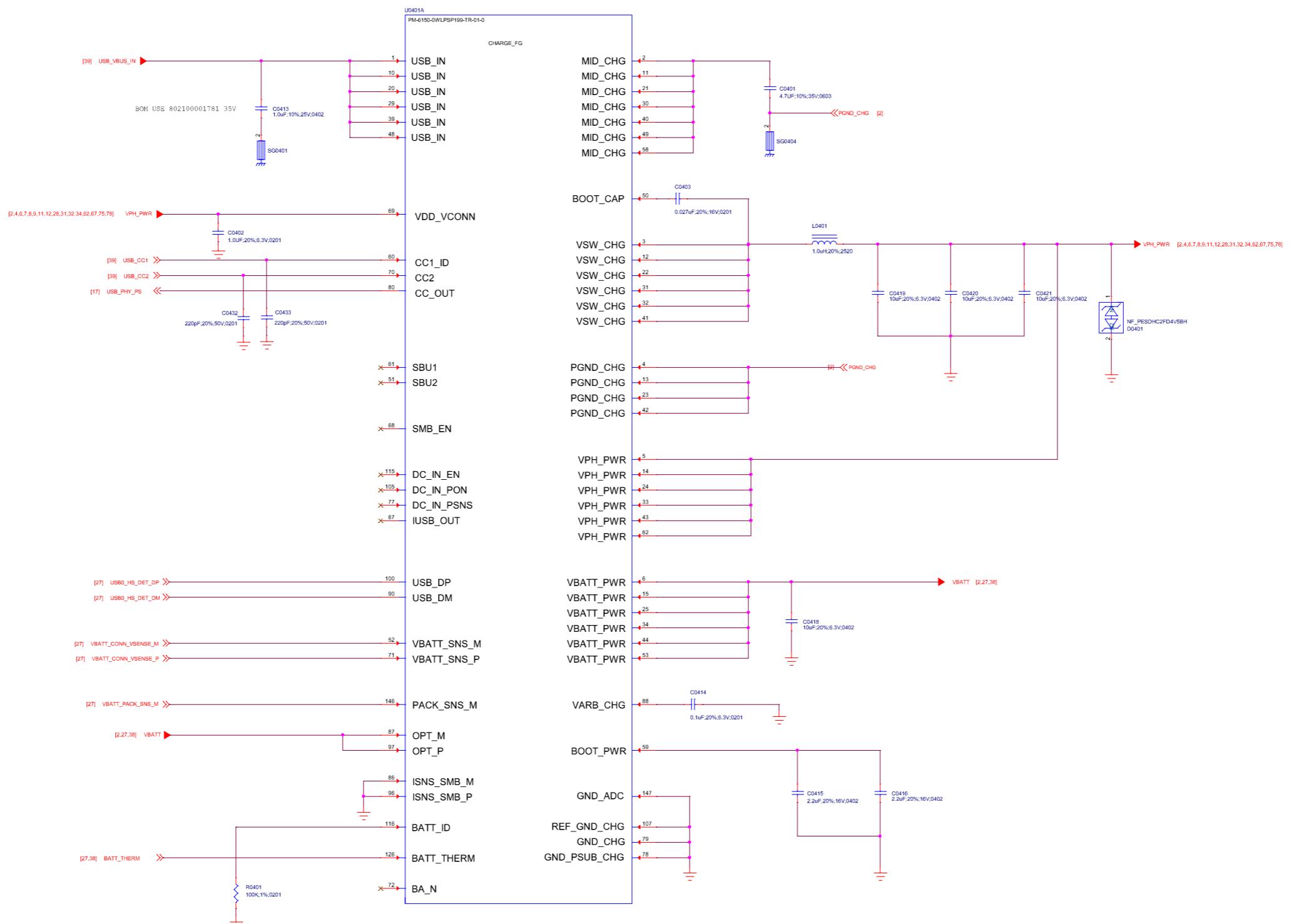
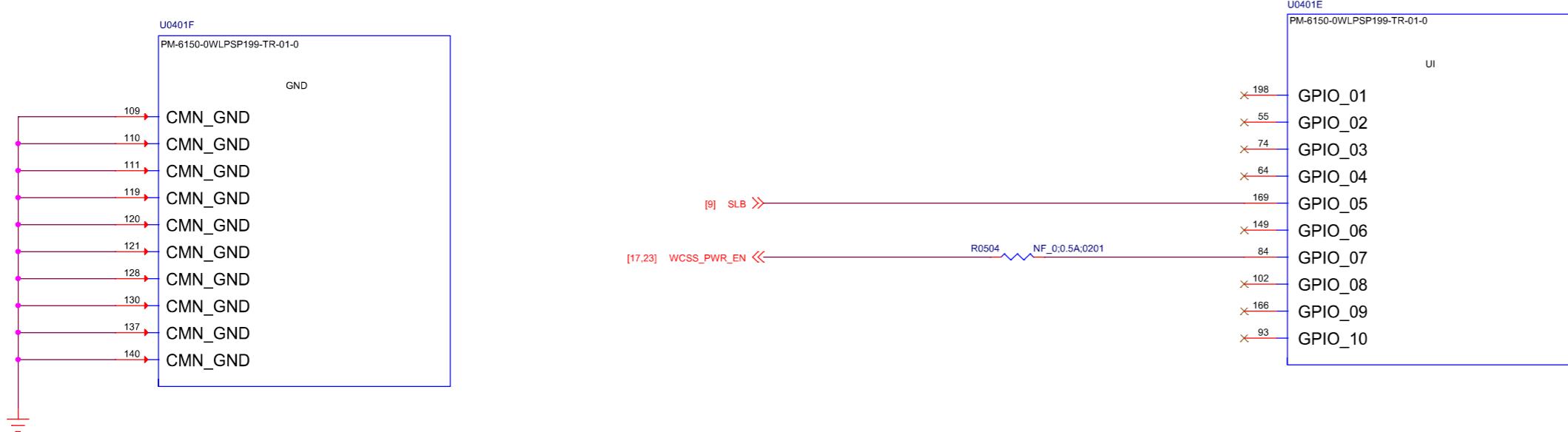


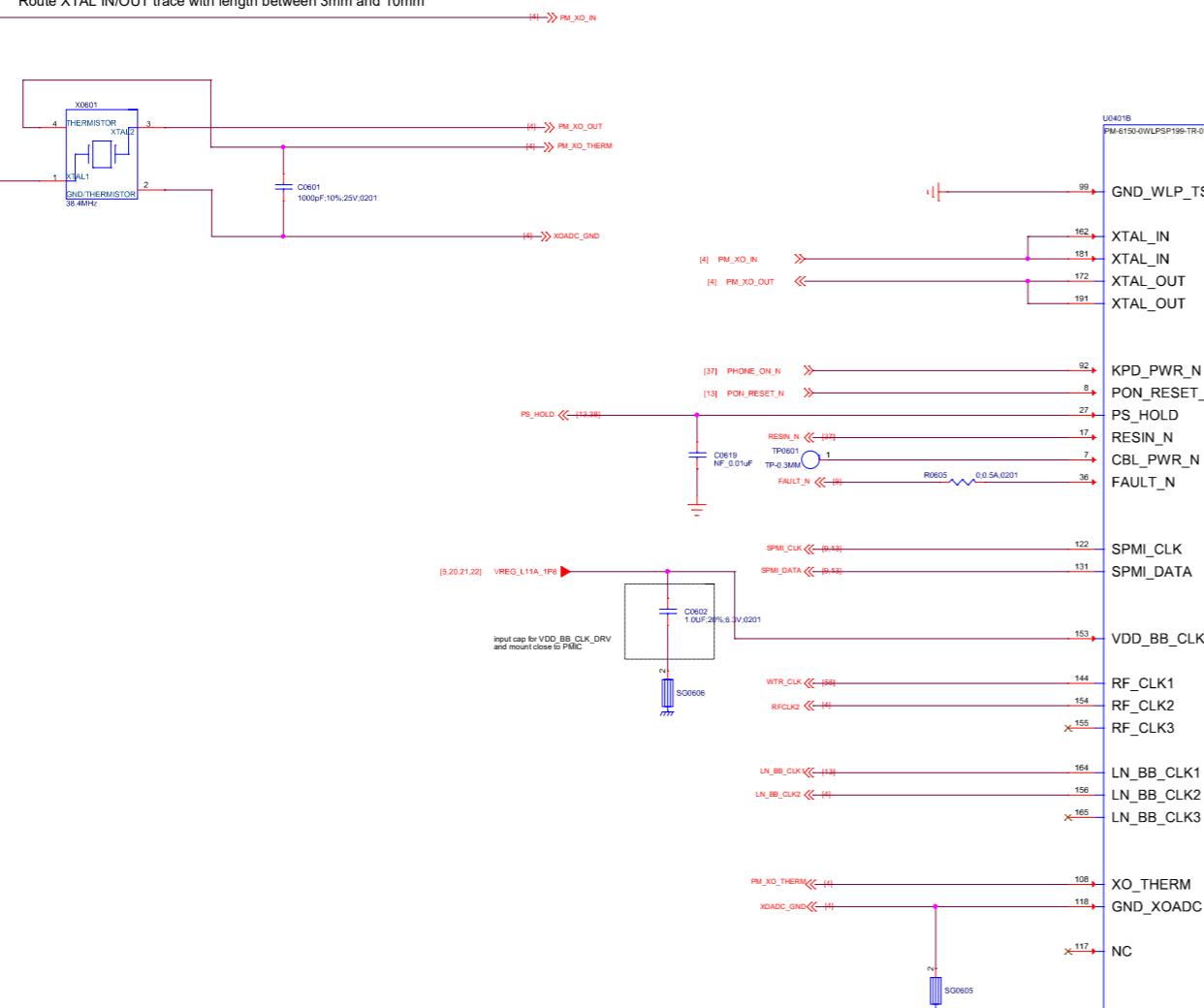
Title	Block Diagram	Rev: V10
DOCUMENT NO:	88750_1_11_20200612_0950	Size: Custom
DEPARTMENT:	Wingtech SZ	DESIGNER: DESIGNER
Date:	Friday, June 12, 2020	Sheet: 1 of 64



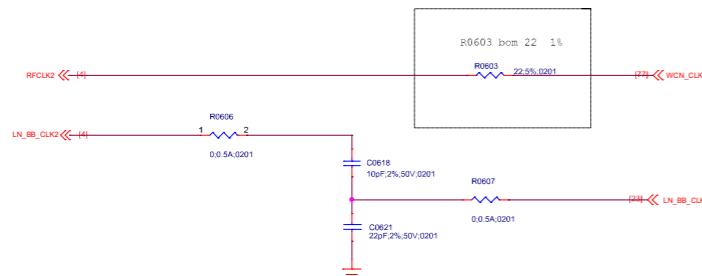
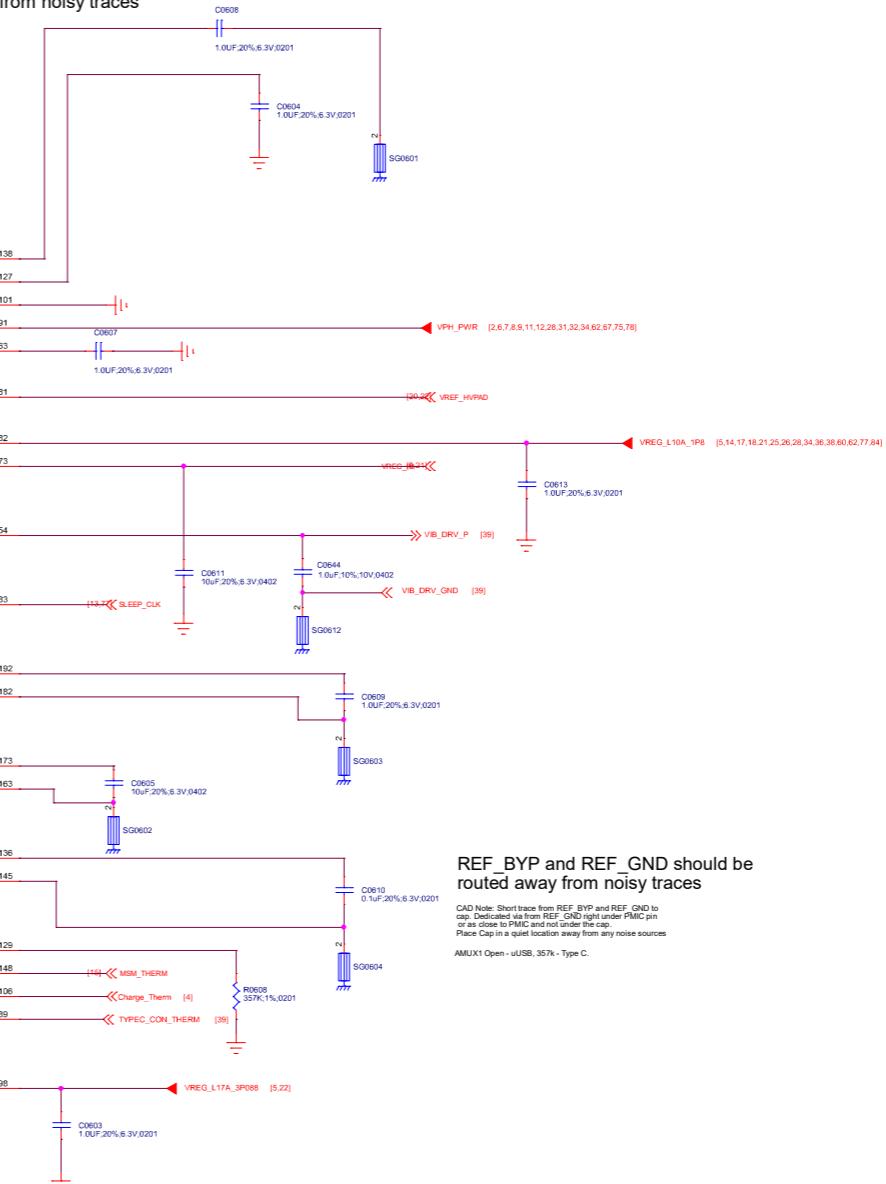
Title PM6150 CHARGER/FG		REV: V10
DOCUMENT NO.:	86750_1_11_20200612_0950	Size D
DEPARTMENT:	Wingtech SZ	DESIGNER: DESIGNER
Date:	Friday, June 12, 2020	Sheet 2 of 64



**Layout Note:**  
No trace shall be present in at-least two immediate layers below XTAL.  
Route XTAL IN/OUT trace with length between 3mm and 10mm



AVDD\_BYP should be routed away from noisy traces



Title	PM6150 HK/AMUX	REV: V10
DOCUMENT NO.	86750_1_11_20200612_0950	Size: Custom
DEPARTMENT:	WingTech SZ	DESIGNER: DESIGNER
Date:	Friday, June 12, 2020	Sheet 4 of 64

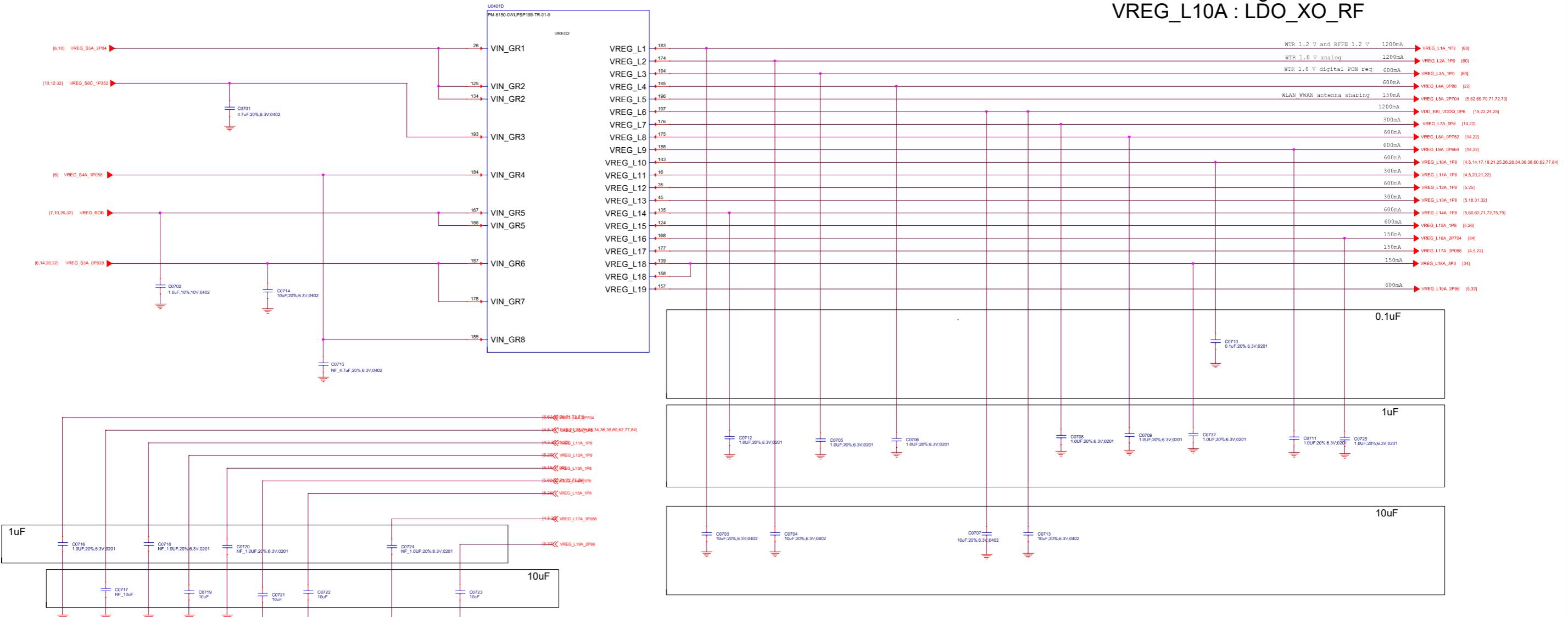
LDO Type VIN\_GR Source V\_default (est) Target Pin#

L1	N1200	3	S8C	1.200	(461)	WTR	1.2V	183
L2	N1200	4	S4A	1.000	(290)	WTR	1.0V ANALOG	174
L3	N600	4	S4A	1.000	(180)	WTR	1.0V DIGITAL	194
L4	N600	8	S4A	0.928	(432)	MSIPs,	0.9V	195
L5	P150	5	BoB	2.704	(2.7)	RFFE,	2.7V	196
L6	N1200	6	S3A	0.600	(692)	LP4x VDDQ,	0.6V	197
L7	N300	8	S4A	0.920	(156)	LPI MX	176	
L8	N600	8	S4A	0.872	(307)	LPI CX	175	
L9	N600	7	S3A	0.728	(250)	WCSS_CX	188	
L10	P600	2	S5A	1.800	(653)	PX3 LDO,	1.8V	143
L11	P300	1	S5A	1.800	(135)	PLL. VDDA MSIPs,	1.8V	16
L12	P600	1	S5A	1.800	(600)	eMMC/UFC,	1.8V	35
L13	P300	1	S5A	1.800	(182)	Camera IO,	1.8V	45
L14	P600	2	S5A	1.800	(263)	WTR,	1.8V	135
L15	P600	2	S5A	1.800	(650)	WCD9370,	1.8V	124
L16	P150	5	BoB	2.704	(0.76)	RFFE	2.7V	168
L17	P150	5	BoB	3.128	(120)	USB	3.1V	177
L18	P150	5	BoB	3.000	(10)	Amoled	3V	139,158
L19	P600	5	BoB	2.850	(316)	WCN3990 CHAIN 0 (WIPWR)		157

LDO Name	Output Voltage(V)	BOOT Defalut	Iout max(mA)	Expected use
VREG_L1	1.20	OFF	1200	WTR
VREG_L2	1.00	OFF	1200	WTR_AVDD
VREG_L3	1.00	ON (1.00)	600	WTR_DVDD
VREG_L4	0.928	ON(0.928)	600	MSIPS
VREG_L5	2.704	OFF	150	RFFE
VREG_L6	0.6	ON(0.6)	1200	LP4x_VDDQ
VREG_L7	0.848	ON(0.928)	300	LPI_MX
VREG_L8	0.8	ON(0.872)	600	LPI_CX
VREG_L9	0.664	ON(0.728)	600	WCSS_CX

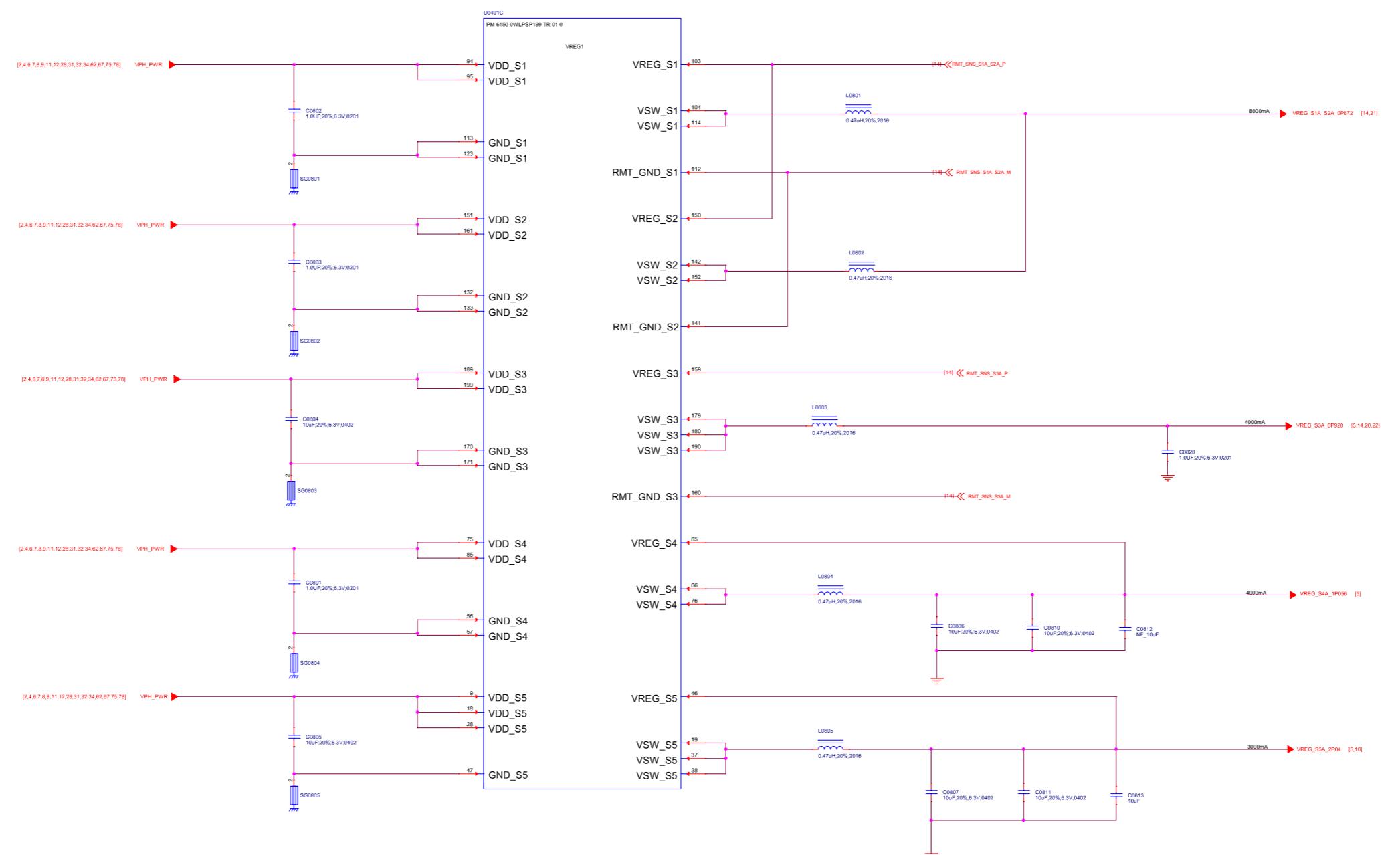
VREG_L10	1.8	ON(1.8)	600	PX3 LDO
VREG_L11	1.8	ON(1.8)	300	PLL, VDDA MSIPs
VREG_L12	1.8	ON(1.8)	600	VCCQ2_UFS
VREG_L13	1.8	OFF	300	VIO_cam&LCD
VREG_L14	1.8	OFF	600	WTR
VREG_L15	1.8	OFF	600	WCD9370
VREG_L16	2.704	OFF	150	RFFE
VREG_L17	3.128	ON(3.128)	150	USB
VREG_L18	3.304	OFF	150	AMLED(not used)
VREG_L19	2.848	OFF	600	AFVDD

## PMIC internal regulators used VREG\_L10A : LDO\_XO\_RF

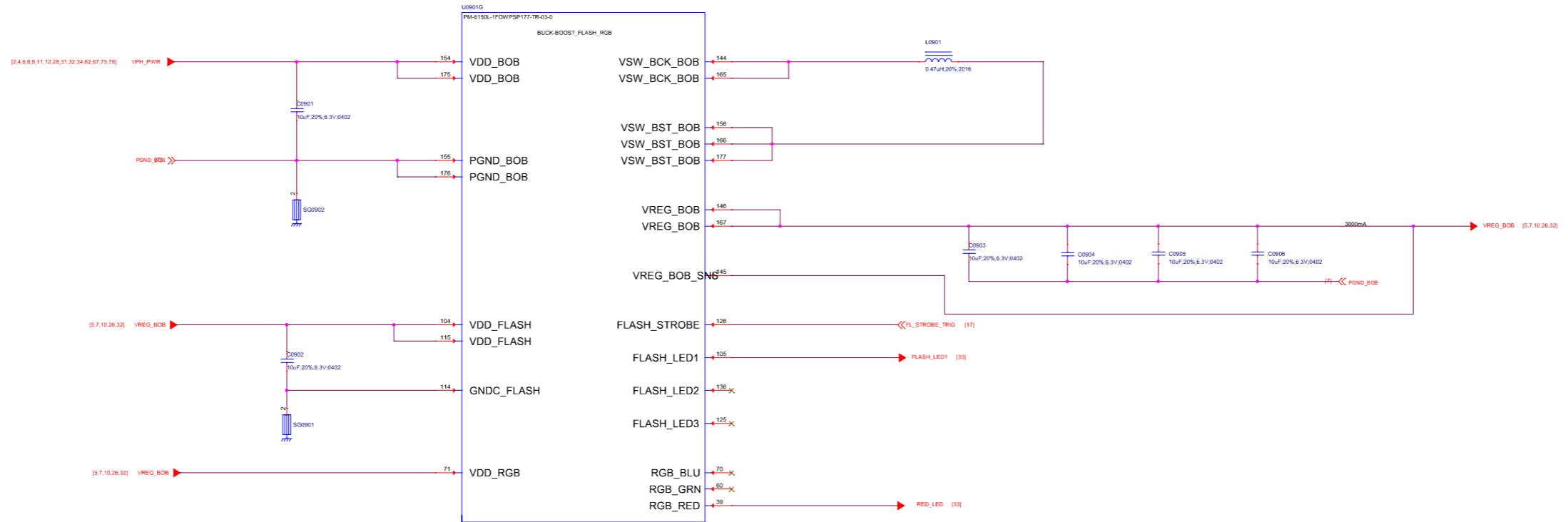


### PSEUDO CAPLESS LDOs

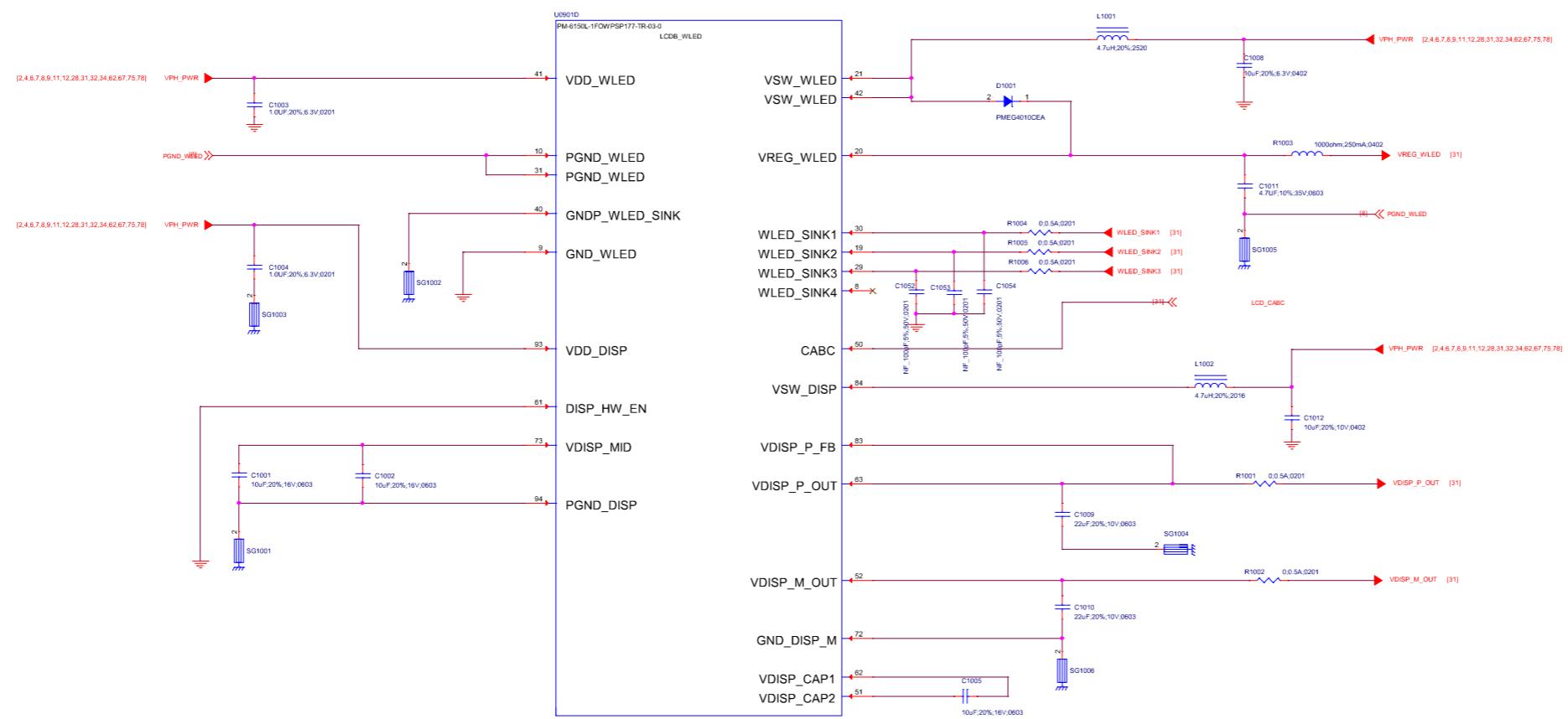
P-type are psuedo-capless, cap can be at load  
For CAPLESS LDOs: If decaps on the load side do not add up to LDO spec, then install the cap close to the PMIC



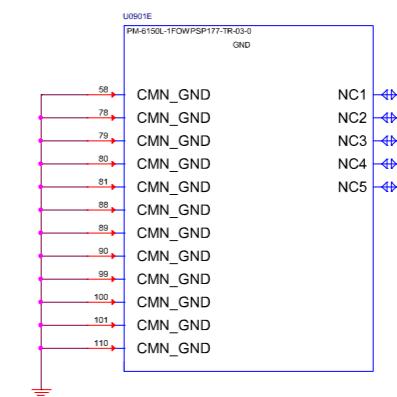
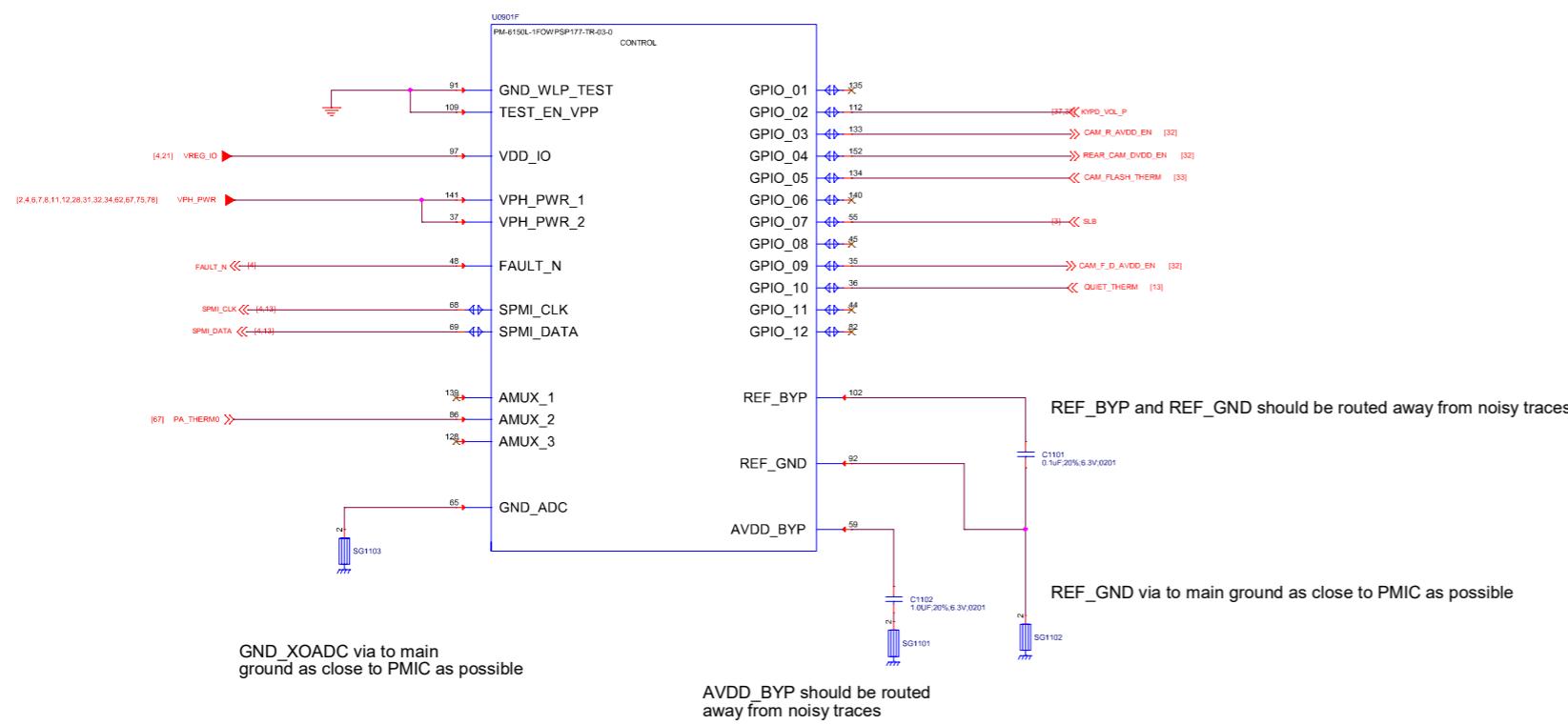
Circuit Type	BUCK Name (Application name)	Output Voltage Range(V)	BOOT Defalut	Iout max(mA)
Buck	VSW_S1 (VDD_CORE)	0.3~1.352	ON(0.872)	4000
	VSW_S2 (VDD_CORE)	0.3~1.352	ON(0.872)	4000
	VSW_S3 (DVDD_VDDM)	0.3~1.352	ON(0.928)	4000
	VSW_S4 (LV_LDO)	0.32~2.04	ON(1.056)	4000
	VSW_S5 (HV_LDO)	0.32~2.04	ON(2.040)	3000

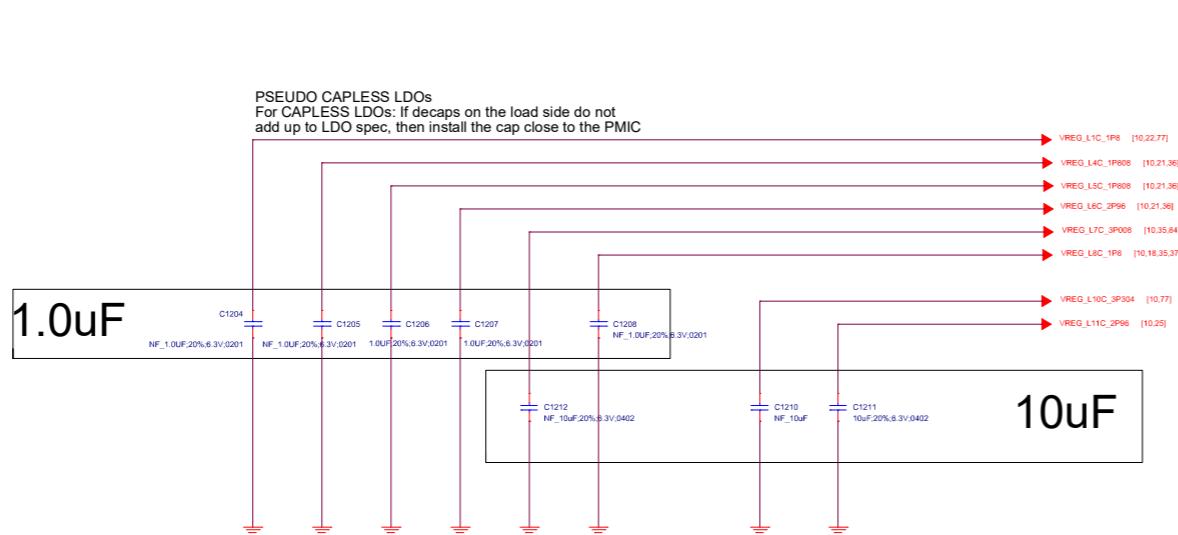
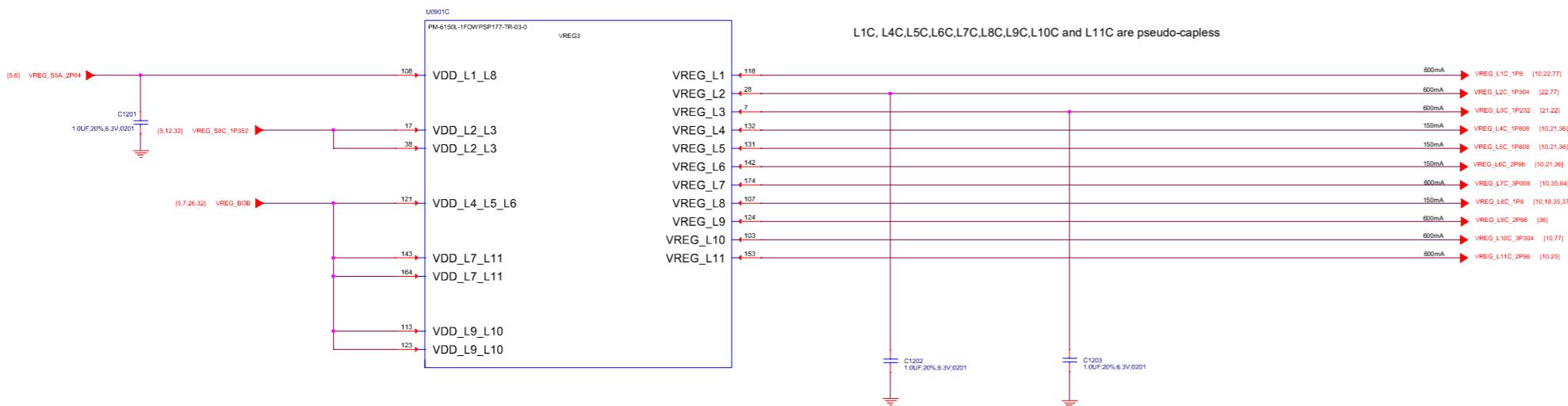


Title	PM6150L_BOB/FLASH/RGB	REV: V10
DOCUMENT NO.	86790_1_11_20200612_0950	Size: Custom
DEPARTMENT:	WingTech SZ	DESIGNER: DESIGNER
Date:	Friday, June 12, 2020	Sheet 7 of 64

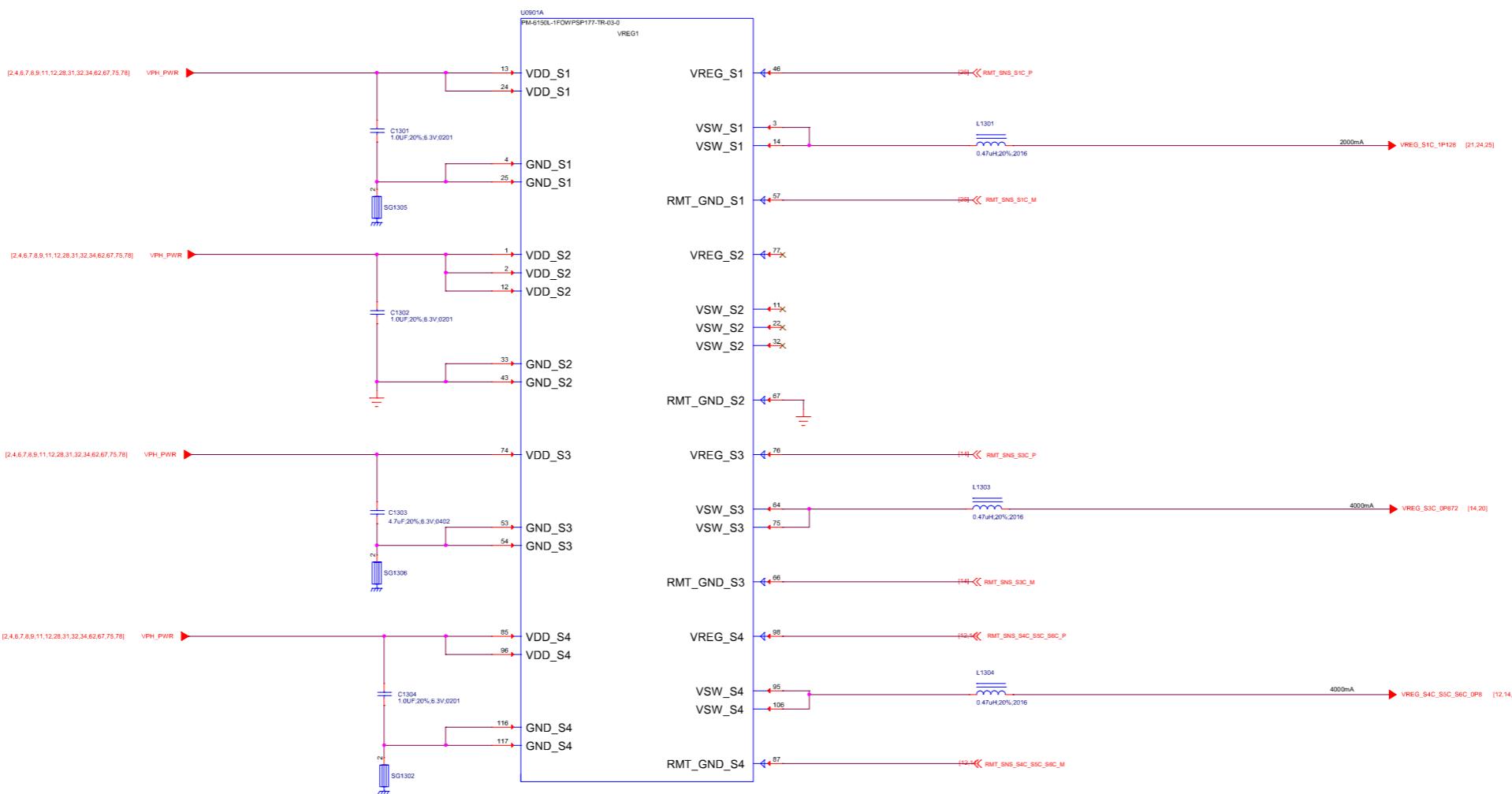


Title	PM6150L DISPLAY	REV: V10
DOCUMENT NO.	86790_1_11_20200612_0950	Size: Custom
DEPARTMENT:	WingTech SZ	DESIGNER: DESIGNER
Date:	Friday, June 12, 2020	Sheet 8 of 64

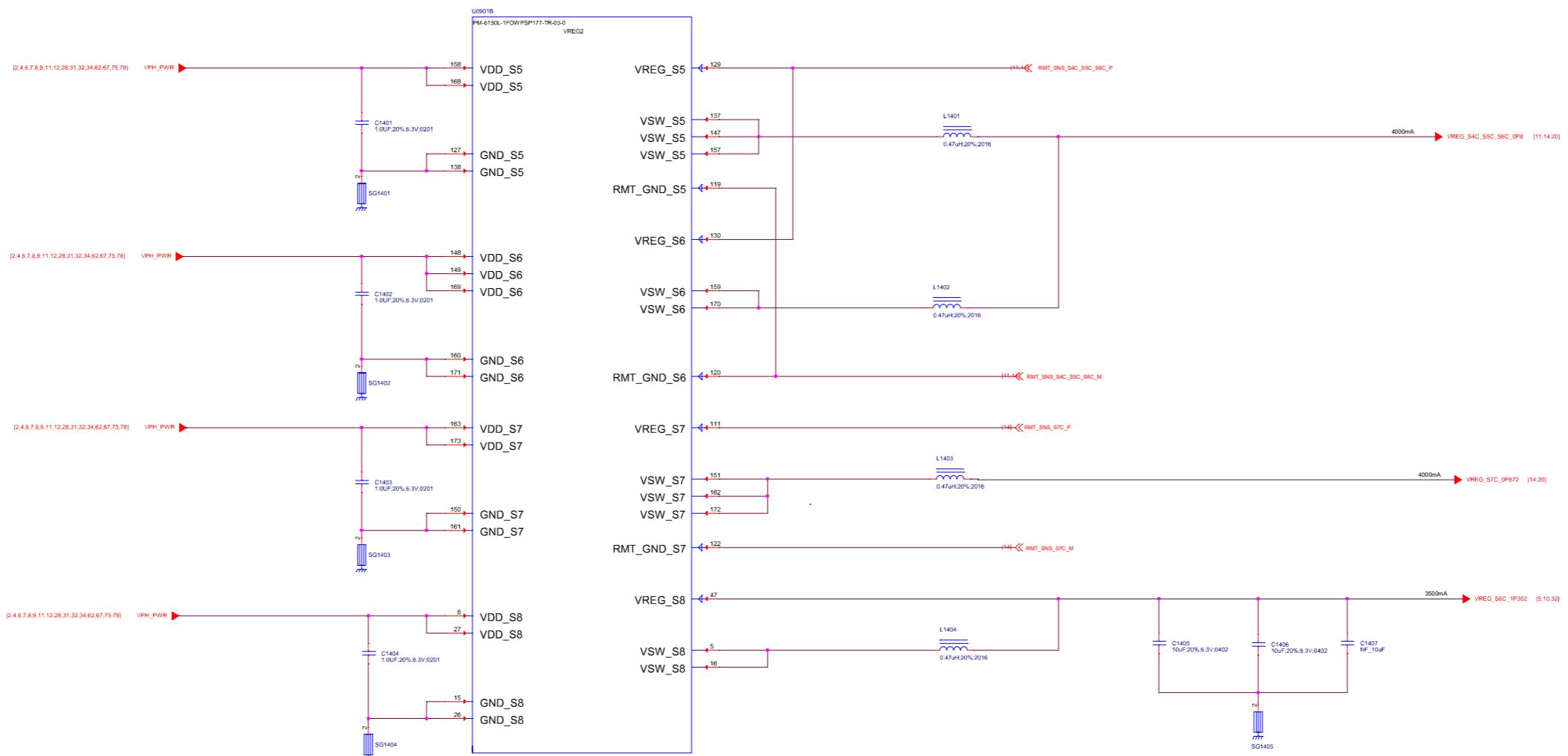




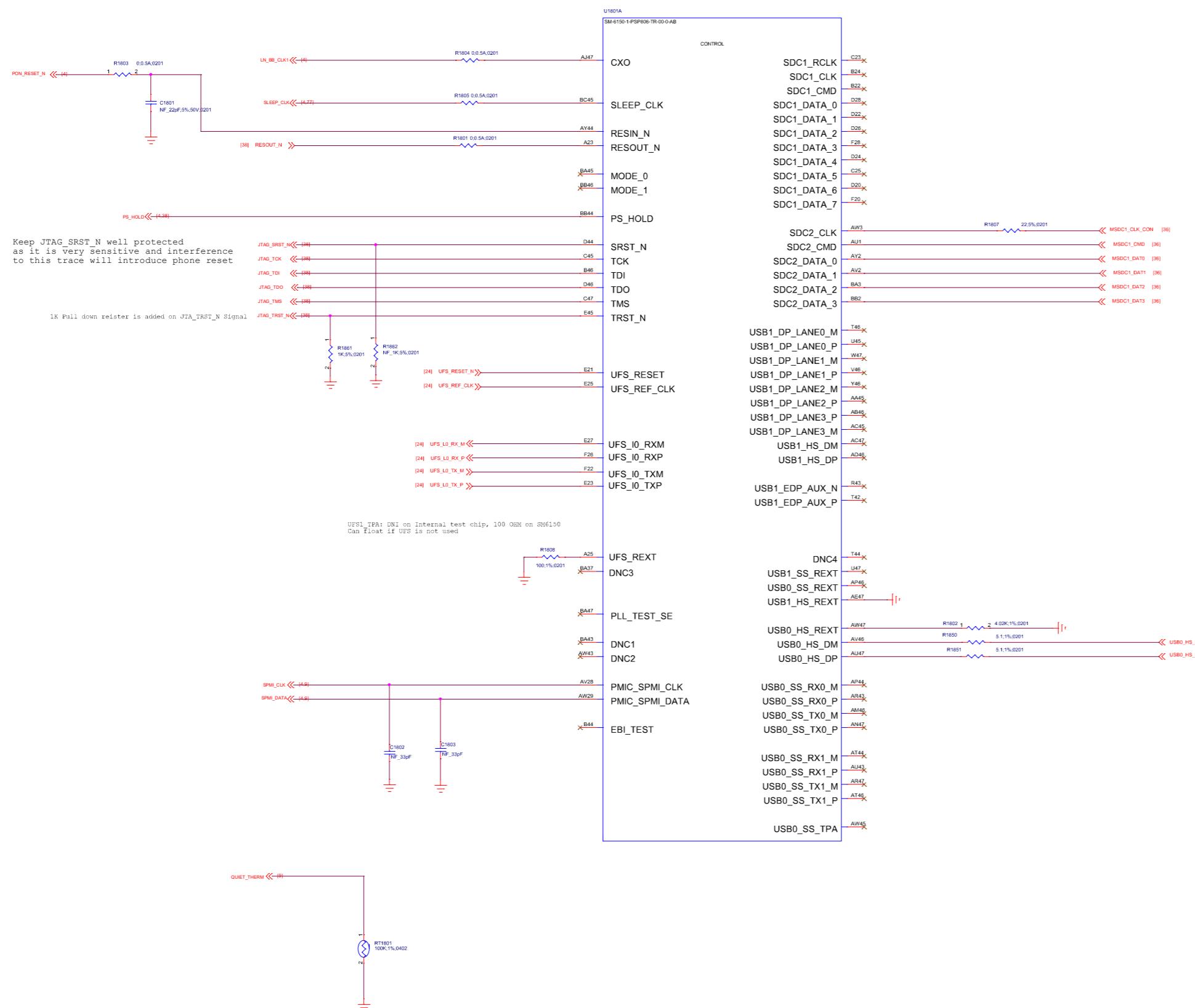
LDO Name	Output Voltage(V)	BOOT Defalut	Iout max(mA)	Expected use
VREG_L1	1.8	OFF	150	WCN_XO
VREG_L2	1.304	OFF	600	WCN_RFA
VREG_L3	1.232	ON (1.232)	150	MSIPs
VREG_L4	1.808/2.95	OFF	150	UIM1
VREG_L5	1.808/2.95	OFF	150	UIM2
VREG_L6	2.96	ON(2.96)	150	SD_I/O_VDDPX2
VREG_L7	3	OFF	600	ALS
VREG_L8	1.8	OFF	150	sensors
VREG_L9	2.96	ON(2.96)	600	SD/MMC
VREG_L10	3.304	OFF	600	WCN
VREG_L11	2.96	ON(2.96)	600	UFS_VCC



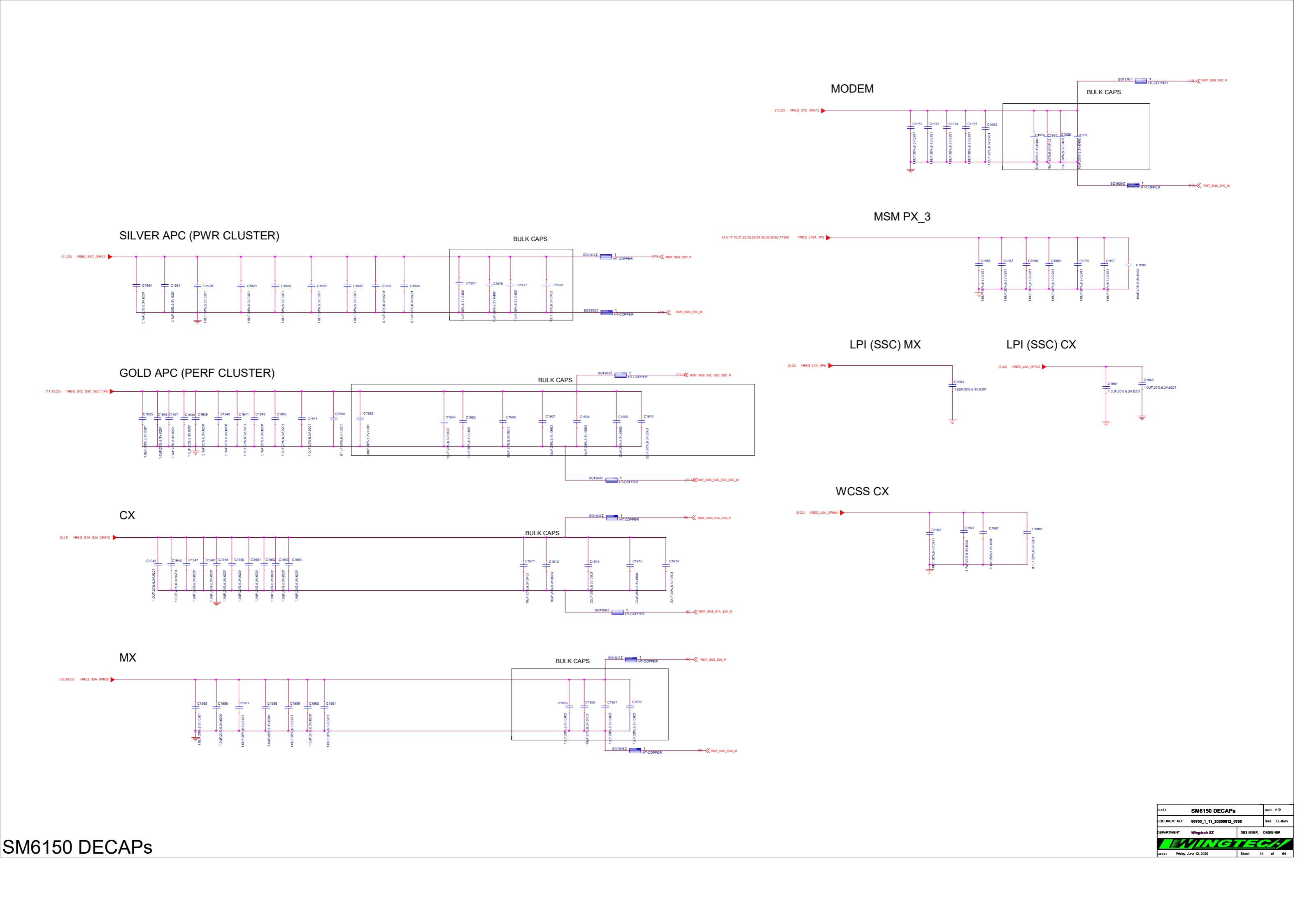
Circuit Type	BUCK Name (Application name)	Output Voltage Range(V)	BOOT Defalut	Iout max(mA)
Buck	VSW_S1 (LP4x_VDD2)	1.128	ON(1.128)	4000
	VSW_S2 (not used in sm6150)	/	/	/
	VSW_S3 (VDD_APPC0)	0.4~0.988	ON(0.872)	4000
	VSW_S4 (VDD_APPC1)	0.4~1.14	OFF	4000

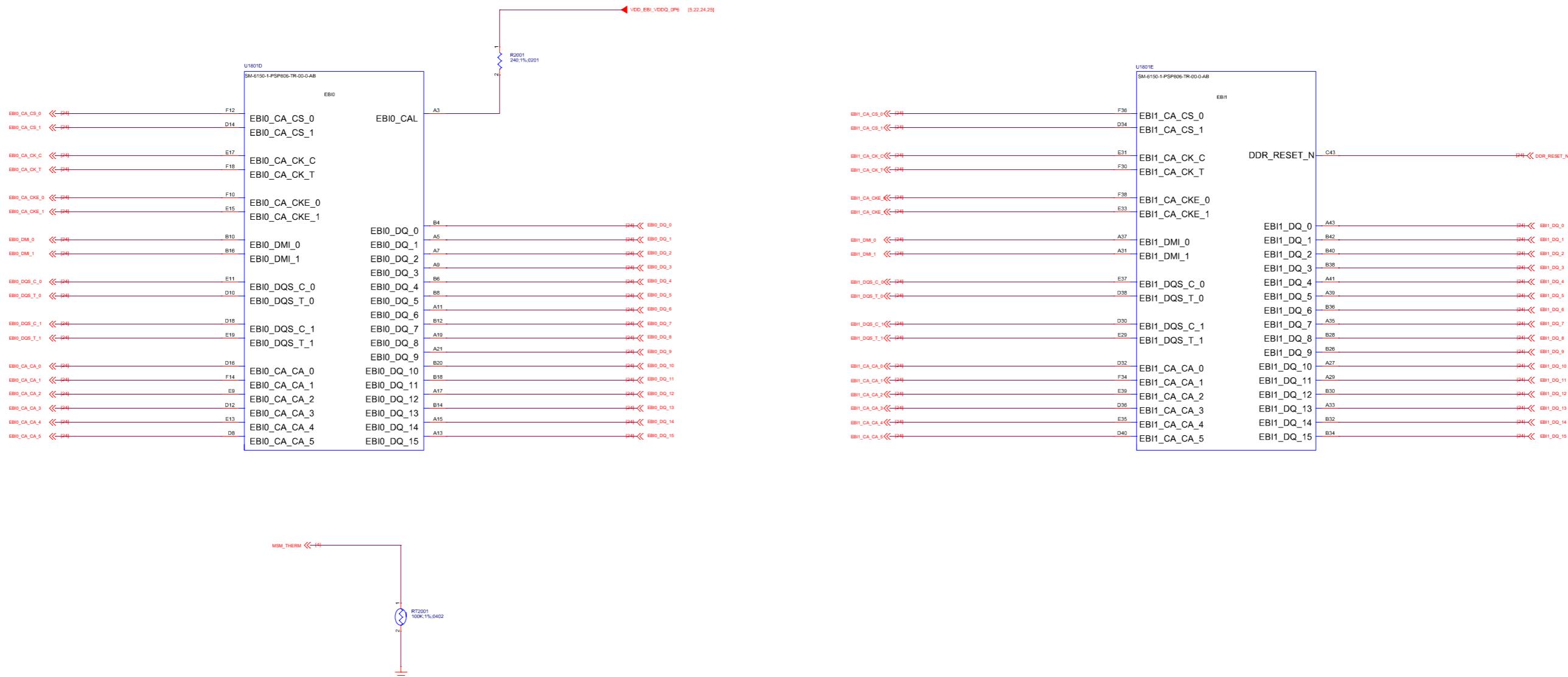


Circuit Type	BUCK Name (Application name)	Output Voltage Range(V)	BOOT Default	Iout max(mA)
Buck	VSW_S5 (VDD_AP1)	0.4~1.14	OFF	4000
	VSW_S6 (VDD_AP1)	0.4~1.14	OFF	4000
	VSW_S7 (VDD_MODEM)	0.4~0.988	ON(0.828)	4000
	VSW_S8 (LDOS)	1.2~1.4	ON(1.352)	3500



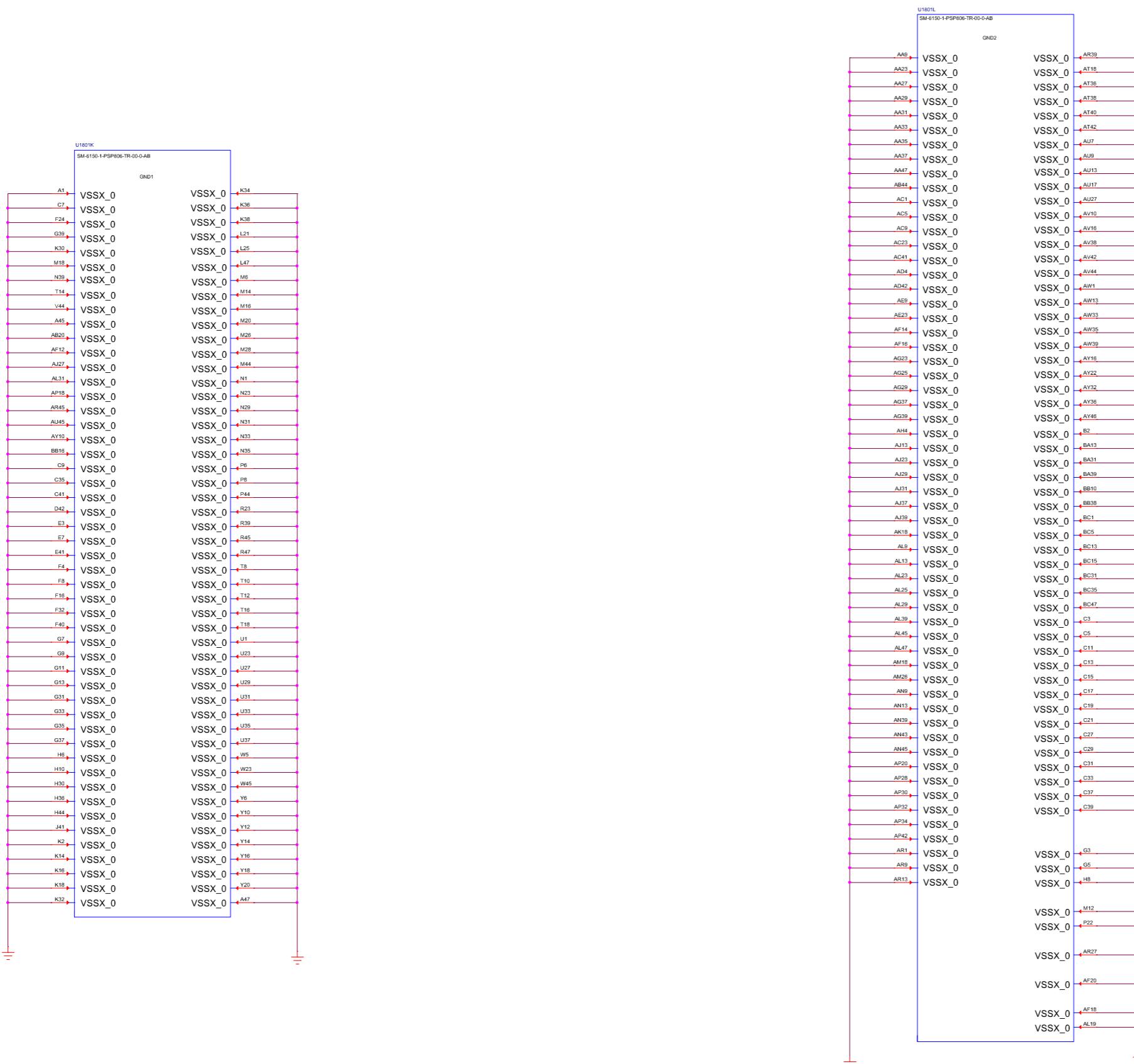
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DOCUMENT NO.:	86750_1_11_20200612_0950	Size: Custom
DEPARTMENT:	WingTech SZ	DESIGNER: DESIGNER
Date:	Friday, June 12, 2020	Sheet 13 of 64

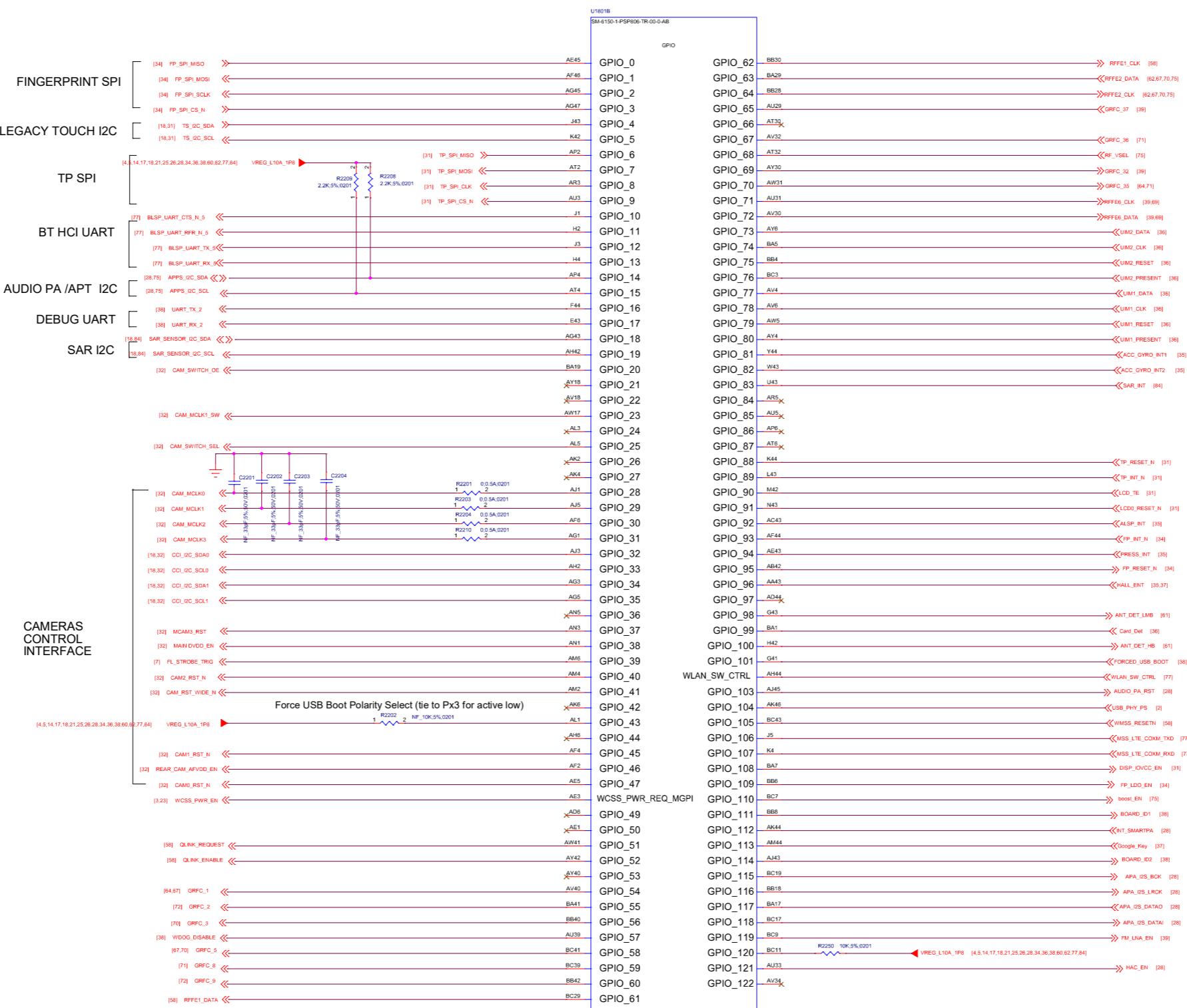


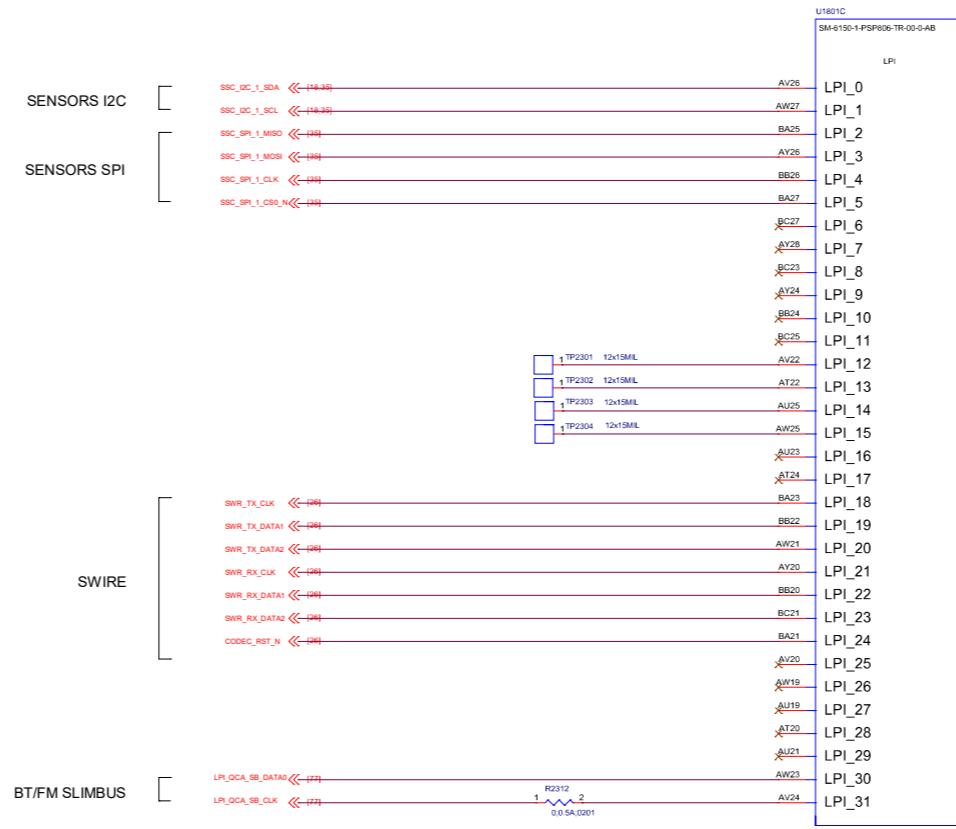


SM6150 EBI0/1

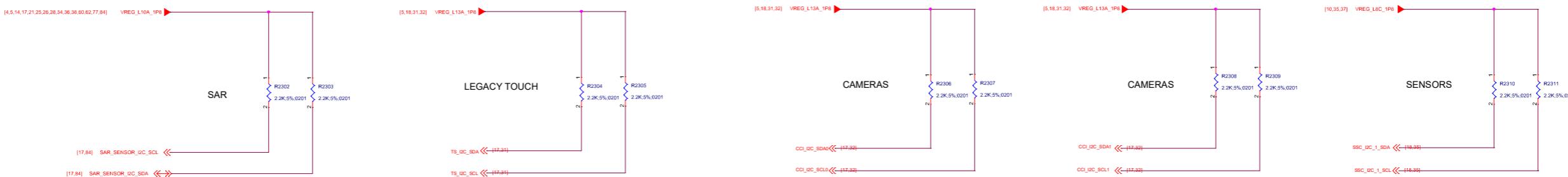
title		SM6150 EBI0/1	REV: V10
DOCUMENT NO.	86750_1_11_20200612_0950	Size	Custom
DEPARTMENT:	WingTech SZ	DESIGNER:	DESIGNER
WINGTECH			

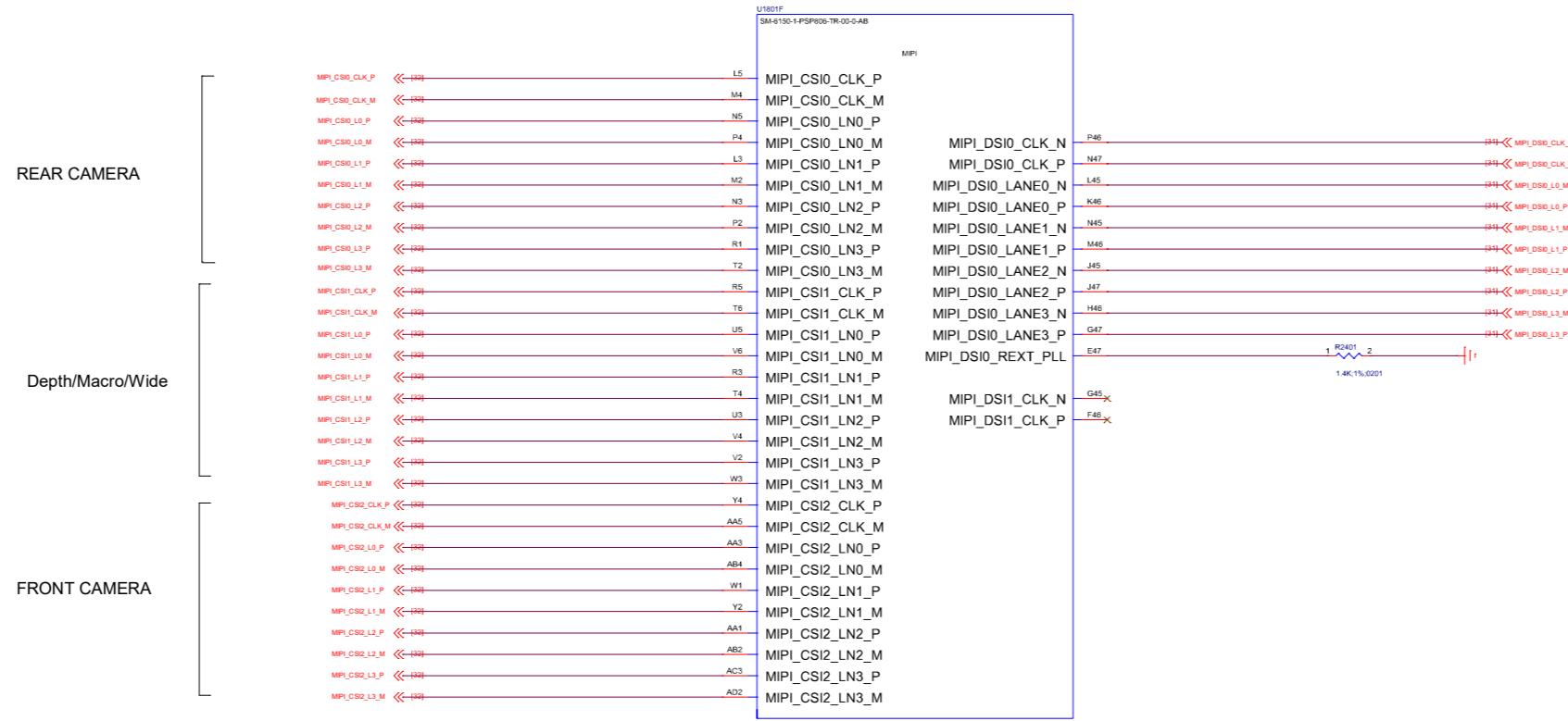


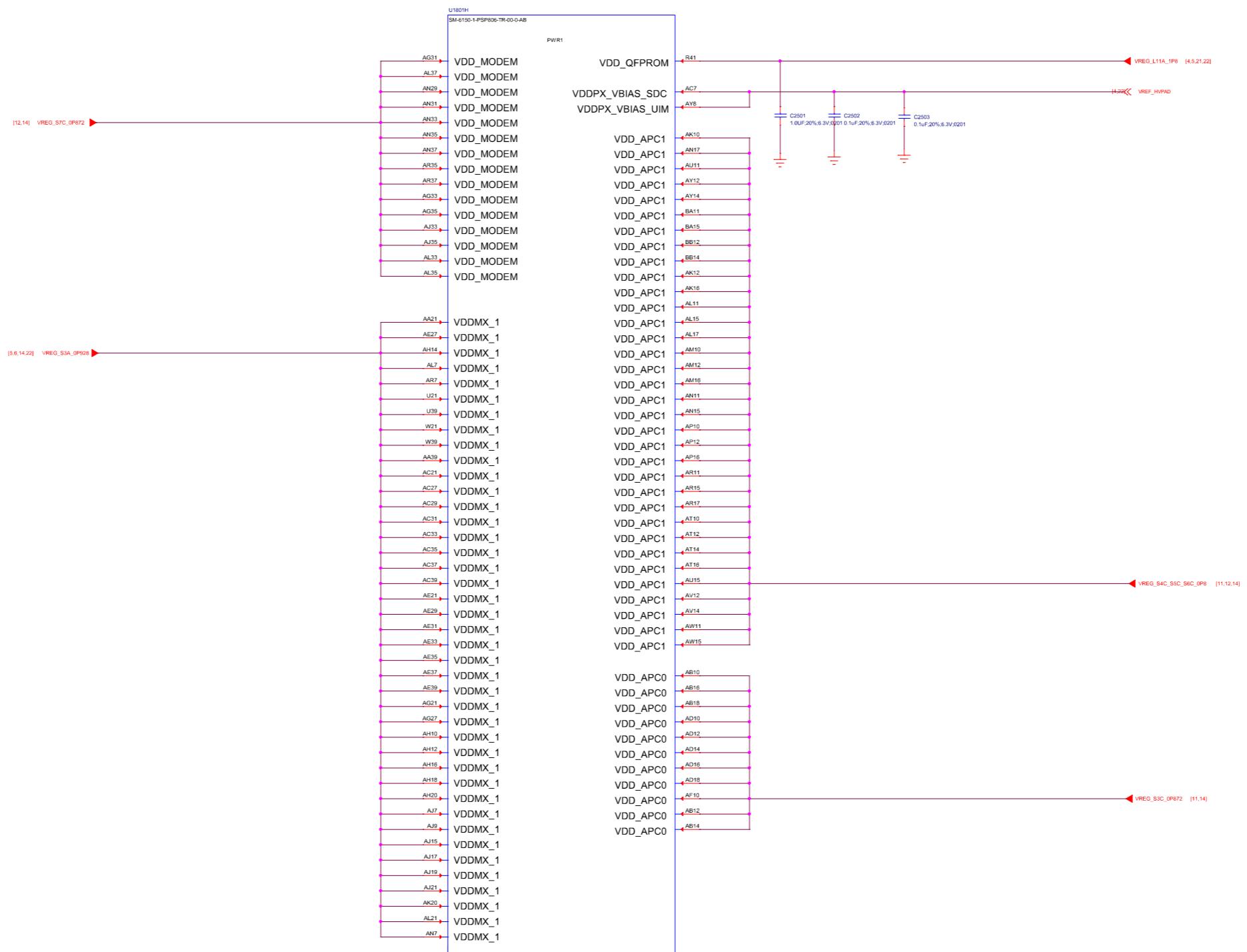


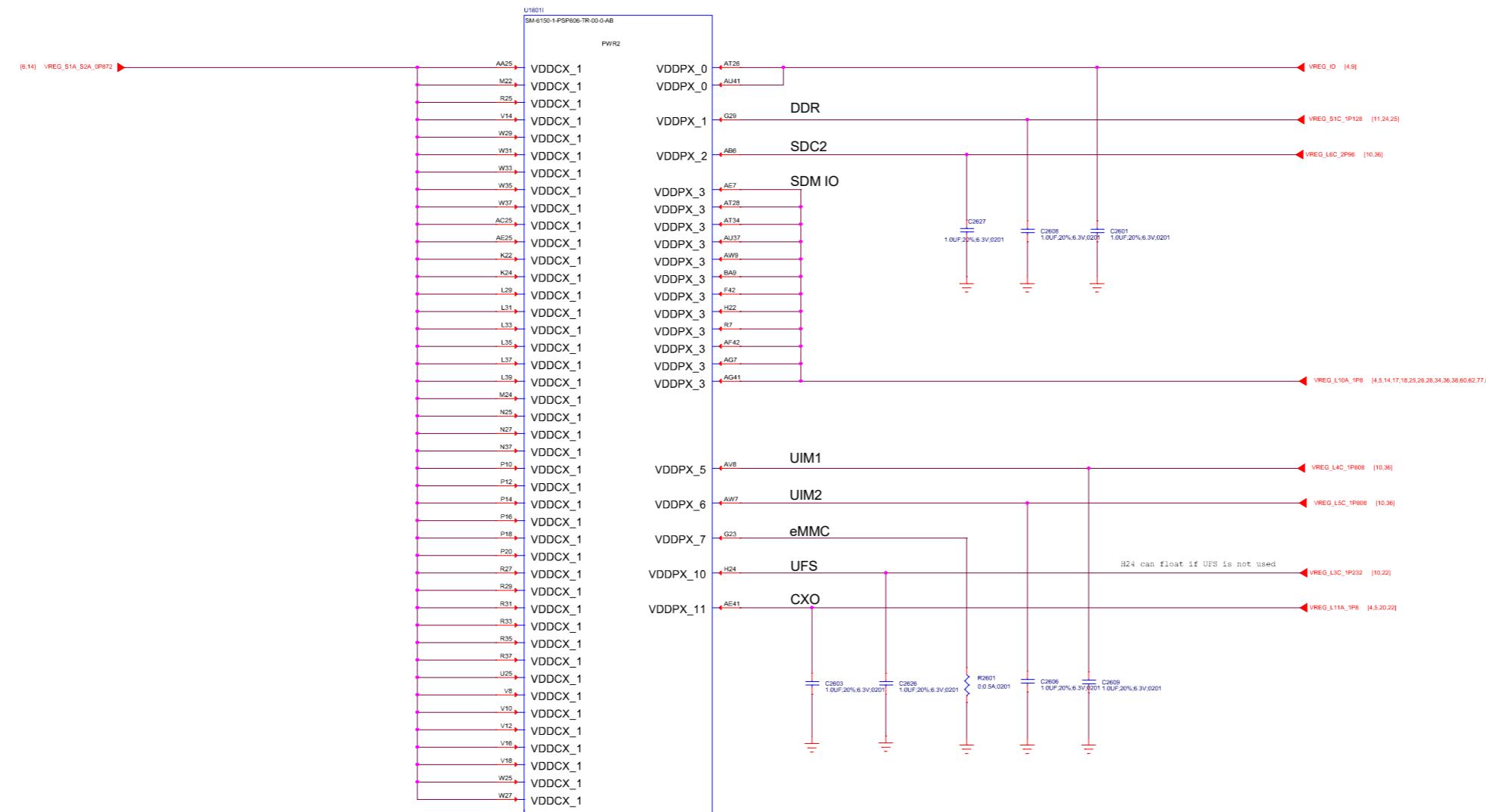


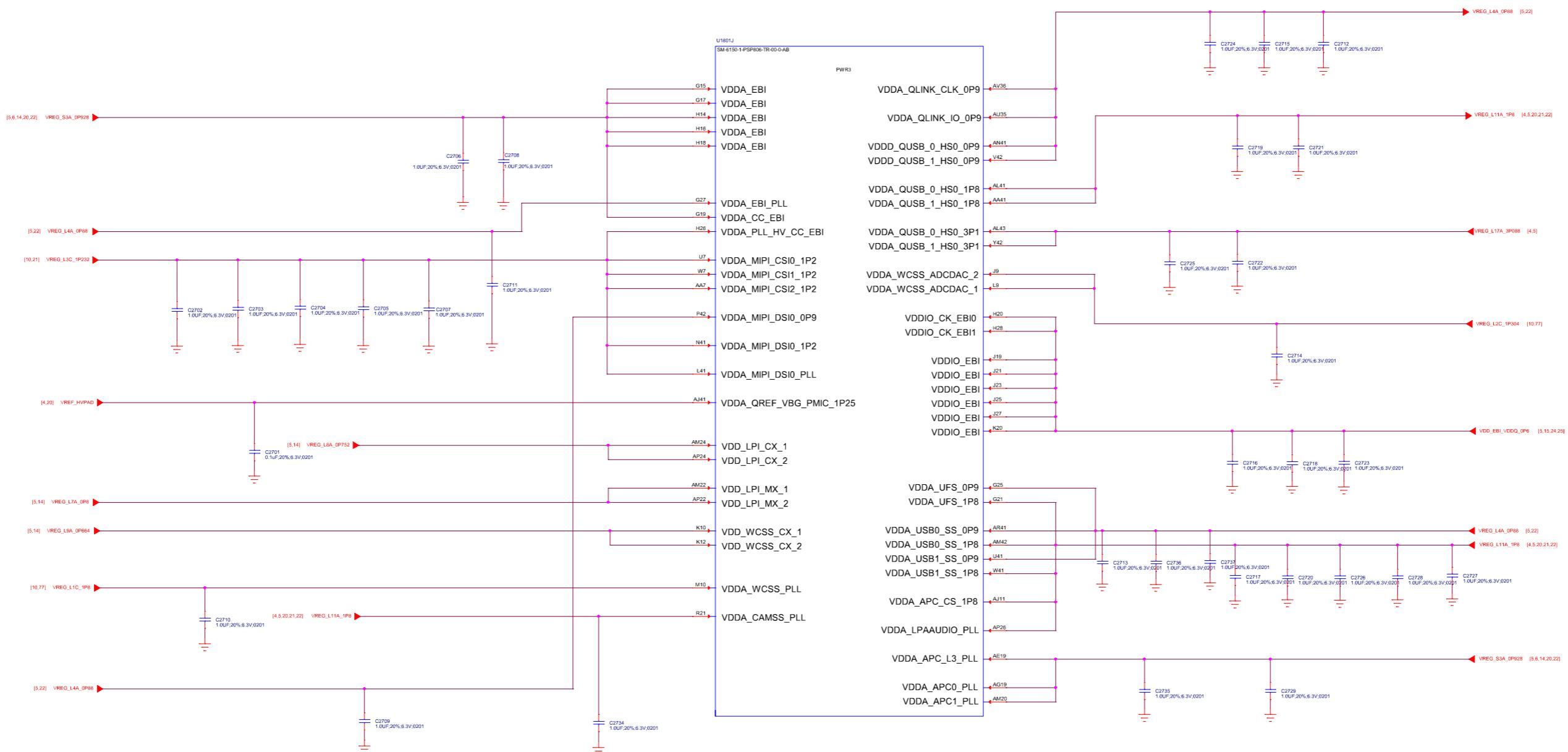
## I2C BUS PULL-UPS



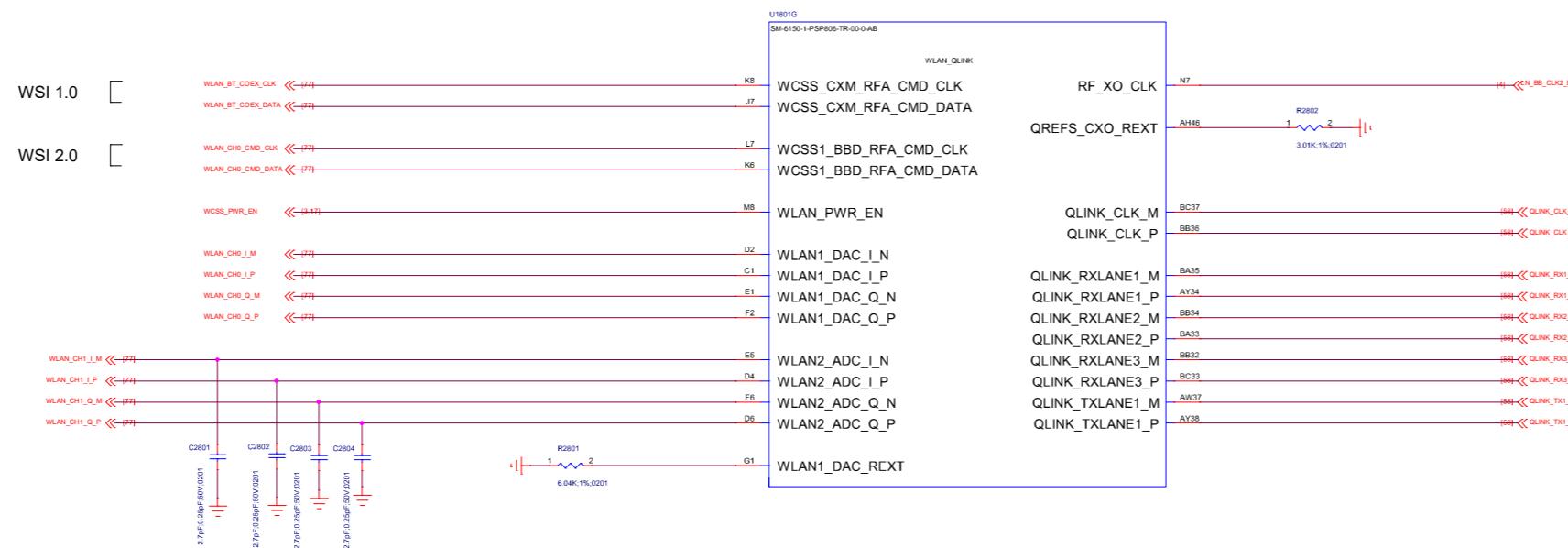


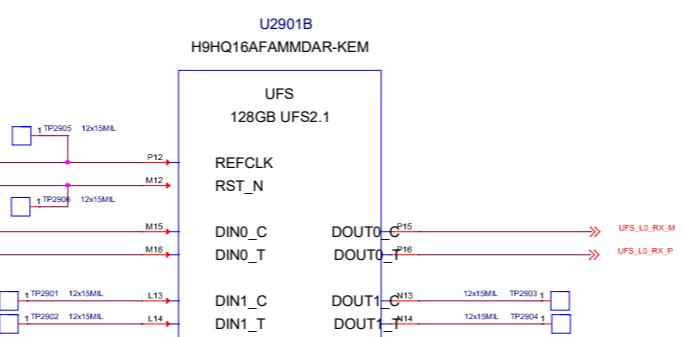
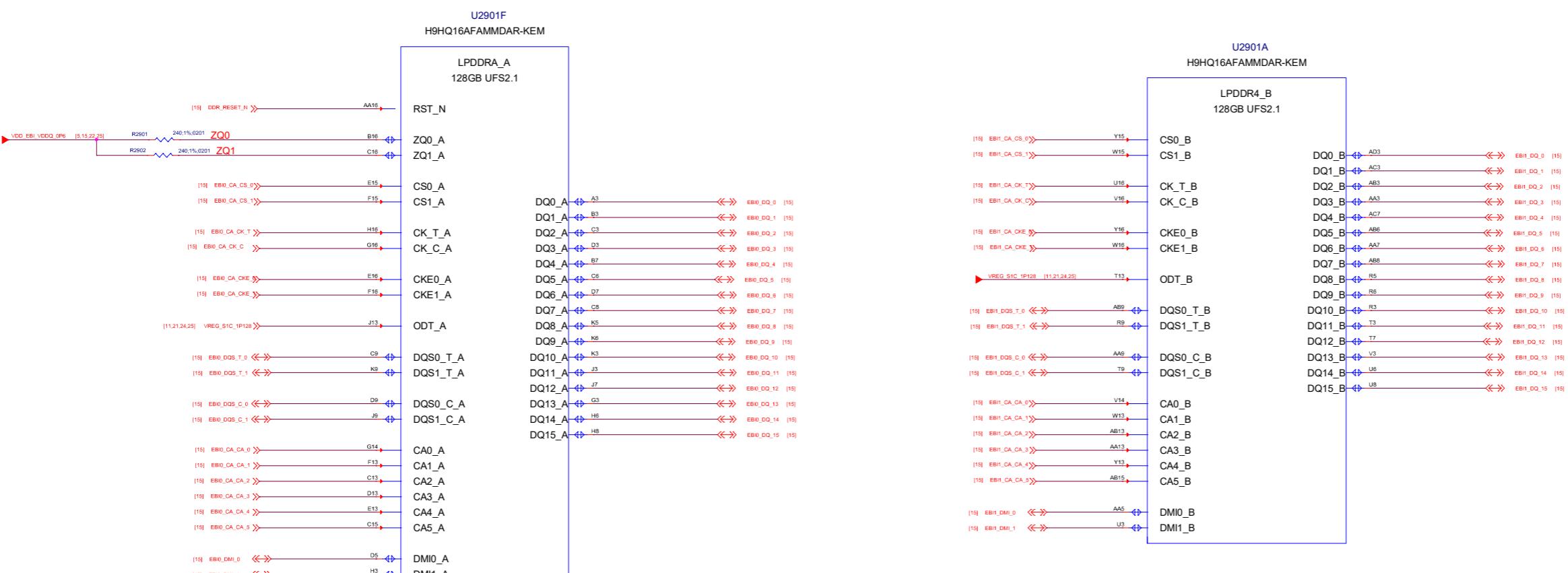


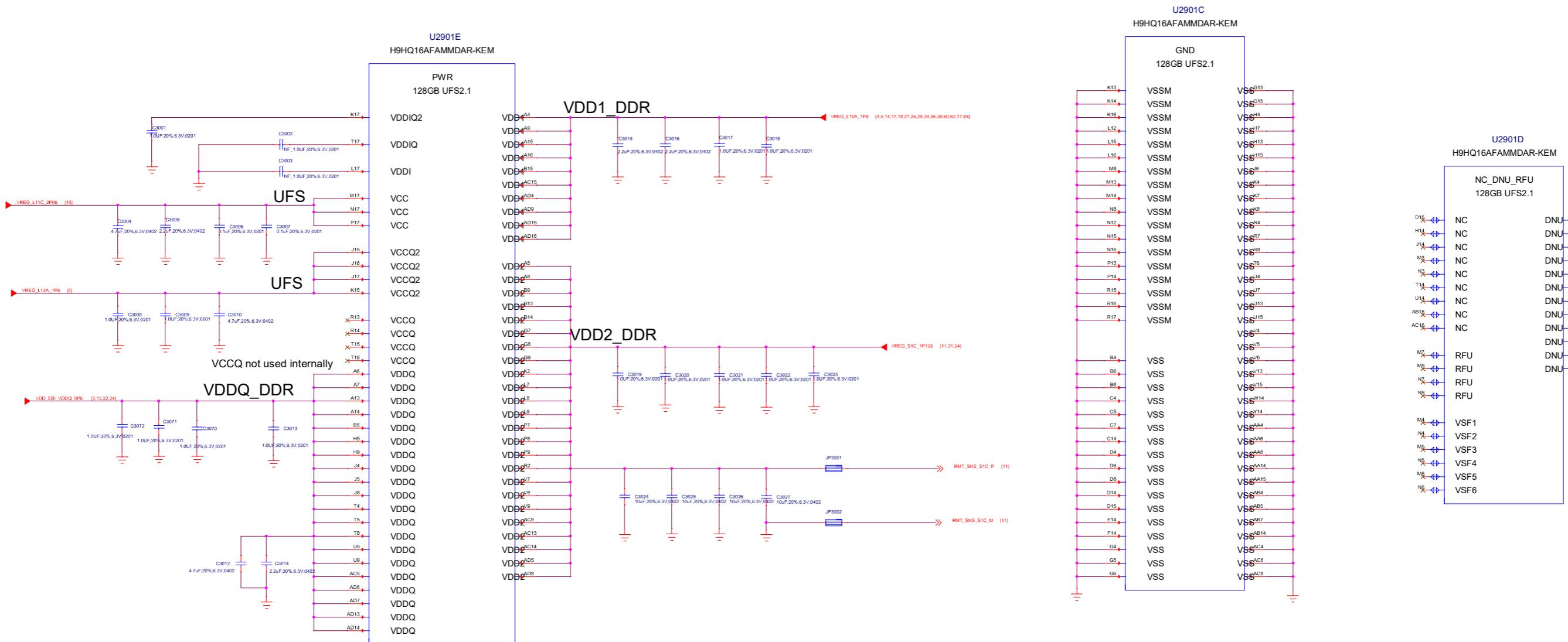


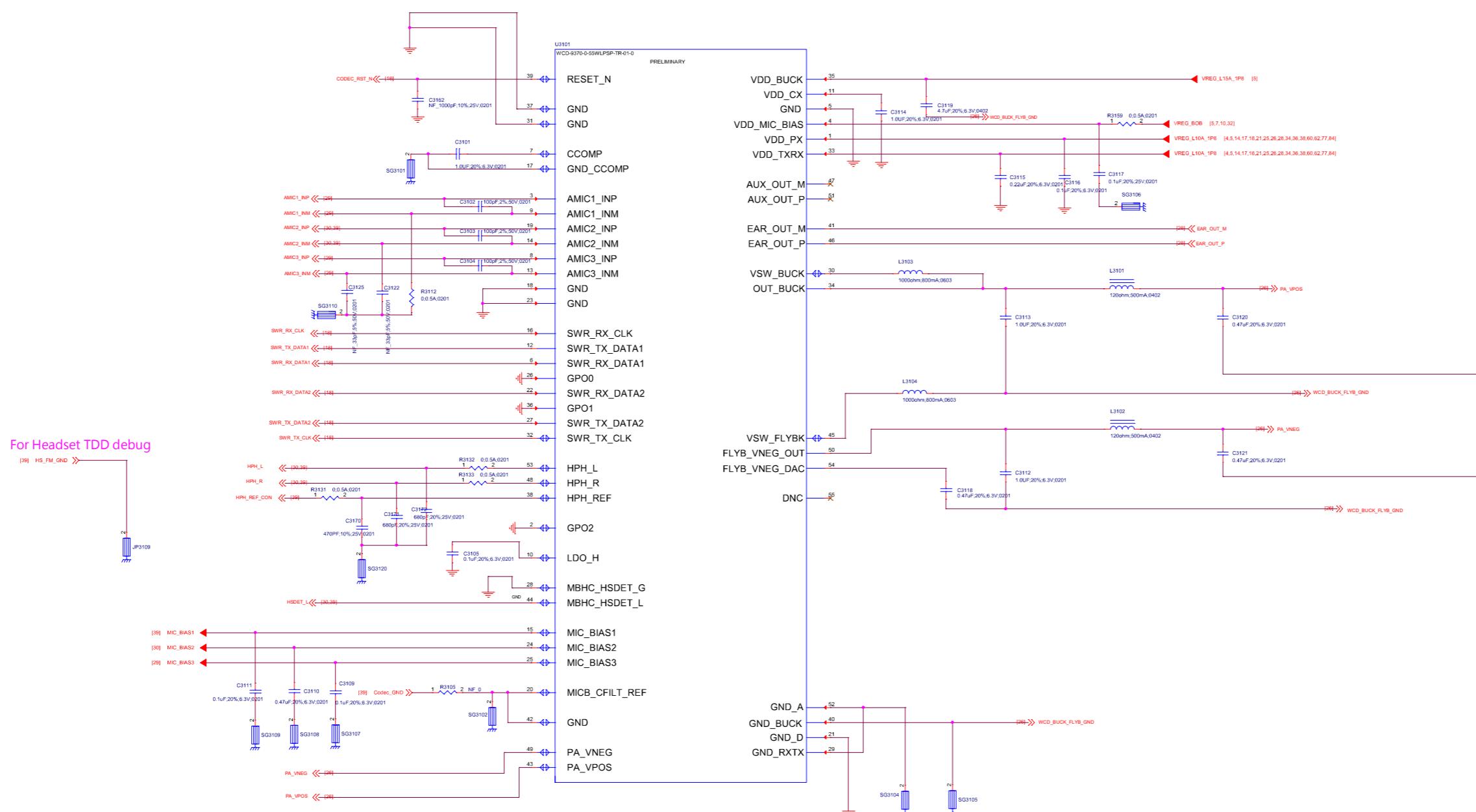


Title: SM6150_PWR_3		REV: V10
DOCUMENT NO.: 86750_1_11_20200812_0950		Size: Custom
DEPARTMENT:	Wingtech SZ	DESIGNER: DESIGNER
Date:	Friday, June 12, 2020	Sheet: 22 of 64

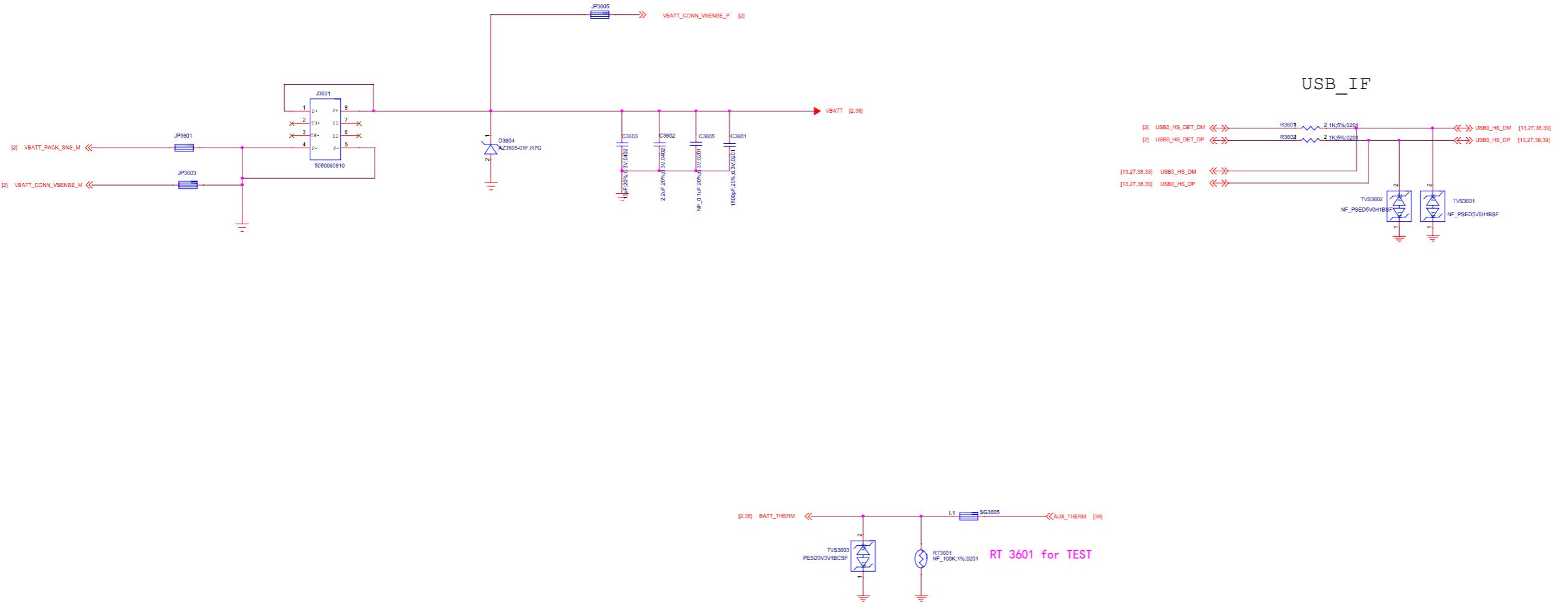








# Battery Connector



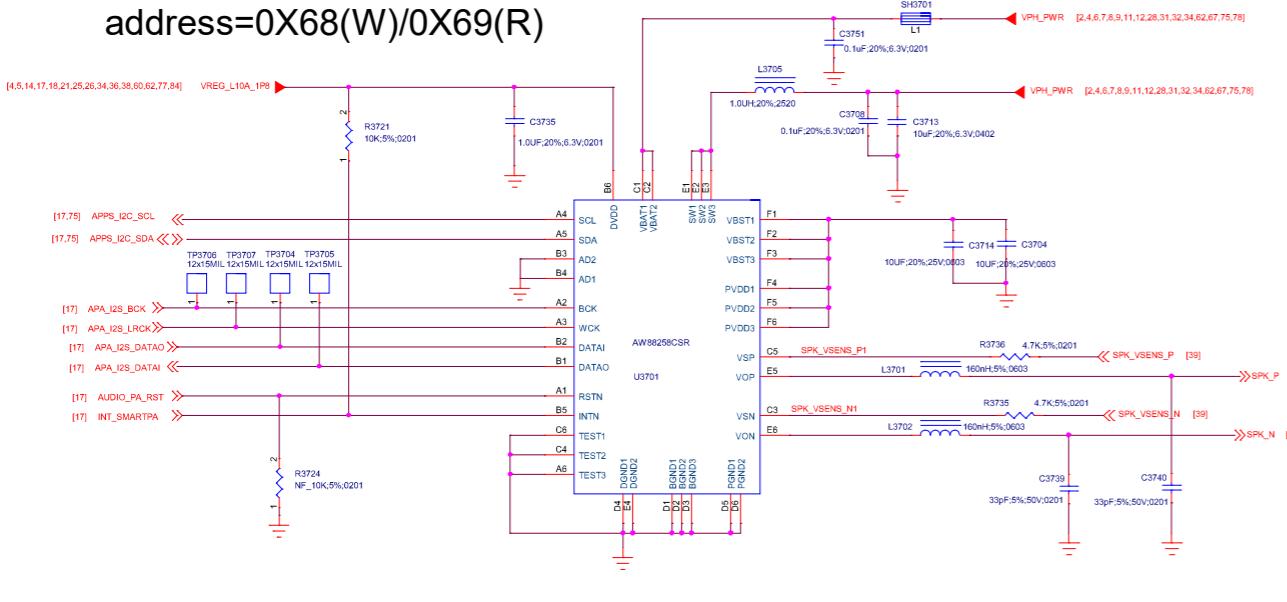
Title	Battery/USB IF	Rev: V10
DOCUMENT NO.:	86750_1_11_20200612_0950	Size: D
DEPARTMENT:	Wingtech SZ	DESIGNER: DESIGNER
Date:	Friday, June 12, 2020	Sheet 27 of 64

WINGTECH

## AUDIO PA

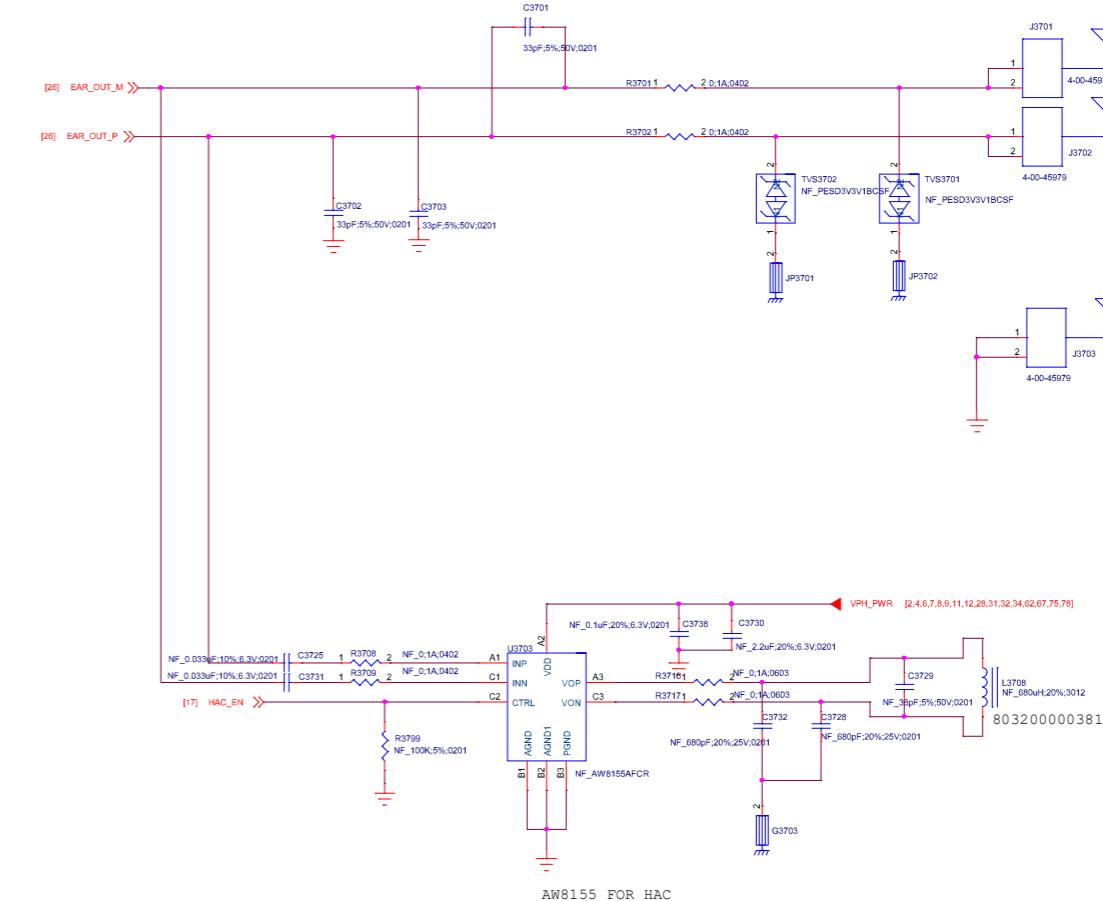
SH3701 close to PM6150

address=0X68(W)/0X69(R)



VIB

## RECEIVER

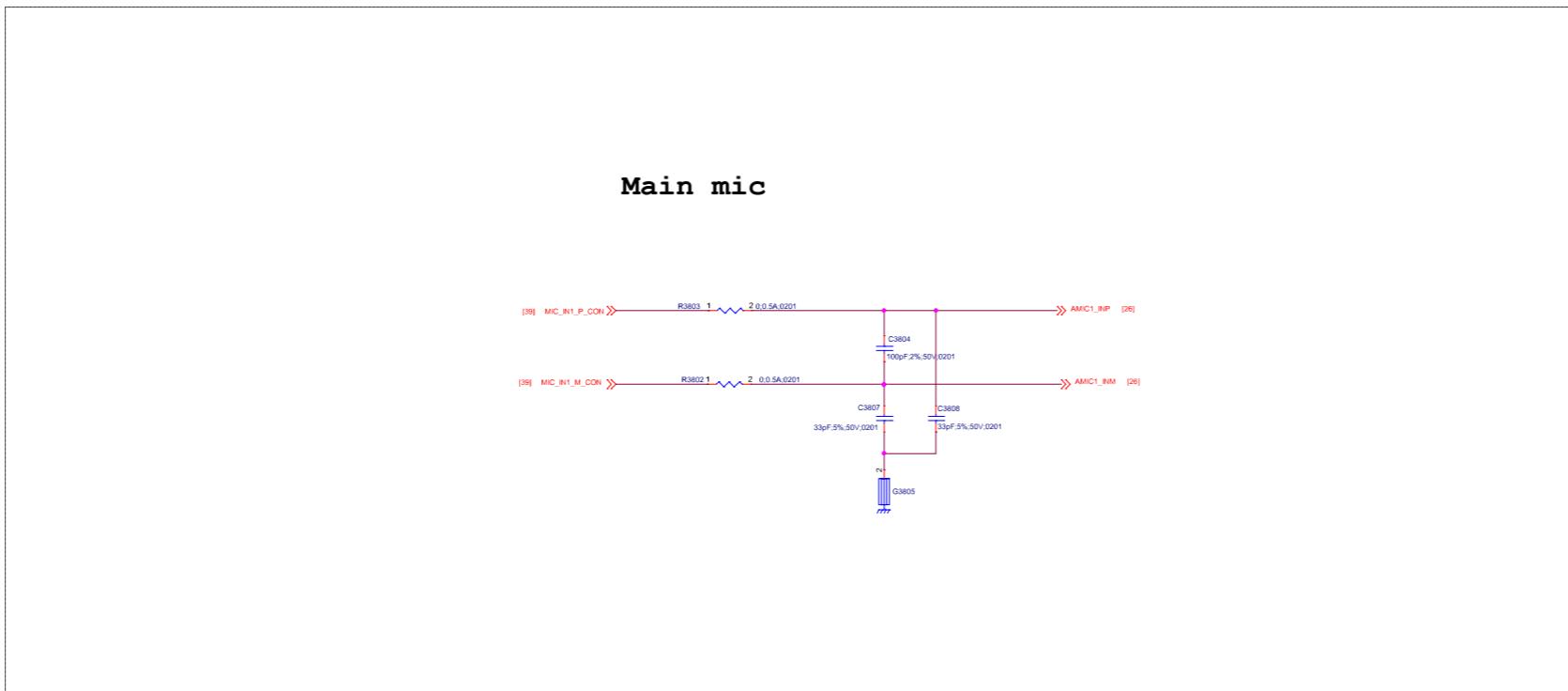
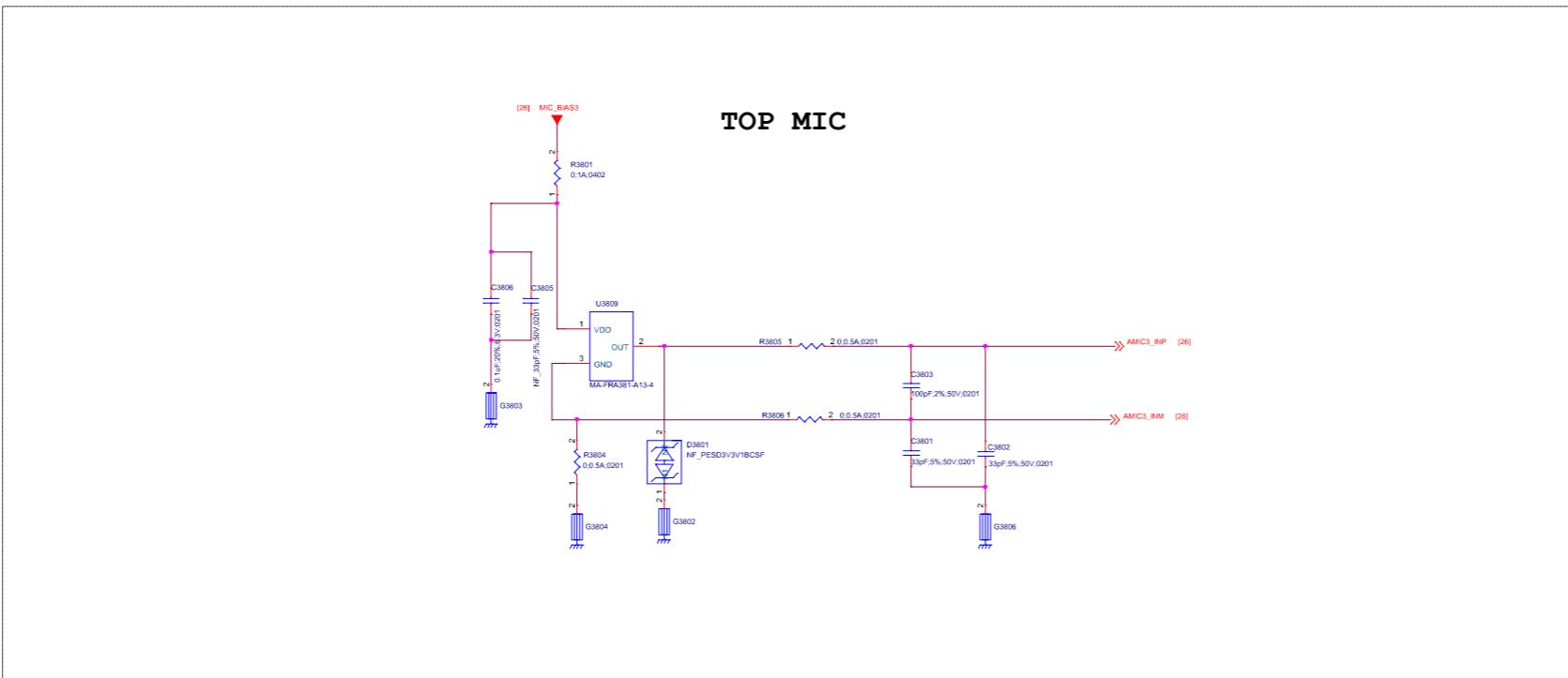


SPK/Receiver/Vibrator

Title	AUDIO	REV: V10
DOCUMENT NO:	86750_1_11_20200612_0950	Size D
DEPARTMENT:	Wingtech SZ	DESIGNER: DESIGNER
WINGTECH		

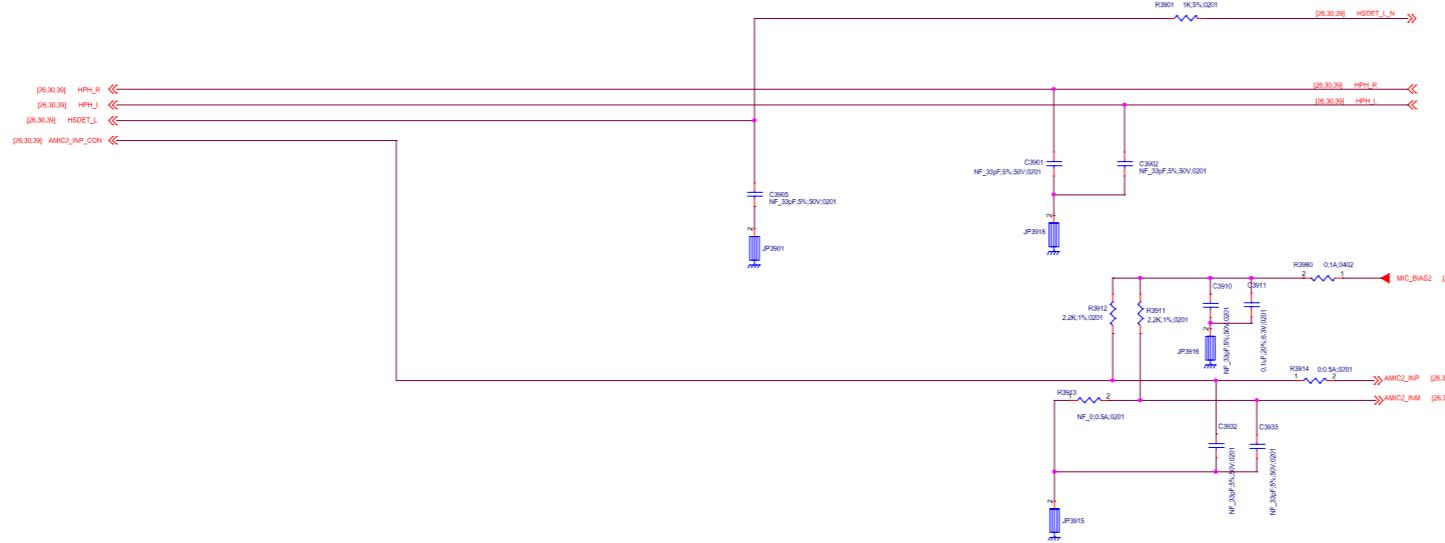
Date: Friday, June 12, 2020

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## EARPHONE

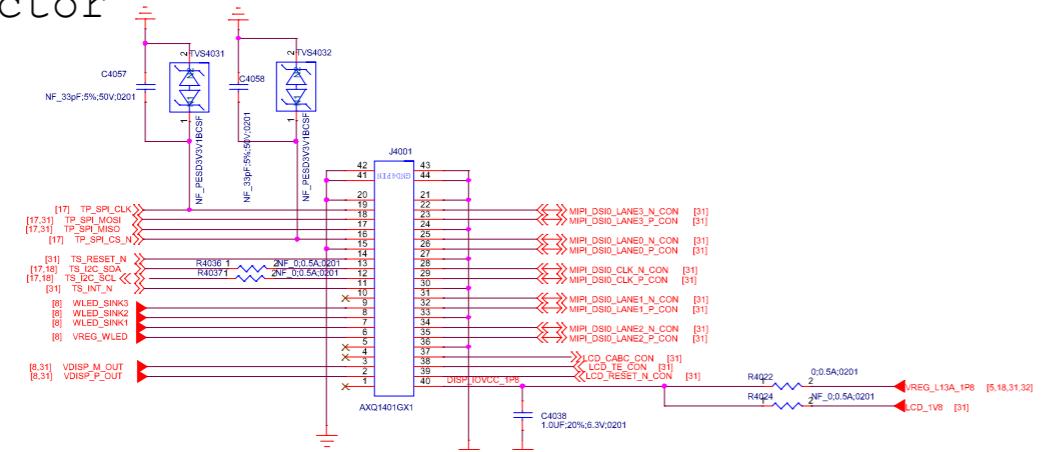
Note: Ferrite beads and their corresponding bypass capacitors on  
on CDC\_HPH\_L\_P, CDC\_HPH\_L\_M and CDC\_HPH\_REF  
are needed to reduce noise generated by audio/FM concurrency



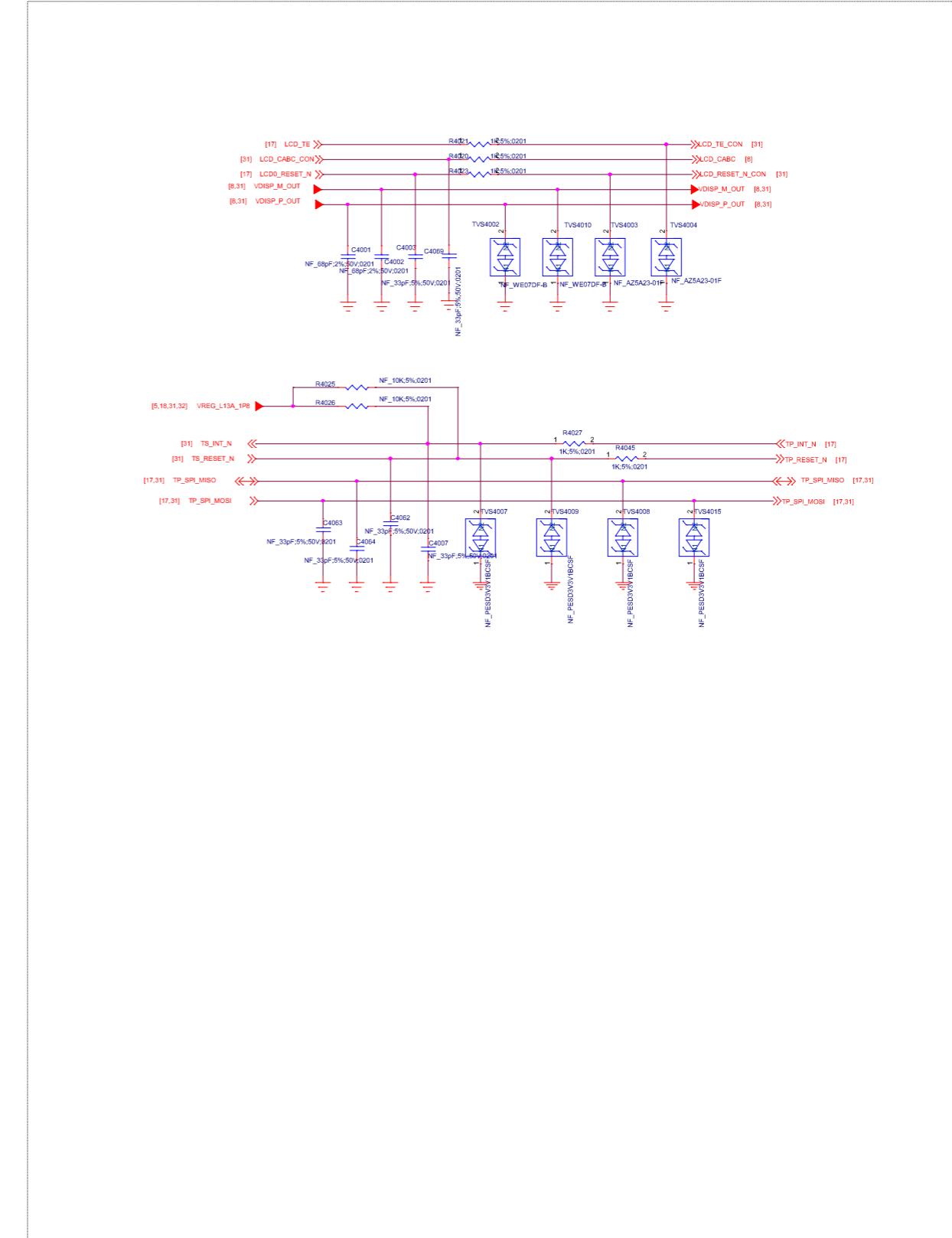
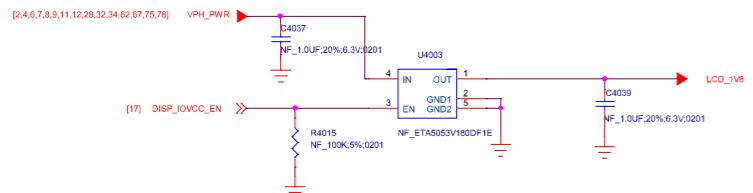
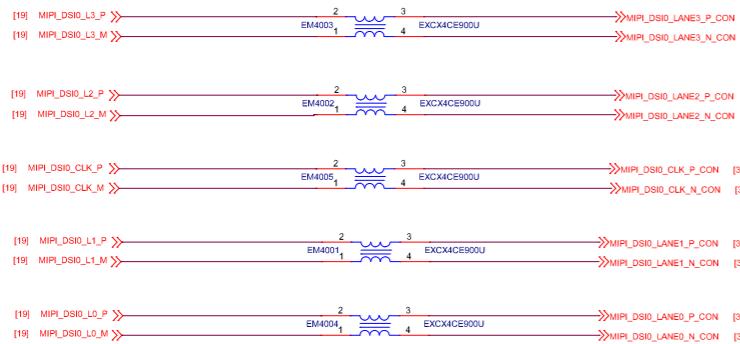
EARPHONE

Title:	EARPHONE	REV: V10
DOCUMENT NO.:	88799_1_11_20200612_0950	Rev: Custom
DEPARTMENT:	Wingtech EZ	DESIGNER: DESIGNER
Date:	Friday, June 12, 2020	Sheet 30 of 64

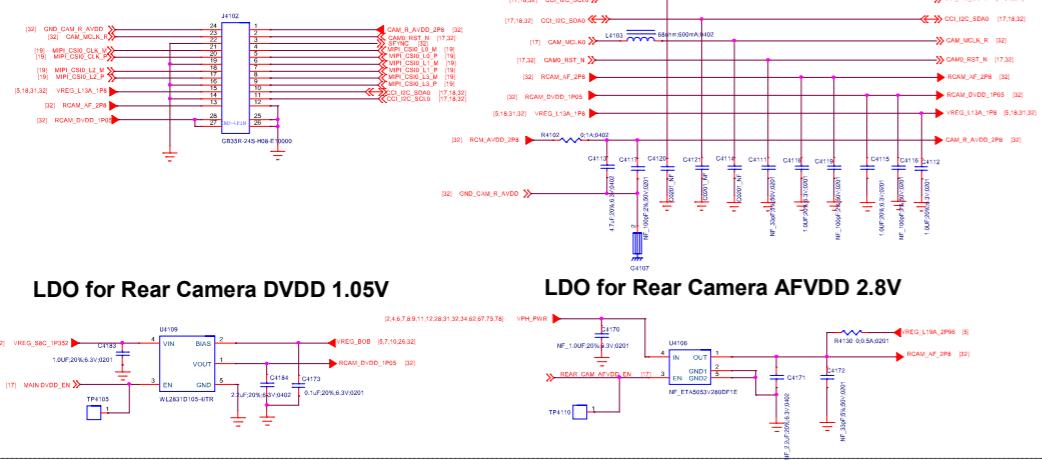
# LCD-Connector



## Common Mode Filter

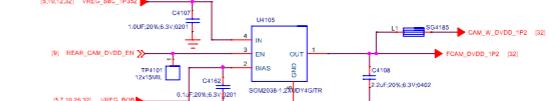


## Rear Camera 48M

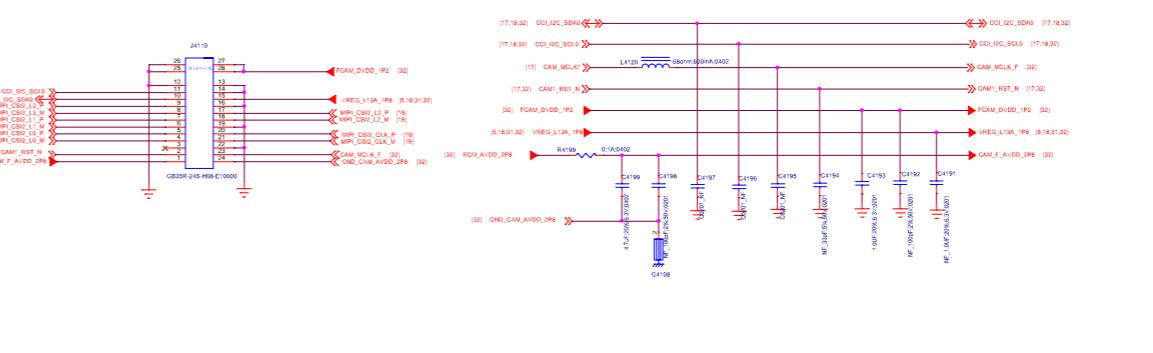


## Front Camera 8M

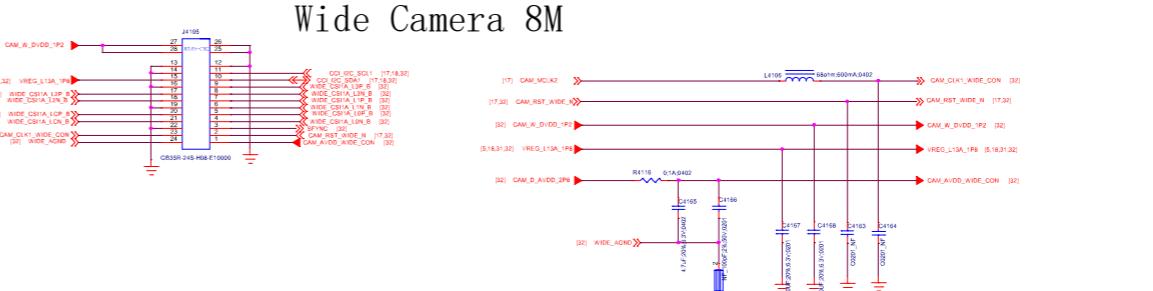
### Camera AVDD For REAR/FRONT



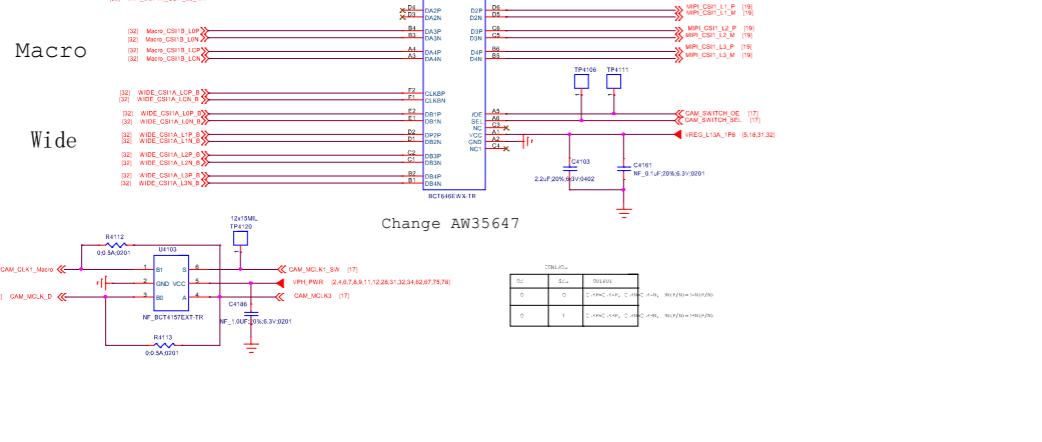
## Depth Camera 2M



## Macro Camera 2M



## Depth

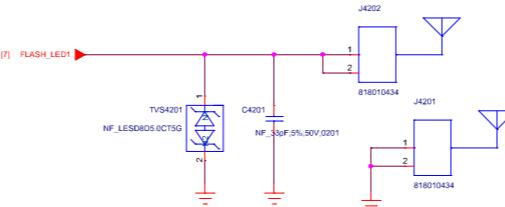


## Macro

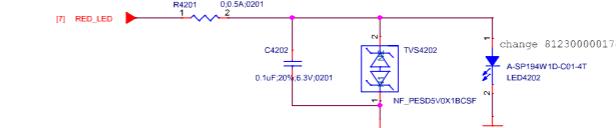
CAMERA	I2C Address(8-bit)
Rear Camera 48M	0X5A(W)/0X5B(R)
Front Camera 16M	0X20(W)/0X21(R)
Front Camera 8M	0X20(W)/0X21(R)
Wide Camera 8M	0X5A(W)/0X5B(R)
Depth Camera 2M	0X7A(W)/0X7B(R)
Macro Camera 2M	0X7B(W)/0X79(R)

## Wide

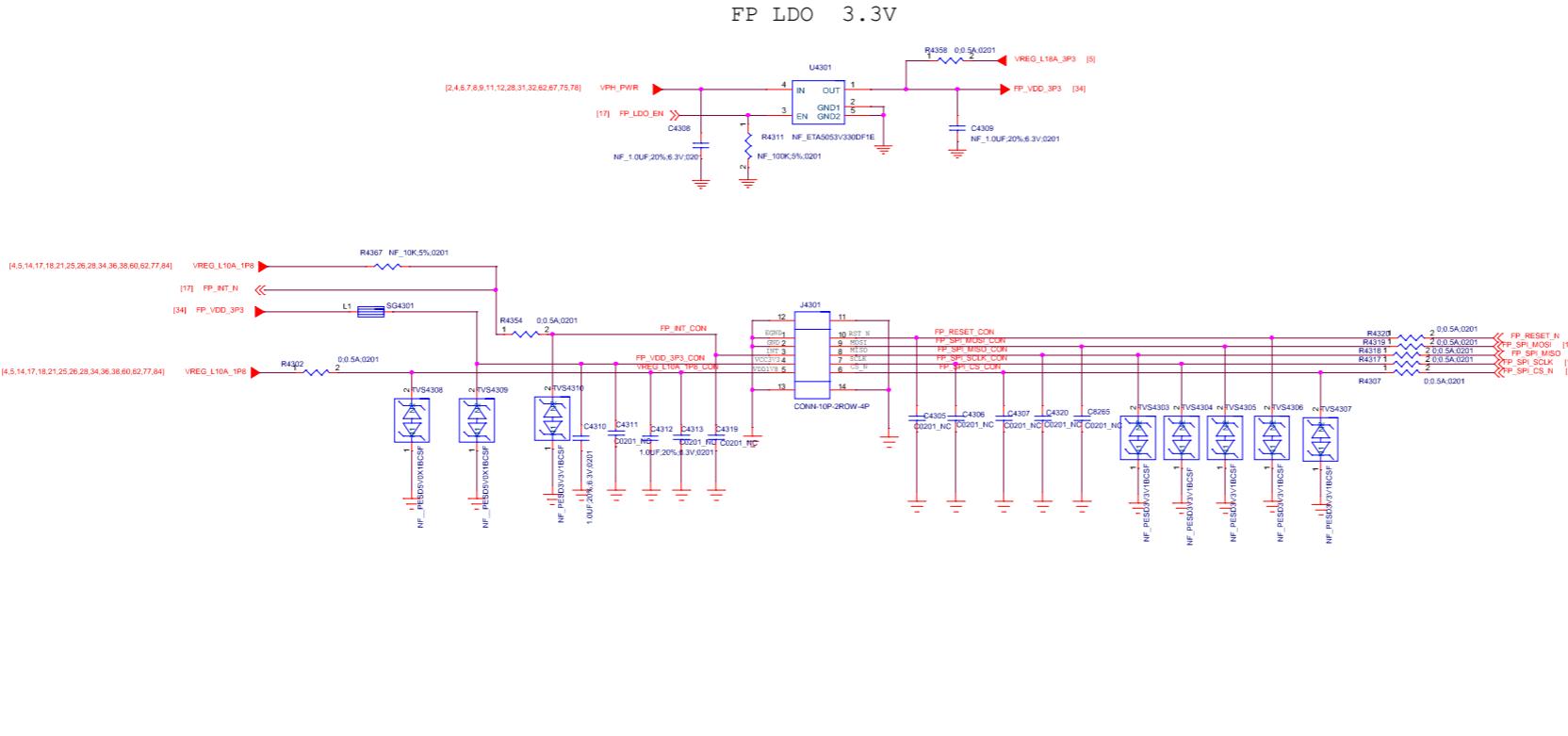
## Flash LED



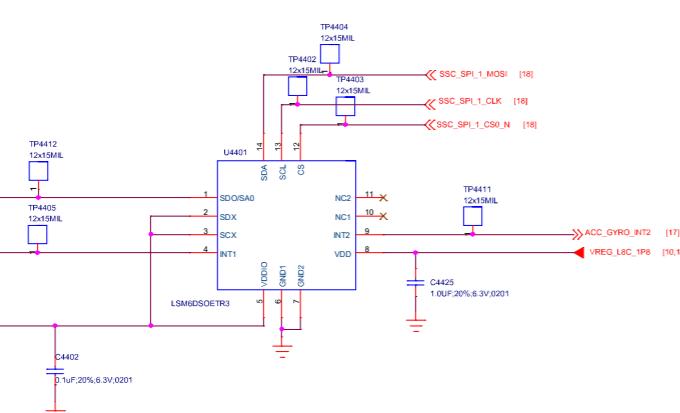
## LED\_DRIVER



## Fingerprint

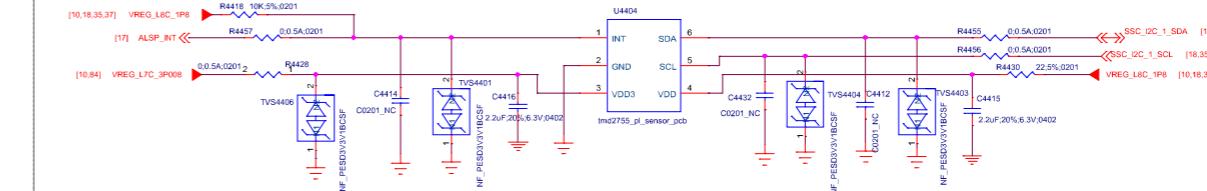


## Acccerometer+Gyroscope



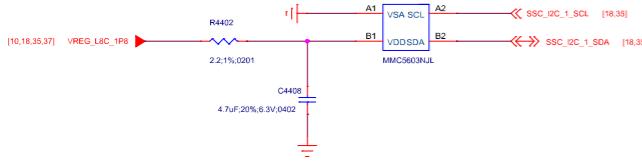
## ALS+Proximity -Sensor

STK33562/TMD2755 LDA Rang :2.8V-3.6V



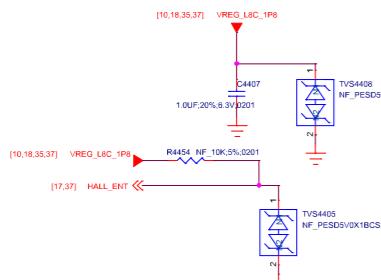
Vendor	Manufacture PN	Slave Address (7-bit)	I2C Address(8-bit)	Remark
Sensortek	TMD2755			

## Compass



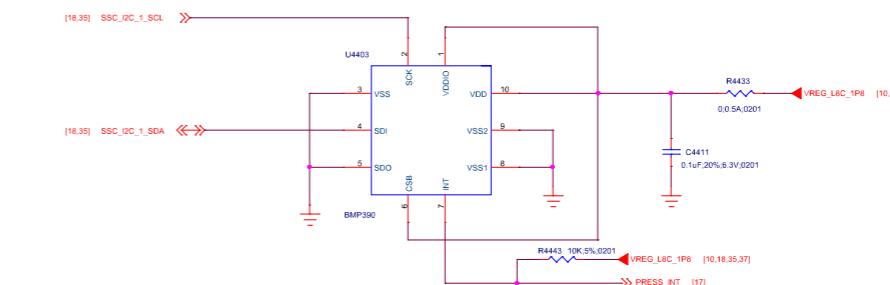
Vendor	Manufacture PN	Slave Address (7-bit)	I2C Address(8-bit)	Remark
AKM	AK09918C	0x0C	Read: 0x19 Write: 0x18	
MEMSIC	MMC5603NL	0x30	Read: 0x61 Write: 0x60	

## Hall-AH1902



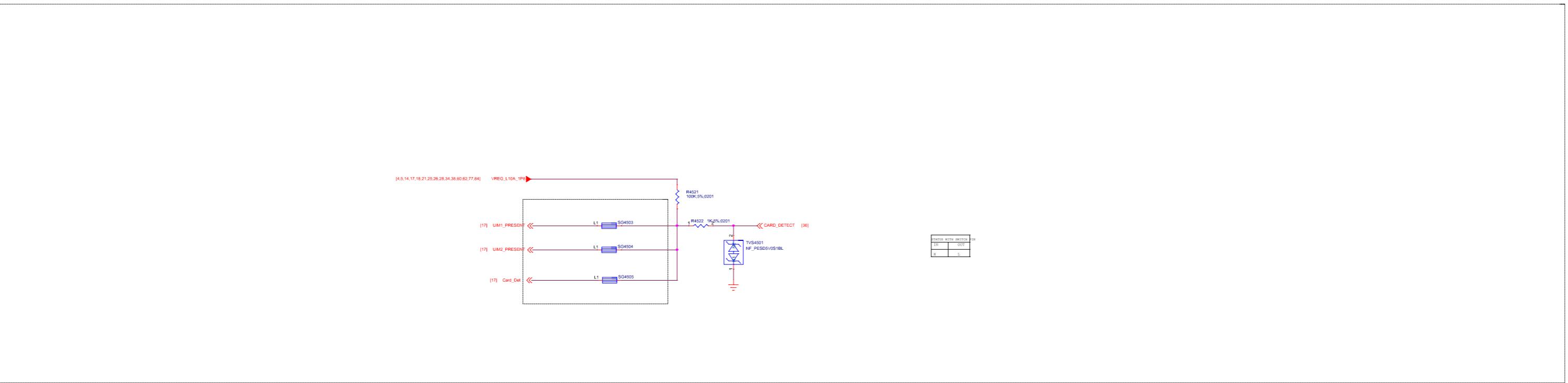
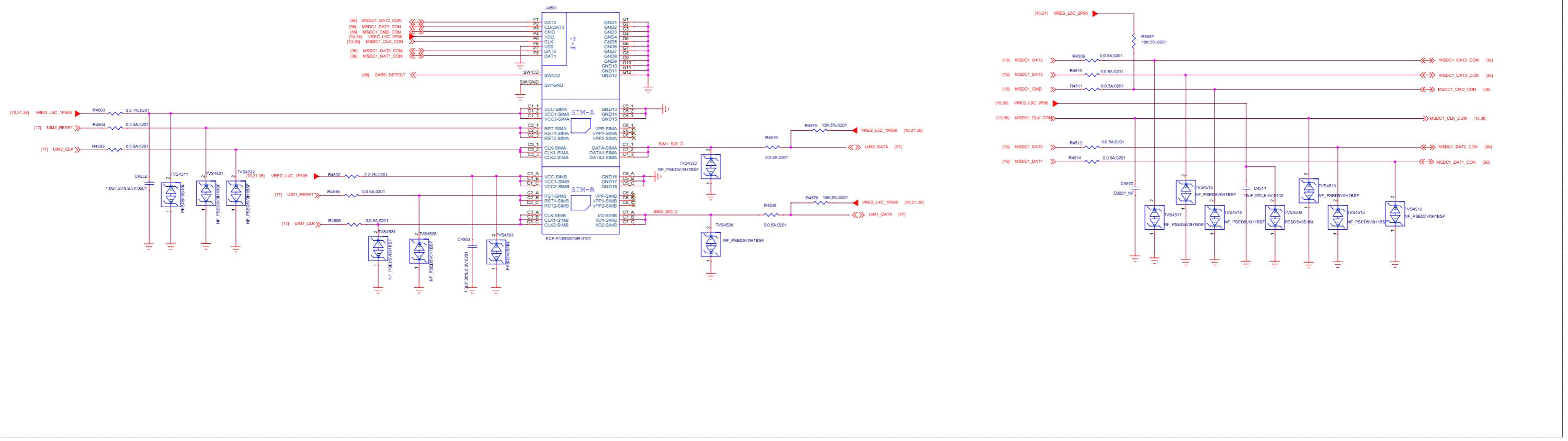
## Barometer Sensor

I2C address:0xEC(W)/0xED(R)

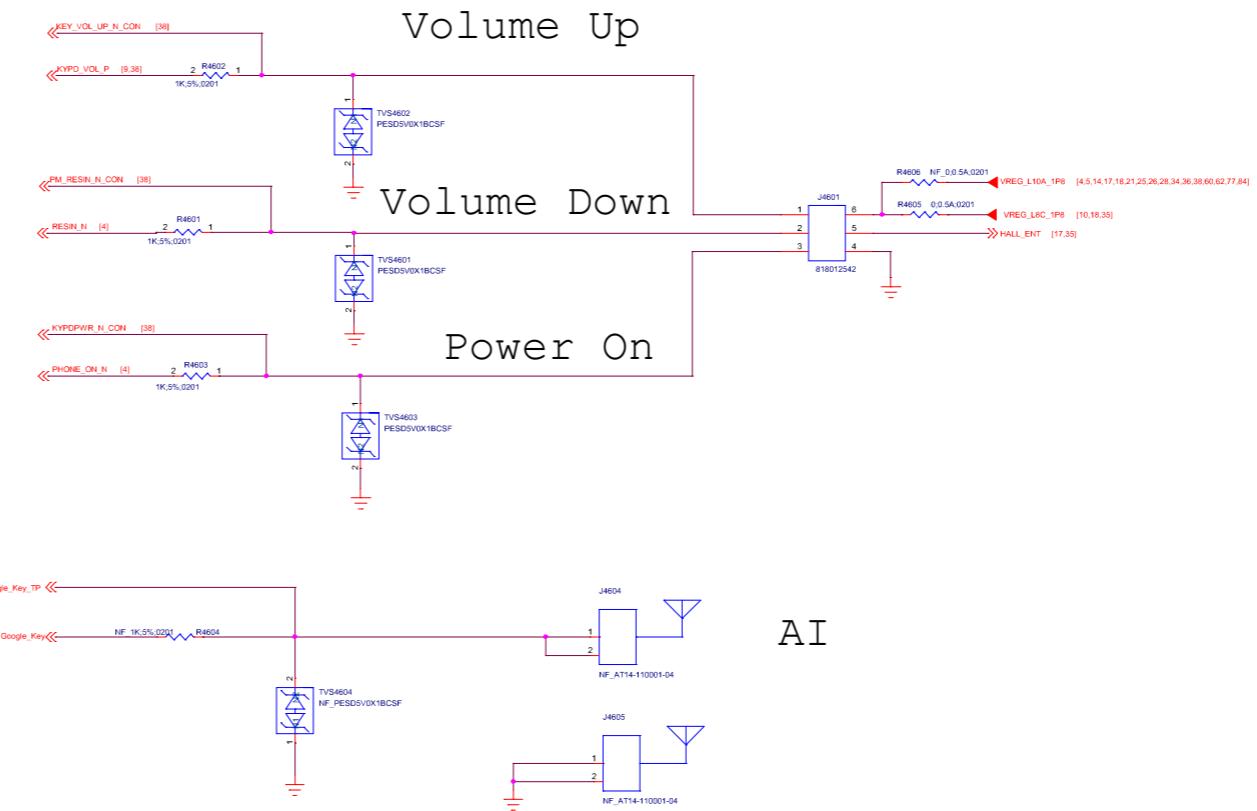


## CONNECTOR

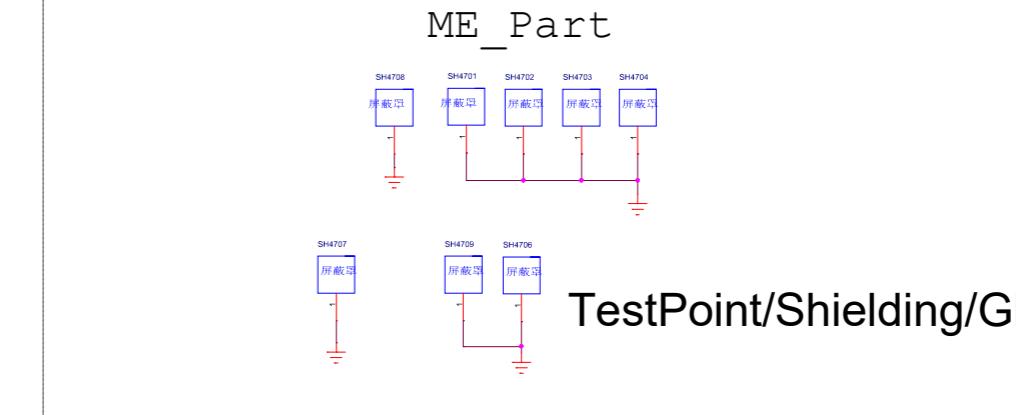
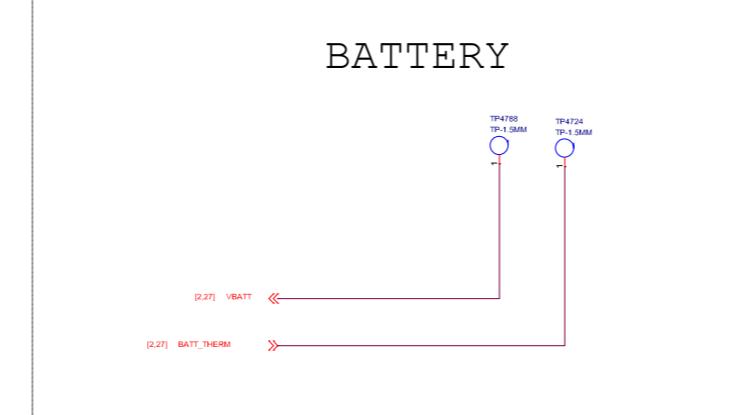
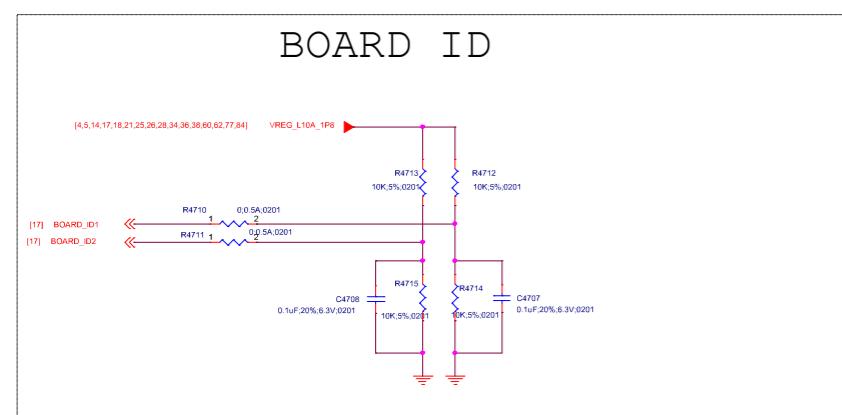
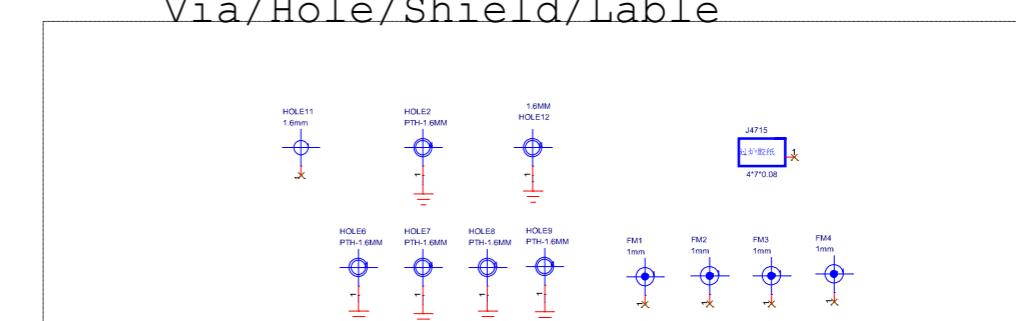
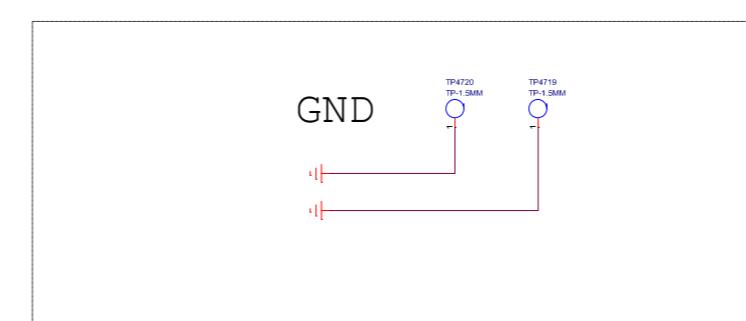
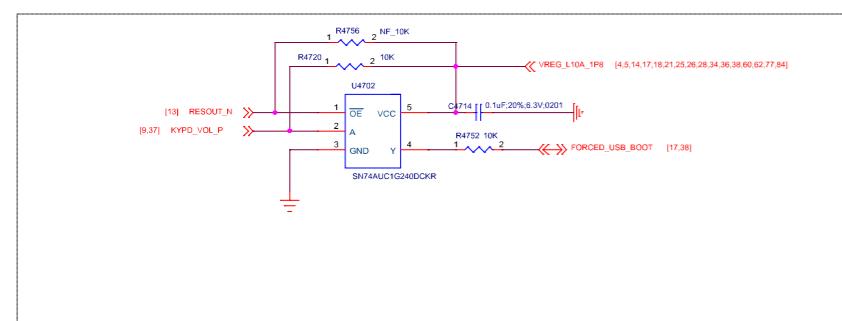
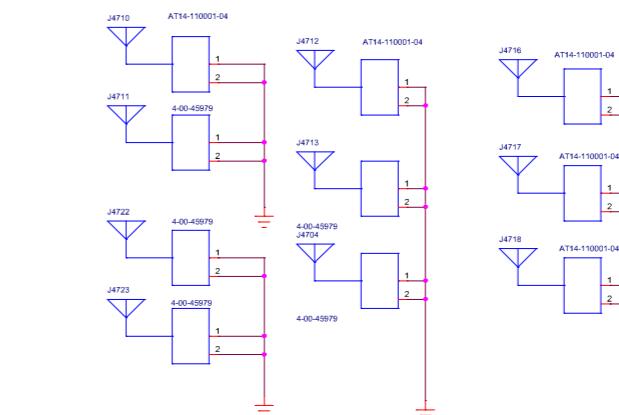
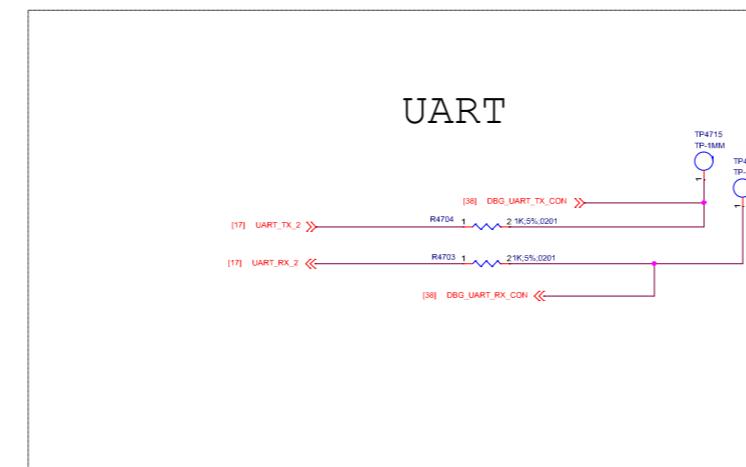
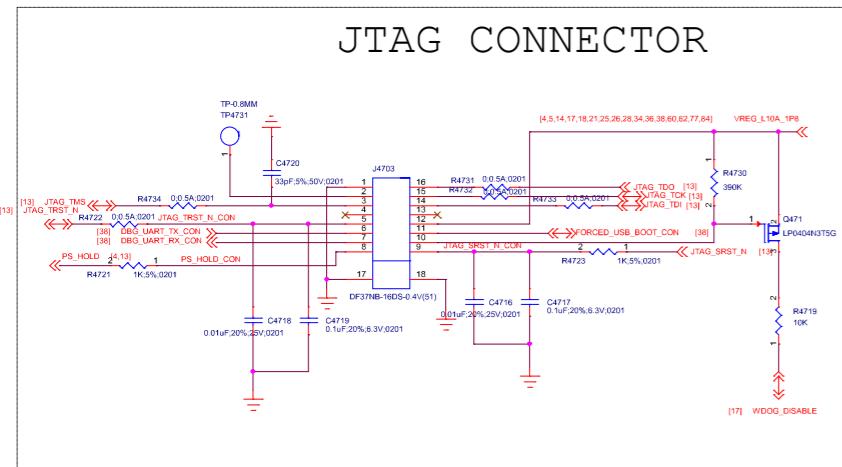
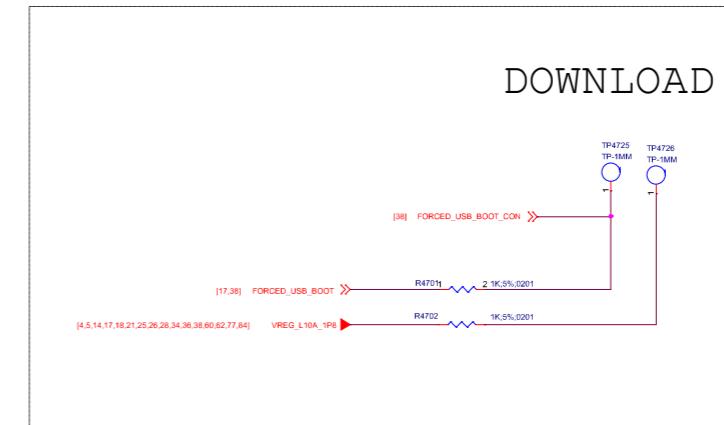
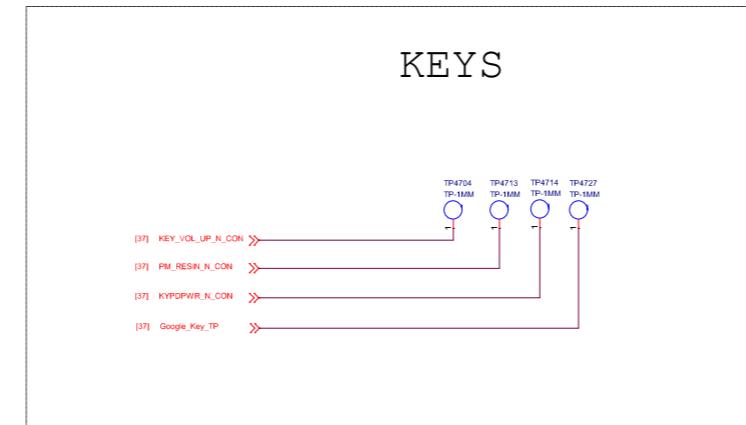
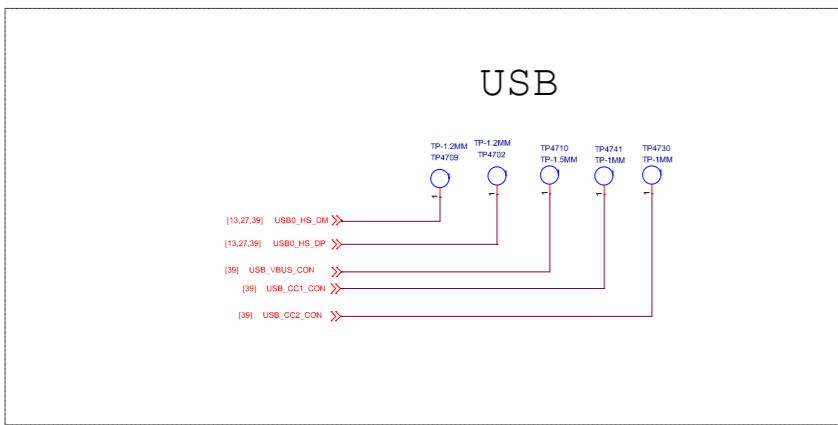
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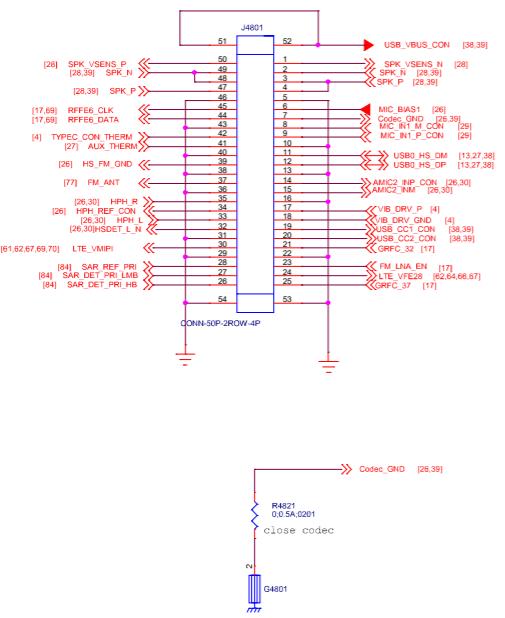
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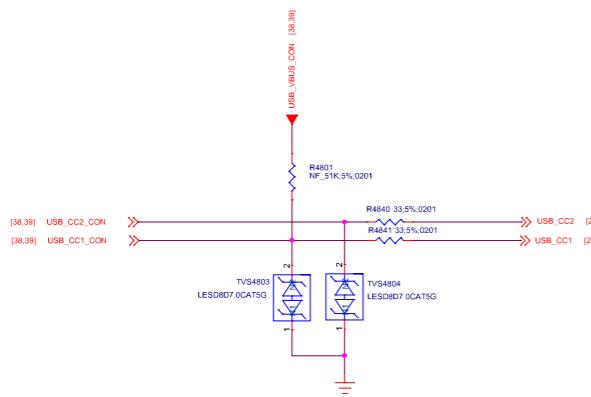
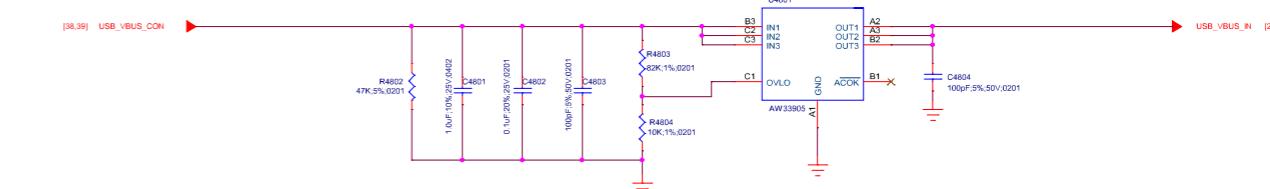
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DOCUMENT NO.	86750_1_11_20200612_0950	Size: Custom
DEPARTMENT:	WingTech SZ	DESIGNER: DESIGNER
Date:	Friday, June 12, 2020	Sheet 37 of 64



## Sub-Board Connector



**Vovp=1.2\*(R4803+R4804)/R4804**



Title	Sub PCB IF	REV: V10
DOCUMENT NO.	86750_1_11_20200612_0950	Size: Custom
DEPARTMENT:	WingTech SZ	DESIGNER: DESIGNER
Date:	Friday, June 12, 2020	Sheet 38 of 64

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE		

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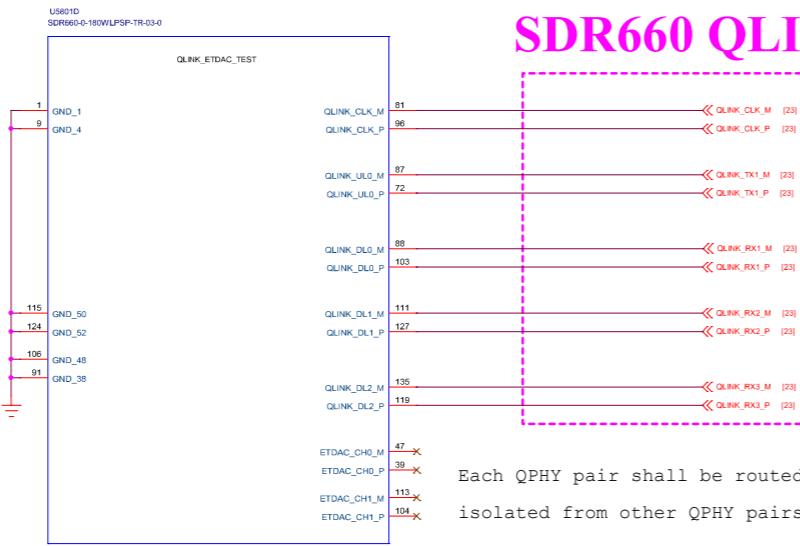
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DOCUMENT NO.:	Design Name = 86750_1_11_20200612_000	Custom
DEPARTMENT:	DEPARTMENT = WINGTECH	DESIGNER = Lingjun
WINGTECH	Page Modify Date = Friday, June 12, 2020 Sheet 57 of 81	

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
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# SDR660 MSS &GND

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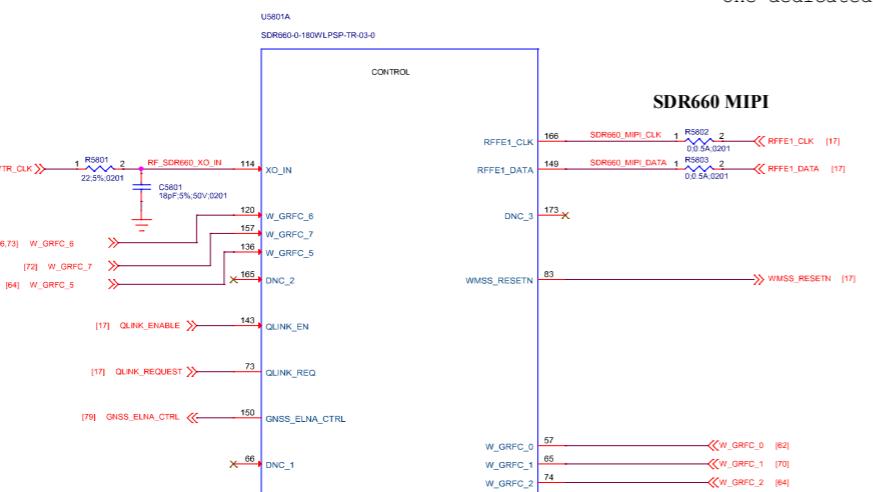
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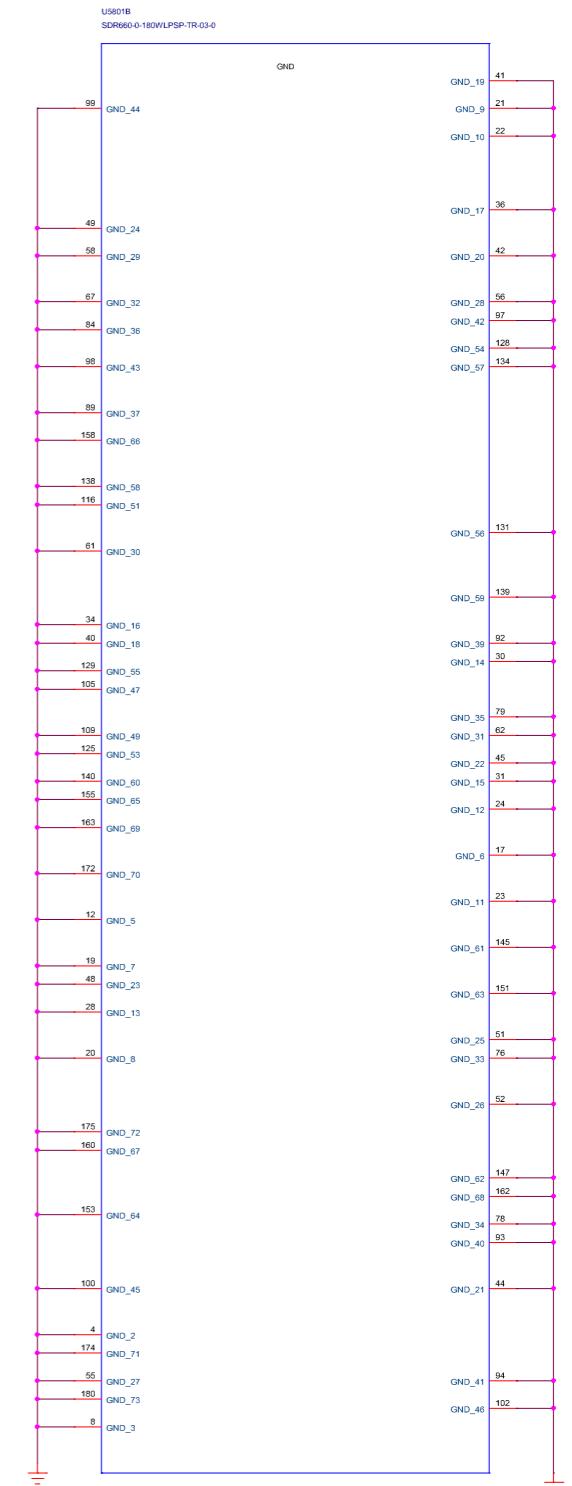
SDR660 QLINK

Each QPHY pair shall be routed in a channel together isolated from other QPHY pairs with surrounding gnd

## SDR660 CONTROL



**NOTE:**  
One dedicated RFFE bus is required for SDR660 debug purposes

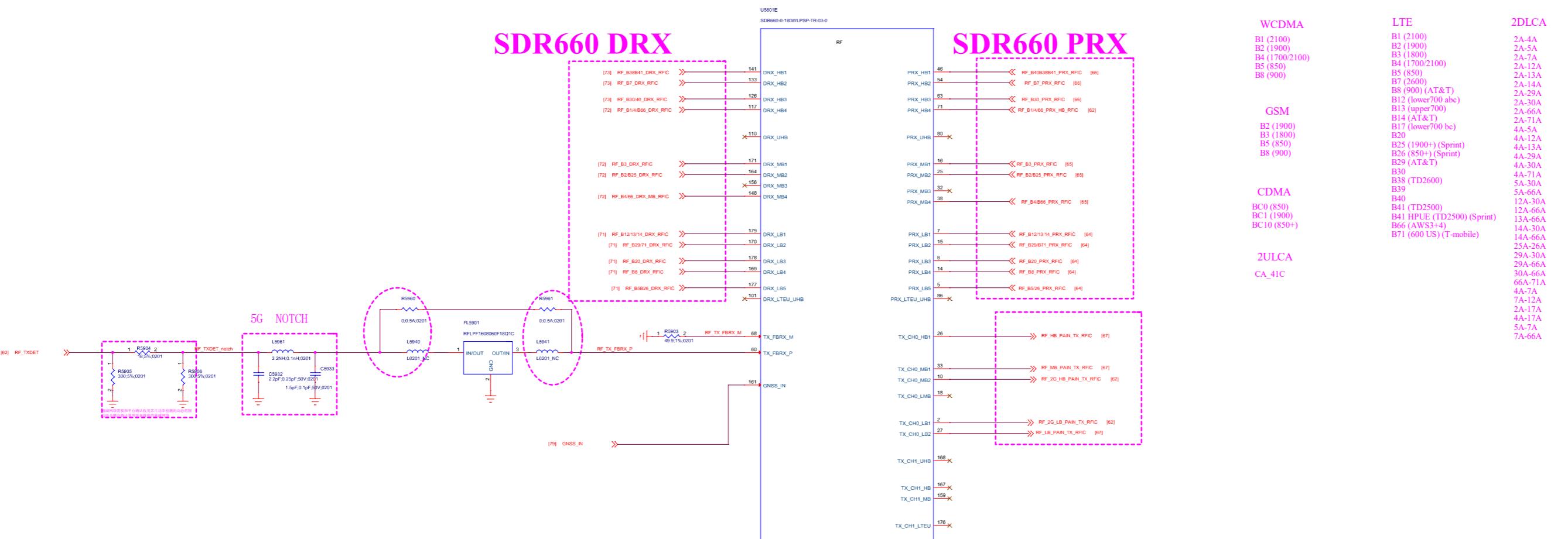


SDR675\_GND

Title	Page Name = 58_SDR660_GND			V10
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DEPARTMENT:	DEPARTMENT = WINGTECH	DESIGNER:	DESIGNER = Lingjun	
				
Date:	Page Modify Date = Friday, June 12, 2020	SHEET Number = 58 of 5	Page Count = 5	

# SDR660 Tx,PRX,DRX,FBRX

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE		



- a. DA outputs have no DC bias and they are DC grounded on chip.
- b. If following component (switch/PA) requires non-zero DC, then a series DC blocking cap is needed
- c. NC for unused LNA and DA Port

Title	Page Name = 59_SDR660_PRX_DRX_FBRX
DOCUMENT NO.	Design Name = 86760_1_11_20200612_0900 Custom
DEPARTMENT:	DEPARTMENT = WINGTECH DESIGNER = Lingjun
Date:	Page Modify Date = Friday, June 12, 2020 Sheet 59 of Page Count = 84

REVIEWS			
LTR	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE		

# SDR660 POWER

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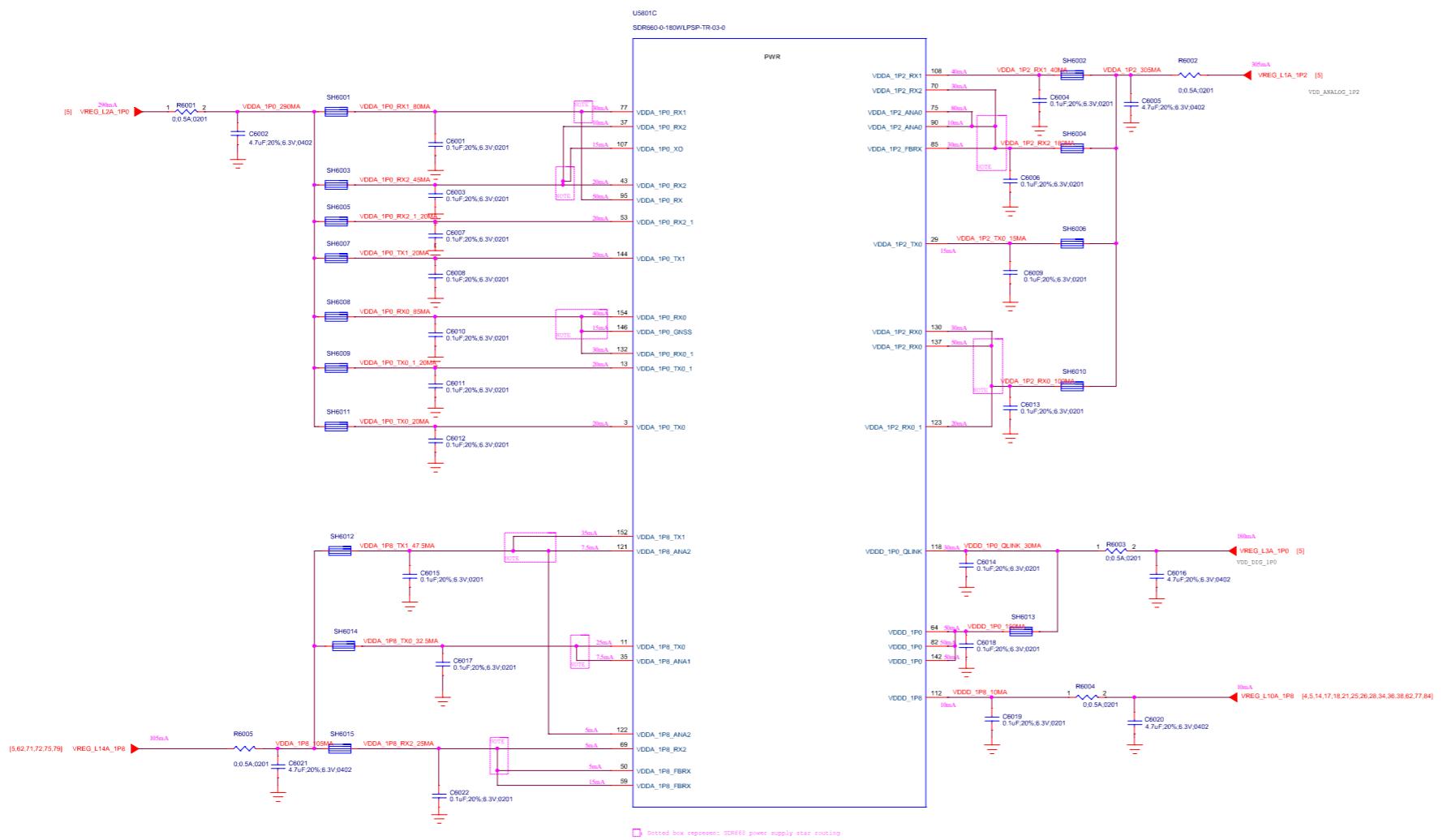
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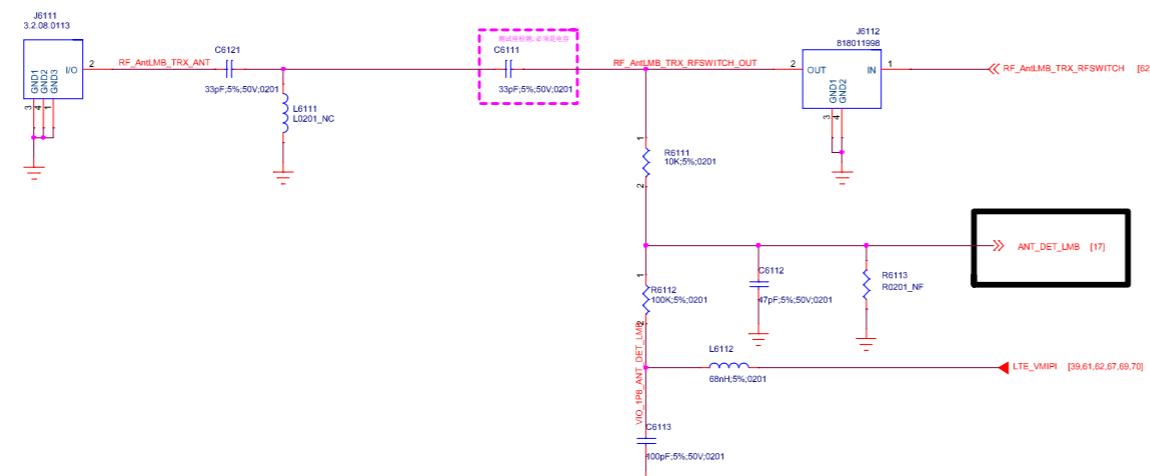
A



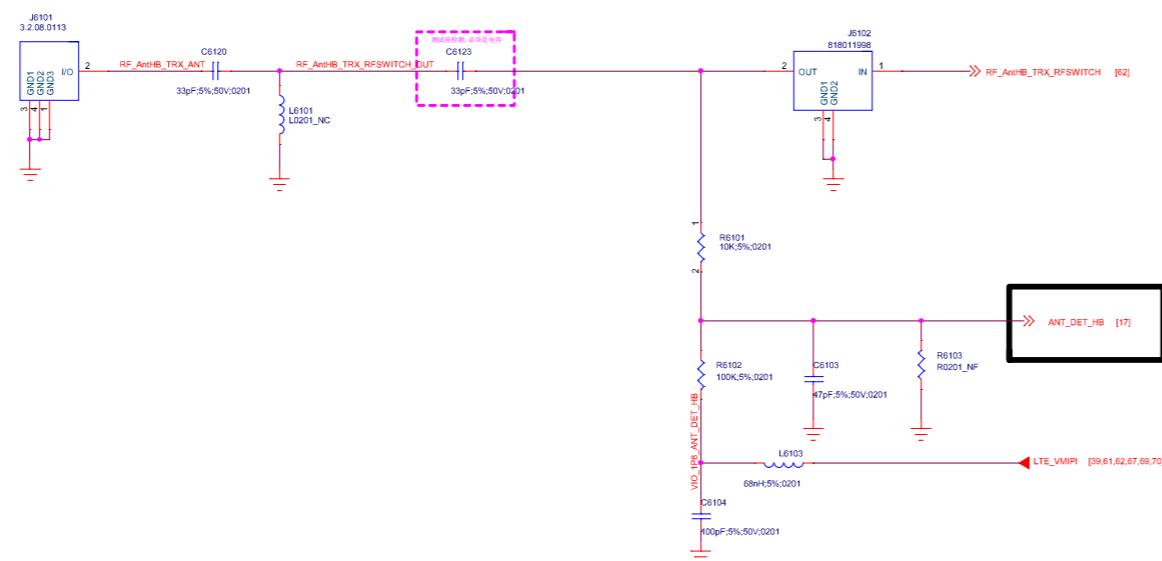
## SDR675\_POWER

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DEPARTMENT:	DEPARTMENT = WINGTECH DESIGNER: DESIGNER = Lingjun
Page Modify Date	Friday, June 12, 2020 Sheet 60 of Page Count = 84

## ANT\_LMB



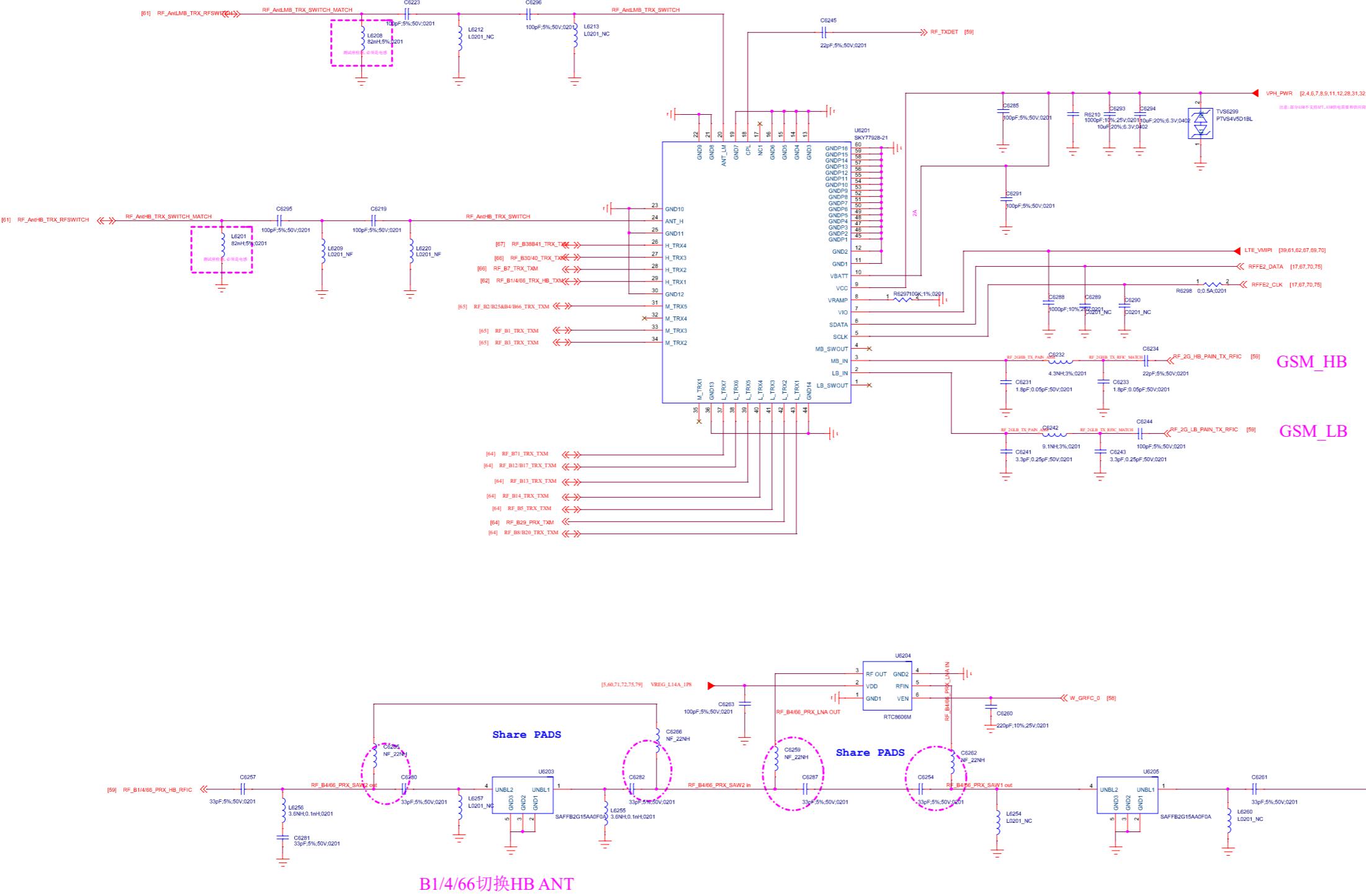
## ANT\_HB



Note1: RF SWITCH DETECT MUST BE CAP IF DPDTR IS WITHOUT DC BLOCK

Note2: MUST BE IND FOR RF SWITCH DETECT

Title	Page Name = 61_Primary_ANT	V10
DOCUMENT NO.:	Design Name = 86750_1_11_20200612_0959	D
DEPARTMENT:	DEPARTMENT = WINGTECH	DESIGNER: DESIGNER = Lingyan
Date:	Page Modify Date = Friday, June 12, 2020	Sheet 61 of Page Count = 84



REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE		

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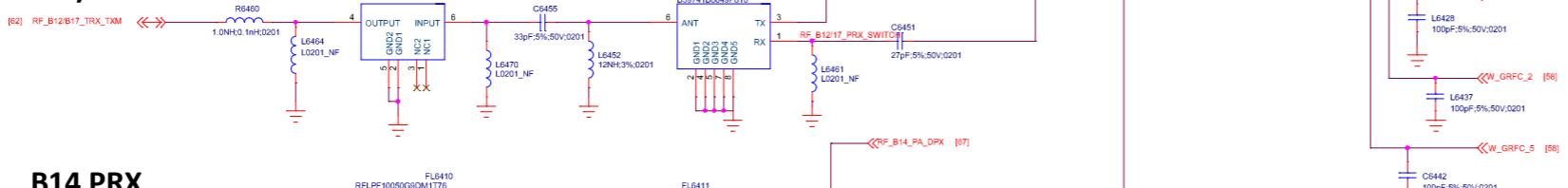
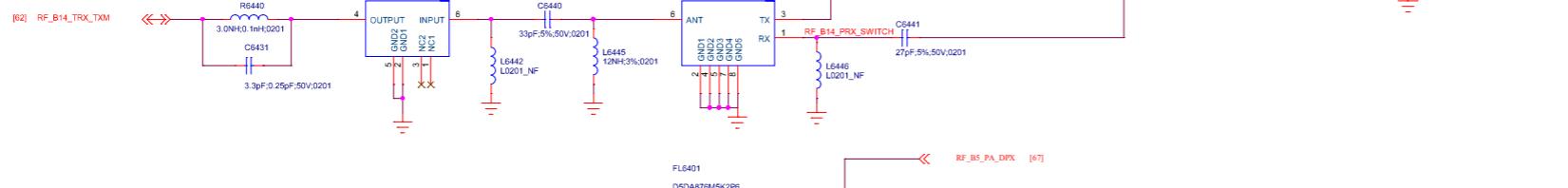
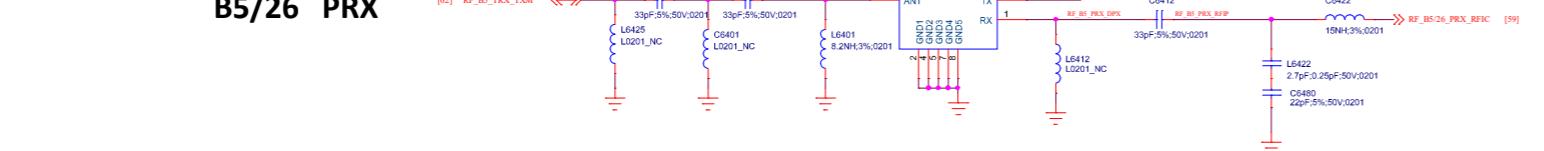
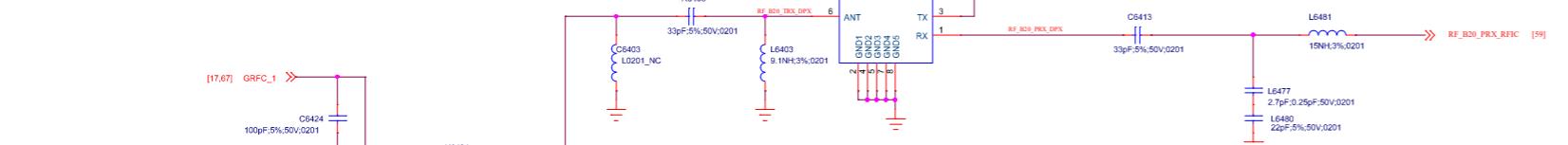
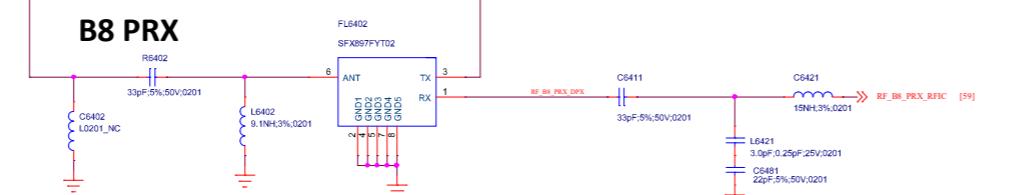
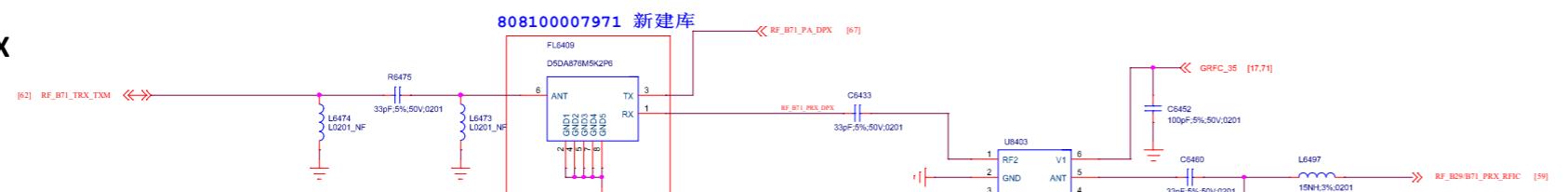
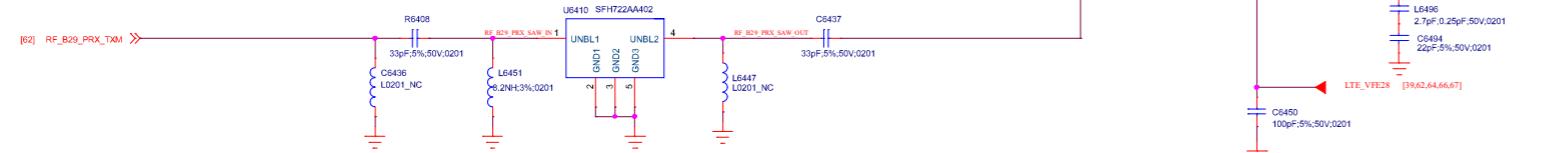
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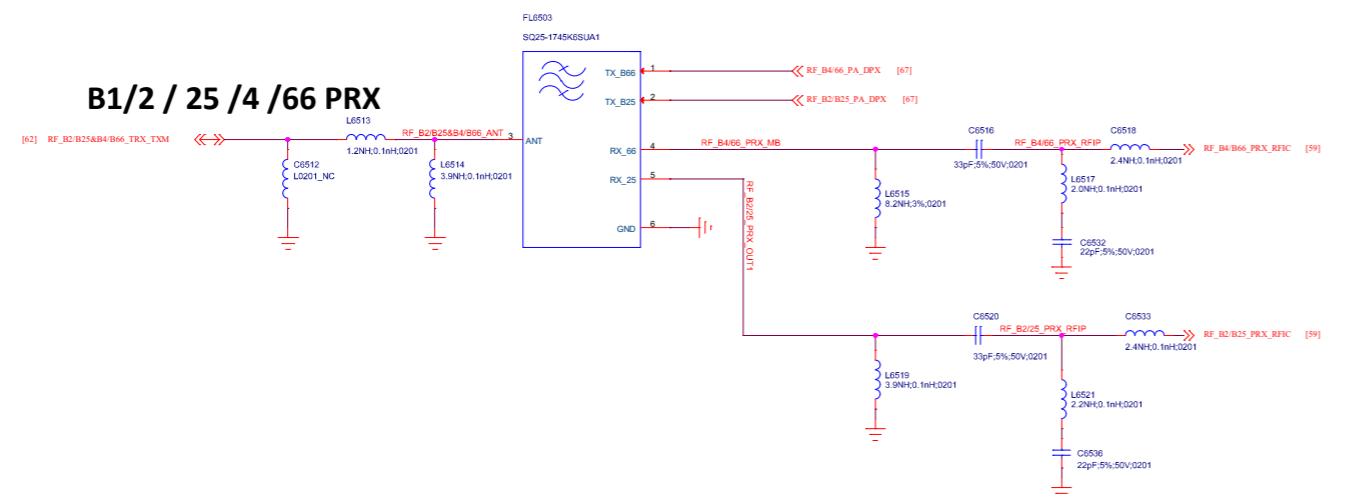
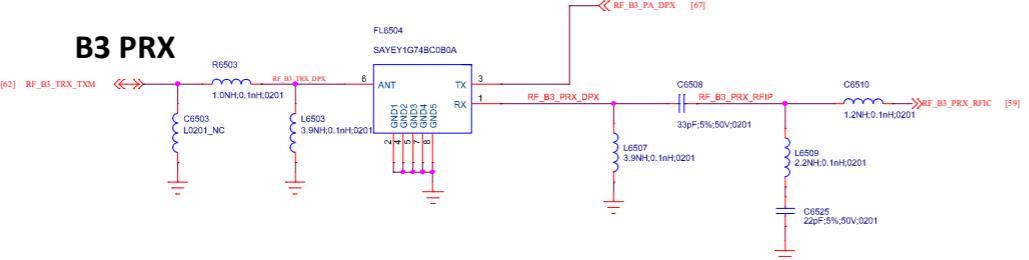
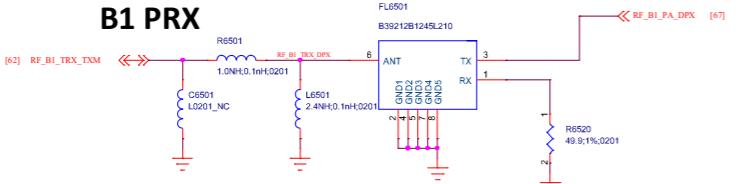
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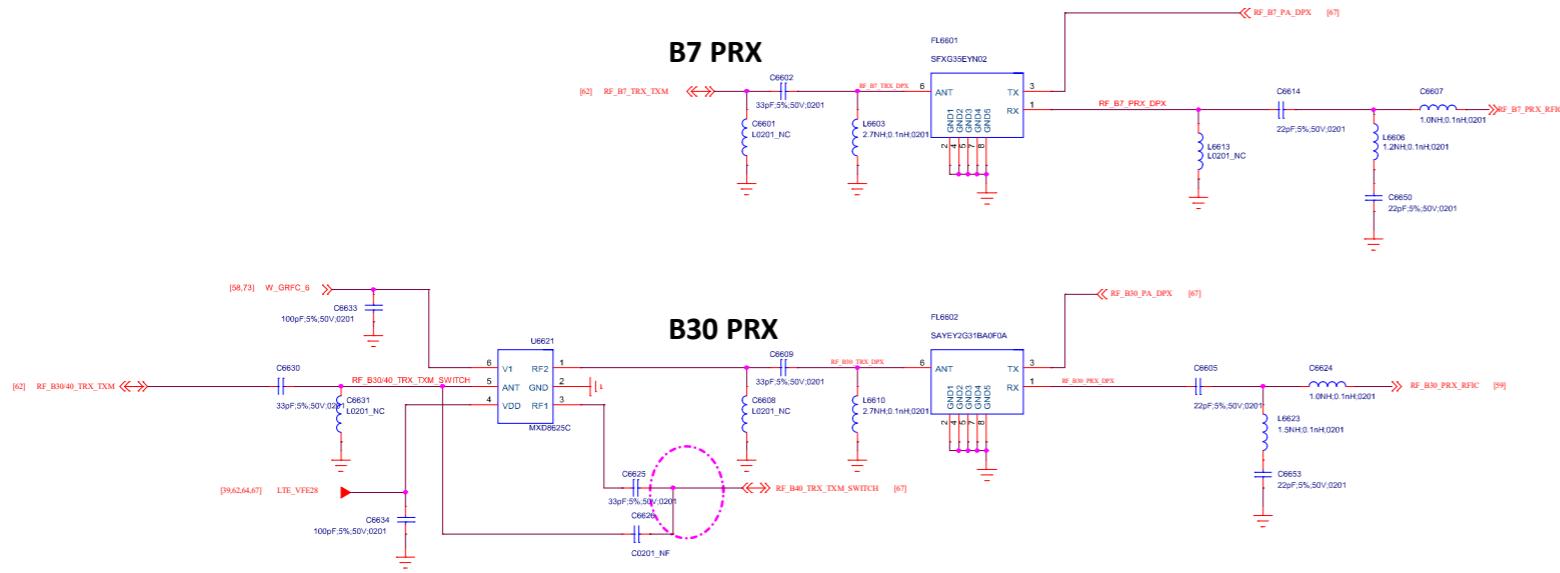
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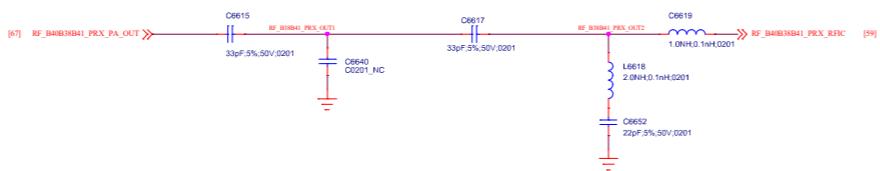
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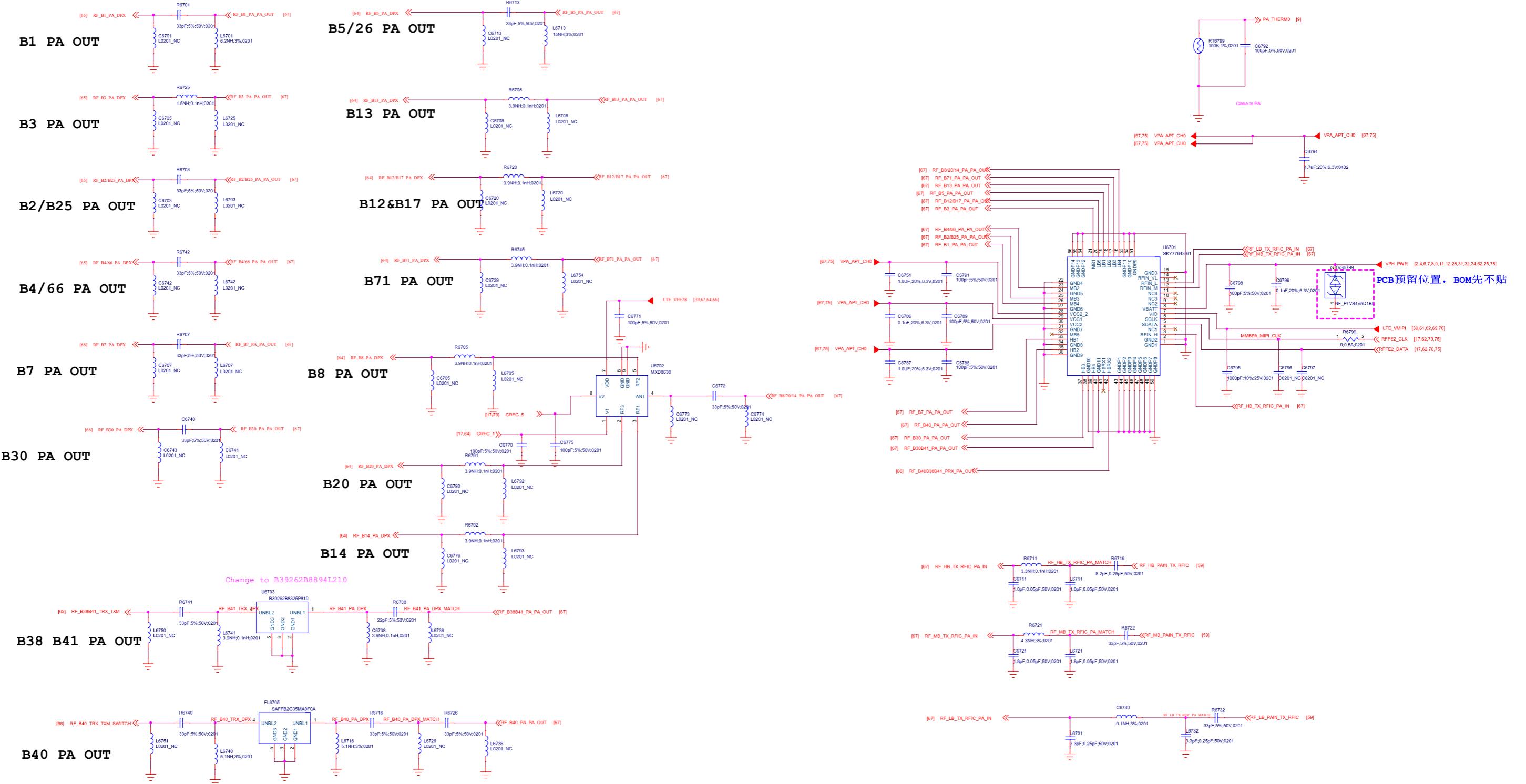
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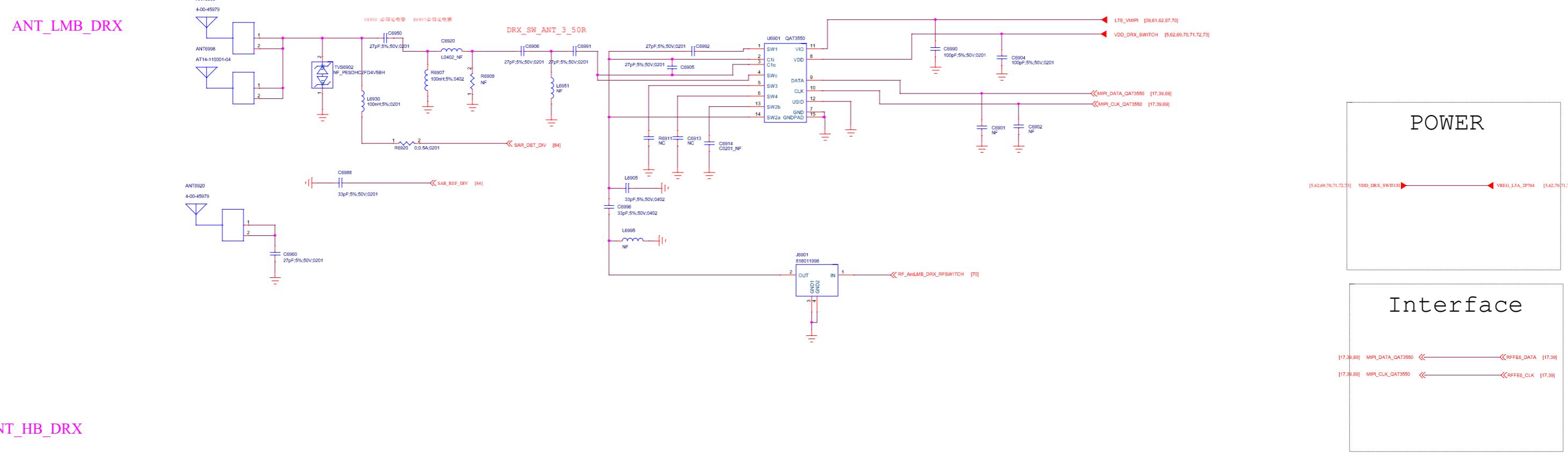




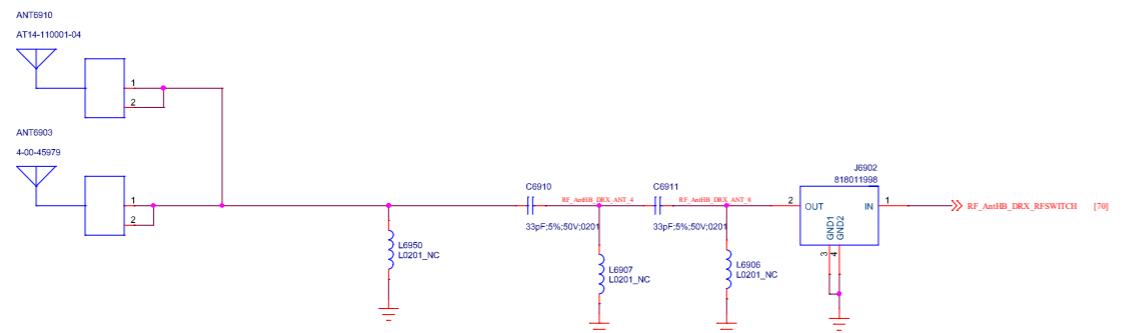
**B40 B38 B41 PRX**



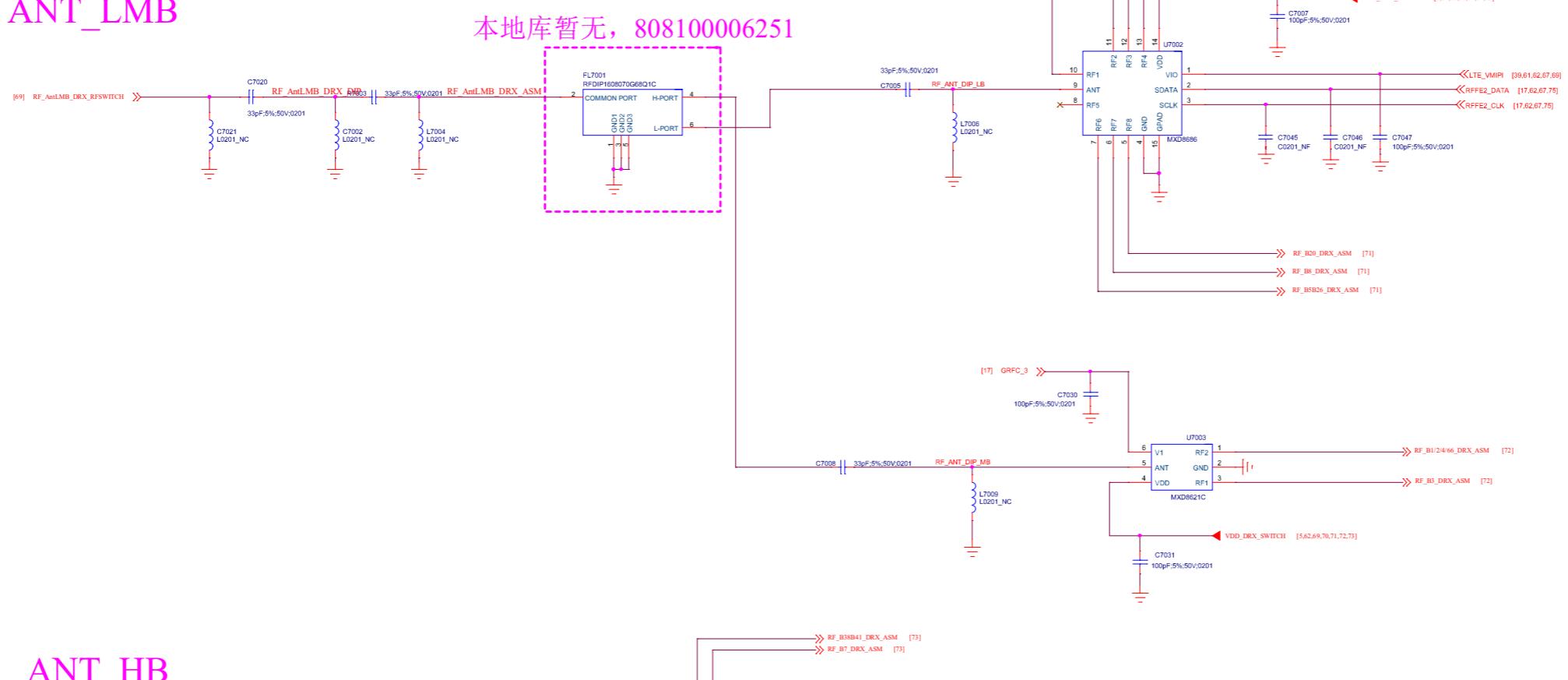




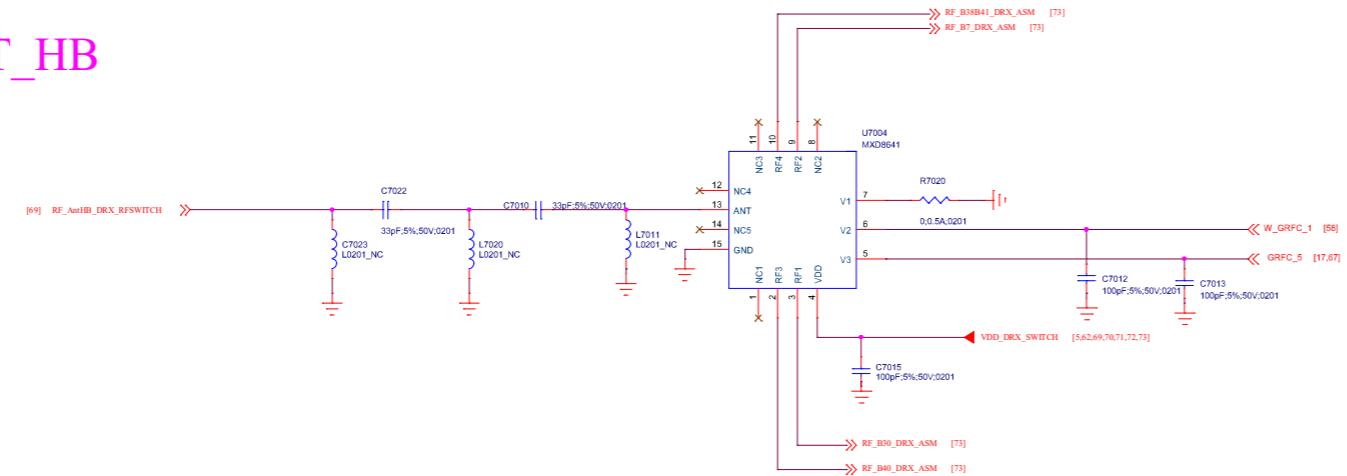
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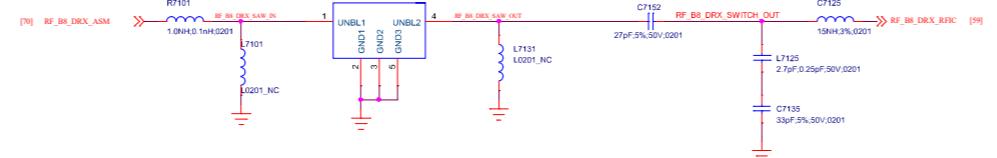


## ANT\_LMB

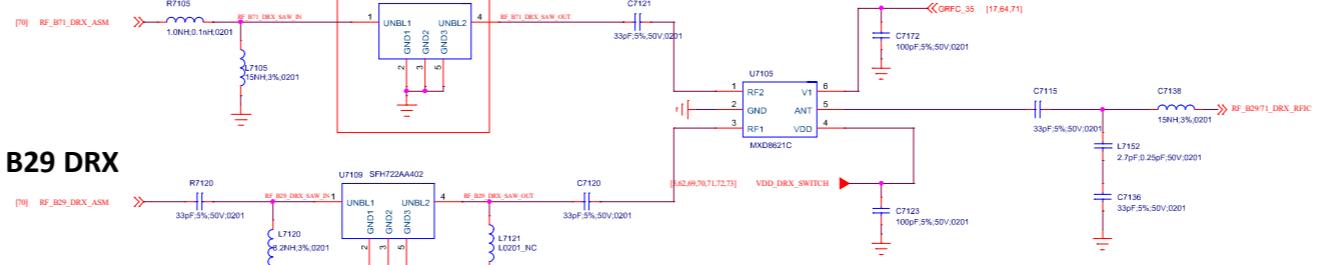
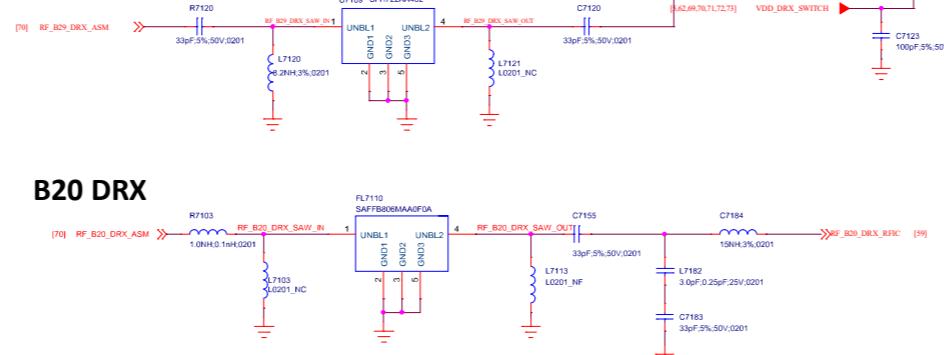
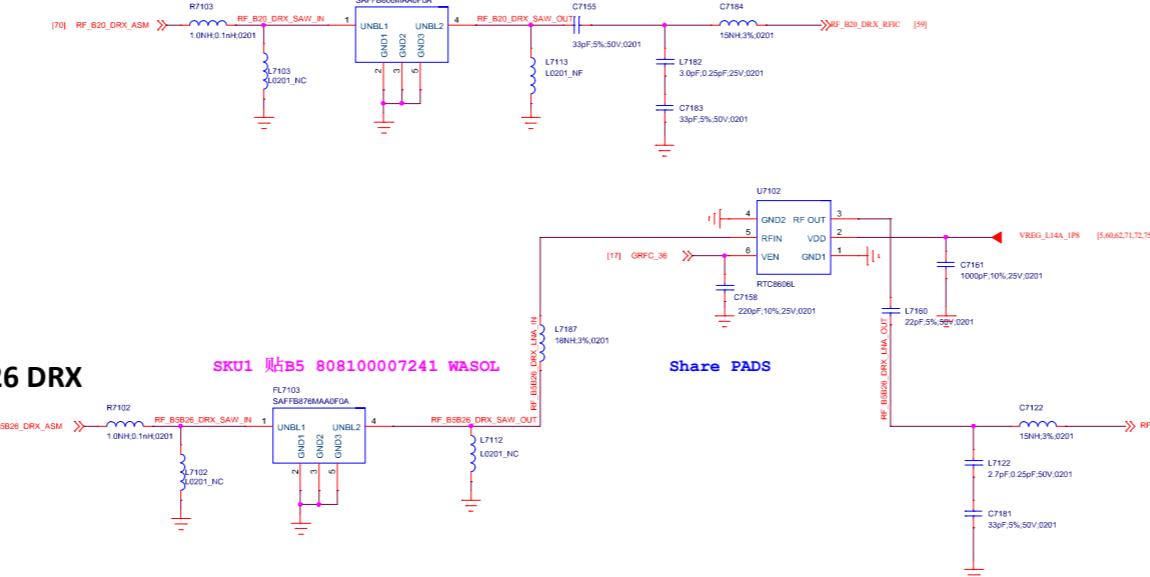
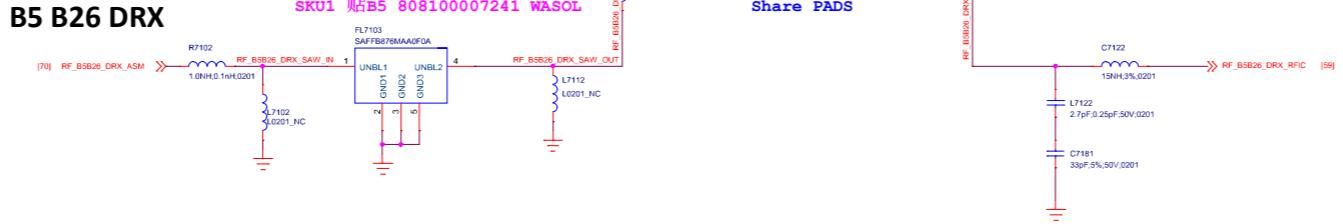
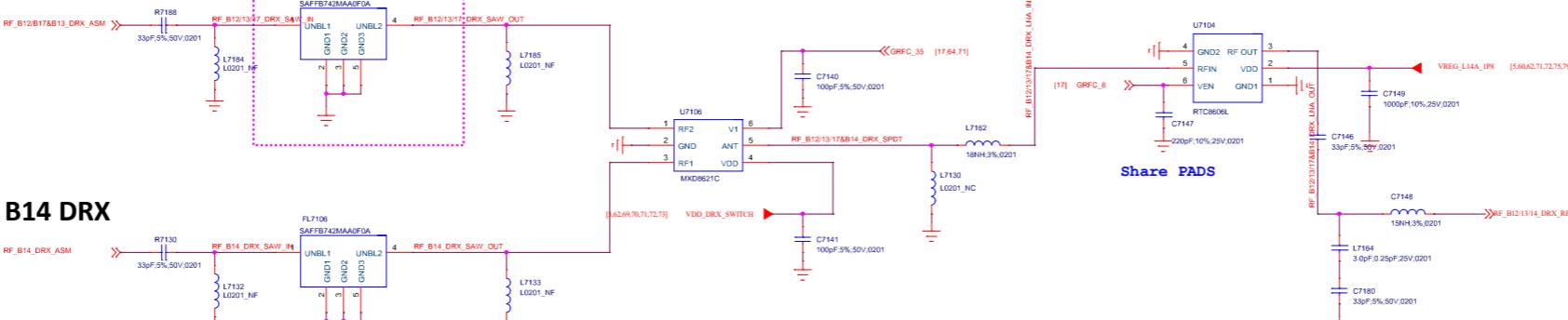
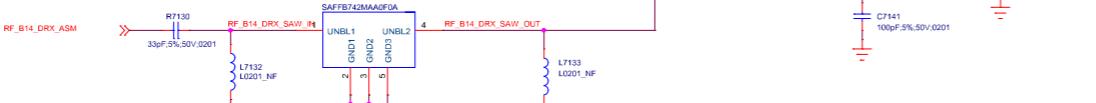


## ANT\_HB



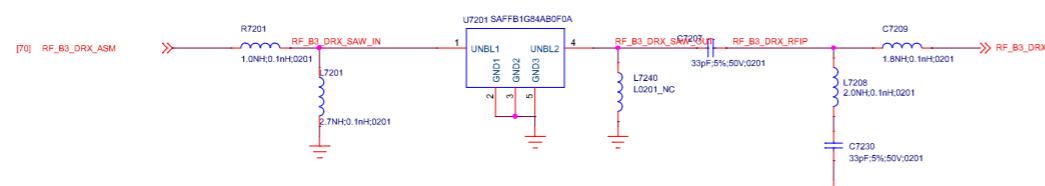
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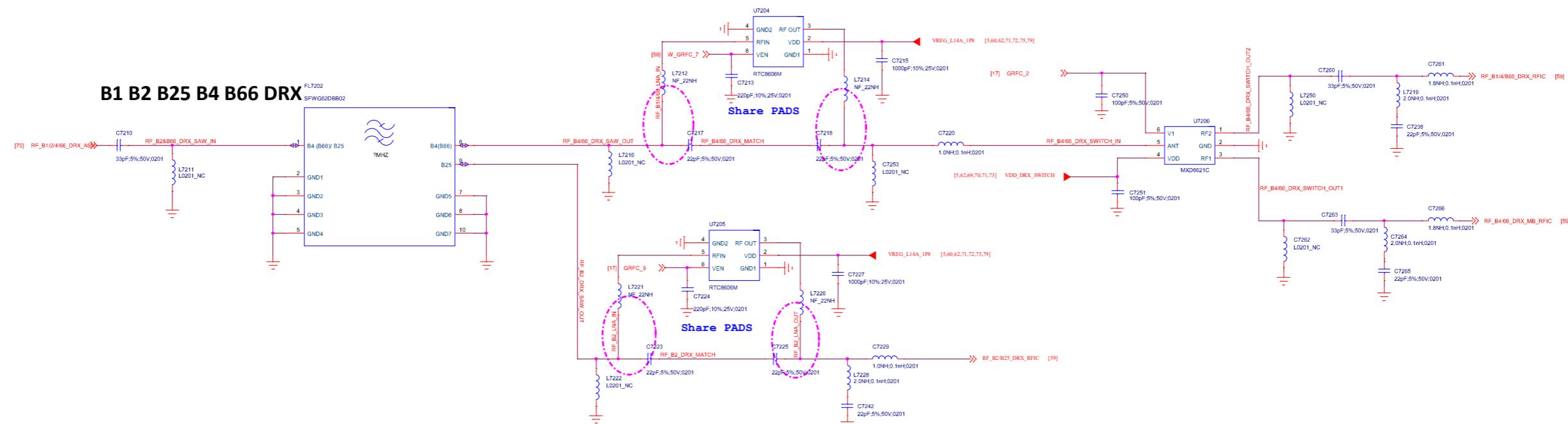
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DEPARTMENT:	DEPARTMENT = WINGTECH	DESIGNER = Lingjun
date:	Page Modify Date = Friday, June 12, 2020	Sheet 71 of Page Count = 64

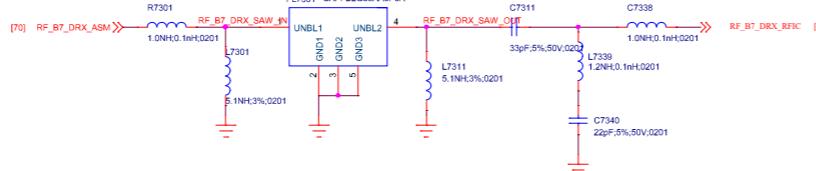
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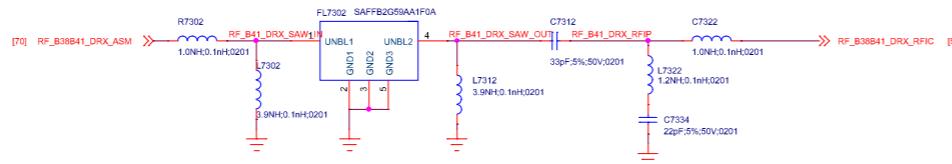
## B1 B2 B25 B4 B66 DRX



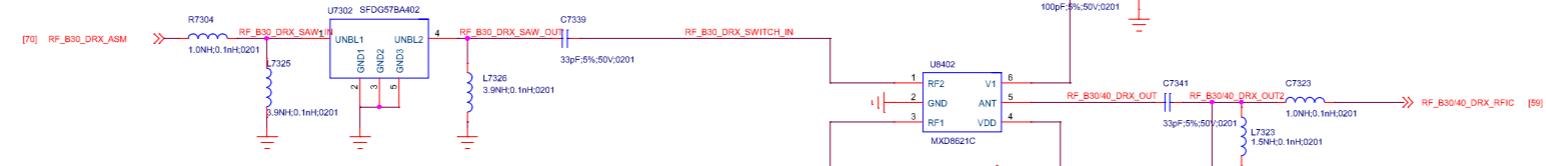
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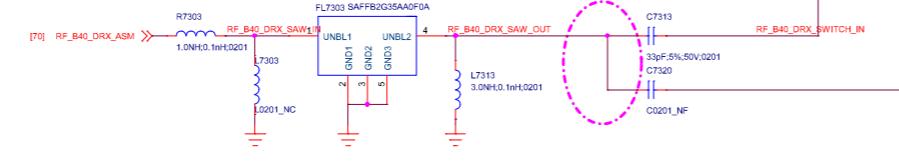
### B38B41 DRX



### B30 DRX



### B40 DRX



REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE		

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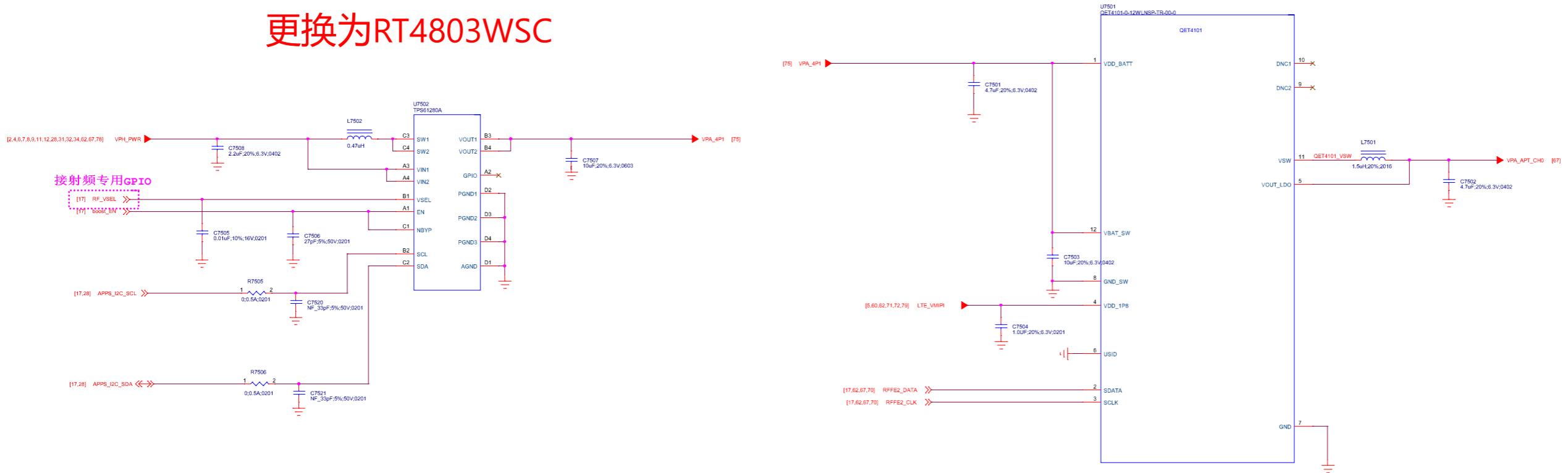
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DEPARTMENT:	DEPARTMENT = WINGTECH	DESIGNER = Lingjun
		
Date: Page Modify Date = Friday, June 12, 2020 Sheet 74 of Page Count = 64		

## 更换为RT4803WSC



Title	75_ET_APT	REV: V1.0
DOCUMENT NO.:	86750_1_11_20200612_0950	Size D
DEPARTMENT:	SH-HW	DESIGNER: LuFenglei
Date:	Friday, June 12, 2020	Sheet 75 of Page Count 84

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE		

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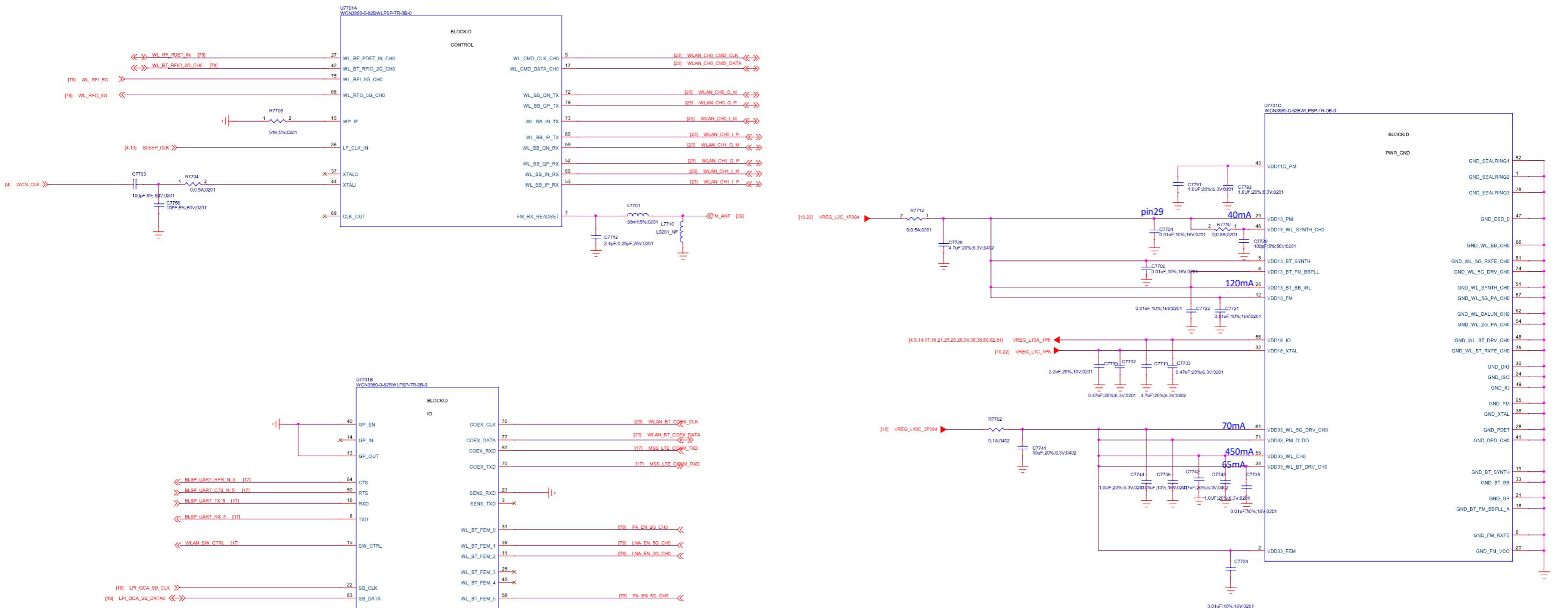
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Title:	Page Name = 76_Reserved	REV: V10
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DEPARTMENT:	DEPARTMENT = WINGTECH	DESIGNER = Lingjun



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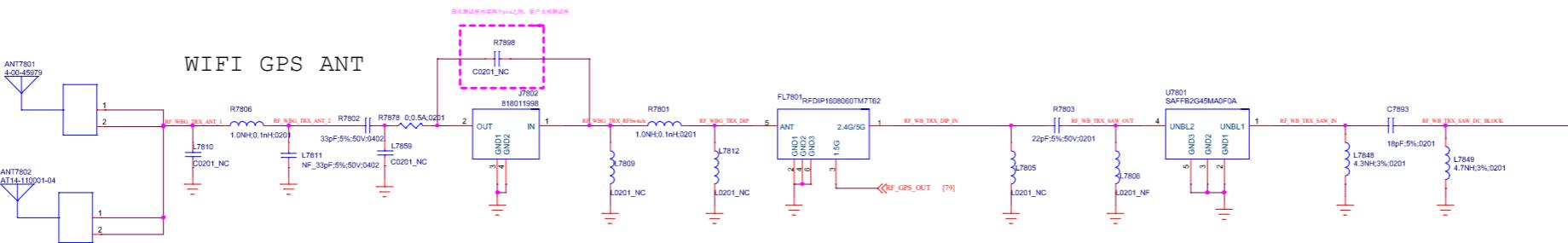
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 PIN55 450mA  
 PIN61 70 mA  
 PIN34 65 mA  
 other: 6mA

(2) 1.8V Total 75mA  
 PIN56 15 mA  
 PIN32 60 mA

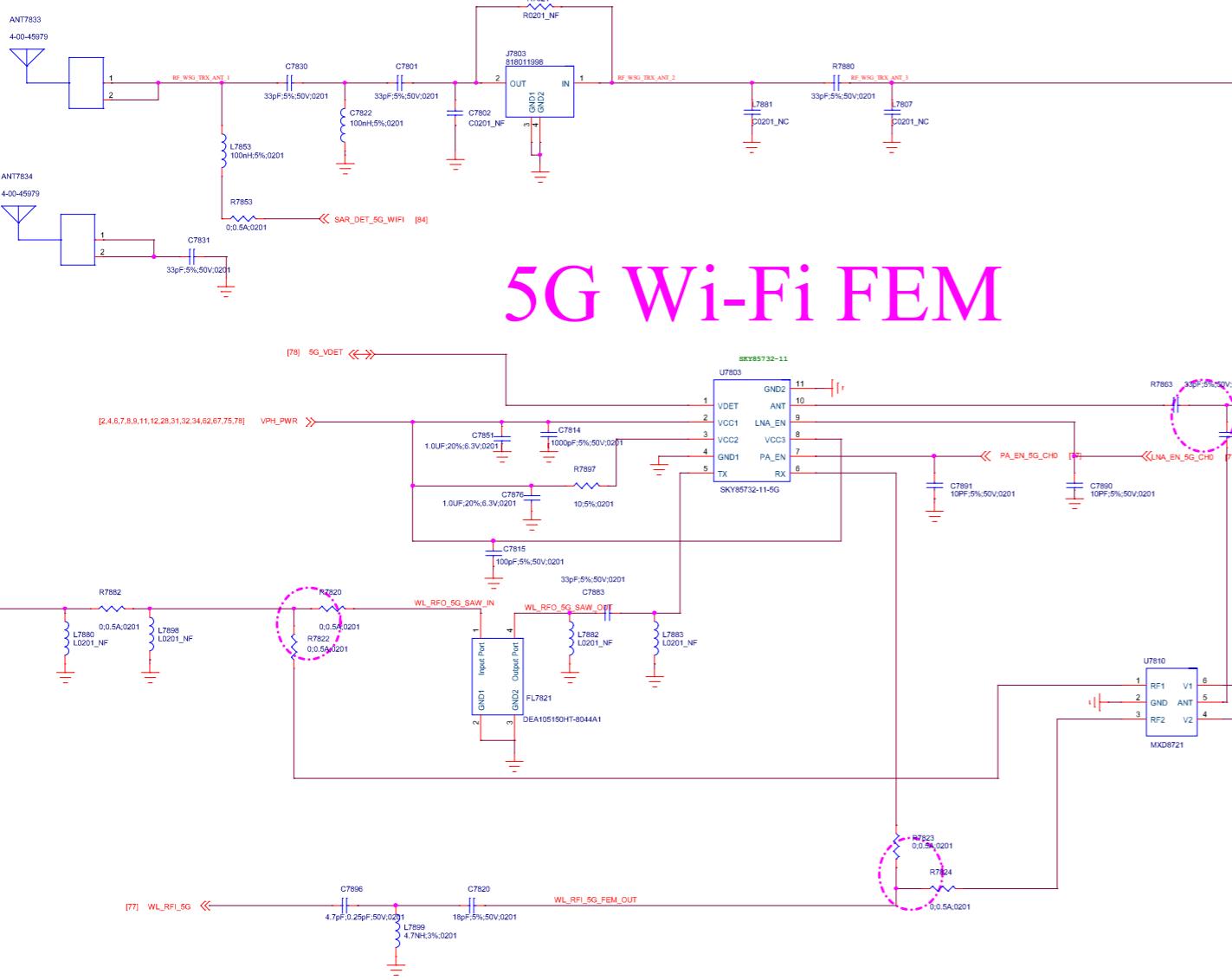
(3) 1.3V Total 240mA  
 PIN26 120mA  
 PIN46 40mA  
 other: 80mA

Title	Page Name = 77.WCN3900	REV: V10
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DEPARTMENT:	DEPARTMENT = WINGTECH	DESIGNER: wanglei
Date:	Page Modify Date = Friday, June 12, 2020	Page Number = 77 of Page Count = 84

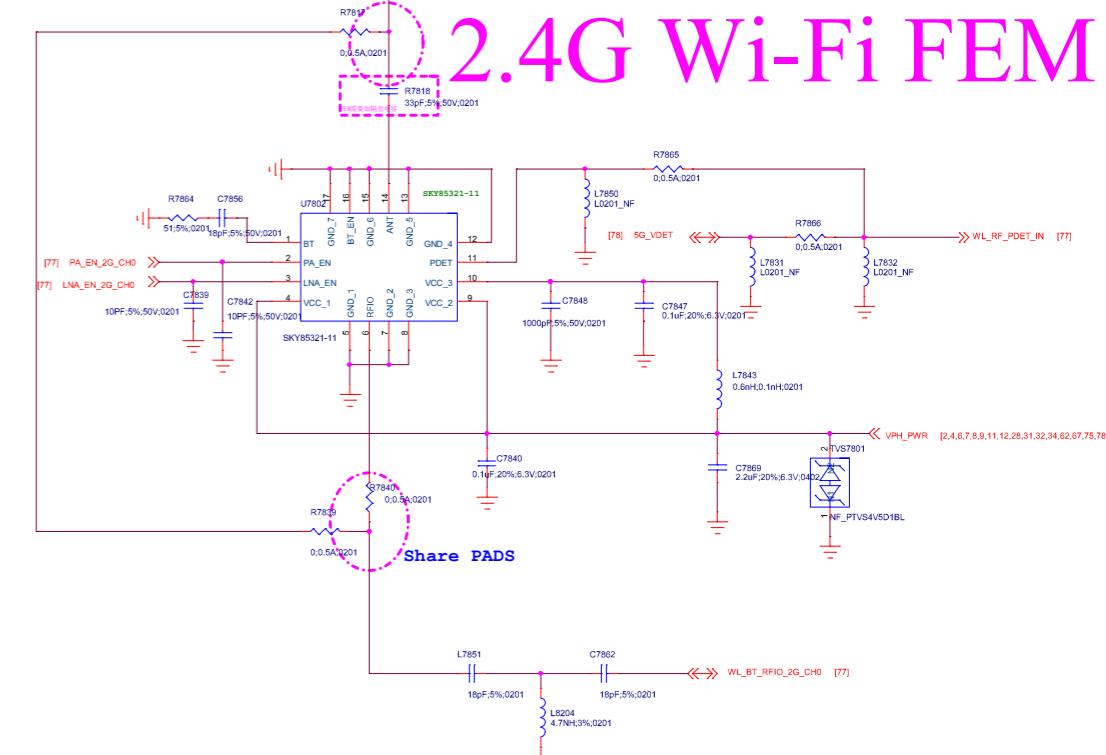
# 2.4G Wi-Fi BT GPS



# 5G Wi-Fi

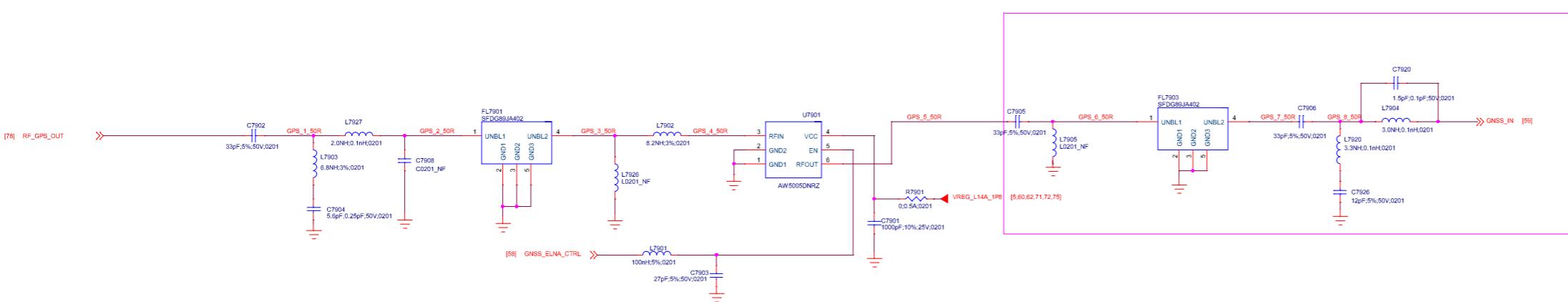


# 5G Wi-Fi FEM



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DOCUMENT NO.:	Design Name = 86750_1_11_20200612	D
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## Close To WTR



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DEPARTMENT:	DEPARTMENT = WINGTECH DESIGNER: DESIGNER = Lingchen
Date:	Page Modify Date = Friday, June 12, 2020 Sheet 82 of 84



REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE		

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Title:	Page Name = 83_Reserved	REV: V10
DOCUMENT NO.:	Design Name = 86750_1_11_20200612_000	Custom
DEPARTMENT:	DEPARTMENT = WINGTECH	DESIGNER = Lingjun
		
Date: Page Modify Date = Friday, June 12, 2020 Sheet 83 of 81		

