HuaQin Confidential

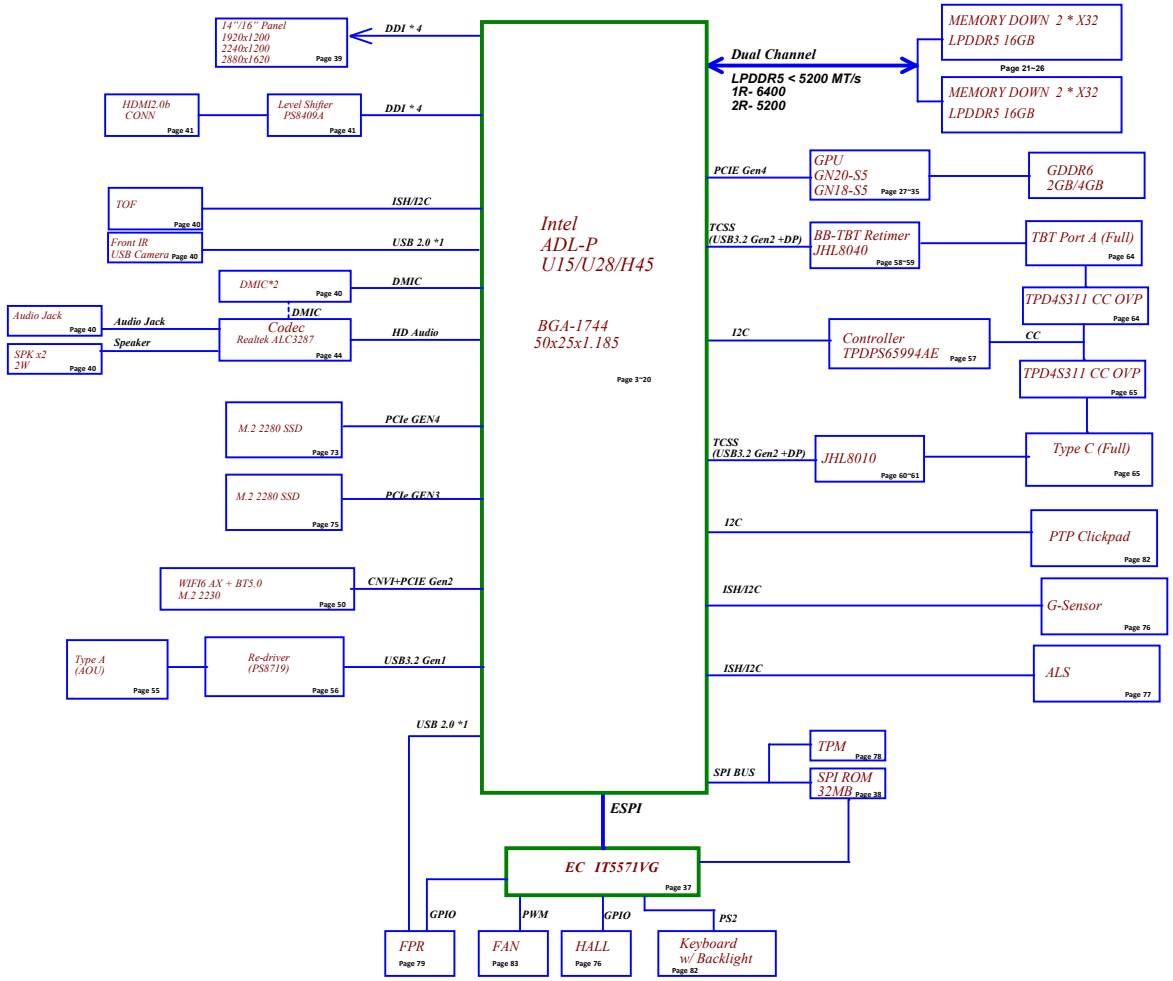
NB5979/NB5986_MB Schematics Document

Intel Alder Lake P-Processor with LPDDR5 MD

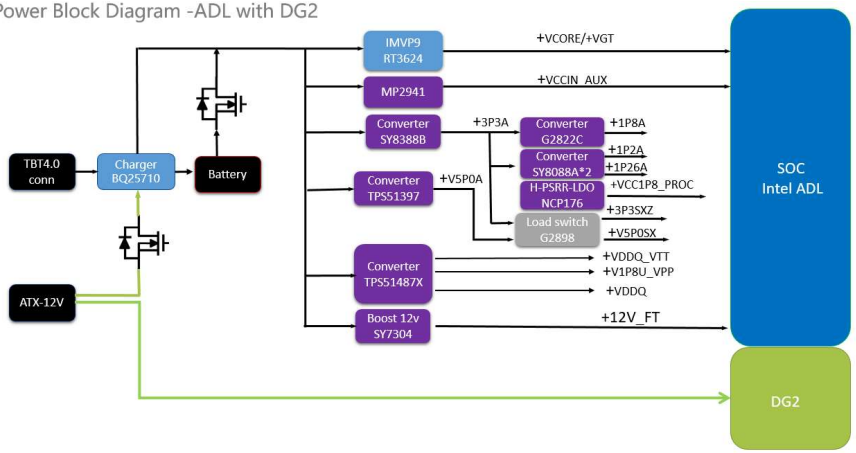
REV 10.0

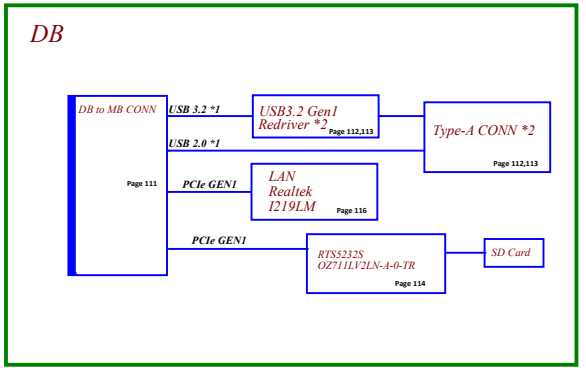
2022-01-19

HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.		
Page name:	Cover page		
Size: A4	Project Name: NB5979&NB5986		REV: V6.0
Date: Thursday, January 27, 2022		Sheet: 1 of 110	



Power Block Diagram -ADL with DG2





Huaqin Telecom Technology Com.,Ltd.			
Page name:	Block Diagram		
Size: A4	Project Name:	NB5979&NB5986	REV: V0.0
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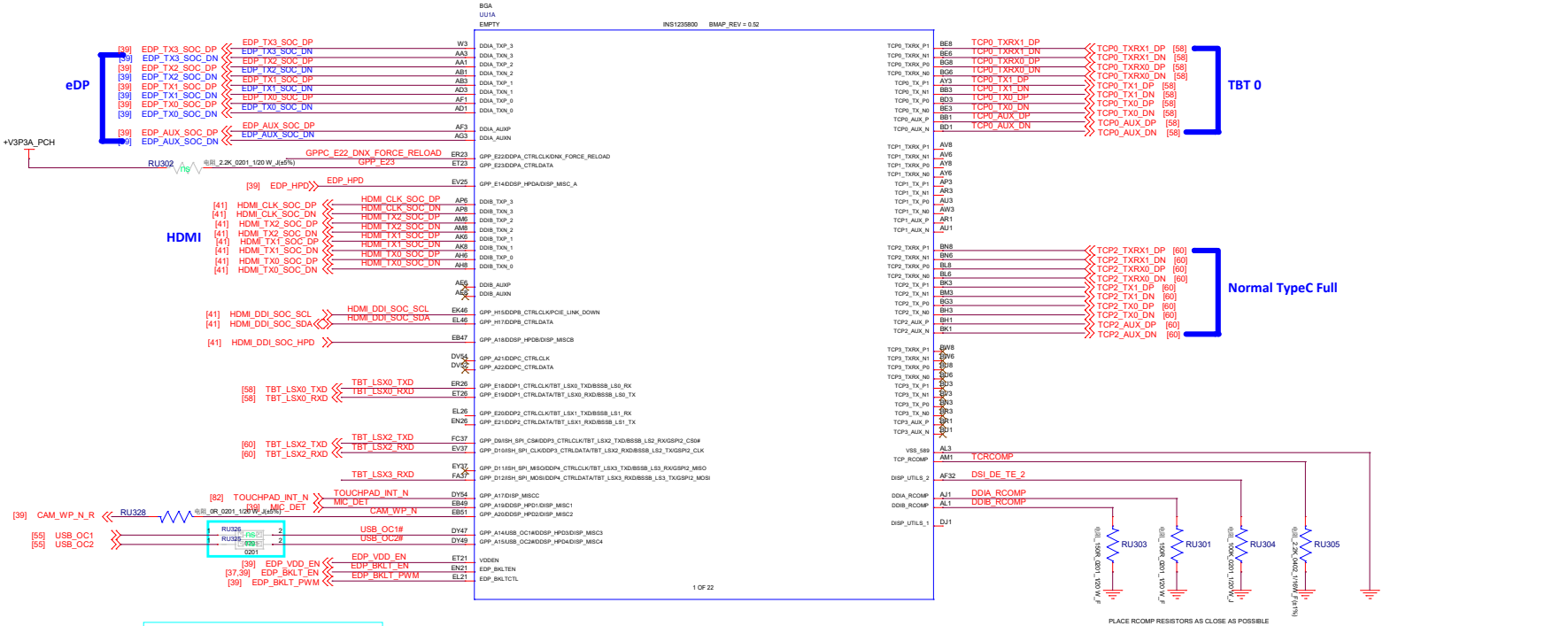

PCH STRAP---VCCIO CONFIGURATION

TBT LSX #0 PINS VCCIO CONFIGURATION

TBT LSX #1 PINS VCCIO CONFIGURATION

TBT LSX #2 PINS VCCIO CONFIGURATION

TBT LSX #3 PINS VCCIO CONFIGURATION

HIGH: 3.3V
LOW: 1.8V
WEAK INTERNAL PD 20K
SAMPLING - RSMRSTB

DNX CIRCUIT

Huaqin Telecom Technology Com.,Ltd.	
Page name:	ADL-P(DISPLAY)
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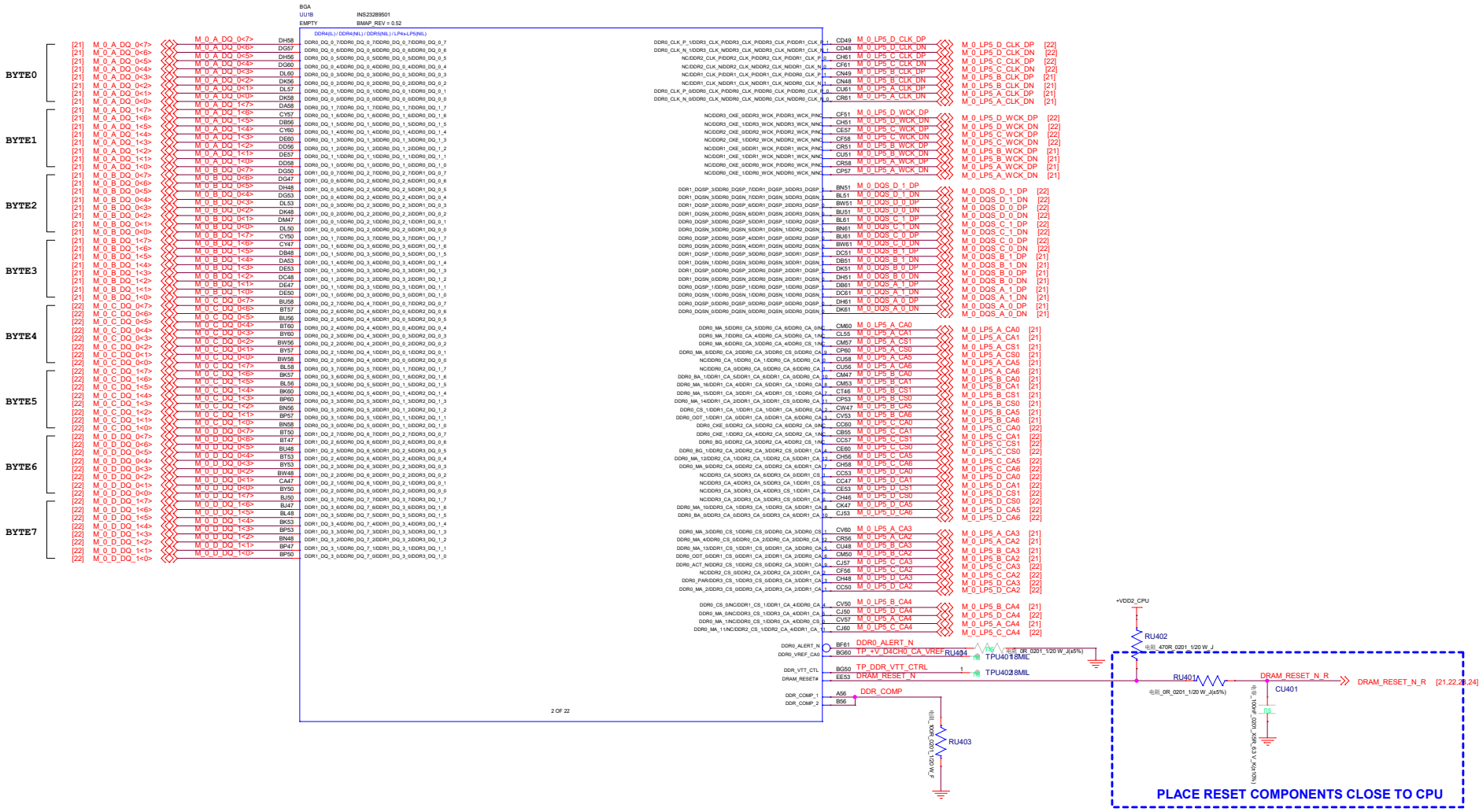
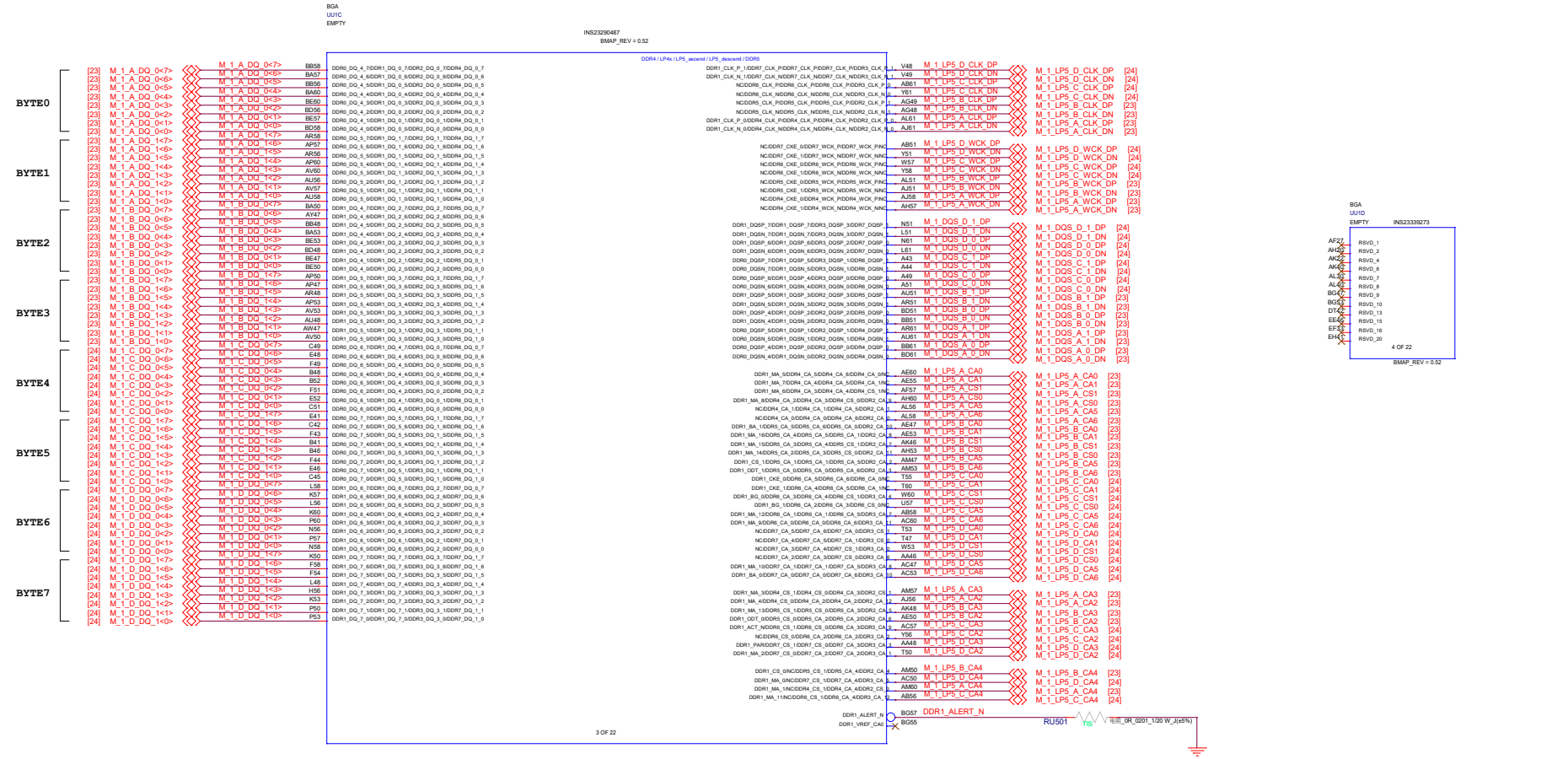


Huaqin Telecom Technology Com.,Ltd.	
Page name:	ADL-P(CHA)
Size: A4	Project Name: NB5979&NB5986
REV: V6.0	
Date: Thursday, January 27, 2022	Sheet: 4 of 110



Company	Huaqin Telecom Technology Com.,Ltd.
Page name	ADL-P(CHB)
Size	A4
Project Name	NB5979&NB5986
REV	V6.0
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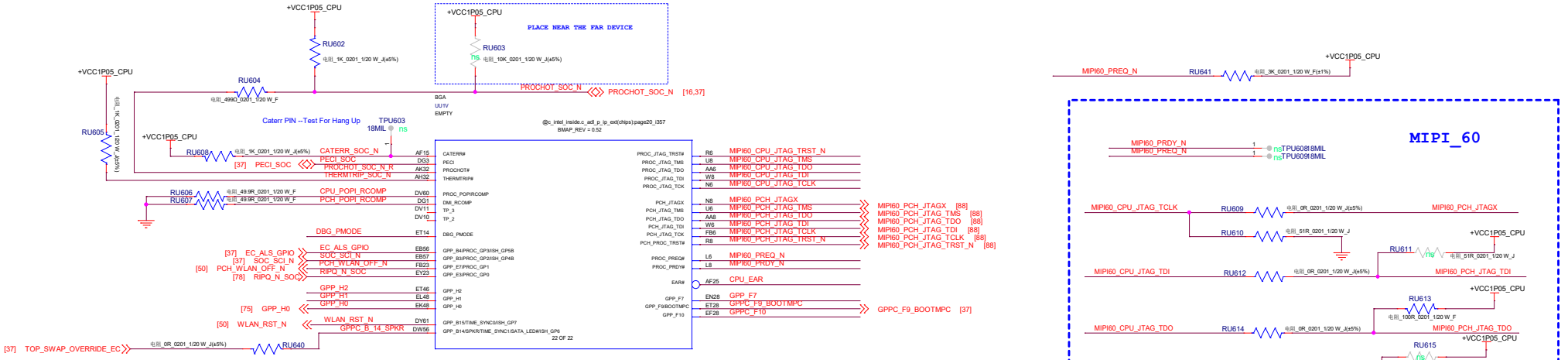
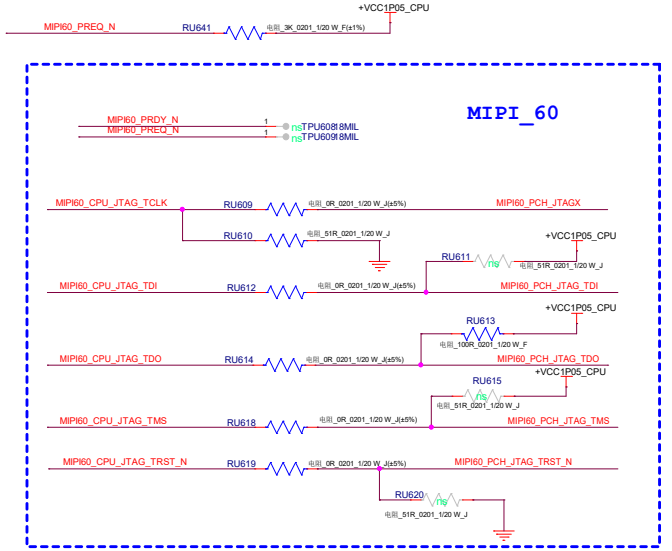
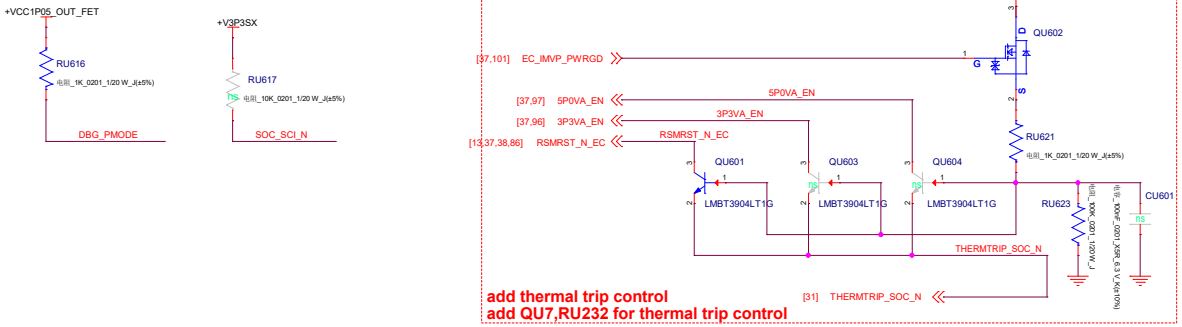
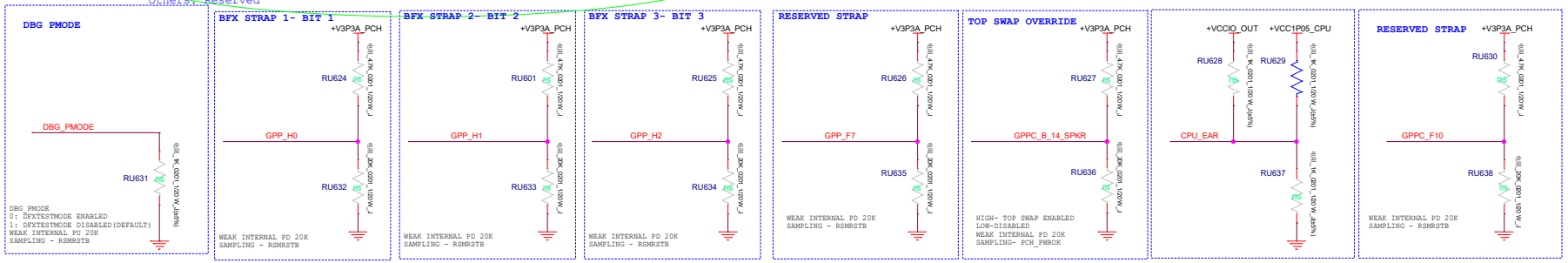







```
0000 = Master Attached Flash Configuration (BIOS / CSME on SPI).
1000 = Slave Attached Flash Configuration (BIOS / CSME on eSPI attached device).
0100 = BIOS on eSPI Peripheral Channel; CSME on master attached SPI
1100 = BIOS on eSPI peripheral Channel; CSME on slave attached SPI.
Others: Reserved
```



Huaqin Telecom Technology Com.,Ltd.			
Page name:	ADL-P(THML/MIPI60)		
Size: A4	Project Name:	NB5979&NB5986	REV: V6.0
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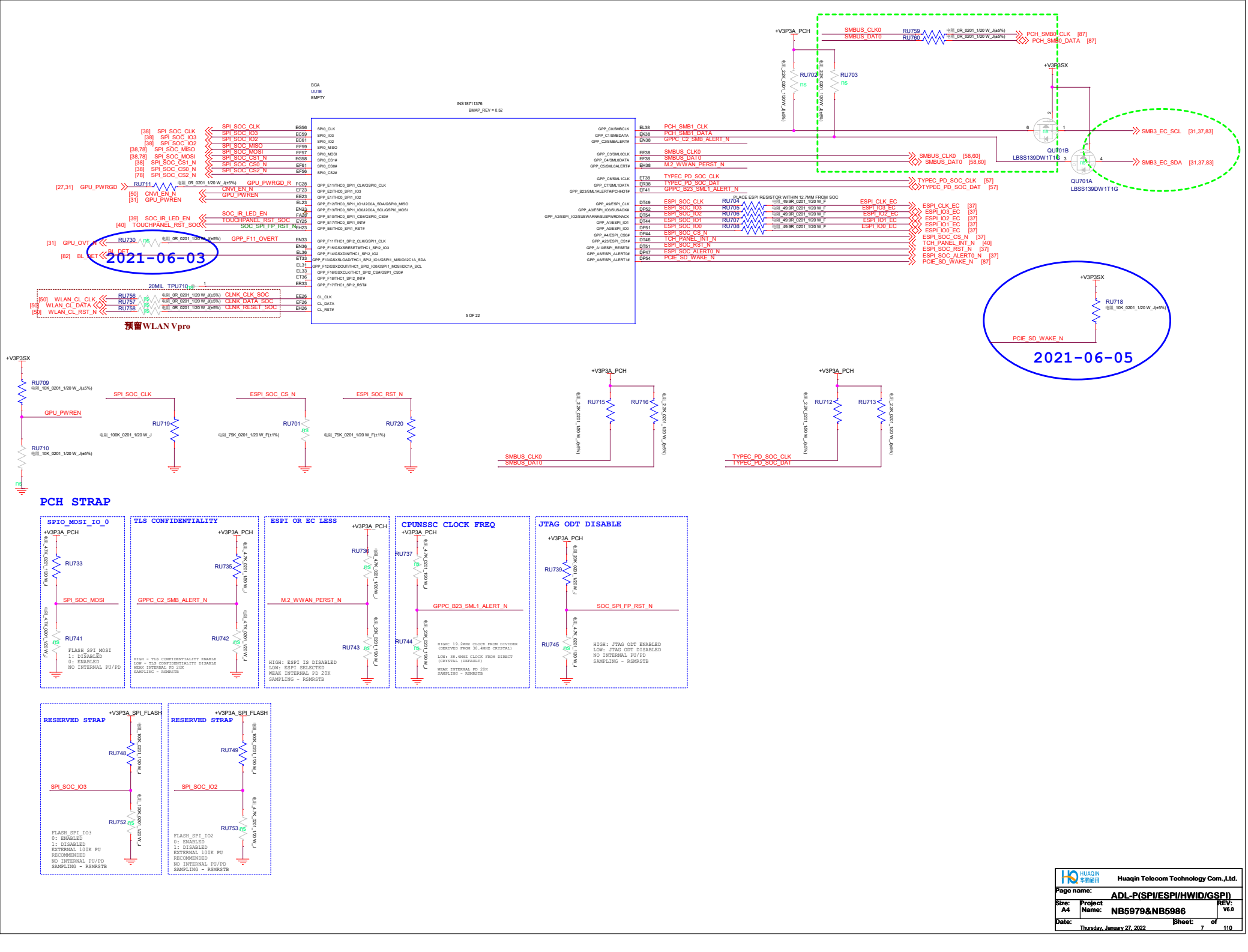

Huaqin Telecom Technology Com.,Ltd.		
Page name:	ADL-P(SPI/ESPI/HWID/GSPI)	
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
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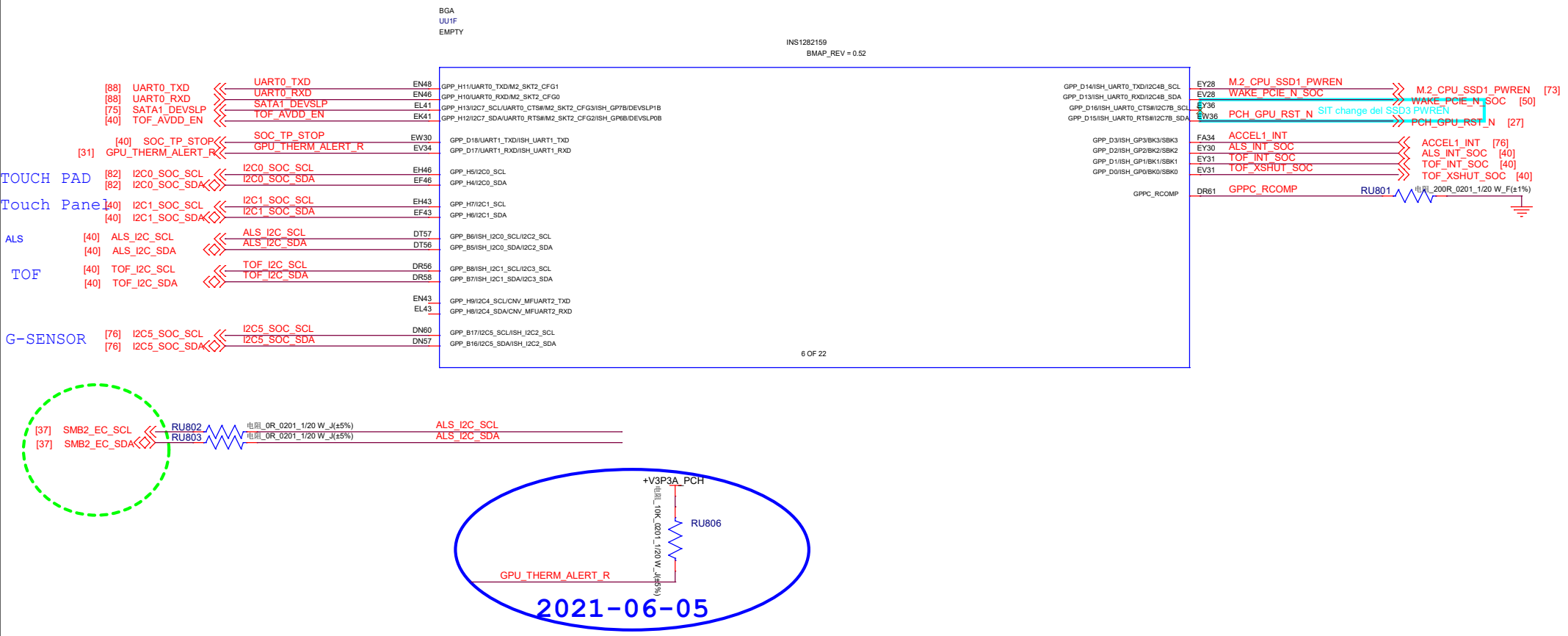

HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.	
Page name:	ADL-P(I2C/ISH/UART)	
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
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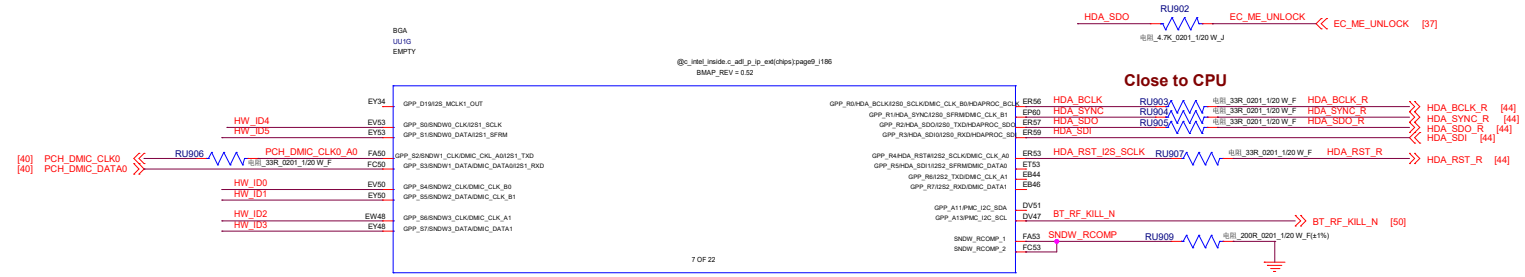

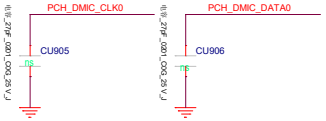

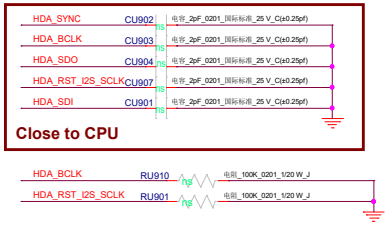

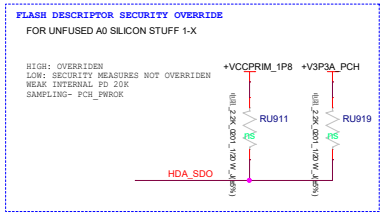

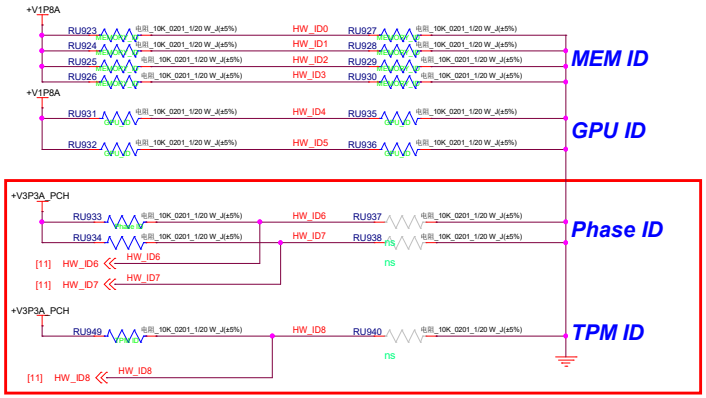

MEM DOWN ID

HW_ID0	HW_ID1	HW_ID2	HW_ID3	Description	Total
0	0	0	0	16Gbx32 LPDDR5 315b Hynix H9JCNNNBK3MLYR-N6E	8GB
1	0	0	0	16Gbx32 LPDDR5 315b Micron MT62F512M32D2DR-031 WT:B	8GB
0	1	0	0	32Gbx32 LPDDR5 315b 6400 K3LKBKB0BM-MGCP 1znm/16Gb DDP	16GB
1	1	0	0	32Gbx32 LPDDR5 315b 6400 H9JCNNNCP3MLYR-N6E 1ynm 8Gb QDP	16GB
0	0	1	0	32Gbx32 LPDDR5 315b 6400 MT62F1G32D4DR-031 WT:B Y31M/1znm/8Gb QDP	16GB
1	0	1	0	64Gbx32 LPDDR5 315b 6400 K3LKCRC0BM-MGCP 1znm/16Gb QDP	32GB
0	1	1	0	64Gbx32 LPDDR5 315b 6400 H9JCNNNFA5MLYR-N6E 1ynm 8Gb ODP	32GB
1	1	1	0	64Gbx32 LPDDR5 315b 6400 MT62F2G32D8DR-031 WT:B Y31M/1znm/8Gb ODP	32GB
0	0	0	1	RESERVE	RESERVE
1	0	0	1	Reserve	Reserve

TPM ID

HW_ID8	TPM
0	NO TPM
1	TPM

Project ID

HW_ID9	Project
0	NB5979
1	NB5986

Phase ID

HW_ID7	HW_ID6	Description
0	0	EVT
1	0	FVT
0	1	SIT
1	1	SVT&SOVP

GPU ID

HW_ID5	HW_ID4	Description
0	0	UMA
0	1	DIS-GN18-S5
1	0	DIS-GN20-S5
1	1	DIS-GN20-S7

HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.	
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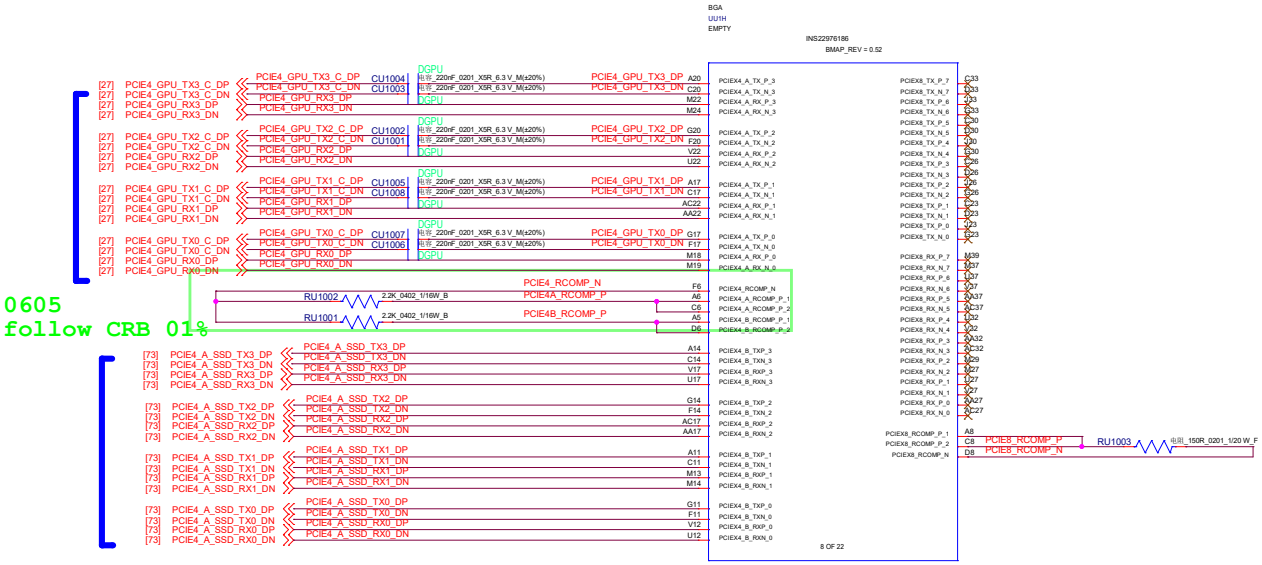
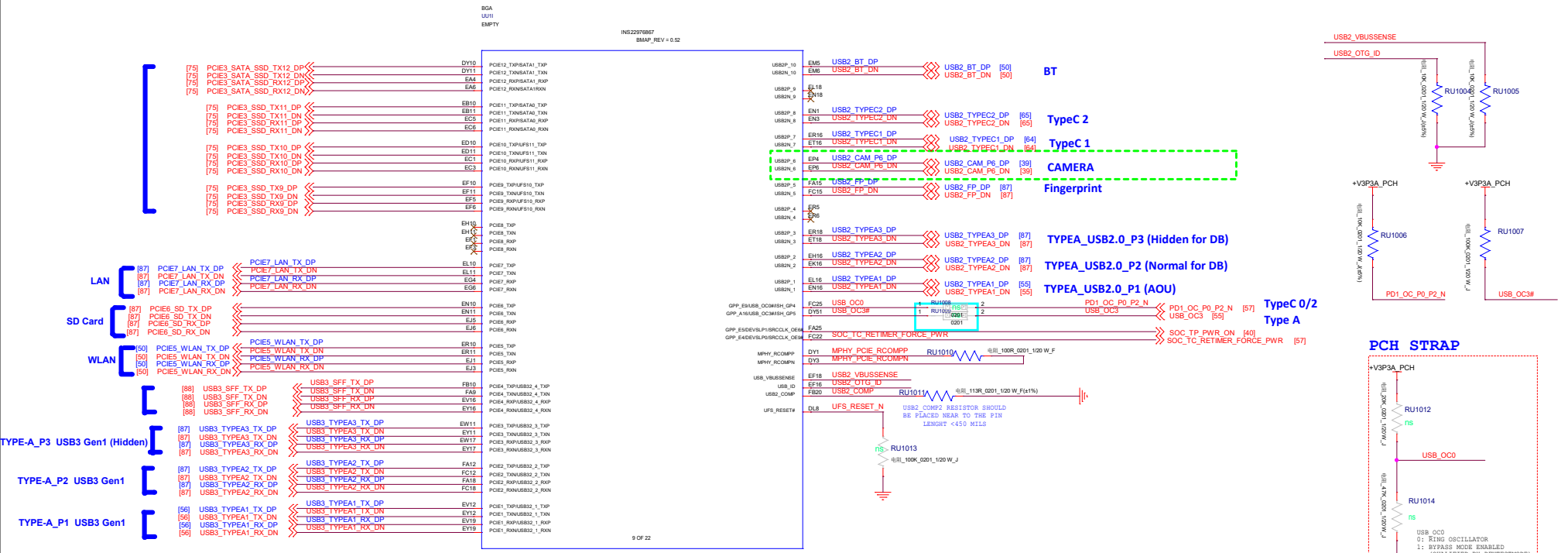
CPU



PCH



Huaqin Telecom Technology Com.,Ltd.			
Page name:	ADL-P(PCIE/USB)		
Size: A4	Project Name:	NB5979&NB5986	REV: V6.0
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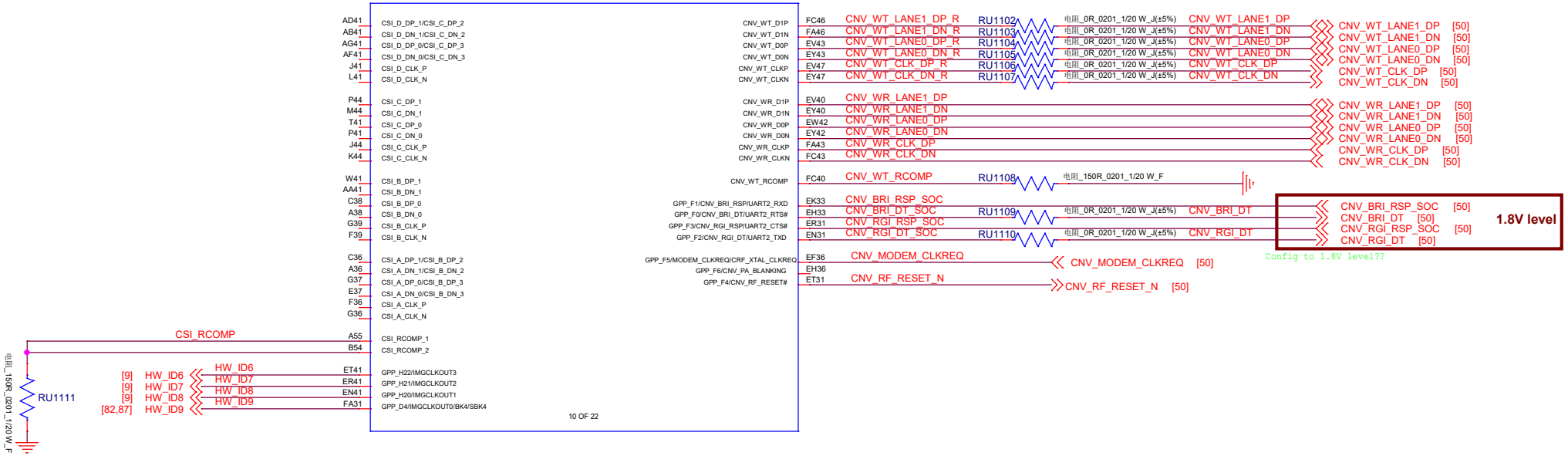
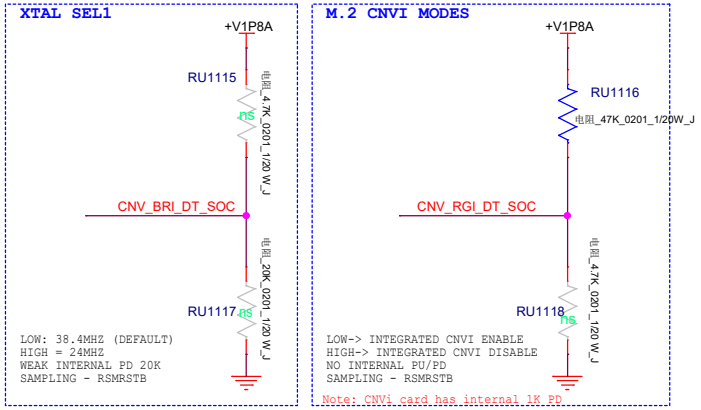
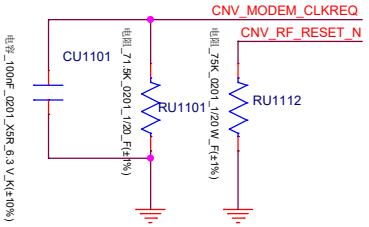
BGA
UU1J
EMPTY

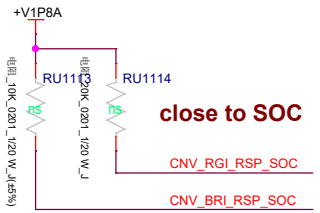
@c_intel_inside.c_adl_p_ip_ext(chips):page12_i284
BMAP_REV = 0.52

only 3vias allowed for CNVi High speed signals on PCB routing;
if more than 3 vias,PLS remove all the serial resistors









HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.	
Page name:	ADL-P(CNVI/CSI)	
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
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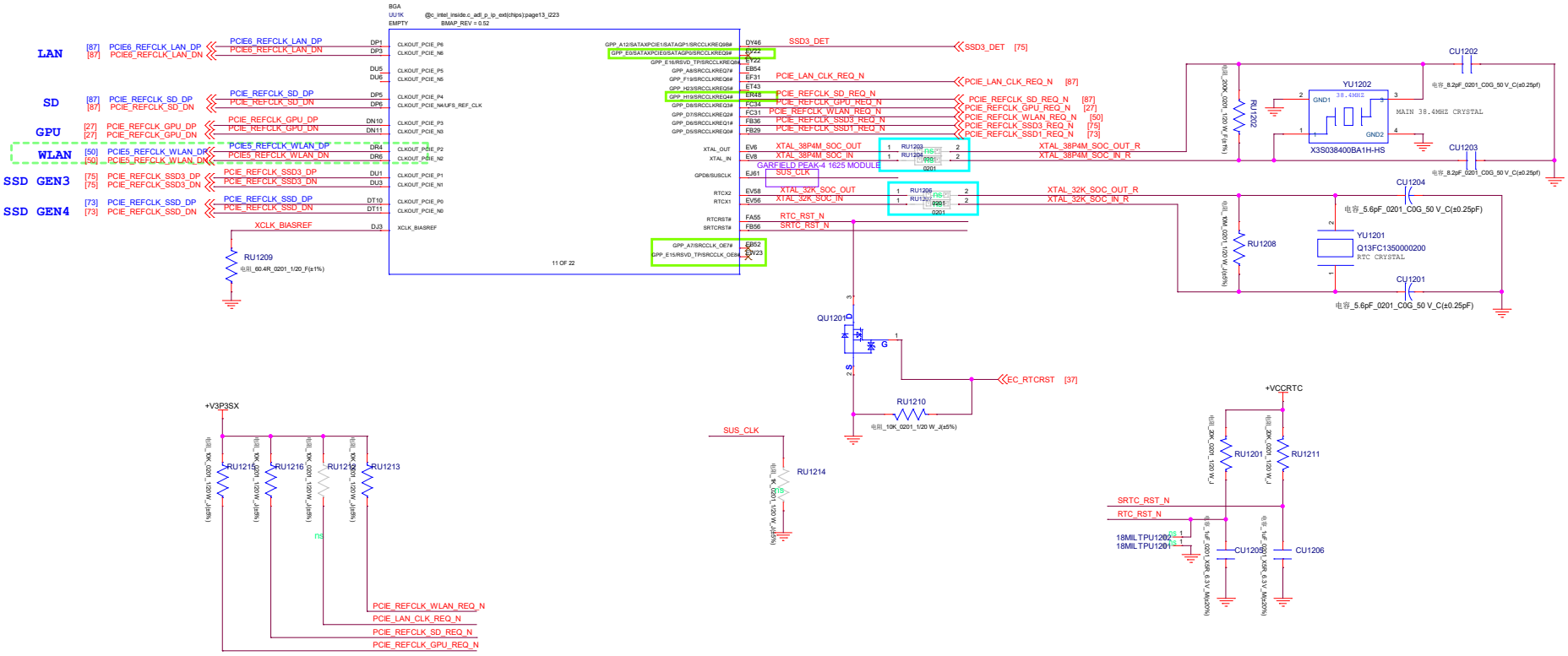

HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.		
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Size: A4	Project Name: NB5979&NB5986	REV: V6.0	
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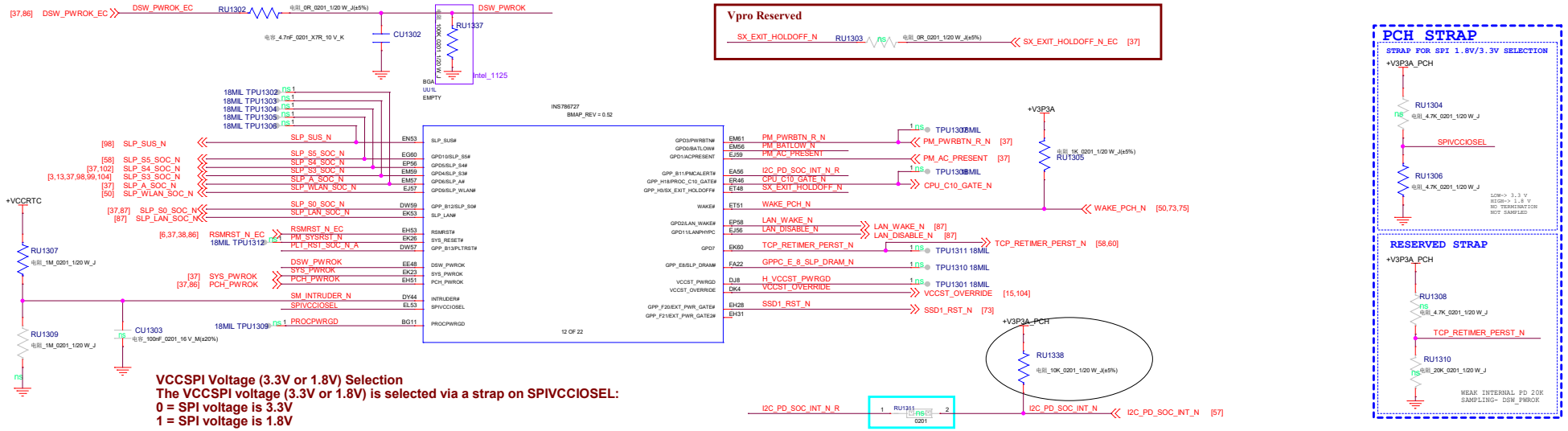

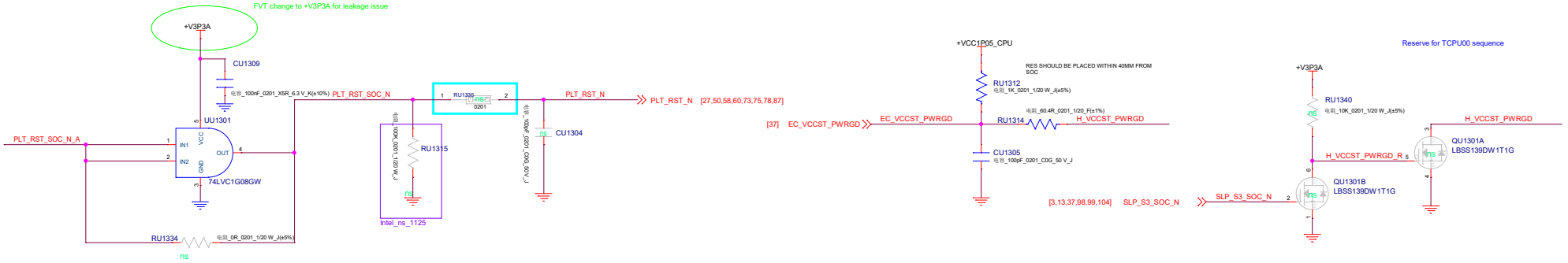

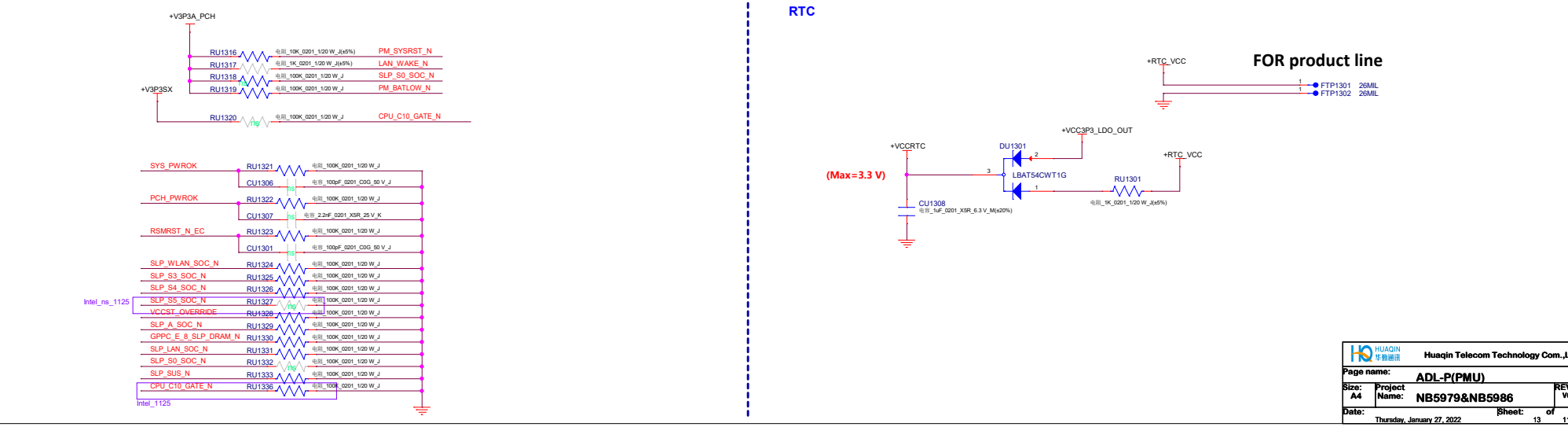

HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.	
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Size: A4	Project Name: NB5979&NB5986	REV: V6.0
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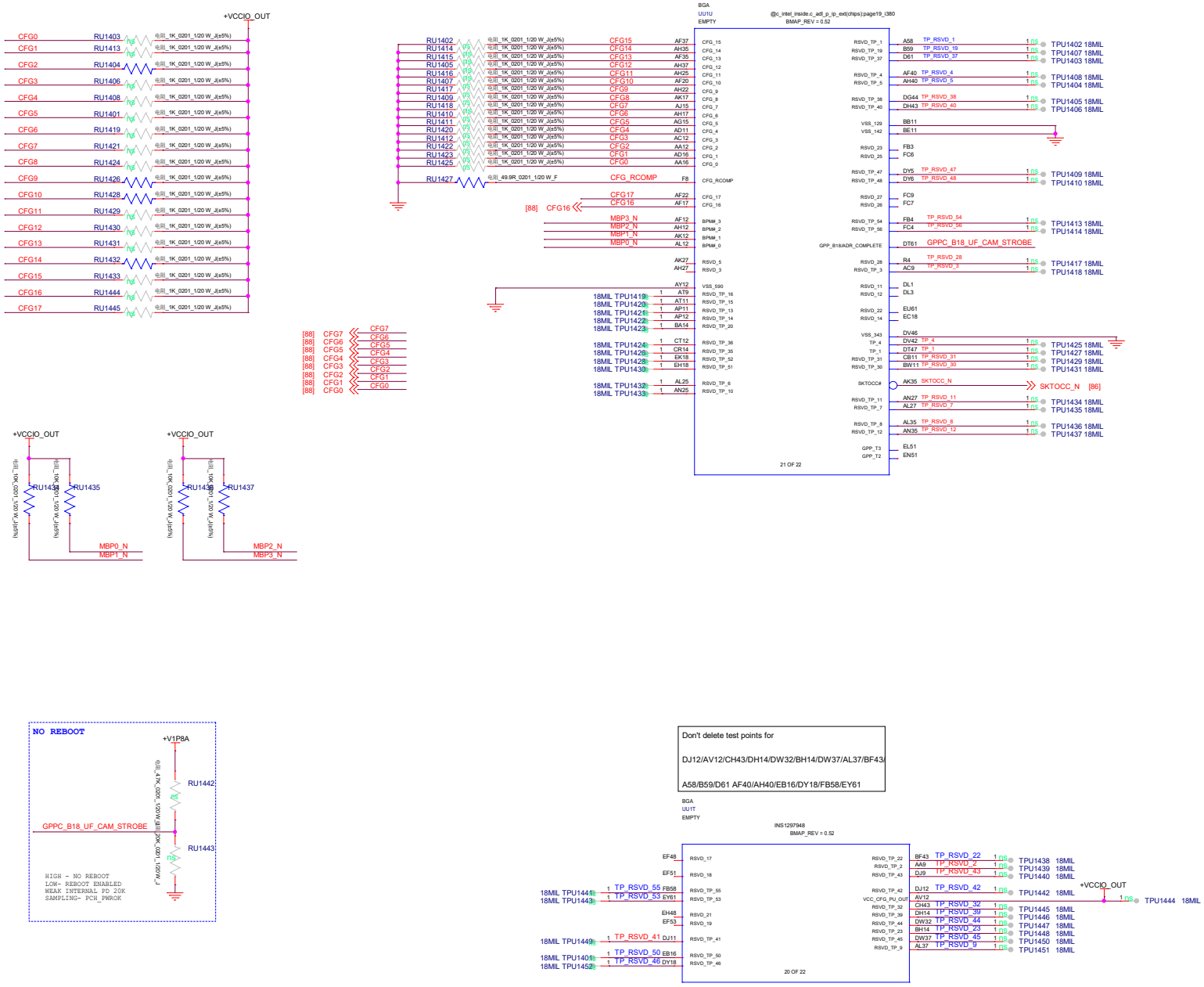

Huaqin Telecom Technology Com.,Ltd.			
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Size: A4	Project Name:	NB5979&NB5986	REV: V6.0
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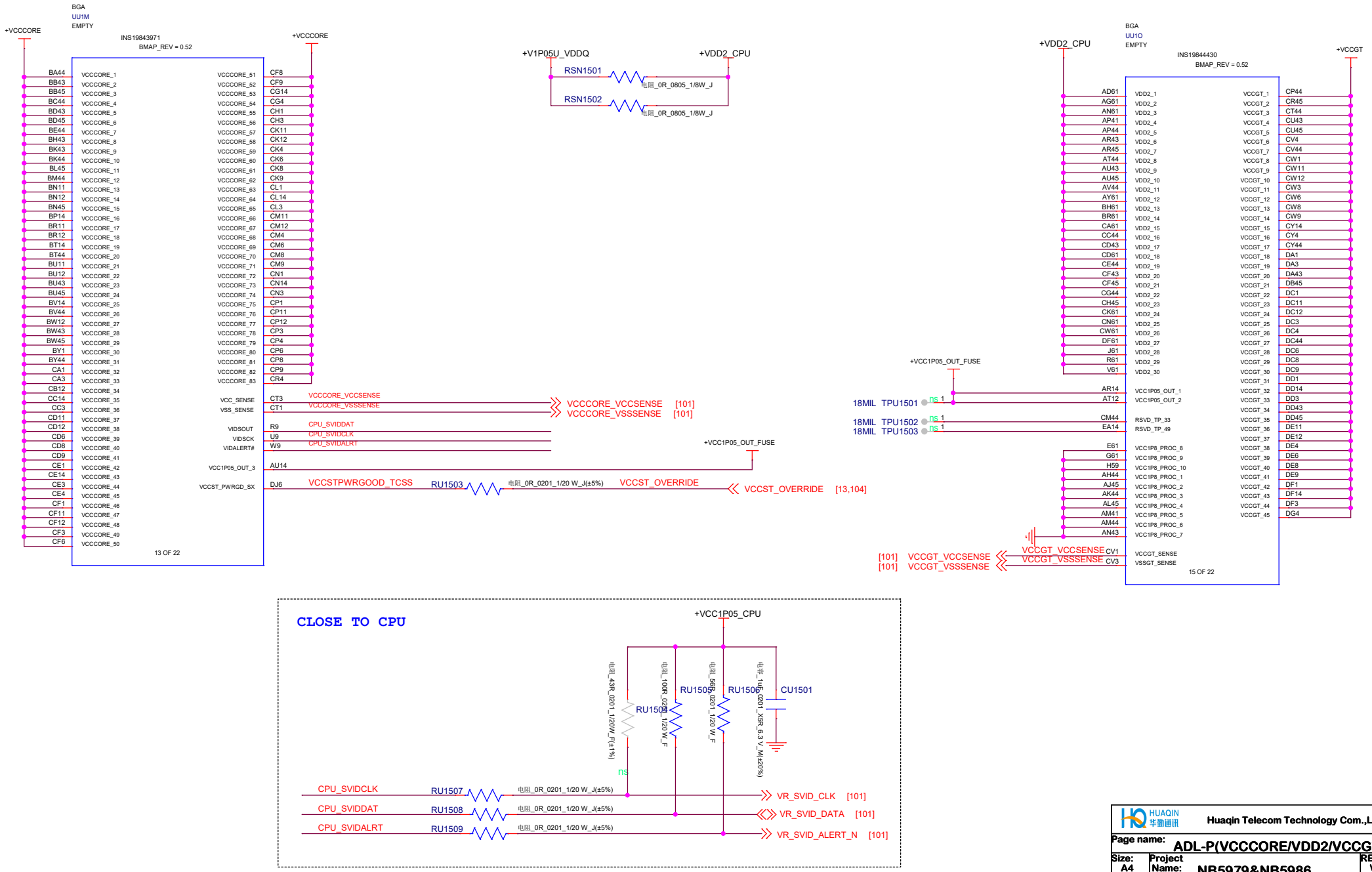

HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.	
Page name:	ADL-P(VCCCORE/VDD2/VCCGT)	
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
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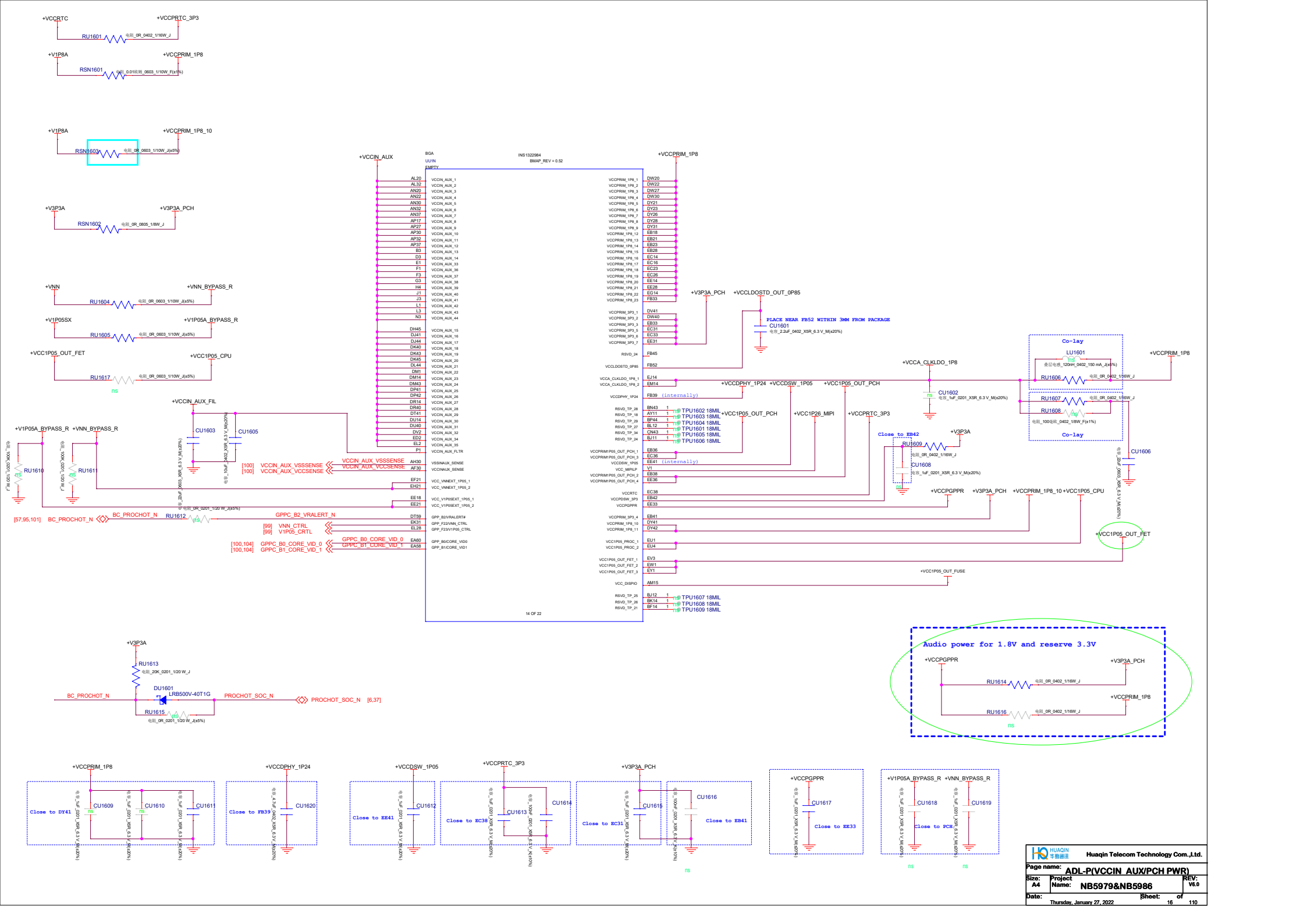
+VCCRTC
+VCCPRTC_3P3
RU1601
电阻_0R_0402_1/16W_J
+V1P8A
+VCCPRIM_1P8
RSN1601
电阻_0.01欧姆_0603_1/10W_F(±1%)
+V1P8A
+VCCPRIM_1P8_10
RSN1603
电阻_0R_0603_1/10W_J(±5%)
+V3P3A
+V3P3A_PCH
RSN1602
电阻_0R_0805_1/8W_J
+VNN
+VNN_BYPASS_R
RU1604
电阻_0R_0603_1/10W_J(±5%)
+V1P05SX
+V1P05A_BYPASS_R
RU1605
电阻_0R_0603_1/10W_J(±5%)
+VCC1P05_OUT_FET
+VCC1P05_CPU
RU1617
电阻_0R_0603_1/10W_J(±5%)
ns
+VCCIN_AUX_FIL
CU1603
CU1605
+V1P05A_BYPASS_R
+VNN_BYPASS_R
RU1610
RU1611
电阻_20R_0201_1/20 W_J
电容_22uF_0603_X5R_6.3 V_M(±20%)
电容_10uF_0402_X5R_6.3 V_M(±20%)
电阻_0R_0201_1/20 W_J(±5%)
[100] VCCIN_AUX_VSSSENSE
[100] VCCIN_AUX_VCCSENSE
VCCIN_AUX_VSSSENSE
VCCIN_AUX_VCCSENSE
[57,95,101] BC_PROCHOT_N
BC_PROCHOT_N
RU1612
GPPC_B2_VRALERT_N
[99] VNN_CTRL
[99] V1P05_CRTL
GPPC_B0_CORE_VID_0
GPPC_B1_CORE_VID_1
[100,104] GPPC_B0_CORE_VID_0
[100,104] GPPC_B1_CORE_VID_1
+V3P3A
RU1613
电阻_20K_0201_1/20 W_J
DU1601
LRB500V-40T1G
BC_PROCHOT_N
PROCHOT_SOC_N
RU1615
电阻_0R_0201_1/20 W_J(±5%)
PROCHOT_SOC_N [6,37]
BGA
UU1N
EMPTY
INS1322984
BMAP_REV = 0.52
14 OF 22
+VCCIN_AUX
+VCCPRIM_1P8
+V3P3A_PCH
+VCCLDOSTD_OUT_0P85
PLACE NEAR FB52 WITHIN 3MM FROM PACKAGE
CU1601
电容_2.2uF_0402_X5R_6.3 V_M(±20%)
+VCCDPHY_1P24
+VCCDSW_1P05
+VCC1P05_OUT_PCH
+VCCA_CLKLDO_1P8
CU1602
电容_1uF_0201_X5R_6.3 V_M(±20%)
+VCC1P26_MIPI
+VCCPRTC_3P3
Close to EB42
RU1609
电阻_0R_0402_1/16W_J
CU1608
电容_1uF_0201_X5R_6.3 V_M(±20%)
+V3P3A
Co-lay
LU1601
叠层电感_120nH_0402_150 mA_J(±5%)
RU1606
RU1607
RU1608
电阻_100欧姆_0402_1/8W_F(±1%)
CU1606
+VCCPGPPR
+V3P3A_PCH
+VCCPRIM_1P8_10
+VCC1P05_CPU
+VCC1P05_OUT_FET
+VCC1P05_OUT_FUSE
TPU1602 18MIL
TPU1603 18MIL
TPU1604 18MIL
TPU1601 18MIL
TPU1605 18MIL
TPU1606 18MIL
TPU1607 18MIL
TPU1608 18MIL
TPU1609 18MIL
Audio power for 1.8V and reserve 3.3V
+VCCPGPPR
+V3P3A_PCH
RU1614
电阻_0R_0402_1/16W_J
+VCCPRIM_1P8
RU1616
电阻_0R_0402_1/16W_J
ns
+VCCPRIM_1P8
Close to DY41
CU1609
CU1610
CU1611
电容_1uF_0201_X5R_6.3 V_M(±20%)
+VCCDPHY_1P24
Close to FB39
CU1620
电容_4.7uF_0402_X5R_6.3 V_M(±20%)
+VCCDSW_1P05
Close to EE41
CU1612
电容_1uF_0201_X5R_6.3 V_M(±20%)
+VCCPRTC_3P3
Close to EC38
CU1613
CU1614
电容_1uF_0201_X5R_6.3 V_M(±20%)
电容_100nF_0201_X5R_6.3 V_K(±10%)
+V3P3A_PCH
Close to EC31
CU1615
CU1616
Close to EB41
+VCCPGPPR
Close to EE33
CU1617
+V1P05A_BYPASS_R
+VNN_BYPASS_R
Close to PCH
CU1618
CU1619
ns
HUAQIN 华勤通讯
Huaqin Telecom Technology Com.,Ltd.
Page name: ADL-P(VCCIN_AUX/PCH PWR)
Size: A4
Project Name: NB5979&NB5986
REV: V6.0
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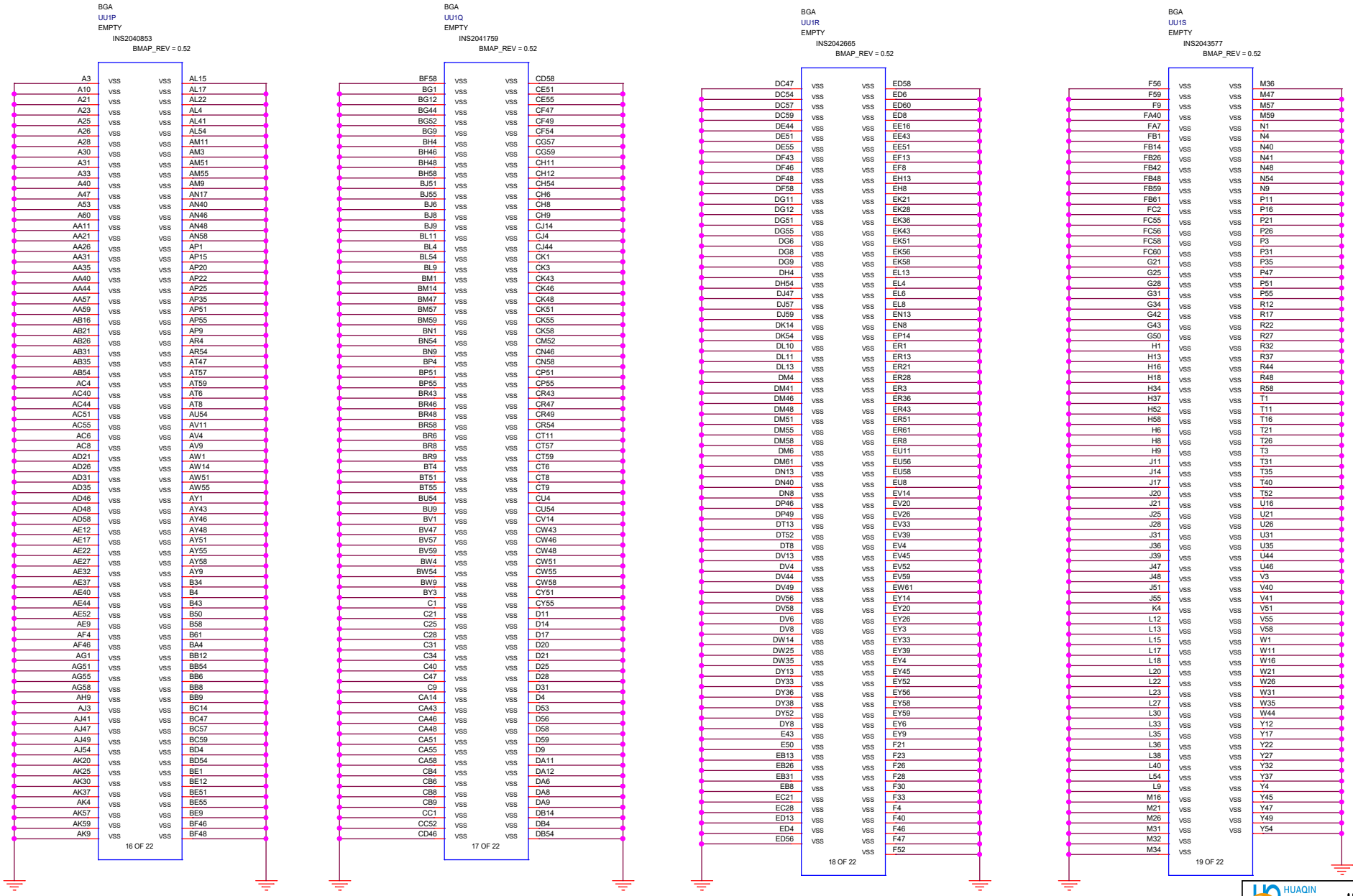

HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.		
Page name:	ADL-P(VSS)		
Size: A4	Project Name:	NB5979&NB5986	REV: V6.0
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HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.	
Page name:	ADL-P(BLANK)	
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
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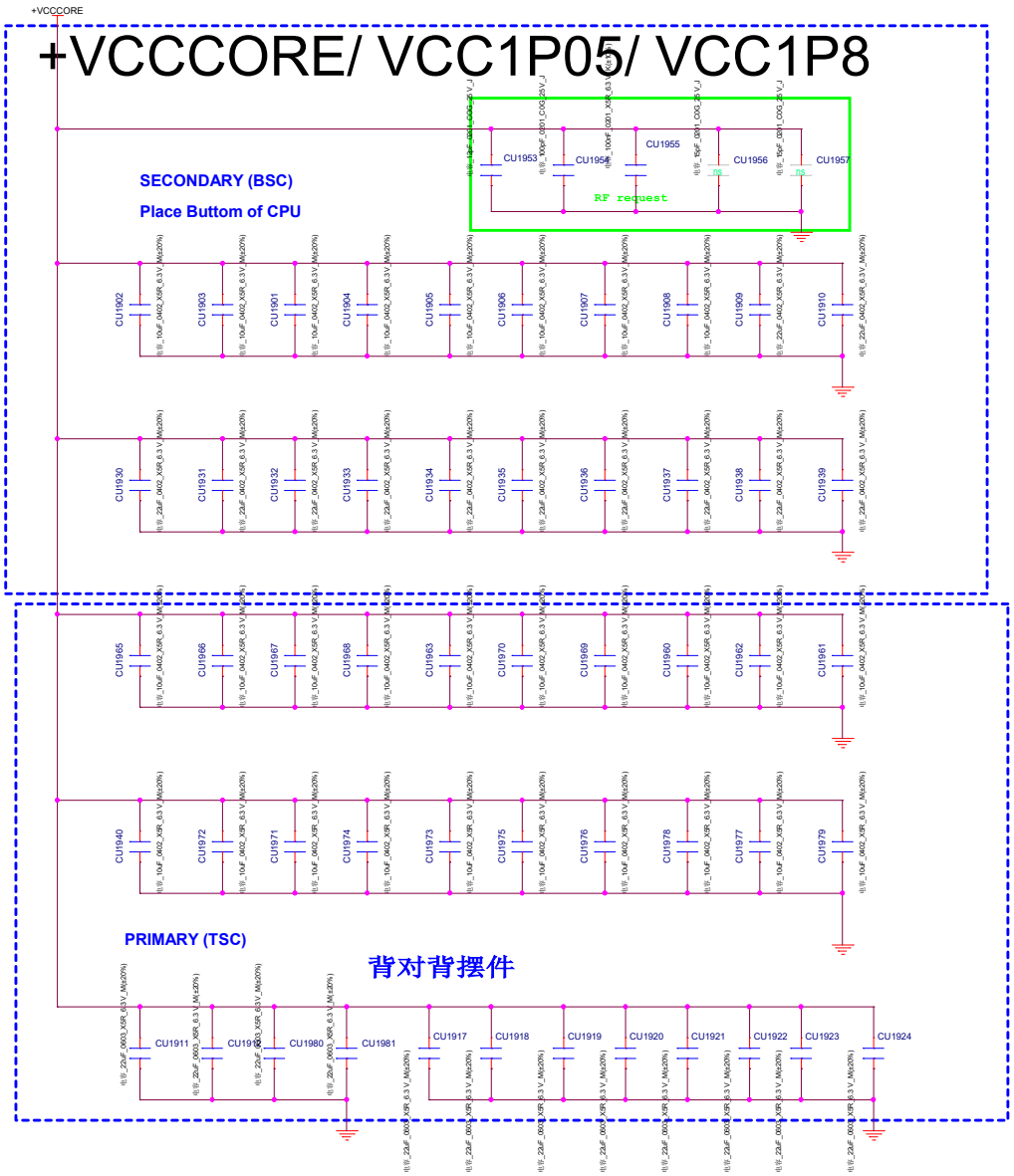
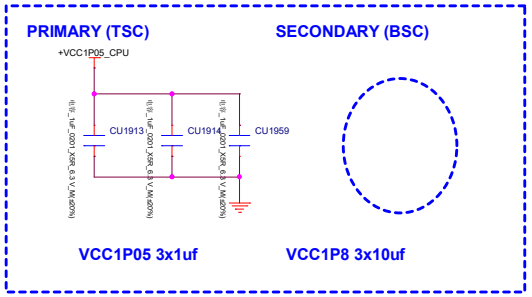
+VCCCORE/ VCC1P05/ VCC1P8

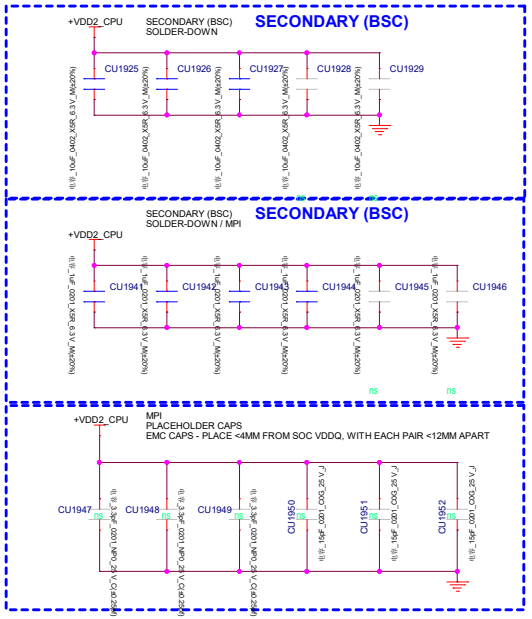


+VCCCORE				
	PDG	RVP	AEP	13X/13S
1uF				
10uF				40+4(NC)
22uF	8	8+4(NC)	21	
47uF	8	8+11(NC)	10	8
330uF	3	4	3	3

+VCC1P05/ VCC1P8



+VDD2_CPU



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Page name:	ADL-P(DECOUPLING1)
Size: A4	Project Name: NB5979&NB5986
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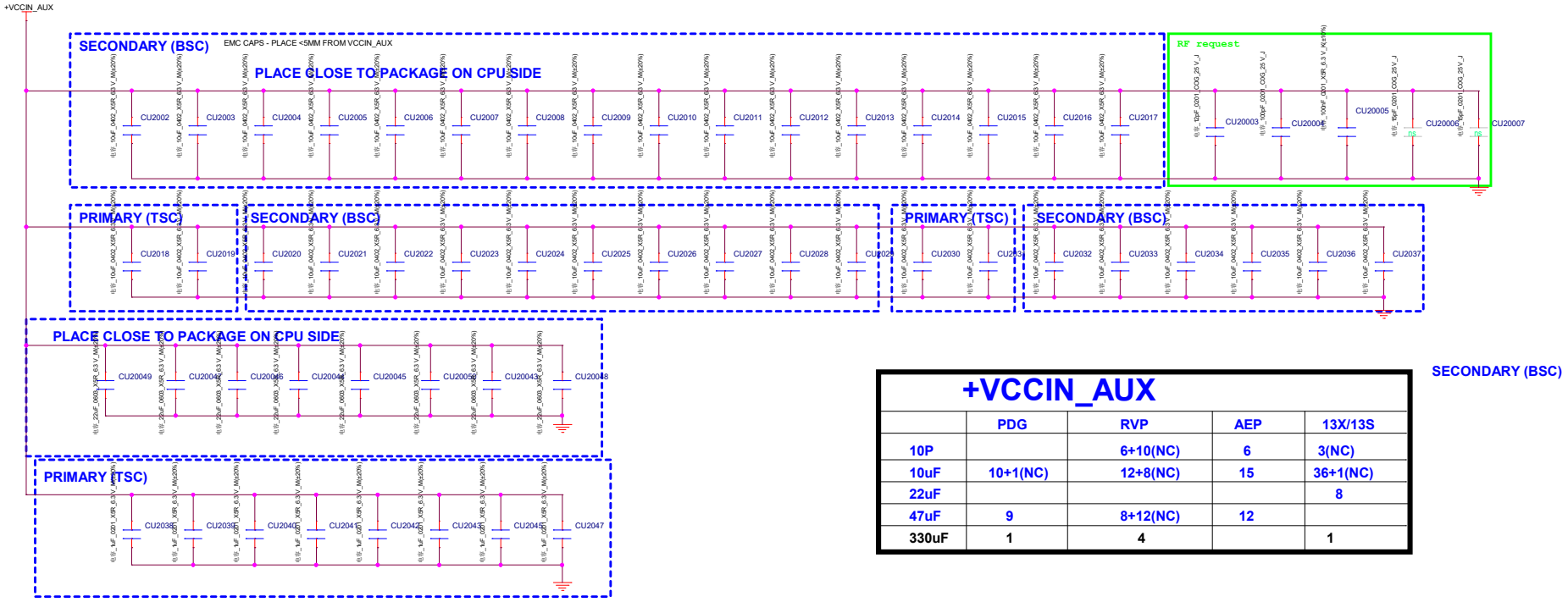
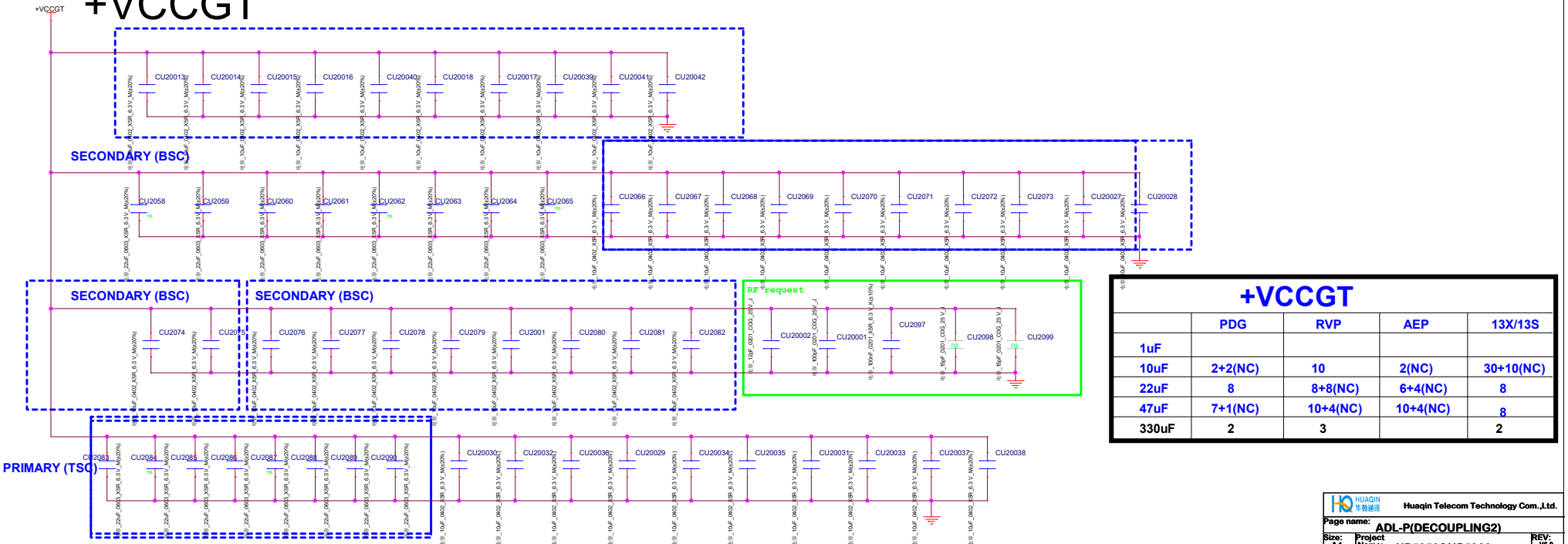
+VCCIN_AUX



SECONDARY (BSC)

+VCCIN_AUX				
	PDG	RVP	AEP	13X/13S
10P		6+10(NC)	6	3(NC)
10uF	10+1(NC)	12+8(NC)	15	36+1(NC)
22uF				8
47uF	9	8+12(NC)	12	
330uF	1	4		1

+VCCGT



+VCCGT				
	PDG	RVP	AEP	13X/13S
1uF				
10uF	2+2(NC)	10	2(NC)	30+10(NC)
22uF	8	8+8(NC)	6+4(NC)	8
47uF	7+1(NC)	10+4(NC)	10+4(NC)	8
330uF	2	3		2

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Page name: ADL-P(DECOUPLING2)

Size: A4 | Project Name: NB5979&NB5986 | REV: V6.0

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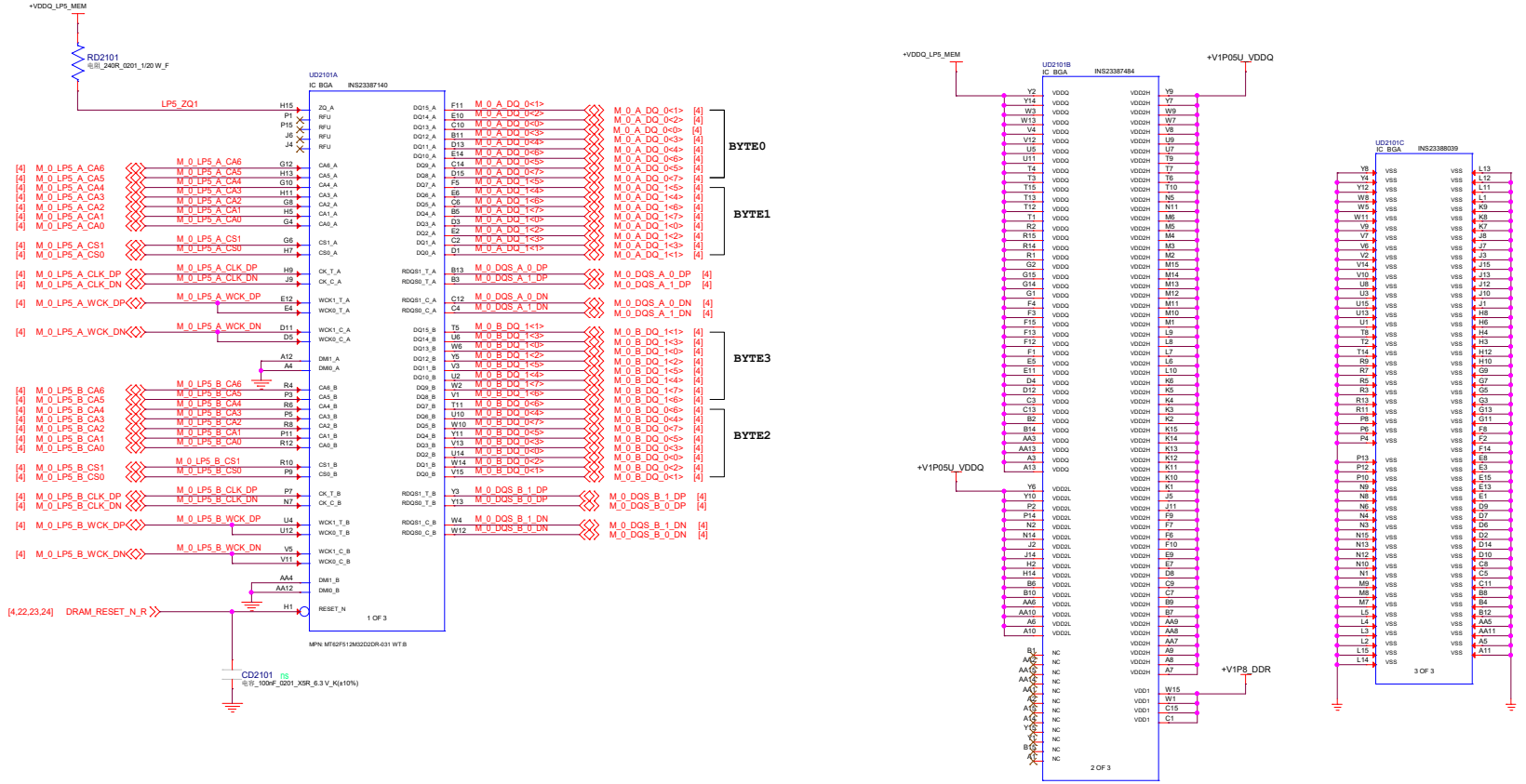
CHA-1



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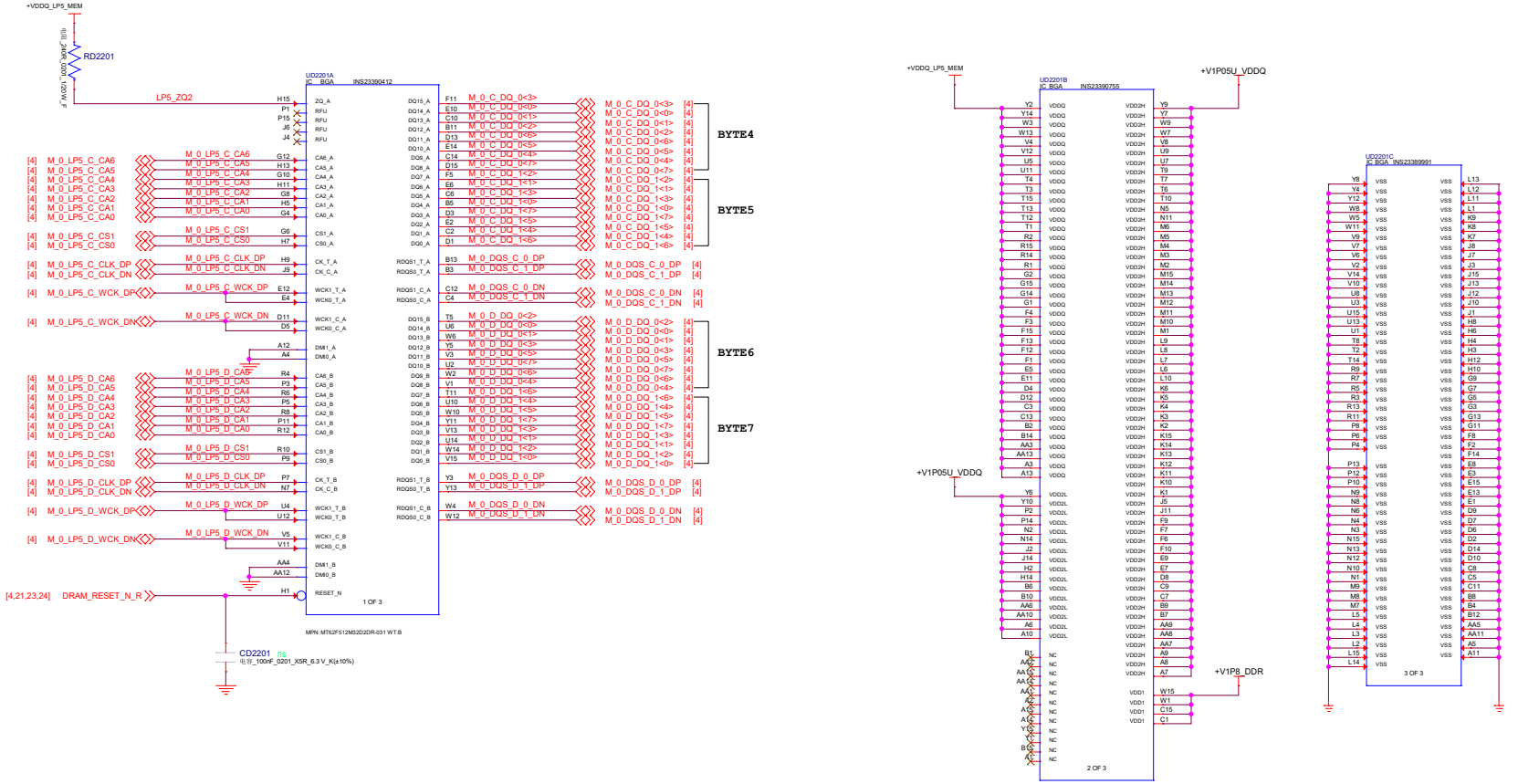
CHA-2



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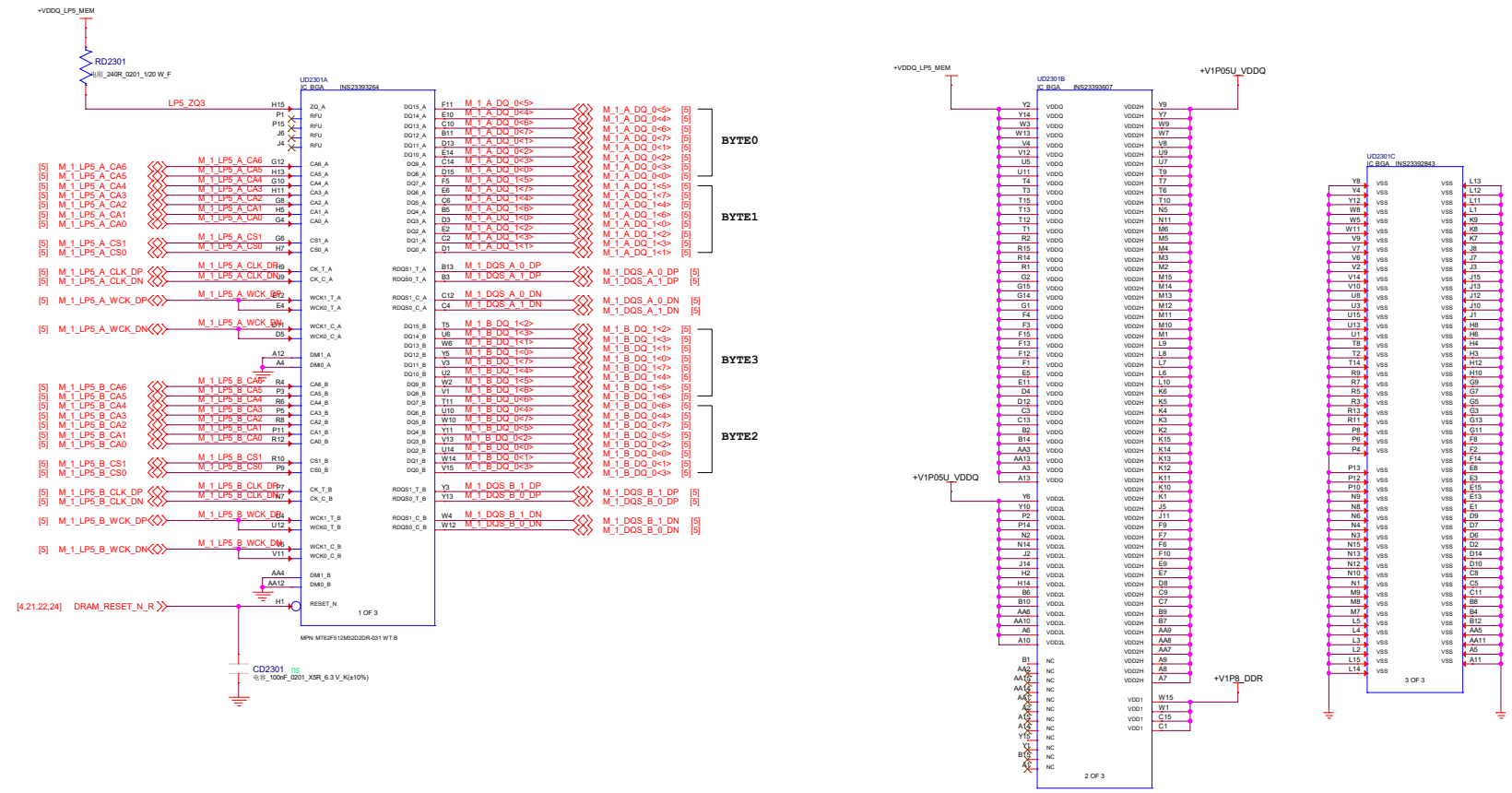
CHB-1



HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.	
Page name:	LPDDR5_CHB_1	
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
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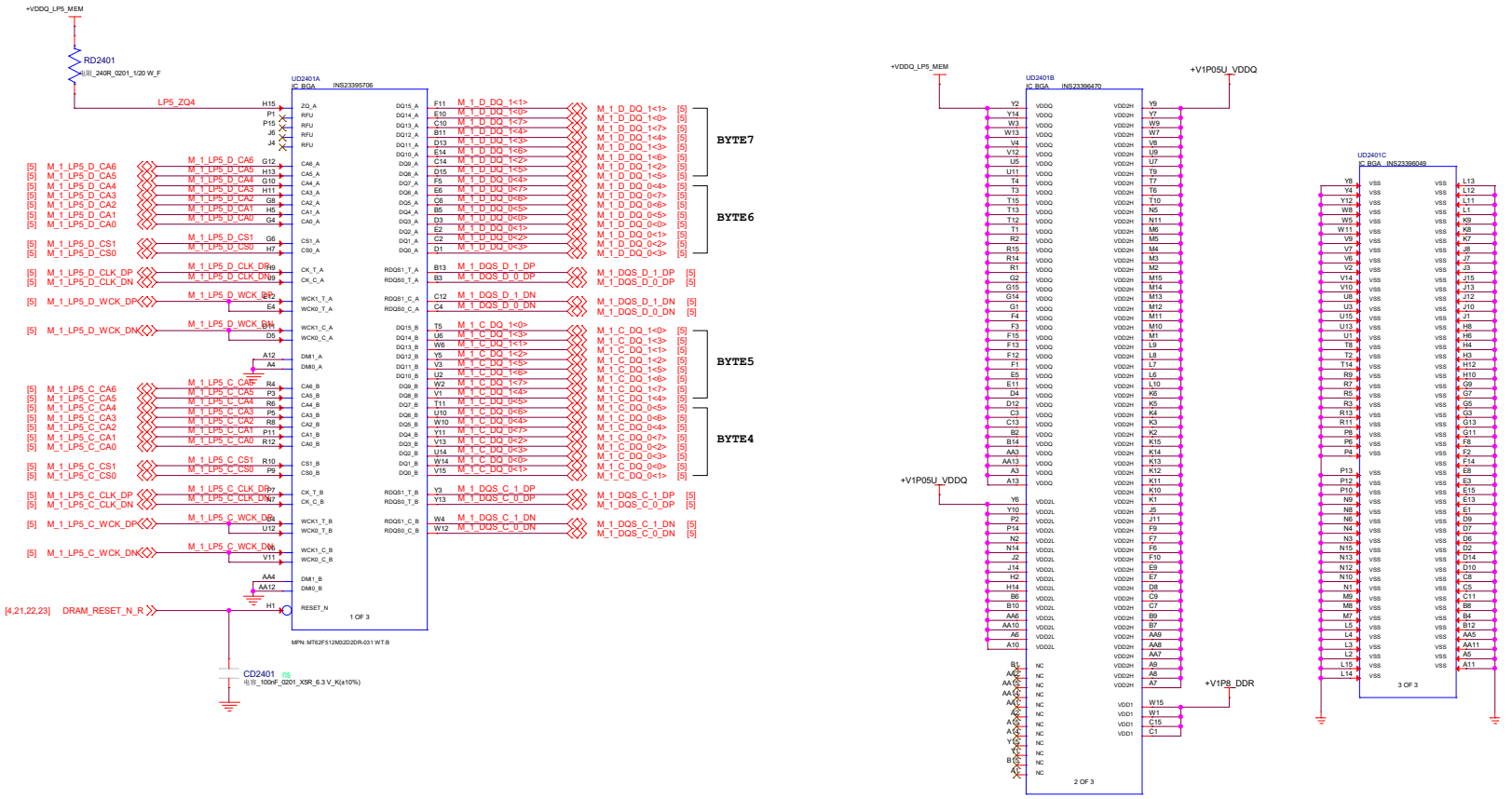
CHB-2



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HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.	
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Size: A4	Project Name: NB5979&NB5986	REV: V6.0
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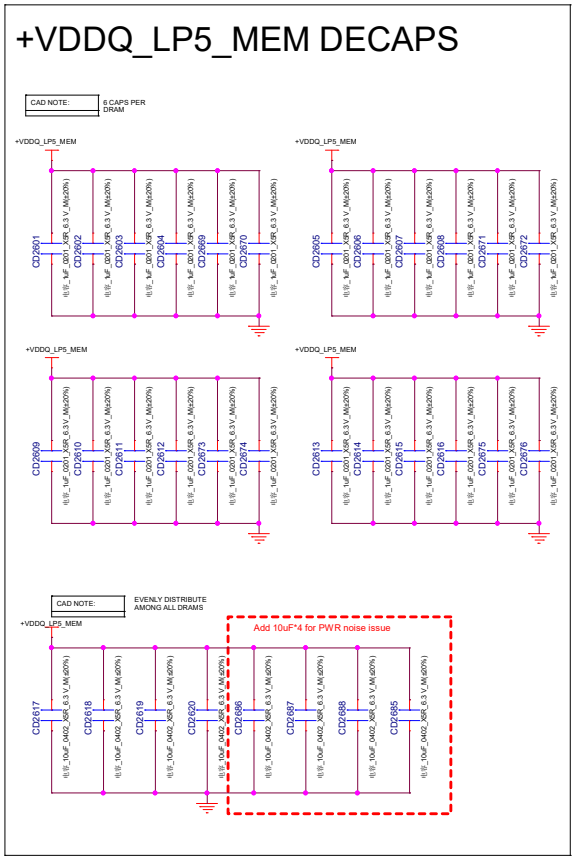
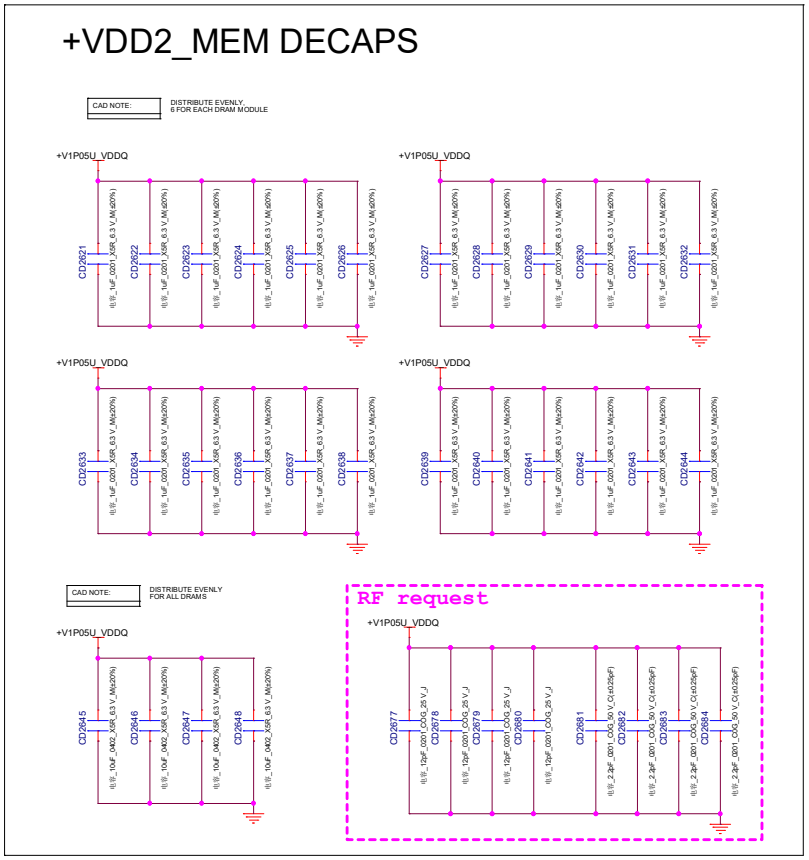
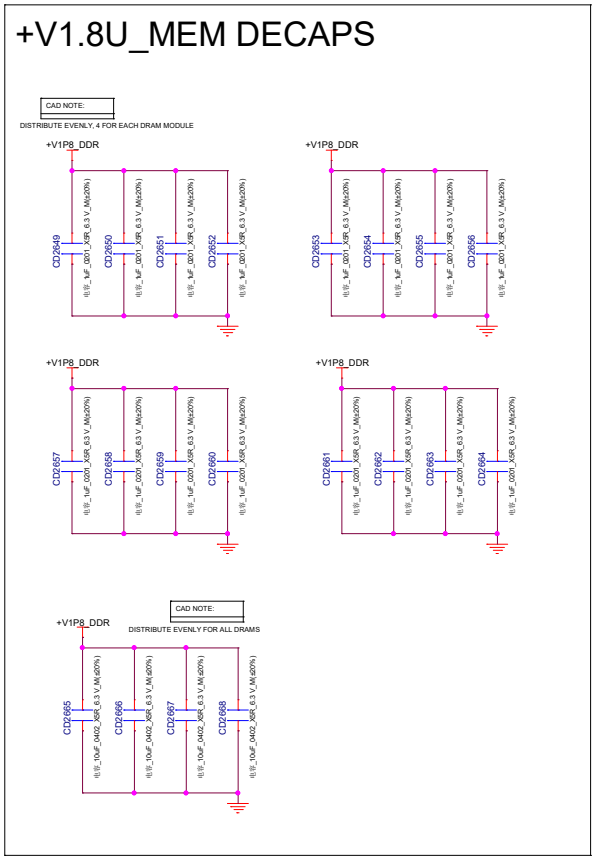






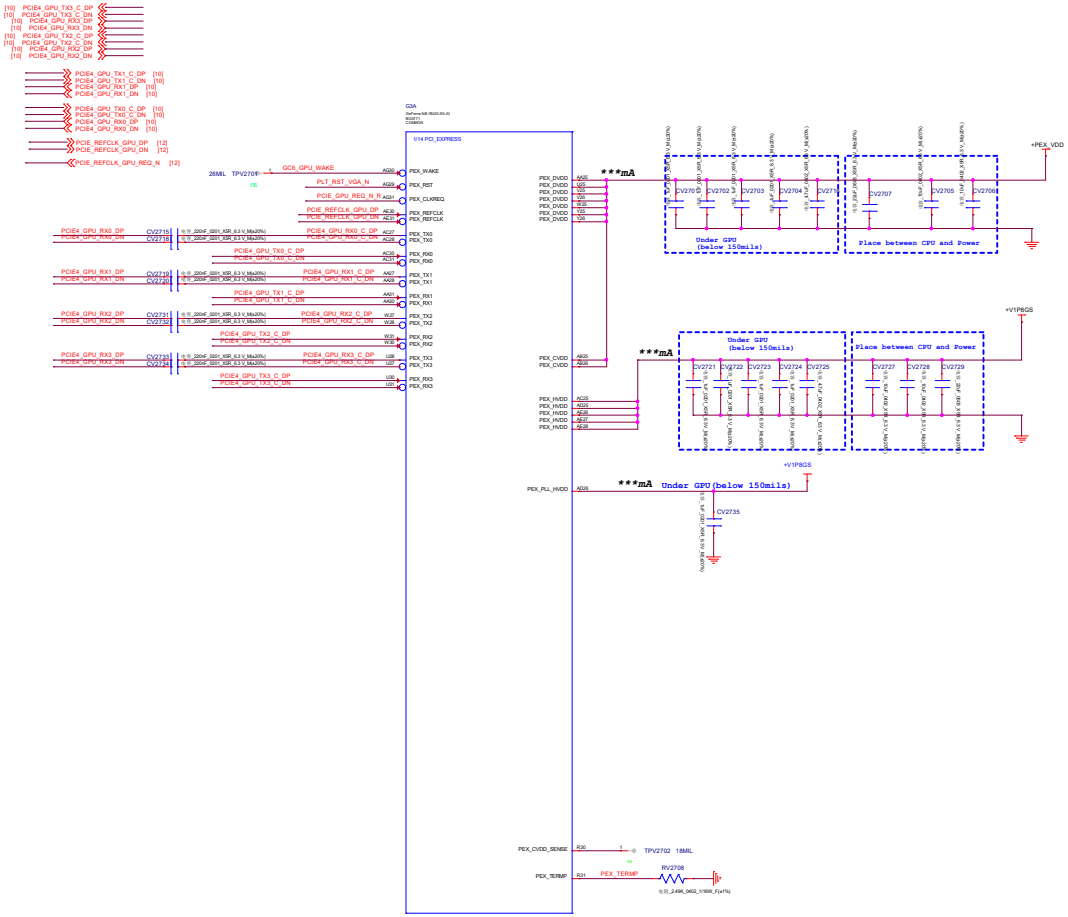
4.13.1.1.4 LPDDR5

Description: VDD2H & VDD2L pins are merged in to VDD2 on Platform/MB

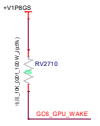
Memory Down Decoupling Config: 4 X32

Table 123. Configuration

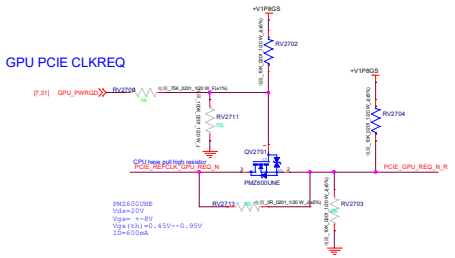
Voltage	Capacitor FF and Value	Quantity	Notes
VDD2H/ VDD2L/VDD2	0402/0201 1uF	24	6 caps per DRAM, 2 per short edge and 1 per long edge close to VDD2H/VDD2L BGA's Customers may adjust the Capacitor Quantity/FF/Value to meet the JEDEC SPEC
VDD2H/ VDD2L/VDD2	0603/0402 10uF	4	evenly distribute among all DRAMs Customers may adjust the Capacitor Quantity/FF/Value to meet the JEDEC SPEC
VDDQ	0402/0201 1uF	24	6 caps per DRAM, 2 per edge close to VDDQ BGA's Customers may adjust the Capacitor Quantity/FF/Value to meet the JEDEC SPEC
VDDQ	0603/0402 10uF	4	evenly distribute among all DRAMs Customers may adjust the Capacitor Quantity/FF/Value to meet the JEDEC SPEC
VDD1	0402/0201 1uF	16	4 caps per DRAM, 2 per long edge close to VDD1 BGA's Customers may adjust the Capacitor Quantity/FF/Value to meet the JEDEC SPEC
VDD1	0603/0402 10uF	4	evenly distribute among all DRAMs Customers may adjust the Capacitor Quantity/FF/Value to meet the JEDEC SPEC



GPU WAKE(NC)



GPU PCIE CLKREQ



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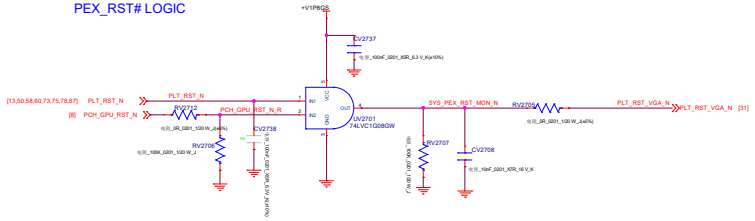

Husqin Telecom Technology Com.,Ltd.			
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Size: A4	Project Name: NB5979&NB5986		REV: V0.5
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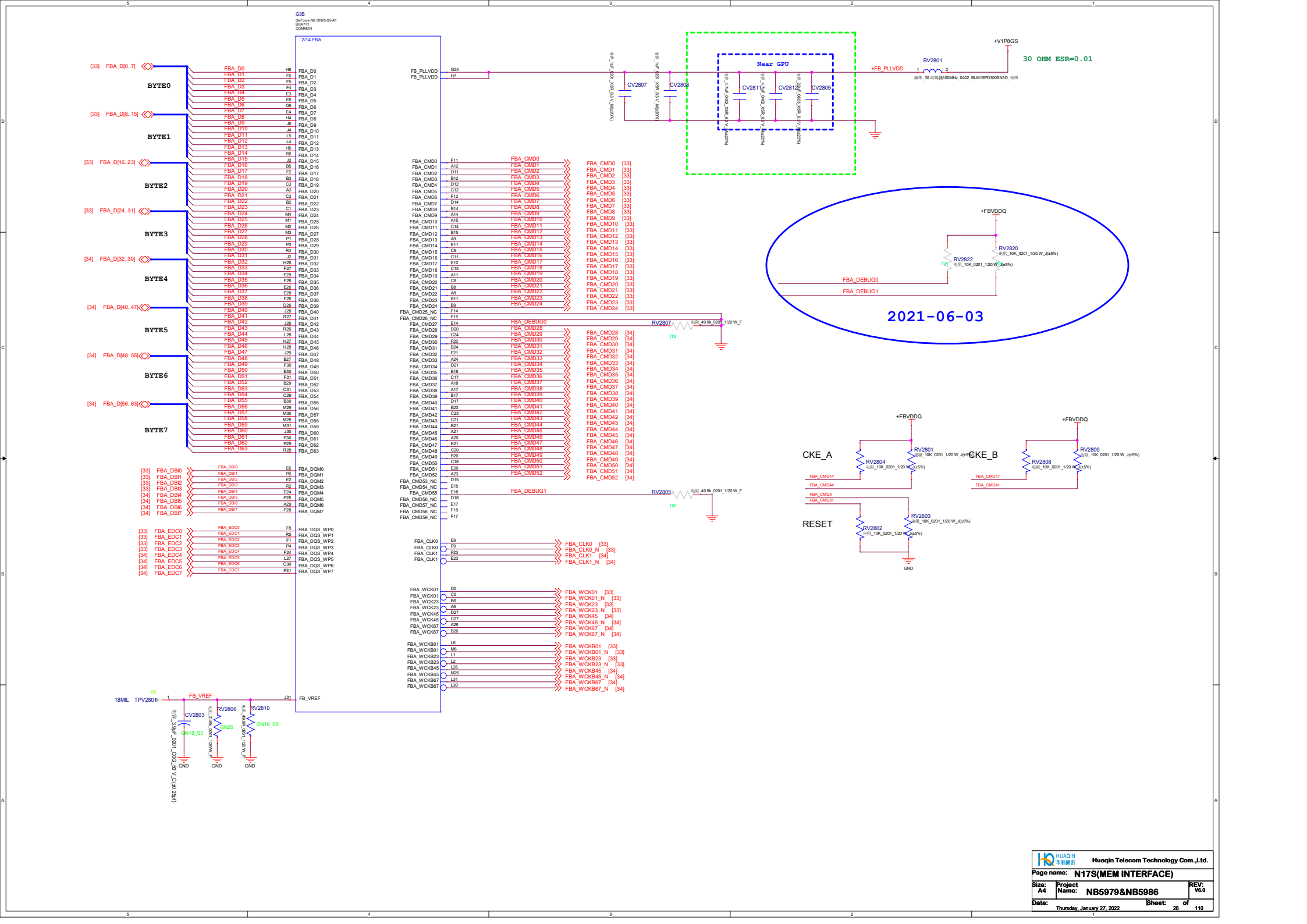

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REV:	V6.0
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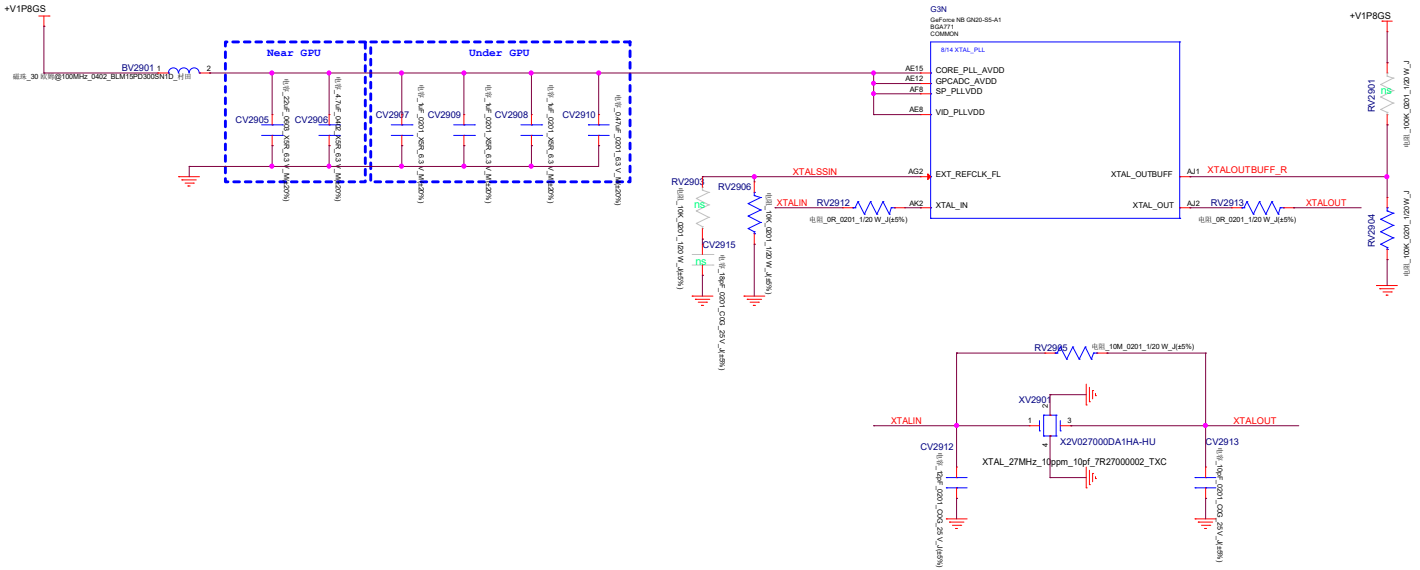

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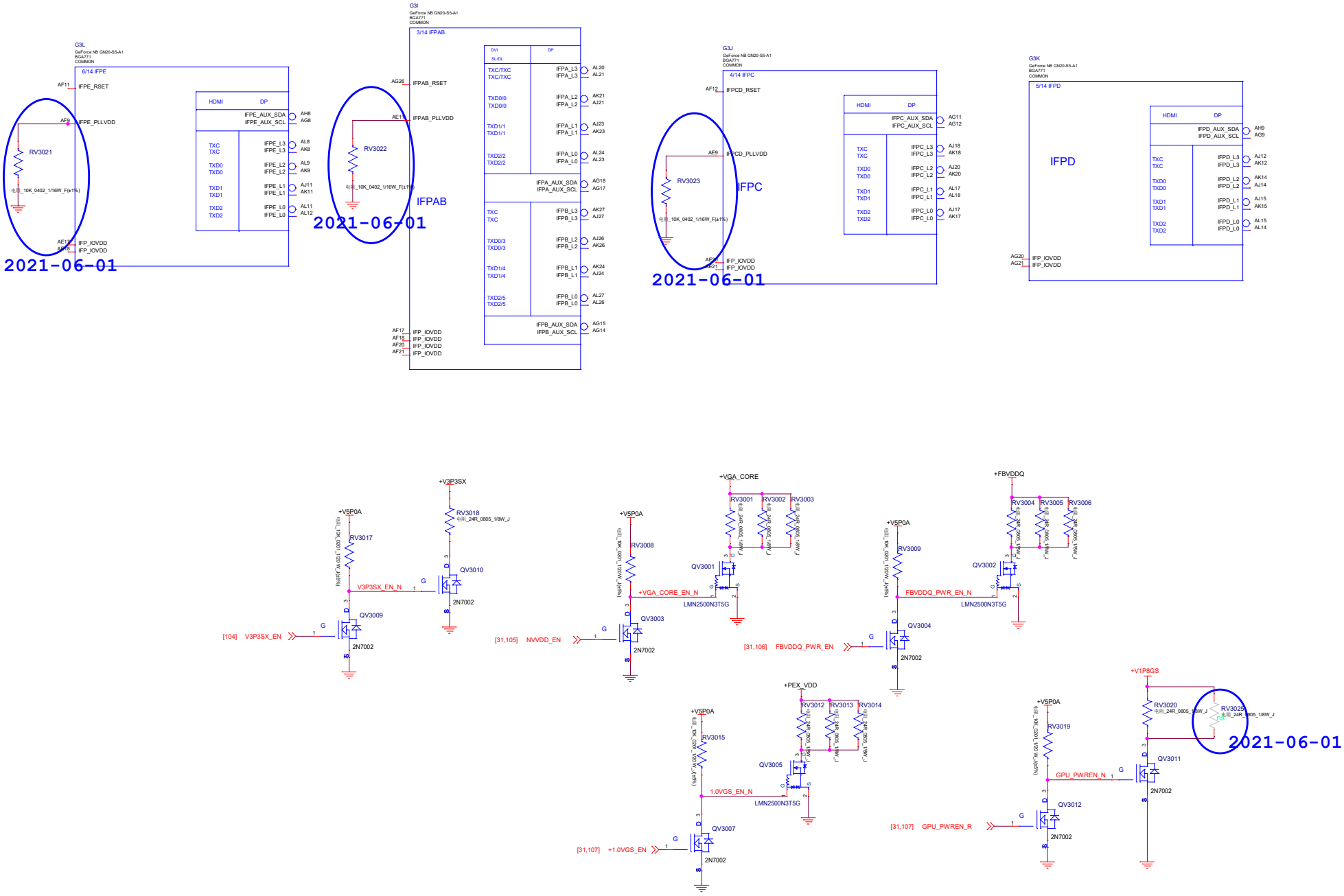

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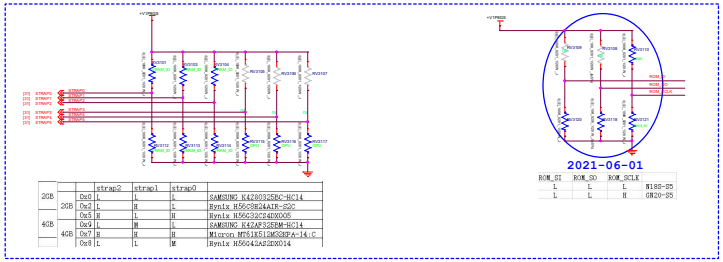
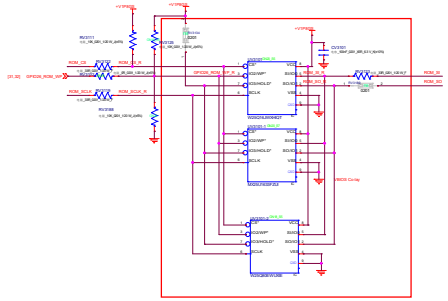
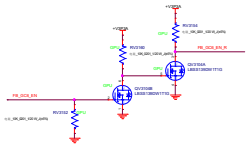




GC6 2.1 LS



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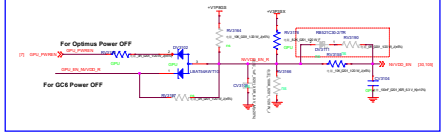
NVVDD ENABLE



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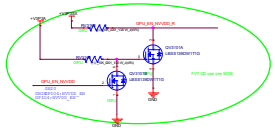
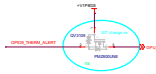
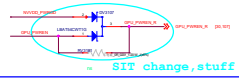


ALERT



POWER DOWN



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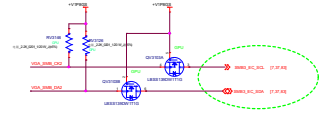
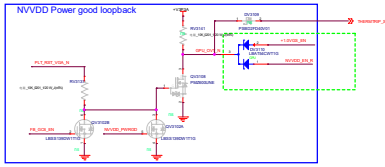


NVVDD Power good loopback



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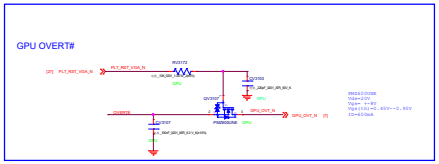
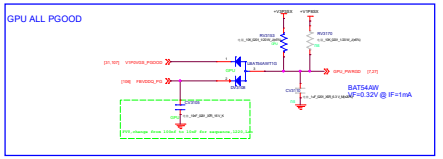
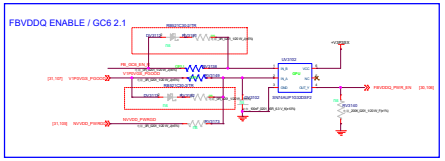


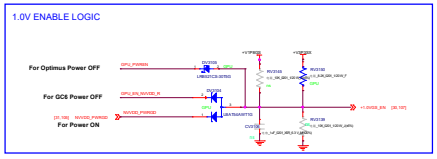
GPU ALL PGOOD



FBVDDQ ENABLE / GC6 2.1



1.0V ENABLE LOGIC



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Page Name:	VGA GPIO STRAP
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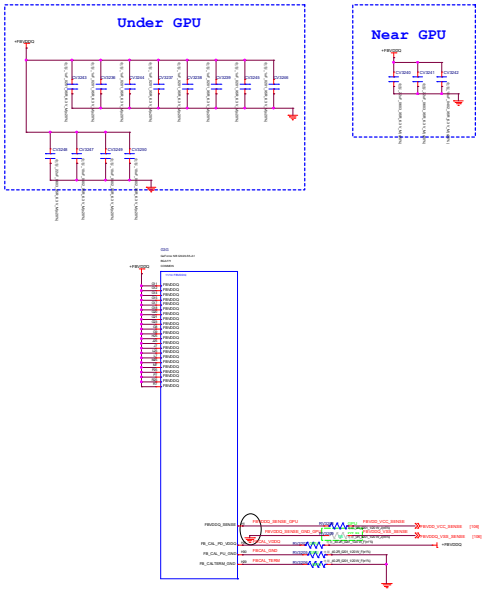
FBVDDQ



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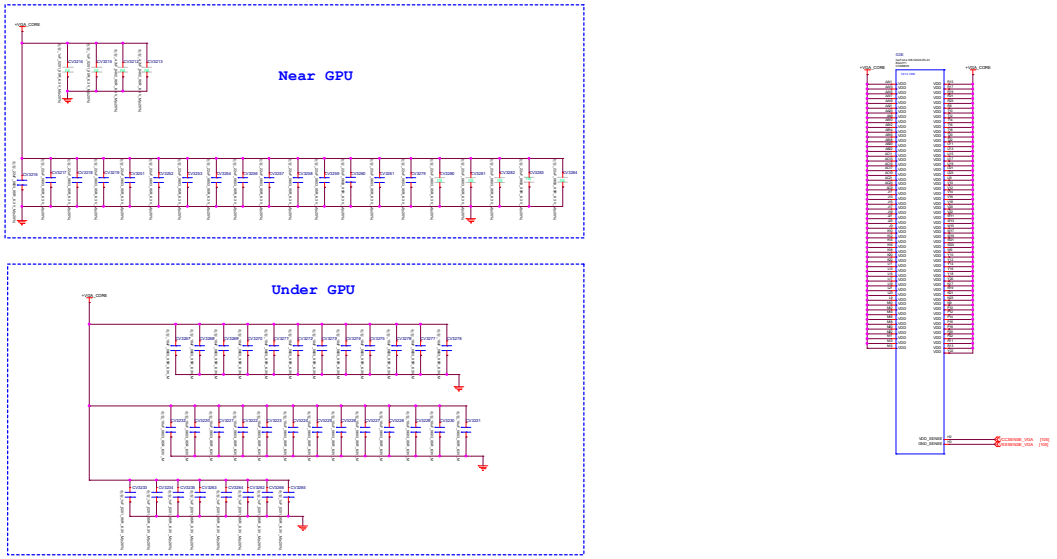

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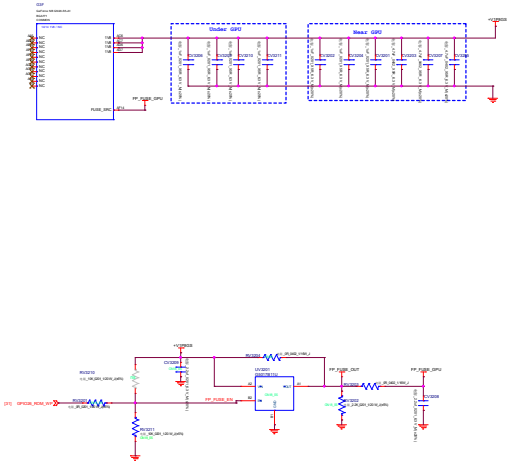

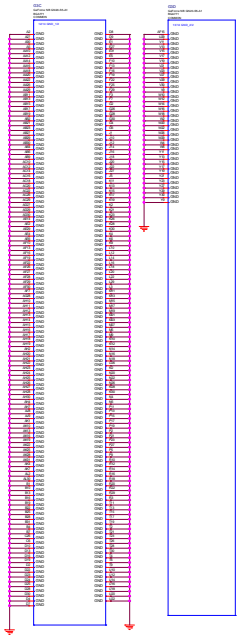

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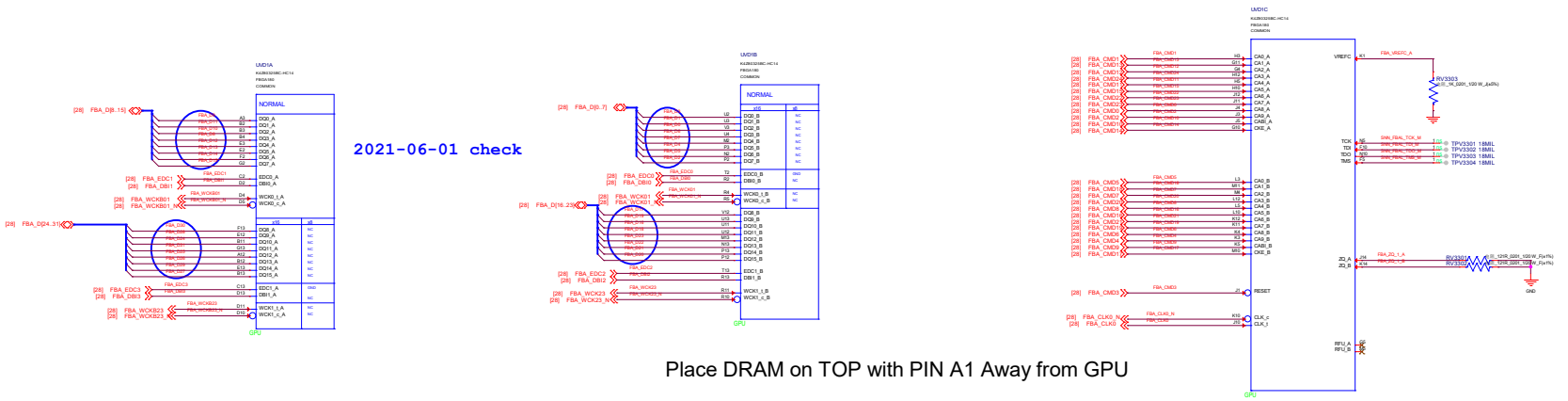
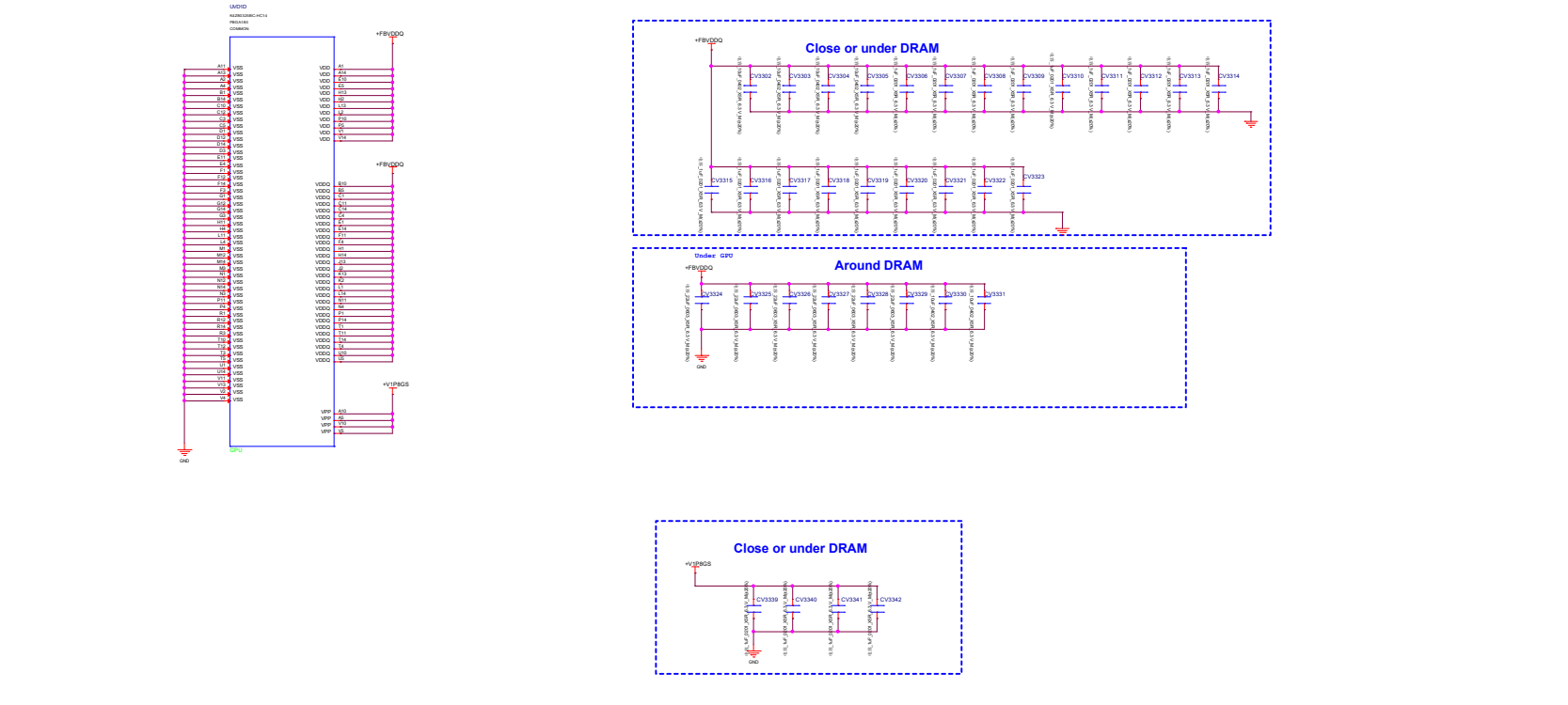
Date:		Sheet:	of: 176



Place DRAM on TOP with PIN A1 Away from GPU



Page name:	N17S(GDDR5)		
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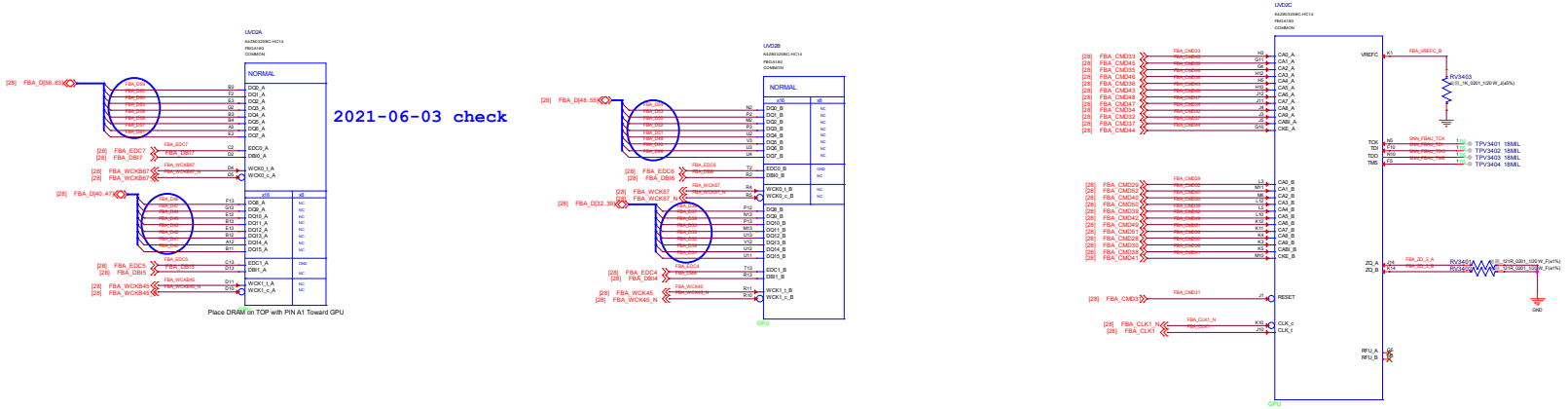
Huaqin Telecom Technology Com.,Ltd.



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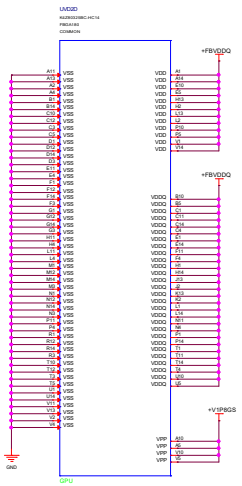
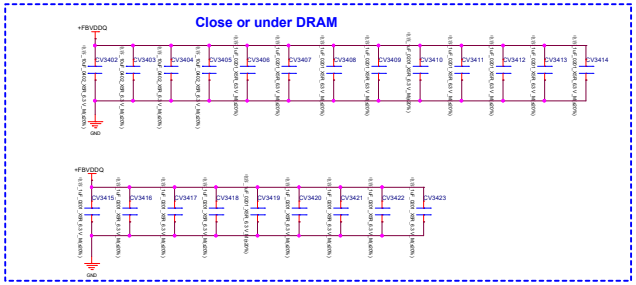
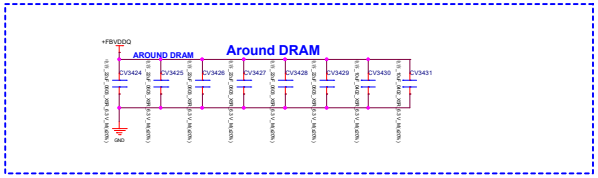
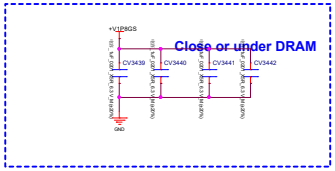




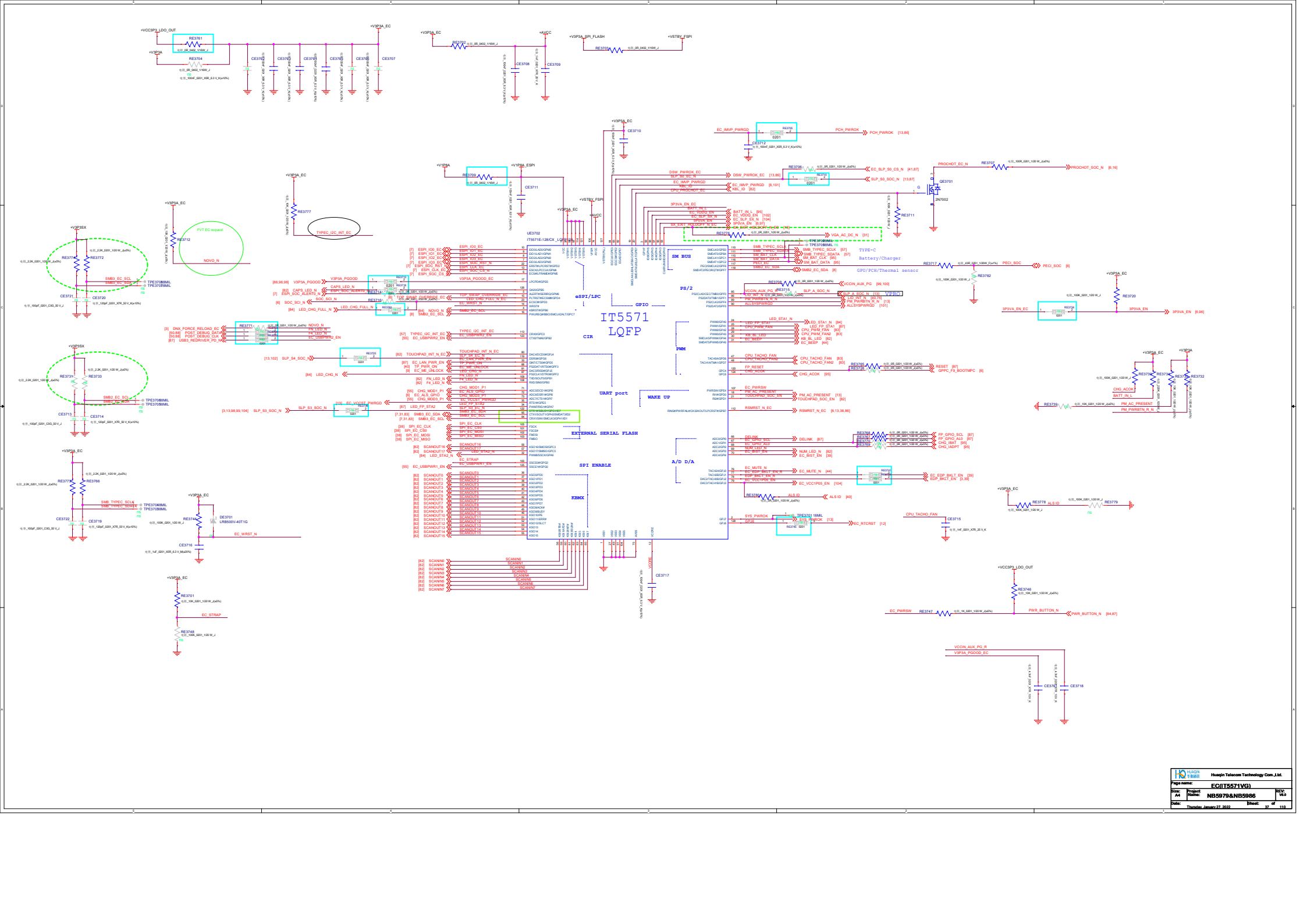




Huaqin Telecom Technology Com.,Ltd.			
Page name: N17S(GDDR5)			
Size: A4	Project Name: NB5979&NB5986		REV: V0.0
Date: Thursday, January 27, 2022		Sheet: 34	of 110

HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.	
Page name:	VRAM(4/4)	
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
Date: Thursday, January 27, 2022	Sheet: 35 of 110	

Huaqin Telecom Technology Com.,Ltd.		
Page name:	BLANK	
Size: A4	Project Name: NB5979&NB5986	REV: V0.0
Date: Thursday, January 27, 2022	Sheet: 36 of 110	


IT5571
LQFP
UE3702
IT5571E-128/CX_LQFP128
eSPI/LPC
GPIO
SM BUS
PS/2
PWM
CIR
UART port
WAKE UP
EXTERNAL SERIAL FLASH
SPI ENABLE
A/D D/A
KBMX
TYPE-C
Battery/Charger
GPU/PCH/Thermal sensor
VPRO
+V3P3A_EC
+V3P3SX
+VCC3P3_LDO_OUT
+V3P3A_SPI_FLASH
+VSTBY_FSPI
+VCC
+V5P0A
+V5P0A_ESPI
EC_IMVP_PWRGD
PCH_PWROK
DSW_PWROK_EC
EC_SLP_S0_CS_N
EC_SLP_S0_SOC_N
PROCHOT_EC_N
PROCHOT_SOC_N
3P3VA_EN_EC
3P3VA_EN
PECI_SOC
VGA_AC_DC_N
VCCIN_AUX_PG
SLP_A_SOC_N
SMB_TYPEC_SCLK
SMB_TYPEC_SDATA
SM_BAT_CLK
SM_BAT_DATA
SMB2_EC_SDA
SMB3_EC_SCL
SMB3_EC_SDA
TYPEC_I2C_INT_EC
EC_USBPWR2_EN
LED_STA1_N
LED_FP_STA1
CPU_PWM_FAN
CPU_PWM_FAN2
KB_BL_LED
EC_BEEP
CPU_TACHO_FAN
CPU_TACHO_FAN2
FP_RESET
CHG_ACOK
EC_PWRSW
PM_AC_PRESENT
TOUCHPAD_SOC_EN
RSMRST_N_EC
DELINK
EC_GPIO_SCL
EC_GPIO_ALS
NUM_LED_N
EC_BIST_EN
EC_MUTE_N
EC_EDP_BKLT_EN_R
EC_VCCIP05_EN
ALS ID
SYS_PWROK
EC_RTCRST
PWR_BUTTON_N
SLP_S3_SOC_N
SLP_S4_SOC_N
LED_CHG_N
LED_CHG_FULL_N
SOC_SCI_N
CAPS_LED_N
NOVO_N
FN_LED_N
F4_LED_N
EC_WRST_N
EC_STRAP
TOUCHPAD_INT_N_EC
EC_LAN_PWR_EN
TP_PWR_ON
EC_ME_UNLOCK
CHG_MOD1_P1
EC_ALS_GPIO
CHG_MOD3_P1
EC_VCCST_PWRGD
LED_FP_STA2
EC_SPI_CLK
EC_SPI_CS0
EC_SPI_MOSI
EC_SPI_MISO
EC_USBPWR1_EN
SCANOUT0
SCANOUT1
SCANOUT2
SCANOUT3
SCANOUT4
SCANOUT5
SCANOUT6
SCANOUT7
SCANOUT8
SCANOUT9
SCANOUT10
SCANOUT11
SCANOUT12
SCANOUT13
SCANOUT14
SCANOUT15
SCANIN0
SCANIN1
SCANIN2
SCANIN3
SCANIN4
SCANIN5
SCANIN6
SCANIN7
TPE3708MIL
TPE3703MIL
TPE3704MIL
TPE3705MIL
TPE3706MIL
TPE3707MIL
TPE3708MIL
TPE3709MIL
TPE3710MIL
TPE3711MIL
TPE3712MIL
TPE3713MIL
TPE3714MIL
TPE3715MIL
TPE3716MIL
TPE3717MIL
TPE3718MIL
TPE3719MIL
TPE3720MIL
TPE3721MIL
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TPE3726MIL
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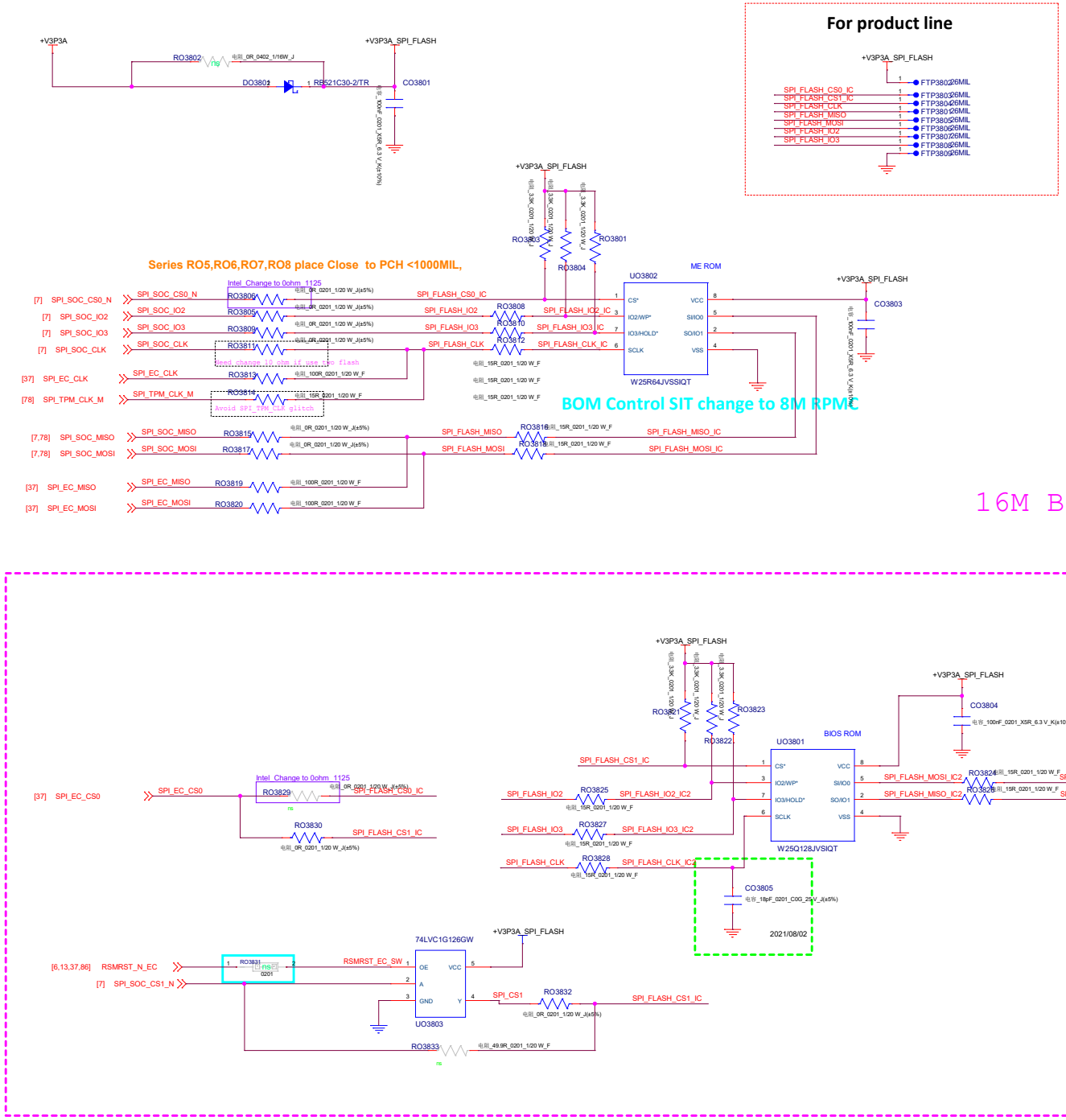
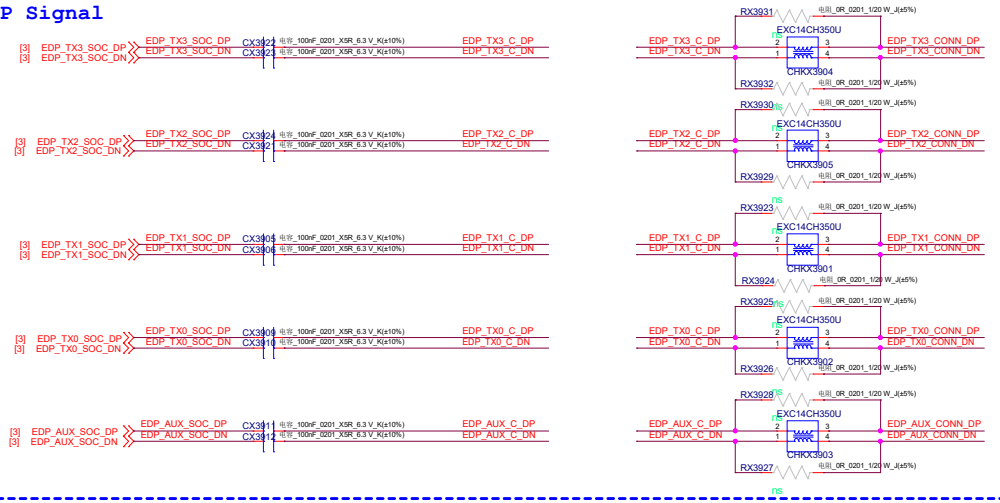
TPE3742MIL

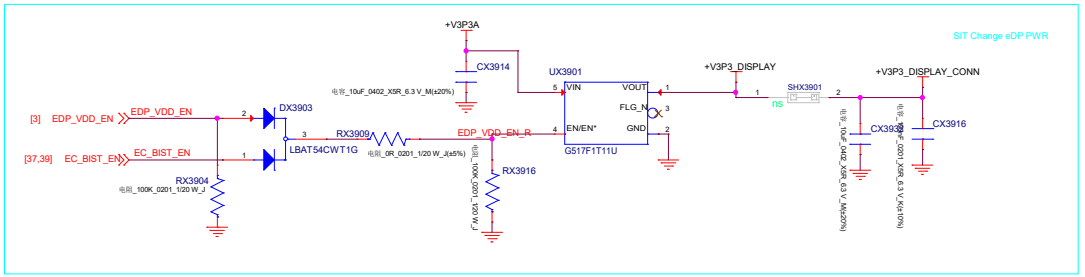


Huaqin Telecom Technology Com.,Ltd.	
Page name:	SYSTEM_FLASH
Size: A4	Project Name: NB5979&NB5986
REV:	V6.0
Date:	Thursday, January 27, 2022
Sheet:	38 of 110

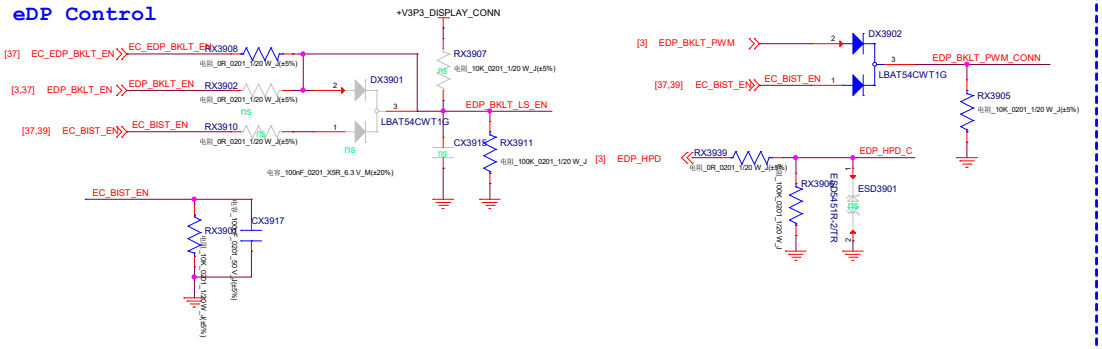
eDP Signal



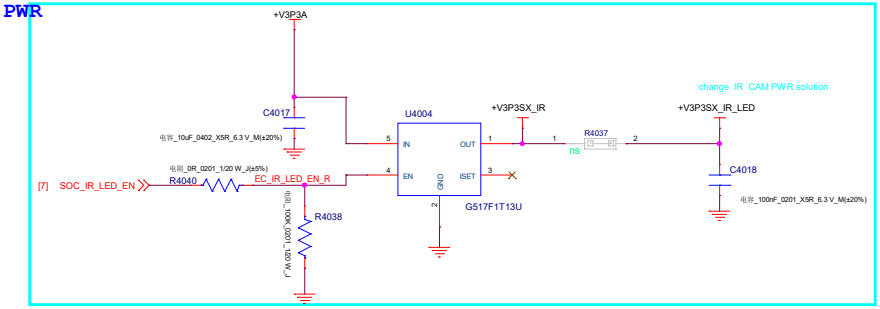
eDP VCC & BL Power

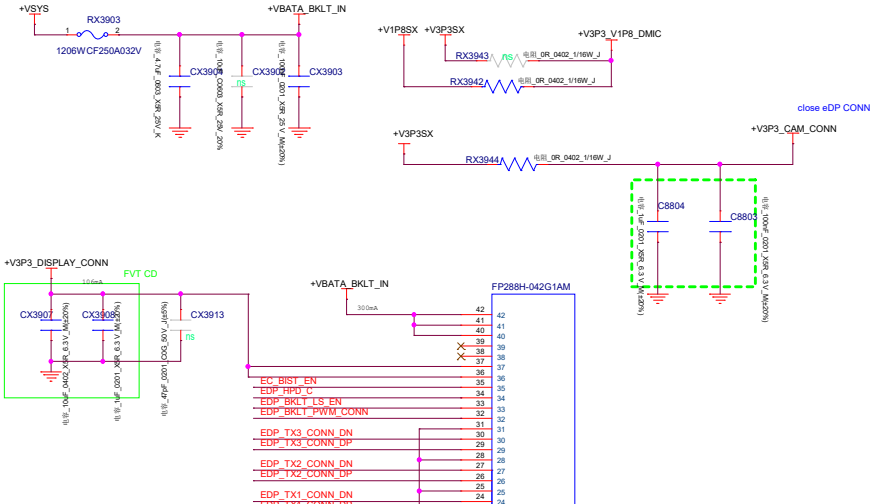


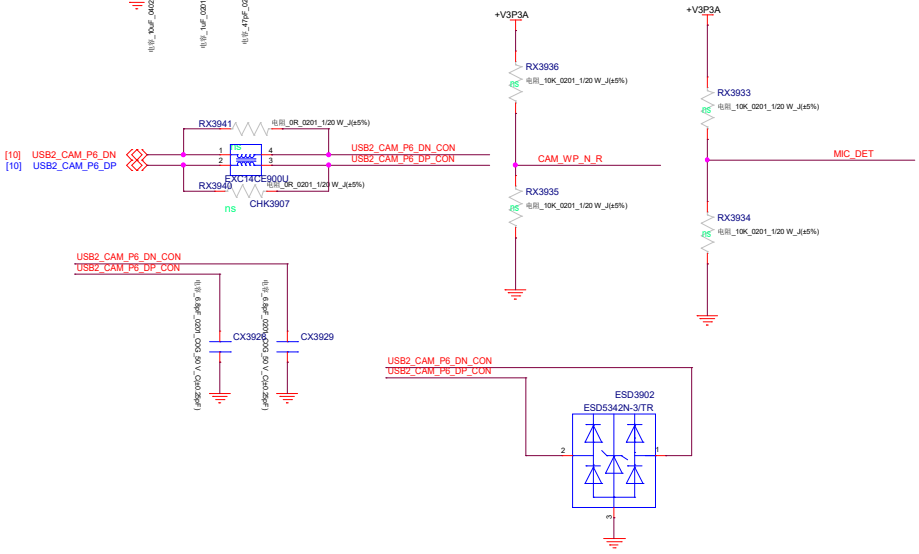
eDP Control



eDP IR CAM PWR







Huaqin Telecom Technology Com.,Ltd.		
Page name:	EDP/ CAM/ MIC	
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
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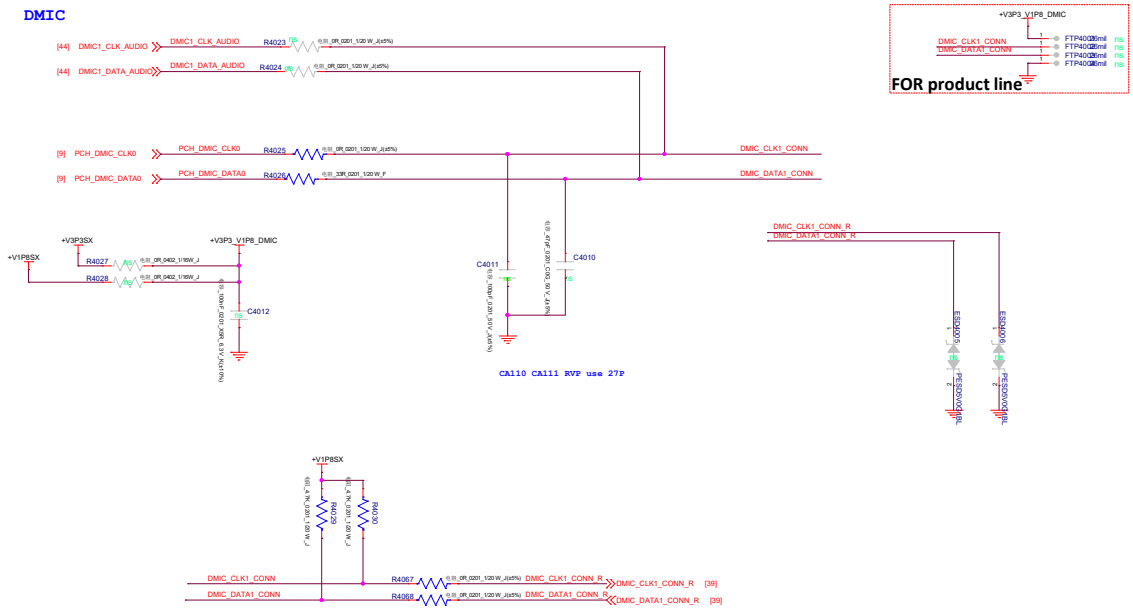
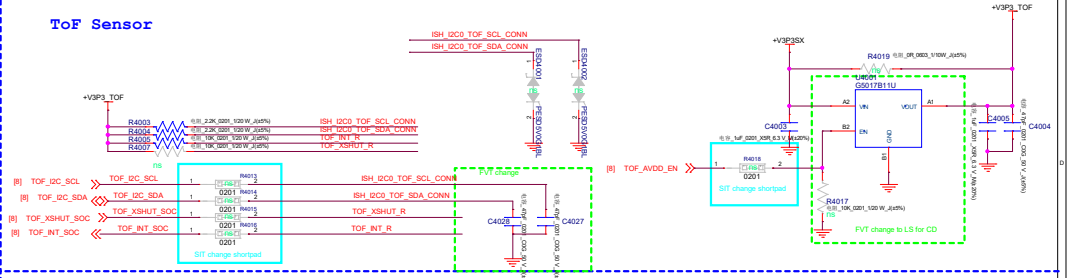
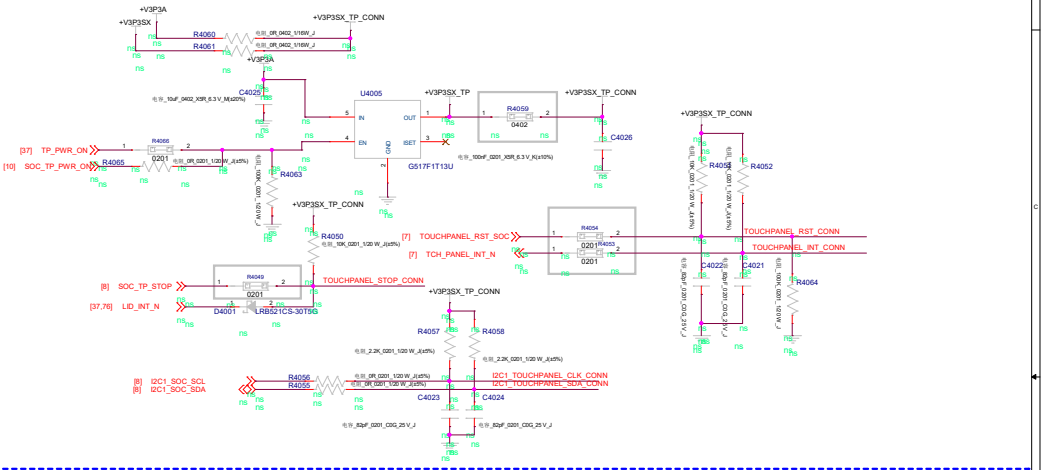
DMIC



ToF Sensor



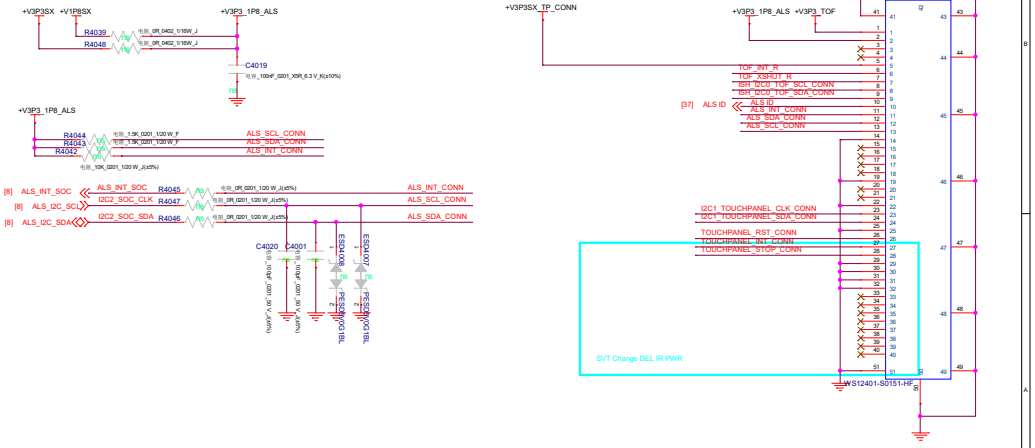
Touch Panel



Camera

DEL sensor CONN CAM

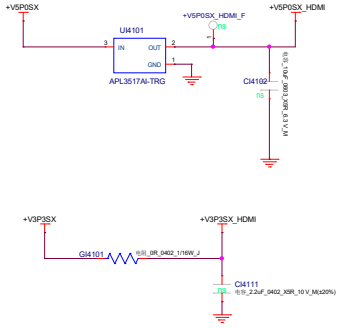
ALS Sensor



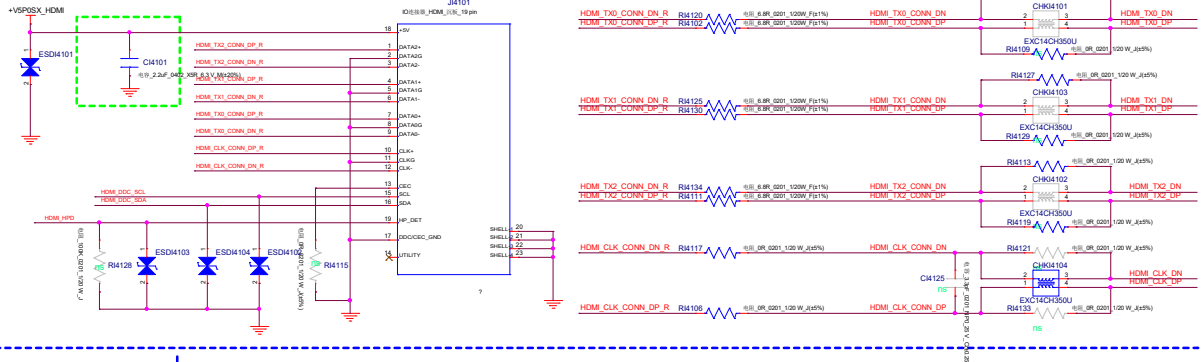
0908

HUAQIN 华勤通讯	Husqin Telecom Technology Com.,Ltd.	
Page name:	Sensor CONN	
Size: A4	Project Name: NB5979	REV: V1.0
Date: Thursday, January 27, 2022	Sheet: 40 of 110	

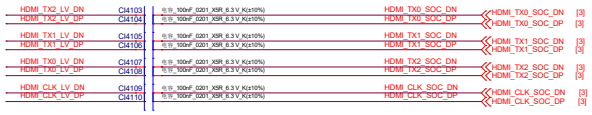
Power 1



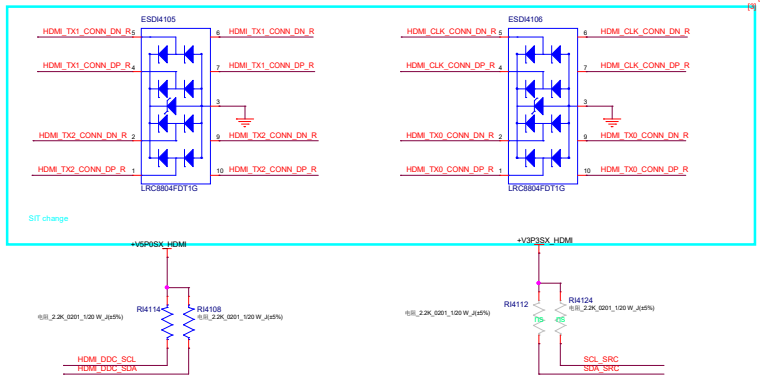
HDMI CONN

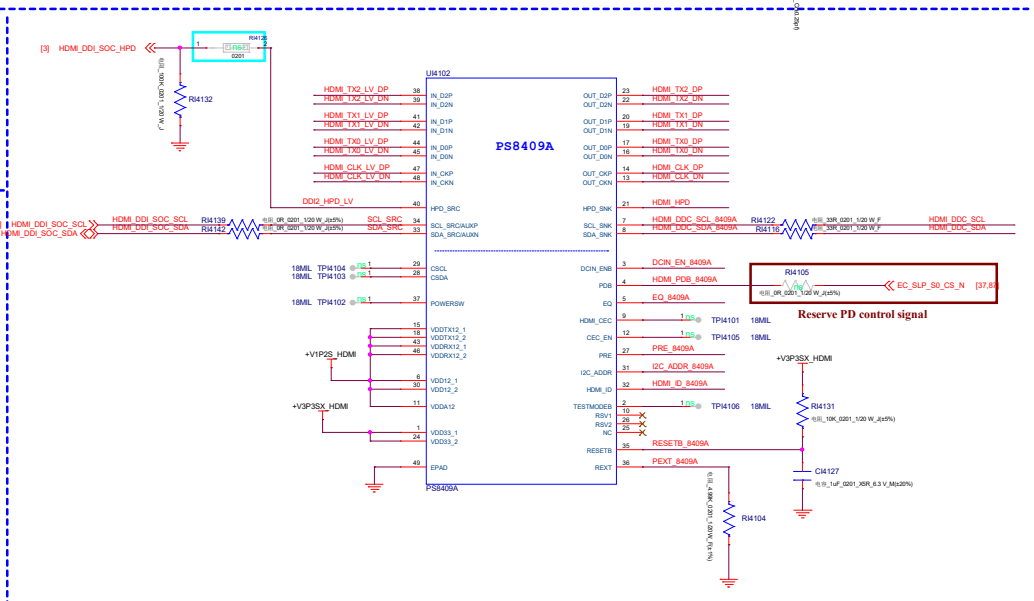


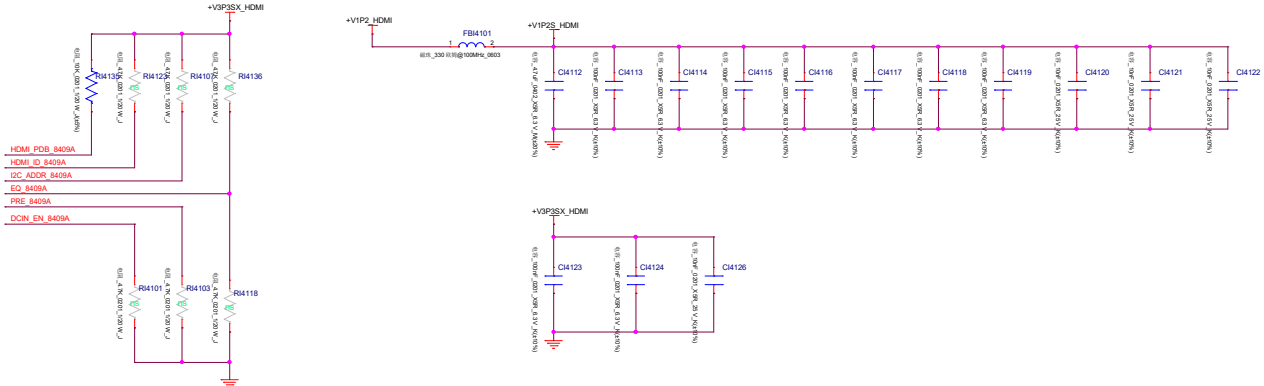
Signal



ESD







Huaqin Telecom Technology Com.,Ltd.			
Page name:	HDMI 2.0		
Size: A4	Project Name:	NB5979&NB5986	REV: V6.0
Date: Thursday, January 27, 2022	Sheet: 41	of 110	

Huaqin Telecom Technology Com.,Ltd.

Page name: USB CAMERA

Size: A4

Project Name: NB5979&NB5986

REV: V0.0

Date: Thursday, January 27, 2022

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Husqin Telecom Technology Com.,Ltd.

Page name: Display(REV)

Size: A4

Project Name: NB5979&NB5986

REV: V0.0

Date: Thursday, January 27, 2022

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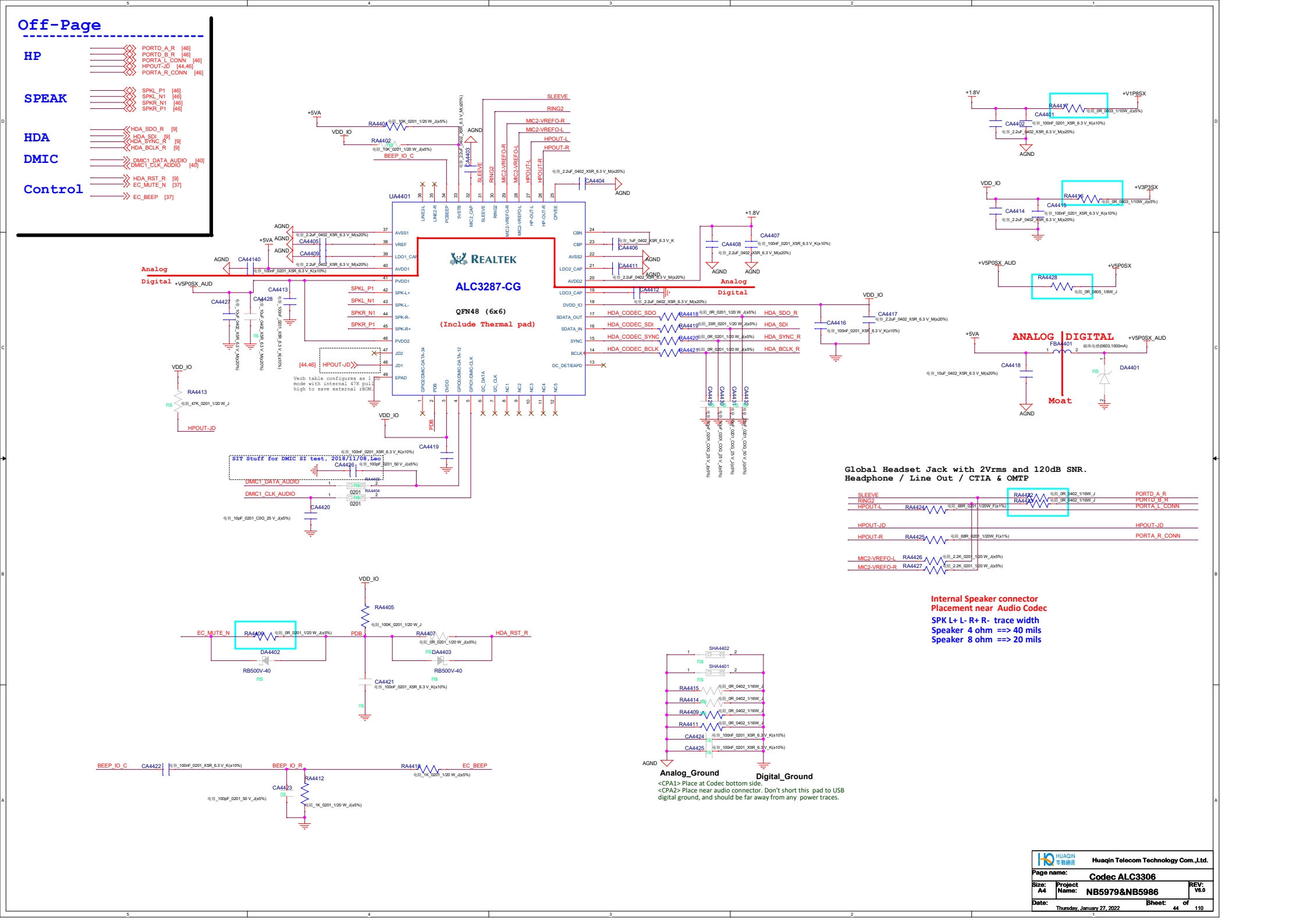
Off-Page
HP
PORTD_A_R [46]
PORTD_B_R [46]
PORTA_L_CONN [46]
HPOUT-JD [44,46]
PORTA_R_CONN [46]
SPEAK
SPKL_P1 [46]
SPKL_N1 [46]
SPKR_N1 [46]
SPKR_P1 [46]
HDA
HDA_SDO_R [9]
HDA_SDI [9]
HDA_SYNC_R [9]
HDA_BCLK_R [9]
DMIC
DMIC1_DATA_AUDIO [40]
DMIC1_CLK_AUDIO [40]
Control
HDA_RST_R [9]
EC_MUTE_N [37]
EC_BEEP [37]
REALTEK
ALC3287-CG
QFN48 (6x6)
(Include Thermal pad)
UA4401
Analog
Digital
+5VA
VDD_IO
AGND
+V5P0SX_AUD
+1.8V
+V1P8SX
+V3P3SX
+V5P0SX
SLEEVE
RING2
MIC2-VREFO-R
MIC2-VREFO-L
HPOUT-L
HPOUT-R
HDA_CODEC_SDO
HDA_CODEC_SDI
HDA_CODEC_SYNC
HDA_CODEC_BCLK
HDA_SDO_R
HDA_SDI
HDA_SYNC_R
HDA_BCLK_R
SPKL_P1
SPKL_N1
SPKR_N1
SPKR_P1
HPOUT-JD
[44,46]
Verb table configures as 1 JD mode with internal 47K pull high to save external rBOM.
SIT Stuff for DMIC SI test, 2018/11/08,Leo
DMIC1_DATA_AUDIO
DMIC1_CLK_AUDIO
PDB
EC_MUTE_N
HDA_RST_R
BEEP_IO_C
BEEP_IO_R
EC_BEEP
ANALOG
DIGITAL
Moat
FBA4401
DA4401
Global Headset Jack with 2Vrms and 120dB SNR.
Headphone / Line Out / CTIA & OMTP
PORTD_A_R
PORTD_B_R
PORTA_L_CONN
PORTA_R_CONN
HPOUT-JD
Internal Speaker connector
Placement near Audio Codec
SPK L+ L- R+ R- trace width
Speaker 4 ohm ==> 40 mils
Speaker 8 ohm ==> 20 mils
Analog_Ground
Digital_Ground
<CPA1> Place at Codec bottom side.
<CPA2> Place near audio connector. Don't short this pad to USB digital ground, and should be far away from any power traces.
Huaqin Telecom Technology Com.,Ltd.
Page name: Codec ALC3306
Size: A4
Project Name: NB5979&NB5986
REV: V6.0
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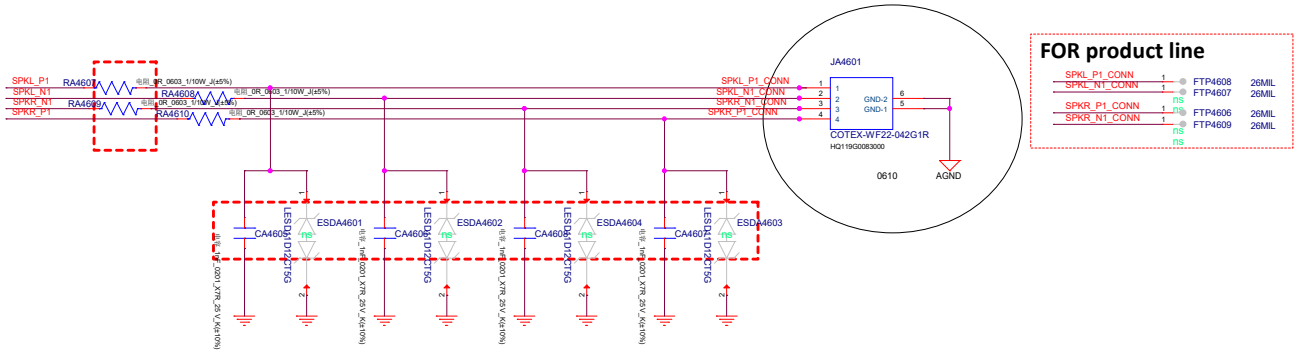
HUAQIN 华勤讯	Huaqin Telecom Technology Com.,Ltd.	
Page name:	Blank	
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
Date: Thursday, January 27, 2022	Sheet: 45 of 110	

Off-Page

PORTD_A_R [44]
PORTD_B_R [44]
PORTA_L_CONN [44]
HPOUT-JD [44]
PORTA_R_CONN [44]

SPKL_P1 [44]
SPKL_N1 [44]
SPKR_N1 [44]
SPKR_P1 [44]

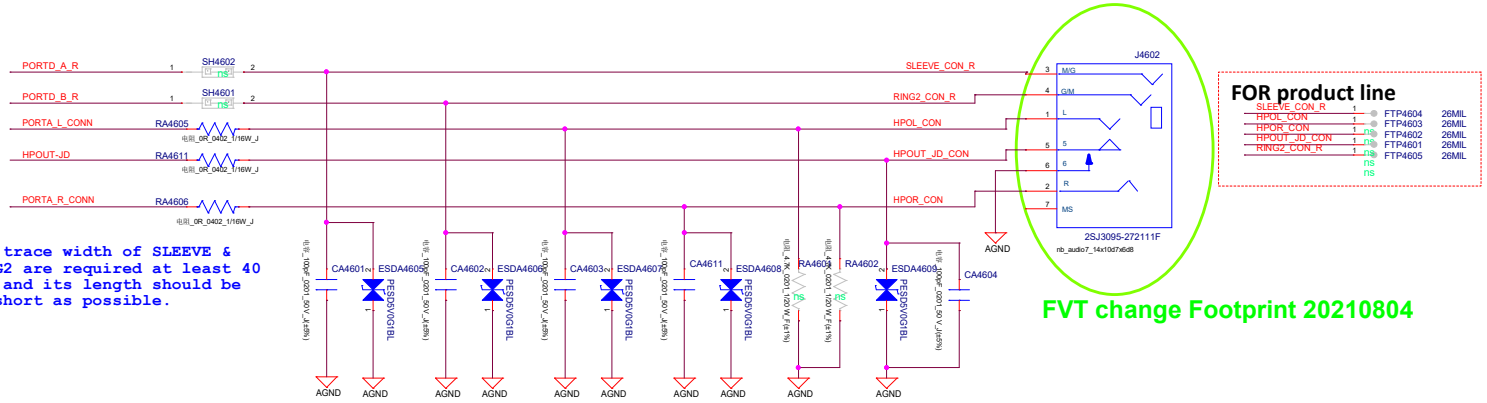
Speaker Conn



FOR product line

SPKL_P1_CONN	FTP4608	26MIL	
SPKL_N1_CONN	FTP4607	26MIL	
SPKR_P1_CONN	FTP4606	26MIL	
SPKR_N1_CONN	FTP4609	26MIL	

Combo Jack



PCB trace width of SLEEVE & RING2 are required at least 40 mil and its length should be as short as possible.

FVT change Footprint 20210804

FOR product line

SLEEVE_CON_R	FTP4604	26MIL	
HPOL_CON	FTP4603	26MIL	
HPOR_CON	FTP4602	26MIL	
HPOUT_JD_CON	FTP4601	26MIL	
RING2_CON_R	FTP4605	26MIL	

Huaqin Telecom Technology Com.,Ltd.		
Page name:	Audio_HP/SPK/MIC Jack	
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
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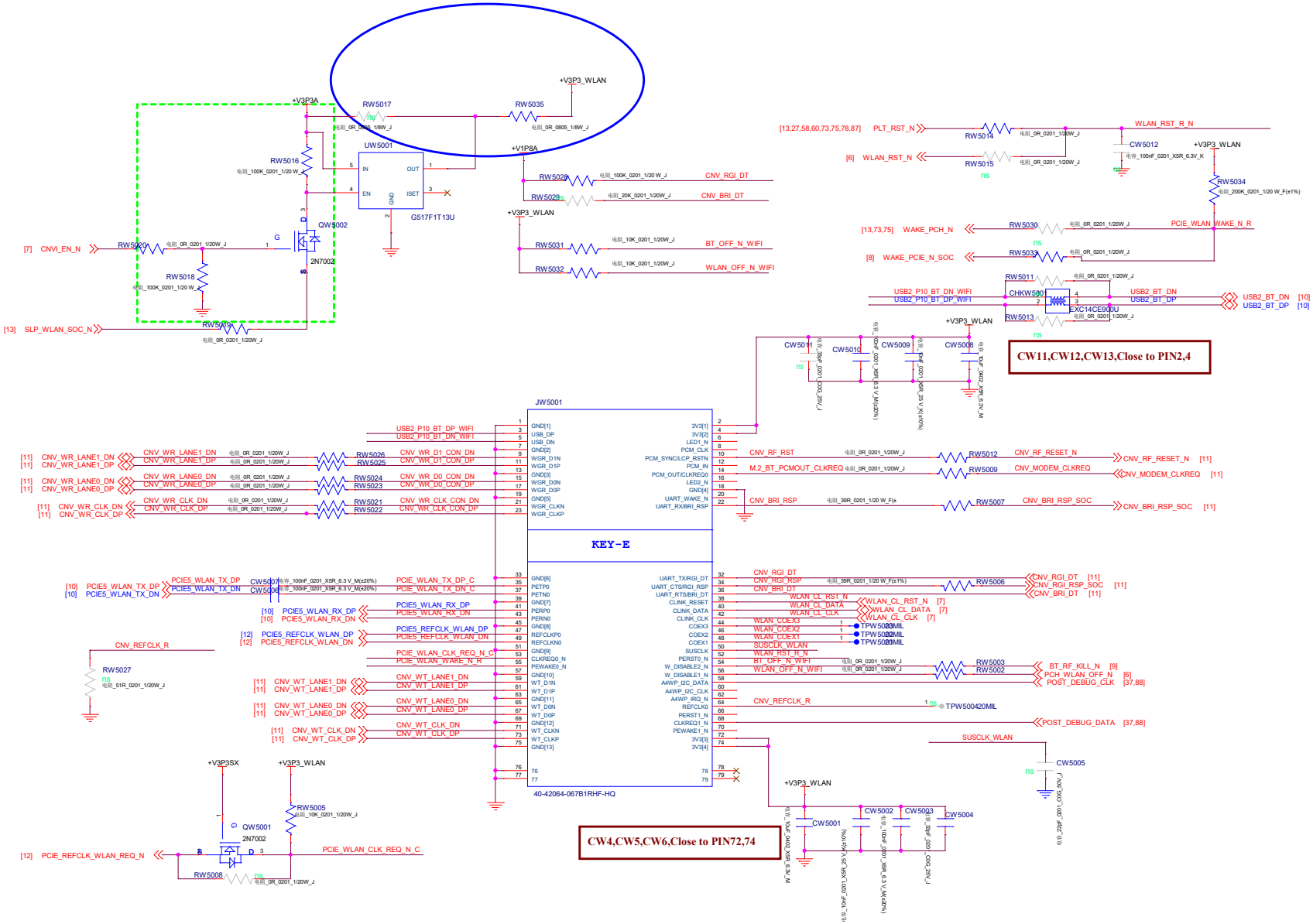
HUAQIN 华勤讯	Huaqin Telecom Technology Com.,Ltd.	
Page name:	Audio(REV)	
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
Date: Thursday, January 27, 2022	Sheet: 47 of 110	

HUAQIN 华勤讯	Huaqin Telecom Technology Com.,Ltd.	
Page name:	LAN(Controller)	
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
Date: Thursday, January 27, 2022	Sheet: 48 of 110	

HUAQIN 华勤讯	Huaqin Telecom Technology Com.,Ltd.	
Page name:	LAN(RJ45+Transformer)	
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
Date: Thursday, January 27, 2022	Sheet: 49 of 110	



HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.	
Page name:	WLAN	
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
Date: Thursday, January 27, 2022	Sheet: 50 of 110	

Huaqin Telecom Technology Com.,Ltd.			
Page name:	WWAN		
Size: A4	Project Name:	NB5979&NB5986	REV: V0.0
Date: Thursday, January 27, 2022		Sheet: 51 of 110	

Huaqin Telecom Technology Com.,Ltd.		
Page name:	WWAN	
Size: A4	Project Name: NB5979&NB5986	REV: V0.0
Date: Thursday, January 27, 2022	Sheet: 52 of 110	

HUAQIN 华勤讯	Huaqin Telecom Technology Com.,Ltd.	
Page name:	Cardreader	
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
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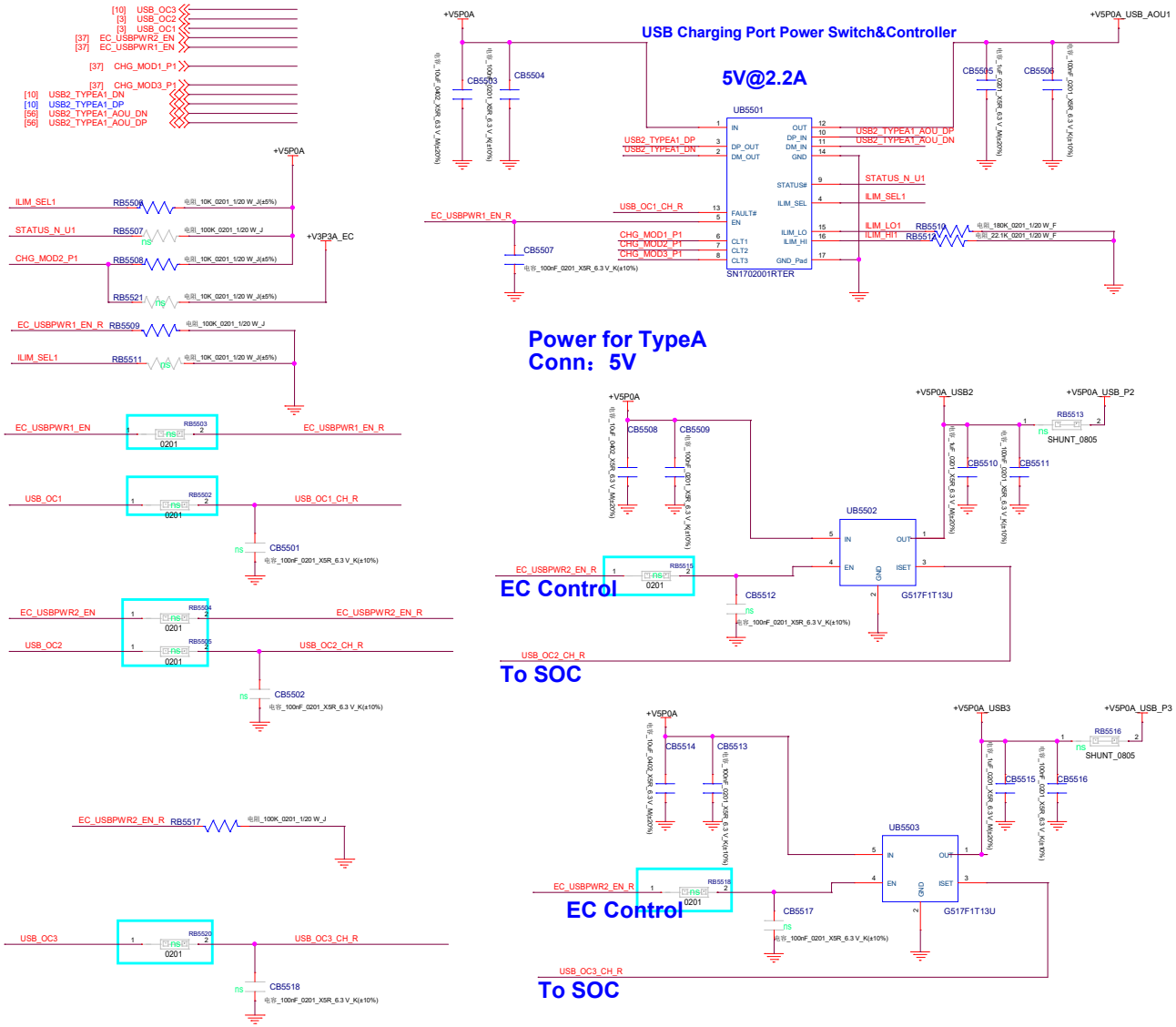
HUAQIN 华勤讯	Huaqin Telecom Technology Com.,Ltd.	
Page name:	Cardreader	
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
Date: Thursday, January 27, 2022	Sheet: 54 of 110	



Huaqin Telecom Technology Com.,Ltd.			
Page name:	USB_AOU_LS		
Size: A4	Project Name:	NB5979&NB5986	REV: V6.0
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Off-Page

USB2.0

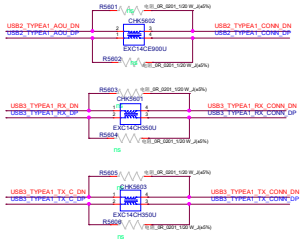
USB3.0

Power for Redriver:3.3V

Redriver

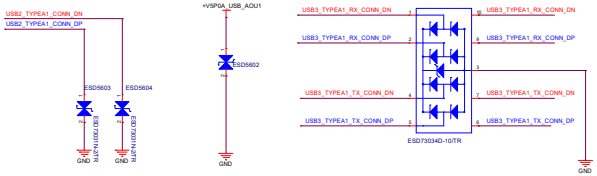
SOC

USB3.1 +USB2.0 Signal



USB3.1 ESD For Gen1

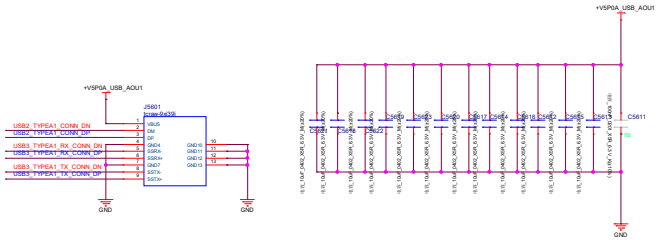
Close to Conn



USB3.1 Type A CONN For Gen1

USB3.1 Power BYPASS Caps

Close to Conn



Huaqin Telecom Technology Com.,Ltd.			
Page name:	DB_USB3.1 TYPEA1		
Size: A4	Project Name:	NB5979&NB5986	REV: V0.0
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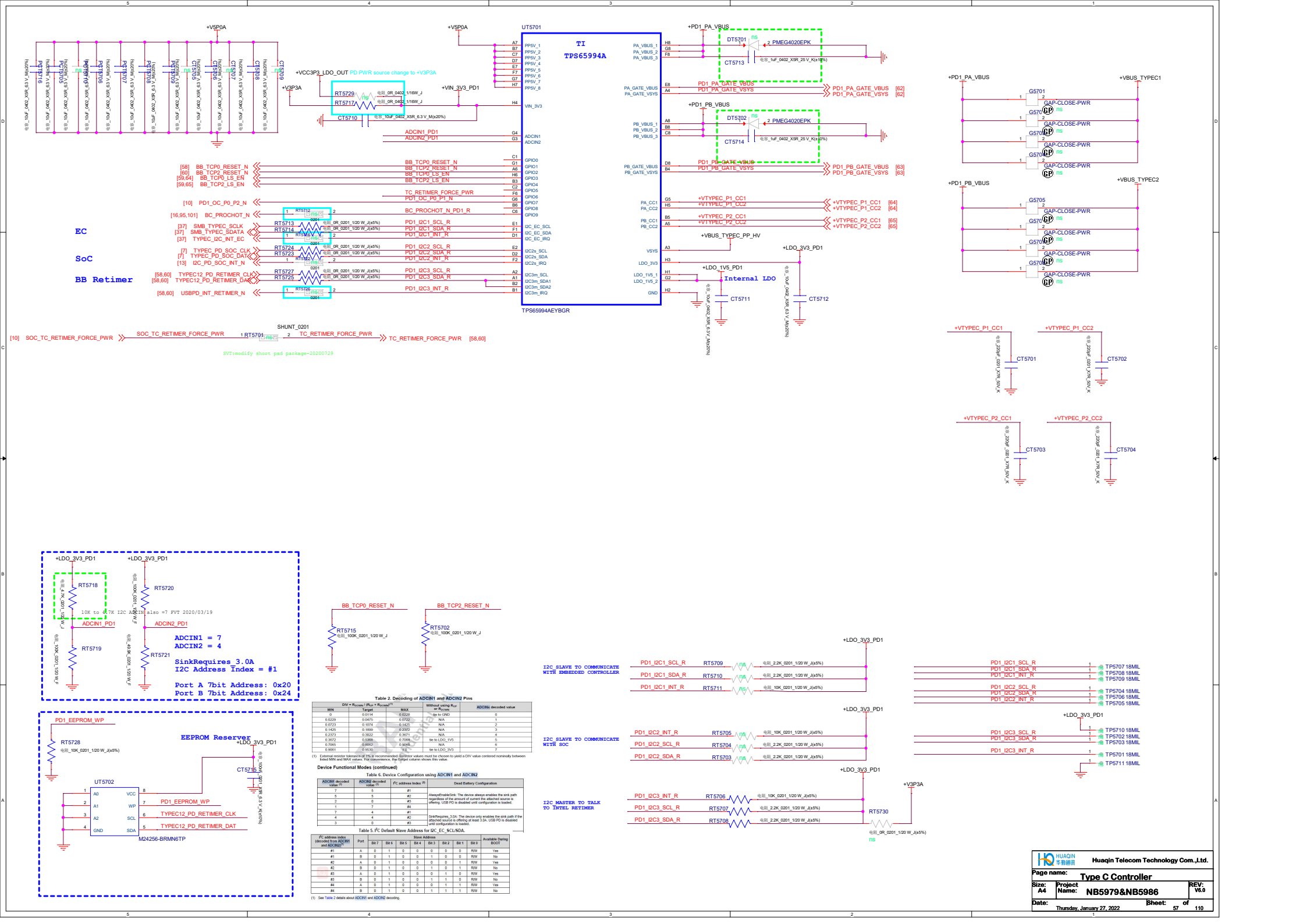

Table 2. Decoding of ADCIN1 and ADCIN2 Pins

DIV = R_{ECOWN} / (R_{UP} + R_{ECOWN})[1]			Without using R_{UP} or R_{ECOWN}	ADCINx decoded value
MIN	Target	MAX		
0	0.0114	0.0228	tie to GND	0
0.0229	0.0475	0.0722	N/A	1
0.0723	0.1074	0.1425	N/A	2
0.1426	0.1899	0.2372	N/A	3
0.2373	0.3022	0.3671	N/A	4
0.3672	0.5068	0.7068	tie to LDO_1V5	5
0.7065	0.8002	0.9000	N/A	6
0.9061	0.9530	1.0	tie to LDO_3V3	7

(1) External resistor tolerance of 1% is recommended. Resistor values must be chosen to yield a DIV value centered nominally between listed MIN and MAX values. For convenience, the Target column shows this value.

Device Functional Modes (continued)

Table 6. Device Configuration using ADCIN1 and ADCIN2

ADCIN1 decoded value [1]	ADCIN2 decoded value [1]	I²C address index [2]	Dead Battery Configuration
7	5	#1	
5	5	#2	AlwaysEnableSink: The device always enables the sink path regardless of the amount of current the attached source is offering. USB PD is disabled until configuration is loaded.
2	0	#3	
1	7	#4	
7	4	#1	
4	4	#2	SinkRequires_3.0A: The device only enables the sink path if the attached source is offering at least 3.0A. USB PD is disabled until configuration is loaded.
3	0	#3	

Table 5. I²C Default Slave Address for I2C_SCL/SDA.

I²C address index (decoded from ADCIN1 and ADCIN2)[1]	Port	Slave Address								Available During BOOT
		Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	
#1	A	0	1	0	0	0	0	0	R/W	Yes
#1	B	0	1	0	0	1	0	0	R/W	No
#2	A	0	1	0	0	0	0	1	R/W	Yes
#2	B	0	1	0	0	1	0	1	R/W	No
#3	A	0	1	0	0	0	1	0	R/W	Yes
#3	B	0	1	0	0	1	1	0	R/W	No
#4	A	0	1	0	0	0	1	1	R/W	Yes
#4	B	0	1	0	0	1	1	1	R/W	No

(1) See Table 2 details about ADCIN1 and ADCIN2 decoding.

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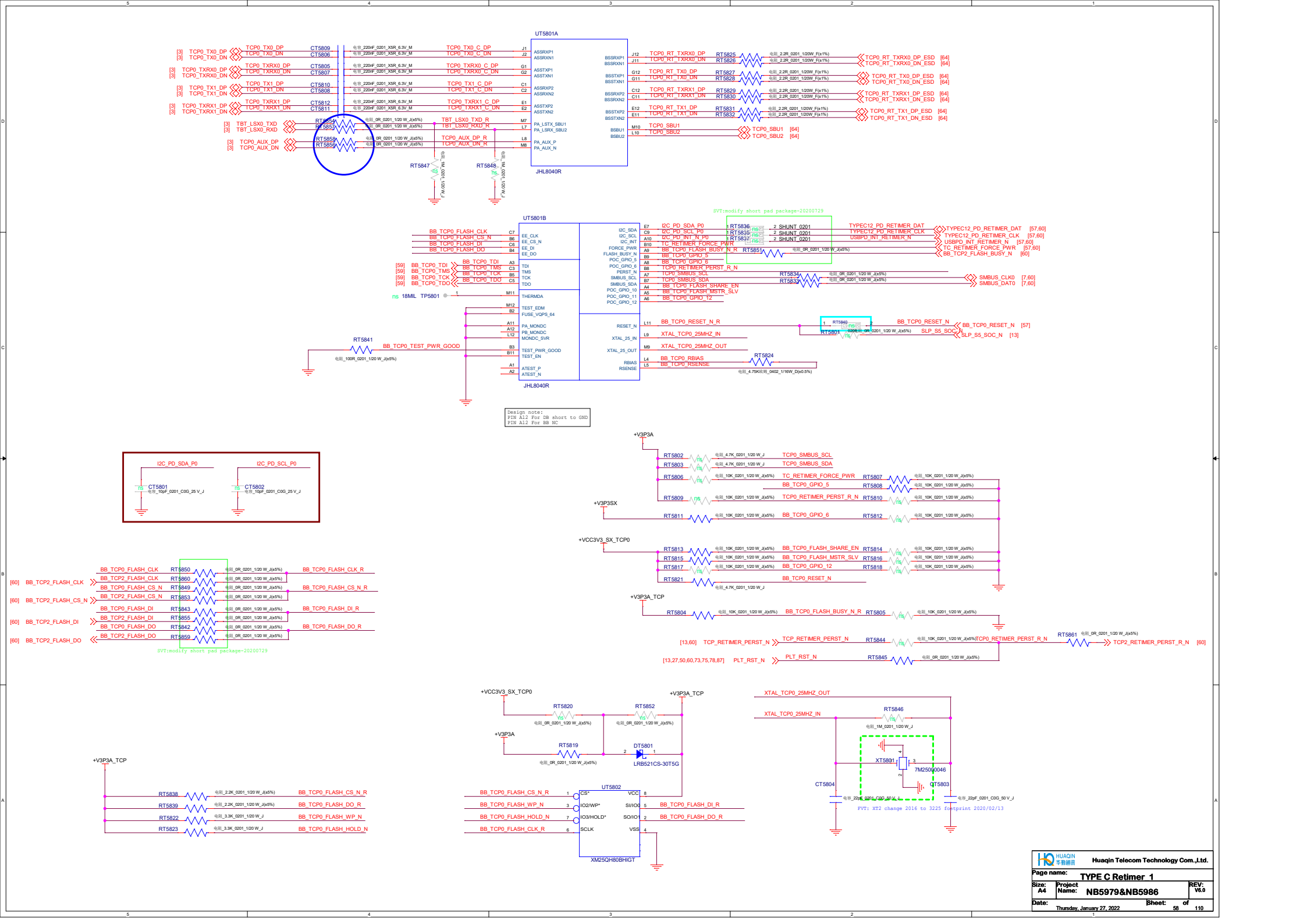
UT5801A
JHL8040R
UT5801B
JHL8040R
SVT:modify short pad package-20200729
Design note:
PIN A12 For DB short to GND
PIN A12 For BB NC
I2C_PD_SDA_P0
I2C_PD_SCL_P0
CT5801
CT5802
SVT:modify short pad package-20200729
+V3P3A
+V3P3SX
+VCC3V3_SX_TCP0
+V3P3A_TCP
UT5802
XM25QH80BHIGT
XTAL_TCP0_25MHZ_OUT
XTAL_TCP0_25MHZ_IN
XT5801
7M25000046
QT5803
CT5804
FVT: XT2 change 2016 to 3225 footprint 2020/02/13
HUAQIN
Huaqin Telecom Technology Com.,Ltd.
Page name:
TYPE C Retimer_1
Size: A4
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NB5979&NB5986
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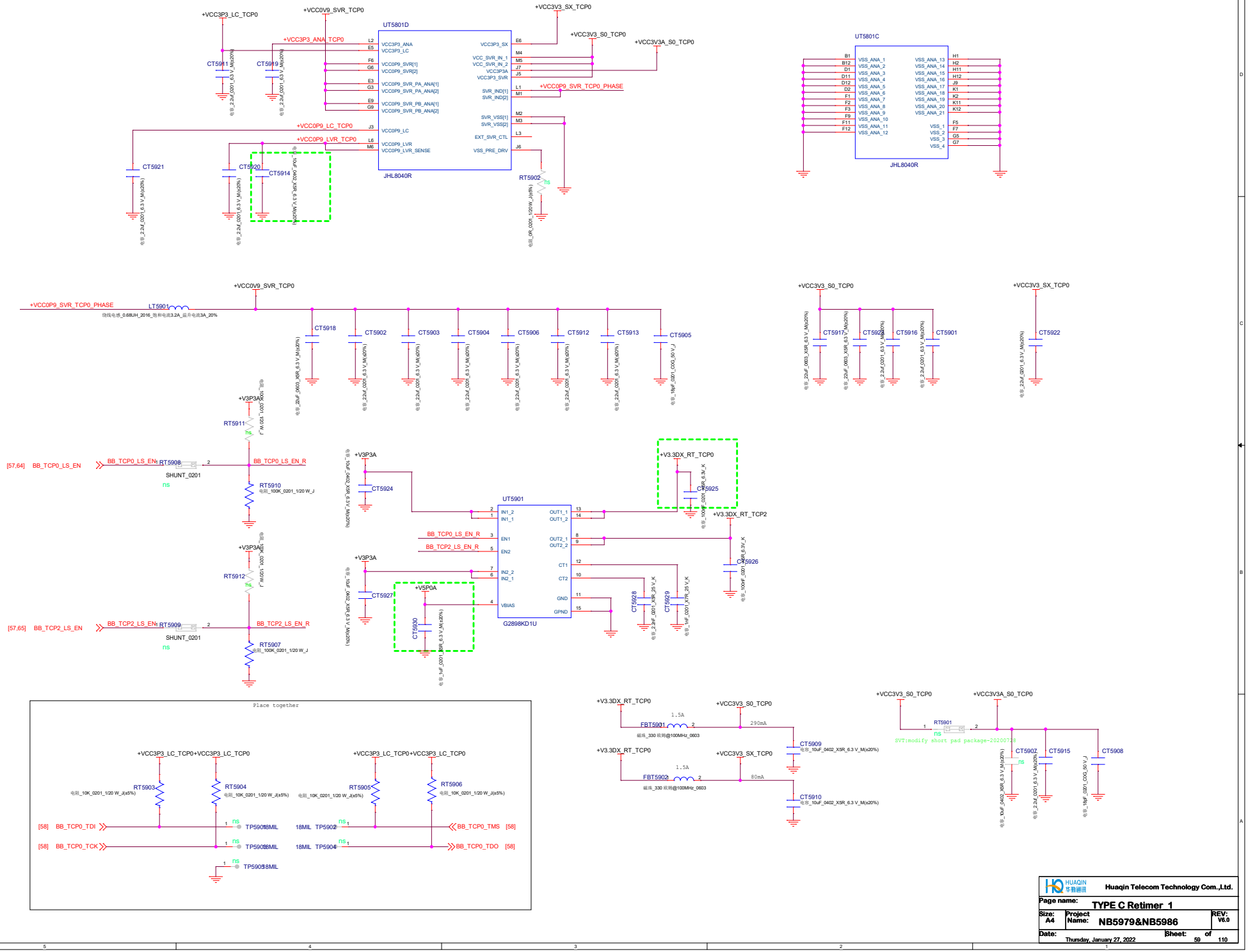
+VCC3P3_LC_TCP0
+VCC0V9_SVR_TCP0
+VCC3V3_SX_TCP0
+VCC3V3_S0_TCP0
+VCC3V3A_S0_TCP0
UT5801D
+VCC3P3_ANA_TCP0
VCC3P3_ANA
VCC3P3_LC
VCC0P9_SVR[1]
VCC0P9_SVR[2]
VCC0P9_SVR_PA_ANA[1]
VCC0P9_SVR_PA_ANA[2]
VCC0P9_SVR_PB_ANA[1]
VCC0P9_SVR_PB_ANA[2]
VCC3P3_SX
VCC_SVR_IN_1
VCC_SVR_IN_2
VCC3P3A
VCC3P3_SVR
SVR_IND[1]
SVR_IND[2]
+VCC0P9_SVR_TCP0_PHASE
SVR_VSS[1]
SVR_VSS[2]
EXT_SVR_CTL
VSS_PRE_DRV
+VCC0P9_LC_TCP0
VCC0P9_LC
+VCC0P9_LVR_TCP0
VCC0P9_LVR
VCC0P9_LVR_SENSE
JHL8040R
CT5911
CT5919
CT5921
CT5920
CT5914
RT5902
UT5801C
VSS_ANA_1
VSS_ANA_2
VSS_ANA_3
VSS_ANA_4
VSS_ANA_5
VSS_ANA_6
VSS_ANA_7
VSS_ANA_8
VSS_ANA_9
VSS_ANA_10
VSS_ANA_11
VSS_ANA_12
VSS_ANA_13
VSS_ANA_14
VSS_ANA_15
VSS_ANA_16
VSS_ANA_17
VSS_ANA_18
VSS_ANA_19
VSS_ANA_20
VSS_ANA_21
VSS_1
VSS_2
VSS_3
VSS_4
JHL8040R
+VCC0P9_SVR_TCP0_PHASE
LT5901
CT5918
CT5902
CT5903
CT5904
CT5906
CT5912
CT5913
CT5905
+V3P3A
RT5911
RT5912
[57,64] BB_TCP0_LS_EN
BB_TCP0_LS_EN
RT5908
BB_TCP0_LS_EN_R
SHUNT_0201
RT5910
[57,65] BB_TCP2_LS_EN
BB_TCP2_LS_EN
RT5909
BB_TCP2_LS_EN_R
RT5907
UT5901
BB_TCP0_LS_EN_R
BB_TCP2_LS_EN_R
IN1_2
IN1_1
EN1
EN2
IN2_2
IN2_1
VBIAS
OUT1_1
OUT1_2
OUT2_1
OUT2_2
CT1
CT2
GND
GPND
G2898KD1U
+V3.3DX_RT_TCP0
+V3.3DX_RT_TCP2
CT5924
CT5925
CT5926
CT5927
CT5928
CT5929
+V5P0A
CT5930
CT5917
CT5922
CT5916
CT5901
CT5922
Place together
+VCC3P3_LC_TCP0+VCC3P3_LC_TCP0
RT5903
RT5904
RT5905
RT5906
[58] BB_TCP0_TDI
[58] BB_TCP0_TCK
BB_TCP0_TMS [58]
BB_TCP0_TDO [58]
TP5901
TP5902
TP5903
TP5904
TP5905
18MIL
+VCC3V3_S0_TCP0
+VCC3V3A_S0_TCP0
FBT5901
FBT5902
1.5A
290mA
80mA
CT5909
CT5910
RT5901
CT5907
CT5915
CT5908
SVT:modify short pad package-20200728
HUAQIN 华勤通讯
Huaqin Telecom Technology Com.,Ltd.
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Size: A4
Project Name: NB5979&NB5986
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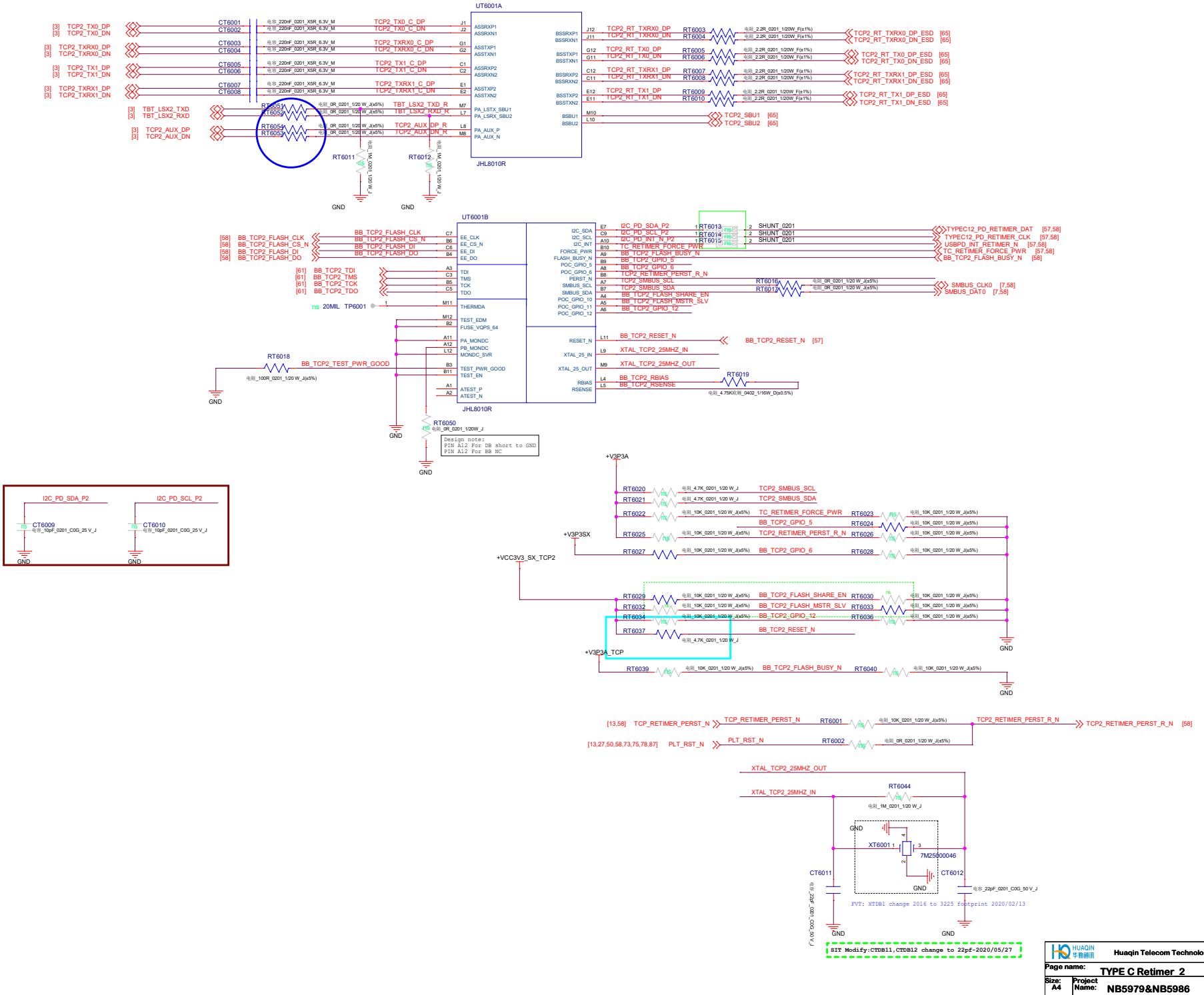
UT6001A
JHL8010R
UT6001B
JHL8010R
I2C_PD_SDA_P2
I2C_PD_SCL_P2
CT6009
CT6010
+V3P3A
+V3P3SX
+VCC3V3_SX_TCP2
+V3P3A_TCP
XTAL_TCP2_25MHZ_OUT
XTAL_TCP2_25MHZ_IN
RT6044
XT6001
7M25000046
CT6011
CT6012
FVT: XTDB1 change 2016 to 3225 footprint 2020/02/13
SIT Modify:CTDB11,CTDB12 change to 22pf-2020/05/27
Design note:
PIN A12 For DB short to GND
PIN A12 For BB NC
Huaqin Telecom Technology Com.,Ltd.
Page name: TYPE C Retimer_2
Size: A4
Project Name: NB5979&NB5986
REV: V6.0
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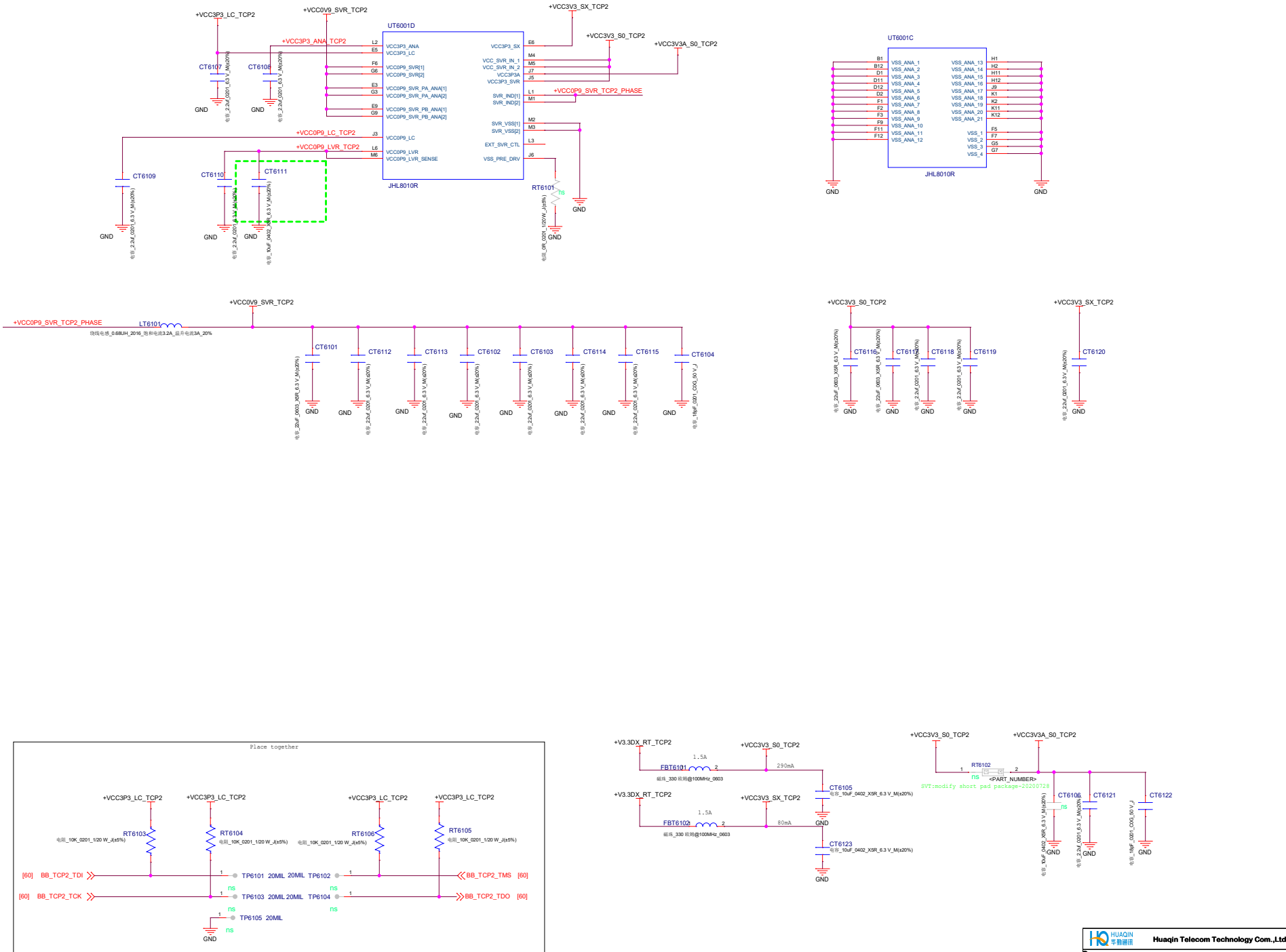

Huaqin Telecom Technology Com.,Ltd.

Page name:	TYPE C Retimer_2	
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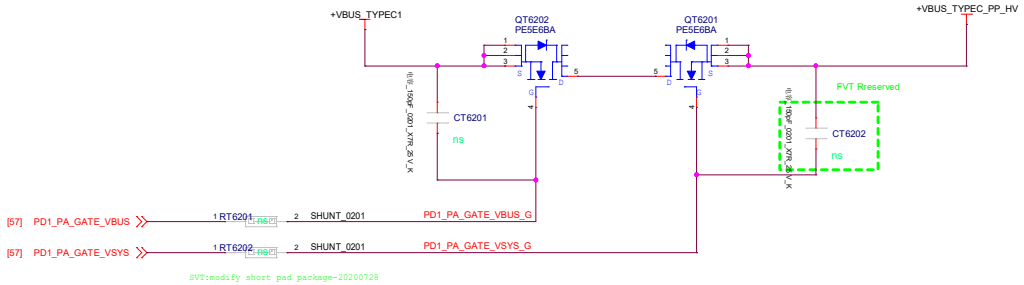

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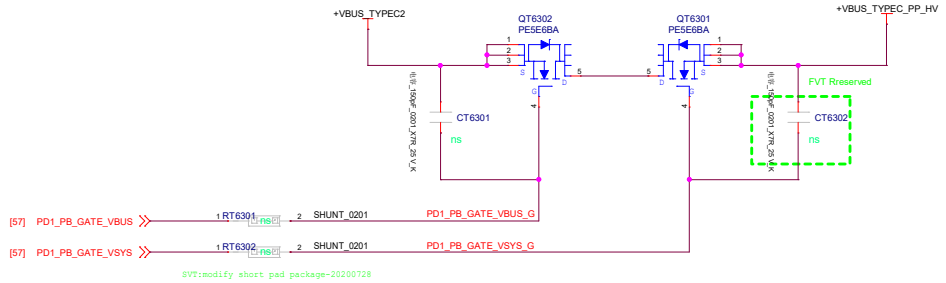

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Page name:	TYPE C Power 2	
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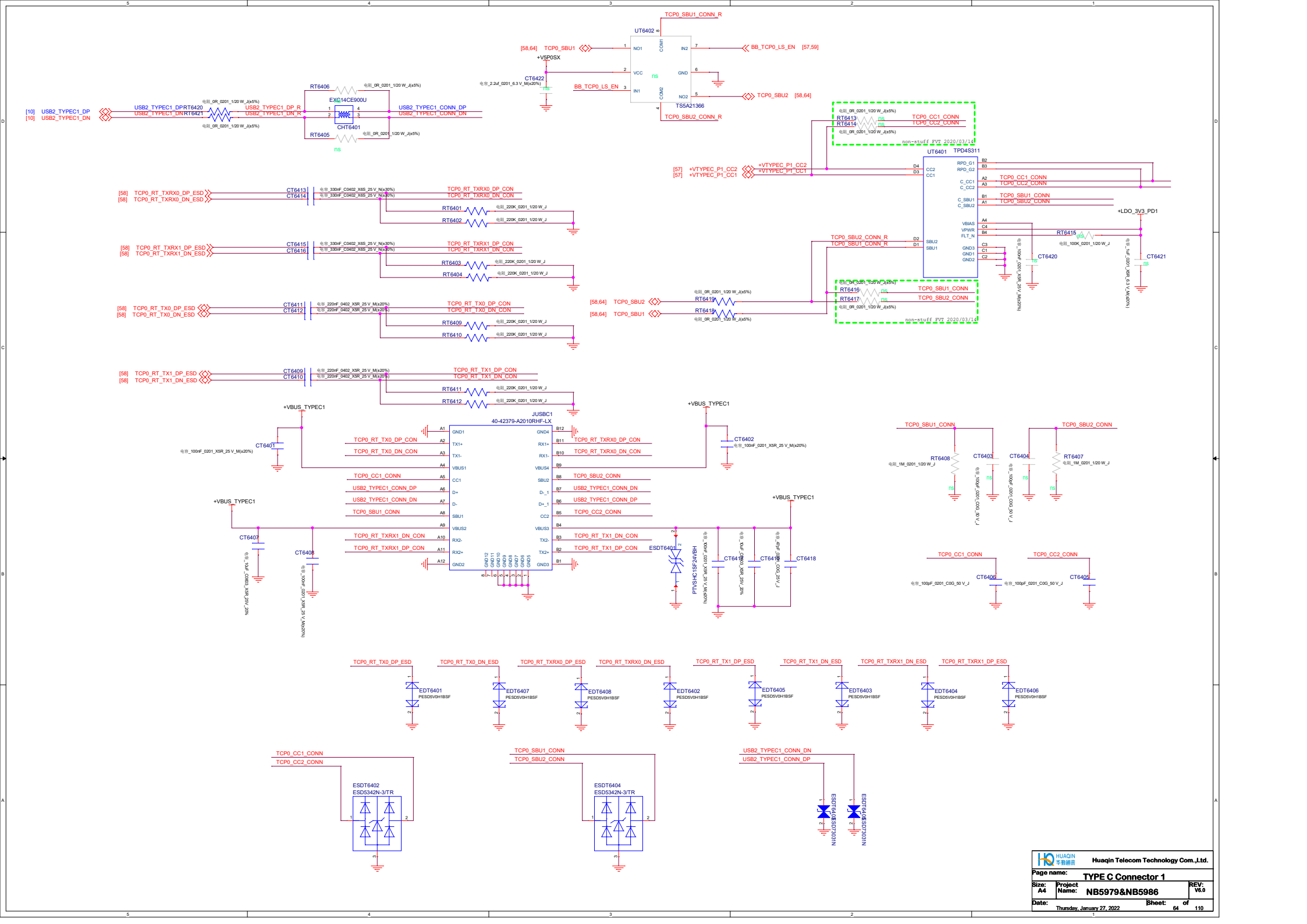

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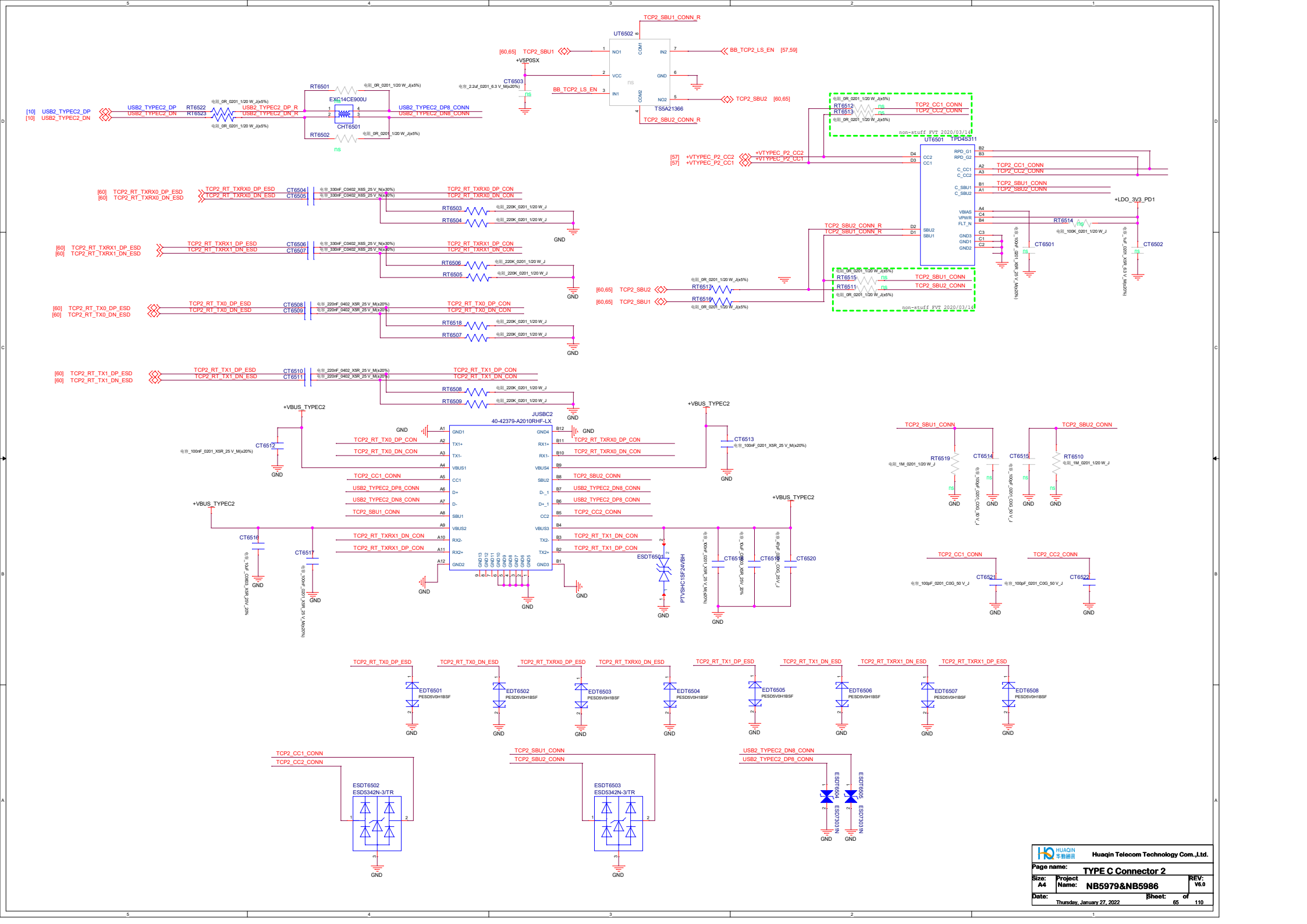

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Page name:	TYPE C Connector 2	
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HUAQIN 华勤讯	Huaqin Telecom Technology Com.,Ltd.		
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HUAQIN 华勤讯通	Huaqin Telecom Technology Com.,Ltd.		
Page name:	TYPE C Retimer_3		
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TYPE-C PD OUTPUT

TYPE-C PD INPUT

TYPEC-IN detect

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Page name:	TYPE C Connector	
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HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.
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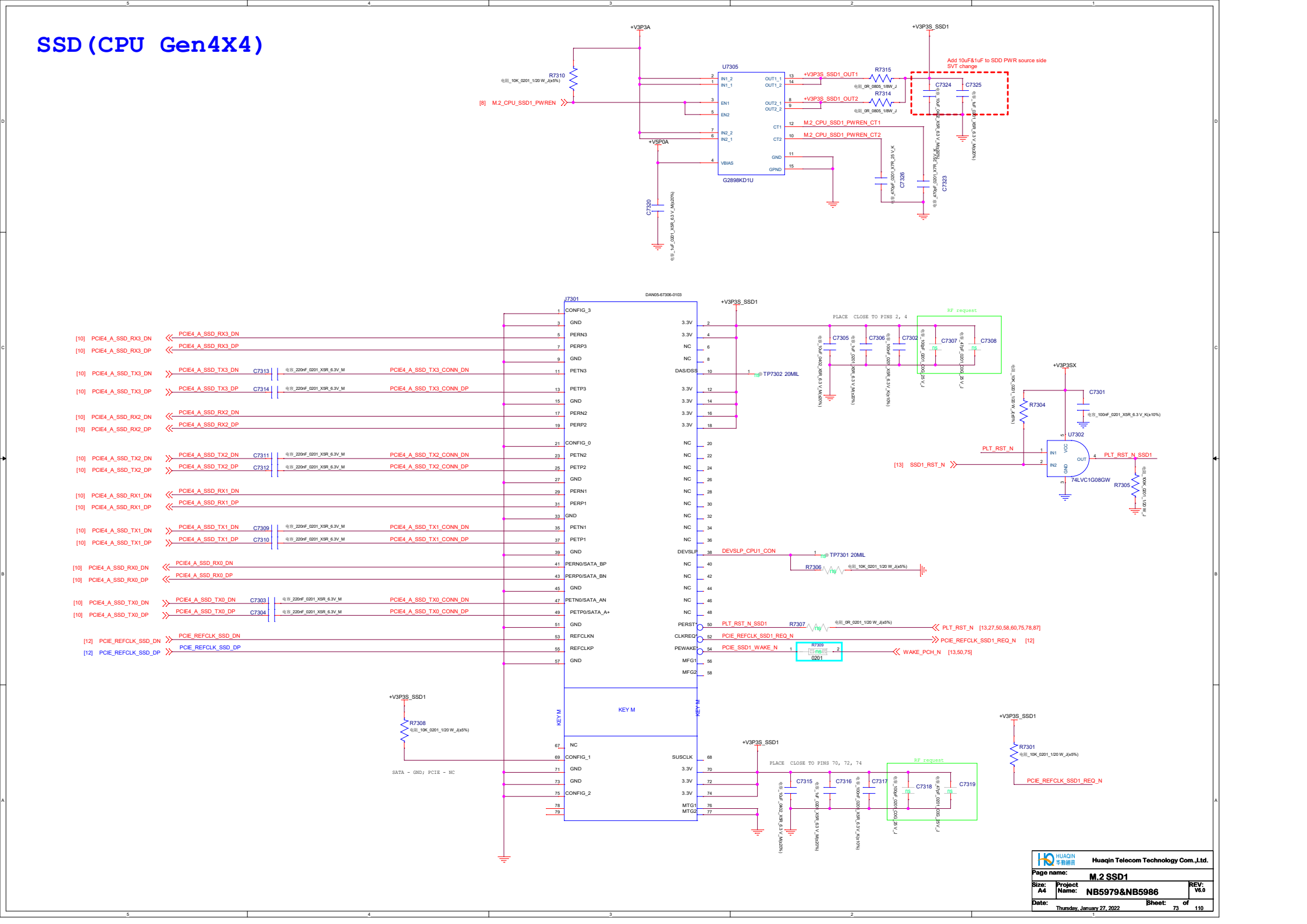
SSD(CPU Gen4X4)



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Page name:	M.2 SSD2	
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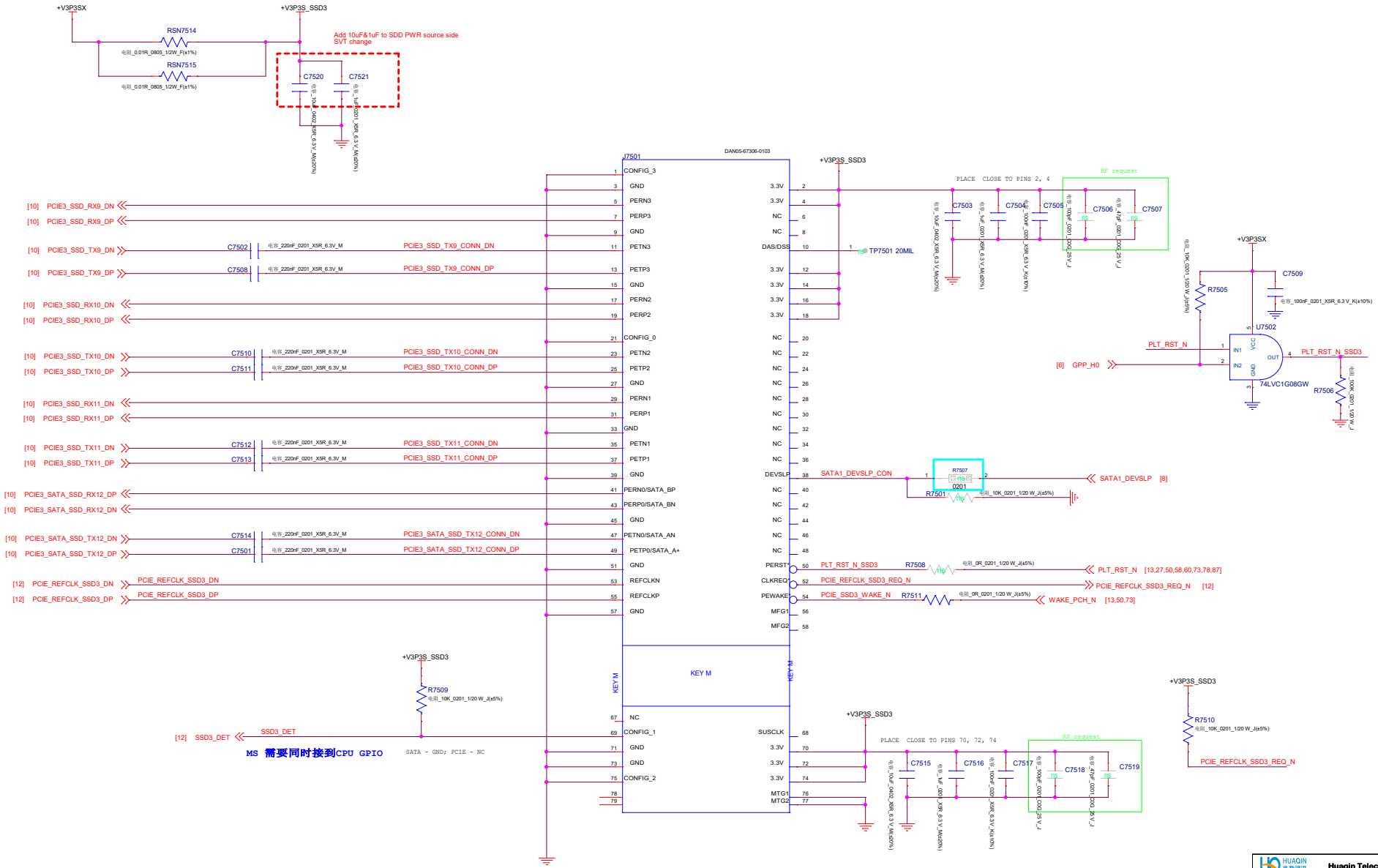
SSD (PCH)



Huaqin Telecom Technology Com.,Ltd.			
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Size: A4	Project Name: NB5979&NB5986		REV: V6.0
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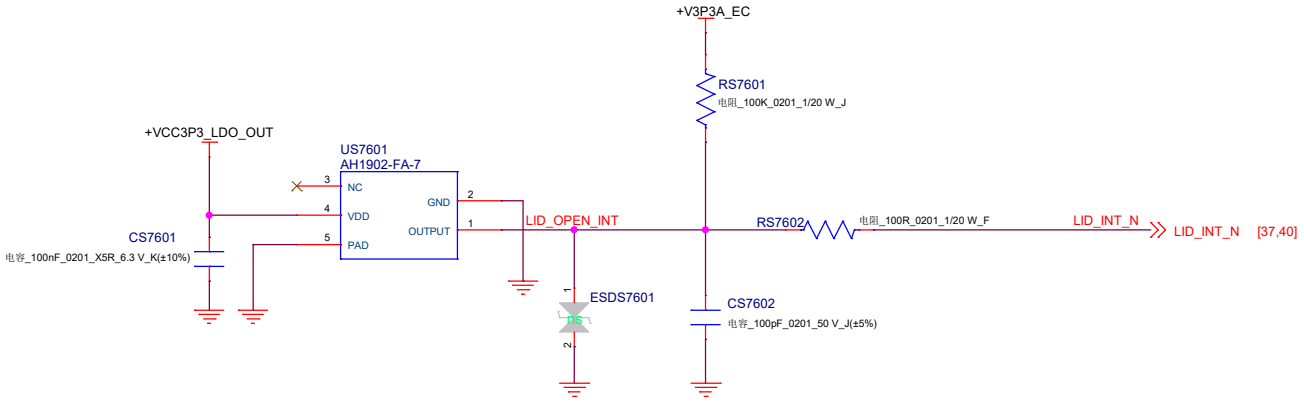
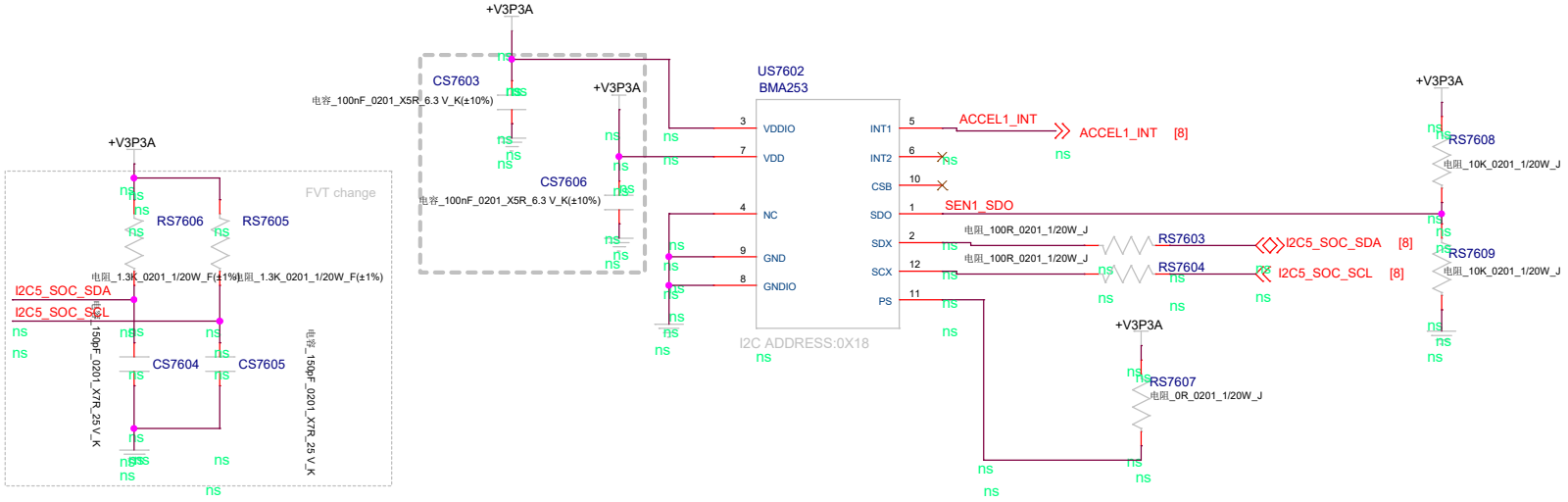
HALL Sensor



G-Sensor(Design reserve)



Huaqin Telecom Technology Com.,Ltd.		
Page name: Sensor_Hall Sensor/G Sensor		
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
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Size: A4	Project Name: NB5979&NB5986 REV: V6.0
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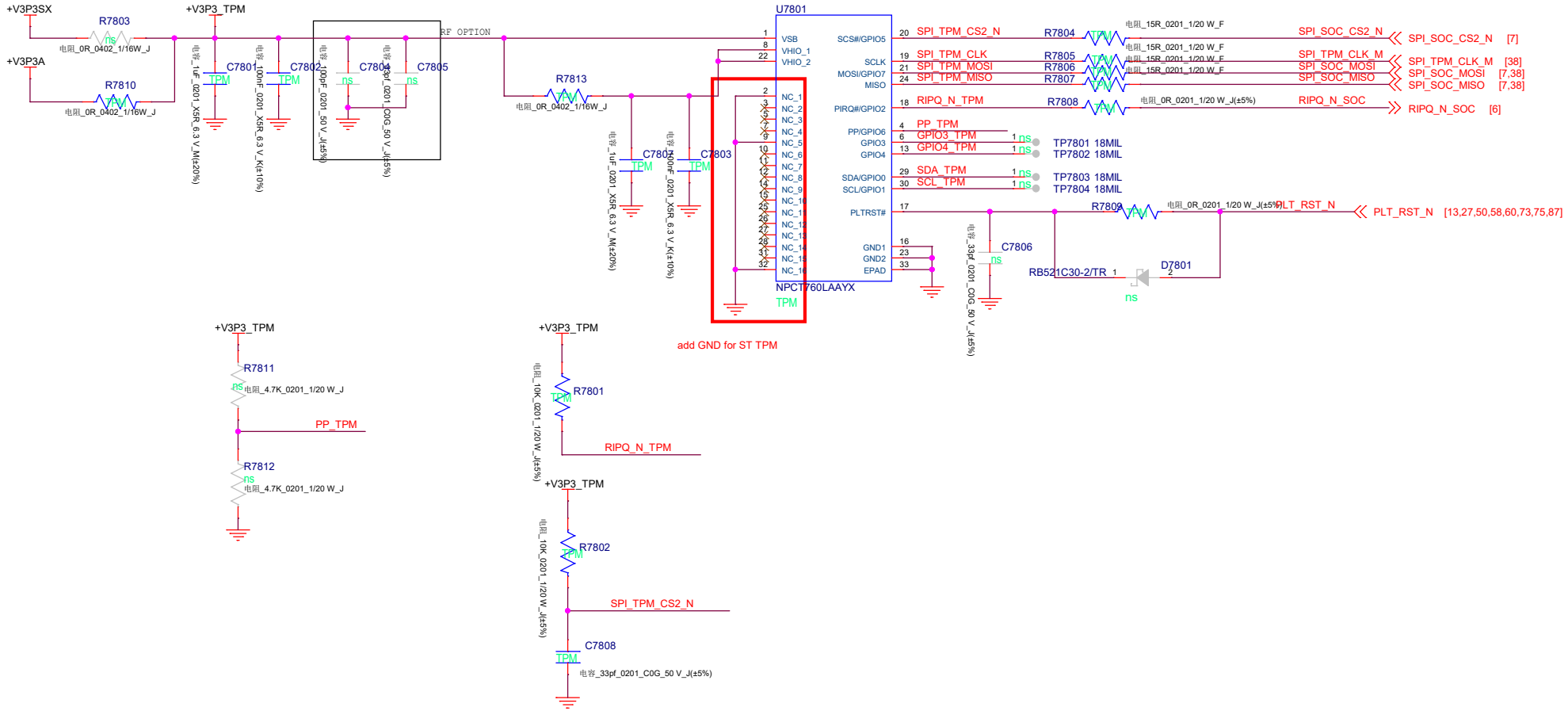

Huaqin Telecom Technology Com.,Ltd.		
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Huaqin Telecom Technology Com.,Ltd.			
Page name:	Finger_Print(REV)		
Size: A4	Project Name:	NB5979&NB5986	REV: V6.0
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Huaqin Telecom Technology Com.,Ltd.	
Page name:	Finger_Print(REV)
Size: A4	Project Name: NB5979&NB5986
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HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.
Page name:	Smart_card
Size: A4	Project Name: NB5979&NB5986 REV: V6.0
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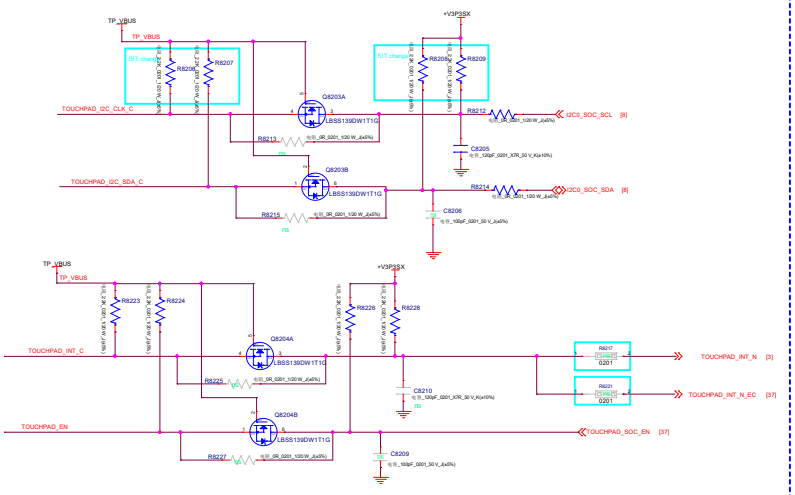
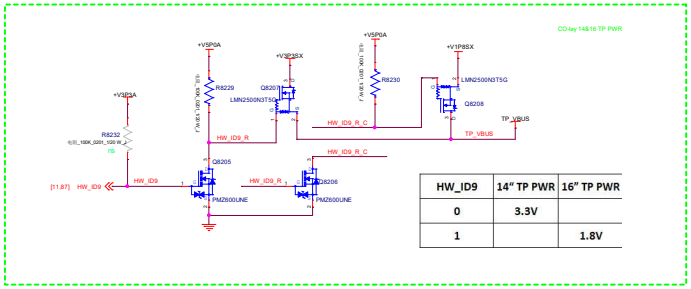
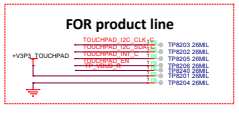
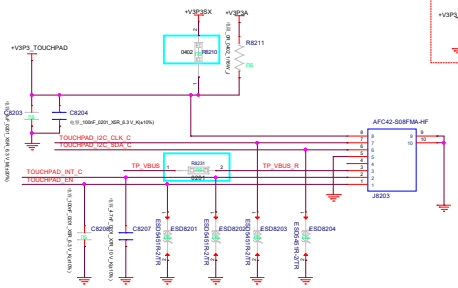
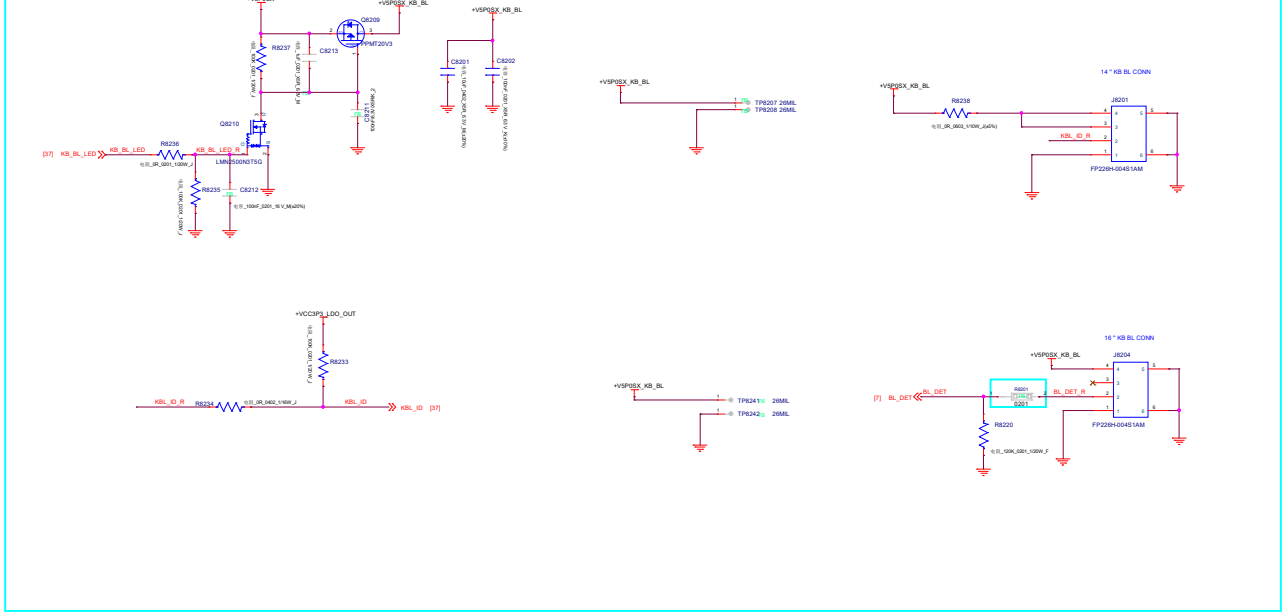


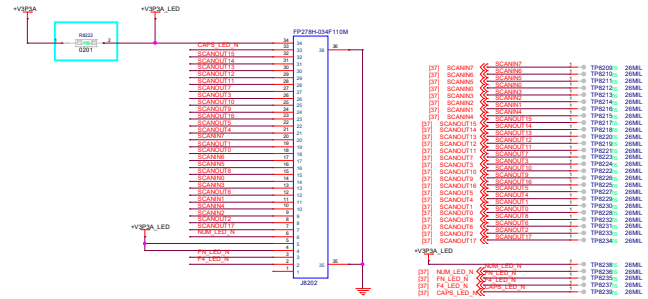


HW_ID9	14" TP PWR	16" TP PWR
0	3.3V	
1		1.8V





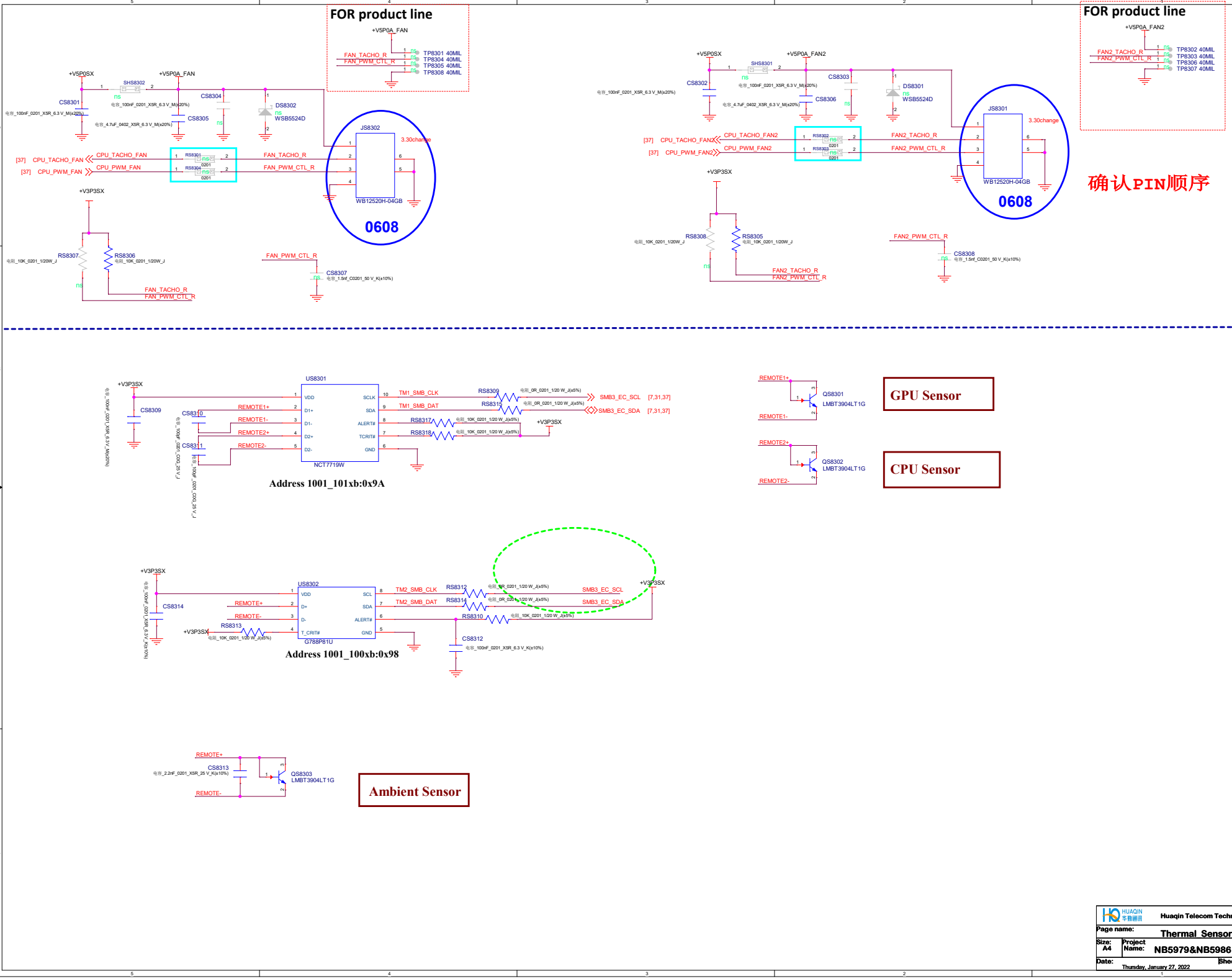




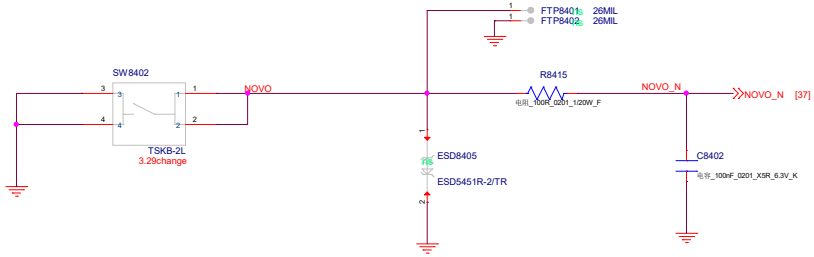
[37] SCANIN7	SCANIN7	TP8209	26MIL
[37] SCANIN6	SCANIN6	TP8210	26MIL
[37] SCANIN5	SCANIN5	TP8211	26MIL
[37] SCANIN0	SCANIN0	TP8212	26MIL
[37] SCANIN3	SCANIN3	TP8213	26MIL
[37] SCANIN2	SCANIN2	TP8214	26MIL
[37] SCANIN1	SCANIN1	TP8216	26MIL
[37] SCANIN4	SCANIN4	TP8215	26MIL
[37] SCANOUT15	SCANOUT15	TP8217	26MIL
[37] SCANOUT14	SCANOUT14	TP8218	26MIL
[37] SCANOUT13	SCANOUT13	TP8220	26MIL
[37] SCANOUT12	SCANOUT12	TP8219	26MIL
[37] SCANOUT11	SCANOUT11	TP8221	26MIL
[37] SCANOUT7	SCANOUT7	TP8223	26MIL
[37] SCANOUT3	SCANOUT3	TP8224	26MIL
[37] SCANOUT10	SCANOUT10	TP8222	26MIL
[37] SCANOUT9	SCANOUT9	TP8226	26MIL
[37] SCANOUT16	SCANOUT16	TP8225	26MIL
[37] SCANOUT5	SCANOUT5	TP8227	26MIL
[37] SCANOUT4	SCANOUT4	TP8229	26MIL
[37] SCANOUT1	SCANOUT1	TP8230	26MIL
[37] SCANOUT0	SCANOUT0	TP8228	26MIL
[37] SCANOUT8	SCANOUT8	TP8232	26MIL
[37] SCANOUT6	SCANOUT6	TP8231	26MIL
[37] SCANOUT2	SCANOUT2	TP8233	26MIL
[37] SCANOUT17	SCANOUT17	TP8234	26MIL

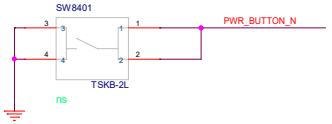
[37] NUM_LED_N	NUM_LED_N	TP8238	26MIL
[37] FN_LED_N	FN_LED_N	TP8236	26MIL
[37] F4_LED_N	F4_LED_N	TP8237	26MIL
[37] CAPS_LED_N	CAPS_LED_N	TP8239	26MIL

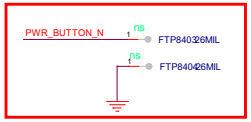
Husqin Telecom Technology Com.,Ltd.			
Page name:	KB/KB_BL/Touchpad		
Size: A4	Project Name: NB5979&NB5986		REV: V0.5
Date: Thursday, January 27, 2022		Sheet: 82	of 110



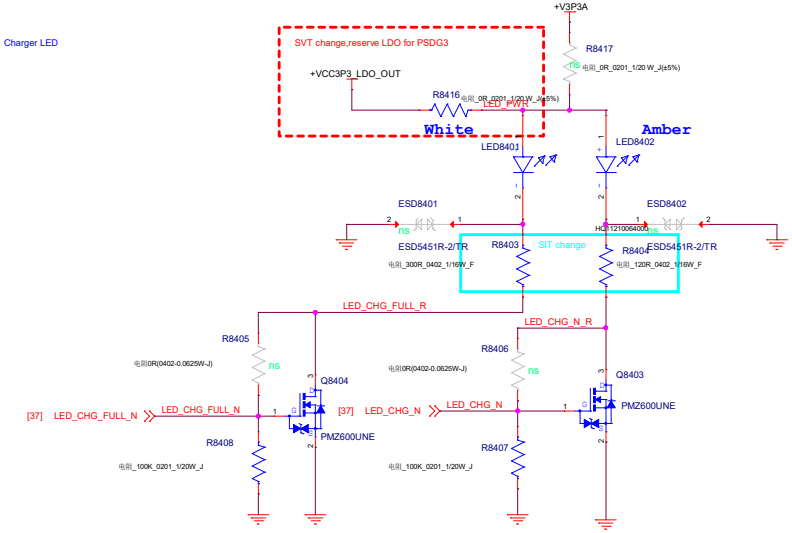
Huaqin Telecom Technology Com.,Ltd.		
Page name:	Thermal Sensor/FAN	
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
Date: Thursday, January 27, 2022	Sheet: 83 of 110	



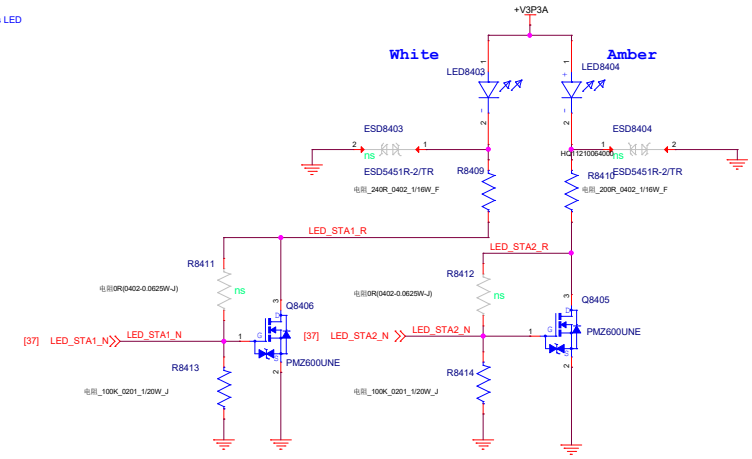




Charger LED



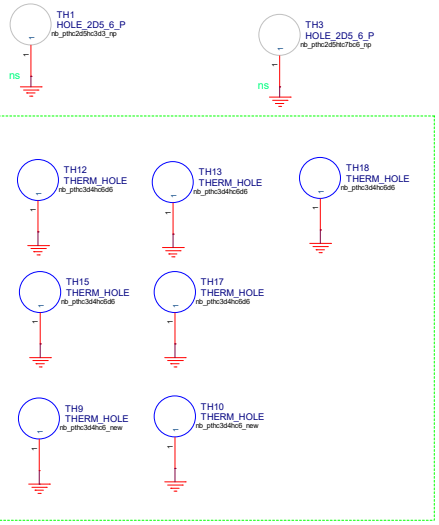
Status LED



HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.	
Page name:	LED/Button	
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
Date: Thursday, January 27, 2022	Sheet: 84 of 110	

Need add HQ CODE and Stuff

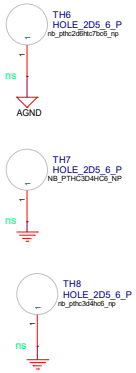
螺母元件

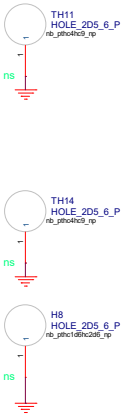


CPU Thermal Nut

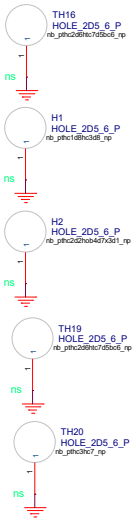
GPU Thermal Nut

WLAN/SSD Nut





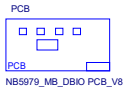
HOLE *14



CPU & GPU Boss

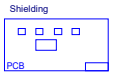
WLAN Boss

SSD Boss



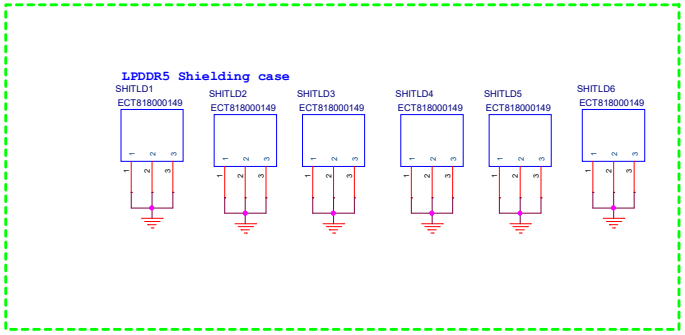
NB5979_MB_DBIO PCB_V8

PCB



NB5986_shielding_Assy_minghengda

Shielding



Huaqin Telecom Technology Com.,Ltd.		
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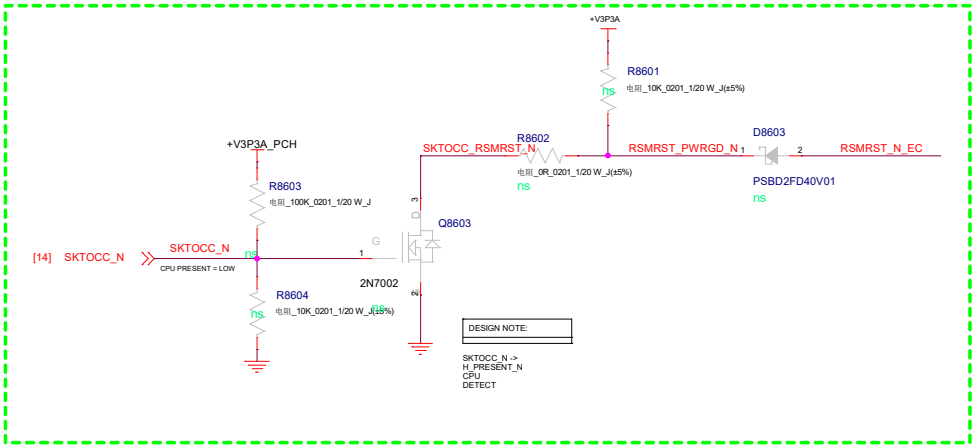
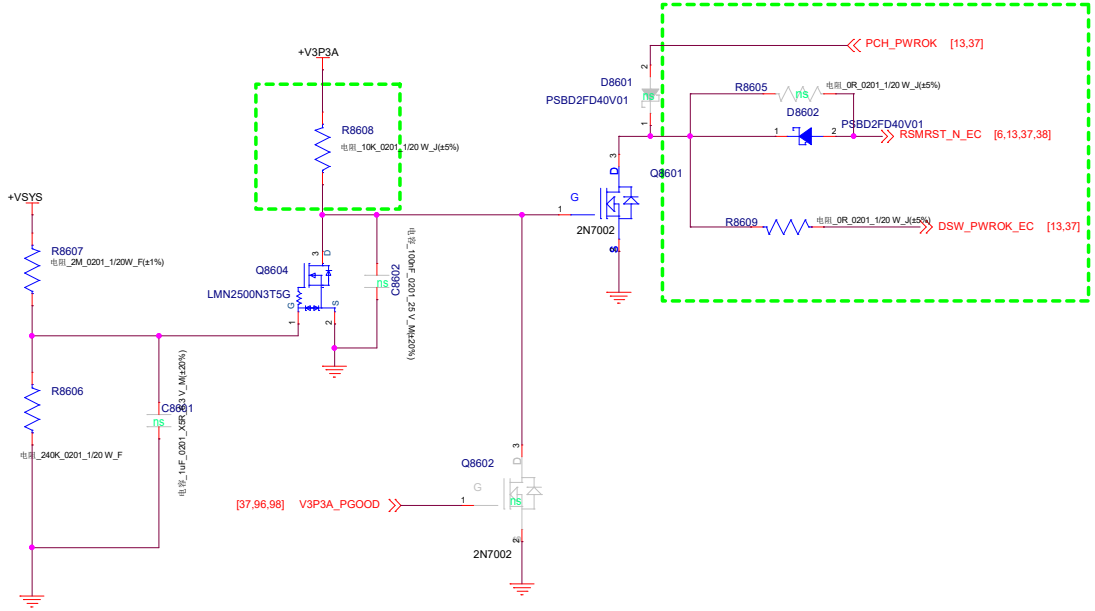
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
Date: Thursday, January 27, 2022	Sheet: 85 of 110	





Huaqin Telecom Technology Com.,Ltd.		
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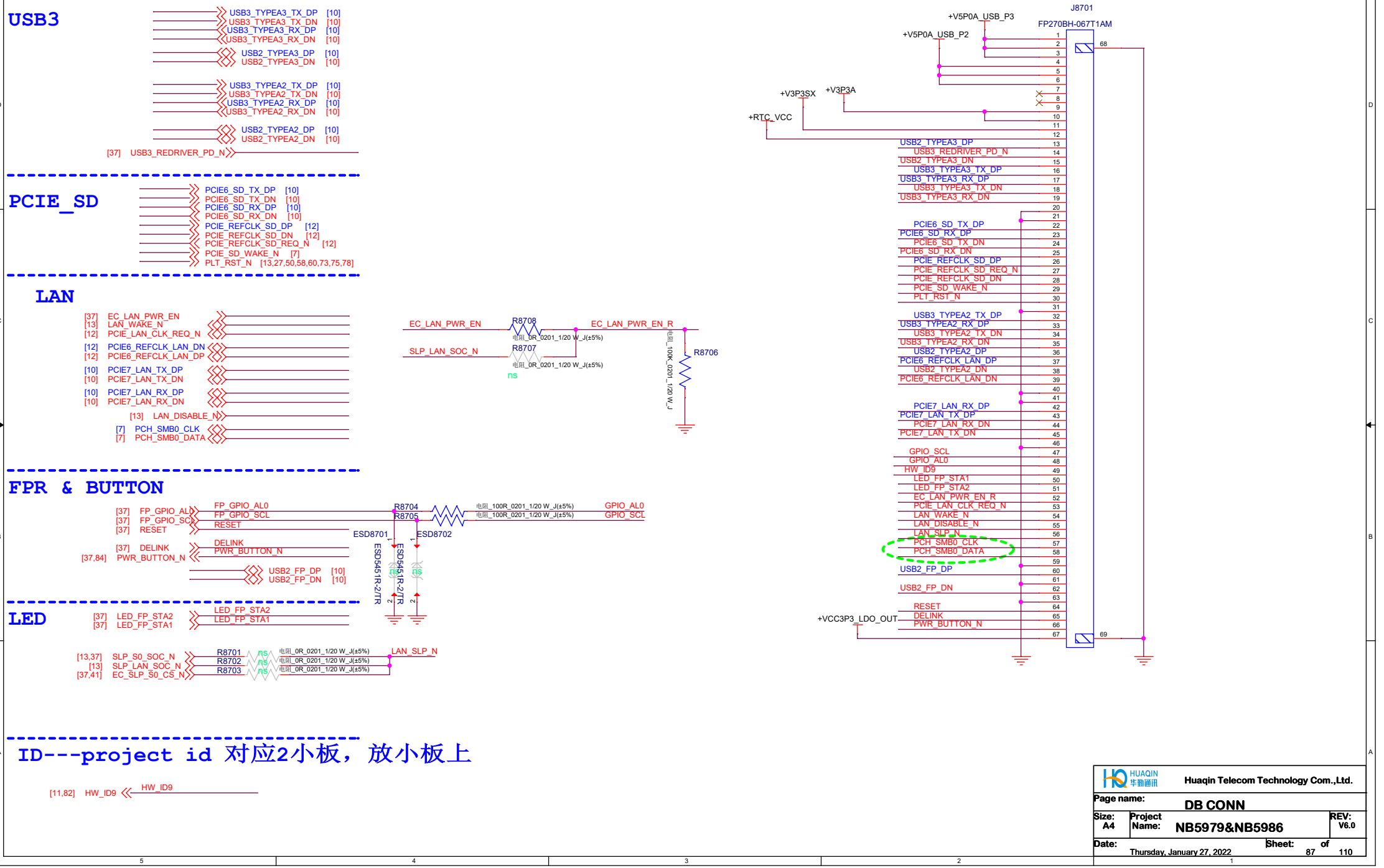
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
Date: Thursday, January 27, 2022	Sheet: 86 of 110	


USB3
USB3_TYPEA3_TX_DP [10]
USB3_TYPEA3_TX_DN [10]
USB3_TYPEA3_RX_DP [10]
USB3_TYPEA3_RX_DN [10]
USB2_TYPEA3_DP [10]
USB2_TYPEA3_DN [10]
USB3_TYPEA2_TX_DP [10]
USB3_TYPEA2_TX_DN [10]
USB3_TYPEA2_RX_DP [10]
USB3_TYPEA2_RX_DN [10]
USB2_TYPEA2_DP [10]
USB2_TYPEA2_DN [10]
[37] USB3_REDRIVER_PD_N
PCIE_SD
PCIE6_SD_TX_DP [10]
PCIE6_SD_TX_DN [10]
PCIE6_SD_RX_DP [10]
PCIE6_SD_RX_DN [10]
PCIE_REFCLK_SD_DP [12]
PCIE_REFCLK_SD_DN [12]
PCIE_REFCLK_SD_REQ_N [12]
PCIE_SD_WAKE_N [7]
PLT_RST_N [13,27,50,58,60,73,75,78]
LAN
[37] EC_LAN_PWR_EN
[13] LAN_WAKE_N
[12] PCIE_LAN_CLK_REQ_N
[12] PCIE6_REFCLK_LAN_DN
[12] PCIE6_REFCLK_LAN_DP
[10] PCIE7_LAN_TX_DP
[10] PCIE7_LAN_TX_DN
[10] PCIE7_LAN_RX_DP
[10] PCIE7_LAN_RX_DN
[13] LAN_DISABLE_N
[7] PCH_SMB0_CLK
[7] PCH_SMB0_DATA
EC_LAN_PWR_EN
R8708
电阻_0R_0201_1/20 W_J(±5%)
EC_LAN_PWR_EN_R
SLP_LAN_SOC_N
R8707
电阻_0R_0201_1/20 W_J(±5%)
ns
R8706
电阻_100K_0201_1/20 W_J
FPR & BUTTON
[37] FP_GPIO_AL0
[37] FP_GPIO_SCL
[37] RESET
[37] DELINK
[37,84] PWR_BUTTON_N
USB2_FP_DP [10]
USB2_FP_DN [10]
FP_GPIO_AL0
FP_GPIO_SCL
RESET
DELINK
PWR_BUTTON_N
R8704
R8705
电阻_100R_0201_1/20 W_J(±5%)
GPIO_AL0
GPIO_SCL
ESD8701
ESD8702
ESD5451R-2/TR
LED
[37] LED_FP_STA2
[37] LED_FP_STA1
LED_FP_STA2
LED_FP_STA1
[13,37] SLP_S0_SOC_N
[13] SLP_LAN_SOC_N
[37,41] EC_SLP_S0_CS_N
R8701
R8702
R8703
电阻_0R_0201_1/20 W_J(±5%)
LAN_SLP_N
ID---project id 对应2小板，放小板上
[11,82] HW_ID9
HW_ID9
J8701
FP270BH-067T1AM
+V5P0A_USB_P3
+V5P0A_USB_P2
+V3P3SX
+V3P3A
+RTC_VCC
+VCC3P3_LDO_OUT
USB2_TYPEA3_DP
USB3_REDRIVER_PD_N
USB2_TYPEA3_DN
USB3_TYPEA3_TX_DP
USB3_TYPEA3_RX_DP
USB3_TYPEA3_TX_DN
USB3_TYPEA3_RX_DN
PCIE6_SD_TX_DP
PCIE6_SD_RX_DP
PCIE6_SD_TX_DN
PCIE6_SD_RX_DN
PCIE_REFCLK_SD_DP
PCIE_REFCLK_SD_REQ_N
PCIE_REFCLK_SD_DN
PCIE_SD_WAKE_N
PLT_RST_N
USB3_TYPEA2_TX_DP
USB3_TYPEA2_RX_DP
USB3_TYPEA2_TX_DN
USB3_TYPEA2_RX_DN
USB2_TYPEA2_DP
PCIE6_REFCLK_LAN_DP
USB2_TYPEA2_DN
PCIE6_REFCLK_LAN_DN
PCIE7_LAN_RX_DP
PCIE7_LAN_TX_DP
PCIE7_LAN_RX_DN
PCIE7_LAN_TX_DN
GPIO_SCL
GPIO_AL0
HW_ID9
LED_FP_STA1
LED_FP_STA2
EC_LAN_PWR_EN_R
PCIE_LAN_CLK_REQ_N
LAN_WAKE_N
LAN_DISABLE_N
LAN_SLP_N
PCH_SMB0_CLK
PCH_SMB0_DATA
USB2_FP_DP
USB2_FP_DN
RESET
DELINK
PWR_BUTTON_N
68
69
Huaqin Telecom Technology Com.,Ltd.
Page name:
DB CONN
Size: A4
Project Name: NB5979&NB5986
REV: V6.0
Date: Thursday, January 27, 2022
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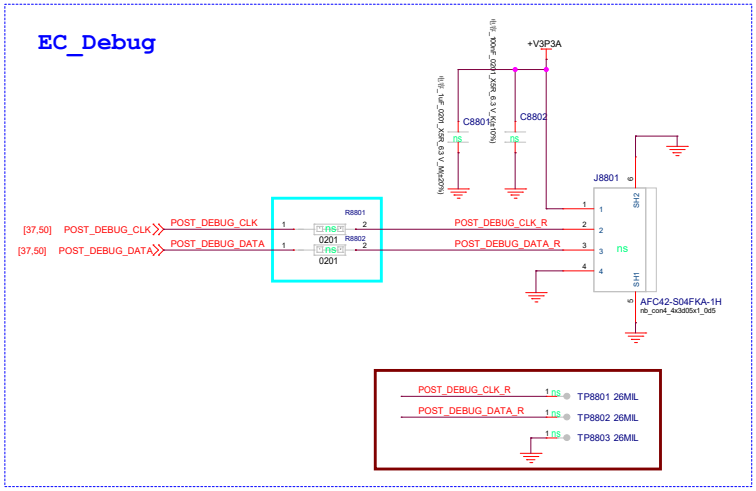
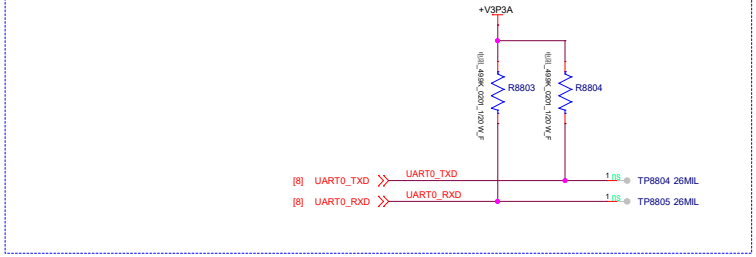
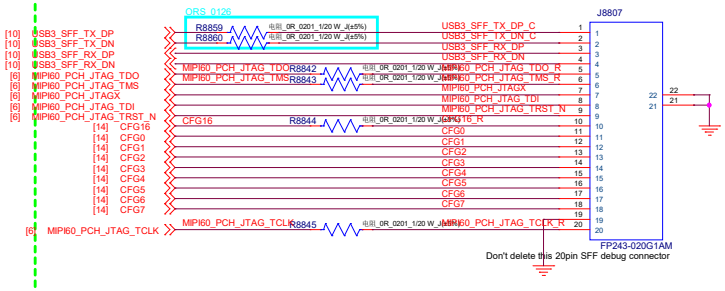
EC_Debug



System_UART_Debug



FVT ADD MIPI debug CONN



Huaqin Telecom Technology Com.,Ltd.		
Page name:	Debug Conn	
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
Date: Thursday, January 27, 2022	Sheet: 88 of 110	

Huaqin Telecom Technology Com.,Ltd.			
Page name:	DC_IN		
Size: A4	Project Name:	NB5979&NB5986	REV: V0.0
Date: Thursday, January 27, 2022		Sheet: 89 of 110	

HUAQIN 华勤科技	Huaqin Telecom Technology Com.,Ltd.	
Page name:	DC_IN	
Size: A4	Project Name: NB5979&NB5986	REV: V0.0
Date: Thursday, January 27, 2022	Sheet: 90 of 110	

Huaqin Telecom Technology Com.,Ltd.

Page name: DC_IN

Size: A4

Project Name: NB5979&NB5986

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Husqin Telecom Technology Com.,Ltd.

Page name: DC_IN

Size: A4

Project Name: NB5979&NB5986

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Husqin Telecom Technology Com.,Ltd.

Page name: DC_IN

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Page name: DC_IN

Size: A4

Project Name: NB5979&NB5986

REV: V0.0

Date: Thursday, January 27, 2022

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Charger

Battery Input

65W/100W TypeC

Vout= battery 3S/4S
Imax =
OCP =
Fsw = 800KHz

Reduce noise

Change to non-install.
EE noise risk

Colay SC8885LQDER

V(ILIM_HIZ) = 1V+40*IDPM*RAC
SC VDDA=5.25V IDPM=5A
TI VDDA=6V IDPM=5A

Setting to 4S

14"
3S1P - 46.5Whr
4S1P- 62Whr

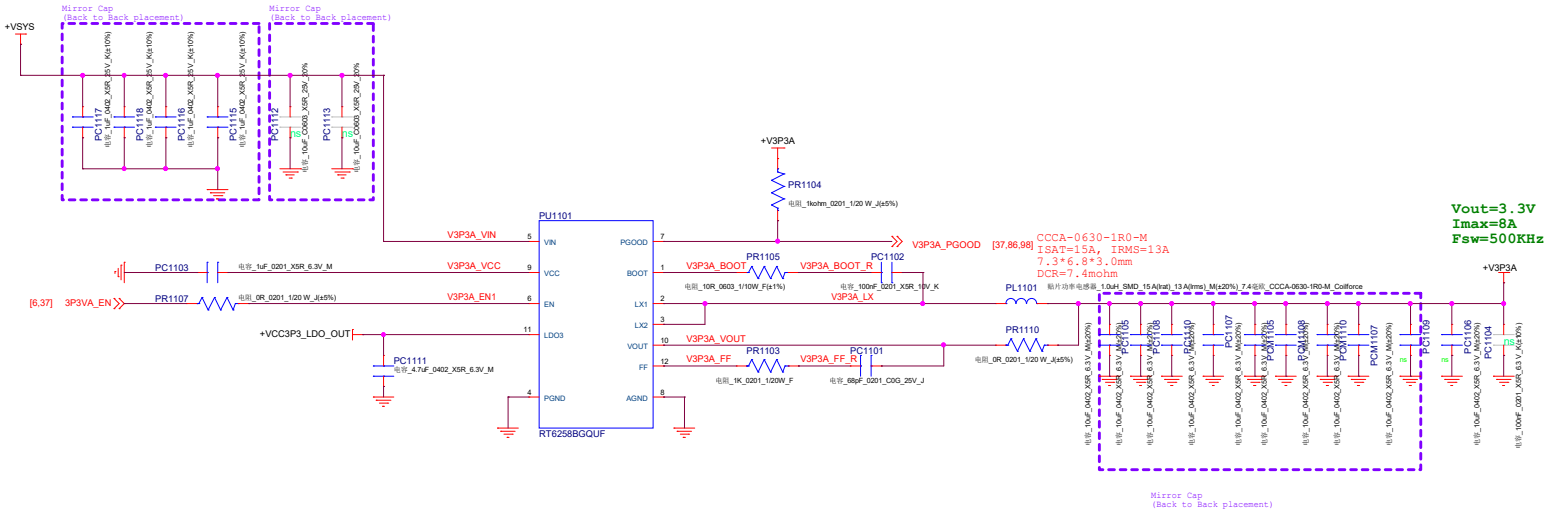
16"
57Whr
71Whr

Table 9-1. Battery Cell Configuration

CELL COUNT	PIN VOLTAGE w.r.t. VDDA	BATTERY VOLTAGE (REG0x15)	SYSOVP
4S	75%	16.800 V	19.5 V
3S	55%	12.592 V	19.5 V
2S	40%	8.400 V	12 V
1S	25%	4.192 V	5 V

V_{CELL_4S}	4S	REGN = 6 V, as percentage of REGN	68.4%	75%
V_{CELL_3S}	3S	REGN = 6 V, as percentage of REGN	51.7%	55% 65%
V_{CELL_2S}	2S	REGN = 6 V, as percentage of REGN	35%	40% 49.1%
V_{CELL_1S}	1S	REGN = 6 V, as percentage of REGN	18.4%	25% 31.6%

Huagin Telecom Technology Com.,Ltd.			
Page name:	POWER DELIVERY CHARGER		
Size: A4	Project Name:	NB5979&NB5986	REV: V0.0
Date:	Thursday, January 27, 2022	Sheet:	of 85 110



HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.	
Page name: POWER DELIVERY +V3P3A		
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
Date: Thursday, January 27, 2022	Sheet: 96 of 110	

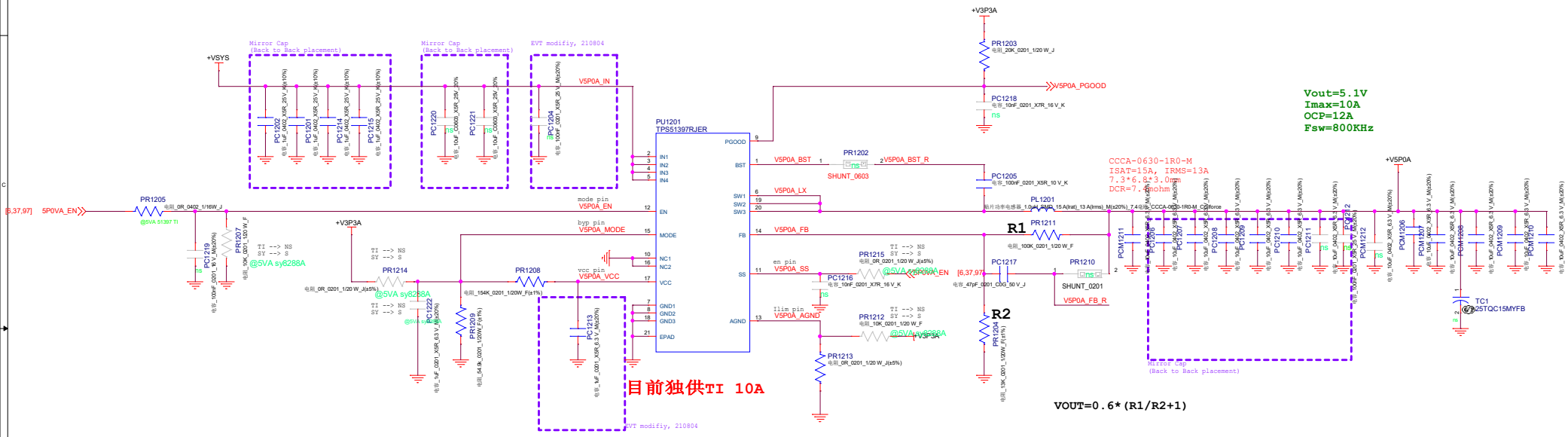
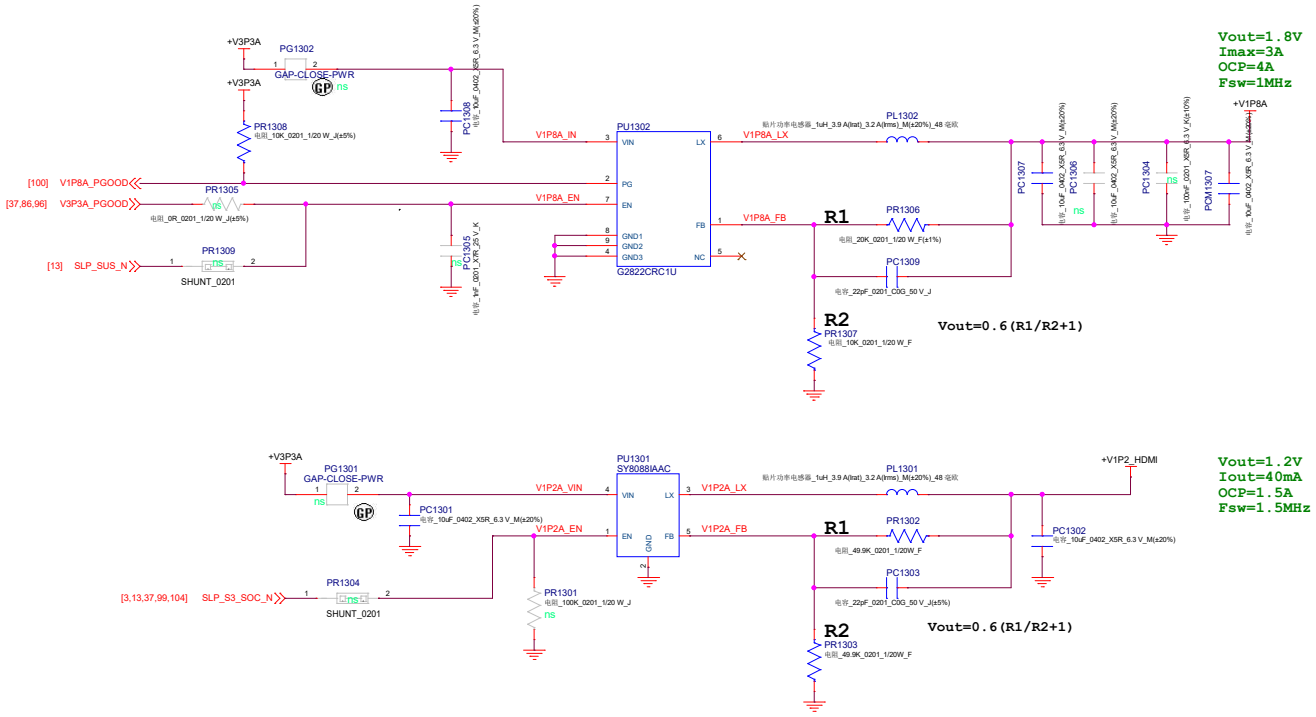


Table 1. MODE Pin Resistor Settings

R_{M_H}(kΩ)	R_{M_L} (kΩ)	LIGHT LOAD OPERATION	FREQUENCY(kHz)
330	15	Eco-mode	500
150	27	OOA	500
160	56	Eco-mode	800
75	51	OOA	800

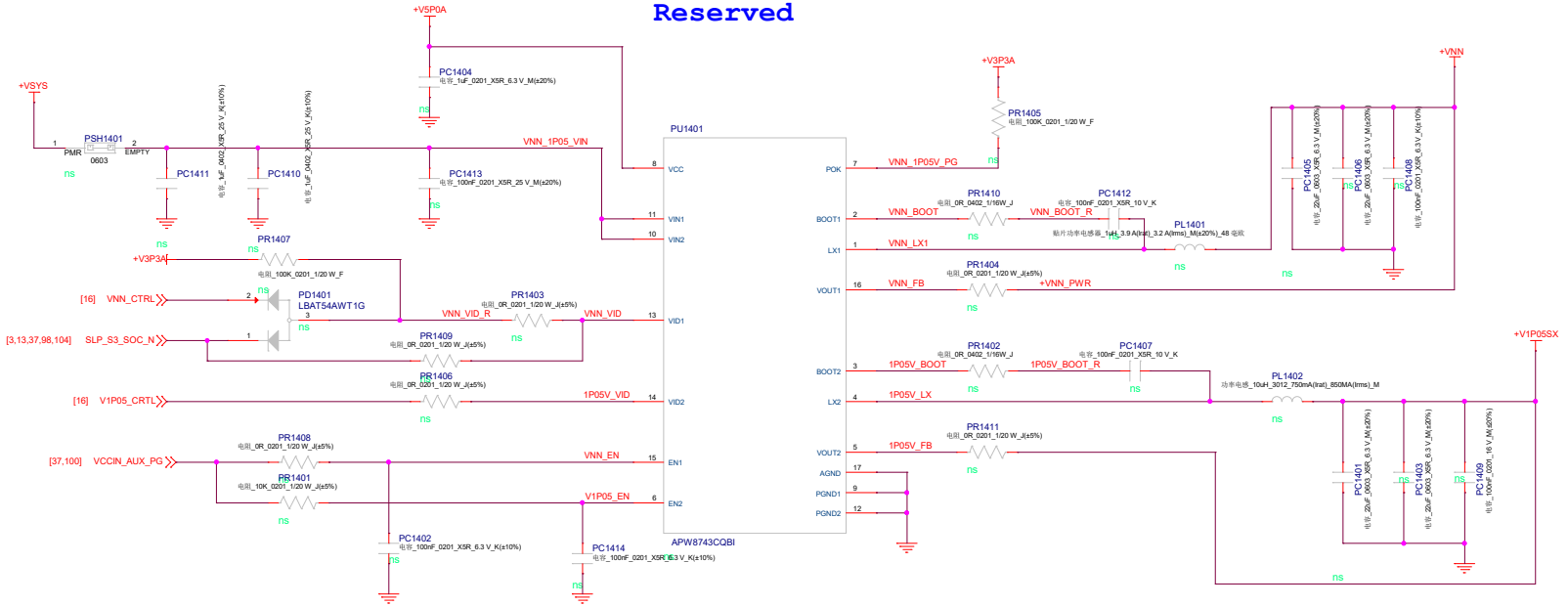
Confidential

HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.		
Page name: POWER DELIVERY +V5P0A			
Size: A4	Project Name: NB5979&NB5986		REV: V6.0
Date: Thursday, January 27, 2022	Sheet: 97	of 110	

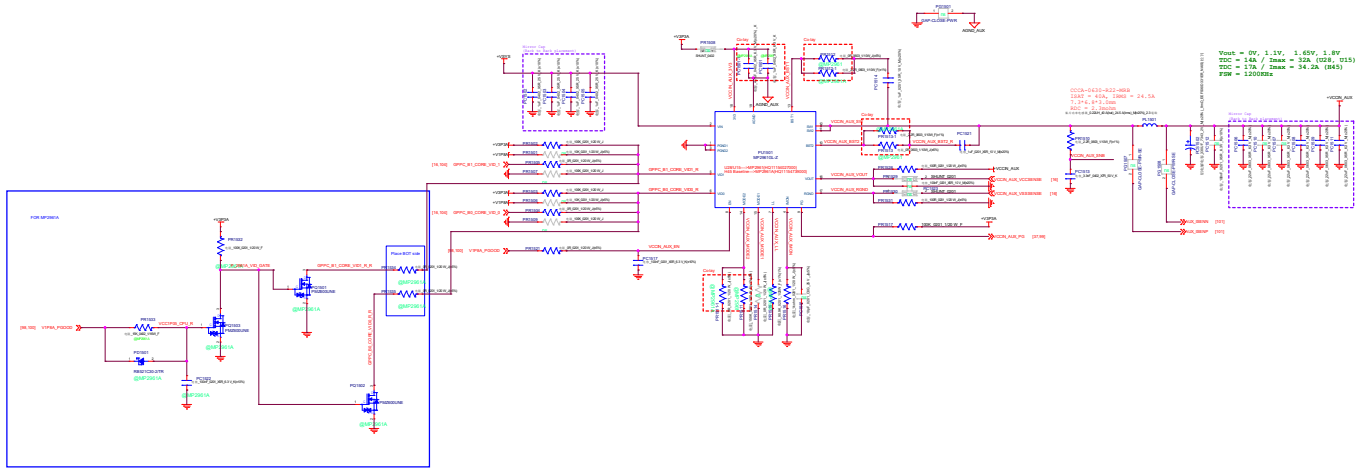


Huaqin Telecom Technology Com.,Ltd.		
Page name: POWER DELIVERY V0.78V		
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
Date: Thursday, January 27, 2022	Sheet: 98 of 110	

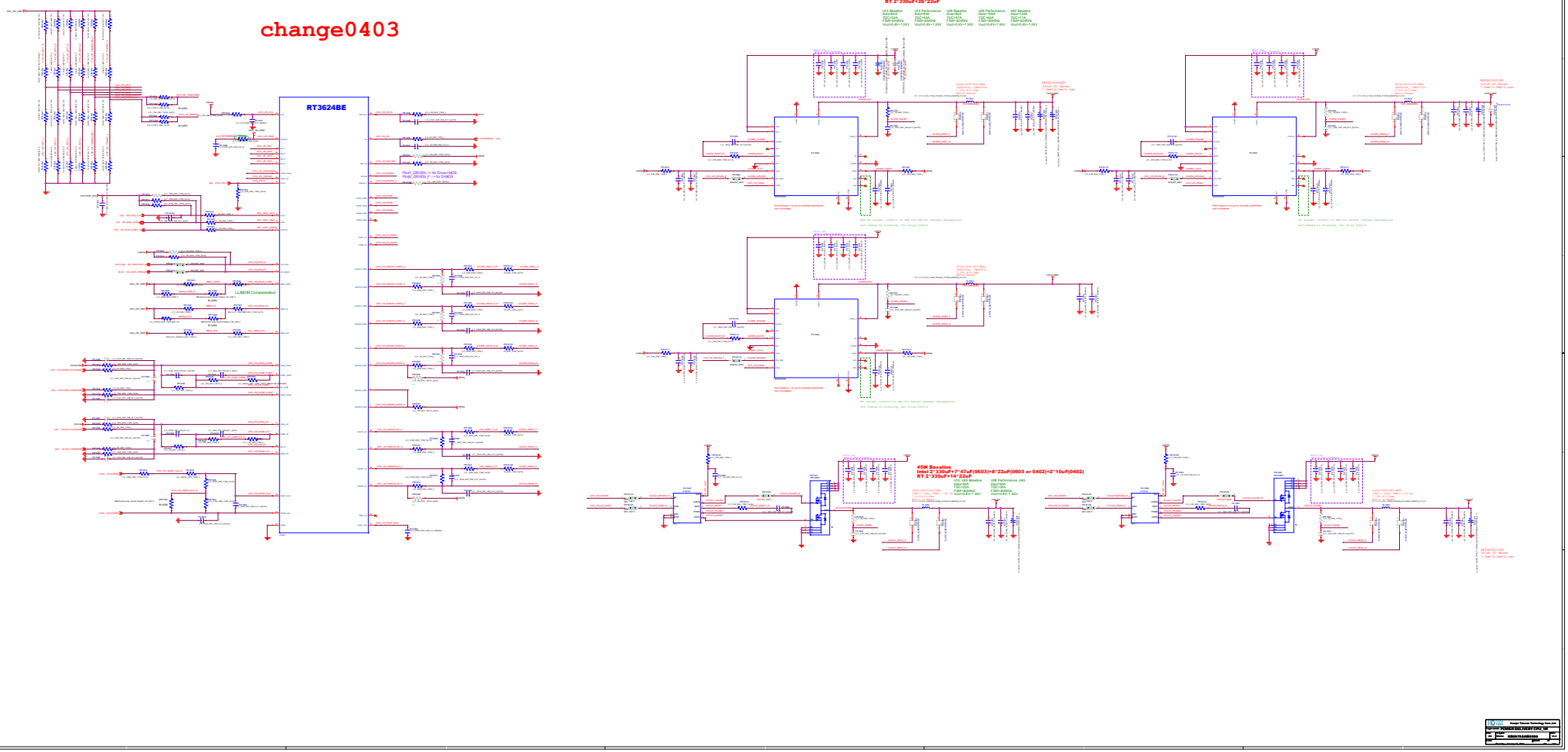
Reserved

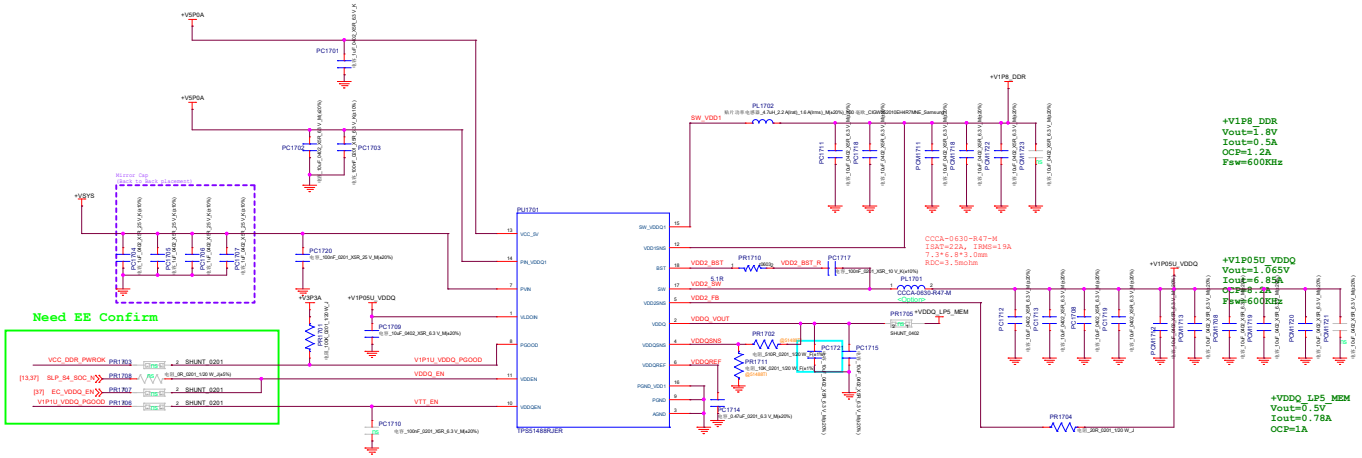


HUAQIN 华勤通讯	Huaqin Telecom Technology Com.,Ltd.		
Page name:	POWER DELIVERY VNN_BYPASS		
Size: A4	Project Name:	NB5979&NB5986	REV: V6.0
Date: Thursday, January 27, 2022	Sheet: 99	of 110	



Inventec	Quanta Computer Inc.	PROJECT :	POWER DELIVERY VCCIN_AUX
SIZE: A3	Project Name:	NB3586_AXL	REV: 0.4
Date:	Tuesday, January 31, 2023	Sheet	88 of 135


change0403
RT3624BE
LL/BKCN Compensation
49W Baseline
Intel 3*330uF+8*47uF(0603)+8*22uF(0603 or 0402)
RT 2*330uF+2*22uF
LFS Baseline
TDC=52A
PSN=630mΩ
Vout%5.0V=1.65V
LFS Performance
TDC=61A
PSN=630mΩ
Vout%5.0V=1.65V
U26 Baseline
TDC=47A
PSN=820mΩ
Vout%5.0V=1.65V
U26 Performance
TDC=52A
PSN=820mΩ
Vout%5.0V=1.65V
H43 Baseline
TDC=47A
PSN=820mΩ
Vout%5.0V=1.65V
49W Baseline
Intel 2*330uF+7*47uF(0603)+8*22uF(0603 or 0402)+2*10uF(0402)
RT 2*330uF+14*22uF
U26, U26 Baseline
TDC=47A
U26 Performance, H43
TDC=52A
PSN=820mΩ
Vout%5.0V=1.65V
Quanta Taiwan Technology (Sun Jose)
POWER DELIVERY CKT_VR
RT3624BE
Rev



State	VDDQ_EN1	VDD_EN2	VDD1	VDD2	VDDQ
S0	H	H	on	on	on
S3	L	H	on	on	off
S4/S5	L	L	off	off	off
Others	H	L	off	off	off

Huaqin Telecom Technology Com.,Ltd.

Page name: POWER DELIVERY VDDQ

Size: A4 | Project Name: NB5979&NB5986 | REV: V0.0

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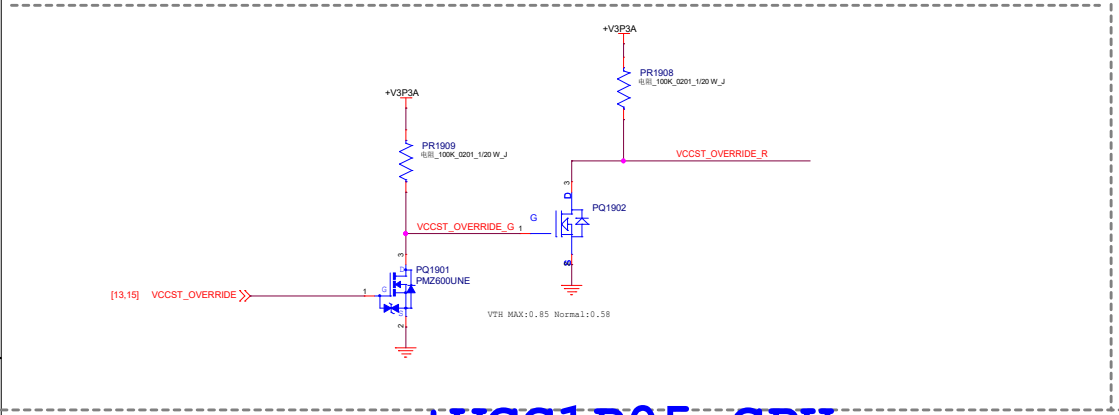
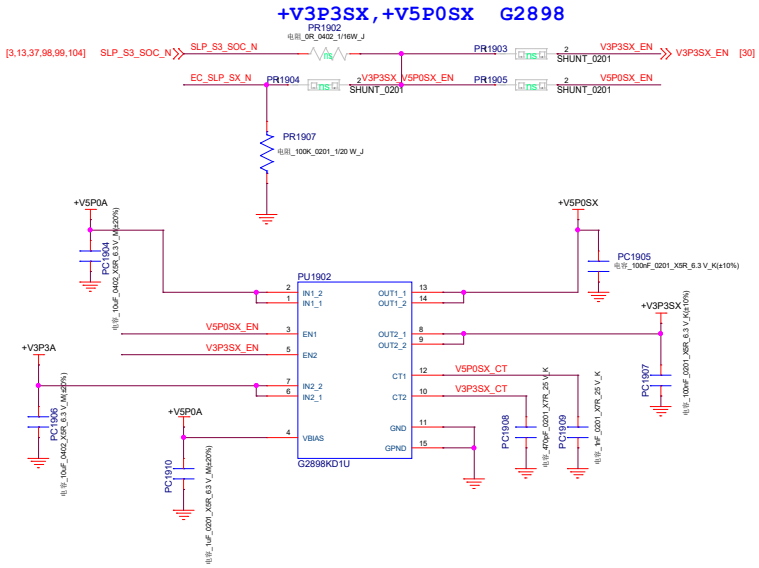
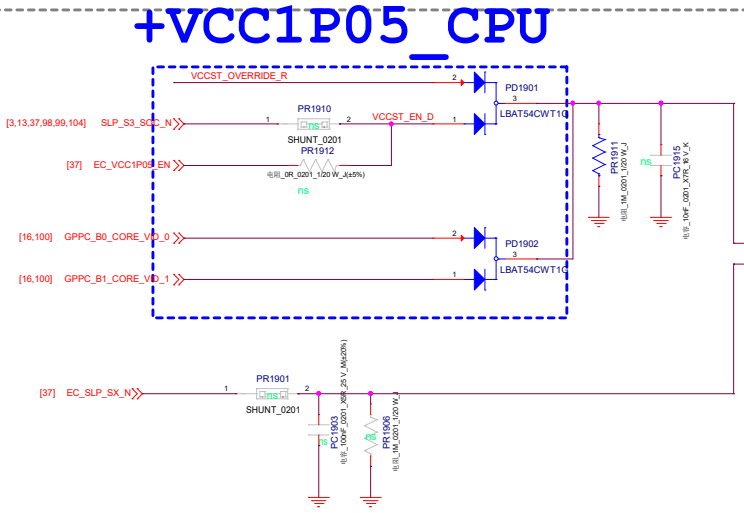
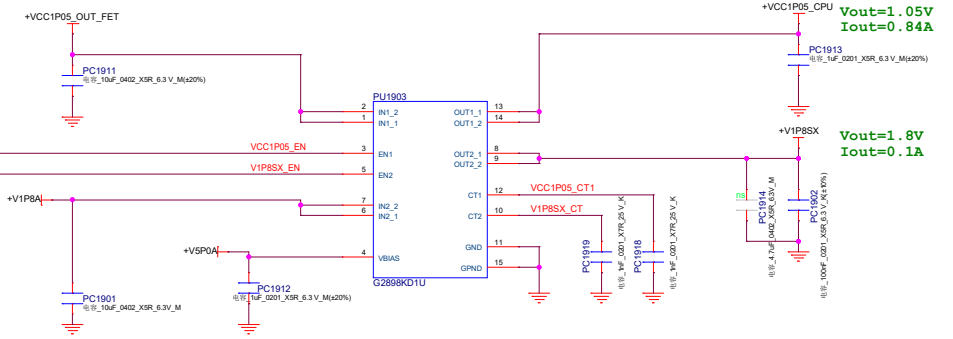
Page name:	POWER DELIVERY_1.05VSX	
Size: A4	Project Name: NB5979&NB5986	REV: V0.0
Date: Thursday, January 27, 2022	Sheet: 103 of 110	

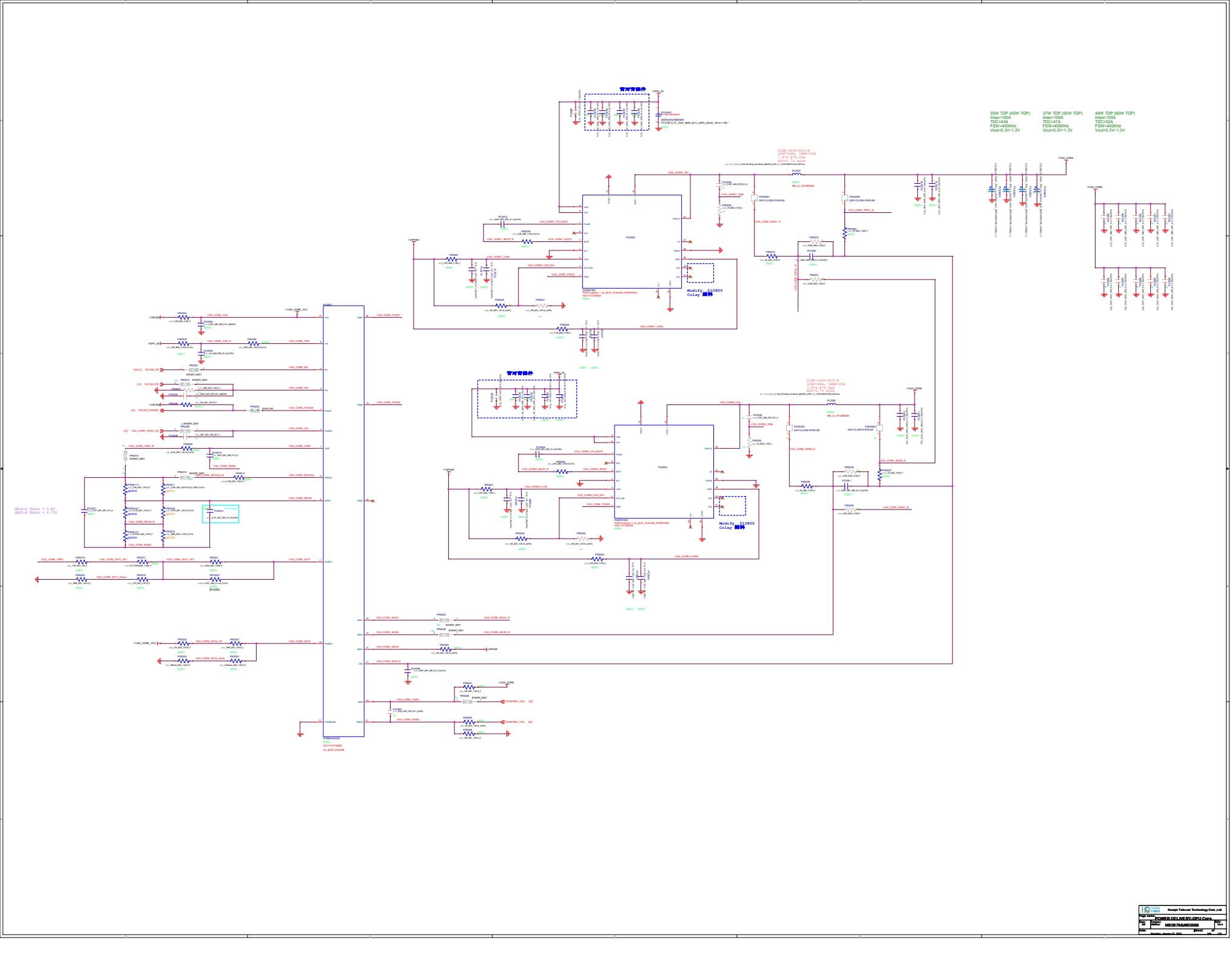


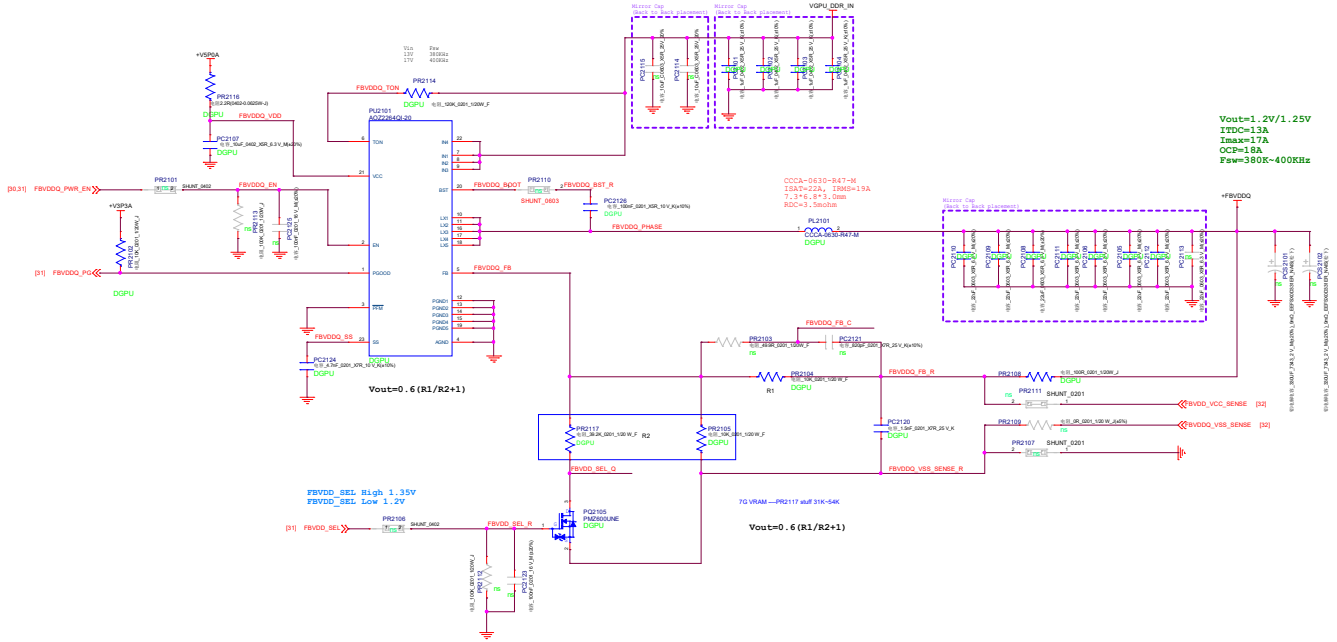




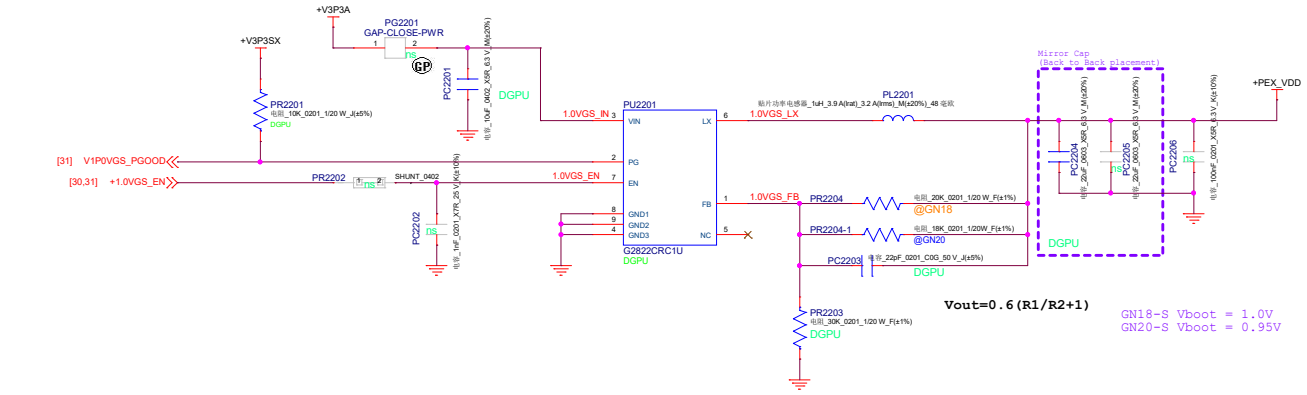


Huaqin Telecom Technology Com.,Ltd.		
Page name: POWER DELIVERY LOAD SWITCH		
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
Date: Thursday, January 27, 2022	Sheet: 104 of 110	


35W TDP (45W TGP)
Imax=100A
TDC=43A
FSW=400KHz
Vout=0.3V~1.3V
37W TDP (50W TGP)
Imax=100A
TDC=47A
FSW=400KHz
Vout=0.3V~1.3V
48W TDP (60W TGP)
Imax=100A
TDC=52A
FSW=400KHz
Vout=0.3V~1.3V
Modify_210805
Colay 調料
GN18-6 Vboot = 0.8V
GN20-6 Vboot = 0.75V
+VGA_CORE
VGA_CORE_VCC
VGA_CORE_PWM1
VGA_CORE_PWM2
VGA_CORE_TON_N
VGA_CORE_VID
VGA_CORE_VREF
VGA_CORE_RSNS1
VGA_CORE_RSNS2
VGA_CORE_RSNP1
VGA_CORE_RSNP2
VGA_CORE_RSNN1
VGA_CORE_RSNN2
VGA_CORE_ISEN1
VGA_CORE_ISEN2
VGA_CORE_ISEN_N
VGA_CORE_VSEN
VGA_CORE_RGND
VGA_CORE_SETT
VGA_CORE_SETT_UP1
VGA_CORE_SETT_UP2
VGA_CORE_SETT_Down1
VGA_CORE_SETT_UP
VGA_CORE_SETT_Down
VGA_CORE_ISEN1_P
VGA_CORE_ISEN2_P
VGA_CORE_ISEN1_N
VGA_CORE_ISEN2_N
VGA_CORE_VDRV
VGA_CORE1_PH
VGA_CORE2_PH
VGA_CORE1_BOOT
VGA_CORE2_BOOT
VGA_CORE1_VCIN
VGA_CORE2_VCIN
VGA_CORE1_VDRV
VGA_CORE2_VDRV
VGA_CORE1_ISEN
VGA_CORE2_ISEN
VGA_CORE1_PWM1
VGA_CORE2_PWM2
VGA_CORE1_SW
VGA_CORE2_SW
VGA_CORE1_ISEN_P
VGA_CORE2_ISEN_P
VGA_CORE1_ISEN_N
VGA_CORE2_ISEN_N
VGA_CORE1_ISEN_P_R
VGA_CORE2_ISEN_P_R
VGA_CORE1_ISEN_N_R
VGA_CORE2_ISEN_N_R
VGA_CORE1_FCCM
VGA_CORE2_FCCM
VGA_CORE1_PH_BOOT
VGA_CORE2_PH_BOOT
VGA_CORE1_BOOT_R
VGA_CORE2_BOOT_R
VGA_CORE1_VCIN
VGA_CORE2_VCIN
VGA_CORE1_FCCM
VGA_CORE2_FCCM
VGA_CORE1_PWM1
VGA_CORE2_PWM2
VGA_CORE1_VDRV
VGA_CORE2_VDRV
VGA_CORE1_ISEN
VGA_CORE2_ISEN
VGA_CORE1_ISEN_P
VGA_CORE2_ISEN_P
VGA_CORE1_ISEN_N
VGA_CORE2_ISEN_N
VGA_CORE1_ISEN_P_R
VGA_CORE2_ISEN_P_R
VGA_CORE1_ISEN_N_R
VGA_CORE2_ISEN_N_R
VGA_CORE_VSEN
VGA_CORE_RGND
VGA_CORE_VDRV
VGA_CORE_VID
VGA_CORE_VREF
VGA_CORE_TON
VGA_CORE_TON_N
VGA_CORE_PSI
VGA_CORE_PSI2DD
VGA_CORE_RSNS1
VGA_CORE_RSNS2
VGA_CORE_RSNP1
VGA_CORE_RSNP2
VGA_CORE_RSNN1
VGA_CORE_RSNN2
VGA_CORE_ISEN1
VGA_CORE_ISEN2
VGA_CORE_ISEN_N
VGA_CORE_VSEN
VGA_CORE_RGND
VGA_CORE_SETT
VGA_CORE_SETT_UP1
VGA_CORE_SETT_UP2
VGA_CORE_SETT_Down1
VGA_CORE_SETT_UP
VGA_CORE_SETT_Down

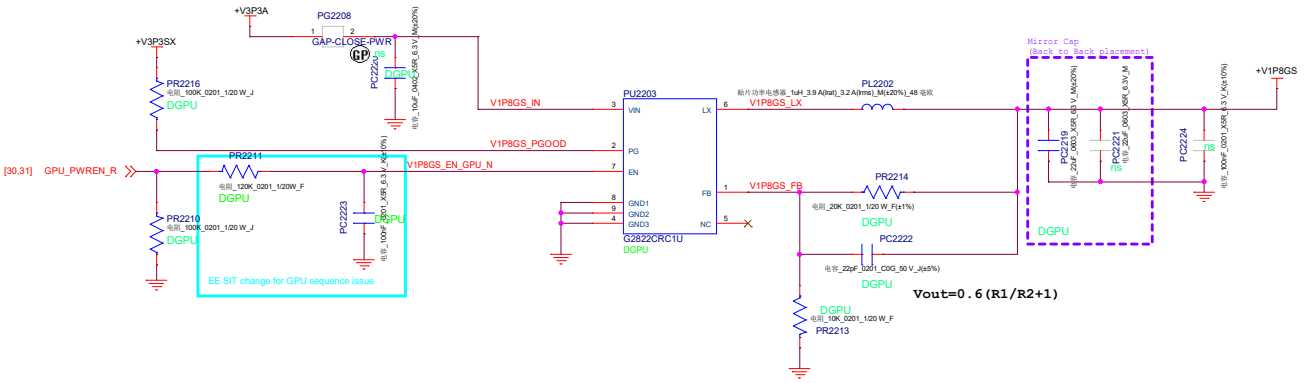


Huaqin Telecom Technology Com.,ltd.			
Page name:	POWER DELIVERY-GPU FBVDDQ		
Size: A4	Project Name: NB5979&NB5986		REV: V0.0
Date: Thursday, January 27, 2022		Sheet: 106	of 110



Vout=0.95V/1.0V
ITDC=1.6A
Imax=1.9A
OCP=4A
Fsw=1MHz

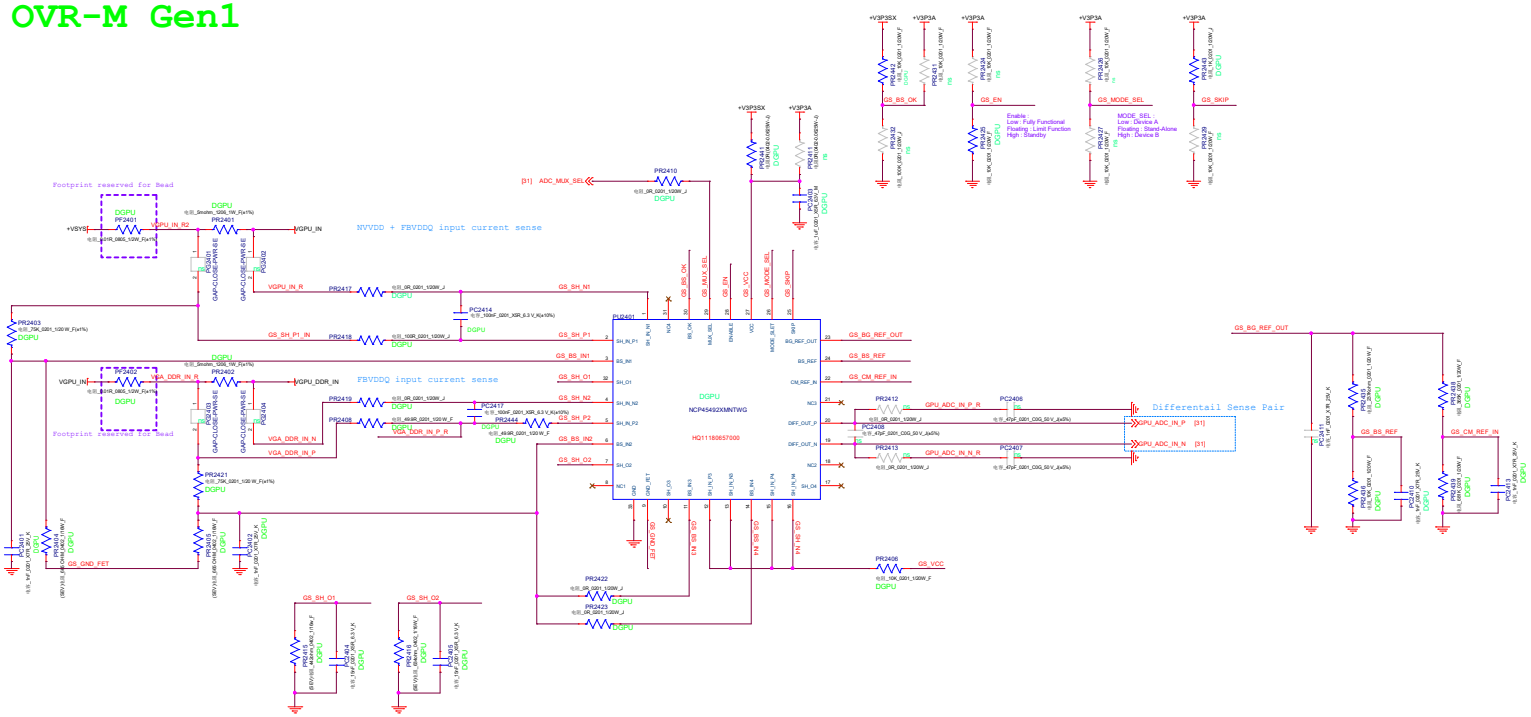
+1.8VGS



Vout=1.8V
ITDC=1.7A
Imax=2A
OCP=4A
Fsw=1MHz

Huaqin Telecom Technology Com.,Ltd.		
Page name:	1.0VGS&1.8VGS	
Size: A4	Project Name: NB5979&NB5986	REV: V6.0
Date: Thursday, January 27, 2022	Sheet: 107 of 110	

OVR-M Gen1



Huaqin Telecom Technology Com.,ltd.			
Page name:	POWER DELIVERY 0.75V		
Size: A4	Project Name: NB5979&NB5986		REV: V0.0
Date: Thursday, January 27, 2022		Sheet: 108	of 110

Huaqin Telecom Technology Com.,Ltd.	
Page name:	POWER_RSVD1
Size: A4	Project Name: NB5979&NB5986
REV: V6.0	
Date: Thursday, January 27, 2022	Sheet: 109 of 110

Huaqin Telecom Technology Com.,Ltd.	
Page name:	POWER_RSVD2
Size: A4	Project Name: NB5979&NB5986
REV: V6.0	
Date: Thursday, January 27, 2022	Sheet: 110 of 110

USB3

USB3_TYPEA3_TX_DP_DB [112]
USB3_TYPEA3_TX_DN_DB [112]
USB3_TYPEA3_RX_DP_DB [112]
USB3_TYPEA3_RX_DN_DB [112]
USB2_TYPEA3_DP_DB [112]
USB2_TYPEA3_DN_DB [112]

USB3_TYPEA2_TX_DP_DB [113]
USB3_TYPEA2_TX_DN_DB [113]
USB3_TYPEA2_RX_DP_DB [113]
USB3_TYPEA2_RX_DN_DB [113]
USB2_TYPEA2_DP_DB [113]
USB2_TYPEA2_DN_DB [113]

[112,113] USB3_REDRIVER_PD_N_DB

PCIE_SD

PCIE6_SD_TX_DP_DB [114]
PCIE6_SD_TX_DN_DB [114]
PCIE6_SD_RX_DP_DB [114]
PCIE6_SD_RX_DN_DB [114]
PCIE_REFCLK_SD_DP_DB [114]
PCIE_REFCLK_SD_DN_DB [114]
PCIE_REFCLK_SD_REQ_N_DB [114]
PCIE_SD_WAKE_N_DB [114]
PLT_RST_N_DB [114,116]

LAN

[116] EC_LAN_PWR_EN_DB
[116] LAN_WAKE_N_DB
[116] PCIE_LAN_CLK_REQ_N_DB
[116] PCIE6_REFCLK_LAN_DP_DB
[116] PCIE6_REFCLK_LAN_DN_DB
[116] PCIE7_LAN_TX_DP_DB
[116] PCIE7_LAN_TX_DN_DB
[116] PCIE7_LAN_RX_DP_DB
[116] PCIE7_LAN_RX_DN_DB
[116] LAN_DISABLE_N_DB
[116] PCH_SMB1_CLK_DB
[116] PCH_SMB1_DATA_DB
[116] LAN_SLP_N_DB

FPR & BUTTON

[115] GPIO_SCL_DB
[115] RESET_DB
[115] GPIO_AL0_DB
[115] DELINK_DB
[115] PWR_BUTTON_N_DB
USB2_FP_DP_DB [115]
USB2_FP_DN_DB [115]

LED

[115] LED_STA1_N_DB
[115] LED_STA2_N_DB

J11101
FP270BH-067T1AM

+V5P0A_USB_P3_DB
+V5P0A_USB_P2_DB
+V3P3A_DB
+V3P3SX_DB
+RTC_VCC_DB
+V3P3A_LDO_DB

1 +V5P0A_USB_P2_DB
2
3
4
5
6
7 +V3P3A_DB
8 +V3P3SX_DB
9
10 +RTC_VCC_DB
11
12
13 USB2_TYPEA3_DP_DB
14 USB3_REDRIVER_PD_N_DB
15 USB2_TYPEA3_DN_DB
16 USB3_TYPEA3_TX_DP_DB
17 USB3_TYPEA3_RX_DP_DB
18 USB3_TYPEA3_TX_DN_DB
19 USB3_TYPEA3_RX_DN_DB
20
21 PCIE6_SD_TX_DP_DB
22 PCIE6_SD_RX_DP_DB
23 PCIE6_SD_TX_DN_DB
24 PCIE6_SD_RX_DN_DB
25 PCIE_REFCLK_SD_DP_DB
26 PCIE_REFCLK_SD_REQ_N_DB
27 PCIE_REFCLK_SD_DN_DB
28 PCIE_SD_WAKE_N_DB
29 PLT_RST_N_DB
30
31 USB3_TYPEA2_TX_DP_DB
32 USB3_TYPEA2_RX_DP_DB
33 USB3_TYPEA2_TX_DN_DB
34 USB3_TYPEA2_RX_DN_DB
35 USB2_TYPEA2_DP_DB
36 PCIE6_REFCLK_LAN_DP_DB
37 PCIE6_REFCLK_LAN_DN_DB
38
39
40 PCIE7_LAN_RX_DP_DB
41 PCIE7_LAN_TX_DP_DB
42 PCIE7_LAN_RX_DN_DB
43 PCIE7_LAN_TX_DN_DB
44
45 GPIO_SCL_DB
46 GPIO_AL0_DB
47 HW_ID9_DB
48 LED_STA1_N_DB
49 LED_STA2_N_DB
50 EC_LAN_PWR_EN_DB
51 PCIE_LAN_CLK_REQ_N_DB
52 LAN_WAKE_N_DB
53 LAN_DISABLE_N_DB
54 LAN_SLP_N_DB
55 PCH_SMB1_CLK_DB
56 PCH_SMB1_DATA_DB
57
58
59 USB2_FP_DP_DB
60
61 USB2_FP_DN_DB
62
63 RESET_DB
64 DELINK_DB
65 PWR_BUTTON_N_DB
66
67
68
69

+V3P3A_DB
R11101 1ns HW_ID9_DB R11102 Project_ID
电阻_10K_0201_1/20 W_J(±5%)
电阻_10K_0201_1/20 W_J(±5%)

Project ID

HW_ID9_DB	Project
0	NB5979
1	NB5986

Huaqin Telecom Technology Com.,Ltd.		
Page name:	TO MB CONNECTOR	
Size: A4	Project Name: NB5979_DB	REV: V1.0
Date: Thursday, January 27, 2022	Sheet: 111 of 117	

Off-Page

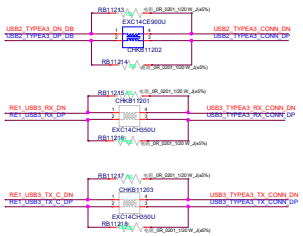
USB3.0

USB2.0

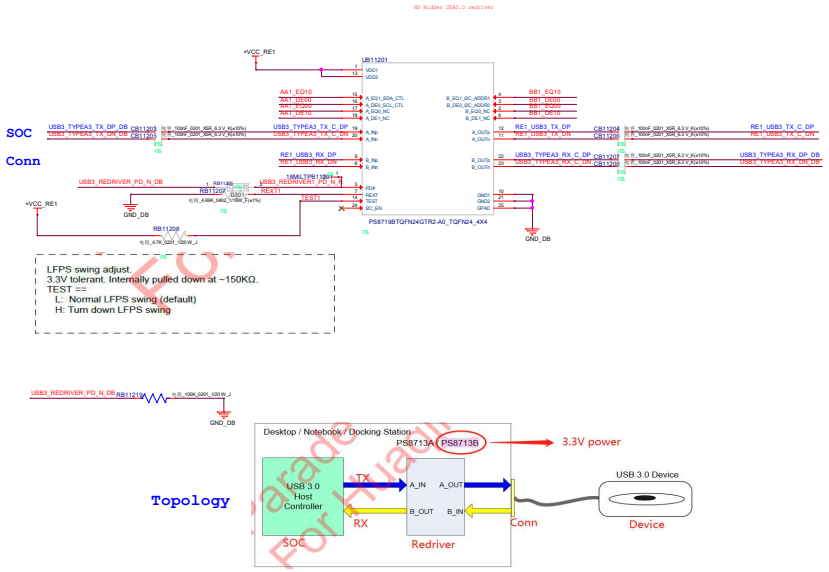
Control

Power for Redriver:3.3V

USB3.1 +USB2.0 Signal

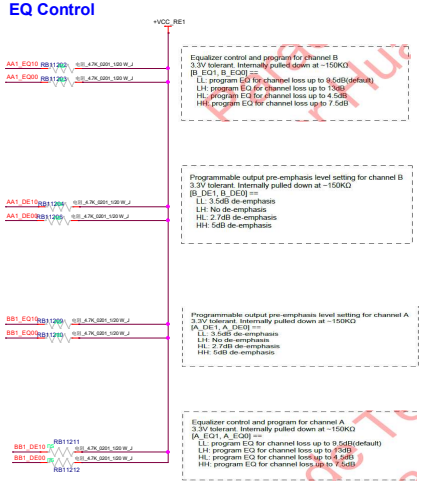


Redriver



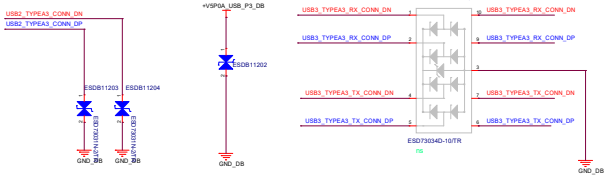
Topology

EQ Control



USB3.1 ESD For Gen1

Close to Conn

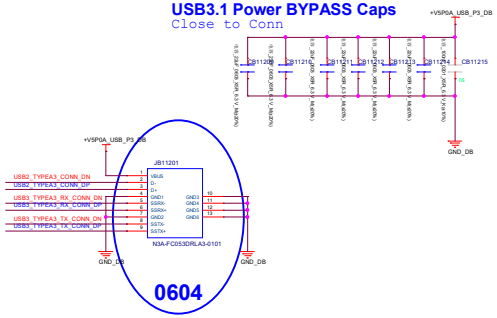


USB3.1 Type A (Hidden) CONN For Gen1 reserve

USB2.0 Type A (Hidden) CONN base

USB3.1 Power BYPASS Caps

Close to Conn



Huaqin Telecom Technology Com.,Ltd.			
Page name:	DB_USB3.1 TYPEA1		
Size: A4	Project Name: NB5979_DB		REV: V1.0
Date: Thursday, January 27, 2022		Sheet: 112 of 117	

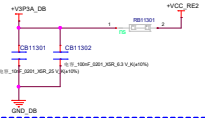
Off-Page

USB2.0

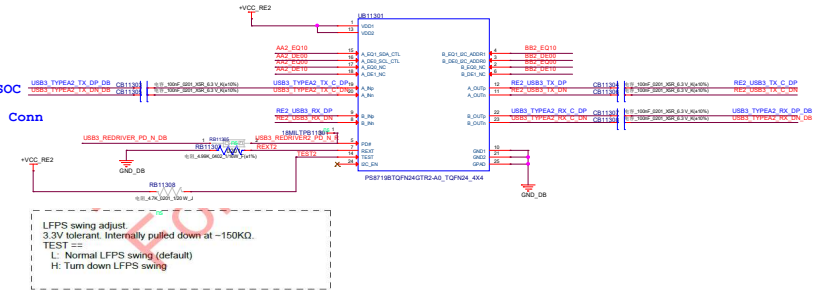
USB3.0

Control

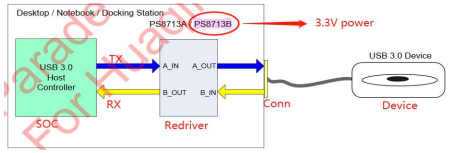
Power for Redriver:3.3V



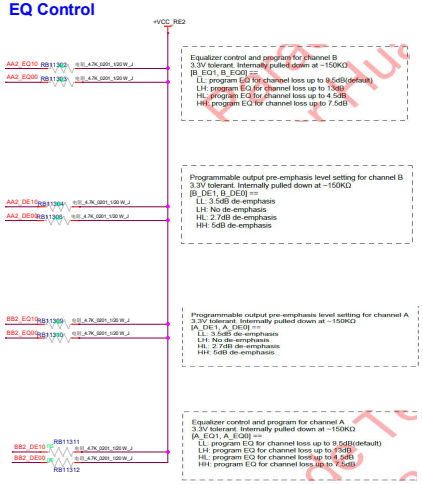
Redriver



Topology

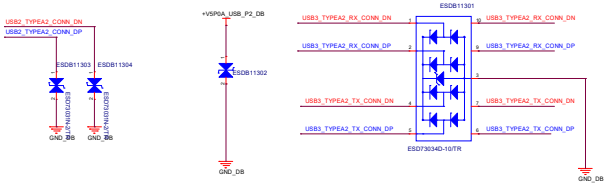


EQ Control



USB3.1 ESD For Gen1

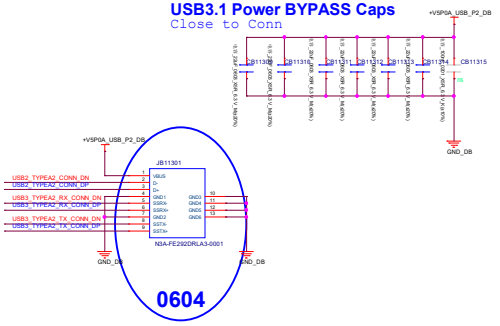
Close to Conn



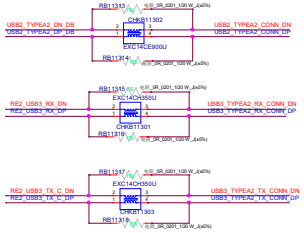
USB3.1 Type A CONN For Gen1

USB3.1 Power BYPASS Caps

Close to Conn

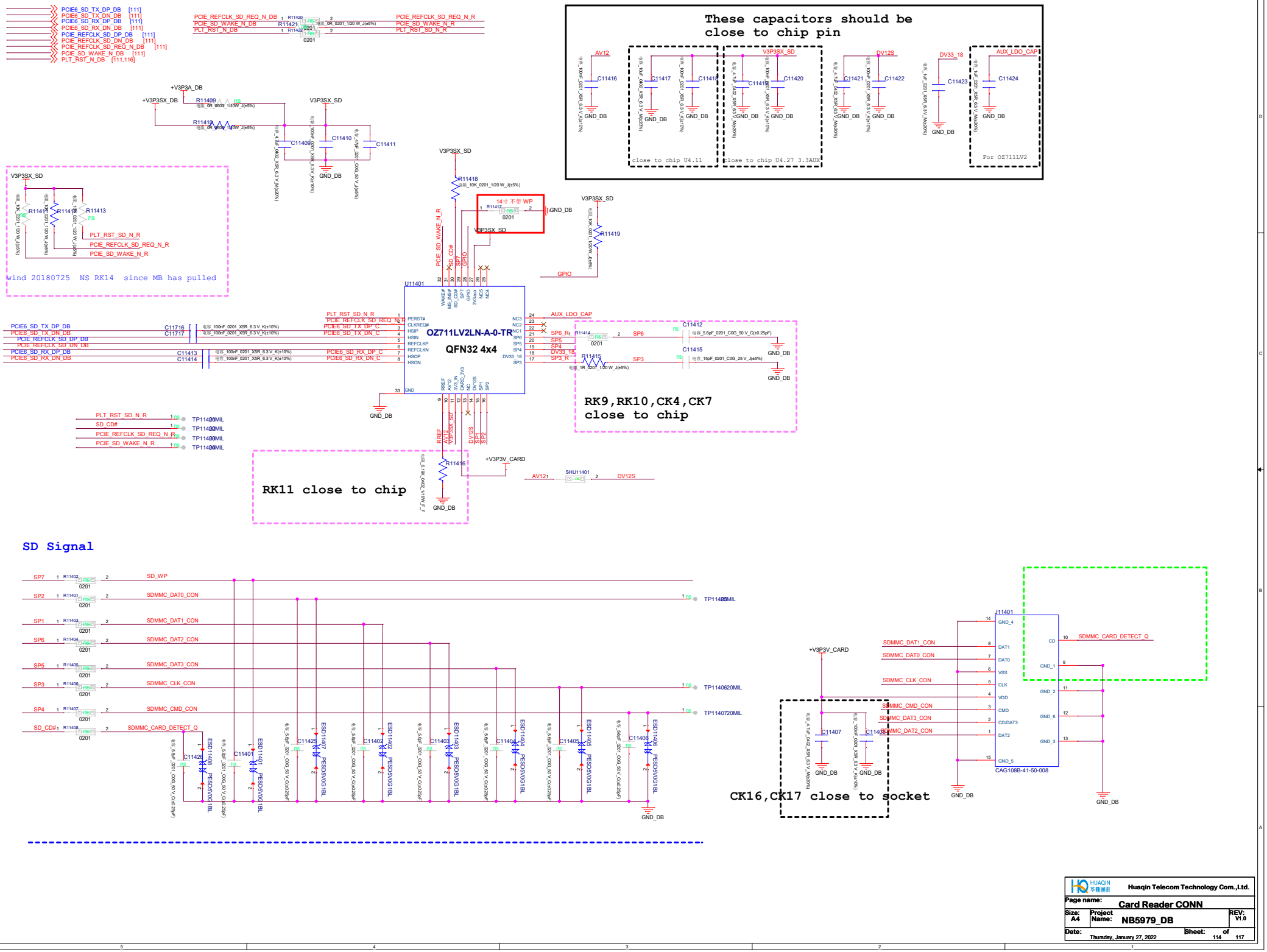


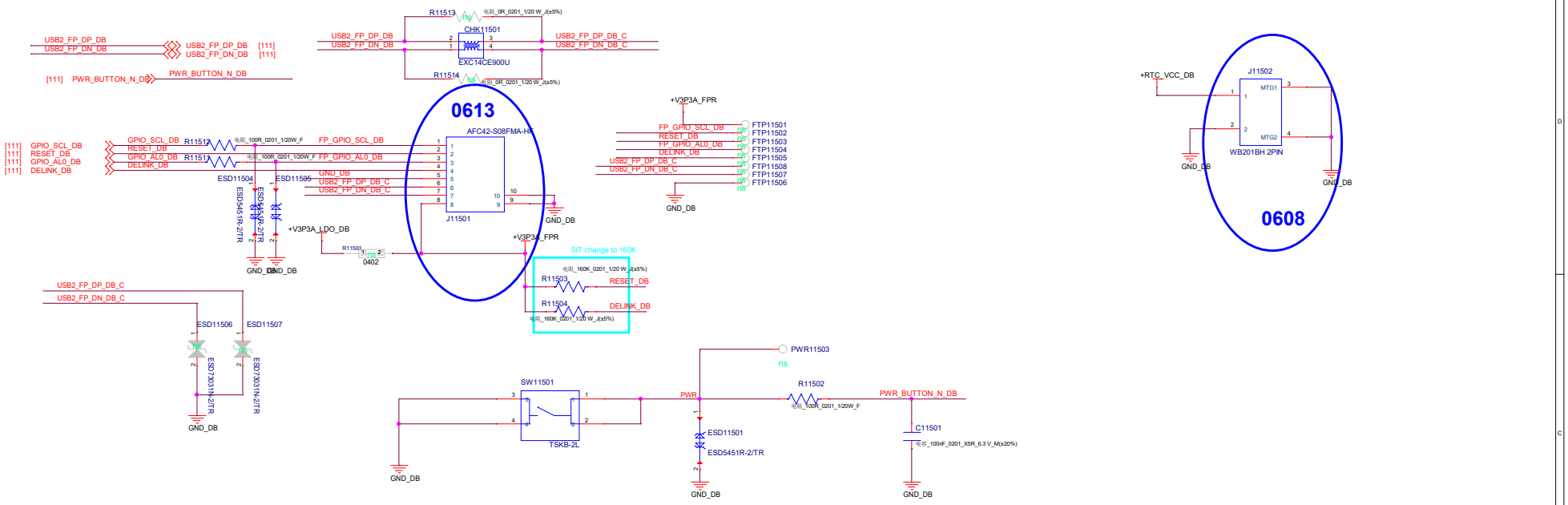
USB3.1 +USB2.0 Signal

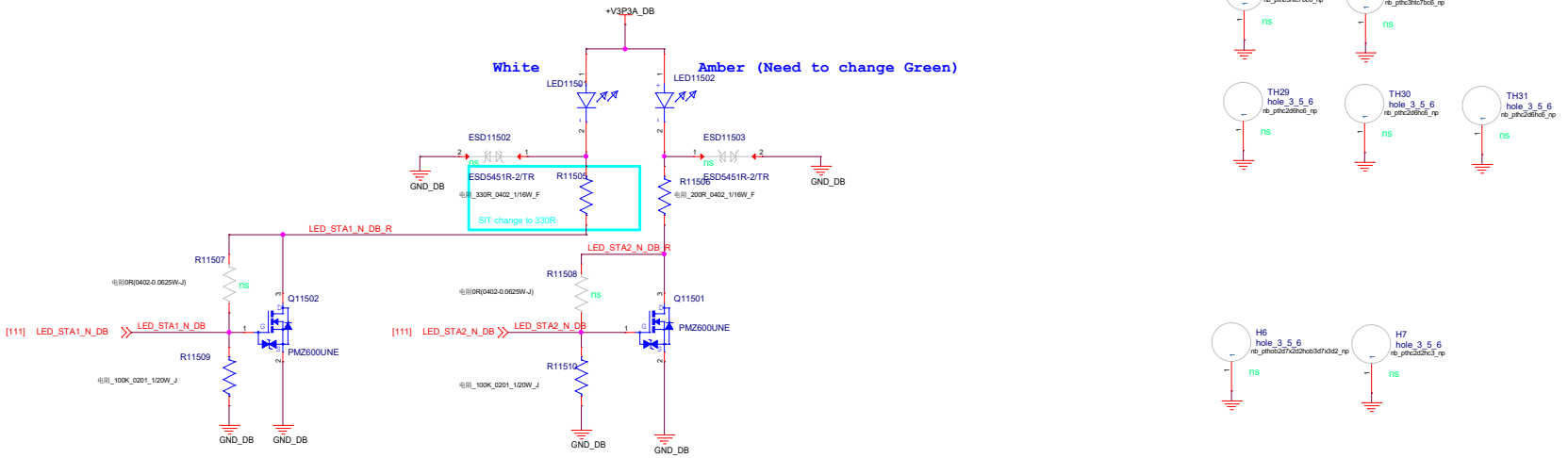


For Huawei Confidential

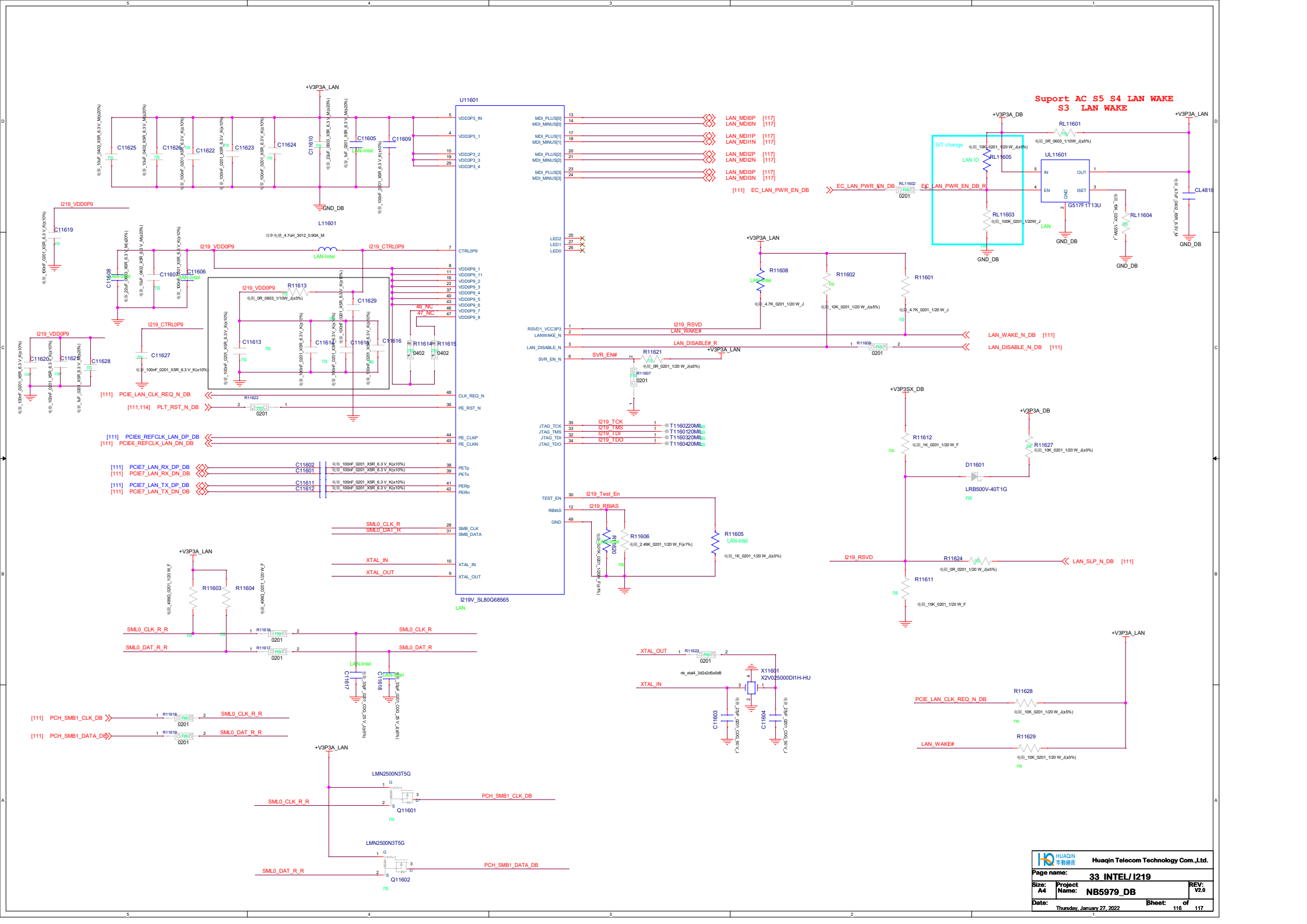
Huaqin Telecom Technology Com.,Ltd.		
Page name:	DB_USB3.1 TYPEA2	
Size: A4	Project Name: NB5979_DB	REV: V1.0
Date: Thursday, January 27, 2022	Sheet: of 113 117	


These capacitors should be close to chip pin
close to chip U4.11
close to chip U4.27 3.3AUX
For OZ711LV2
wind 20180725 NS RK14 since MB has pulled
OZ711LV2LN-A-0-TR
QFN32 4x4
RK9,RK10,CK4,CK7 close to chip
RK11 close to chip
SD Signal
CK16,CK17 close to socket
CAG108B-41-50-008
Huaqin Telecom Technology Com.,Ltd.
Page name: Card Reader CONN
Size: A4
Project Name: NB5979_DB
REV: V1.0
Date: Thursday, January 27, 2022
Sheet: 114 of 117

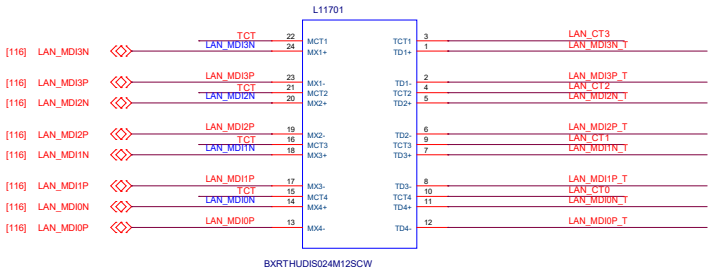


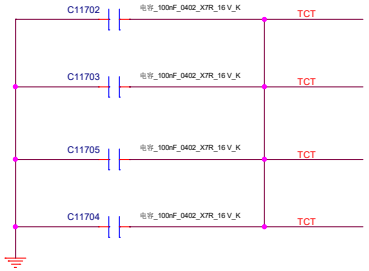


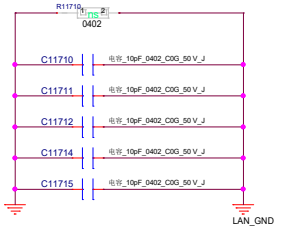
Huaqin Telecom Technology Com.,Ltd.		
Page name:	BUTTON & LED	
Size: A4	Project Name: NB5979_DB	REV: V1.0
Date: Thursday, January 27, 2022	Sheet: 115 of 117	

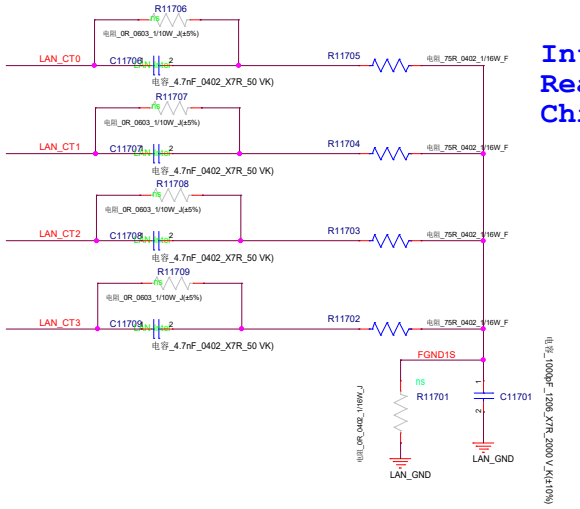


Huaqin Telecom Technology Com.,Ltd.			
Page name:	33_INTEL/I219		
Size: A4	Project Name: NB5979_DB		REV: V2.0
Date: Thursday, January 27, 2022	Sheet: 116	of 117	

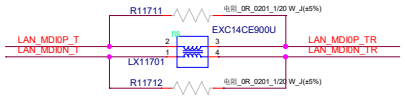


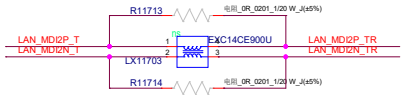


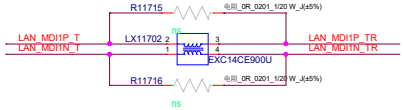


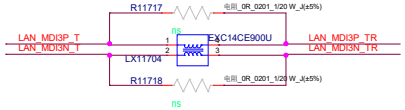


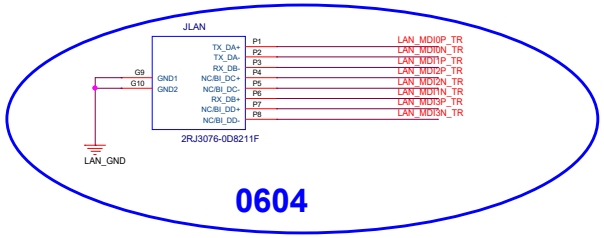
Intel LAN Chip: 上件电容
Realtek LAN Chip: 上件电阻











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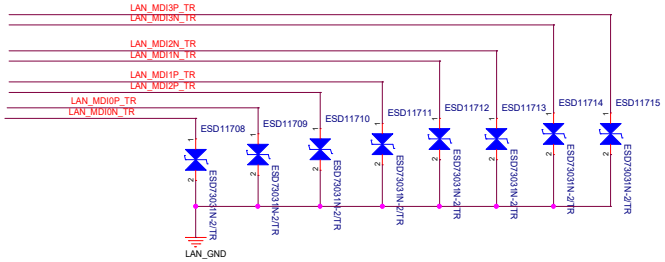

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