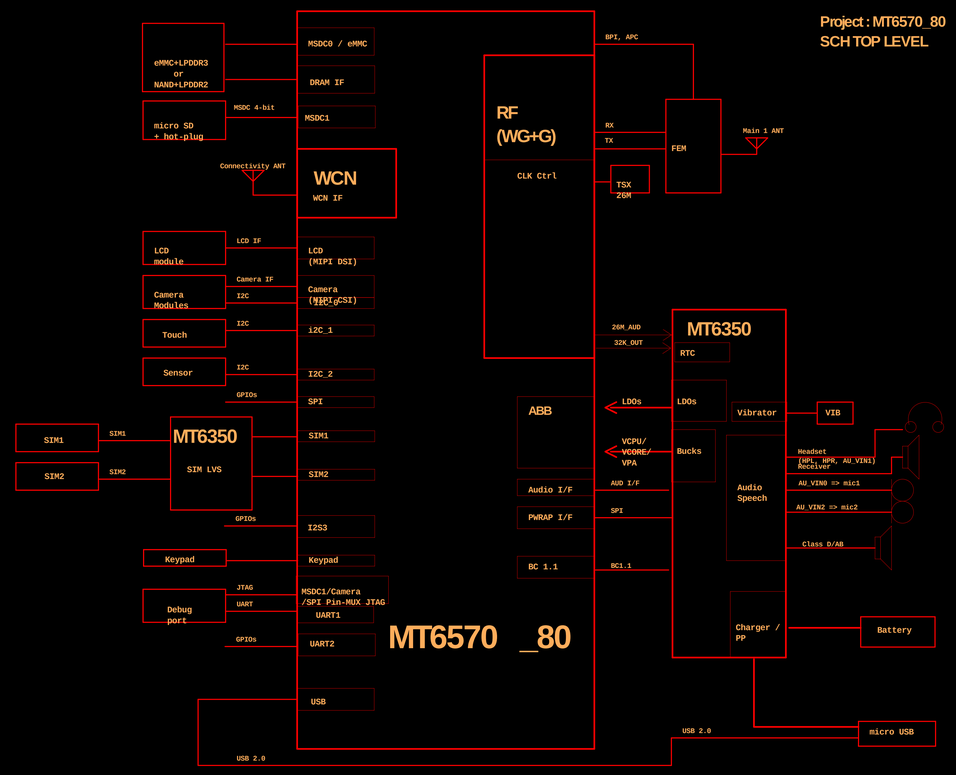


TITLE:	90918_1_10	REV:	<REV>
DOCUMENT NO:	01_BLOCK_DIAGRAM	SIZED:	A0
DEPARTMENT:	Hardware DEPT.		
COMPANY:	WINGTECH		
DESIGNER: <DESIGNER>	Last Saved Date: 2015/1/17	SHEET: 1 OF 20	

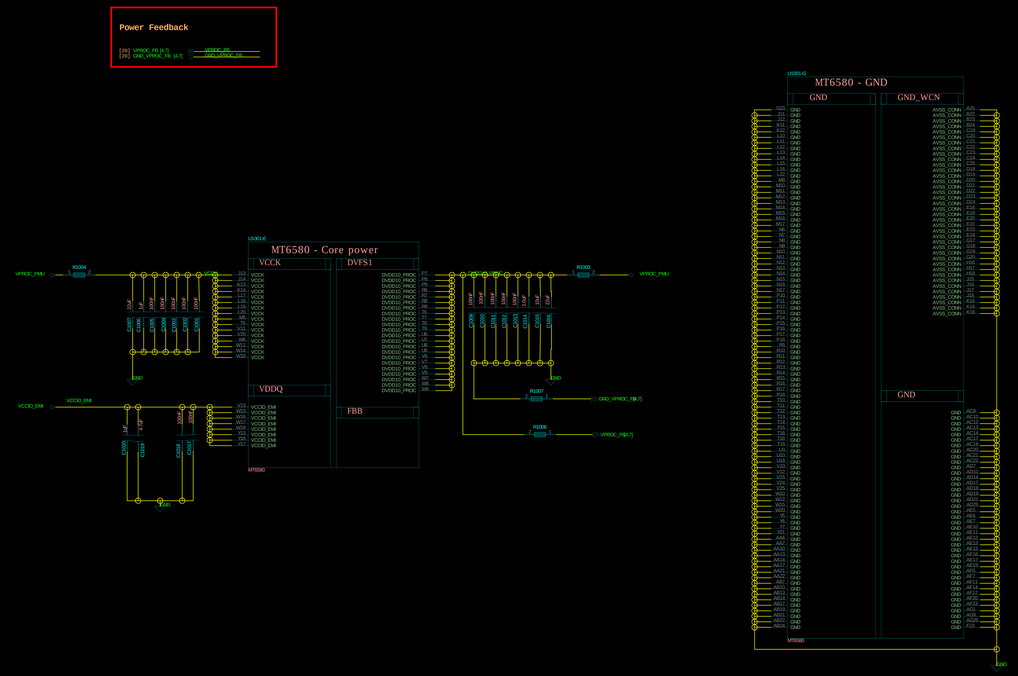
I2C	Function	I2C Spec.	Budgeted Timing	I2C Slave Address (7-bit mode)
I2C-0	Rear Camera	400 Kbps		Rear camera (IMX179) I2C address: 0X10 (Write:0x20, Read:0x21) AF driver (F8N03C) I2C address: 0x0C (Write:0x18 , Read:0x19)
	Front Camera	400 Kbps		Front camera (OV5670) I2C address: 0X36 (Write:0x6C, Read:0x6D)
I2C-1	CTP	400 Kbps	Yes.	GT1151 / CTP I2C address: 0X5D (Write:0xBA, Read:0xBB) or 0x14 (Write:0x28, Read:0x29)
I2C-2	Flash LED 5V boost	400 Kbps		LM3642 / Flashlight Driver I2C address: 0X63 (Write:0xC6, Read:0xC7)
	Accelerometer	400 Kbps	Yes.	MC3410 / Accelerometer I2C address: 0x4C (Write:0x98, Read:0x99)
	Gyro	400 Kbps	Yes.	Gyro I2C Address: 0x68 (Write:0xD0, Read:0xD1)
	M sensor	2.5 Mbps	Yes.	M-Sensor I2C Address: 0x0D (Write:0x1A, Read:0x1B)
	Light&PS sensor	400 Kbps	Yes.	CM36652 / RGB + PS I2C address: 0X60 (Write:0xC0, Read:0xC1)

Note : I2C Spec. : Standard mode (100 kbps) and Fast mode (400 kbps), Fast mode Plus (1 Mbps) and High-speed mode (3.4 Mbps)

TITLE:	90918_1_10	REV:	<REV>
DOCUMENT NO:	02_I2C_ID_OVERVIEW	SIZE:	A0
DEPARTMENT:	Hardware DEPT.		
COMPANY:	WINGTECH		
DESIGNER: <DESIGNER>	Last Saved Date: 2015/11/17	SHEET: 2 OF 20	

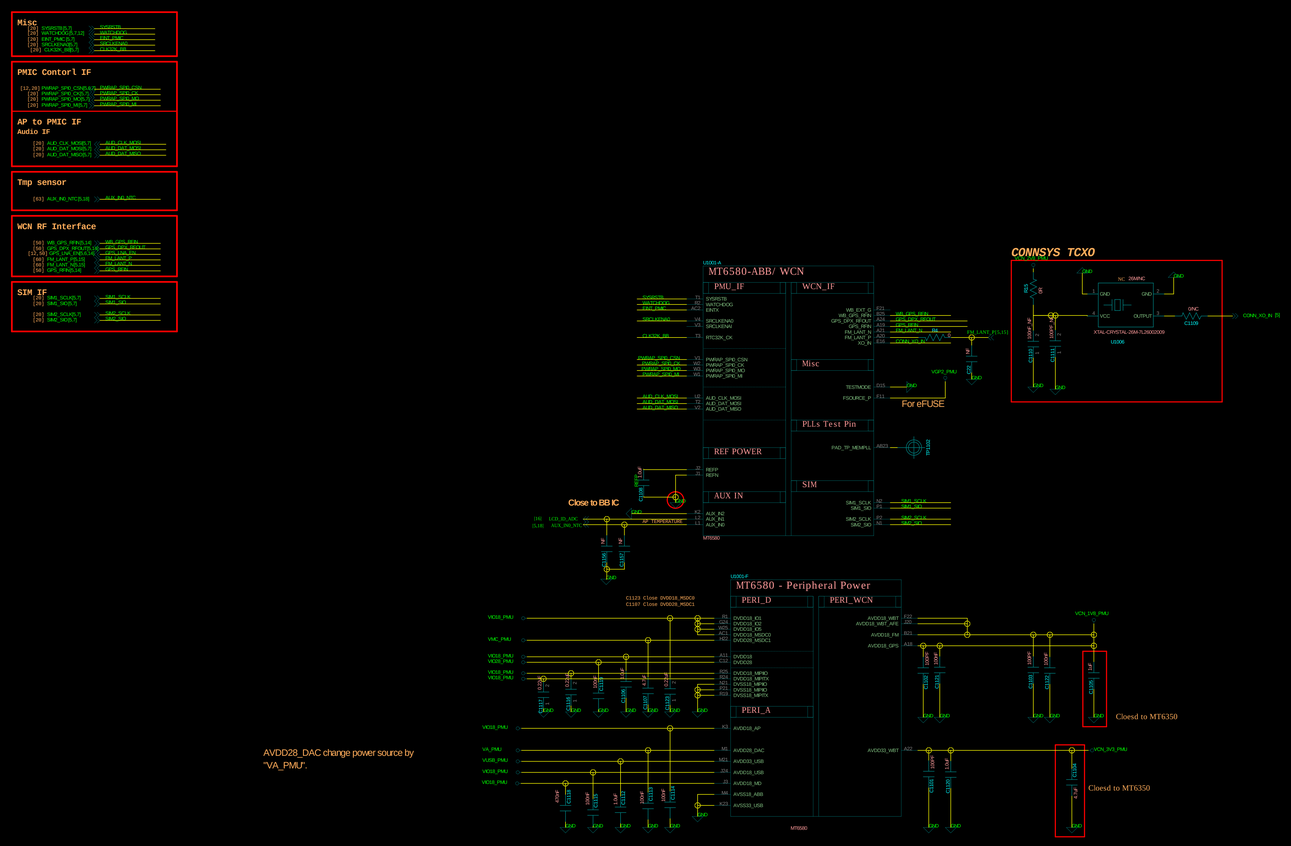
Date	Category	Item	SW Modification
V0.1 2014.12.24	RF	1.Change RLC value for RF matching	
		1.Change External GPS CLK source from VCN1V8 toVCN2V8 2.R3122 NC 3.VTCXO2_RF change to VTCXO_PMU, remove R3142 4.VRF18_RF change to VRF18_PMU, remove R3140	
	WCN	5.W_PA_VCC change to VPA_PMU, remove R3143 6.Remove R3185,R3186,R3264,R3265,R3286,R3260,R3261,R3283,R3266,R3267,R3284,R3262,R3263,R3268 0ohm 7.Remove U3182 and peripheral component	
	Power	2.C2039-2 connect to GND-AUXADC 3.Remove R5002 0ohm 1.Remove short pad SH2001	
	BB	2.Remove R2006,R2007,R2016,R2024,R2025,R2104,R2105 0 ohm 3.Change R2027 to shortpad	
		1.Remove C1008, R1006,R1007 change as short pad 2.Remove R2310,R2307, keep DISP_PWM0	
	Audio	3.VCCIO_EMI change to VM_PMU, remove R4008	
	BB	4.Net name "PS_XDD_ANODE", "PS_VDD" change to dummy net name 5.Remove ESD & common choke	
V0.2 2015.1.6		6.Remove R6304,R6312	
	RF	1.MCP 162balls =>186 balls as MMD condition 2.Front Cam MIPI Lan0 & Lan1 modification 3.Add R4011,R4012 for eMMC/NAND colay 1.Change L6001,R6004 to shortpad 1.RF matching modify	
V0.3 2015.1.9	Thermal	1.Remove AUX_IN1_NTC1	
	Power	1.Remove R2110	
	WCN	1.US002(Saw filter) Change to SAFEB1G57KE0F00	
V0.4 2015.1.22	BB		
		1.C1109 change to R/0/ohm/0201/NC 2.Add R4013 for eMMC/NAND colay	
V0.5 2015.3.18	BB	3.Add "Schematic design notice 40-1"	
	WCN	4.Add MLC description 5.Add R4008 to separate VM_PMU & VCCIO_EMI as MMD	
	Power	1.GPS Co-TMS trapping remove(P.12) 2.TMS feature move to P.33	
	RF	1. Change C1107 byapss cap. of VMC to 4.7uF 3.Modify GND_AUXADC to AUXADC_GND 4.Reserve L5004,C5009 for decreasing harmonic level. The essentiality is depend on design quality. 1.Add LNA information in RF Symbol	
V1.0 2015.4.21	GPS	1.Change C2024 to insert for better GPS clock performance(P.20) 2.Connect TMS GND (Pin2) to PMIC AUXADC_GND (Pin B2) first. Then connect to main GND by inner layer short pad (i.e., layer 2).	
	BB	1.Change MT6580-L4 from AVDD_VIO18 to OUT32K 2.Change MT6580-F3 from OUT32K to NC	

TITLE:	90018_1_10	REV:	<REV>
DOCUMENT NO:	03_CHANGE_NOTICE	SIZE:	A0
DEPARTMENT:	Hardware DEPT.		
COMPANY:	WINGTECH		
DESIGNER: <DESIGNER>	Last Saved Date: 2015/1/17	SHEET: 3 OF 20	



1.3G(6570,6580):
W/O R1001,R1008,R1009,U2302,R1010
W/ R1003,R1007,R1006
1.5G:
W/O R1003,R1007,R1006
W/ R1001,R1010,R1008,R1009,U2302

TITLE:	90918_1_10	REV:	<REV>
DOCUMENT NO:	10_BB_POWER	SIZE:	A0
DEPARTMENT:	Hardware DEPT.		
COMPANY:	WINGTECH		
DESIGNER: <DESIGNER>	Last Saved Date: 2015/11/17	SHEET: 4 OF 20	



TITLE:	90918_1_10	REV	<REV>
DOCUMENT NO:	11_BB_1	SIZE:	A0
DEPARTMENT:	Hardware DEPT.		
COMPANY:	WINGTECH		
DESIGNER	<DESIGNER>	Last Saved Date: 2015/1/17	SHEET 5 OF 20

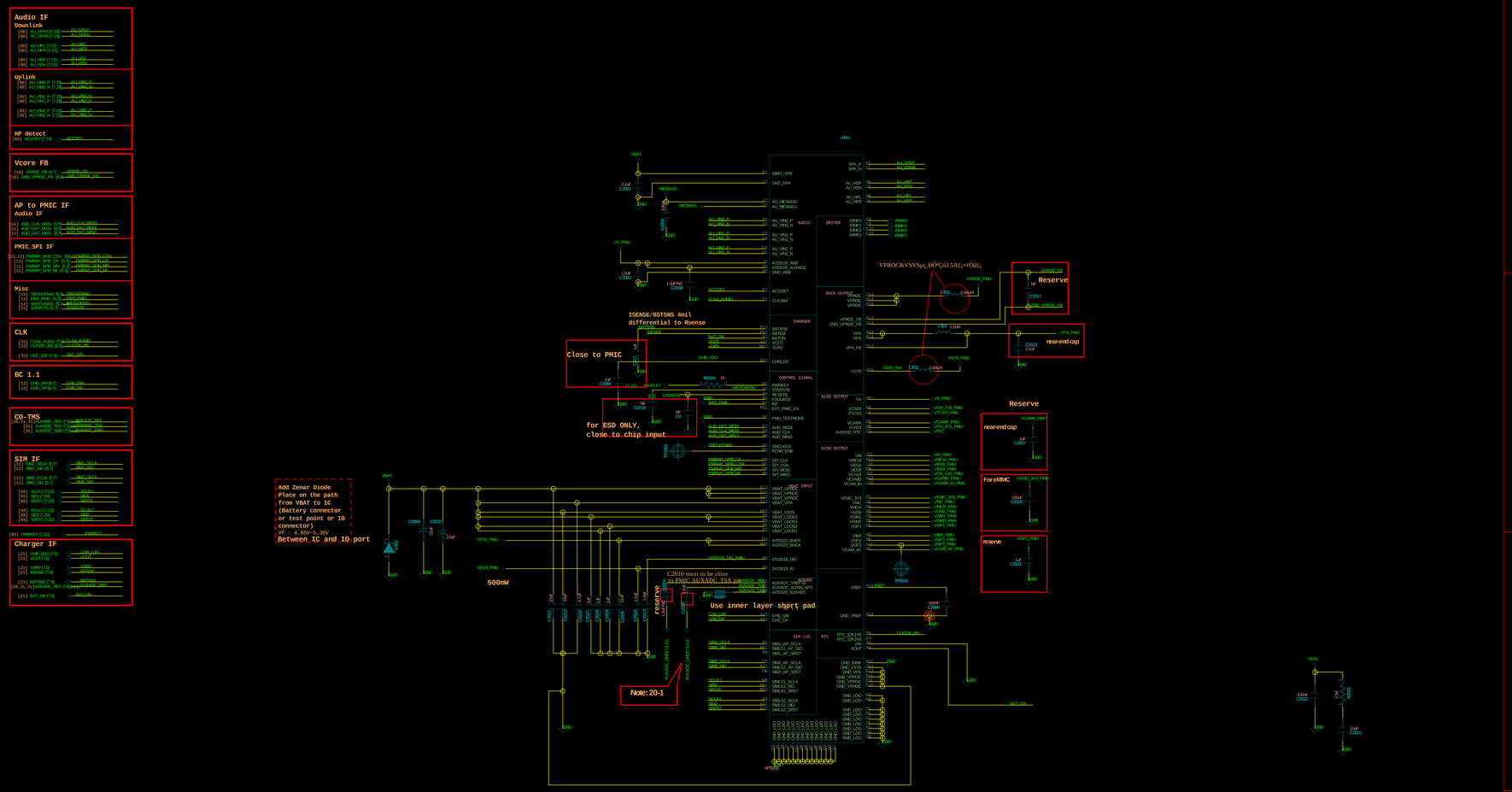
Schematic design notice of "12_BB_2" page.

Note 12-1:

Do not use UART1 as Power solution enable.
Do not use UART2 as power solution enable, if select UART1 as D/L or calibration path.

URXD1¡¢UTXD1¶Ë¿Ú²»¿ÉÒÒÔÃ×÷Íâ²¿DC-DC µÄ¿ØÖ£ÈÊ¹ÃÜ¶Ë

TITLE:	90918_1_10	REV:	<REV>
DOCUMENT NO:	12_BB_2	SIZE:	A0
DEPARTMENT:	Hardware DEPT.		
COMPANY:	WINGTECH		
DESIGNER: <DESIGNER>	Last Saved Date: 2015/1/17	SHEET: 6 OF 20	



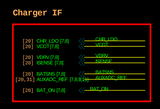
Schematic design notice of "20_Power_MT6350" page.

Note 20-1:

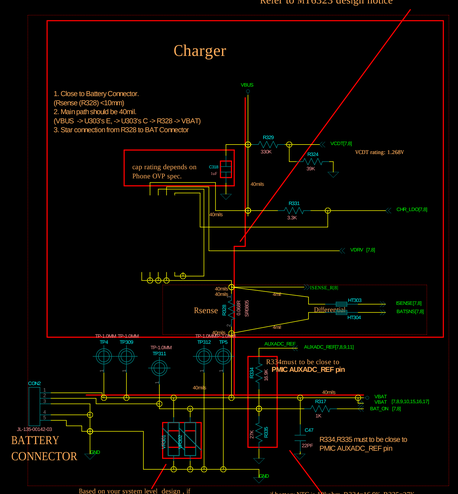
Connect TMS GND (PinI2) to PMIC AUXADC_GND (Pin B2) first.
Then connect to main GND by inner layer short pad (i.e., layer 2).

TITLE:	90918_1_10	REV:	<REV>
DOCUMENT NO:	13_POWER_MT6350	SIZED:	A0
DEPARTMENT:	Hardware DEPT.		
COMPANY:	WINGTECH		
DESIGNER: <DESIGNER>	Last Saved Date: 2015/11/17	SHEET: 7	OF 20

Charger IF



Before you select BJT , please take power dissipation into consideration.
Refer to MT6323 design notice

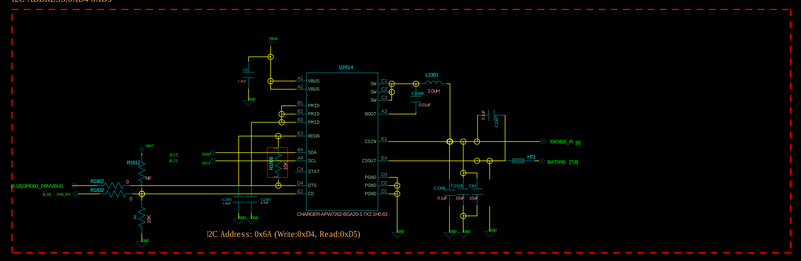


Based on your system level design , if better ESD performance is needed on your system, please refer to ESD performance enhance proposal

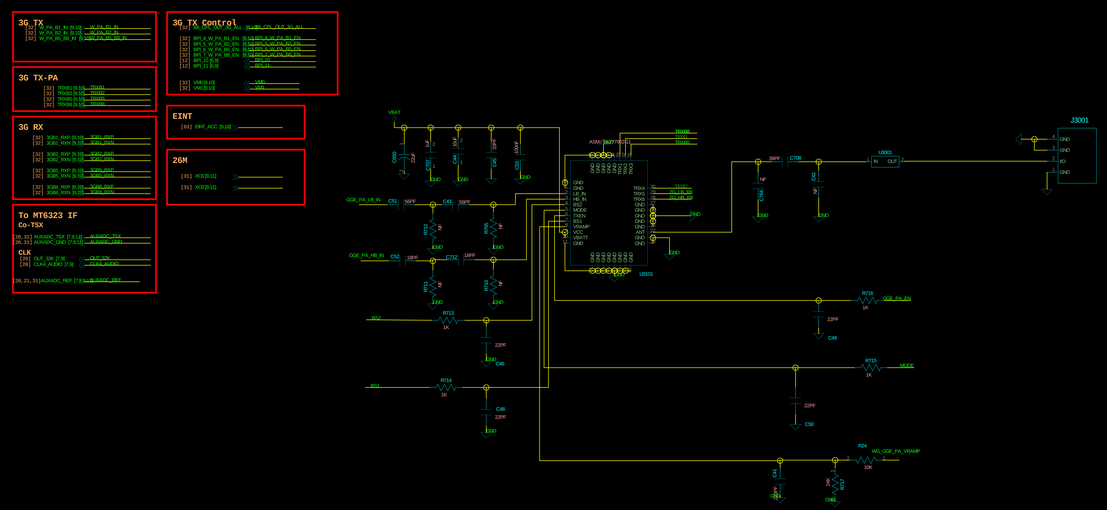
if battery NTC is 10kohm, R334=16.9K, R335=27K
if battery NTC is 47kohm, R334=61.9K, R335=100K
Refer to MT6350 HW design notice

Switching Charger + Power Path

I2C ADDRESS:0XD4 0XD5

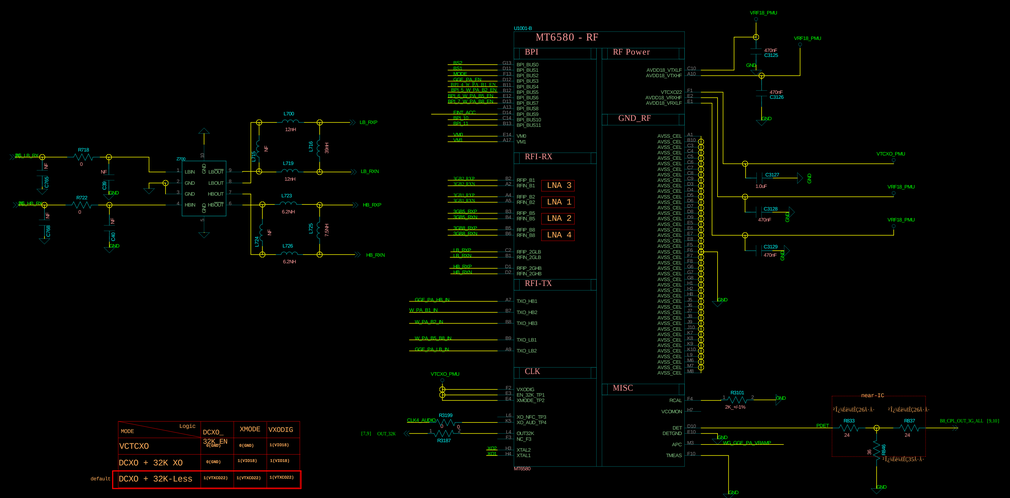


TITLE:	90918_1_10	REV:	<REV>
DOCUMENT NO:	14_POWER_CHARGER	SIZED:	A0
DEPARTMENT:	XI'AN Hardware DEPT.		
COMPANY:	WINGTECH		
DESIGNER:	<yingpenghui>	Last Saved Date: 2015/11/17	SHEET: 8 OF 20



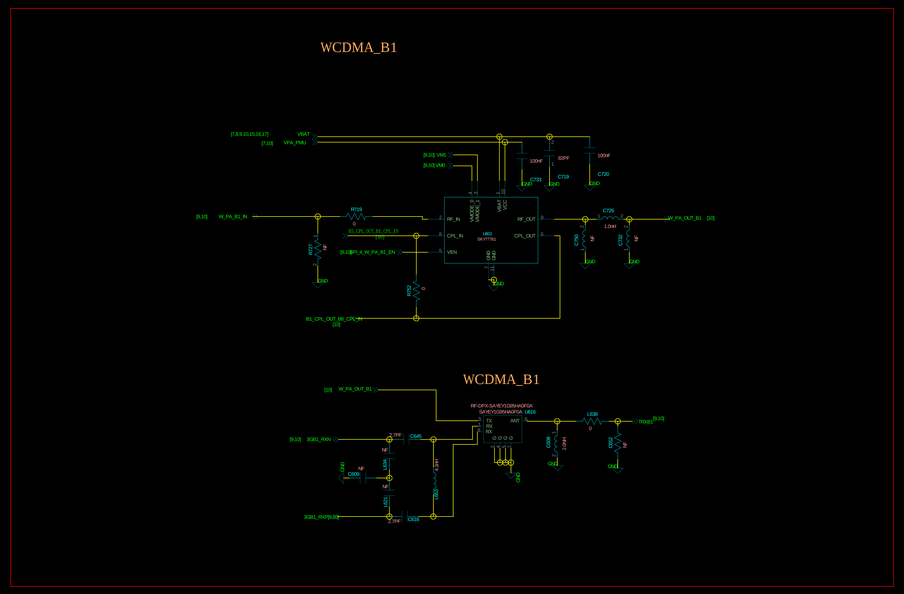
SKY77590 control logic table

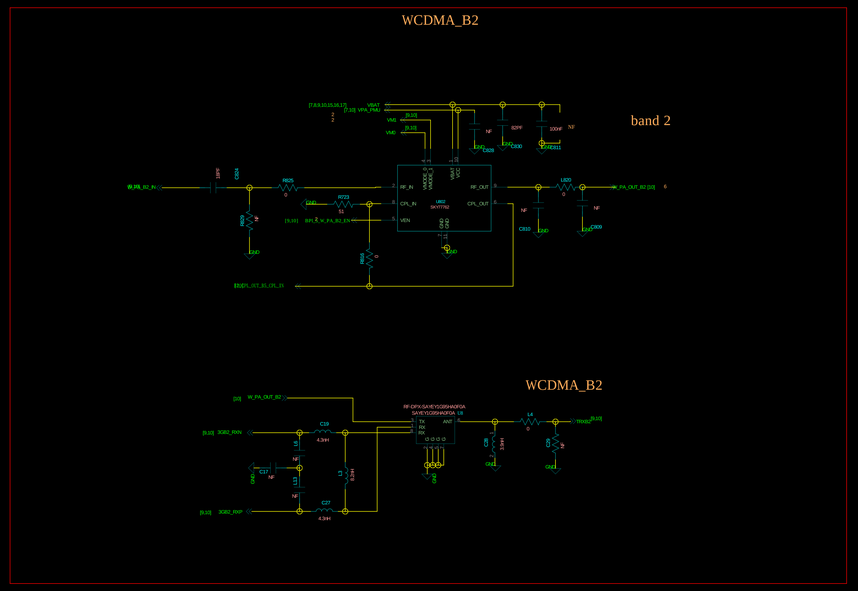
	VctA	VctB	VctC	TxEn	BS2	BS1	mode	ebable
(TRX1)G_DCS	L	L	H	L				
(TRX2)W_Band8	L	H	H	L				
(TRX3)W_Band1	H	L	H	L				
(TRX4)W_Band5	H	H	H	L				
(TRX5)W_Band2	L	H	L	L				
(TRX6) NA	H	L	L	L				
EDGETX_L	H	L	H	H				
EDGETX_H	H	H	H	H				
GMSKTX_L	H	L	L	H				
GMSKTX_H	H	H	L	H				

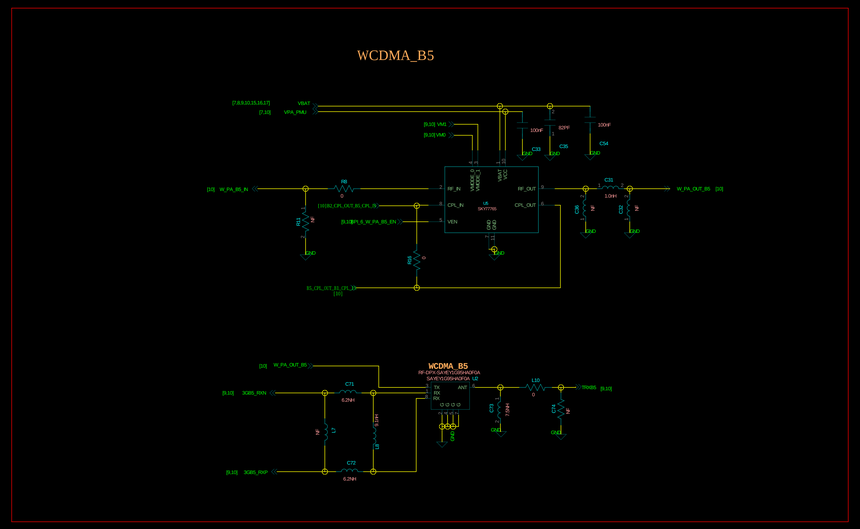


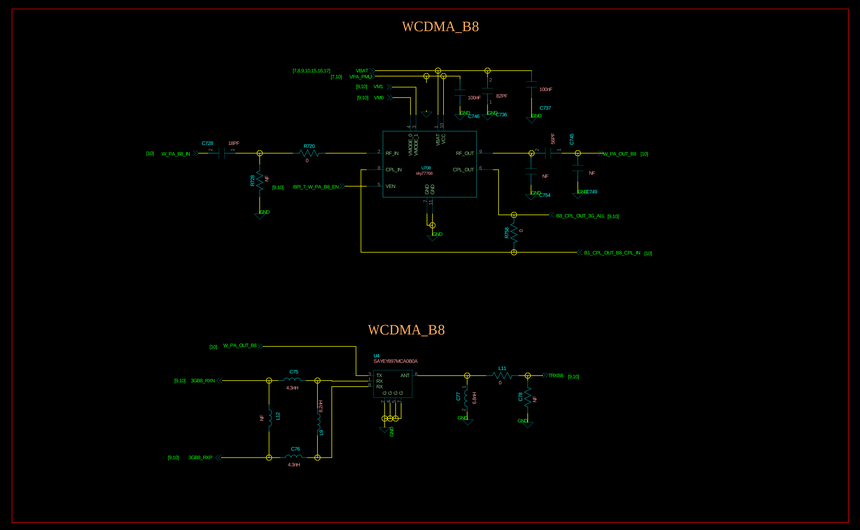
Logic	DCXO_32K_EN	XMODE	VXDDIG
MODE			
VCTCXO	0(GND)	0(GND)	1(VDD18)
DCXO + 32K XO	0(GND)	1(VDD18)	1(VDD18)
default DCXO + 32K-Less	1(VTCXO22)	1(VTCXO22)	1(VTCXO22)

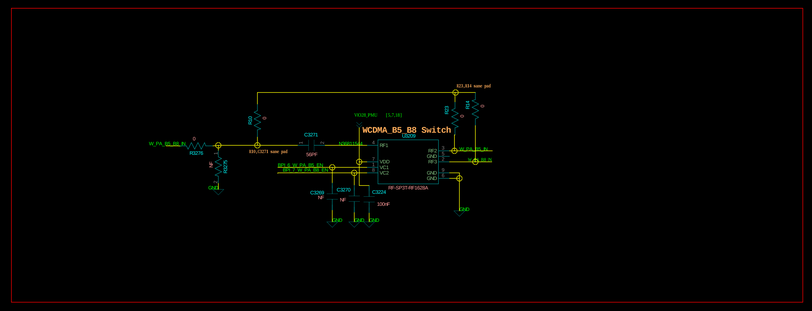
TITLE:	90918_1_10	REV:	<REV>
DOCUMENT NO.:	21_RF_TXM_2G	SIZE:	A0
DEPARTMENT:	Hardware DEPT.		
COMPANY:	WINGTECH		
DESIGNER: <DESIGNER>	Last Saved Date: 2015/1/17	SHEET: 9	OF 20

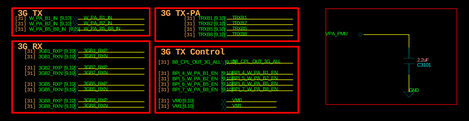

WCDMA_B1
WCDMA_B1


WCDMA_B2
band 2
WCDMA_B2


WCDMA_B5
WCDMA_B5


WCDMA_B8
WCDMA_B8


WCDMA_B5_B8 Switch

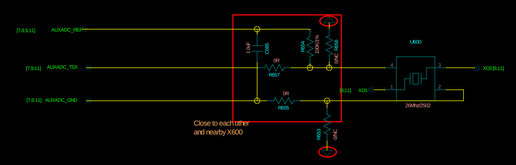

3G TX
3G TX-PA
3G RX
3G TX Control

26M TSX

[31] XO3[B:11]
[31] XO2[B:11]
[20,21,31] AUXADC_REF [7:B:11]
[20,31] AUXADC_TSX [7:B:11]
[20,31] AUXADC_GND [7:B:11]

1. Keep the crystal > 10 mm and < 30 mm away from the heat sources (Priority: 2/3G PAs, charger, and PMIC).
2. Keep out at least first three inner layers of metal for all TVS circuits.
3. Keep the TVS > 4 mm away from MT6580 Co- TVS.
4. Keep out all TVS circuits > 0.5 mm away from the surrounding metal.
5. Do not place the TVS directly under the heat sources that on the opposite side (i.e., CPU and PAs).
6. Keep all TVS routing away from high-speed and power traces.

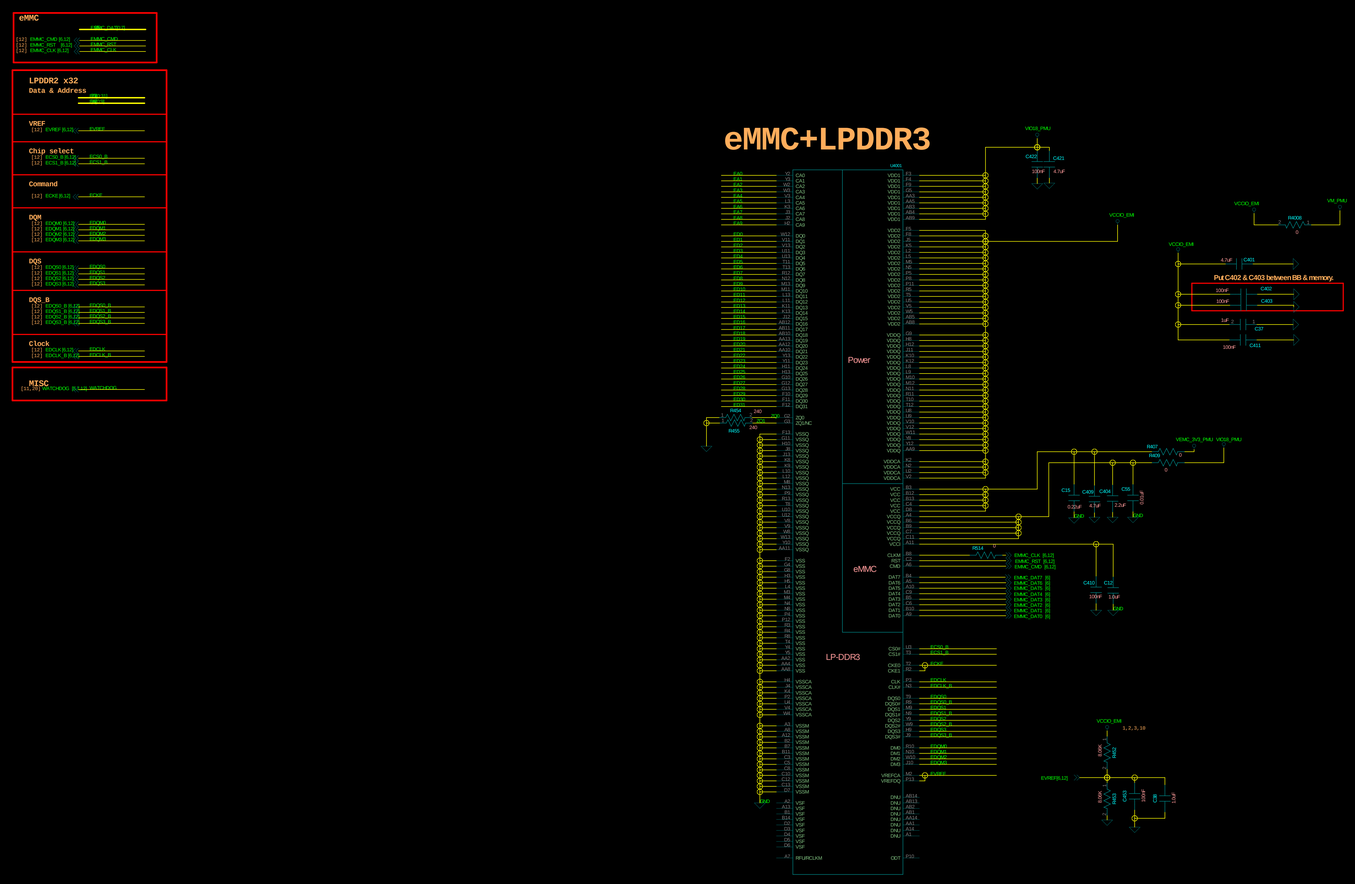
1.Route AUXADC_REF/AUXADC_TSX with 3mil trace width
2.Route AUXADC_REF/AUXADC_TSX as differential trace with well GND shielding
3.Route AUXADC_GND with 15mil trace width under AUXADC_REF/AUXADC_TSX trace to provide return current path



Close to each other and nearby X600

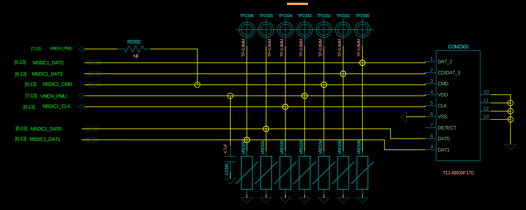
Two Application Circuit Conditions,
1.TSX Circuit : X600=TSX, R653=R656=NC, R654=100K+-1%, R655=R657=0ohm
2.XTAL Circuit :X600=Mobile XTAL, R653=R656=0ohm, R654=R655=R657=NC

TITLE	90918_1_10	REV	<REV>
DOCUMENT NO.	23_RF_CLOCK	SIZED	A0
DEPARTMENT	Hardware DEPT.		
COMPANY	WINGTECH		
DESIGNER <DESIGNER>	Last Saved Date: 2015/11/17	SHEET 11 OF 20	



TITLE	90918_1_10	REV:	<REV>
DOCUMENT NO:	40_MEMORY_EMMC_NAND_LPDDR2	SIZE:	A0
DEPARTMENT:	Hardware DEPT.		
COMPANY:	WINGTECH		
DESIGNER:	<DESIGNER>	Last Saved Date: 2015/11/17	SHEET 12 OF 20

T_Flash



Schematic design notice of "41_MEMORY_SD Card" page.

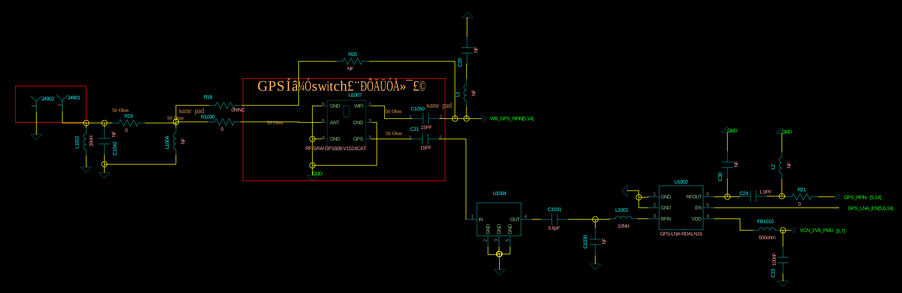
Note 41-1:
The equivalent capacitance of ESD protection device must be <=1pF
-- otherwise it will result in NFC card mode function fail.

Note 41-2: Depends on system design to add ESD protection componemt or not.

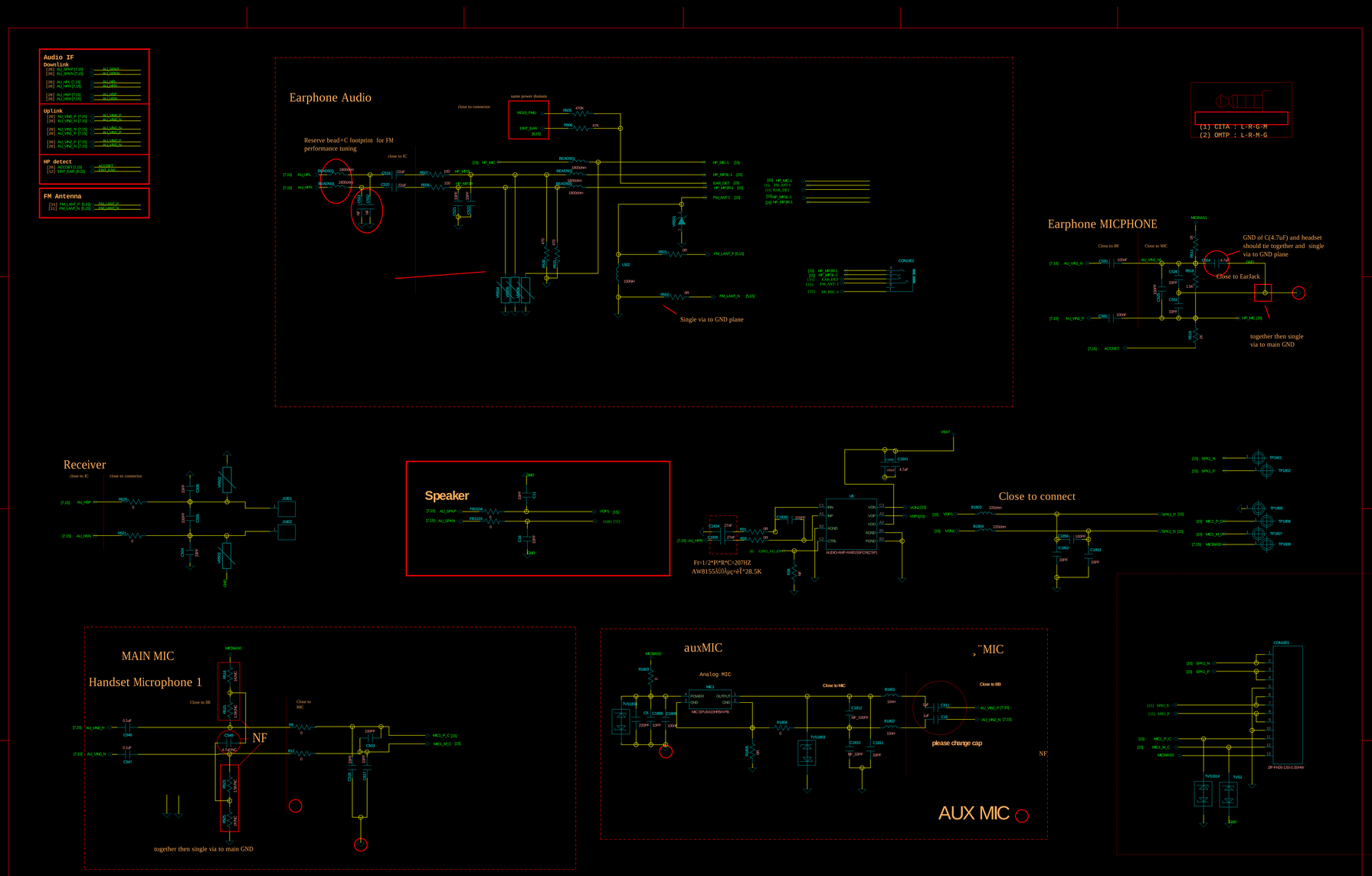
TITLE:	90918_1_10	REV:	<REV>
DOCUMENT NO.:	41_MEMORY_SD_CARD	SIZED:	A0
DEPARTMENT:	Hardware DEPT.		
COMPANY:	WINGTECH		
DESIGNER:	<DESIGNER>	Last Saved Date: 2015/11/17	SHEET 13 OF 20

WCN RF Interface

[11] WB_GPS_RFIN [5,14] WB_GPS_RFIN
[11] GPS_DFX_RFOUT [5,14] GPS_DFX_RFOUT
[11] GPS_RFIN [5,14] GPS_RFIN
[12] GPS_LNA_EN [5,6,13] GPS_LNA_EN



TITLE:	90918_1_10	REV:	<REV>
DOCUMENT NO:	50_BT_FM_GPS_WIFI	SIZE:	A0
DEPARTMENT:	Hardware DEPT.		
COMPANY:	WINGTECH		
DESIGNER: <DESIGNER>	Last Saved Date: 2015/11/17	SHEET: 14 OF 20	



TITLE:	90918_1_10	REV:	<REV>
DOCUMENT NO:	60_PERI_AUDIO_IO	SIZE:	A0
DEPARTMENT:	Hardware DEPT.		
COMPANY:	WINGTECH		
DESIGNER: <DESIGNER>	Last Saved Date: 2015/11/17	SHEET: 15	OF 20

LCD interface

MIPI-DSI

[12]	TOP0_B[18]	TOP0
[12]	TON0_B[18]	TON0
[12]	TOP2_B[18]	TOP2
[12]	TON2_B[18]	TON2
[12]	TOP1_B[18]	TOP1
[12]	TON1_B[18]	TON1
[12]	TOP3_B[18]	TOP3
[12]	TON3_B[18]	TON3

Control interface

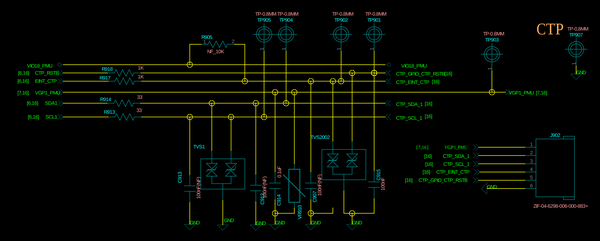
[12]	LCM_RST [5,18]	LCM_RST
[12]	DSI_TE [5,18]	DSI_TE

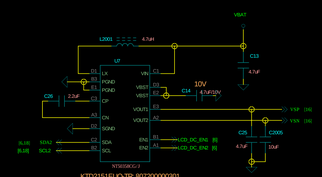
Blacklight IF

[23]	LCM_LEDA [18]	LEDA [18]
[23]	LCM_LEDK [18]	LEDK [18]

CTP IF

[12]	SCL1 [5,18]	SCL1
[12]	SDA1 [5,18]	SDA1
[12]	ENT_CTP_B [18]	ENT_CTP
[12]	CTP_RSTB [5,18]	CTP_RSTB

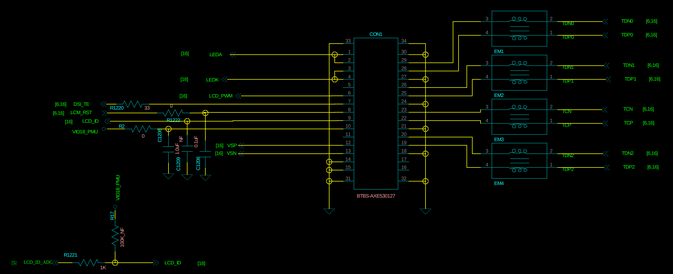


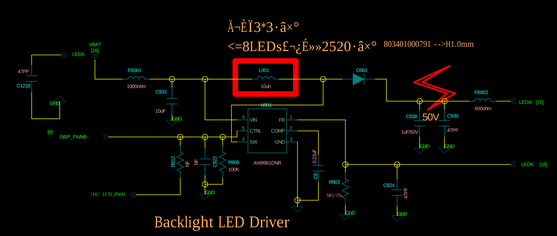


KTD2151EUO-TR: 807200000301

KTD2151 powers ON with a default voltage of 5.4V

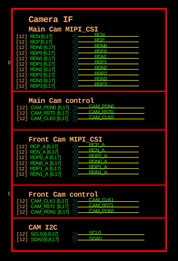
SBL software should configure this to 5.0 V

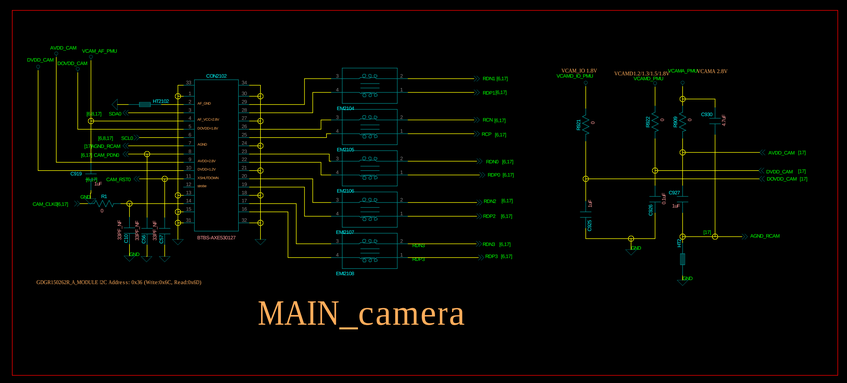




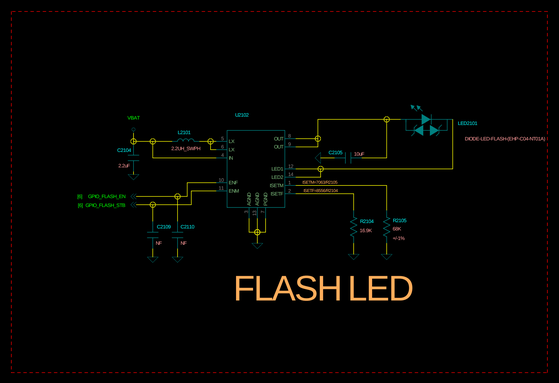
Backlight LED Driver

TITLE:	90918_1_10	REV:	<REV>
DOCUMENT NO.:	61_PERI_LCD_CTP	SIZED:	A0
DEPARTMENT:	Hardware DEPT.		
COMPANY:	WINGTECH		
DESIGNER: <DESIGNER>	Last Saved Date: 2015/11/17	SHEET: 16 OF 20	

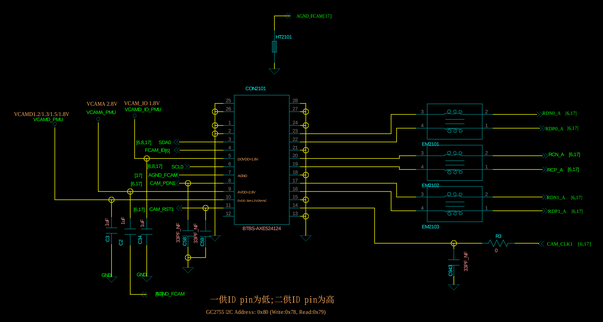




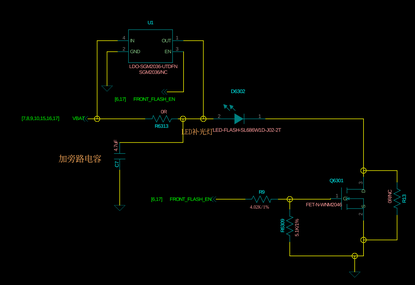
MAIN_camera



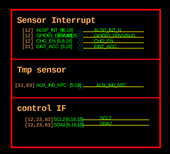
FLASH LED

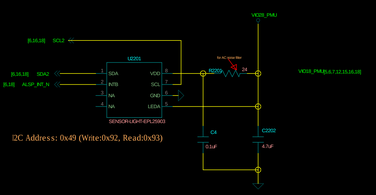


Front camera

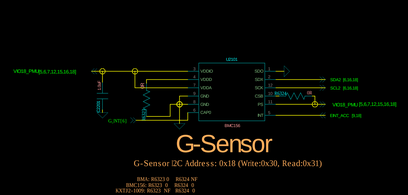


TITLE:	90918_1_10	REV:	<REV>
DOCUMENT NO:	62_PERI_CAMERA	SIZED:	A0
DEPARTMENT:	Hardware DEPT.		
COMPANY:	WINGTECH		
DESIGNER: <DESIGNER>	Last Saved Date: 2015/1/17	SHEET: 17 OF 20	





I2C Address: 0x49 (Write:0x92, Read:0x93)

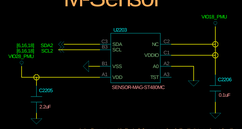


G-Sensor

G-Sensor I2C Address: 0x18 (Write:0x30, Read:0x31)

BMA: R63213-0 R6124 NF
BMC156: R6323 0 R6324 0
KXTJ2-1009: R6323 NF R6324 0

M-Sensor

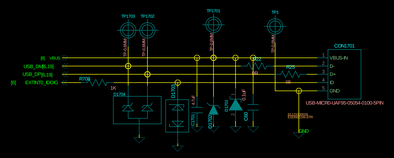


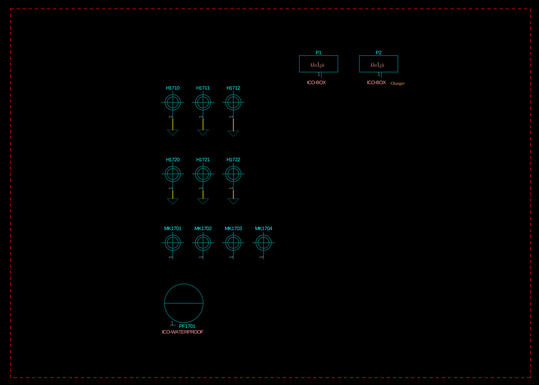
M-Sensor I2C Address: 0x0C (Write:0x18, Read:0x19)

Thermistor / To sense board level temperature

NTC6301 close to BB ,and located in the same layer
(can refer to thermal design notice)

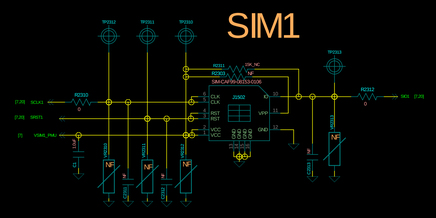
TITLE:	90918_1_10	REV:	<REV>
DOCUMENT NO.:	63_PERI_SENSORS	SIZE:	A0
DEPARTMENT:	Hardware DEPT.		
COMPANY:	WINGTECH		
DESIGNER: <DESIGNER>	Last Saved Date: 2015/11/17	SHEET: 18 OF 20	





TITLE:	90918_1_10	REV:	<REV>
DOCUMENT NO:	64_PERI_USB	SIZE:	A0
DEPARTMENT:	Hardware DEPT.		
COMPANY:	WINGTECH		
DESIGNER: <DESIGNER>	Last Saved Date: 2015/11/17	SHEET: 19 OF 20	

SIM Card IF
SIM1
[20] SCLK1 SCLK1
[20] SIO1 [7,20] SIO1
[20] SRST1 [7,20] SRST1
SIM2
[20] SCLK2 SCLK2
[20] SIO2 [7,20] SIO2
[20] SRST2 [7,20] SRST2
KP IF
[20] PWRKEY [7,20] PWRKEY
[12] KPCOL0 [8,20] KPCOL0
[12] KPROW0 [8,20] KPROW0
[12] KPROW1 [8,20] KPROW1


SIM1
TP2212
TP2211
TP2210
TP2213
R2201
10K_NC
R2202
10K
SIM-CARD-6615-010K
J2002
CLK
CLK
RST
RST
VCC
VCC
VPP
GND
R2210
0
R2212
0
[7,20] SCLK1
[7,20] SRST1
[5] VSIM1_PMU
[7,20] SIO1
C2001
1.5NF
C2002
NF
C2003
NF
C2004
NF
C2005
NF
C2006
NF
C2007
NF
C2008
NF
C2009
NF
C2010
NF
C2011
NF
C2012
NF
C2013
NF
C2014
NF
C2015
NF
C2016
NF
C2017
NF
C2018
NF
C2019
NF
C2020
NF
C2021
NF