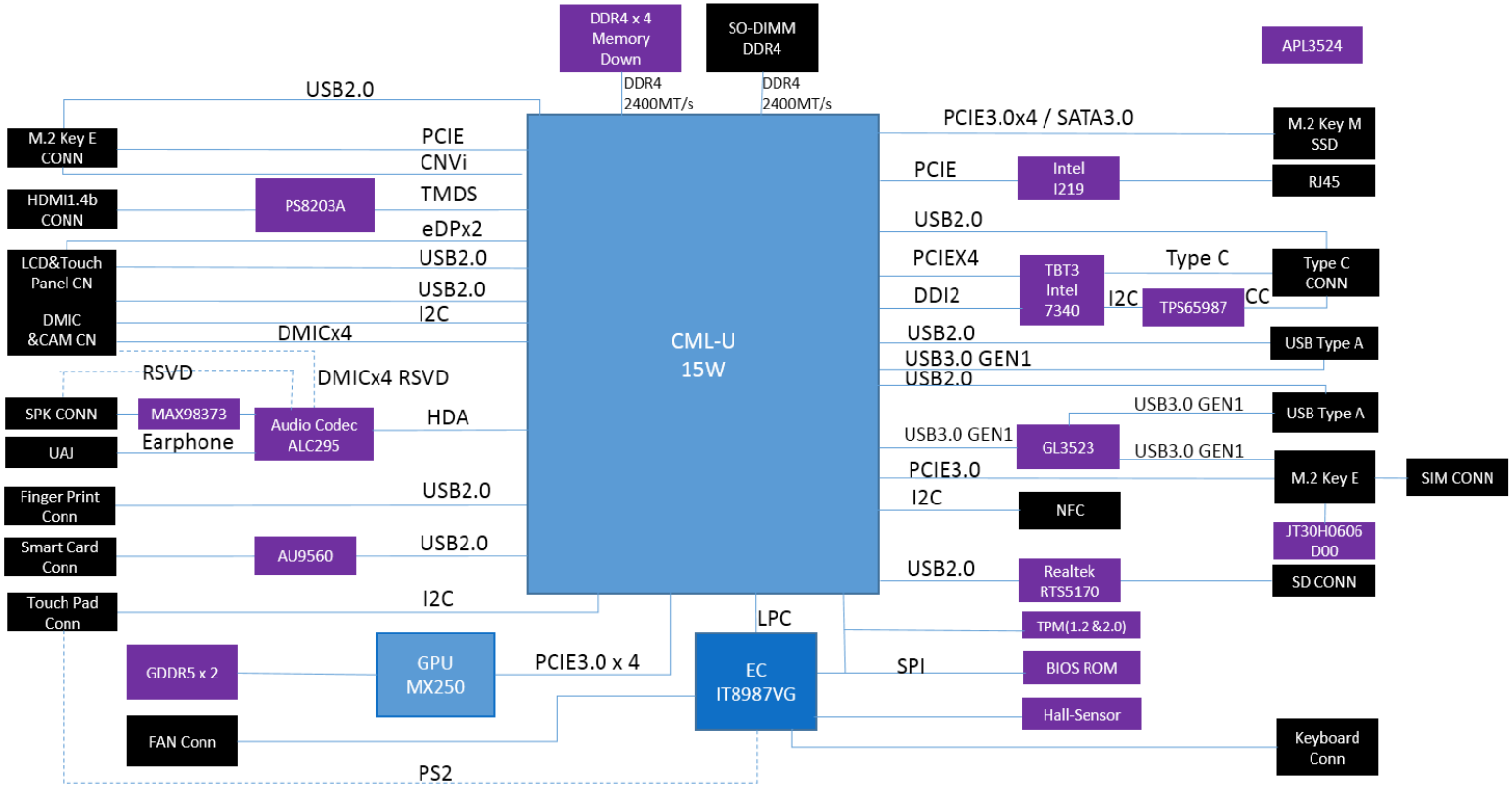
EE MB Block Diagram



Huaqin Telecom Technology Com.,Ltd.		
Page name:	01 Block Diagram	
Size: A4	Project Name: NB2250	REV: V1.0
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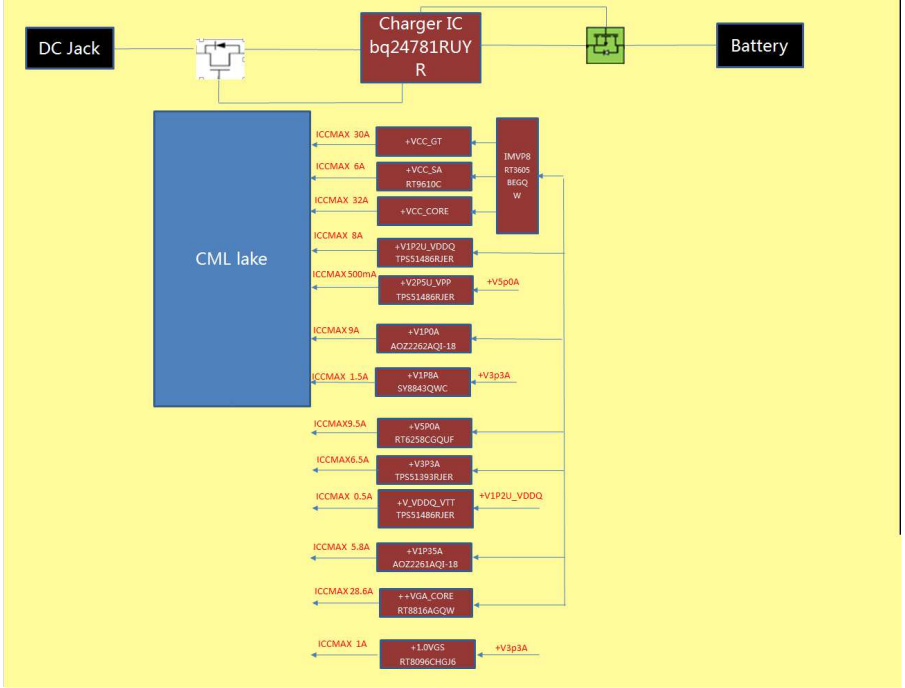
Project name	Piano

Power Tree



Proj_ID

Proj_ID	GPP_F9
P0	0
P4	1

SMC_ID

SMC_ID	GPP_F8
/SMC	0
w/o SMC	1

Phase ID PVT 001

Phase	PCB_ID2 GPP_G7	PCB_ID1 GPP_G6	PCB_ID0 GPP_G5
P10	0	0	0
P11	0	0	1
P12	0	1	0
P13	0	1	1
P14	1	0	0
P15	1	0	1
P20	1	1	0

MEM ID

	MEM_ID3 GPP_H3	MEM_ID2 GPP_H2	MEM_ID1 GPP_H1	MEM_ID0 GPP_H0
MICRON MT40A1G16KNR-075:E 8GB	0	0	0	0
Hynix H5AN8G8NCMR-VKC 8GB	0	0	0	1
	0	0	1	0
Hynix H5AN8G8NCJR-VKC 8GB	0	0	1	1
MICRON MT40A512M16TB-062E:J 8GB	0	1	0	0
	0	1	0	1
	0	1	1	0

GPIO ID

	GPIO_ID GPP_E0
/91.5-(default)	0
/91.4+	1

NFC ID

	NFC_ID GPP_D3
W/O NFC	1
NFC	0

CAM ID

	CAM_ID GPP_E8
RS_CAM	1
IR_CAM	0

LTE ID

	LTE_ID GPP_H2
NO LTE	1
LTE	0

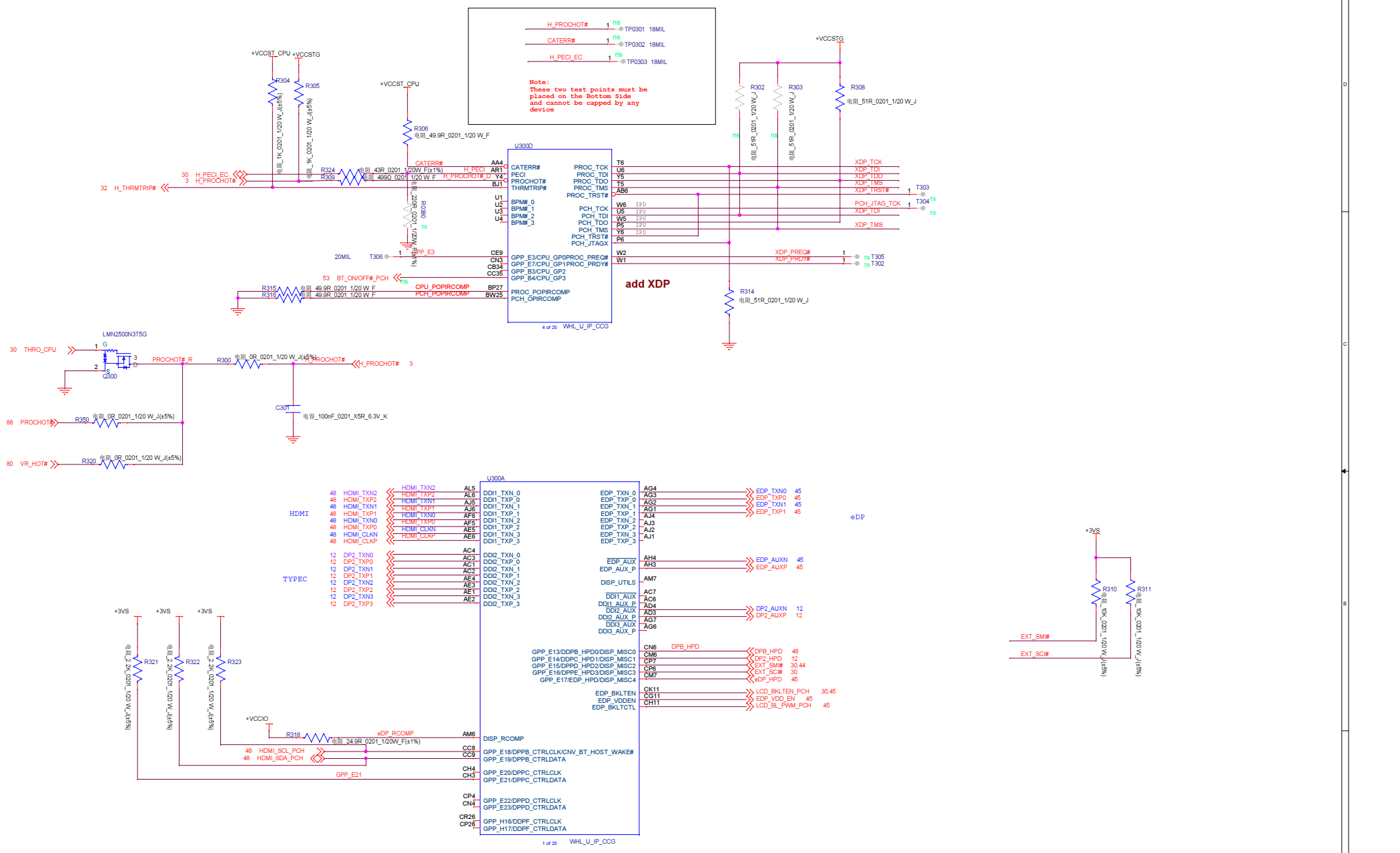
UMA$DGPU

	MA ID GPP_C13
UMA	0
DGPU	1

CML-noVpro &CML-Vpro

	CPU ID GPP_C22
/CML-noVpro	0
/CML-Vpro	1

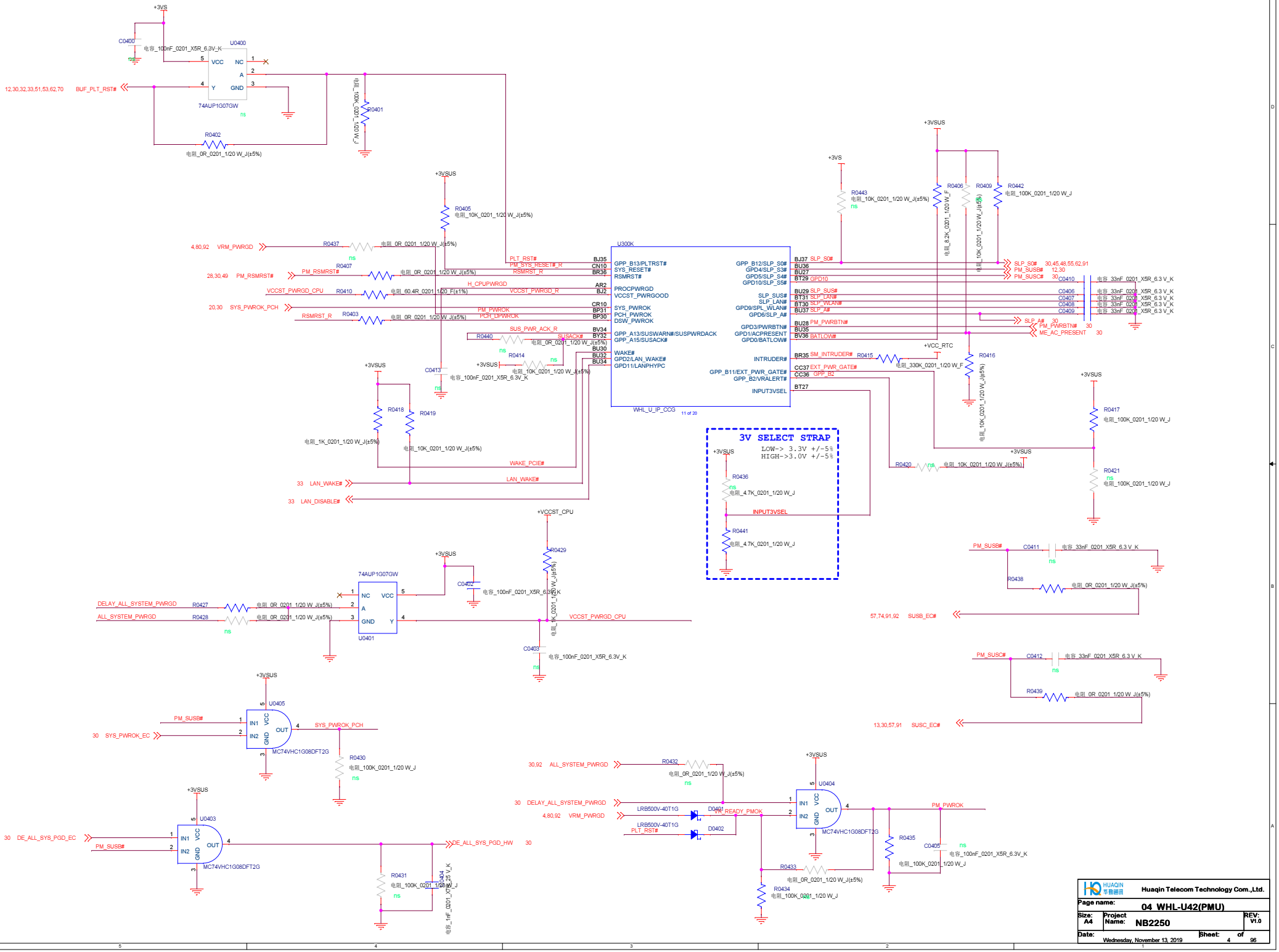
Huaqin Telecom Technology Com.,Ltd.	
Page name:	02_I2C Table
Size: A4	Project Name: NB2250
REV: V1.0	
Date: Thursday, November 14, 2019	Sheet: 2 of 98



DISPLAY PORT STRAP

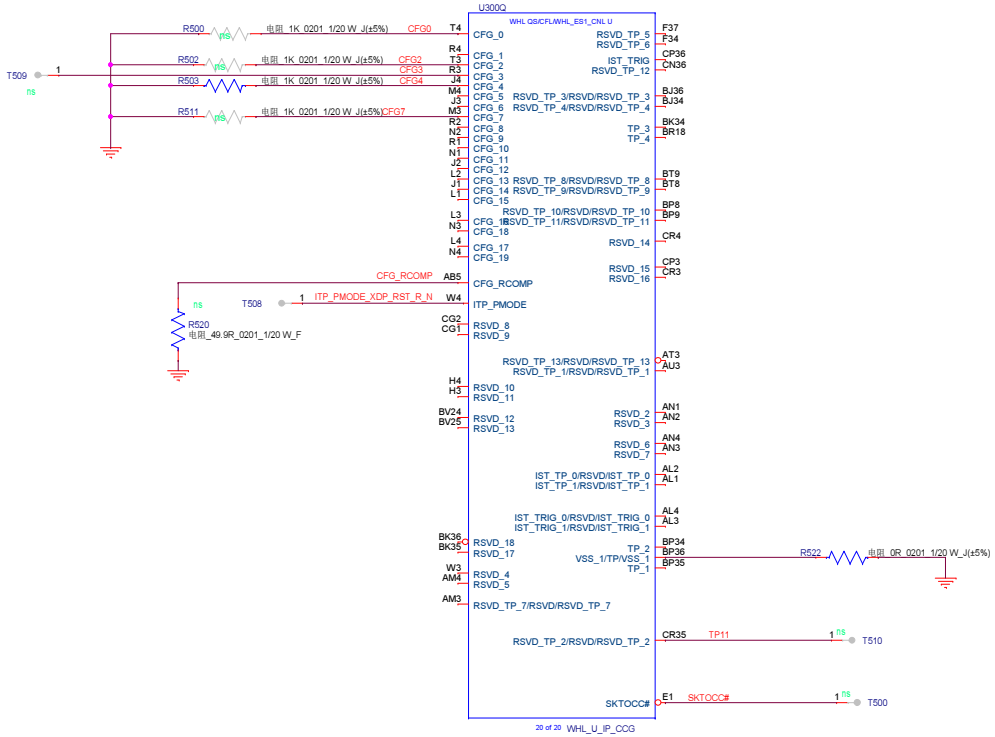
	Strap	How to Enable Port	How to Disable Port
DDI Port 1	DDPB_CTRLDATA(L12)	Pull up to 3.3 V	No Connect
DDI Port 2	DDPC_CTRLDATA(N8)	Pull up to 3.3 V	No Connect

Huaqin Telecom Technology Com.,Ltd.	
Page name:	03 WHL-U42(DISPLAY)
Size: A4	Project Name: NB2250
REV:	V1.0
Date:	Wednesday, November 13, 2019
Sheet:	3 of 96


3V SELECT STRAP
LOW-> 3.3V +/-5%
HIGH->3.0V +/-5%
U300K
WHL_U_IP_CCG
11 of 20
74AUP1G07GW
MC74VHC1G08DFT2G
LRB500V-40T1G
Huaqin Telecom Technology Com.,Ltd.
Page name: 04 WHL-U42(PMU)
Size: A4
Project Name: NB2250
REV: V1.0
Date: Wednesday, November 13, 2019
Sheet: 4 of 96

PCI EXPRESS STATIC LANE REVERSAL FOR ALL PEG PORTS

1:(DEFAULT)NORMAL OPERATION
0: LANE REVERSAL



DISPLAY PORT PRESENCE STRAP

CFG_4	0: ENABLED AN EXTERNAL DISPLAY PORT DEVICE IS CONNECTED TO THE EMBEDDED DISPLAY PORT 1: DISABLED NO PHYSICAL DISPLAY PORT ATTACHED TO EMBEDDED DISPLAY PORT
CFG_[6:5]	00: DEVICE 1 FUNCTION 1 ENABLED, DEVICE 1 FUNCTION 2 ENABLED 01: DEVICE 1 FUNCTION 1 DISABLED, DEVICE 1 FUNCTION 2 ENABLED 10: DEVICE1 FUNCTION1 ENABLED DEVICE1 FUNCTION 2 DISABLED 11: DEVICE1 FUNTION 1, DEVICE 1 FUNCTION2 DISABLED

Huaqin Telecom Technology Com.,Ltd.		
Page name: 05_WHL-U42(CFG)		
Size: A4	Project Name: NB2250	REV: V1.0
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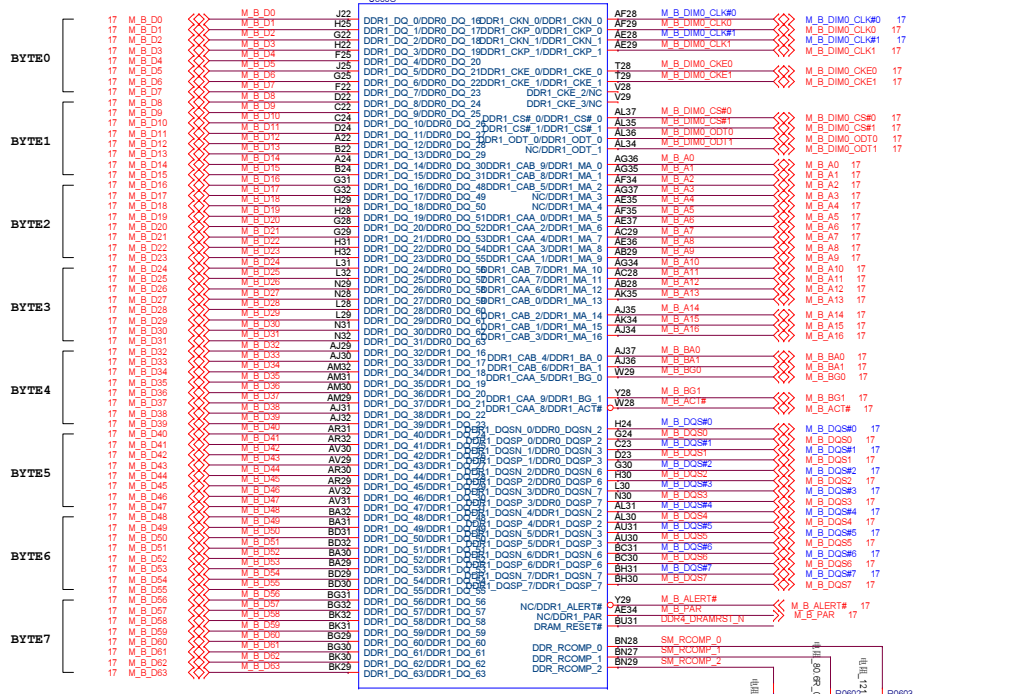
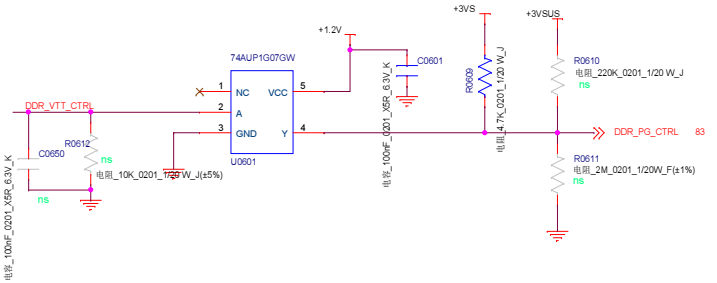
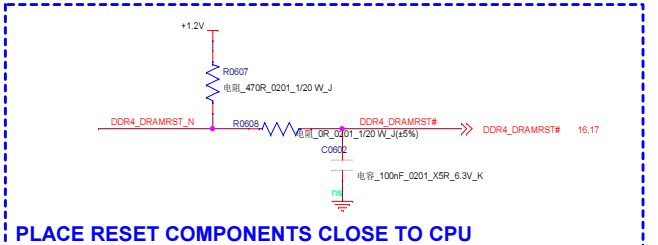
CHA_SODIMM







BOM NOTE

CFL-U43e/WHLU42/CMLU
[0]:121
[1]:80.6
[2]:100
CNL-U22:
100/100/100

Huaqin Telecom Technology Com.,Ltd.			
Page name:	06_WHL-U42(DDR4)		
Size: A4	Project Name: NB2250		REV: V1.0
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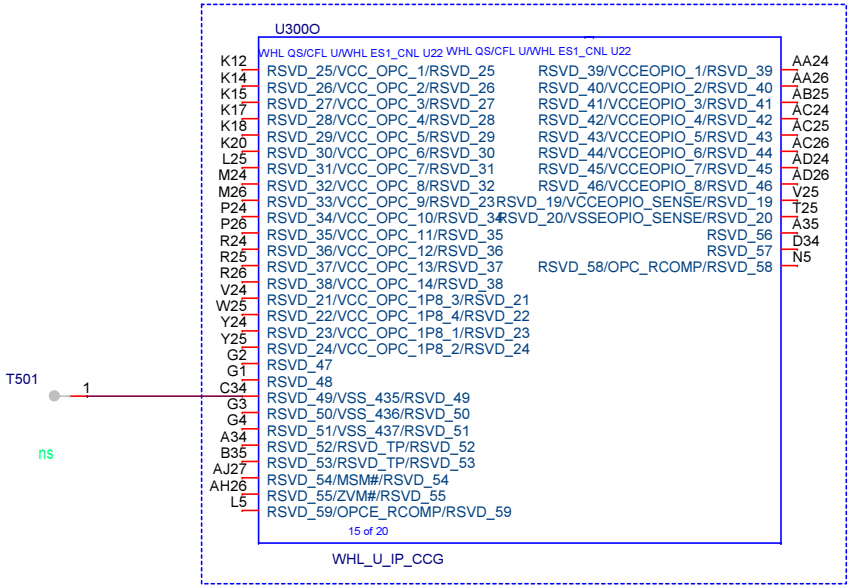
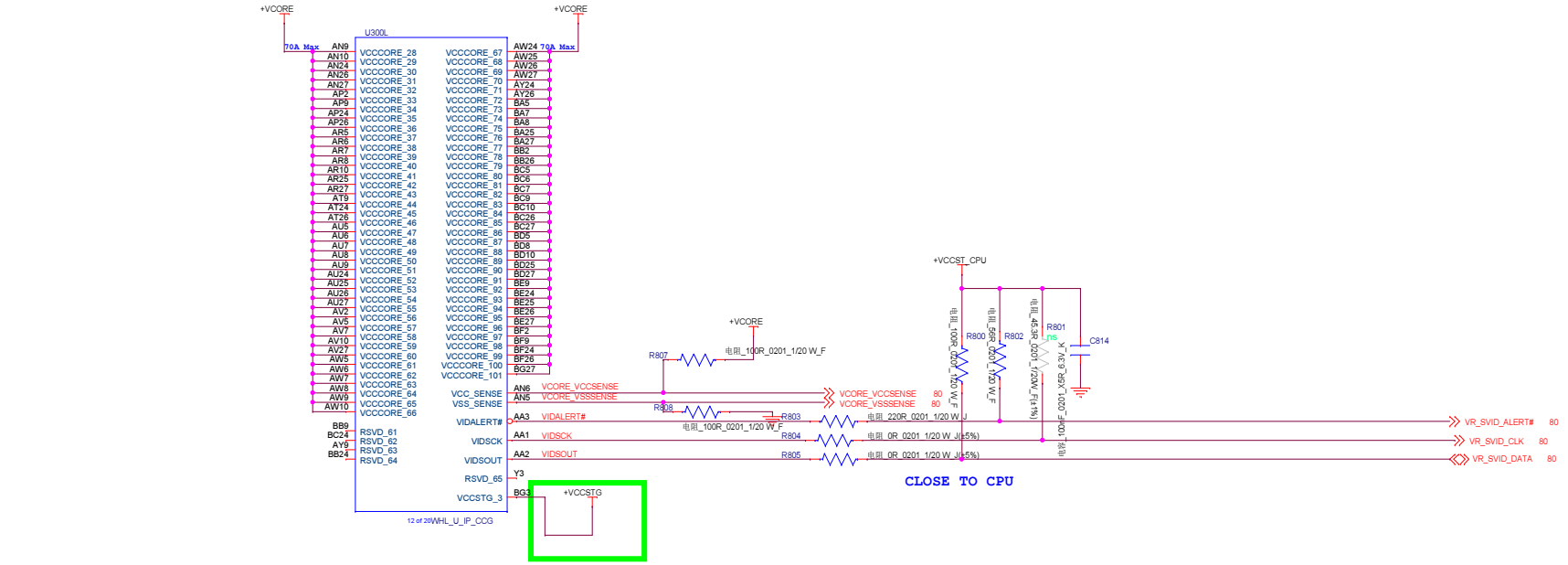
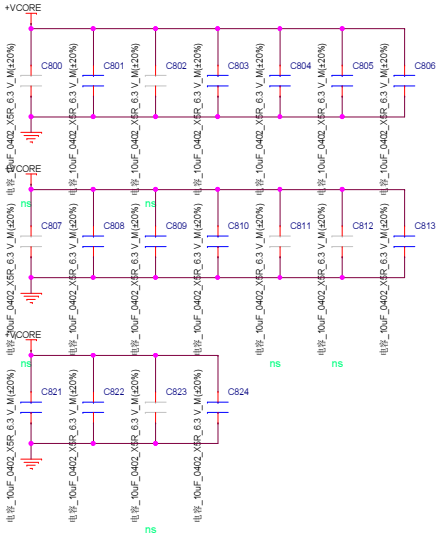
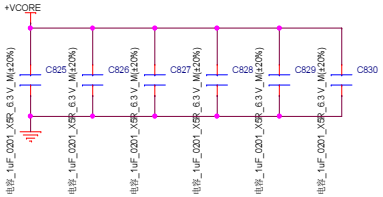


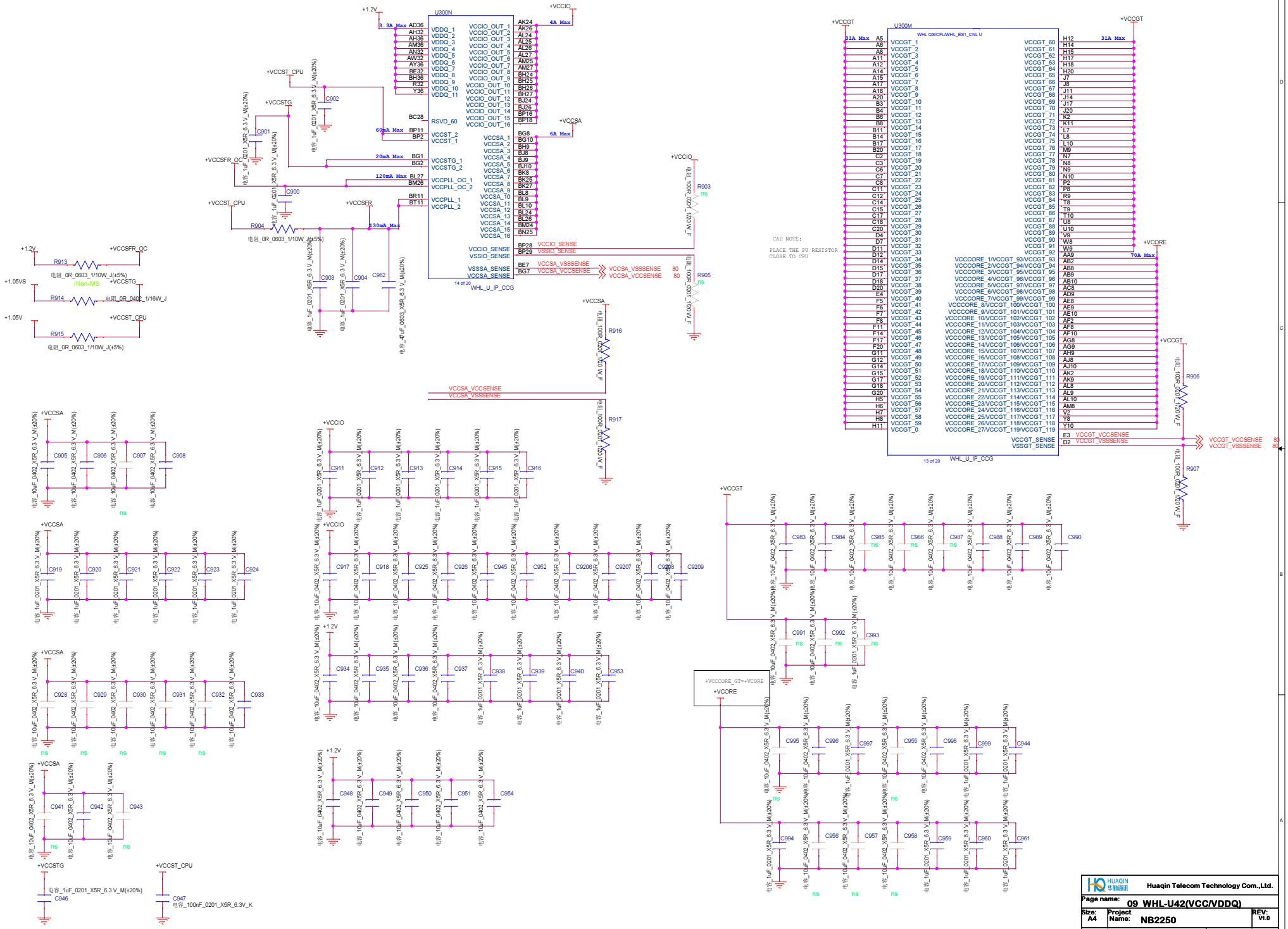
HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.	
Page name:	07_WHL-U42(CPU_RSVD)	
Size: A4	Project Name: NB2250	REV: V1.0
Date: Friday, November 08, 2019	Sheet: 7 of 96	







Huaqin Telecom Technology Com.,Ltd.		
Page name: 08_WHL-U42(CPU_POWER_01)		
Size: A4	Project Name: NB2250	REV: V1.0
Date: Wednesday, November 13, 2019	Sheet: 8 of 96	


U300N
WHL_U_IP_CCG
14 of 20
U300M
WHL OS/CFL/WHL_ES1_CNL U
13 of 20
CAD NOTE:
PLACE THE PU RESISTOR CLOSE TO CPU
+1.2V
+VCCIO
+VCCSA
+VCCGT
+VCORE
+VCCST_CPU
+VCCSTG
+VCCSFR_OC
+1.05VS
+1.05V
/Non-MS
VCCSA_VCCSENSE
VCCSA_VSSSENSE
VCCGT_VCCSENSE
VCCGT_VSSSENSE
VCCIO_SENSE
VSSIO_SENSE
+VCCORE_GT=+VCORE
Huaqin Telecom Technology Com.,Ltd.
Page name: 09 WHL-U42(VCC/VDDQ)
Size: A4
Project Name: NB2250
REV: V1.0
Date: Wednesday, November 13, 2019
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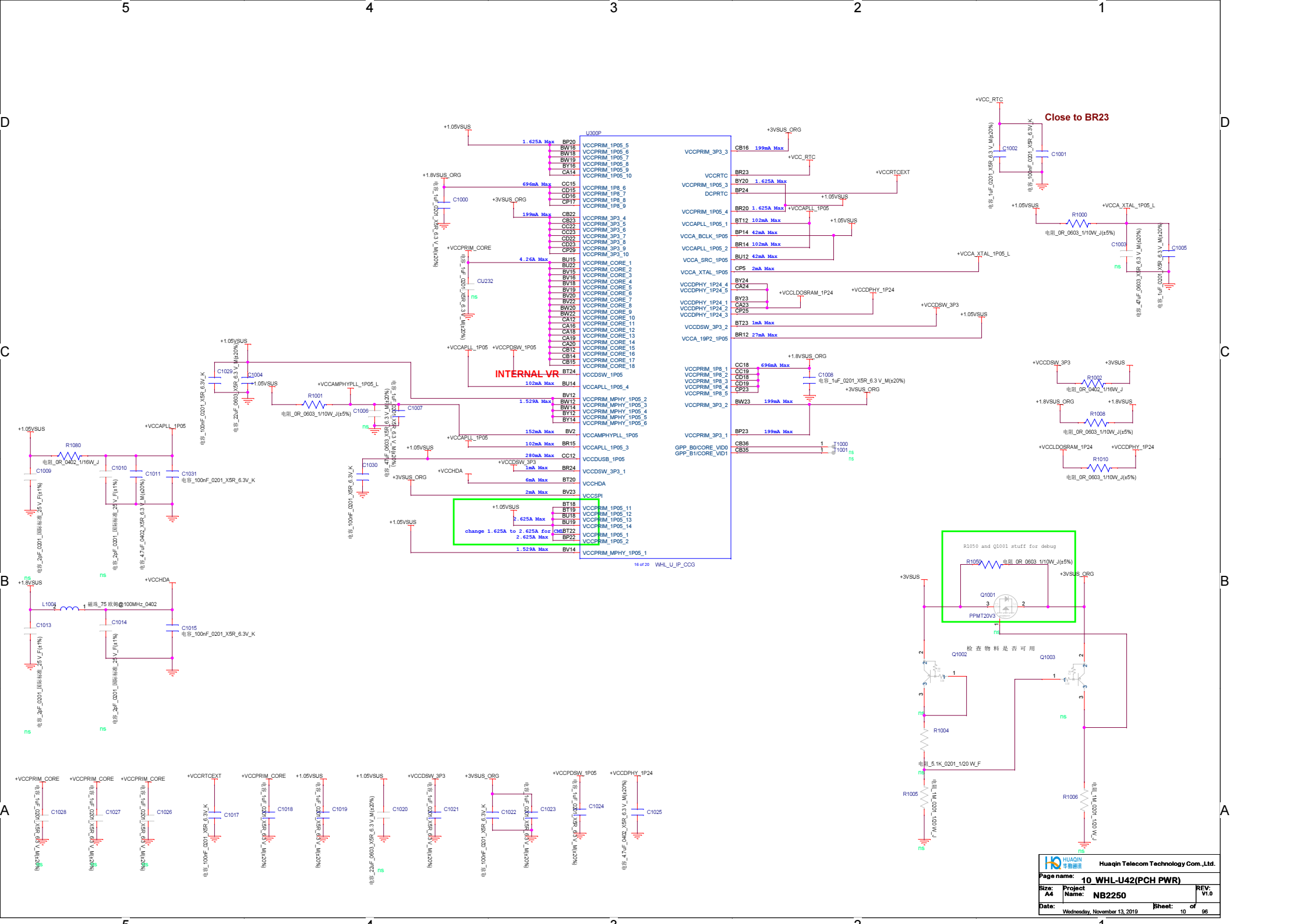
Close to BR23
INTERNAL VR
U300P
16 of 20 WHL_U_IP_CCG
R1050 and Q1001 stuff for debug
检查物料是否可用
Huaqin Telecom Technology Com.,Ltd.
Page name: 10_WHL-U42(PCH PWR)
Size: A4
Project Name: NB2250
REV: V1.0
Date: Wednesday, November 13, 2019
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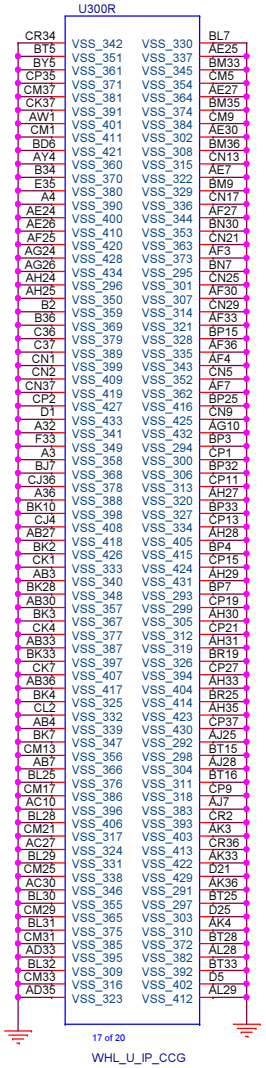
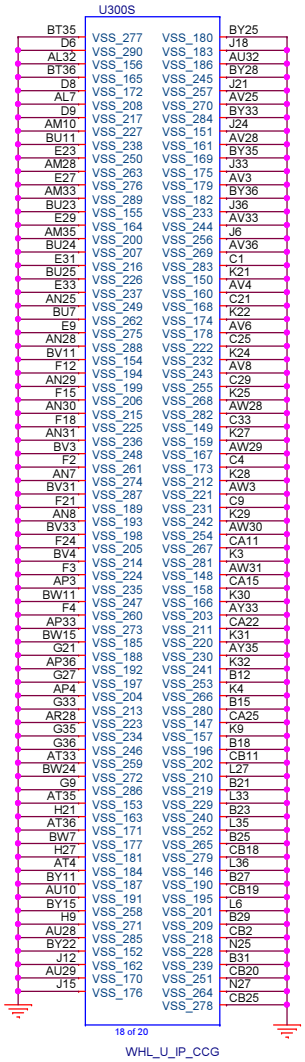
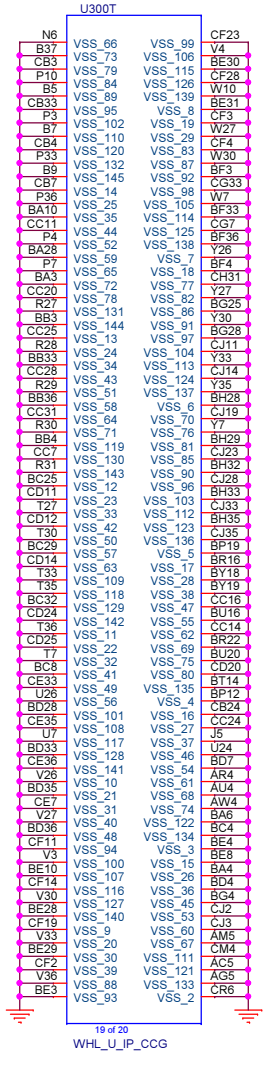
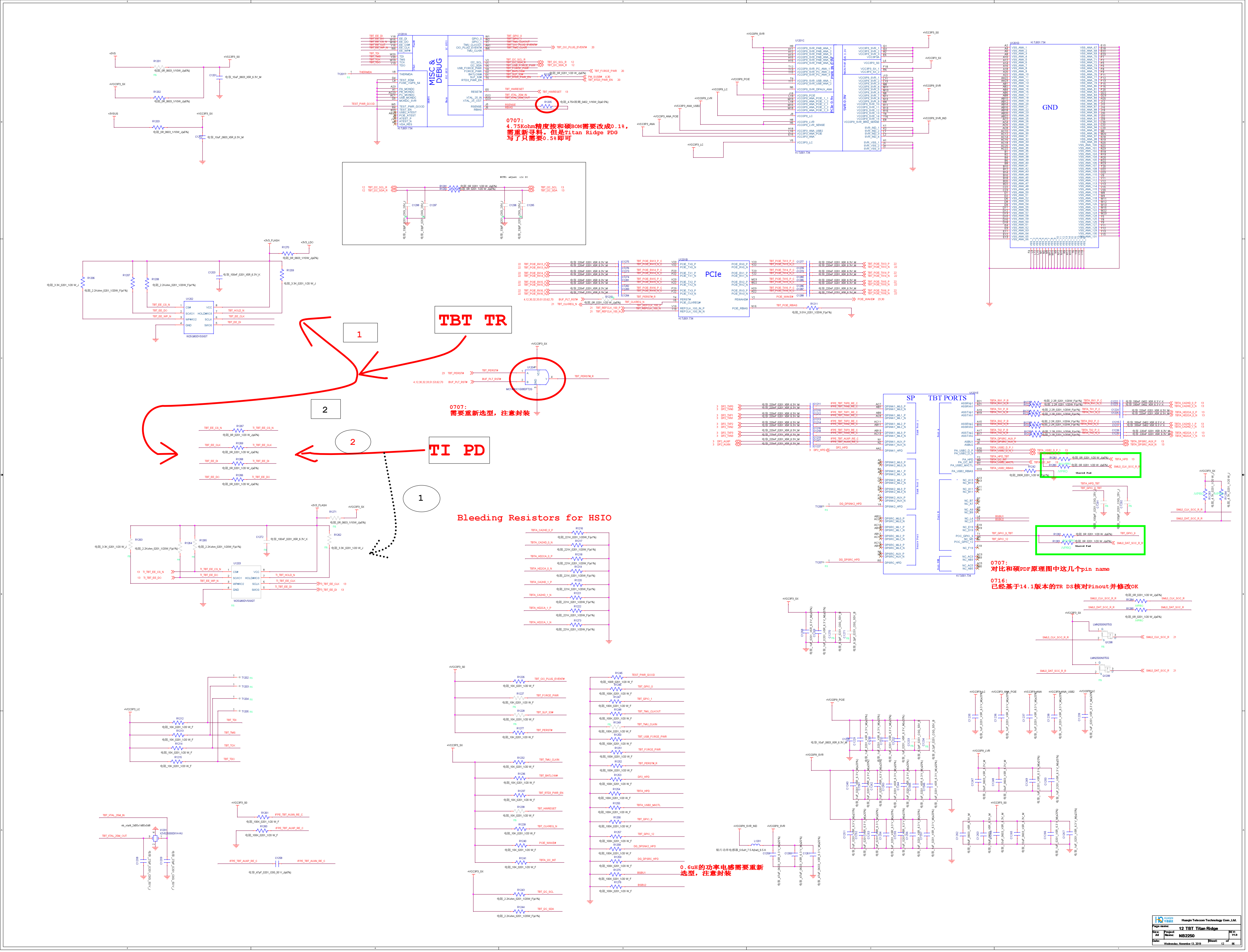
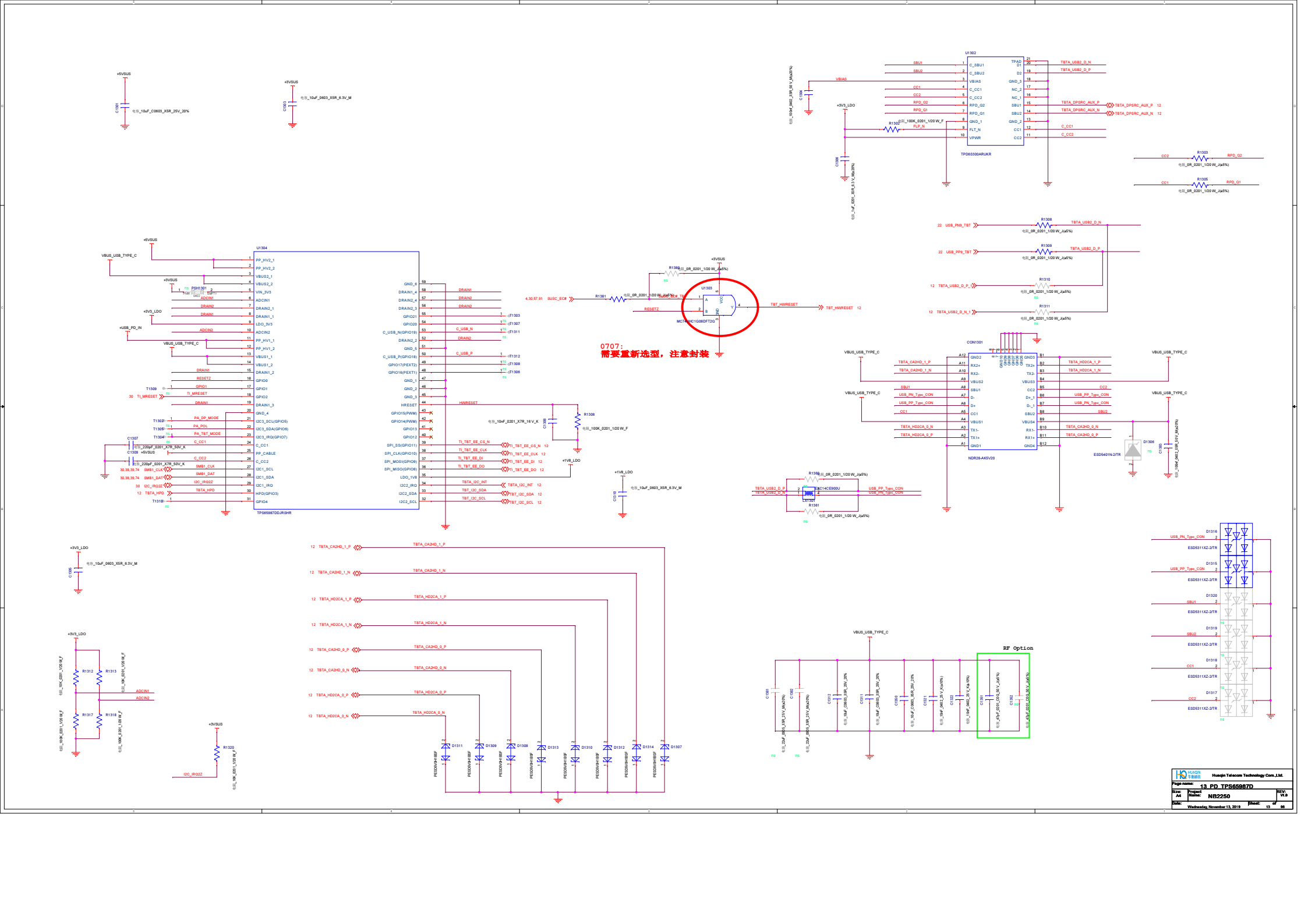






HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.	
Page name:	11_WHL-U42(VSS)	
Size: A4	Project Name: NB2250	REV: V1.0
Date: Friday, November 08, 2019	Sheet: 11 of 96	


MISC & DEBUG
0707:
4.75Kohm精度按和硕BOM需要改成0.1%,
需要重新寻料。但是Titan Ridge PDG
写了只需要0.5%即可
GND
PCIe
TBT TR
1
2
TI PD
0707:
需要重新选型，注意封装
Bleeding Resistors for HSIO
SP
TBT PORTS
0707:
对比和硕PDF原理图中这几个pin name
0716:
已经基于14.1版本的TR DS核对Pinout并修改OK
0.6uH的功率电感需要重新
选型，注意封装
Huaqin Telecom Technology Com.,Ltd.
12 TBT Titan Ridge
NB2250


U1304
TPS65987DDJRSHR
U1303
MC74VHC1G08DFT2G
U1302
TPD6S300ARUKR
CON1301
NDR28-AK5V20
0707:
需要重新选型，注意封装
RF Option
Huaqin Telecom Technology Com.,Ltd.
Page name: 13_PD_TPS65987D
Size: A4
Project Name: NB2250
REV: V1.0
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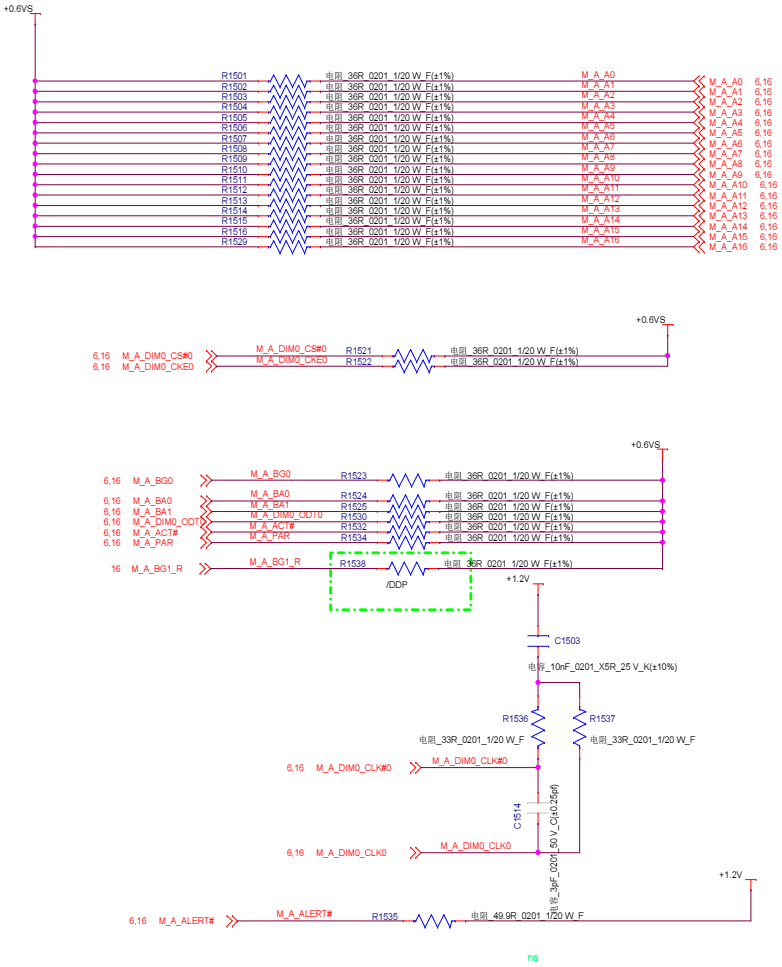
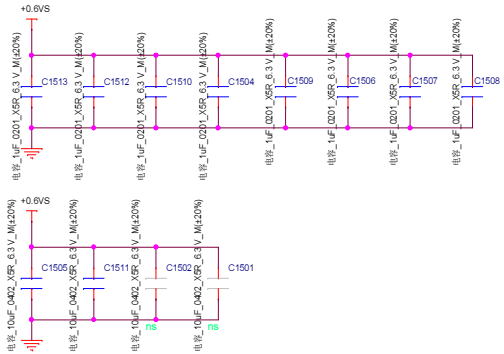
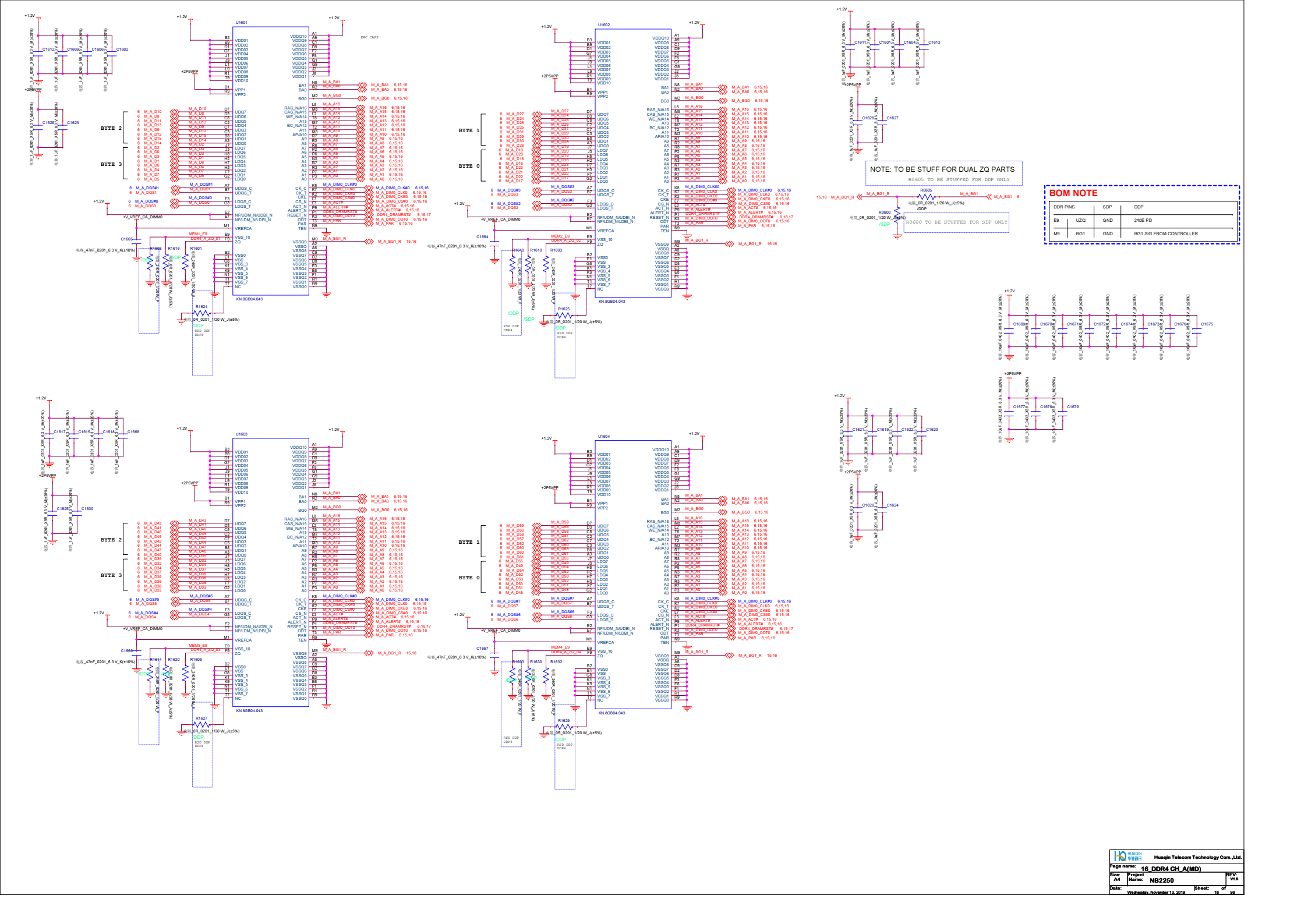
Page name:	14 BLANK
Size: A4	Project Name: NB2250
REV: V1.0	
Date: Friday, November 08, 2019	Sheet: 14 of 96





Huaqin Telecom Technology Com.,Ltd.		
Page name: 15_DDR4 TERMINATIONS		
Size: A4	Project Name: NB2250	REV: V1.0
Date: Wednesday, November 13, 2019	Sheet: 15 of 96	


NOTE: TO BE STUFF FOR DUAL ZQ PARTS
R0605 TO BE STUFFED FOR DDP ONLY
R0600 TO BE STUFFED FOR SDP ONLY
BOM NOTE
DDR PINS | SDP | DDP
E9 | UZQ | GND | 240E PD
M9 | BG1 | GND | BG1 SIG FROM CONTROLLER
BYTE 2
BYTE 3
BYTE 1
BYTE 0
KN.8GB04.043
Huaqin Telecom Technology Com.,Ltd.
Page name: 16_DDR4 CH_A(MD)
Size: A4
Project Name: NB2250
REV: V1.0
Date: Wednesday, November 13, 2019
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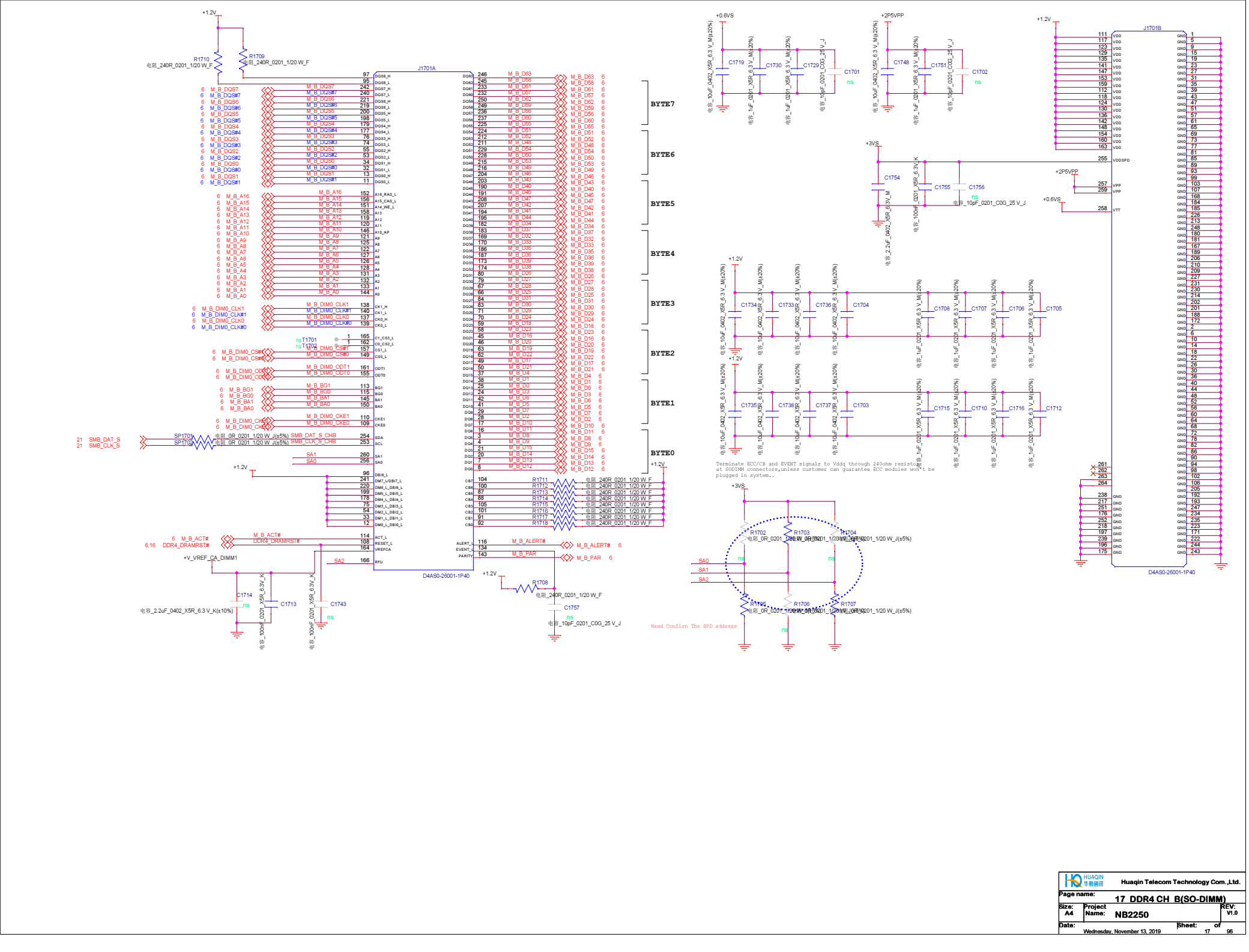
J1701A
J1701B
D4AS0-26001-1P40
BYTE7
BYTE6
BYTE5
BYTE4
BYTE3
BYTE2
BYTE1
BYTE0
Terminate ECC/CB and EVENT signals to Vddq through 240ohm resistors at SODIMM connectors,unless customer can guarantee ECC modules won't be plugged in system..
Need Confirm The SPD address
HUAQIN 华勤通讯
Huaqin Telecom Technology Com.,Ltd.
Page name: 17_DDR4 CH_B(SO-DIMM)
Size: A4
Project Name: NB2250
REV: V1.0
Date: Wednesday, November 13, 2019
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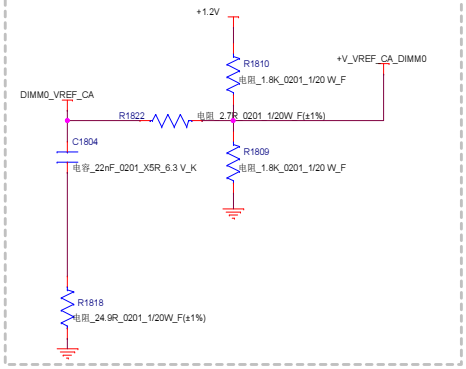
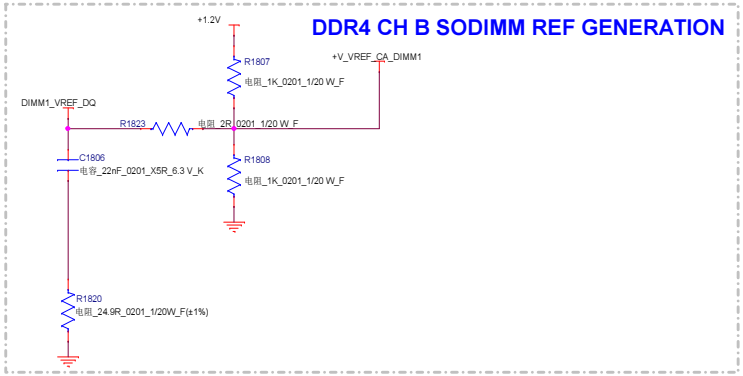
DDR4 CH A MD REF GENERATION



DDR4 CH B SODIMM REF GENERATION



Huaqin Telecom Technology Com.,Ltd.		
Page name: 18_DDR4_CA/DQ Voltage		
Size: A4	Project Name: NB2250	REV: V1.0
Date: Friday, November 08, 2019	Sheet: 18 of 96	

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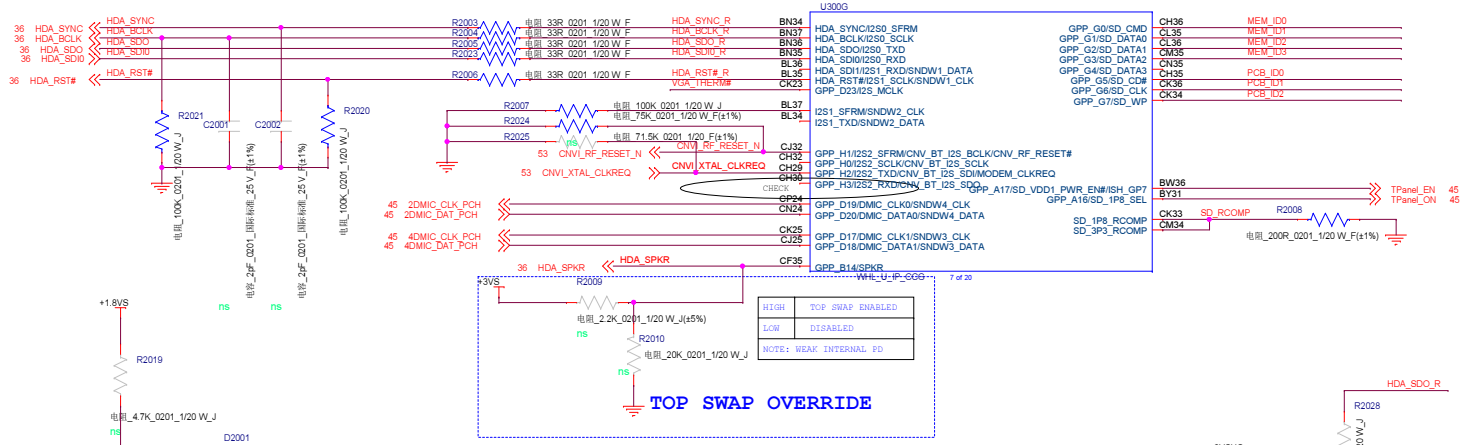
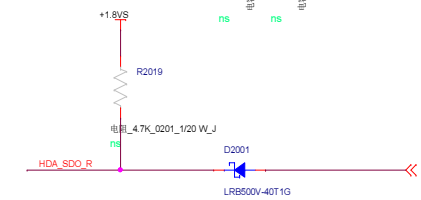
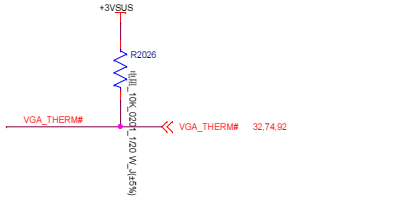
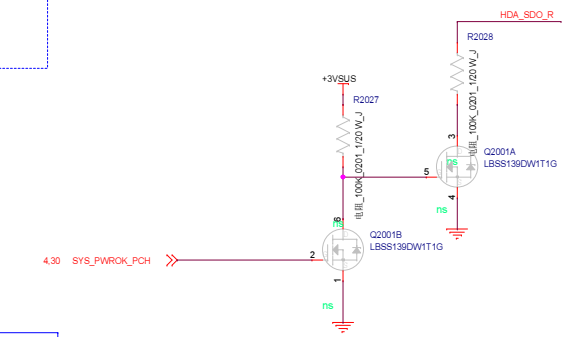
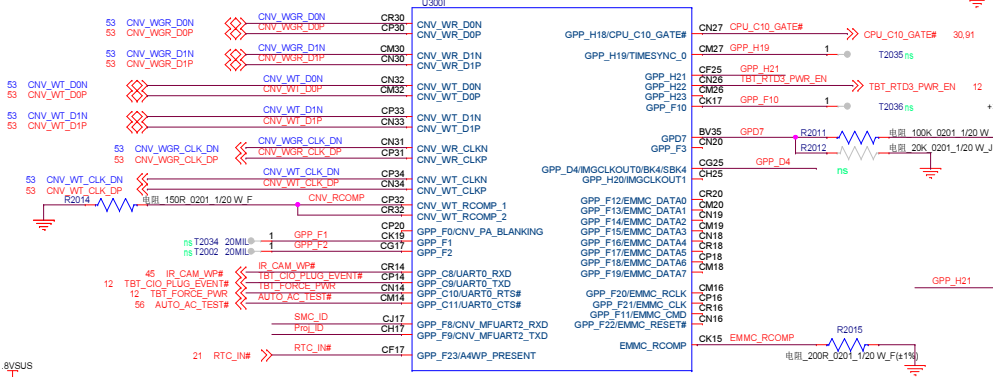
Page name:	19 BLANK	
Size: A4	Project Name: NB2250	REV: V1.0
Date: Friday, November 08, 2019	Sheet: 19 of 96	

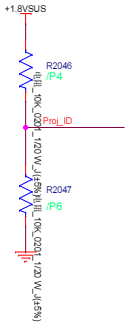




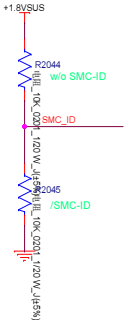




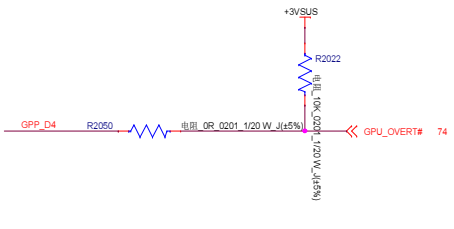


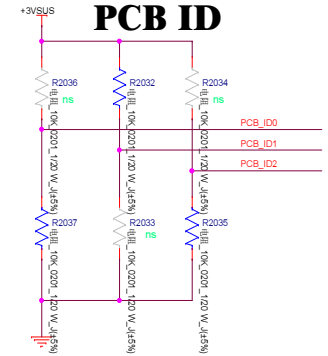


Proj_ID	GPP_F9
P6	0
P4	1



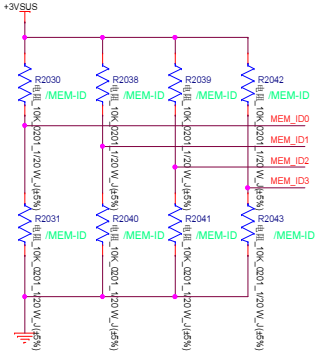
SMC_ID	GPP_F8
/SMC	0
w/o SMC	1





PCB ID

Phase	PCB_ID2 GPP_G7	PCB_ID1 GPP_G6	PCB_ID0 GPP_G5
R10	0	0	0
R11	0	0	1
R12	0	1	0
R13	0	1	1
R14	1	0	0
R15	1	0	1
R20	1	1	0



MEM ID

	MEM_ID3 GPP_G3	MEM_ID2 GPP_G2	MEM_ID1 GPP_G1	MEM_ID0 GPP_G0
MICRON MT40A1G16KNR-075:E DDP	0	0	0	0
Hynix H5ANAG6NCMR-VKC DDP	0	0	0	1
	0	0	1	0
Hynix H5AN8G6NCJR-VKC SDP	0	0	1	1
MICRON MT40A512M16TB-062E:J SDP	0	1	0	0
	0	1	0	1
	0	1	1	0

HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.		
Page name:	20_WHL-U42(HDA/SD/I2C/GSPI)		
Size: A4	Project Name: NB2250	REV: V1.0	
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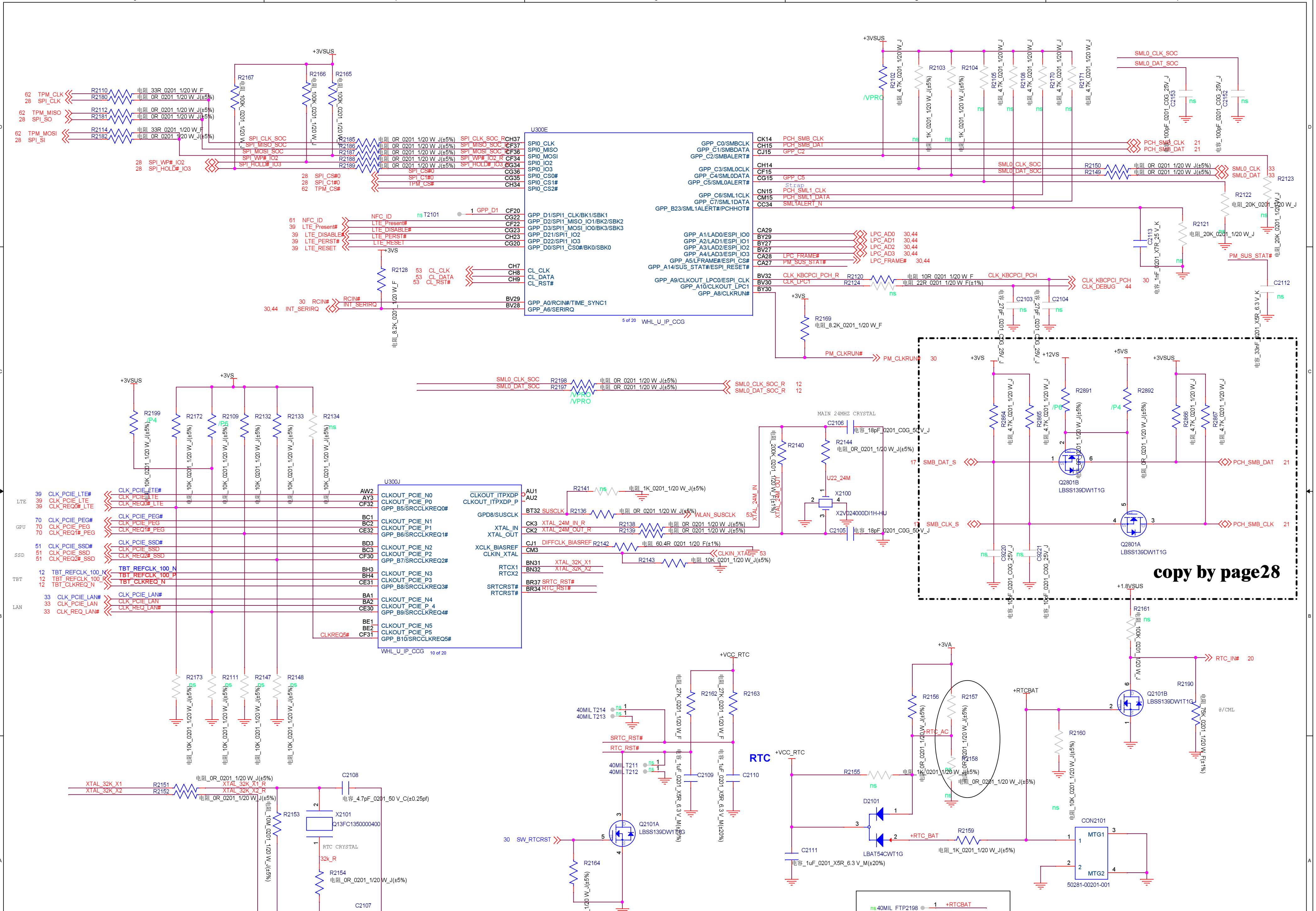
U300E
SPI0_CLK
SPI0_MISO
SPI0_MOSI
SPI0_IO2
SPI0_IO3
SPI0_CS0#
SPI0_CS1#
SPI0_CS2#
GPP_C0/SMBCLK
GPP_C1/SMBDATA
GPP_C2/SMBALERT#
GPP_C3/SML0CLK
GPP_C4/SML0DATA
GPP_C5/SML0ALERT#
GPP_C6/SML1CLK
GPP_C7/SML1DATA
GPP_B23/SML1ALERT#/PCHHOT#
GPP_D1/SPI1_CLK/BK1/SBK1
GPP_D2/SPI1_MISO_IO1/BK2/SBK2
GPP_D3/SPI1_MOSI_IO0/BK3/SBK3
GPP_D21/SPI1_IO2
GPP_D22/SPI1_IO3
GPP_D0/SPI1_CS0#/BK0/SBK0
GPP_A1/LAD0/ESPI_IO0
GPP_A2/LAD1/ESPI_IO1
GPP_A3/LAD2/ESPI_IO2
GPP_A4/LAD3/ESPI_IO3
GPP_A5/LFRAME#/ESPI_CS#
GPP_A14/SUS_STAT#/ESPI_RESET#
CL_CLK
CL_DATA
CL_RST#
GPP_A9/CLKOUT_LPC0/ESPI_CLK
GPP_A10/CLKOUT_LPC1
GPP_A8/CLKRUN#
GPP_A0/RCIN#/TIME_SYNC1
GPP_A6/SERIRQ
5 of 20 WHL_U_IP_CCG
U300J
CLKOUT_PCIE_N0
CLKOUT_PCIE_P0
GPP_B5/SRCCLKREQ0#
CLKOUT_PCIE_N1
CLKOUT_PCIE_P1
GPP_B6/SRCCLKREQ1#
CLKOUT_PCIE_N2
CLKOUT_PCIE_P2
GPP_B7/SRCCLKREQ2#
CLKOUT_PCIE_N3
CLKOUT_PCIE_P3
GPP_B8/SRCCLKREQ3#
CLKOUT_PCIE_N4
CLKOUT_PCIE_P_4
GPP_B9/SRCCLKREQ4#
CLKOUT_PCIE_N5
CLKOUT_PCIE_P5
GPP_B10/SRCCLKREQ5#
CLKOUT_ITPXDP
CLKOUT_ITPXDP_P
GPD8/SUSCLK
XTAL_IN
XTAL_OUT
XCLK_BIASREF
CLKIN_XTAL
RTCX1
RTCX2
SRTCRST#
RTCRST#
WHL_U_IP_CCG 10 of 20
MAIN 24MHZ CRYSTAL
X2100
RTC CRYSTAL
X2101
RTC
copy by page28
Q2801A LBSS139DW1T1G
Q2801B LBSS139DW1T1G
Q2101A LBSS139DW1T1G
Q2101B LBSS139DW1T1G
D2101 LBAT54CWT1G
CON2101 50281-00201-001
40MIL FTP2198 +RTCBAT
40MIL FTP2199

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Page name	21_WHL-U42(SPI/LPC/ESPI/XDP)		
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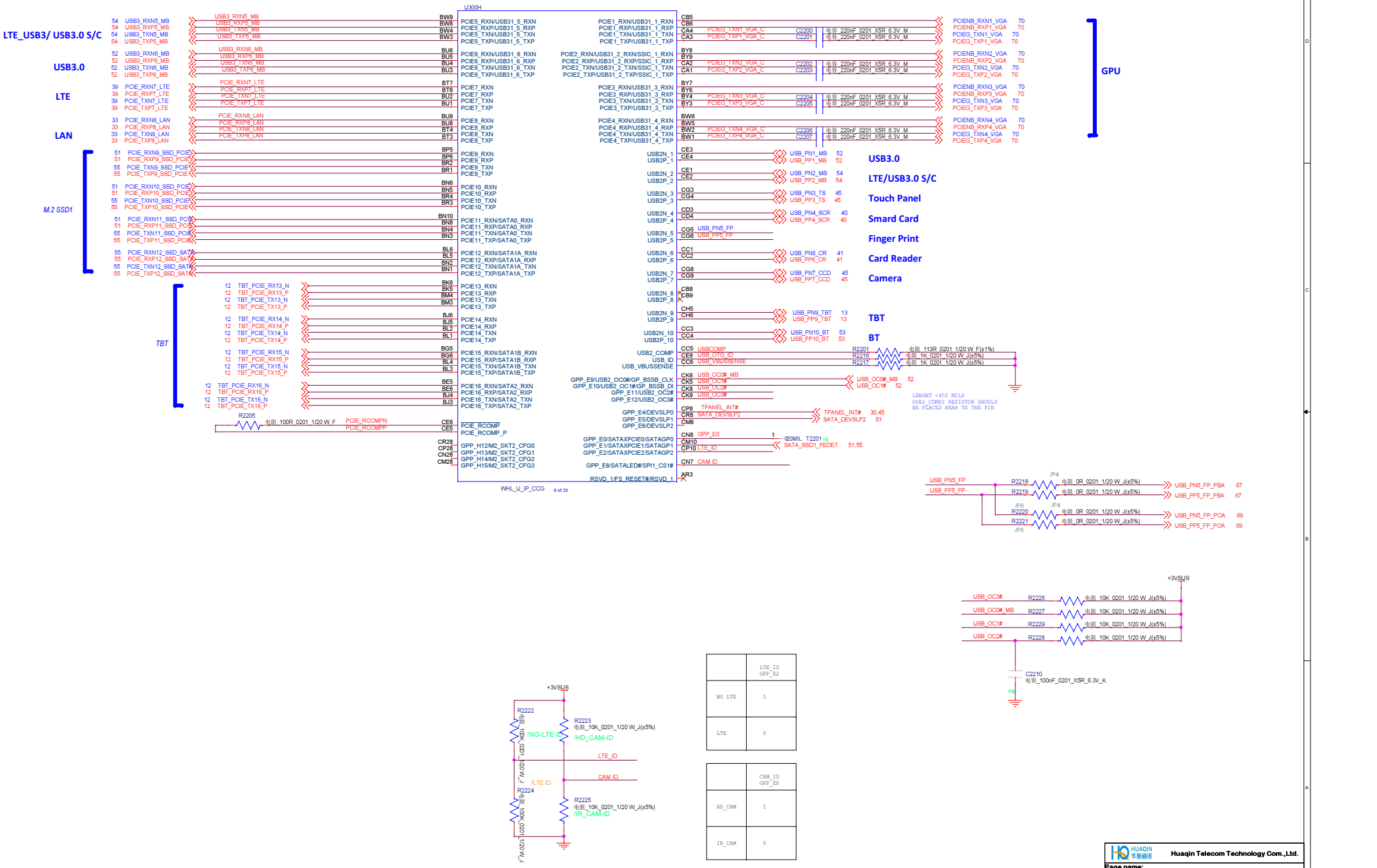

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Page name:	22 WHL-U42(USB/PCIE)
Size: A4	Project Name: NB2250
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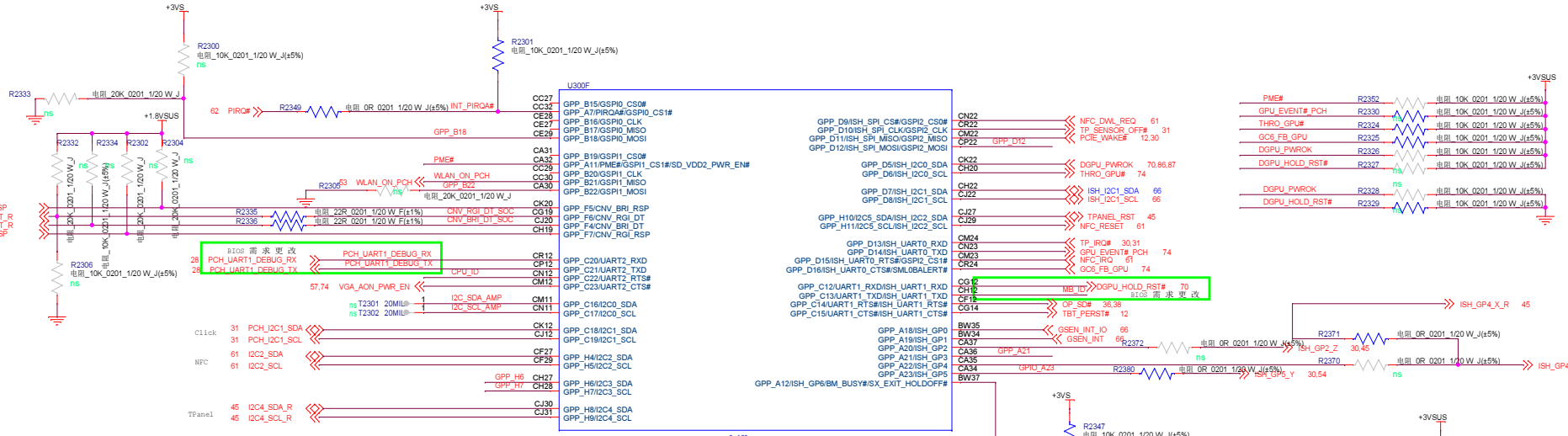
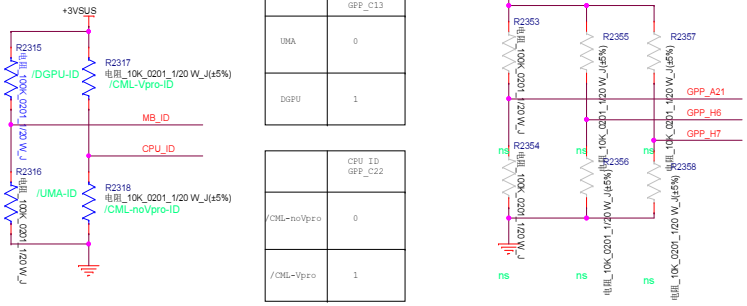


CPU BD ID



	MB ID GPP_C13
UMA	0
DGPU	1

	CPU ID GPP_C22
/CML-noVpro	0
/CML-Vpro	1

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Page name:	23 WHL-U42(PCH_I2C, CNVi, GPIO)
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Page name:	27_BLANK
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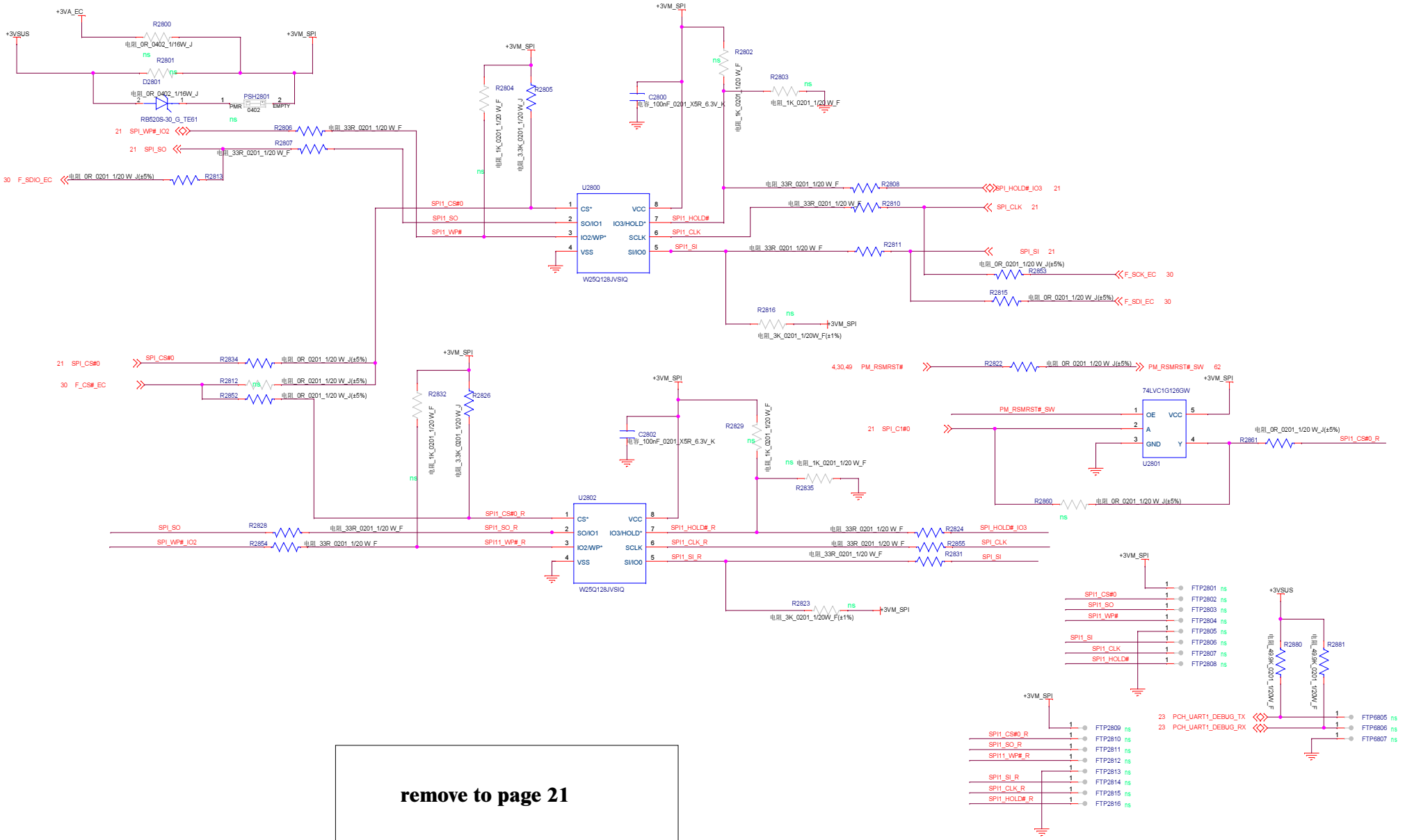

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Page name:	28 SYSTEM FLASH	
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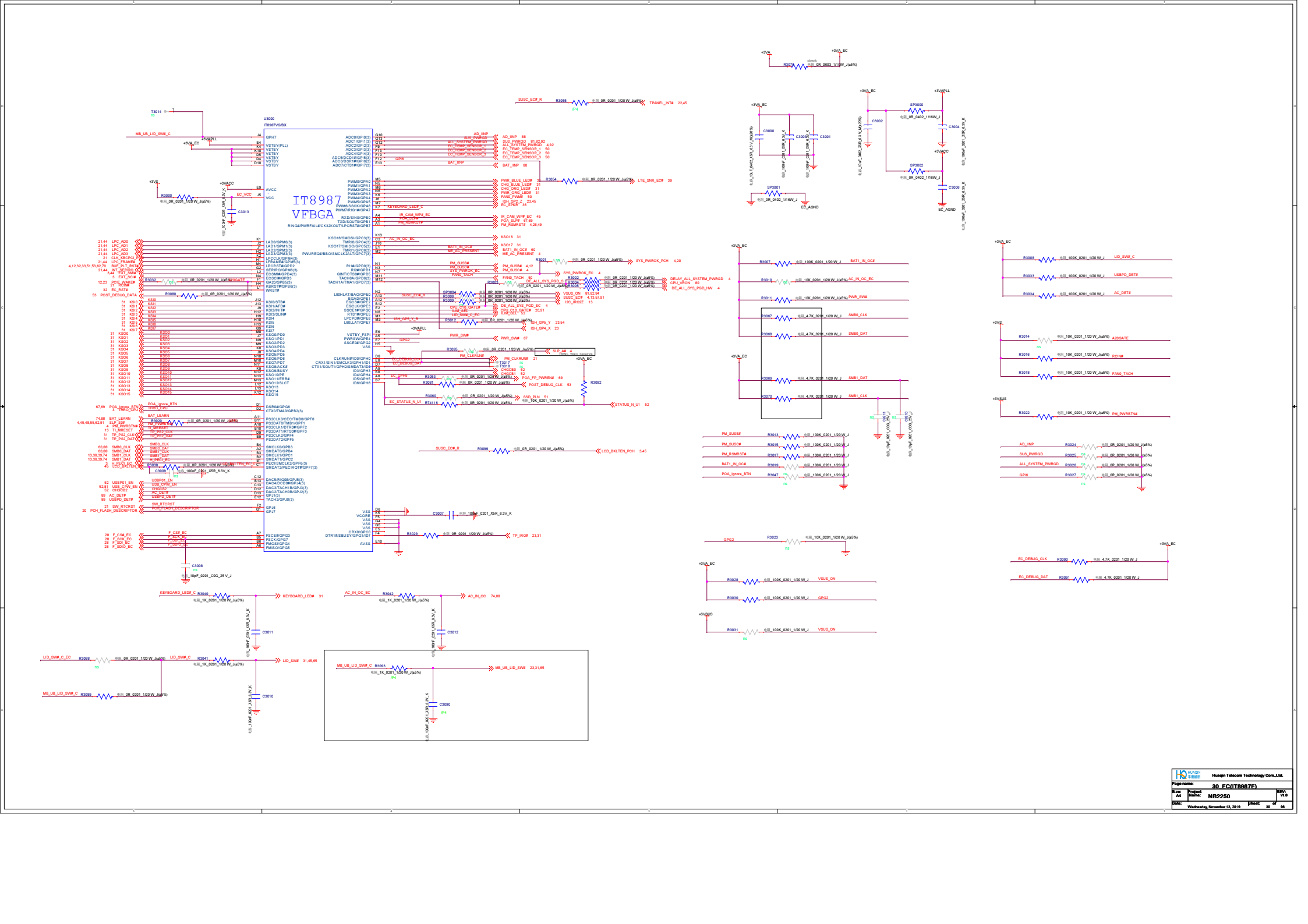
U3000
IT8987VG/BX
IT8987
VFBGA
GPH7
VSTBY(PLL)
VSTBY
VSTBY
VSTBY
VSTBY
VSTBY
AVCC
VCC
LAD0/GPM0(3)
LAD1/GPM1(3)
LAD2/GPM2(3)
LAD3/GPM3(3)
LPCCLK/GPM4(3)
LFRAME#/GPM5(3)
LPCRST#/GPD2
SERIRQ/GPM6(3)
ECSCI#/GPD3
GA20/GPB5(3)
KBRST#/GPB6(3)
WRST#
KSO16/SMOSI/GPC3(3)
TMRI0/GPC4(3)
KSO17/SMISO/GPC5(3)
TMRI1/GPC6(3)
PWUREQ#/BBO/SMCLK2/ALT/GPC7(3)
RI1#/GPD0(3)
RI2#/GPD1
GINT/CTS0#/GPD5
TACH0A/GPD6(3)
TACH1A/TMA1/GPD7(3)
L80HLAT/BAO/GPE0
EGAD/GPE1
EGCS#/GPE2
EGCLK/GPE3
SSCE1#/GPG0
RTS1#/GPG5
LPCPD#/GPE6
LBDLLAT/GPE7
VSTBY_FSP
PWRSW/GPE4
SSCE0#/GPG2
VSS
CLKRUN#/IDG/GPH0
CRX1/SIN1/SMCLK3/GPH1/ID1
CTX1/SOUT1/GPH2/SMDAT3/ID2
IDS/GPH3
IDA/GPH4
IDS/GPH5
ID6/GPH6
DSR0#/GPG6
CTX0/TMA0/GPB2(3)
PS2CLK0/CEC/TMB0/GPF0
PS2DAT0/TMB1/GPF1
PS2CLK1/DTR0#/GPF2
PS2DAT1/RTS0#/GPF3
PS2CLK2/GPF4
PS2DAT2/GPF5
SMCLK0/GPB3
SMDAT0/GPB4
SMCLK1/GPC1
SMDAT1/GPC2
PECI/SMCLK2/GPF6(3)
SMDAT2/PECIRQT#/GPF7(3)
DAC5/RIGD#/GPJ5(3)
DAC4/DCD0#/GPJ4(3)
DAC3/TACH1B/GPJ3(3)
DAC2/TACH0B/GPJ2(3)
GPJ1(3)
TACH3/GPJ0(3)
GPJ6
GPJ7
FSCE#/GPG3
FSCK/GPG7
FMOSI/GPG4
FMISO/GPG5
ADC0/GPI0(3)
ADC1/GPI1(3)
ADC2/GPI2(3)
ADC3/GPI3(3)
ADC4/GPI4(3)
ADC5/DCD1#/GPI5(3)
ADC6/DSR1#/GPI6(3)
ADC7/CTS1#/GPI7(3)
GPI6
BAT_IINP
PWMG/GPA0
PWM1/GPA1
PWM2/GPA2
PWM3/GPA3
PWM4/GPA4
PWM5/GPA5
PWM6/SSCK/GPA6
PWM7/RIG1#/GPA7
KEYBOARD_LED#_C
RXD/SINIG/GPB0
TXD/SOUTG/GPB1
RING#/PWRFAIL#/CK32KOUT/LPCRST#/GPB7
VSS
VCORE
VSS
VSS
VSS
CRXD/GPC0
DTR1#/SBUSY/GPG1/ID7
AVSS
T3014
MB_UB_LID_SW#_C
+3VALPLL
+3VA_EC
+3VS
+3VACC
EC_VCC
C3013
R3000
0R_0201_1/20 W_J±5%
+3VA
+3VA_EC
R3073
0R_0603_1/16W_J±5%
SUSC_EC#_R
R3055
0R_0201_1/20 W_J±5%
TPANEL_INT# 22,45
C3000
C3001
C3002
C3003
SP3000
0R_0402_1/16W_J
C3004
SP3002
C3006
SP3001
EC_AGND
AD_INP 88
SUS_PWRGD 81,82,92
ALL_SYSTEM_PWRGD 4,92
EC_TEMP_SENSOR_1 50
EC_TEMP_SENSOR_2 50
EC_TEMP_SENSOR_3 50
BAT_IINP 88
PWR_BLUE_LED# 31
CHG_BLUE_LED# 31
CHG_ORG_LED# 31
PWR_ORG_LED# 31
FAN2_PWM# 50
ISH_GPI_2 23,45
EC_SPKR 36
R3054
0R_0201_1/20 W_J±5%
LTE_SNR_EC# 39
KEYBOARD_LED# 31
IR_CAM_WP#_EC
PCH_SYS
PM_RSMRST#
IR_CAM_WP#_EC 45
PCH_SYS 67,69
PM_RSMRST# 4,28,49
KSO16 31
KSO17 31
BAT1_IN_OC# 60
ME_AC_PRESENT 4
AC_IN_OC_EC
BAT1_IN_OC#
ME_AC_PRESENT
R3001
0R_0201_1/20 W_J±5%
SYS_PWROK_PCH 4,20
PM_SUSB#
PM_SUSB# 4,12
PM_SUSC# 4
SYS_PWROK_EC
FAN2_TACH
SYS_PWROK_EC 4
FAN2_TACH 50
R3002
0R_0201_1/20 W_J±5%
DELAY_ALL_SYSTEM_PWRGD 4
R3004
0R_0201_1/20 W_J±5%
CPU_VRON 80
R3005
0R_0201_1/20 W_J±5%
DE_ALL_SYS_PGD_HW 4
R3007
100K_0201_1/20 W_J
BAT1_IN_OC#
R3010
10K_0201_1/20 W_J±5%
AC_IN_OC_EC
R3011
10K_0201_1/20 W_J±5%
PWR_SW#
R3067
4.7K_0201_1/20 W_J
SMB0_CLK
R3068
4.7K_0201_1/20 W_J
SMB0_DAT
R3069
4.7K_0201_1/20 W_J
SMB1_DAT
R3070
4.7K_0201_1/20 W_J
SMB1_CLK
R3008
100K_0201_1/20 W_J
LID_SW#_C
R3033
100K_0201_1/20 W_J
USBPD_DET#
R3034
100K_0201_1/20 W_J
AC_DET#
R3014
10K_0201_1/20 W_J±5%
A20GATE
R3016
10K_0201_1/20 W_J±5%
RCIN#
R3018
10K_0201_1/20 W_J±5%
FAN2_TACH
R3022
10K_0201_1/20 W_J±5%
PM_PWRSTN#
PM_SUSB# R3013 100K_0201_1/20 W_J
PM_SUSC# R3015 100K_0201_1/20 W_J
PM_RSMRST# R3017 100K_0201_1/20 W_J
BAT1_IN_OC# R3019 100K_0201_1/20 W_J
POA_Ignore_BTN R3047 100K_0201_1/20 W_J
AD_IINP R3024 0R_0201_1/20 W_J±5%
SUS_PWRGD R3025 0R_0201_1/20 W_J±5%
ALL_SYSTEM_PWRGD R3026 0R_0201_1/20 W_J±5%
GPI6 R3027 0R_0201_1/20 W_J±5%
GPG2 R3023 10K_0201_1/20 W_J±5%
R3028 100K_0201_1/20 W_J
VSUS_ON
R3030 100K_0201_1/20 W_J
GPG2
R3031 100K_0201_1/20 W_J
VSUS_ON
EC_DEBUG_CLK R3090 4.7K_0201_1/20 W_J
EC_DEBUG_DAT R3091 4.7K_0201_1/20 W_J
POA_Ignore_BTN
PWRBTN_OUT
BAT_LEARN
SUP_GI#
PM_PWRBTN#
TP_SMIRESET
TP_PS2_CLK
TP_PS2_DAT
R3020
0R_0201_1/20 W_J±5%
SMB0_CLK
SMB0_DAT
SMB1_CLK
SMB1_DAT
H_PECI_EC
LCD_BKLTEN
R3038
0R_0201_1/20 W_J±5%
C3009
100pF_0201_X5R_6.3V_K
USBP01_EN
USB_CPW_EN
CHGCB2
PU_DET#
USBP01_DET#
SW_RTCRST
PCH_FLASH_DESCRIPTOR
F_CS#_EC
F_SCK_EC
F_SDI_EC
F_SDIO_EC
C3008
10pF_0201_C0G_25 V_J
SUSC_EC#_R
R3099
0R_0201_1/20 W_J±5%
LCD_BKLTEN_PCH 3,45
R3095
0R_0201_1/20 W_J±5%
SLP_A#_J
PM_CLKRUN#
PM_CLKRUN# 21
T3017
T3018
CHGCB0 52
CHGCB1 52
EC_DEBUG_CLK
EC_DEBUG_DAT
R3053
0R_0201_1/20 W_J±5%
POA_FP_PWREN# 69
R3081
0R_0201_1/20 W_J±5%
POST_DEBUG_CLK 53
R3092
R3060
0R_0201_1/20 W_J±5%
SSD_PLN 51
R74116
10K_0201_1/20 W_J±5%
STATUS_N_U1 52
R3029
0R_0201_1/20 W_J±5%
TP_IRQ# 23,51
C3007
100pF_0201_X5R_6.3V_K
KEYBOARD_LED#_C R3040 1K_0201_1/20 W_J±5%
KEYBOARD_LED# 31
AC_IN_OC_EC R3042 1K_0201_1/20 W_J±5%
AC_IN_OC 74,88
C3011
C3012
LID_SW#_C_EC R3088 0R_0201_1/20 W_J±5%
LID_SW#_C R3041 1K_0201_1/20 W_J±5%
LID_SW# 31,45,65
MB_UB_LID_SW#_C R3089 0R_0201_1/20 W_J±5%
MB_UB_LID_SW#_C R3093 1K_0201_1/20 W_J±5%
MB_UB_LID_SW# 23,31,65
C3010
C3090
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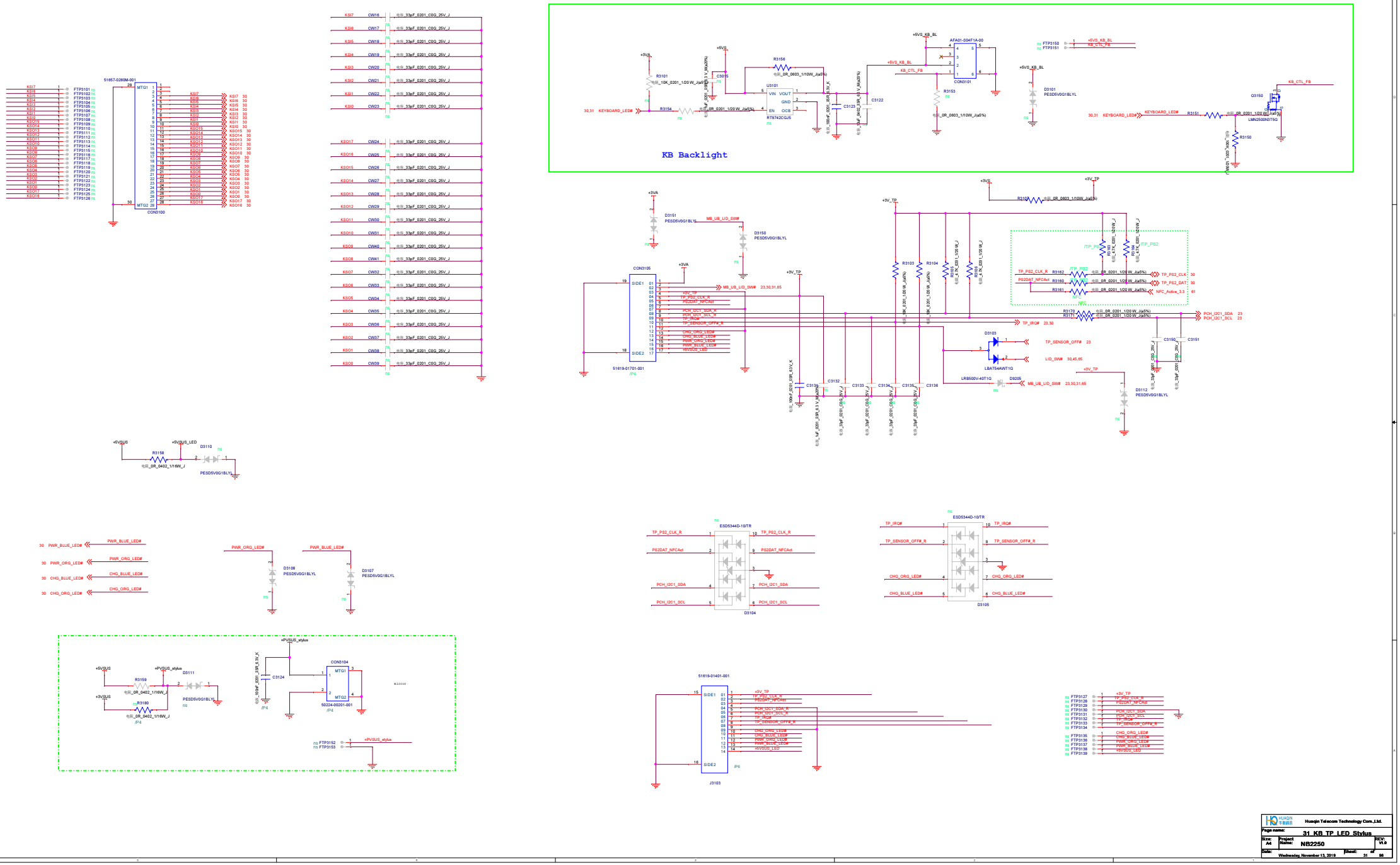

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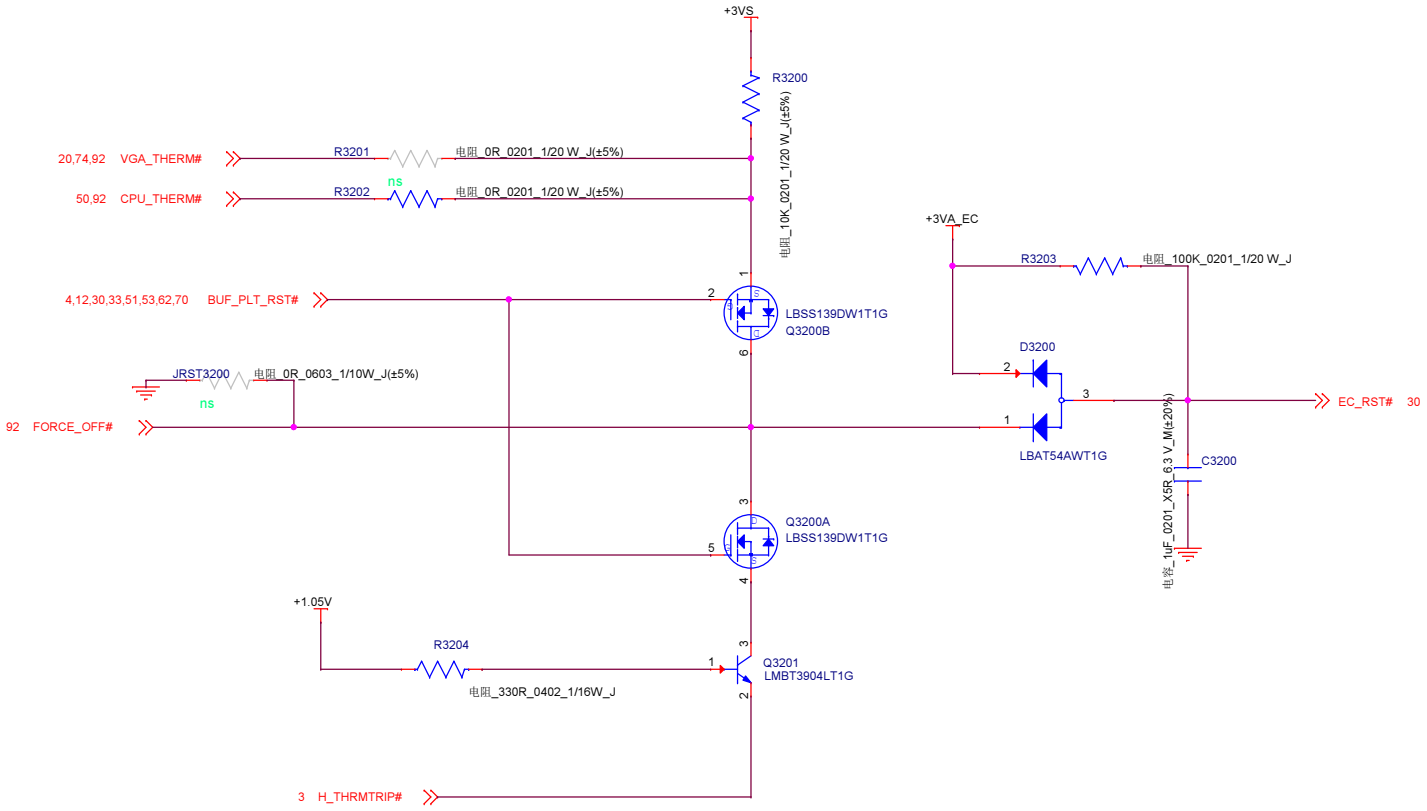

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Size: A4	Project Name: NB2250	REV: V1.0
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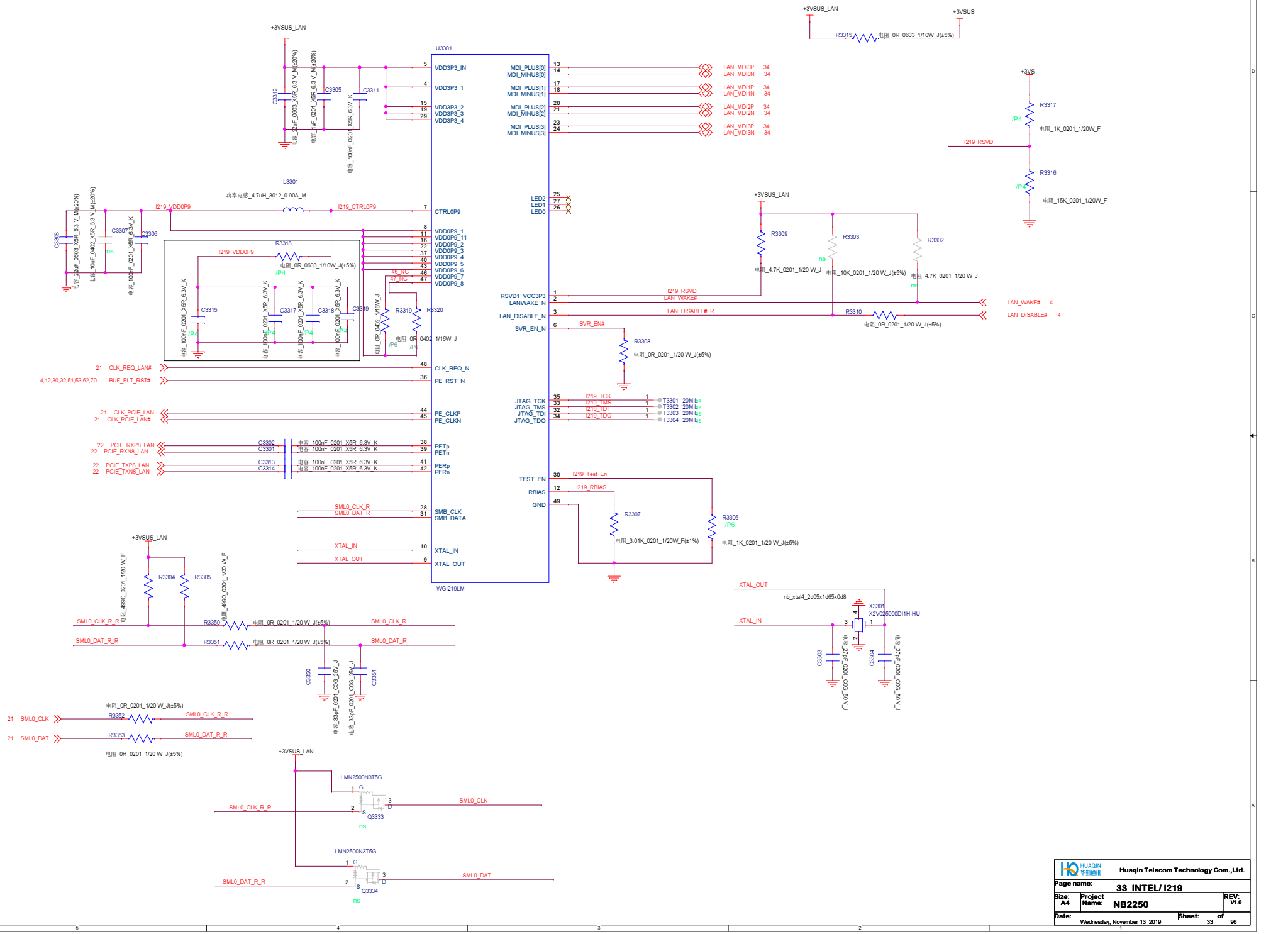

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Size: A4	Project Name: NB2250	REV: V1.0	
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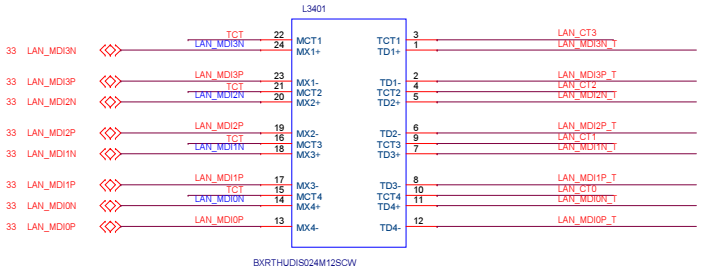

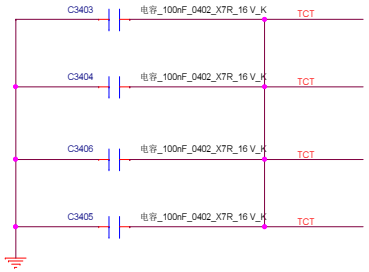

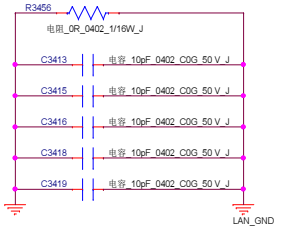

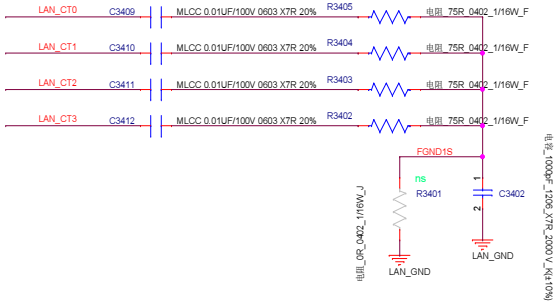

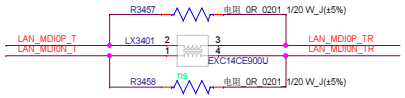

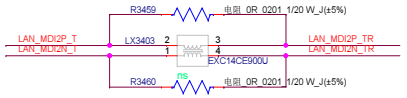

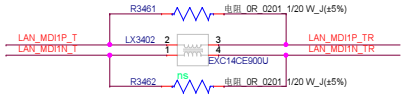

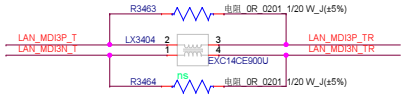

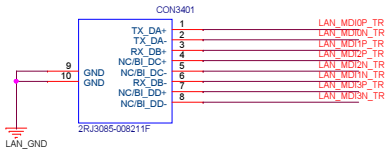

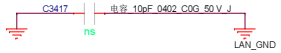

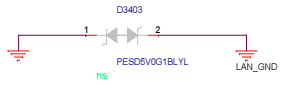

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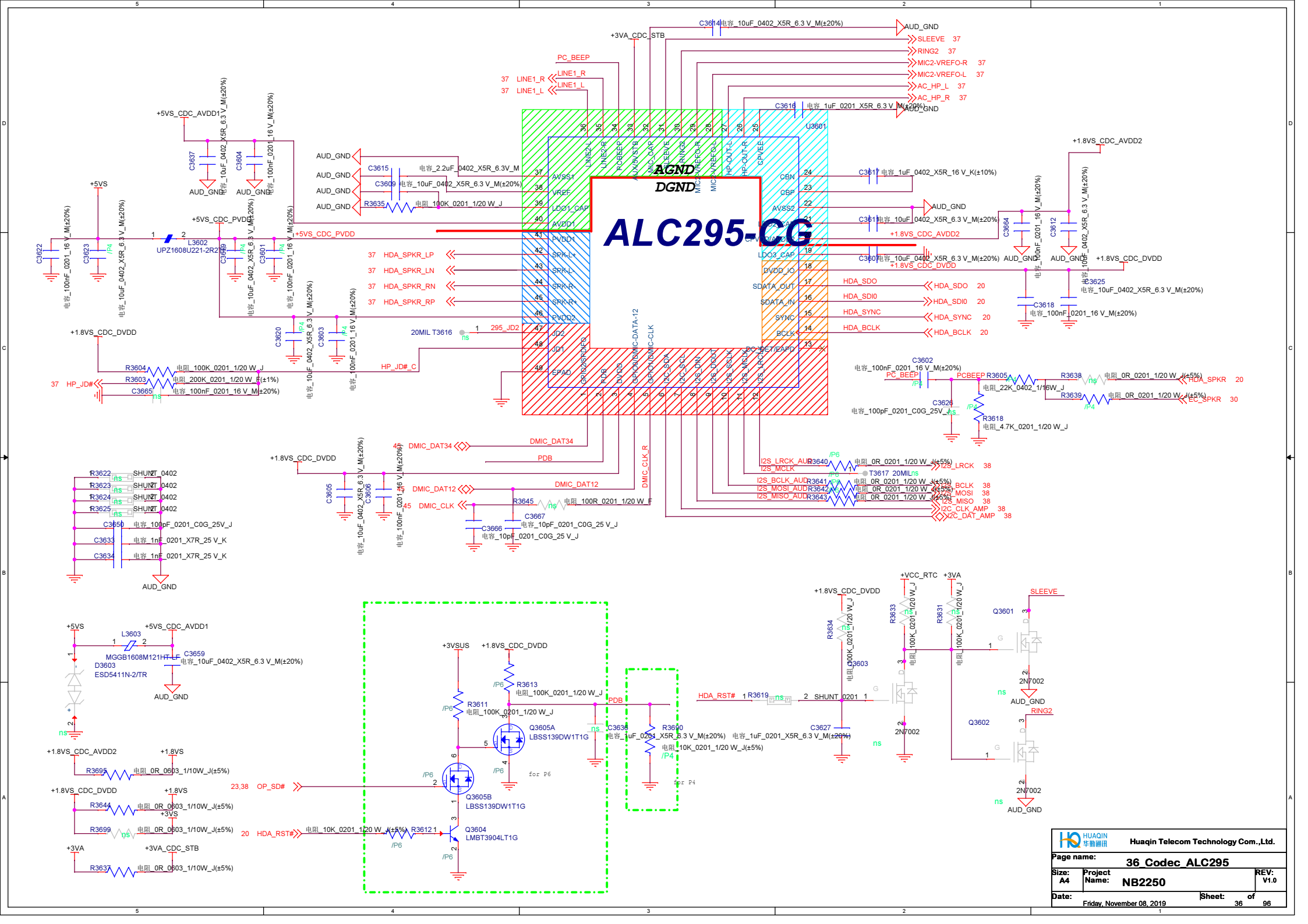

Huaqin Telecom Technology Com.,Ltd.		
Page name:	36_Codec_ALC295	
Size: A4	Project Name: NB2250	REV: V1.0
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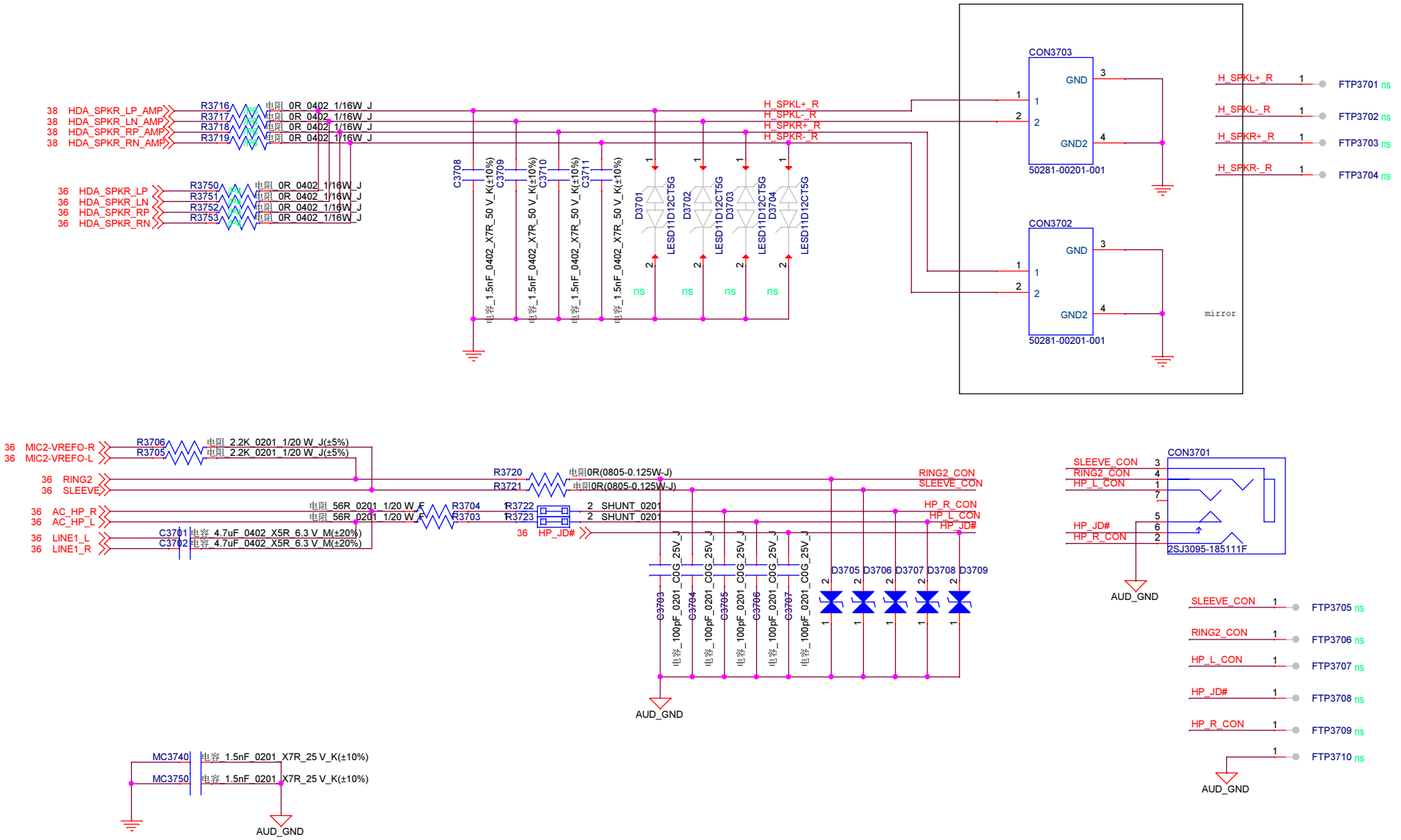
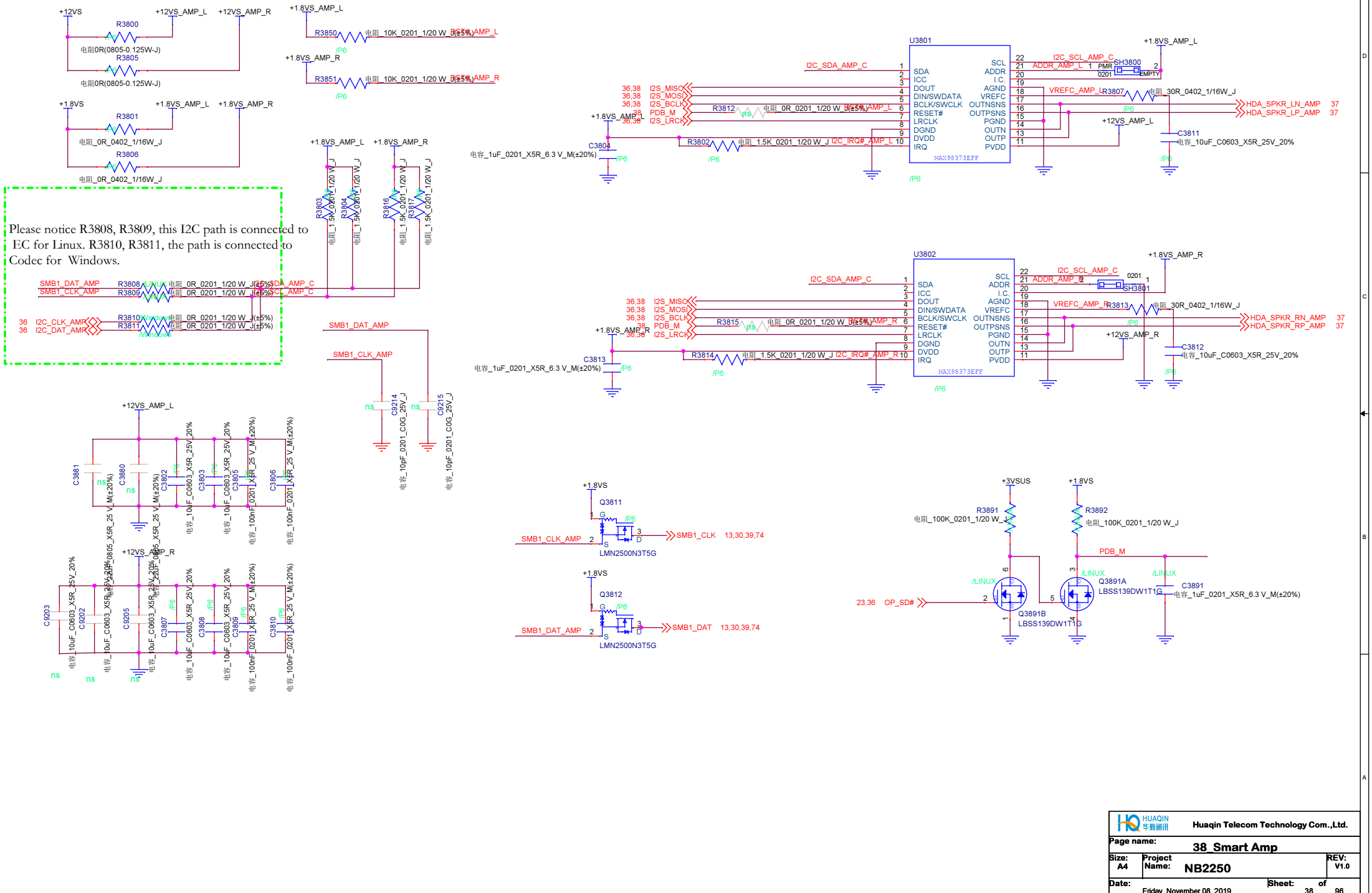


Huaqin Telecom Technology Com.,Ltd.		
Page name:	37_SPK_HP JACK	
Size: A4	Project Name: NB2250	REV: V1.0
Date: Friday, November 08, 2019	Sheet: 37 of 96	



HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.	
Page name:	38_Smart Amp	
Size: A4	Project Name: NB2250	REV: V1.0
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LTE Interface

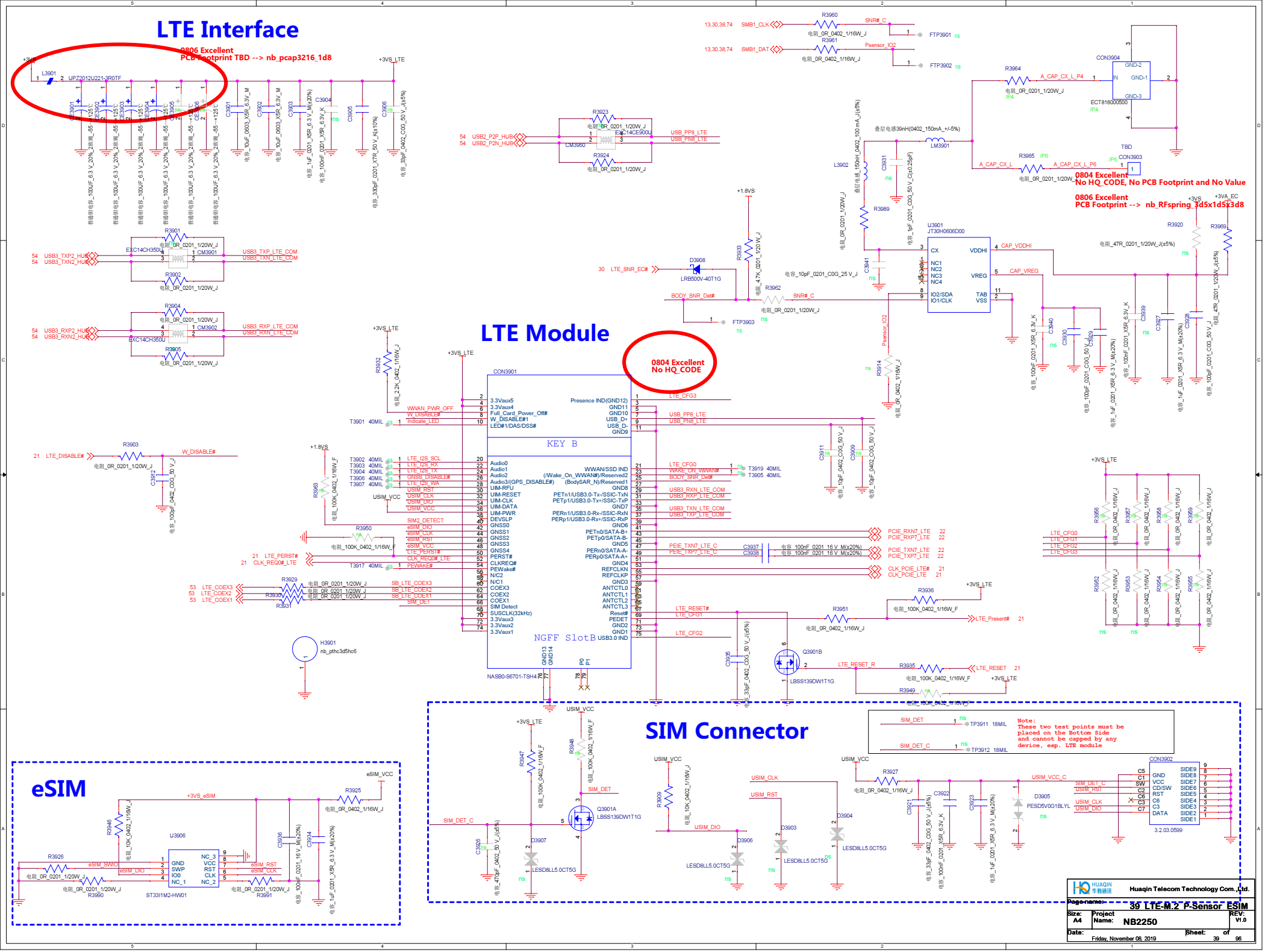
0806 Excellent
PCB Footprint TBD --> nb_pcap3216_1d8

LTE Module

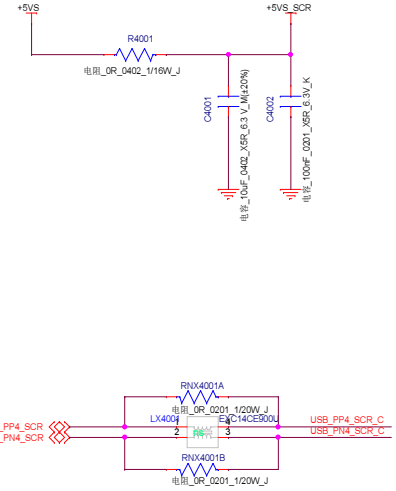
0804 Excellent
No HQ_CODE

SIM Connector

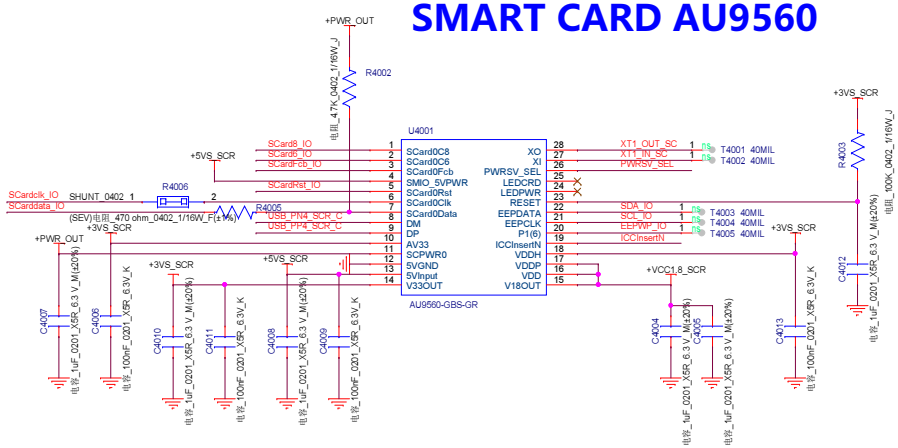
eSIM



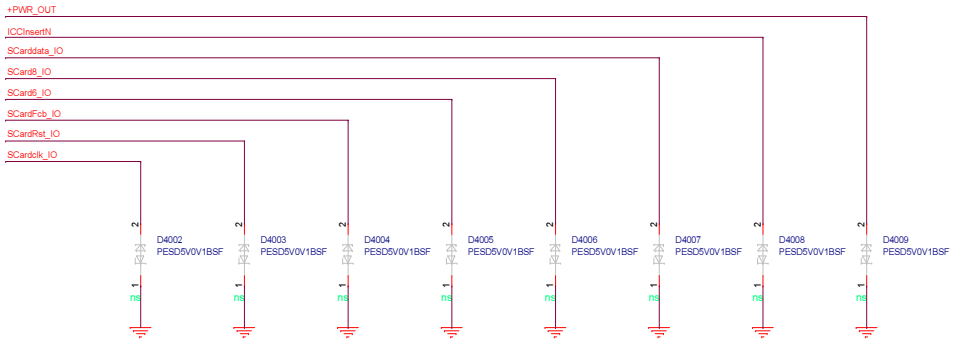
5V POWER INPUT

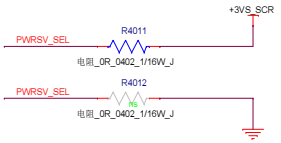


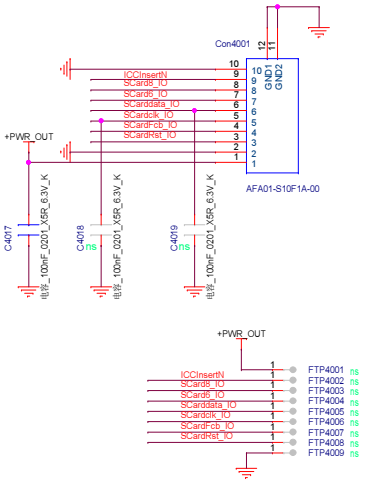
SMART CARD AU9560



SMART CARD CONNECTOR







HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.	
Page name:	40_Smart Card_A9560	
Size: A4	Project Name: NB2250	REV: V1.0
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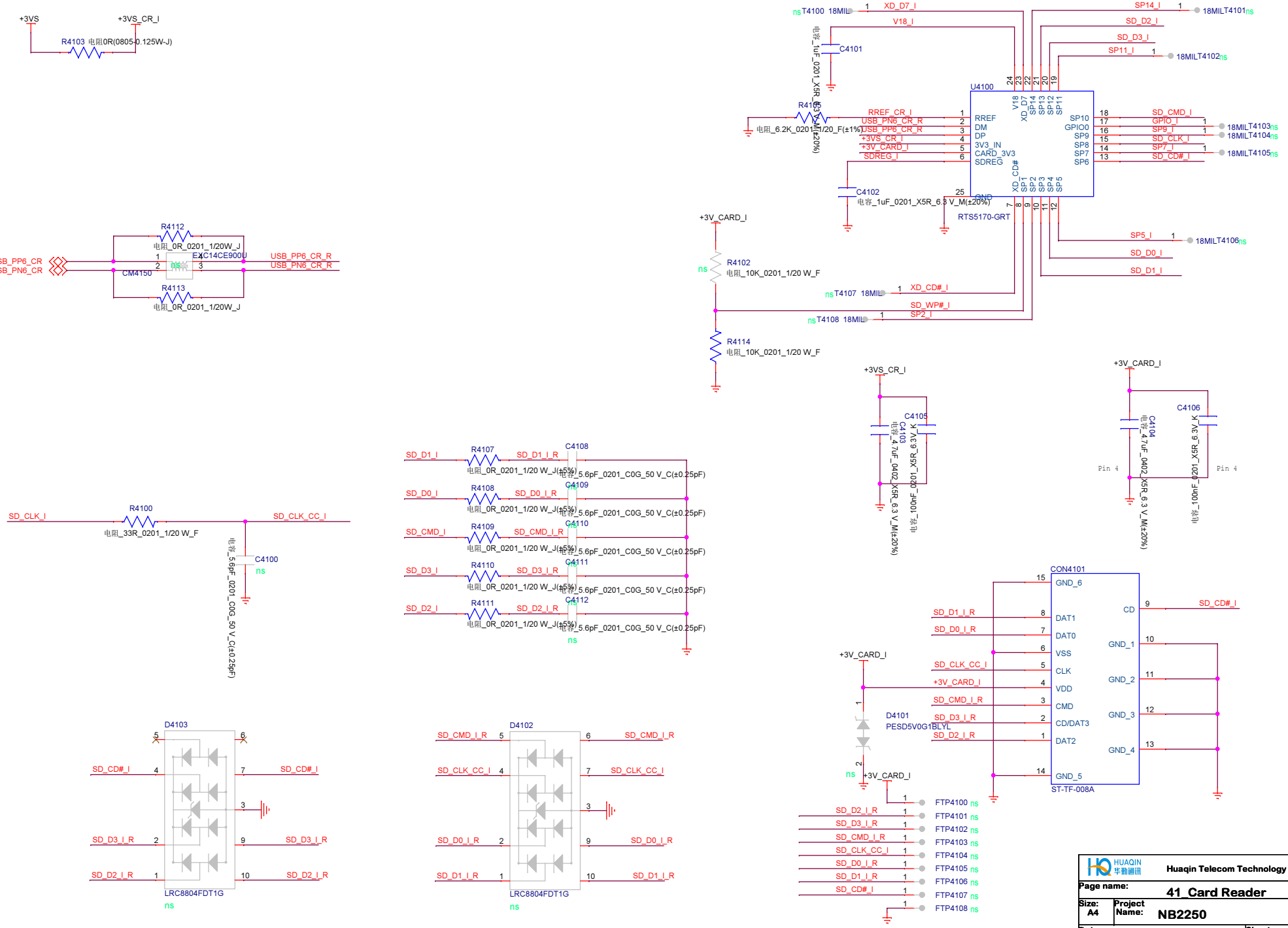
Card Reader



Huaqin Telecom Technology Com.,Ltd.		
Page name:	41_Card Reader	
Size: A4	Project Name: NB2250	REV: V1.0
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Huaqin Telecom Technology Com.,Ltd.	
Page name:	42 BLANK
Size: A4	Project Name: NB2250
REV: V1.0	
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HUAQIN 华勤讯通	Huaqin Telecom Technology Com.,Ltd.
Page name:	43 BLANK
Size: A4	Project Name: NB2250 / REV: V1.0
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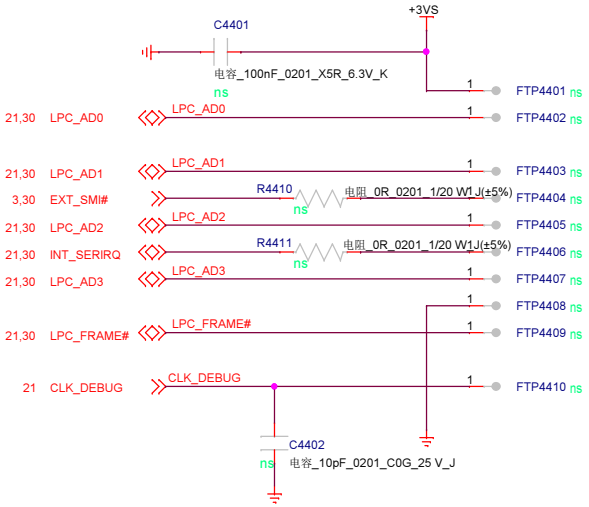
Debug



HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.		
Page name:	44_Debug		
Size: A4	Project Name: NB2250		REV: V1.0
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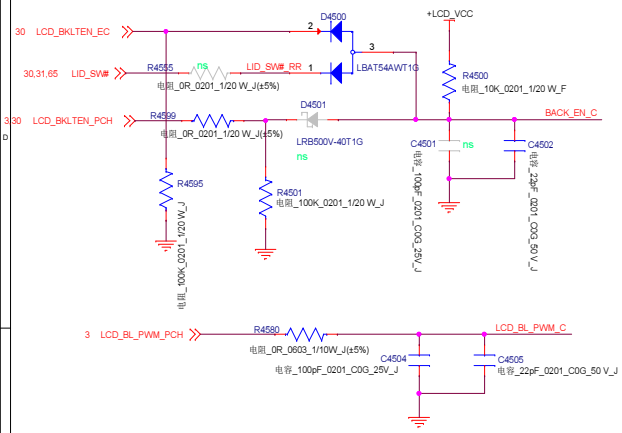
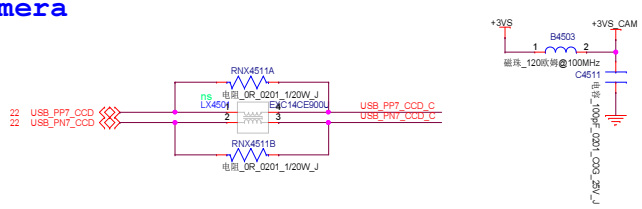
Controller circuit

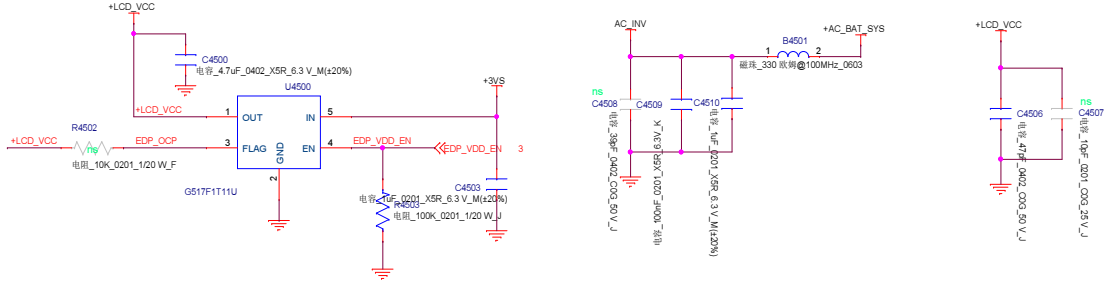


Camera

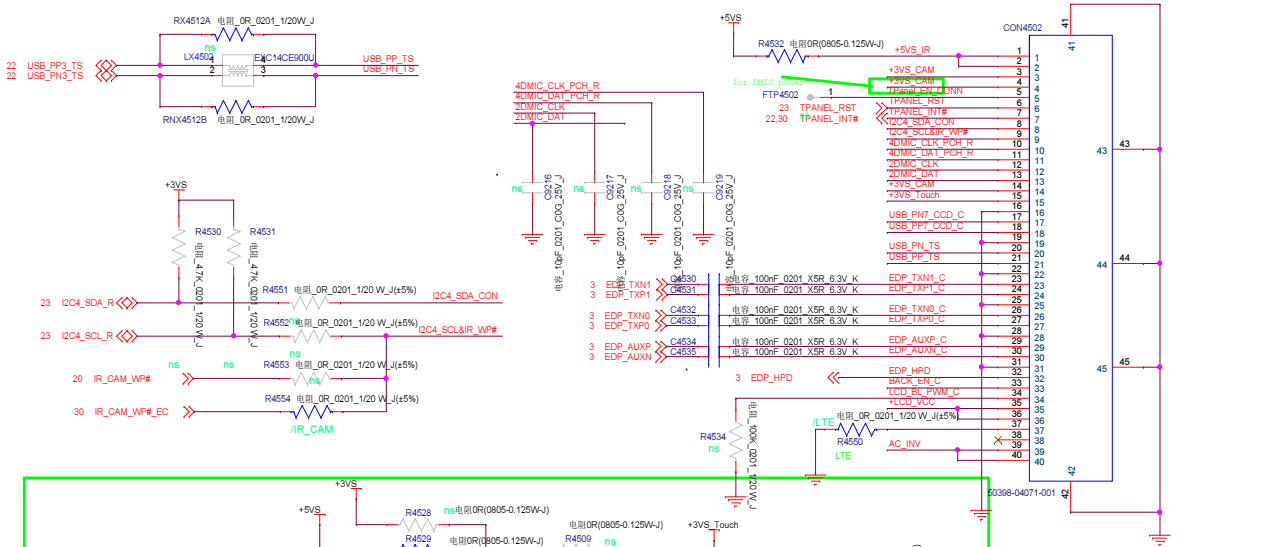


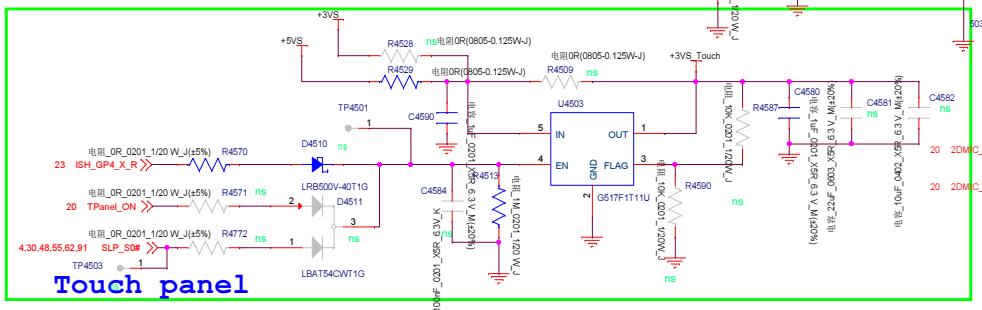
eDP HPD

LCD_VCC for eDP

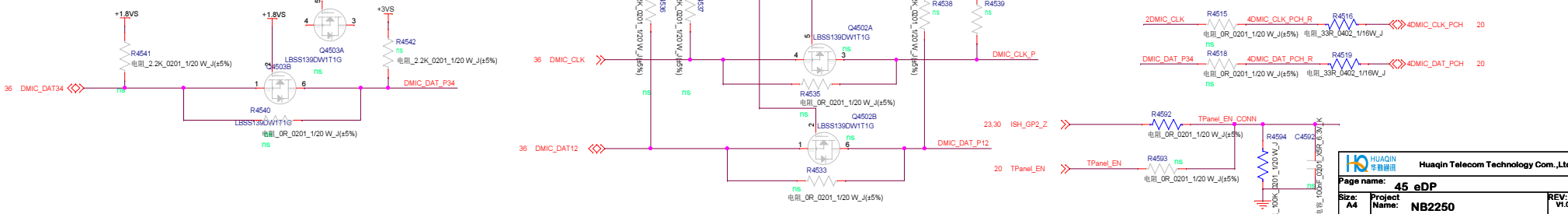


eDP CONN





Touch panel



Huaqin Telecom Technology Com.,Ltd.			
Page name:	45 eDP		
Size: A4	Project Name: NB2250		REV: V1.0
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Size: A4	Project Name: NB2250 / REV: V1.0
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HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.
Page name:	47_BLANK
Size: A4	Project Name: NB2250
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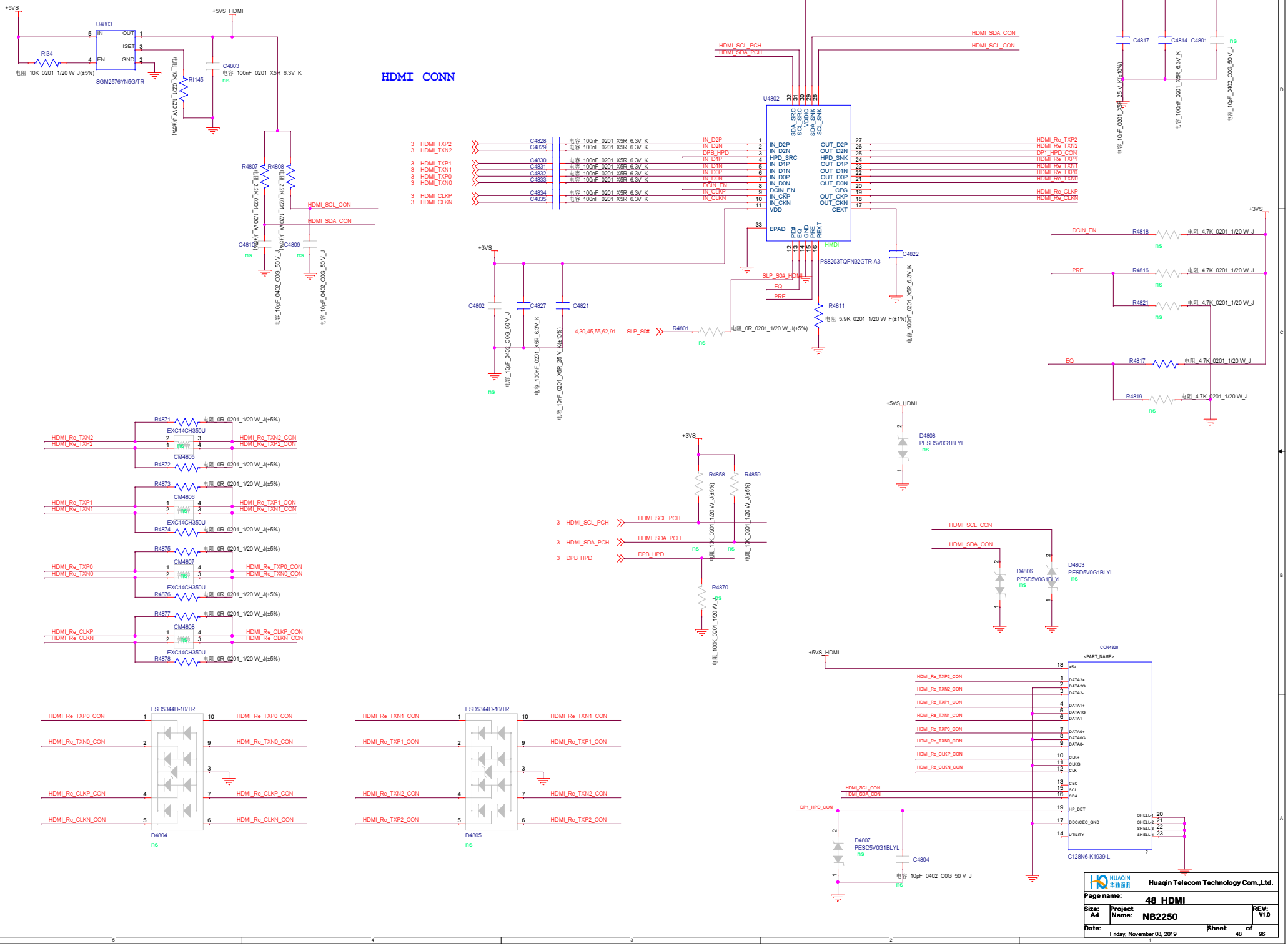
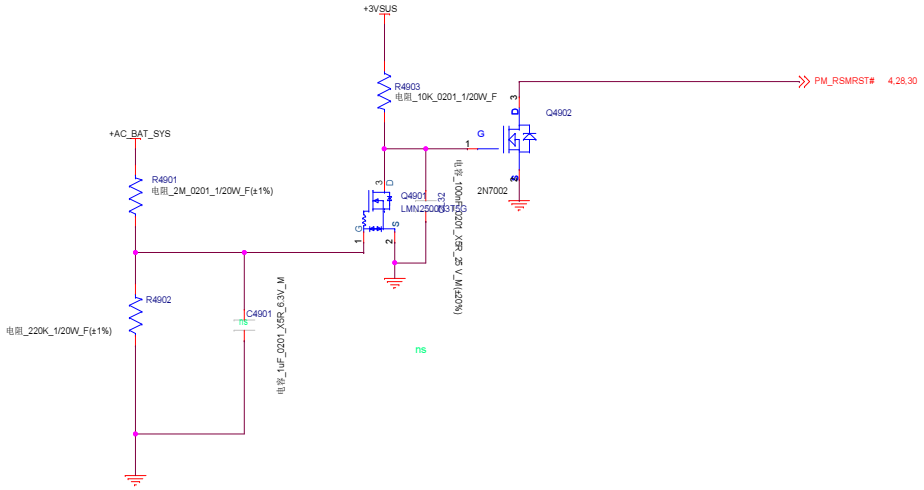
HDMI CONN



Huaqin Telecom Technology Com.,Ltd.	
Page name:	48_HDMI
Size: A4	Project Name: NB2250
REV: V1.0	
Date: Friday, November 08, 2019	Sheet: 48 of 96



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Page name: 49 BLANK		
Size: A4	Project Name: NB2250	REV: V1.0
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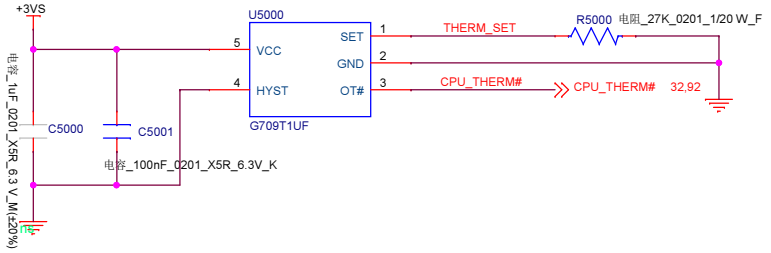
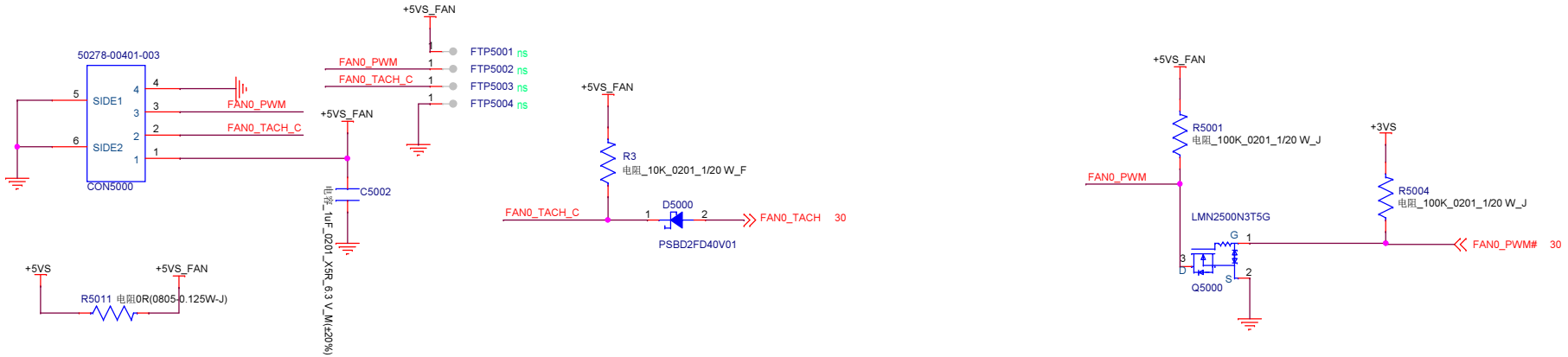
Thermal Sensor for package test

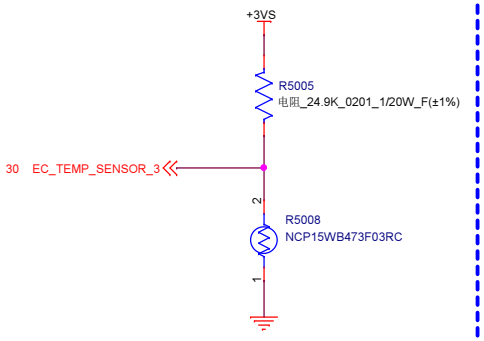


FAN

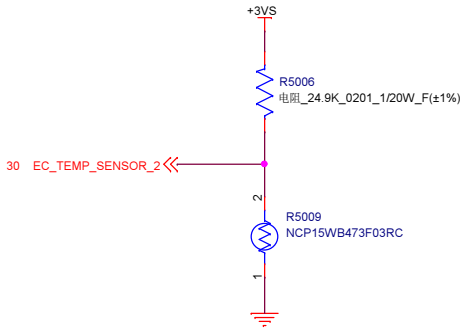


DPTF

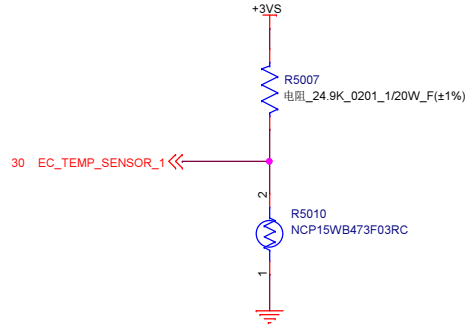
close to CPU VR



close to GPU VR



close to RAM



Huaqin Telecom Technology Com.,Ltd.		
Page name:	50_Thermal Sensor_FAN	
Size: A4	Project Name: NB2250	REV: V1.0
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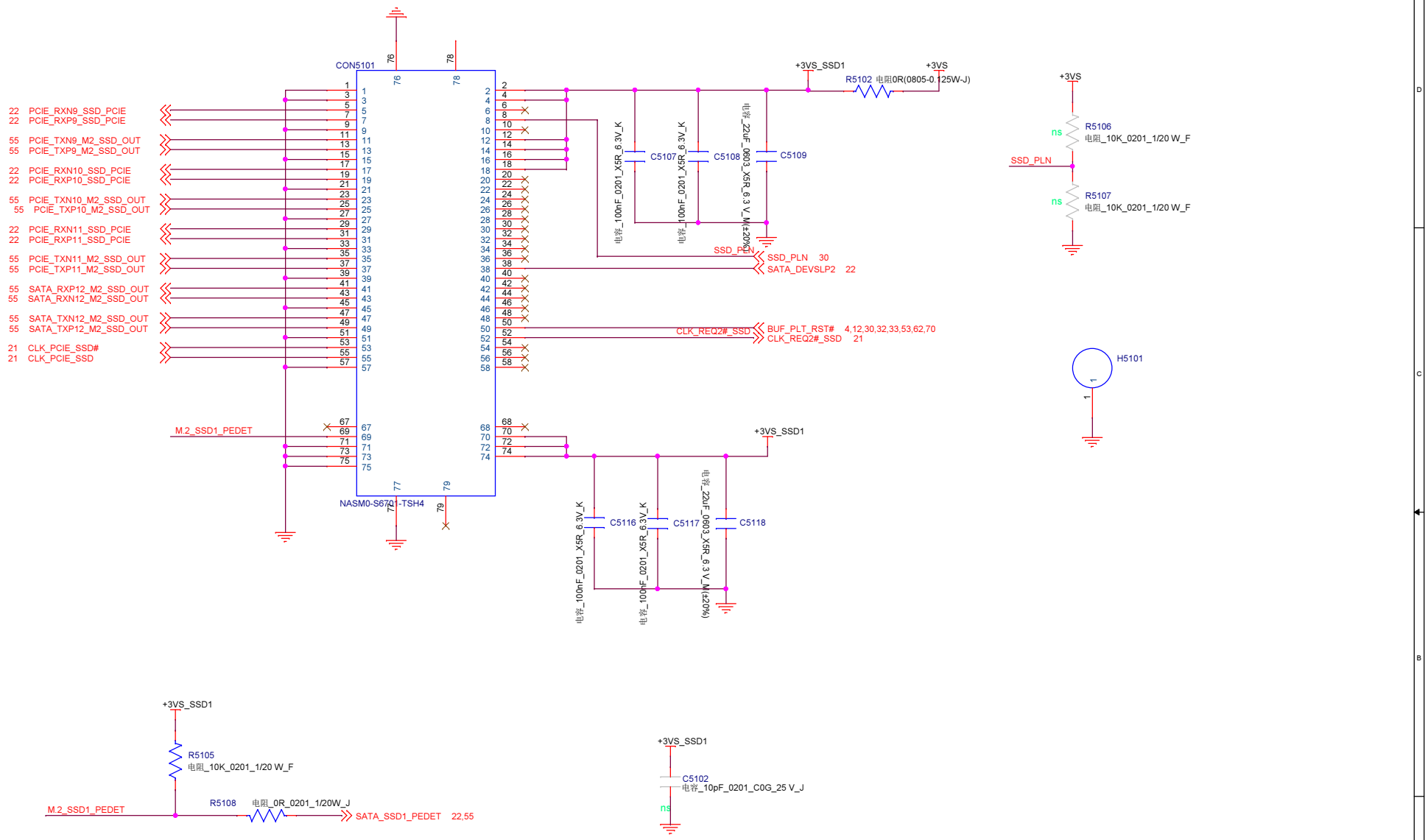
SSD



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Size: A4	Project Name: NB2250	REV: V1.0
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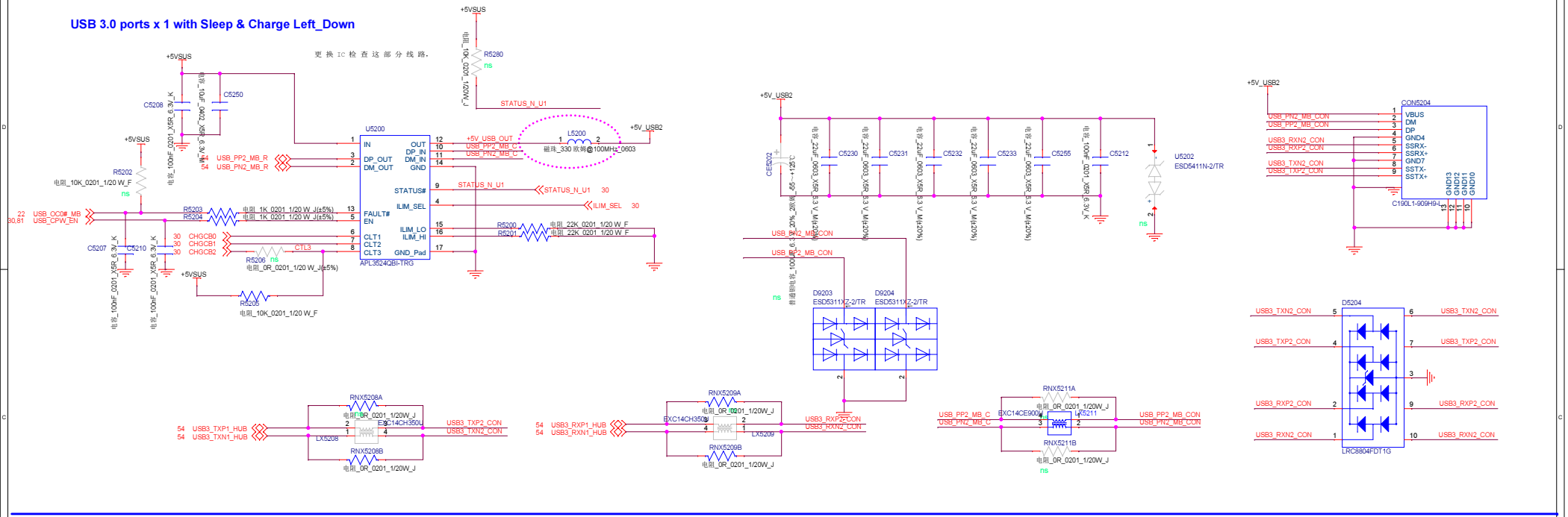
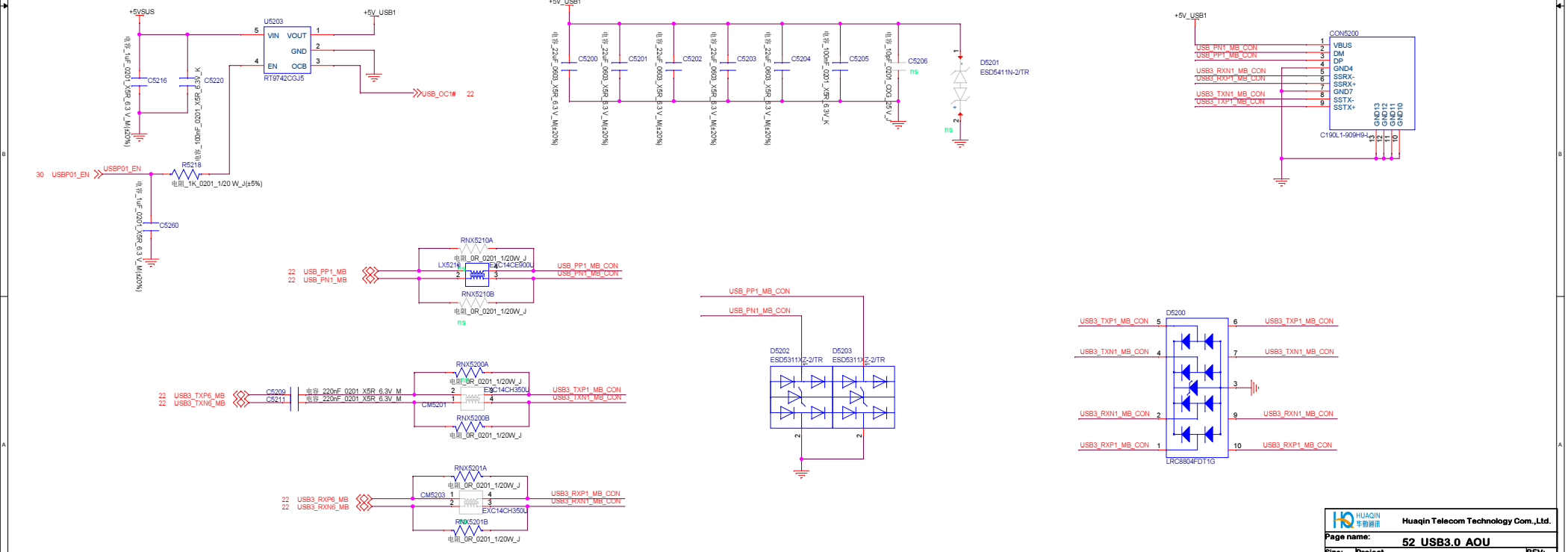
USB 3.0 ports x 1 with Sleep & Charge Left_Down





HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.		
Page name:	52 USB3.0 AOU		
Size: A4	Project Name: NB2250	REV: V1.0	
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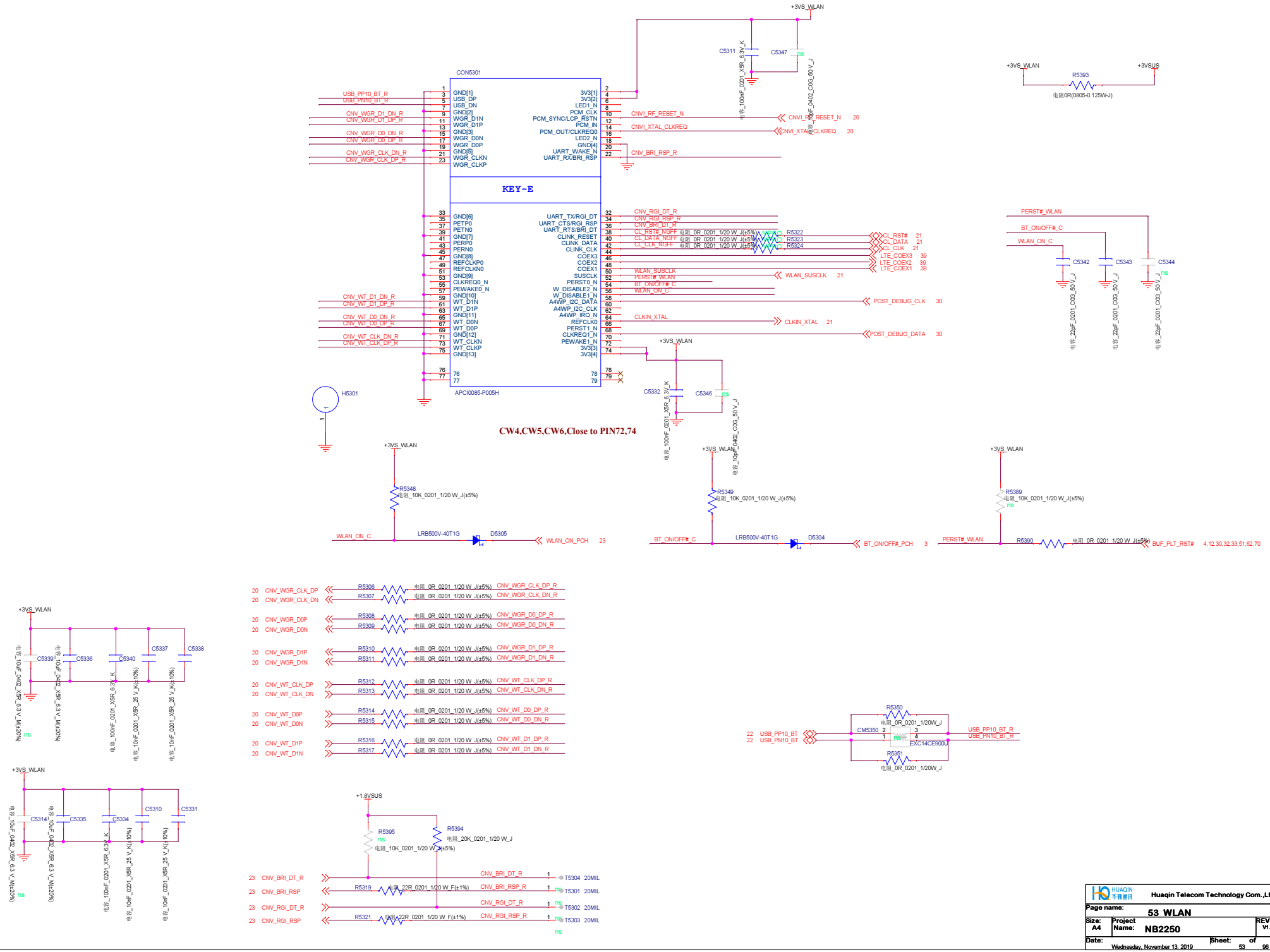

Huaqin Telecom Technology Com.,Ltd.			
Page name:	53 WLAN		
Size: A4	Project Name: NB2250	REV: V1.0	
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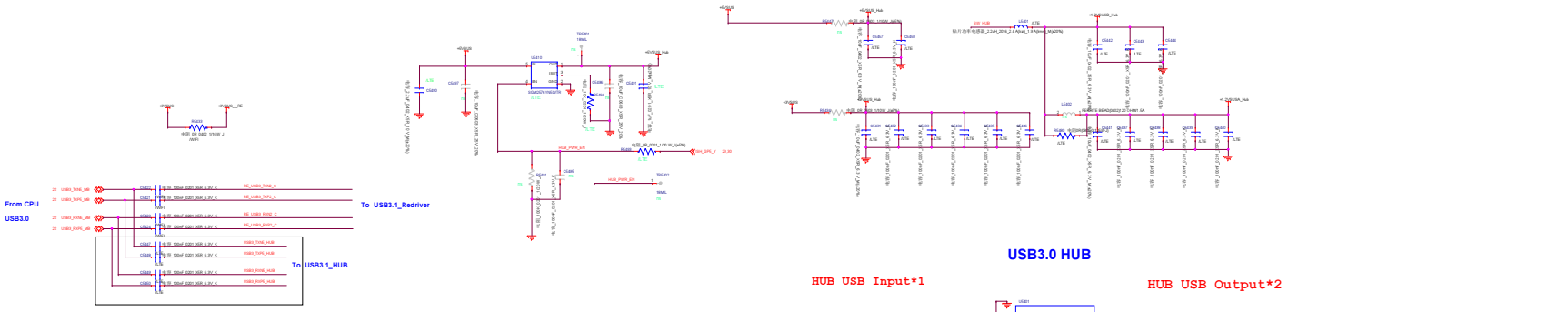
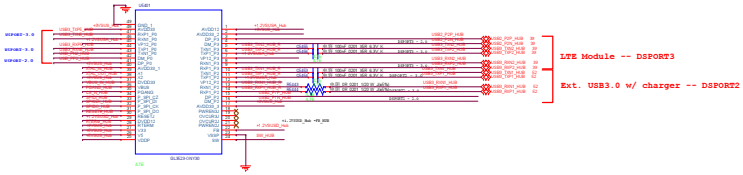


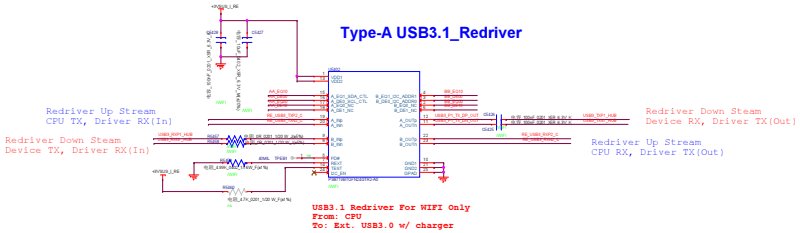
USB3.0 HUB

HUB USB Input*1

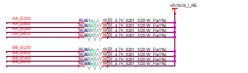
HUB USB Output*2

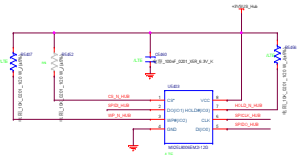


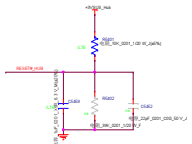
Type-A USB3.1_Redriver

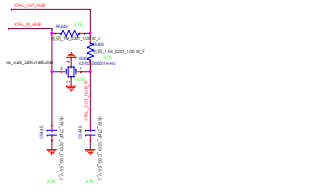


USB3.1 Redriver For WIFI Only
From: CPU
To: Ext. USB3.0 w/ charger









Huaqin Telecom Technology Com.,Ltd.			
Page name:	54 USB3.0 Redriver_HUB		
Doc:	Project:		REV:
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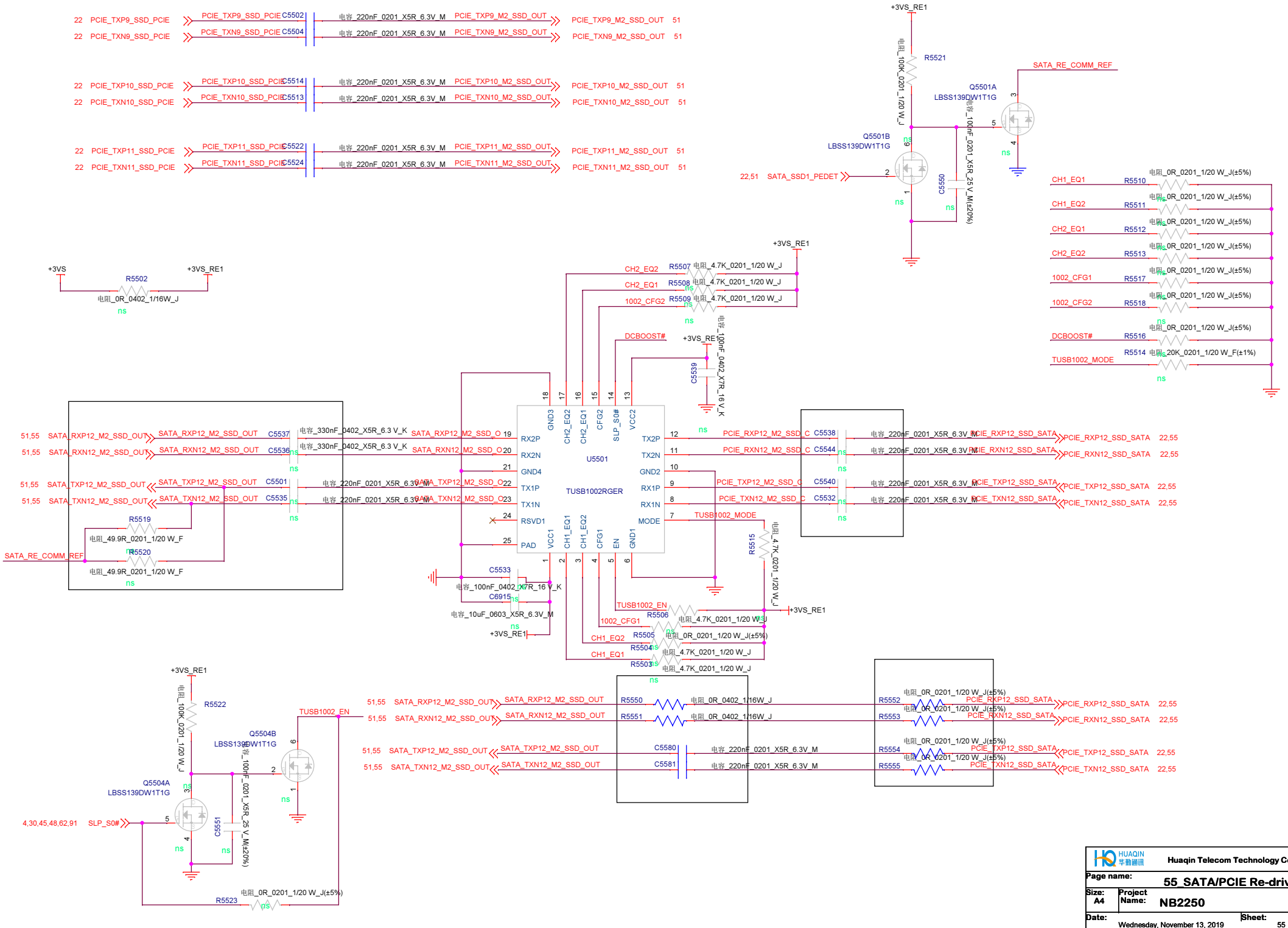

Huaqin Telecom Technology Com.,Ltd.	
Page name:	55_SATA/PCIE Re-driver
Size: A4	Project Name: NB2250
REV: V1.0	
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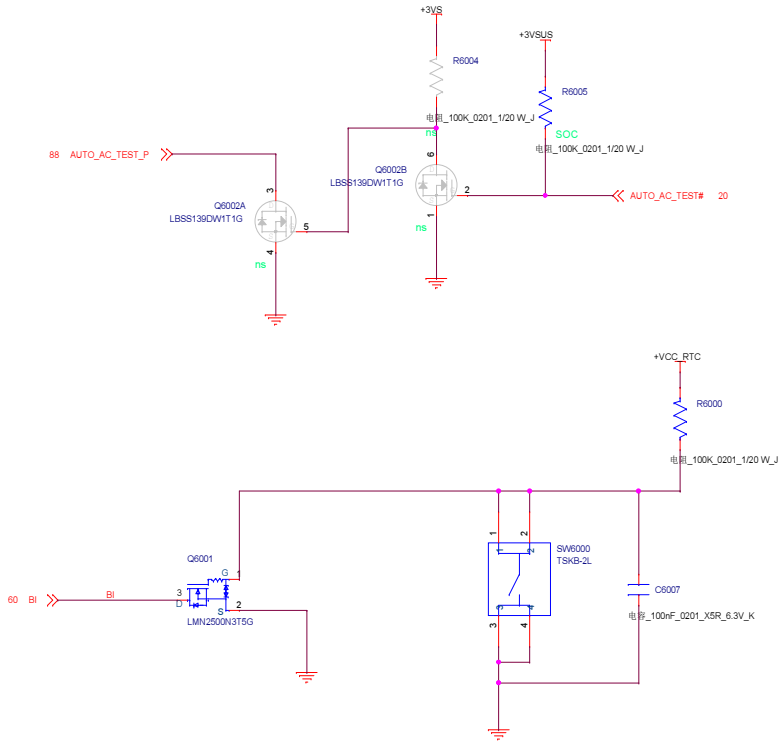

HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.	
Page name:	56 for 60 other	
Size: A4	Project Name: NB2250	REV: V1.0
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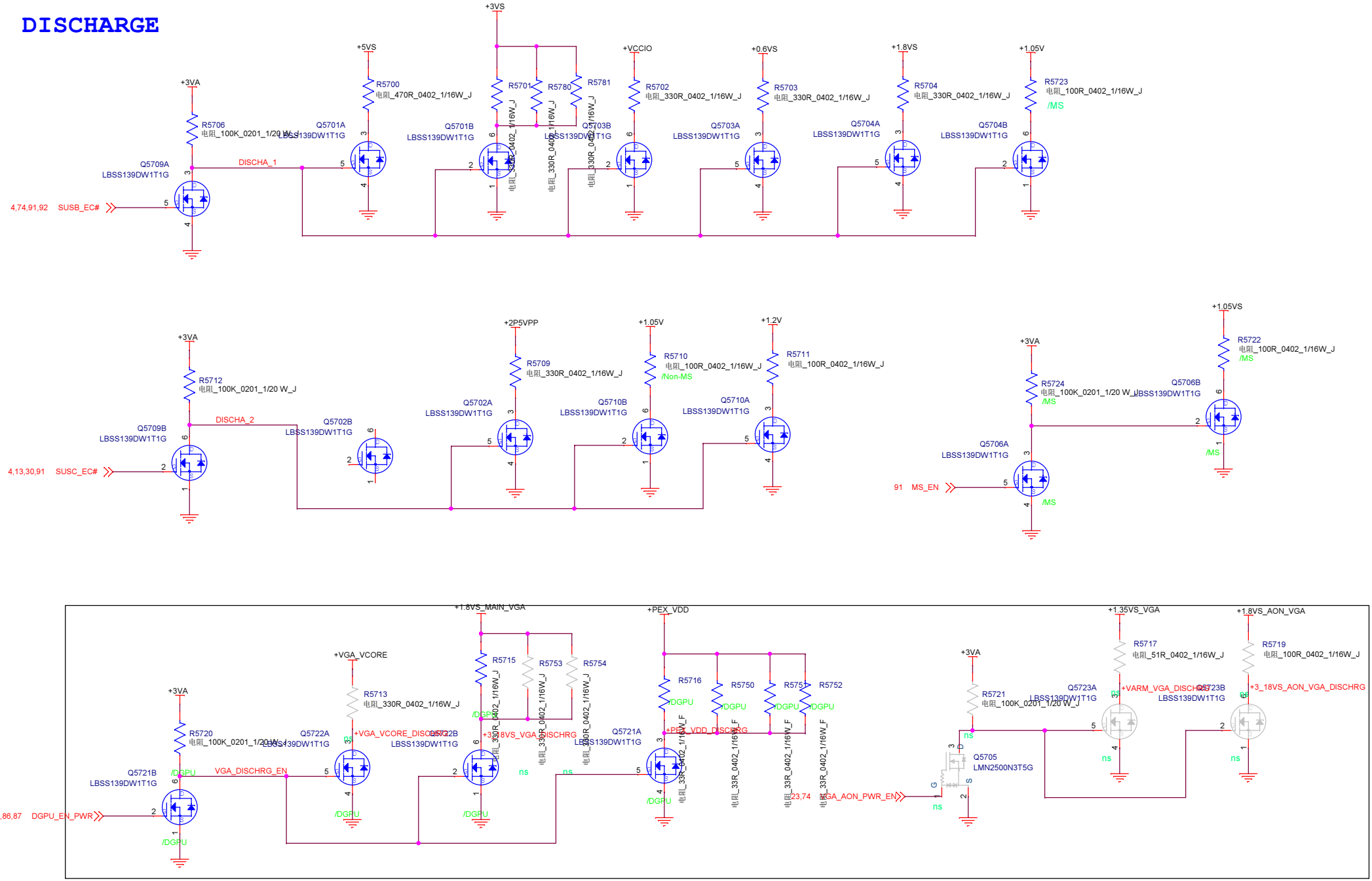
DISCHARGE



HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.	
Page name:	57_DISCHARGE	
Size: A4	Project Name: NB2250	REV: V1.0
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Huaqin Telecom Technology Com.,Ltd.			
Page name:	58_Hall Sensor(Spin-Sub)-blank		
Size: A4	Project Name: NB2250		REV: V1.0
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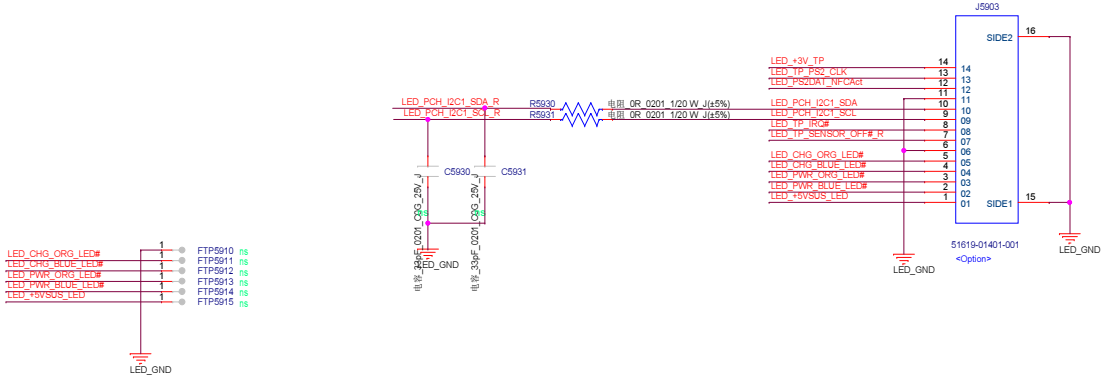
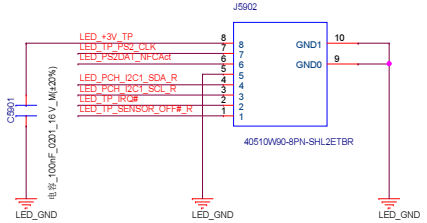
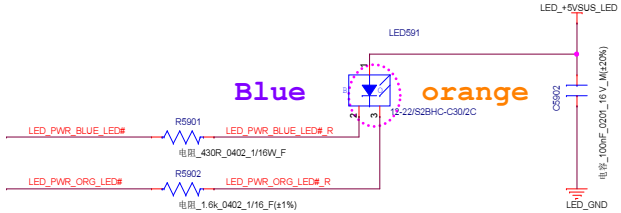
P6 LED Sub Board



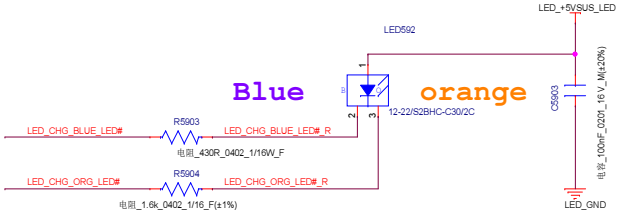
to Click Pad



Power LED



Charger LED



Huaqin Telecom Technology Com.,Ltd.		
Page name:	59_LED Board (P6_Sub)	
Size: A4	Project Name: NB2250	REV: V1.0
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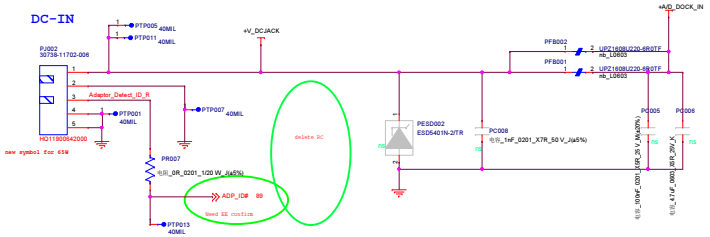
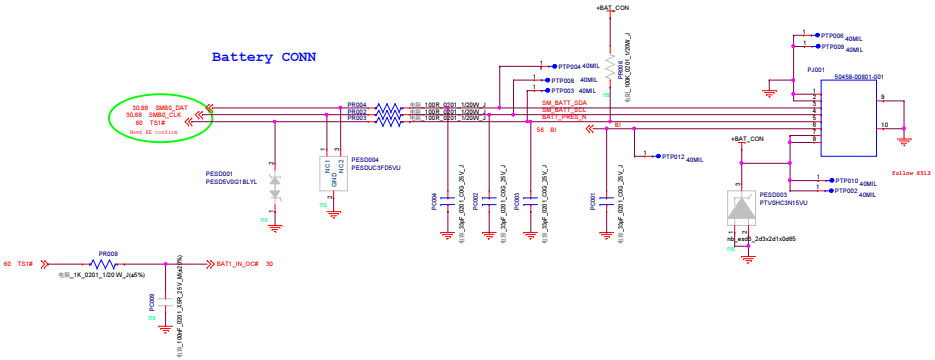
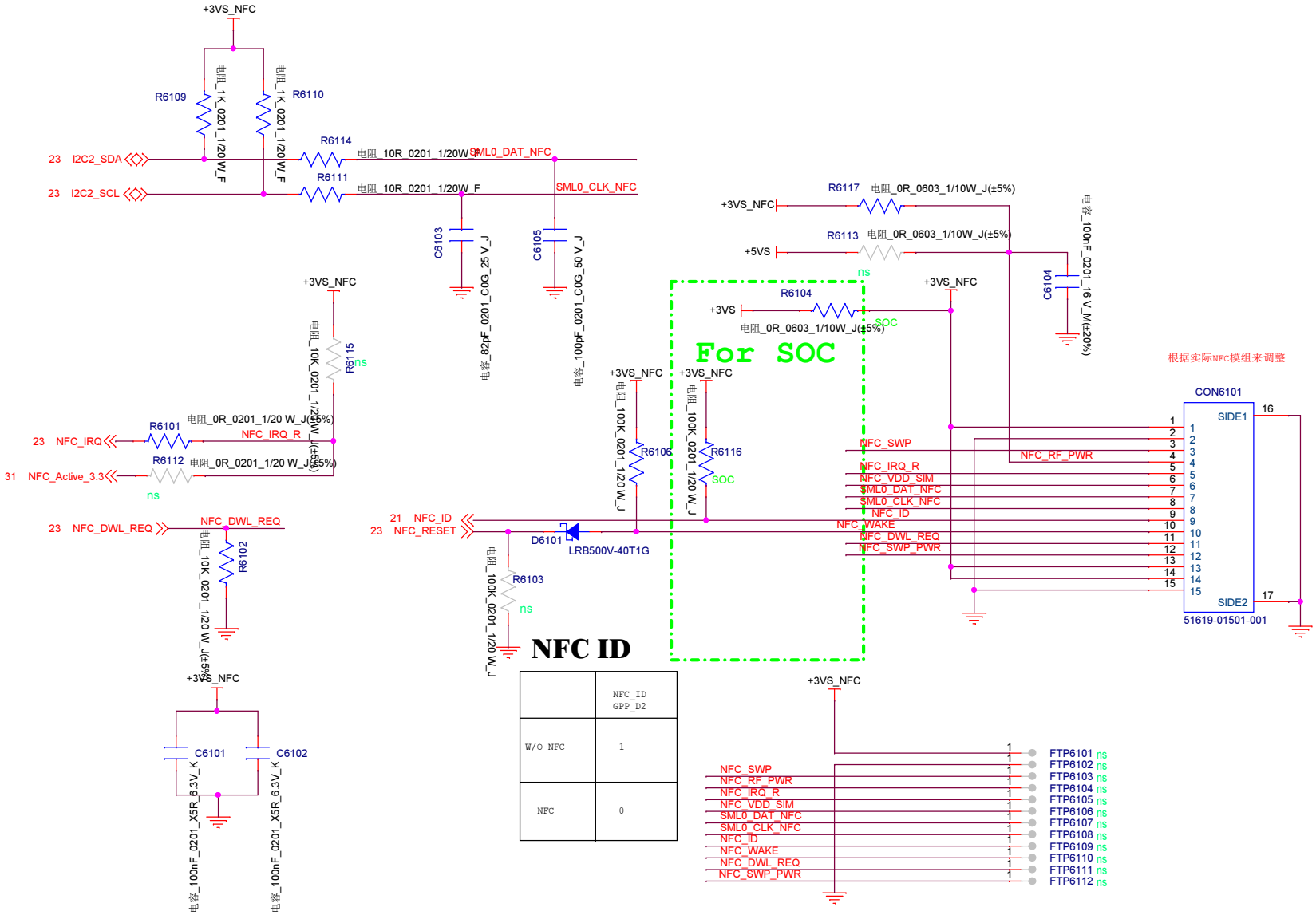
change1_4

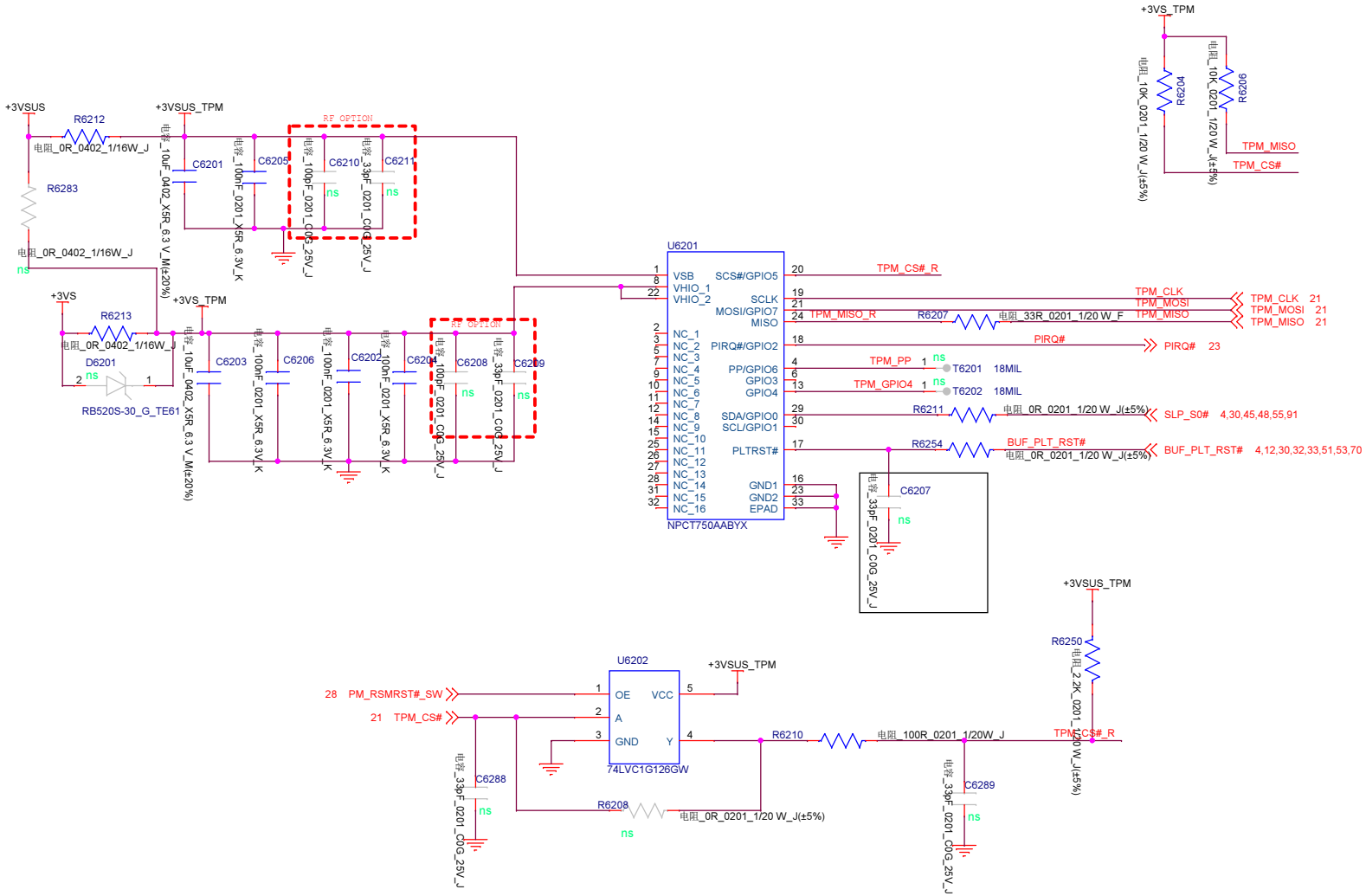




Huaqin Telecom Technology Com.,Ltd.			
Page name:	Power Map		
Size: A4	Project Name: NB8513		REV: V1.0
Date: Friday, November 08, 2019	Sheet: 59	of	86



Huaqin Telecom Technology Com.,Ltd.	
Page name:	61_NFC
Size: A4	Project Name: NB2250
REV: V1.0	
Date: Friday, November 08, 2019	Sheet: 61 of 96



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Page name:	62_TPM	
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Page name:	63_G-Sensor Board(Spin_UB)		
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Page name:	64_PBA_Board (Spin-Sub)-blank	
Size: A4	Project Name: NB2250	REV: V1.0
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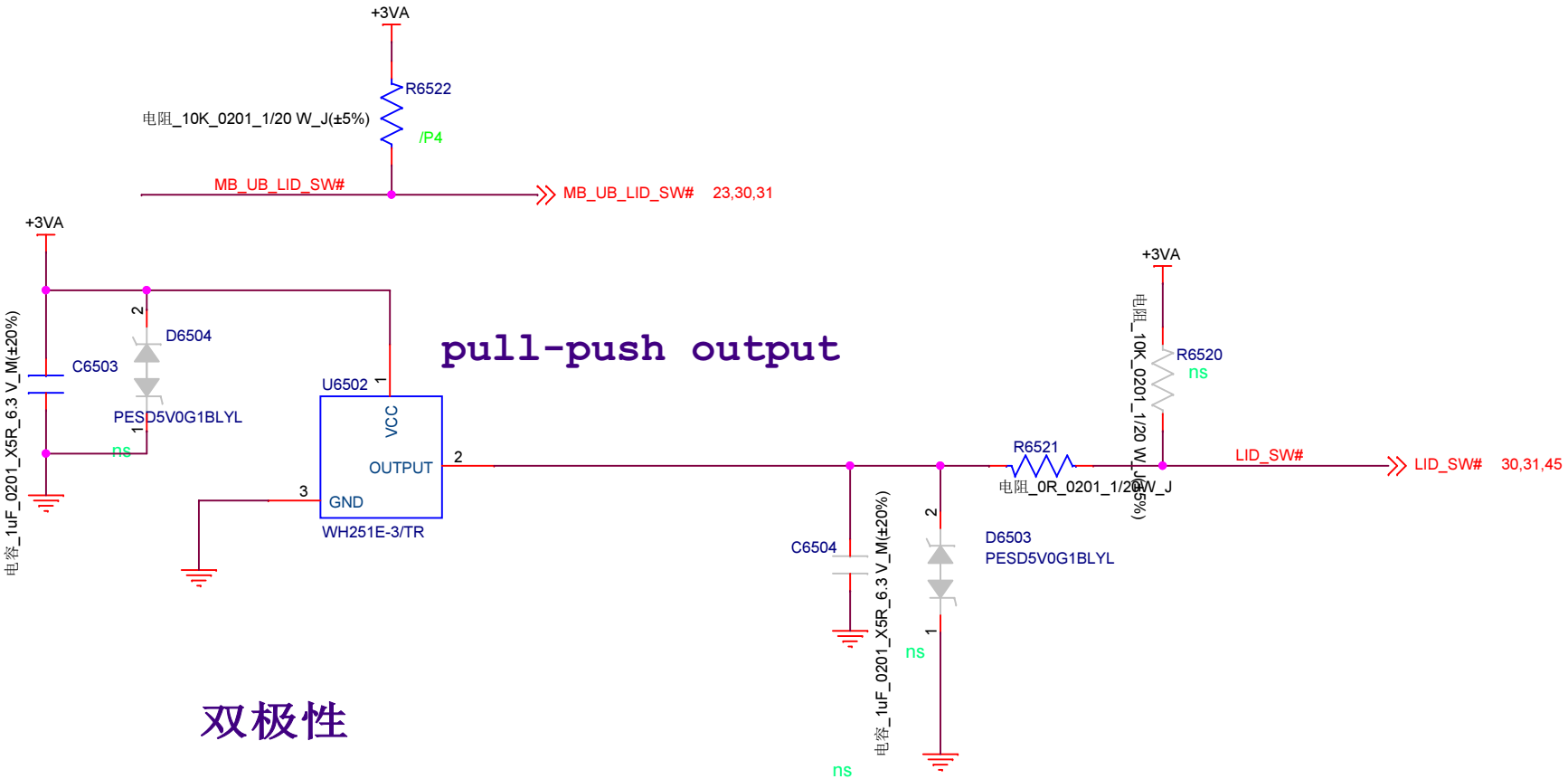

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Page name:	65_Hall Sensor-blank	
Size: A4	Project Name: NB2250	REV: V1.0
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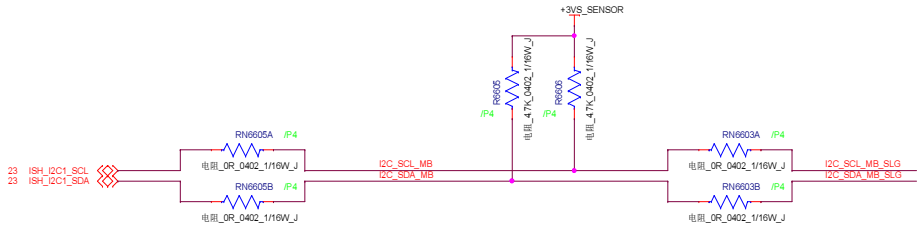
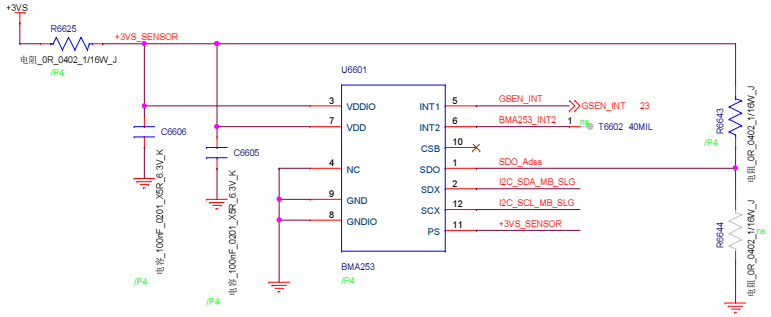
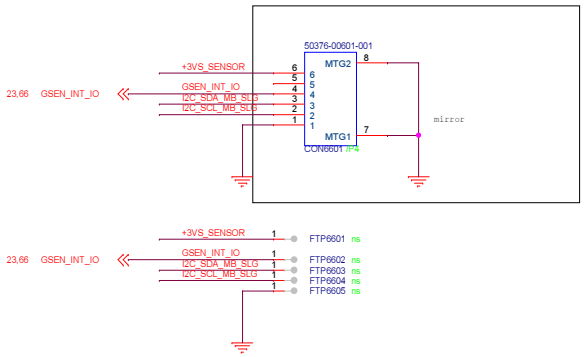




IO side G-Sensor



Huaqin Telecom Technology Com.,Ltd.		
Page name:	66 G-Sensor(Spin-MB)	
Size: A4	Project Name: NB2250	REV: V1.0
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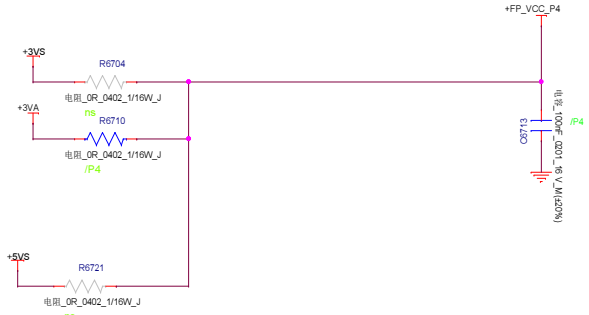
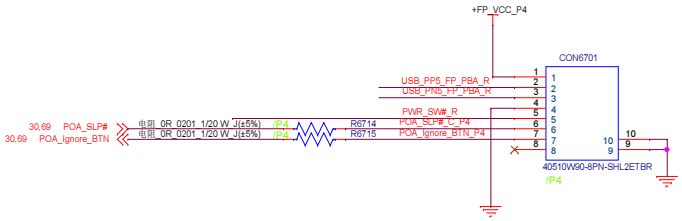
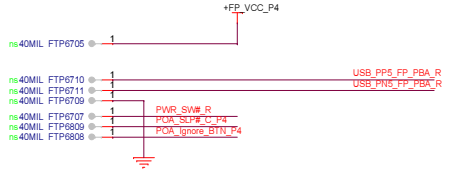
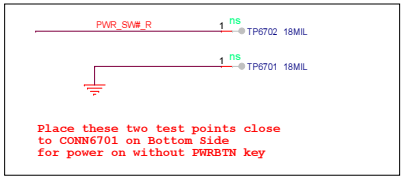
Finger printer

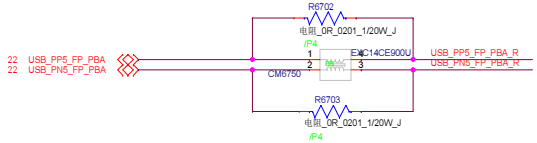
P4 Finger Print CONN

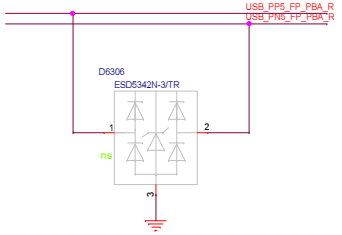


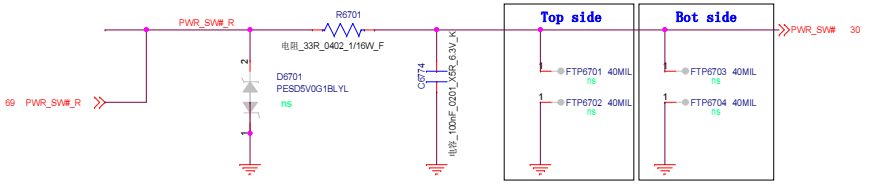












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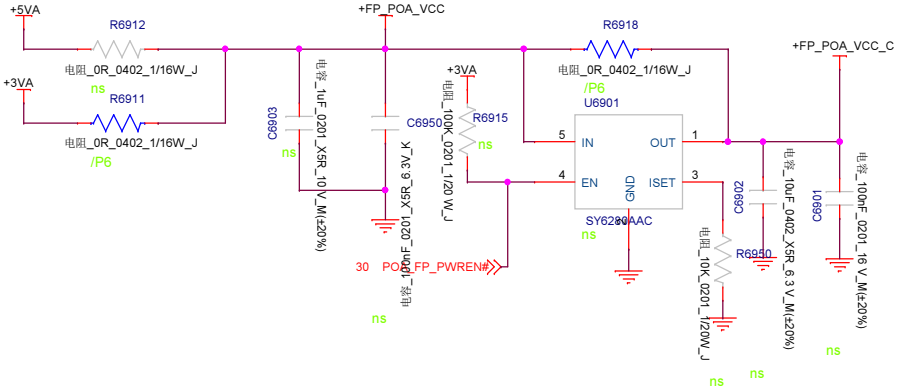
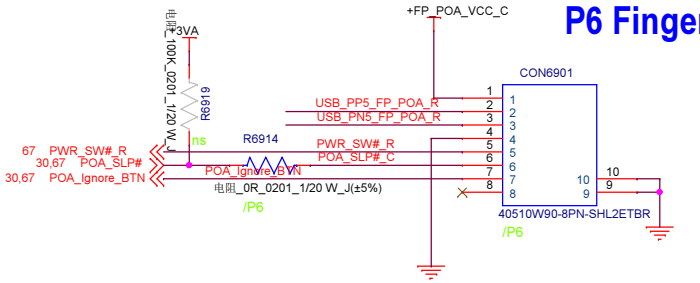
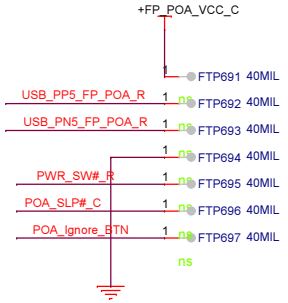
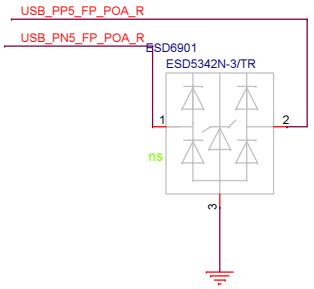
Finger Printer

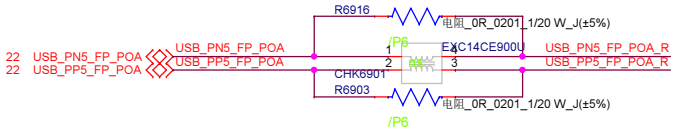


P6 Finger Print CONN









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Page name:	69_Finger Printer	
Size: A4	Project Name: NB2250	REV: V1.0
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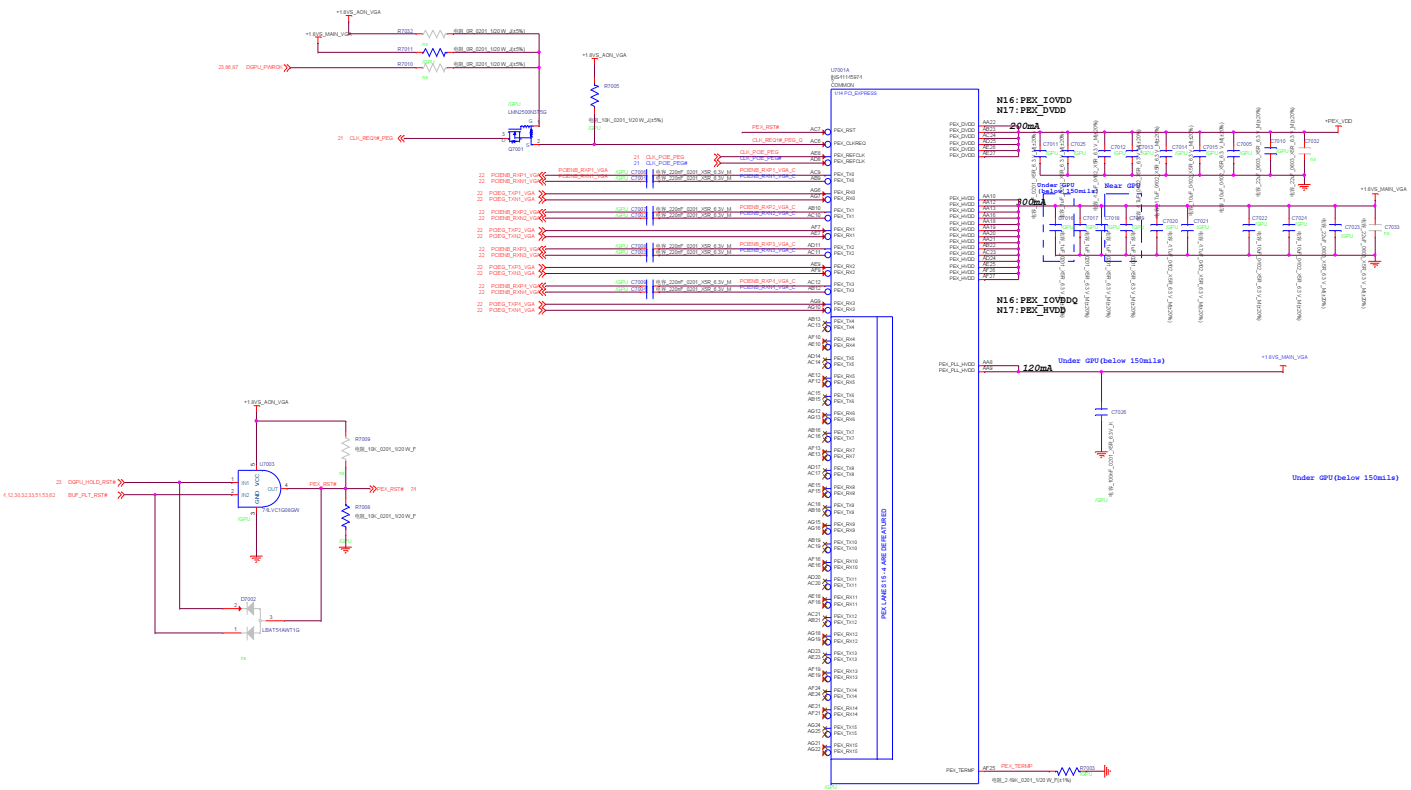

Huaqin Telecom Technology Com.,Ltd.	
Page name:	70_N17S(PCIE/ CLK/ GPIO)
Size: A4	Project Name: NB2250
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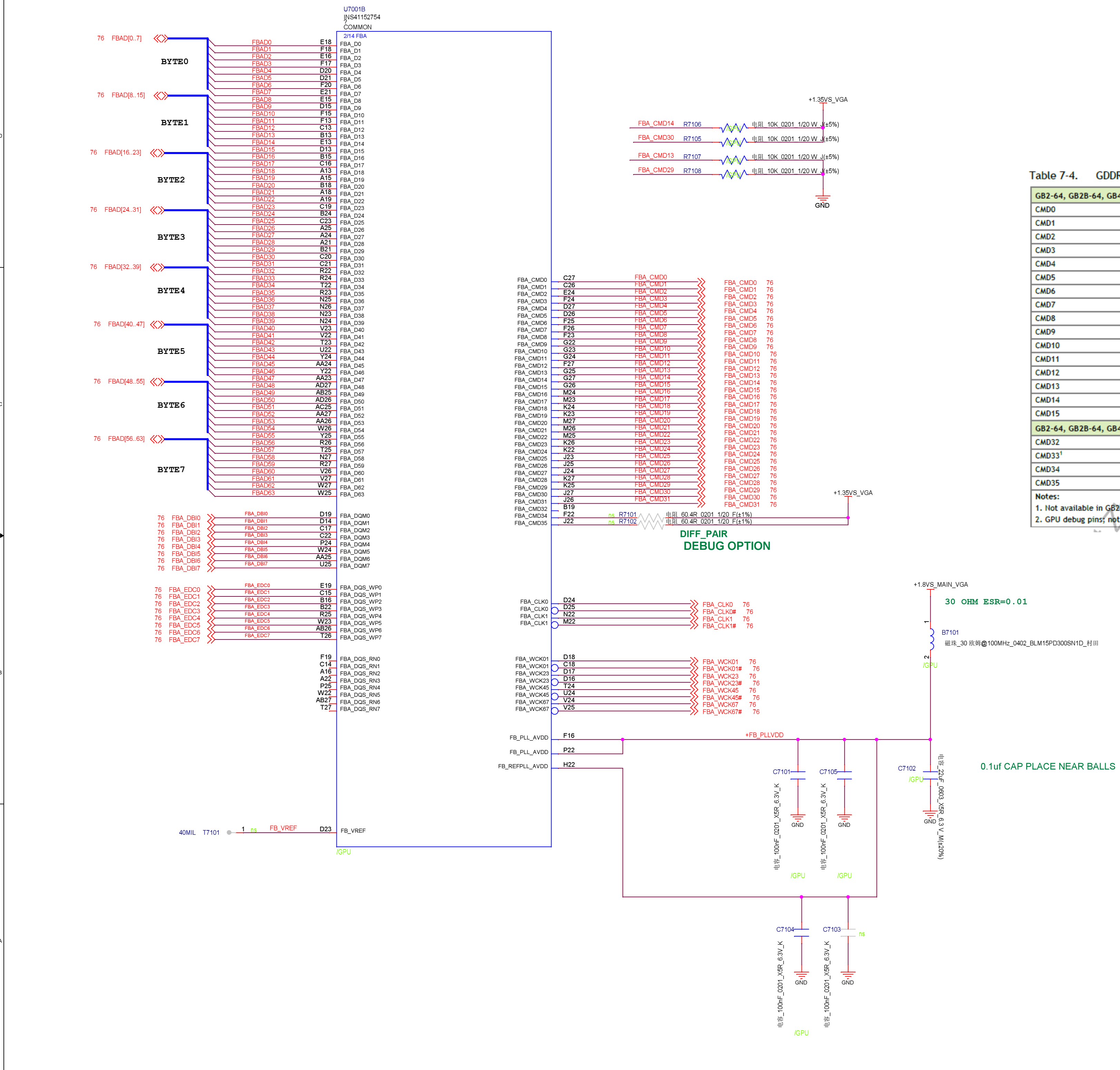
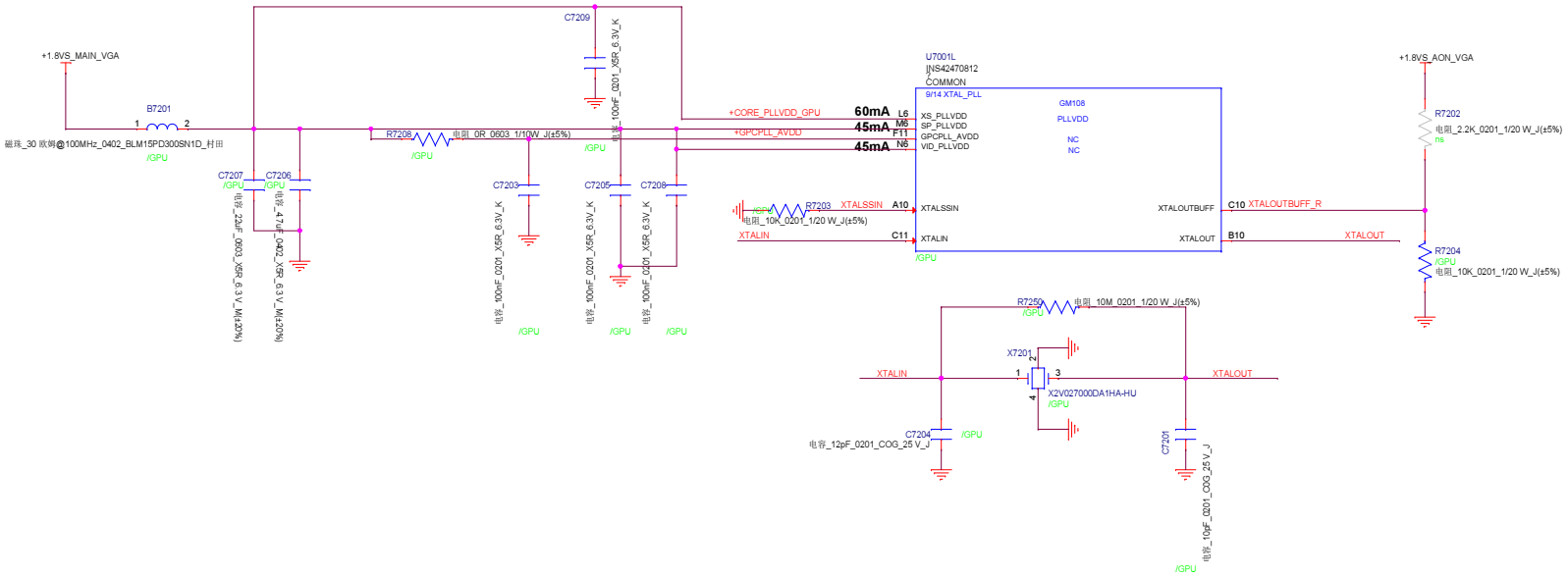


Table 7-4. GDDR5 Mode H Mapping

GB2-64, GB2B-64, GB4B-128	Channel 0 0..31	GB2-64, GB2B-64, GB4B-128	Channel 1 32..63
CMD0	CS*	CMD16	CS*
CMD1	A3_BA3	CMD17	A3_BA3
CMD2	A2_BA0	CMD18	A2_BA0
CMD3	A4_BA2	CMD19	A4_BA2
CMD4	A5_BA1	CMD20	A5_BA1
CMD5	WE*	CMD21	WE*
CMD6	A7_A8	CMD22	A7_A8
CMD7	A6_A11	CMD23	A6_A11
CMD8	ABI*	CMD24	ABI*
CMD9	A12_RFU	CMD25	A12_RFU
CMD10	A0_A10	CMD26	A0_A10
CMD11	A1_A9	CMD27	A1_A9
CMD12	RAS*	CMD28	RAS*
CMD13	RST*	CMD29	RST*
CMD14	CKE*	CMD30	CKE*
CMD15	CAS*	CMD31	CAS*
GB2-64, GB2B-64, GB4B-128	**Channel 0 & 1**		
CMD32	Not used		
CMD33[1]	Not used		
CMD34	DEBUG0[2]		
CMD35	DEBUG1[2]		

Notes:
1. Not available in GB2-64 and GB2B-64 packages.
2. GPU debug pins; not connected to DRAM. See section 7.1.13.



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Page name:	72_VGA_XTAL	
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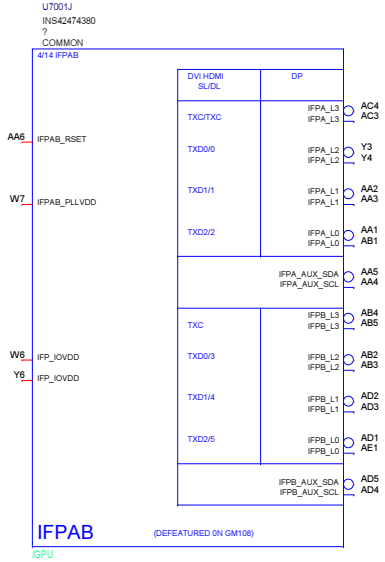

HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.	
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Table 5. N17S-G0/G2 GDDR5 Recommended Memories

Memory Density	Allowed Memory Configuration	FBVDDQ	Vendor	Manufacturer Part Number	Die Revision	Strap	Memory Speed Grade	Date Code Alert	Qual Plan	Status
8 Gb	256Mx32 512Mx16	1.35V	Micron	MT51J256M32HF-80:B	B-die	0x9	8 Gbps	N/A	Full	Production ready
			Hynix	H5GC8H24AJR-R2C	A-die	0xA	8 Gbps	N/A	Full	Production ready

Table 5.3 RAMCFG

Strap Pins see Note			RAMCFG Setting Number
STRAP2	STRAP1	STRAP0	(see Memory RVL for memory configs corresponding to these numbers)
L	L	L	0 (0x0000)
L	L	H	1 (0x0001)
L	H	L	2 (0x0002)
L	H	H	3 (0x0003)
H	L	L	4 (0x0004)
H	L	H	5 (0x0005)
H	H	L	6 (0x0006)
H	H	H	7 (0x0007)
L	L	M	8 (0x0008)
L	M	L	9 (0x0009)
L	M	H	10 (0x000A)
L	H	M	11 (0x000B)
M	L	L	12 (0x000C)
M	L	H	13 (0x000D)

Note:
These test points should be placed on the Bottom Side

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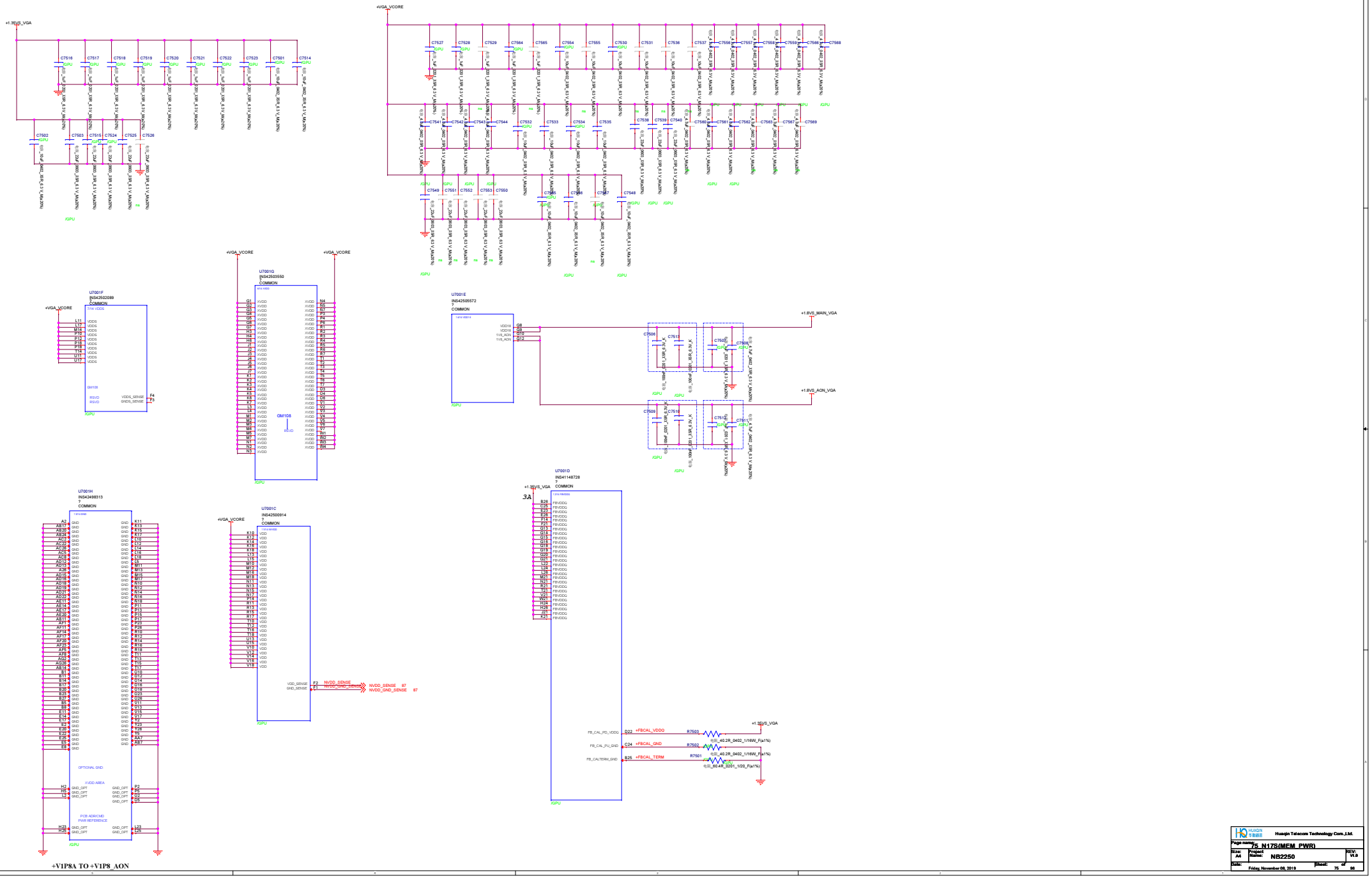

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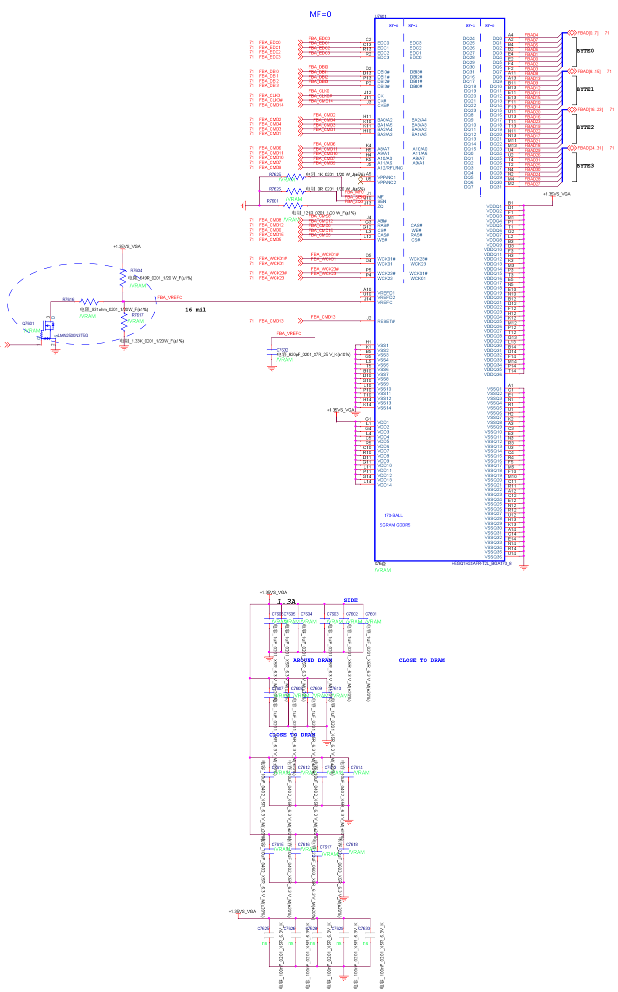
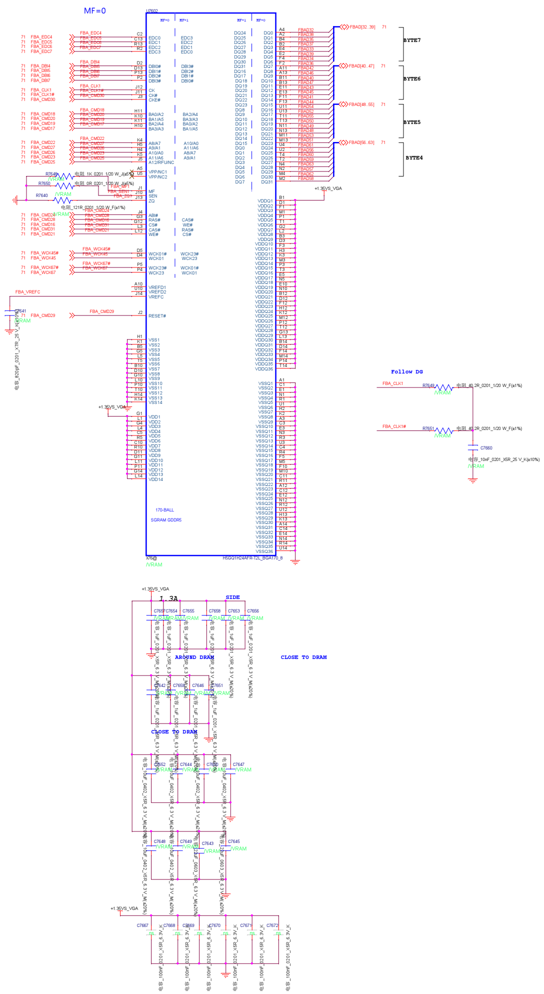
Memory - Lower 32 bits



Memory - Upper 32 bits



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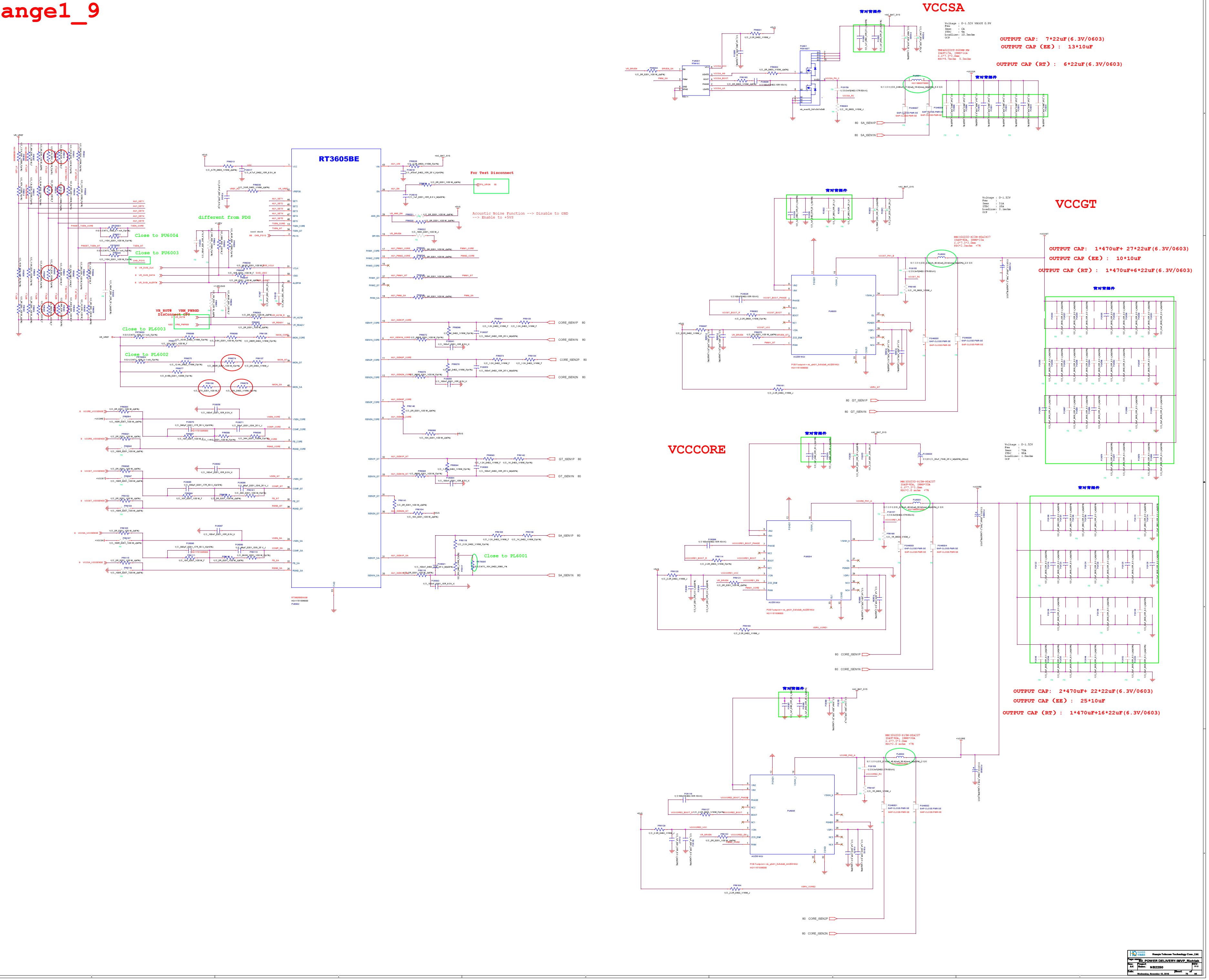
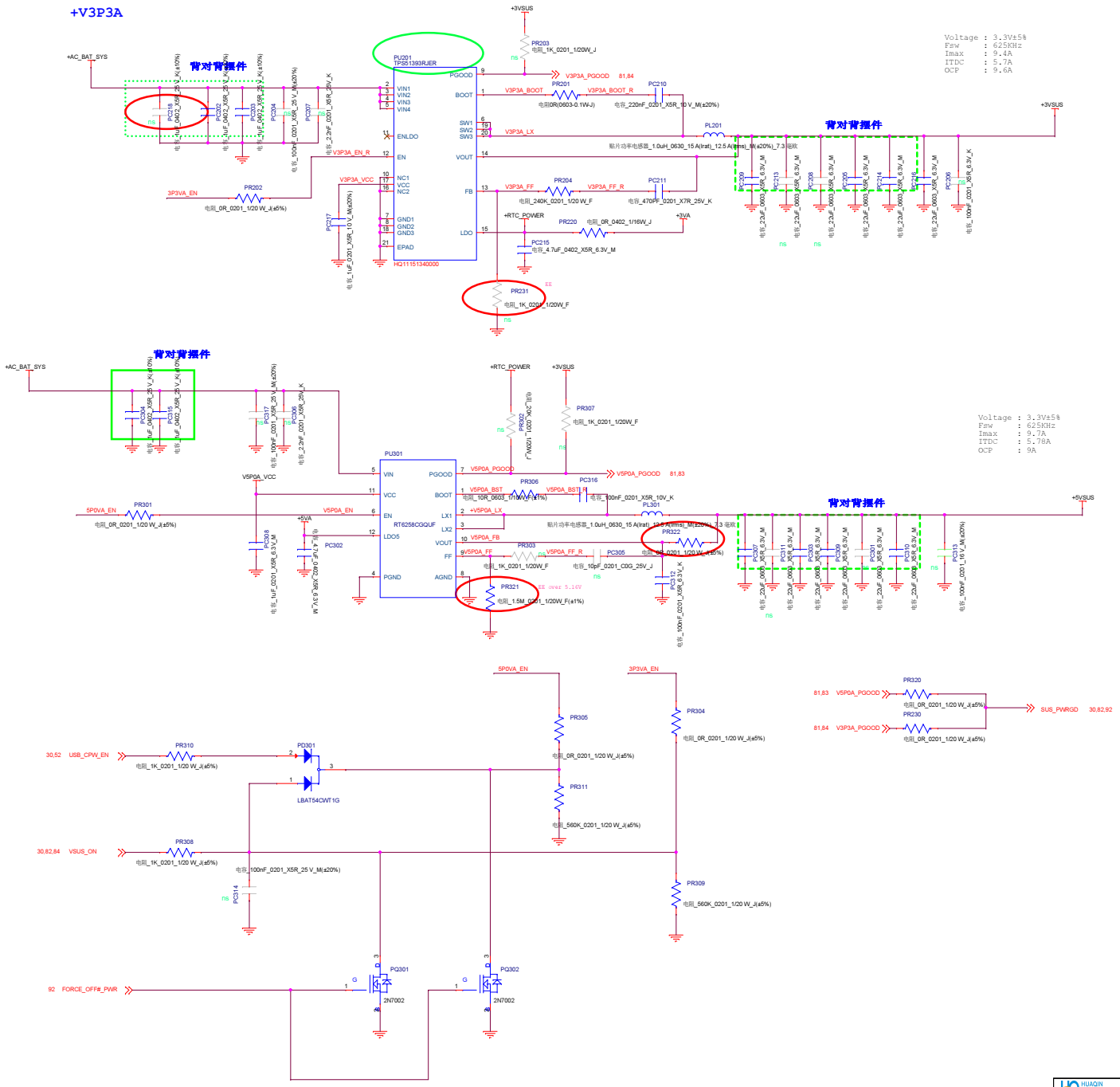


VCCSA
OUTPUT CAP: 7*22uF(6.3V/0603)
OUTPUT CAP (EE): 13*10uF
OUTPUT CAP (RT): 6*22uF(6.3V/0603)
RT3605BE
For Test Disconnect
Acoustic Noise Function --> Disable to GND
--> Enable to +5VS
different from PDG
Close to PU6004
Close to PU6003
Close to PL6003
Close to PL6002
Close to PL6001
VCCGT
OUTPUT CAP: 1*470uF+ 27*22uF(6.3V/0603)
OUTPUT CAP (EE): 10*10uF
OUTPUT CAP (RT): 1*470uF+6*22uF(6.3V/0603)
VCCCORE
OUTPUT CAP: 2*470uF+ 22*22uF(6.3V/0603)
OUTPUT CAP (EE): 25*10uF
OUTPUT CAP (RT): 1*470uF+16*22uF(6.3V/0603)
POWER DELIVERY-IMVP_Richtek
NB2250

change1_9


+V3P3A
+AC_BAT_SYS
背对背摆件
PU201
TPS51393RJER
PGOOD
BOOT
SW1
SW2
SW3
VOUT
FB
LDO
VIN1
VIN2
VIN3
VIN4
ENLDO
EN
NC1
VCC
NC2
GND1
GND2
GND3
EPAD
HQ11151340000
V3P3A_EN_R
V3P3A_VCC
V3P3A_BOOT
V3P3A_BOOT_R
V3P3A_LX
V3P3A_FF
V3P3A_FF_R
V3P3A_PGOOD
3P3VA_EN
+RTC_POWER
+3VA
+3VSUS
PR201
PR202
PR203
PR204
PR220
PR231
PC210
PC211
PC215
PC217
PL201
Voltage : 3.3V±5%
Fsw : 625KHz
Imax : 9.4A
ITDC : 5.7A
OCP : 9.6A
PU301
RT6258CGQUF
V5P0A_VCC
V5P0A_EN
V5P0A_BST
V5P0A_BST_R
V5P0A_LX
V5P0A_FB
V5P0A_FF
V5P0A_FF_R
V5P0A_PGOOD
+5VA
+5VSUS
PR301
PR302
PR303
PR305
PR306
PR307
PR321
PR322
PC302
PC316
PL301
Voltage : 3.3V±5%
Fsw : 625KHz
Imax : 9.7A
ITDC : 5.78A
OCP : 9A
5P0VA_EN
3P3VA_EN
PR304
PR308
PR309
PR310
PR311
PD301
LBAT54CWT1G
PQ301
PQ302
2N7002
FORCE_OFF#_PWR
USB_CPW_EN
VSUS_ON
PR320
PR230
SUS_PWRGD
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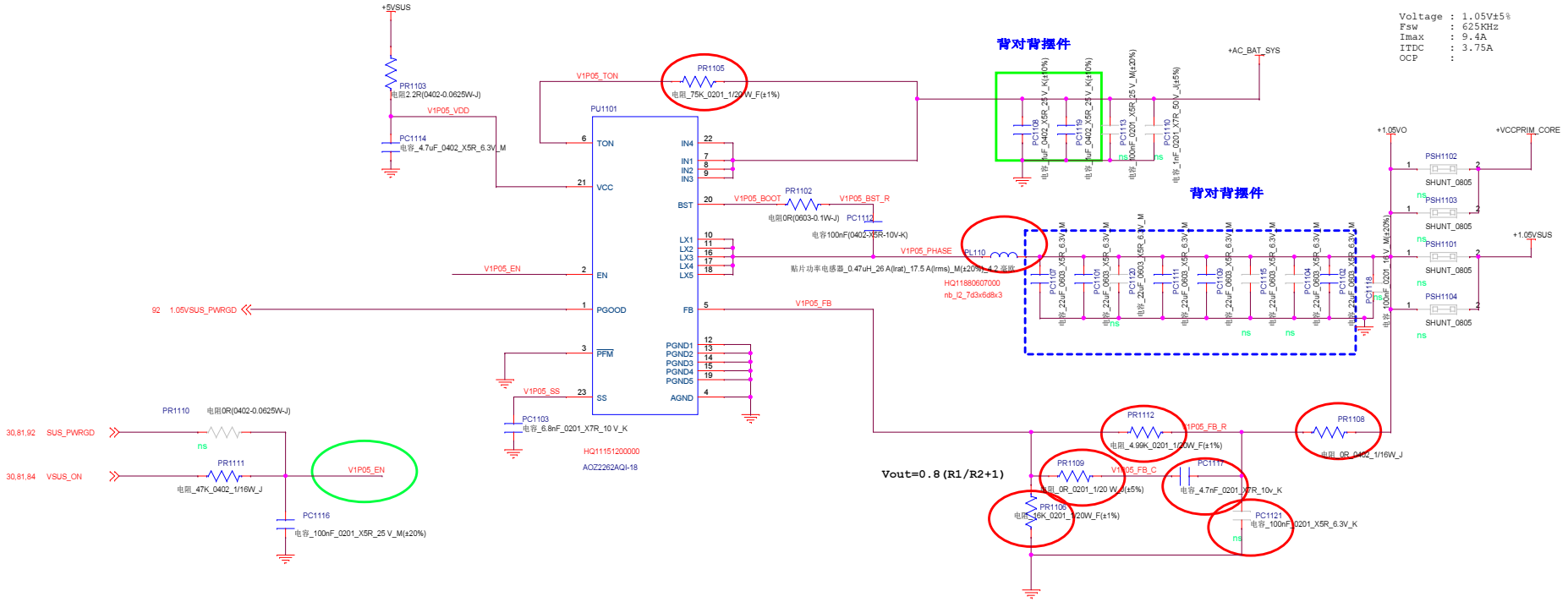

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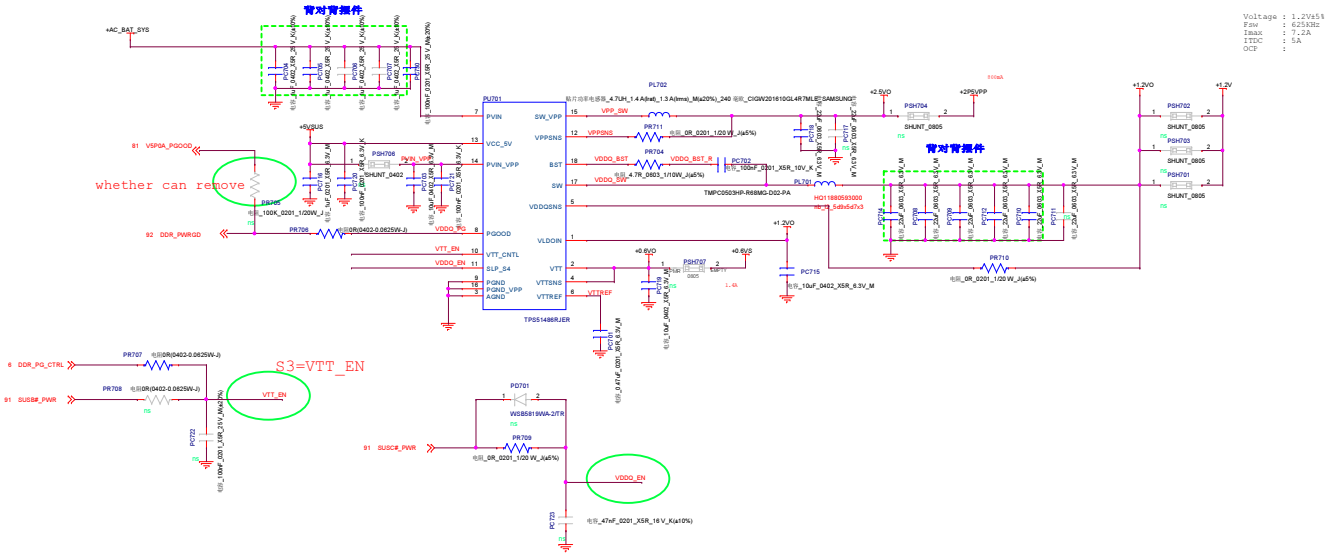

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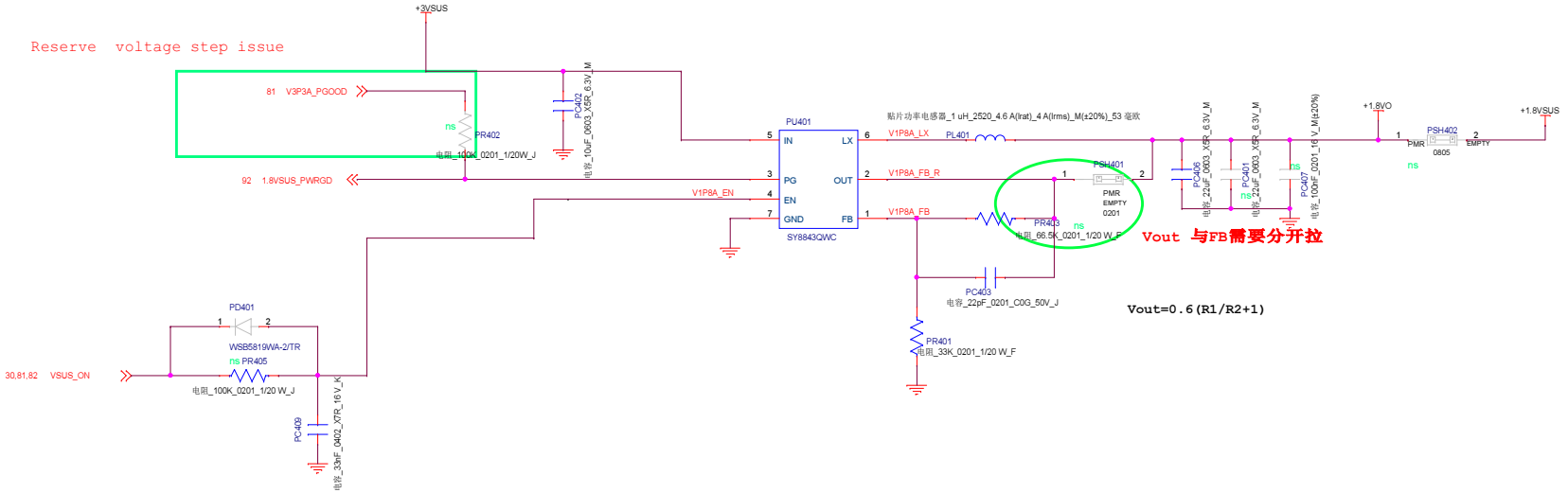
+V1P8A



Voltage : 3.3V±5%
Fsw : 625KHz
Imax : 1A
ITDC :
OCP :

Huaqin Telecom Technology Com.,Ltd.		
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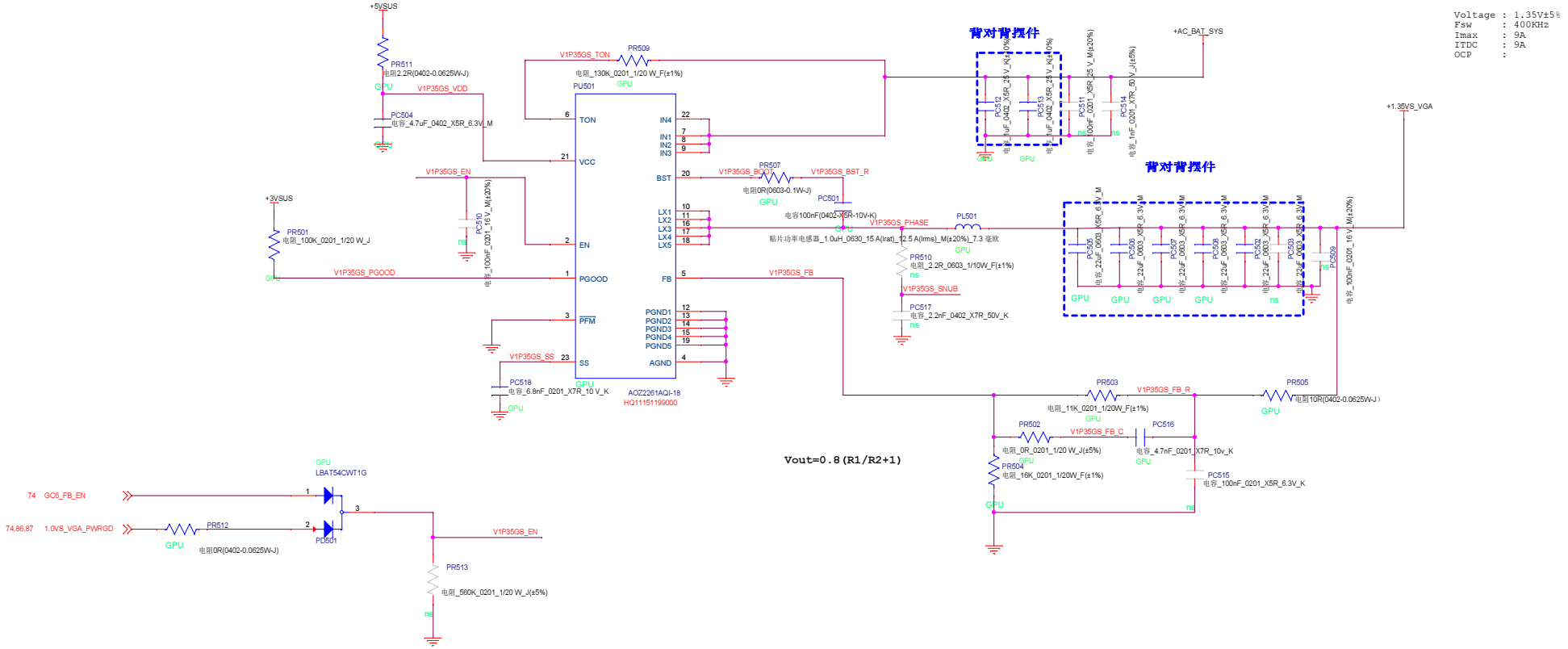

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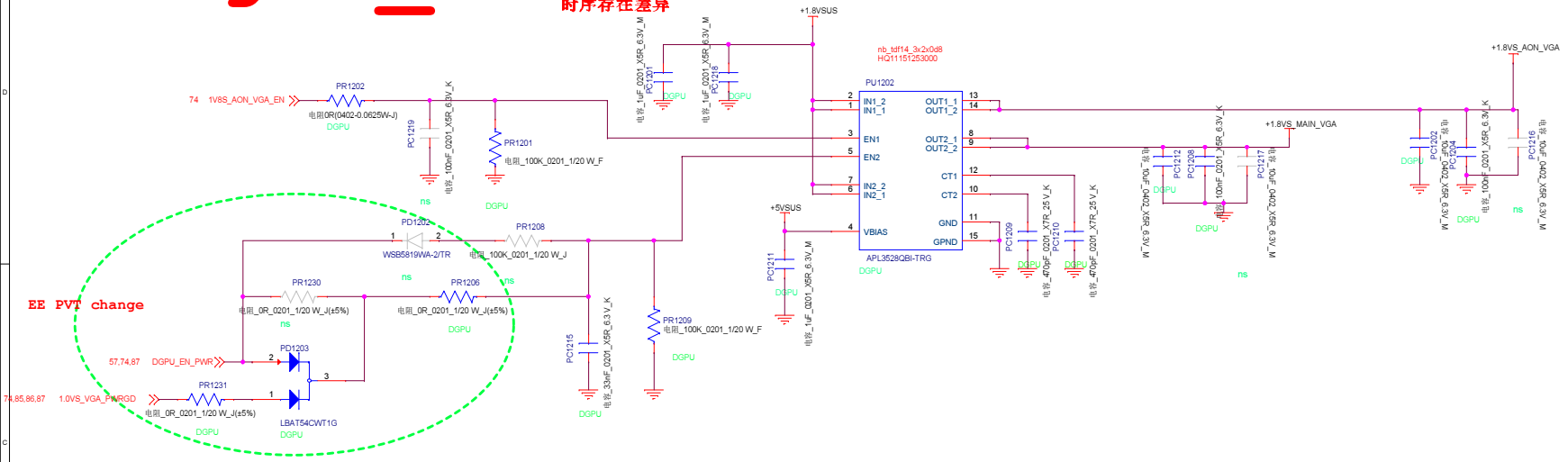

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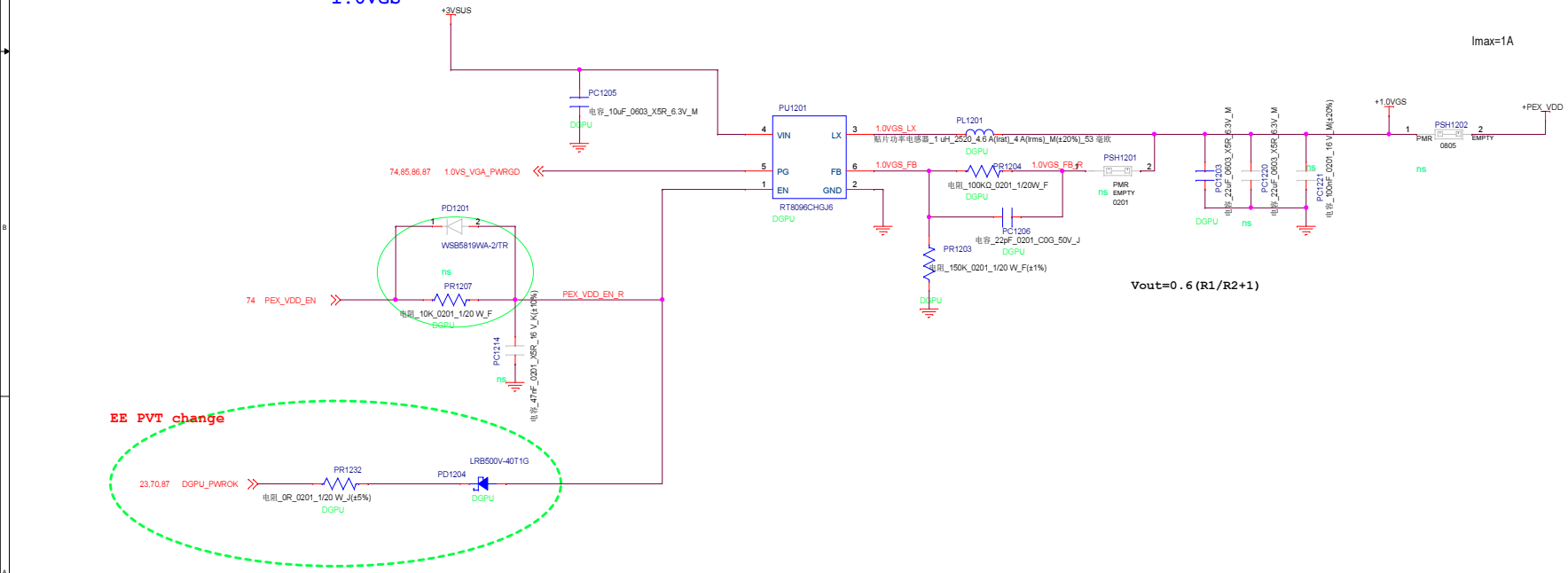

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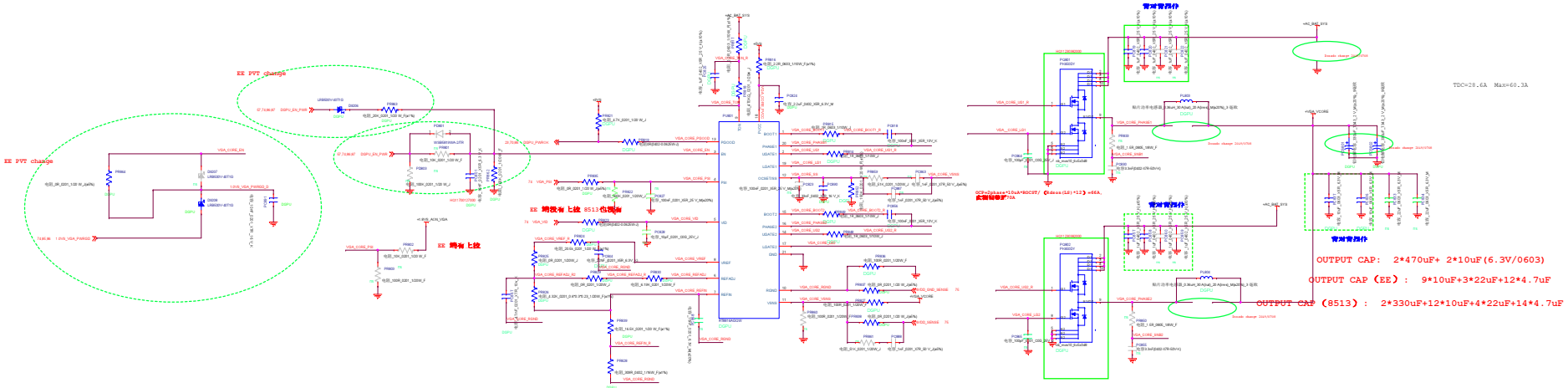


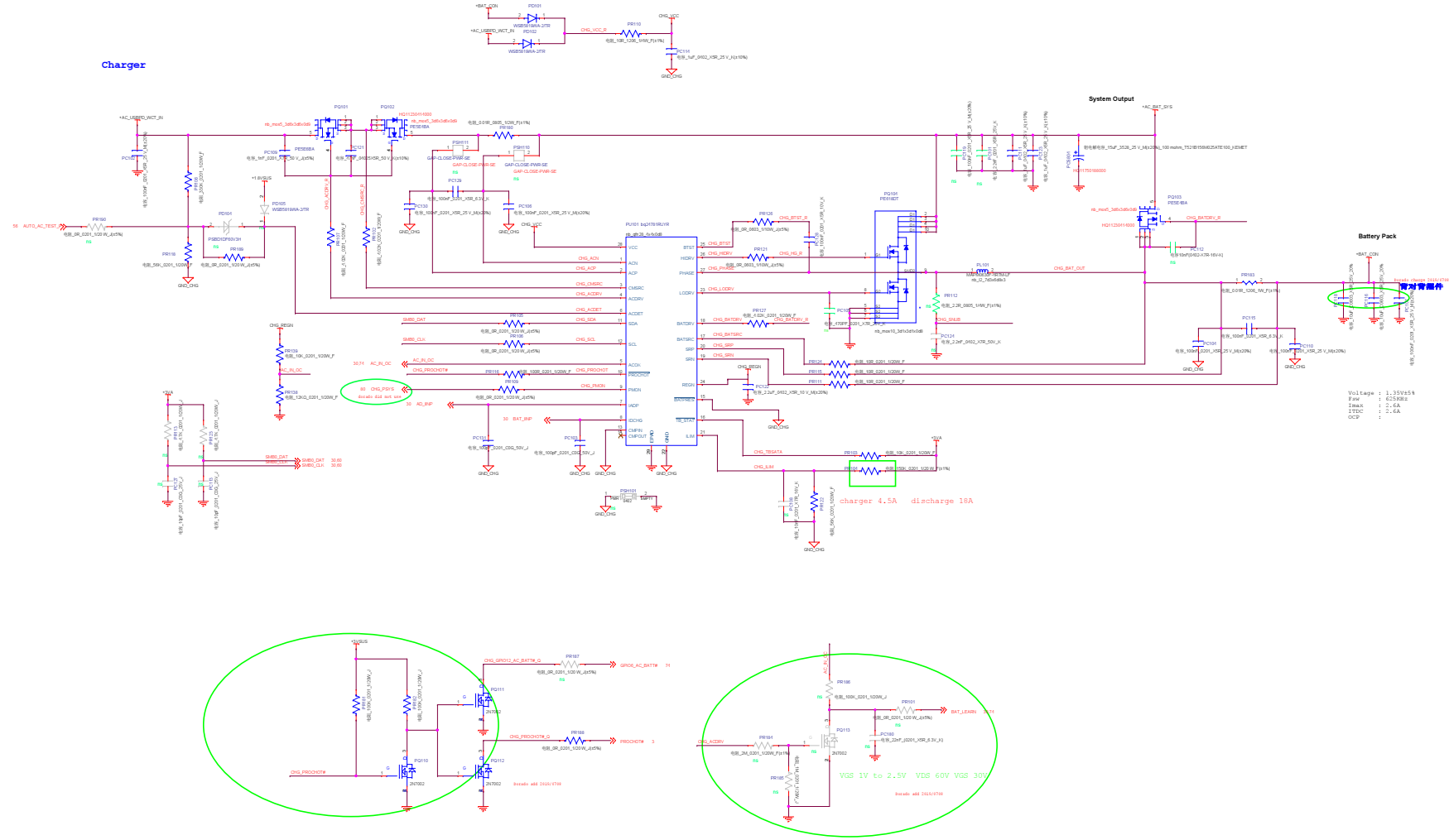
Table 7. Output EDP-Continuous

Product	NVVDD — (A)	GPU FBIO 1.35V[4] (A)	FB Total[3] 1.35V[4] (A)	1.0V Total[1] 1.0V[4] (A)	1.8V Total[2] 1.8V[4] (A)
N17S-LG	15.4	2.5	5.0	0.1	0.2
N17S-G1	30.0	3.0	5.6	0.1	0.3
N17S-G0[6]	27.8	3.2	5.8	0.2	0.5
N17S-G2[6]	28.6	3.2	5.8	0.2	0.5

Table 8. Output EDP-Peak

Product	NVVDD — (A)	GPU FBIO 1.35V[3] (A)	FB TOTAL[4] 1.35V[3] (A)	1.0V Total[1] 1.0V[3] (A)
N17S-LG	48.3	2.8	5.8	0.2
N17S-G1	60.1	3.4	6.9	0.2
N17S-G0[5]	42.0	3.9	7.4	0.3
N17S-G2[5]	60.3	3.9	7.4	0.3

change1_9



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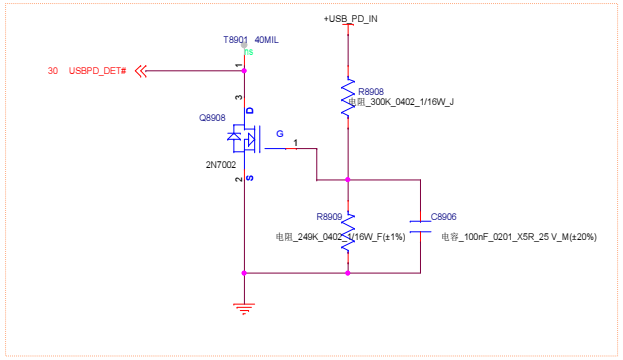
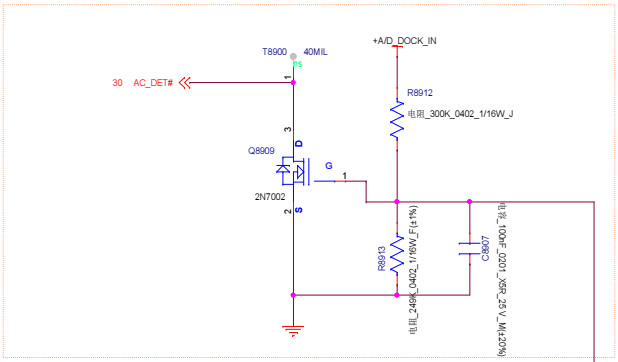
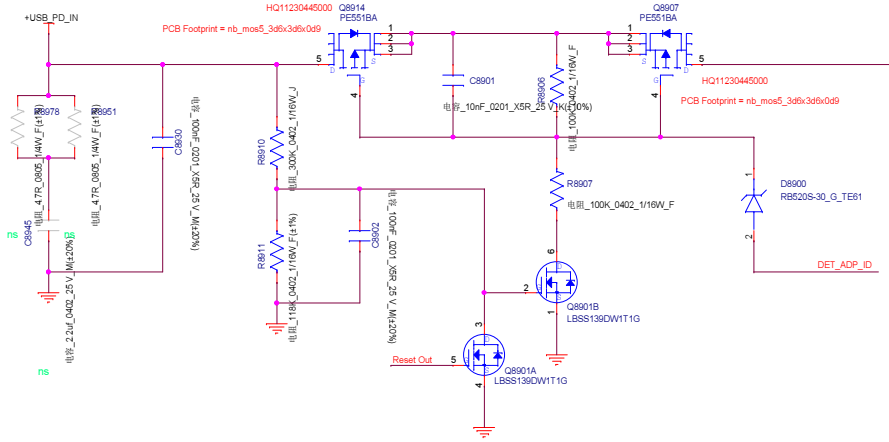
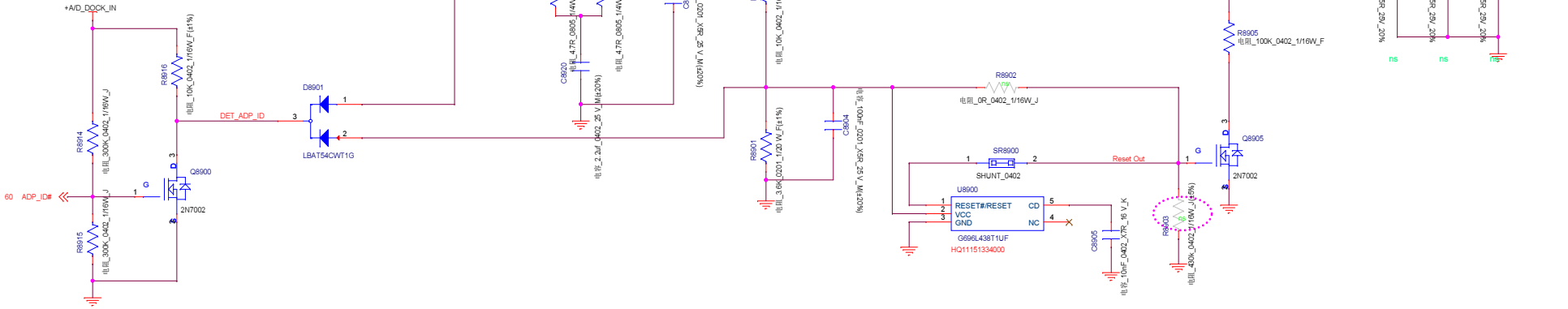
AC & USB_PD Detect





2 Input switch Circuit





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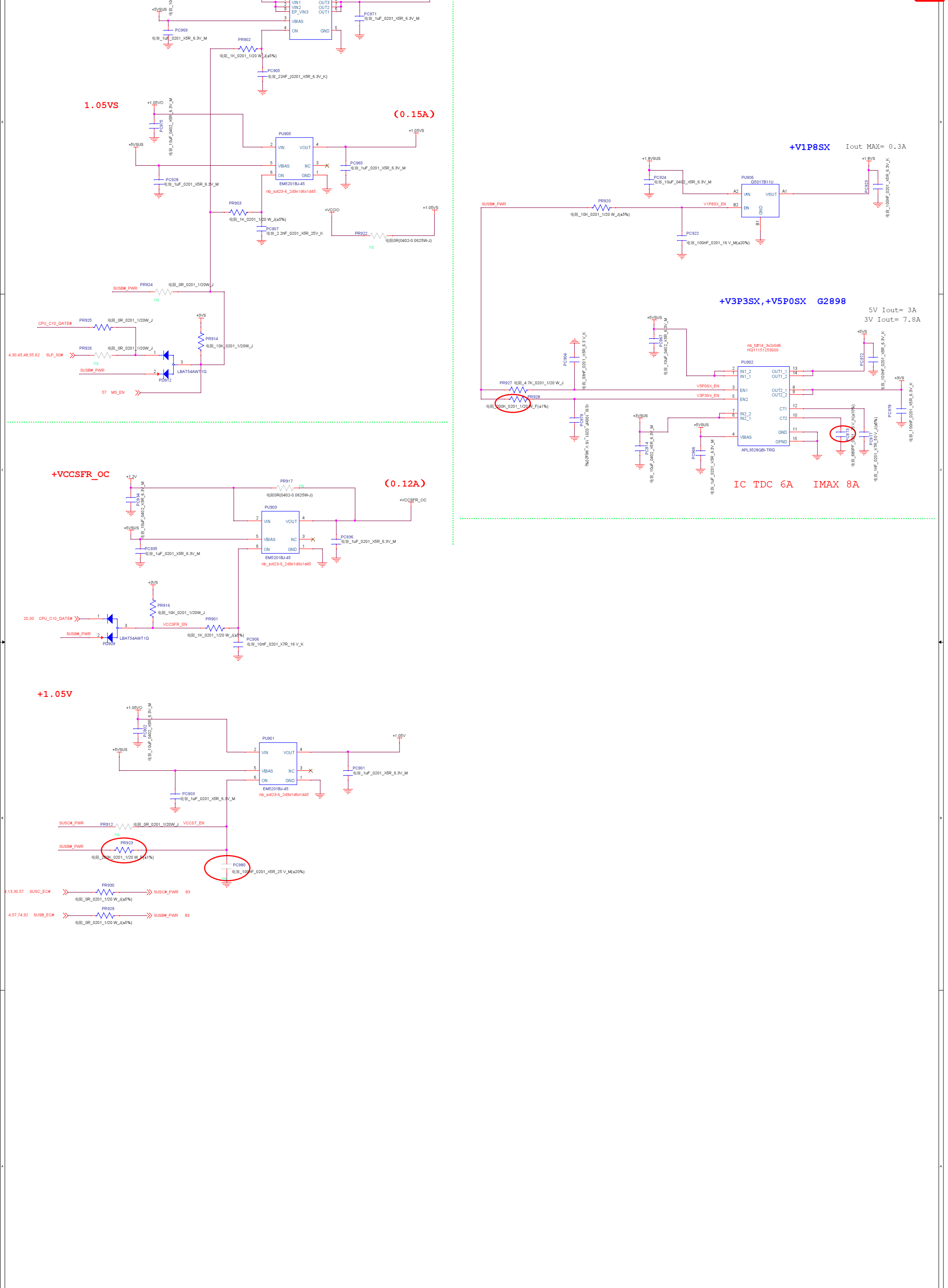

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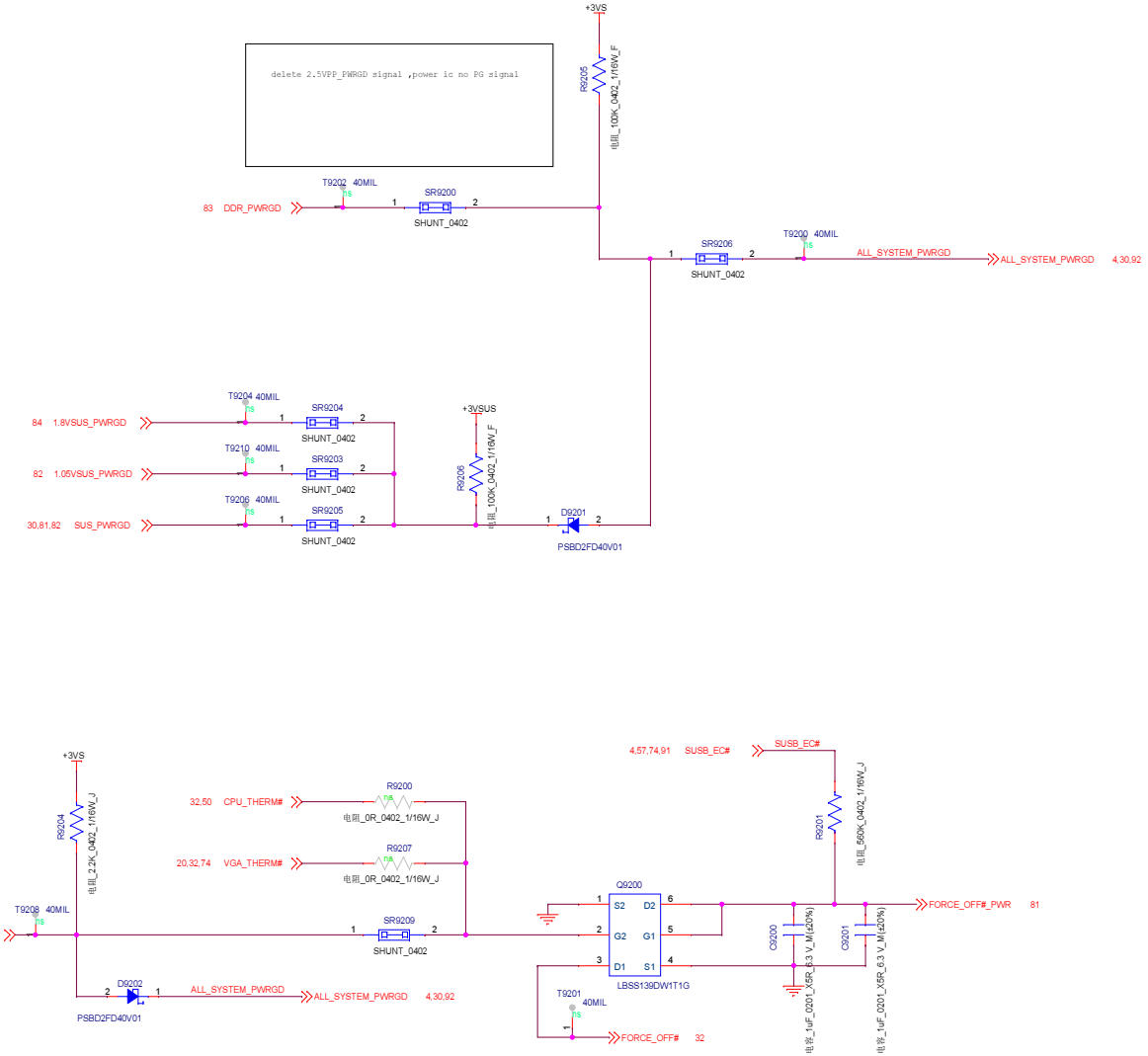
POWER GOOD DETECTER



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RTCBATT
RTC
CR2016-LH20126

PCB
PCB
MB_PCB

PCB1
PCB
UB_MIC_PCB
ns

PCB2
PCB
LED_UB_PCB
ns

HS1
NB_PTHC2D5HTC8BC7_U4_NP
HS2
NB_ptho4d7htc10bc10_ud9_np
HS3
NB_PTHC4D2HC8_NP
HS4
NB_PTHC2D5HC7_NP
HS5
NB_PTHC2D5HC7_NP
HS6
NB_pthc2d5htc8bc8_u5d4d5_np
HS7
ns
NB_PTHC4D2HTC8BC8_D5_NP
HS8
ns
NB_PTHC2D5HTC8BC8_UD5_NP
HS9
ns
NB_PTHC2D5HC8_NP
HS10
ns
NB_NB2250_HOLE6
HS11
ns
NB_NB2250_HOLE7

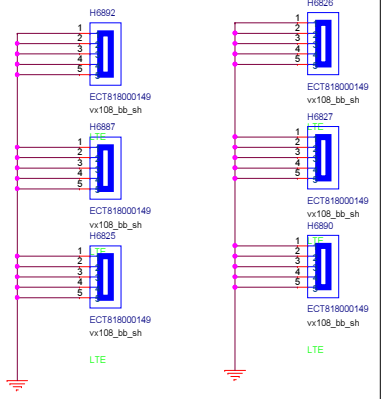
CPU NUT

H6800 H6801 H6802 H6803

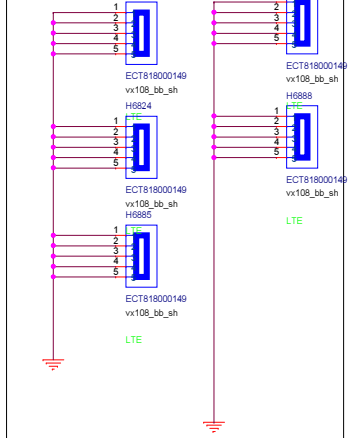
GPU NUT

H6804 H6805
/GPU /GPU

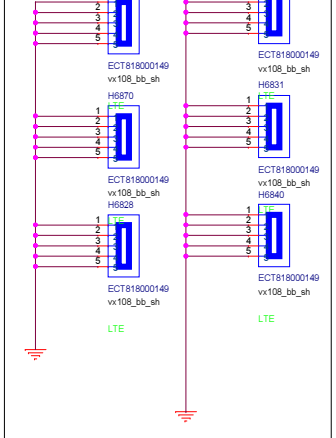
TOP USB



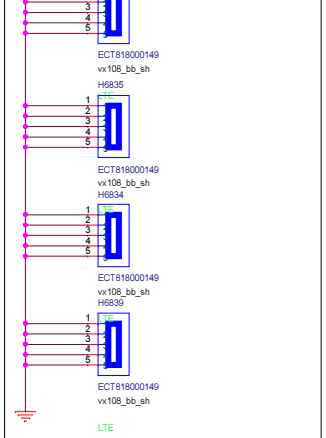
TOP MEM



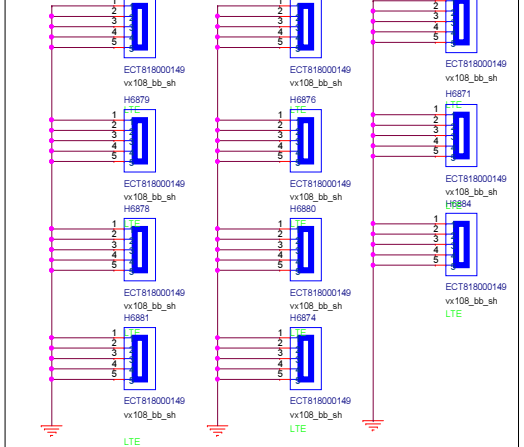
BOT USB



BOT Power



BOT CPU GPU



LTE1+
RTC
NB2250AJA-GU-1
ns

LTE2+
RTC
NB2250AJA-GU-2
ns

LTE3+
RTC
NB2250AJA-GU-3
ns

LTE4+
RTC
NB2250AJA-GU-4
ns

LTE5+
RTC
NB2250AJA-GU-5
ns

LTE6+
RTC
NB2250AJA-GU-6
ns

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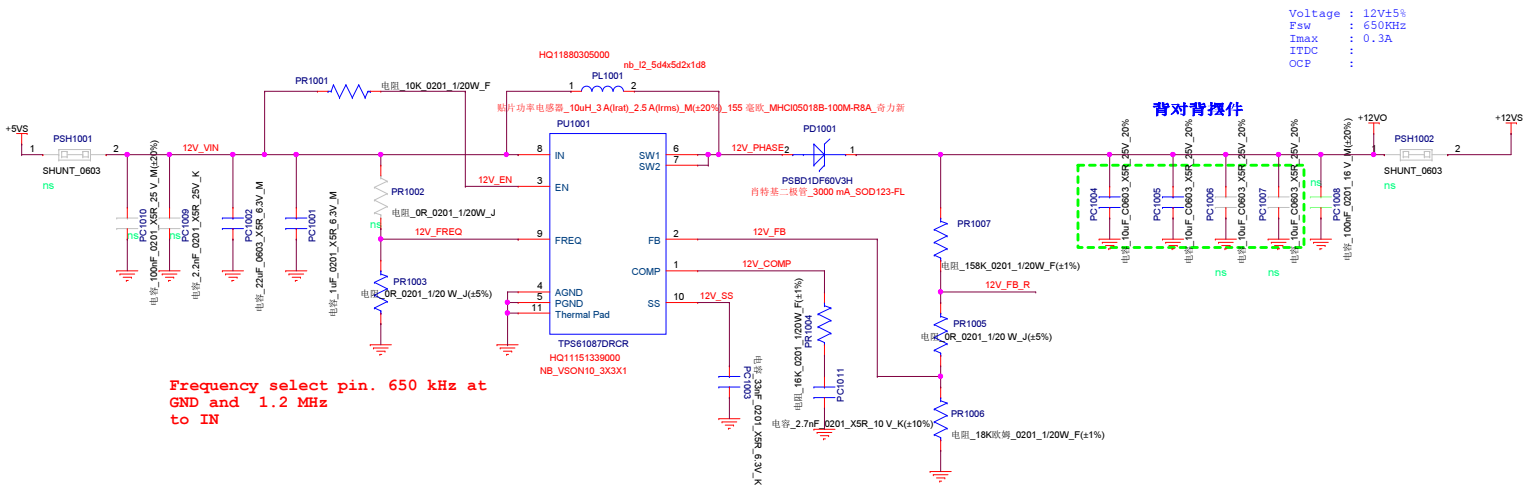

Frequency select pin. 650 kHz at
GND and 1.2 MHz
to IN

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