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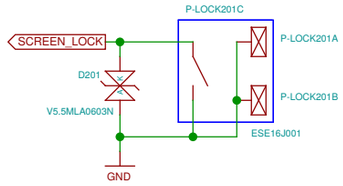
V

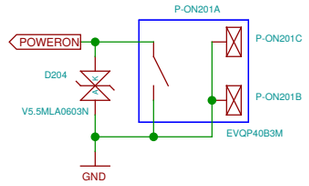
Note regarding I2C addresses:
Addresses in the schematics are provided for convenience.
The authoritative source is
https://neo900.org/git?p=misc;a=tree;f=i2c

Sheet: / File: neo900.sch		
Title: Neo900		
Size: A3	Date: 16 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 1/37

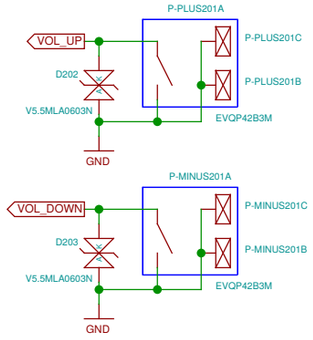
lock switch



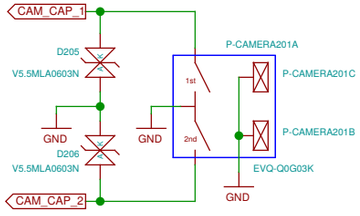
on-off

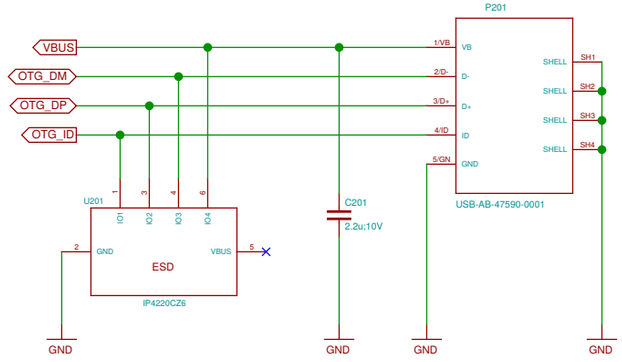


volume



camera trigger

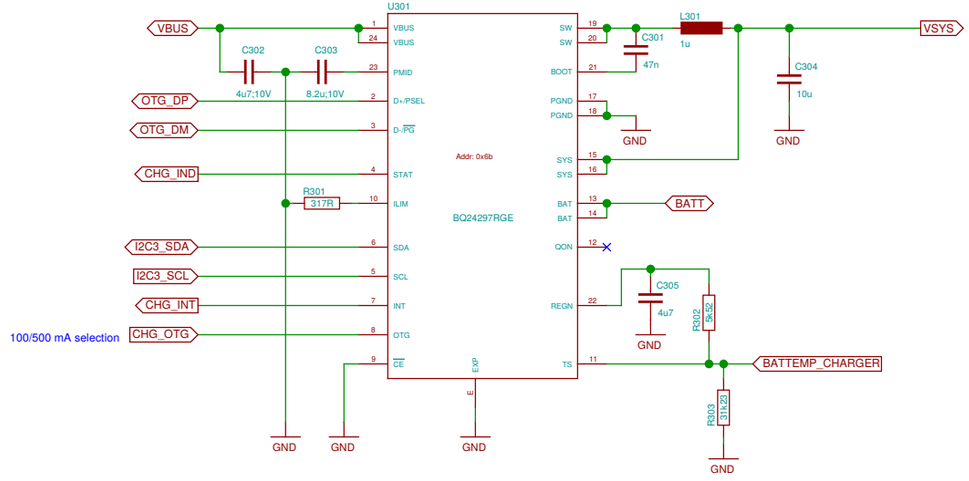


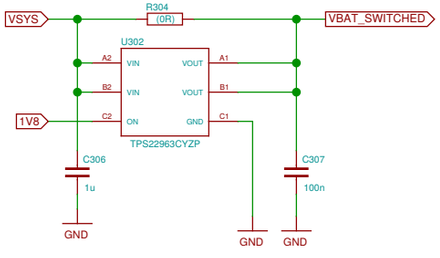


place in scan matrix? would need 3-4 wires to UPPER board instead of 2

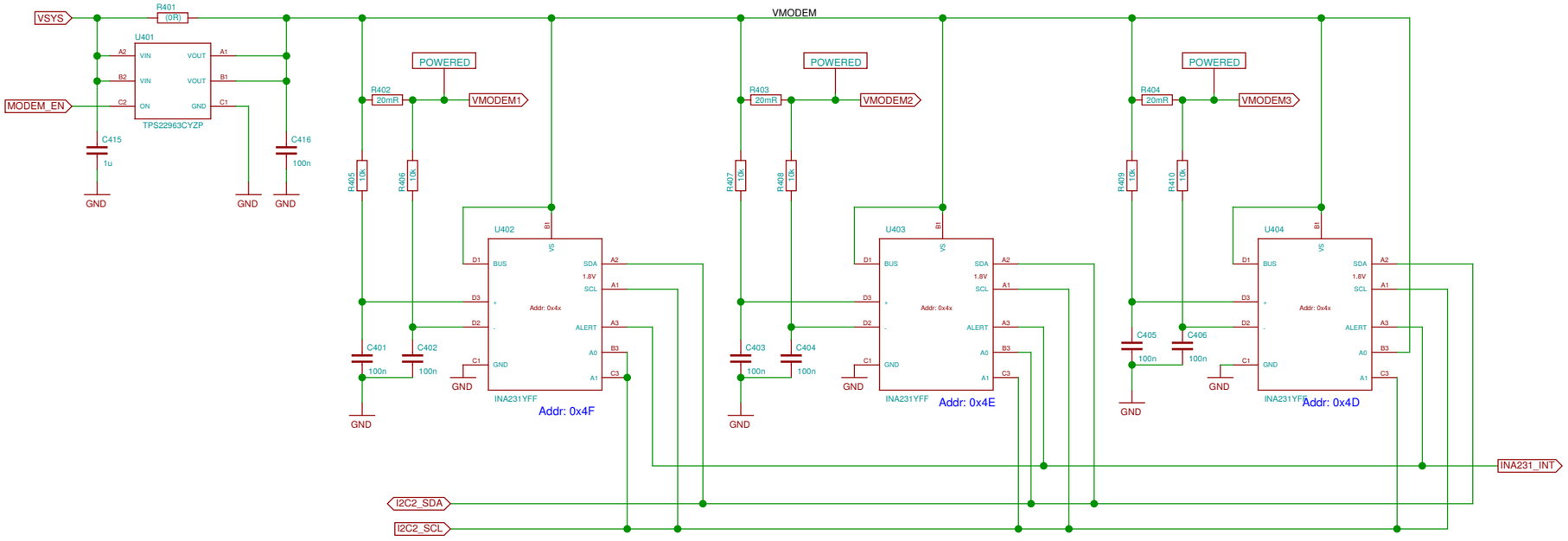
in any case it is sufficient to connect GPIO-VOL+ and VOL- to two pins on the B2B connector

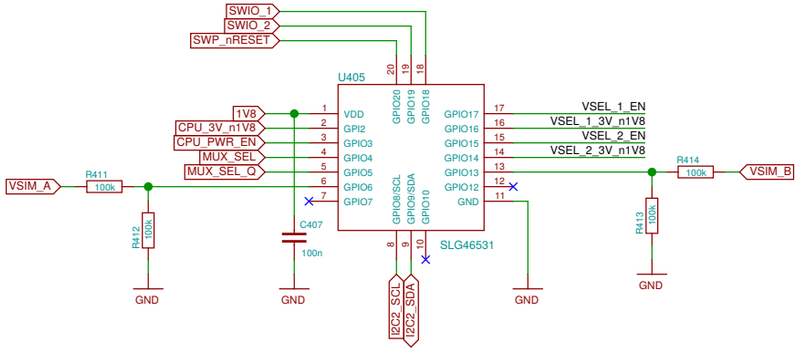
Sheet: /OTG/ File: neo900_SS_2.sch		
Title: OTG		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 2/37

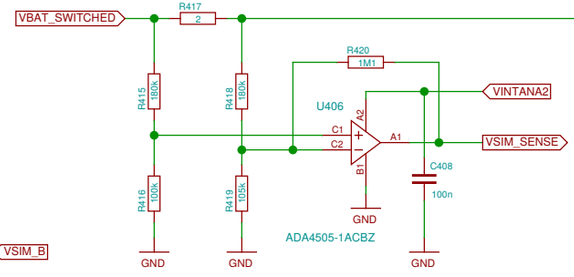


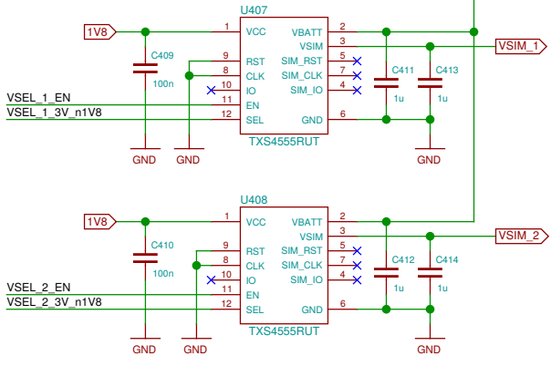


Sheet: /Charger/OTG-Booster/ File: neo900_SS_3.sch		
Title: Charger/OTG-Booster		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 3/37



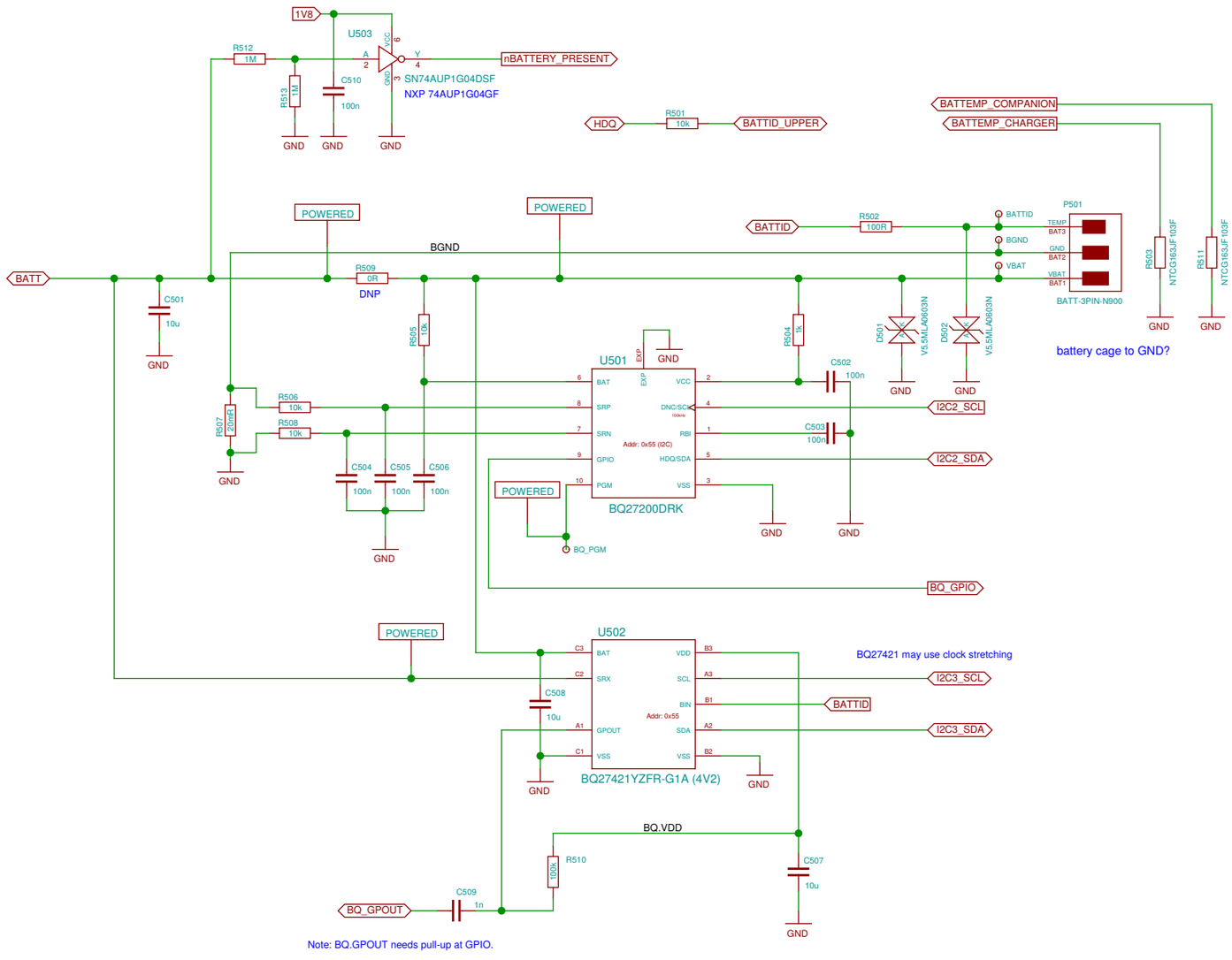




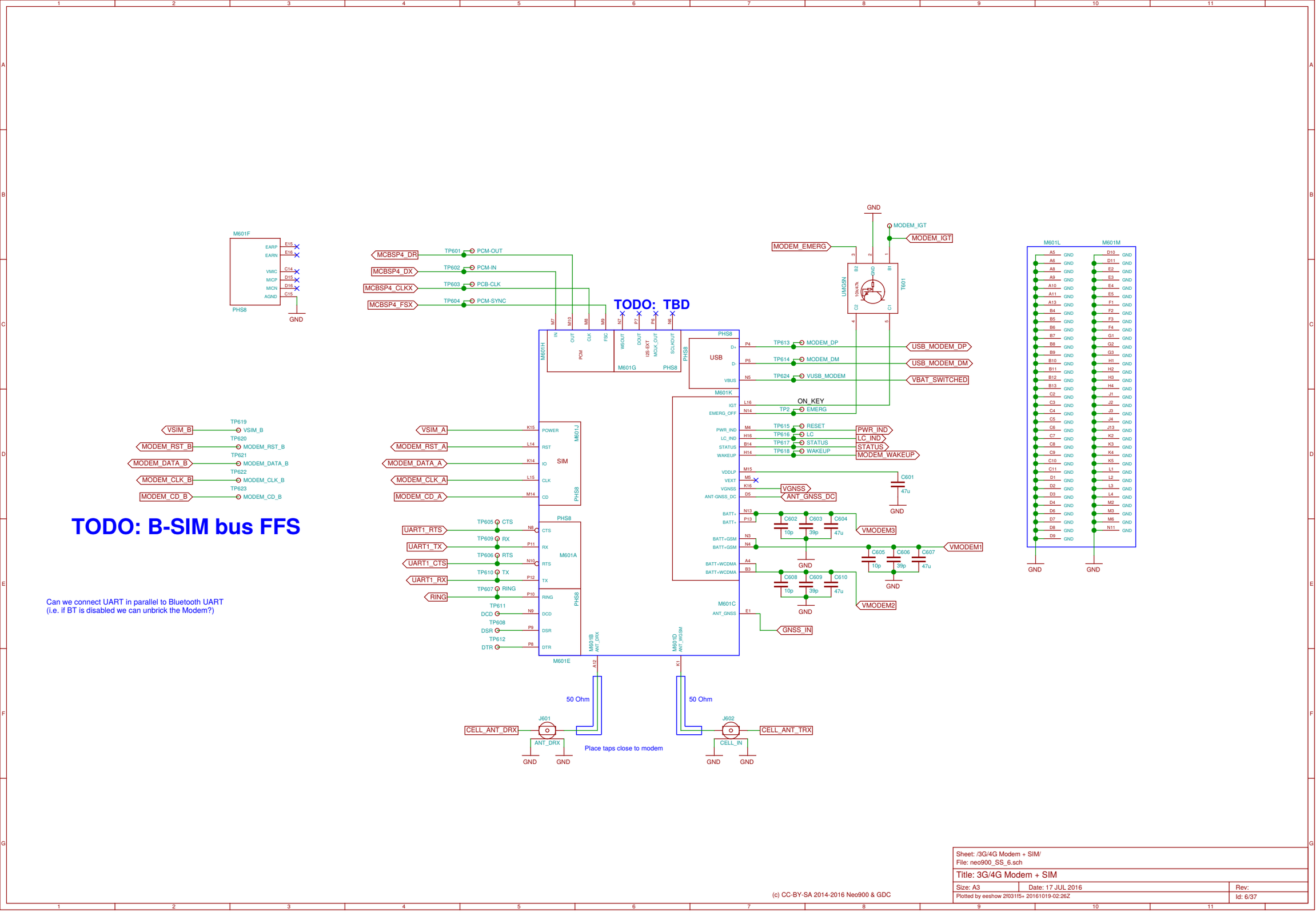


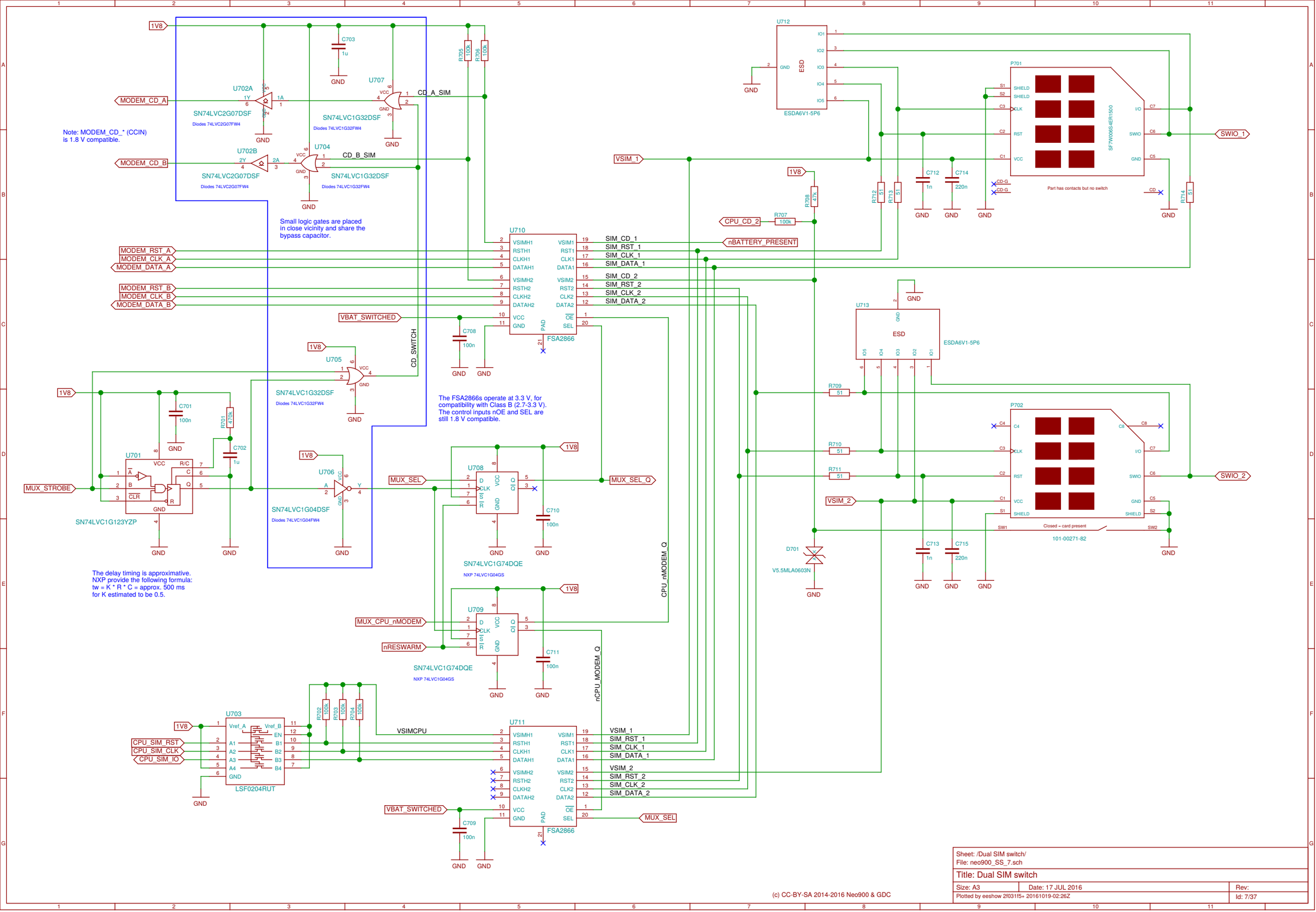
TODO: update SLG design for changed pins

Sheet: /Modem Power/ File: neo900_SS_4.sch		
Title: Modem Power		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 4/37



Sheet: /Fuel Gauge/	
File: neo900_SS_5.sch	
Title: Fuel Gauge	
Size: A3	Date: 17 JUL 2016
Plotted by eeshow 2f031f5+ 20161019-02:26Z	Rev:
	Id: 5/37


M601F
EARP
EARN
VMIC
MICP
MICN
AGND
E15
E16
C14
D15
D16
C15
PHS8
GND
MCBSP4_DR
MCBSP4_DX
MCBSP4_CLKX
MCBSP4_FSX
TP601
PCM-OUT
TP602
PCM-IN
TP603
PCB-CLK
TP604
PCM-SYNC
TODO: TBD
M601H
M601G
PHS8
PCM
I2S-JEXT
IN
OUT
CLK
FSC
WSOUT
DOUT
MCLK_OUT
SCLKOUT
M7
M10
M8
M9
N7
P7
P6
N6
GND
MODEM_IGT
MODEM_IGT
MODEM_EMERG
UMG5N
T601
TP613
MODEM_DP
USB_MODEM_DP
TP614
MODEM_DM
USB_MODEM_DM
TP624
VUSB_MODEM
VBAT_SWITCHED
USB
D+
D-
VBUS
P4
P5
N5
M601K
ON_KEY
IGT
EMERG_OFF
L16
N14
TP2
EMERG
PWR_IND
LC_IND
STATUS
WAKEUP
TP615
RESET
TP616
LC
TP617
STATUS
TP618
WAKEUP
PWR_IND
LC_IND
STATUS
MODEM_WAKEUP
VDDLP
VEXT
VGNSS
ANT-GNSS_DC
M15
M5
K16
D5
C601
47u
VGNSS
ANT_GNSS_DC
GND
BATT+
BATT+GSM
BATT+WCDMA
N13
P13
N3
N4
A4
B3
C602
C603
C604
10p
39p
47u
VMODEM3
C605
C606
C607
VMODEM1
C608
C609
C610
VMODEM2
M601C
ANT_GNSS
E1
GNSS_IN
M601L
M601M
GND
VSIM_B
MODEM_RST_B
MODEM_DATA_B
MODEM_CLK_B
MODEM_CD_B
TP619
TP620
TP621
TP622
TP623
VSIM_A
MODEM_RST_A
MODEM_DATA_A
MODEM_CLK_A
MODEM_CD_A
M601J
SIM
POWER
RST
IO
CLK
CD
K15
L14
K14
L15
M14
UART1_RTS
UART1_TX
UART1_CTS
UART1_RX
RING
TP605
TP609
TP606
TP610
TP607
CTS
RX
RTS
TX
RING
N8
P11
N10
P12
P10
M601A
TP611
TP608
TP612
DCD
DSR
DTR
N9
P9
P8
M601B
ANT_DRX
M601D
ANT_WGSM
M601E
A12
K1
50 Ohm
50 Ohm
J601
J602
CELL_ANT_DRX
CELL_ANT_TRX
ANT_DRX
CELL_IN
Place taps close to modem
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?)
(c) CC-BY-SA 2014-2016 Neo900 & GDC
Sheet: /3G/4G Modem + SIM/
File: neo900_SS_6.sch
Title: 3G/4G Modem + SIM
Size: A3
Date: 17 JUL 2016
Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z
Id: 6/37



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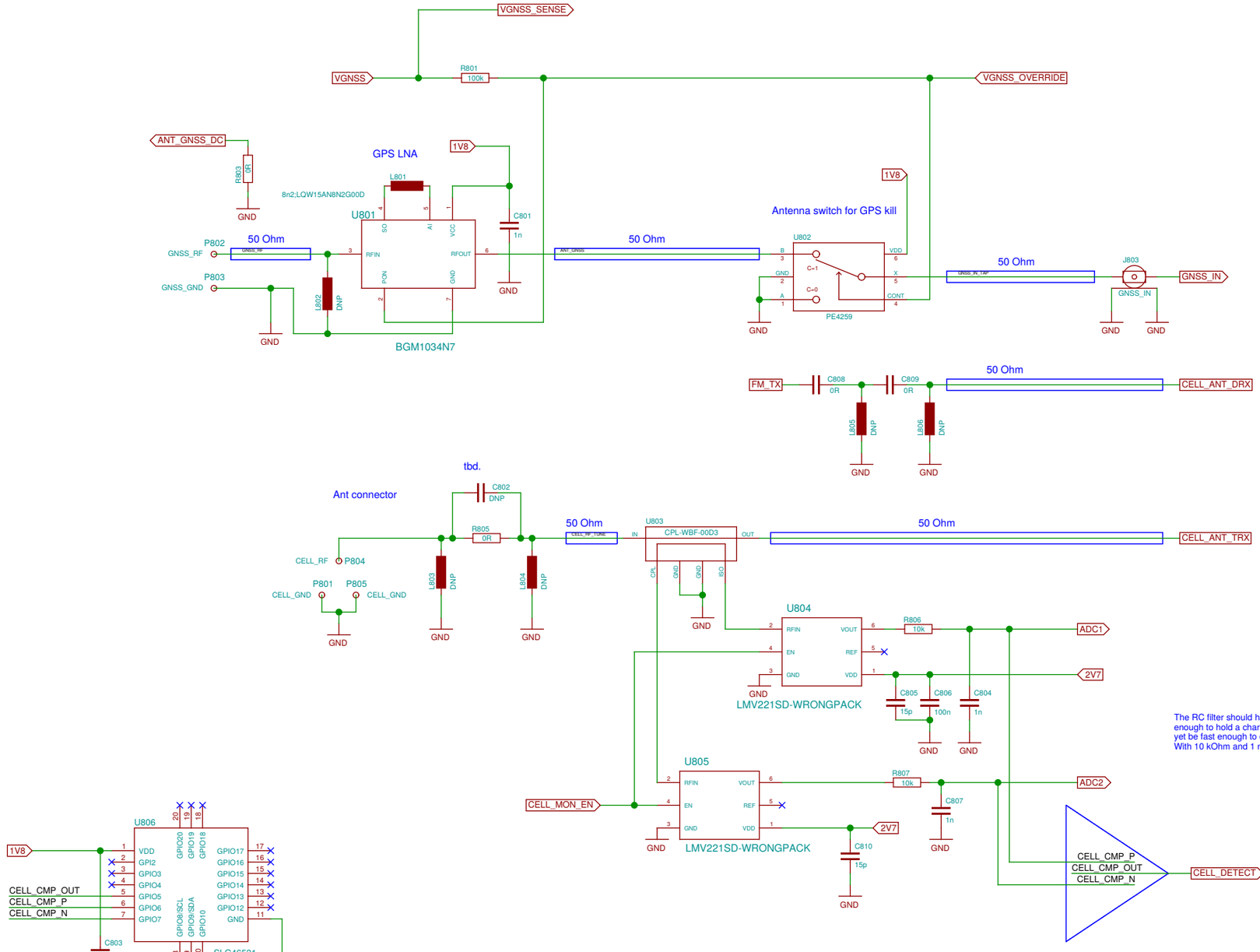
Sheet: /Dual SIM switch/
File: neo900_SS_7.sch

Title: Dual SIM switch

Size: A3 | Date: 17 JUL 2016 | Rev:

Plotted by eeshow 2f031f5+ 20161019-02:26Z | Id: 7/37



TODO: complete comparator circuit

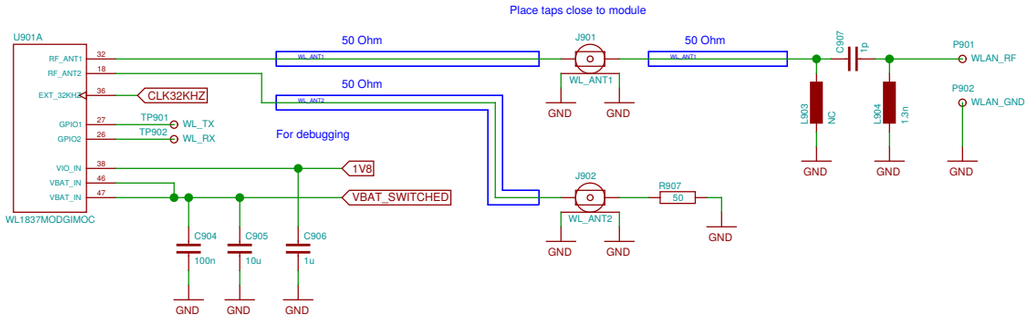
TODO: add silego i2c assignment

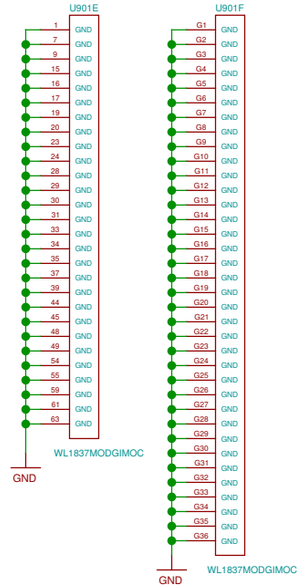
TODO: iox

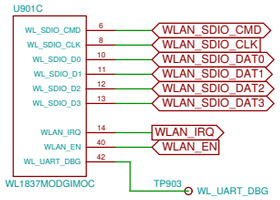
Sheet: /Antenna connections/ File: neo900_SS_8.sch		
Title: Antenna connections		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 8/37

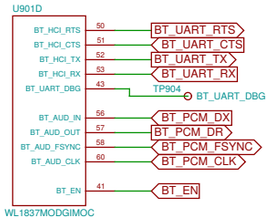
WiLink8

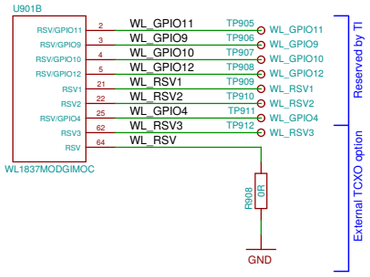
TODO: assign footprints for c-spring contacts



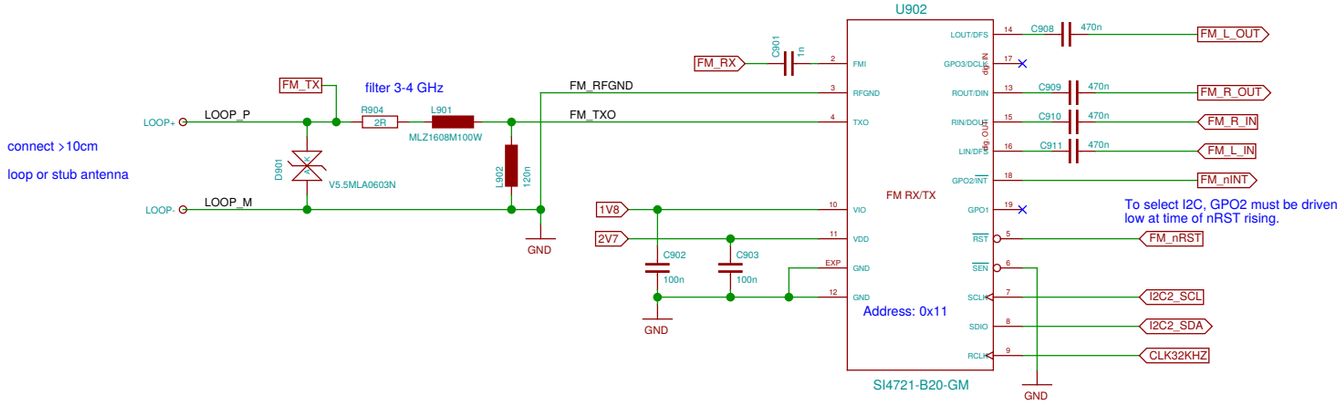






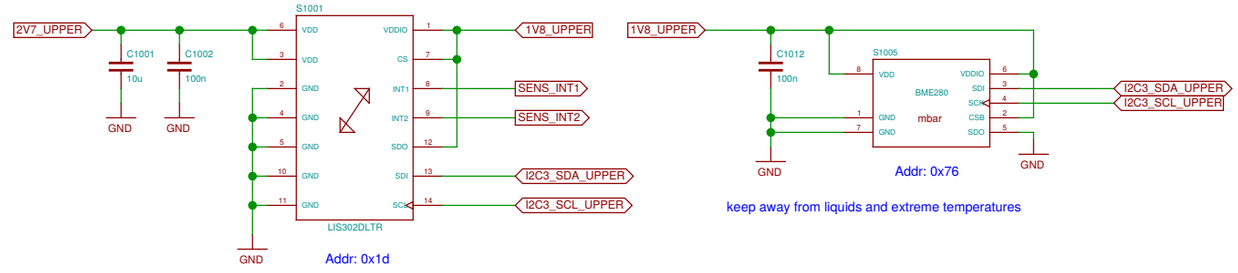


TODO: check caps

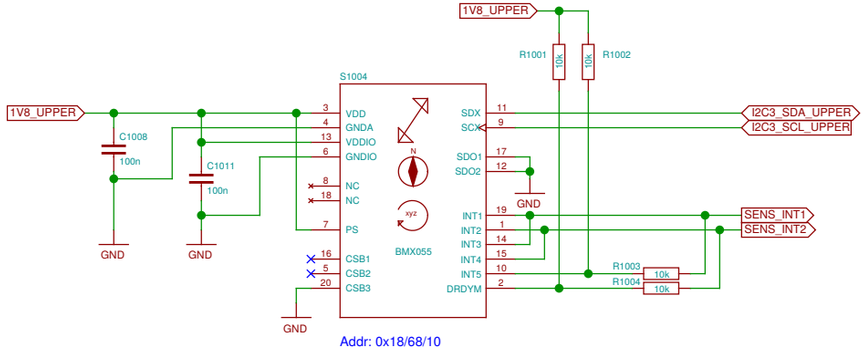


Si4705 is pin compatible (mostly) but RX-only

Sheet: /WLAN, Bluetooth, FM/ File: neo900_SS_9.sch		
Title: WLAN, Bluetooth, FM		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 9/37



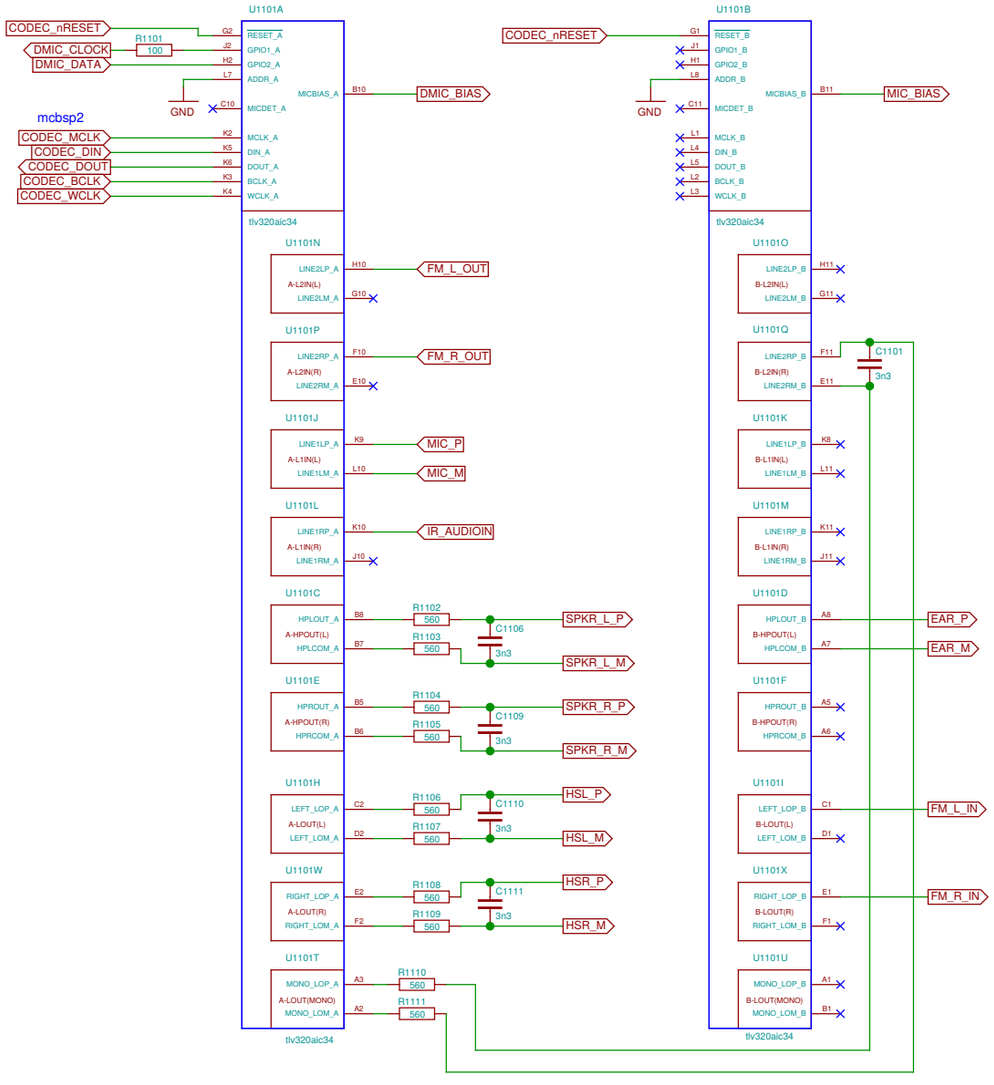
keep away from liquids and extreme temperatures



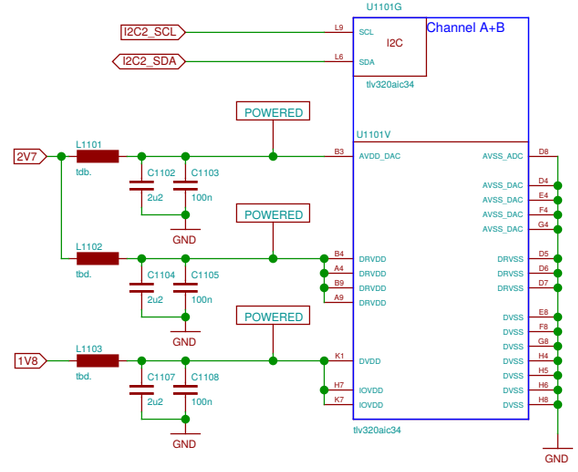
keep away from magnets and metal

Sheet: /Sensors/ File: neo900_SS_10.sch		
Title: Sensors		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 10/37

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)



address: 0x18, 0x19



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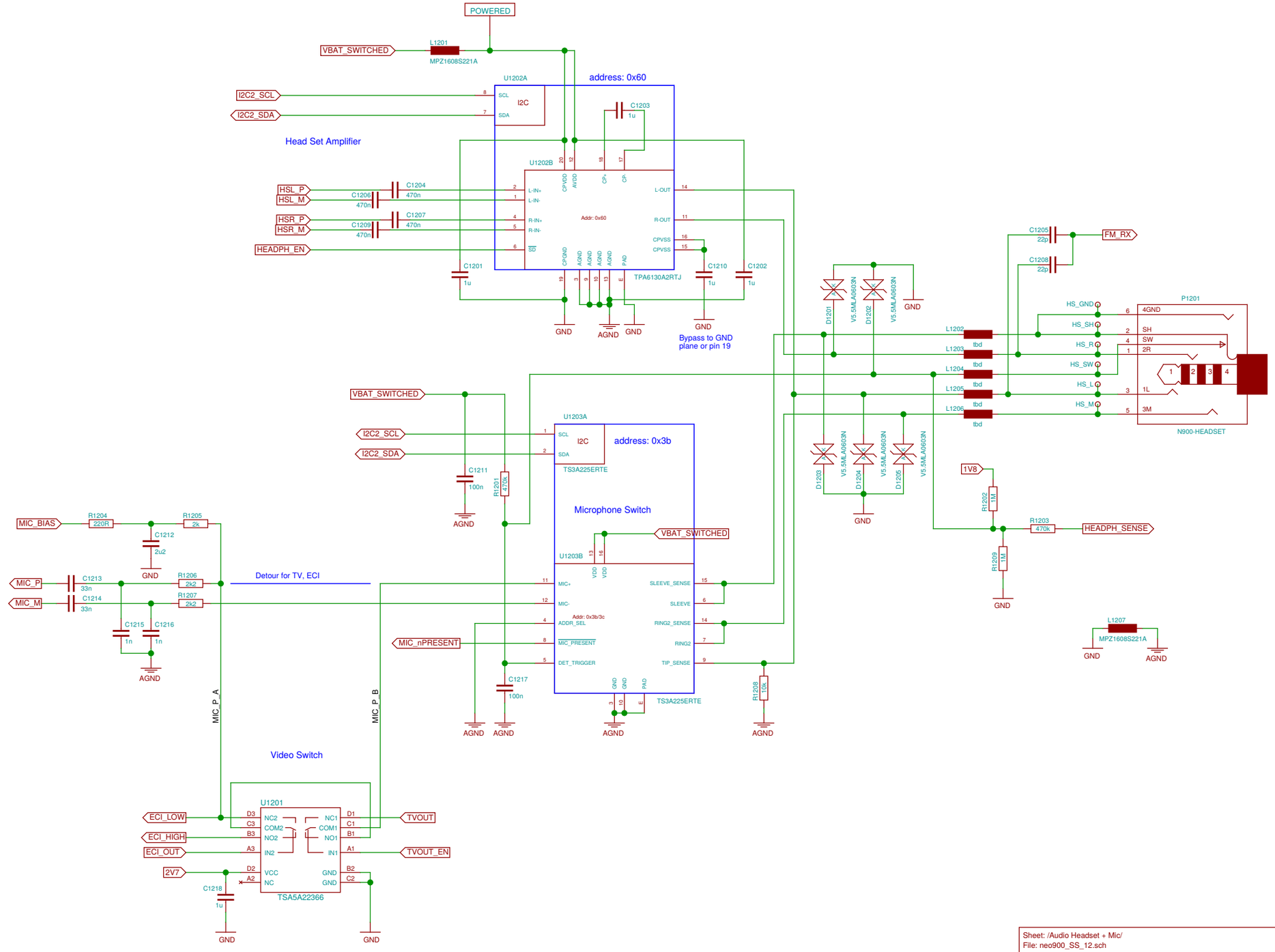
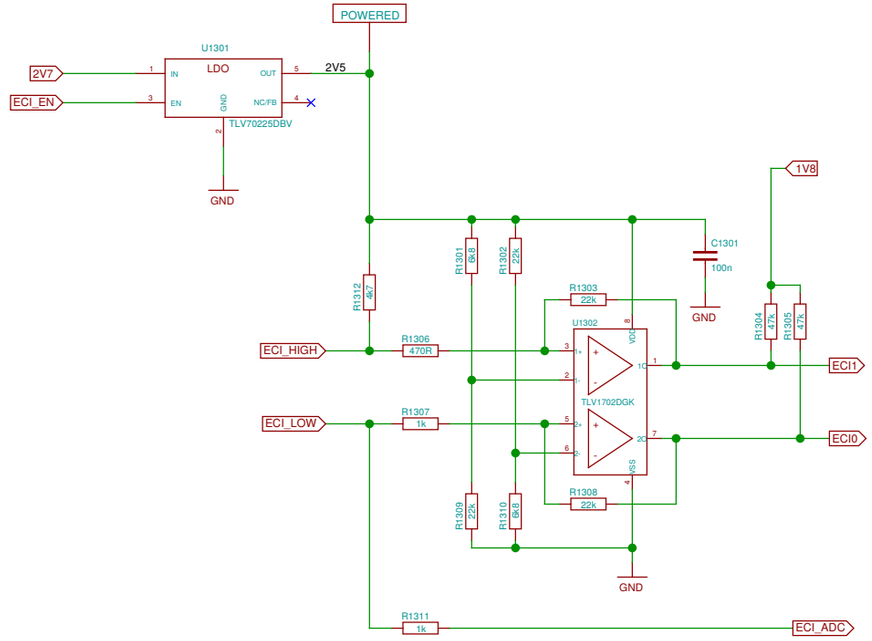
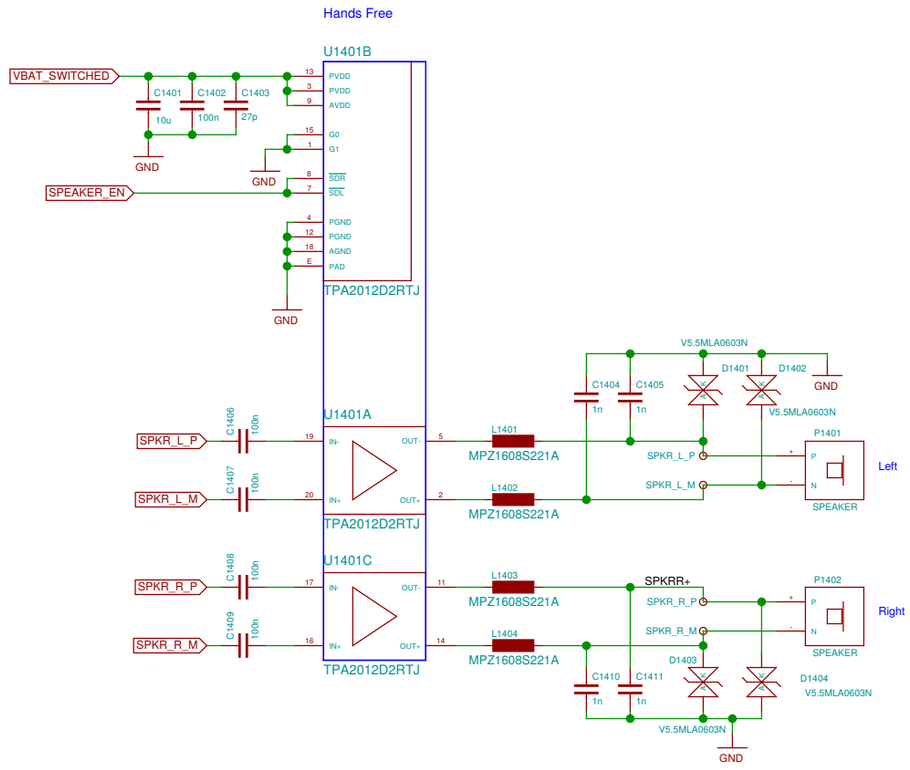
Sheet: /Audio Codec/ File: neo900_SS_11.sch		
Title: Audio Codec		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 11/37



Sheet: /Audio Headset + Mic/ File: neo900_SS_12.sch		
Title: Audio Headset + Mic		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 12/37

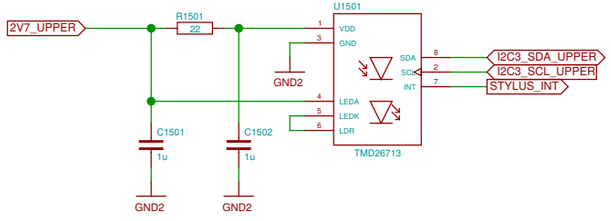


Sheet: /ECI/ File: neo900_SS_13.sch		
Title: ECI		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 13/37

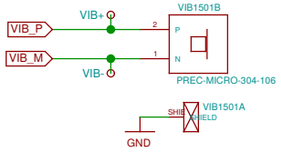


Sheet: /Audio Handsfree/ File: neo900_SS_14.sch		
Title: Audio Handsfree		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 14/37

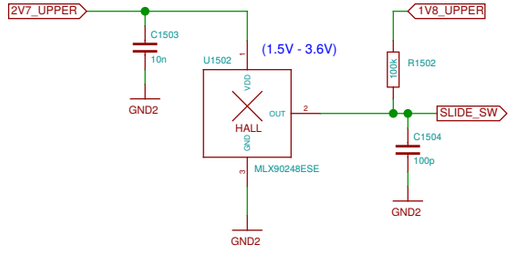
Stylus detect



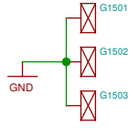
Vibramotor



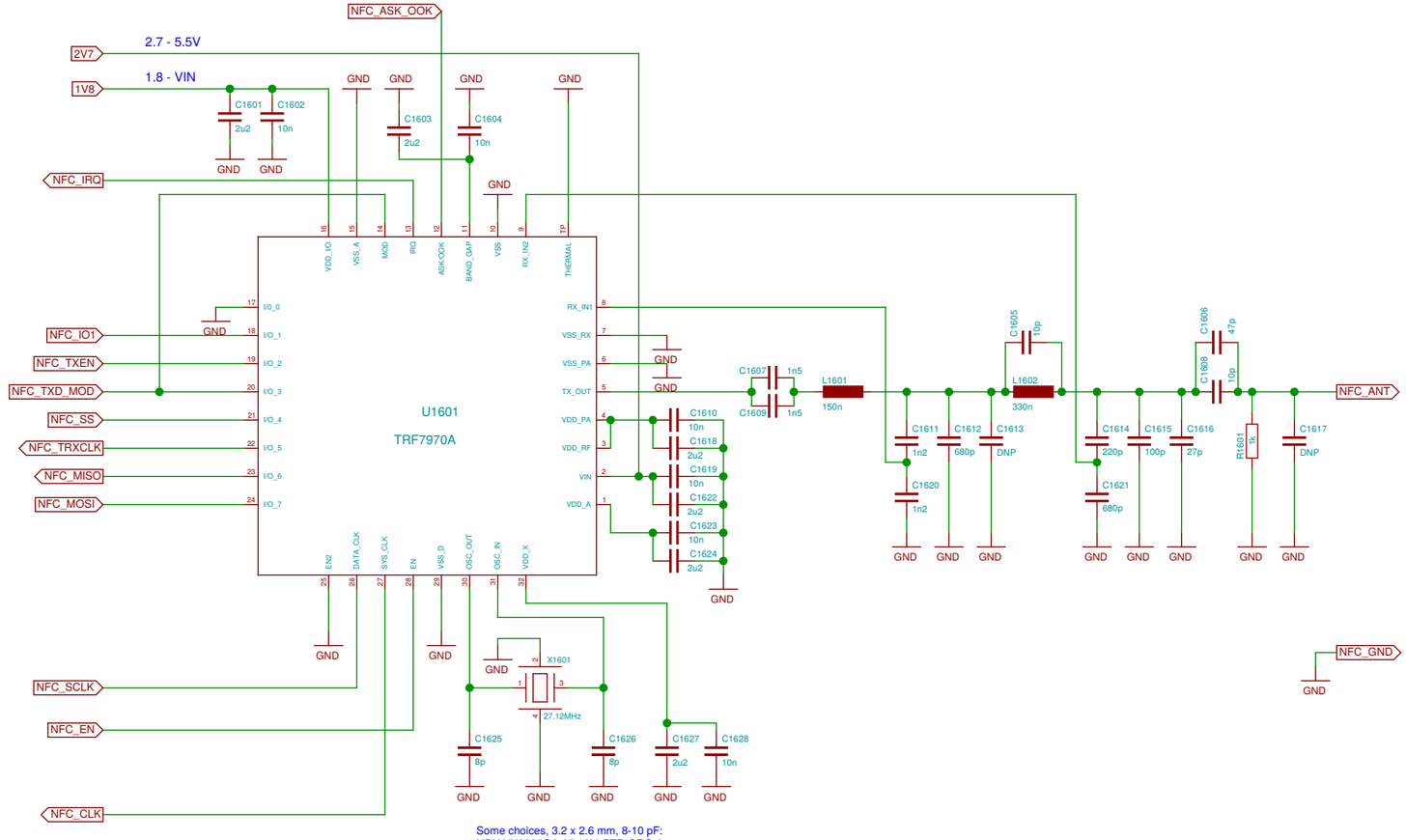
Slide sensor



Shield

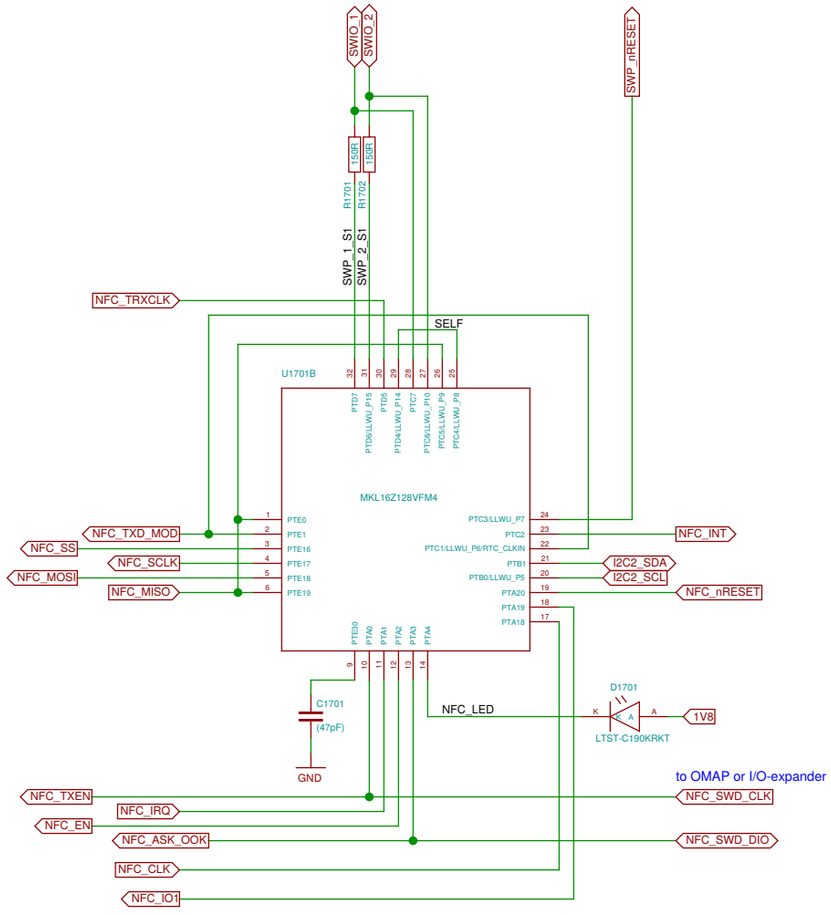


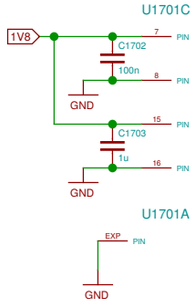
Sheet: /Misc/ File: neo900_SS_15.sch		
Title: Misc		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 15/37



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

Sheet: /RFID/NFC Reader/ File: neo900_SS_16.sch		
Title: RFID/NFC Reader		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 16/37

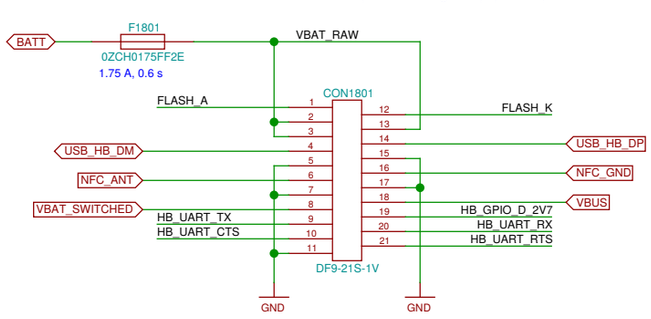


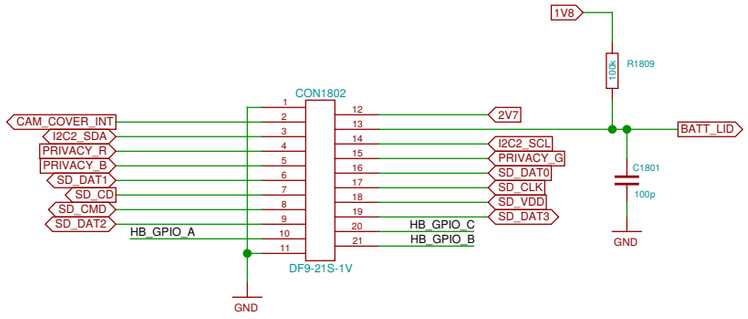


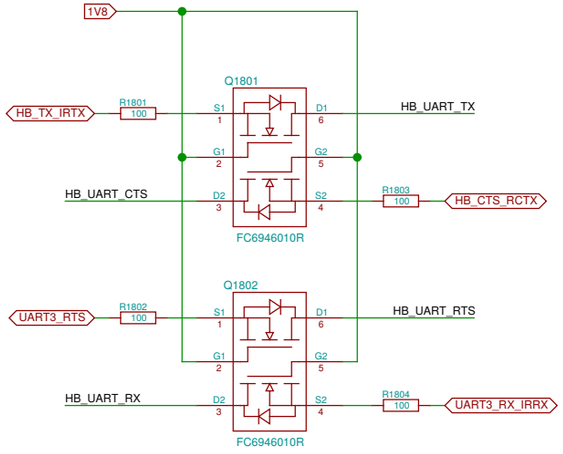
Sheet: /RFID/NFC Controller/ File: neo900_SS_17.sch		
Title: RFID/NFC Controller		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 17/37

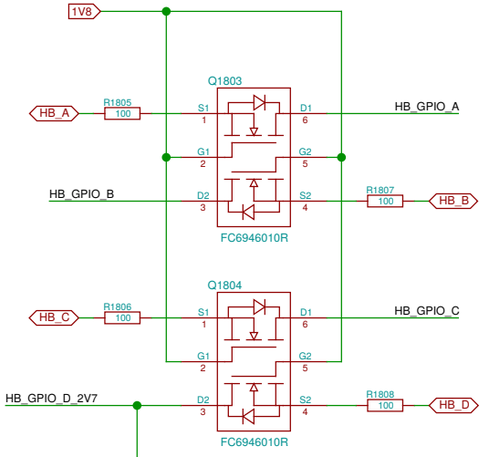
NOTE: this is mangling up Breakout and Lower board connectors
Signals may have to be fed through the breakout board connector increasing resistance

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

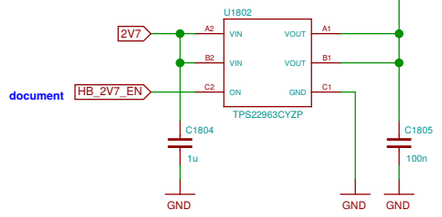




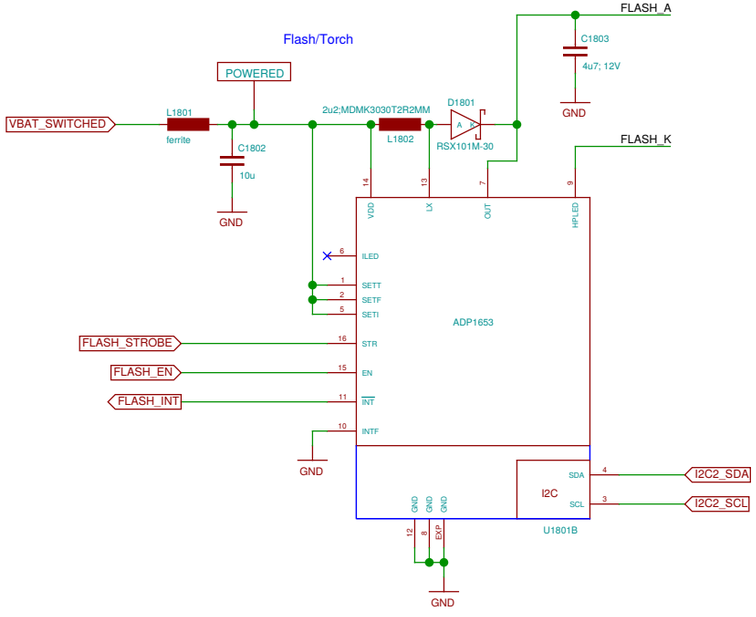




Q18xx alternative: Diodes DMN63D8LV



document



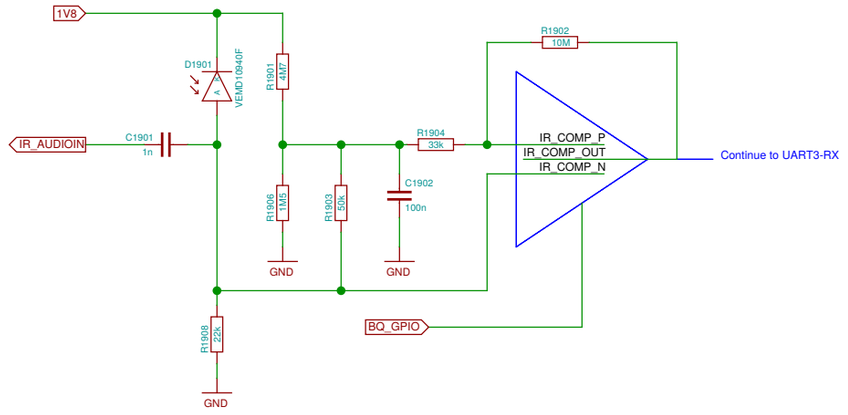
TODO: HB USB PHY may go here

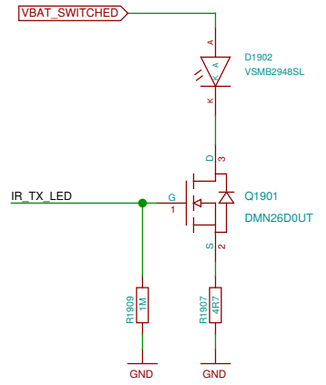
Missing 6x 2R for alternate function select (do we have the space for ca. 2.5 x 5mm?)

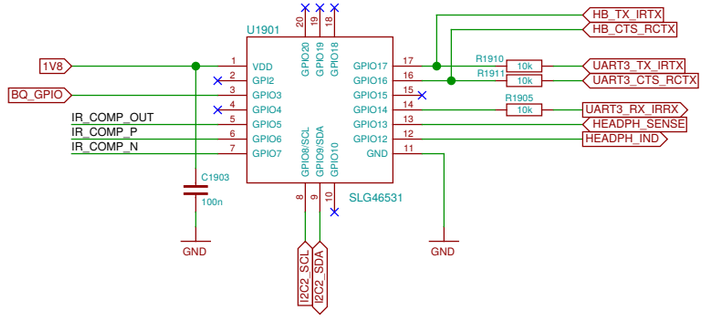
Sheet: /Hackerbus/ File: neo900_SS_18.sch		
Title: Hackerbus		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 18/37

TODO: update D1901 footprint

NOTE: 1V8 may be quite noisy

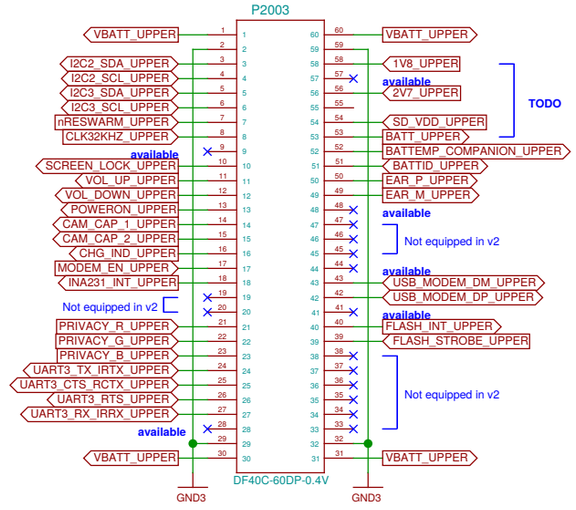


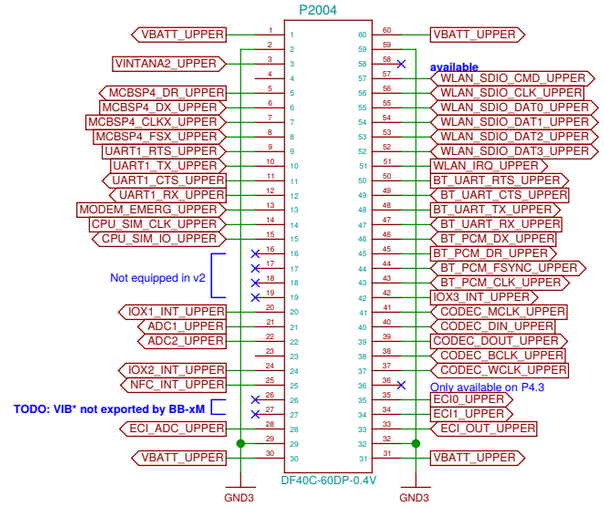


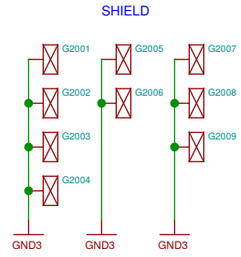


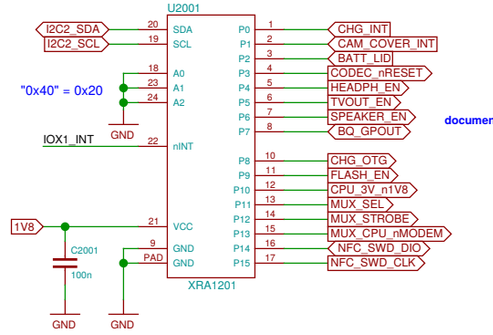
Sheet: /Infrared/ File: neo900_SS_19.sch		
Title: Infrared		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 19/37

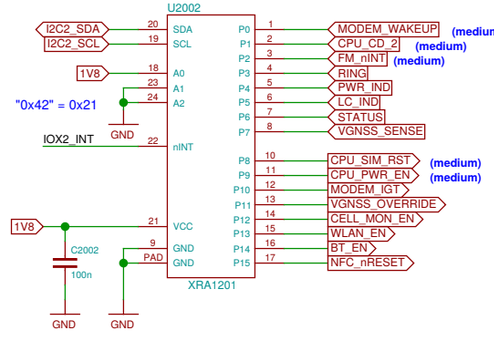
This is just the collection of signals we have.
Proper assignment still pending.

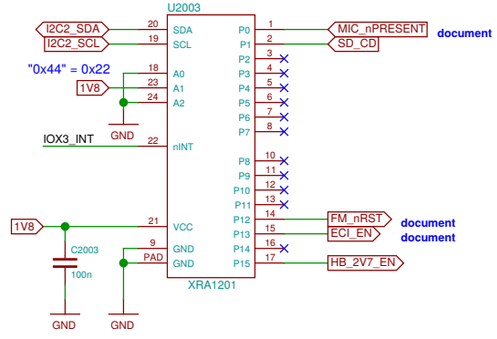






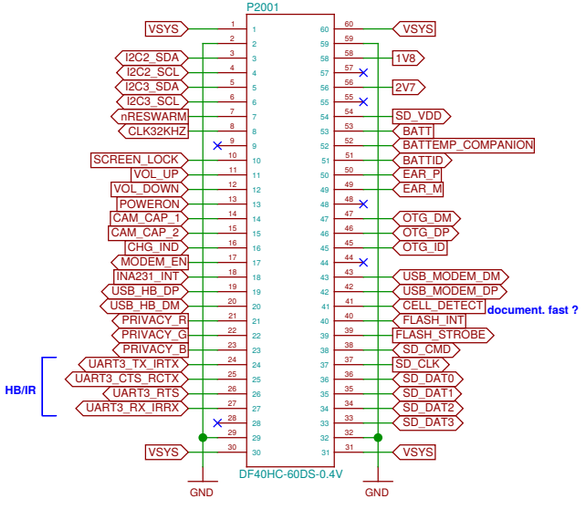


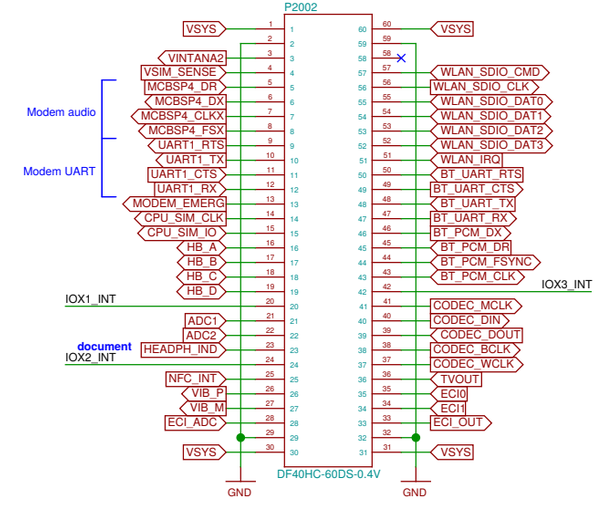




UPPER

LOWER

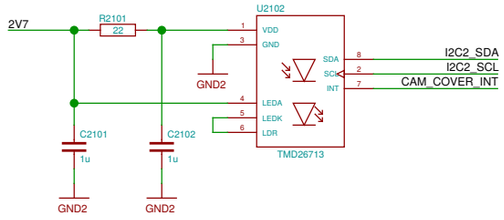




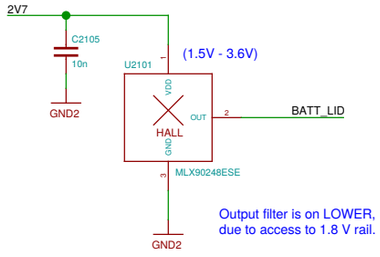
Current rating per contact: 0.3 A

Sheet: /B2B LOWER-UPPER/ File: neo900_SS_20.sch		
Title: B2B LOWER-UPPER		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 20/37

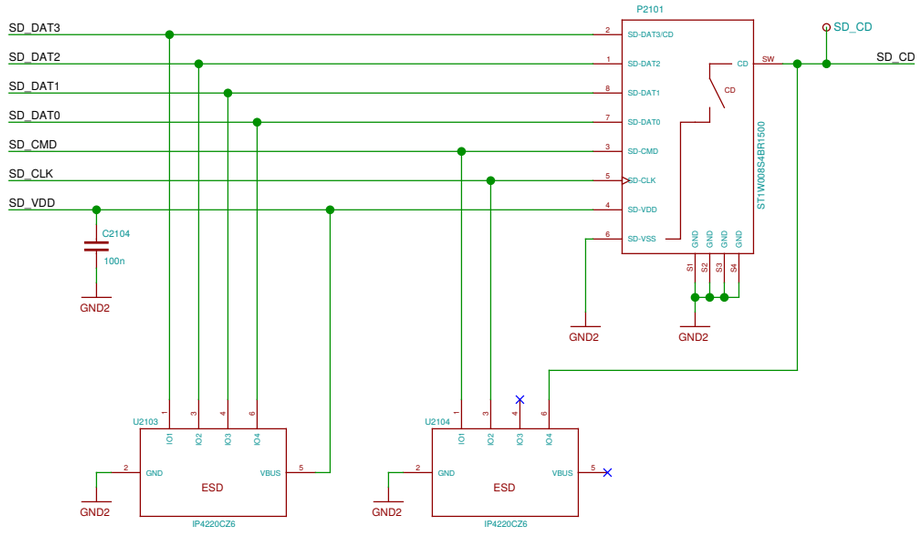
Camera Cover detect



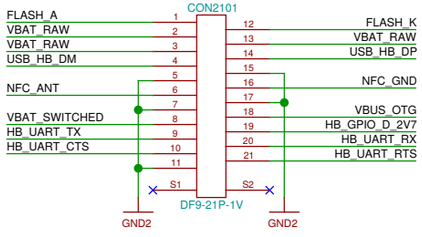
Battery Cover detect

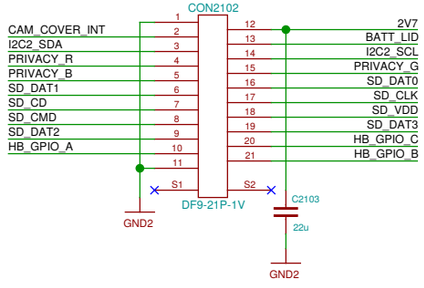


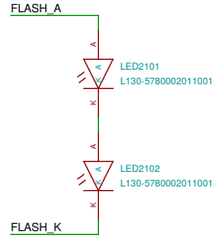
Output filter is on LOWER,
due to access to 1.8 V rail.

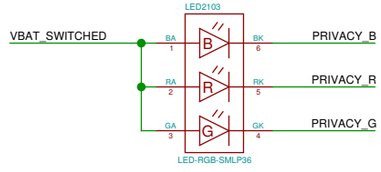


The LOWER-BOB interconnect is defined in the Hackerbus specification
http://neo900.org/stuff/papers/hb.pdf

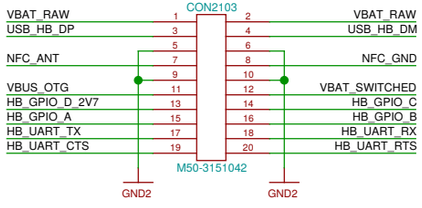








Hackerbus



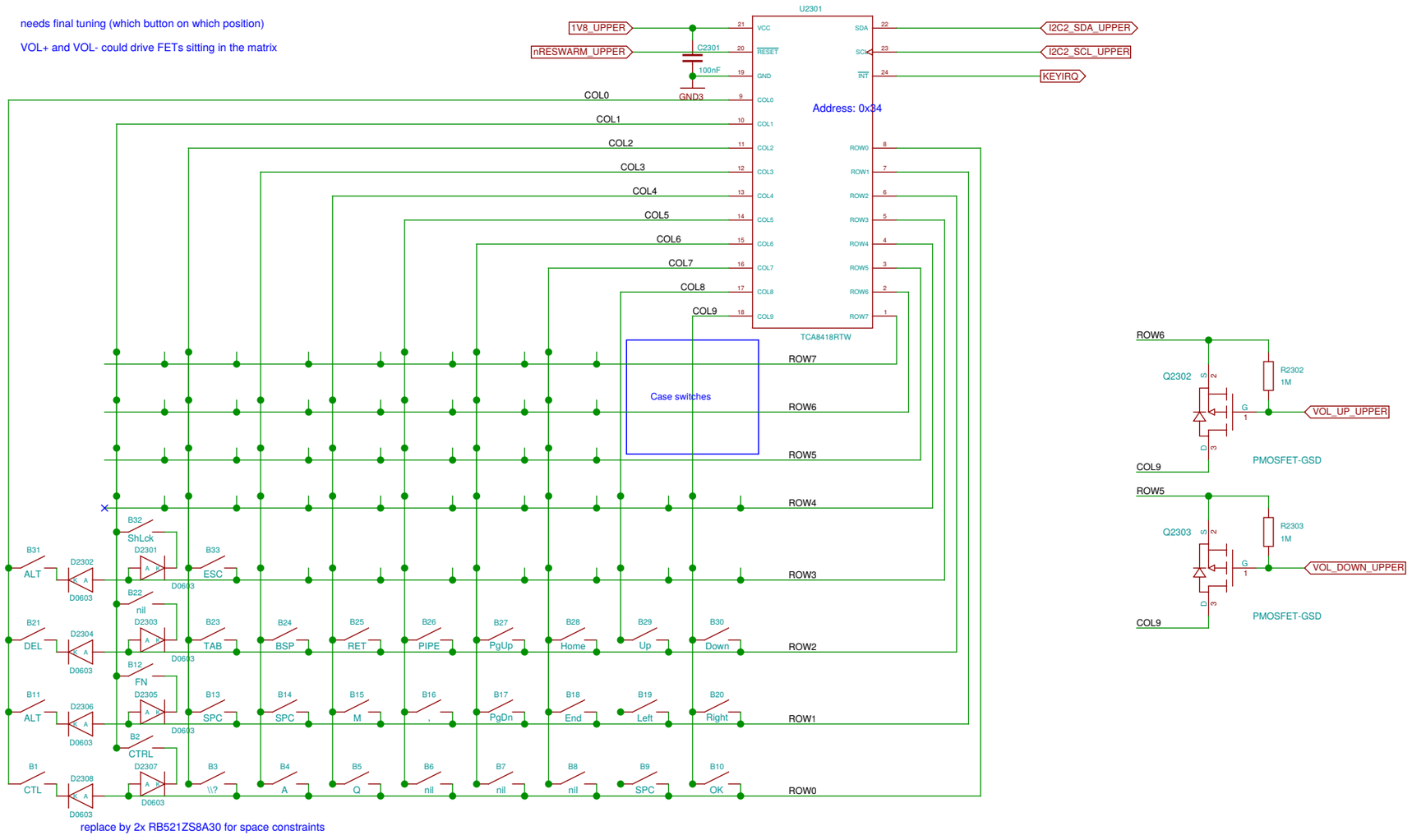
Sheet: /uSD Breakout Board/ File: neo900_SS_21.sch		
Title: uSD Breakout Board		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 21/37

TODO: consider sheet for deletion

Sheet: /empty/
File: neo900_SS_22.sch

Title: empty

Size: A3 | Date: 17 JUL 2016 | Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z | Id: 22/37

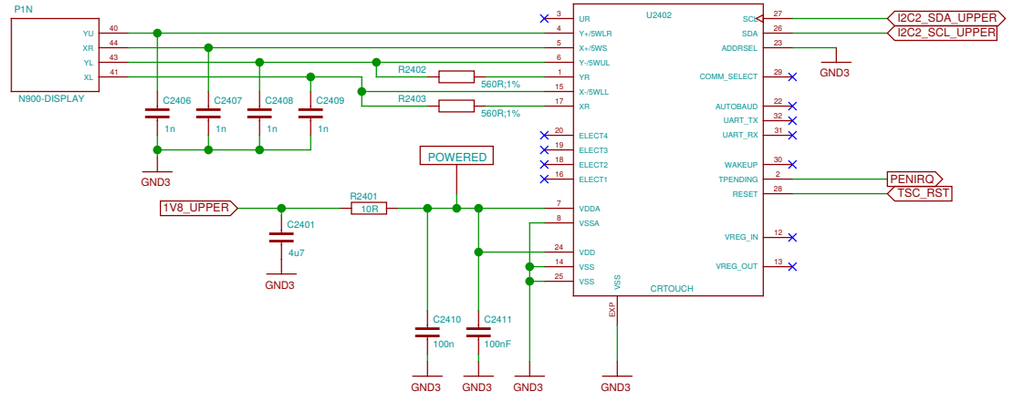


TODO: key names are nonsense

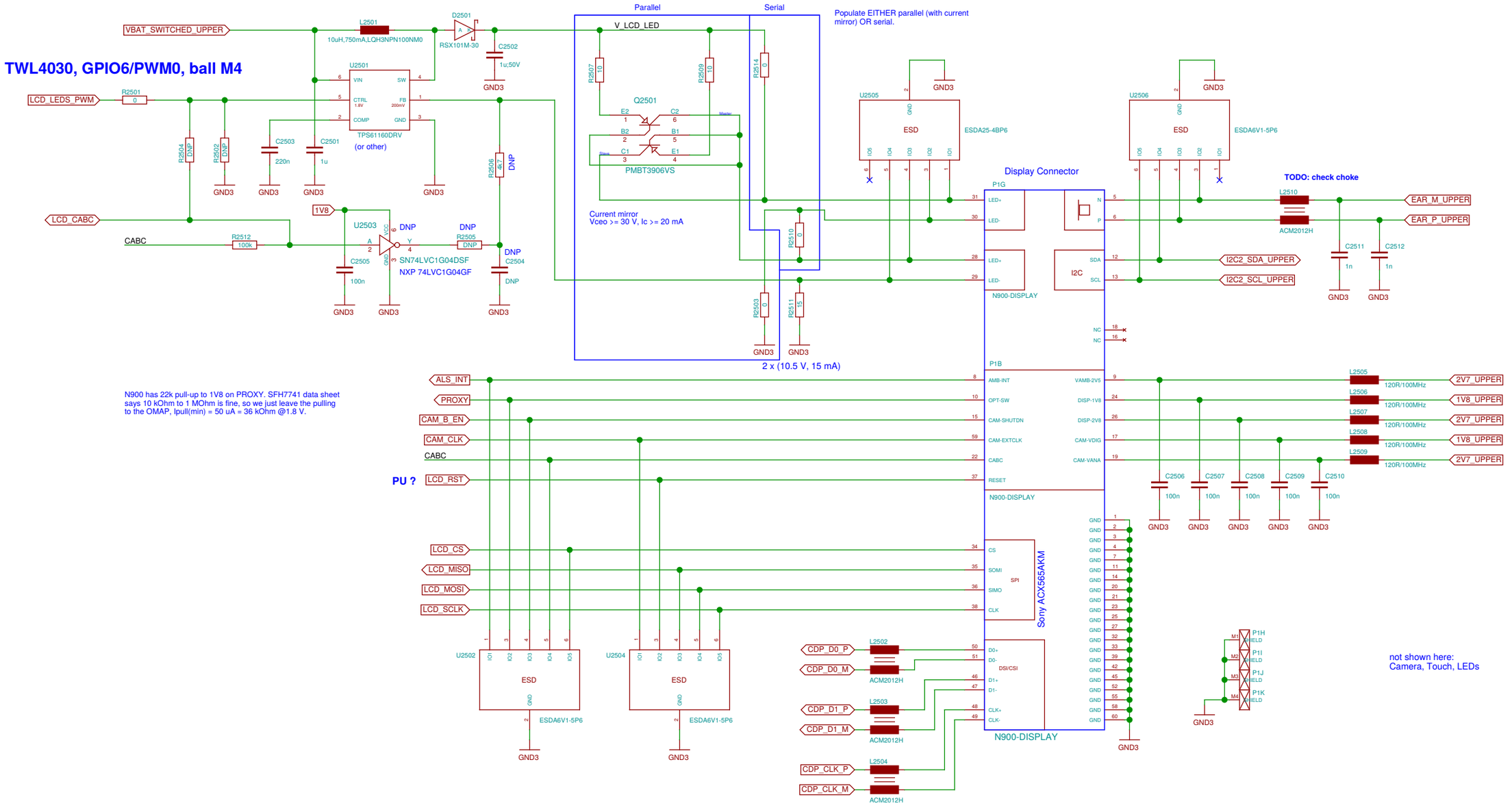
TODO: rearrange matrix to avoid diodes ?

Sheet: /Keypad/ File: neo900_SS_23.sch		
Title: Keypad		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 23/37

Resistive Touch (display connector)



Sheet: /Display-Peripherals/ File: neo900_SS_24.sch		
Title: Display-Peripherals		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 24/37



N900 has 22k pull-up to 1V8 on PROXY. SFH7741 data sheet says 10 kOhm to 1 MOhm is fine, so we just leave the pulling to the OMAP, Ipull(min) = 50 uA = 36 kOhm @1.8 V.

Sheet: /Display-Panel&Power/	
File: neo900_SS_25.sch	
Title: Display-Panel&Power	
Size: A3	Date: 17 JUL 2016
Plotted by eeshow 2f031f5+ 20161019-02:26Z	Rev:
	Id: 25/37

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 2f031f5+ 20161019-02:26Z		Id: 26/37

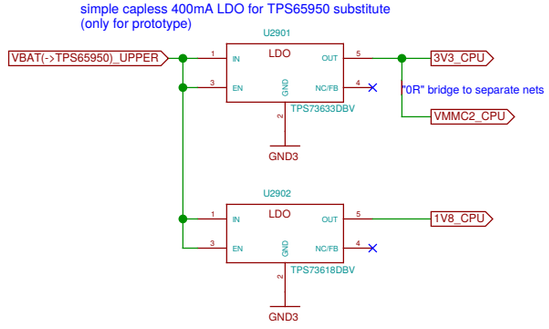
eMMC is not part of v2

Sheet: /eMMC/ File: neo900_SS_27.sch		
Title: eMMC		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		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 2f031f5+ 20161019-02:26Z		Id: 28/37

TODO: empty this sheet, too ?

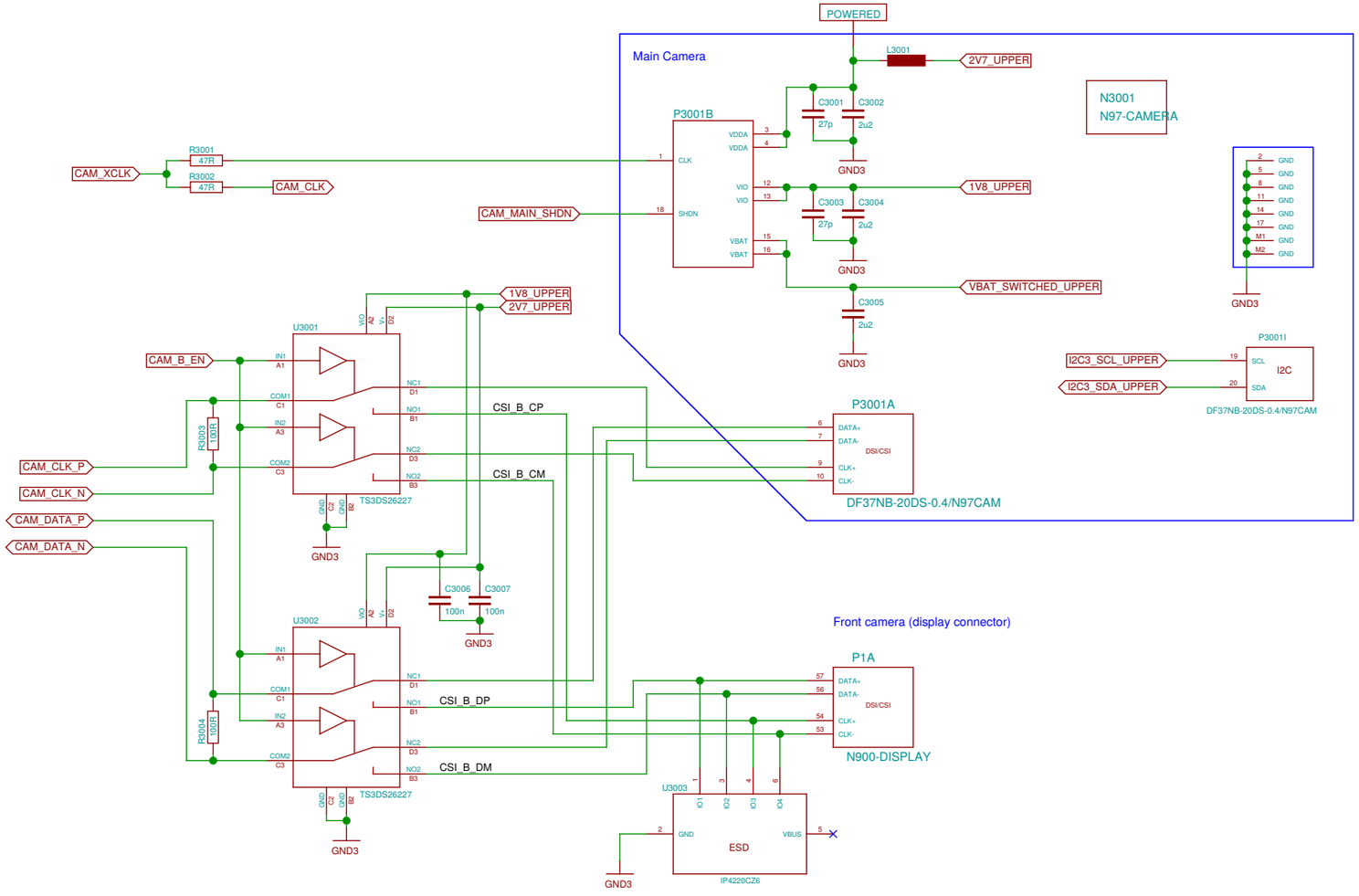


Sheet: /BB-XM Dummy (TWL4030)/
File: neo900_SS_29.sch

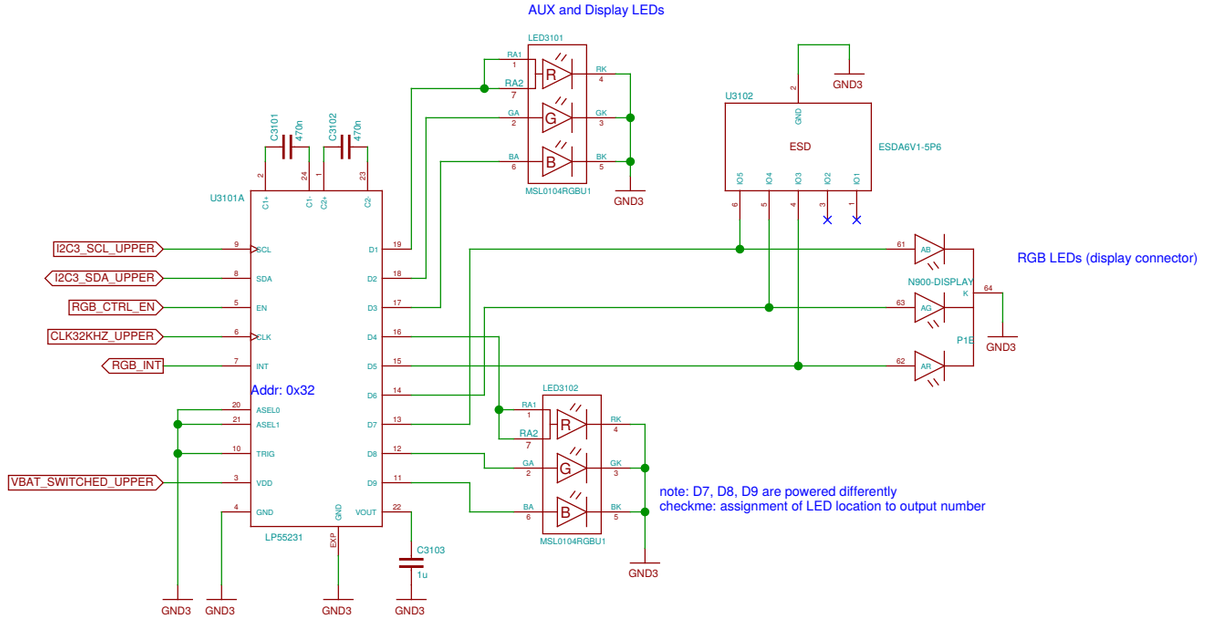
Title: BB-XM Dummy (TWL4030)

Size: A3 | Date: 17 JUL 2016 | Rev:

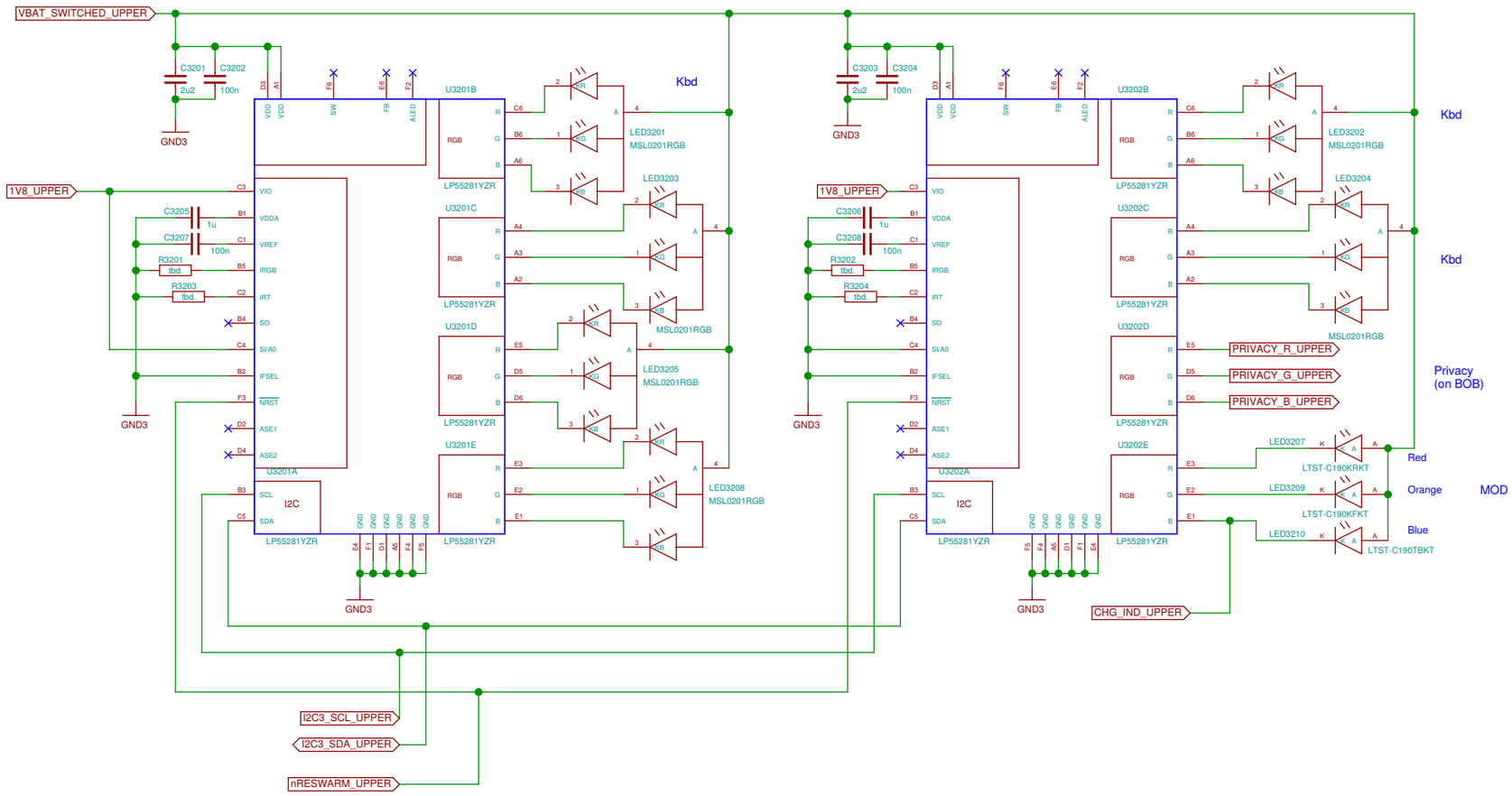
Plotted by eeshow 2f031f5+ 20161019-02:26Z | Id: 29/37



Sheet: /Camera/ File: neo900_SS_30.sch		
Title: Camera		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 30/37



Sheet: /Fancy LEDs/ File: neo900_SS_31.sch		
Title: Fancy LEDs		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 31/37



Sheet: /Basic LEDs/
File: neo900_SS_32.sch

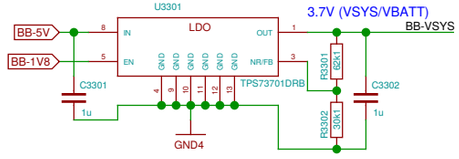
Title: Basic LEDs

Size: A3 | Date: 17 JUL 2016 | Rev:

Plotted by eeshow 2f031f5+ 20161019-02:26Z | Id: 32/37

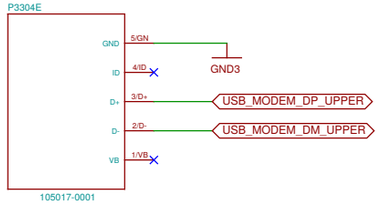
Cleaning up. The connections to BB-xM are on the next sheets.

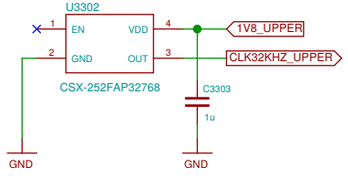
TODO: v2 power supply still needs designing



Ersetzen durch 2A buck converter

connect to BB
by some Micro-USB cable





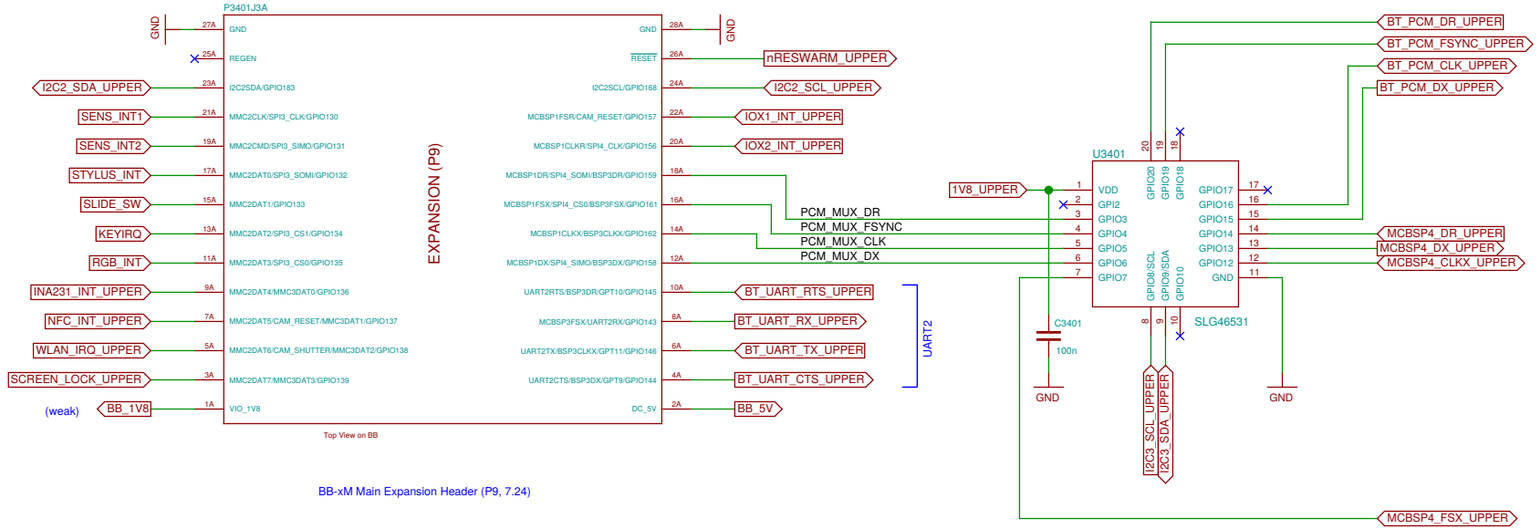
Alternative: OYKTGLJANF-0.032768

Sheet: /Connector to BB-XM/
File: neo900_SS_33.sch

Title: Connector to BB-XM

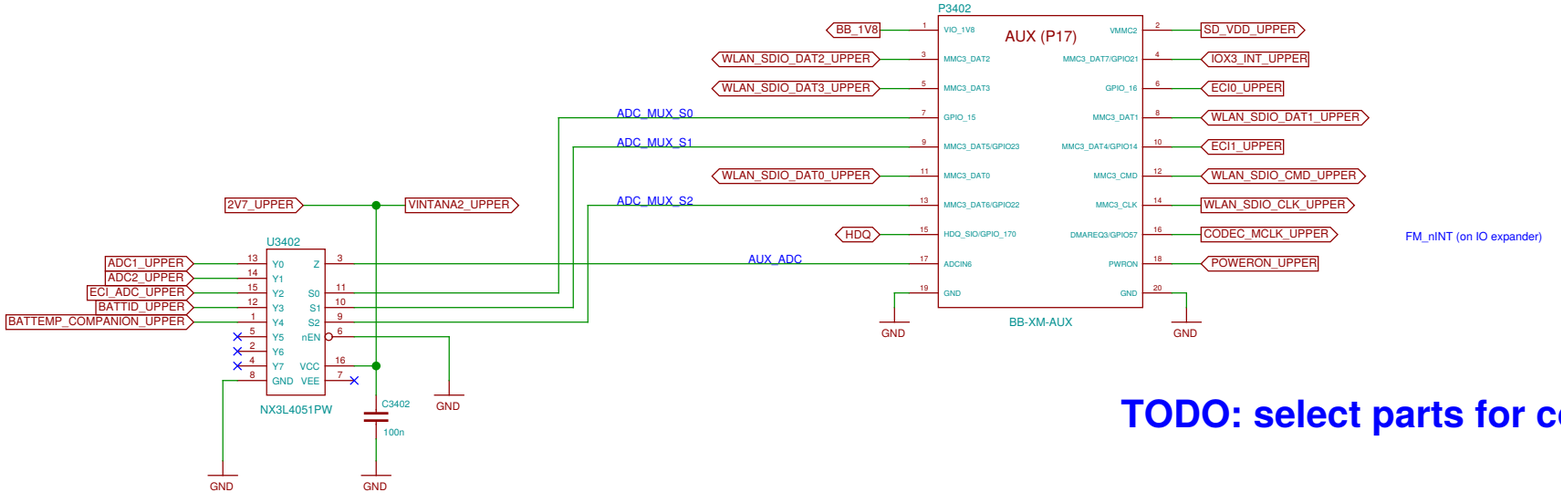
Size: A3 | Date: 17 JUL 2016 | Rev:

Plotted by eeshow 2f031f5+ 20161019-02:26Z | Id: 33/37



BB-xM Main Expansion Header (P9, 7.24)

TODO: update pin names in footprint

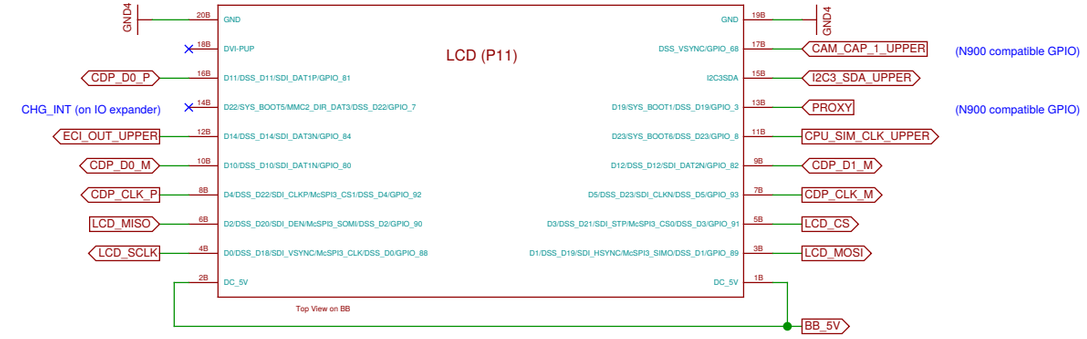


TODO: select parts for connectors

Sheet: /BB-XM Adapter (CPU)/ File: neo900_SS_34.sch		
Title: BB-XM Adapter (CPU)		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 34/37

P11 (7.25)

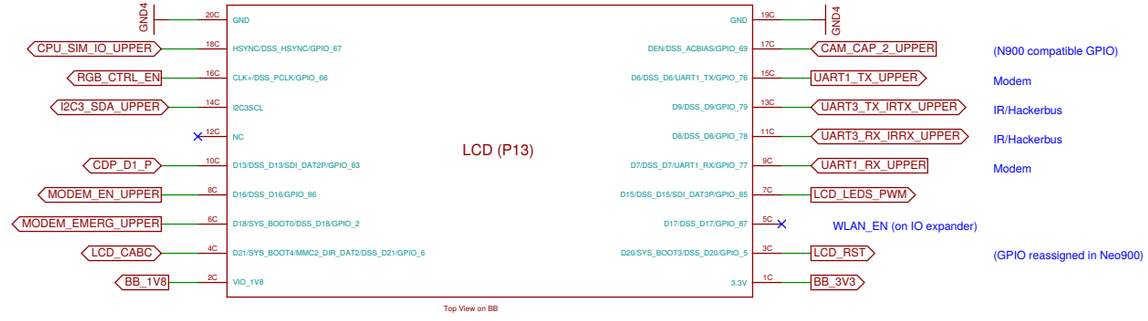
P3401B



(N900 compatible GPIO)

(N900 compatible GPIO)

P3401C



(N900 compatible GPIO)

Modem

IR/Hackerbus

IR/Hackerbus

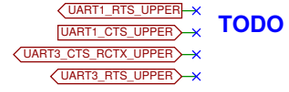
Modem

WLAN_EN (on IO expander)

(GPIO reassigned in Neo900)

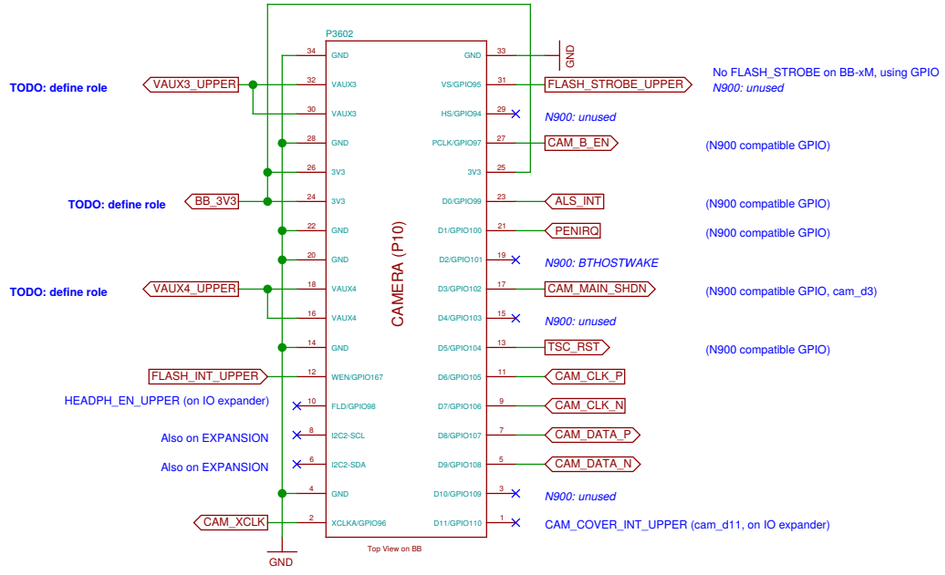
P13 (7.25)

TODO: update pin names in footprint

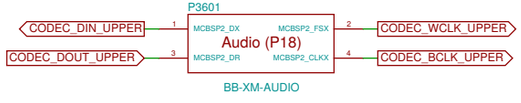


Sheet: /BB-XM Adapter (DISP)/ File: neo900_SS_35.sch		
Title: BB-XM Adapter (DISP)		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 35/37

Processor Camera Port Interface (P10, 7.20.3)



TODO: update pin names in footprint



Sheet: /BB-XM Adapter (CAM)/ File: neo900_SS_36.sch		
Title: BB-XM Adapter (CAM)		
Size: A3	Date: 17 JUL 2016	Rev:
Plotted by eeshow 2f031f5+ 20161019-02:26Z		Id: 36/37

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

N3701
15015-0439

CPU

N3702
15015-0439

DISP

N3703
15015-0439

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 2f031f5+ 20161019-02:26Z | Id: 37/37