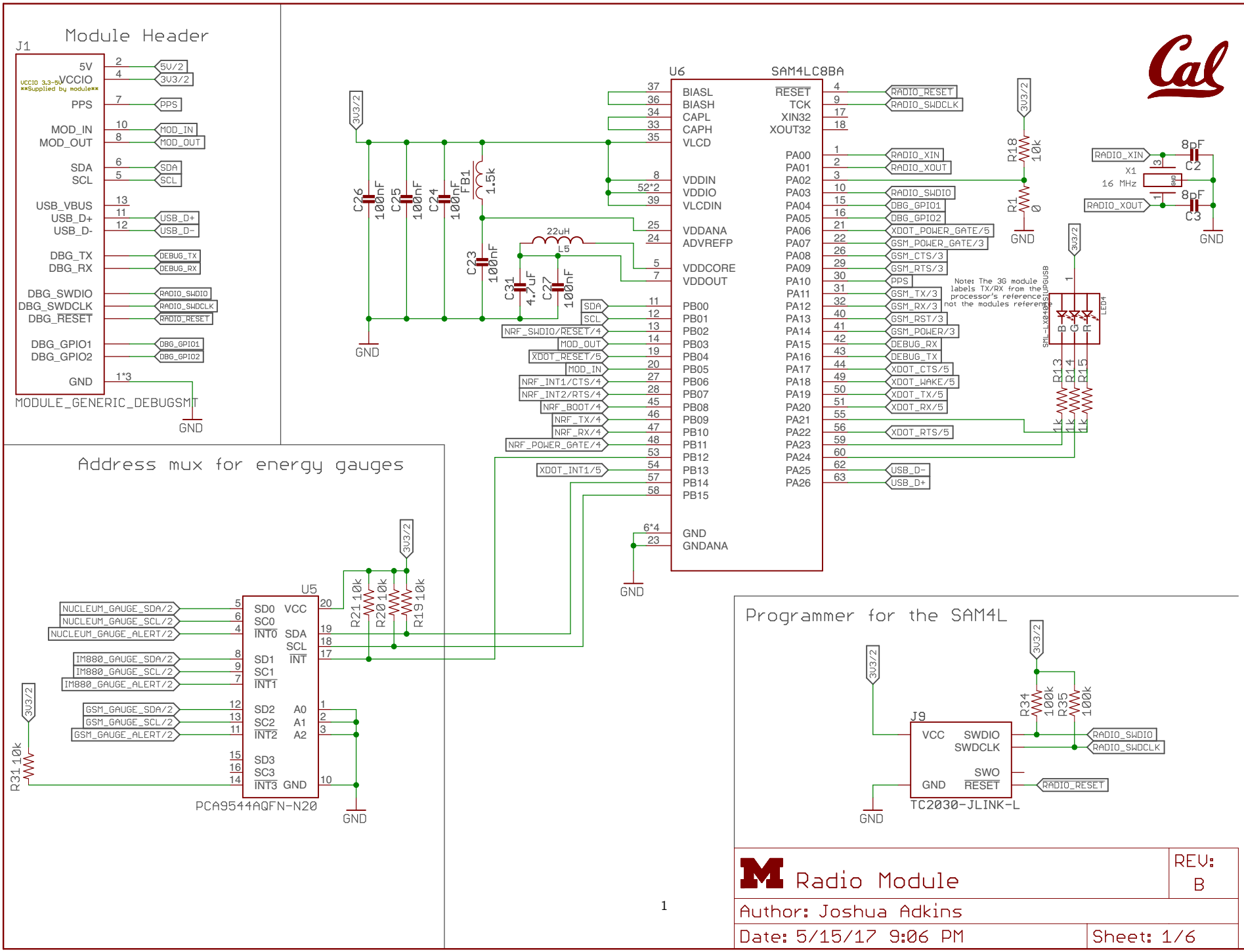
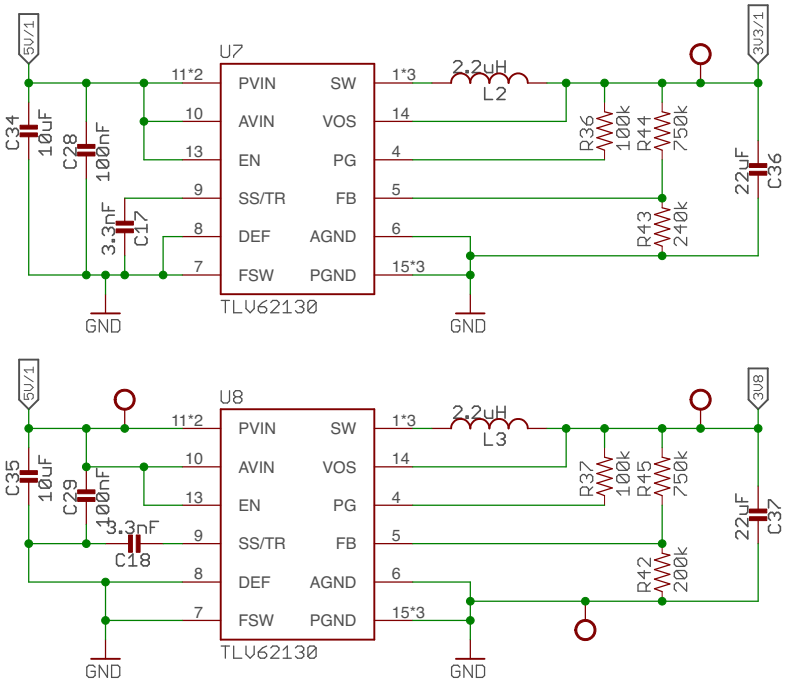
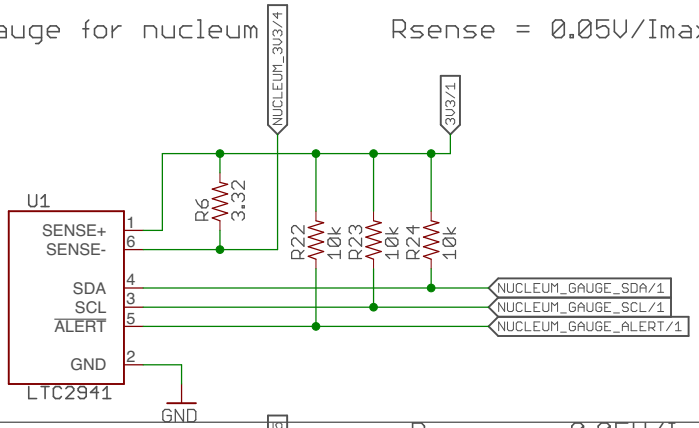

Module Header
J1
5V
VCCIO
PPS
MOD_IN
MOD_OUT
SDA
SCL
USB_VBUS
USB_D+
USB_D-
DBG_TX
DBG_RX
DBG_SWDIO
DBG_SWDCLK
DBG_RESET
DBG_GPIO1
DBG_GPIO2
GND
MODULE_GENERIC_DEBUGSMT
U6
SAM4LC8BA
BIASL
BIASH
CAPL
CAPH
VLCD
VDDIN
VDDIO
VLCDIN
VDDANA
ADVREFP
VDDCORE
VDDOUT
PB00
PB01
PB02
PB03
PB04
PB05
PB06
PB07
PB08
PB09
PB10
PB11
PB12
PB13
PB14
PB15
GNDANA
RESET
TCK
XIN32
XOUT32
PA00
PA01
PA02
PA03
PA04
PA05
PA06
PA07
PA08
PA09
PA10
PA11
PA12
PA13
PA14
PA15
PA16
PA17
PA18
PA19
PA20
PA21
PA22
PA23
PA24
PA25
PA26
3V3/2
C26
C25
C24
C23
C31
C27
FB1
L5
22uH
R18
R1
R13
R14
R15
RADIO_XIN
RADIO_XOUT
X1
16 MHz
8pF
C2
C3
LED4
Note: The 3G module labels TX/RX from the processor's reference, not the modules reference.
Address mux for energy gauges
U5
PCA9544AQFN-N20
R21 10k
R20 10k
R19 10k
R31 10k
Programmer for the SAM4L
J9
TC2030-JLINK-L
R34 100k
R35 100k
Radio Module
REV: B
Author: Joshua Adkins
Date: 5/15/17 9:06 PM
Sheet: 1/6



The Regulator Blocks

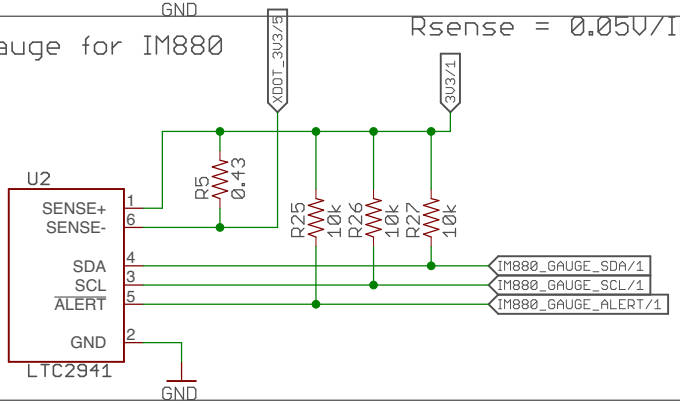
Energy gauge for nucleum

Rsense = 0.05V/Imax = 0.05V/15mA



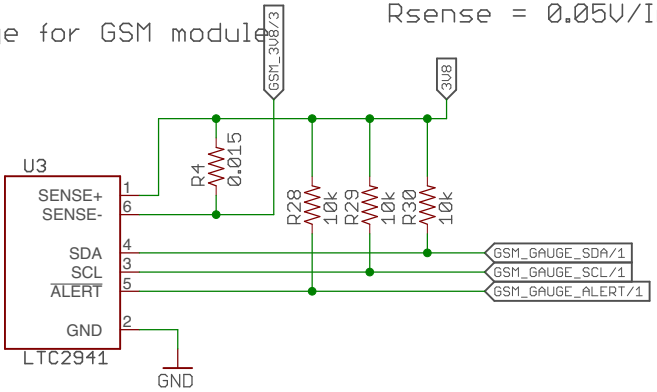
Energy gauge for IM880

Rsense = 0.05V/Imax = 0.05V/118mA

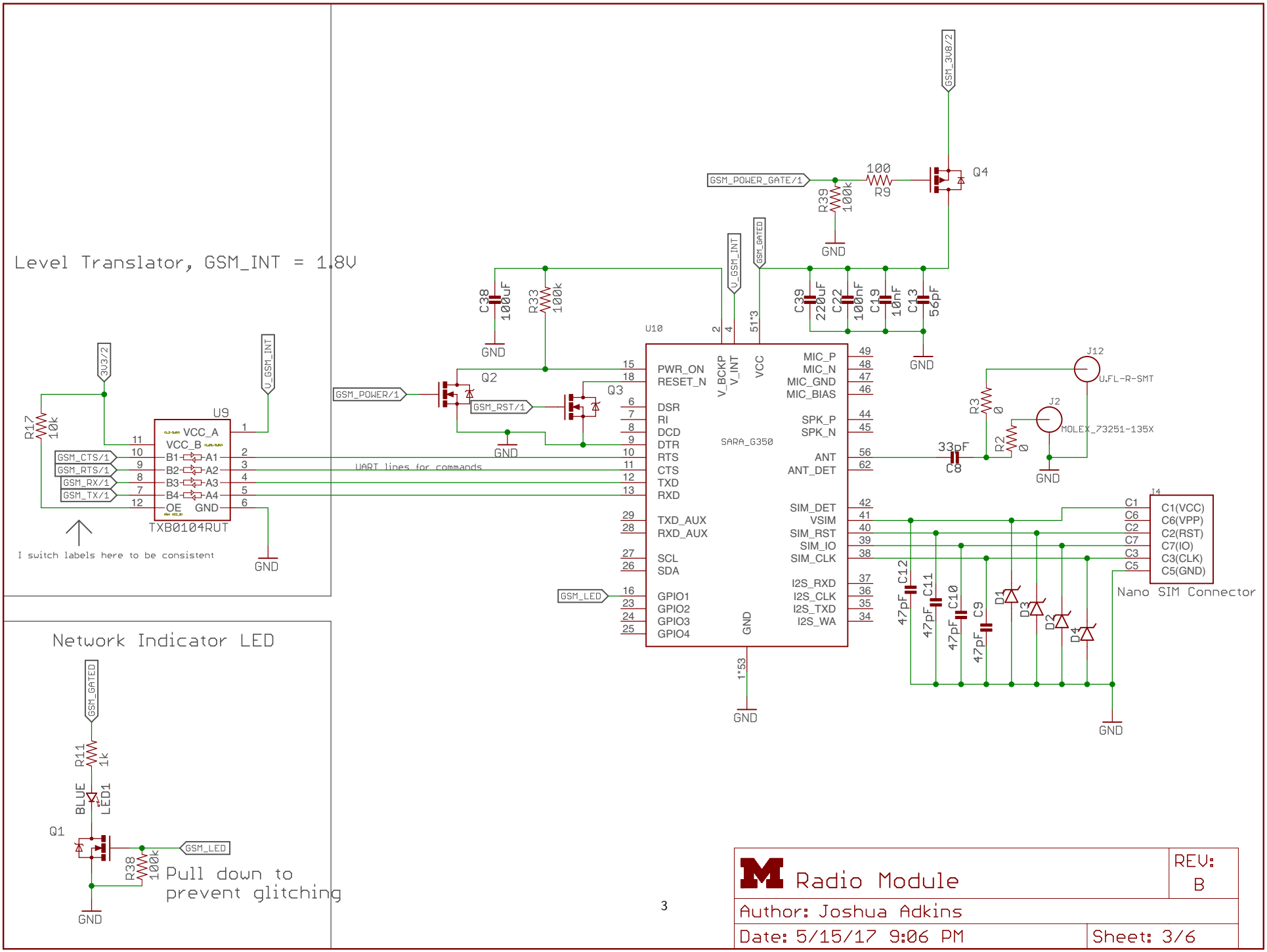


Energy gauge for GSM module

Rsense = 0.05V/Imax = 0.05V/3A



Radio Module	REV: B
Author: Joshua Adkins	
Date: 5/15/17 9:06 PM	Sheet: 2/6


Level Translator, GSM_INT = 1.8V
3V3/2
V_GSM_INT
R17
10k
U9
VCC_A
VCC_B
GSM_CTS/1
GSM_RTS/1
GSM_RX/1
GSM_TX/1
B1
B2
B3
B4
A1
A2
A3
A4
OE
GND
TXB0104RUT
I switch labels here to be consistent
GND
GSM_POWER/1
GSM_RST/1
Q2
Q3
C38
100uF
R33
100k
GND
U10
PWR_ON
RESET_N
DSR
RI
DCD
DTR
RTS
CTS
TXD
RXD
TXD_AUX
RXD_AUX
SCL
SDA
GPIO1
GPIO2
GPIO3
GPIO4
V_BCKP
V_INT
VCC
GND
SARA_G350
MIC_P
MIC_N
MIC_GND
MIC_BIAS
SPK_P
SPK_N
ANT
ANT_DET
SIM_DET
VSIM
SIM_RST
SIM_IO
SIM_CLK
I2S_RXD
I2S_CLK
I2S_TXD
I2S_WA
GSM_LED
UART lines for commands
GSM_GATED
51*3
1*53
GSM_3V8/2
GSM_POWER_GATE/1
100
R9
R39
100k
Q4
C39
220uF
C22
100nF
C19
10nF
C13
56pF
J12
U.FL-R-SMT
J2
MOLEX_73251-135X
R3
0
R2
0
33pF
C8
C12
47pF
C11
47pF
C10
47pF
C9
47pF
D1
D3
D2
D4
J4
C1(VCC)
C6(VPP)
C2(RST)
C7(IO)
C3(CLK)
C5(GND)
Nano SIM Connector
Network Indicator LED
R11
1k
BLUE
LED1
Q1
R38
100k
Pull down to
prevent glitching
Radio Module
REV:
B
Author: Joshua Adkins
Date: 5/15/17 9:06 PM
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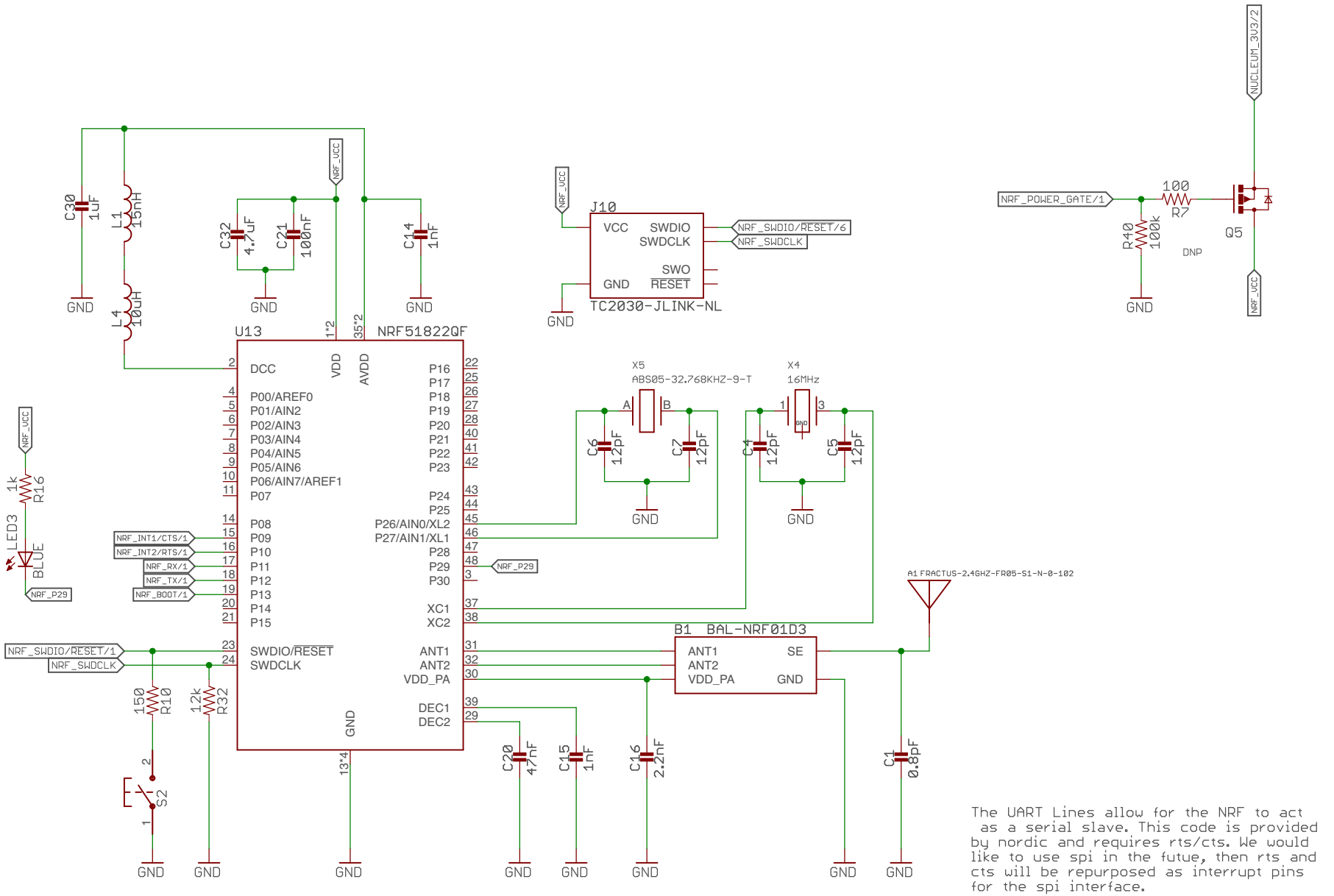
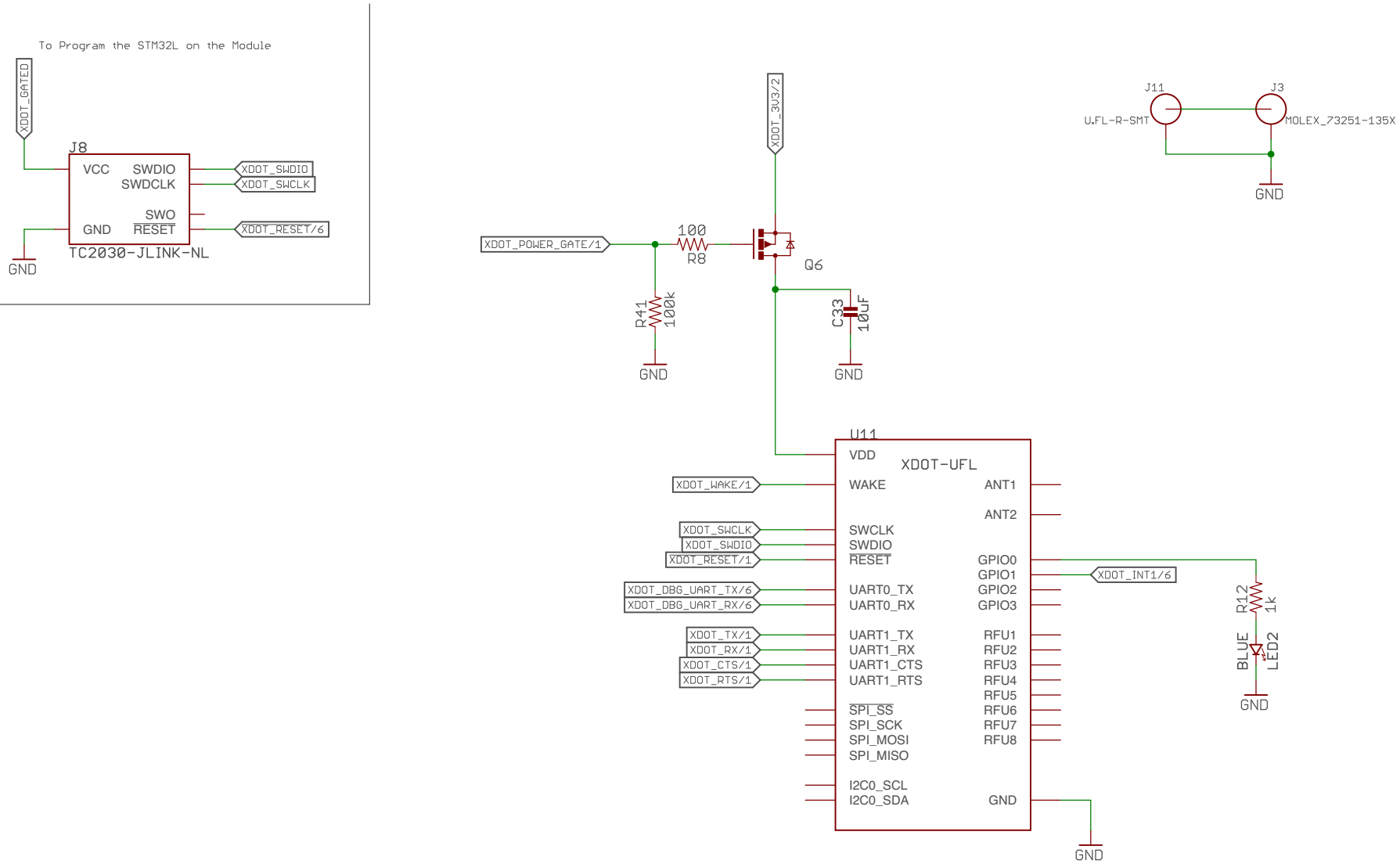


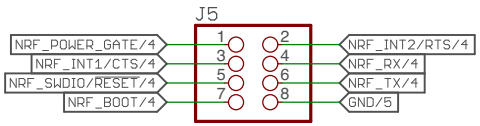
The UART Lines allow for the NRF to act as a serial slave. This code is provided by nordic and requires rts/cts. We would like to use spi in the futue, then rts and cts will be repurposed as interrupt pins for the spi interface.

Radio Module	REV: B
Author: Joshua Adkins	
Date: 5/15/17 9:06 PM	Sheet: 4/6

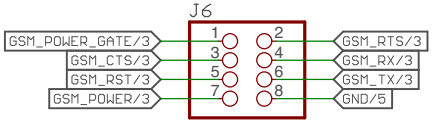


Radio Module	REV: B
Author: Joshua Adkins	
Date: 5/15/17 9:06 PM	Sheet: 5/6

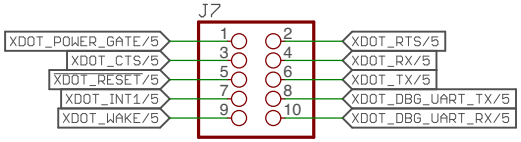
NRF Debug Header



GSM Debug Header

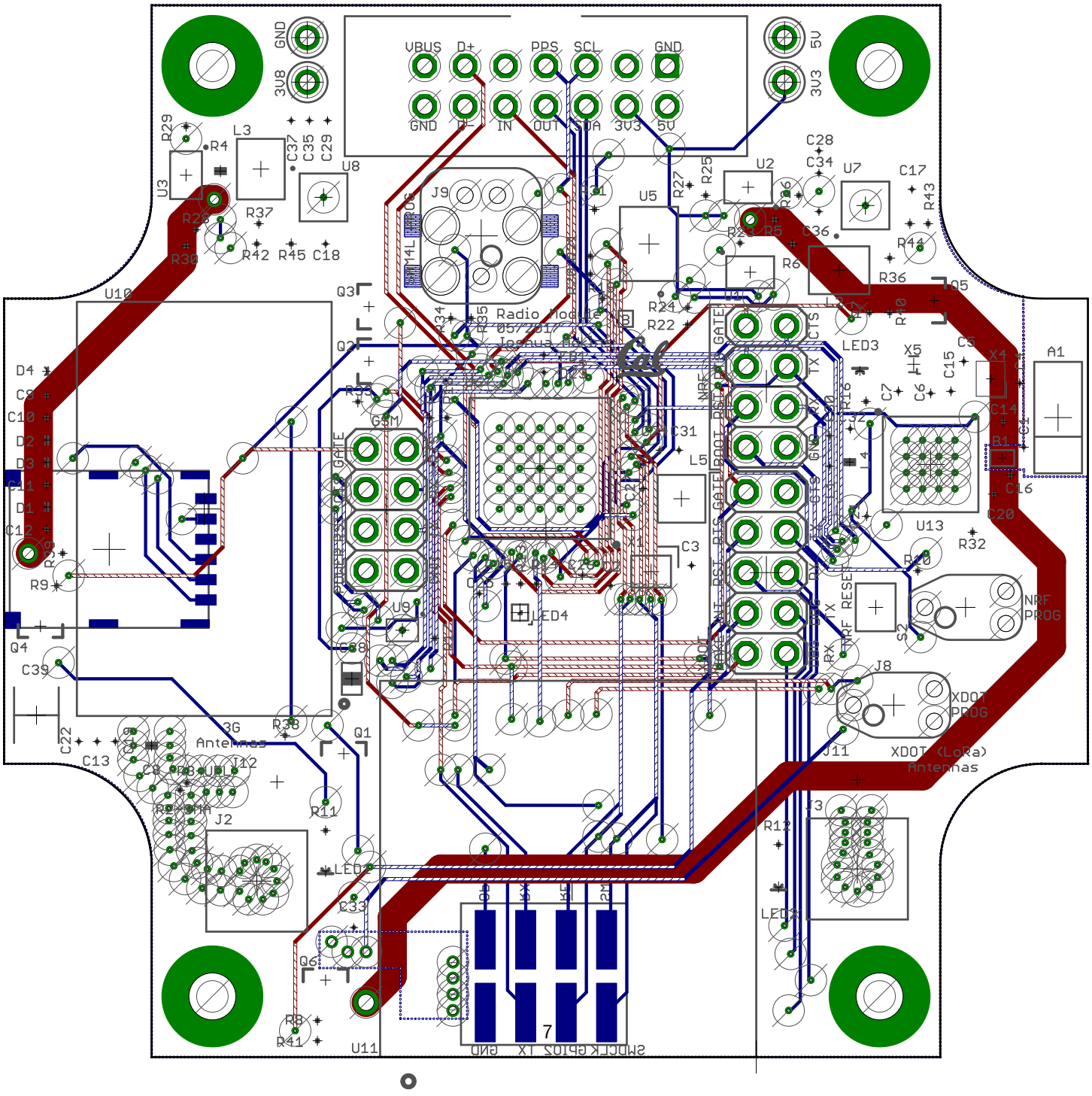


Xdot Debug

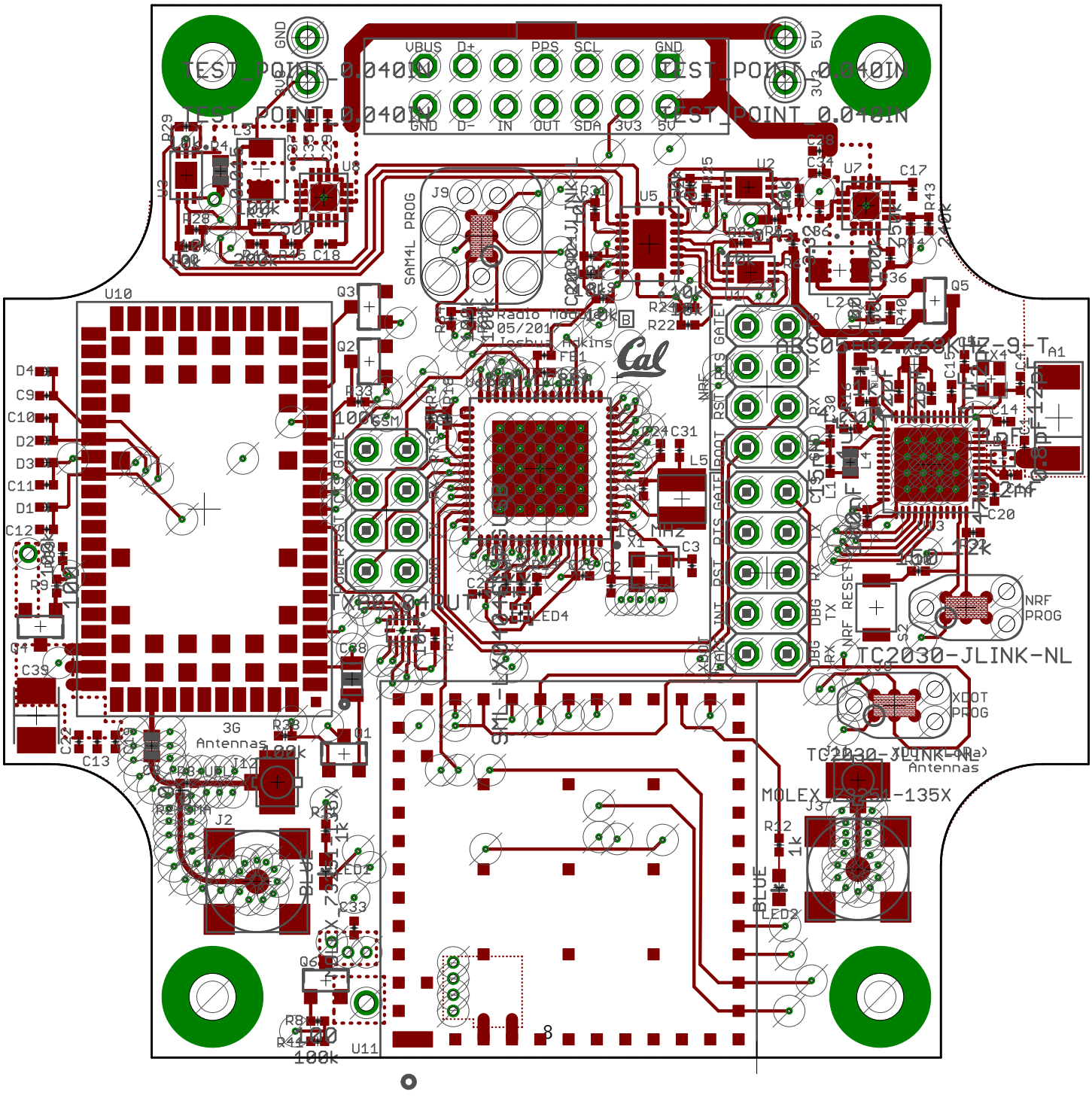


Radio Module	REV: B
Author: Joshua Adkins	
Date: 5/15/17 9:06 PM	Sheet: 6/6

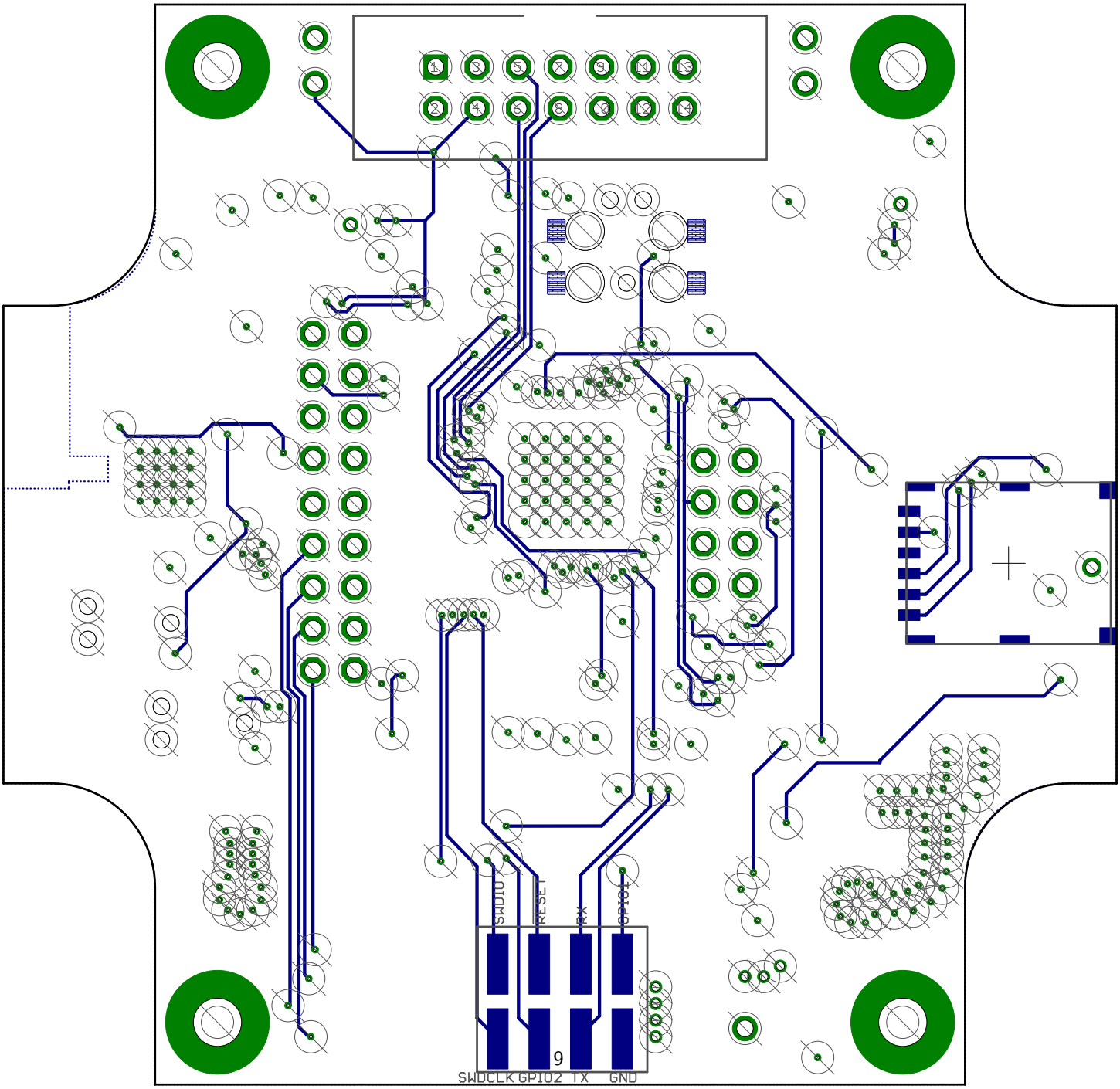
Top and Bottom Layers



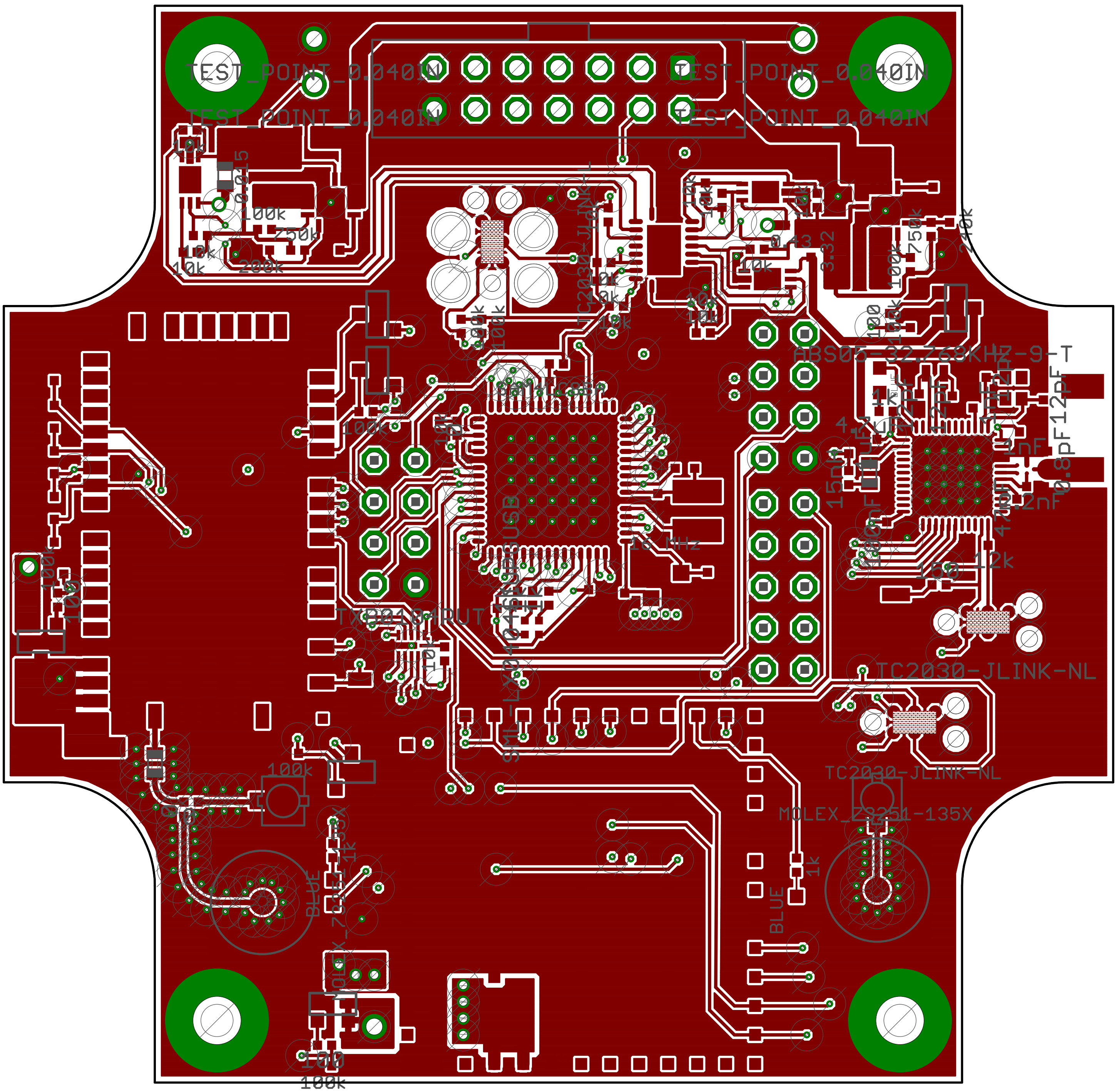
Top Layer


TEST_POINT 0.040IN
VBUS
D+
PPS
SCL
GND
5V
GND
D-
IN
OUT
SDA
3V3
5V
SAM4L PROG
TC2030-JLINK-NL
NRF PROG
XDOT PROG
MOLEX_73725-135X
3G Antennas
GSM Antennas
BLUE
LED2
LED4
Radio Mod
05/201
Joshua
Adkins
FE1
Cal
8

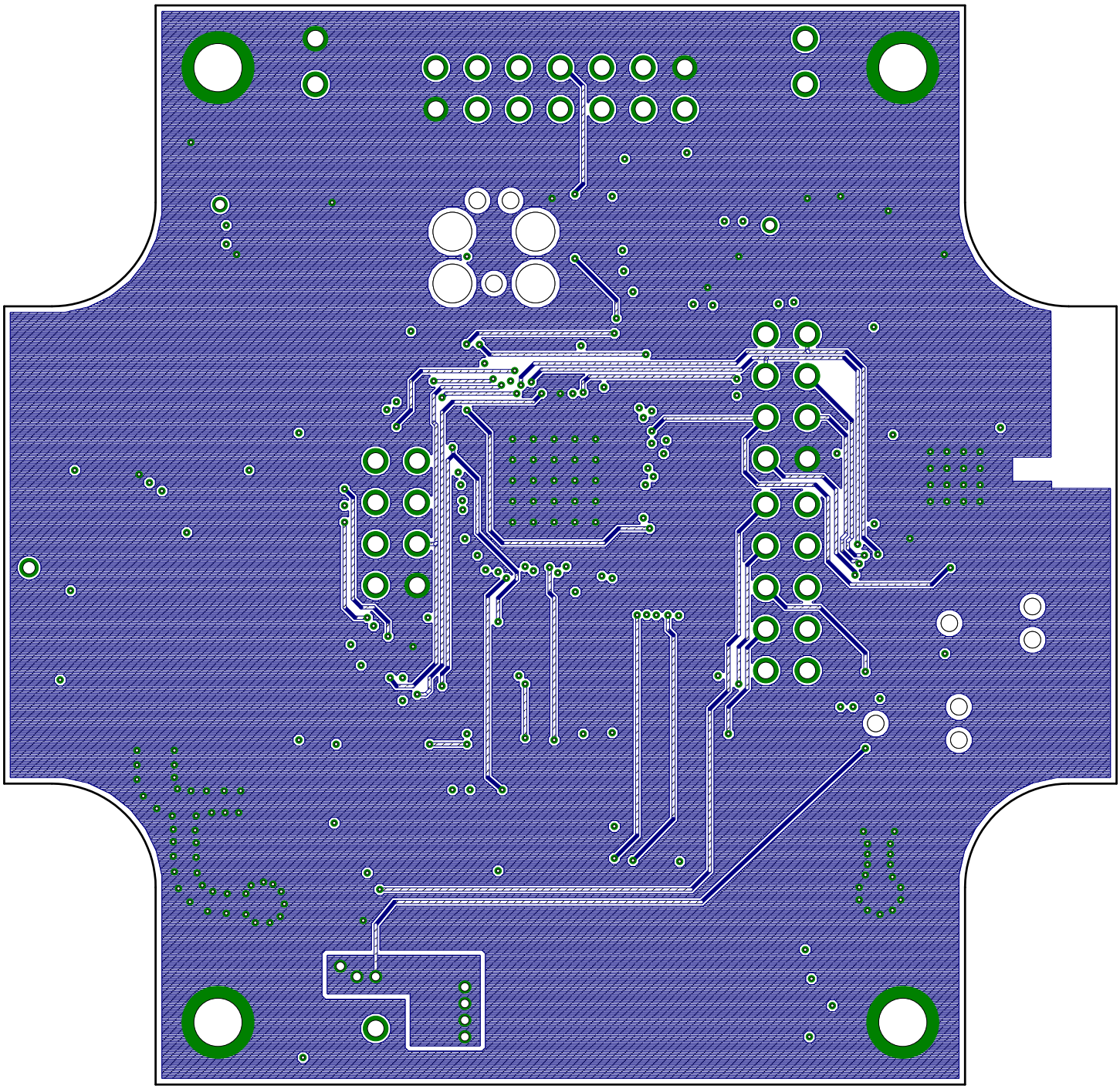
Bottom Layer



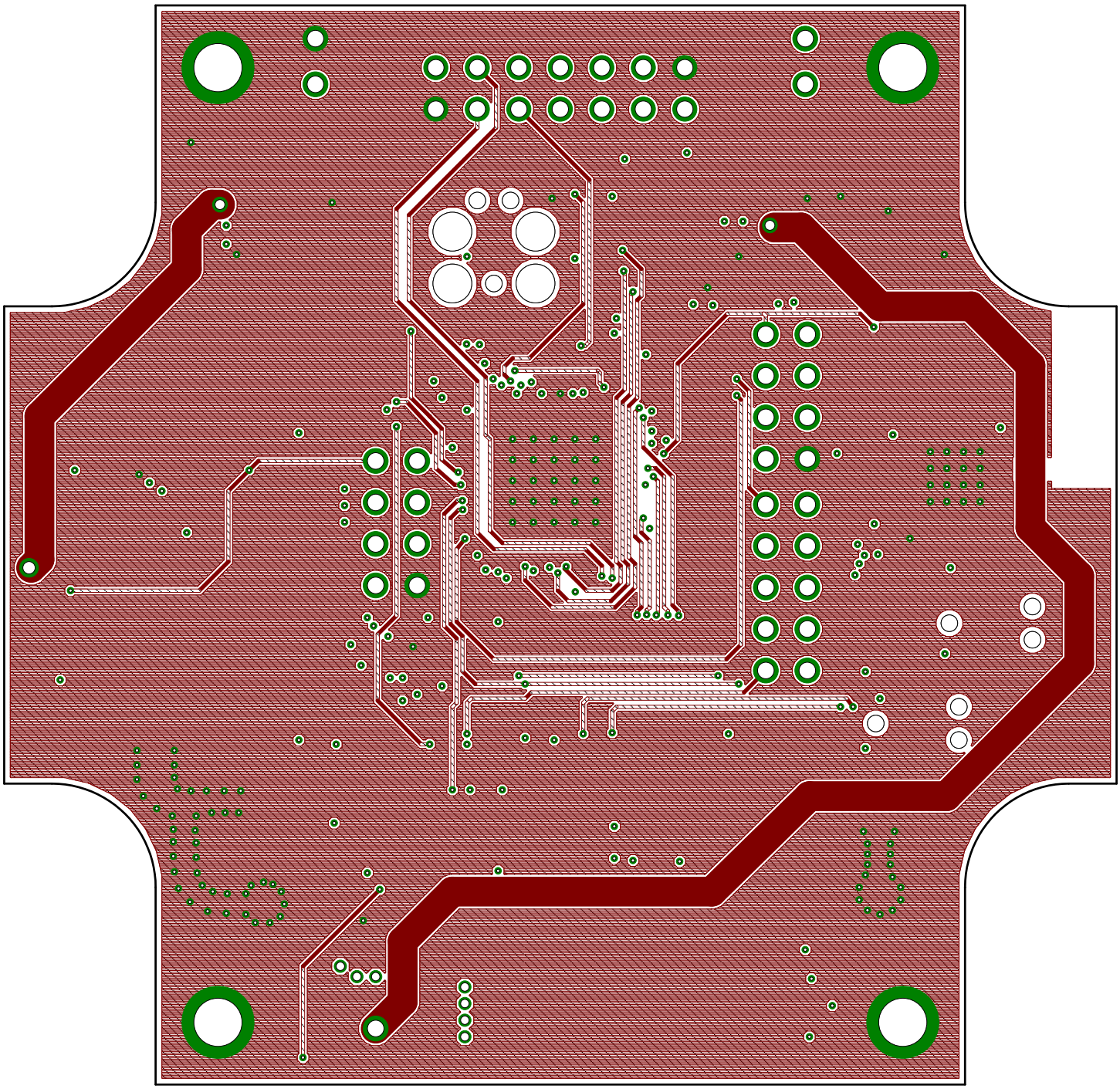
Top Copper Layer



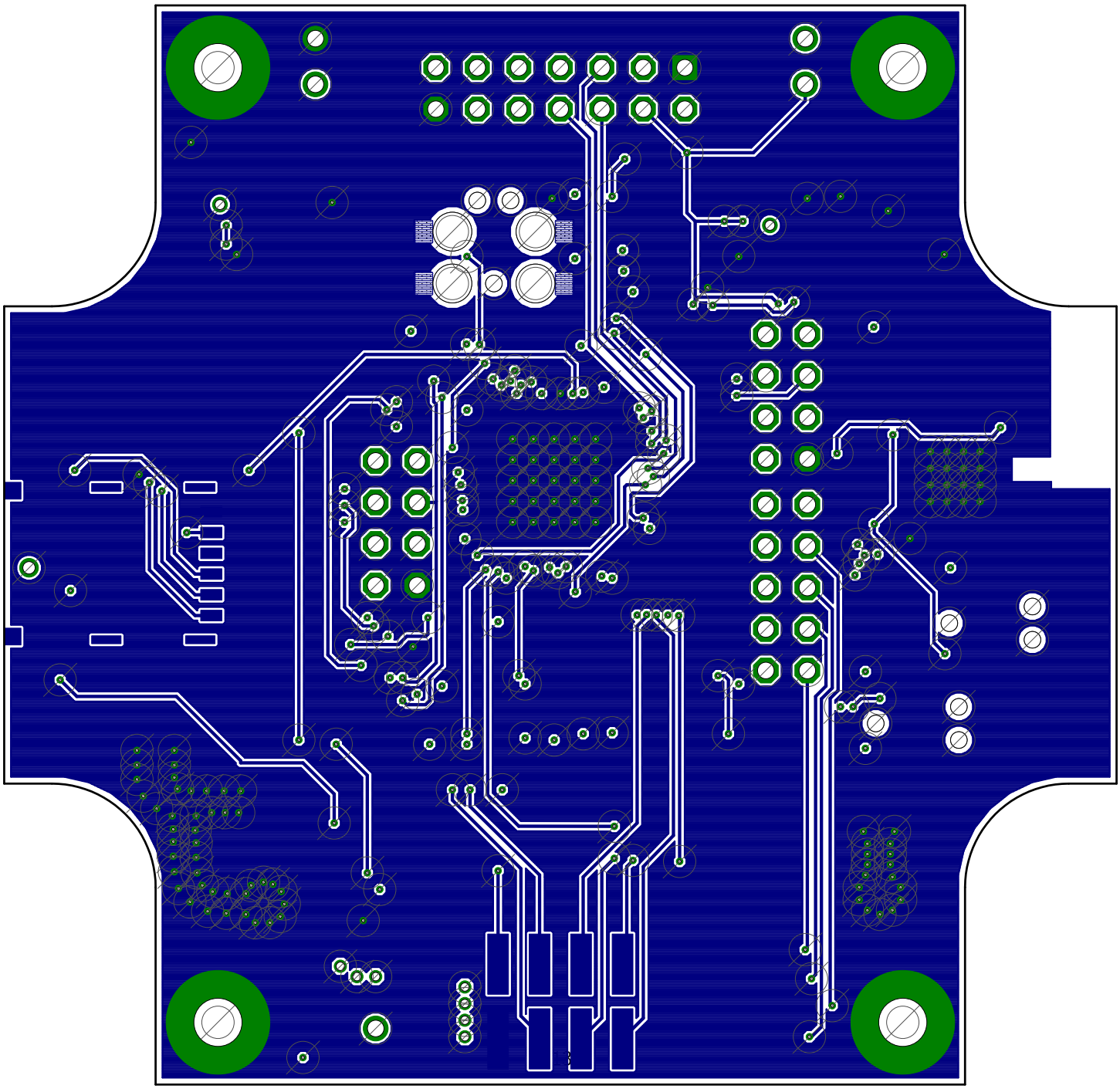
Layer 2 Copper



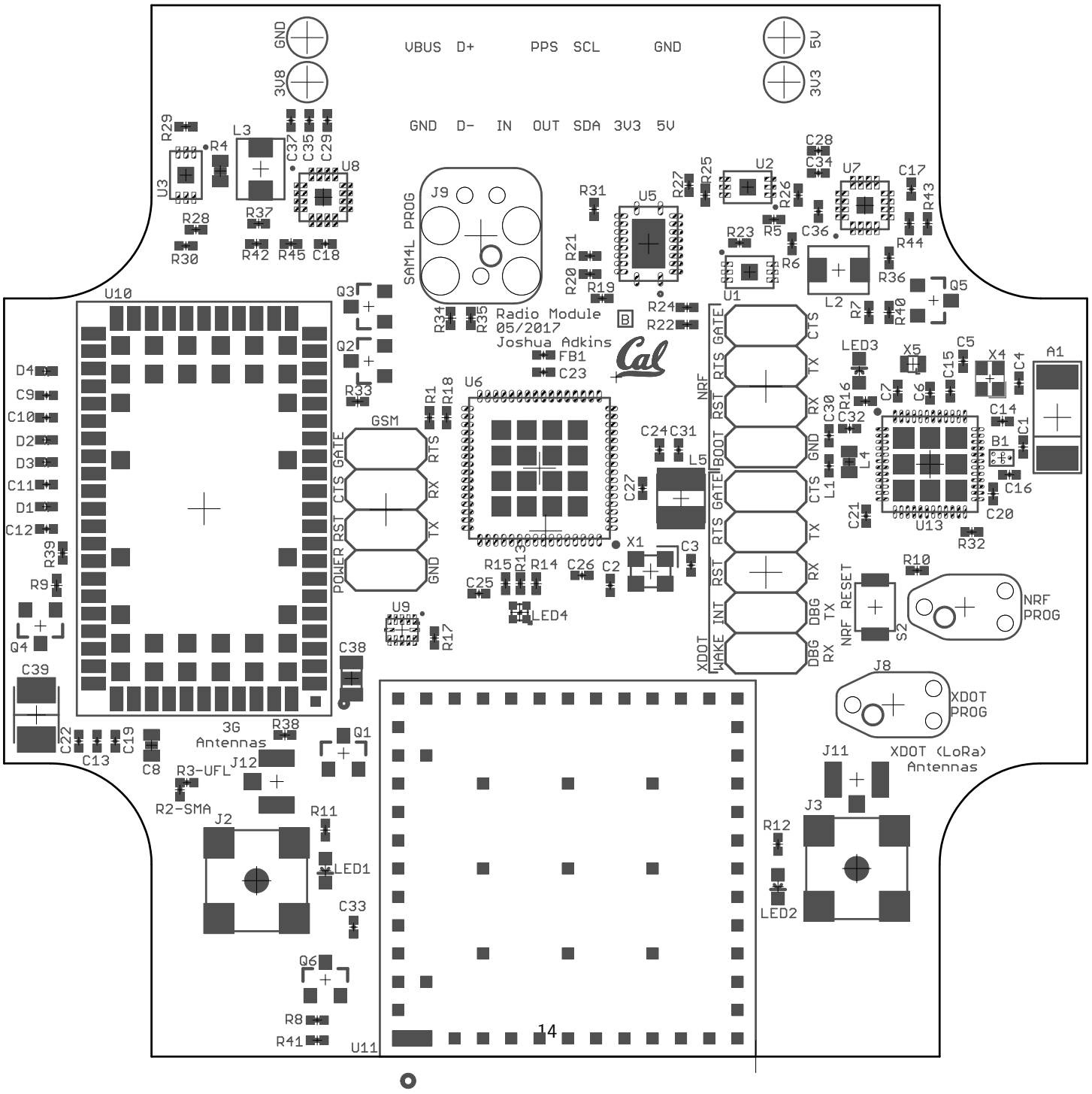
Layer 3 Copper



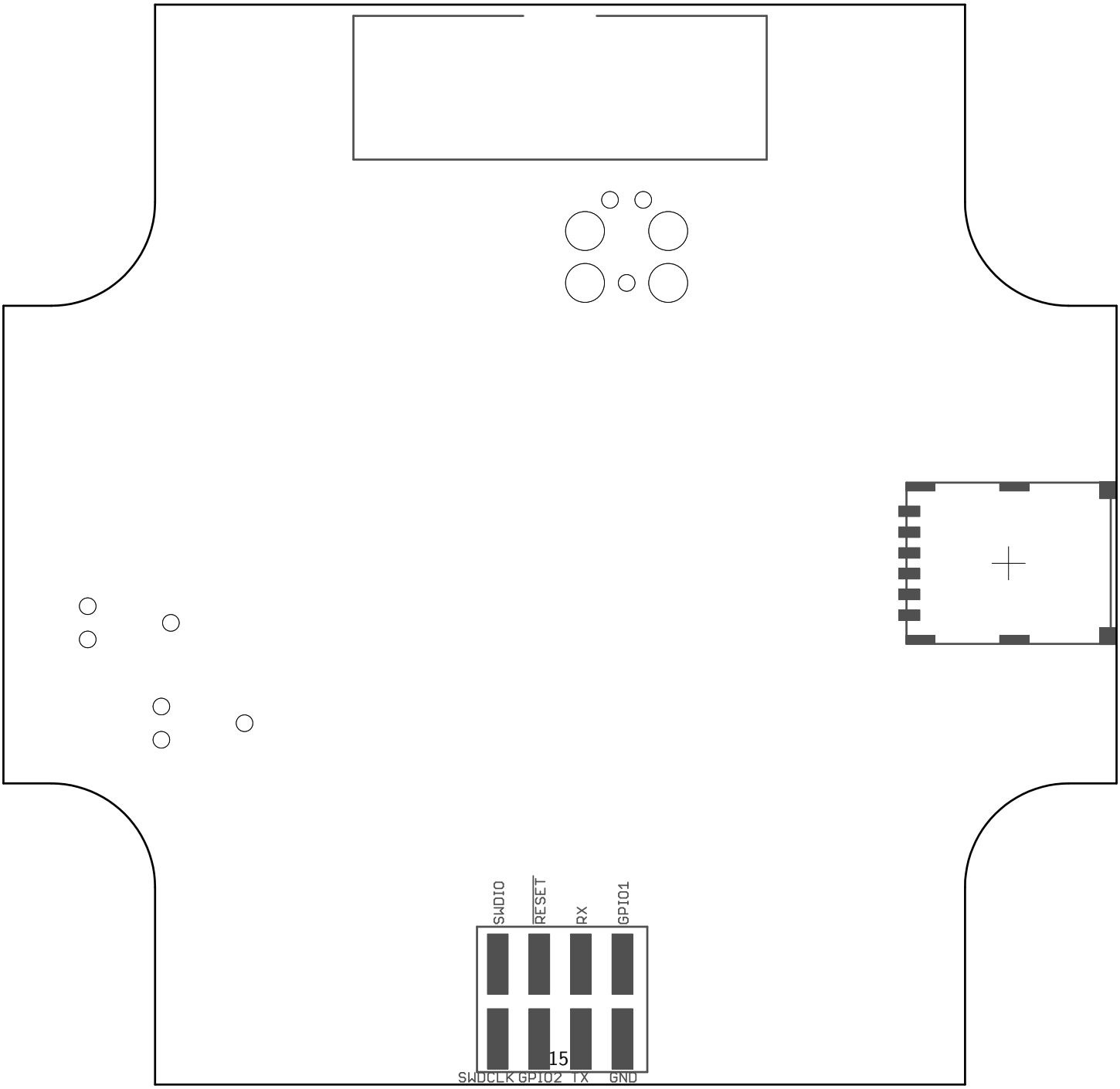
Bottom Copper Layer



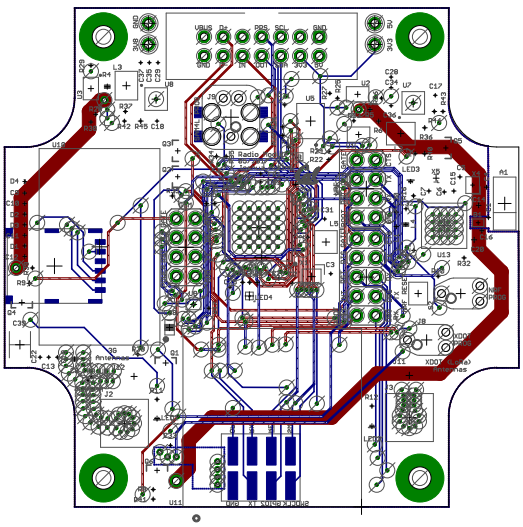
Top Paste Layer with Silkscreen



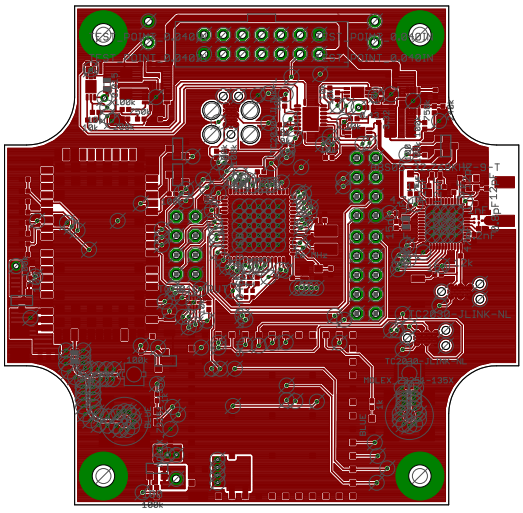
Bottom Paste Layer with Silkscreen



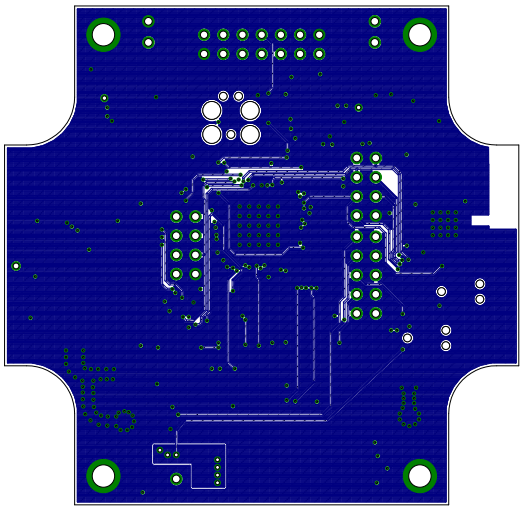
Top and Bottom Layers 1:1 Scale



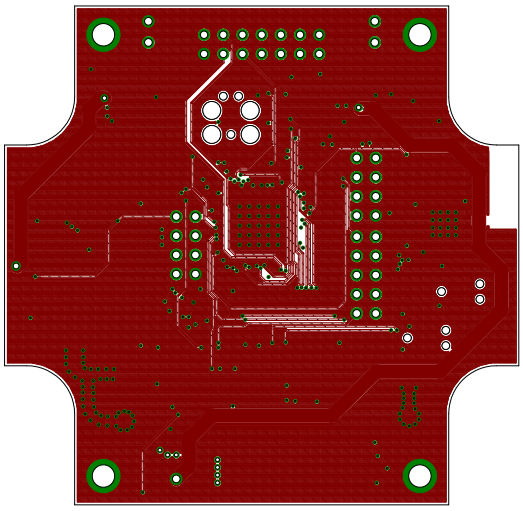
Top Layer 1:1 Scale



Layer 2 Copper 1:1 Scale



Layer 3 Copper 1:1 Scale



Bottom Copper Layer 1:1 Scale