

ZZZ



PCB DAZ@
DA8000WX000
PCB 10G LA-A401P REV0 M/B HDI 1

S1



FRAME
ECOMV000200

@

S4



FRAME
ECOMV000200
for GLONASS

@

Compal Confidential

Schematics Document

ZEJ20

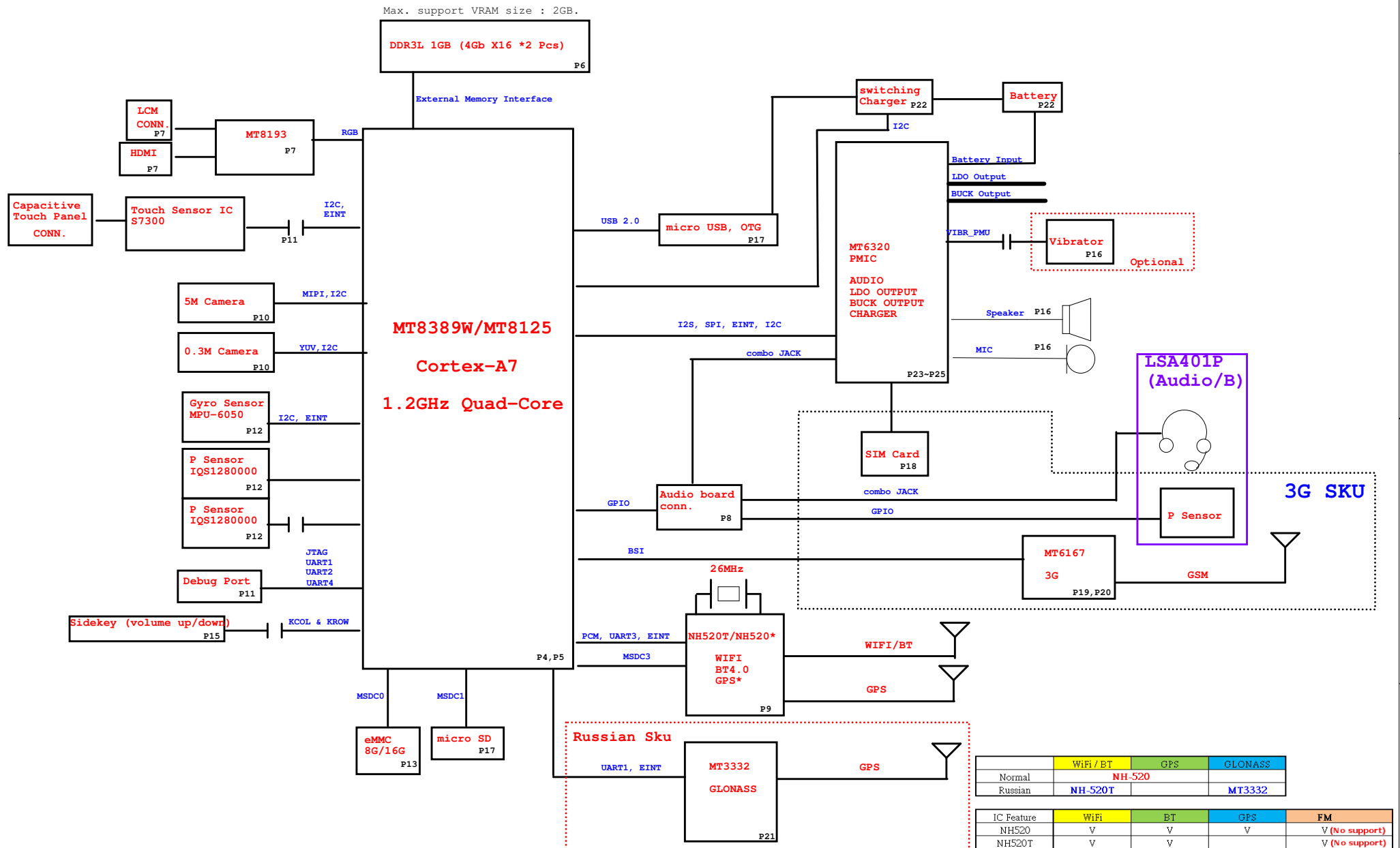
LA-A792

2013-05-20

REV:0.1

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ZEJ20 (ZARA 3G) block diagram



	WiFi / BT	GPS	GLONASS
Normal	NH-520		
Russian	NH-520T		MT3332

IC Feature	WiFi	BT	GPS	FM
NH520	V	V	V	V (No support)
NH520T	V	V	V	V (No support)

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Voltage Rails

MT6320 Power Plane	Function	Power Level	IDLE	Sleep mode
VCORE_PMU	VCORE switching output	0.75 ~ 1.3	ON	Low voltage
VPROC_PMU	VPROC switching output	0.75 ~ 1.3	ON	Low voltage
VCXO_1_PMU	LDO output for TCXO	2.8V	ON	OFF
VCAMA_PMU	LDO output for camaera analog	2.8V	ON	Gating by SW
VSRAM_PMU	LDO output used for 1.2V SRAM	1.2V	ON	Low voltage
VDD28_6583	LDO output used for 2.8V IO	2.8V	ON	Gating by SW
VGP2_PMU	LDO output for camaera 1.8V	1.8V	ON	Gating by SW
VEMC_3V3_PMU	LDO output for eMMC&P-sensor	3.3V	ON	Gating by SW
VMCH_PMU	LDO output for SD card	3.3V	ON	Gating by SW
VGP5_PMU	LDO output for Touch panel	2.8V	ON	Gating by SW
DDR3VCCIO	LDO output for DDR3L	1.35V	ON	Gating by SW
VDD33_6583	LCD & Bridge power	3.3V	ON	Gating by SW
VDD18_6583	LDO output used for 1.8V IO	1.8V	ON	Gating by SW
VRF18_PMU	LDO output for RF_MT6167	1.8V	ON	Gating by SW

Main board ID

MB_ID0	MB_ID1	
0	0	EVT
0	1	DVT
1	0	PVT
1	1	MP

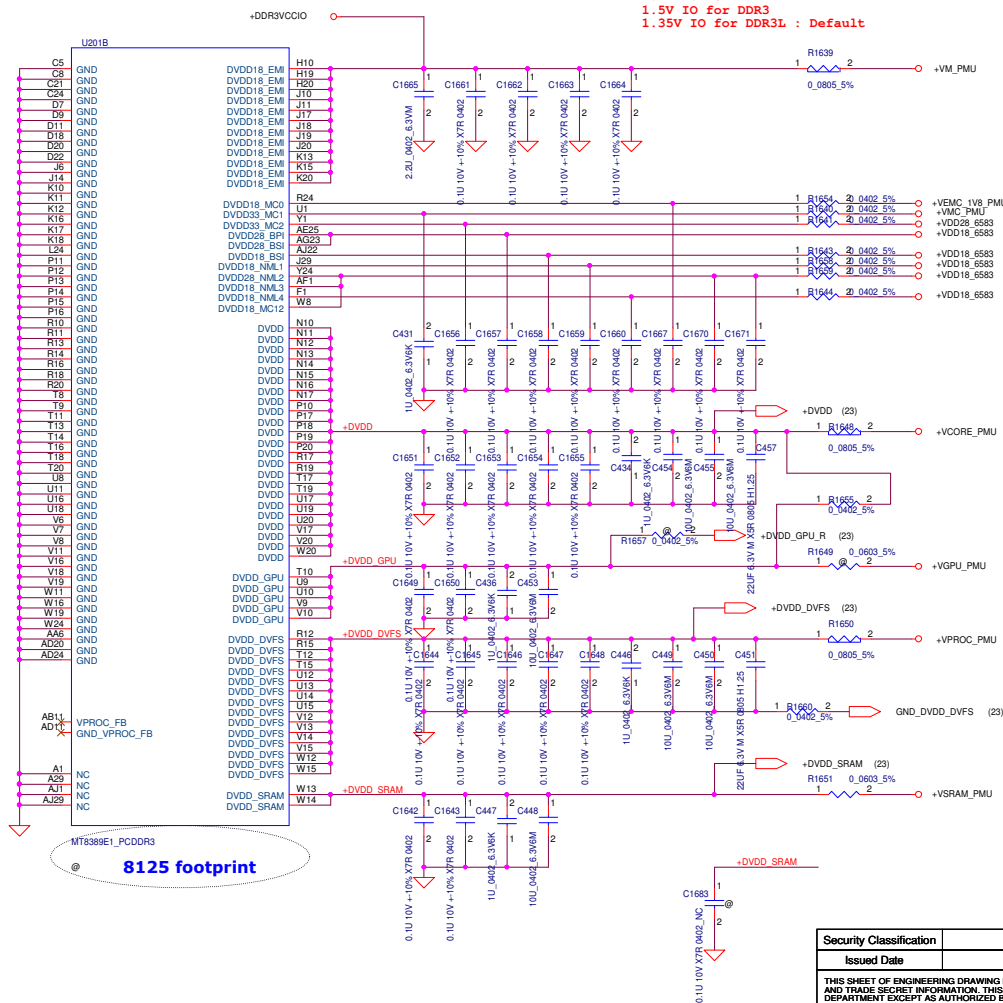
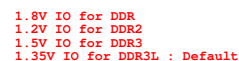
I2C address

Device	Address(7 bit)	Address(8bit)	
		Write	Read
Gyro+G (MPU-6050)	0x68	0xD0	0xD1
Touch screen (S7300B)	0x20	0x40	0x41
Camera 0.3M	0x21	0xBA	0xBB
Camera 5M	0x36	0x6C	0x6D
Charge (BQ24196)	0x6B	0x42	0x43
PMU(MT6320)		0xD6	0xD7
Battery	0x55	0xAA	0xAB

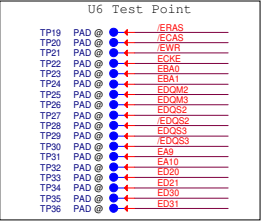
BOM structure

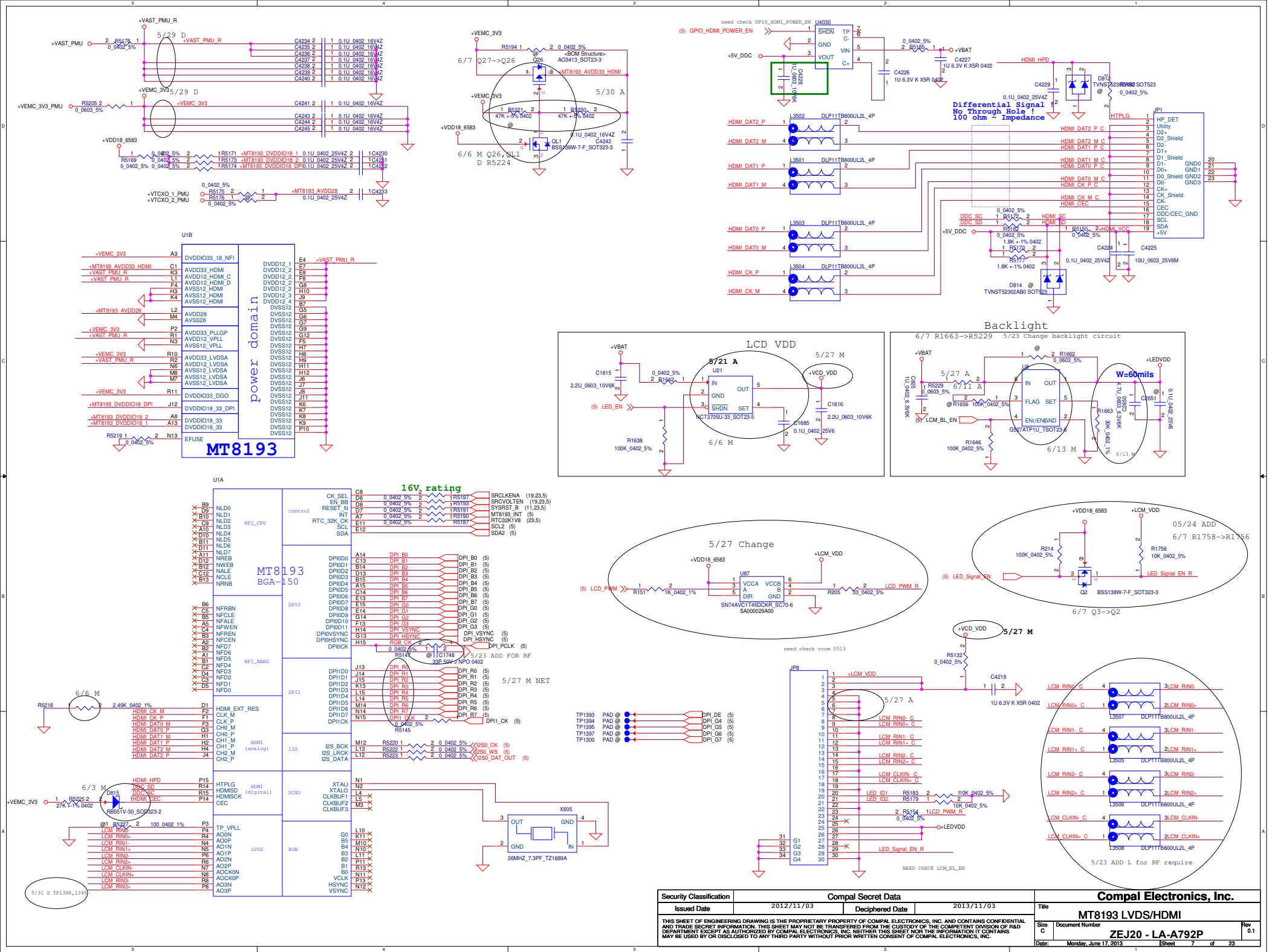
Name	Function	
3G@	3G only	
WIFI_ONLY@	WIFI ONLY	
DAZ@	PCB	
EMC@	for EMC request	
NH520@	AW-NH520	
NH520_EMC@	GPS EMC	
GLONASS@	MT3332	

U201
WIFI_ONLY@
SA00006S500
S IC MT8389WK/A 1.2G FCCSP 515P CPU

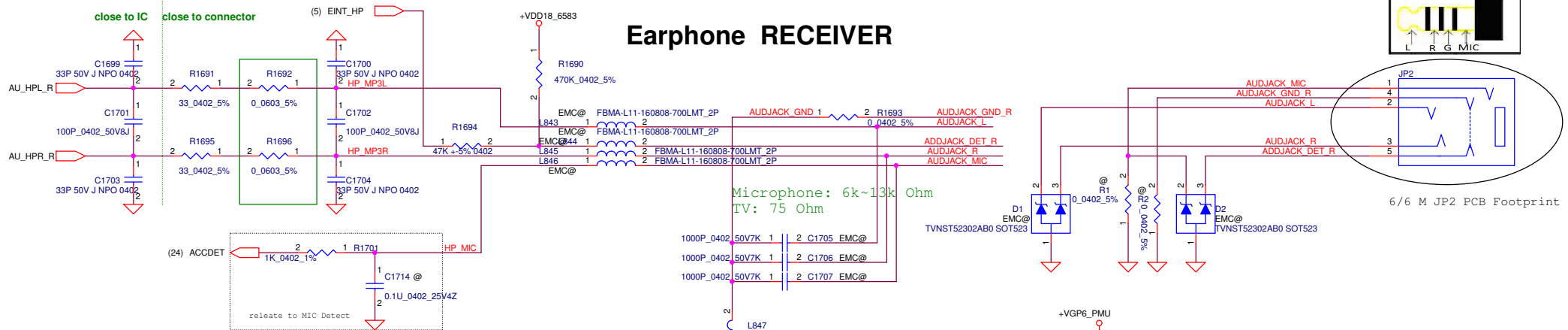


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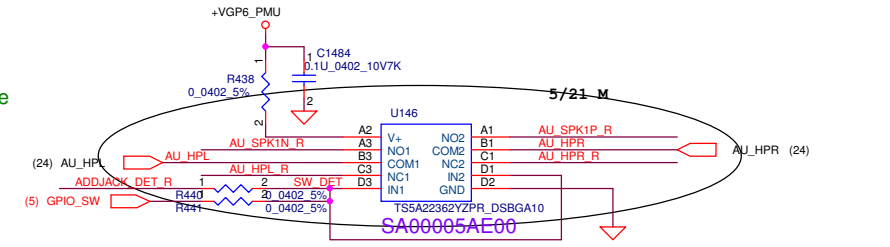
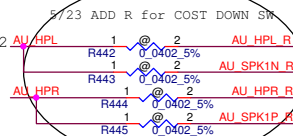
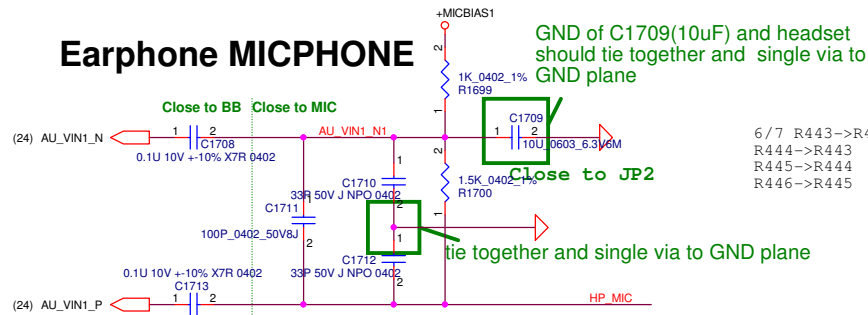




Earphone RECEIVER

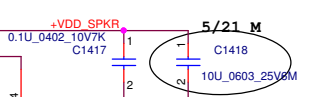
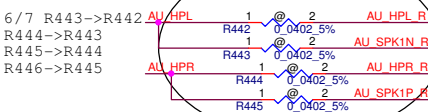
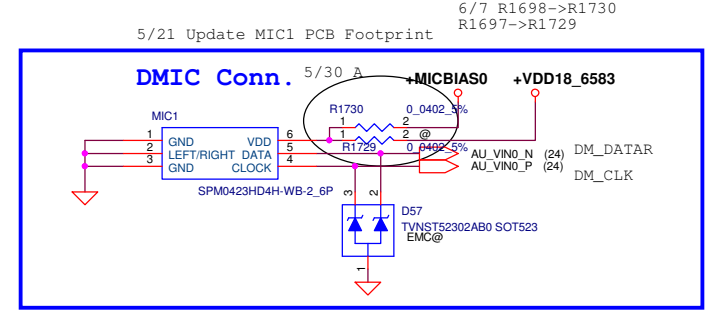


Earphone MICPHONE

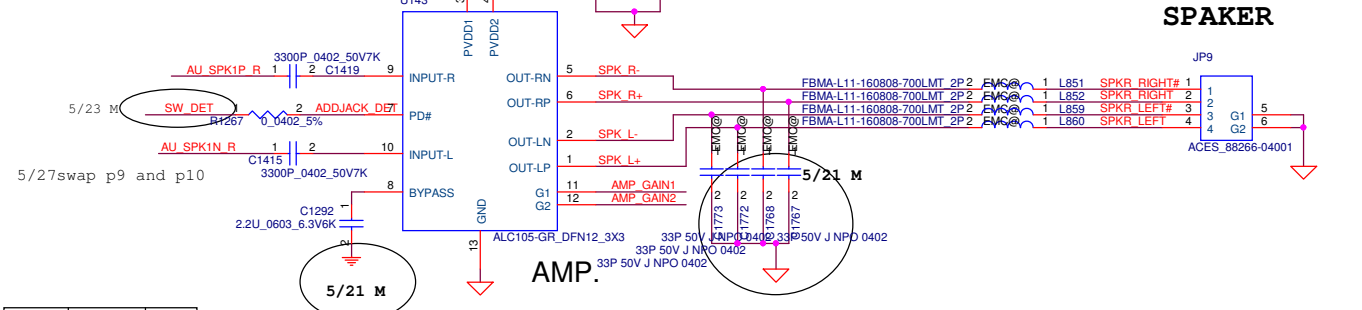


IN	NC to COM	COM to NC	NC to COM	COM to NC
L	ON	OFF	HP	
H	OFF	ON	SPK	

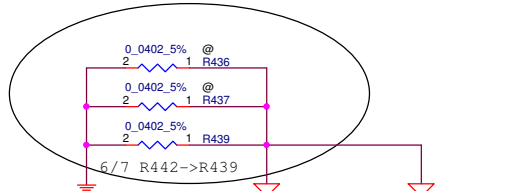
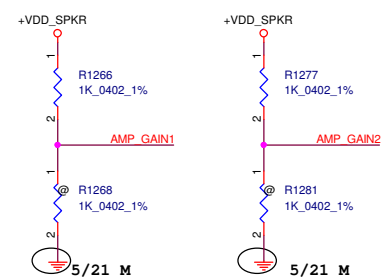
HP Switch



SPAKER

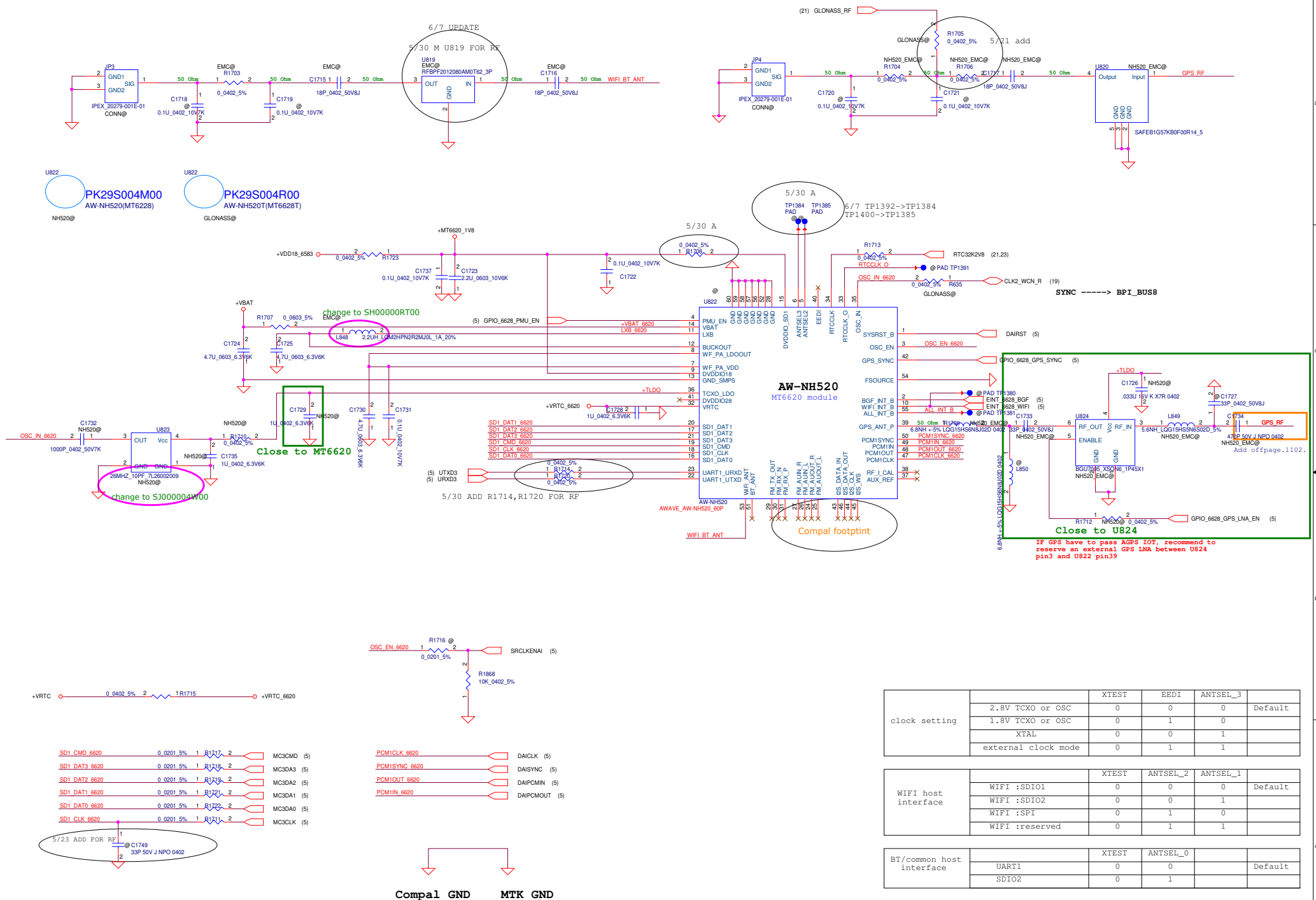


GAIN1	GAIN2	
0	0	11dB
1	0	14dB
0	1	19dB
1	1	25dB



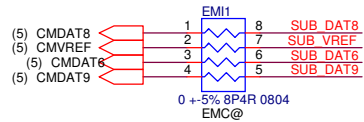
5/21 Add Compal GND MTK GND

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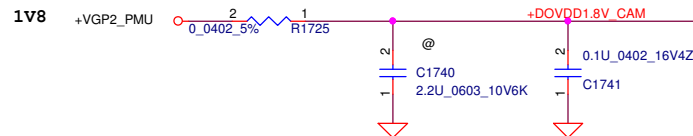
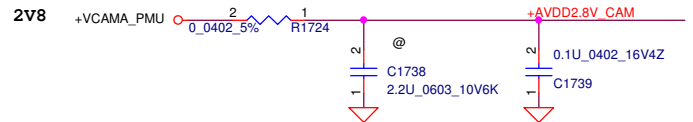
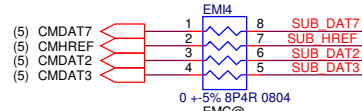
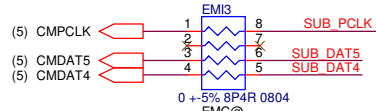


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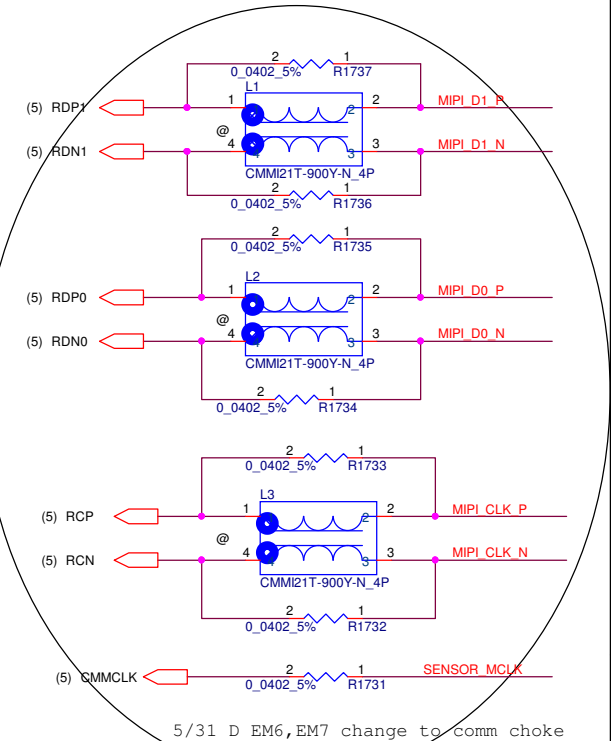
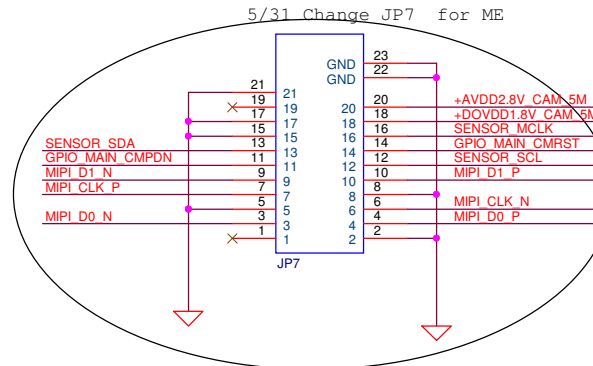
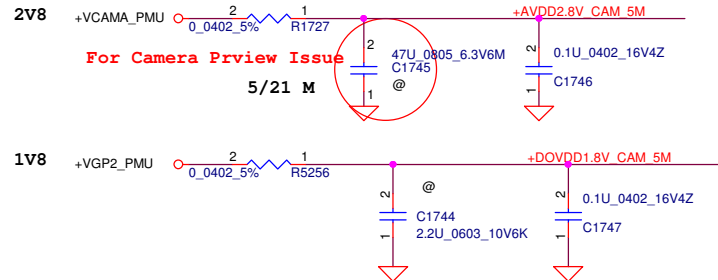
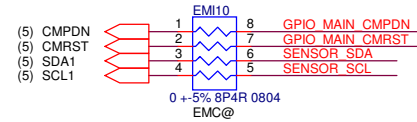
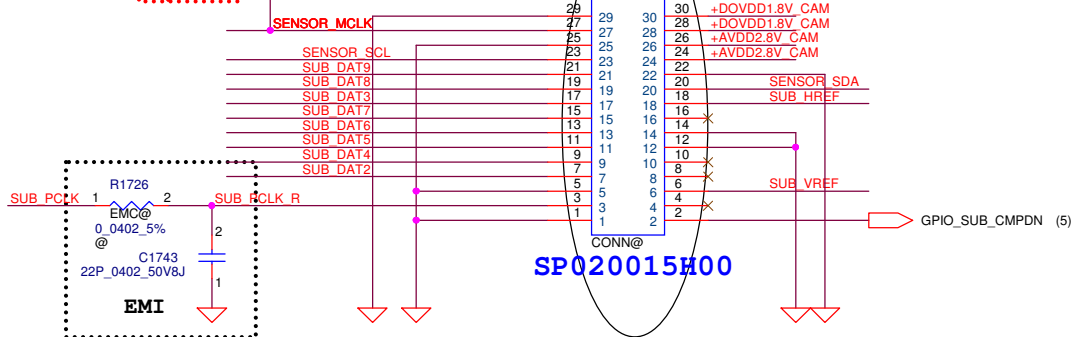
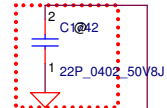
5M Camera



5/21 DEL EM12



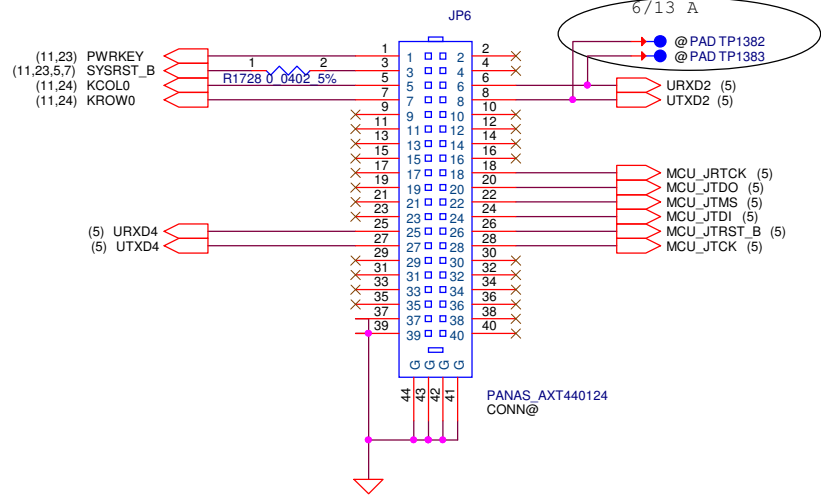
Acer reserve



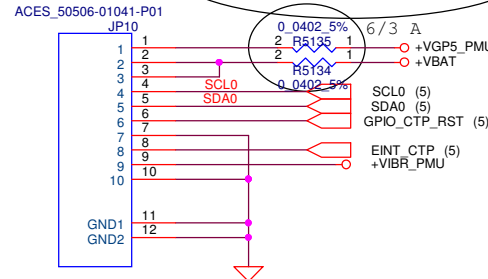
5/31 D EM6, EM7 change to comm choke

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Common Debug



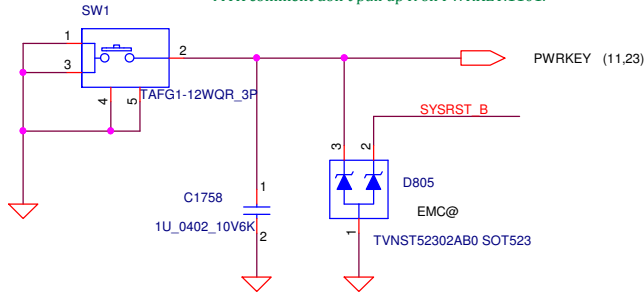
Touch



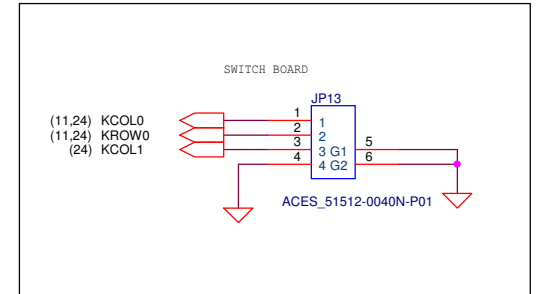
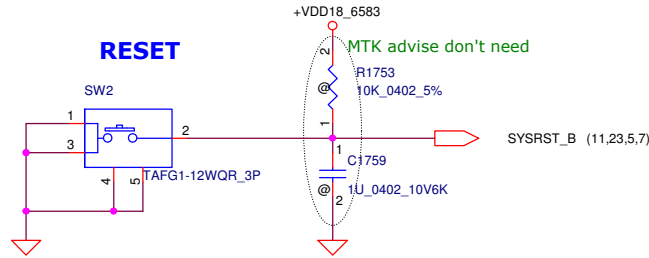
Compal GND MTK GND

Power-on Button

MTK comment don't pull up R on PWRKEY.1101.



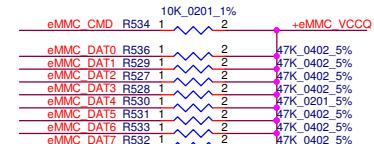
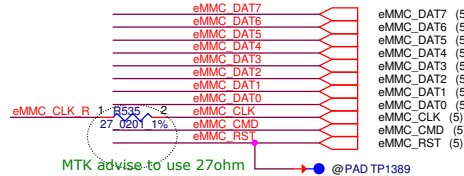
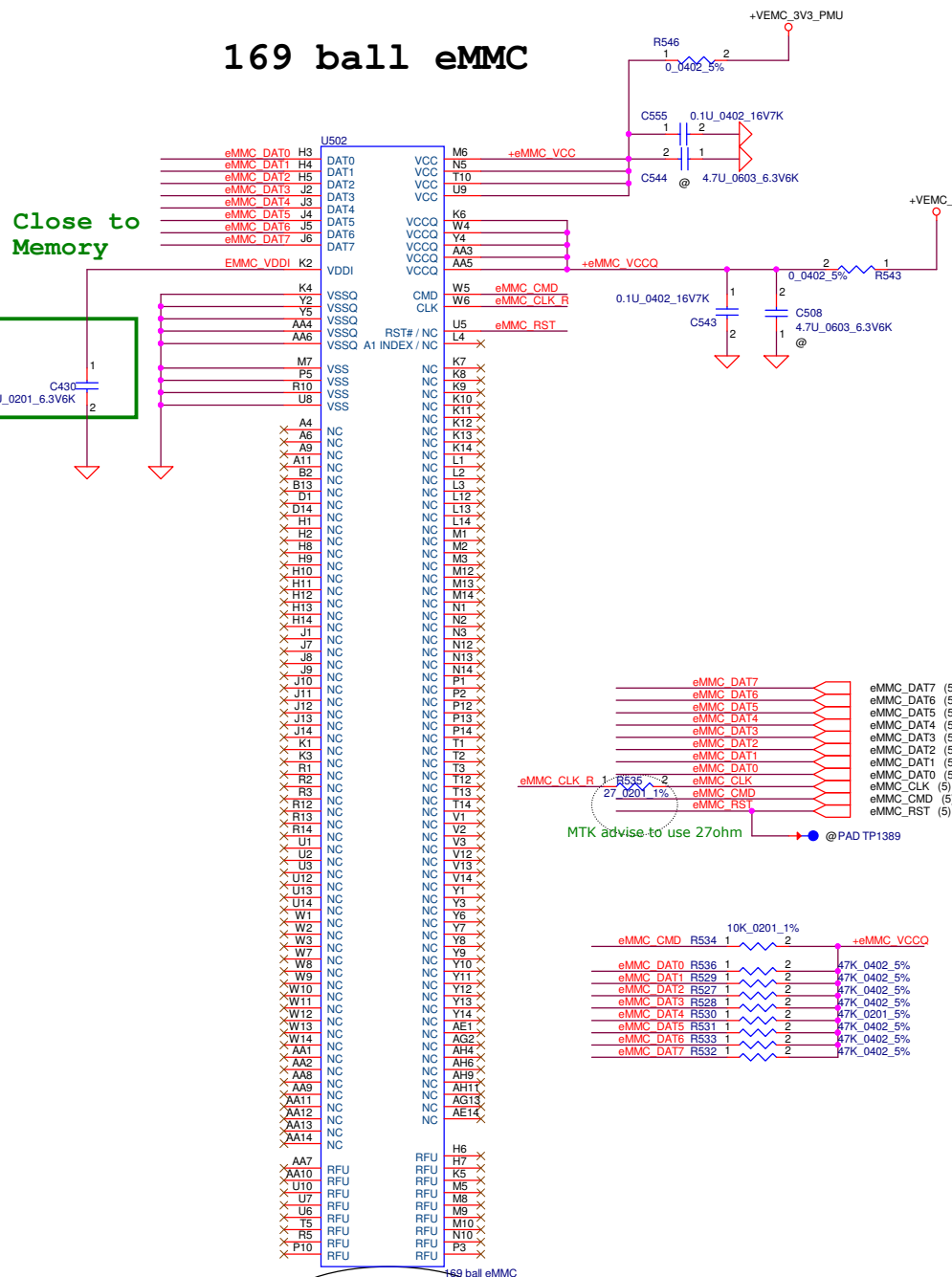
RESET



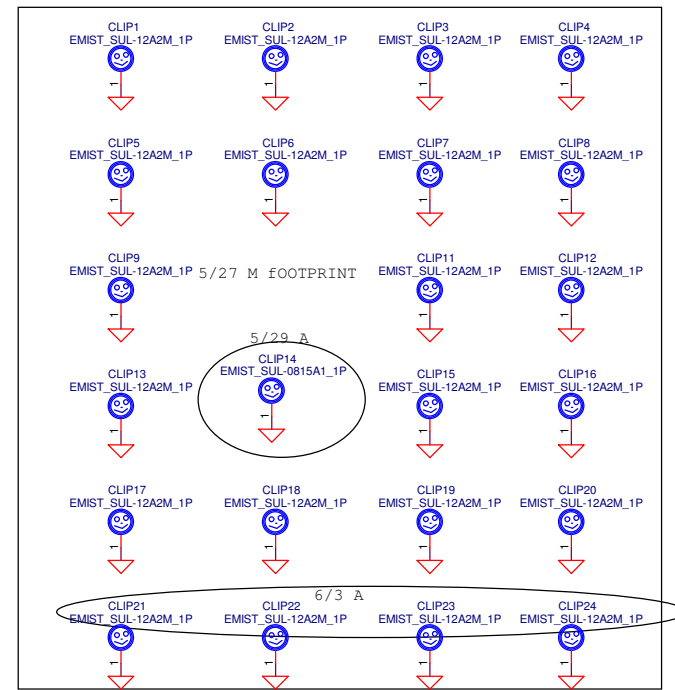
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169 ball eMMC

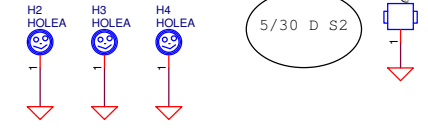
Close to Memory



- U502 KIN 8GB@ SA00006MF30 Kingston 8G KE4CN3K6A
- U502 KIN 16GB@ SA00006MG30 Kingston 16G KE4CN4K6A
- U502 HYN 8GB@ SA00006PW10 HYNIX 8G H26M42002GMR
- U502 HYN 16GB@ SA00006VJ10 HYNIX 16G H26M52002EQR
- U502 SAM 8GB@ SA00006VE10 Samsung KLM8G1WE4A-A001
- U502 SAM 16GB@ SA00006Z610 Samsung KLMAG2WE4A-A001



SCREW HOLE



SDIN4E2-16G-T_TFBGA_169P-P
@ompal footprint

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								eMMC, SCREW HOLE	
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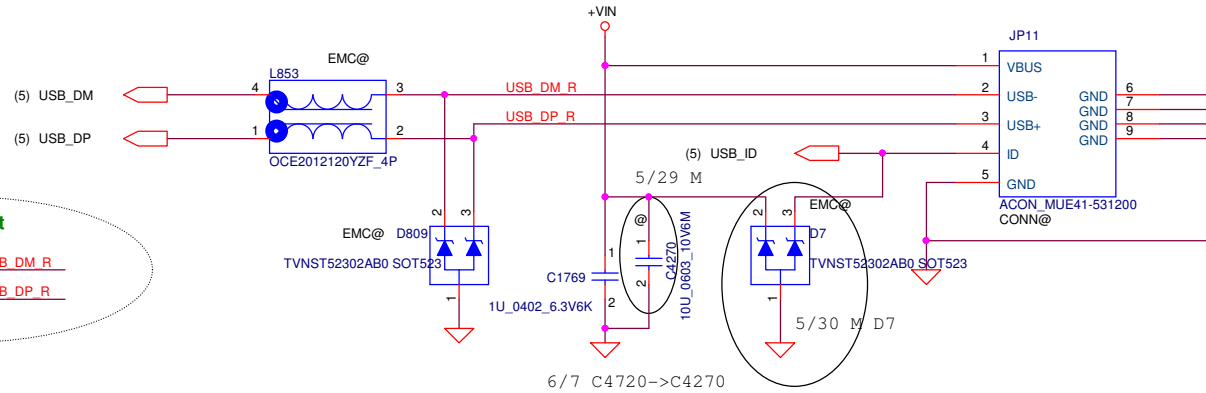
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Date:	Monday, June 17, 2013		Sheet	15 of 28																														
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A				A																								
<table><tr><td colspan="2">Security Classification</td><td colspan="2">Compal Secret Data</td><td colspan="2">Compal Electronics, Inc.</td></tr><tr><td>Issued Date</td><td>2012/11/03</td><td>Deciphered Date</td><td>2013/11/03</td><td>Title</td><td>BLANK</td></tr><tr><td colspan="4">THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.</td><td>Size B</td><td>Document Number ZEJ20 - LA-A792P</td></tr><tr><td colspan="4"></td><td>Date: Monday, June 17, 2013</td><td>Sheet 16 of 28</td></tr></table>					Security Classification		Compal Secret Data		Compal Electronics, Inc.		Issued Date	2012/11/03	Deciphered Date	2013/11/03	Title	BLANK	THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.				Size B	Document Number ZEJ20 - LA-A792P					Date: Monday, June 17, 2013	Sheet 16 of 28
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				Date: Monday, June 17, 2013	Sheet 16 of 28																							
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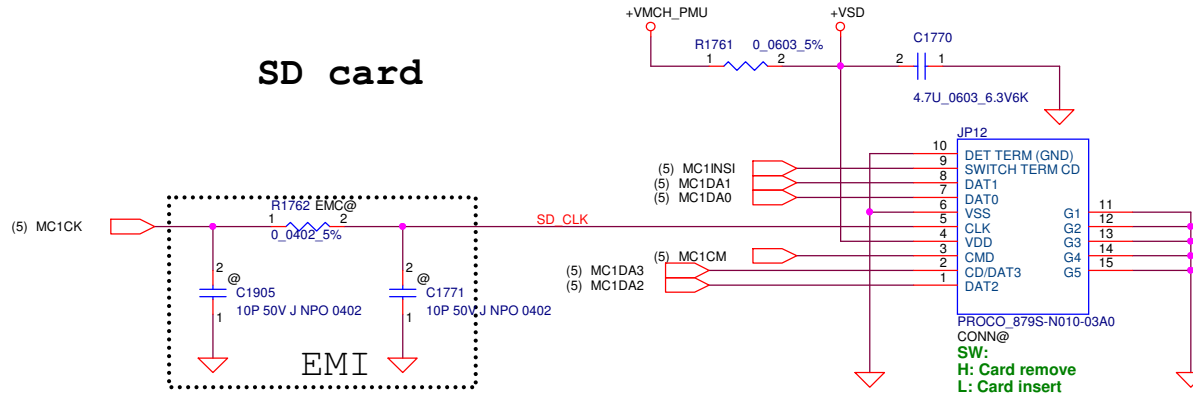
Micro-USB

If mini-A connector insert => CID < 0V => Low
If mini-B connector insert => CID > 1.2V => High

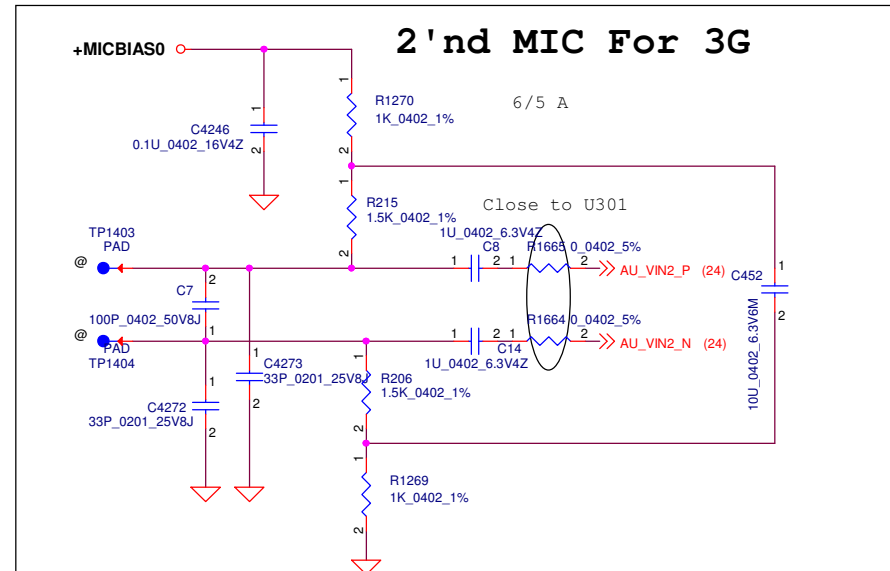
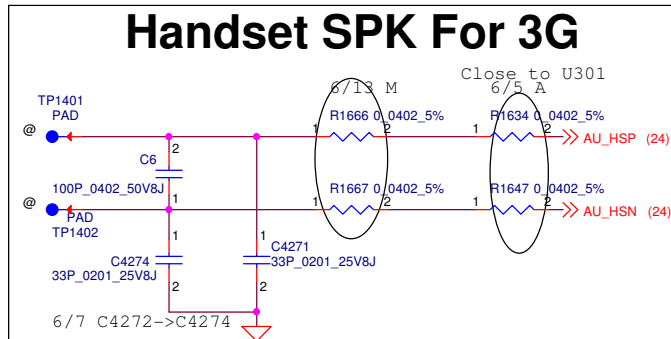
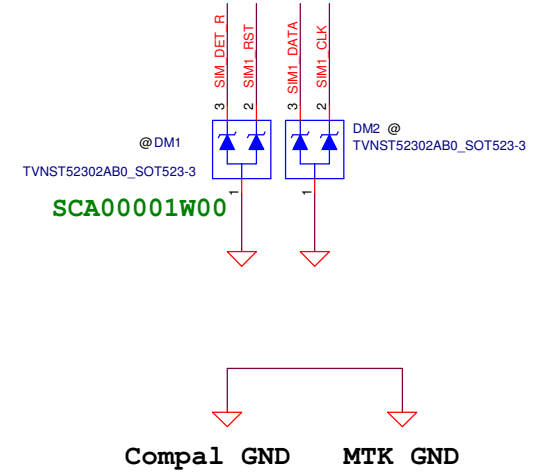
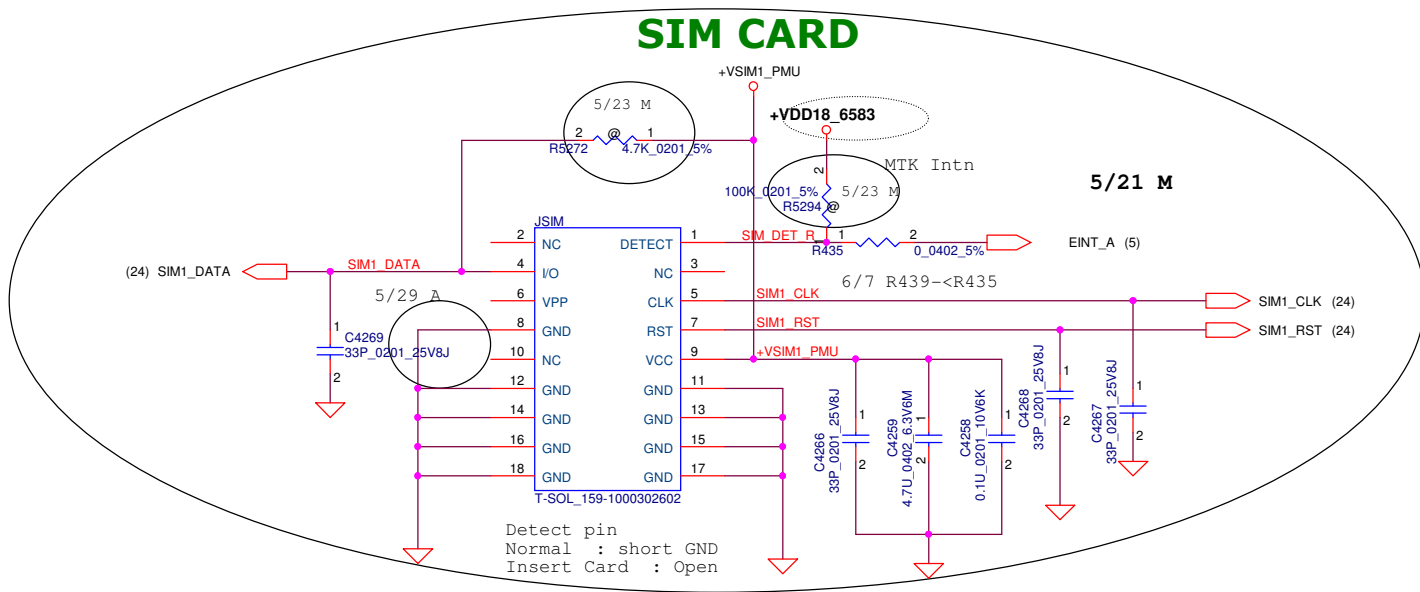
IDPULLUP pin is replaced by 1.2V power source.



SD card



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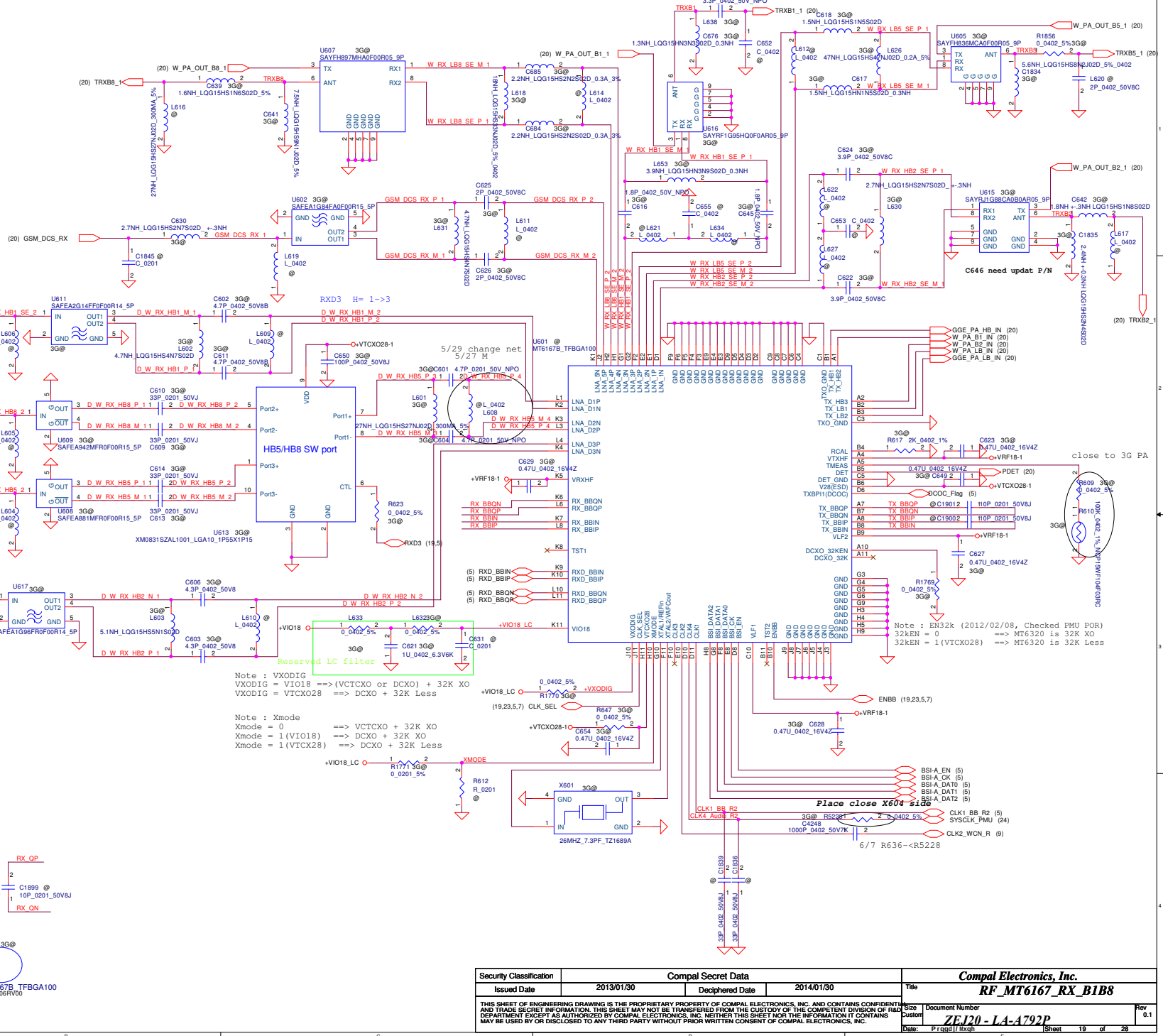
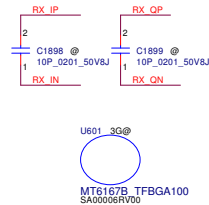
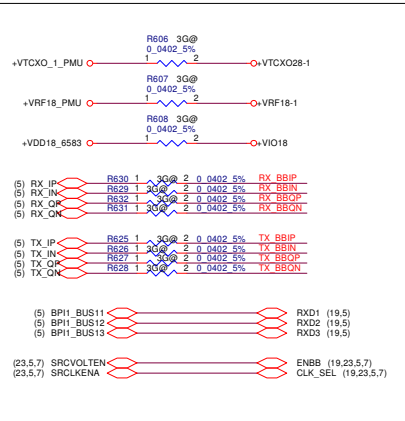
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WS1940-1	SKY13380	CTRL1	CTRL2	CTL	XM0831SZ
B2	switch path	RXD1	RXD2	RXD3	switch path
B8	ANT-RF2	L	L	L	RF1~RF2
B1	ANT-RF3	H	L	X	X
B5	ANT-RF4	H	H	H	RF1~RF3

Note : Use RX Co-banding
GSM850 = 3G B5
GSM900 = 3G B8
GSM1900 = 3G B2

SP4T Control Truth Table_SKY13380

Vctrl Vct2	RF1	RF2	RF3	RF4
L L	L	L	L	L
H L	L	L	L	L
H L	L	L	L	L
H H	L	L	L	L



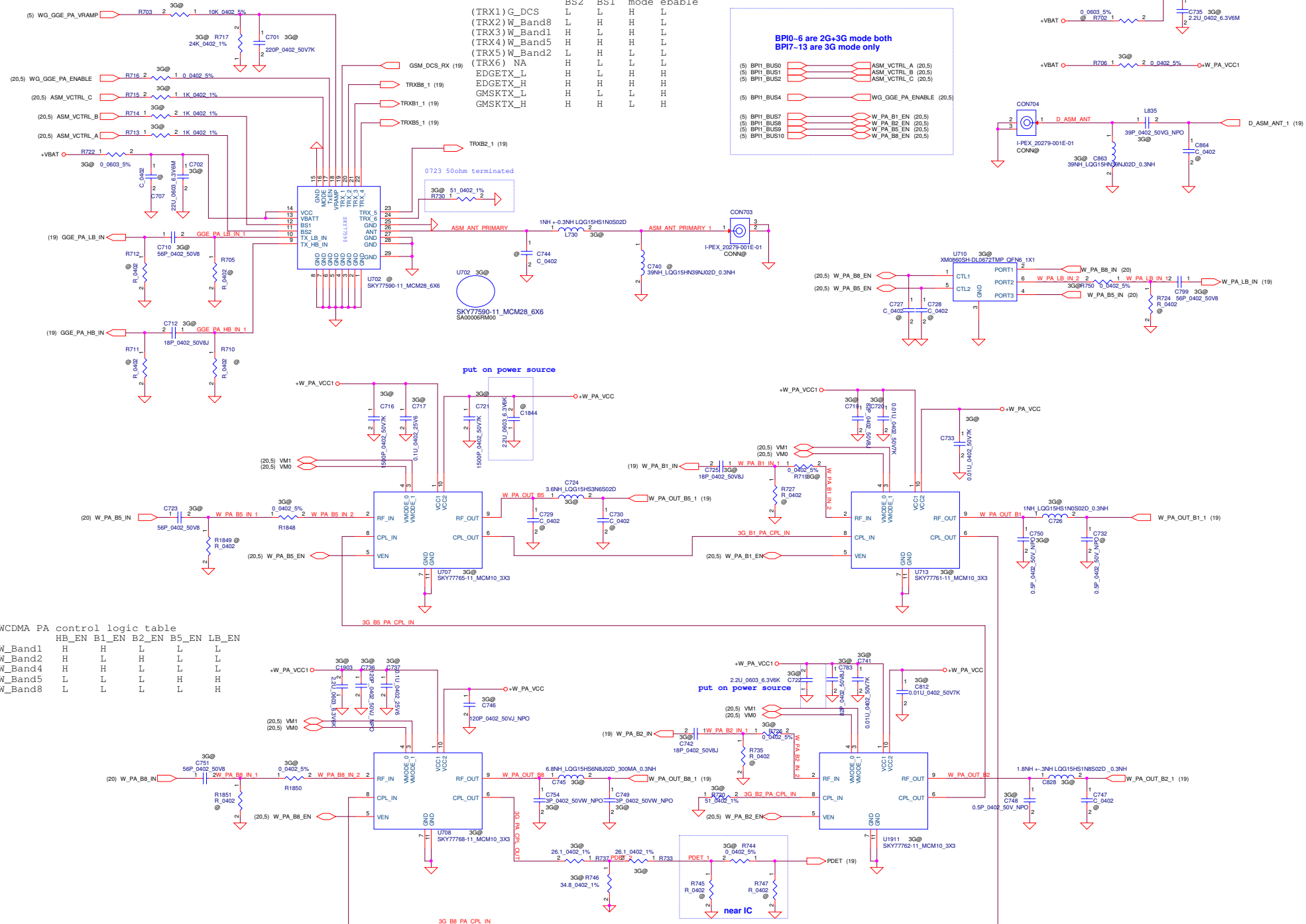
Security Classification	2013/01/30	Deciphered Date	2014/01/30	Title	RF_MT6167_RX_B1B8
Issued Date	2013/01/30	Deciphered Date	2014/01/30	Document Number	ZE120-LA-A792P
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Date:	P	Proj	1	Sheet	19 of 28

SKY77590 control logic table

VctA	VctB	VctC	TxE
BS2	BS1	mode	enable
(TRX1) G_DCS	L	H	L
(TRX2) W_Band8	L	H	L
(TRX3) W_Band1	H	L	H
(TRX4) W_Band5	H	H	L
(TRX5) W_Band2	L	H	L
(TRX6) NA	H	L	L
EDGE_TX_L	H	L	H
EDGE_TX_H	H	H	H
GMSK_TX_L	H	L	H
GMSK_TX_H	H	H	L

BPI0-6 are 2G+3G mode both
BPI7-13 are 3G mode only

(5) BPI0_BUS0	ASM_VCTRL_A (20.5)
(5) BPI1_BUS1	ASM_VCTRL_B (20.5)
(5) BPI1_BUS2	ASM_VCTRL_C (20.5)
(5) BPI1_BUS4	WG_GGE_PA_ENABLE (20.5)
(5) BPI1_BUS7	W_PA_B1_EN (20.5)
(5) BPI1_BUS8	W_PA_B2_EN (20.5)
(5) BPI1_BUS9	W_PA_B5_EN (20.5)
(5) BPI1_BUS10	W_PA_B8_EN (20.5)

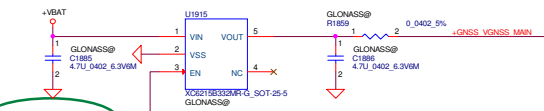


WCDMA PA control logic table

HB_EN	B1_EN	B2_EN	B5_EN	B8_EN
W_Band1	H	H	L	L
W_Band2	H	L	H	L
W_Band4	H	H	L	L
W_Band5	L	L	L	H
W_Band8	L	L	L	H

5/21 del JP15 R1857 C1878 C1879 for RF require share JP4 connect

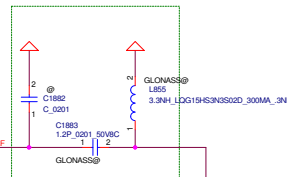
3.3V LDO



Connect to Host GPIO Pin

U1906 without output high-speed discharge function, then tdrop-down (2.7V-to-0.5V) > 50ms.
Please use MTK qualified LDOs, such as Torex XC6215/XC6221.

MT3332 on-chip LNA Matching



U1907 GLONASS@
SA00006M400
S IC MT3332N QFN 48P GPS

MT3332 QFN-48pins

C1891 is close to pin11

C1893 is close to pin11

pin14 connect to C1894 GND net first,
then connect to reference GND

RTC Voltage (2.8V)

Connect GNSS_HOST_VRTC to always alive voltage source, and keep the voltage swing of GNSS_HOST_32K RTC clock same as GNSS_HOST_VRTC.

1.8V / 2.8V IO Voltage Selection

2.8V IO : U1907 pin30 - 42 need change to GNSS_VTLDO
1.8V IO : U1907 pin30 - 42 (IO voltage is SMP5_VI8)

Reserved for GPS HRST from host,
connect to Host (MT62xx) GPIO pin

Reserved for improving GNSS Hot-Start performance.

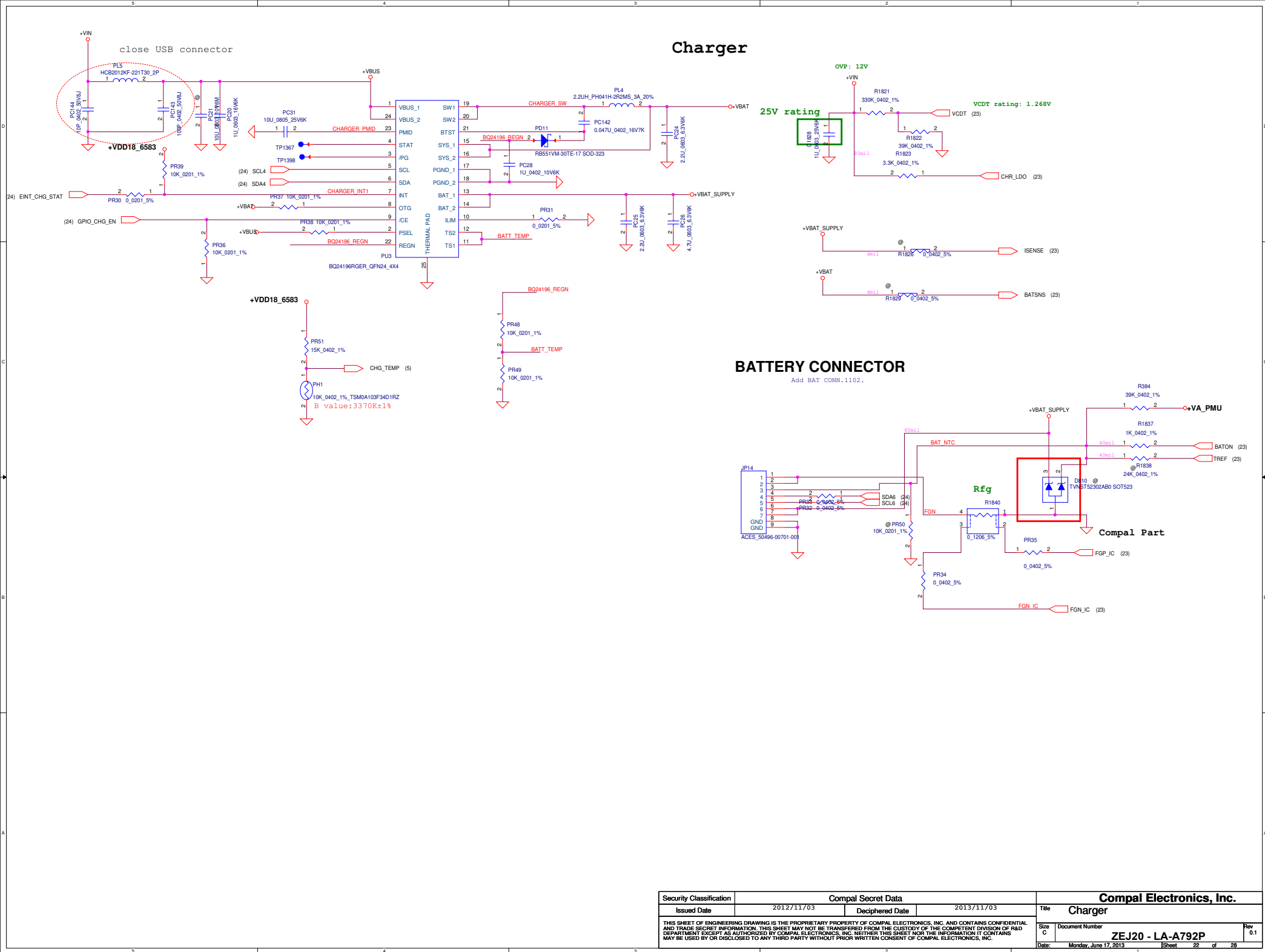
Reference Frequency Selection

16.368MHz TCXO : R1864 = NC, PIN_41 = NC
26MHz TCXO : R1864 = 10K, PIN_41 = NC
26MHz XTAL : R1864 = 10K, PIN_41 contact 10K

As EINT to Host

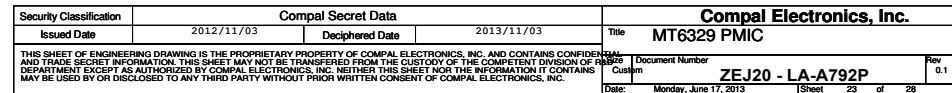
Connect to HOST UART (TX/RX) interface

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				Date	Monday, June 17, 2013



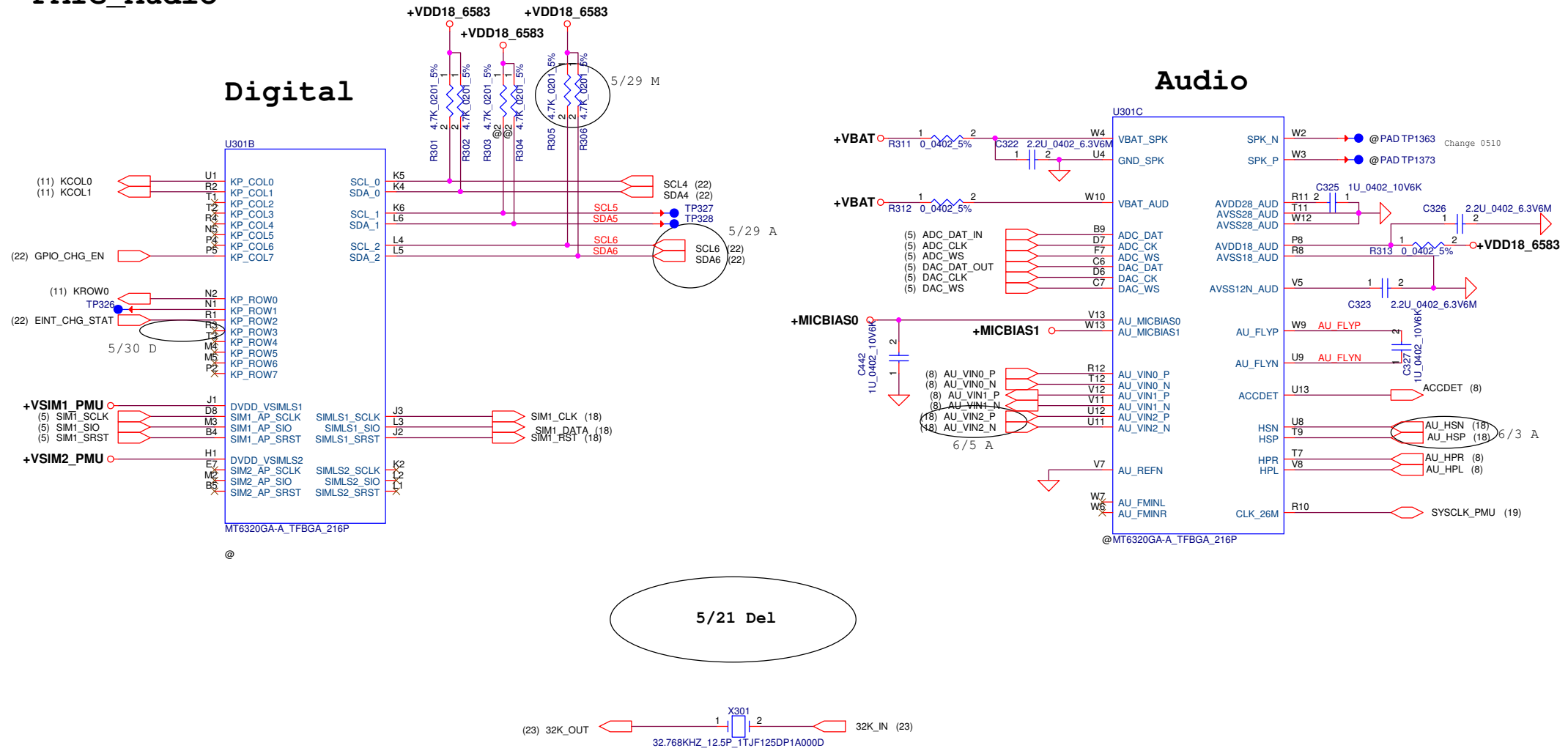
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	LPDDR2/1.2V	DDR3U/1.25V	DDR3L/1.35V	DDR3/1.5V
VMSEL2	L	L	H	H
VMSEL1	L	H	L	H



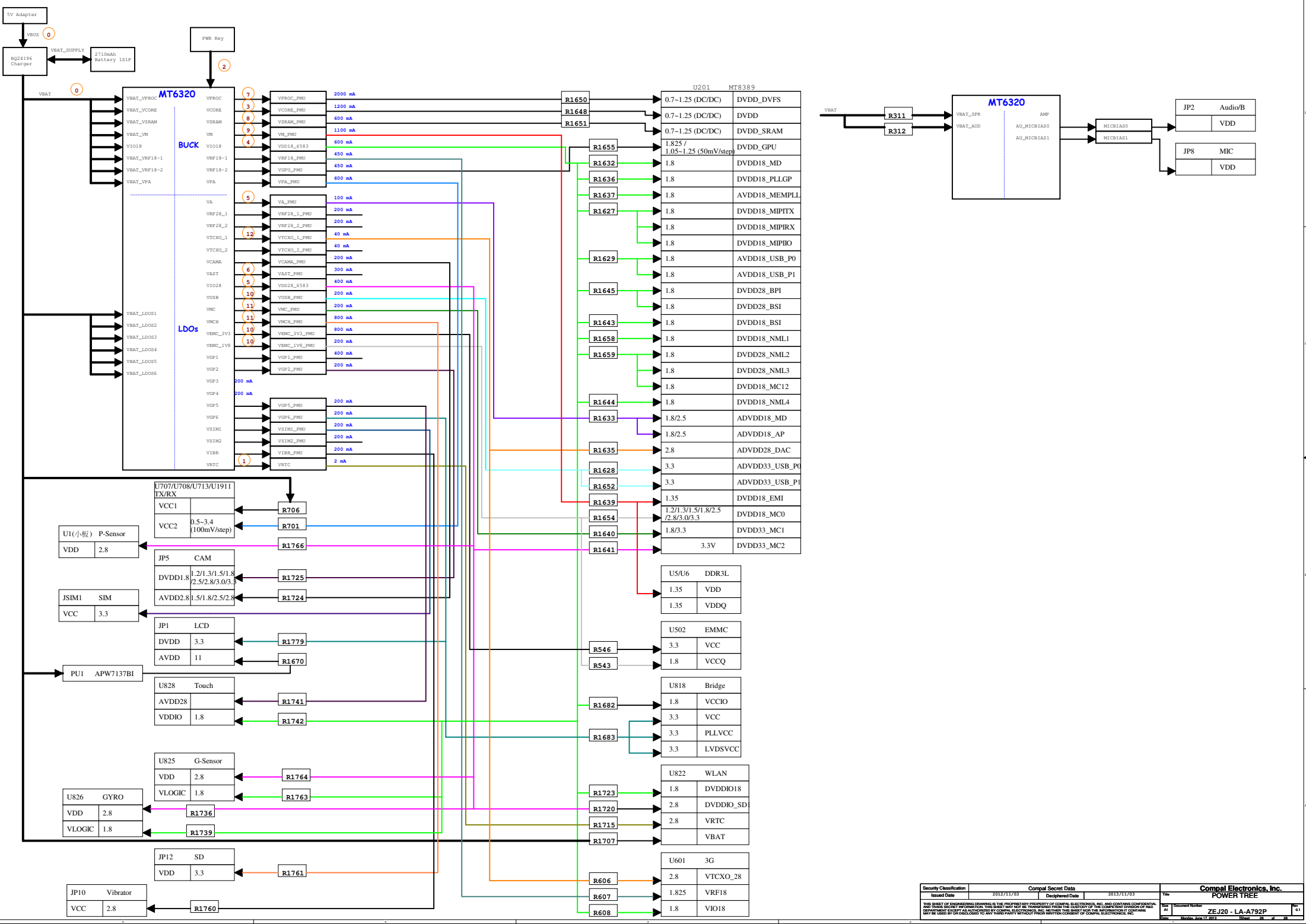
	Symbol	Application	Vout (V)	Iout (mA)	Cap Value (uF)
Buck	VPROC	CPU	0.7~1.25 (DC/DC)	2000	42
	VCORE	MDSYS/Infra	0.7~1.25 (DC/DC)	1200	30
	VM	VM	1.2/1.25/1.35/1.5	1100	10
	VSRAM	Memory	0.7~1.25 (DC/DC)	600	10
	VPA	3GPA	0.5~3.4 (100mV/step)	600	2.2+2.2
	VRF18	1st RF	1.825	450	4.7
	VRF18_2	2nd RF GPU OD	1.825 1.05~1.25 (50mV/step)	450	10
	VIO18	IO App.	1.8	600	4.7
Analog LDO	VA		1.8/2.5	100	
	VRF28_1	MDSYS	2.85		2.2
	VRF28_2	General	1.8/2.85	200	2.2
	VTXCO_1	MDSYS	2.8	40	1
	VTXCO_2	MDSYS	1.8/2.8	40	1
VCAMA	VCAMA	1.5/1.8/2.5/2.8	200	2.2	
Digital LDO	VIO28		2.8	400	2.2
	VAST	MT6168	0.9/1.0/1.1/1.2	300	2.2
	VUSB		3.3	200	1
	VMC	T-Card	1.8/3.3	200	1
	VMCH	T-Card	3.0/3.3	800	4.7
	VEMC_3V3	eMMC (Core)	3.0/3.3	800	4.7
	VEMC_1V8	eMMC	1.2/1.3/1.5/1.8/2.5/2.8/3.0/3.3	200	2.2
	VGP1	VCAMD	1.2/1.3/1.5/1.8/2.5/2.8/3.0/3.3	400	2.2
	VGP2	VCAM_IO	1.2/1.3/1.5/1.8/2.5/2.8/3.0/3.3	200	1
	VGP3	VCAM_AF	1.2/1.3/1.5/1.8/2.5/2.8/3.0/3.3	200	1
	VGP4	CTP/CMMB	1.2/1.3/1.5/1.8/2.5/2.8/3.0/3.3	200	1
	VGP5	CTP/CMMB	1.2/1.3/1.5/1.8/2.5/2.8/3.0/3.3	200	1
	VGP6	CTP/CMMB	1.2/1.3/1.5/1.8/2.5/2.8/3.0/3.3	200	1
VSIM1	VSIM1	1.2/1.3/1.5/1.8/2.5/2.8/3.0/3.3	200	1	
VSIM2	VSIM2	1.2/1.3/1.5/1.8/2.5/2.8/3.0/3.3	200	1	
Vibrator	VIBR	Vibrator	1.2/1.3/1.5/1.8/2.5/2.8/3.0/3.3	200	1
RTC	VRTC	RTC Block	2.8	2	1~22

PMIC_Audio



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<table><tr><td>Security Classification</td><td colspan="3">Compal Secret Data</td><td colspan="2">Compal Electronics, Inc.</td></tr><tr><td>Issued Date</td><td>2012/11/03</td><td>Deciphered Date</td><td>2013/11/03</td><td>Title</td><td>LED Backlight Driver</td></tr><tr><td colspan="4">THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.</td><td>Document Number</td><td>Rev</td></tr><tr><td colspan="4"></td><td>ZEJ20 - LA-A792P</td><td>0.1</td></tr><tr><td colspan="4"></td><td>Date: Monday, June 17, 2013</td><td>Sheet 25 of 28</td></tr></table>					Security Classification	Compal Secret Data			Compal Electronics, Inc.		Issued Date	2012/11/03	Deciphered Date	2013/11/03	Title	LED Backlight Driver	THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.				Document Number	Rev					ZEJ20 - LA-A792P	0.1					Date: Monday, June 17, 2013	Sheet 25 of 28
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2013/3/11
Update PD11 , D308 , D309 , D310 , D311 , L301 ,
L302 , L303 , L304 , L307 , C647 , C646 , C635 ,
C638 compal P/N
Change to un-pop : PR50 , R1838 , R314 ,R315
Change to pop : R1855

2013/3/13
Add C318

2013/3/14
Del R332,R348

2013/4/1
add R1847
reserve 0-ohm for panel design

2013/4/10
reserve C346 for VGP6 PMU
PR51 change to 15K_0402_1%
PH1 change to 10K_0402_1%

2013/4/15
Add PL5 , PC143 ,PC144 for EMI request
Add PC21 , PC22 ,PC23 for RF request

2013/4/22
Change L307 and C342 to reserve

2013/5/6
Change L306 and C338 BOM structure to 3G@

2013/5/6
Change PC21,PC22 and PC23 BOM structure to 3G@
PC21 change from 22P to 10P
PC22 and PC23 change 68P to 33P

2013/5/8
Change L305 and C337 BOM structure to 3G@

2013/5/8
Change D311 and C638 BOM structure to 3G@

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Data	page	state	description	
2013 05/21	P5	D	X602,R1852,C1840	
		M	LTE_ON_OFF#, GPS_OFF#, LTE_RESET +EVREF net	
	P7	A	U21,C1615,C1616,R1638,R1642,R1685	
	P8	A	R436,R437,R442	
		M	U146 net swap ,C1418 10nF,C1767,C1768,C1772,C1773 C1292 R1268,R1281 GND net,MIC1 Footprint	
	P9	A	R1705	
	P10	D	EM12	
		M	C1745	
	P12	A	R1754,R1755	
		M	C4175,C4176,U4029 GND net,Q1	
	P18	M	JSIM DSN	
	P21	D	JP15 R1857 C1878 C1879 for RF require	
	P24	D	X604,C1843,R1854	
	2013 05/23	P5	A	C1736, GPIO_SW net, LED_Signal EN net
P7		A	C1748,C605,C2650,C2651,R1662,R1646,L305~L308	
P8		A	R443~R446	
		M	SW_DET net	
P9		A	C1749	
P18	M	R5272@,R5294@		
2013/5/24	P7	A	Q3,R214,R1758	
2013 05/27	P5	D	R1765,R1766	
	P8	M	JP8 P4~8 Change to GND,Q2 Change to U87 Modify U1 U8 U21 net ,U143 net	
		A	R1663	
	P10	M	JP5 Swap	
	P13	M	CLIP FOOTPRINT	
	P17	A	C4270	
	P19	M	L608 Swap	
	P7	D	R5181,5185,5186,5188,5189,5192,5196,5198,5204	
	P12	A	D3	
	2013 05/29	P13	A	CLIP14
M			H6,H7	
P17		M	C4720 changt to 10nF	
P18		M	JSIM.8 GND	
P19		M	Modify L608 net	
P24		M	R305,R306 on , change U1,U201,U301,U601 0201 Footprint -P	
P5		M	R218,R218 上件	
P7		A	R5230	
		M	R5221@	
2013 05/30		P9	M	U819 SAFEA2G45MB0F0AR15_5
	A		TP1392,TP1400,R1708,R1714,R1720	
	P11	D	5/30 D R1760,C1766	
		M	JP10 pin nane	
	P12	A	R4903	
		M	R4901 @,U4902.5 U4902.17 U4902.25 NC	
	P13	D	R4909,R4911	
		D	S2	
	P16	A	R1697,R1698	
	P17	M	D7 TVNST52302AB0 SOT523	
P24	D	U301 BAT_ID		
2013 05/31	P7	D	TP1396,1399	
	P10	M	JP7 SWAP	
		D	EM6,EM7	
		A	L1~L3,R1731~R1737	
2013 06/03	P5	A	R1869,R1872	
	p7	M	D815 Footprint	
	P11	A	R5135,R5134	
	P12	A	R8	
	P13	A	Clip21~24	
	P18	A	C6,C4270,C4271,L861,L862	
	P24	A	AU_HSN,AU_HSP NET	
	P7	M	U8 Pin4&pin3 swap	Symbol Error
2013 06/05	P18	A	C7,C8,C14,C452,C4272,C4246,C4273 R206,R215,R1269,R1270,R1634,R1647,R1664,R1665,	Add handset SPK and MIC
	6	M	MX76 Part number	
2013 06/06	7	A	MADD C1685 DEL	
		D	R1685 R5224	
	8	M	U21 Q26 QL1 R5218 P/N	
		M	JP2 PCB Footprint	
	12	M	U3 P/N	
		D	PAD1,	
	13	A	H1	
		A	CLIP25	

Data	page	state	description
2013 06/07	5	M	R637->R636
	7	M	R1758->R1756,Q27->Q26,Q3->Q2,R1663->R5229
	8	M	R442->R439,R443->R442,R444->R443,R445->R444,R446->R44
	9	M	R1698->R1730,R1697->R1729
		M	TP1392->TP1384 , TP1400->TP1385
	12	M	U891_UPDATE
		M	U3->U2
	17	M	C4720->C4270
	18	M	C4272->C4274, R439-<R435
	19	M	R636-<R5228
2013 06/11	7	M	Footprint 0201 => 0201-P
		A	R1656
		M	U8
2013 06/13	7	M	U8 ,C2650 10U->4.7U
		A	R1663
	11	A	TP1382,TP1383
	18	M	L681->R1666,L682->R1667

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