

SCH 051-0517

BRD 820-3675

MCO 056-6398

BOM 639-4924 (16GB)

BOM 639-00196 (16GB,DTD)

BOM 639-6157 (32GB)

BOM 639-00194 (32GB,DTD)

BOM 639-6158 (64GB)

BOM 639-00195 (64GB,DTD)

BOM 639-00150 (128GB)

BOM 639-00197 (128GB,DTD)

## D



## B

B

A

PCB: PLACE THIS XW  
AT U1, NEAR XI/XO

**XW0204**  
SHORT-10L-0.1MM-SM

1 2

ROOM=SOC



WAKE\_BT  
BB\_RST\_L  
WLAN\_JTAG\_SWDCLK  
WLAN\_JTAG\_SWDIO

BB\_IPC\_GPIO1  
AP\_WAKE\_MODEM

STOCKHOLM\_SIM\_SEL

BB\_DEVICE\_RDY  
BB\_GPS\_SYNC  
BB\_HOST\_RDY  
BB\_RESET\_DET\_L  
PP1V8

RADIO\_ON\_L

PP1V8

PP1V8  
BB\_CORE\_DUMP

BB\_IPC\_GPIO

BT\_UART\_RTS\_L  
BT\_UART\_CTS\_L  
BT\_UART\_TXD  
BT\_UART\_RXD

BB\_UART\_RTS\_L  
BB\_UART\_CTS\_L  
BB\_UART\_TXD  
BB\_UART\_RXD

STOCKHOLM\_RTS\_L  
STOCKHOLM\_CTS\_L  
STOCKHOLM\_UART\_TXD  
STOCKHOLM\_UART\_RXD

WLAN\_UART\_RTS\_L  
WLAN\_UART\_CTS\_L  
WLAN\_UART\_TXD  
WLAN\_UART\_RXD

PCIE\_DEV\_WAKE

BT\_PCM\_CLK  
BT\_PCM\_SYNC  
BT\_PCM\_OUT  
BT\_PCM\_IN

BB\_I2S\_CLK  
BB\_I2S\_WS  
BB\_I2S\_TXD  
BB\_I2S\_RXD

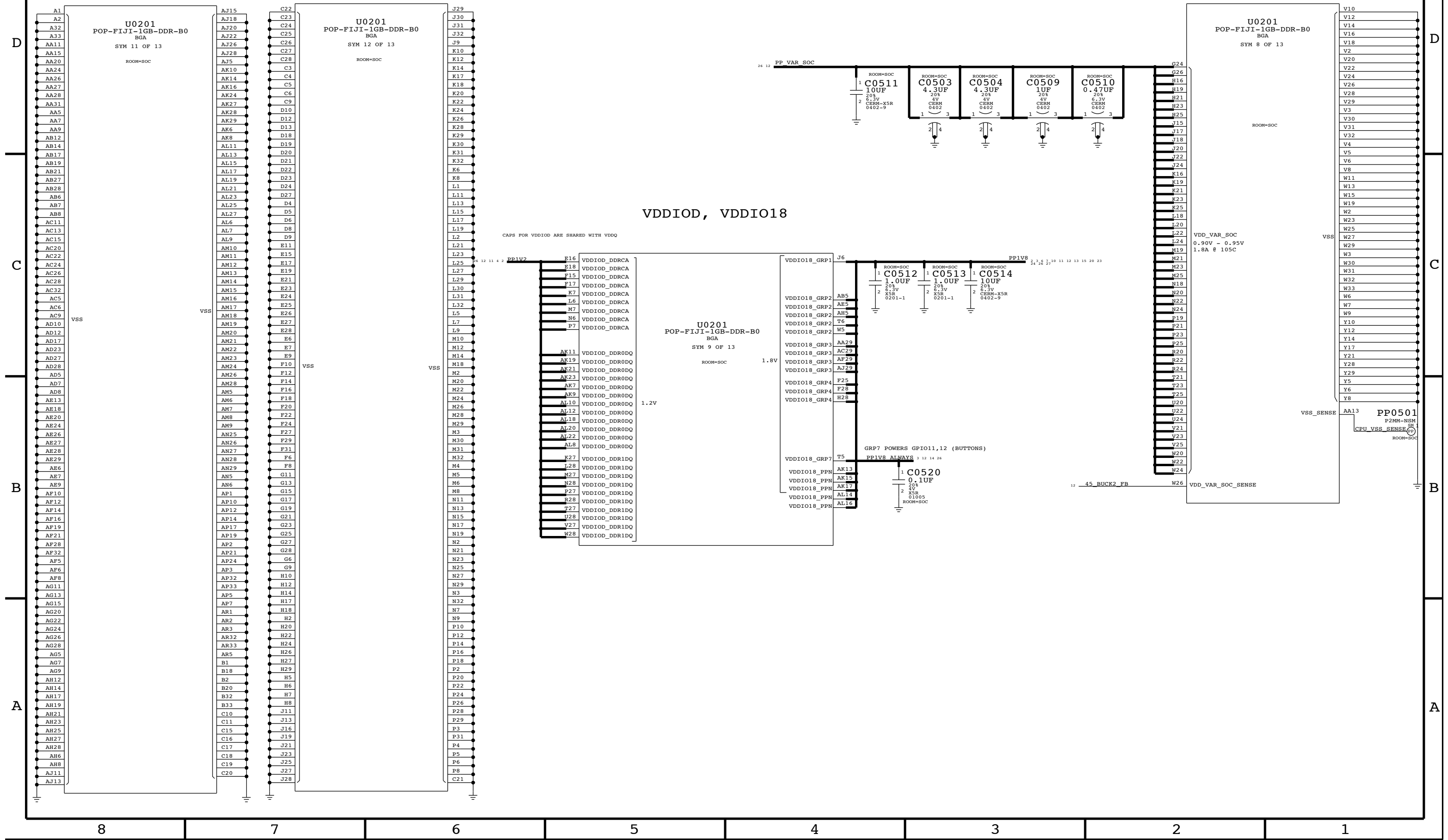




# FIJI: VDDIOD, VDDIO18, VDD\_VAR\_SOC

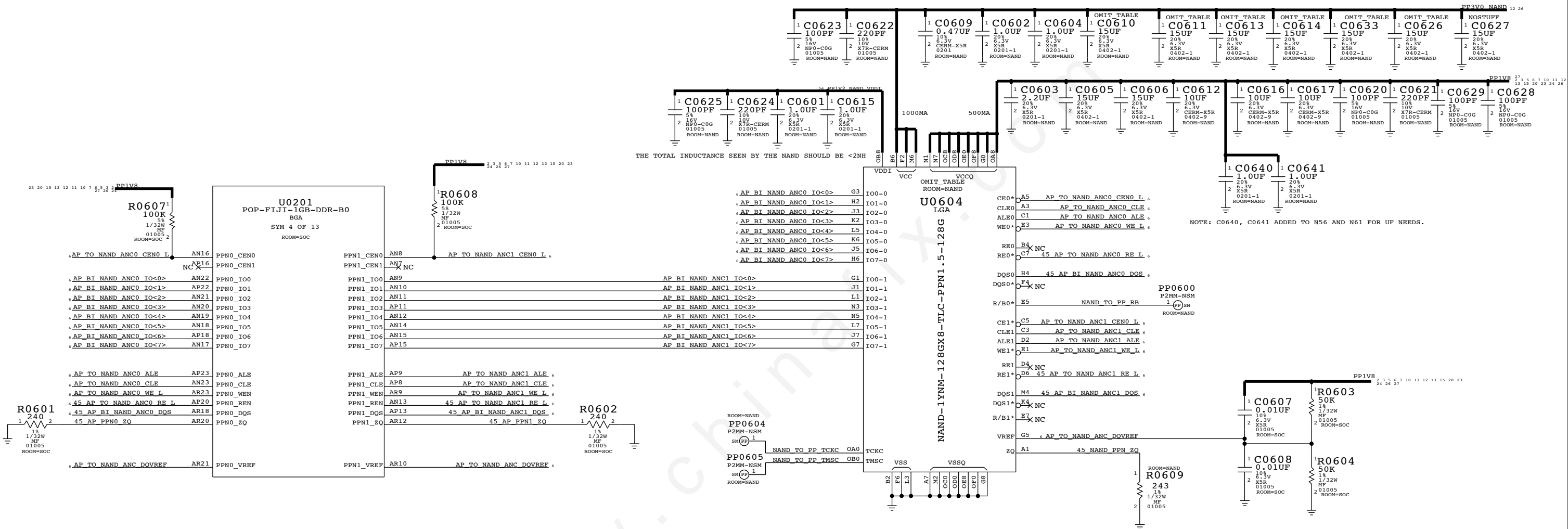
JUST A FEW GNDS

VDD\_SRAM, VDD\_SOC



## FIJI: NAND + 12X17 NAND PKG

SUPPORT FOR PPN1.5 (1.8V IO) ONLY



NOTE: NAND PADS SHOULD BE SHIELDED FROM TRACES WITH A GROUND PLANE

# FIJI: HIGH SPEED DIG (CAM,LCD,LPDP,PCIE)

D

D

C

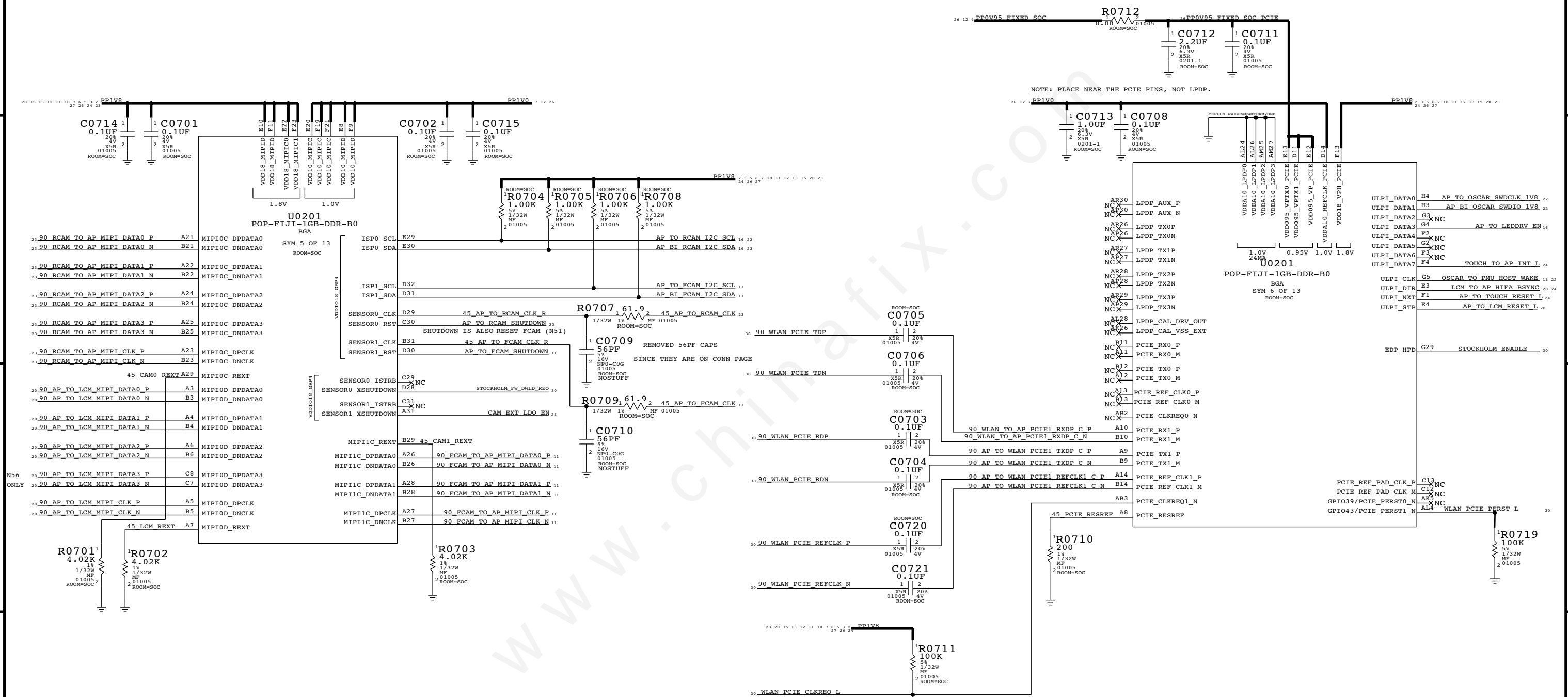
C

B

B

A

A



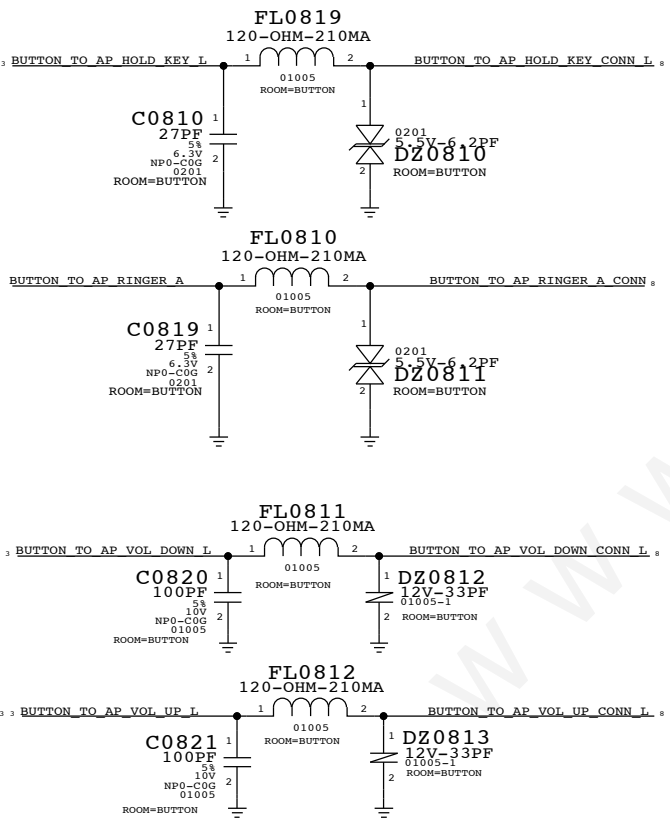
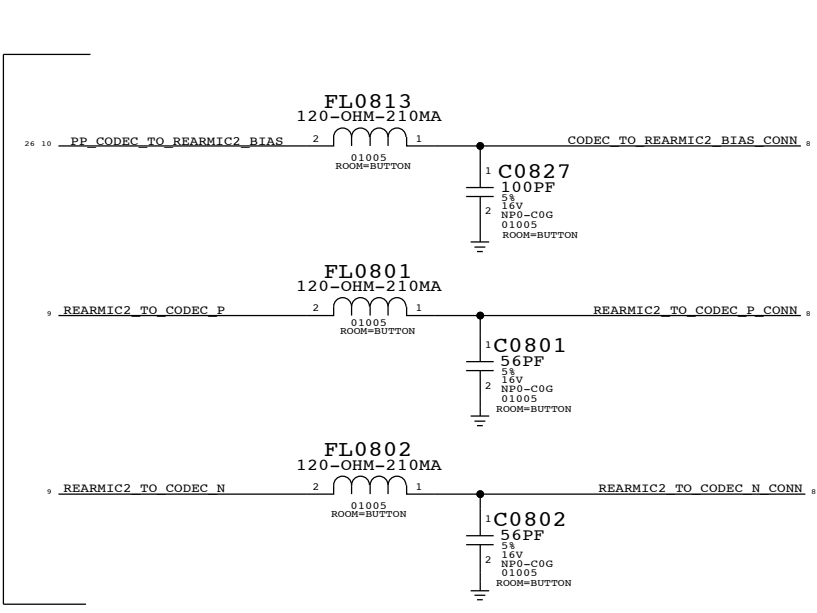




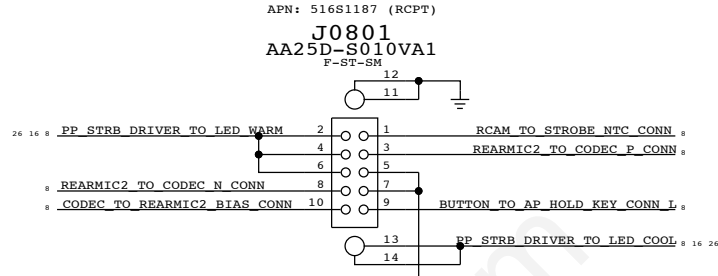
# BUTTON FLEX (BUTTONS, ANC REF MIC, STROBE, STROBE\_NTC, WIFI FLEX PAC)

MIC2 (ANC REF MIC):  
MIC2/4 BIAS,  
MIC2\_P,\_N

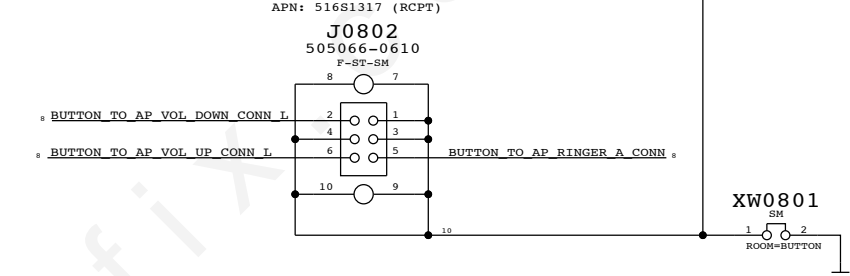
BUTTONS:  
RINGER, HOLD,  
VOL\_UP/DOWN,



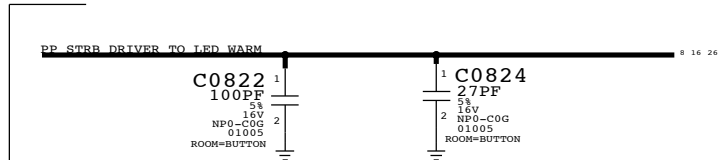
## RIGHT BUTTON FLEX B2B



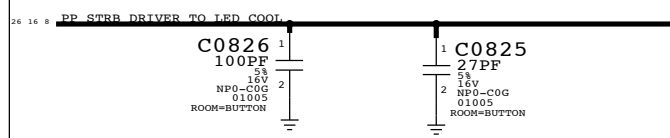
## LEFT BUTTON FLEX B2B



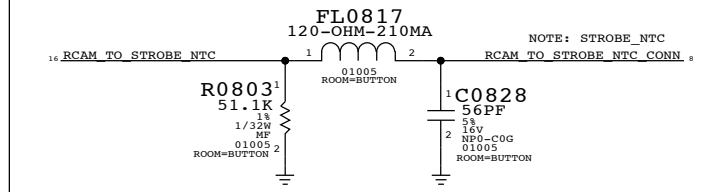
STROBE:  
LED WARM



STROBE:  
LED COOL



STROBE:  
NTC



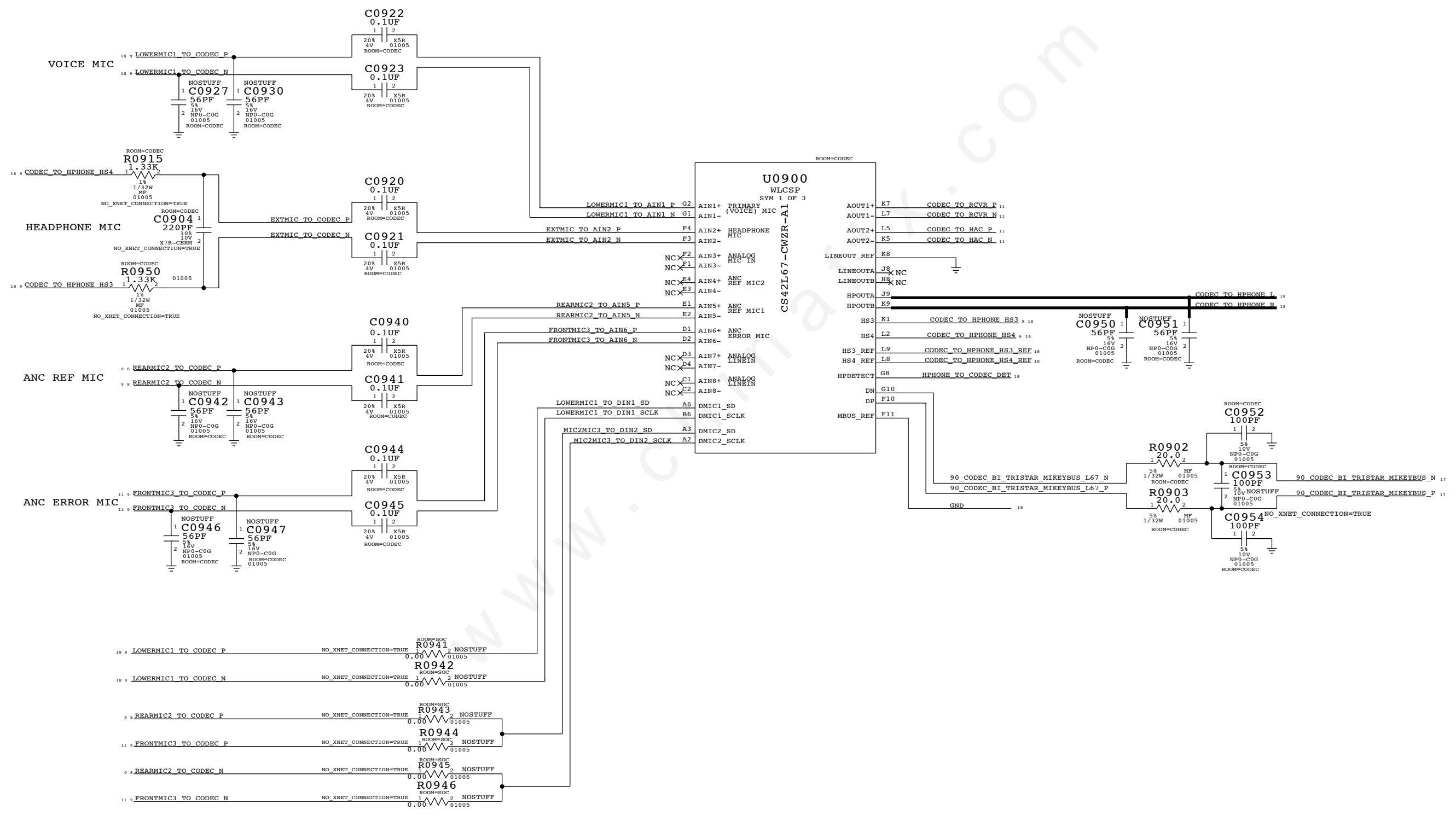




# L67 AUDIO CODEC

## AUDIO I/O

(ANALOG MIC IN, DIG MIC IN, HPOUT, LINEOUT, RECEIVER OUT, MIKEYBUS)



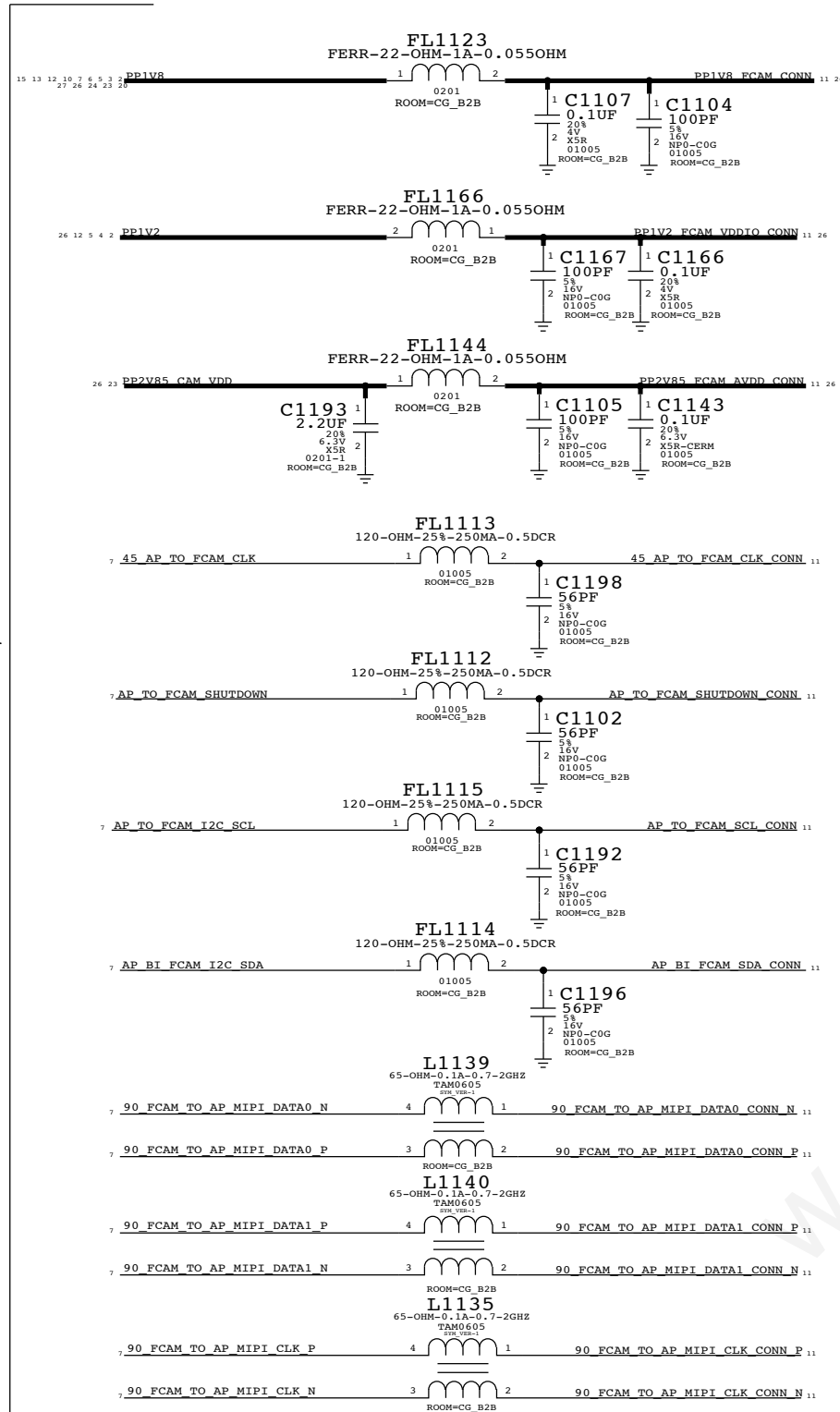


# DIGITAL SYSTEM I/O

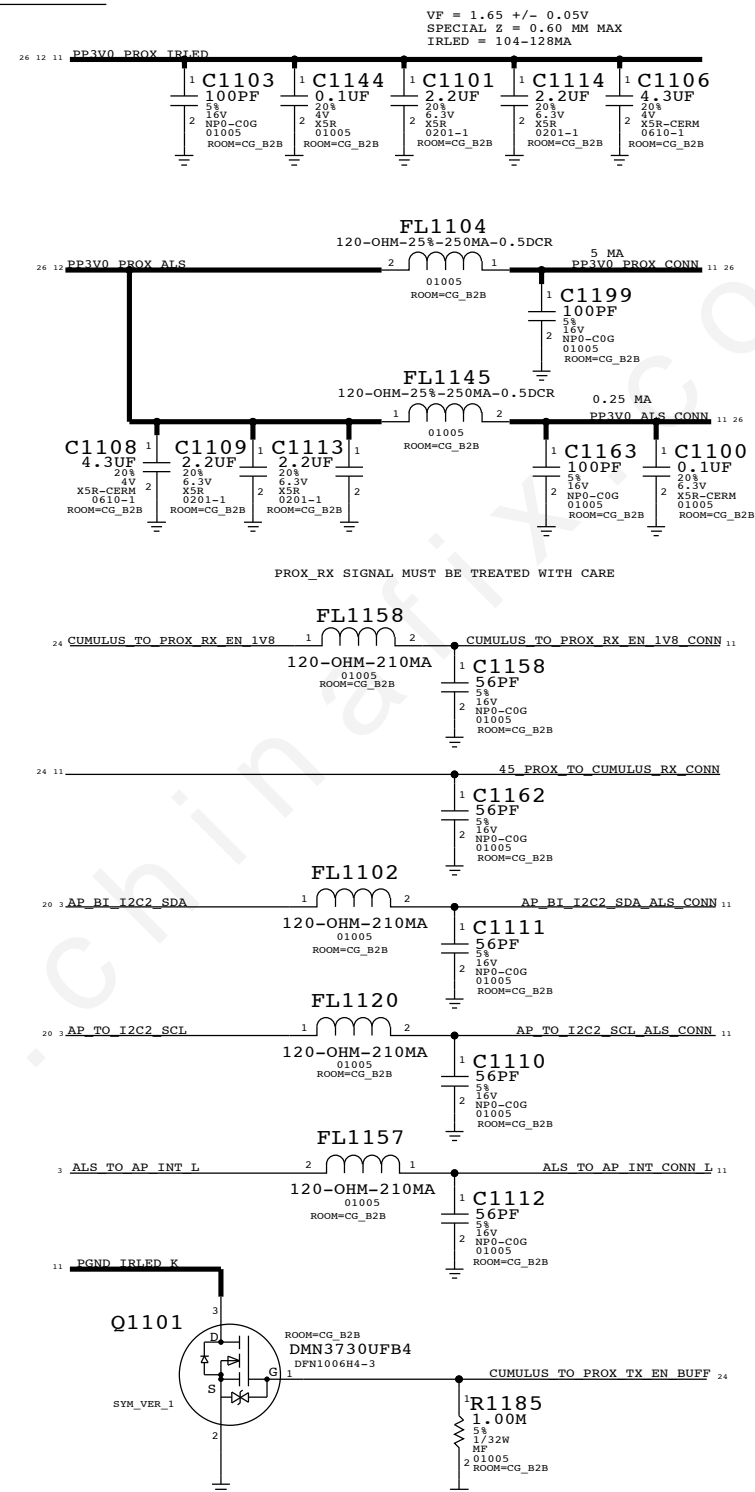
[illegible]

FRONT CAM FLEX B2B

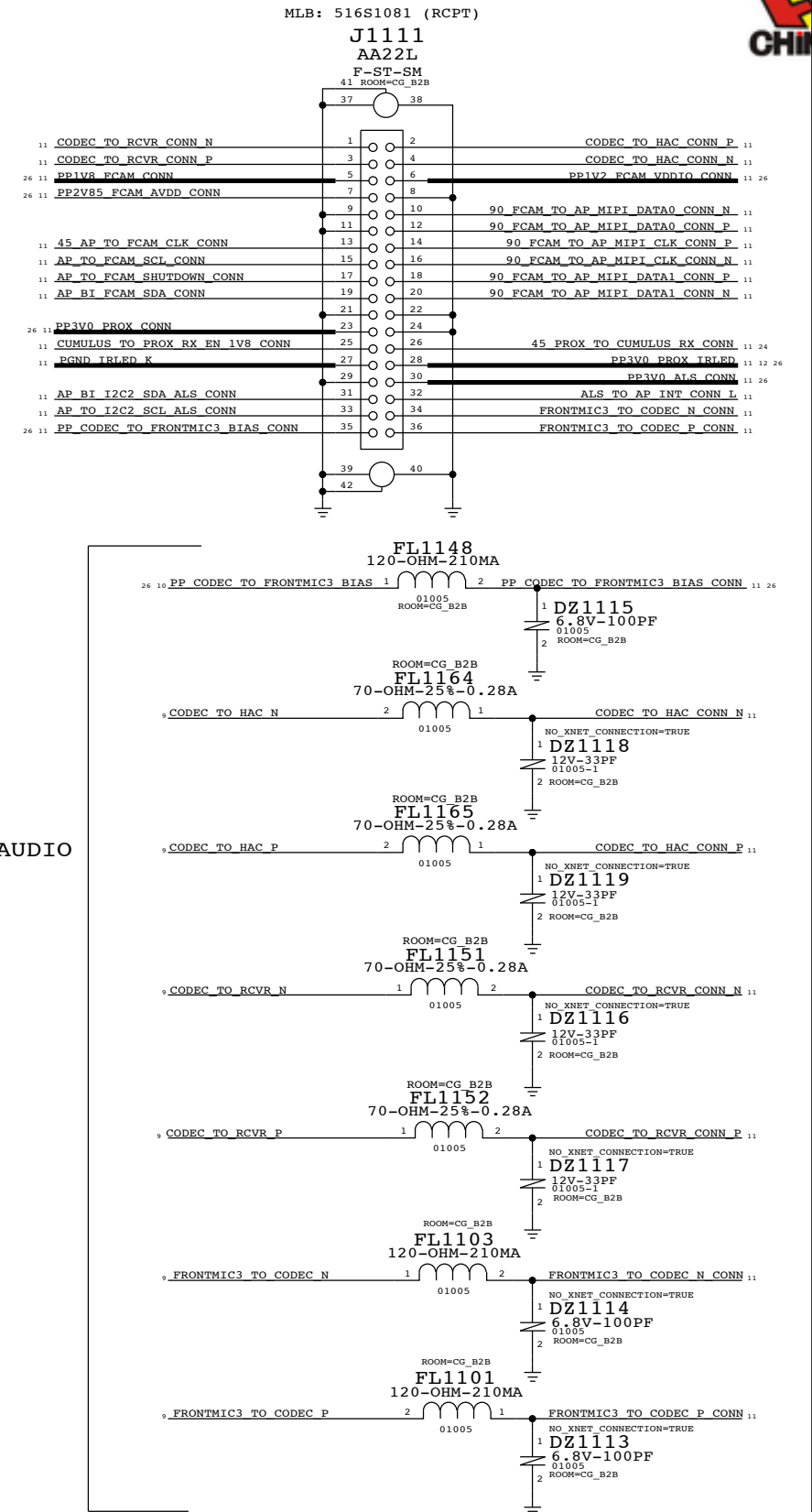
(FCAM, PROX, ALS, RECEIVER, ANC ERROR MIC)

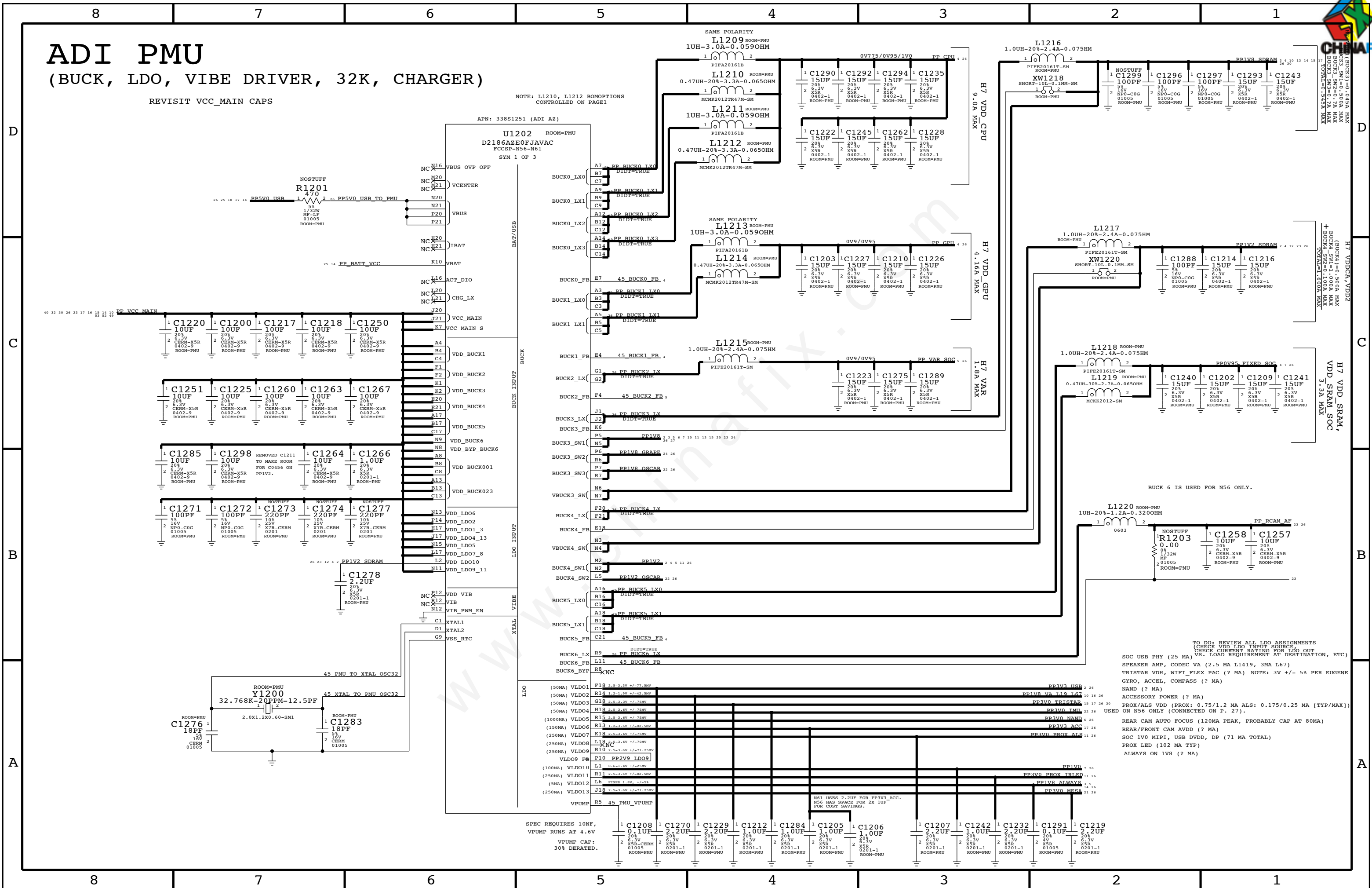


ALS,  
PROX



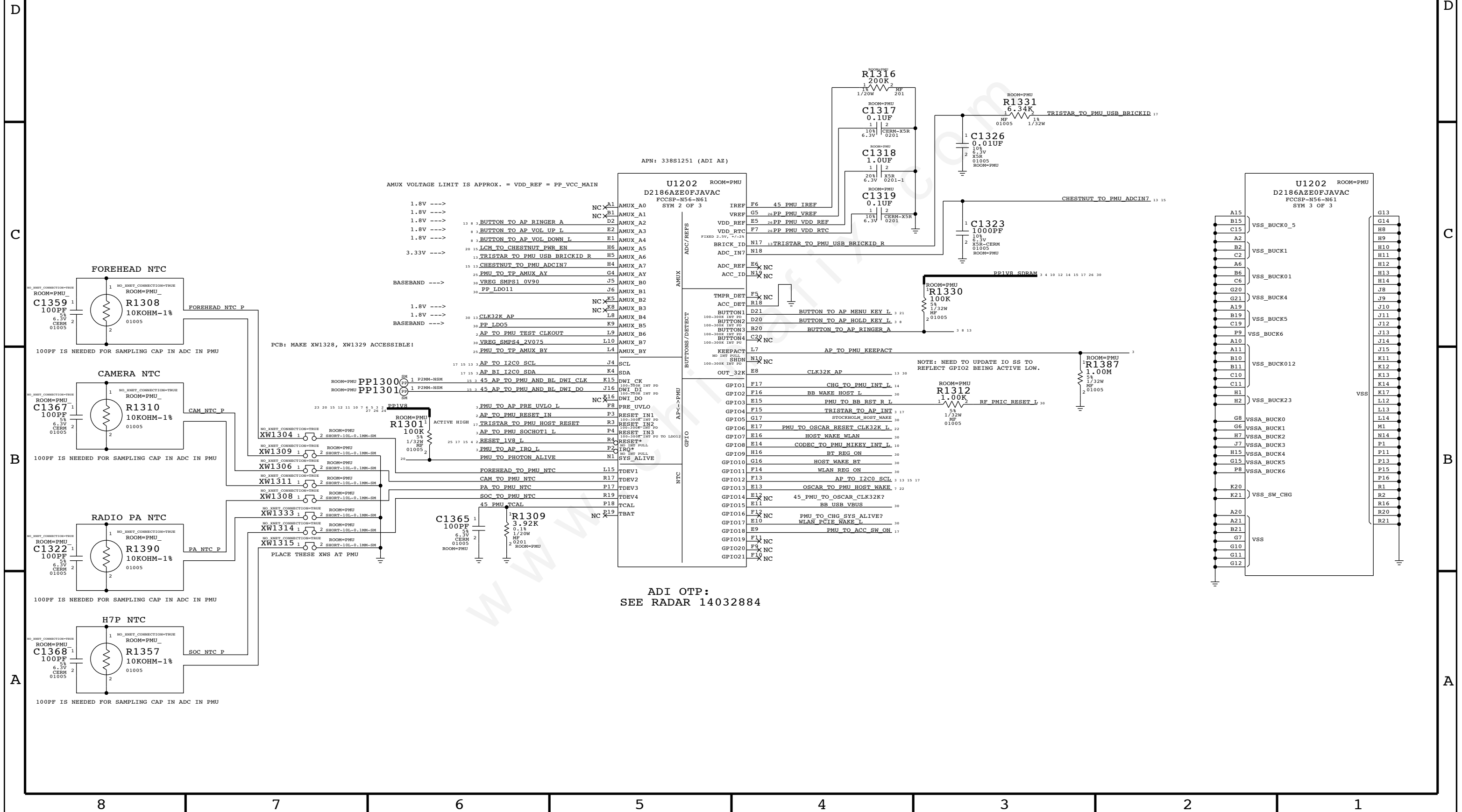
## AUDIO





## ADI PMU

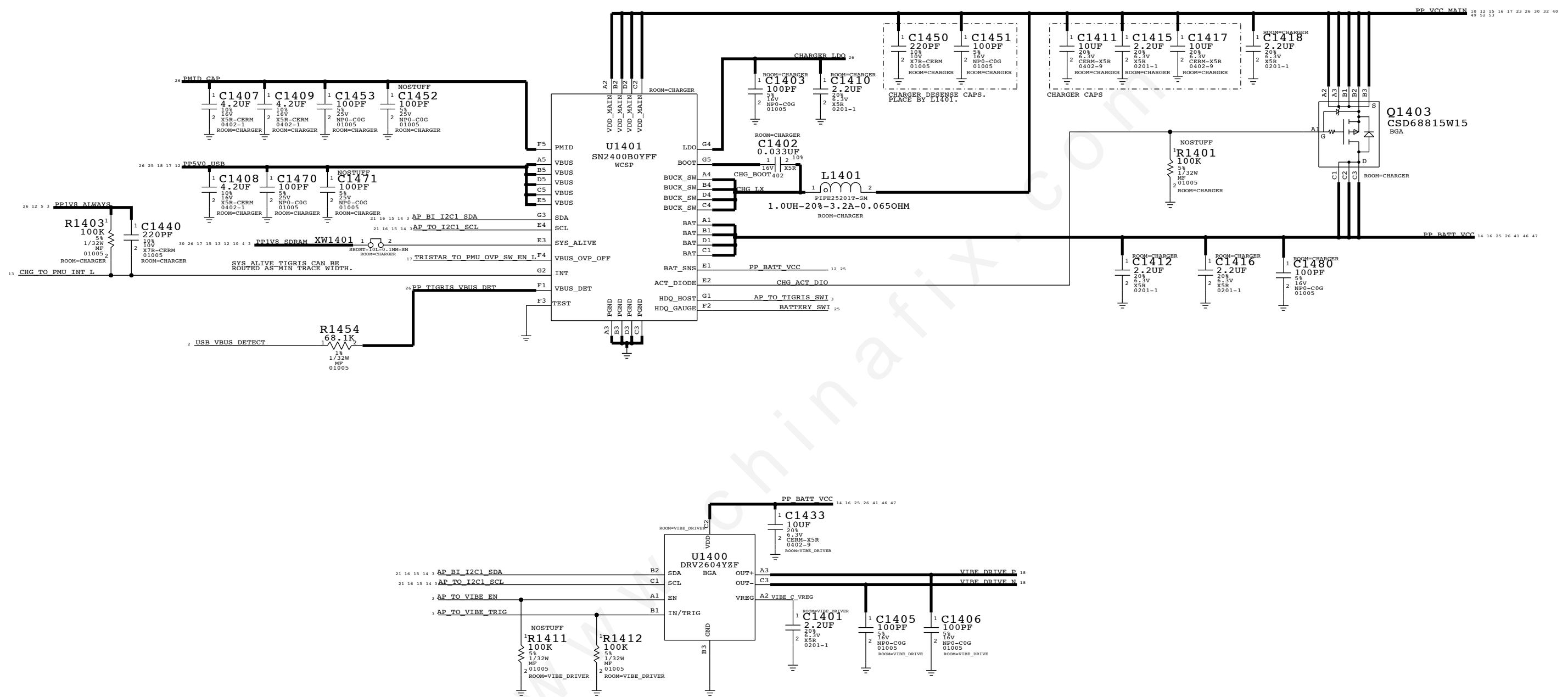
(AMUX, GPIO, BUTTONS, ADC, THERMISTORS, SYSTEM I/F, GND)

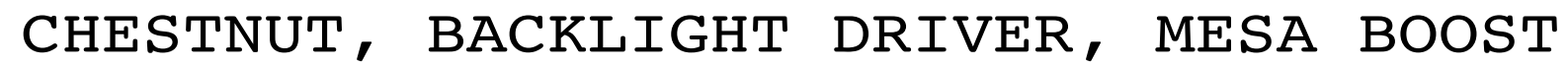




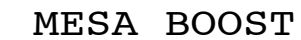


## A





## BACKLIGHT DRIVERS

[illegible]

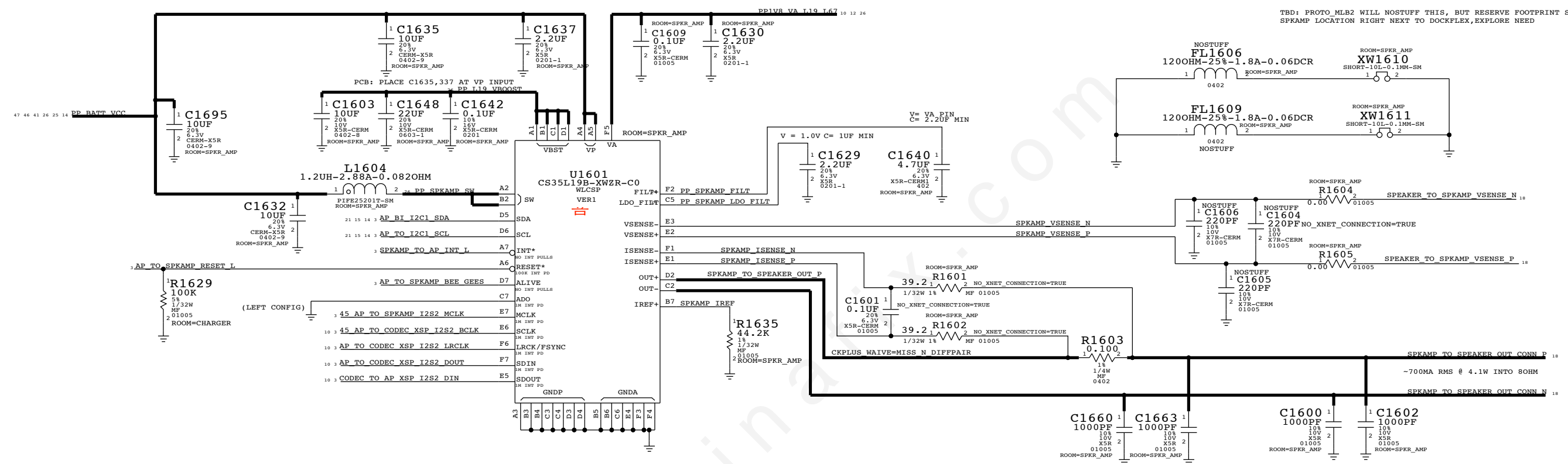




# SPEAKER AMP, LED DRIVER

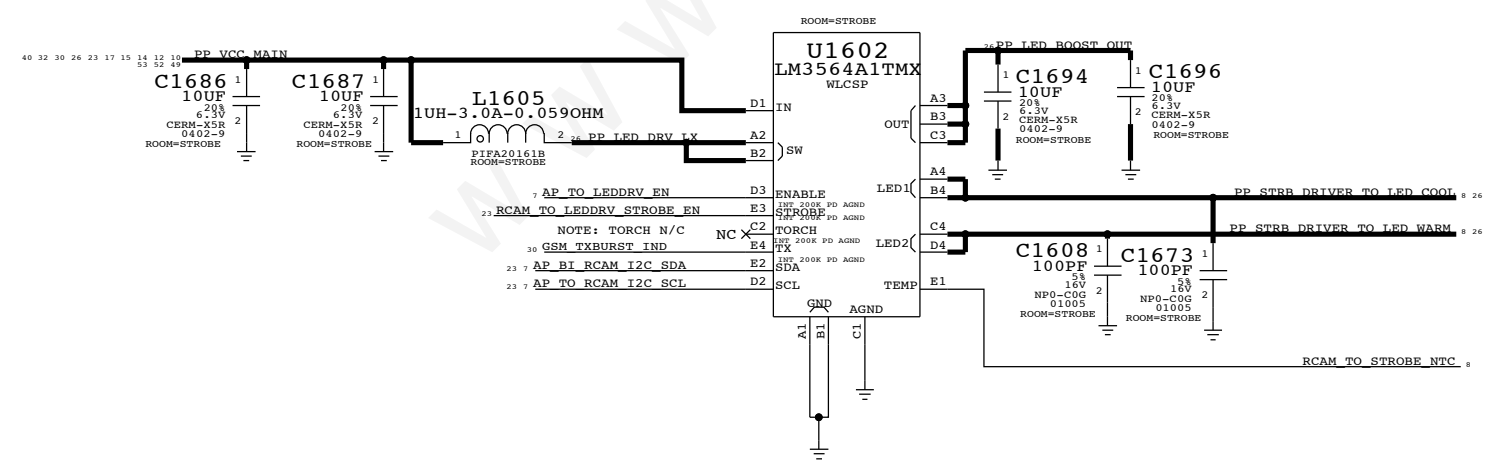
## SPEAKER AMP

I2C ADDRESS: 1000000X



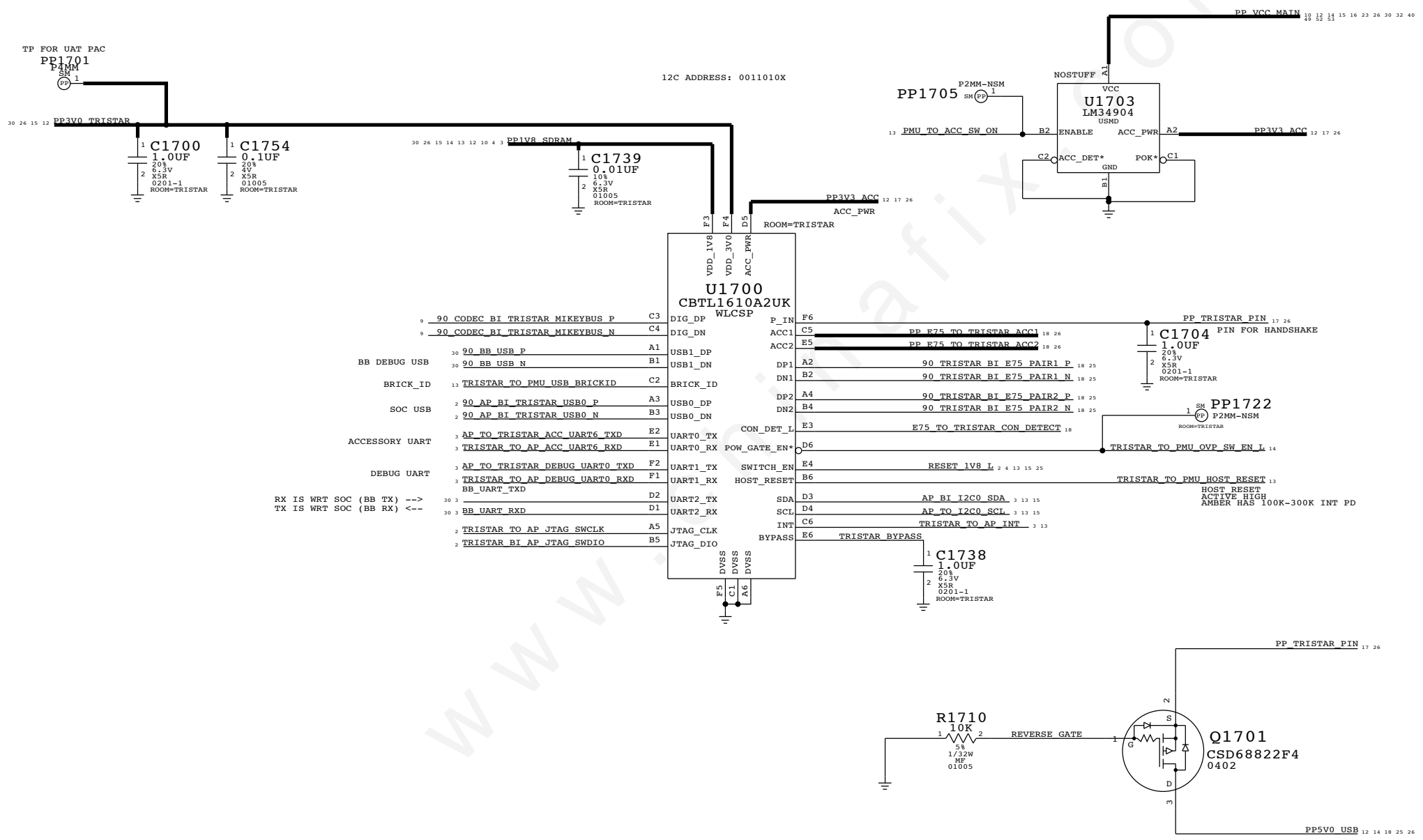
## STROBE DRIVER

TI: APN 353S3899





# TRISTAR2





# DOCKFLEX B2B (USB VBUS, SPEAKER, ANTENNA LAT SW CTRL, MIC1 (PRIMARY MIC), ACC DET/ID/PWR, E75 DIFFPAIRS)

D

LOWER MIC1  
(PRIMARY  
VOICE MIC)

C

HEADPHONE

B

CODEC TO  
HEADPHONE

A

ACCESSORY:  
VIBE  
DRIVE

USB  
VBUS

SPEAKER:  
LEADS,  
VSENSE

TRISTAR

D

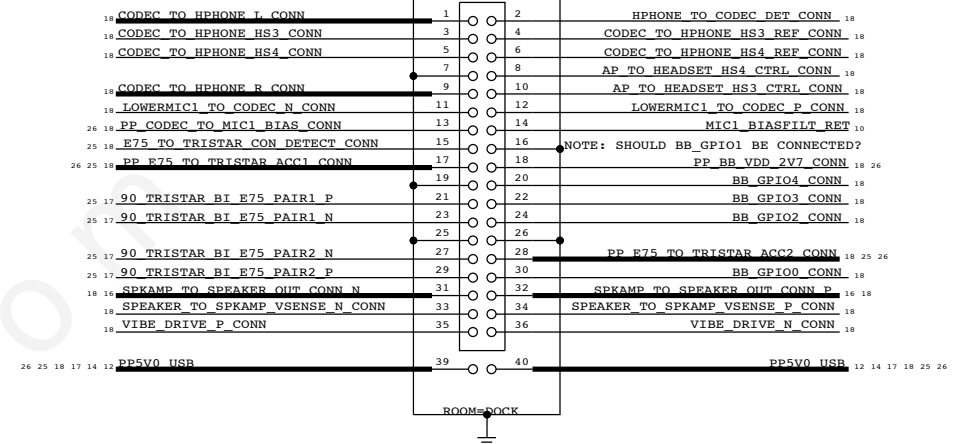
C

B

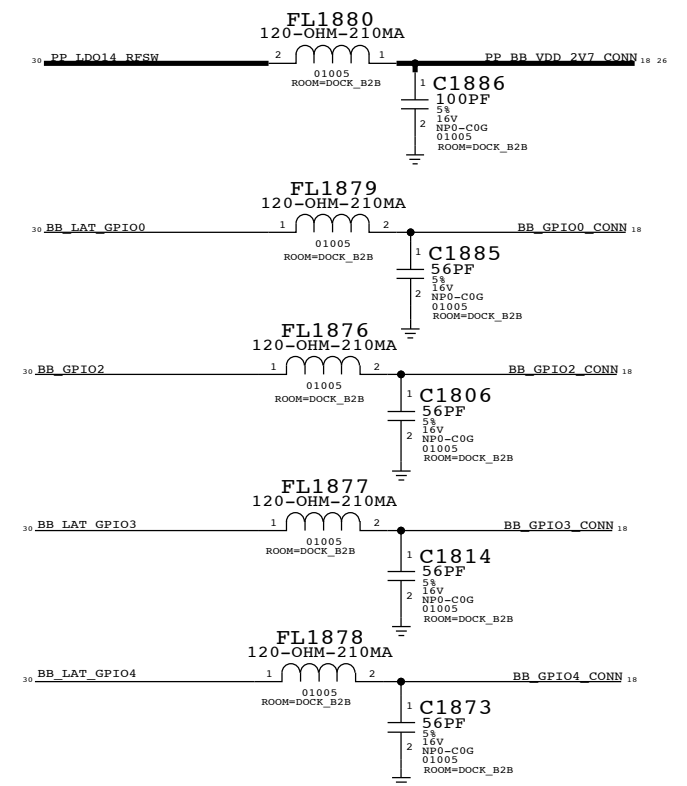
A

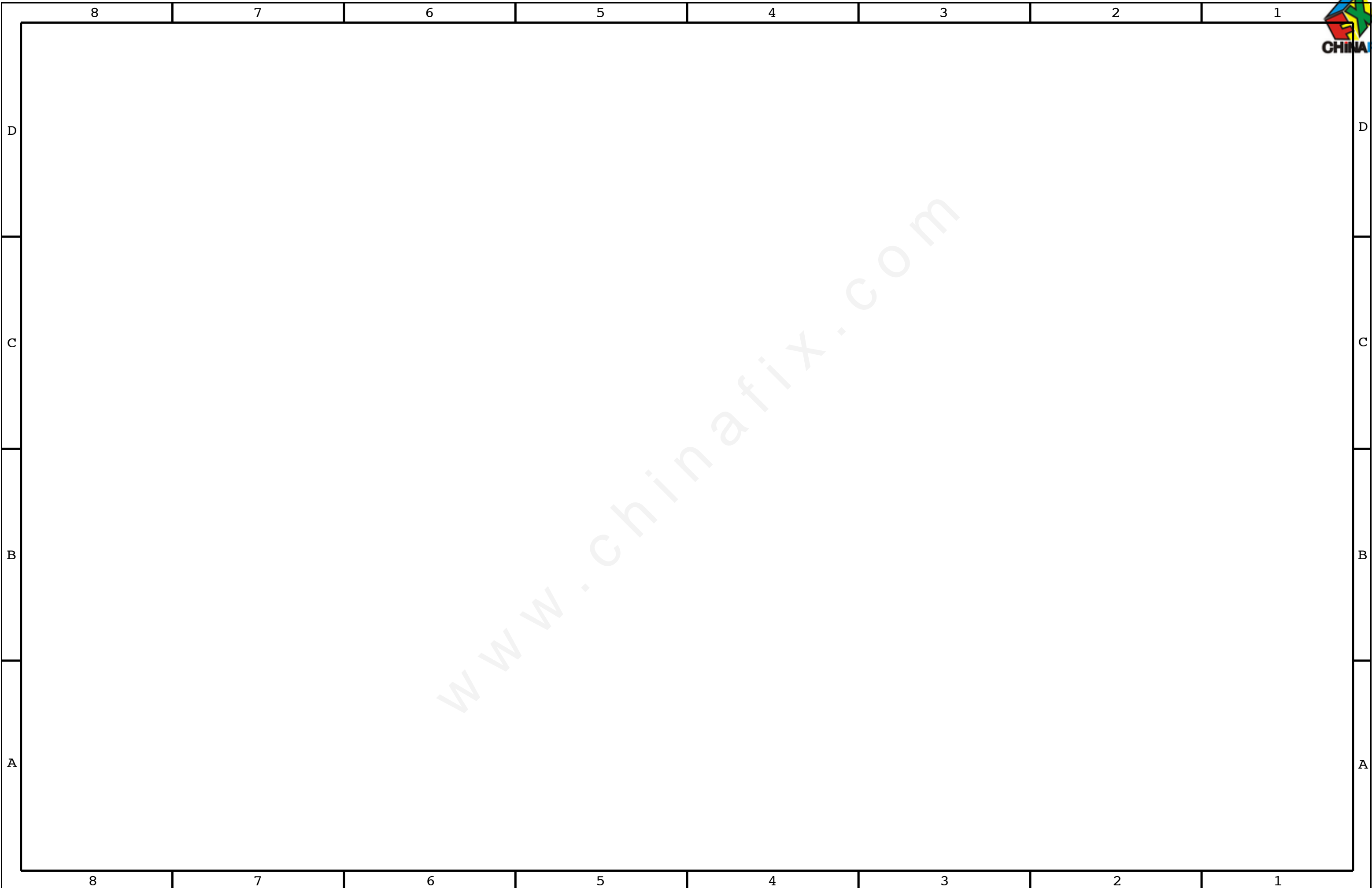
MLB: 516S1282 (PLUG)

J1817  
14-5859-036-201-829



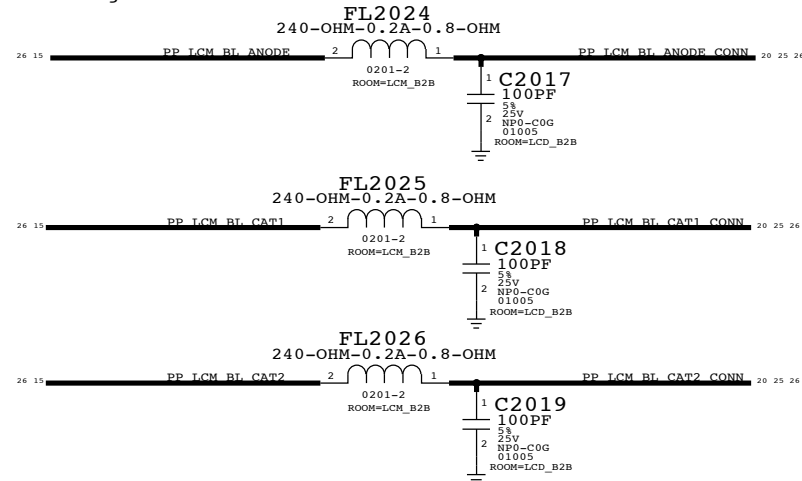
ANTENNA



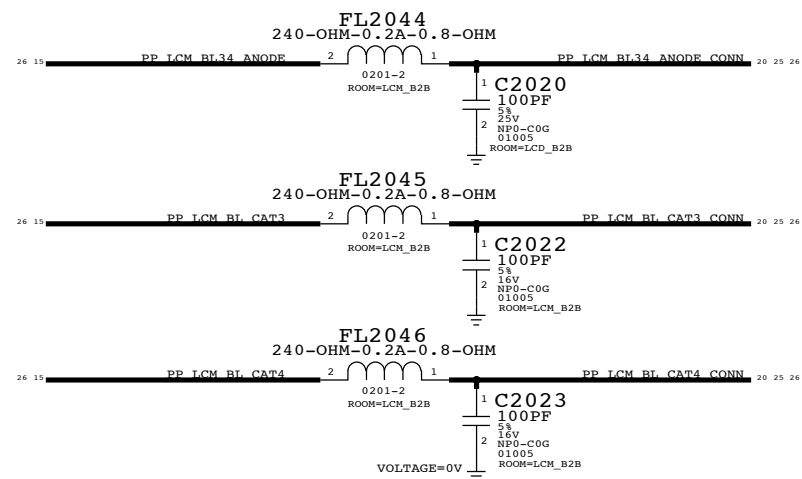


# LCD B2B

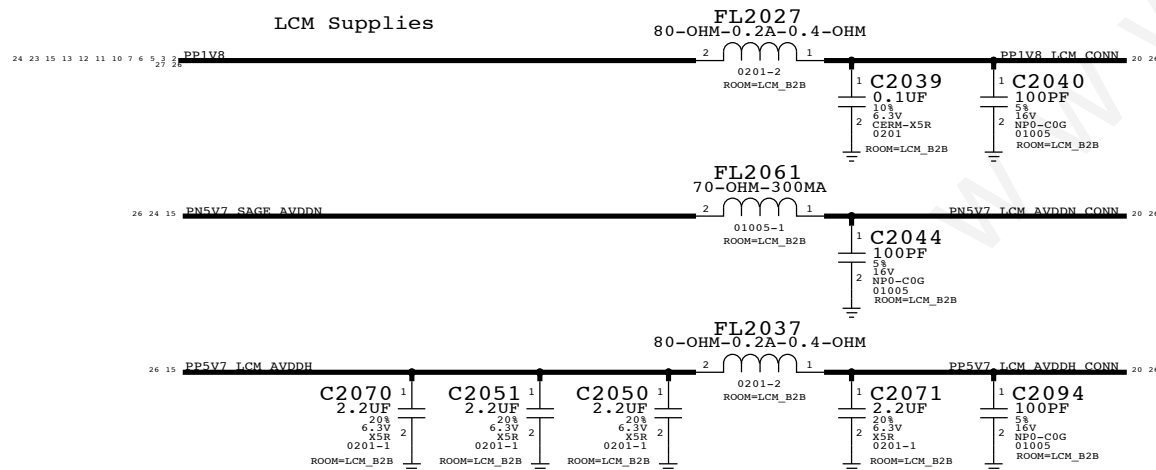
## Backlight



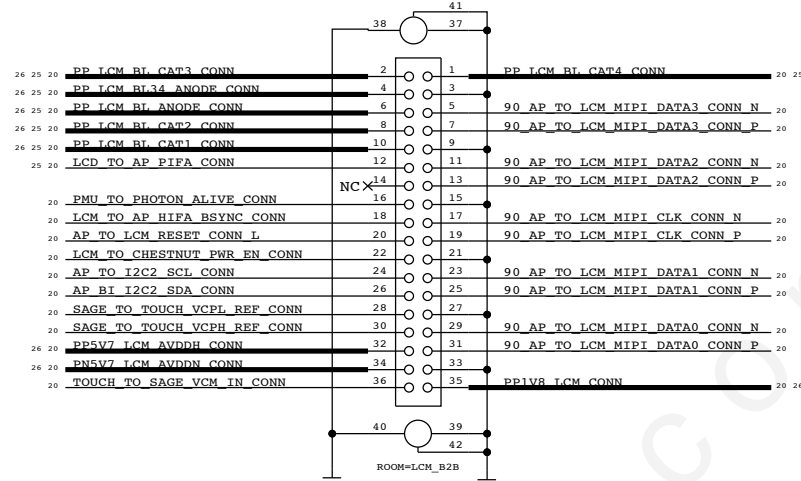
## BACKLIGHT 2 (N56 ONLY)



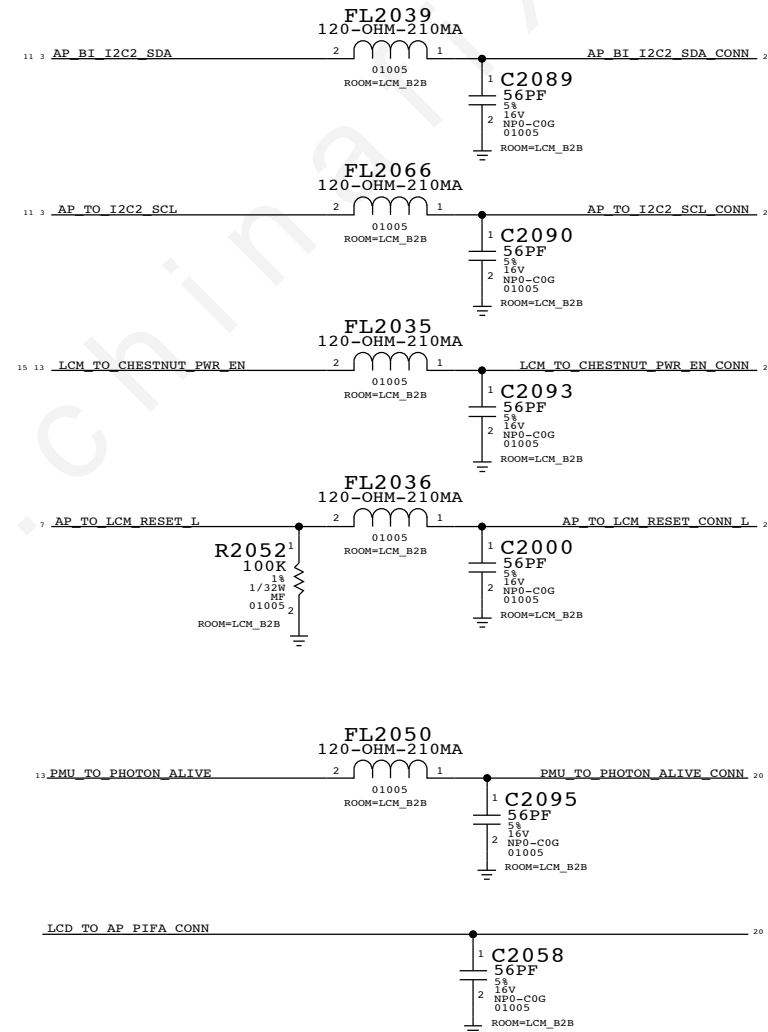
## LCM Supplies



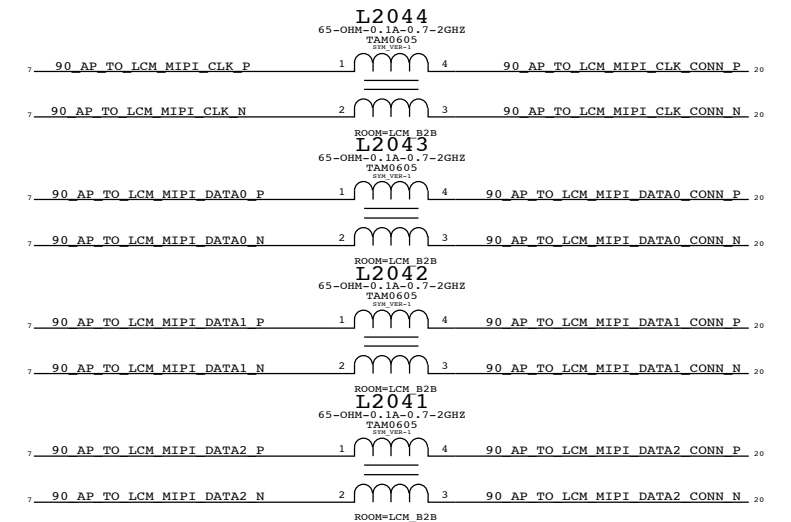
MLB: 516S1185 (RCPT)  
(516S1184 ON FLEX)  
J2019  
20-5857-036-001-829  
F-ST-SM



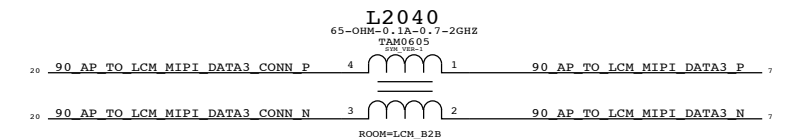
## Digital Interfaces



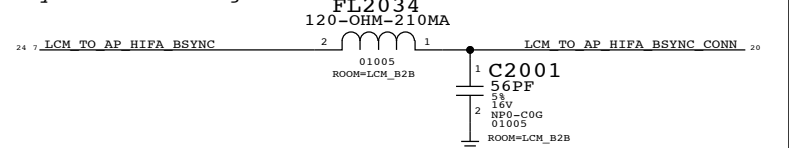
## MIPI Common Mode Chokes



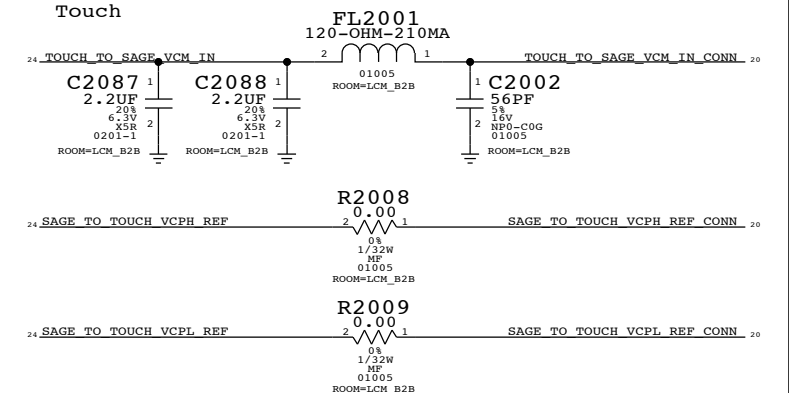
## MIPI LANE 3 (N56 ONLY)



## Sync/Reset/Debug

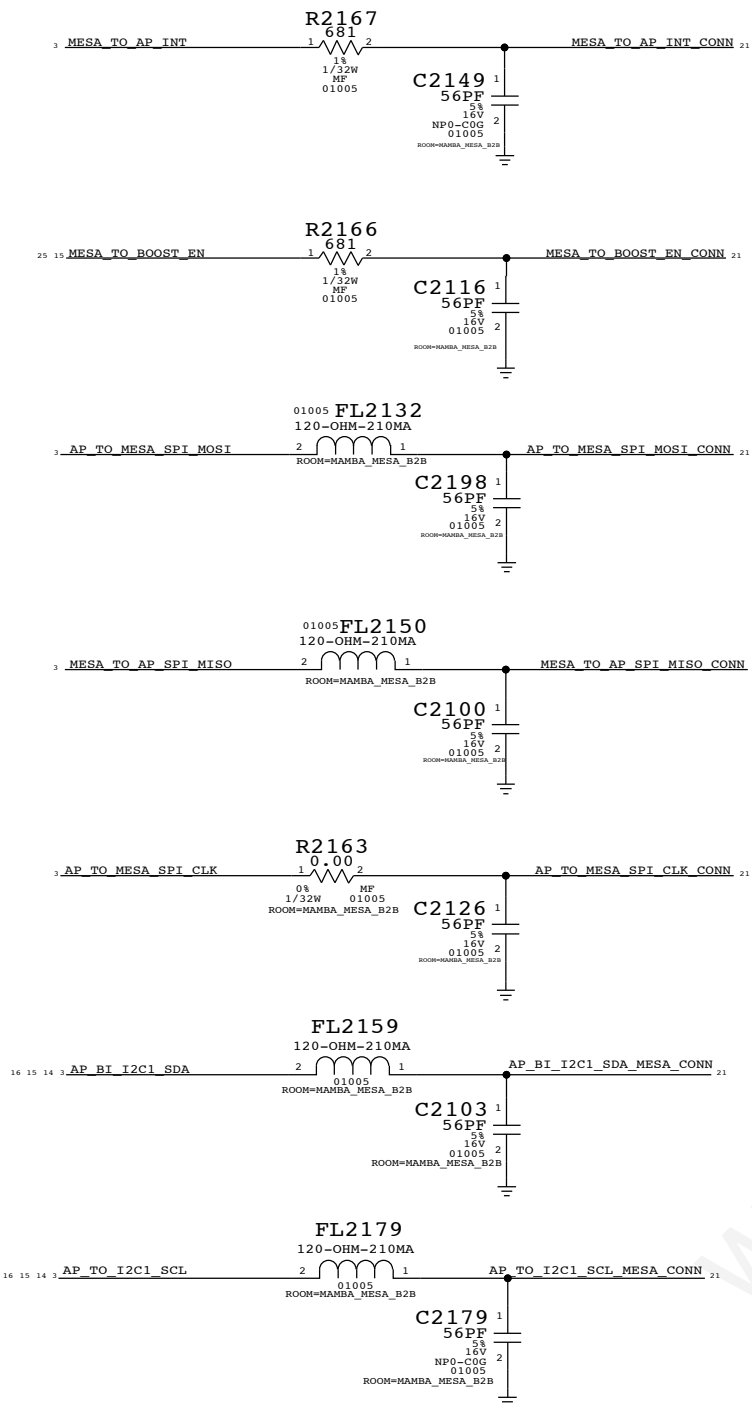


## Touch



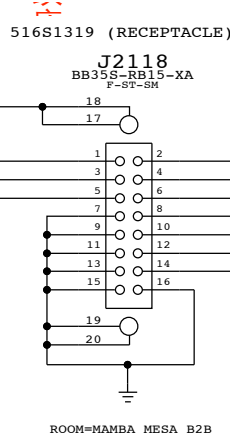
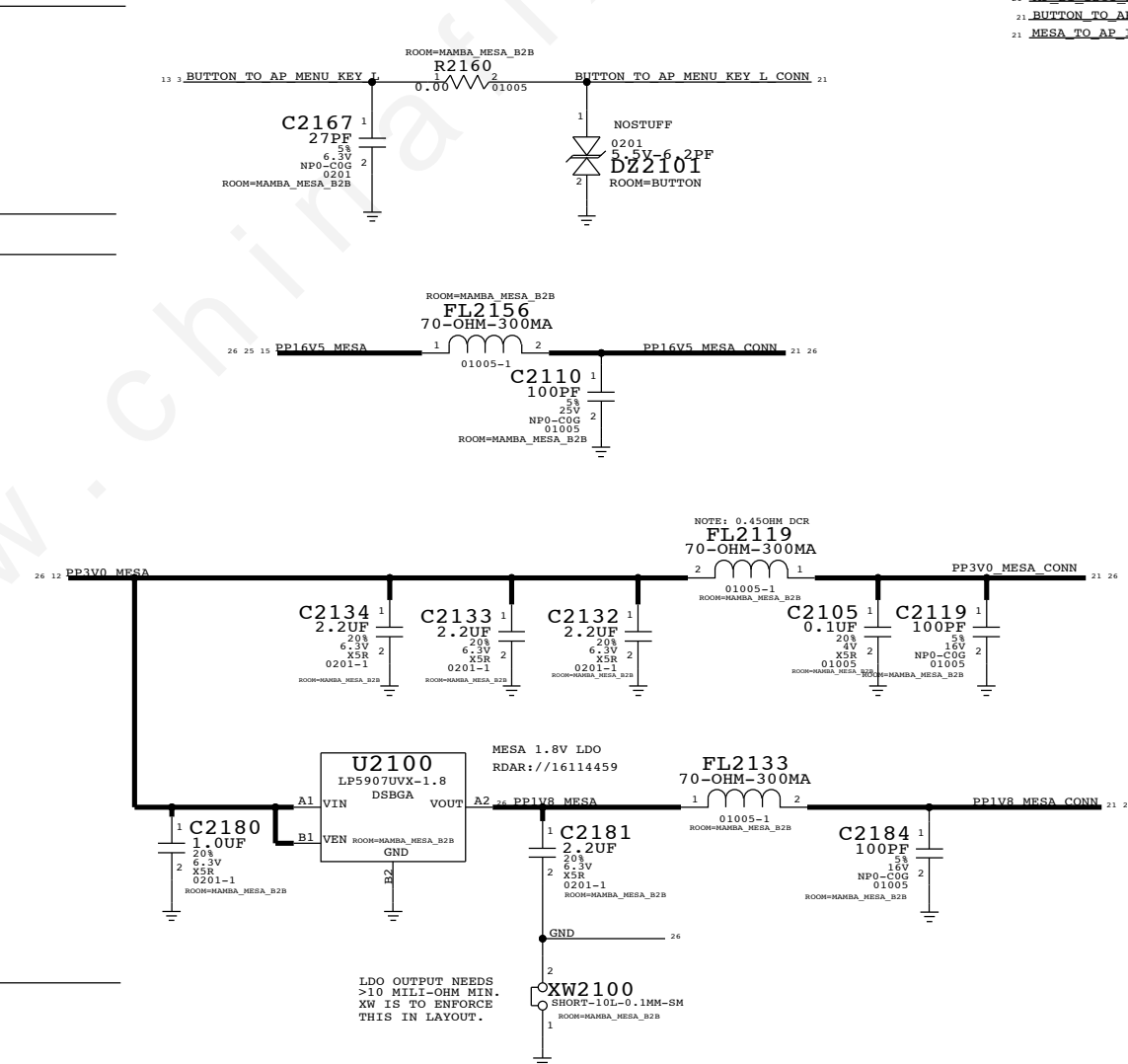
# MESA CONNECTOR

MESA:  
INT, EN, SPI, I2C



MENU  
BUTTON

MESA:  
POWER

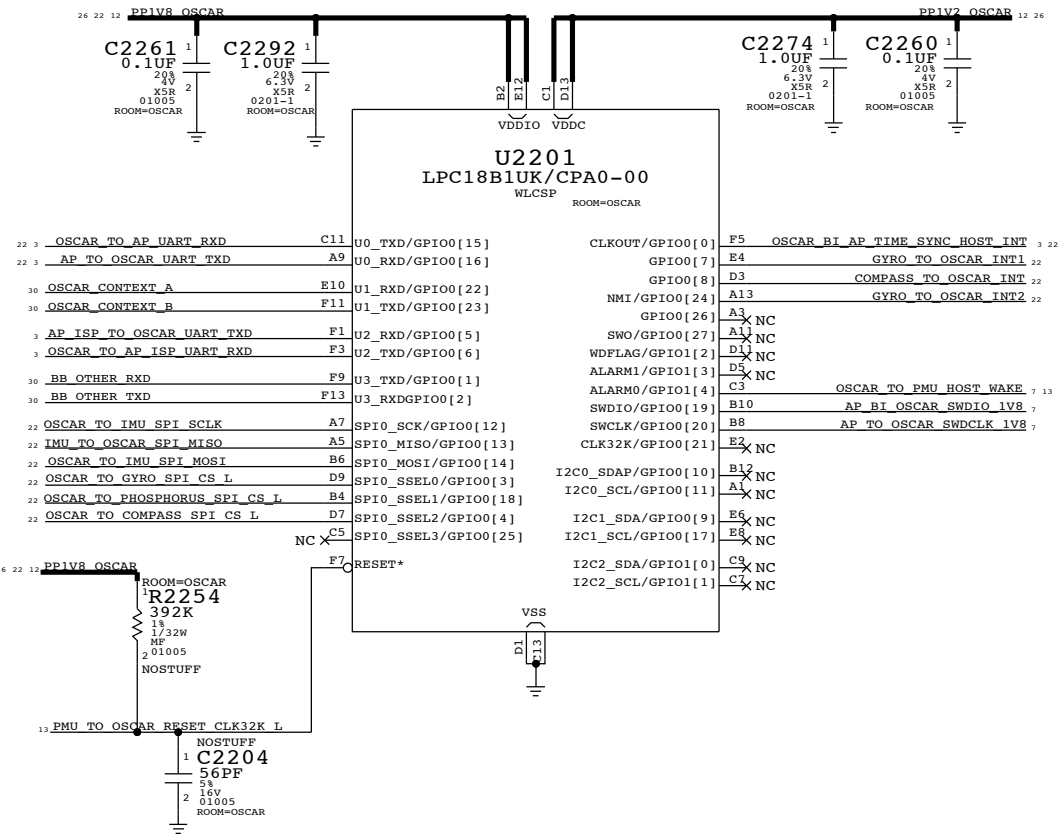


LDO OUTPUT NEEDS  
>10 MILLI-OHM MIN.  
XW IS TO ENFORCE  
THIS IN LAYOUT.



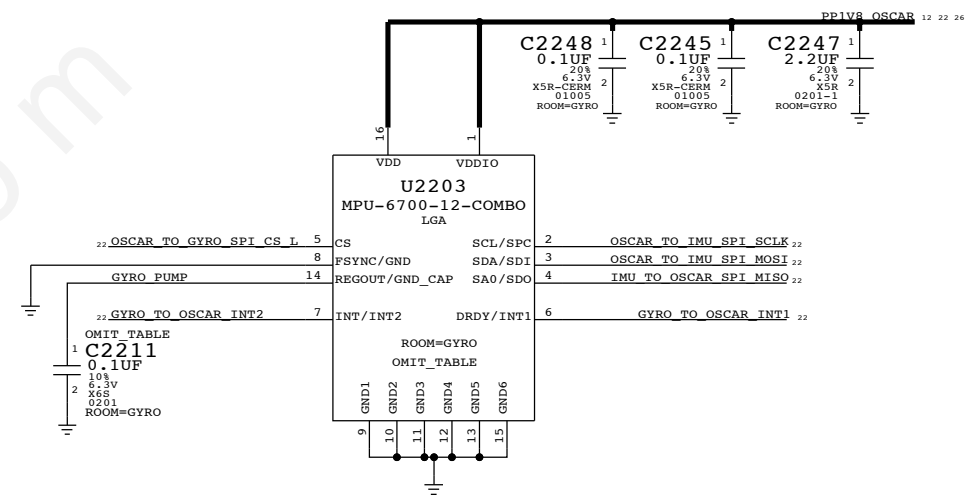
# OSCAR + SENSORS

OSCAR VDDIO = 1.8V ALWAYS ON (NEED TO MAKE HOST & RUN PLL)  
OSCAR CORE = 1.2V ALWAYS ON (NEED TO RUN IN S2RAM)



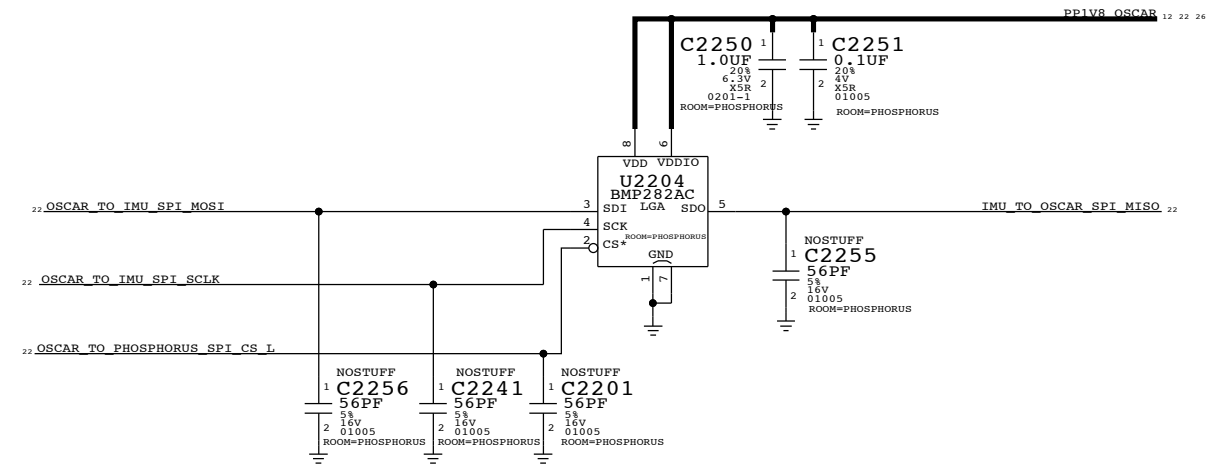
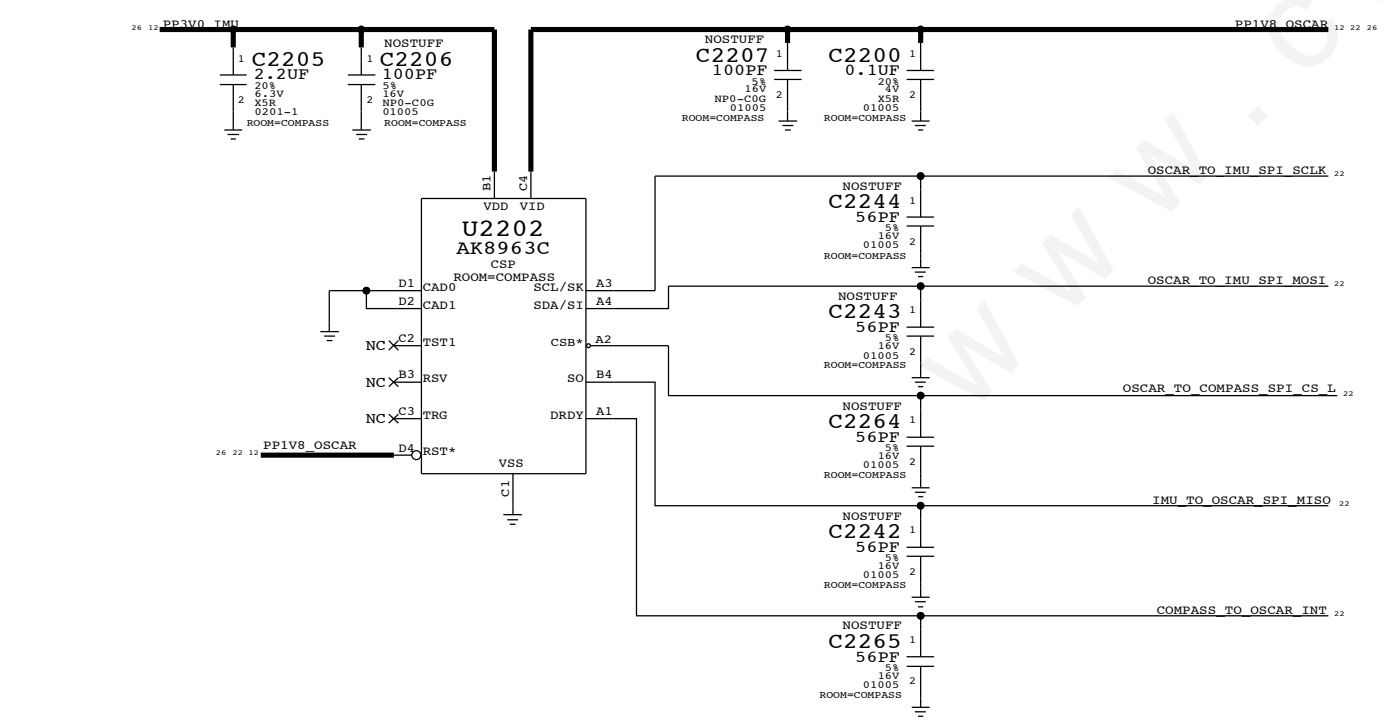
# CARBON (ACCEL GYRO COMBO)

INVENSENSE, APN 338S00017, C2211=0.1UF (132S0395)  
BOSCH, APN 338S00028, C2211=0.1UF (132S0395)  
ST, APN 338S00029, C2211=0.01UF,25V (132S0391)



THIS IS OUTSIDE OF SHIELD IN  
TO THE RIGHT OF THE NAND  
PHOSPHORUS

# THIS PART OUTSIDE OF SHIELD ON THE PENINSULA COMPASS

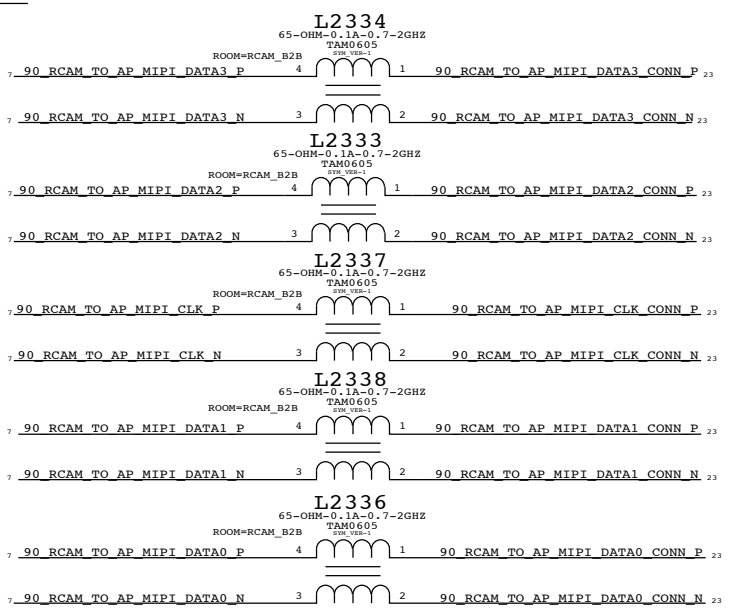




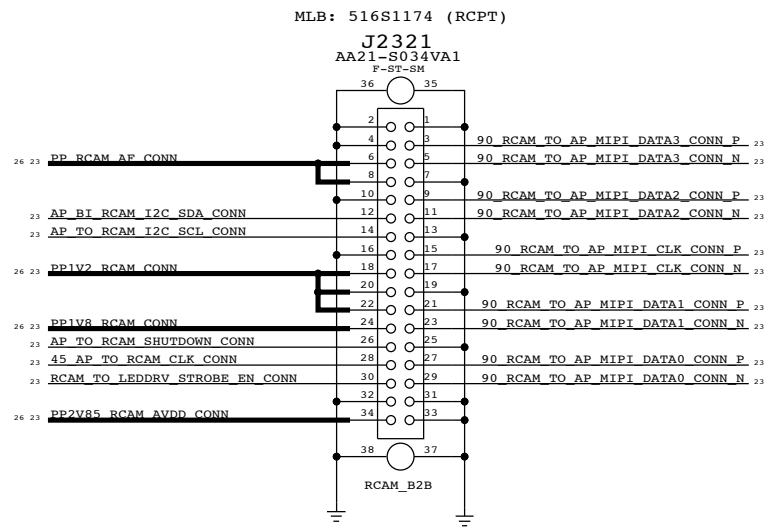
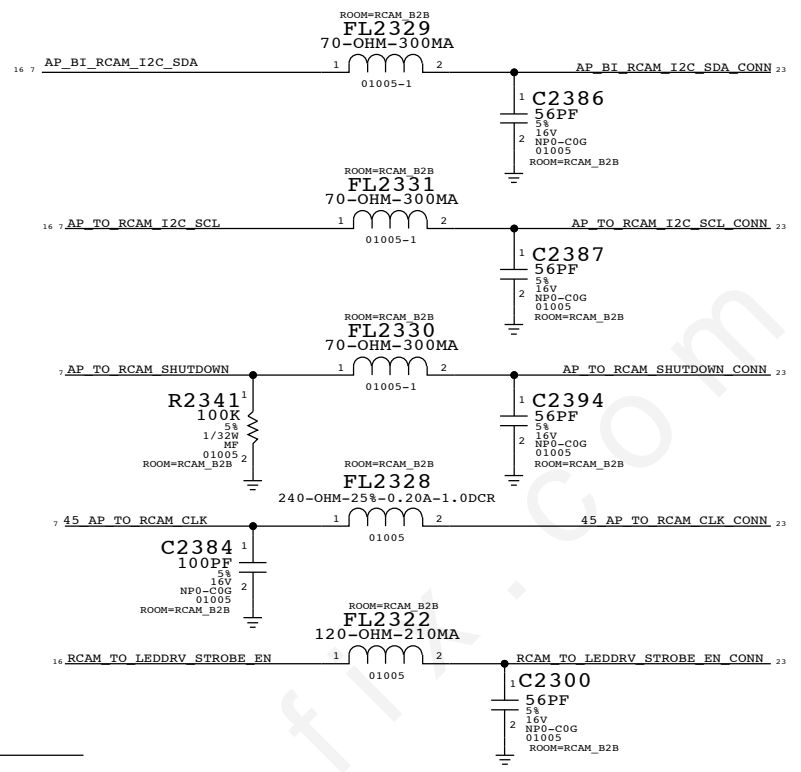


# RCAM B2B (REAR CAMERA CONNECTOR)

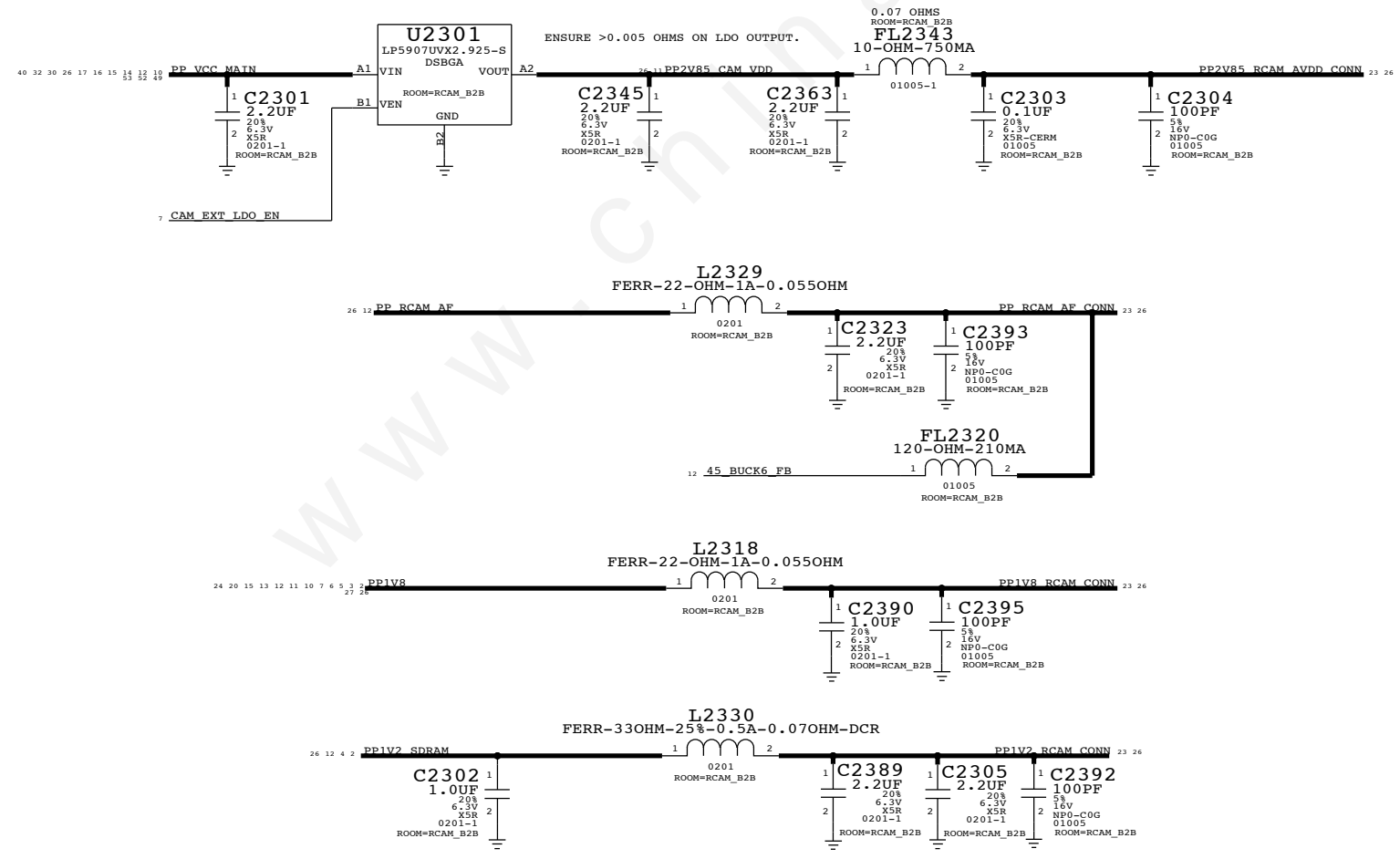
RCAM:  
4-LANE MIPI



RCAM:  
DIGITAL I/F  
(I2C, CTRL, CLK)



RCAM:  
POWER:  
(1.8V DOVDD)  
(2.9V AVDD)  
(1.2V DVDD)  
(2V AF)



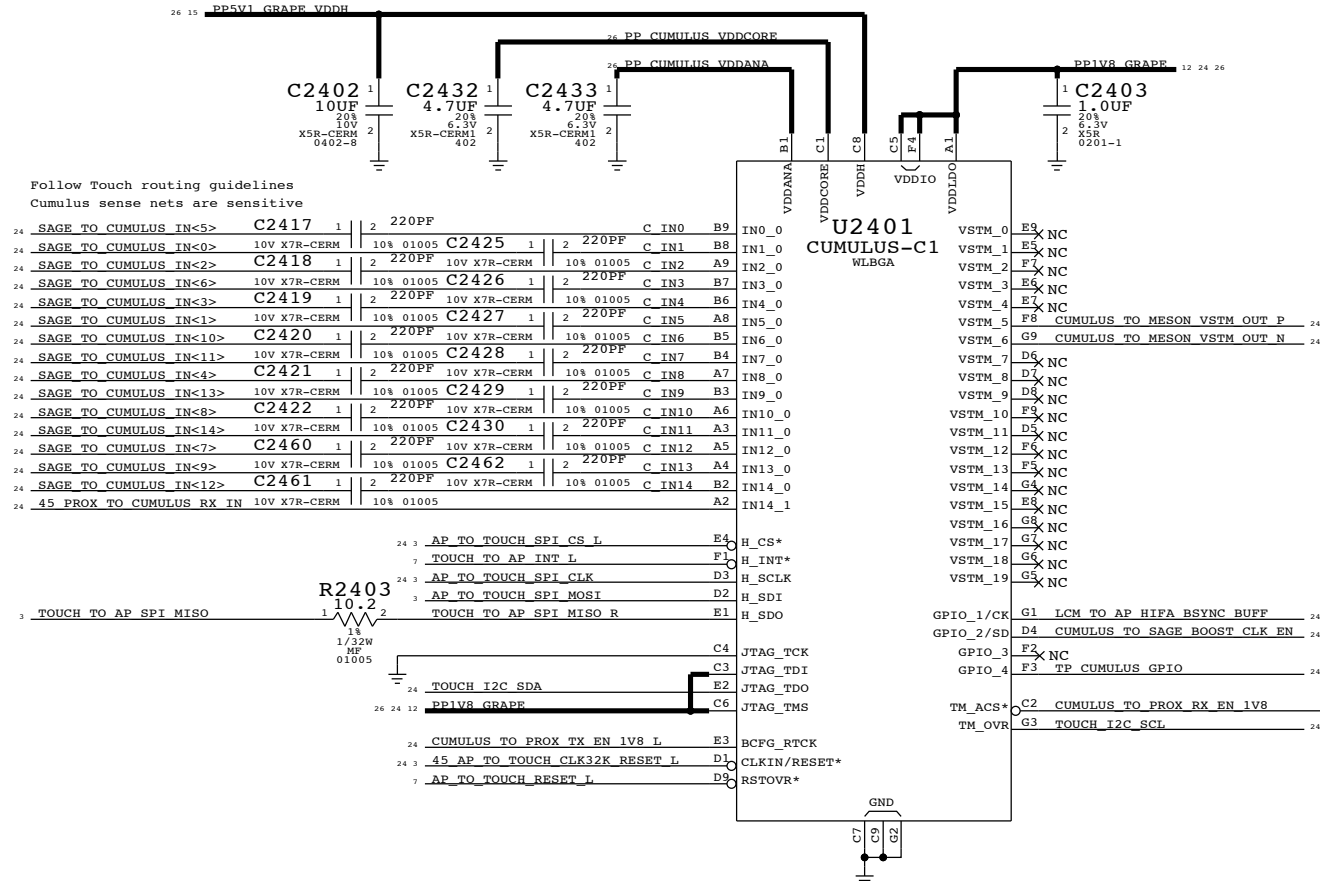


## Touch (B2B, Driver ICs)

### Cumulus

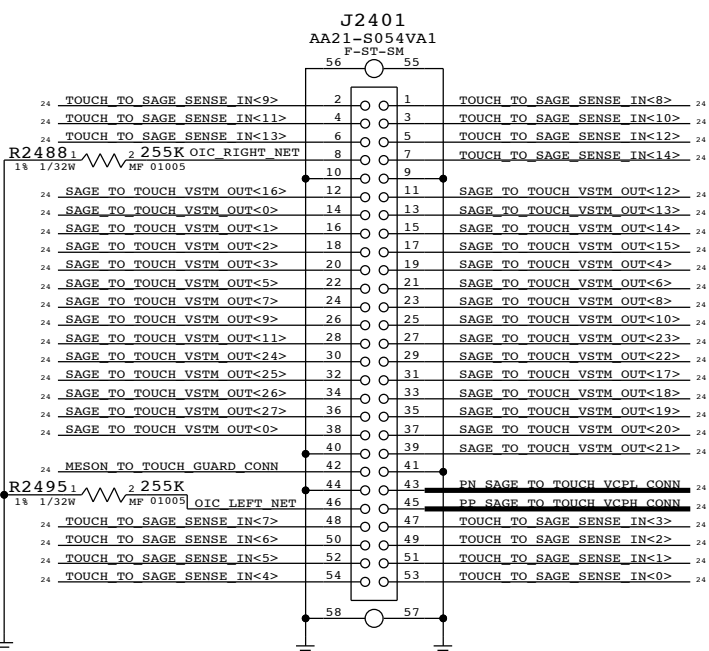
APN: 343S0638

Turn on is later than PPIV8\_GRAPE  
Turn off is same time as PPIV8\_GRAPE

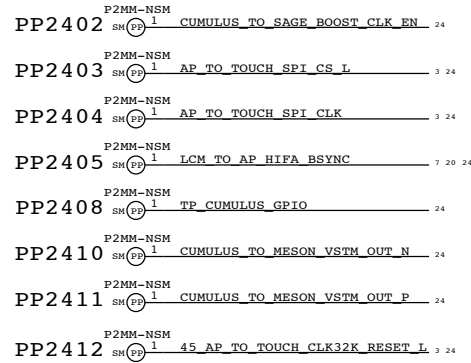


### Touch B2B

MLB APN : 516S1183 (Receptacle)  
Flex APN: 516S1182 (Plug)

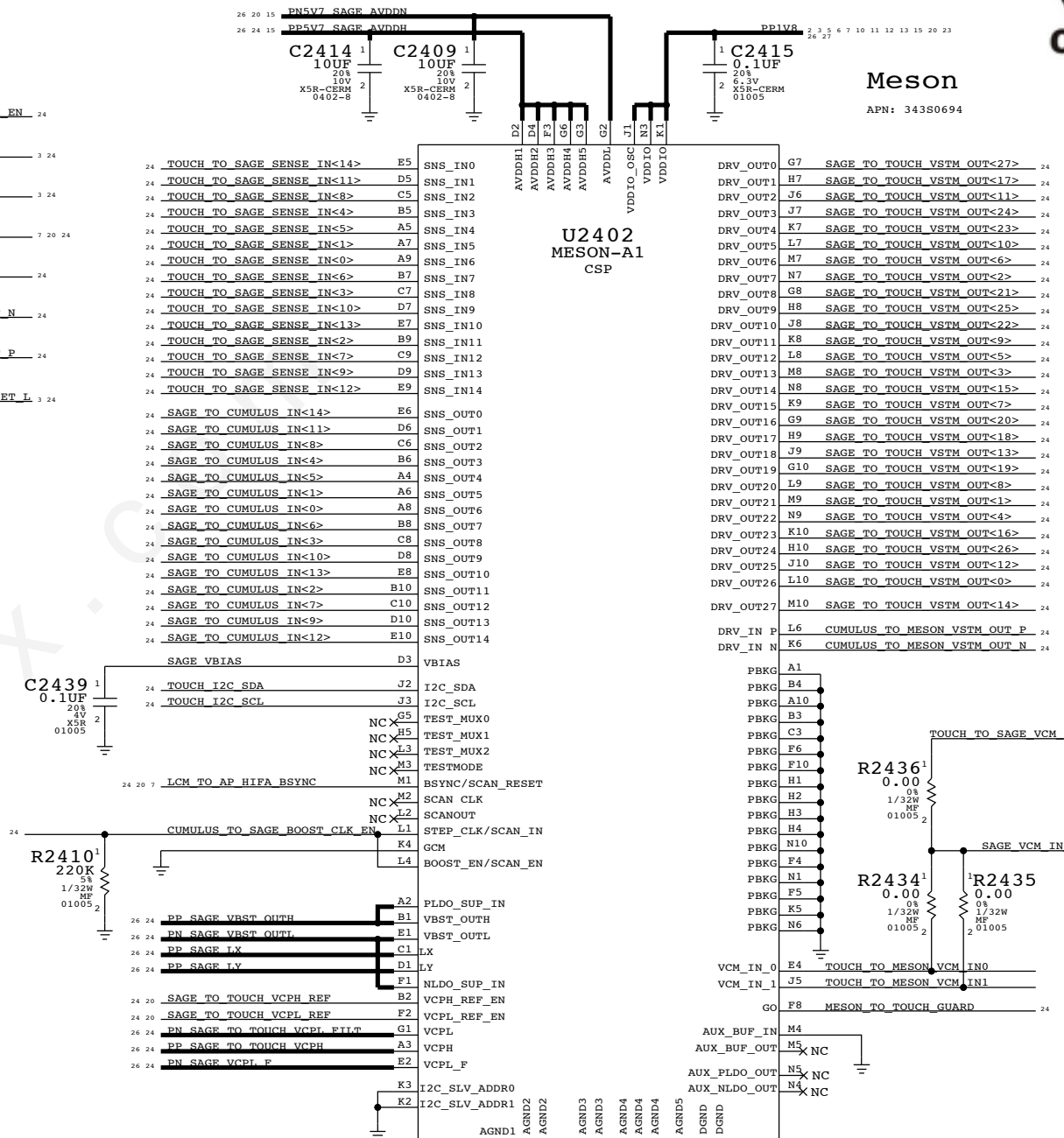


### Touch probe points



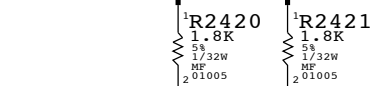
### Meson

APN: 343S0694

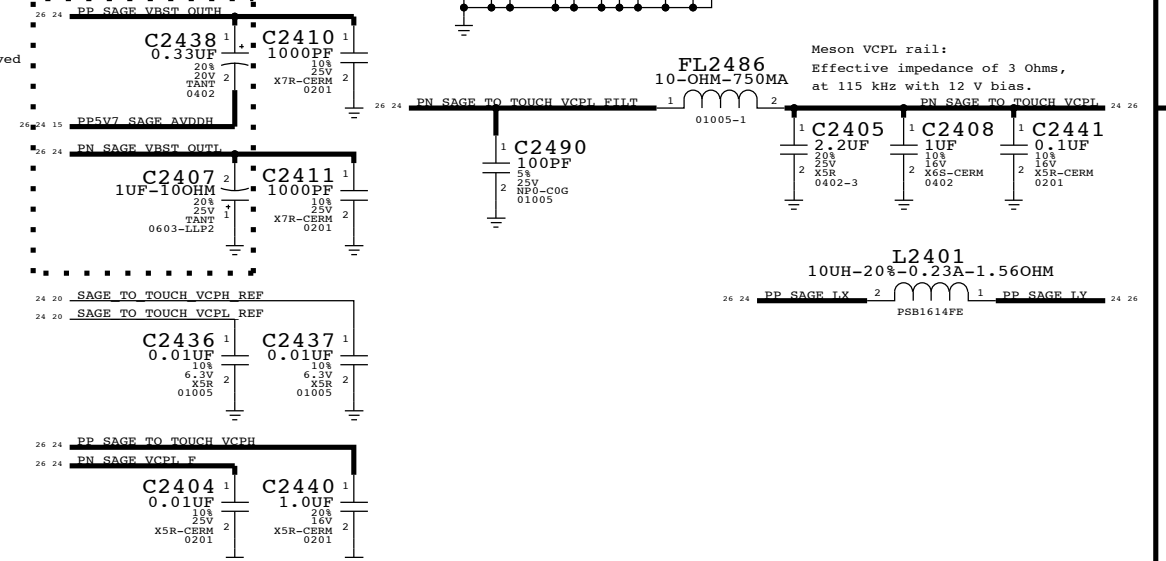


Tantalums solved singing caps issue. Validate issue is resolved with Meson and replace with 0402 ceramics.

### I2C pull-ups



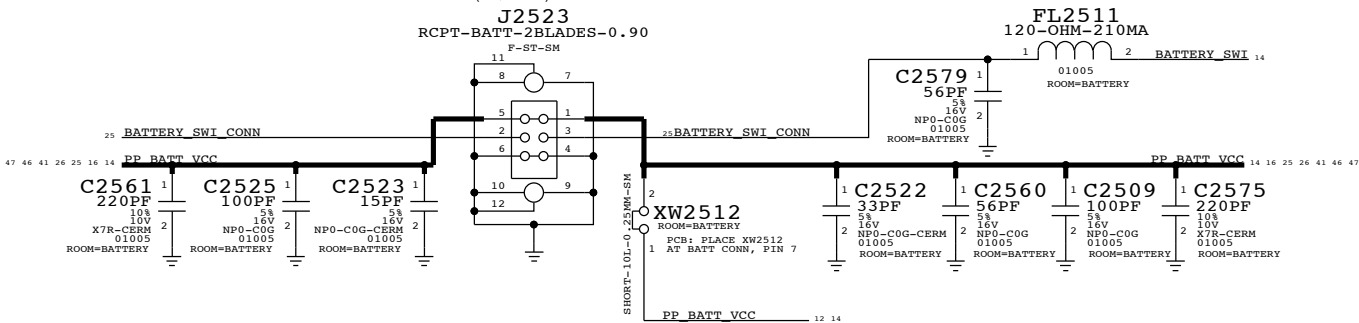
### Meson decoupling



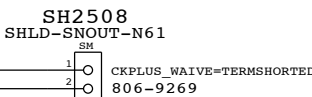
# BATT CONN, TPS, STANDOFFS/SHIELDS/FIDUCIALS

## BATTERY CONN

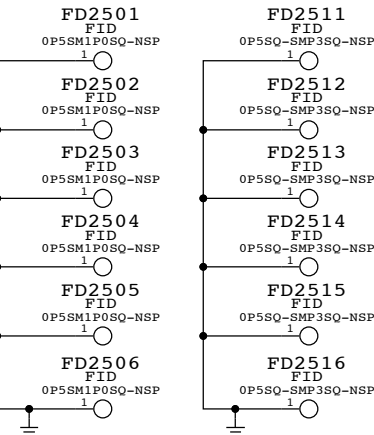
THIS ONE ON MLB ---> 516S1080 RCPT  
SCHEMATIC SYMBOL(PIN ORDER) IS WIERD !!



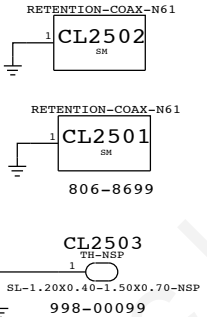
## SHIELDS



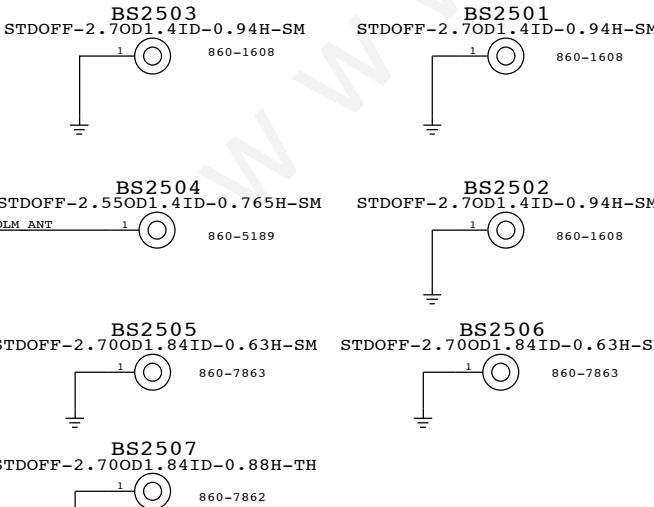
## FIDUCIALS



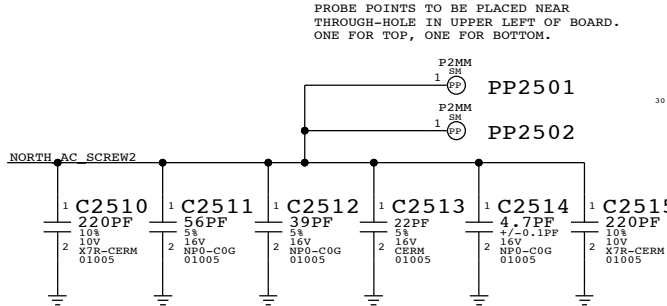
## RF CLIPS



## STANDOFFS

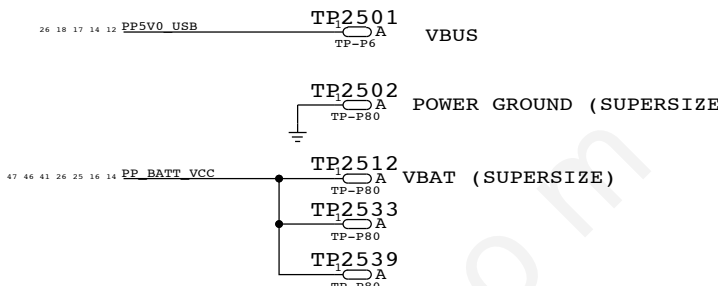


## SCREW HOLES + STANDOFFS

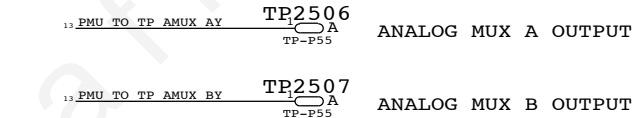


## TESTPOINTS

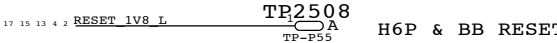
### POWER TP



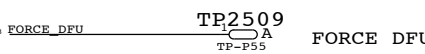
### SUPER TP



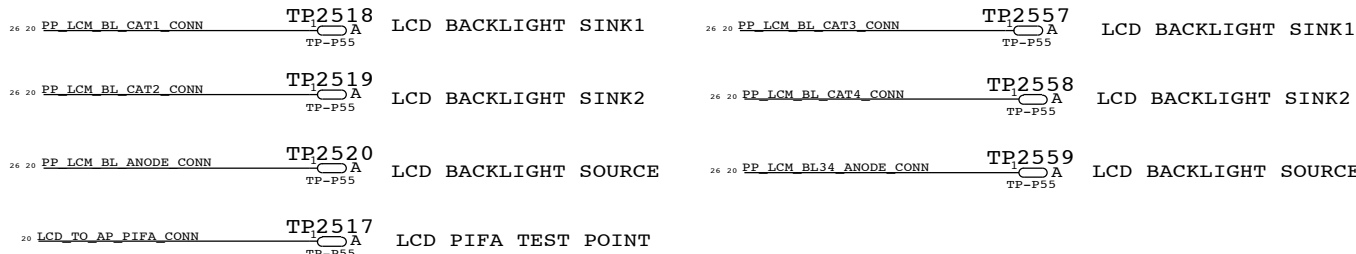
### RESET



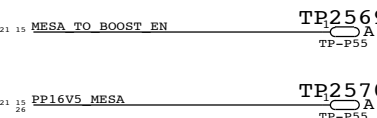
### DFU



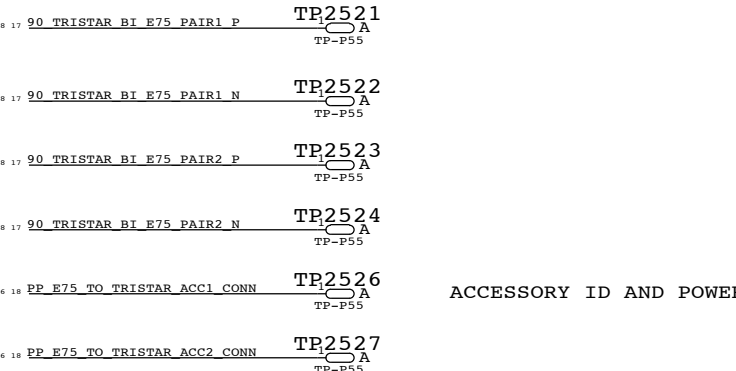
## LCM BACKLIGHT



### MOJAVE TP



## E75 - USB/UART/ID/POWER





# VOLTAGE PROPERTIES

E65	VOLTAGE=3.3V	PP3V3 USB	2 12
E66	VOLTAGE=1.8V	PP1V8 VA I19 I67	10 12 16
E67	VOLTAGE=3.0V	PP3V0 TRISTAR	12 15 17 30
E68	VOLTAGE=3.0V	PP3V0 IMU	12 22
E69	VOLTAGE=3.0V	PP3V0 NAND	6 12
E70	VOLTAGE=3.0V	PP3V3 ACC	12 17
E71	VOLTAGE=3.0V	PP3V0 PROX ALS	11 12
E72	VOLTAGE=3.0V	PP2V9 LDO9	12

E64	VOLTAGE=4.6V	PP VCC MAIN	10 12 14 15 16 17 23 30 32
E65	VOLTAGE=1.0V	PP1V0	7 12
E66	VOLTAGE=3.0V	PP3V0 PROX TRIED	11 12
E67	VOLTAGE=1.8V	PP1V8 ALWAYS	3 5 12 14
E68	VOLTAGE=3.0V	PP3V0 MESA	12 21
E69	VOLTAGE=1.1V	PP CPU	4 12
E70	VOLTAGE=1.1V	PP GPU	4 12

E91	VOLTAGE=1.2V	PP1V2 SDRAM	2 4 12 23
E92	VOLTAGE=1.8V	PP1V8 SDRAM	3 4 10 12 13 14 15 17 30
E93	VOLTAGE=1.8V	PP1V8	2 4 12 23
E94	VOLTAGE=1.8V	PP1V8 GRAPE	12 24
E95	VOLTAGE=1.8V	PP1V8 OSCAR	12 22
E96	VOLTAGE=1.2V	PP1V2 NAND VDDT	6

E94	VOLTAGE=1.8V	PP EXTMIC BIAS FILT IN	10
E95	VOLTAGE=1.8V	BOARD ID2	3 27
E96	VOLTAGE=1.2V	PP1V2	2 4 5 11 12
E97	VOLTAGE=5.0V	PP E75 TO TRISTAR ACC1 CONN	18 25
E98	VOLTAGE=5.0V	PP E75 TO TRISTAR ACC1	17 18
E99	VOLTAGE=22.0V	PP LCM BL ANODE	15 20
E100	VOLTAGE=0.2V	PP LCM BL CAT2	15 20
E101	VOLTAGE=0.2V	PP LCM BL CAT1	15 20
E102	VOLTAGE=0.2V	PP LCM BL CAT2 CONN	20 25
E103	VOLTAGE=0.2V	PP LCM BL CAT1 CONN	20 25

E104	VOLTAGE=-5.7V	PN5V7 SAGE AVDDN	15 20 24
E105	VOLTAGE=1.2V	PP1V2 OSCAR	12 22
E106	VOLTAGE=3.0V	PP3V0 MESA CONN	21
E107	VOLTAGE=6V	PP6V0 LCM BOOST	15
E108	VOLTAGE=5.0V	PP STRB DRIVER TO LED WARM	9 16
E109	VOLTAGE=5.0V	PP STRB DRIVER TO LED COOL	8 16

E93	VOLTAGE=1.8V	PP CODEC TO MIC1 BIAS	10 18
E94	VOLTAGE=1.8V	PP EXTMIC BIAS FILT IN	10
E95	VOLTAGE=1.8V	PP EXTMIC BIAS FILT	10
E96	VOLTAGE=1.8V	PP CODEC TO FRONTMIC3 BIAS	10 11
E97	VOLTAGE=1.8V	PP CODEC TO REARMIC2 BIAS	8 10
E98	VOLTAGE=1.8V	PP CODEC FILT4	10
E99	VOLTAGE=2.2V	PP CODEC SPKR VO	10
E100	VOLTAGE=2.5V	PP CODEC VCPFILT	10
E101	VOLTAGE=2.5V	PP CODEC VCPFILT4	10
E102	VOLTAGE=2.5V	PP CODEC VHP ELYN	10
E103	VOLTAGE=0.2V	PP CODEC VHP ELYC	10
E104	VOLTAGE=2.5V	PP CODEC VHP ELYP	10
E105	VOLTAGE=1.8V	PP1V8 FCAM CONN	11
E106	VOLTAGE=3.0V	PP2V85 FCAM AVDD CONN	11
E107	VOLTAGE=1.8V	PP CODEC TO FRONTMIC1 BIAS CONN	11
E108	VOLTAGE=3.0V	PP3V0 ALS CONN	11
E109	VOLTAGE=1.2V	PP1V2 FCAM VDDIO CONN	11
E110	VOLTAGE=5.0V	PP5V0 USB	12 14 17 18 25
E111	VOLTAGE=5.0V	PP5V0 USB TO PMU	12
E112	VOLTAGE=4.6V	PP BUCK5 LX0	12
E113	VOLTAGE=4.6V	PP BUCK3 LX	12
E114	VOLTAGE=4.6V	PP BUCK4 LX	12
E115	VOLTAGE=4.6V	PP BUCK2 LX	12
E116	VOLTAGE=4.6V	PP BUCK1 LX1	12
E117	VOLTAGE=4.6V	PP BUCK1 LX0	12
E118	VOLTAGE=4.6V	PP BUCK0 LX3	12
E119	VOLTAGE=4.6V	PP BUCK0 LX2	12
E120	VOLTAGE=4.6V	PP BUCK0 LX1	12
E121	VOLTAGE=4.6V	PP BUCK0 LX0	12
E122	VOLTAGE=6.0V	PP CHESTNUT LXP	15
E123	VOLTAGE=6.0V	PP CHESTNUT CP	15
E124	VOLTAGE=6.0V	PP CHESTNUT CN	15
E125	VOLTAGE=5.7V	PP5V7 SAGE AVDDH	15 24
E126	VOLTAGE=5.7V	PP5V7 LCM AVDDH	15 20
E127	VOLTAGE=5.1V	PP5V1 GRAPE VDDH	15 24
E128	VOLTAGE=22.0V	PP WLED LX	15
E129	VOLTAGE=18.0V	PP18V0 MESA SW	15
E130	VOLTAGE=17.0V	PP17V0 MESA SW	15
E131	VOLTAGE=16.5V	PP16V5 MESA	15 21 25
E132	VOLTAGE=8.0V	PP SPKAMP SW	16
E133	VOLTAGE=8.0V	PP I19 VBOOST	16
E134	VOLTAGE=1.8V	PP SPKAMP FILT	16
E135	VOLTAGE=1.8V	PP SPKAMP LDO FILT	16

E11	VOLTAGE=5.0V	PP LED DRV LX	14
E12	VOLTAGE=5.0V	PP LED BOOST OUT	14
E13	VOLTAGE=2.7V	PP BB VDD 2V7 CONN	18
E14	VOLTAGE=1.8V	PP CODEC TO MIC1 BIAS CONN	18
E15	VOLTAGE=4.6V	PP E75 TO TRISTAR ACC2	17 18
E16	VOLTAGE=4.6V	PP E75 TO TRISTAR ACC2 CONN	18 25

E10	VOLTAGE=1.8V	PP1V8 LCM CONN	20
E11	VOLTAGE=22.0V	PP LCM BL ANODE CONN	20 25
E12	VOLTAGE=-5.7V	PN5V7 LCM AVDDN CONN	20
E13	VOLTAGE=5.7V	PP5V7 LCM AVDDH CONN	20
E14	VOLTAGE=2.95V	PP ID013 GPS	51

E16	VOLTAGE=1.8V	PP1V8 MESA	21
E17	VOLTAGE=16.5V	PP16V5 MESA CONN	21

E135	VOLTAGE=5.0V	PP TRISTAR PIN	17
------	--------------	----------------	----

E20	VOLTAGE=1.2V	PP1V2 RCAM CONN	23
E21	VOLTAGE=1.8V	PP1V8 RCAM CONN	23

E23	VOLTAGE=3.0V	PP2V85 CAM VDD	11 23
E24	VOLTAGE=1.8V	PP2V85 RCAM AVDD CONN	23
E25	VOLTAGE=1.8V	PP CUMULUS VDDCORE	24
E26	VOLTAGE=1.2V	PP CUMULUS VPDANA	24
E27	VOLTAGE=13.5V	PP SAGE TO TOUCH VCPH CONN	24
E28	VOLTAGE=-12V	PN SAGE TO TOUCH VCPH CONN	24
E29	VOLTAGE=13.5V	PP SAGE TO TOUCH VCPH	24
E30	VOLTAGE=-12V	PN SAGE TO TOUCH VCPH	24

E31	VOLTAGE=-12V	PN SAGE VCPH F	24
E32	VOLTAGE=5.7V	PP SAGE LX	24
E33	VOLTAGE=17.0V	PP SAGE LX	24

E38	VOLTAGE=1.8V	PP PMU VREF	13
E39	VOLTAGE=14V	PP SAGE VBST OUTH	24

E40	VOLTAGE=5.0V	PP TIGRIS VBUS DET	14
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E41	VOLTAGE=2.5V	PP PMU VDD REF	13
E42	VOLTAGE=1.8V	PP EXTMIC BIAS	10
E43	VOLTAGE=1.8V	PP1V8 XTAL	2
E44	VOLTAGE=1.8V	PP PMU VDD RTC	13

E45	VOLTAGE=3.80V	PP BATT VCC	14 16 25 41 46 47
E46	VOLTAGE=1.8V	PP1V8 MESA CONN	21
E47	VOLTAGE=3.0V	PP3V0 PROX CONN	11

E50	VOLTAGE=1.0V	PP0V95 FIXED SOC	4 7 12
E51	VOLTAGE=1.0V	PP0V95 FIXED SOC PCIE	7
E52	VOLTAGE=1.2V	PP1V2 PLL	2
E53	VOLTAGE=1.0V	PP BUCK5 LX1	12
E54	VOLTAGE=1.0V	PP VAR SOC	5 12

E55	VOLTAGE=3.00V	PP PN65 STM PMU	53 55
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E137	VOLTAGE=1.8V	PP1V8 HALL CONN	
E138	VOLTAGE=1.8V	GND	21
E139	VOLTAGE=5.0V	CHARGER LDO	14
E140	VOLTAGE=5.0V	PMID_CAP	14

## N56 SPECIFIC VOLTAGE PROPERTIES

E151	VOLTAGE=22.0V	PP WLED14 LX	15
E152	VOLTAGE=22.0V	PP LCM BL34 ANODE	15 20
E153	VOLTAGE=22.0V	PP LCM BL34 ANODE CONN	20 25
E154	VOLTAGE=0.2V	PP LCM BL CAT3	15 20
E155	VOLTAGE=0.2V	PP LCM BL CAT4	15 20
E156	VOLTAGE=0.2V	PP LCM BL CAT3 CONN	20 25
E157	VOLTAGE=0.2V	PP LCM BL CAT4 CONN	20 25

E158	VOLTAGE=-12V	PN SAGE TO TOUCH VCPH FILT	24
E159	VOLTAGE=2.0V	PP RCAM AF	12 23
E160	VOLTAGE=2.0V	PP RCAM AF CONN	23

E161	VOLTAGE=-14.0V	PN SAGE VBST OUTH	24
E162	VOLTAGE=-5.7V	PN5V7 SAGE AVDDN FILT	
E163	VOLTAGE=2.0V	PP BUCK6 LX	12



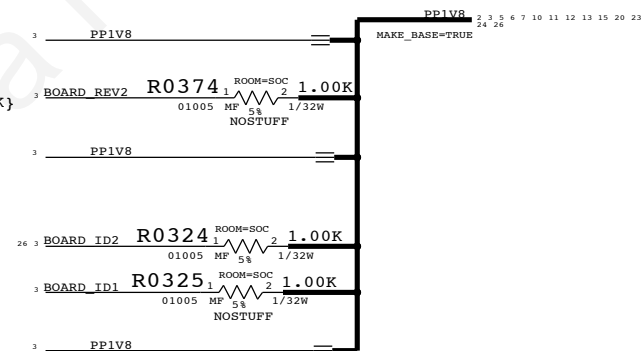
# N56 SPECIFIC

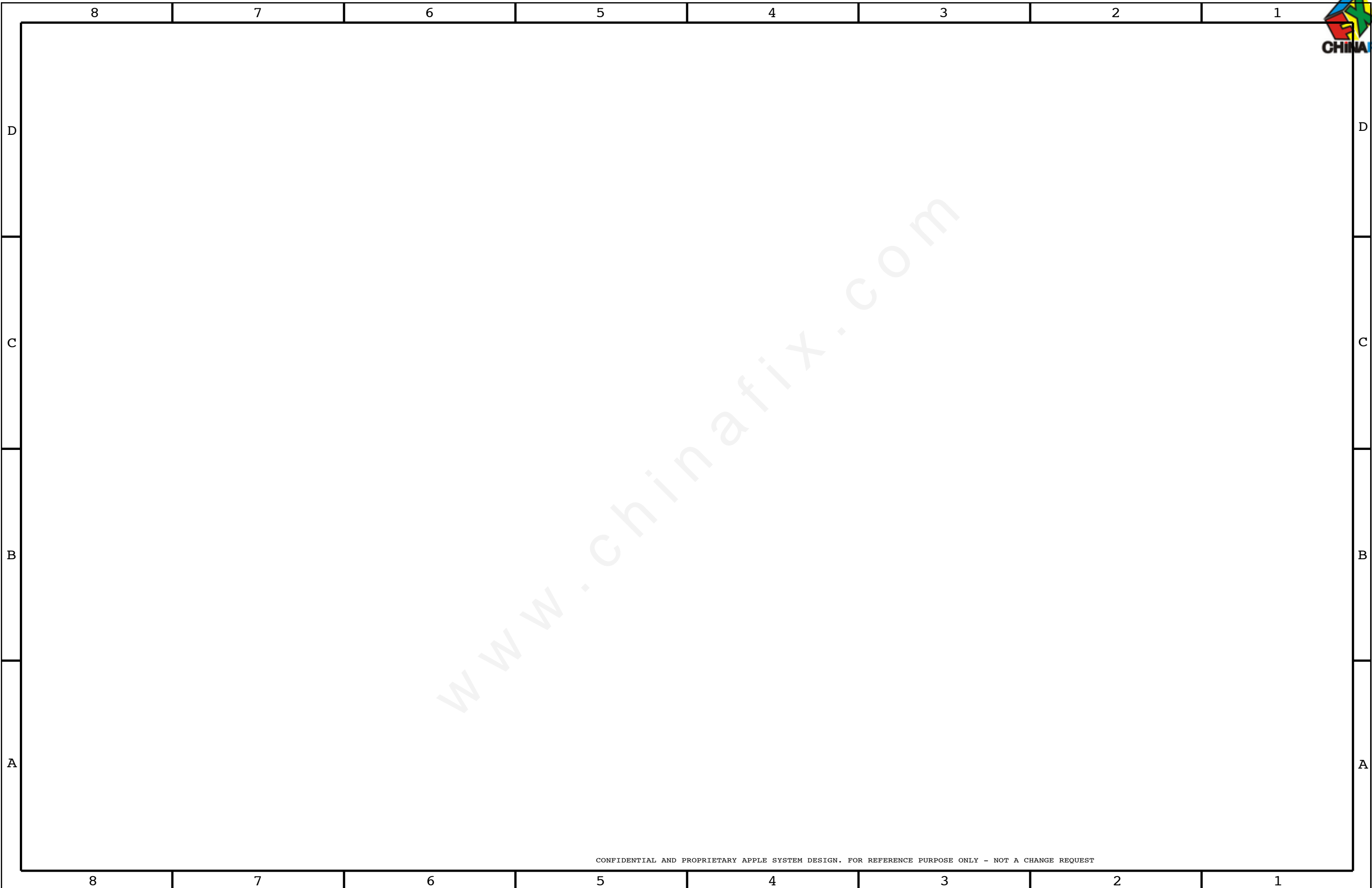
## BOOTSTRAPPING (BOARD\_REV, BOARD\_ID, BOOT\_CFG, DISPLAY ID)

```
BOARD_REV[3:0]={GPIO34, GPIO35, GPIO36, GPIO37}  
FLOAT=LOW, PULLUP=HIGH  
1111 PROTO1  
1110 PROTO1, ALTERNATE  
1100 PROTO2  
1011 EVT  
1001 CARRIER BUILD <--- SELECTED
```

```
BOARD_ID[4:0]={GPIO29, GPIO16, SPI00_MISO, SPI0_MOSI, SPI0_SCLK}  
FLOAT=LOW, PULLUP=HIGH  
00100 N56, T133 MLB <--- SELECTED  
00101 N56 DEV  
00110 FIJI N61 MLB
```


```
BOOT_CONFIG[2:0]={GPIO28, GPIO25, GPIO18}  
FLOAT=LOW, PULLUP=HIGH  
000 SPI0  
001 SPI0 TEST MODE  
010 NAND <--- SELECTED  
011 NAND TEST MODE  
100 NVME  
101 NVME TEST MODE  
111 FAST SPI
```









87654321																
D																D
C																C
B																B
A																A

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# RADIO\_MLB HIERARCHICAL SYMBOL

## POWER

32	30	26	23	17	16	15	14	12	10	PP_VCC_MAIN	MAKE_BASE=TRUE	I42	PP_VCC_MAIN	10	12	14	15	16	17	23	26	30	32

## CELLULAR HOUSE KEEPING

3		RADIO_ON_L	MAKE_BASE=TRUE	I44	RADIO_ON_L	31	33
3		BB_RESET_DET_L	MAKE_BASE=TRUE	I48	BB_RESET_DET_L	31	36
13		RF_PMIC_RESET_L	MAKE_BASE=TRUE	I47	RF_PMIC_RESET_L	31	33
3		BB_RST_L	MAKE_BASE=TRUE		BB_RST_L	31	33
				I190			
3		AP_WAKE_MODEM	MAKE_BASE=TRUE	I50	AP_WAKE_MODEM	36	
13		BB_WAKE_HOST_L	MAKE_BASE=TRUE	I51	BB_WAKE_HOST_L	31	36
3		BB_IPC_GPIO	MAKE_BASE=TRUE	I52	BB_IPC_GPIO	36	
16		GSM_TXBURST_IND	MAKE_BASE=TRUE	I53	GSM_TXBURST_IND	36	
3		BB_IPC_GPIO1	MAKE_BASE=TRUE		BB_IPC_GPIO1	36	

## HSIC IPC

2		50_BB_HSIC_DATA	MAKE_BASE=TRUE	I54	50_BB_HSIC_DATA	31	35
2		50_BB_HSIC_STROBE	MAKE_BASE=TRUE	I56	50_BB_HSIC_STROBE	31	35
3		BB_HOST_RDY	MAKE_BASE=TRUE	I57	BB_HOST_RDY	31	36
3		BB_DEVICE_RDY	MAKE_BASE=TRUE	I58	BB_DEVICE_RDY	31	36
3		BB_GPS_SYNC	MAKE_BASE=TRUE		BB_GPS_SYNC	31	36

## UART IPC

3		BB_UART_CTS_L	MAKE_BASE=TRUE	I60	BB_UART_CTS_L	31	36
3		BB_UART_RTS_L	MAKE_BASE=TRUE	I62	BB_UART_RTS_L	31	36
17	3	BB_UART_RXD	MAKE_BASE=TRUE	I61	BB_UART_RXD	31	36
17	3	BB_UART_TXD	MAKE_BASE=TRUE		BB_UART_TXD	31	36

## AUDIO I2S

3		BB_I2S_CLK	MAKE_BASE=TRUE	I64	BB_I2S_CLK	36	
3		BB_I2S_RXD	MAKE_BASE=TRUE	I65	BB_I2S_RXD	31	36
3		BB_I2S_TXD	MAKE_BASE=TRUE	I66	BB_I2S_TXD	31	36
3		BB_I2S_WS	MAKE_BASE=TRUE		BB_I2S_WS	31	36

## OSCAR UART

22		BB_OTHER_RXD	MAKE_BASE=TRUE	I67	BB_OTHER_RXD	31	36
22		BB_OTHER_TXD	MAKE_BASE=TRUE		BB_OTHER_TXD	31	36

## BB DEBUG INTERFACES

3		BB_CORE_DUMP	MAKE_BASE=TRUE	I70	BB_CORE_DUMP	31	36
13		BB_USB_VBUS	MAKE_BASE=TRUE	I74	BB_USB_VBUS	31	35
17		90_BB_USB_N	MAKE_BASE=TRUE	I73	90_BB_USB_N	31	35
17		90_BB_USB_P	MAKE_BASE=TRUE		90_BB_USB_P	31	35

## RADIO ANTENNA CONTROL

18		PP_LDO14_RFSW	MAKE_BASE=TRUE	I75	PP_LDO14_RFSW	32	42	43	51
18		BB_LAT_GPIO0	MAKE_BASE=TRUE		BB_LAT_GPIO0	36			
18		BB_LAT_GPIO2	MAKE_BASE=TRUE	I74	BB_LAT_GPIO2	36			
18		BB_LAT_GPIO3	MAKE_BASE=TRUE	I76	BB_LAT_GPIO3	36			
18		BB_LAT_GPIO4	MAKE_BASE=TRUE		BB_LAT_GPIO4	36			

## FCT TESTING

13		VREG_SMPS1_0V90	MAKE_BASE=TRUE	I82	VREG_SMPS1_0V90				
13		PP_LDO11	MAKE_BASE=TRUE	I84	PP_LDO11	31			
13		PP_LDO5	MAKE_BASE=TRUE	I85	PP_LDO5	31			
13		VREG_SMPS4_2V075	MAKE_BASE=TRUE		VREG_SMPS4_2V075				

## UPPER RADIO ANTENNA CONTROL

30	26	17	15	12	PP3V0_TRISTAR	MAKE_BASE=TRUE		PP3V0_TRISTAR	54
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## POWER

26	17	15	14	13	12	10	4	3	PP1V8_SDRAM	MAKE_BASE=TRUE	I2	PP1V8_SDRAM	52
											I1	PP1V8_SDRAM	53 55
												PP1V8_SDRAM	54

## WLAN/BT HOUSE KEEPING

13		CLK32K_AP	MAKE_BASE=TRUE	I3	CLK32K_AP	31	52
13		WLAN_REG_ON	MAKE_BASE=TRUE	I5	WLAN_REG_ON	31	52
13		HOST_WAKE_WLAN	MAKE_BASE=TRUE	I4	HOST_WAKE_WLAN	31	52
13		BT_REG_ON	MAKE_BASE=TRUE	I6	BT_REG_ON	31	52
3		WAKE_BT	MAKE_BASE=TRUE	I8	WAKE_BT	31	52
13		HOST_WAKE_BT	MAKE_BASE=TRUE	I7	HOST_WAKE_BT	52	

3		WLAN_JTAG_SWDCLK	MAKE_BASE=TRUE	I9	WLAN_JTAG_SWDCLK	31	52
3		WLAN_JTAG_SWDIO	MAKE_BASE=TRUE	I10	WLAN_JTAG_SWDIO	31	52
13		WLAN_PCIE_WAKE_L	MAKE_BASE=TRUE	I14	WLAN_PCIE_WAKE_L	31	52
3		PCIE_DEV_WAKE	MAKE_BASE=TRUE	I13	PCIE_DEV_WAKE	31	52
90		WLAN_PCIE_TDP	MAKE_BASE=TRUE	I12	90_WLAN_PCIE_TDP	31	52
90		WLAN_PCIE_TDN	MAKE_BASE=TRUE	I16	90_WLAN_PCIE_TDN	31	52
90		WLAN_PCIE_RDP	MAKE_BASE=TRUE	I15	90_WLAN_PCIE_RDP	31	52
90		WLAN_PCIE_RDN	MAKE_BASE=TRUE	I17	90_WLAN_PCIE_RDN	31	52
90		WLAN_PCIE_REFCLK_P	MAKE_BASE=TRUE	I19	90_WLAN_PCIE_REFCLK_P	52	
90		WLAN_PCIE_REFCLK_N	MAKE_BASE=TRUE	I18	90_WLAN_PCIE_REFCLK_N	52	
7		WLAN_PCIE_CLKREQ_L	MAKE_BASE=TRUE	I20	WLAN_PCIE_CLKREQ_L	31	52
7		WLAN_PCIE_PERST_L	MAKE_BASE=TRUE		WLAN_PCIE_PERST_L	31	52

## WLAN HSIC IPC

3		WLAN_UART_TXD	MAKE_BASE=TRUE	I21	WLAN_UART_TXD	31	52
3		WLAN_UART_RXD	MAKE_BASE=TRUE	I23	WLAN_UART_RXD	31	52
3		WLAN_UART_RTS_L	MAKE_BASE=TRUE	I22	WLAN_UART_RTS_L	31	52
3		WLAN_UART_CTS_L	MAKE_BASE=TRUE		WLAN_UART_CTS_L	31	52

## BT UART IPC

3		BT_UART_CTS_L	MAKE_BASE=TRUE	I26	BT_UART_CTS_L	52	
3		BT_UART_RTS_L	MAKE_BASE=TRUE	I27	BT_UART_RTS_L	52	
3		BT_UART_RXD	MAKE_BASE=TRUE	I28	BT_UART_RXD	31	52
3		BT_UART_TXD	MAKE_BASE=TRUE		BT_UART_TXD	31	52

## BT AUDIO PCM

3		BT_PCM_CLK	MAKE_BASE=TRUE	I29	BT_PCM_CLK	52	
3		BT_PCM_IN	MAKE_BASE=TRUE	I30	BT_PCM_IN	52	
3		BT_PCM_OUT	MAKE_BASE=TRUE	I32	BT_PCM_OUT	52	
3		BT_PCM_SYNC	MAKE_BASE=TRUE		BT_PCM_SYNC	52	

## OSCAR STATES

22		OSCAR_CONTEXT_A	MAKE_BASE=TRUE	I34	OSCAR_CONTEXT_A	52	
22		OSCAR_CONTEXT_B	MAKE_BASE=TRUE		OSCAR_CONTEXT_B	52	

## STOCKHOLM

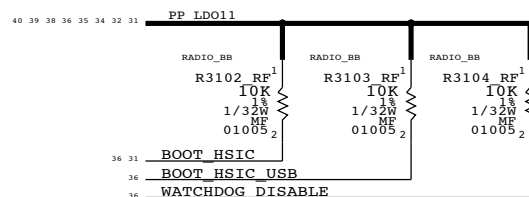
				I35			
3		STOCKHOLM_RTS_L	MAKE_BASE=TRUE	I36	STOCKHOLM_RTS_L	31	53
		STOCKHOLM_CTS_L	MAKE_BASE=TRUE	I37	STOCKHOLM_CTS_L	31	53
3		STOCKHOLM_UART_TXD	MAKE_BASE=TRUE	I38	STOCKHOLM_UART_TXD	31	53
3		STOCKHOLM_UART_RXD	MAKE_BASE=TRUE	I39	STOCKHOLM_UART_RXD	31	53
		STOCKHOLM_FW_DWLD_REQ	MAKE_BASE=TRUE	I41	STOCKHOLM_FW_DWLD_REQ	53	
13		STOCKHOLM_HOST_WAKE	MAKE_BASE=TRUE	I40	STOCKHOLM_HOST_WAKE	31	53
		STOCKHOLM_ENABLE	MAKE_BASE=TRUE		STOCKHOLM_ENABLE	53	
30	26	17	15	12	PP3V0_TRISTAR	MAKE_BASE=TRUE	
		STOCKHOLM_SIM_SEL	MAKE_BASE=TRUE		STOCKHOLM_SIM_SEL	55	
25		STOCKHOLM_ANT	MAKE_BASE=TRUE		STOCKHOLM_ANT	53	

# AP INTERFACE & DEBUG CONNECTORS

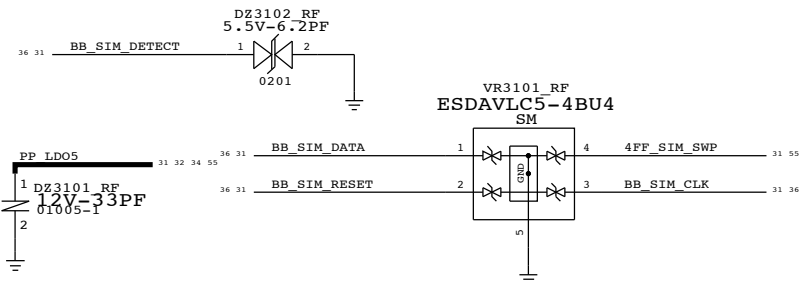
## PROBE POINTS

PP3105 RF P2MM-NSM SM 1 CLK32K_AP 30 52	PP3121 RF P2MM-NSM SM 1 STOCKHOLM_HOST_WAKE 30 53	PP3115 RF P4MM-NSM SM 1 50_BB_HSIC_STROBE 30 35	PP3130 RF P4MM-NSM SM 1 BB_JTAG_RST_L 30 35	PP3141 RF P4MM-NSM SM 1 BB_UART_TXD 30 36	PP3170 RF P4MM-NSM SM 1 RFFE1_CLK 36 40 41 42 43 44 45
PP3113 RF P4MM-NSM SM 1 BB_COEX_UART_RXD 36 52	PP3122 RF P4MM-NSM SM 1 BB_REQUEST_XO_CLK 33 53	PP3116 RF P4MM-NSM SM 1 50_BB_HSIC_DATA 30 35	PP3131 RF P4MM-NSM SM 1 BB_JTAG_TCK 30 35	PP3142 RF P4MM-NSM SM 1 BB_UART_RXD 30 36	PP3171 RF P4MM-NSM SM 1 RFFE1_DATA 36 40 41 42 43 44 45
PP3114 RF P4MM-NSM SM 1 BB_COEX_UART_TXD 36 52	PP3123 RF P2MM-NSM SM 1 STOCKHOLM_UART_RXD 30 53	PP3101 RF P4MM-NSM SM 1 BB_DEBUG_ERROR 36	PP3132 RF P4MM-NSM SM 1 BB_JTAG_TMS 30 35	PP3143 RF P4MM-NSM SM 1 BB_UART_RTS_L 30 36	PP3172 RF P4MM-NSM SM 1 RFFE2_CLK 36 46 47 49
PP3119 RF P2MM-NSM SM 1 BT_UART_TXD 30 52	PP3124 RF P2MM-NSM SM 1 STOCKHOLM_UART_TXD 30 53	PP3102 RF P4MM-NSM SM 1 RF_PMIC_RESET_L 30 33	PP3133 RF P4MM-NSM SM 1 BB_JTAG_TDO 30 35	PP3144 RF P4MM-NSM SM 1 BB_UART_CTS_L 30 36	PP3173 RF P4MM-NSM SM 1 RFFE2_DATA 36 46 47 49
PP3120 RF P2MM-NSM SM 1 BT_UART_RXD 30 52	PP3125 RF P2MM-NSM SM 1 STOCKHOLM_CTS_L 30 53	PP3103 RF P4MM-NSM SM 1 PS_HOLD_PMIC 33	PP3134 RF P4MM-NSM SM 1 BB_JTAG_TDI 30 35	PP3145 RF P4MM-NSM SM 1 BB_HOST_RDY 30 36	PP3175 RF P4MM-NSM SM 1 BB_I2S_WS 30 36
PP3122 RF P2MM-NSM SM 1 WAKE_BT 30 52	PP3126 RF P2MM-NSM SM 1 STOCKHOLM_RTS_L 30 53	PP3127 RF P4MM-NSM SM 1 PMIC_RESOUT_L 33 35	PP3135 RF P4MM-NSM SM 1 BB_JTAG_TRST_L 30 35	PP3146 RF P4MM-NSM SM 1 BB_DEVICE_RDY 30 36	PP3176 RF P4MM-NSM SM 1 BB_I2S_RXD 30 36
PP3153 RF P4MM-NSM SM 1 WLAN_REG_ON 30 52	PP3128 RF P4MM-NSM SM 1 PP_PN65_VCC_SIM 53	PP3104 RF P4MM-NSM SM 1 MDM_CLK 33 35	PP3136 RF P4MM-NSM SM 1 BB_DEBUG_STATUS 36	PP3147 RF P4MM-NSM SM 1 BB_GPS_SYNC 30 36	PP3177 RF P4MM-NSM SM 1 BB_I2S_TXD 30 36
PP3154 RF P4MM-NSM SM 1 BT_REG_ON 30 52	PP3144 RF P4MM-NSM SM 1 STOCKHOLM_SIM_SWP 53 55	PP3109 RF P4MM-NSM SM 1 PP_LDO11 31 32 34 35 36 38 39	PP3137 RF P4MM-NSM SM 1 BB_CORE_DUMP 30 36	PP3148 RF P4MM-NSM SM 1 BB_WAKE_HOST_L 30 36	PP3178 RF P4MM-NSM SM 1 BB_OTHER_TXD 30 36
PP3155 RF P2MM-NSM SM 1 HOST_WAKE_WLAN 30 52	PP3129 RF P4MM-NSM SM 1 REF_CLK_FROM_BB 33 53	PP3110 RF P4MM-NSM SM 1 RADIO_ON_L 30 33	PP3138 RF P4MM-NSM SM 1 BB_USB_VBUS 30 35	PP3149 RF P4MM-NSM SM 1 BB_RESET_DET_L 30 36	PP3179 RF P4MM-NSM SM 1 BB_OTHER_RXD 30 36
PP3156 RF P2MM-NSM SM 1 WLAN_PCIE_WAKE_L 30 52	PP3160 RF P4MM-NSM SM 1 DSDS_SIM_CLK 35 55	PP3111 RF P4MM-NSM SM 1 SPMI_DATA 33 35	PP3139 RF P4MM-NSM SM 1 90_BB_USB_N 30 35	PP3150 RF P4MM-NSM SM 1 BB_RST_L 30 33	PP3182 RF P4MM-NSM SM 1 RFFE2_CLK_BUFFER 36 54
PP3157 RF P2MM-NSM SM 1 WLAN_PCIE_PERST_L 30 52	PP3183 RF P4MM-NSM SM 1 DSDS_SIM_RESET 35 55	PP3112 RF P4MM-NSM SM 1 SPMI_CLK 33 35	PP3140 RF P4MM-NSM SM 1 90_BB_USB_P 30 35	PP3151 RF P4MM-NSM SM 1 BOOT_HSIC 31 36	PP3185 RF P4MM-NSM SM 1 RFFE2_DATA_BUFFER 36 54
PP3158 RF P2MM-NSM SM 1 WLAN_PCIE_CLKREQ_L 30 52	PP3184 RF P4MM-NSM SM 1 DSDS_SIM_DATA 35 55				
PP3159 RF P4MM-NSM SM 1 PCIE_DEV_WAKE 30 52	PP3186 RF P4MM-NSM SM 1 DSDS_SIM_DETECT 35				
PP3160 RF P2MM-NSM SM 1 WLAN_UART_RTS_L 30 52	PP3187 RF P4MM-NSM SM 1 PP_LDO6 32 34 55				
PP3161 RF P2MM-NSM SM 1 WLAN_UART_CTS_L 30 52	PP3188 RF P4MM-NSM SM 1 DSDS_SIM_SWP 55				
PP3162 RF P2MM-NSM SM 1 WLAN_UART_RXD 30 52	PP3189 RF P4MM-NSM SM 1 DSDS_SIM_DATA_R 55				
PP3163 RF P2MM-NSM SM 1 WLAN_UART_TXD 30 52					
PP3190 RF P2MM-NSM SM 1 WLAN_JTAG_SWCLK 30 52	PP 3178 RF P2MM-NSM SM 1 BB_SIM_RESET 31 36				
PP3191 RF P2MM-NSM SM 1 WLAN_JTAG_SWDIO 30 52	PP 3179 RF P2MM-NSM SM 1 BB_SIM_CLK 31 36				
	PP 3180 RF P2MM-NSM SM 1 BB_SIM_DATA 31 36				
	PP 3183 RF P2MM-NSM SM 1 BB_SIM_DETECT 31 36				
	PP 3184 RF P2MM-NSM SM 1 PP_LDO5 31 32 34 55				

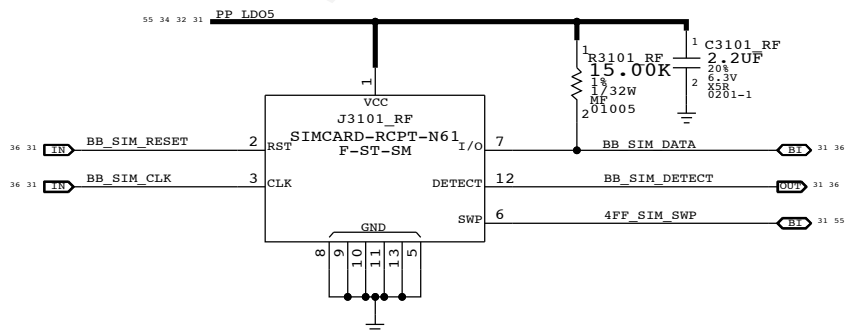
PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
197S0565	197S0593	ALTERNATE	Y3301_RF	KDS 19.2MHZ XTAL
197S0598	197S0593	ALTERNATE	Y3301_RF	AVX 19.2MHZ XTAL
138S00005	138S00003	ALTERNATE	C3216_RF	150F CAPACITOR
138S0739	138S0706	ALTERNATE	C4207_RF	1.00UF CAPACITOR
138S0945	138S0706	ALTERNATE	C4207_RF	1.00UF CAPACITOR
138S1103	138S0719	ALTERNATE	C4007_RF	4.7UF CAPACITOR
339S0231	339S0228	ALTERNATE	U5201_RF	CORONA MODULE USI
339S0242	339S0228	ALTERNATE	U5201_RF	CORONA MODULE TDK
155S00024	155S0950	ALTERNATE	F_TRI_RF	TRIPLEXER BIN2



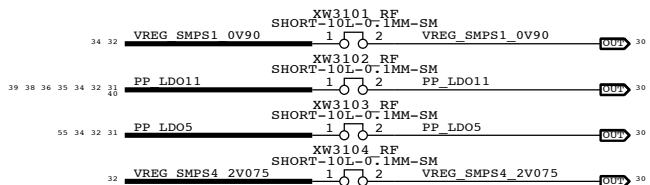
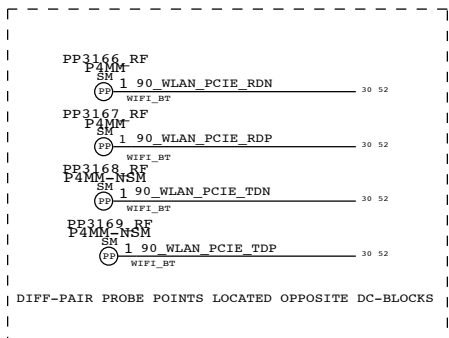
## SIM CARD ESD PROTECTION



## SIM CARD CONNECTOR



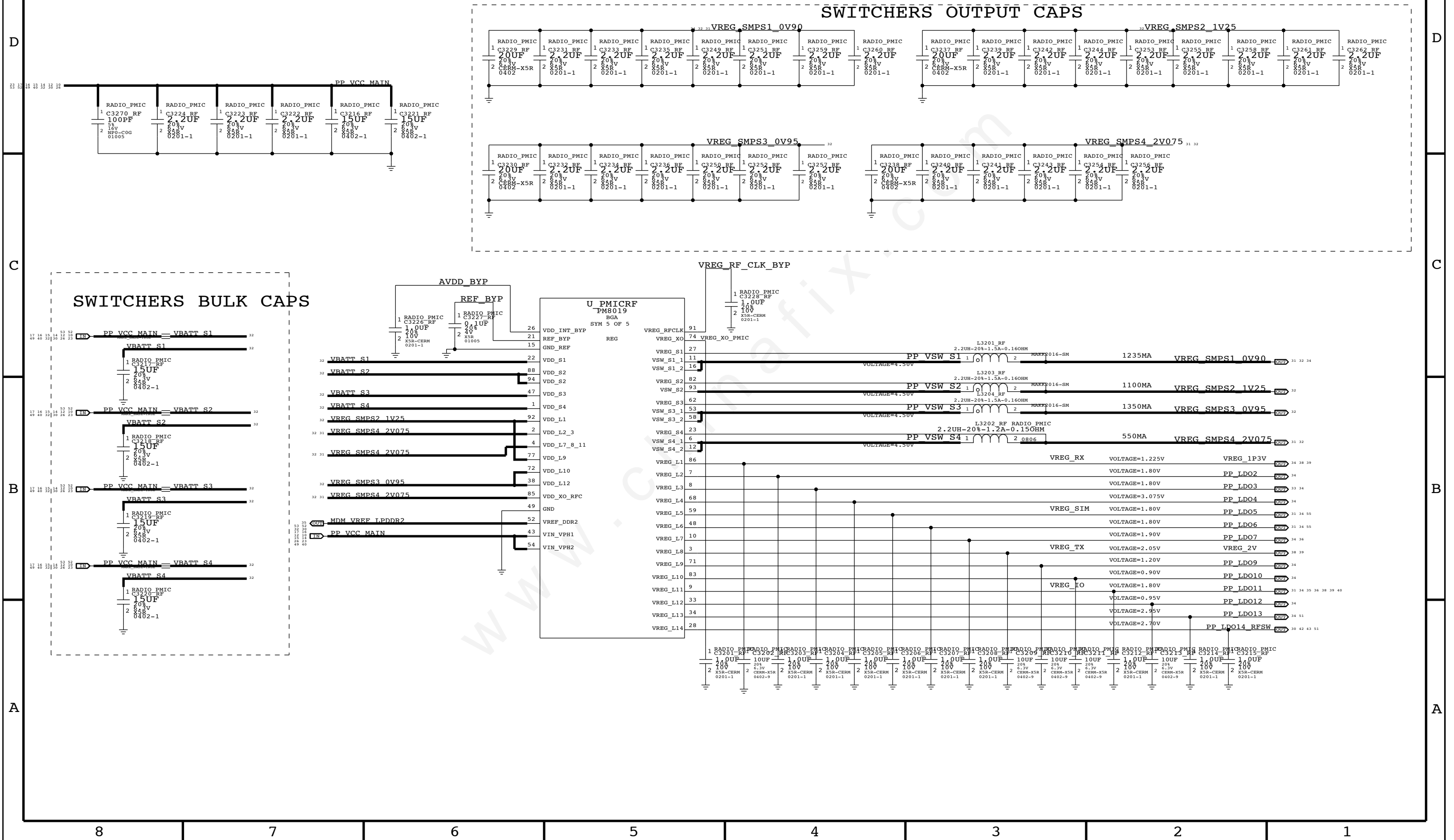
CONFIDENTIAL AND PROPRIETARY APPLE SYSTEM DESIGN. FOR REFERENCE PURPOSE ONLY - NOT A CHANGE REQUEST





# BASEBAND PMU (1 OF 2)

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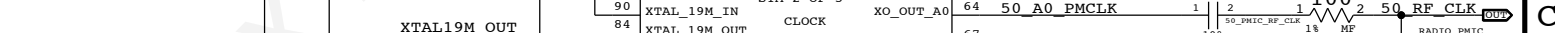
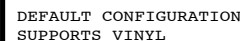




CONFIDENTIAL AND PROPRIETARY APPLE SYSTEM DESIGN. FOR REFERENCE PURPOSES ONLY - NOT A CHANGE REQUEST.

U404

1.70V	N61/N56	PVT
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U502

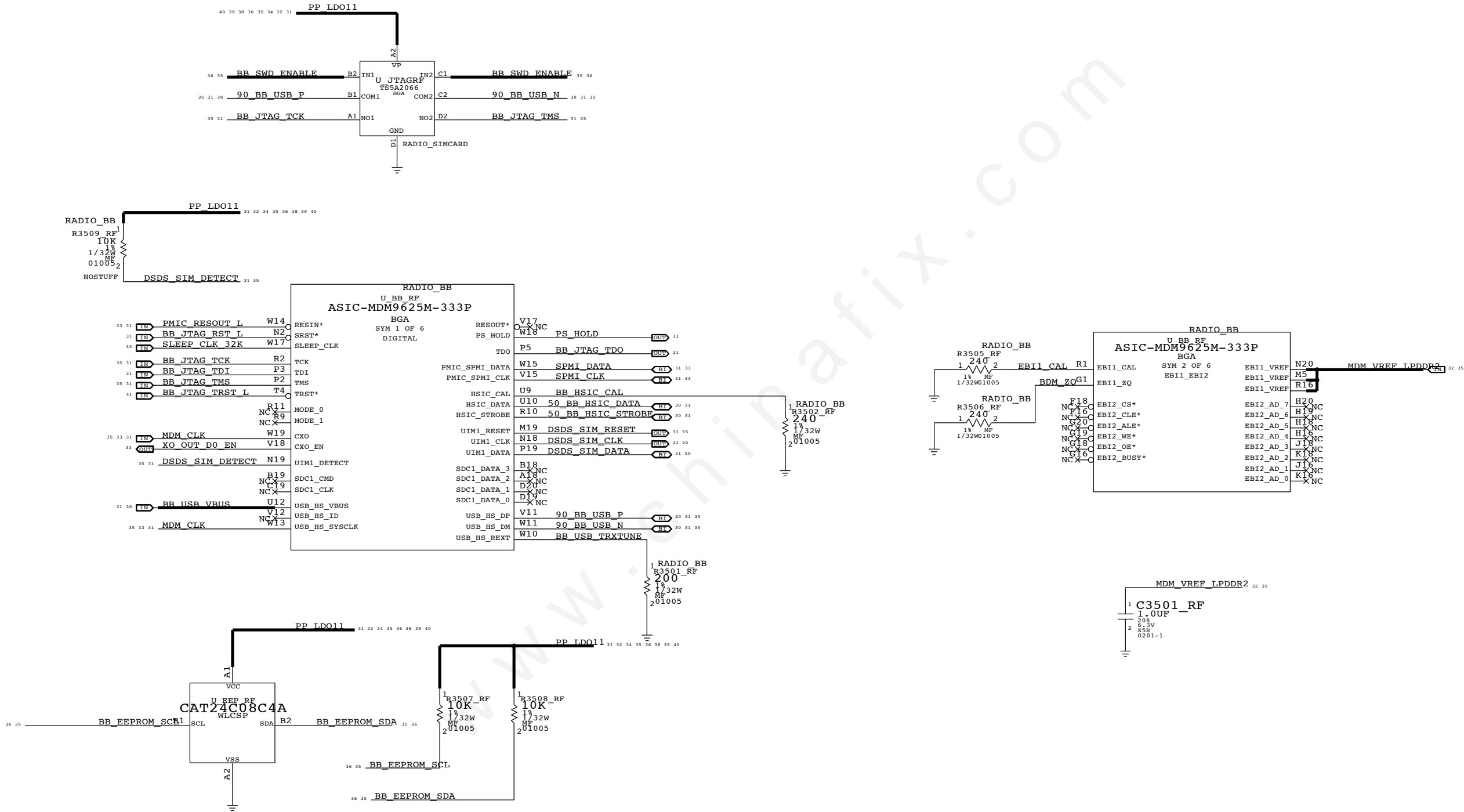




# BASEBAND ( 2 OF 3 )

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C600
R606
L600
U602





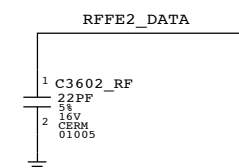


C704
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R700

L700

U702



MOBILE DATA MODEM (2 OF 2)



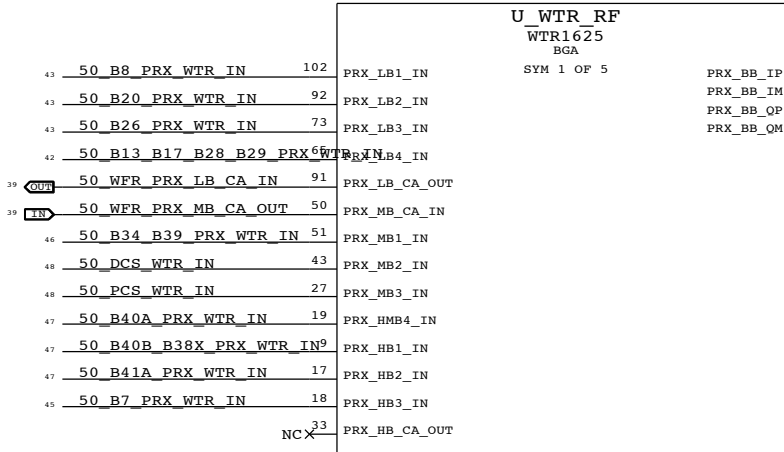
# WTR TRANSCEIVER (1 OF 2)

CONFIDENTIAL AND PROPRIETARY APPLE SYSTEM DESIGN. FOR REFERENCE PURPOSES ONLY - NOT A CHANGE REQUEST.

C802  
R802  
L800  
U803

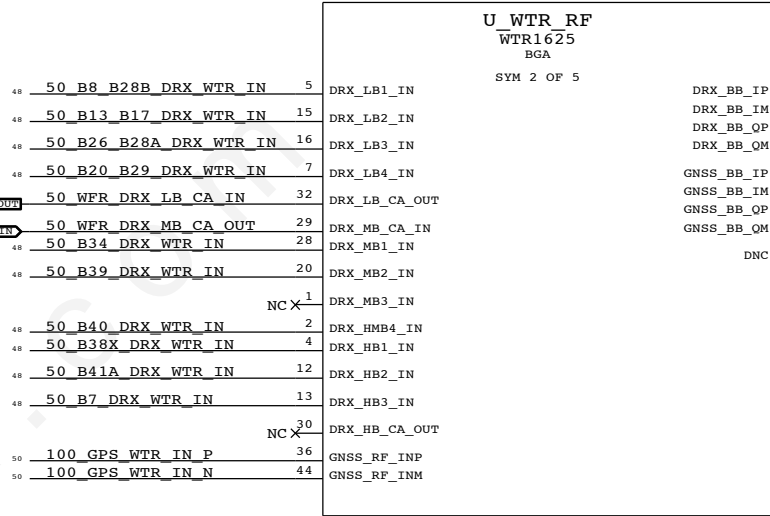


LB1	DC
LB2	DC
LB3	DC
LB4	DC
MB1	NO DC
MB2	DC
MB3	DC
HB1	NO DC
HB2	DC
HB3	DC
HMB4	NO DC



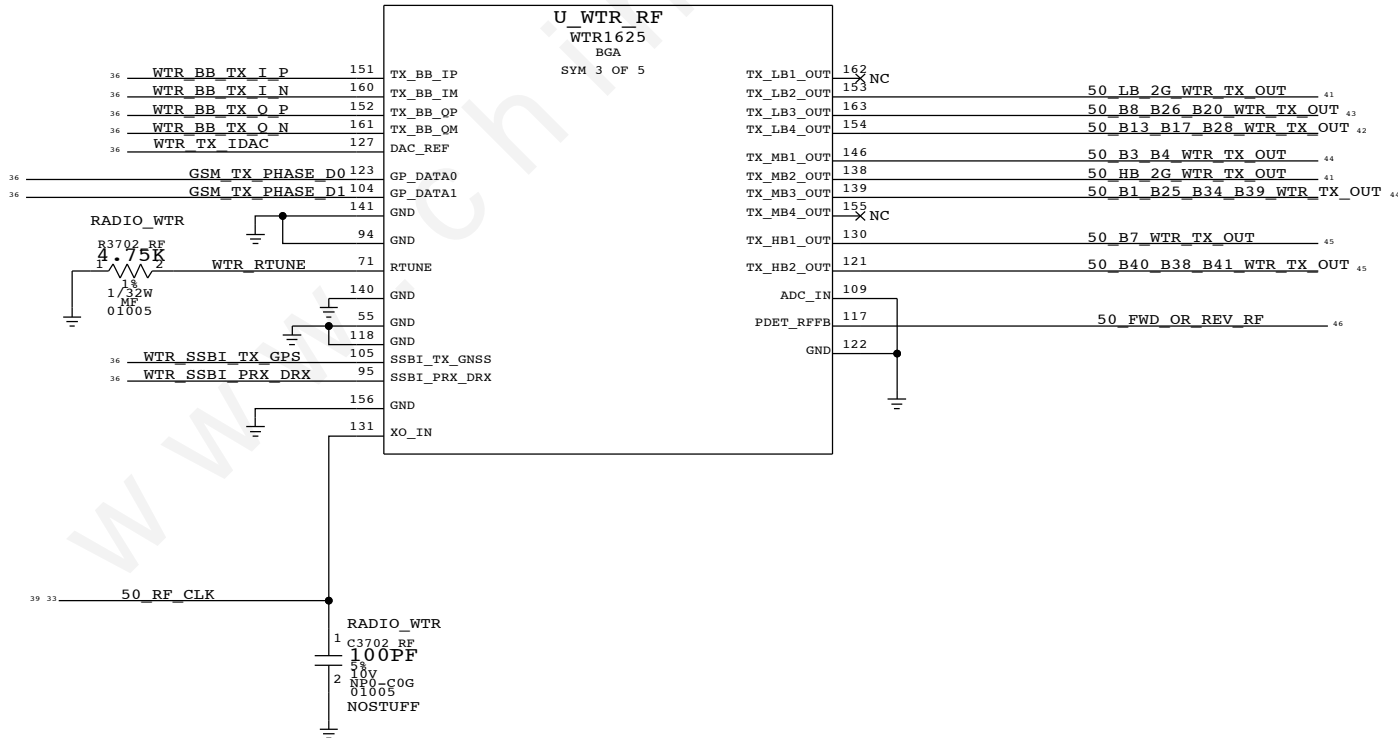
PRX_BB_IP	99	WTR_BB_PRX_I_P	36
PRX_BB_IM	108	WTR_BB_PRX_I_N	36
PRX_BB_QP	107	WTR_BB_PRX_Q_P	36
PRX_BB_QM	97	WTR_BB_PRX_Q_N	36

LB1	DC
LB2	DC
LB3	DC
LB4	DC
MB1	NO DC
MB2	DC
MB3	DC
HB1	NO DC
HB2	DC
HB3	DC
HMB4	NO DC



DRX_BB_IP	76	WTR_BB_DRX_I_P	36	RADIO_WTR
DRX_BB_IM	86	WTR_BB_DRX_I_N	36	RADIO_WTR
DRX_BB_QP	61	WTR_BB_DRX_Q_P	36	RADIO_WTR
DRX_BB_QM	68	WTR_BB_DRX_Q_N	36	RADIO_WTR
GNSS_BB_IP	60	WTR_BB_GPS_I_P	36	RADIO_WTR
GNSS_BB_IM	53	WTR_BB_GPS_I_N	36	RADIO_WTR
GNSS_BB_QP	67	WTR_BB_GPS_Q_P	36	RADIO_WTR
GNSS_BB_QM	85	WTR_BB_GPS_Q_N	36	RADIO_WTR

DNC



RF\_CLK IS SHARED BETWEEN WTR AND WFR. LENGTH DIFFERENCE BETWEEN THE TWO SHOULD BE < 5MM.



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0902

L3801 RF  
22NH-3%-0.25A



(2)

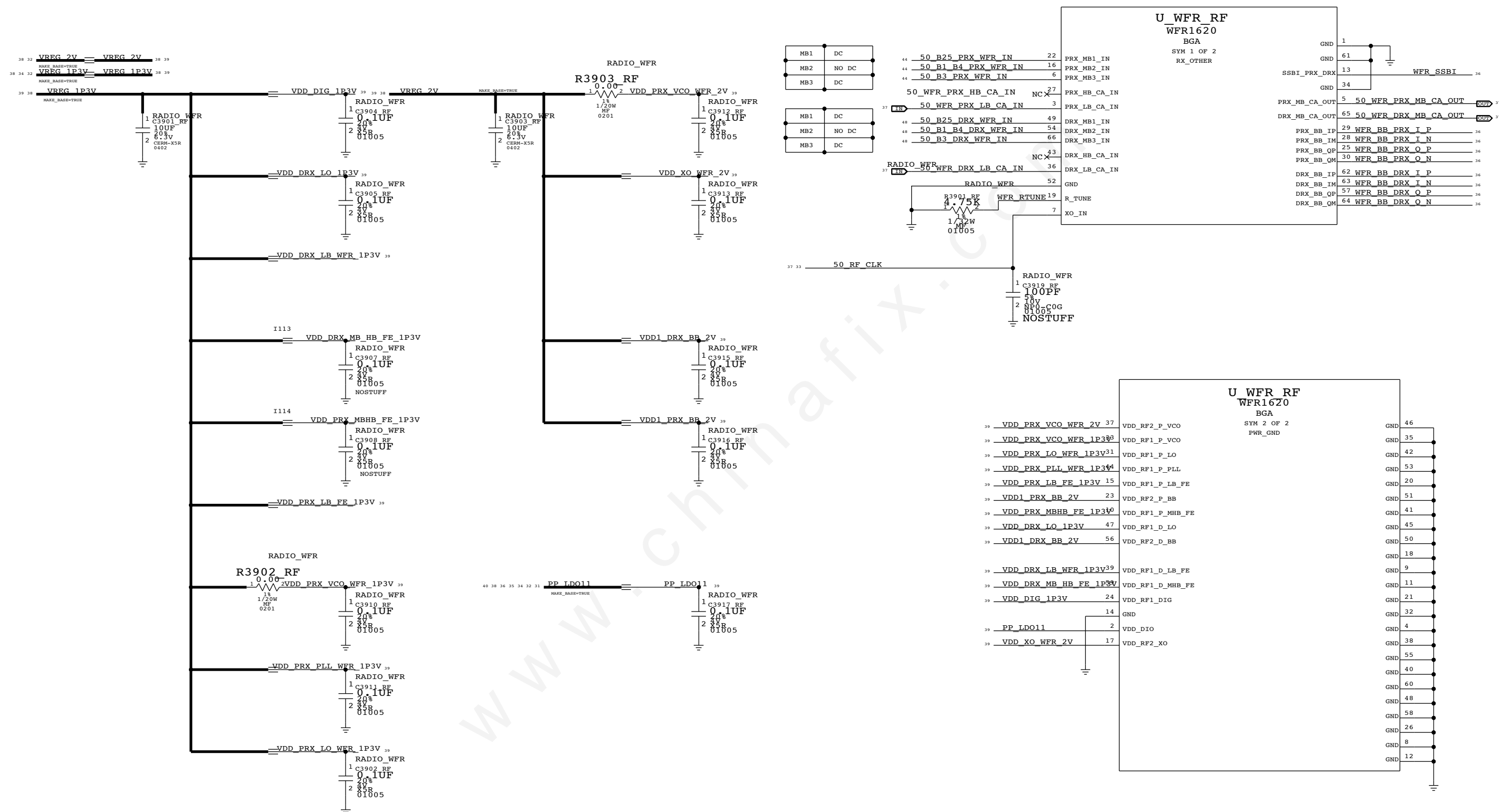
3 |

A



CONFIDENTIAL AND PROPRIETARY APPLE SYSTEM DESIGN. FOR REFERENCE PURPOSES ONLY – NOT A CHANGE REQUEST.

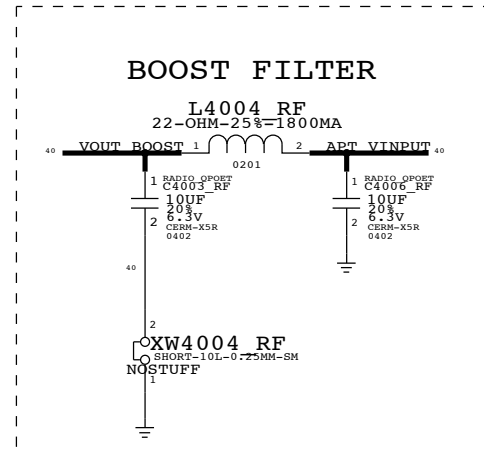
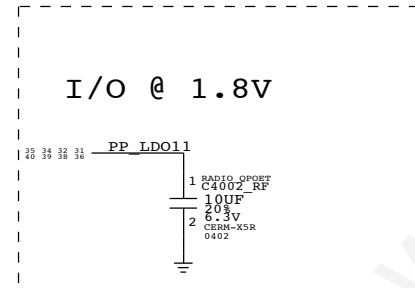
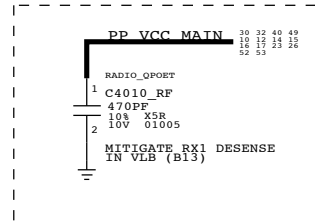
C1019
R1016
L1000
U1002





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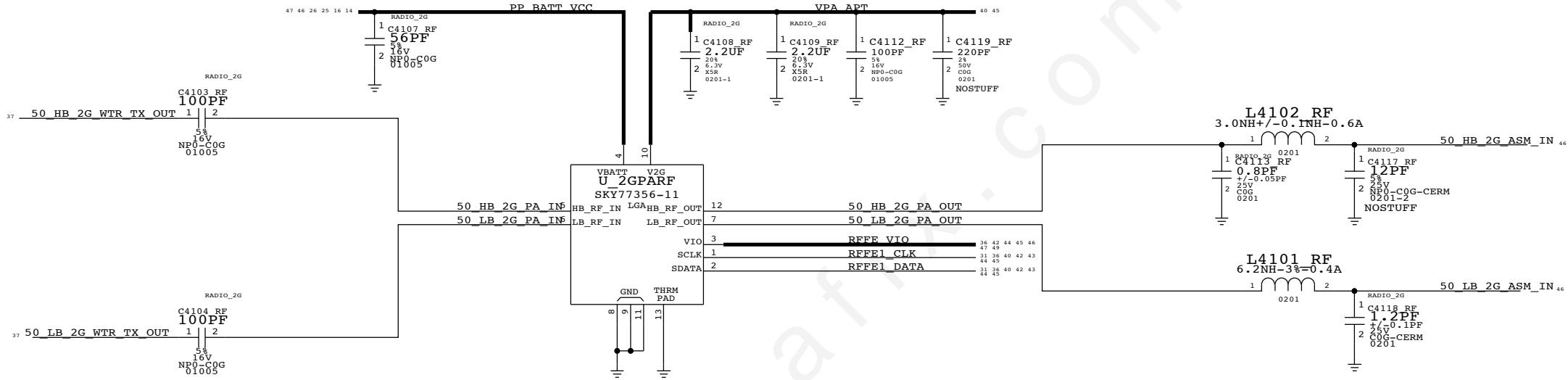
C1110	
R1102	CH
L1104	
U1101	



# 2G PA

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C1208  
R1200  
L1204  
U1201



# VERY LOW BAND PAD (B13, B17, B28)

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C1332  
R1300  
L4215 RF  
U1304



D

C

B

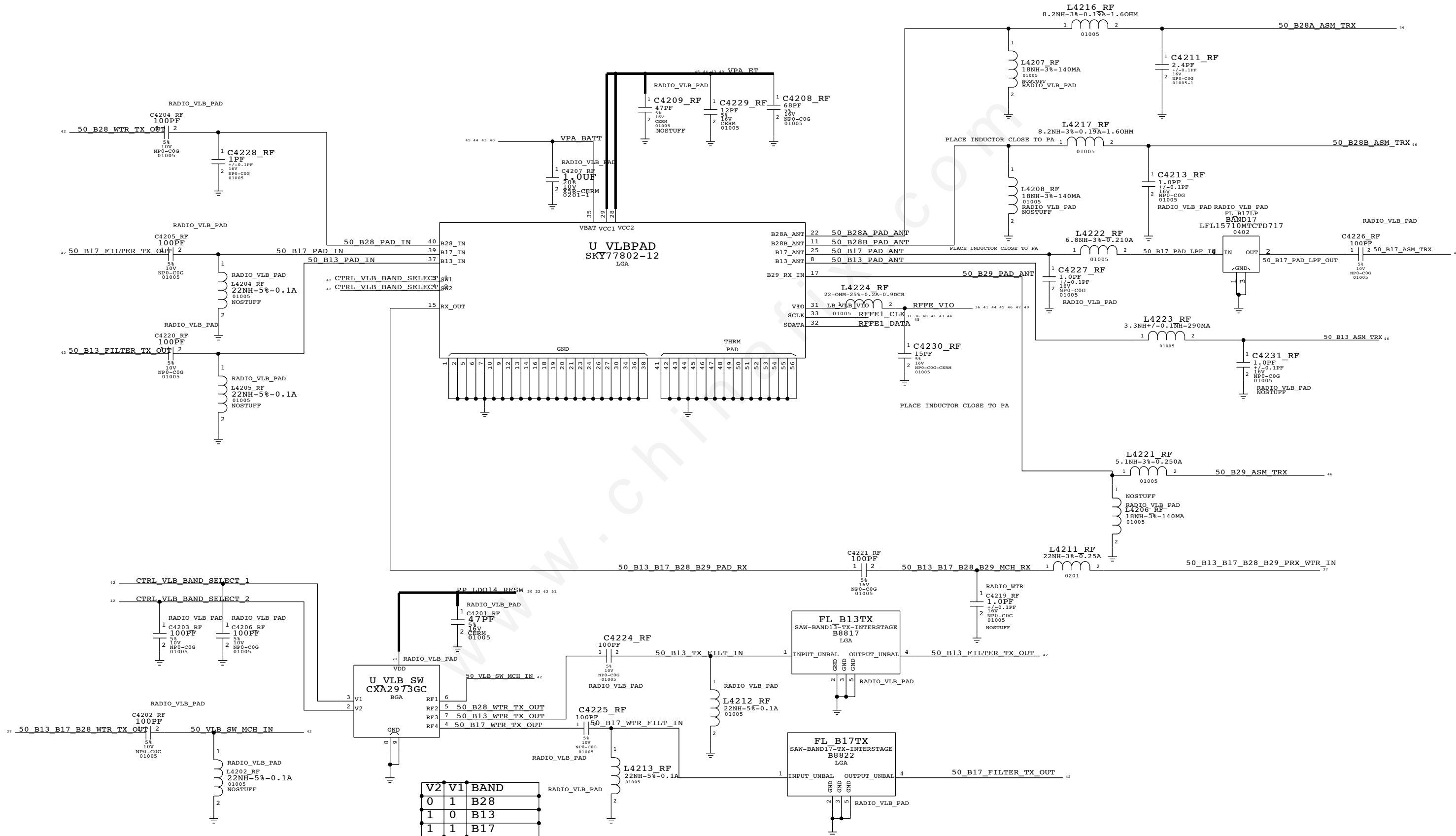
A

D

C

B

A

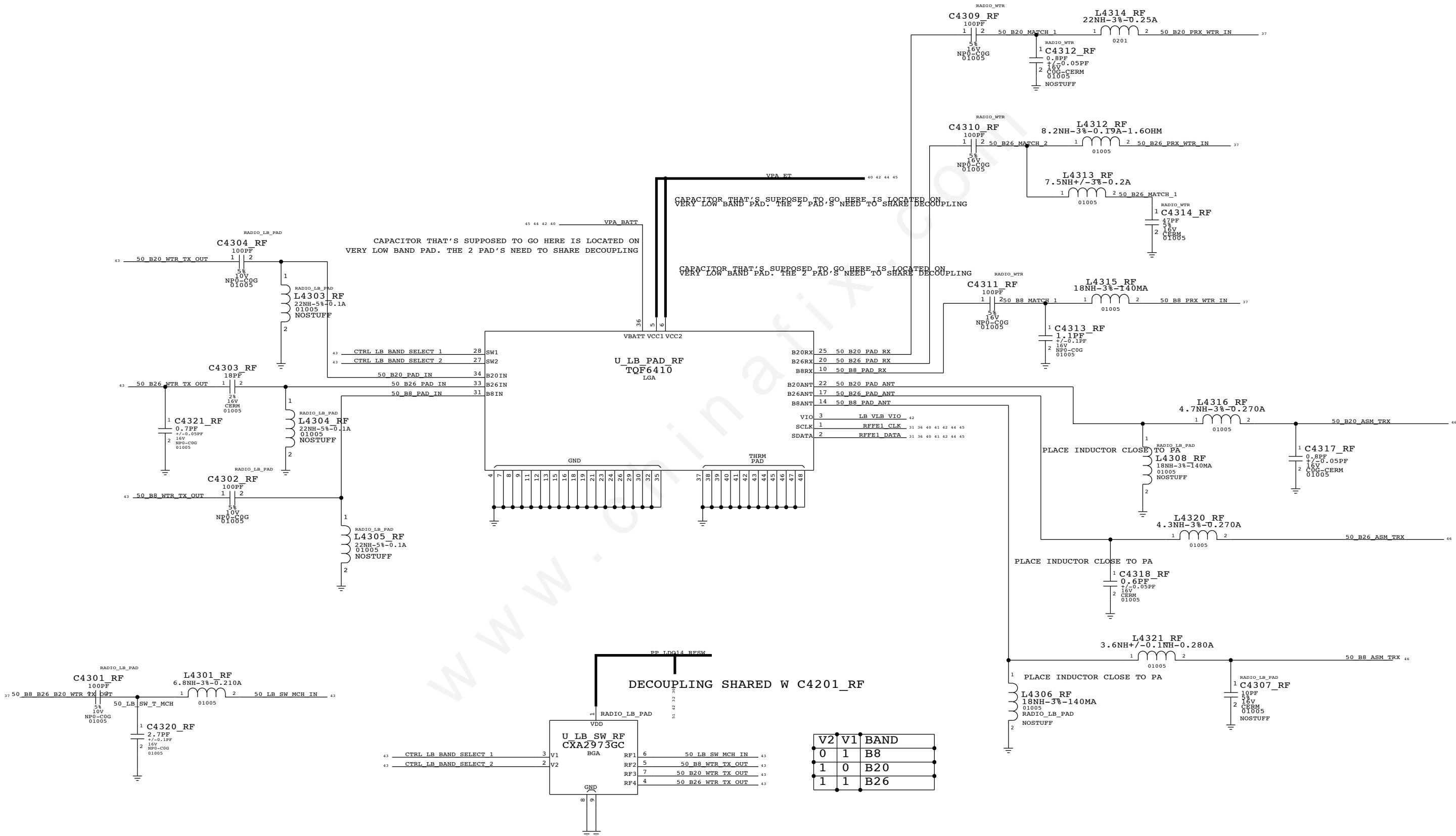




# LOW BAND PAD (B8, B26, B20)

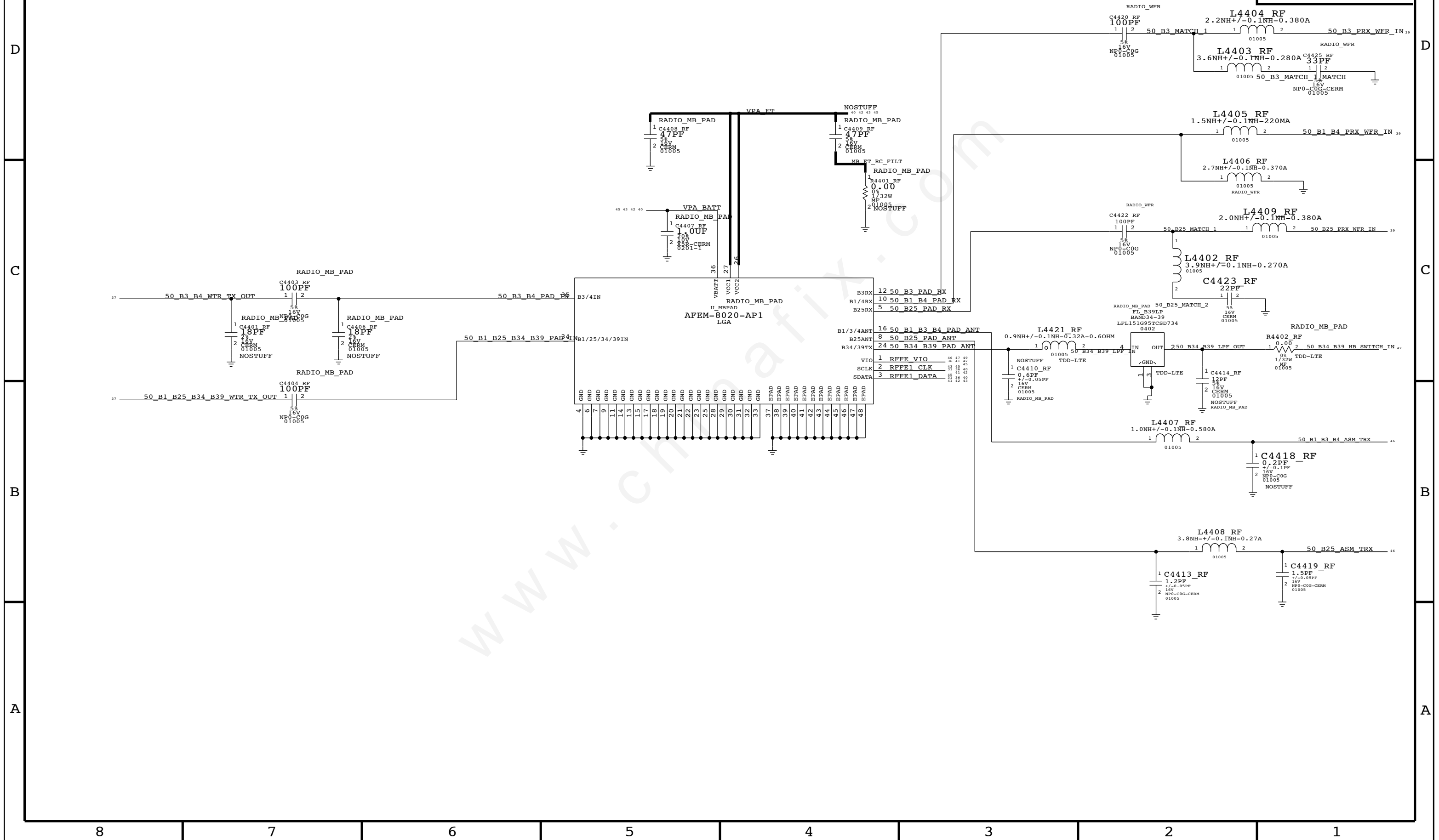
CONFIDENTIAL AND PROPRIETARY APPLE SYSTEM DESIGN. FOR REFERENCE PURPOSES ONLY - NOT A CHANGE REQUEST

C4318 RF  
R1400  
L4322 RF  
U1402





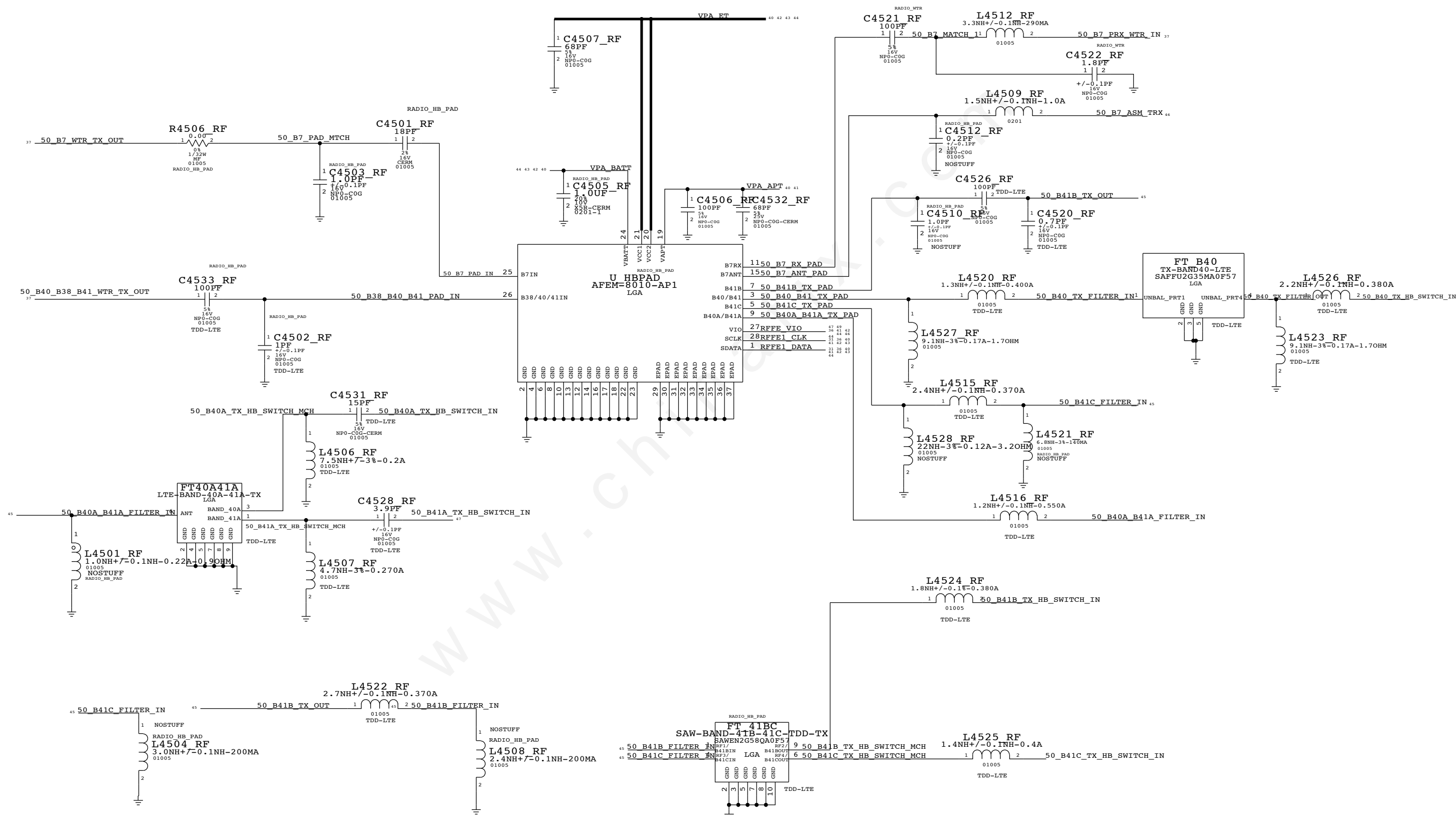
C4426	RF
R1500	
L4409	RF
U1501	





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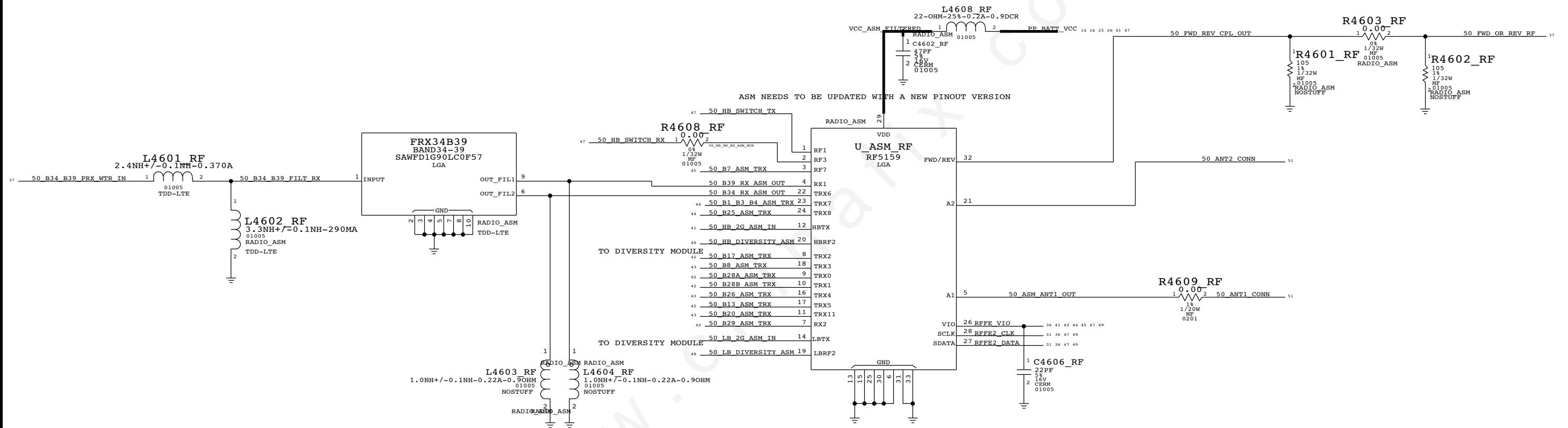
C4533	RF
R1600	
L1616	
U1601	





CONFIDENTIAL AND PROPRIETARY APPLE SYSTEM DESIGN. FOR REFERENCE PURPOSES ONLY - NOT A CHANGE REQUEST.

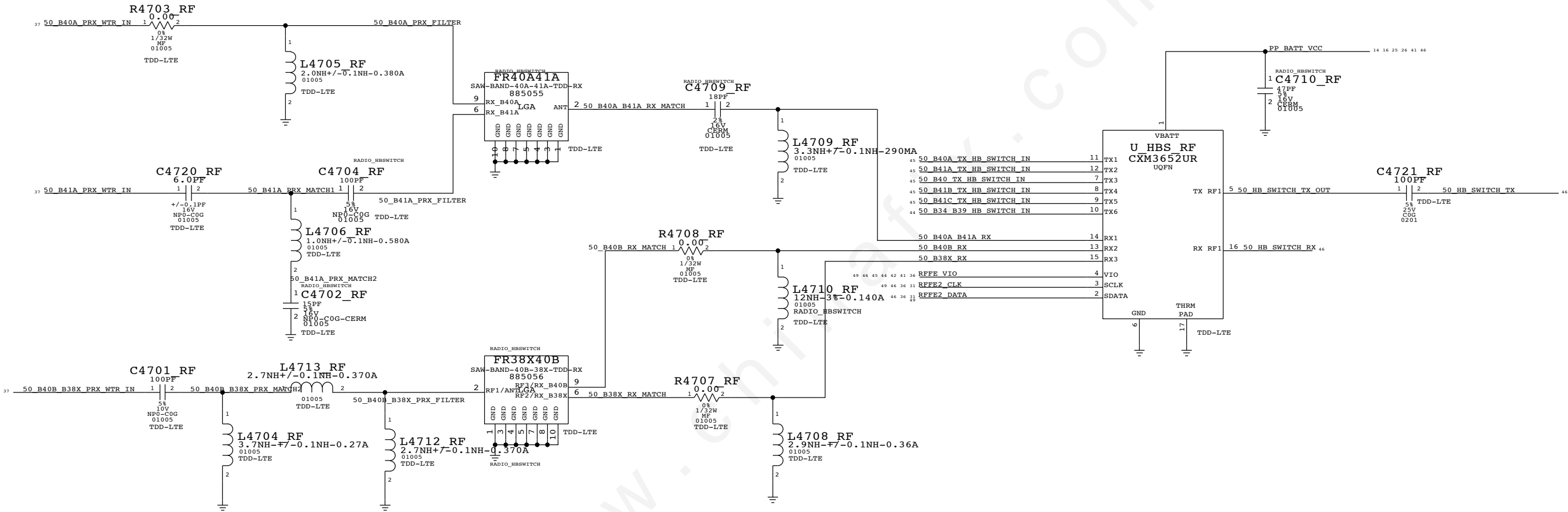
C1702
R1700
L4608 RF
U1702





# HIGH BAND SWITCH

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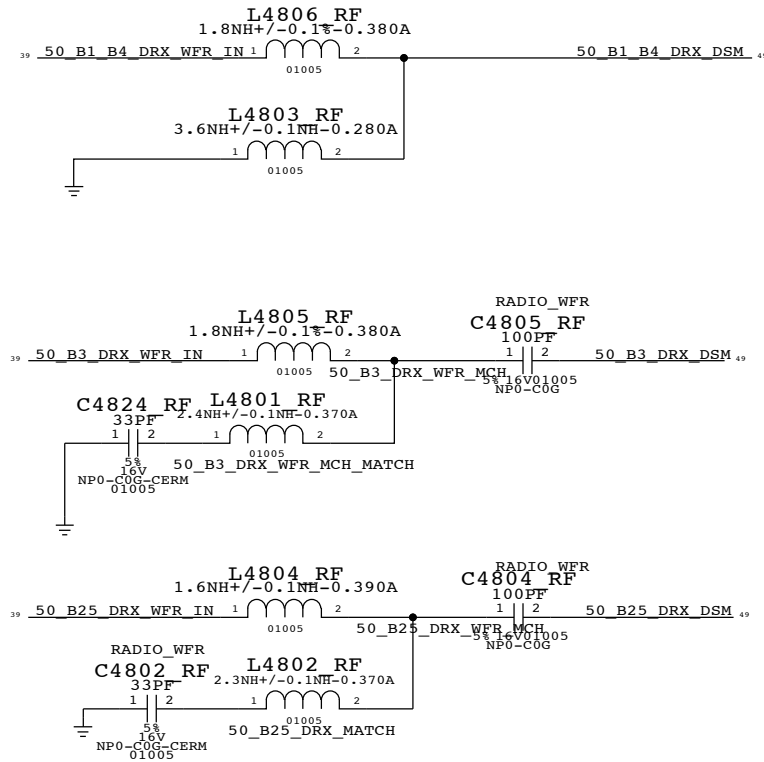
# RX DIVERSITY (1)

CONFIDENTIAL AND PROPRIETARY APPLE SYSTEM DESIGN. FOR REFERENCE PURPOSES ONLY - NOT A CHANGE REQUEST.

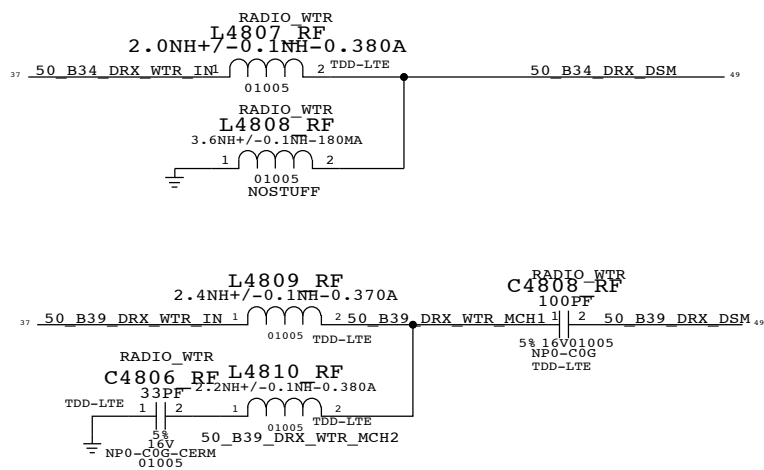
C4826 RF  
R1800  
L1829  
U1801



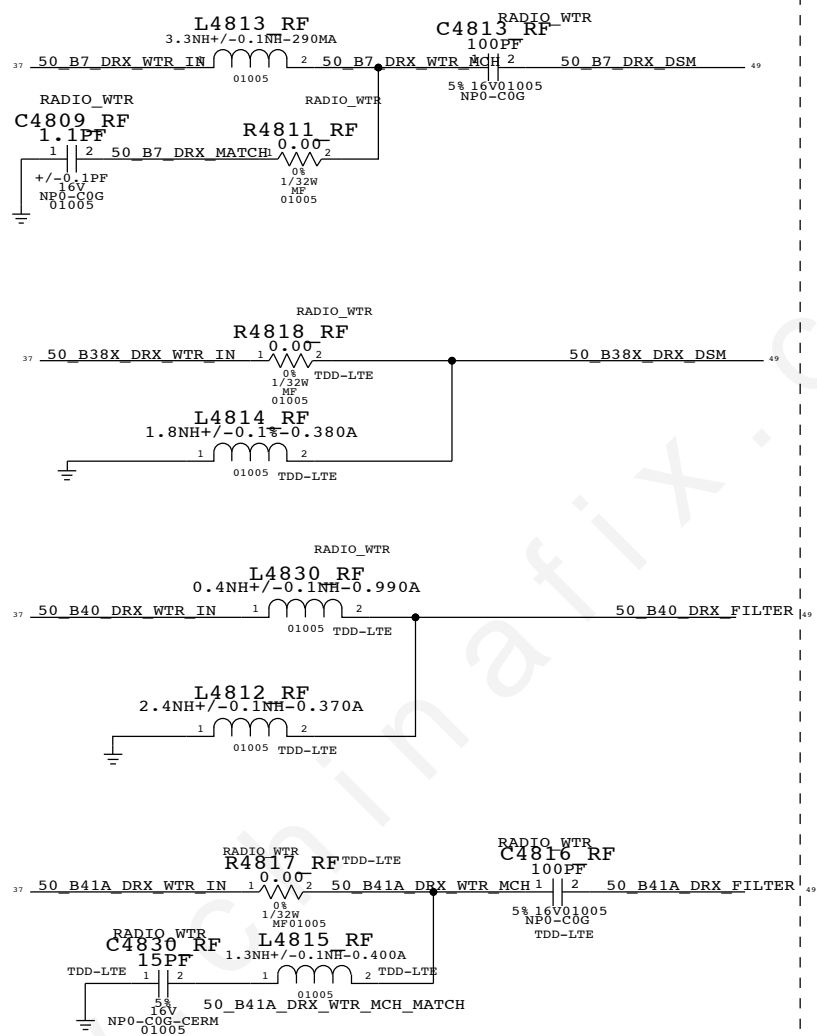
## MIDBAND MIDBAND DIVERSITY - WFR



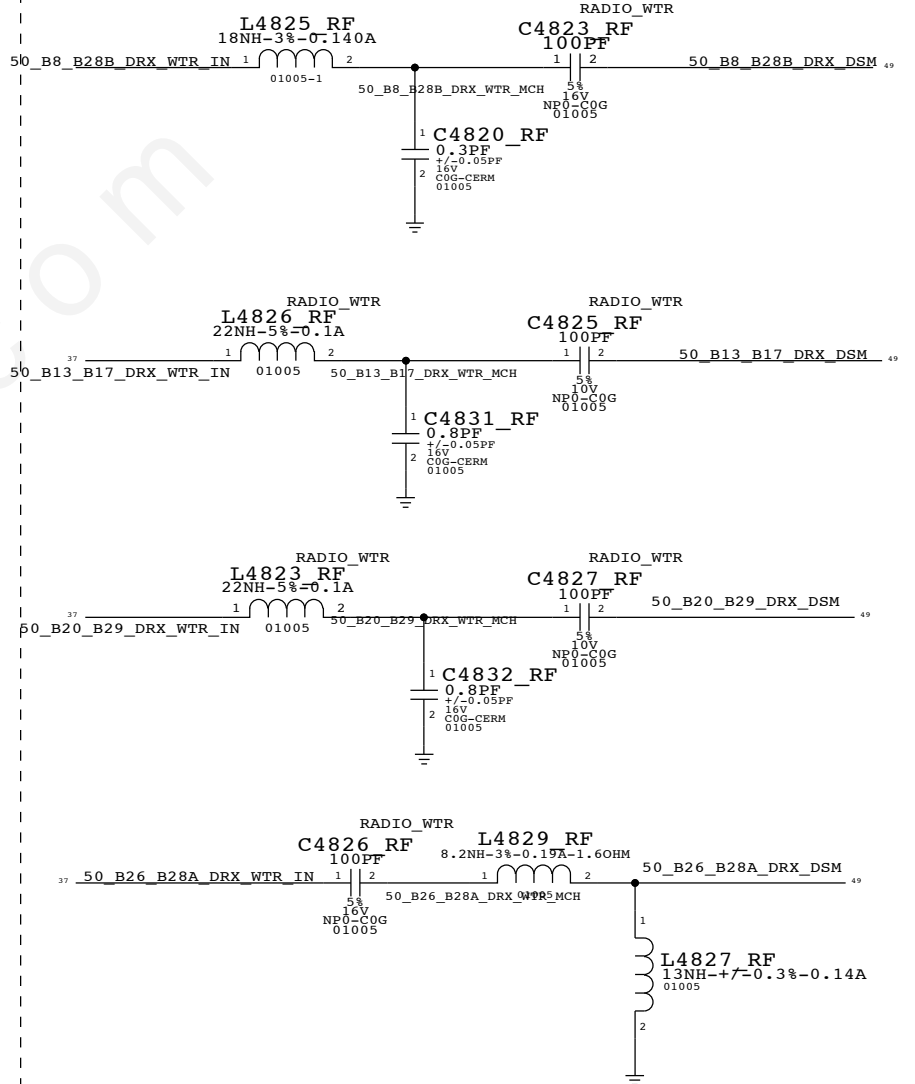
## MIDBAND DIVERSITY - WTR



## HIGHBAND DIVERSITY - WTR



## LOWBAND DIVERSITY - WTR



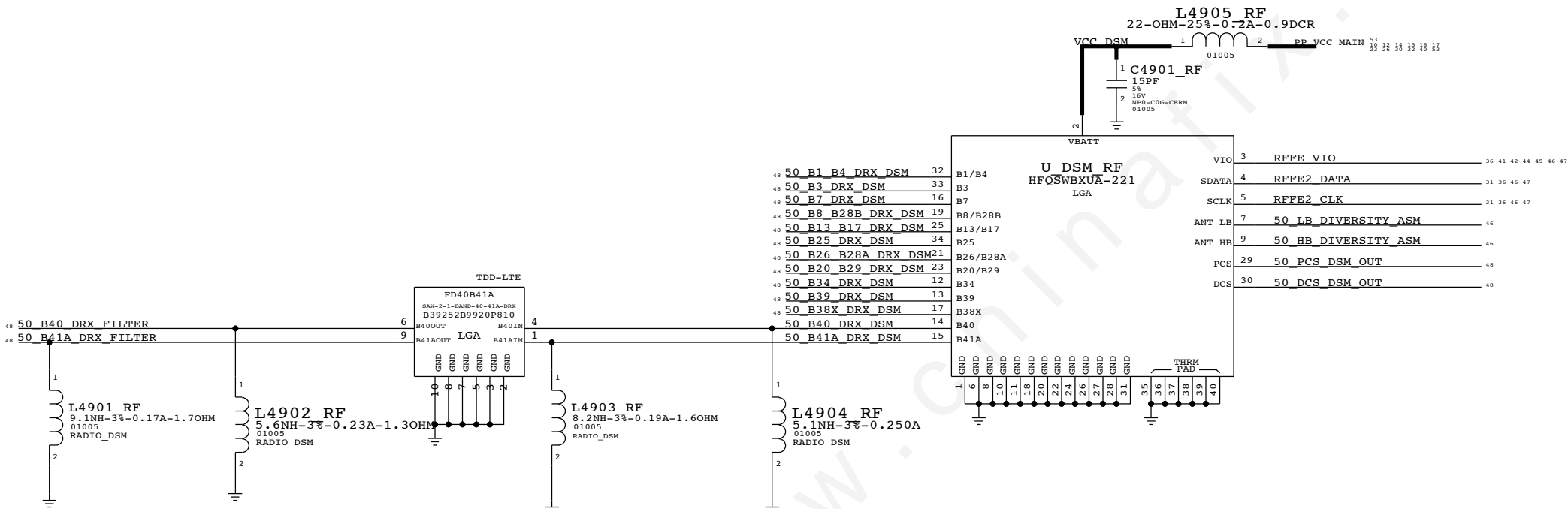


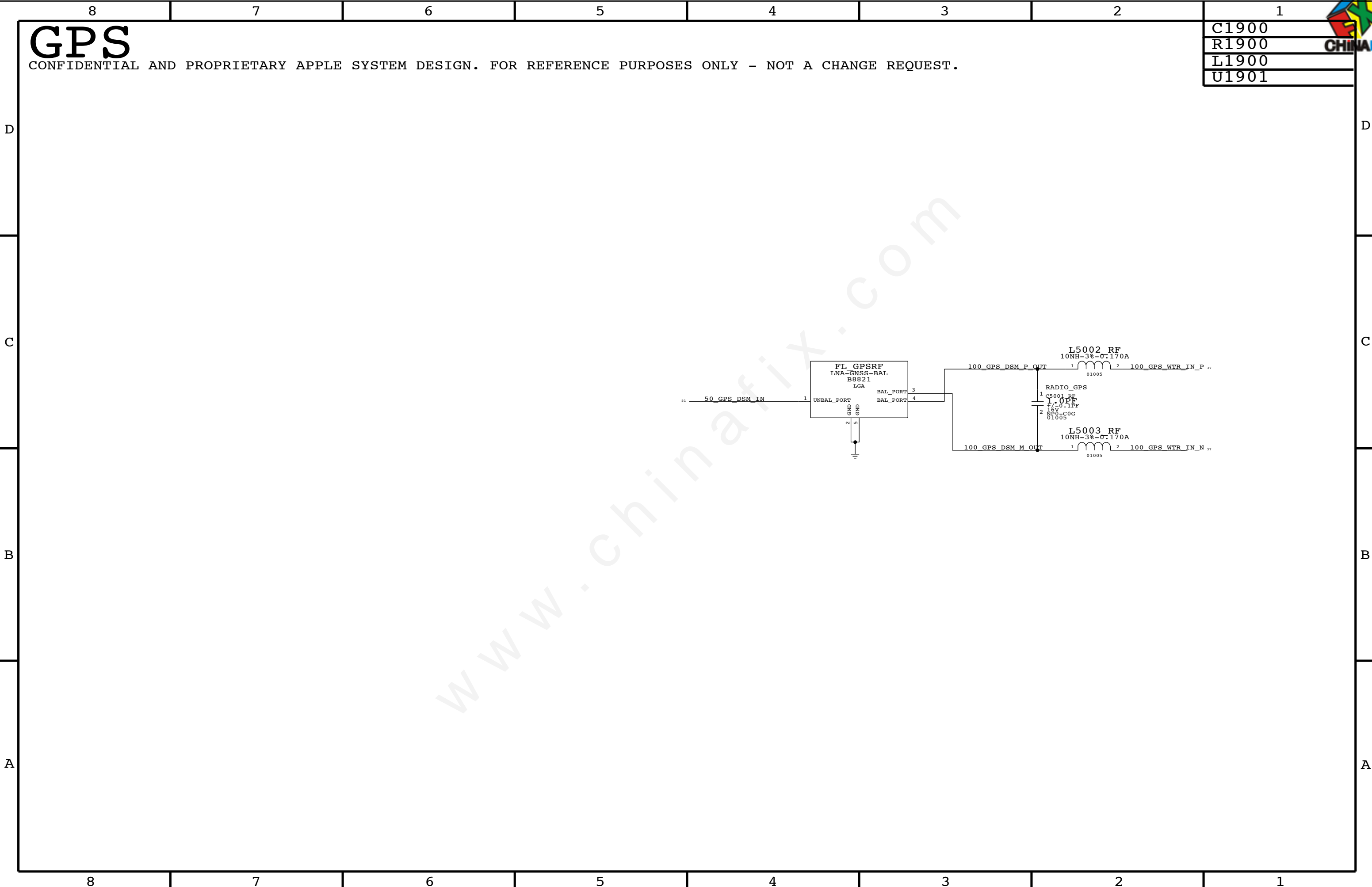
# RX DIVERSITY (2)

CONFIDENTIAL AND PROPRIETARY APPLE SYSTEM DESIGN. FOR REFERENCE PURPOSES ONLY - NOT A CHANGE REQUEST.



C1900  
R1900  
L1900  
U1901



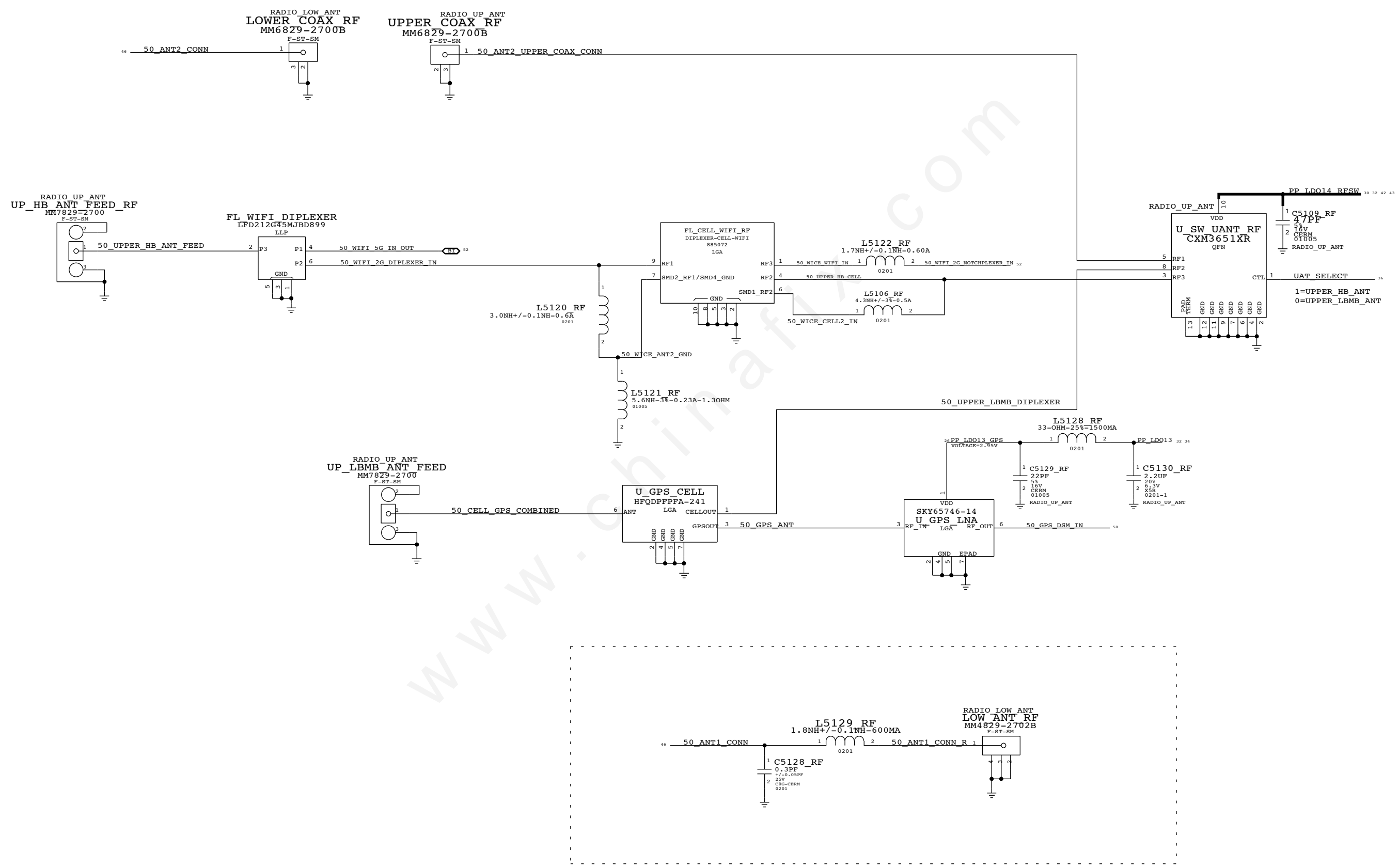




# ANTENNA FEED'S

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TEST & COAX CONNECTOR FOR LOWER SECTION OF MLB



# WLAN/BT

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D

D

C

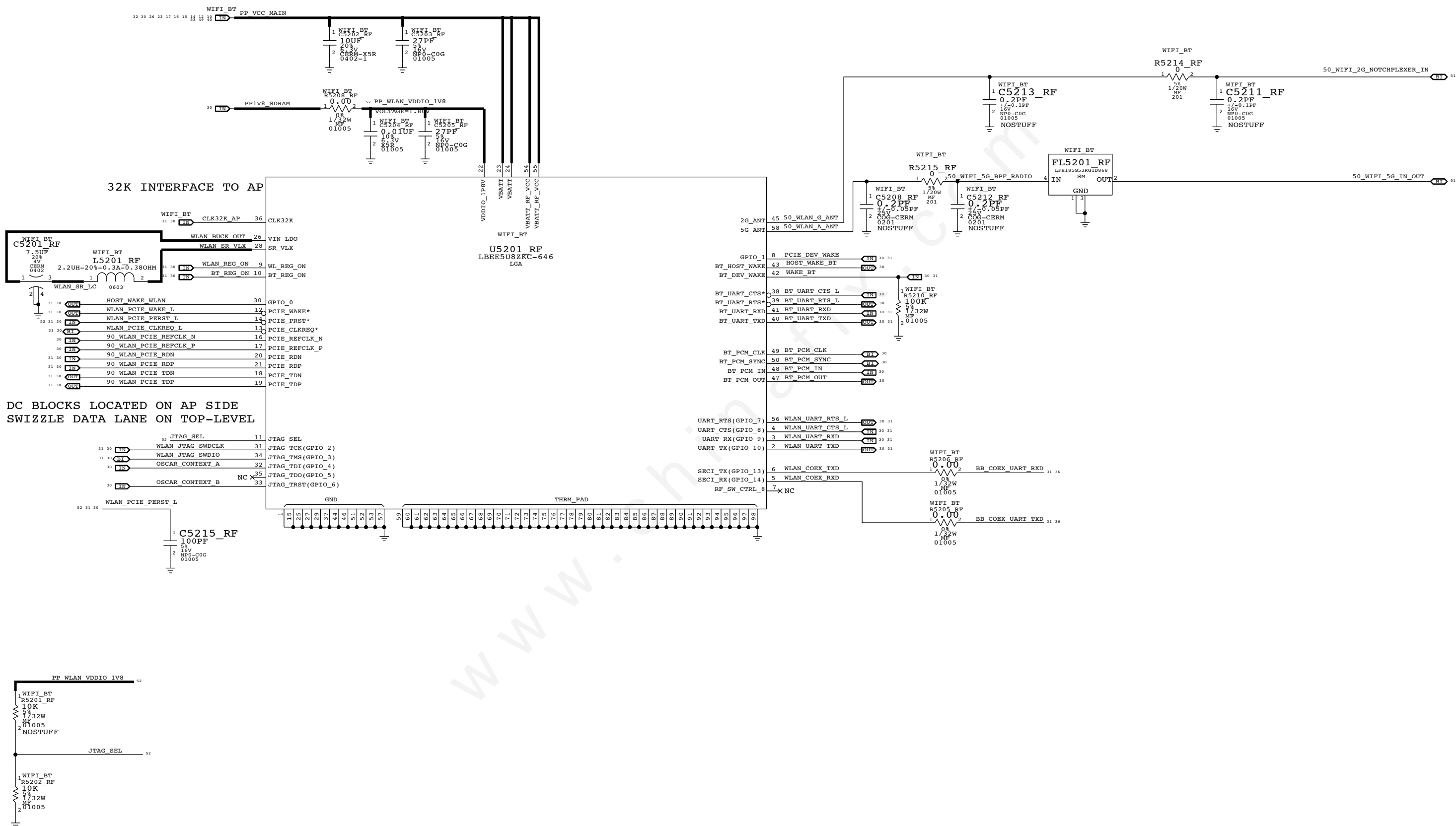
C

B

B

A

A



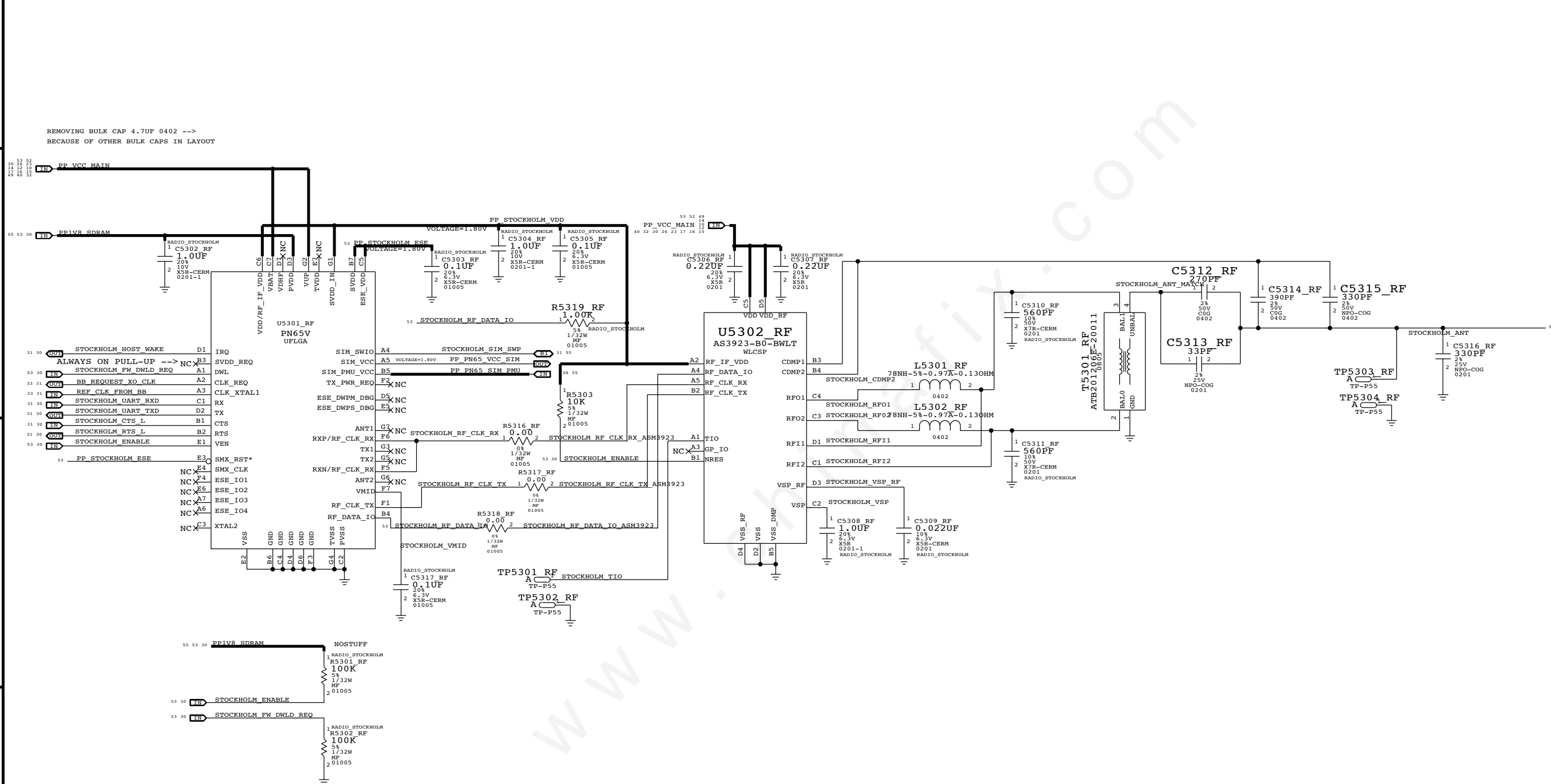
DC BLOCKS LOCATED ON AP SIDE  
SWIZZLE DATA LANE ON TOP-LEVEL

MODULE BOOT-STRAPPED TO PCIE INTERNALLY



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C2101
R2100
L2102
U2100



C

B

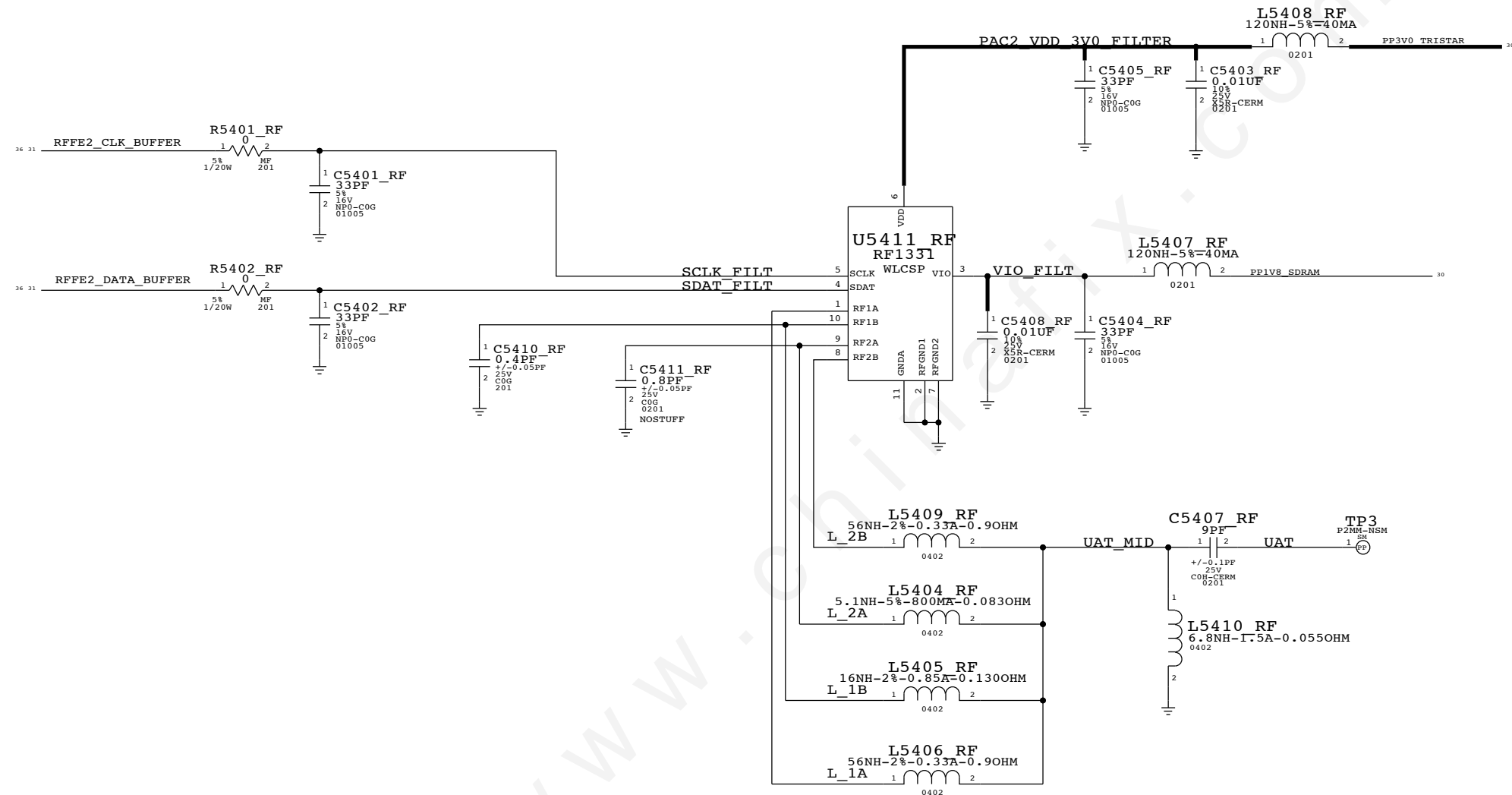
A

D

C

B

A







# DSDS

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