

Click | Here

This sheet: [index](#)

[Sheet: OTG](#)
File: neo900_SS_2.sch
OTG & Switches

[Sheet: Charger/OTG-Booster](#)
File: neo900_SS_3.sch
Charger/OTG-Booster

[Sheet: Modem Power](#)
File: neo900_SS_4.sch
Modem Power

[Sheet: Fuel Gauge](#)
File: neo900_SS_5.sch
Fuel Gauge

[Sheet: 3G/4G Modem + SIM](#)
File: neo900_SS_6.sch
3G/4G Modem + SIM

[Sheet: Dual SIM switch](#)
File: neo900_SS_7.sch
Dual SIM switch

[Sheet: Antenna connections](#)
File: neo900_SS_8.sch
Antenna connections

[Sheet: WLAN, Bluetooth, FM](#)
File: neo900_SS_9.sch
WLAN, Bluetooth, FM

[Sheet: Sensors](#)
File: neo900_SS_10.sch
Sensors

[Sheet: Audio Codec](#)
File: neo900_SS_11.sch
Audio Codec

[Sheet: Audio Headset + Mic](#)
File: neo900_SS_12.sch
Audio Headset + Mic

[Sheet: ECI](#)
File: neo900_SS_13.sch
ECI

[Sheet: Audio Handsfree](#)
File: neo900_SS_14.sch
Audio Handsfree

[Sheet: Misc](#)
File: neo900_SS_15.sch
Misc

[Sheet: RFID/NFC Reader](#)
File: neo900_SS_16.sch
RFID/NFC Reader

[Sheet: RFID/NFC Controller](#)
File: neo900_SS_17.sch
RFID/NFC Controller

[Sheet: Hackerbus](#)
File: neo900_SS_18.sch
Hackerbus

[Sheet: Infrared](#)
File: neo900_SS_19.sch
Infrared

[Sheet: B2B LOWER-UPPER](#)
File: neo900_SS_20.sch
B2B LOWER-UPPER

[Sheet: uSD Breakout Board](#)
File: neo900_SS_21.sch
uSD Breakout Board

[Sheet: B2B to LOWER](#)
File: neo900_SS_22.sch
B2B to LOWER

[Sheet: Keypad](#)
File: neo900_SS_23.sch
Keypad

[Sheet: Display-Peripherals](#)
File: neo900_SS_24.sch
Display-Peripherals

[Sheet: Display-Panel&Power](#)
File: neo900_SS_25.sch
Display-Panel&Power

Click | Here

[Sheet: CPU + PoP RAM/NAND](#)
File: neo900_SS_26.sch
CPU + PoP RAM/NAND

[Sheet: eMMC](#)
File: neo900_SS_27.sch
eMMC

[Sheet: PMU+Codec](#)
File: neo900_SS_28.sch
PMU+Codec

[Sheet: BB-XM Dummy \(TWL4030\)](#)
File: neo900_SS_29.sch
BB-XM Dummy (TWL4030)

[Sheet: Camera](#)
File: neo900_SS_30.sch
Camera

[Sheet: Fancy LEDs](#)
File: neo900_SS_31.sch
Fancy LEDs

[Sheet: Basic LEDs](#)
File: neo900_SS_32.sch
Basic LEDs

[Sheet: Connector to BB-XM](#)
File: neo900_SS_33.sch
Connector to BB-XM

[Sheet: BB-XM Adapter \(CPU\)](#)
File: neo900_SS_34.sch
BB-XM Adapter (CPU)

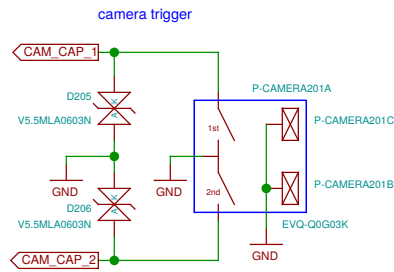
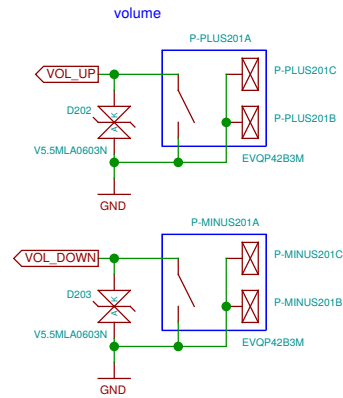
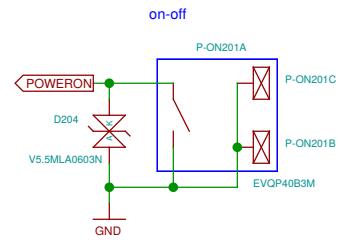
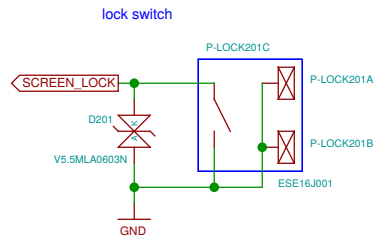
[Sheet: BB-XM Adapter \(DISP\)](#)
File: neo900_SS_35.sch
BB-XM Adapter (DISP)

[Sheet: BB-XM Adapter \(CAM\)](#)
File: neo900_SS_36.sch
BB-XM Adapter (CAM)

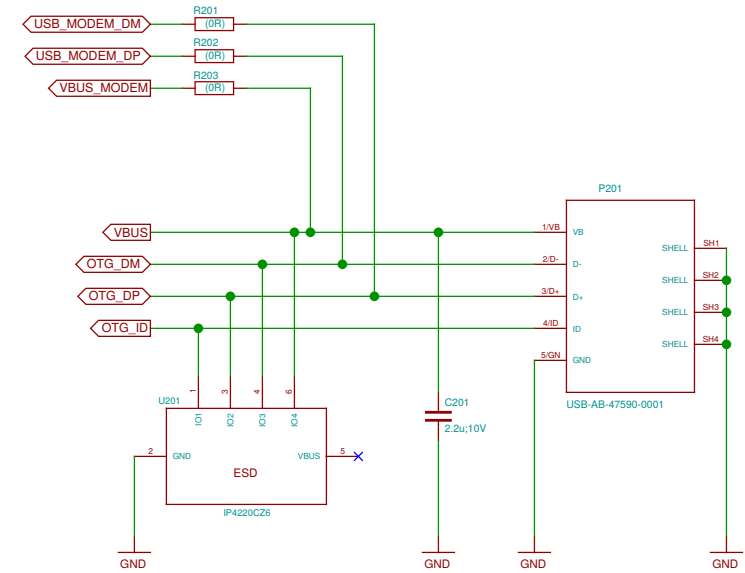
[Sheet: No-Solder Components](#)
File: neo900_SS_37.sch
No-Solder Components

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	Rev:
Plotted by eeshow 14908eb+ 20160930-18:22Z		Id: 1/37



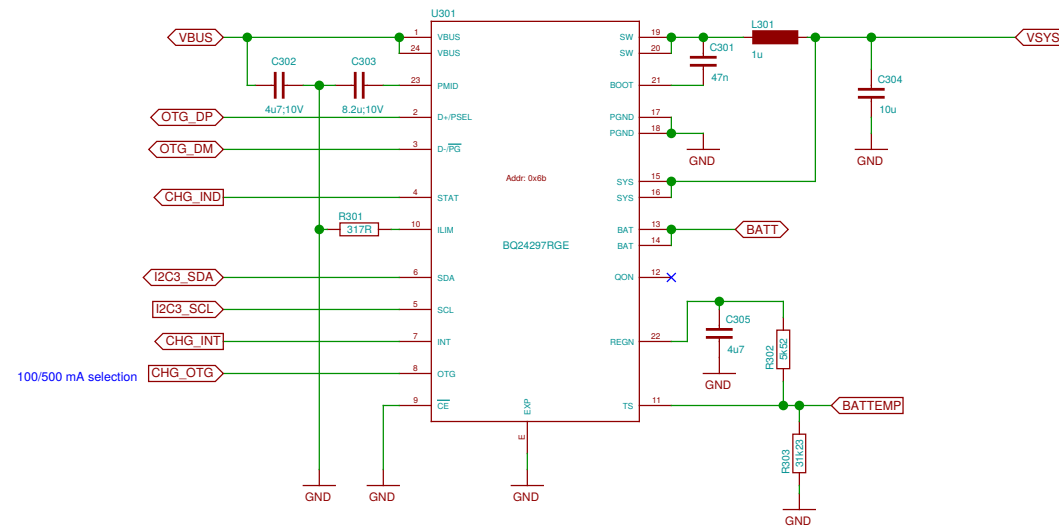
can be used to test/operate the modem through the OTG port (w/o UPPER PCB)



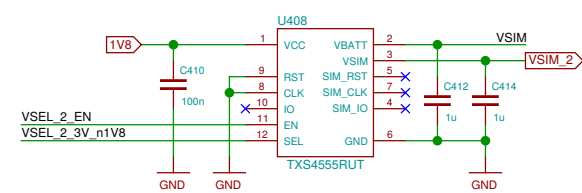
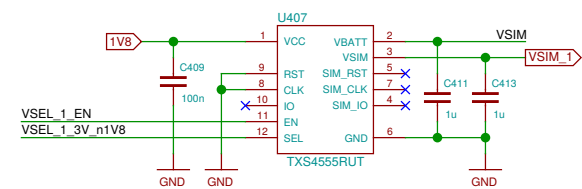
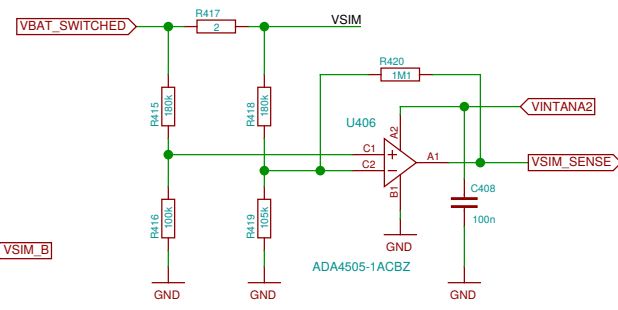
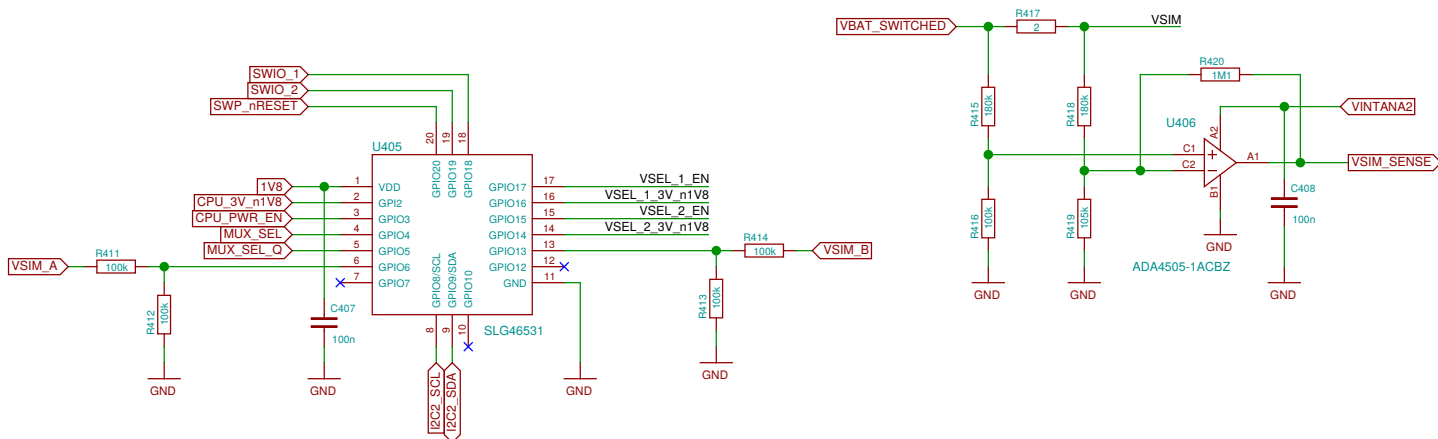
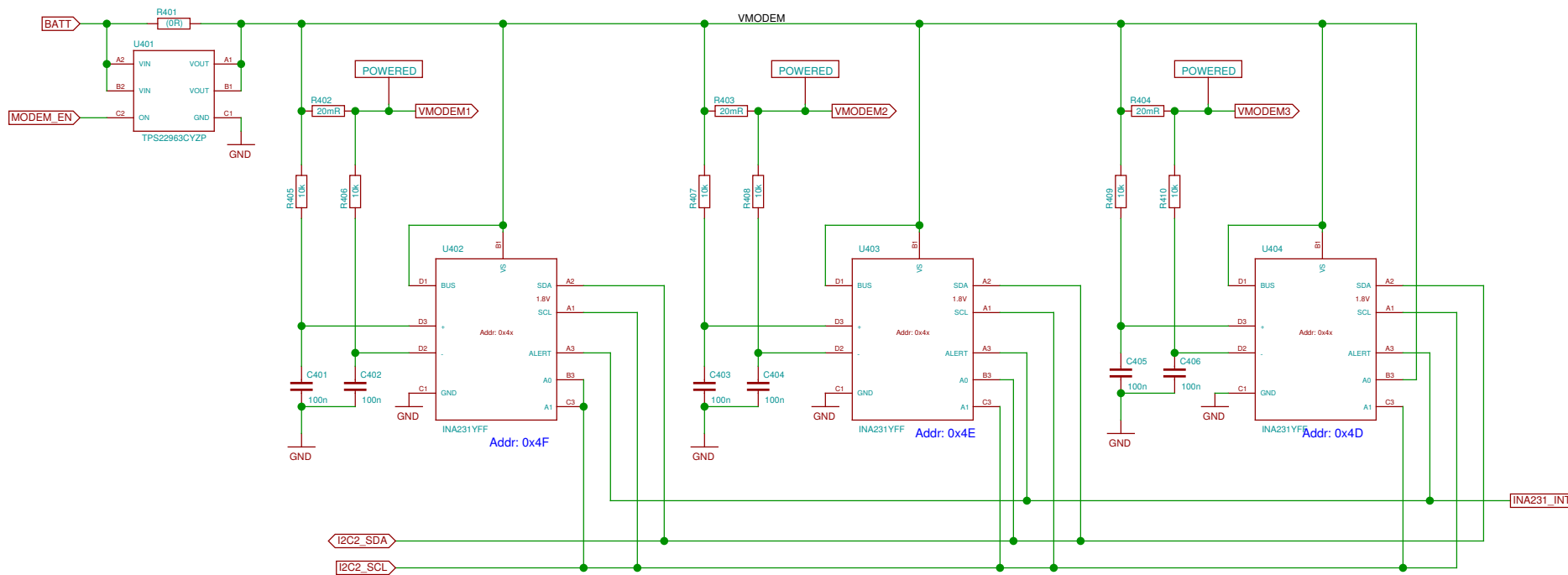
place in scan matrix? would need 3-4 wires to UPPER board instead of 2

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

TODO: VBAT_SWITCHED, with 1V8 as "enable"

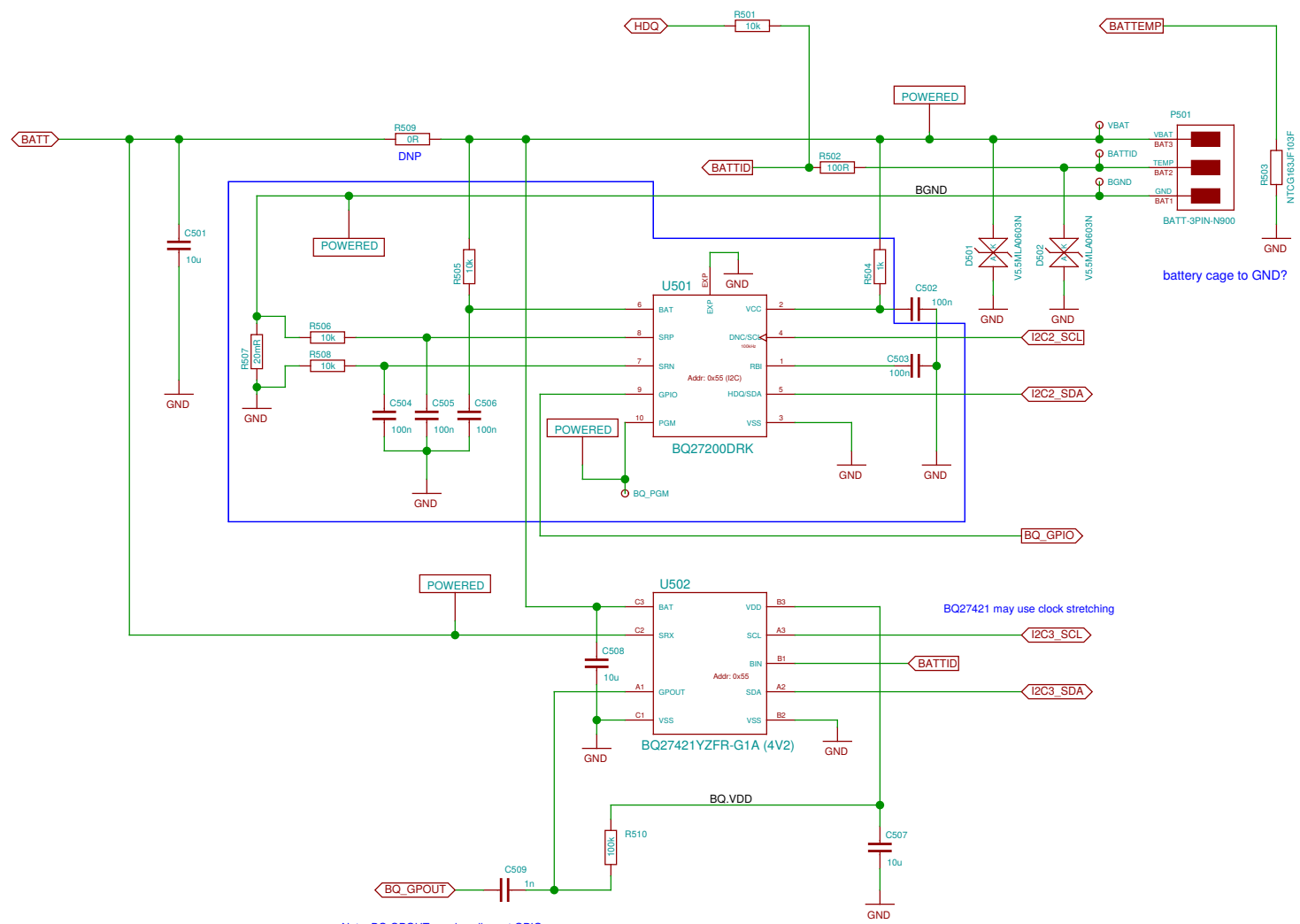


Sheet: /Charger/OTG-Booster/ File: neo900_SS_3.sch		
Title: Charger/OTG-Booster		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 14908eb+ 20160930-18:22Z		Id: 3/37



TODO: update SLG design for changed pins

TODO: does BATTID go to UPPER, too ?

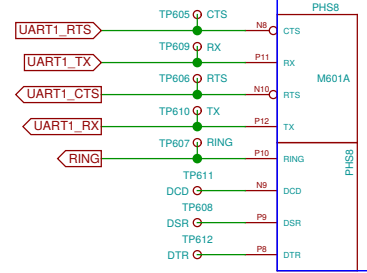
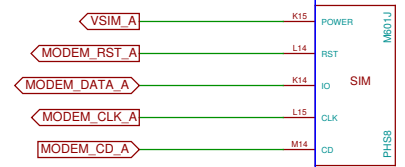
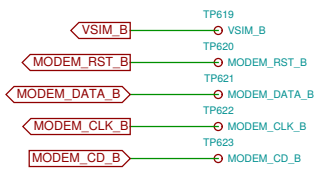
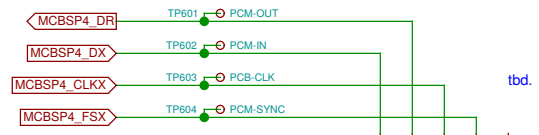
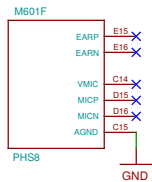


battery cage to GND?

BQ27421 may use clock stretching

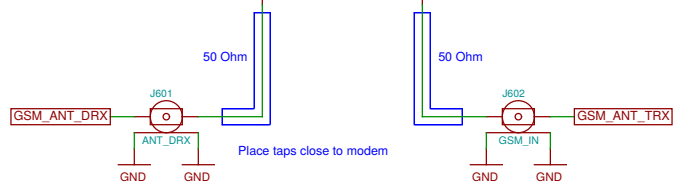
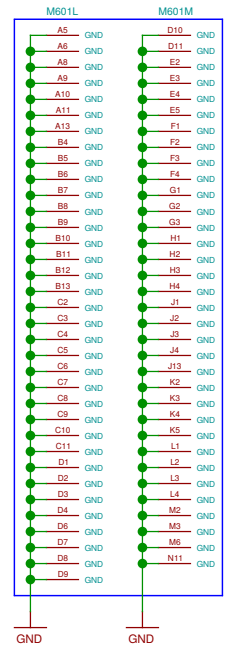
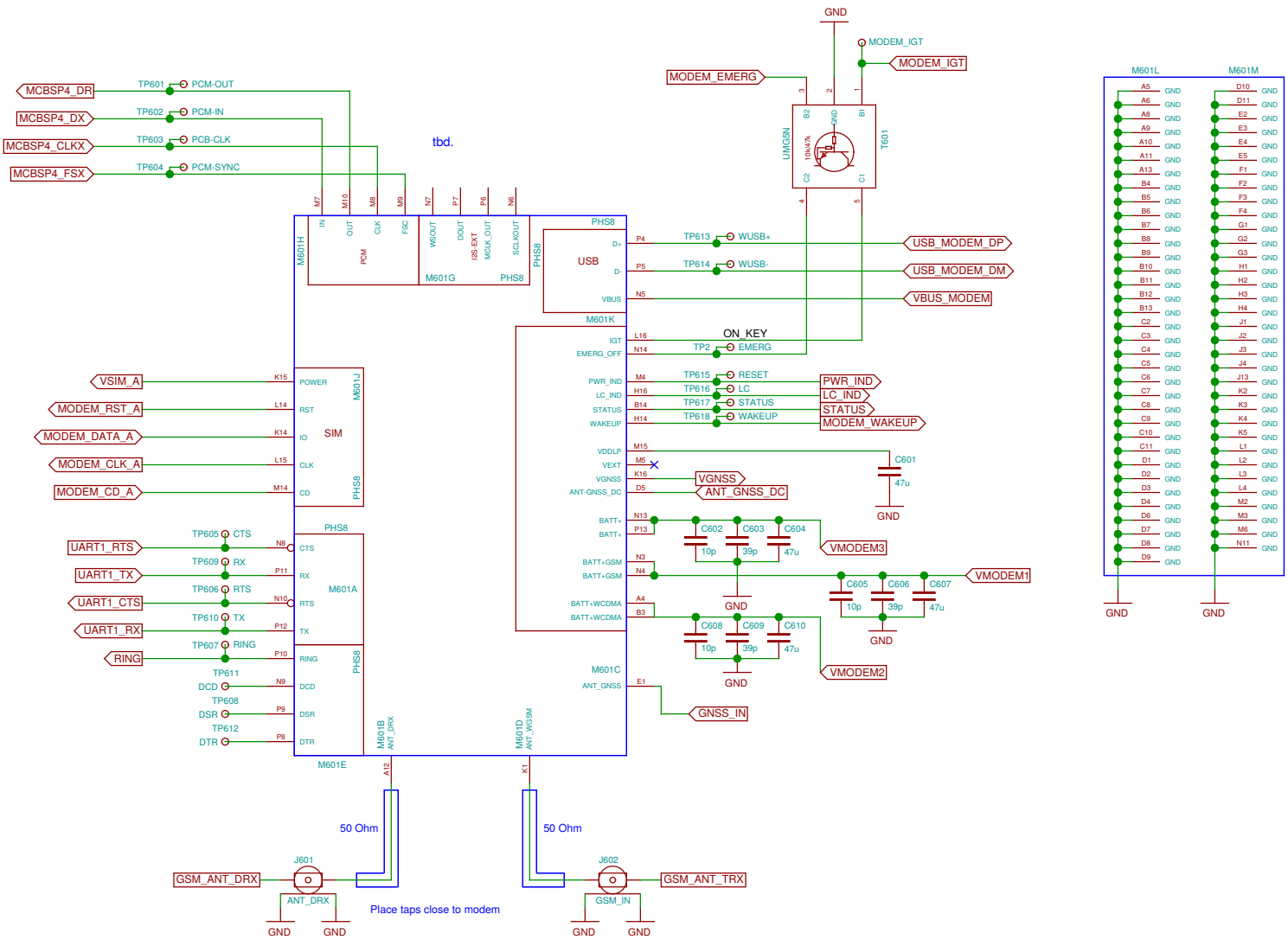
Note: BQ.GPOUT needs pull-up at GPIO.

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	



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?)

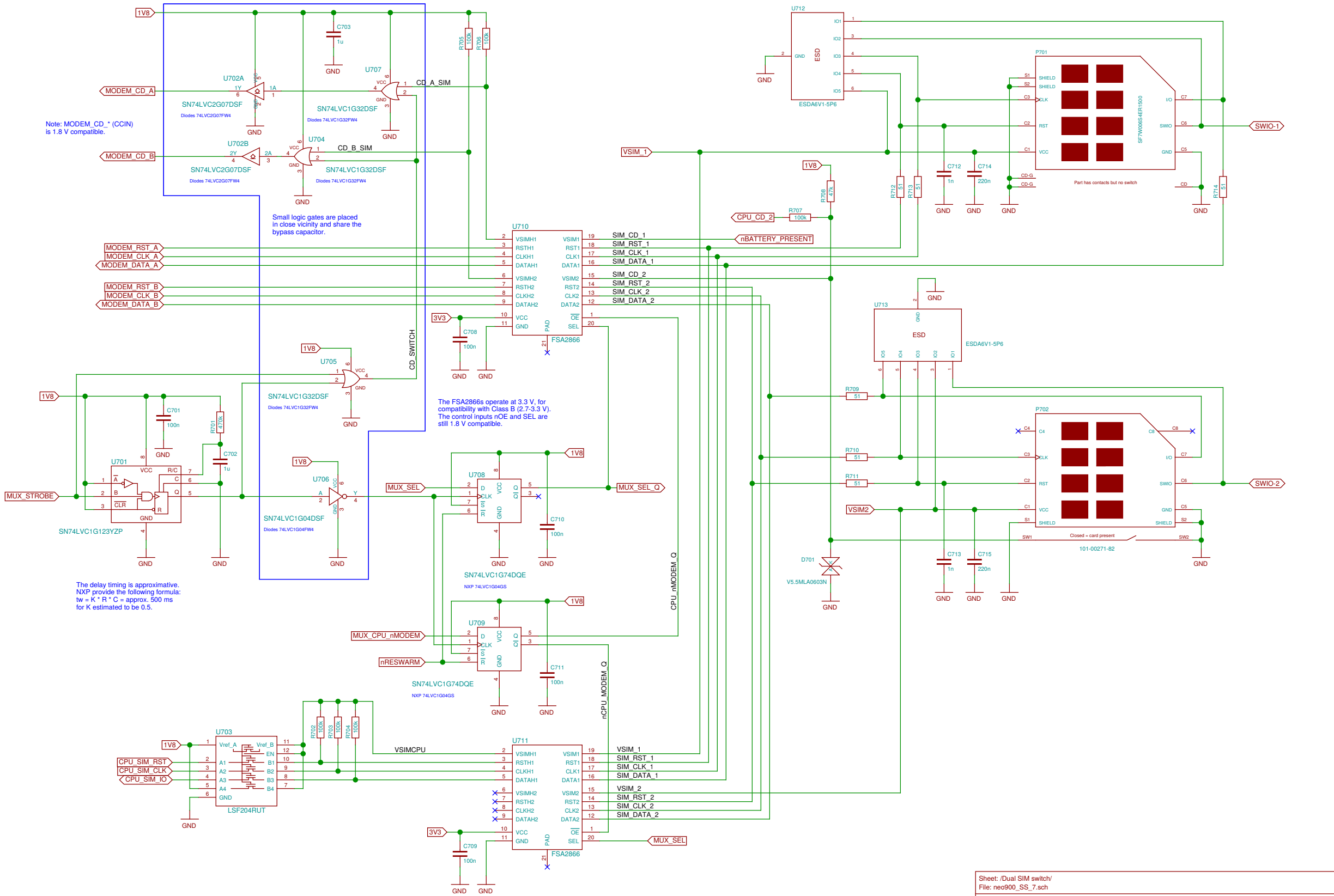


Note: MODEM_CD_* (CCIN) is 1.8 V compatible.

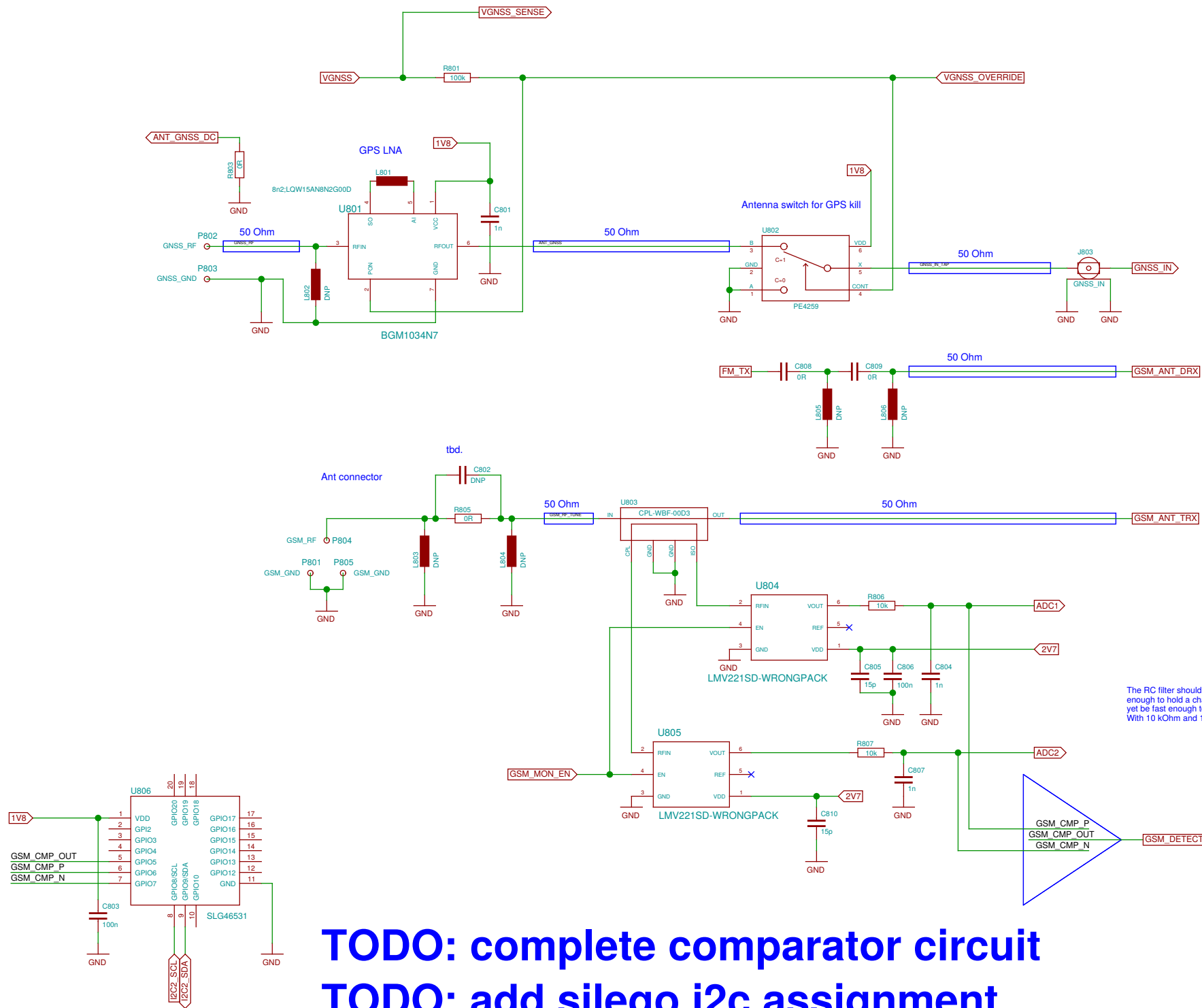
Small logic gates are placed in close vicinity and share the bypass capacitor.

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.

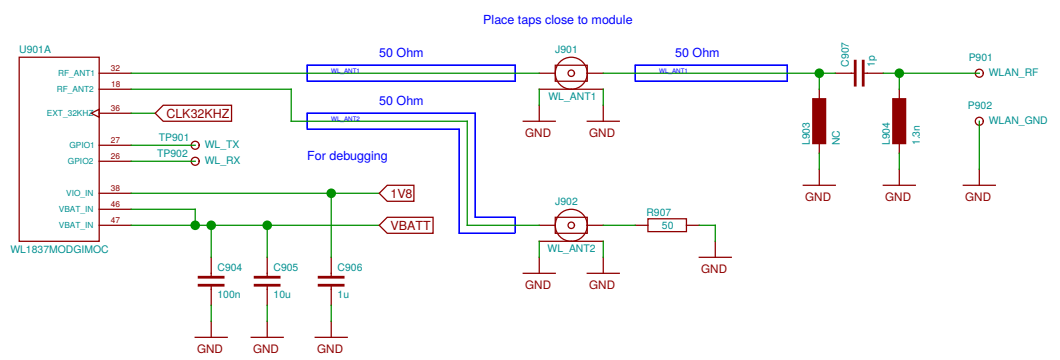


Sheet: /Dual SIM switch/ File: neo900_SS_7.sch		
Title: Dual SIM switch		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eshow 14908eb+ 20160930-18:22Z		Id: 7/37

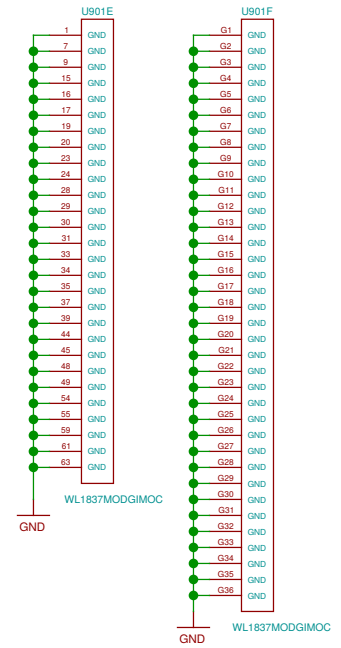
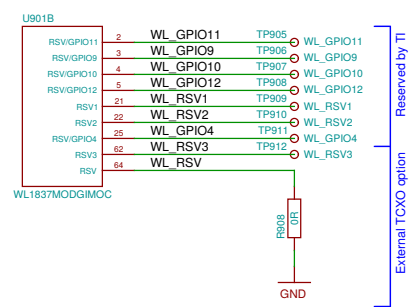
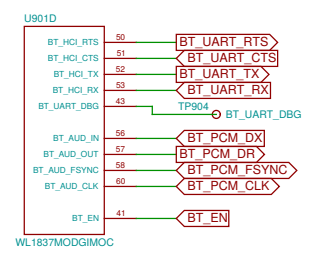
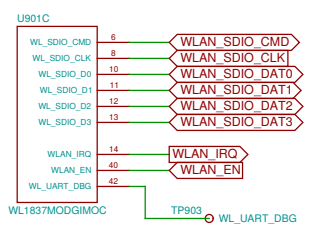


The RC filter should have C large enough enough to hold a charge in pulsed operation, yet be fast enough to detect short activity. With 10 kOhm and 1 nF, we get about 16 kHz.

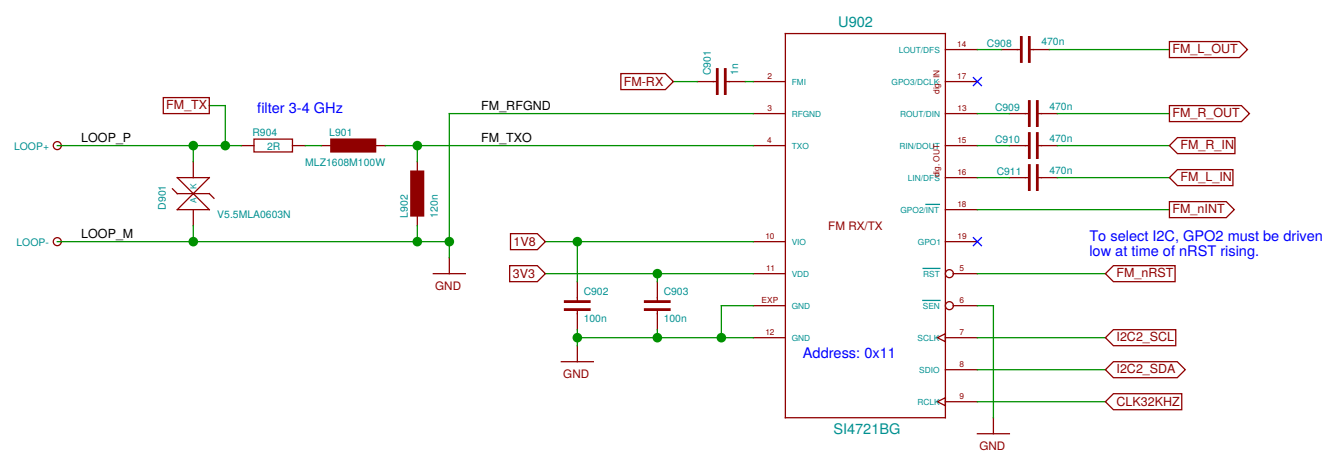
TODO: complete comparator circuit
TODO: add silego i2c assignment
TODO: iox



TODO: assign footprints

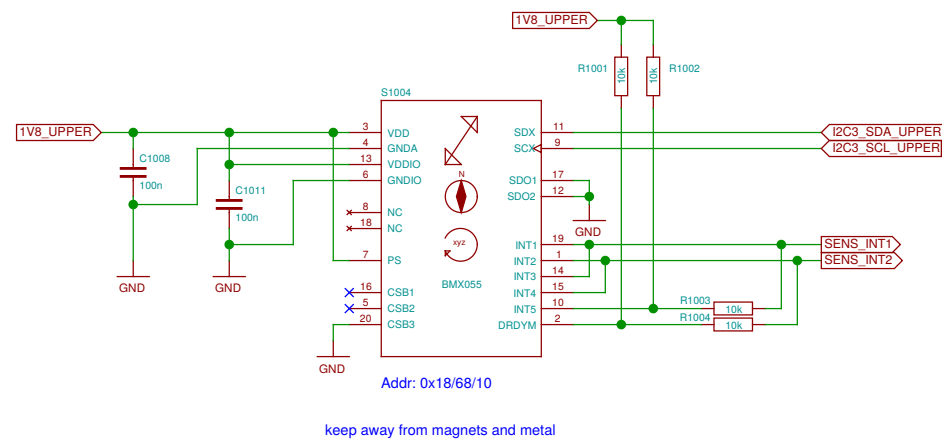
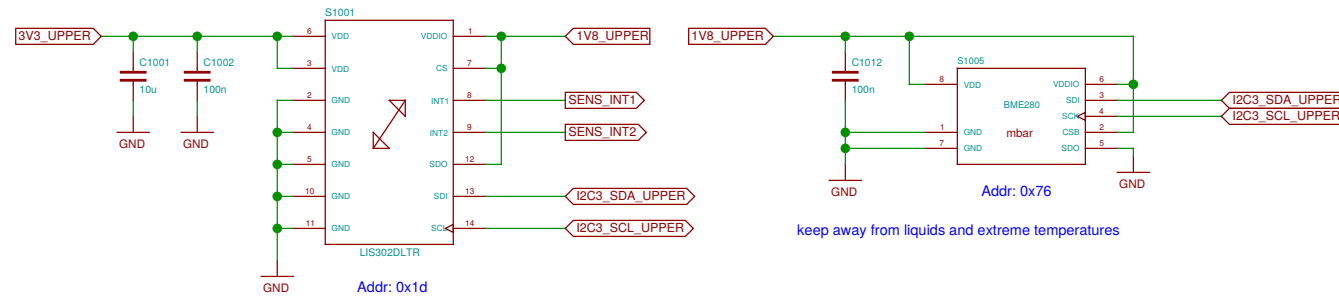


connect > 10cm loop or stub antenna

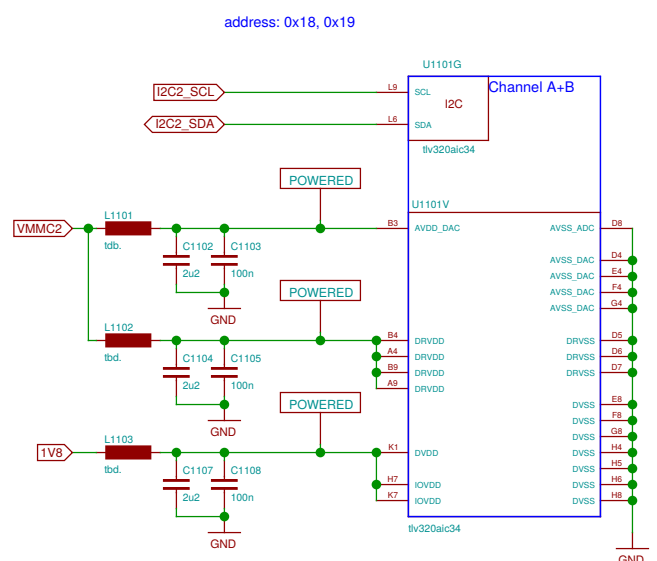
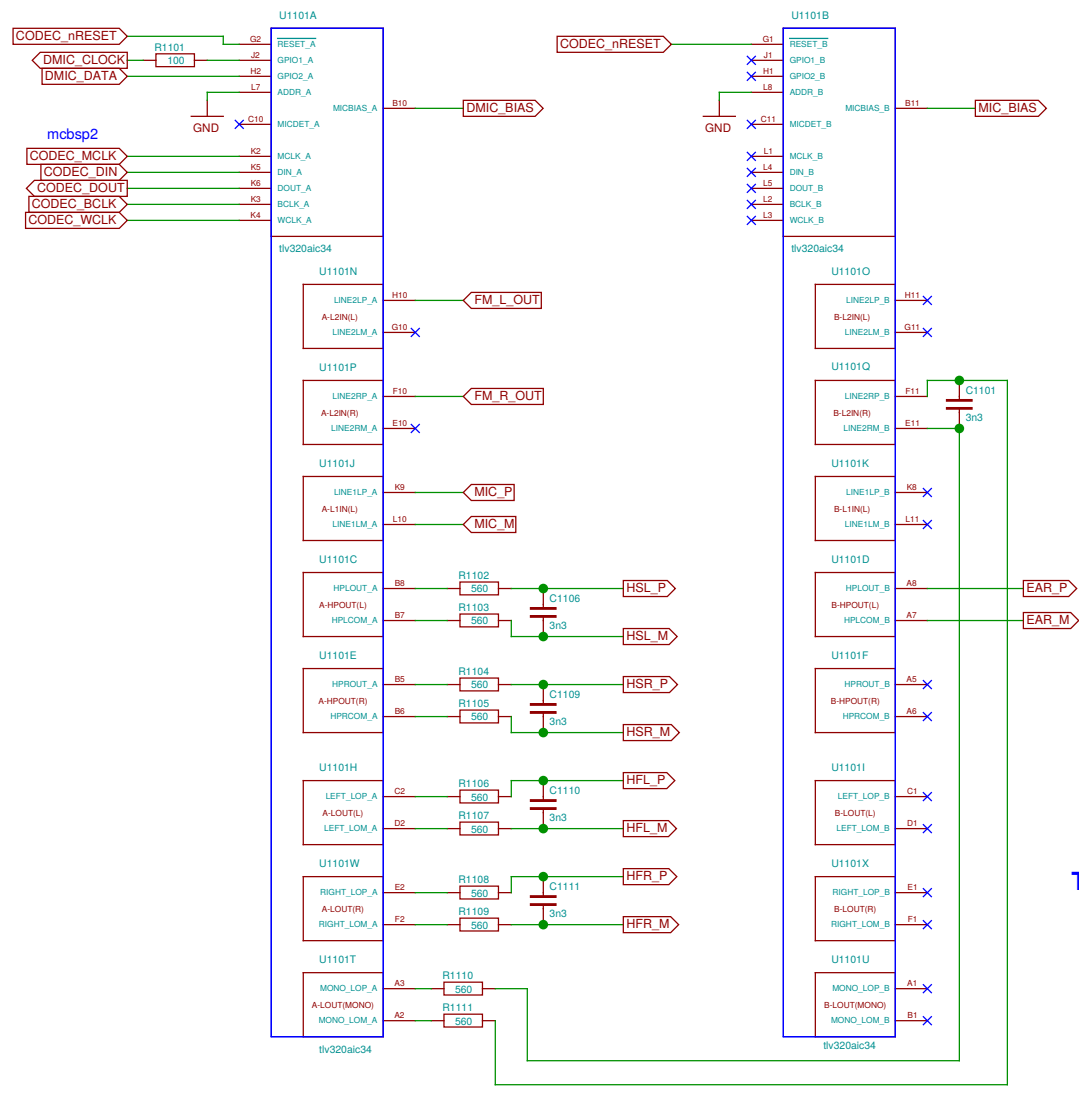


TODO: check caps

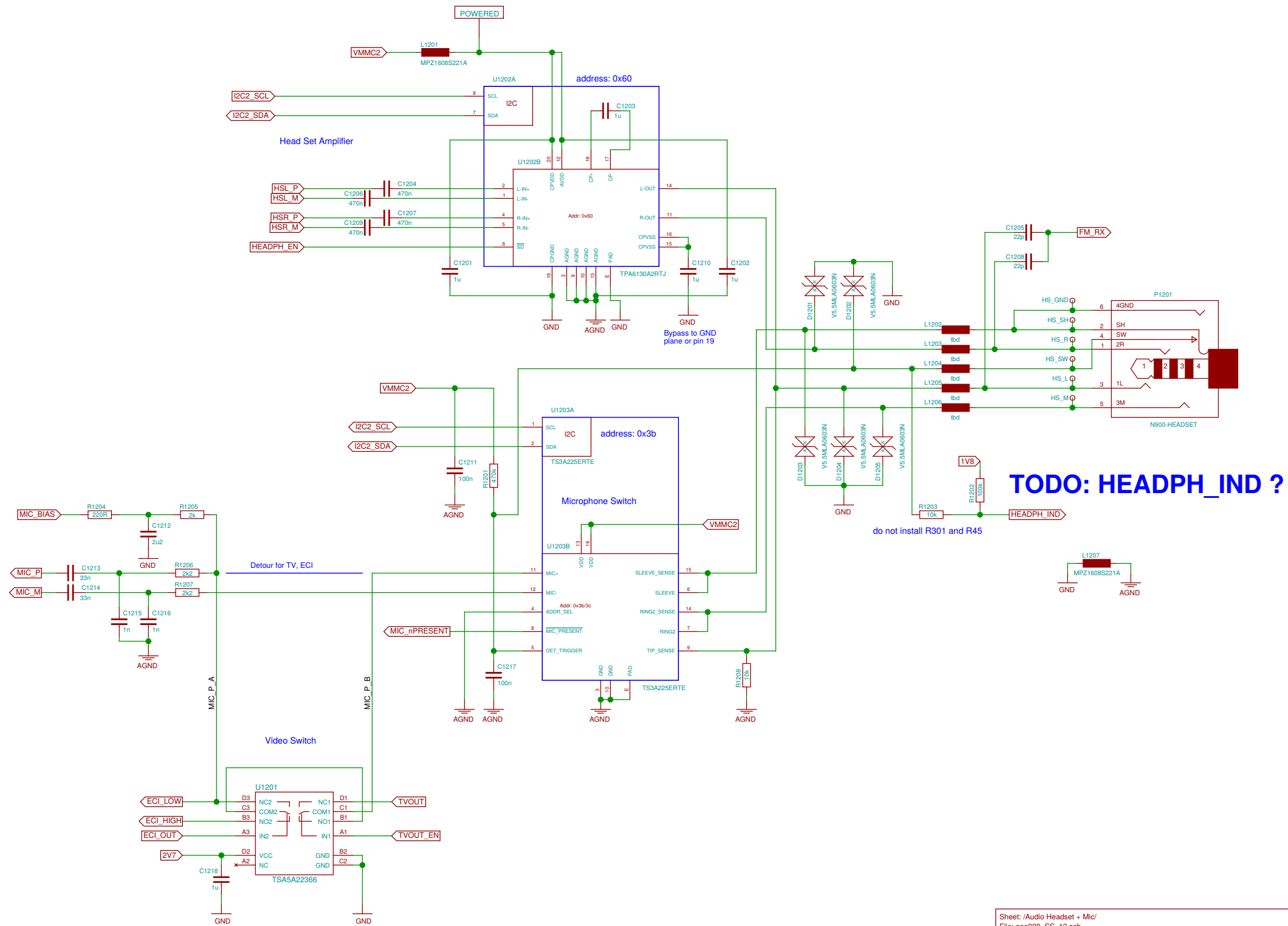
Si4705 is pin compatible (mostly) but RX-only

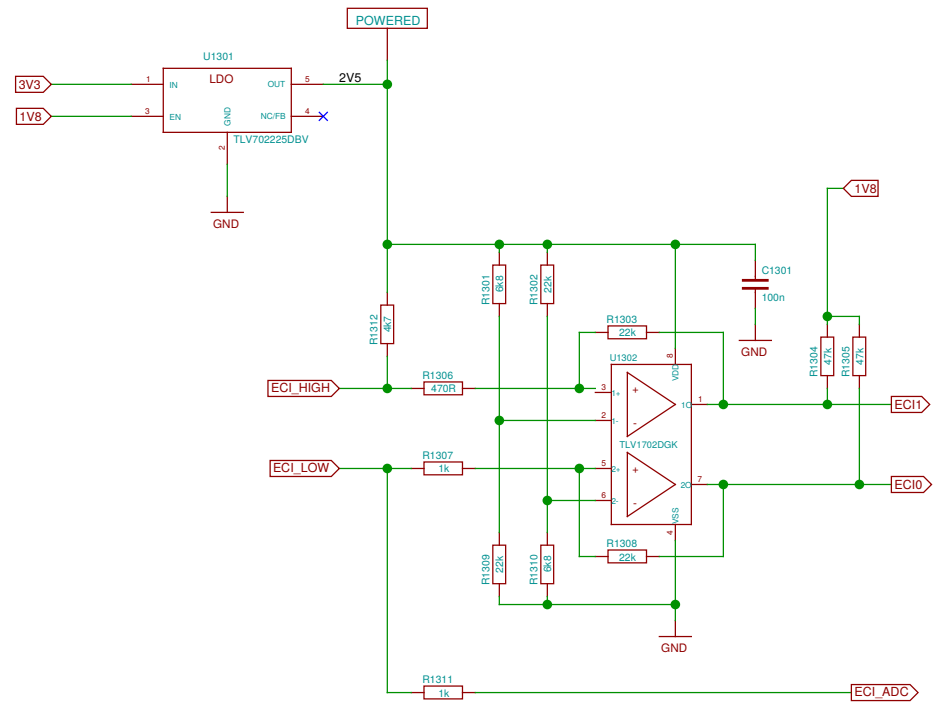


problem: this is a 0.5mm BGA making lower board expensive
 but it appears to be not extremely critical (only 3 rows and inner ring is GND)
 problem: analog mic is on upper board
 alternative: place on upper board (to be evaluated)

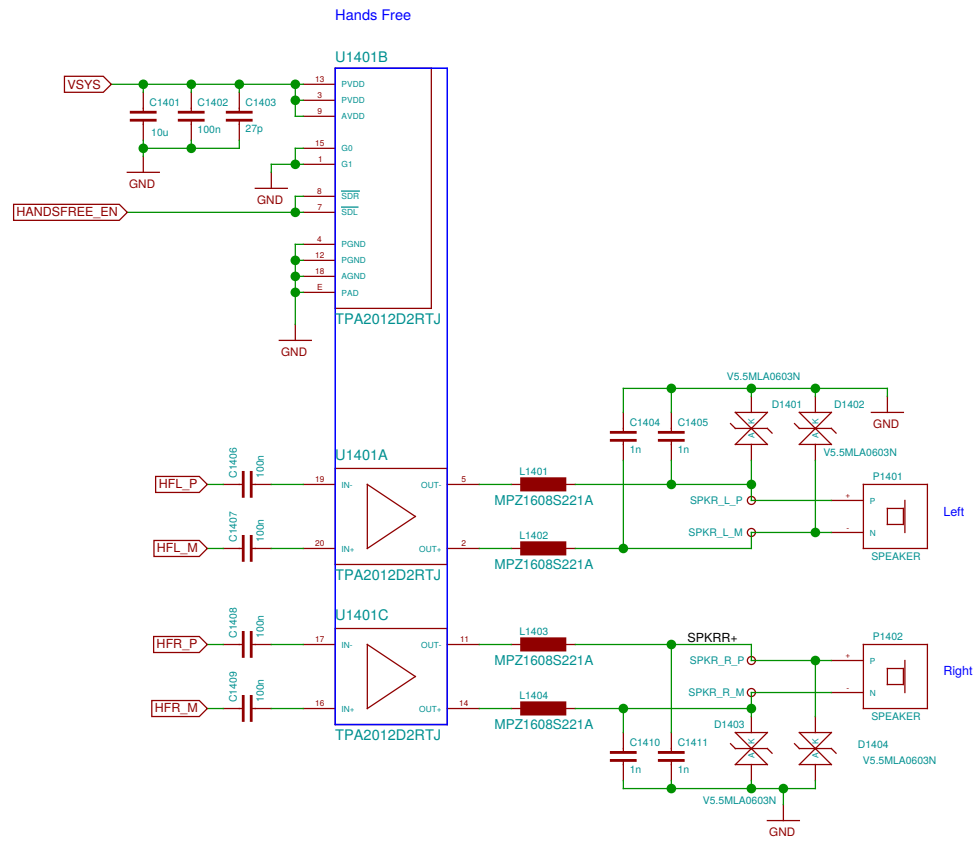


TODO: assign FM out

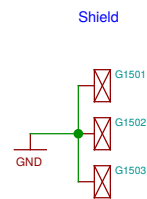
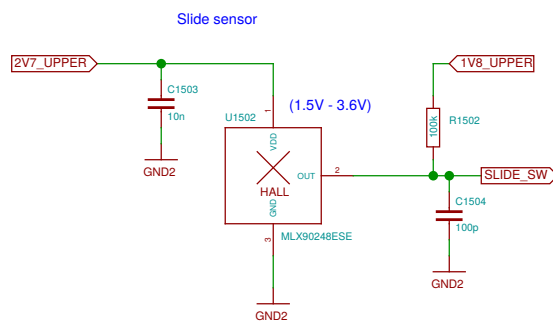
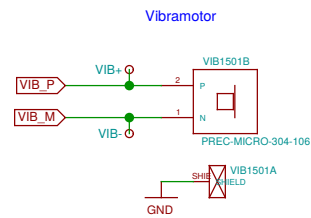
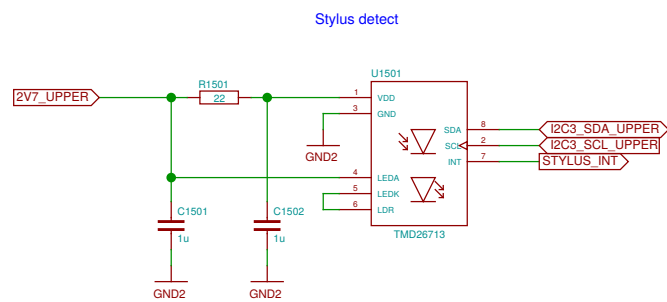




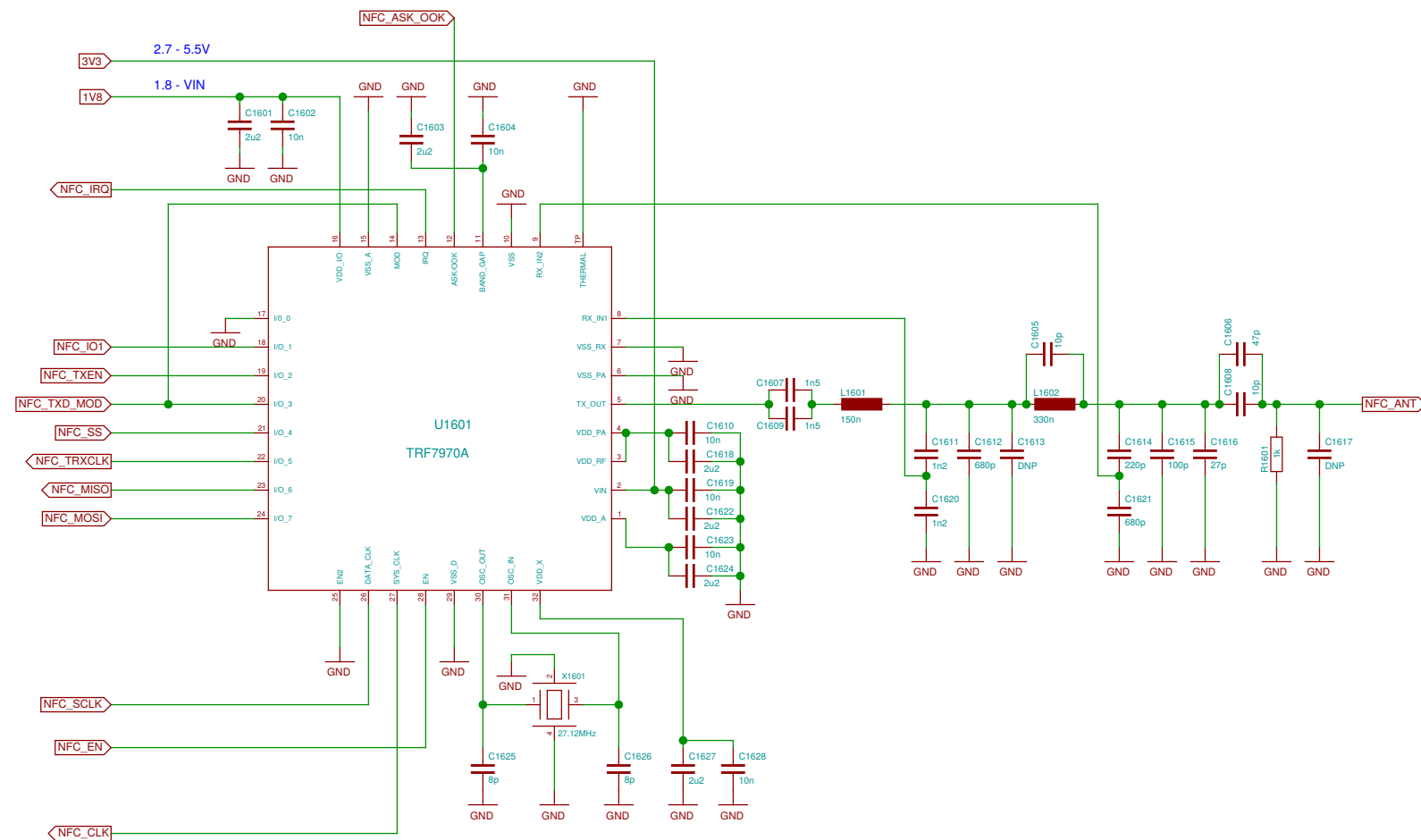
Sheet: /ECI/		
File: neo900_SS_13.sch		
Title: ECI		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 14908eb+ 20160930-18:22Z		Id: 13/37



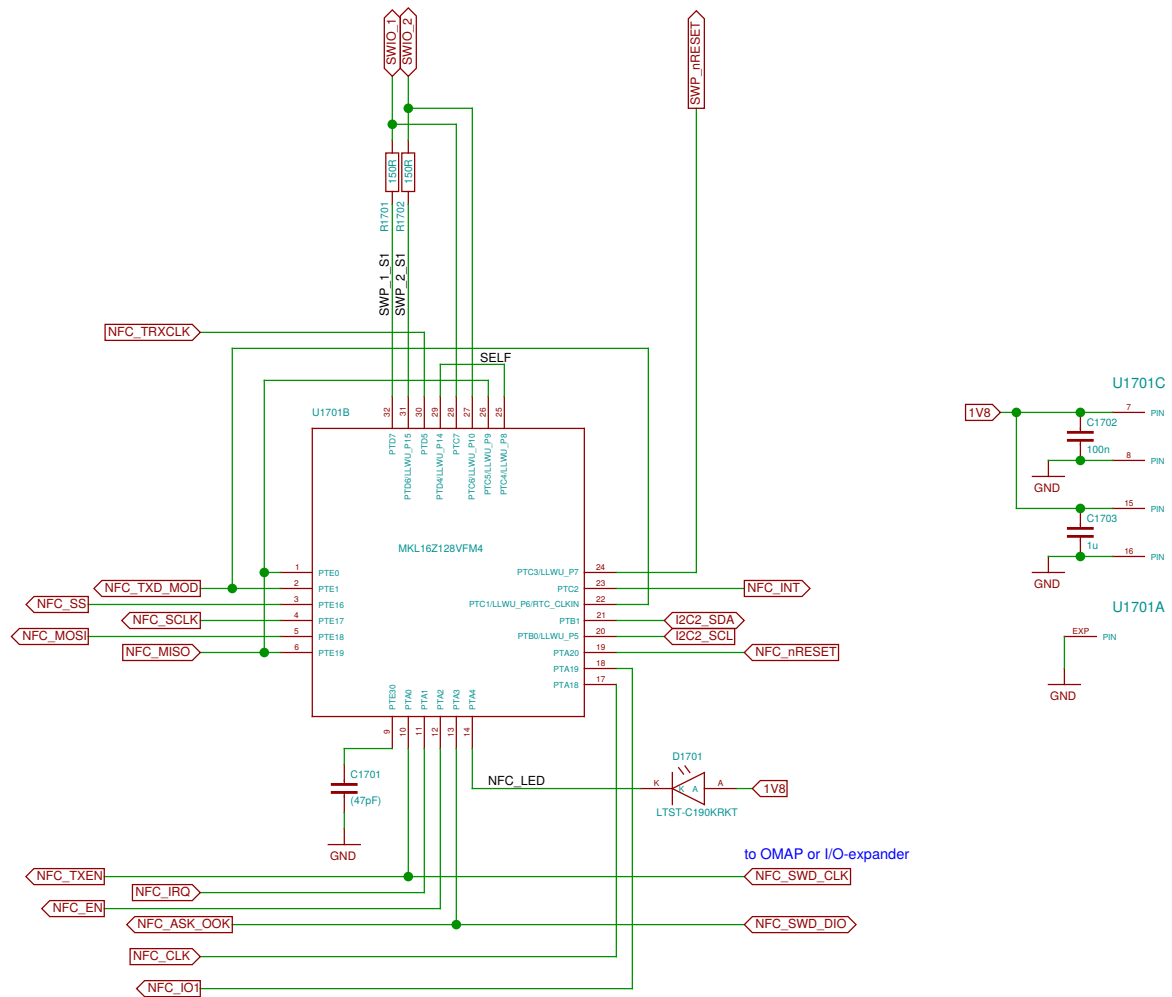
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Title: Audio Handsfree		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 14908eb+ 20160930-18:22Z		Id: 14/37



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

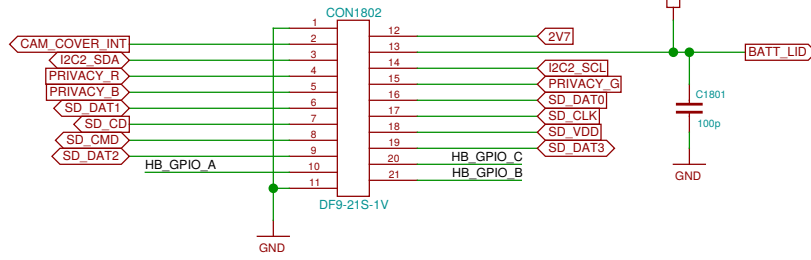
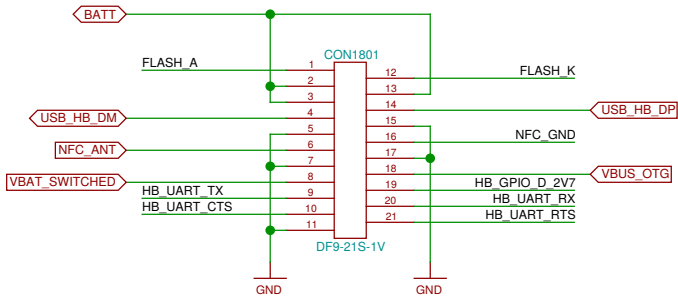


Some choices, 3.2 x 2.6 mm, 8-10 pF:
 NDK NX3225GA-27.12M-STD-CRG-2
 NDX NX3225SA-27.12M-STD-CSR-3
 Tattien XXCCEINANF-27.120000

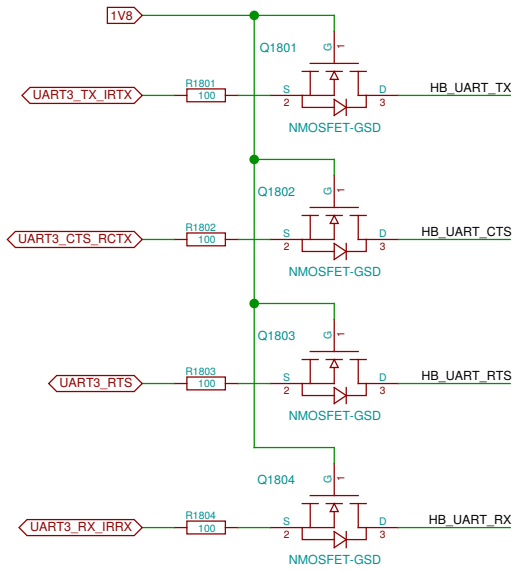
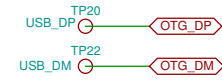


NOTE: this is mangling up Breakout and Lower board connectors
 Signals may have to be fed through the breakout board connector increasing resistance

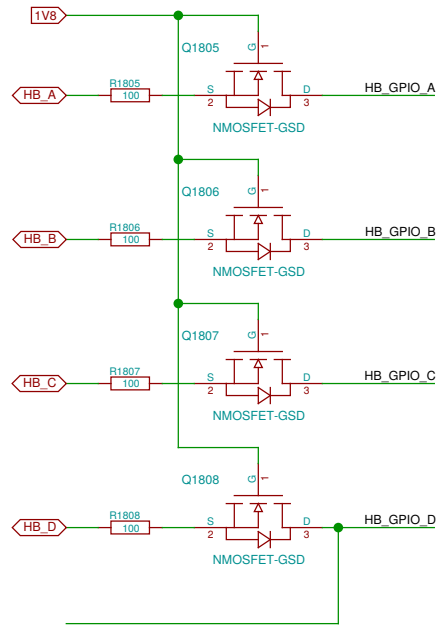
The LOWER-BOB interconnect is defined in the Hackerbus specification
<http://neo900.org/stuff/papers/hb.pdf>



TODO: define NFC-GND



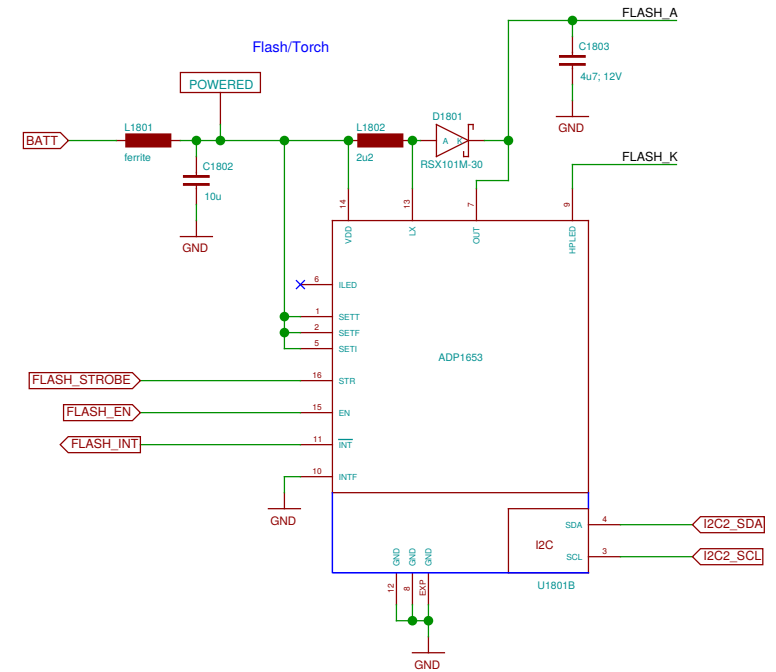
TODO: use arrays



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?)

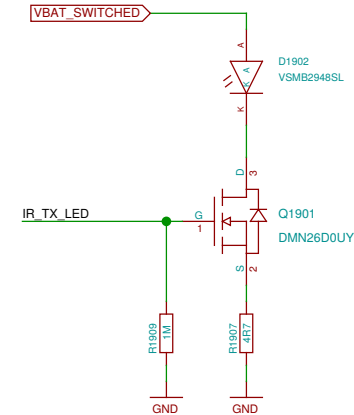
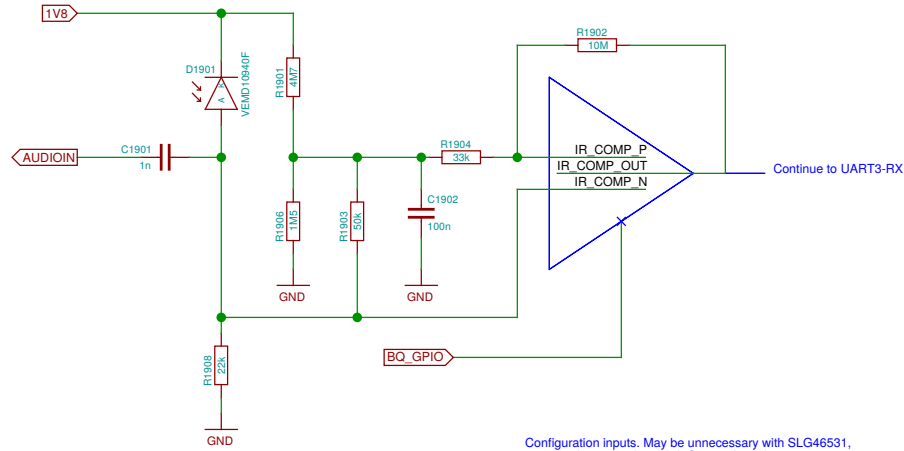
TODO: HB USB PHY goes here



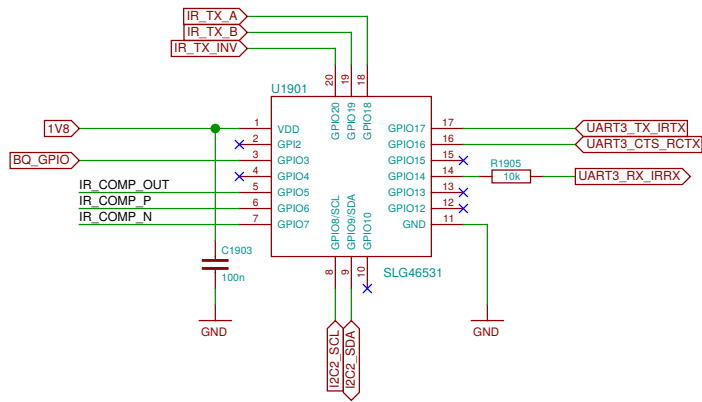
Sheet: /Hackerbus/ File: neo900_SS_18.sch		Title: Hackerbus	
Size: A3	Date: 17 JUL 2016	Rev:	
Plotted by eeshow 14908eb+ 20160930-18:22Z		Id: 18/37	

TODO: update D1901 footprint

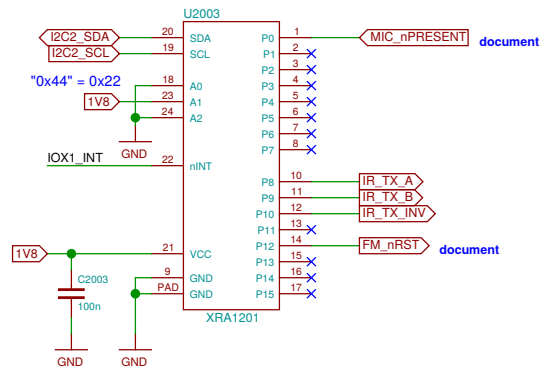
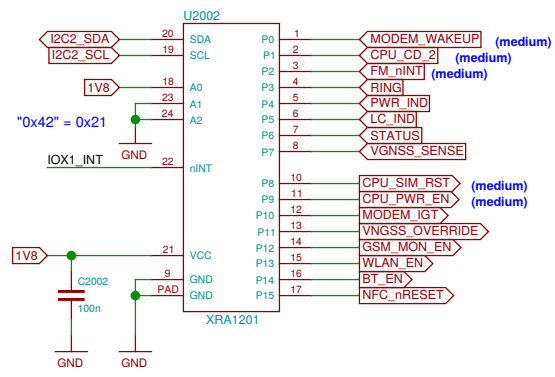
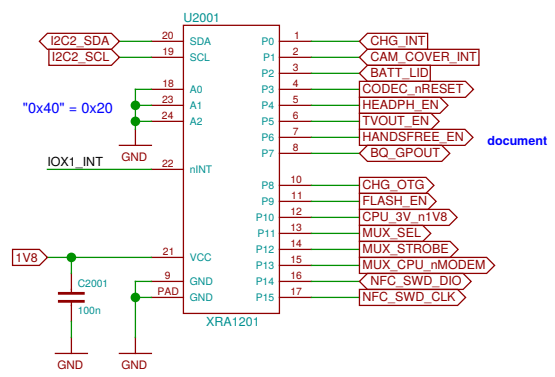
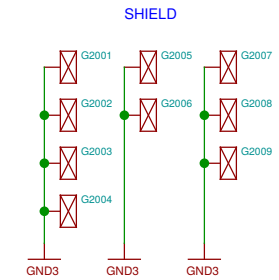
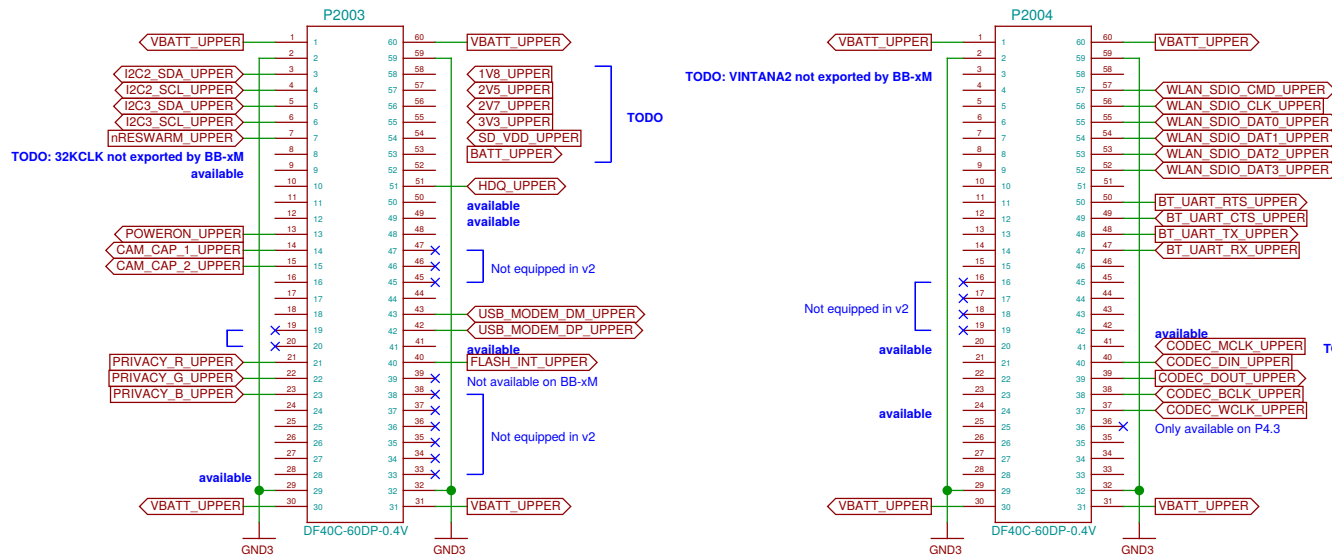
NOTE: 1V8 may be quite noisy



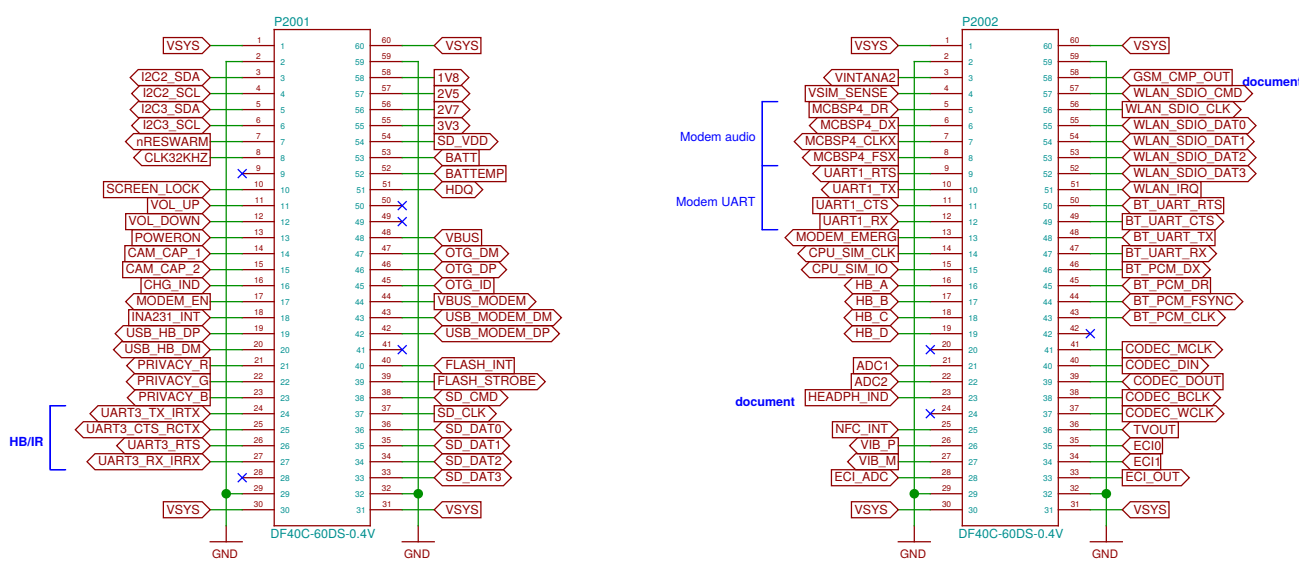
Configuration inputs. May be unnecessary with SLG46531, once configuration through I2C is confirmed.



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

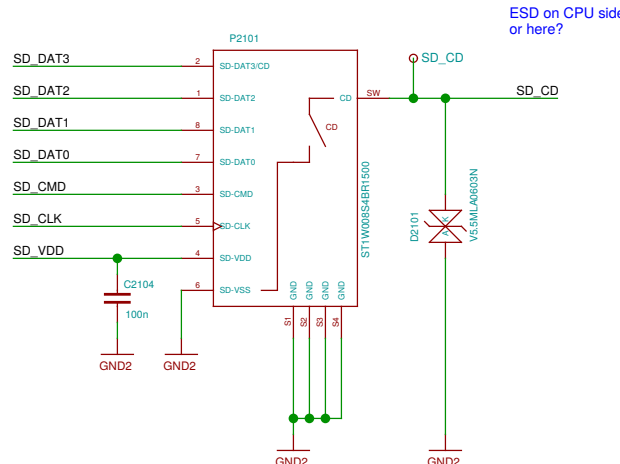
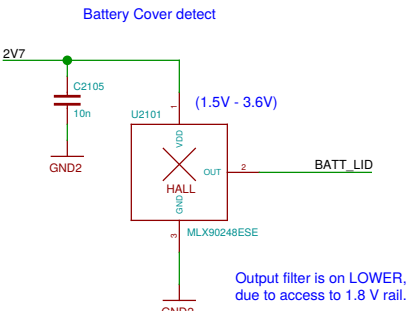
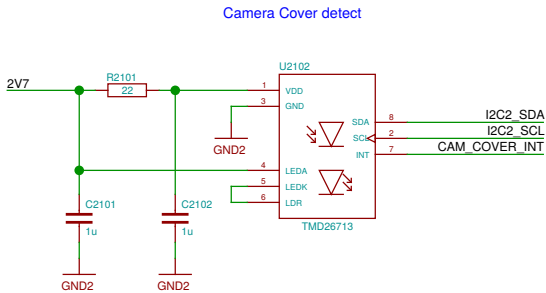


UPPER
LOWER

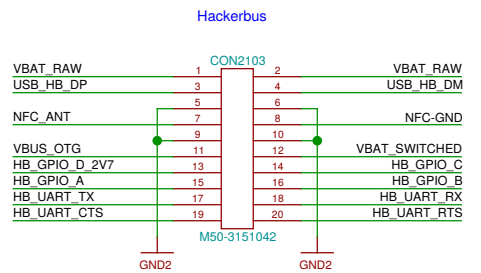
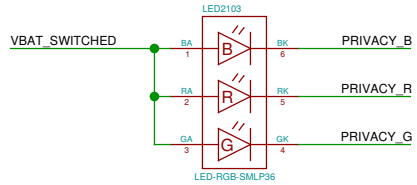
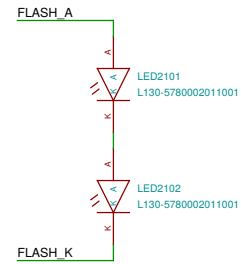
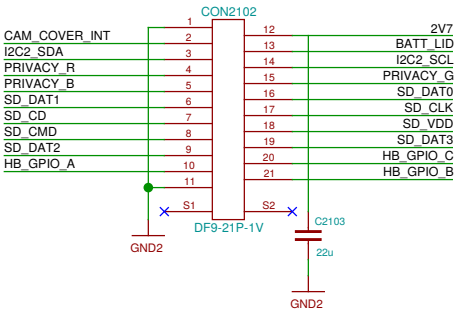
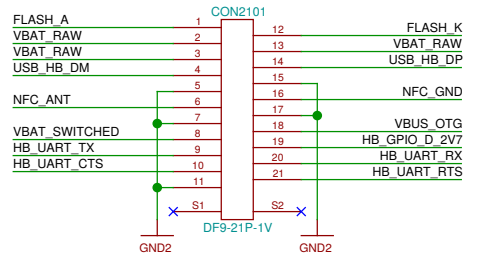


Current rating per contact: 0.3 A

TODO: add ESD protection (here)



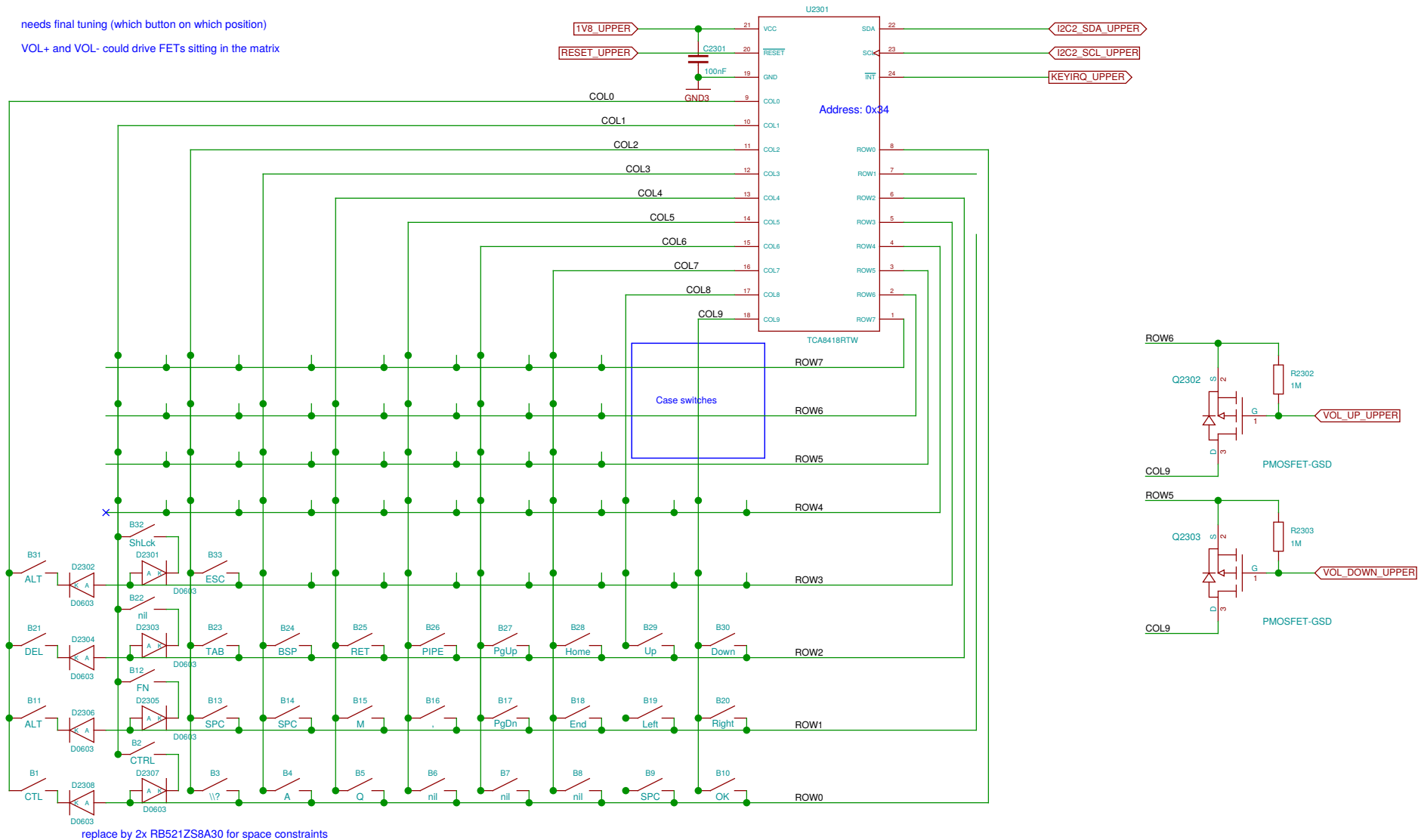
The LOWER_BOB interconnect is defined in the Hackerbus specification <http://neo900.org/stuff/papers/hb.pdf>



TODO: consider sheet for deletion

Sheet: /B2B to LOWER/ File: neo900_SS_22.sch		
Title: B2B to LOWER		
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



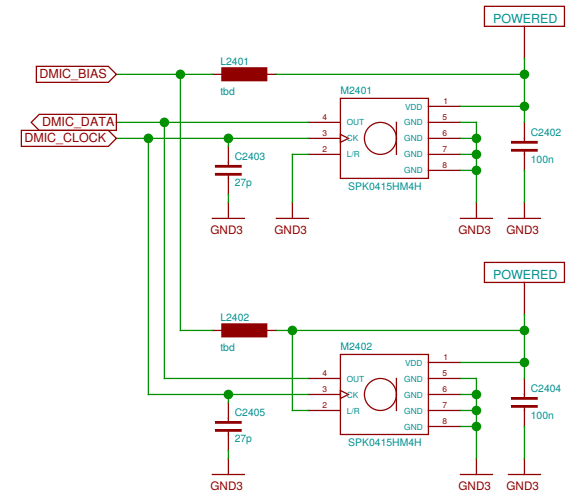
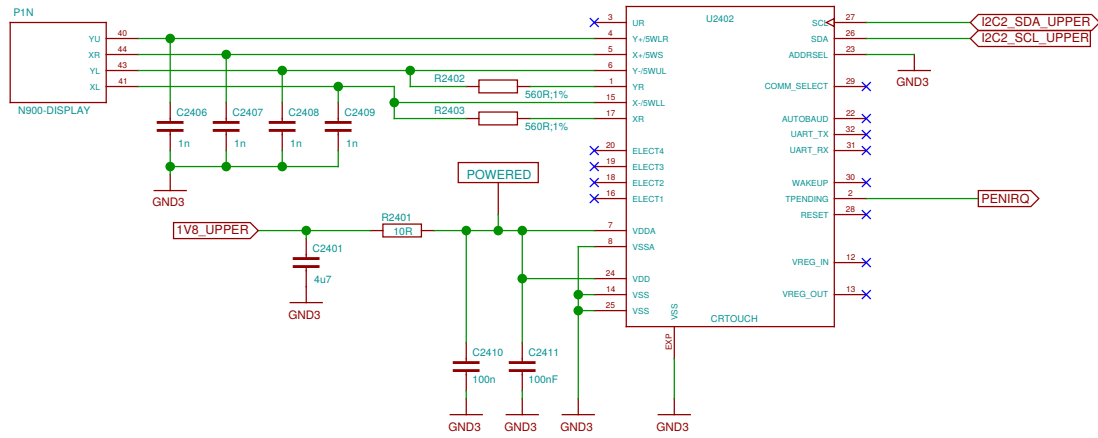
replace by 2x RB521ZS8A30 for space constraints

TODO: key names are nonsense

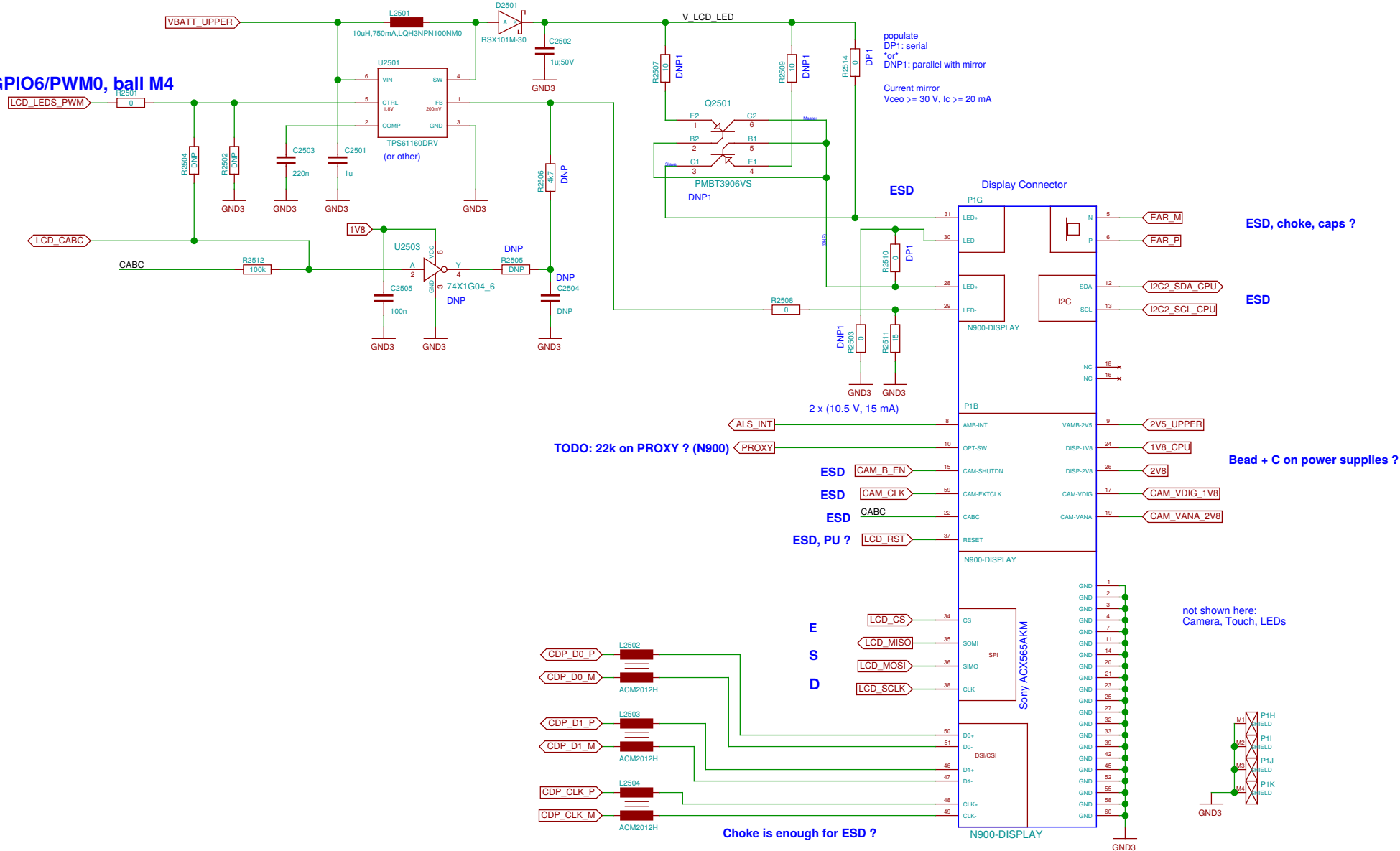
TODO: rearrange matrix to avoid diodes ?

Sheet: /Keypad/ File: neo900_SS_23.sch		
Title: Keypad		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 14908eb+ 20160930-18:22Z		Id: 23/37

Resistive Touch (display connector)



TWL4030, GPIO6/PWM0, ball M4



OMAP is not part of v2

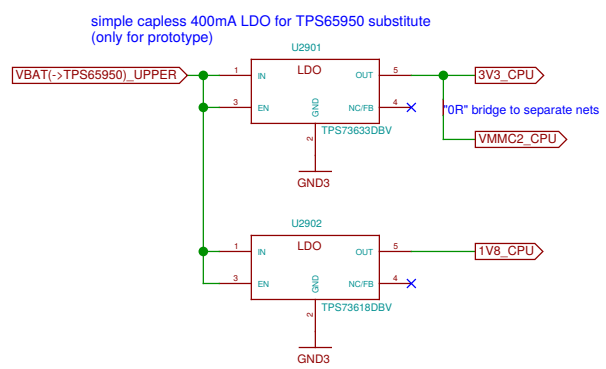
Sheet: /CPU + PoP RAM/NAND/ File: neo900_SS_26.sch		
Title: CPU + PoP RAM/NAND		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 14908eb+ 20160930-18:22Z		Id: 26/37

eMMC is not part of v2

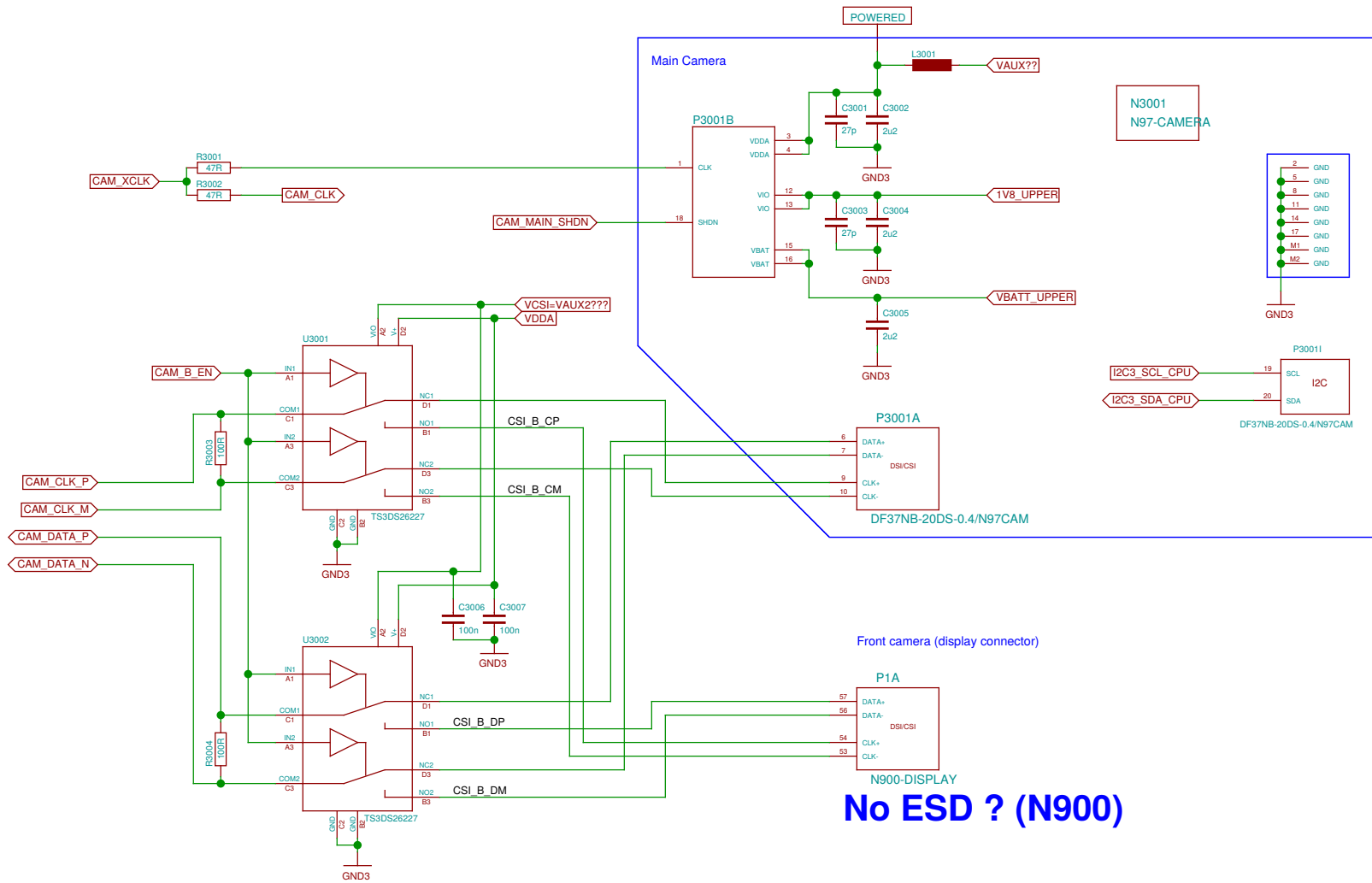
Sheet: /eMMC/ File: neo900_SS_27.sch		
Title: eMMC		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 14908eb+ 20160930-18:22Z		Id: 27/37

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

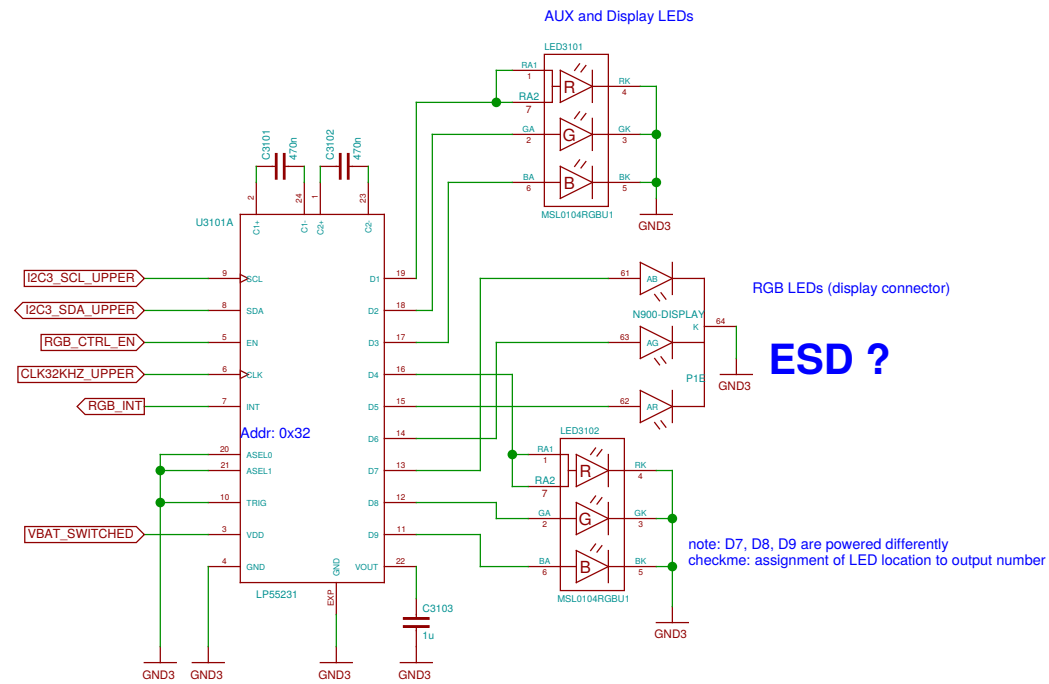


Sheet: /BB-XM Dummy (TWL4030)/		
File: neo900_SS_29.sch		
Title: BB-XM Dummy (TWL4030)		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 14908eb+ 20160930-18:22Z		Id: 29/37

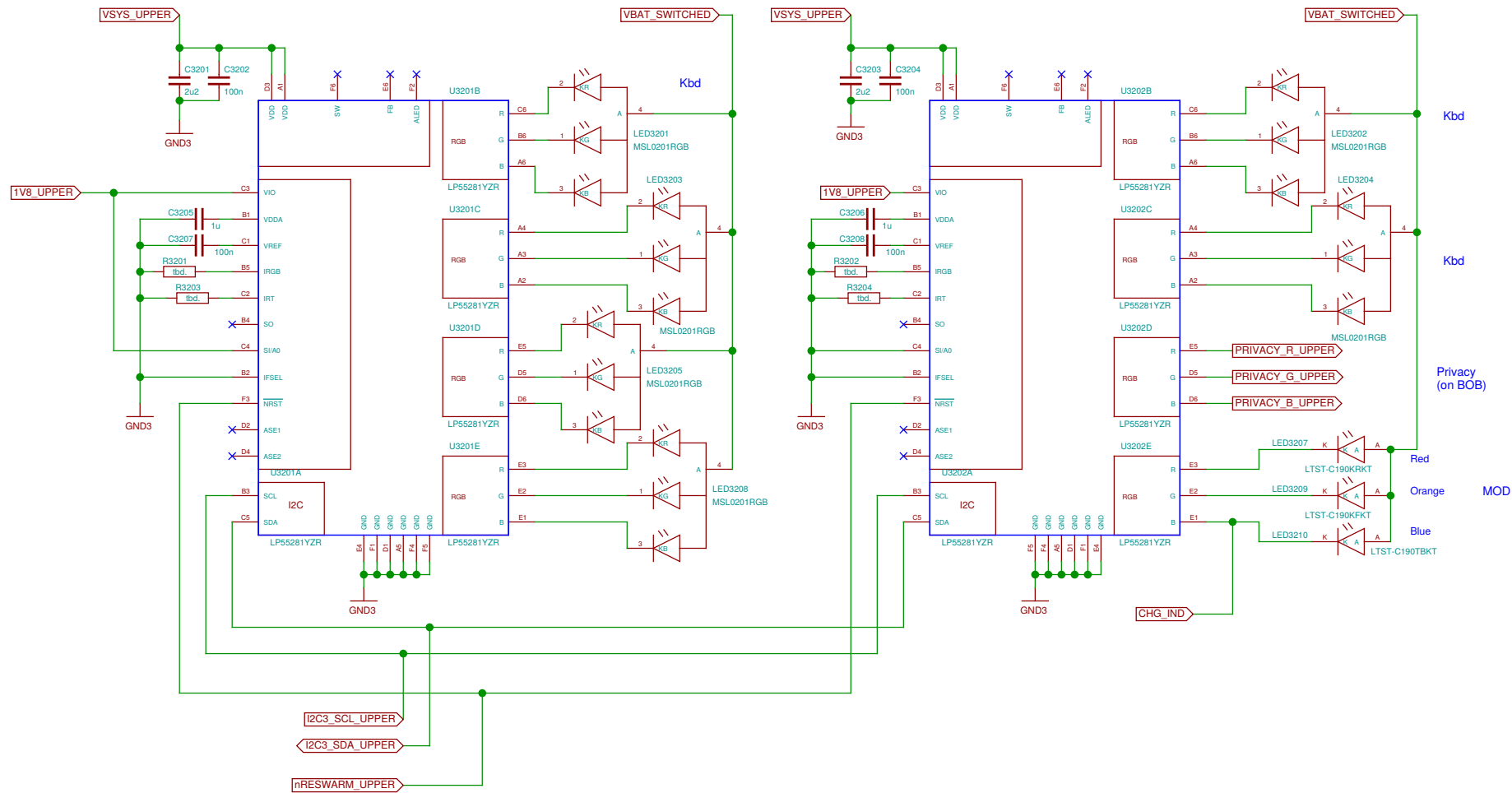


No ESD ? (N900)

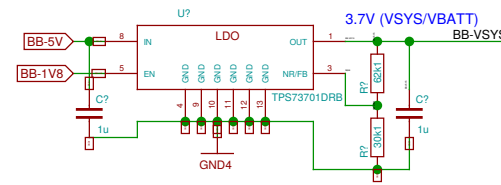
Sheet: /Camera/ File: neo900_SS_30.sch	
Title: Camera	
Size: A3	Date: 17 JUL 2016
Plotted by eeshow 14908eb+ 20160930-18:22Z	
Rev:	Id: 30/37



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

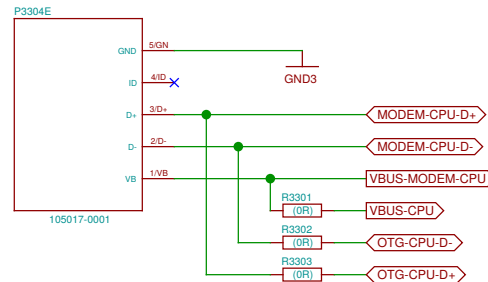


Cleaning up. The connections to BB-xM are on the next sheets.



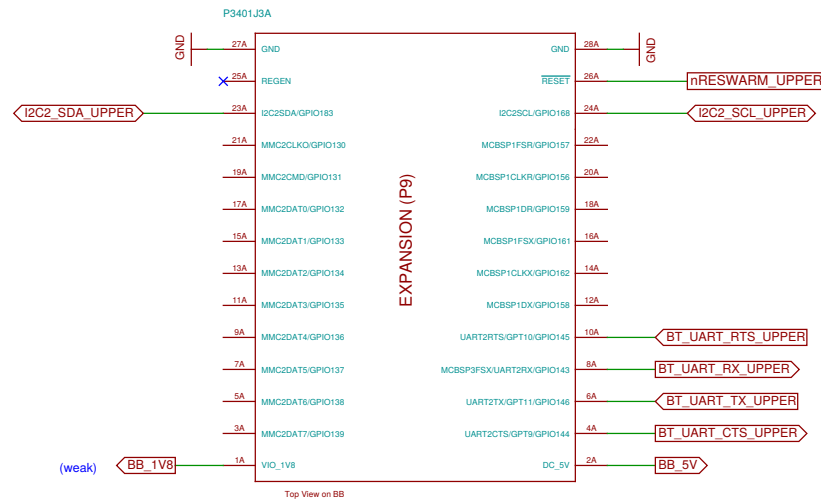
Ersetzen durch 2A buck converter

connect to BB by some Micro-USB cable



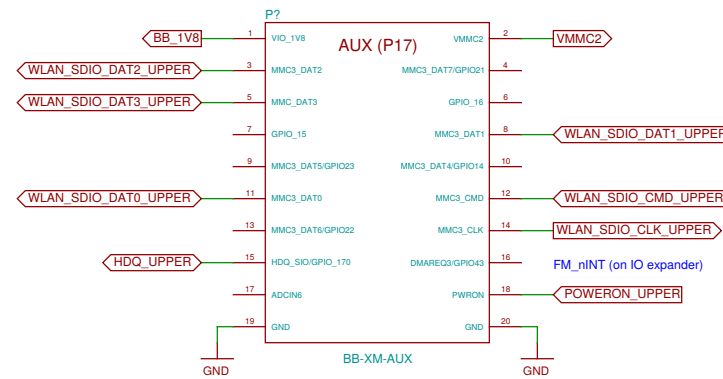
TODO: VBUS-MODEM ?

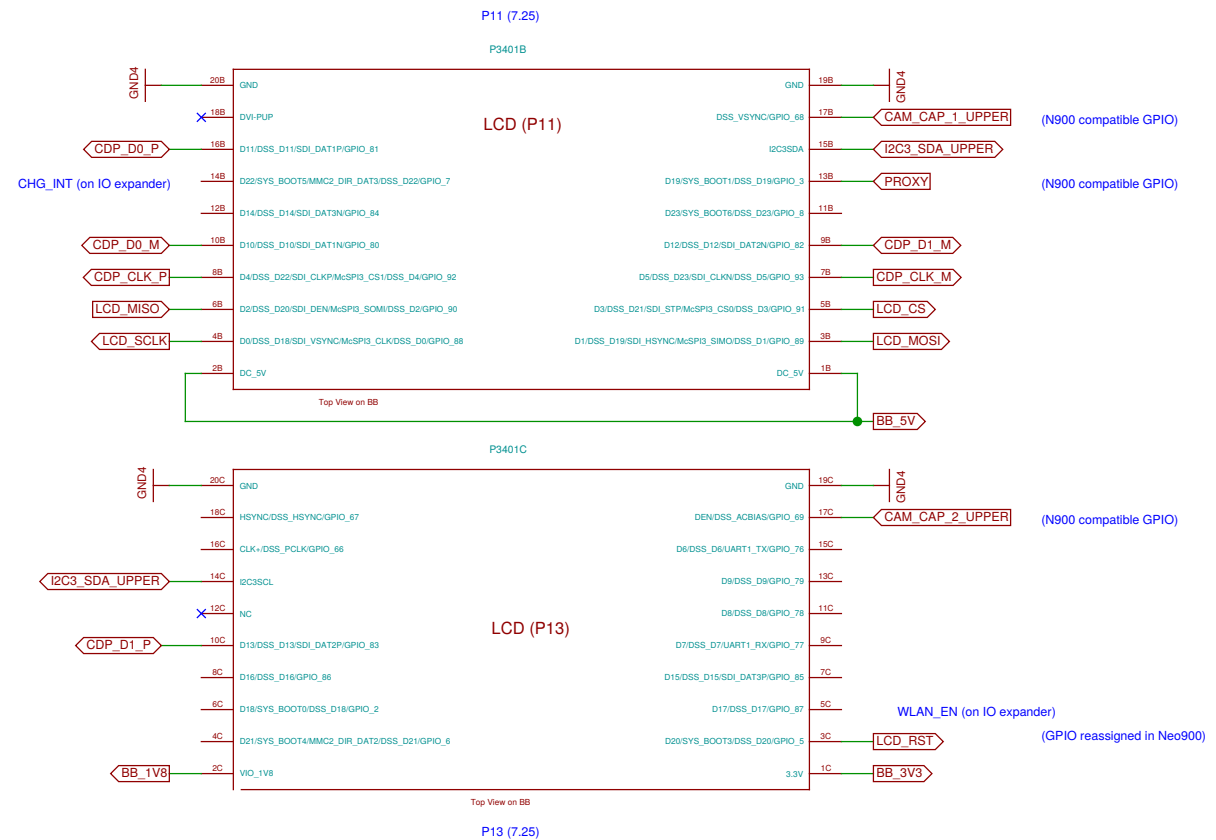
Sheet: /Connector to BB-XM/		
File: neo900_SS_33.sch		
Title: Connector to BB-XM		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 14908eb+ 20160930-18:22Z		Id: 33/37



BB-xM Main Expansion Header (P9, 7.24)

TODO: update pin names in footprint

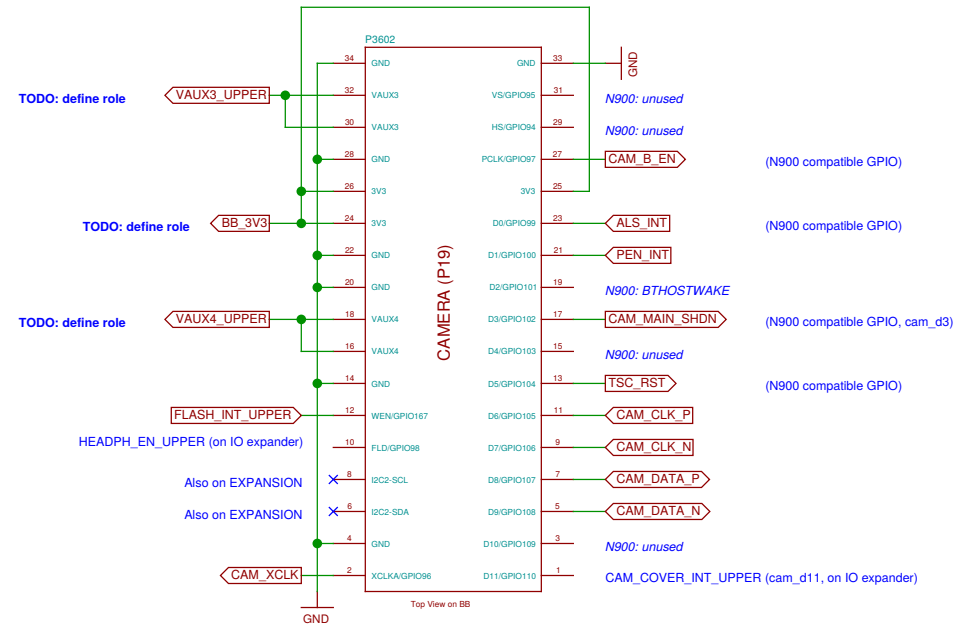




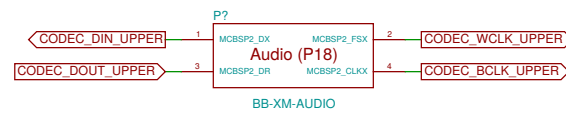
TODO: update pin names in footprint

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 (P19, 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