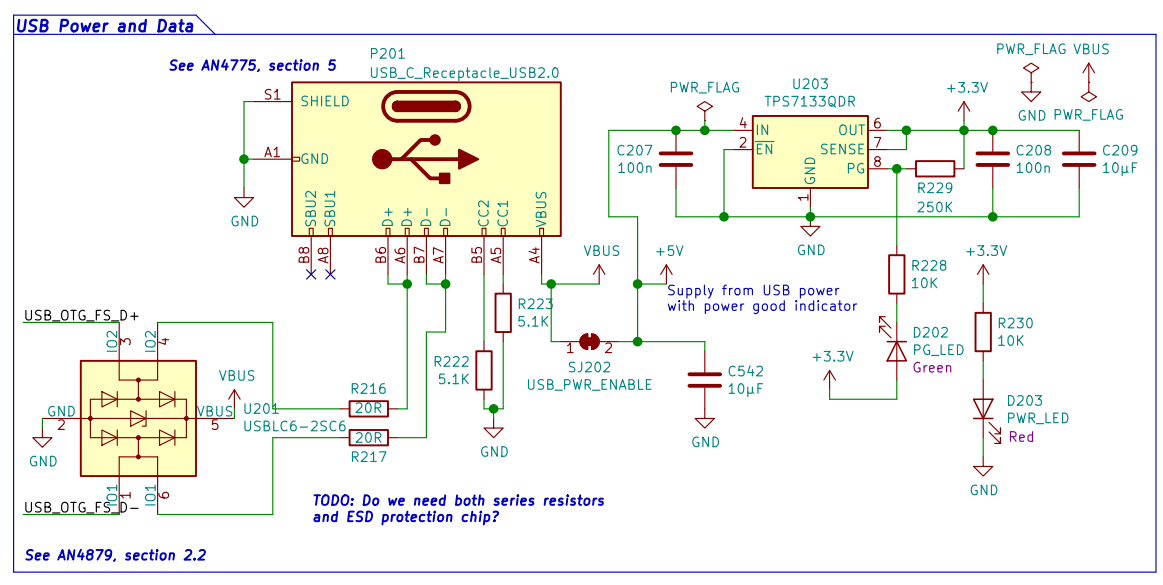
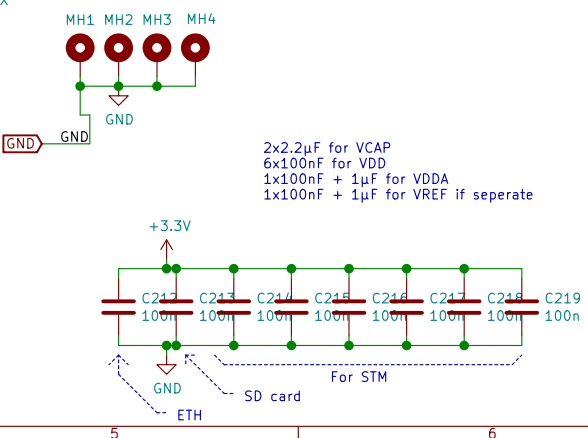
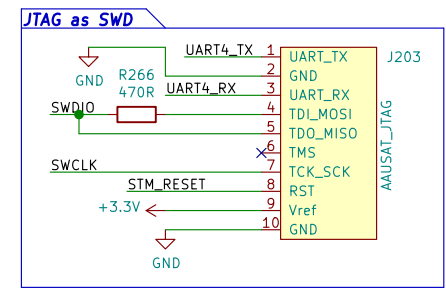
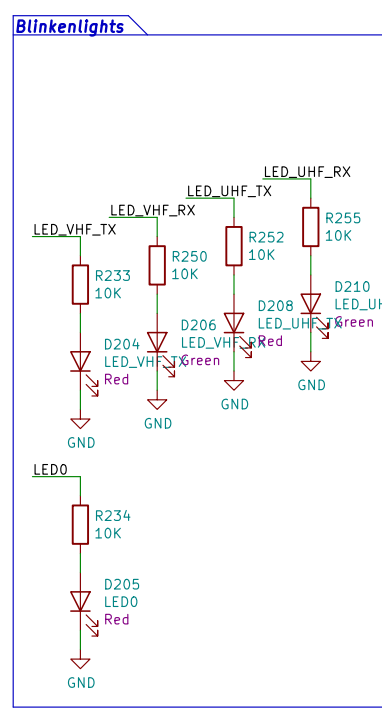
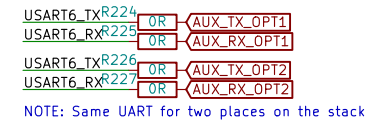
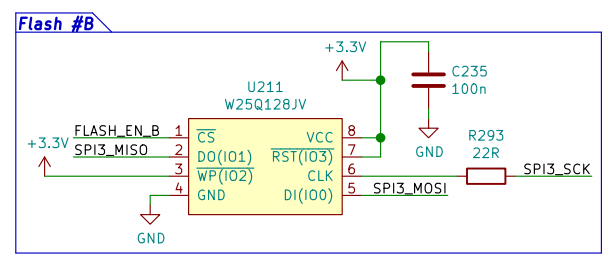
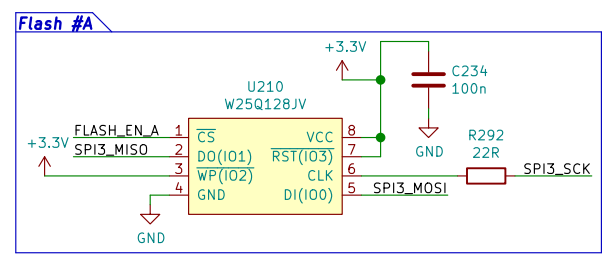
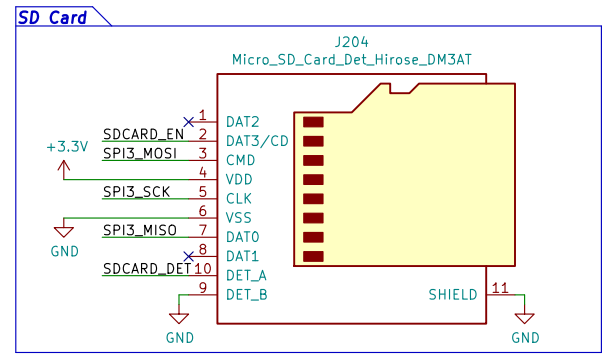
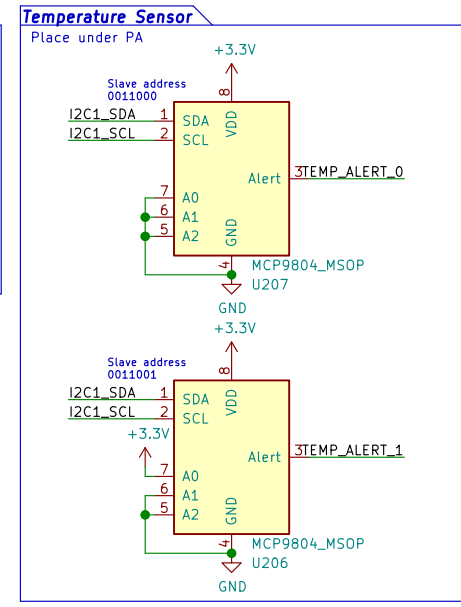
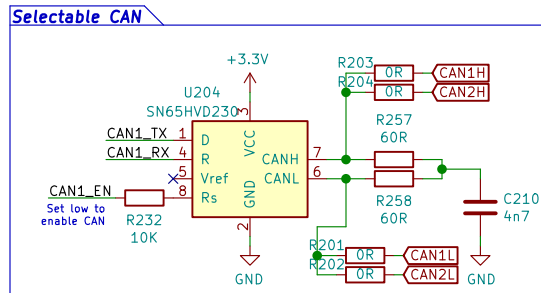
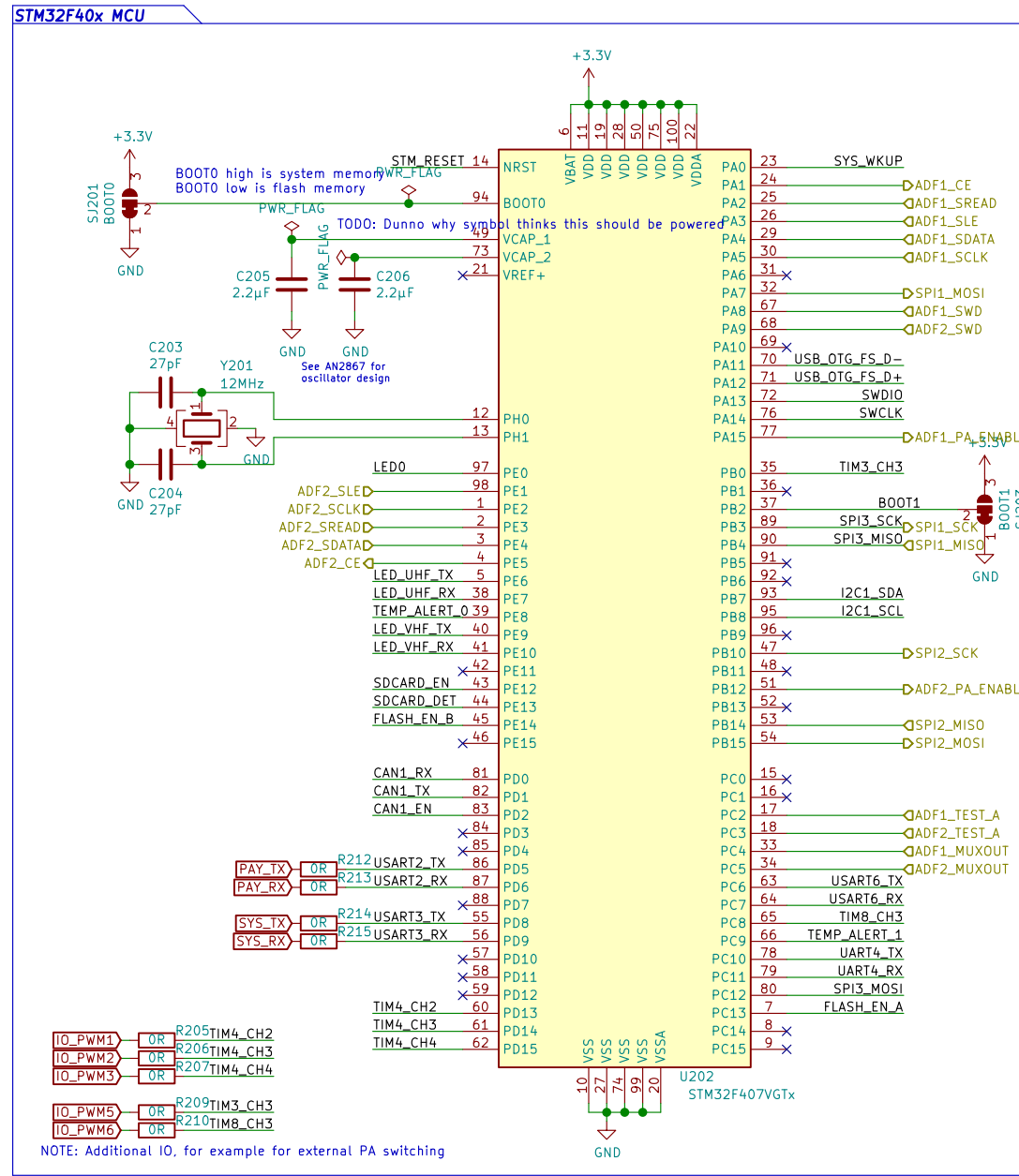


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Sheet: /RX path/
File: tx.sch

Title: SKYpeater

Size: A3	Date: 2019-04-05	Rev: 1.0
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Sheet: /MCU/
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