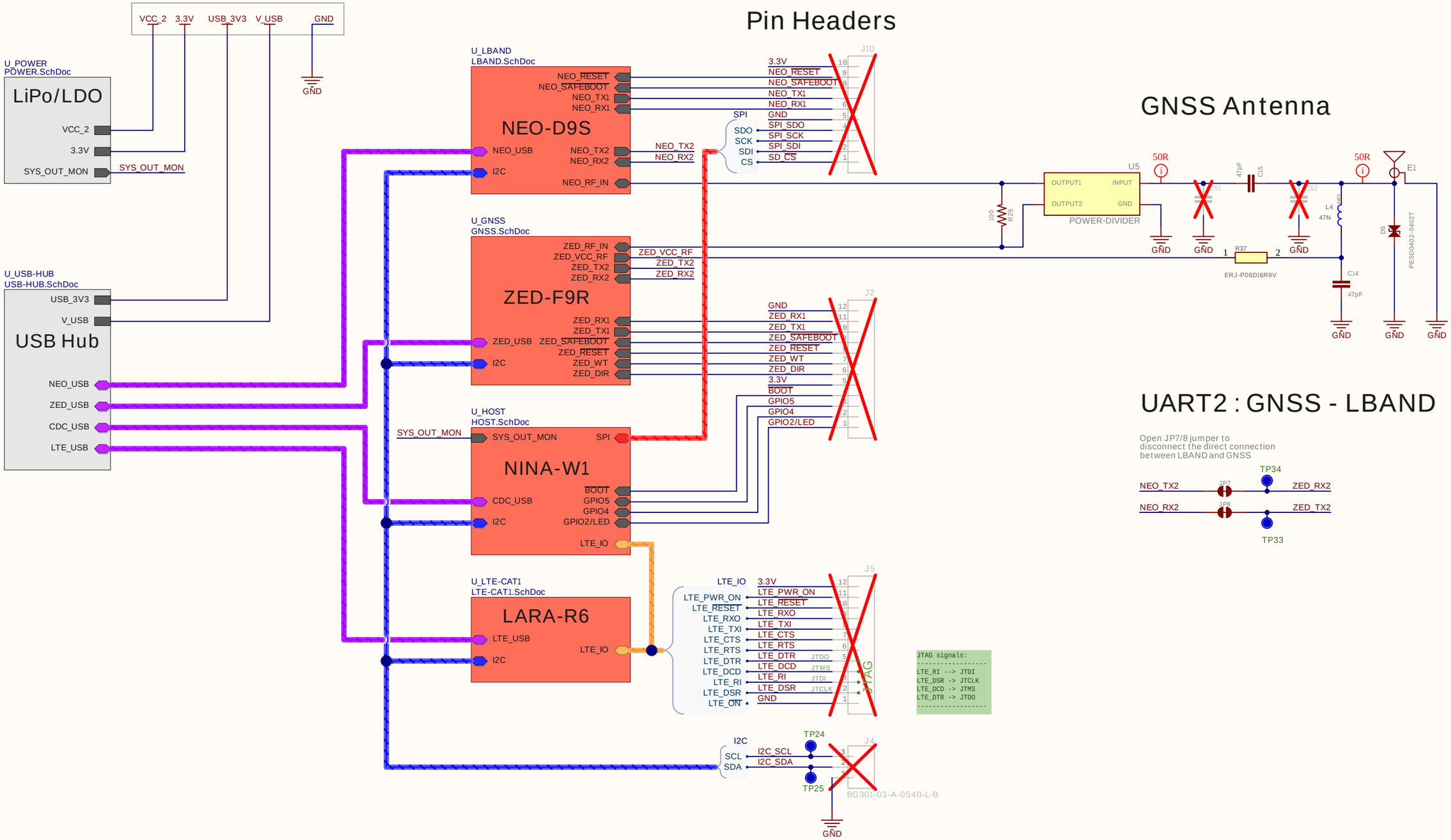
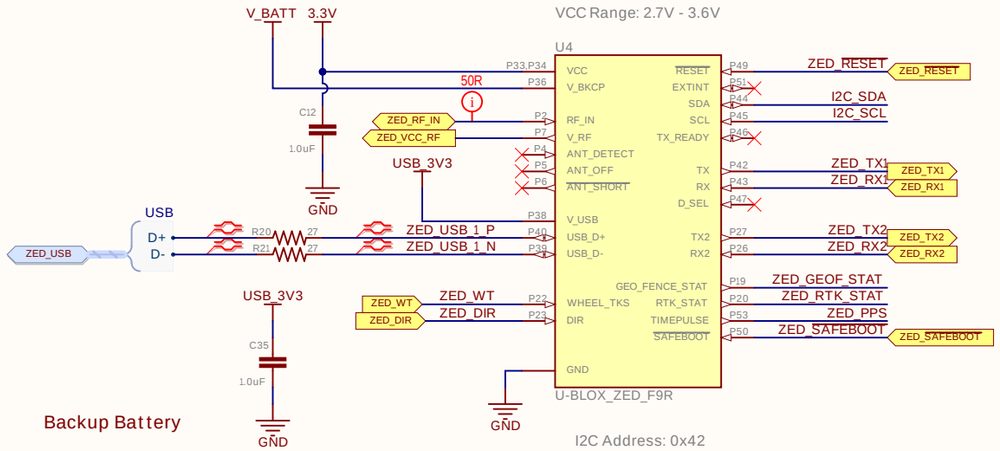
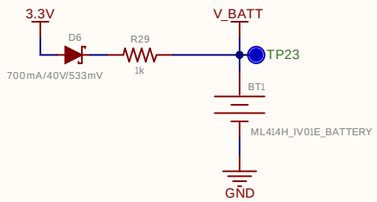
Schematic/Assembly Revision			
Rev.	Description	Date	By
v1.01	mamm v0.9 + Adjustable LDO, LENA-R8 pin, Mouser connectors, testpoints	22/09/2022	tcha
revA	Changed to u-blox standards. Changed RF paths, battery charger and LDOs + JTAG.	14/10/2022	tcha
revC	Fixed adjustable LDO	29/11/2022	tcha



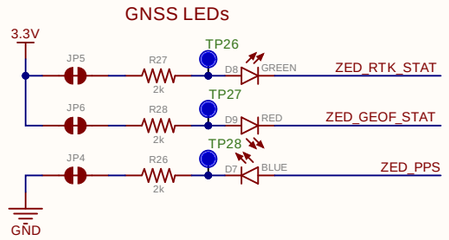
Prepared By u-blox CONFIDENTIAL	Project: C214 ALPS-HPG	PCB: UBXH60-0000969	Revision: revC
	Board:C214 revC	PCBA:	Size: A3
Author: tcha	High Precision GNSS Demo Board	HPG_Solution_0.SchDoc	Page: 1 / *
Team: sys-sho	Sch Num:	Release Date: 29/11/2022	

ZED-F9 GNSS / RTK / DR





*Battery Initial Charge: 2.3-2.8V
*Intial Battery Capacity (mAH):
800mAH or Greater
*Battery Charge Rate: 1mA MAX
*Voff: 2.0V
*72 hours charge time from 2.0-3.1V



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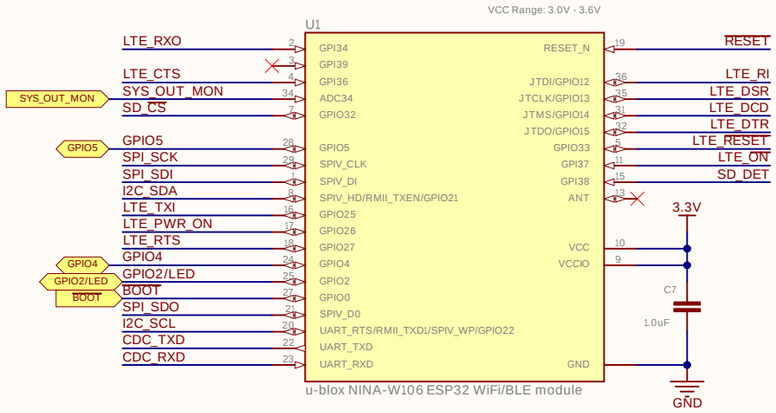
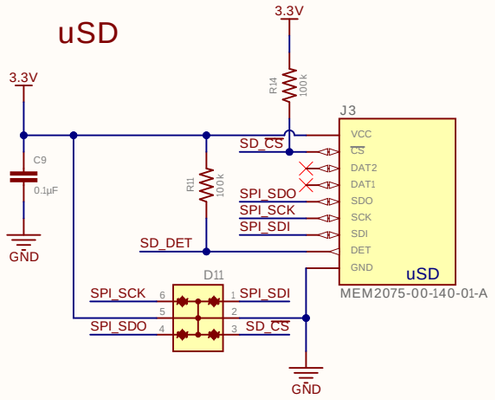
HOST

NINA-W1

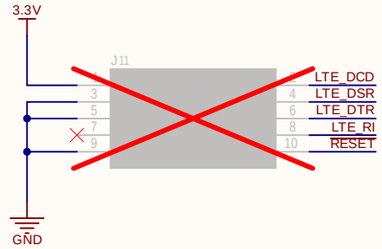



```
JTAG signals:
-----------------
LTE_RI --> JTDI
LTE_DSR -> JTCLK
LTE_DCD -> JTMS
LTE_DTR -> JTDO
-----------------
```

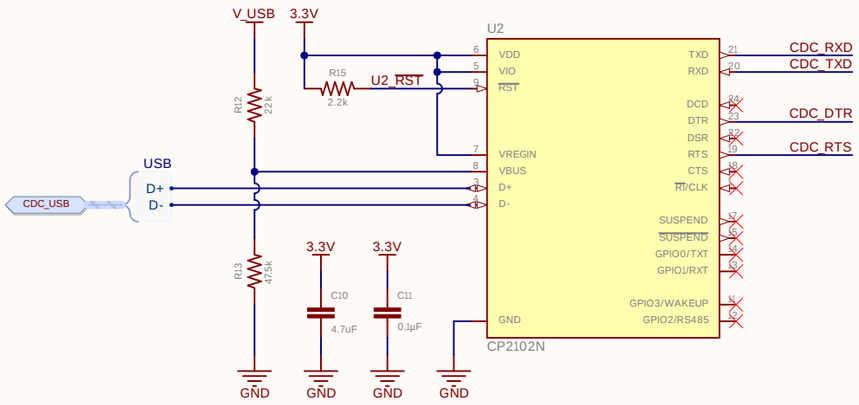
uSD



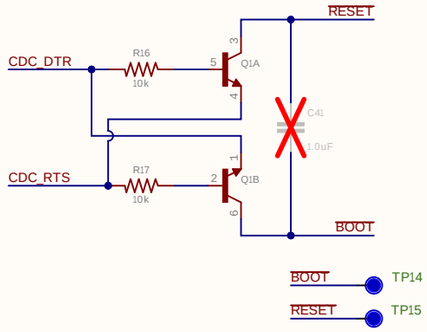
JTAG Connector



CP2104/2N
(USB-to-Serial Converter)



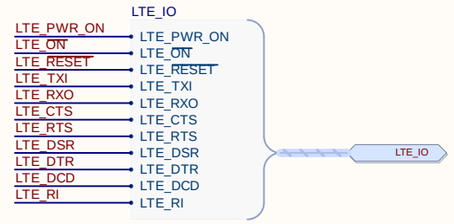
Auto-Reset



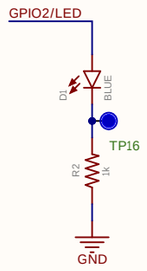

```
Boot Mode Configuration
Pin       Default     Boot    Download
GPIO0       1         1       0
U0TXD       1         1       x
GPIO2       0         x       0
GPIO4       0         x       x
MTDO        1         x       x
GPIO5       1         1       x
If U0TXD, GPIO2, GPIO5 are floating,
GPIO0 determines boot mode

If DTR is LOW, toggling RTS from
HIGH to LOW resets to run mode.
If RTS is HIGH, toggling DTR from
LOW to HIGH resets to bootloader.
```

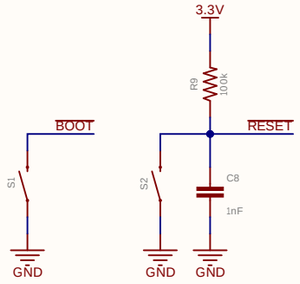
Outputs



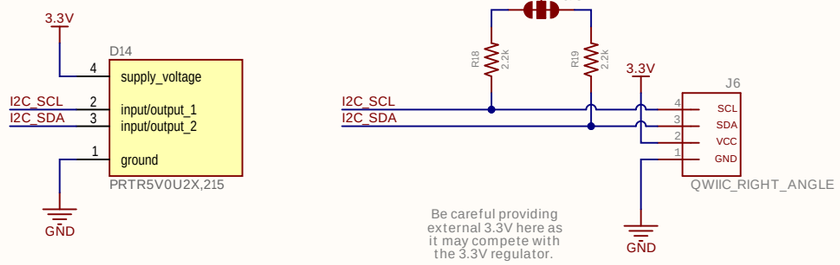
LEDs



Switches



Qwiic



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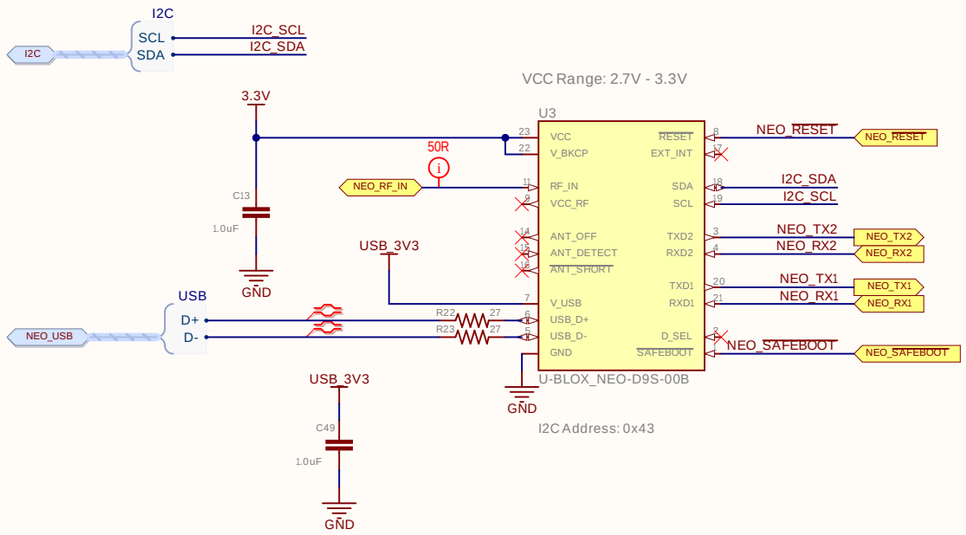
NEO-D9 LBAND



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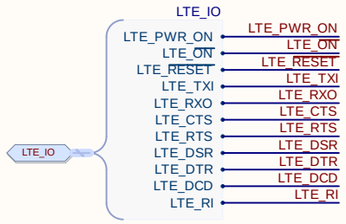
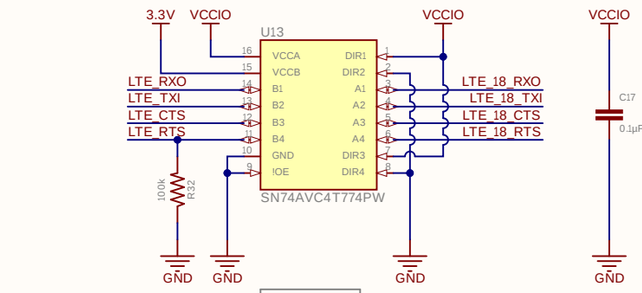
LTE

Inputs

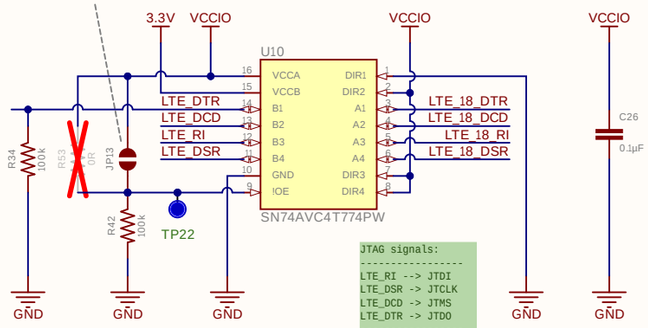


LTE Level Shifting

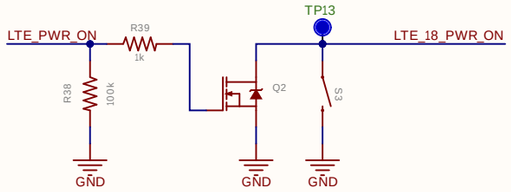


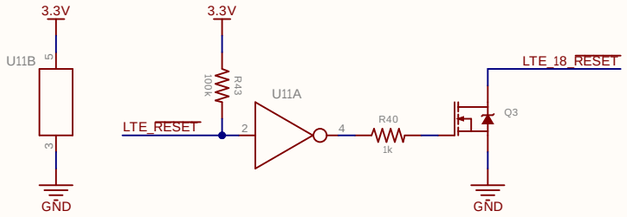
LTE VCCIO is 1.8V

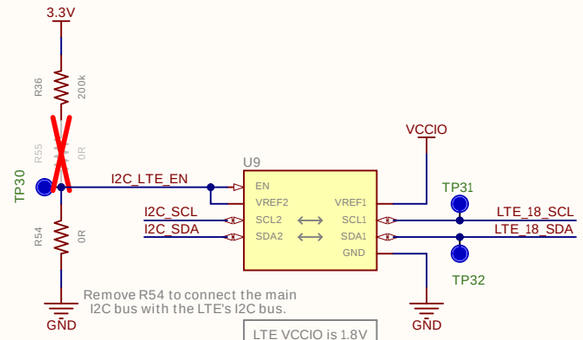
Close JP13 to be able to use JTAG when LTE is ON



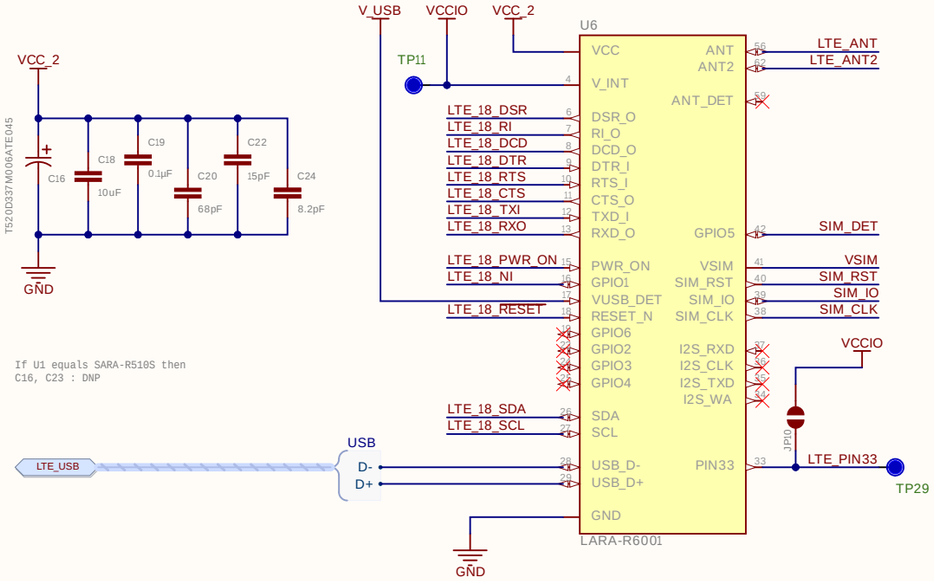
JTAG signals:
LTE_RI --> JTDI
LTE_DSR -> JTCLK
LTE_DCD -> JTMS
LTE_DTR -> JTDO



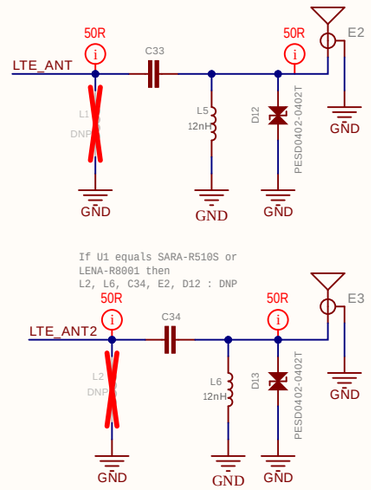




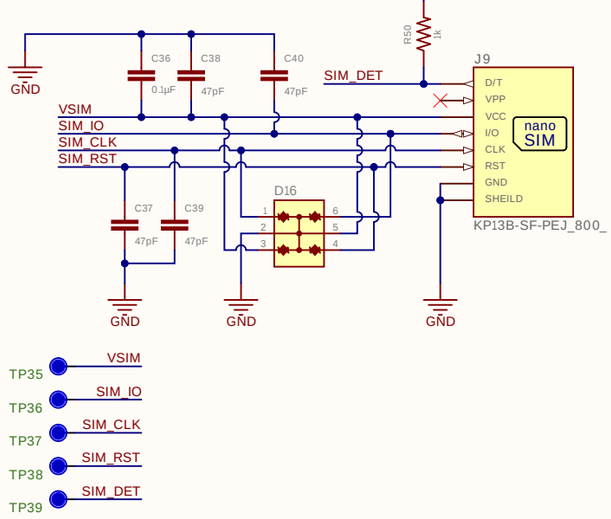
LTE Cellular Modem
LARA-R6, LENA-R8 or SARA-R5



LTE Antennas



SIM



Charge current: 450mA
(1000V/Rprog)

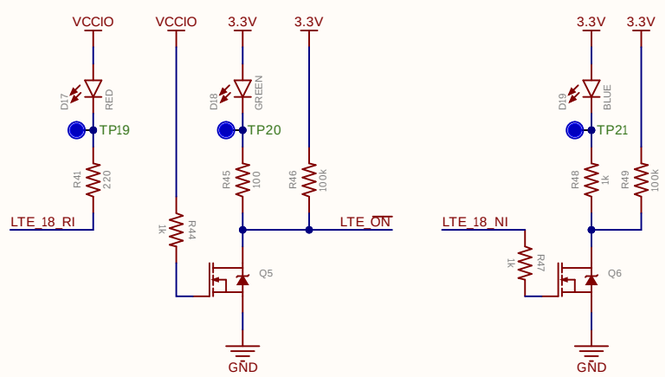
SARA-R5 VCC Design Notes:

VCC: Min. 3.3V Typ. 3.8V Max. 4.4V
VCC Extended: Min. 3.0V Max. 4.5V

Worst case:
Maximum current draw during Tx: 395mA
Estimated current for other components: 100mA
Total maximum current draw: 500mA
AP7361C-33 drop out voltage: 170mV at: 500mA output current; Vout = 3.3V; 25ÂºC
D7 LSM115J Schottky diode forward voltage: 210mV at: 500mA; 25ÂºC
AP7361C 3.3V output will start to fall when the battery voltage falls below 3.68V at 500mA
For a typical 2000mAh LiPo battery discharging at 500mA (0.25C), we would expect 3.68V to be reached when the battery is approximately 50% discharged.

Typical:
Typical current draw during Tx/Rx: 195mA at 23dBm
Estimated current for other components: 100mA
Total typical current draw: 300mA
AP7361C-33 drop out voltage: 100mV at: 300mA output current; Vout = 3.3V; 25ÂºC
D7 LSM115J Schottky diode forward voltage: 180mV at: 300mA; 25ÂºC
AP7361C 3.3V output will start to fall when the battery voltage falls below 3.58V at 300mA
For a typical 2000mAH LiPo battery discharging at 300mA (0.15C), we would expect 3.58V to be reached when the battery is approximately 90% discharged.

LTE LEDs



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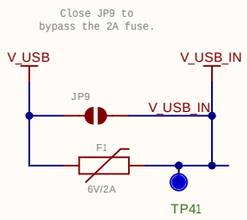
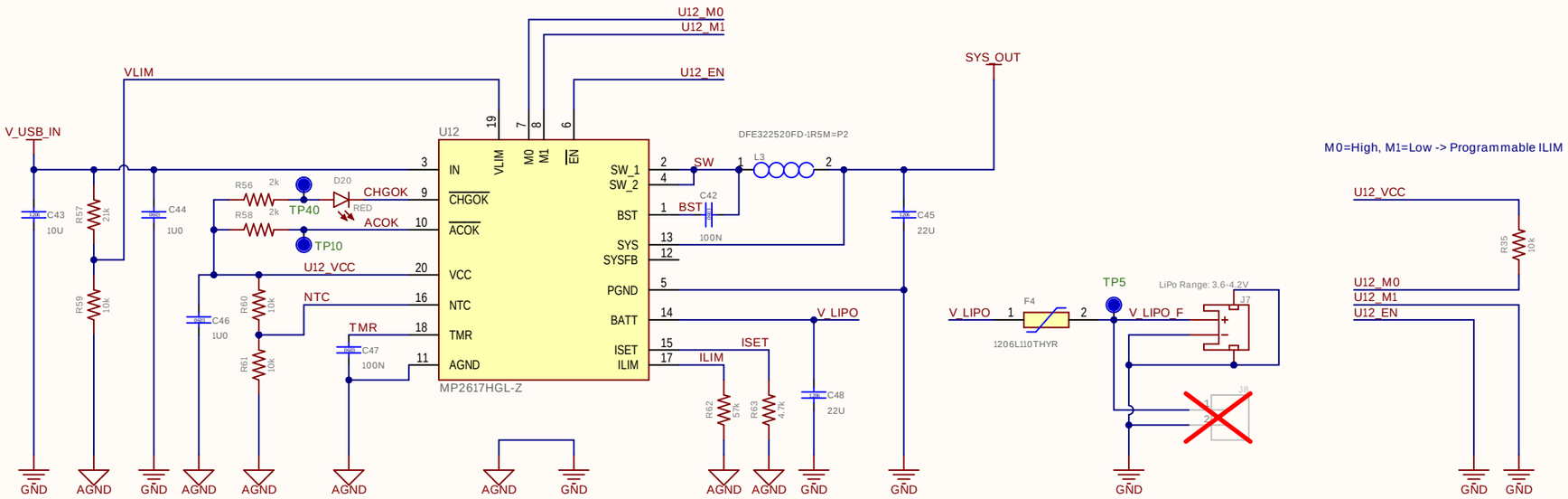
Battery Charger





ILIM: Sets input current, if M0 and M1 are set to High/Low.

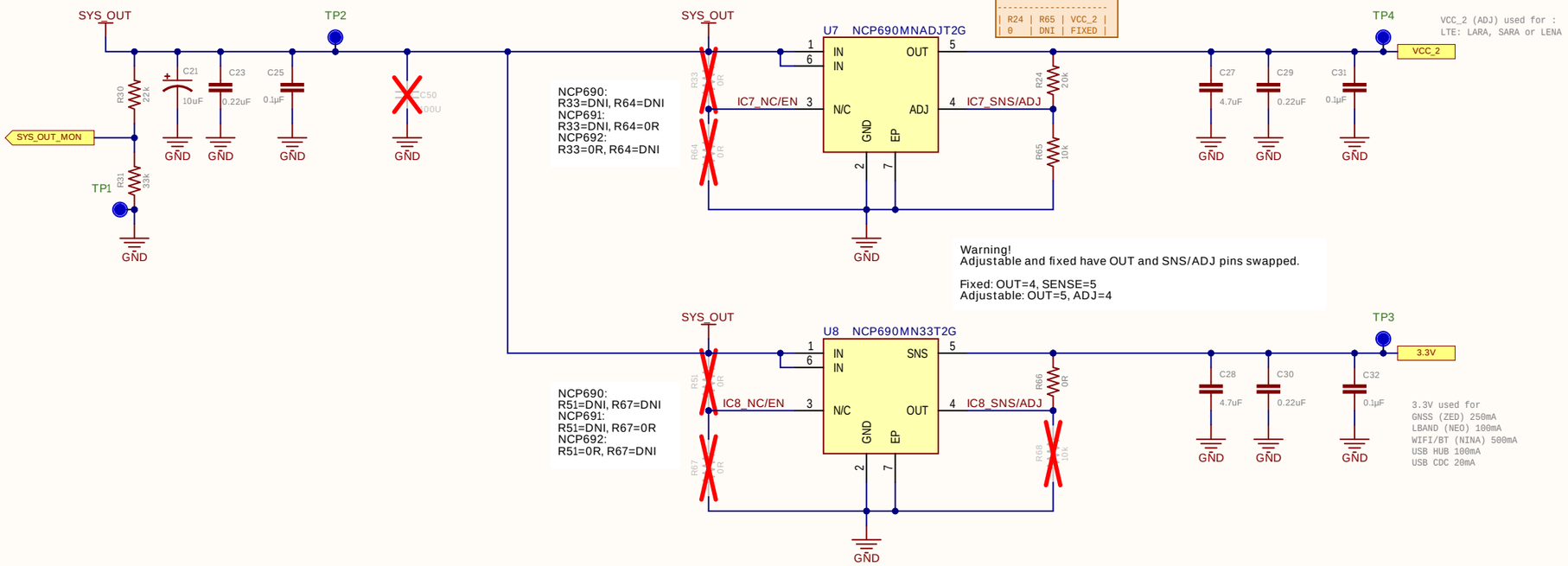
R62=57k -> I_in_lim = 800mA
RILIM[k]=(1.14 x 40000) / I_in_lim[mA] =(1.14 x 40000) /800 = 57k

R63=4.7k -> ISET = 440mA

Different NCP69xMNyyyT2G variants:
NCP690: No enable pin
NCP691: Active Low Enable pin
NCP692: Active High Enable pin

33: Fixed 3.3V output
ADJ: Adjustable output

Voltage Regulation



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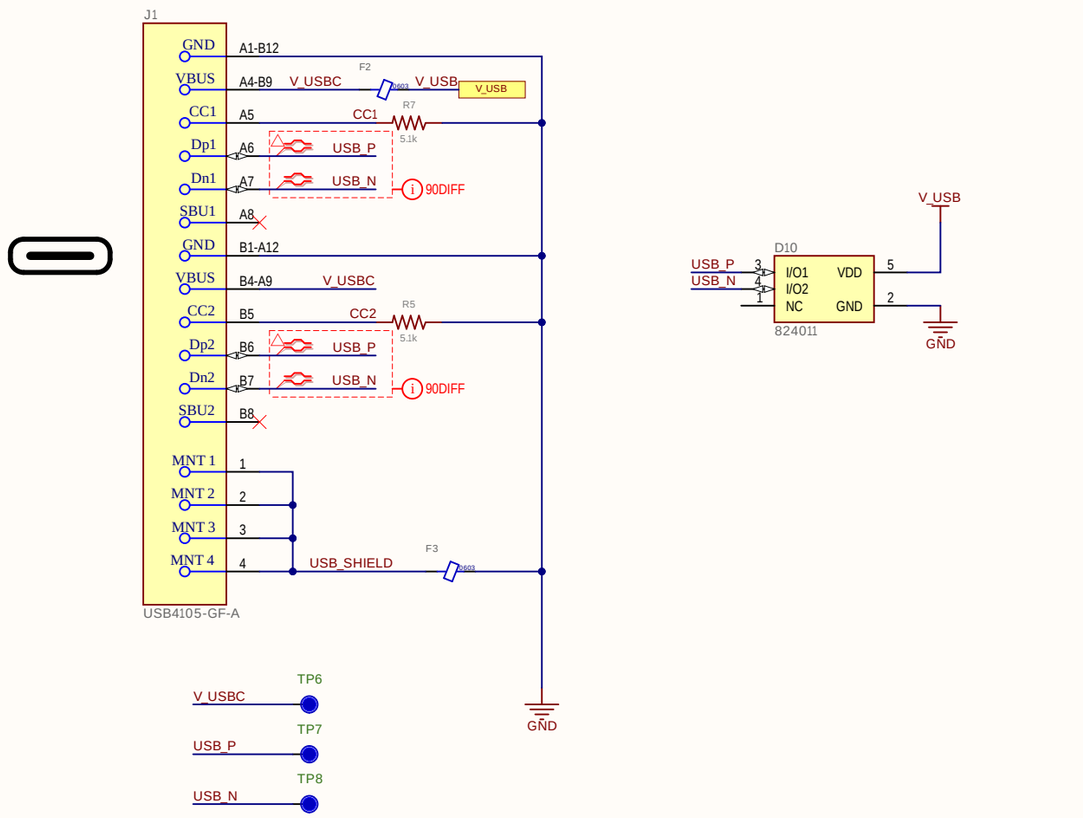
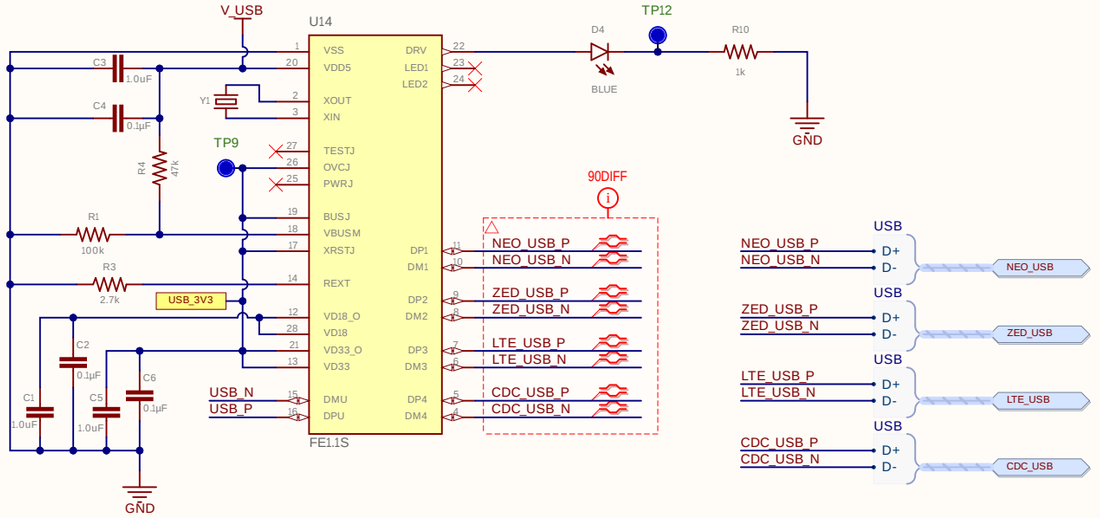
USB-C Connector



USB HUB



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Board:C214 revC		USB-HUB.SchDoc	Page: * / *
Sch Num:	Release Date:29/11/2022		