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CPU + PoP RAM/NAND

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Connector to BB-XM

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BB-XM Adapter (CPU)

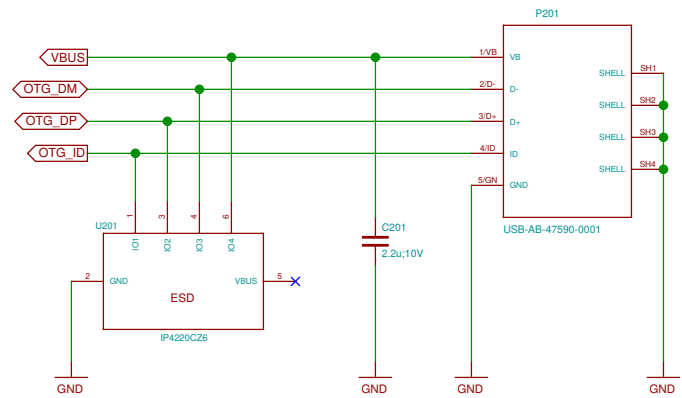
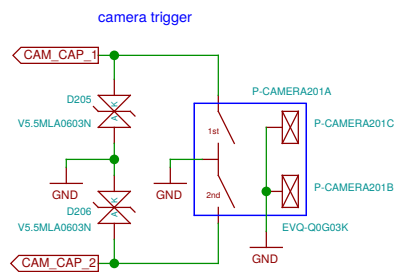
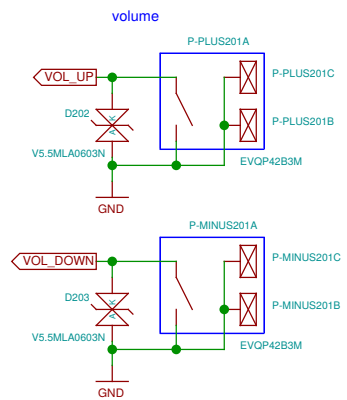
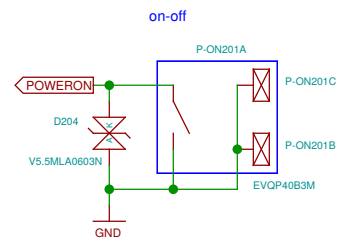
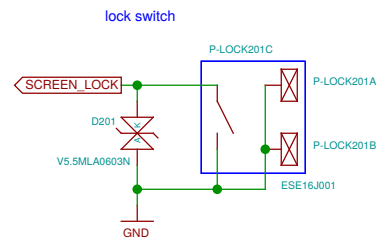
[Sheet: BB-XM Adapter \(DISP\)](#)
File: neo900_SS_35.sch
BB-XM Adapter (DISP)

[Sheet: BB-XM Adapter \(CAM\)](#)
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BB-XM Adapter (CAM)

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File: neo900_SS_37.sch
No-Solder Components

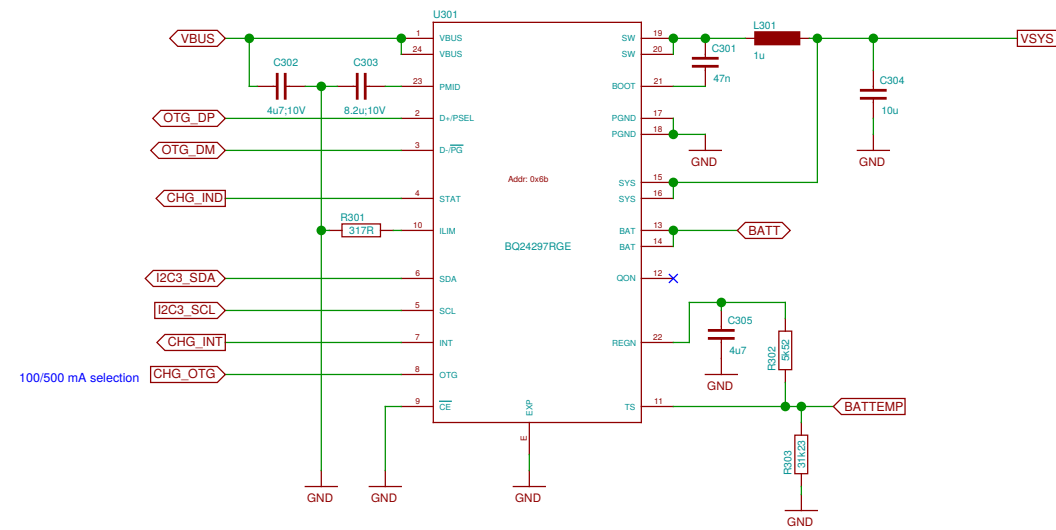
Note regarding I2C addresses:
Addresses in the schematics are provided for convenience.
The authoritative source is
<https://neo900.org/git?p=misc;a=tree;f=i2c>

Sheet: /	
File: neo900.sch	
Title: Neo900	
Size: A3	Date: 16 JUL 2016
Plotted by eeshow 14908eb+ 20160930-18:22Z	
Rev:	Id: 1/37

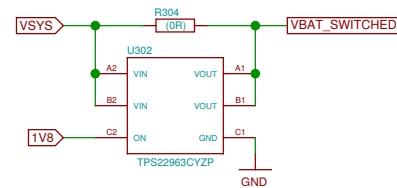


place in scan matrix? would need 3-4 wires to UPPER board instead of 2

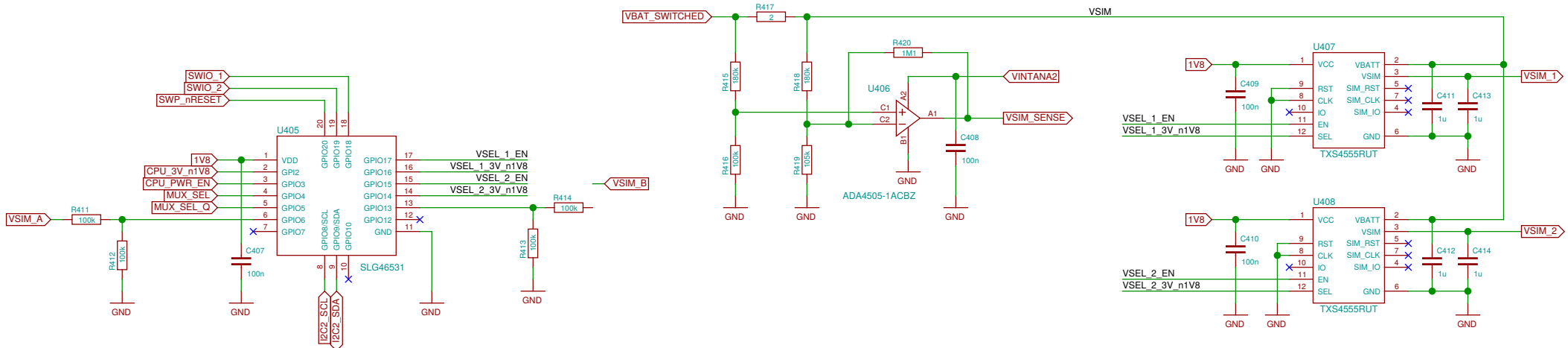
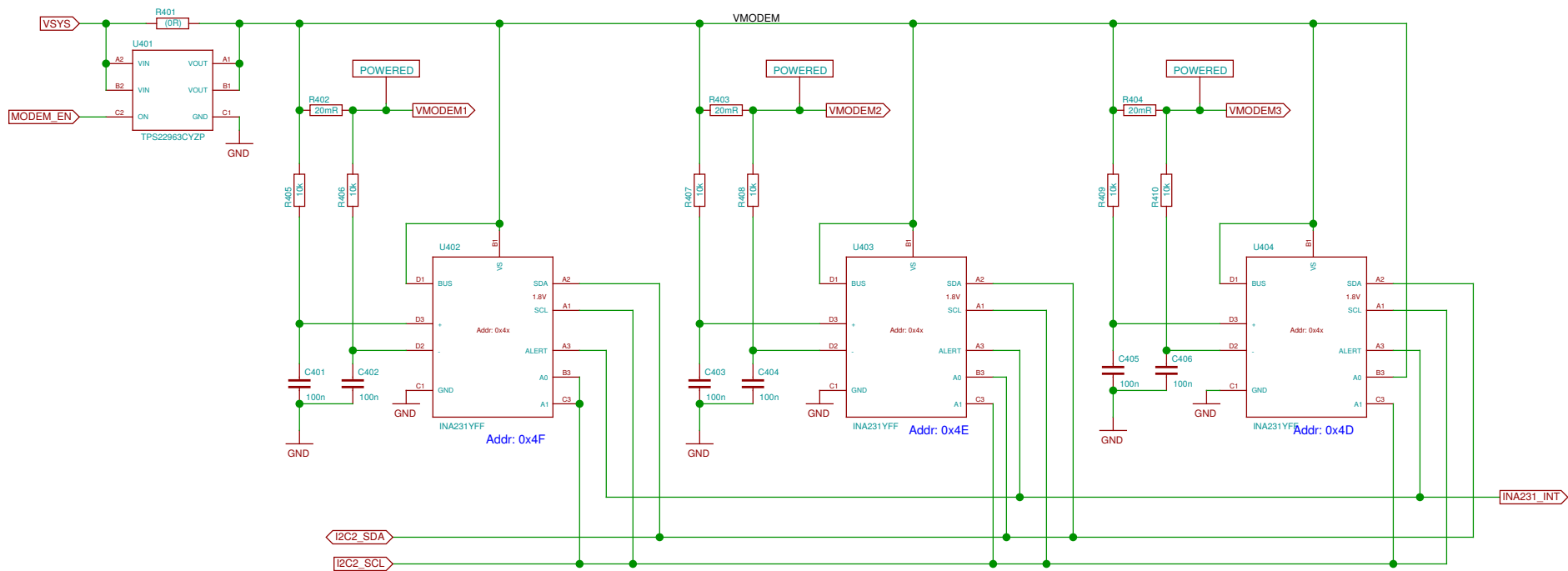
in any case it is sufficient to connect GPIO-VOL+ and VOL- to two pins on the B2B connector



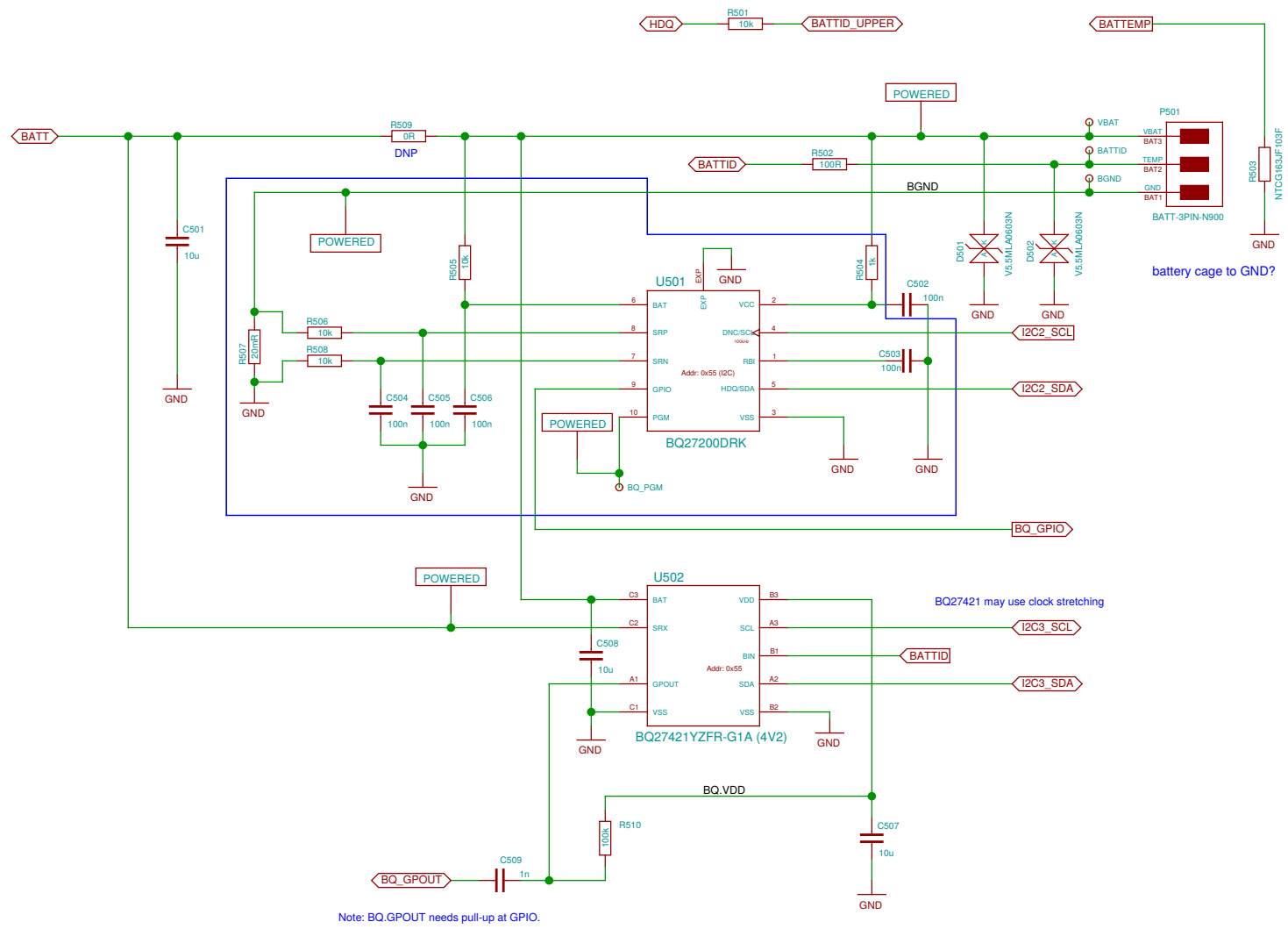
100/500 mA selection



Sheet: /Charger/OTG-Booster/		
File: neo900_SS_3.sch		
Title: Charger/OTG-Booster		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 14908eb+ 20160930-18:22Z		Id: 3/37



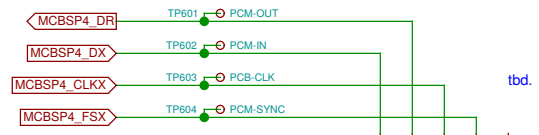
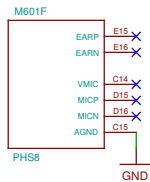
TODO: update SLG design for changed pins



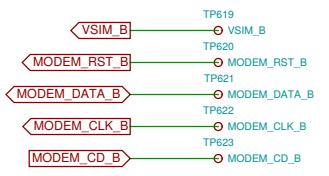
Note: BQ.GPOUT needs pull-up at GPIO.

battery cage to GND?

Sheet: /Fuel Gauge/		Date: 17 JUL 2016	
File: neo900_SS_5.sch		Rev:	
Title: Fuel Gauge			
Size: A3	Plotted by: eeshow 14908eb+ 20160930-18:22Z	Id: 5/37	

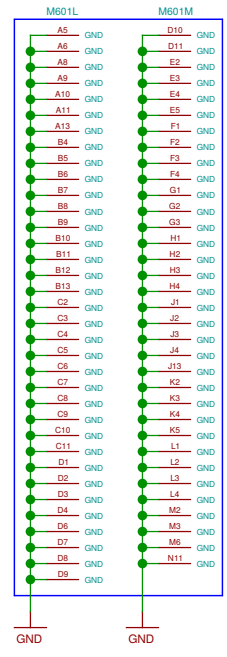
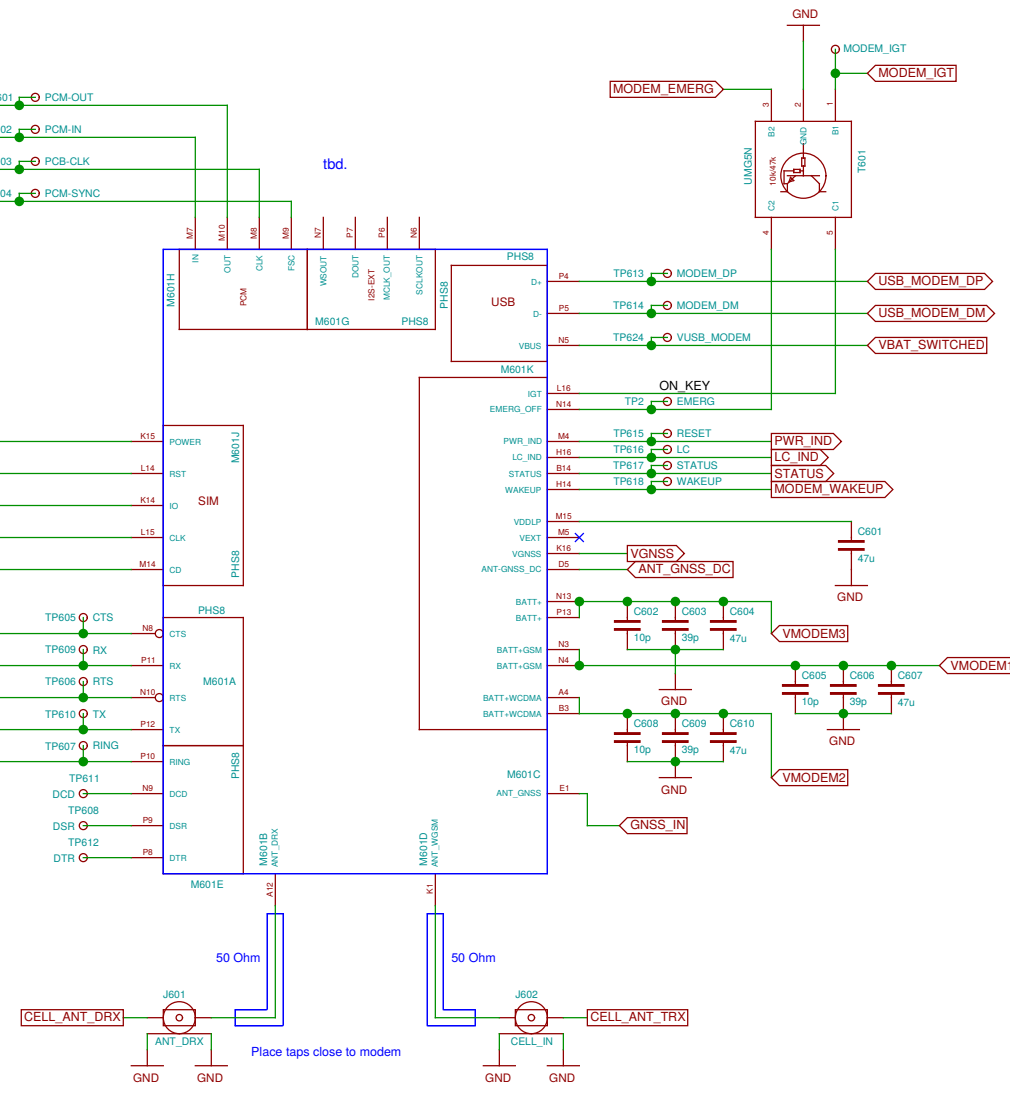
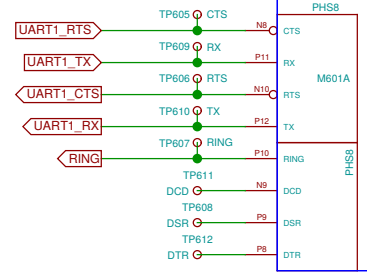
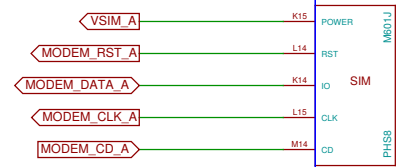


tbd.



TODO: B-SIM bus FFS

Can we connect UART in parallel to Bluetooth UART (i.e. if BT is disabled we can unbrick the Modem?)



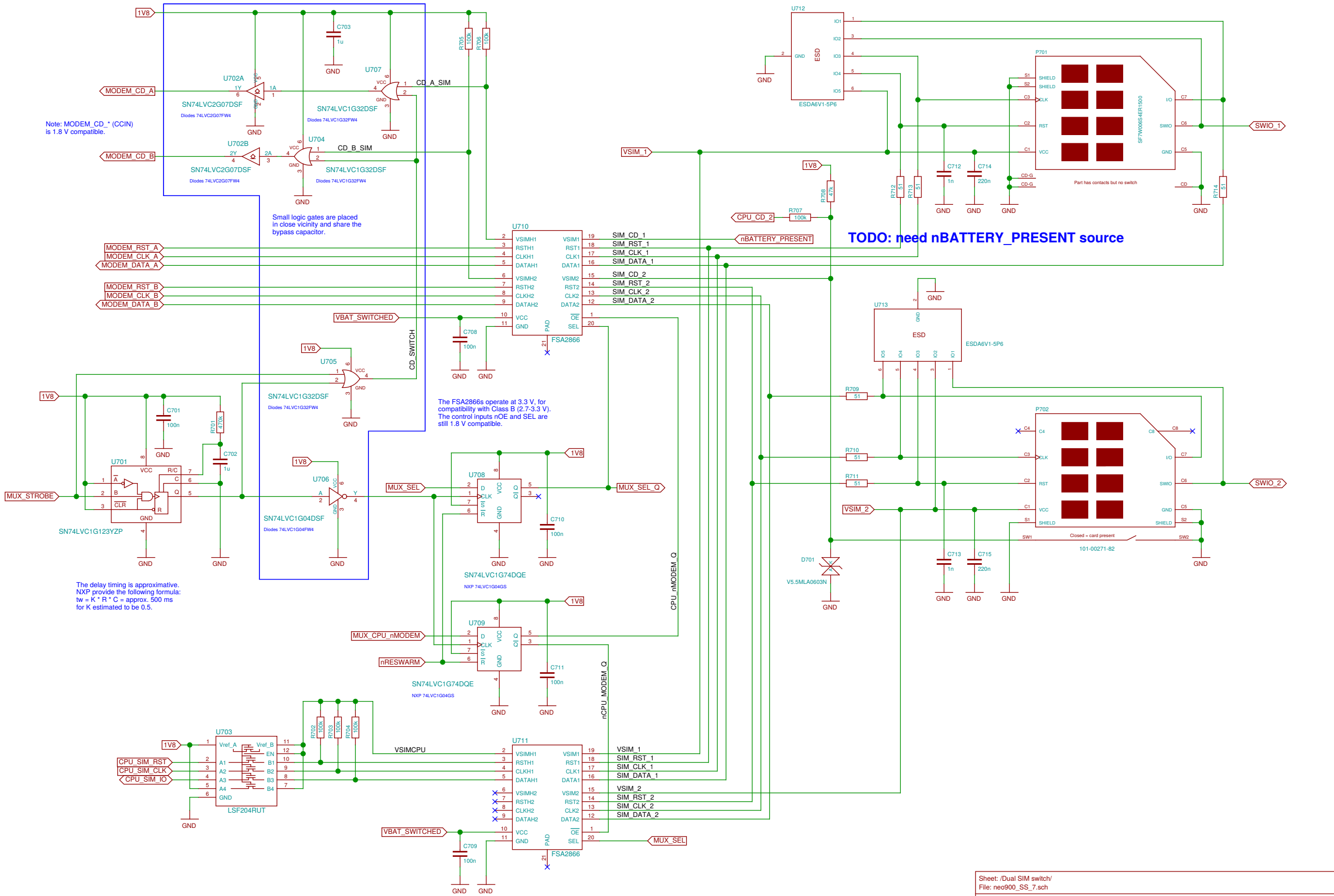
Note: MODEM_CD_* (CCIN) is 1.8 V compatible.

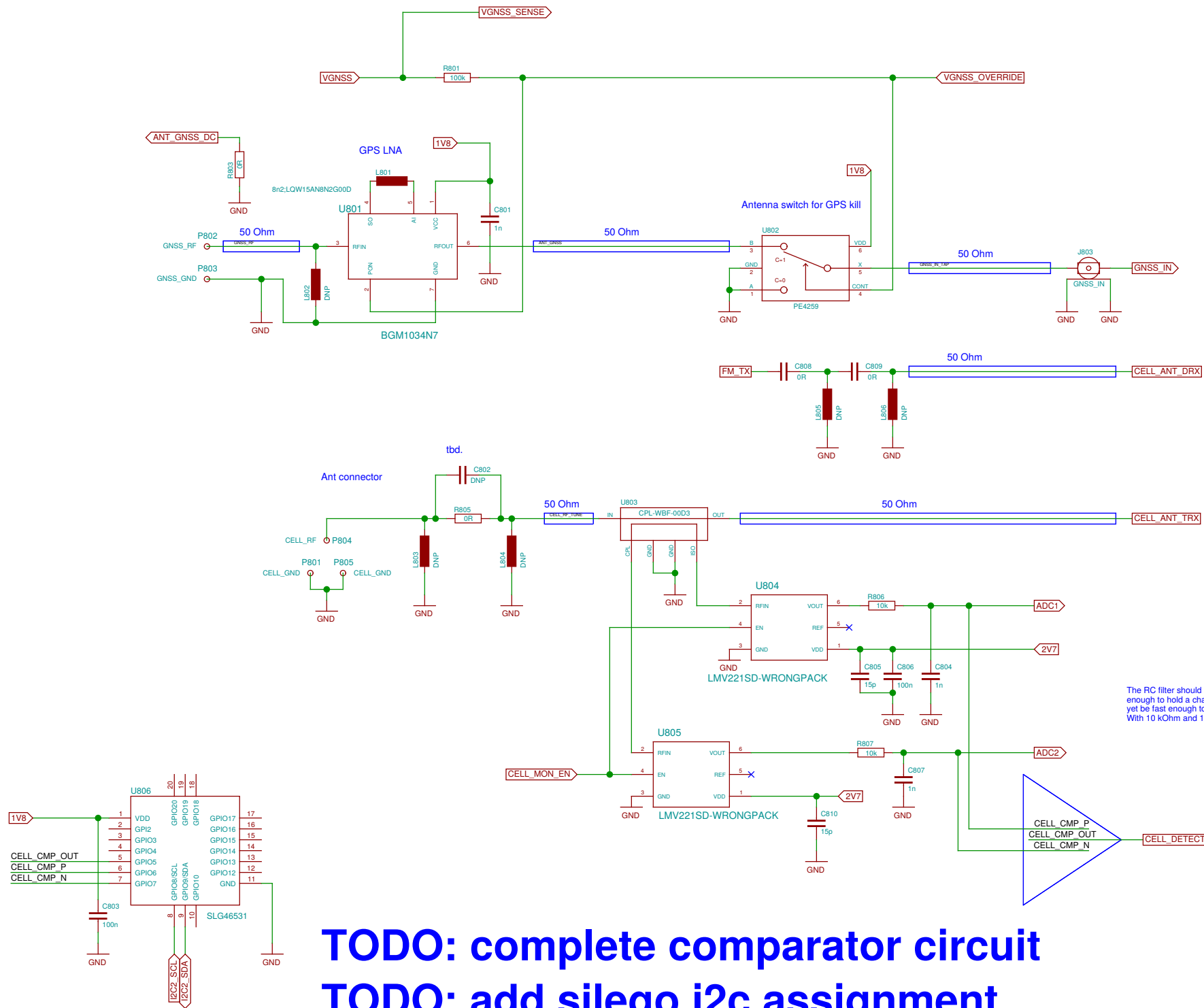
Small logic gates are placed in close vicinity and share the bypass capacitor.

The FSA2866s operate at 3.3 V, for compatibility with Class B (2.7-3.3 V). The control inputs nOE and SEL are still 1.8 V compatible.

The delay timing is approximative. NXP provide the following formula: $t_w = K * R * C = \text{approx. } 500 \text{ ms}$ for K estimated to be 0.5.

TODO: need nBATTERY_PRESENT source

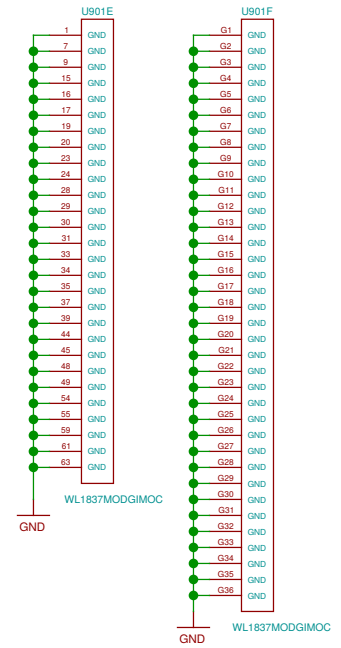
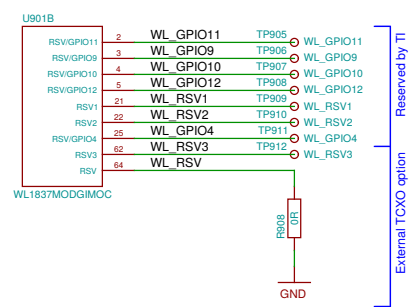
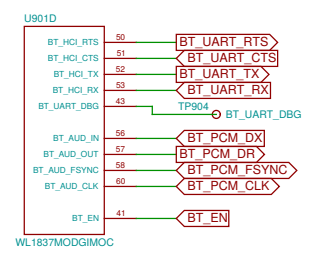
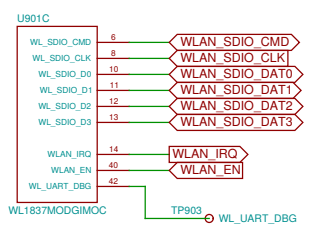
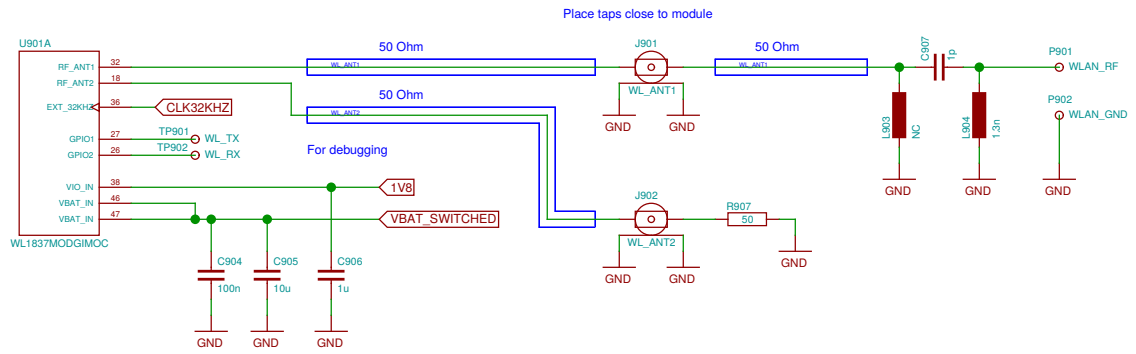




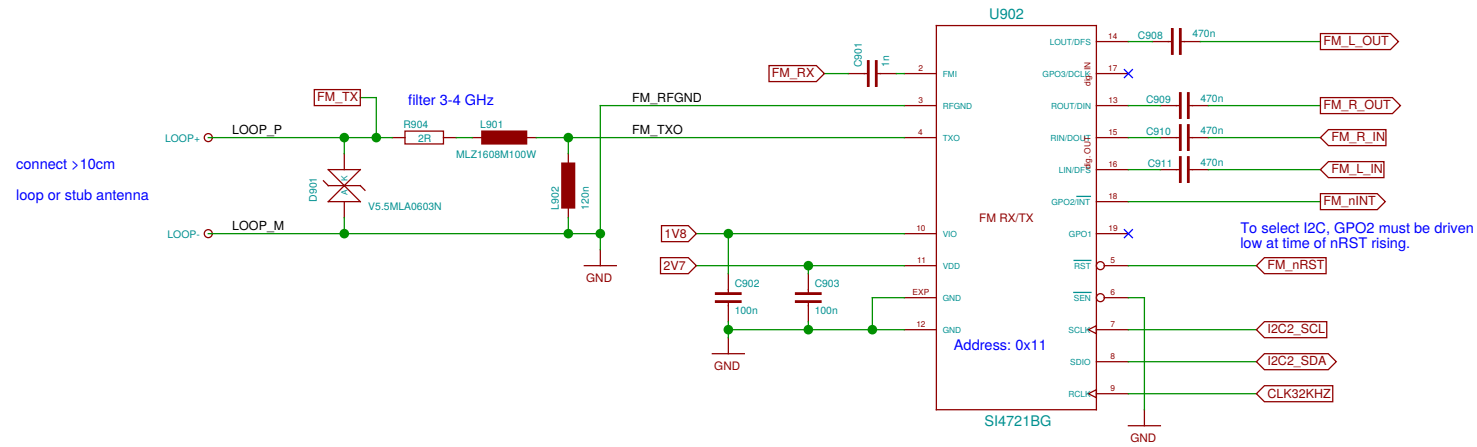
The RC filter should have C large enough enough to hold a charge in pulsed operation, yet be fast enough to detect short activity. With 10 kOhm and 1 nF, we get about 16 kHz.

TODO: complete comparator circuit
TODO: add silego i2c assignment
TODO: iox

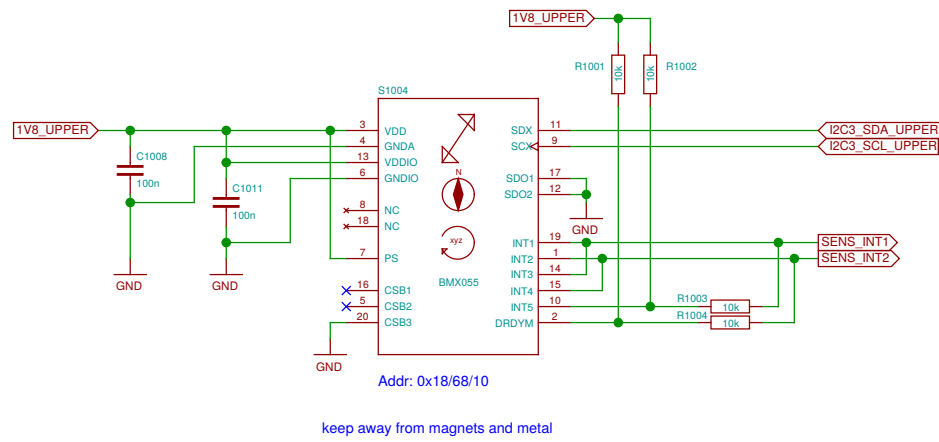
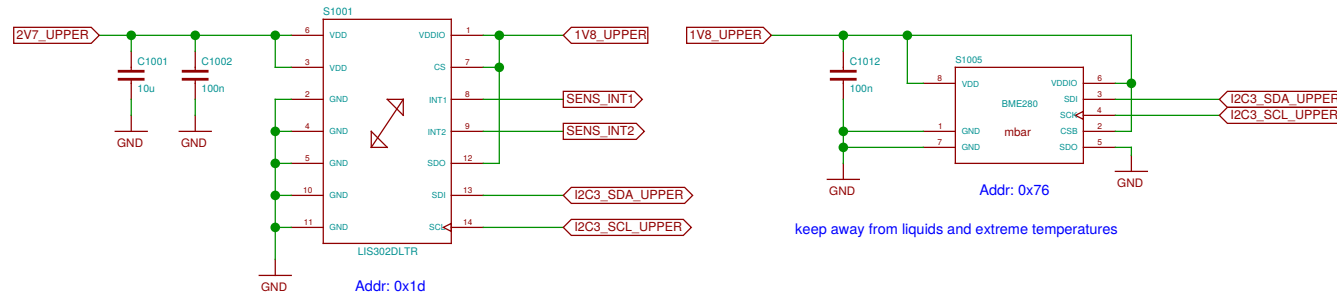
TODO: assign footprints



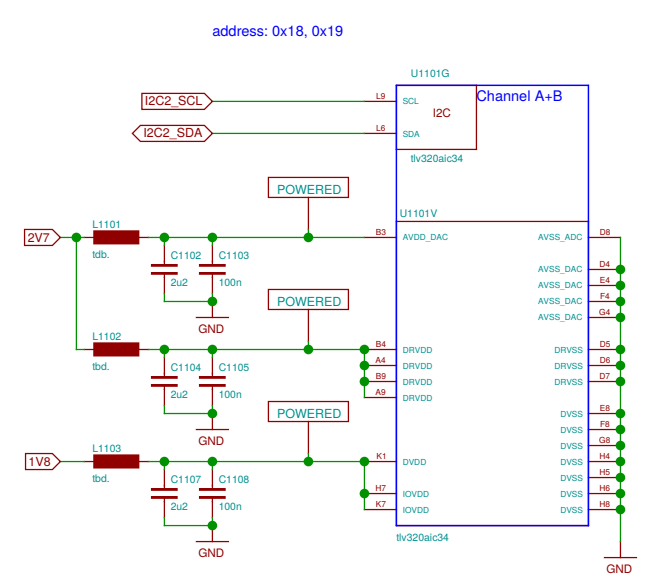
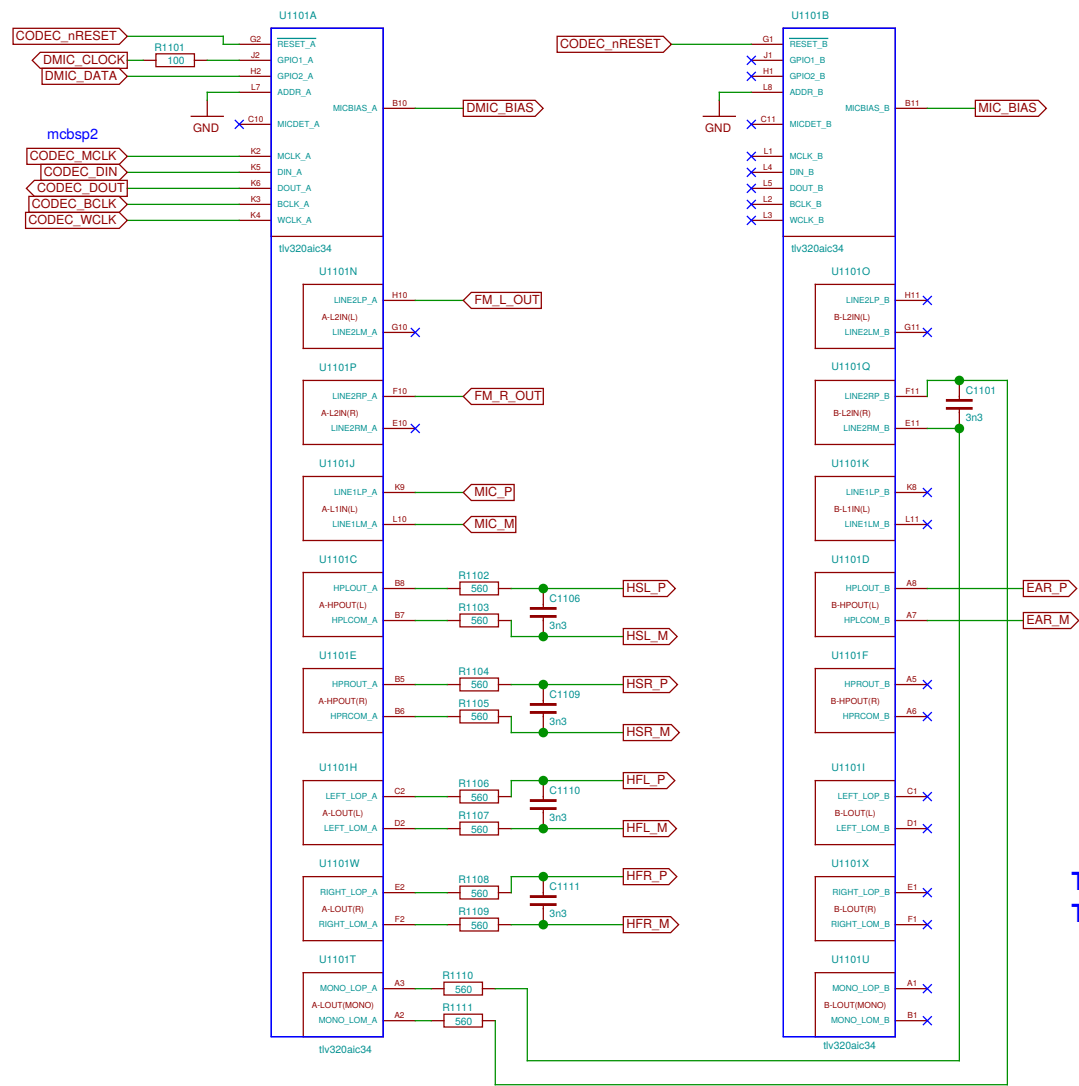
TODO: check caps



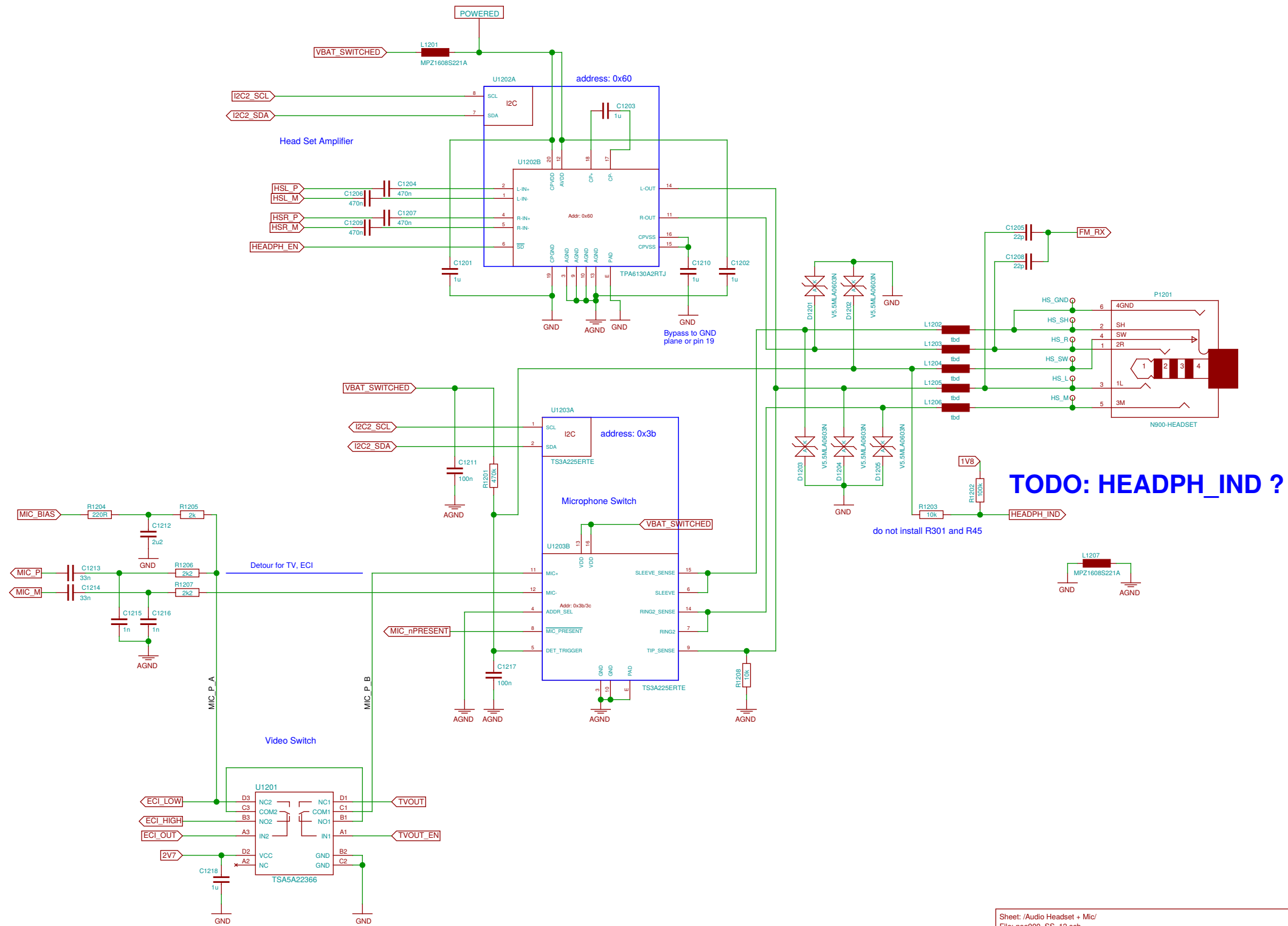
Si4705 is pin compatible (mostly) but RX-only



problem: this is a 0.5mm BGA making lower board expensive
 but it appears to be not extremely critical (only 3 rows and inner ring is GND)
 problem: analog mic is on upper board
 alternative: place on upper board (to be evaluated)



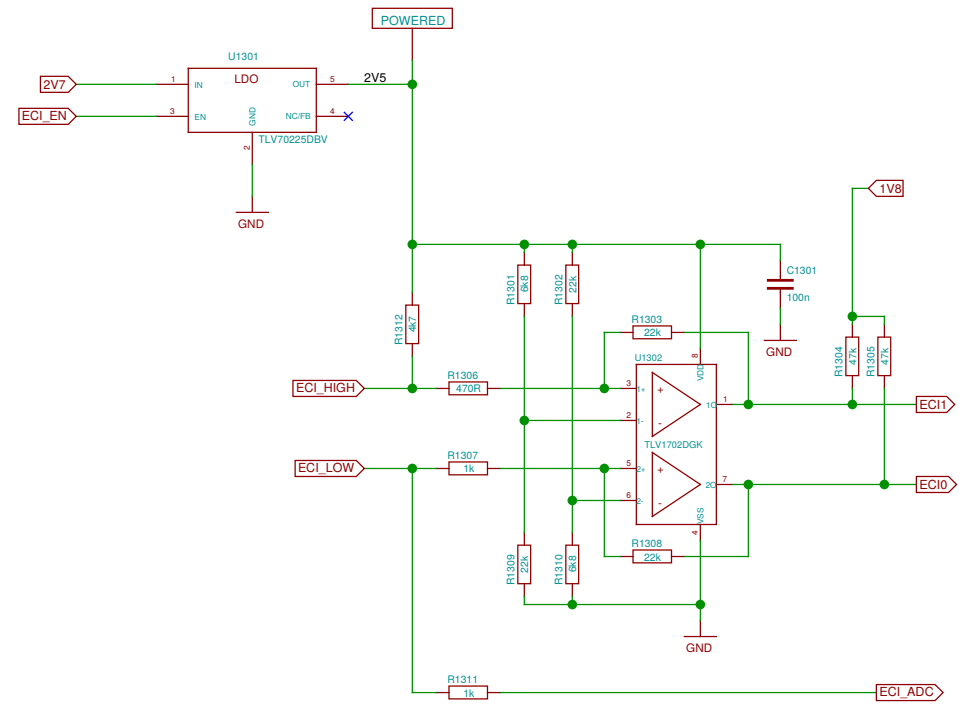
TODO: assign FM out (FM_L_IN, FM_R_IN)
 TODO: IR_AUDIOIN



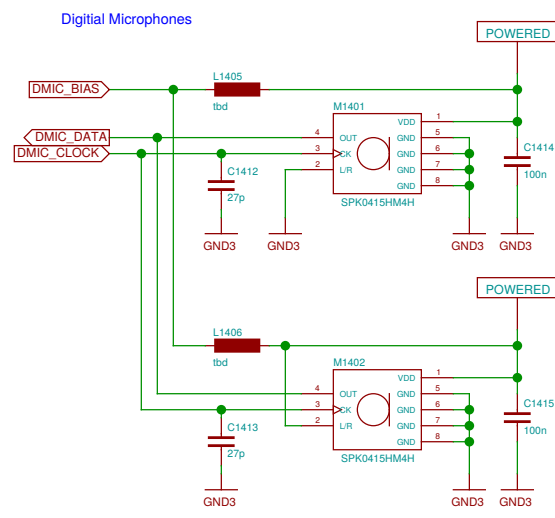
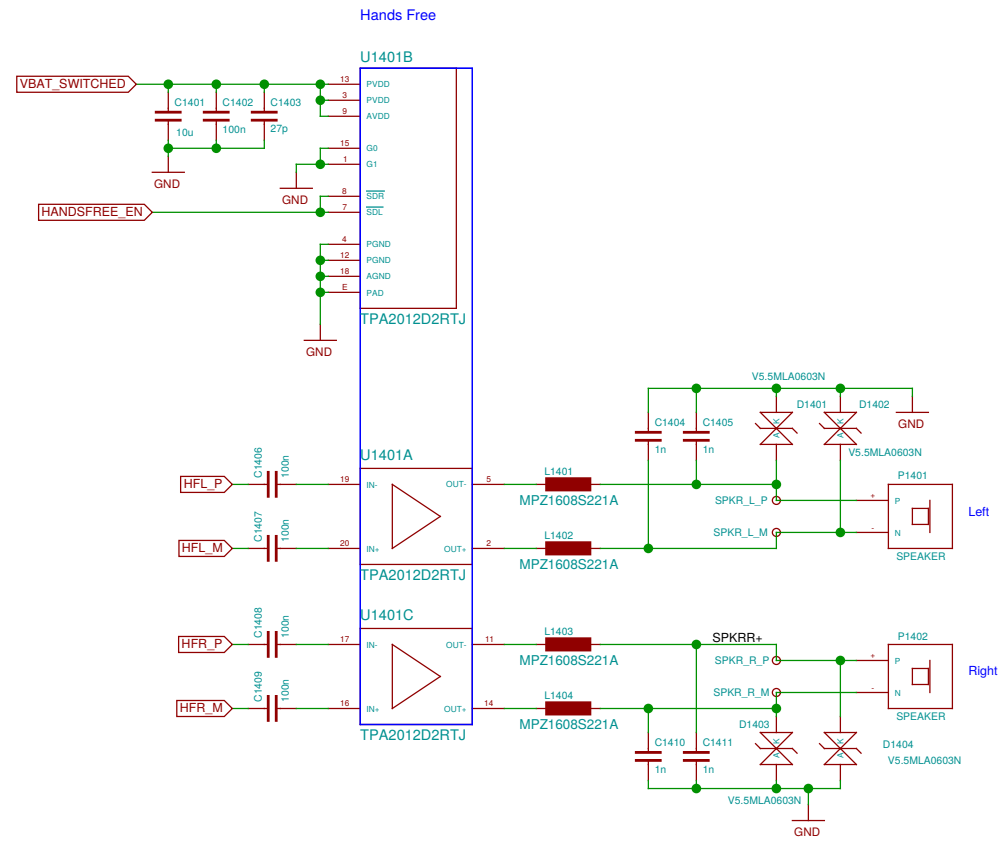
TODO: HEADPH_IND ?

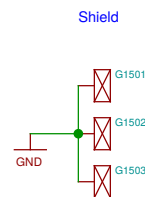
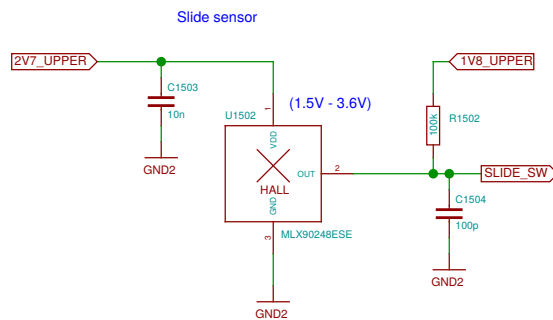
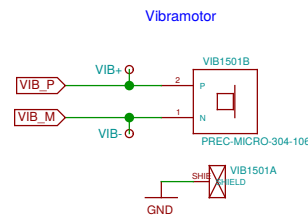
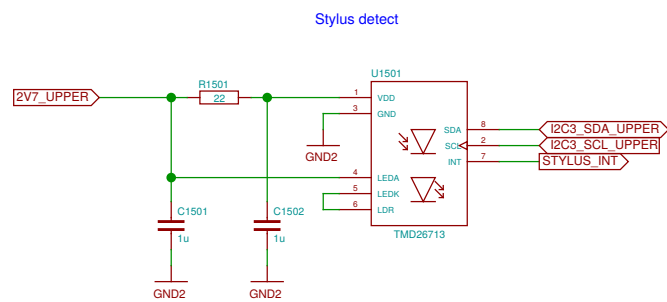
do not install R301 and R45

Sheet: /Audio Headset + Mic/		
File: neo900_SS_12.sch		
Title: Audio Headset + Mic		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 14908eb+ 20160930-18:22Z		Id: 12/37

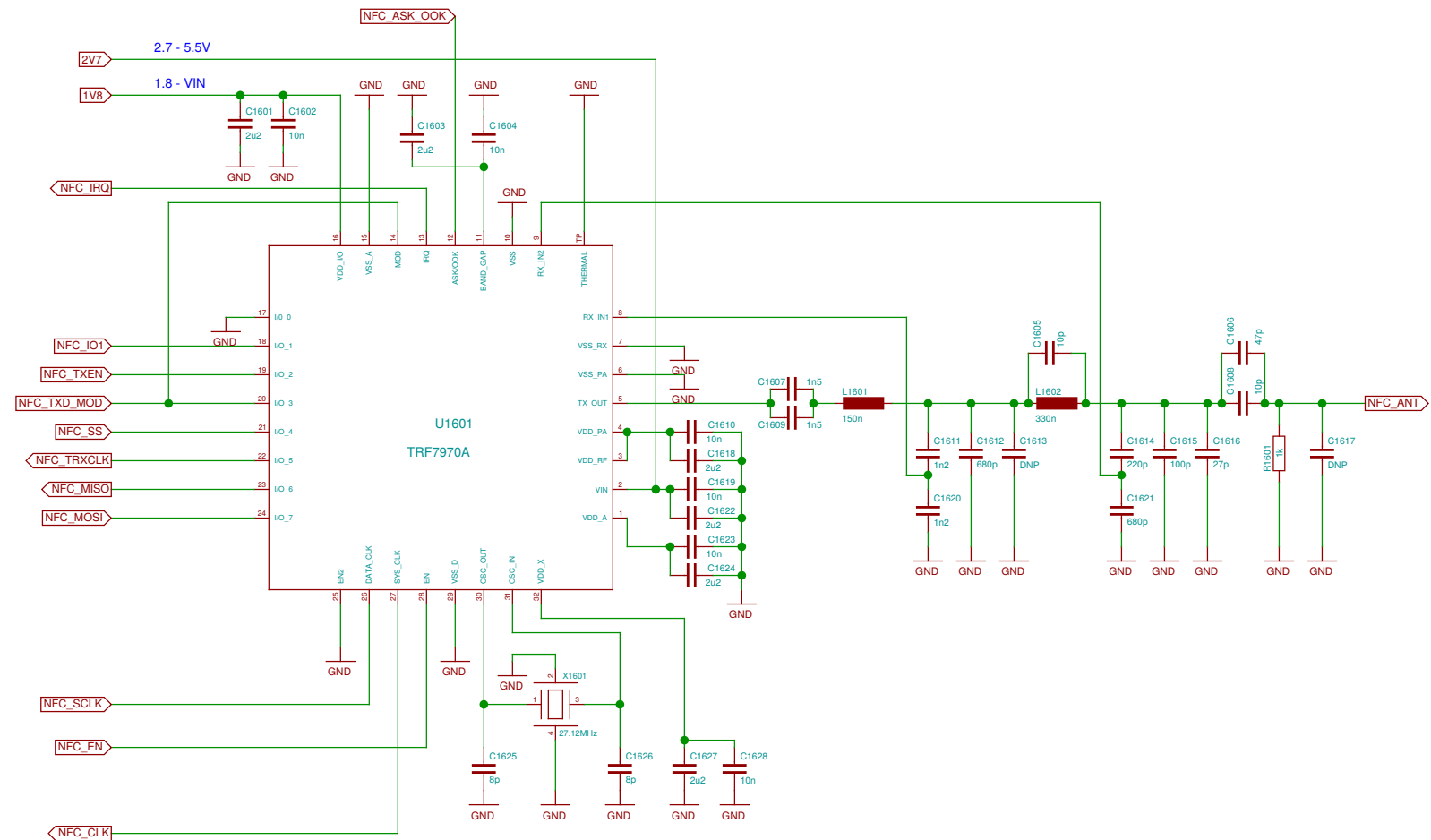


Sheet: /ECI/		
File: neo900_SS_13.sch		
Title: ECI		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 14908eb+ 20160930-18:22Z		Id: 13/37

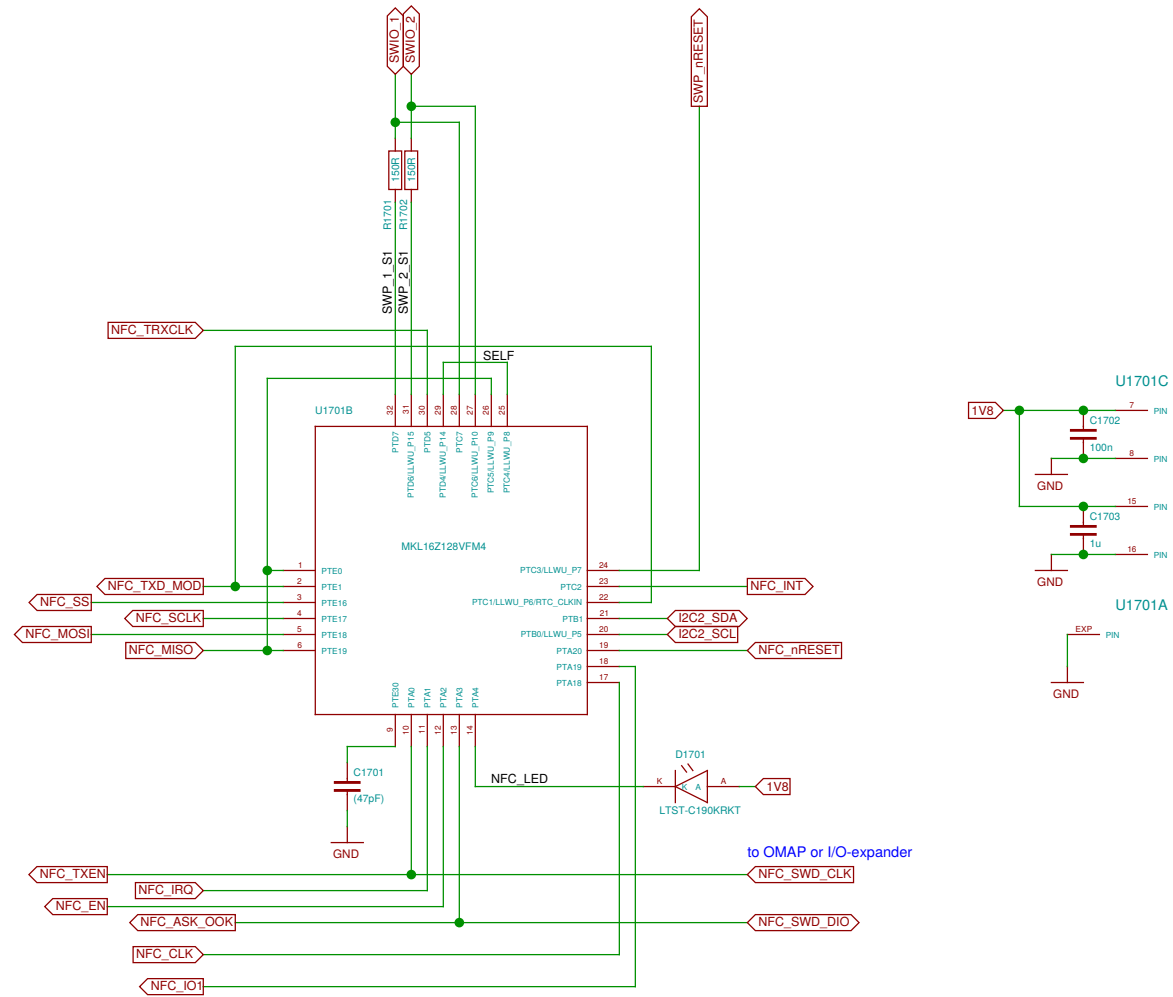




Sheet: /Misc/ File: neo900_SS_15.sch	
Title: Misc	
Size: A3	Date: 17 JUL 2016
Plotted by eeshow 14908eb+ 20160930-18:22Z	Rev: Id: 15/37



Some choices, 3.2 x 2.6 mm, 8-10 pF:
 NDK NX3225GA-27.12M-STD-CRG-2
 NDX NX3225SA-27.12M-STD-CSR-3
 Tattien XXCCEINANF-27.120000

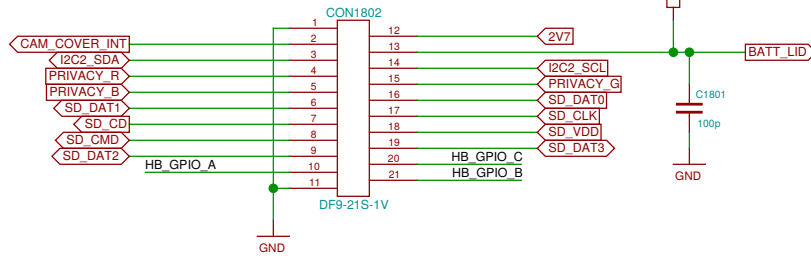
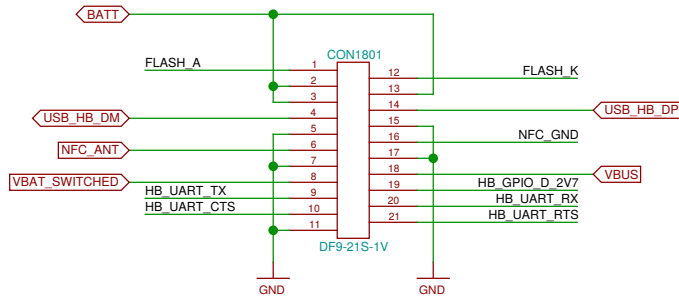


Sheet: /RFID/NFC Controller/		Date: 17 JUL 2016	
File: neo900_SS_17.sch		Rev:	
Title: RFID/NFC Controller			
Size: A3	Date: 17 JUL 2016	Rev:	
Plotted by eeshow 14908eb+ 20160930-18:22Z		Id: 17/37	

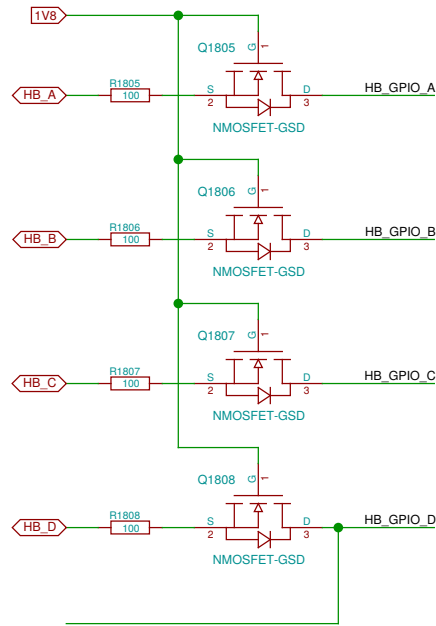
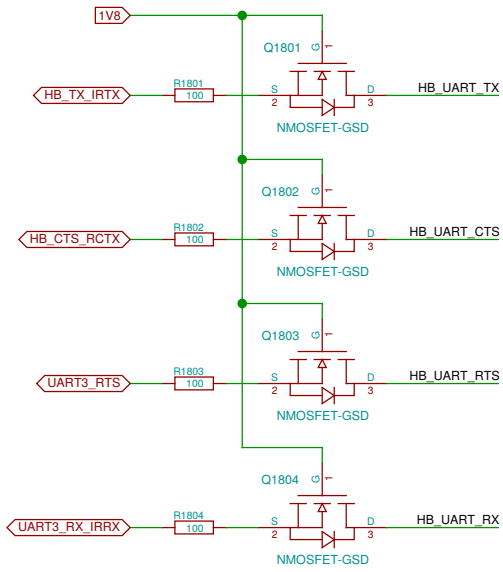
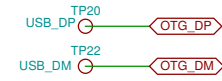
NOTE: this is mangling up Breakout and Lower board connectors
 Signals may have to be fed through the breakout board connector increasing resistance

TODO: add fuse

The LOWER-BOB interconnect is defined in the Hackerbus specification
<http://neo900.org/stuff/papers/hb.pdf>

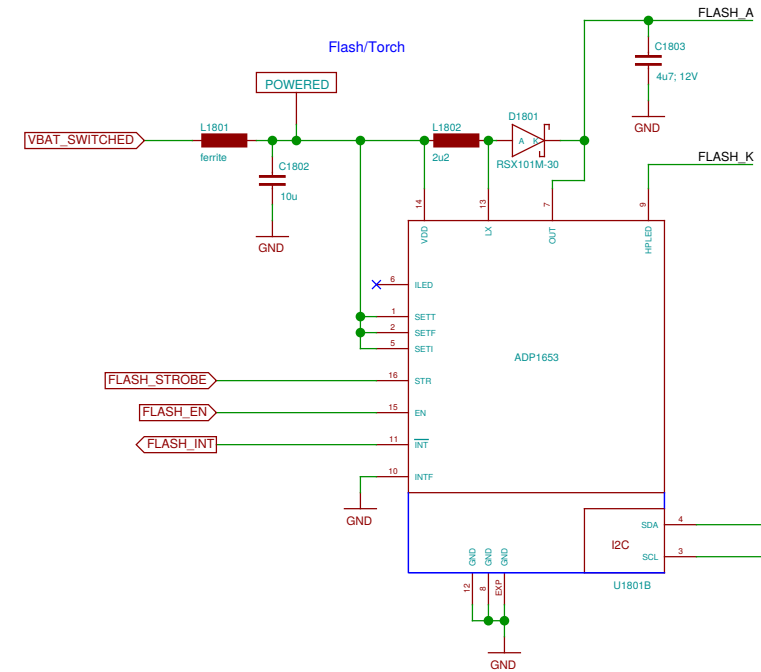


TODO: define NFC-GND



TODO: use arrays

TODO: 2V7+SW / LDO ?



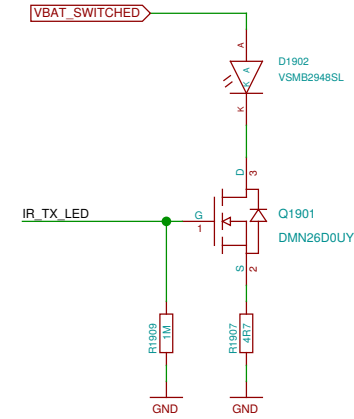
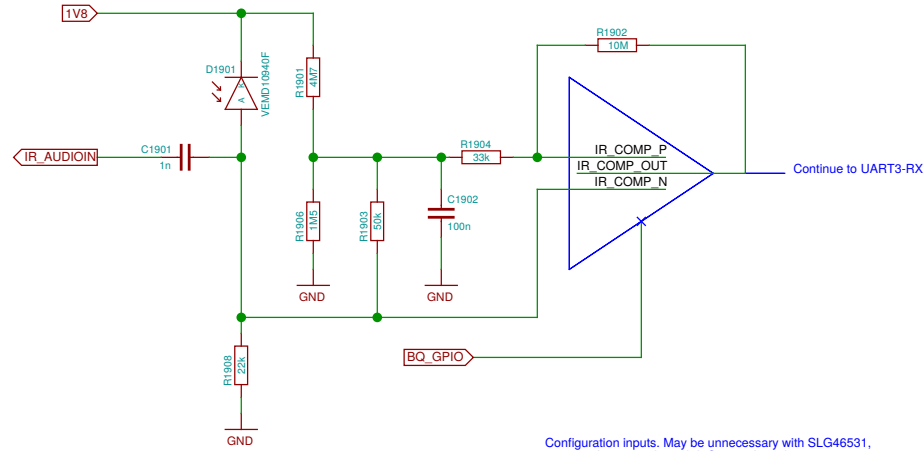
Missing 10 level shifter chip (or do we really have the space for 10x discrete T+R+D ca. 3x3mm each?)

Missing 6x 2R for alternate function select (do we have the space for ca. 2.5 x 5mm?)

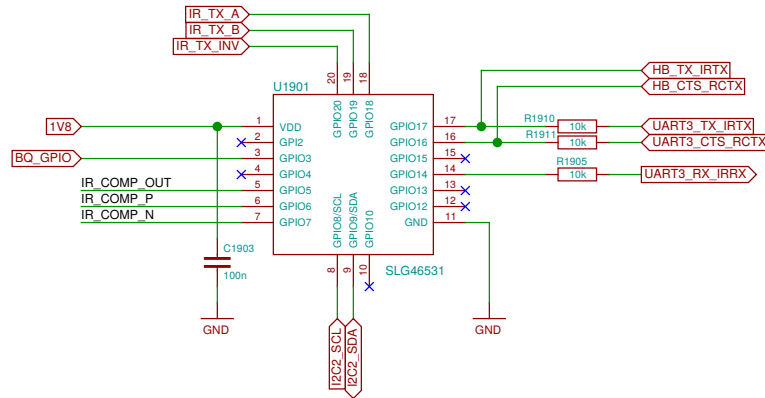
TODO: HB USB PHY may go here

TODO: update D1901 footprint

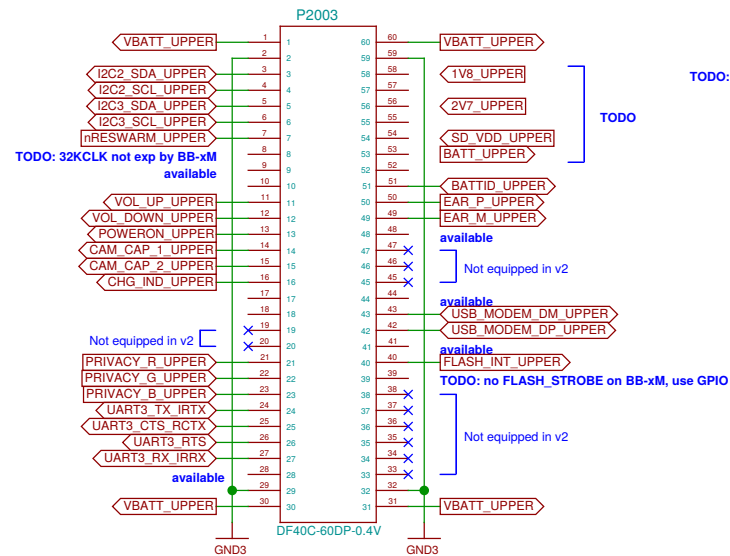
NOTE: 1V8 may be quite noisy



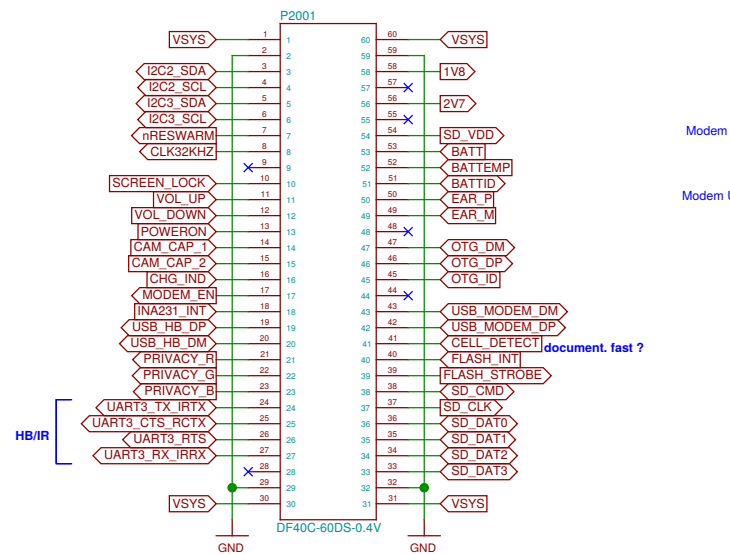
Configuration inputs. May be unnecessary with SLG46531, once configuration through I2C is confirmed.



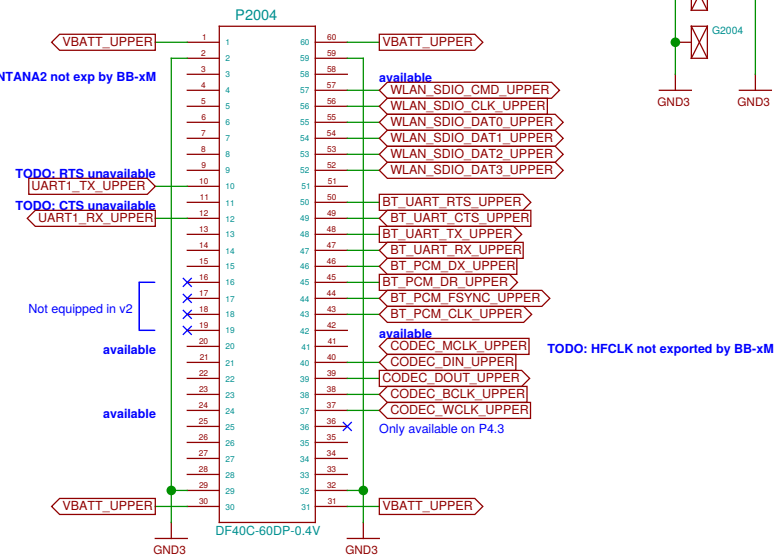
This is just the collection of signals we have. Proper assignment still pending.



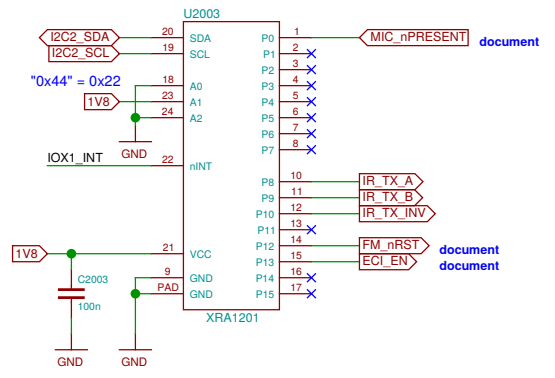
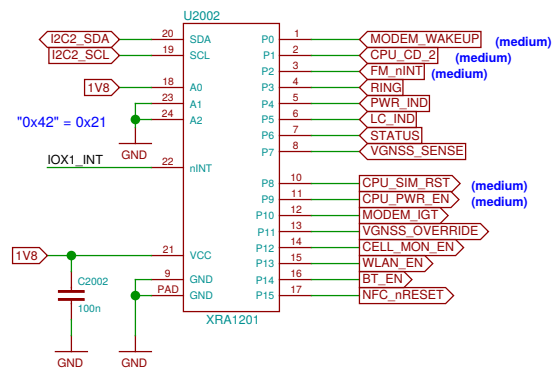
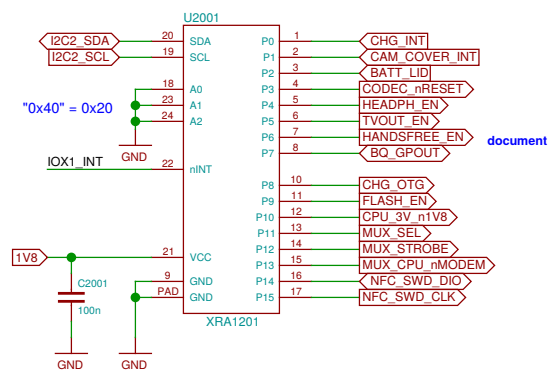
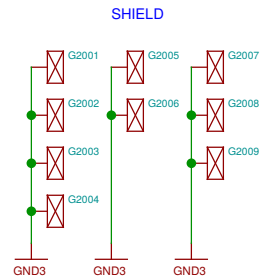
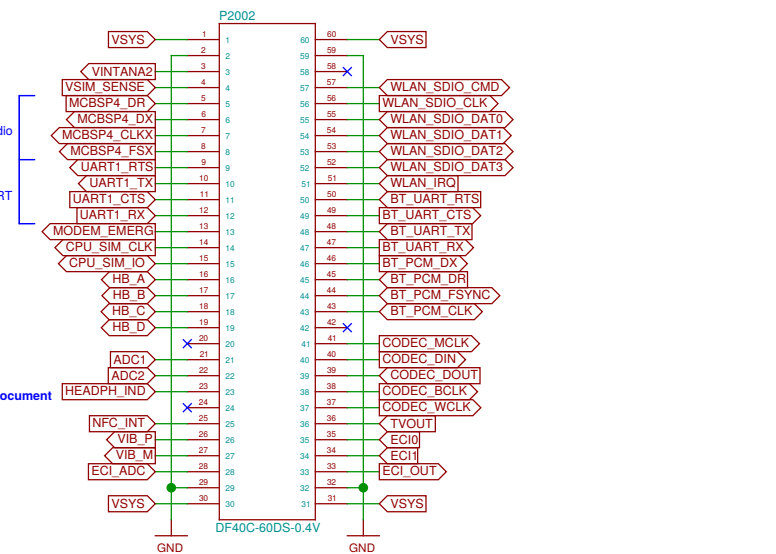
UPPER
LOWER



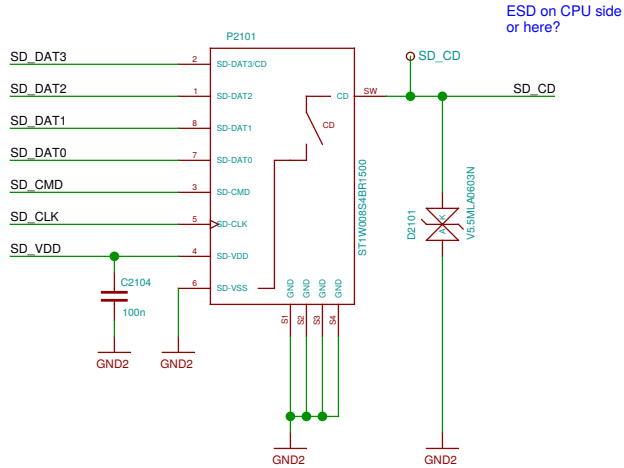
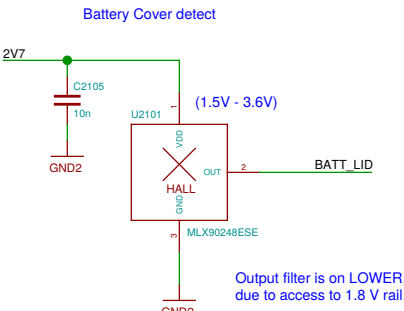
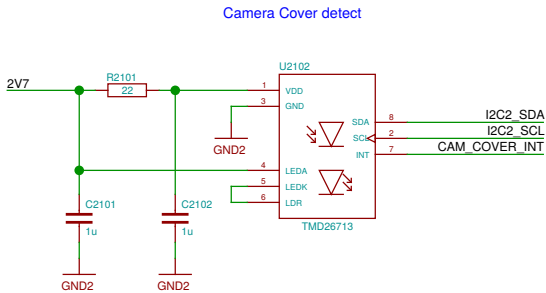
Current rating per contact: 0.3 A



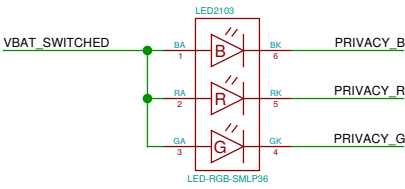
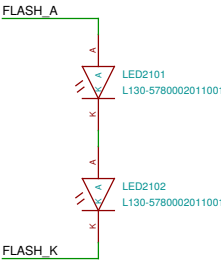
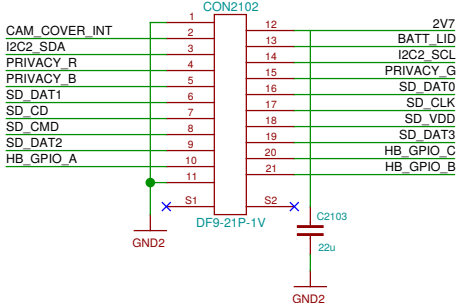
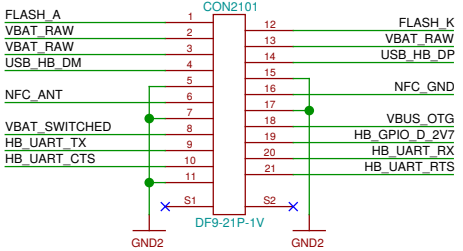
UPPER
LOWER



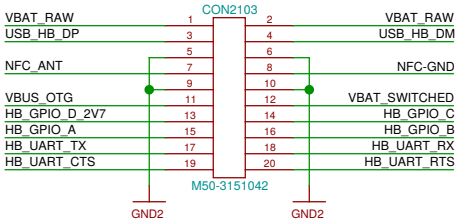
TODO: add ESD protection (here)



The LOWER_BOB interconnect is defined in the Hackerbus specification <http://neo900.org/stuff/papers/hb.pdf>



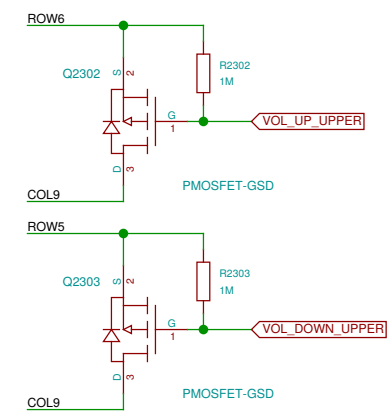
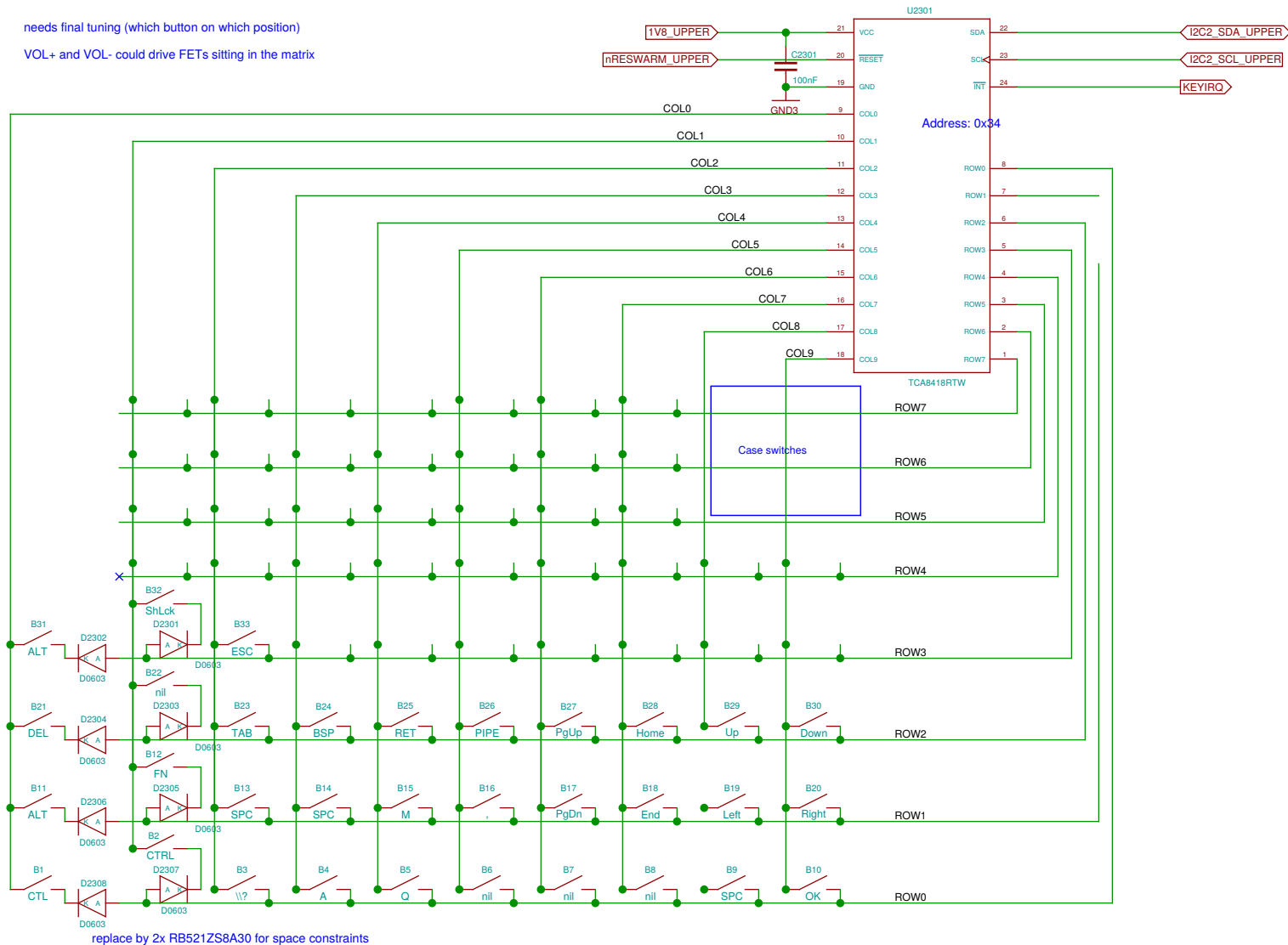
Hackerbus



TODO: consider sheet for deletion

Sheet: /empty/ File: neo900_SS_22.sch		
Title: empty		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 14908eb+ 20160930-18:22Z		Id: 22/37

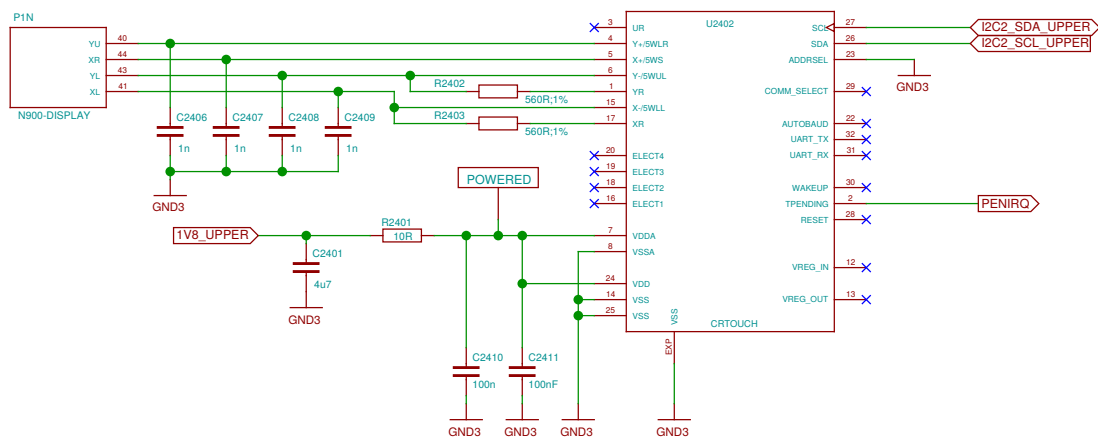
needs final tuning (which button on which position)
 VOL+ and VOL- could drive FETs sitting in the matrix



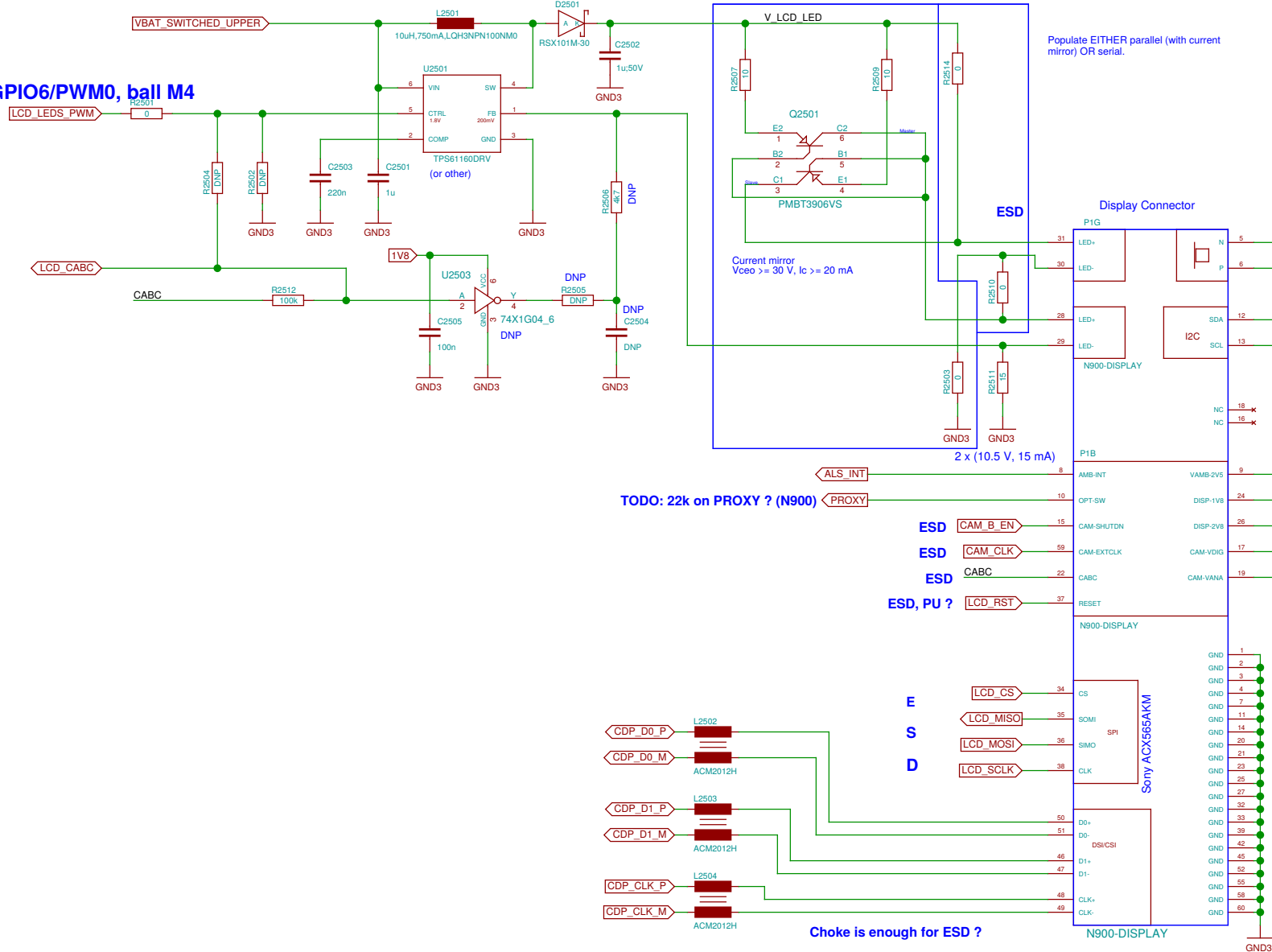
TODO: key names are nonsense

TODO: rearrange matrix to avoid diodes ?

Resistive Touch (display connector)



TWL4030, GPIO6/PWM0, ball M4



TODO: 22k on PROXY ? (N900)

ESD CAM_B_EN

ESD CAM_CLK

ESD CABC

ESD, PU ? LCD_RST

ESD
LCD_CS
LCD_MISO
LCD_MOSI
LCD_SCLK

Choke is enough for ESD ?

Populate EITHER parallel (with current mirror) OR serial.

ESD, choke, caps ?

ESD

Bead + C on power supplies ?

not shown here: Camera, Touch, LEDs

OMAP is not part of v2

Sheet: /CPU + PoP RAM/NAND/ File: neo900_SS_26.sch		
Title: CPU + PoP RAM/NAND		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 14908eb+ 20160930-18:22Z		Id: 26/37

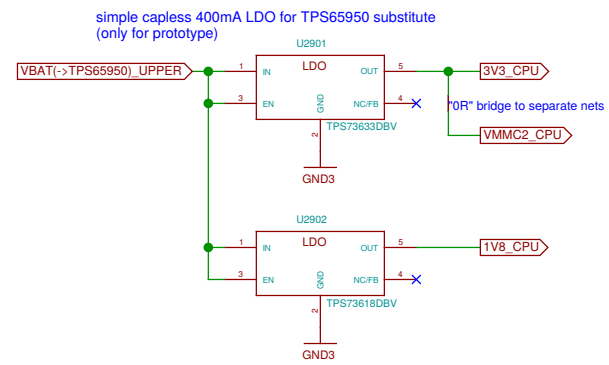
eMMC is not part of v2

Sheet: /eMMC/ File: neo900_SS_27.sch		
Title: eMMC		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 14908eb+ 20160930-18:22Z		Id: 27/37

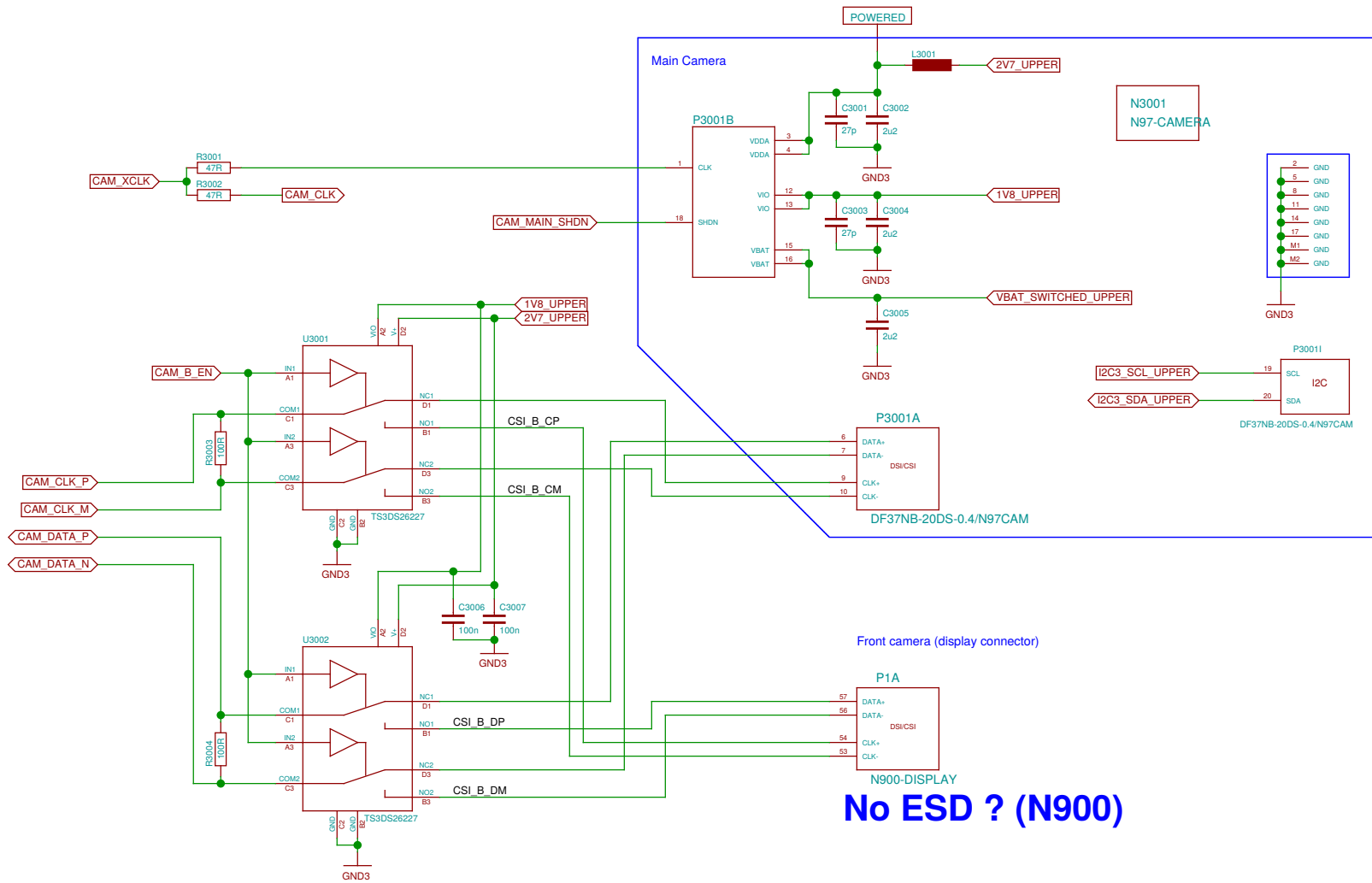
Companion chip (TPS65950) is not part of v2

Sheet: /PMU+Codec/ File: neo900_SS_28.sch		
Title: PMU+Codec		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 14908eb+ 20160930-18:22Z		Id: 28/37

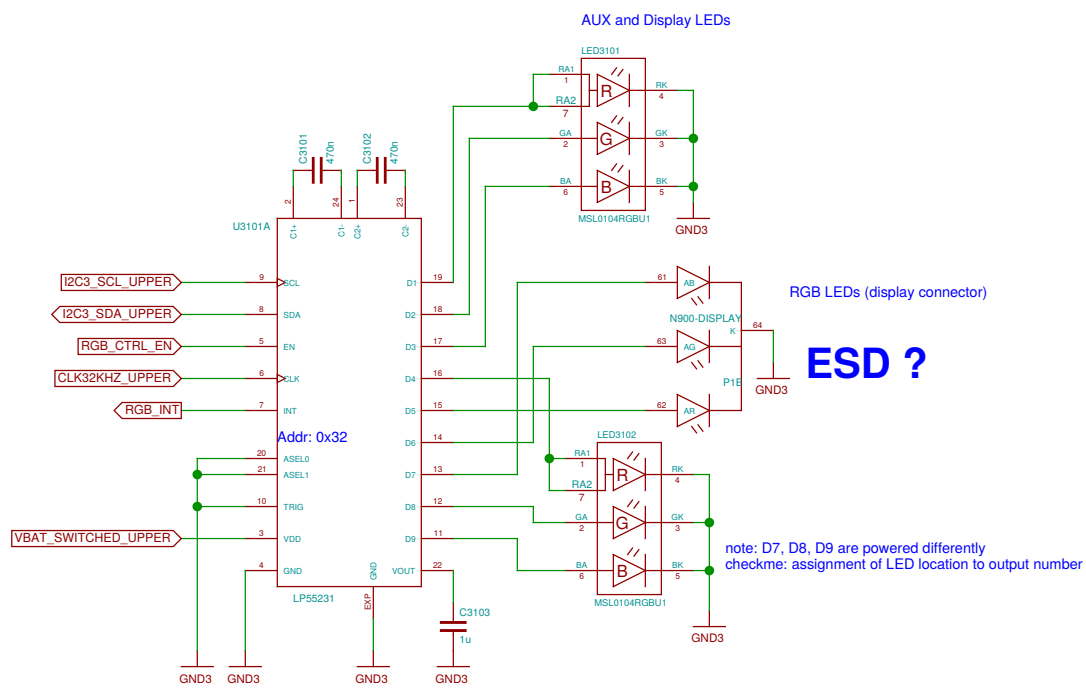
TODO: empty this sheet, too ?



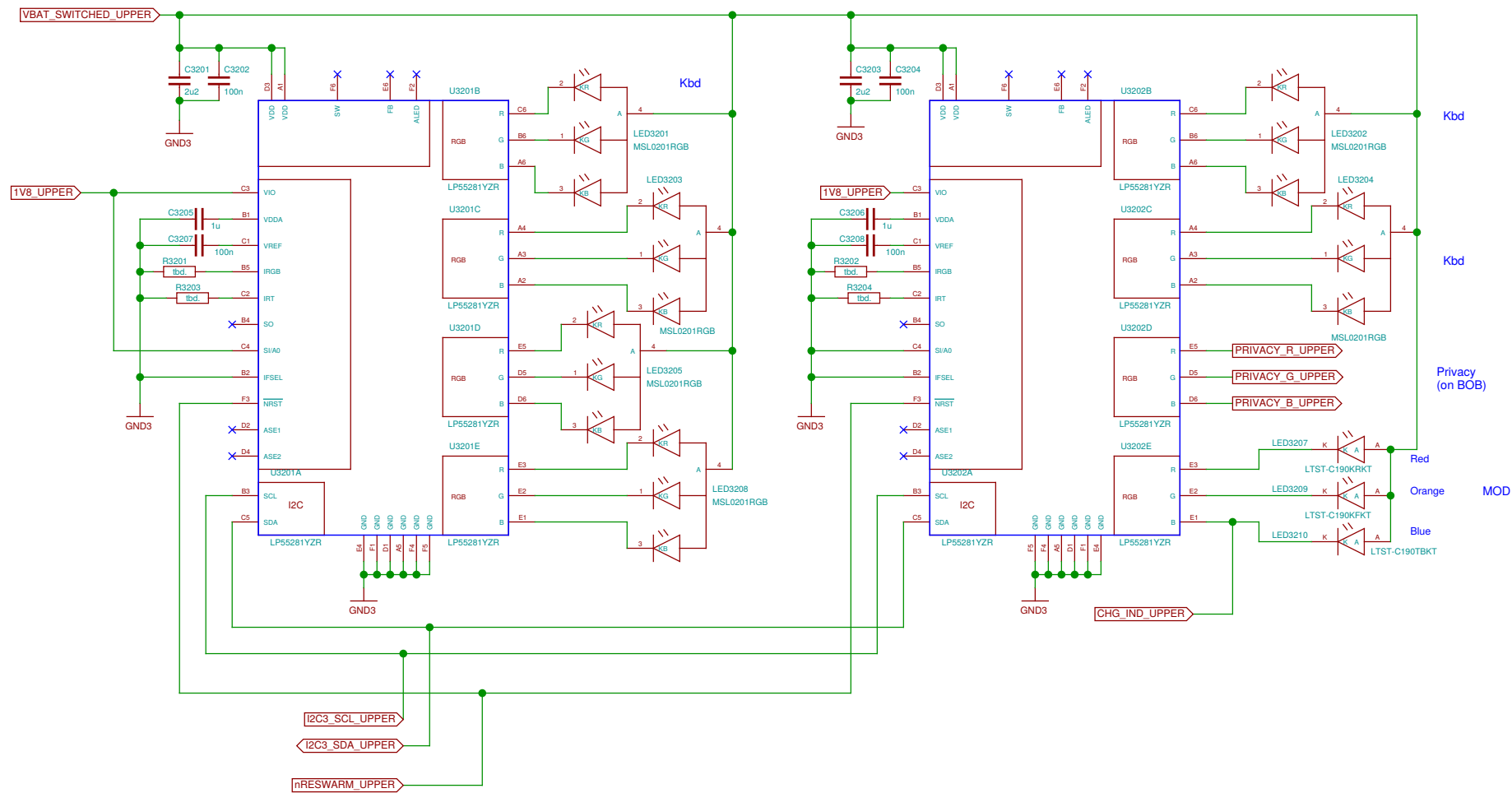
Sheet: /BB-XM Dummy (TWL4030)/		
File: neo900_SS_29.sch		
Title: BB-XM Dummy (TWL4030)		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 14908eb+ 20160930-18:22Z		Id: 29/37



Sheet: /Camera/ File: neo900_SS_30.sch	
Title: Camera	
Size: A3	Date: 17 JUL 2016
Plotted by eeshow 14908eb+ 20160930-18:22Z	
Rev:	Id: 30/37

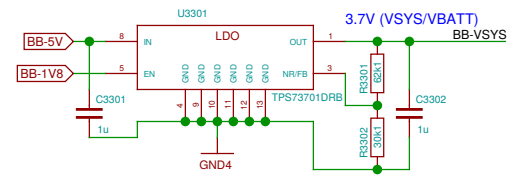


Sheet: /Fancy LEDs/ File: neo900_SS_31.sch		
Title: Fancy LEDs		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 14908eb+ 20160930-18:22Z		Id: 31/37



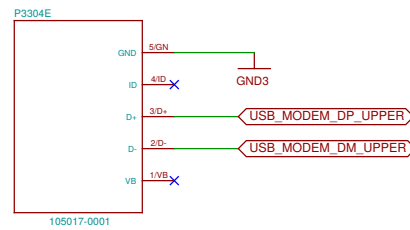
Cleaning up. The connections to BB-xM are on the next sheets.

TODO: v2 power supply still needs designing



Ersetzen durch 2A buck converter

connect to BB by some Micro-USB cable



TODO: assign

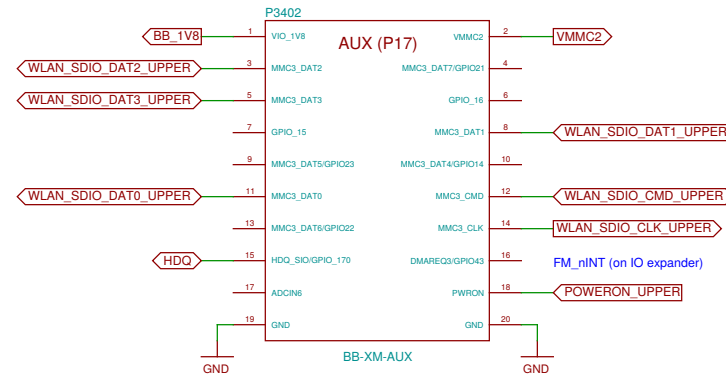
- SENS_IN1
- SENS_IN2
- PENIRQ
- STYLUS_INT
- SLIDE_SW
- KEYIRQ
- RGB_INT
- RGB_CTRL_EN
- BATTID_UPPER

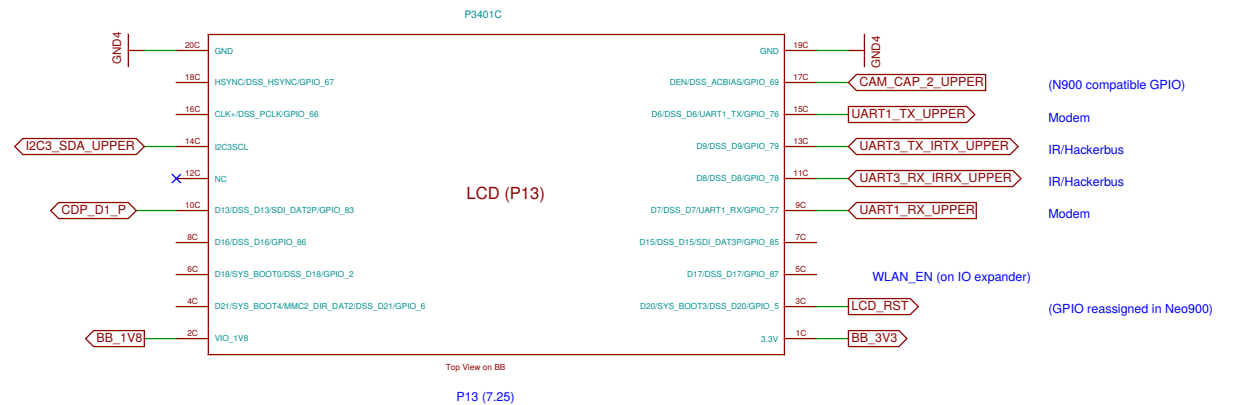
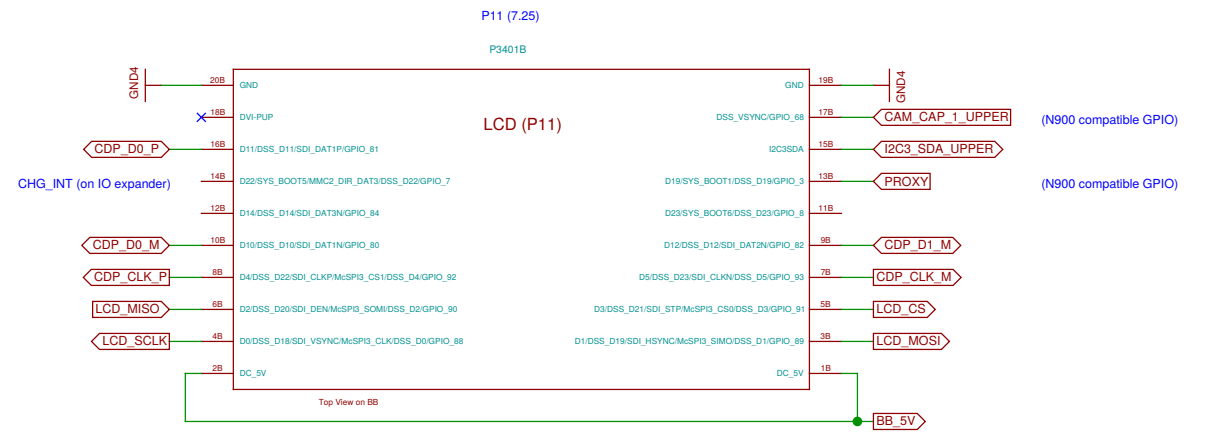
Sheet: /Connector to BB-XM/		
File: neo900_SS_33.sch		
Title: Connector to BB-XM		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 14908eb+ 20160930-18:22Z		Id: 33/37



BB-xM Main Expansion Header (P9, 7.24)

TODO: update pin names in footprint



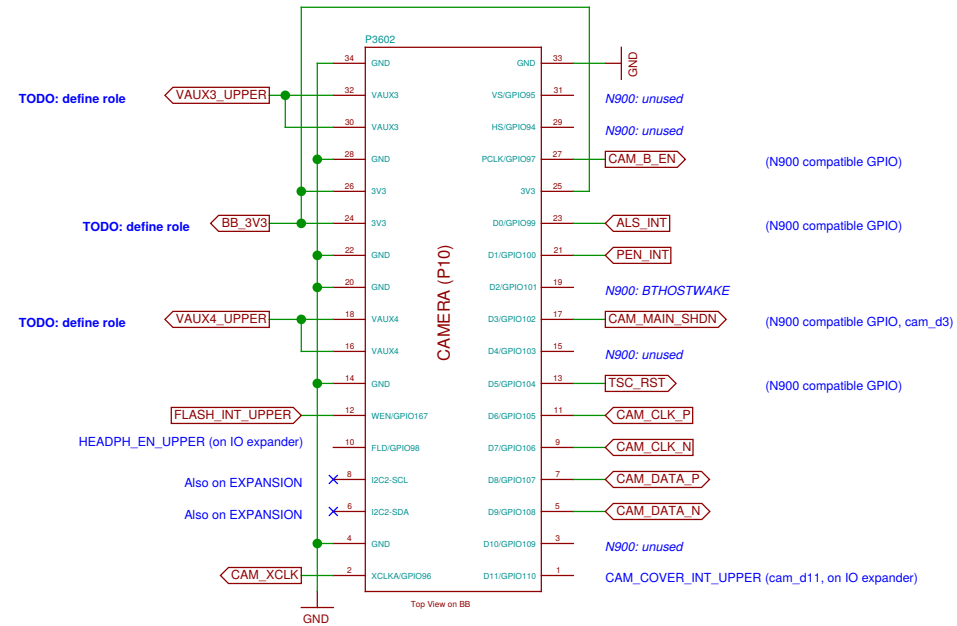


TODO: update pin names in footprint

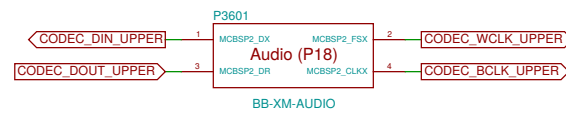
~~UART1_RTS~~ **TODO**
~~UART1_CTS~~
~~UART3_CTS_RCTX_UPPER~~
~~UART3_RTS_UPPER~~

Sheet: /BB-XM Adapter (DISP/)		
File: neo900_SS_35.sch		
Title: BB-XM Adapter (DISP)		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 14908eb+ 20160930-18:22Z		Id: 35/37

Processor Camera Port Interface (P10, 7.20.3)



TODO: update pin names in footprint



Molex Jumper cables to connect BB-XM-Adapter to Uppwer board

N3701 15015-0439	N3702 15015-0439	N3703 15015-0439
CPU	DISP	CAM

N3704 N900 case assembly

N3705 N97-CAMERA-HOLE

N3706 headset jack

N3707 STENCIL-TOP

N3708 STENCIL-BOTTOM

Sheet: /No-Solder Components/ File: neo900_SS_37.sch		
Title: No-Solder Components		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 14908eb+ 20160930-18:22Z		Id: 37/37