

Inductors Ref Murata LQW18AN_00 series

Note A:
Tune resistor for best gain and lowest current.
May replace the FET bia with an active
bias network.

Note 1
Test performance at different offset bias levels and ground.
One AX5043 note suggested 1.0 volts for best results.
Disconnected this on prototypes and had center conductor grounded.

Symbol Numbers 600 up

RX INPUT POWER DIVIDER

N5BRG

AMSAT-NA

Sheet: /Rx_Power_Divider/

File: Power_Divider.kicad_sch

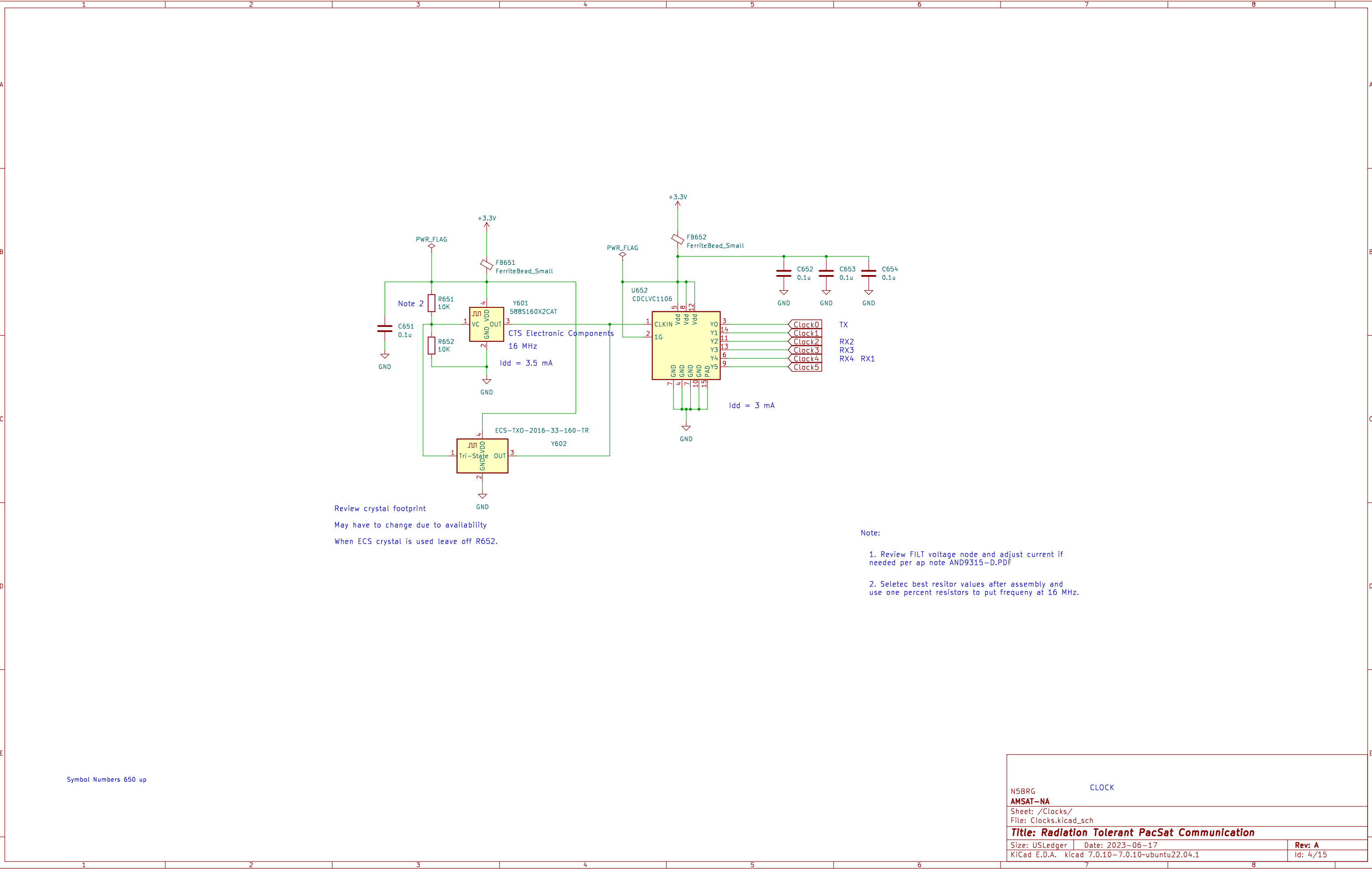
Title: Radiation Tolerant PacSat Communication

Size: USLedger Date: 2023-06-17

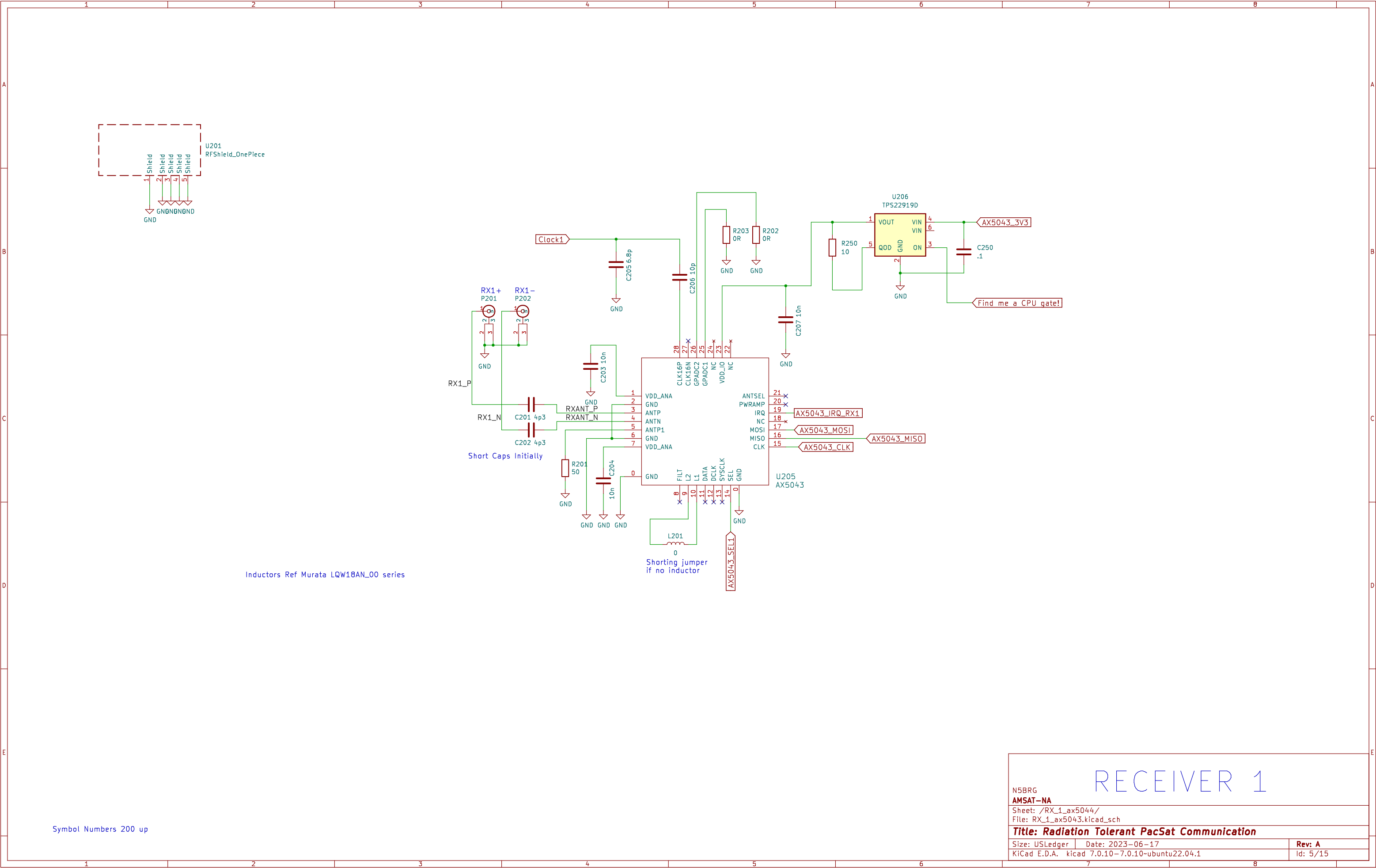
KiCad E.D.A. kicad 7.0.10-7.0.10-ubuntu22.04.1

Rev: A

Id: 2/15

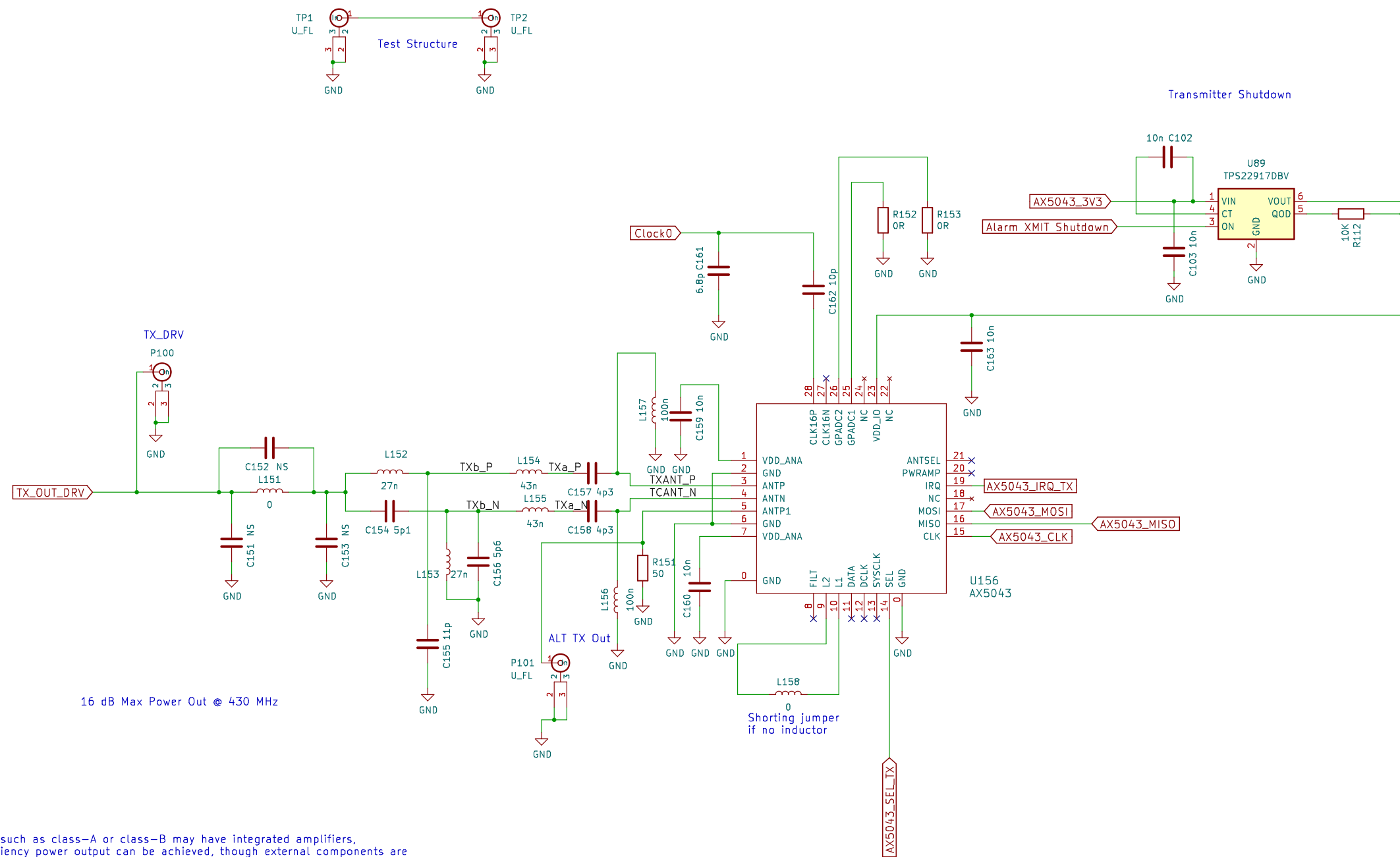


Symbol Numbers 650 up



Symbol Numbers 200 up

RECEIVER 1		
N5BRG AMSAT-NA		
Sheet: /RX_1_ax5044/ File: RX_1_ax5043.kicad_sch		
Title: Radiation Tolerant PacSat Communication		
Size: USLedger	Date: 2023-06-17	Rev: A
KiCad E.D.A. kicad 7.0.10-7.0.10-ubuntu22.04.1		Id: 5/15



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, ANTn, 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

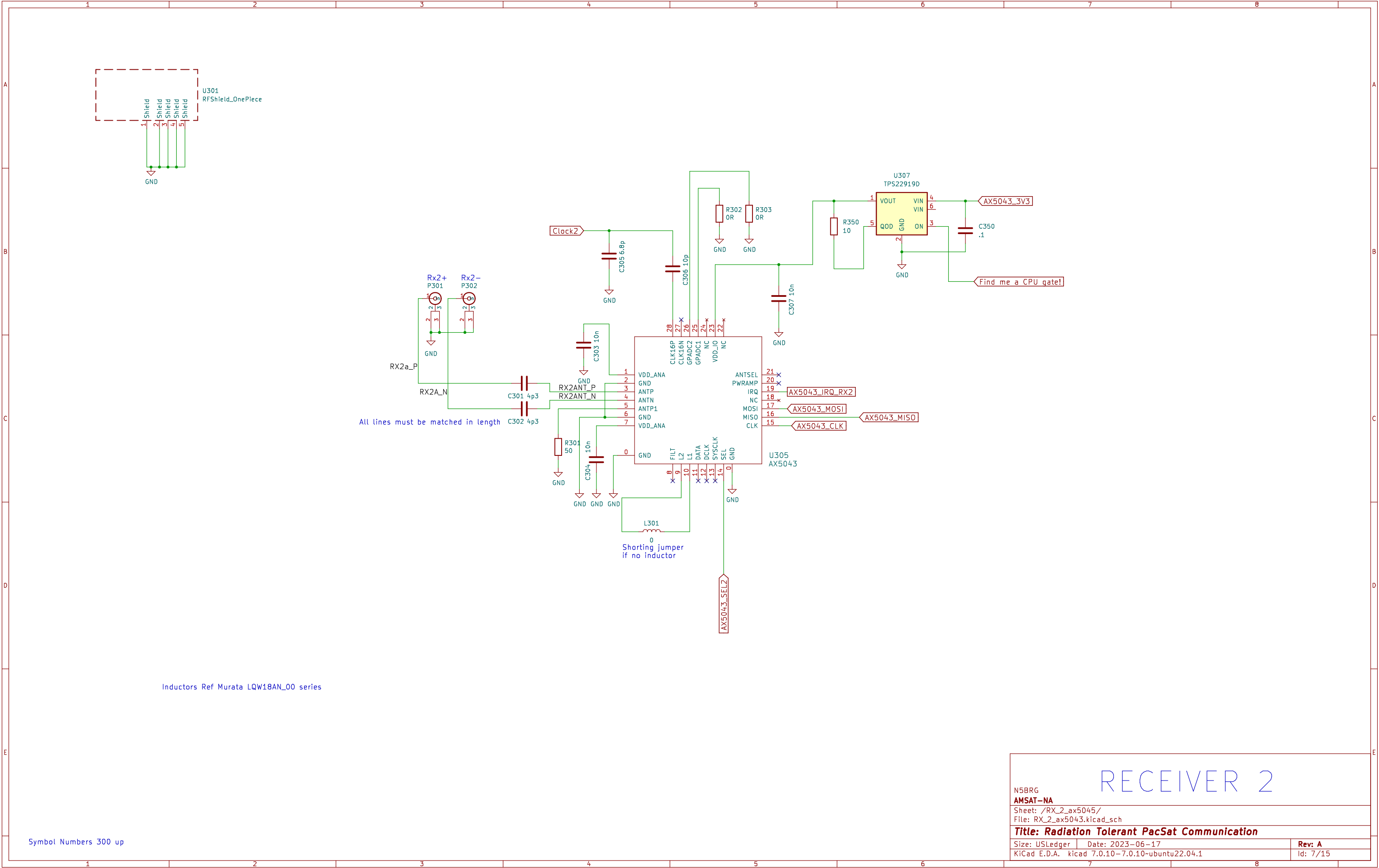
Title: Radiation Tolerant PacSat Communication

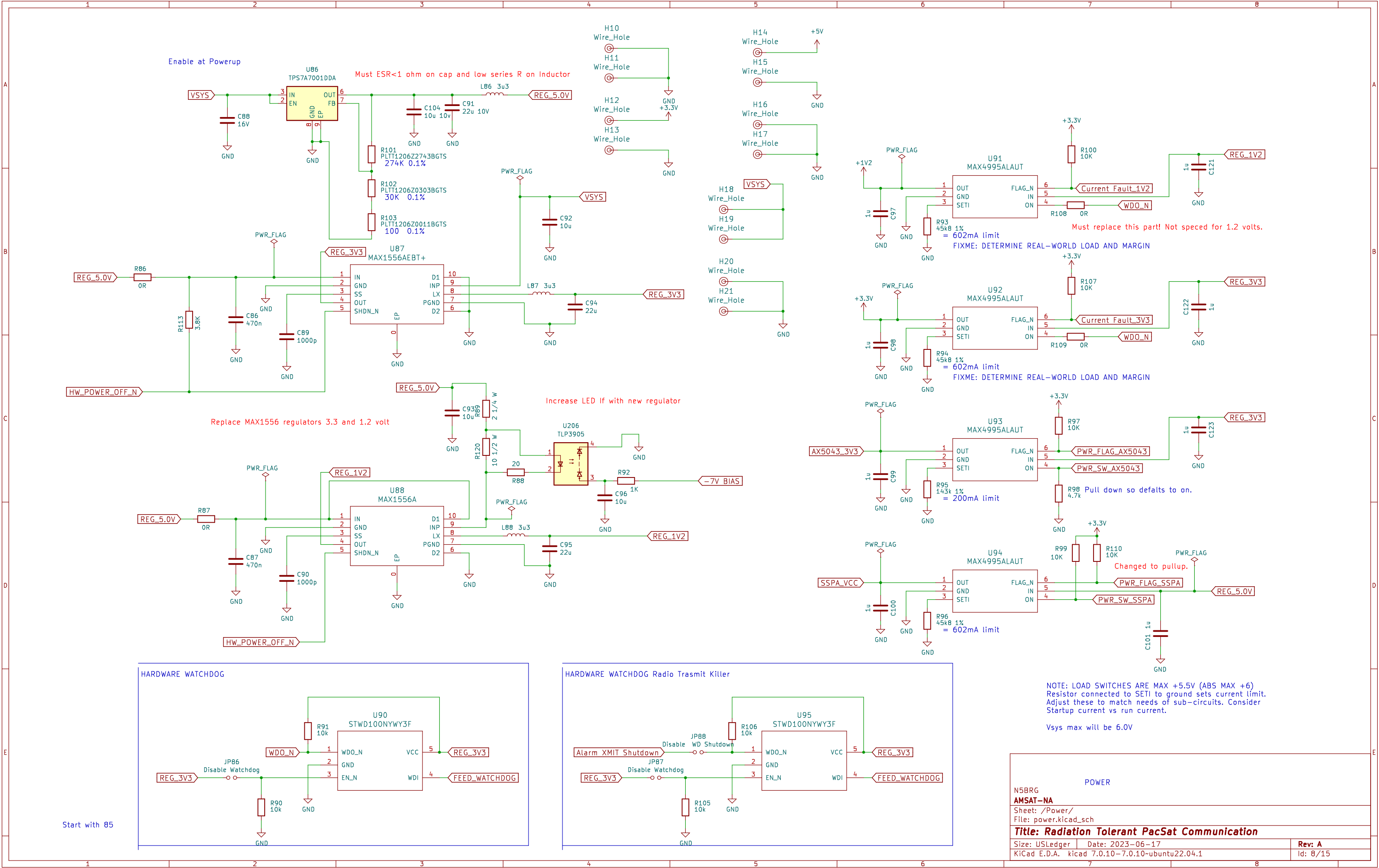
Size: USLedger	Date: 2023-06-17
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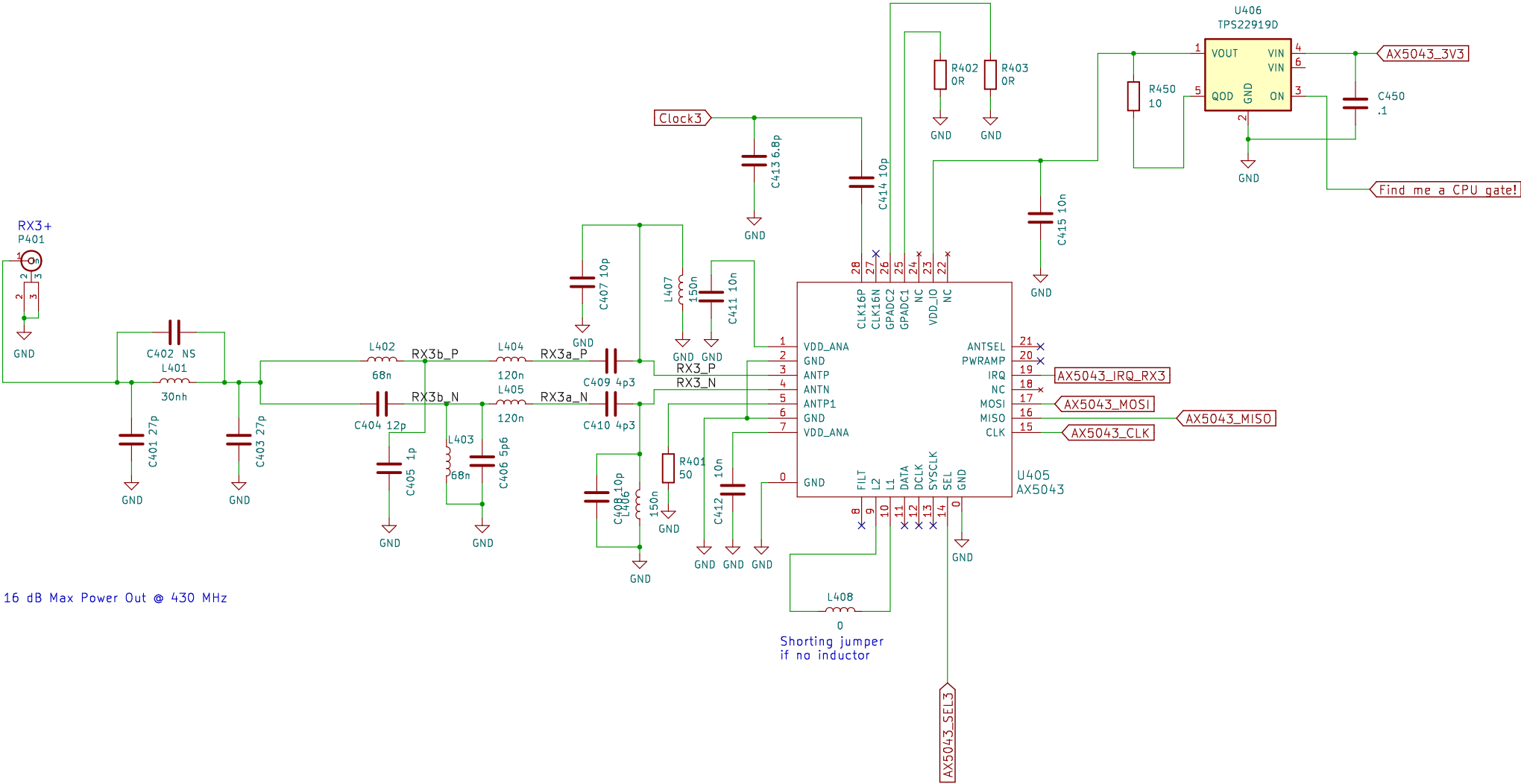
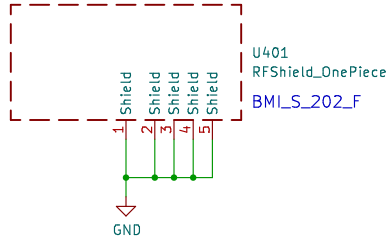
KiCad E.D.A. kicad 7.0.10-7.0.10~ubuntu22.04.1

Rev: A

id: 6/15







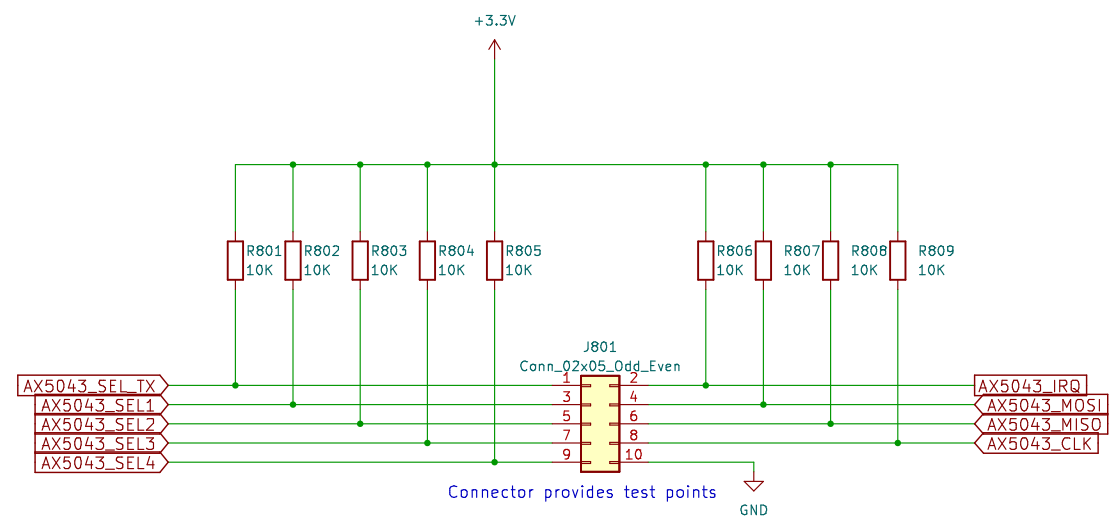
16 dB Max Power Out @ 430 MHz

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	Rev: A
KiCad E.D.A. kicad 7.0.10-7.0.10-ubuntu22.04.1		Id: 9/15



Symbol Numbers 800 up

N5BRG COPNTOL LINES

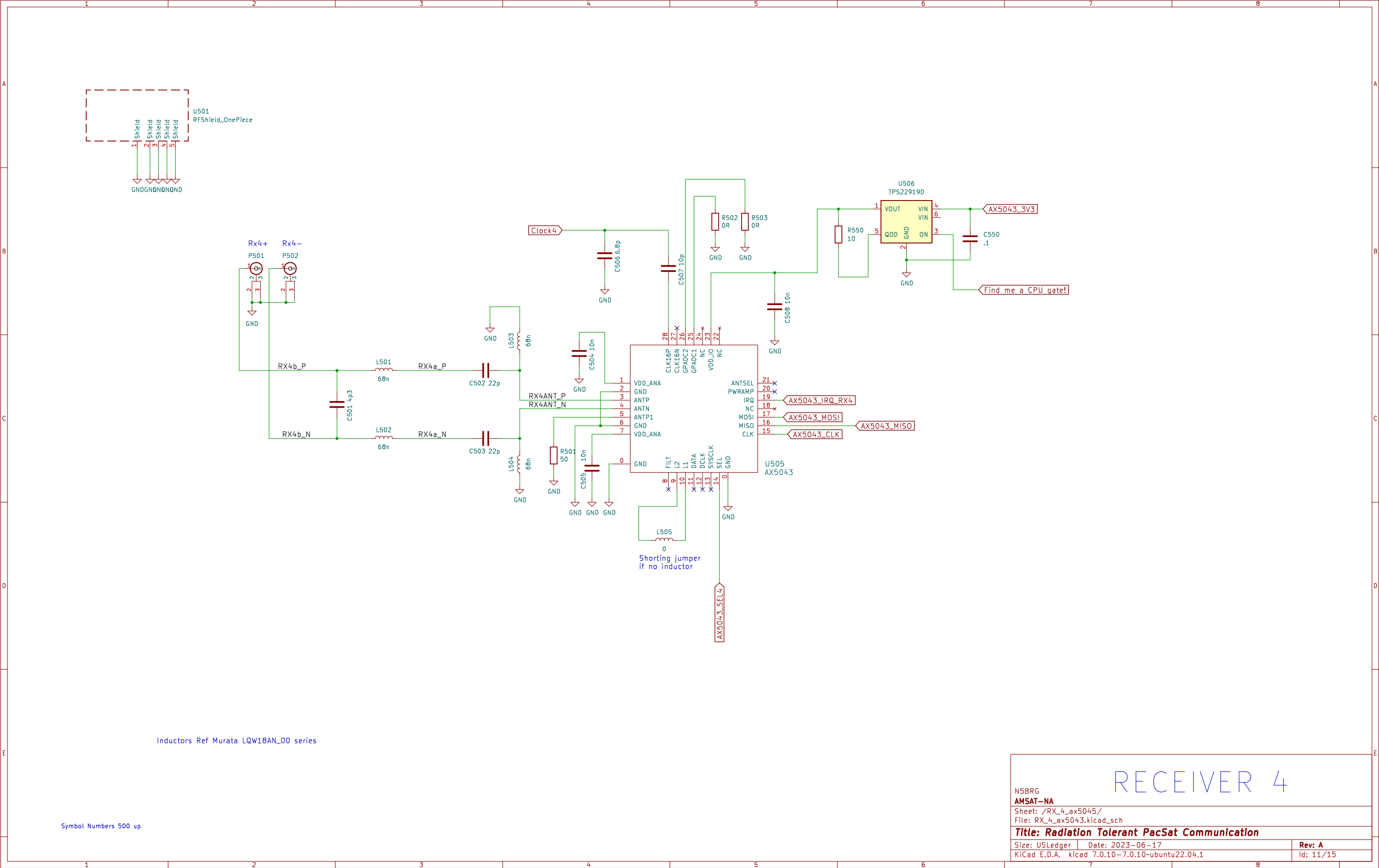
AMSAT-NA

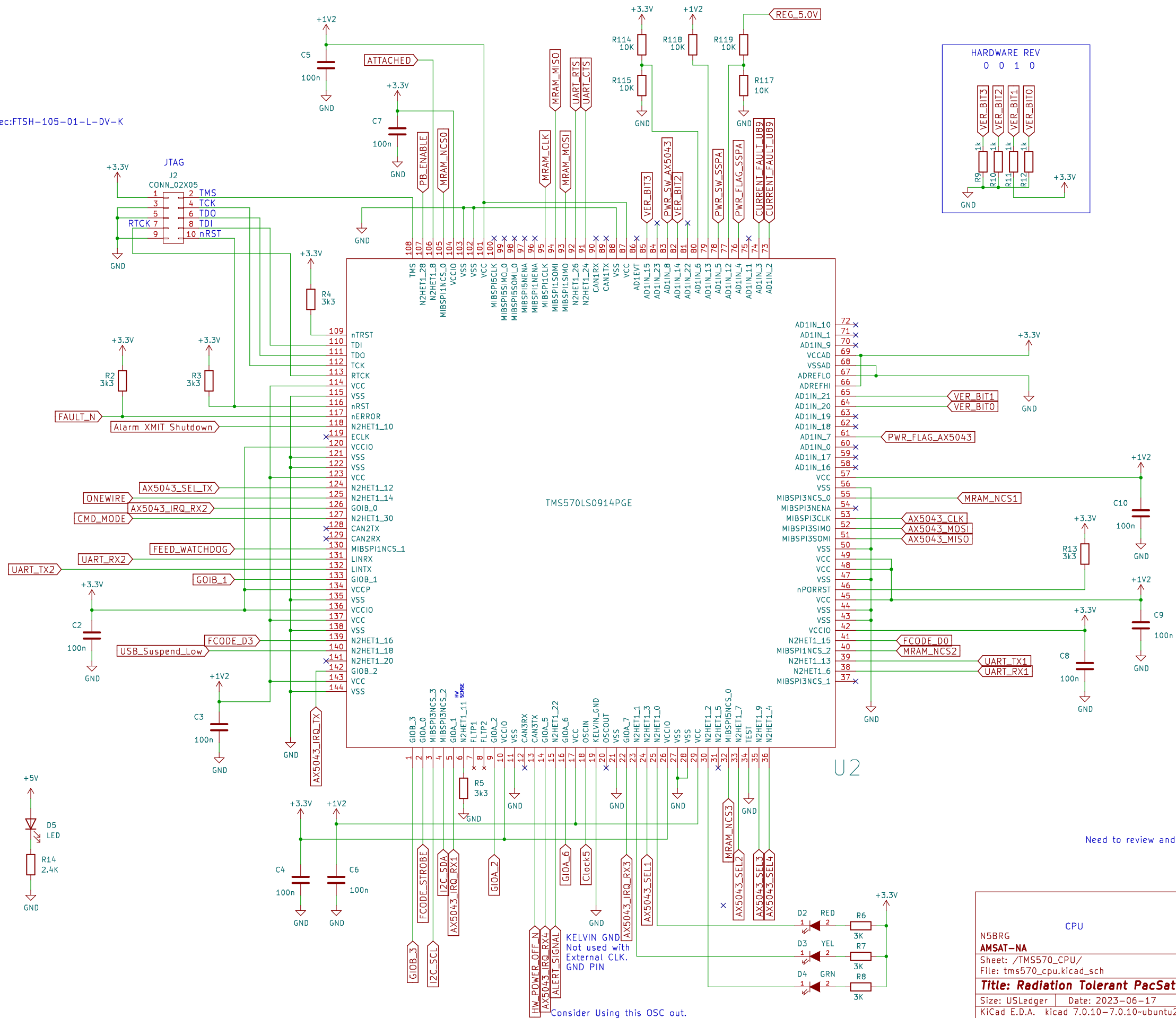
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File: SPI_CTL.kicad_sch

Title: Radiation Tolerant PacSat Communication

Size: USLdger	Date: 2023-06-17
KiCad E.D.A. kicad 7.0.10-7.0.10~ubuntu22.04.1	

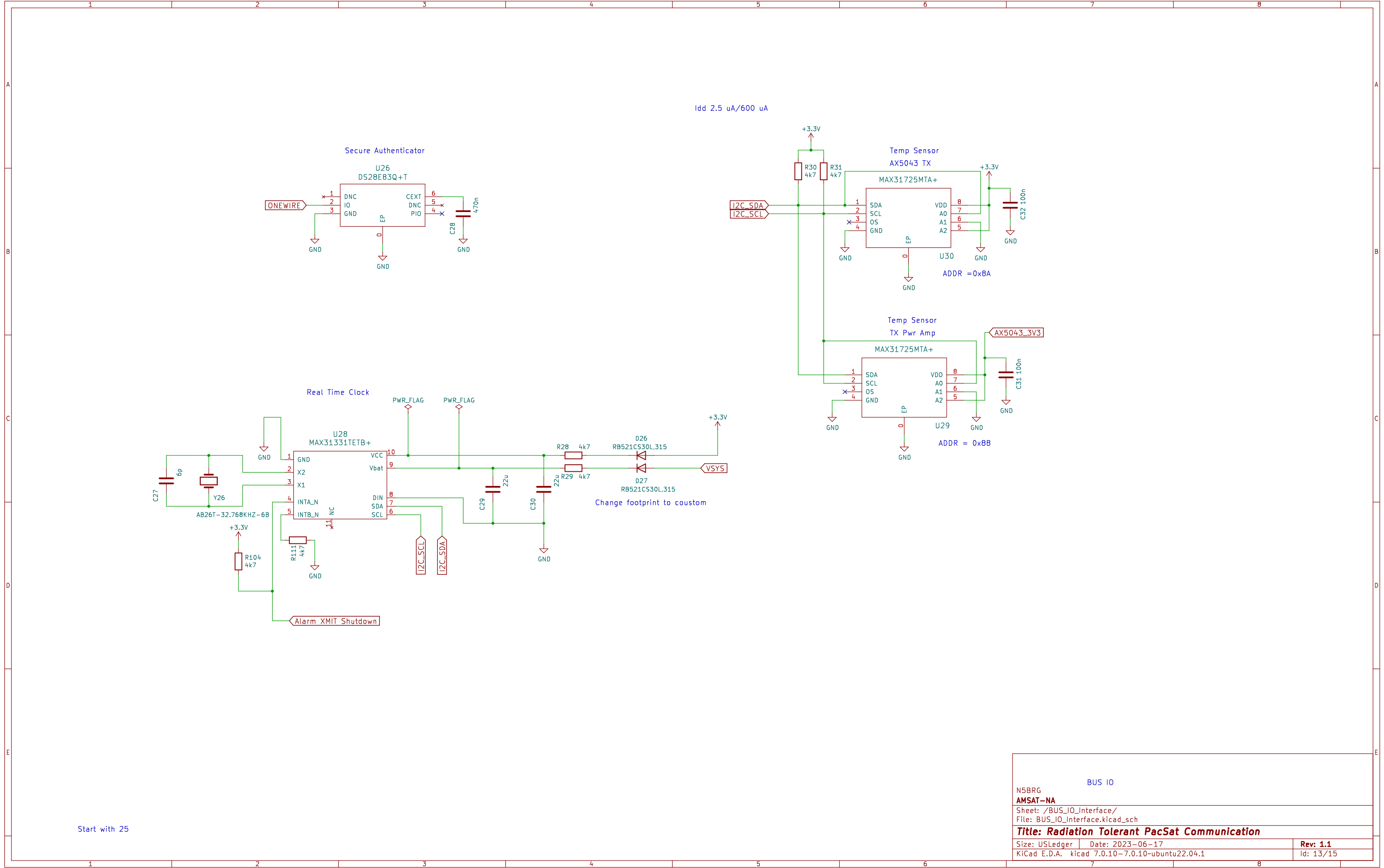
Rev: A
d: 10/15

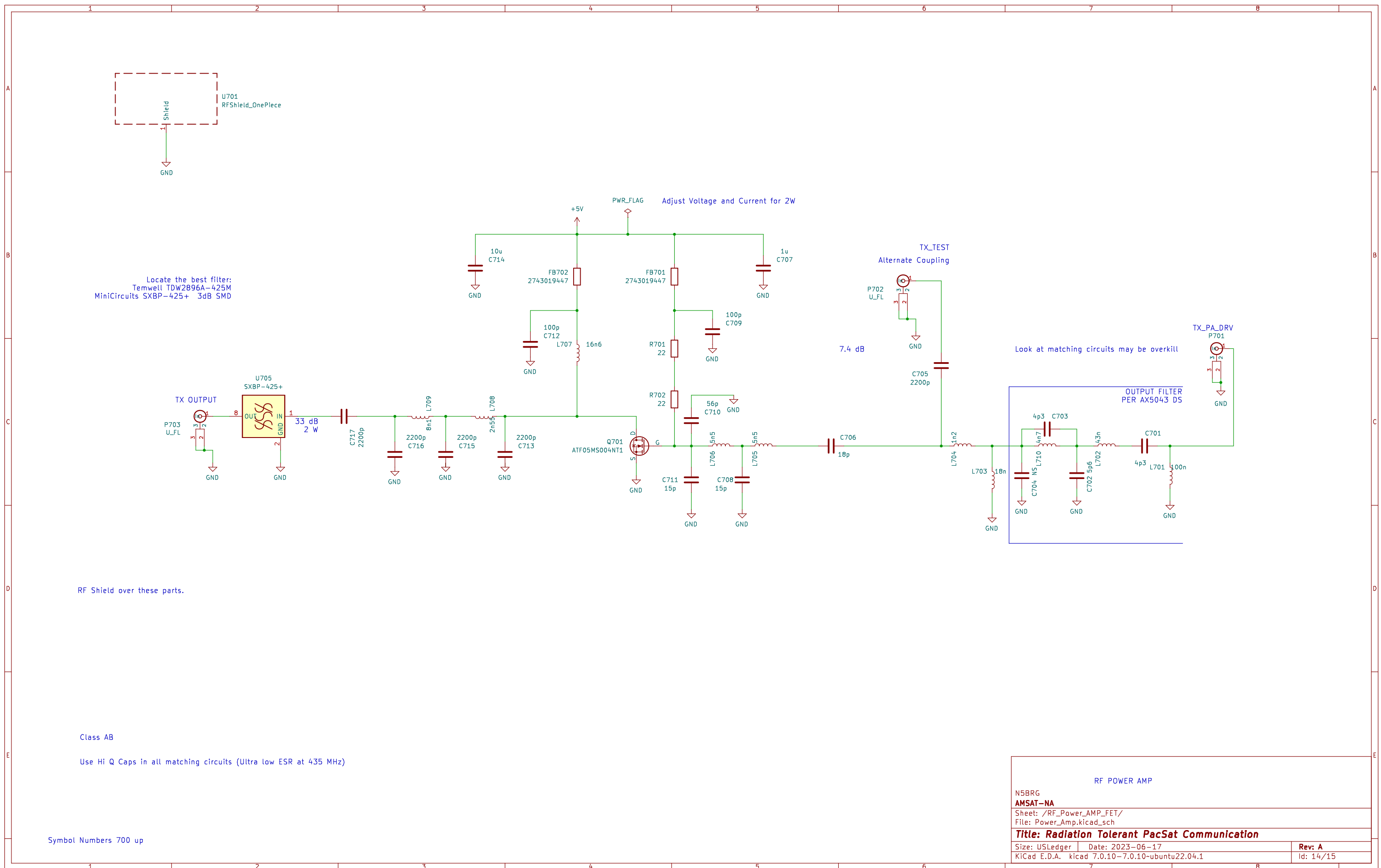


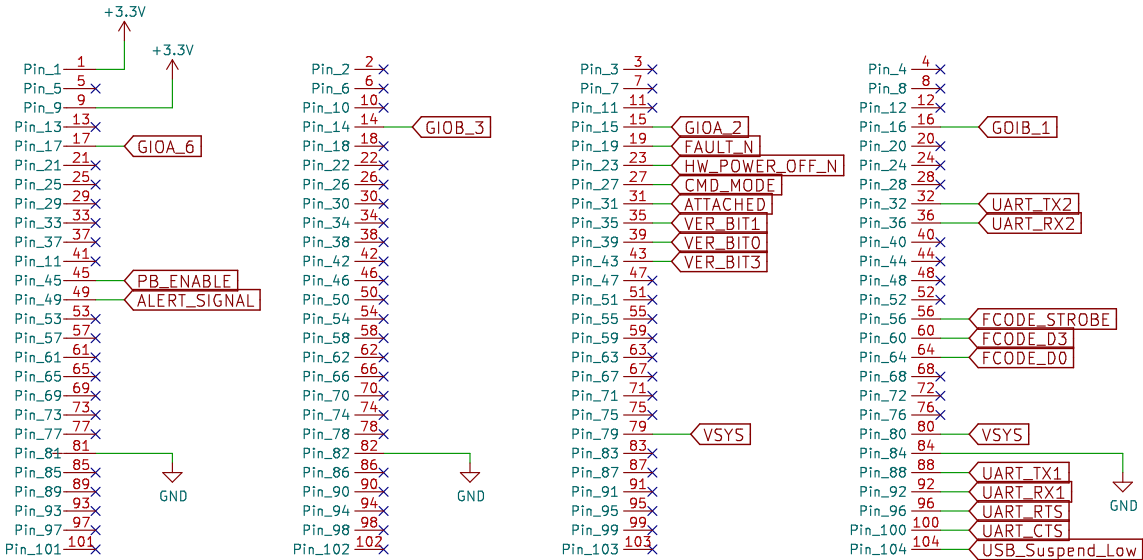


Consider Using this OSC out.

N5BRG		CPU
AMSAT-NA		
Sheet: /TMS570_CPU/		
File: tms570_cpu.kicad_sch		
<i>Title: Radiation Tolerant PacSat Communication</i>		
Size: USLdger	Date: 2023-06-17	Rev: 1.1
KiCad E.D.A.	kicad 7.0.10-7.0.10-ubuntu22.04.1	Id: 12/15







PacSat_Dev_CONN_04X26
Conn_04x26_Pin
P651

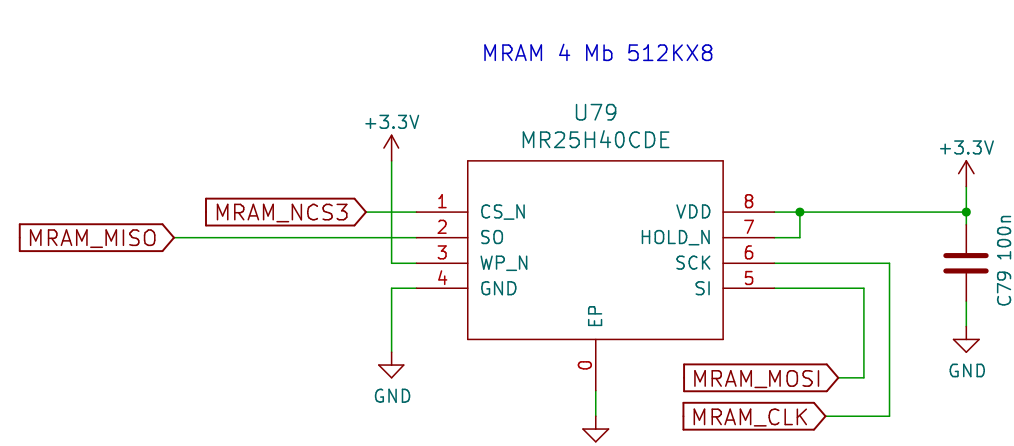
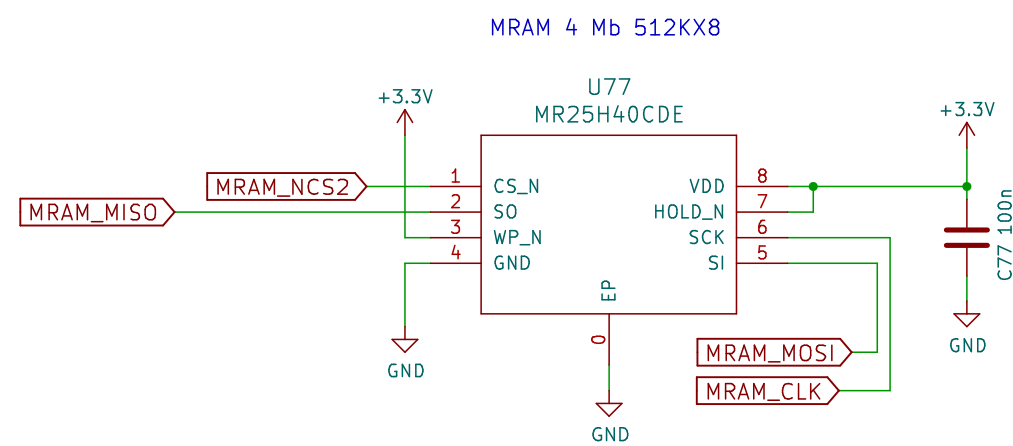
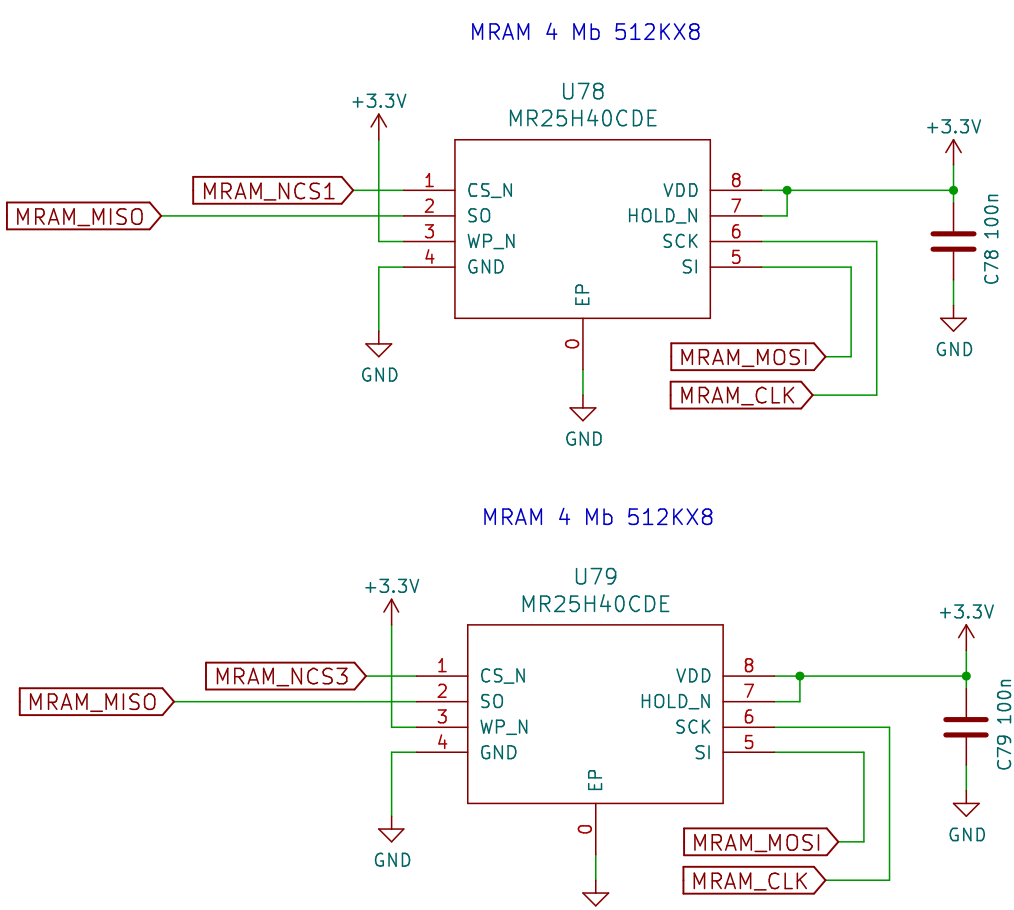
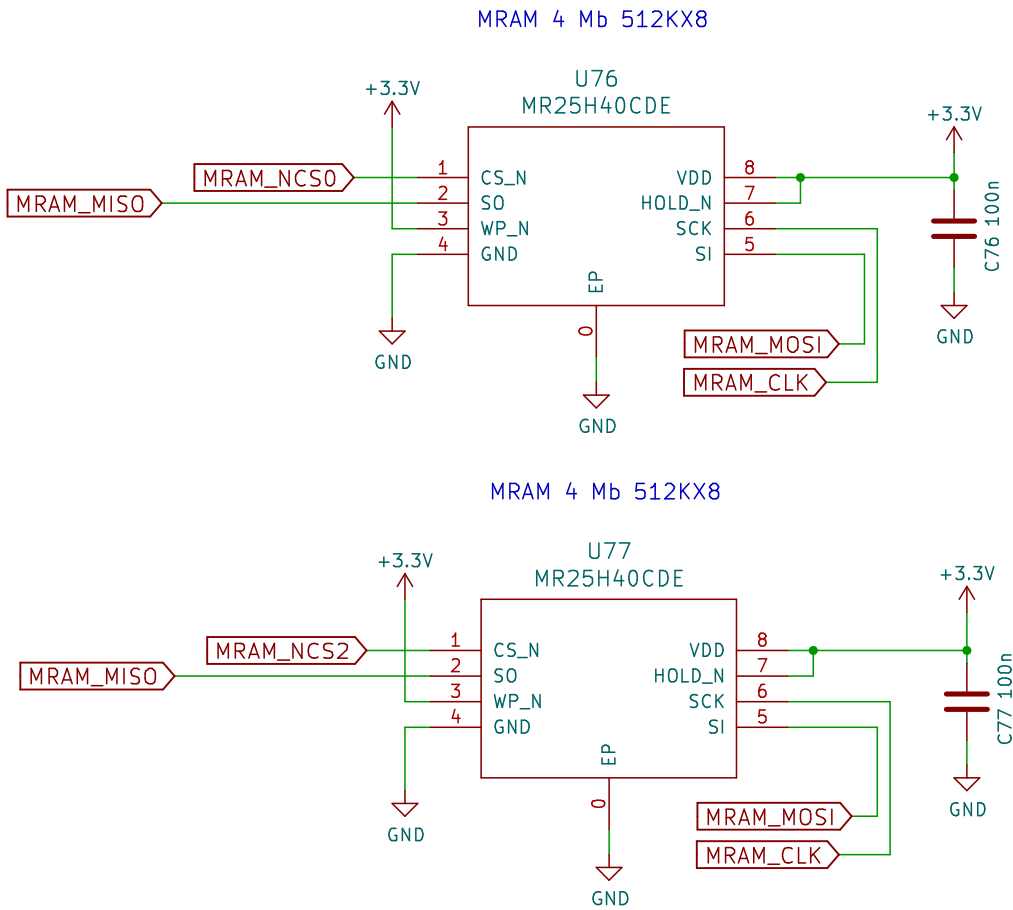
Timer Signals

EXTERNAL
USB Interface

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 7.0.10-7.0.10-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 7.0.10-7.0.10~ubuntu22.04.1		Id: 17/15