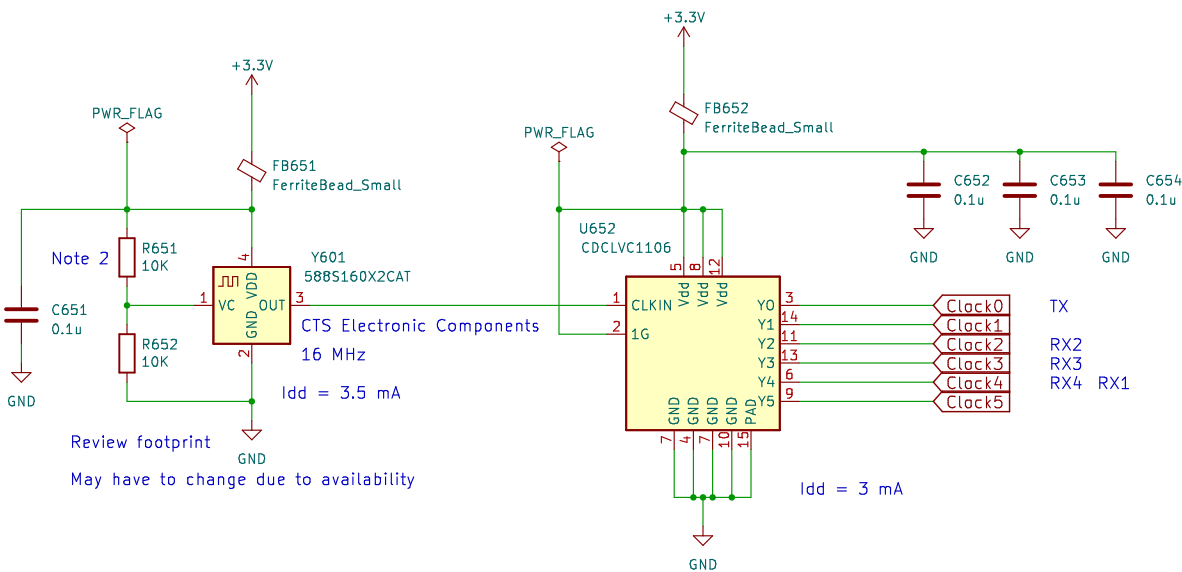


N5BRG		
AMSAT-NA		
Sheet: /Rx_Power_Divider/		
File: Power_Divider.kicad_sch		
Title: Radiation Tolerant PacSat Communication		
Size: USLedger	Date: 2023-06-17	Rev: A
KiCad E.D.A. kicad 7.0.7-7.0.7-ubuntu22.04.1	Id: 2/15	

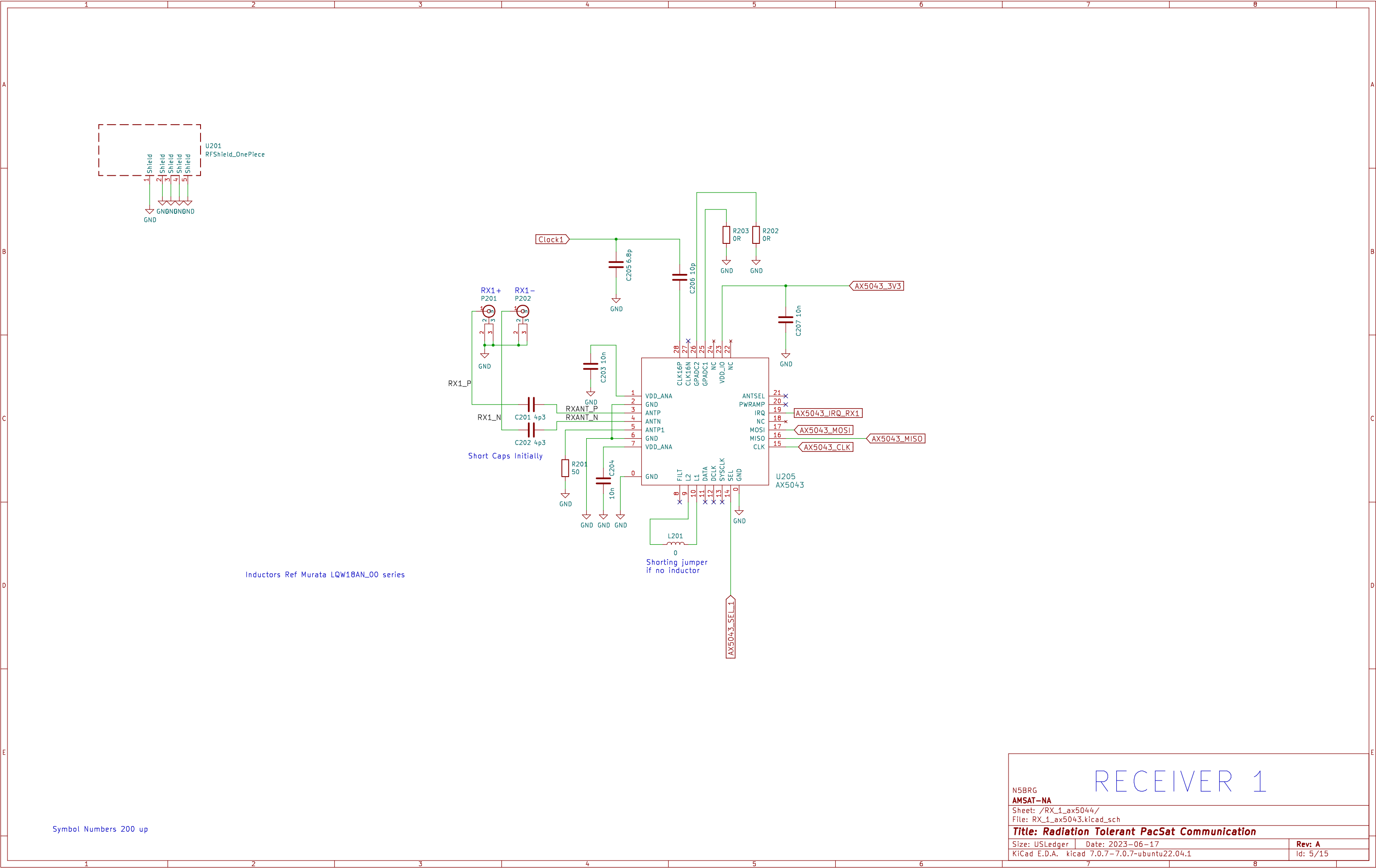


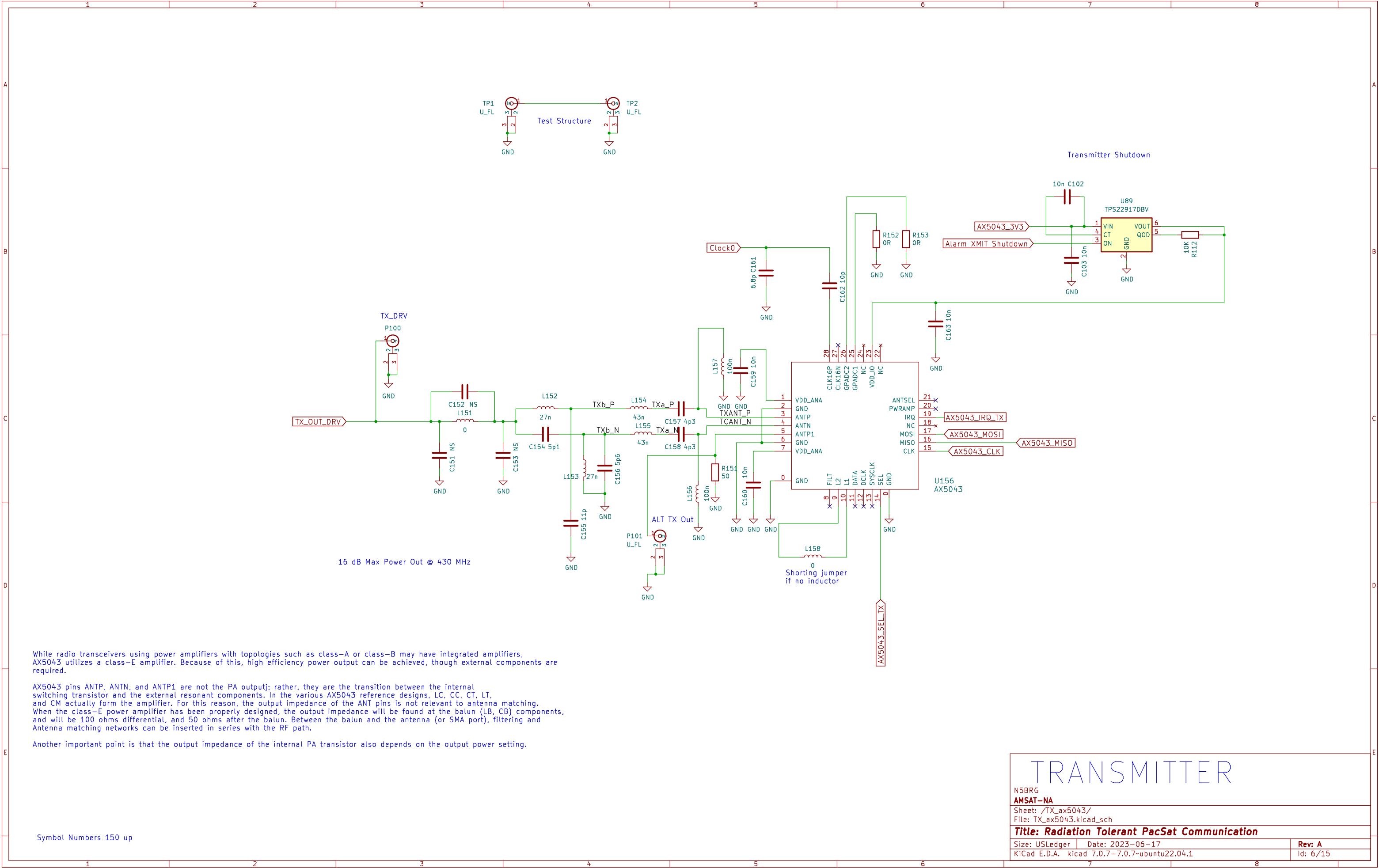
Note:

1. Review FILT voltage node and adjust current if needed per ap note AND9315-D.PDF
2. Seletec best resitor values after assembly and use one percent resistors to put frequency at 16 MHz.

Symbol Numbers 650 up

N5BRG		CLOCK
AMSAT-NA		
Sheet: /Clocks/		
File: Clocks.kicad_sch		
Title: Radiation Tolerant PacSat Communication		
Size: USLedger	Date: 2023-06-17	Rev: A
KiCad E.D.A. kicad 7.0.7-7.0.7-ubuntu22.04.1		Id: 4/15





While radio transceivers using power amplifiers with topologies such as class-A or class-B may have integrated amplifiers, AX5043 utilizes a class-E amplifier. Because of this, high efficiency power output can be achieved, though external components are required.

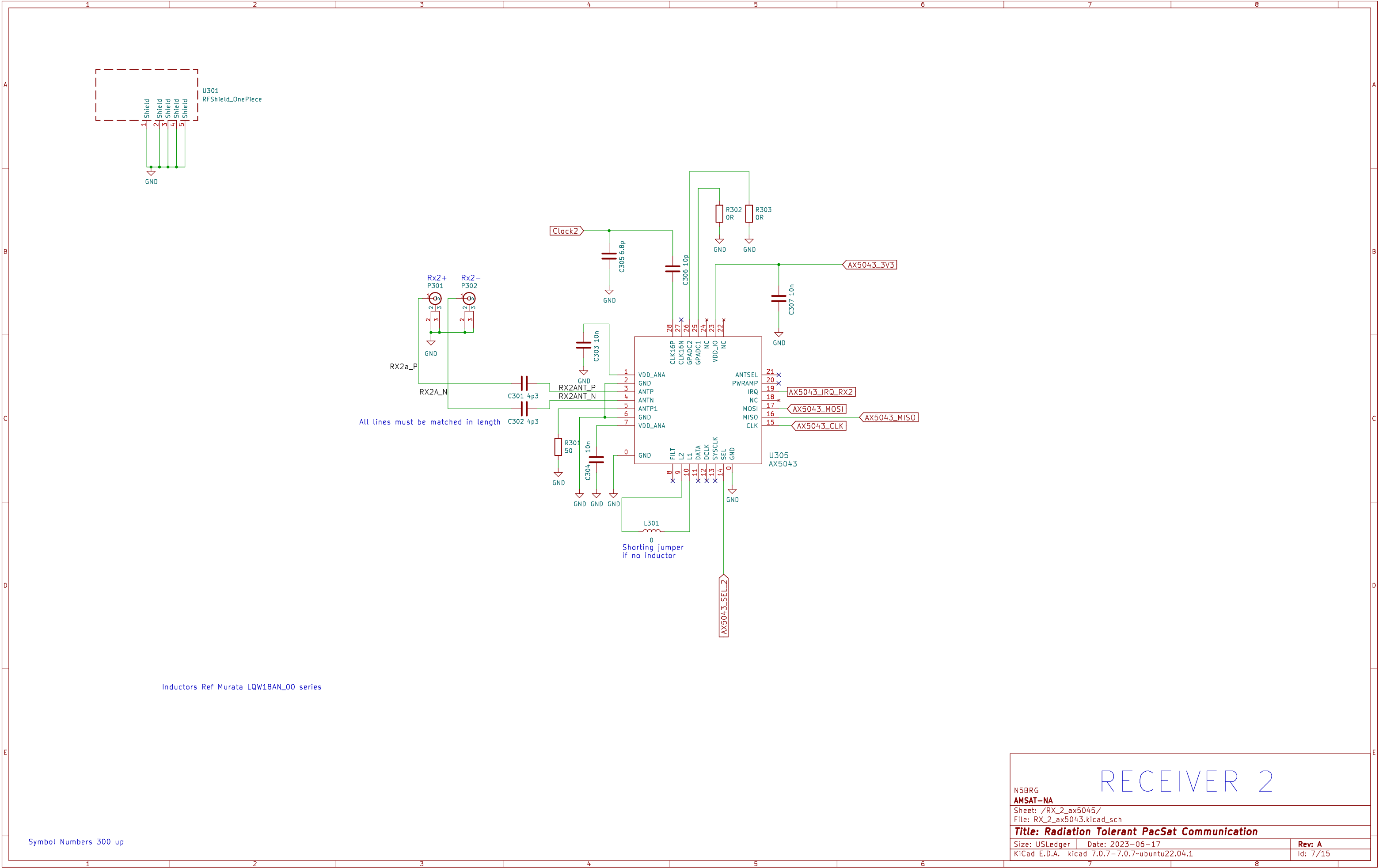
AX5043 pins ANTP, ANTEN, and ANTP1 are not the PA output; rather, they are the transition between the internal switching transistor and the external resonant components. In the various AX5043 reference designs, LC, CC, CT, LT, and CM actually form the amplifier. For this reason, the output impedance of the ANT pins is not relevant to antenna matching. When the class-E power amplifier has been properly designed, the output impedance will be found at the balun (LB, CB) components, and will be 100 ohms differential, and 50 ohms after the balun. Between the balun and the antenna (or SMA port), filtering and Antenna matching networks can be inserted in series with the RF path.

Another important point is that the output impedance of the internal PA transistor also depends on the output power setting.

Symbol Numbers 150 up

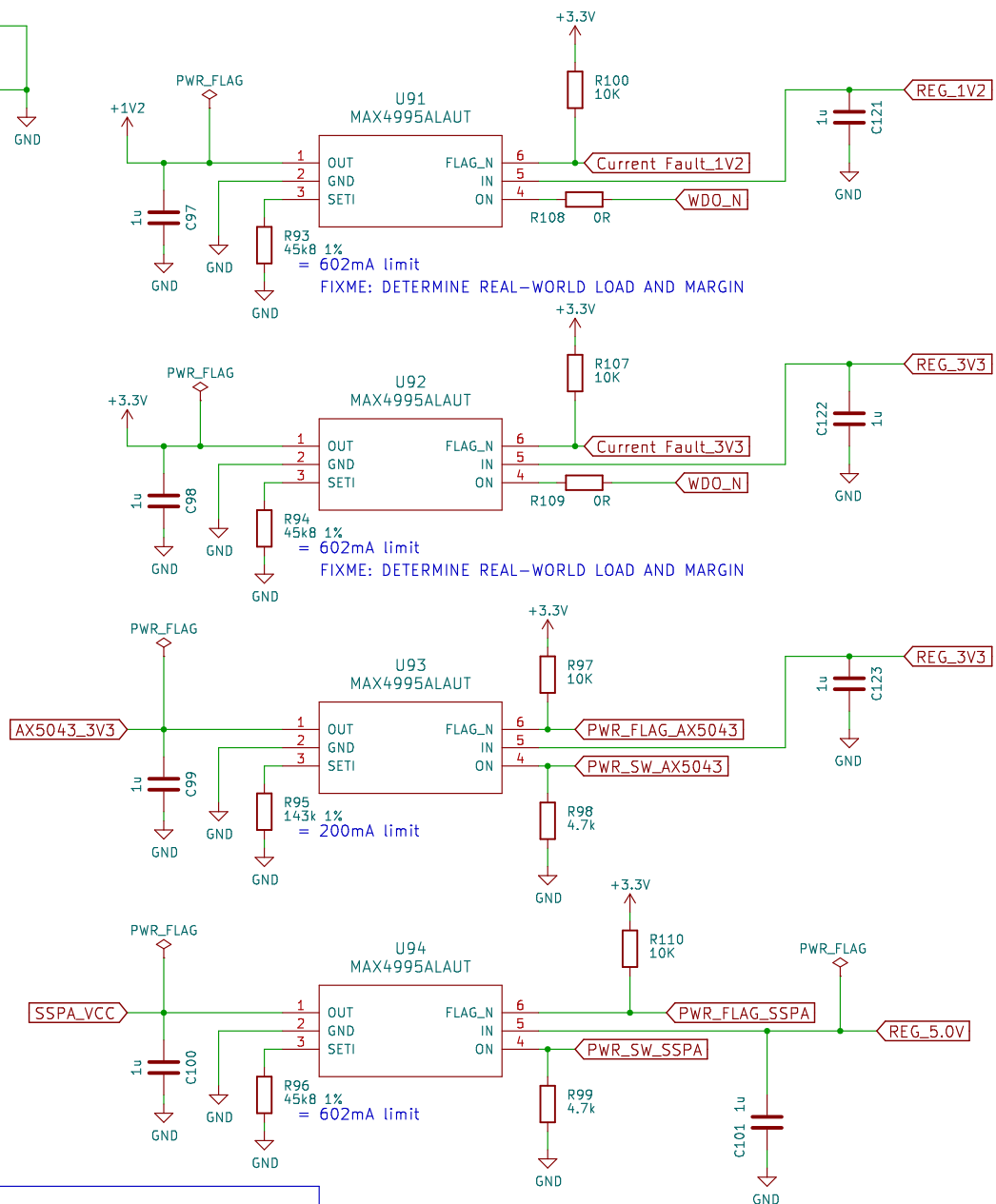
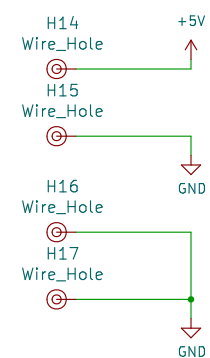
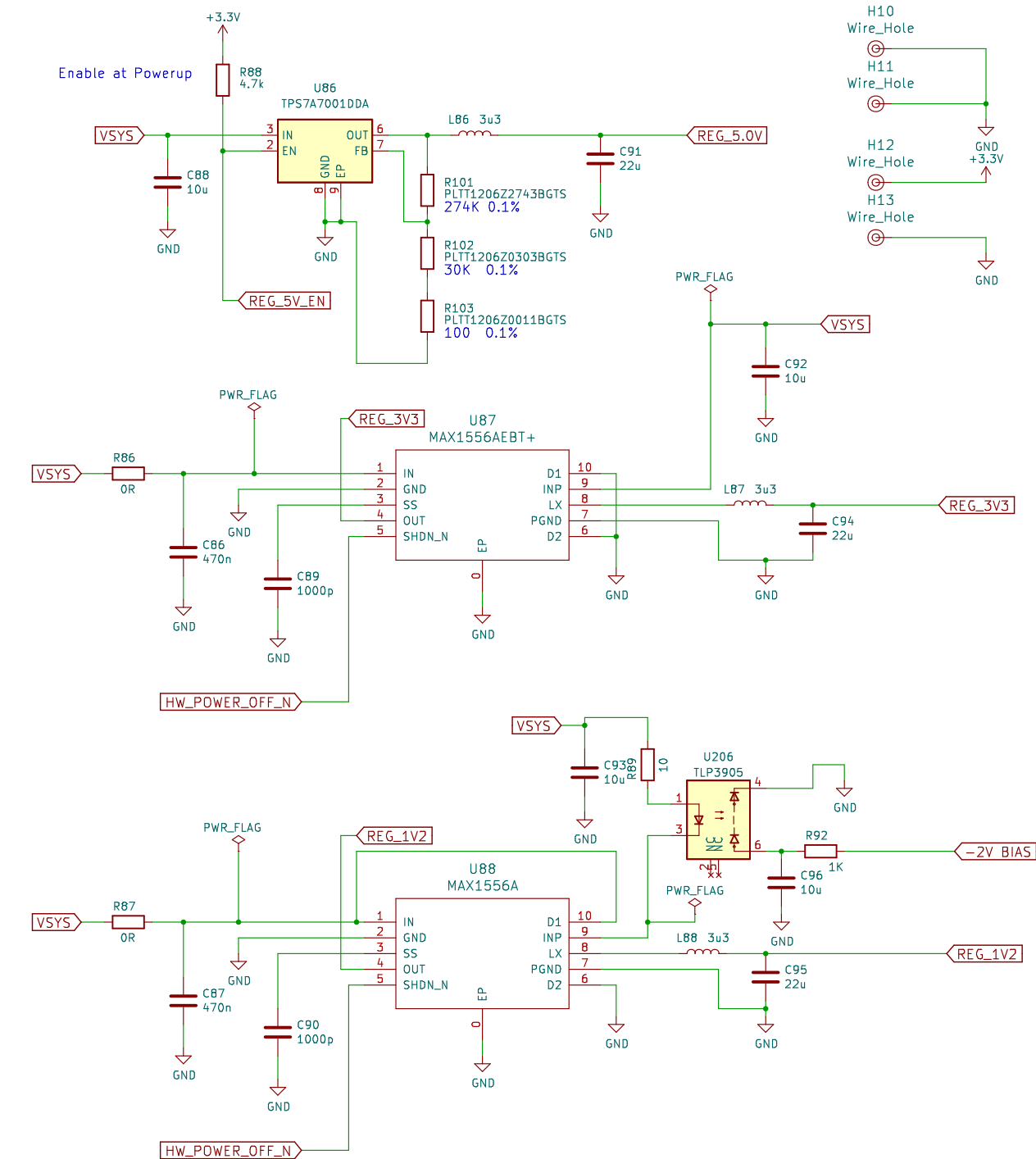
TRANSMITTER

N5BRG		
AMSAT-NA		
Sheet: /TX_ax5043/		
File: TX_ax5043.kicad_sch		
Title: Radiation Tolerant PacSat Communication		
Size: USLedger	Date: 2023-06-17	Rev: A
KiCad E.D.A. kicad 7.0.7-7.0.7-ubuntu22.04.1	Id: 6/15	

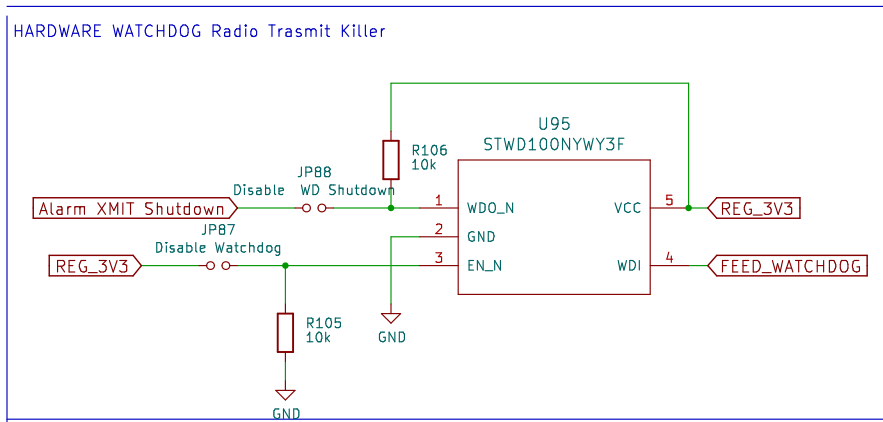
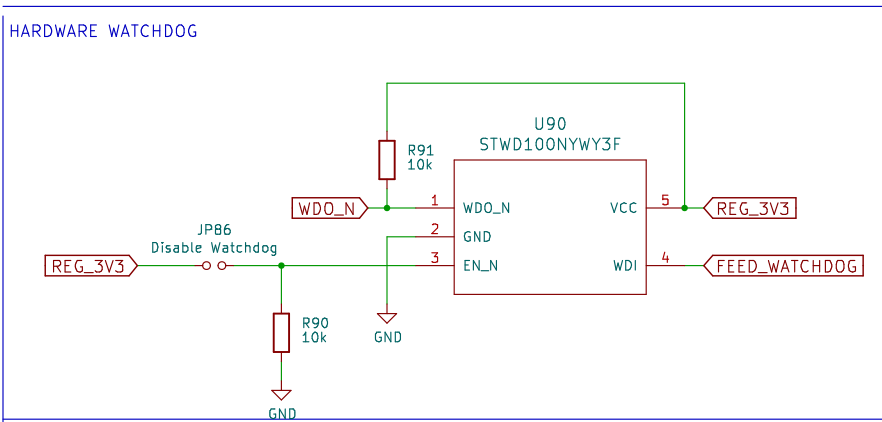


RECEIVER 2

N5BRG		
AMSAT-NA		
Sheet: /RX_2_ax5045/		
File: RX_2_ax5043.kicad_sch		
Title: Radiation Tolerant PacSat Communication		
Size: USLdger	Date: 2023-06-17	Rev: A
KiCad E.D.A. kicad 7.0.7-7.0.7~ubuntu22.04.1	Id: 7/15	

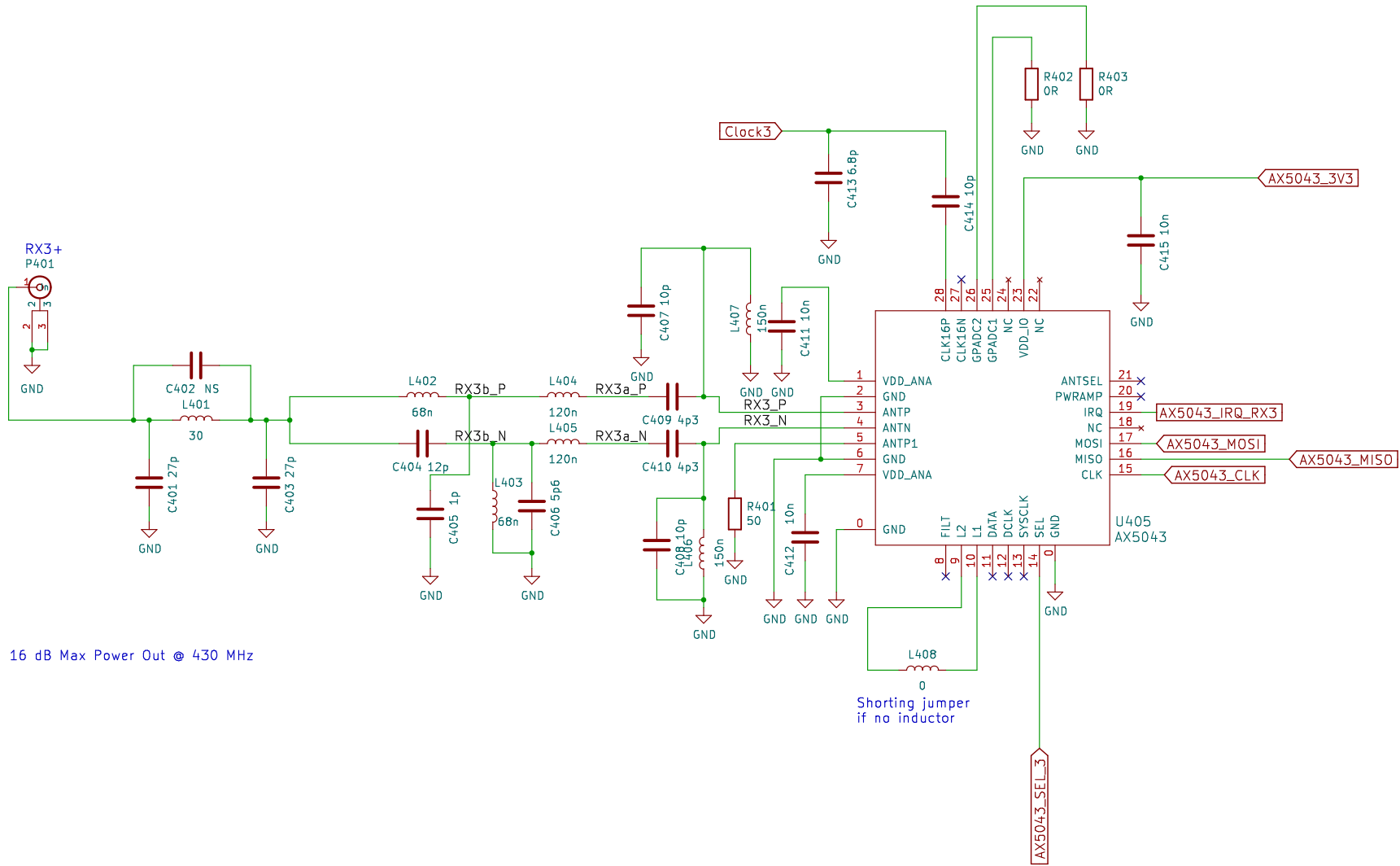
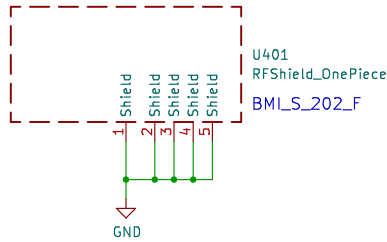


NOTE: LOAD SWITCHES ARE MAX +5.5V (ABS MAX +6)
Resistor connected to SETI to ground sets current limit.
Adjust these to match needs of sub-circuits. Consider
Startup current vs run current.



Start with 85

POWER		
N5BRG		
AMSAT-NA		
Sheet: /Power/		
File: power.kicad_sch		
Title: Radiation Tolerant PacSat Communication		
Size: USLdger	Date: 2023-06-17	Rev: A
KiCad E.D.A. kicad 7.0.7-7.0.7-ubuntu22.04.1		Id: 8/15



Inductors Ref Murata LQW1BAN_00 series

Symbol Numbers 400 up

RECEIVER 3

N5BRG

AMSAT-NA

Sheet: /RX_3_ax5045/

File: RX_3_ax5043.kicad_sch

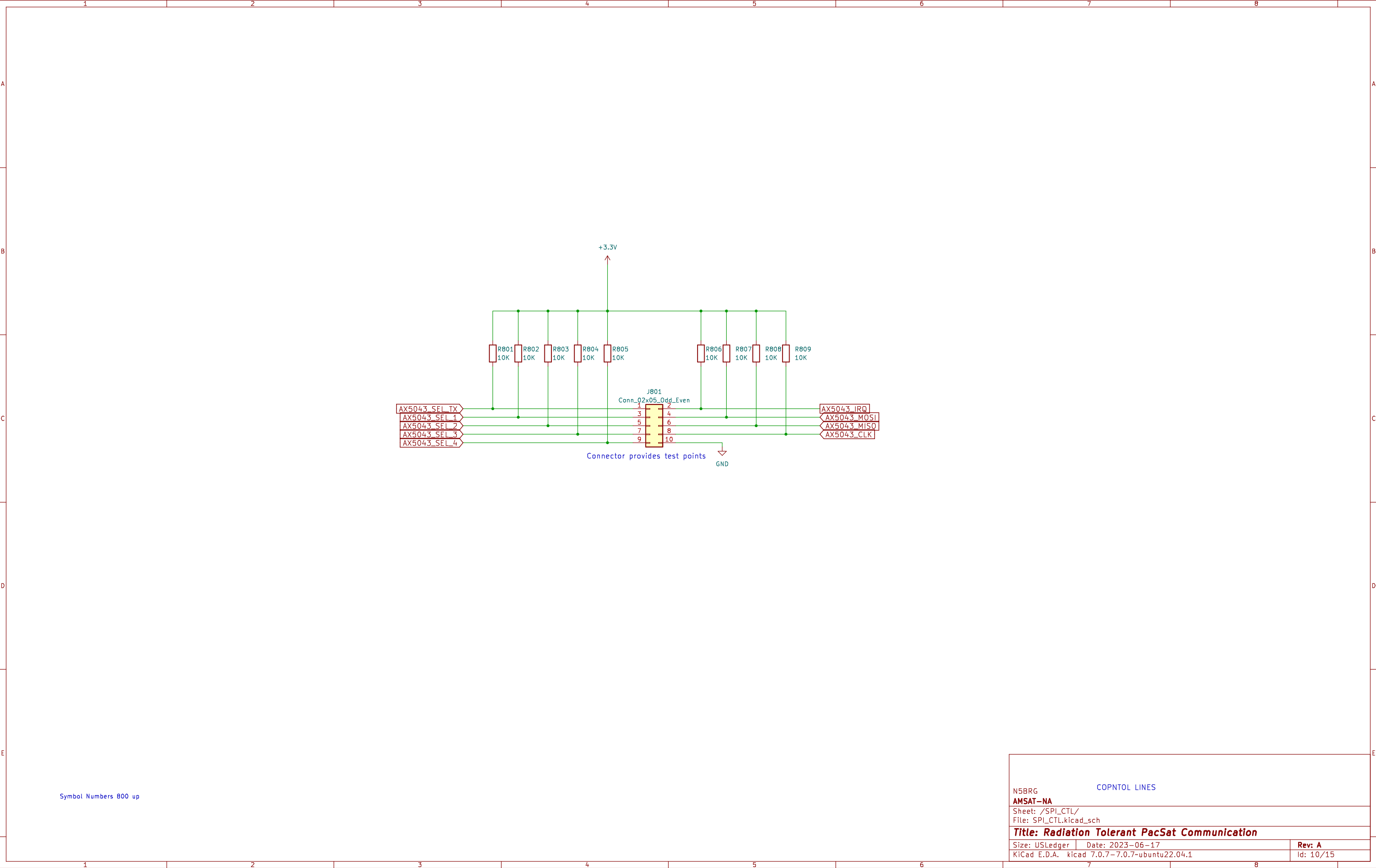
Title: Radiation Tolerant PacSat Communication

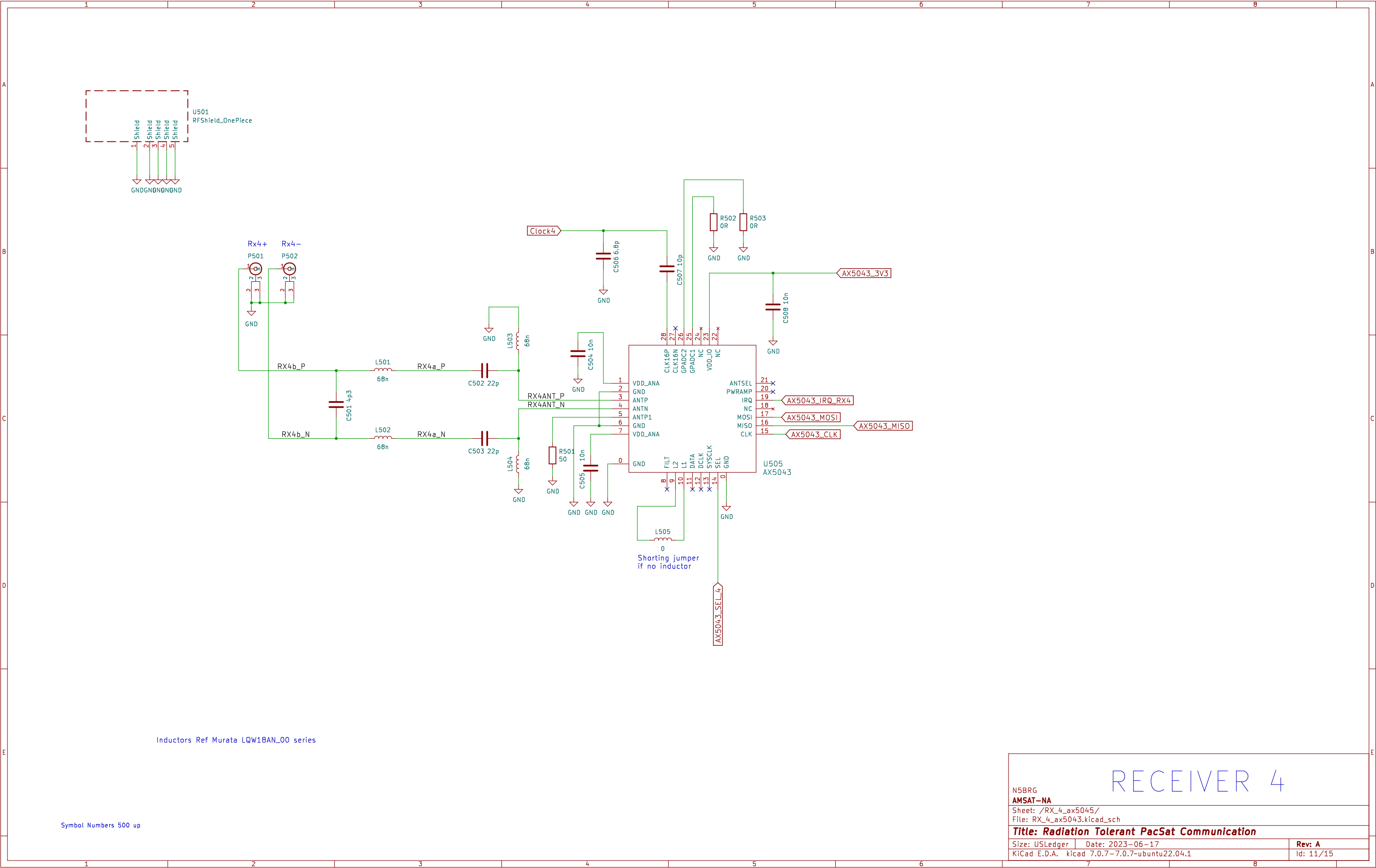
Size: USLedger | Date: 2023-06-17

KiCad E.D.A. kicad 7.0.7-7.0.7~ubuntu22.04.1

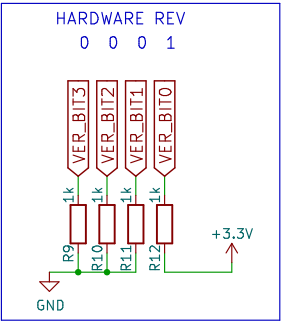
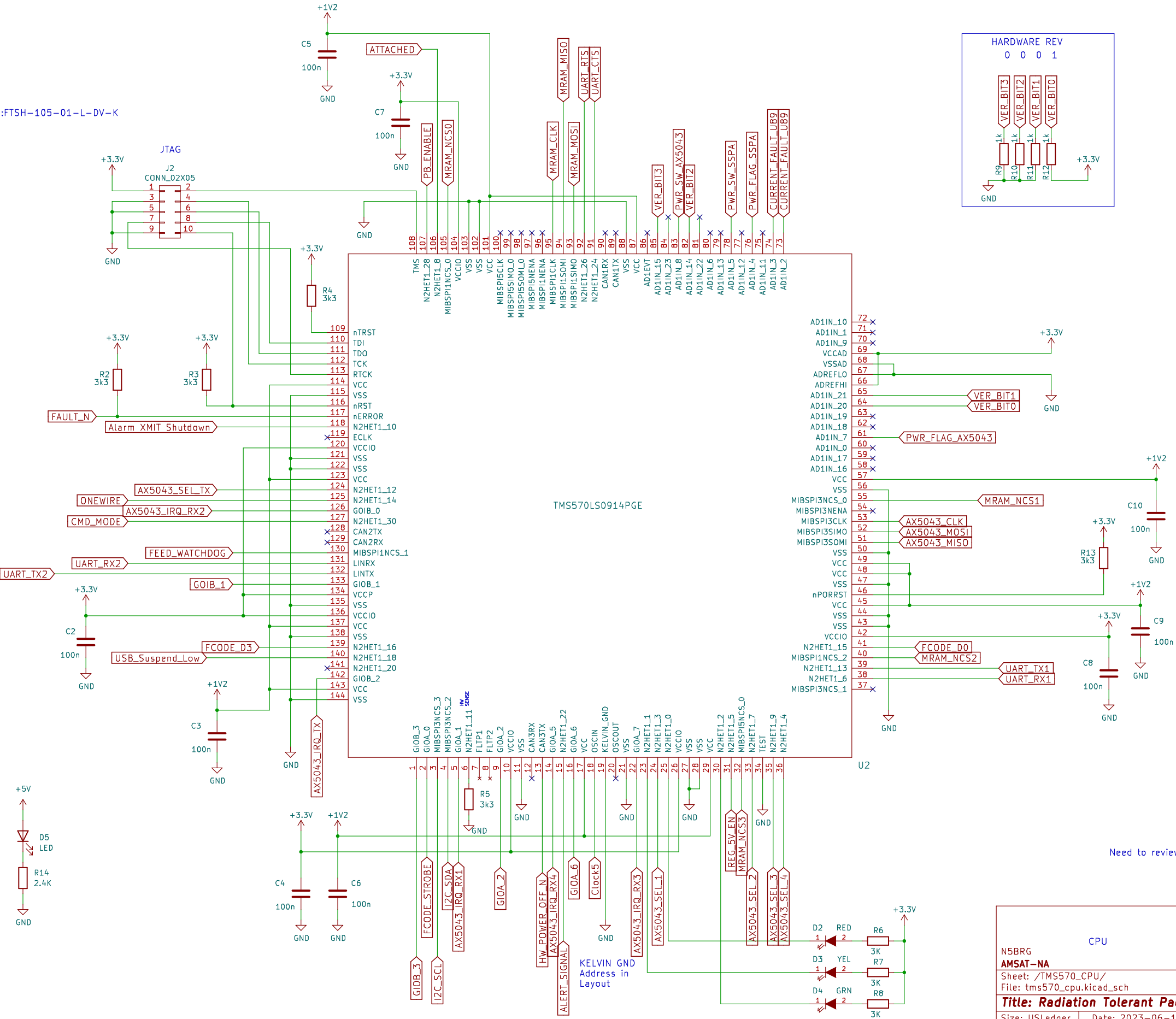
Rev: A

Id: 9/15





PacSatDev_samtec:FTSH-105-01-L-DV-K



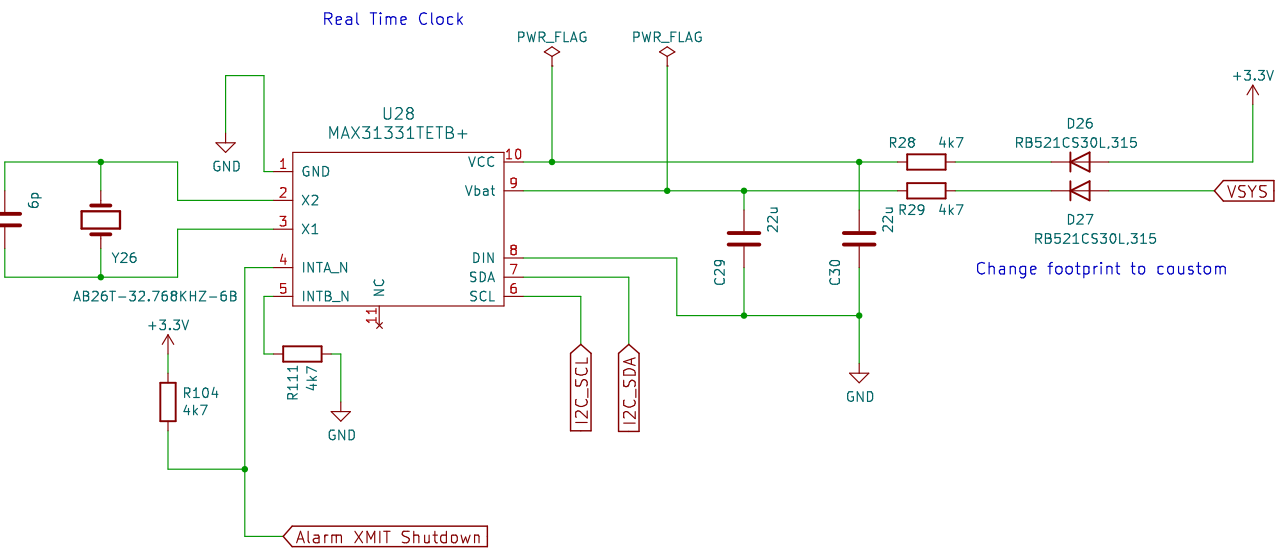
Must add USB interface

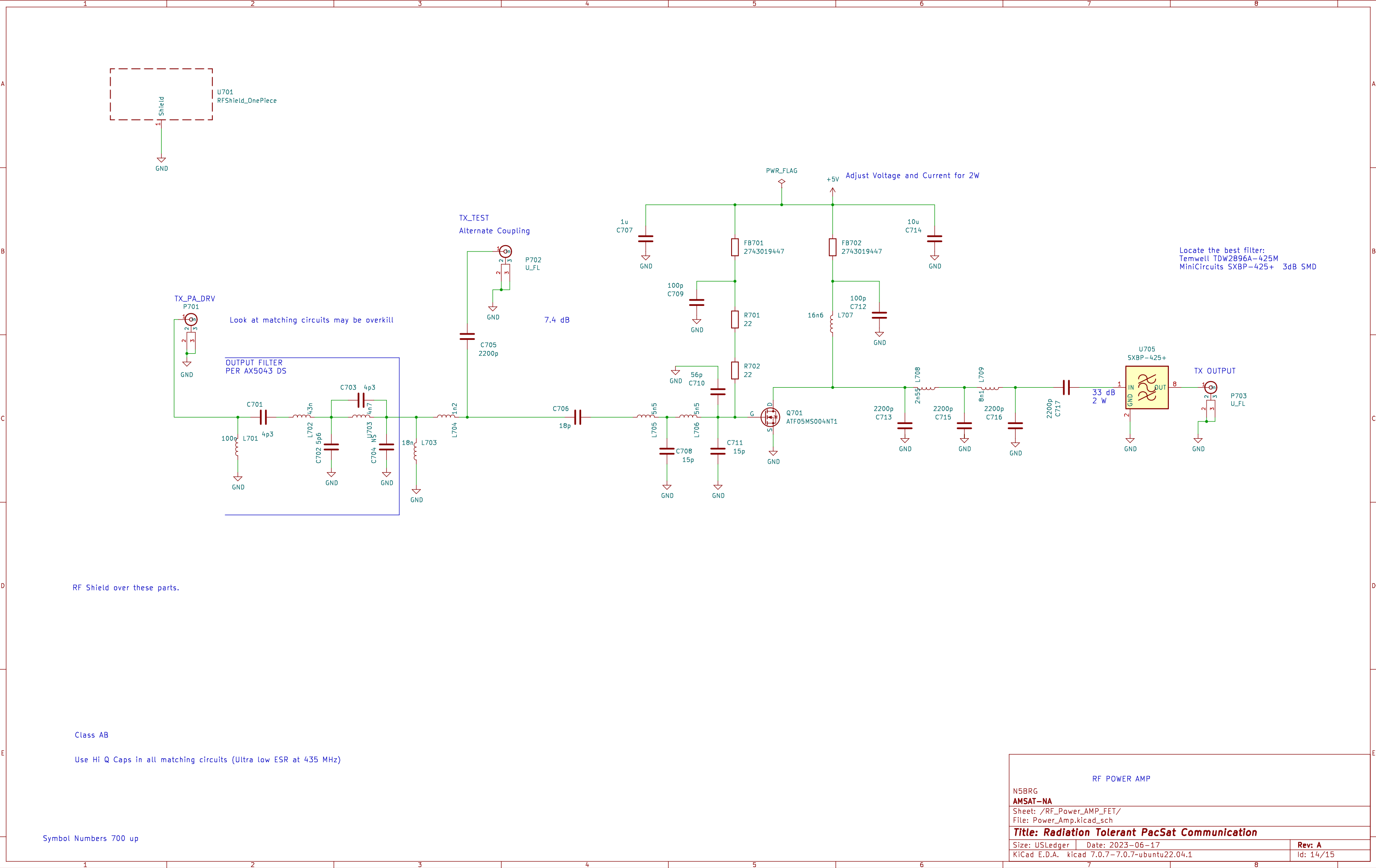
Need to review and remove things not used on this design.

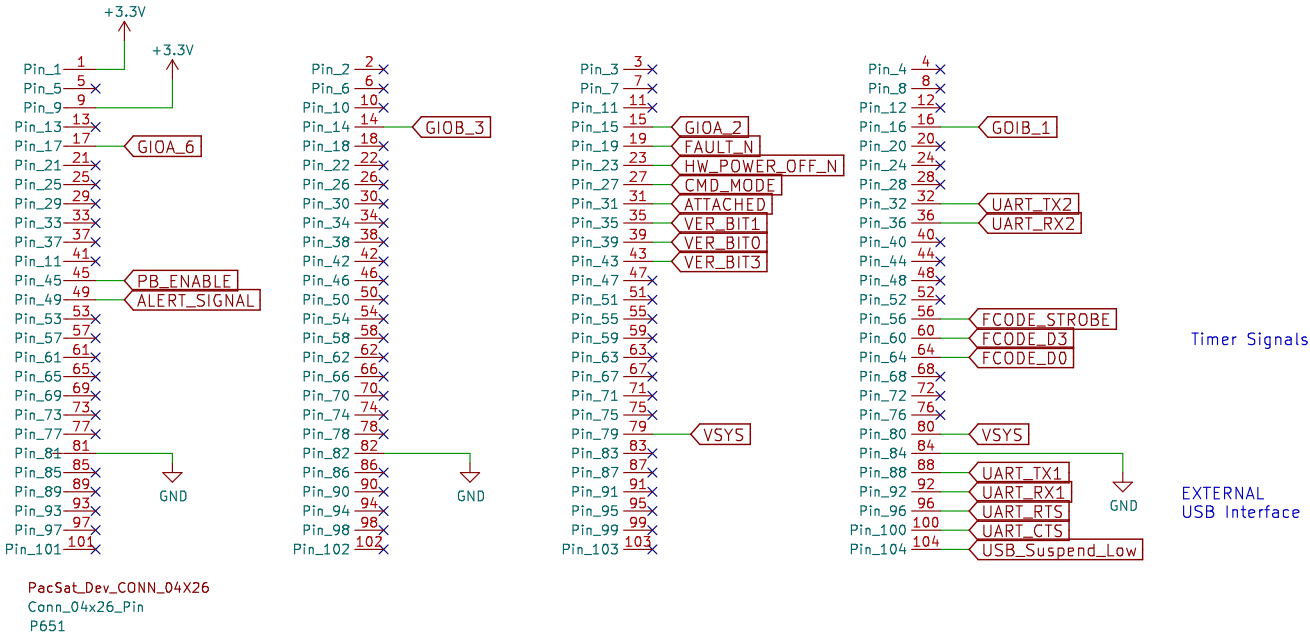
CPU		
N5BRG		
AMSAT-NA		
Sheet: /TMS570_CPU/		
File: tms570_cpu.kicad_sch		
Title: Radiation Tolerant PacSat Communication		
Size: USLedger	Date: 2023-06-17	Rev: 1.1
KiCad E.D.A. kicad 7.0.7-7.0.7-ubuntu22.04.1	Id: 12/15	

Start with 1

Consider Using this OSC out.





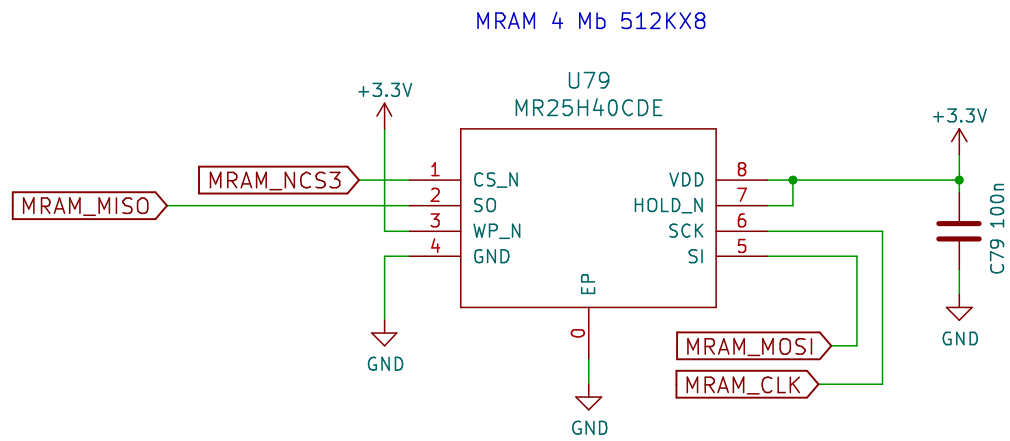
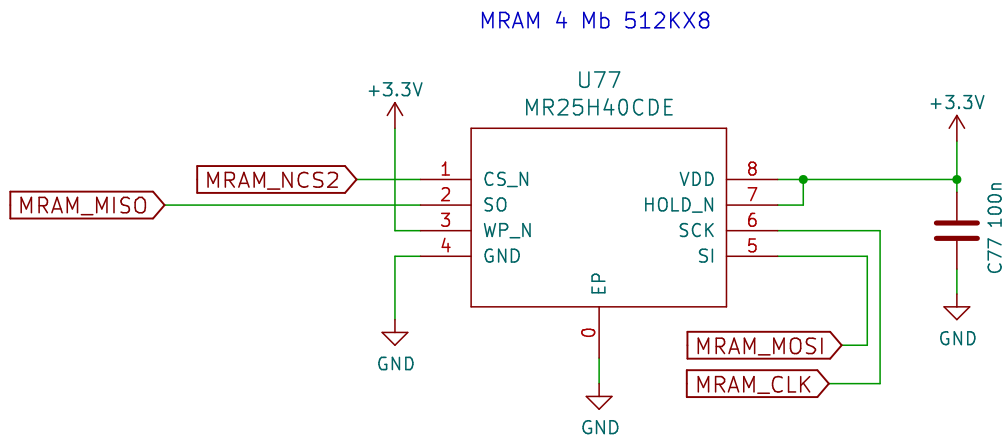
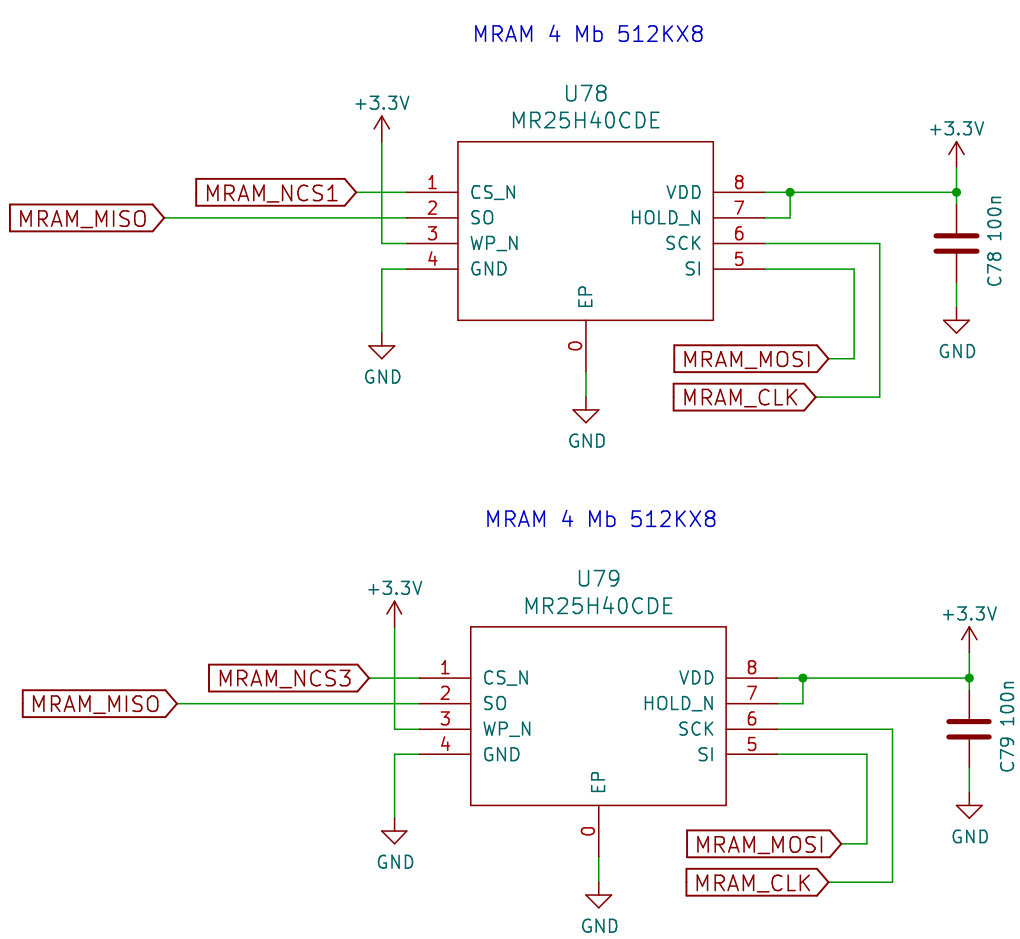
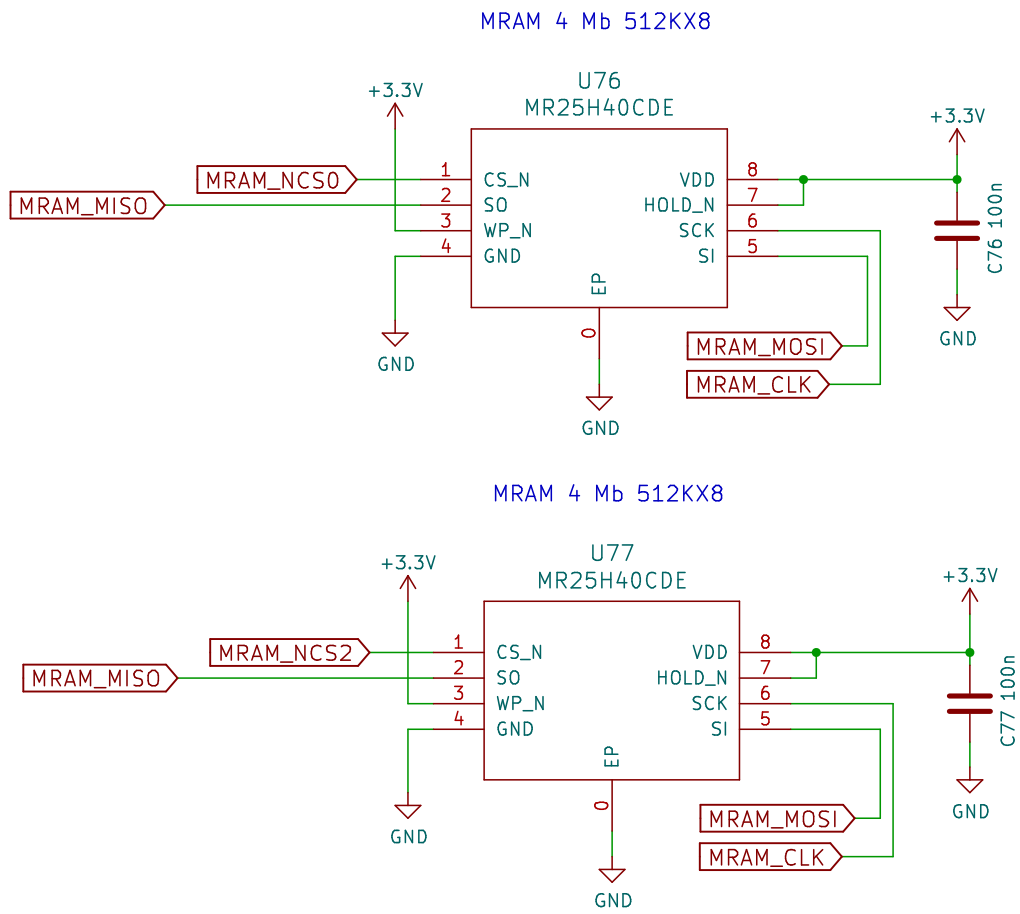


PacSat_Dev_CONN_04X26
Conn_04x26_Pin
P651

Needs a lot of work to define all IO and put the connections on proper pins.

Samtec Q Series Connectors
QSS mates with QTS
This cinnector accomidates stacking PCBs

PACSAT BOARD IO		
N5BRG		
AMSAT-NA		
Sheet: /PC104_IO/		
File: PC104_io_conn.kicad_sch		
Title: Radiation Tolerant PacSat Communication		
Size: USLedger	Date: 2023-06-17	Rev: A
KiCad E.D.A. kicad 7.0.7-7.0.7~ubuntu22.04.1	Id: 15/15	



Memory Chips
400 uA standby
11 to 18.5 mA active

Start with 75

Memory		
N5BRG		
AMSAT-NA		
Sheet: /Memory/		
File: memorg.kicad_sch		
Title: Radiation Tolerant PacSat Communication		
Size: A4	Date: 2023-06-17	Rev: A
KiCad E.D.A. kicad 7.0.7-7.0.7-ubuntu22.04.1		Id: 17/15