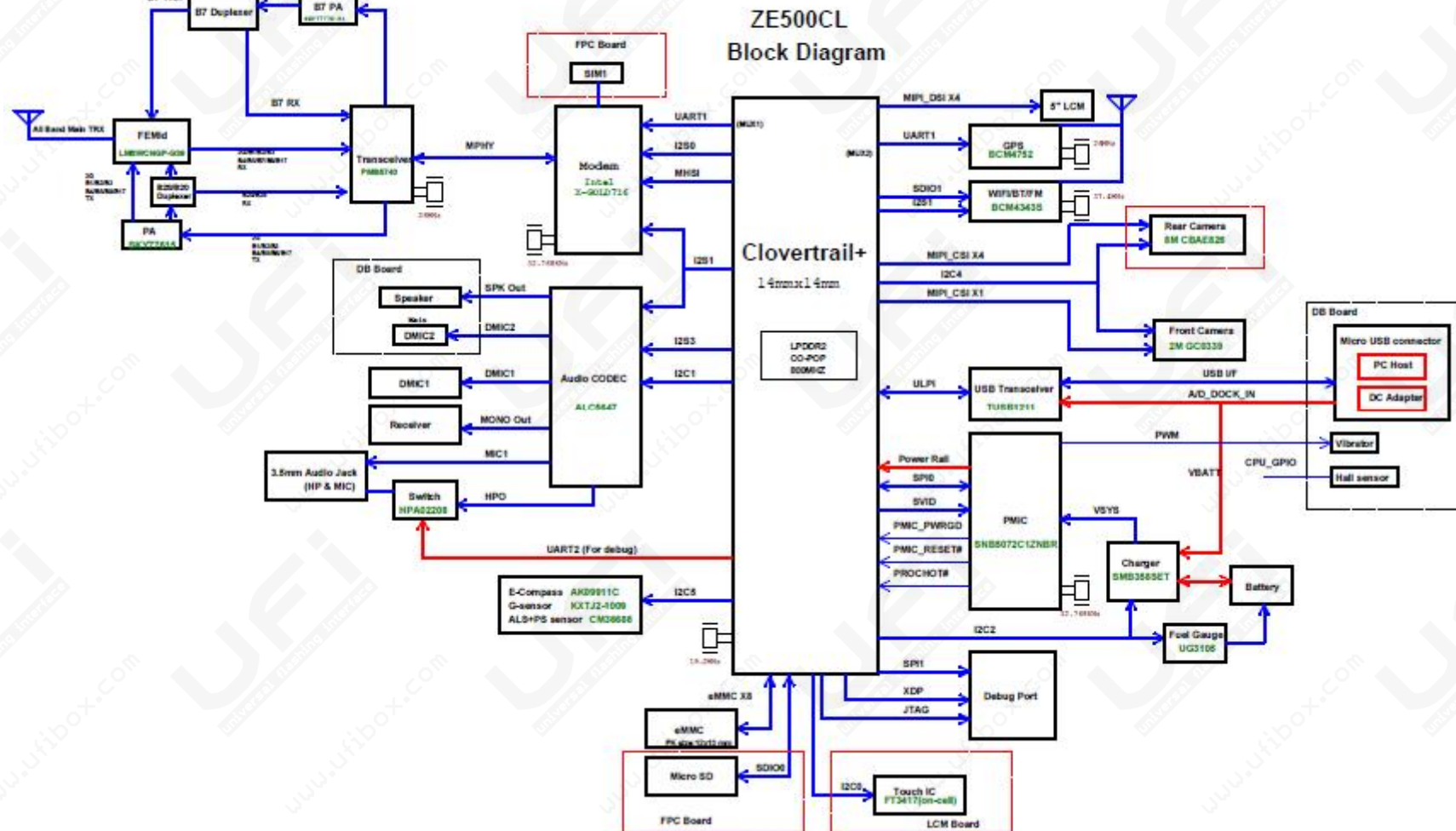


ZE500CL(Virgo) EE

Trouble Shooting Guide

Block diagram



TOP View

Receiver

P-sensor

2M
camera

Charger
LED

Mic2

Mic1



ROT View

Flash LED

VOL KEY

- Speaker



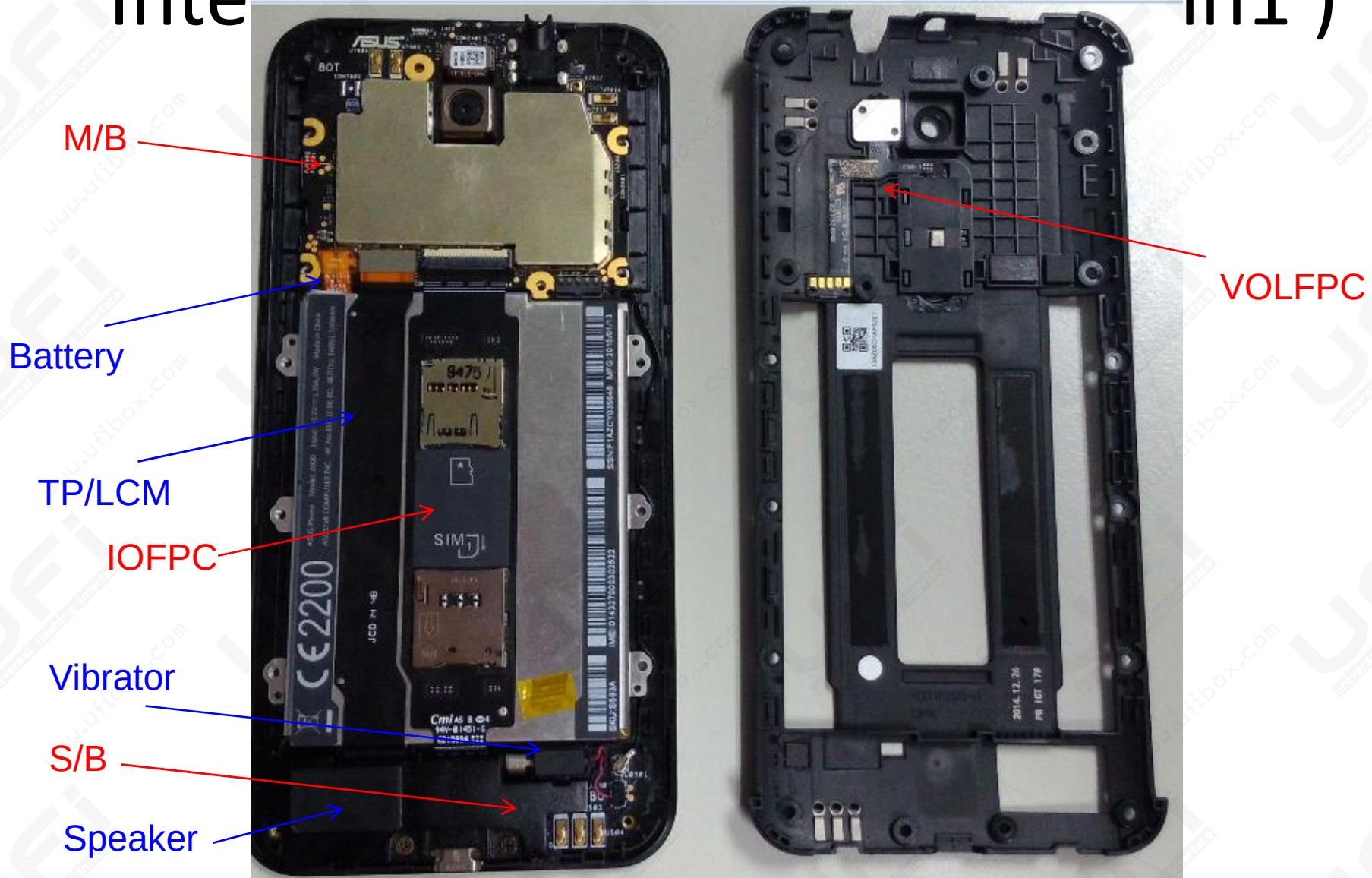
Internal



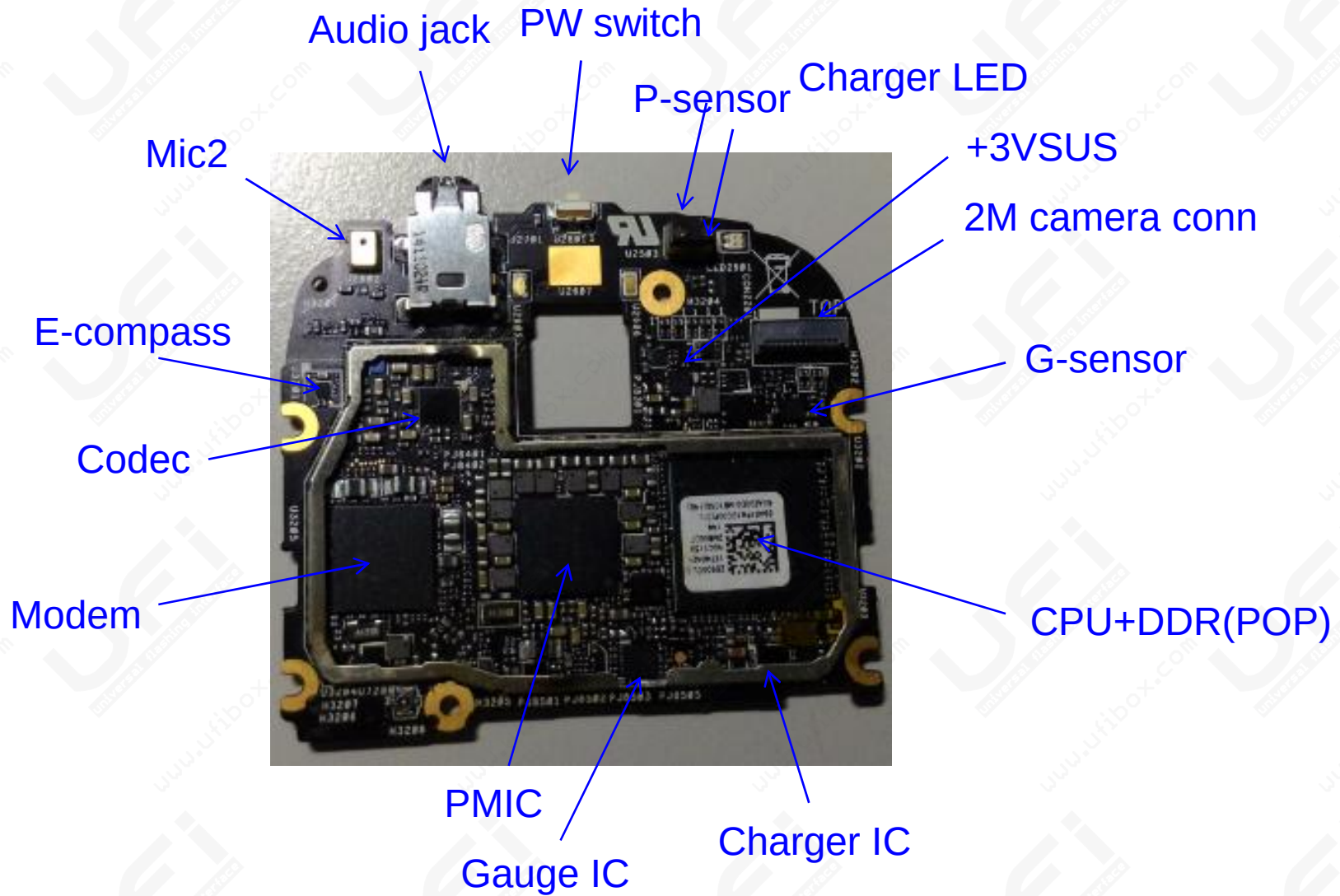
SD conn

SIM conn

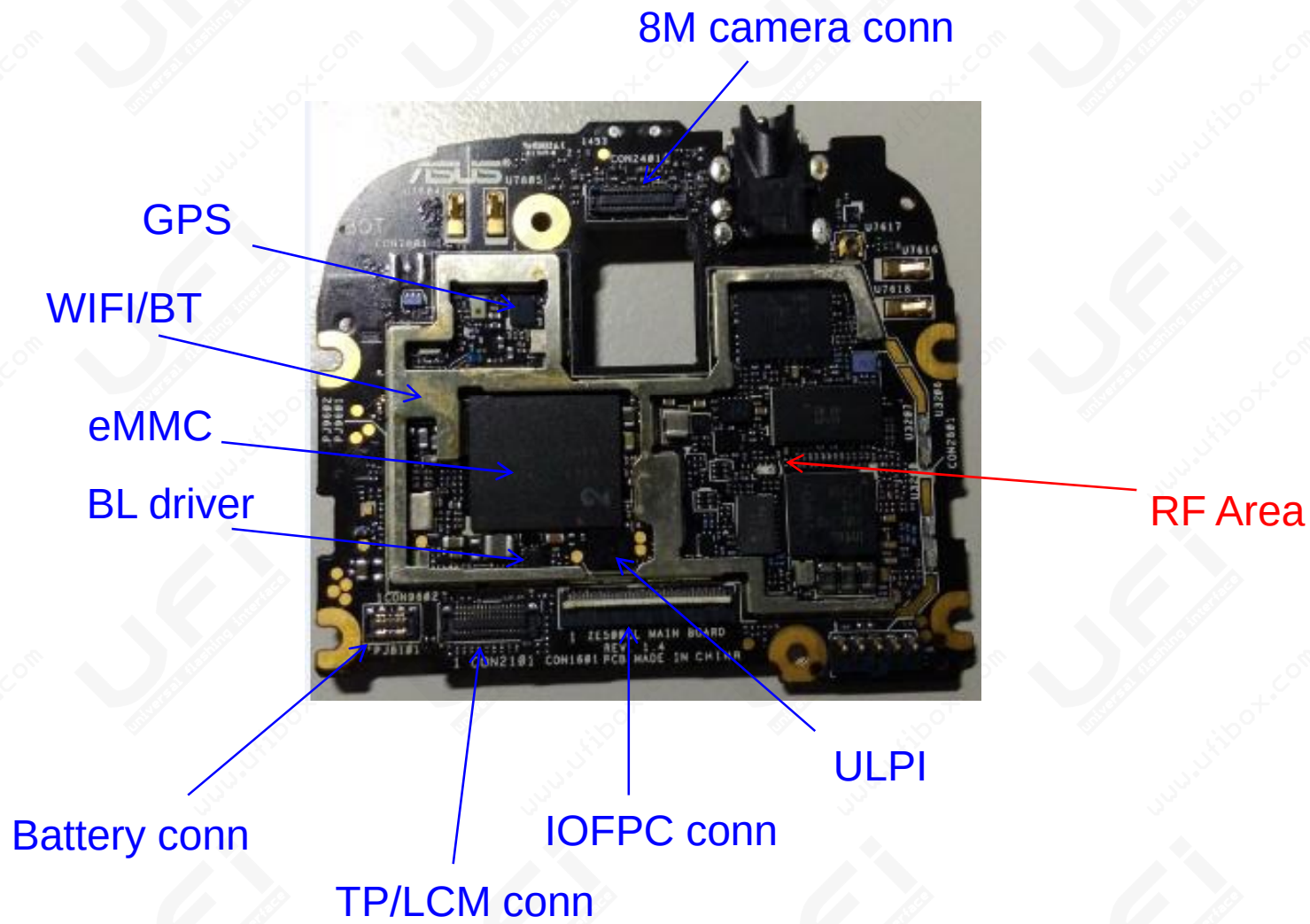
Internal Structure (Main Board)



TOP View

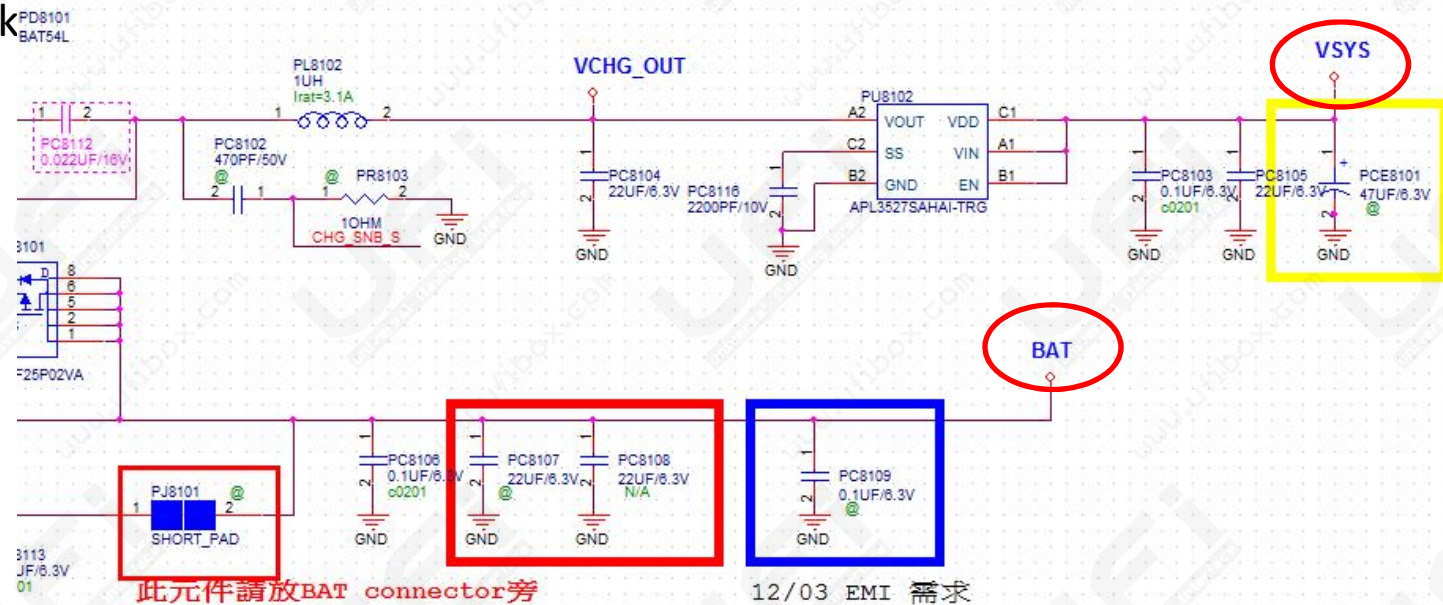


BOT View



Can not Power ON-1

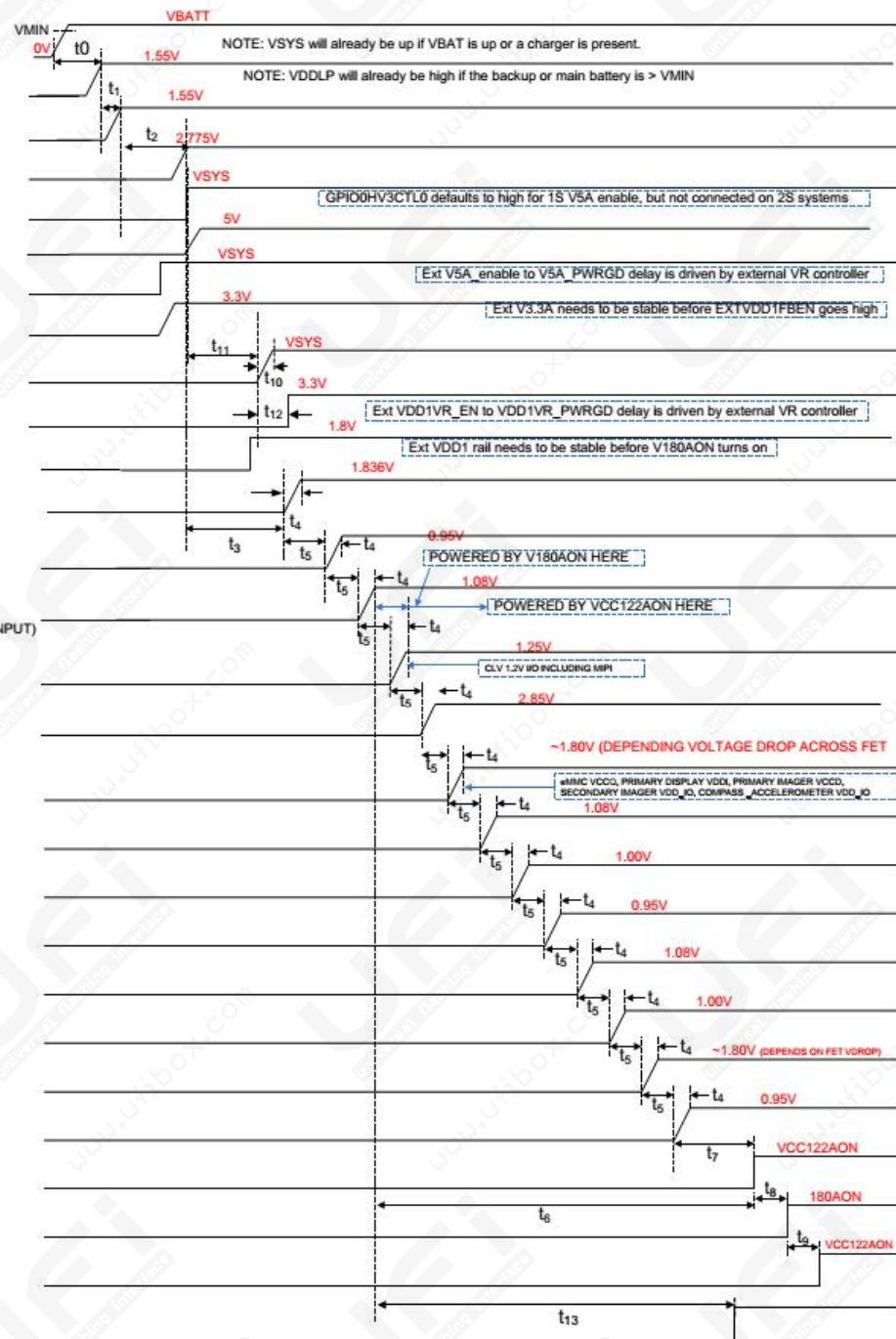
- If Battery insert and don't press power on appears great current, check all components polar and X-Ray status. Check power on sequence of PMIC, see if any power rail short to others.
- When press power key cannot power on, check R2805.1(PMU_ONKEY#) is Low signal.
- When Battery insert, check PC8105.1(VSYS), it should be close to battery voltage, if not, check



PMIC Power On Sequence

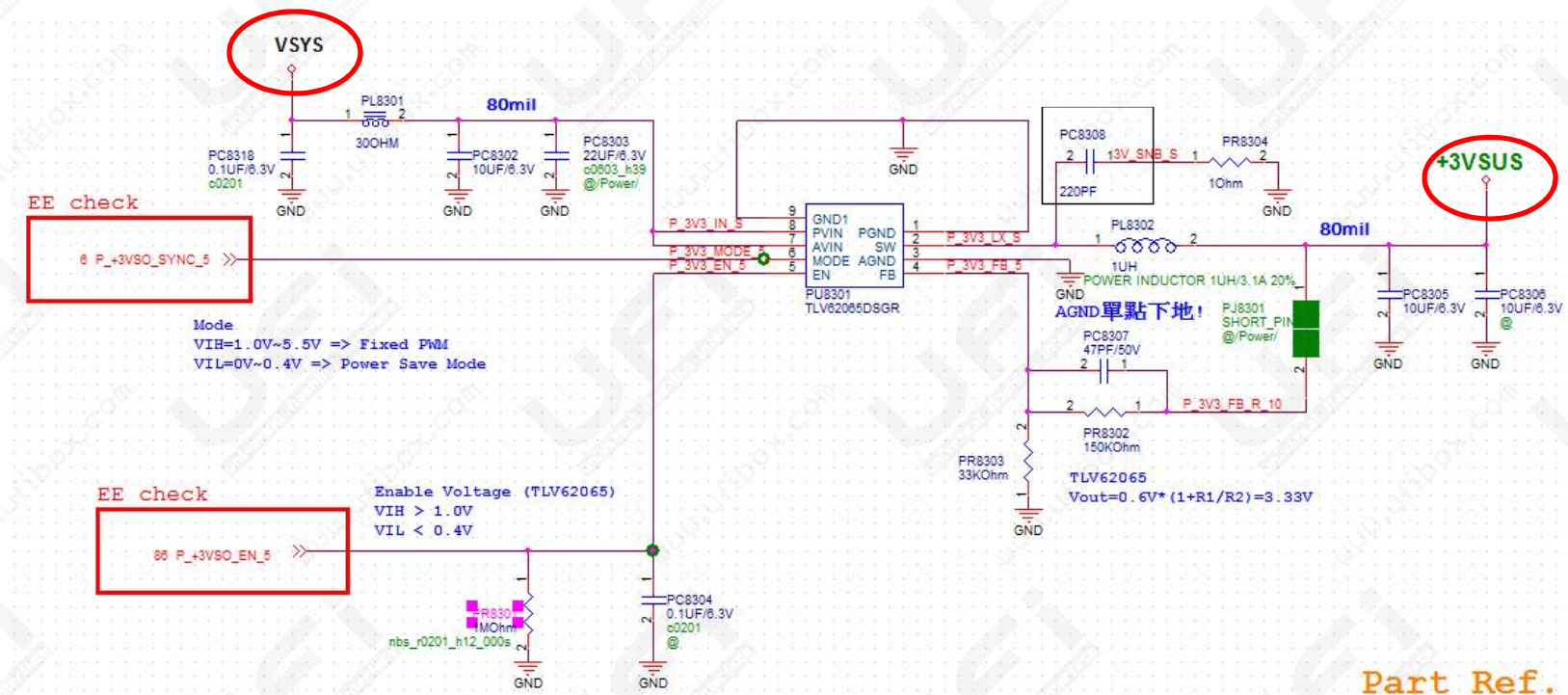
PMIC Power on Sequence
measure pad and correct
voltage value.

- PC8105.1 VSYS
- PC8516.1 VDDL
- PC8517.1 VMSIC
- PC8514.1 VCORE
- PR8301.1 GPIO0HV3CTL0
(enables ext V5A)
Ext V5A
Ext V5A_PWRGD
- PC8305.1 Ext V3.3A
- EXTVDD1FBEN
- EXTVDD1VREN
- Ext VDD1
- PC8417.1 V180AON
- PC8412.1 VNNAON
- PC8520.1 VCC108AON
(LDO W/ FET SWITCHED INPUT)
- PC8415.1 VCC122AON
- PC8529.1 VEMMC1, VEMMC2
- PC8531.1 VCC180AON
(FET SWITCHED)
- PC8523.1 VCC108AS
- PC8522.1 VCCA100AS
- PC8408.1 VNN
- PC8519.1 VCC108
- PC8521.1 VCCA100
VCC180
(FET SWITCHED)
- PC8403.1 VCC
- T0612 PWRGD
- SDWN#
- PR8620.1 RESET#
- BBR8.1 MODEM_RST#



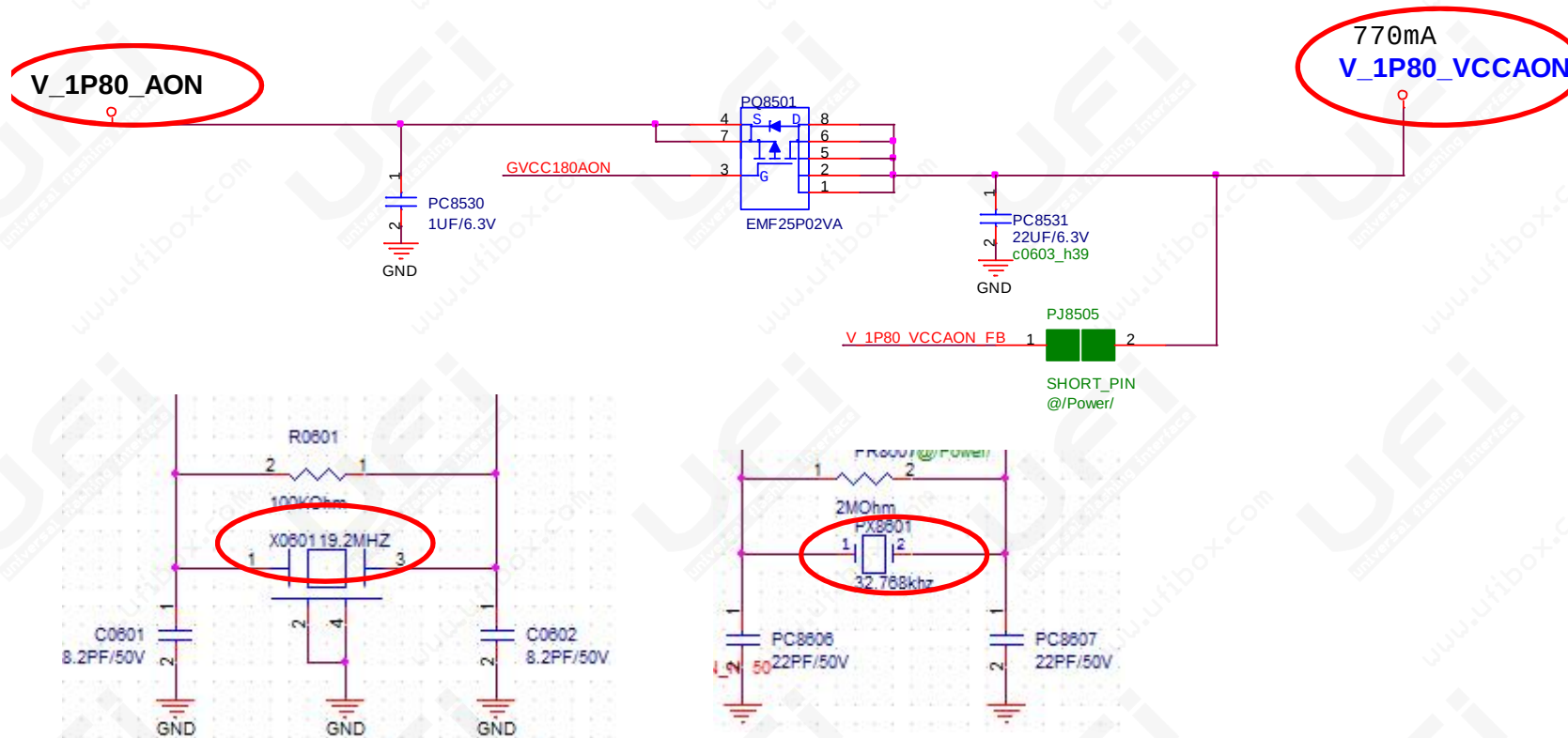
Can not Power ON-2

- EXT 3.3VA is external power rail, +3VSUS.
- Check PU8301 SMT polar and PL8301, PL8302 solder status.
- When Press power key check PR8301.1(P_+3VSO_EN_5) is High, if not, please check PMIC(PU8401).
- When PR8301.1 is high, PC8305.1 should output 3.3V, if not please check PU8301.



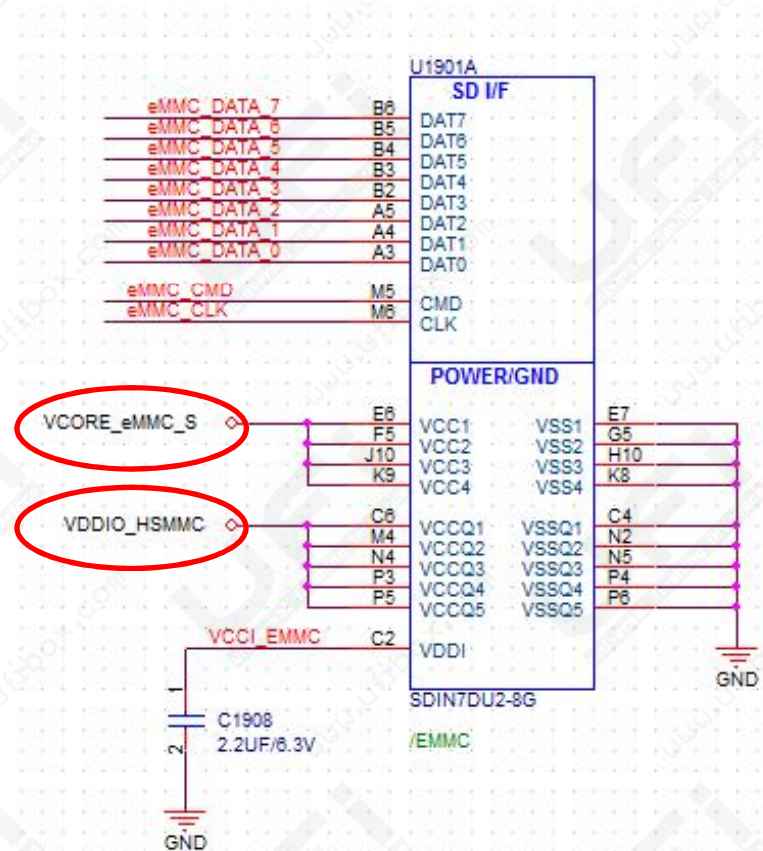
Can not Power ON-3

- If V_1P80_VCCAON is not appears 1.8V, please check polarity and SMT of PQ8501 and PMIC (PU8401).
- Check C0601.1 is 19.2MHz or not. Check PC8606.1 is 32.768kHz or not.



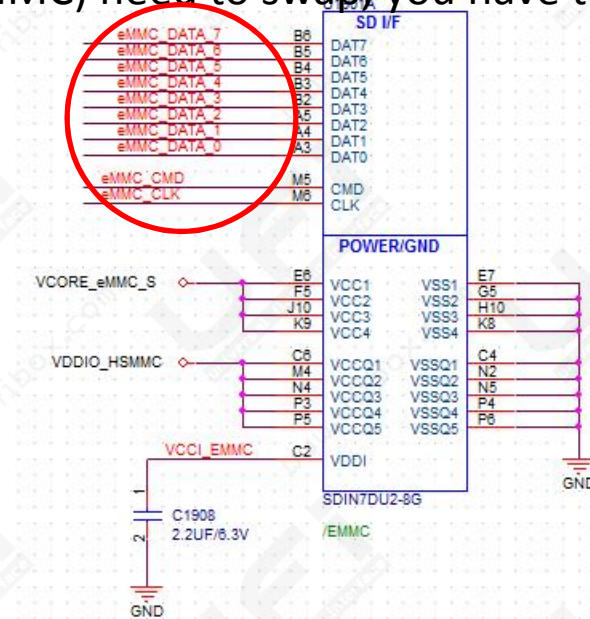
Can not Power ON-4

- If power rails and status of PMIC (PU8401) all fine, then CPU(U1), LPDDR and EMMC (U1901) might have problem.
- Please check power of EMMC, VCORE_eMMC_S(3.3V) and VDDIO_HSMMMC (1.8V)



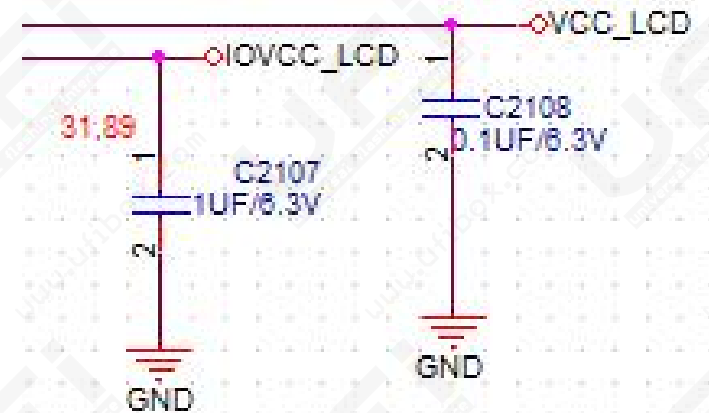
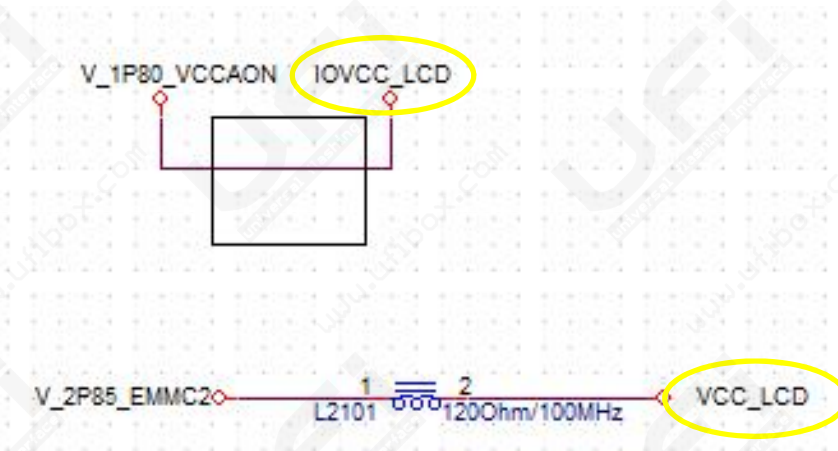
Can not Power ON-5

- Please check signals of EMMC_DATA_0~7, EMMC_CMD and EMMC_CLK.
- If signals EMMC_CMD and EMMC_CLK are fine, then assuming CPU is ok.
- If signals EMMC_DATA_0~7 are fine, then assuming EMMC is ok.
- If all signals all fine, then swap LPDDR.
- Due to ZE500CL MP all use security CPU, It bundle with EMMC, therefore if any three of them (CPU, LPDDR and EMMC) need to swap, you have to swap three of them.



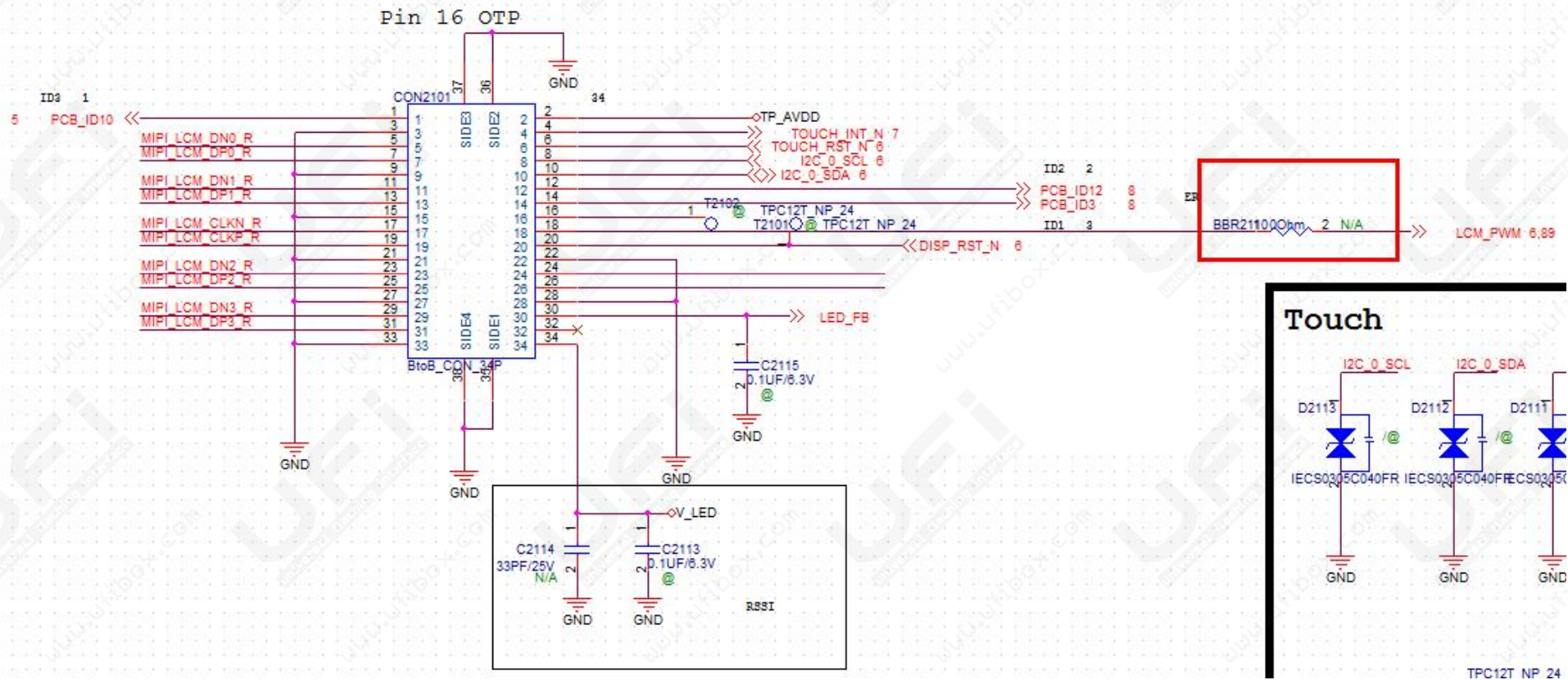
LCM No Function-1

- Check LCM FPC assembly and CON2101 SMT solder status.
- Check if C2108.1 is 2.85V or C2107.1 is 1.8V or not.
- Check R2101~R2110 SMT solder status.



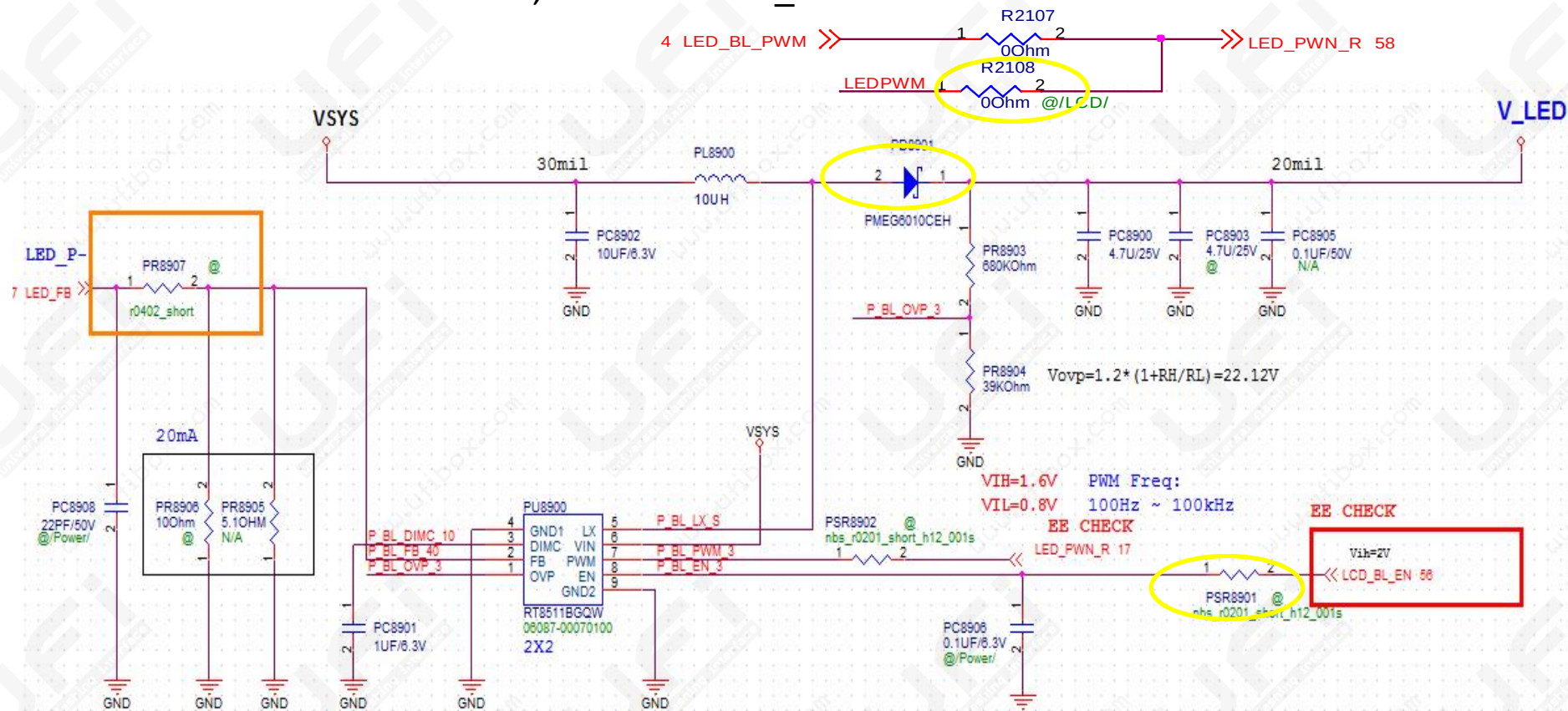
LCM No Function-2

- Check MIPI_LCM_CLKP_R, MIPI_LCM_CLKN_R, MIPI_LCM_DP(0:3)_R and MIPI_LCM_DN(0:3)_R Signal.



Backlight No Function

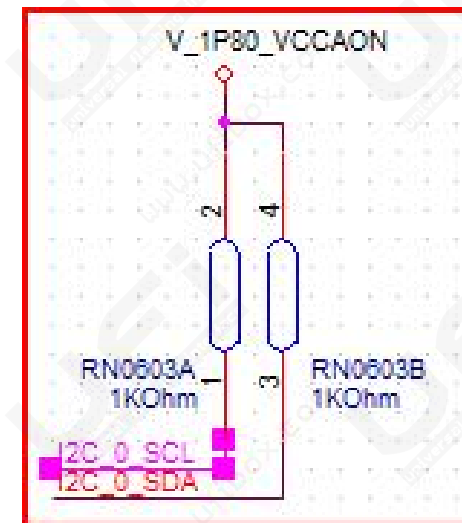
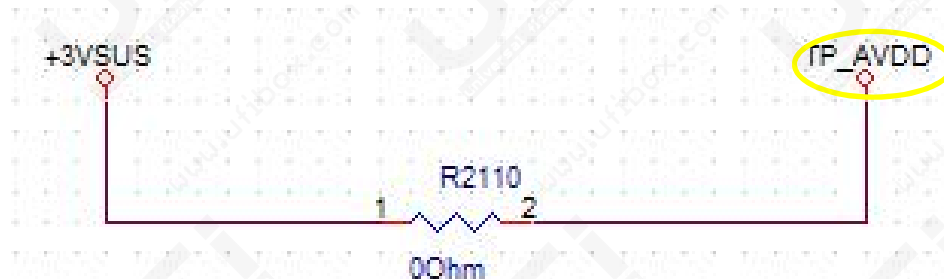
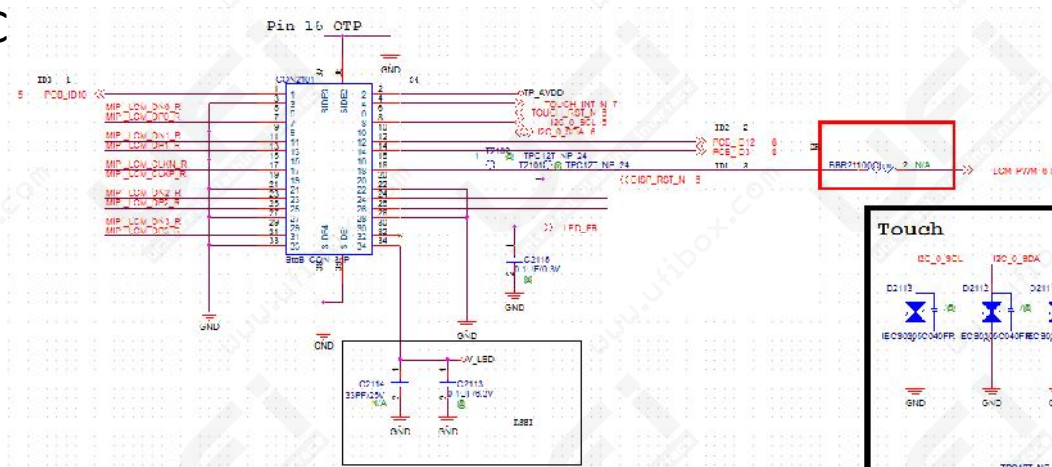
- Check LCM FPC assembly and CON2101 SMT solder status.
- Check PU8900 R2108 and PD8901 SMT polar and solder status.
- Check PC8906.1 is 3.3V, if not change PMIC(PU8401).
- Check BBR2110 SMT status.
- Check PD8901.2 is VSYS, PD8901.1 is V_LED.



Touch No Function

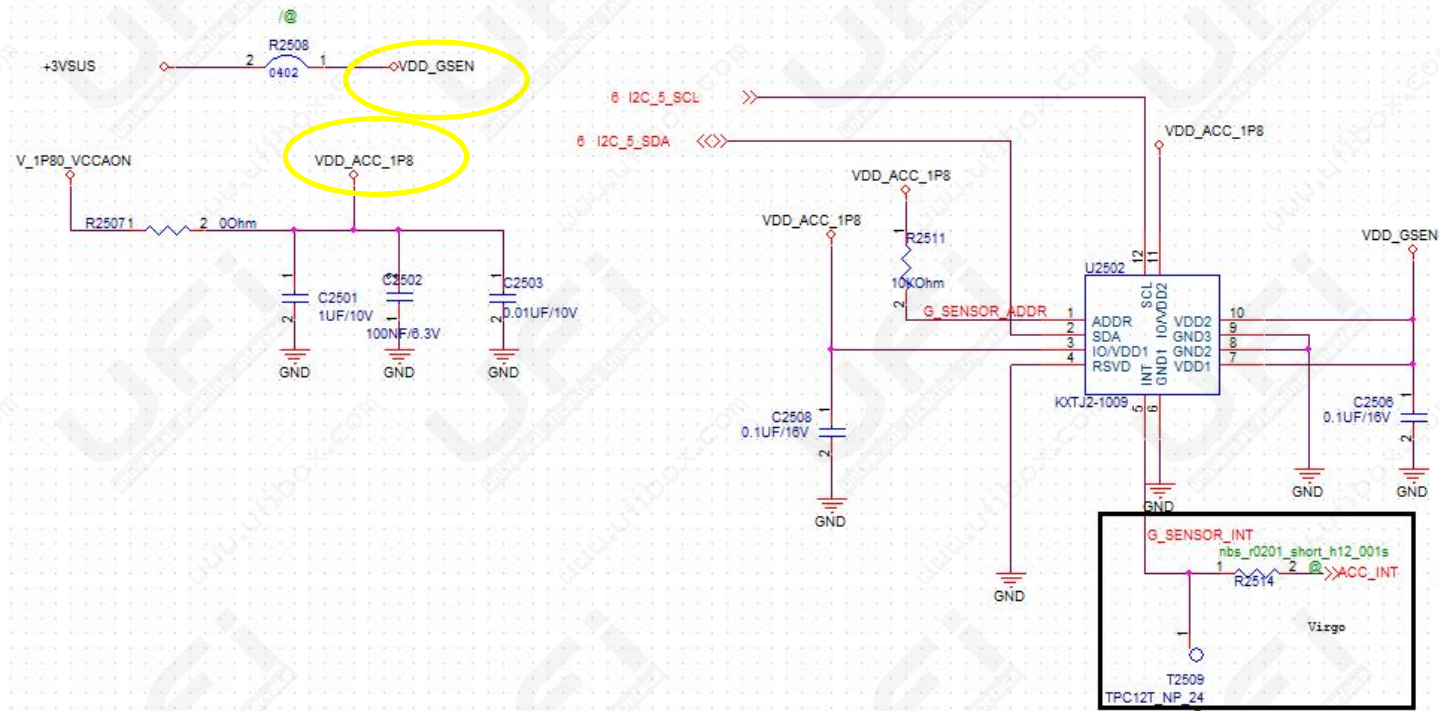
- Check TP assembly, LCM FPC, and CON2101 SMT solder status.
- Check if R2110.2 is 3.3V or not.
- C

signal.



G-Sensor No Function

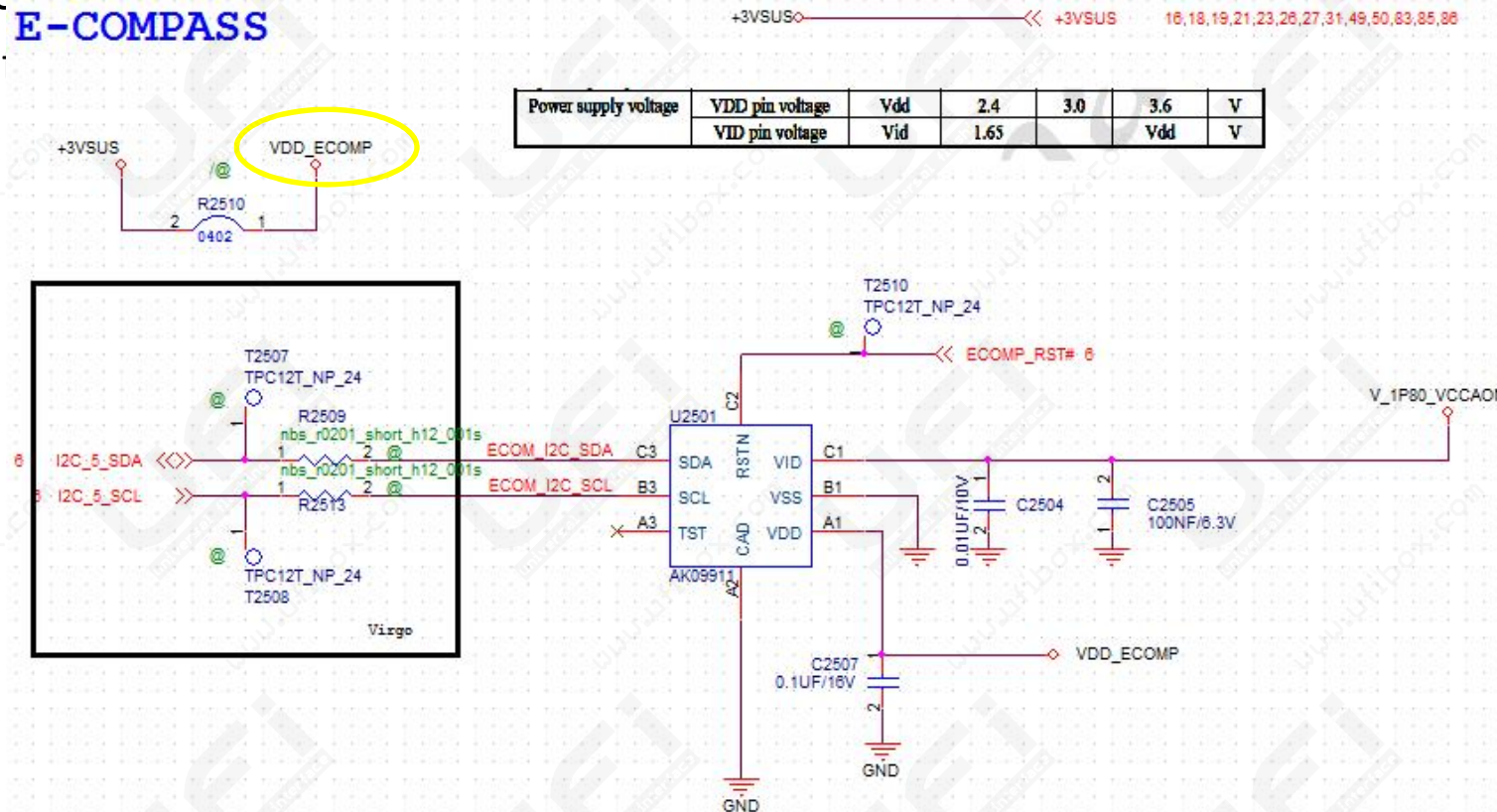
- Check G-sensor IC(U2502) SMT polar and solder status.
- Check if C2501.1 is 1.8V or R2508.1 is 3.3V or not.
- Check I2C_5_SDA and I2C_5_SCL is 1.8V and SDA/SCL signal.
- If above are all normal, change U2502 to verify.



E-Compass No Function

- Check E-Compass IC(U2501) SMT polar and solder status.
- Check if C2507.1 is 3.3V or C2505.2 is 1.8V or not.
- Check I2C 5 SDA and I2C 5 SCL is 1.8V and SDA/SCL signal

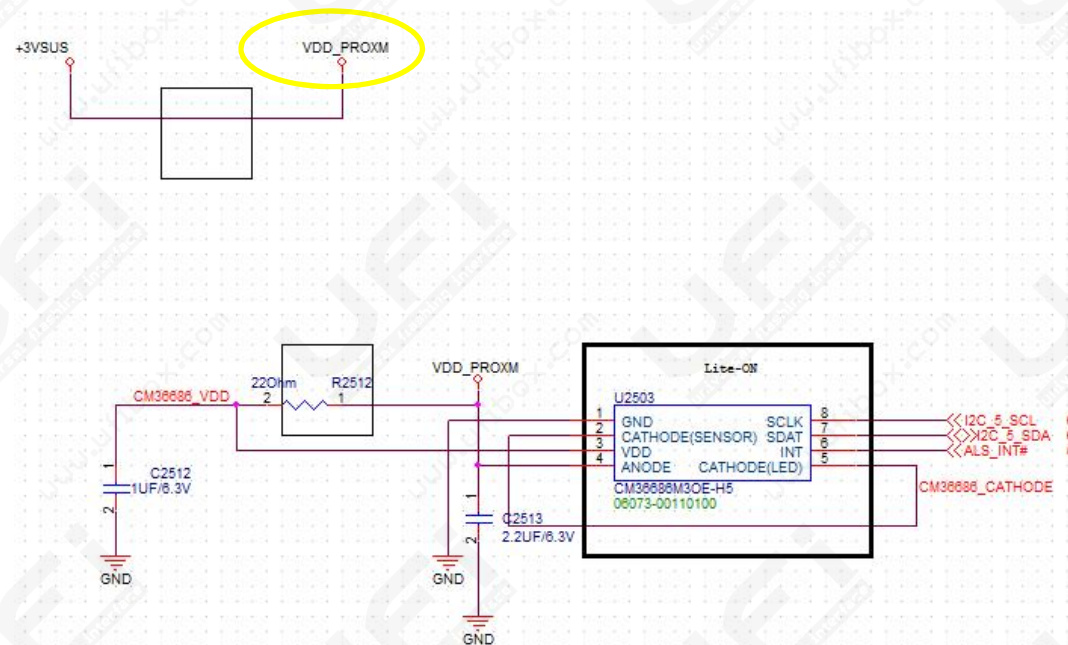
E-COMPASS



Proximity / Light Sensor No Function

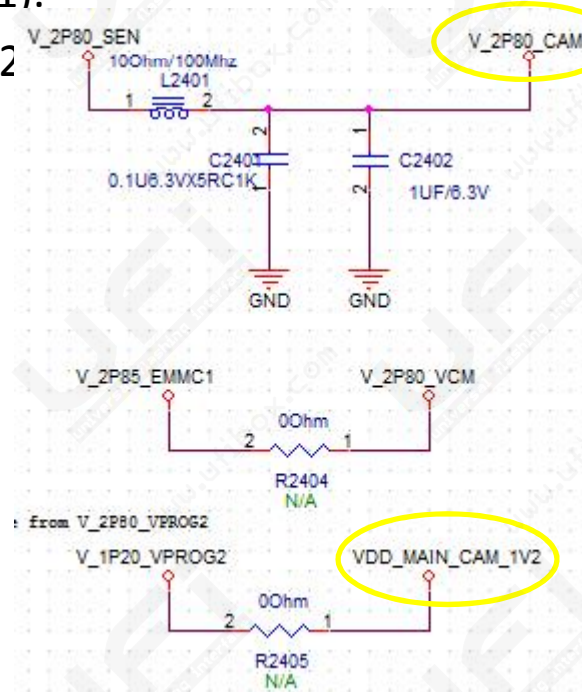
- Check Proximity/Light sensor IC(U2503) SMT polar and solder status.
- Check if C2513.1 is 3.3V or not.
- Check I2C_5_SDA and I2C_5_SCL is 1.8V and SDA/SCL signal.
- If above are all normal, change U2503 to verify.

Ambient Light + Proximity Sensor



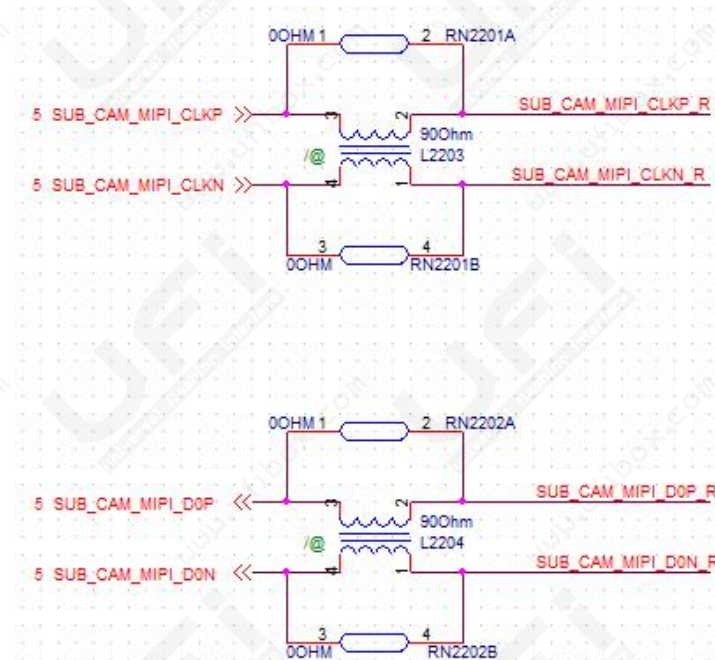
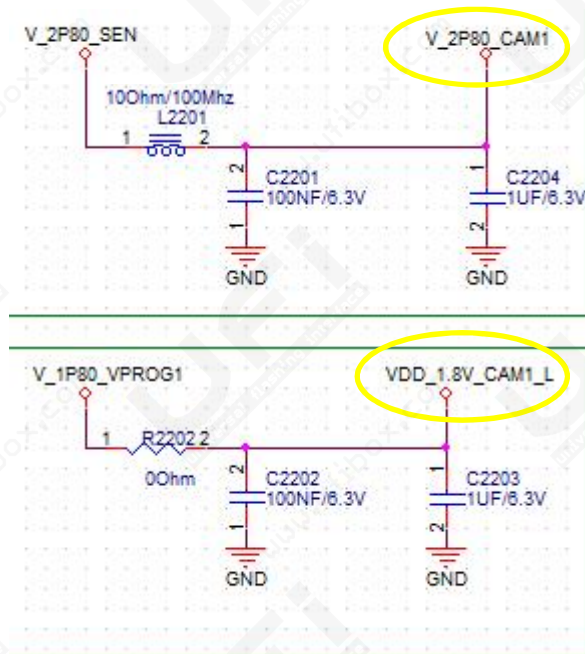
8M Camera No Function

- Check 8M assembly or change new 8M Camera module to verify again.
- Check CON2401 SMT solder status.
- Check Filter L2402~L2406 SMT solder status.
- Check C2402.1 is 2.8V, if not change PMIC(PU8401) and C2411.1 is 1.2V, if not check LDO(PU9421).
- Check I2C_4_SDA and I2C_4_SCL signal.



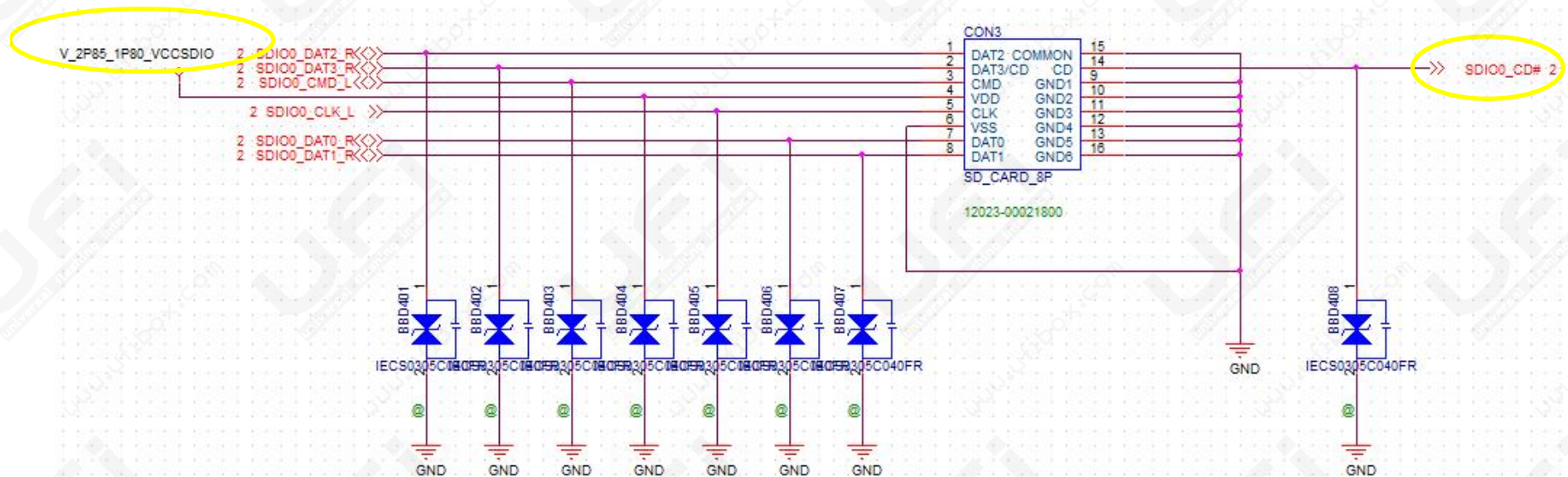
2M Camera No Function

- Check 2M assembly or change new 2M Camera module to verify again.
- Check CON2201 SMT solder status.
- Check RN2201 and RN2202 SMT solder status.
- Check C2203.1 is 1.8V, if not change PMIC(PU8401) and C2204.1 is 2.8V, if not check LDO(PU9421) .
- Check I2C_4_SDA and I2C_4_SCL is 1.8V and SDA/SCL signal.



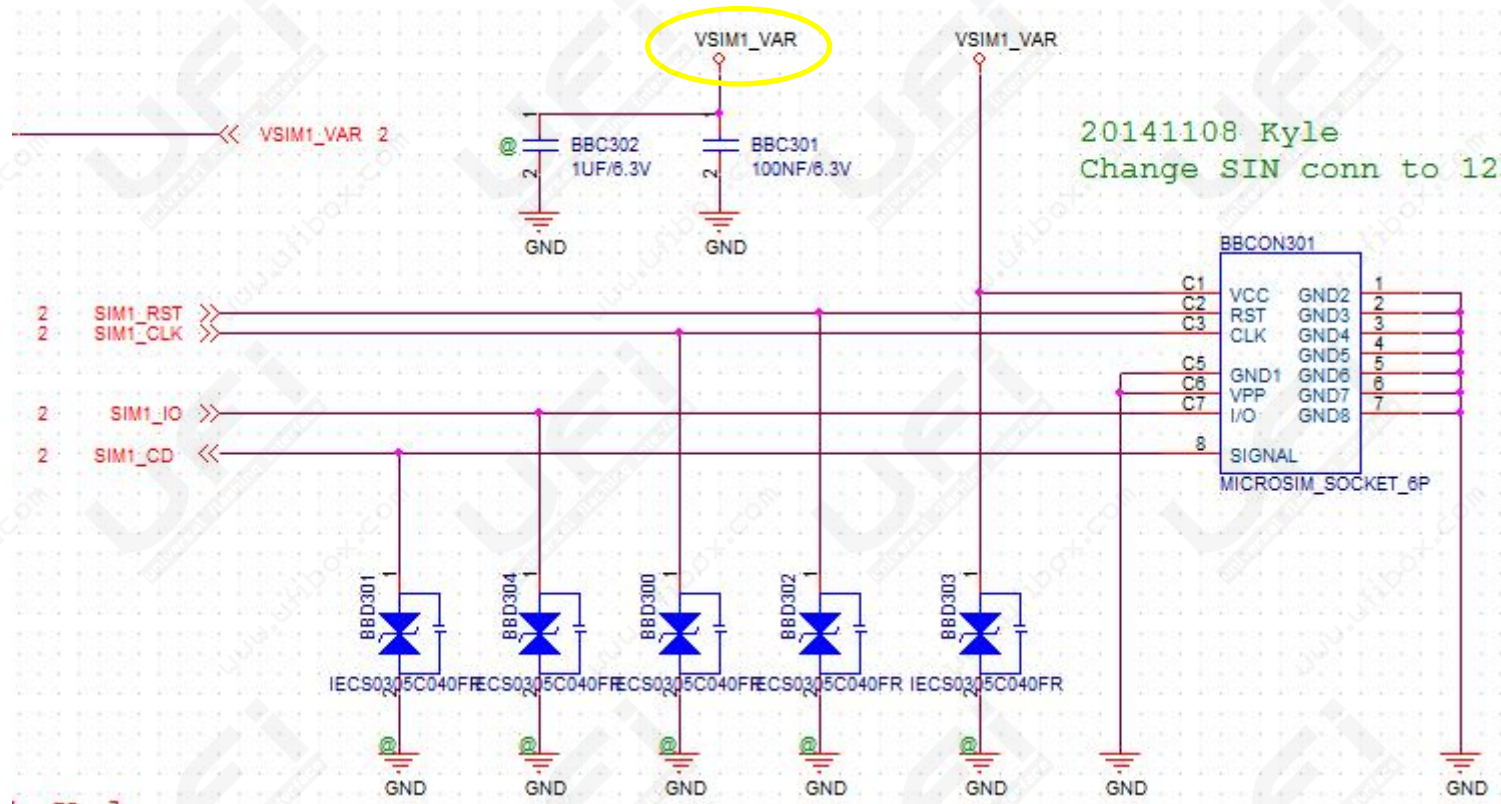
SD Card No Function(IOFPC)

- Verify the problem is occurred on M/B or IOFPC.
- Check CON3 Connector SMT solder status.
- Check V_2P85_1P80_VCCSDIO voltage is 2.85V, if not 2.85V change PMIC(PU8401).
- Check SDIO0_CD# whether Low signal when SD card insert.
- Check SDIO0_DAT(0:3)_R, SDIO0_CMD_L and SDIO0_CLK_L signal.



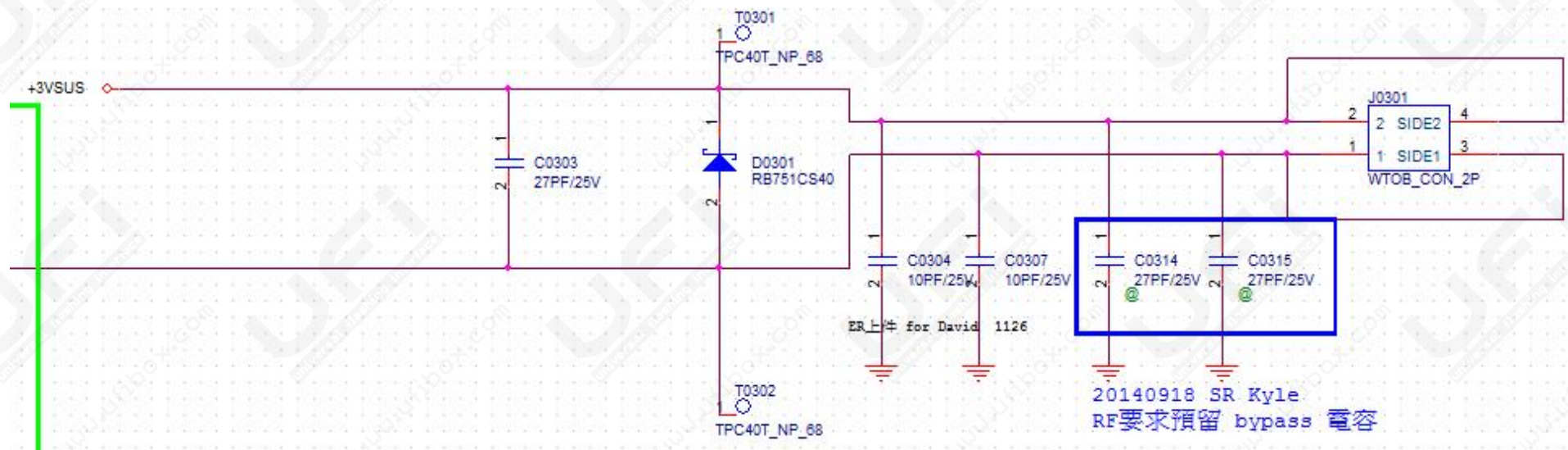
SIM No Function(IOFPC)

- Verify the problem is occurred on M/B or IOFPC.
- Check BBCON401 Connector SMT solder status.
- Check BBR5302.1(VSD2_1V8) is 1.8V, if not check BBL5302 SMT status or Change Modem IC(U5101).
- Check BBR302.1 is 1.8V, BBD301.1 is 1.8V when SIM Card plug in.



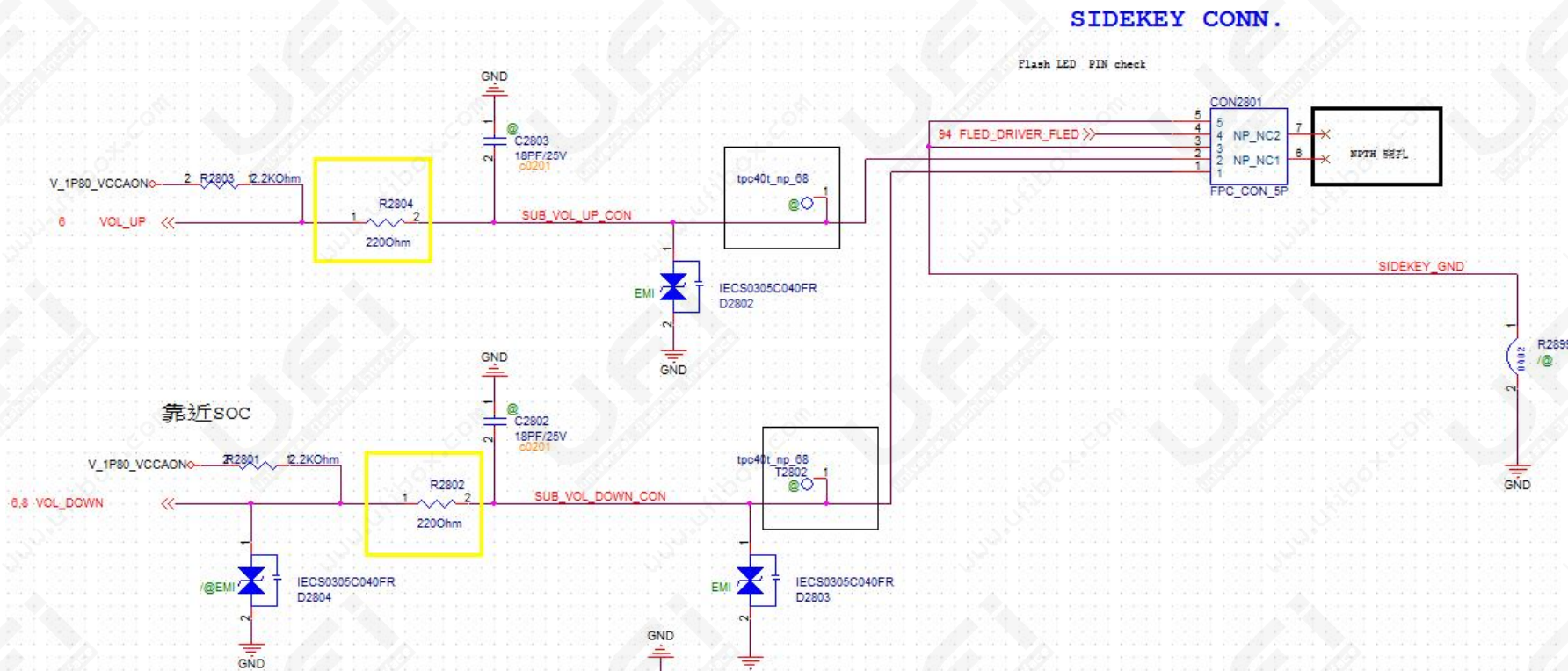
Vibrator No Function(S/B)

- Verify the problem is occurred on M/B, IOFPC or S/B.
- Check J0301 Connector SMT solder status.
- Check C0304.1 voltage whether 3.3V or not, if not, check R1702 component or solder status.
- Check VIBE_PWM_VB whether Low signal when Vib motion.



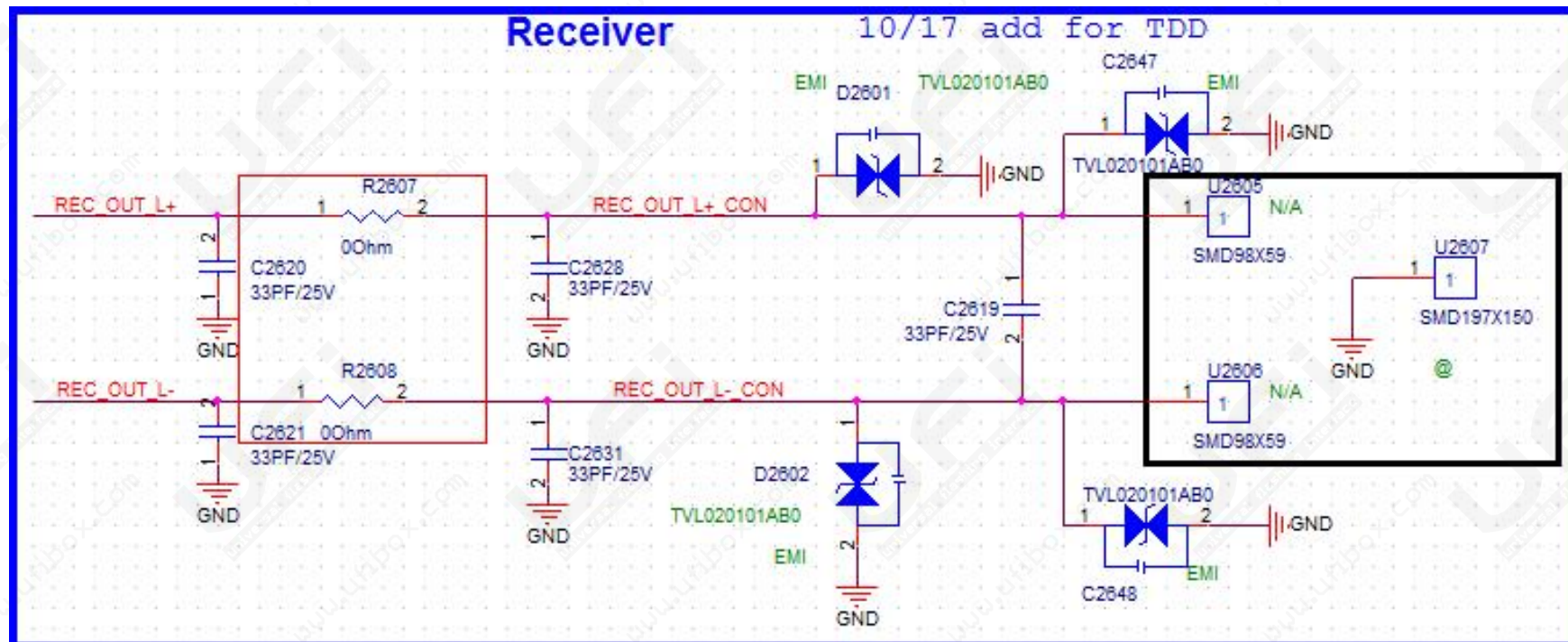
VOL Key No Function(VOLFPC)

- Verify the problem is occurred on M/B or VOLFPC
- Check CON2801 Connector SMT solder status.
- When press Vol Up key, check R2804.1(VOL_UP) is Low and D2802 whether short.
- When press Vol Down key, check R2802.1(VOL_DOWN) is Low and D2803 whether short.



Receiver No Function

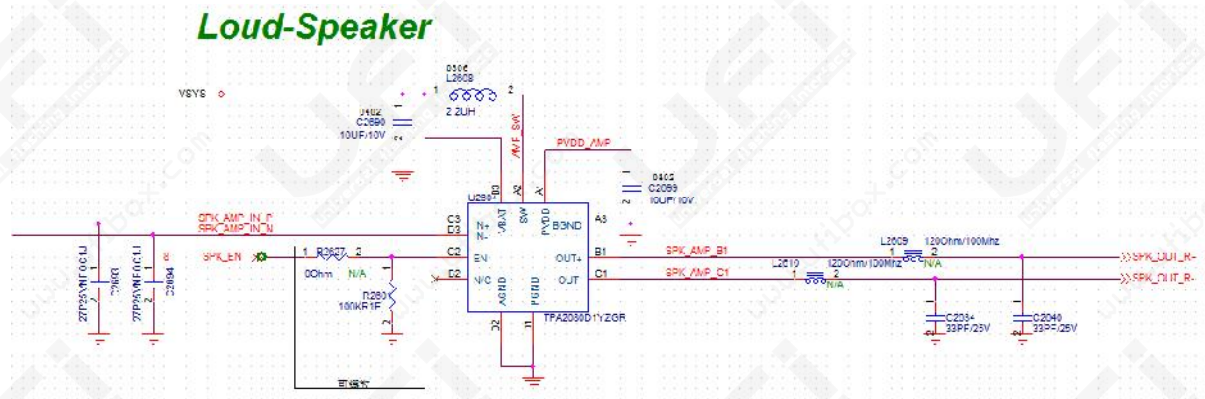
- Check Receiver component contact MB status or change new Receiver to verify.
- Check R2606 and R2607 SMT solder status.



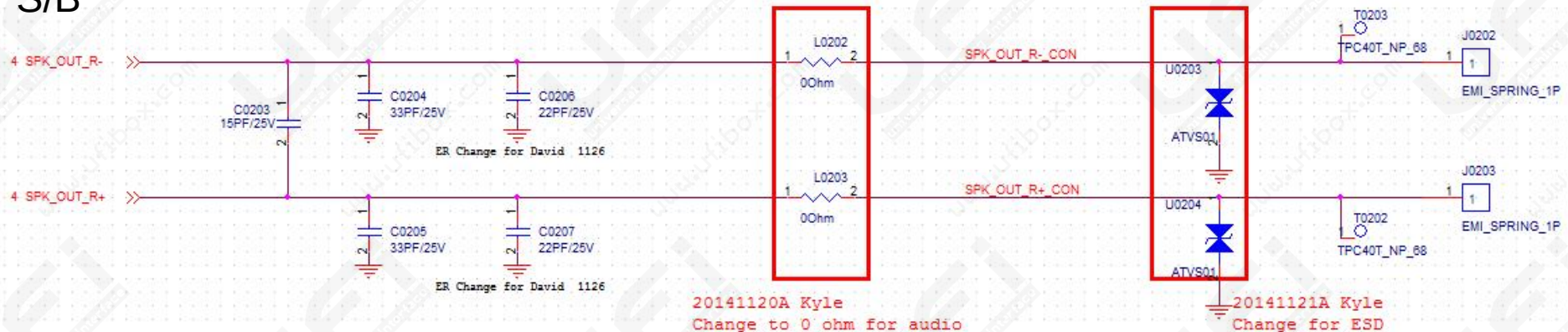
Speaker No Function(S/B)

- Verify the problem has occurred on M/B, or FPC or S/B
- Check Speaker component contact S/B status or change new Speaker to verify.
- Check U2604 SMT polar and solder status.
- Check C2692, C2700, L2609, L2610, **L0202 and L0203** SMT solder status.

M/B

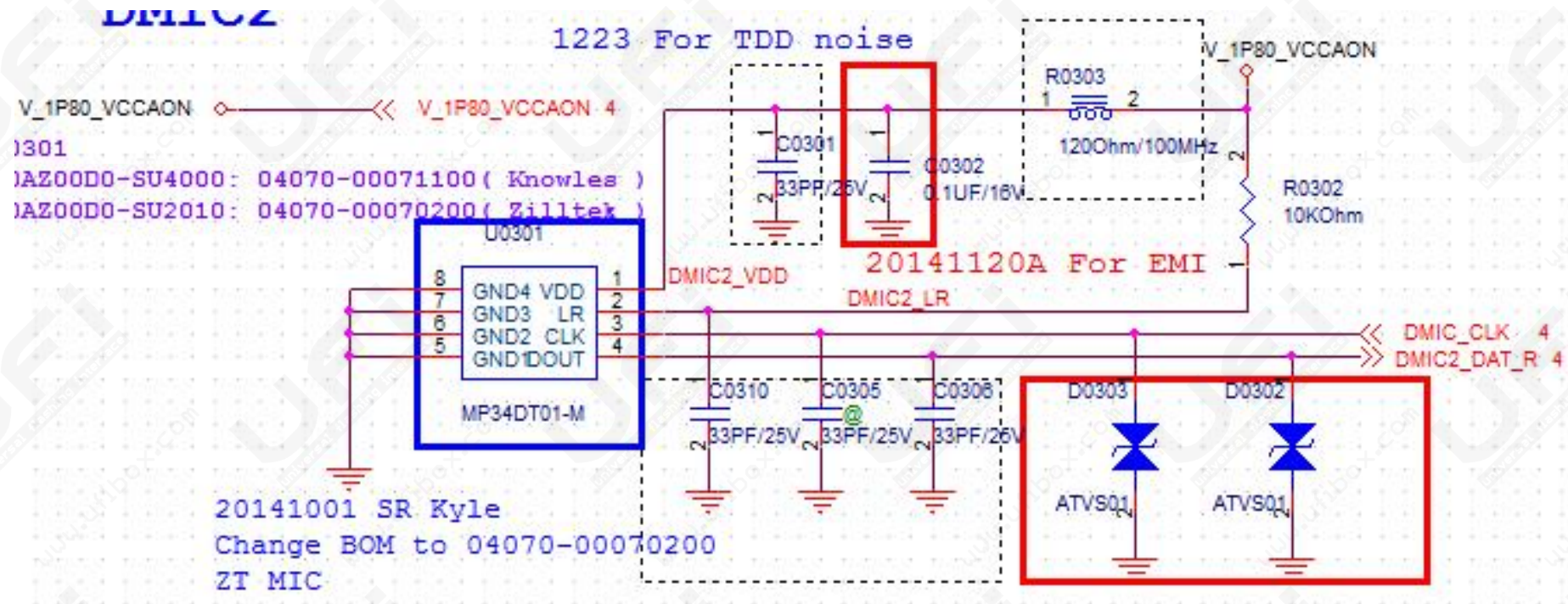


S/B



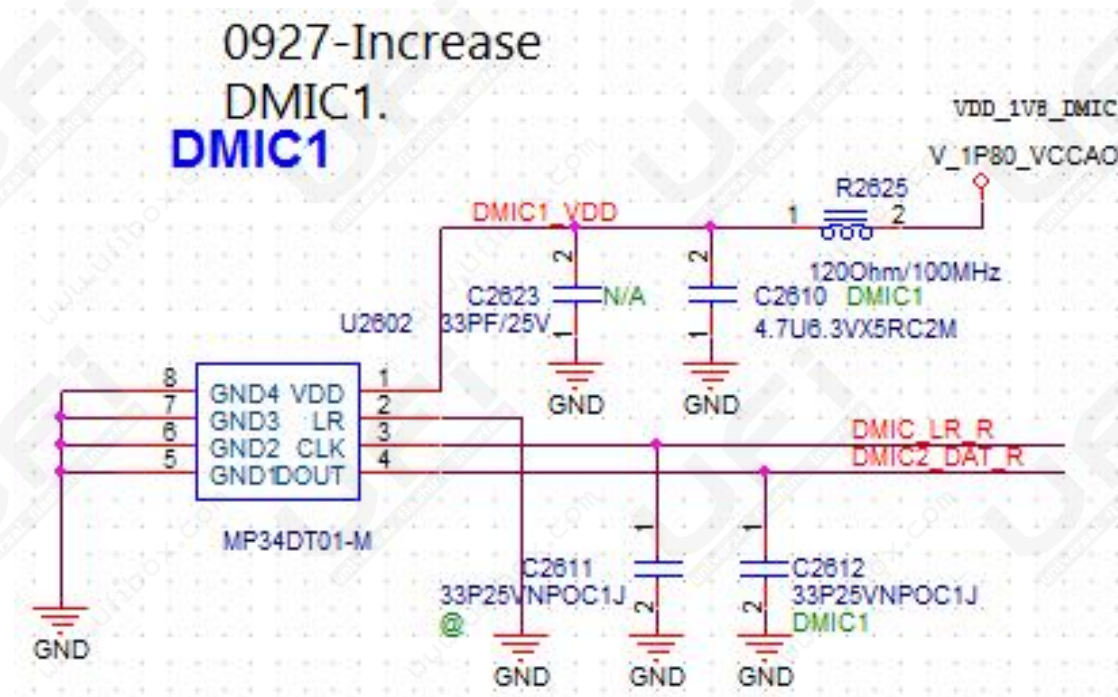
Main Mic No Function(S/B)

- Verify the problem is occurred on M/B, IOFPC or S/B.
- Check U0301 SMT polar and solder status.
- Check C0302.1 is 1.8V and check DMIC_CLK and DMIC2_DAT_R signal.



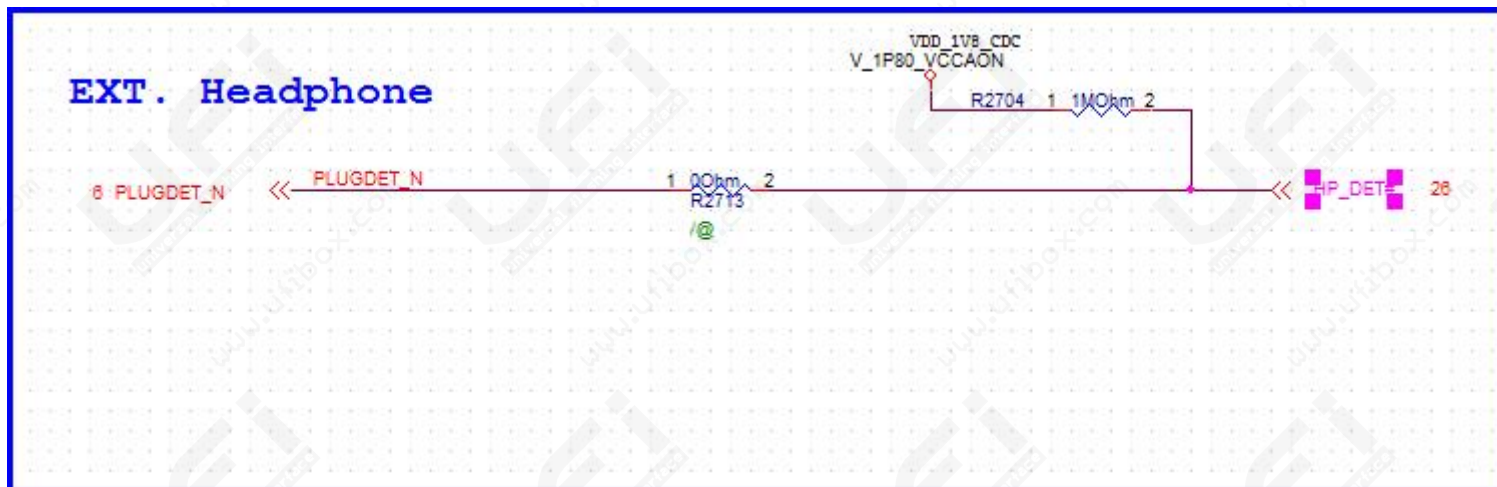
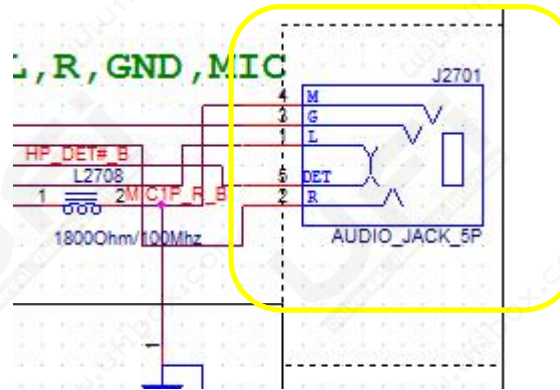
2nd Mic No Function(M/B)

- Check U2602 SMT polar and solder status.
- Check C2610.1 is 1.8V and check DMIC_LR_R and DMIC2_DAT_R signal.



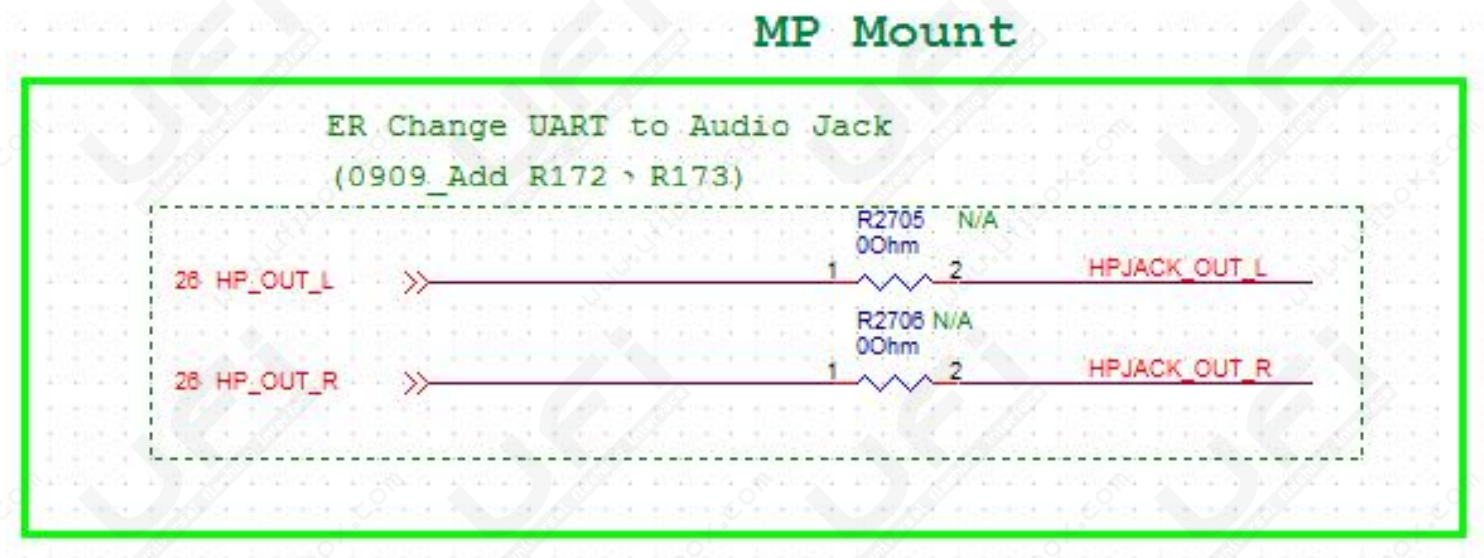
Headset No Function - 1

- Check J2701 SMT solder status and L2707 SMT solder status.
- Check C2646.1 is Low when plug in Headset, if not, check R2615, R2704, L2707 SMT status.



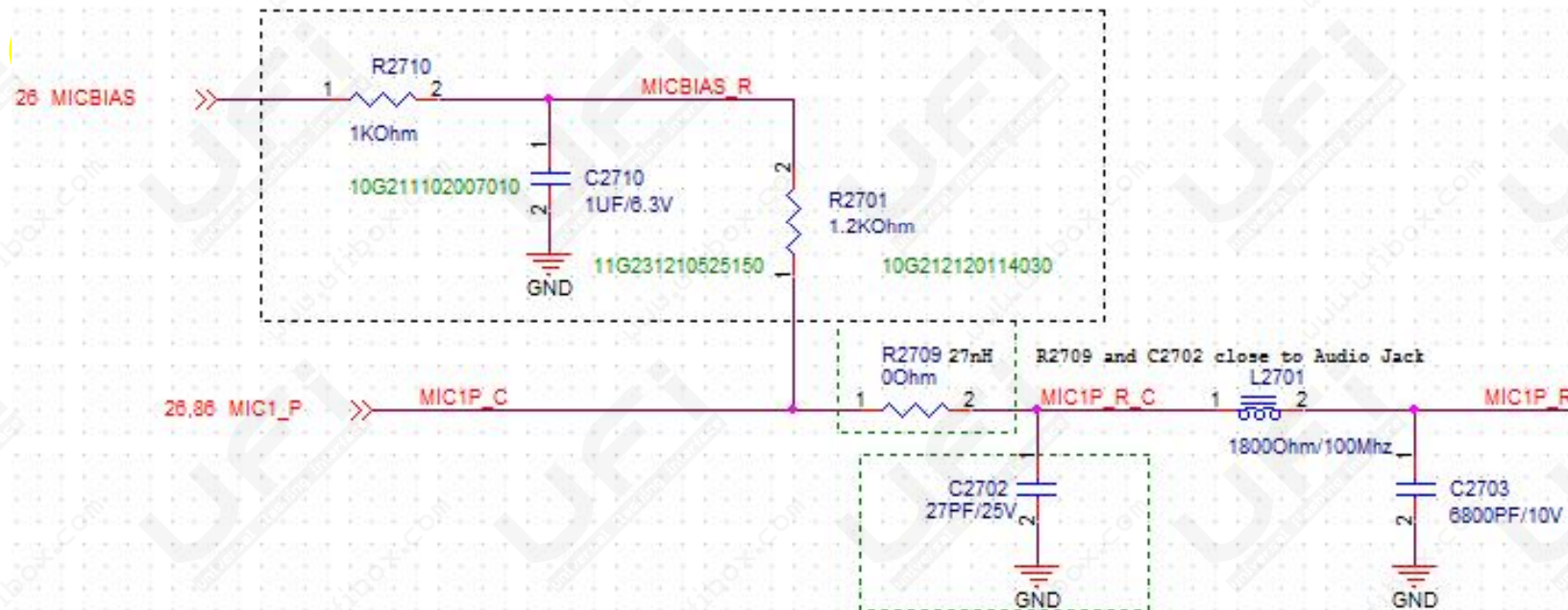
Headset No Function – 2 (L/R)

- Check headset R and L route components, include R2705~R2708 and L2703, L2704, L2706 and L2709 SMT solder status.



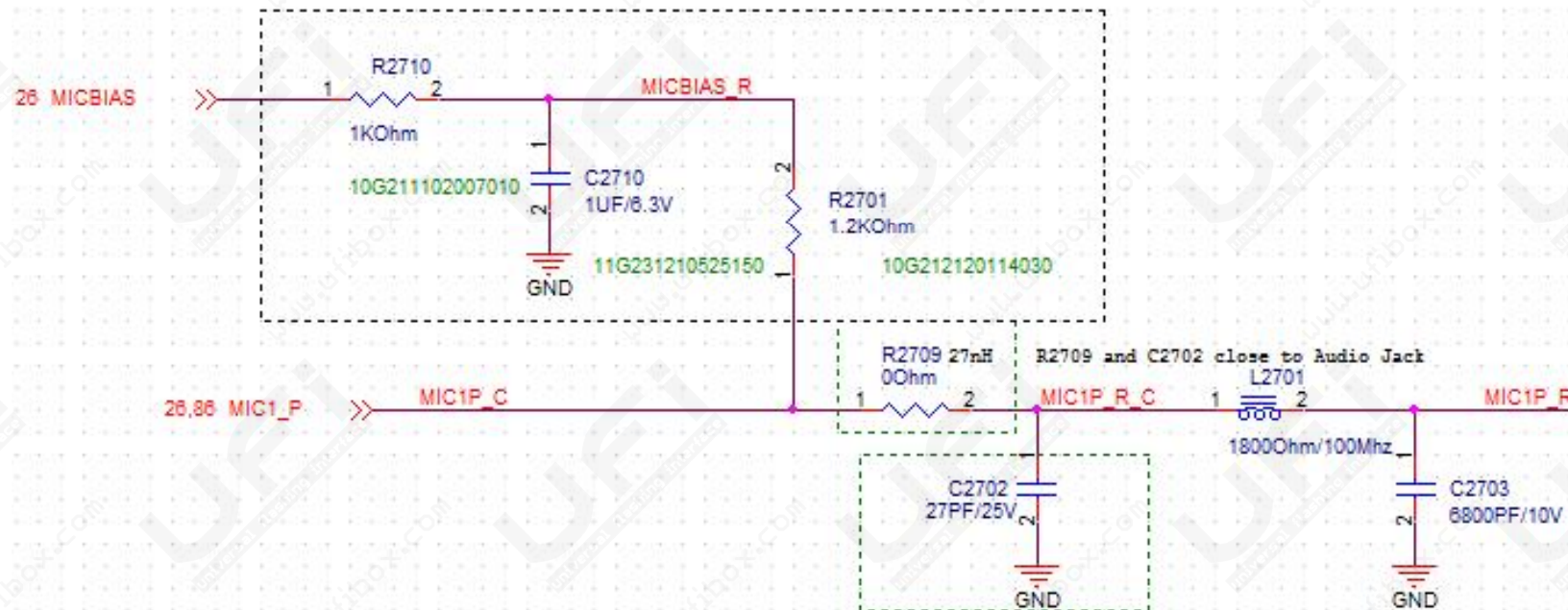
Headset No Function – 3 (Mic)

- Check MICBIAS R2710.1 is 2.95V or not, if not check U2601.
- Check MIC1P_C is like normal M/B when plug in Headset.



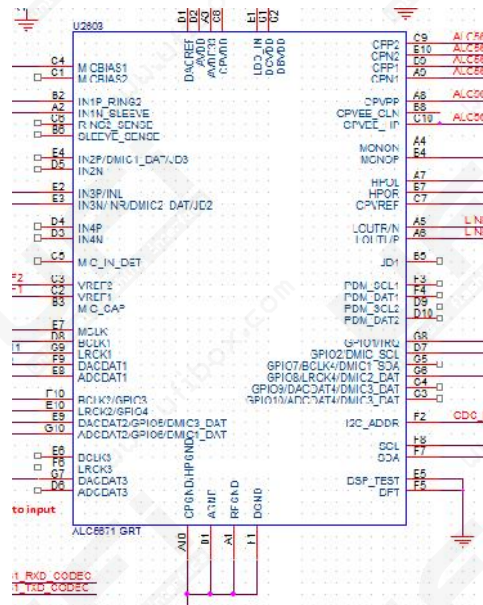
Headset No Function – 4 (Hook Det)

- Check MICBIAS R2710.1 is 2.95V or not, if not check U2601.
- Check MIC1P_C is like normal M/B when plug in Headset.



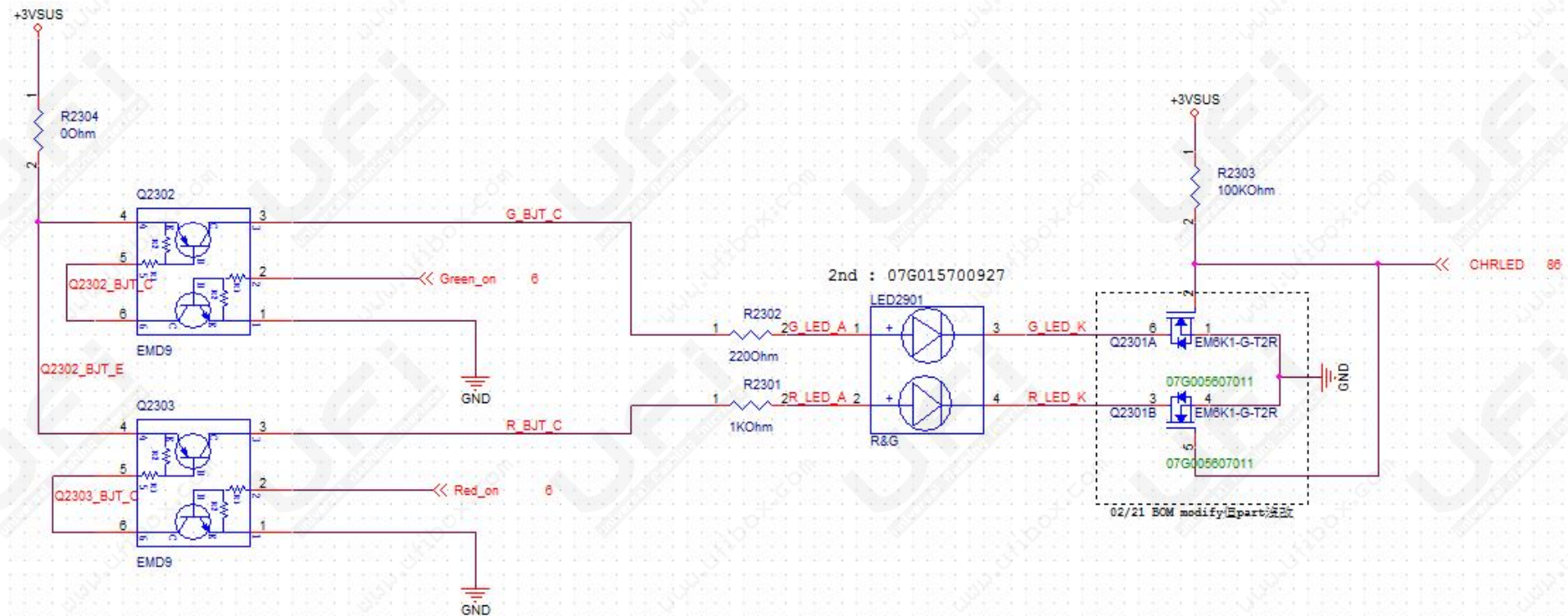
Check Audio Codec

- Check polarity and x-ray of audio codec U2603.
- Check I2C_1_SCL and I2C_1_SDA of audio codec.
- Check power of audio codec.
- If recording fail, please check CLV_I2S3_CLK, CLV_I2S3_FS, CLV_I2S3_RXD, OSC_CLK_OUT_0 and DACREF_CDC. If signals ok, swap CPU.
- If playback fail, please check CLV_I2S3_CLK, CLV_I2S3_FS, CLV_I2S3_TXD, OSC_CLK_OUT_0 and DACREF_CDC. If signals ok, swap audio codec.



Charger LED No Function

- Check LEDZ901, Q2302 and Q2303 SMT polar and solder status.

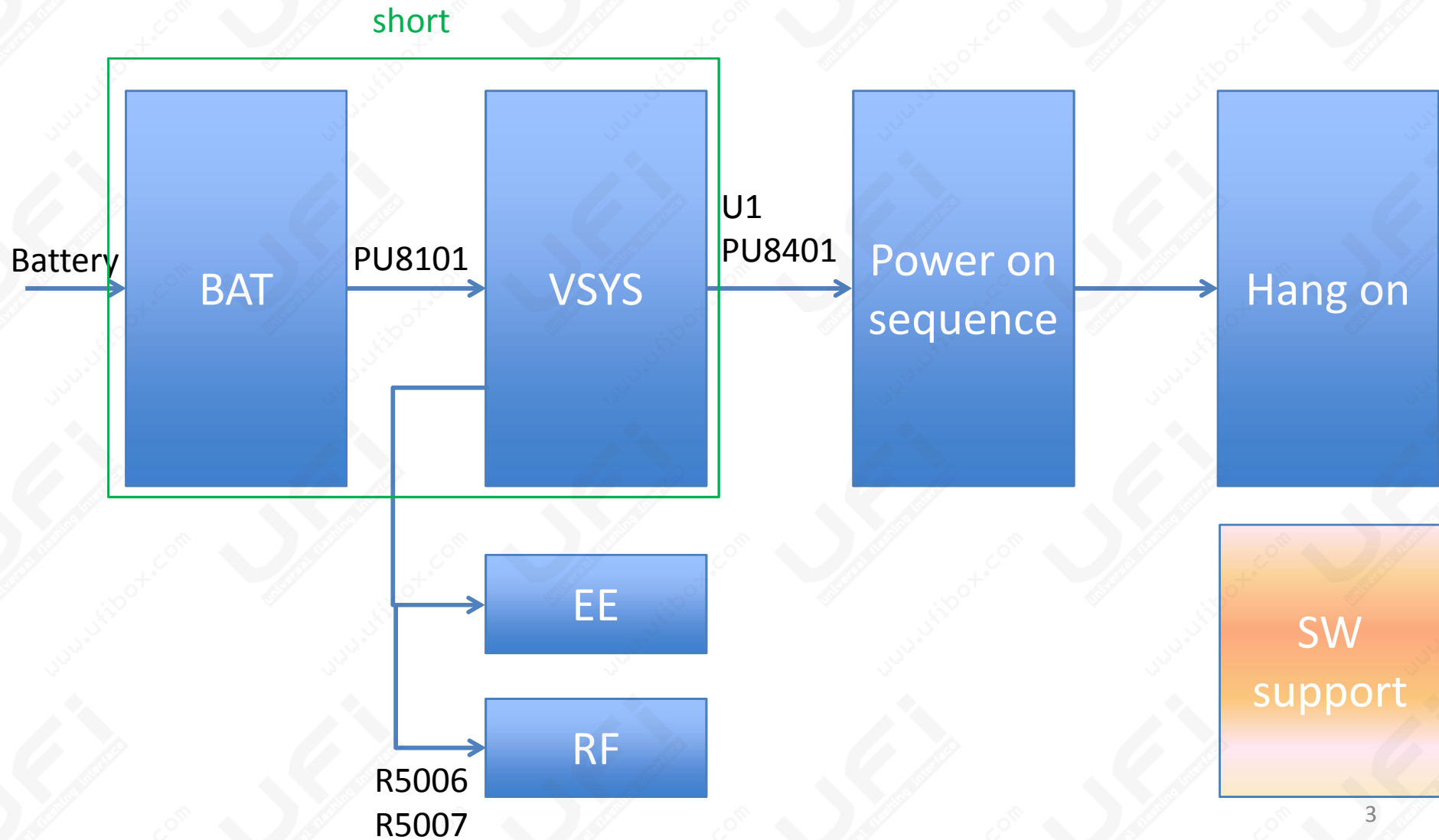


ZE500CL EE

大綱

- 不開機
- 開機無顯
- MIC測試失敗
- 白屏
- G sensor測試失敗
- Touch測試失敗
- 無法震動
- 無法連接USB

開機階段



不開機 (1): BAT (**PC8108.1**)無電壓且非短路到地

檢查 CON9602 是否空焊

不開機 (1): VSYS(**PCE8101.1**)無電壓
且非短路到地

PU8101 不良

不開機 (2): VSYS (PCE8101.1)對地短路

- 移除R5006、R5007，若還有短路為EE部分短路，若無短路為RF部分短路
- 若為EE，逐一檢查有吃VSYS的元件，X-ray檢查下有無連錫

目檢連接BAT與VSYS部分是否有對地短路

X-ray檢查PU8101(Charger)是否連錫

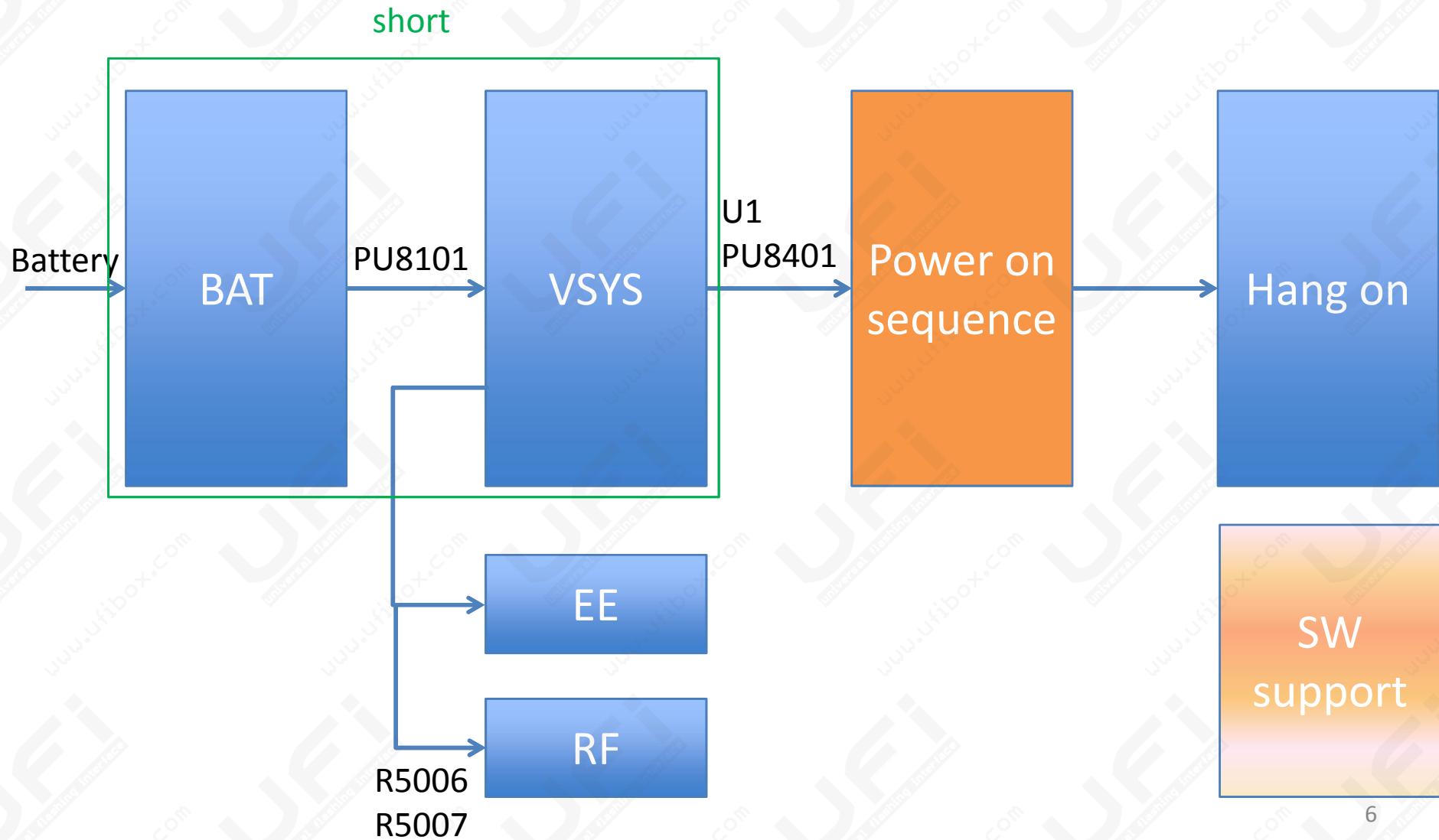
X-ray檢查PU8401(PMIC)是否連錫

X-ray檢查PU9601(Gauge)是否連錫

X-ray檢查U5101(Modem)是否連錫

X-ray檢查CON9602(BAT CONN)是否連錫

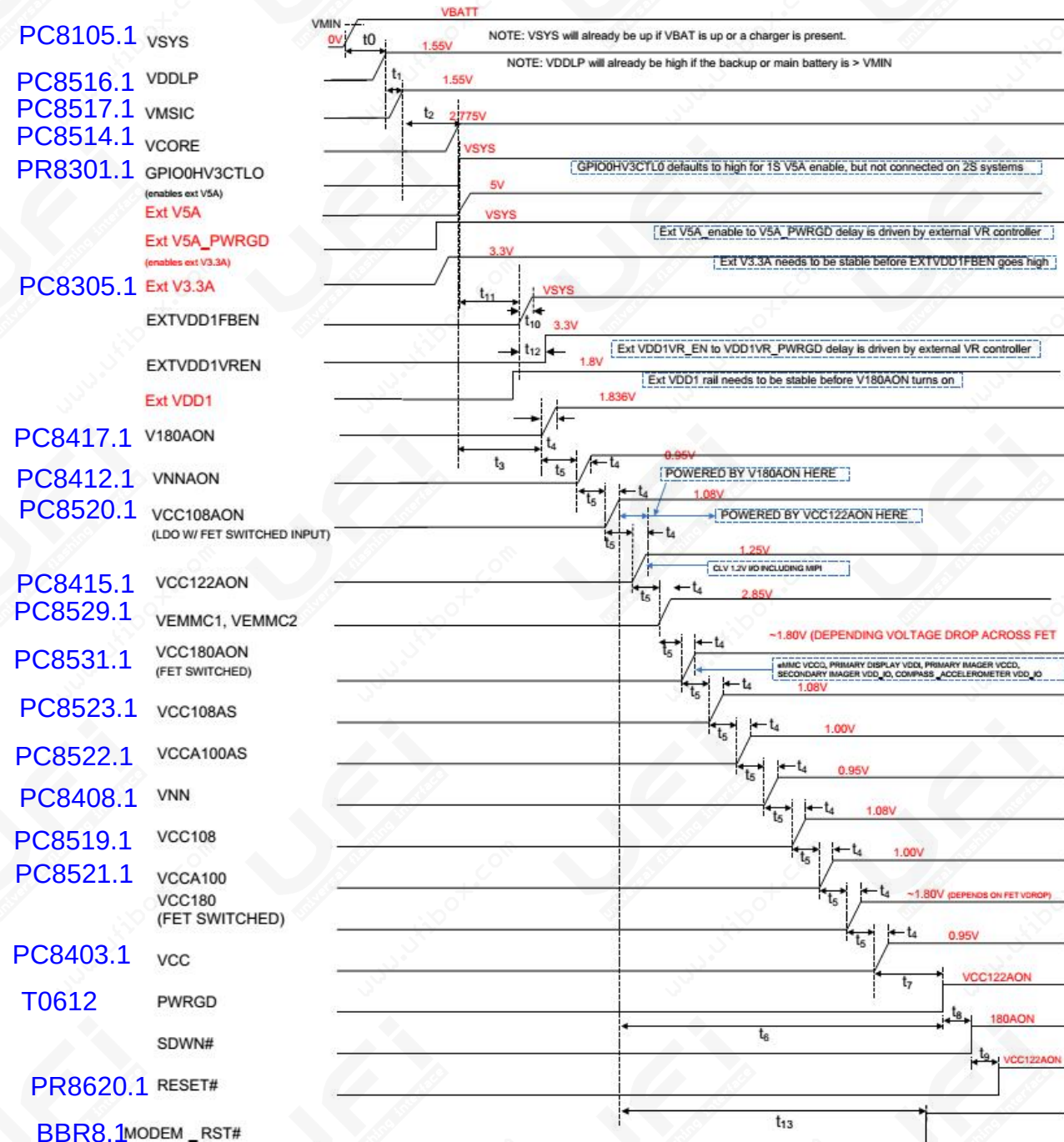
開機階段



Power on sequence



C Power on Sequence
Measure pad and correct
page value.



PARAMETER	DESCRIPTION	MIN	TYPICAL	MAX	UNITS
t0	VDDL turn on delay + Ramp-Up time	0.08		16	ms
t1	VDDL to VMSIC Turn on Delay + Ramp-Up Time	0.08	1	2	ms
t2	VMSIC to VCORE Turn On Delay + Ramp-Up Time (Includes LOWBATTD8 default time)	0.08	17.5	21	ms
t3	VCORE to First SOC Rail (V180AON) Turn-On Delay	14	18	24	ms
t4	Rail Ramp-Up Time	0.08	1	2.0	ms
t5	Rail to Subsequent Rail Turn-On Delay	0.25	1	2.031	ms
t6	Time from VCC108AON to PWRGD Assertion	63		150	ms
t7	PWRGD Delay from VCC	60		110	ms
t8	SDWN# Delay from PWRGD	40		75	µs
t9	RESET# Delay from SDWN#	40		75	µs
t10	EXTVDD1FBEN ramp up time	0.825	0.42	1.65	ms
t11	GPO0HV3 to EXTVDD1FBEN delay	9	10	11	ms
t12	EXTVDD1FBEN to EXTVDD1VREN delay	1.5	2	2.5	ms
t13	Time from VCC108AON to MODEM_RST# de-assert	50		75	ms
t14	Time from VMSIC to GPO0HV3		1		ms
tCHK	VMSIC on time to check if VSYS allows boot		17		ms

PARAMETER	DESCRIPTION	MIN	TYPICAL	MAX	UNITS
tDBC	VBUS debounce time to allow VMSIC to turn on with charger present		30		ms
tPWRBTNDBNC	Power Button debounce time (hard coded)	25	30	35	ms

不開機 (3): 電源不啟動且非開機過程中短路

– 檢查Power-on sequence

- (1) P_+3VSO_EN_5(**PR8301.1**) , 3.6V~4.2V , 若沒起來為PU8401不良
- (2) +3VSUS(**PC8306.1**) , 3.3V , 若沒起來 , PU8301不良
- (3) V_VCC(**PC8403.1**) , 0.95V , 若沒起來 , PU8401不良
- (4) MSIC_PWRGOOD(**T0612**) , 1.22V , 若沒起來 , PU8401或U1不良
- (5) MSIC_RESET_N(**PR8620.1**) , 1.22V , 若沒起來 , PU8401或U1不良
- (6) MOD_RST_PWRDWN_N(**BBR8.1**) , 1.85V , 若沒起來 , PU8401或U5101不良

以上根據不良部分照X-ray釐清, 不管有無異常接著換料維修, 從第一步開始再做一次分析

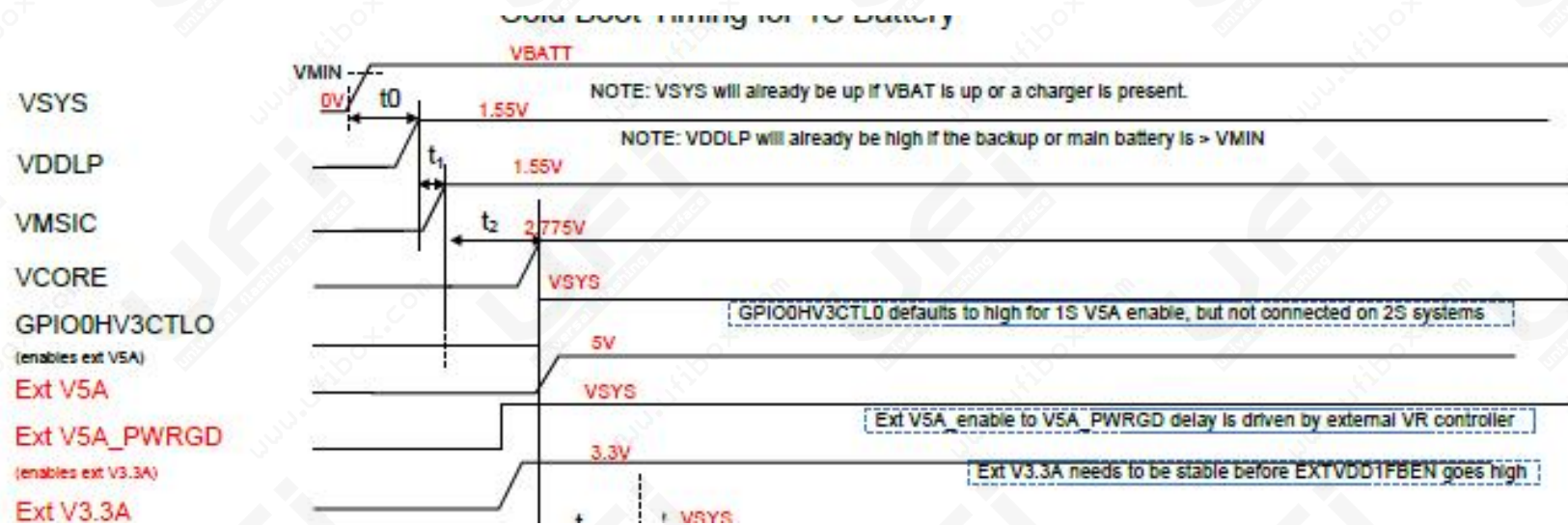
不開機 (3): 電源不啟動且為開機過程中短路

– 檢查Power-on sequence

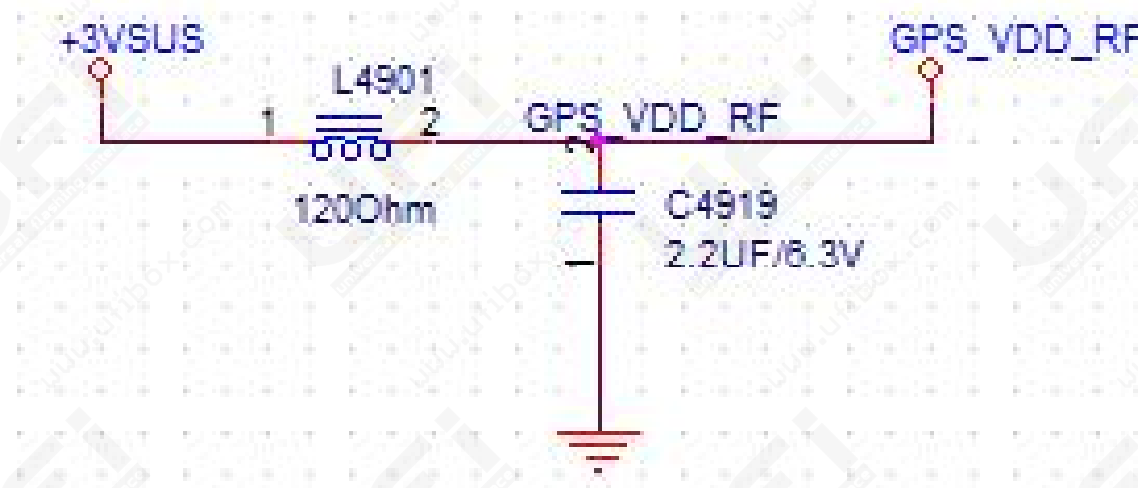
- (1) P_+3VSO_EN_5(**PR8301.1**) , 3.6V~4.2V , 若沒起來為PU8401不良或後端連接不良
- (2) +3VSUS(**PC8306.1**) , 3.3V , 若沒起來 , PU8301不良或後端連接不良
- (3) V_VCC(**PC8403.1**) , 0.95V , 若沒起來 , PU8401不良或後端連接不良
- (4) MSIC_PWRGOOD(**T0612**) , 若沒起來 , PU8401或U1不良或後端連接不良
- (5) MSIC_RESET_N(**PR8620.1**) , 若沒起來 , PU8401或U1不良或後端連接不良
- (6) MOD_RST_PWRDWN_N(**BBR8.1**) , 若沒起來 , PU8401或U5101不良或後端連接不良

以上情況請照可能不良部分之 X-ray , 發現異狀請換 IC 再從第一步開始進行 , 若沒發現異狀再繼續以下面步驟 debug

若卡在 **+3VSUS**沒起來且短路到地，請依照
power sequence 確認其他的電壓並確認用到
此電壓的電路



U4901 用到 +3VSUS



不開機(4): 其他情況

- **ASUS logo**顯示不到兩秒便關機，或是重開機
 - 請檢查BAT是否落在正常範圍 3.6V ~ 4.2V
- **ASUS logo**畫面完跳一藍色方塊後關機
 - U1 CPU不良，請更換
- 開機藍屏
 - U1 CPU不良，請更換
- 若到 MOD_RST_PWRDWN_N 都正常且非以上所說之現象，錄取 LOG 請 SW 幫忙分析

開機無顯

- 檢查CON2101空焊/連錫
 - 更換CON2101

功能異常debug原則

- 量測供應電壓是否正常
從 PU8401 ，再檢查外部電路
- 量測I2C訊號是否有作用
從 pull high 電阻或 U1 開始檢查，再檢查外部電路
- 量測EN pin是否正常
從IC 本身或 U1 開始檢查，再檢查外部電路

MIC1測試失敗

- Error code: 907
- 顯微鏡/X-ray 檢查是否有錫珠殘留/短路
- 檢查DMIC_LR_R(C2611.1)是否對地短路
- 檢查DMIC2_DAT_R (C2612.1)是否對地短路
- 檢查V_1P80_VCCAON(C2610.2)是否為1.8V

MIC2測試失敗

- Error code: 915
- 顯微鏡/X-ray 檢查是否有錫珠殘留/短路
- 檢查DMIC_LR_R(C2611.1)是否對地短路
- 檢查DMIC2_DAT_R (C2612.1)是否對地短路
- 檢查V_1P80_VCCAON(C2610.2)是否為1.8V

白屏

- 請檢查HW ID各電阻PR8630 ~ PR8632，有沒有空焊或上錯件
- MP Stage的HW ID設定如下：

PR8630不上件

PR8631上件

PR8632上件

G sensor測試失敗

- Error code: 5016
- X-ray 檢查U2502, U1
- 量測I2C_5_SCL (RN0604.1)是否有訊號，若無請U1跟U2502
- 以上皆無問題請換U2502再來檢查U1

Touch測試失敗

- 檢查TP_AVDD (C2112.1)電壓是否正常
 - 正常是3.3V
- 檢查VDD_TP_1P8(C2111.1)電壓是否正常
 - 正常是1.8V
- 檢查I2C_0_SCL(RN0603.1)以及I2C_0_SDA(RN0603.3)是否有訊號
 - 無訊號的話是RN0603或是U1不良

無法震動

- 檢查S/B VIBE_PWM(Q0301.1)是否有訊號
沒有的話是PU8401不良
- 檢查S/B VIBE_PWM_VB(Q0301.3)是否有訊號
沒有的話是Q0301或J0301不良
- 檢查S/B J0301是否有異狀

無法連接USB

- 檢查S/B J0201是否有異狀
- 檢查S/B RN0201是否有異狀
- X-ray檢查 U1
- 若皆無問題請置換U1

5115 Thermal_zone0 and zone1

- 檢查 V_1P50_VREFBUFF
- 檢查 SYSTHERM_0
- 檢查 PR8604 以及 PR8606
- 若以上皆無問題 reheat PR8606 ,PR8604 若不行依序更換此兩顆料件
- 若還不行 reheat PU8401 若不行則更換

5115 Thermal_zone2

- Reheat PU8401 不行則換 PU8401

5115 Thermal_zone3

- 檢查 PR8609.2 電壓
- 檢查 PR8609 以及 PR8610
- 若以上皆無問題 reheat PR8609 ,PR8610 若不行依序更換此兩顆料件
- 若還不行 reheat PU8401 若不行則更換

5115 CPU_Temp and CPU_Temp2

- 檢查 VREF250
- 檢查 PR9601
- 置換 PR9601
- Reheat PU9601 若不行則更換

Thanks for your attention

- Q&A