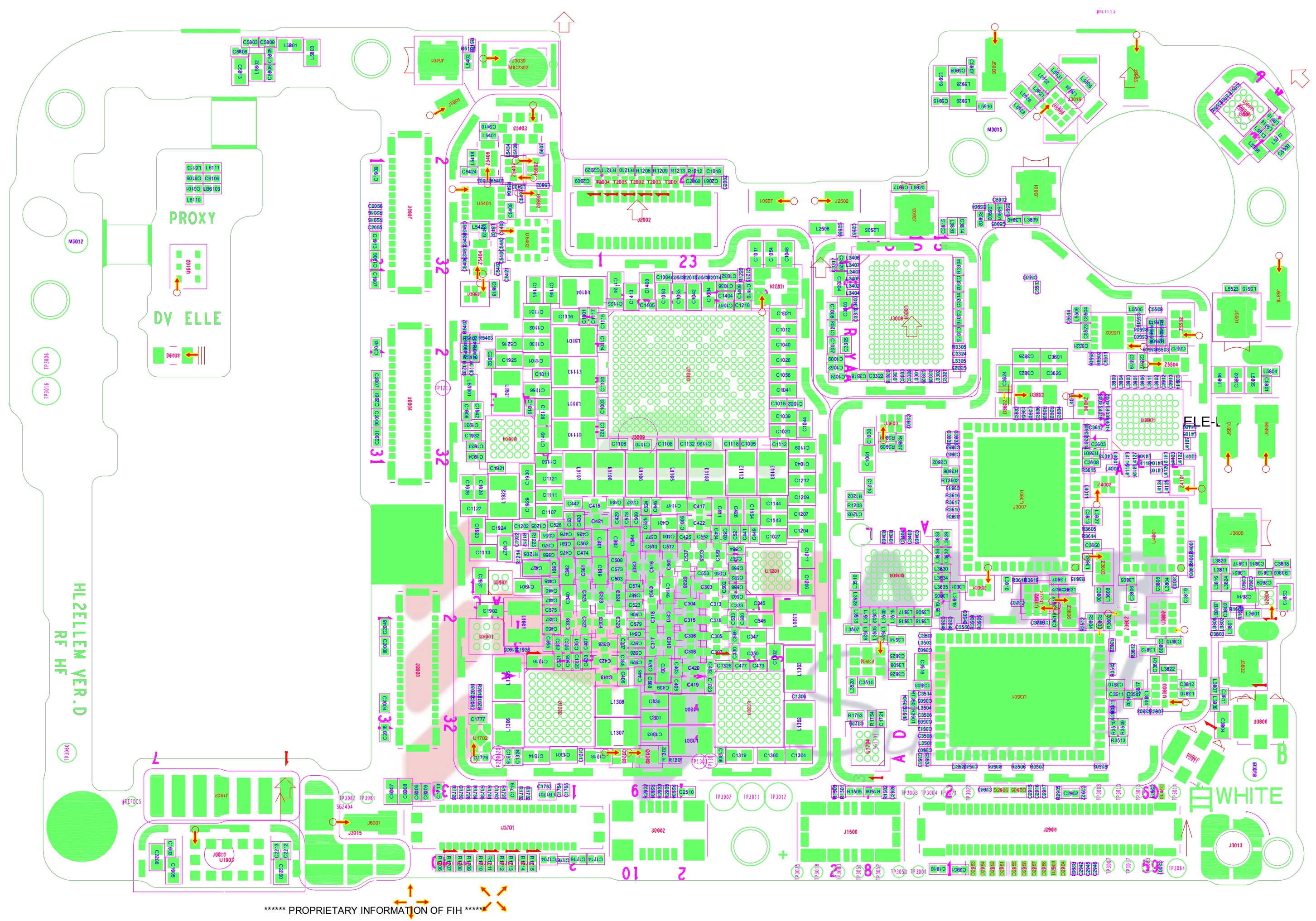




***** PROPRIETARY INFORMATION OF FIH *****

123456

A

Baseband Schematic

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5. SOC PWR3
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7. SOC GPIO Interface
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9. SOC GND & NC
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11. Hi6421 BUCK
12. Hi6421 DIGITAL INTERFACE
13. HI6422V320
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15. Battery & Fuel gauge
16. Charge Management
17. AMOLED Interface
18. Direct Charge LoadSwitch
19. Flash LED&TCAM
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22. Codec HI6405
23. MIC/VIB
24. Headphone
25. SMART PA
26. X-Sensor
27. IRDA
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MODEM Schematic

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40. DRX LB
41. DRX MHB
42. Reserved
43. MIMO DRX
44. MIMO PRX
45. RFIC 2
46. Reserved
47. Reserved
48. Reserved
49. Reserved
50. Reserved
51. 1103 BB
52. 1103 POWER
53. Reserved
54. WIFI RF0
55. WIFI RF1
56. GPS
57. NFC BB
58. ANT3/4
59. ANT1/2
60. ANT Tuner

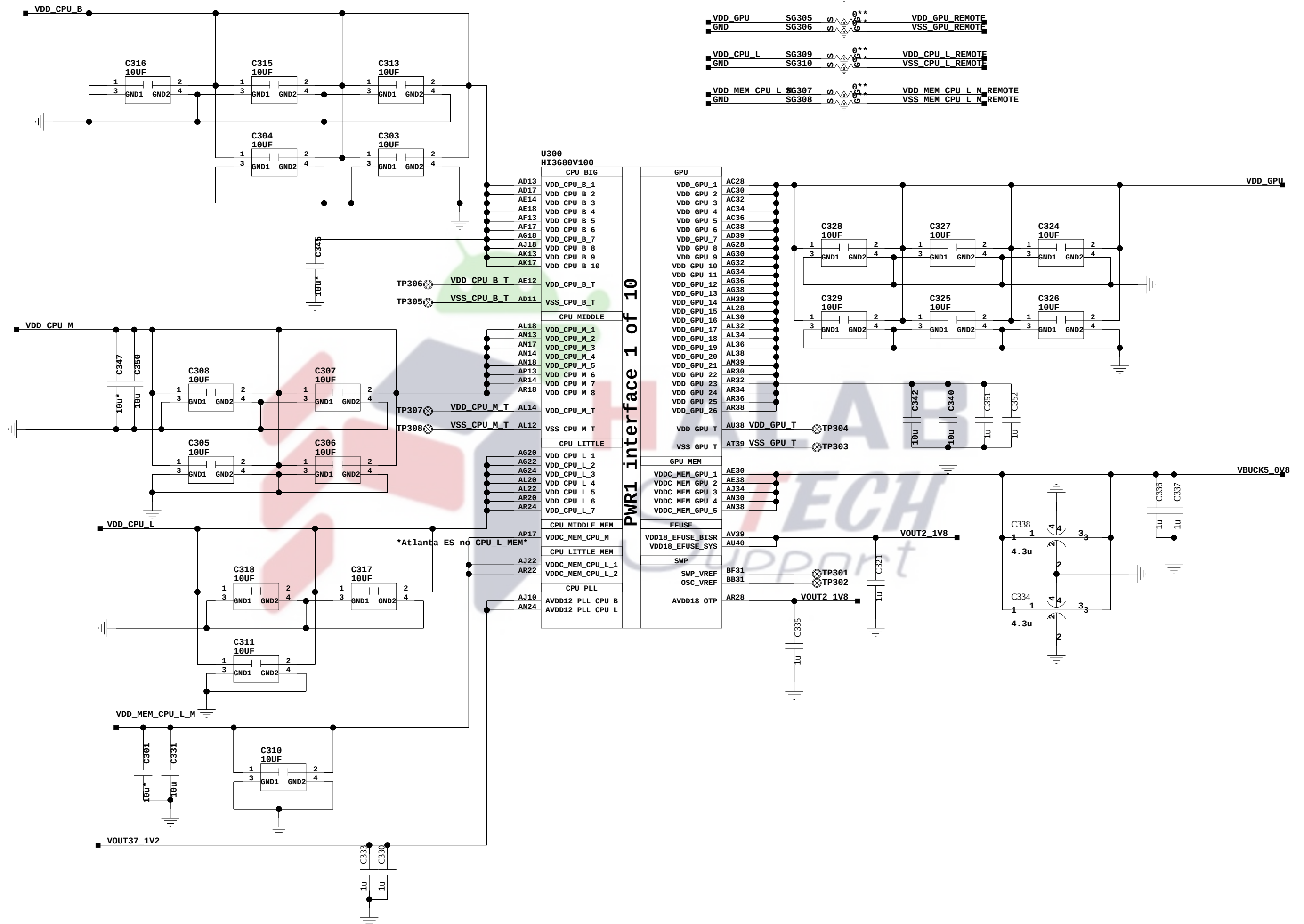
The type and specification of the components refer to the BOM

				NA	2018-07-11
				ECA NO	DATE
DESIGNED	GUOXIN 352298	HL2ELLEM		03025PEC	
REVIEWED	XUJIANGUO 312186				
		VER	PART_NUMBER	SHEET 1 Content 02	
		A	03025PEC	HUAWEI TECH CO.,LTD.	

2. Block Diagram



3. SOC PWR1



4. SOC PWR2

VBUCK1_1V12 SG402
GND SG401 VBUCK1_DDRMEM_REMOTE
VSS_DDRMEM_REMOTE

U300
HI3680V100

DDRPHY CORE
VDD_DDR4A_1
VDD_DDR4A_2
VDD_DDR4A_3
VDD_DDR4B_1
VDD_DDR4B_2
VDD_DDR4B_3
VDD_DDR4C_1
VDD_DDR4C_2
VDD_DDR4C_3
VDD_DDR4D_1
VDD_DDR4D_2
VDD_DDR4D_3

DDRPHY IO
VDD06_DDR4A_1
VDD06_DDR4A_2
VDD06_DDR4A_3
VDD06_DDR4B_1
VDD06_DDR4B_2
VDD06_DDR4B_3
VDD06_DDR4C_1
VDD06_DDR4C_2
VDD06_DDR4C_3
VDD06_DDR4D_1
VDD06_DDR4D_2
VDD06_DDR4D_3

DDRPHY PLL
AVDD18_PLL_DDR4A
AVDD18_PLL_DDR4B
AVDD18_PLL_DDR4C
AVDD18_PLL_DDR4D

IO POWER
VDD18_IO_1
VDD18_IO_2
VDD18_IO_3
VDD18_IO_4
VDD18_IO_5
VDD18_IO_6
VDD18_IO_7
VDD18_IO_8
VDD18_IO_9
VDD18_IO_10
VDD18_IO_11
VDD18_IO_12
VDD18_IO_13
VDD18_IO_14
VDD18_IO_15
VDD18_IO_16

DDR MEMORY CORE
VDD1_M_1
VDD1_M_2
VDD1_M_3
VDD1_M_4
VDD1_M_5
VDD1_M_6
VDD2_M_1
VDD2_M_2
VDD2_M_3
VDD2_M_4
VDD2_M_5
VDD2_M_6
VDD2_M_7
VDD2_M_8
VDD2_M_9
VDD2_M_10
VDD2_M_11
VDD2_M_12
VDD2_M_13
VDD2_M_14
VDD2_M_15
VDD2_M_16
VDD2_M_17
VDD2_M_18

DDR MEMORY IO
VDDQ_M_1
VDDQ_M_2
VDDQ_M_3
VDDQ_M_4
VDDQ_M_5
VDDQ_M_6
VDDQ_M_7
VDDQ_M_8
VDDQ_M_9
VDDQ_M_10

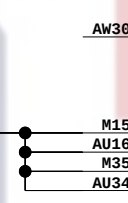
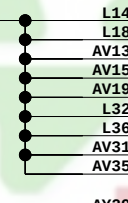
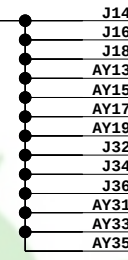
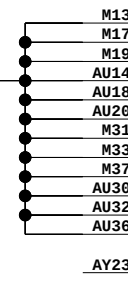
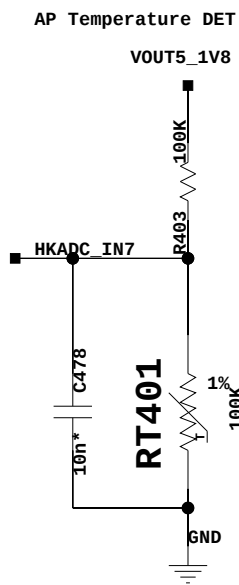
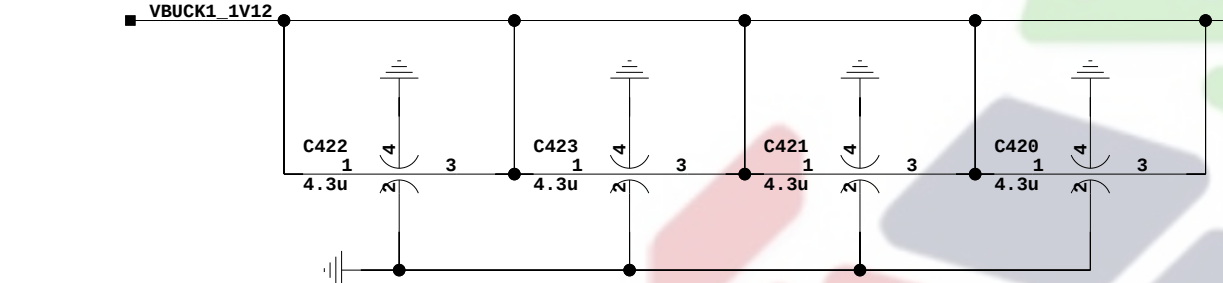
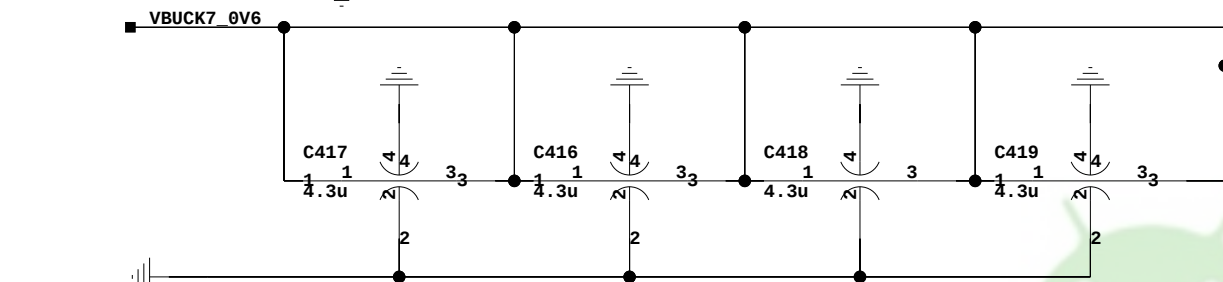
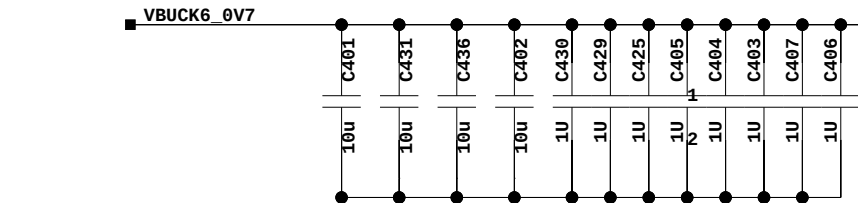
UFS
AVDD_UFS
AVDD12_UFS
USIM IO
VDD1830_USIM0
VDD1830_USIM1
SDCARD IO
VDD1830_SD
SYS CLK
VDD1812_CLK_SYS

F1
BD1
BH25
BC48
F47
B25

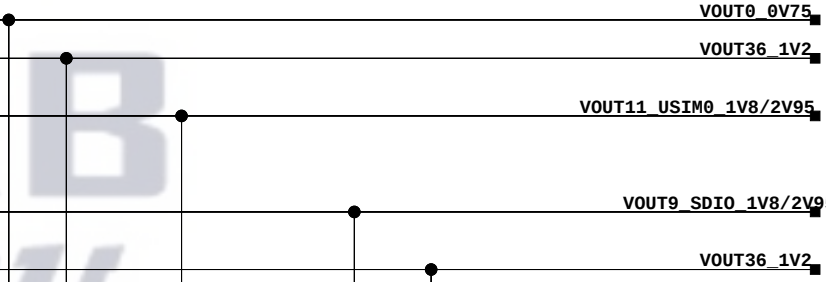
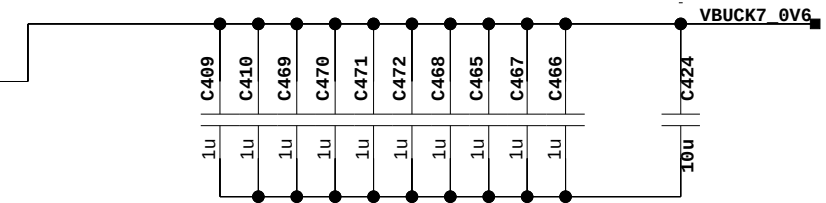
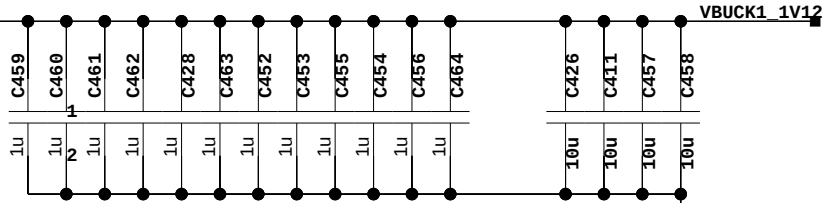
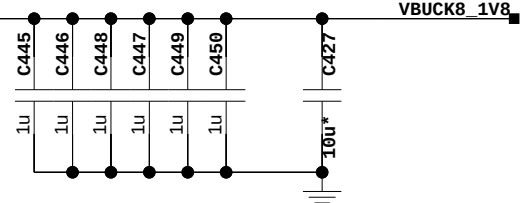
A18
B11
B31
B37
BD47
BE2
BE48
BF3
BF47
BG12
BG38
BH21
BH29
C2
C46
D1
D47
E2

A6
BH5
BH19
BG24
BH31
BG44
A44
A32
A24
B19

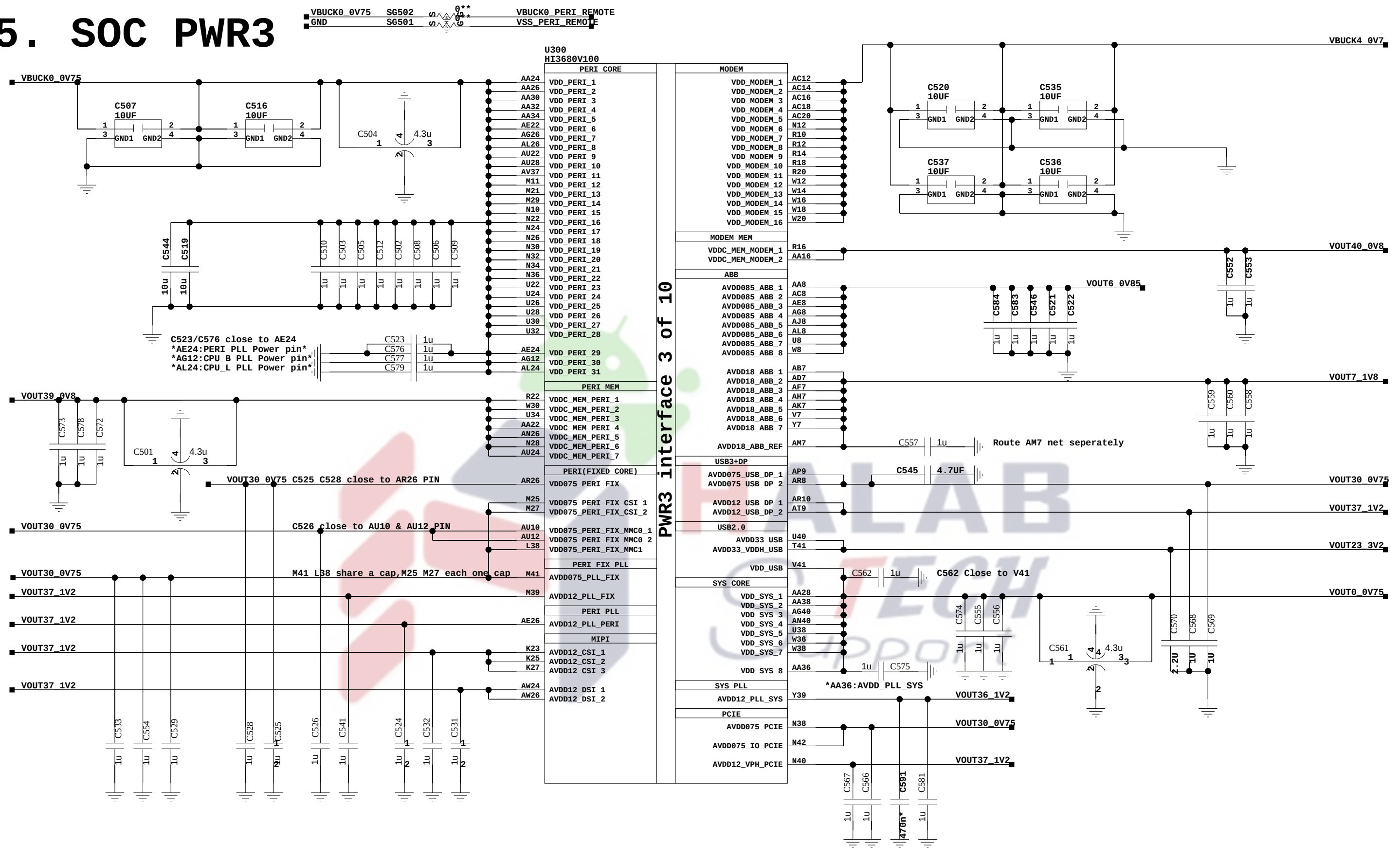
R38
R40
AW10
AW12
AV9
V39



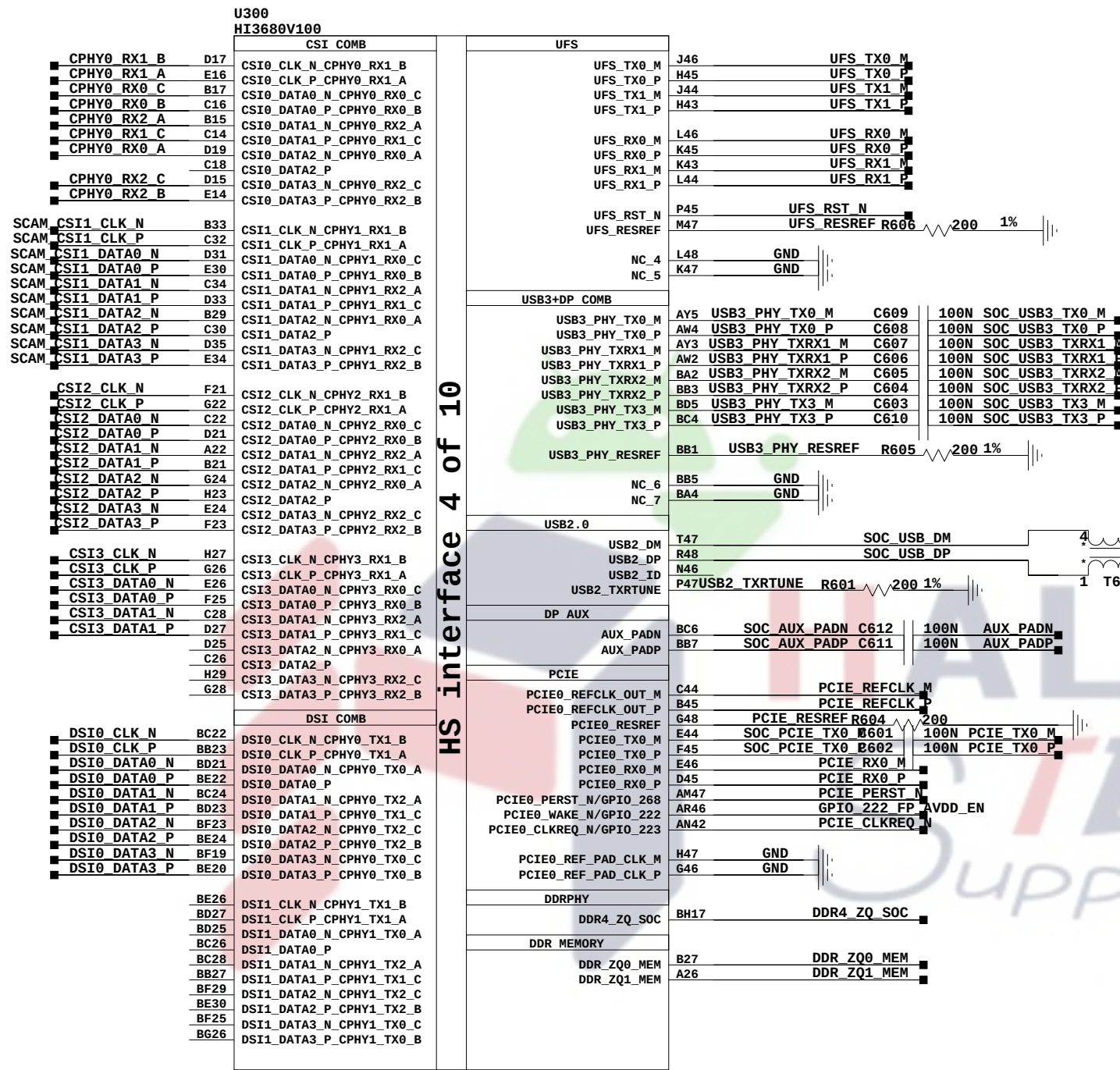
PWR2 interface 2 of 10



5. SOC PWR3



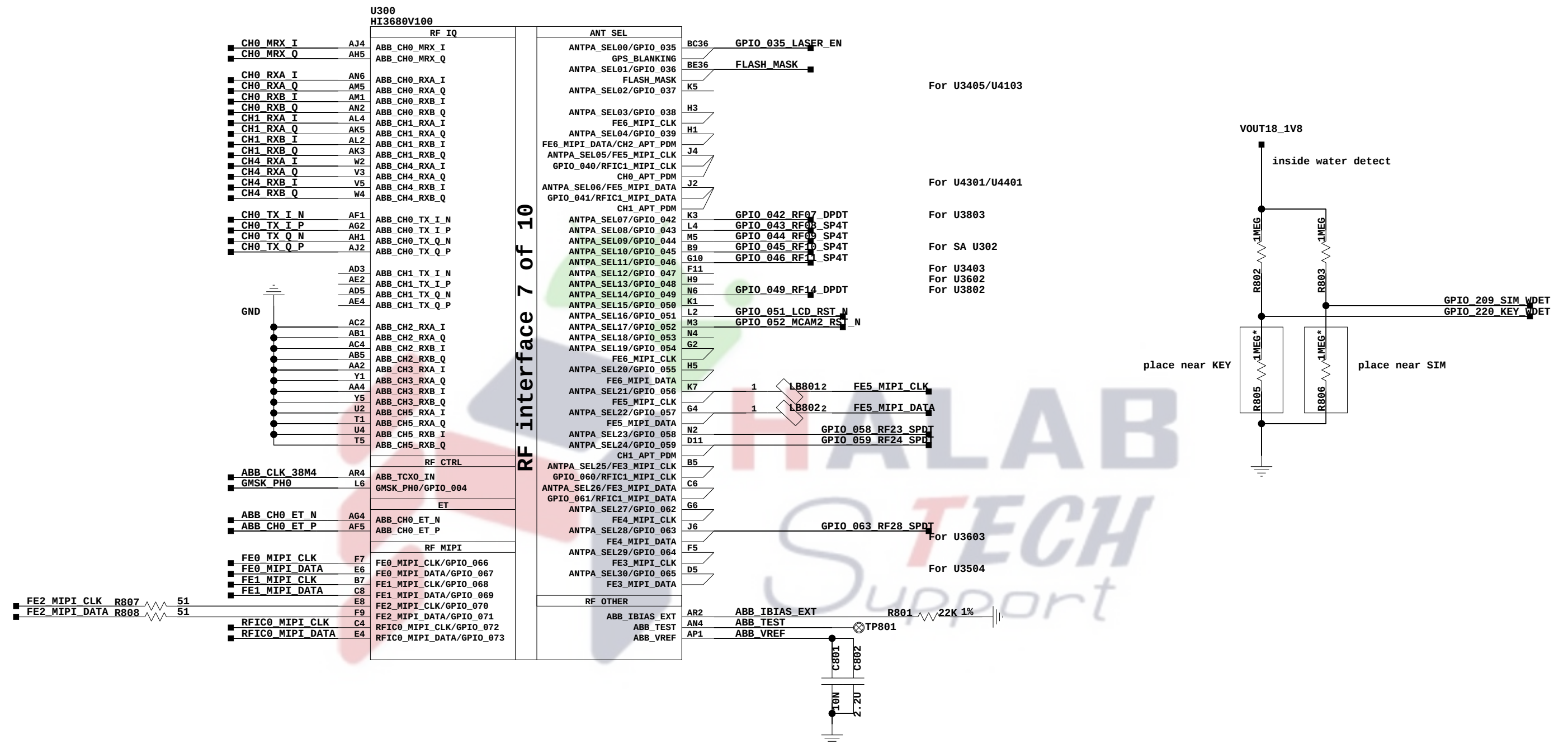
6. SOC HS Interface



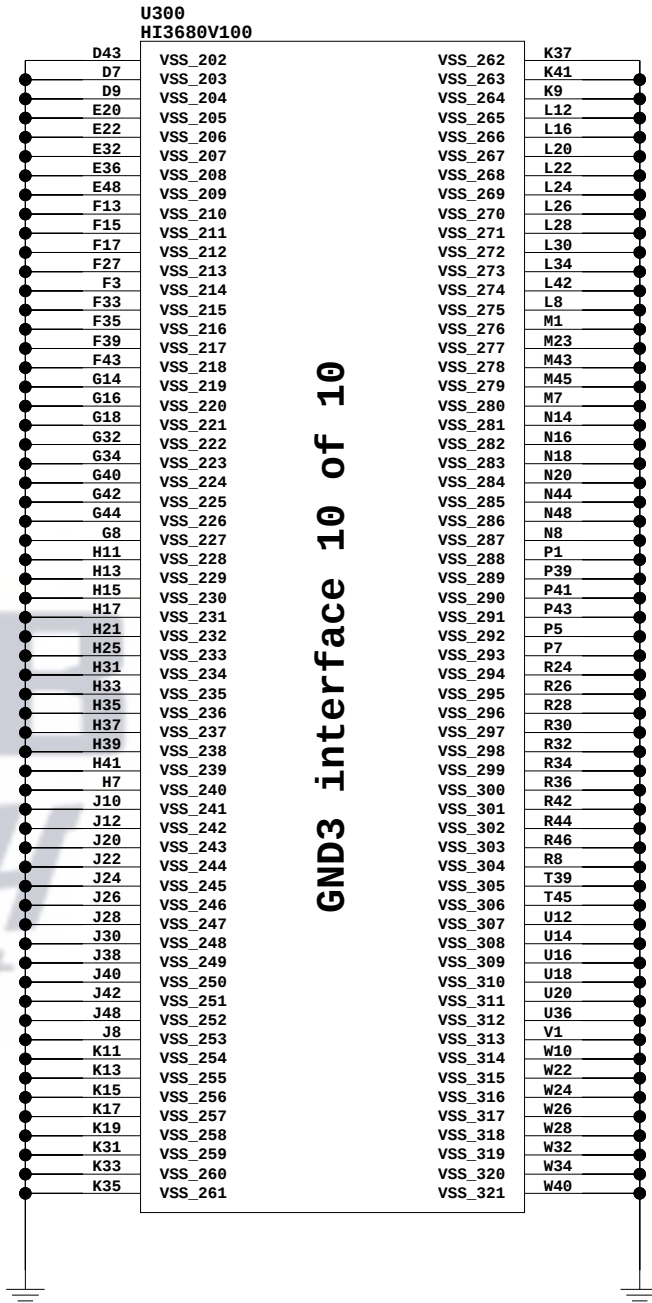
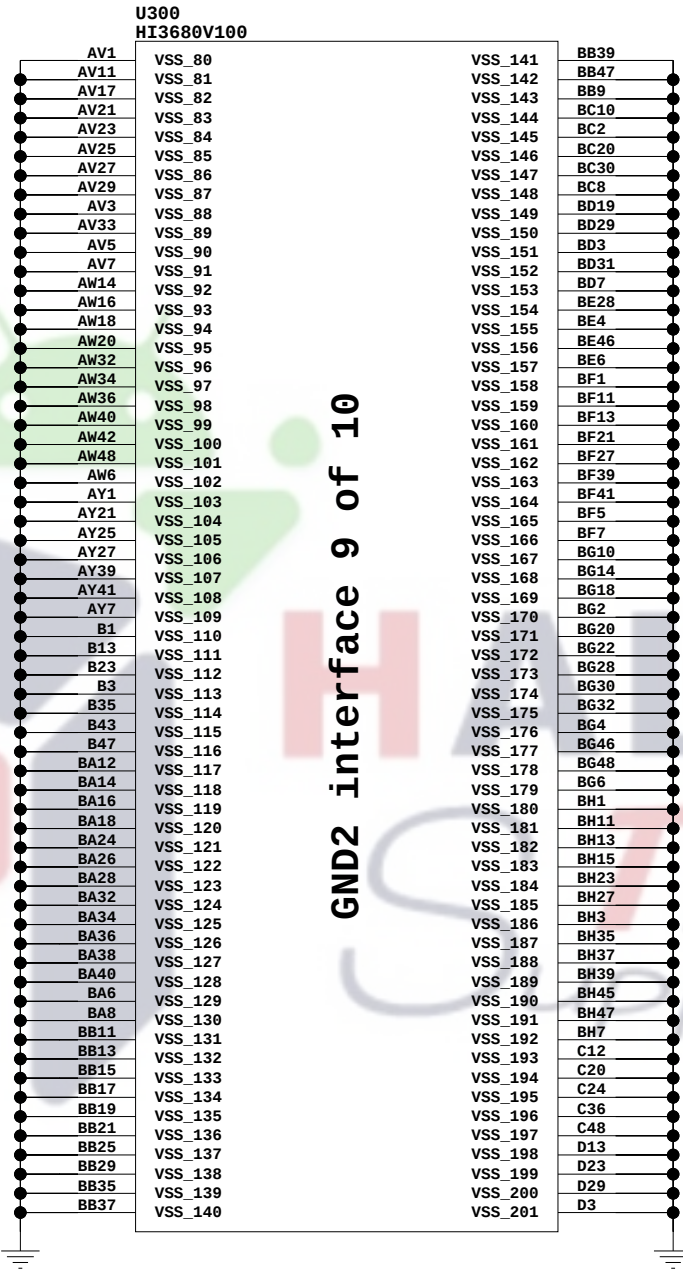
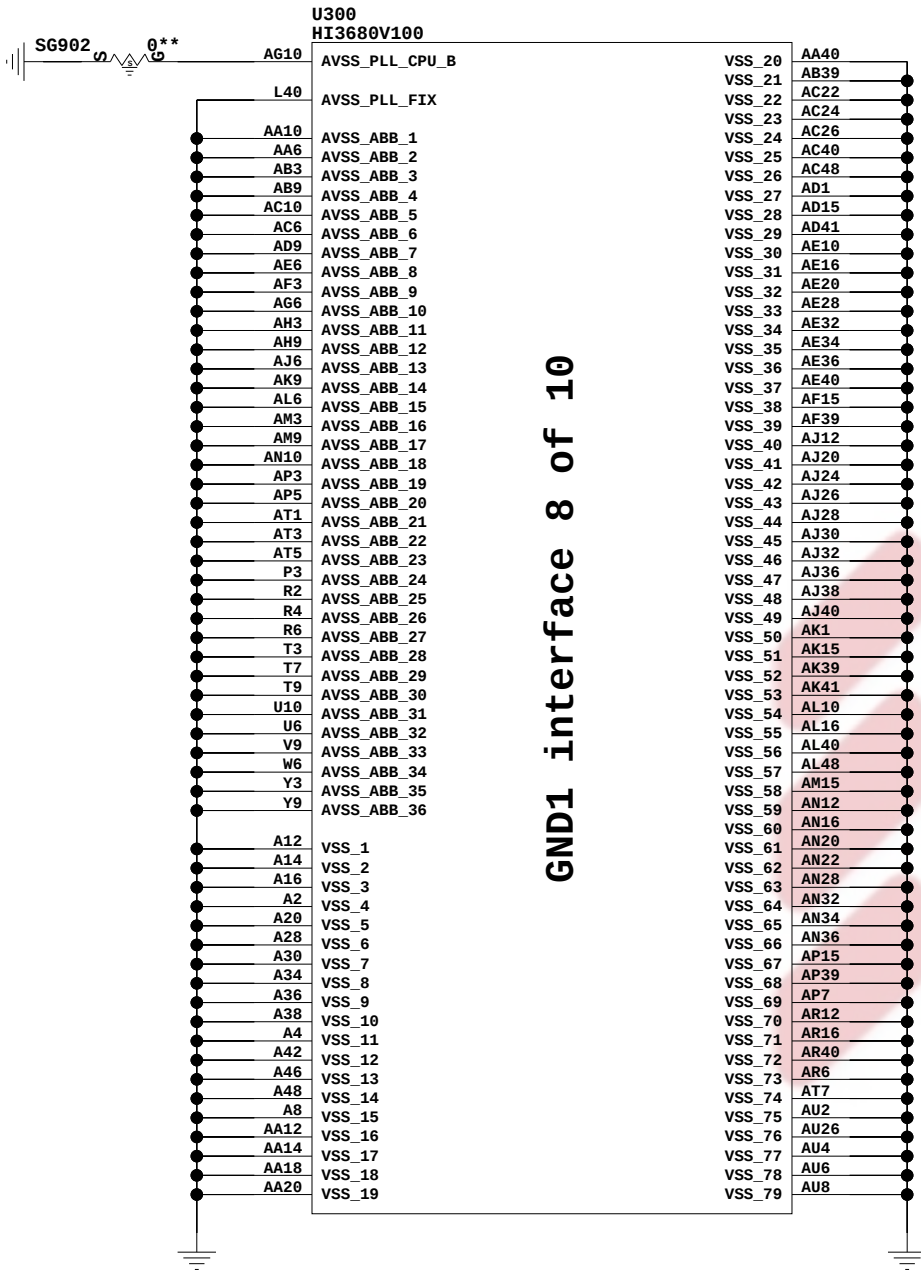
HS interface 4 of 10

[illegible]

8. SOC RF Interface

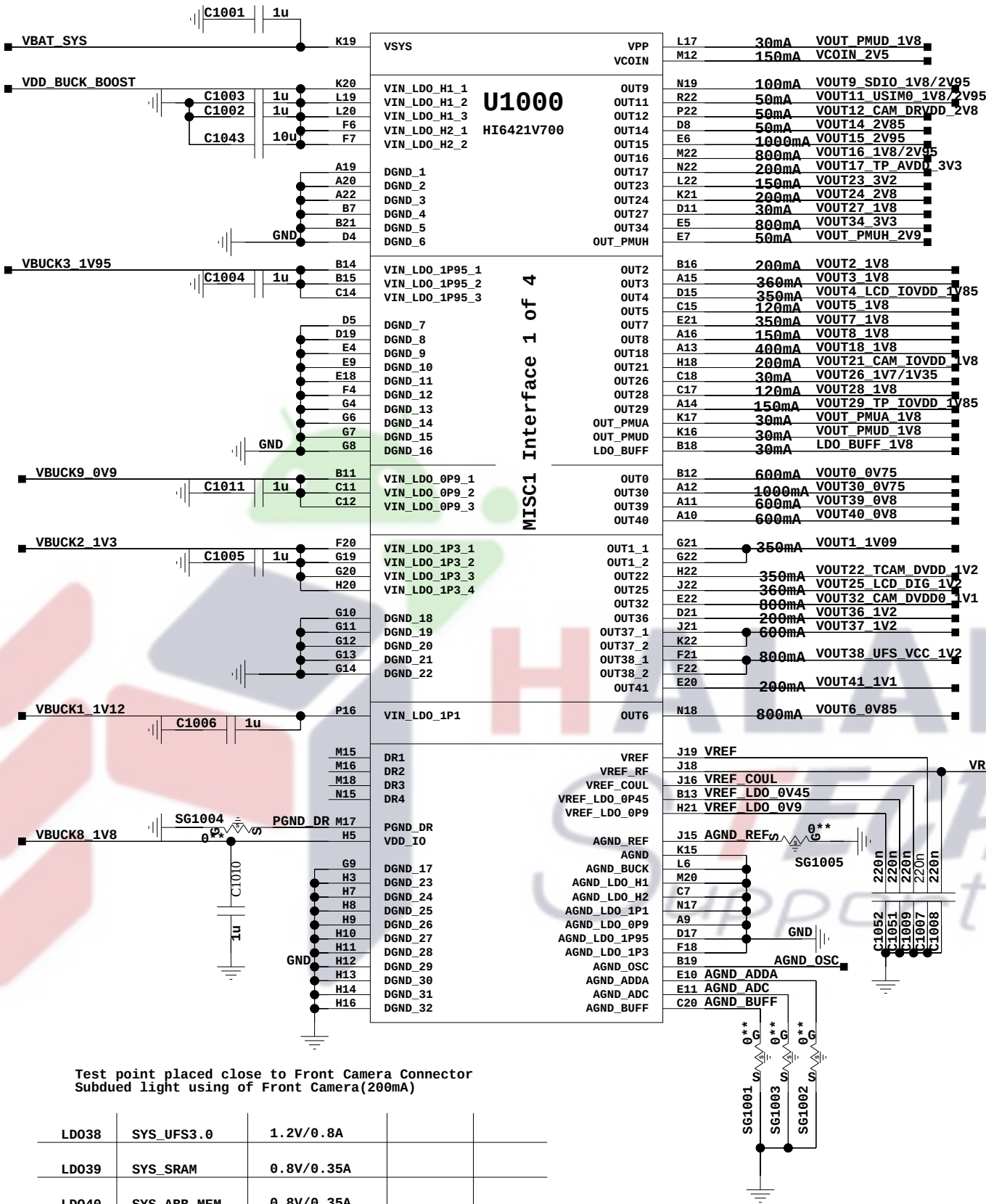


9. SOC GND



10.Hi6421 LDO

			Default	Sleep
BUCK0	SYS_PERI	0.75V/12A		
BUCK1	SYS_DDR	1.12V/4A		
BUCK2	SYS_POWER	1.3V/4A		
BUCK3	SYS_POWER	1.955/4A		
BUCK4	SYS_MODEM	0.8V/4A		
BUCK5	SYS_GPU_L2	0.8V/2A		
BUCK6	SYS_DDR_Core	0.752V/2A		
BUCK7	SYS_DDR	0.62V/2A		
BUCK8	SYS_DDR_UFS_IO	1.805V/3A		
BUCK9	SYS_POWER	0.9V/3A		
LD00	SYS_PHY_PLL	0.75V/0.6A		
LD01	SYS_RFIC	1.09V/0.35A		
LD02	SYS_HISEC_EFUSE	1.8V/0.2A		
LD03	SYS_RF_LNA	1.8V/0.36A		
LD04	PERI_TPLCD_IO	1.8V/0.35A		
LD05	SYS_ADC_DDR	1.8V/0.12A		
LD06	SYS_ABB_AVDD	0.87V/0.8A		
LD07	SYS_ABB_AVDD	1.8V/0.4A		
LD08	SYS_CODEC_RFIC	1.8V/0.15A		
LD09	PERI_SD_IO	1.8V_2.95V/0.1A		
LD011	SYS_SIM0	1.8V_2.95V/0.05A		
LD012	SYS_SIM1	1.8V_2.95V/0.05A		
LD014	SYS_DAC_RF	2.85V/0.05A		
LD015	SYS_UFS	2.95V/1A		
LD016	PERI_SD	2.95V/0.8A		
? LD017	PERI_AVDD1	3.1V/0.2A		
LD018	PERI_IO	1.8V/0.4A		
LD021	PERI_CAM_IO	1.8V/0.2A		
LD022	SYS_RFIC	1.09V/0.35A		
LD023	SYS_USB3.0_PA	3.2V/0.15A		
? LD024	PERI_AVDD2	2.8V/0.2A		
LD025	PERI_LCD_1.2V	1.2V/0.36A		
LD026	SYS_X0	1.7V/0.03A		
LD027	SYS_ADC_X0	1.8V/0.03A		
LD028	SYS_RF_MIPI	1.8V/0.12A		
LD029	SYS_USB	1.8V/0.15A		
LD030	SYS_HS_CORE	0.75V/1A		
LD032	PERI_CAM_1.2?	1.2V/0.8A		
LD034	PERI_MIC_FP	2.9V/0.8A		
LD035	SYS_X0	1.7V/0.03A		
LD036	SYS_UFS_CLK	1.2V/0.2A		
LD037	SYS_HS_PHY	1.2V/0.6A		

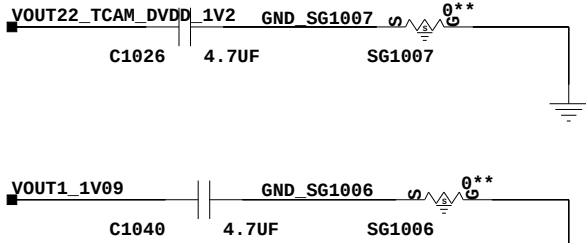


Test point placed close to Front Camera Connector
Subdued light using of Front Camera(200mA)

LD038	SYS_UFS3.0	1.2V/0.8A		
LD039	SYS_SRAM	0.8V/0.35A		
LD040	SYS_ABB_MEM	0.8V/0.35A		
LD041	SYS_CODEC	1.1V/0.15A		
LDO_BUF	SYS_PMU_CLK_BUF	1.8V/0.03A		
PMUA	SYS_PMU_AVDD	1.8V/0.03A		
PMUD	SYS_PMU_DVDD	1.8V/0.03A		
RF_VREF	SYS_RF_VREF	0.75V/0.001A		
PMUH	?	1.1V/0.15A		
VCOIN	SYS_COIN	2.5V/A		

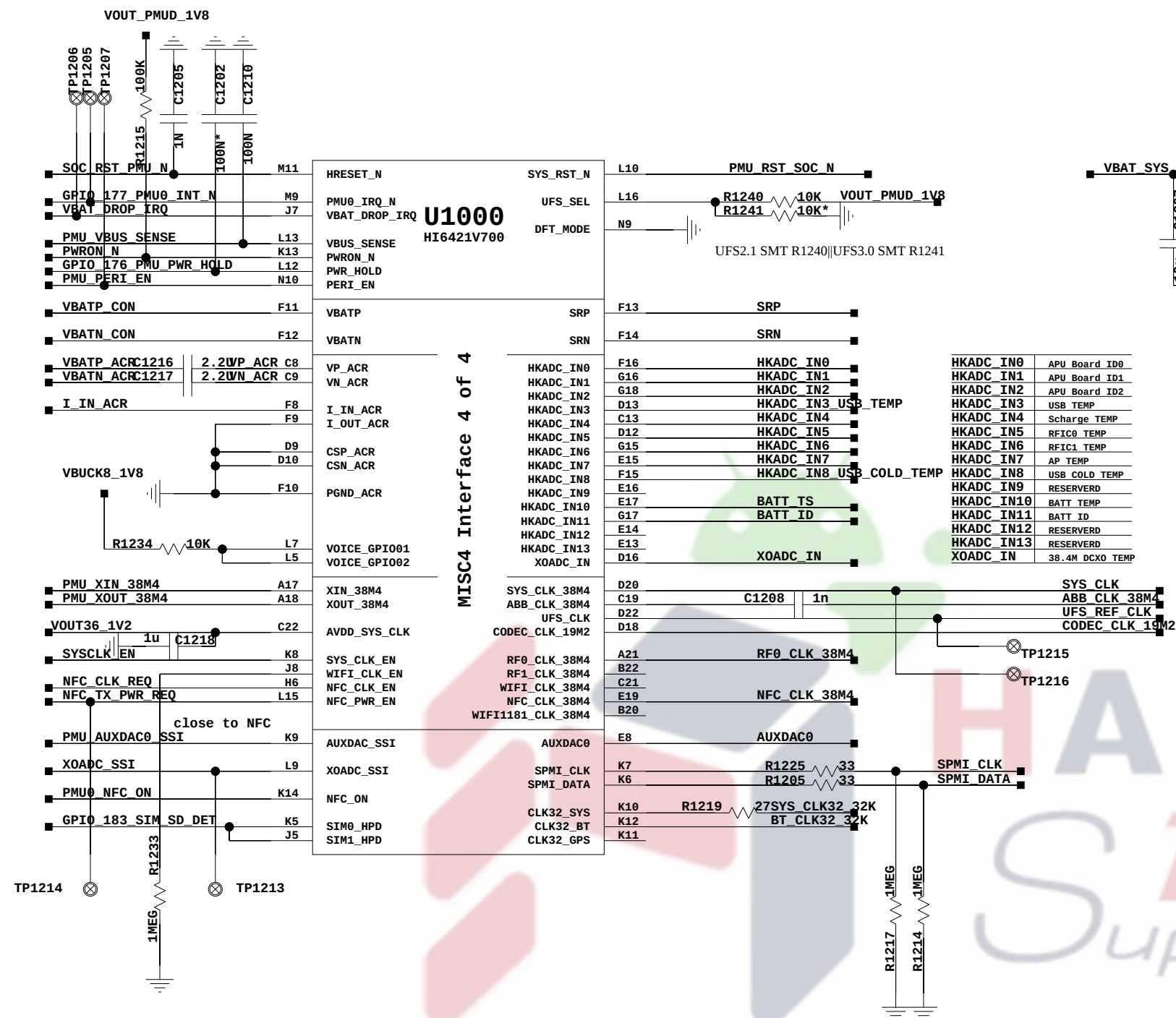
NEAR END CAP NEAR PMU

VCOIN_2V5	C1061	10u
VOUT12_CAM_DRVDD_2V8	C1015	1u
VOUT14_2V85	C1030	1u
VOUT16_1V8/2V95	C1039	4.7uF
VOUT17_TP_AVDD_3V3	C1020	4.7uF
VOUT24_2V8	C1031	4.7uF
VOUT27_1V8	C1032	1u
VOUT34_3V3	C1033	4.7uF
VOUT_PMUH_2V9	C1018	2.2u
VOUT2_1V8	C1034	4.7uF
VOUT3_1V8	C1042	4.7uF
VOUT4_LCD_IOVDD_1V85	C1044	4.7uF
VOUT7_1V8	C1045	4.7uF
VOUT8_1V8	C1047	1u
VOUT18_1V8	C1013	4.7uF
VOUT21_CAM_IOVDD_1V8	C1048	4.7uF
VOUT26_1V7/1V35	C1028	2.2u
VOUT28_1V8	C1049	4.7uF
VOUT_PMUA_1V8	C1024	1u
VOUT_PMUD_1V8	C1035	1u
LDO_BUFF_1V8	C1036	2.2u
VOUT0_0V75	C1050	4.7uF
VOUT30_0V75	C1053	4.7uF
VOUT40_0V8	C1022	4.7uF
VOUT25_LCD_DIG_1V2	C1056	4.7uF
VOUT32_CAM_DVDD0_1V1	C1054	4.7uF
VOUT36_1V2	C1021	4.7uF
VOUT37_1V2	C1041	4.7uF
VOUT38_UFS_VCC_1V2	C1012	4.7uF
VOUT41_1V1	C1017	4.7uF
VOUT6_0V85	C1027	4.7uF



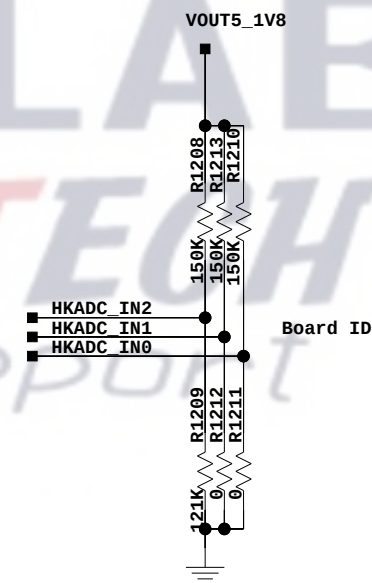
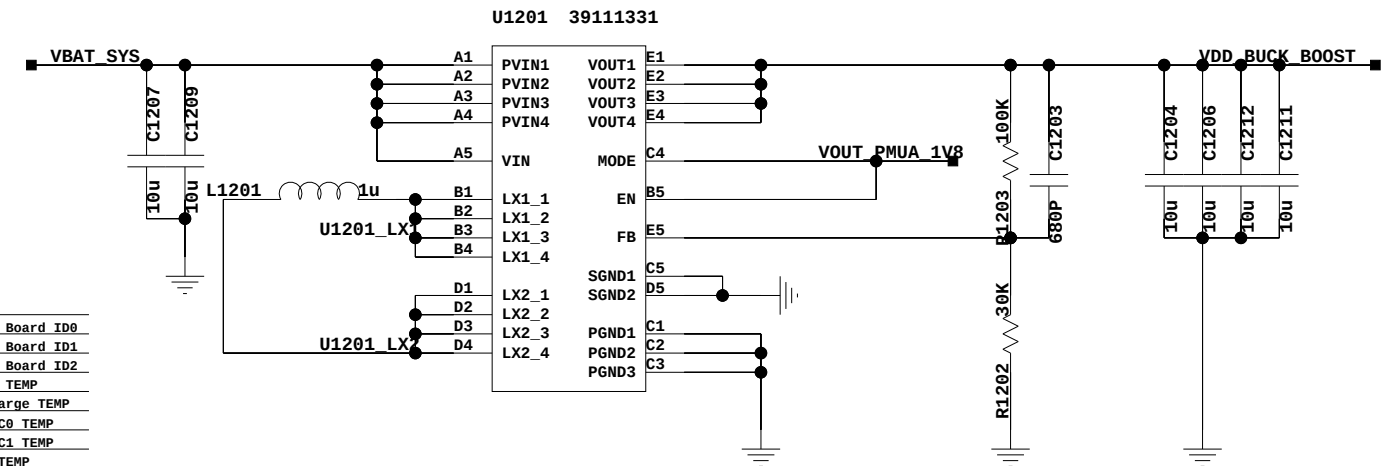
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12.Hi6421 DIGITAL INTERFACE

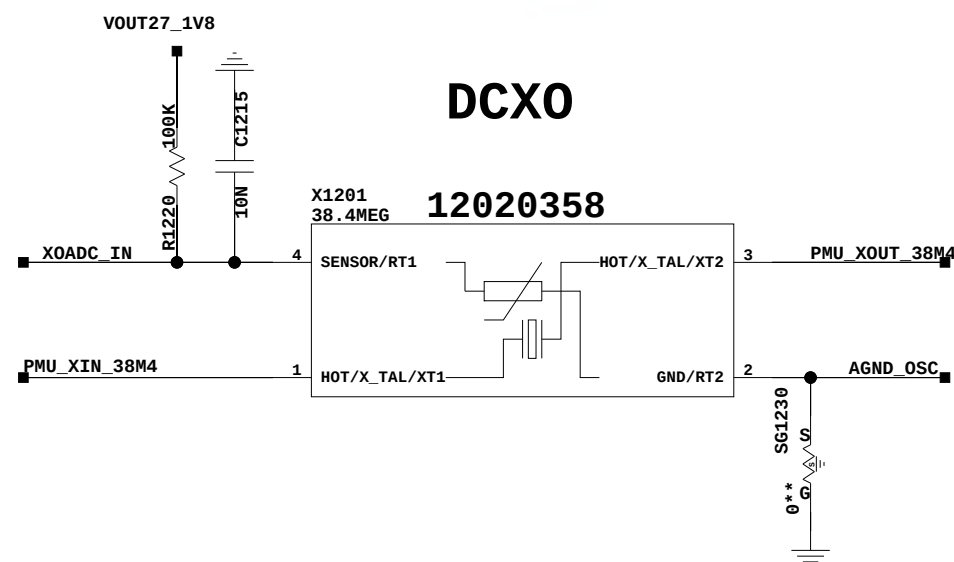


BUCK BOOST

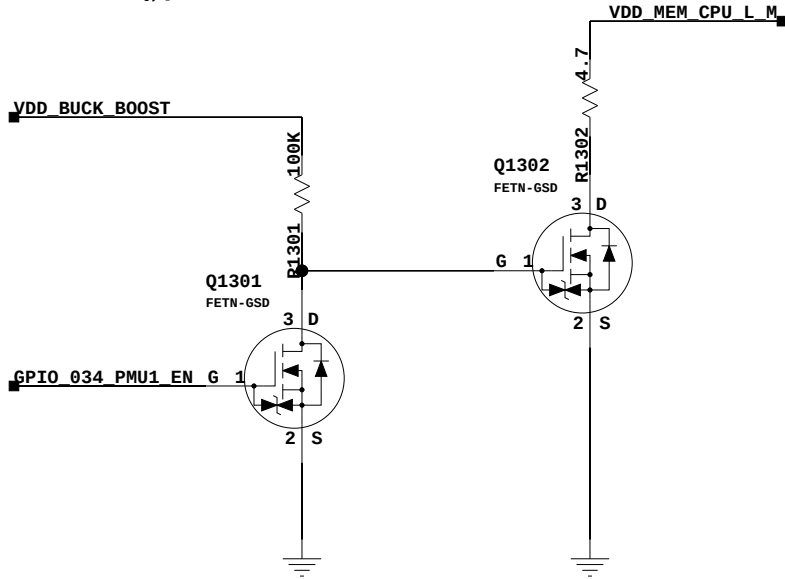
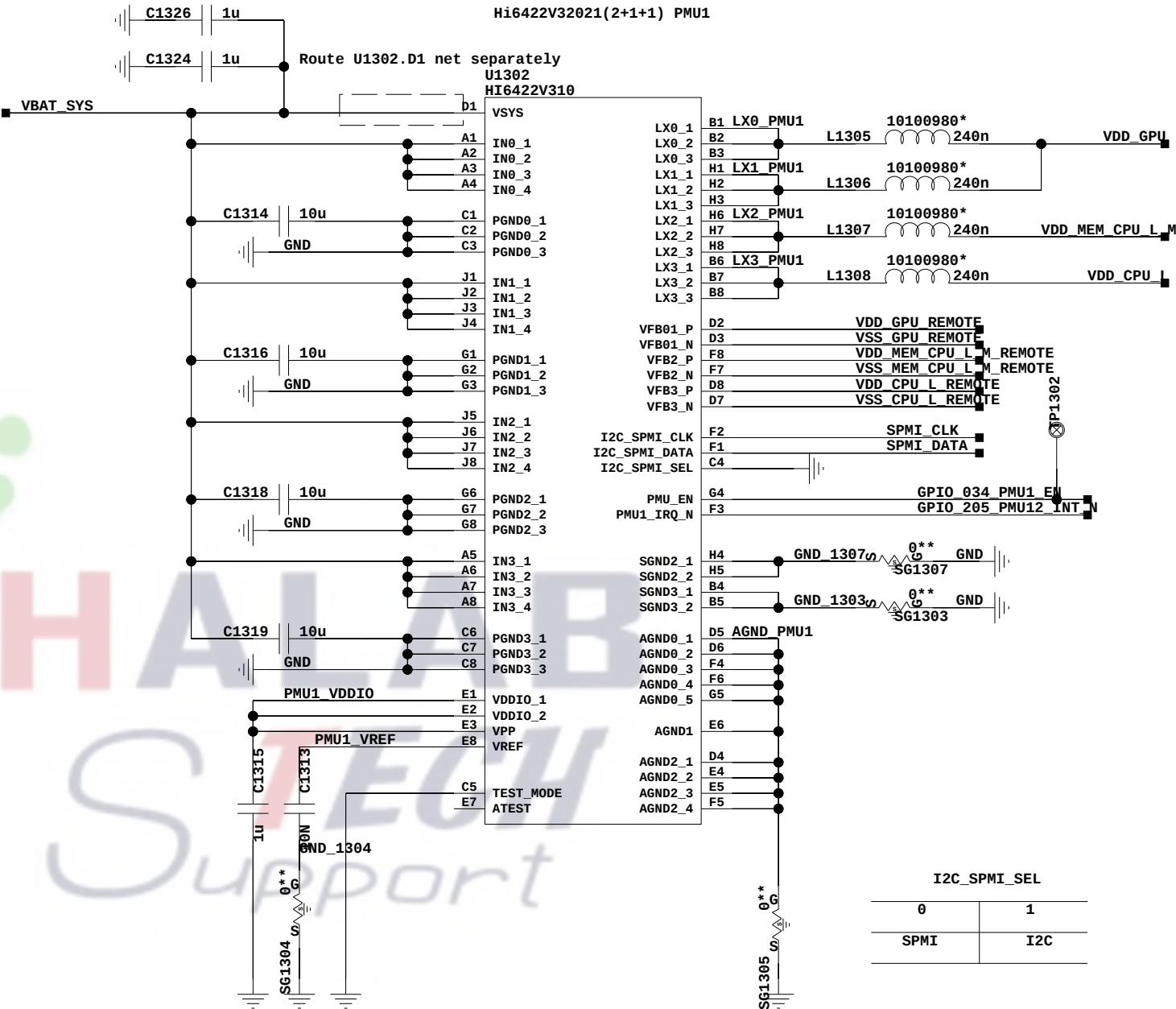
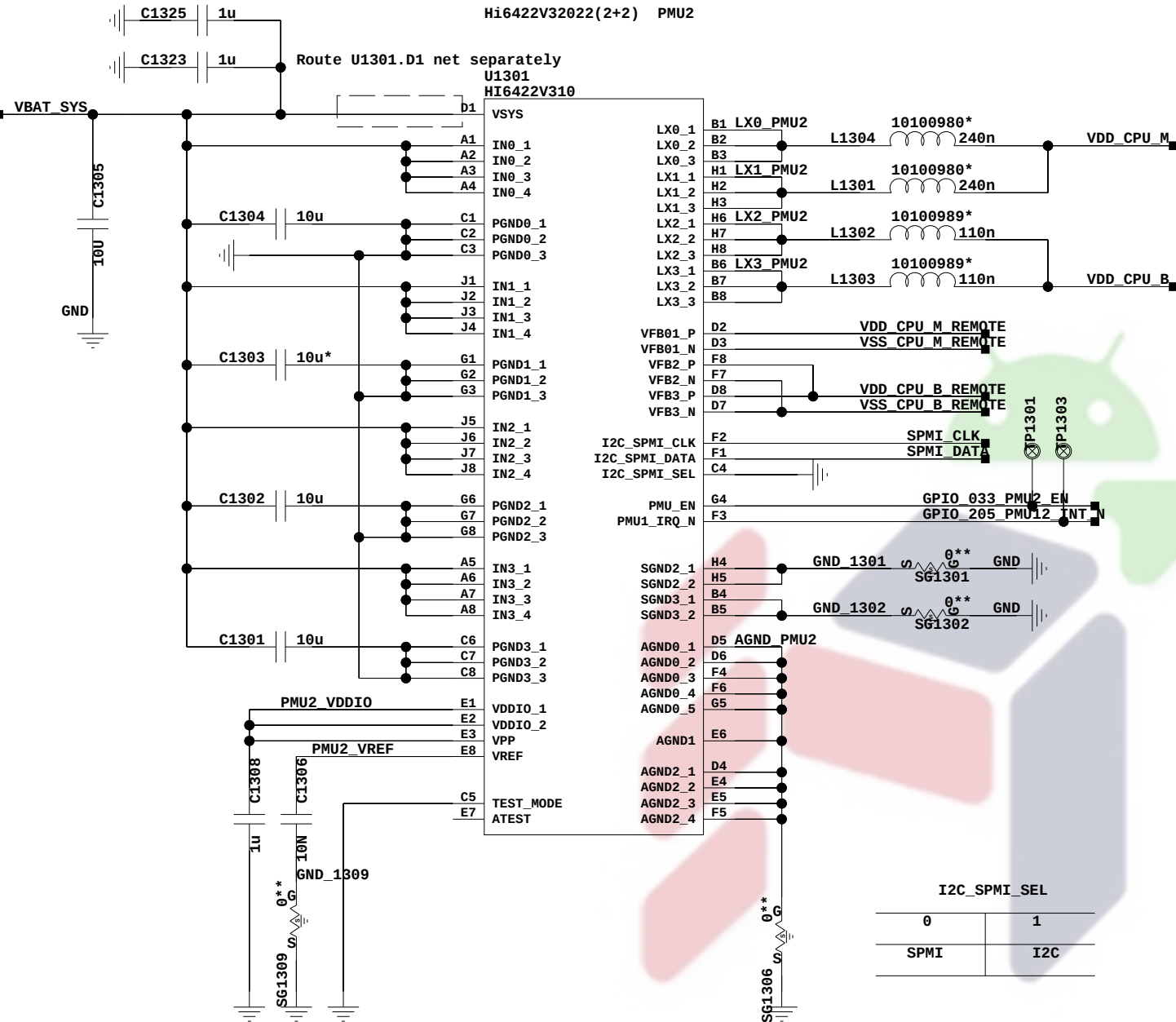
$$V_{out} = 0.8 * (1 + R1/R2) = 3.467V$$



DCXO



13. HI6422V320



A

B

C

A

B

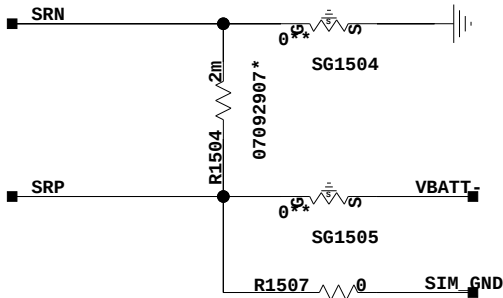
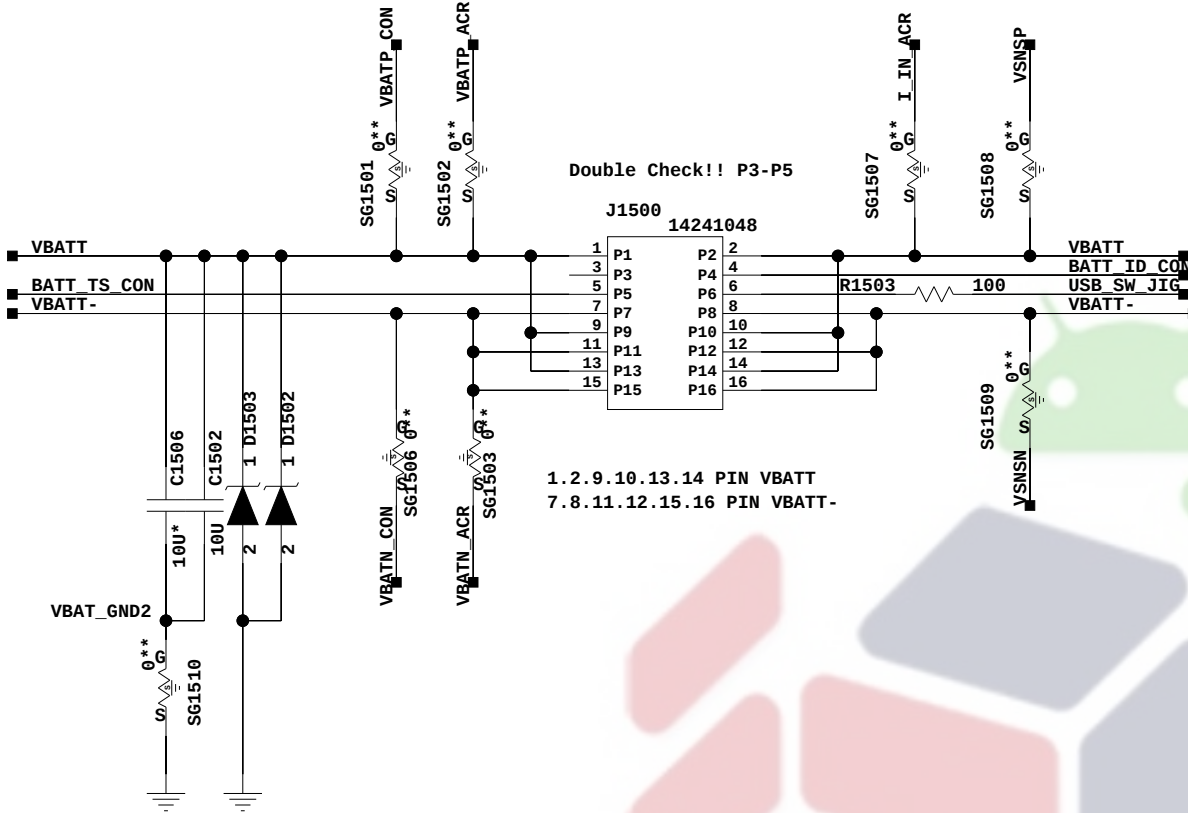
C

D

15. Battery & Fuel gauge

CAD note:1.Trace for 8A
2.Differential trace

Battery Connector

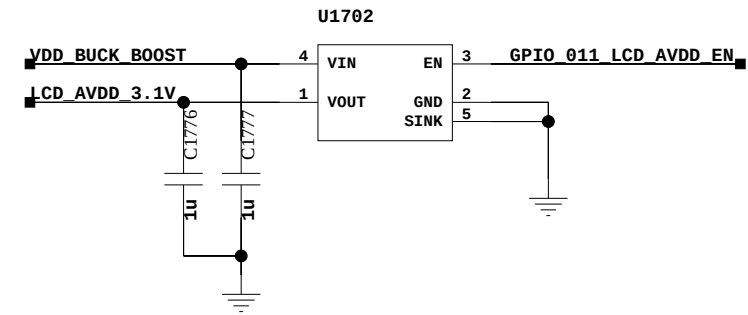
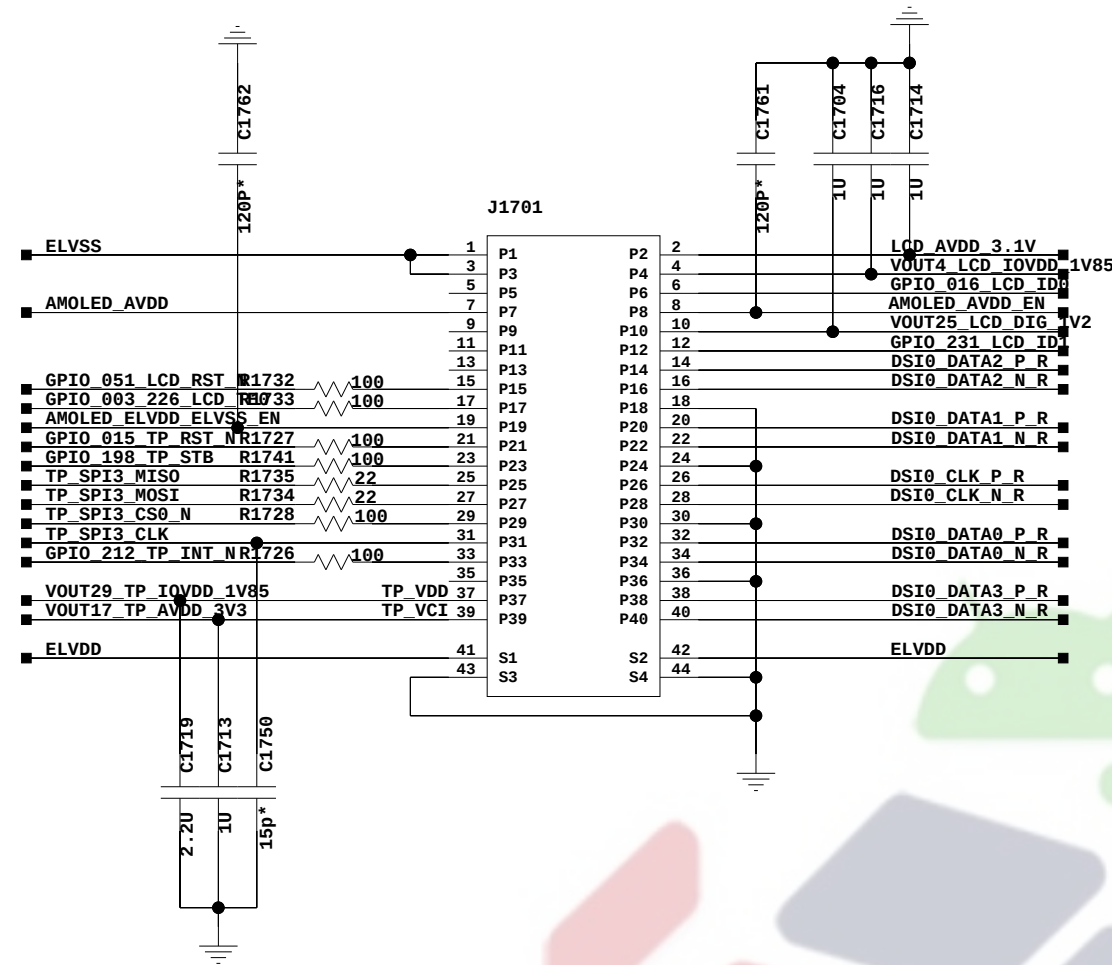


Battery Temperature

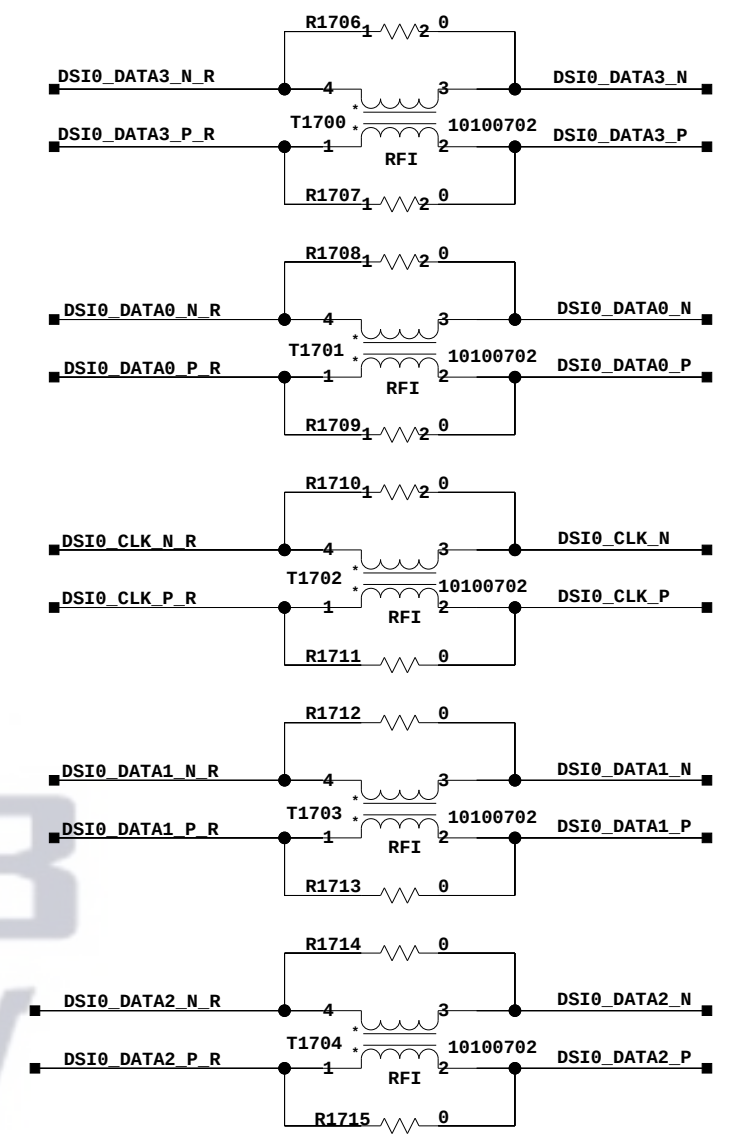
Battery ID

16. SCHARGERV600

17. AMOLED Interface

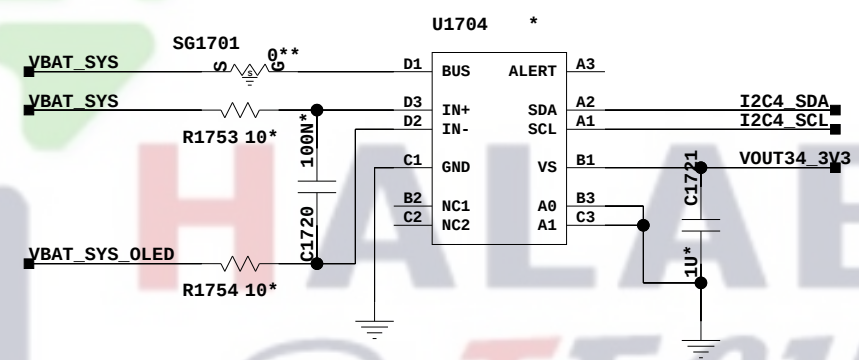


Resistors Share PADS with Inductors

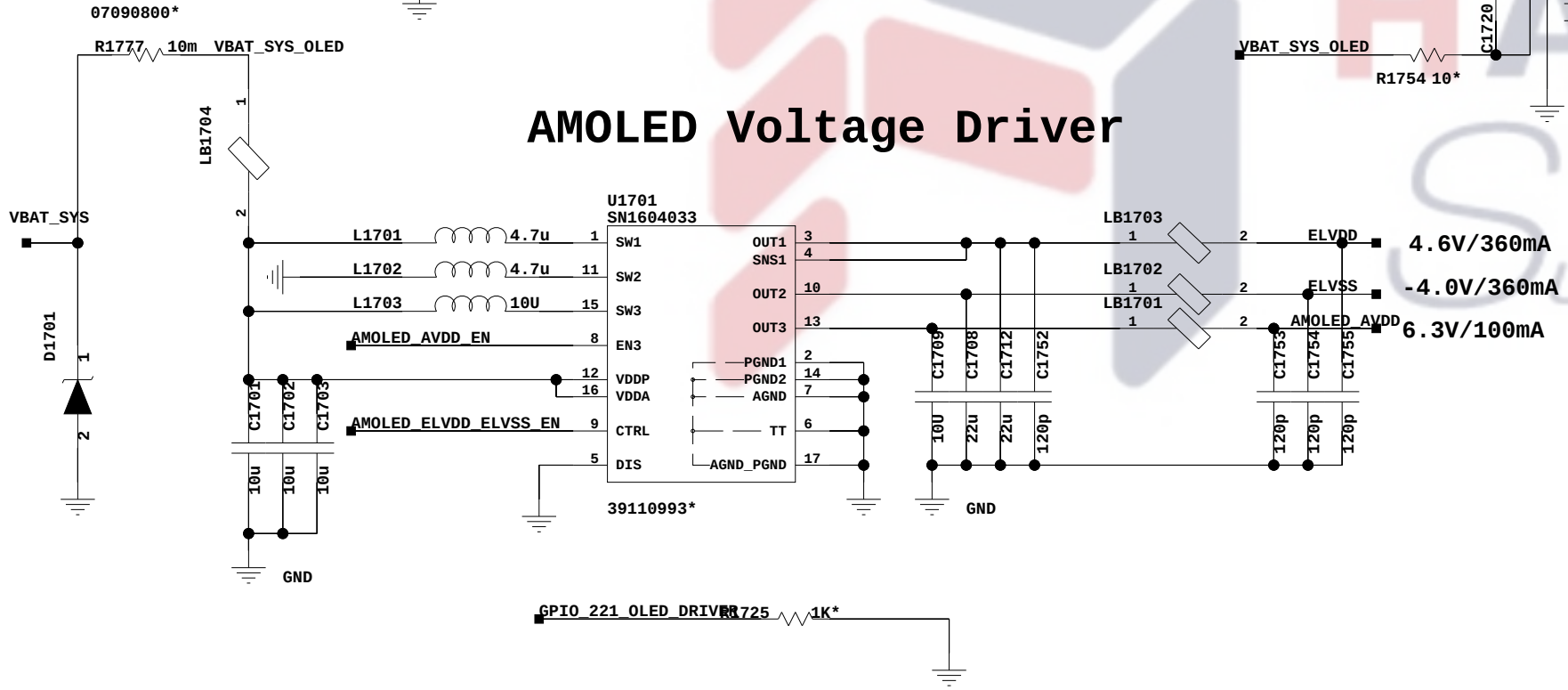


AMOLED Current Test

I2C Address=1000000(0X40)



AMOLED Voltage Driver



AMOLED DRIVER	FOR SAMSUNG	FOR TIANMA
R1725	DNI(DEFAULT)	SMT

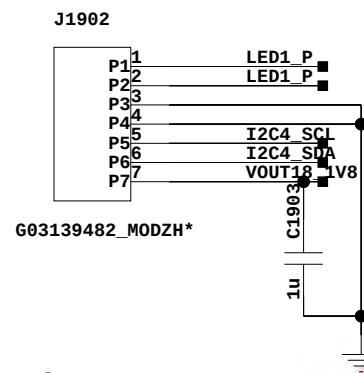
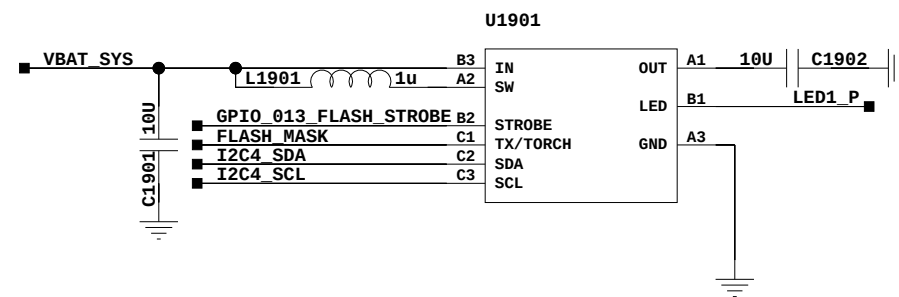
18. Direct Charge LoadSwitch



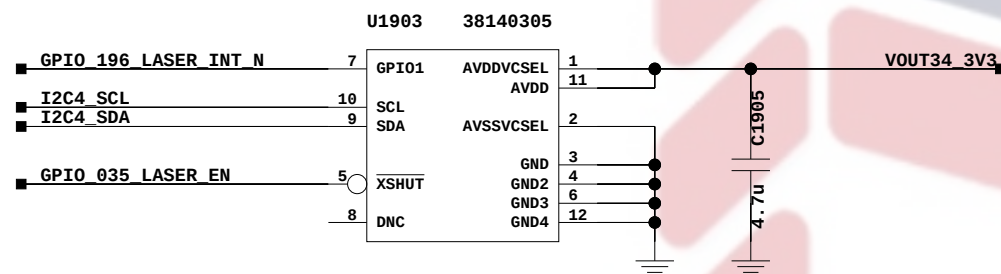
19. Flash LED&TCAM

I2C address=0x63(TI)/0x67(MPS)

rear camera single flash led
software set the limit current 1.5A



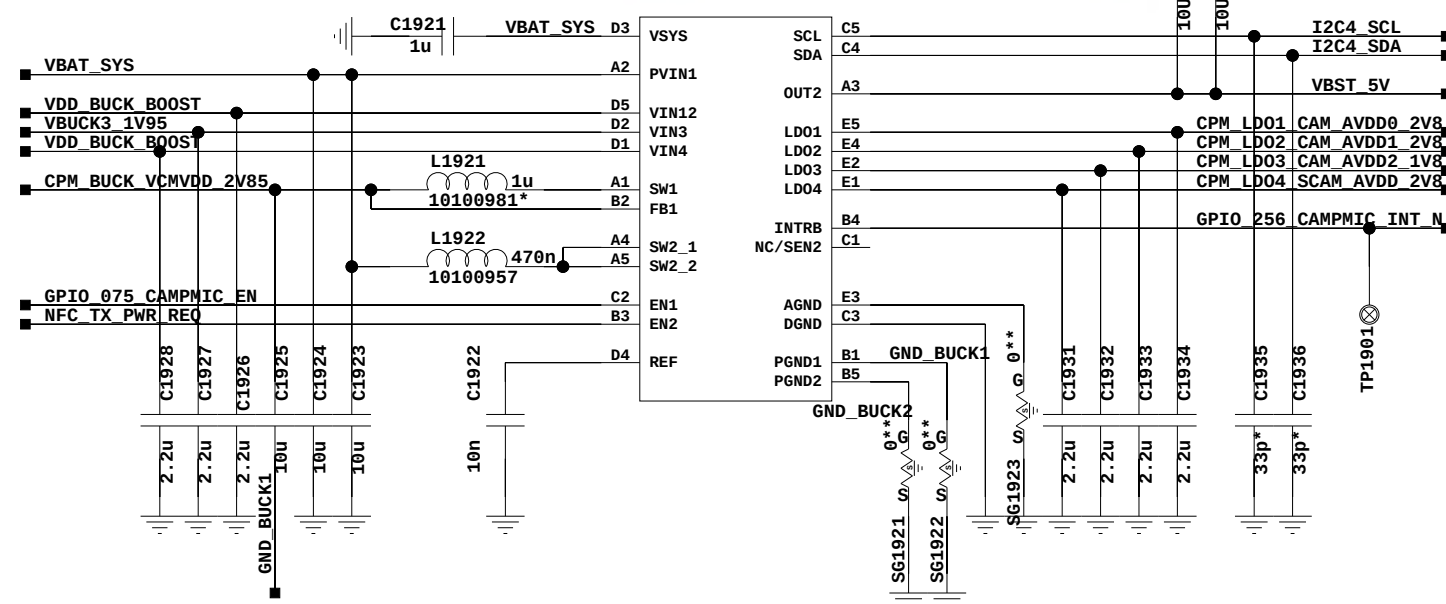
Laser



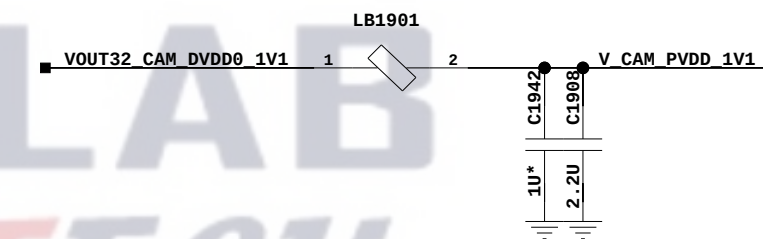
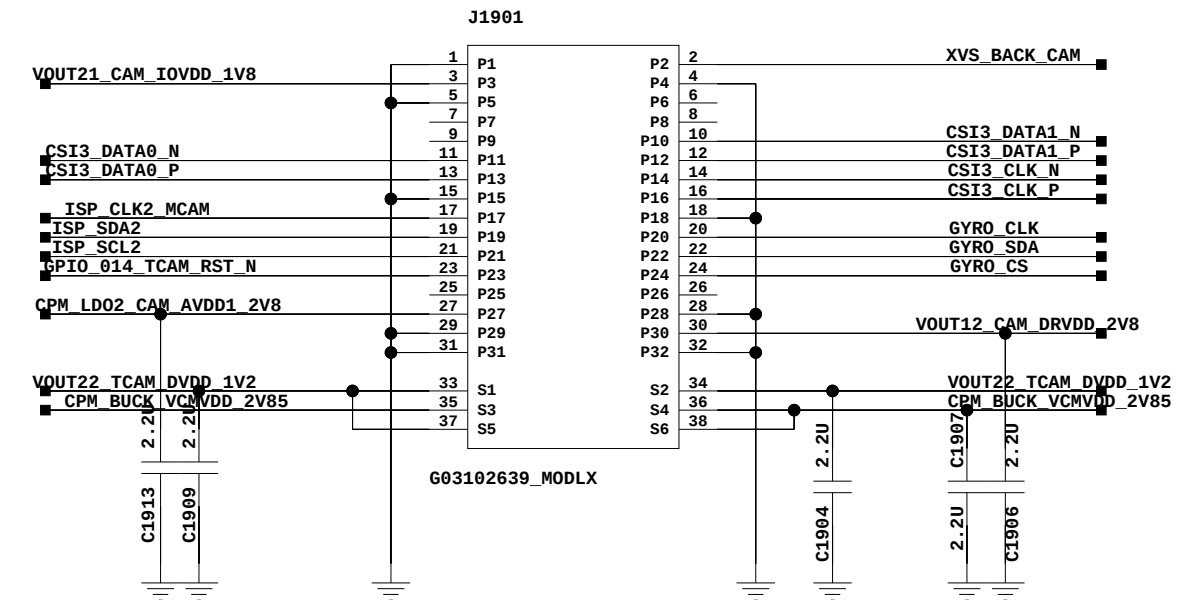
Cam PMIC

I2C ADDRESS=0X1C

U1904 MP54196C-0000-Z



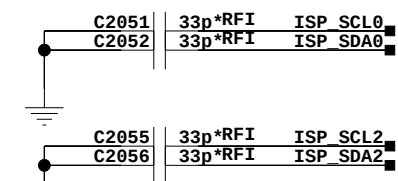
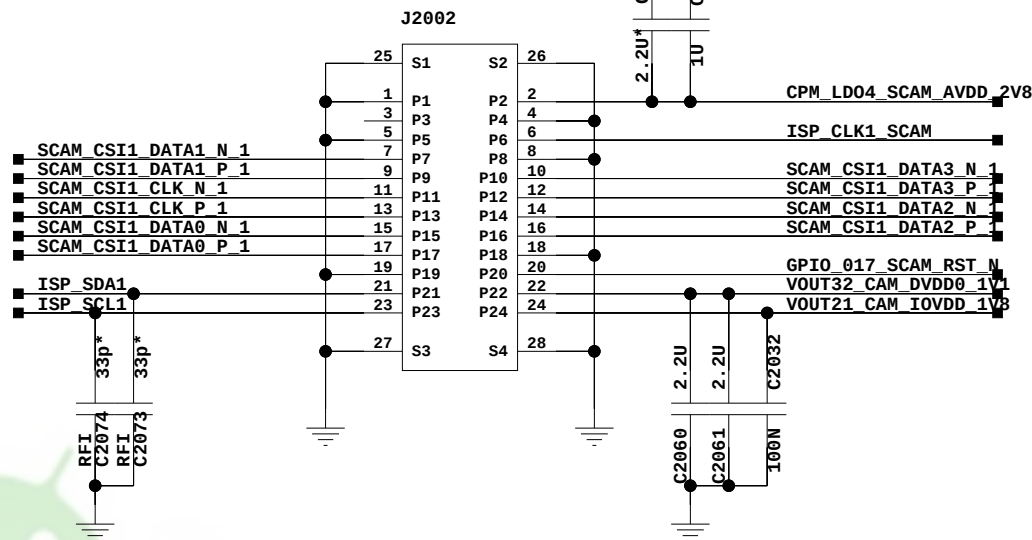
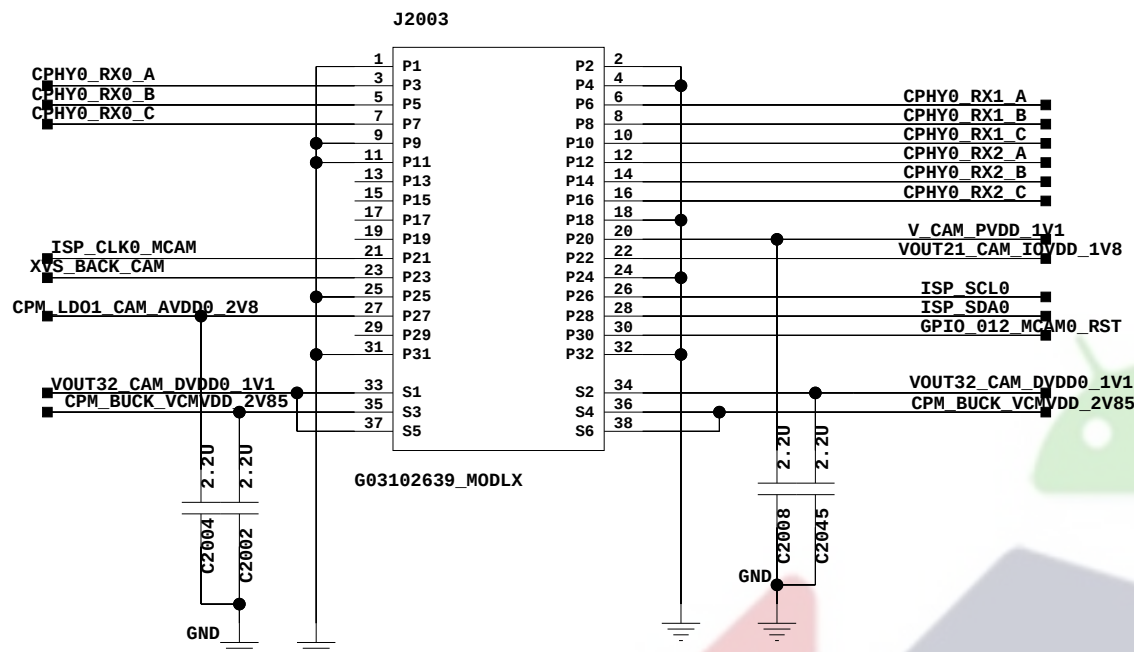
TCAM_B2B



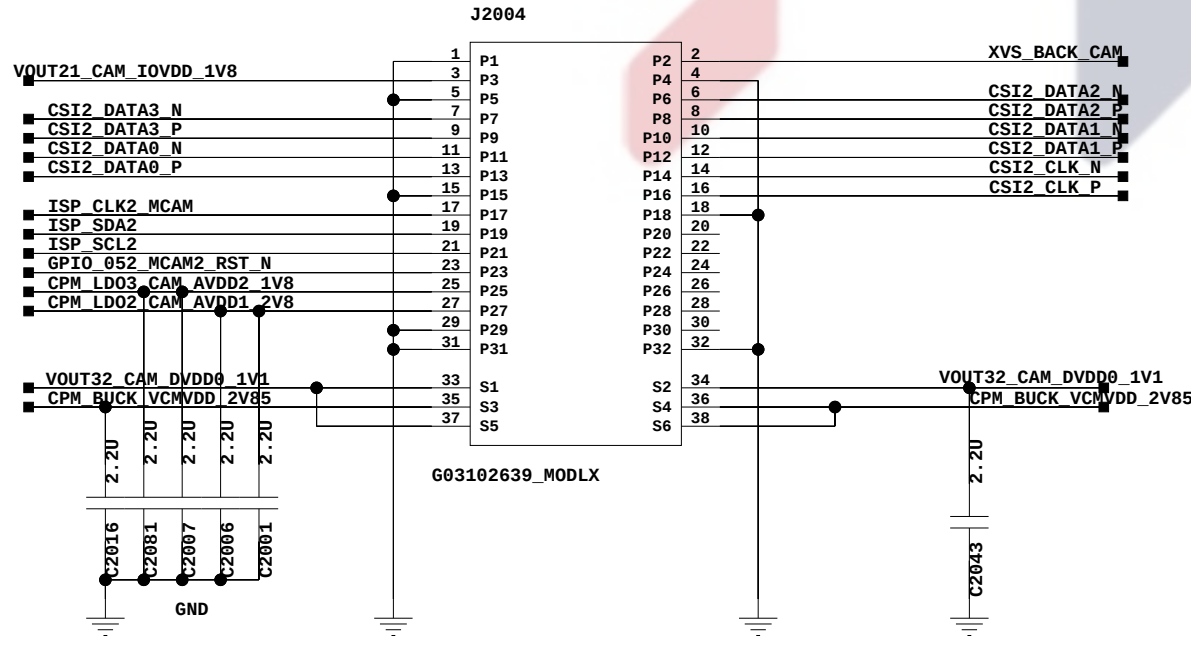
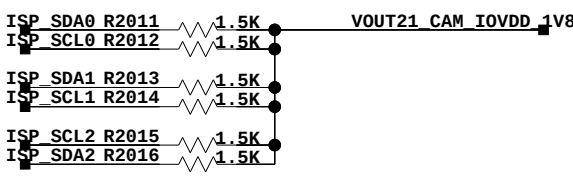
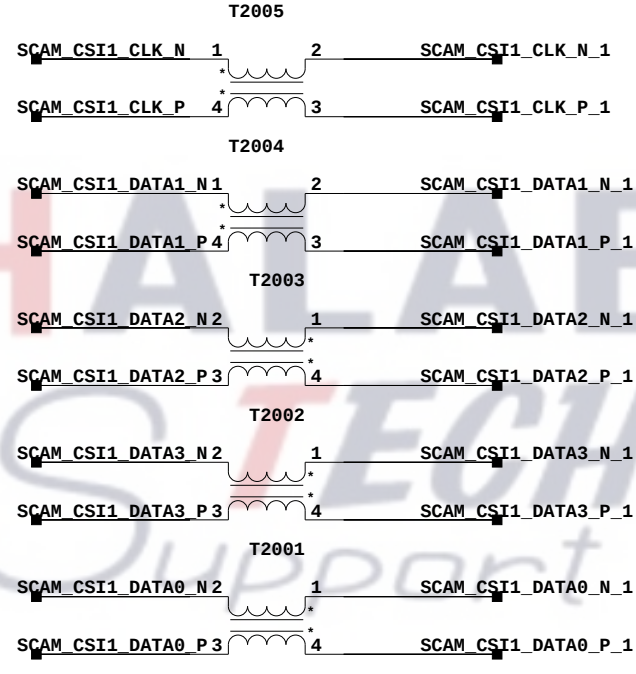
20. Camera

Rear MCAM B2B

Front SCAM B2B

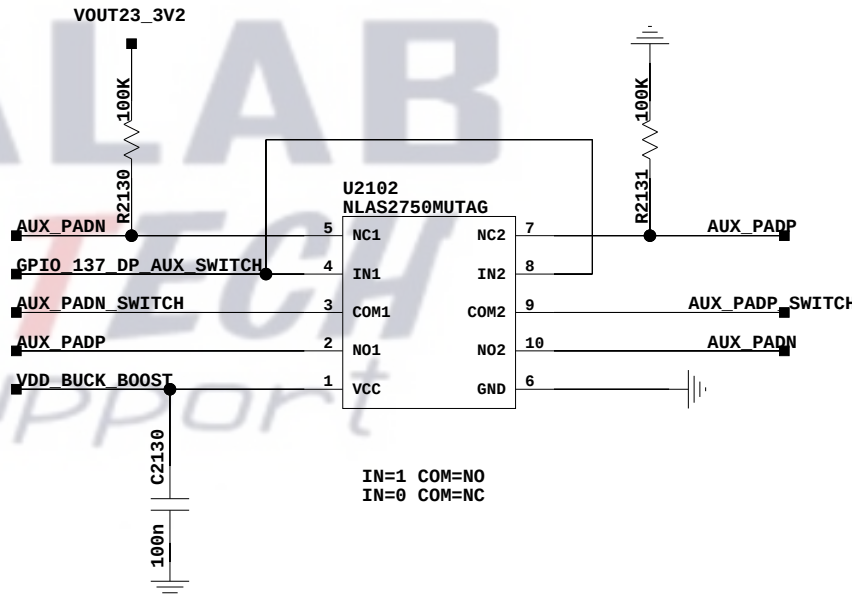
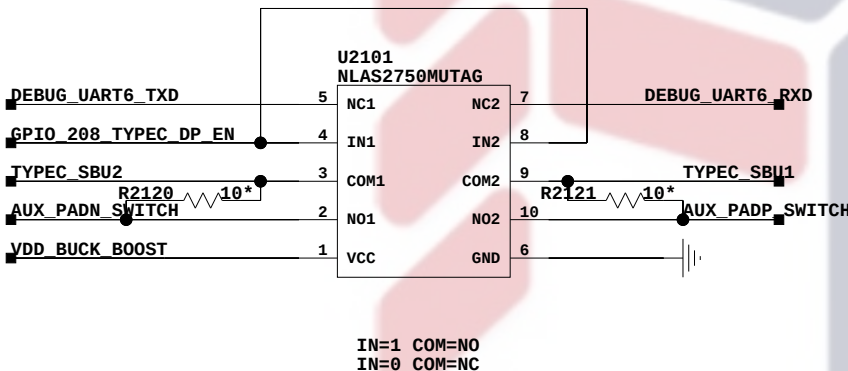
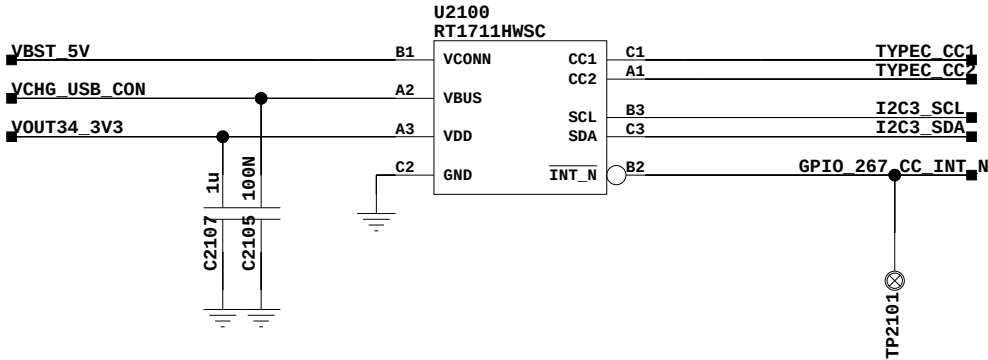
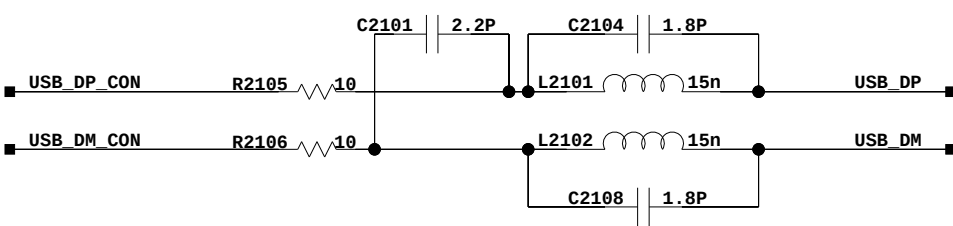


SUB MCAM B2B



21. TYPEC INTERFACE

TypeC PD IC



22. CODEC HI6405

A

B

C

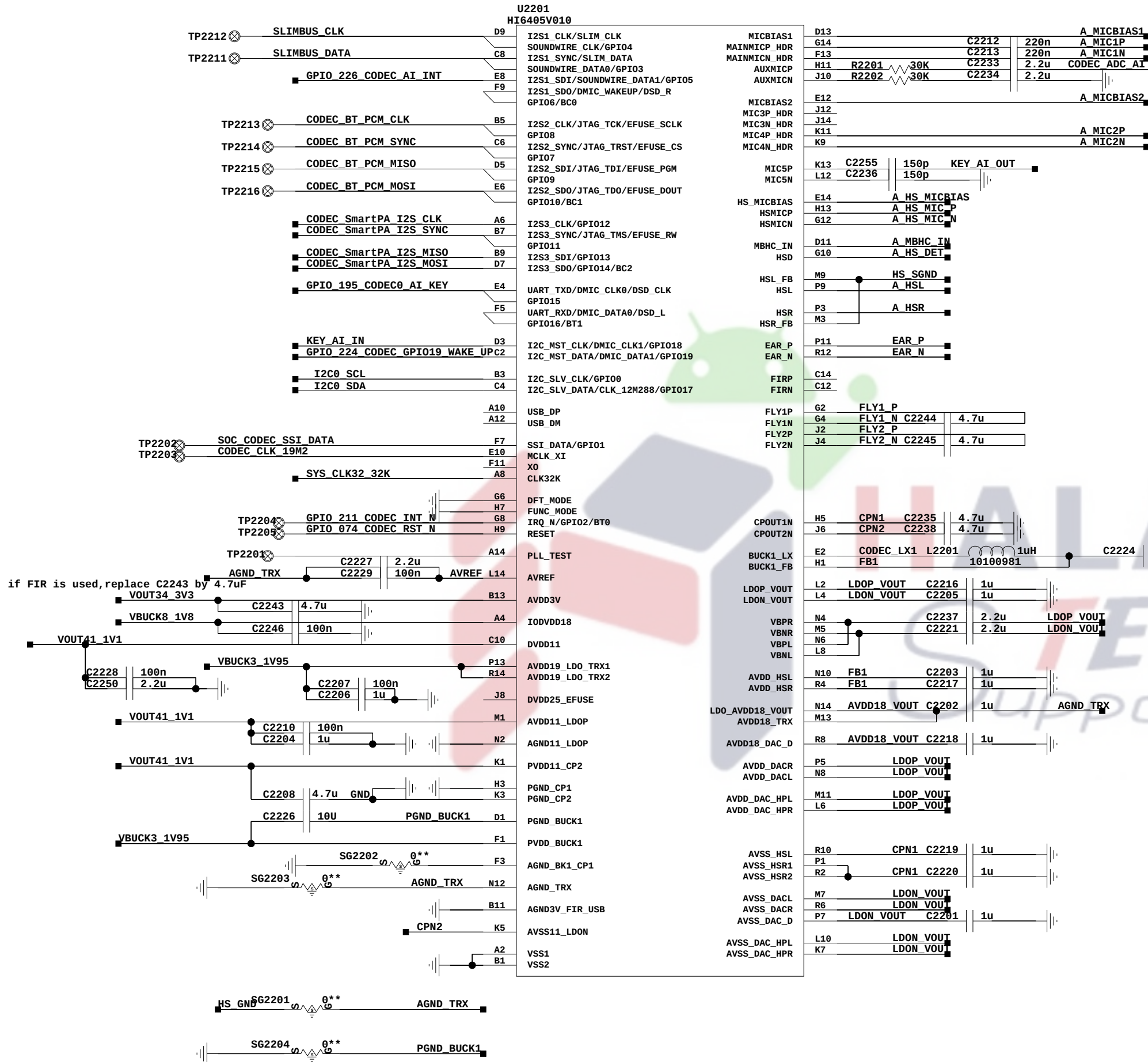
D

A

B

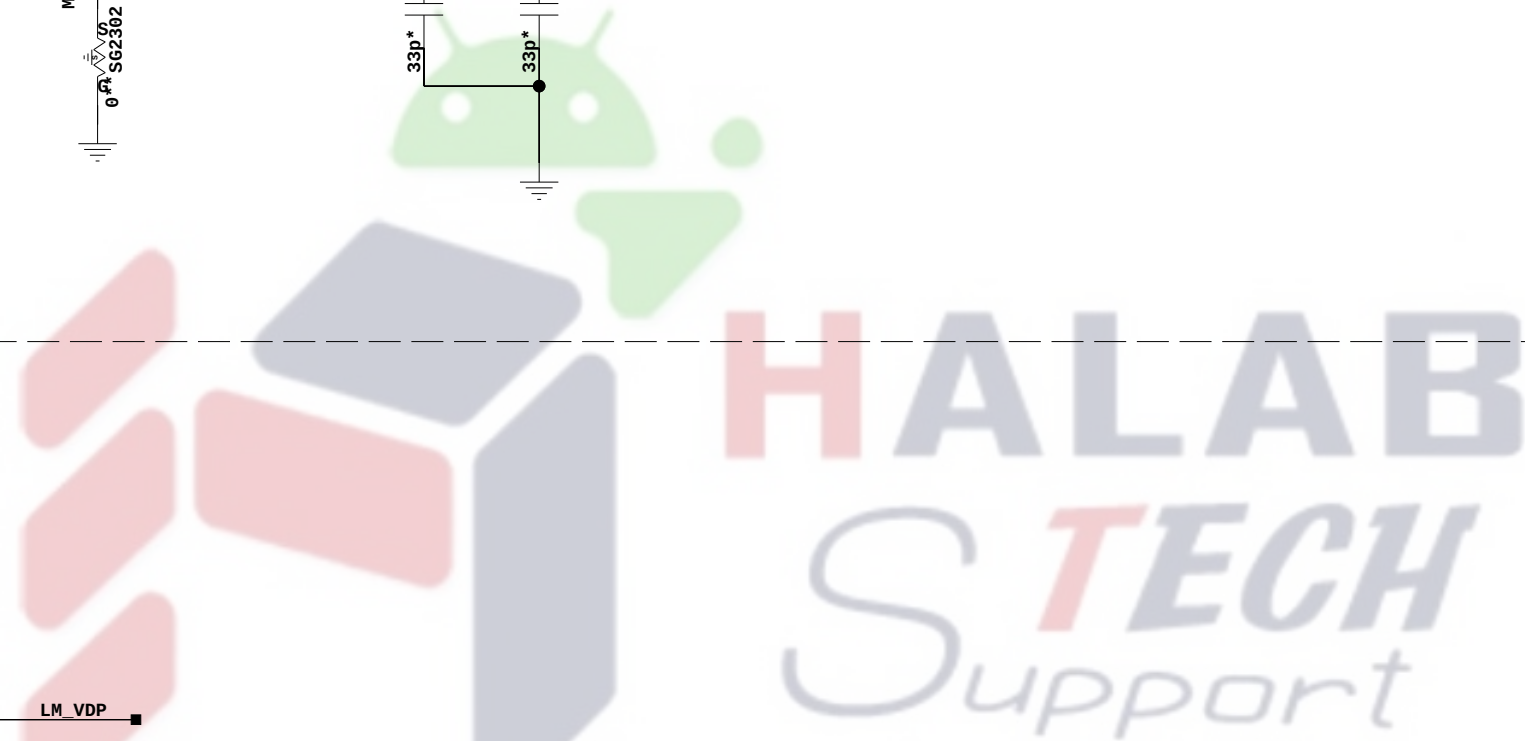
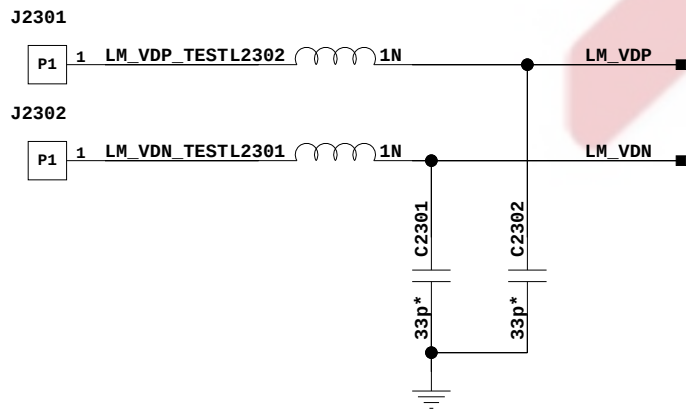
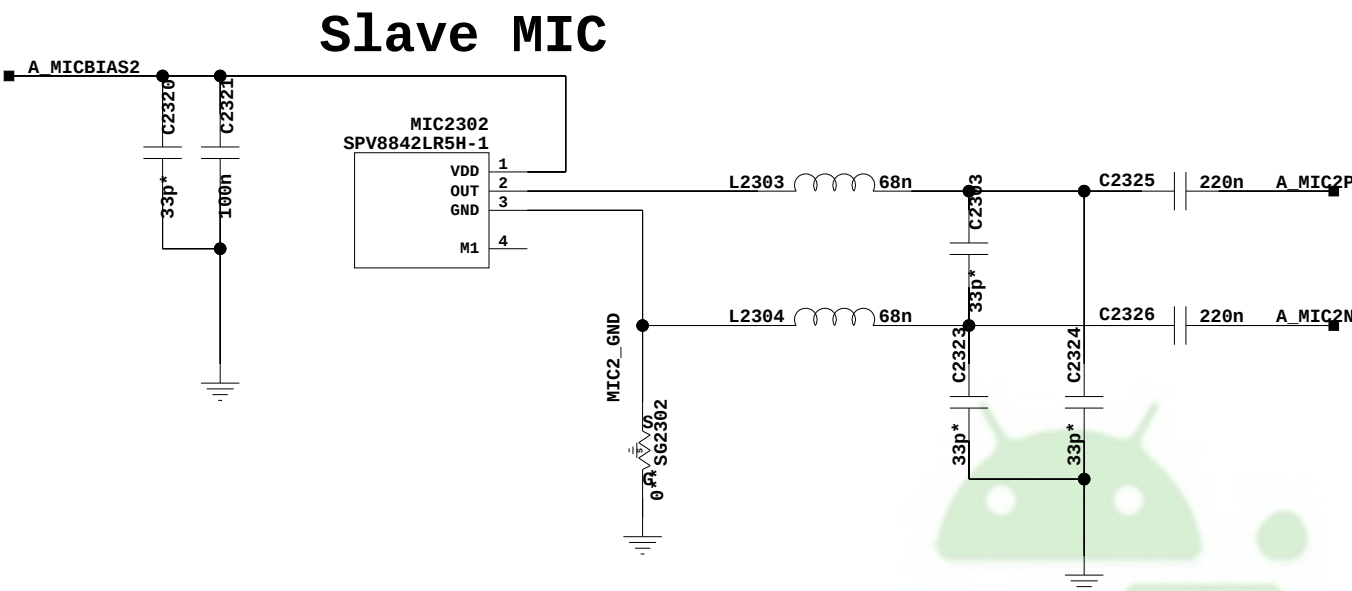
C

D



MAIN MIC1 Close To SPK
Reference MIC Close To Camera

23. MIC/VIB

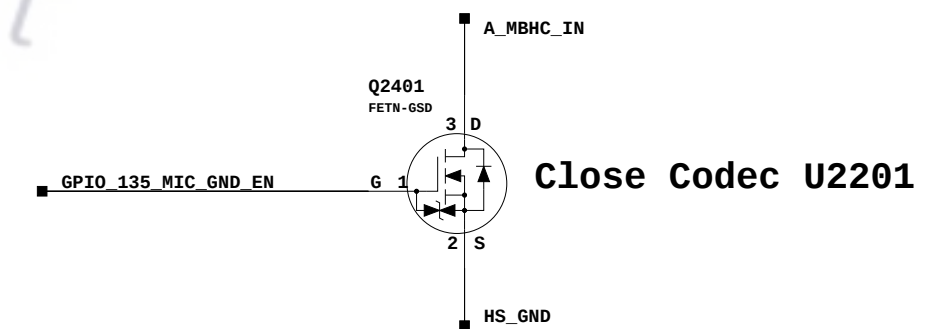
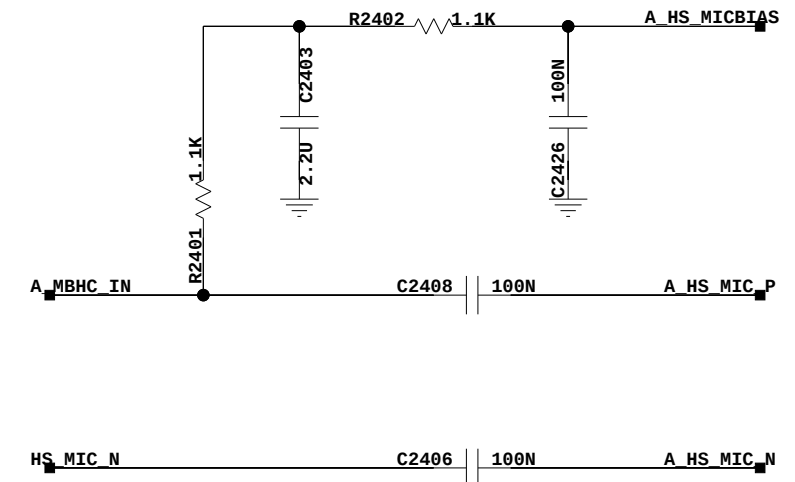
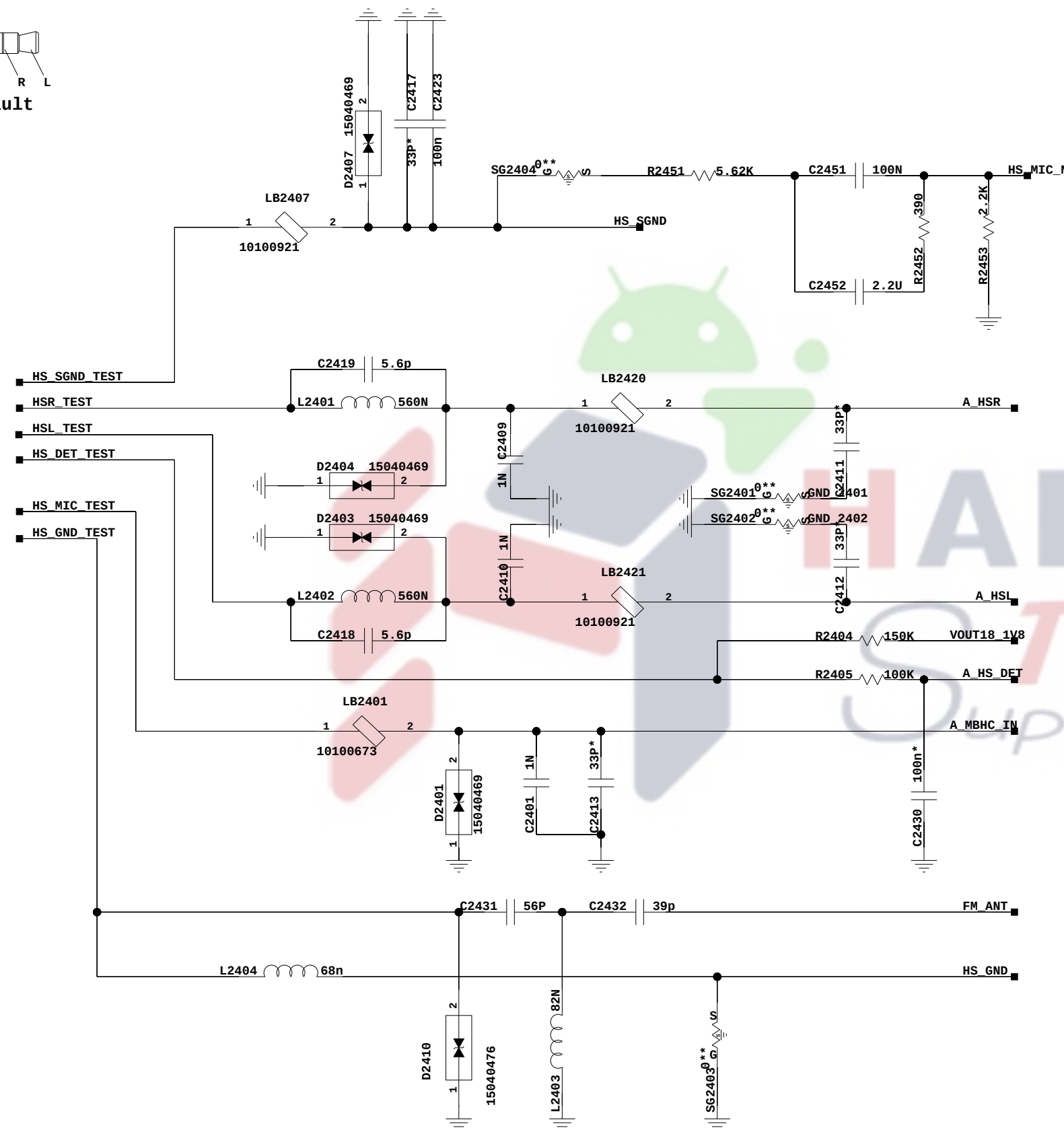
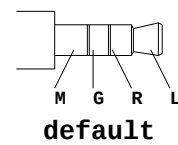


24. Headphone

CAD note:

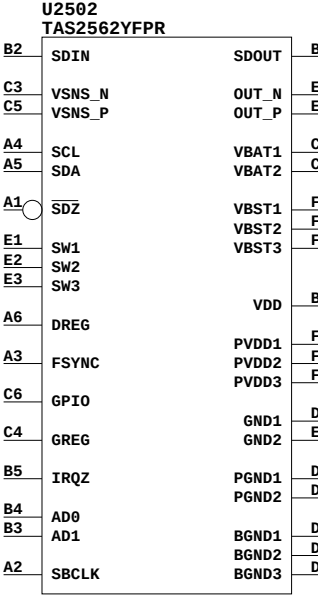
LB2401/LB2402/LB2403/LB2404/LB2407/LB2408

- the signal before and after them route can not cross and overlap
- forbidden to place in parallel, need to place vertically

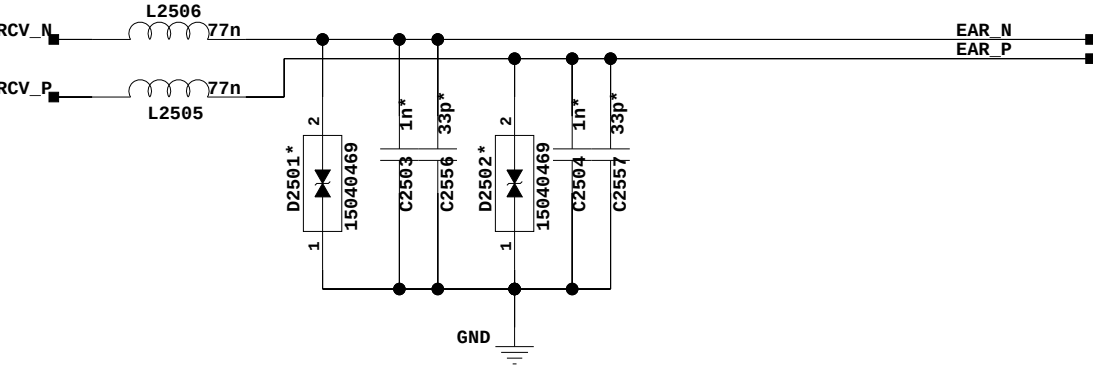
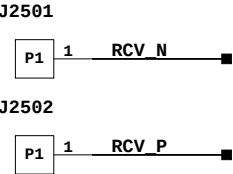
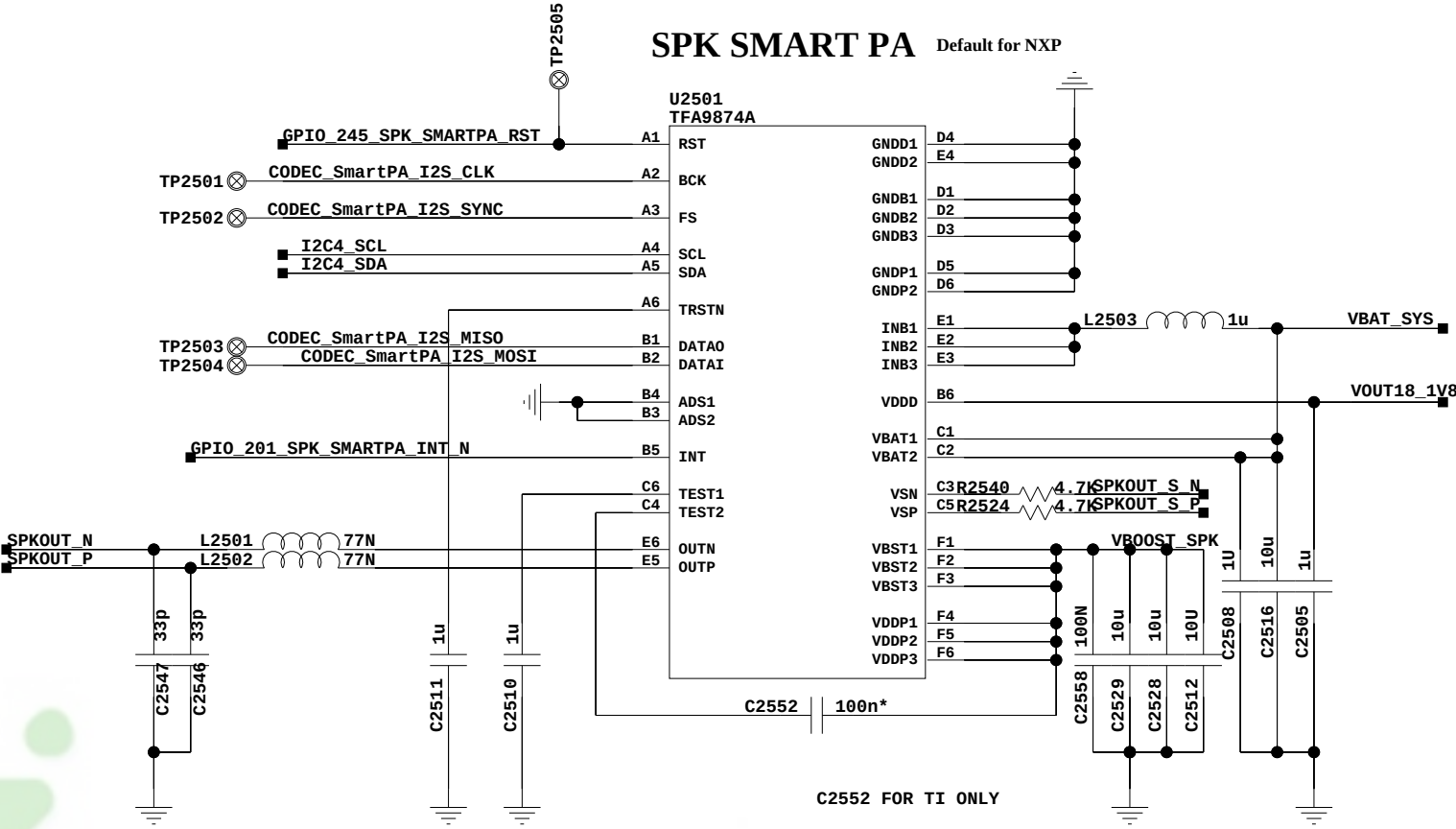
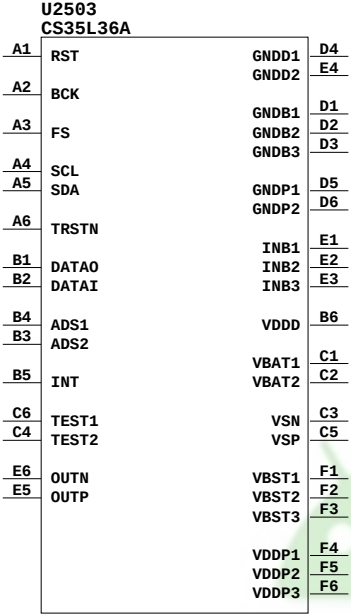


25. Audio

SPK SMART PA For TI Share PAD with U2501



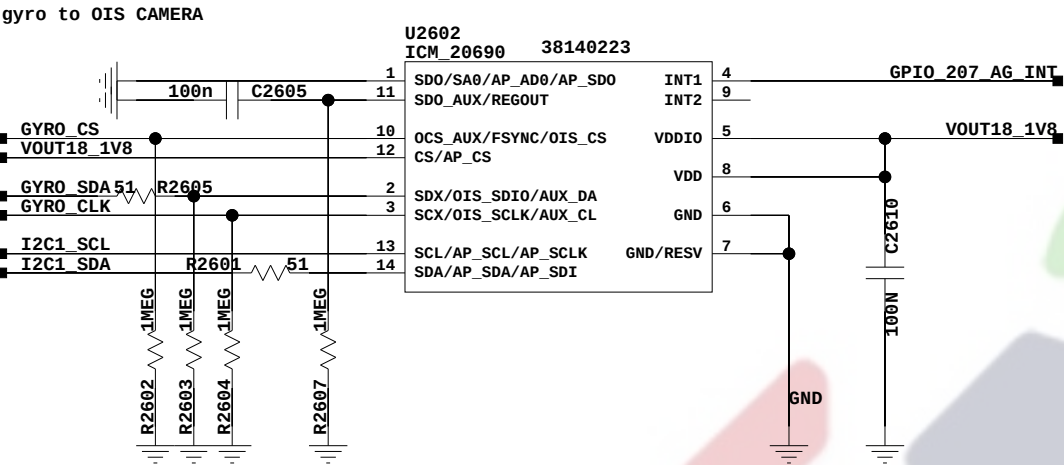
SPK SMART PA For Cirrus Share PAD with U2501



26. X-Sensor

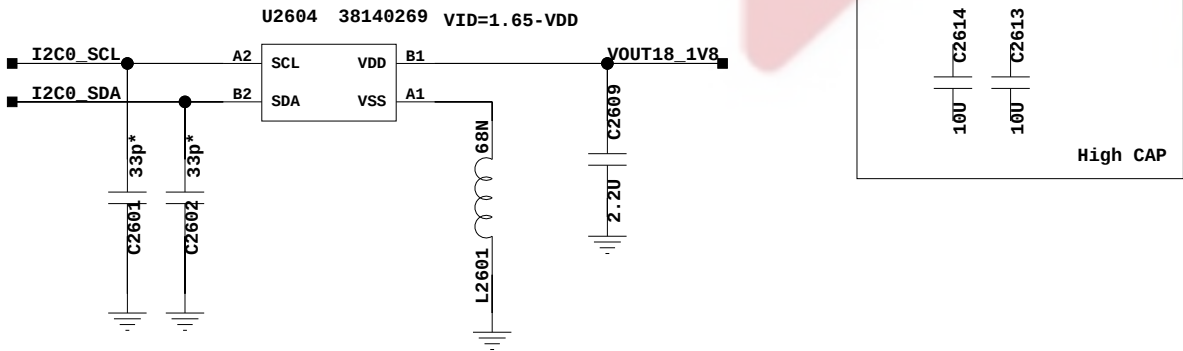
Accelerometer and Gyroscope 6-AXIS SENSOR

SD0=1 ADDRESS=0X6B(ST)/0X69(INVENSENS)
SD0=0 ADDRESS=0X6A(ST)/0X68(INVENSENS)



Compass

I2C Address=0001101(0x0C)

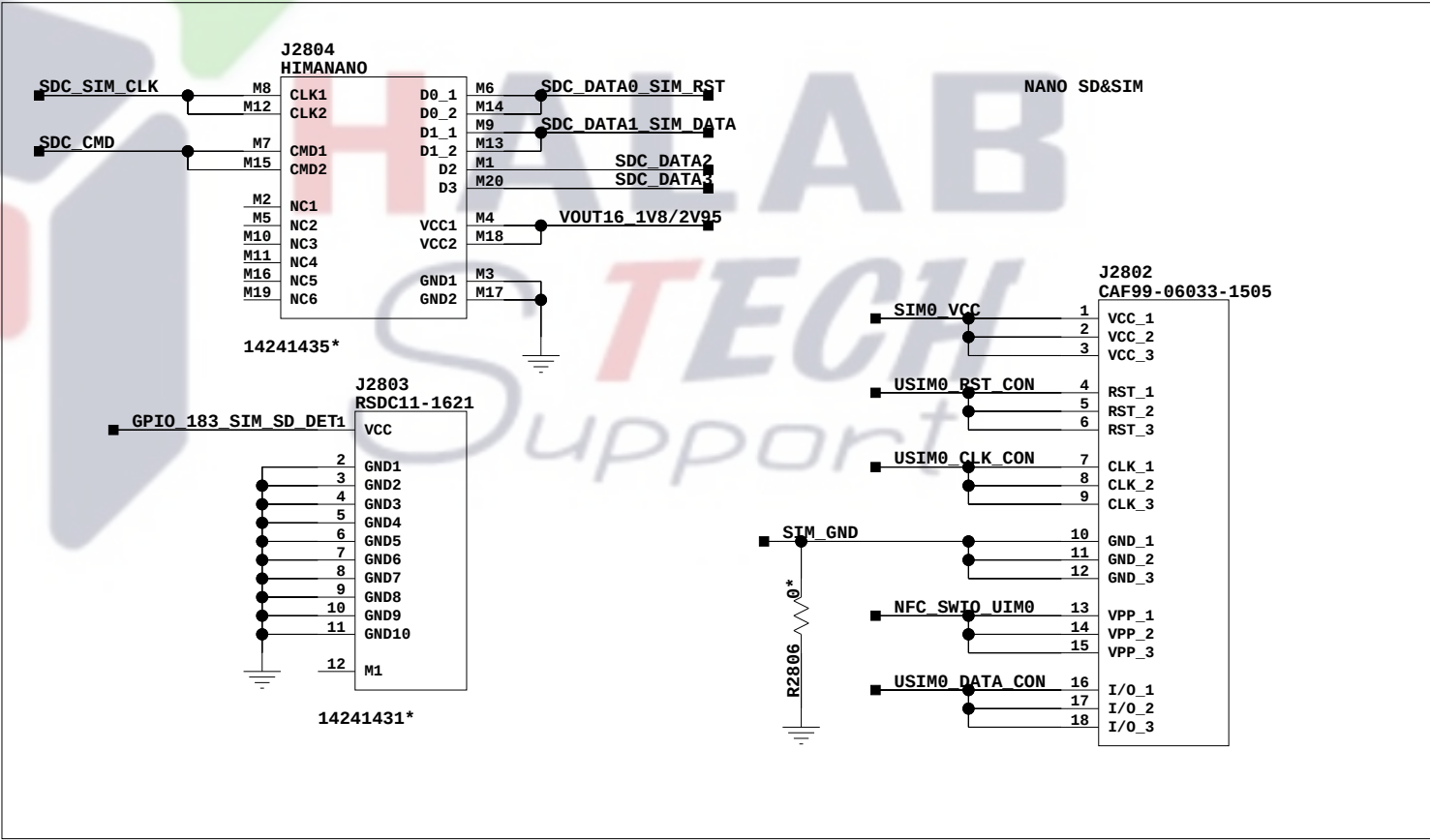
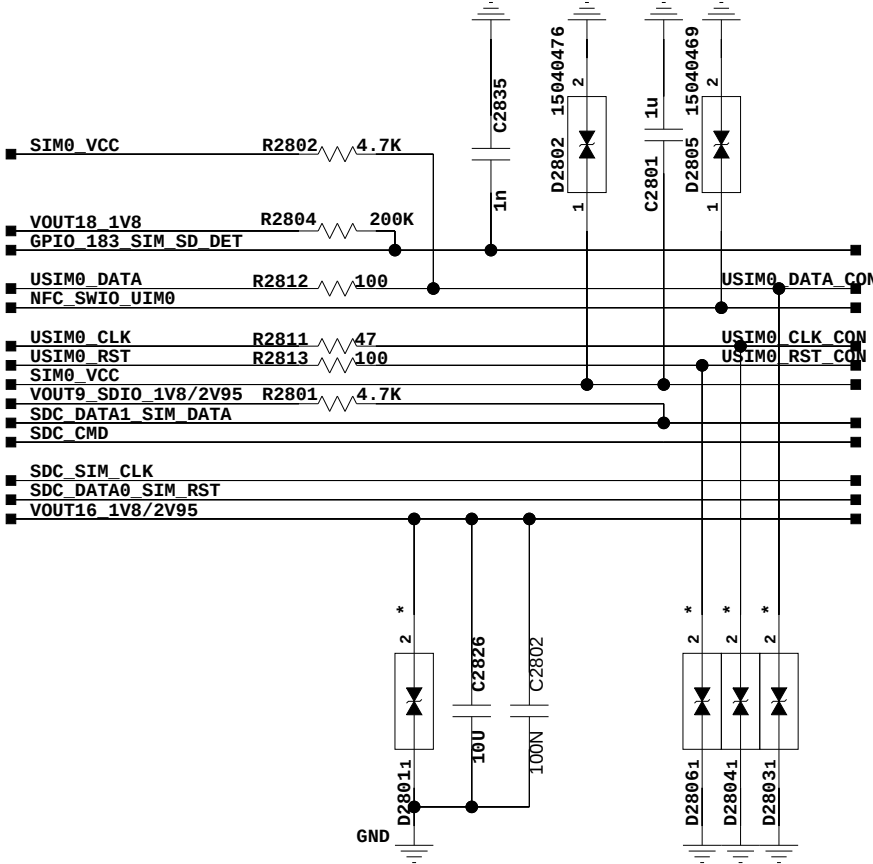


27. HOMO

28.SIM/NANO SD Card

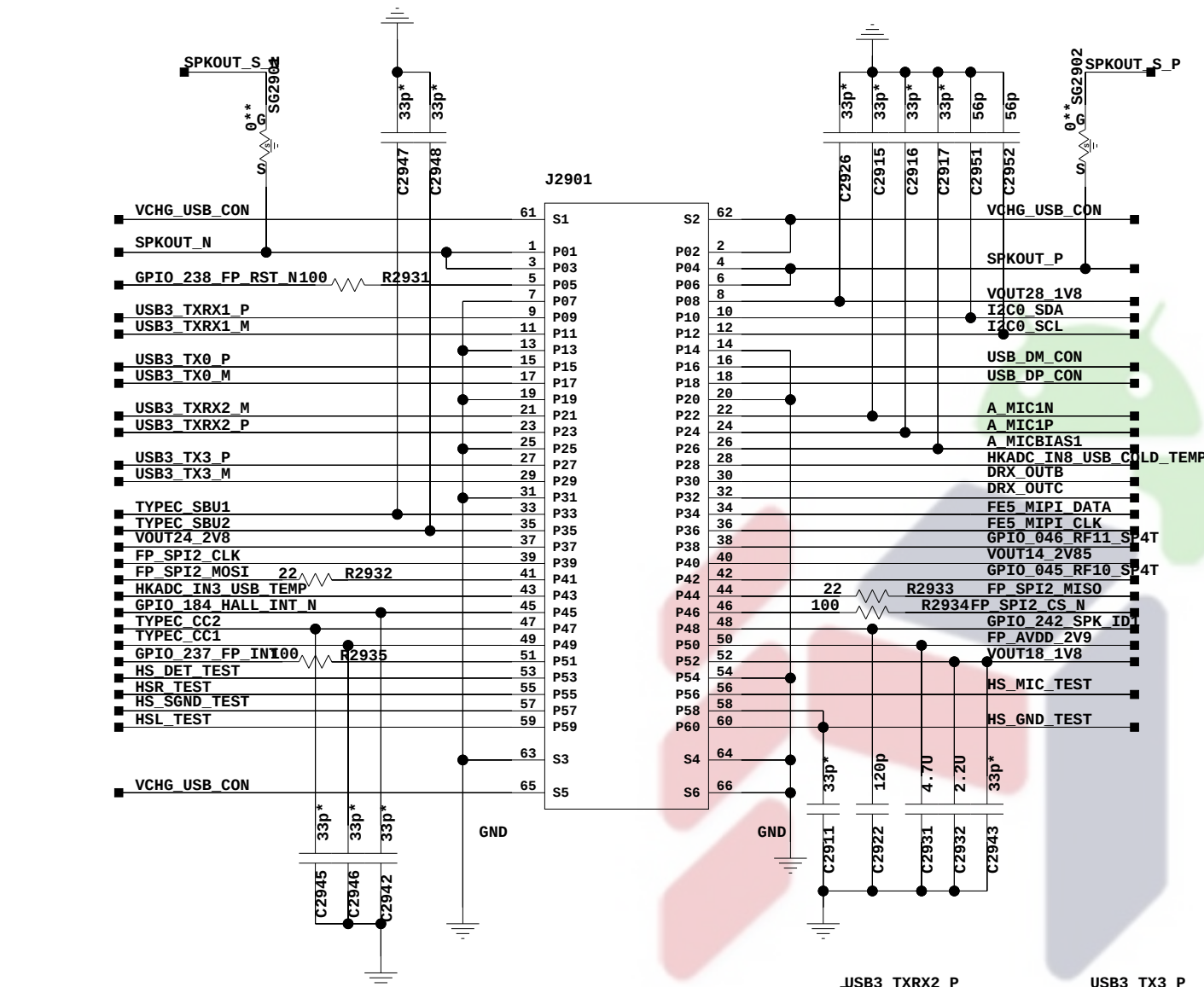
SIM0

SIM1&SD

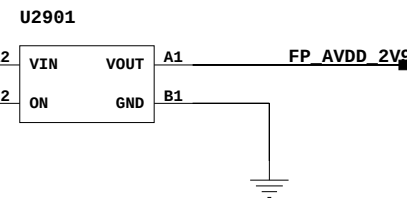


29. FPC Interface

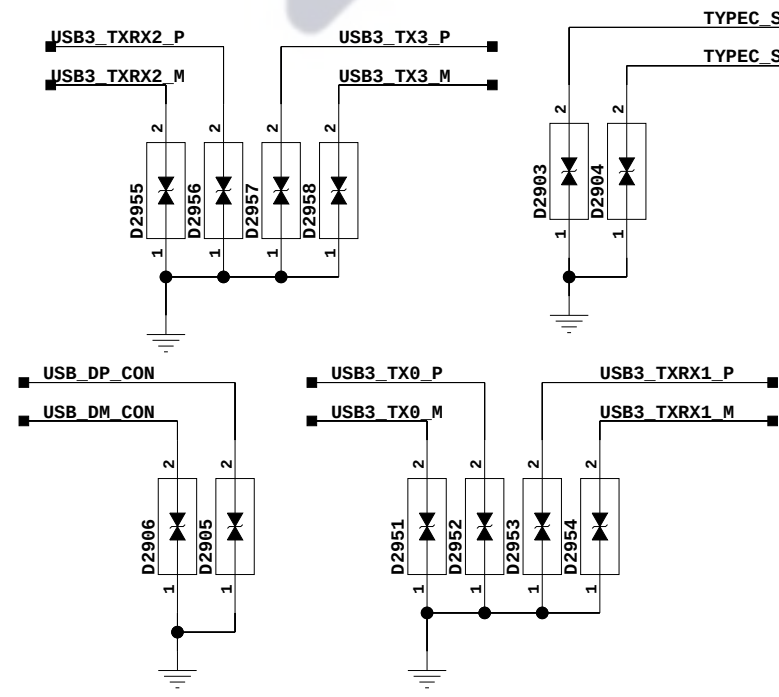
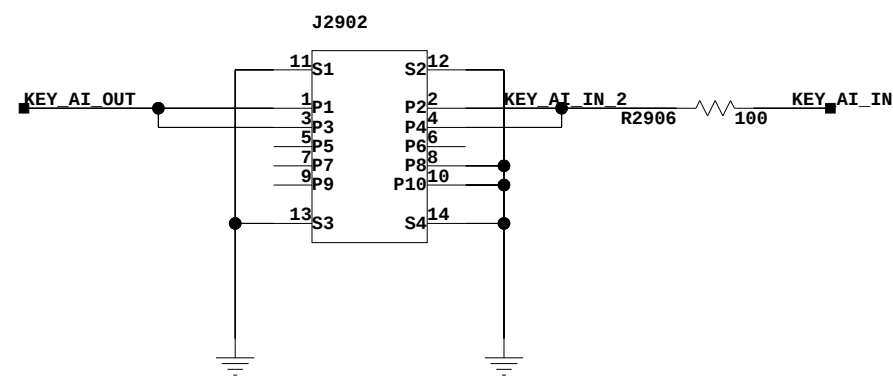
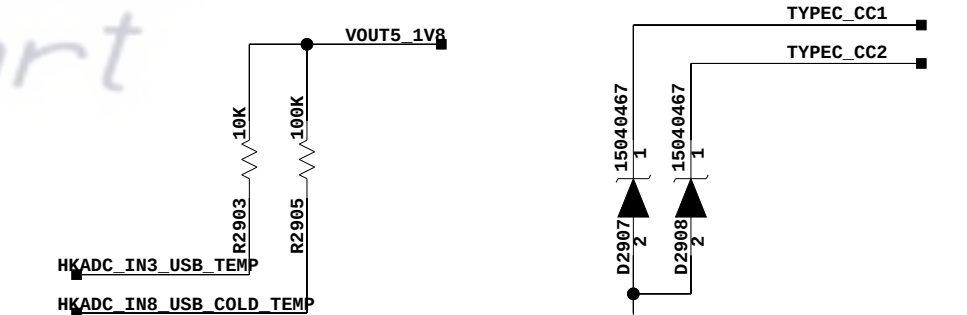
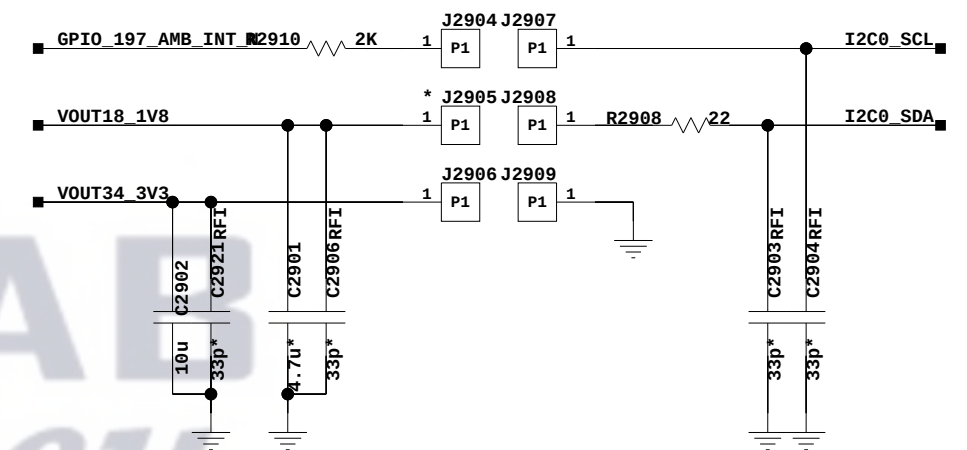
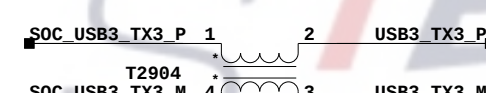
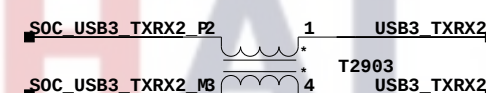
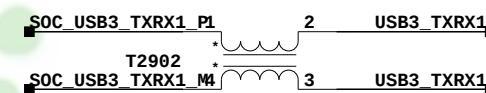
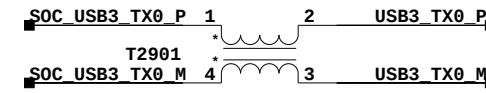
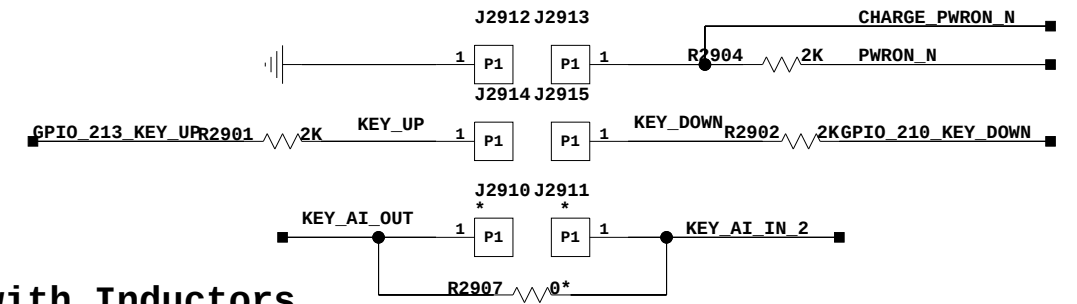
MAIN FPC BTB Female



Resistors Share PADS with Inductors

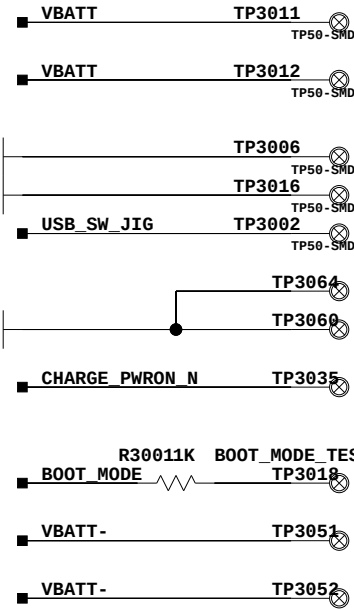


KEY BTB



30. Test Points/Shields

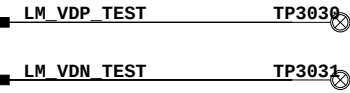
CBT TEST POINT



TYPE C



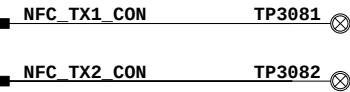
Vibrator



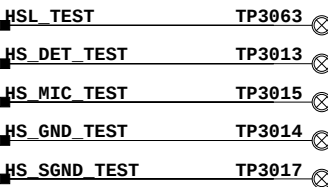
Speaker



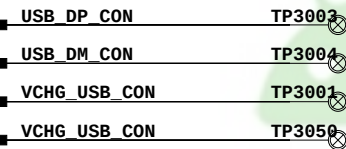
NFC



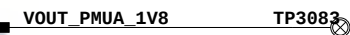
Headset



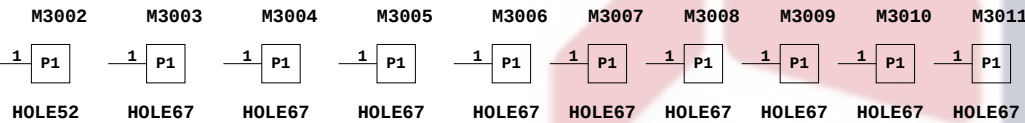
USB



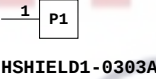
V_BUCK_BOOST



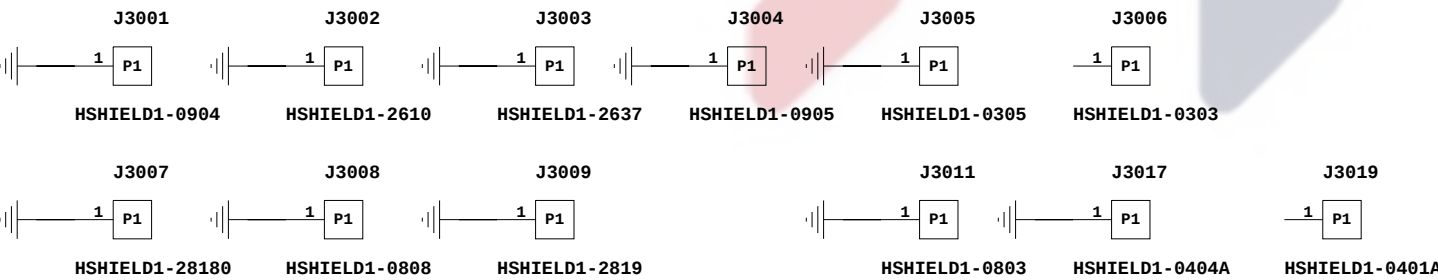
HOLE



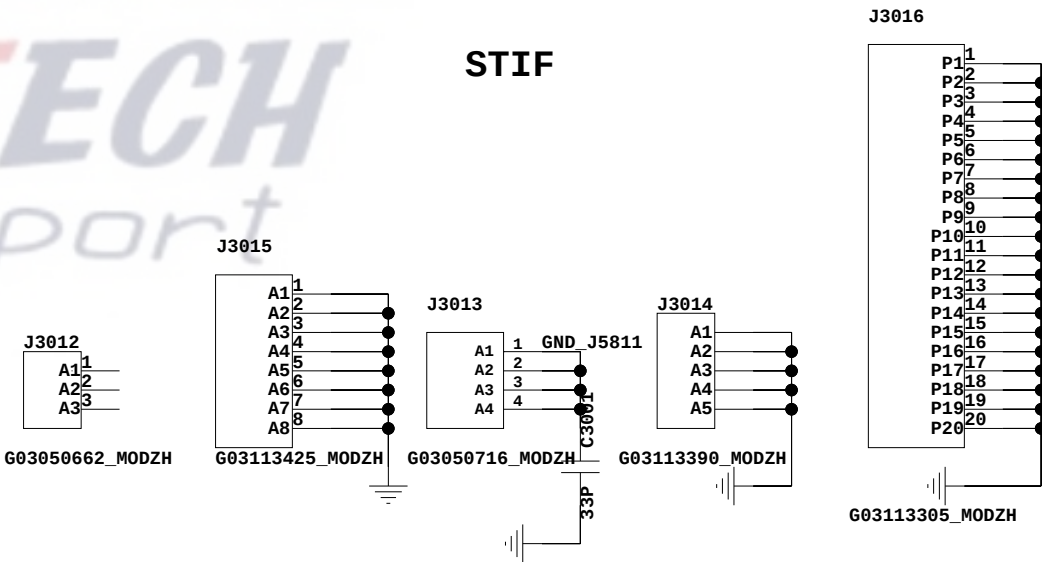
J3039



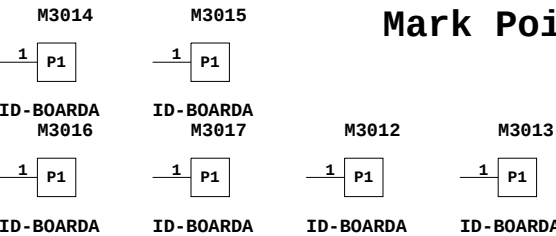
SHIELD



STIF

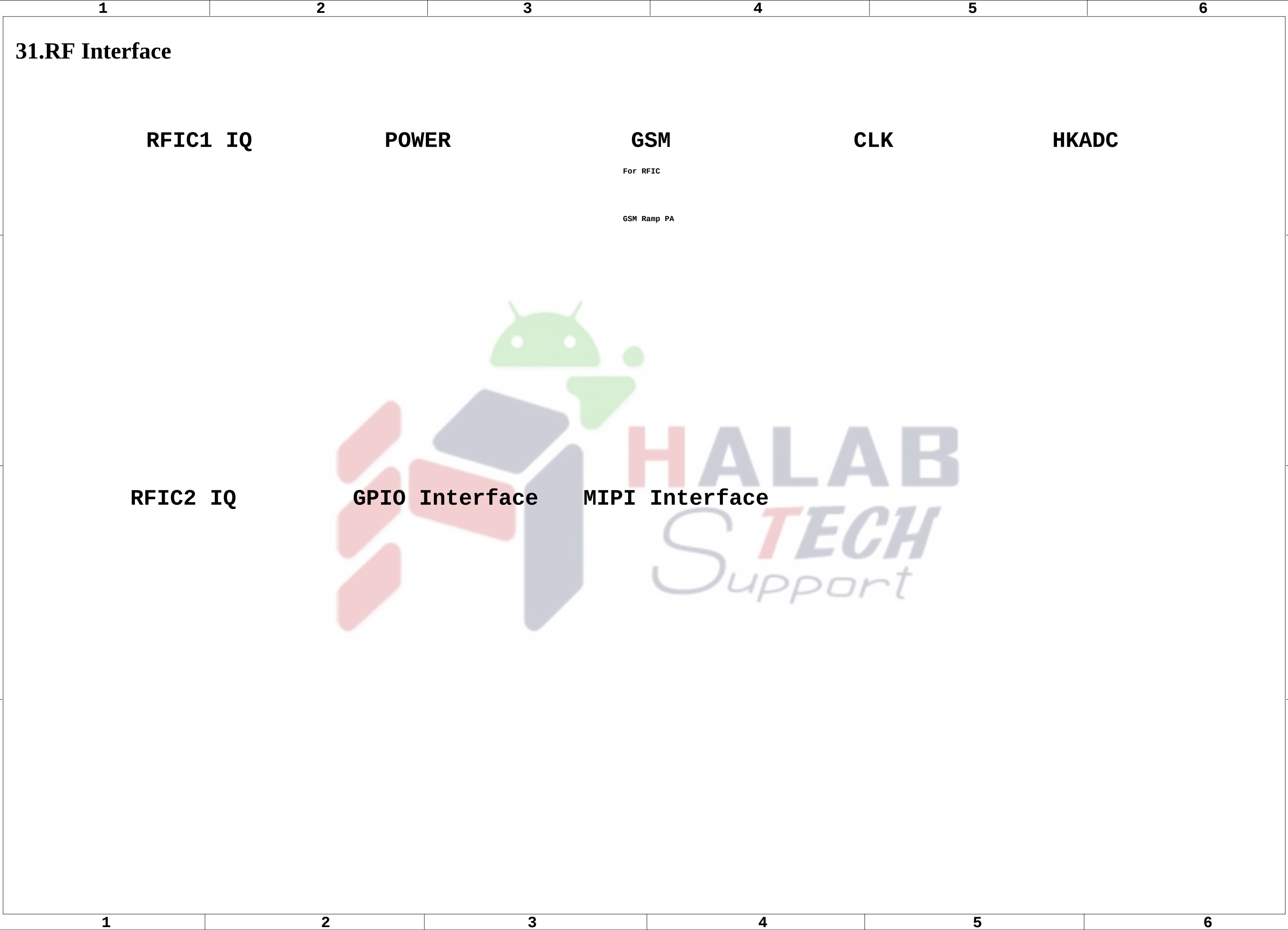


Mark Point

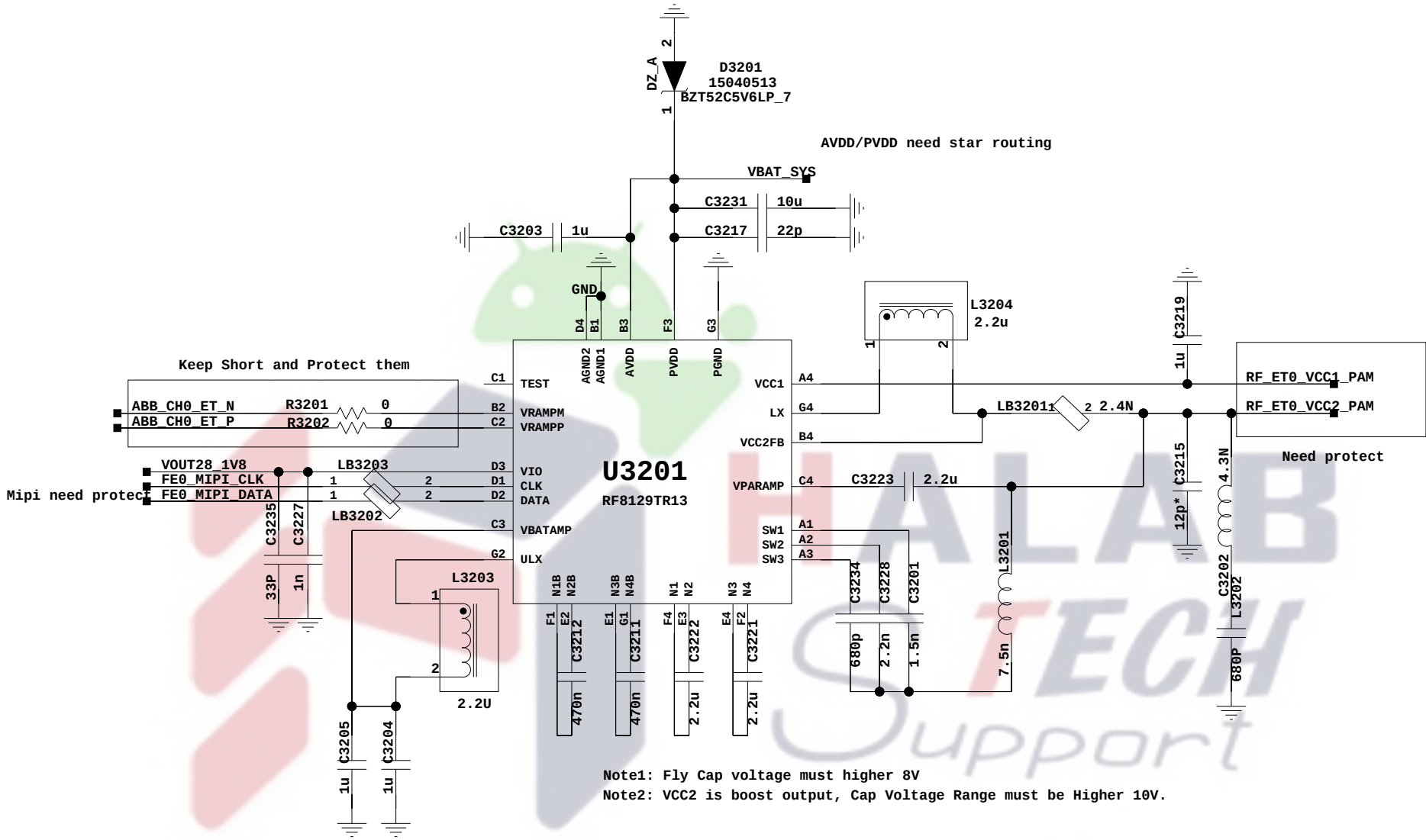


Hook

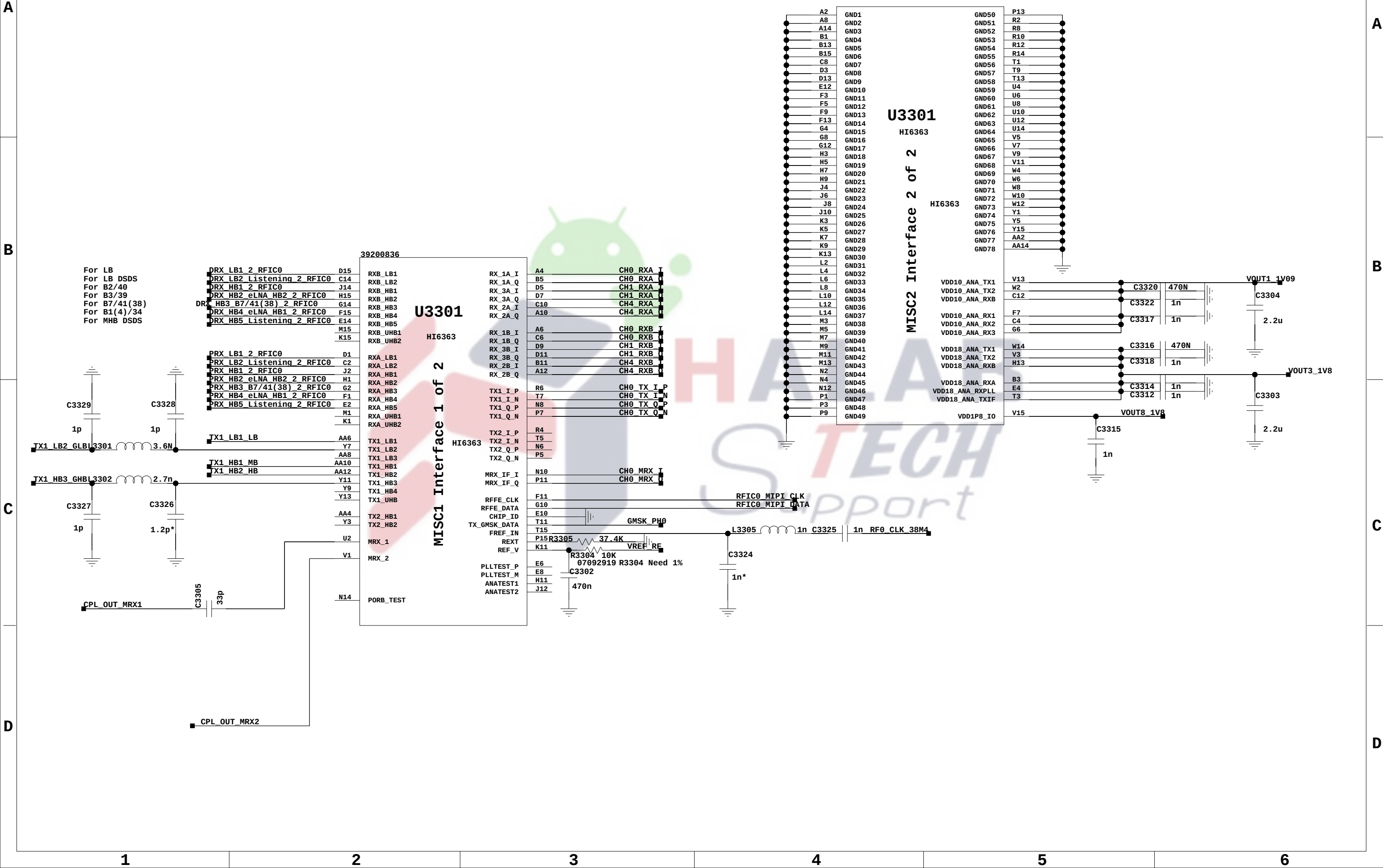
HOOK



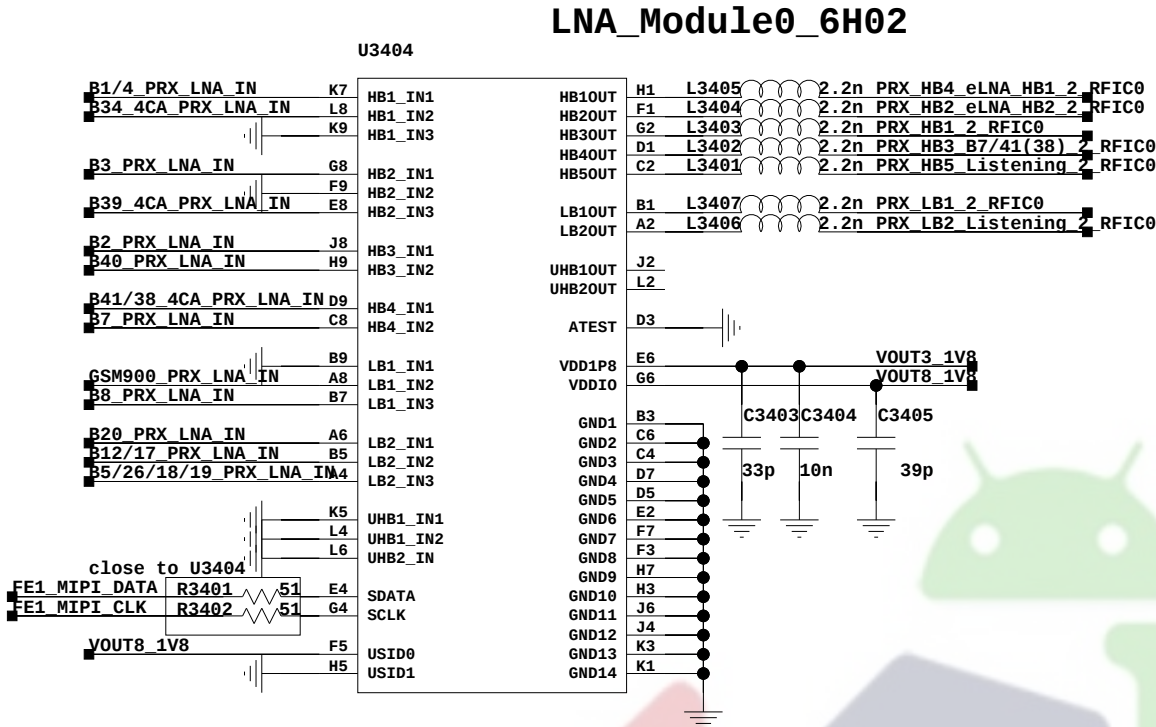
ETM1.0
USID=0XC-1100-12



33. RF Transceiver_HI6363_01



34.eLNA PRX

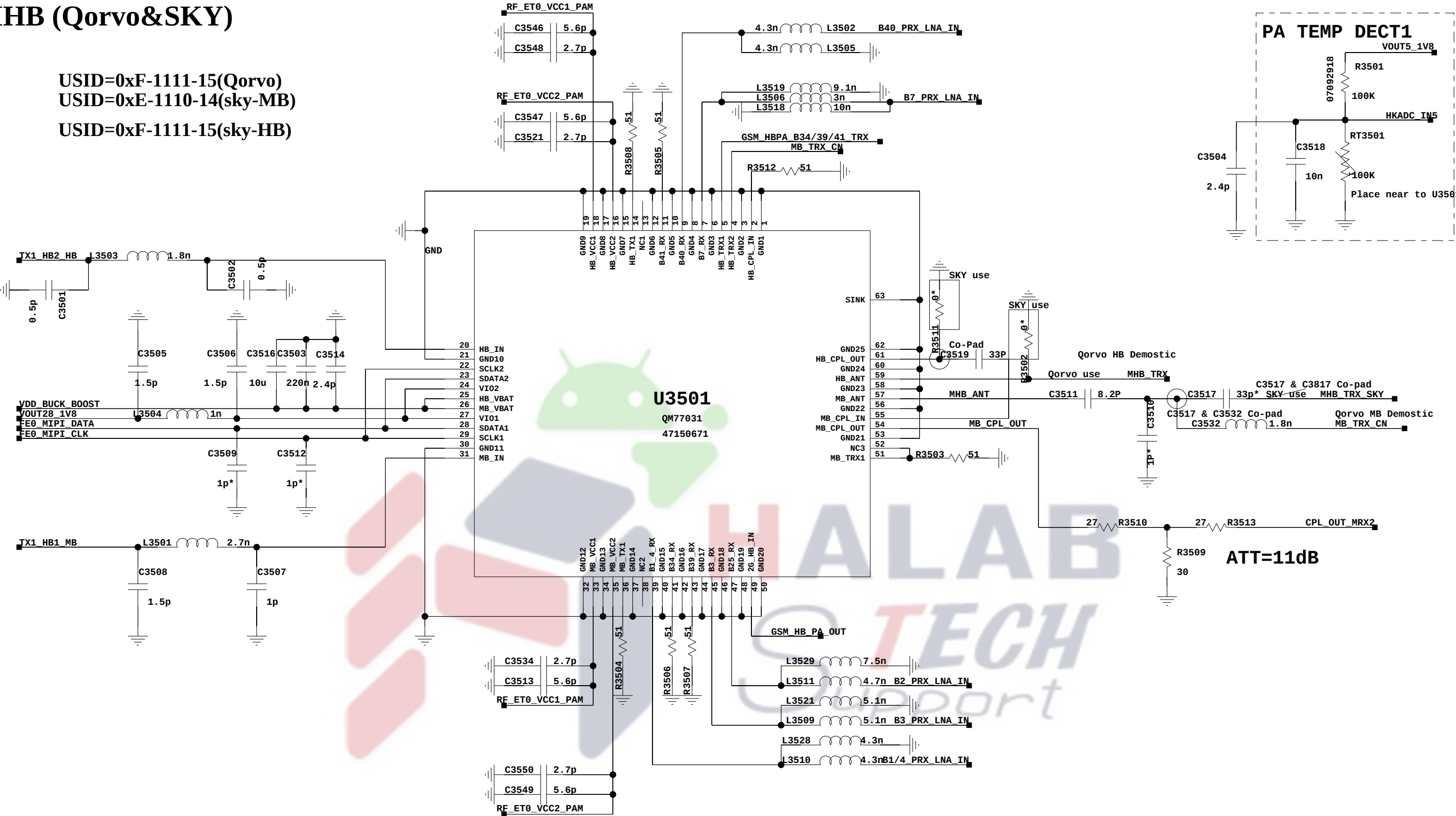


Free Inputports should be connected to GND!

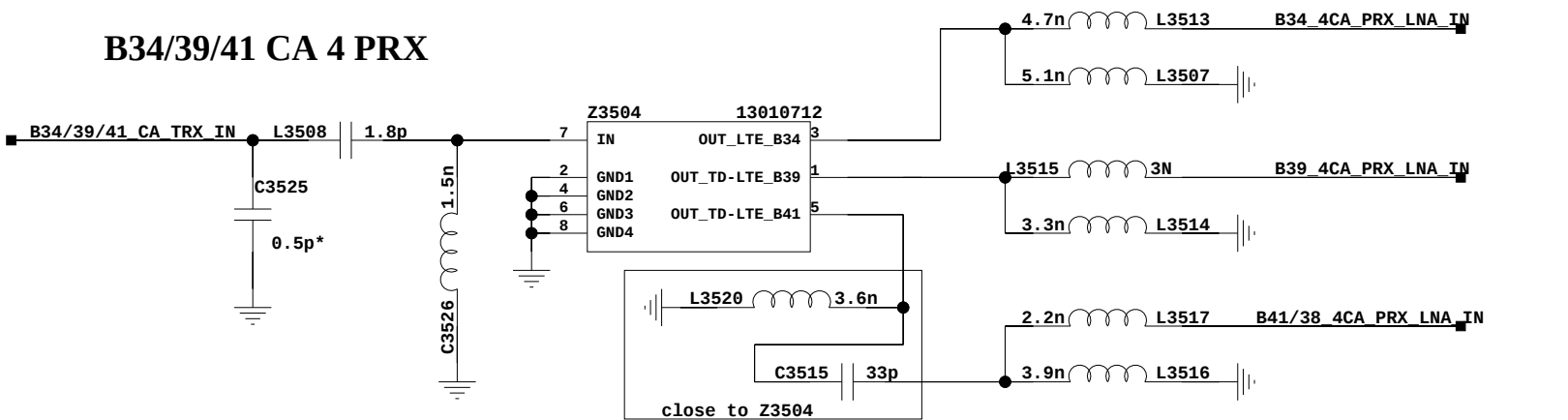


35.MHB (Qorvo&SKY)

USID=0xF-1111-15(Qorvo)
USID=0xE-1110-14(sky-MB)
USID=0xF-1111-15(sky-HB)

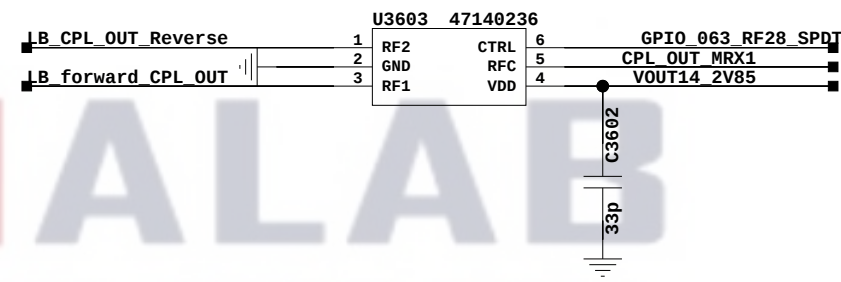
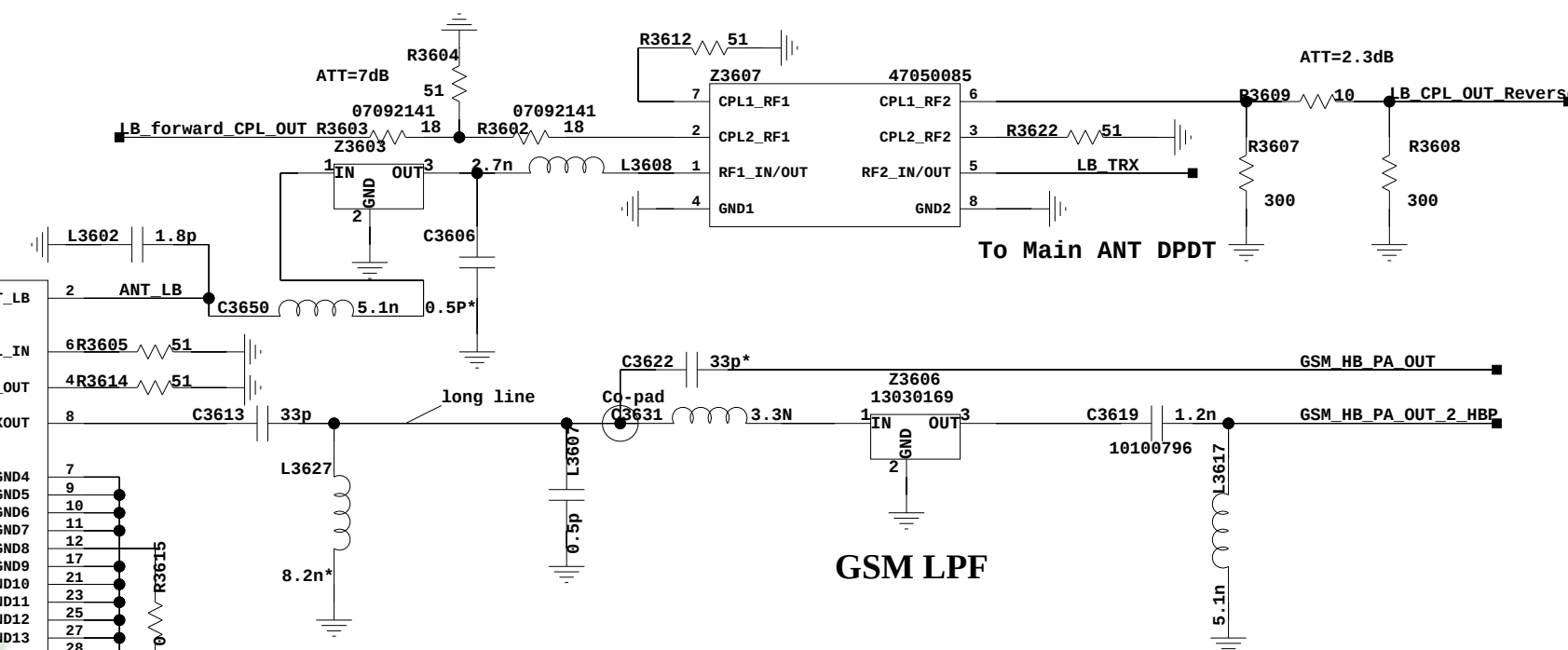
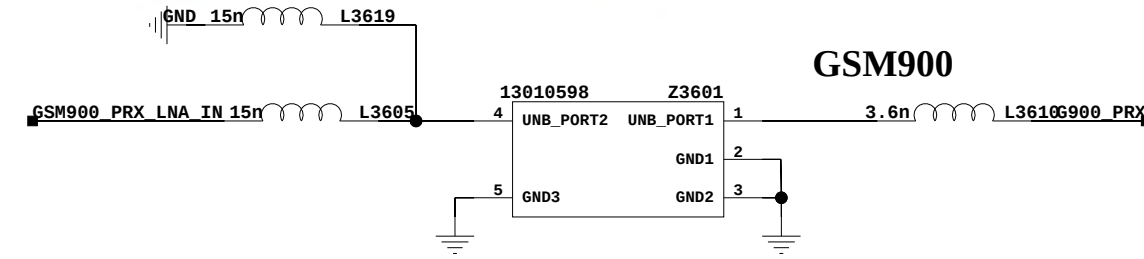
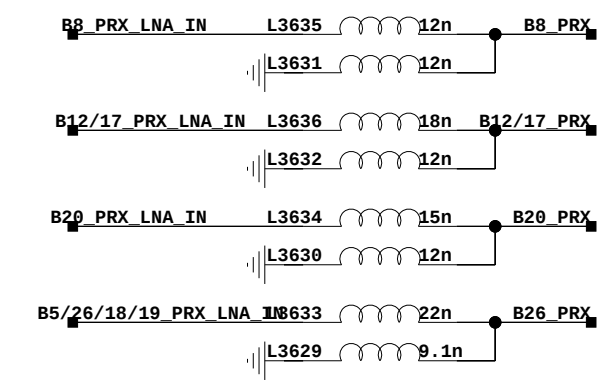
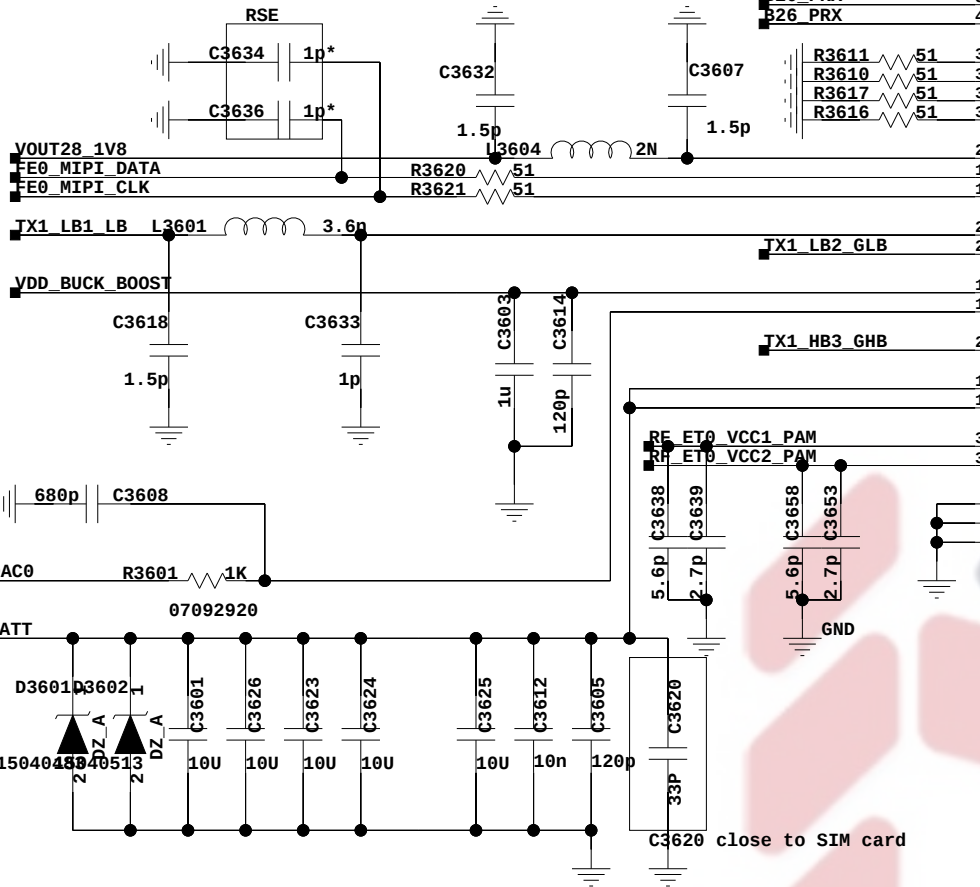
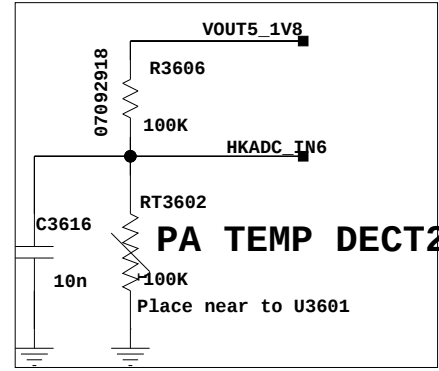


B34/39/41 CA 4 PRX



36.LB (Qorvo & SKY)

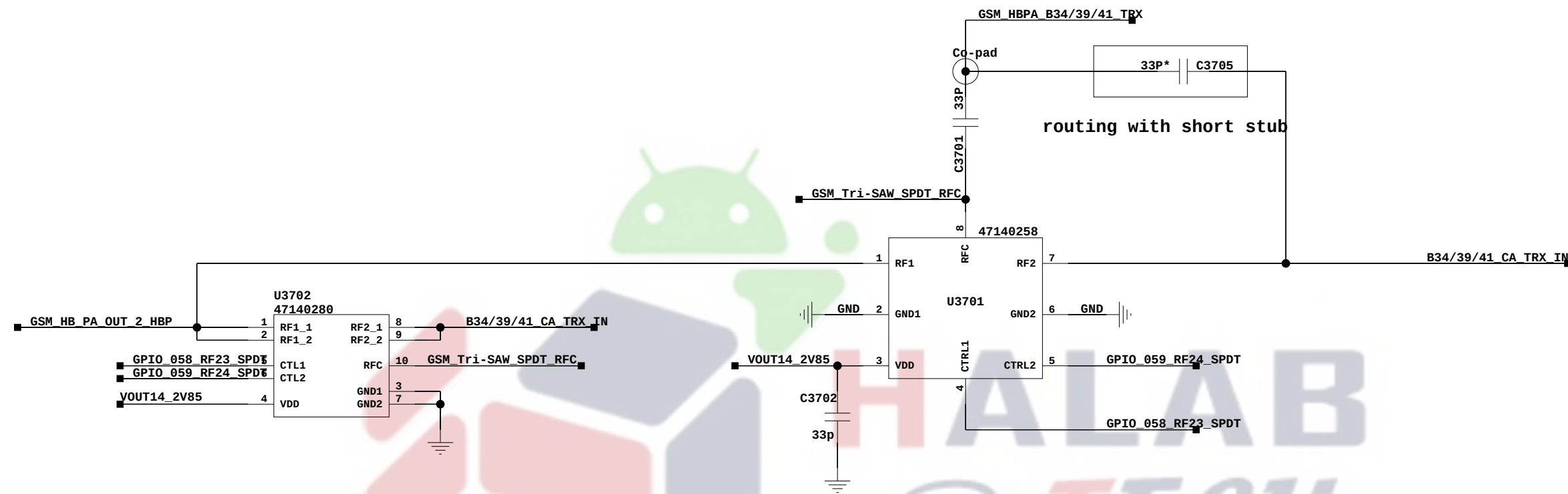
USID=0xF-1111-15(Qorvo-PA)
USID=0x8-1000-8(Qorvo-ASM)
USID=0xD-1101-13(sky)



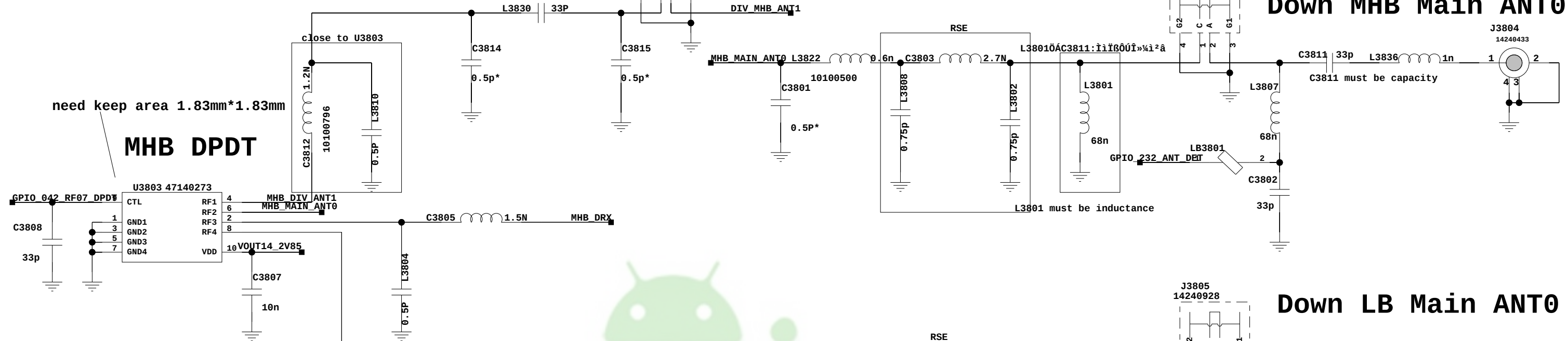
GSM900

37. GSM HB

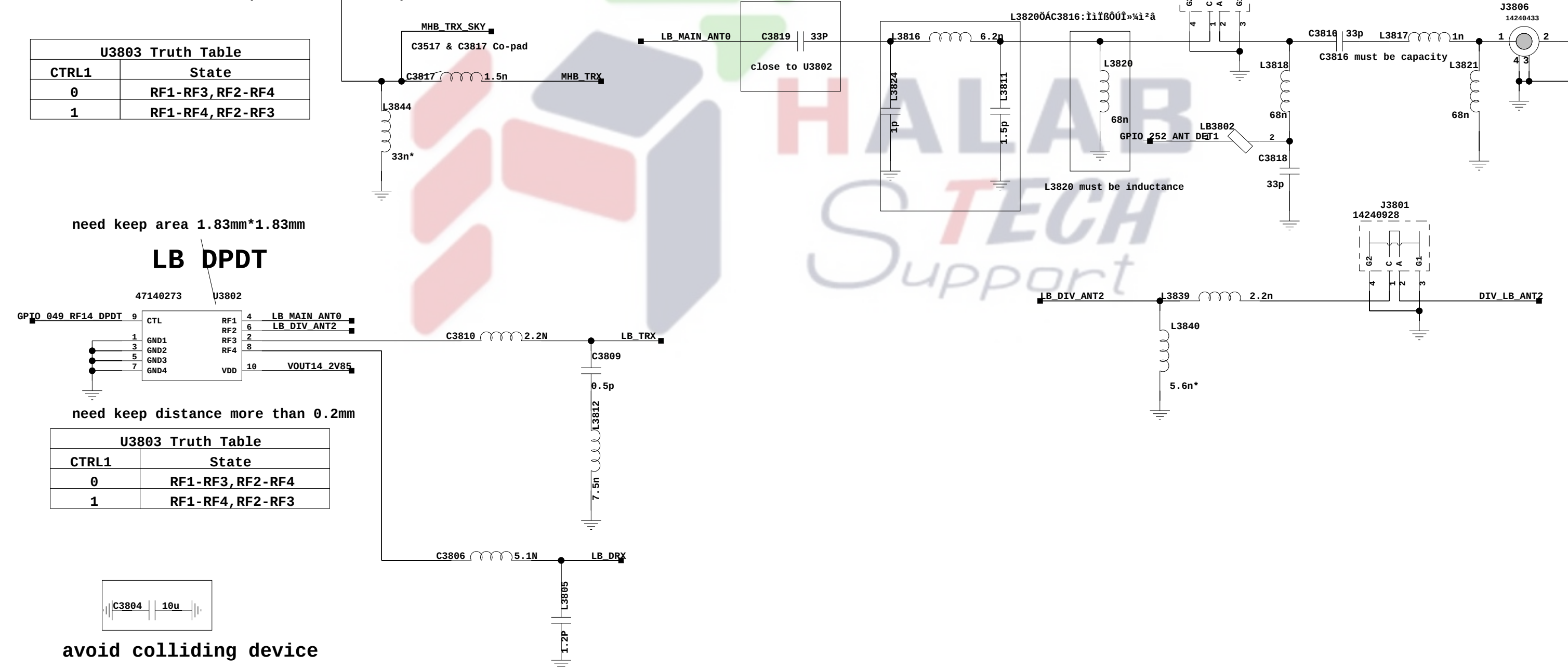
47140258 & 47140280 pad overlapping



38. RF Front End Switch



U3803 Truth Table	
CTRL1	State
0	RF1-RF3, RF2-RF4
1	RF1-RF4, RF2-RF3

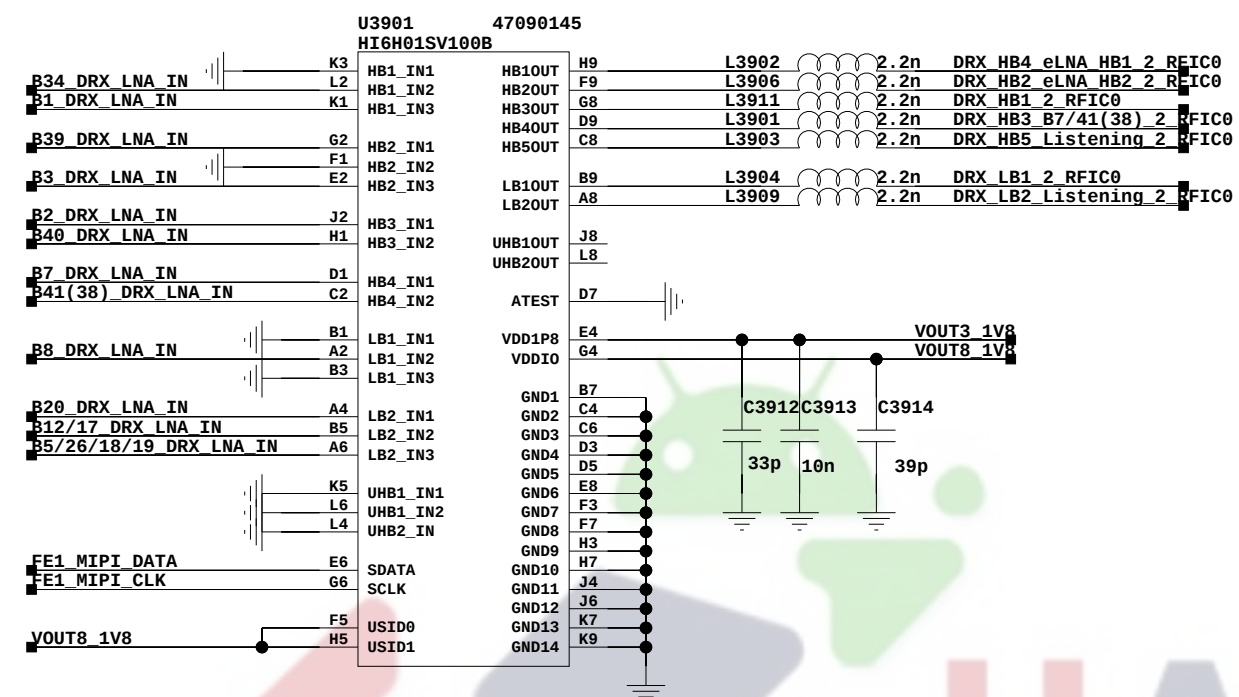


U3803 Truth Table	
CTRL1	State
0	RF1-RF3, RF2-RF4
1	RF1-RF4, RF2-RF3

avoid colliding device

39. eLNA DRX

USID=0xD-1101-13
LNA_Module1_6H01

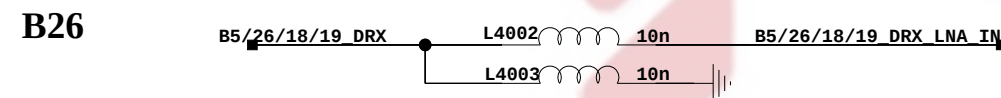
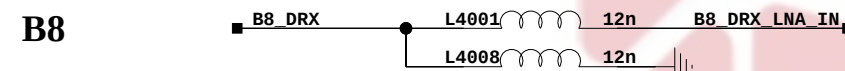
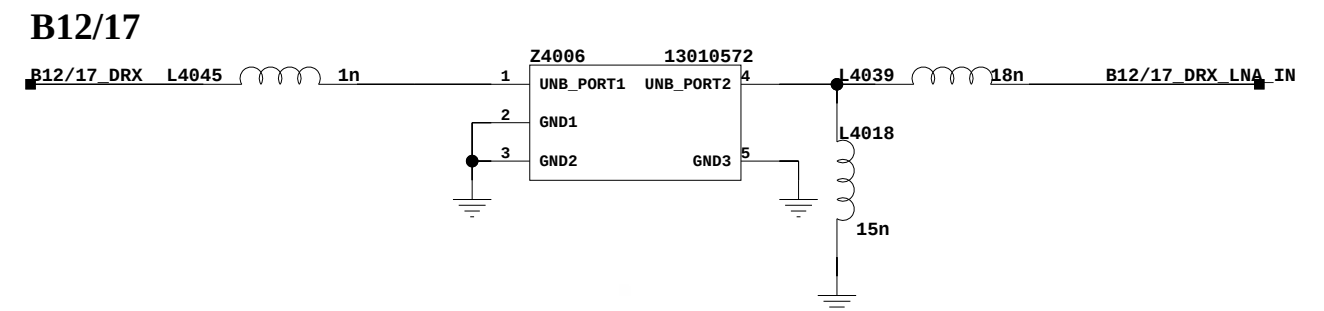
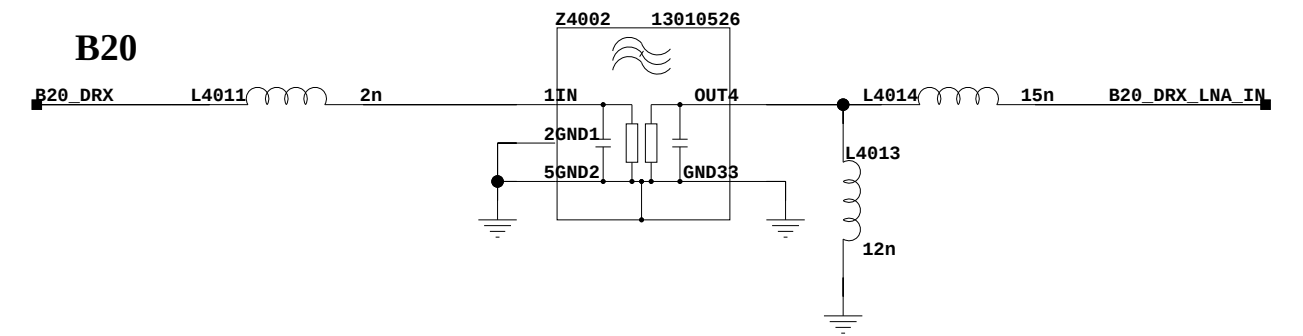
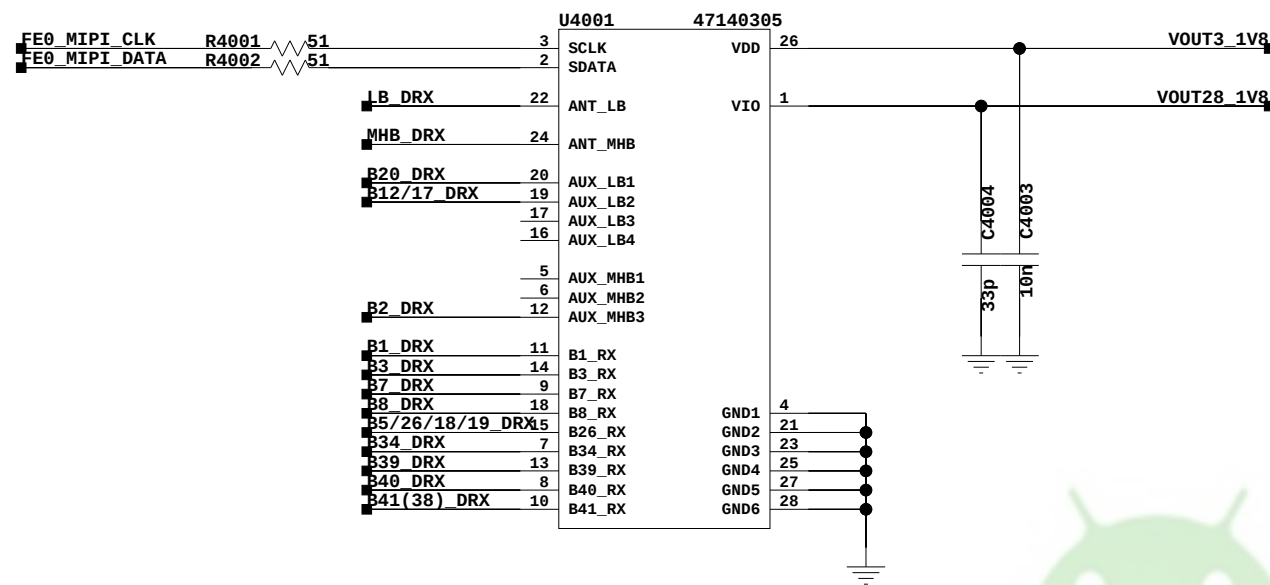


Free Inputports should be connected to GND!

6H01 Frequency Range	
LB1_IN1	460-895MHz
LB1_IN2-3, LB2_IN_1-3	703-960MHz
HB1_IN1-3	1447-2200MHz
HB2_IN1-3	1805-2200MHz
HB3_IN1-2	2000-2690MHz
HB4_IN1-2	2000-2690MHz
UHB1_IN1, UHB2	3400-3800MHz
UHB1_IN2	5150-5925MHz

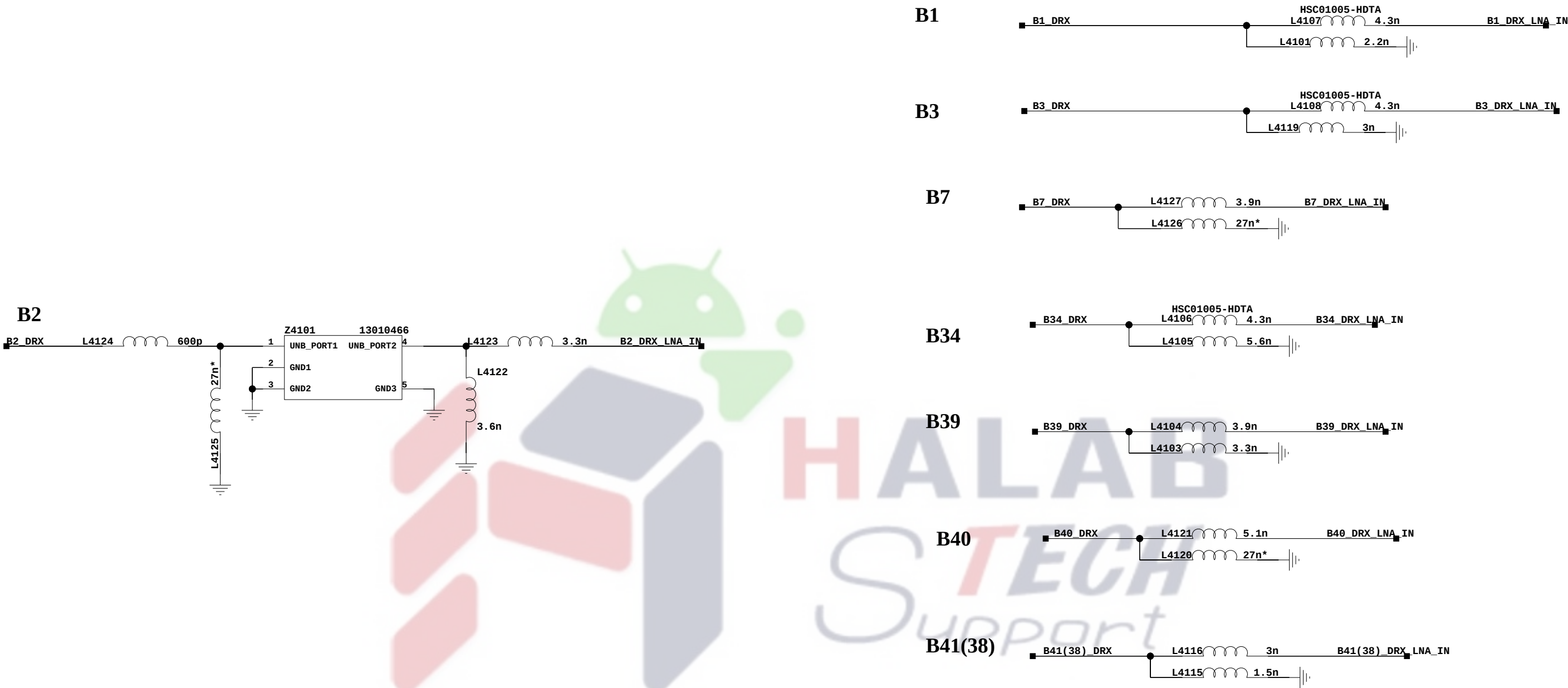
6H01 Frequency Range	
LB1_IN1	460-895MHz
LB1_IN2-3, LB2_IN_1-3	703-960MHz
HB1_IN1-3	1447-2200MHz
HB2_IN1-3	1805-2200MHz
HB3_IN1-2	2000-2690MHz
HB4_IN1-2	2000-2690MHz
UHB1_IN1, UHB2	3400-3800MHz
UHB1_IN2	5150-5925MHz

40. DRX LB



HALAB
STECH
Support

41. DRX_MHB



	1	2	3	4	5	6
A	42. Reserved					
B						
C						
D						
	1	2	3	4	5	6



43.MIMO_DRX



	1	2	3	4	5	6
44. MIMO_PRX						
A						
B						
C						
D						
	1	2	3	4	5	6



45. RF Transceiver_HI6363 _02



46. Reserved for CDMA Modem



47. Reserved for CDMA Modem



48. Reserved



49. Reserved



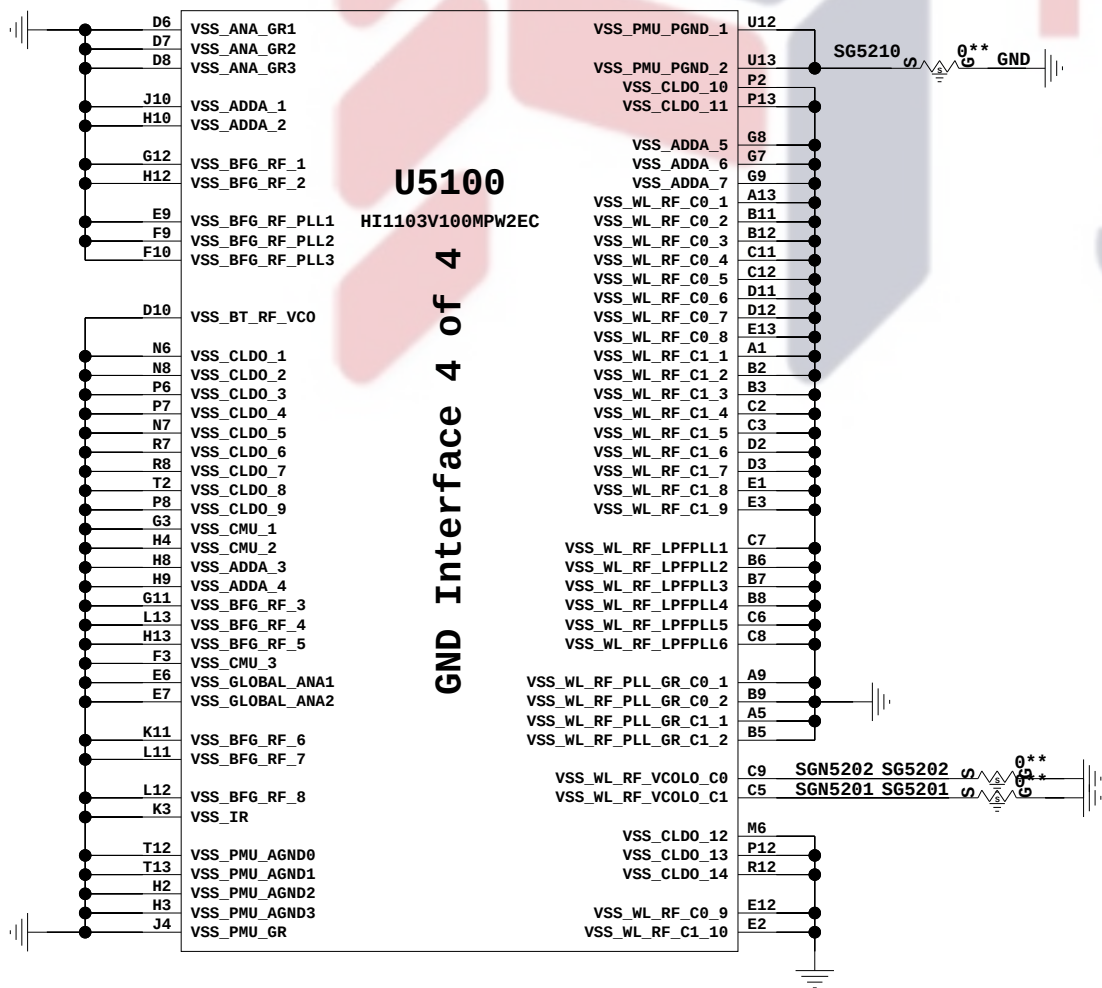
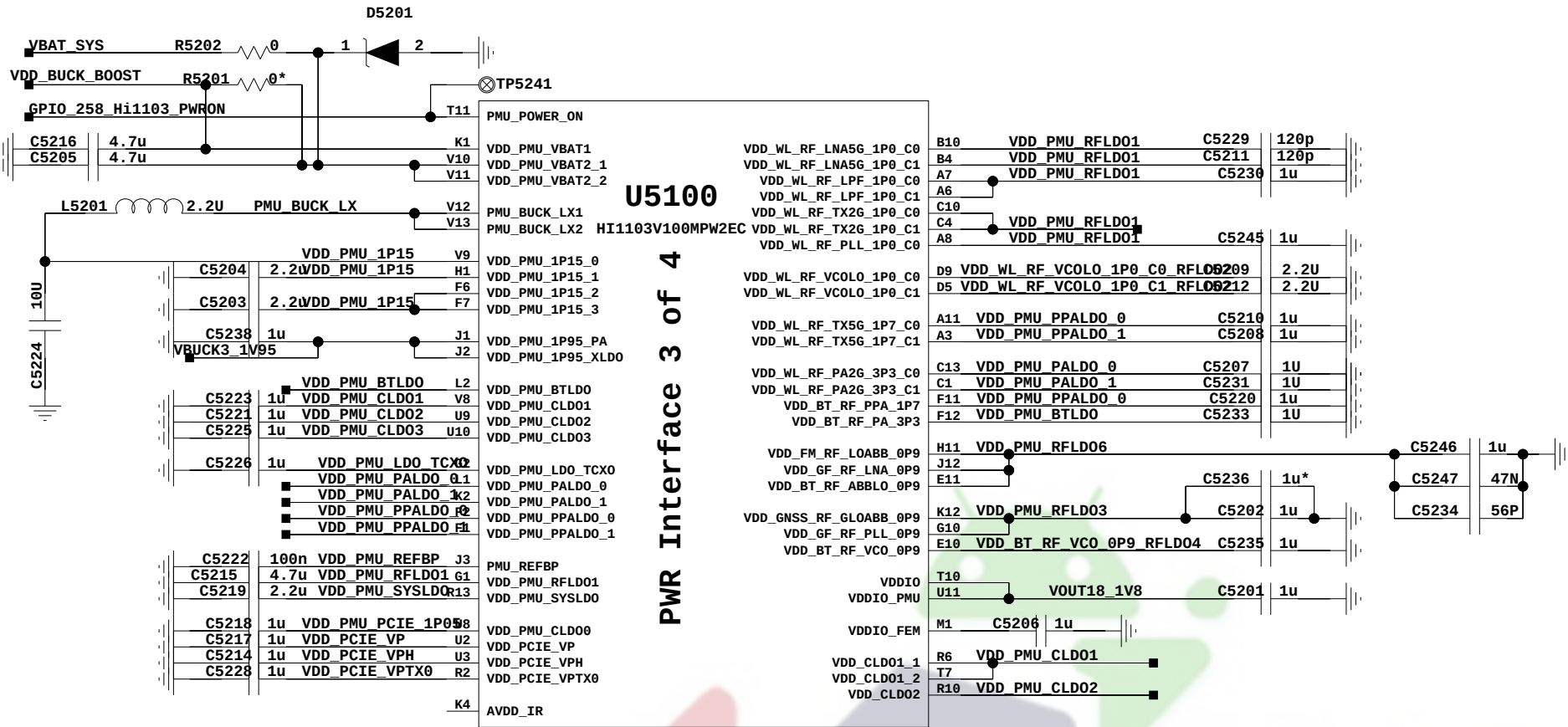
50. Reserved



D



52.Hi1103 PWR



POWER	CURRENT	VOLTAGE
VDD_PMU_1P15	1A	1V1-1V5(1V15)
VDD_PMU_1P95	600mA	1V95
VDD_PMU_BTLD0	200mA	2V-3V5 (3V3)
VDD_PMU_CLD01	400mA	0V6-1V0(0V9)
VDD_PMU_CLD02	150mA	0V6-1V0(0V9)
VDD_PMU_CLD03	50mA	0V6-1V0(0V9)
VDD_PMU_LDO_TCX0	100mA	1V8/2V8
VDD_PMU_PALDO	400mA	2V-3V5 (3V3)
VDD_PMU_PPALDO	250mA	1V7
VDD_PMU_SYSLDO	30mA	0V6-1V0(0V9)
VDD_PMU_RFLD01	250mA	0V85-1V1(1V0)
VDD_PMU_RFLD02	100mA	1V0
VDD_PMU_RFLD03	100mA	0V9
VDD_PMU_RFLD04	50mA	0V9
VDD_PMU_RFLD06	150mA	0V9

	1	2	3	4	5	6
A	53.Reserved					
B						
C						
D						
	1	2	3	4	5	6

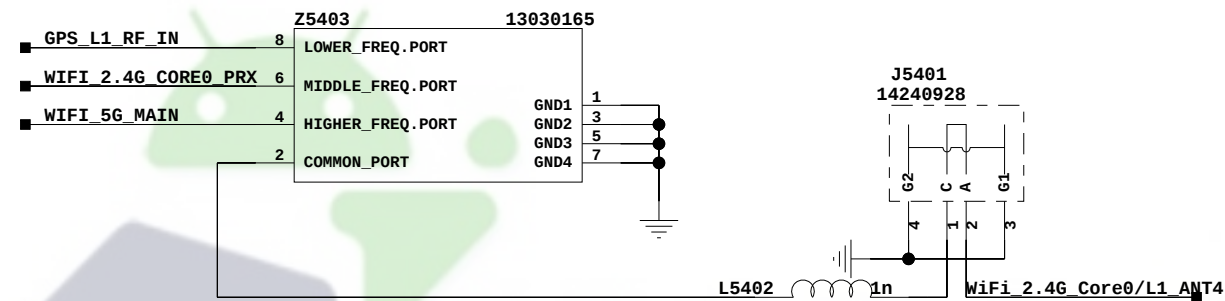
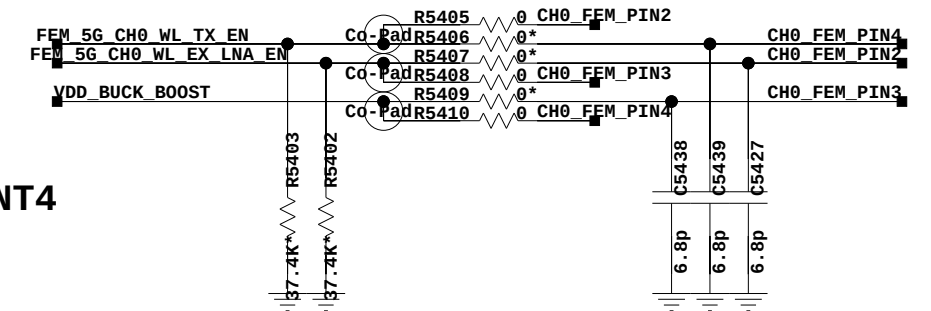


A

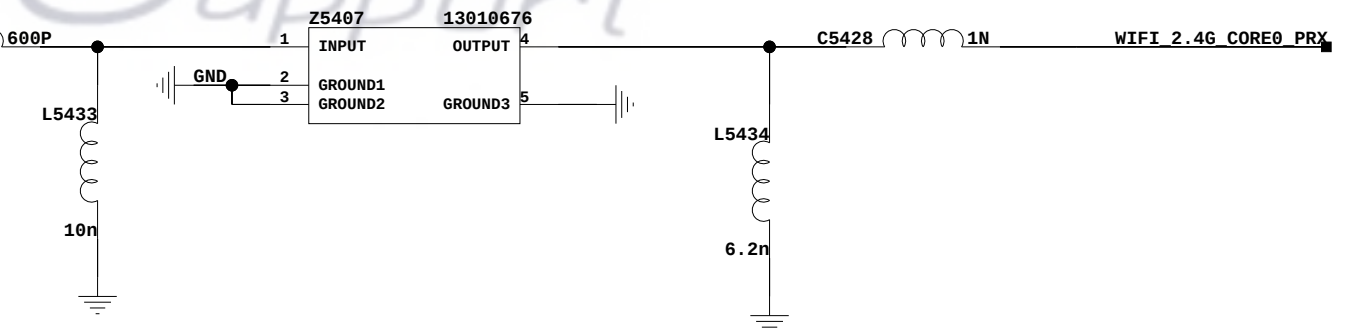
B



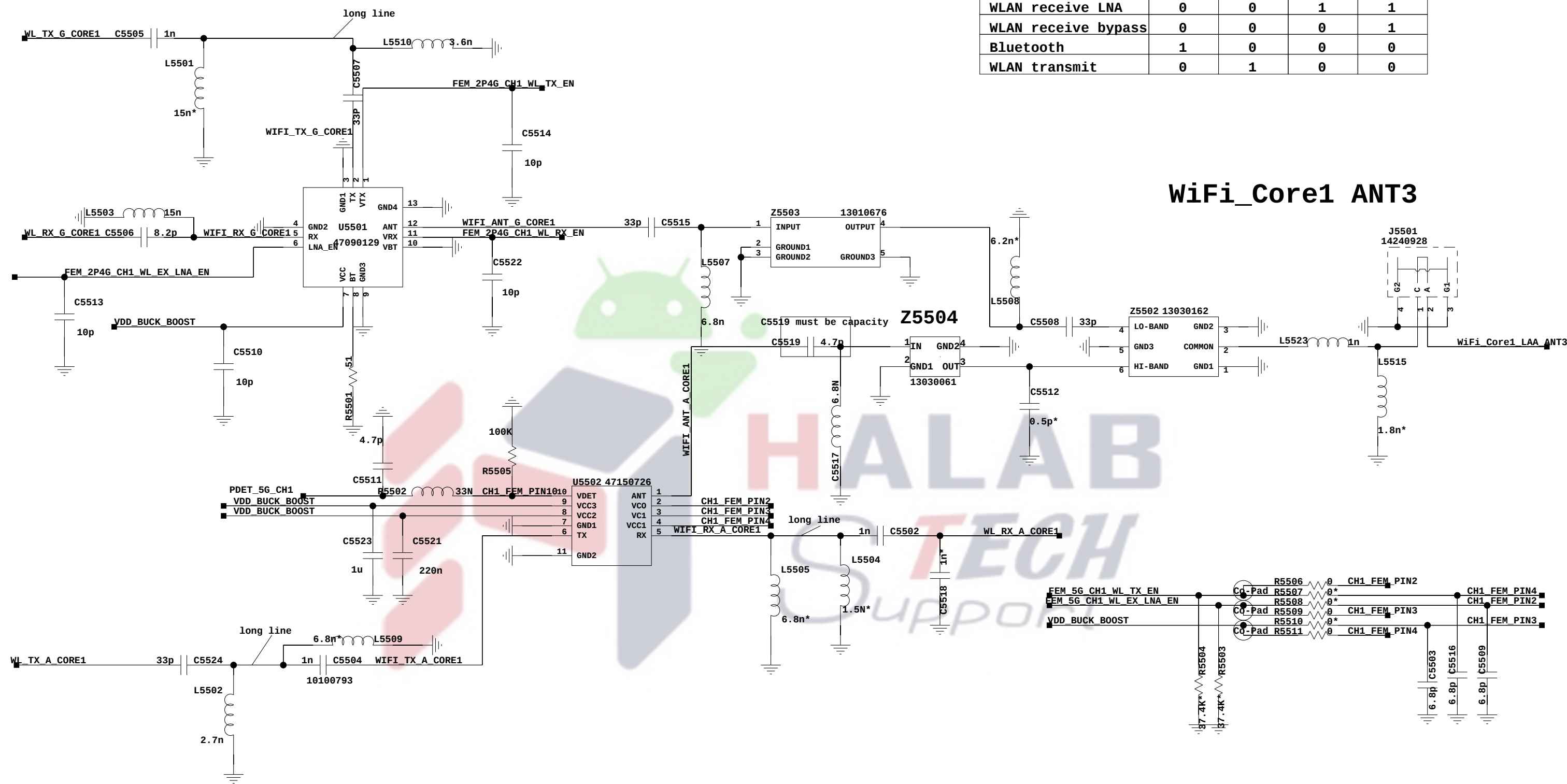
D



WiFi 2.4G+5G Core0+GPS L1 ANT4



55.WLAN RF1 & 5G Core1

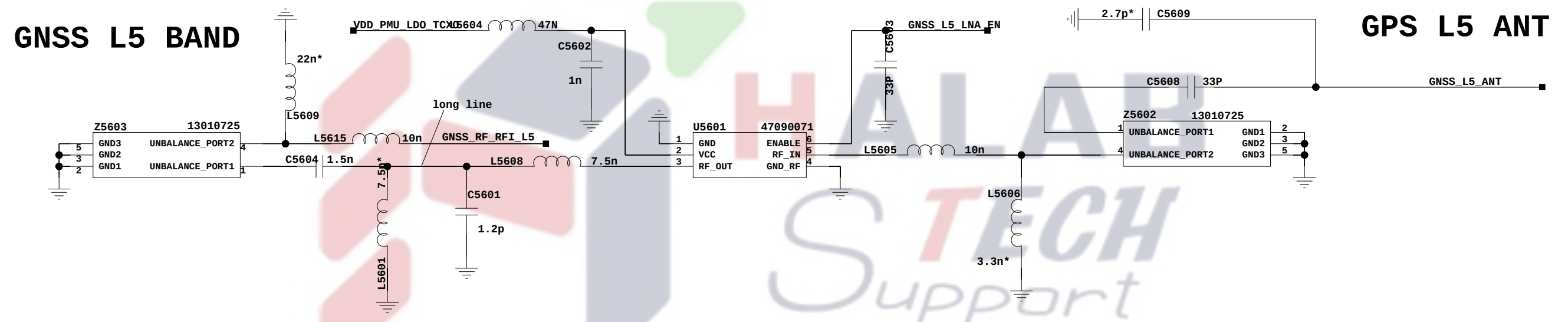
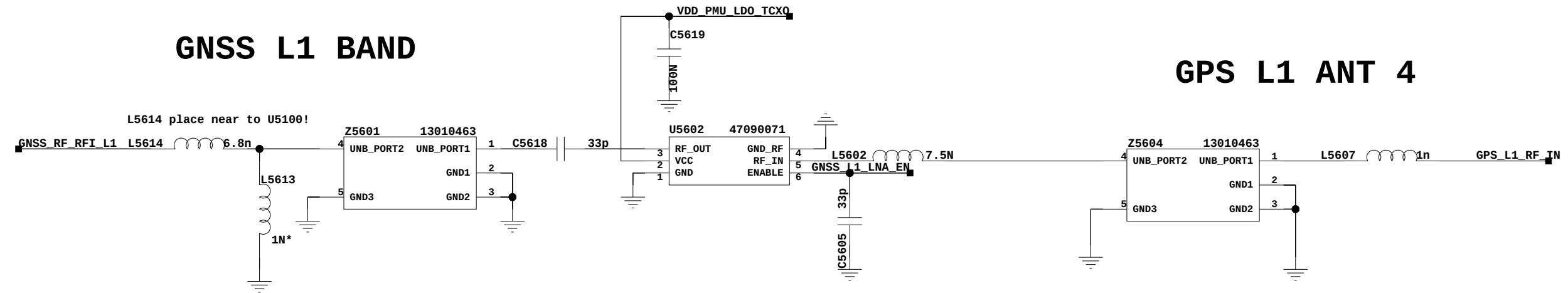


U5501 Control Logic				
Mode	CBT	CTX	LEN	CRX
ALL OFF	0	0	0	0
WLAN receive LNA	0	0	1	1
WLAN receive bypass	0	0	0	1
Bluetooth	1	0	0	0
WLAN transmit	0	1	0	0

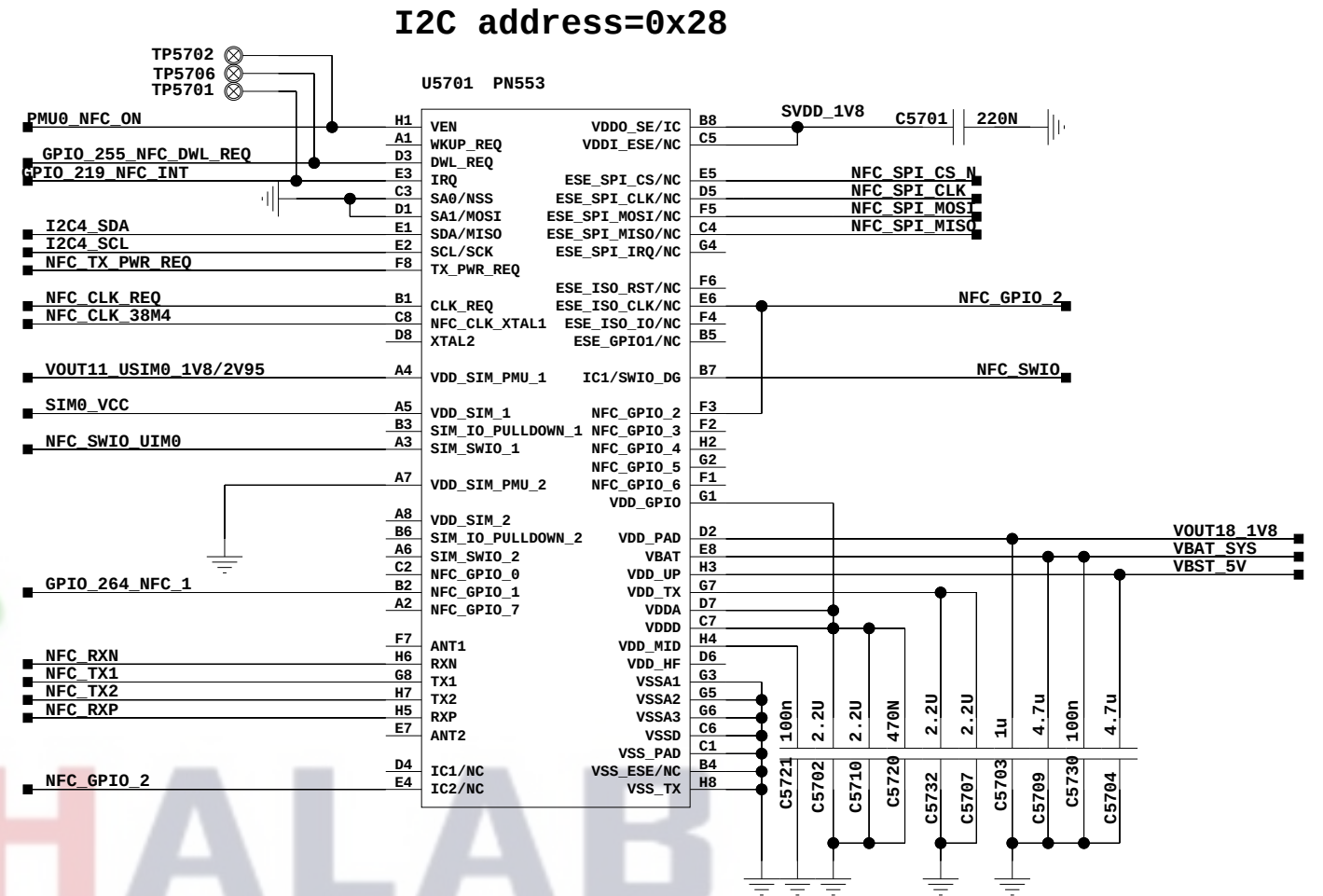
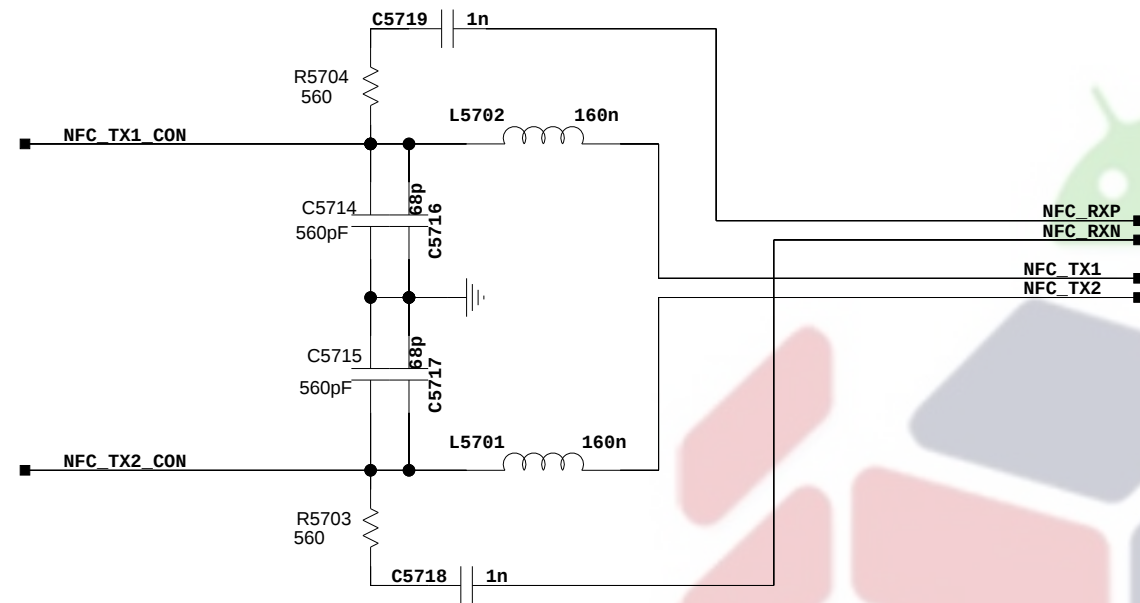
WiFi_Core1 ANT3

U5401 Logic Table		
Mode	CTRL1	CTRL2
TX High Power	High	Low
RX Gain	Low	High
RX Bypass	Low	Low
Satndby	Low	Low

56.GNSS RF FE



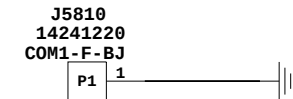
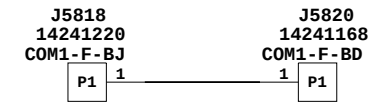
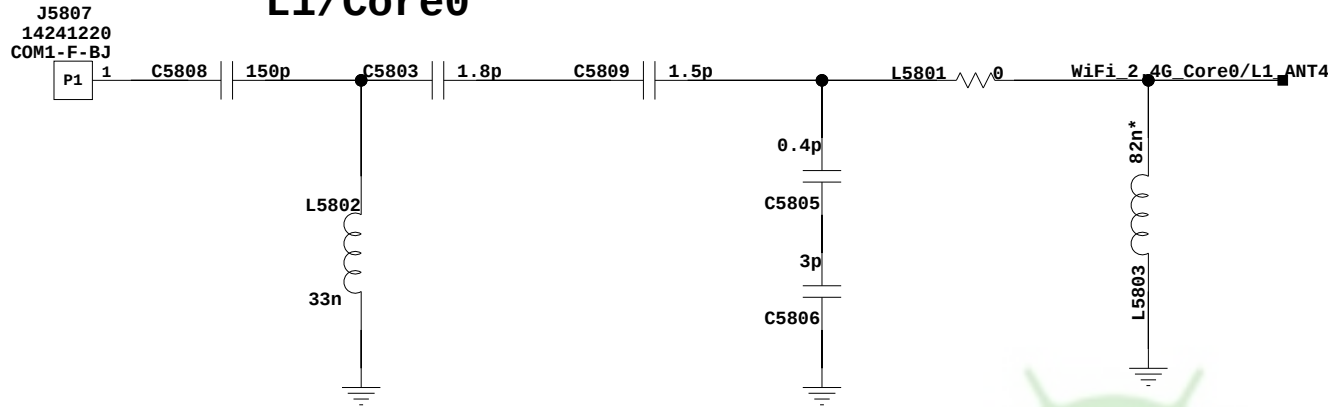
57 . NFC



58.UP ANT: ANT3/4/L5

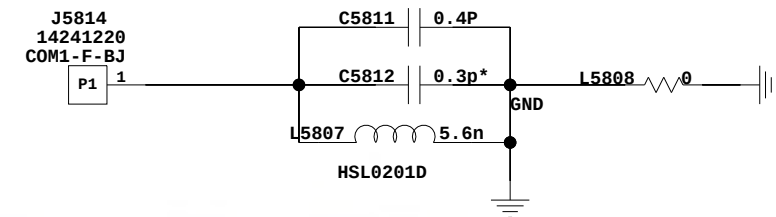
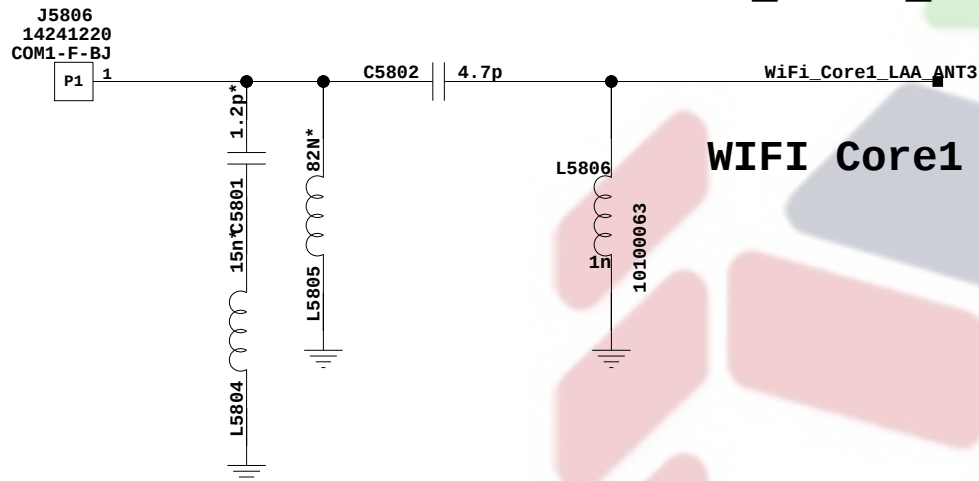
GPS_L1+WiFi_2.4G/5G_Core0 ANT4

L1/Core0

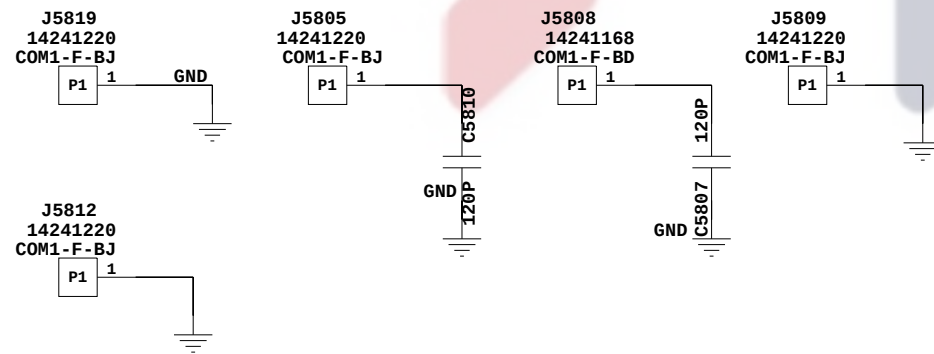


WiFi_Core1_LAA_ANT3

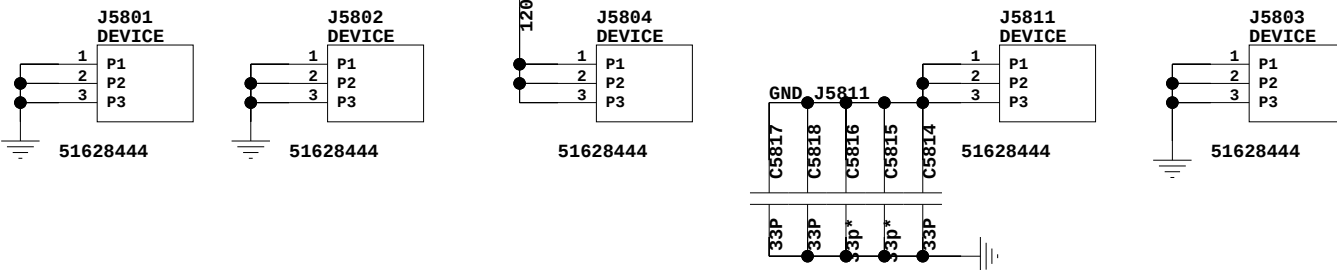
WIFI Core1



G1-G6 1/20μF



S μA



avoid colliding device

59.UP ANT: ANT1/2

A

B

C

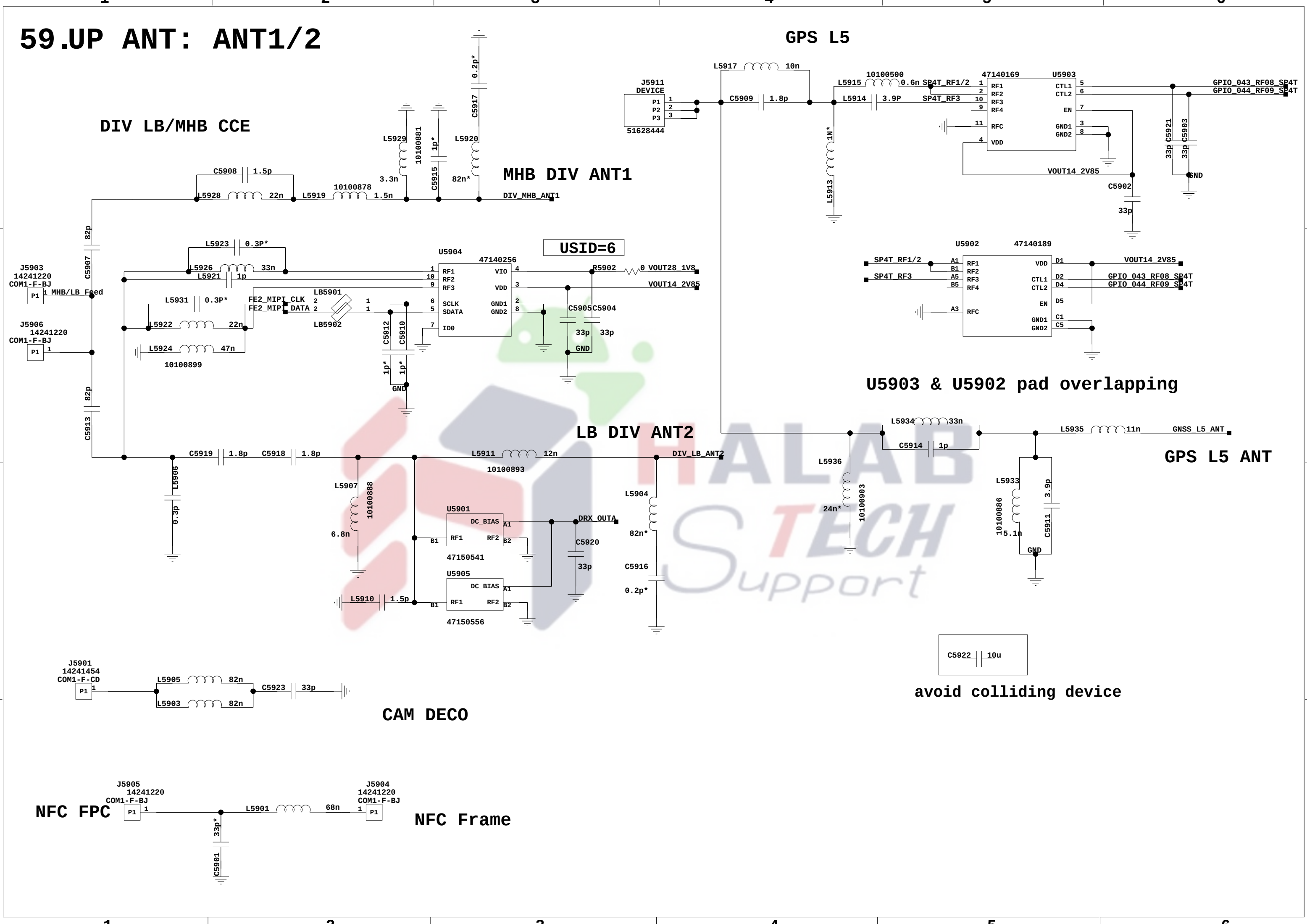
D

A

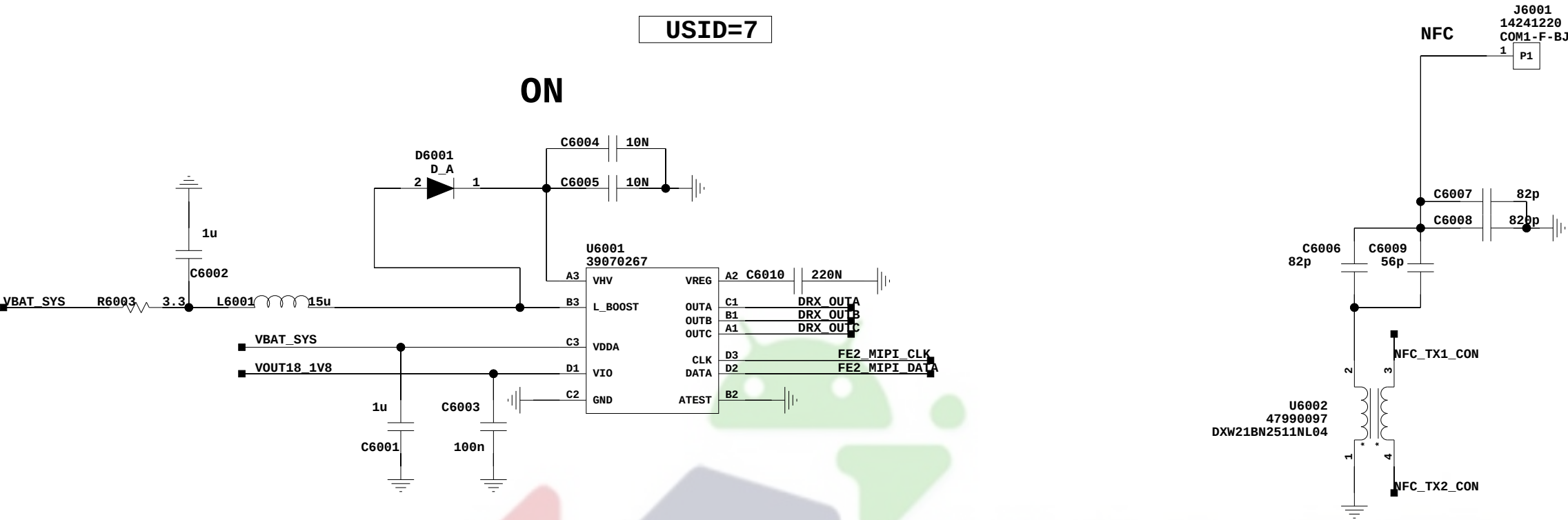
B

C

D

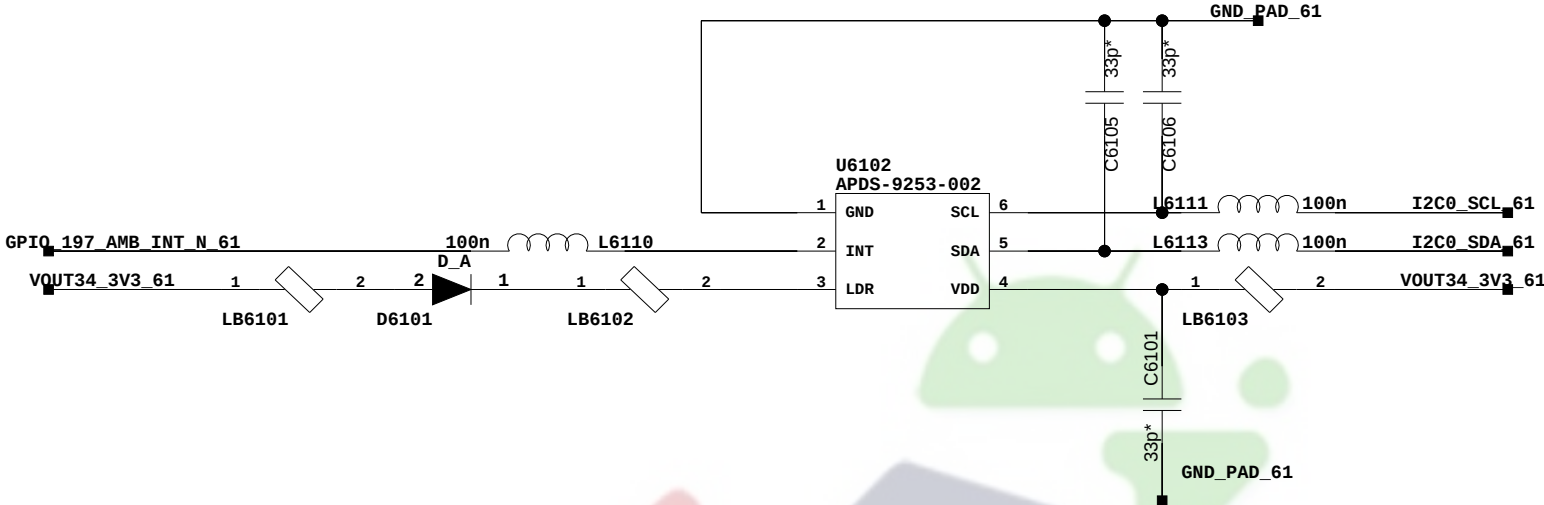


60.Antenna Tunner

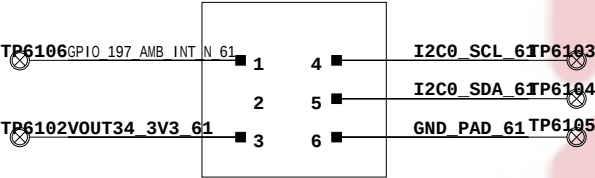


61.Ambient Light and Proximity

Ambient&Proximity(AVAGO)



PAD



HALAB
S
TECH
Support